

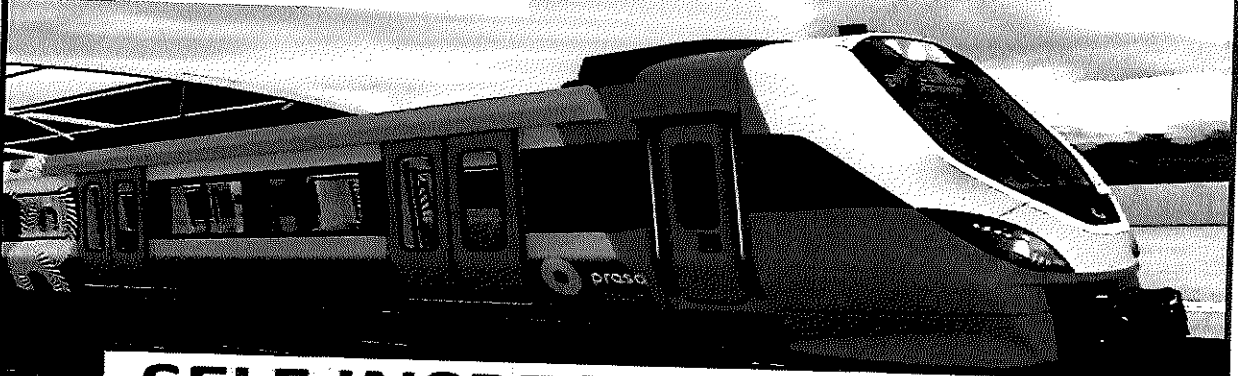
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PRASA PROJECT



# SELF INSPECTION SHEET

## CONFIDENTIAL INFORMATION



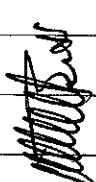
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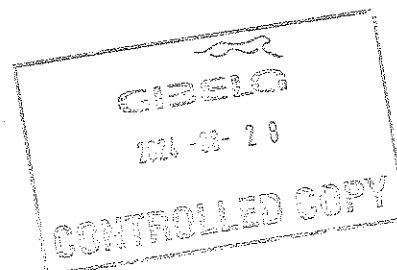
## APPLICATION REFERENCE

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	<input checked="" type="checkbox"/>	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 232	TC1	R. Nkomo	27/06/24	SI.FT1140.52	01/08

	SELF INSPECTION INDUSTRIAL QUALITY		Rev:09 Date: 5/31/2022	Projet: 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	OK	NOK	Signature/Date
PRA.FT1140.04	✓								✓		27/06/24
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	WRTA 0276		26/10/23 - 26/10/24		✓		 27/06/24				
Variar Calliper	WBRP 0050		06/08/23 - 06/08/24		✓						
Torque wrench 530NM	A9650003		19/12/23 - 19/12/24		✓						
Torque wrench 320NM	A9670019		19/12/23 - 19/12/24		✓						
Torque wrench 150NM	B7217566		21/12/23 - 21/12/24		✓						
Torque wrench 35NM	D2511023		21/12/23 - 21/12/24		✓						
Torque wrench 17NM	D2861617		19/12/23 - 19/12/24		✓						





# SELF INSPECTION INDUSTRIAL QUALITY

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## II - Self Inspection - Items to Check

### II.1 - Items to Check

IL1 - 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		✓		 27/06/24										
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): 10,01 bar Final pressure (FP): 9,990 bar FP - IP = 0,02 APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓		 27/06/24										
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 27/06/24										
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 9/12/2022	✓		 27/06/24										
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><tr><th>EQUIPMENT DESCRIPTION</th><th>WEIGHT (kg)</th></tr><tr><td>Long way</td><td>360</td></tr><tr><td>Whisper motor</td><td></td></tr><tr><td>3 Whisper</td><td>10</td></tr><tr><td>Blade</td><td></td></tr></table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	Long way	360	Whisper motor		3 Whisper	10	Blade		✓		 27/06/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)															
Long way	360															
Whisper motor																
3 Whisper	10															
Blade																
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		 27/06/24										
07		Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project		✓		 27/06/24										
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 27/06/24										

