

PRASA PROJECT




# SELF INSPECTION SHEET

## 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






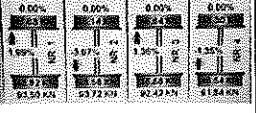


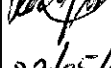




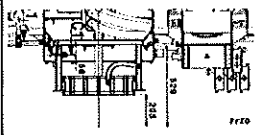
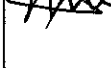
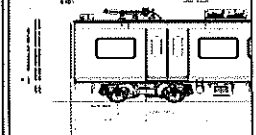
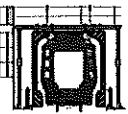
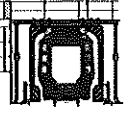
MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	1	1	1		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	X				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
TS225	TC1	Andrew	21/05/24	SI.FT1140.52	01/08

	SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Project: PRASA	SI.FT1140.52						
			Date:  5/31/2022								
Car:	NCR:		Work Station FT1140								
 Safety Related											
I - Document and Instrument Control											
I.1 - Documents control											
Document	T01	M1	M2	M3	M4	T02	Revision	Remark	OK	KO	Signature/Date
PRA.FT1140.04	✓								✓		<i>Prasat</i> 22/05/24
PRA.FT1140.05											
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	KO	Signature/Date				
Measuring Tape	GIBTA 0276		26/10/23-26/10/24		✓		<i>Prasat</i> 22/05/24				
Vernier Caliper	GIBVR 0056		06/06/23-06/06/24		✓		<i>Prasat</i> 22/05/24				
Torque Wrench 35 N.m	D2311023		19/12/23-19/12/24		✓		<i>Prasat</i> 22/05/24				
Torque wrench 150 N.m	D28622009		19/12/23-19/12/24		✓		<i>Prasat</i> 22/05/24				
Torque Wrench 320 N.m	A9630027		21/12/23-21/12/24		✓		<i>Prasat</i> 22/05/24				
Torque wrench 530 N.m	A9630053		21/12/23-21/12/24		✓		<i>Prasat</i> 22/05/24				
Torque wrench 17 N.m	D2861617		19/12/23-19/12/24		✓		<i>Prasat</i> 22/05/24				

	<h1 style="text-align: center;">SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Projet: PRASA	SI.FT1140.52									
			Date:											
			5/31/2022											
<b>II - Self Inspection - Items to Check</b>														
<b>II.1 - Items to Check</b>														
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		✓		M.S. Mayana 21/05/2024								
02		Check underframe pipe system Air tightness. Test performance according to VW PRA FT1130.15.	The test was performed and no leak was observed. Initial pressure (IP): 9.93 bar Final pressure (FP): 9.91 bar FP - IP = 0.02 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓		M.S. Mayana 21/05/2024								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		D. P. P. 22/05/24								
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 19.11.23	✓		D. P. P. 22/05/24								
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>DRIVER'S SEAT</td> <td>60</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	DRIVER'S SEAT	60					✓		D. P. P. 22/05/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)													
DRIVER'S SEAT	60													
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		D. P. P. 22/05/24								
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		D. P. P. 22/05/24								
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		D. P. P. 22/05/24								

		<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09 Date: 5/31/2022	Projet: PRASA	SI.FT1140.52
Item	Picture/Sketch	Description	Criteria/Comment	OK	NO	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓		 22/05/24
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).		✓		 22/05/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of ≤ 4%.		✓		 22/05/24
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	✓		 22/05/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA FT1140.04 / 05	✓		 22/05/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5 / -10mm) (Using levelled rail)	TC CAB #1= 896 mm	✓		 22/05/24
15		FOR TC CARS Height of Eurobalse Antenna = 205mm (+/-10mm) (Using levelled rail)	TC CAB #1= 196 mm	✓		 22/05/24
16		Check pantograph piping air tightness Test performance according to WIPRA FT1140.17.	The test was performed and no leak was observed. -Roof piping connection fittings. -Room piping connection fittings (Roof arch and door trimming)			M/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			M/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			M/A



# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

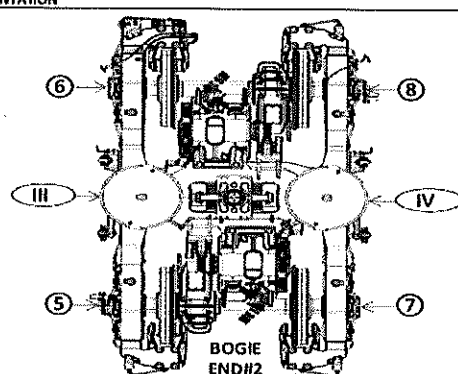
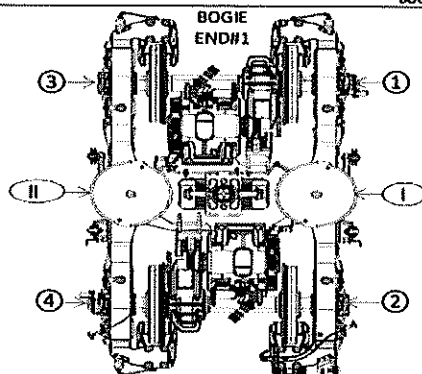
Proj:  
PRASA

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'III											
AIR SPRING HEIGHT (FULL)	min 254 max 261	AII					254	252	244				244	253	256										AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII												EIII											EI
AIR SPRING PRESSURE	≤ 0.3 (QI - QI)	CII					3.57	3.56	3.88				3.15	3.55	3.58										CI
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3												D5											D1
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4												D6											D2
PIVOT VERTICAL GAP	min 25 max 32	KII												KIII											KI
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (AI - AI)	JII												JIII											JI
QTY OF TURNS OF LEVELLING ROD	N/A	XII							1 1/2	2 1/4			2 1/4	1 1/2											XI
SHIMS OF ANTI-ROLL BAR	N/A	YII												YIII											YI
AIR SPRING HEIGHT (EMPTY)	N/A	A'III												A'IV											
AIR SPRING HEIGHT (FULL)	min 254 max 261	AIII					255	255	245				260	257	257										AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII												EIV											EIV
AIR SPRING PRESSURE	≤ 0.3 (QIV - QIV)	CIII					2.90	2.91	2.55				3.06	2.77	2.77										CIV
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5												D7											D7
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6												D8											D8
PIVOT VERTICAL GAP	min 25 max 32	KIII												KIV											KIV
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (KIV - KIV)	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 MEASURE AS BELOW		
GOOD	LOWER	HIGHER
✓	↓	↑
WEIGHT COMPENSATION		
EQUIPMENT		
WEIGHT		
EQUIPMENT		
WEIGHT		
SECONDARY MEASUREMENTS (ONLY TO CASE)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		





# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Proj:  
PRASA

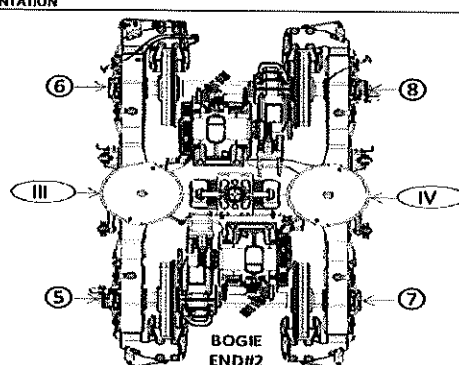
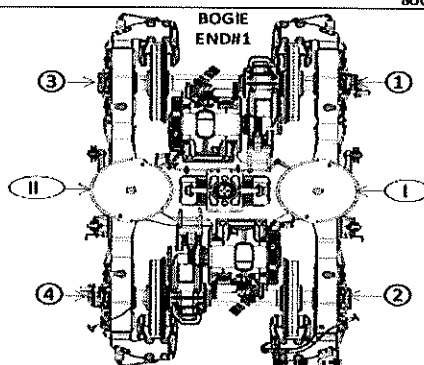
SI.FT1140.52

