

GIBELQ

2024-07-08

CONTROLLED COPY

GIBELQ


PRASA PROJECT

SELF INSPECTION SHEET

CONFIDENTIAL INFORMATION



This document and the information contemplated therein have to be considered as Confidential Information pursuant to the provisions of Clause 2.5 of the MSA, and treated as such.

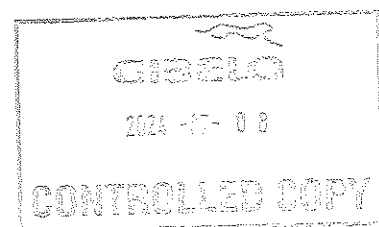
APPLICATION REFERENCE

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		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
TS 234	M2	M. Khumyane	08/07/24	SI.FT1140.52	01/08

	SELF INSPECTION INDUSTRIAL QUALITY		Rev:09	Project: PRASA	SI.FT1140.52						
			Date: 5/31/2022								
GMR:	NGR:		Work Station: FT1140								
 Safety Related											
I - Document and Instrument Control											
I.1 - Documents control											
Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	OK	Signature/Date	
PRA.FT1140.04											
PRA.FT1140.05			✓						✓	MPL 09/07/24	
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	Signature/Date					
Measuring Tape	GibTA 0276		26/10/23-26/10/24		✓						
Vernier Calliper	GibVR 0056		06/06/23-06/06/24		✓						
Torque wrench 35Nm	D2S11023		19/12/23-19/12/24		✓						
Torque wrench 150Nm	D28622009		19/12/23-19/12/24		✓						
Torque wrench 320Nm	A9630027		21/12/23-21/12/24		✓	MPL 09/07/24					





SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022








Project:
PRASA

SI.FT1140.52

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		✓		MCL 03/07/24										
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): 10.0 bar Final pressure (FP): 10.0 bar FP - IP = 0.0 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓		MCL 03/07/24										
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓		MCL 03/07/24										
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 19/21/23	✓		MCL 03/07/24										
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>Gangway</td><td>360</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	Gangway	360							✓		MCL 03/07/24
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.		✓		MCL 03/07/24										
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓		MCL 03/07/24										
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓		MCL 03/07/24										

GIBELQ

2024-07-08

CONTROLLED COPY



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:
PRASA

SI.FT1140.52

Item	Picture/Sketch	Description	Criteria/Record	OK	Signature/Date
09		Check that the leveling rods are torqued and have torque marker.		✓	MCL 09/07/24
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).		✓	MCL 09/07/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of $\leq 4\%$.		✓	MCL 09/07/24
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I II III IV	✓	MCL 09/07/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓	MCL 09/07/24
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. -Roof piping connection fittings(Roof arch and door trimming)	✓	MCL 09/07/24
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	✓	MCL 09/07/24
18		Car does not come into contact with the gauge.	No Contact with Car and Gauge -GO Contact with Car and Gauge - NO GO	✓	MCL 09/07/24

2024-07-08

CONTROLLED COPY



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Project:
PRASA

SI.FT1140.52

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

DESCRIPTION	TOLERANCE	END#1												END#2											
		LEFT SIDE						RIGHT SIDE						LEFT SIDE						RIGHT SIDE					
AIR SPRING HEIGHT (EMPTY)	N/A	A ¹ _{II}												A ¹ _{III}											
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ¹ _{II}												A ¹ _{III}											
FLOOR COVERING HEIGHT	min 1096 max 1116	E ¹ _{II}												E ¹ _{III}											
AIR SPRING PRESSURE	≤ 0.3 (C ¹ _I - C ¹ _I)	C ¹ _{II}												C ¹ _{III}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ¹ _{II}												D ¹ _{III}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ¹ _{II}												D ¹ _{III}											
PIVOT VERTICAL GAP	min 25 max 32	K ¹ _{II}												K ¹ _{III}											
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J ¹ _I - J ¹ _I)	J ¹ _{II}												J ¹ _{III}											
QTY OF TURNS OF LEVELLING ROD	N/A	X ¹ _{II}												X ¹ _{III}											
SHIMS OF ANTI-ROLL BAR	N/A	Y ¹ _{II}												Y ¹ _{III}											
AIR SPRING HEIGHT (EMPTY)	N/A	A ¹ _{III}												A ¹ _{IV}											
AIR SPRING HEIGHT (FULL)	min 254 max 261	A ¹ _{III}												A ¹ _{IV}											
FLOOR COVERING HEIGHT	min 1096 max 1116	E ¹ _{III}												E ¹ _{IV}											
AIR SPRING PRESSURE	≤ 0.3 (C ¹ _{IV} - C ¹ _{IV})	C ¹ _{III}												C ¹ _{IV}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ¹ _{III}												D ¹ _{IV}											
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ¹ _{III}												D ¹ _{IV}											
PIVOT VERTICAL GAP	min 25 max 32	K ¹ _{III}												K ¹ _{IV}											
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J ¹ _{IV} - J ¹ _{IV})	J ¹ _{III}												J ¹ _{IV}											
QTY OF TURNS OF LEVELLING ROD	N/A	X ¹ _{III}												X ¹ _{IV}											
SHIMS OF ANTI-ROLL BAR	N/A	Y ¹ _{III}												Y ¹ _{IV}											

