

GIBELQ

2024-03-24

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PRASA PROJECT




SELF INSPECTION SHEET

CONFIDENTIAL INFORMATION



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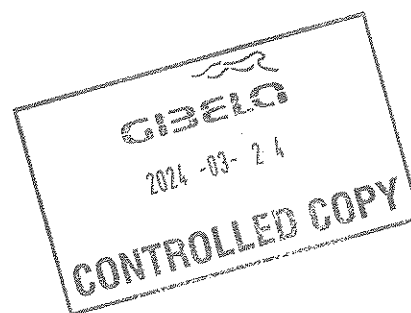
APPLICATION REFERENCE



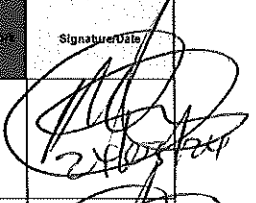
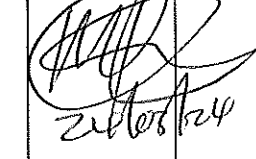

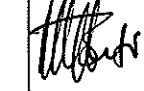

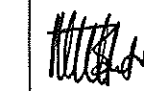

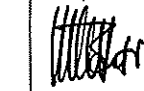



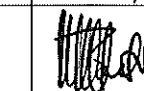

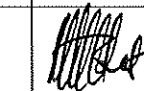
MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	1	1	1		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1				1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	1	1	1	1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	1	1	1	1	PRA.FT1140.05	YES
<input type="checkbox"/>										
<input type="checkbox"/>										
<input type="checkbox"/>										

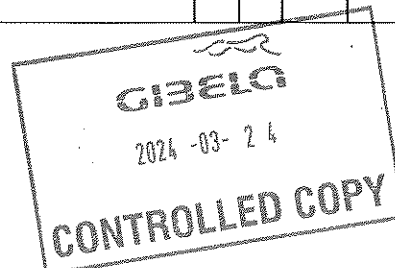
REV	DATE	MODIFICATION CONTENT	RESPONSIBLE	NAME	DATE
7	2/11/2020	UPDATE OF AIR TIGHTNESS TEST TIME FROM 4 MIN TO 5 MIN. ADD PANTOGRAPH AIR TIGHTNESS.	APPROVER	GIVEN SILOWA	2/11/2020
			CHECKER	SIMON MOKOENA	2/11/2020
			COMPILER	COMFORT MALATJI	2/11/2020
8	9/13/2021	ADDING GAUGE MEASUREMENT CHECK ON THE SI.	APPROVER	MAKOFANE LUCY	9/13/2021
			CHECKER	RATAU EDISON	9/13/2021
			COMPILER	TSAKANI KHOSA	9/13/2021
9	5/31/2022	pressure valve (APV) Isolation	APPROVER	MAKHURUPETJI THABANG	5/31/2022
			CHECKER	HAZEL MGIBA	5/31/2022
			COMPILER	RATAU EDISON	5/31/2021

TUE	CAR	OPERATOR NAME	DATE	SELF INSPECTION NUMBER	PAGES
T5 Q16	M4	B. Momo	24/03/24	SI.FT1140.52	01/08

	<h1 style="margin: 0;">SELF INSPECTION INDUSTRIAL QUALITY</h1>										Rev:09	Projet: PRASA	SI.FT1140.52		
											Date:				
											5/31/2022				
Car:			NCR:					Work Station				FT1140			
 Safety Related															
I - Document and Instrument Control															
1.1 - Documents control															
Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	OK	NOK	Signature/Date				
PRA.FT1140.04															
PRA.FT1140.05					✓				✓		24/03/24				
PRA.FT1140.05															
1.2 - Instruments Control - Monitoring and Measuring Instrument Control (Used for all instrument with calibration needed)															
Instruments description	Serial number					Calibration or Verification Validation Date				OK	NOK	Signature/Date			
Measuring tape	C1BTA 0236					26/01/23 - 26/01/24				✓					
Vernier Calliper	C1BVR 0056					06/06/23 - 06/06/24				✓					
Torque wrench 320NM	A 9680027					21/11/23 - 21/11/24				✓		24/03/24			
Torque wrench 150NM	D28622009					17/11/23 - 17/11/24				✓					
Torque wrench 35NM	D2511023					17/11/23 - 17/11/24				✓					



