

GIBELQ

PRASA PROJECT




SELF INSPECTION SHEET

CONFIDENTIAL INFORMATION



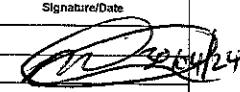

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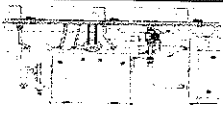





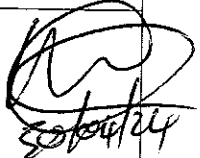





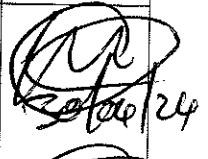

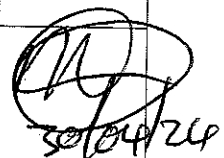
APPLICATION REFERENCE

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	X		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
TS 220	M3	P. Seisa	30/04/24	SI.FT1140.52	01/08

	SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Project: PRASA	SI.FT1140.52					
			Date: 5/31/2022							
Car:	NCR:		Work Station <div style="text-align: right; font-weight: bold;">FT1140</div>							
 Safety Related										
I - Document and Instrument Control										
I.1 - Documents control										
Document	TC1	31	32	33	34	TC2	Revision	Remark	OK	Signature/Date
PRA.FT1140.04										
PRA.FT1140.05				X					✓	
PRA.FT1140.05										
I.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	Signature/Date				
Measuring Tape	GIBTA 0276		26/10/23-26/10/24		✓					
Venier Calliper	GIBVR 0056		26/06/23-06/06/24		✓					
Torque Wrench 35 N.m	D2511023		19/12/23-19/12/24		✓					
Torque Wrench 150 N.m	D28622009		19/12/23-19/12/24		✓					
Torque Wrench 320 N.m	A9650027		21/12/23-21/12/24		✓					

		SELF INSPECTION INDUSTRIAL QUALITY		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	Not OK	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		✓		 30/04/24								
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 (IP): <u>9.82</u> bar Final pressure (FP): <u>9.80</u> bar FP - IP = <u>0.02</u> bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓		 20/04/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 30/04/24								
04		Measurement inspection was done with car on condition AWO and the rail leveled. (The load cells system must be levelled and calibrated)	Calibration Validation Date <u> </u> / <u> </u> / <u> </u>	✓		 30/04/24								
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>GANGWAY</td> <td>30</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	GANGWAY	30					✓		 30/04/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)													
GANGWAY	30													
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		 30/04/24								
07		Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		 30/04/24								
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 30/04/24								



SELF INSPECTION INDUSTRIAL QUALITY

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Item	Picture/Sketch	Description	Criteria/Record	OK	Signature/Date											
09		Check that the leveling rods are torqued and have torque marker.		✓	 30/04/24											
10	<table border="1"><thead><tr><th>0.00%</th><th>0.00%</th><th>0.00%</th><th>0.00%</th></tr></thead><tbody><tr><td>1.09% NR 1</td><td>0.67% NR 2</td><td>1.30% NR 3</td><td>1.35% NR 4</td></tr><tr><td>93.50 KN</td><td>93.72 KN</td><td>92.42 KN</td><td>91.84 KN</td></tr></tbody></table>	0.00%	0.00%	0.00%	0.00%	1.09% NR 1	0.67% NR 2	1.30% NR 3	1.35% NR 4	93.50 KN	93.72 KN	92.42 KN	91.84 KN	The difference of weight between the left and right wheels of each axis, must be $\leq 4\%$. (Verify on the T&C equipment if all arrows are in green).	✓	 30/04/24
0.00%	0.00%	0.00%	0.00%													
1.09% NR 1	0.67% NR 2	1.30% NR 3	1.35% NR 4													
93.50 KN	93.72 KN	92.42 KN	91.84 KN													
11	<table border="1"><thead><tr><th>0.00%</th><th>0.00%</th><th>0.00%</th><th>0.00%</th></tr></thead><tbody><tr><td>1.09% NR 1</td><td>0.67% NR 2</td><td>1.30% NR 3</td><td>1.35% NR 4</td></tr><tr><td>93.50 KN</td><td>93.72 KN</td><td>92.42 KN</td><td>91.84 KN</td></tr></tbody></table>	0.00%	0.00%	0.00%	0.00%	1.09% NR 1	0.67% NR 2	1.30% NR 3	1.35% NR 4	93.50 KN	93.72 KN	92.42 KN	91.84 KN	Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$.	✓	 30/04/24
0.00%	0.00%	0.00%	0.00%													
1.09% NR 1	0.67% NR 2	1.30% NR 3	1.35% NR 4													
93.50 KN	93.72 KN	92.42 KN	91.84 KN													
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I 0 II 0 III 0 IV 0	✓	 30/04/24											
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓	 30/04/24											
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5 / -10mm) (Using levelled rail)	TC CAB #1= _____ mm		N/A											
15		FOR TC CARS Height of Eurobalise Antenna = 205mm(+/-10mm) (Using levelled 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 blinning)		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	✓	 30/04/24											



