



THE UNITED KINGDOM VEHICLE APPROVAL AUTHORITY

COMMUNICATION CONCERNING THE APPROVAL GRANTED ⁽⁺⁾/~~APPROVAL EXTENDED ⁽⁺⁾/~~
~~APPROVAL REFUSED ⁽⁺⁾/~~ ~~APPROVAL WITHDRAWN ⁽⁺⁾/~~ ~~PRODUCTION DEFINITELY~~
~~DISCONTINUED ⁽⁺⁾~~ OF A VEHICLE TYPE WITH REGARD TO PROTECTION OF THE OCCUPANTS
OF THE CAB OF A VEHICLE PURSUANT TO REGULATION NO 29.03



Approval No: E11*29R03/03*0539*00

1. Trade name or mark of the Vehicle: NAFFCO
2. Vehicle type: ARFF-AL
3. Manufacturer's name and address:

NAFFCO FZ CO
(Trucks and Vehicles Division)
South Jebel Ali Free Zone
P.O. Box 262169
Dubai
United Arab Emirates
4. If applicable, name and address of manufacturer's representative: Not applicable
5. Brief description of the cab's design and method of attachment:

Refer Manufacturer's information document
6. Vehicle submitted for approval on: 11 January 2022
7. Technical service responsible for conducting approval tests: Vehicle Certification Agency

- 8. Date of test report issued by that service: 14 February 2022
- 9. Number of test report issued by that service: ISY551923
- 10. Approval GRANTED/~~EXTENDED/REFUSED/WITHDRAWN~~:⁽¹⁾
- 11. Position of approval mark on vehicle: Label pasted on the cab's door frame
- 12. Place: BRISTOL
- 13. Date: 17 FEBRUARY 2022

14. Signature:  C MCCABE
Chief Technical and Statutory Operations Officer

The list of documents deposited with the Administrative Service which has granted approval is annexed to this communication and may be obtained on request.

(1) Strike out what does not apply.





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APPROVAL NUMBER: E11*29R03/03*0539*00

INFORMATION PACKAGE CONTENTS

INDEXREVISION NUMBER: Not applicable

Conformity of Production (COP) Declaration COP Confirmed

Assessment Method ISO & Control Plans

Date of Initial Clearance December 2018

Date of Last Clearance December 2020

Total number of sheets: 15 (Fifteen)

Reasons for Revision: Not applicable / ~~See manufacturer's documentation /~~
~~See approval certificate~~

Revision Date
&
Office Stamp



INFORMATION DOCUMENT REF: INF/R29/21/01 DATED 27th Sep 2021 – FOR APPROVAL PURSUANT TO ECE R 29.03: “UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO THE PROTECTION OF THE OCCUPANTS OF THE CAB OF A ARFF (AIRCRAFT RESCUE AND FIRE FIGHTING) VEHICLE”

INFORMATION DOCUMENT REF: INF/R29/18/01 DATED 27th Sep 2021 – FOR APPROVAL PURSUANT TO ECE R 29.03: “UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO THE PROTECTION OF THE OCCUPANTS OF THE CAB OF A COMMERCIAL VEHICLE”

1 GENERAL

- 1.1 Make (Trade name of manufacturer) : NAFFCO
- 1.2 Type and commercial description(s) : ARFF-AL and Aircraft Rescue and Fire Fighting Vehicle-AL
- 1.3 Means of identification of type, if marked on the vehicle : Type mentioned (ARFF-AL) in manufacturing plate
- 1.3.3 Location of that marking : Manufacturing plate
- 1.4 Category of vehicle : N3 (Subcategory SG)
- 1.5 Name and address of manufacturer : NAFFCO FZ CO
(Trucks and Vehicles Division)
South Jebel Ali Free Zone
P.O. Box 262169
Dubai
UAE
- 1.6 Address(es) of assembly plants(s)method of affixing : Same as above 1.5
- 1.7 Location of ECE approval mark : Level pasted on the cab door frame

2 GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE

- 2.1 Photographs and/ or drawings of a representative vehicle : Refer Annexure 1
- 2.2 Dimensional drawing of the whole vehicle : Refer Annexure 2
- 2.3 Number of axles and wheels : 2 axles 4 wheels
3 axles 6 wheels
4 axles 8 wheels
- 2.6 Position and arrangement of Engine : Rear mounted Engine
- 2.7 Driving Cab (Cab-over-engine or bonnet) : Being rear mounted engine, not cab-over –engine or bonnet
- 2.8 Hand of drive : Left or Right hand drive
(Center-Left steering wheel being special purpose vehicle for inside airport use)

3 MASSES AND DIMENSIONS (e) (in kg and mm)

- 3.1 Technically permissible maximum laden mass stated by the manufacturer : 26,000 kg (2 axle vehicle)
39,000 kg (3 axle vehicle)
52,000 kg (4 axle vehicle)
- 3.2 Technically permissible maximum mass on for the front axle or axles of vehicle : 13,000 kg per axle

INFORMATION DOCUMENT REF: INF/R29/18/01 DATED 27th Sep 2021 – FOR APPROVAL PURSUANT TO ECE R 29.03: “UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO THE PROTECTION OF THE OCCUPANTS OF THE CAB OF A COMMERCIAL VEHICLE”

4 CAB

- | | |
|--|---|
| 4.1 Type of cab (normal/sleeper/top-sleeper) | : Normal |
| 4.2 Materials used and methods of construction | : Combination of welded aluminum tubes, steel sheets and GRP. |
| 4.3 Door configuration and number of doors | : Side doors, Left and Right |
| 4.4 Drawings of door latches and retention components and their positions in the doors | : See Annex. 3 |
| 4.5 Number of seating positions | : One (Center-Left, Driver’s seat. See Annex. 4) |
| 4.6 R-Points | : See Annex 5 |
| 4.7 Detailed description of the cab of the vehicle type including its dimensions configuration and constituent materials and its attachment to the chassis frame | : See Annex 6 |
| 4.8 Drawings of the cab and those parts of its interior arrangement which have an influence on the residual space | : See Annex 7 |

5 Steering

- | | |
|---|------------------|
| 5.1 Schematic diagram (s) of the steering control(s) | : See Annex 6 |
| 5.2 Range and method of adjustment (if any) of the steering control | : Not Applicable |

INFORMATION DOCUMENT REF: INF/R29/21/01 DATED 27th Sep 2021 – FOR APPROVAL PURSUANT TO ECE R 29.03: “UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO THE PROTECTION OF THE OCCUPANTS OF THE CAB OF A COMMERCIAL VEHICLE”

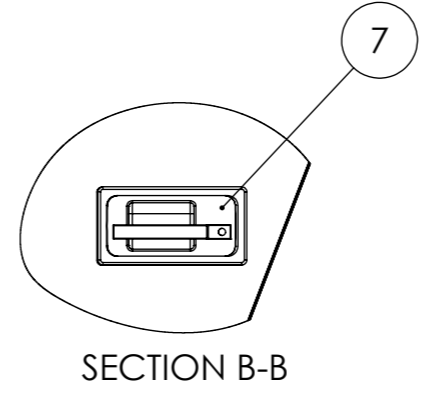
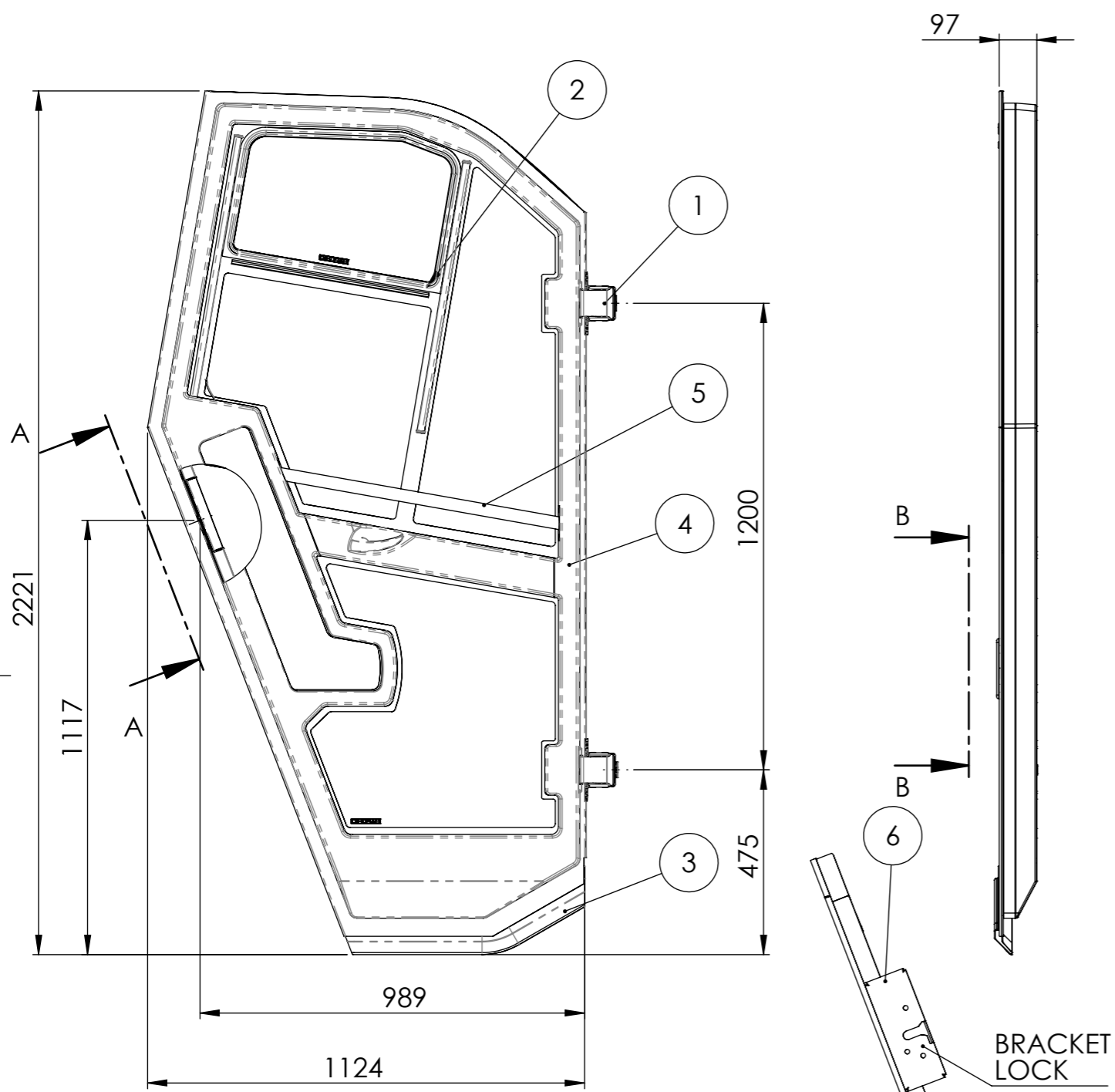
LIST OF ANNEXURE

ANNEXURE NO	DRAWING NUMBER/ PART NUMBER	DESCRIPTION
1	----	Photographs and/ or drawings of a representative vehicle (1 page)
2	GA-2021-0106-04	Dimensional drawing of the whole vehicle (1 page)
3(a)(b)	3(a) : NF000135 3(b) : NF000137	Drawings of door latches and retention components and their positions in the doors (3(a) 1 page, 3(b) (1 page)
4	CSA-1406-2021-01	Number of seating positions (1 page)
5	ECER29-SEAT	R-Points (1 page)
6	AA-1166	Cab description, dimensions, configuration, constituent materials and its attachment to the chassis frame. Schematic diagram (s) of the steering control (1 page)
7	AA054-2021-0101	Drawings of the cab and those parts of its interior arrangement which have an influence on the residual space (4 pages)

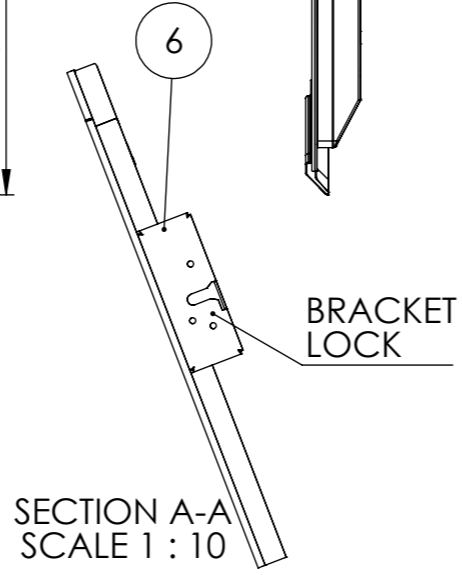


REVISIONS

REV.	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
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ITEM	PART NUMBER	DESCRIPTION	QTY.	REMARKS
7	15448070113	Door Handle L, P/N.# MA941 760 04 59 - Mercedes Benz	1	
6	NF000137	DOOR FRAME WELDMENT - LHS	1	
5	NF000246	GRAB HANDLE	1	
4	NF000131	GRP - ARFF INTERIOR DOOR PANEL, LHS	1	
3	NF000099_LHS	GRP DOOR BOTTOM COVER - LHS	1	
2	15448073203	LHS Drop Sliding Window 972/1120 x 2092/2114h for ARFF Cab- 6mm Clear- Flat Tempered Glass- Complying ECE 43R- w/Solid Black Silk Screen Printing (D20x3 +1 Big Hole 295x155)- Dwg. Plana Patented System- Dwg Ref.# DR-LHS-CAB-GRP-ARFF-STD-03	1	
1	NF000146	HINGE MODIFICATION	1	





NAFFCO FZCO

TRUCKS & VEHICLES DIVISION



P.O. BOX-262169, DUBAI-U.A.E. TEL.: +97148151111 FAX: +97148151222
 WEBSITE: www.naffco.com e-MAIL: info@naffco.com

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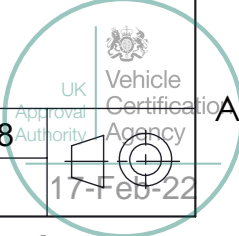
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Linear Dimension	c (coarse)
External radius & chamfer height	c (coarse)
Angular Dimension	v (very coarse)
Straightness & Flatness	K
Perpendicularity	K
Symmetry	K
Run-Out	K

DOOR ASSY - LHS

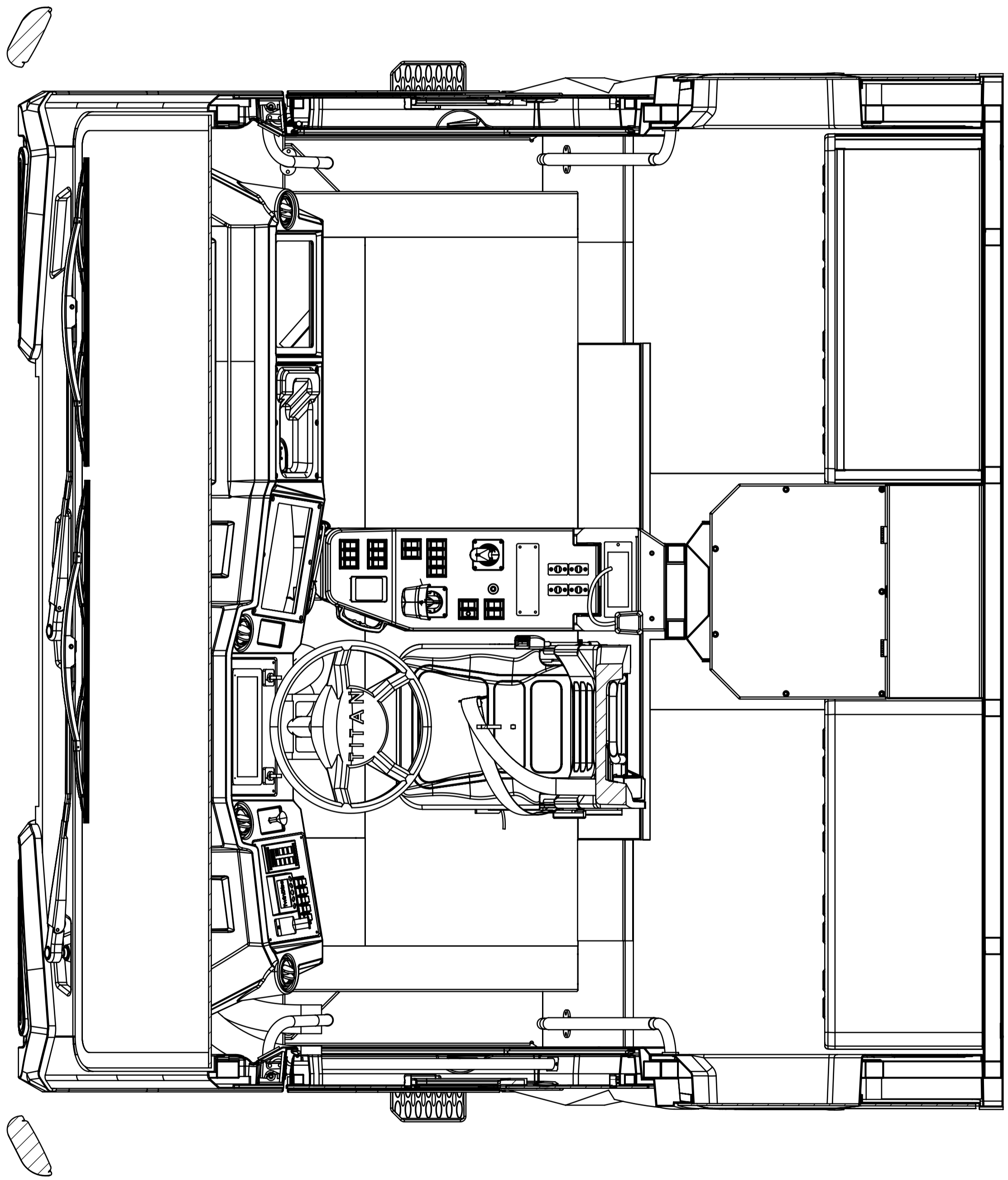
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ASK IF IN DOUBT

