

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	<input checked="" type="checkbox"/>	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 229	m1	CHIPU	11/06/24	SI.FT1140.52	01/08



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Rev:09

Date:

5/31/2022

Project:
PRASA

SI.FT1140.52

Car:

NCR:

Work Station

FT1140



Safety Related




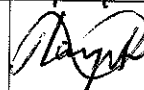



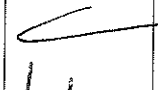

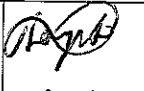

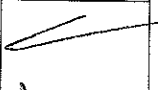

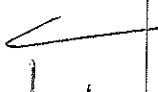

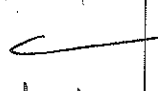
I - Document and Instrument Control

I.1 - Documents control

Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	CS	Signature/Date
PRA.FT1140.04										
PRA.FT1140.05										
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	CS	Signature/Date
Measuring tape	C13TA 0276	26/10/23-26/10/24	✓	8/11/06/24
Vanier caliper	C13VR 0056	26/10/23-26/10/24	✓	8/11/06/24
Torque wrench	D2S11023	19/12/23-19/12/24	✓	8/11/06/24
Torque wrench	D28622009	19/12/23-19/12/24	✓	8/11/06/24
Torque wrench	A9650027	21/12/23-21/12/24	✓	8/11/06/24

	<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	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		✓		 10/06/24								
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>4.96</u> bar Final pressure (FP): <u>4.94</u> bar FP - IP = <u>0.02</u> bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓		 10/06/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 11/06/24								
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>19/12/2023</u>	✓		 11/06/24								
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"> <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>					✓		 10/06/24
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.		✓		 11/06/24								
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		 11/06/24								
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 11/06/24								



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Item	Picture/Check	Description	Criteria/Record	Pass	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓	 11/06/24
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).		✓	 11/06/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$.		✓	 11/06/24
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	✓	 11/06/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓	 11/06/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5/-10mm) (Using levelled rail)	TC CAB #1= _____ mm		 11/06/24
15		FOR TC CARS Height of Eurobalise Antenna = 205mm(+/-10mm) (Using levelled rail)	TC CAB #1= _____ mm		 11/06/24
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)	✓	 11/06/24
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	✓	 11/06/24
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	✓	 11/06/24



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DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

		END#1													
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}					256 254	255 257						A ^I	
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II}												E ^I	
AIR SPRING PRESSURE	≤ 0.3 (C _I - C ₀)	C ^{II}					2.89	2.93						C ^I	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₃												D ₁	
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₄												D ₂	
PIVOT VERTICAL GAP	min 25 max 32	K ^{II}												K ^I	
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{II} - J _I)	J ^{II}												J ^I	
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{II}					↑1	↑½						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}					256 255	252 251							A ^{IV}
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{III}													E ^{IV}
AIR SPRING PRESSURE	≤ 0.3 (C _{IV} - C _{III})	C ^{III}					2.81	2 2.87							C ^{IV}
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₅													D ₇
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₆													D ₈
PIVOT VERTICAL GAP	min 25 max 32	K ^{III}													K ^{IV}
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{IV} - J _{III})	J ^{III}													J ^{IV}
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{III}					↑1	↑2							X ^{IV}
SHIMS OF ANTI-ROLL BAR	N/A	Y ^{III}													Y ^{IV}

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

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT COMPENSATION

EQUIPMENT

WEIGHT

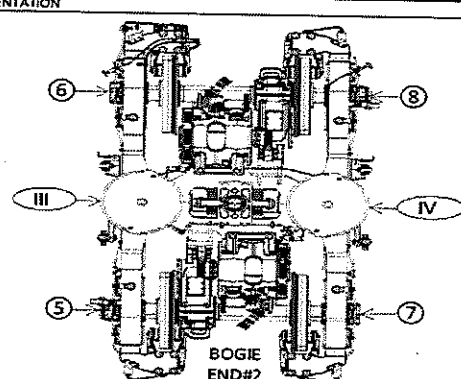
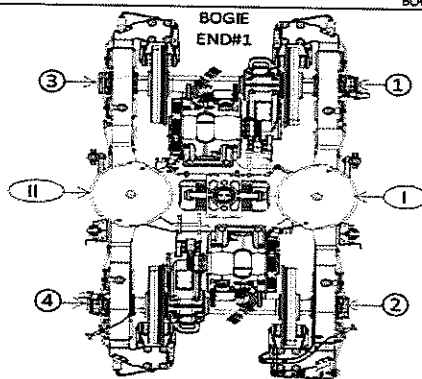
EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS (ONLY TC CARS)