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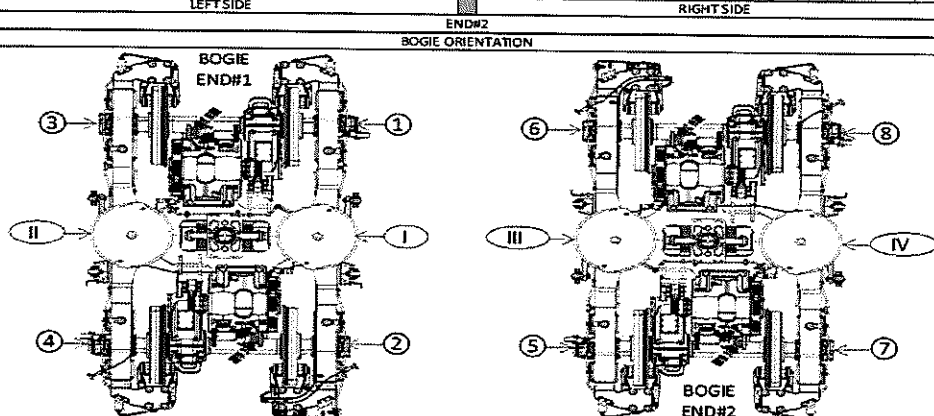
Project:
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DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

DESCRIPTION	TOLERANCE	LEFT SIDE						RIGHT SIDE					
		6	5	4	3	2	1	1	2	3	4	5	6
AIR SPRING HEIGHT (EMPTY)	N/A	A ^{II}											A ^I
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ^{II}			257	257	251	257	257	255			A ^I
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II}			1111	1111	1104	1105	1105	1105			E ^I
AIR SPRING PRESSURE	≤ 0.3 (C ^{II} - C ^I)	C ^{II}			2,76	2,50	2,32	3,11	2,97	2,78			C ^I
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ³											D ¹
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁴											D ²
PIVOT VERTICAL GAP	min 25 max 32	K ^{II}											K ^I
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J ^{II} - J ^I)	J ^{II}											J ^I
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{II}				1 P	1/2 P	0	1/2	1			X ^I
SHIMS OF ANTI-ROLL BAR	N/A	Y ^{II}											Y ^I
AIR SPRING HEIGHT (EMPTY)	N/A	A ^{III}											A ^{IV}
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ^{III}			256	257	257	254	254	256			A ^{IV}
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{III}			1107	1107	1107	1108	1108	1109			E ^{IV}
AIR SPRING PRESSURE	≤ 0.3 (C ^{IV} - C ^{III})	C ^{III}			2,78	2,96	2,51	2,36	2,52	2,71			C ^{IV}
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁵											D ⁷
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁶											D ⁸
PIVOT VERTICAL GAP	min 25 max 32	K ^{III}											K ^{IV}
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J ^{IV} - J ^{III})	J ^{III}											J ^{IV}
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{III}				1/2	0	1/2 P	1 P				X ^{IV}
SHIMS OF ANTI-ROLL BAR	N/A	Y ^{III}											Y ^{IV}

COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW		
GOOD	LOWER	HIGHER
✓	↓	↑
WEIGHT COMPENSATION		
EQUIPMENT		
WEIGHT		
EQUIPMENT		
WEIGHT		
SECONDARY MEASUREMENTS (ONLY T.C.CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		





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

DESCRIPTION	TOLERANCE	END#1												END#2					
		LEFT SIDE						RIGHT SIDE						LEFT SIDE					
AIR SPRING HEIGHT (EMPTY)	N/A	A ^{II}												A ^{IV}					
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ^{II}												A ^{IV}					
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II}												E ^{IV}					
AIR SPRING PRESSURE	≤ 0.3 (C _{II} - C _I)	C ^{II}												C ^{IV}					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₃												D ₇					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₄												D ₈					
PIVOT VERTICAL GAP	min 25 max 32	K ^{II}												K ^{IV}					
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{II} - J _I)	J ^{II}												J ^{IV}					
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{II}												X ^{IV}					
SHIMS OF ANTI-ROLL BAR	N/A	Y ^{II}												Y ^{IV}					
AIR SPRING HEIGHT (EMPTY)	N/A	A ^{III}												A ^{IV}					
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ^{III}												A ^{IV}					
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{III}												E ^{IV}					
AIR SPRING PRESSURE	≤ 0.3 (C _{IV} - C _{II})	C ^{III}												C ^{IV}					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₅												D ₇					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₆												D ₈					
PIVOT VERTICAL GAP	min 25 max 32	K ^{III}												K ^{IV}					
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{IV} - J _{III})	J ^{III}												J ^{IV}					
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{III}												X ^{IV}					
SHIMS OF ANTI-ROLL BAR	N/A	Y ^{III}												Y ^{IV}					

