




# SELF INSPECTION SHEET

**CONFIDENTIAL INFORMATION**


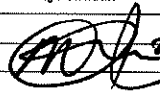
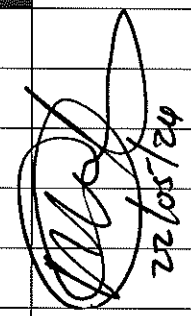
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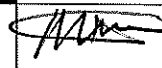
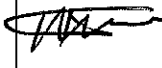












**APPLICATION REFERENCE**


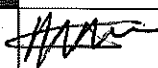
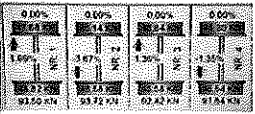
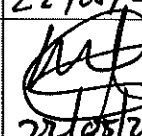
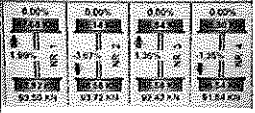
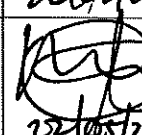

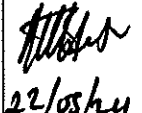

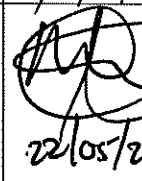

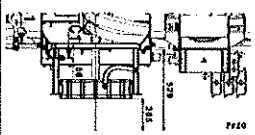
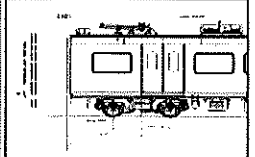
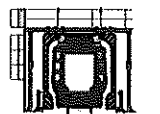
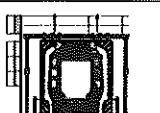
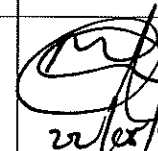
MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	1	1	K		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1				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
TS224	M3	P. Seisa	28/05/24	SI.FT1140.52	01/08

	SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Projel: PRASA	SI.FT1140.52						
			Date:								
			5/31/2022								
Cac:		NCR:		Work Station FT1140							
 Safety Related											
I - Document and Instrument Control											
1.1 - Documents control											
Document	T01	M1	M2	M3	M4	T02	Revision	Remark	OK	NOT	Signature/Date
PRA.FT1140.04											
PRA.FT1140.05				X					✓		 23/05/24
PRA.FT1140.05											
1.2 - Instruments Control - Monitoring and Measuring Instrument Control (Used for all Instrument with calibration needed)											
Instruments description	Serial number		Calibration or Verification Validation Date		OK	NOT	Signature/Date				
Measuring tape	GIBTA 0276		26/10/23-26/10/24		✓		 22/05/22				
Venier Calliper	GIBVR 0056		06/06/23-06/06/24		✓						
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		✓						

	<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	Critéria/Record	OK	DATE	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		✓		 22/05/24								
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) 10.100 bar Final pressure (FP) 9.86 bar FP - IP = 0.24 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓		 22/05/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 22/05/24								
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 _ / _ / _	✓		 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>CRANGWAYS</td> <td>360</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	CRANGWAYS	360					✓		 22/05/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)													
CRANGWAYS	360													
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		 22/05/24								
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		 22/05/24								
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 22/05/24								

		<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09		Projel: PRASA	SI.FT1140.52
				Date:	5/31/2022		
Item	Picture & Sketch	Description	Criteria/Record	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 $\leq 4\%$ . (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 $\leq 4\%$ .		✓		 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 80 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 leveled rail)	TC CAB #1= _____ mm			N/A	
15		FOR TC CARS Height of Eurobalise Antenna = 205mm(+/-10mm) (Using leveled 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 -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	✓		 22/05/24	



# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:  
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				288	256	255	257				AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII				1112	1110	1112	1114				EI
AIR SPRING PRESSURE	± 0.3 (CI - CI)	CII				2.74	2.75	2.69	2.72				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 (AI - AI)	JII											JI
QTY OF TURNS OF LEVELLING ROD	N/A	XII											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				286	253	254	256				AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII				1106	1103	1106	1107				EIV
AIR SPRING PRESSURE	± 0.3 (CIv - CIv)	CIII				2.70	2.64	2.75	2.75				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 (AIv - AIv)	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

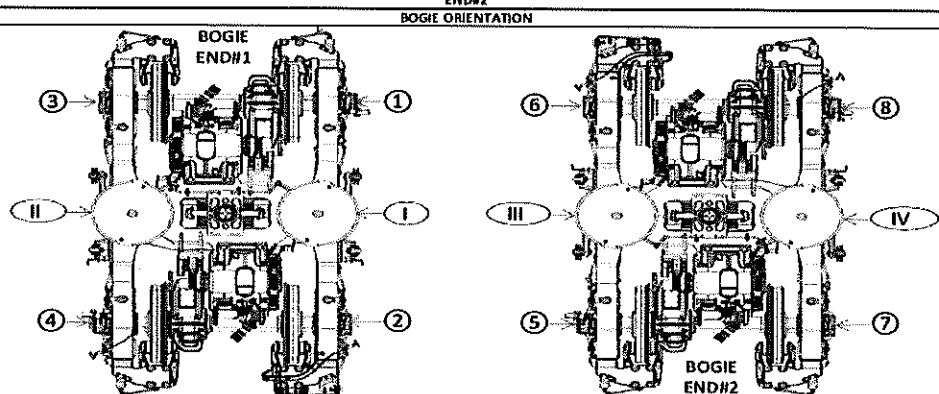
EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS (ONLY TO CARS)

