



DTR30223319/2 Carshell Assembly TC

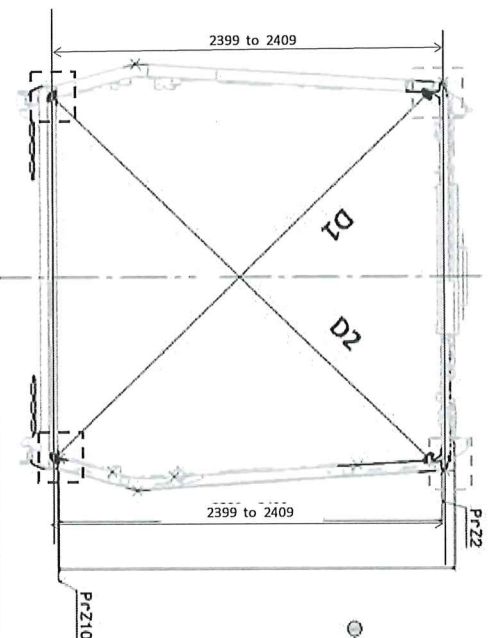
Rev.
29

Project: PRASA

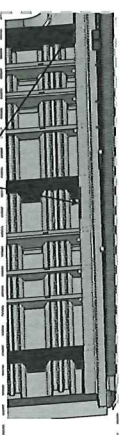
Date-

28/10/2023

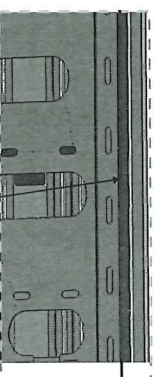
SI.CB1220.323.V29



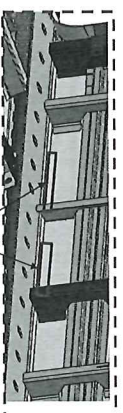
Take measurement close to radius



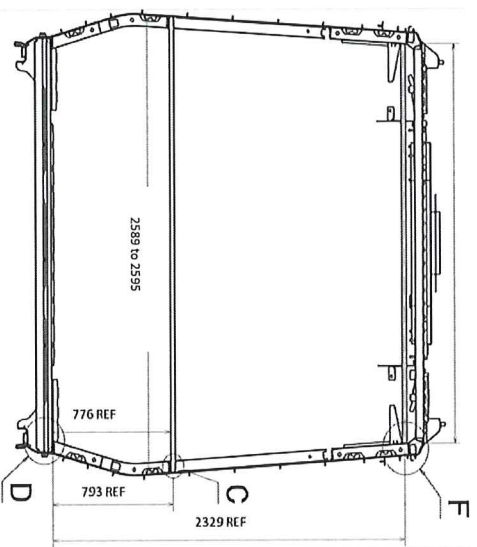
Measurement positions on roof rail and sidewall omega corner.



Reinforcement area measurement positions on roof reinforcement area.



Measurement positions on sidewall and side sill corner.



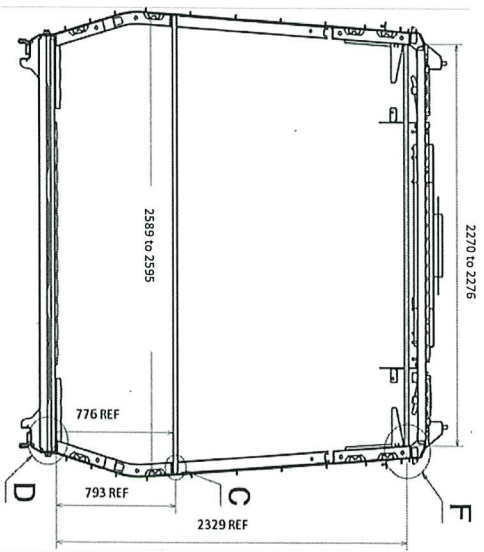
Take measurement close to radius



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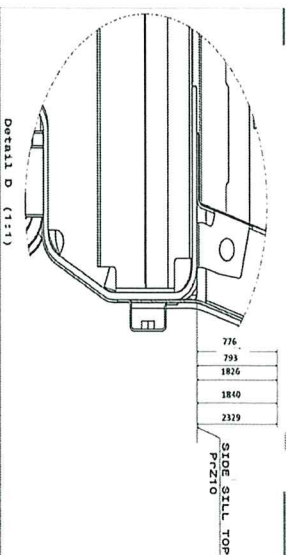
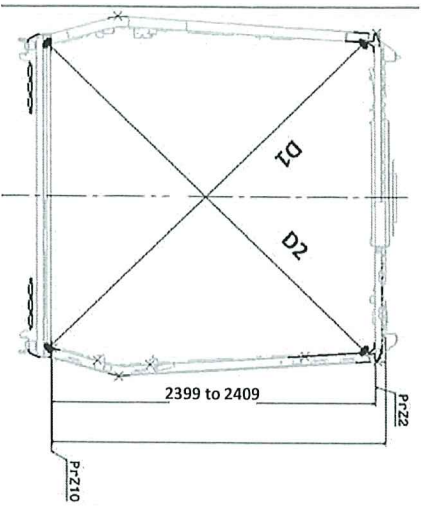
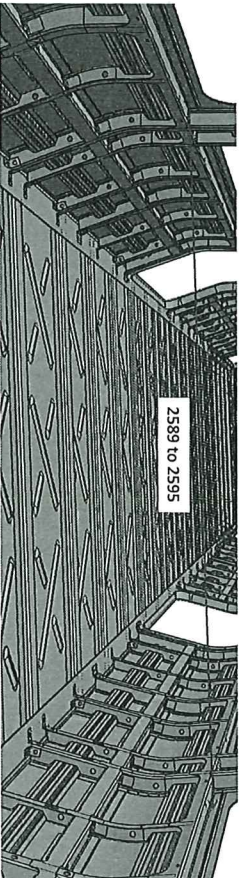
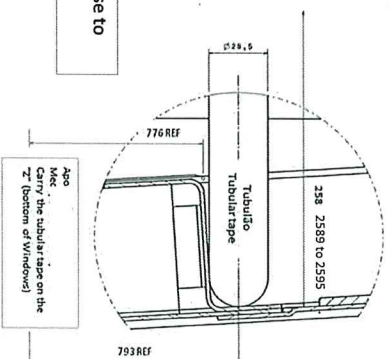
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Take measurement close to radius

Detail C





DTR3023319/2 Carshell Assembly TC

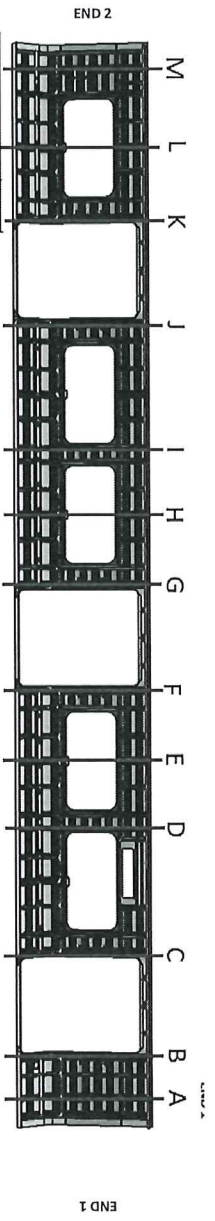
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Date-

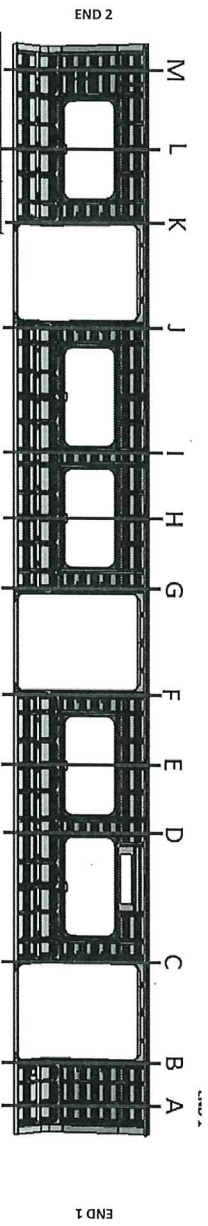
28/10/2023

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BEFORE WELDING

	Record D1 values	Record D2 values	D1-D2 ≤ 5mm	2589 to 2595
A	3291	3295	2	-
B	3295	3290	5	-
C	3295	3295	0	-
D	3261	3268	1	-
E	3265	3267	2	-
F	3298	3298	0	-
G	3297	3300	3	-
H	3265	3267	2	-
I	3267	3268	1	-
J	3298	3298	0	-
K	3299	3299	0	-
L	3265	3267	2	-
M	3296	3298	2	-



