

GIBELQ

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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 25 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	1	PRA.FT1140.05	YES
<input type="checkbox"/>	DTR3-PROCE-17 LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	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
TS234	M3	B. Khomo	09/07/24	SI.FT1140.52	01/08



# SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Proj:  
PRASA

SI.FT1140.52

Car:

NCR:

Work Station

FT1140



Safety Related

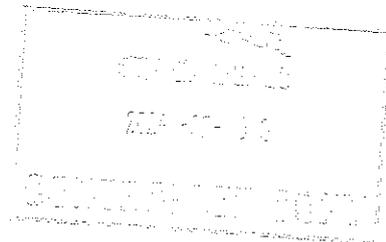
## I - Document and Instrument Control

### L1 - Documents control

Document	TC1	MI	SC	ND	SA	TC2	Relation	Remark	OK	NO	Signature/Date
PRA.FT1140.04											
PRA.FT1140.05				✓					✓		<i>[Signature]</i> 07/07/24
PRA.FT1140.05											

### L2 - Instruments Control - Monitoring and Measuring Instrument Control (Used for all Instrument with calibration needed)

Instruments description	Serial number	Calibration or Verification Validation Date	OK	NO	Signature/Date
Measuring tape	UMRTA	26/09/23 - 26/09/24	✓		
Vernier Calliper	UMRUR	06/08/23 - 06/08/24	✓		
Torque wrench 320NM	A9690019	19/01/23 - 19/01/24	✓		<i>[Signature]</i> 07/07/24
Torque wrench 150NM	B7217566	21/01/23 - 21/01/24	✓		
Torque wrench 55NM	D2511023	21/01/23 - 21/01/24	✓		





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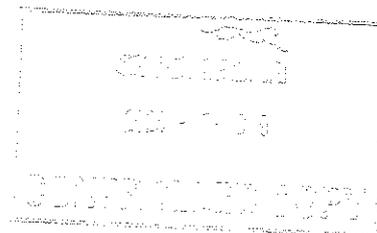
Projet:  
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## II - Self Inspection - Items to Check

### 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		✓	 09/07/24								
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): 0.9 bar Final pressure (FP): 0.72 bar FP - IP = 0.2 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0.2 bar	✓	 09/07/24								
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓	 09/07/24								
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 19/12/2023	✓	 09/07/24								
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 border="1"> <thead> <tr> <th>EQUIPMENT DESCRIPTION</th> <th>WEIGHT (kg)</th> </tr> </thead> <tbody> <tr> <td>Langway</td> <td>360</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	Langway	360					✓	 09/07/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)												
Langway	360												
06		The pressure difference between air spring on each bogie when raise the pressure was maintained < 0.3 bar.		✓	 09/07/24								
07		Measurement recorded with empty suspension and loaded are on conformity with tolerances of the project.		✓	 09/07/24								
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")		✓	 09/07/24								





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Item	Picture/Sketch	Description	Criteria/Record	OK	Signature/Date
09		Check that the levelling rods are torqued and have torque marker.		✓	<i>[Signature]</i> 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).		✓	<i>[Signature]</i> 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 $\leq 4\%$ .		✓	<i>[Signature]</i> 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	✓	<i>[Signature]</i> 09/07/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓	<i>[Signature]</i> 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. -Room 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	✓	<i>[Signature]</i> 09/07/24



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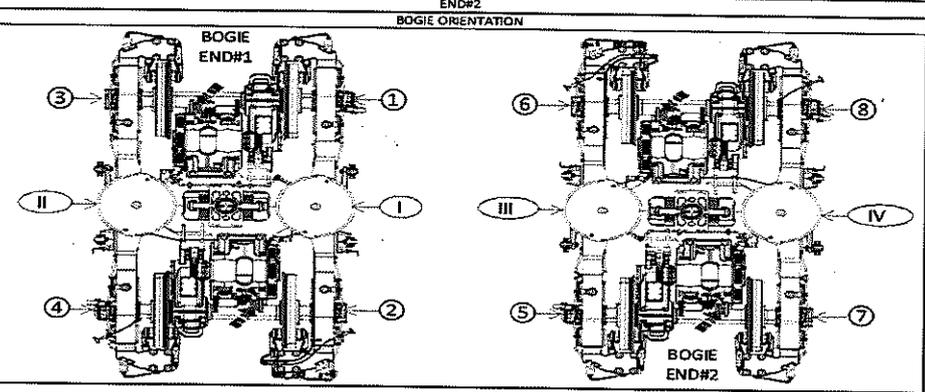
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## DRAFT TO MEASUREMENTS DURING LEVELLING (ALL UNITS MUST BE IN mm/bar/kg)

