



CONFIDENTIAL INFORMATION



This document and the information contemplated therein have to be considered as Confidential Information pursuant to the provisions of Clause 25 of the MSA, and treated as such.




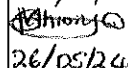



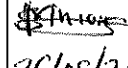








APPLICATION REFERENCE




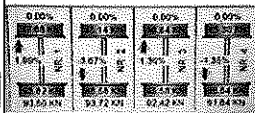
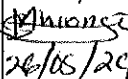





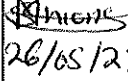
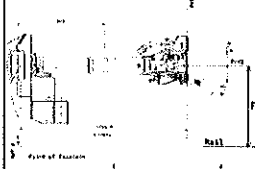

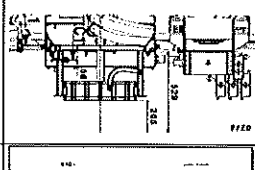

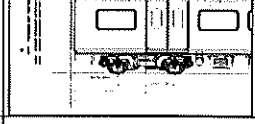
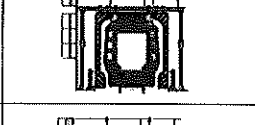

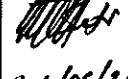
MOUNTING		DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
				TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140		1	1	1	1	X	PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1					1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	1	1	1	1	1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	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
225	TC 2	Sandie	26/05/24	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											
I.1 - Documents control											
Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	OK	NOK	Signature/Date
PRA.FT1140.04							✓		✓		Signature 26/05/24
PRA.FT1140.05											Signature 26/05/24
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	NOK	Signature/Date	
Measuring Tape	GIBELQ 0276					26/10/23-26/10/24		✓		Signature 26/05/2024	
Venier Caliper	GIBELQ 0056					06/06/23-06/06/24		✓		Signature 26/05/2024	
Torque Wrench 35NM	2511023					19/12/23-19/12-24		✓		Signature 26/05/2024	
Torque Wrench 150NM	D 28 622009					11-12/23-19/12-24		✓		Signature 26/05/2024	
Torque Wrench 320NM	A9650027					21-12/23-21/12-24		✓		Signature 26/05/2024	

	<h1 style="text-align: center;">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	FAIL	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		✓		 26/05/24										
02		Check underframe pipe system Air tightness Test performance according to WH PRAFT1130.15.	The test was performed and no leak was observed. Initial pressure (IP): <u>10.25</u> bar Final pressure (FP): <u>10.23</u> bar FP - IP = <u>0.03</u> bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓		 26/05/24										
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 26/05/24										
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 <u>19/11/2022</u>	✓		 26/05/24										
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>Drivers seat</td> <td>60</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	Drivers seat	60							✓		 26/05/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)															
Drivers seat	60															
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		 26/05/24										
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		 26/05/24										
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 26/05/24										

		SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Projet: PRASA	SI.FT1140.52
				Date: 5/31/2022		
Item	Picture/Sketch	Description	Criteria/Record	PS	TS	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓		 26/05/24
10		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)		✓		 26/05/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$.		✓		 26/05/24
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	✓		 26/05/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04/05	✓		 26/05/24
14		FOR TC CARS F = Height of the center of Automatic coupler F = 895mm (+5/-10mm) (Using leveled rail)	TC CAB #1 = 896 mm	✓		 26/05/24
15		FOR TC CARS Height of Eurobase Antenna = 205mm(+/-10mm) (Using leveled rail)	TC CAB #1 = 197 mm	✓		 26/05/24
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 trimming)			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	✓		 26/05/24