	<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Project: PRASA	SI.FT1140.52										
			Date: 5/31/2022												
II - Self Inspection - Items to Check															
II.1 - Items to Check															
Item	Picture/Sketch	Description	Criteria/Record	OK	NO	Remarks	Signature/Date								
01		Ensure that the average pressure valve (APV) is isolated by capping the two input pipes at the fittings installing the blanking fitting on the pipes highlighted		✓			 24/03/24								
02		Check underframe pipe system Air tightness. Test performance according to WI PRA FT1130.15.	The test was performed and no leak was observed. Initial pressure (PI): 9.90 bar Final pressure (FP): 9.88 bar FP - PI: 0.02 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓			 24/03/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓			 24/03/24								
04		Measurement inspection was done with car on condition AWD and the rail leveled. (The load cells system must be leveled and calibrated)	Calibration Validation Date _ / _ / _	✓			 24/03/24								
05		In case of the equipments not installed, equivalent weight of the item should be added in the same place to simulate the equipment. (Any simulated weight, add on pending list)	<table border="1"> <thead> <tr> <th>EQUIPMENT DESCRIPTION</th> <th>WEIGHT (kg)</th> </tr> </thead> <tbody> <tr> <td>Langmuir</td> <td>360</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	Langmuir	360					✓			 24/03/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)														
Langmuir	360														
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓			 24/03/24								
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓			 24/03/24								
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓			 24/03/24								



GIBELQ		SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Project: PRASA		SI.FT1140.52
				Date: 5/31/2022			
Item	Picture/Sketch	Description	Criteria/Record	OK	NO	Notes	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓			 24/03/24
10		The difference of weight between the left and right wheels of each axis, must be ≤ 4%. (Verify on the T&C equipment if all arrows are in green).		✓			 24/03/24
11		Remove the car, move back onto the load cello and repeat the step 09. Confirm if both are in the tolerance of ≤ 4%.		✓			 24/03/24
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I II III IV	✓			 24/03/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓			 24/03/24
14		FOR TC CARS F = Height of the center of Automatic coupler F = 895mm (+5 / -10mm) (Using leveled rail)	TC CAB #1 = _____ mm				N/A
15		FOR TC CARS Height of Eurobase Antenna = 205mm (+/-10mm) (Using leveled rail)	TC CAB #1 = _____ mm				N/A
16		Check pantograph piping air tightness. Test performance according to WI PRA.FT1140.17.	The test was performed and no leak was observed. -Roof piping connection fittings. -Roof piping connection fittings(Roof arch and door binning)				N/A
17		Pantograph does not come in contact with the higher height gauge when passing through.	No Contact with Pantograph and Gauge -GO Contact with Pantograph and Gauge - NO GO				N/A
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	✓			 24/03/24

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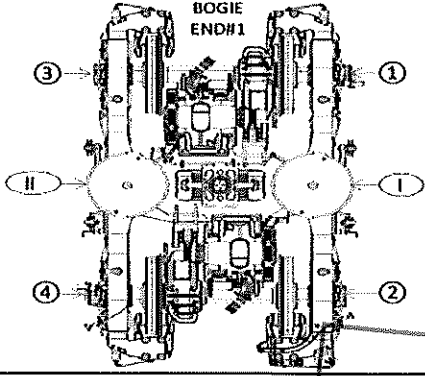
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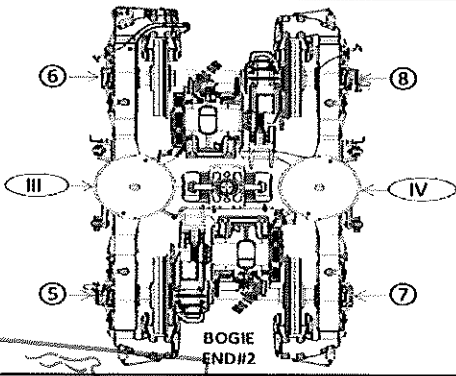
	<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>	Rev:09	Project: PRASA	SI.FT1140.52
		Date:		
		5/31/2022		

DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)															
		END#1													
		LEFT SIDE						RIGHT SIDE							
DESCRIPTION	TOLERANCE	A'ii	6	5	4	3	2	1	1	2	3	4	5	6	A'i
AIR SPRING HEIGHT (EMPTY)	N/A														
AIR SPRING HEIGHT (FULL)	min 254 max 261	Aii			256	256	254	255	255	255	257	257			Ai
FLOOR COVERING HEIGHT	min 1096 max 1116	Eii			1105	1105	1103	1104	1107	1107	1109	1109			Ei
AIR SPRING PRESSURE	± 0.3 (Oil - Oil)	Cii			2,66	2,66	2,73	2,84	2,53	2,63	2,73	2,70			CI
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3													D1
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4													D2
PIVOT VERTICAL GAP	min 25 max 32	Kii													Ki
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ai - A)	Jii													Ji
QTY OF TURNS OF LEVELLING ROD	N/A	Xii					1/2 P		1/2 P	1/2 P					Xi
SHIMS OF ANTI-ROLL BAR	N/A	Yii													Yi
DESCRIPTION	TOLERANCE		6	5	4	3	2	1	1	2	3	4	5	6	
AIR SPRING HEIGHT (EMPTY)	N/A	A'iii													A'iv
AIR SPRING HEIGHT (FULL)	min 254 max 261	Aiii			256	256	251	244	251	256	257	257			Aiv
FLOOR COVERING HEIGHT	min 1096 max 1116	Eiii			1109	1109	1100	1088	1102	1108	1109	1109			Eiv
AIR SPRING PRESSURE	± 0.3 (Oil - Oil)	Ciii			2,78	2,81	2,72	2,57	2,78	2,73	2,69	2,68			Civ
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5													D7
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6													D8
PIVOT VERTICAL GAP	min 25 max 32	Kiii													Kiv
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Aiv - Av)	Jiii													Jiv
QTY OF TURNS OF LEVELLING ROD	N/A	Xiii					1 P 3 P		1/2 P 3/4 P						Xiv
SHIMS OF ANTI-ROLL BAR	N/A	Yiii													Yiv


COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW			END#2	
GOOD	LOWER	HIGHER	BOGIE ORIENTATION	
✓	↓	↑		
WEIGHT COMPENSATION				
EQUIPMENT				
WEIGHT				
EQUIPMENT				
WEIGHT				
SECONDARY MEASUREMENTS (ONLY TC CARS)				
AUTOMATIC COUPLER HEIGHT				
ANTENNA HEIGHT				



BOGIE
END#1



BOGIE
END#2


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SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:
PRASA

SI.FT1140.52

DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

		END#1													
		LEFT SIDE						RIGHT SIDE							
DESCRIPTION	TOLERANCE	6	5	4	3	2	1	1	2	3	4	5	6		
AIR SPRINGS HEIGHT (EMPTY)	N/A	A'ii												A'i	
AIR SPRING HEIGHT (FULL)	min 254 max 261	Aii												Ai	
FLOOR COVERING HEIGHT	min 1096 max 1116	Eii												Ei	
AIR SPRING PRESSURE	≤ 0.3 (Qi - Q)	Cii												Ci	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3												D1	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4												D2	
PIVOT VERTICAL GAP	min 25 max 32	Kii												Ki	
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ai - Aj)	Jii												Ji	
QTY OF TURNS OF LEVELLING ROD	N/A	Xii												Xi	
SHIMS OF ANTI-ROLL BAR	N/A	Yii												Yi	
DESCRIPTION	TOLERANCE	6	5	4	3	2	1	1	2	3	4	5	6		
AIR SPRING HEIGHT (EMPTY)	N/A	A'iii												A'iv	
AIR SPRING HEIGHT (FULL)	min 254 max 261	Aiii												Aiv	
FLOOR COVERING HEIGHT	min 1096 max 1116	Eiii												Eiv	
AIR SPRING PRESSURE	≤ 0.3 (Qv - Qh)	Ciii												Civ	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5												D7	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6												D8	
PIVOT VERTICAL GAP	min 25 max 32	Kiii												Kiv	
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Av - Ax)	Jiii												Jiv	
QTY OF TURNS OF LEVELLING ROD	N/A	Xiii												Xiv	
SHIMS OF ANTI-ROLL BAR	N/A	Yiii												Yiv	

COMPARE EACH TENTATIVE WITH
THE TOLERANCE AND IDENTIFY
EACH MEASURE AS BELOW

GOOD LOWER HIGHER

WEIGHT
COMPENSATION

EQUIPMENT

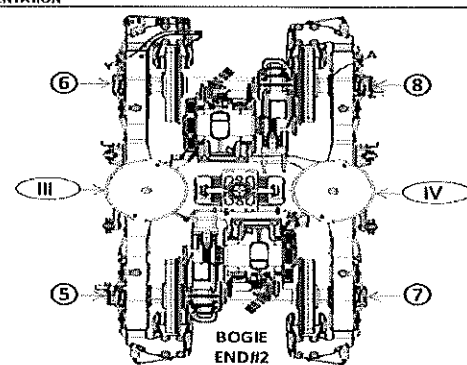
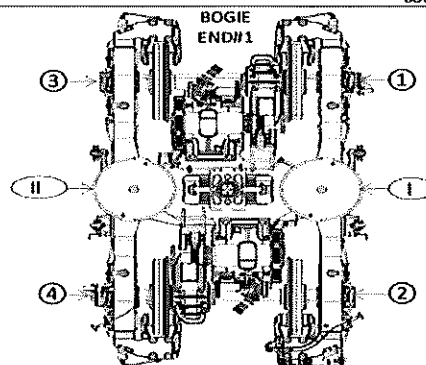
WEIGHT

EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS
(ONLY TO CARS)AUTOMATIC COUPLER
HEIGHT

ANTENNA HEIGHT



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Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

ITEM	THEORETICAL VALUES													
	TCL CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		TCL CAR			
	TBext	TBint	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	TBext	TBint		
Pivot lateral stop gap difference [mm]	Fig. 4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4		
Air Spring Height [mm]	Fig. 5	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄		
Air spring pressure at AWD [Bar]	Fig. 5	3,76	2,82	2,87	2,83	3,02	2,91	3,07	2,85	2,83	2,83	2,83	3,76	
		(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	
		0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	
Primary Suspension gap [mm]	Fig. 6	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	
		D ₁ : D ₂												
		D ₂ : D ₃												
		D ₃ : D ₄												
Carbody floor height [mm]	Fig. 7	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	
Bolster height [mm]	Fig. 7	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	850 ⁺²⁵ ₋₂₅	
Coupling End height [mm]	Fig. 8	895 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	895 (Ref.)	895 (Ref.)	895 (Ref.)	
	Fig. 9	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	
Pivot Vertical gap [mm]	Fig. 10	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	

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	<h1>SELF INSPECTION</h1> <h1>INDUSTRIAL QUALITY</h1>	Rev:09	Project: PRASA	SI.FT1140.52
		Date:		
		5/31/2022		

Leveling report from Production (Final measurements after Levelling and Weighting fine)

References for secondary suspension empty
A'n Air spring height empty

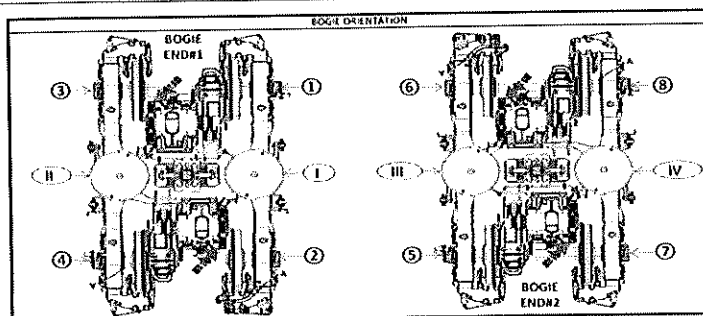
References for secondary suspension full
An Air spring height
Bn Difference between measurement A'n and An
En Floor covering height
Cn Air spring pressure
Dn Primary suspension
Kn Pivot Vertical gap
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 243	A'e 245	A'n 243	A'v 243
An	254 to 261	Ai 257	Ae 256	Aa 256	Av 257
Bn = An - A'n	N/A	Bi 14	Be 11	Ba 13	Bv 14
En	1106 ±10 mm	Ei 1109	Ee 1105	Ea 1109	Ev 1109
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2.70	Ce 2.66	Ca 2.78	Cv 2.68
Cn - Cn+1	Difference ≤ 0,3	Ci - Ce 0,04		Ca - Cv 0,1	
Gauge serial number	N/A	S1B05875		S1B05875	
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 45.39	D3 47.13	D5 45.04	D7 47.14
		D2 46.60	D4 45.56	D6 46.13	D8 45.86
Kn	25 to 45	Ki 39.74		Ka 36.09	
Jn	Difference ≤ 4	Ji 24.44	Je 25.56	Ja 24.90	Jv 26.56

(*) Reference, only include values, isn't approval criteria.

Table 01 D Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbex	TBin	Mb1	Mb1	Mb1	Mb2	Mb2	Mb1	Mb1	Mb1	TBin	Tbex
D=	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅	35 ⁺¹² ₋₅

Table 02 C Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbex	TBin	Mb1	Mb1	Mb1	Mb2	Mb2	Mb1	Mb1	Mb1	TBin	Tbex
C=	3.76	2.82	2.87	2.83	3.02	2.91	3.07	2.85	2.83	2.87	2.83	3.76



Weighting report from Test and Commissioning (Final measurements after Levelling and Weighting fine)





Gibela Rail Transport Consortium RF (Pty)
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Dunnotar X7
Ekurhuleni, 1590, South Africa
Reception: +27 (0)10 600 0651

TRAIN SET 216	PC09 WEIGHING REPORT
---------------	----------------------

M4	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ≤ 5%
		17.91	17.90	0.20%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		35.79	35.95	0.45%	1.36% Criteria MinDiffMax PASS

Test Participants			
Name	Company	Department	Date
Dubois	Gibela	EOC	24/03/2024
NH			