

GIBELQ

2024-02-21

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PRASA PROJECT

SELF INSPECTION SHEET

CONFIDENTIAL INFORMATION



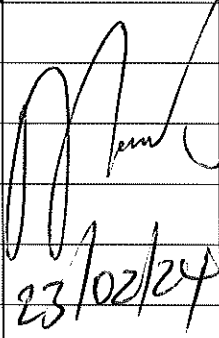
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APPLICATION REFERENCE








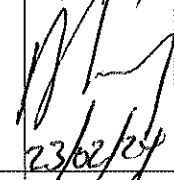

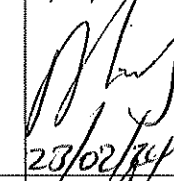

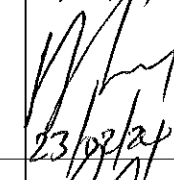

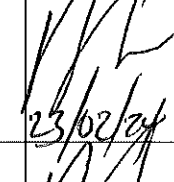

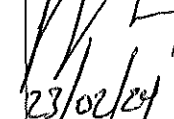
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			TC1	M4	M1	M2	M3	TC2		
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<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	✓			1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17	LEVELLING, WEIGHTING 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
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<input type="checkbox"/>										
<input type="checkbox"/>										

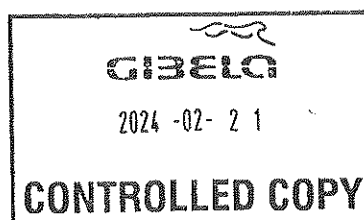
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7	2020/02/11	UPDATE OF AIR TIGHTNESS TEST TIME FROM 4 MIN TO 5 MIN. ADD PANTOGRAPH AIR TIGHTNESS.	APPROVER	GIVEN SILOWA	2020/02/11
			CHECKER	SIMON MOKOENA	2020/02/11
			COMPILER	COMFORT MALATJI	2020/02/11
8	2021/09/13	ADDING GAUGE MEASUREMENT CHECK ON THE SI.	APPROVER	MAKOFANE LUCY	2021/09/13
			CHECKER	RATAU EDISON	2021/09/13
			COMPILER	TSAKANI KHOSA	2021/09/13
9	2022/05/31	pressure valve (APV) Isolation	APPROVER	MAKHURUPETJI THABANG	2022/05/31
			CHECKER	HAZEL MGIBA	2022/05/31
			COMPILER	RATAU EDISON	2021/05/31



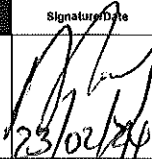
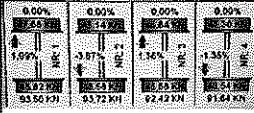
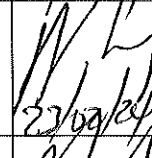
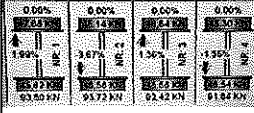
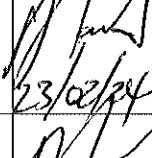
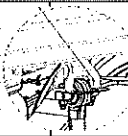
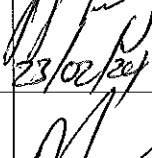

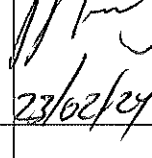
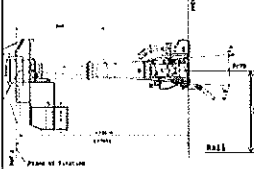
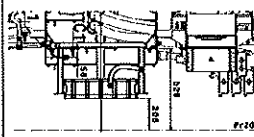
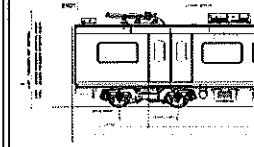
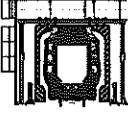
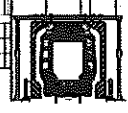
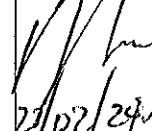
TUE	CAR	OPERATOR NAME	DATE	SELF INSPECTION NUMBER	PAGES
TS 209	M4	Matimba	23/02/2024	SI.FT1140.52	01/08


