GIBELA

PRASA PROJECT

SELF INSPECTION SHEET

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		X	1	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	1	PRA.FT1140.05	YES
☐ DTR3-PROCE-17	LEVELLING, WEIGHTING AND BALANCING TC CAR	FT1140	1	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
TS 230	M4	Pule	14/06/24	**SI.FT1140.52**	01/08

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SELF INSPECTION INDUSTRIAL QUALITY

Rev:09	Projet: PRASA	SI.FT1140.52
Date: 5/31/2022		

Car: | NCR: | Work Station: FT1140

Safety Related

I - Document and Instrument Control

I.1 - Documents control

Document	TC1	M1	M2	M3	M4	TC2	Revision	Remark	OK	NOK	Signature/Date
PRA.FT1140.04											
PRA.FT1140.05					K				✓		
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	NOK	Signature/Date
Measuring Gauge	GIBTA 0276	26/10/23-26/10/24	✓		
Vernier Calliper	GIBVR 0056	27/02/24-27/02/24	✓		
Torque Wrench 35N.m	D2511023	19/12/23-19/12/24	✓		
Torque Wrench 150N.m	D28622009	19/12/23-19/12/24	✓		
Torque Wrench 320N.m	A9650027	21/12/23-21/12/24	✓		

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II - Self Inspection - Items to Check

IL1 - Items to Check

Item	Picture/Sketch	Description	Criteria/Record	OK	NOK	Remarks	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		✓			14/06/24
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): 11,07 bar Final pressure (FP): 10,94 bar FP - IP = 0,13 bar APPROVAL CRITERIA: After 5 minutes the pressure cannot drops more than 0,2 bar	✓			14/06/24
03		Movement performed at least 50m to shudder the car. And position on the leveled load cell, with wheels on the center.		✓			14/06/24
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	✓			14/06/24
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)	EQUIPMENT DESCRIPTION / WEIGHT (kg) CAMGWAY 360	✓			14/06/24
06		The pressure difference between air spring on each bogie when raise the pressure was maintened < 0.3 bar.		✓			14/06/24
07		Measuremet recorded with empty suspention and loaded are on conformity with tolerances of the project.		✓			
08		All levelling measurements are according to the reference. (Values out of reference must be recorded on "Description of defects")			✓		14/06/24

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SELF INSPECTION INDUSTRIAL QUALITY

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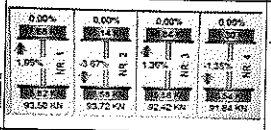
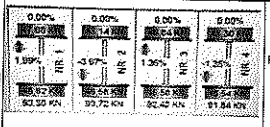
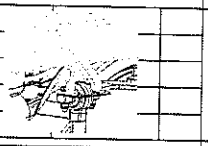
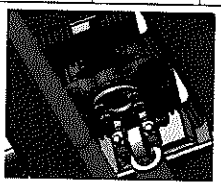
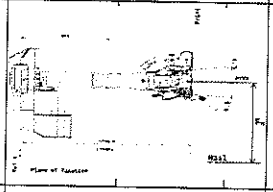
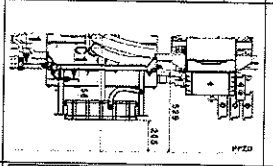
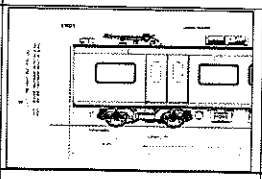
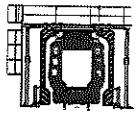
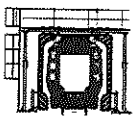
Item	Picture/Sketch	Description	Criteria/Record	OK	NOK	N/A	Signature/Date
09		Check that the levelling rods are torqued and have torque marker.		✓			14/06/24
10		The difference of weight between the left and right wheels of each axis, must be ≤ 4%. (Verify on the T&C equipment if all arrows are in green).		✓			14/06/24
11		Remove the car, move back onto the load cells and repeat the step 09. Confirm if both are in the tolerance of ≤ 4%.		✓			14/06/24
12		1 - Record shims thickness used on rod. 2 - All screws were torqued and have torque marker.	THICKNESS (mm) I 00 II 00 III 00 IV 00	✓			14/06/24
13		Pivot fixation	1- M20 x 90 screws with application of torque according to PRA.FT1140.04 / 05	✓			14/06/24
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	✓			14/06/24

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

END#1

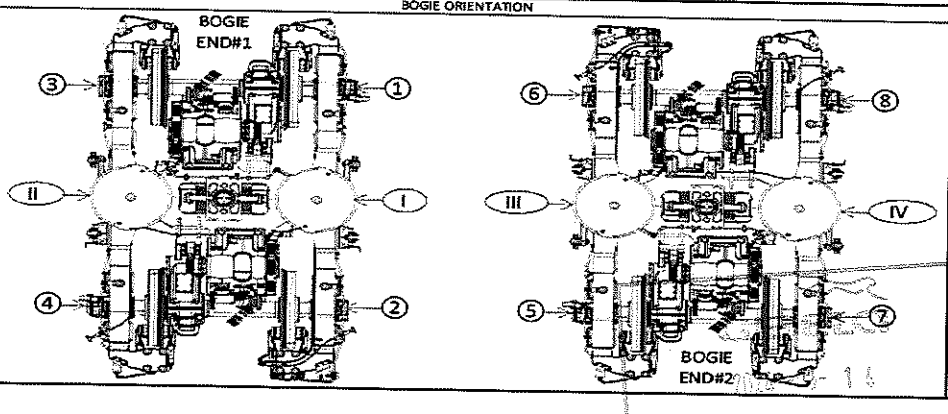
DESCRIPTION	TOLERANCE		LEFT SIDE 6	5	4	3	2	1	RIGHT SIDE 1	2	3	4	5	6	
AIR SPRING HEIGHT (EMPTY)	N/A	A`II													A`I
AIR SPRING HEIGHT (FULL)	min 254 max 261	AII						257	259						AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII						1114	1108						EI
AIR SPRING PRESSURE	≤ 0,3 (CI - CI)	CII						2,88	2,78						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													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						257	260						AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII						1107	1104						EIV
AIR SPRING PRESSURE	≤ 0,3 (CV - CIII)	CIII						2,77	2,87						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 (JV - JII)	JIII													JIV
QTY OF TURNS OF LEVELLING ROD	N/A	XIII													XIV
SHIMS OF ANTI-ROLL BAR	N/A	YIII													YIV

LEFT SIDE — END#2 — RIGHT SIDE

COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW		
GOOD	LOWER	HIGHER
✓	↓	↑

WEIGHT COMPENSATION	
EQUIPMENT	
WEIGHT	
EQUIPMENT	
WEIGHT	
SECUNDARY MEASUREMENTS (ONLY TC CARS)	
AUTOMATIC COUPLER HEIGHT	
ANTENNA HEIGHT	

BOGIE ORIENTATION



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

END#1

DESCRIPTION	TOLERANCE	LEFT SIDE 6	5	4	3	2	1	RIGHT SIDE 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											AI
FLOOR COVERING HEIGHT	min 1096 max 1116	EII											EI
AIR SPRING PRESSURE	≤ 0.3 (CI - CI)	CII											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											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											AIV
FLOOR COVERING HEIGHT	min 1096 max 1116	EIII											EIV
AIR SPRING PRESSURE	≤ 0.3 (CV - CIII)	CIII											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 - JIII)	JIII											JIV
QTY OF TURNS OF LEVELLING ROD	N/A	XIII											XIV
SHIMS OF ANTI-ROLL BAR	N/A	YIII											YIV

LEFT SIDE — END#2 — RIGHT SIDE

COMPARE EACH TENTATIVE WITH THE TOLERANCE AND IDENTIFY EACH MEASURE AS BELOW		
GOOD	LOWER	HIGHER
✓	↓	↑

WEIGHT COMPENSATION	
EQUIPMENT	
WEIGHT	
EQUIPMENT	
WEIGHT	
SECUNDARY MEASUREMENTS (ONLY TC CARS)	
AUTOMATIC COUPLER HEIGHT	
ANTENNA HEIGHT	

BOGIE ORIENTATION

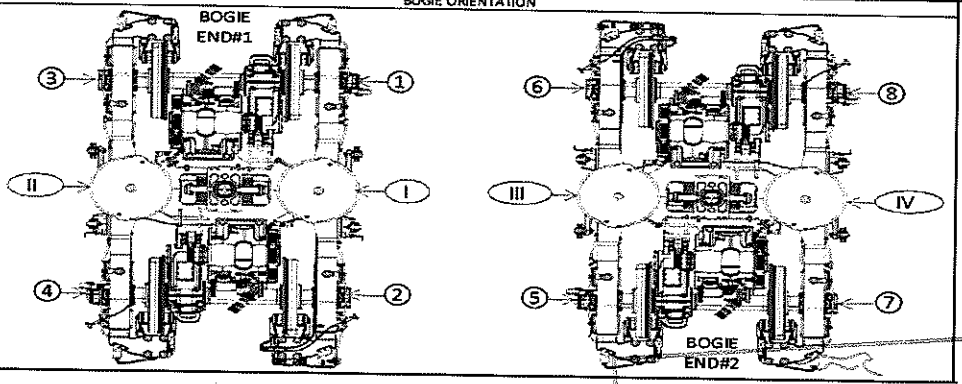

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Table 1 - Reference Values and Measurement Tolerances for the Car Levelling.

ITEM			THEORETICAL VALUES											
			TC1 CAR		M4 CAR		M1 CAR		M2 CAR		M3 CAR		TC2 CAR	
			TBext	TBint	MB1	MB1	MB1	MB2	MB2	MB1	MB1	MB1	TBint	TBext
Pivot lateral stop gaps difference (mm)	Jn-Jn+1 (I à IV)	Fig. 4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4	≤4
Air Spring height (mm)	A_n (I à IV)	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 AW0 (Bar)	C_n (I à IV)	Fig. 5	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.)	3,76 (Ref.)
	$C_I - C_{II}$ $C_{III} - C_{IV}$		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)	D_1; D_5 D_2; D_6 D_3; D_7 D_4; D_8	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)	E_n (I à IV)	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)	N_n (I à IV)	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)	F_1	Fig. 8	895 (Ref.)		760 (Ref.)		760 (Ref.)		760 (Ref.)		760 (Ref.)		895 (Ref.)	
	F_2	Fig. 9	760 (Ref.)		760 (Ref.)		760 (Ref.)		760 (Ref.)		760 (Ref.)		760 (Ref.)	
Pivot Vertical gap (mm)	K_n	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}

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

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

References for secondary suspention full
An Air spring height
Bn Difference between measurement A'n and An
En Floor covering height
Cn Air spring pressure
Dn Primary suspention
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 247	A'II 246	A'III 244	A'IV 245
An	254 to 261	AI 255	AII 258	AIII 260	AIV 256
Bn = An - A'n	N/A	BI 8	BII 12	BIII 16	BIV 11
En	1106 ±10 mm	EI 1105	EII 1114	EIII 1107	EIV 1104

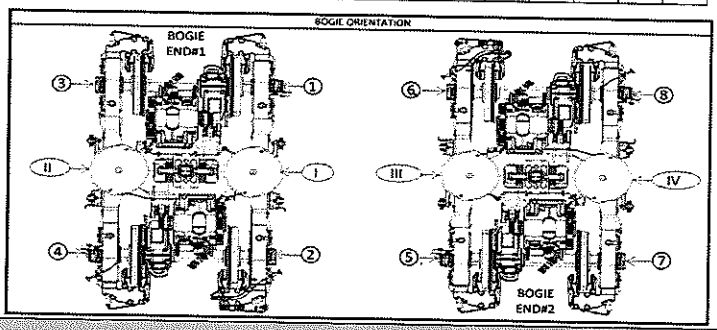
Item	Reference [bar]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Cn	Table 02 (*)	CI 2,855	CII 2,722	CIII 2,804	CIV 2,743
Cn - Cn+1	Diference ≤ 0,3	CI - CII 0,133		CIII - CIV 0,061	
Gauge serial number	N/A	GIB05873	GIB05873	GIB05873	GIB05873

Item	Reference [mm]	END#1		END#2	
		Right Side	Left Side	Left Side	Right Side
Dn	Table 01 (*)	D1 44,90	D3 47,0	D5 45,03	D8 47,21
		D2 46,50	D4 46,14	D6 47,10	D7 47,12
Kn	25 to 45	KI 36,8		KII 37,0	
Jn	Diference ≤ 4	JI 24,92	JII 26,90	JIII 25,71	JIV 24,99

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

Table 01 D Theorethical 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 Theorethical 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)

Validated by Lucy

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SELF INSPECTION INDUSTRIAL QUALITY

Rev:09	Projet: PRASA	SI.FT1140.52
Date: 5/31/2022		

Item	Description of defects			Signature/Date
1.	Dn Values out of Specifications	✓		

II.2 - Check List REX

Check List items

Item	Picture/Drawing	Descriptio Question	Criteria /Record	GO			Signature/Date
01	N/A	To complete REX	Refer to REX. New defects must be added on the REX	✓			14/06/24

Self Inspection - Final Result

	Is the car good to advance to the next workstation/process? (Approval of Operations Manager/Team Leader and Industrial Quality)			DATE	NAME	SIGNATURE
HOLD POINT		GO	If activities are not complete, the missing activities must not impact the next stage!	14/06/2024	Operations Manager	
			Every auto inspection performed conforms to specification or in case of discrepancy the same is approved by the competent party.	14/06/24	Industrial Quality	
			There are activities pendings that impact/stop the activities of the next process Obs: (To describe problems below)	14/06/2024	Operations Manager	
			There are non-conformities impact the quality of the product and there is no corrective action defined yet)	14/06/24	Industrial Quality	

In case of "NO GO", describe blocking problems

In case of "NO GO", the operations manager must define below action plan to ensure "GO":

Item	Description	Action	Responsible		Status
1.	Dn Values out of Specifications	Desogation to apply	PME		closed

Operations Manager / Team Leader

Quality Manager / Team Leader

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2 Shosholoza Avenue
Dunnottar X7
Ekurhuleni, 1590, South Africa
Reception: +27 (0)10 600 0651

TRAIN SET 230	
	PC09 WEIGHING REPORT

M4	Balance across front and rear bogies	Front Bogie [Tons]	Rear Bogie [Tons]	Longitudinal Imbalance [%]	Criteria Longitudinal Imbalance ≤ 3%	
		17.85	17.92	0.08%	PASS	
	Weight Mesured vs Predicted	Weight Mesured [Tons]	Weight Predicted [Tons]	Weight Difference [%]	Tolerance [%]	Criteria Min≤Diff≤Max
		35.73	35.95	0.61%	1.36%	PASS

Test Participants				
Name	Company	Department	Signature	Date
[illegible]	Gibela	EOC	[signature]	19/06/2024

ALSTOM

DEROGATION REQUEST

Company	Name of the requester	Function	Date	Visa	Request N°
GIBELA	Joshua NEMANASHE	PME	12 February 2024		PRASA-DERSU-1006 extension
Plant	Dunnottar 0302		Plant Country	South Africa	
Project	PRASA		Customer	PRASA	
Product name Reference			Drawing number and Revision		
Temporary ☒ From TS200	Quantity: 30 Trainsets	Serial numbers / Batch: TS201: Bogie end#1 and Bogie end#2 to TS230: Bogie end#1 and Bogie end#2		Permanent ☐	

Requirement:
The specification for Dn values of primary suspension requires the value for all cars to be Dn=35+/- (12/5)

Non-conformity description:
Several cars are found to have primary suspension gap which is out of specification. The cars are out of specification on the upper limit with Dn values ranging between 0.1 mm to 2 mm above the maximum Tolerance.

Cause of the non-conformity / reasons for request:
1. Reason for request: Primary Suspension gaps are measured after weighing and levelling. The are currently no means of adjusting these gaps at Gibela.
2. Cause of the non-conformity: To be Confirmed - Target date: 30/04/2024

Attached documents:
See self-inspection database from IQ

Anteriority:

Impact on:

Environment	☐
Safety (people)	☐
Contract clauses	☐
Economic Development.	☐
Product	☐
Safety	☒
Reliability	☐
Performances	☒
Delivery	☒
Cost	☐
Documentation	☐
Resources	☐
Others	☐

Containment action:
Evaluate and if no risk approve derogation.
Get Wolmerton to do measurement after the primary suspensions. have settled.
Allow cars found to be out of tolerance with Dn value of 49 mm and less. to be covered by this derogation.

Use or assignment limitations of the non-conforming product:

Corrective & Preventive action:
TBD

Function	Entity	Name	Date	Visa	Observations / Conditions	Decision
PME Manager	GIB	Junior MAGADA	22 February 2024	JFK		☑ OK ☐ NOK
Train System Engineering	GIB	Mmakwena RAMATSHELA	22/02/2024	Ramatshela		☑ OK ☐ NOK
Project Engineering Manager	GIB	Tshepo NKODI	22/02/24			☒ OK ☐ NOK
Quality Manager	GIB	Lucy MAKOFANE	22/02/2024			☑ OK ☐ NOK
Project Quality Manager	GIB	Malibongwe SOLANI	23/02/2024	R.M.C pp. Reitumetse Mphuthi		☒ OK ☐ NOK
Project Warranty Manager	GIB	Noko MABUTLA	13/03/2024			☑ OK ☐ NOK
Project Manager	GIB	Devendran GOVENDER	13/03/2024		50km/h speed restriction when operating with defalted suspension. Dn settling to be checked at the depot. long term solution to be defined by Engeinnering	☒ OK ☐ NOK