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

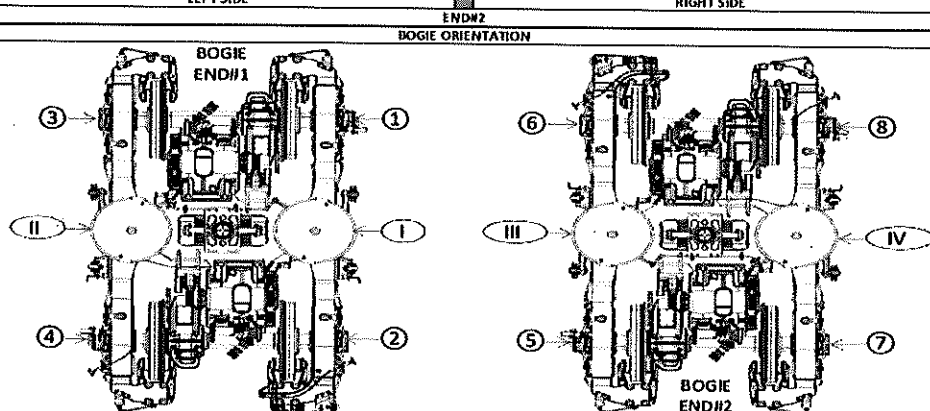
Project:
PRASA

SI.FT1140.52

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

DESCRIPTION	TOLERANCE	END#1											
		LEFT SIDE						RIGHT SIDE					
AIR SPRING HEIGHT (EMPTY)	N/A	A'II											A'I
AIR SPRING HEIGHT (FULL)	min 254 max 261	AII	259	257	257	254	244	244	250	253	256	255	AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII											EI
AIR SPRING PRESSURE	± 0.3 (Ci - Ci)	CII	3,55	3,46	3,50	3,49	3,39	3,62	3,51	3,77	3,70	3,62	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 (A1 - A2)	JII											JI
QTY OF TURNS OF LEVELLING ROD	N/A	XII	3/4	1	1/2	1/4	2	2	1 1/2	1/2	3/4	6	XI
SHIMS OF ANTI-ROLL BAR	N/A	YII											YI
AIR SPRING HEIGHT (EMPTY)	N/A	A'III											A'IV
AIR SPRING HEIGHT (FULL)	min 254 max 261	AIII	254	256	254	256	253	254	259	258	261	258	AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII											EIV
AIR SPRING PRESSURE	± 0.3 (Ov - Os)	CIII	2,89	3,02	2,95	2,96	2,95	2,67	2,76	2,73	2,69	2,77	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 - As)	JIII											JIV
QTY OF TURNS OF LEVELLING ROD	N/A	XIII	3/4	6	1/2	1	3/4	1/2	1	0	3/4	1	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 TC CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		





SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Proj:
PRASA

SI.FT1140.52

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						RIGHT SIDE					
AIR SPRING HEIGHT (EMPTY)	N/A	A'II												A'IV											A'IV
AIR SPRING HEIGHT (FULL)	mn 254 max 261	AII												AIV											AIV
FLOOR COVERING HEIGHT	mn 1096 max 1116	EII												EIV											EIV
AIR SPRING PRESSURE	≤ 0.3 (QI - Qi)	CII												CIV											CIV
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	Ds												D7											D7
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4												D8											D8
PIVOT VERTICAL GAP	mn 25 max 32	KII												KIV											KIV
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ai - A)	JII												JIV											JIV
QTY OF TURNS OF LEVELLING ROD	N/A	XII												XIV											XIV
SHIMS OF ANTI-ROLL BAR	N/A	YII												YIV											YIV
AIR SPRING HEIGHT (EMPTY)	N/A	A'III												A'IV											A'IV
AIR SPRING HEIGHT (FULL)	mn 254 max 261	AIII												AIV											AIV
FLOOR COVERING HEIGHT	mn 1096 max 1116	EIII												EIV											EIV
AIR SPRING PRESSURE	≤ 0.3 (QIV - Qi)	CIII												CIV											CIV
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	Ds												D7											D7
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6												D8											D8
PIVOT VERTICAL GAP	mn 25 max 32	KIII												KIV											KIV
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (AIV - A)	JIII												JIV											JIV
QTY OF TURNS OF LEVELLING ROD	N/A	XIII												XIV											XIV
SHIMS OF ANTI-ROLL BAR	N/A	YIII												YIV											YIV

COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASUREMENTS BELOW

GOOD	LOWER	HIGHER
✓	↓	↑
WEIGHT COMPENSATION		
EQUIPMENT		
WEIGHT		
EQUIPMENT		
WEIGHT		
SECONDARY MEASUREMENTS (ONLY TO EARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		

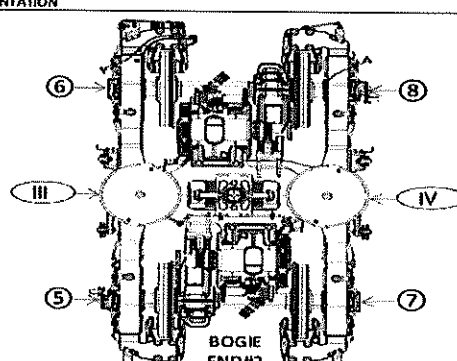
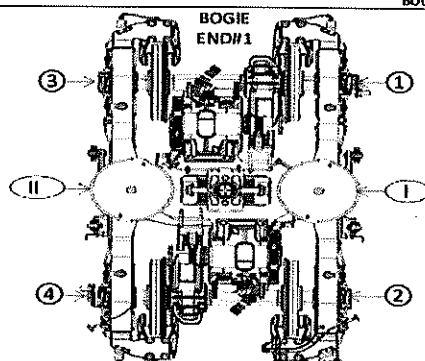


Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

THEORETICAL VALUES																	
ITEM	T01 CAR		M4 CAR		M3 CAR		M2 CAR		M1 CAR		M0 CAR		T02 CAR				
	T01	T02	M01	M02	M01	M02	M01	M02	M01	M02	M01	M02	T01	T02			
Pivot lateral stop gap difference [mm]	Fig. 4		≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4			
Air Spring height [mm]	Fig. 5		255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋₄	255 ⁺⁵ ₋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.)	3,76 (Ref.)			
			0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.	0,3 Max.			
			C ₁ -C ₄ C ₁₀ -C ₁₇														
Primary Suspension gap [mm]	Fig. 6		35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃	35 ⁺⁵ ₋₃			
			D ₁ -D ₂														
			D ₃ -D ₄														
			D ₅ -D ₆ D ₇ -D ₈														
Canopy 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 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅	850 ⁺⁵ ₋₅			
Coupling End Height [mm]	Fig. 8		895 ⁺⁵ ₋₅	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (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.)				
Pivot Vertical gap [mm]	Fig. 10		30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃	30 ⁺⁵ ₋₃			

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

Levelling report from Production (Final measurements after Levelling and Weighling fine)

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

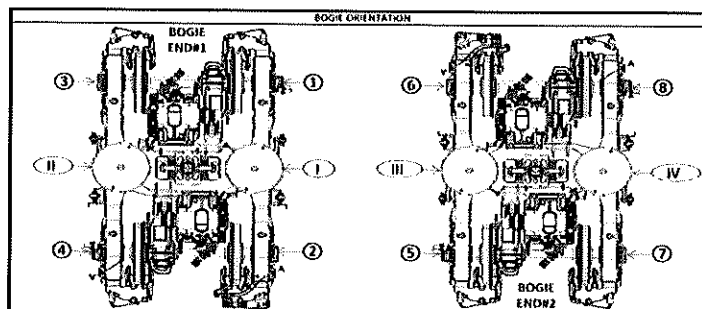
References for secondary suspension full
An Air spring height
Bn Difference between measurement A'n and An
En Floor covering height
Cn Air spring pressure
Dn Primary suspension
Kn Pivot Vertical gap
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'n 233	A'n 238	A'n 240	A'n 244
An	254 to 261	Ai 255	An 260	Aii 255	An 258
Bn = An - A'n	N/A	Bi 22	Bi 22	Bi 15	Bi 14
En	1108 ±10 mm	Ei 1108	Ei 1112	Eii 1102	Eii 1104
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 3.62	Ci 3.54	Cii 2.88	Cii 2.77
Cn - Cn+1	Difference ≤ 0.3	Ci - Cii 0.08		Cii - Ciii 0.11	
Gauge serial number	N/A	51B05873	51B05813	51B05873	51B05873
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 43.20	D1 44.47	D1 44.76	D1 45.46
		D2 44.01	D2 43.83	D2 44.64	D2 45.90
Kn	25 to 45	Ki 29.09		Ki 35.72	
Jn	Difference ≤ 4	Ji 25.32	Ji 24.84	Jii 25.52	Jii 24.10

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

Table 01 D Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbox	Tbin	Mb1	Mb1	Mb1	Mb2	Mb1	Mb1	Mb1	Mb1	Tbin	Tbox
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	
	Tbox	Tbin	Mb1	Mb1	Mb1	Mb2	Mb1	Mb1	Mb1	Mb1	Tbin	Tbox
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



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



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

TRAIN SET 225	REF: GIB000001672_J0 PRASA WEIGHT BALANCE EN
PC09 WEIGHING REPORT	

TC2	Balance across front and rear bogies		Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ≤ 10%
	Weight Measured vs Predicted		Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Criteria MinDiffMax
			18.52	15.48	8.94%	PASS
			34.00	34.42	1.23%	1.62% PASS

Test Participants			
Name	Company	Department	Date
Thato Musi	Gibela	EOC	28/05/24