



PRASA PROJECT


SELF INSPECTION SHEET

CONFIDENTIAL INFORMATION



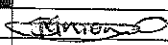
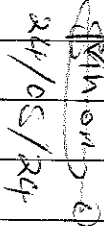
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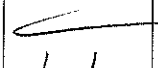
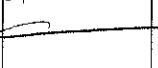

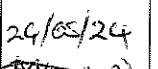

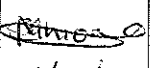

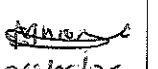

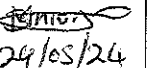

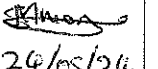

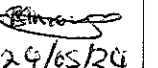
APPLICATION REFERENCE



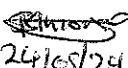
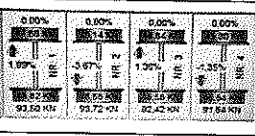
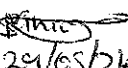
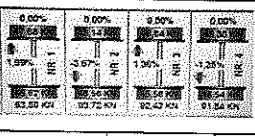
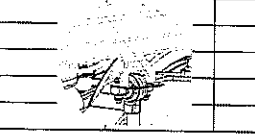
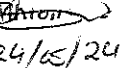
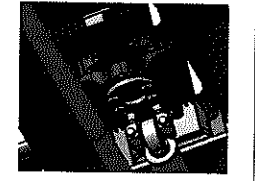
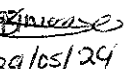
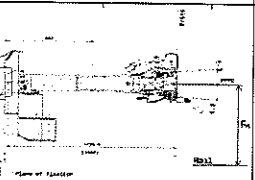
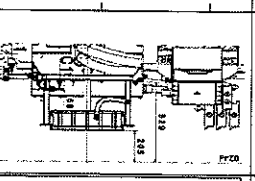
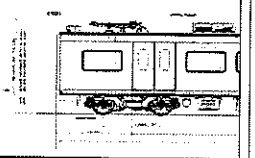
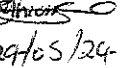
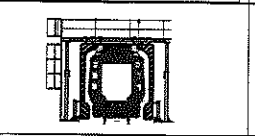
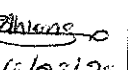
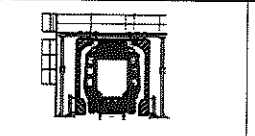
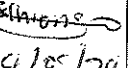
MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	1	1	1		PRA.FT1140.04	YES
<input type="checkbox"/>	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1			X	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 225	M2	Sandile	24/05/24	SI.FT1140.52	01/08

	<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09	Project: PRASA	SI.FT1140.52						
			Date: 5/31/2022								
Cart:	NCR:		Work Station: FT1140								
 Safety Related											
I - Document and Instrument Control											
I.1 - Documents control											
Document	TC1	M1	RC	MS	MM	TC2	Revision	Remark	OK	Not OK	Signature/Date
PRA.FT1140.04			X						✓		 24/05/24
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	Not OK	Signature/Date				
Measuring tape	G166A 0276		26/10/23-26/10/24		✓		 24/05/24 D. C. NO. 1140				
Venier Caliper	G1BUR 0056		06/06/23-06/06/24		✓						
Torque Wrench 35 N.m	D2811023		19/12/23-19/12-24		✓						
Torque Wrench 150 N.m	D28622009		19/12/23-19/12/24		✓						
Torque Wrench 320 N.m	A9650027		21/12/23-21/12-24		✓						

	<h1>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		✓		 24/05/24								
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): 10.9 bar Final pressure (FP): 10.8 bar FP - IP = 0.1 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓		 24/05/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		 24/05/24								
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 19/12/2023	✓		 24/05/24								
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 border="1"> <thead> <tr> <th>EQUIPMENT DESCRIPTION</th> <th>WEIGHT (kg)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td></td> </tr> <tr> <td>G. GUNSWAY</td> <td>360</td> </tr> <tr> <td>0</td> <td></td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	0		G. GUNSWAY	360	0		✓		 24/05/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)													
0														
G. GUNSWAY	360													
0														
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓		 24/05/24								
07		Measuremet recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		 24/05/24								
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		 24/05/24								

		<h1>SELF INSPECTION INDUSTRIAL QUALITY</h1>		Rev:09 Date: 5/31/2022	Projet: PRASA	SI.FT1140.52
N°	Picture/Sketch	Description	Criteria/Record	OK	Signature/Date	
09		Check that the leveling rods are torqued and have torque marker.		✓	 24/05/24	
10		The difference of weight between the left and right wheels of each axis, must be ≤ 4%. (Verify on the T&C equipment if all arrows are in green).		✓	 24/05/24	
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of ≤ 4%.		✓		
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I C II C III C IV C	✓	 24/05/24	
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓	 24/05/24	
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)	✓	 24/05/24	
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	✓	 24/05/24	
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	✓	 24/05/24	



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)

		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'II
AIR SPRING HEIGHT (FULL)	min 254 max 261	AII						256	255					AII
FLOOR COVERING HEIGHT	min 1096 max 1116	EII												EII
AIR SPRING PRESSURE	≤ 0.3 (Ci - Ci)	CII						2,94	2,91					CII
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3												D3
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4												D4
PIVOT VERTICAL GAP	min 25 max 32	KII												KII
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ji - Ji)	JII												JII
QTY OF TURNS OF LEVELLING ROD	N/A	XII												XII
SHIMS OF ANTI-ROLL BAR	N/A	YII												YII
DESCRIPTION	TOLERANCE		6	5	4	3	2	1	1	2	3	4	5	6
AIR SPRING HEIGHT (EMPTY)	N/A	A'III												A'III
AIR SPRING HEIGHT (FULL)	min 254 max 261	AIII						256	255					AIII
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII												EIII
AIR SPRING PRESSURE	≤ 0.3 (Cv - Cv)	CIII						2,77	2,67					CIII
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5												D5
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6												D6
PIVOT VERTICAL GAP	min 25 max 32	KIII												KIII
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Jv - Jv)	JIII												JIII
QTY OF TURNS OF LEVELLING ROD	N/A	XIII												XIII
SHIMS OF ANTI-ROLL BAR	N/A	YIII												YIII
		LEFT SIDE						RIGHT SIDE						

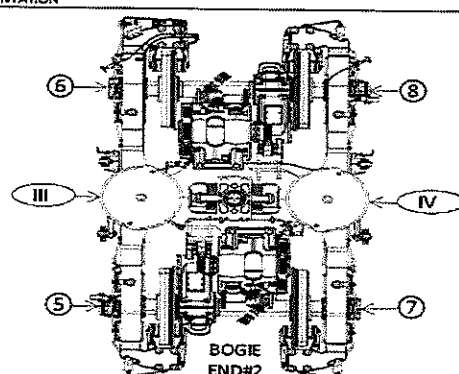
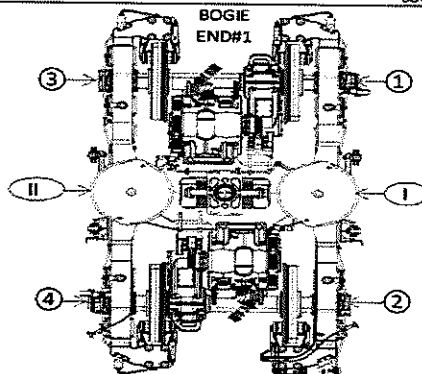
COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT COMPENSATION

EQUIPMENT
WEIGHT
EQUIPMENT
WEIGHT
SECONDARY MEASUREMENTS (ONLY T.C. CAR)
AUTOMATIC COUPLER HEIGHT
ANTENNA HEIGHT





SELF INSPECTION INDUSTRIAL QUALITY

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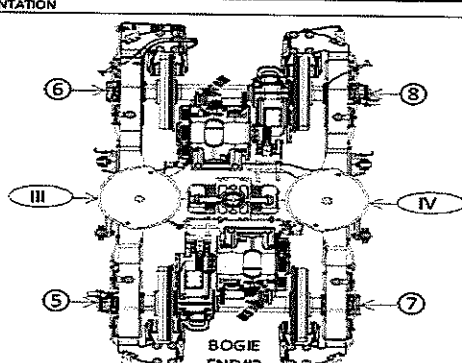
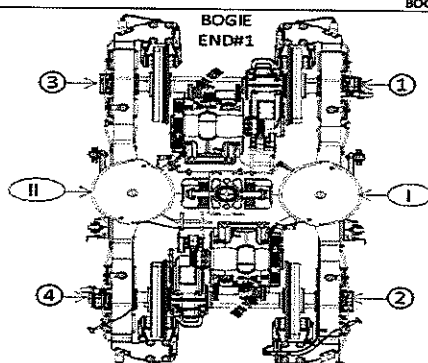
SI.FT1140.52

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}											A ^I
FLOOR COVERING HEIGHT	min 1096 max 1116	E ^{II}											E ^I
AIR SPRING PRESSURE	≤ 0.3 (C ^I - C)	C ^{II}											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}											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		
WEIGHT		
EQUIPMENT		
WEIGHT		
SECONDARY MEASUREMENTS (ONLY TC CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		





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Rev:09
Date:
5/31/2022

Projet
PRASA

SI.FT1140.52

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

ITEM		THEORETICAL VALUES																TQ2 CAR	
		TQ1 CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		TQ2 CAR							
		TBext	TBint	MB1	MB1	MB1	MB2	MB2	MB1	MB1	MB1	MB1	TBint	TBext					
Pivot lateral stop gaps difference (mm)	Fig. 4 Jn-Iw1 (±0.0)	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4		
Air Spring height (mm)	Fig. 5 A ₀ (±0.0)	255 ⁺⁸ ₋₄	255 ⁺⁸ ₋₄	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₄	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁		
Air spring pressure at AWD (Bar)	Fig. 5 C ₀ (±0.0)	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.)	2,83 (Ref.)	2,83 (Ref.)	2,83 (Ref.)	2,83 (Ref.)	3,76 (Ref.)		
	C ₁ - C ₀ C ₀ - C ₀	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.	0,3 Máx.	0,3 Máx.	0,3 Máx.	0,3 Máx.		
Primary Suspension gaps (mm)	Fig. 6 D ₁ D ₂ D ₃ D ₄ D ₅ D ₆ D ₄ D ₅	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃	35 ⁺¹² ₋₃		
	Fig. 7 E ₀ (±0.0)	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	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀		
	Fig. 7 N ₀ (±0.0)	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	850 ⁺¹³ ₋₇	850 ⁺¹³ ₋₇	850 ⁺¹³ ₋₇	850 ⁺¹³ ₋₇		
	Fig. 8 F ₁	895 (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.)	760 (Ref.)	760 (Ref.)	895 (Ref.)		
Coupling End height (mm)	Fig. 9 F ₂	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.)	760 (Ref.)	760 (Ref.)	760 (Ref.)		
	Fig. 10 K ₀	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	30 ⁺¹⁵ ₋₅	30 ⁺¹⁵ ₋₅	30 ⁺¹⁵ ₋₅	30 ⁺¹⁵ ₋₅		



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:
PRASA

SI.FT1140.52

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

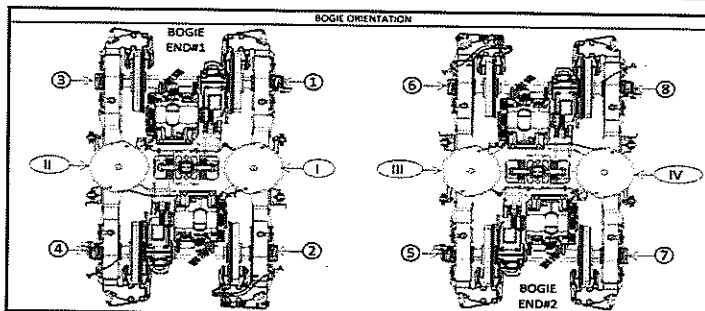
An Air spring height
Bn Difference between measurement A'n and An
En Floor covering height
Cn Air spring pressure
Dn Primary suspension
Kn Pivot Vertical gap
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 237	A'ii 240	A'iii 245	A'iv 243
An	254 to 261	Al 257	Aii 259	Aiii 257	Aiv 255
Bn = An - A'n	N/A	Bl 20	Bii 19	Biii 12	Biv 12
En	1106 ±10 mm	Ei 1109	Eii 1100	Eiii 1104	Eiv 1105
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Cl 2.72	Cii 2.96	Ciii 2.78	Civ 2.69
Cn - Cn+i	Difference ≤ 0,3	Ci - Cii 0,24		Cii - Ciii 0,09	
Gauge serial number	N/A	GIB05112	GIB05112	GIB05112	GIB05112
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 44.44	D3 44.90	D6 44.79	D8 46.24
		D2 45.49	D4 44.14	D5 45.35	D7 45.72
Kn	25 to 45	Kl 33.14		Kii 35.46	
Jn	Difference ≤ 4	Ji 25.59	Jii 24.85	Jiii 26.00	Jiv 25.26

(*) 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]



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TRAIN SET 225	REF: GIB0000001672_J0 PRASA WEIGHT BALANCE EN
	PC09 WEIGHING REPORT

M2	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ≤ 3%
		18.63	18.09	1.47%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]
		36.72	37.06	0.93%	1.37%
					Criteria Min:Diff:Max
					PASS

Test Participants			
Name	Company	Department	Date
Tudato MUSA	GIBELA	EOC	24/05/24