



CONFIDENTIAL INFORMATION



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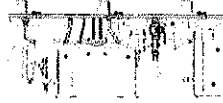
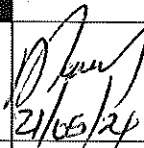
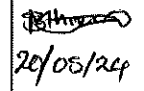

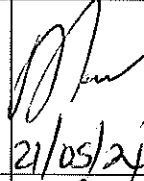

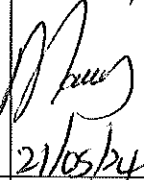

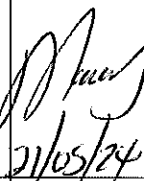

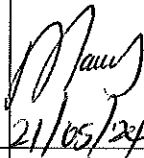

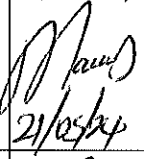


APPLICATION REFERENCE


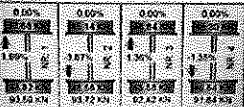
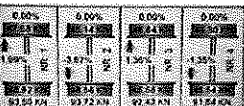



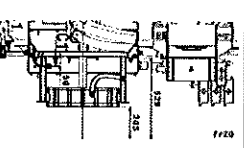
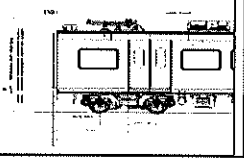
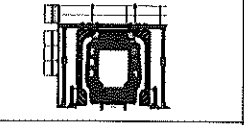

MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	1	1	1		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1			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
224	M2	MATIMBA	20/05/24	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	T03	Revision	Remark	OK	NO	Signature/Date	
PRA.FT1140.04												
PRA.FT1140.05			✓								✓	M/ 21/05/24
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	NO	Signature/Date					
Measuring TAPE	GIBIA 0276		26/10/23-26/10/24		✓		 21/05/24					
Veinler Coupler	GIBUR 0056		06/08/23-06/08/24		✓							
Torque wrench 320NM	A96SP0027		21/12/23-21/12/24		✓							
Torque wrench 150NM	D28622009		19/12/23-19/12/24		✓							
Torque wrench 35NM	D2511023		19/12/23-19/12/24		✓							

	<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Projet: 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	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		✓	 21/05/24								
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): <u>10.00</u> bar Final pressure (FP): <u>9.98</u> bar FP - IP = <u>0.02</u> bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓	 20/05/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓	 21/05/24								
04		Measurement inspection was done with car on condition AW0 and the rail levelled. (The load cells system must be levelled and calibrated)	Calibration Validation Date <u>19/12/24</u>	✓	 21/05/24								
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><u>gangway</u></td> <td><u>360</u></td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	<u>gangway</u>	<u>360</u>					✓	 21/05/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)												
<u>gangway</u>	<u>360</u>												
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓	 21/05/24								
07		Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓	 21/05/24								
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓	 21/05/24								

		SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Projet: PRASA	SI.FT1140.52
				Date: 5/31/2022		
Item	Picture/State	Description	Criteria/Record	OK	Signature/Date	
09		Check that the leveling rods are torqued and have torque marker.		✓	<i>M. J. J.</i> 21/05/24	
10		The difference of weight between the left and right wheels of each axle, must be $\leq 4\%$. (Verify on the T&C equipment if all arrows are in green).		✓	<i>M. J. J.</i> 21/05/24	
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$.		✓	<i>M. J. J.</i> 21/05/24	
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	✓	<i>M. J. J.</i> 21/05/24	
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRAFT1140.04 / 05	✓	<i>M. J. J.</i> 21/05/24	
14		FOR TC CARS F= Height of the center of Automatic coupler F = 695mm (+5 / -10mm) (Using levelled rail)	TC CAB #1= _____ mm	✓	H/A	
15		FOR TC CARS Height of Eurobase Antenna = 205mm (+/-10mm) (Using levelled rail)	TC CAB #1= _____ mm		H/A	
16		Check pantograph piping air tightness. Test performance according to WIPRAFT1140.17.	The test was performed and no leak was observed. -Roof piping connection fittings. -Room piping connection fittings (Roof arch and door trimming)	✓	<i>M. J. J.</i> 20/05/24	
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	✓	<i>M. J. J.</i> 21/05/24	
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	✓	<i>M. J. J.</i> 21/05/24	



