

GIBELQ

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
IS 224	M1	R. Momo	19/05/24	SI.FT1140.52	01/08

	<h2 style="margin: 0;">SELF INSPECTION INDUSTRIAL QUALITY</h2>		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	TC1	R1	R2	R3	R4	TC2	Revision	Remark	OK	NOK	Signature/Date
PRA.FT1140.04											
PRA.FT1140.05		✓							✓		<i>[Signature]</i> 12/05/24
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	NOK	Signature/Date				
Measuring Tape	G1BTA 0276		26/10/23-26/11/24		✓						
Vernier Calliper	G1BVR 0056		06/08/23-05/09/24		✓						
Torque wrench 320NM	A9650027		21/11/23-21/11/24		✓		<div style="text-align: right;"> <i>[Signature]</i> 19/05/24 </div>				
Torque wrench 110NM	D28622009		19/11/23-19/12/24		✓						
Torque wrench 35NM	D2511023		19/12/23-19/12/24		✓						



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

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5/31/2022

Project:
PRASA

SI.FT1140.52

II - Self Inspection - Items to Check

II.1 - Items to Check

Item	Picture/Sketch	Description	Criteria/Record	OK	Not OK	Score	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		✓			 19/05/24								
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>9.96</u> bar Final pressure (FP): <u>9.92</u> bar FP - IP = <u>0.04</u> bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓			 19/05/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓			 19/05/24								
04		Measurement inspection was done with car on condition AWD and the rail levelled. (The load cells system must be levelled and calibrated)	Calibration Validation Date _ / _ / _	✓			 19/05/24								
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><thead><tr><th>EQUIPMENT DESCRIPTION</th><th>WEIGHT (kg)</th></tr></thead><tbody><tr><td><u>Camper</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>Camper</u>	<u>360</u>					✓			 19/05/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)														
<u>Camper</u>	<u>360</u>														
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓			 19/05/24								
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓			 19/05/24								
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓			 19/05/24								



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

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5/31/2022

Projet:
PRASA

SI.FT1140.52

Item	Picture/Sketch	Description	Criteria/Record	OK	Signature/Date
09		Check that the levelling rods are torqued and have torque marker.		✓	 19/05/24
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).		✓	 19/05/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$.		✓	 19/05/24
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	✓	 19/05/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓	 19/05/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 695mm (+5 / -10mm) (Using levelled rail)	TC CAB #1= _____ mm		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)	✓	 19/05/24
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	✓	 19/05/24
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	✓	 19/05/24



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

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5/31/2022

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PRASA

SI.FT1140.52

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 ¹ II											
AIR SPRING HEIGHT (FULL)	min 254 max 261	AII					256 264	289 255					
FLOOR COVERING HEIGHT	min 1096 max 1116	EII					1105 1116	1108 1104					
AIR SPRING PRESSURE	≤ 0.3 (Q1 - Q1)	CII					2.84 2.90	2.97 2.96					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4											
PIVOT VERTICAL GAP	min 25 max 32	KII											
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J1 - J1)	JII											
QTY OF TURNS OF LEVELLING ROD	N/A	XII					1 1/2	1 1/2					
SHIMS OF ANTI-ROLL BAR	N/A	YII											
DESCRIPTION	TOLERANCE		6	5	4	3	2	1	1	2	3	4	5
AIR SPRING HEIGHT (EMPTY)	N/A	A ¹ III											
AIR SPRING HEIGHT (FULL)	min 254 max 261	AIII					256 255	258 258					
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII					1102 1101	1106 1106					
AIR SPRING PRESSURE	≤ 0.3 (QV - QV)	CIII					2.84 2.82	2.78 2.74					
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6											
PIVOT VERTICAL GAP	min 25 max 32	KIII											
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Jv - Jv)	JIII											
QTY OF TURNS OF LEVELLING ROD	N/A	XIII					0	1 1/2					
SHIMS OF ANTI-ROLL BAR	N/A	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 TO CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		

BOGIE END#1

BOGIE END#2



SELF INSPECTION INDUSTRIAL QUALITY

Rev:08

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5/31/2022

Projet:
PRASA

SI.FT1140.52

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

		END#1												
DESCRIPTION	TOLERANCE	LEFTSIDE						RIGHTSIDE						
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 (JI - 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
		LEFTSIDE						RIGHTSIDE						