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	/	/	259	256	251	252	257	258	/	/	/	A'i
FLOOR COVERING HEIGHT	min 1096 max 1116	E'ii	/	/	1114	1111	1109	1100	1114	1115	/	/	/	E'i
AIR SPRING PRESSURE	≤ 0.3 (Cii - Ci)	C'ii	/	/	2.74	2.69	2.75	2.64	2.80	2.74	/	/	/	C'i
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D3	/	/	/	/	/	/	/	/	/	/	/	D1
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D4	/	/	/	/	/	/	/	/	/	/	/	D2
PIVOT VERTICAL GAP	min 25 max 32	K'ii	/	/	/	/	/	/	/	/	/	/	/	K'i
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Ji - Ji')	J'ii	/	/	/	/	3.75	/	/	/	/	/	/	J'i
QTY OF TURNS OF LEVELLING ROD	N/A	X'ii	/	/	/	/	1/2	1/2	/	/	/	/	/	X'i
SHIMS OF ANTI-ROLL BAR	N/A	Y'ii	/	/	/	/	/	/	/	/	/	/	/	Y'i
AIR SPRING HEIGHT (EMPTY)	N/A	A'iii	/	/	/	/	/	/	/	/	/	/	/	A'iv
AIR SPRING HEIGHT (FULL)	min 254 max 261	A'iii	/	/	256	257	253	257	258	257	/	/	/	A'iv
FLOOR COVERING HEIGHT	min 1096 max 1116	E'iii	/	/	1105	1106	1103	1108	1109	1108	/	/	/	E'iv
AIR SPRING PRESSURE	≤ 0.3 (Civ - Cii)	C'iii	/	/	2.74	2.82	2.67	2.77	2.69	2.77	/	/	/	C'iv
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D5	/	/	/	/	/	/	/	/	/	/	/	D7
PRIMARY SUSPENSION	SEE TABLE (ONLY REF)	D6	/	/	/	/	/	/	/	/	/	/	/	D8
PIVOT VERTICAL GAP	min 25 max 32	K'iii	/	/	/	/	/	/	/	/	/	/	/	K'iv
PIVOT LATERAL STOP GAPS DIFFERENCE	≤ 4 (Jiv - Ji')	J'iii	/	/	/	/	/	/	/	/	/	/	/	J'iv
QTY OF TURNS OF LEVELLING ROD	N/A	X'iii	/	/	/	/	1/2	3/4	/	/	/	/	/	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		
WGHT		
EQUIPMENT		
WGHT		
SECONDARY MEASUREMENTS (ONLY TC CARS)		
AUTOMATIC COUPLER HEIGHT		
ANTENNA HEIGHT		