SELF INSPECTION INDUSTRIAL QUALITY

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5/31/2022

Proj:
PRASA

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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'i											A'i
AIR SPRING HEIGHT (FULL)	min 254 max 261	Aii				254	253	251	254				Aii
FLOOR COVERING HEIGHT	min 1096 max 1116	Eii											Eii
AIR SPRING PRESSURE	± 0.3 (O1 - C1)	Cii				2,87	2,86	2,91	2,93				Cii
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3											D3
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4											D4
PIVOT VERTICAL GAP	min 25 max 32	Kii											Kii
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (A1 - A2)	Jii											Jii
QTY OF TURNS OF LEVELLING ROD	N/A	Xii				1 1/2		1 1/2					Xii
SHIMS OF ANTI-ROLL BAR	N/A	Yii											Yii
AIR SPRING HEIGHT (EMPTY)	N/A	A'iii											A'iii
AIR SPRING HEIGHT (FULL)	min 254 max 261	Aiiii				255	252	254	254				Aiiii
FLOOR COVERING HEIGHT	min 1096 max 1116	Eiii											Eiii
AIR SPRING PRESSURE	± 0.3 (Ov - Cv)	Ciii				2,82	2,81	2,93	2,93				Ciii
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5											D5
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6											D6
PIVOT VERTICAL GAP	min 25 max 32	Kiii											Kiii
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Av - Ar)	Jiii											Jiii
QTY OF TURNS OF LEVELLING ROD	N/A	Xiii				1/2		0					Xiii
SHIMS OF ANTI-ROLL BAR	N/A	Yiii											Yiii

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

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT COMPENSATION

EQUIPMENT

WEIGHT

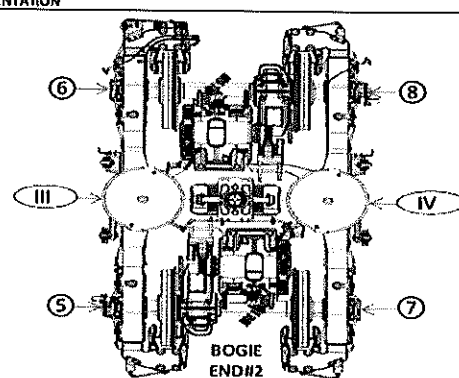
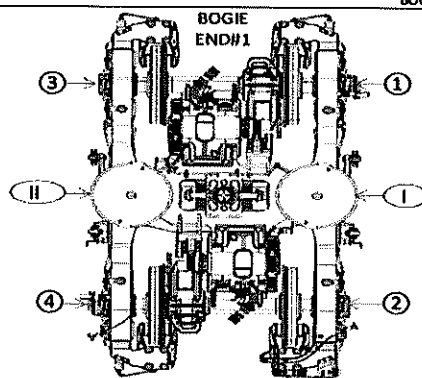
EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS (ONLY T.C.C.A.S)

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	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 (Ci - Qi)	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 (Ai - A)	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 (Civ - Qiv)	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 (Av - A)	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

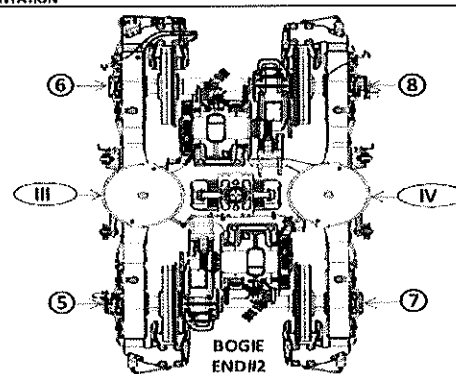
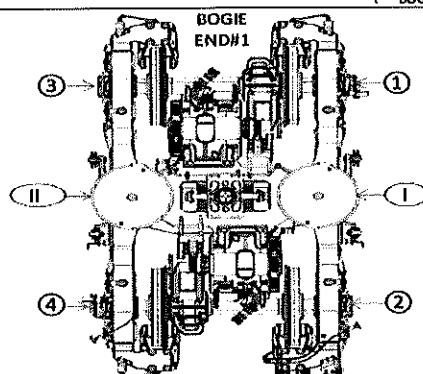
EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS (ONLY TC CARS)