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

GOOD LOWER HIGHER

✓ ↓ ↑

WEIGHT

COMPENSATION

EQUIPMENT

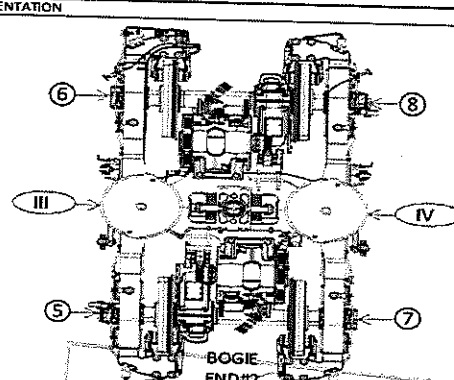
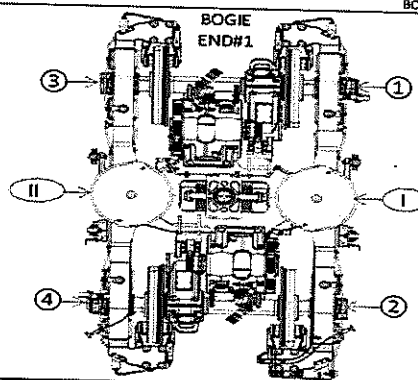
WEIGHT

EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS
(ONLY TC CARS)AUTOMATIC COUPLER
HEIGHT

ANTENNA HEIGHT



CONTROLLED COPY



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Project:
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 ¹ _{II}													
AIR SPRING HEIGHT (FULL)	min 254 max 261	A _{II}													
FLOOR COVERING HEIGHT	min 1096 max 1116	E _{II}													
AIR SPRING PRESSURE	≤ 0.3 (C _I - C _I)	C _{II}													
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₃													
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₄													
PIVOT VERTICAL GAP	min 25 max 32	K _{II}													
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{II} - J _I)	J _{II}													
QTY OF TURNS OF LEVELLING ROD	N/A	X _{II}													
SHIMS OF ANTI-ROLL BAR	N/A	Y _{II}													
DESCRIPTION	TOLERANCE		6	5	4	3	2	1		1	2	3	4	5	6
AIR SPRING HEIGHT (EMPTY)	N/A	A ¹ _{III}													
AIR SPRING HEIGHT (FULL)	min 254 max 261	A _{III}													
FLOOR COVERING HEIGHT	min 1096 max 1116	E _{III}													
AIR SPRING PRESSURE	≤ 0.3 (C _{IV} - C _{III})	C _{III}													
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₅													
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D ₆													
PIVOT VERTICAL GAP	min 25 max 32	K _{III}													
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (J _{IV} - J _{III})	J _{III}													
QTY OF TURNS OF LEVELLING ROD	N/A	X _{III}													
SHIMS OF ANTI-ROLL BAR	N/A	Y _{III}													

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

GOOD LOWER HIGHER

WEIGHT
COMPENSATION

EQUIPMENT

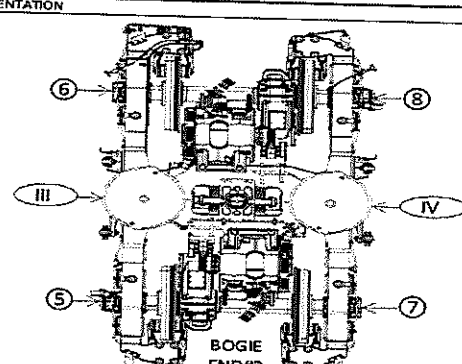
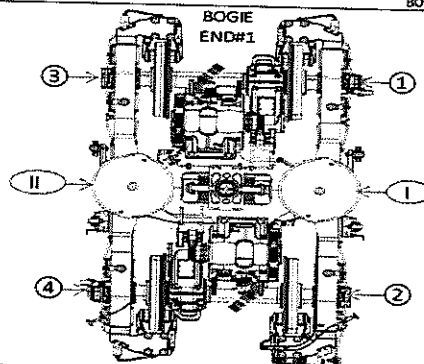
WEIGHT

