REPORT NUMBER: SideNCAPMDB-MGA-25-016

NEW CAR ASSESSMENT PROGRAM (NCAP)
Moving Deformable Barrier Side Impact Test

MAZDA MOTOR CORPORATION
2025 Mazda CX-70 PHEV 5-Door SUV
NHTSA No.: O20255401

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: March 7, 2025

Final Report Date: April 15, 2025

FINAL REPORT

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NRM-100
1200 New Jersey Ave, SE
Washington, DC 20590

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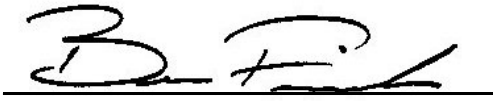
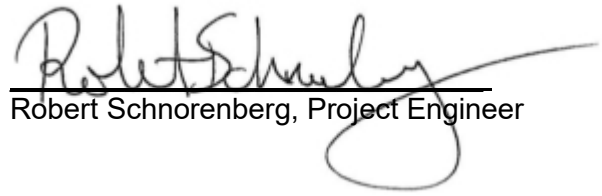
Prepared by: 
Ben Fischer, Program Manager

Approved by: 
Robert Schnorenberg, Project Engineer

Approval Date: April 15, 2025

FINAL REPORT ACCEPTANCE BY OCWS:

_____
Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

_____
COR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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SideNCAPMDB-MGA-25-016		

4. Title and Subtitle	5. Report Date
Final Report of New Car Assessment Program Side Impact MDB Testing and FMVSS No. 305 Indicant Testing of 2025 Mazda CX-70 PHEV 5-Door SUV, NHTSA No.: O20255401	April 15, 2025
	6. Performing Organization Code MGA
7. Author(s) Ben Fischer, Program Manager	**8. Performing Organization Report No.** SideNCAPMDB-MGA-25-016
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105	**10. Work Unit No.**
	11. Contract or Grant No. 693JJ920D000017
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-100) 1200 New Jersey Ave, SE Washington, D.C. 20590	**13. Type of Report and Period Covered:** Final Test Report March 7, 2025 to April 15, 2025
	14. Sponsoring Agency Code NRM-100

15. Supplementary Notes

16. Abstract

A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2025 Mazda CX-70 PHEV 5-Door SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP MDB Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the MGA Research Corporation facility in Burlington, Wisconsin on March 7, 2025.

The impact velocity of the Moving Deformable Barrier (MDB) was 62.39 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 22.0°C. The target vehicle post-test maximum crush was 135 mm at level 3. The test vehicle's performance was as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	53.058
Maximum Thorax Rib Deflection	mm	44	14.365
Total Abdominal Force	N	2500	610.455
Pubic Symphysis Force	N	6000	772.993
Resultant Lower Spine Acceleration	g	82*	17.275

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	20.618
Resultant Lower Spine Acceleration	g	82	27.044
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1848.969
Maximum Thoracic Rib Deflection	mm	38*	9.057
Maximum Abdomen Rib Deflection	mm	45*	3.982

*Proposed IARV

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite door(s) did not open during the side impact event.

17. Key Words	18. Distribution Statement
New Car Assessment Program (NCAP) Side Impact MDB ES-2re SID-IIs	Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590

19. Security Classification of Report	20. Security Classification of Page	21. No. of Pages	22. Price
Unclassified	Unclassified	246	

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SECTION 1
PURPOSE AND SUMMARY OF TEST

PURPOSE

This moving deformable barrier side impact test is part of the MY 2025 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. 693JJ920D000017. The purpose of this test is to generate comparative side impact performance in a 2025 Mazda CX-70 PHEV 5-Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Laboratory Test Procedure dated March 2020.

SUMMARY

A 2025 Mazda CX-70 PHEV 5-Door SUV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.39 km/h. The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin on March 7, 2025. Pre-test and post-test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS NCAP Side Laboratory Test Procedure dated March 2020. The side impact event was documented by eleven (11) cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)
Primary and Redundant Head CG Triaxial Accelerometers
Chest Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
Abdomen Forward, Middle, and Rear Y-Axis Load Cells
Lower Spine (T12) Triaxial Accelerometers
Pubic Symphysis Y-Axis Load Cell

PASSENGER ATD (SID-IIs)
Primary and Redundant Head CG Triaxial Accelerometers
Head Triaxial Angular Rate Sensors
Chest Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
Abdomen Upper Rib and Lower Rib Y-Axis Displacement Potentiometers
Lower Spine (T12) Triaxial Accelerometers
Acetabulum and Iliac Wing Y-Axis Load Cells

Appendix B contains the dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D contains the test equipment and instrumentation calibration data.

Dummy Injury readings were recorded as follows:

DUMMY INJURY VALUES

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	53.058
Maximum Thorax Rib Deflection	mm	44	14.365
Total Abdominal Force	N	2500	610.455
Pubic Symphysis Force	N	6000	772.993
Resultant Lower Spine Acceleration	g	82*	17.275

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	20.618
Resultant Lower Spine Acceleration	g	82	27.044
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1848.969
Maximum Thoracic Rib Deflection	mm	38*	9.057
Maximum Abdomen Rib Deflection	mm	45*	3.982

*Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Bag	Yes	Yes	No	
Side Torso Airbag			Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes		Yes	
Other				

The test data can be found on the NHTSA website at www.nhtsa.gov

GENERAL COMMENTS

None.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20255401	Traction Control System (TCS)	Yes
Model Year	2025	Auto-Leveling System	No
Make	Mazda	Automatic Door Locks (ADL)	Yes
Model	CX-70 PHEV	Power Window Auto-Reverse	Yes
Body Style	5-Door SUV	Other Optional Feature	No
VIN	JM3KJDHA2S1108148	Driver Front Airbag	Yes
Body Color	Zircon Sand Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	74 km / 46 mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.5	Driver Torso Airbag	No
Type/No. Cylinders	Inline 4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	8	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	AWD	Rear Pass. Torso Airbag	Yes
Roof Rack	Yes	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	Yes	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	Yes
Power Seats	Driver	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	Yes
		Other Safety Restraint	N/A

Does owner's manual provide instruction to turn off automatic door locks?	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	MAZDA MOTOR CORPORATION	GVWR (kg)	2887
Date of Manufacture	04/24	GAWR Front (kg)	1302
Vehicle Type	MPV	GAWR Rear (kg)	1589

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				385	(A)
DSC x 68 kg				340	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				45	(A-B)

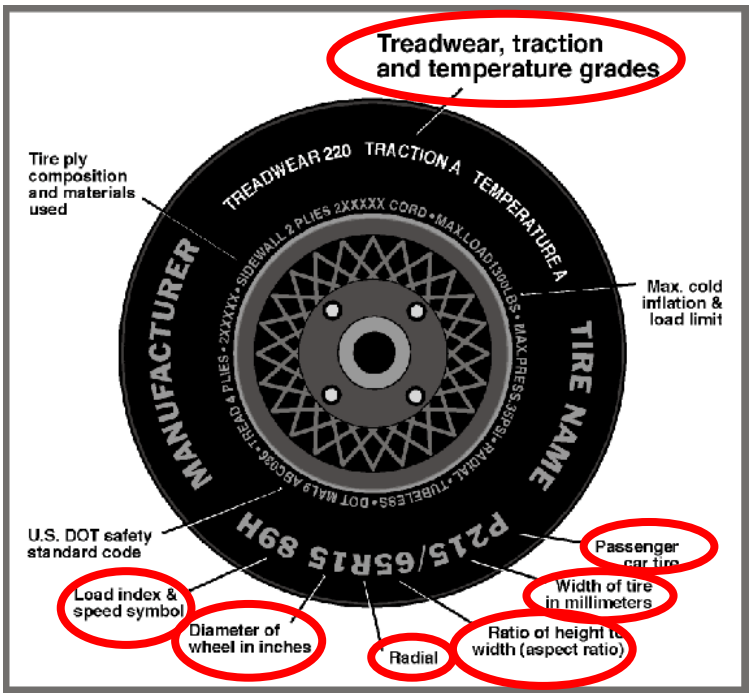
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/ Lever	Adjustable w/ Knob
Front Seat	X					X	
Rear or Second Row			X			X	
Third Row Seat							

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	250	250
Recommended Tire Size	275/45R21	275/45R21
Tire Size on Vehicle	275/45R21	275/45R21
Tire Manufacturer	Falken	Falken
Tire Model	Ziex	Ziex
Treadwear	300	300
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	107W	107W
Tire Material	Rubber	Rubber
DOT Safety Code Left	1V4V6 AMAR 1524	1V4V6 AMAR 1524
DOT Safety Code Right	1V4V6 AMAR 1524	1V4V6 AMAR 1524

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

TEST VEHICLE TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	230	235	235	235
Tire Placard	kPa	250	250	250	250
Owner's Manual	kPa	250	250	250	250
As Tested	kPa	250	250	250	250

MDB TIRE SPECIFICATIONS

	Requirement	Units	LF	RF	LR	RR
Tire Size	P205/75R15	N/A	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	200 ± 21	kPa	200	200	200	200

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	568.5	612.5		617.5	677.5		605.0	698.0	
Right	kg	579.0	575.0		600.0	608.5		584.5	627.0	
Ratio	%	49.1%	50.9%		48.6%	51.4%		47.3%	52.7%	
Totals	kg	1147.5	1187.5	2335.0	1217.5	1286.0	2503.5	1189.5	1325.0	2514.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2335.0	(A)
Sum of Actual Weight of 2 P572 ATDs Used	kg	129	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	45	(C)
Calculated Test Vehicle Target Weight (TVTW)	kg	2509.0	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? **YES**

TEST VEHICLE ATTITUDES AND CG

	Units	Fully Loaded	As Tested	Meets Requirement*
Left Front	mm	852	844	Yes
Right Front	mm	852	844	Yes
Right Rear	mm	863	859	Yes
Left Rear	mm	855	847	Yes
Vehicle CG (Aft of Front Axle)	mm	1644	1602	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	31	29	

* ND=Nose Down (-), NU=Nose Up (+) ** LD=Left Down (-), LU=Left Up (+)
*** The "As Tested" vehicle attitude measurements must be equal to or within ± 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well.

Test height adjustable suspension setting, if applicable:	Not Applicable

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Units	Weight
Weight of Ballast Added	kg	0
Components Removed: none	kg	

TEST SURFACE MARKINGS

	Units	Distance from 63° Impact Angle Line
Fore 25 mm Target	mm	996
Aft 25 mm Target	mm	998
Pre-Impact Angle Line	mm	100

Parallel Track Target	Units	X Location	Y Location
A	mm	0	0
B	mm	1520	3085
C	mm		
D	mm	3500	0

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	22.2	12.2	17.2
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As-Tested SCRL Angle (Mid) (°)	As-Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-Most	Mid	Forward-Most
Driver Seat	17.2	0	Max	50	50	50
			Mid	25	25	25
			Min	0	0	0
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

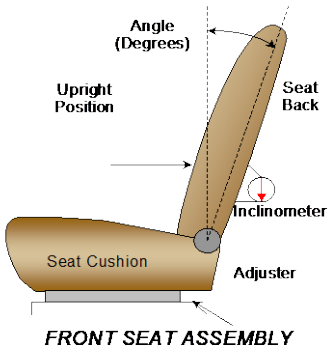
Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-Most Position	
	mm	Detents (1st as 1)	mm	Detent (1st as 0)
Driver Seat	255		128	
Front Passenger Seat	230		115	
Front Center Seat				
Struck Side Rear Seat	120	13	120	12
Non-Struck Side Rear Seat	120	13	120	12
Rear Center Seat	120	13	120	12

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck-side rear seat back.



FRONT SEAT ASSEMBLY

Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents (1st as 1)	Degrees	Detent (1st as 0)
Driver Seat	74.9		6.3	
Front Passenger Seat	76.5		5.5	
Front Center Seat				
Struck Side Rear Seat	17.5	10	3.5	0
Non-Struck Side Rear Seat	17.4	10	3.9	0
Rear Center Seat	17.5	10	3.5	0

Seat back angles measured on outboard headrest post.

DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on S1 - Vehicle Setup Information.

	Total # of Positions	Placed in Position #
Driver Seat	4	0 (Uppermost as 0)
Rear Seat	Fixed	

HEAD RESTRAINT ADJUSTMENT

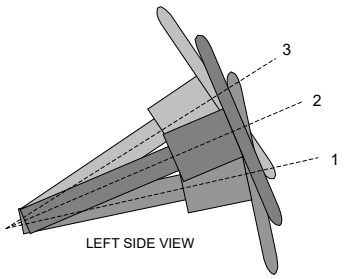
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	4	3 (Lowest as 0) / Fixed Fore-Aft
Rear Seat	4	0 (Lowest as 0) / Fixed Fore-Aft

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

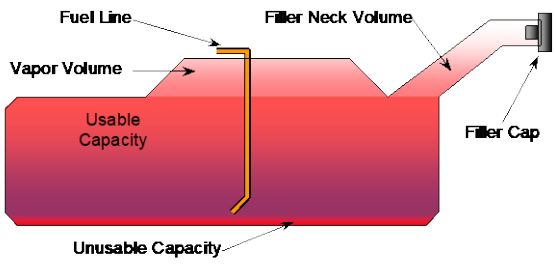
	Wheel Angle (°)	Fore/Aft Position (mm)
Lowermost, Position 1	68.1	
Geometric Center, Position 2	66.0	
Uppermost, Position 3	63.8	
Telescoping Steering Wheel Travel		70
Test Position	66.0	35



STEERING COLUMN ASSEMBLY

FUEL PUMP

The vehicle is equipped with an electronic fuel pump. The fuel pump will run when the engine is running. The pump will also briefly run when the ignition key is turned to the "on" position. The filler neck is located on the driver's side.



VEHICLE FUEL TANK ASSEMBLY

DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

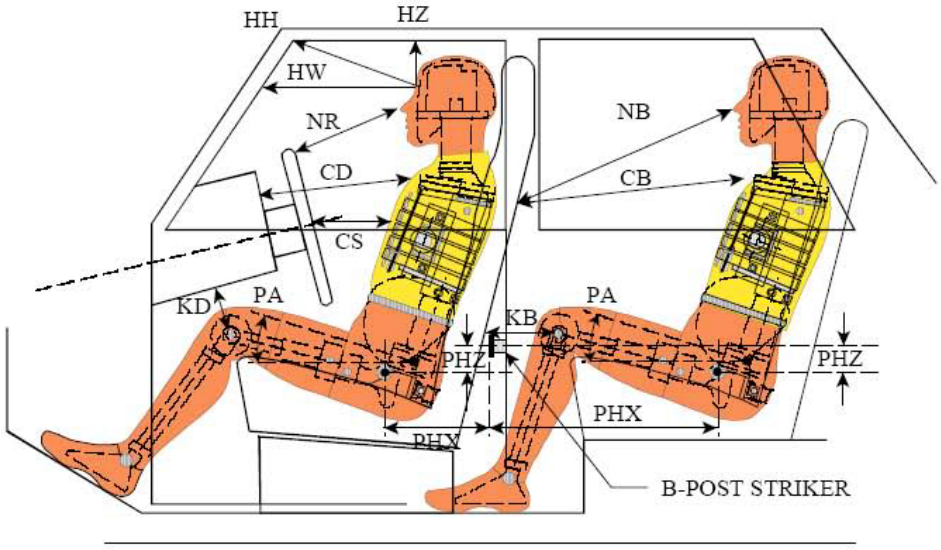
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of Standard Tank (see S1 - Vehicle Setup Information)	70.0
Usable Capacity of Optional Tank (see S1 - Vehicle Setup Information)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	70.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	65.1
Actual Amount of Solvent Used	65.1
1/3 of Usable Capacity	23.3

Is the actual amount of solvent used in the test equal to 93% ± 1%
of the Usable Capacity stated in S1 - Vehicle Setup Information? **YES**

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



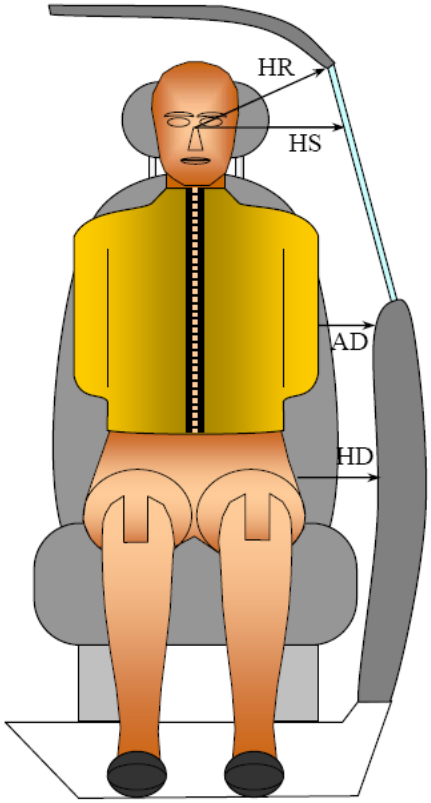
NOTE: 2-DOOR VEHICLE SHOWN. REAR DUMMY PHX & PHZ MEASUREMENTS FOR A 4-DOOR VEHICLE WOULD USE THE C-POST STRIKER AS A REFERENCE POINT

LEFT SIDE VIEW

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	334	23.8		
HW		Head to Windshield	614	0		
HZ	HZ	Head to Roof Liner	168	90	289	90
NR	NB	Nose to Rim/Seat Back	433	12.5	546	14.0
CD	CB	Chest to Dashboard/Seat Back	566	9.0	551	5.7
CS		Chest to Steering Wheel	351	8.1		
KDL	KBL	Left Knee to Dash/Seat Back	159	31.5	326	26.0
KDR	KBR	Right Knee to Dash/Seat Back	148	31.5	325	25.3
PAX	PAX	Pelvic Tilt Angle X		29.3		21.1
PAY	PAY	Pelvic Tilt Angle Y		1.2		-0.6
PHX	PHX	Hip Point to Striker (X-Axis)	196		390	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	153		261	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

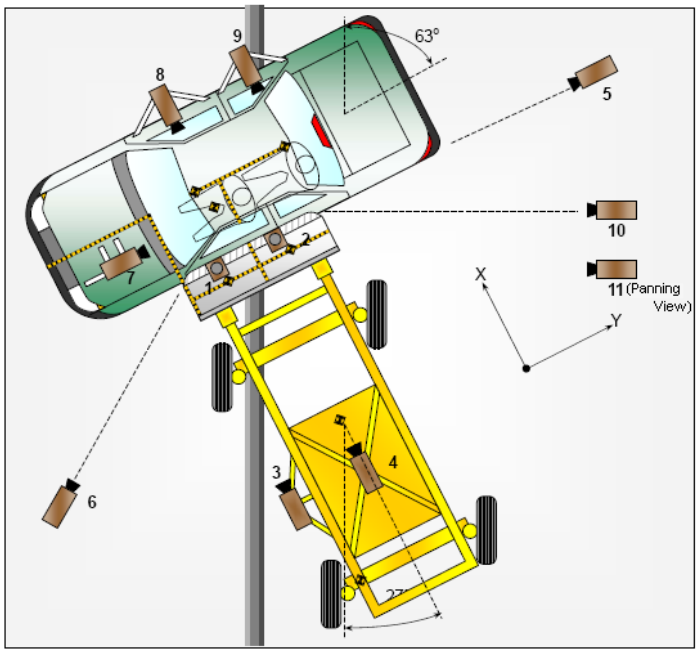
Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



Code	Measurement Description	Driver	Passenger
		Length (mm)	
HR	Head to Side Header	224	276
HS	Head to Side Window	336	369
AD	Arm to Door	77	146
HD	Hip Point to Door	161	180

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates* (mm)			Lens (mm)	Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	580	1270	-4995	8	1000
2	Overhead Close-Up	0	800	-4895	20	1000
3	Left Impact Point (MDB)				50	1000
4	Side Overall (MDB)				16	1000
5	Rear	-20	7990	-1500	24	1000
6	Left Front	-1505	-4460	-1530	24	1000
7	Driver Front (OB)				16	1000
8	Driver Side (OB)				8	1000
9	Passenger Side (OB)				8	1000
10	Real Time Left Rear					30
11	Real Time Inrun					30

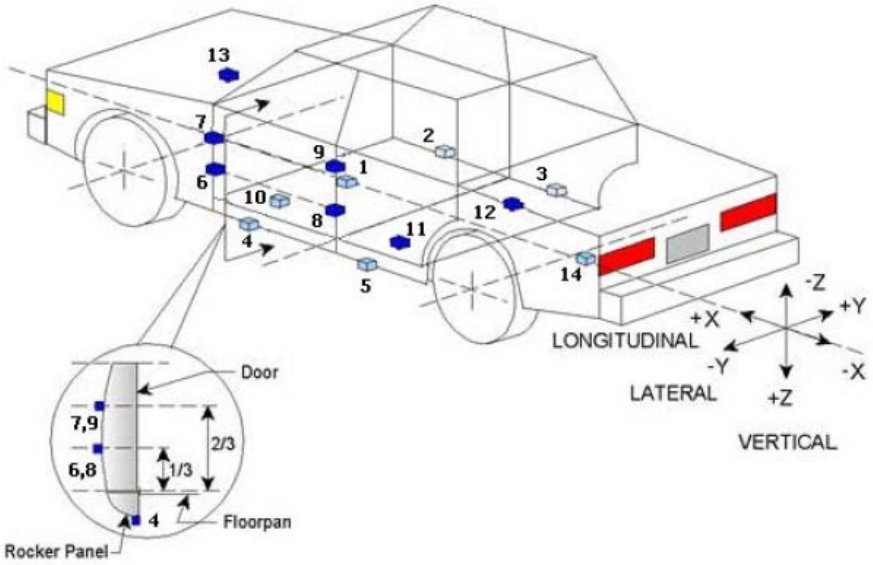
Reference: Impact Point projected to Ground; +X = To Front of MDB, + Y = To Right of MDB, +Z = Down
*All measurements accurate to ±6 mm

INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Passenger Dummy	19
Vehicle Structure	21
MDB Accelerometers	5
Total	61

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025



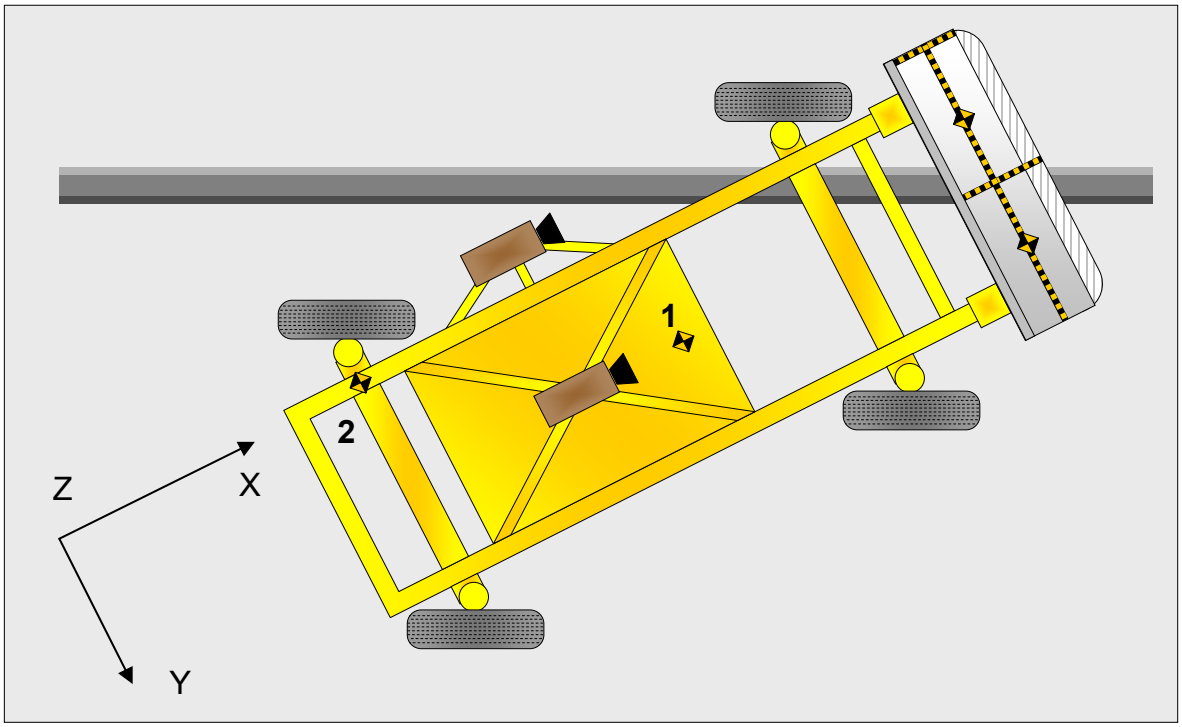
TEST VEHICLE ACCELEROMETER LOCATIONS

No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2598	-14	-196
2	Right Sill at Front Seat	2708	736	-275
3	Right Sill at Rear Seat	1810	737	-284
4	Left Sill at Front Door	3450	-754	-273
5	Left Sill at Rear Door	1775	-748	-282
6	Left Lower A-Post	3479	-870	-599
7	Left Middle A-Post	3471	-861	-872
8	Left Lower B-Post			
9	Left Middle B-Post			
10	Front Seat Track	2547	-406	-437
11	Rear Seat Structure	2110	-348	-503
12	Rt. Rear Occ. Compartment	2116	422	-464
13	Engine Block	4275	59	-996
14	Rear Above Axle	1128	-4	-570

Reference: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



MDB ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	MDB CG	-1105	0	-330
2	MDB Rear	-2580	-650	-625

Reference: X – MDB Face (+ forward)
Y – MDB Centerline (+ to right)
Z – Ground Plane (+ down)

Width between left and right MDB contact switches	mm	1398

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	None
Top of Head	Curtain Airbag, Headliner	Curtain Airbag
Left Side of Head	Curtain Airbag	Curtain Airbag
Back of Head	Curtain Airbag, Headrest	Headrest
Left Shoulder	None	Side Torso/Pelvis Airbag, Seatback
Upper Torso	Seatback	Seatback
Lower Torso	Side Torso/Pelvis Airbag, Seatback	Side Torso/Pelvis Airbag
Left Hip	Side Torso/Pelvis Airbag, Seat Cushion	Seat Cushion, Door Panel
Left Knee	Door Panel	None

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)					

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	None
Side Window Damage	LF window cracked
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Left Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Bag	Yes	Yes	No	
Side Torso Airbag			Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes		Yes	
Other				

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheelbase	mm		3119
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		508
Actual Impact Point (Aft of Front Axle)	mm		500
Horizontal Offset (+forward / -rearward)	mm	+/- 50 of intended impact point	8
Vertical Offset (+down / -up)	mm	+/- 20 of intended impact point	2

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Face	4119
Wheelbase of Framework Carriage	2588
CG Location aft of Front Axle	1125

MDB WEIGHTS

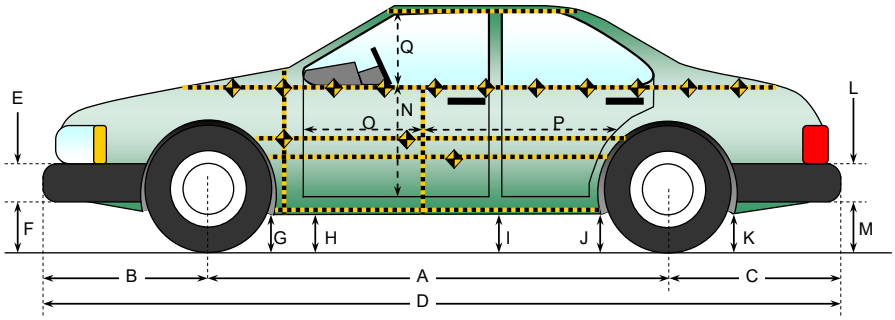
	Units	Front Axle	Rear Axle	Total
Left	kg	393.4	297.1	
Right	kg	378.0	295.8	
Ratio	%	56.5	43.5	
Totals	kg	771.4	592.9	1364.4

SPEED AND ANGLE AT IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.39
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.33
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	26.3

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



All measurements in (mm) with tolerance of ± 3 mm

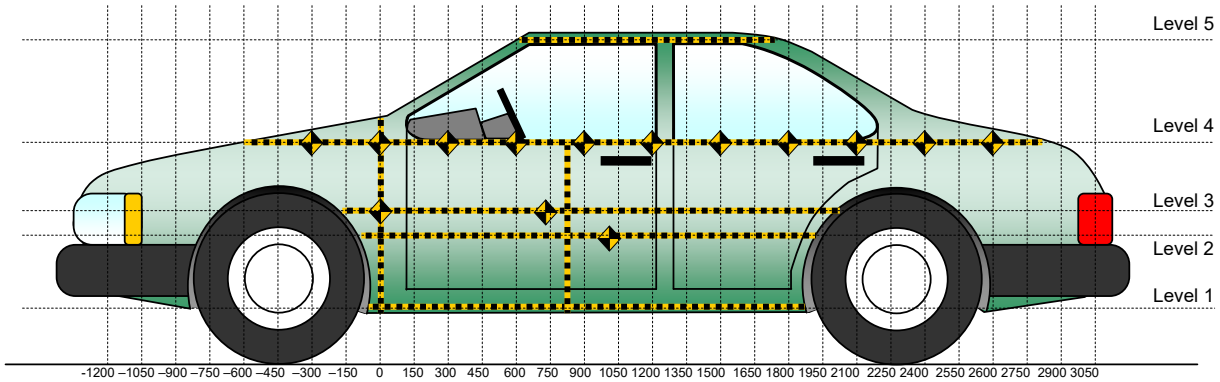
LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Change
A	Wheelbase	3119	3111	-8
B	Front Axle to FSOV	851	859	8
C	Rear Axle to RSOV	1122	1124	2
D	Total Length at Centerline	5092	5094	2
E	Front Bumper Thickness	248	249	1
F	Front Bumper Bottom to Ground	450	471	21
G	Sill Height at Front Wheel Well	272	272	0
H	Sill Height at Front Door Leading Edge	270	275	5
I	Sill Height at B Pillar	265	274	9
J1	Sill Height at Rear Wheel Well	271	282	11
J2	Pinch Weld Height at Rear Wheel Well	271	281	10
K	Sill Height Aft of Rear Wheel Well	271	283	12
L	Rear Bumper Thickness	83	83	0
M	Rear Bumper Bottom to Ground	477	493	16
N	Sill Height to Window Bottom Sill	747	732	-15
O	Front Door Leading Edge to Impact CL	557	547	-10
P	Rear Door Trailing Edge to Impact CL	1397	1350	-47
Q	Front Window Opening	362	368	6
R	Right Side Length	4611	4611	0
S	Left Side Length	4609	4606	-3
T	Vehicle Width at B Post	1866	1774	-92
U	Front Wheel Track Width	1694		
V	Rear Wheel Track Width	1683		

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test
Test Date: 3/7/2025



All Measurements Shown in mm

LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEAUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	445	119	150
2	Mid Door	705	129	1650
3	Occupant H-Point	734	134	1650
4	Window Sill	1123	18	1500
5	Window Top	1657	-1	1350

Note: The measurements are taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

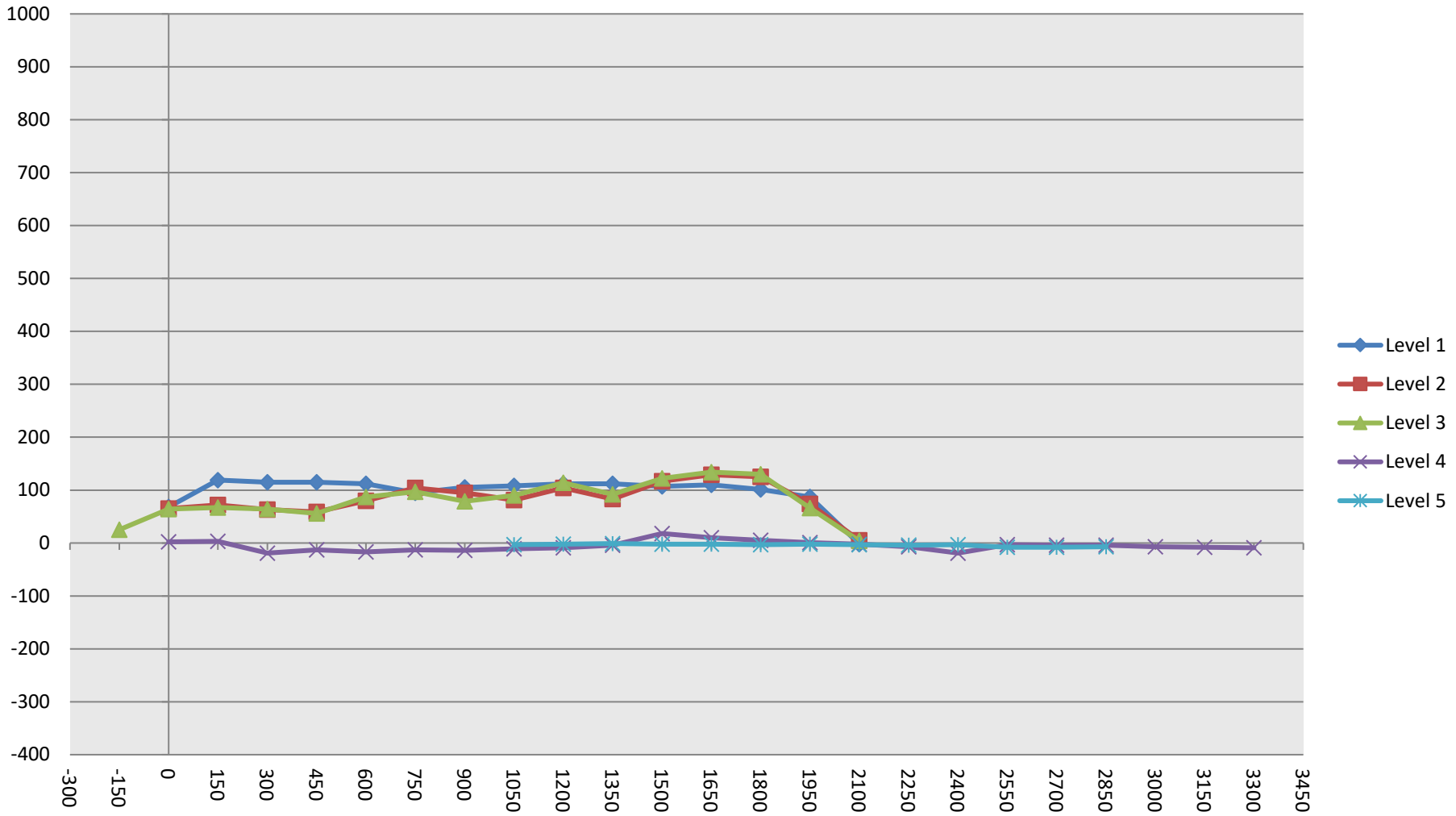
Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

	Pre-Test					Post-Test					Exterior Crush				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-2100															
-1950															
-1800															
-1650															
-1500															
-1350															
-1200															
-1050															
-900															
-750															
-600															
-450															
-300															
-150			998					973					25		
0	987	979	977	832		919	914	913	830		68	65	64	2	
150	975	956	954	847		856	884	887	844		119	72	67	3	
300	967	943	941	861		852	880	877	880		115	63	64	-19	
450	963	937	936	870		848	878	880	883		115	59	56	-13	
600	959	934	933	860		847	854	846	877		112	80	87	-17	
750	958	933	932	887		863	829	835	900		95	104	97	-13	
900	957	932	932	891		852	837	853	905		105	95	79	-14	
1050	956	933	932	899	644	848	852	842	910	647	108	81	90	-11	-3
1200	955	933	933	901	658	843	829	819	910	660	112	104	114	-9	-2
1350	953	934	933	905	660	841	851	841	909	661	112	83	92	-4	-1
1500	952	935	934	905	659	845	818	812	887	661	107	117	122	18	-2
1650	952	936	936	908	656	842	807	802	898	658	110	129	134	10	-2
1800	955	940	939	907	653	854	815	809	902	656	101	125	130	5	-3
1950	961	948	946	908	654	874	874	880	907	656	87	74	66	1	-2
2100	974	968	965	907	654	976	963	961	909	657	-2	5	4	-2	-3
2250		987	985	906	653				913	657				-7	-4
2400				901	653				920	656				-19	-3
2550				902	645				905	653				-3	-8
2700				897	636				901	644				-4	-8
2850				895	620				899	627				-4	-7
3000				891					898					-7	
3150				886					894					-8	
3300				873					882					-9	
3450															
3600															
3750															
3900															

NOTE: Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point.

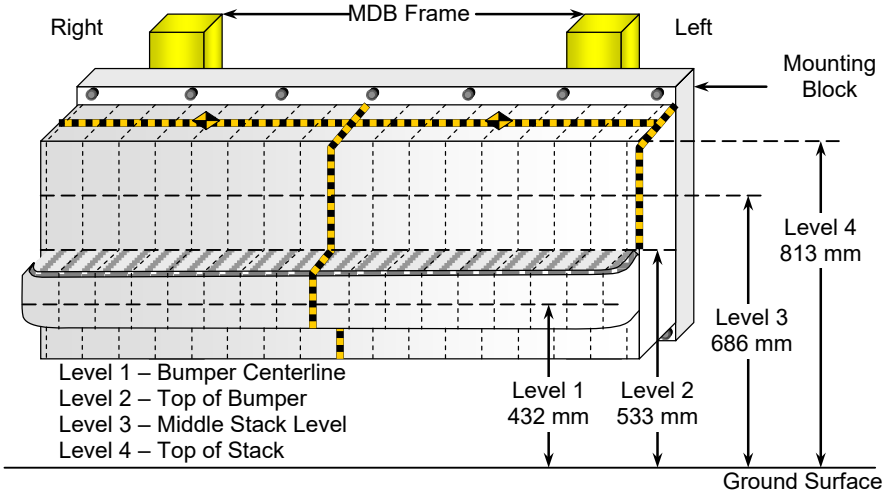
DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



FRONT VIEW

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

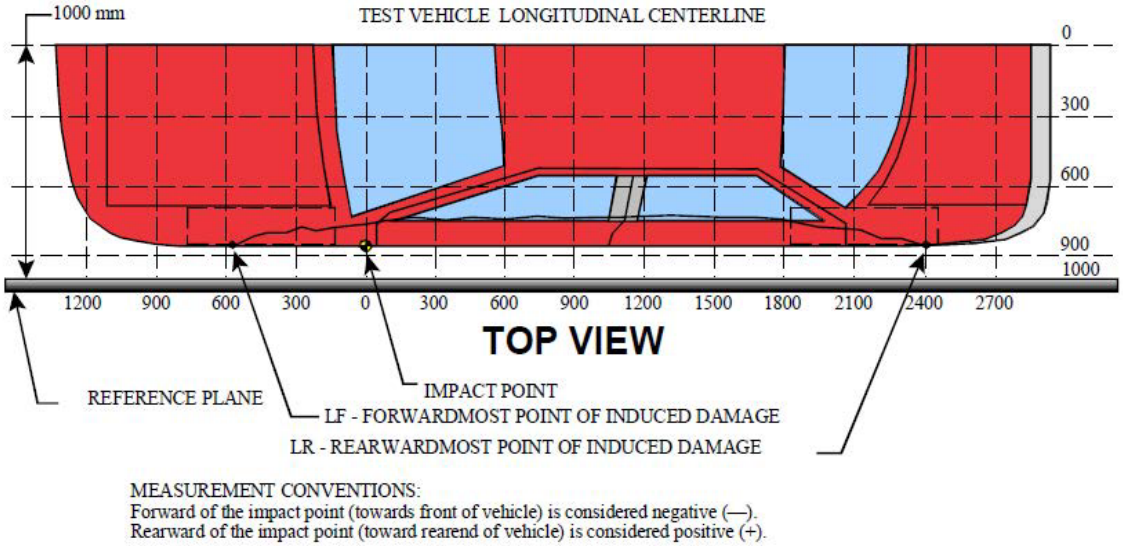
Vertical Location			From Centerline		Maximum Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	700	Right	272
B	Top of Bumper	533	800	Left	212
C	Mid-Level	686	700	Left	177
D	Top of Stack	813	800	Left	215

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center (mm)								C_L	Distance Left of Center (mm)							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
4	134	109	113	122	142	119	102	104	106	117	135	139	136	152	178	200	215
3	128	122	127	135	155	148	138	133	111	101	100	110	134	158	166	177	175
2	210	209	210	200	195	197	197	194	191	191	189	188	188	187	191	205	212
1	270	272	268	266	264	262	258	257	253	256	258	249	244	240	238	237	233

DATA SHEET NO. 13
VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



MEASUREMENT CONVENTIONS:
Forward of the impact point (towards front of vehicle) is considered negative (—).
Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Max. Static Crush (mm)
1	2100	3	39	35	4
2	1682	3	198	63	135
3	1250	3	177	67	110
4	842	3	151	68	83
5	420	3	122	63	59
6	150	3	113	46	67

MDB DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Max. Static Crush (mm)
1	800 mm right of center	1	746	476	270
2	480 mm right of center	1	730	463	267
3	160 mm right of center	1	720	463	257
4	160 mm left of center	1	717	463	254
5	480 mm left of center	1	708	463	245
6	800 mm left of center	1	709	476	233

DATA SHEET NO. 14
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test
Test Date: 3/7/2025

Test Time: 1:26 pm
Temperature: 22.0°C

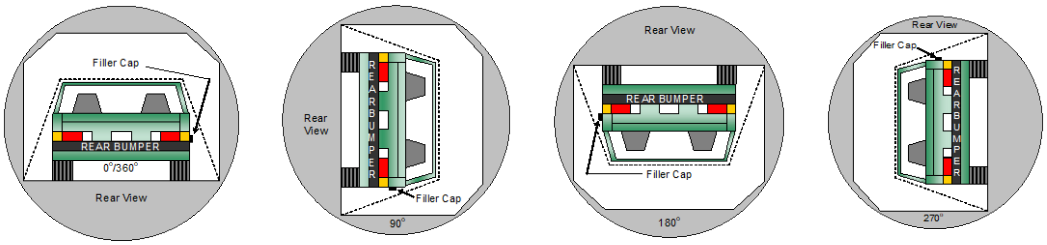
A. From impact until vehicle motion ceases: (Maximum Allowable = 1 ounce) 0.0 oz.

B. For the 5 minute period after motion ceases: (Maximum Allowable = 5 ounces) 0.0 oz.

C. For the following 25 minutes: (Maximum Allowable = 1 ounce / minute) None

D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



0°/360° 90° 180° 270°

ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	112	300	412
90° to 180°	110	300	410
180° to 270°	107	300	407
270° to 360°	111	300	411

FMVSS 301 ROLLOVER SPILLAGE TABLE (UNITS IN OUNCES)

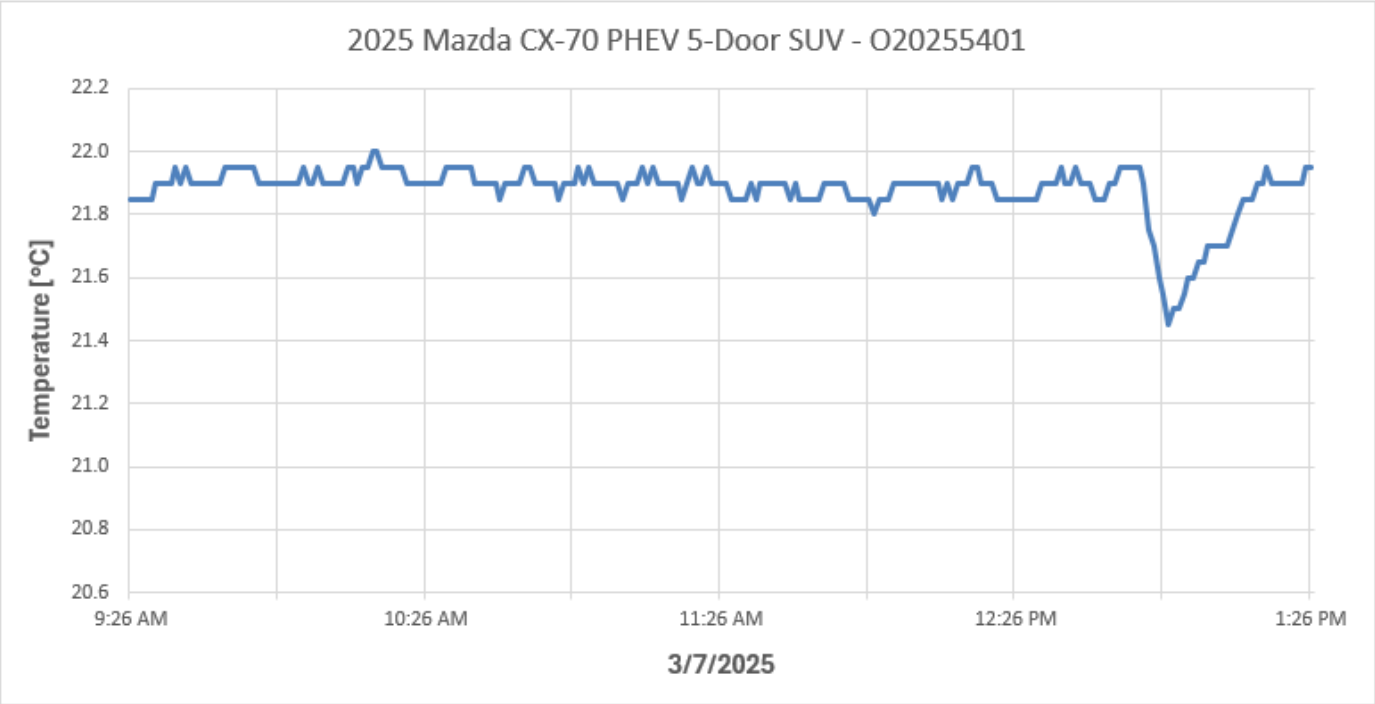
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0.0	0.0	0.0	
90° to 180°	0.0	0.0	0.0	
180° to 270°	0.0	0.0	0.0	
270° to 360°	0.0	0.0	0.0	

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 15
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025



Serial #	Description	Maximum	Average	Minimum	Units
W2425691	VSC North Hall - Temp (3016)	22.00	21.88	21.45	°C

DATA SHEET NO. 305-1
GENERAL TEST AND VEHICLE PARAMETER DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

ELECTRIC VEHICLE PROPULSION SYSTEM

	Units	Observations and Conclusions
Type of Electric Vehicle		Gas-Electric Hybrid
Propulsion Battery Type		Lithium-ion Battery
Nominal Voltage	V	355
Physical Location of Automatic Propulsion Battery Disconnect		Automatic Propulsion Battery Disconnect is inside Lithium-ion Battery.
Auxiliary Battery Type		Lead Battery

PROPULSION BATTERY SYSTEM DATA

	Units		Observations and Conclusions
Electrolyte Fluid Type			Class 4 Second petroleum
Electrolyte Fluid Specific Gravity	g/L		1.25
Electrolyte Fluid Kinematic Viscosity	cSt		No Data
Electrolyte Fluid Color			Colorless
Propulsion Battery Coolant Type, Color, Specific Gravity (if applicable)			Refrigerant (Green)
Location of Battery Modules			Inside Passenger Compartment
		X	Outside Passenger Compartment
			The high-voltage battery is located on the underside of the vehicle.

PROPULSION BATTERY STATE OF CHARGE

For all battery types:	
Voltage range corresponding to **useable energy** of the battery:	
Minimum State of Charge	332.3
Maximum State of Charge	397.4
95% of Maximum State of Charge	377.5
Test Voltage - No less than 95% of maximum State of Charge	389.6
For batteries that are rechargeable ONLY by an energy source on the vehicle:	
Voltage range corresponding to **useable energy** of the battery:	
Minimum State of Charge	
Maximum State of Charge	
Test Voltage – Maximum practicable State of Charge within Normal Operating Range	

DATA SHEET NO. 305-2
PRE-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle:	2025 Mazda CX-70 PHEV 5-Door SUV	NHTSA No.:	O20255401
Test Program:	NCAP Side MDB Impact Test	Test Date:	3/7/2025

VEHICLE CHASSIS GROUND POINT(S) LOCATION(S)

Details of Vehicle Chassis Ground Point(s) & Location(s)	Body structure

PROPULSION BATTERY SYSTEM

Details of Electric Energy Storage/Conversion System Test Points	Connected at + and – terminal ends of propulsion system
Additional Comments	None

DATA SHEET NO. 305-3
PRE-IMPACT ELECTRICAL ISOLATION MEASUREMENTS AND CALCULATIONS
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

VOLTMETER INFORMATION

	Units	Observations and Conclusions
Make		
Model		
Serial Number		
Internal Impedance Value	MΩ	
Resolution	V	
Last Calibration Date		

PROPULSION BATTERY VOLTAGE

Measurement shall be made with Energy Storage/Conversion System connected to the vehicle propulsion system, and the vehicle in the "ready-to-drive" (propulsion system energized) position.

NOTE: If voltage measurement is not at the voltage or within the normal operating voltage range specified by the manufacturer, the battery must be charged.

Vb	V	

ELECTRIC ISOLATION MEASUREMENTS
PROPULSION BATTERY TO VEHICLE CHASSIS

Vehicle chassis point(s) determined and supplied to contractor by COR.

V1	V	
V2	V	

PROPULSION BATTERY TO VEHICLE CHASSIS ACROSS RESISTOR

The known resistance Ro (in ohms) should be approximately 500 times the normal operating voltage of the vehicle (in volts) per SAE J1766.

Ro	Ω	

V1' Pre-Impact	V	
V2' Pre-Impact	V	

DATA SHEET NO. 305-3 (CONTINUED)
PRE-IMPACT ELECTRICAL ISOLATION MEASUREMENTS AND CALCULATIONS
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle:	2025 Mazda CX-70 PHEV 5-Door SUV	NHTSA No.:	O20255401
Test Program:	NCAP Side MDB Impact Test	Test Date:	3/7/2025

ELECTRICAL ISOLATION CALCULATIONS

NOTE: If measured voltage is zero and results in a division by zero, record “Zero Volts”.
This “zero voltage” condition is considered as being compliant.

Ri1 = Ro (1 + V2/V1) [(V1-V1’)/V1’]		
Ri1 Pre-Impact	Ω	
Ri2 = Ro (1 + V1/V2) [(V2-V2’)/V2’]		
Ri2 Pre-Impact	Ω	
Ri = The lesser of Ri1 and Ri2		
Ri Pre-Impact	Ω	
Ri / Vb = Electrical Isolation Value / Nominal Battery Voltage		
Ri / Vb Pre-Impact	Ω	

NOTE: The minimum Electrical Isolation Value is 500 Ω/V.

	Yes	No (Fail)
Is the measured Electrical Isolation Value ≥ 500 Ω/V?		
Additional Comments	Not Applicable, vehicle was certified to FMVSS No. 305 S5.3(c).	

DATA SHEET NO. 305-4
POST-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

VOLTMETER INFORMATION

	Units	Observations and Conclusions
Make		
Model		
Serial Number		
Internal Impedance Value	MΩ	
Resolution	V	
Last Calibration Date		

ELECTRICAL ISOLATION MEASUREMENTS

Vb Post-Impact	V	

V1 Post-Impact	V		Impact Time		Minutes		Seconds
V2 Post-Impact	V				Minutes		Seconds
V1' Post-Impact	V				Minutes		Seconds
V2' Post-Impact	V				Minutes		Seconds

DATA SHEET NO. 305-4 (CONTINUED)
POST-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle:	2025 Mazda CX-70 PHEV 5-Door SUV	NHTSA No.:	O20255401
Test Program:	NCAP Side MDB Impact Test	Test Date:	3/7/2025

ELECTRICAL ISOLATION CALCULATIONS

NOTE: If measured voltage is zero and results in a division by zero, record "Zero Volts". This "zero voltage" condition is considered as being compliant.

Ri1 = Ro (1 + V2/V1) [(V1-V1')/V1']							
Ri1 Post-Impact	Ω		Impact Time		Minutes		Seconds
Ri2 = Ro (1 + V1/V2) [(V2-V2')/V2']							
Ri2 Post-Impact	Ω		Impact Time		Minutes		Seconds
Ri = The lesser of Ri1 and Ri2							
Ri Post-Impact	Ω		Impact Time		Minutes		Seconds
Ri / Vb = Electrical Isolation Value / Nominal Battery Voltage							
Ri / Vb Post-Impact	Ω		Impact Time		Minutes		Seconds

NOTE: The minimum Electrical Isolation Value is 500 Ω/V.

	Yes	No (Fail)
Is the measured Electrical Isolation Value ≥ 500 Ω/V?		
Additional Comments	Not Applicable, vehicle was certified to FMVSS No. 305 S5.3(c).	

DATA SHEET NO. 305-4 (CONTINUED)
POST-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

PROPULSION BATTERY SYSTEM COMPONENTS

Describe any Propulsion Battery Module movement within the passenger compartment [Supply photographs as appropriate]:
Not Applicable

	Yes (Fail)	No
Has the Propulsion Battery Module moved within the passenger compartment?		X

Describe intrusion of an outside Propulsion Battery Component into the passenger compartment [Supply photographs as appropriate]:
No Intrusion

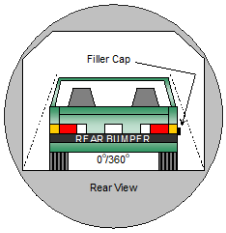
	Yes (Fail)	No
Has an outside Propulsion Battery Component intruded into the passenger compartment?		X

	Yes (Fail)	No
Is the Propulsion Battery Electrolyte Spillage visible in the passenger compartment?		X

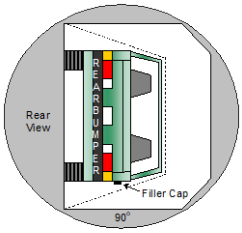
DATA SHEET NO. 305-5
STATIC ROLLOVER TEST DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test
NHTSA No.: O20255401
Test Date: 3/7/2025

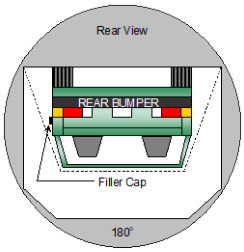
PROPULSION BATTERY SYSTEM COMPONENTS



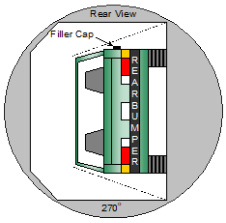
0°/360°



90°



180°



270°

PROPULSION BATTERY ELECTROLYTE COLLECTION TIME PERIOD

Test Phase	Rotation Time (spec. 1-3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	min	52	sec	5	min	6	min	52	sec	7	min
90° - 180°	1	min	50	sec	5	min	6	min	50	sec	7	min
180° - 270°	1	min	47	sec	5	min	6	min	47	sec	7	min
270° - 360°	1	min	51	sec	5	min	6	min	51	sec	7	min

TEST VEHICLE PROPULSION BATTERY ELECTROLYTE SPILLAGE

NOTE: The maximum allowable Propulsion Battery Electrolyte Spillage is 5.0 Liters.

Test Phase	Propulsion Battery Electrolyte Spillage (L)	Spillage Location
0° to 90°	0	Not Applicable
90° to 180°	0	Not Applicable
180° to 270°	0	Not Applicable
270° to 360°	0	Not Applicable
Total Spillage	0	

	Yes (Fail)	No
Is the total Propulsion Battery Electrolyte Spillage greater than 5.0 Liters?		X
Is the Propulsion Battery Electrolyte Spillage visible in the passenger compartment?		X

DATA SHEET NO. 305-5 (CONTINUED)
STATIC ROLLOVER TEST DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

VOLTMETER INFORMATION

	Units	Observations and Conclusions
Make		
Model		
Serial Number		
Internal Impedance Value	MΩ	
Resolution	V	
Last Calibration Date		

ELECTRICAL ISOLATION MEASUREMENTS

Vb Post-Impact	V	

Record V1, V2, V1', V2' voltage measurements at the start of each successive increment of 90°, 180°, 270°, and 360° of the static rollover test.

	Voltage	Units	Test Phase	Time			
V1		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				
V2		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				
V1'		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				
V2'		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				

DATA SHEET NO. 305-5 (CONTINUED)
STATIC ROLLOVER TEST DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

ELECTRICAL ISOLATION CALCULATIONS

NOTE: If measured voltage is zero and results in a division by zero, record "Zero Volts". This "zero voltage" condition is considered as being compliant.

	Voltage	Units	Test Phase	Time			
Ri1 = Ro (1 + V2/V1) [(V1-V1')/V1']							
Ri1		Ω	0°		min		sec
			90°				
			180°				
			270°				
			360°				
Ri2 = Ro (1 + V1/V2) [(V2-V2')/V2']							
Ri2		Ω	0°		min		sec
			90°				
			180°				
			270°				
			360°				
Ri = The lesser of Ri1 and Ri2							
Ri		Ω	0°		min		sec
			90°				
			180°				
			270°				
			360°				
Ri / Vb = Electrical Isolation Value / Nominal Battery Voltage							
Ri / Vb		Ω/V	0°		min		sec
			90°				
			180°				
			270°				
			360°				

NOTE: The minimum Electrical Isolation Value is 500 Ω/V.

	Yes	No (Fail)
Is the measured Electrical Isolation Value ≥ 500 Ω/V?		
Additional Comments	Not Applicable, vehicle was certified to FMVSS No. 305 S5.3(c).	

DATA SHEET NO. 305A-1
EVALUATE PROTECTION FROM DIRECT CONTACT WITH HIGH VOLTAGES SOURCES FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

For each data point where the IPXXB probe is used to evaluate electrical protection from direct contact with high voltage sources, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the direct contact between probe and the high voltage source and/or the probe lamp being illuminated.

POST-CRASH / PRE-ROLLOVER

Description of Evaluated Location	Probe Contact with High Voltage Source		Probe Lamp Illuminated	
	Yes, Fail	No, Pass	Yes, Fail	No, Pass
High-Voltage Battery Case to Electrical Ground		X		X
Inverter to Electrical Ground		X		X
DC Converter to Electrical Ground		X		X
Electric Propulsion Drive Motor to Electrical Ground		X		X
Electric Propulsion Drive Motor to High-Voltage Battery Case		X		X
Electric Propulsion Drive Motor to Inverter		X		X
Electric Propulsion Drive Motor to DC Converter		X		X
DC Converter to High-Voltage Battery Case		X		X
DC Converter to Inverter		X		X
Inverter to High-Voltage Battery Case		X		X

STATIC ROLLOVER

Description of Evaluated Location	Probe Contact with High Voltage Source		Probe Lamp Illuminated	
	Yes, Fail	No, Pass	Yes, Fail	No, Pass
High-Voltage Battery Case to Electrical Ground		X		X
Inverter to Electrical Ground		X		X
DC Converter to Electrical Ground		X		X
Electric Propulsion Drive Motor to Electrical Ground		X		X
Electric Propulsion Drive Motor to High-Voltage Battery Case		X		X
Electric Propulsion Drive Motor to Inverter		X		X
Electric Propulsion Drive Motor to DC Converter		X		X
DC Converter to High-Voltage Battery Case		X		X
DC Converter to Inverter		X		X
Inverter to High-Voltage Battery Case		X		X

DATA SHEET NO. 305A-1 (CONTINUED)
EVALUATE PROTECTION FROM DIRECT CONTACT WITH HIGH VOLTAGES SOURCES FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

For each data point where the IPXXB probe is used to evaluate electrical protection from direct contact with high voltage sources, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the direct contact between probe and the high voltage source and/or the probe lamp being illuminated.

POST-ROLLOVER

Description of Evaluated Location	Probe Contact with High Voltage Source		Probe Lamp Illuminated	
	Yes, Fail	No, Pass	Yes, Fail	No, Pass
High-Voltage Battery Case to Electrical Ground		X		X
Inverter to Electrical Ground		X		X
DC Converter to Electrical Ground		X		X
Electric Propulsion Drive Motor to Electrical Ground		X		X
Electric Propulsion Drive Motor to High-Voltage Battery Case		X		X
Electric Propulsion Drive Motor to Inverter		X		X
Electric Propulsion Drive Motor to DC Converter		X		X
DC Converter to High-Voltage Battery Case		X		X
DC Converter to Inverter		X		X
Inverter to High-Voltage Battery Case		X		X

DATA SHEET NO. 305A-2
EVALUATE PROTECTION AGAINST INDIRECT CONTACT WITH HIGH VOLTAGE SOURCES USING A RESISTANCE TESTER OR DC POWER SUPPLY, VOLTMETER AND AMMETER FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

For any measuring points where protection against indirect contact with high voltage sources is evaluated, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values. If the resistance is calculated using separately measured resistances, describe each measurement and the final calculation as separate entries in the table below.

Measuring Path	Pass	Fail
BC: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.*	< 0.1 Ω	≥ 0.1 Ω
BB: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.*	< 0.2 Ω	≥ 0.2 Ω

POST-CRASH / PRE-ROLLOVER

Description of Evaluated Location	Measuring Path	Method 2 ONLY		Methods 1 & 2	Pass *or* Fail
	BC *or* **BB**	**Voltage** (V) Volts	**Current** (I) Amps	**Resistance** (R=V/I) Ω	
High-Voltage Battery Case to Electrical Ground	BC			0.002	Pass
Inverter to Electrical Ground	BC			0.004	Pass
DC Converter to Electrical Ground	BC			0.013	Pass
Electric Propulsion Drive Motor to Electrical Ground	BC			0.019	Pass
Electric Propulsion Drive Motor to High-Voltage Battery Case	BB			0.009	Pass
Electric Propulsion Drive Motor to Inverter	BB			0.017	Pass
Electric Propulsion Drive Motor to DC Converter	BB			0.021	Pass
DC Converter to High-Voltage Battery Case	BB			0.021	Pass
DC Converter to Inverter	BB			0.024	Pass
Inverter to High-Voltage Battery Case	BB			0.020	Pass

DATA SHEET NO. 305A-2 (CONTINUED)
EVALUATE PROTECTION AGAINST INDIRECT CONTACT WITH HIGH VOLTAGE SOURCES USING A RESISTANCE TESTER OR DC POWER SUPPLY, VOLTMETER AND AMMETER FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

For any measuring points where protection against indirect contact with high voltage sources is evaluated, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values. If the resistance is calculated using separately measured resistances, describe each measurement and the final calculation as separate entries in the table below.

Measuring Path	Pass	Fail
BC: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.*	< 0.1 Ω	≥ 0.1 Ω
BB: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.*	< 0.2 Ω	≥ 0.2 Ω

STATIC ROLLOVER

Description of Evaluated Location	Measuring Path	Method 2 ONLY		Methods 1 & 2	Pass *or* Fail
	BC *or* **BB**	**Voltage** (V) Volts	**Current** (I) Amps	**Resistance** (R=V/I) Ω	
High-Voltage Battery Case to Electrical Ground	BC			0.002	Pass
Inverter to Electrical Ground	BC			0.005	Pass
DC Converter to Electrical Ground	BC			0.013	Pass
Electric Propulsion Drive Motor to Electrical Ground	BC			0.019	Pass
Electric Propulsion Drive Motor to High-Voltage Battery Case	BB			0.009	Pass
Electric Propulsion Drive Motor to Inverter	BB			0.016	Pass
Electric Propulsion Drive Motor to DC Converter	BB			0.021	Pass
DC Converter to High-Voltage Battery Case	BB			0.020	Pass
DC Converter to Inverter	BB			0.024	Pass
Inverter to High-Voltage Battery Case	BB			0.021	Pass

* Final resistance values reported after subtracting the resistance of the measurement device extensions.

DATA SHEET NO. 305A-2 (CONTINUED)
EVALUATE PROTECTION AGAINST INDIRECT CONTACT WITH HIGH VOLTAGE SOURCES USING A RESISTANCE TESTER OR DC POWER SUPPLY, VOLTMETER AND AMMETER FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

For any measuring points where protection against indirect contact with high voltage sources is evaluated, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values. If the resistance is calculated using separately measured resistances, describe each measurement and the final calculation as separate entries in the table below.

Measuring Path	Pass	Fail
BC: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.*	< 0.1 Ω	≥ 0.1 Ω
BB: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.*	< 0.2 Ω	≥ 0.2 Ω

POST-ROLLOVER

Description of Evaluated Location	Measuring Path	Method 2 ONLY		Methods 1 & 2	Pass *or* Fail
	BC *or* **BB**	**Voltage** (V) Volts	**Current** (I) Amps	**Resistance** (R=V/I) Ω	
High-Voltage Battery Case to Electrical Ground	BC			0.002	Pass
Inverter to Electrical Ground	BC			0.005	Pass
DC Converter to Electrical Ground	BC			0.013	Pass
Electric Propulsion Drive Motor to Electrical Ground	BC			0.019	Pass
Electric Propulsion Drive Motor to High-Voltage Battery Case	BB			0.009	Pass
Electric Propulsion Drive Motor to Inverter	BB			0.017	Pass
Electric Propulsion Drive Motor to DC Converter	BB			0.021	Pass
DC Converter to High-Voltage Battery Case	BB			0.021	Pass
DC Converter to Inverter	BB			0.024	Pass
Inverter to High-Voltage Battery Case	BB			0.020	Pass

* Final resistance values reported after subtracting the resistance of the measurement device extensions.

DATA SHEET NO. 305A-3
DETERMINE VOLTAGE BETWEEN EXPOSED CONDUCTIVE PARTS OF ELECTRICAL PROTECTION BARRIERS AND THE ELECTRICAL CHASSIS AND BETWEEN EXPOSED PARTS OF ELECTRICAL PROTECTION BARRIERS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

For each data point where the voltage between exposed conductive parts of electrical protection barriers and the electrical chassis and between exposed conductive parts of electrical protection barriers is determined, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values.

Measuring Path	Pass	Fail
BC: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.*	≤ 30 VAC ≤ 60 VDC	> 30 VAC > 60 VDC
BB: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.*	≤ 30 VAC ≤ 60 VDC	> 30 VAC > 60 VDC

POST-CRASH / PRE-ROLLOVER

Description of Evaluated Location	Measuring Path	Measured Voltage		Pass *or* Fail
	BC *or* **BB**	**VAC** (V) Volts	**VDC** (V) Volts	
High-Voltage Battery Case to Electrical Ground	BC	0.0	0.0	Pass
Inverter to Electrical Ground	BC	0.0	0.0	Pass
DC Converter to Electrical Ground	BC	0.0	0.0	Pass
Electric Propulsion Drive Motor to Electrical Ground	BC	0.0	0.0	Pass
Electric Propulsion Drive Motor to High-Voltage Battery Case	BB	0.0	0.0	Pass
Electric Propulsion Drive Motor to Inverter	BB	0.0	0.0	Pass
Electric Propulsion Drive Motor to DC Converter	BB	0.0	0.0	Pass
DC Converter to High-Voltage Battery Case	BB	0.0	0.0	Pass
DC Converter to Inverter	BB	0.0	0.0	Pass
Inverter to High-Voltage Battery Case	BB	0.0	0.0	Pass

STATIC ROLLOVER

Description of Evaluated Location	Measuring Path	Measured Voltage		Pass *or* Fail
	BC *or* **BB**	**VAC** (V) Volts	**VDC** (V) Volts	
High-Voltage Battery Case to Electrical Ground	BC	0.0	0.0	Pass
Inverter to Electrical Ground	BC	0.0	0.0	Pass
DC Converter to Electrical Ground	BC	0.0	0.0	Pass
Electric Propulsion Drive Motor to Electrical Ground	BC	0.0	0.0	Pass
Electric Propulsion Drive Motor to High-Voltage Battery Case	BB	0.0	0.0	Pass
Electric Propulsion Drive Motor to Inverter	BB	0.0	0.0	Pass
Electric Propulsion Drive Motor to DC Converter	BB	0.0	0.0	Pass
DC Converter to High-Voltage Battery Case	BB	0.0	0.0	Pass
DC Converter to Inverter	BB	0.0	0.0	Pass
Inverter to High-Voltage Battery Case	BB	0.0	0.0	Pass

DATA SHEET NO. 305A-3 (CONTINUED)
DETERMINE VOLTAGE BETWEEN EXPOSED CONDUCTIVE PARTS OF ELECTRICAL PROTECTION BARRIERS AND THE ELECTRICAL CHASSIS AND BETWEEN EXPOSED PARTS OF ELECTRICAL PROTECTION BARRIERS

Test Vehicle: 2025 Mazda CX-70 PHEV 5-Door SUV NHTSA No.: O20255401
Test Program: NCAP Side MDB Impact Test Test Date: 3/7/2025

For each data point where the voltage between exposed conductive parts of electrical protection barriers and the electrical chassis and between exposed conductive parts of electrical protection barriers is determined, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values.