AUTOMATIC COUPLER HEIGHT

ANTENNA HEIGHT





SELF INSPECTION INDUSTRIAL QUALITY


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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	MB1	MB1	MB2	MB2	MB1	MB1	MB2	MB1	MB1	TBext	TBint
Pivot lateral stop gap difference [mm]	Fig. 4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
Air Spring height [mm]	Fig. 5	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄	255 ⁺⁴ ₋₄
Air spring pressure at AWP [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	2,87	2,83	3,76
		(Ref.)	(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.	0,3 Max.
		35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂	35 ⁺² ₋₂
Primary Suspension gas D ₁ [mm]	Fig. 6	D ₁ -D ₂													
		D ₂ -D ₃													
		D ₃ -D ₄													
		D ₄ -D ₅													
Carbody 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	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀
Bolster height [mm]	Fig. 7	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃	850 ⁺³ ₋₃
Coupling End height [mm]	Fig. 8	895	(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.)
Pivot Vertical gap [mm]	Fig. 10	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃	30 ⁺³ ₋₃

	<h1>SELF INSPECTION</h1> <h1>INDUSTRIAL QUALITY</h1>	Rev:09	Projct: 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

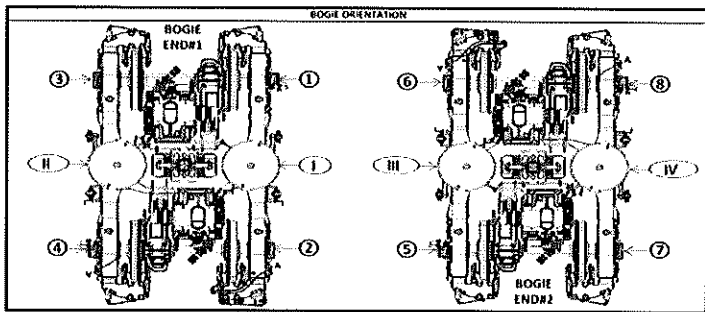
References for secondary suspension full
An Air spring height
Bn Difference between measurement A'n and An
En Floor covering height
Cn Air spring pressure
Dn Primary suspension
Kn Pivot Vertical gap
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 240	A'ii 238	A'ia 239	A'iv 238
An	254 to 261	Ai 257	Aii 256	Aia 255	Aiv 257
Bn = An - A'n	N/A	Bi 17	Bii 18	Bia 16	Biv 19
En	1108 ±10 mm	Ei 1109	Eii 1108	Eia 1108	Eiv 1110
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2,95	Cii 2,93	Cia 2,87	Civ 2,72
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0,02		Cia - Civ 0,15	
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 (*)	Di 44,20	Dii 45,27	Dia 45,18	Div 46,67
		D2 45,79	D4 44,08	D5 45,69	D7 46,48
Kn	25 to 45	Ki 35,16		Kii 33,11	
Jn	Difference ≤ 4	Ji 25,36	Jii 25,63	Jia 26,11	Jiv 25,09

(*) 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=	3.76	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 Leveling and Weighting fine)

GIBELQ	SELF INSPECTION INDUSTRIAL QUALITY	Rev:09	Projet: PRASA	SI.FT1140.52			
		Date:					
		6/31/2022					
Item	Description of defects	OK	NG	Signature/Data			
II-2 - Check List REX							
Check List Items							
Item	Picture/Drawing	Description	Critera /Remark	OK	NG	Other	Signature/Data
01	N/A	To complete REX	Refer to REX. New defects must be added on the REX	✓			21/05/24 [signature]
Self Inspection - Final Result							
Is the car good to advance to the next workstation/process? (Approval of Operations Manager/Team Leader and Industrial Quality)			DATE	NAME	SIGNATURE		
HOLD POINT		GO	If activities are not complete, the missing activities must not impact the next stage!	20/05/24	[signature]	[signature]	
			Every auto inspection performed conforms to specification or in case of discrepancy the same is approved by the competent party.	20/05/24	[signature]	[signature]	
			There are activities pendings that Impact/stop the activities of the next process Obs: (To describe problems below)		Operations Manager		
			There are non-conformities Impact the quality of the product and there is no corrective action defined yet!		Industrial Quality		
In case of "NO GO", describe blocking problems							
In case of "NO GO", the operations manager must define below action plan to ensure "GO":							
Item	Description	Action	Responsible	Status			
Operations Manager / Team Leader				Quality Manager / Team Leader			



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TRAIN SET 224	REF: GIB0000001672_J0 PRASA WEIGHT BALANCE EN
	PC09 WEIGHING REPORT

M2	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance \pm 3%
		13.66	18.00	1.80%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		36.66	37.05	1.09%	1.37%
					Criteria Min:Diff:Max
					PASS

Test Participants			
Name	Company	Department	Date
Thato M	GIBELA	EOC	20105/24