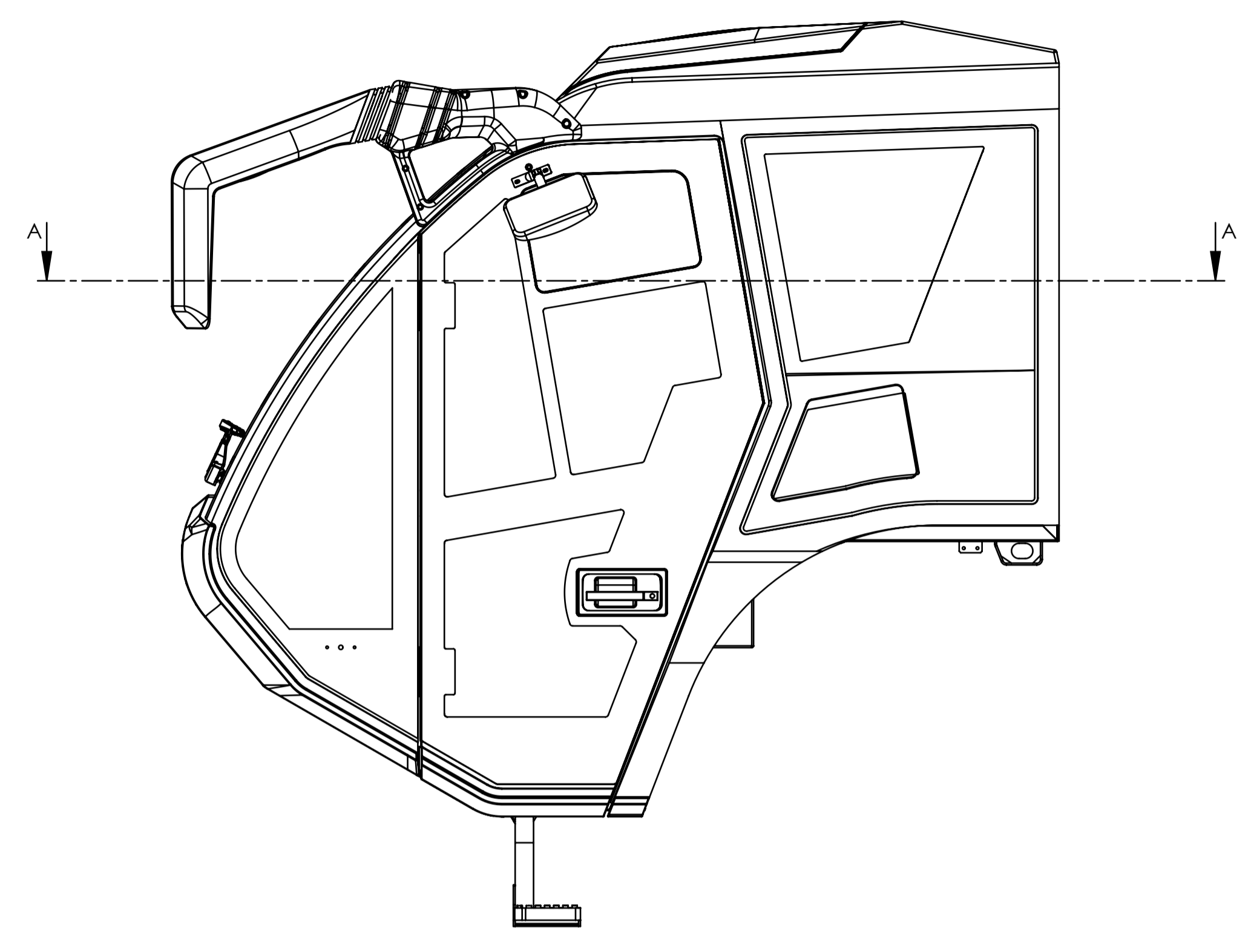
ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED




REVISIONS					
REV.	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED




SECTION A-A
SCALE 1 : 10





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TRUCKS & VEHICLES DIVISION



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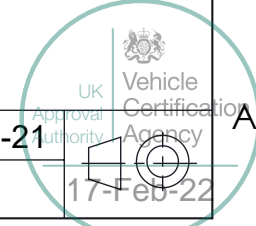
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External radius & chamfer height	c (coarse)
Angular Dimension	v (very coarse)
Straightness & Flatness	K
Perpendicularity	K
Symmetry	K
Run-Out	K

CAB SEATING ARRANGEMENT

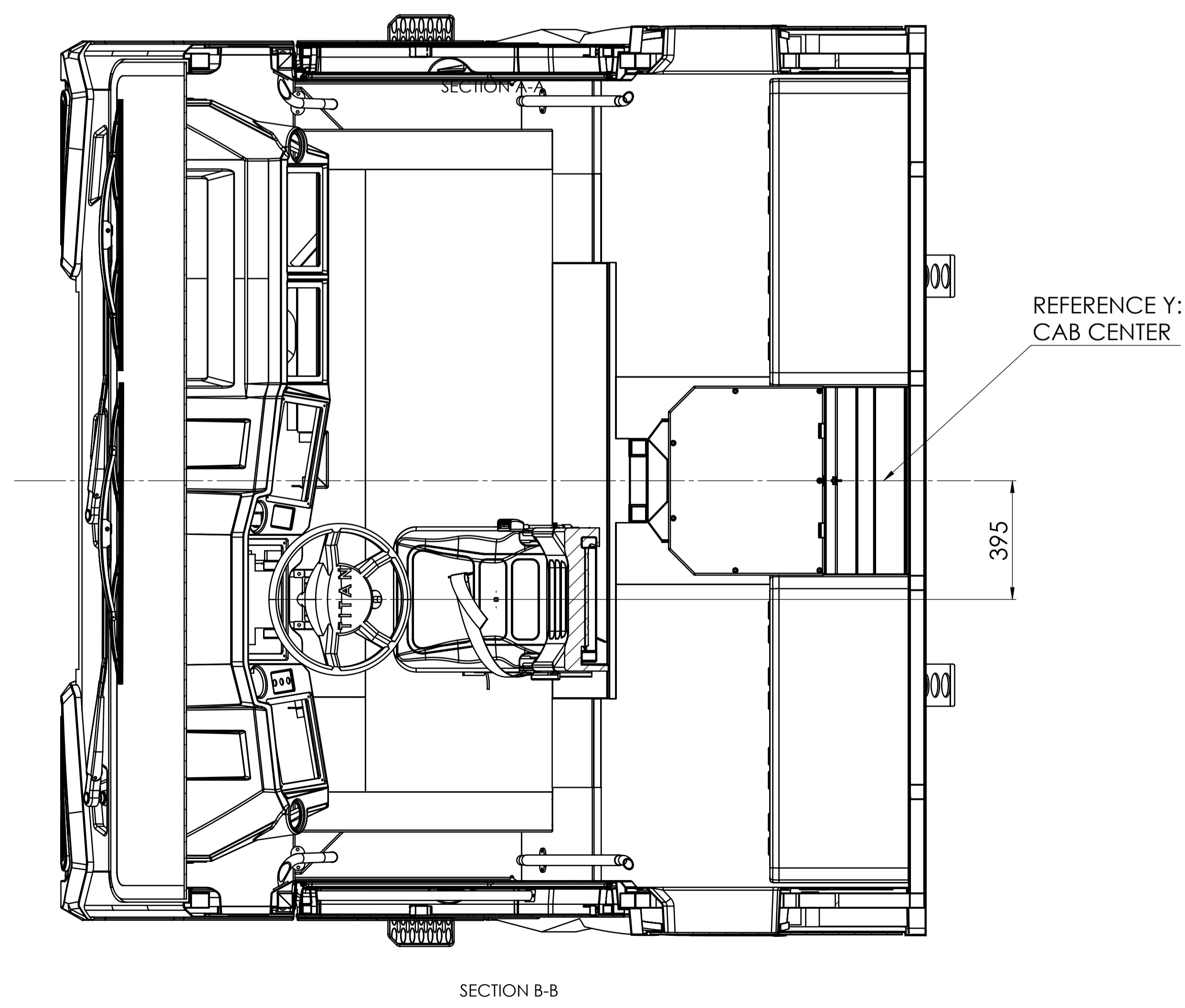
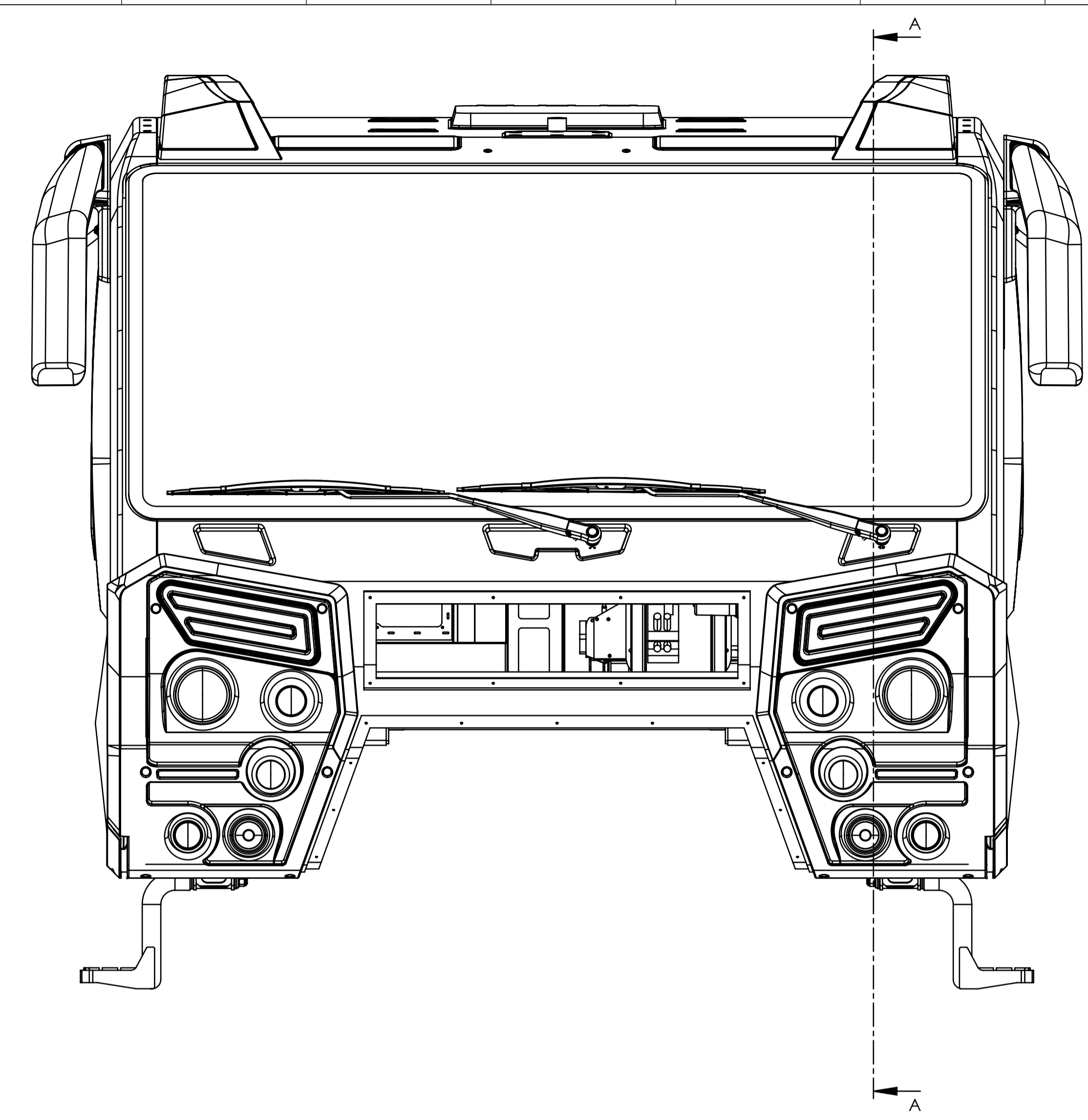
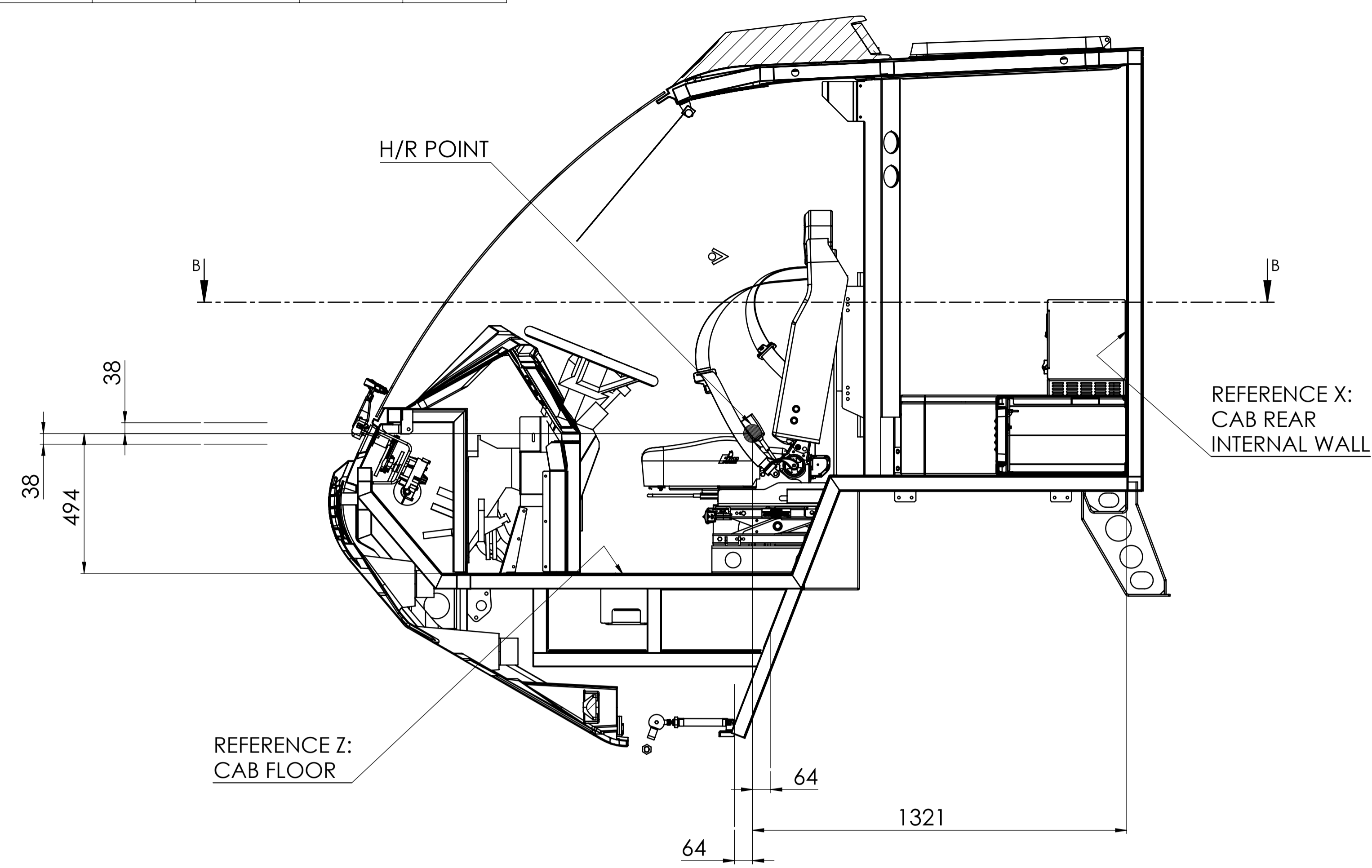
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		SHEET: 1/1	

ASK IF IN DOUBT

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED



REVISIONS					
REV.	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED



DRIVER SEAT R/H POINT:


X1 = 456 (DOWN MOST)
 X2 = 494 (MID POSITION)
 X3 = 532 (MOST UPWARD)

Y= -395

Z1 = - 1385 (MOST FORWARD)
 Z2 = - 1321 (MID POSITION)
 Z3 = - 1257 (MOST BACKWARD)


ASK IF IN DOUBT

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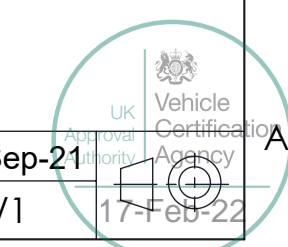


GENERAL TOLERANCES:
(As per Standard ISO 2768)
- unless otherwise specified:

TOLERANCE DESCRIPTION	TOLERANCE CLASS DESIGNATION
Linear Dimension	c (coarse)
External radius & chamfer height	c (coarse)
Angular Dimension	v (very coarse)
Straightness & Flatness	K
Perpendicularity	K
Symmetry	K
Run-Out	K