EQUIPMENT

WEIGHT

SECONDARY MEASUREMENTS
(ONLY TO CARS)AUTOMATIC COUPLER
HEIGHT

ANTENNA HEIGHT



GIBELQ
2022-08-08
CONTROLLED COPY

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

ITEM		THEORETICAL VALUES											
		TCL CAR		M4 CAR		M3 CAR		M2 CAR		M3 CAR		TCL CAR	
		TBext	TBint	MB1	MB2	MB1	MB2	MB2	MB1	MB1	MB1	TBint	TBext
Phot 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}_{-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 AVO [Bar]	Fig. 5	3,76	2,82	2,83	2,91	2,83	2,91	2,83	2,85	2,83	2,87	2,83	3,76
Primary Suspension gaps [mm]	$C_1 - C_4$	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.
	$C_{30} - C_{10}$	35	35	35	35	35	35	35	35	35	35	35	35
	$D_{11} D_2$	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}
	$D_{21} D_2$	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}
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^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}	850^{+10}_{-7}
Coupling End height [mm]	Fig. 8	895	895	760	760	760	760	760	760	760	760	895	895
Pivot Vertical gap [mm]	F_1	760	760	760	760	760	760	760	760	760	760	760	760
	F_2	760	760	760	760	760	760	760	760	760	760	760	760
Pivot Vertical gap [mm]	K_0	30	30	30	30	30	30	30	30	30	30	30	30
	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}



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:
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

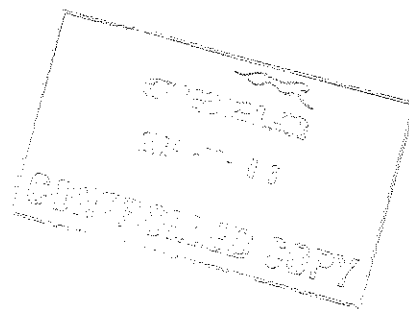
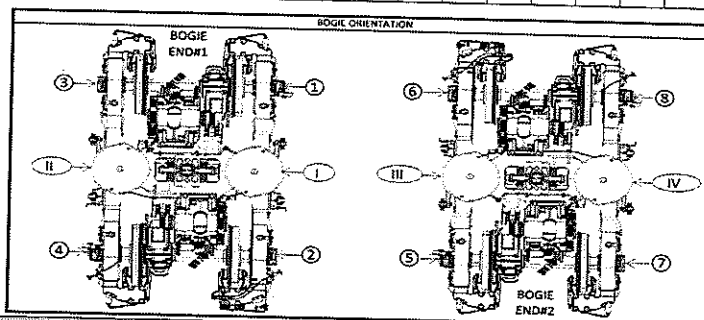
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 240	A'ii 240	A'iii 238	A'iv 240
An	254 to 261	Ai 257	Aii 258	Aiii 257	Aiv 256
Bn = An - A'n	N/A	Bi 17	Bii 18	Biii 19	Biv 16
En	1108 ±10 mm	Ei 1108	Eii 1107	Eiii 1109	Eiv 1112
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2.99	Cii 2.99	Ciii 2.87	Civ 2.75
Cn - Cn+1	Difference ≤ 0,3	Ci - Cii 0		Ciii - Civ 0.12	
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 44.12	D3 45.65	D5 44.22	D6 45.33
		D2 44.34	D4 44.16	D5 44.14	D7 44.19
Kn	25 to 45	Ki 31.72		Kii 31.58	
Jn	Difference ≤ 4	Ji 24.98	Jii 26.36	Jiii 26.23	Jiv 25.68

(*) 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)



Gibela Rail Transport Consortium RF (Pty)
Ltd
2 Shosholoza Avenue
Dunmottar X7
Ekurhuleni, 1590, South Africa
Reception: +27 (0)10 600 0651

TRAIN SET 234	REF: GIB0000001672_JO 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 $\leq 3\%$
		18,66	18,00	1,80%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Criteria MinDiffMax
		36,66	37,06	1,09%	PASS
				Tolerance [%]	1,37%
					PASS

Test Participants			
Name	Company	Department	Date
Abcdo Minsy	GIBELA	EOC	08/07/24