



**PRASA PROJECT**


# SELF INSPECTION SHEET

**CONFIDENTIAL INFORMATION**



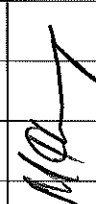
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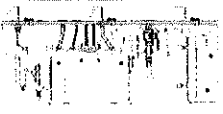
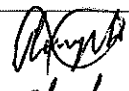
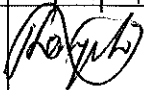

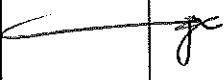

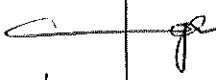



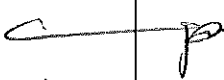

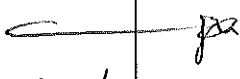


**APPLICATION REFERENCE**



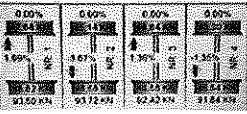
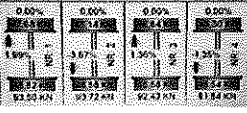






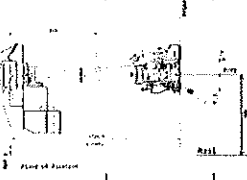
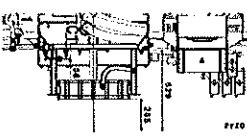
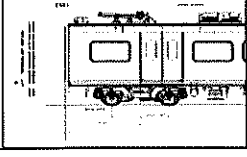

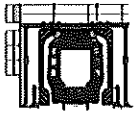
MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	1	1	1		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1				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
TS 219	TC1	CHIPU	20/04/21	SI.FT1140.52	01/08

	<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Projet: PRASA	SI.FT1140.52					
			Date: 5/31/2022							
Car:	NCR:		Work Station FT1140							
 Safety Related										
<b>I - Document and Instrument Control</b>										
<b>I1 - Documents control</b>										
Document	TC1	M1	M2	M3	M4	TC2	Revision	Remarks	OK	Signature/Date
PRA.FT1140.04	L								L	28/04/24
PRA.FT1140.05										
PRA.FT1140.06										
<b>I2 - Instruments Control - Monitoring and Measuring Instrument Control (Used for all instrument with calibration needed)</b>										
Instruments description	Serial number		Calibration or Verification Validation Date		OK	Signature/Date				
Measuring tape	C11BTA 0276		26/10/23-26/10/24		L					
Vernier calliper	C11BVR 0056		06/06/23-06/06/24		L					
Torque wrench 320Nm	A9630053		21/12/23-21/12/24		L	 28/04/24				
Torque wrench 320Nm	A9650027		21/12/23-21/12/24		L					
Torque wrench 150Nm	D28622009		19/12/23-19/12/24		L					
Torque wrench 35Nm	D2511023		07/08/23-07/08/24		L					
Torque wrench 17Nm	D2861617		13/07/23-13/07/24		L					

	<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	Criterias/Record	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		✓	 19/04/24										
02		Check underframe pipe system Air tightness Test performance according to WJ PRA FT1130.15.	The test was performed and no leak was observed. Initial pressure (IP) <u>10.05</u> bar Final pressure (FP) <u>9.96</u> bar FP - IP = <u>0.09</u> bar  APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓	 19/04/24										
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓	 20/04/24										
04		Measurement inspection was done with car on condition AW0 and the rail leveled (The load cells system must be leveled and calibrated)	Calibration Validation Date _ / _ / _	✓	 20/04/24										
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" style="width: 100%;"> <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							✓	 20/04/24
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.		✓	 20/04/24										
07		Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓	 20/04/24										
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓	 20/04/24										