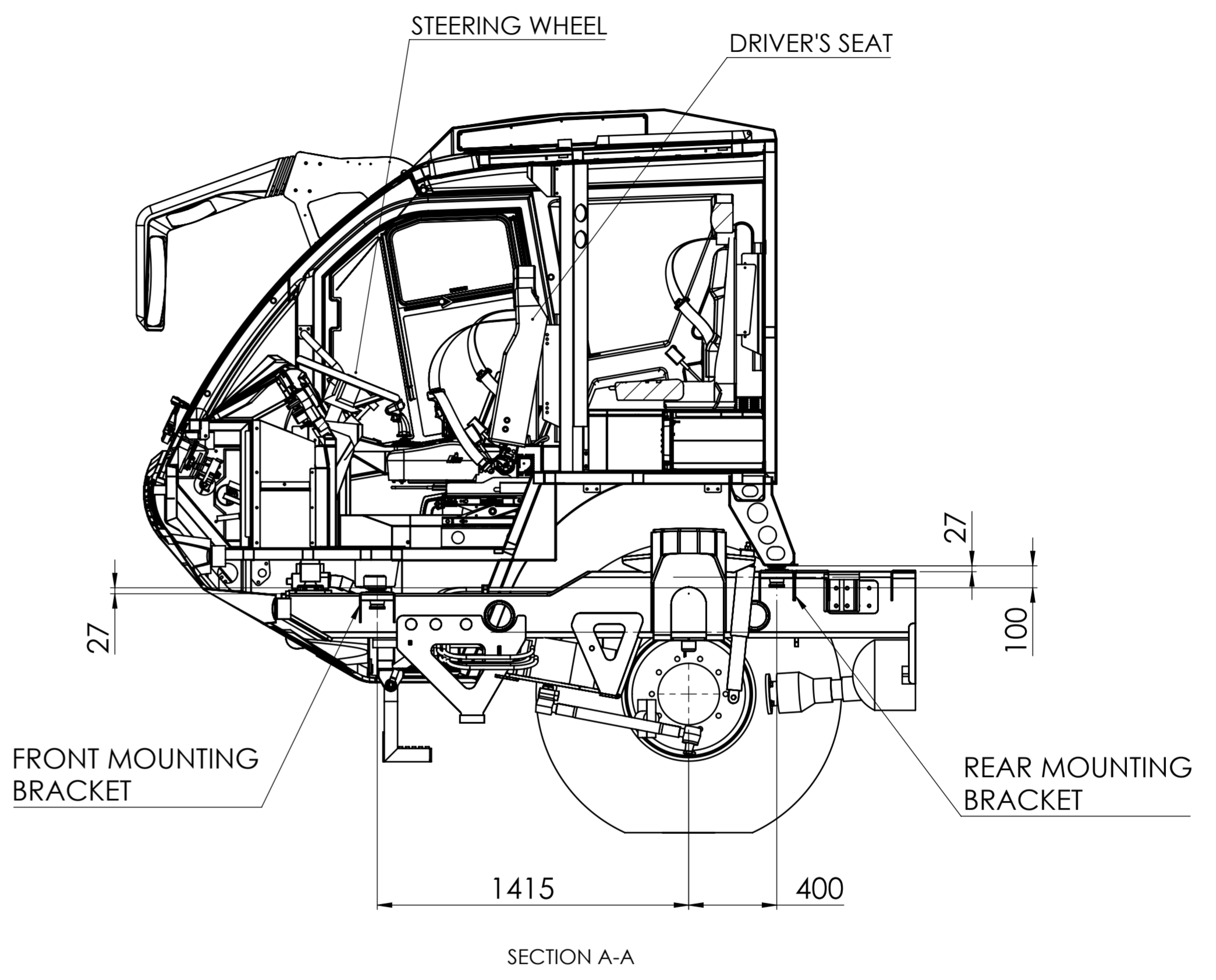
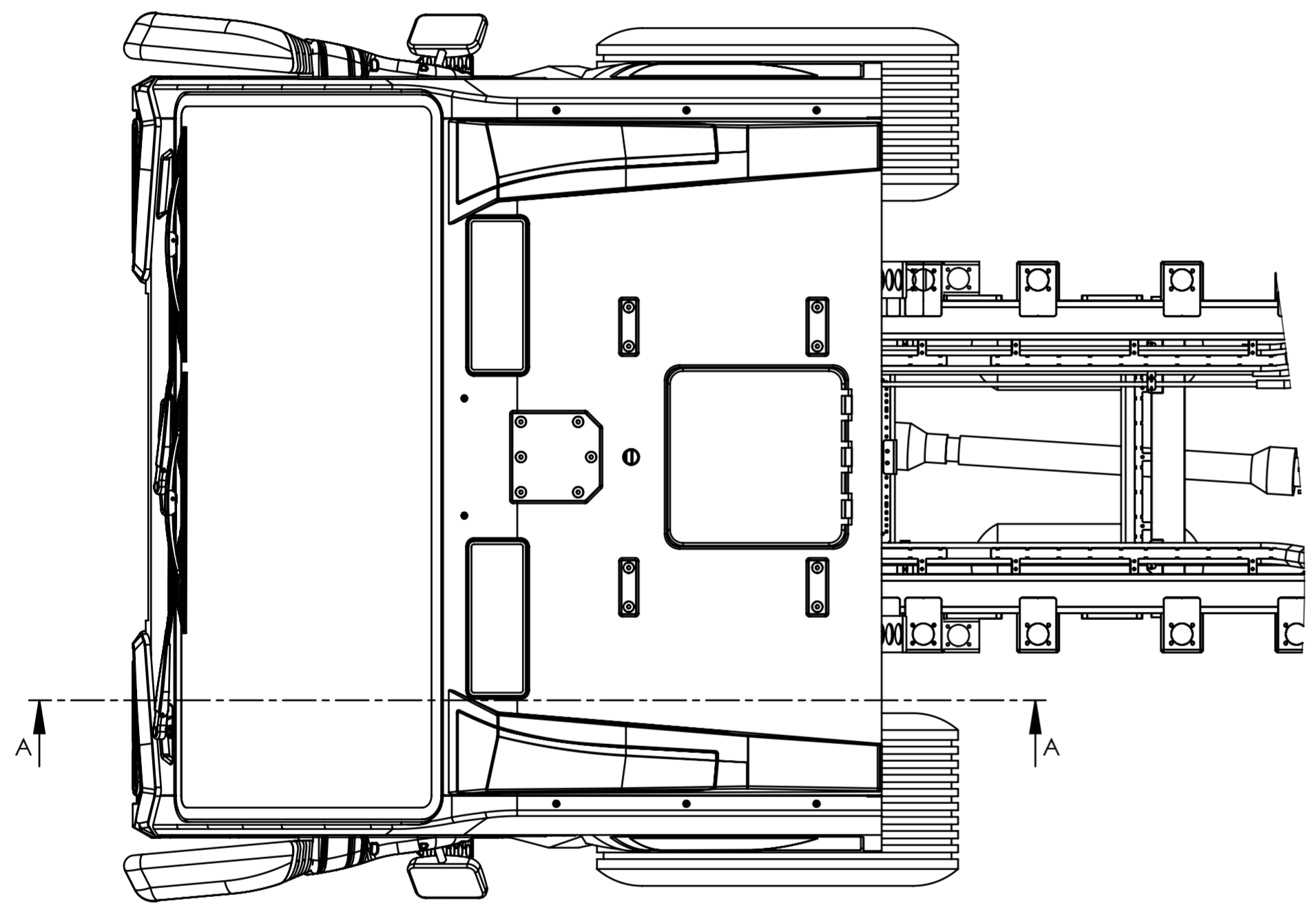
SEAT MOUNTING

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REVISIONS

REV.	DESCRIPTION	DATE	DRAWN	CHECKED	APPROVED
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PACKAGE CODE	MASS(REFERENCE)	WELDING PROCESS
-	- kg	
MATERIAL		
DESCRIPTION		

GENERAL TOLERANCES:
 (As per Standard ISO 2768)
 -unless otherwise specified-

TOLERANCE DESCRIPTION	TOLERANCE CLASS DESIGNATION
Linear Dimension	c (coarse)
External radius & chamfer height	c (coarse)
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Symmetry	K
Run-Out	K

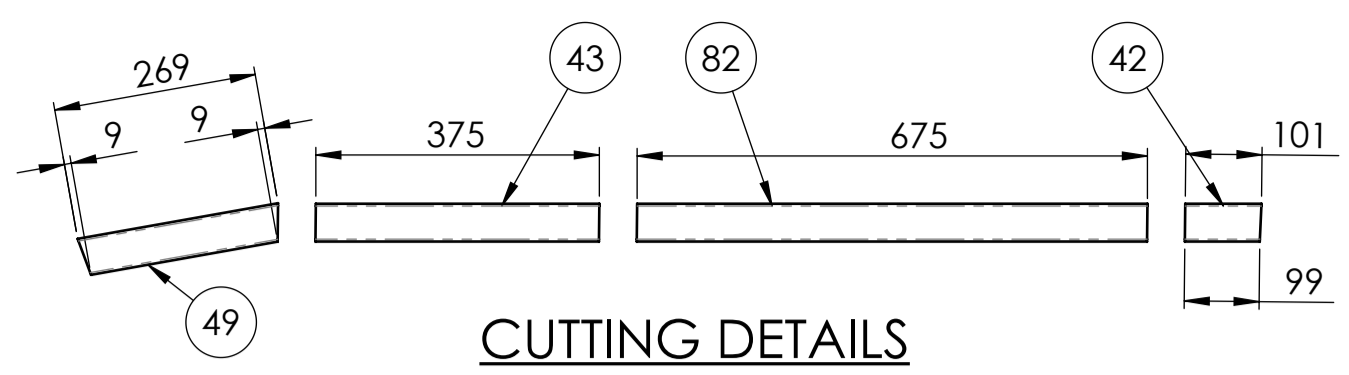
ASK IF IN DOUBT

CABIN MOUNTING

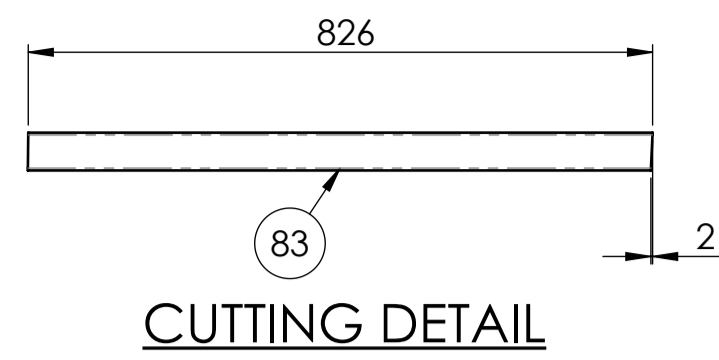
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ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED

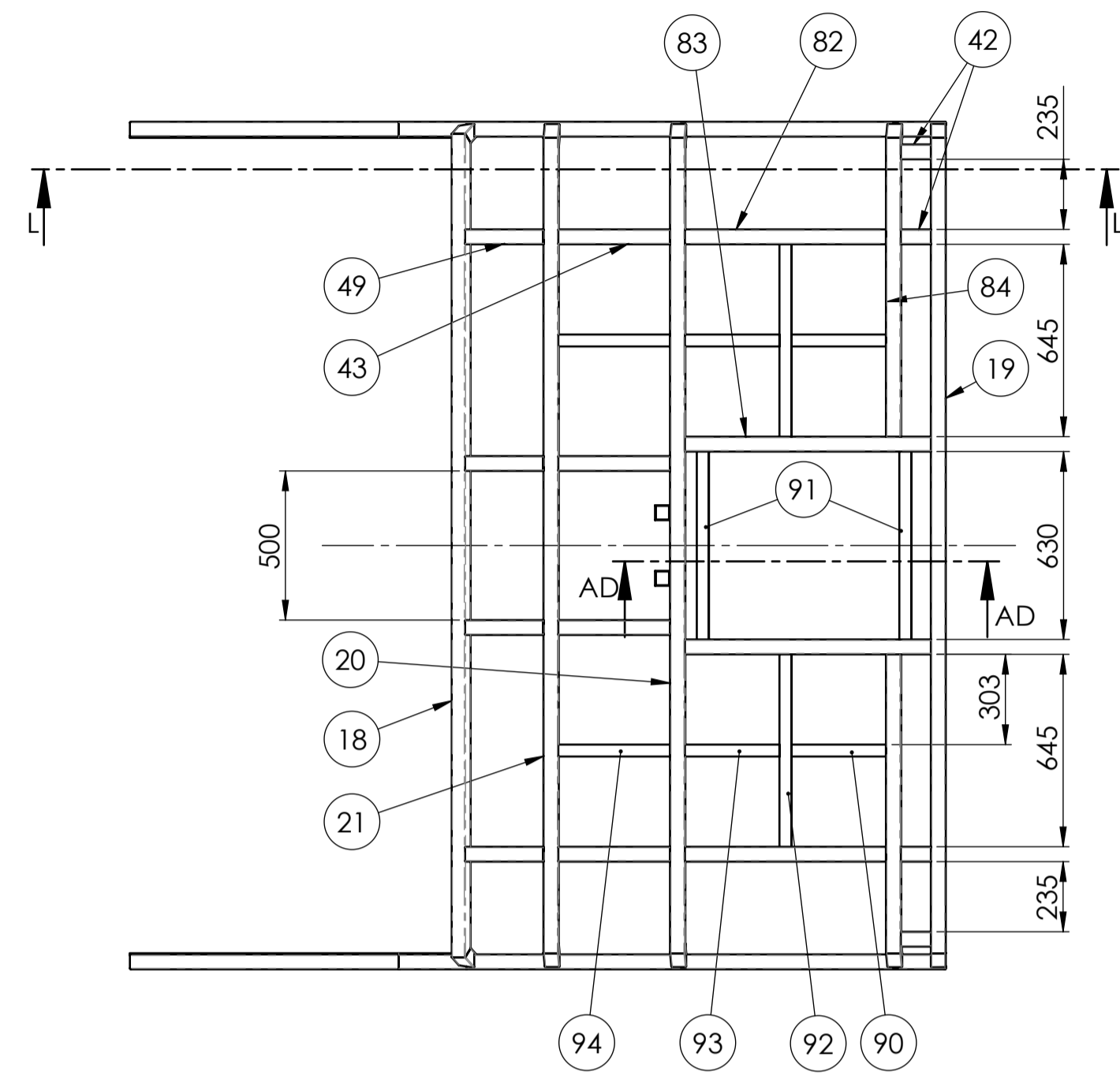




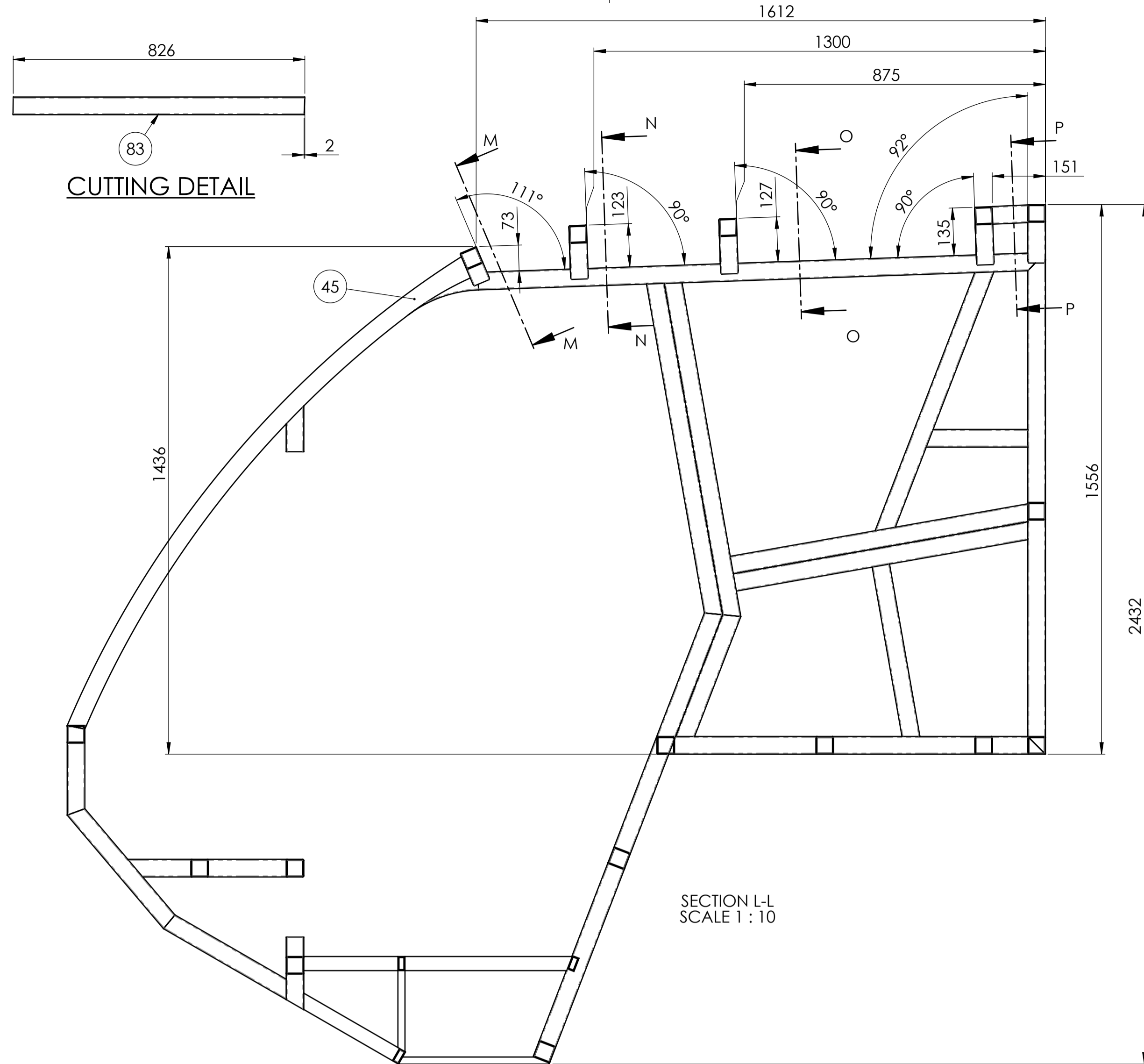
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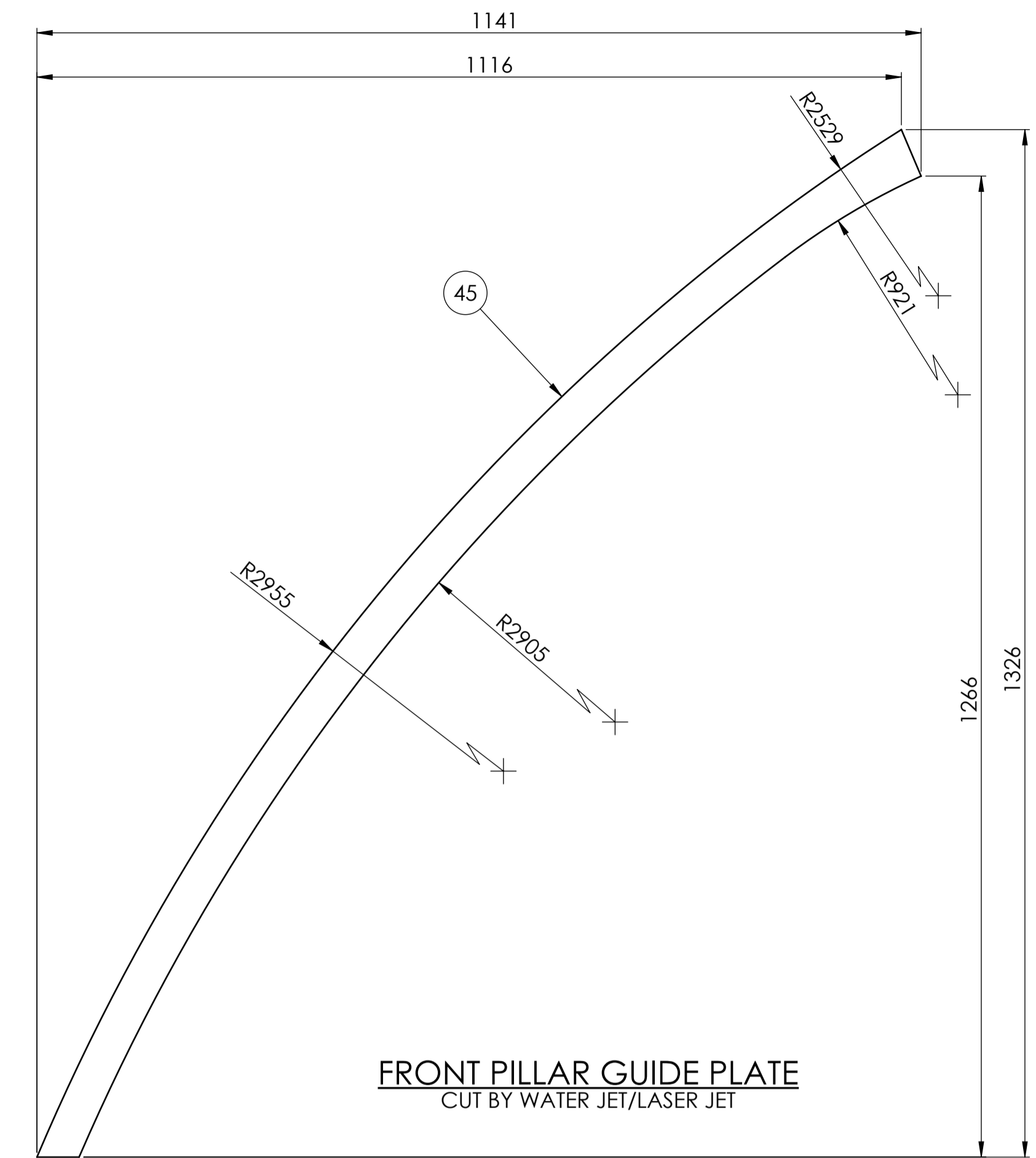
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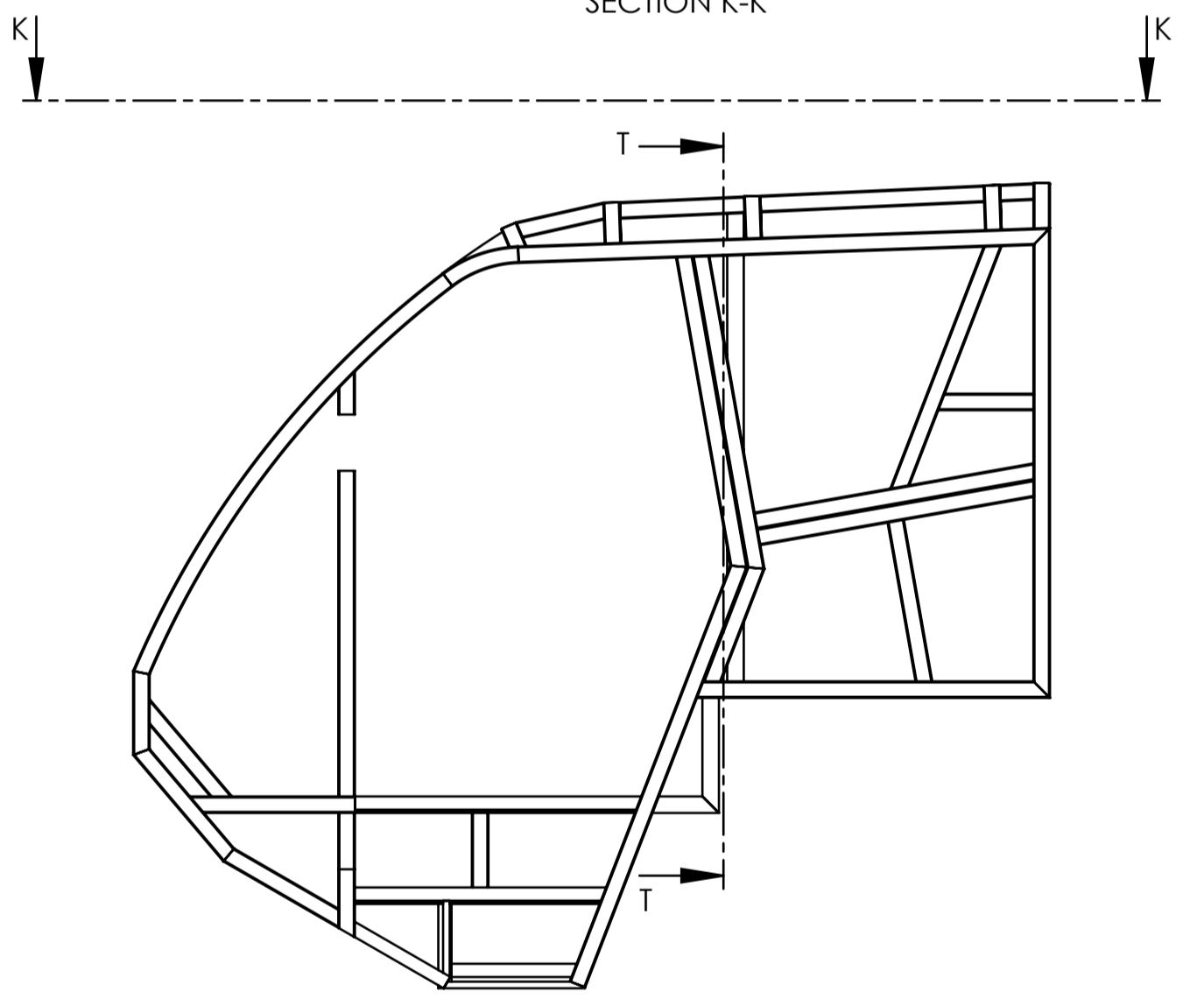
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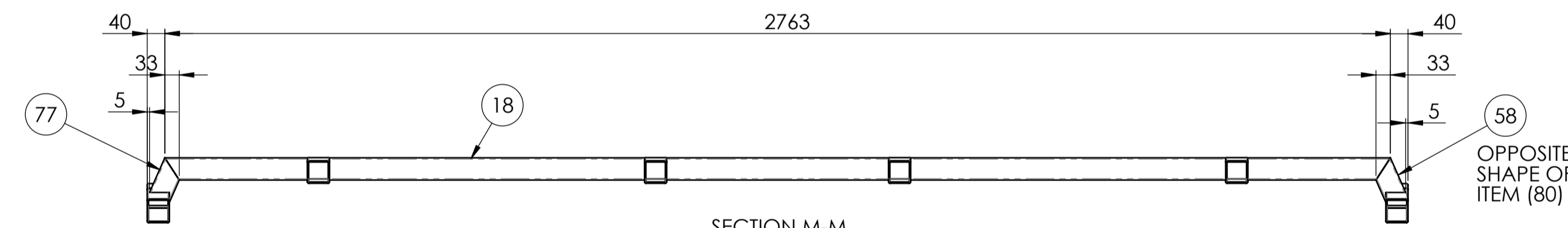
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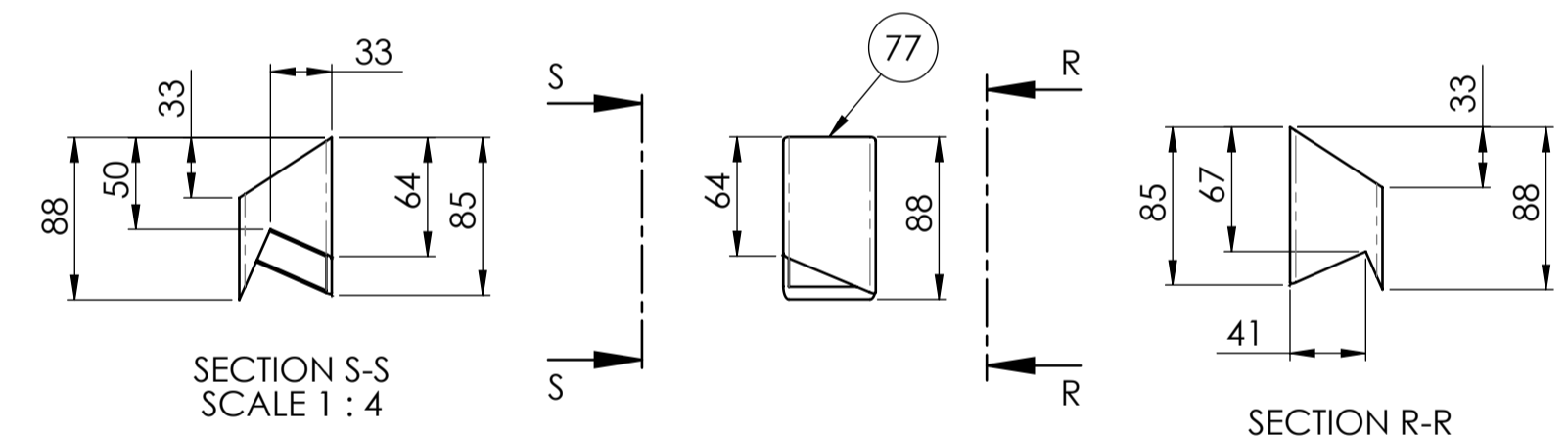
FRONT PILLAR GUIDE PLATE
CUT BY WATER JET/LASER JET