AFTER WELDING

	Record D1 values	Record D2 values	D1-D2 ≤ 5mm	2589 to 2595
A	3296	3296	0	2595
B	3296	3296	0	3590
C	3294	3295	3	2592
D	3270	3270	0	2595
E	3267	3265	2	2594
F	3214	3300	2	2514
G	3298	3302	4	2595
H	3270	3265	5	2595
I	3270	3270	0	2595
J	3302	3302	0	2592
K	3294	3302	4	2594
L	3267	3267	0	2595
M	3297	3298	1	2595

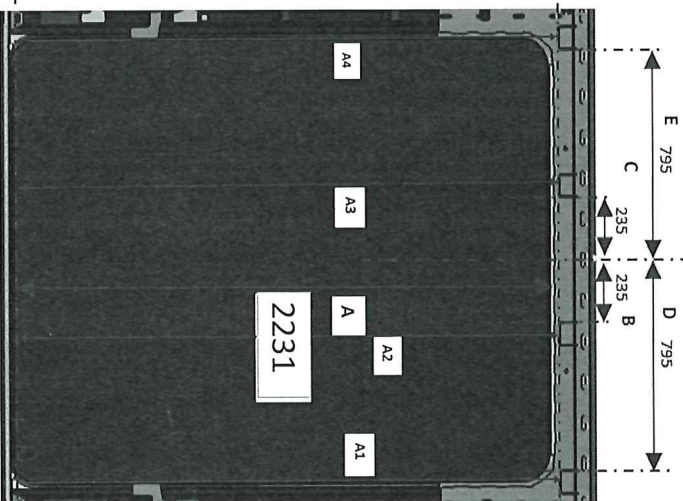


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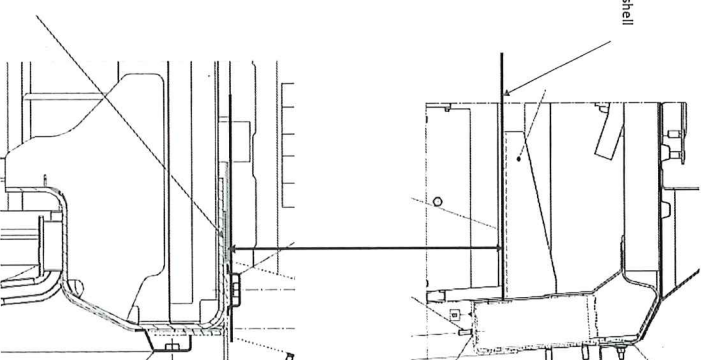
Project: PRASA
SI,CB1220.323.V29

Specifications of Details for CBS measurement



Brackets Carbody/shell
U Type Supports

Brackets Carbody/shell
Channel Assy



DOOR 1 - LHS

VALUE	ACTUAL
A1 2230 to 2232	2232
A2 2230 to 2232	2232
A3 2230 to 2232	2232
A4 2230 to 2232	2232
B 234 to 236	235
C 234 to 236	235
D 794 to 796	795
E 794 to 796	795

DOOR 2 - LHS

VALUE	ACTUAL
A1 2230 to 2232	2230
A2 2230 to 2232	2230
A3 2230 to 2232	2230
A4 2230 to 2232	2230
B 234 to 236	235
C 234 to 236	235
D 794 to 796	795
E 794 to 796	795

DOOR 3 - LHS

VALUE	ACTUAL
A1 2230 to 2232	2231
A2 2230 to 2232	2231
A3 2230 to 2232	2231
A4 2230 to 2232	2231
B 234 to 236	235
C 234 to 236	235
D 794 to 796	795
E 794 to 796	795

DOOR 1 - RHS

VALUE	ACTUAL
A1 2230 to 2232	2234
A2 2230 to 2232	2234
A3 2230 to 2232	2234
A4 2230 to 2232	2234
B 234 to 236	235
C 234 to 236	235
D 794 to 796	795
E 794 to 796	795

DOOR 2 - RHS

VALUE	ACTUAL
A1 2230 to 2232	2232
A2 2230 to 2232	2232
A3 2230 to 2232	2232
A4 2230 to 2232	2232
B 234 to 236	235
C 234 to 236	235
D 794 to 796	795
E 794 to 796	795

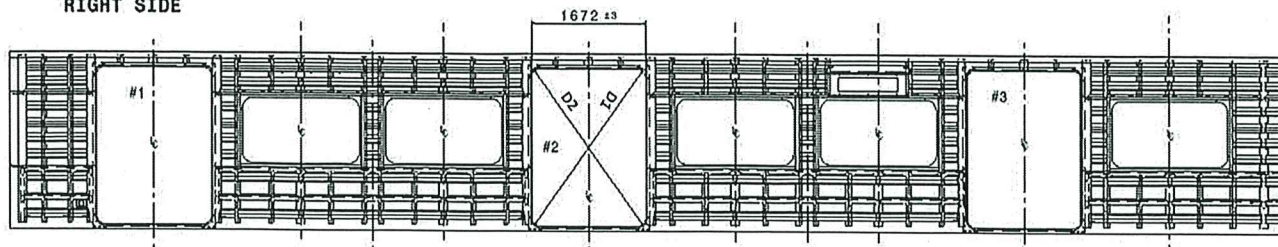
DOOR 3 - RHS

VALUE	ACTUAL
A1 2230 to 2232	2234
A2 2230 to 2232	2234
A3 2230 to 2232	2234
A4 2230 to 2232	2234
B 234 to 236	235
C 234 to 236	235
D 794 to 796	795
E 794 to 796	795

Specifications of Details for CBS measurement

RIGHT SIDE

End #1



End #2

Doors length - 1672 ±3mm

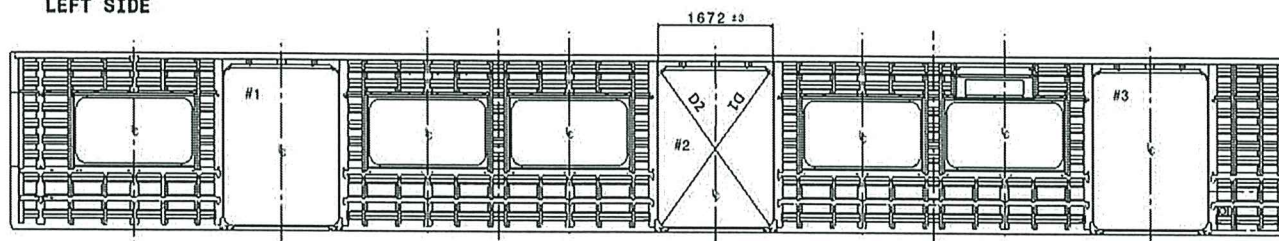
Doors diagonal D1-D2 maximum difference ≤ 4mm

#1	#2	#3	
1672	1675	1673	HIGHER DIMENSION
1673	1673	1672	CENTRAL DIMENSION
1671	1672	1675	LOWER DIMENSION

	#1	#2	#3
D1	2750	2750	2749
D2	2748	2749	2748
D1-D2	2	1	1

LEFT SIDE

End #2




End #1

Vão de Portas - 1672 ±3mm
Doors length - 1672 ±3mm


Diagonal de portas - diferença D1-D2 < 4mm

#1	#2	#3	
1671	1672	1673	DIMENSÃO SUPERIOR HIGHER DIMENSION
1672	1673	1671	CENTRAL DIMENSION
1673	1672	1673	LOWER DIMENSION

