

GIBELQ

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	X	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
TS 233	M1	ANDREW	29/06/24	SI.FT1140.52	01/08



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:
PRASA

SI.FT1140.52

Car:

NCR:

Work Station

FT1140



Safety Related

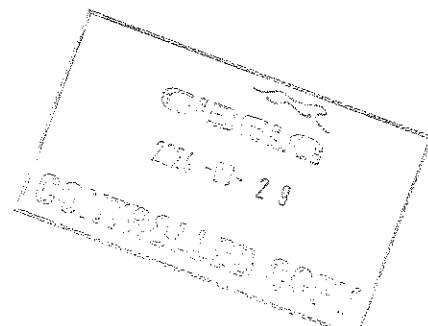
I - Document and Instrument Control

I.1 - Documents control

Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	OK	Signature/Date
PRA.FT1140.04										
PRA.FT1140.05		✓								
PRA.FT1140.05									✓	29/06/24

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	CUBTA 0276	26/10/23 - 26/10/24	✓	
Vernier Calliper	CIBVR 0050	06/04/23 - 06/08/24	✓	
Torque Wrench 35 N.m	D254023	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

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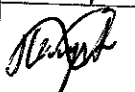







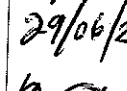




5/31/2022

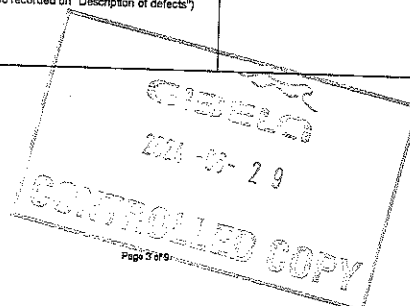
Project:
PRASA

SI.FT1140.52

II - Self Inspection - Items to Check

II.1 - Items to Check

IL1 - Items to Check															
Item	Picture/Sketch	Description	Critical/Record	OK	Not OK	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		✓			 29/06/24								
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): 10.50 bar Final pressure (FP): 9.90 bar FP - IP = 0.60 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓			 29/06/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓			 29/06/24								
04		Measurement inspection was done with car on condition AWD and the rail levelled. (The load cells system must be levelled and calibrated)	Calibration Validation Date 19/12/2023				 29/06/24								
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><tr><th>EQUIPMENT DESCRIPTION</th><th>WEIGHT (kg)</th></tr><tr><td>CHASSIS WAGON</td><td>326</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	CHASSIS WAGON	326					✓			 29/06/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)														
CHASSIS WAGON	326														
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓			 29/06/24								
07		Measurement recorded with empty suspension and loaded are in conformity with tolerances of the project.		✓			 29/06/24								
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓			 29/06/24								





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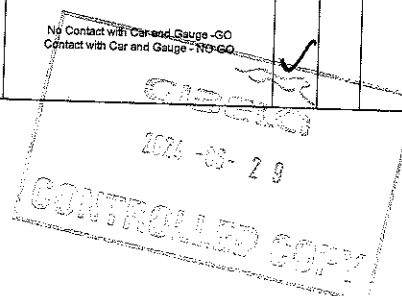
Date:

5/31/2022

Projet:
PRASA

SI.FT1140.52

Item	Picture/Sketch	Description	Criteria/Record	OK	NO	Signature/Date
09		Check that the levelling rods are torqued and have torque marker.		✓		 29/06/24
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).		✓		 29/06/24
11		Remove the car, move back onto the load cells and repeat the step D9. Confirm if both are in the tolerance of $\leq 4\%$.		✓		 29/06/24
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	✓		 29/06/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓		 29/06/24
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 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	✓		 29/06/24