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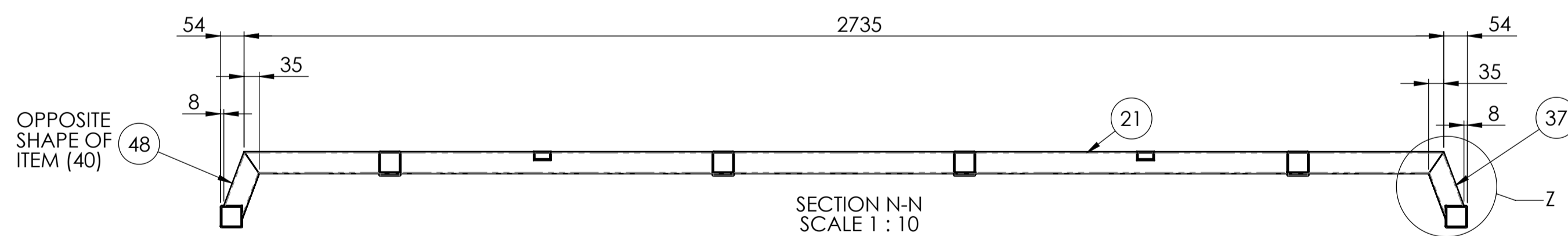


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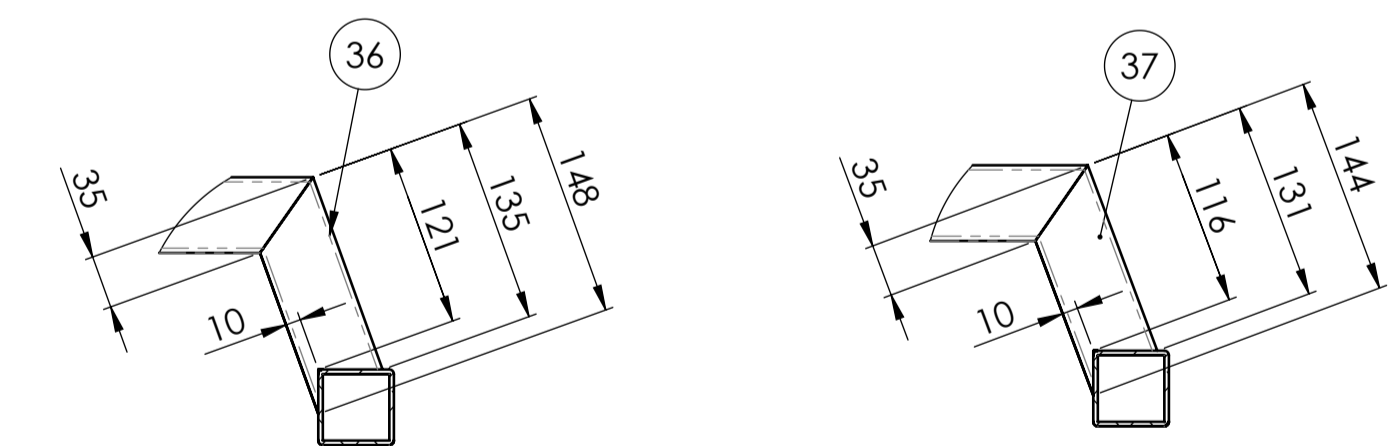


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SECTION R-R
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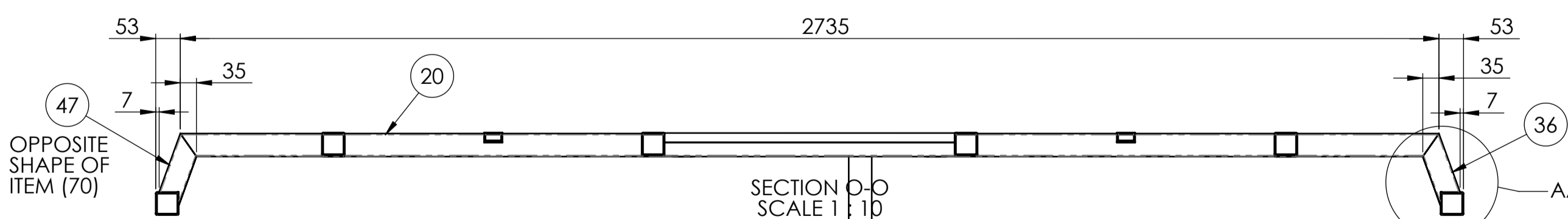


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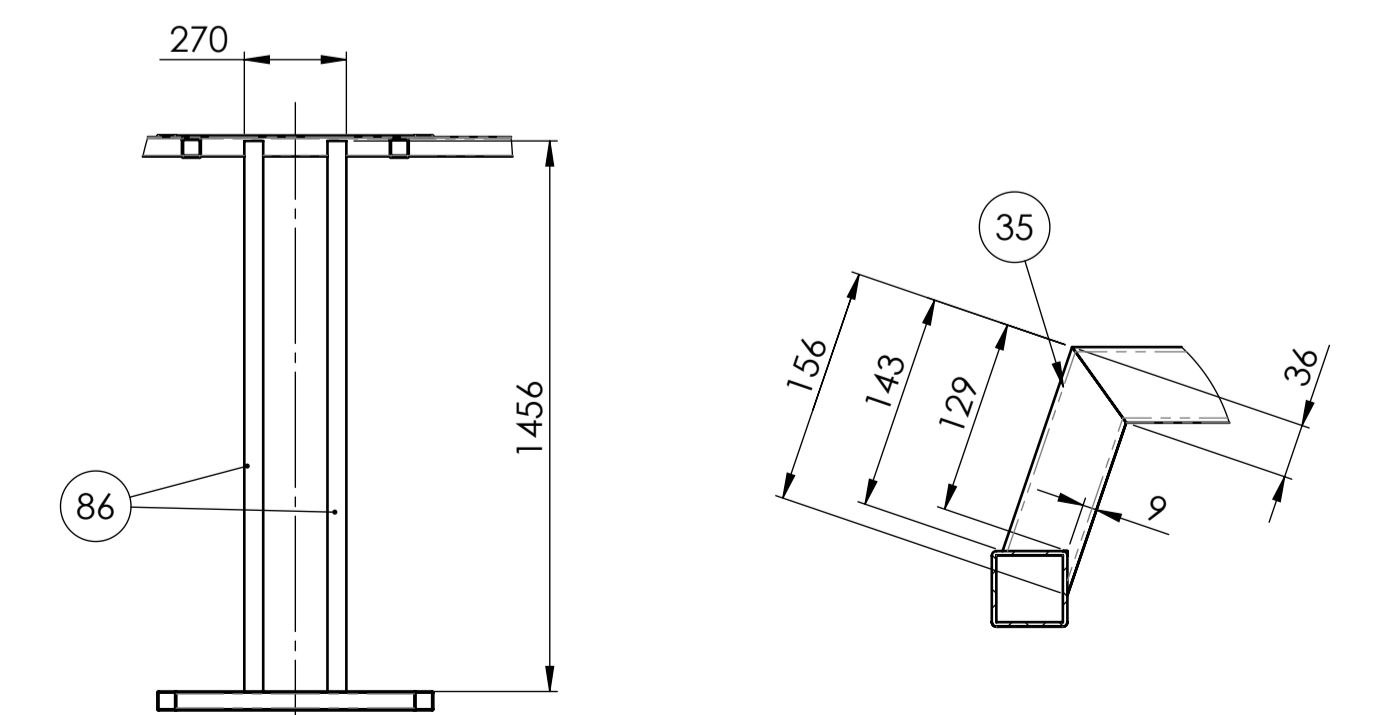


DETAIL AA
SCALE 1 : 5

DETAIL Z
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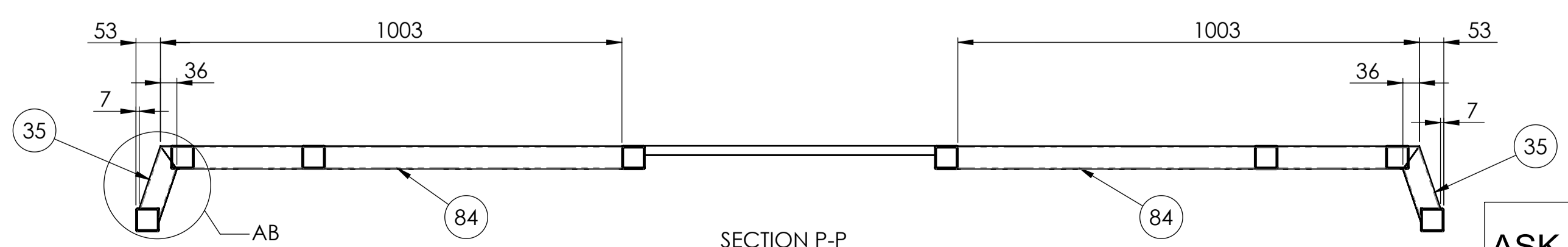


SECTION O-O
SCALE 1 : 10



SECTION T-T

DETAIL AB
SCALE 1 : 5



SECTION P-P
SCALE 1 : 10

ASK IF IN DOUBT

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED

NAFFCO FZCO
TRUCKS & VEHICLES DIVISION

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WEBSITE: www.naffco.com e-MAIL: info@naffco.com

GENERAL TOLERANCES:
(As per Standard ISO 2768)
- unless otherwise specified:

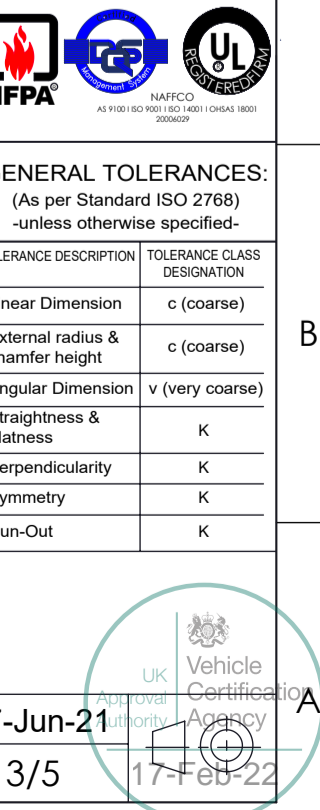
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External radius & chamfer height	c (coarse)
Angular Dimension	v (very coarse)
Straightness & Flatness	K
Perpendicularity	K
Symmetry	K
Run-Out	K

