

REPORT NUMBER: SideNCAPMDB-MGA-25-015

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

**MAZDA MOTOR CORPORATION
2025 Mazda CX-70 MHEV 5-Door SUV
NHTSA No.: O20255400**

**MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105**



Test Date: March 3, 2025

Final Report Date: April 15, 2025

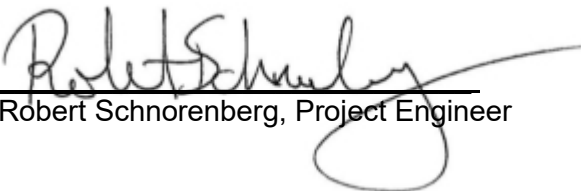
FINAL REPORT

**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**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof.

If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement.

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

1. Report No. SideNCAPMDB-MGA-25-015	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing and FMVSS No. 305 Indicant Testing of 2025 Mazda CX-70 MHEV 5-Door SUV, NHTSA No.: O20255400	5. Report Date April 15, 2025	6. Performing Organization Code MGA
	8. Performing Organization Report No. SideNCAPMDB-MGA-25-015	10. Work Unit No.
7. Author(s) Ben Fischer, Program Manager	11. Contract or Grant No. 693JJ920D000017	13. Type of Report and Period Covered: Final Test Report March 3, 2025 to April 15, 2025
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105	14. Sponsoring Agency Code NRM-100	15. Supplementary Notes
	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	

16. Abstract

A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2025 Mazda CX-70 MHEV 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 3, 2025.

The impact velocity of the Moving Deformable Barrier (MDB) was 62.30 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.7°C. The target vehicle post-test maximum crush was 130 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	64.726
Maximum Thorax Rib Deflection	mm	44	14.204
Total Abdominal Force	N	2500	593.298
Pubic Symphysis Force	N	6000	916.499
Resultant Lower Spine Acceleration	g	82*	16.846

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	30.057
Resultant Lower Spine Acceleration	g	82	29.767
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2119.576
Maximum Thoracic Rib Deflection	mm	38*	11.316
Maximum Abdomen Rib Deflection	mm	45*	4.680

*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 New Car Assessment Program (NCAP) Side Impact MDB ES-2re SID-IIs	18. Distribution Statement 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 Unclassified	20. Security Classification of Page Unclassified	21. No. of Pages 244	22. Price
--	--	--------------------------------	------------------

TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	Purpose and Summary of Test	1
2	Occupant and Vehicle Information / Data Sheets	3

<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	4
2	Seat, Seat Belt, Steering Wheel Adjustment and Fuel System Data	8
3	Dummy Longitudinal Clearance Dimensions	12
4	Dummy Lateral Clearance Dimensions	13
5	Camera and Instrumentation Data	14
6	Test Vehicle Accelerometer Locations	15
7	MDB Accelerometer Locations	16
8	Post-Test Observations	17
9	MDB Summary of Results	19
10	Test Vehicle Profile Measurements	20
11	Test Vehicle Exterior Crush Measurements	21
12	MDB Exterior Static Crush Measurements	24
13	Vehicle and MDB Damage Profile Distances	25
14	FMVSS No. 301 Static Rollover Results	26
15	Dummy/Vehicle Temperature and Humidity Stabilization Data	27
305-1	General Test and Vehicle Parameter Data for Indicant FMVSS No. 305 Testing	28
305-2	Pre-Impact Data for Indicant FMVSS No. 305 Testing	29
305-3	Pre-Impact Electrical Isolation Measurements and Calculations for Indicant FMVSS No. 305 Testing	30
305-4	Post-Impact Data for Indicant FMVSS No. 305 Testing	32
305-5	Static Rollover Test Data for Indicant FMVSS No. 305 Testing	35

<u>Appendix</u>		
A	Photographs	A
B	Dummy Response Data Plots	B
C	Dummy Qualification and Performance Verification	C
D	Test Equipment and Instrumentation Calibration	D

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 MHEV 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 MHEV 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 62.30 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 3, 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	64.726
Maximum Thorax Rib Deflection	mm	44	14.204
Total Abdominal Force	N	2500	593.298
Pubic Symphysis Force	N	6000	916.499
Resultant Lower Spine Acceleration	g	82*	16.846

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	30.057
Resultant Lower Spine Acceleration	g	82	29.767
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2119.576
Maximum Thoracic Rib Deflection	mm	38*	11.316
Maximum Abdomen Rib Deflection	mm	45*	4.680

*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.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

**DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20255400	Traction Control System (TCS)	Yes
Model Year	2025	Auto-Leveling System	No
Make	Mazda	Automatic Door Locks (ADL)	Yes
Model	CX-70 MHEV	Power Window Auto-Reverse	Yes
Body Style	5-Door SUV	Other Optional Feature	No
VIN	JM3KJDHC7S1105294	Driver Front Airbag	Yes
Body Color	Zircon Sand Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	76 km / 47 mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	3.3	Driver Torso Airbag	No
Type/No. Cylinders	Inline 6	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Longitudinal	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)	2728
Date of Manufacture	04/24	GAWR Front (kg)	1287
Vehicle Type	MPV	GAWR Rear (kg)	1445

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	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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	250	250
Cold Pressure (kPa)	250	250
Recommended Tire Size	275/45R21	275/45R21
Tire Size on Vehicle	275/45R21	275/45R21
Tire Manufacturer	Toyo	Toyo
Tire Model	Open Country A-50	Open Country A-50
Treadwear	300	300
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 2 Polyester, 1 Nylon	2 Steel, 2 Polyester, 1 Nylon
Load Index/Speed Symbol	107W	107W
Tire Material	Rubber	Rubber
DOT Safety Code Left	1N3V6 22AD 0524	1N3V6 22AD 0524
DOT Safety Code Right	1N3V6 22AD 0524	1N3V6 22AD 0524

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

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

TEST VEHICLE TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	235	240	235	240
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	581.0	526.5		623.0	594.0		610.5	613.0	
Right	kg	572.0	532.5		593.0	569.5		578.0	584.5	
Ratio	%	52.1%	47.9%		51.1%	48.9%		49.8%	50.2%	
Totals	kg	1153.0	1059.0	2212.0	1216.0	1163.5	2379.5	1188.5	1197.5	2386.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2212.0	(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 (TVTWTW)	kg	2386.0	(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	847	837	Yes
Right Front	mm	843	833	Yes
Right Rear	mm	856	853	Yes
Left Rear	mm	850	842	Yes
Vehicle CG (Aft of Front Axle)	mm	1564	1524	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	22	19	

* 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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Units	Weight
Weight of Ballast Added	kg	5
Components Removed: none	kg	

TEST SURFACE MARKINGS

	Units	Distance from 63° Impact Angle Line
Fore 25 mm Target	mm	998
Aft 25 mm Target	mm	1004
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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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	19.2	10.5	14.9
Front Passenger Seat	22.4	12.3	17.4
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	14.9	0	Max	52	52	52
			Mid	26	26	26
			Min	0	0	0
Front Passenger Seat	17.4	0	Max	48	48	48
			Mid	24	24	24
			Min	0	0	0
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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

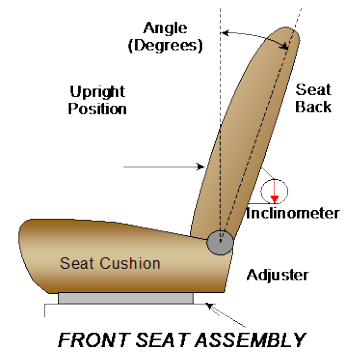
NHTSA No.: O20255400
 Test Date: 3/3/2025

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-Most Position	
	mm	Detents (1 st as 1)	mm	Detent (1 st as 0)
Driver Seat	255		128	
Front Passenger Seat	216		108	
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.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents (1 st as 1)	Degrees	Detent (1 st as 0)
Driver Seat	74.7		6.0	
Front Passenger Seat	69.4		5.5	
Front Center Seat				
Struck Side Rear Seat	16.7	10	4.1	0
Non-Struck Side Rear Seat	16.7	10	4.1	0
Rear Center Seat	16.7	10	4.1	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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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

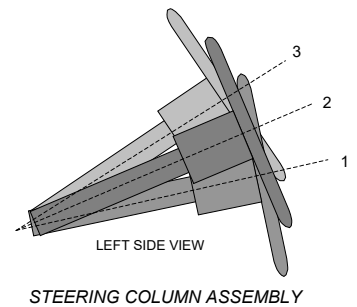
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	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

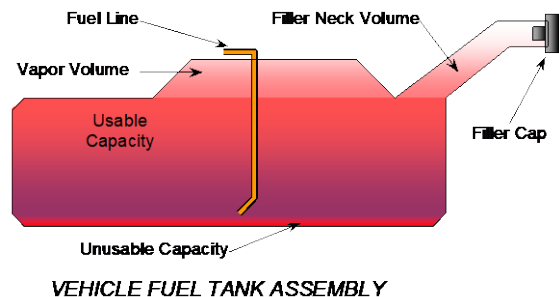
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

	Wheel Angle (°)	Fore/Aft Position (mm)
Lowermost, Position 1	67.9	
Geometric Center, Position 2	65.6	
Uppermost, Position 3	63.3	
Telescoping Steering Wheel Travel		68
Test Position	65.6	34



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.



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

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

FUEL TANK CAPACITY DATA

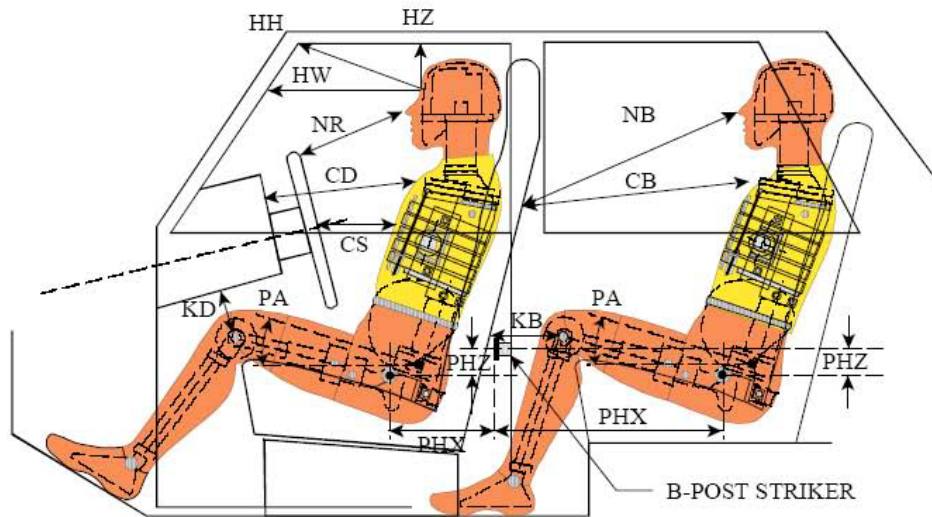
	Liters
Usable Capacity of Standard Tank (see S1 - Vehicle Setup Information)	73.8
Usable Capacity of Optional Tank (see S1 - Vehicle Setup Information)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	73.8
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	68.6
Actual Amount of Solvent Used	68.5
1/3 of Usable Capacity	24.6

Is the actual amount of solvent used in the test equal to $93\% \pm 1\%$ 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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025



LEFT SIDE VIEW

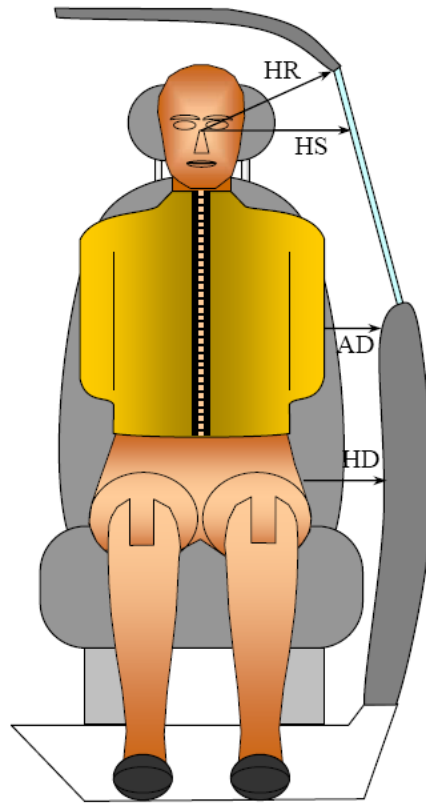
NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	315	21.1		
HW		Head to Windshield	580	0		
HZ	HZ	Head to Roof Liner	156	90	264	90
NR	NB	Nose to Rim/Seat Back	428	14.8	553	10.9
CD	CB	Chest to Dashboard/Seat Back	558	8.4	562	4.2
CS		Chest to Steering Wheel	342	9.7		
KDL	KBL	Left Knee to Dash/Seat Back	167	39.3	325	8.7
KDR	KBR	Right Knee to Dash/Seat Back	163	39.3	313	13.0
PAX	PAX	Pelvic Tilt Angle X		22.8		21.9
PAY	PAY	Pelvic Tilt Angle Y		-0.6		-0.8
PHX	PHX	Hip Point to Striker (X-Axis)	196		391	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	153		260	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

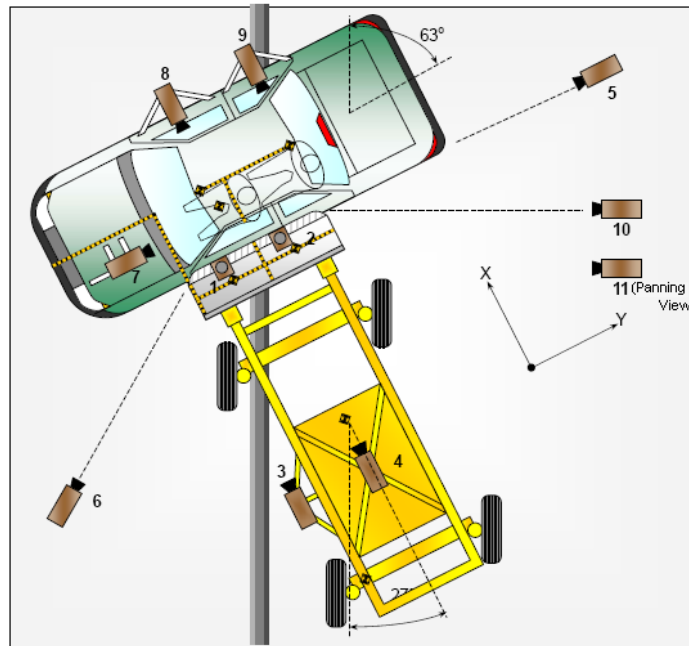


Code	Measurement Description	Driver	Passenger
		Length (mm)	
HR	Head to Side Header	245	272
HS	Head to Side Window	328	360
AD	Arm to Door	83	146
HD	Hip Point to Door	156	174

**DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA**

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates* (mm)			Lens (mm)	Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	590	1285	-4995	8	1000
2	Overhead Close-Up	0	805	-4895	20	1000
3	Left Impact Point (MDB)				50	1000
4	Side Overall (MDB)				16	1000
5	Rear	-25	7980	-1495	24	1000
6	Left Front	-1530	-4455	-1515	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

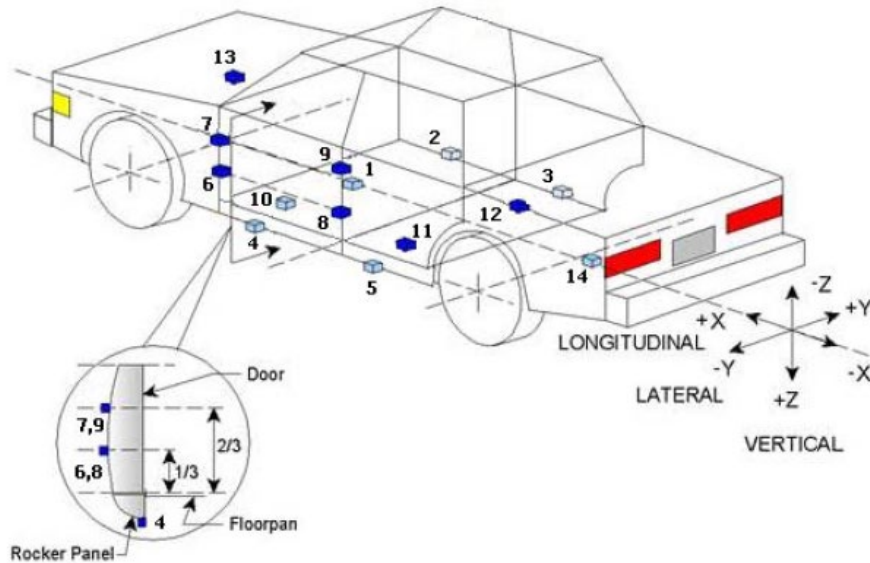
INSTRUMENTATION

	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 MHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
Test Date: 3/3/2025



TEST VEHICLE ACCELEROMETER LOCATIONS

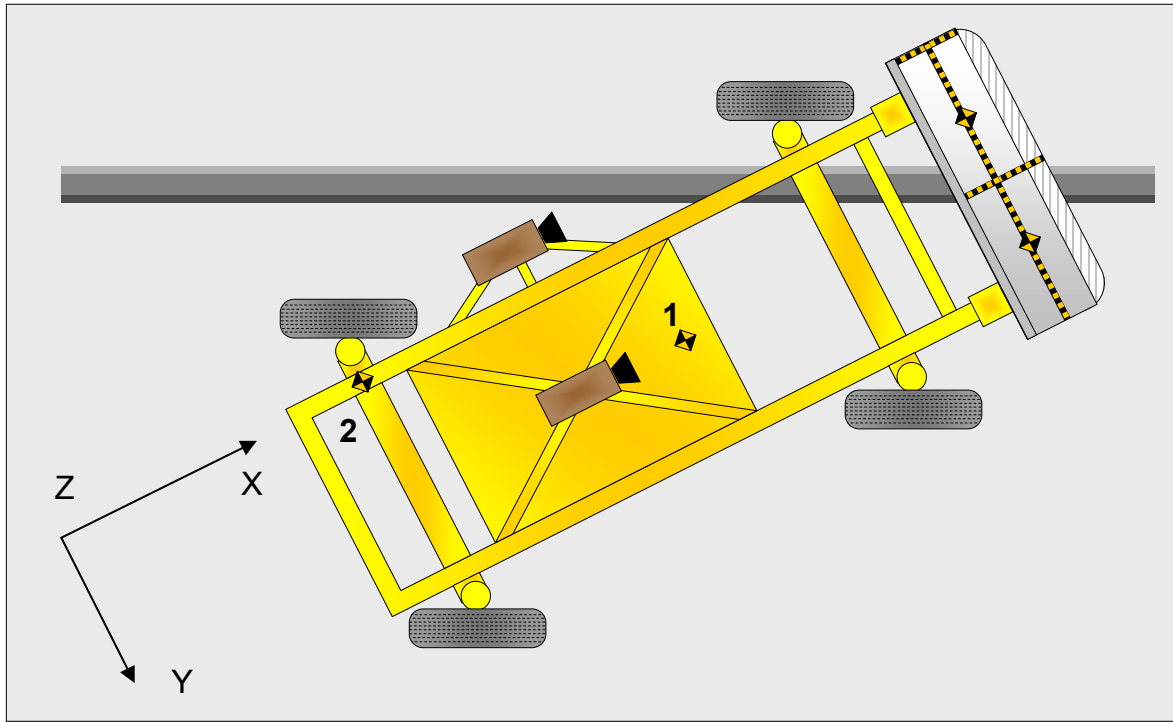
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2659	46	-510
2	Right Sill at Front Seat	2980	736	-278
3	Right Sill at Rear Seat	1967	737	-281
4	Left Sill at Front Door	2977	-742	-270
5	Left Sill at Rear Door	1962	-741	-275
6	Left Lower A-Post	3482	-876	-591
7	Left Middle A-Post	3472	-865	-852
8	Left Lower B-Post			
9	Left Middle B-Post			
10	Front Seat Track	2511	-408	-425
11	Rear Seat Structure	2108	-420	-466
12	Rt. Rear Occ. Compartment	2113	410	-464
13	Engine Block	4301	5	-931
14	Rear Above Axle	1127	-6	-571

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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025



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	1405
---	----	------

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Curtain Airbag, Headliner	Curtain Airbag
Left Side of Head	Curtain Airbag, Headliner	Curtain Airbag
Back of Head	Curtain Airbag, Headrest	Headrest, Seatback
Left Shoulder	Door Panel	Side Torso/Pelvis Airbag, Seatback
Upper Torso	Seatback	Side Torso/Pelvis Airbag, Seatback
Lower Torso	Side Torso/Pelvis Airbag, Seatback	Side Torso/Pelvis Airbag
Left Hip	Side Torso/Pelvis Airbag, Seat Cushion	Side Torso/Pelvis Airbag
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
Sill Separation	No
Windshield Damage	No
Side Window Damage	LF window cracked
Other Notable Effects	None

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

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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		3117
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		508
Actual Impact Point (Aft of Front Axle)	mm		522
Horizontal Offset (+forward / -rearward)	mm	+/- 50 of intended impact point	-14
Vertical Offset (+down / -up)	mm	+/- 20 of intended impact point	1

**DATA SHEET NO. 9
MDB SUMMARY OF RESULTS**

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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	593.0	1364.4

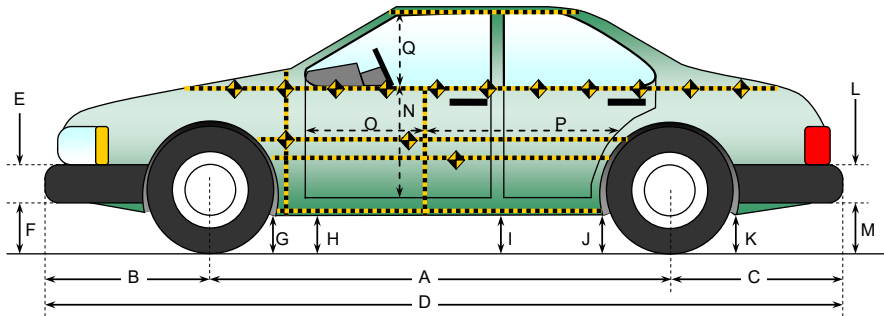
SPEED AND ANGLE AT IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.30
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.43
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.9
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.9
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	26.9

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
Test Date: 3/3/2025



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

LEFT SIDE VIEW

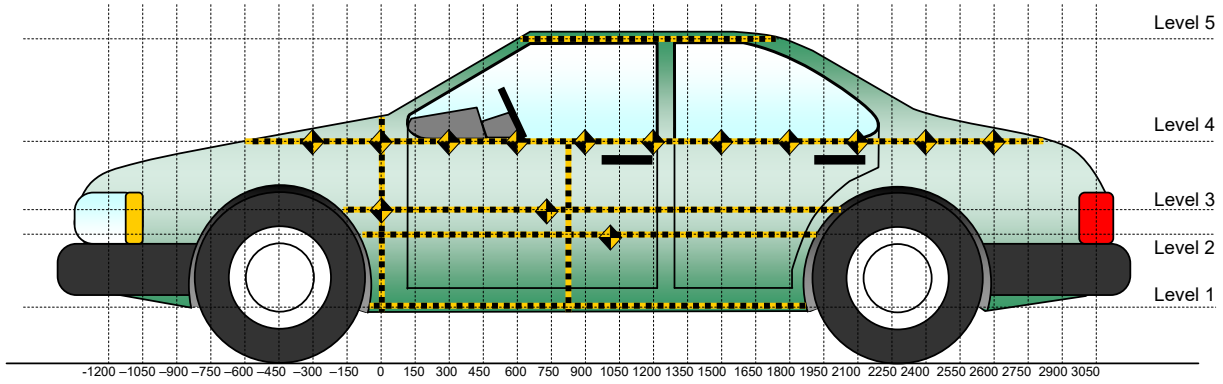
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Change
A	Wheelbase	3117	3119	2
B	Front Axle to FSOV	852	850	-2
C	Rear Axle to RSOV	1120	1121	1
D	Total Length at Centerline	5089	5090	1
E	Front Bumper Thickness	75	75	0
F	Front Bumper Bottom to Ground	449	463	14
G	Sill Height at Front Wheel Well	264	299	35
H	Sill Height at Front Door Leading Edge	264	303	39
I	Sill Height at B Pillar	263	308	45
J1	Sill Height at Rear Wheel Well	268	267	-1
J2	Pinch Weld Height at Rear Wheel Well	268	274	6
K	Sill Height Aft of Rear Wheel Well	270	278	8
L	Rear Bumper Thickness	126	125	-1
M	Rear Bumper Bottom to Ground	448	453	5
N	Sill Height to Window Bottom Sill	745	734	-11
O	Front Door Leading Edge to Impact CL	570	560	-10
P	Rear Door Trailing Edge to Impact CL	1391	1346	-45
Q	Front Window Opening	358	362	4
R	Right Side Length	4608	4609	1
S	Left Side Length	4610	4607	-3
T	Vehicle Width at B Post	1874	1799	-75
U	Front Wheel Track Width	1690		
V	Rear Wheel Track Width	1688		

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025



All Measurements Shown in mm

LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	446	116	1200
2	Occupant H-Point	711	128	1650
3	Mid Door	737	130	1650
4	Window Sill	1125	27	1350
5	Window Top	1661	2	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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

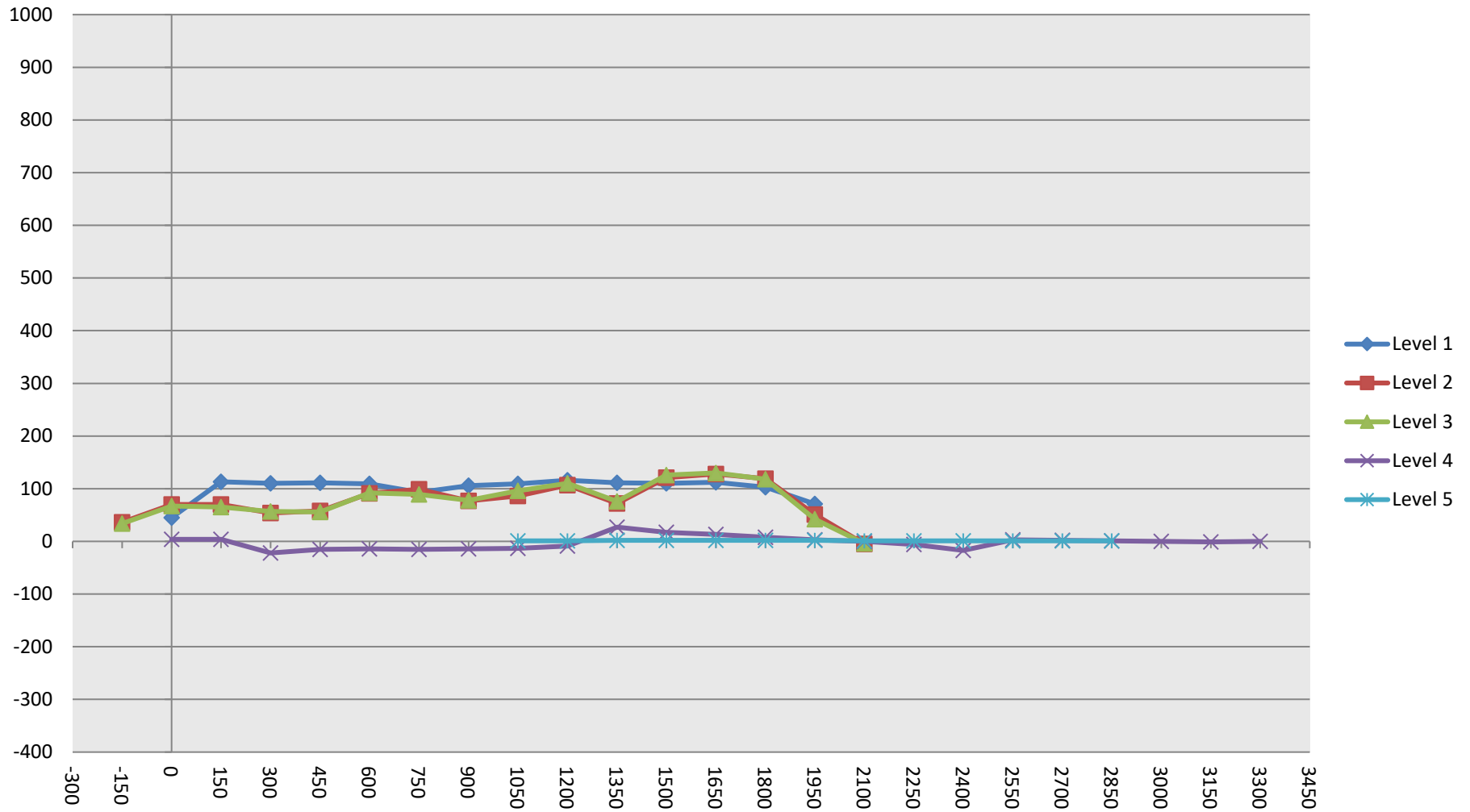
	Pre-Test					Post-Test					Exterior Crush				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-2100															
-1950															
-1800															
-1650															
-1500															
-1350															
-1200															
-1050															
-900															
-750															
-600															
-450															
-300															
-150		1003	997				967	963				36	34		
0	988	978	975	834		943	908	908	830		45	70	67	4	
150	975	956	954	845		862	886	889	841		113	70	65	4	
300	969	945	944	855		859	891	887	877		110	54	57	-22	
450	964	940	939	866		853	882	883	881		111	58	56	-15	
600	961	938	937	877		852	847	845	891		109	91	92	-14	
750	959	937	936	885		866	838	847	900		93	99	89	-15	
900	958	936	936	894		852	859	858	908		106	77	78	-14	
1050	956	936	936	900	640	847	850	840	913	639	109	86	96	-13	1
1200	956	937	937	903	656	840	830	827	912	655	116	107	110	-9	1
1350	955	937	937	907	660	844	865	861	880	658	111	72	76	27	2
1500	955	938	938	910	660	845	817	812	893	658	110	121	126	17	2
1650	955	940	939	911	659	843	812	809	898	657	112	128	130	13	2
1800	958	944	943	911	659	855	825	825	903	657	103	119	118	8	2
1950	966	953	951	909	658	895	902	909	906	656	71	51	42	3	2
2100	980	976	973	908	657		981	977	908	656		-5	-4	0	1
2250		996	992	905	656				911	655				-6	1
2400				904	654				921	653				-17	1
2550				901	645				898	644				3	1
2700				899	629				897	628				2	1
2850				896	600				895	599				1	1
3000				890					890					0	
3150				881					882					-1	
3300				872					872					0	
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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