		<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Projet: PRASA	SI.FT1140.52
				Date: 5/31/2022		
Item	Picture/Label	Description	Criteria/Record	OK	NO	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓		M.P.L 20/04/24
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).		✓		20/04/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of ≤ 4%.		✓		20/04/24
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I  II  III  IV 	✓		M.P.L 20/04/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA FT1140.04 / 05	✓		M.P.L 20/04/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5 / -10mm) (Using levelled rail)	TC CAB #1 = 894 mm	✓		M.P.L 20/04/24
15		FOR TC CARS Height of Eurobalise Antenna = 205mm(+/-10mm) (Using levelled rail)	TC CAB #1 = 196 mm	✓		M.P.L 20/04/24
16		Check pantograph piping air tightness. Test performance according to VVI PRA FT1140.17.	The test was performed and no leak was observed. -Roof piping connection fittings. -Room 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			20/04/24



# SELF INSPECTION INDUSTRIAL QUALITY

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PRASA

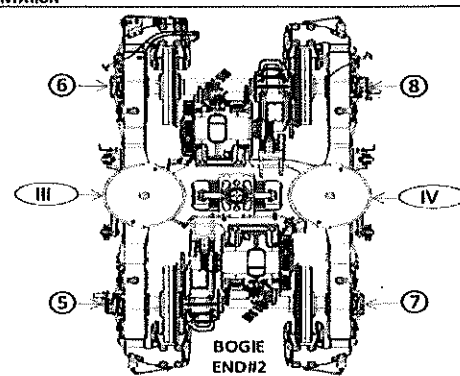
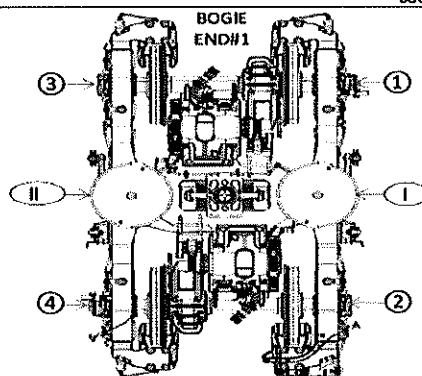
SI.FT1140.52

## 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				259	260	256	255				A'i
FLOOR COVERING HEIGHT	min 1096 max 1116	E'ii											E'i
AIR SPRING PRESSURE	± 0.3 (Ci - Ci)	C'ii				3.65	3.74	3.56	3.60				C'i
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3											D1
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4											D2
PIVOT VERTICAL GAP	min 25 max 32	K'ii											K'i
PIVOT LATERAL STOP GAPS DIFFERENCE	± 4 (Ai - Ai)	J'ii											J'i
QTY OF TURNS OF LEVELLING ROD	N/A	X'ii											X'i
SHIMS OF ANTI-ROLL BAR	N/A	Y'ii											Y'i
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	A'iii				258	259	256	256				A'iv
FLOOR COVERING HEIGHT	min 1096 max 1116	E'iii											E'iv
AIR SPRING PRESSURE	± 0.3 (Civ - Cii)	C'iii				2.86	2.84	2.97	2.90				C'iv
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5											D7
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6											D8
PIVOT VERTICAL GAP	min 25 max 32	K'iii											K'iv
PIVOT LATERAL STOP GAPS DIFFERENCE	± 4 (Iv - 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 MEASUREMENTS 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

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PRASA

SI.FT1140.52

## 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	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 (J1 - J)	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 (QIV - QII)	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 (JIV - JII)	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 TC CARS)