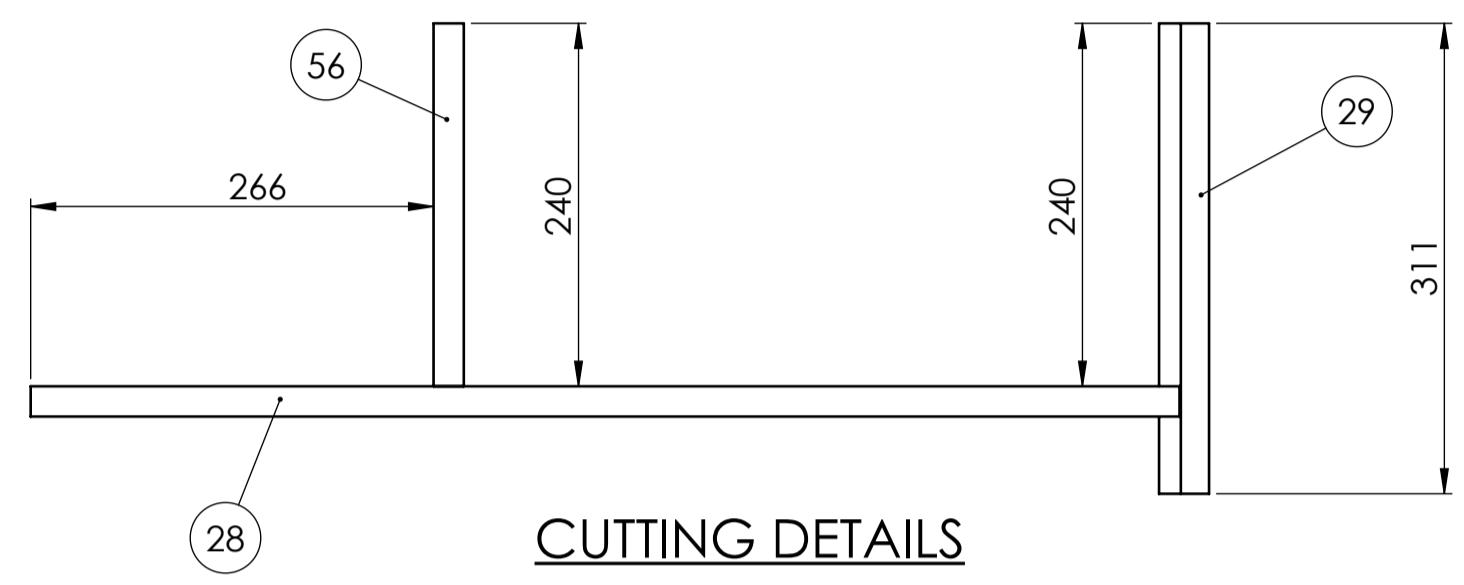
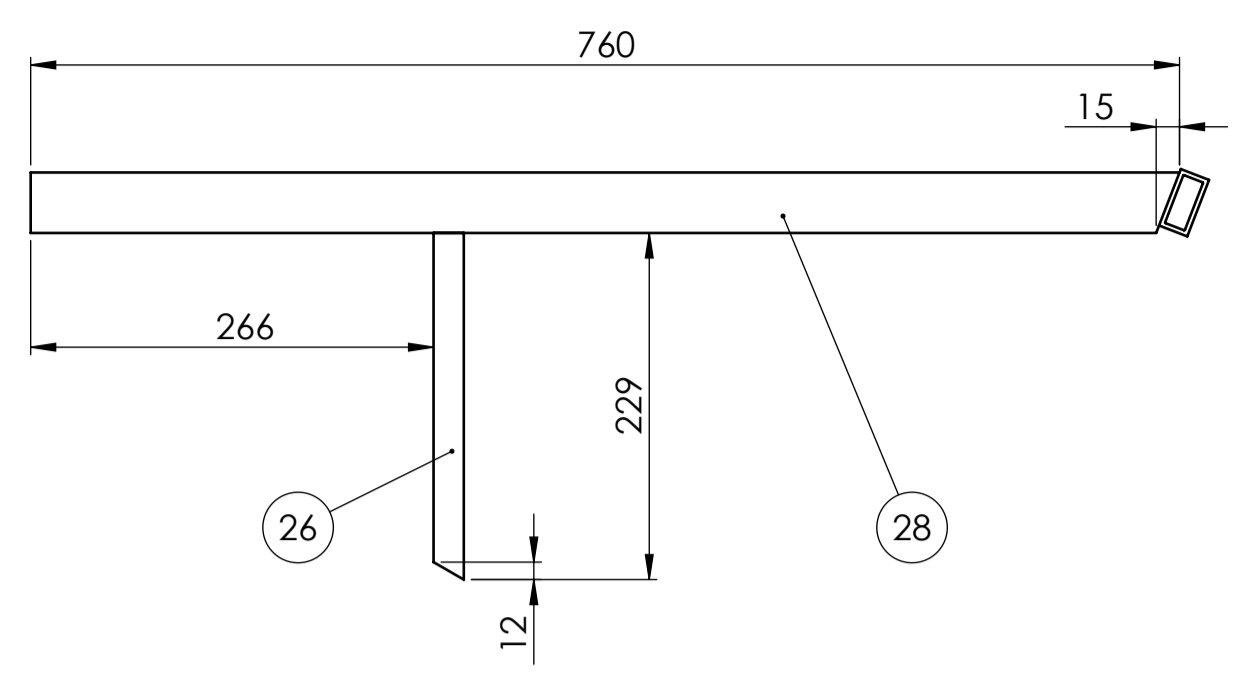
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MATERIAL: ALUMINUM

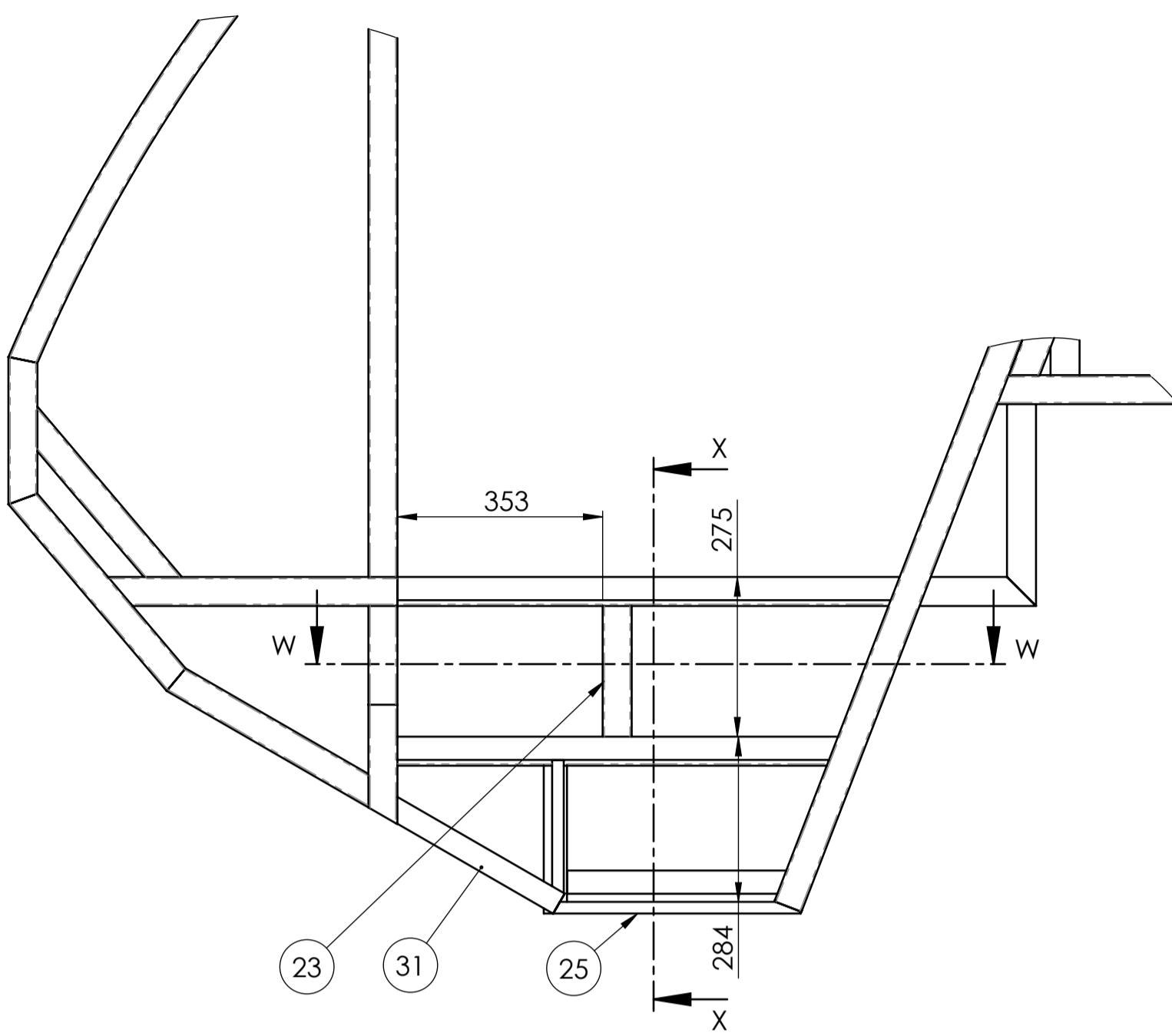
DESCRIPTION: ROLLAGE WELDMENT - 3M CABIN (AL)

DRAWN: ROGELIO	CHECKED: ELI	APPROVED: LAU	DATE: 17-Jun-21
DRAWING NO: AA054-2021-0101	REV: 0	SCALE: 1:20	SHEET: 3/5

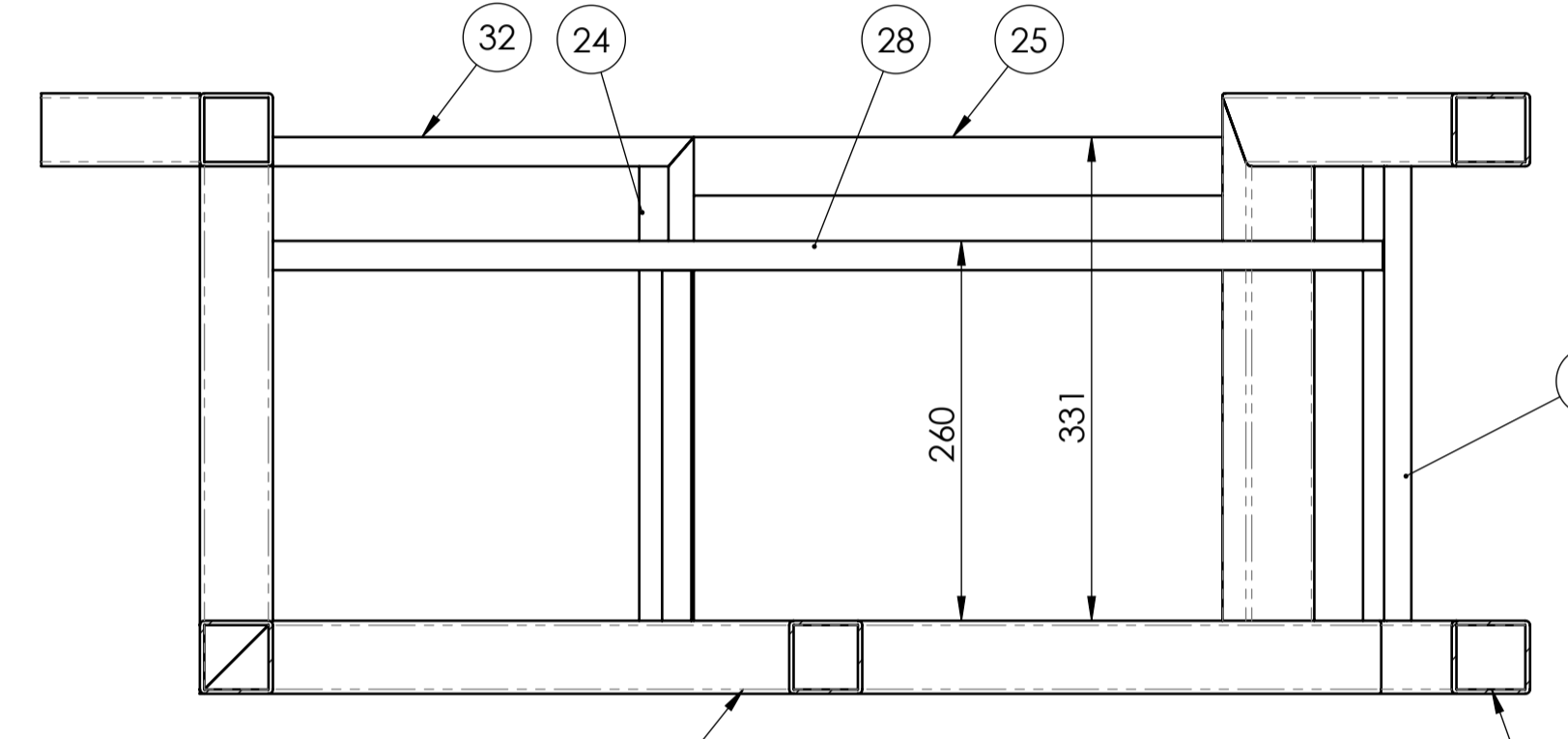
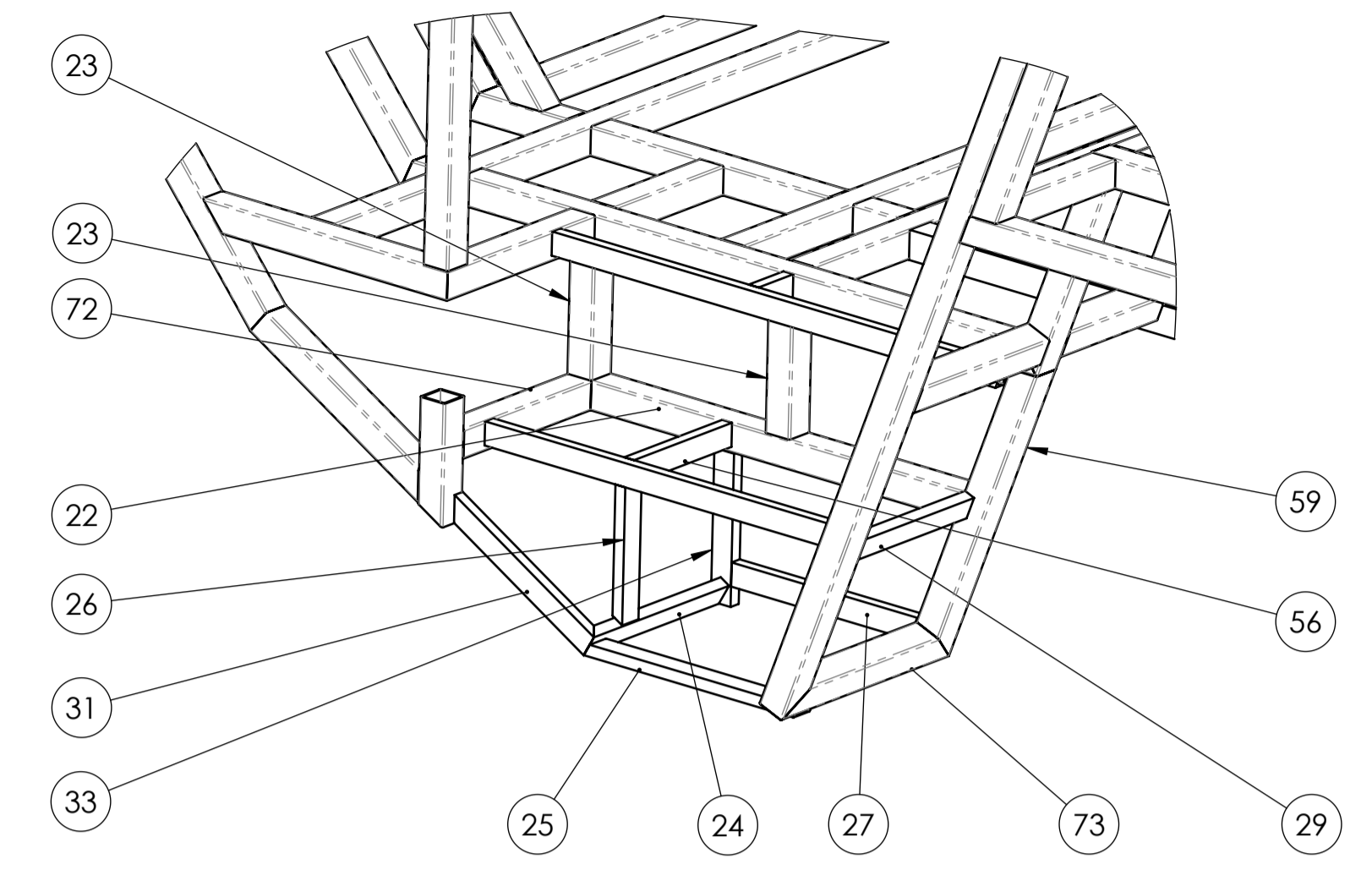