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

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT COMPENSATION

EQUIPMENT

WEIGHT

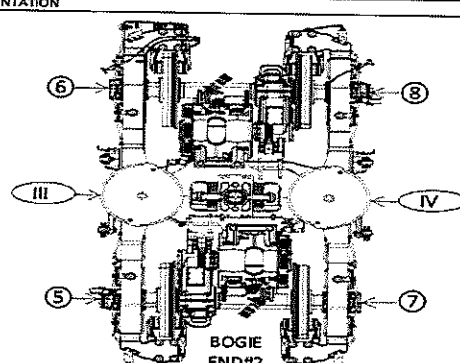
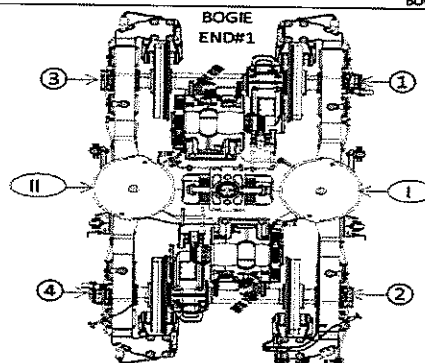
EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS (ONLY TO CARS)

AUTOMATIC COUPLER HEIGHT

ANTENNA HEIGHT





SELF INSPECTION INDUSTRIAL QUALITY


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5/31/2022

Projeto:
PRASA

SI.FT1140.52

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

ITEM		THEORETICAL VALUES													
		TCL CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		M2 CAR		M3 CAR	
		TBext	TBint	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	MB1	TBext
Pivot lateral stop gaps difference [mm]	Fig. 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Air Spring height [mm]	Fig. 5	255^{+8}_{-3}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}	255^{+8}_{-4}
Air spring pressure at AWO [bar]	Fig. 5	3,76 (Ref.)	2,82 (Ref.)	2,87 (Ref.)	2,83 (Ref.)	3,02 (Ref.)	2,91 (Ref.)	3,07 (Ref.)	2,85 (Ref.)	2,83 (Ref.)	2,87 (Ref.)	2,83 (Ref.)	2,83 (Ref.)	2,83 (Ref.)	3,76 (Ref.)
Primary Suspension gaps [mm]	Fig. 6	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}	35^{+12}_{-5}	35^{+12}_{-5}
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}	1106^{+10}_{-10}	1106^{+10}_{-10}
Booster height [mm]	Fig. 7	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}
Coupling End height [mm]	Fig. 8	895 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	895 (Ref.)
Pivot Vertical gap [mm]	Fig. 10	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}	30^{+15}_{-5}

	<h1 style="text-align: center;">SELF INSPECTION INDUSTRIAL QUALITY</h1>	Rev:09	Projet: PRASA	SI.FT1140.52
		Date:		
		5/31/2022		

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

References for secondary suspension empty

A'n Air spring height empty

References for secondary suspension full

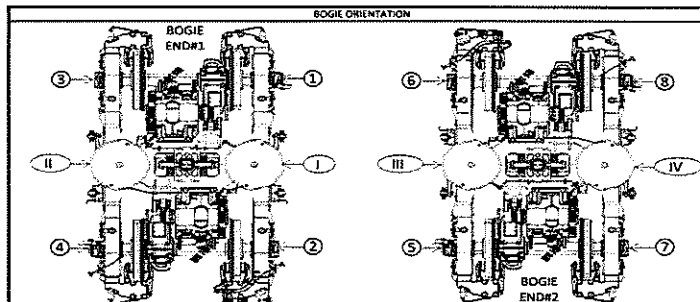
An Air spring height
 Bn Difference between measurement A'n and An
 En Floor covering height
 Cn Air spring pressure
 Dn Primary suspension
 Kn Pivot Vertical gap
 Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 241	A'ii 244	A'iii 245	A'iv 242
An	254 to 261	Ai 257	Aii 258	Aiii 256	Aiv 257
Bn = An - A'n	N/A	Bi 16	Bii 14	Biii 11	Biv 15
En	1106 ±10 mm	Ei 1105	Eii 1112	Eiii 1107	Eiv 1109
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2.77	Cii 2.68	Ciii 2.77	Civ 2.69
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0,09		Ciii - Civ 0,08	
Gauge serial number	N/A	G1B05873	G1B05873	G1B05873	G1B05873
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 45.68	D3 46.75	D5 46.75	D6 47.52
		D2 45.57	D4 46.50	D5 46.17	D7 46.73
Kn	25 to 45	Ki 38.67		Kii 36.47	
Jn	Difference ≤ 4	Ji 24.63	Jii 26.18	Jiii 25.70	Jiv 25.03

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

Table 01 D Theoretical Values	TC1	M4	M1	M2	M3	TC2
	Tbex	TBin	Mb1	Mb1	Mb1	Tbex
D=	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	Tbex
C=	3.76	2.82	2.87	2.83	3.02	2.91



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



Gibela Rail Transport Consortium RF (Pty)
Ltd
2 Shosholozu Avenue
Dunmottar X7
Ekurhuleni, 1590, South Africa
Reception: +27 (0)10 600 0651

TRAIN SET 220	REF: GIB0000001672_JD PRASA WEIGHT BALANCE EN
	PC09 WEIGHING REPORT

M3	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ≤ 3%
		17.91	17.89	0.06%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Criteria Min≤Diff≤Max
		35.80	35.90	0.28%	1.36% PASS

Test Participants			
Name	Company	Department	Date
Danthona	GIBELA	EOC	20/04/2024
N-N			