AUTOMATIC COUPLER HEIGHT

ANTENNA HEIGHT





# SELF INSPECTION INDUSTRIAL QUALITY

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Project:  
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 - Qi)	Cii											Ci
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	Ds											D1
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4											D2
PIVOT VERTICAL GAP	min 25 max 32	Kii											Ki
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (li - li)	Jii											Ji
QTY OF TURNS OF LEVELLING ROD	N/A	Xii											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											Aiv
FLOOR COVERING HEIGHT	min 1096 max 1116	Eiii											Eiv
AIR SPRING PRESSURE	≤ 0.3 (Qv - Qv)	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 (lv - lv)	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 TO CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		

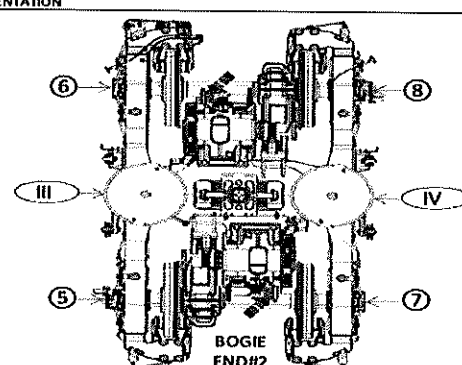
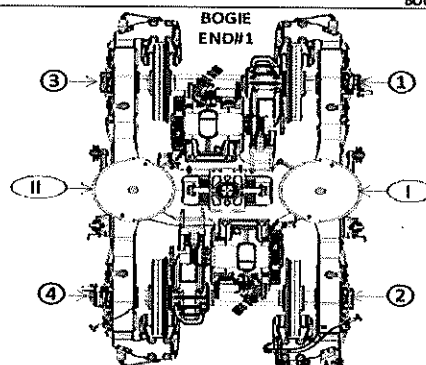



Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

ITEM	THEORETICAL VALUES													
	TCL CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		TCL CAR		TCL CAR	
	TBext	TBint	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	TBext	TBint	TBext	TBint
Pivot lateral stop gap difference [mm]	Fig. 4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
Air Spring height [mm]	Fig. 5	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>	255 <sup>+8</sup> <sub>-4</sub>
Air spring pressure at AWD [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 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>	35 <sup>+25</sup> <sub>-5</sub>
		D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3	D1, D3
		D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4	D3, D4
		D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5	D3, D5
Carbody Floor height [mm]	Fig. 7	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>	1106 <sup>+15</sup> <sub>-10</sub>
Bolster height [mm]	Fig. 7	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>	850 <sup>+25</sup> <sub>-25</sub>
Coupling End height [mm]	Fig. 8	895	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	895	(Ref.)	895
	Fig. 9	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760
Pivot Vertical gap [mm]	Fig. 10	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>	30 <sup>+25</sup> <sub>-5</sub>

	<h1>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 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

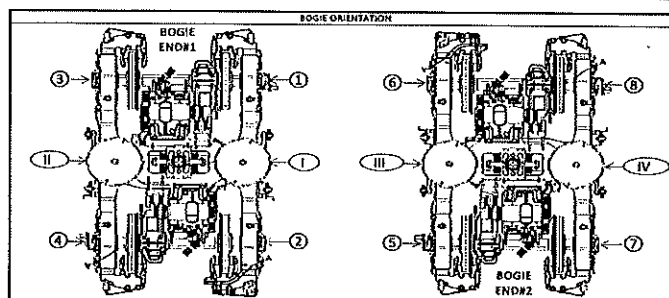
Jn Pivot Lateral stop gaps difference

Item	Reference (mm)	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 244	A'ii 242	A'iii 242	A'iv 244
An	254 to 261	Ai 260	Aii 259	Aiii 257	Aiv 259
Bn = An - A'n	N/A	Bi	Bii	Biii	Biv
En	1105 ±10 mm	Ei 1114	Eii 1112	Eiii 1106	Eiv 1107
Item	Reference (bar)	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2.69	Cii 2.75	Ciii 2.68	Civ 2.75
Cn - Ci	Difference ≤ 0,3	Ci - Cii 0,06		Ciii - Civ 0,07	
Gauge serial number	N/A	GIB05873	GIB05873	GIB05873	GIB05873
Item	Reference (mm)	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 45.60	D3 45.93	D5 46.79	D6 46.81
		D2 46.58	D4 45.48	D7 47.43	D8 46.08
Kn	25 to 45	Ki 36.78		Kii 38.82	
Jn = J1-J2+1	Difference ≤ 4	Ji 25.99	Jii 24.89	Jiii 25.50	Jiv 24.71

(\*) 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 <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	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 Weighling fine)







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TRAIN SET 224	REF: GIB0000001672_JO 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%
	Weight Measured vs Predicted	17.82	17.92	0.28%	PASS
		Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		35.74	35.90	0.45%	1.36%
					Criteria MinDiffMax
					PASS

Test Participants			
Name	Company	Department	Date
Thato M	GIBELA	EOC	22/10/24