




# 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.



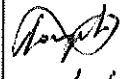






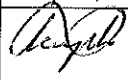






**APPLICATION REFERENCE**




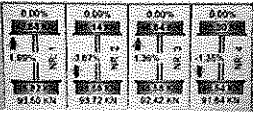

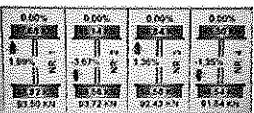
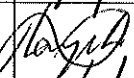






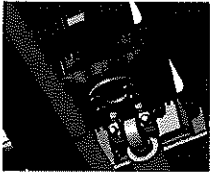

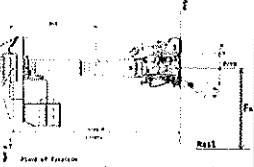
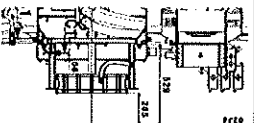
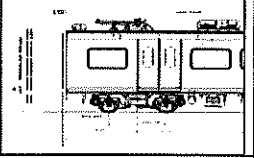
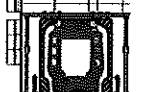
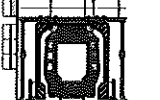

MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	1	1	<del>1</del>		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	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 227	M3	Andrew	05/06/24	SI.FT1140.52	01/08

	SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Date:  5/31/2022	Project: PRASA	SI.FT1140.52					
Car:		INCR:		Work Station FT1140							
 Safety Related											
I - Document and Instrument Control											
I.1 - Documents control											
Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	OK	NO	Signature/Date
PRA.FT1140.04											
PRA.FT1140.05				X					✓		<i>[Signature]</i> 05/06/24
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	CUBTA 0076		06/10/23 - 06/10/24		✓		<i>[Signature]</i> 05/06/24				
Vernier Caliper	CUBVR 0056		06/06/23 - 06/06/24		✓		<i>[Signature]</i> 05/06/24				
Torque Wrench 35 N.m	D2511023		19/12/23 - 19/12/24		✓		<i>[Signature]</i> 05/06/24				
Torque Wrench 150 N.m	D2860009		19/12/23 - 19/12/24		✓		<i>[Signature]</i> 05/06/24				
Torque Wrench 320 N.m	A9650027		21/12/23 - 21/12/24		✓		<i>[Signature]</i> 05/06/24				

	<h1 style="text-align: center;">SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Projat: 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	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		✓		 05/06/24								
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) <u>990</u> bar Final pressure (FP) <u>920</u> bar FP - IP = <u>70</u> bar  APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓		 05/06/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 05/06/24								
04		Measurement inspection was done with car on condition AWD and the rail levelled. (The load cells system must be leveled and calibrated)	Calibration Validation Date <u>  </u> / <u>  </u> / <u>  </u>			 05/06/24								
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 border="1" style="width: 100%;"> <thead> <tr> <th>EQUIPMENT DESCRIPTION</th> <th>WEIGHT (kg)</th> </tr> </thead> <tbody> <tr> <td><u>CHANGUAY</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>CHANGUAY</u>	<u>360</u>					✓		 05/06/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)													
<u>CHANGUAY</u>	<u>360</u>													
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		 05/06/24								
07		Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		 05/06/24								
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 05/06/24								

		<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09		Projet: PRASA	SI.FT1140.52
				Date: 5/31/2022			
Item	Picture/Sketch	Description	Criteria/Record	OK	NO	Remarks	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓			
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).		✓			 05/06/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$ .		✓			 05/06/24
12		1 - Record shims thickness used on red. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I  II  III  IV 	✓			 05/06/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA FT1140.04 / 05	✓			 05/06/24
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. -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	✓			 05/06/24



# 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	END#1											
		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				261	263	260	256				AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII											EI
AIR SPRING PRESSURE	± 0.3 (CiI - Ci)	CII				2,83	2,85	2,76	2,76				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 (JiI - Ji)	JII											Ji
QTY OF TURNS OF LEVELLING ROD	N/A	XII				↓ 1/2	↓ 1	↓ 1	0				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				256	257	258	256				AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII											EIV
AIR SPRING PRESSURE	± 0.3 (Civ - CiI)	CIII				2,83	2,77	2,87	2,81				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				0	0	# ↓	0				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

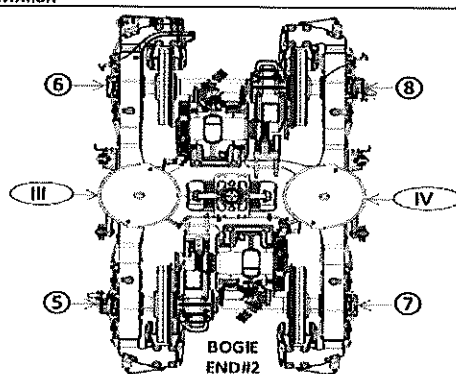
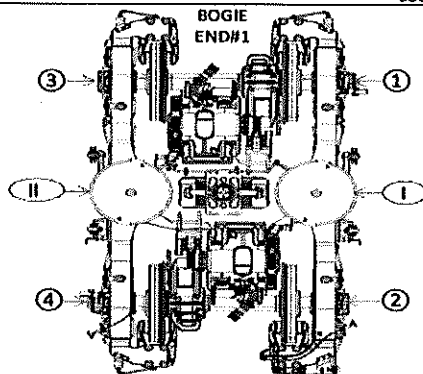
ANTENNA HEIGHT

LEFT SIDE

END#2

RIGHT SIDE

BOGIE ORIENTATION





# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projeto:  
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					
AIR SPRING HEIGHT (EMPTY)	N/A	A'ii												A'iv					
AIR SPRING HEIGHT (FULL)	min 254 max 261	Aii												Aiv					
FLOOR COVERING HEIGHT	min 1096 max 1116	Eii												Eiv					
AIR SPRING PRESSURE	≤ 0.3 (Ci - Ci)	Cii												Civ					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	Ds												D7					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4												D8					
PIVOT VERTICAL GAP	min 25 max 32	Kii												Kiv					
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ai - Ai)	Jii												Jiv					
QTY OF TURNS OF LEVELLING ROD	N/A	Xii												Xiv					
SHIMS OF ANTI-ROLL BAR	N/A	Yii												Yiv					
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 - Qi)	Ciii												Civ					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	Ds												D7					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6												D8					
PIVOT VERTICAL GAP	min 25 max 32	Kiii												Kiv					
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Jv - Ji)	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		

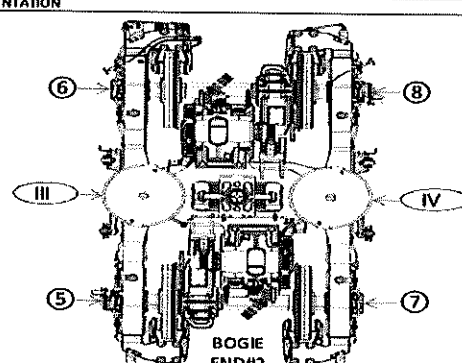
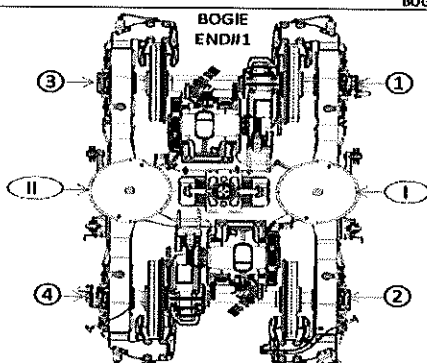



Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

ITEM		THEORETICAL VALUES															
		TCL CAR		M4 CAR		M3 CAR		M2 CAR		M3 CAR		M2 CAR		M3 CAR		TCL CAR	
		TBox	TBlnt	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	TBlnt	TBox
		≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Pivot lateral stop gaps difference [mm]	J <sub>12</sub> -J <sub>11</sub> (1+0)	Fig. 4															
Alt Spring height [mm]	A <sub>1</sub> (1+0)	Fig. 5															
Alt spring pressure at AWD [Bar]	C <sub>1</sub> -C <sub>2</sub> (1+0)	Fig. 5															
	C <sub>3</sub> -C <sub>4</sub>																
	C <sub>5</sub> -C <sub>6</sub>																
Primary Suspension gaps [mm]	D <sub>12</sub> -D <sub>1</sub>	Fig. 6															
	D <sub>22</sub> -D <sub>2</sub>																
	D <sub>32</sub> -D <sub>3</sub>																
	D <sub>42</sub> -D <sub>4</sub>																
Curbody Floor height [mm]	E <sub>1</sub> (1+0)	Fig. 7															
Booster height [mm]	N <sub>1</sub> (1+0)	Fig. 7															
Coupling End height [mm]	F <sub>1</sub>	Fig. 8															
	F <sub>2</sub>	Fig. 9															
Pivot Vertical gap [mm]	K <sub>1</sub>	Fig. 10															

	<h1>SELF INSPECTION</h1> <h1>INDUSTRIAL QUALITY</h1>	Rev:09	Proj: PRASA	SI.FT1140.52
		Date:		
		5/31/2022		

Leveling report from Production (Final measurements after Levelling and Weighting fine)

References for secondary suspension empty  
A'n Air spring height empty

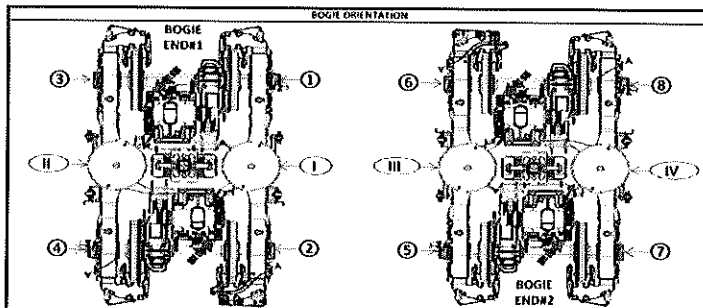
References for secondary suspension full  
An Air spring height  
Bn Difference between measurement A'n and An  
En Floor covering height  
Cn Air spring pressure  
Dn Primary suspension  
Kn Pivot Vertical gap  
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 241	A'n 242	A'm 240	A'v 243
An	254 to 261	Ai 258	An 257	Am 258	Av 258
Bn = An - A'n	N/A	Bi 17	Bi 15	Bi 18	Bi 15
En	1106 ±10 mm	Ei 1107	Ea 1110	Ea 1108	Ev 1109
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2,84	Ca 2,68	Ca 2,87	Cv 2,73
Cn - Cn+1	Difference ≤ 0,3	Ci - Ca 0,16		Ca - Cv 0,14	
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 43,85	Ds 46,54	Ds 44,67	Ds 46,64
		D2 44,62	D4 45,46	Ds 45,26	Dt 46,11
Kn	25 to 45	Ki 34,14		Kn 32,57	
Jn	Difference ≤ 4	Ji 24,94	Js 26,07	Jn 28,35	Jv 25,55

(\*) 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	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>	

Table 02 C Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbex	TBin	Mb1	Mb1	Mb1	Mb2	Mb1	Mb1	Mb1	Tbin	Tbex	
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



Weighting report from Test and Commissioning (Final measurements after Levelling and Weighting fine)







Gibela Rail Transport Consortium RF (Pty)  
Ltd  
2 Shosholoza Avenue  
Dunnetar X7  
Ekurhuleni, 1590, South Africa  
Reception: +27 (0)10 600 0651

TRAIN SET 227	REF: GIB000001672_Q0 PRASA WEIGHT BALANCE EN
	POB WEIGHING REPORT

MB	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance $\pm 3\%$
		17.81	17.87	0.17%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		35.68	35.90	0.61%	1.36% Criteria Wtgs Diff Max PASS

Test Participants			
Name	Company	Department	Date
Thedee Ntusi	GIBELA	EOC	06/06/24