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# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

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Item	Picture/Sketch	Description	Criteria/Record	OK	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓	 27/06/24
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).		✓	 27/06/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$ .		✓	 27/06/24
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I II III IV	✓	 27/06/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.D4 / 05	✓	 27/06/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5 / -10mm) (Using levelled rail)	TC CAB #1= <u>896</u> mm	✓	 27/06/24
15		FOR TC CARS Height of Eurobalise Antenna = 205mm(+/-10mm) (Using levelled rail)	TC CAB #1= <u>197</u> mm	✓	 27/06/24
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. -Roof 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	✓	 27/06/24

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# 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	A'ii			256	256	252	252	256	255			A'i
FLOOR COVERING HEIGHT	min 1096 max 1116	Eii			1107	1107	1103	1096	1103	1102			Ei
AIR SPRING PRESSURE	≤ 0.3 (Ci - Qi)	Cii			3,65	3,66	3,63	3,59	3,60	3,57			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 - Ji')	Jii											Ji
QTY OF TURNS OF LEVELLING ROD	N/A	Xii					14	14					Xi
SHIMS OF ANTI-ROLL BAR	N/A	Yii											Yi
AIR SPRING HEIGHT (EMPTY)	N/A	A'iii											A'iv
AIR SPRING HEIGHT (FULL)	min 254 max 261	A'iii			256	256	261	260	256	256			A'iv
FLOOR COVERING HEIGHT	min 1096 max 1116	Eiii			1109	1109	1115	1114	1110	1110			Eiv
AIR SPRING PRESSURE	≤ 0.3 (Ov - Qi)	Ciii			2,85	2,87	2,89	2,83	2,79	2,79			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					16	16					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

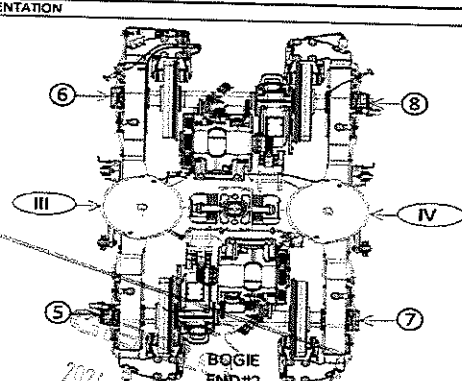
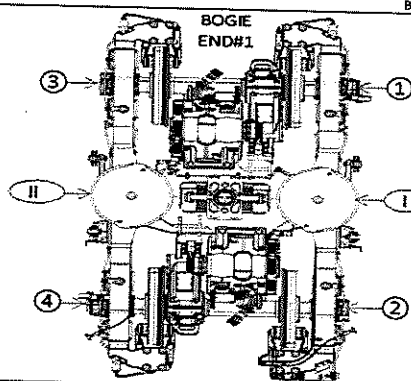
EQUIPMENT

WEIGHT

### SECONDARY MEASUREMENTS (ONLY TC CARS)

AUTOMATIC COUPLER HEIGHT

ANTENNA HEIGHT



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# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

