

GIBELQ

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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	✓		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
TS234	M3	P. Komo	09/07/24	SI.FT1140.52	01/08



SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:

5/31/2022

Projet:
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SI.FT1140.52

Car:

NCR:

Work Station

FT1140



Safety Related

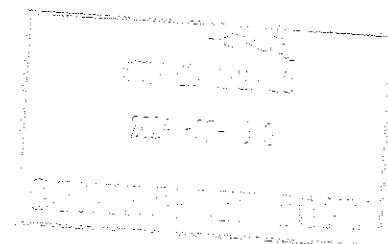
I - Document and Instrument Control

I.1 - Documents control

Document	TC1	M1	M2	M3	M4	TC2	Revised	Remark	OK	Signature/Date
PRA.FT1140.04										
PRA.FT1140.05				✓					✓	
PRA.FT1140.05									✓	<i>[Signature]</i> 07/07/24

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	CURTA	26/10/23 - 26/10/24	✓	
Vernier Calliper	U1R0R	06/08/23 - 06/08/24	✓	
Torque wrench 320NM	A9690019	19/11/23 - 19/11/24	✓	
Torque wrench 150NM	B7217566	21/11/23 - 21/11/24	✓	
Torque wrench 55NM	D2511023	21/11/23 - 21/11/24	✓	





SELF INSPECTION INDUSTRIAL QUALITY

Rev:09

Date:
















5/31/2022

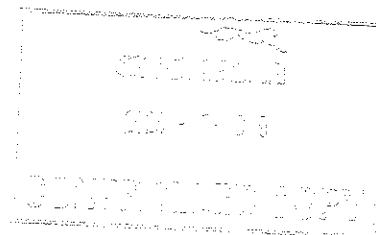
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II - Self Inspection - Items to Check

II.1 - 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		✓		 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): 9.9 bar Final pressure (FP): 9.82 bar FP - IP = 0.08 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><thead><tr><th>EQUIPMENT DESCRIPTION</th><th>WEIGHT (kg)</th></tr></thead><tbody><tr><td>Lang woy</td><td>360</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table>	EQUIPMENT DESCRIPTION	WEIGHT (kg)	Lang woy	360					✓		 09/07/24
EQUIPMENT DESCRIPTION	WEIGHT (kg)													
Lang woy	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								



SELF INSPECTION INDUSTRIAL QUALITY


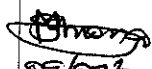
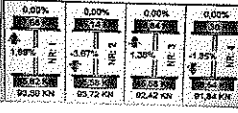

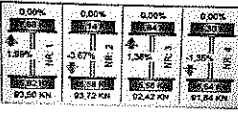

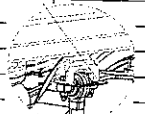
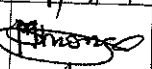
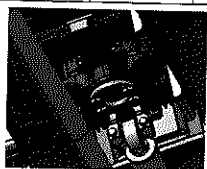

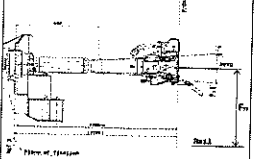
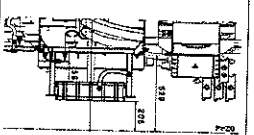
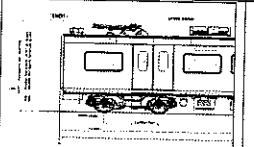
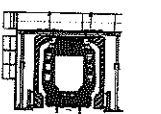
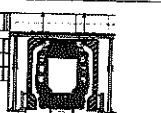

Rev:09

Date:

5/31/2022

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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.		✓	 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).		✓	 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 $\leq 4\%$.		✓	 09/07/24
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I 0 II 0 III 0 IV 0	✓	 09/07/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓	 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	✓	 09/07/24



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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 (C ^{II} - C ^I)	C ^{II}				2.74	2.69	2.75	2.64	2.80	2.74			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 ^{II} - J ^I)	J ^{II}						2.75						J ^I
QTY OF TURNS OF LEVELLING ROD	N/A	X ^{II}						169						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}				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 (C ^{IV} - C ^{III})	C ^{III}				2.74	2.82	2.67	2.77	2.69	2.77			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}						169						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		

BOGIE END#1

BOGIE END#2

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

ITEM		THEORETICAL VALUES											
		TC1 CAR		MAC 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]	Fig. 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4
Air Spring height [mm]	Fig. 5	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}	255^{+6}_{-1}
Air spring pressure at AWD [Bar]	Fig. 5	3,76	2,82	2,83	2,91	3,02	2,91	2,85	3,07	2,83	2,87	2,83	3,76
Primary Suspension gaps [mm]	Fig. 6	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}
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^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}	850^{+3}_{-7}
Coupling End height [mm]	Fig. 8	895	895	760	760	760	760	760	760	760	760	895	895
Pivot 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}

Leveling report from Production (Final measurements after Levelling and Weighting fine)

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

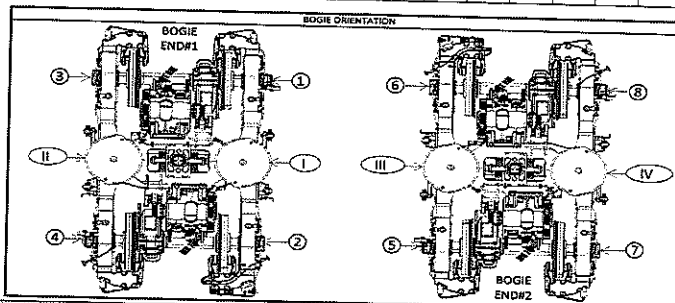
References for secondary suspension full
An Air spring height
Bn Difference between measurement A'n and An
En Floor covering height
Cn Air spring pressure
Dn Primary suspension
Kn Pivot Vertical gap
Jn Pivot Lateral stop gaps difference

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
A'n	N/A	A'i 244	A'v 244	A'ii 243	A'iv 245
An	254 to 261	Au 258	Av 259	Aui 256	Aui 257
Bn = An - A'n	N/A	Bi 14	Bv 15	Bii 13	Biv 12
En	1106 ±10 mm	Ei 1115	Ei 1114	Eii 1105	Eiv 1108
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	Ci 2.74	Cv 2.77	Cii 2.74	Civ 2.77
Cn - Cn	Difference ≤ 0,3	Ci - Cv 0,03		Cii - Civ 0,03	
Gauge serial number	N/A	91B05873	91B05873	91B05873	91B05873
Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 43.97	D2 44.79	D3 43.85	D4 44.39
Kn	25 to 45	K1 45.86	K2 43.38	K3 45.03	K4 43.47
Jn = J1-J2+1	Difference ≤ 4	J1 32.88		J2 34.83	
		Ji 28.61	Jv 25.05	Jii 26.38	Jiv 24.79

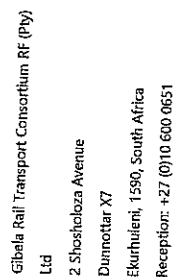
(*) Reference, only include values, isn't approval criteria.

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



REF: GIB0000001672_J0 PRASA WEIGHT BALANCE EN
PC09 WEIGHING REPORT

Name	Company	Department	Signature	Date
F/n/c	GIBELA	EOC	[Signature]	06/07/2020