	<h2 style="margin: 0;">SELF INSPECTION INDUSTRIAL QUALITY</h2>		Rev:09	Projet: PRASA	SI.FT1140.52						
			Date: 2022/05/31								
Car:	NCR:		Work Station FT1140								
 Safety Related											
I - Document and Instrument Control											
I.1 - Documents control											
Document	TC1	M1	M2	M3	M4	TC2	Revision	Remarks	OK	NOK	Signature/Date
PRA.FT1140.04					X				✓		23/02/24
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		OK	NOK	Signature/Date				
Measuring Tape	GIBTA 0276		26/10/23-26/10/24		✓		 23/02/24				
Vernier Caliper	GIBUR 0056		06/10/23-06/10/24		✓						
Torque Wrench 320	A9680027		21/12/23-21/12/24		✓						
Torque Wrench 150	D28622009		19/12/23-19/12/24		✓						
Torque Wrench 35	D2511023		19/12/23-19/12/24		✓						



	<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Projet: PRASA	SI.FT1140.52					
			Date: 2022/05/31							
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		✓		 22/02/24				
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): 9.78 bar Final pressure (FP): 9.62 bar FP - IP = 0.12 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓		 22/02/24				
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 23/02/24				
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 19/12/23	✓		 23/02/24				
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>GangWAY</td> <td>360</td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	GangWAY	360	✓		 23/02/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)									
GangWAY	360									
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		 23/02/24				
07		Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		 23/02/24				
08		All leveling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 23/02/24				



		SELF INSPECTION INDUSTRIAL QUALITY		Rev:09		Projet: PRASA	SI.FT1140.52
				Date:			
		2022/05/31					
Item	Picture/Sketch	Description	Criteria/Record	OK		Signature	Date
09		Check that the leveling rods are torqued and have torque marker.		✓			23/02/24
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).		✓			23/02/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$.		✓			23/02/24
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	✓			23/02/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓			23/02/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5 / -10mm) (Using levelled rail)	TC CAB #1= _____ mm			H/1/A	
15		FOR TC CARS Height of Eurobalise Antenna = 205mm(+/-10mm) (Using levelled rail)	TC CAB #1= _____ mm			H/1/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. -Roof piping connection fittings(Roof arch and door trimming)			H/1/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			H/1/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	✓			23/02/24


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SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

2022/05/31

Proj:
PRASA

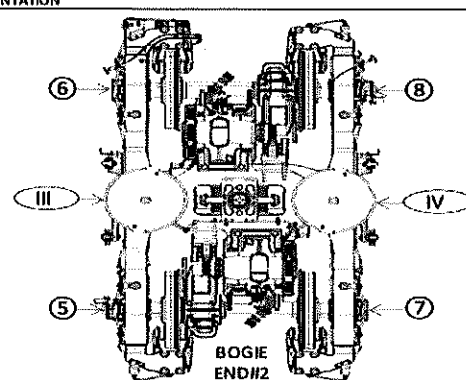
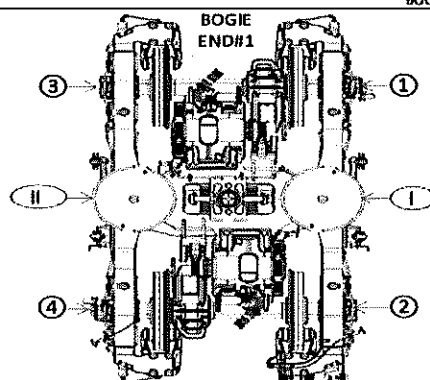
SI.FT1140.52

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	A ^{II}					255	257					A ^I
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II}											E ^I
AIR SPRING PRESSURE	≤ 0.3 (Q _I - Q)	C ^{II}					2.64	2.76					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 _I - J)	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}					256	256					A ^{IV}
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{III}											E ^{IV}
AIR SPRING PRESSURE	≤ 0.3 (Q _V - Q _I)	C ^{III}					2.79	2.64					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 _V - J _{II})	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		
WEIGHT		
EQUIPMENT		
WEIGHT		
SECONDARY MEASUREMENTS (ONLY TC CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		



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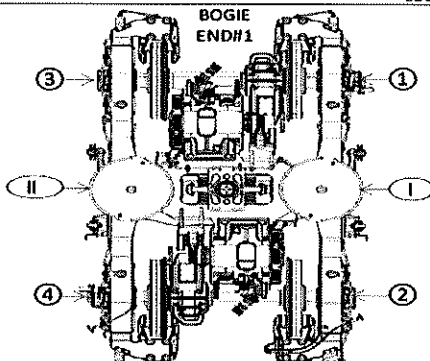
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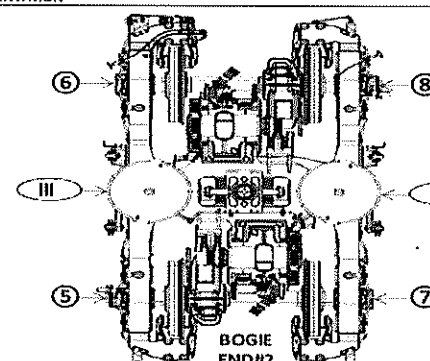
DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