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

ITEM	THEORETICAL VALUES											
	TC1 CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		TC2 CAR	
	TBext	TBint	MB1	MB2	MB1	MB2	MB1	MB2	MB1	MB2	TBext	TBint
Pivot lateral stop gaps difference [mm]	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
Air Spring height [mm]	Fig. 4	255 <sup>+6</sup> <sub>-1</sub>										
	Fig. 5	3,76	2,82	2,83	2,87	2,88	2,83	2,83	2,85	2,83	2,83	2,83
Air spring pressure at AWD [bar]	Fig. 5	0,3 Méc.										
	C <sub>1</sub> (x10)	3,02	2,91	3,07	2,91	3,07	2,85	2,83	2,85	2,83	2,83	2,83
	C <sub>1</sub> -C <sub>2</sub>	(Ref.)										
	C <sub>3</sub> -C <sub>4</sub>	(Ref.)										
Primary Suspension gaps [mm]	Fig. 6	35 <sup>+12</sup> <sub>-3</sub>										
	D <sub>1</sub> : D <sub>2</sub>	35 <sup>+12</sup> <sub>-3</sub>										
	D <sub>3</sub> : D <sub>4</sub>	35 <sup>+12</sup> <sub>-3</sub>										
	D <sub>5</sub> : D <sub>6</sub>	35 <sup>+12</sup> <sub>-3</sub>										
Carbody Floor height [mm]	Fig. 7	1106 <sup>+10</sup> <sub>-10</sub>										
	Fig. 8	850 <sup>+3</sup> <sub>-7</sub>										
Bolster height [mm]	Fig. 7	895 (Ref.)	760 (Ref.)	895 (Ref.)	760 (Ref.)							
	Fig. 9	760 (Ref.)										
Coupling End height [mm]	Fig. 8	30 <sup>+15</sup> <sub>-5</sub>										
	Fig. 9	30 <sup>+15</sup> <sub>-5</sub>										
Pivot Vertical gap [mm]	Fig. 10	30 <sup>+15</sup> <sub>-5</sub>										
	Fig. 10	30 <sup>+15</sup> <sub>-5</sub>										



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Leveling report from Production (Final measurements after Leveling and Weighing fine)

References for secondary suspension empty  
A'n Air spring height empty

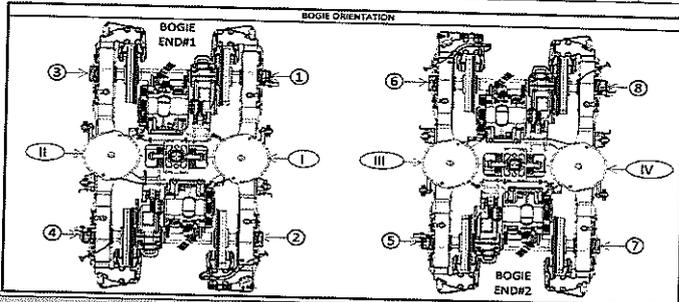
References for secondary suspension full  
An Air spring height  
Bn Difference between measurement A'n and An  
En Floor covering height  
Cn Air spring pressure  
Dn Primary suspension  
Kn Pivot Vertical gap  
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1				END#2			
		Right Side		Left Side		Left Side		Right Side	
A'n	N/A	A'i	244	A'v	244	A'ii	243	A'iv	245
An	254 to 261	Au	258	Aii	259	Aui	256	Auv	257
Bn = An - A'n	N/A	Bi	14	Bii	15	Bui	13	Buv	12
En	1106 ±10 mm	Ei	1115	Eii	1114	Eui	1105	Euv	1108
Item	Reference [bar]	END#1				END#2			
Cn	Table 02 (*)	Ci	2.74	Cii	2.77	Cui	2.74	Cuv	2.77
Cn - Cn	Diference ± 0,3	Ci - Cii	0,03		Cui - Cuv	0,03			
Gauge serial number	N/A	91805873		91805873		91805873		91805873	
Item	Reference [mm]	END#1				END#2			
Dn	Table 01 (*)	Right Side		Left Side		Left Side		Right Side	
		D1	43.97	D2	44.79	D3	43.85	D4	44.39
Kn	25 to 45	32.88		43.38		45.03		43.47	
		Ki	32.88		43.38		45.03		43.47
Jn=J1-J2+1	Diference ± 4	Ji	28.61	Jii	28.05	Jui	26.38	Juv	24.79

(\*) 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=	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$	$95^{+12}_{-5}$

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 Leveling and Weighing fine)





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TRAIN SET 234 REF: GIB000001672\_J0 PRASA WEIGHT BALANCE EN  
 PC03 WEIGHING REPORT

M3	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ±3%
		17.74	17.74	0.00%	PASS
	Weight Measured vs Predicted	Weight Measured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Criteria Min/Diff/Max
		35.48	35.90	1.17%	1.36% PASS

Name	Company	Department	Signature	Date
<i>F. v. S.</i>	GIBELA	EOC	<i>[Signature]</i>	<i>2016/10/10</i>