AUTOMATIC COUPLER HEIGHT

ANTENNA HEIGHT

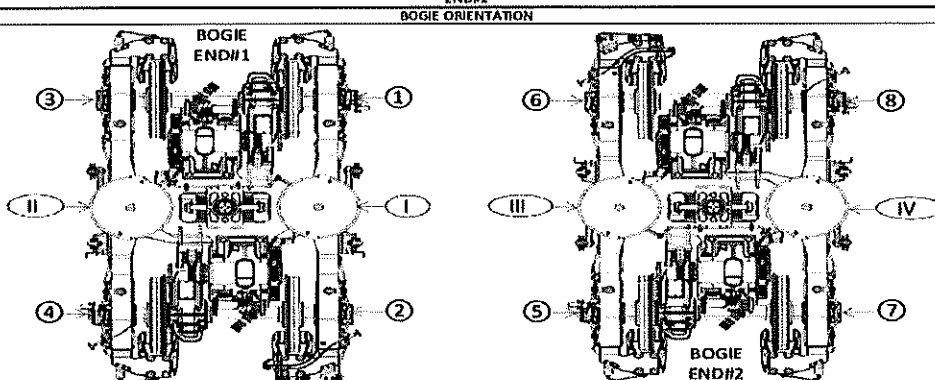


Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

ITEM	THEORETICAL VALUES													
	TCL CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		TCL CAR		TCL CAR	
	TBint	TBext	MB1	MB2	MB1	MB2	MB2	MB2	MB1	MB1	TBint	TBext	TBint	TBext
Pivot lateral stop gap difference [mm]	Fig. 4	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$
Air Spring height [mm]	Fig. 5	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$
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	2,83	2,83	2,83	3,76
		[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[Ref.]	[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.	0,3 Max.
Primary Suspension gaps [mm]	Fig. 6	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$	$35^{+2}_{-3}$
		$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$
		$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$
		$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$	$D_{12}, D_3$
Carbody floor height [mm]	Fig. 7	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$	$1106^{+10}_{-15}$
Boiler height [mm]	Fig. 7	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$	$850^{+3}_{-2}$
Coupling End height [mm]	Fig. 8	895	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	895	[Ref.]	895
Coupling End height [mm]	Fig. 9	760	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	760
	Fig. 9	760	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	760	[Ref.]	760
Pivot Vertical gap [mm]	Fig. 10	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$	$30^{+5}_{-3}$

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

Leveling report from Production (Final measurements after Leveling 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

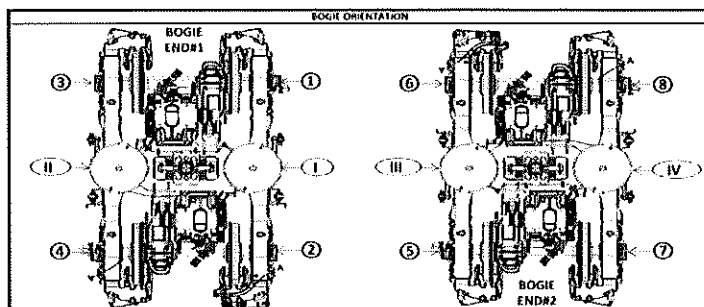
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 233	A'ii 232	A'ia 240	A'iv 241
An	254 to 261	Ai 256	Aii 259	Aia 258	Aiv 257
Bn = An - A'n	N/A	Bi 23	Bii 27	Bia 18	Biv 16
En	1108 ±10 mm	Ei 1106	Eii 1113	Eia 1106	Eiv 1114
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 3.60	Cii 3.64	Cia 2.87	Civ 2.89
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0.04		Cia - Civ 0.02	
Gauge serial number	N/A	91B05873	91B05873	91B05873	91B05873
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	Di 44.01	Dii 44.61	Dia 45.19	Div 44.53
		Dz 44.44	D4 44.04	Ds 44.46	D7 45.25
Kn	25 to 45	Ki 27.67		Kii 28.80	
Jn	Difference ≤ 4	Ji 25.25	Jii 26.84	Ja 26.70	Jv 24.18

(\*) 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 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>	35 <sup>+12</sup> <sub>-5</sub>

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)







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TRAIN SET 219	REF: GIB000001672_ID PRASA WEIGHT BALANCE EN
	PC09 WEIGHING REPORT

TCL	Balance across front and rear bogies	Front Bogie [Tons]		Rear Bogie [Tons]		Longitudinal Imbalance [%]		Criteria Longitudinal Imbalance ≤ 10%	
		Weight Measured [Tons]		Weight Predicted [Tons]		Weight Difference [%]		Tolerance [%]	
		34,11		34,42		0,91%		1,62%	
									PASS
									PASS

Test Participants			
Name	Company	Department	Date
Fulemi Zwane	Gibela	EOS	20/04/24