	#1	#2	#3
D1	2750	2749	2748
D2	2751	2748	2747
D1-D2	1	1	1

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Self Inspection - Final Result

Is the car good to advance to the next workstation/process? (Approval of Operations and Industrial Quality)				DATE	NAME	SIGNATURE
HOLD POINT	GO	If activities are not complete, the missing activities must not impact the next stage!		21/02/2024	Mt1p100231	
		Every auto inspection performed conforms to specification or in case of discrepancy the same is approved by the competent party.)			Industrial Quality	
	NO GO	There are activities pendings that impact the activities of the next process Obs: (To describe problems below) There are non-conformities impact the quality of the product and there is no corrective action defined yet)			Operations	
In case of "NO GO", describe blocking problems					Industrial Quality	

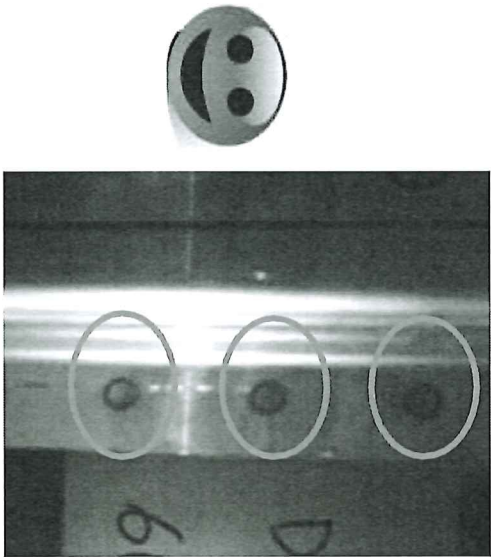
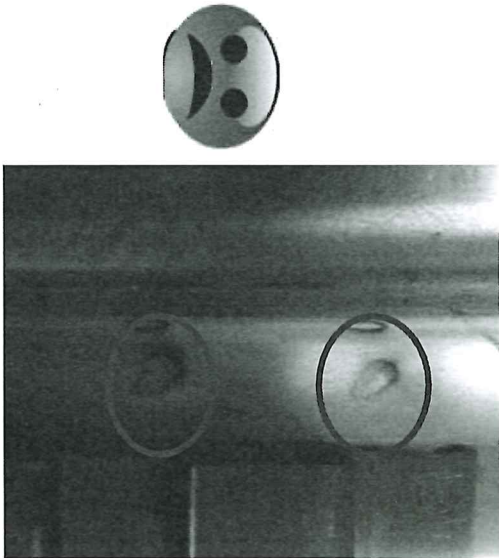
In case of "NO GO", the operations manager must define below action plan to ensure "GO".				
Item	Description	Action	Responsible	Due date
				Status


Operations

Quality

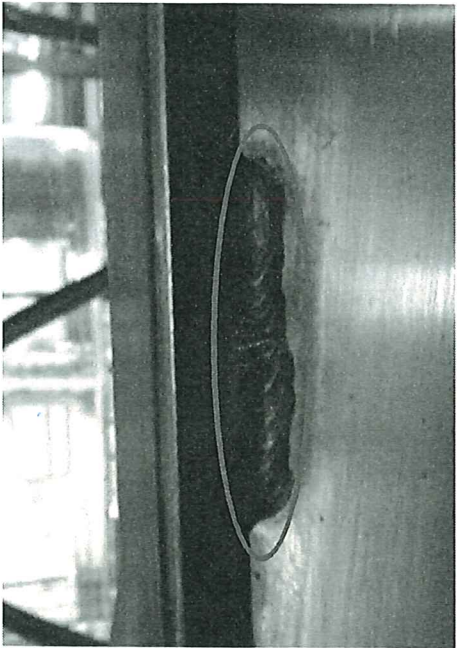
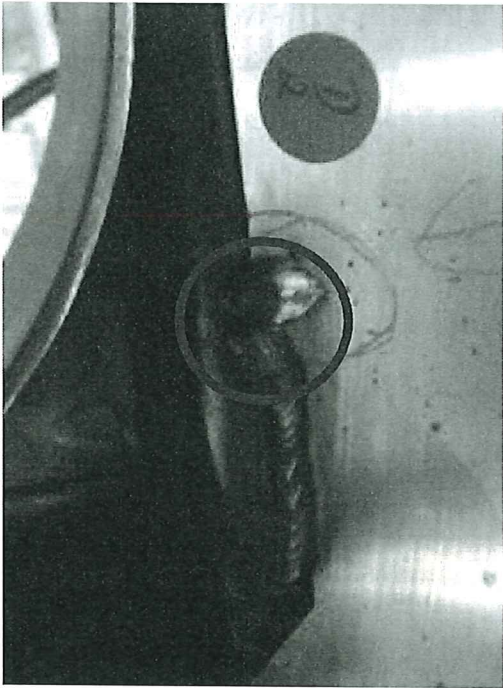
	DTR3022331912 Carshell Assembly TC		Rev.	Project: PRASA
			29	
			Date-	
			28/10/2023	
SI.CB1220.323.V29				

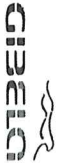
ANNEXURE A: Spot Welding Quality Acceptance Standard



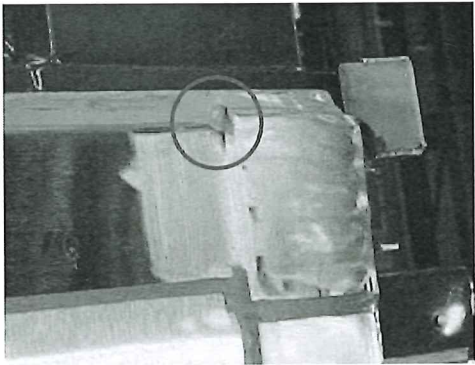
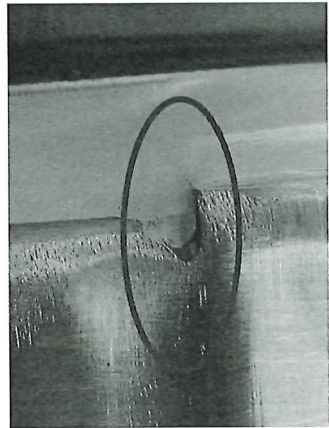
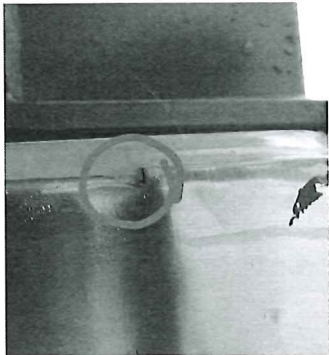
	DTR30223319/2 Carshell Assembly TC		Rev. 29	Project: PRASA SI.CB1220.323.V29
			Date- 28/10/2023	


ANNEXURE B: Arc Welding Quality Acceptance Standard



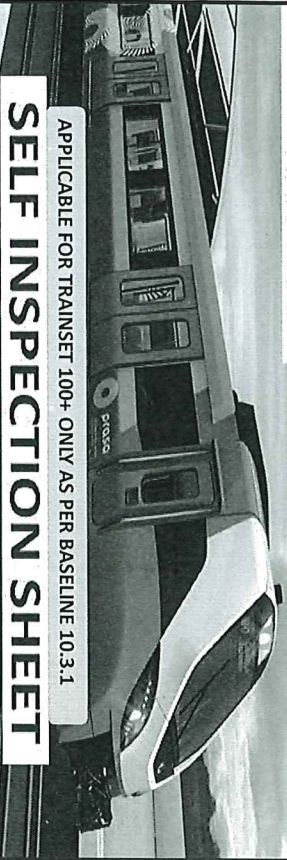
	DTR30223319/2 Carshell Assembly TC		Rev. 29	Project: PRASA SI.CB1220.323.V29
			Date- 28/10/2023	