AUTOMATIC COUPLER HEIGHT

ANTENNA HEIGHT





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DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

		END#1												
		LEFT SIDE						RIGHT SIDE						
DESCRIPTION	TOLERANCE	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}												A ^I
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II}												E ^I
AIR SPRING PRESSURE	≤ 0.3 (C ^{II} - C ^I)	C ^{II}												C ^I
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁵												D ¹
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁴												D ²
PIVOT VERTICAL GAP	min 25 max 32	K ^{II}												K ^I
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J ^{II} - J ^I)	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}												A ^{IV}
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{III}												E ^{IV}
AIR SPRING PRESSURE	≤ 0.3 (C ^{IV} - C ^{III})	C ^{III}												C ^{IV}
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁵												D ⁷
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ⁶												D ⁸
PIVOT VERTICAL GAP	min 25 max 32	K ^{III}												K ^{IV}
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J ^{IV} - J ^{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 MEASURE AS BELOW		
GOOD	LOWER	HIGHER
✓	↓	↑
WEIGHT COMPENSATION		
EQUIPMENT		
WBGHT		
EQUIPMENT		
WBGHT		
SECONDARY MEASUREMENTS (ONLY TO CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		

BOGIE END#1

BOGIE END#2



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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	MB2	MB1	MB2	MB1	MB2	MB1	MB2	TBint	TBext				
Pivot lateral stop gaps difference [mm]	Fig. 4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4				
Air Spring height [mm]	Fig. 5	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁	255 ⁺⁶ ₋₁				
Air spring pressure at AWO [Bar]	Fig. 5	3,76 (Ref.)	2,82 (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.)				
C ₁ -C ₃ C ₃ -C ₁₀		0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.	0,3 Mdx.				
Primary Suspension gaps [mm]	Fig. 6	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				
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				
Bolster height [mm]	Fig. 7	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇				
Coupling End height [mm]	Fig. 8 Fig. 9	895 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	895 (Ref.)				
Pivot Vertical gap [mm]	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	30 ⁺¹⁵ ₋₅				



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Leveling report from Production (Final measurements after Leveling and Weighing 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

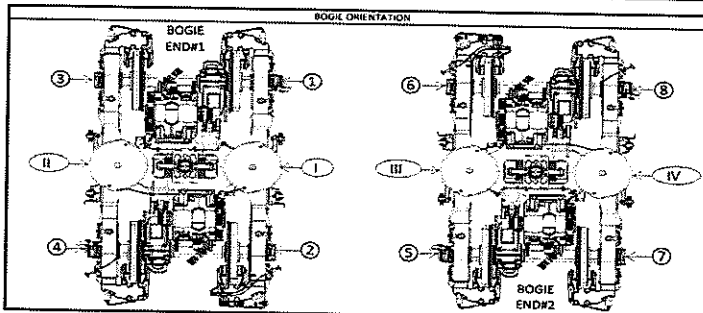
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 239	A'ii 240	A'iii 241	A'iv 241
An	254 to 261	Ai 259	Aii 258	Aiii 257	Aiv 257
Bn = An - A'n	N/A	Bi 20	Bii 18	Biii 16	Biv 16
En	1106 ±10 mm	Ei 1112	Eii 1102	Eiii 1102	Eiv 1115
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2,92	Cii 2,96	Ciii 2,79	Civ 2,84
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0,04		Ciii - Civ 0,05	
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 (*)	Di 43,34	Ds 43,36	De 44,34	Df 44,61
		Dz 43,45	Dx 43,34	Dg 44,53	Dt 44,59
Kn	25 to 45	Ki 35,69		Kii 34,96	
Jn	Difference ≤ 4	Ji 25,46	Jii 25,59	Jiii 26,00	Jiv 26,33

(*) 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=	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$	$35 \pm \frac{+12}{-5}$

Table 02 C Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbex	TBin	Mb1	Mb1	Mb1	Mb2	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 Weighing fine)

[illegible]



Gibela Rail Transport Consortium RE (Pty)
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TRAIN SET 229	REF: GIB0000001672_10 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%
		17.80	18.80	2.73%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		36.60	36.87	0.72%	1.37% PASS

Test Participants			
Name	Company	Department	Signature
5-14-8	GIBELA Rail	EOC	
			Date
			11/06/2024