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

		END#1												
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'
AIR SPRING HEIGHT (FULL)	min 254 max 261	AII												A
FLOOR COVERING HEIGHT	min 1096 max 1116	EII												E
AIR SPRING PRESSURE	≤ 0.3 (Qi - Qi)	CII												C
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3												D3
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4												D2
PIVOT VERTICAL GAP	min 25 max 32	KII												KI
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ai - Ai)	JII												J
QTY OF TURNS OF LEVELLING ROD	N/A	XII												XI
SHIMS OF ANTI-ROLL BAR	N/A	YII												Y
DESCRIPTION	TOLERANCE		6	5	4	3	2	1	1	2	3	4	5	6
AIR SPRING HEIGHT (EMPTY)	N/A	A'III												A'II
AIR SPRING HEIGHT (FULL)	min 254 max 261	AIII												AII
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII												EII
AIR SPRING PRESSURE	≤ 0.3 (Qiv - Qiv)	CIII												CII
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5												D3
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6												D2
PIVOT VERTICAL GAP	min 25 max 32	KIII												KII
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Iiv - Iiv)	JIII												JII
QTY OF TURNS OF LEVELLING ROD	N/A	XIII												XII
SHIMS OF ANTI-ROLL BAR	N/A	YIII												YII

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

Rev:09  
Date:  
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		TCL CAR	
		TBolt	TBlnt	MB1	MB1	MB1	MB1	MB2	MB2	MB1	MB1	TBlnt	TBolt
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 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>	255 <sup>+5</sup> <sub>-5</sub>
Air spring pressure at AVO [Bar]	Fig. 5	3,76	2,82	2,87	2,83	3,02	2,91	3,07	2,85	2,83	2,87	2,83	3,76
	C <sub>1</sub> - C <sub>4</sub>	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)
	C <sub>5</sub> - C <sub>6</sub>	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
	C <sub>7</sub> - C <sub>8</sub>	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 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>	35 <sup>+5</sup> <sub>-5</sub>
	D <sub>1</sub> - D <sub>2</sub>												
	D <sub>3</sub> - D <sub>4</sub>												
	D <sub>5</sub> - D <sub>6</sub>												
Carbody Floor height [mm]	Fig. 7	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>	1106 <sup>+10</sup> <sub>-10</sub>
Bolster height [mm]	Fig. 7	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>	850 <sup>+5</sup> <sub>-5</sub>
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.)	895 (Ref.)	760 (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 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>	30 <sup>+5</sup> <sub>-5</sub>



# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projeto:  
PRASA

SI.FT1140.52

Leveling 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

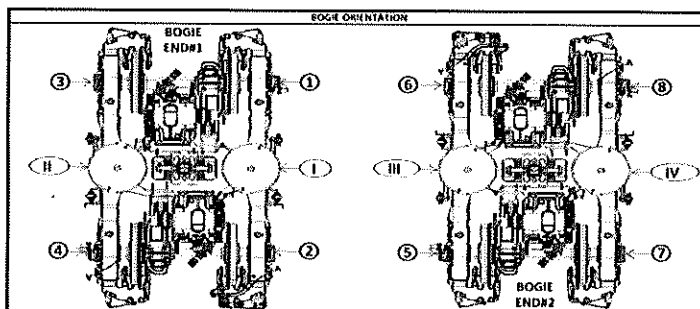
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 236	A'ii 235	A'is 239	A'iv 241
An	254 to 261	Ai 257	Aii 257	Ais 256	Aiv 258
Bn = An - A'n	N/A	Bi 21	Bii 22	Bis 17	Biv 17
En	1108 ±10 mm	Ei 1110	Eii 1108	Eis 1109	Eiv 1112
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 3,57	Cii 3,59	Cis 2,91	Civ 2,79
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0,02		Cis - Civ 0,12	
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 43,13	D3 43,30	D5 44,18	D7 44,66
		D2 44,04	D4 42,68	D6 43,37	D8 45,44
Kn	25 to 45	Ki 32,60		Ks 34,66	
Jn	Difference ≤ 4	Ji 23,56	Jii 25,99	Jis 24,90	Jiv 25,40

(\*) 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	Mb2	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	Mb2	Mb1	Mb1	Mb1	Tbin	Tbox
C=	3.78	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 Shosholozo Avenue  
Dunnetter X7  
Ekurhuleni, 1590, South Africa  
Reception: +27 (0)10 600 0651

TRAIN SET 225	REF: GIB0000004672_J0 PRASA WEIGHT BALANCE EN
	PC09 WEIGHING REPORT

TC1	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ≤ 10%
		13.50	15.64	8.38%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		34.14	34.42	0.83%	1.62%
					Criteria MinDiffMax
					PASS

Test Participants			
Name	Company	Department	Date
Mato M	Gibela	EOS	23/08/24