Measuring Path	Pass	Fail
BC: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.*	≤ 30 VAC ≤ 60 VDC	> 30 VAC > 60 VDC
BB: *Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.*	≤ 30 VAC ≤ 60 VDC	> 30 VAC > 60 VDC

POST-ROLLOVER

Description of Evaluated Location	Measuring Path	Measured Voltage		Pass *or* Fail
	BC *or* **BB**	**VAC** (V) Volts	**VDC** (V) Volts	
High-Voltage Battery Case to Electrical Ground	BC	0.0	0.0	Pass
Inverter to Electrical Ground	BC	0.0	0.0	Pass
DC Converter to Electrical Ground	BC	0.0	0.0	Pass
Electric Propulsion Drive Motor to Electrical Ground	BC	0.0	0.0	Pass
Electric Propulsion Drive Motor to High-Voltage Battery Case	BB	0.0	0.0	Pass
Electric Propulsion Drive Motor to Inverter	BB	0.0	0.0	Pass
Electric Propulsion Drive Motor to DC Converter	BB	0.0	0.0	Pass
DC Converter to High-Voltage Battery Case	BB	0.0	0.0	Pass
DC Converter to Inverter	BB	0.0	0.0	Pass
Inverter to High-Voltage Battery Case	BB	0.0	0.0	Pass

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Photo No. 001 - As Delivered Right Front Three-Quarter View of Test Vehicle

Photo No. 002 - As Delivered Left Rear Three-Quarter View of Test Vehicle

Photo No. 003 - Pre-Test Frontal View of Test Vehicle

Photo No. 004 - Post-Test Frontal View of Test Vehicle

Photo No. 005 - Pre-Test Left Front Three-Quarter View of Test Vehicle

Photo No. 006 - Post-Test Left Front Three-Quarter View of Test Vehicle

Photo No. 007 - Pre-Test Left Side View of Test Vehicle

Photo No. 008 - Post-Test Left Side View of Test Vehicle

Photo No. 009 - Pre-Test Left Three-Quarter Rear View of Test Vehicle

Photo No. 010 - Post-Test Left Three-Quarter Rear View of Test Vehicle

Photo No. 011 - Pre-Test Rear View of Test Vehicle

Photo No. 012 - Post-Test Rear View of Test Vehicle

Photo No. 013 - Pre-Test Right Side View of Test Vehicle

Photo No. 014 - Post-Test Right Side View of Test Vehicle

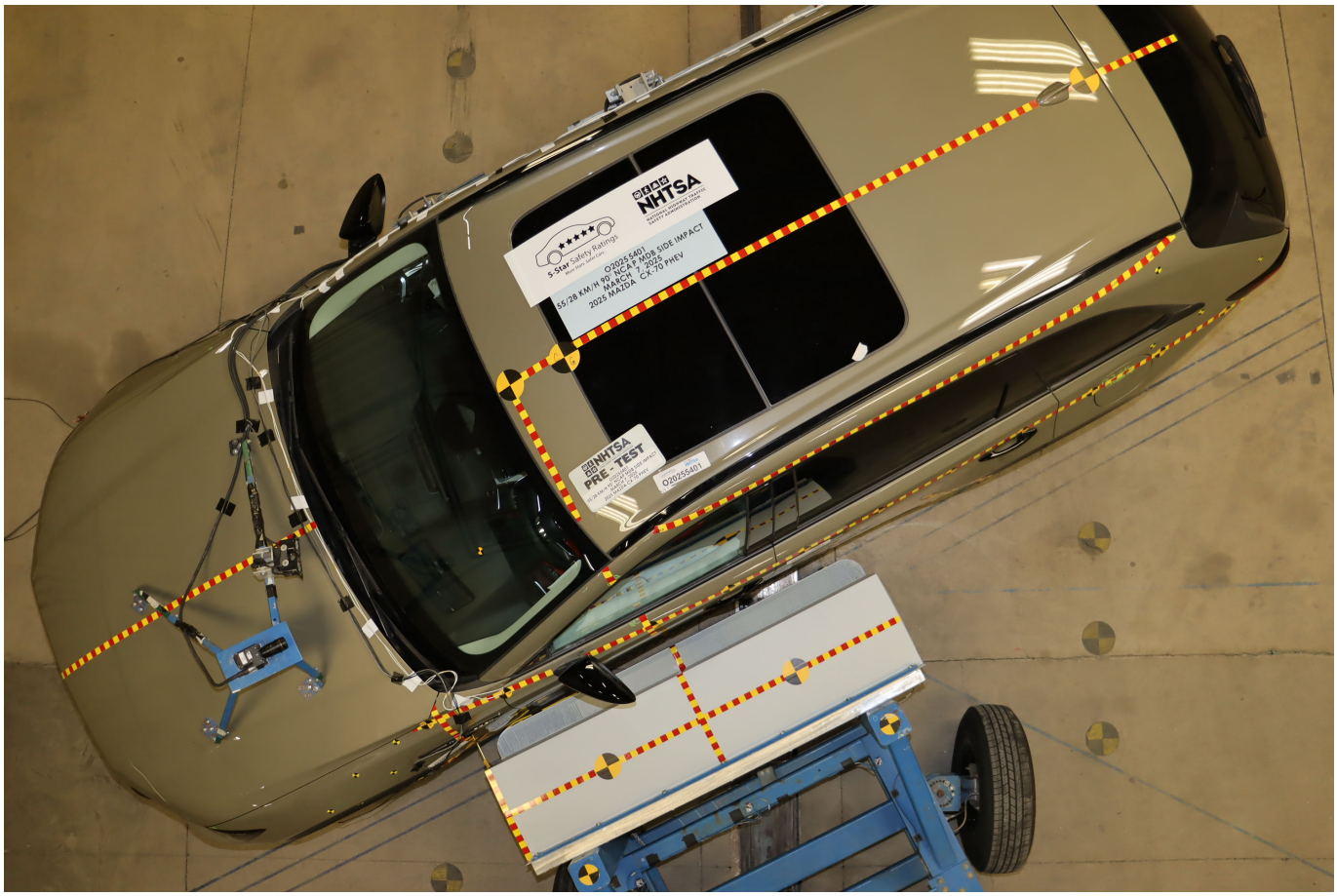


Photo No. 015 - Pre-Test Overhead View of Test Area

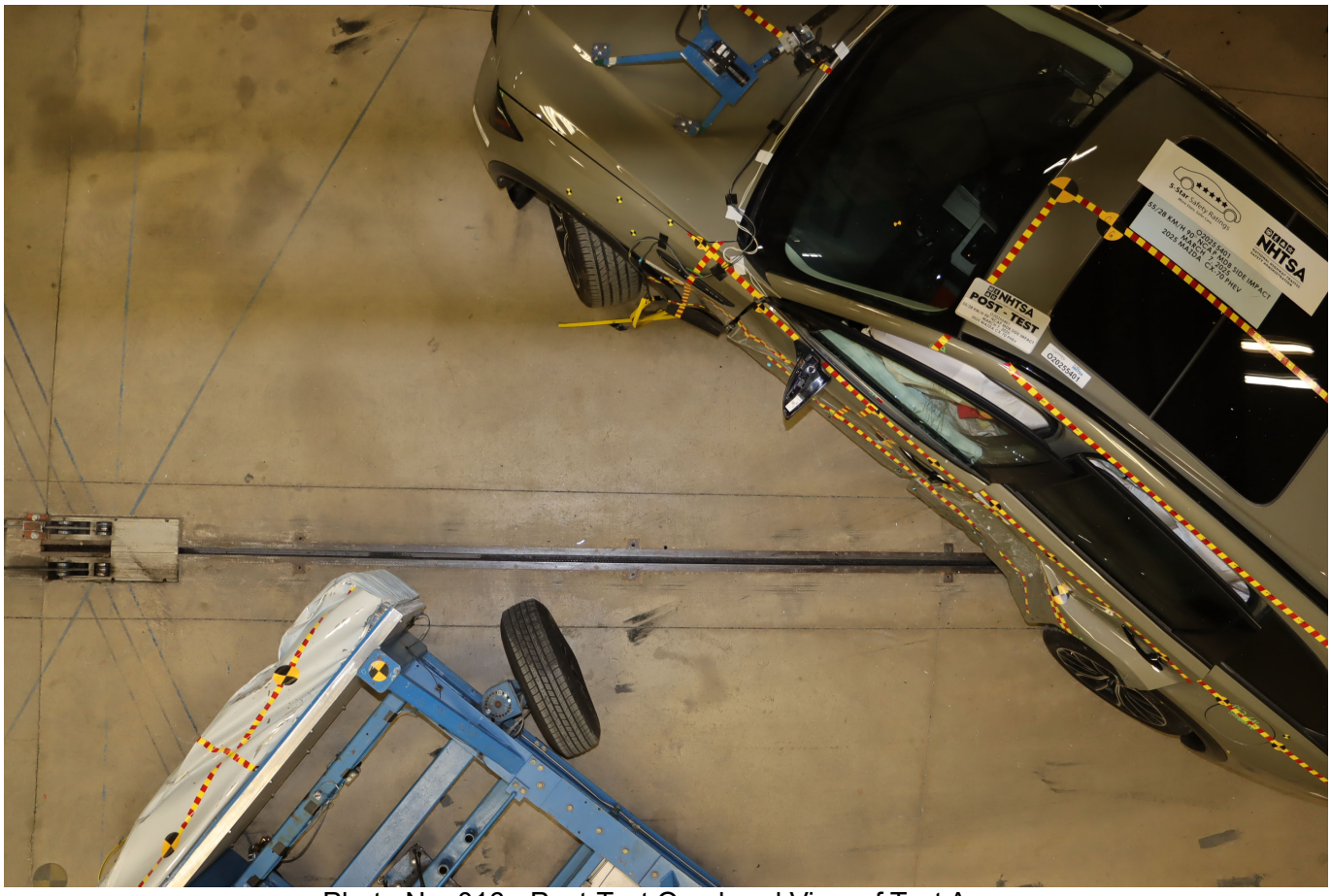


Photo No. 016 - Post-Test Overhead View of Test Area

Photo No. 017 - Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle

Photo No. 018 - Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle

Photo No. 019 - Pre-Test Close-Up View of Impact Point Target

Photo No. 020 - Post-Test Close-Up View of Impact Point Target

Photo No. 021 - Pre-Test Left Front Door Latch Close-Up

Photo No. 022 - Post-Test Left Front Door Latch Close-Up

Photo No. 023 - Pre-Test Left Rear Door Latch Close-Up

Photo No. 024 - Post-Test Left Rear Door Latch Close-Up

Photo No. 025 - Pre-Test Front Close-Up View of Driver Dummy

Photo No. 026 - Post-Test Front Close-Up View of Driver Dummy

Photo No. 027 - Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking

Photo No. 028 - Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View

Photo No. 029 - Post-Test Left Side View of Driver Dummy Shoulder and Door Top View

Photo No. 030 - Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning

Photo No. 031 - Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint

Photo No. 032 - Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning

Photo No. 033 - Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan

Photo No. 034 - Pre-Test Placement of Driver Dummy's Feet

Photo No. 035 - Pre-Test View of Belt Anchorage for Driver Dummy

Photo No. 036 - Pre-Test Left Side View of Steering Wheel

Photo No. 037 - Pre-Test View of Disengaged Parking Brake

Photo No. 038 - Pre-Test View of Parking Brake

Photo No. 039 - Pre-Test Close-Up Left Side View of Driver Seat Track

Photo No. 040 - Pre-Test Close-Up Left Side View of Driver Seat Back

Photo No. 041 - Pre-Test Close-Up View of Driver Seat Back or Head Restraint

Photo No. 042 - Pre-Test Driver Dummy and Door Clearance View

Photo No. 043 - Post-Test Driver Dummy and Door Clearance View

Photo No. 044 - Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

Photo No. 045 - Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment

Photo No. 046 - Pre-Test Driver Inner Door Panel View

Photo No. 047 - Post-Test Driver Inner Door Panel View

Photo No. 048 - Post-Test Driver Dummy Close-Up Head Contact with Vehicle Interior View

Photo No. 049 - Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View

Photo No. 050 - Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View

Photo No. 051 - Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View

Photo No. 052 - Post-Test Driver Dummy Close-Up Pelvis Contact with Vehicle Interior View

Photo No. 053 - Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View

PHOTOGRAPH NOT APPLICABLE

Photo No. 054 - Post-Test Driver Dummy Close-Up Knee Contact View

Photo No. 055 - Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking

Photo No. 056 - Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View

Photo No. 057 - Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View

Photo No. 058 - Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning

Photo No. 059 - Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint

Photo No. 060 - Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning

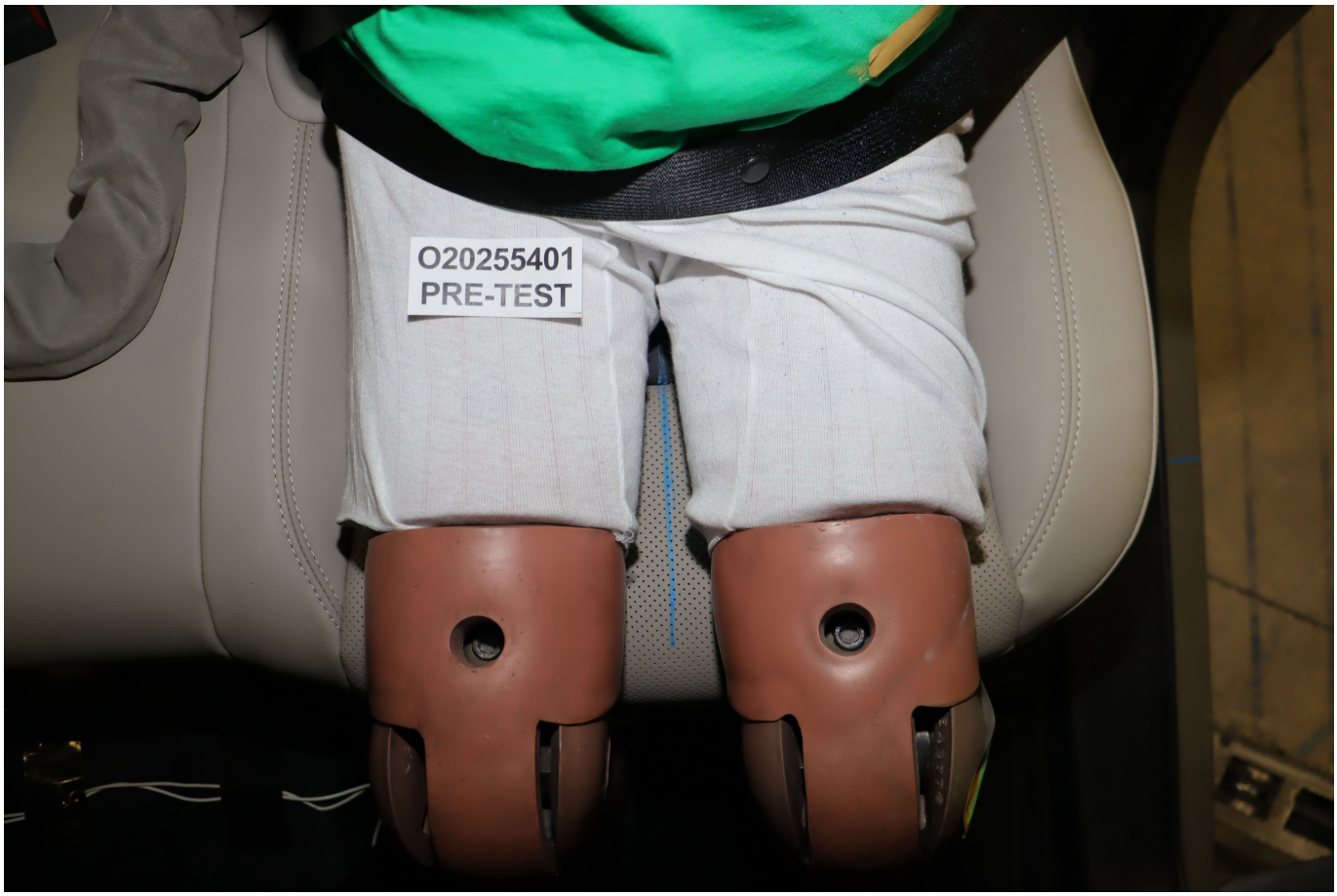


Photo No. 061 - Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

Photo No. 062 - Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket

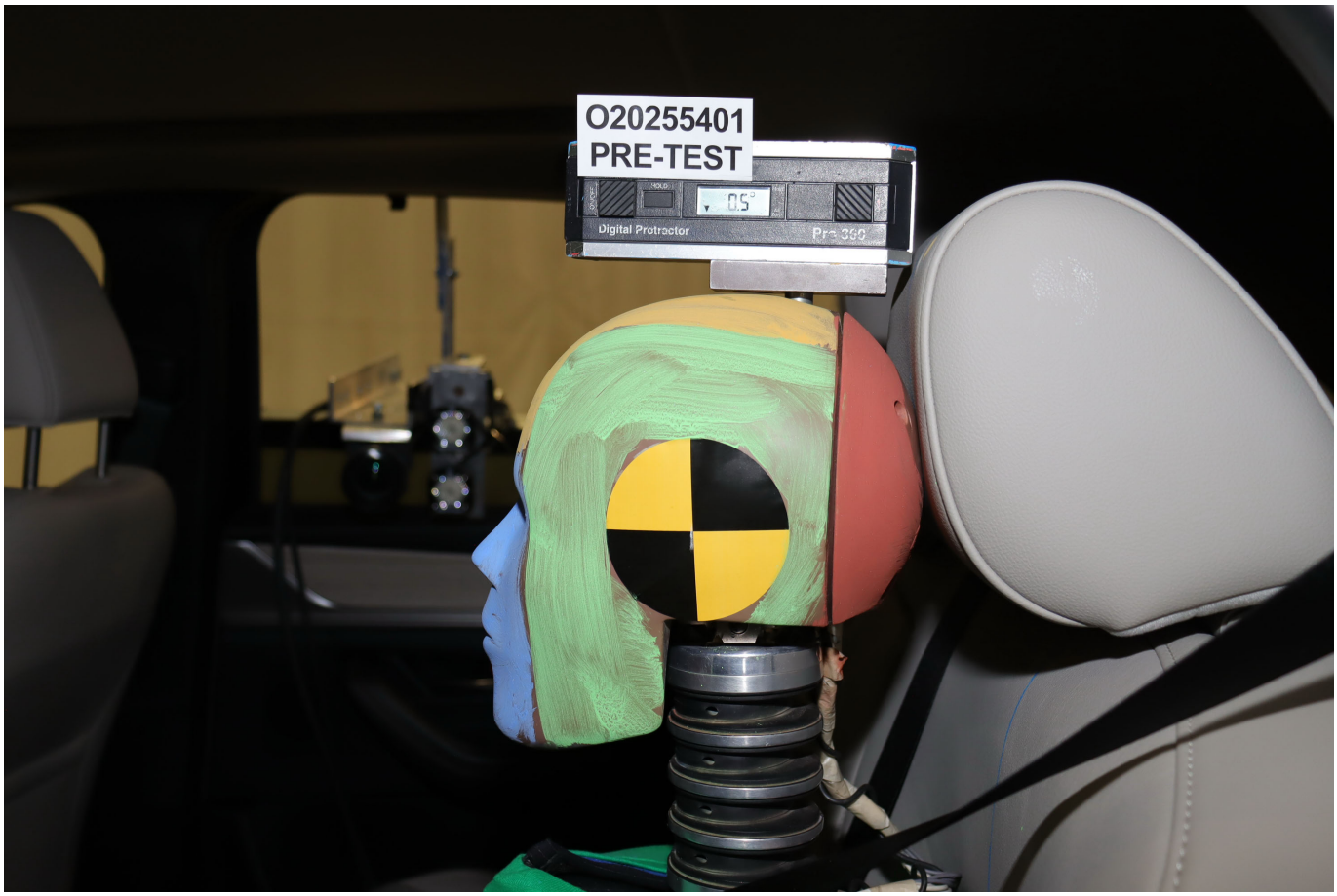


Photo No. 063 - Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level

Photo No. 064 - Pre-Test Placement of Rear Passenger Dummy's Feet

Photo No. 065 - Pre-Test View of Belt Anchorage for Rear Passenger Dummy

Photo No. 066 - Pre-Test Close-Up Left Side View of Rear Passenger Seat Track

Photo No. 067 - Pre-Test Close-Up Left Side View of Rear Passenger Seat Back

Photo No. 068 - Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint

Photo No. 069 - Pre-Test Rear Passenger Dummy and Door Clearance View

Photo No. 070 - Post-Test Rear Passenger Dummy and Door Clearance View

Photo No. 071 - Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

Photo No. 072 - Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

Photo No. 073 - Pre-Test Rear Passenger Inner Door Panel View

Photo No. 074 - Post-Test Rear Passenger Inner Door Panel View

Photo No. 075 - Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle Interior View

Photo No. 076 - Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View

Photo No. 077 - Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View

Photo No. 078 - Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View

Photo No. 079 - Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Vehicle Interior View

PHOTOGRAPH NOT APPLICABLE

Photo No. 080 - Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View

PHOTOGRAPH NOT APPLICABLE

Photo No. 081 - Post-Test Rear Passenger Dummy Close-Up Knee Contact View

Photo No. 082 - Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

Photo No. 083 - Post-Test View of Fuel Filler Cap or Fuel Filler Neck

Photo No. 084 - Pre-Test Front View of MDB Impactor Face

Photo No. 085 - Post-Test Front View of MDB Impactor Face

Photo No. 086 - Pre-Test Top View of MDB Impactor Face

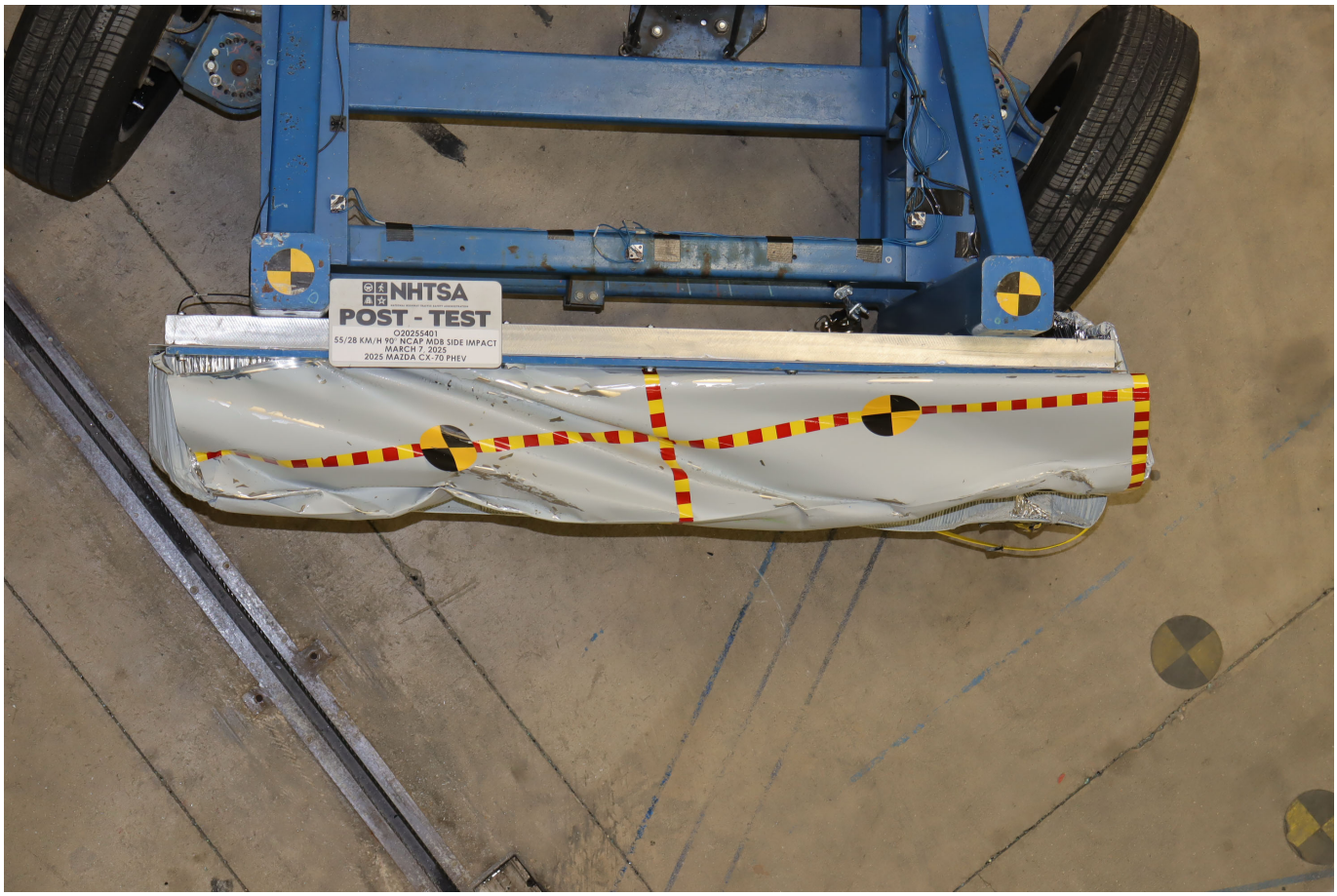


Photo No. 087 - Post-Test Top View of MDB Impactor Face

Photo No. 088 - Pre-Test Left Side View of MDB Impactor Face

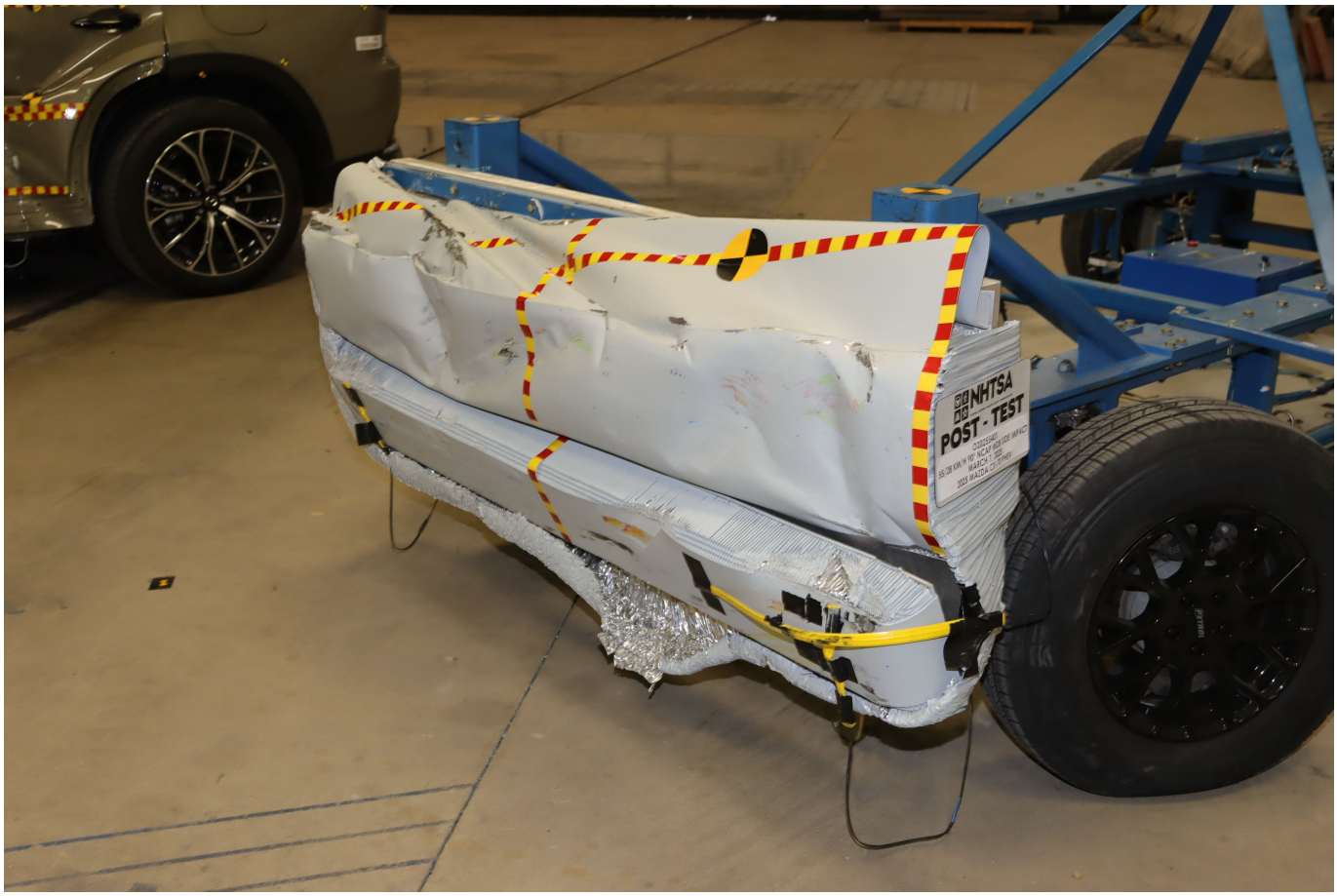


Photo No. 089 - Post-Test Left Side View of MDB Impactor Face

Photo No. 090 - Pre-Test Right Side View of MDB Impactor Face

Photo No. 091 - Post-Test Right Side View of MDB Impactor Face

Photo No. 092 - Close-Up View of Vehicle's Certification Label

Photo No. 093 - Close-Up View of Vehicle's Tire Information Placard or Label

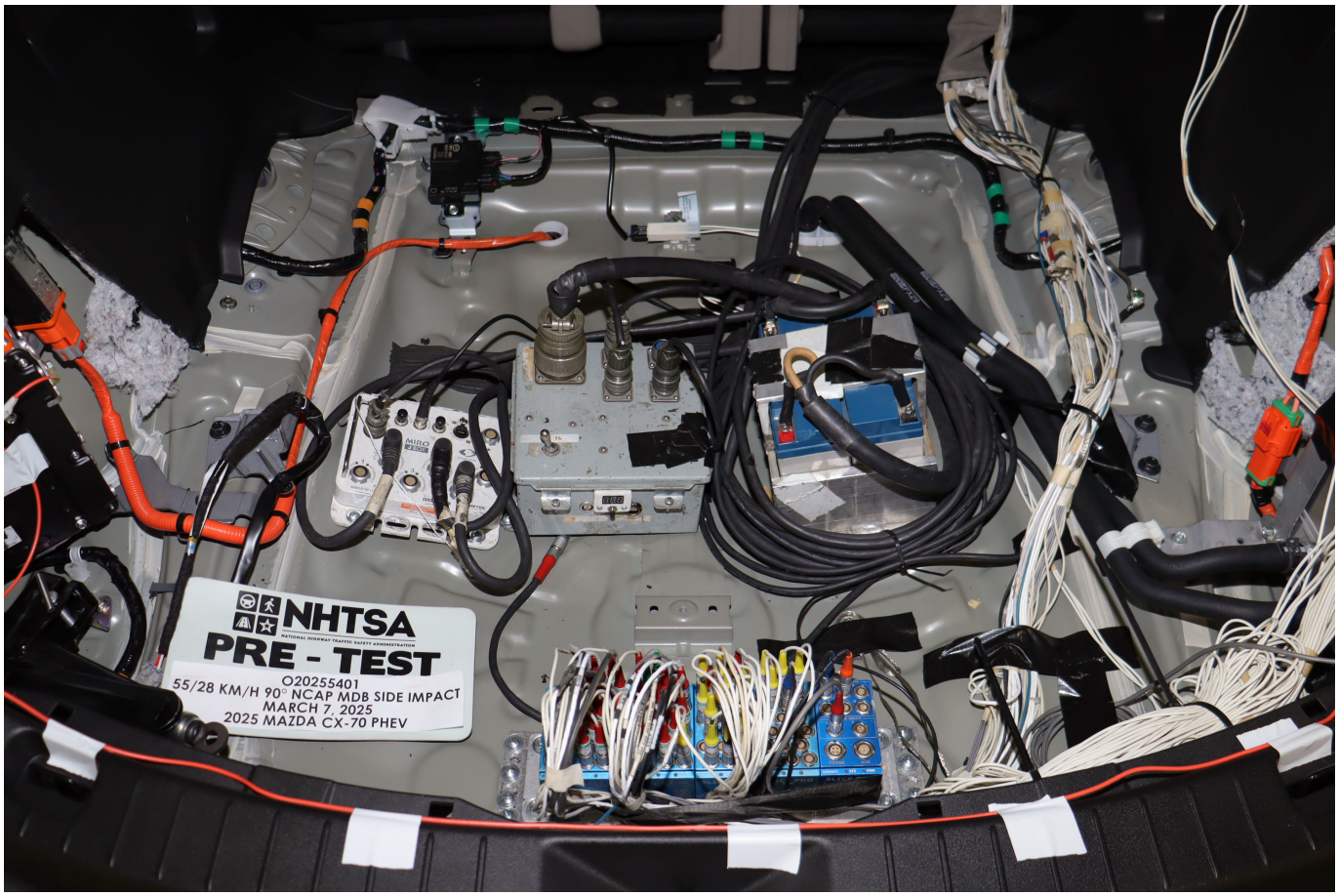


Photo No. 094 - Pre-Test Ballast View

Photo No. 095 - Post-Test Primary and Redundant Speed Trap Read-Out


Photo No. 096 - FMVSS Photo No. 301 Static Rollover 0 Degrees

Photo No. 097 - FMVSS Photo No. 301 Static Rollover 90 Degrees

Photo No. 098 - FMVSS Photo No. 301 Static Rollover 180 Degrees

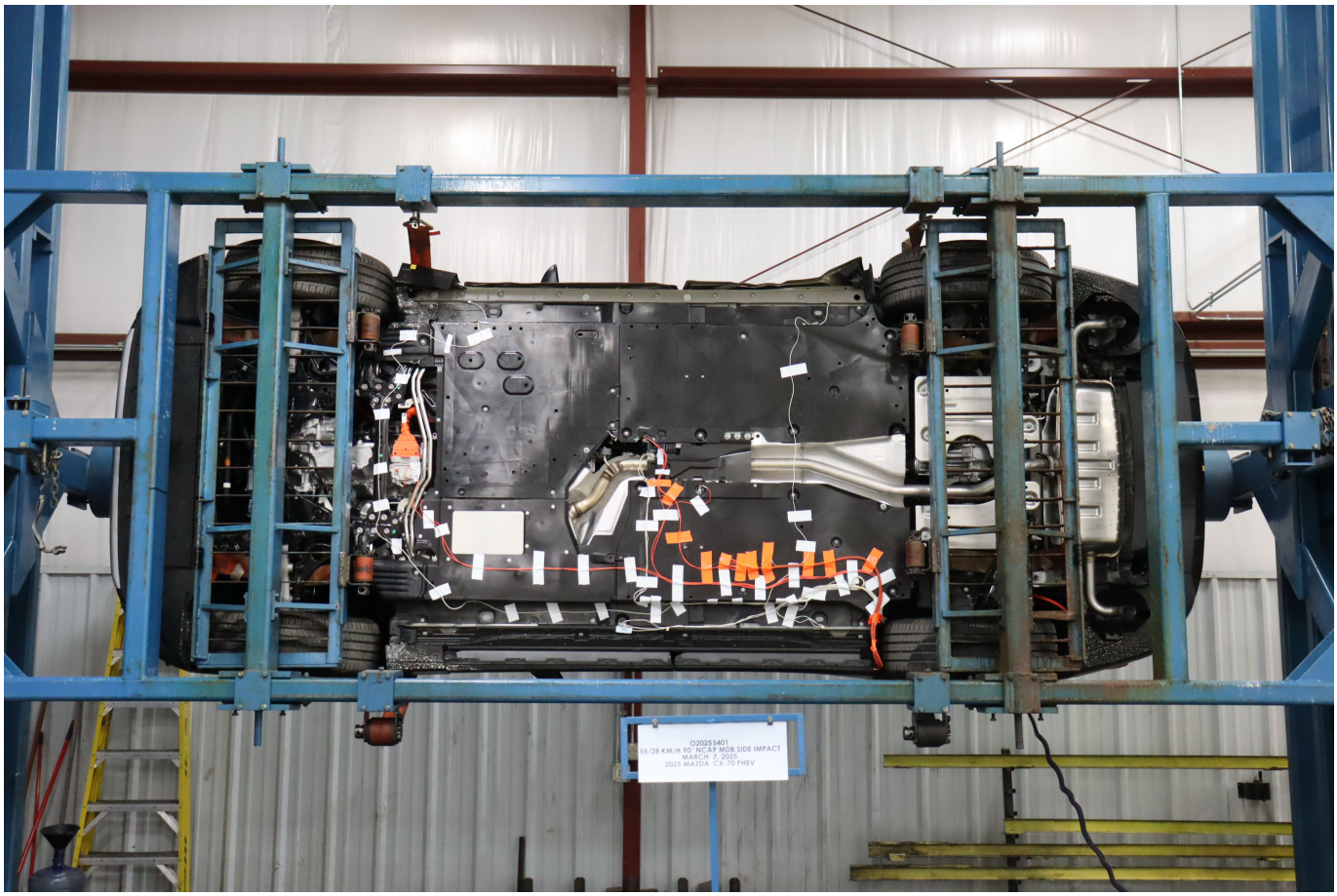


Photo No. 099 - FMVSS Photo No. 301 Static Rollover 270 Degrees

Photo No. 100 - FMVSS Photo No. 301 Static Rollover 360 Degrees

Photo No. 101 - Impact Event

mazda

EPA DOT **Fuel Economy and Environment**

Plug-In Hybrid Vehicle
Electricity-Gasoline

Fuel Economy Standard SUVs range from 11 to 100 MPGe. The best vehicle rates 140 MPGe.

Electricity + Gasoline
ChargeTime: 2 hours (240V)
56 MPGe
0.1 gallons per 100 miles
58 kW-hrs per 100 miles
combined city/highway

Gasoline Only
25 MPG
4.0 gallons per 100 miles
combined city/highway

You **spend $250** more in fuel costs over 5 years compared to the average new vehicle.

Driving Range
Electricity + Gasoline: 0 8 16 — All Electric Range = 0 - 25 miles
Gasoline only: 34 490
26 miles

Annual fuel **cost** **$1,950**

Fuel Economy & Greenhouse Gas Rating (tailpipe only)
MPG: 1 — 7 — 8 — 10 Best
CO_2: 1 — 8 — 10 Best

Smog Rating (tailpipe only)
1 — 6 — 10 Best

This vehicle emits 168 grams CO_2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel & electricity also create emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and costs $9,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $ 4.25 per gallon and $0.16 per kW-hr. This is a dual fueled automobile. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 0%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN 90%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: HOFU, JAPAN
COUNTRY OF ORIGIN:
ENGINE: JAPAN
TRANSMISSION: JAPAN

This label is affixed pursuant to the Federal Automobile Disclosure Act. Gasoline, License and Title fees, State and Local taxes, and Dealer installed options are not included.

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score		**Not Rated**
Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.		
Frontal Crash	Driver	**Not Rated**
	Passenger	**Not Rated**
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.		
Side Crash	Front seat	**Not Rated**
	Rear seat	**Not Rated**
Based on the risk of injury in a side impact.		
Rollover		**Not Rated**
Based on the risk of rollover in a single vehicle crash.		

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

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C7P--PR-XA---KR9ENAA-TF----------20240525

MazdaUSA.com

2025 MAZDA CX-70

Model: **2025 CX-70 PHEV PREMIUM**
Exterior Color: **ZIRCON SAND METALLIC**
Interior Color: **GREIGE LEATHER**

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES
- E-SKYACTIV PHEV
- 323 HORSEPOWER; 369 LB-FT TORQUE WITH PREMIUM GASOLINE
- SKYACTIV-DRIVE 8-SPEED AT
- HILL LAUNCH ASSIST
- KINEMATIC POSTURE CONTROL
- ABS WITH EBD
- M-DRIVE - SPORT/OFF-ROAD/ TOWING/EV MODE
- 3500 LB TOWING CAPACITY

EXTERIOR FEATURES
- RAIN-SENSING WINDSHIELD WIPERS
- HEATED POWER MIRRORS W/TURN LAMPS
- HONEYCOMB GRILL MESH PIANO BLACK
- LED HEADLIGHTS W/ AUTO ON/OFF
- HIGH BEAM CONTROL
- ALUMINUM ROOF RAILS PIANO BLACK

INTERIOR FEATURES
- 5-PASSENGER SEATING CAPACITY
- LEATHER-TRIMMED SEATS
- 8-WAY PWR DRIVER'S SEAT W/LUMBAR
- DRIVER SEAT MEMORY W/ 2 POSITIONS
- 4-WAY POWER PASSENGER SEAT
- HEATED FRONT SEATS
- LTHR ST WHEEL W/ PADDLE SHIFTERS
- ACTIVE DRIVING DISPLAY
- MAZDA ADVANCED KEYLESS ENTRY
- 3-ZONE AUTOMATIC CLIMATE CONTROL
- ALEXA
- BLUETOOTH® / USB INPUTS (4)
- MAZDA CONNECTED SERVICES
- 2ND-ROW WINDOW SUNSHADES

SAFETY AND SECURITY FEATURES
- 96MO/100K MI HIGH VOLTAGE BATTERY LIMITED WARRANTY
- 24-HOUR ROADSIDE ASSISTANCE
- BLIND SPOT MONITORING
- LANE DEPARTURE WARNING SYSTEM
- DRIVER ATTENTION ALERT
- ANTI-THEFT ENGINE IMMOBILIZER
- FRONTAL, KNEE, CURTAIN & SIDE IMPACT AIRBAGS
- SMART BRAKE SUPPORT
- REAR CROSS TRAFFIC ALERT
- LANE KEEP ASSIST
- MAZDA RADAR CRUISE CONTROL
- REAR VIEW MONITOR

MSRP $54,400

OPTIONAL EQUIPMENT

JCS	ZIRCON SAND PAINT CHARGE	$450
1PR	PREMIUM PACKAGE	NO CHARGE

- 21-INCH ALLOY WHEELS MACHINE CUT
- P275/45 R21 ALL-SEASON TIRES
- HANDS-FREE POWER REAR LIFTGATE
- CRUISING & TRAFFIC SUPPORT
- SECONDARY COLLISION REDUCTION
- TRAFFIC SIGN RECOGNITION
- FRONT AND REAR PARKING SENSORS
- 1500W AC POWER OUTLET
- POWER PANORAMIC MOONROOF
- 12.3" COLOR CENTER DISPLAY
- BOSE® AM/FM/HD RADIO® 12-SPEAKERS
- MAZDA ONLINE NAVIGATION
- WIRELESS PHONE CHARGER
- WIRELESS ANDROID AUTO™
- WIRELESS APPLE CARPLAY™
- SIRIUSXM® 3 MOS. TRIAL N/A&HI

Total Vehicle and Options	$54,850
Delivery, Processing and Handling Fee	$1,455
Total MSRP	**$56,305**

Photo No. 102 - Monroney Label

Head Restraints

Your vehicle is equipped with head restraints on all outboard seats and the rear center seat.
The head restraints are intended to help protect you and the passengers from neck injury.

Warnings and Cautions for Using the Head Restraints

⚠ WARNING

Always drive with the head restraints installed when seats are being used and make sure they are properly adjusted.
Driving with the head restraints adjusted too low or removed is dangerous. With no support behind your head, your neck could be seriously injured in a collision.

Always drive with the head restraints installed when seats are being used and make sure they are properly installed.
Driving with the head restraints not installed is dangerous. With no support behind your head, your neck could be seriously injured in a collision.

After installing a head restraint, try lifting it to make sure that it does not pull out.
Driving with an unsecured head restraint is dangerous as the effectiveness of the head restraint will be compromised which could cause it to unexpectedly detach from the seat.

⚠ CAUTION

➢When installing a head restraint, make sure that it is installed correctly with the front of the head restraint facing forward. If the head restraint is installed incorrectly, it could detach from the seat during a collision and result in injury.

➢The head restraints on each of the front and rear seats are specialized to each seat. Do not switch around the head restraint positions. If a head restraint is not installed to its correct seat position, the effectiveness of the head restraint during a collision will be compromised which could cause injury.

How to Use the Head Restraints

Adjusting the Head Restraints

Adjust the head restraint so that the center is even with the top of the passenger's ears.

To Raise a Head Restraint

Pull up a head restraint.

To Lower a Head Restraint

Lower a head restraint while pressing the lock knob.
Front seats

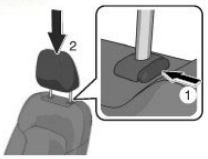


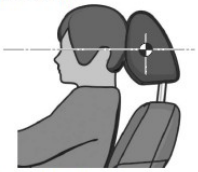
Photo No. 103 - Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

➢The head restraints on each of the front and rear seats are specialized to each seat. Do not switch around the head restraint positions. If a head restraint is not installed to its correct seat position, the effectiveness of the head restraint during a collision will be compromised which could cause injury.

How to Use the Head Restraints

Adjusting the Head Restraints

Adjust the head restraint so that the center is even with the top of the passenger's ears.

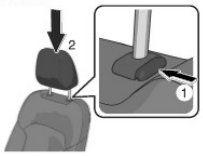


To Raise a Head Restraint

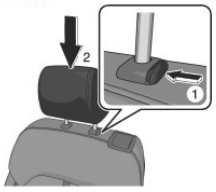
Pull up a head restraint.

To Lower a Head Restraint

Lower a head restraint while pressing the lock knob.
Front seats



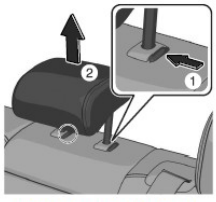
Rear seats



Removing or Installing a Head Restraint

To Remove a Head Restraint

Pull up a head restraint while pressing the lock knob.
(Rear center seat)
Pull up the center seat head restraint while pressing both lock knobs.



To Install a Head Restraint

Insert a head restraint while pressing the lock knob.
(Rear center seat)
Insert the center seat head restraint while pressing both lock knobs.

Photo No. 104 - Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

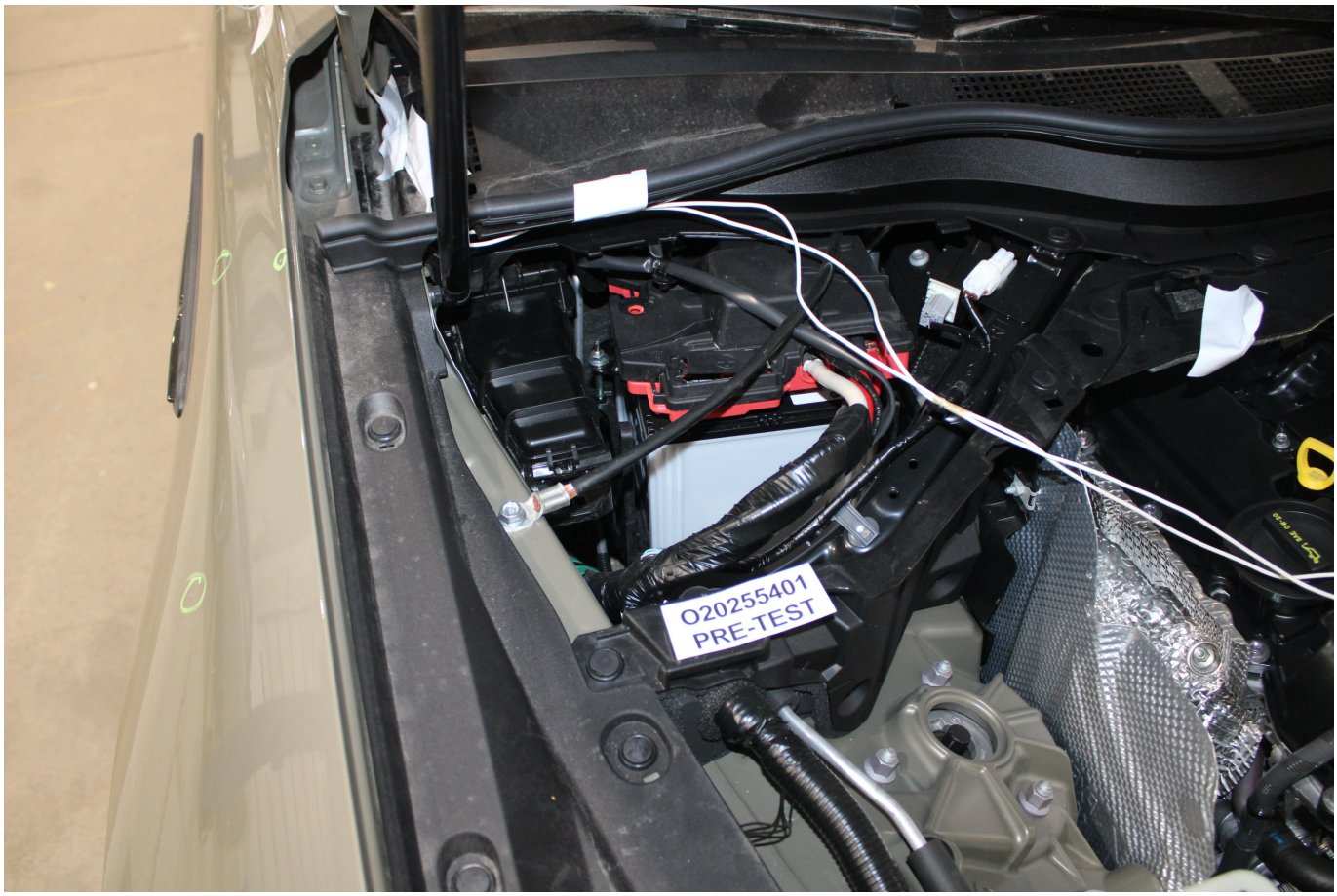


Photo No. 305-01 - Auxiliary Power Module Warning Label

Photo No. 305-02 - Power Inverter Warning Label

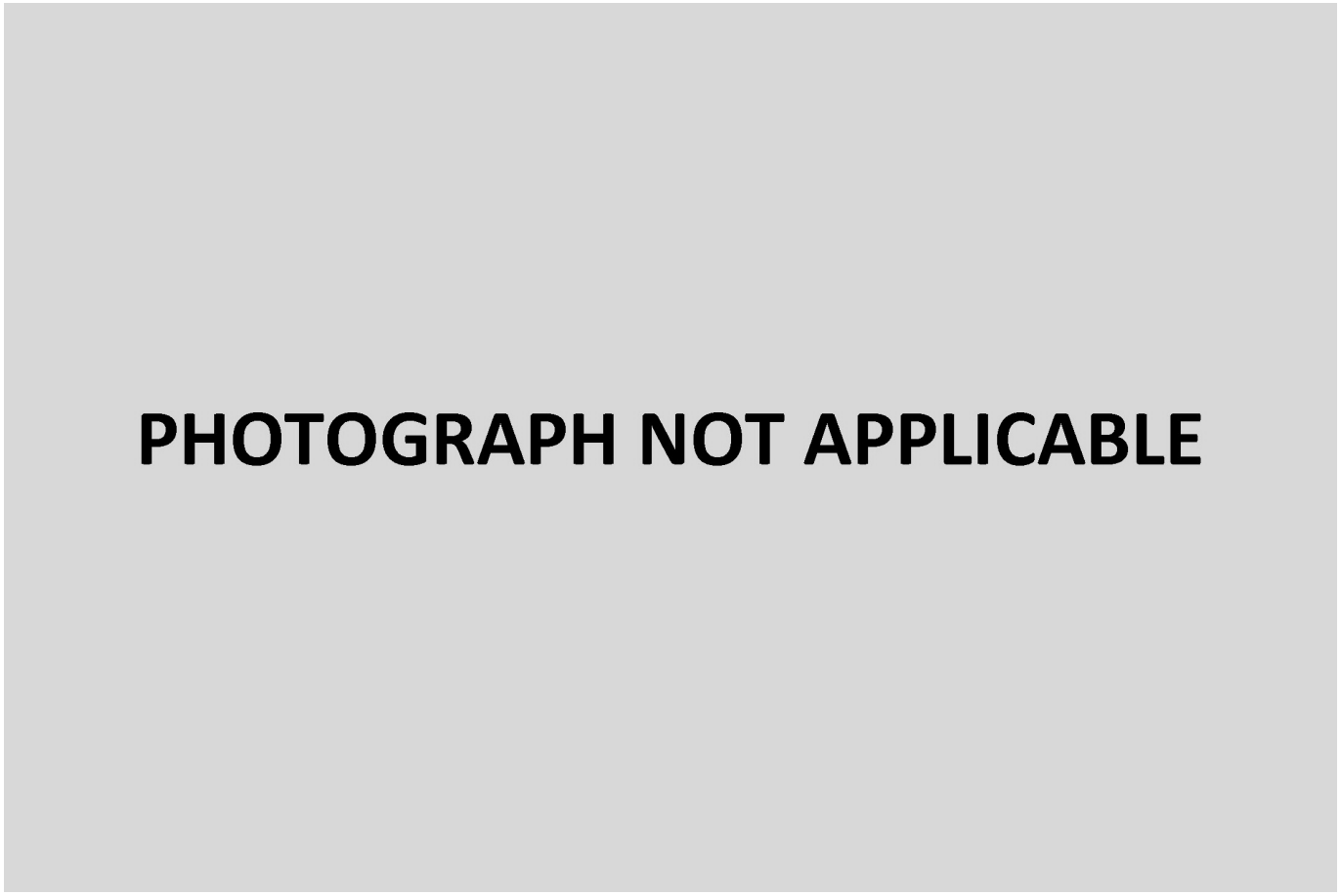


Photo No. 305-03 - First Responder Warning Label

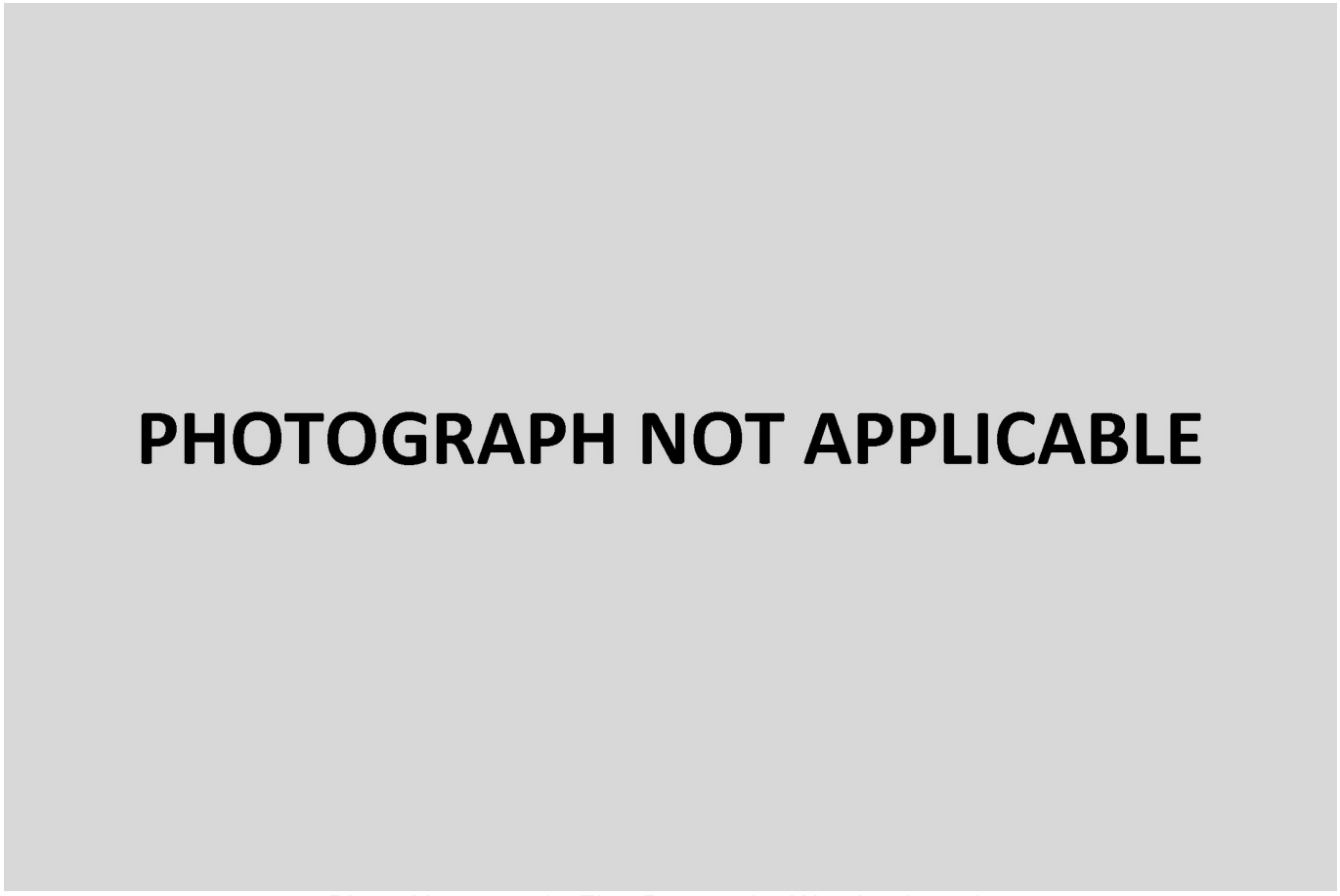


Photo No. 305-04 - First Responder Warning Location

Photo No. 305-05 - Other Vehicle Label(s) Related to Electrical Propulsion System

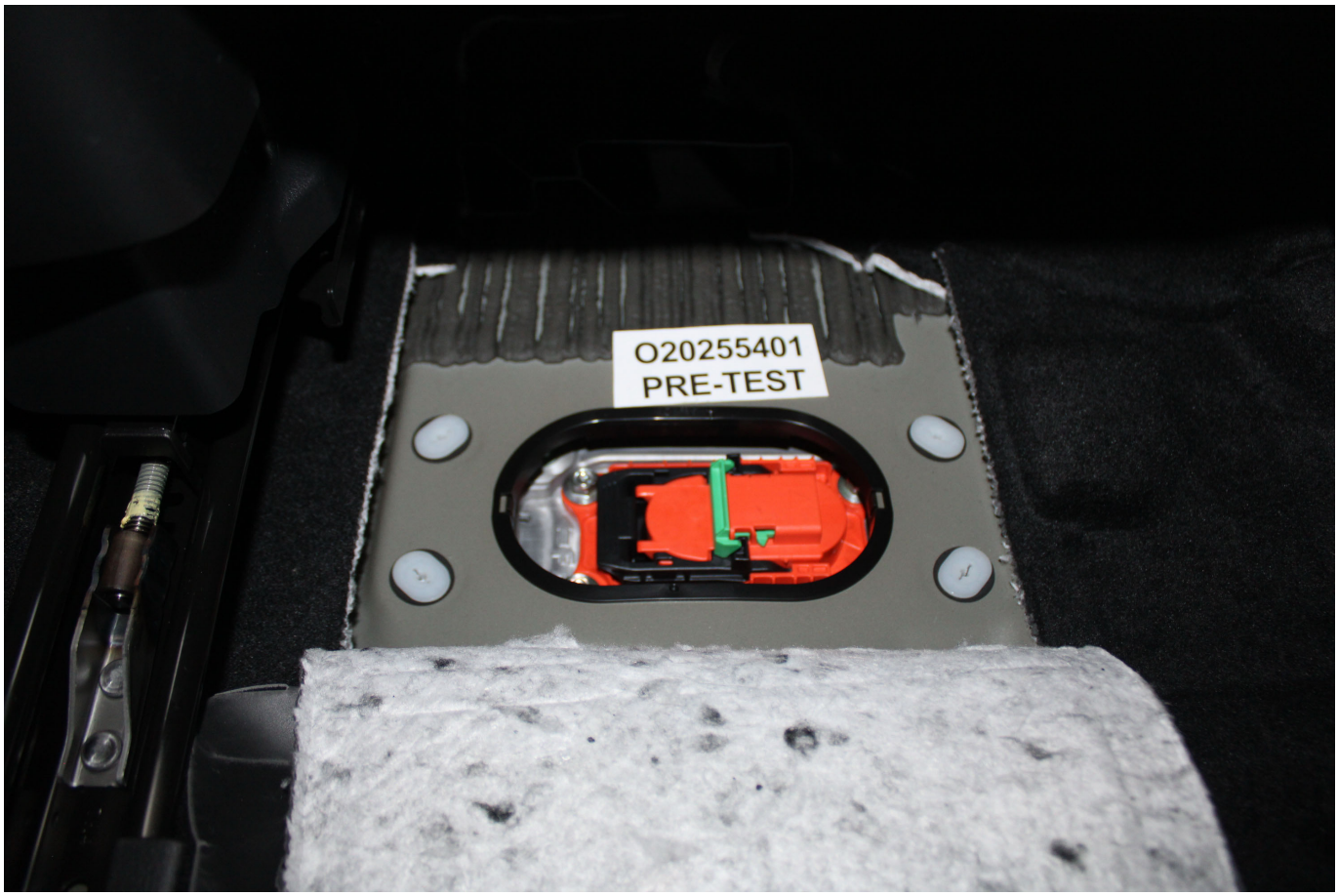


Photo No. 305-06 - Manual High Voltage Service Disconnect in Place

Photo No. 305-07 - Manual High Voltage Service Disconnect Removed

Photo No. 305-08 - Manual High Voltage Service Disconnect Removed

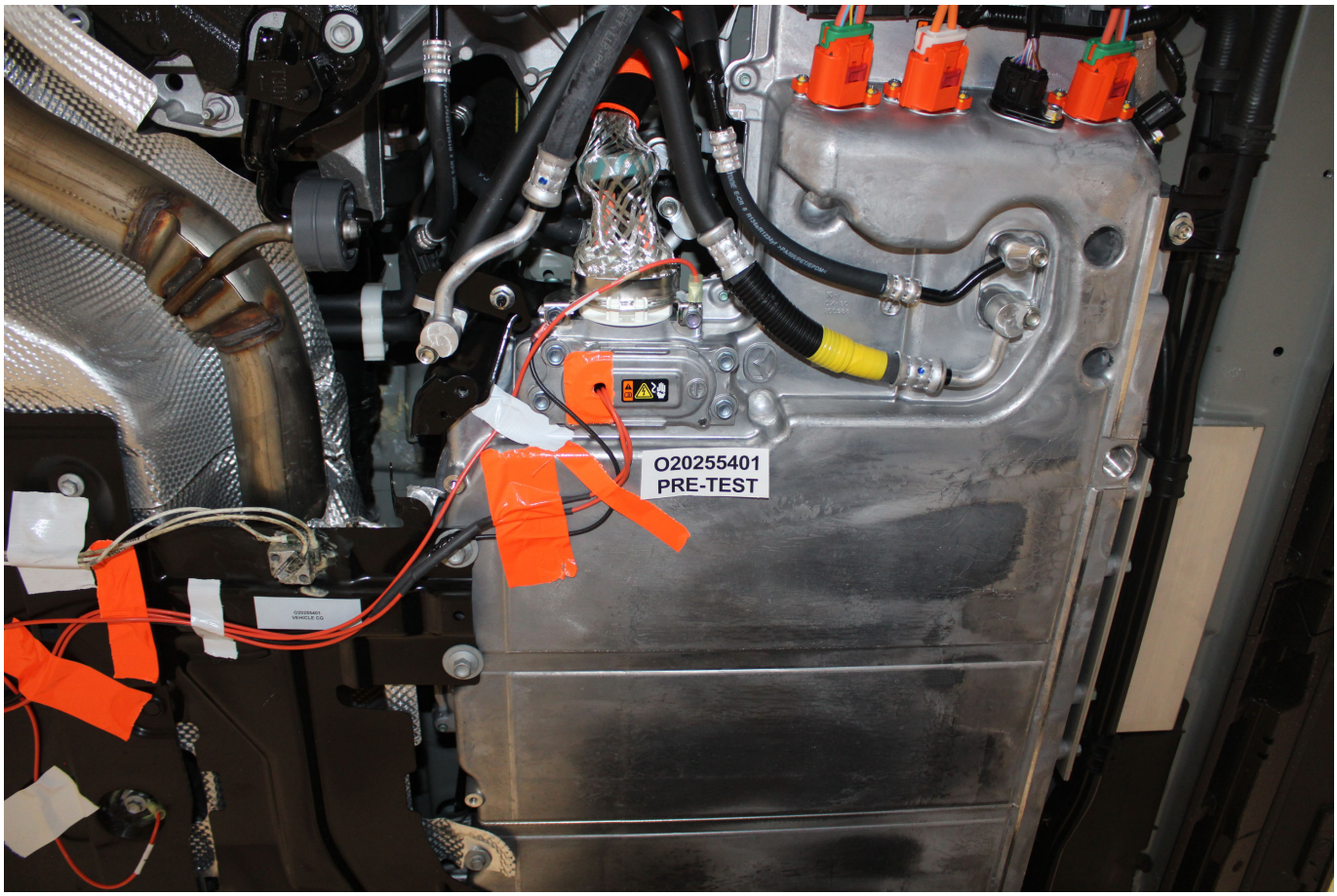


Photo No. 305-09 - Pre-Impact View of Propulsion Battery

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-10 - Post-Impact Front View of Propulsion Battery

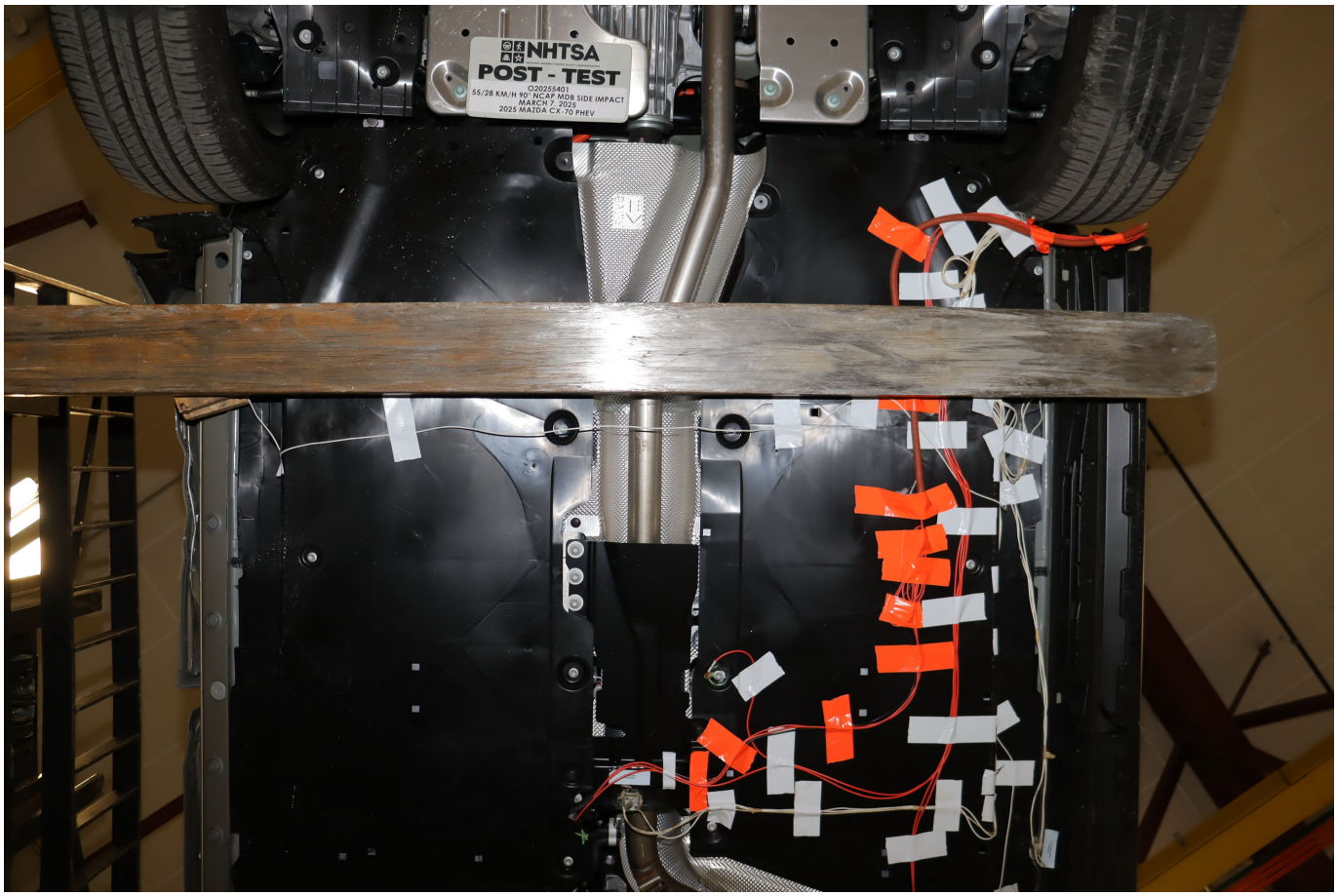


Photo No. 305-11 - Post-Impact Rear View of Propulsion Battery

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-12 - Pre-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules

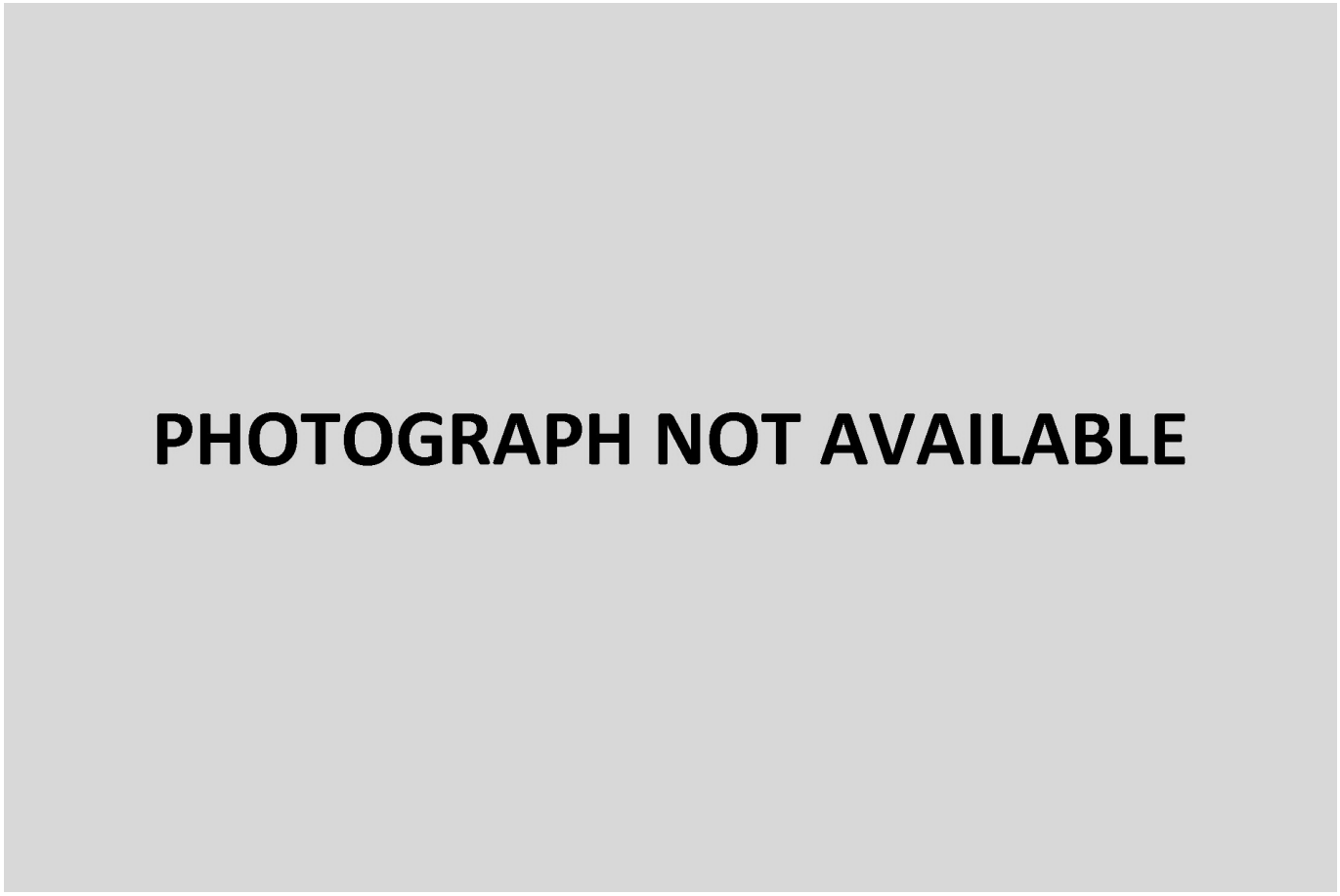


Photo No. 305-13 - Post-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules

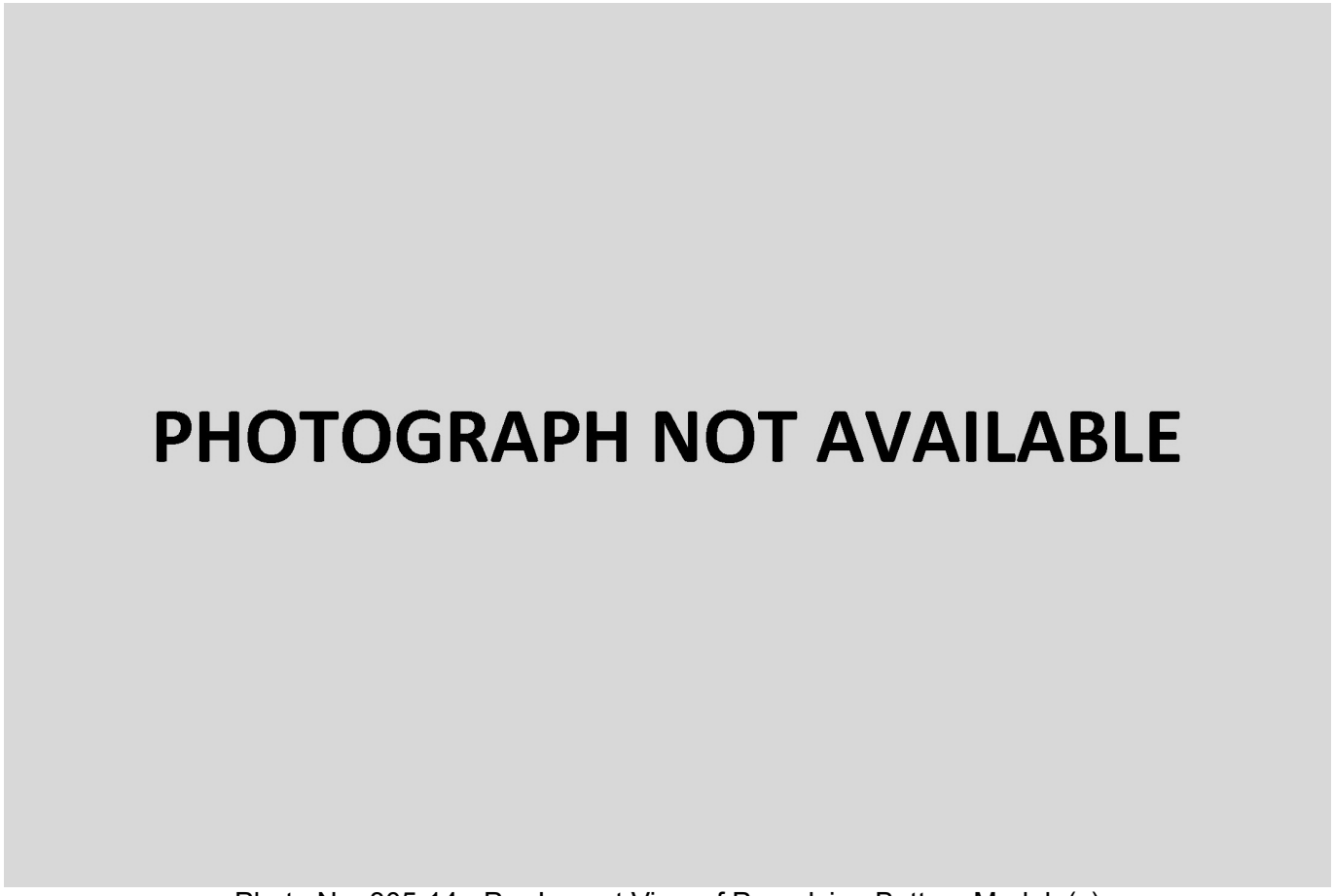


Photo No. 305-14 - Pre-Impact View of Propulsion Battery Module(s)

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-15 - Post-Impact View of Propulsion Battery Module(s)

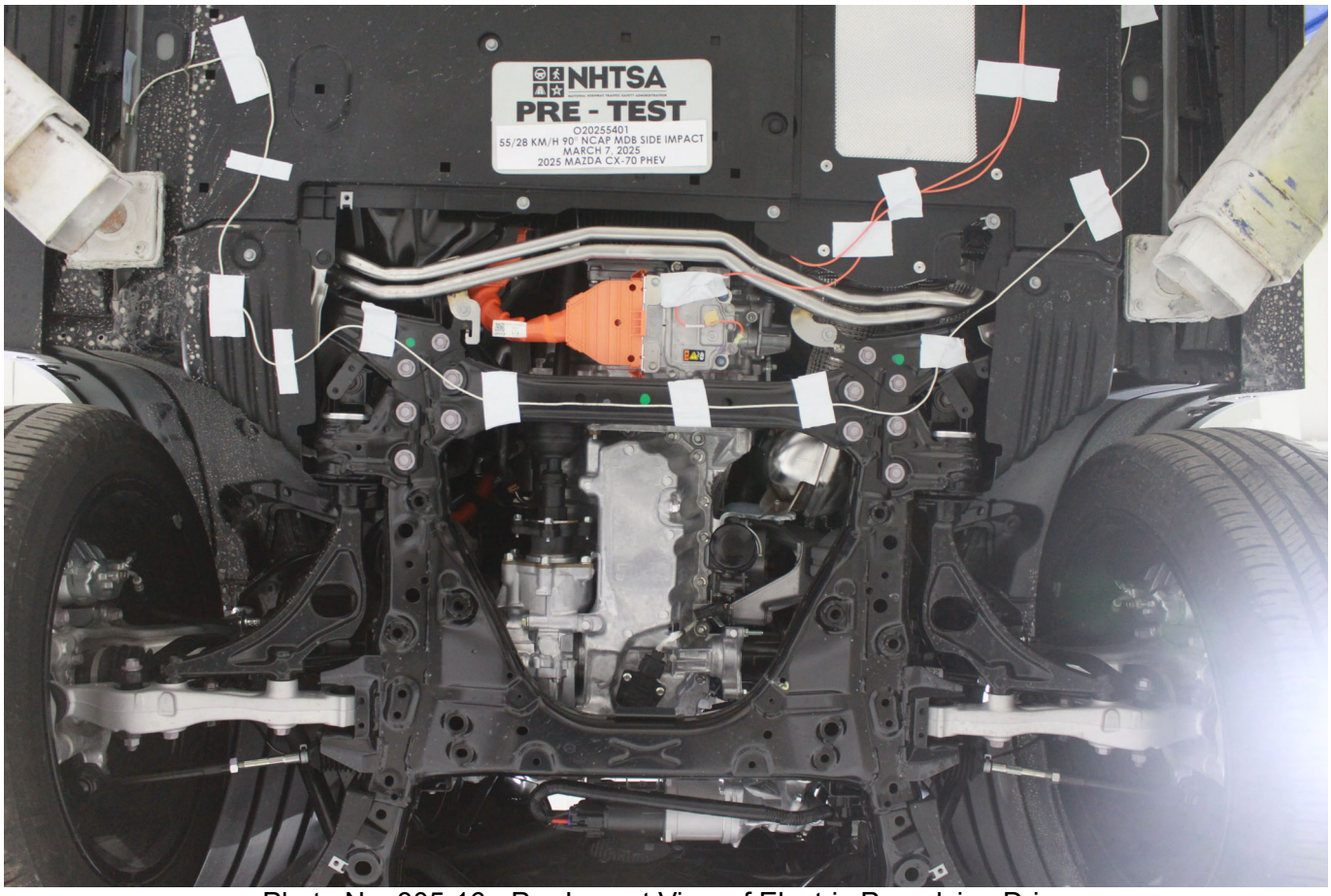


Photo No. 305-16 - Pre-Impact View of Electric Propulsion Drive

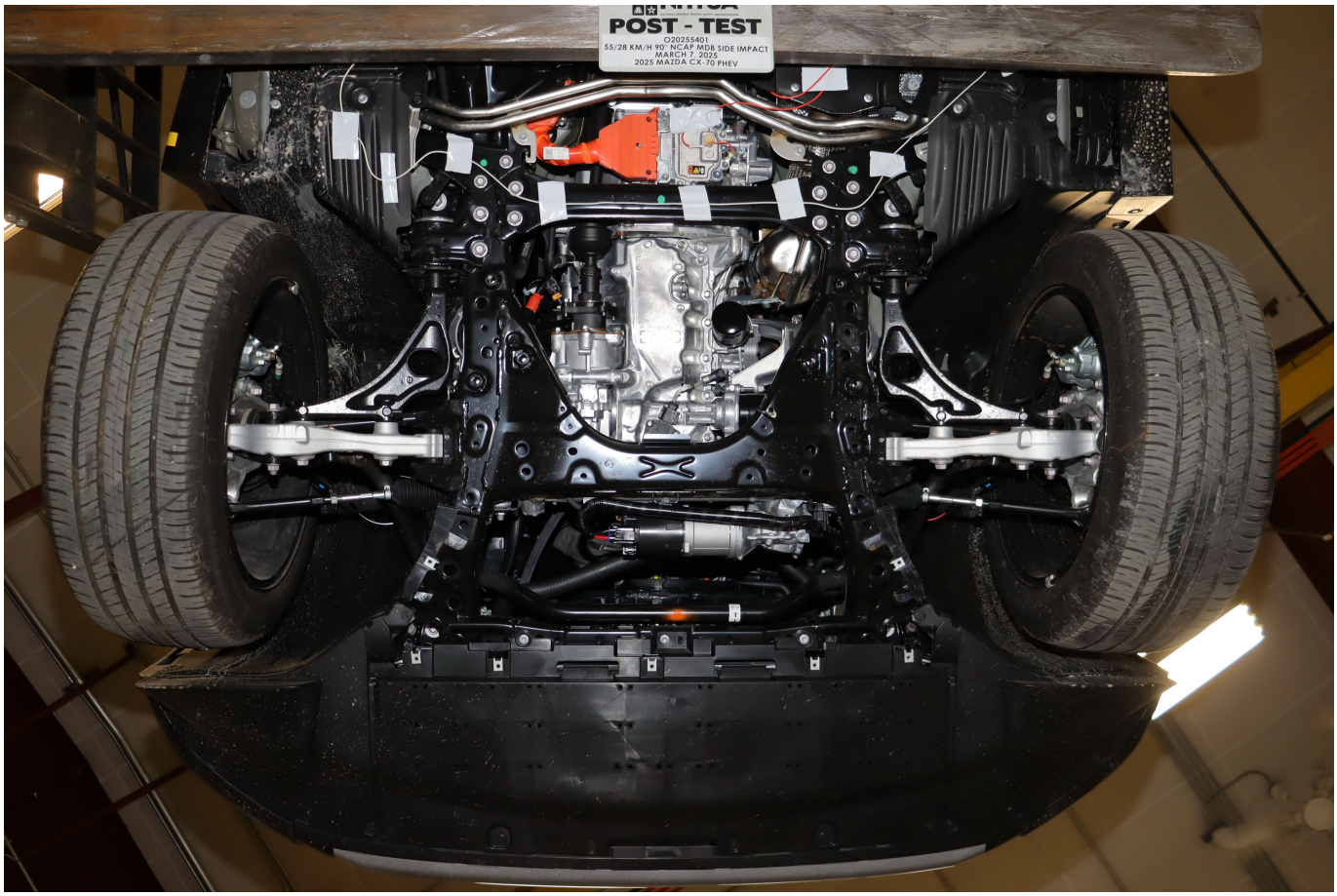


Photo No. 305-17 - Post-Impact View of Electric Propulsion Drive

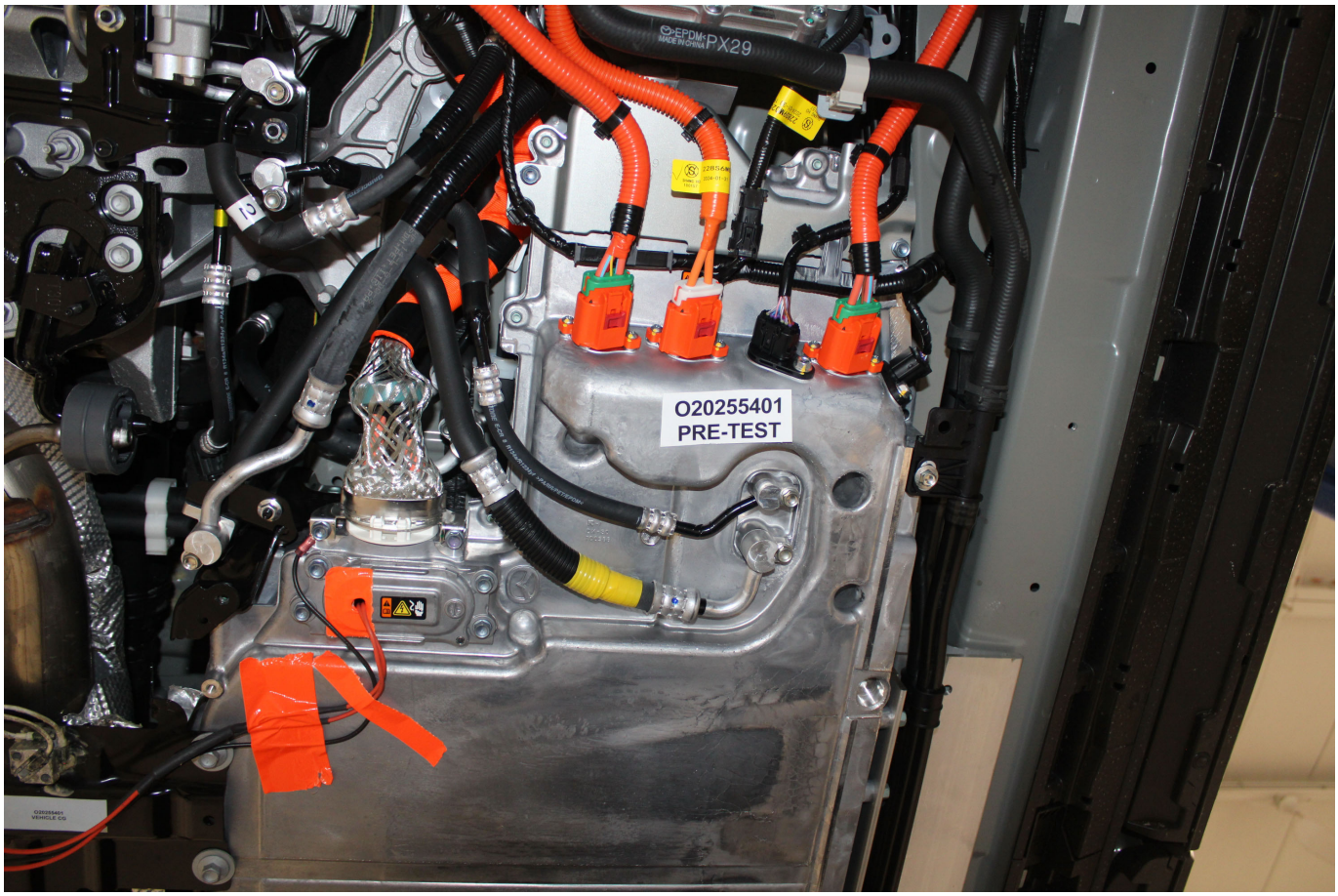


Photo No. 305-18 - Pre-Impact View of High Voltage Interconnect(s)

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-19 - Pre-Impact View Propulsion Battery Venting System(s)

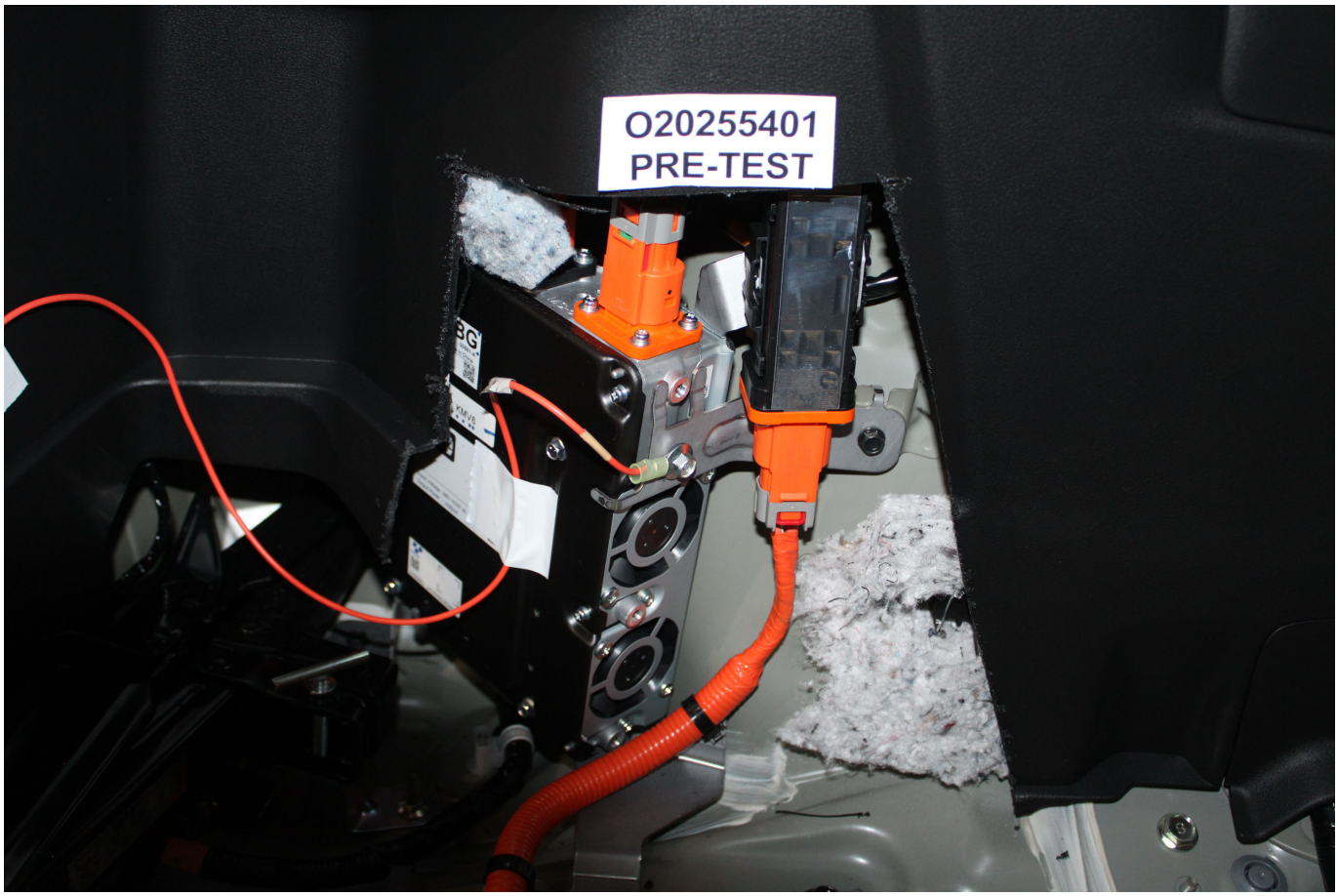


Photo No. 305-20 - Pre-Impact View of Other Visible Electric Propulsion Components

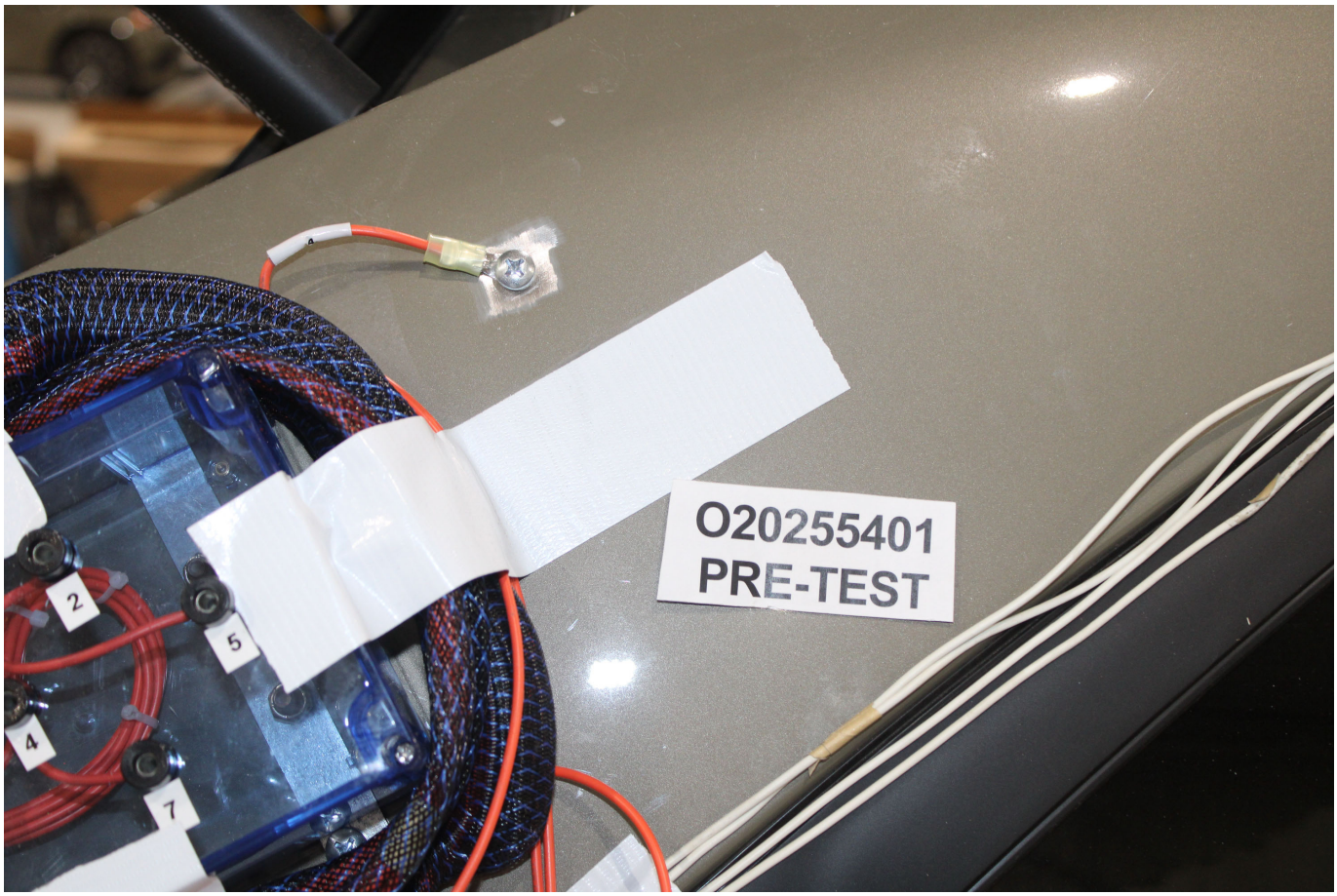


Photo No. 305-21 - Pre-Impact View of Ground Lead Attached

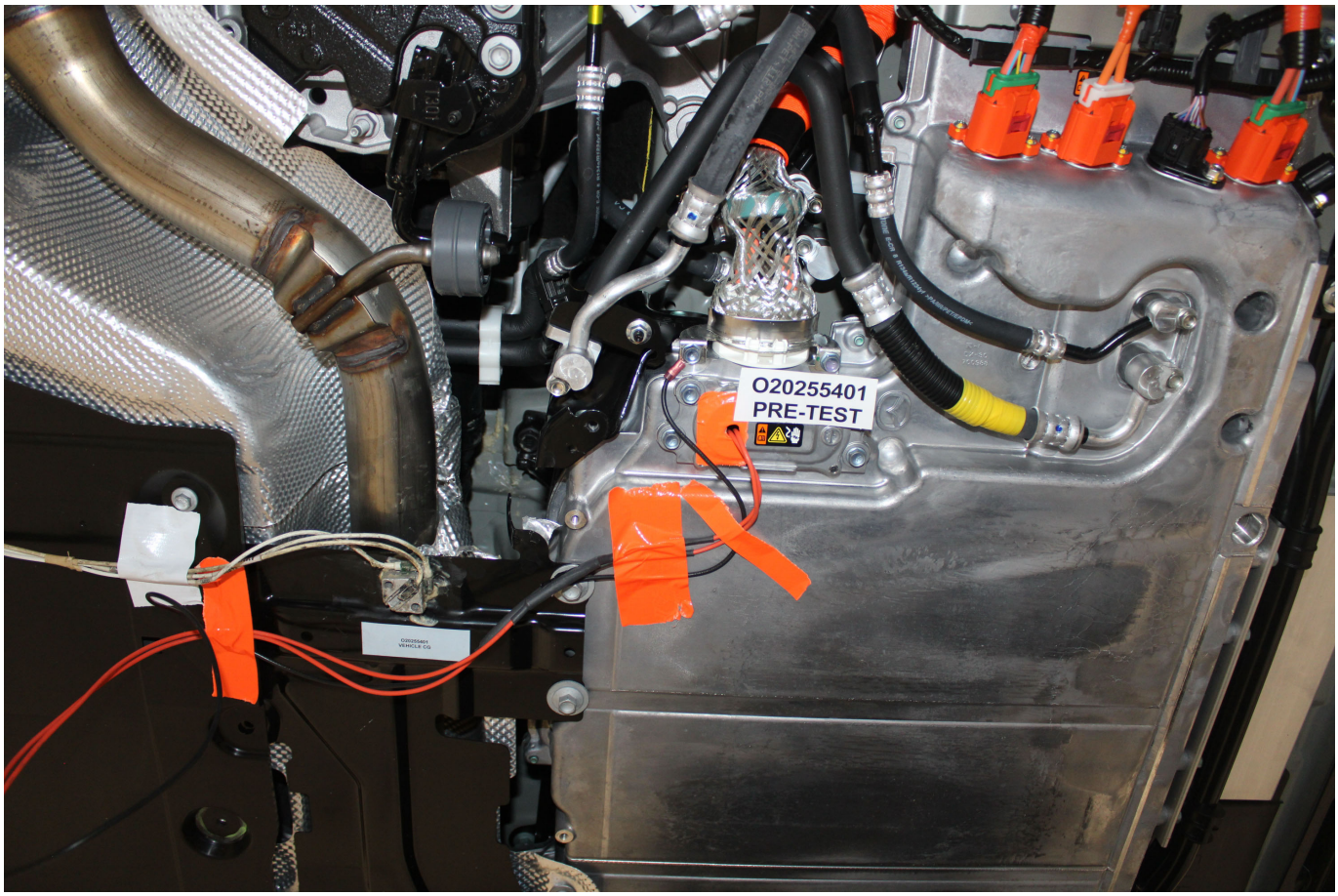


Photo No. 305-22 - Pre-Impact View of High Voltage Leads Attached

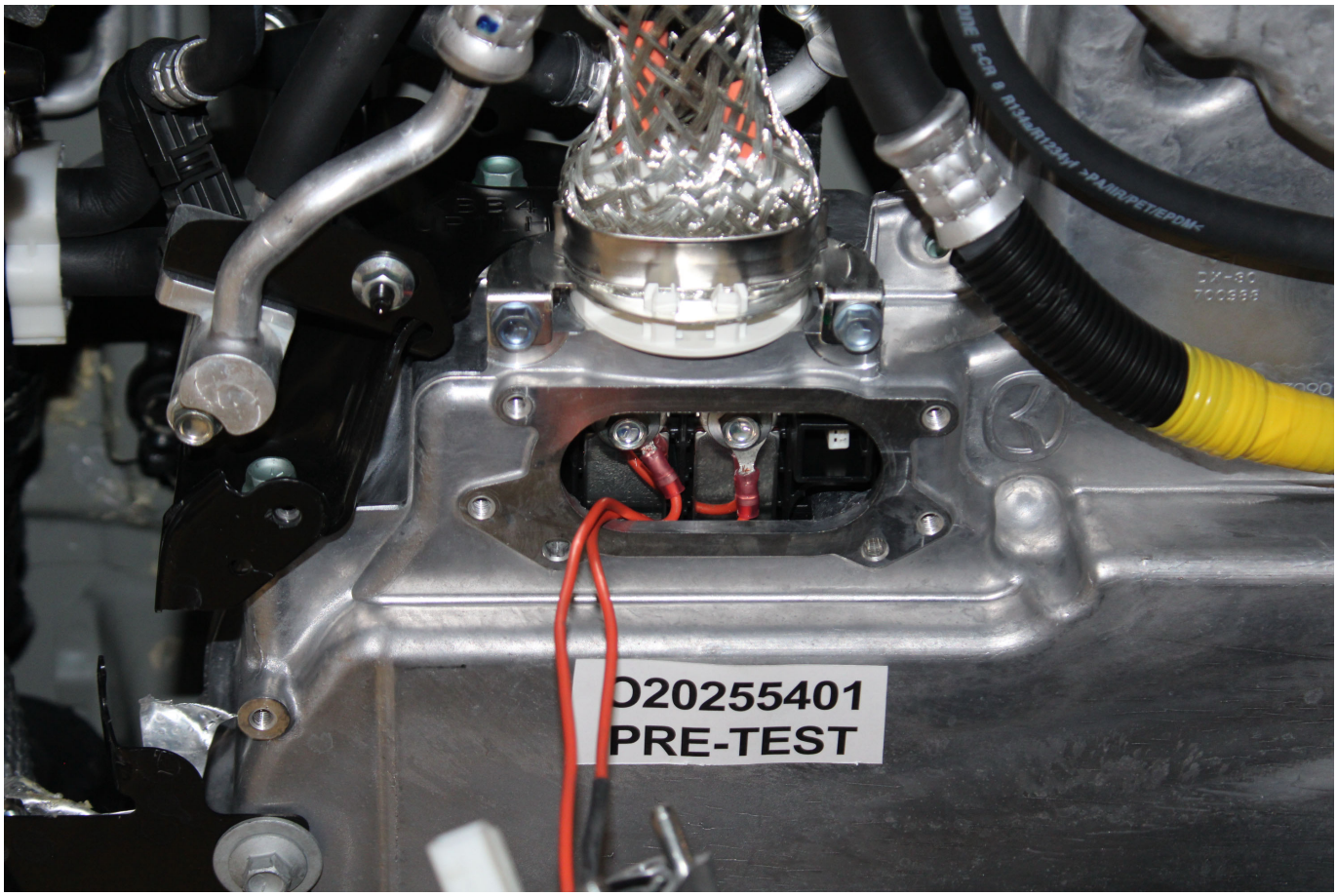


Photo No. 305-23 - Pre-Impact Close-Up View of High Voltage Leads Attached

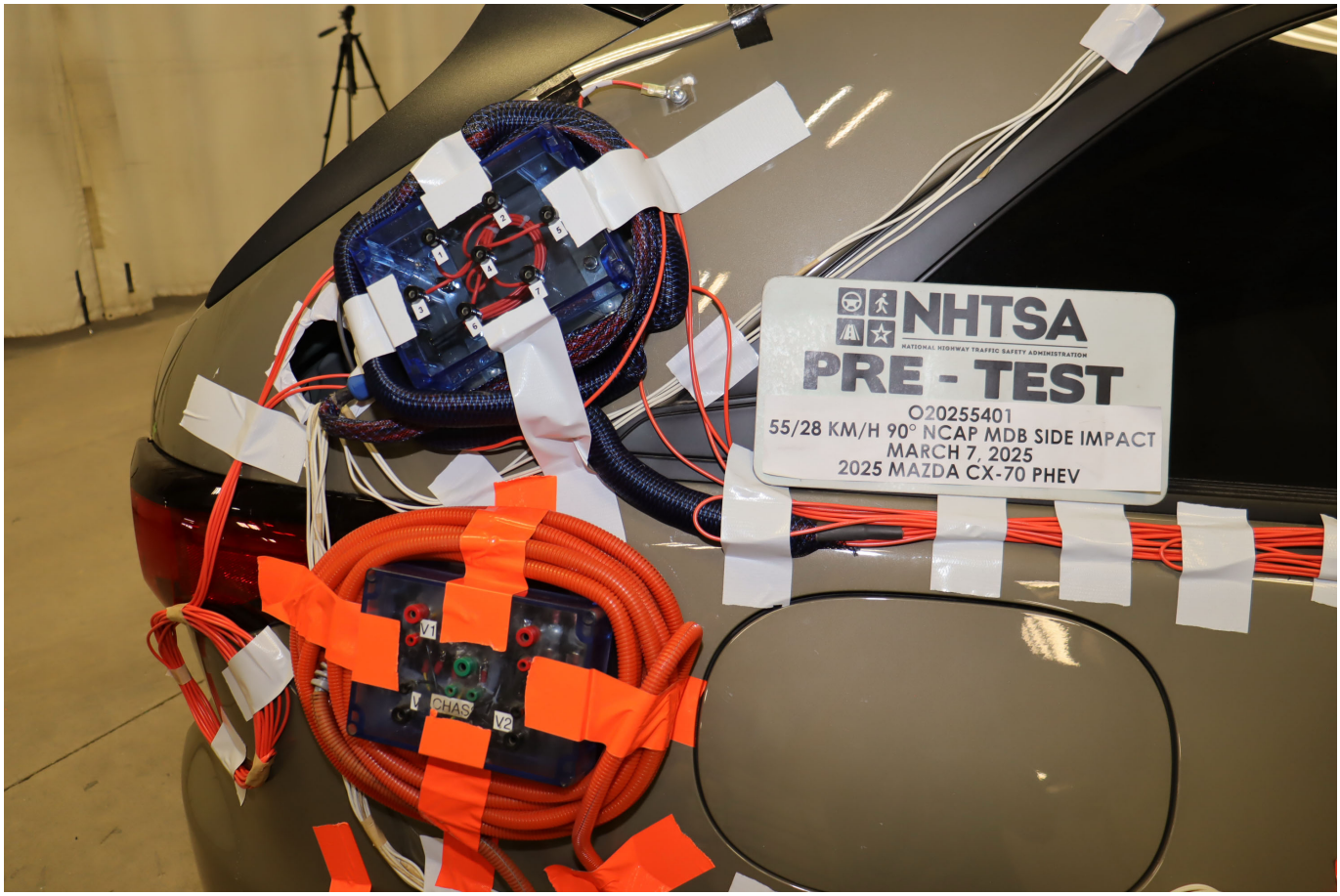


Photo No. 305-24 - Pre-Impact View of Installed Test Interface Port

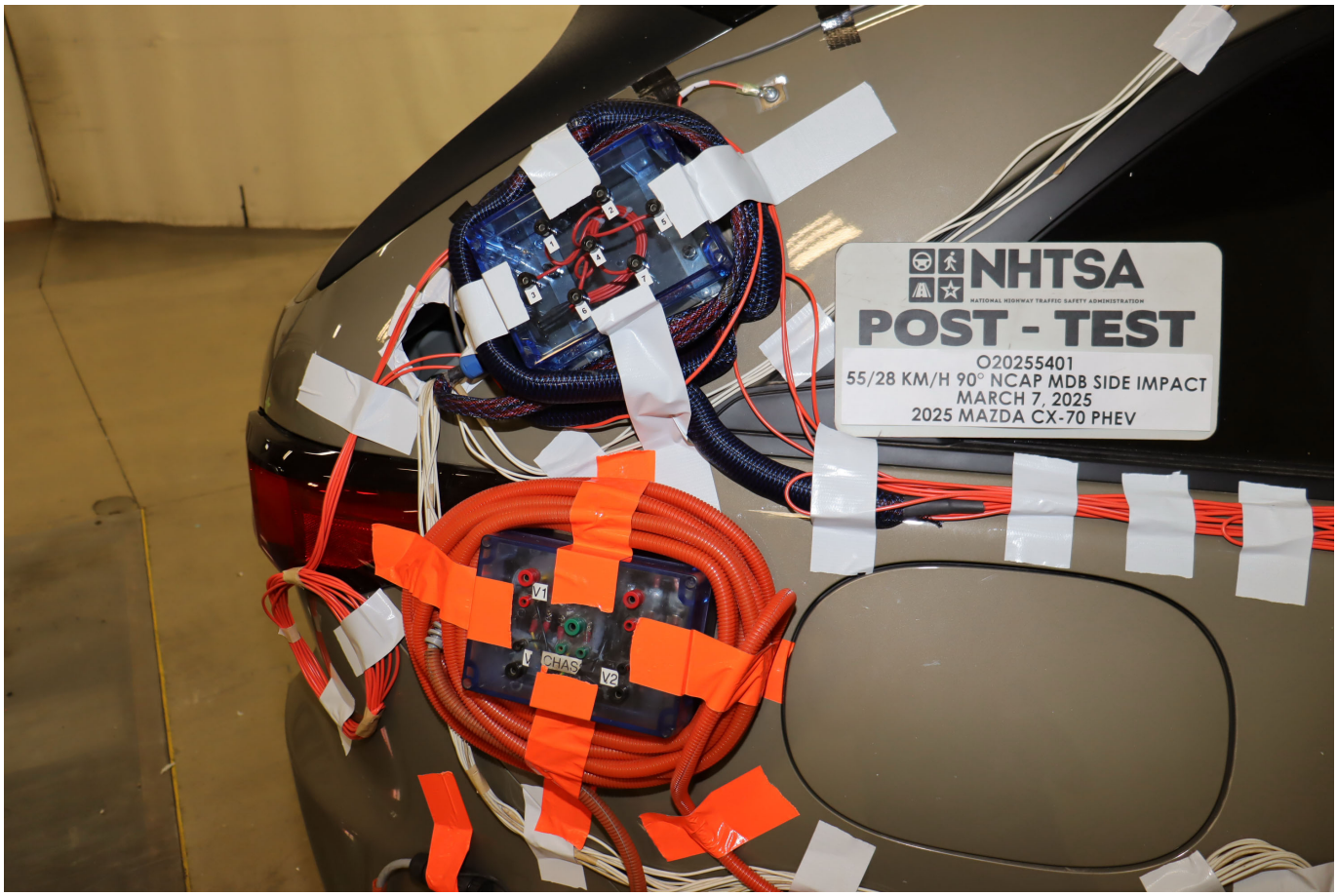


Photo No. 305-25 - Post-Impact View of Installed Test Interface Port

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-26 - Pre-Impact View of Other Test Devices

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-27 - Post-Impact View of Other Test Devices

Photo No. 305-28 - FMVSS No. 305 Static Rollover at 90 Degrees

Photo No. 305-29 - FMVSS No. 305 Static Rollover at 180 Degrees

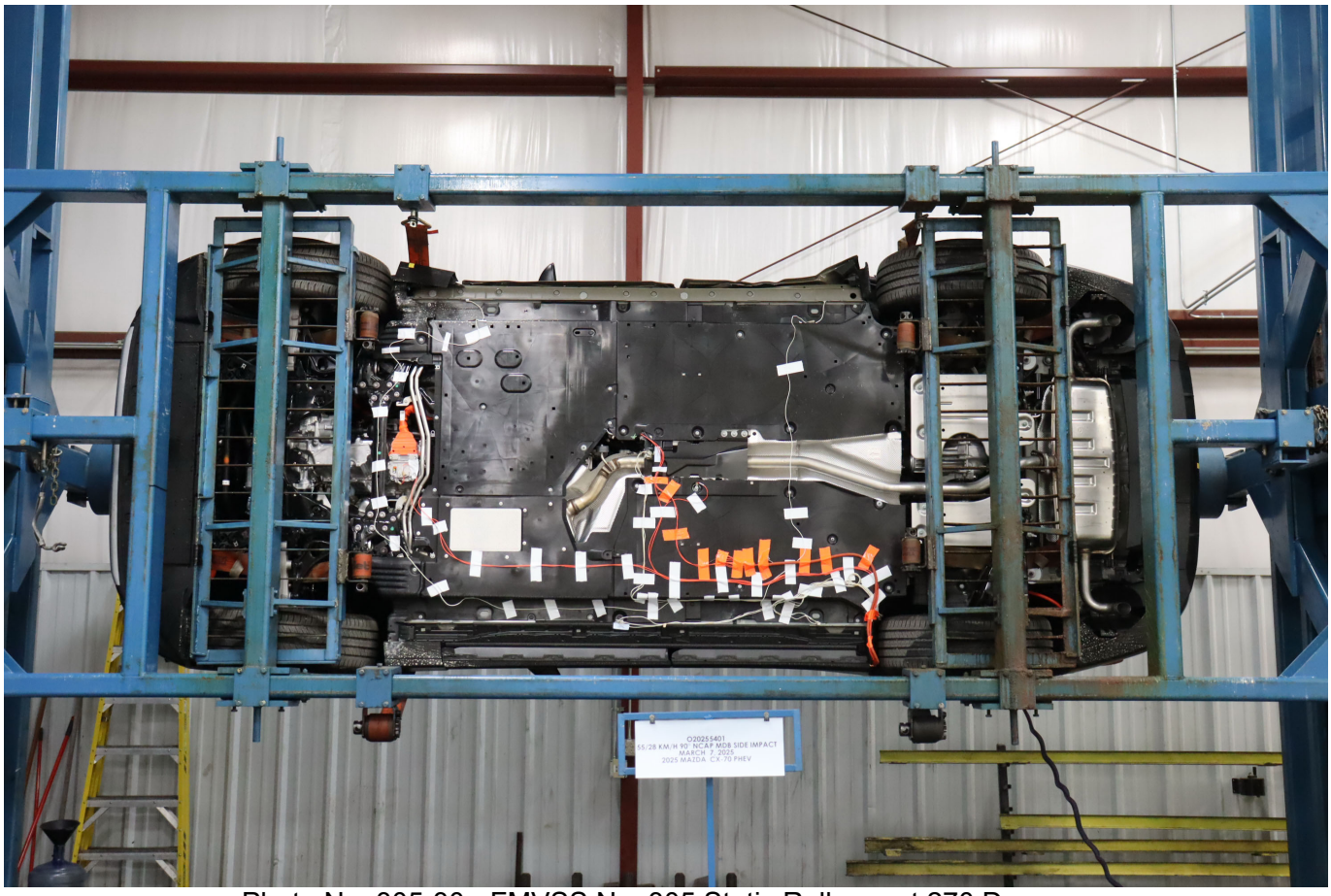


Photo No. 305-30 - FMVSS No. 305 Static Rollover at 270 Degrees

Photo No. 305-31 - FMVSS No. 305 Static Rollover at 360 Degrees

Photo No. 305-32 - Pre-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery

Photo No. 305-33 - Post-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-34 - Post-Impact Propulsion Battery System Mounting and-or Intrusion Failure(s)

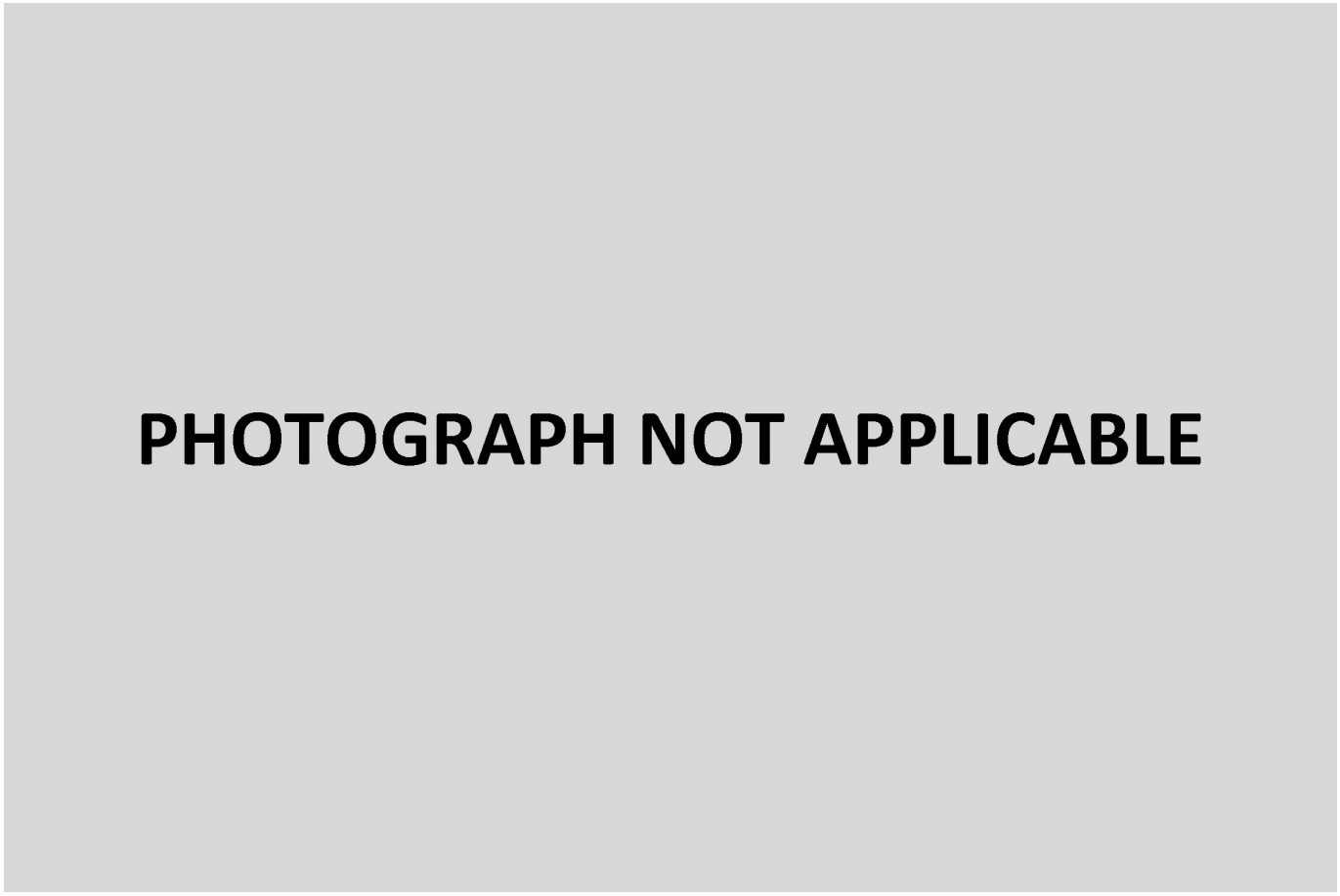


Photo No. 305-35 - Post-Impact View of Battery Component Intrusion

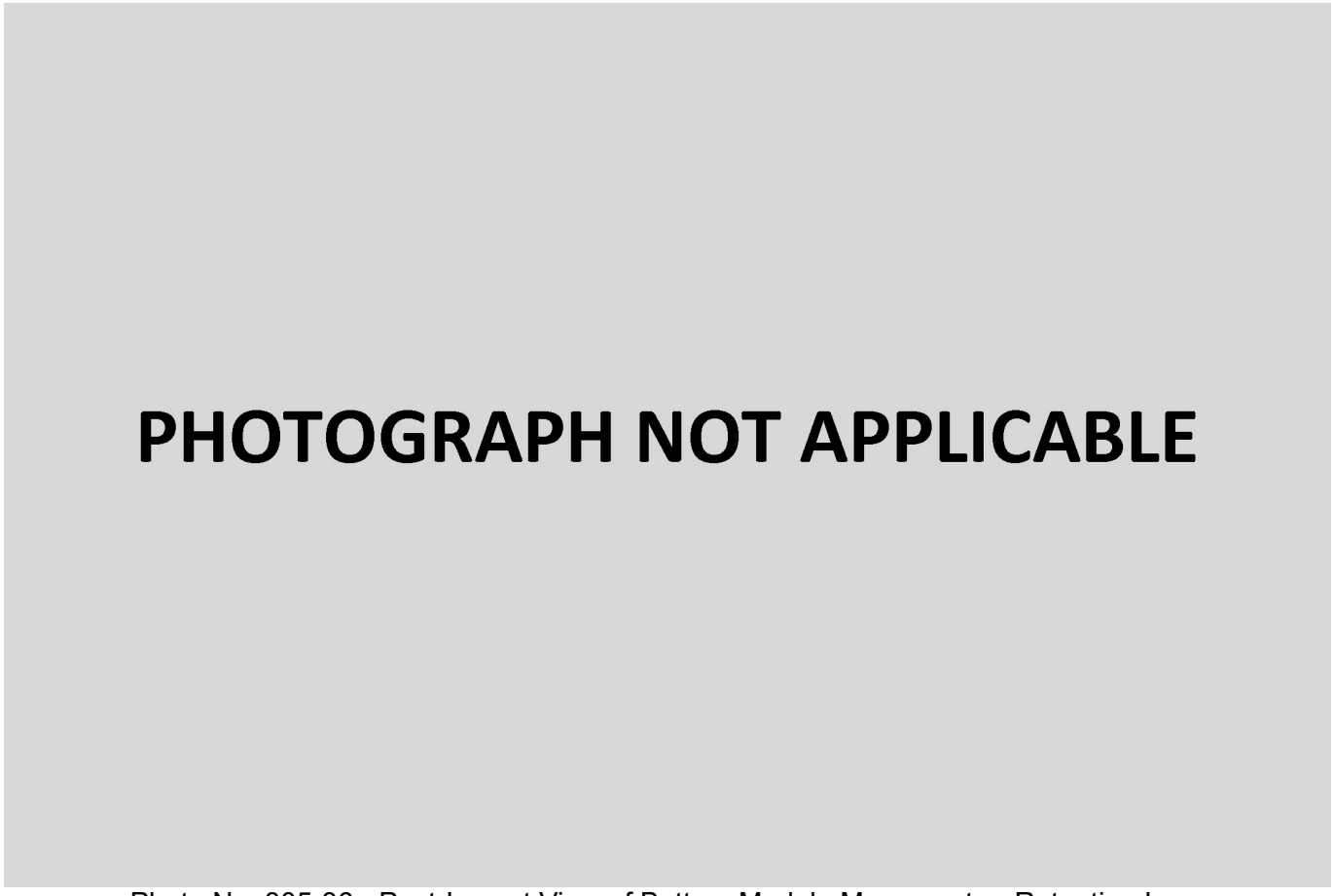


Photo No. 305-36 - Post-Impact View of Battery Module Movement or Retention Loss

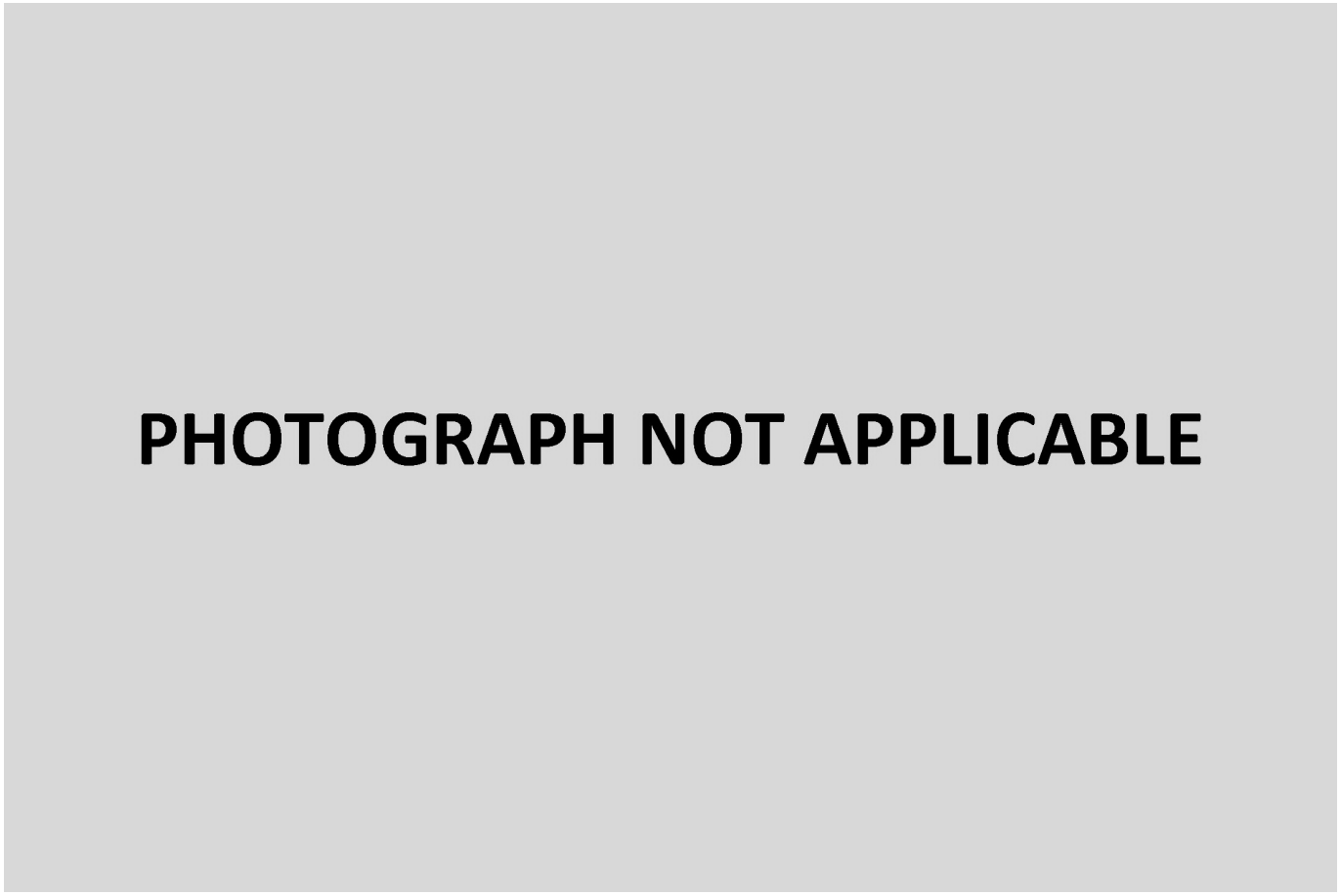


Photo No. 305-37 - Post-Impact View of Propulsion Battery Electrolyte Spillage Location

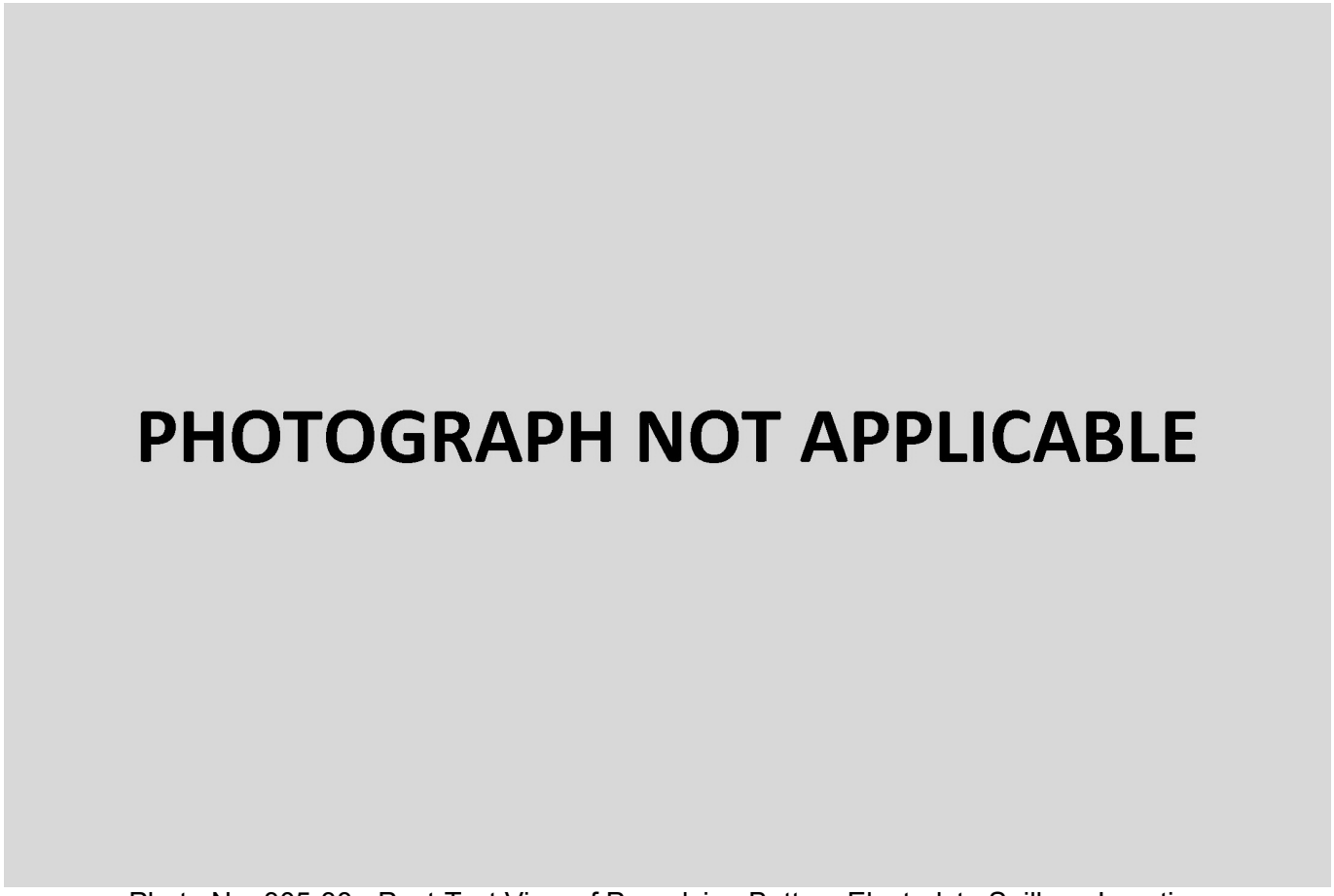


Photo No. 305-38 - Post-Test View of Propulsion Battery Electrolyte Spillage Location

APPENDIX B
DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.nhtsa.gov

Additional Driver & Passenger Dummy Instrumentation Data

Passenger Head Angular Velocity (X)

Passenger Head Angular Velocity (Y)

Passenger Head Angular Velocity (Z)

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Upper Thorax Rib Deflection (Y)

Passenger Middle Thorax Rib Deflection (Y)

Passenger Lower Thorax Rib Deflection (Y)

Passenger Upper Abdomen Rib Deflection (Y)

Passenger Lower Abdomen Rib Deflection (Y)

Driver Head Acceleration Redundant (X)

Driver Head Acceleration Redundant (Y)

Driver Head Acceleration Redundant (Z)

Passenger Head Acceleration Redundant (X)

Passenger Head Acceleration Redundant (Y)

Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)

Vehicle Center of Gravity Acceleration (Y)

Vehicle Center of Gravity Acceleration (Z)

Right Side Sill at Front Seat Acceleration (X)

Right Side Sill at Front Seat Acceleration (Y)

Right Side Sill at Front Seat Acceleration (Z)

Right Side Sill at Rear Seat Acceleration (X)

Right Side Sill at Rear Seat Acceleration (Y)

Right Side Sill at Rear Seat Acceleration (Z)

Left Side Sill at Front Seat Acceleration (Y)

Left Side Sill at Rear Seat Acceleration (Y)

Lower A-Post Acceleration (Y)

Middle A-Post Acceleration (Y)

Lower B-Post Acceleration (Y)

Middle B-Post Acceleration (Y)

Front Seat Track Acceleration (Y)

Rear Seat Track Acceleration (Y)

Right Rear Occupant Compartment Acceleration (Y)

Engine Block (X)

Engine Block (Y)

Rear Floorpan Above Axle Acceleration (X)

Rear Floorpan Above Axle Acceleration (Y)

Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

MDB Center of Gravity Acceleration (Z)

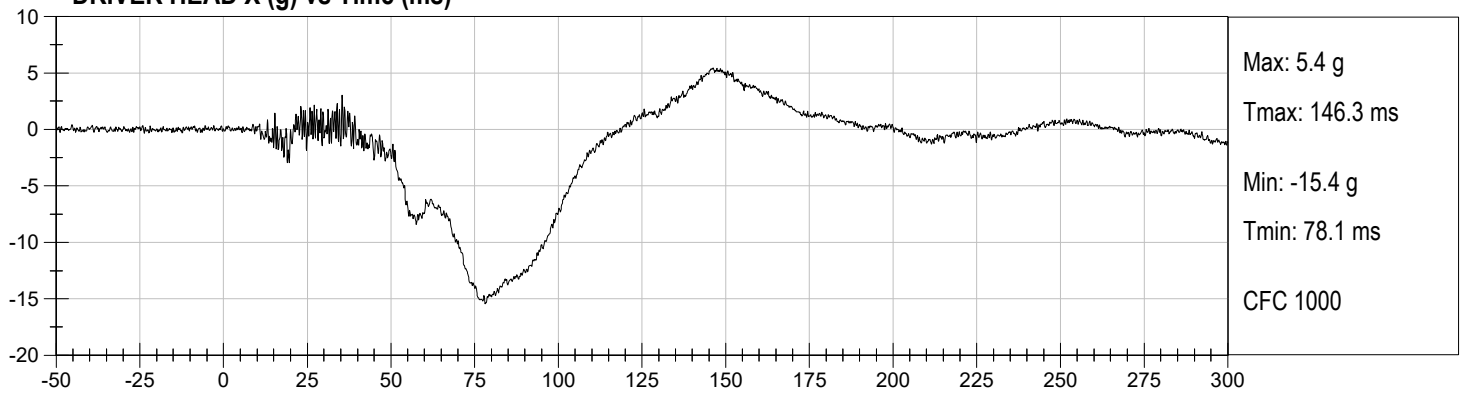
MDB Rear Acceleration (X)

MDB Rear Acceleration (Y)

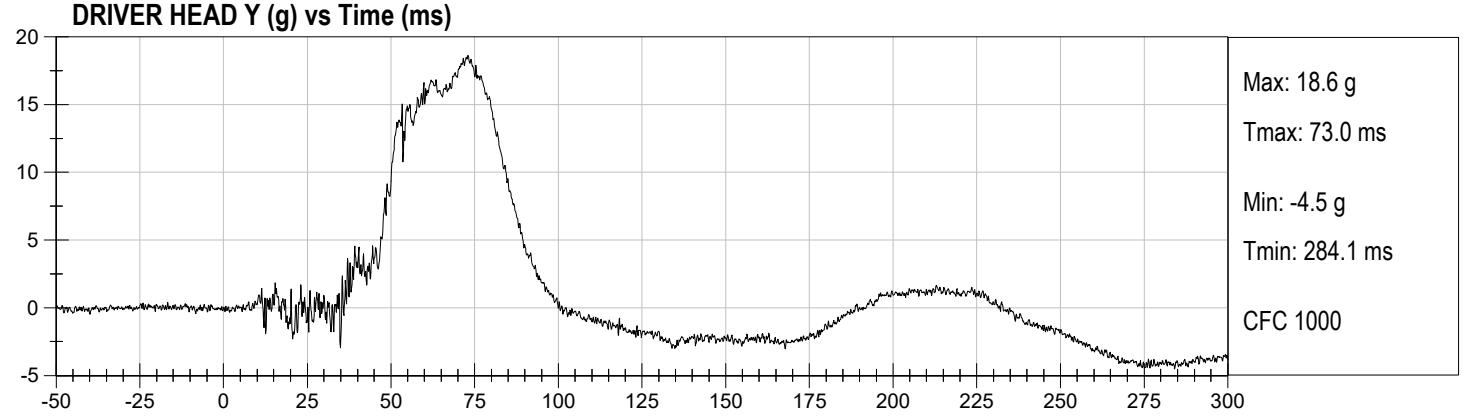
Left MDB Contact Switch

Right MDB Contact Switch

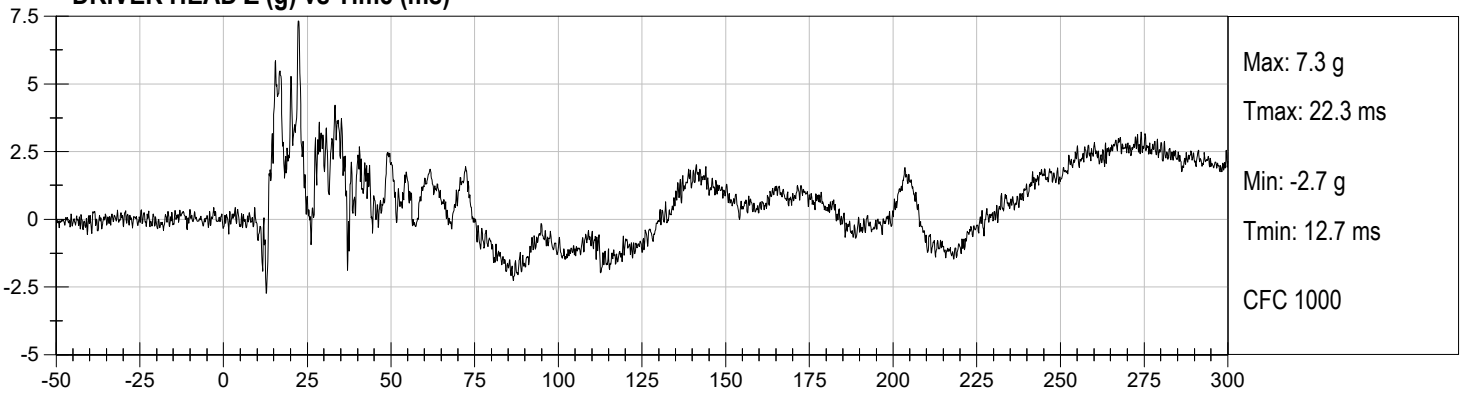
DRIVER HEAD X (g) vs Time (ms)



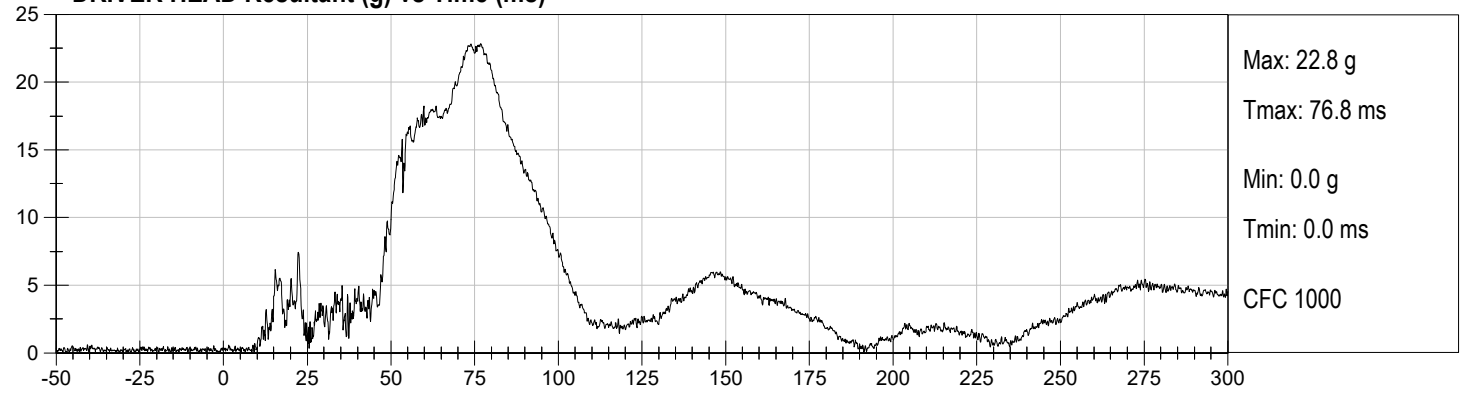
DRIVER HEAD Y (g) vs Time (ms)



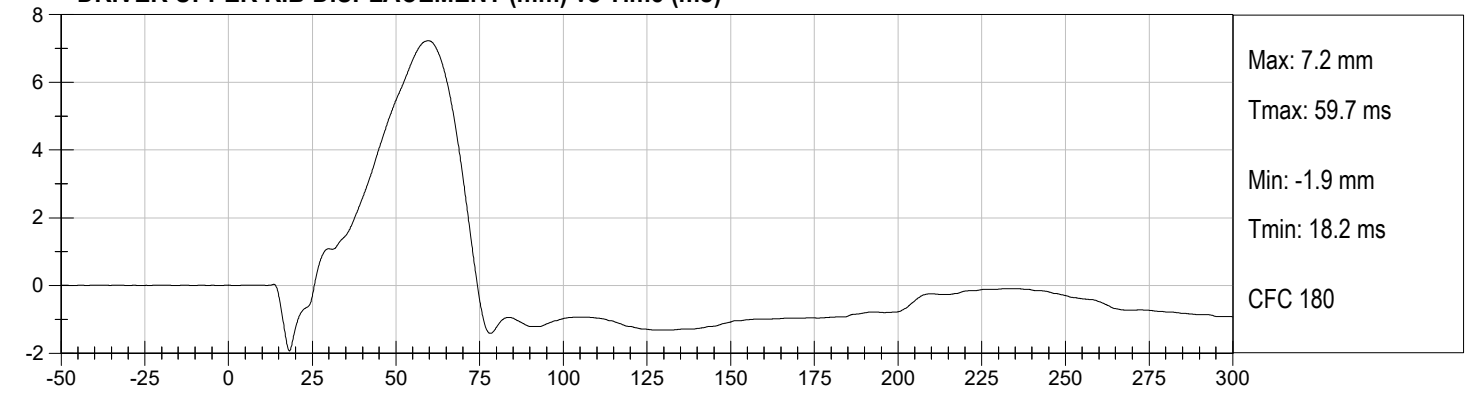
DRIVER HEAD Z (g) vs Time (ms)



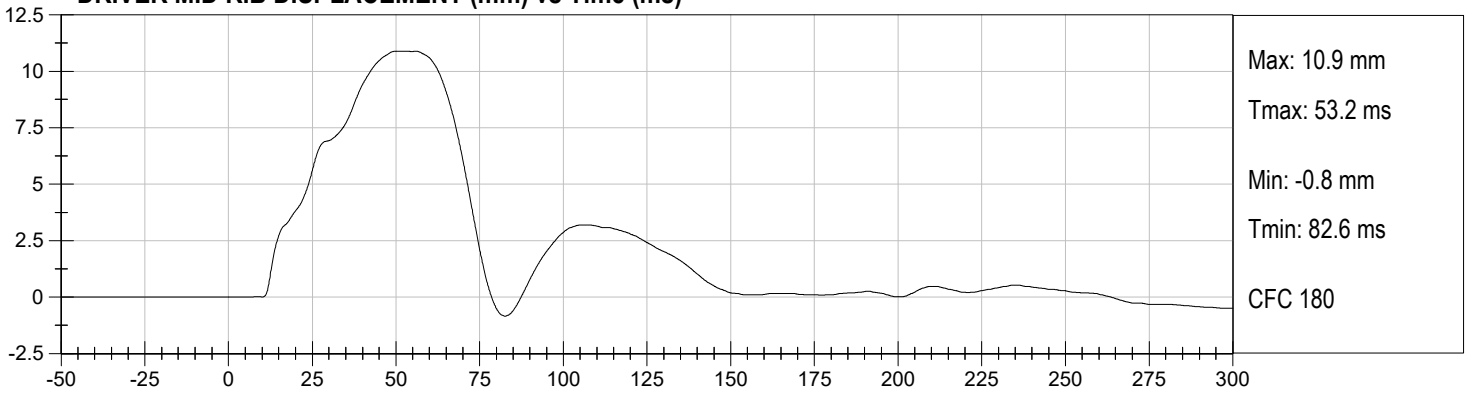
DRIVER HEAD Resultant (g) vs Time (ms)



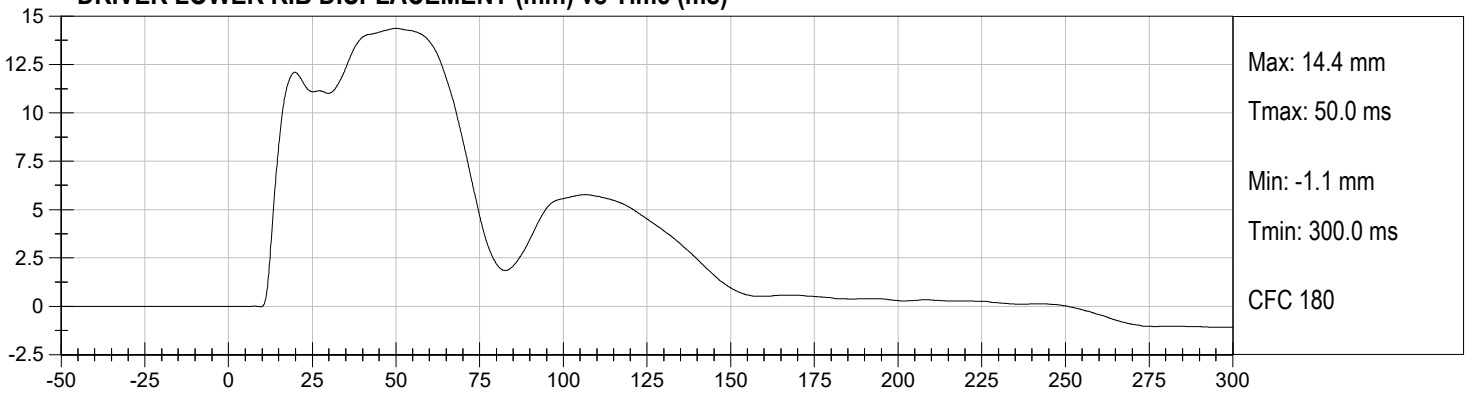
DRIVER UPPER RIB DISPLACEMENT (mm) vs Time (ms)



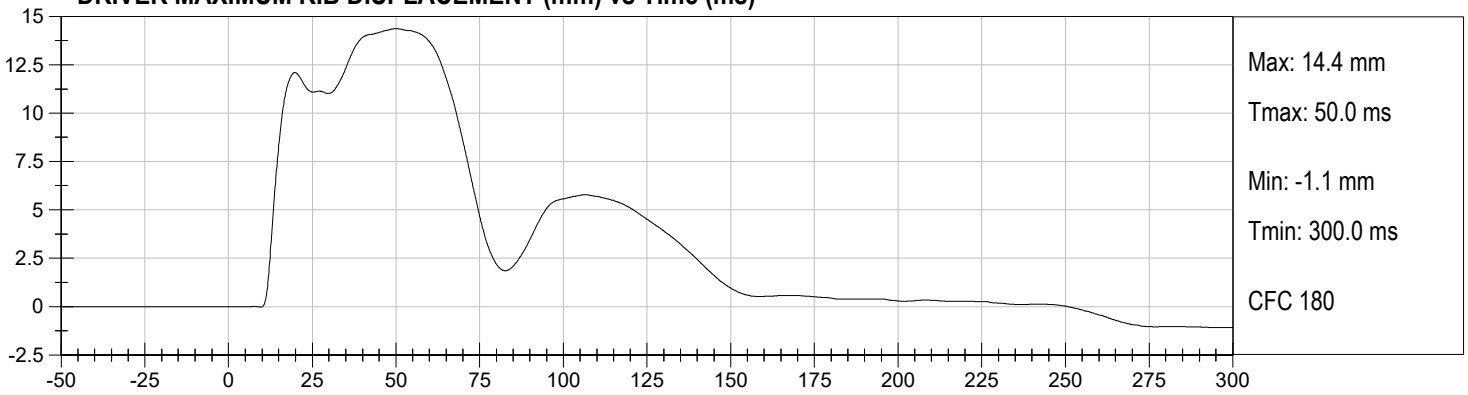
DRIVER MID RIB DISPLACEMENT (mm) vs Time (ms)



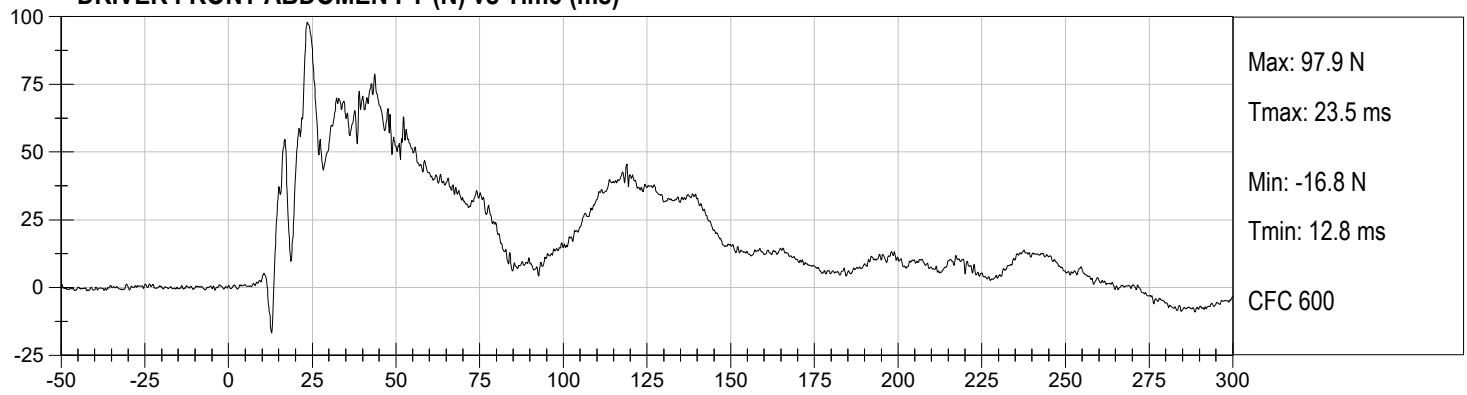
DRIVER LOWER RIB DISPLACEMENT (mm) vs Time (ms)



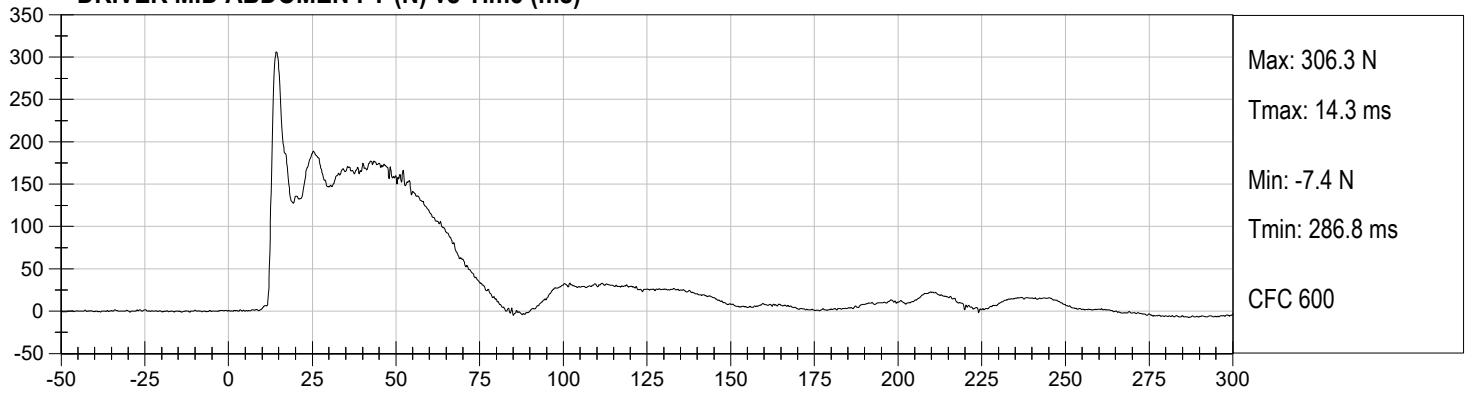
DRIVER MAXIMUM RIB DISPLACEMENT (mm) vs Time (ms)



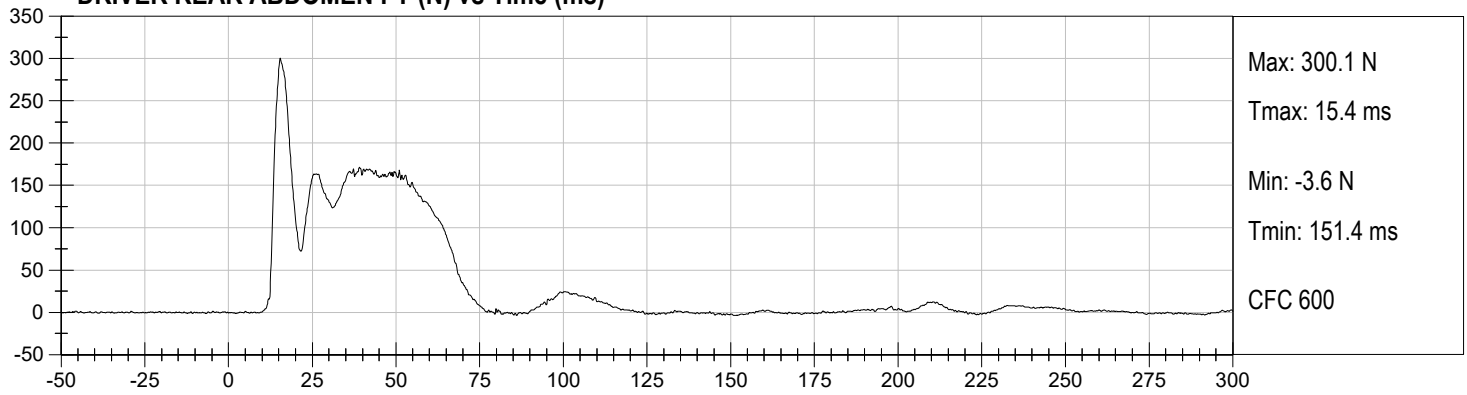
DRIVER FRONT ABDOMEN FY (N) vs Time (ms)



DRIVER MID ABDOMEN FY (N) vs Time (ms)

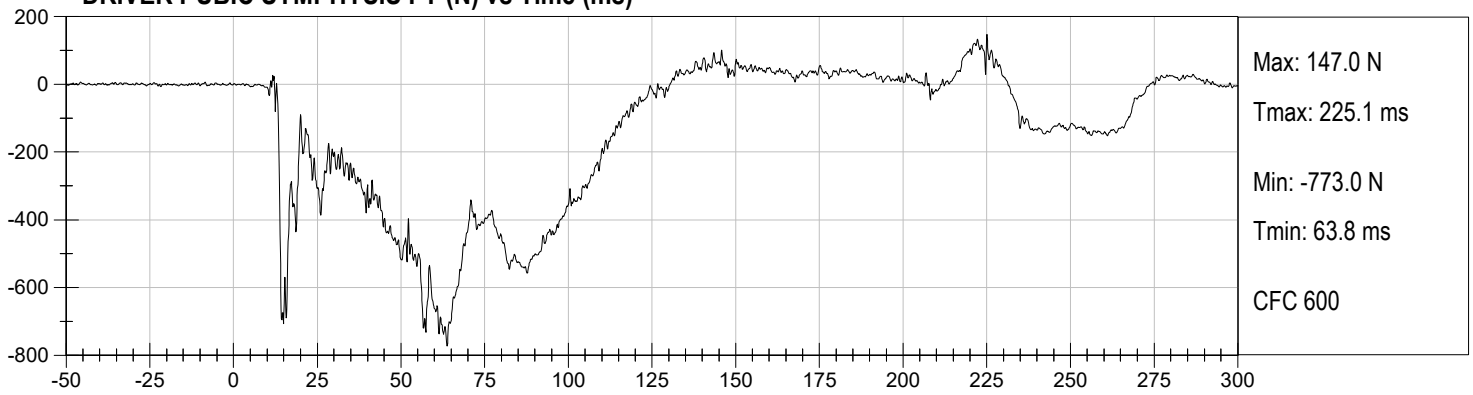


DRIVER REAR ABDOMEN FY (N) vs Time (ms)

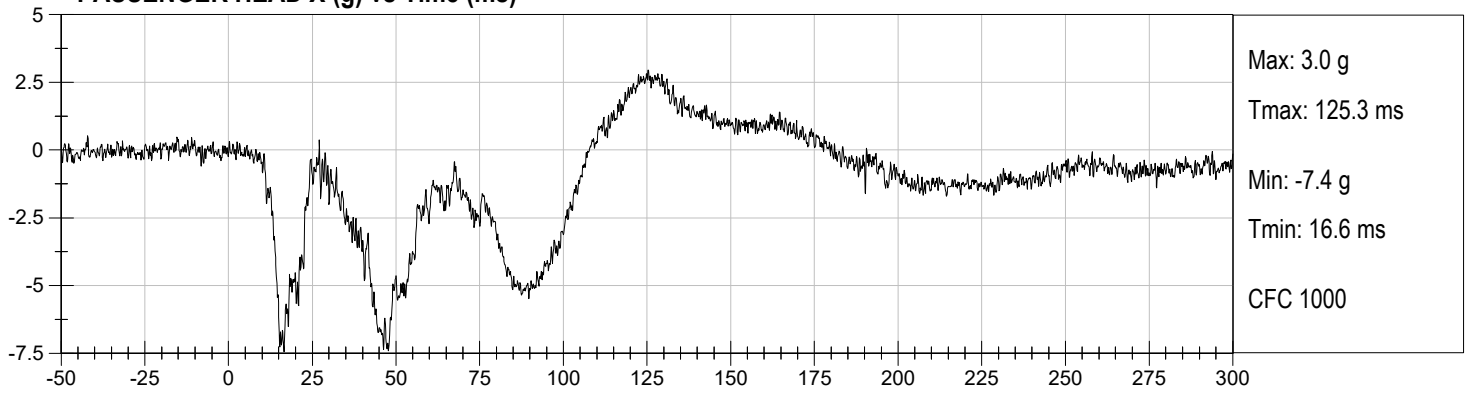


DRIVER SUMMED ABDOMEN FORCE (N) vs Time (ms)

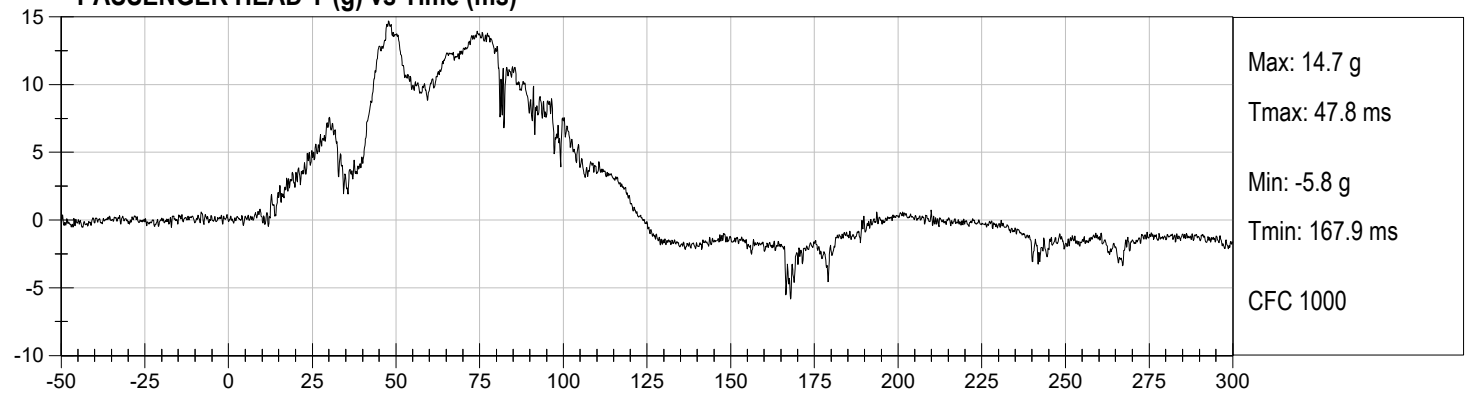
DRIVER PUBIC SYMPHYSIS FY (N) vs Time (ms)



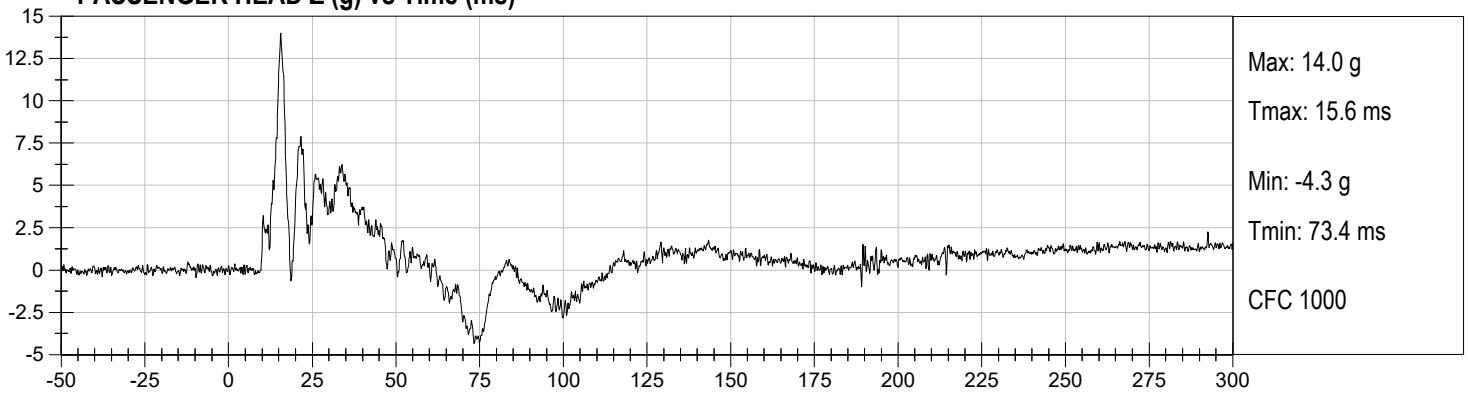
PASSENGER HEAD X (g) vs Time (ms)



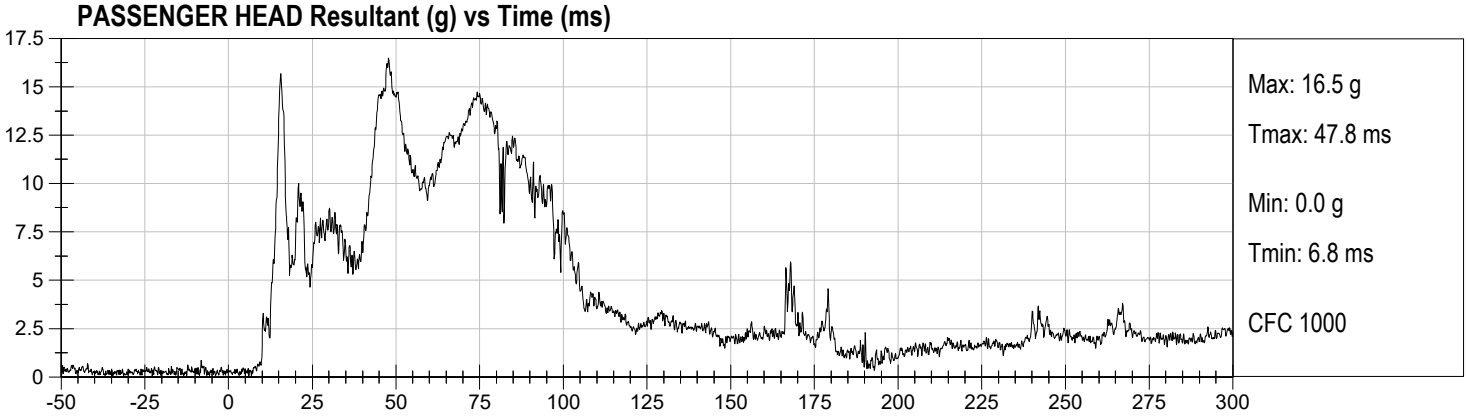
PASSENGER HEAD Y (g) vs Time (ms)



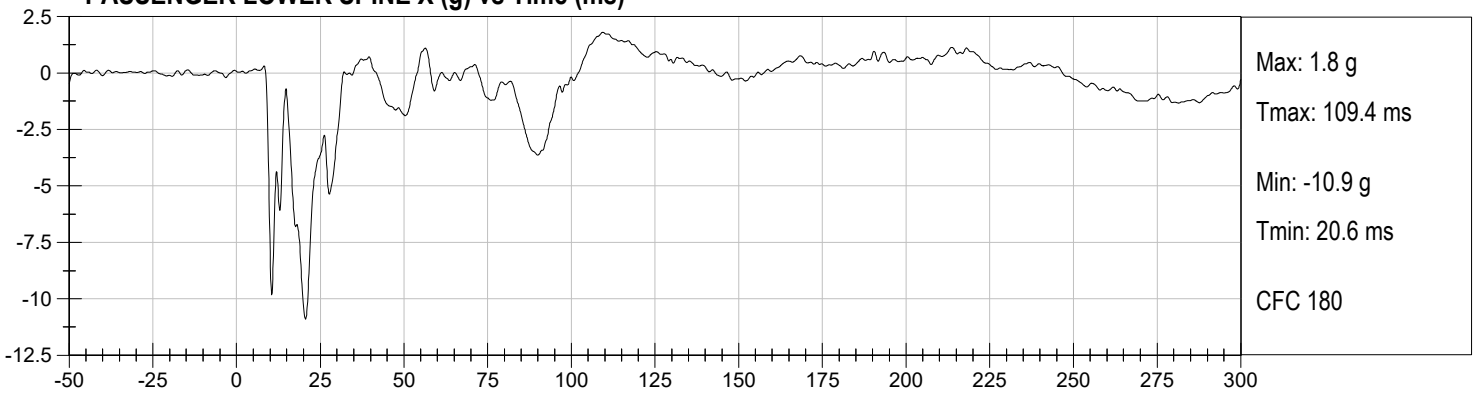
PASSENGER HEAD Z (g) vs Time (ms)



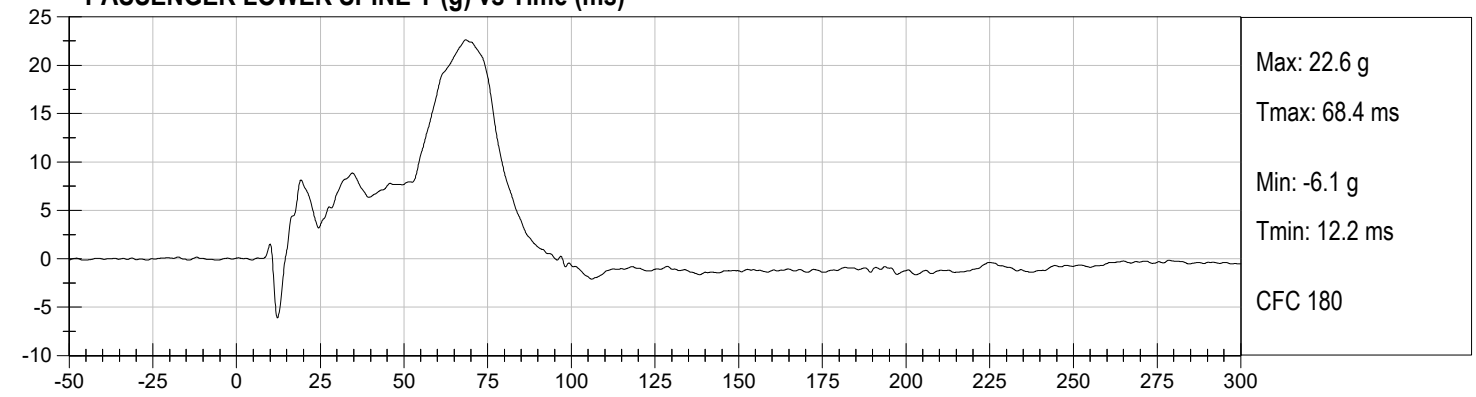
PASSENGER HEAD Resultant (g) vs Time (ms)



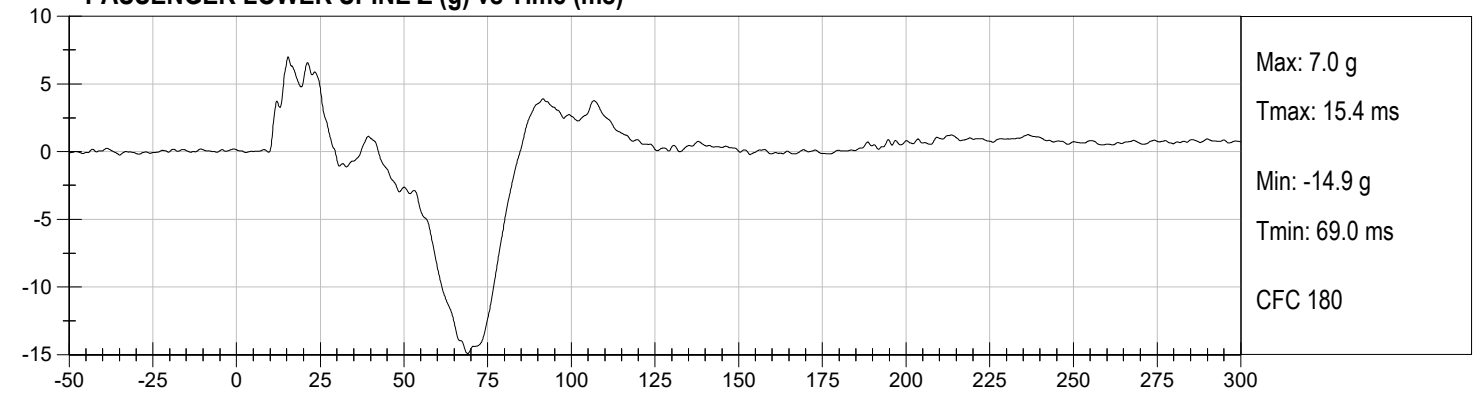
PASSENGER LOWER SPINE X (g) vs Time (ms)



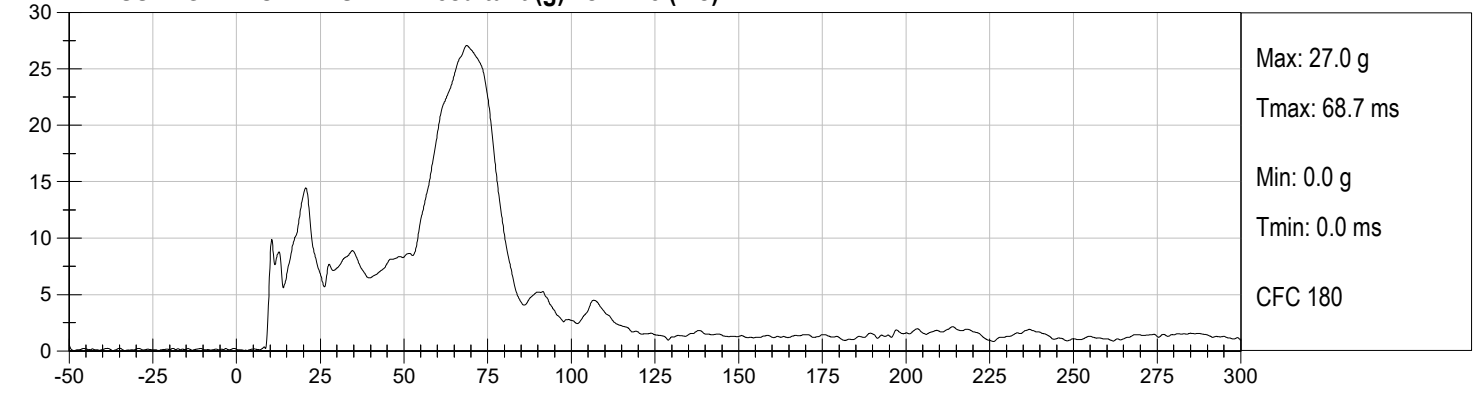
PASSENGER LOWER SPINE Y (g) vs Time (ms)



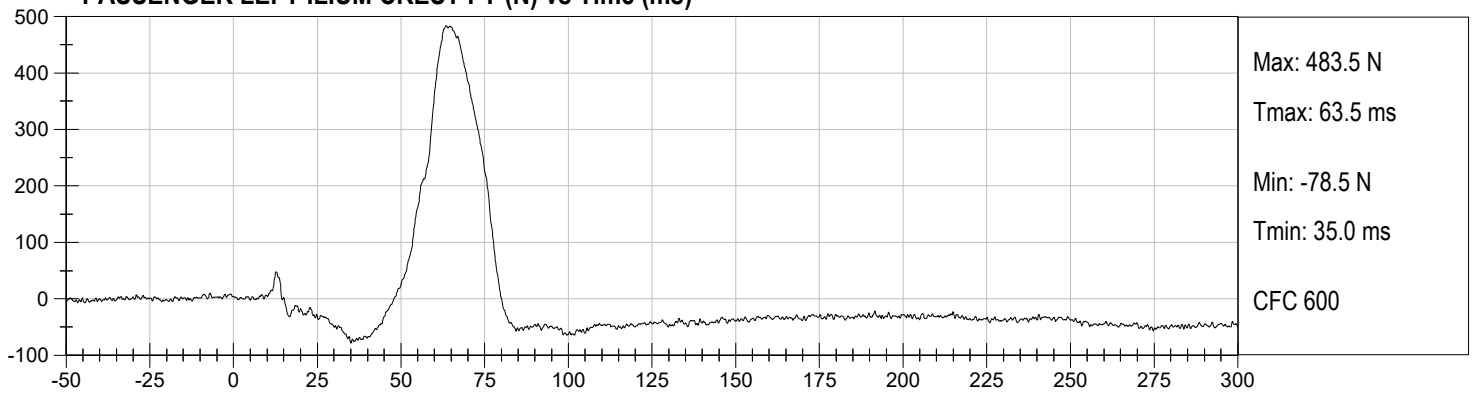
PASSENGER LOWER SPINE Z (g) vs Time (ms)



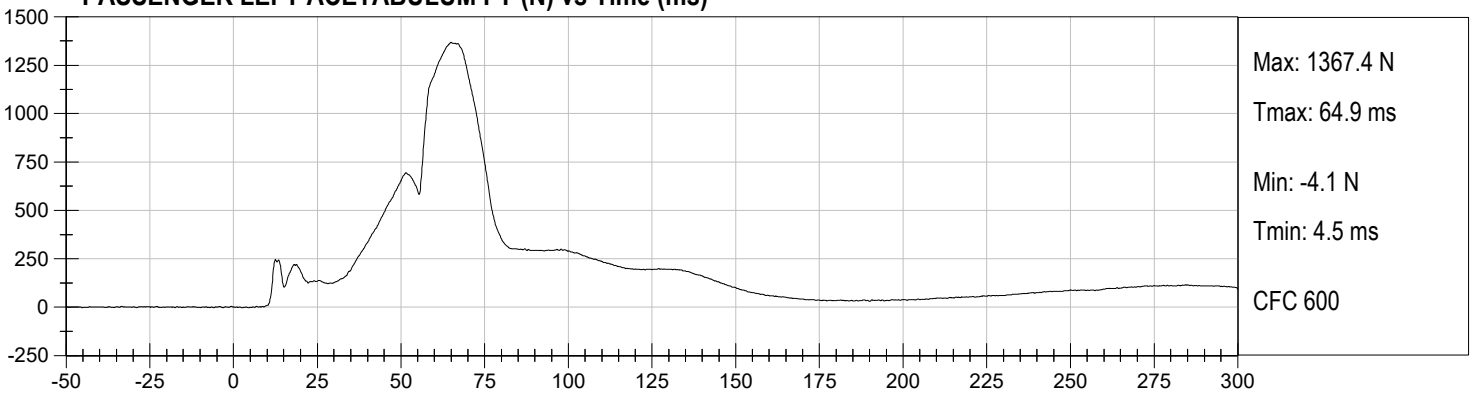
PASSENGER LOWER SPINE Resultant (g) vs Time (ms)



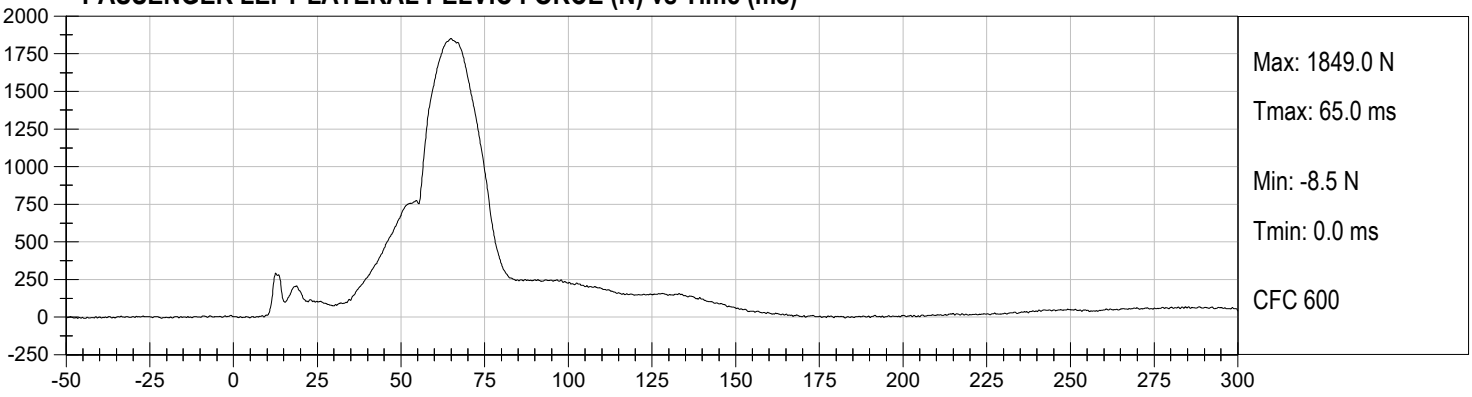
PASSENGER LEFT ILIUM CREST FY (N) vs Time (ms)



PASSENGER LEFT ACETABULUM FY (N) vs Time (ms)



PASSENGER LEFT LATERAL PELVIC FORCE (N) vs Time (ms)



APPENDIX C
DUMMY QUALIFICATION AND PERFORMANCE VERIFICATION

QUALIFICATION TEST RESULTS

PRE-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

ES-2re External Measurements
SN: F032

No.	Name	Spec. (mm)	Result	Pass/Fail
1	Sitting Height	900 - 918	915	Pass
2	Seat to Shoulder Joint	558 - 572	568	Pass
3	Seat to Lower Face of Thoracic Spine Box	346 - 356	355	Pass
4	Seat to Hip Joint (center of bolt)	97 - 103	98	Pass
5	Sole to Seat, Sitting	333 - 451	440	Pass
6	Head Width	152 - 158	157	Pass
7	Shoulder/Arm Width	461 - 479	464	Pass
8	Thorax Width	322 - 332	323	Pass
9	Abdomen Width	273 - 287	281	Pass
10	Pelvis Lap Width	359 - 373	370	Pass
11	Head Depth	196 - 206	203	Pass
12	Thorax Depth	262 - 272	264	Pass
13	Abdomen Depth	194 - 204	196	Pass
14	Pelvis Depth	235 - 245	236	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150 - 160	151	Pass
16	Back of Buttocks to Front Knee	597 - 615	607	Pass

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Lateral Head Drop Test
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250651
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Peak Resultant Acceleration	g	125 to 155	137	Pass
Peak Longitudinal Acceleration	g	-15 to 15	7.0	Pass
Unimodal	%	within 15% of peak	3	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
HEAD X	Endevco	P78728	02/24/2025	8/26/2025
HEAD Y	Endevco	P78732	02/24/2025	8/26/2025
HEAD Z	Endevco	P78739	02/24/2025	8/26/2025

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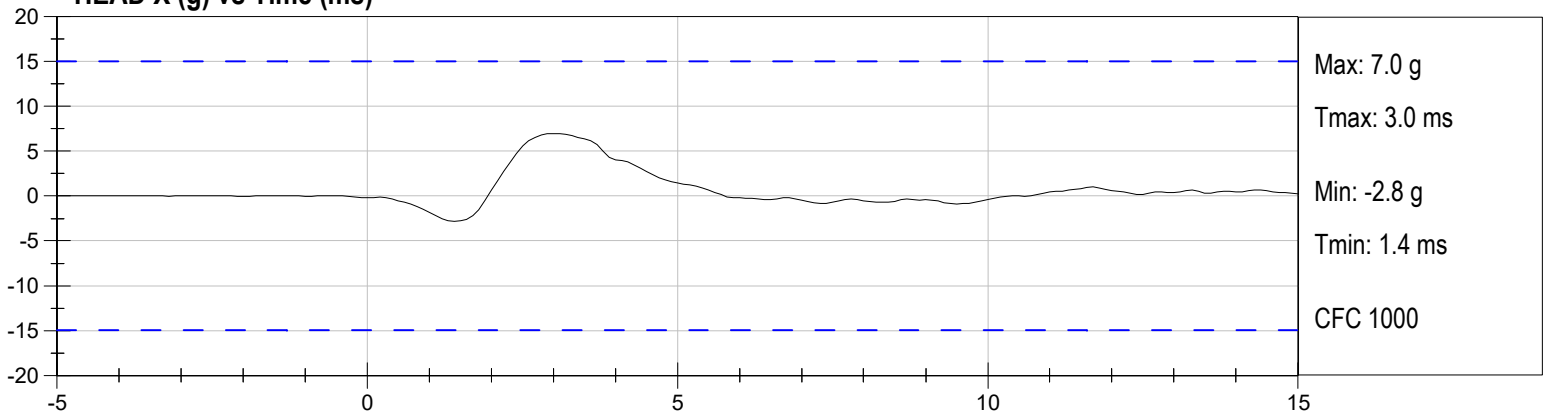
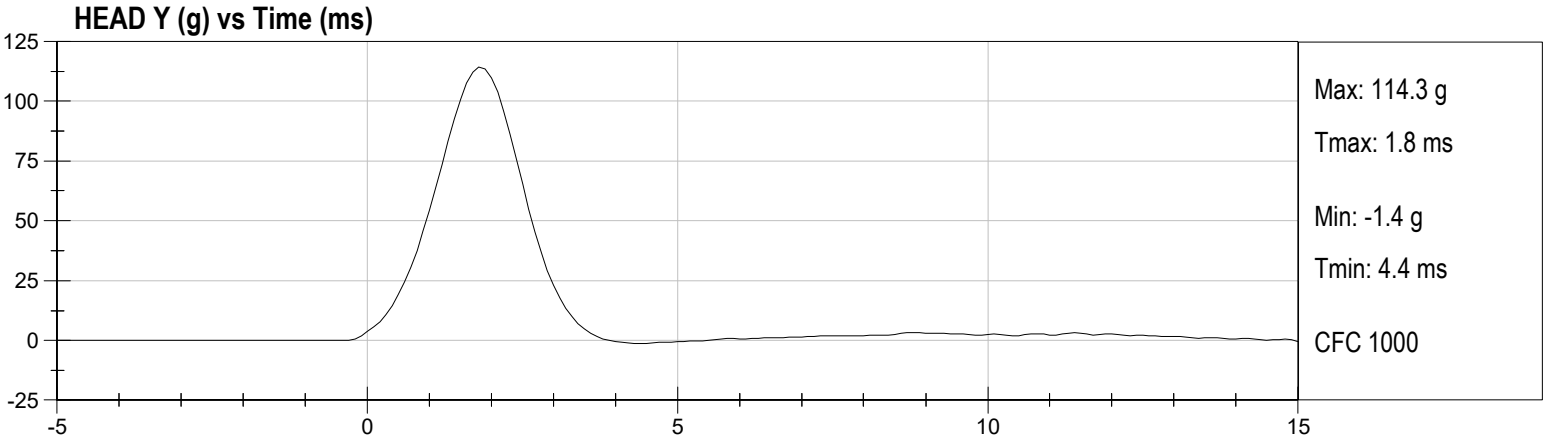
Lateral Head Drop Test
ES2re

Test Date: 03/04/2025
Test ID: D250651

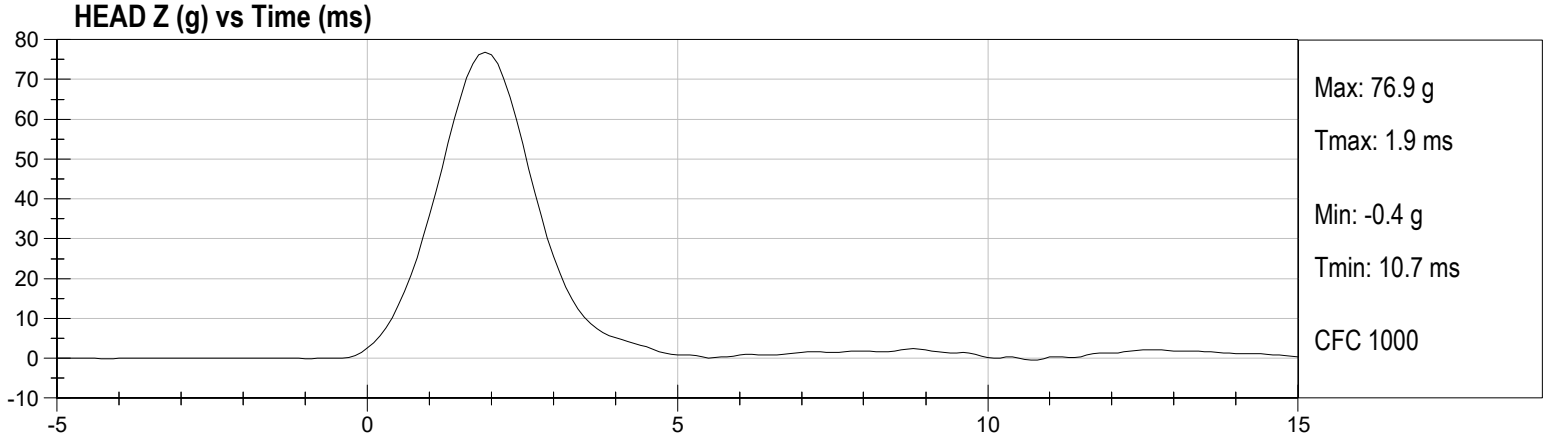
HEAD X (g) vs Time (ms)



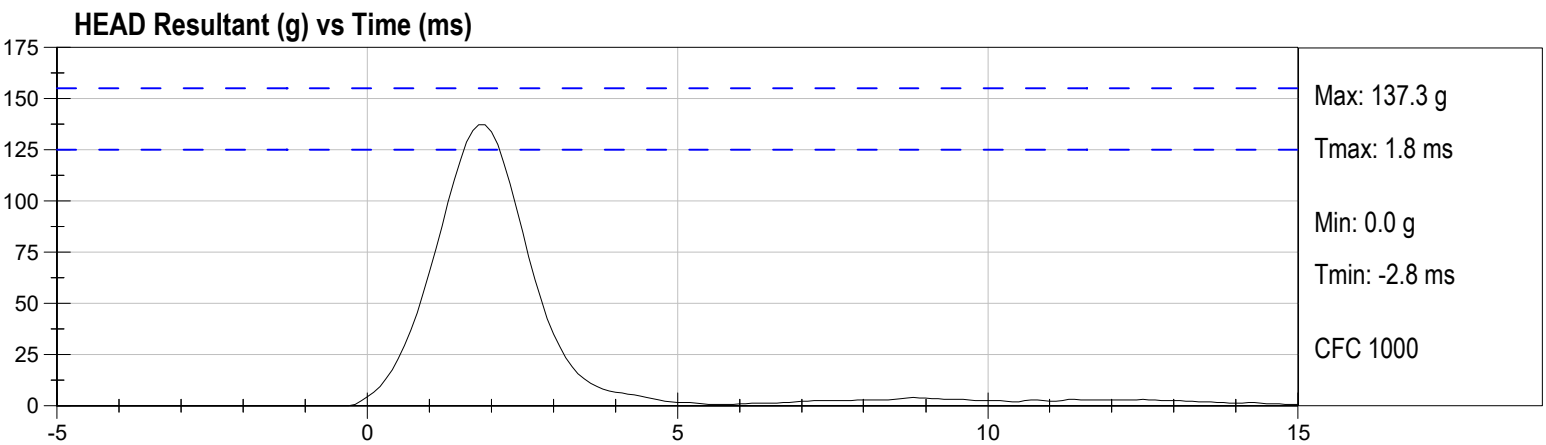
HEAD Y (g) vs Time (ms)



HEAD Z (g) vs Time (ms)



HEAD Resultant (g) vs Time (ms)



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Lateral Neck Bending Test
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250652
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	3.30 to 3.50	3.41	Pass
Pendulum Velocity Within Corridor	m/s	Within	Yes	Pass
Maximum Flexion Angle	deg	49 to 59	52.4	Pass
Time of Maximum Flexion Angle	ms	54 to 66	61.1	Pass
Decay Time to Zero Crossing	ms	53 to 88	61.5	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PEND. ACCEL.	Endevco	AH5P1	01/13/2025	7/15/2025
POT. B - REAR	Spectrol	025_es2	01/13/2025	7/15/2025
POT. A - FRONT	Spectrol	027_es2	01/13/2025	7/15/2025
POT. C - HEADFORM	Spectrol	028_es2	01/13/2025	7/15/2025

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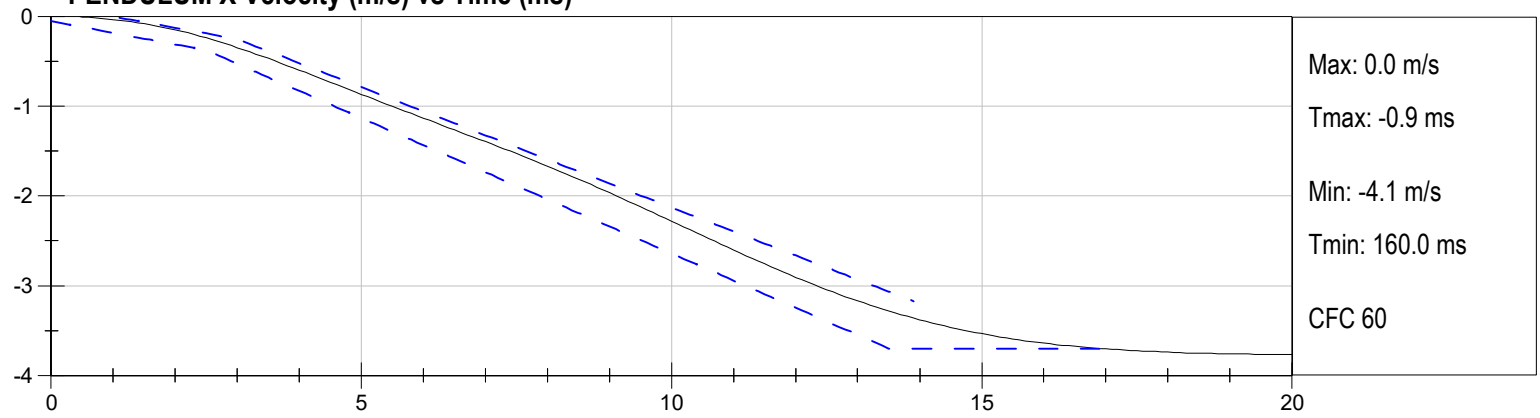
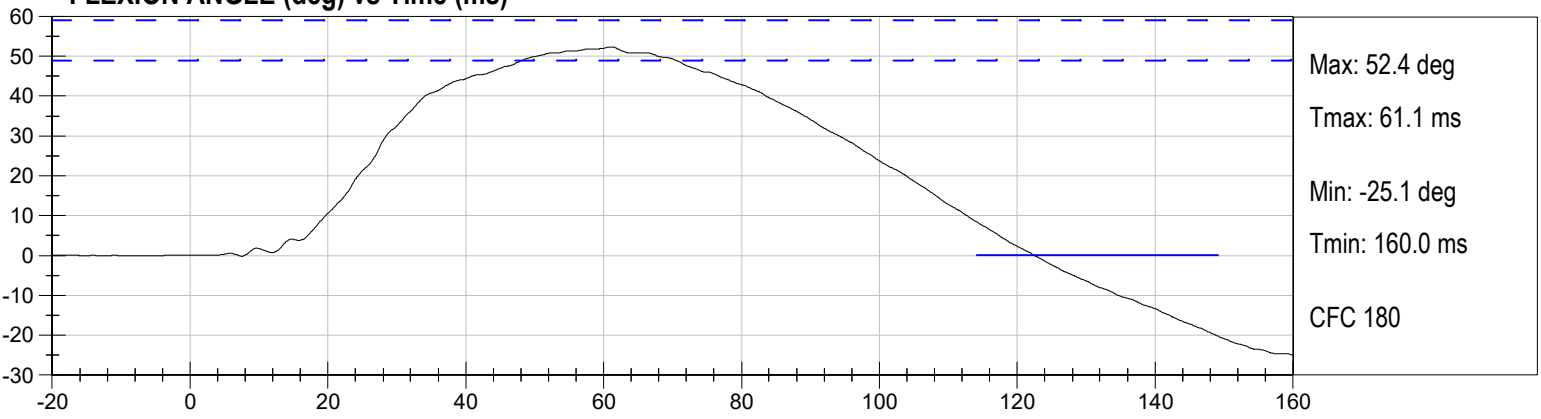
Lateral Neck Bending Test
ES2re

Test Date: 03/04/2025
Test ID: D250652

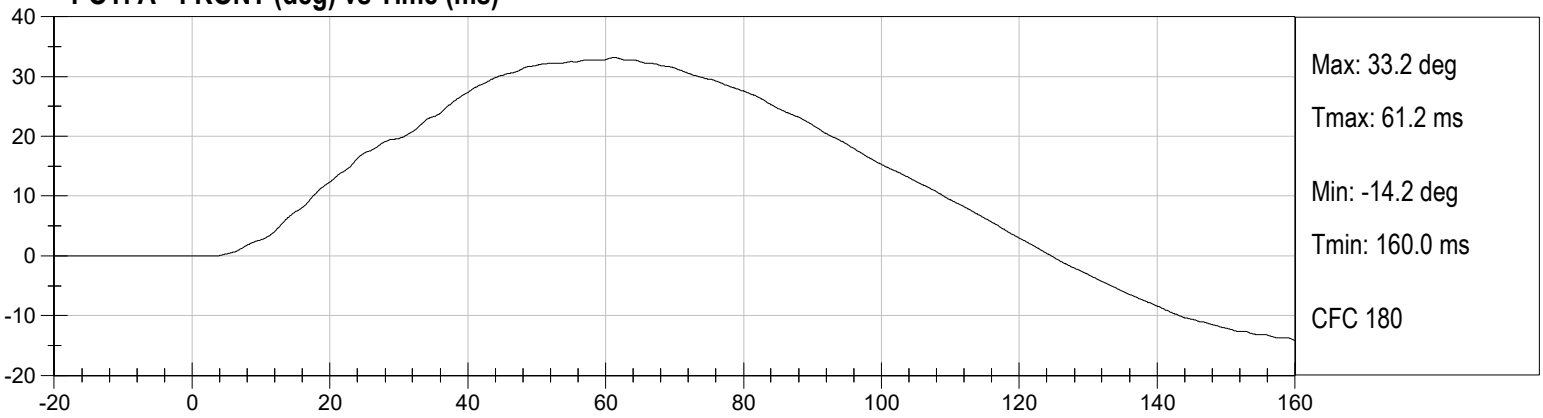
PENDULUM X Velocity (m/s) vs Time (ms)



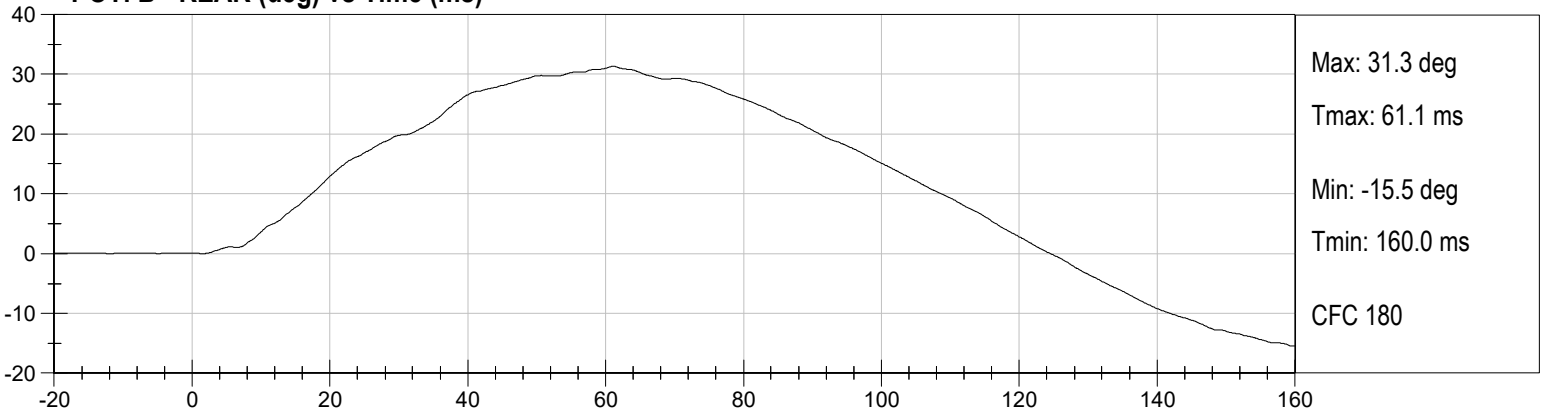
FLEXION ANGLE (deg) vs Time (ms)



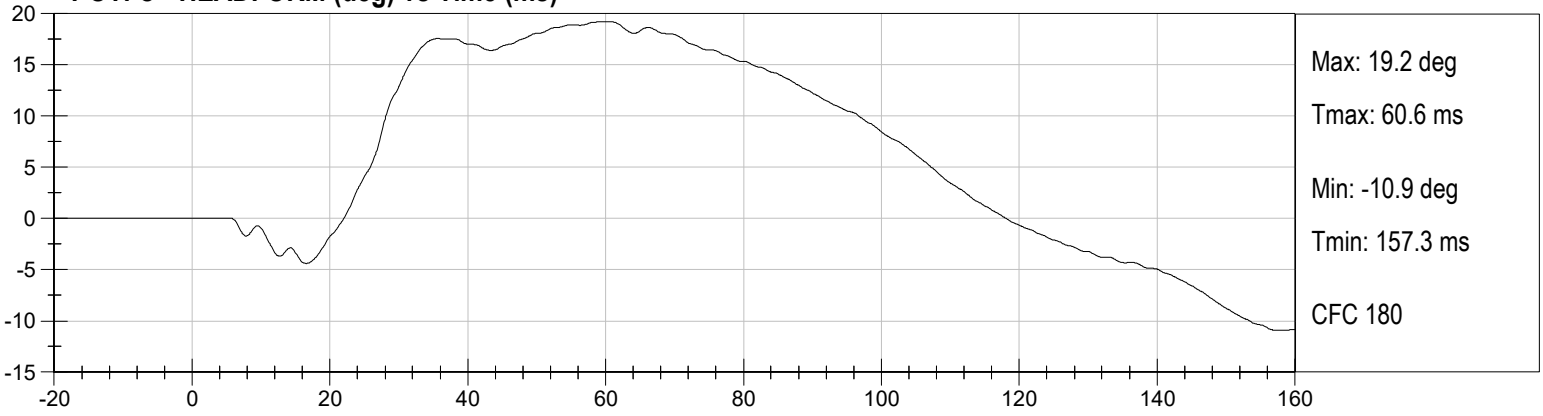
POT. A - FRONT (deg) vs Time (ms)



POT. B - REAR (deg) vs Time (ms)



POT. C - HEADFORM (deg) vs Time (ms)



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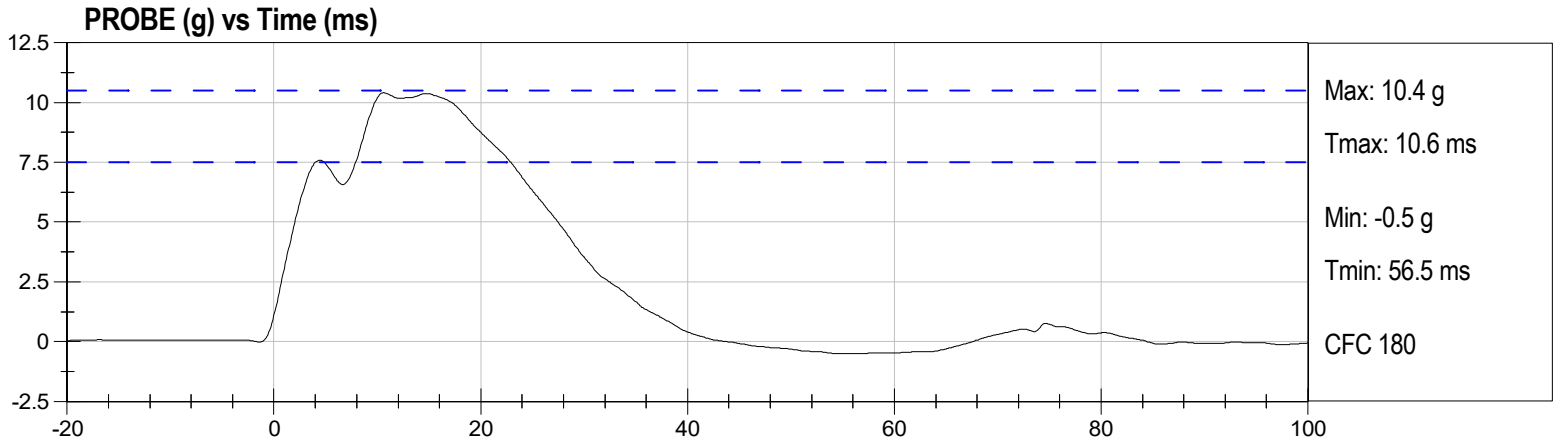
Shoulder Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250653
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Probe Acceleration	G's	7.5 to 10.5	10.4	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025


PROBE (g) vs Time (ms)
12.5
10
7.5
5
2.5
0
-2.5
-20
0
20
40
60
80
100
Max: 10.4 g
Tmax: 10.6 ms
Min: -0.5 g
Tmin: 56.5 ms
CFC 180

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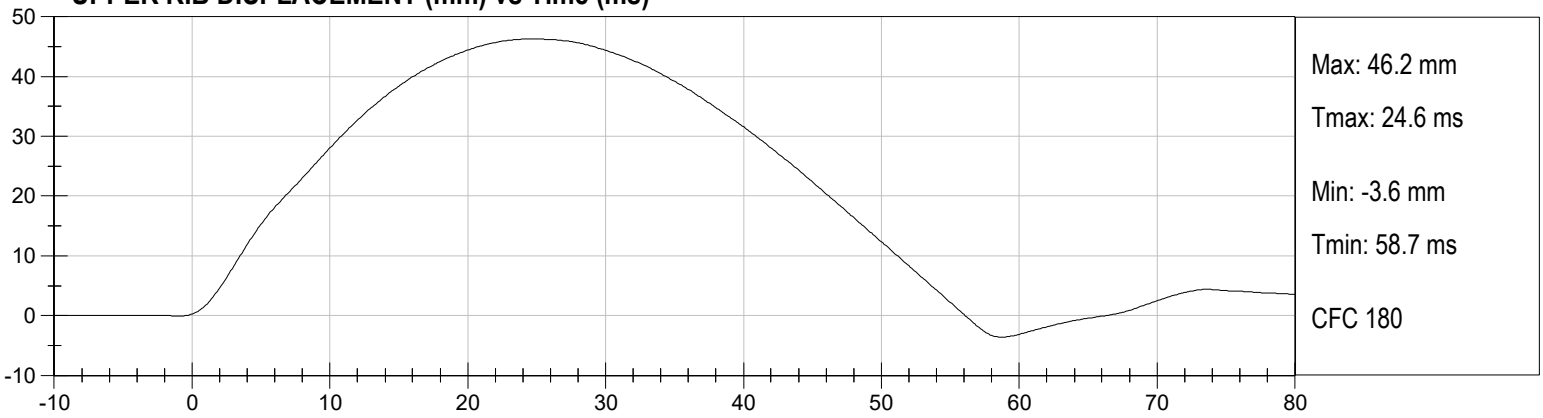
Upper Rib Drop Test - 815mm
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250654H
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Rib Deflection at 815 mm	mm	46 to 51	46.2	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
UPPER RIB DISPLACEMENT	Honeywell	G236	11/21/2024	5/23/2025

UPPER RIB DISPLACEMENT (mm) vs Time (ms)



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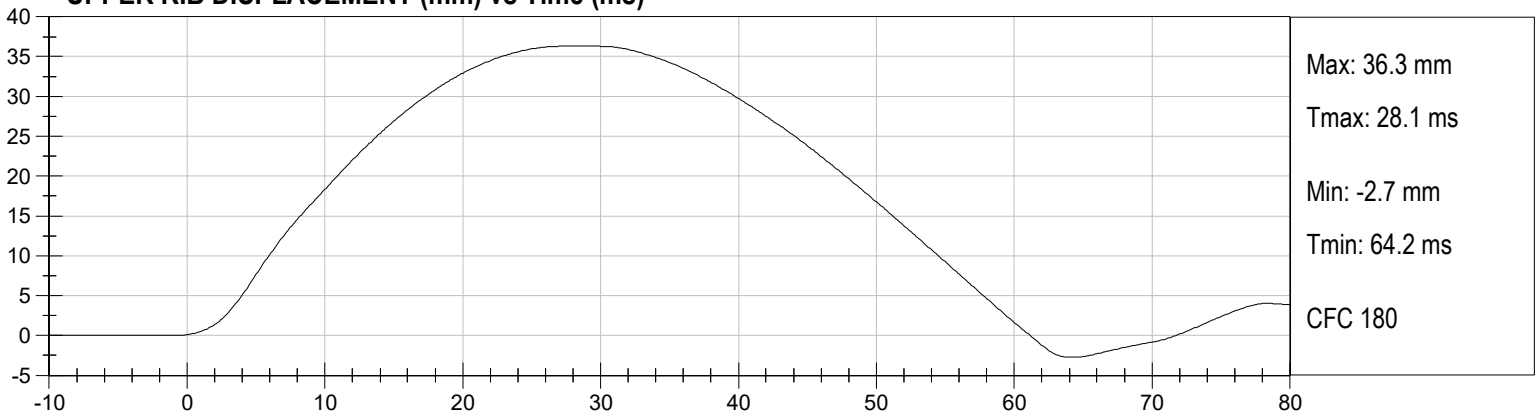
Upper Rib Drop Test - 459mm
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250654L
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Rib Deflection at 459 mm	mm	36 to 40	36.3	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
UPPER RIB DISPLACEMENT	Honeywell	G236	11/21/2024	5/23/2025

UPPER RIB DISPLACEMENT (mm) vs Time (ms)



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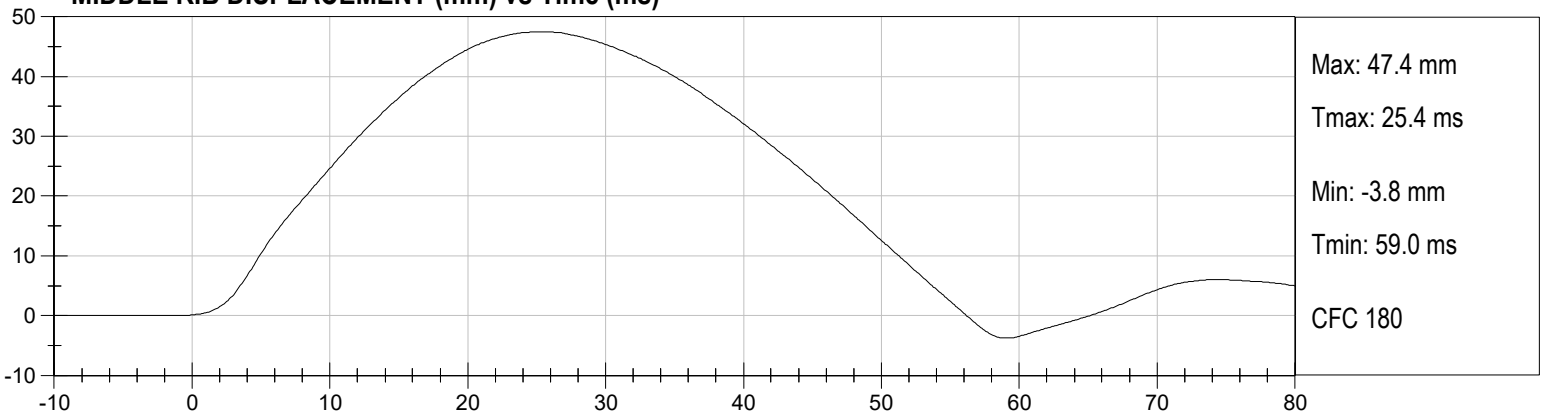
Middle Rib Drop Test - 815mm
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250655H
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Rib Deflection at 815 mm	mm	46 to 51	47.4	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
MIDDLE RIB DISPLACEMENT	Honeywell	G368	11/21/2024	5/23/2025

MIDDLE RIB DISPLACEMENT (mm) vs Time (ms)



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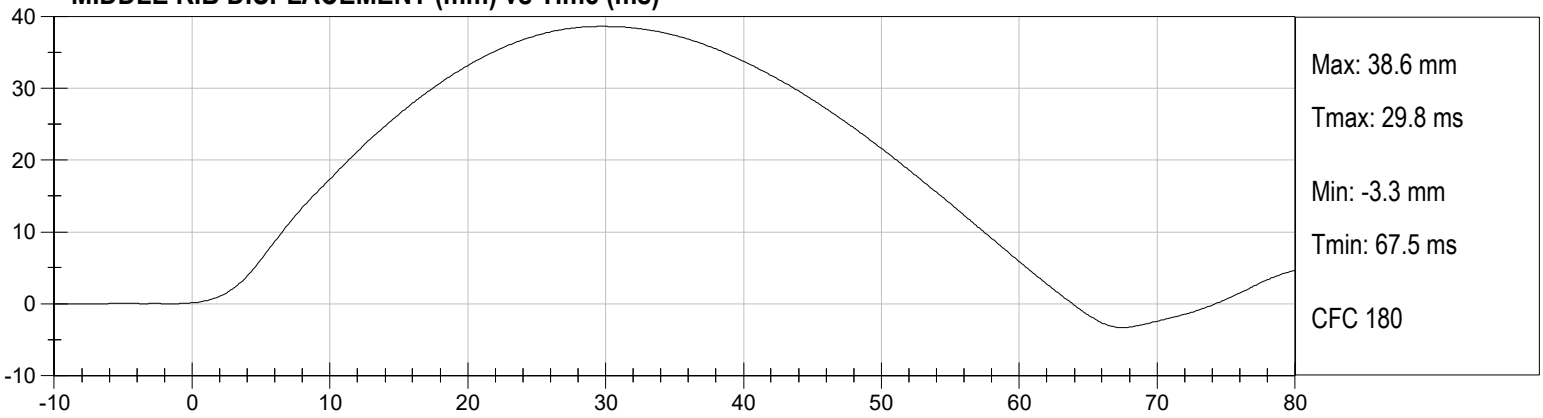
Middle Rib Drop Test - 459mm
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250655L
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Rib Deflection at 459 mm	mm	36 to 40	38.6	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
MIDDLE RIB DISPLACEMENT	Honeywell	G368	11/21/2024	5/23/2025

MIDDLE RIB DISPLACEMENT (mm) vs Time (ms)



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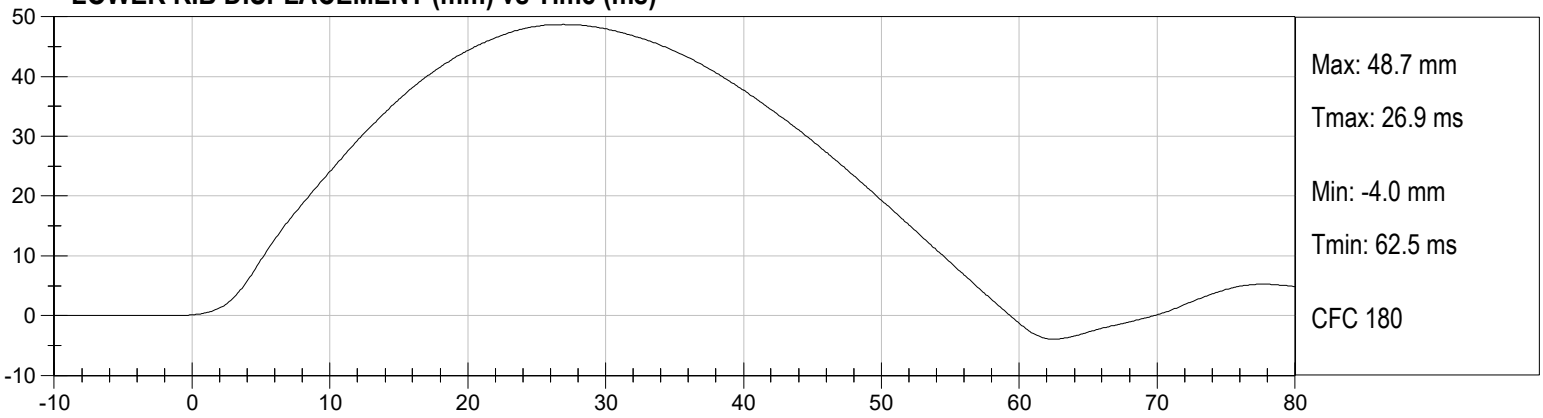
Lower Rib Drop Test - 815mm
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250656H
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Rib Deflection at 815 mm	mm	46 to 51	48.7	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
LOWER RIB DISPLACEMENT	Honeywell	G164	11/21/2024	5/23/2025

LOWER RIB DISPLACEMENT (mm) vs Time (ms)



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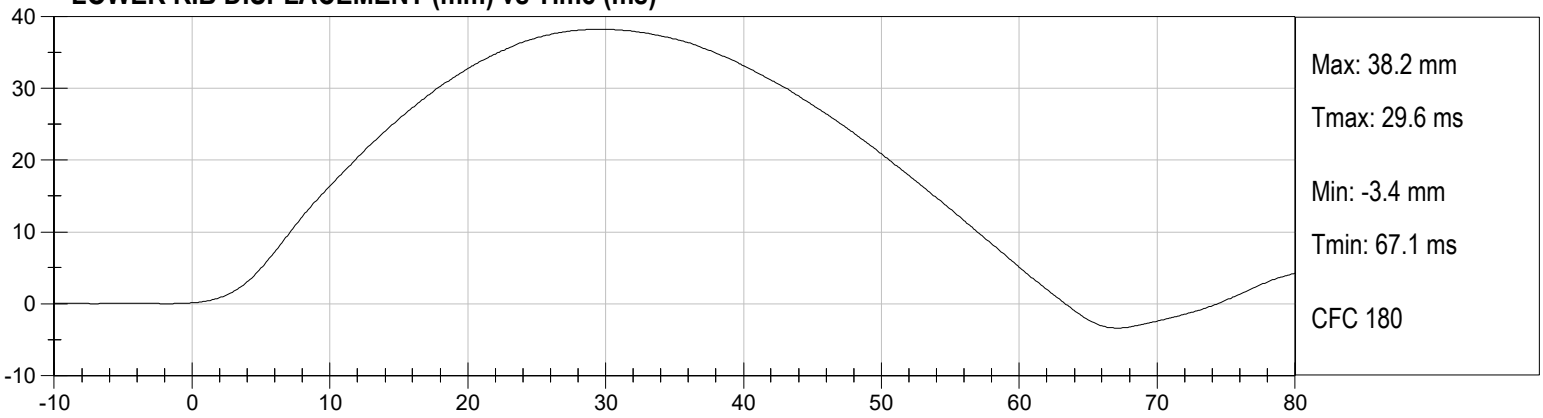
Lower Rib Drop Test - 459mm
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250656L
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Rib Deflection at 459 mm	mm	36 to 40	38.2	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
LOWER RIB DISPLACEMENT	Honeywell	G164	11/21/2024	5/23/2025

LOWER RIB DISPLACEMENT (mm) vs Time (ms)



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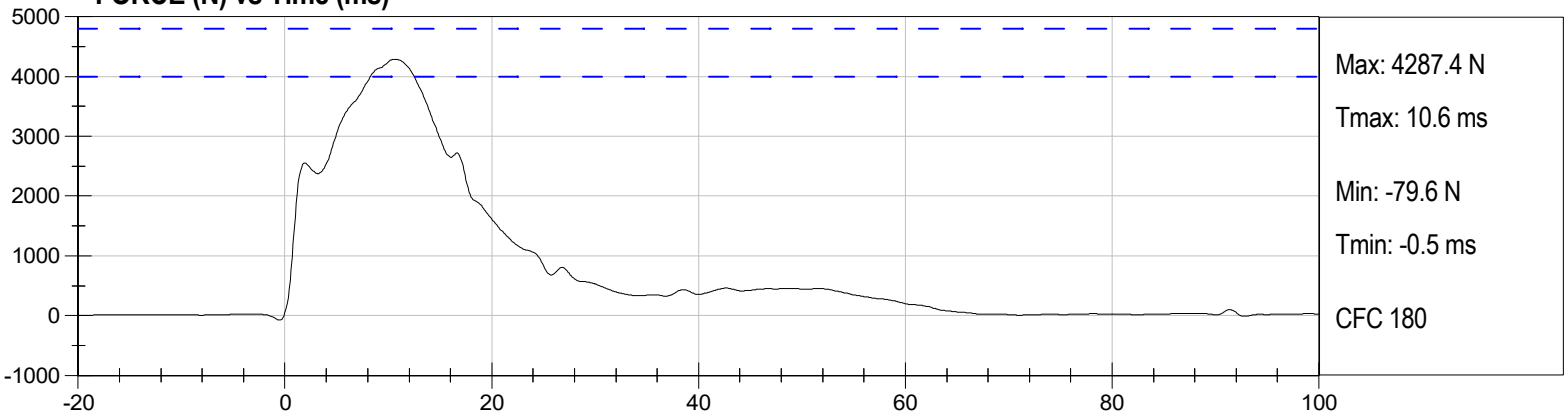
Abdomen Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250657
Test Technician: Jonah Pulokas

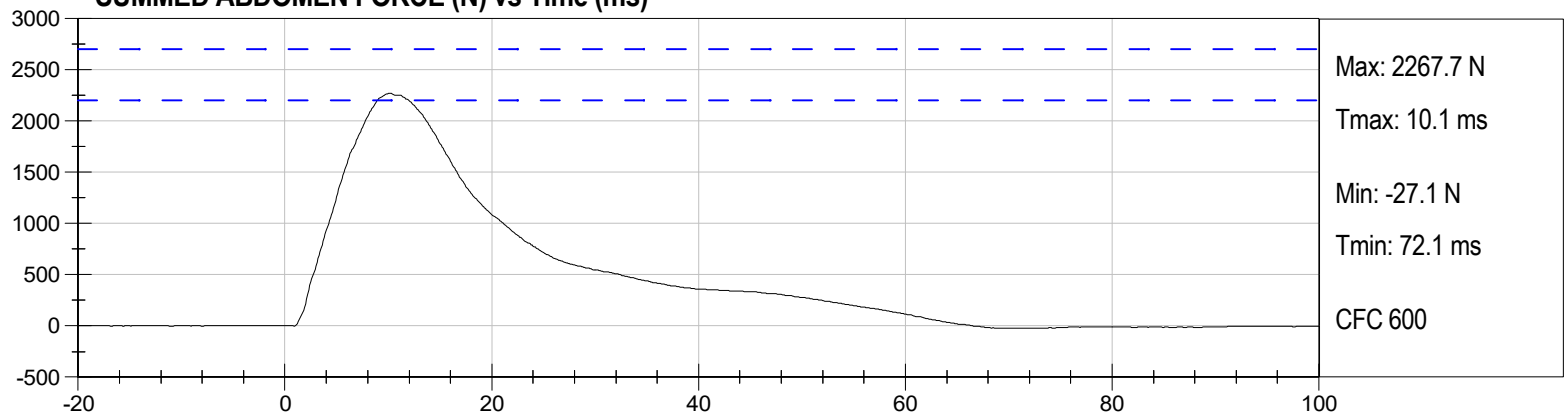
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	3.9 to 4.1	4.0	Pass
Peak Probe Force	N	4000 to 4800	4287	Pass
Time of Peak Probe Force	ms	10.6 to 13.0	10.6	Pass
Peak Abdomen Force	N	2200 to 2700	2268	Pass
Time of Peak Abdomen Force	ms	10.0 to 12.3	10.1	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
FRONT ABDOMEN FY	Denton	ABG1532FY	01/20/2025	1/20/2026
MID ABDOMEN FY	Denton	ABG1534FY	01/20/2025	1/20/2026
REAR ABDOMEN FY	Denton	ABG1535FY	01/20/2025	1/20/2026

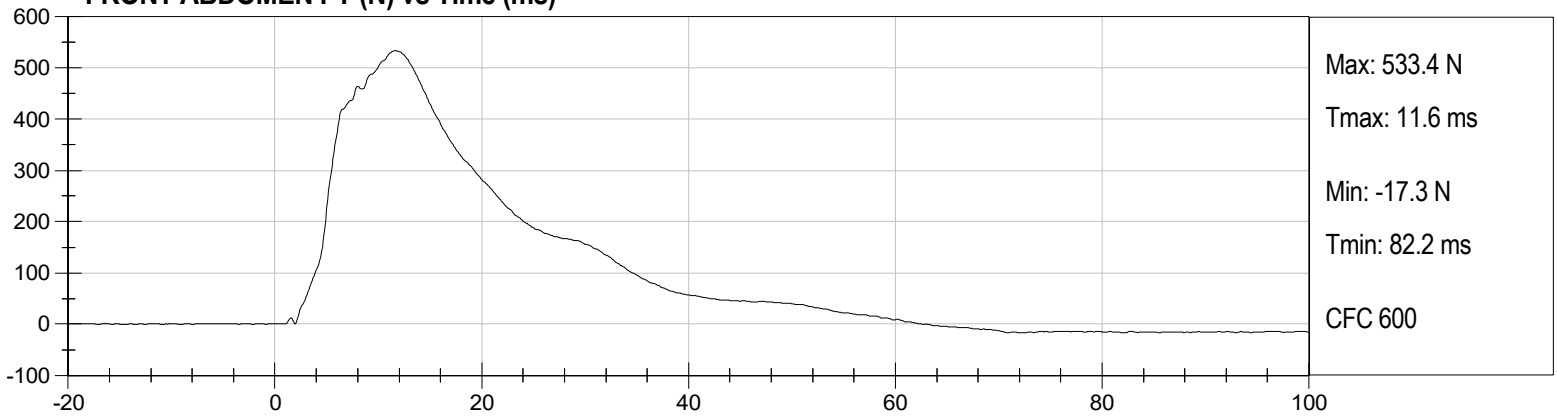
FORCE (N) vs Time (ms)



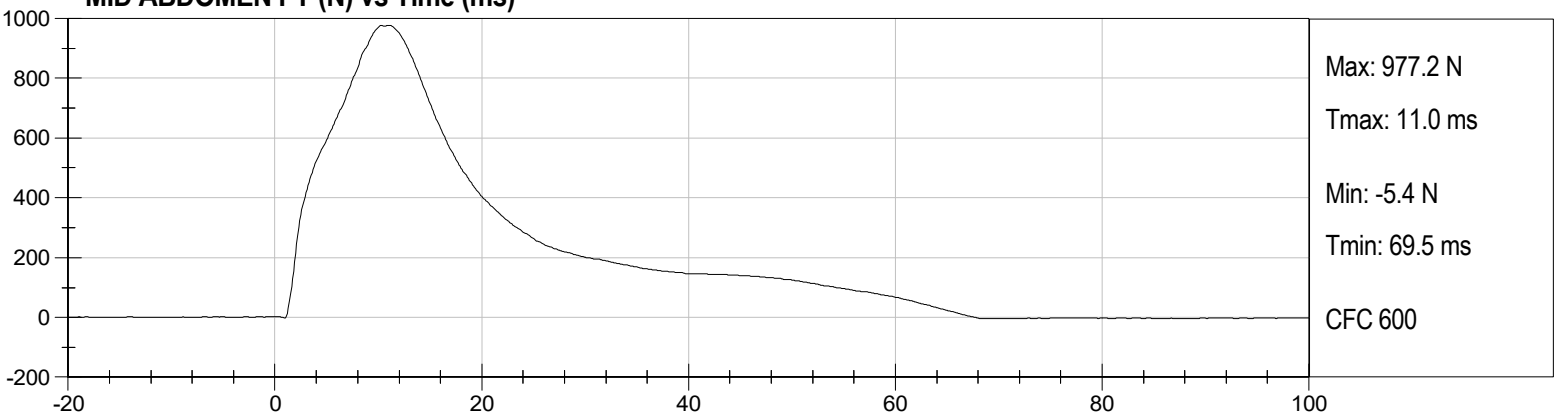
SUMMED ABDOMEN FORCE (N) vs Time (ms)



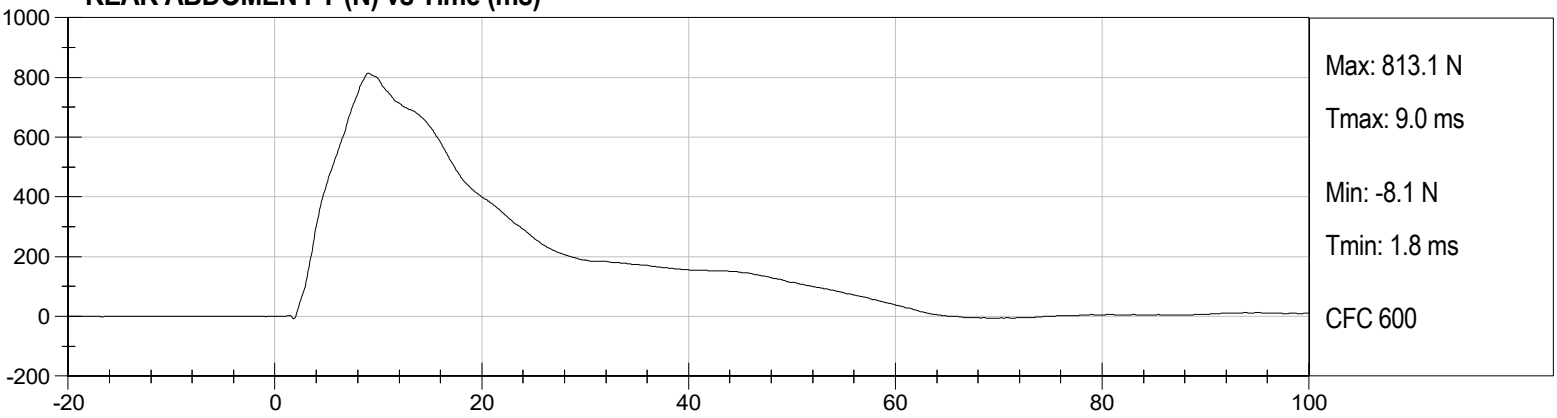
FRONT ABDOMEN FY (N) vs Time (ms)



MID ABDOMEN FY (N) vs Time (ms)



REAR ABDOMEN FY (N) vs Time (ms)



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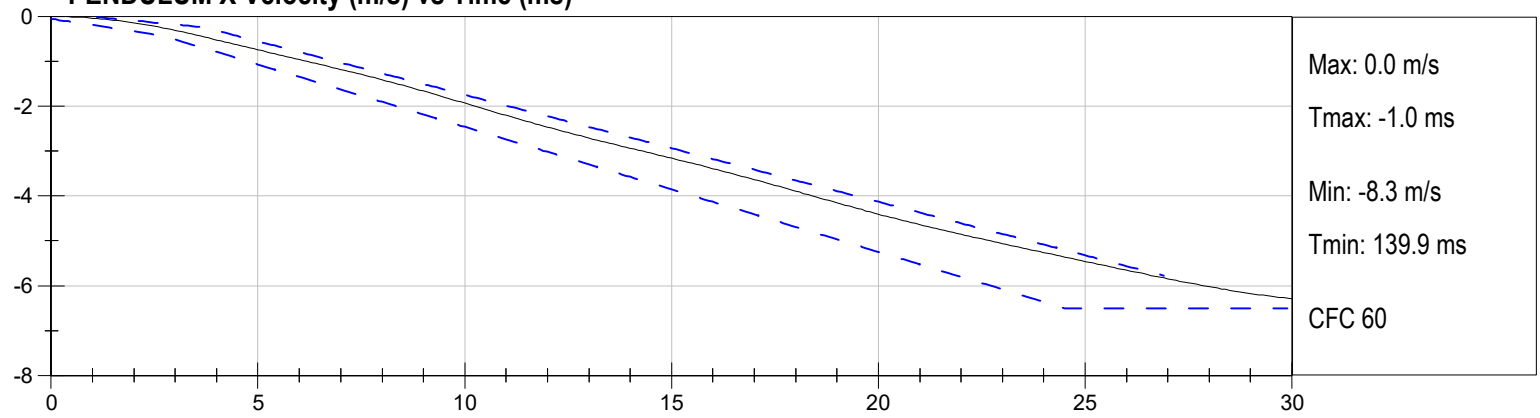
Lumbar Spine Flexion Test
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250658
Test Technician: Jonah Pulokas

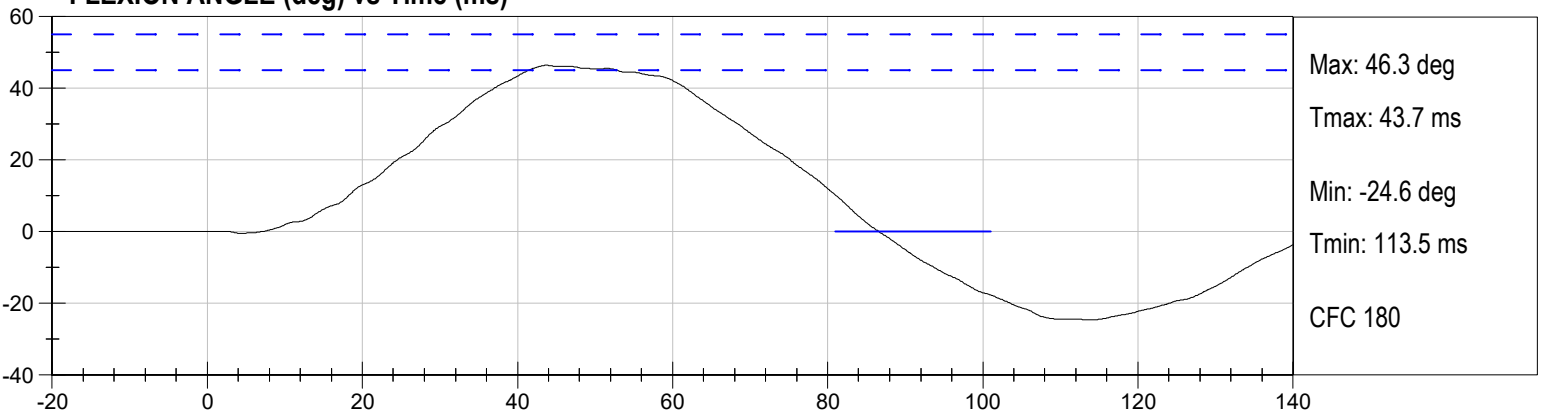
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	5.95 to 6.15	6.05	Pass
Pendulum Velocity Within Corridor	m/s	Within	Yes	Pass
Maximum Flexion Angle	deg	45 to 55	46	Pass
Time of Maximum Flexion Angle	ms	39 to 53	44	Pass
Decay Time to Zero Crossing from Peak	ms	37 to 57	43	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PEND. ACCEL.	Endevco	AH5P1	01/13/2025	7/15/2025
POT. B - REAR	Spectrol	025_es2	01/13/2025	7/15/2025
POT. A - FRONT	Spectrol	027_es2	01/13/2025	7/15/2025
POT. C - HEADFORM	Spectrol	028_es2	01/13/2025	7/15/2025

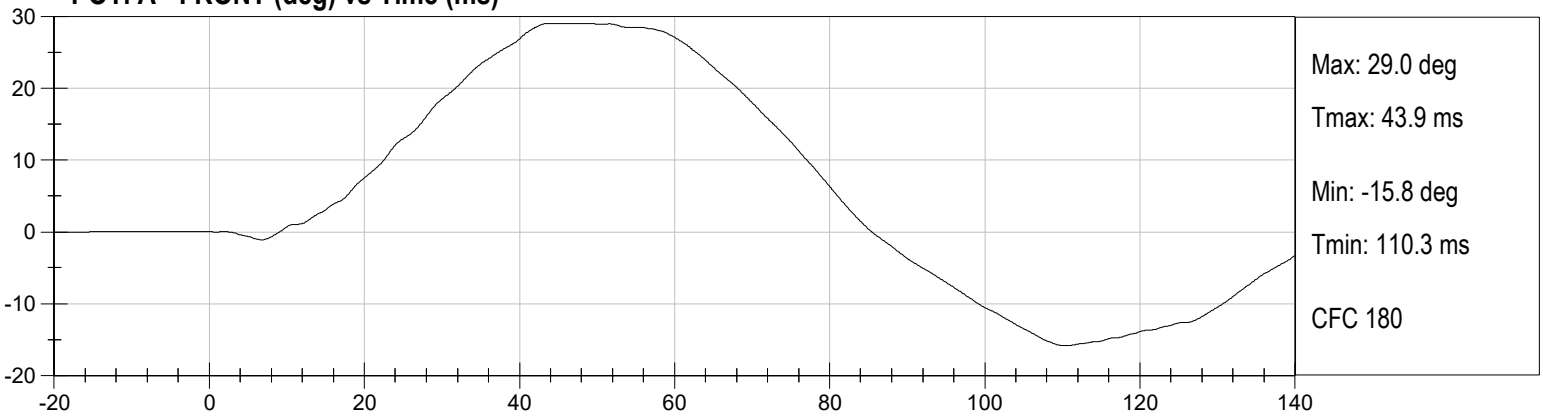
PENDULUM X Velocity (m/s) vs Time (ms)



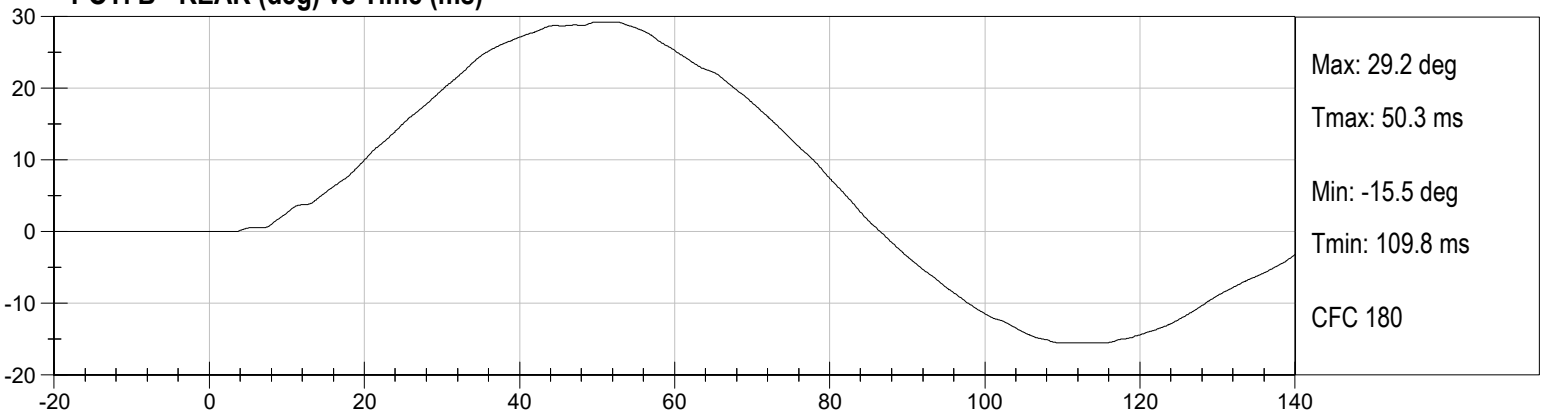
FLEXION ANGLE (deg) vs Time (ms)



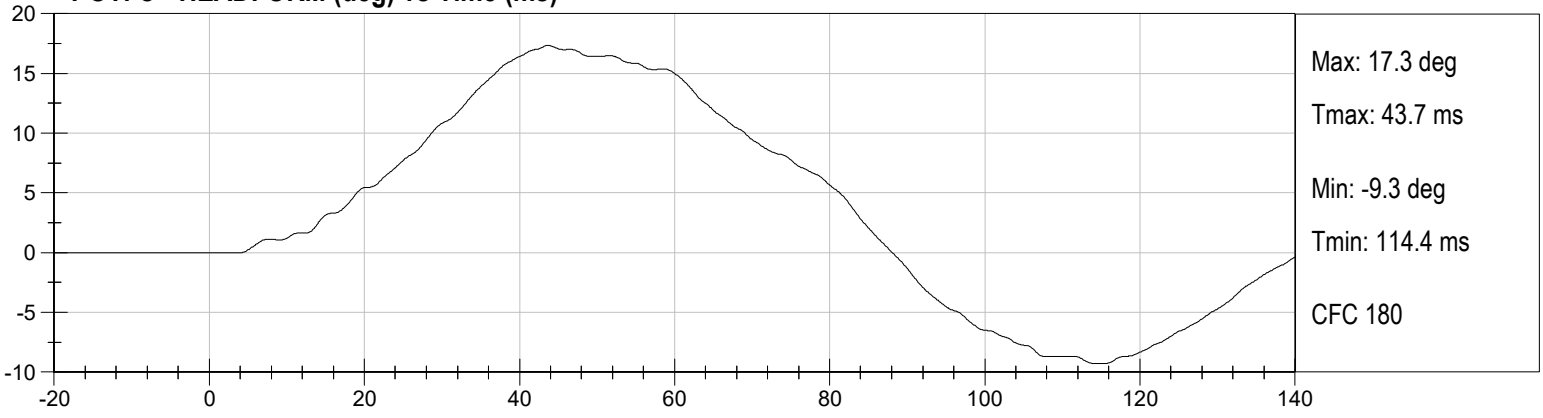
POT. A - FRONT (deg) vs Time (ms)



POT. B - REAR (deg) vs Time (ms)



POT. C - HEADFORM (deg) vs Time (ms)



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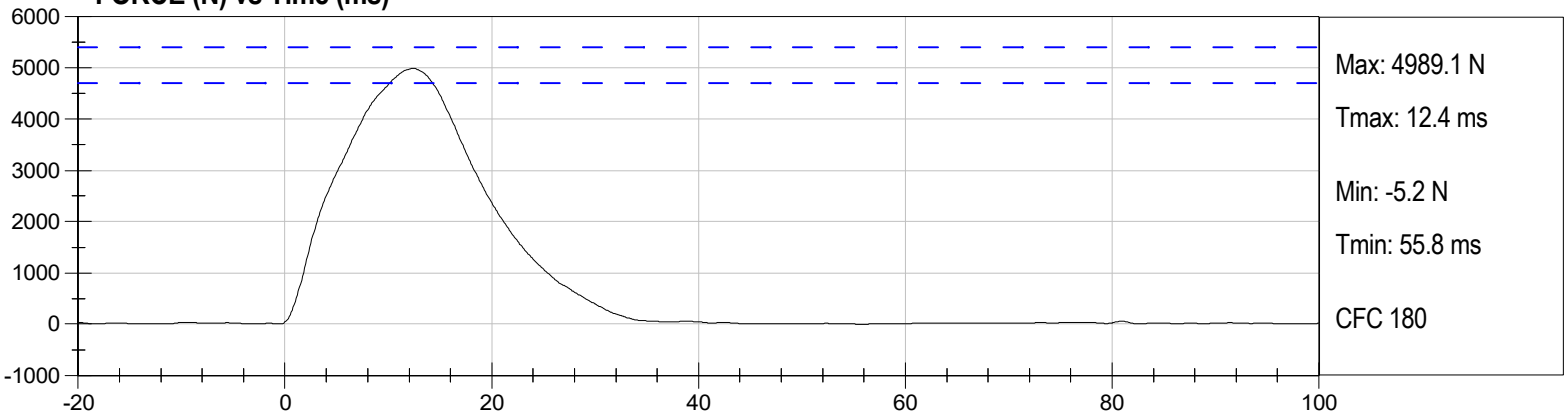
Pelvis Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250659
Test Technician: Jonah Pulokas

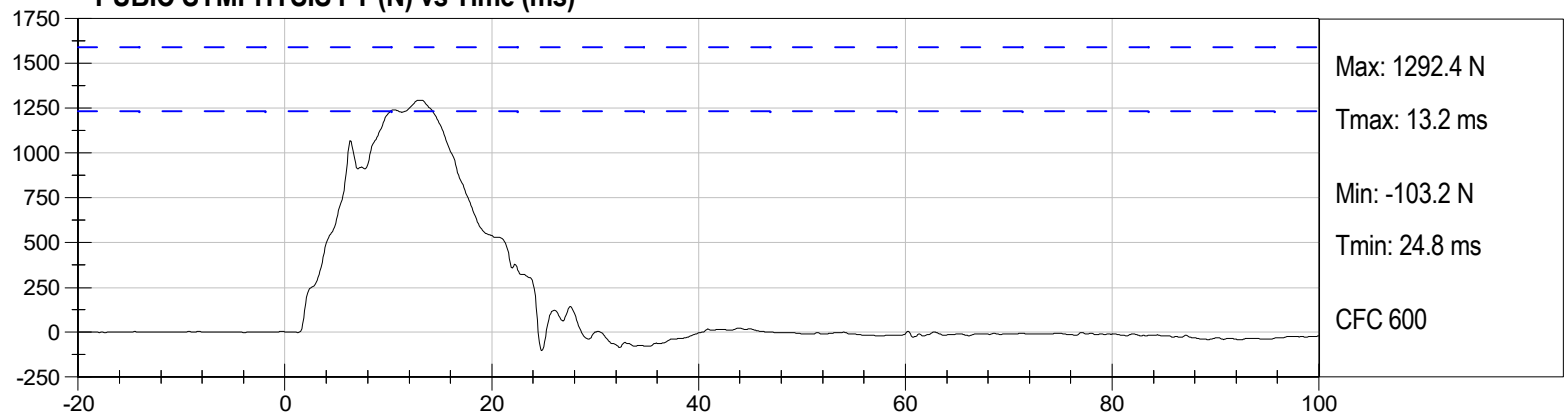
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	4.2 to 4.4	4.34	Pass
Peak Probe Force	N	4700 to 5400	4989	Pass
Time of Peak Probe Force	ms	11.8 to 16.1	12.4	Pass
Peak Pubic Force	N	1230 to 1590	1292	Pass
Time of Peak Pubic Force	ms	12.2 to 17.0	13.2	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
PUBIC SYMPHYSIS FY	Denton	PG461FY	01/20/2025	1/20/2026

FORCE (N) vs Time (ms)



PUBIC SYMPHYSIS FY (N) vs Time (ms)



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Thorax Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/04/2025
Test ID: D250650
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	5.4 to 5.6	5.46	Pass
Peak Probe Force after 6 ms	N	5100 to 6200	6162	Pass
Maximum Upper Thorax Rib Displacement	mm	34 to 41	37.1	Pass
Maximum Middle Thorax Rib Displacement	mm	37 to 45	39.2	Pass
Maximum Lower Thorax Rib Displacement	mm	37 to 44	37.5	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER RIB DISPLACEMENT	Honeywell	G236	11/21/2024	5/23/2025
MIDDLE RIB DISPLACEMENT	Honeywell	G368	11/21/2024	5/23/2025
LOWER RIB DISPLACEMENT	Honeywell	G164	11/21/2024	5/23/2025

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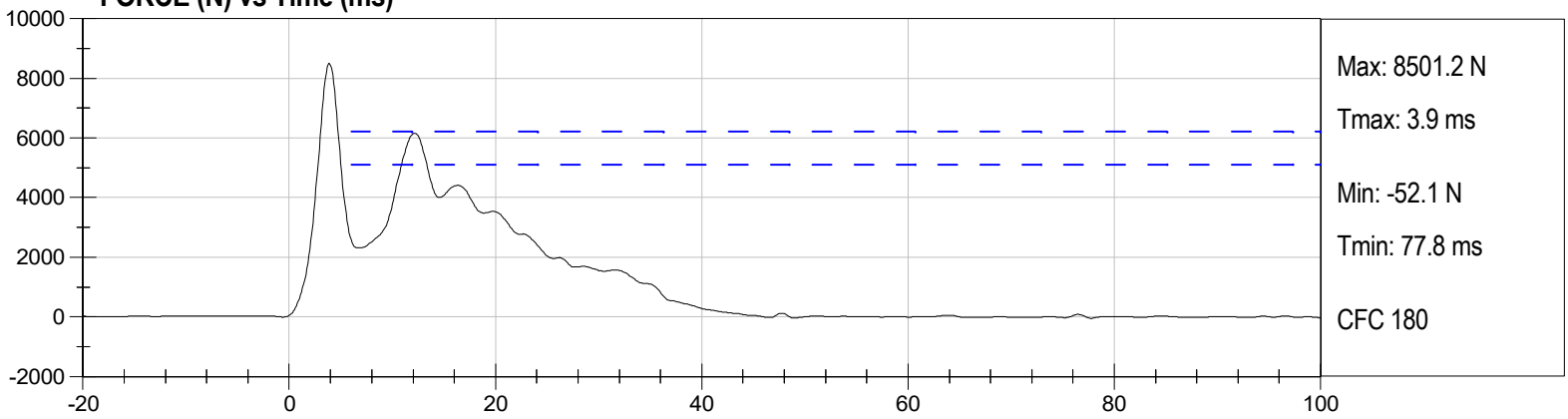
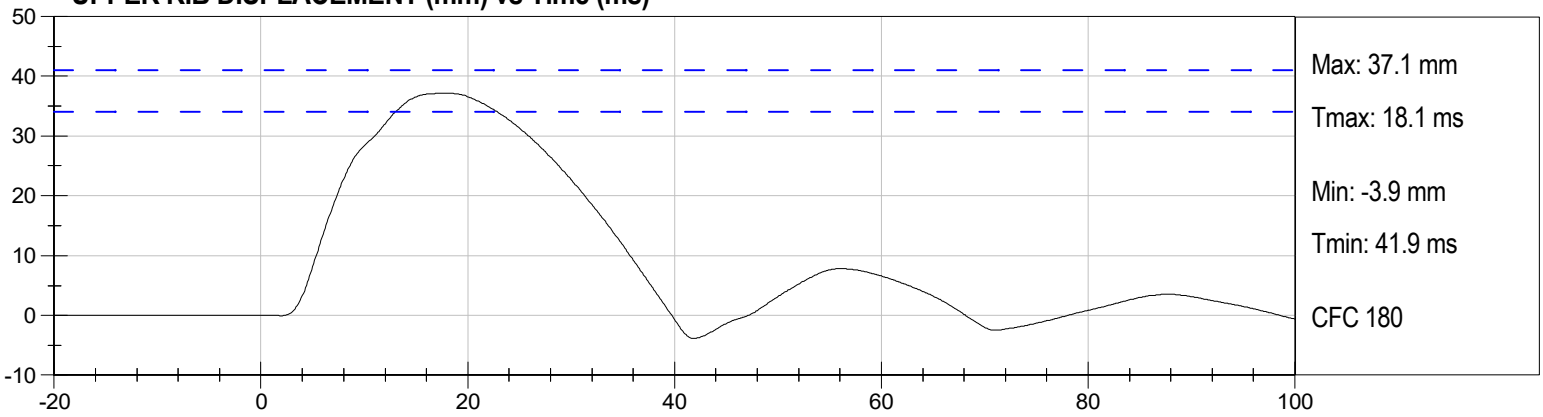
Thorax Impact Test
ES2re

Test Date: 03/04/2025
Test ID: D250650

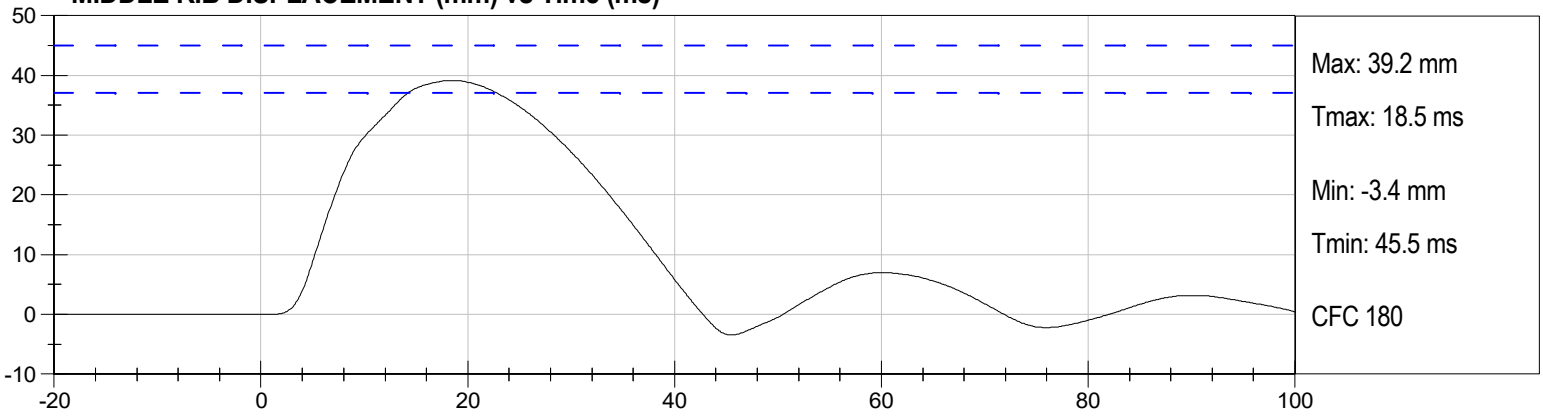
FORCE (N) vs Time (ms)



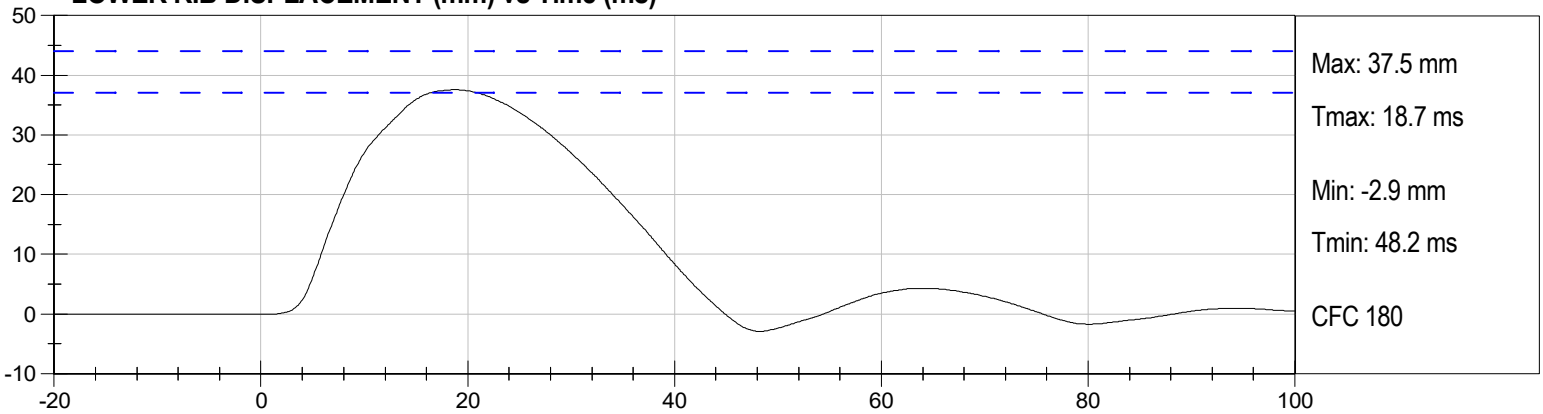
UPPER RIB DISPLACEMENT (mm) vs Time (ms)



MIDDLE RIB DISPLACEMENT (mm) vs Time (ms)



LOWER RIB DISPLACEMENT (mm) vs Time (ms)



QUALIFICATION TEST RESULTS

POST-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

ES-2re External Measurements
SN: F032

No.	Name	Spec. (mm)	Result	Pass/Fail
1	Sitting Height	900 - 918	915	Pass
2	Seat to Shoulder Joint	558 - 572	568	Pass
3	Seat to Lower Face of Thoracic Spine Box	346 - 356	355	Pass
4	Seat to Hip Joint (center of bolt)	97 - 103	98	Pass
5	Sole to Seat, Sitting	333 - 451	440	Pass
6	Head Width	152 - 158	157	Pass
7	Shoulder/Arm Width	461 - 479	464	Pass
8	Thorax Width	322 - 332	323	Pass
9	Abdomen Width	273 - 287	281	Pass
10	Pelvis Lap Width	359 - 373	370	Pass
11	Head Depth	196 - 206	203	Pass
12	Thorax Depth	262 - 272	264	Pass
13	Abdomen Depth	194 - 204	196	Pass
14	Pelvis Depth	235 - 245	236	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150 - 160	151	Pass
16	Back of Buttocks to Front Knee	597 - 615	607	Pass

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Lateral Head Drop Test
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250701
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Peak Resultant Acceleration	g	125 to 155	140	Pass
Peak Longitudinal Acceleration	g	-15 to 15	7.8	Pass
Unimodal	%	within 15% of peak	3	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
HEAD X	Endevco	P78728	02/24/2025	8/26/2025
HEAD Y	Endevco	P78732	02/24/2025	8/26/2025
HEAD Z	Endevco	P78739	02/24/2025	8/26/2025

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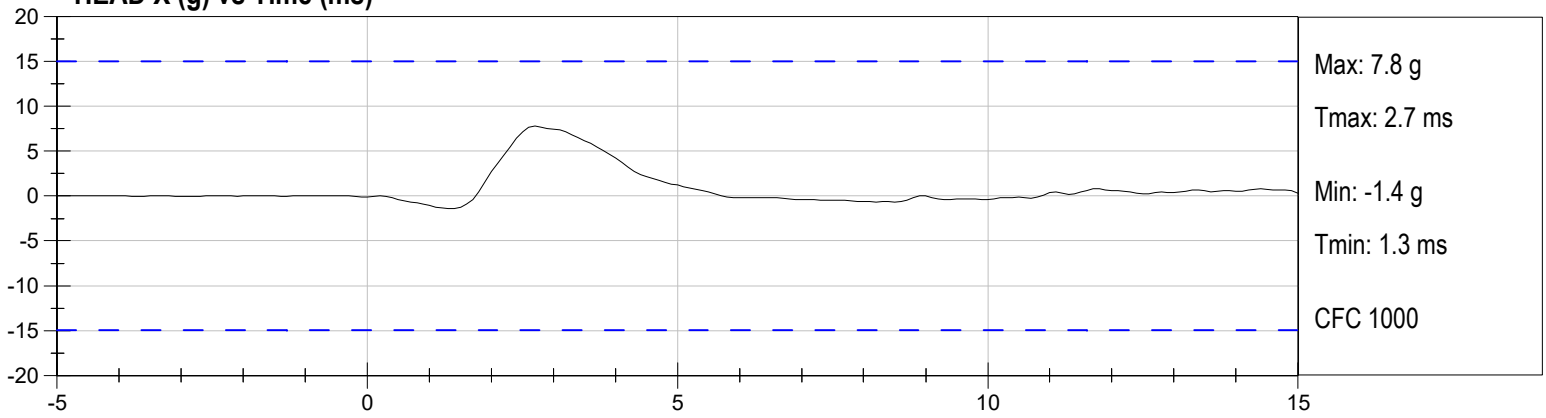
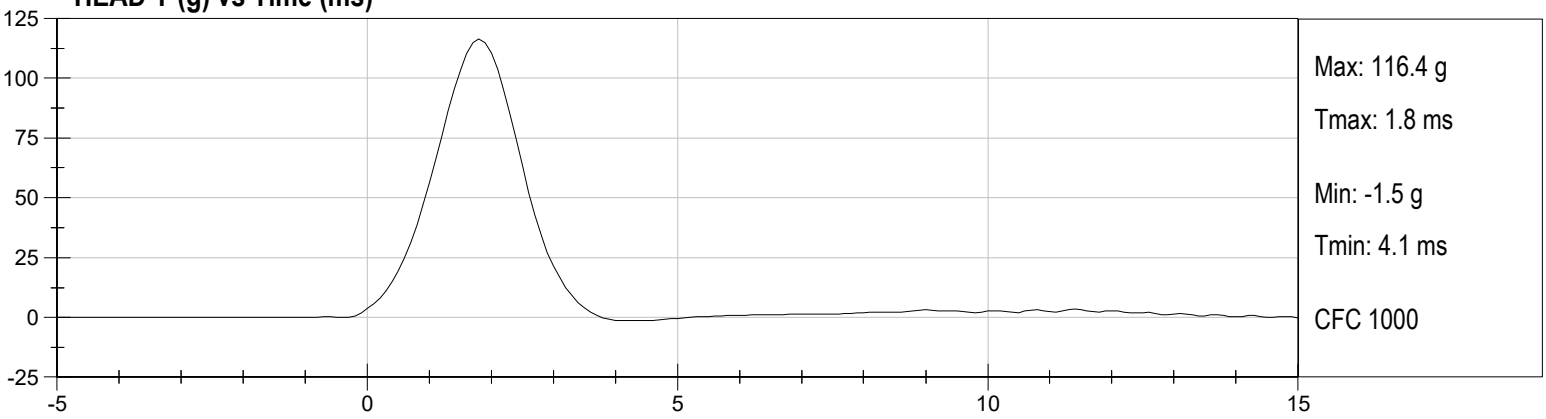
Lateral Head Drop Test
ES2re

Test Date: 03/10/2025
Test ID: D250701

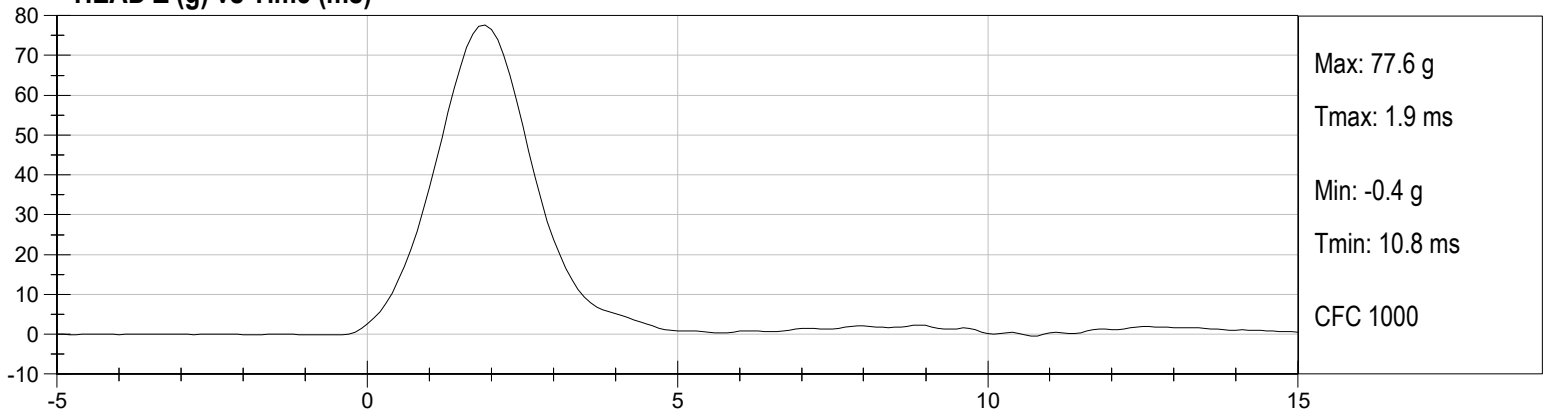
HEAD X (g) vs Time (ms)



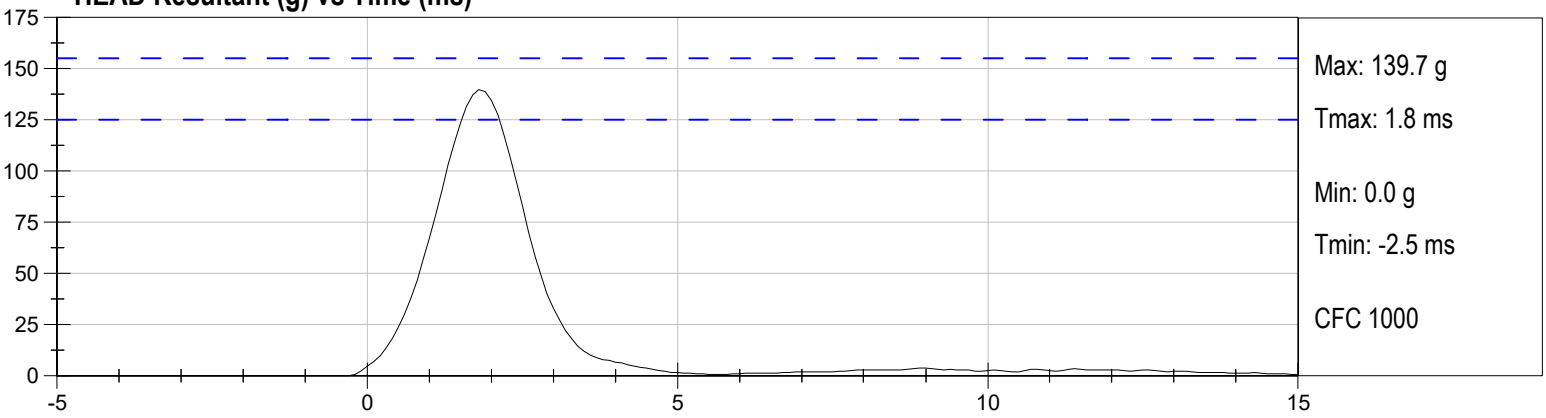
HEAD Y (g) vs Time (ms)



HEAD Z (g) vs Time (ms)



HEAD Resultant (g) vs Time (ms)



mga research corporation

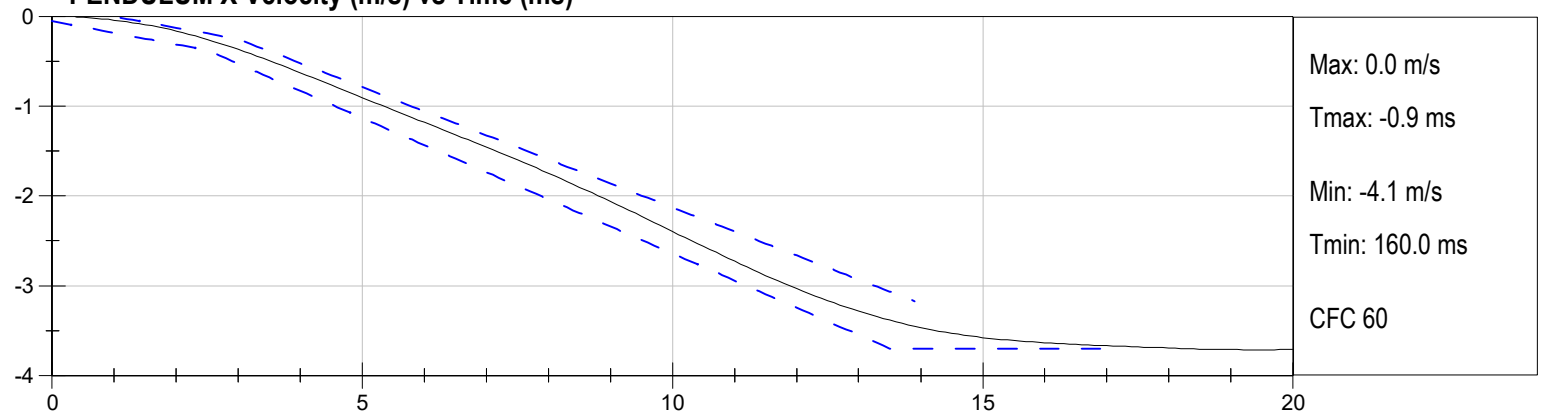
Lateral Neck Bending Test
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250702
Test Technician: Jonah Pulokas

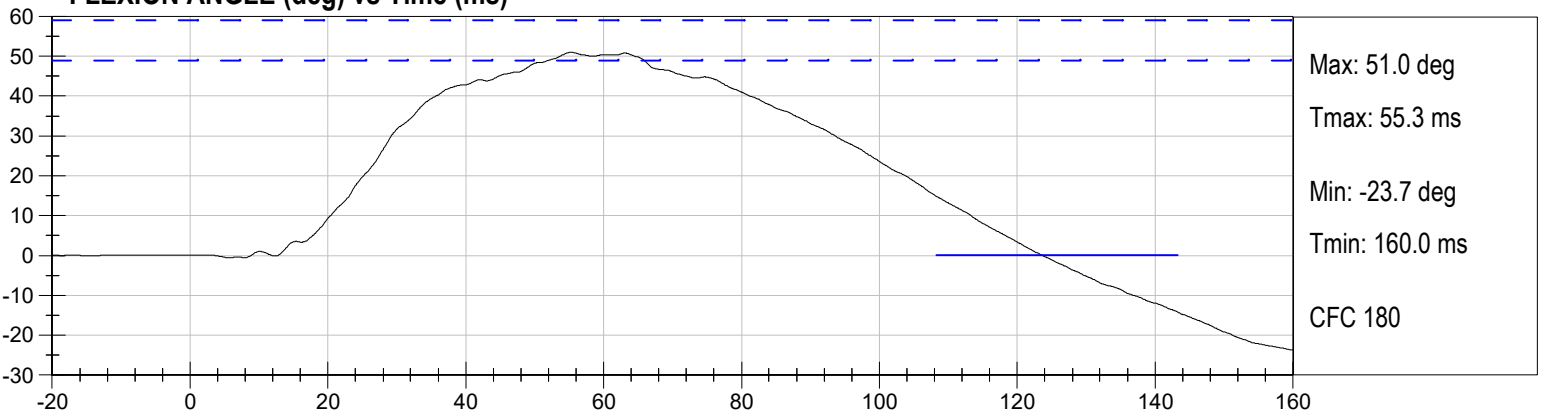
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	3.30 to 3.50	3.34	Pass
Pendulum Velocity Within Corridor	m/s	Within	Yes	Pass
Maximum Flexion Angle	deg	49 to 59	51.0	Pass
Time of Maximum Flexion Angle	ms	54 to 66	55.3	Pass
Decay Time to Zero Crossing	ms	53 to 88	68.5	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PEND. ACCEL.	Endevco	AH5P1	01/13/2025	7/15/2025
POT. B - REAR	Spectrol	025_es2	01/13/2025	7/15/2025
POT. A - FRONT	Spectrol	027_es2	01/13/2025	7/15/2025
POT. C - HEADFORM	Spectrol	028_es2	01/13/2025	7/15/2025

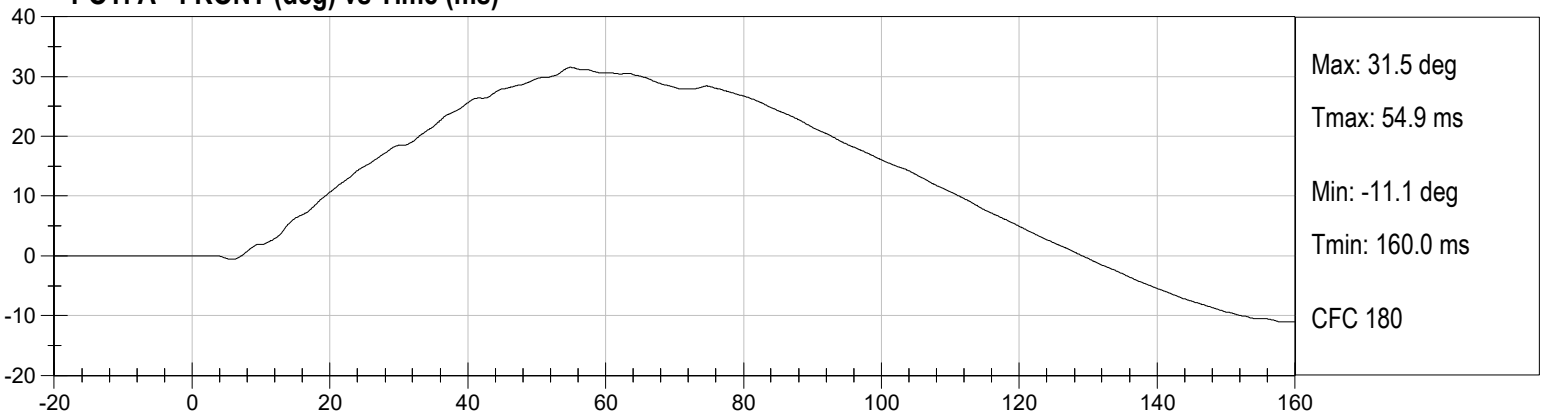
PENDULUM X Velocity (m/s) vs Time (ms)



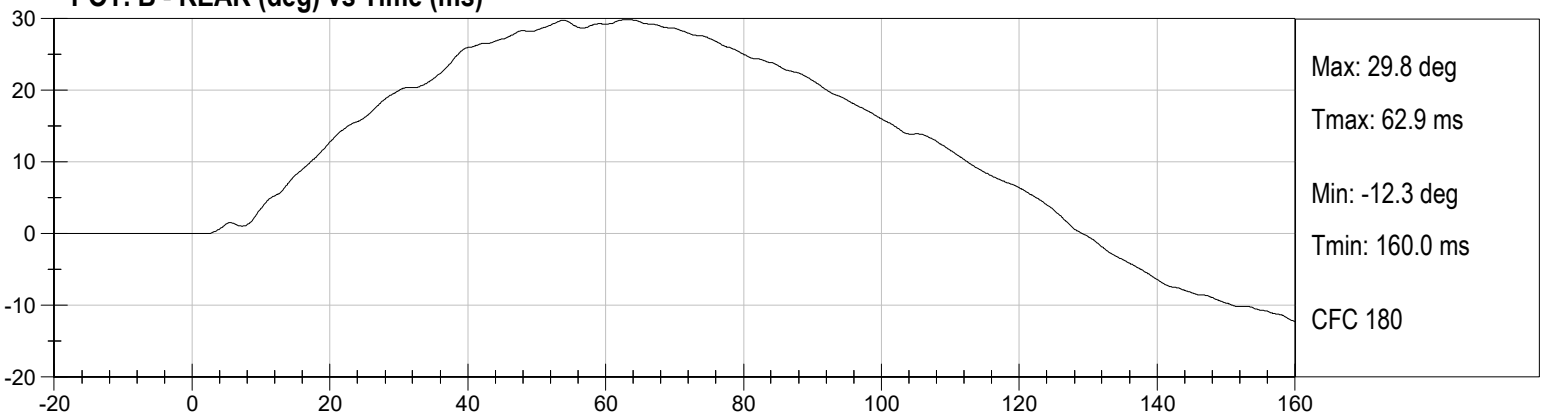
FLEXION ANGLE (deg) vs Time (ms)



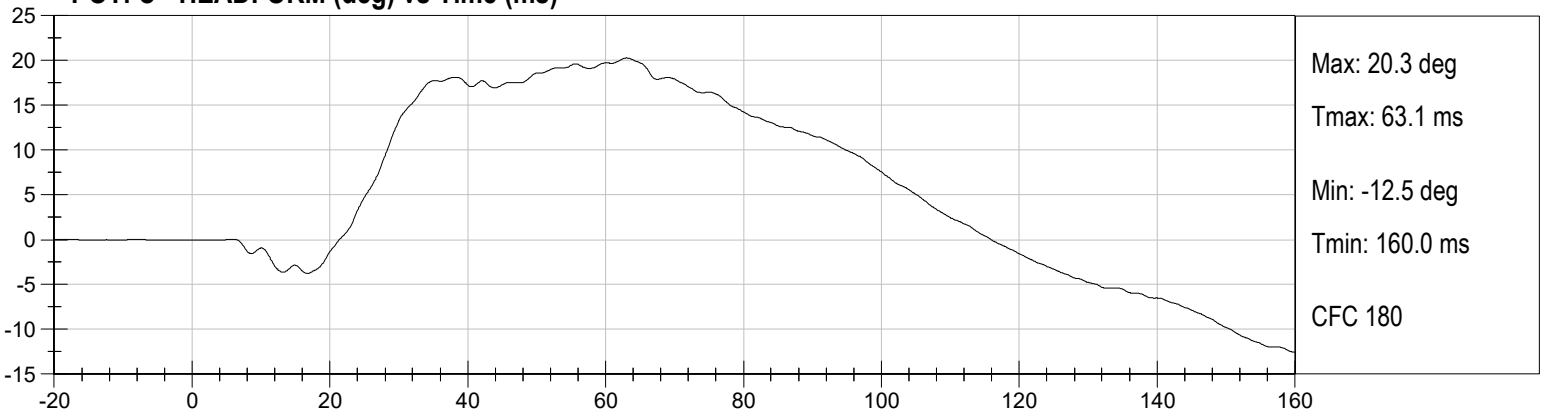
POT. A - FRONT (deg) vs Time (ms)



POT. B - REAR (deg) vs Time (ms)



POT. C - HEADFORM (deg) vs Time (ms)



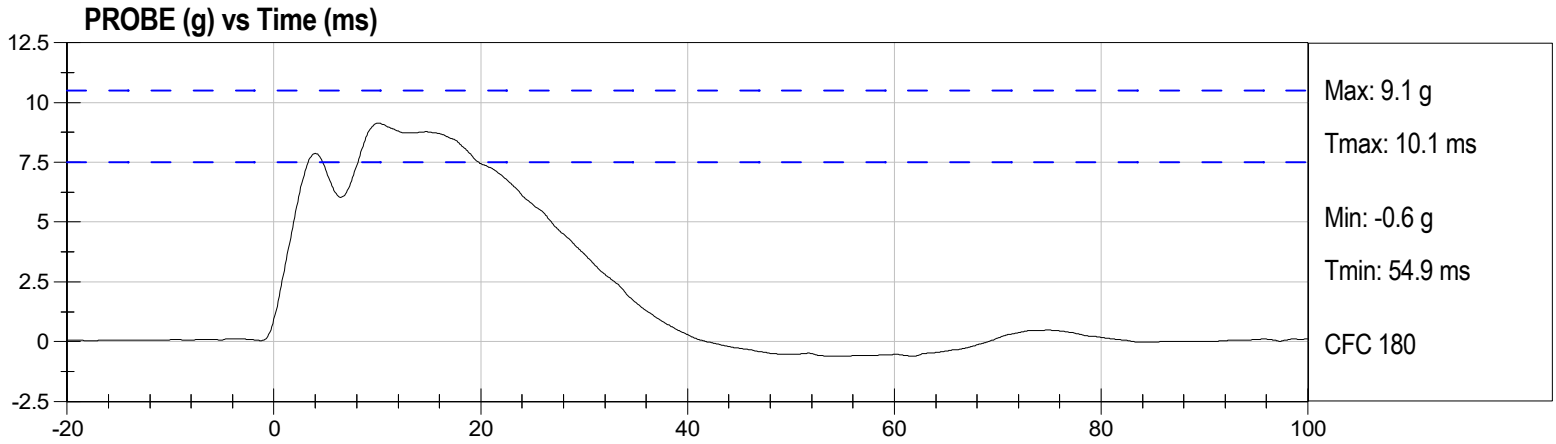
mga research corporation

Shoulder Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250703
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Impact Velocity	m/s	4.2 to 4.4	4.2	Pass
Peak Probe Acceleration	G's	7.5 to 10.5	9.1	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025


PROBE (g) vs Time (ms)
12.5
10
7.5
5
2.5
0
-2.5
-20
0
20
40
60
80
100
Max: 9.1 g
Tmax: 10.1 ms
Min: -0.6 g
Tmin: 54.9 ms
CFC 180

mga research corporation

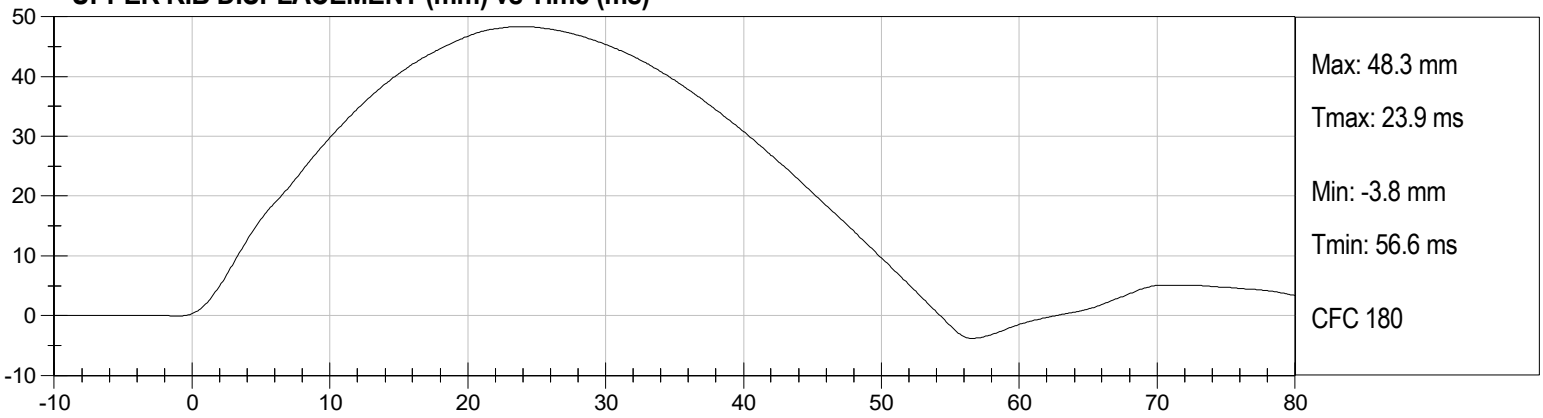
Upper Rib Drop Test - 815mm
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250704H
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Rib Deflection at 815 mm	mm	46 to 51	48.3	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
UPPER RIB DISPLACEMENT	Honeywell	G236	11/21/2024	5/23/2025

UPPER RIB DISPLACEMENT (mm) vs Time (ms)



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Upper Rib Drop Test - 459mm
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250704L
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Rib Deflection at 459 mm	mm	36 to 40	37.4	Pass

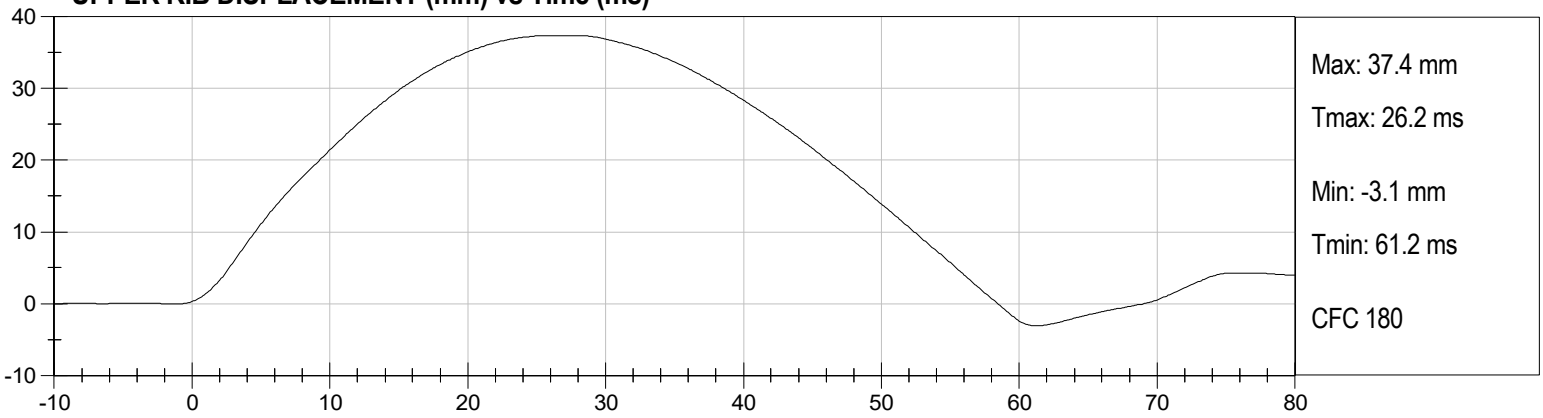
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
UPPER RIB DISPLACEMENT	Honeywell	G236	11/21/2024	5/23/2025

mga research corporation

Upper Rib Drop Test - 459mm
ES2re

Test Date: 03/10/2025
Test ID: D250704L

UPPER RIB DISPLACEMENT (mm) vs Time (ms)



mga research corporation

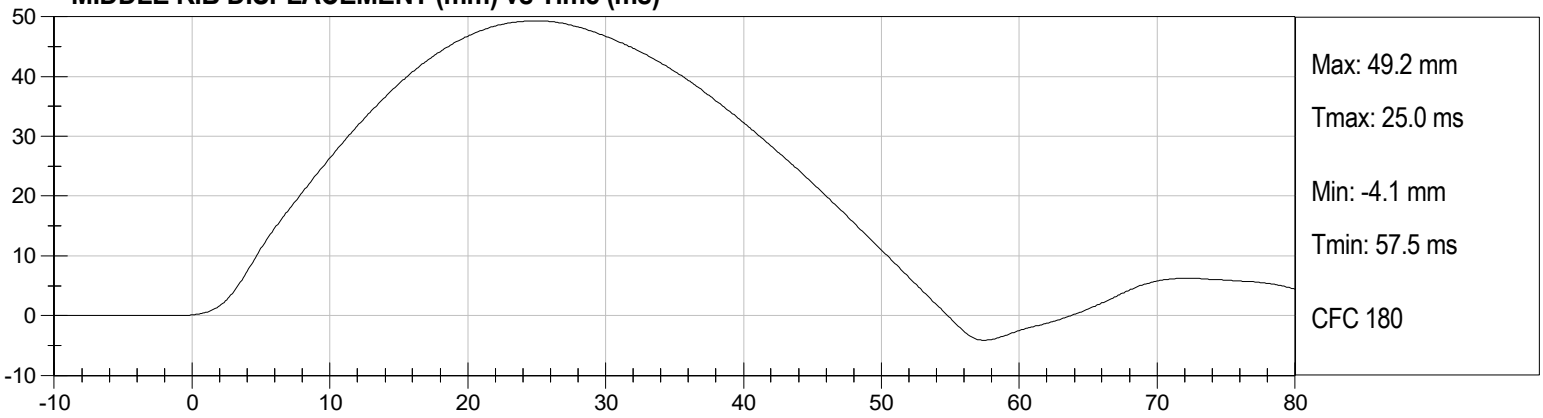
Middle Rib Drop Test - 815mm
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250705H
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Rib Deflection at 815 mm	mm	46 to 51	49.2	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
MIDDLE RIB DISPLACEMENT	Honeywell	G368	11/21/2024	5/23/2025

MIDDLE RIB DISPLACEMENT (mm) vs Time (ms)



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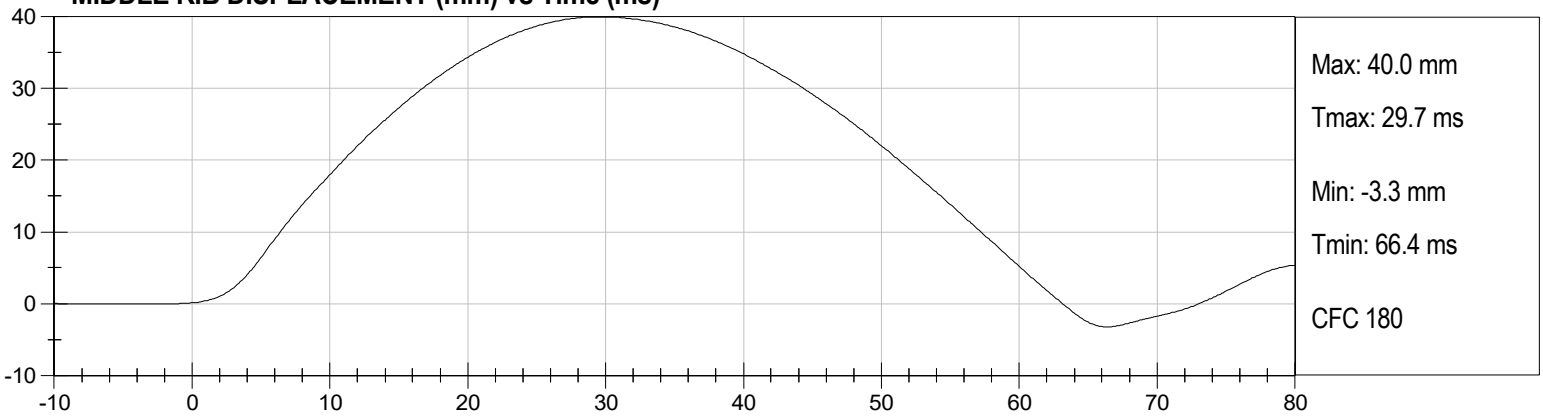
Middle Rib Drop Test - 459mm
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250705L
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Rib Deflection at 459 mm	mm	36 to 40	40.0	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
MIDDLE RIB DISPLACEMENT	Honeywell	G368	11/21/2024	5/23/2025

MIDDLE RIB DISPLACEMENT (mm) vs Time (ms)



mga research corporation

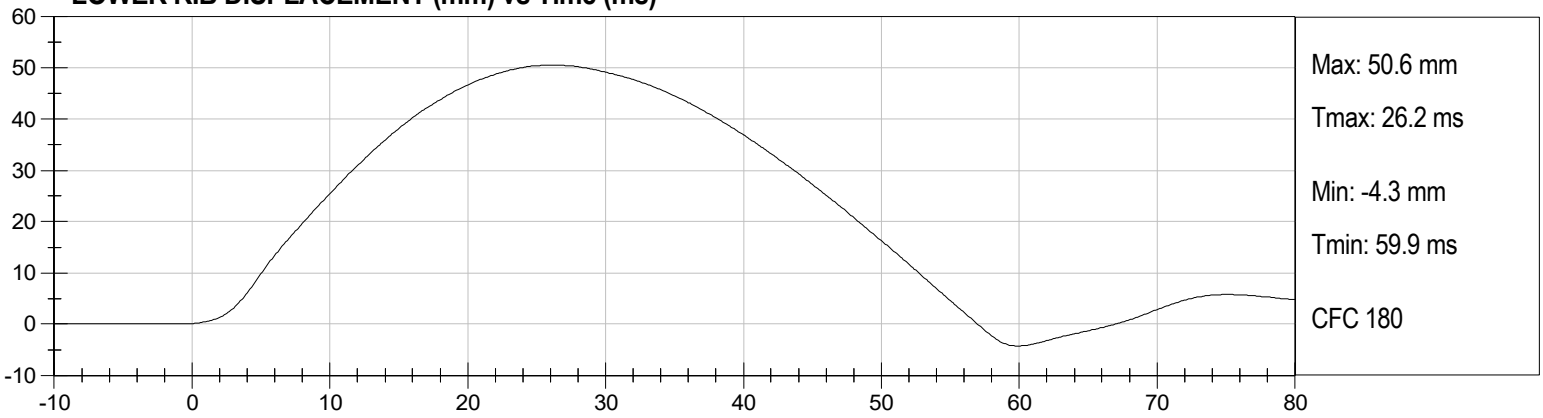
Lower Rib Drop Test - 815mm
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250706H
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Rib Deflection at 815 mm	mm	46 to 51	50.6	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
LOWER RIB DISPLACEMENT	Honeywell	G164	11/21/2024	5/23/2025

LOWER RIB DISPLACEMENT (mm) vs Time (ms)



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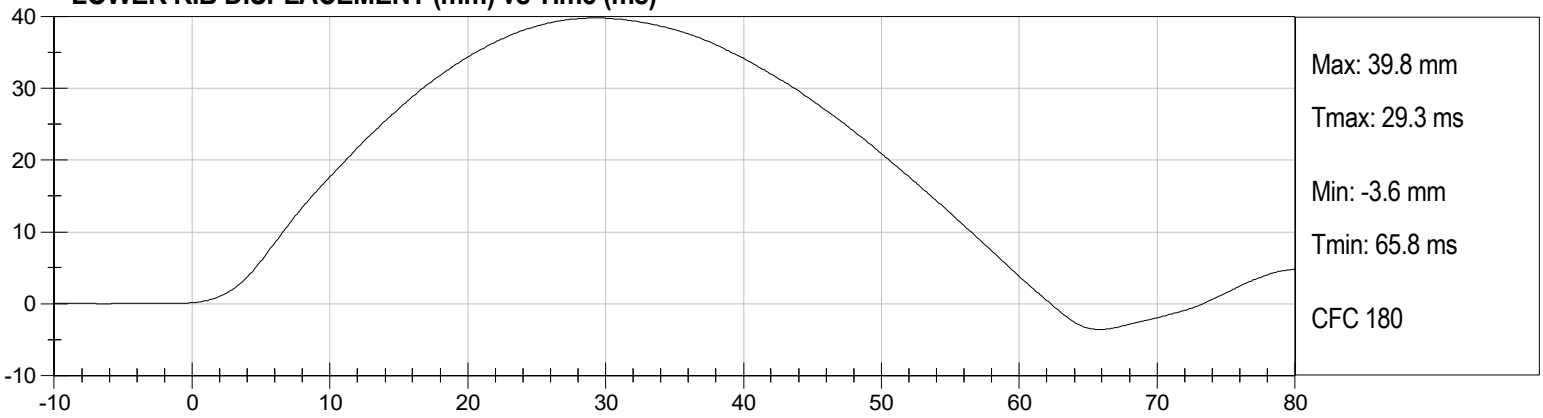
Lower Rib Drop Test - 459mm
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250706L
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Rib Deflection at 459 mm	mm	36 to 40	39.8	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
LOWER RIB DISPLACEMENT	Honeywell	G164	11/21/2024	5/23/2025

LOWER RIB DISPLACEMENT (mm) vs Time (ms)



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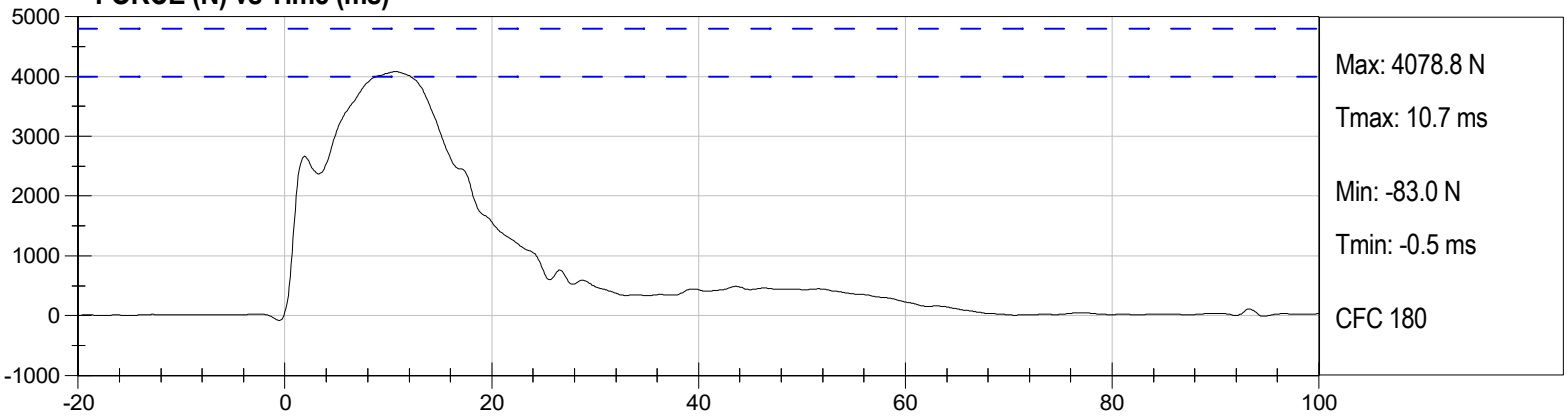
Abdomen Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250707
Test Technician: Jonah Pulokas

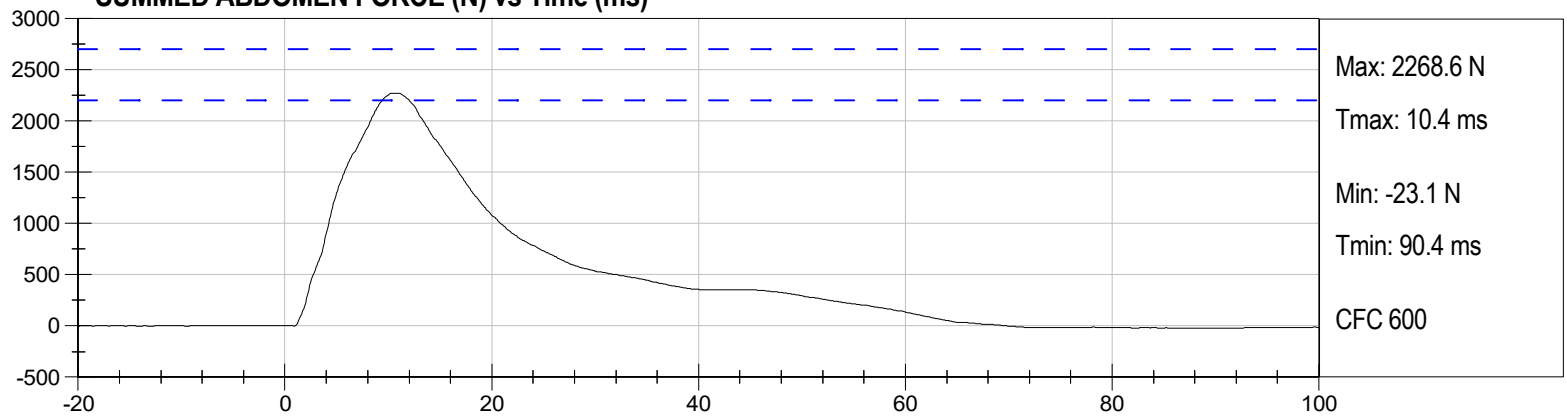
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Impact Velocity	m/s	3.9 to 4.1	4.0	Pass
Peak Probe Force	N	4000 to 4800	4079	Pass
Time of Peak Probe Force	ms	10.6 to 13.0	10.7	Pass
Peak Abdomen Force	N	2200 to 2700	2269	Pass
Time of Peak Abdomen Force	ms	10.0 to 12.3	10.4	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
FRONT ABDOMEN FY	Denton	ABG1532FY	01/20/2025	1/20/2026
MID ABDOMEN FY	Denton	ABG1534FY	01/20/2025	1/20/2026
REAR ABDOMEN FY	Denton	ABG1535FY	01/20/2025	1/20/2026

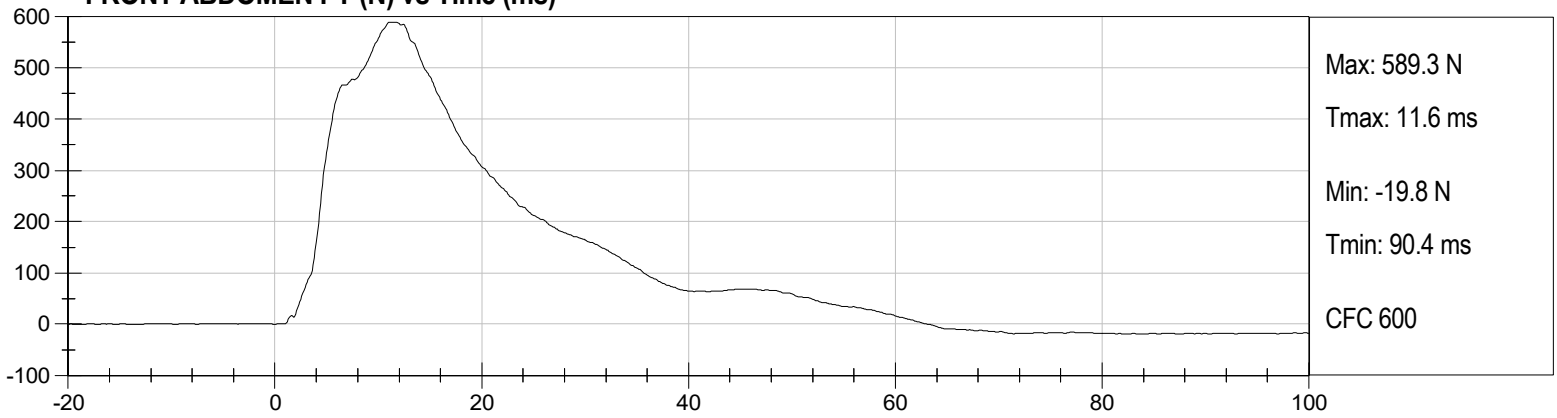
FORCE (N) vs Time (ms)



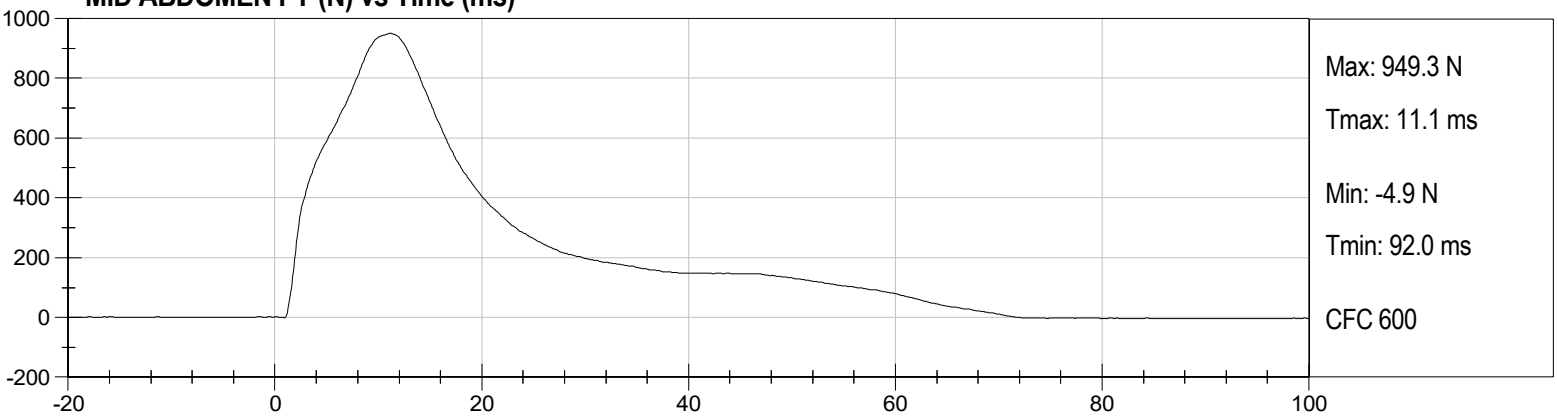
SUMMED ABDOMEN FORCE (N) vs Time (ms)



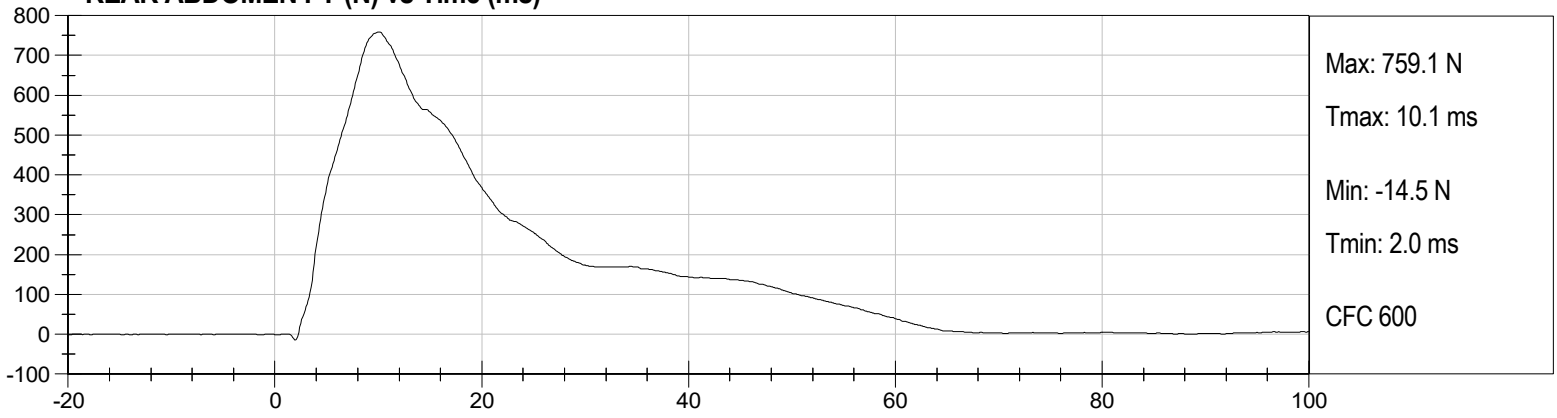
FRONT ABDOMEN FY (N) vs Time (ms)



MID ABDOMEN FY (N) vs Time (ms)



REAR ABDOMEN FY (N) vs Time (ms)



mga research corporation

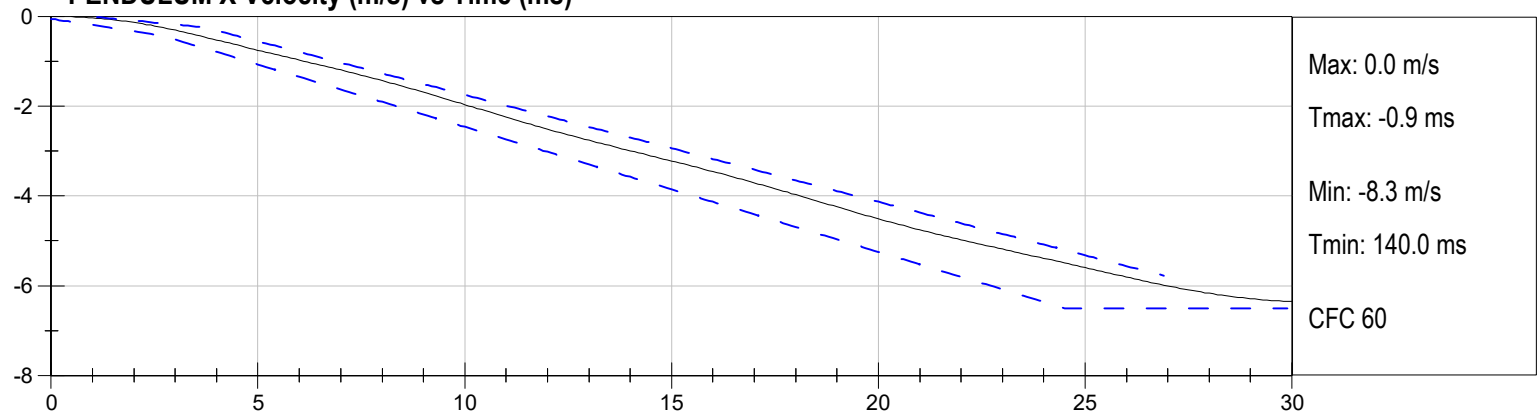
Lumbar Spine Flexion Test
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250708
Test Technician: Jonah Pulokas

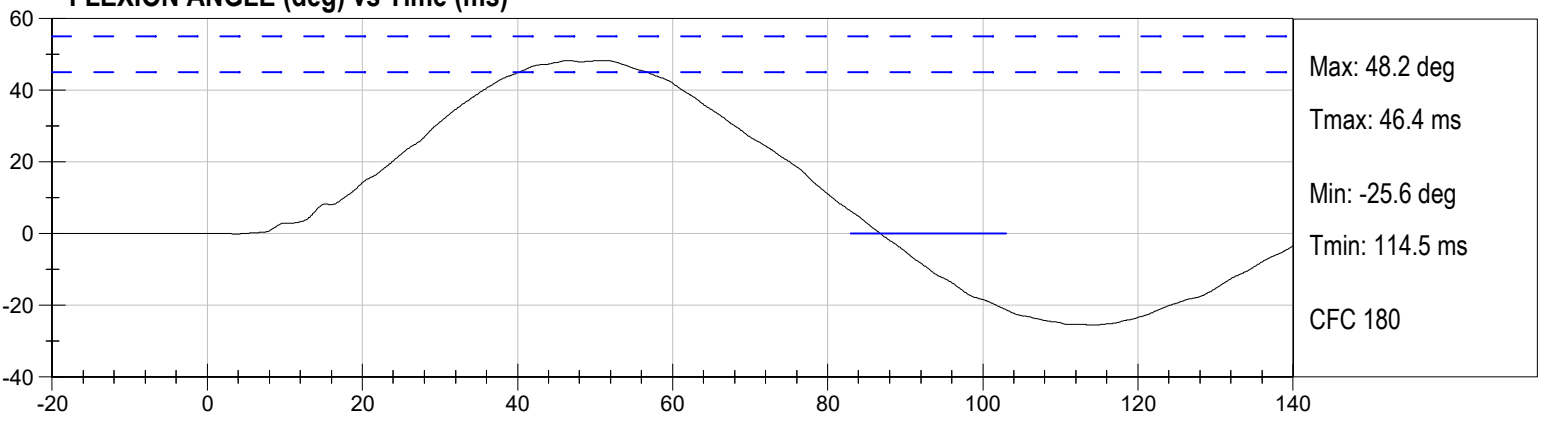
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	5.95 to 6.15	6.05	Pass
Pendulum Velocity Within Corridor	m/s	Within	Yes	Pass
Maximum Flexion Angle	deg	45 to 55	48	Pass
Time of Maximum Flexion Angle	ms	39 to 53	46	Pass
Decay Time to Zero Crossing from Peak	ms	37 to 57	41	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PEND. ACCEL.	Endevco	AH5P1	01/13/2025	7/15/2025
POT. B - REAR	Spectrol	025_es2	01/13/2025	7/15/2025
POT. A - FRONT	Spectrol	027_es2	01/13/2025	7/15/2025
POT. C - HEADFORM	Spectrol	028_es2	01/13/2025	7/15/2025

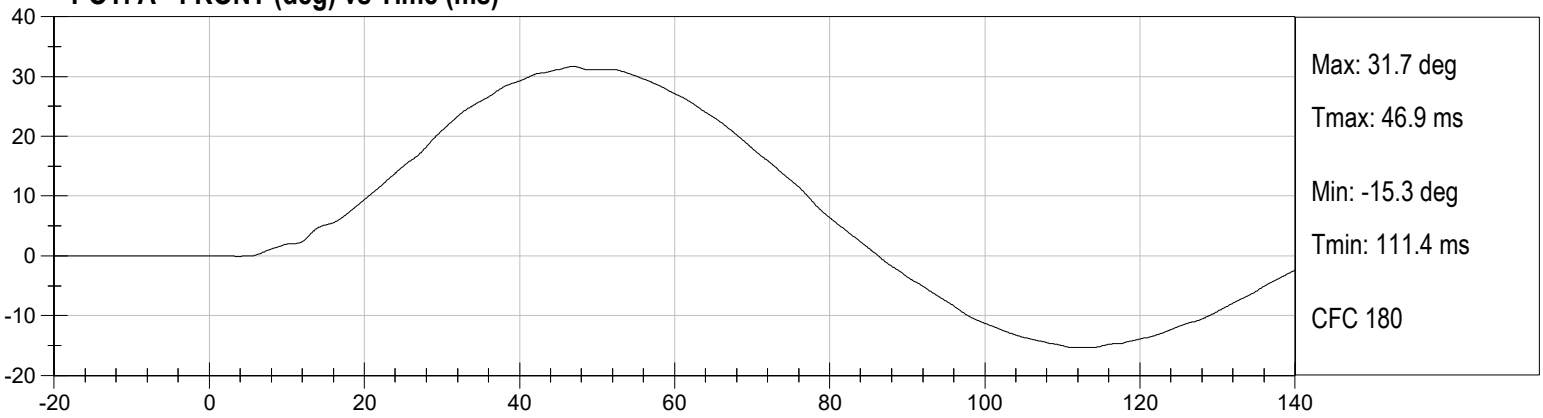
PENDULUM X Velocity (m/s) vs Time (ms)



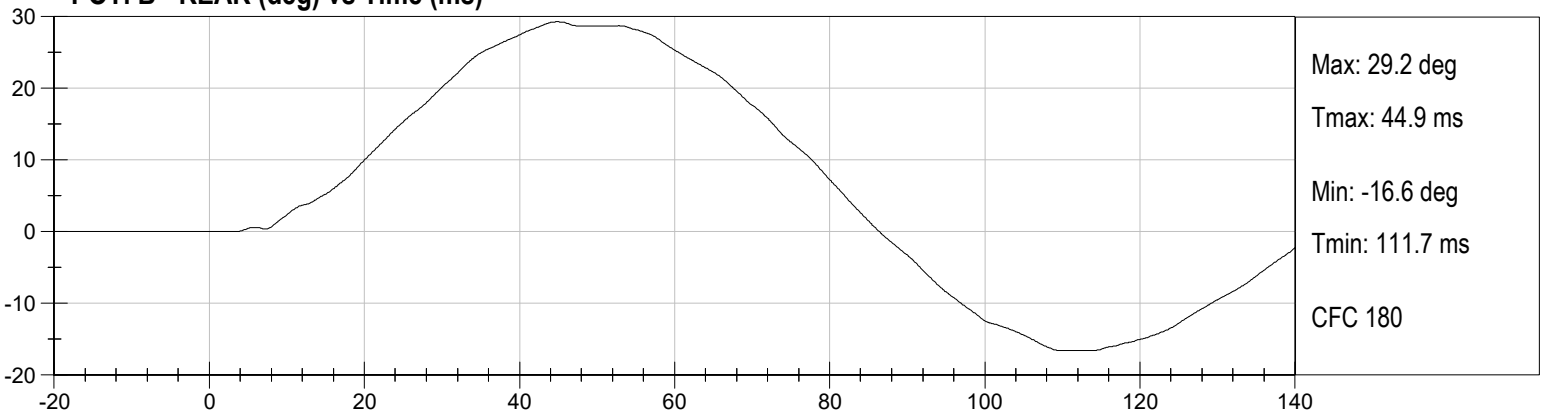
FLEXION ANGLE (deg) vs Time (ms)



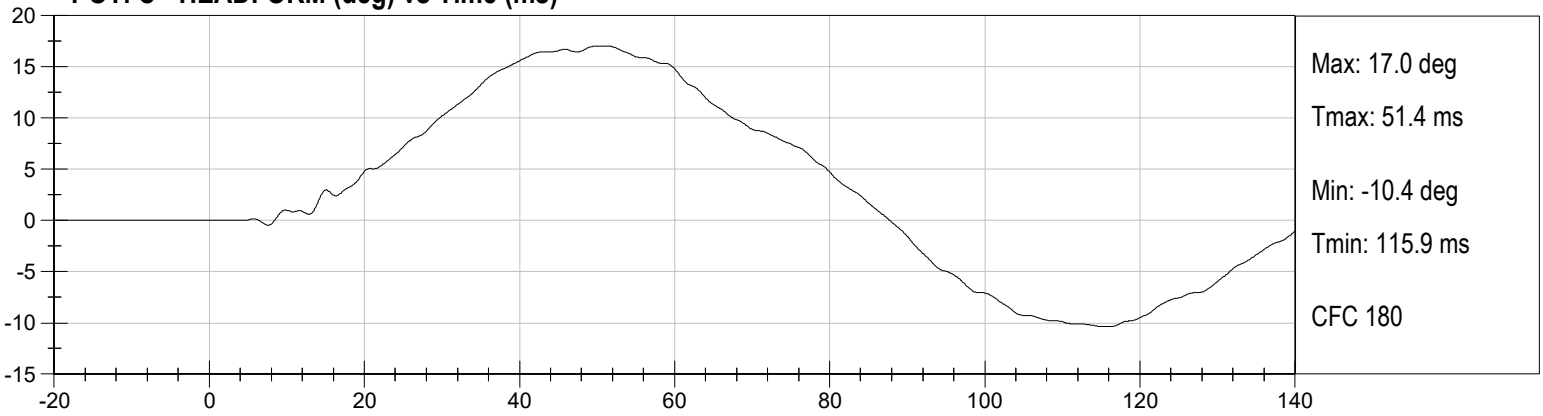
POT. A - FRONT (deg) vs Time (ms)



POT. B - REAR (deg) vs Time (ms)



POT. C - HEADFORM (deg) vs Time (ms)



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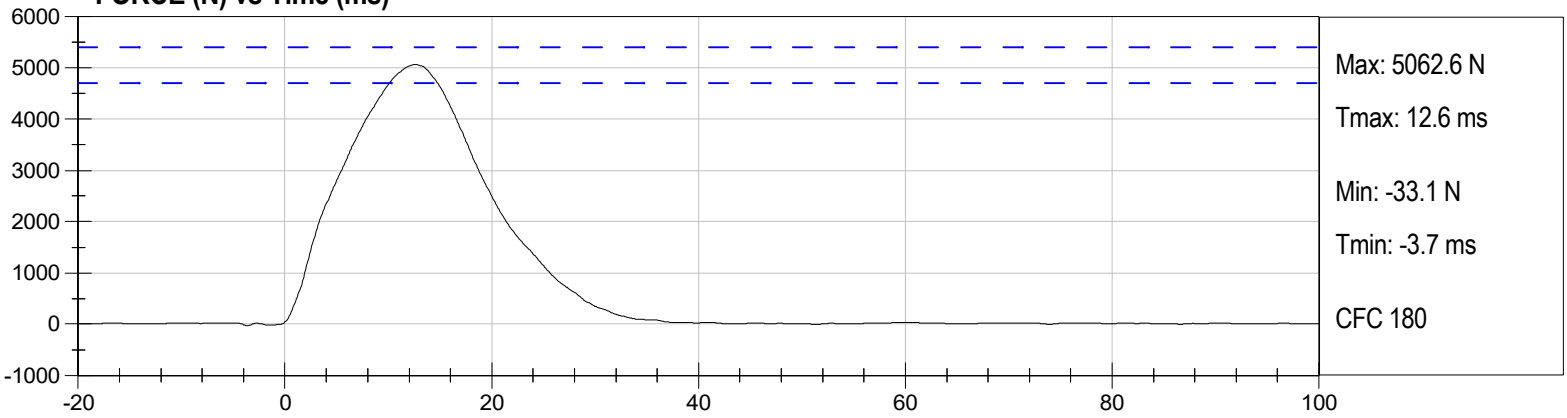
Pelvis Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250709
Test Technician: Jonah Pulokas

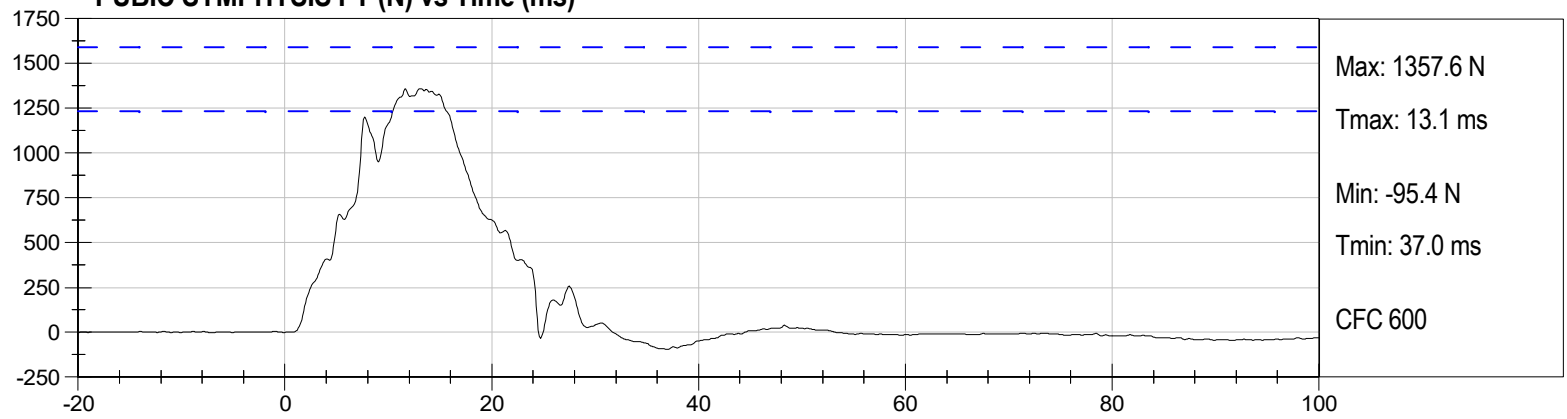
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Impact Velocity	m/s	4.2 to 4.4	4.34	Pass
Peak Probe Force	N	4700 to 5400	5063	Pass
Time of Peak Probe Force	ms	11.8 to 16.1	12.6	Pass
Peak Pubic Force	N	1230 to 1590	1358	Pass
Time of Peak Pubic Force	ms	12.2 to 17.0	13.1	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
PUBIC SYMPHYSIS FY	Denton	PG461FY	01/20/2025	1/20/2026

FORCE (N) vs Time (ms)



PUBIC SYMPHYSIS FY (N) vs Time (ms)



mga research corporation

Thorax Impact Test
ES2re
ATD Serial No: F032

Test Date: 03/10/2025
Test ID: D250700
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Impact Velocity	m/s	5.4 to 5.6	5.46	Pass
Peak Probe Force after 6 ms	N	5100 to 6200	5520	Pass
Maximum Upper Thorax Rib Displacement	mm	34 to 41	38.1	Pass
Maximum Middle Thorax Rib Displacement	mm	37 to 45	40.3	Pass
Maximum Lower Thorax Rib Displacement	mm	37 to 44	39.0	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER RIB DISPLACEMENT	Honeywell	G236	11/21/2024	5/23/2025
MIDDLE RIB DISPLACEMENT	Honeywell	G368	11/21/2024	5/23/2025
LOWER RIB DISPLACEMENT	Honeywell	G164	11/21/2024	5/23/2025

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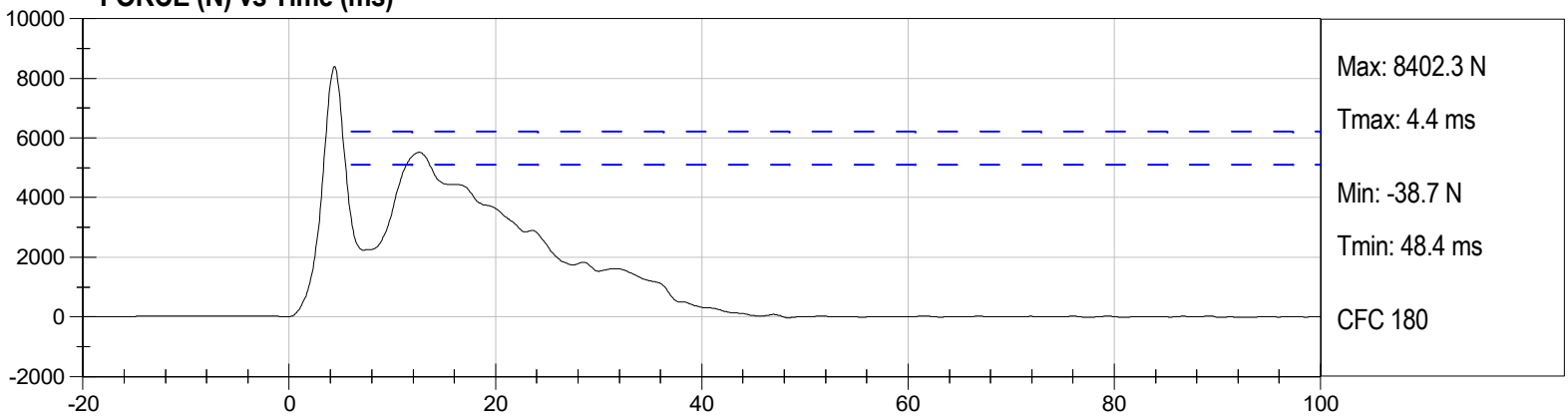
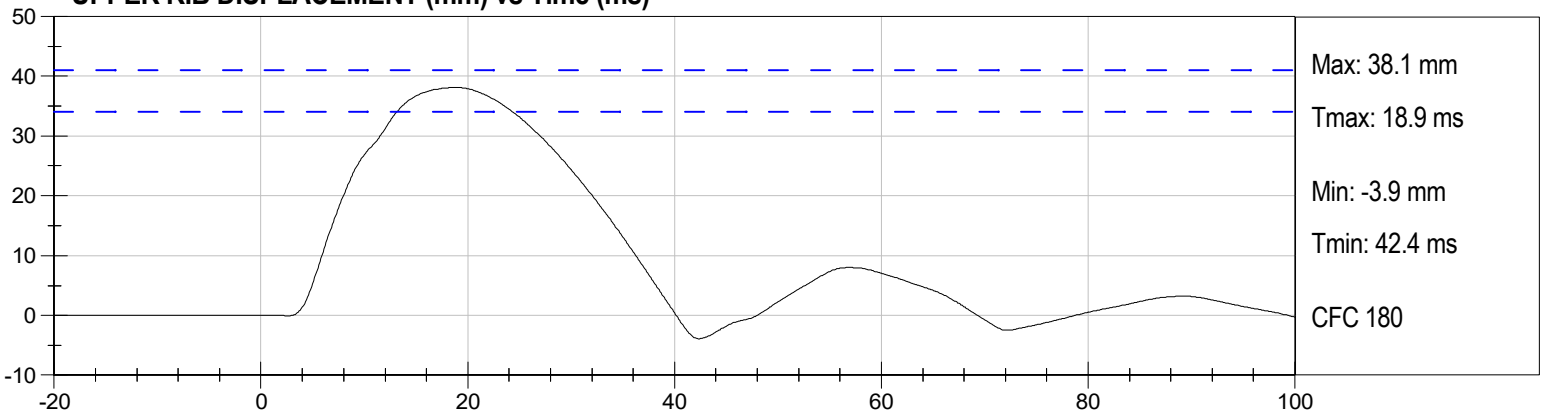
Thorax Impact Test
ES2re

Test Date: 03/10/2025
Test ID: D250700

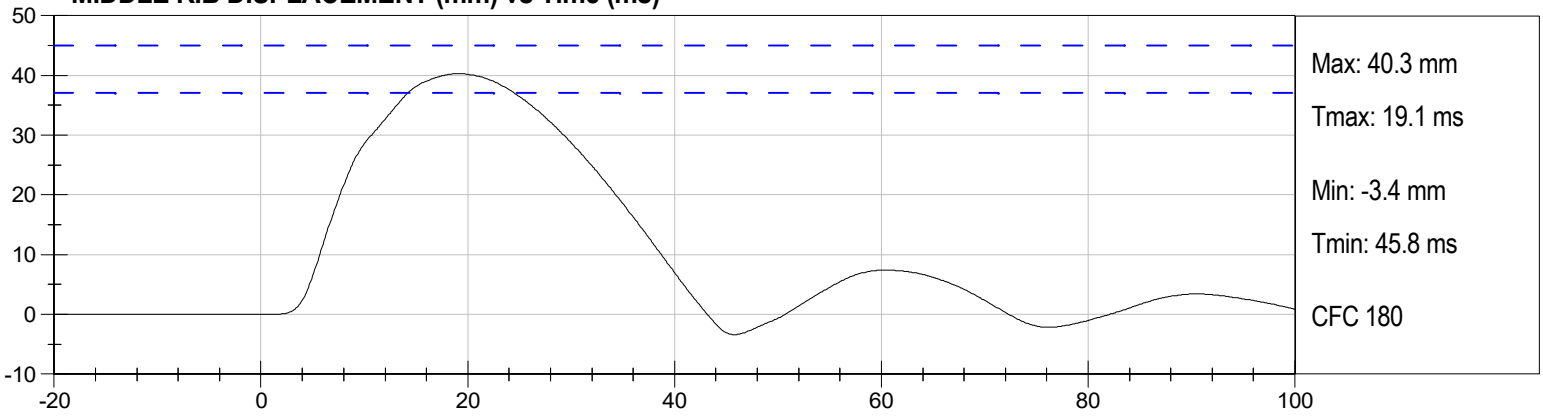
FORCE (N) vs Time (ms)



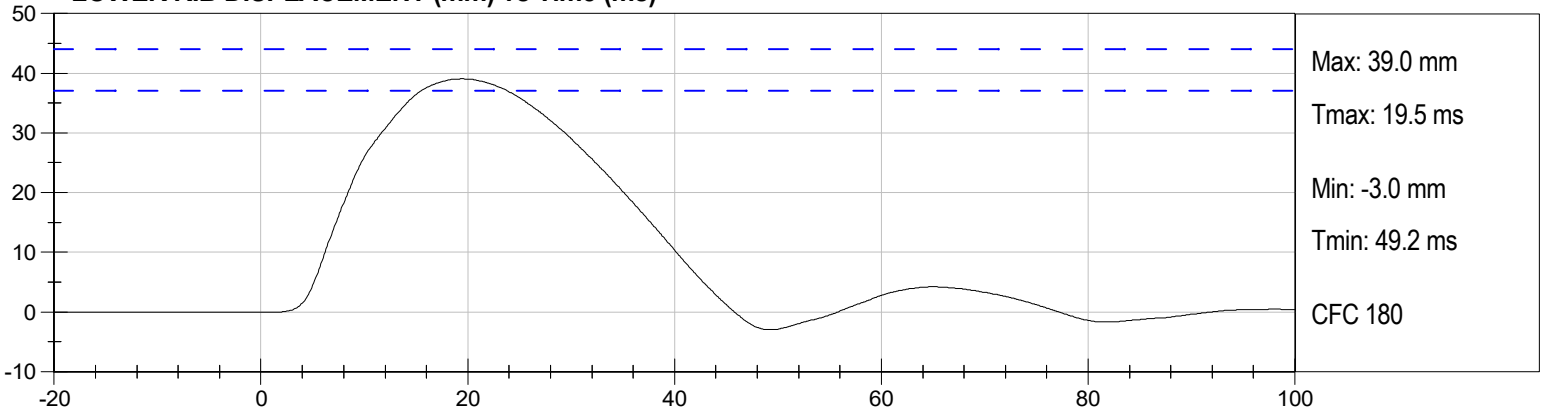
UPPER RIB DISPLACEMENT (mm) vs Time (ms)



MIDDLE RIB DISPLACEMENT (mm) vs Time (ms)



LOWER RIB DISPLACEMENT (mm) vs Time (ms)



QUALIFICATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - PASSENGER ATD

SID-IIsD External Measurements
SN: 306

No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	785	Pass
B	Shoulder Pivot Height	437 - 453	449	Pass
C	H-point Height	79 - 89	86	Pass
D	H-point from Seatback	141 - 151	147	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	120	Pass
G	Head Breadth	140 - 148	141	Pass
H	Head Back from Backline	40 - 46	45	Pass
I	Head Depth	178 - 188	182	Pass
J	Head Circumference	541 - 551	550	Pass
K	Buttock to Knee Length	514 - 540	538	Pass
L	Popliteal Height	343 - 369	349	Pass
M	Knee Pivot to Floor Height	392 - 409	394	Pass
N	Buttock Popliteal Length	416 - 442	435	Pass
O	Chest Depth w/o Jacket	195 - 211	198	Pass
P	Foot Length	216 - 232	222	Pass
Q	Hip Breadth (w/ pelvic plugs)	313 - 323	317	Pass
R	Arm Length	249 - 259	250	Pass
S	Knee Joint to Seatback	477 - 493	483	Pass
V	Shoulder Width	341 - 357	351	Pass
W	Foot Width	78 - 94	82	Pass
Y	Chest Circumference w/ jacket	851 - 881	863	Pass
Z	Waist Circumference	761 - 791	782	Pass

mga research corporation

Lateral Head Drop Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250641
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Peak Resultant Acceleration	g	115 to 137	129	Pass
Peak Longitudinal Acceleration	g	-15.0 to 15.0	-6.0	Pass
Unimodal	%	within 15% of peak	1	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
HEAD Y	Endevco	T30974	11/25/2024	5/27/2025
HEAD X	Endevco	T30975	11/25/2024	5/27/2025
HEAD Z	Endevco	T30976	11/25/2024	5/27/2025

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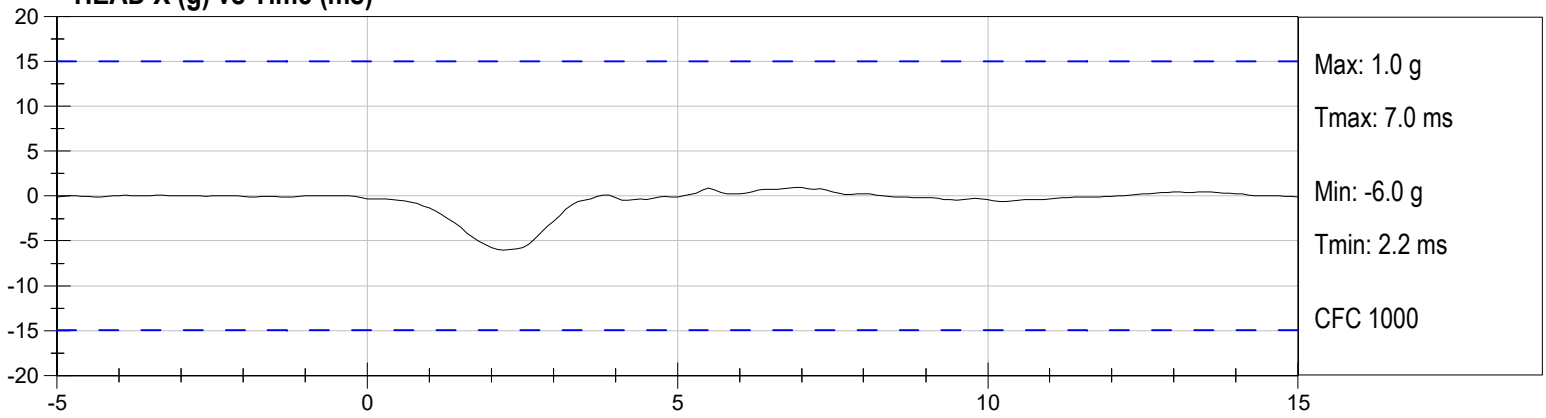
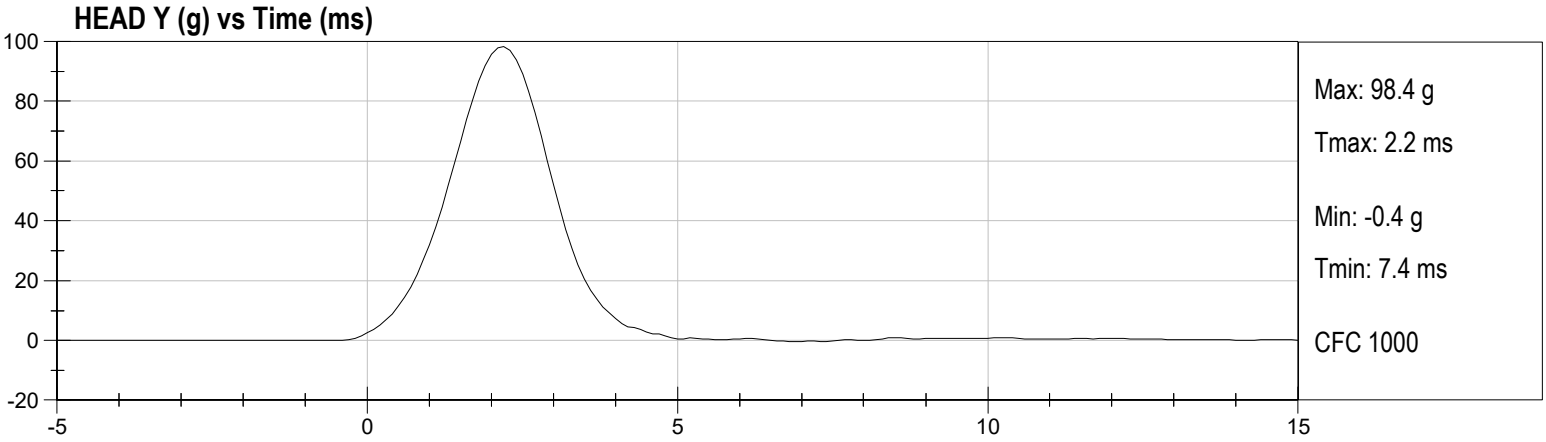
Lateral Head Drop Test
SID IIs

Test Date: 03/04/2025
Test ID: D250641

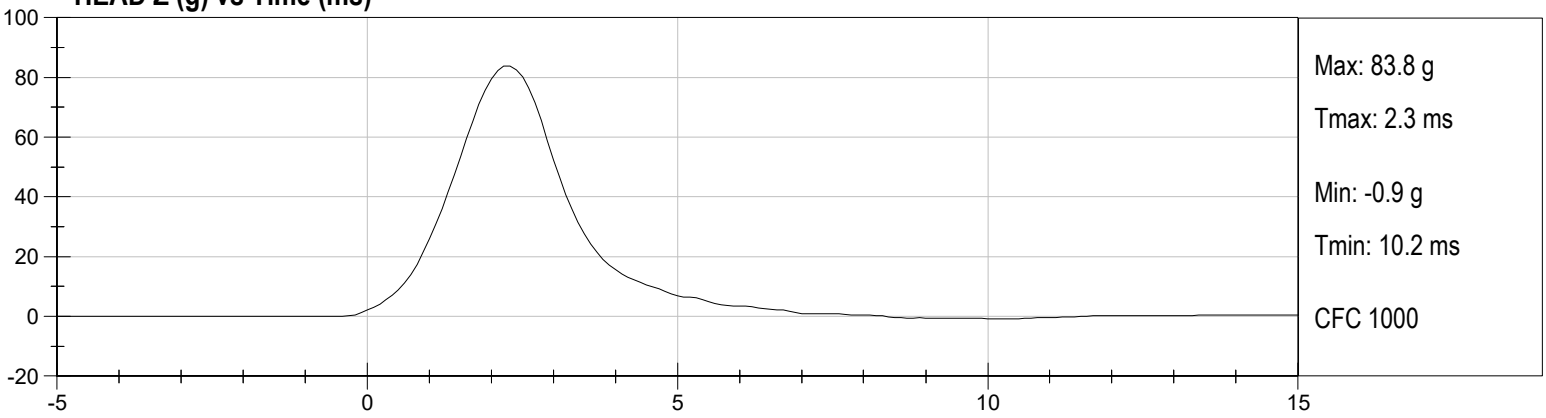
HEAD X (g) vs Time (ms)



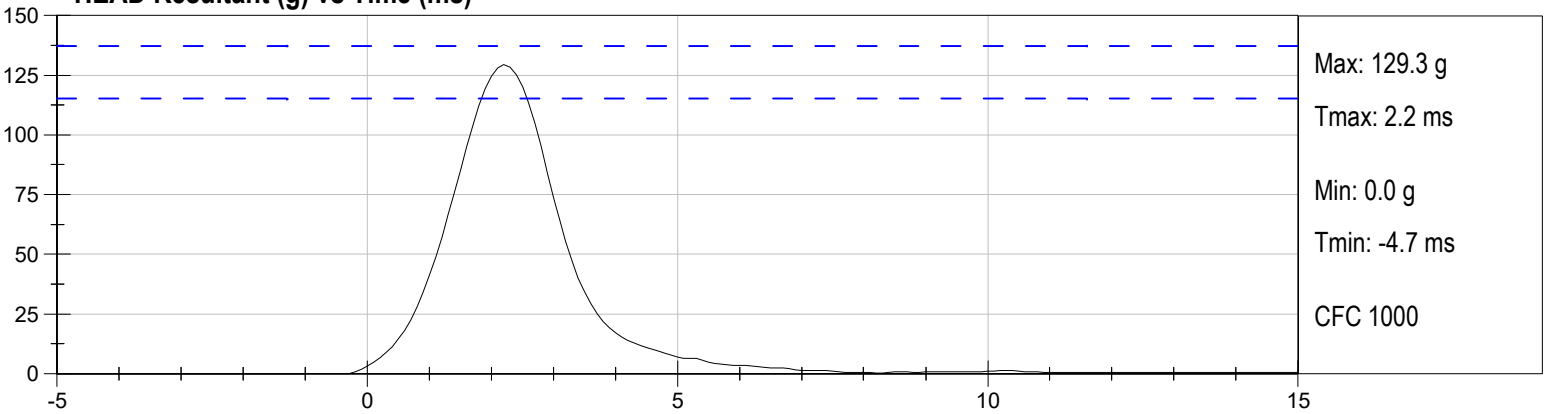
HEAD Y (g) vs Time (ms)



HEAD Z (g) vs Time (ms)



HEAD Resultant (g) vs Time (ms)



mga research corporation

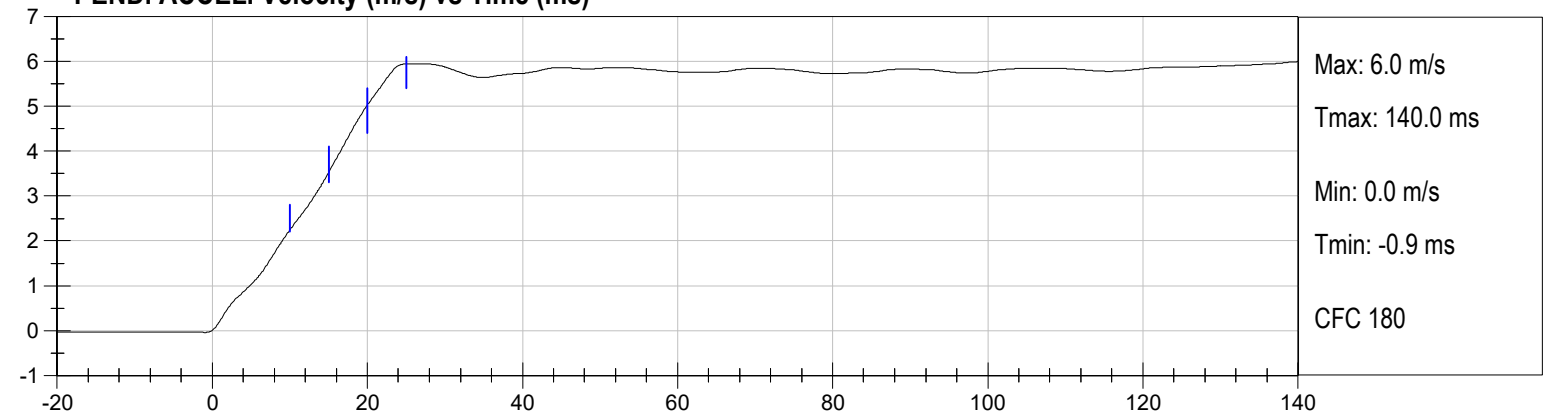
Lateral Neck Bending Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250642
Test Technician: Jonah Pulokas

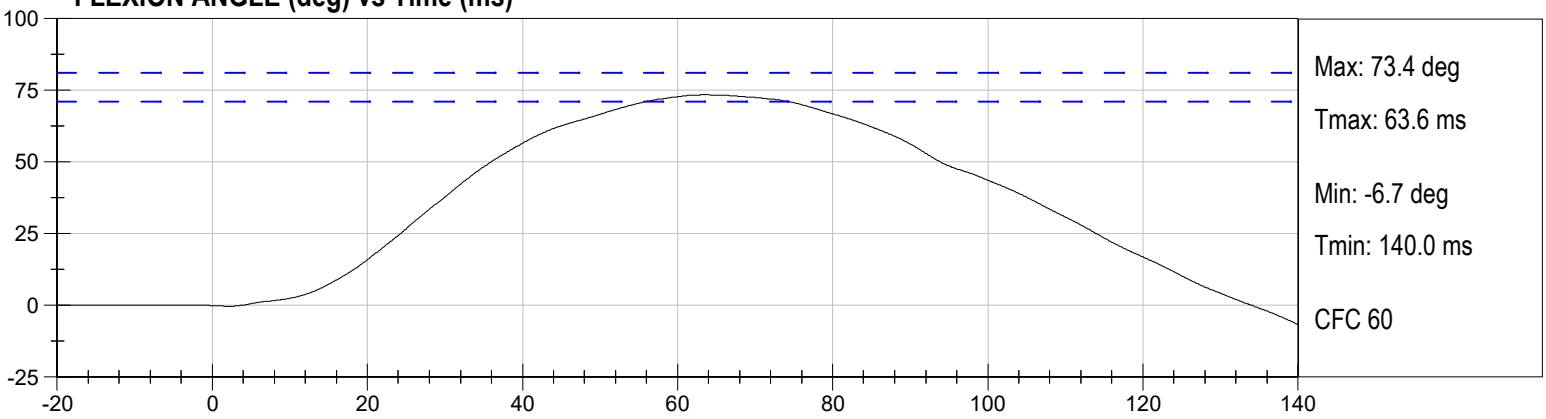
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	5.51 to 5.63	5.52	Pass
Pendulum Velocity at 10 ms	m/s	2.20 to 2.80	2.22	Pass
Pendulum Velocity at 15 ms	m/s	3.30 to 4.10	3.49	Pass
Pendulum Velocity at 20 ms	m/s	4.40 to 5.40	5.01	Pass
Pendulum Velocity at 25 ms	m/s	5.40 to 6.10	5.94	Pass
Peak Pendulum Velocity from 25 to 100 ms	m/s	5.50 to 6.20	5.94	Pass
Maximum "D" Plane Rotation	deg	71 to 81	73	Pass
Time of Maximum "D" Plane Rotation	ms	50 to 70	64	Pass
Maximum Moment About Occipital Condyle	Nm	-44 to -36	-38	Pass
Time of Moment Decay Time To 0 Nm	ms	102 to 126	119	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PEND. ACCEL.	Endevco	AH5P1	01/13/2025	7/15/2025
NECK FORCE Y	Denton	N1021FY	02/19/2025	2/19/2026
NECK MOMENT X	Denton	N1021MX	02/19/2025	2/19/2026
POT. A - FRONT	Servo	2732	01/09/2025	7/11/2025
POT. C - HEADFORM	Servo	2204	01/09/2025	7/11/2025

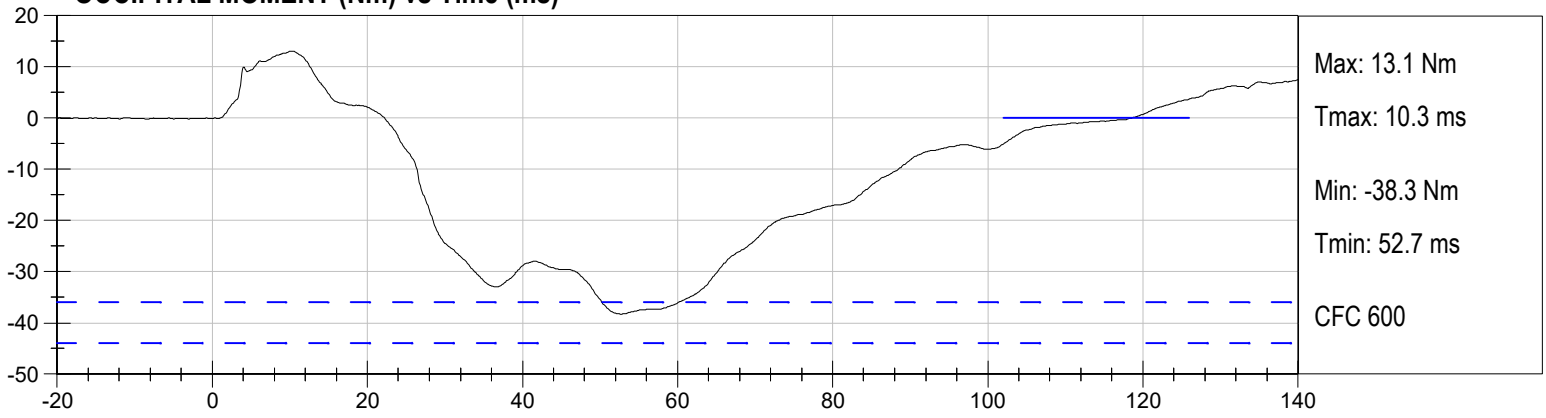
PEND. ACCEL. Velocity (m/s) vs Time (ms)



FLEXION ANGLE (deg) vs Time (ms)



OCCIPITAL MOMENT (Nm) vs Time (ms)



mga research corporation

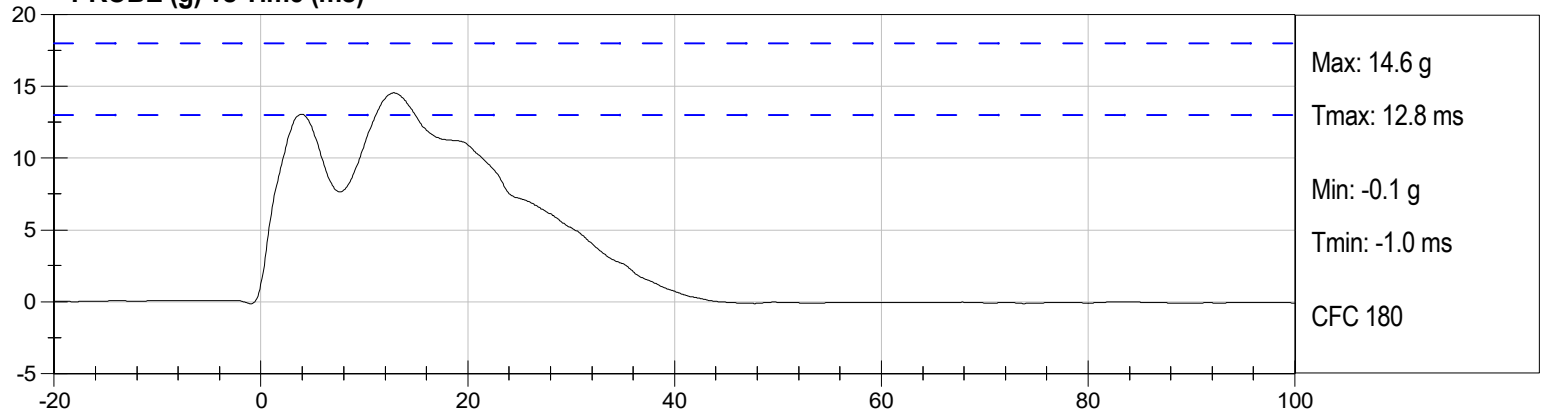
Shoulder Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250643
Test Technician: Jonah Pulokas

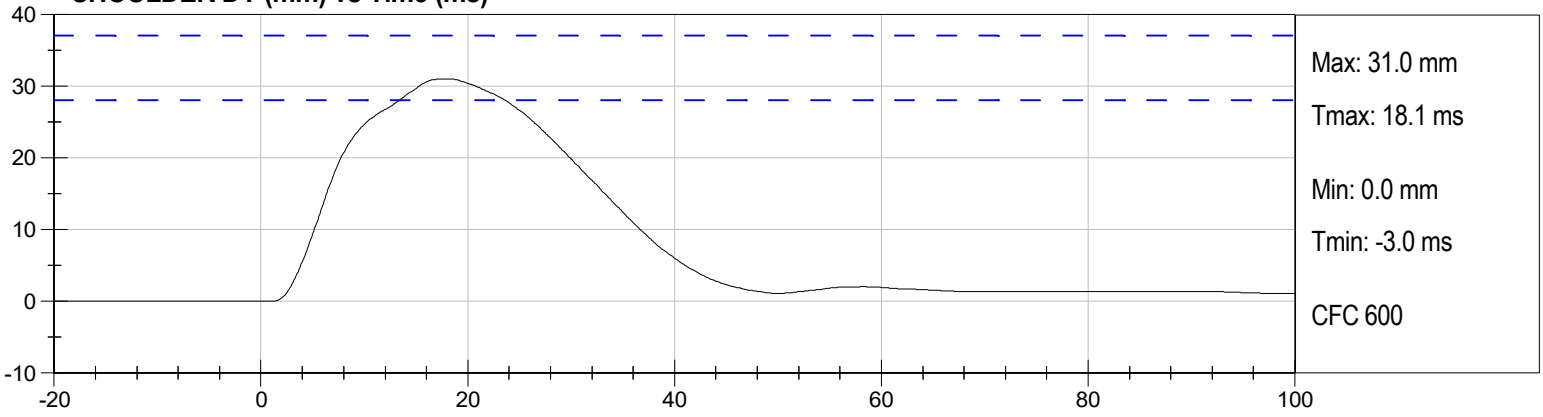
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	33	Pass
Impact Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Probe Acceleration	g	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	31	Pass
Upper Spine (T1) Y Acceleration	g	17 to 22	19	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
SHOULDER DY	FTSS	G050	12/11/2024	6/12/2025

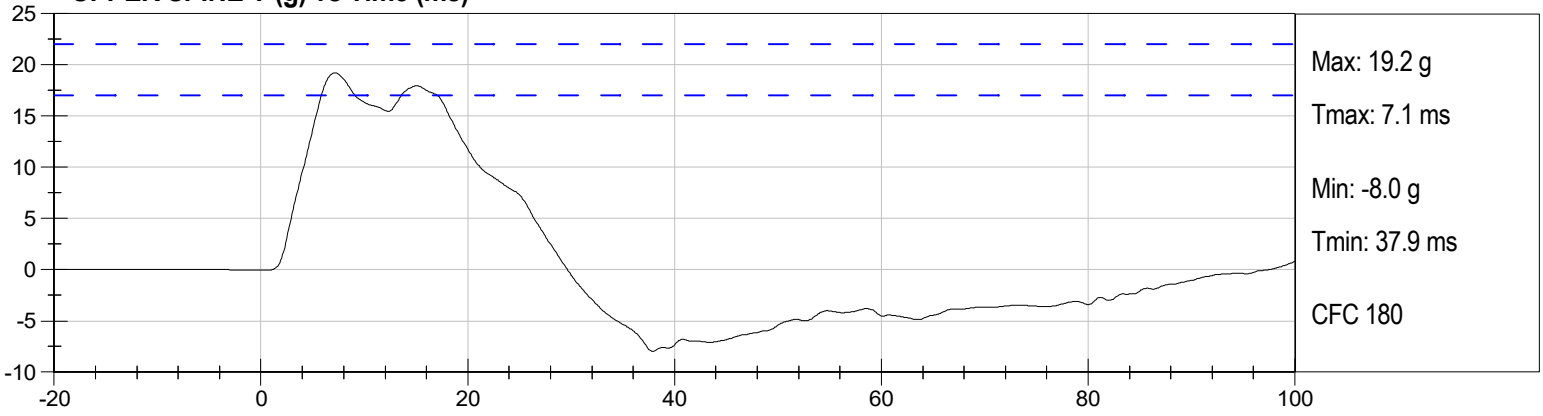
PROBE (g) vs Time (ms)



SHOULDER DY (mm) vs Time (ms)



UPPER SPINE Y (g) vs Time (ms)



mga research corporation

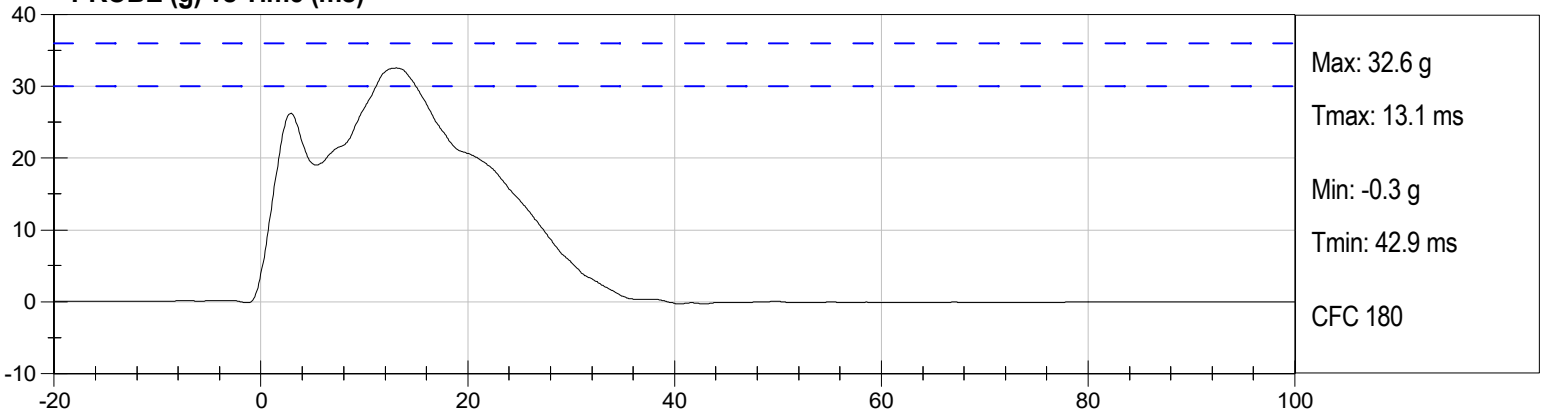
Thorax with Arm Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250644
Test Technician: Jonah Pulokas

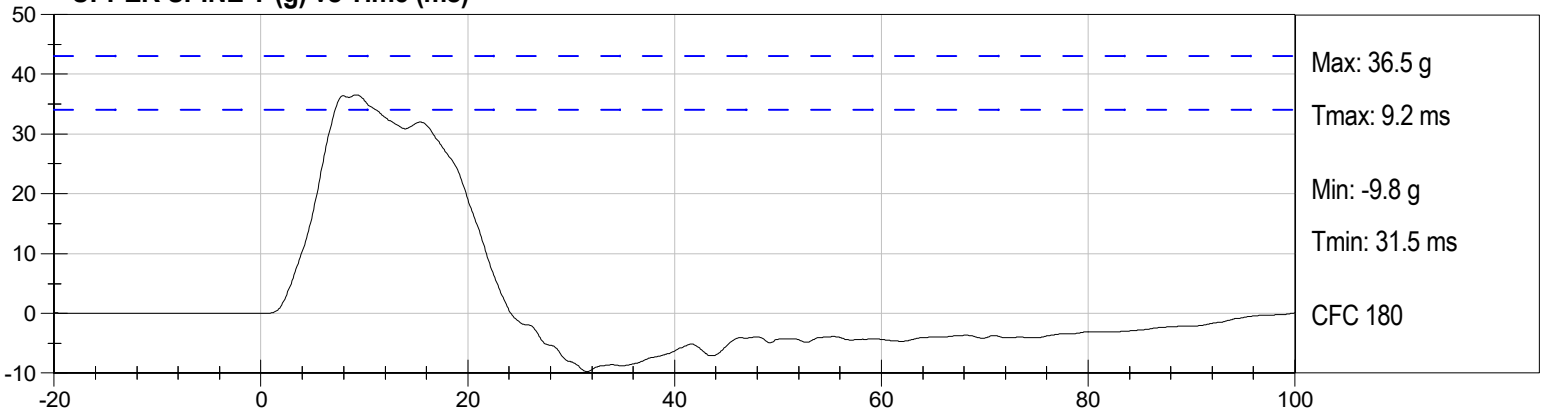
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	6.6 to 6.8	6.70	Pass
Peak Probe Acceleration after 5 ms	g	30 to 36	33	Pass
Upper Spine (T1) Y Acceleration	g	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	g	29 to 37	32	Pass
Shoulder Displacement	mm	31 to 40	37	Pass
Upper Thorax Rib Displacement	mm	25 to 32	30	Pass
Middle Thorax Rib Displacement	mm	30 to 36	34	Pass
Lower Thorax Rib Displacement	mm	32 to 38	35	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
SHOULDER DY	FTSS	G050	12/11/2024	6/12/2025
UPPER THORAX RIB DY	FTSS	G033	12/11/2024	6/12/2025
MID THORAX RIB DY	Servo	G2403	12/11/2024	6/12/2025
LOWER THORAX RIB DY	FTSS	G1270	12/11/2024	6/12/2025

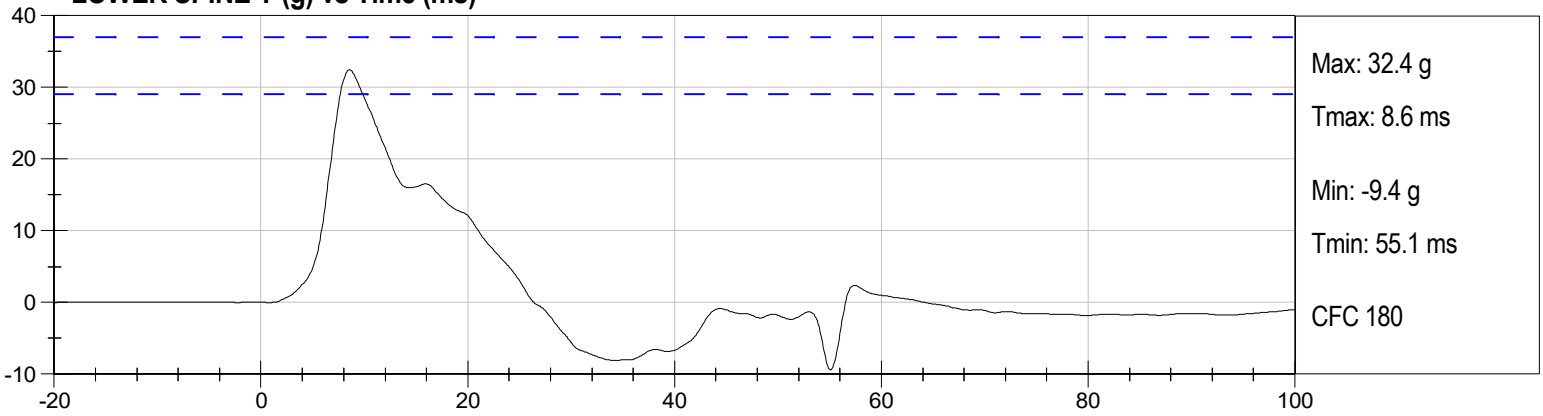
PROBE (g) vs Time (ms)



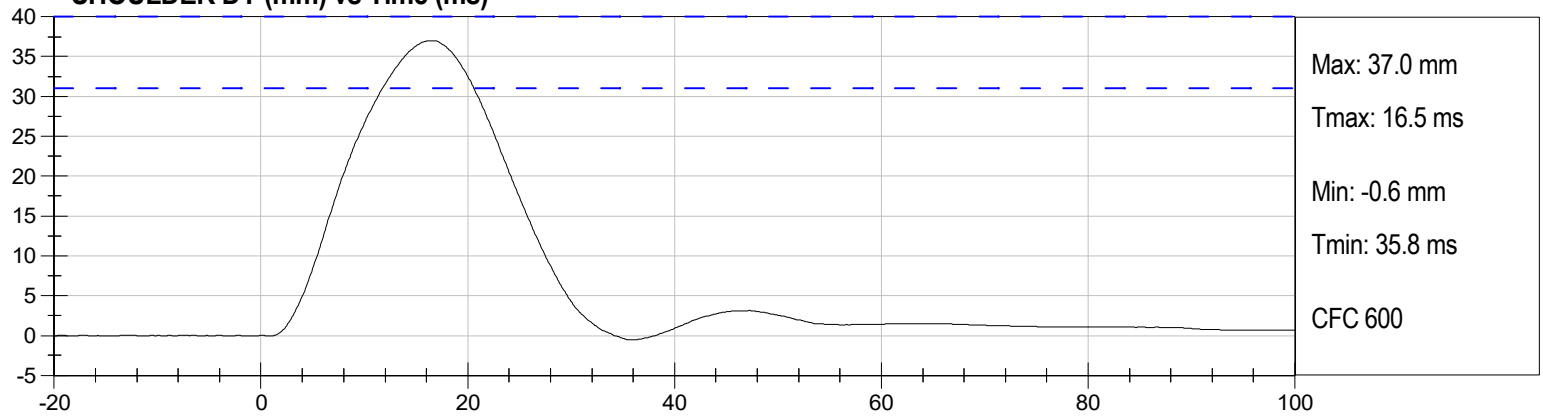
UPPER SPINE Y (g) vs Time (ms)



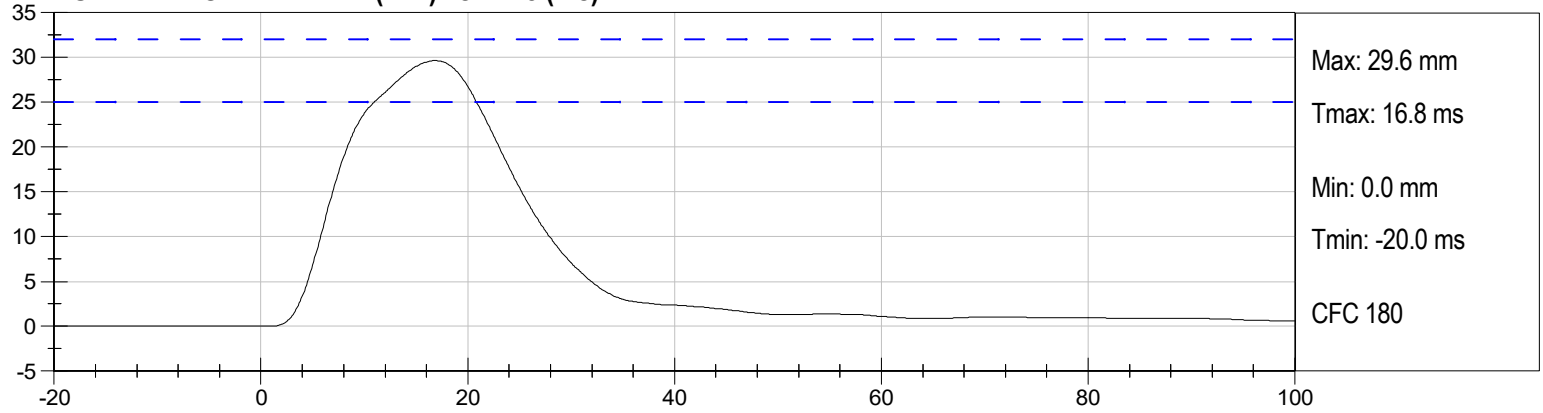
LOWER SPINE Y (g) vs Time (ms)



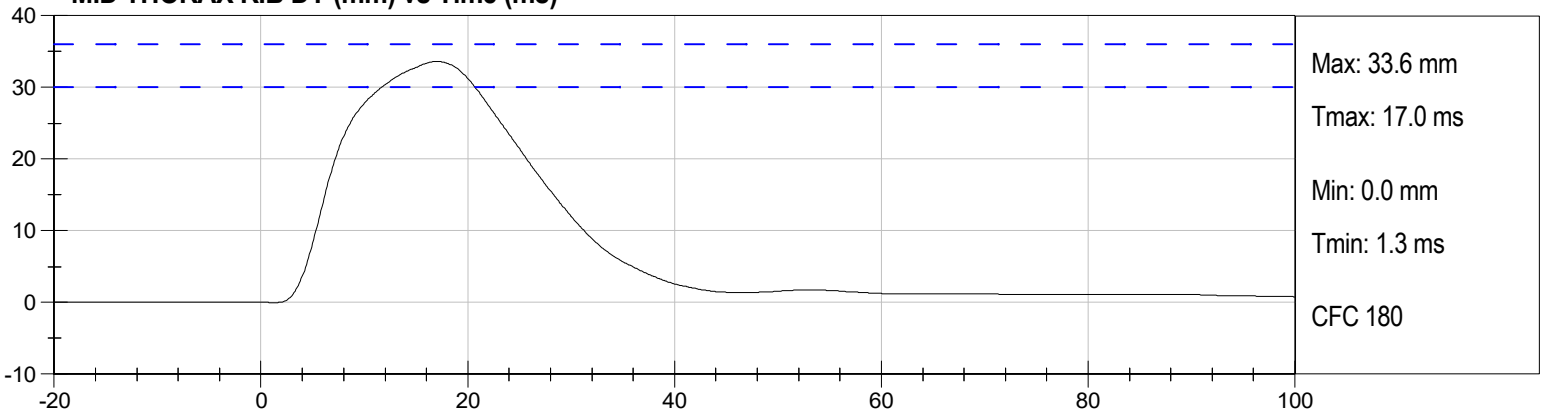
SHOULDER DY (mm) vs Time (ms)



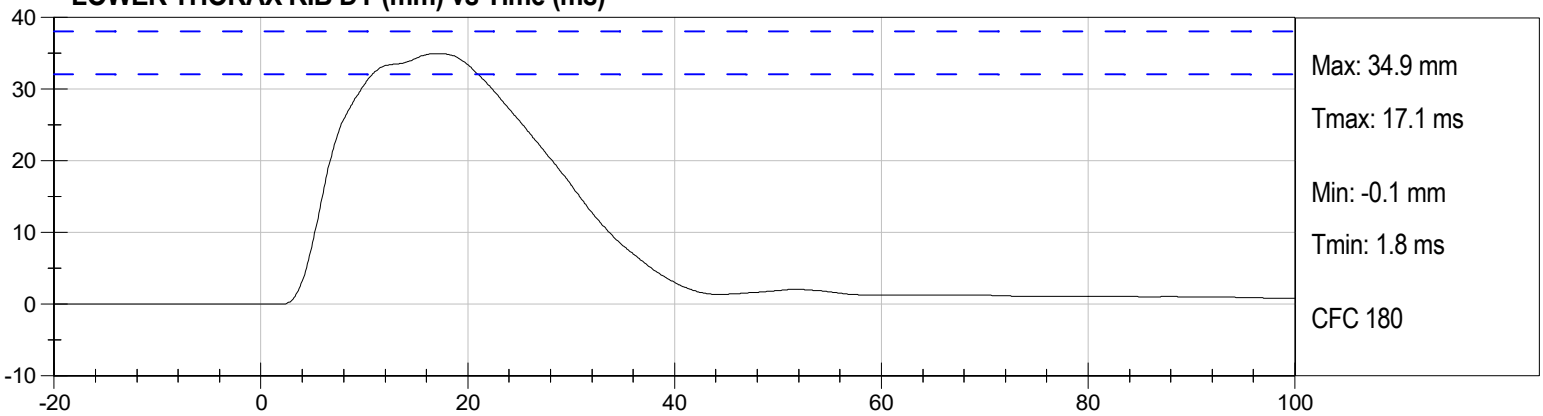
UPPER THORAX RIB DY (mm) vs Time (ms)



MID THORAX RIB DY (mm) vs Time (ms)



LOWER THORAX RIB DY (mm) vs Time (ms)



mga research corporation

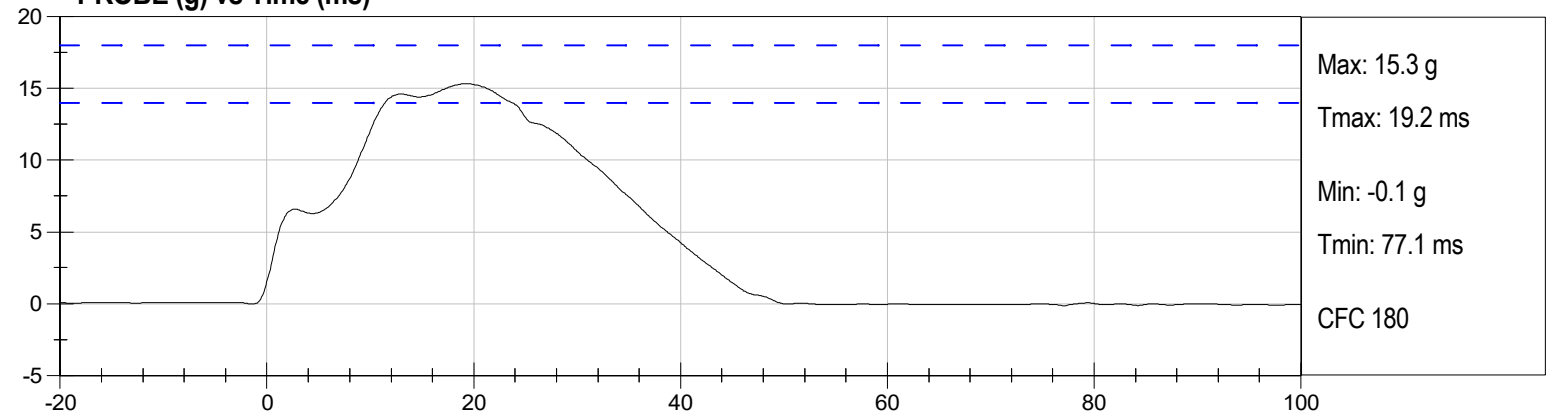
Thorax without Arm Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250645
Test Technician: Jonah Pulokas

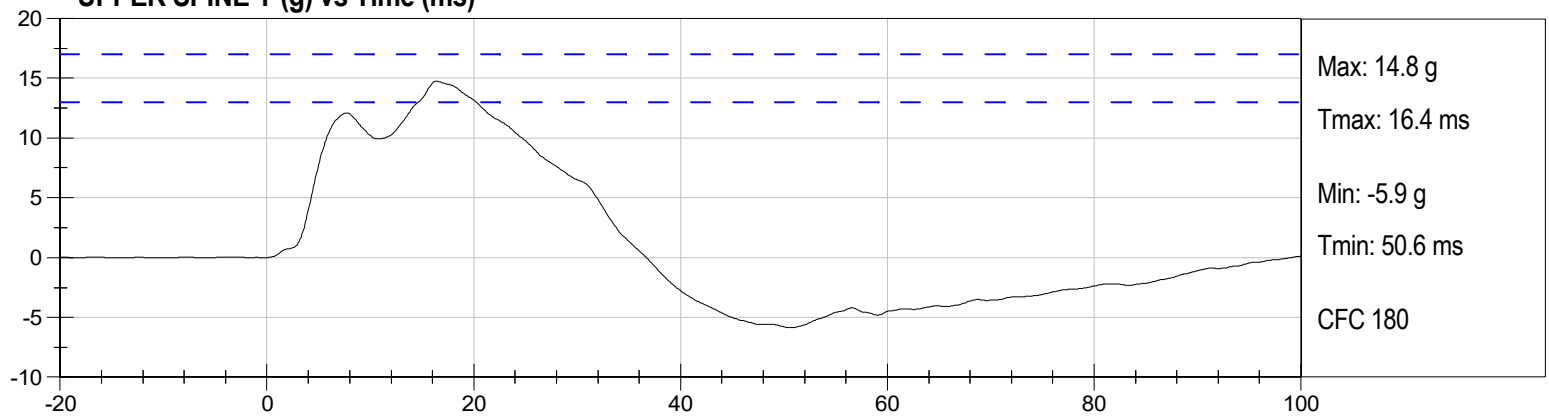
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Probe Acceleration	g	14 to 18	15	Pass
Upper Spine (T1) Y Acceleration	g	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	g	7 to 11	9	Pass
Upper Thorax Rib Displacement	mm	32 to 40	37	Pass
Middle Thorax Rib Displacement	mm	39 to 45	43	Pass
Lower Thorax Rib Displacement	mm	35 to 43	41	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
UPPER THORAX RIB DY	FTSS	G033	12/11/2024	6/12/2025
MID THORAX RIB DY	Servo	G2403	12/11/2024	6/12/2025
LOWER THORAX RIB DY	FTSS	G1270	12/11/2024	6/12/2025

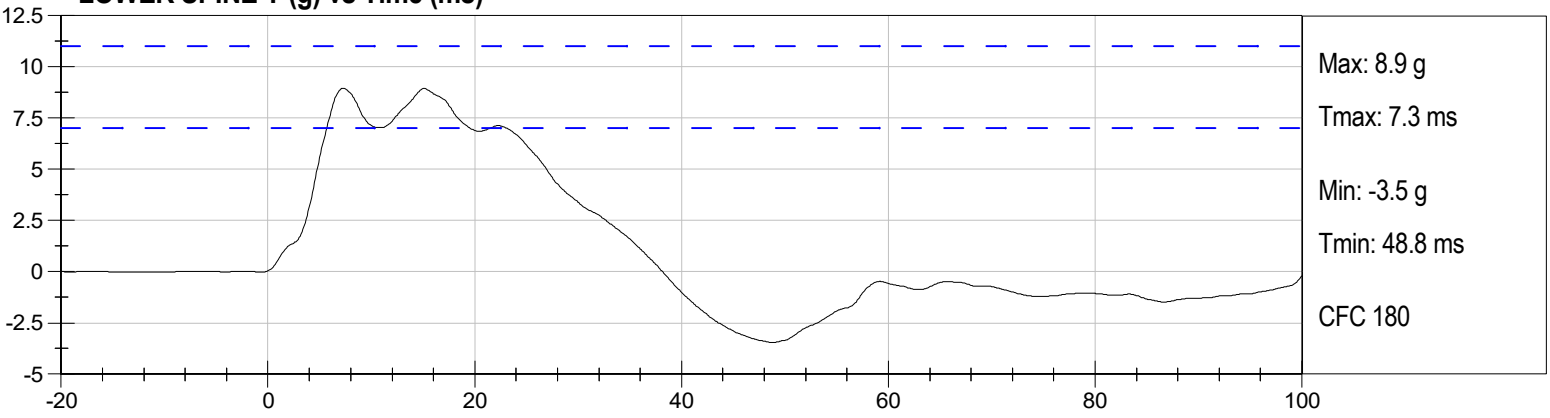
PROBE (g) vs Time (ms)



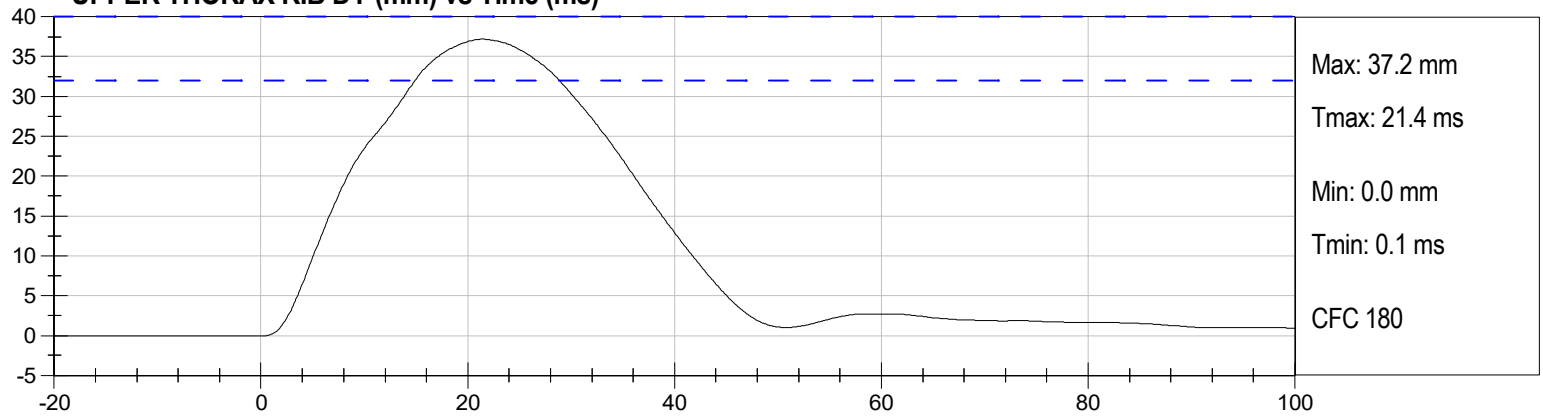
UPPER SPINE Y (g) vs Time (ms)



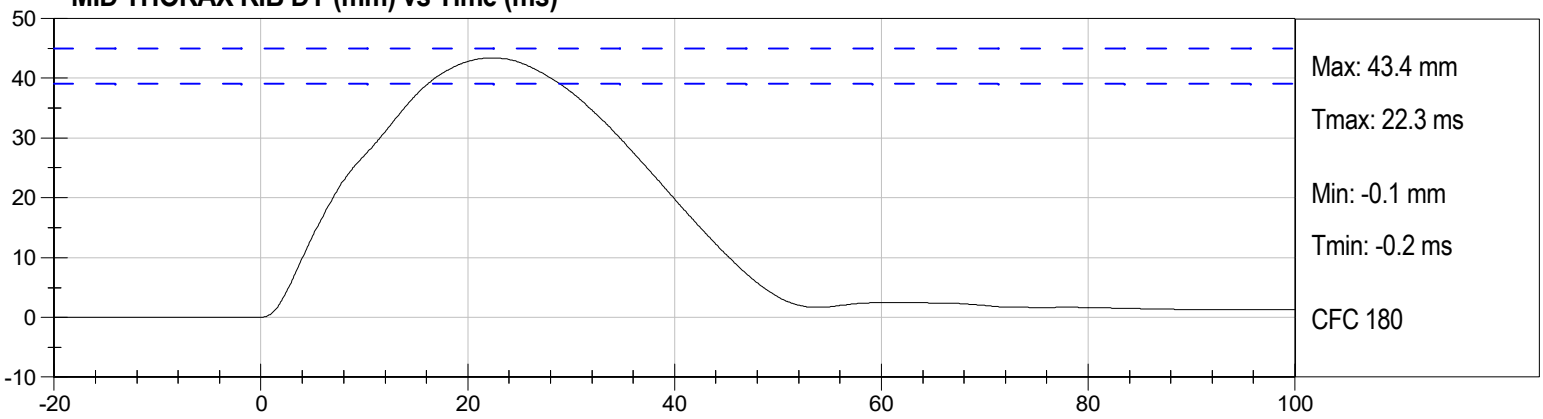
LOWER SPINE Y (g) vs Time (ms)



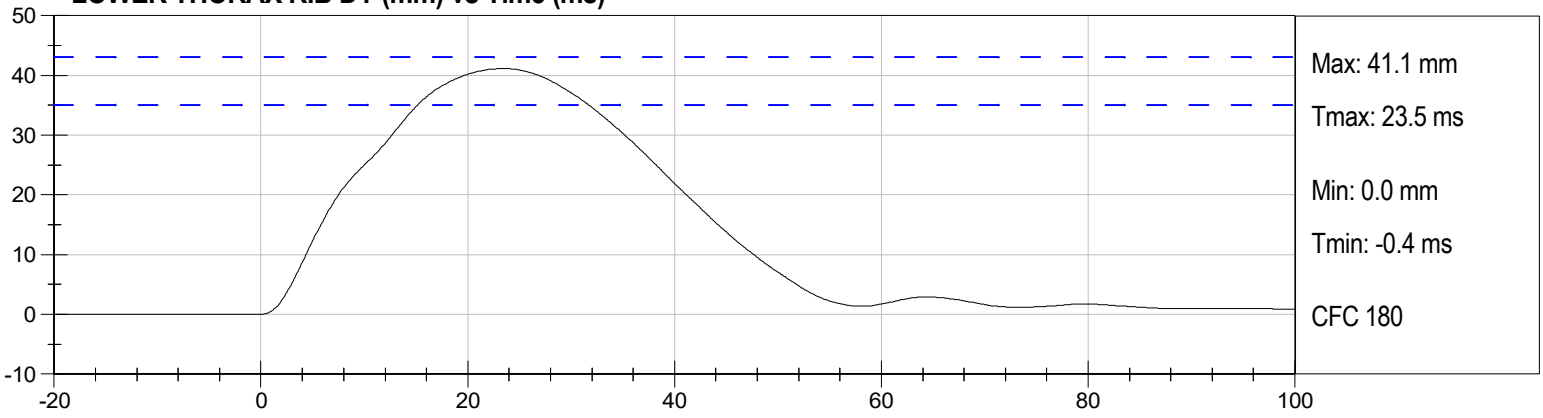
UPPER THORAX RIB DY (mm) vs Time (ms)



MID THORAX RIB DY (mm) vs Time (ms)



LOWER THORAX RIB DY (mm) vs Time (ms)



mga research corporation

Abdomen Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250646
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	4.2 to 4.4	4.34	Pass
Peak Probe Acceleration	g	12 to 16	14	Pass
Lower Spine (T12) Y Acceleration	g	9 to 14	10	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	43	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	36	Pass

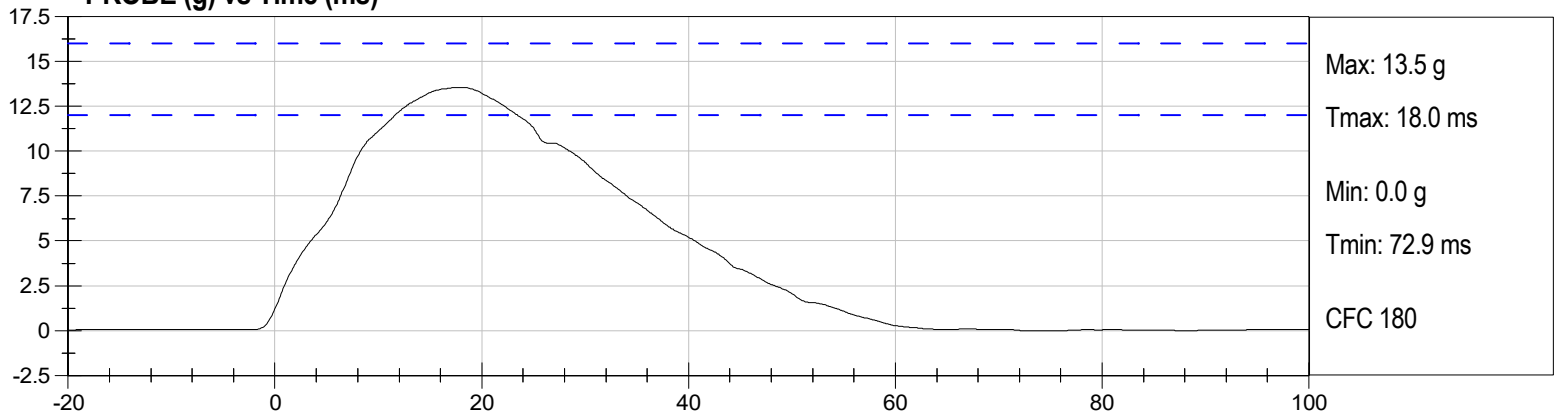
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
UPPER ABDOMINAL RIB DY	FTSS	G032	12/11/2024	6/12/2025
LOWER ABDOMINAL RIB DY	Medius	MJ5171	12/11/2024	6/12/2025

mga research corporation

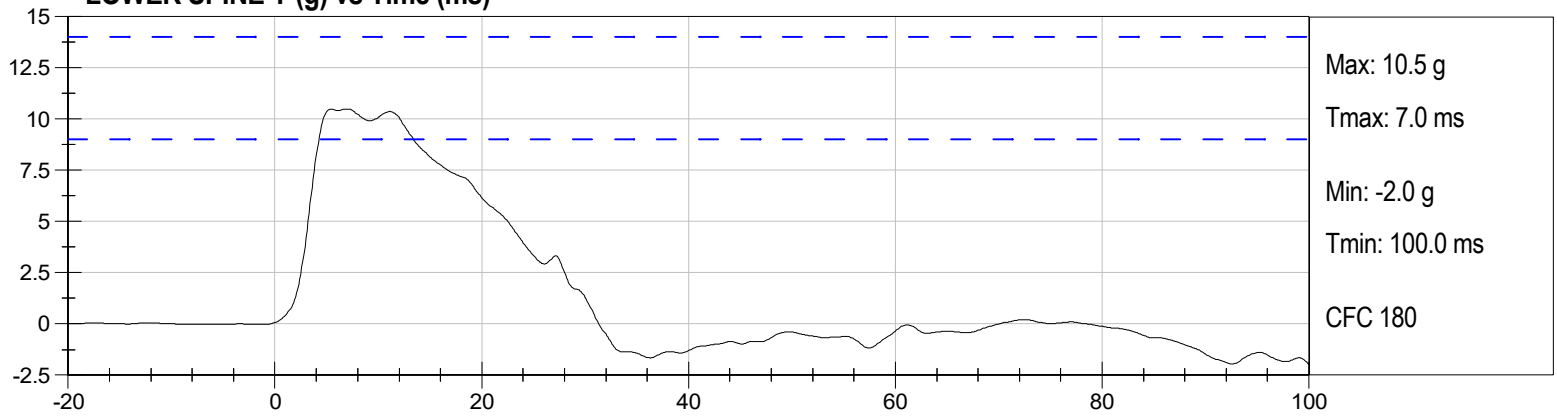
Abdomen Impact Test
SID IIs

Test Date: 03/04/2025
Test ID: D250646

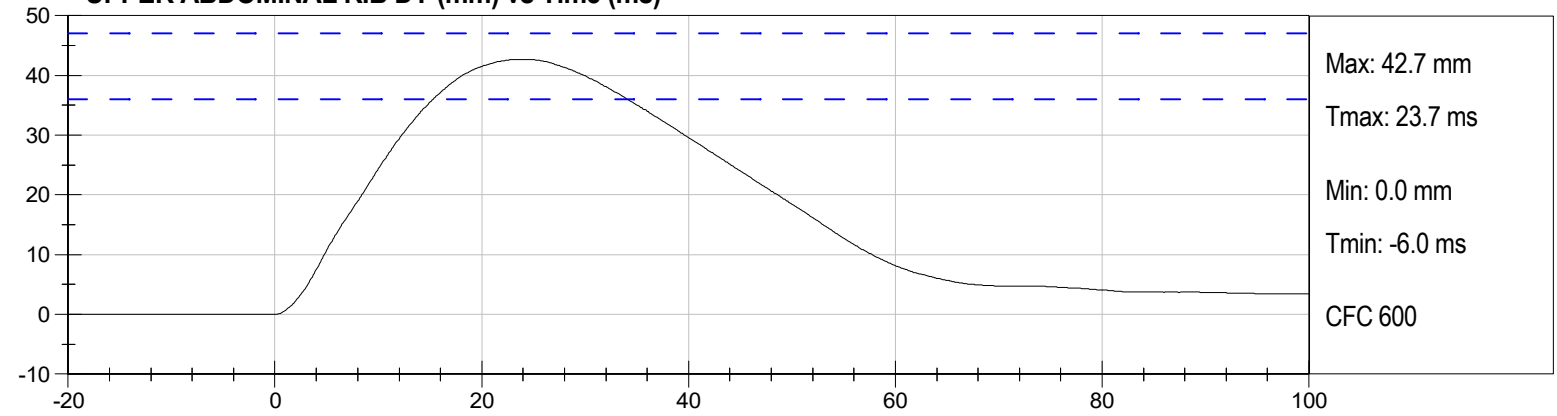
PROBE (g) vs Time (ms)



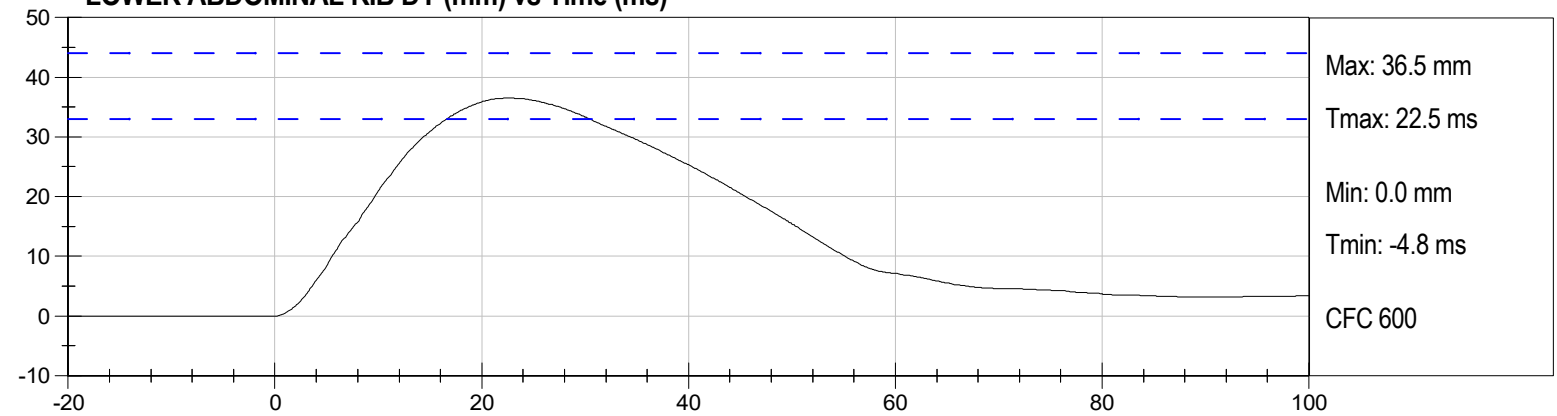
LOWER SPINE Y (g) vs Time (ms)



UPPER ABDOMINAL RIB DY (mm) vs Time (ms)



LOWER ABDOMINAL RIB DY (mm) vs Time (ms)



mga research corporation

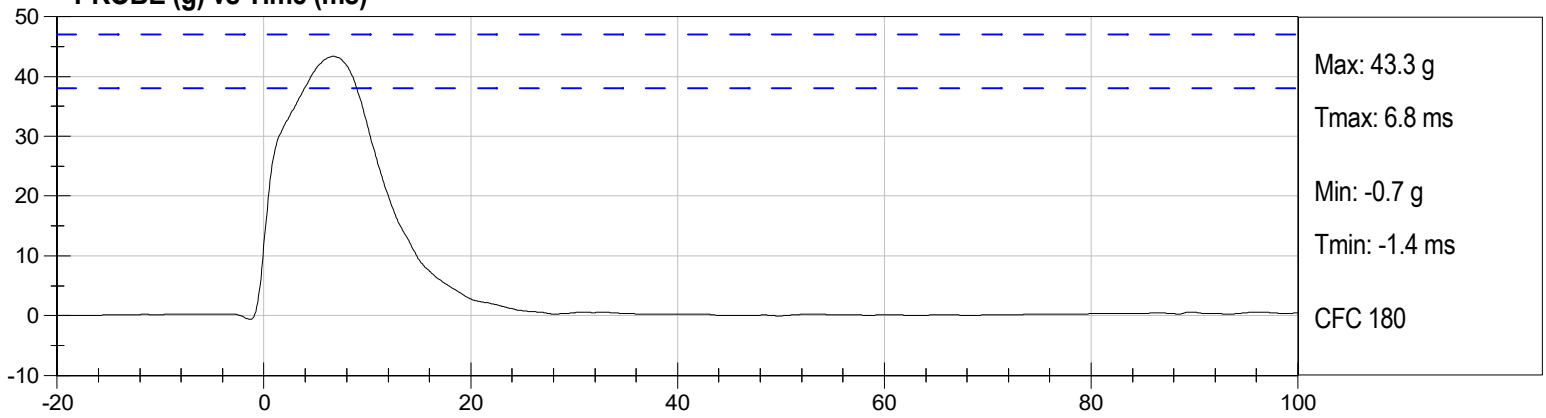
Acetabulum Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250647
Test Technician: Jonah Pulokas

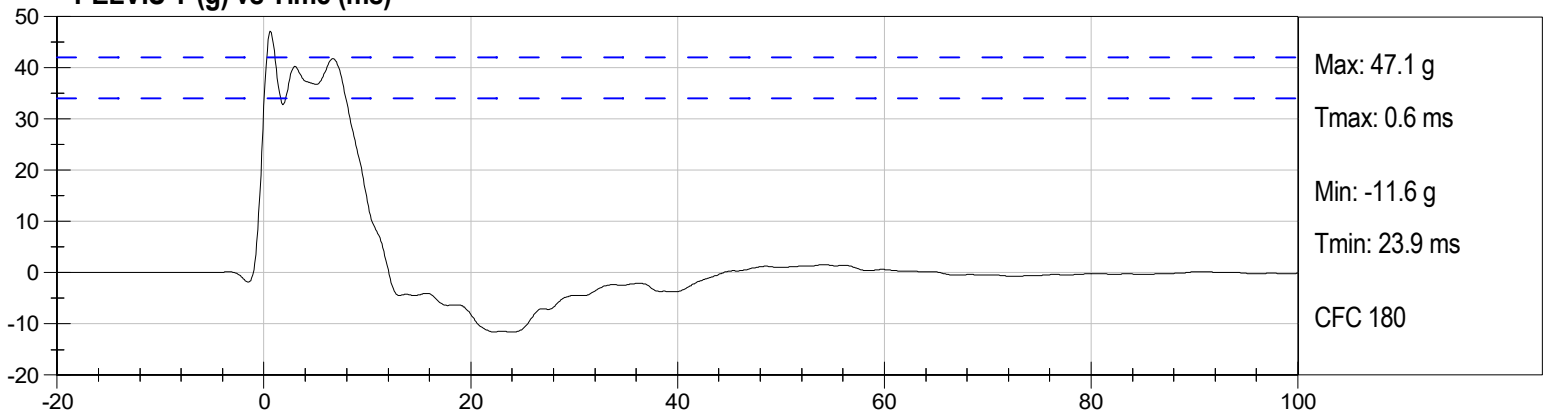
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	33	Pass
Impact Velocity	m/s	6.6 to 6.8	6.68	Pass
Peak Probe Acceleration	g	38 to 47	43	Pass
Peak Pelvis Y Acceleration after 6 ms	g	34 to 42	41.7	Pass
Acetabulum Force	N	3600 to 4300	4098	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
PELVIS Y	Endevco	P82673	12/10/2024	6/11/2025
ACETABULUM FY	FTSS	ACG4285FY	05/24/2024	5/24/2025

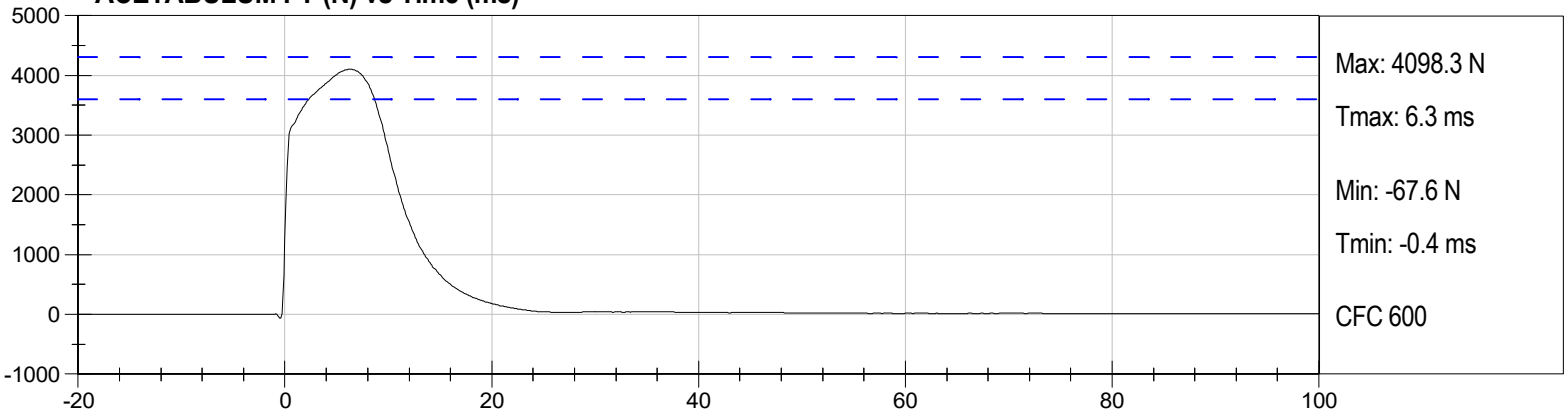
PROBE (g) vs Time (ms)



PELVIS Y (g) vs Time (ms)



ACETABULUM FY (N) vs Time (ms)



mga research corporation

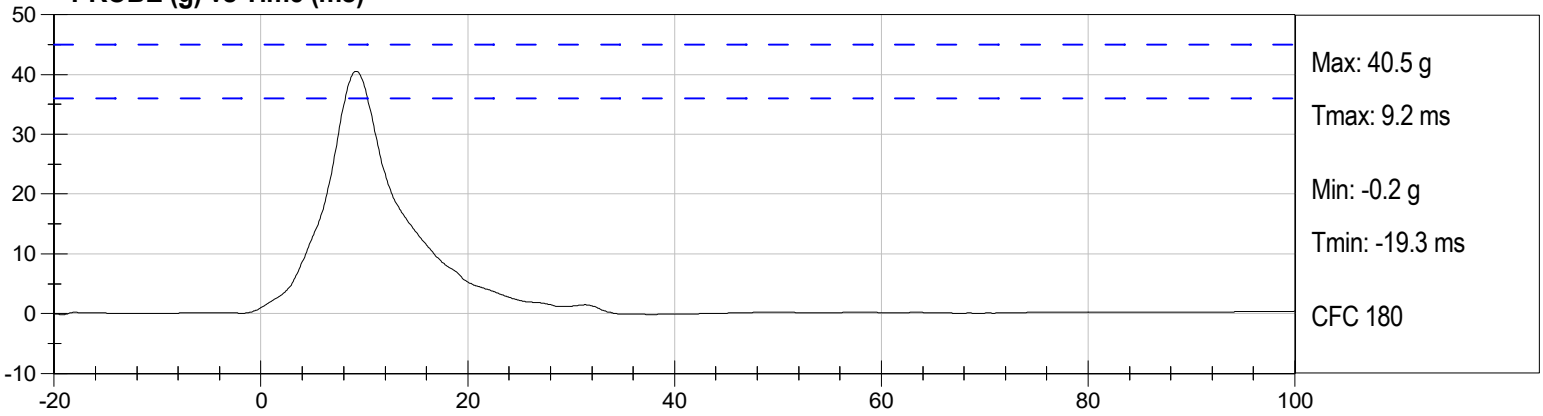
Iliac Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/04/2025
Test ID: D250648
Test Technician: Jonah Pulokas

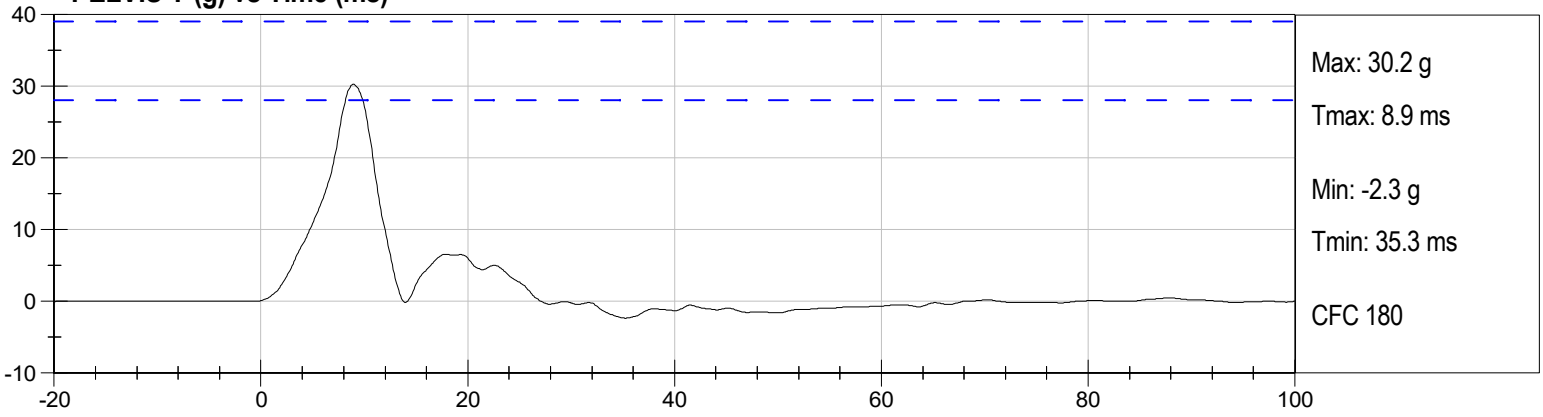
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Probe Acceleration	g	36 to 45	41	Pass
Peak Pelvis Y Acceleration	g	28 to 39	30	Pass
Iliac Force	N	4100 to 5100	4610	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
PELVIS Y	Endevco	P82673	12/10/2024	6/11/2025
ILIUM CREST FY	FTSS	IWG3023FY	05/24/2024	5/24/2025

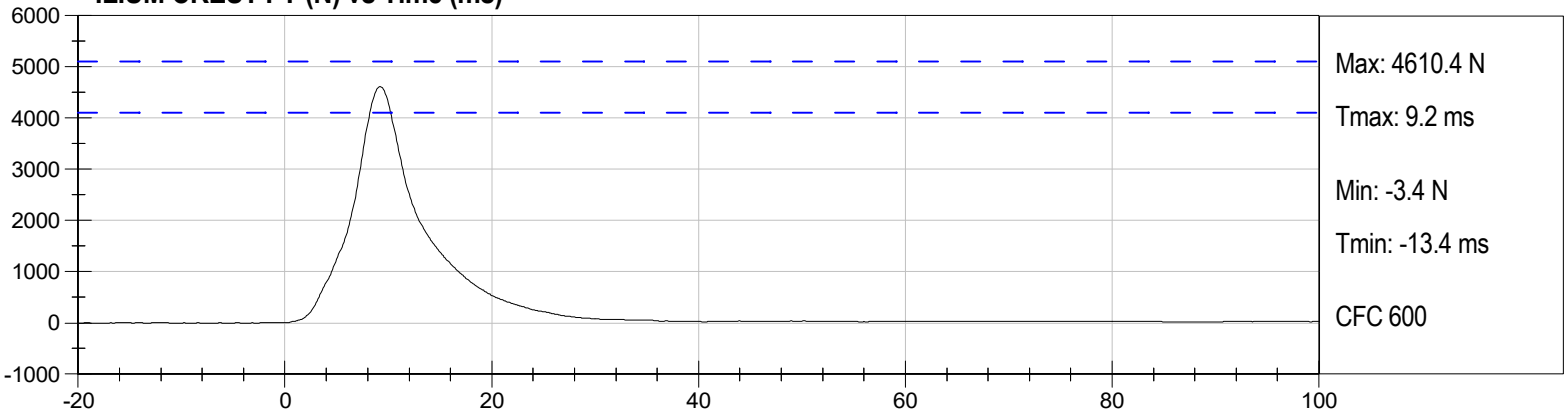
PROBE (g) vs Time (ms)



PELVIS Y (g) vs Time (ms)



ILIUM CREST FY (N) vs Time (ms)



QUALIFICATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - PASSENGER ATD

SID-IIsD External Measurements
SN: 306

No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	785	Pass
B	Shoulder Pivot Height	437 - 453	449	Pass
C	H-point Height	79 - 89	86	Pass
D	H-point from Seatback	141 - 151	147	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	120	Pass
G	Head Breadth	140 - 148	141	Pass
H	Head Back from Backline	40 - 46	45	Pass
I	Head Depth	178 - 188	182	Pass
J	Head Circumference	541 - 551	550	Pass
K	Buttock to Knee Length	514 - 540	538	Pass
L	Popliteal Height	343 - 369	349	Pass
M	Knee Pivot to Floor Height	392 - 409	394	Pass
N	Buttock Popliteal Length	416 - 442	435	Pass
O	Chest Depth w/o Jacket	195 - 211	198	Pass
P	Foot Length	216 - 232	222	Pass
Q	Hip Breadth (w/ pelvic plugs)	313 - 323	317	Pass
R	Arm Length	249 - 259	250	Pass
S	Knee Joint to Seatback	477 - 493	483	Pass
V	Shoulder Width	341 - 357	351	Pass
W	Foot Width	78 - 94	82	Pass
Y	Chest Circumference w/ jacket	851 - 881	863	Pass
Z	Waist Circumference	761 - 791	782	Pass

mga research corporation

Lateral Head Drop Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250691
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Peak Resultant Acceleration	g	115 to 137	130	Pass
Peak Longitudinal Acceleration	g	-15.0 to 15.0	-6.4	Pass
Unimodal	%	within 15% of peak	3	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
HEAD Y	Endevco	T30974	11/25/2024	5/27/2025
HEAD X	Endevco	T30975	11/25/2024	5/27/2025
HEAD Z	Endevco	T30976	11/25/2024	5/27/2025

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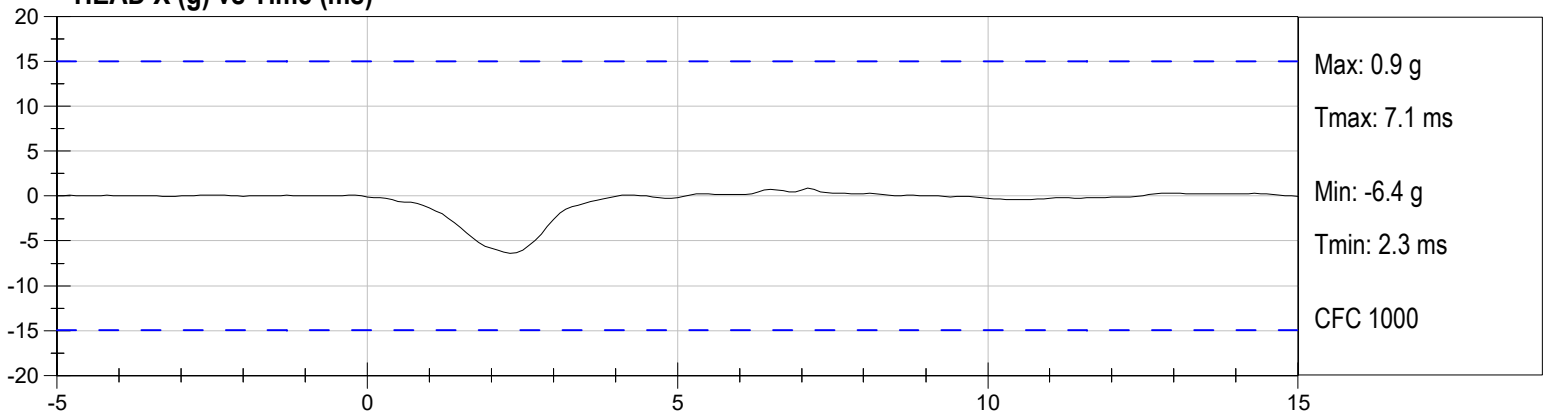
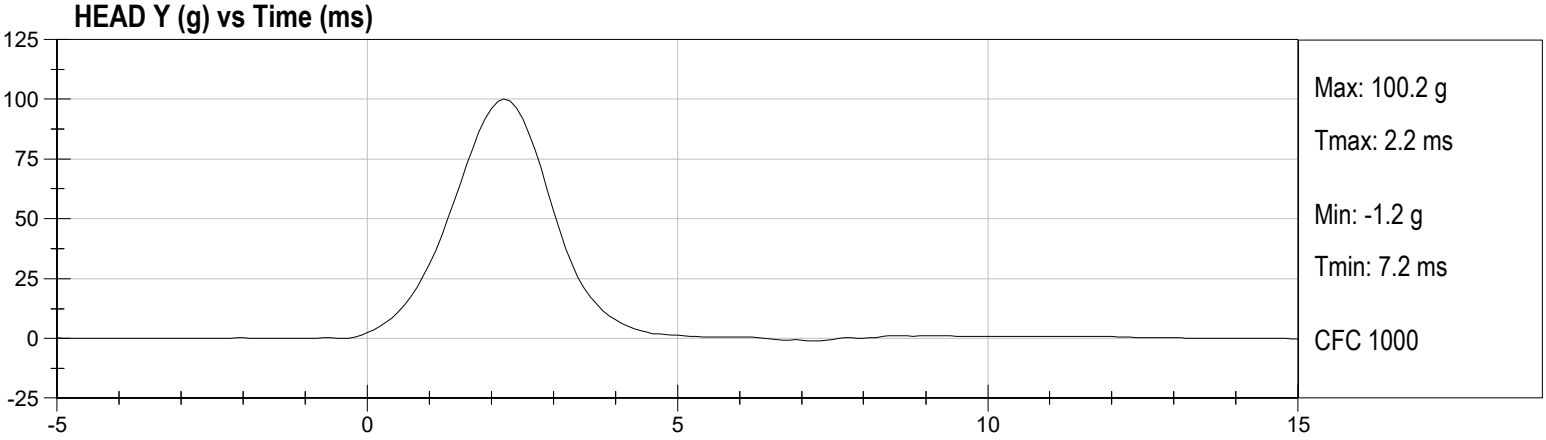
Lateral Head Drop Test
SID IIs

Test Date: 03/10/2025
Test ID: D250691

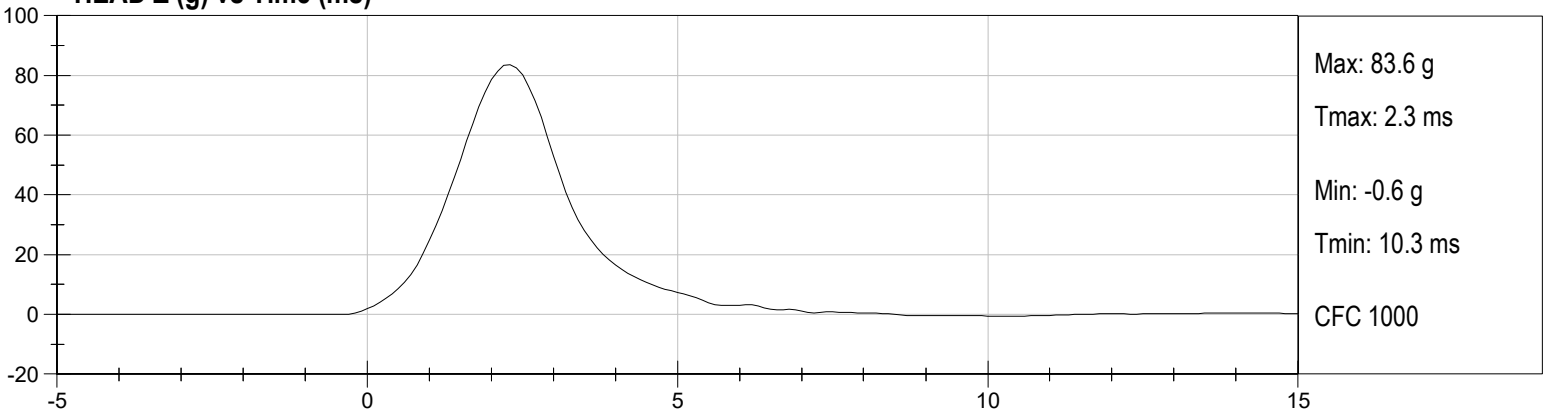
HEAD X (g) vs Time (ms)



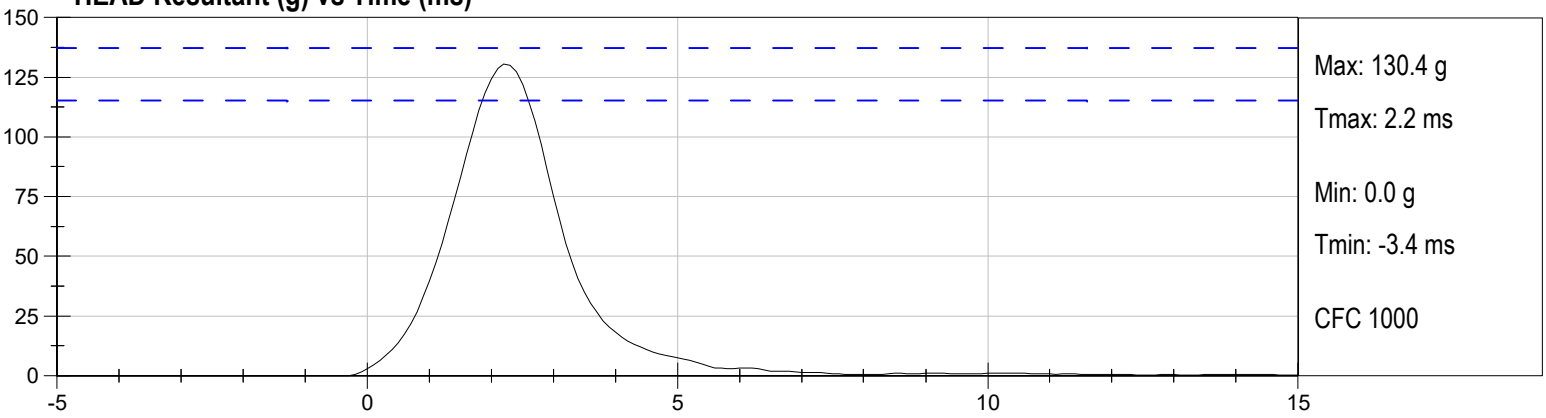
HEAD Y (g) vs Time (ms)



HEAD Z (g) vs Time (ms)



HEAD Resultant (g) vs Time (ms)



mga research corporation

Lateral Neck Bending Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250692
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	5.51 to 5.63	5.52	Pass
Pendulum Velocity at 10 ms	m/s	2.20 to 2.80	2.26	Pass
Pendulum Velocity at 15 ms	m/s	3.30 to 4.10	3.55	Pass
Pendulum Velocity at 20 ms	m/s	4.40 to 5.40	4.93	Pass
Pendulum Velocity at 25 ms	m/s	5.40 to 6.10	5.91	Pass
Peak Pendulum Velocity from 25 to 100 ms	m/s	5.50 to 6.20	5.92	Pass
Maximum "D" Plane Rotation	deg	71 to 81	73	Pass
Time of Maximum "D" Plane Rotation	ms	50 to 70	66	Pass
Maximum Moment About Occipital Condyle	Nm	-44 to -36	-37	Pass
Time of Moment Decay Time To 0 Nm	ms	102 to 126	120	Pass

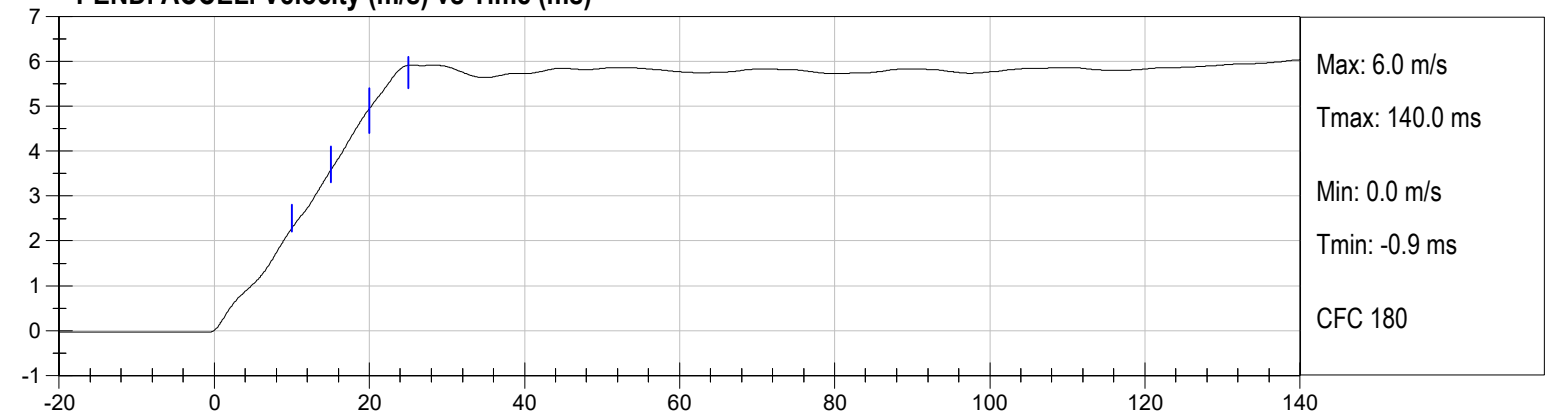
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PEND. ACCEL.	Endevco	AH5P1	01/13/2025	7/15/2025
NECK FORCE Y	Denton	N1021FY	02/19/2025	2/19/2026
NECK MOMENT X	Denton	N1021MX	02/19/2025	2/19/2026
POT. A - FRONT	Servo	2732	01/09/2025	7/11/2025
POT. C - HEADFORM	Servo	2204	01/09/2025	7/11/2025

mga research corporation

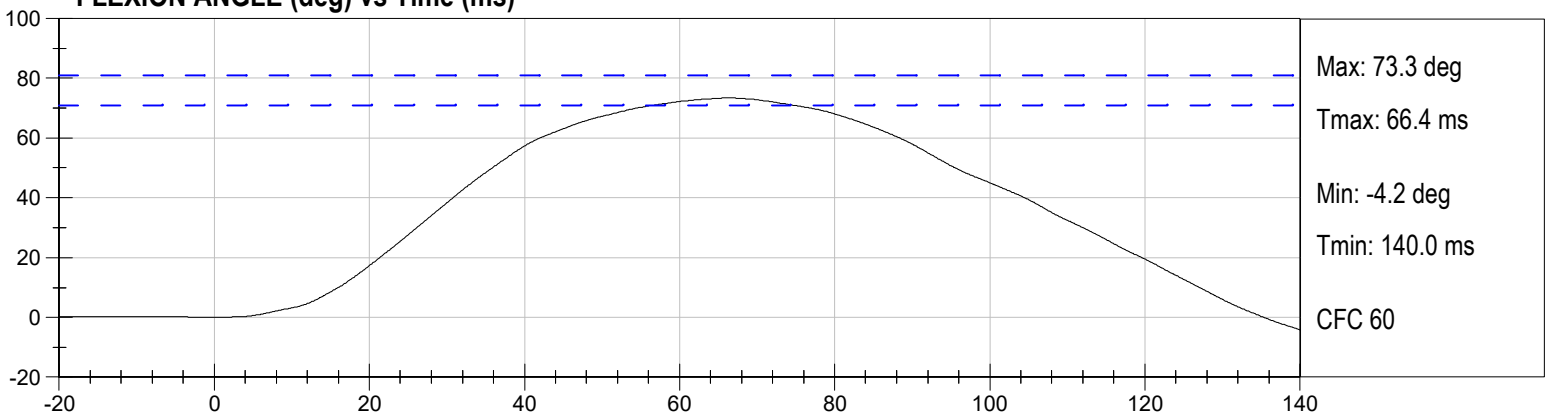
Lateral Neck Bending Test
SID IIs

Test Date: 03/10/2025
Test ID: D250692

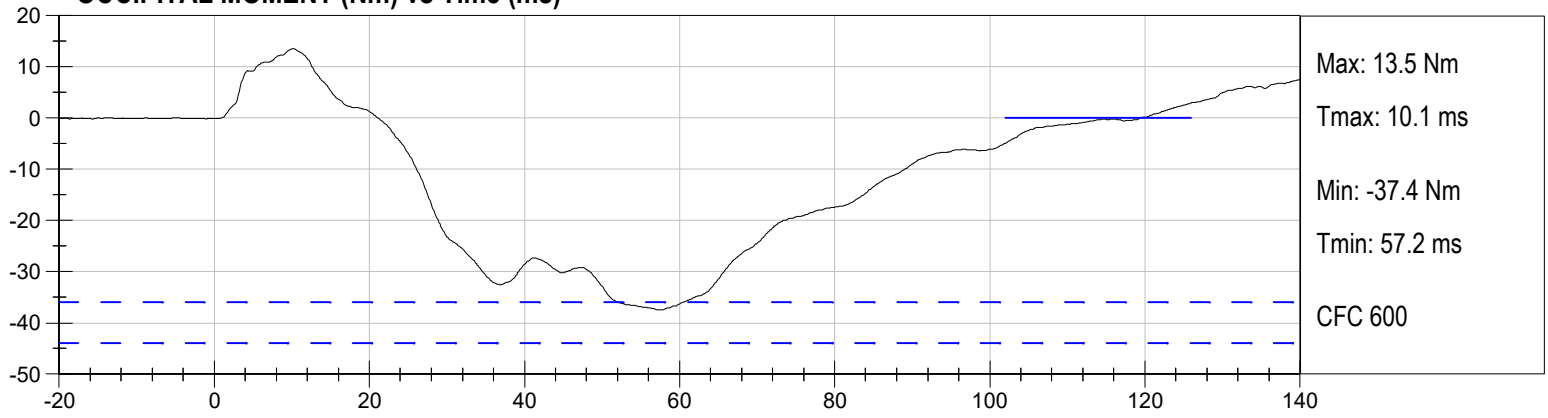
PEND. ACCEL. Velocity (m/s) vs Time (ms)



FLEXION ANGLE (deg) vs Time (ms)



OCCIPITAL MOMENT (Nm) vs Time (ms)



mga research corporation

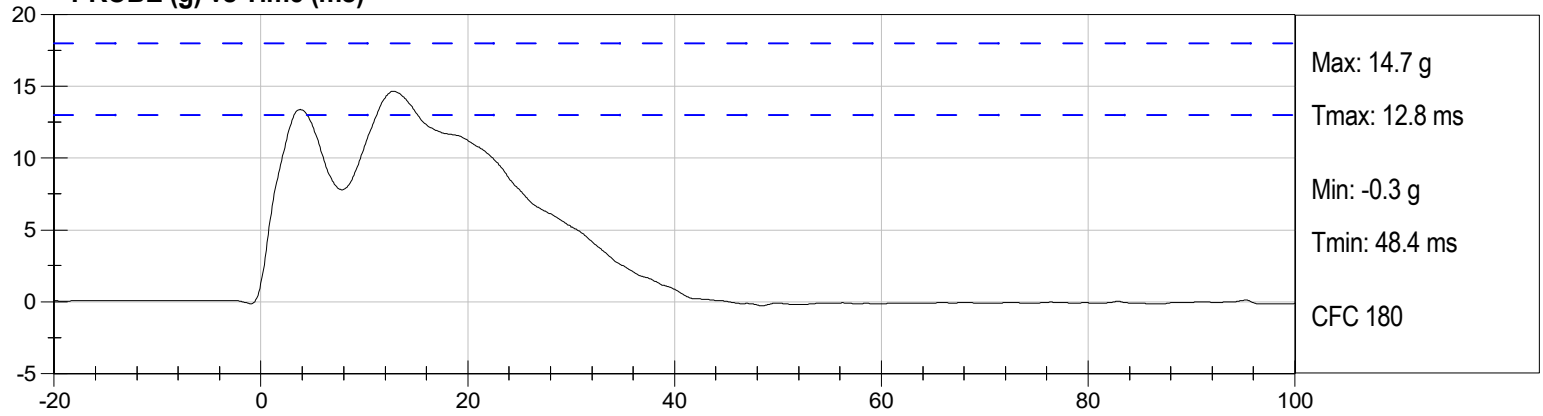
Shoulder Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250693
Test Technician: Jonah Pulokas

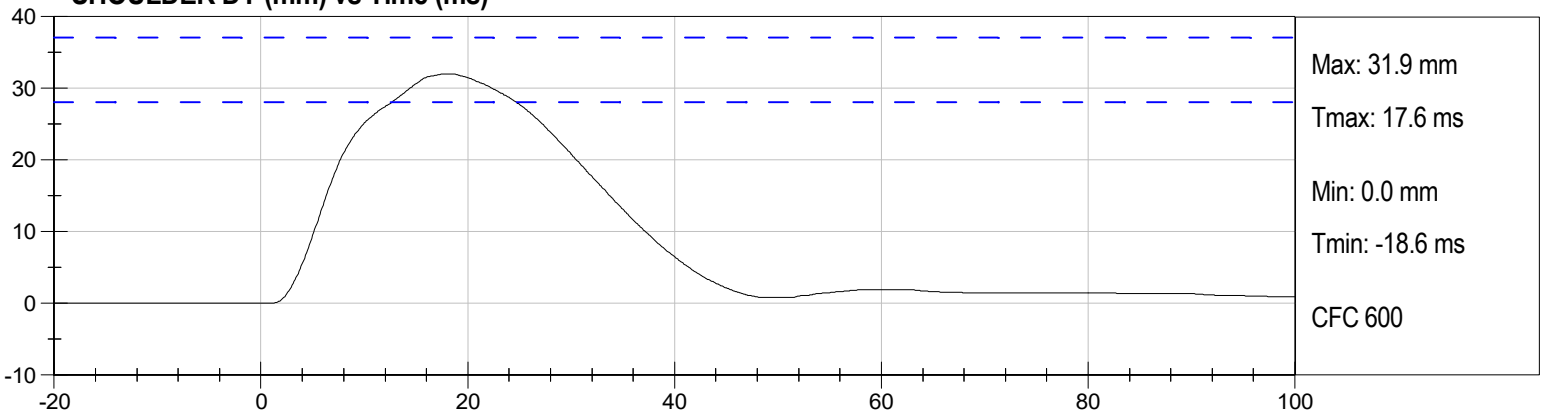
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Impact Velocity	m/s	4.2 to 4.4	4.38	Pass
Peak Probe Acceleration	g	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	32	Pass
Upper Spine (T1) Y Acceleration	g	17 to 22	18	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
SHOULDER DY	FTSS	G050	12/11/2024	6/12/2025

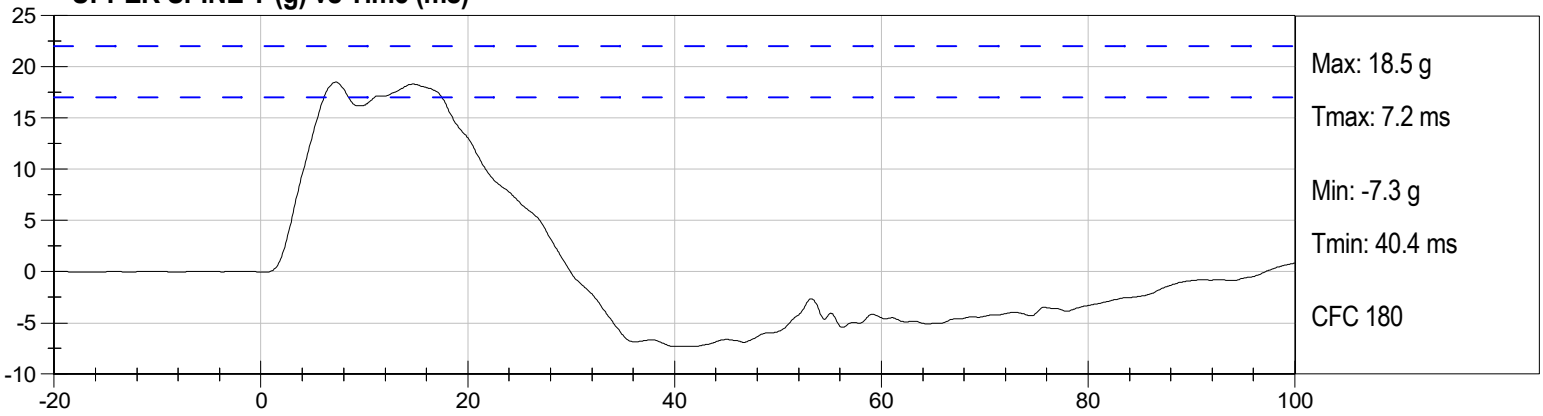
PROBE (g) vs Time (ms)



SHOULDER DY (mm) vs Time (ms)



UPPER SPINE Y (g) vs Time (ms)



mga research corporation

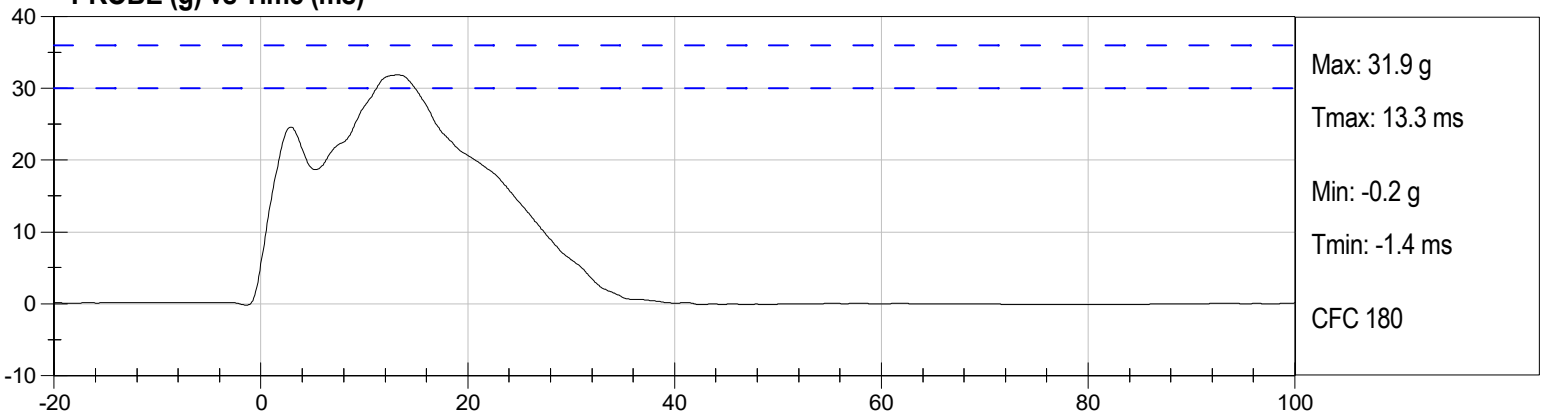
Thorax with Arm Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250694
Test Technician: Jonah Pulokas

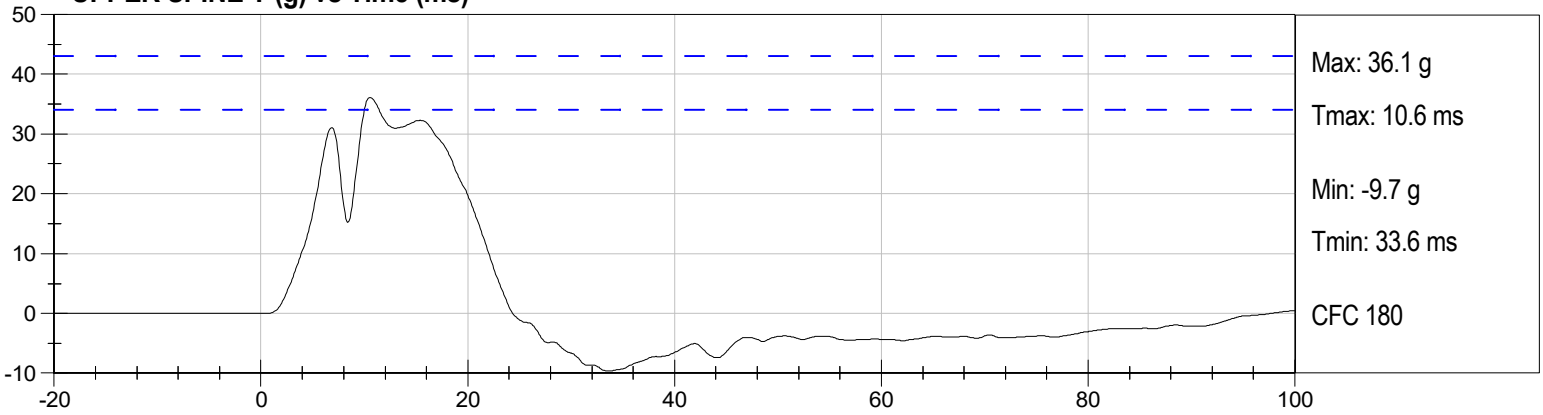
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.6 to 6.8	6.77	Pass
Peak Probe Acceleration after 5 ms	g	30 to 36	32	Pass
Upper Spine (T1) Y Acceleration	g	34 to 43	36	Pass
Lower Spine (T12) Y Acceleration	g	29 to 37	33	Pass
Shoulder Displacement	mm	31 to 40	38	Pass
Upper Thorax Rib Displacement	mm	25 to 32	30	Pass
Middle Thorax Rib Displacement	mm	30 to 36	34	Pass
Lower Thorax Rib Displacement	mm	32 to 38	35	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
SHOULDER DY	FTSS	G050	12/11/2024	6/12/2025
UPPER THORAX RIB DY	FTSS	G033	12/11/2024	6/12/2025
MID THORAX RIB DY	Servo	G2403	12/11/2024	6/12/2025
LOWER THORAX RIB DY	FTSS	G1270	12/11/2024	6/12/2025

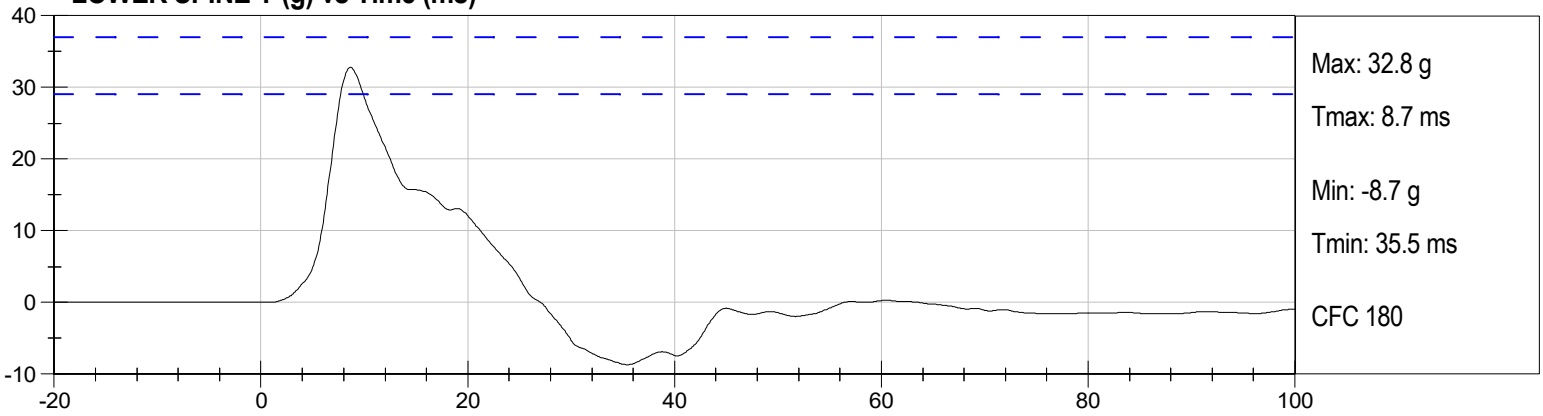
PROBE (g) vs Time (ms)



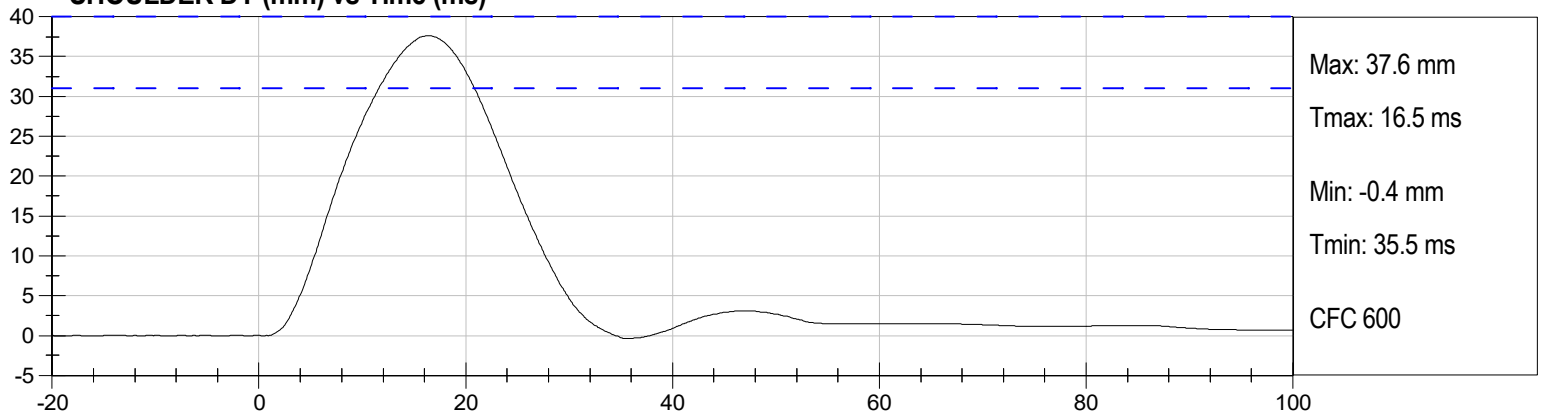
UPPER SPINE Y (g) vs Time (ms)



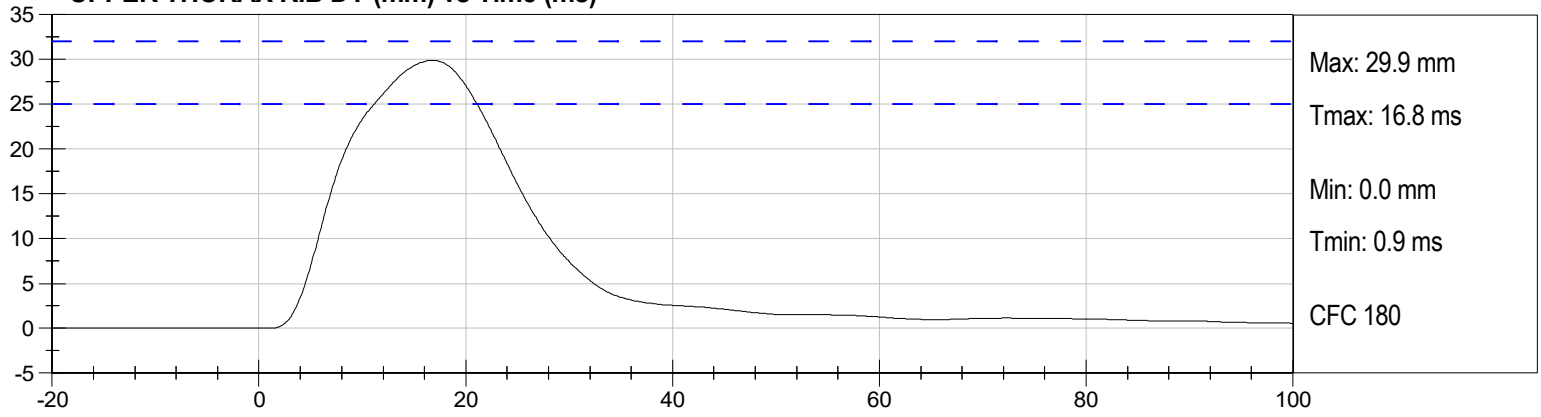
LOWER SPINE Y (g) vs Time (ms)



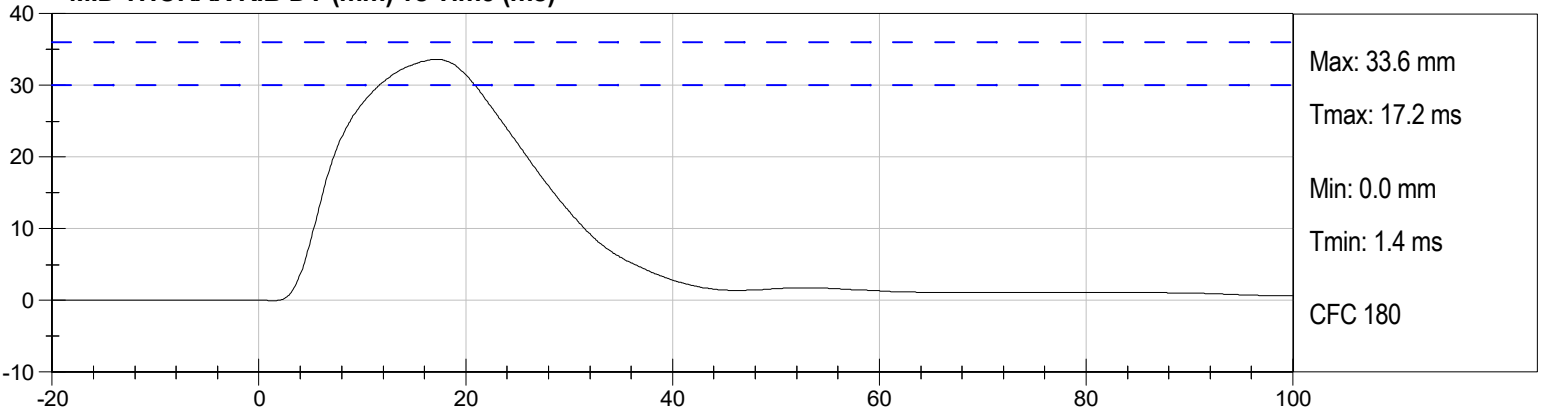
SHOULDER DY (mm) vs Time (ms)



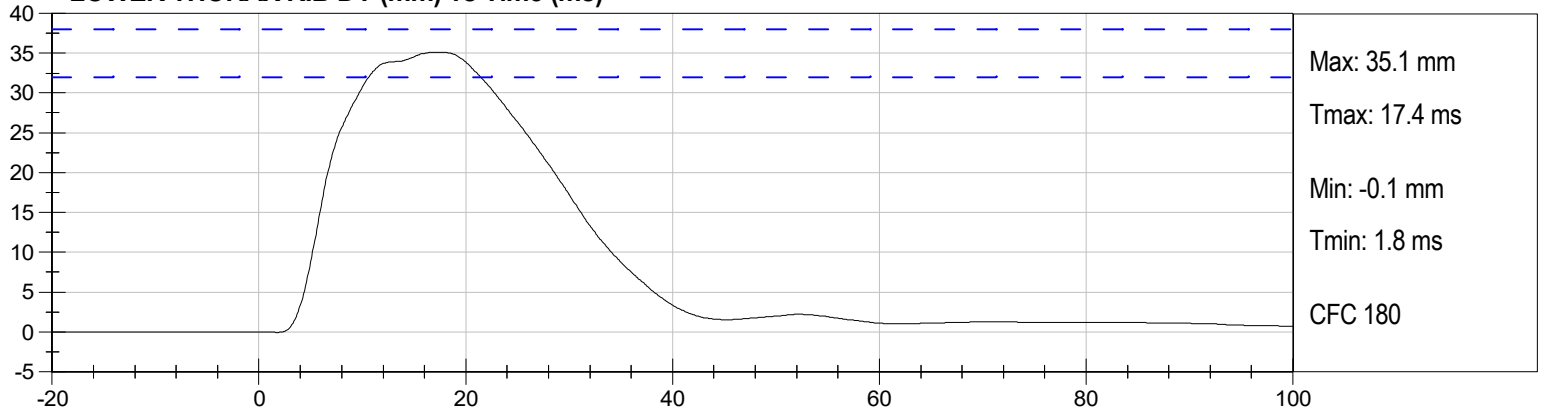
UPPER THORAX RIB DY (mm) vs Time (ms)



MID THORAX RIB DY (mm) vs Time (ms)



LOWER THORAX RIB DY (mm) vs Time (ms)



mga research corporation

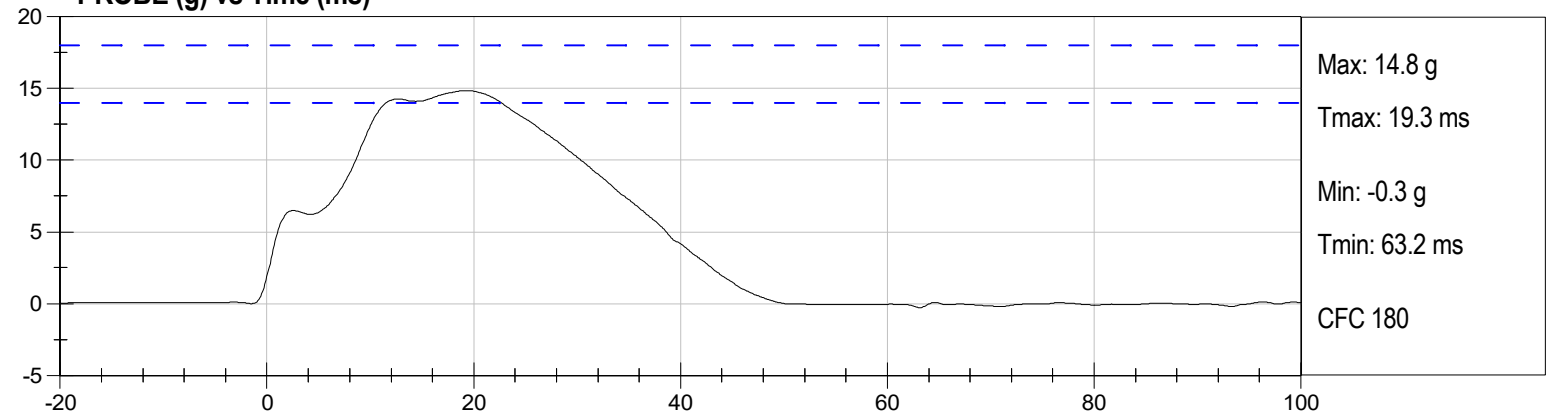
Thorax without Arm Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250695
Test Technician: Jonah Pulokas

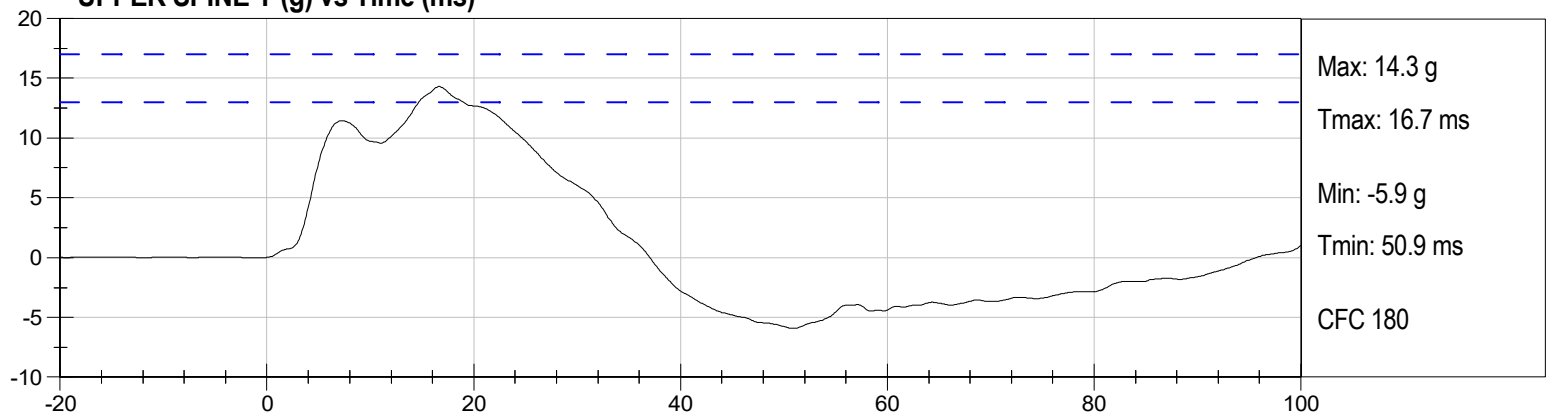
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Impact Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Probe Acceleration	g	14 to 18	15	Pass
Upper Spine (T1) Y Acceleration	g	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	g	7 to 11	9	Pass
Upper Thorax Rib Displacement	mm	32 to 40	37	Pass
Middle Thorax Rib Displacement	mm	39 to 45	43	Pass
Lower Thorax Rib Displacement	mm	35 to 43	40	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
UPPER THORAX RIB DY	FTSS	G033	12/11/2024	6/12/2025
MID THORAX RIB DY	Servo	G2403	12/11/2024	6/12/2025
LOWER THORAX RIB DY	FTSS	G1270	12/11/2024	6/12/2025

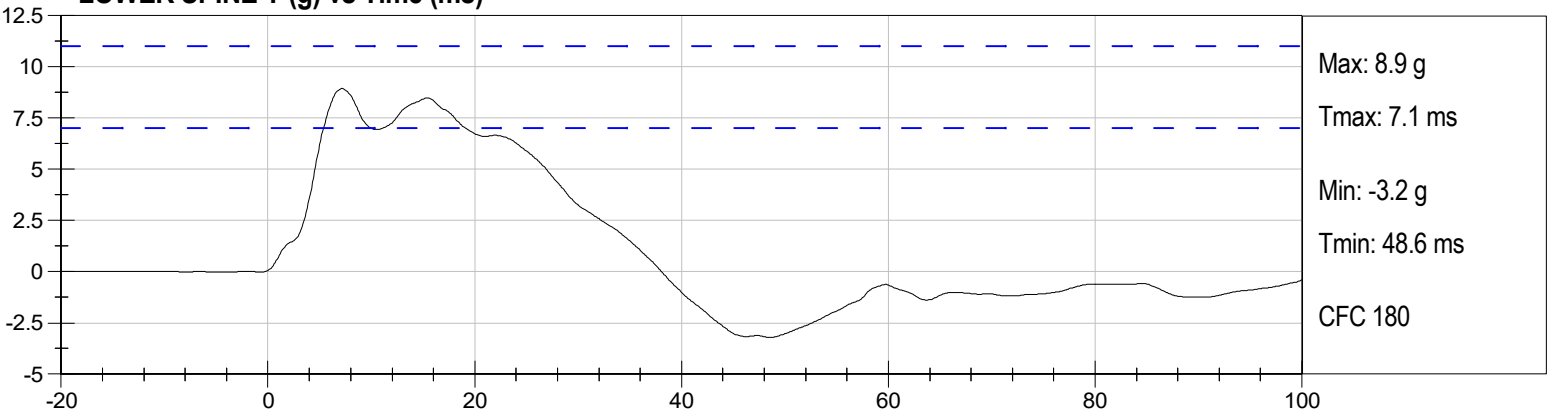
PROBE (g) vs Time (ms)



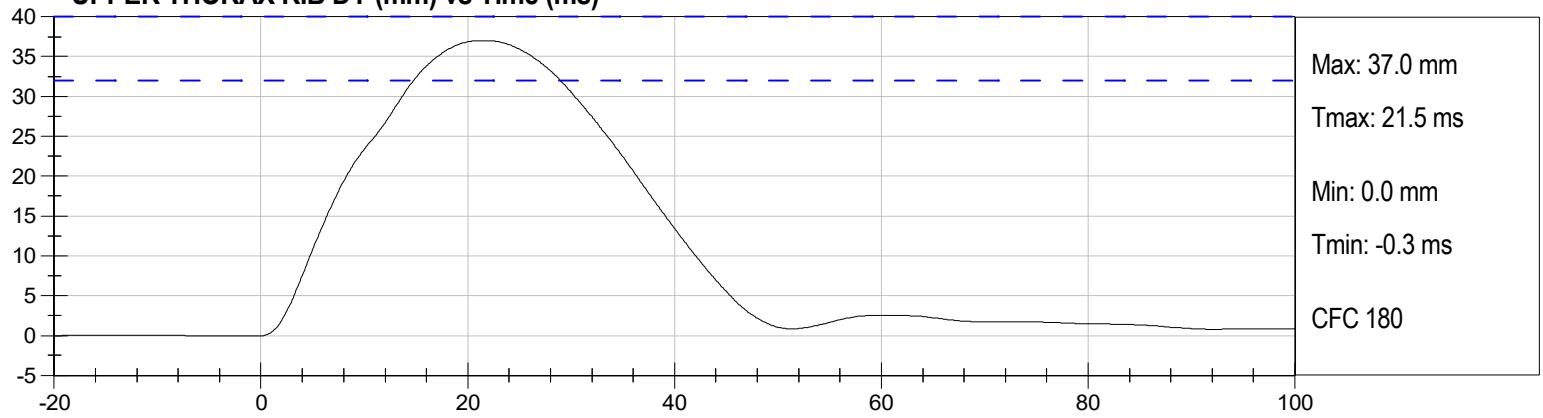
UPPER SPINE Y (g) vs Time (ms)



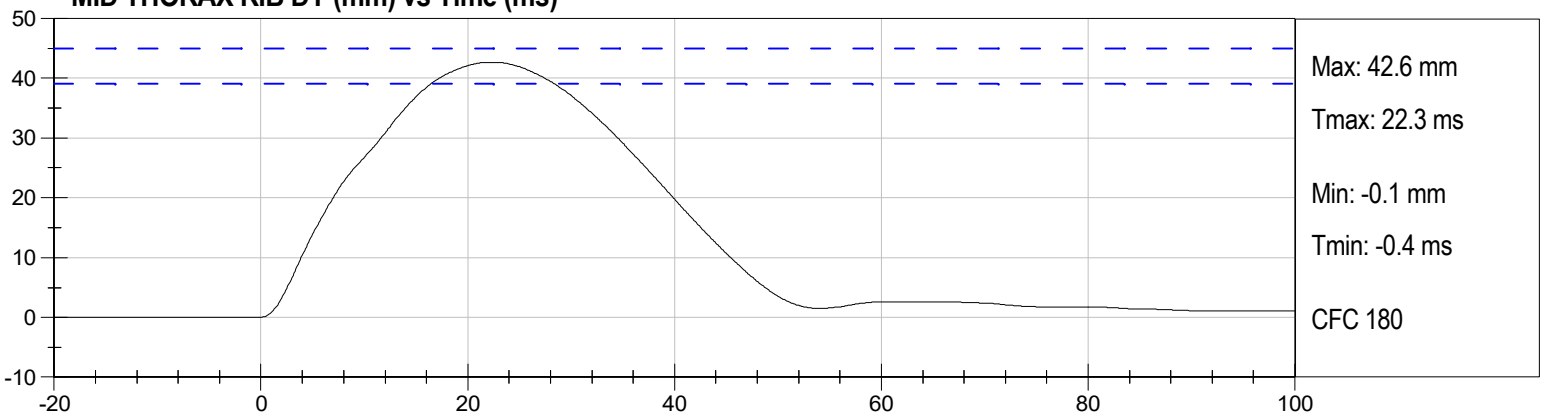
LOWER SPINE Y (g) vs Time (ms)



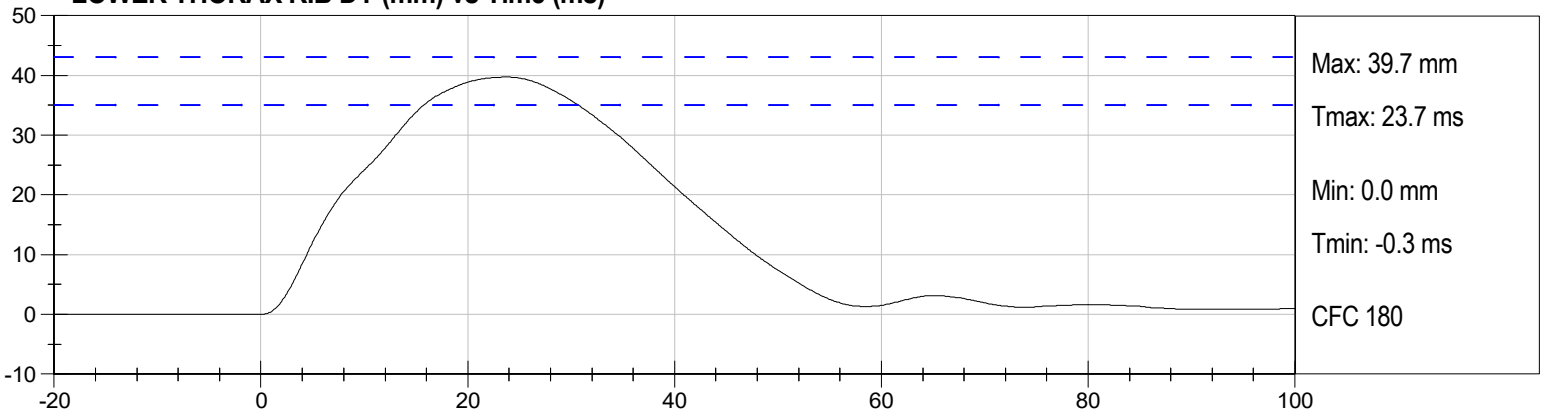
UPPER THORAX RIB DY (mm) vs Time (ms)



MID THORAX RIB DY (mm) vs Time (ms)



LOWER THORAX RIB DY (mm) vs Time (ms)



mga research corporation

Abdomen Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250696
Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	4.2 to 4.4	4.38	Pass
Peak Probe Acceleration	g	12 to 16	14	Pass
Lower Spine (T12) Y Acceleration	g	9 to 14	11	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	44	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	37	Pass

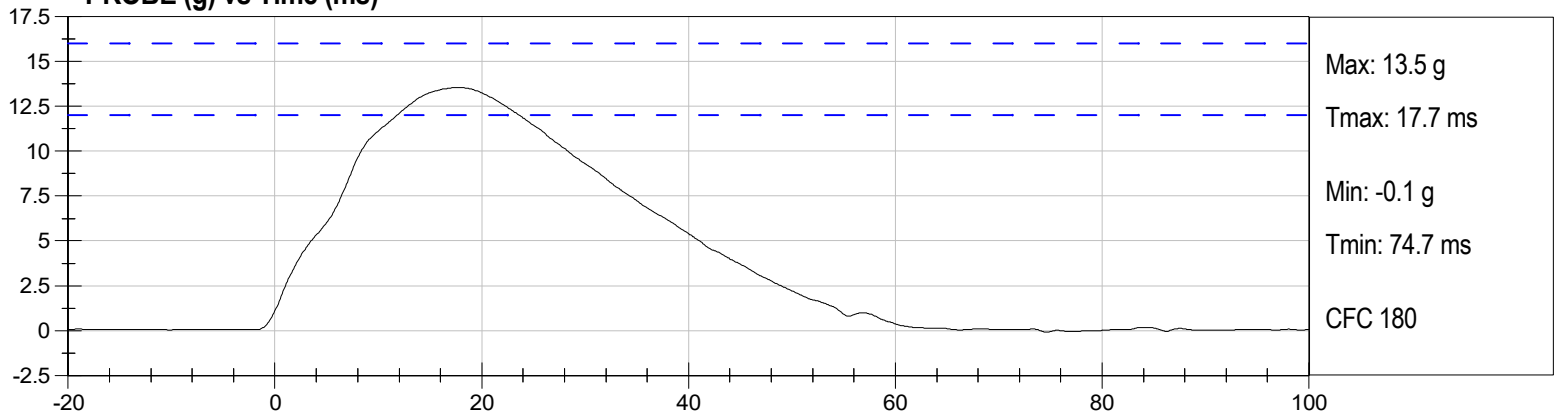
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
UPPER ABDOMINAL RIB DY	FTSS	G032	12/11/2024	6/12/2025
LOWER ABDOMINAL RIB DY	Medius	MJ5171	12/11/2024	6/12/2025

mga research corporation

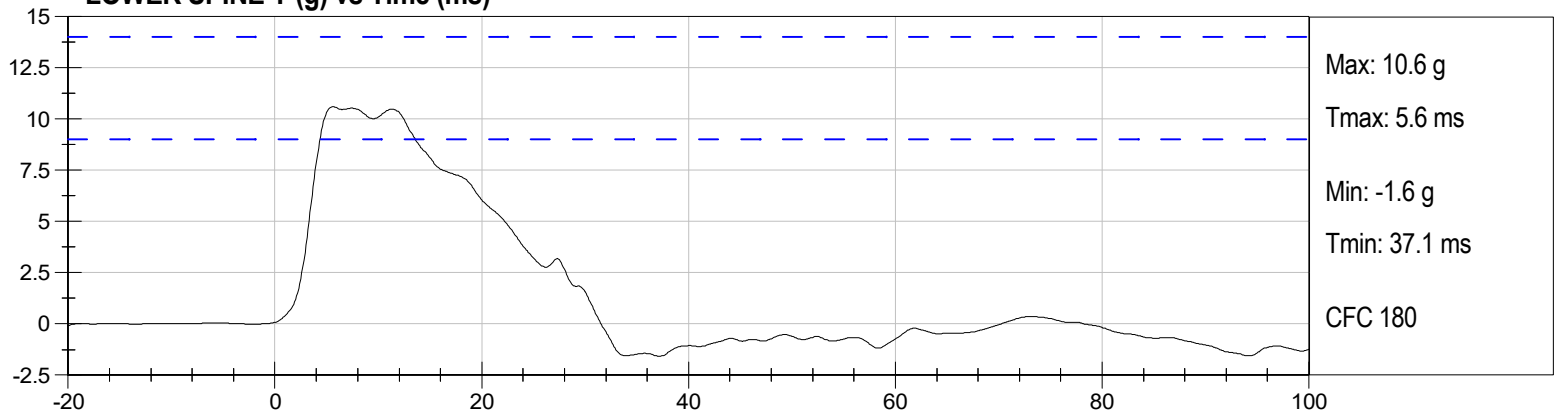
Abdomen Impact Test
SID IIs

Test Date: 03/10/2025
Test ID: D250696

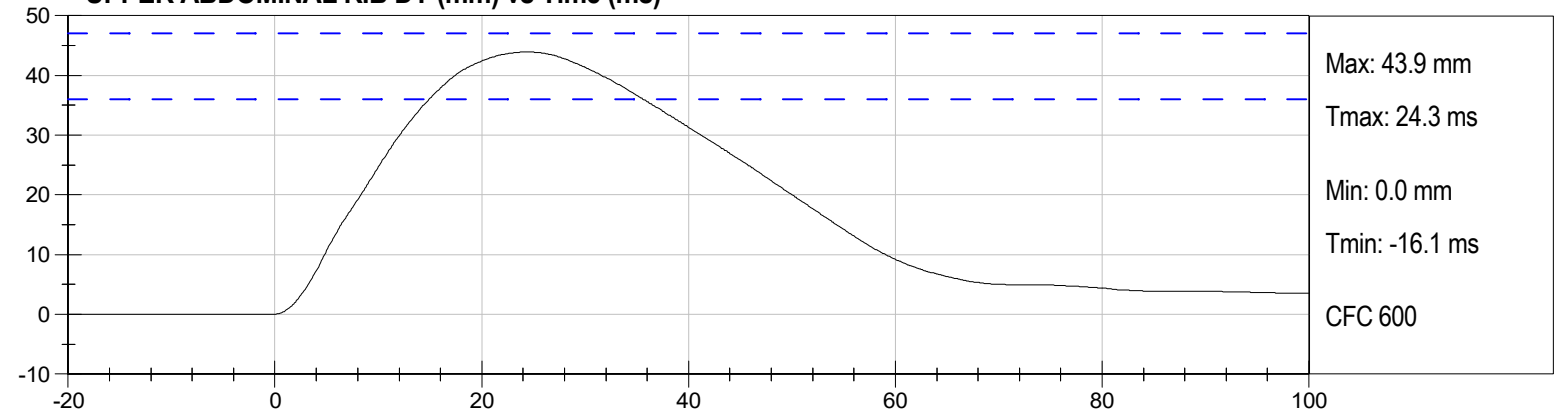
PROBE (g) vs Time (ms)



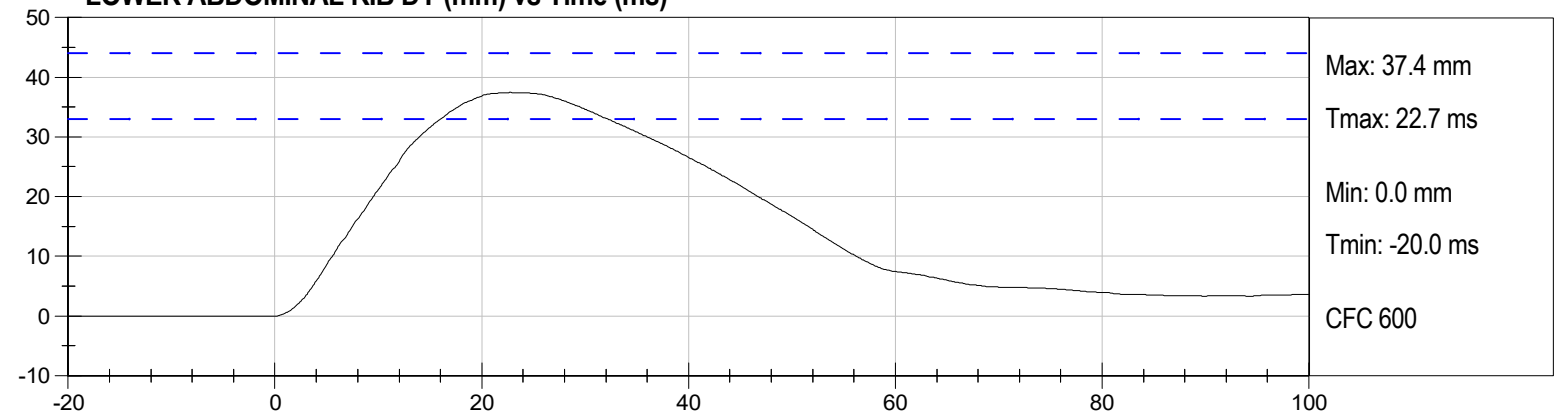
LOWER SPINE Y (g) vs Time (ms)



UPPER ABDOMINAL RIB DY (mm) vs Time (ms)



LOWER ABDOMINAL RIB DY (mm) vs Time (ms)



mga research corporation

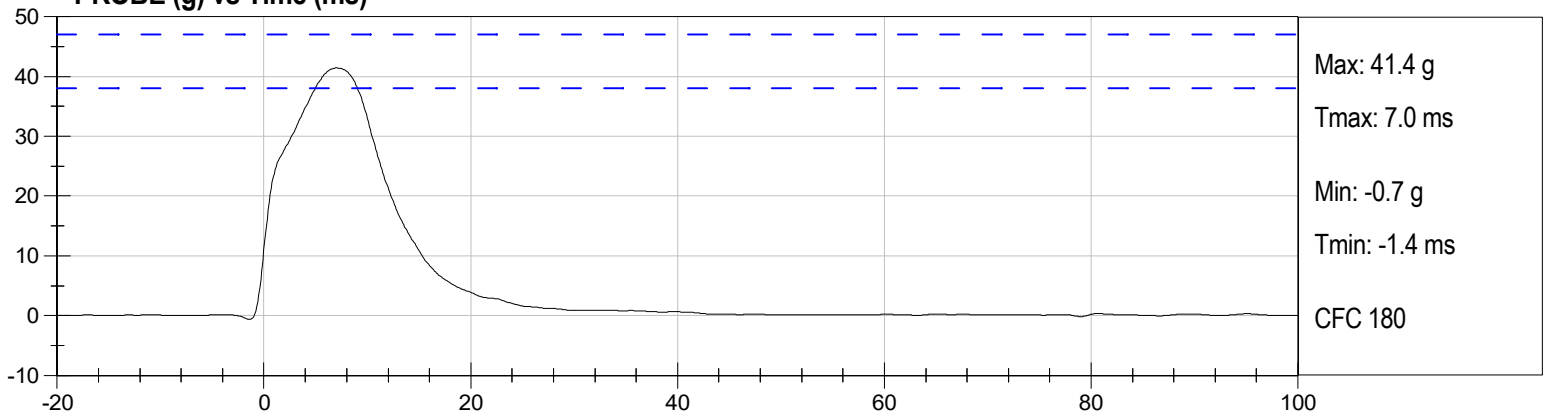
Acetabulum Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250697
Test Technician: Jonah Pulokas

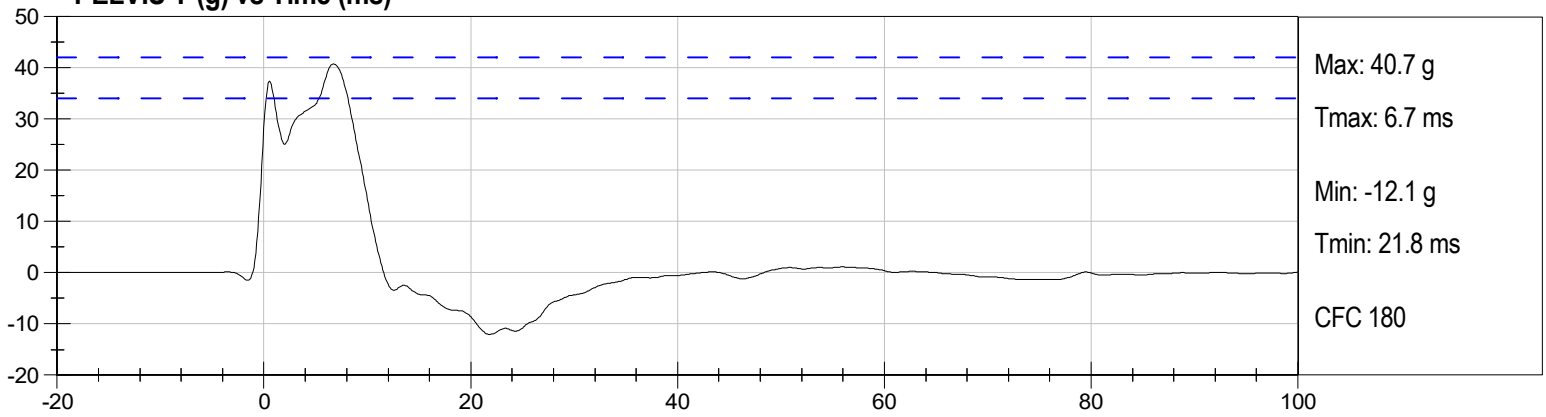
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Impact Velocity	m/s	6.6 to 6.8	6.68	Pass
Peak Probe Acceleration	g	38 to 47	41	Pass
Peak Pelvis Y Acceleration after 6 ms	g	34 to 42	40.7	Pass
Acetabulum Force	N	3600 to 4300	3766	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
PELVIS Y	Endevco	P82673	12/10/2024	6/11/2025
ACETABULUM FY	FTSS	ACG4285FY	05/24/2024	5/24/2025

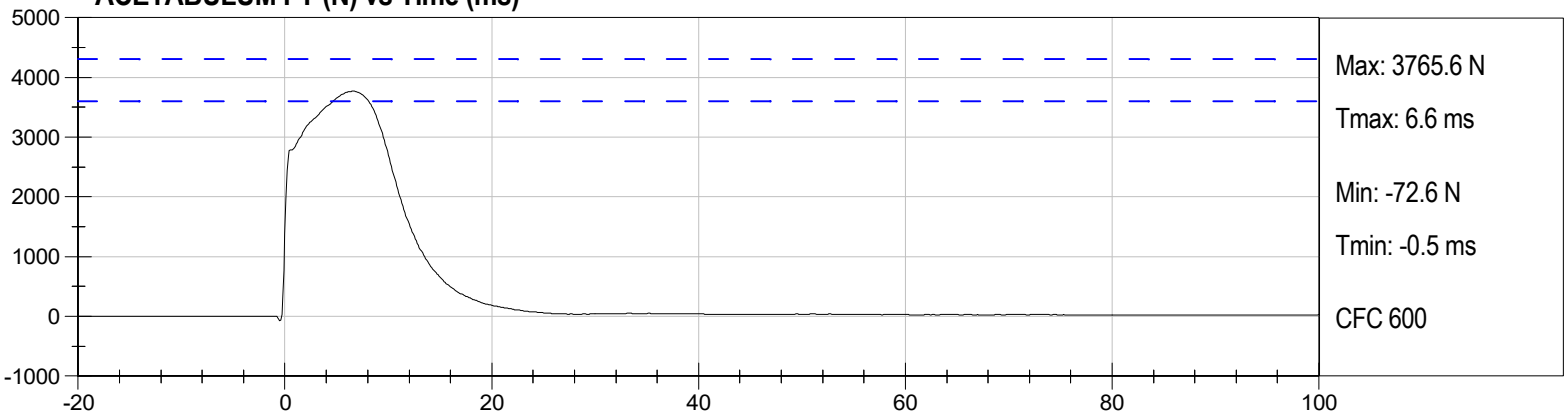
PROBE (g) vs Time (ms)



PELVIS Y (g) vs Time (ms)



ACETABULUM FY (N) vs Time (ms)



mga research corporation

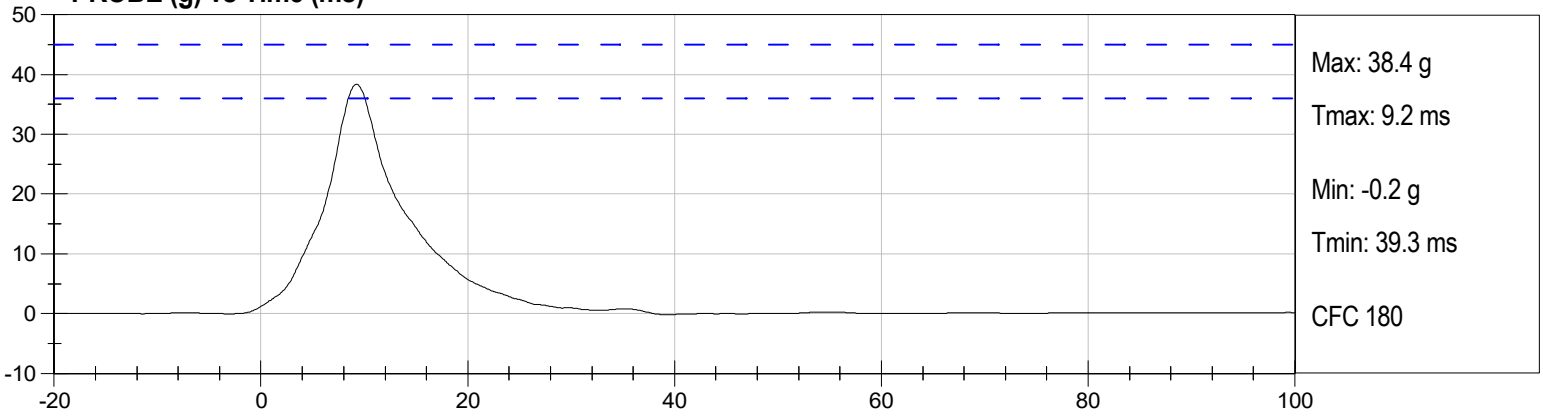
Iliac Impact Test
SID IIs
ATD Serial No: 306

Test Date: 03/10/2025
Test ID: D250698
Test Technician: Jonah Pulokas

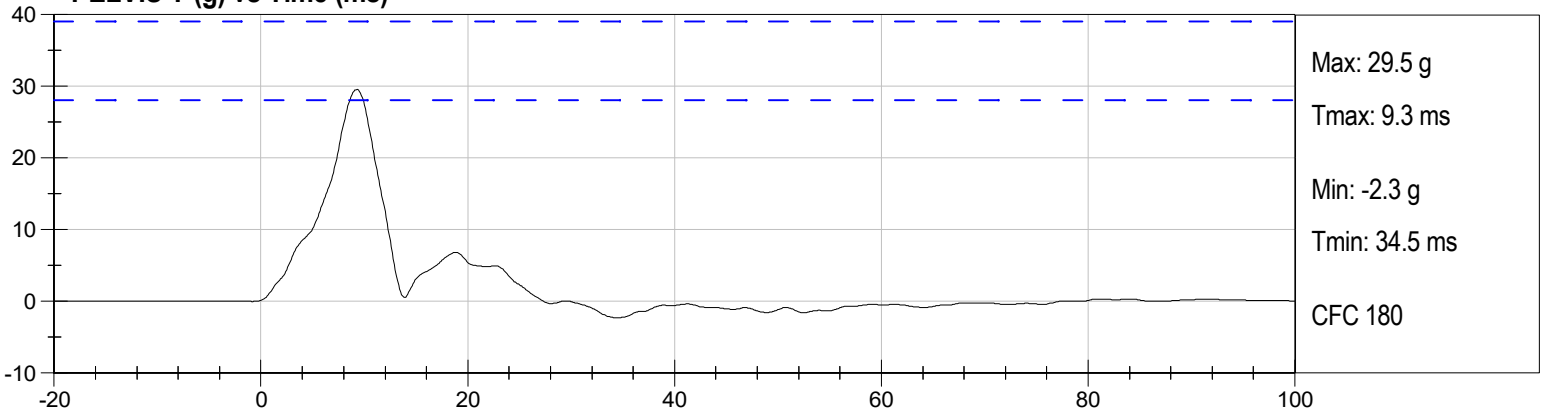
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Impact Velocity	m/s	4.2 to 4.4	4.23	Pass
Peak Probe Acceleration	g	36 to 45	38	Pass
Peak Pelvis Y Acceleration	g	28 to 39	29	Pass
Iliac Force	N	4100 to 5100	4250	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
PELVIS Y	Endevco	P82673	12/10/2024	6/11/2025
ILIUM CREST FY	FTSS	IWG3023FY	05/24/2024	5/24/2025

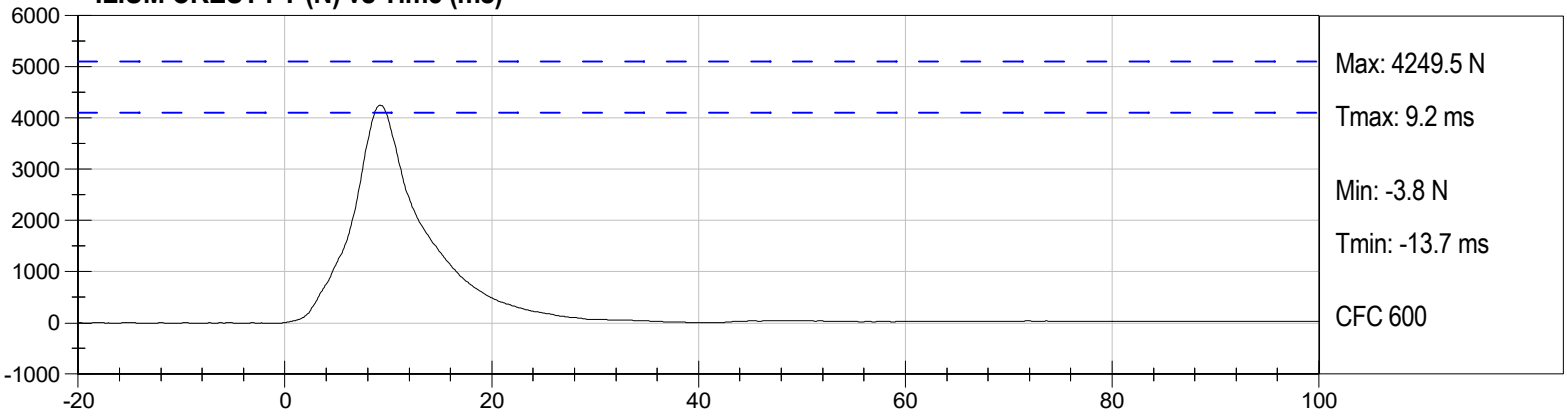
PROBE (g) vs Time (ms)



PELVIS Y (g) vs Time (ms)



ILIUM CREST FY (N) vs Time (ms)



SID-IIs Pelvis Plug Certification Test

Plug S/N 16590
Test Number 23375
Report Number 23432
Test Date 7/20/2022 11:07:50 AM

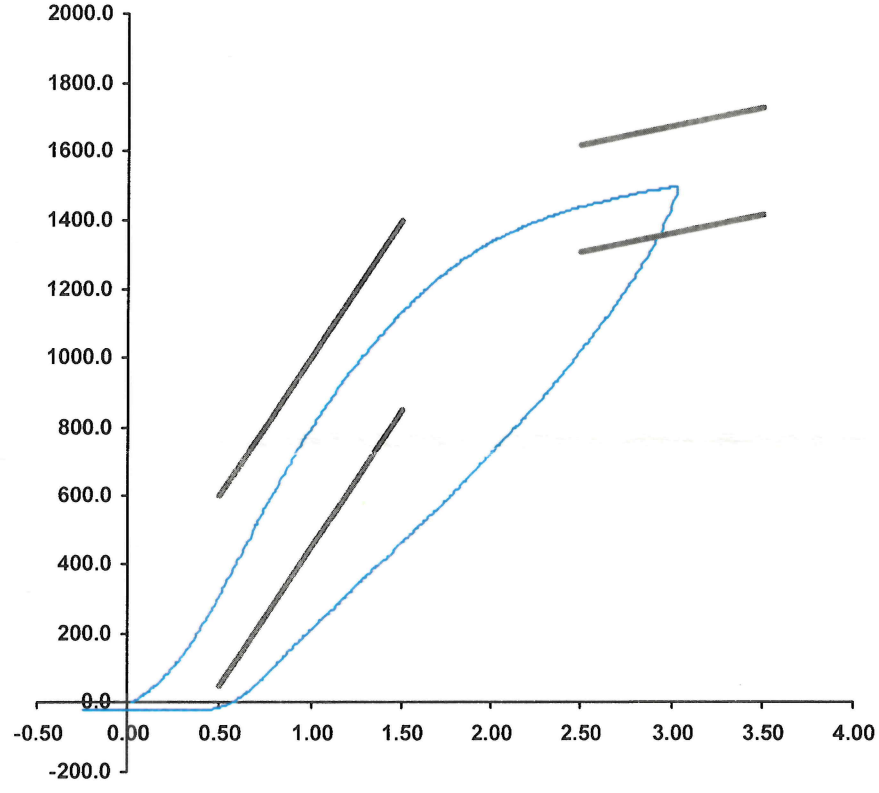
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	313	50	600
Force @ 1.5 mm (N)	1,131	850	1,400
Force @ 2.5 mm (N)	1,441	1,306	1,618
Force @ 3.0 mm (N)	1,496	1,361	1,673

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS) 1000

Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 20-Jul-22
SACO Research

By : DC Date : 7/20/22

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

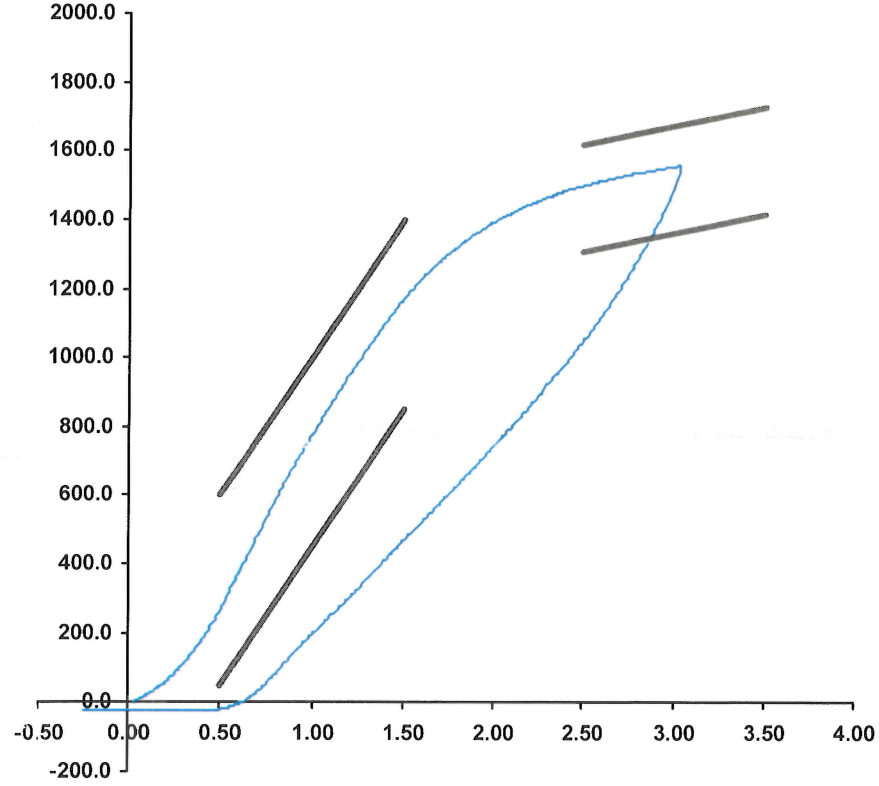
SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 15794
Test Number 20694
Report Number 20748
Test Date 10/15/2021 8:45:29 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	272	50	600
Force @ 1.5 mm (N)	1,176	850	1,400
Force @ 2.5 mm (N)	1,502	1,306	1,618
Force @ 3.0 mm (N)	1,558	1,361	1,673

Force (-N) vs Extension (-mm)



Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS) 1000

Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:

Operator

Part Number 180-4450

Template No 107 15-Oct-21
SACO Research

By : DC Date : 10/15/21

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

Table 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F032		
			Serial Number	Manufacturer	Calibration Date
Head CG Accelerometers		X	P79568	Endevco	11/21/2024
		Y	P79569	Endevco	11/21/2024
		Z	T30941	Endevco	11/21/2024
		Xr	P86797	Endevco	11/21/2024
		Yr	P94957	Endevco	11/21/2024
		Zr	P97381	Endevco	11/21/2024
Thorax Rib Displacement Potentiometers	Upper	Y	G236	Honeywell	11/21/2024
	Middle	Y	G368	Honeywell	11/21/2024
	Lower	Y	G164	Honeywell	11/21/2024
Abdomen Load Cells	Forward	Y	ABG1532	Denton	01/20/2025
	Middle	Y	ABG1534	Denton	01/20/2025
	Rear	Y	ABG1535	Denton	01/20/2025
Lower Spine Accelerometers (T12)		X	P79574	Endevco	11/21/2024
		Y	T14094	Endevco	11/21/2024
		Z	P82603	Endevco	11/21/2024
Public Symphysis Load Cell		Y	PG461	Denton	01/20/2025

Table 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 306		
				Serial Number	Manufacturer	Calibration Date
Head CG Accelerometers			X	P79003	Endevco	12/10/2024
			Y	P79445	Endevco	12/10/2024
			Z	P79724	Endevco	12/10/2024
			Xr	P84999	Endevco	12/10/2024
			Yr	P85000	Endevco	12/10/2024
			Zr	P85001	Endevco	12/10/2024
Head Angular Rate Sensors			X	ARS7566	DTS	07/31/2024
			Y	ARS7586	DTS	07/31/2024
			Z	ARS7602	DTS	07/31/2024
Displacement Potentiometers	Thoracic Rib	Upper	Y	G033	FTSS	12/11/2024
		Middle	Y	G2403	Servo	12/11/2024
		Lower	Y	G1270	FTSS	12/11/2024
	Abdominal Rib	Upper	Y	G032	FTSS	12/11/2024
		Lower	Y	MJ5171	Medius	12/11/2024
Lower Spine Accelerometers (T12)			X	P96332	Endevco	12/10/2024
			Y	P96335	Endevco	12/10/2024
			Z	P96341	Endevco	12/10/2024
Acetabulum Load Cell			Y	ACG4285	FTSS	05/24/2024
Iliac Wing Load Cell			Y	IWG3023	FTSS	05/24/2024
Pelvis Plug (struck side)				16590	SACO	07/20/2022
Pelvis Plug (non-struck side)				15794	SACO	10/15/2021

Table 3 – Vehicle Instrumentation

			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	T44595	Endevco	02/14/2025
	Vehicle Center of Gravity	Y	T39078	Endevco	10/09/2024
	Vehicle Center of Gravity	Z	A383426	MSI	02/16/2025
2	Right Sill at Front Seat	X	T44144	Endevco	10/25/2024
	Right Sill at Front Seat	Y	T44148	Endevco	10/25/2024
	Right Sill at Front Seat	Z	T40091	Endevco	02/25/2025
3	Right Sill at Rear Seat	X	T40086	Endevco	02/25/2025
	Right Sill at Rear Seat	Y	T44174	Endevco	10/31/2024
	Right Sill at Rear Seat	Z	T45077	Endevco	02/14/2025
4	Left Sill at Front Door	Y	T42841	Endevco	01/23/2025
5	Left Sill at Rear Door	Y	T43472	Endevco	02/14/2025
6	Left A-Post Lower	Y	T44418	Endevco	02/25/2025
7	Left A-Post Middle	Y	T43948	Endevco	02/06/2025
8	Left B-Post Lower	Y			
9	Left B-Post Middle	Y			
10	Front Seat Track	Y	T43953	Endevco	02/25/2025
11	Rear Seat Track or Structure	Y	T39741	Endevco	02/26/2025
12	Right Rear Occ. Compartment	Y	T39914	Endevco	02/16/2025
13	Engine Block	X	T45282	Endevco	02/06/2025
	Engine Block	Y	T45045	Endevco	02/16/2025
14	Rear Floorpan Above Axle	X	T43937	Endevco	02/16/2025
	Rear Floorpan Above Axle	Y	T44521	Endevco	02/16/2025
	Rear Floorpan Above Axle	Z	T43999	Endevco	02/16/2025

Table 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	PCB1183D	PCB	03/15/2024
MDB Center of Gravity	Y	PCB1822D	PCB	03/15/2024
MDB Center of Gravity	Z	PCB1753D	PCB	03/15/2024
Left Frame at Rear Axle Centerline	X	PCB1438D	PCB	03/15/2024
Left Frame at Rear Axle Centerline	Y	PCB1653D	PCB	03/15/2024