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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						RIGHT SIDE					
AIR SPRING HEIGHT (EMPTY)	N/A	A ¹ _{II}												A ¹ _{IV}											
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ^{II} _{II}						250	252	251	256			A ^{II} _{IV}											
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II} _{II}												E ^{II} _{IV}											
AIR SPRING PRESSURE	≤ 0.3 (C _{II} - C _I)	C ^{II} _{II}						2,92	2,74	3,11	3,02			C ^{II} _{IV}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ³ _{II}												D ³ _{IV}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁴ _{II}												D ⁴ _{IV}											
PIVOT VERTICAL GAP	min 25 max 32	K ^{II} _{II}												K ^{II} _{IV}											
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{II} - J _I)	J ^{II} _{II}												J ^{II} _{IV}											
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{II} _{II}						↓ ¼	1 2 ½	1 1 ½				X ^{II} _{IV}											
SHIMS OF ANTI-ROLL BAR	N/A	Y ^{II} _{II}												Y ^{II} _{IV}											
AIR SPRING HEIGHT (EMPTY)	N/A	A ¹ _{III}												A ¹ _{IV}											
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ^{II} _{III}						256	258	256	259			A ^{II} _{IV}											
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II} _{III}												E ^{II} _{IV}											
AIR SPRING PRESSURE	≤ 0.3 (C _{IV} - C _{III})	C ^{II} _{III}						2,87	3,01	2,64	2,80			C ^{II} _{IV}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁵ _{III}												D ⁵ _{IV}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁶ _{III}												D ⁶ _{IV}											
PIVOT VERTICAL GAP	min 25 max 32	K ^{III} _{III}												K ^{III} _{IV}											
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{IV} - J _{III})	J ^{III} _{III}												J ^{III} _{IV}											
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{III} _{III}												X ^{III} _{IV}											
SHIMS OF ANTI-ROLL BAR	N/A	Y ^{III} _{III}												Y ^{III} _{IV}											

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

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT
COMPENSATION

EQUIPMENT

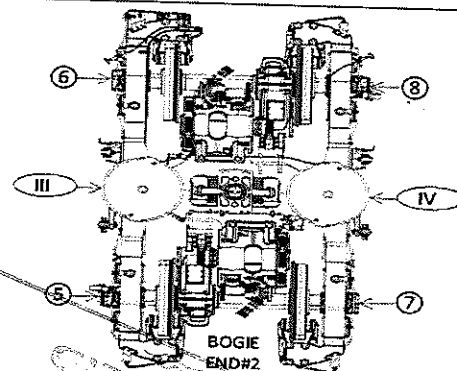
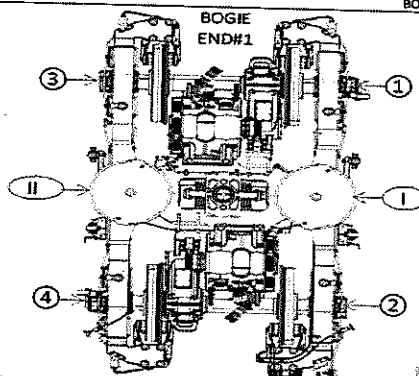
WEIGHT

EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS
(ONLY TO CARS)AUTOMATIC COUPLER
HEIGHT

ANTENNA HEIGHT





SELF INSPECTION INDUSTRIAL QUALITY

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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)	min 254 max 261	AII												AIV											AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EII												EIV											EIV
AIR SPRING PRESSURE	≤ 0.3 (CII - CI)	CII												CI											CI
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3												D1											D1
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4												D2											D2
PIVOT VERTICAL GAP	min 25 max 32	KII												KI											KI
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (JII - JI)	JII												JI											JI
QTY OF TURNS OF LEVELLING ROD	N/A	XII												XI											XI
SHIMS OF ANTI-ROLL BAR	N/A	YII												YI											YI
AIR SPRING HEIGHT (EMPTY)	N/A	A'III												A'IV											A'IV
AIR SPRING HEIGHT (FULL)	min 254 max 261	AIII												AIV											AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII												EIV											EIV
AIR SPRING PRESSURE	≤ 0.3 (CIII - CI)	CIII												CI											CI
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 (JIV - JII)	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 TC CARS)

AUTOMATIC COUPLER HEIGHT

ANTENNA HEIGHT

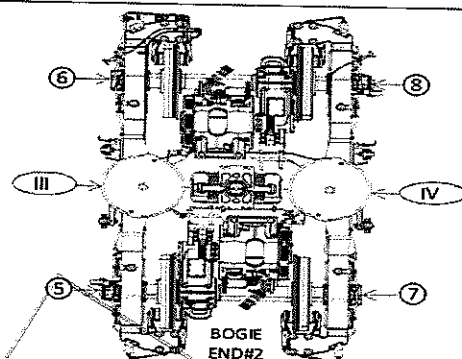
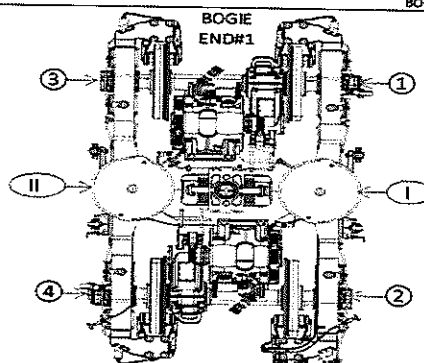
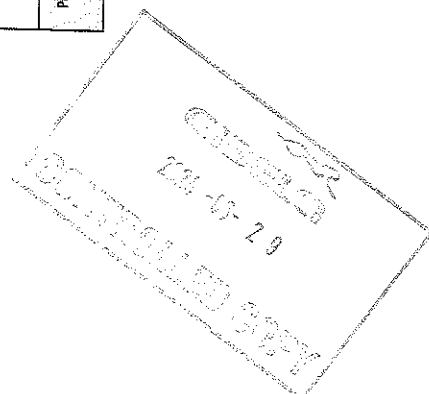


Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

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	TBint	TBext
Pivot lateral stop gap difference (mm)	J ₁₂ /J ₁₃ 1 (1=1)	Fig. 4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
Air Spring height (mm)	A ₁ (1=1)	Fig. 5	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄	255 ⁺⁶ ₋₄
Air spring pressure at AWD (bar)	C ₁ (1=1)	Fig. 5	3,76 (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.)
Primary Suspension gaps (mm)	C ₁ - C ₂		0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.
	D ₁₂ /D ₃	Fig. 6	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄	35 ⁺¹⁵ ₋₄
	D ₂ /D ₄												
	D ₃ /D ₅												
Carbody Floor height (mm)	E ₁ (1=1)	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
Bolster height (mm)	N ₁ (1=1)	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
Coupling End height (mm)	F ₁	Fig. 8	895 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	895 (Ref.)	895 (Ref.)
	F ₂	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)	K ₁	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





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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

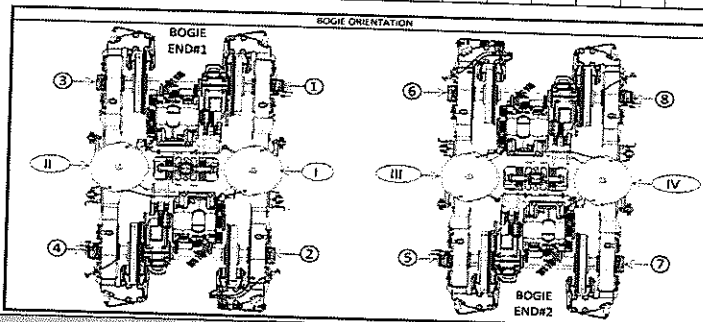
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 240	A'ii 241	A'iii 242	A'iv 243
An	254 to 261	Ai 256	Aii 258	Aiii 256	Aiv 258
Bn = An - A'n	N/A	Bi 16	Bii 17	Biii 14	Biv 15
En	1106 ±10 mm	Ei 1109	Eii 1110	Eiii 1109	Eiv 1107
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 3,06	Cii 2,87	Ciii 2,91	Civ 2,74
Cn - Cn+i	Difference ≤ 0,3	Ci - Cii 0,19		Ciii - Cii 0,17	
Gauge serial number	N/A	GAB05873		GAB05873	
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	Di 42,64	Di 43,64	Di 43,67	Di 45,55
		Dz 42,59	Dz 44,58	Dz 44,14	Dz 45,08
Kn	25 to 45	Ki 34,42		Kii 36,18	
Jn	Difference ≤ 4	Ji 25,74	Jii 25,37	Jiii 25,94	Jiv 24,91

(*) 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	Mb1	Mb1	Mb1	Mb1	Tbin	Tbex
D=	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$

Table 02 C Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbex	TBin	Mb1	Mb1	Mb1	Mb2	Mb1	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)
Ltd
2 Shosholoza Avenue
Dunmottar X7
Ekurhuleni, 1590, South Africa
Reception: +27 (0)10 600 0651



TRAIN SET 233	REF: GIB0000001672_ID PRASA WEIGHT BALANCE EN
	PC09 WEIGHING REPORT

M1	Balance across front and rear bogies		Front Bogie [Tons]		Rear Bogie [Tons]		Longitudinal Imbalance [%]		Criteria Longitudinal Imbalance ≤ 3%	
	Weight Measured vs Predicted		Weight Measured [Tons]		Weight Predicted [Tons]		Weight Difference [%]		Tolerance [%]	
			13.62		18.09		1.44%		PASS	
			36.71		36.87		0.42%		1.37%	
									Criteria Min:Diff:Max	
									PASS	

Test Participants			
Name	Company	Department	Date
<i>[Signature]</i>	GIBELA Rail	EOC	29/06/2024