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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	AII	/	/	/	/	/	/	/	/	/	/	/	/	A
FLOOR COVERING HEIGHT	min 1096 max 1116	EII	/	/	/	/	/	/	/	/	/	/	/	/	A
AIR SPRING PRESSURE	≤ 0.3 (QI - Q)	CII	/	/	/	/	/	/	/	/	/	/	/	/	E
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3	/	/	/	/	/	/	/	/	/	/	/	/	C
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4	/	/	/	/	/	/	/	/	/	/	/	/	C
PIVOT VERTICAL GAP	min 25 max 32	KII	/	/	/	/	/	/	/	/	/	/	/	/	D
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (JI - J)	JII	/	/	/	/	/	/	/	/	/	/	/	/	D
QTY OF TURNS OF LEVELLING ROD	N/A	XII	/	/	/	/	/	/	/	/	/	/	/	/	K
SHIMS OF ANTI-ROLL BAR	N/A	YII	/	/	/	/	/	/	/	/	/	/	/	/	J
DESCRIPTION	TOLERANCE		6	5	4	3	2	1	1	2	3	4	5	6	YI
AIR SPRING HEIGHT (EMPTY)	N/A	A`III	/	/	/	/	/	/	/	/	/	/	/	/	A`IV
AIR SPRING HEIGHT (FULL)	min 254 max 261	AIII	/	/	/	/	/	/	/	/	/	/	/	/	A`IV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII	/	/	/	/	/	/	/	/	/	/	/	/	AIV
AIR SPRING PRESSURE	≤ 0.3 (QIV - QII)	CIII	/	/	/	/	/	/	/	/	/	/	/	/	EIV
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5	/	/	/	/	/	/	/	/	/	/	/	/	CIV
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6	/	/	/	/	/	/	/	/	/	/	/	/	CIV
PIVOT VERTICAL GAP	min 25 max 32	KIII	/	/	/	/	/	/	/	/	/	/	/	/	D7
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (JIV - JII)	JIII	/	/	/	/	/	/	/	/	/	/	/	/	D8
QTY OF TURNS OF LEVELLING ROD	N/A	XIII	/	/	/	/	/	/	/	/	/	/	/	/	KIV
SHIMS OF ANTI-ROLL BAR	N/A	YIII	/	/	/	/	/	/	/	/	/	/	/	/	JIV
			LEFT SIDE						RIGHT SIDE						YIV

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

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT  
COMPENSATION

EQUIPMENT

WEIGHT

EQUIPMENT

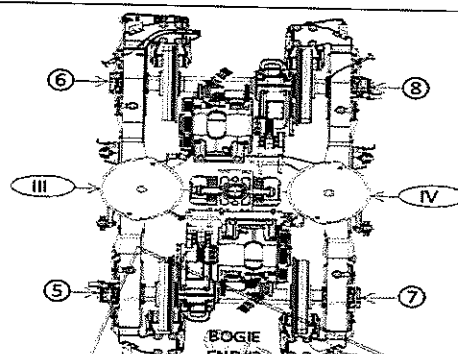
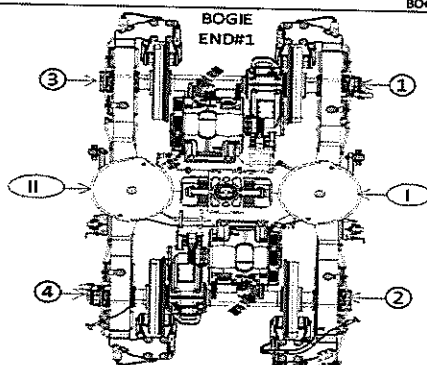
WEIGHT

SECONDARY MEASUREMENTS  
(ONLY TO CARS)

AUTOMATIC COUPLER

HEIGHT

ANTENNA HEIGHT



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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		TQ CAR	
		TBext	TBint	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	TBint	TBext
Pivot lateral stop gaps difference (mm)	$J_n - J_{n+1}$ (Fig. 4)	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$	$\leq 4$
Air Spring height (mm)	$A_n$ (Fig. 5)	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$	$255^{+6}_{-4}$
Air spring pressure at AWD (bar)	$C_n$ (Fig. 5)	3,76	2,82	2,83	2,91	3,02	2,91	3,07	2,85	2,83	2,83	2,83	3,76
	$C_1 - C_1$	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)
	$C_{10} - C_{10}$	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)	$D_1, D_3$ (Fig. 6)	35	35	35	35	35	35	35	35	35	35	35	35
	$D_2, D_4$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$
	$D_3, D_5$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$
	$D_4, D_6$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$	$35^{+12}_{-4}$
Carbody Floor height (mm)	$E_n$ (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)	$N_n$ (Fig. 7)	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$	$850^{+15}_{-7}$
Coupling End height (mm)	$F_1$ (Fig. 8)	895	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	895	(Ref.)
	$F_2$ (Fig. 9)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)	760	(Ref.)
Pivot Vertical gap (mm)	$K_n$ (Fig. 10)	30	$30^{+15}_{-5}$	30	$30^{+15}_{-5}$	30	$30^{+15}_{-5}$	30	$30^{+15}_{-5}$	30	$30^{+15}_{-5}$	30	$30^{+15}_{-5}$