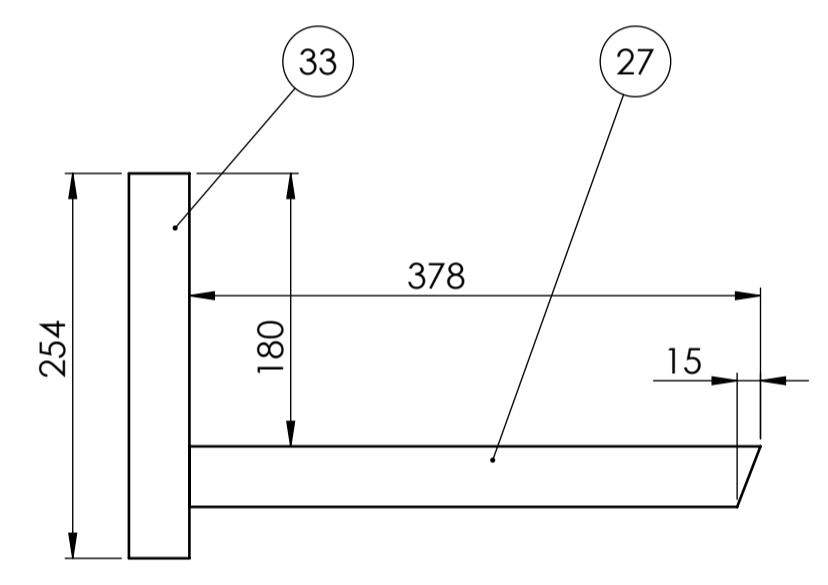
CUTTING DETAILS



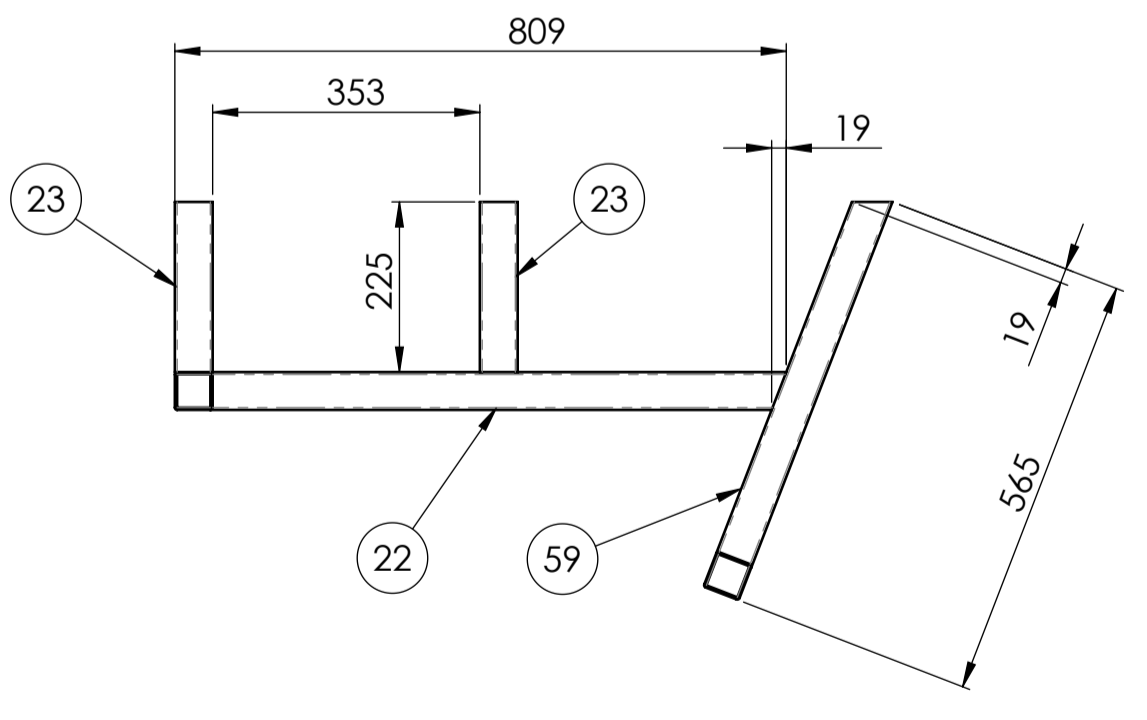
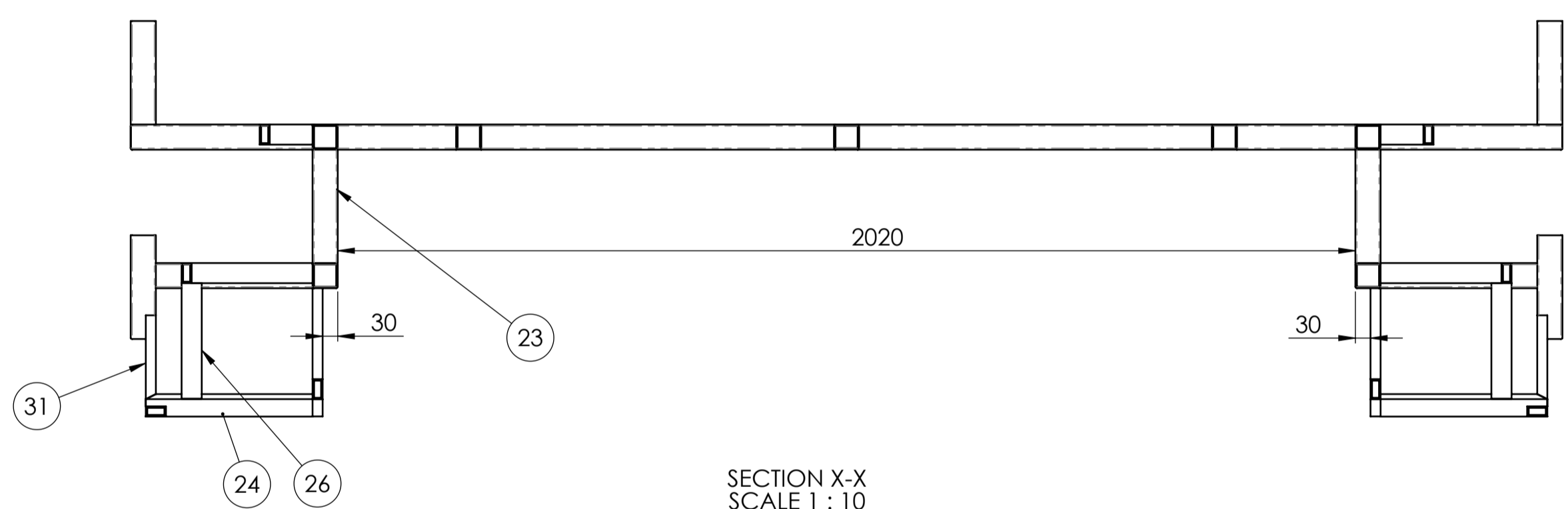
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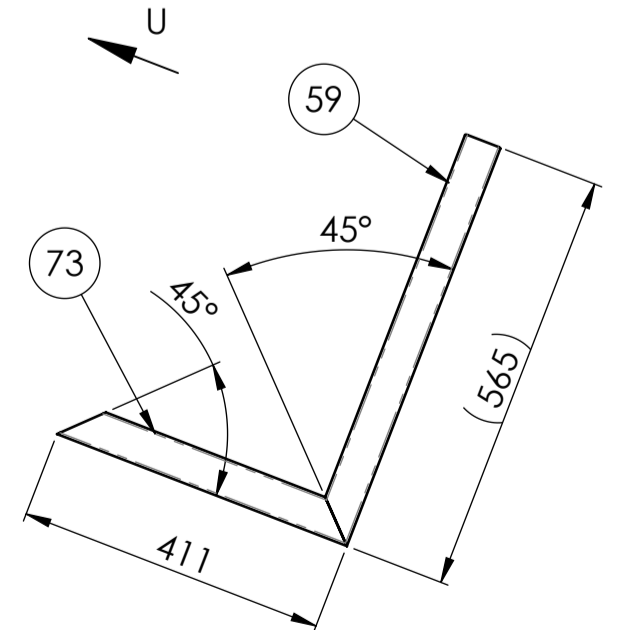
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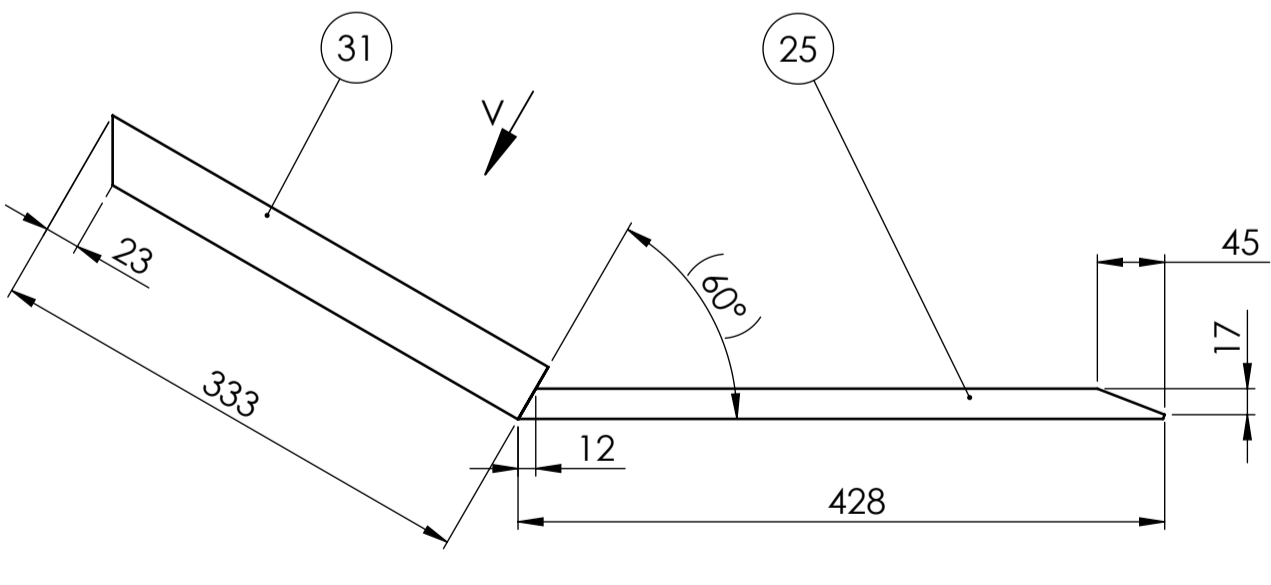
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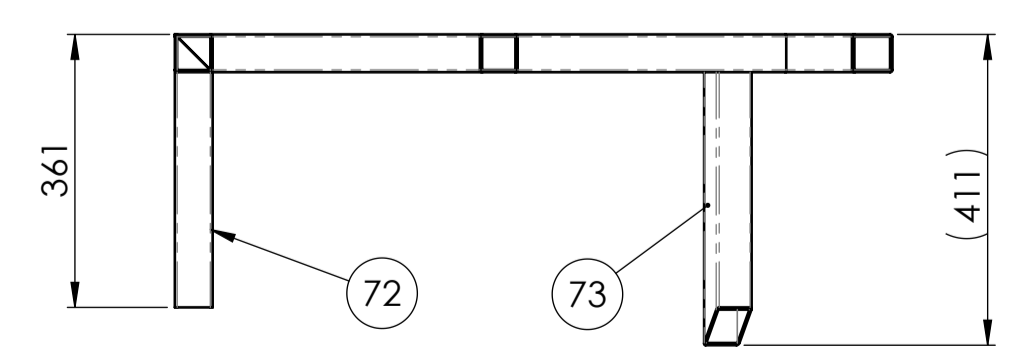
CUTTING DETAILS



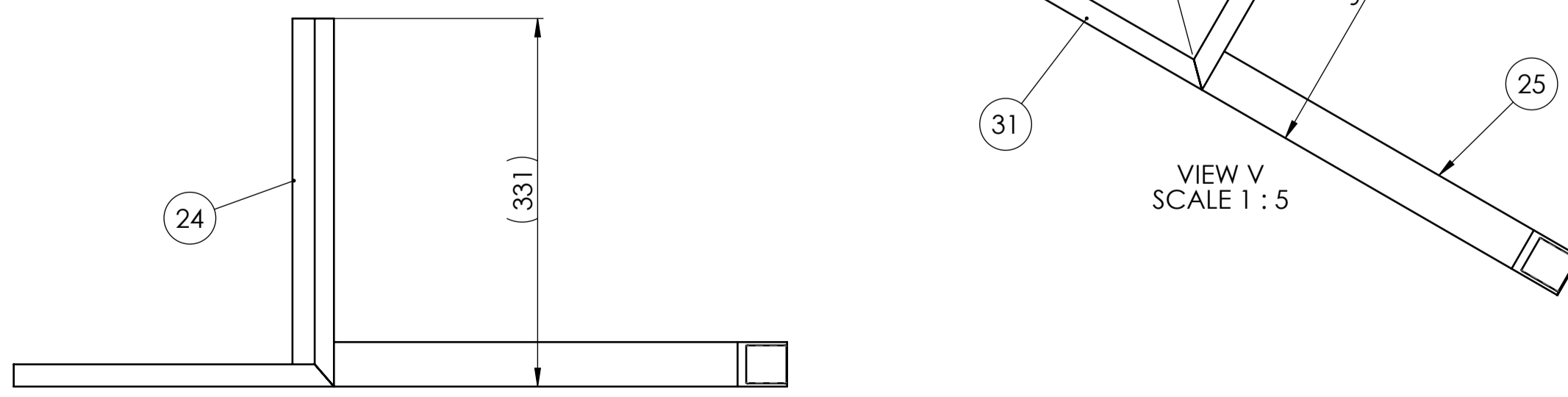
VIEW U
SCALE 1 : 10



VIEW V
SCALE 1 : 5



CUTTING DETAILS



CUTTING DETAILS

OPPOSITE SHAPE OF ITEM (25)

OPPOSITE SHAPE OF ITEM (62)

STEP STRUCTURE - LHS SIDE SHOWN. RHS SIDE IS MIRROR SHAPE

NAFFCO FZCO
TRUCKS & VEHICLES DIVISION

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TOLERANCE DESCRIPTION	TOLERANCE CLASS DESIGNATION
Linear Dimension	c (coarse)
External radius & chamfer height	c (coarse)
Angular Dimension	v (very coarse)
Straightness & Flatness	K
Perpendicularity	K
Symmetry	K
Run-Out	K

PACKAGE CODE: AA054 MASS(REFERENCE): 311.89 kg WELDING PROCESS: WPS-10

MATERIAL: ALUMINUM

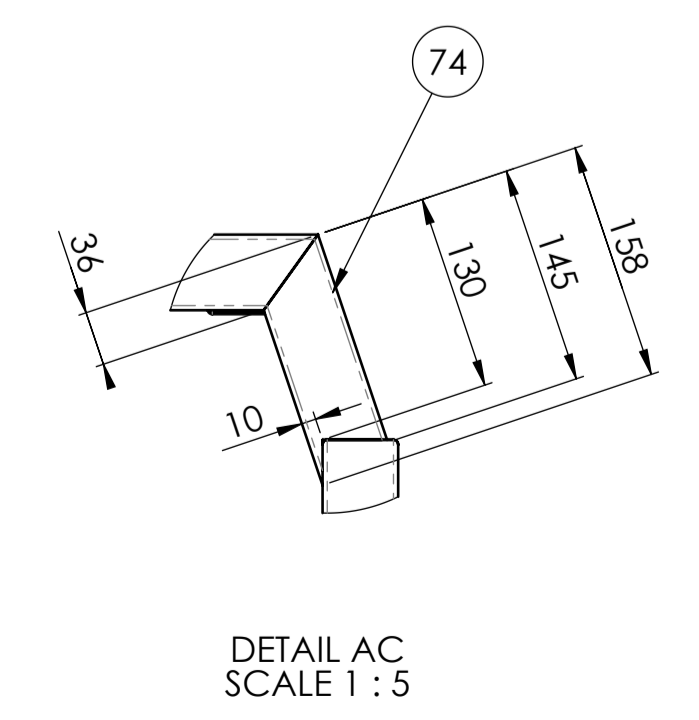
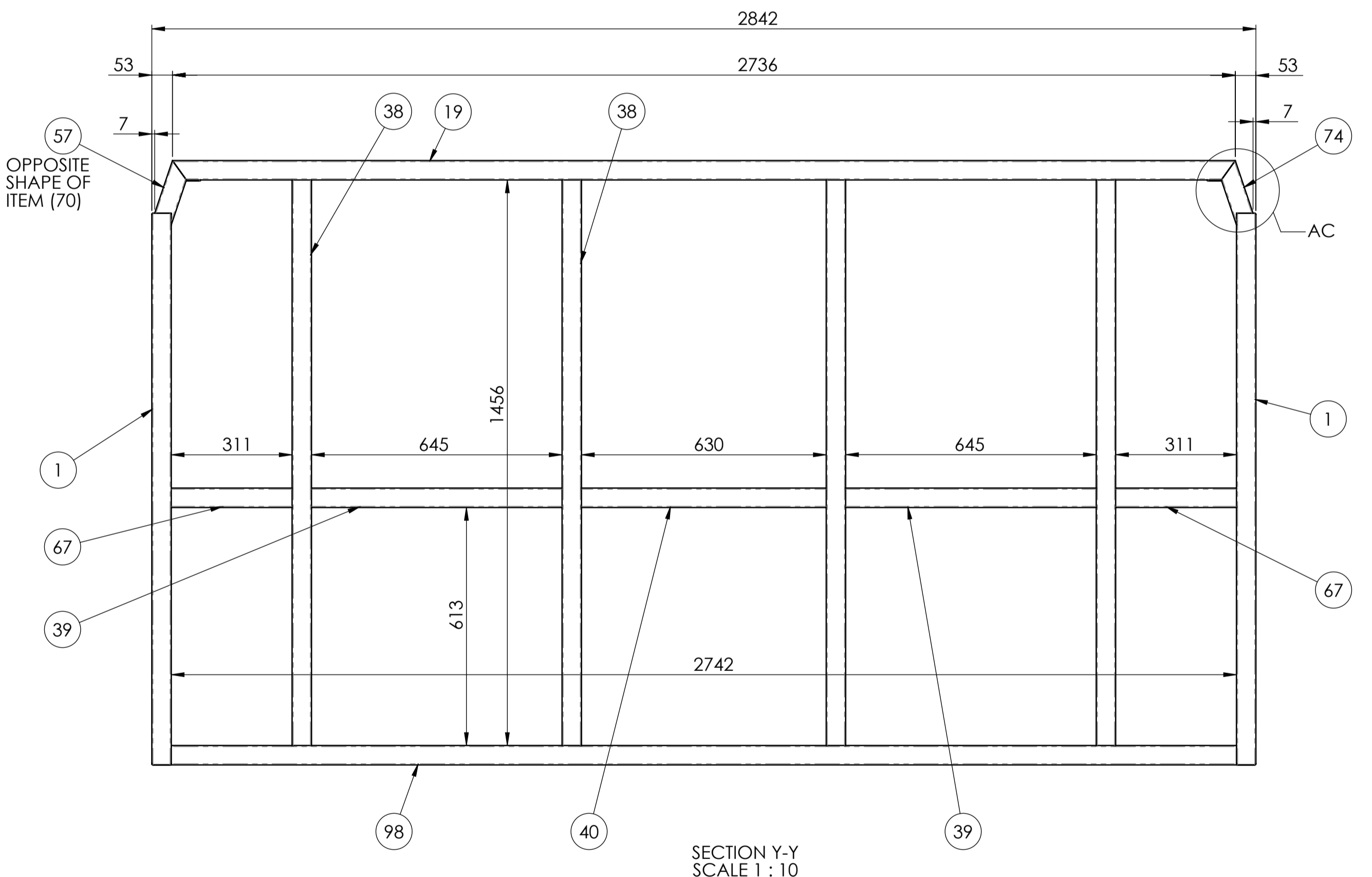
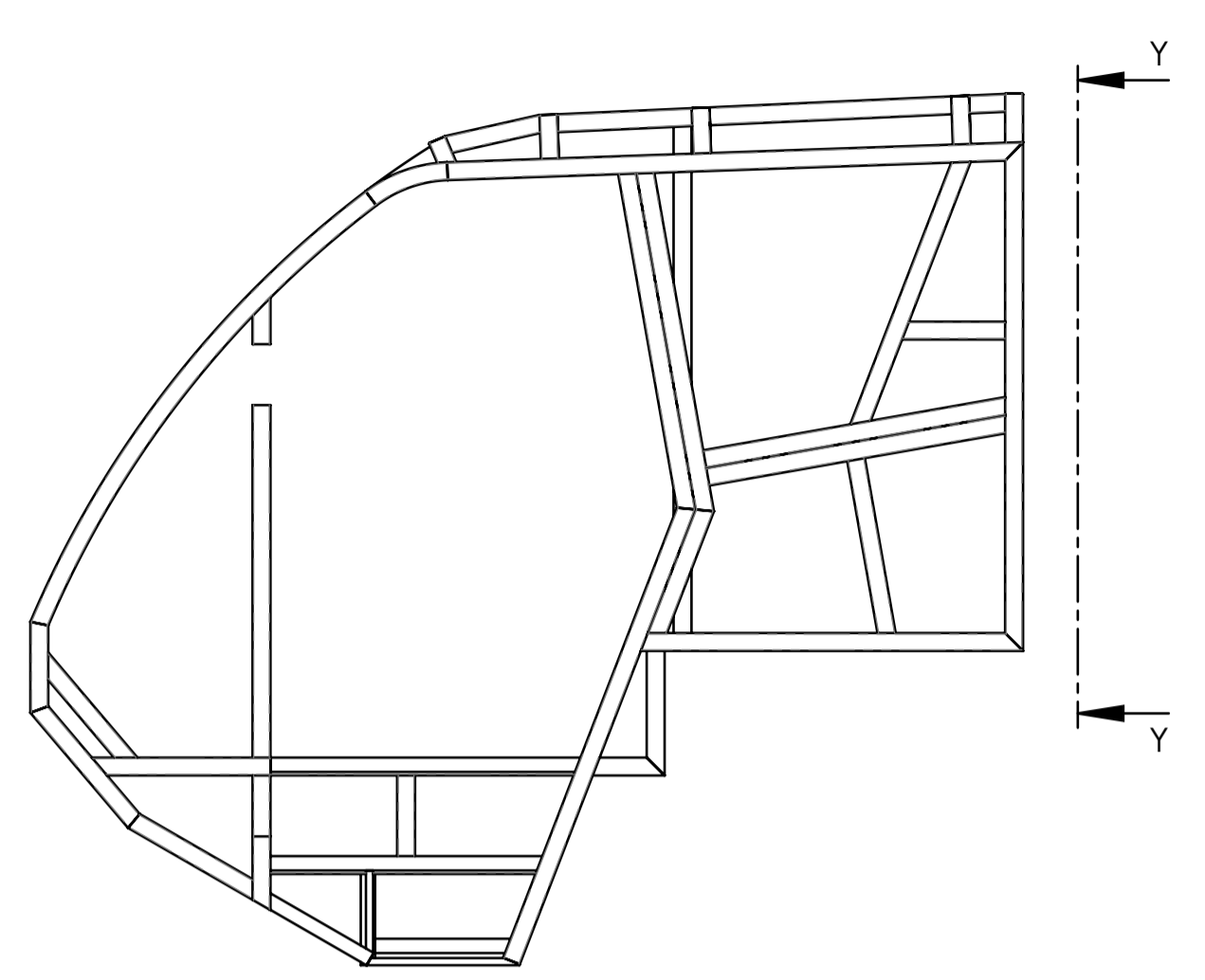
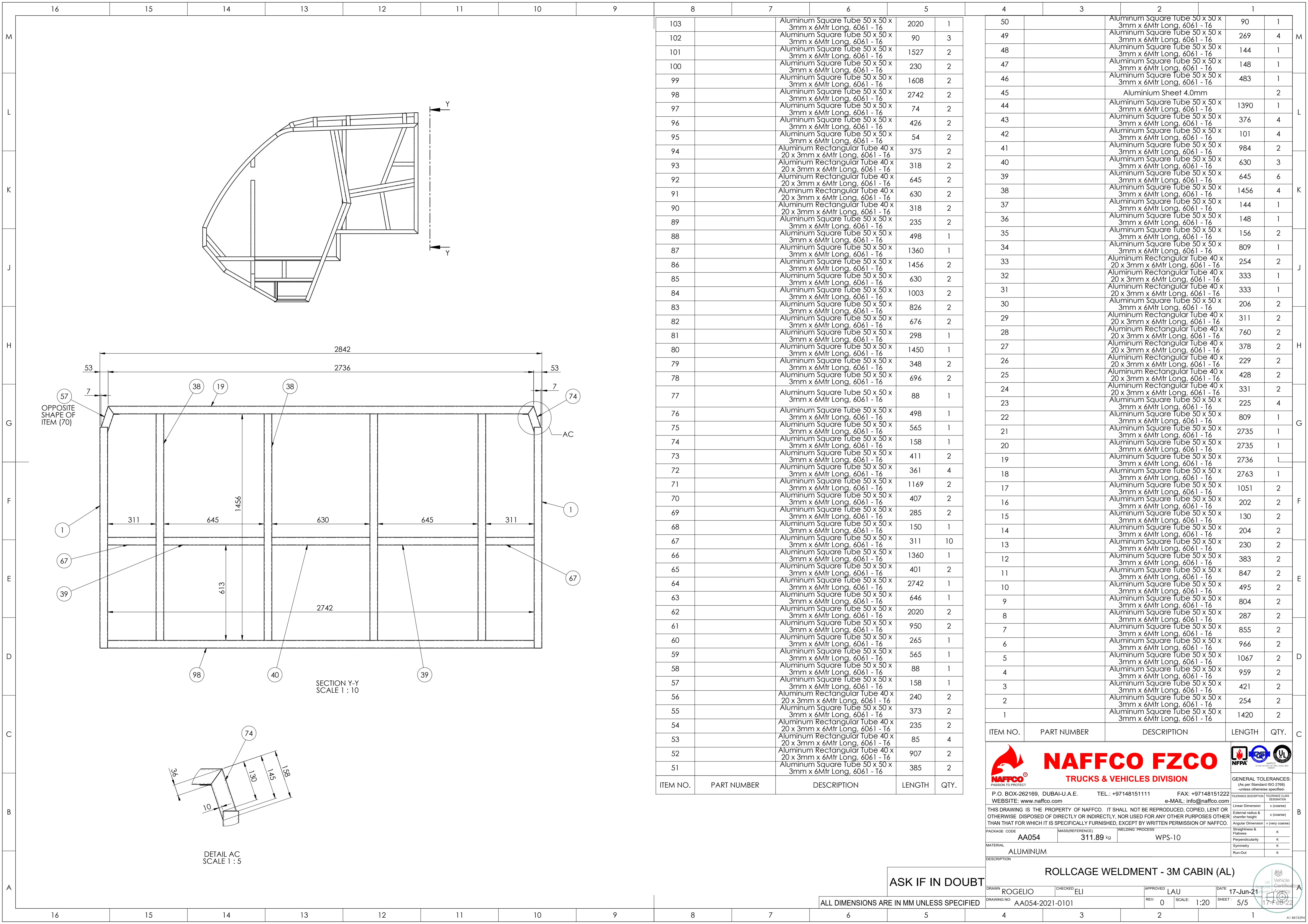
DESCRIPTION: ROLLAGE WELDMENT - 3M CABIN (AL)