ANNEXURE B: Sealant





PRASA PROJECT



APPLICABLE FOR TRAINSET 100+ ONLY AS PER BASELINE 10.3.1

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	DRAWING	DESCRIPTION	CAR TYPE						WORK INSTRUCTION	SAFETY ?		
			STATION	TC1	M1	M2	M3	TC2				
<input type="checkbox"/>	DT0000223319	AD000123883 TC	CB1230	X					X	PRA, CB1230, DT00000012	YES	
<input type="checkbox"/>										23319, V20		
REV	DATE	MODIFICATION CONTENT							RESPONSIBLE	NAME	DATE	
0	06/04/2018	GIBELA NEW CREATION							APPROVER	Izumeleng Modiba	09/04/2018	
									CHECKER	Nosizo Pindela	09/04/2018	
									COMPLER	Thanyani Mathegu	06/04/2018	
									APPROVER	Izumeleng Modiba	30/5/2018	
									CHECKER	Nosizo Pindela	30/5/2018	
1	30/5/2018	Team leader and Quality Technician to sign Change final signature from PME Manager to Quality manager.							REVISED BY	Nosizo Pindela	30/5/2018	
									APPROVER	Izumeleng Modiba	06/07/2018	
									CHECKER	Nosizo Pindela	06/07/2018	
									COMPLER	Ramokone Motama	06/07/2018	
									APPROVER	Izumeleng Modiba	24/01/2019	
5	24/01/2019	As per Baseline 10.2							CHECKER	Nosizo Pindela	24/01/2019	
									REVISED BY	Vanessa Nduli	24/01/2019	
									APPROVER	Izumeleng Modiba	13/03/2019	
									CHECKER	Nosizo Pindela	13/03/2019	
									COMPLER	Nosizo Pindela	13/03/2019	
									APPROVER	Izumeleng Modiba	17/09/2019	
									CHECKER	Nosizo Pindela	17/09/2019	
6	13/03/2019	Added Twist and Door Bracket Measurements Remove Door Measurements							APPROVER	Izumeleng Modiba	20/09/2019	
									CHECKER	Nosizo Pindela	20/09/2019	
									COMPLER	Timothy Maimela	28/01/2021	
									CHECKER	Bongane Masina	28/01/2021	
									COMPLER	Bongane Masina	28/01/2021	
									APPROVER	Timothy Maimela	19/04/2021	
									CHECKER	Bongane Masina	19/04/2021	
									COMPLER	Bongane Masina	19/04/2021	
10	20/09/2019	New Baseline 10.2.5							CHECKER	Nosizo Pindela	20/09/2019	
									COMPLER	Timothy Maimela	28/01/2021	
									CHECKER	Bongane Masina	28/01/2021	
									COMPLER	Bongane Masina	28/01/2021	
15	28/01/2021	New Baseline 10.2.6							APPROVER	Timothy Maimela	19/04/2021	
									CHECKER	Bongane Masina	19/04/2021	
									COMPLER	Bongane Masina	19/04/2021	
20	19/04/2021	New Baseline change 10.3							APPROVER	Collins Mkhombhi	20/02/2022	
									CHECKER	Andani Muthelo	20/02/2022	
									COMPLER	Andani Muthelo	20/02/2022	
25	20/04/2022	New Baseline change 10.3.1							APPROVER	Collins Mkhombhi	14/06/2022	
									CHECKER	Andani Muthelo	14/06/2022	
									COMPLER	Andani Muthelo	14/06/2022	
26	14/06/2022	Update minimum temperature requirement for sealant application							APPROVER	Collins Mkhombhi	28/07/2022	
									CHECKER	Andani Muthelo	28/07/2022	
									COMPLER	Andani Muthelo	28/07/2022	
27	28/07/2022	Threshold measurements addition							APPROVER	Collins Mkhombhi	17/10/2022	
									CHECKER	Noboko Zwane	17/10/2022	
									COMPLER	Amogelang Moflamepe	14/04/2023	
28	17/10/2022	Addition of traceability for sealant application							APPROVER	Vanessa Nduli	14/04/2023	
									CHECKER	Noboko Zwane	14/04/2023	
									COMPLER	Amogelang Moflamepe	14/04/2023	
29	14/04/2023	Added sealant batch number & welding consumables traceability							APPROVER	Tyson Ngweni	06/11/2023	
									CHECKER	Andani Muthelo	06/11/2023	
									COMPLER	Noboko Zwane	06/11/2023	
30	06/11/2023	Added traceability for thresholds for boiler makers and welders							APPROVER	Vanessa Nduli	14/04/2023	
									CHECKER	Noboko Zwane	14/04/2023	
									COMPLER	Amogelang Moflamepe	14/04/2023	
TRAINSET	CAR	OPERATOR NAME & ALPS NUMBER		DATE		SELF INSPECTION NUMBER			PAGES			
213	TC1	Lefatso 14173808		21/02/24		SI, CB1230, 324, V28			14			



2024 -02- 01

INDUSTRIAL QUALITY

MANLINE



DT00000223319 Carshell Assembly TC

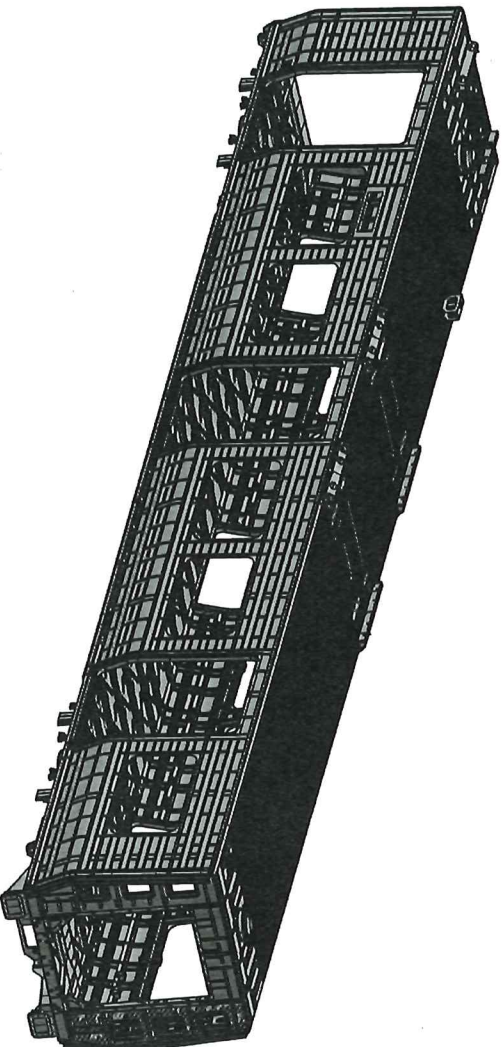
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SI.CB1230.324.V29

Carro
Car: NCR:

Work station: CB1230




Safety Related







I - Documentation and Instruments

1.1 - Documentation Control

Document	Type of car					Revision	Observation	OK	NOK	Remark	Signature/Date (Operations)	Signature/Date (Quality)
	TC1	M1	M2	M3	M4	TC2						
DT00000223319	X						29			N/A		



1.2 - Instruments Control


Monitoring and Measuring Instrument Control - Used for Special Process

Instruments	Validation	Calibration or Verification Validation Date	OK	NOK	Signature/Date (Operations)	Signature/Date (Quality)
Measuring tape	GIBELCO	05/04/24	OK		 21/02/24	
Combination Square	GIBELCO	27/07/24	OK		 21/02/24	
Twula	22713	26/06/24	OK		 21/02/24	
Ruler	GIBELCO	27/09/24	OK		 21/02/24	

1.3 Consumables
















Welding Consumable Control - Used for Special Process

Filler Material	Heat Number	Welding Process	OK	NOK	Signature/Date (Manufacturing)	Signature/Date (Quality)
ER 308 L	204681	MIG welding	✓		 21/02/24	
	GIBELCO				 21/02/24	
	2024-02-11					
	INDUSTRIAL QUALITY					
	WARRANT					

	DT00000223319 Carshell Assembly TC		
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	Date-		
06/11/2023		SI.CB1230.324.V29	