		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	AII											AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII											EI
AIR SPRING PRESSURE	≤ 0.3 (Q1 - 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 (A1 - 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 (Qv - Qb)	CII											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 - Ab)	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		




BOGIE END#1



BOGIE END#2

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	MB2	MB2	MB1	MB1	TBext	TBint	TBext	TBint
Pivot lateral stop gaps difference [mm]	Fig. 4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
Air Spring height [mm]	Fig. 5	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅	255 ⁺⁵ ₋₅
Air spring pressure at AVO [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.)	2,83 (Ref.)	2,83 (Ref.)	2,83 (Ref.)	3,76 (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.
		35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅
		1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀
Primary Suspension gaps [mm]	Fig. 6	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅	35 ⁺²⁵ ₋₅
Carbody Floor height [mm]	Fig. 7	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀	1106 ⁺²⁰ ₋₁₀
Booster height [mm]	Fig. 7	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅	850 ⁺²⁵ ₋₅
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.)	895 (Ref.)	760 (Ref.)
	Fig. 9	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)
Pivot Vertical gap [mm]	Fig. 10	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅	30 ⁺²⁵ ₋₅


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SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

2022/05/31

Projet:
PRASA

SI.FT1140.52

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

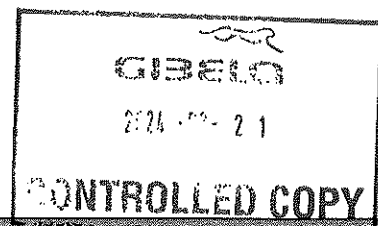
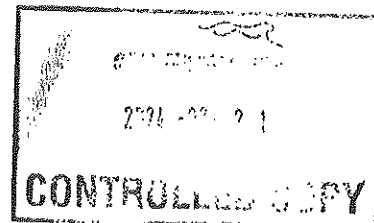
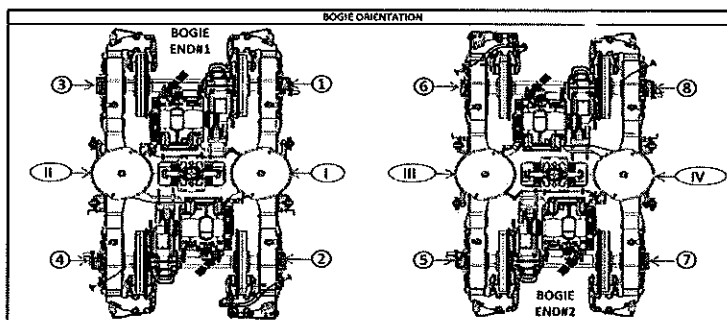
An Air spring height
Bn Difference between measurement A'n and An
En Floor covering height
Cn Air spring pressure
Dn Primary suspension
Kn Pivot Vertical gap
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 242	A's 241	A'm 240	A'v 241
An	264 to 261	Au 257	As 255	Am 256	Av 256
Bn = An - A'n	N/A	Bi 15	BS 14	Bm 16	Bv 15
En	1106 ±10 mm	Ei 1110	ES 1112	Em 1109	Ev 1108
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	CI 2.77	CS 2.64	Cm 2.80	Cv 2.65
Cn - Cn+1	Difference ≤ 0.3	Ci - Cs 0.13		Cm - Cv 0.15	
Gauge serial number	N/A	61B05875	61B05875	61B05875	61B05875
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 45.61	Ds 46.36	Dm 45.96	Dv 46.87
		D2 45.91	D4 46.45	D6 46.25	D7 46.88
Kn	25 to 45	Ks 38.92		Km 36.88	
Jn	Difference ≤ 4	Ji 24.66	Js 25.35	Jm 24.71	Jv 26.22

(*) 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)
Ltd
2 Shosholozza Avenue
Dunmottar X7
Ekurhuleni, 1590, South Africa
Reception: +27 (0)10 680 0651

TRAIN SET 209	PC09 WEIGHING REPORT
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M4	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance of 3%
		17.83	17.79	0.25%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		35.61	35.95	0.95%	1.36% Criteria Mass Diff: Max PASS

Test Participants			
Name	Company	Department	Date
<i>[Signature]</i>	Gibela	EOC	23/02/2024