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# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

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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

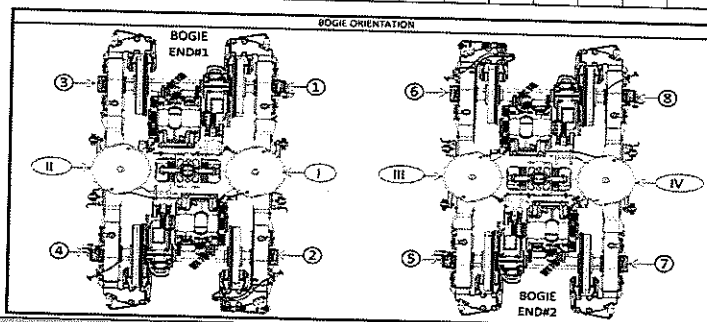
An Air spring height  
Bn Difference between measurement A'n and An  
En Floor covering height  
Cn Air spring pressure  
Dn Primary suspension  
Kn Pivot Vertical gap  
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 233	A'ii 234	A'iii 242	A'iv 241
An	254 to 261	Ai 255	Aii 256	Aiii 256	Aiv 256
Bn = An - A'n	N/A	Bi 22	Bii 22	Biii 14	Biv 15
En	1108 ±10 mm	Ei 1102	Eii 1107	Eiii 1109	Eiv 1110
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 3.57	Cii 3.65	Ciii 2.85	Civ 2.79
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0.08		Ciii - Civ 0.06	
Gauge serial number	N/A	91805873		91805873	
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 42.64	D2 41.64	D3 42.41	D4 44.23
		D2 42.39	D4 42.84	D5 43.42	D7 43.23
Kn	25 to 45	Ki 30.62		Kii 37.69	
Jn	Difference ≤ 4	Ji 26.02	Jii 25.50	Jiii 24.78	Jiv 25.63

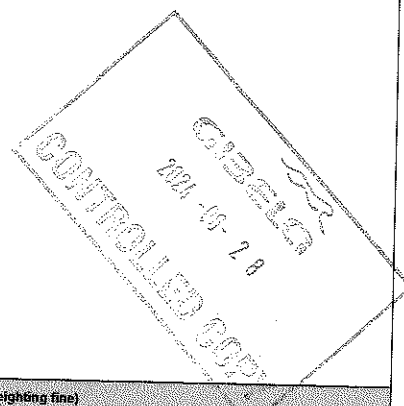
(\*) Reference, only include values, isn't approval criteria.

Table 01 D Theoretical Values	TC1		M4		M1		M2		M3		TC2	
	Tbex	Tbin	Mb1	Mb1	Mb1	Mb2	Mb1	Mb1	Mb1	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	Mb1	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 Weighting fine)





[illegible]

Gibela Rail Transport Consortium RF (Pty)  
 Ltd  
 2 Shosholozu Avenue  
 Dunnetta X7  
 Ekurhuleni, 1550, South Africa  
 Reception: +27 (0)10 600 0651



TRAIN SET 232	REF: GIB0000001672 JO PRASA WEIGHT BALANCE EN
	PC09 WEIGHING REPORT

TC1	Balance across front and rear bogies	Front bogie [Tons]	Rear bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ≤ 10%
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Criteria Minus Gills Max
		18.51	15.56	8.66%	PASS
		34.07	34.42	1.03%	1.62% PASS

Name	Company	Department	Signature	Date
Thabo Musi	Gibela	EOS		21/06/24