II - Control Activities of Production

II.1 - Items to check

Item	Picture/Drawing	Description	Acceptance criteria / Record	OK	NOK	Rework	Signature/Date (Operations)	Signature/Date (Quality)
01	N/A	Assembly according to Instruction Engineering nº DT00000223319	DT00000223319	OK			 21/02/24	 21/02/24
02	N/A	Carshell free of significant flaws which compromise the appearance or functionality.	DTD0000210675	OK			 21/02/24	 21/02/24
03	REFER TO ANNEXURE A	Arc Welding inspected and approved according procedure.	IND-SAL-WMS-016 DTD0000210675	OK			 21/02/24	 21/02/24
04	N/A	Functionals dimensions approved according drawing or complementary document approved by Alstom engineering and registered in this document.	Approved according specified on pages below.	OK			 21/02/24	 21/02/24
05	N/A	Perform visual inspection of welds in 100% of the project. Run by penetrant testing in electric arc welding (weld ring) as IND-SAL-WMS-018. Run by penetrant testing welds (weld ring) and fillet sampling as described in DTD0000210658.	As the welding procedure IND-SAL-WMS-018 and DTD0000210658	OK			 21/02/24	 21/02/24
06	N/A	Before application of sealant record the expiry date and make sure that the room temperature and humidity are within specified values as per Works Instructions Specified: <div> <div>Temperature Min - Max (1)</div> <div>Min-Max</div> <div>10°C - 35°C</div> <div>Relative humidity Min - Max (1)</div> <div>Min-Max</div> <div>25% - 80%</div> </div>	Sealant Batch No: ^{FA} 26089333 Exp Date: <u>02/24</u> Actuals Temperature: <u>21.0°C</u> Humidity: <u>84%</u>	OK			 21/02/24	 21/02/24
07	N/A	Verification of sealant application in regions of roof and sidiframe finishers.	Sealant must be: -Applied straight and even (1.5mm) -Free of gaps, cracks, damage and debris (flashes, dirt, dust) Refer to 	OK			 21/02/24	 21/02/24



2024-02-01

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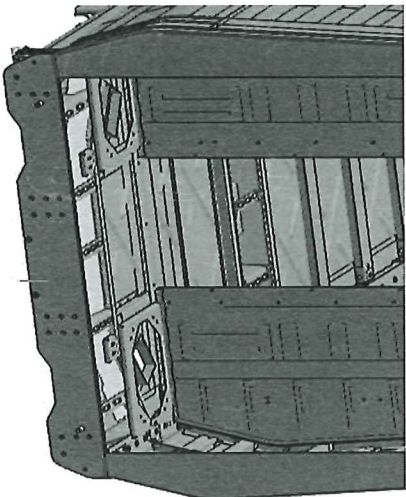


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06/11/2023

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SI.CB1230.324.V29

VIEW A



**END 1
SEALANT**

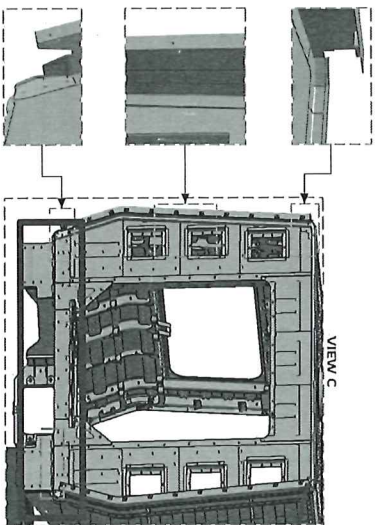
OPERATOR
(Name & sign):

Burke *[Signature]*

OPERATOR
(Name & sign):

Boikunelo *[Signature]*

VIEW C



OPERATOR
(Name&sign):

Levey *[Signature]*

OPERATOR
(Name&sign):

Levey *[Signature]*

OPERATOR
(Name&sign):

Levato *[Signature]*

**INDUSTRIAL QUALITY
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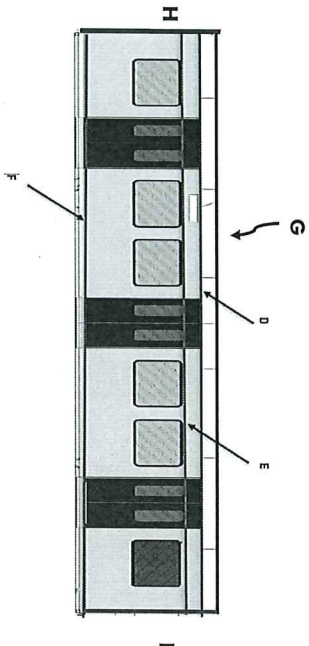
[Signature]
2024-06-11



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06/11/2023

Project: PRASA
SI.CB1230.324.V29



Area D,E,F,G,H,I

Operator (Name & sign) :

(F) LHS Tshenoi (RHS) Tshenoi

Operator (Name & sign) :

(F) Sinie (RHS) Sinie

Operator (Name & sign) :

(F) DE,G,H,I (RHS) DE,G,H,I

Operator (Name & sign) :

(F) Buine (RHS) Buine

Operator (Name & sign) :

(F) Boitumele (RHS) Boitumele

Operator (Name & sign) :

INDUSTRIAL QUALITY
MAINLINE

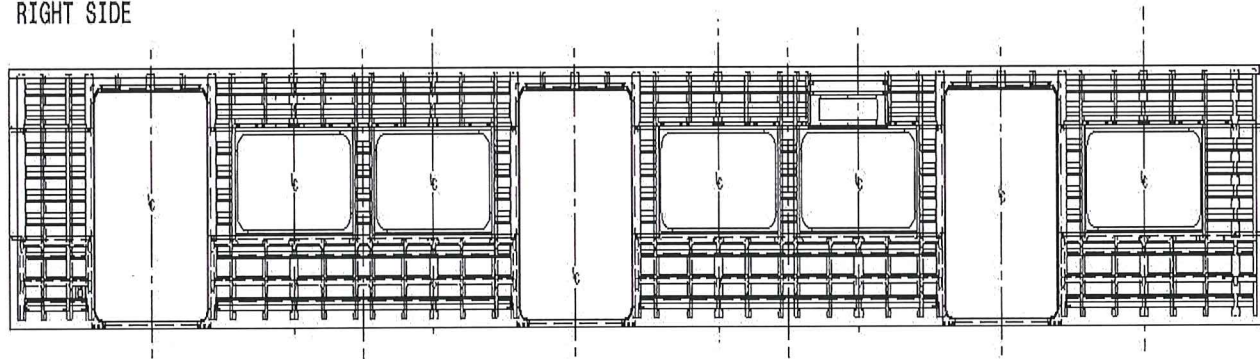
END #2

END #1

Flatness side left and right maximum of 2mm in the valley to peak measured in 900mm. Recod the maximum and minimum value foundand indicate the corresponding region.