ASK IF IN DOUBT

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED

DRAWN: ROGELIO	CHECKED: ELI	APPROVED: LAU	DATE: 17-Jun-21
DRAWING NO: AA054-2021-0101	REV: 0	SCALE: 1:20	SHEET: 4/5





ITEM NO.	PART NUMBER	DESCRIPTION	LENGTH	QTY.
103		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2020	1
102		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	90	3
101		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1527	2
100		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	230	2
99		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1608	2
98		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2742	2
97		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	74	2
96		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	426	2
95		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	54	2
94		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	375	2
93		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	318	2
92		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	645	2
91		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	630	2
90		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	318	2
89		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	235	2
88		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	498	1
87		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1360	1
86		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1456	2
85		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	630	2
84		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1003	2
83		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	826	2
82		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	676	2
81		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	298	1
80		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1450	1
79		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	348	2
78		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	696	2
77		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	88	1
76		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	498	1
75		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	565	1
74		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	158	1
73		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	411	2
72		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	361	4
71		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1169	2
70		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	407	2
69		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	285	2
68		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	150	1
67		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	311	10
66		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1360	1
65		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	401	2
64		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2742	1
63		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	646	1
62		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2020	2
61		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	950	2
60		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	265	1
59		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	565	1
58		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	88	1
57		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	158	1
56		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	240	2
55		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	373	2
54		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	235	2
53		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	85	4
52		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	907	2
51		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	385	2

ITEM NO.	PART NUMBER	DESCRIPTION	LENGTH	QTY.
50		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	90	1
49		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	269	4
48		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	144	1
47		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	148	1
46		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	483	1
45		Aluminium Sheet 4.0mm		2
44		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1390	1
43		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	376	4
42		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	101	4
41		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	984	2
40		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	630	3
39		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	645	6
38		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1456	4
37		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	144	1
36		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	148	1
35		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	156	2
34		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	809	1
33		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	254	2
32		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	333	1
31		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	333	1
30		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	206	2
29		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	311	2
28		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	760	2
27		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	378	2
26		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	229	2
25		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	428	2
24		Aluminum Rectangular Tube 40 x 20 x 3mm x 6Mtr Long, 6061 - T6	331	2
23		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	225	4
22		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	809	1
21		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2735	1
20		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2735	1
19		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2736	1
18		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	2763	1
17		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1051	2
16		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	202	2
15		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	130	2
14		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	204	2
13		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	230	2
12		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	383	2
11		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	847	2
10		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	495	2
9		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	804	2
8		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	287	2
7		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	855	2
6		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	966	2
5		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1067	2
4		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	959	2
3		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	421	2
2		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	254	2
1		Aluminum Square Tube 50 x 50 x 3mm x 6Mtr Long, 6061 - T6	1420	2

ASK IF IN DOUBT

ALL DIMENSIONS ARE IN MM UNLESS SPECIFIED

NAFFCO FZCO
TRUCKS & VEHICLES DIVISION

P.O. BOX-262169, DUBAI-U.A.E. TEL.: +97148151111 FAX: +97148151222
WEBSITE: www.naffco.com e-MAIL: info@naffco.com

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GENERAL TOLERANCES:
(As per Standard ISO 2768) unless otherwise specified:

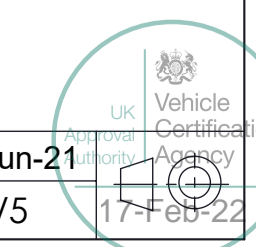
TOLERANCE DESCRIPTION	TOLERANCE CLASS
Linear Dimension	c (coarse)
External radius & chamfer height	c (coarse)
Angular Dimension	v (very coarse)
Straightness & Flatness	K
Perpendicularity	K
Symmetry	K
Run-Out	K

PACKAGE CODE: AA054 MASS/REFERENCE: 311.89 kg WELDING PROCESS: WPS-10

MATERIAL: ALUMINUM

DESCRIPTION: ROLLCAGE WELDMENT - 3M CABIN (AL)

DRAWN: ROGELIO CHECKED: ELI APPROVED: LAU DATE: 17-Jun-21
DRAWING NO: AA054-2021-0101 REV: 0 SCALE: 1:20 SHEET: 5/5





Test Report: Protection of the Occupants of the Cab of a Commercial Vehicle

Legislation

UNECE Regulation 29.03 to Supplement 3

Inspection/Test Details

Location of Inspection/Test:	NAFFCO FZ CO (Trucks and Vehicles Division) South Jebel Ali Free Zone, Dubai, UAE.
Date of Inspection/Test:	11-14 January 2022 (Remote witness)
VCA Representative(s):	Vasant Chaudhari
Inspectors Home office location:	VCA India
Manufacturer's Representative(s):	Girish Raj
Reason for Test Report:	New Approval

Manufacturer Details

Name and Address:	NAFFCO FZ CO (Trucks and Vehicles Division) South Jebel Ali Free Zone P.O. Box 262169 Dubai UAE
Type:	ARFF-AL
Commercial Description:	Aircraft Rescue and Fire Fighting Vehicle
Category:	N3 (Subcategory SG)

Conclusion

The above-mentioned vehicle / engine / component was tested in accordance with the above mentioned legislation and was found to comply in all respects. This report relates only to the items tested.

Witness Engineer

Signature:

Name:	Vasant Chaudhari
Position:	Principal Type Approval Engineer
Date:	14 February 2022

List of Annexes

Annex	No of Pages	Subject
I	2	Test Set up photographs
II	4	Measurement of Manikin and vehicle clearances





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Issue Record

Note: Include reason for reissue, date of reissue, who has reissued.

Issue 0 is original report

Worst Case Rationale:

Single type of cabin for N3 category (subcategory SG), special purpose vehicle for Aircraft Rescue and Fire Fighting having rear engine , no other configuration. Cabin having only Middle driver seat and cab is not over engine being rear engine vehicle.

As per clause 5.1.4. Test A (frontal impact) shall only be conducted on Cab-over-Engine vehicles but the test conducted as requested by manufacturer and results for test A in this report are just recorded and not part of approval.

Secondly for test A, as per Annex 3 Appendix 1, clause 1.6, equivalent mounting, as requested by manufacturer cab mounted on a special frame, on condition that this method of mounting is shown to be equivalent to mounting on the vehicle accepted.

For test C impactor is rectangular and flat, P2 test conducted with Cab tilted position.

All tests conducted on representative cab mounted on special frame at the manufacturer's choice.

Note: Include information on variants and versions this report covers, as applicable. Supporting documents may be annexed to this report

Significant Interpretations, Alternative Test Methods, New Technologies

NIL

Inspection/Tests Required

Table with 2 columns: Test Name, Response (Yes, NA, See Report ... / Approval ... / Annex ...)

Vehicle Specification

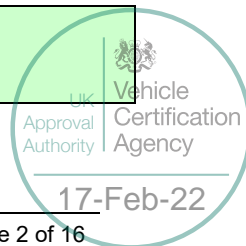
Vehicle Identification Number: Not applicable

Manufacturer's Documentation

Manufacturer's documentation is complete and reflects the agreed specification for the vehicle tested and covers all variants and versions agreed in the worst case rationale.

Yes

Information document uploaded to job folder and identified by job number





Report Number: ISY551923
Issue: 0

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Facility and Equipment Checks

Facility Appraisal reference and date:

Yes

Reference and date if formal; state if ad-hoc appraisal).

Calibration certificates are traceable to national or international standards of measurement, where available:

Yes

Calibration certificates checked and valid, recorded in the following table:

Yes

Equipment

Description	Make	Model	Serial number	Calibration due date*
Digital Protractor	MITUTOYO	Cert No:05-C375550-RevNo:0	18030234(PD-01)	27/01/2023
Weighing pads	CAS	RWT-910F	RW95T002	29/08/2022

*Specify calibrated date + (interval) or calibration due date.

Software used in Testing: NA

Description	Make	Version
--	--	--
--	--	--
--	--	--





Inspection/Test Requirements:		Complies Yes / NA
General		
5.1.2.	Vehicles of categories N ₁ and vehicles of categories N ₂ with a gross vehicle mass ≤ 7.5 t are subjected to tests A and C, as described in Annex 3, paragraphs 5 and 7. <i>Note: Test C is only conducted on vehicles that have a separate cab.</i>	NA
5.1.2.	Vehicle type that meets the frontal impact requirements of UNECE Regulation 12, UNECE Regulation 33 or UNECE Regulation 94, and vehicles of category N ₁ , derived from M ₁ approved to UNECE Regulation 94, may be considered to have satisfied the requirements on frontal impact (test A).	NA
5.1.3.	Vehicles of categories N ₃ and vehicles of categories N ₂ with a gross vehicle mass > 7.5 t are subjected to the tests A, B and C, as described in Annex 3, paragraphs 5, 6 and 7. <i>Note: Test C is only conducted on vehicles that have a separate cab.</i>	Yes
5.1.4.	Test A (frontal impact) is only conducted on cab-over-engine vehicles.	Yes <i>(Refer Page 2, WC note)</i>
5.1.5.	1, 2 or 3 cabs, at the manufacturer's choice, may be used for the purpose of demonstrating compliance with paragraphs 5.1.2 or 5.1.3 above. However, both phases in Test C, if applicable, are conducted on the same cab.	Yes
5.1.6.	If computer simulation or calculations of the strength of the component parts of the cab are to the satisfaction of the Technical Service that the cab will not undergo deformation dangerous to the occupants, these may be used instead of the above tests.	NA



Test Procedure

Doors

Ann 3, 1. Before the tests, the doors of the cab are closed but not locked. Yes

Engine

Ann 3, 2. For test A, the engine or a model equivalent thereto in mass, dimensions and mounting, is fitted to the vehicle. NA
(Refer Page 2,
WC note)

Cab

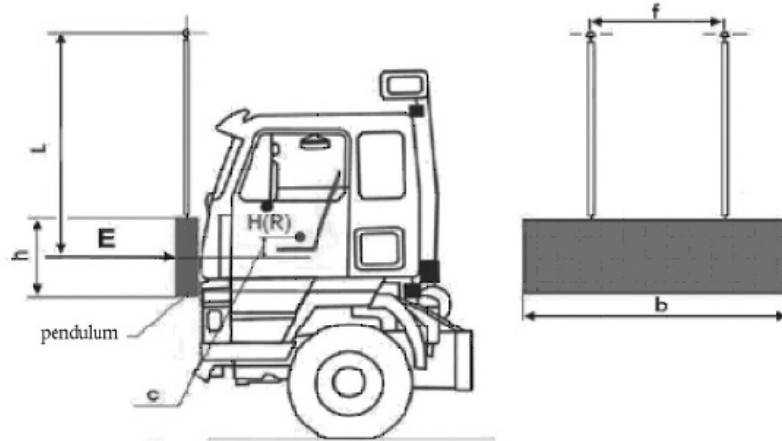
Ann 3, 3. Cab is equipped with the steering mechanism, steering wheel, instrument panel and the driver and passenger seats. The steering wheel and the seating position are adjusted to their positions for normal use, as prescribed by the manufacturer. Yes

Anchorage of the Cab

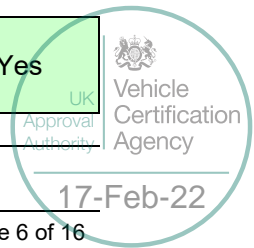
Ann 3, 4. For test A, the cab is mounted on a vehicle. For tests B and C, the cab, at the manufacturer's choice, is mounted either on a vehicle or on a separate frame. The vehicle or frame is secured in the manner prescribed in Appendix 1 to this annex. Yes
(Refer Page 2,
WC note)



Front Impact Test (Test A): (Refer Page 2, WC note)



Ann 3, 5.1.	Impactor made of steel and its mass evenly distributed.		Yes
Ann 3, 5.1.	Its mass is $\geq 1,500$ kg:	1700 kg	Yes
Ann 3, 5.1.	Its striking surface, rectangular and flat, is 2,500 mm wide and 800 mm high (b and h). Its edges are rounded to a radius of curvature of $10 \text{ mm} \pm 5 \text{ mm}$.		Yes
Ann 3, 5.2.	Impactor assembly is of rigid construction.		Yes
Ann 3, 5.2.	Impactor is freely suspended by 2 beams rigidly attached to it and spaced $\geq 1,000$ mm apart (f):	1000 mm	Yes
Ann 3, 5.2.	Beams are $\geq 3,500$ mm long from the axis of suspension to the geometric centre of the impactor (L):	3500 mm	Yes
Ann 3, 5.3.	Impactor is so positioned that in the vertical position:		
Ann 3, 5.3.1.	Its striking face is in contact with the foremost part of the vehicle;		Yes
Ann 3, 5.3.2.	Its centre of gravity is $c = 50 + 5/- 0$ mm below the R-point of the driver's seat;		Yes
Ann 3, 5.3.3.	Its centre of gravity is in the median longitudinal plane of the vehicle.		Yes
Ann 3, 5.4.	Impactor strikes the cab at the front in the direction towards the rear of the cab. The direction of impact is horizontal and parallel to the median longitudinal plane of the vehicle.		Yes





Ann 3, 5.5.-5.5.2. Impact energy is: Yes
(Tested
impact energy
58 kJ)

- ~~20.4 kJ in the case of vehicles of category N₁ and vehicles of category N₂ with a gross vehicle mass ≤ 7.5 t*~~
- 55 kJ in the case of vehicles of category N₃ and vehicles of category N₂ with a gross vehicle mass > 7.5 t*

*Strikethrough, as appropriate.