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

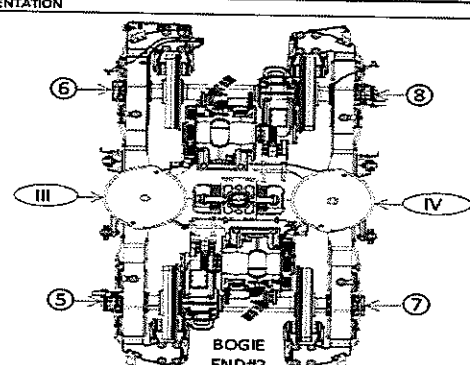
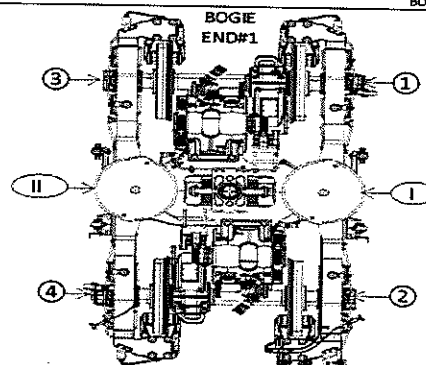


Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

ITEM		THEORETICAL VALUES											
		TCL CAR		M1 CAR		M2 CAR		M3 CAR		TCL CAR		TCL CAR	
		TB ext	TB int	MB1	MB2	MB1	MB2	MB1	MB2	TB int	TB ext	TB int	TB ext
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 AWD [Bar]	Fig. 5	3,76	2,82	2,87	2,91	2,83	3,02	2,83	2,85	2,83	2,83	2,83	3,76
Primary Suspension gaps [mm]	$C_{\text{a}} - C_{\text{t}}$	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)
	$C_{\text{B}} - C_{\text{D}}$	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.
	$D_{\text{1}}; D_{\text{2}}$	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}
	$D_{\text{3}}; D_{\text{4}}$	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^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}	850^{+13}_{-7}
Coupling End height [mm]	Fig. 8	895 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	895 (Ref.)	760 (Ref.)	760 (Ref.)
Pivot Vertical gap [mm]	F_1	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}
	F_2	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}
Pivot Vertical gap [mm]	K_{a}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}
	K_{b}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}	30^{+13}_{-5}



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Leveling report from Production (Final measurements after Levelling 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

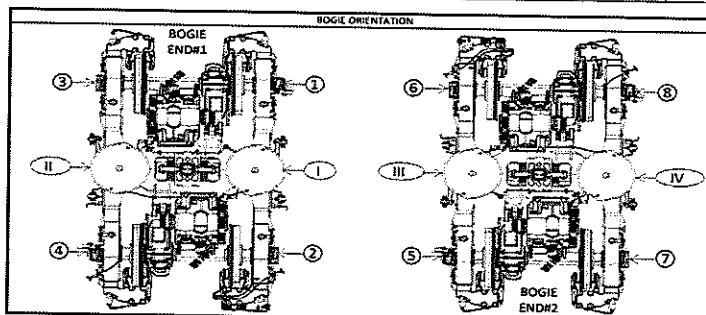
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 243	A'ii 242	A'iii 242	A'iv 242
An	254 to 261	Ai 255	Aii 257	Aiii 256	Aiv 257
Bn = An - A'n	N/A	Bi 12	Bii 13	Biii 14	Biv 15
En	1106 ±10 mm	Ei 1104	Eii 1106	Eiii 1102	Eiv 1105
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2.95	Cii 2.83	Ciii 2.83	Civ 2.76
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0.12		Ciii - Civ 0.07	
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 44.34	D2 45.10	D3 45.93	D4 46.46
		D5 44.29	D6 44.92	D7 45.28	D8 45.91
Kn	25 to 45	Ki 38.66		Kii 36.26	
Jn	Difference ≤ 4	Ji 24.40	Jii 26.20	Jiii 24.24	Jiv 25.80

(*) 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 ⁺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	
	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



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

[illegible]



Gibela Rail Transport Consortium RF (Pty)
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Reception: +27 (0)10 600 0651

TRAIN SET 224	REF: GIB000001672_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 $\leq 3\%$
		18,35	18,40	0,14%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		36,75	36,87	0,31%	1,37%
					Criteria Min/Diffs/Max
					PASS

Test Participants			
Name	Company	Department	Date
<i>Floris</i>	GIBELA Rail	EOC	19/05/2024