RIGHT SIDE

END #1

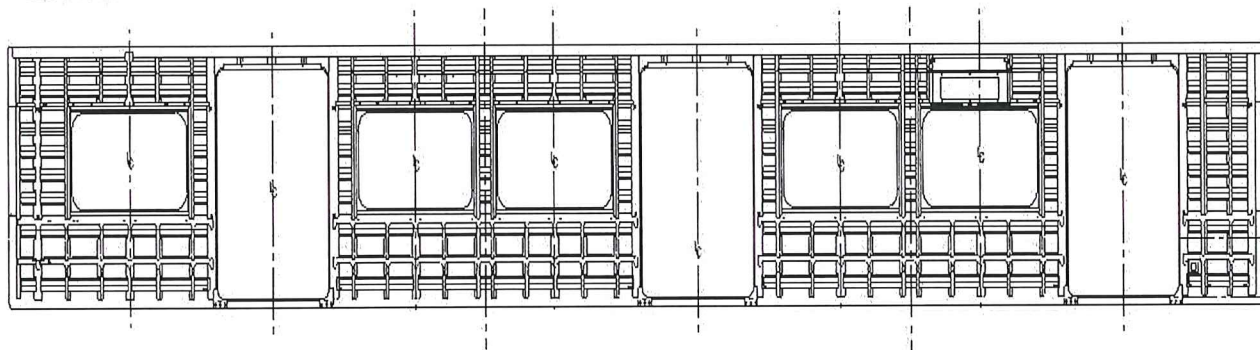


MAXIMUM 2.1

MINIMUM 1.0

LEFT SIDE

END #2



MAXIMUM 1.4

MINIMUM 1.3



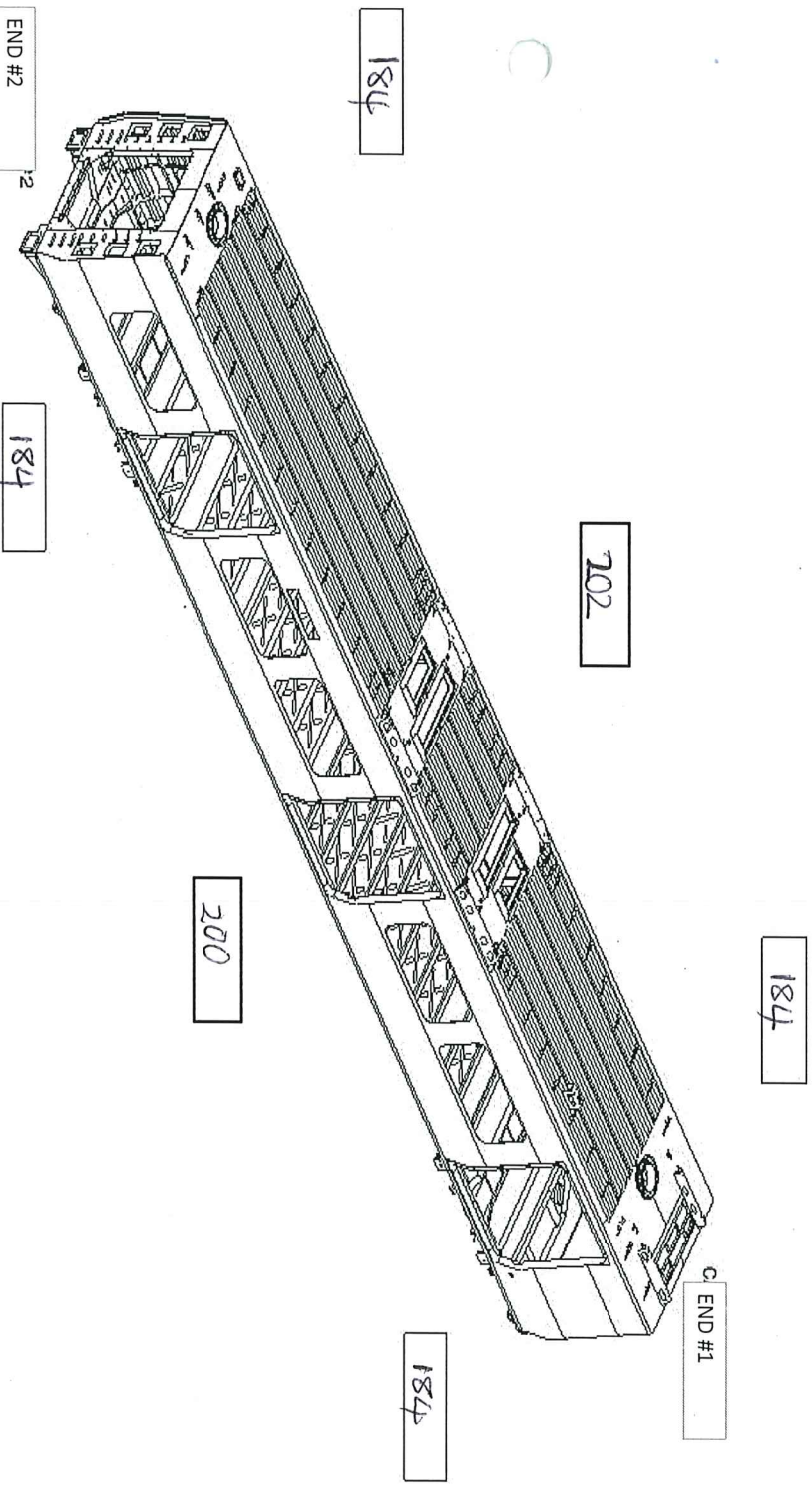
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06/11/2023

Project: PRASA
SI.CB1230.324.V29


Specifications of Details for CBS measurement CB1230

Specified Camber for car out of jig is 16mm (-0mm + 2mm)



MEASURED CAMBER VALUES

RIGHT	+	18
LEFT	-	16


GIBELCO
2024-02-01
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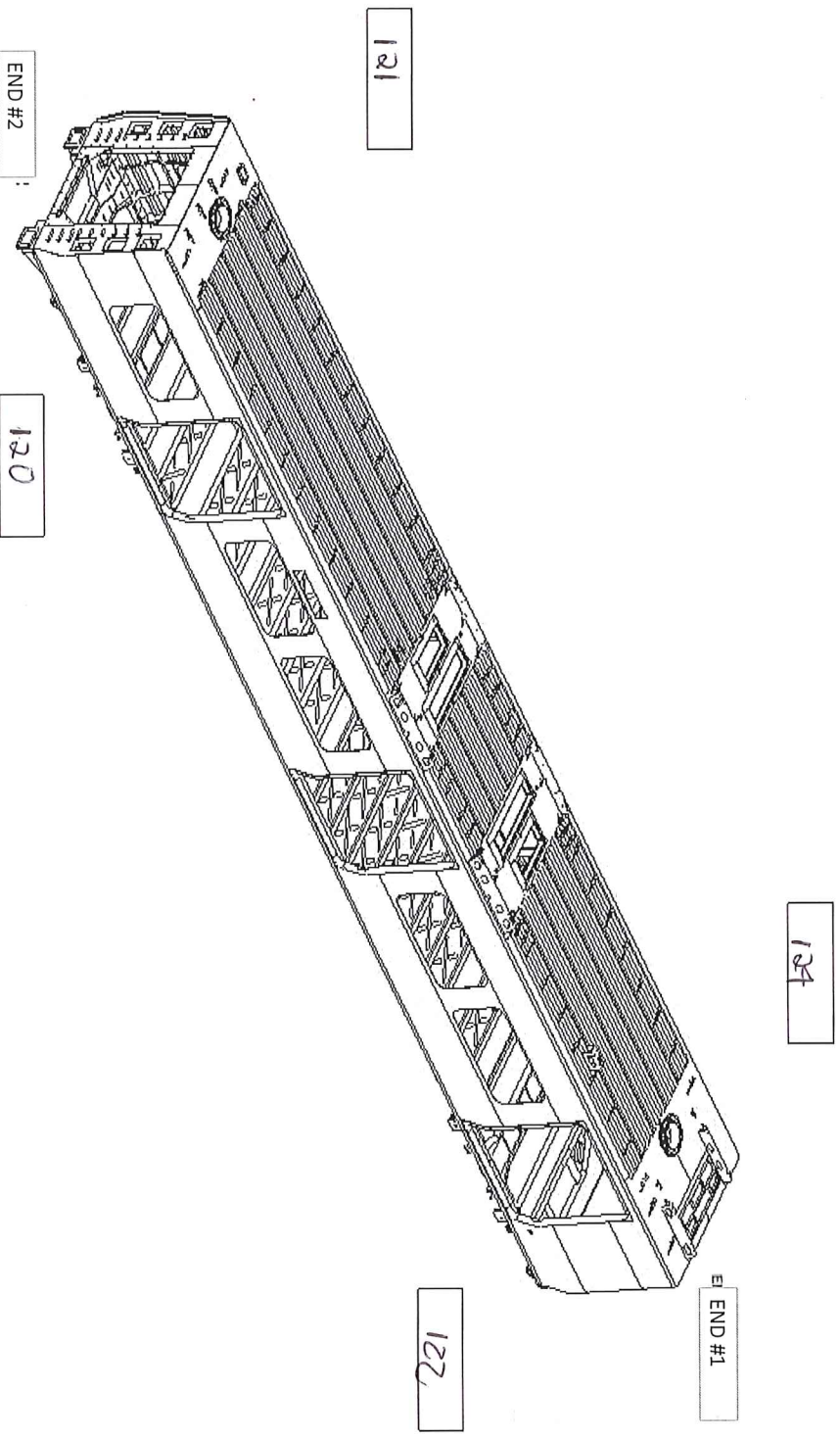
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SI.CB1230.324.V29

Specifications of Details for CBS measurement CB1230

Twist measured in transversal and longitudinal = Maximum 3mm. Measure twist on air spring plates (LHS and RHS), both End 1 and End 2 following twist measurement document.



MEASURED TWIST VALUES END 1

LATERAL

2

LATERAL

1

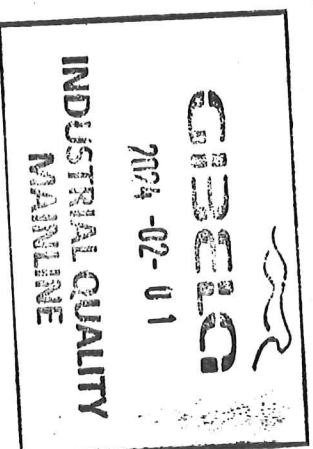
LONGITUDINAL 1

2

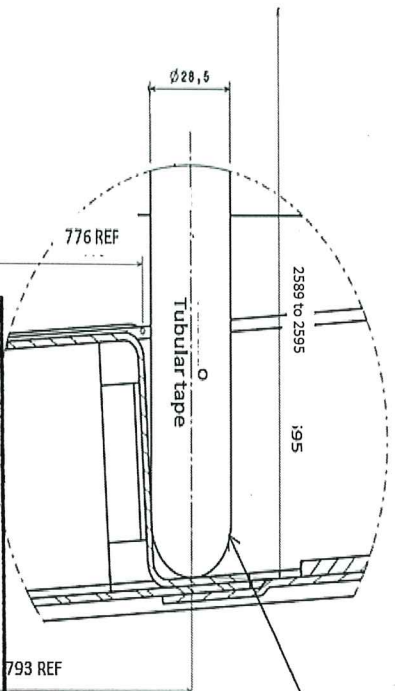
LONGITUDINAL

3

MEASURED TWIST VALUES END 2



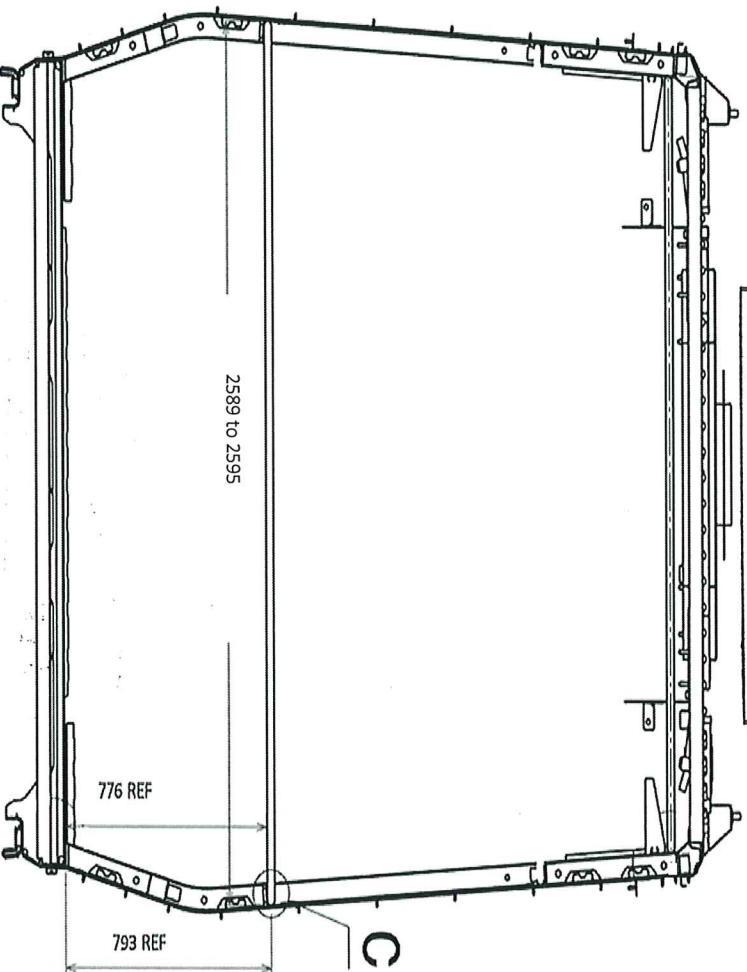
Details for measuring on the CB1230 stage, after completion of activities



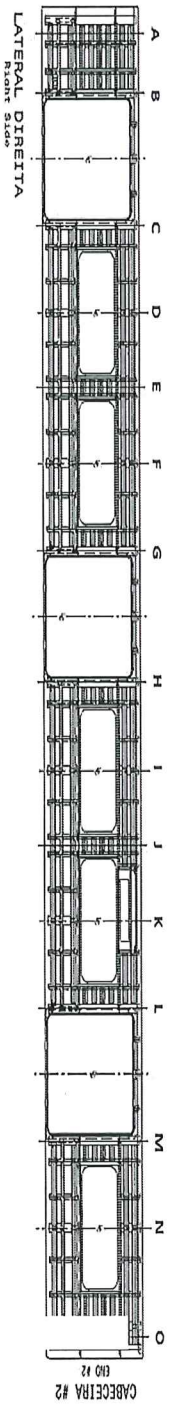
A
N
Carry the tubular tape on the
"Z" bottom of Windows

Detail C 2024-02-01

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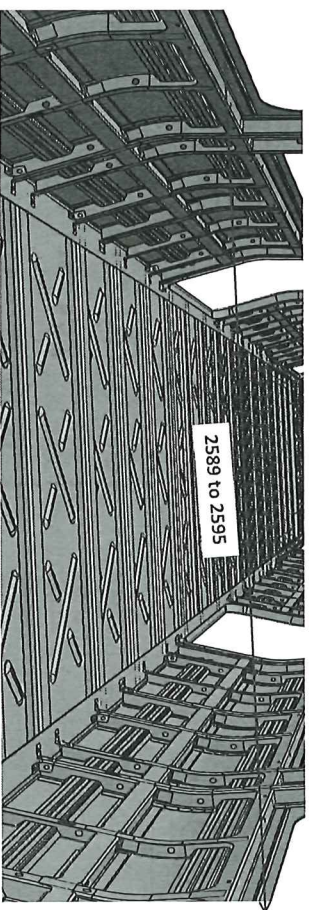


Specifications of Details for CBS measurement



2589 to 2595mm

A	2595
B	2595
C	2594
D	2593
E	2593
F	2591
G	2591
H	2595
I	2595
J	2595
K	2594
L	2595
M	2595
N	2595
O	2595



Threshold verification

Door 1		Door 2		Door 3	
L	R	L	R	L	R
38	38	39	39	37	38
Door 4		Door 5		Door 6	
L	R	L	R	L	R
38	38	38	38	38	38

BOILER MAKER: Kento

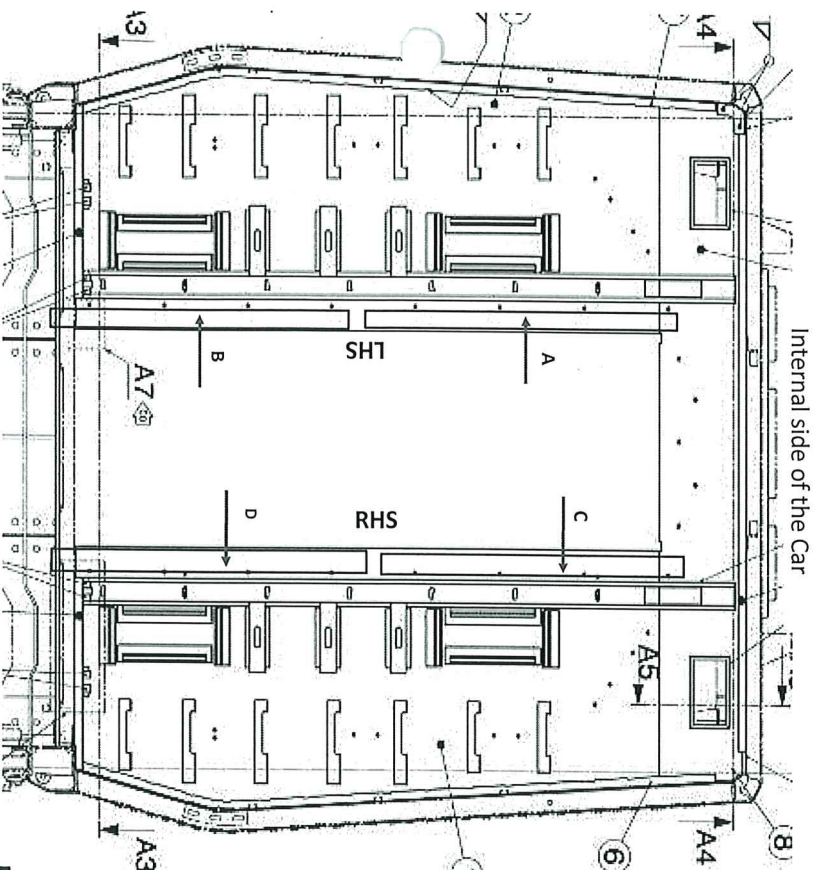
WELDER: Neuhahla

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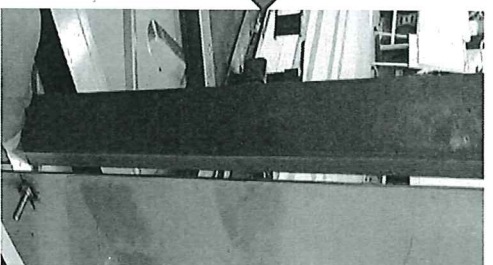
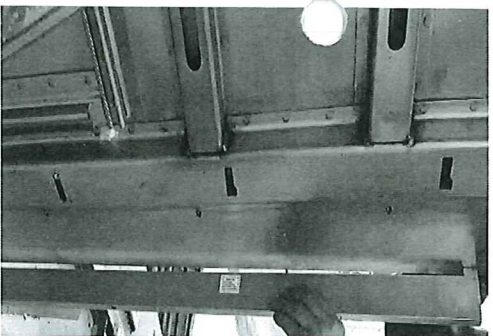
Specifications of Details for CBS measurement


Measure the flatness on the Cab Fire Barrier after installation and welding. Measure positions A, B, C and D using 1000mm flatness ruler and taper gauge.

Specified Maximum Flatness deviation on Cab Fire Barrier = 2mm





Measured Values			
	Minimum	Maximum	Deviation
A	8	9	1
B	10	10.5	0.5
C	10.5	10.8	0.3
D	11	12	1



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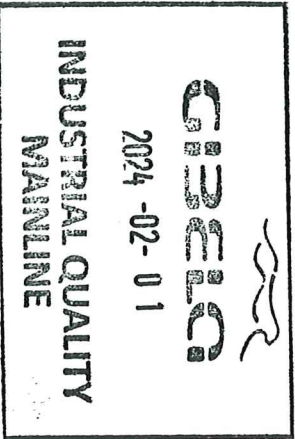
Self Inspection - Final Result


Is the car good to advance to the next workstation/process? (Approval of Operations and Industrial Quality)				DATE	NAME	SIGNATURE
HOLD POINT	GO	If activities are not complete, the missing activities must not impact the next stage!	21/08/24	Lerato Operations		
		Every auto inspection performed conforms to specification or in case of discrepancy the same is approved by the competent party.)	21/08/24	Ano Industrial Quality		
	NO GO	There are activities pendings that impact/stop the activities of the next process Obs: (To describe problems below)	There are non-conformities impact the quality of the product and there is no corrective action defined yet)		Operations	
				Industrial Quality		

In case of "NO GO", the operations manager must define below action plan to ensure "GO":					
Item	Description	Action	Responsible	Due date	Status

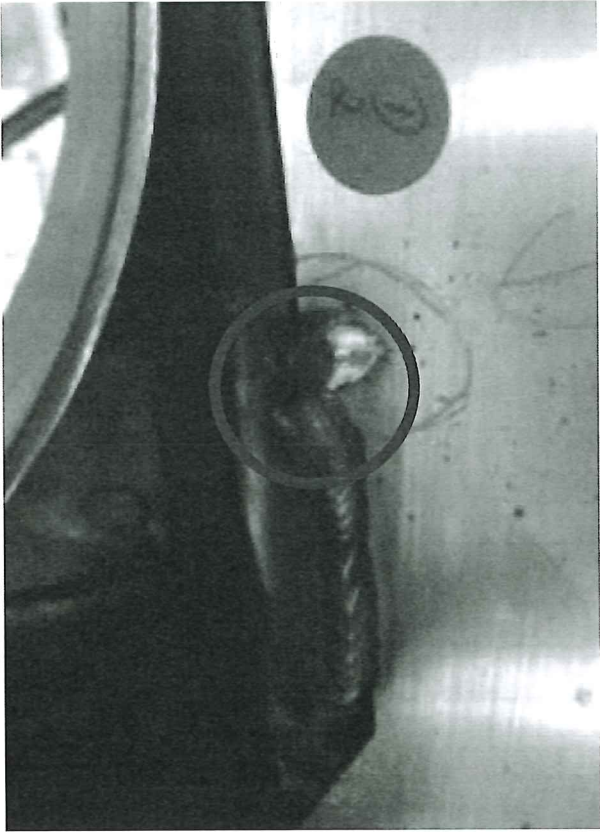
Operations


Quality



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			Date- 06/11/2023	

ANNEXURE A: Arc Welding Quality Acceptance Standard





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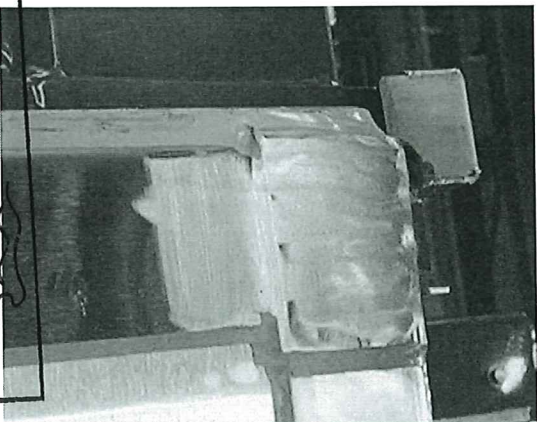
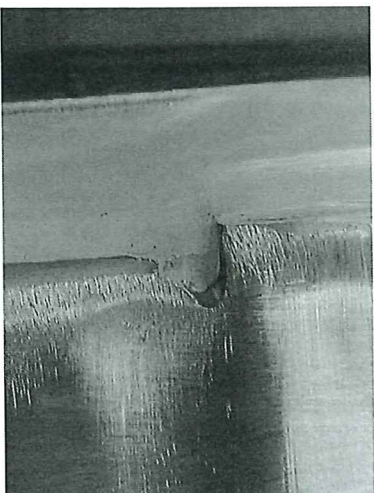
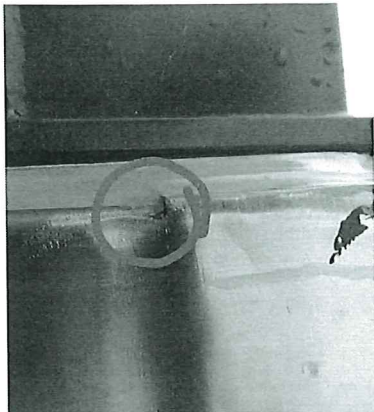


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ANNEXURE B: SEALANT



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