Ann 4-5 **Reference Data concerning Seating Positions**

H-point within 50 mm by 50 mm rectangle on first check. Yes

H-point within 50 mm by 50 mm rectangle on second check. NA

H-point within 50 mm by 50 mm rectangle on third check. NA

Manufacturer's R-point used for tests. Yes

Details of seat used for the tests:

Driving seating position: -

Longitudinal Travel: - Total travel measured 136 mm
Seat is positioned to the mid-position of travel for measurement of survival space before and after test.

Height adjustment: - normal condition (Mid position)

Seatback tilt adjustment:- Seat maintained at normal design position as specified by the manufacturer

Details of vehicle ride height to be used for the tests, if other than normal:

Height adjustment – seat was set in normal condition (Mid position)

Seat adjusted to its most rearward position for the manikin assembled, then moved to its median position for assessment of the survival space. Yes

Design torso angle: 13 °

Actual seat back angle: 13 °

Offset of R-point from H-point:		up/down* mm
Offset of R-point from H-point		forward/rearward* mm

*Strikethrough, as appropriate.





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Vehicle ride height set as agreed, where applicable.

Yes

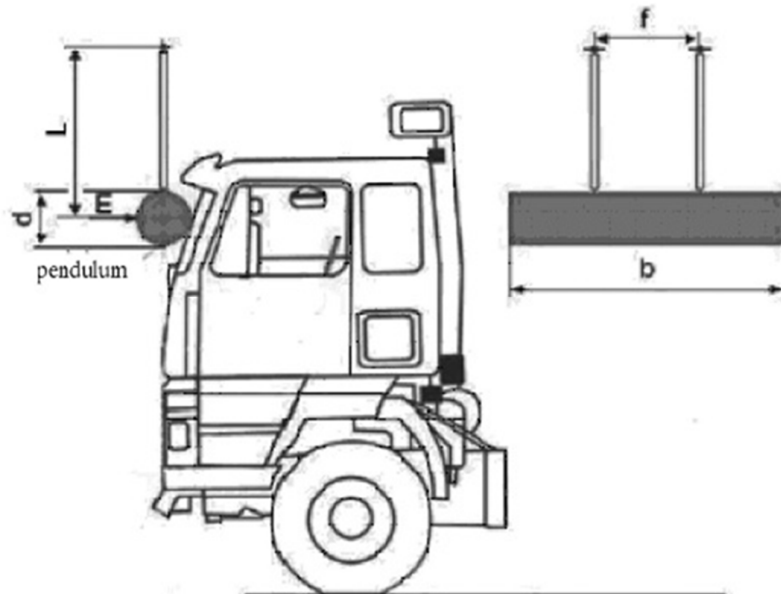
Coordinates of R-point:

	1L	1C	1R	2L	2C	2R
X		993				
Y		-395				
Z		457				

Specifications for seat adjustment:

	1L	1C	1R	2L	2C	2R
Horizontal		240				
Vertical		76				
Angular		20°				
Torso angle		13°				

Front Pillar Impact Test (Test B) –



Ann 3, 6.1.

Impactor is rigid and its mass evenly distributed;

Yes

Ann 3, 6.1.

Its mass is $\geq 1,000$ kg:

1220 kg

Yes

Ann 3, 6.1.

Impactor is cylindrical with a diameter (d) of the cylinder of 600 ± 50 mm.

Yes
(600 mm)



17-Feb-22

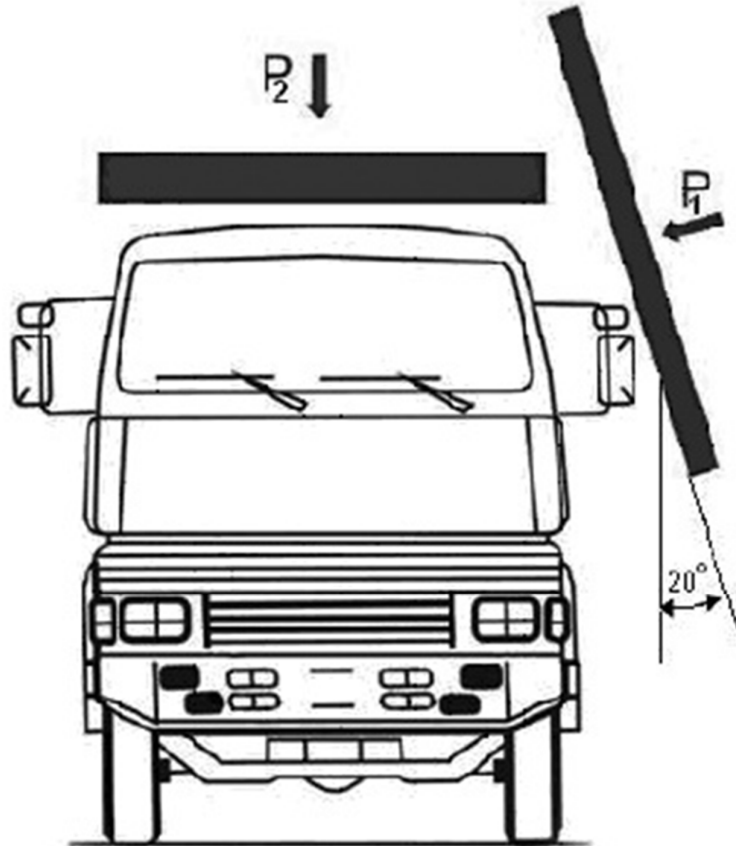


Ann 3, 6.1.	Length (b) is $\geq 2,500$ mm:	3000 mm	Yes
Ann 3, 6.1.	Its edges are rounded to a radius of curvature of ≥ 1.5 mm:	≥ 1.5 mm	Yes
Ann 3, 6.2.	Impactor assembly is of rigid construction.		Yes
Ann 3, 6.2.	Impactor is freely suspended by 2 beams rigidly attached to it and spaced 1,000 mm apart (f):	1000 mm	Yes
Ann 3, 6.2.	Beams are $\geq 3, 500$ mm long (L) from the axis of suspension to the geometric centre of the bob impactor:	3500 mm	Yes
Ann 3, 6.3.	Impactor is positioned so that when its suspension is in the vertical position:		
Ann 3, 6.3.1.	Its striking face is in contact with the foremost part of the cab;		Yes
Ann 3, 6.3.2.	Its median longitudinal line is horizontal and perpendicular to the median longitudinal vertical plane of the cab;		Yes
Ann 3, 6.3.3.	Its centre of gravity is midway between the lower and the upper windscreen frame, as measured along the windscreen and along the median longitudinal vertical plane of the cab;		Yes
Ann 3, 6.3.4.	Its centre of gravity is in the median longitudinal plane of the cab;		Yes
Ann 3, 6.3.5.	Its length is equally distributed over the width of the vehicle, overlapping the full width of both A-pillars.		Yes
Ann 3, 6.4.	Impactor strikes the cab at the front in the direction towards the rear of the cab. The direction of impact is horizontal and parallel to the median longitudinal plane of the vehicle.		Yes
Ann 3, 6.5.	Impact energy is 29.4 kJ.		Yes (Tested impact energy 40 kJ)



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Roof Strength Test (Test C)



General

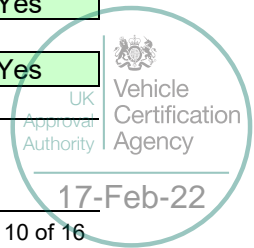
Ann 3, 7.1. For vehicles of category N₂ with a gross vehicle mass > 7.5 t and of category N₃, both tests as described in paragraphs 7.3 and 7.4 below, in that order, are conducted on the same cab. Yes

Ann 3, 7.2. For vehicles of category N₂ with a gross vehicle mass ≤ 7.5 t and of category N₁, only the test as described in paragraph 7.4 below is conducted. NA

Dynamic Pre-loading of Vehicles of Category N₂ with a Gross Vehicle Mass > 7.5 t and of Category N₃ (P₁)

Ann 3, 7.3.1. Impactor is rigid and its mass evenly distributed. Yes

Ann 3, 7.3.1. Its mass is ≥ 1 500 kg: 1740 kg Yes





Ann 3, 7.3.2.	Striking surface of the impactor is rectangular and flat. Its dimensions are sufficiently large such that, when positioned in accordance with paragraph 7.3.3 below, no contact occurs between the cab and the edges of the impactor.	Yes
	<i>Note: If a pendulum is used as an impactor, it shall be freely suspended by two beams rigidly attached to it and spaced not less than 1,000 mm apart. The distance from the axis of suspension to the geometric centre of the impactor shall not be less than 3,500 mm.</i>	
Ann 3, 7.3.3.	Impactor and/or the cab are positioned so that, at the moment of impact:	
Ann 3, 7.3.3.1.	Striking face of the impactor is at an angle of 20° to the median longitudinal plane of the cab; <i>Note: Either the impactor or the cab may be tilted.</i> If the impactor is a pendulum, the cab shall not be tilted and shall be installed in a horizontal position.	Yes
Ann 3, 7.3.3.2.	Striking face of the impactor covers the whole length of the top side of the cab;	Yes
Ann 3, 7.3.3.3.	Median longitudinal line of the impactor is horizontal and parallel to the median longitudinal plane of the cab.	Yes
Ann 3, 7.3.4.	Impactor strikes the upper side of the cab such that, at the time of the impact, the prescriptions of paragraph 7.3.3 above are satisfied. The direction of impact is perpendicular to the surface of the impactor and perpendicular to the median longitudinal line of the cab. <i>Note: Either the impactor or the cab may be moving, as long as the positioning requirements are satisfied at the moment of impact.</i>	Yes
Ann 3, 7.3.5.	Impact energy is ≥ 17.6 kJ: 34 kJ	Yes
	Roof Strength Test (P₂)	
Ann 3, 7.4.1.	Loading device made of steel and its mass evenly distributed.	Yes
Ann 3, 7.4.2.	Loading face of the device is rectangular and flat. Its dimensions are sufficiently large such that, when positioned in accordance with paragraph 7.4.4 below, no contact occurs between the cab and the edges of the device.	Yes
Ann 3, 7.4.3.	If applicable, a linear bearing system is included between the device and its supporting structure to allow for lateral motion of the cab roof away from the side that was impacted in the pre-load phase of paragraph 6.3.	NA
Ann 3, 7.4.4.	Loading device is positioned so that during the test:	



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Ann 3, 7.4.4.1.	It is parallel to the x-y plane of the chassis;	Yes
Ann 3, 7.4.4.2.	It moves parallel to the vertical axis of the chassis;	Yes
Ann 3, 7.4.4.3.	Its loading face covers the whole area of the cab roof.	Yes
Ann 3, 7.4.5.	Static load is applied by the loading device to the roof of the cab, corresponding to the maximum mass authorised for the front axle or axles of the vehicle, subject to a maximum of 98 kN.	Yes (Static load applied 105 kN)





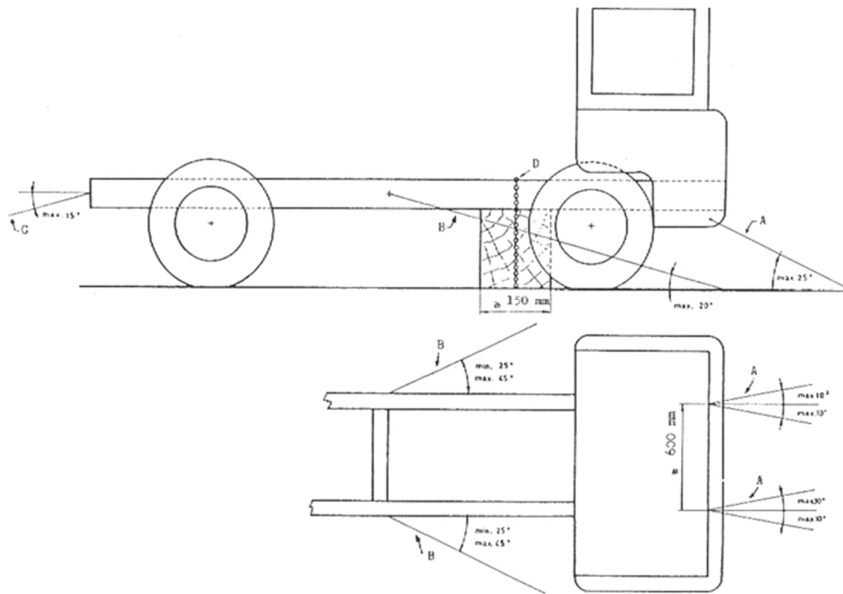
Securing Vehicles to the Test Bed

Frontal Impact

Ann 3, App 1, 1.

Test A is applied to a cab mounted on the vehicle in the following way:

NA



Ann 3, App 1, 1.1.

Each anchoring chain or rope is made of steel and capable of withstanding a tractive load of at least 10 tons.

NA

Ann 3, App 1, 1.2.

Longitudinal members of the chassis frame are supported on wooden blocks across their full width and over a length of ≥ 150 mm. The front edges of the blocks are not situated forward of the rearmost point of the cab, nor rearward of the mid-point of the wheel base. At the manufacturer's request, the chassis frame is set in the attitude it takes up when loaded.

NA

Ann 3, App 1, 1.3.

Rearward movement of the chassis frame is limited by chains or ropes (A) attached to the front of the chassis frame symmetrically in relation to its longitudinal axis.

NA

Ann 3, App 1, 1.3.

Points of attachment are ≥ 600 mm apart: mm

NA

Ann 3, App 1, 1.3.

Chains or ropes, when tensioned, form a downward angle of 25° with the horizontal: $^\circ$

NA

Ann 3, App 1, 1.3.

Their projection on a horizontal plane forms an angle $\leq 10^\circ$ with the longitudinal axis of the vehicle: $^\circ$

NA

Note: Chains or ropes may cross one another.



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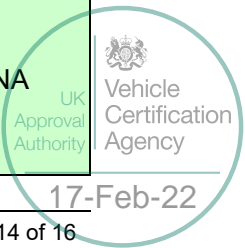
<i>Ann 3, App 1, 1.4.</i>	Lateral movement is limited by chains or ropes (B) attached to the chassis frame symmetrically in relation to its longitudinal axis.		NA
<i>Ann 3, App 1, 1.4.</i>	Points of attachment to the chassis are ≤ 5 m and ≥ 3 m from the front of the vehicle:	-- m	NA
<i>Ann 3, App 1, 1.4.</i>	Chains or ropes, when tensioned, form a downward angle of $\leq 20^\circ$ with the horizontal:	-- °	NA
<i>Ann 3, App 1, 1.4.</i>	Their projection on a horizontal plane forms an angle of $\geq 25^\circ$ and $\leq 45^\circ$ with the longitudinal axis of the vehicle:	-- °	NA
<i>Ann 3, App 1, 1.5.</i>	Chain or rope (C), to begin with, is placed under a load of approximately 1 kN.		NA
<i>Ann 3, App 1, 1.5.</i>	All slack in the 4 chains or ropes (A and B) are then taken up and chain or rope (C) is subjected to a tensile stress of ≥ 10 kN:	-- kN	NA
<i>Ann 3, App 1, 1.5.</i>	Angle of chain or rope (C) with the horizontal is $\leq 15^\circ$:	-- °	NA
<i>Ann 3, App 1, 1.5.</i>	Vertical blocking force of ≥ 500 N is applied at point (D) between the chassis frame and the ground:	-- N	NA
<i>Ann 3, App 1, 1.6.</i>	At the request of the manufacturer, the test may be carried out with the cab mounted on a special frame, on condition that this method of mounting is shown to be equivalent to mounting on the vehicle.		Yes

Front Pillars Impact

<i>Ann 3, App 1, 2.1.</i>	For cabs mounted on the vehicle, measures are taken to ensure that the vehicle does not shift appreciably during the test. For this purpose, the handbrake is applied, a gear engaged and the front wheels wedged with chocks.		NA
<i>Ann 3, App 1, 2.2.</i>	For cabs mounted on a frame, measures are taken to ensure that the cab does not shift appreciably during the test.		Yes

Roof Strength

<i>Ann 3, App 1, 3.1.</i>	For cabs mounted on the vehicle, measures are taken to ensure that the vehicle does not shift appreciably during the test. For this purpose, the handbrake is applied, a gear engaged and the front wheels wedged with chocks. Deformation of the various components of the suspension (springs, tyres, etc.) is eliminated by means of rigid members.		NA
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Ann 3, App 1, 3.2.

For cabs mounted on a frame, measures are taken to ensure that the frame does not shift appreciably during the test.

Yes

Survival Space Required after the Test(s)

5.2.1.

After undergoing each of the tests referred to in paragraphs 5.1.2 or 5.1.3, the cab of the vehicle exhibits a survival space allowing accommodation of the manikin defined in Annex 3, Appendix 2, on the seat, when the latter is in its median position, without contact between the test manikin and non-resilient parts with a Shore-Hardness of 50 or more.

Note: No account is taken of non-resilient parts that can be moved away without any tools from the test manikin by using a force <100 N.

Yes

5.2.1.

To facilitate installation, the manikin may be inserted in dismantled form and assembled in the cab. For this purpose, the seat is adjusted to its most rearward position and the manikin completely assembled and placed so that its H-point coincides with the R-point. The seat is then moved forward to its median position for the assessment of the survival space.

Note: As an alternative to the test manikin defined in Annex 3, Appendix 2, a fiftieth percentile Hybrid II or III male dummy, with or without measuring instrumentation, the description of which is given in Regulation No 94, may be used.

Yes

5.2.2.

Space defined is verified for every seat provided by the manufacturer.

Yes

5.3.1.

During the tests the components by which the cab is secured to the chassis frame may be distorted or broken, provided that the cab remains attached to the chassis frame by standard fixture attachments and does not unintentionally move, shift or rotate about the attachment points.

Yes

5.3.2.

None of the doors open during the tests, but the doors are not required to open after testing.

Yes

Notes

5.5.

[Notes can be provided at the bottom if it is useful to provide additional information that is not covered by a compliance statement, for example glazing markings.]





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Remarks

Test results & Observations: -

Front Impact Test (Test A):

Measurement position	Pre-Test	Post-Test
	Centre seat	Centre seat
Driver Seating position		
Manikin thigh to steering	27 mm	26 mm
Manikin knee to dash board	85 mm	90 mm
Manikin abdomen to steering wheel	135 mm	140 mm
Manikin head to roof	430 mm	440 mm
Steering angle	9.2 ⁰	9.9 ⁰
Steering wheel diameter	390 mm	390 mm

- The doors did not open during the test
- The cabin did not get detached from the special fixture
- Manikin could accommodate at the median position of the seat adjustments on driver seat, no contact with non-resilient parts

Roof Strength Test (Test C):

Measurement position	Pre-Test	Post-Test
	Centre driver seat	Centre driver seat
Head to roof	440	430 mm

Note: VCA apply measurement uncertainty to calibrated items but not test results.



Annex 1: Test Set up photographs

a) Test Type A



b) Test Type B



C) Test Type C (P1)



c) Test Type C (P2)



Annex 2: Measurement of Manikin and vehicle clearances.

a) Before tests:





b) After tests:



