

GIBELO

2024-07-27

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PRASA PROJECT

SELF INSPECTION SHEET

CONFIDENTIAL INFORMATION

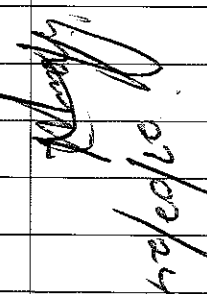
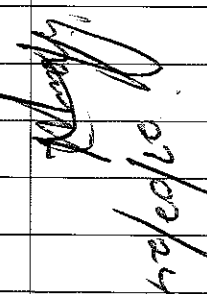
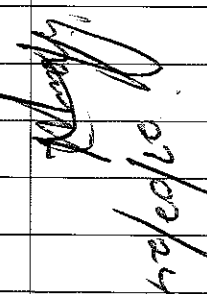
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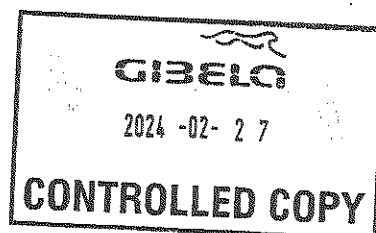
APPLICATION REFERENCE

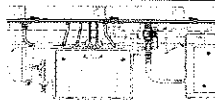
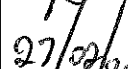
MOUNTING	DESCRIPTION	STATION	CAR TYPE						WORK INSTRUCTION	SAFETY ? 
			TC1	M4	M1	M2	M3	TC2		
☐	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING M CAR	FT1140	1	X	1	1		PRA.FT1140.04	YES
☐	DTR3-PROCE-14	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1				1	PRA.FT1140.05	YES
☐	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	1	1	1	1	PRA.FT1140.05	YES
☐	DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	1	1	1	1	PRA.FT1140.05	YES
☐										
☐										
☐										

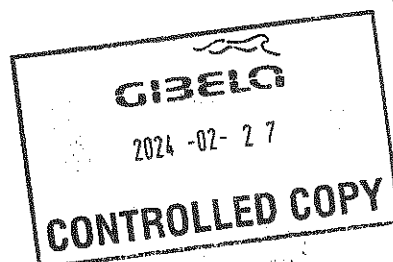
REV	DATE	MODIFICATION CONTENT	RESPONSIBLE	NAME	DATE
7	2/11/2020	UPDATE OF AIR TIGHTNESS TEST TIME FROM 4 MIN TO 5 MIN. ADD PANTOGRAPH AIR TIGHTNESS.	APPROVER	GIVEN SILOWA	2/11/2020
			CHECKER	SIMON MOKOENA	2/11/2020
			COMPILER	COMFORT MALATJI	2/11/2020
8	9/13/2021	ADDING GAUGE MEASUREMENT CHECK ON THE 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
TS210	M1	Andrew	27/02/24	SI.FT1140.52	01/08

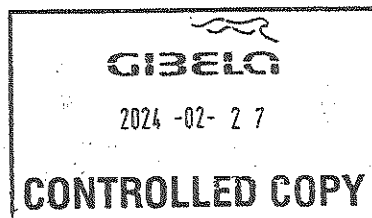
	SELF INSPECTION INDUSTRIAL QUALITY	Rev:09	Project: PRASA	SI.FT1140.52																																												
		Date: 5/31/2022																																														
Cat:	NGR:	Work Station: FT1140																																														
 Safety Related																																																
I - Document and Instrument Control																																																
I.1 - Documents control																																																
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I.2 - Instruments Control - Monitoring and Measuring Instrument Control (Used for all Instrument with calibration needed)																																																
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	SELF INSPECTION INDUSTRIAL QUALITY	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	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		✓	 27/02/24								
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): 9.2 bar Final pressure (FP): 7.79 bar FP - IP = 0.01 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓	 27/02/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓	 27/02/24								
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 19/12/2023	✓	 27/02/24								
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> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	GANGWAY	360					✓	 27/02/24
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.		✓	 27/02/24								
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓	 27/02/24								
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓	 27/02/24								

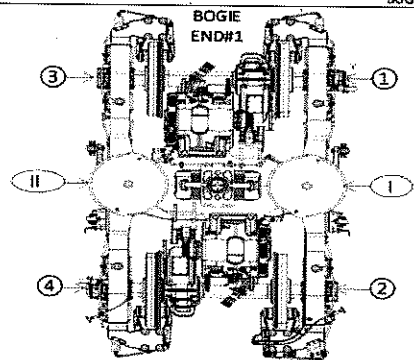


GIBELQ		SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Project: PRASA	SI.FT1140.52
				Date: 5/31/2022		
09		Check that the levelling rods are torqued and have torque marker.		✓		 27/02/24
10		The difference of weight between the left and right wheels of each axis, must be ≤ 4%. (Verify on the T&C equipment if all arrows are in green).		✓		 27/02/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of ≤ 4%.		✓		 27/02/24
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I _____ II _____ III _____ IV _____	✓		 27/02/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓		 27/02/24
14		FOR TC CARS F= Height of the center of Automatic coupler F = 895mm (+5/-10mm) (Using levelled rail)	TC CAB #1= _____ mm			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 VI 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)	✓		 27/02/24
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	✓		 27/02/24
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	✓		 27/02/24

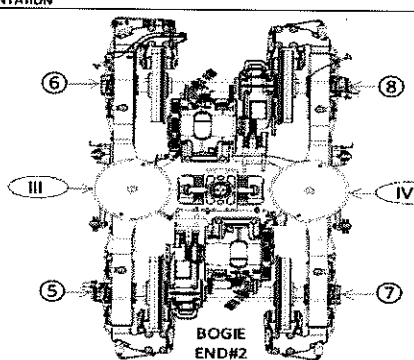


DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)															
DESCRIPTION	TOLERANCE	LEFT SIDE						RIGHT SIDE							
		6	5	4	3	2	1	1	2	3	4	5	6		
AIR SPRING HEIGHT (EMPTY)	N/A	A'II												A'I	
AIR SPRING HEIGHT (FULL)	min 254 max 261	AII		256	255	255	253	256		255	249	255	255	256	AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII		1105	1103	1103	1101	1103		1101	1095	1105	1100	1102	EI
AIR SPRING PRESSURE	≤ 0.3 (Ci - Ci)	CII		2,87	2,84	2,85	2,90	3,03		2,73	2,80	2,91	2,87	2,91	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			1/2	0	1/2	0		0	1/4	0	1/2		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		255	251	251	247	244		250	250	252	254	256	AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII		1116	1114	1112	1110	1105		1096	1096	1100	1106	1104	EIV
AIR SPRING PRESSURE	≤ 0.3 (Civ - Cii)	CIII		2,80	2,75	2,76	2,66	2,58		2,88	2,84	2,77	2,81	2,81	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			1/4	1/2	1/4	1/4		1/4	1/2	1/4	1/2		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 ORIENTATION
END#1



BOGIE ORIENTATION
END#2



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:
PRASA

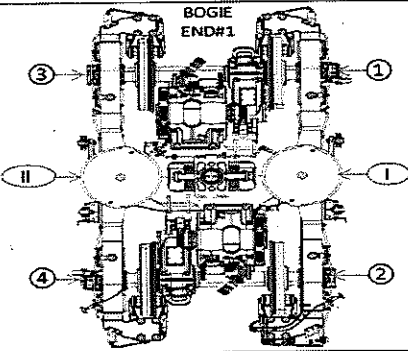
SI.FT1140.52

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

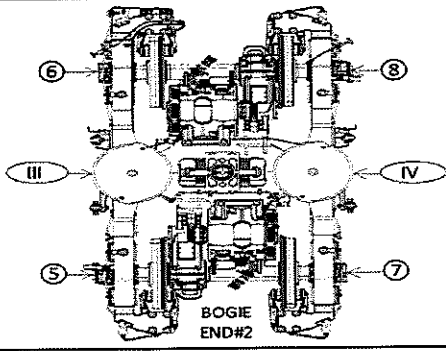
DESCRIPTION	TOLERANCE	LEFTSIDE						RIGHTSIDE						
		6	5	4	3	2	1	1	2	3	4	5	6	
AIR SPRING HEIGHT (EMPTY)	N/A	A ⁱⁱ											A ⁱ	
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ⁱⁱ											A ⁱ	
FLOOR COVERING HEIGHT	min 1096 max 1116	E ⁱⁱ											E ⁱ	
AIR SPRING PRESSURE	≤ 0.3 (C ⁱ - C ⁱ)	C ⁱⁱ											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 ⁱ											K ⁱ	
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J ⁱ - 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 ^{iv})	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 ^{iv})	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 TO CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		

BOGIE END#1



BOGIE END#2



GIBELQ

2024-02-27

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

ITEM		THEORETICAL VALUES														T2 CAR	
		TCL CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		M5 CAR		T1 CAR			
		TBext	TBint	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	TBint	TBext		
		≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4		
Pivot lateral stop gaps difference [mm]	Fig. 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	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁	255 ⁺⁸ ₋₁
Air Spring height [mm]	Fig. 5	3,76	2,82	2,87	2,83	3,02	2,91	3,07	2,85	2,83	2,87	2,83	2,87	2,83	2,87	2,83	2,87
Air spring pressure at AW0 [Bar]	Fig. 5	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)	(Ref.)
C ₁ -C ₂ C ₃₁ -C ₃₂	Fig. 5	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	0,3 Mdx	0,3 Mdx	0,3 Mdx	0,3 Mdx
Primary Suspension gaps [mm]	D ₁ ; D ₆	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅	35 ⁺²² ₋₅
	D ₂ ; D ₈																
	D ₃ ; D ₇																
	D ₄ ; D 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	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀	1106 ⁺¹⁰ ₋₁₀
Booster 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	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋₇	850 ⁺⁵ ₋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.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	760 (Ref.)	895 (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.)	760 (Ref.)	760 (Ref.)	
Photo 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	30 ⁺¹⁵ ₋₅	30 ⁺¹⁵ ₋₅	30 ⁺¹⁵ ₋₅	30 ⁺¹⁵ ₋₅

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SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Project:
PRASA

SI.FT1140.52

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

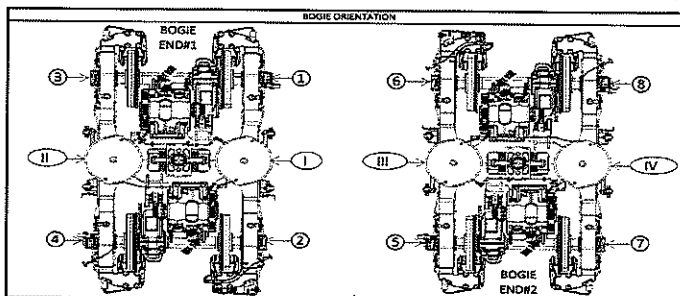
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 239	A'ii 241	A'iii 239	A'iv 238
An	254 to 261	Ai 257	Aii 258	Aiii 256	Aiv 256
Bn = An - A'n	N/A	Bi 18	Bii 17	Biii 17	Biv 18
En	1106 ±10 mm	Ei 1108	Eii 1107	Eiii 1111	Eiv 1107
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2.92	Cii 2.89	Ciii 2.80	Civ 2.83
Cn - Cn	Difference ≤ 0.3	Ci - Cii 0.03		Ciii - Civ 0.03	
Gauge serial number	N/A	51B05875		51B05875	
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 43.24	D2 43.67	D3 46.35	D4 44.95
		D5 43.92	D6 43.91	D7 44.55	D8 44.87
Kn	25 to 45	Ki 38.31		Kii 34.98	
Jn = J1-J2+1	Difference ≤ 4	Ji 25.35	Jii 26.55	Jiii 26.88	Jiv 24.43

(*) 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



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

GIBELQ

2024 -02- 27

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TRAIN SET 210	REF: GIB0000001672 JO 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%	
		18.67		18.16		1.38%		PASS	
	Weight Measured vs Predicted	Weight Measured [Tons]		Weight Predicted [Tons]		Weight Difference [%]		Tolerance [%]	
		36.83		36.87		0.09%		1.37%	
								Criteria MinDiff:Max	
								PASS	

Test Participants			
Name	Company	Department	Date
<i>E. J. J. J.</i>	GIBELA Rail	EOC	27/02/2024