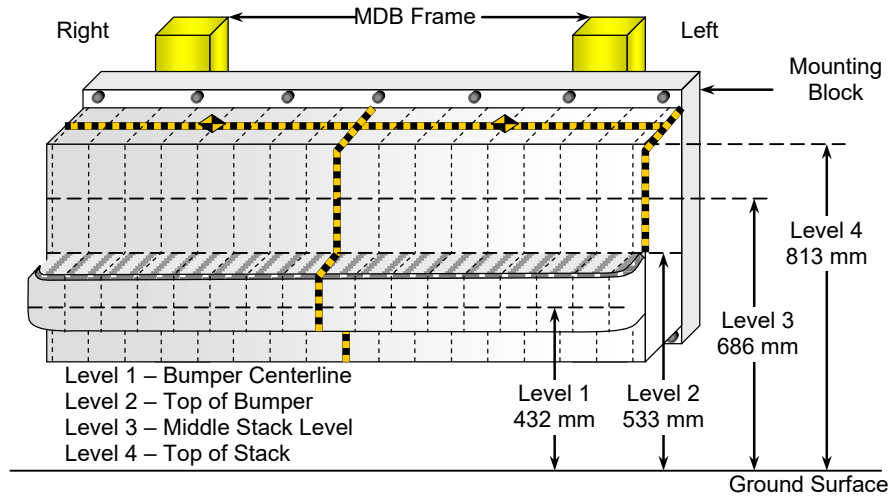
NHTSA No.: O20255400
 Test Date: 3/3/2025



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025



FRONT VIEW

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Row	Vertical Location		From Centerline		Maximum Crush (mm)
	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	700	Right	269
B	Top of Bumper	533	800	Left	214
C	Mid-Level	686	700	Left	176
D	Top of Stack	813	800	Left	219

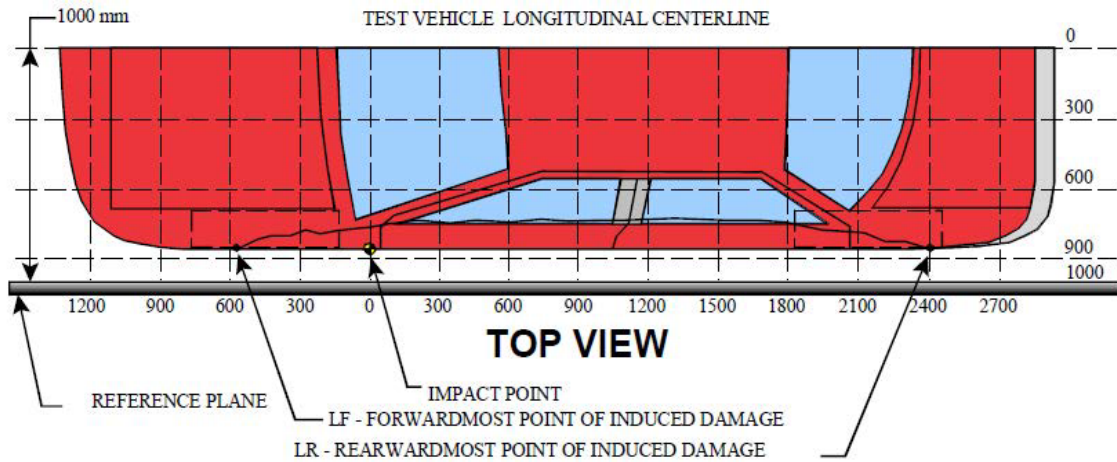
DEFORMABLE BARRIER STATIC CRUSH

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
4	143	118	120	128	159	126	105	105	105	119	132	127	141	154	177	204	219
3	133	125	125	135	156	154	139	136	118	105	103	110	131	155	167	176	174
2	205	206	203	199	199	198	194	196	195	195	194	193	194	194	197	207	214
1	266	269	266	266	264	262	259	258	256	257	259	256	252	250	249	250	245

**DATA SHEET NO. 13
VEHICLE AND MDB DAMAGE PROFILE DISTANCES**

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
Test Date: 3/3/2025



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Max. Static Crush (mm)
1	1950	3	91	49	42
2	1557	3	191	62	129
3	1065	3	162	64	98
4	792	3	147	64	83
5	393	3	116	59	57
6	0	3	92	25	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	742	476	266
2	480 mm right of center	1	729	463	266
3	160 mm right of center	1	721	463	258
4	160 mm left of center	1	719	463	256
5	480 mm left of center	1	717	463	254
6	800 mm left of center	1	721	476	245

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

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

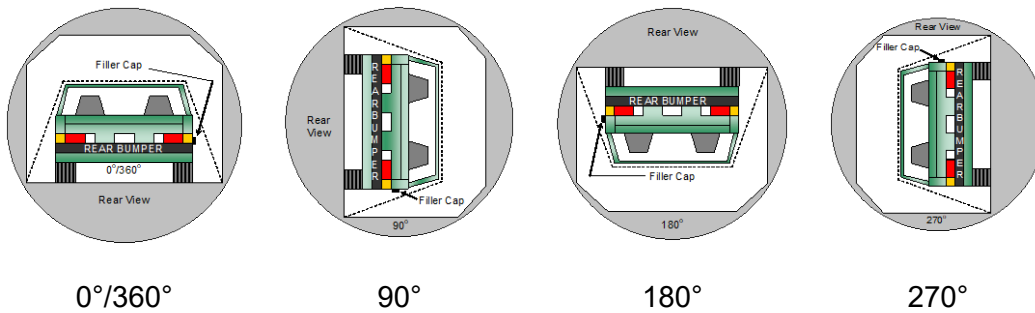
NHTSA No.: O20255400
 Test Date: 3/3/2025

Test Time: 1:16 pm

Temperature: 21.7°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



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	110	300	410
90° to 180°	112	300	412
180° to 270°	108	300	408
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	

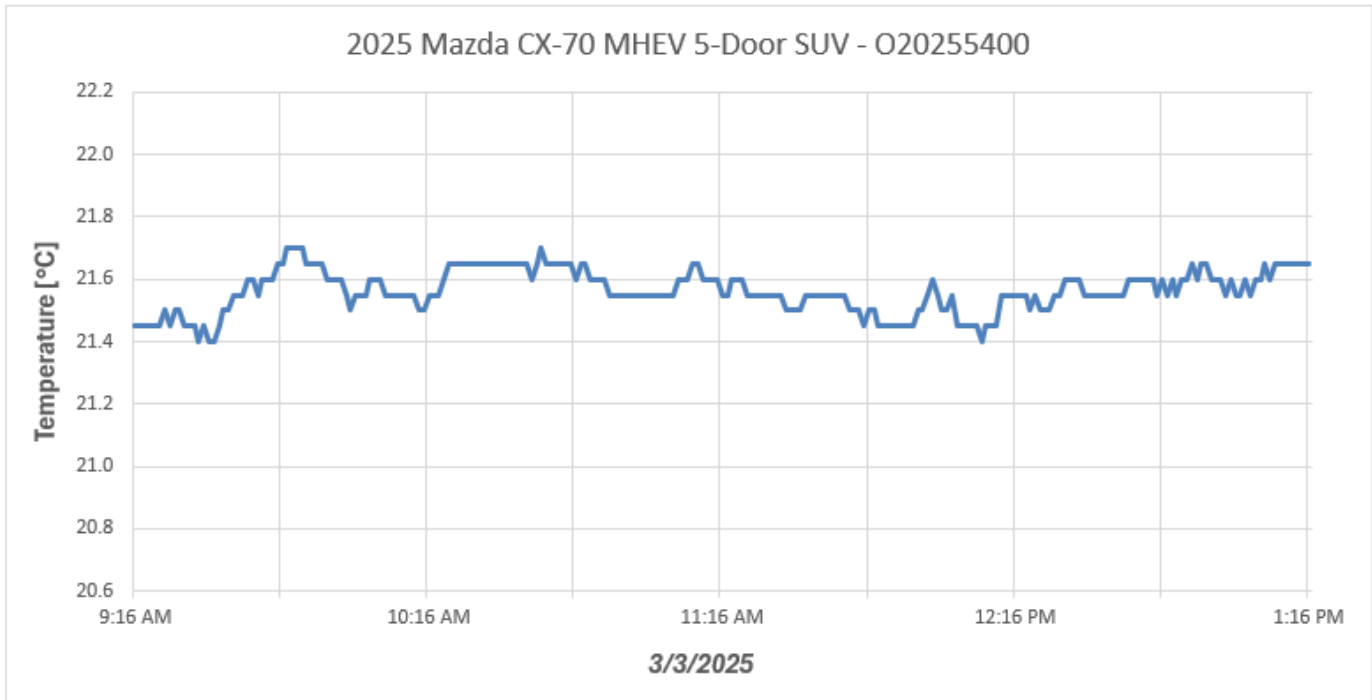
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025



Serial #	Description	Maximum	Average	Minimum	Units
W2425691	VSC North Hall - Temp (3016)	21.70	21.56	21.40	°C

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

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
Test Date: 3/3/2025

ELECTRIC VEHICLE PROPULSION SYSTEM

	Units	Observations and Conclusions
Type of Electric Vehicle		Gas-Electric Hybrid
Propulsion Battery Type		Lithium-ion battery
Nominal Voltage	V	44.4
Physical Location of Automatic Propulsion Battery Disconnect		Automatic Propulsion Battery Disconnect is located 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 below the 2 nd row seat cushion.

PROPULSION BATTERY STATE OF CHARGE

<i>For all battery types:</i>	
Voltage range corresponding to useable energy of the battery:	
Minimum State of Charge	
Maximum State of Charge	
95% of Maximum State of Charge	
Test Voltage - No less than 95% of maximum State of Charge	
<i>For batteries that are rechargeable ONLY by an energy source on the vehicle:</i>	
Voltage range corresponding to useable energy of the battery:	
Minimum State of Charge	42.7
Maximum State of Charge	47.2
Test Voltage – Maximum practicable State of Charge within Normal Operating Range	N/A

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

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

VEHICLE CHASSIS GROUND POINT(S) LOCATION(S)

Details of Vehicle Chassis Ground Point(s) & Location(s)	Underbody chassis ground attachment area
---	--

PROPULSION BATTERY SYSTEM

Details of Electric Energy Storage/Conversion System Test Points	
Additional Comments	

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

Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
Test Date: 3/3/2025

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

R_o	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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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.

$R_{i1} = R_o (1 + V_2/V_1) [(V_1 - V_1')/V_1']$		
Ri1 Pre-Impact	Ω	
$R_{i2} = R_o (1 + V_1/V_2) [(V_2 - V_2')/V_2']$		
Ri2 Pre-Impact	Ω	
Ri = The lesser of Ri1 and Ri2		
Ri Pre-Impact	Ω	
$R_i / V_b = \text{Electrical Isolation Value} / \text{Nominal Battery Voltage}$		
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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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.

$R_{i1} = R_o (1 + V_2/V_1) [(V_1 - V_1')/V_1']$							
Ri1 Post-Impact	Ω		Impact Time		Minutes		Seconds
$R_{i2} = R_o (1 + V_1/V_2) [(V_2 - V_2')/V_2']$							
Ri2 Post-Impact	Ω		Impact Time		Minutes		Seconds
Ri = The lesser of Ri1 and Ri2							
Ri Post-Impact	Ω		Impact Time		Minutes		Seconds
$R_i / V_b = \text{Electrical Isolation Value} / \text{Nominal Battery Voltage}$							
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?	No	No
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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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

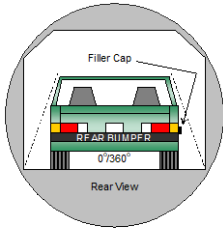
	Yes (Fail)	No
Is the Propulsion Battery Electrolyte Spillage visible in the passenger compartment?		X

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

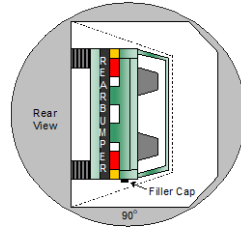
Test Vehicle: 2025 Mazda CX-70 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

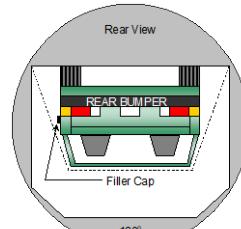
PROPULSION BATTERY SYSTEM COMPONENTS



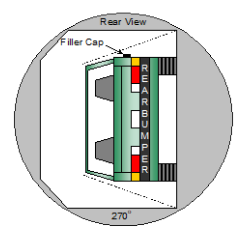
0°/360°



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	
	1	min	50	sec	5	min	6	min	50	sec	7	min
0° - 90°	1	min	50	sec	5	min	6	min	50	sec	7	min
90° - 180°	1	min	52	sec	5	min	6	min	52	sec	7	min
180° - 270°	1	min	48	sec	5	min	6	min	48	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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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°			
$Ri / Vb = \text{Electrical Isolation Value} / \text{Nominal Battery Voltage}$						
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?	Yes	No (Fail)
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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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
Inverter Assembly to Electrical Ground		X		X
Bottom of Engine Assembly to Electrical Ground		X		X
High-Voltage Battery to Electrical Ground		X		X
Inverter Assembly to Bottom of Engine Assembly		X		X
Inverter Assembly to High-Voltage Battery		X		X
Bottom of Engine Assembly to High-Voltage Battery		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
Inverter Assembly to Electrical Ground		X		X
Bottom of Engine Assembly to Electrical Ground		X		X
High-Voltage Battery to Electrical Ground		X		X
Inverter Assembly to Bottom of Engine Assembly		X		X
Inverter Assembly to High-Voltage Battery		X		X
Bottom of Engine Assembly to High-Voltage Battery		X		X

POST-ROLLOVER

Description of Evaluated Location	Probe Contact with High Voltage Source		Probe Lamp Illuminated	
	Yes, Fail	No, Pass	Yes, Fail	No, Pass
Inverter Assembly to Electrical Ground		X		X
Bottom of Engine Assembly to Electrical Ground		X		X
High-Voltage Battery to Electrical Ground		X		X
Inverter Assembly to Bottom of Engine Assembly		X		X
Inverter Assembly to High-Voltage Battery		X		X
Bottom of Engine Assembly to High-Voltage Battery		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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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	
Inverter Assembly to Electrical Ground	BC			0.005	Pass
Bottom of Engine Assembly to Electrical Ground	BC			0.008	Pass
High-Voltage Battery to Electrical Ground	BC			0.003	Pass
Inverter Assembly to Bottom of Engine Assembly	BB			0.000	Pass
Inverter Assembly to High-Voltage Battery	BB			0.000	Pass
Bottom of Engine Assembly to High-Voltage Battery	BB			0.000	Pass

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	
Inverter Assembly to Electrical Ground	BC			0.000	Pass
Bottom of Engine Assembly to Electrical Ground	BC			0.000	Pass
High-Voltage Battery to Electrical Ground	BC			0.000	Pass
Inverter Assembly to Bottom of Engine Assembly	BB			0.000	Pass
Inverter Assembly to High-Voltage Battery	BB			0.000	Pass
Bottom of Engine Assembly to High-Voltage Battery	BB			0.000	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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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	
Inverter Assembly to Electrical Ground	BC			0.000	Pass
Bottom of Engine Assembly to Electrical Ground	BC			0.000	Pass
High-Voltage Battery to Electrical Ground	BC			0.000	Pass
Inverter Assembly to Bottom of Engine Assembly	BB			0.000	Pass
Inverter Assembly to High-Voltage Battery	BB			0.000	Pass
Bottom of Engine Assembly to High-Voltage Battery	BB			0.000	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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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	
Inverter Assembly to Electrical Ground	BC	0.0	0.0	Pass
Bottom of Engine Assembly to Electrical Ground	BC	0.0	0.0	Pass
High-Voltage Battery to Electrical Ground	BC	0.0	0.0	Pass
Inverter Assembly to Bottom of Engine Assembly	BB	0.0	0.0	Pass
Inverter Assembly to High-Voltage Battery	BB	0.0	0.0	Pass
Bottom of Engine Assembly to High-Voltage Battery	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	
Inverter Assembly to Electrical Ground	BC	0.0	0.0	Pass
Bottom of Engine Assembly to Electrical Ground	BC	0.0	0.0	Pass
High-Voltage Battery to Electrical Ground	BC	0.0	0.0	Pass
Inverter Assembly to Bottom of Engine Assembly	BB	0.0	0.0	Pass
Inverter Assembly to High-Voltage Battery	BB	0.0	0.0	Pass
Bottom of Engine Assembly to High-Voltage Battery	BB	0.0	0.0	Pass

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 MHEV 5-Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: O20255400
 Test Date: 3/3/2025

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: <i>Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.</i>	≤ 30 VAC ≤ 60 VDC	> 30 VAC > 60 VDC
BB: <i>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.</i>	≤ 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	
Inverter Assembly to Electrical Ground	BC	0.0	0.0	Pass
Bottom of Engine Assembly to Electrical Ground	BC	0.0	0.0	Pass
High-Voltage Battery to Electrical Ground	BC	0.0	0.0	Pass
Inverter Assembly to Bottom of Engine Assembly	BB	0.0	0.0	Pass
Inverter Assembly to High-Voltage Battery	BB	0.0	0.0	Pass
Bottom of Engine Assembly to High-Voltage Battery	BB	0.0	0.0	Pass

**APPENDIX A
PHOTOGRAPHS**

TABLE OF PHOTOGRAPHS

		<u>Page No.</u>
Photo No. 001	As Delivered Right Front Three-Quarter View of Test Vehicle	A-1
Photo No. 002	As Delivered Left Rear Three-Quarter View of Test Vehicle	A-1
Photo No. 003	Pre-Test Frontal View of Test Vehicle	A-2
Photo No. 004	Post-Test Frontal View of Test Vehicle	A-2
Photo No. 005	Pre-Test Left Front Three-Quarter View of Test Vehicle	A-3
Photo No. 006	Post-Test Left Front Three-Quarter View of Test Vehicle	A-3
Photo No. 007	Pre-Test Left Side View of Test Vehicle	A-4
Photo No. 008	Post-Test Left Side View of Test Vehicle	A-4
Photo No. 009	Pre-Test Left Three-Quarter Rear View of Test Vehicle	A-5
Photo No. 010	Post-Test Left Three-Quarter Rear View of Test Vehicle	A-5
Photo No. 011	Pre-Test Rear View of Test Vehicle	A-6
Photo No. 012	Post-Test Rear View of Test Vehicle	A-6
Photo No. 013	Pre-Test Right Side View of Test Vehicle	A-7
Photo No. 014	Post-Test Right Side View of Test Vehicle	A-7
Photo No. 015	Pre-Test Overhead View of Test Area	A-8
Photo No. 016	Post-Test Overhead View of Test Area	A-8
Photo No. 017	Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle	A-9
Photo No. 018	Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle	A-9
Photo No. 019	Pre-Test Close-Up View of Impact Point Target	A-10
Photo No. 020	Post-Test Close-Up View of Impact Point Target	A-10
Photo No. 021	Pre-Test Left Front Door Latch Close-Up	A-11
Photo No. 022	Post-Test Left Front Door Latch Close-Up	A-11
Photo No. 023	Pre-Test Left Rear Door Latch Close-Up	A-12
Photo No. 024	Post-Test Left Rear Door Latch Close-Up	A-12
Photo No. 025	Pre-Test Front Close-Up View of Driver Dummy	A-13
Photo No. 026	Post-Test Front Close-Up View of Driver Dummy	A-13
Photo No. 027	Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking	A-14
Photo No. 028	Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-14
Photo No. 029	Post-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-15
Photo No. 030	Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning	A-15

		<u>Page No.</u>
Photo No. 031	Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint	A-16
Photo No. 032	Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning	A-16
Photo No. 033	Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan	A-17
Photo No. 034	Pre-Test Placement of Driver Dummy's Feet	A-17
Photo No. 035	Pre-Test View of Belt Anchorage for Driver Dummy	A-18
Photo No. 036	Pre-Test Left Side View of Steering Wheel	A-18
Photo No. 037	Pre-Test View of Disengaged Parking Brake	A-19
Photo No. 038	Pre-Test View of Parking Brake	A-19
Photo No. 039	Pre-Test Close-Up Left Side View of Driver Seat Track	A-20
Photo No. 040	Pre-Test Close-Up Left Side View of Driver Seat Back	A-20
Photo No. 041	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-21
Photo No. 042	Pre-Test Driver Dummy and Door Clearance View	A-21
Photo No. 043	Post-Test Driver Dummy and Door Clearance View	A-22
Photo No. 044	Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment	A-22
Photo No. 045	Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment	A-23
Photo No. 046	Pre-Test Driver Inner Door Panel View	A-23
Photo No. 047	Post-Test Driver Inner Door Panel View	A-24
Photo No. 048	Post-Test Driver Dummy Close-up Head Contact with Vehicle Interior View	A-24
Photo No. 049	Post-Test Driver Dummy Close-up Head Contact with Side Airbag View	A-25
Photo No. 050	Post-Test Driver Dummy Close-up Torso Contact with Vehicle Interior View	A-25
Photo No. 051	Post-Test Driver Dummy Close-up Torso Contact with Side Airbag View	A-26
Photo No. 052	Post-Test Driver Dummy Close-up Pelvis Contact with Vehicle Interior View	A-26
Photo No. 053	Post-Test Driver Dummy Close-up Pelvis Contact with Side Airbag View	A-27
Photo No. 054	Post-Test Driver Dummy Close-up Knee Contact View	A-27
Photo No. 055	Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking	A-28
Photo No. 056	Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-28
Photo No. 057	Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-29

		<u>Page No.</u>
Photo No. 058	Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning	A-29
Photo No. 059	Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint	A-30
Photo No. 060	Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning	A-30
Photo No. 061	Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan	A-31
Photo No. 062	Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket	A-31
Photo No. 063	Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level	A-32
Photo No. 064	Pre-Test Placement of Rear Passenger Dummy's Feet	A-32
Photo No. 065	Pre-Test View of Belt Anchorage for Rear Passenger Dummy	A-33
Photo No. 066	Pre-Test Close-Up Left Side View of Rear Passenger Seat Track	A-33
Photo No. 067	Pre-Test Close-Up Left Side View of Rear Passenger Seat Back	A-34
Photo No. 068	Pre-Test Close-up View of Rear Passenger Seat Back or Head Restraint	A-34
Photo No. 069	Pre-Test Rear Passenger Dummy and Door Clearance View	A-35
Photo No. 070	Post-Test Rear Passenger Dummy and Door Clearance View	A-35
Photo No. 071	Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-36
Photo No. 072	Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-36
Photo No. 073	Pre-Test Rear Passenger Inner Door Panel View	A-37
Photo No. 074	Post-Test Rear Passenger Inner Door Panel View	A-37
Photo No. 075	Post-Test Rear Passenger Dummy Close-up Head Contact with Vehicle Interior View	A-38
Photo No. 076	Post-Test Rear Passenger Dummy Close-up Head Contact with Side Airbag View	A-38
Photo No. 077	Post-Test Rear Passenger Dummy Close-up Torso Contact with Vehicle Interior View	A-39
Photo No. 078	Post-Test Rear Passenger Dummy Close-up Torso Contact with Side Airbag View	A-39
Photo No. 079	Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Vehicle Interior View	A-40
Photo No. 080	Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Side Airbag View	A-40
Photo No. 081	Post-Test Rear Passenger Dummy Close-up Knee Contact View	A-41
Photo No. 082	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-41
Photo No. 083	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-42

		<u>Page No.</u>
Photo No. 084	Pre-Test Front View of MDB Impactor Face	A-42
Photo No. 085	Post-Test Front View of MDB Impactor Face	A-43
Photo No. 086	Pre-Test Top View of MDB Impactor Face	A-43
Photo No. 087	Post-Test Top View of MDB Impactor Face	A-44
Photo No. 088	Pre-Test Left Side View of MDB Impactor Face	A-44
Photo No. 089	Post-Test Left Side View of MDB Impactor Face	A-45
Photo No. 090	Pre-Test Right Side View of MDB Impactor Face	A-45
Photo No. 091	Post-Test Right Side View of MDB Impactor Face	A-46
Photo No. 092	Close-Up View of Vehicle's Certification Label	A-46
Photo No. 093	Close-Up View of Vehicle's Tire Information Placard or Label	A-47
Photo No. 094	Pre-Test Ballast View	A-47
Photo No. 095	Post-Test Primary and Redundant Speed Trap Read-Out	A-48
Photo No. 096	FMVSS No. 301 Static Rollover 0 Degrees	A-48
Photo No. 097	FMVSS No. 301 Static Rollover 90 Degrees	A-49
Photo No. 098	FMVSS No. 301 Static Rollover 180 Degrees	A-49
Photo No. 099	FMVSS No. 301 Static Rollover 270 Degrees	A-50
Photo No. 100	FMVSS No. 301 Static Rollover 360 Degrees	A-50
Photo No. 101	Impact Event	A-51
Photo No. 102	Monroney Label	A-51
Photo No. 103	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52
Photo No. 104	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52
Photo No. 305-01	Auxiliary Power Module Warning Label	A-53
Photo No. 305-02	Power Inverter Warning Label	A-53
Photo No. 305-03	First Responder Warning Label	A-54
Photo No. 305-04	First Responder Warning Location	A-54
Photo No. 305-05	Other Vehicle Label(s) Related to Electrical Propulsion System	A-55
Photo No. 305-06	Manual High Voltage Service Disconnect in Place	A-55
Photo No. 305-07	Manual High Voltage Service Disconnect Removed	A-56
Photo No. 305-08	Manual High Voltage Service Disconnect Removed	A-56
Photo No. 305-09	Pre-Impact View of Propulsion Battery	A-57

		<u>Page No.</u>
Photo No. 305-10	Post-Impact Front View of Propulsion Battery	A-57
Photo No. 305-11	Post-Impact Rear View of Propulsion Battery	A-58
Photo No. 305-12	Pre-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules	A-58
Photo No. 305-13	Post-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules	A-59
Photo No. 305-14	Pre-Impact View of Propulsion Battery Module(s)	A-59
Photo No. 305-15	Post-Impact View of Propulsion Battery Module(s)	A-60
Photo No. 305-16	Pre-Impact View of Electric Propulsion Drive	A-60
Photo No. 305-17	Post-Impact View of Electric Propulsion Drive	A-61
Photo No. 305-18	Pre-Impact View of High Voltage Interconnect(s)	A-61
Photo No. 305-19	Pre-Impact View Propulsion Battery Venting System(s)	A-62
Photo No. 305-20	Pre-Impact View of Other Visible Electric Propulsion Components	A-62
Photo No. 305-21	Pre-Impact View of Ground Lead Attached	A-63
Photo No. 305-22	Pre-Impact View of High Voltage Leads Attached	A-63
Photo No. 305-23	Pre-Impact Close-Up View of High Voltage Leads Attached	A-64
Photo No. 305-24	Pre-Impact View of Installed Test Interface Port	A-64
Photo No. 305-25	Post-Impact View of Installed Test Interface Port	A-65
Photo No. 305-26	Pre-Impact View of Other Test Devices	A-65
Photo No. 305-27	Post-Impact View of Other Test Devices	A-66
Photo No. 305-28	FMVSS No. 305 Static Rollover at 90 Degrees	A-66
Photo No. 305-29	FMVSS No. 305 Static Rollover at 180 Degrees	A-67
Photo No. 305-30	FMVSS No. 305 Static Rollover at 270 Degrees	A-67
Photo No. 305-31	FMVSS No. 305 Static Rollover at 360 Degrees	A-68
Photo No. 305-32	Pre-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery	A-68
Photo No. 305-33	Post-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery	A-69
Photo No. 305-34	Post-Impact Propulsion Battery System Mounting and/or Intrusion Failure(s)	A-69
Photo No. 305-35	Post-Impact View of Battery Component Intrusion	A-70
Photo No. 305-36	Post-Impact View of Battery Module Movement or Retention Loss	A-70
Photo No. 305-37	Post-Impact View of Propulsion Battery Electrolyte Spillage Location	A-71
Photo No. 305-38	Post-Test View of Propulsion Battery Electrolyte Spillage Location	A-71



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

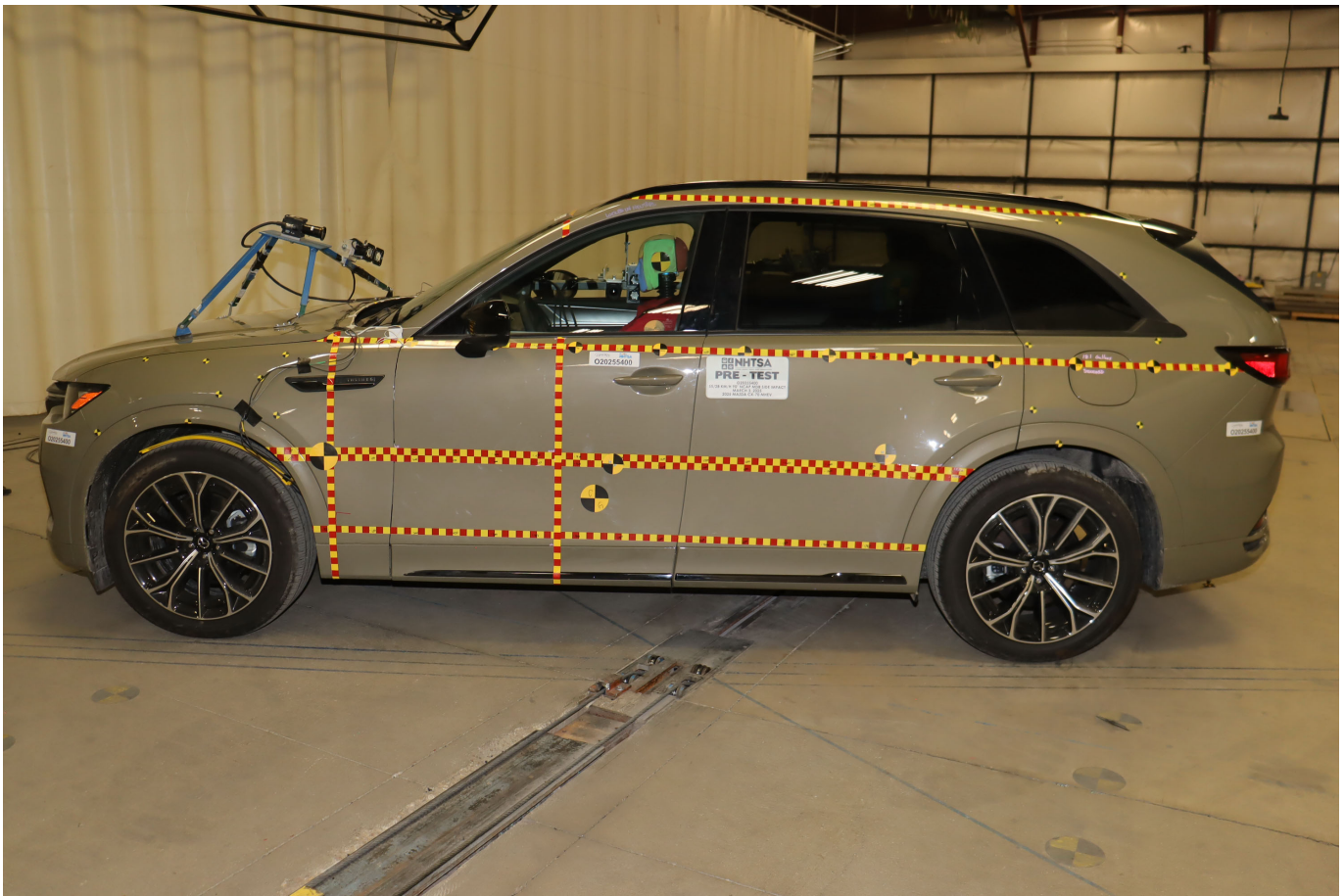


Photo No. 007 - Pre-Test Left Side View of Test Vehicle



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

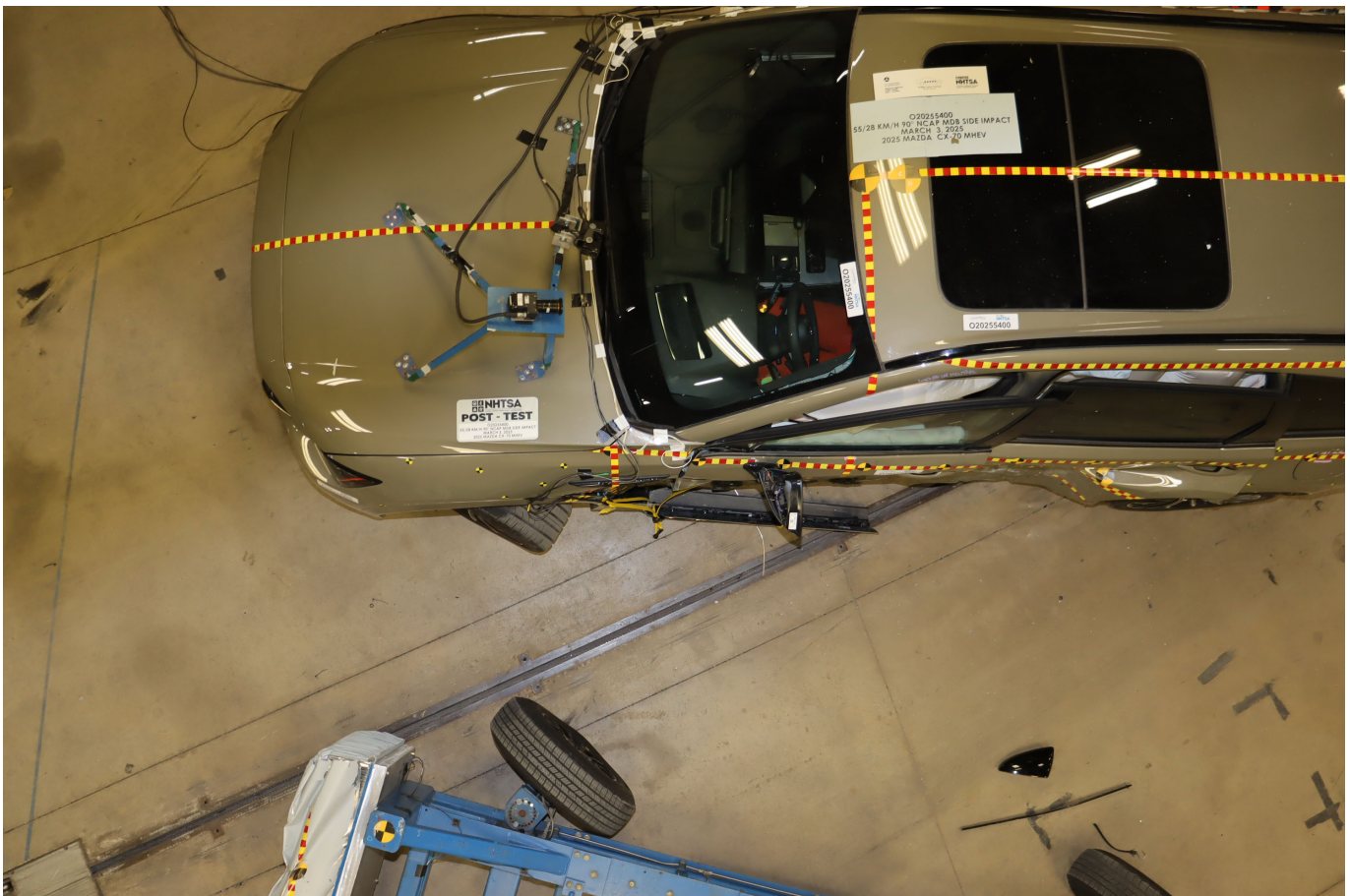


Photo No. 016 - Post-Test Overhead View of Test Area



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



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

PHOTOGRAPH NOT APPLICABLE

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



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

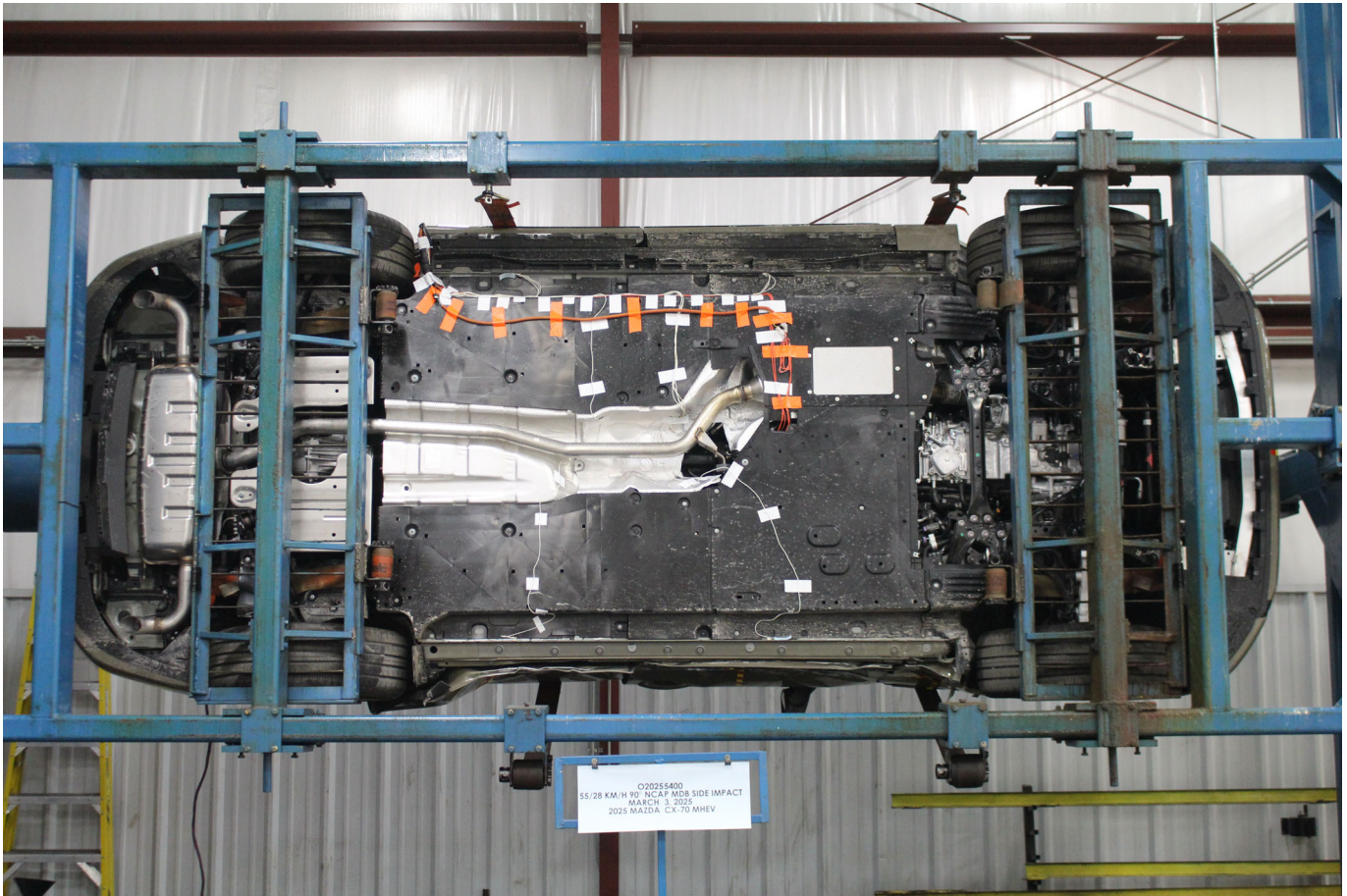


Photo No. 097 - FMVSS Photo No. 301 Static Rollover 90 Degrees



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



EPA DOT Fuel Economy and Environment

Fuel Economy
25 MPG combined city/hwy
 23 city
 28 highway
 4.0 gallons per 100 miles

Standard SUVs range from 11 to 100 MPG. The best vehicle rates 140 MPG.

You spend \$3,250 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$2,550

Fuel Economy & Greenhouse Gas Rating (tailpipe only) **5**

Smog Rating (tailpipe only) **5**

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 23 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. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov
Calculate personalized estimates and compare vehicles

2025 MAZDA CX-70

Model: 2025 CX-70 3.3 TURBO S PREMIUM
 Exterior Color: ZIRCON SAND METALLIC
 Interior Color: BLACK NAPPA LEATHER

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.

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES

- E-SKYACTIV G 3.3L I6 TURBO ENGINE
- 340 HORSEPOWER; 369 LB-FT TORQUE WITH PREMIUM GASOLINE
- M HYBRID BOOST
- SKYACTIV-DRIVE 8-SPEED AT

EXTERIOR FEATURES

- 21-INCH ALLOY WHEELS MACHINE CUT
- P275/45 R21 ALL-SEASON TIRES
- HANDS-FREE POWER REAR LIFTGATE
- HONEYCOMB GRILL MESH PIANO BLACK
- POWER SIDE MIRRORS W/TURN LAMPS
- HEATED SIDE MIRRORS W/MEMORY&TILT

INTERIOR FEATURES

- 8-PASSENGER SEATING
- NAPPA LEATHER-TRIMMED SEATS
- 8-WAY PWR DRIVER'S SEAT W/LUMBAR
- DRIVER SEAT MEMORY W/2 POSITIONS
- 8-WAY POWER FRONT PASSENGER SEAT
- HEATED FRONT SEATS
- ALEXA
- 3-ZONE AUTOMATIC CLIMATE CONTROL
- 2ND-ROW WINDOW SUNSHADES
- MAZDA ADVANCED KEYSLESS ENTRY
- MAZDA CONNECTED SERVICES

SAFETY AND SECURITY FEATURES

- 60MO/60K MI POWERTRAIN & 36MO/36K MI NEW VEHICLE LIMITED WARRANTY
- 24-HOUR ROADSIDE ASSISTANCE
- BLIND SPOT MONITORING
- LANE DEPARTURE WARNING SYSTEM
- DRIVER ATTENTION ALERT
- DRIVER MONITORING
- REAR SEAT ALERT
- ANTI-THEFT ENGINE IMMOBILIZER
- SECURITY SYSTEM
- TRAFFIC SIGN RECOGNITION

OPTIONAL EQUIPMENT

JCS	ZIRCON SAND PAINT CHARGE	\$450
1LO	DESTINATION SET	\$625
ZPR	TURBO PREMIUM PACKAGE	NO CHARGE
	AUTO DIMMING SIDE MIRROR	
	HEATED LEATHER STEERING WHEEL	
	POWER TILT & TELESCOPIC STEERING	
	WITH MEMORY SETTINGS	
	DRIVER PERSONALIZATION SYSTEM	
	VENTILATED FRONT SEATS	
	HEATED SECOND ROW SEATS	
	POWER AUTO FOLD SIDE MIRRORS	
	FRAMELESS AUTO-DIM R/VIEW MIRROR	
	WHOMELINK®	
	FRONT CROSS TRAFFIC ALERT/BRKING	
	SMART BRAKE SUPPORT REAR	
	360 DEGREE VIEW MONITOR WITH SEE-THROUGH VIEW	

Total Vehicle and Options \$53,525
 Delivery, Processing and Handling Fee \$1,455
Total MSRP \$54,980

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 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. Rear sec.	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

SOLD TO: 61449
 FRANK BOUCHER MAZDA RACINE
 9601 WASHINGTON AVENUE #300
 RACINE, WI 53406

SHIP TO: 61449 DY
 FRANK BOUCHER MAZDA RACINE
 9601 WASHINGTON AVENUE #300
 RACINE, WI 53406

JM3KJJDHC7S1105294
 C70-SPR-XA-KMM9NAE-TF-20240503

MazdaUSA.com

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

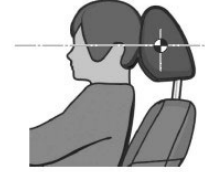
➤ When installing a head restraint, make sure that it is installed correctly with the front of the head restraint facing forward. If the head restraint is installed incorrectly, it could detach from the seat during a collision and result in injury.

3-42

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.

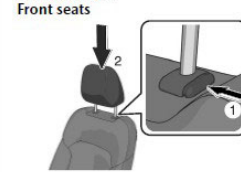


To Raise a Head Restraint

Pull up a head restraint.

To Lower a Head Restraint

Lower a head restraint while pressing the lock knob.



Front seats

3-43

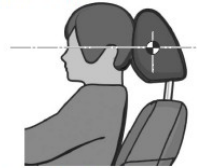
Photo No. 103 - Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

➤ 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.



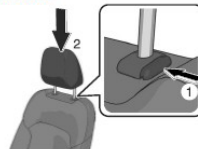
To Raise a Head Restraint

Pull up a head restraint.

To Lower a Head Restraint

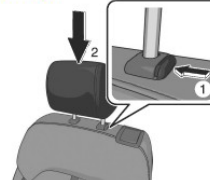
Lower a head restraint while pressing the lock knob.

Front seats



3-43

Rear seats



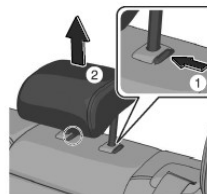
Removing or Installing a Head Restraint

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.

3-44

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

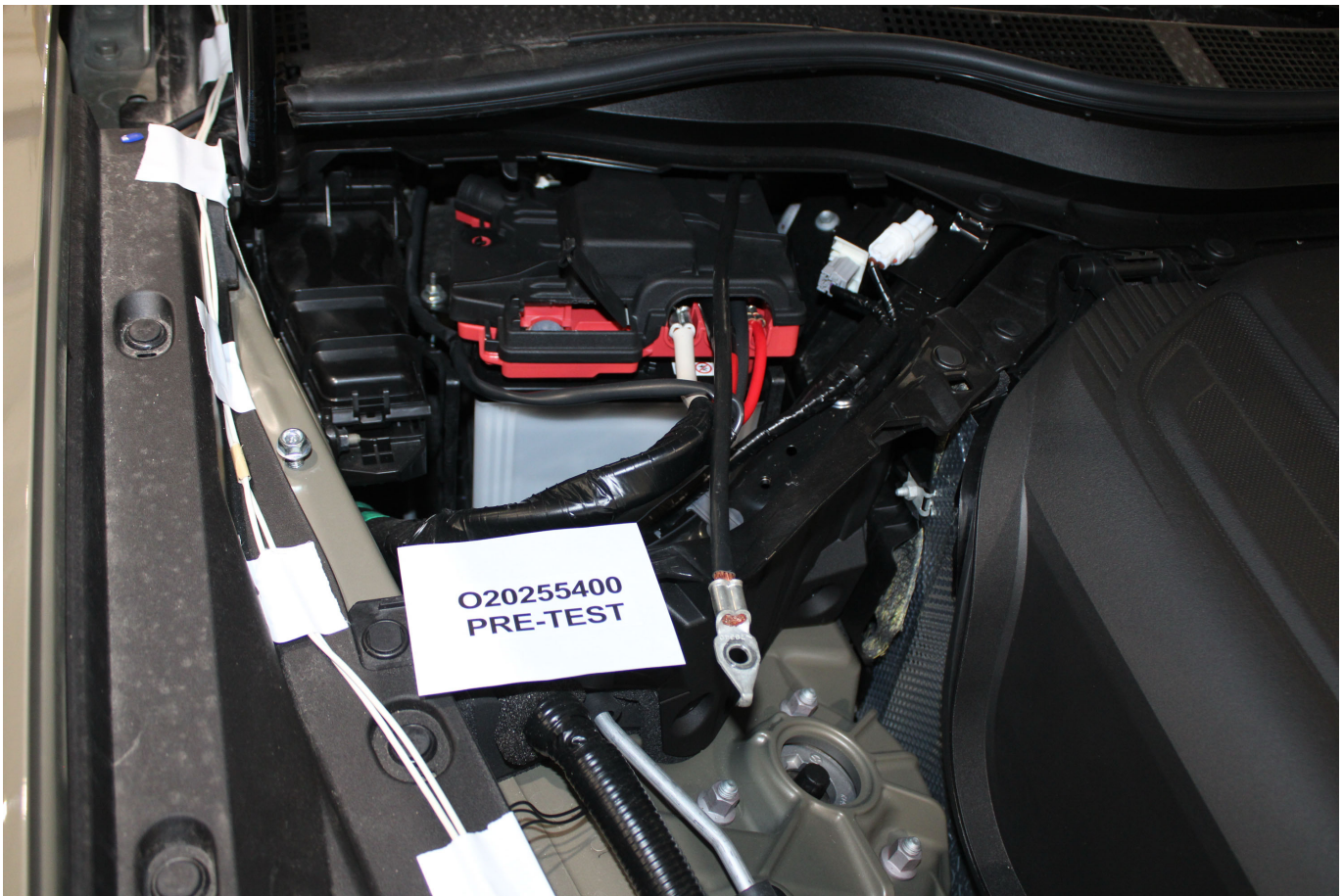


Photo No. 305-01 - Auxiliary Power Module Warning Label

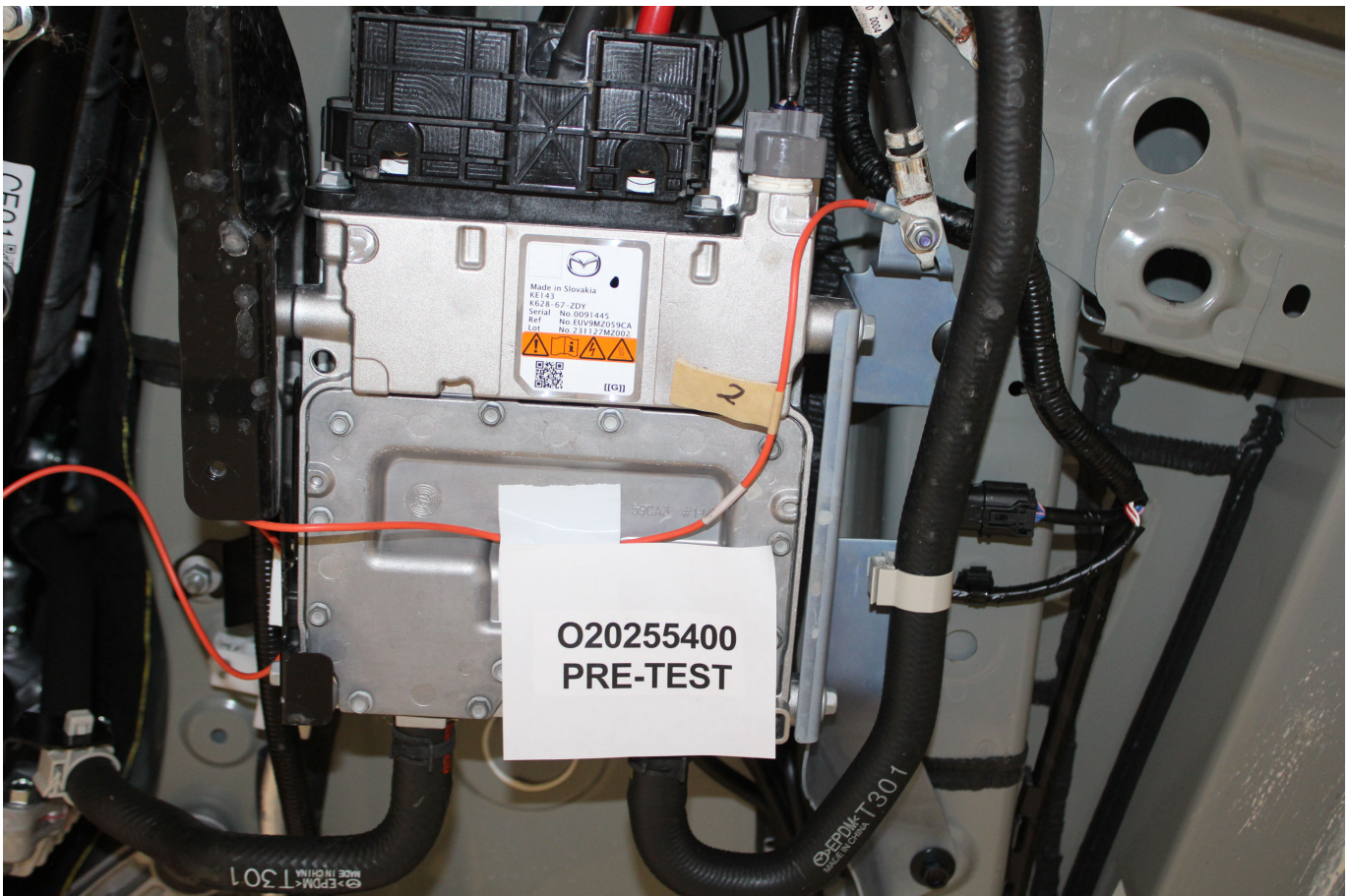


Photo No. 305-02 - Power Inverter Warning Label



Photo No. 305-03 - First Responder Warning Label



Photo No. 305-04 - First Responder Warning Location

PHOTOGRAPH NOT APPLICABLE

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

PHOTOGRAPH NOT APPLICABLE

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

PHOTOGRAPH NOT APPLICABLE

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

PHOTOGRAPH NOT APPLICABLE

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

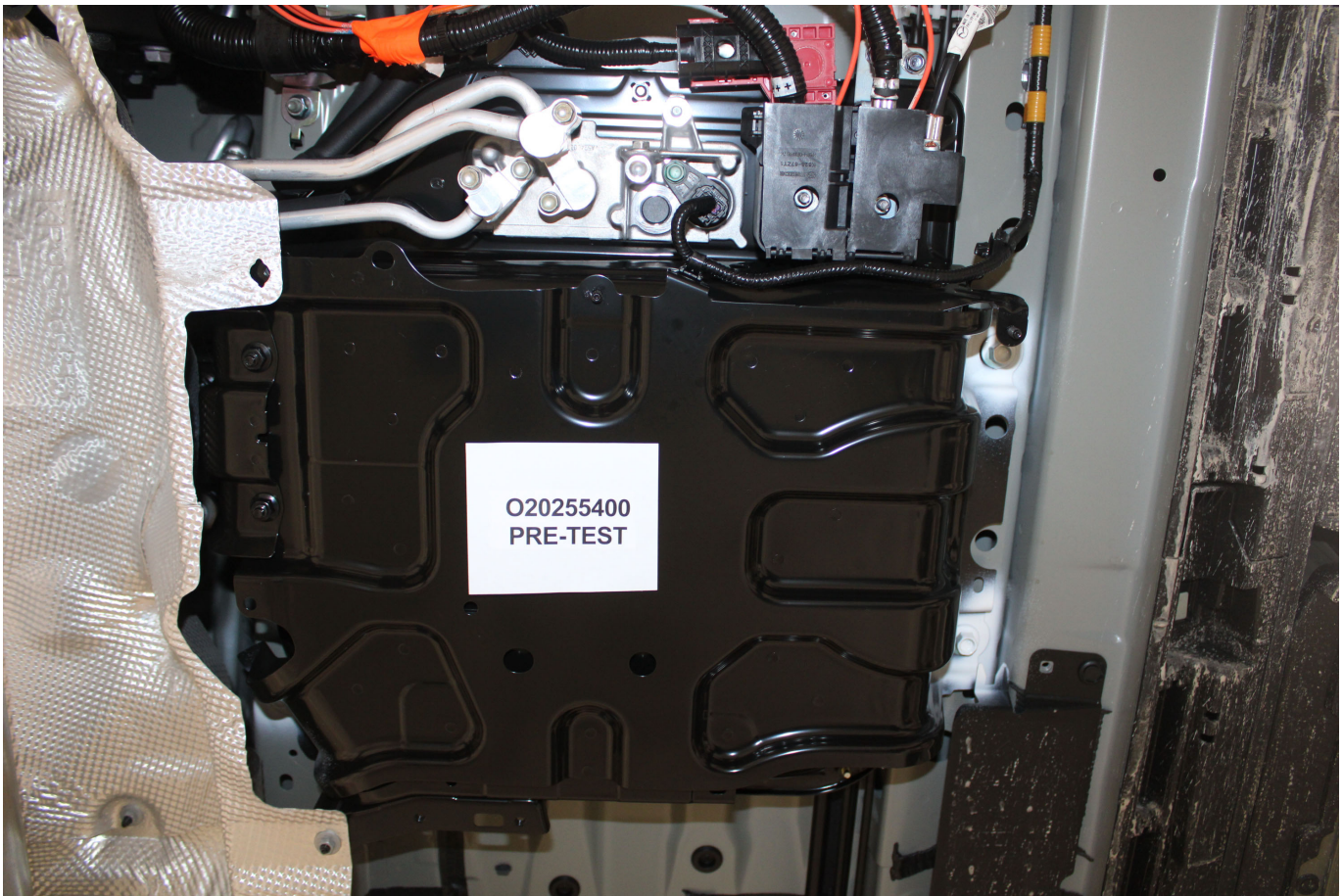


Photo No. 305-09 - Pre-Impact View of Propulsion Battery

PHOTOGRAPH NOT AVAILABLE

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

PHOTOGRAPH NOT AVAILABLE

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

PHOTOGRAPH NOT AVAILABLE

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

PHOTOGRAPH NOT AVAILABLE

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)

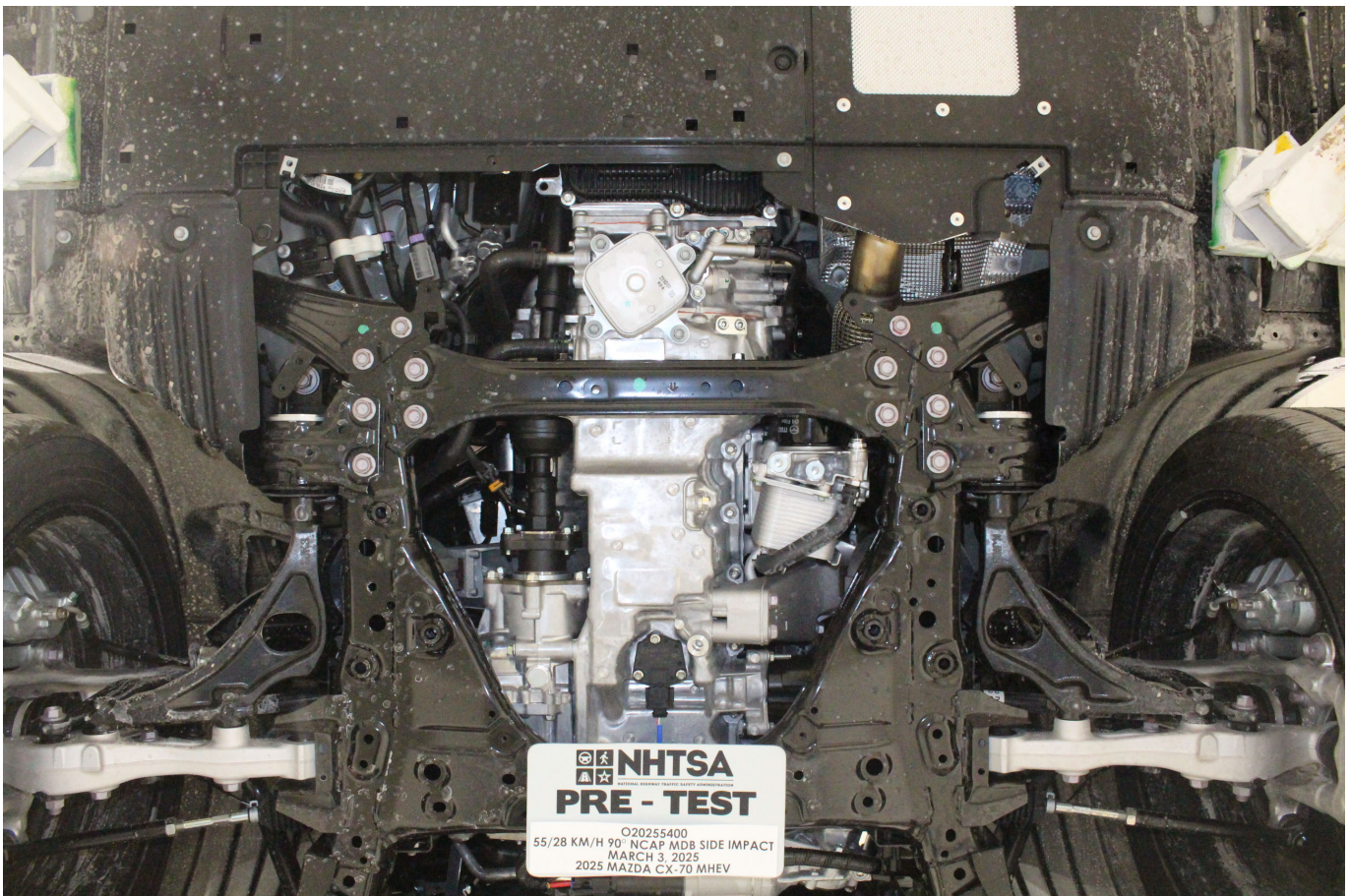


Photo No. 305-16 - Pre-Impact View of Electric Propulsion Drive

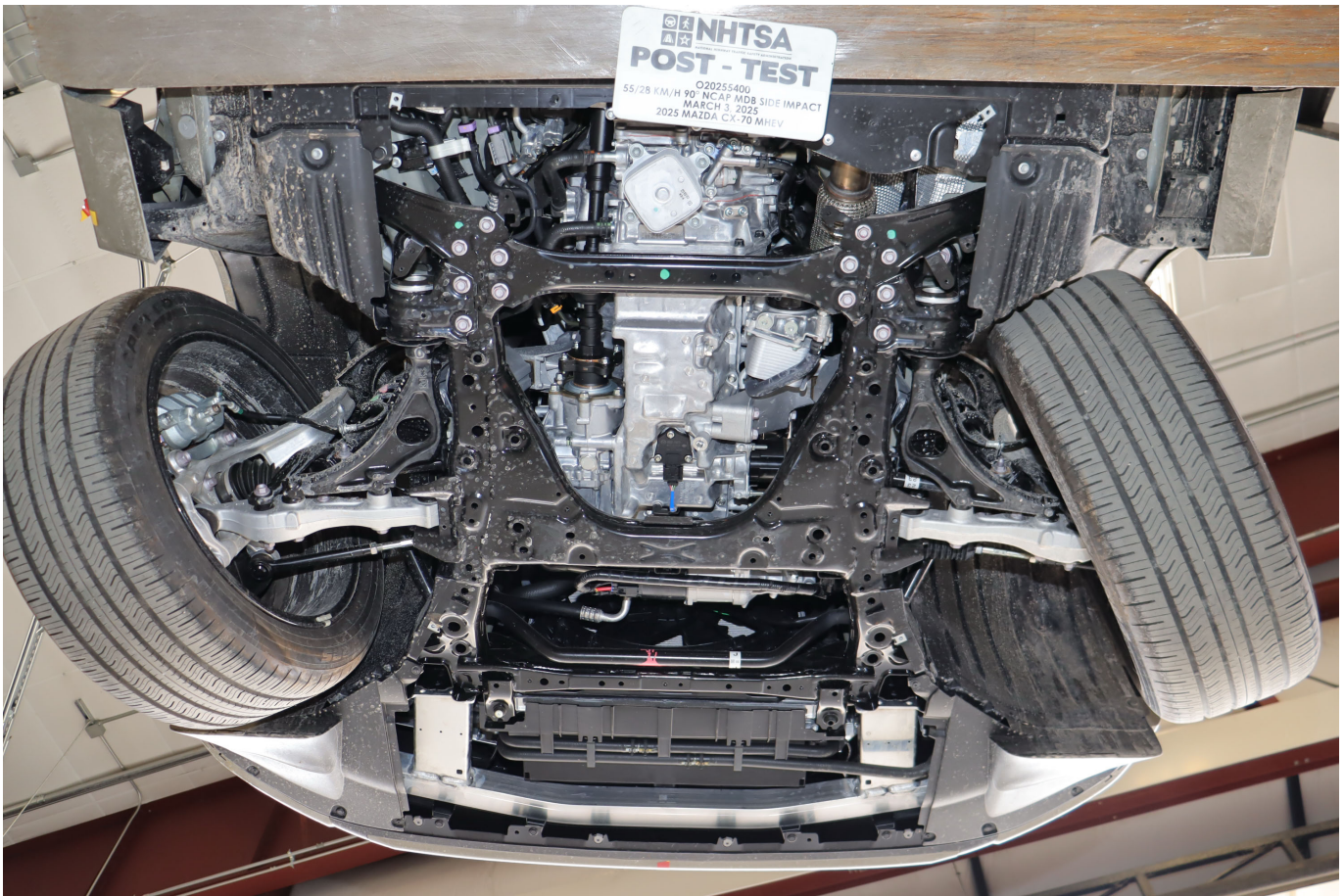


Photo No. 305-17 - Post-Impact View of Electric Propulsion Drive

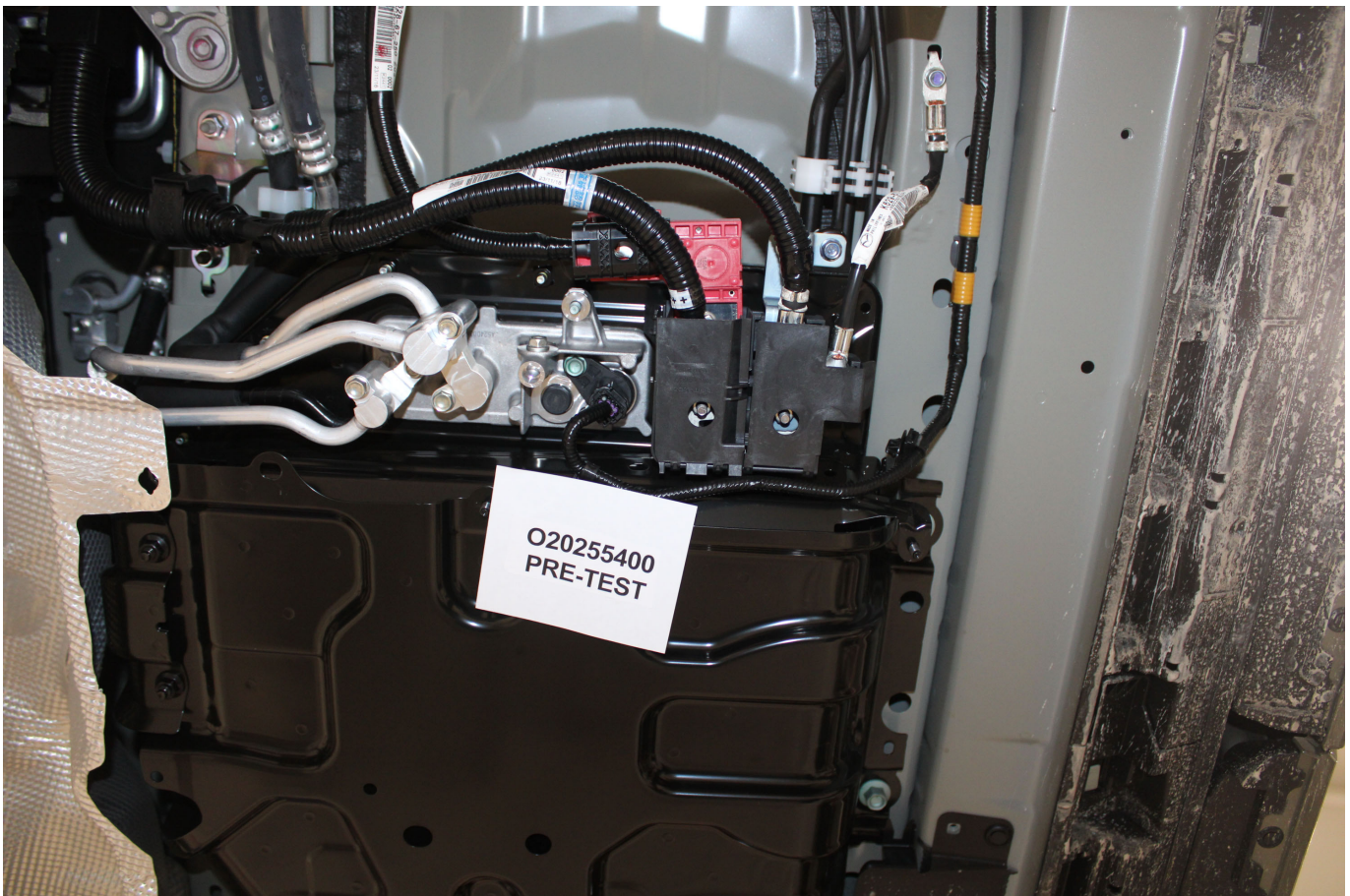


Photo No. 305-18 - Pre-Impact View of High Voltage Interconnect(s)

PHOTOGRAPH NOT APPLICABLE

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

PHOTOGRAPH NOT APPLICABLE

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

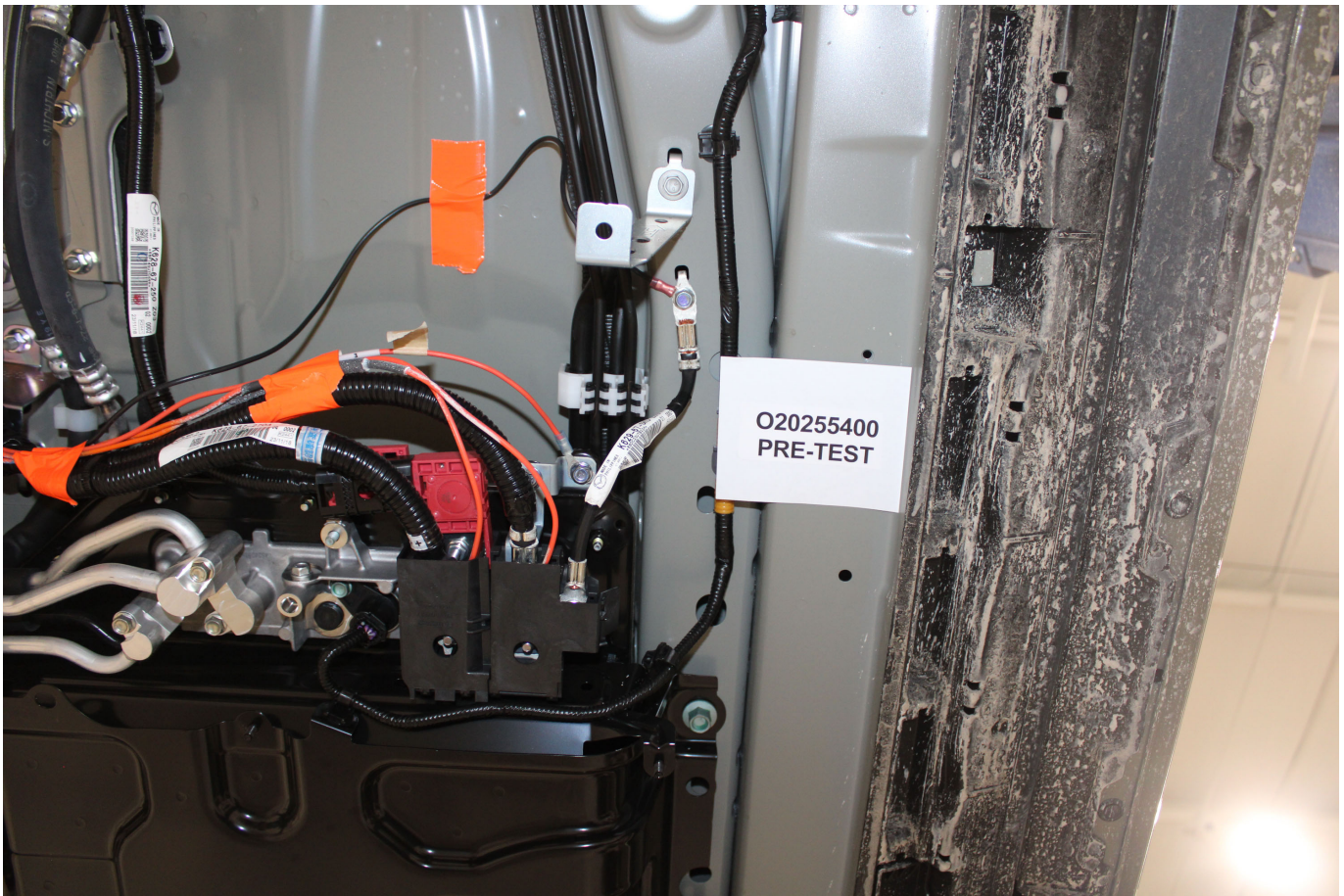


Photo No. 305-21 - Pre-Impact View of Ground Lead Attached

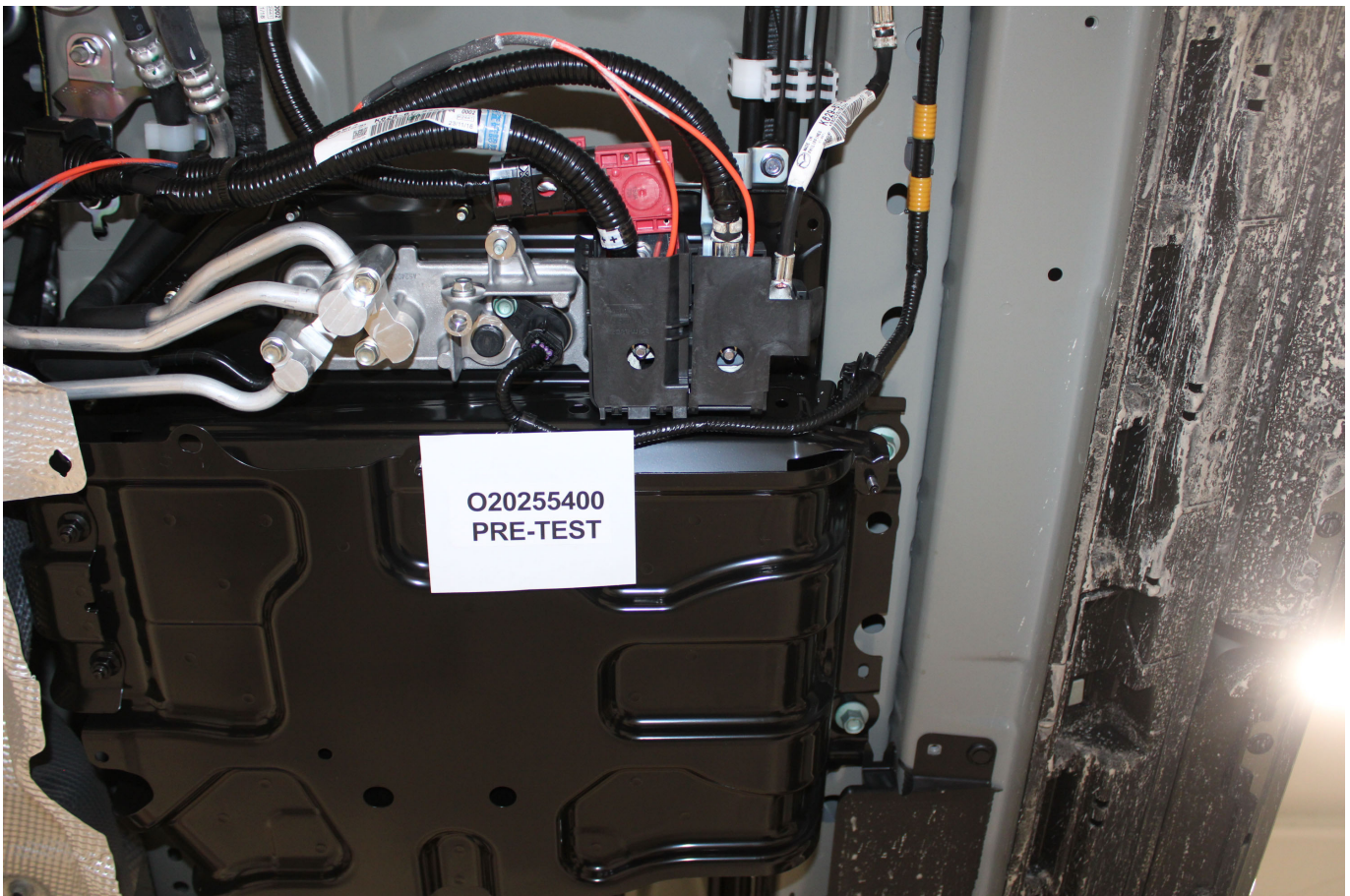
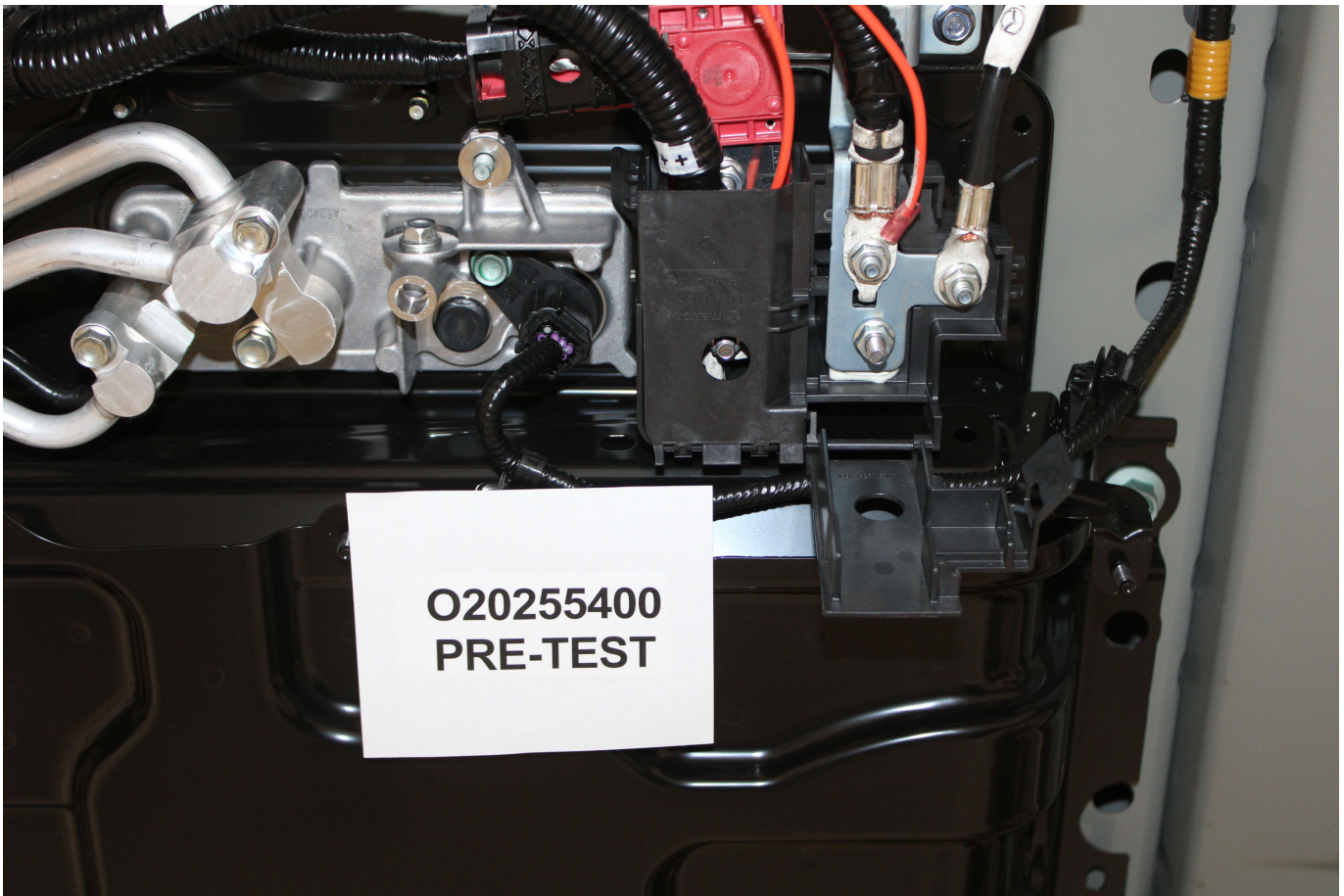


Photo No. 305-22 - Pre-Impact View of High Voltage Leads Attached



**O20255400
PRE-TEST**

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

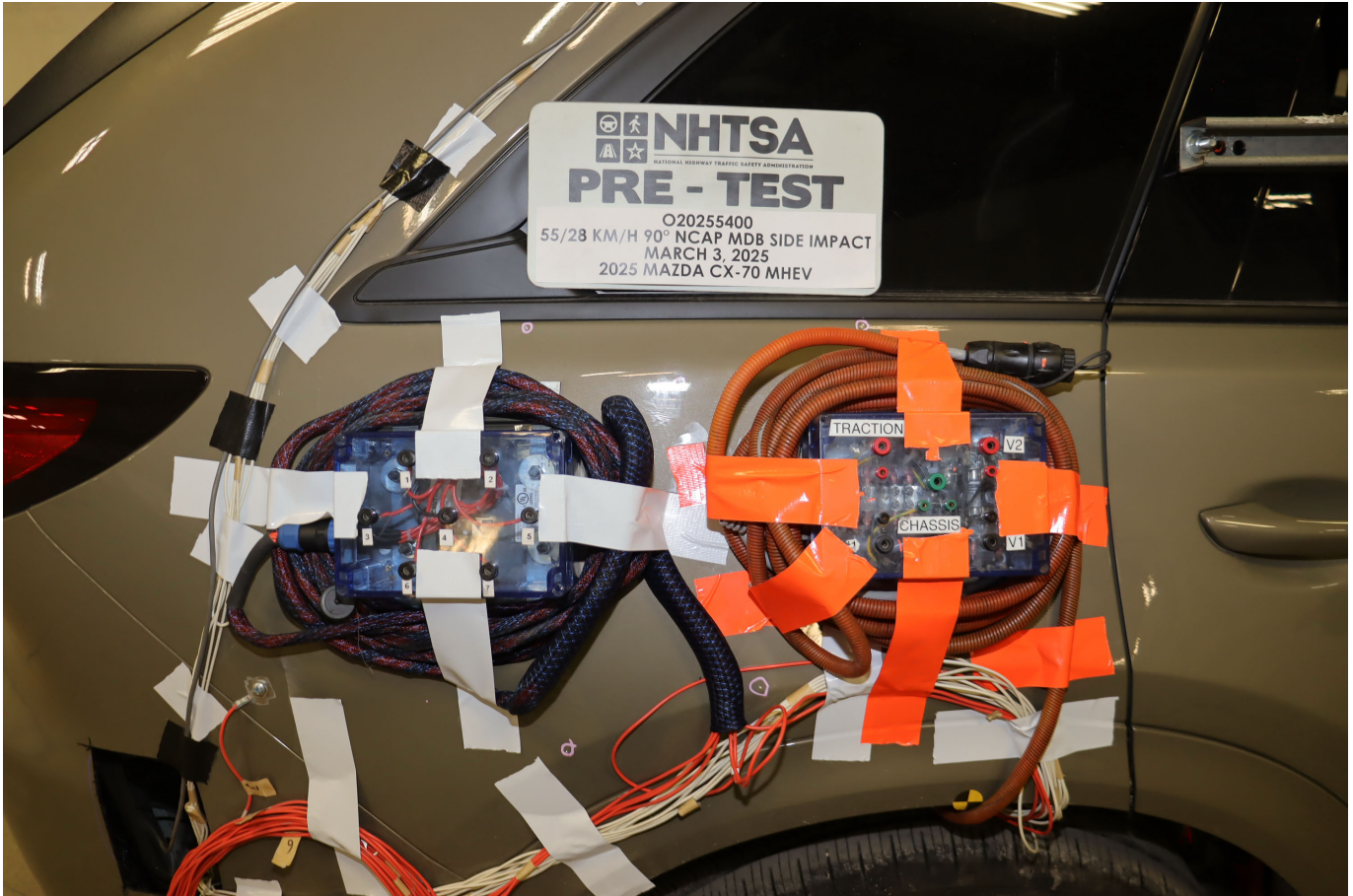


Photo No. 305-24 - Pre-Impact View of Installed Test Interface Port

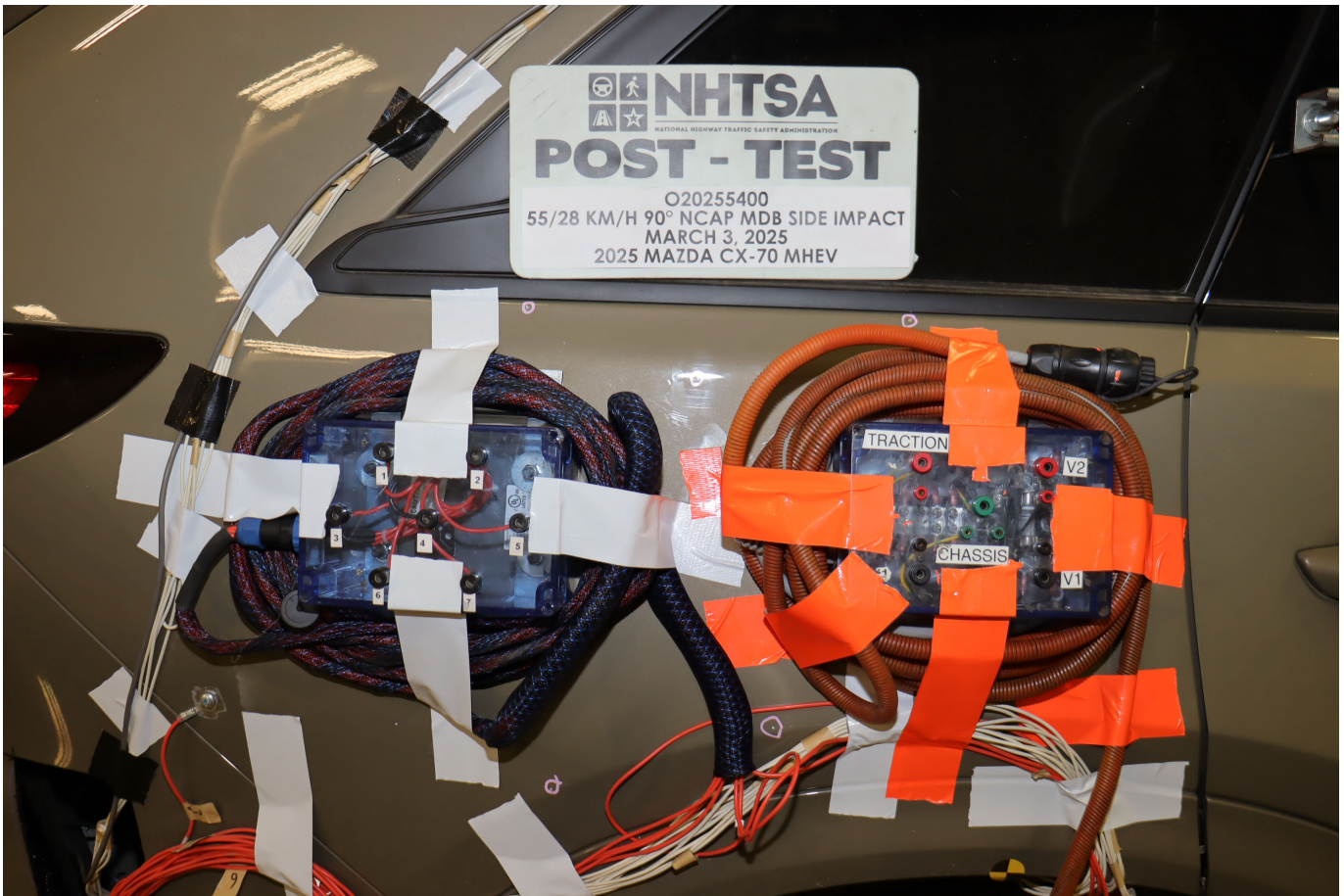


Photo No. 305-25 - Post-Impact View of Installed Test Interface Port



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

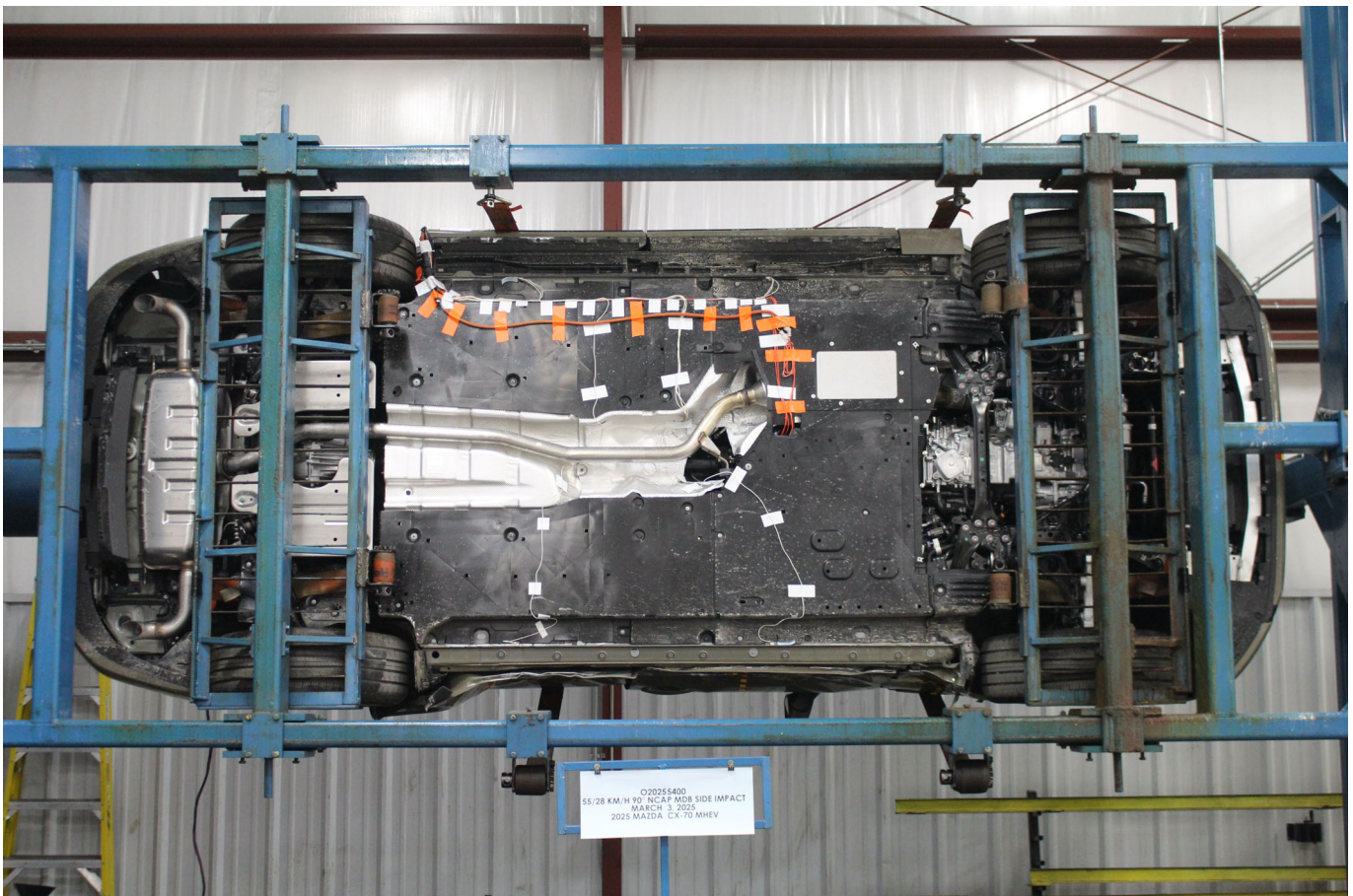


Photo No. 305-28 - FMVSS No. 305 Static Rollover at 90 Degrees



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)

PHOTOGRAPH NOT APPLICABLE

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

PHOTOGRAPH NOT APPLICABLE

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

PHOTOGRAPH NOT APPLICABLE

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

PHOTOGRAPH NOT APPLICABLE

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

<u>No.</u>	<u>Description</u>	<u>Page No.</u>
Figure No. 1.	Driver Head Acceleration (X) Primary vs. Time	B-1
Figure No. 2.	Driver Head Acceleration (Y) Primary vs. Time	B-1
Figure No. 3.	Driver Head Acceleration (Z) Primary vs. Time	B-1
Figure No. 4.	Driver Head Resultant Acceleration Primary vs. Time	B-1
Figure No. 5.	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-2
Figure No. 6.	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-2
Figure No. 7.	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-2
Figure No. 8.	Driver Thorax Rib Deflection Maximum vs. Time	B-2
Figure No. 9.	Driver Anterior Abdomen Force (Y) vs. Time	B-3
Figure No. 10.	Driver Middle Abdomen Force (Y) vs. Time	B-3
Figure No. 11.	Driver Posterior Abdomen Force (Y) vs. Time	B-3
Figure No. 12.	Driver Total Abdominal Force (Y) vs. Time	B-3
Figure No. 13.	Driver Pubic Symphysis Force (Y) vs. Time	B-4
Figure No. 14.	Passenger Head Acceleration (X) Primary vs. Time	B-5
Figure No. 15.	Passenger Head Acceleration (Y) Primary vs. Time	B-5
Figure No. 16.	Passenger Head Acceleration (Z) Primary vs. Time	B-5
Figure No. 17.	Passenger Head Resultant Acceleration Primary vs. Time	B-5
Figure No. 18.	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-6
Figure No. 19.	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-6
Figure No. 20.	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-6
Figure No. 21.	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-6
Figure No. 22.	Passenger Iliac Force on Impact Side (Y) vs. Time	B-7
Figure No. 23.	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-7
Figure No. 24.	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-7

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)

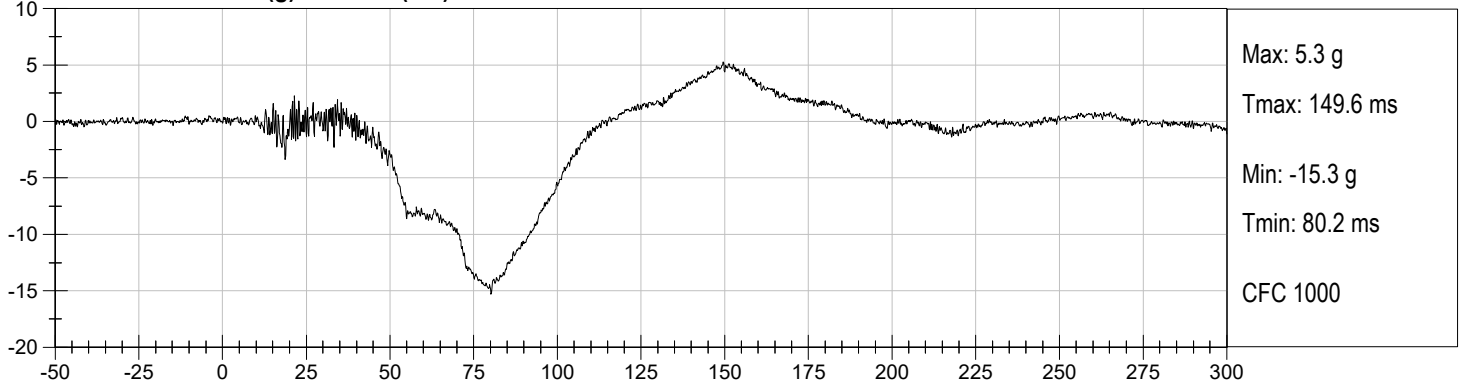
MDB Rear Acceleration (X)

MDB Rear Acceleration (Y)

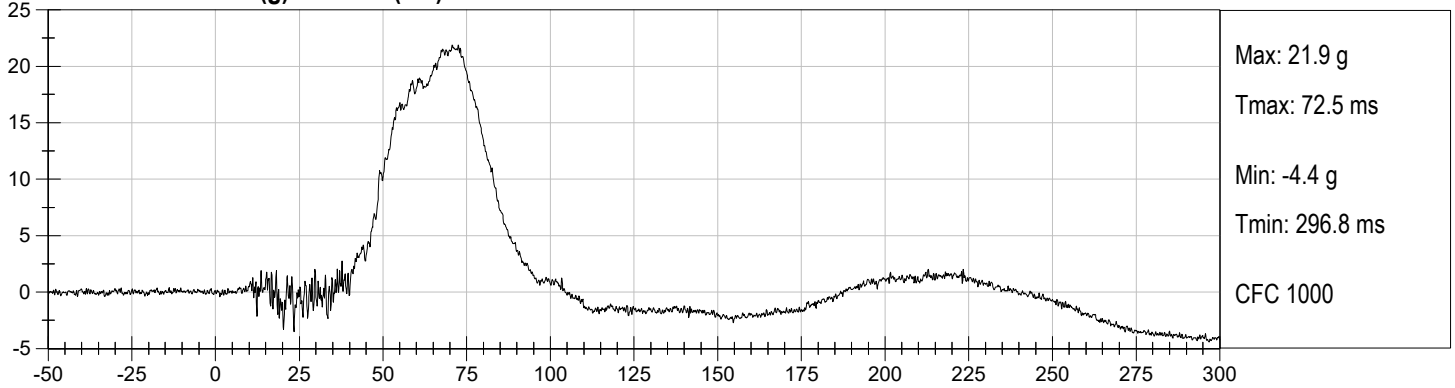
Left MDB Contact Switch

Right MDB Contact Switch

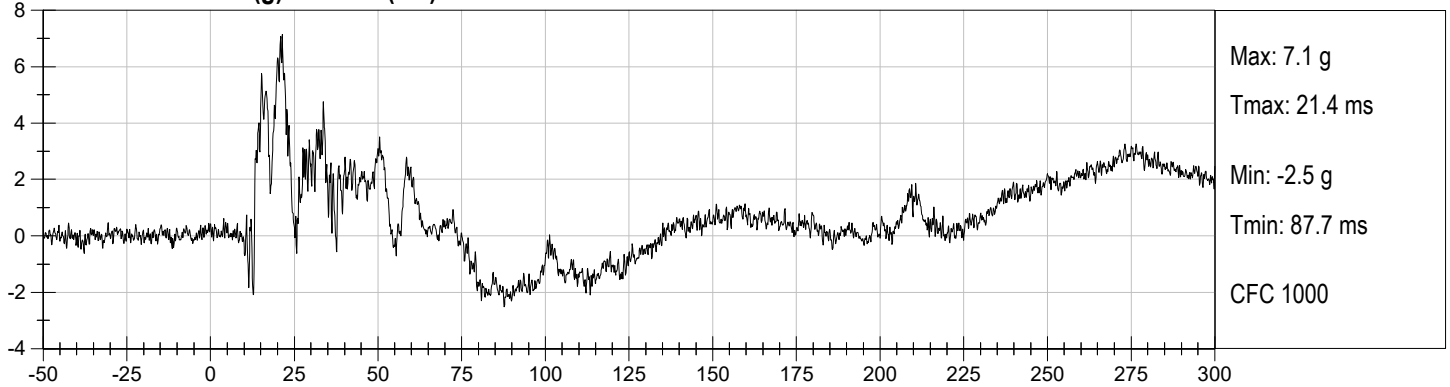
DRIVER HEAD X (g) vs Time (ms)



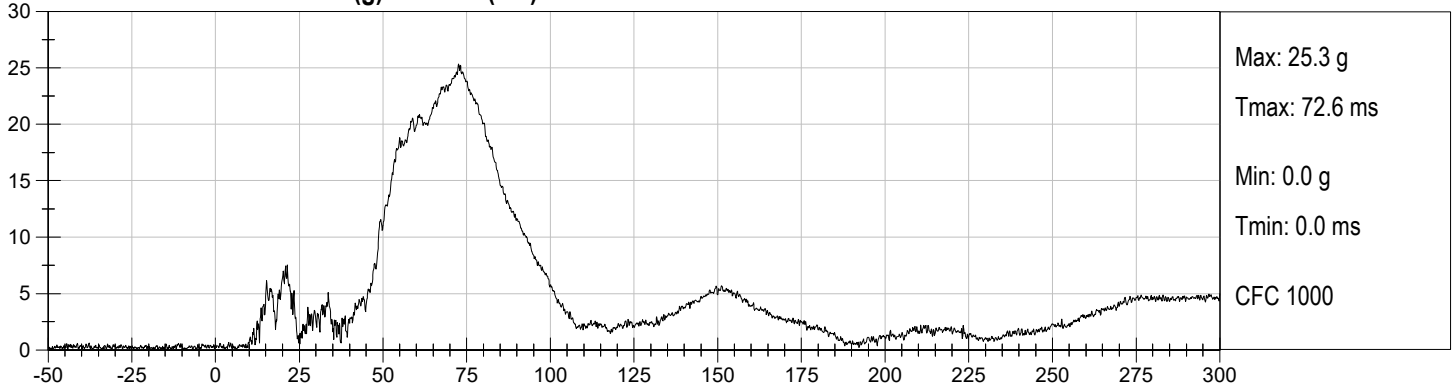
DRIVER HEAD Y (g) vs Time (ms)



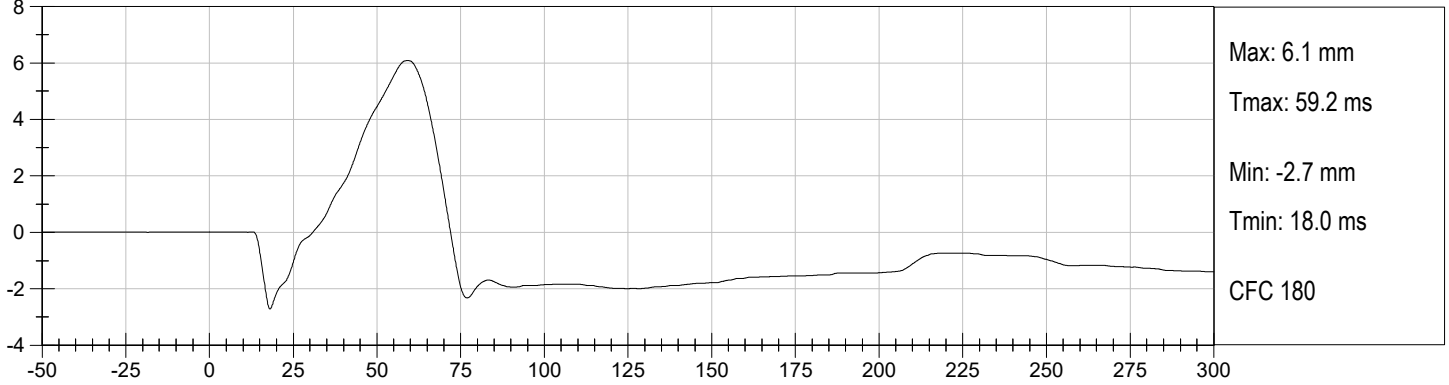
DRIVER HEAD Z (g) vs Time (ms)



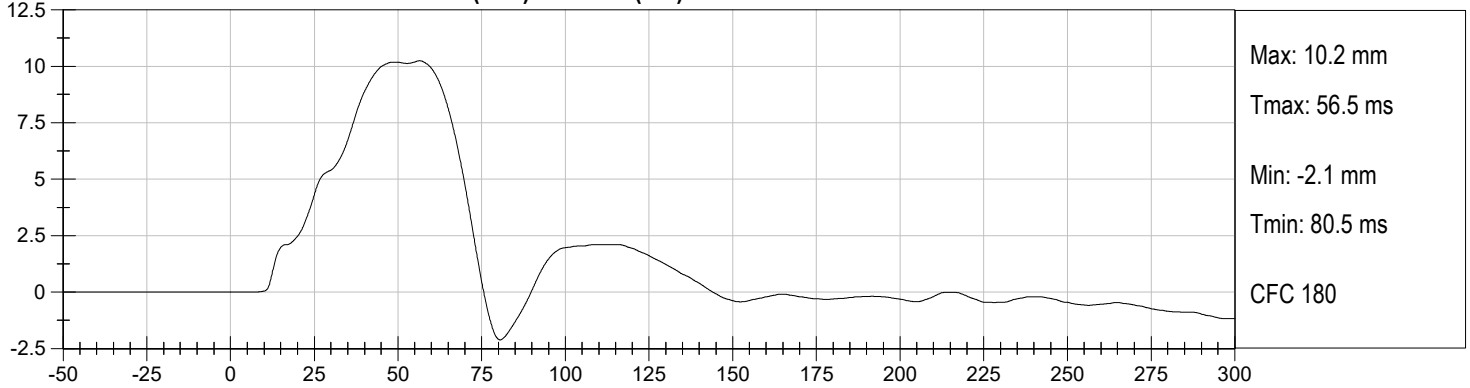
DRIVER HEAD Resultant (g) vs Time (ms)



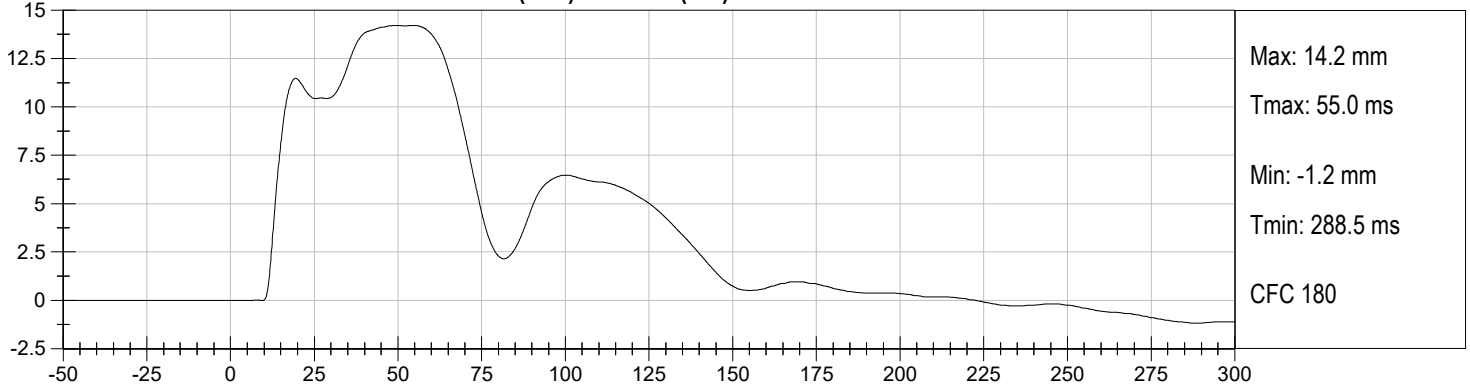
DRIVER UPPER RIB DISPLACEMENT (mm) vs Time (ms)



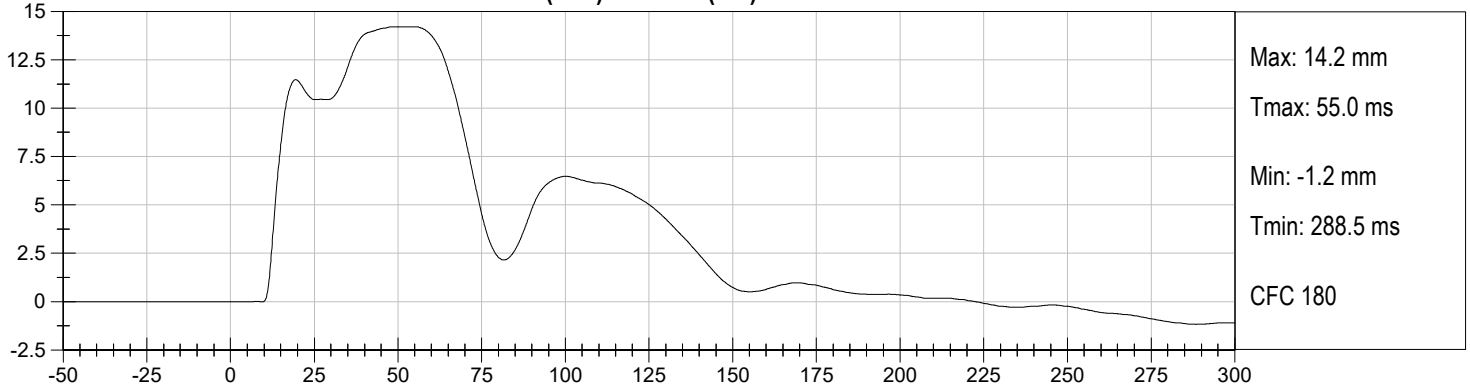
DRIVER MID RIB DISPLACEMENT (mm) vs Time (ms)



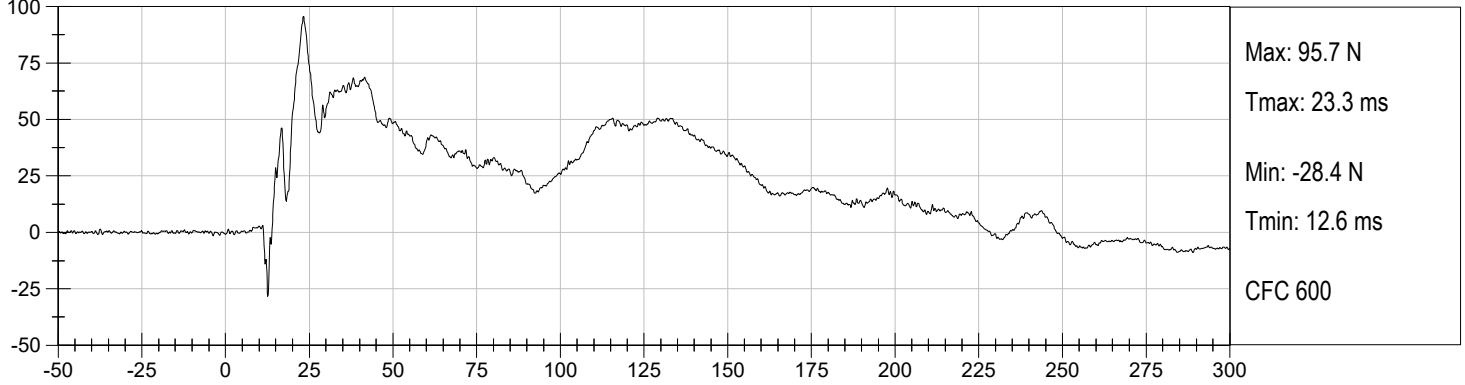
DRIVER LOWER RIB DISPLACEMENT (mm) vs Time (ms)



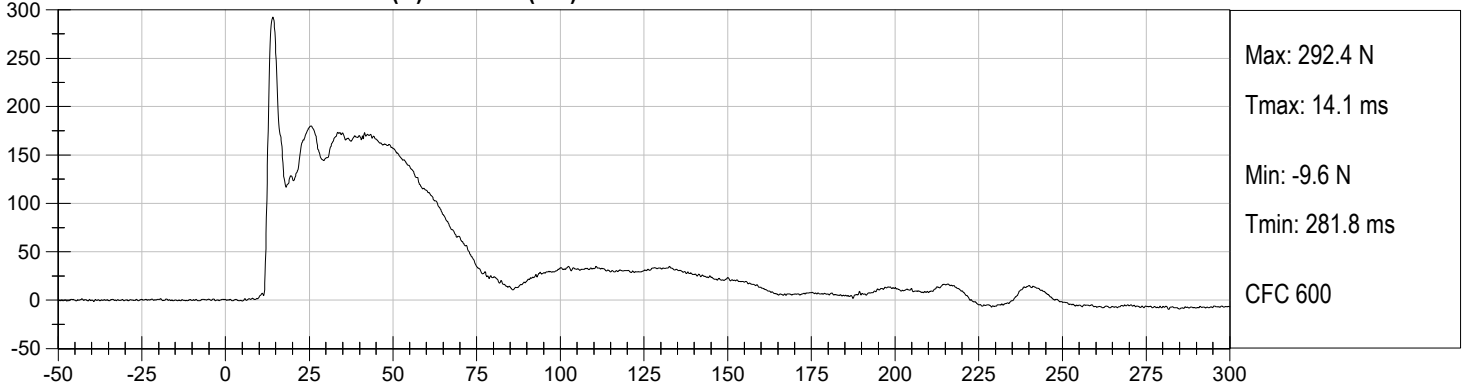
DRIVER MAXIMUM RIB DISPLACEMENT (mm) vs Time (ms)



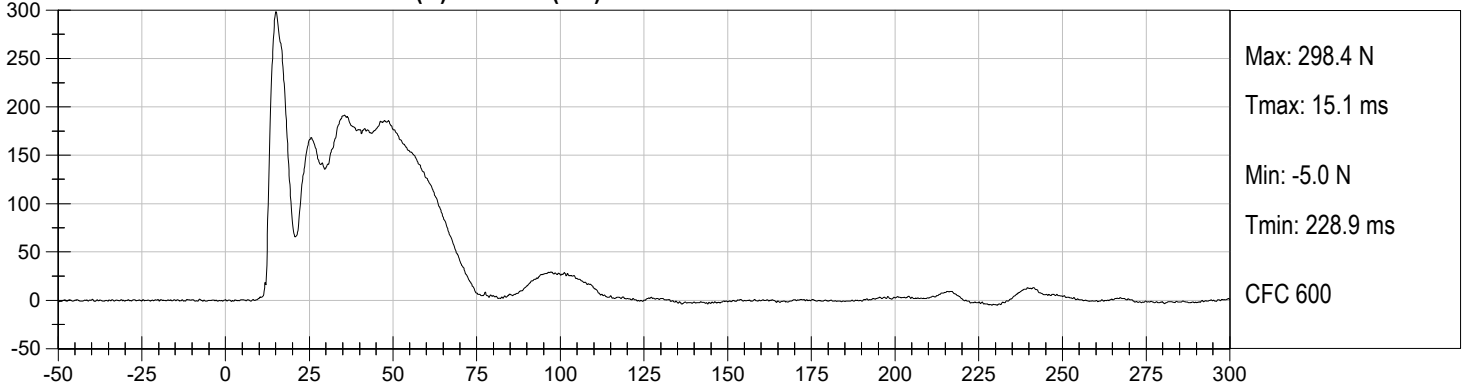
DRIVER FRONT ABDOMEN FY (N) vs Time (ms)



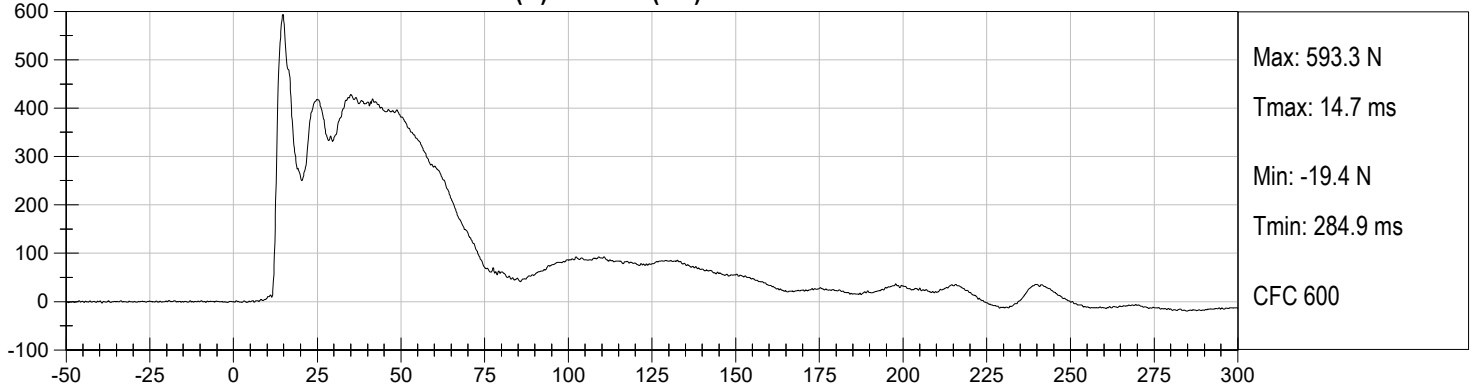
DRIVER MID ABDOMEN FY (N) vs Time (ms)

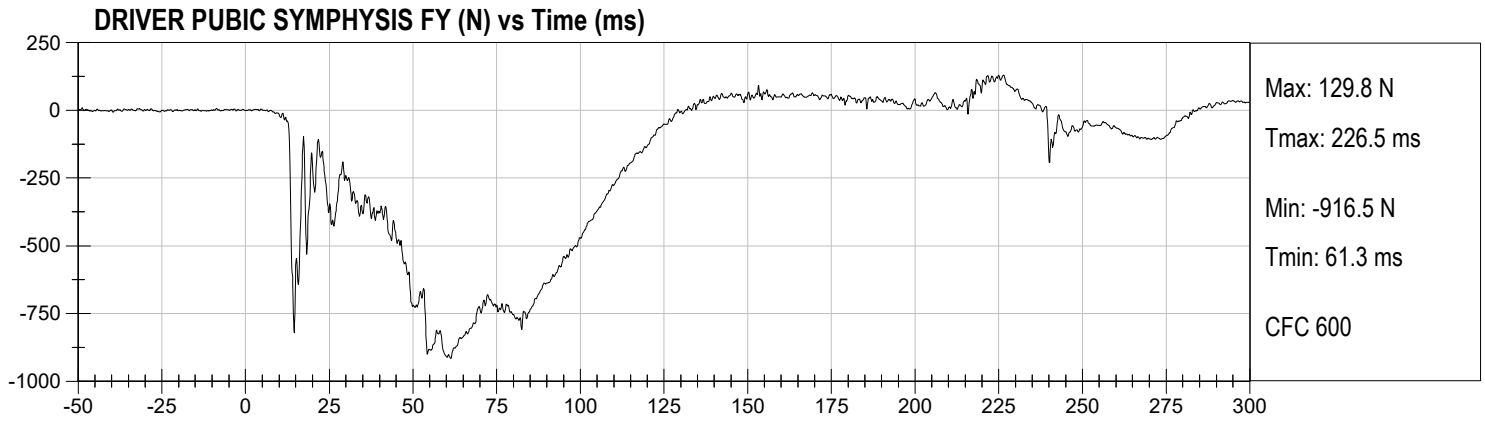


DRIVER REAR ABDOMEN FY (N) vs Time (ms)

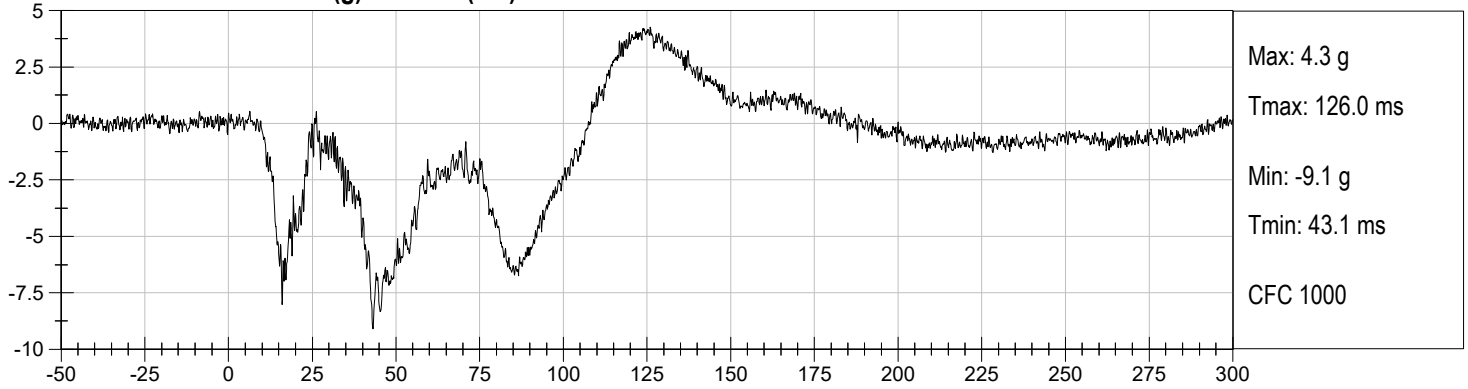


DRIVER SUMMED ABDOMEN FORCE (N) vs Time (ms)

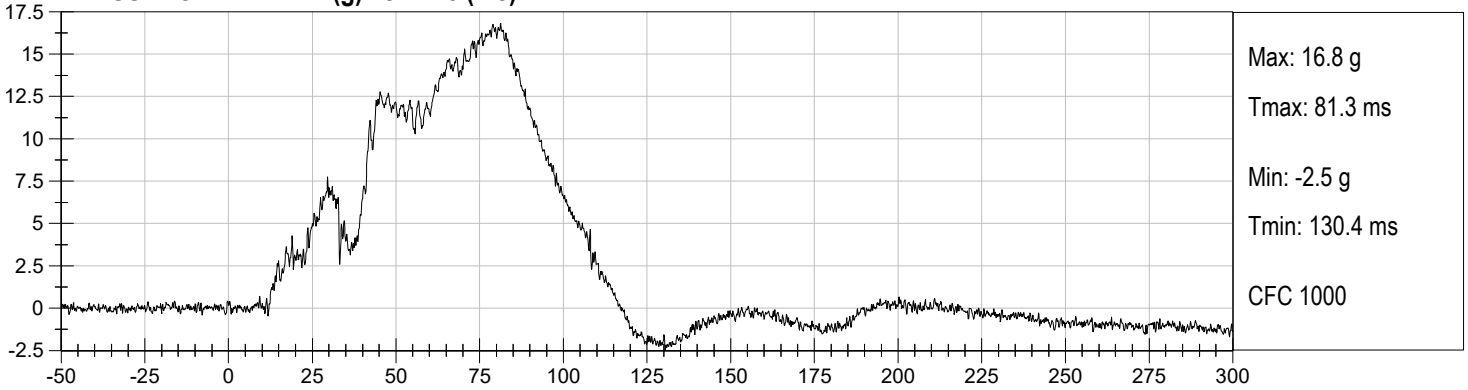




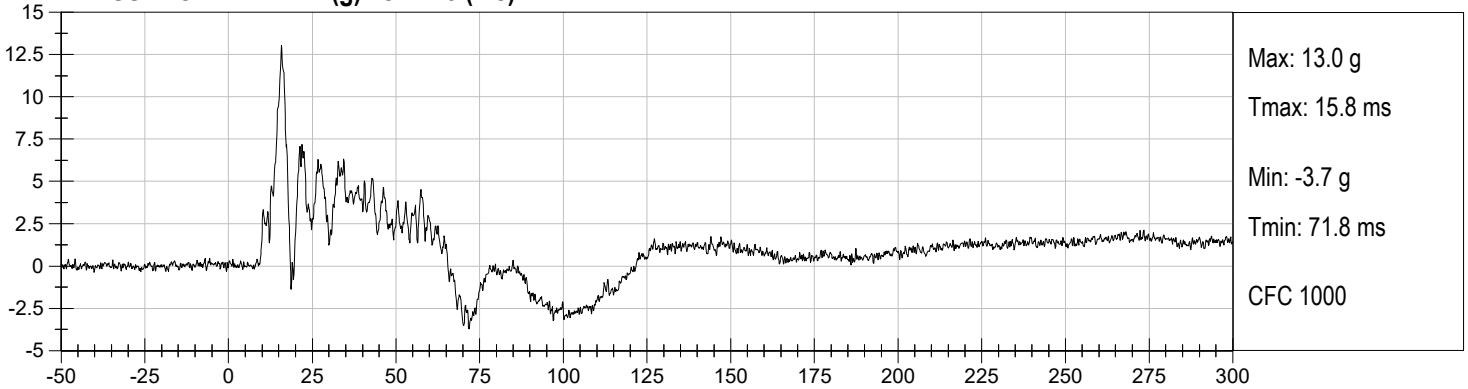
PASSENGER HEAD X (g) vs Time (ms)



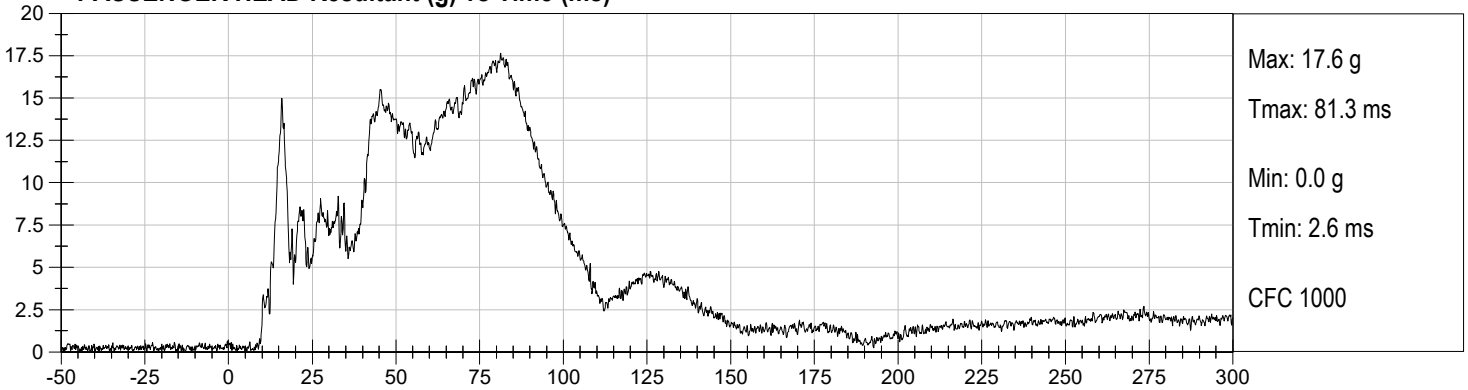
PASSENGER HEAD Y (g) vs Time (ms)

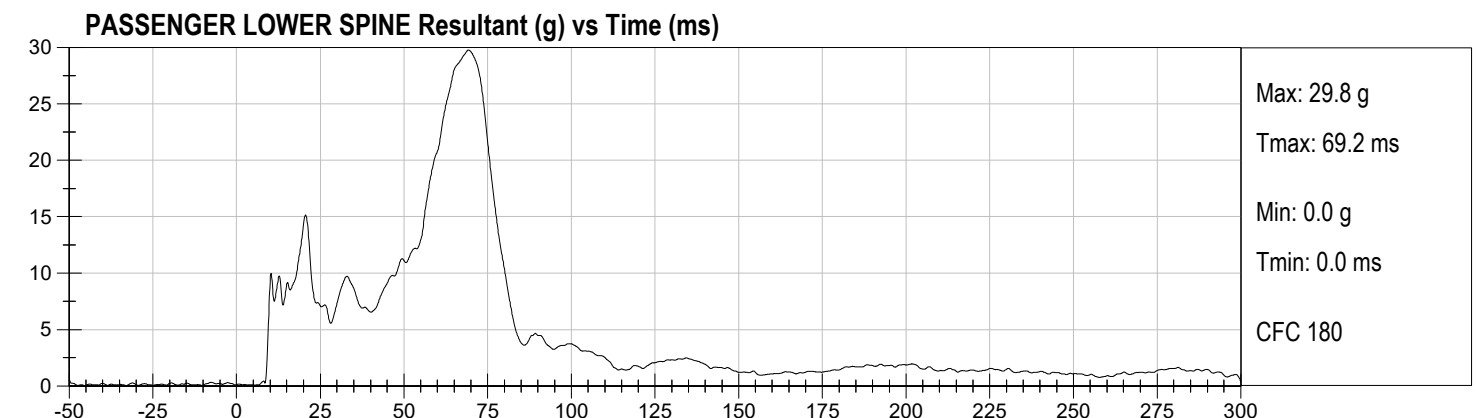
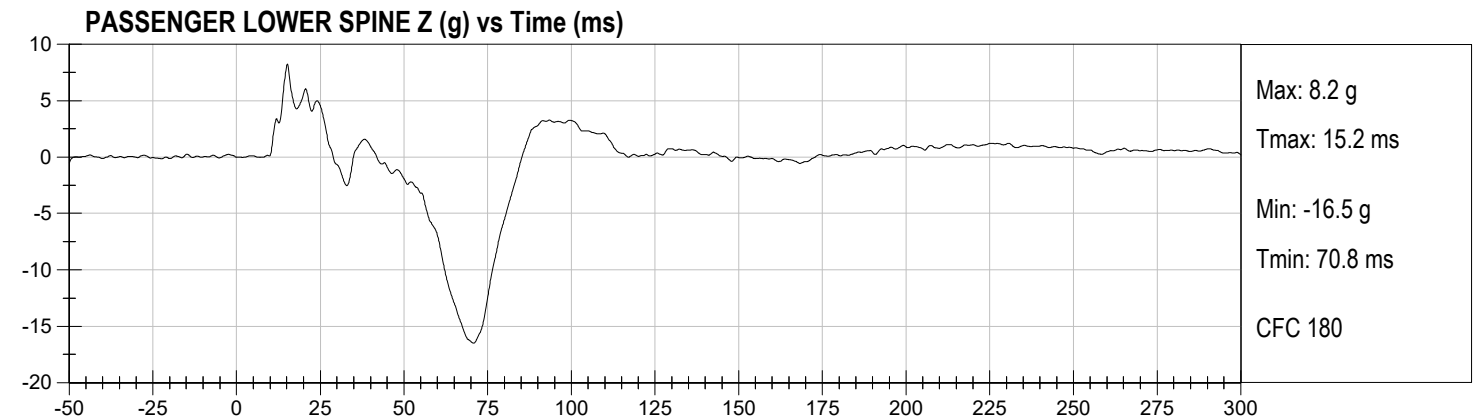
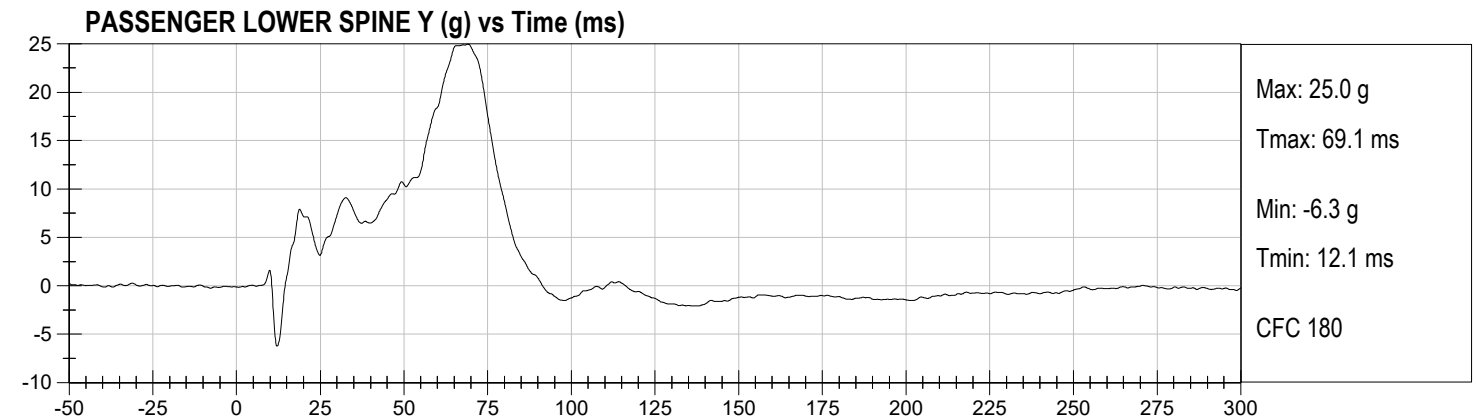
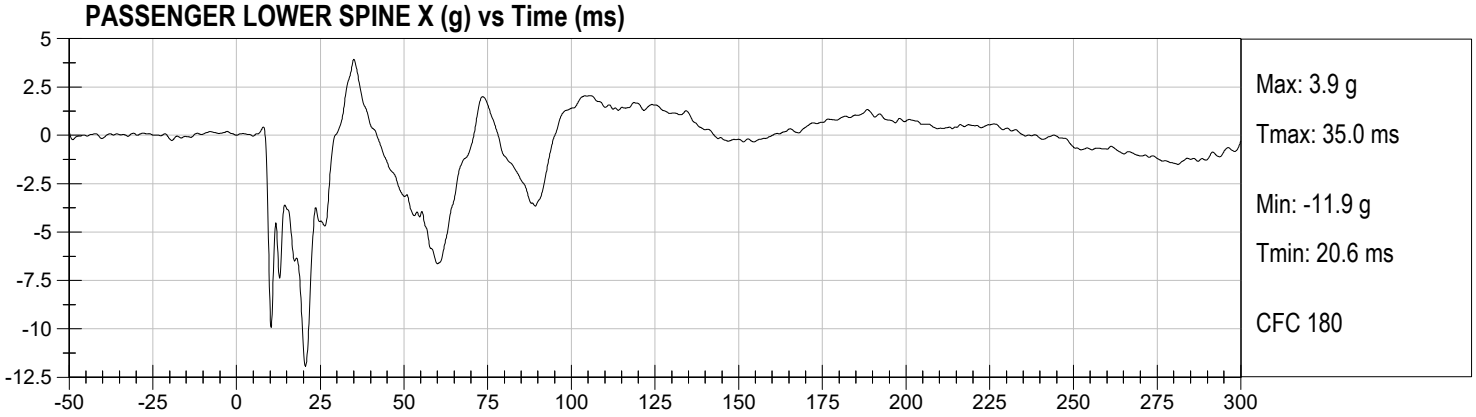


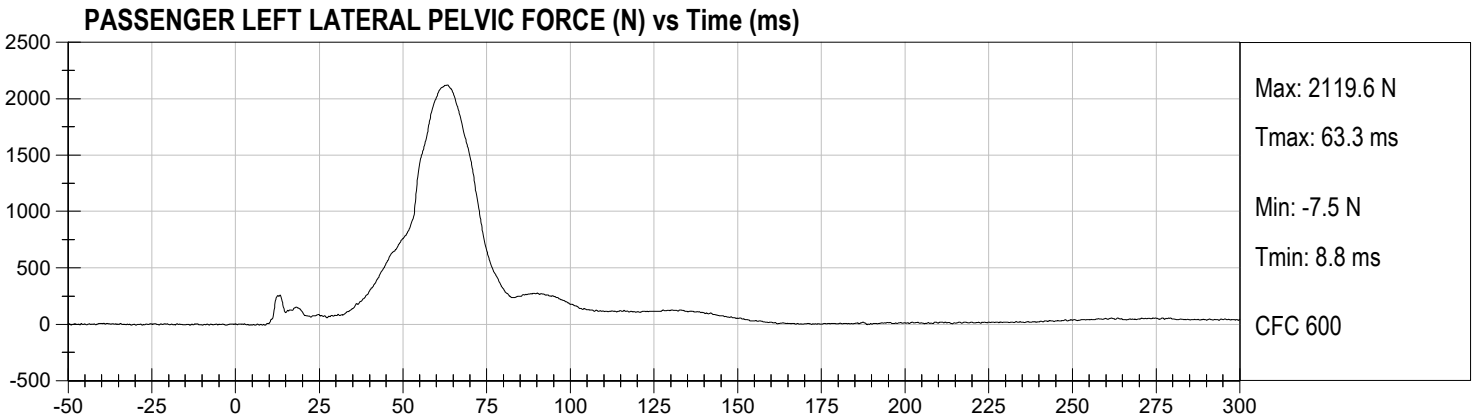
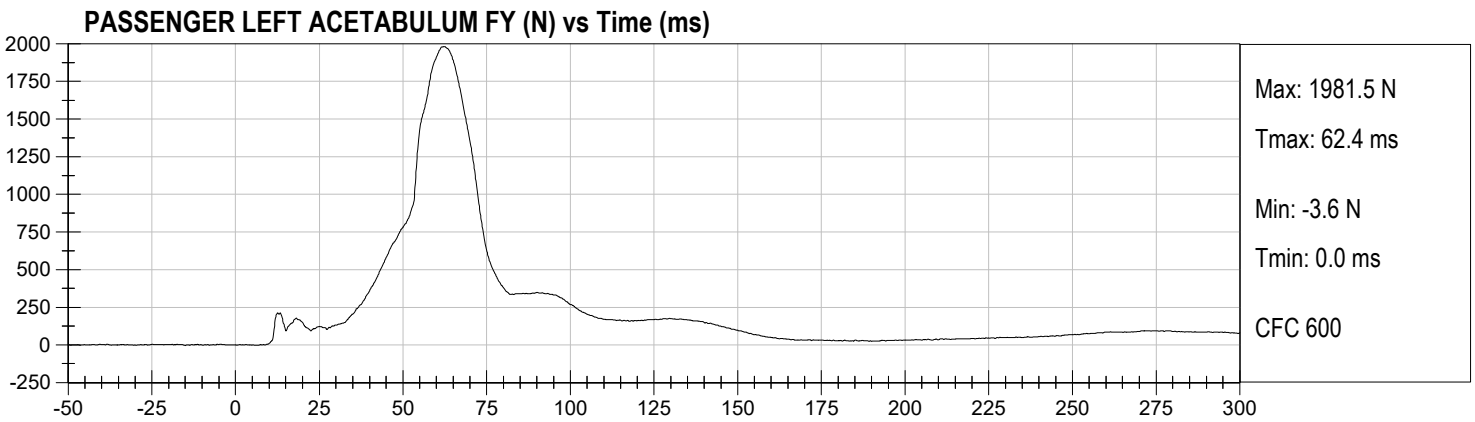
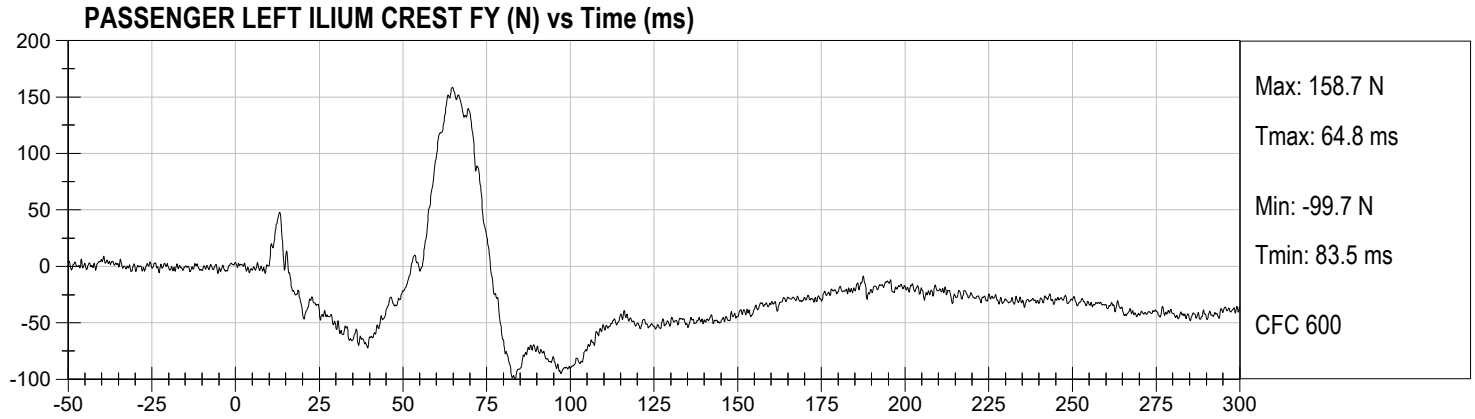
PASSENGER HEAD Z (g) vs Time (ms)



PASSENGER HEAD Resultant (g) vs Time (ms)







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

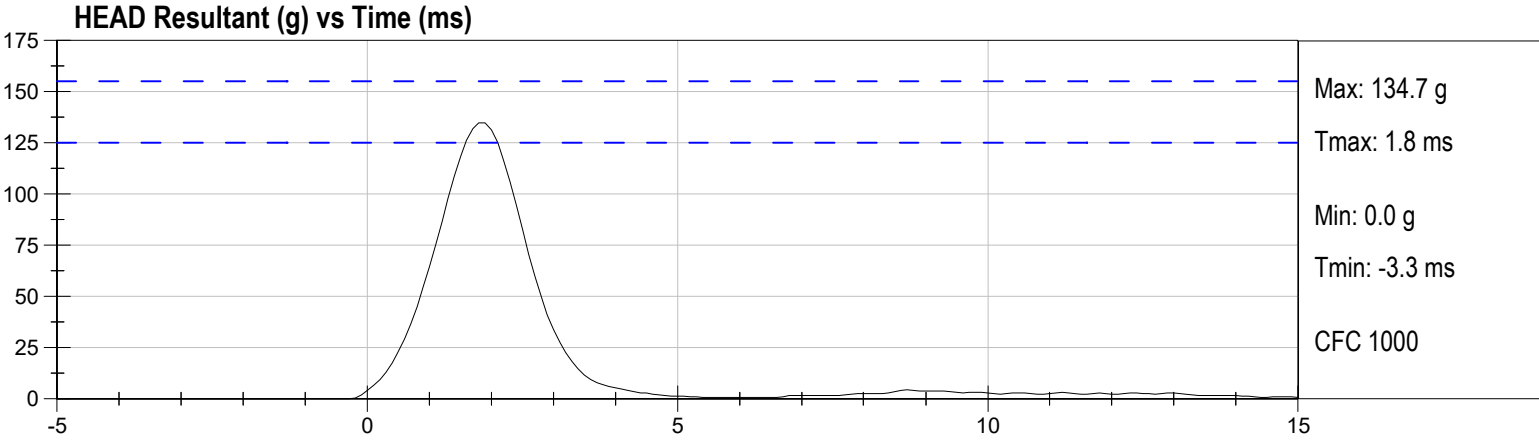
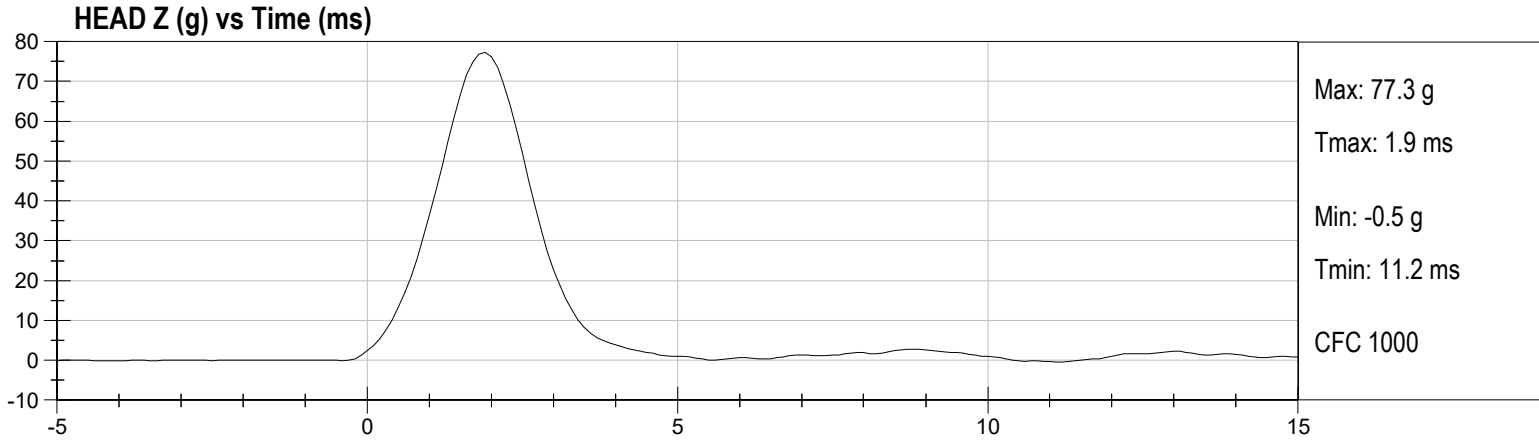
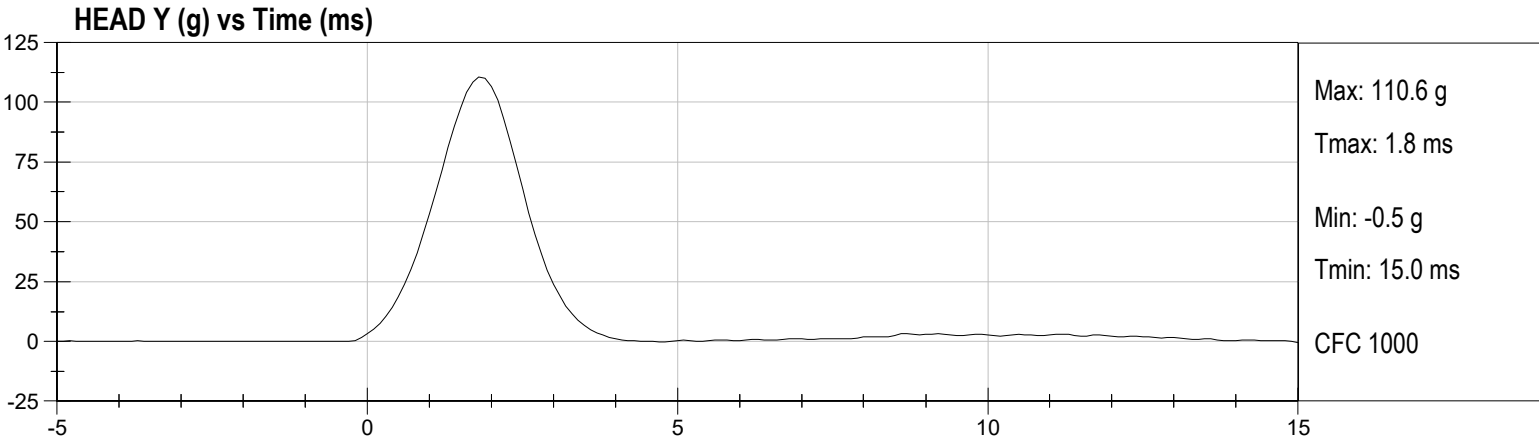
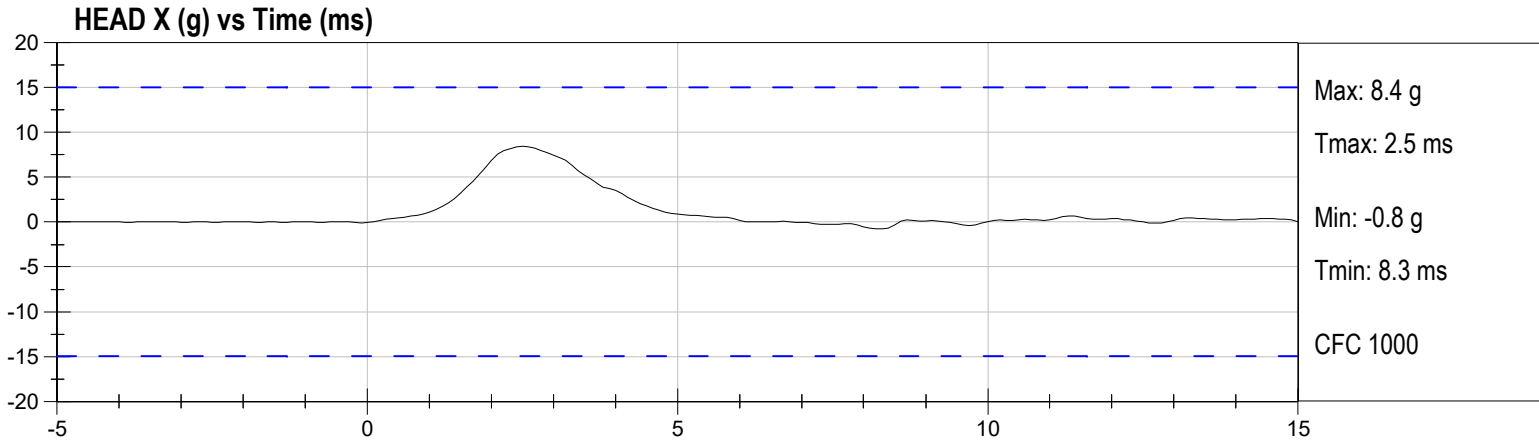


Lateral Head Drop Test
ES2re
ATD Serial No: F032

Test Date: 02/19/2025
Test ID: D250531
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	24	Pass
Peak Resultant Acceleration	g	125 to 155	135	Pass
Peak Longitudinal Acceleration	g	-15 to 15	8.4	Pass
Unimodal	%	within 15% of peak	3	Pass

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



**Lateral Neck Bending Test**

ES2re

ATD Serial No: F032

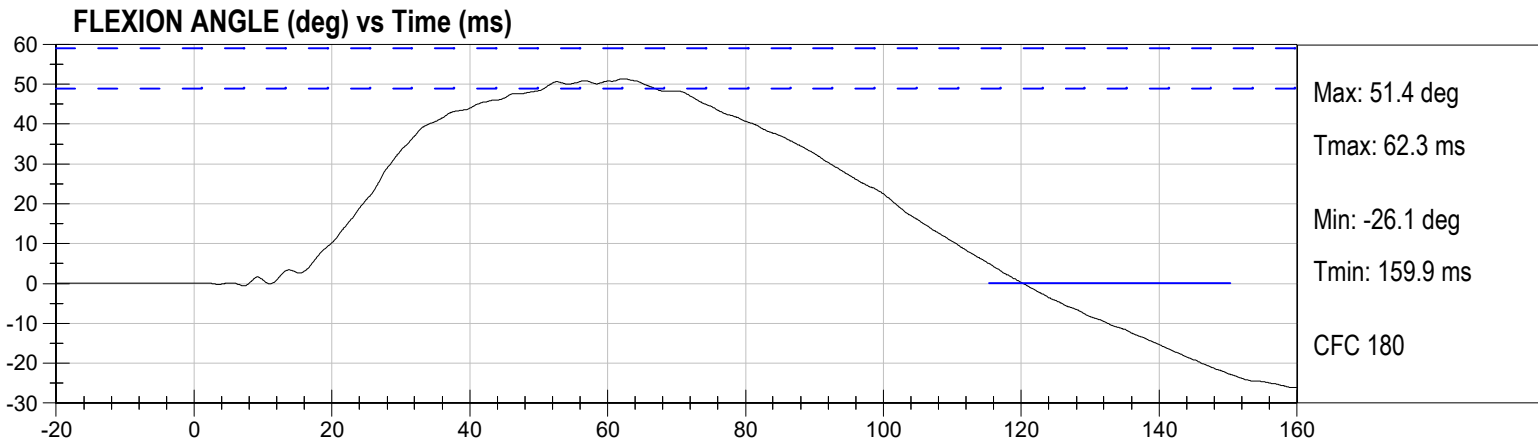
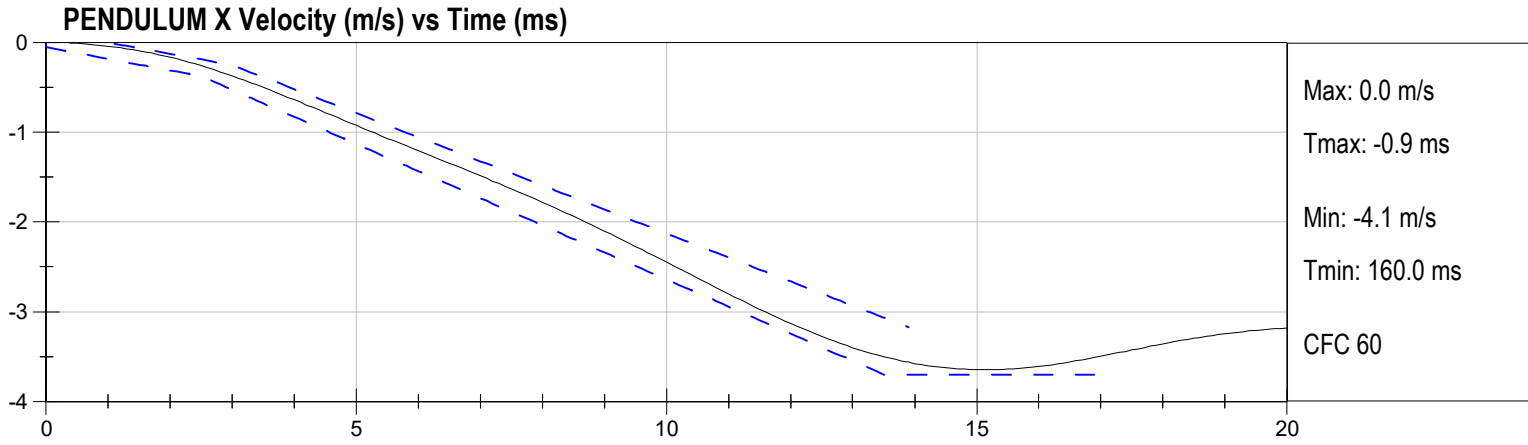
Test Date: 02/19/2025

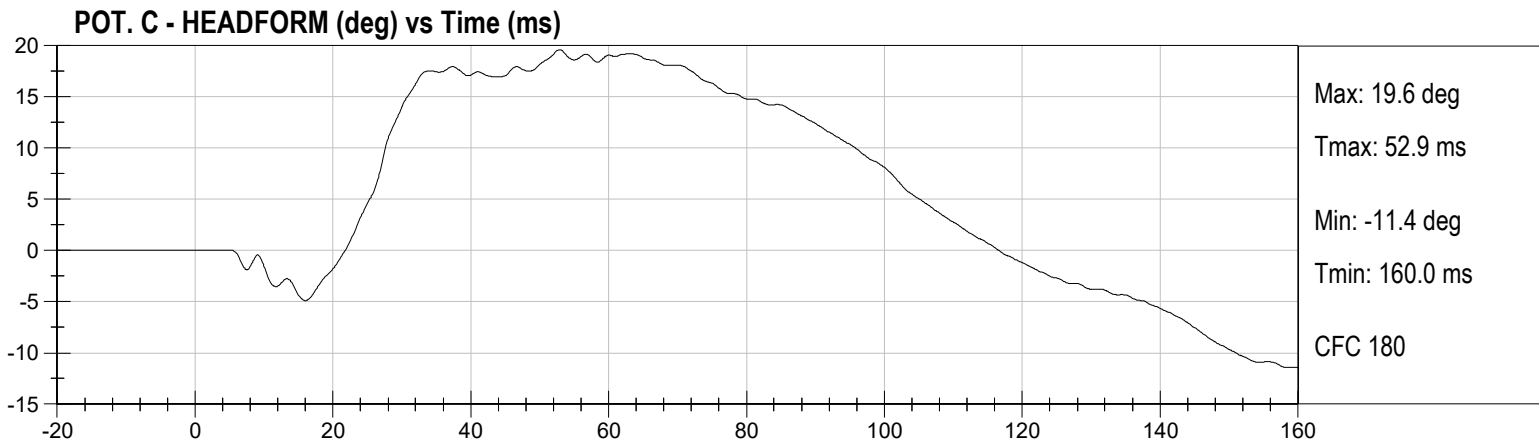
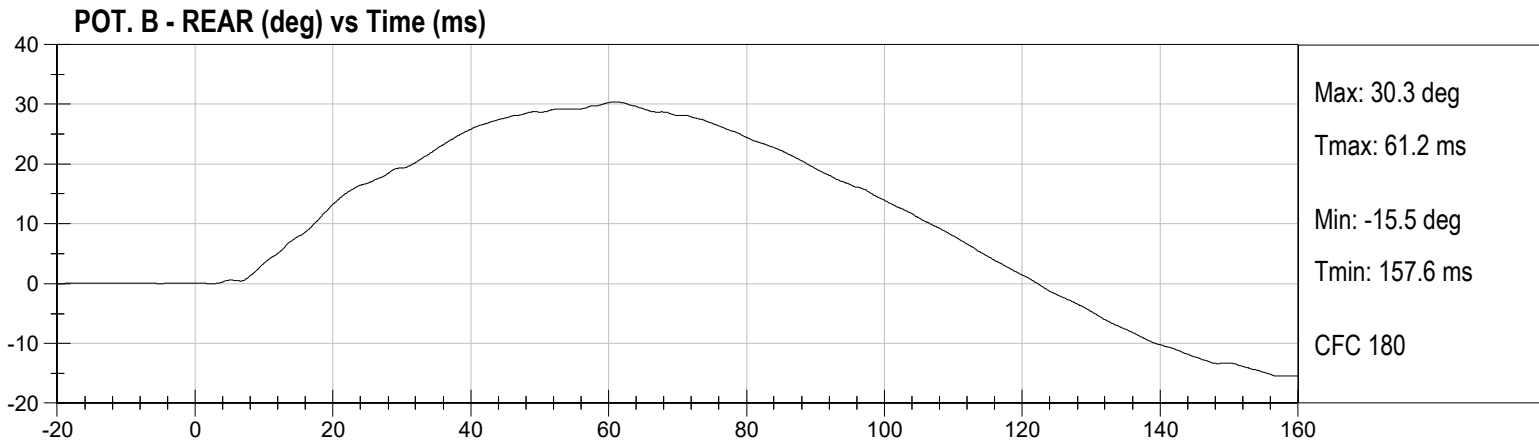
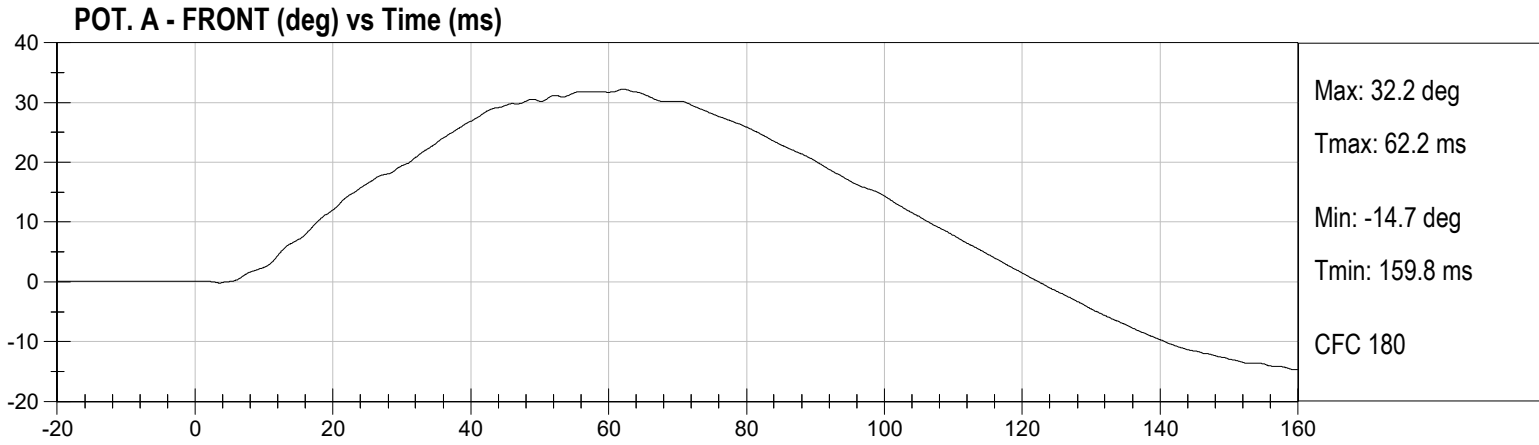
Test ID: D250532

Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	3.30 to 3.50	3.43	Pass
Pendulum Velocity Within Corridor	m/s	Within	Yes	Pass
Maximum Flexion Angle	deg	49 to 59	51.4	Pass
Time of Maximum Flexion Angle	ms	54 to 66	62.3	Pass
Decay Time to Zero Crossing	ms	53 to 88	58.1	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





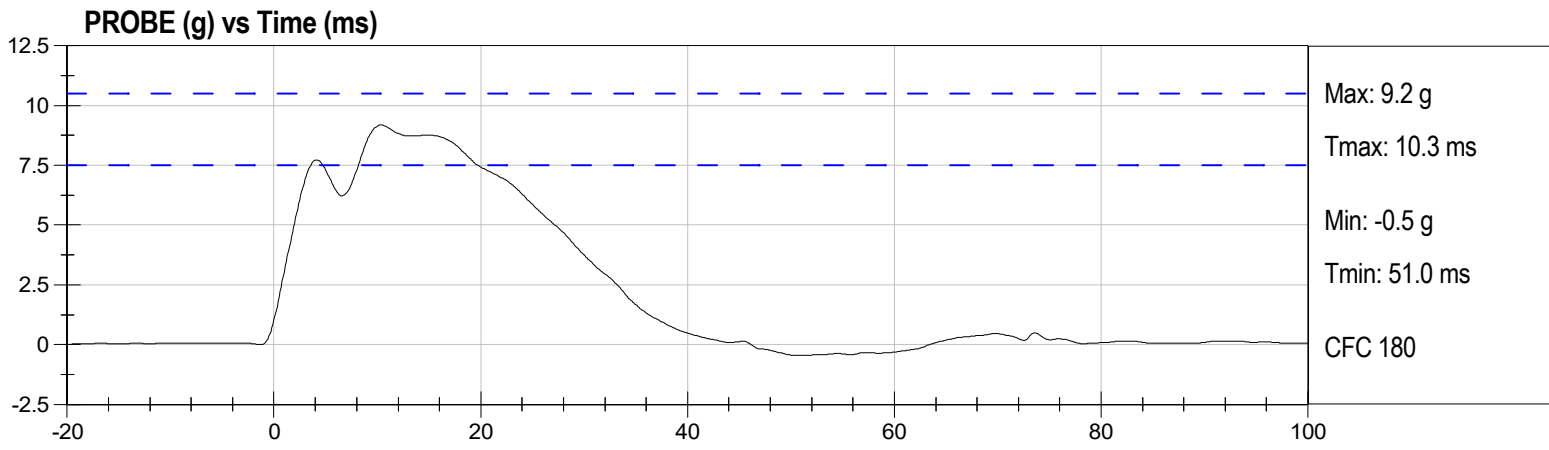


Shoulder Impact Test
ES2re
ATD Serial No: F032

Test Date: 02/19/2025
Test ID: D250533
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	22	Pass
Impact Velocity	m/s	4.2 to 4.4	4.2	Pass
Peak Probe Acceleration	G's	7.5 to 10.5	9.2	Pass

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





Upper Rib Drop Test - 459mm

ES2re

ATD Serial No: F032

Test Date: 02/19/2025

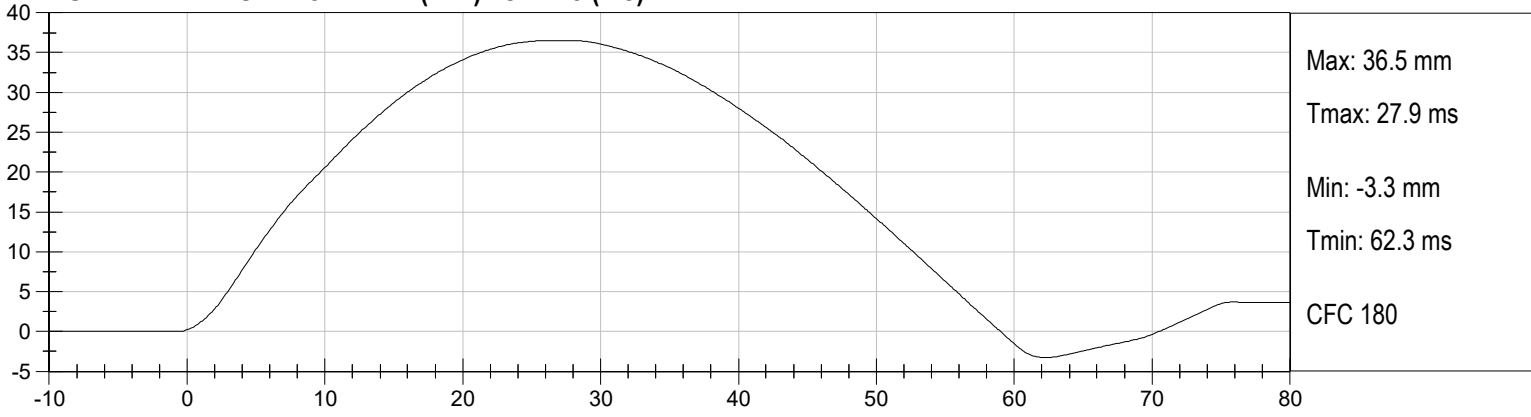
Test ID: D250534L

Test Technician: Brian Lucas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Rib Deflection at 459 mm	mm	36 to 40	36.5	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)





Upper Rib Drop Test - 815mm

ES2re

ATD Serial No: F032

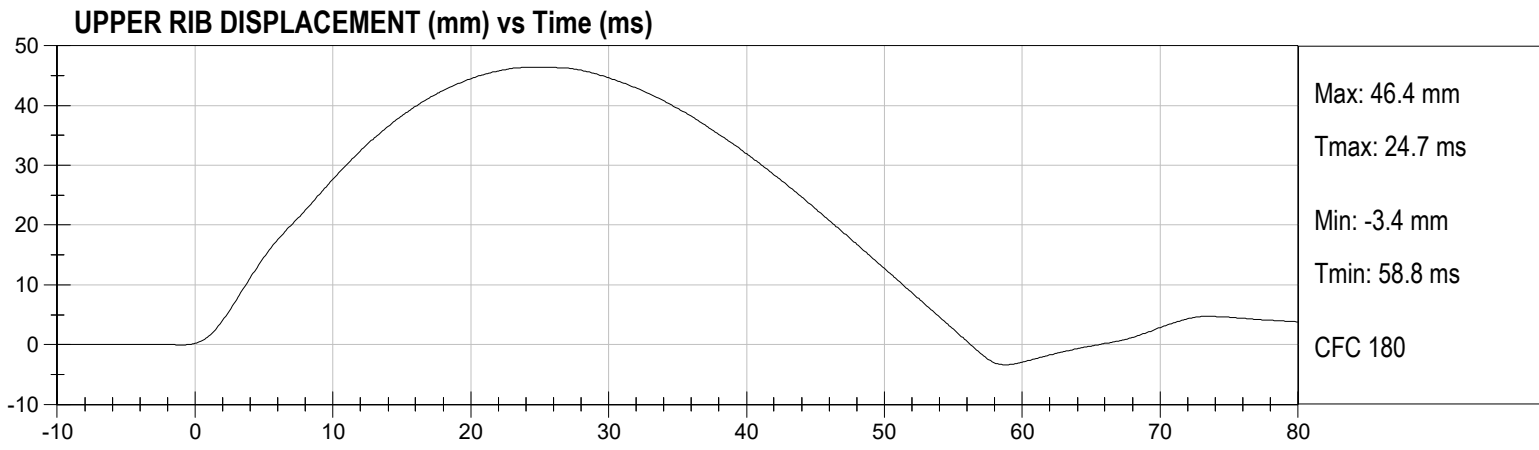
Test Date: 02/19/2025

Test ID: D250534H

Test Technician: Brian Lucas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Rib Deflection at 815 mm	mm	46 to 51	46.4	Pass

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





Middle Rib Drop Test - 459mm

ES2re

ATD Serial No: F032

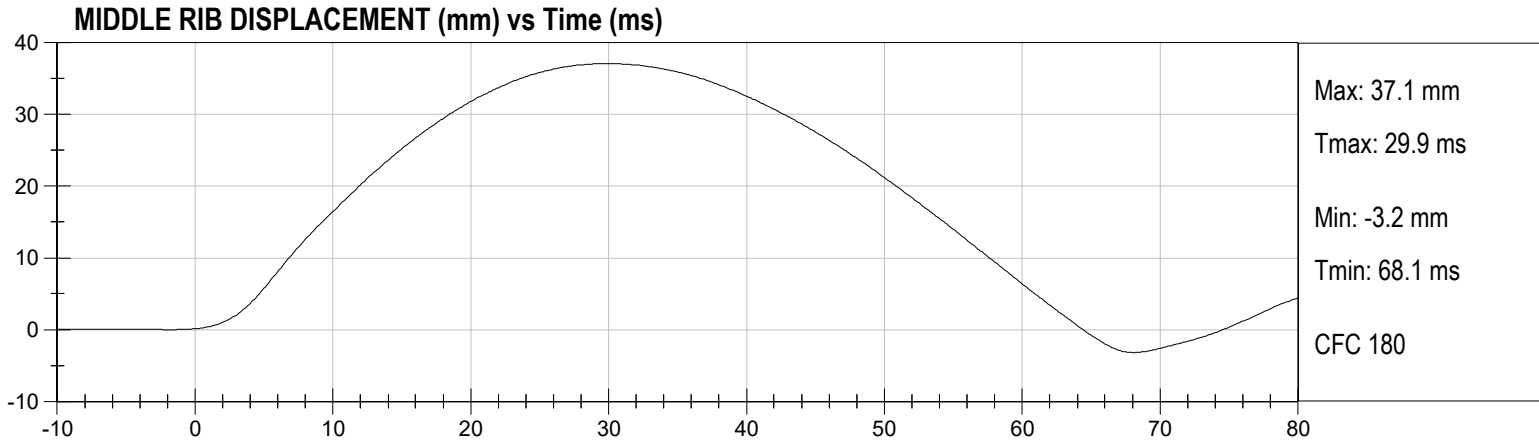
Test Date: 02/19/2025

Test ID: D250535L

Test Technician: Brian Lucas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Rib Deflection at 459 mm	mm	36 to 40	37.1	Pass

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





Middle Rib Drop Test - 815mm

ES2re

ATD Serial No: F032

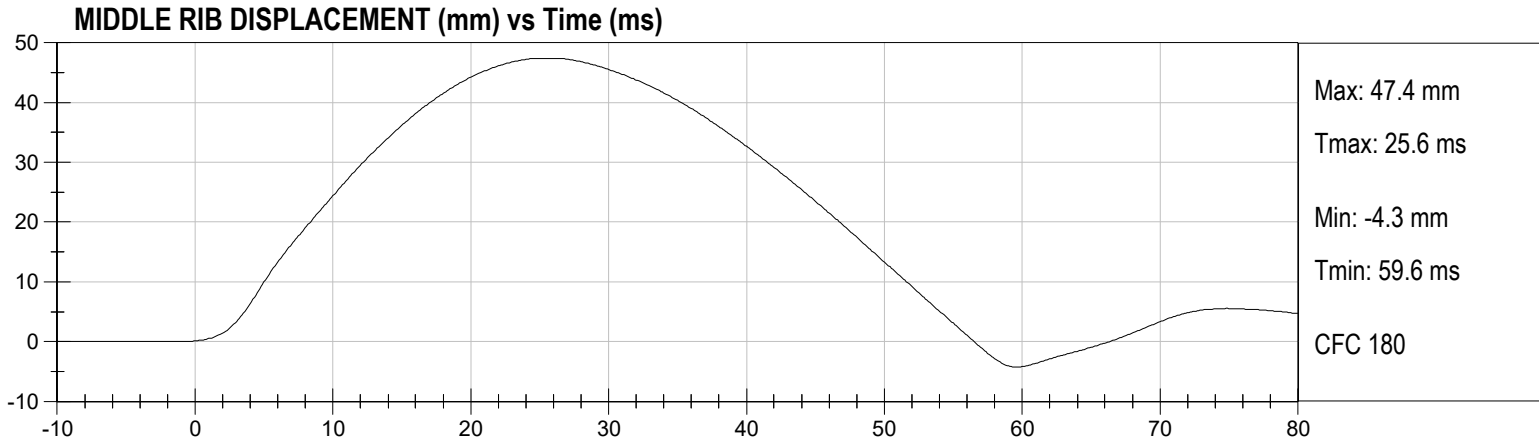
Test Date: 02/19/2025

Test ID: D250535H

Test Technician: Brian Lucas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	22	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





Lower Rib Drop Test - 459mm

ES2re

ATD Serial No: F032

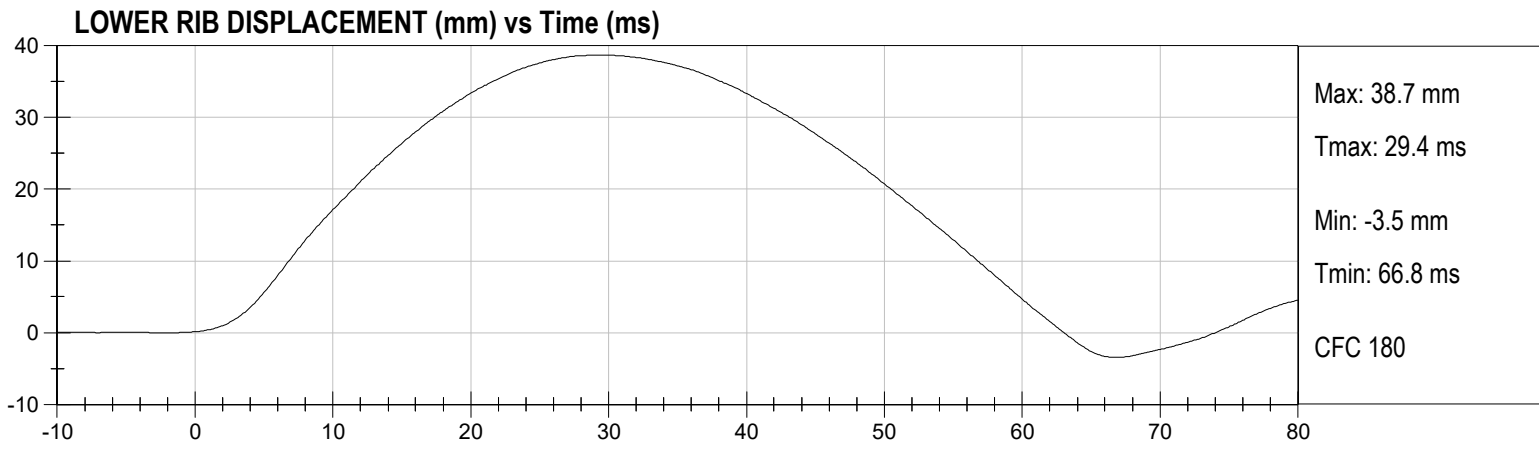
Test Date: 02/19/2025

Test ID: D250536L

Test Technician: Brian Lucas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Rib Deflection at 459 mm	mm	36 to 40	38.7	Pass

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





Lower Rib Drop Test - 815mm

ES2re

ATD Serial No: F032

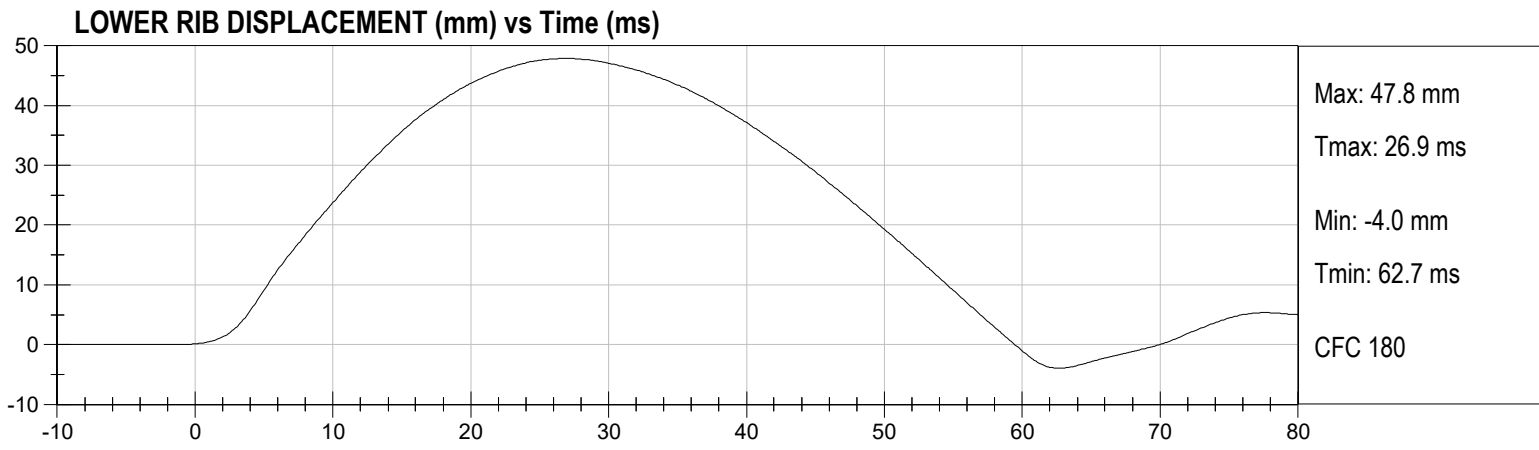
Test Date: 02/19/2025

Test ID: D250536H

Test Technician: Brian Lucas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Rib Deflection at 815 mm	mm	46 to 51	47.8	Pass

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



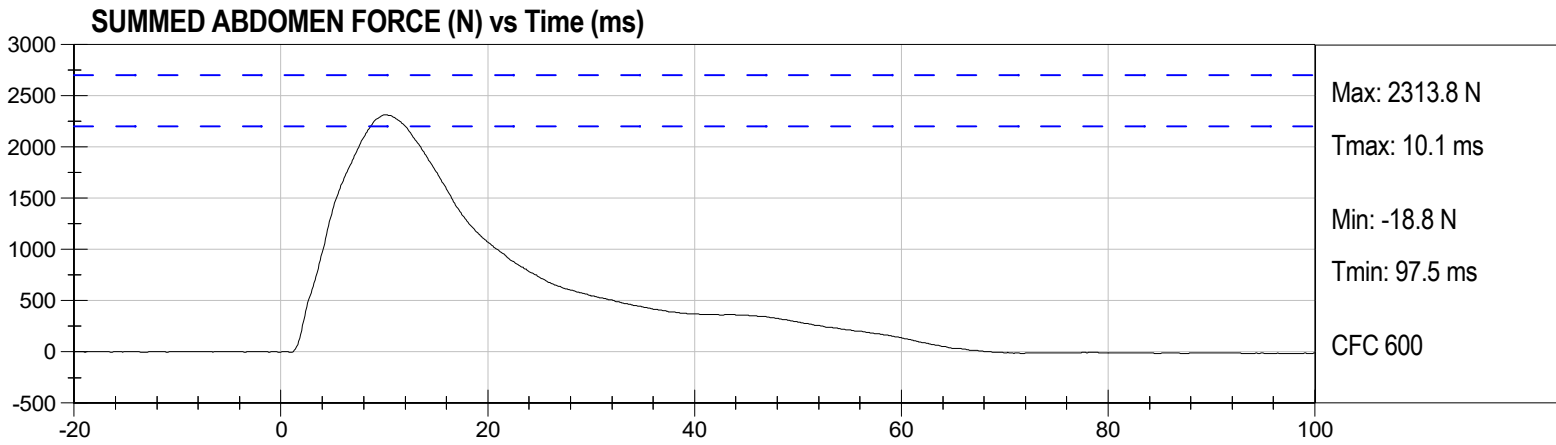
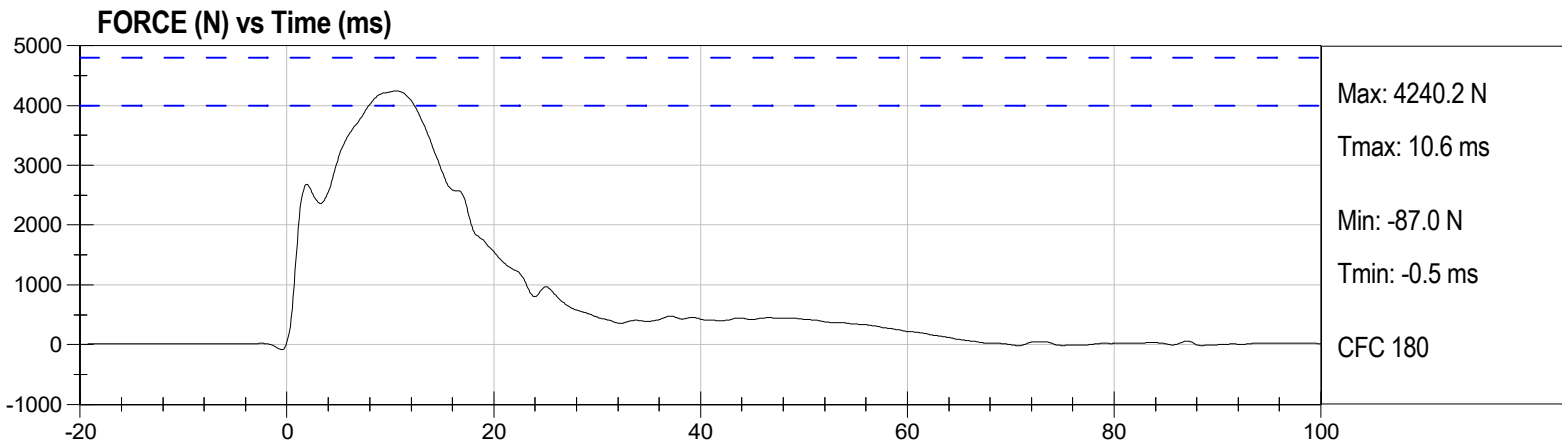


Abdomen Impact Test
 ES2re
 ATD Serial No: F032

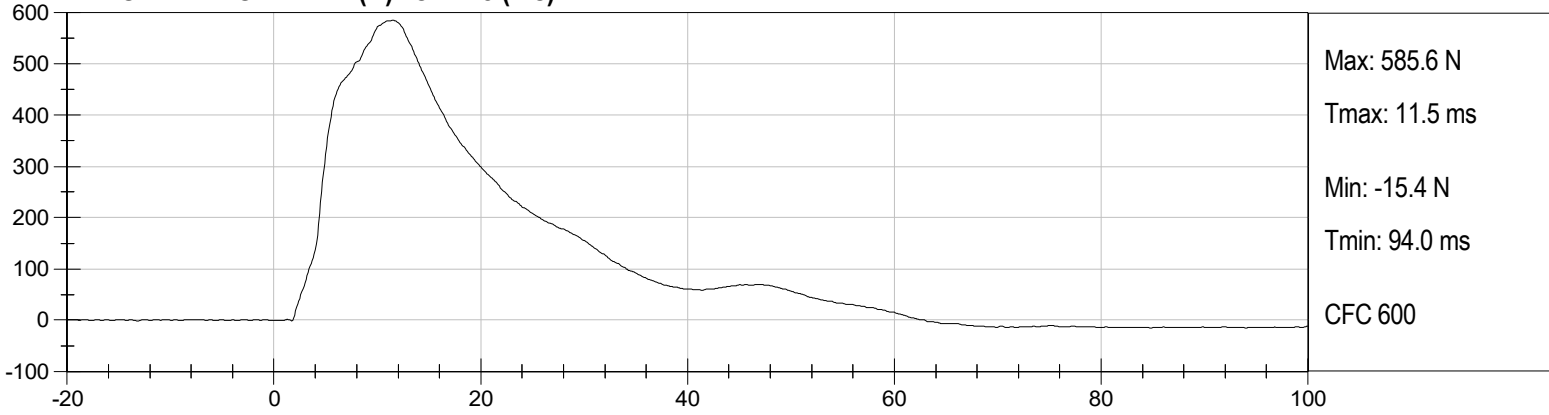
Test Date: 02/19/2025
 Test ID: D250537
 Test Technician: Jonah Pulokas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Impact Velocity	m/s	3.9 to 4.1	4.0	Pass
Peak Probe Force	N	4000 to 4800	4240	Pass
Time of Peak Probe Force	ms	10.6 to 13.0	10.6	Pass
Peak Abdomen Force	N	2200 to 2700	2314	Pass
Time of Peak Abdomen Force	ms	10.0 to 12.3	10.1	Pass

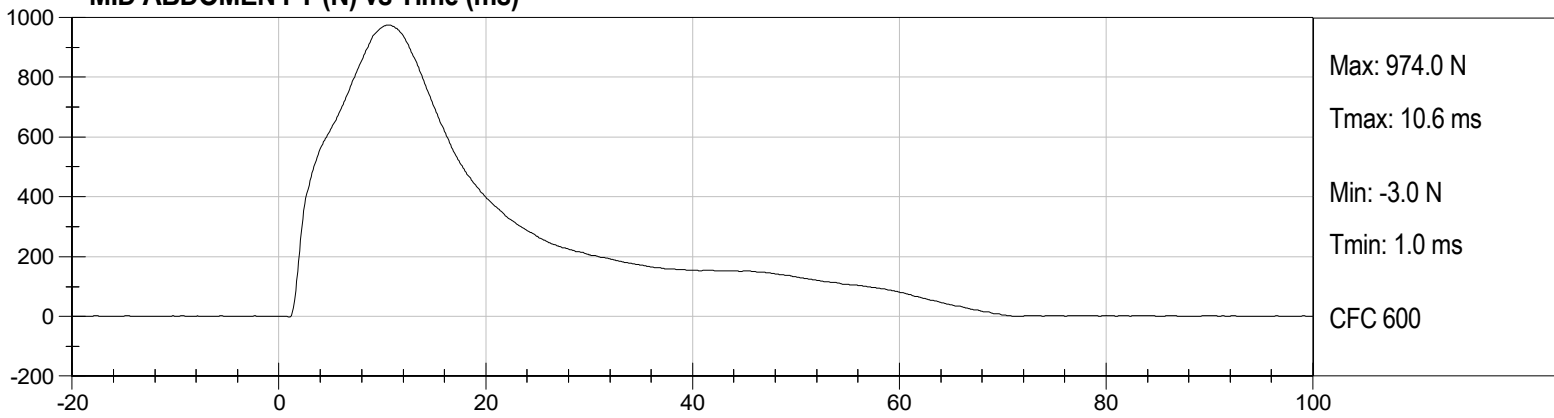
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
FRONT ABDOMEN FY	Denton	ABG1532FY	01/20/2025	1/20/2026
MID ABDOMEN FY	Denton	ABG1534FY	01/20/2025	1/20/2026
REAR ABDOMEN FY	Denton	ABG1535FY	01/20/2025	1/20/2026



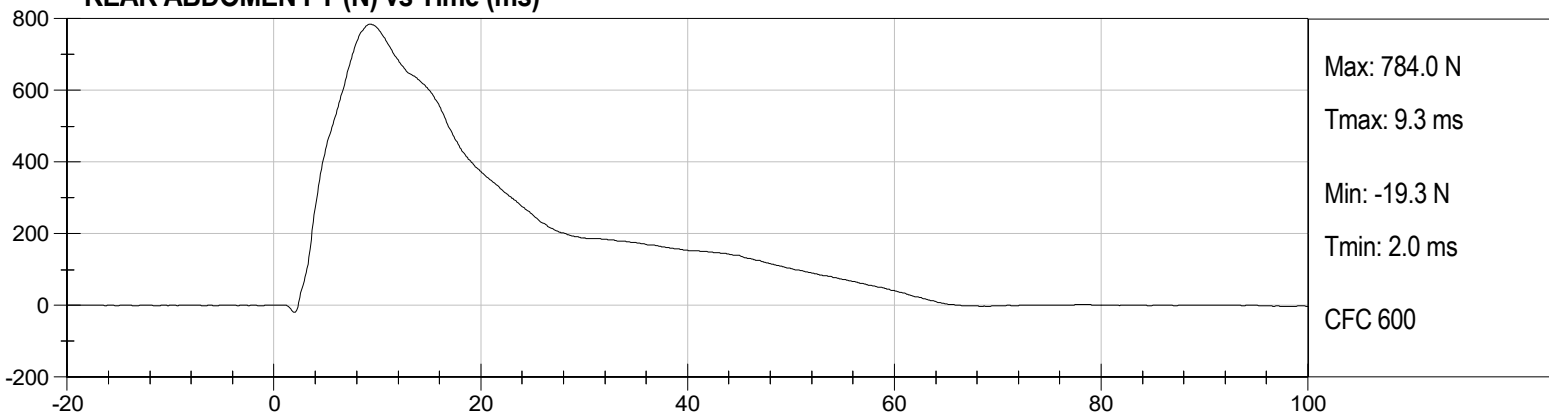
FRONT ABDOMEN FY (N) vs Time (ms)



MID ABDOMEN FY (N) vs Time (ms)



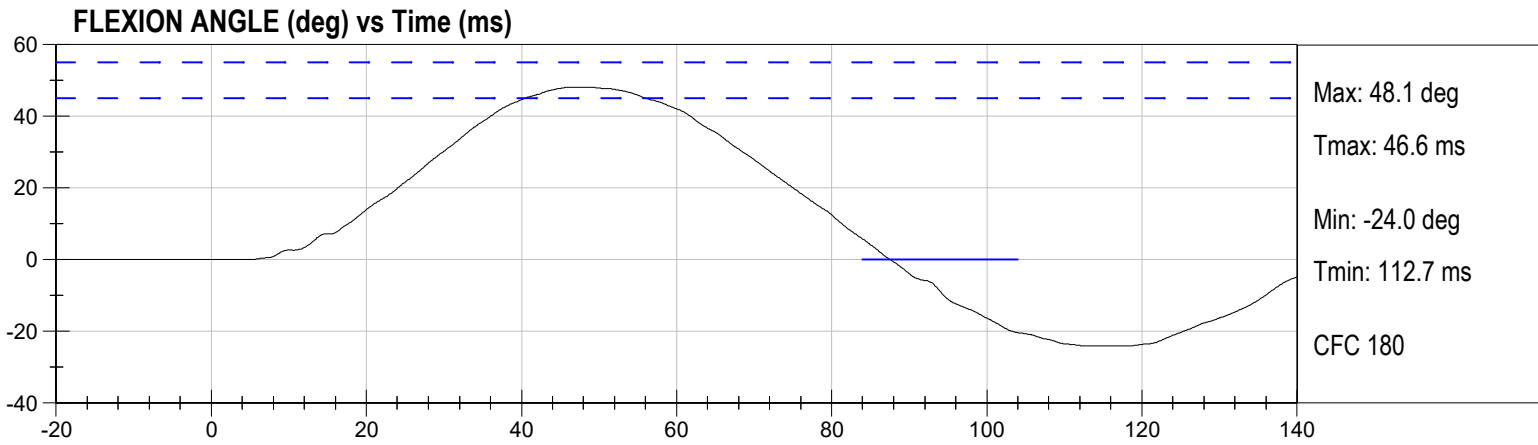
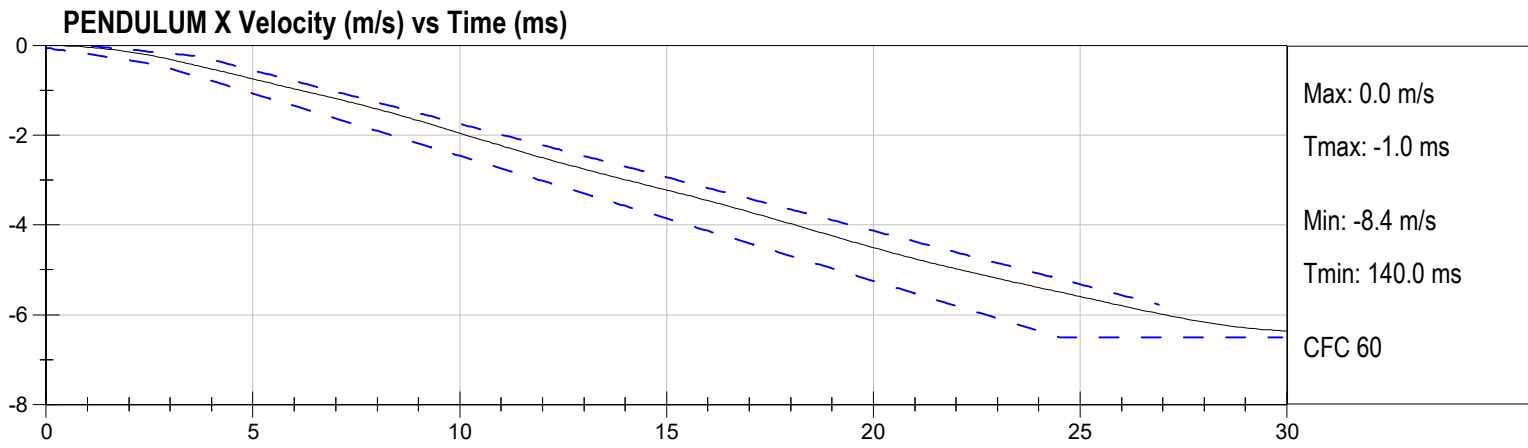
REAR ABDOMEN FY (N) vs Time (ms)

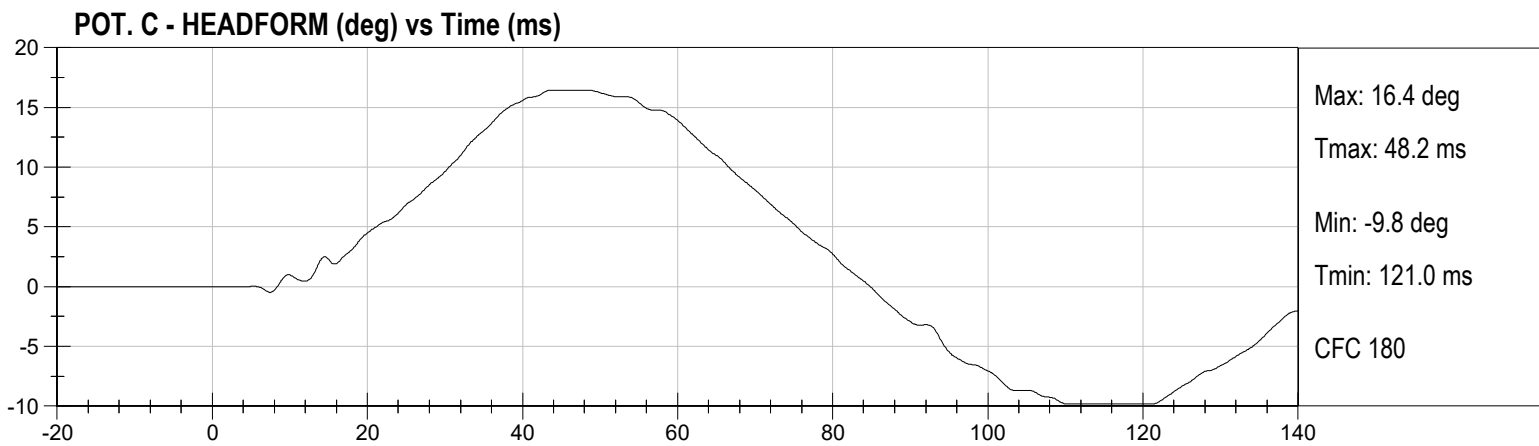
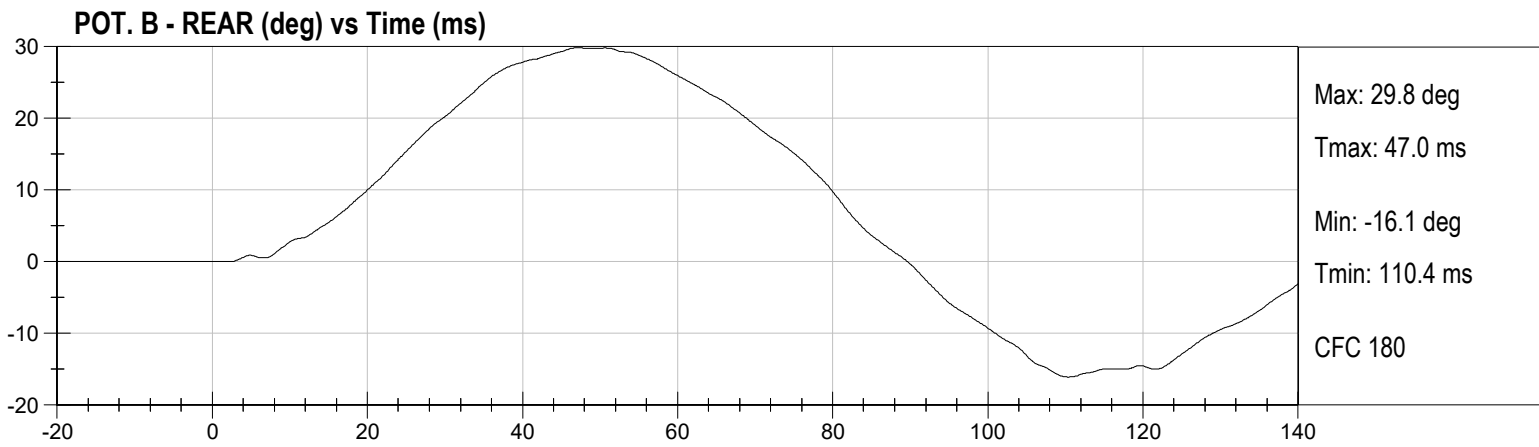
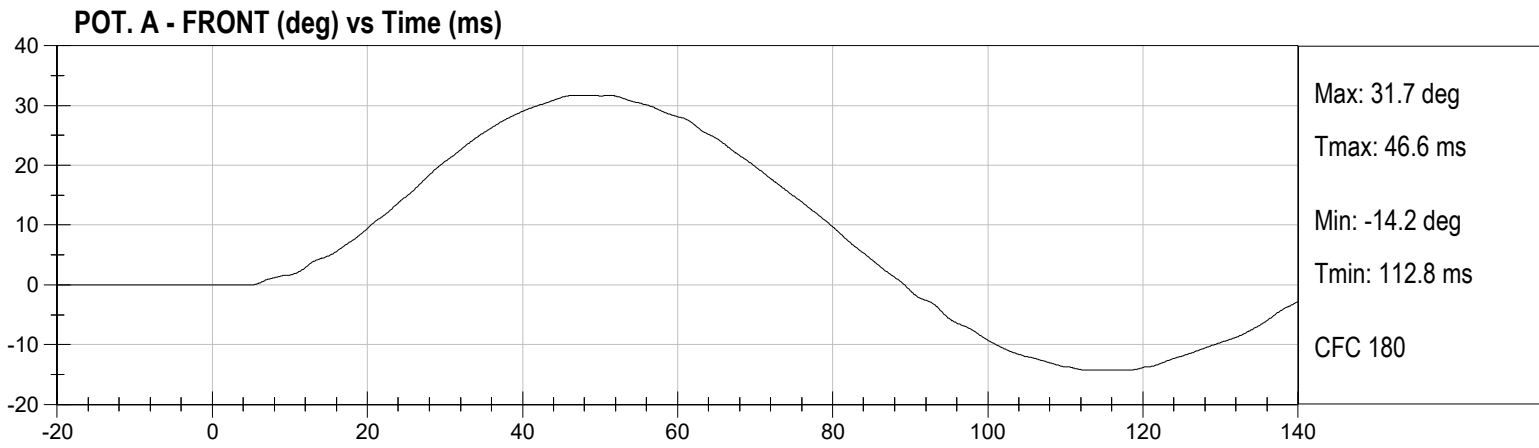




Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	5.95 to 6.15	6.05	Pass
Pendulum Velocity Within Corridor	m/s	Within	Yes	Pass
Maximum Flexion Angle	deg	45 to 55	48	Pass
Time of Maximum Flexion Angle	ms	39 to 53	47	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





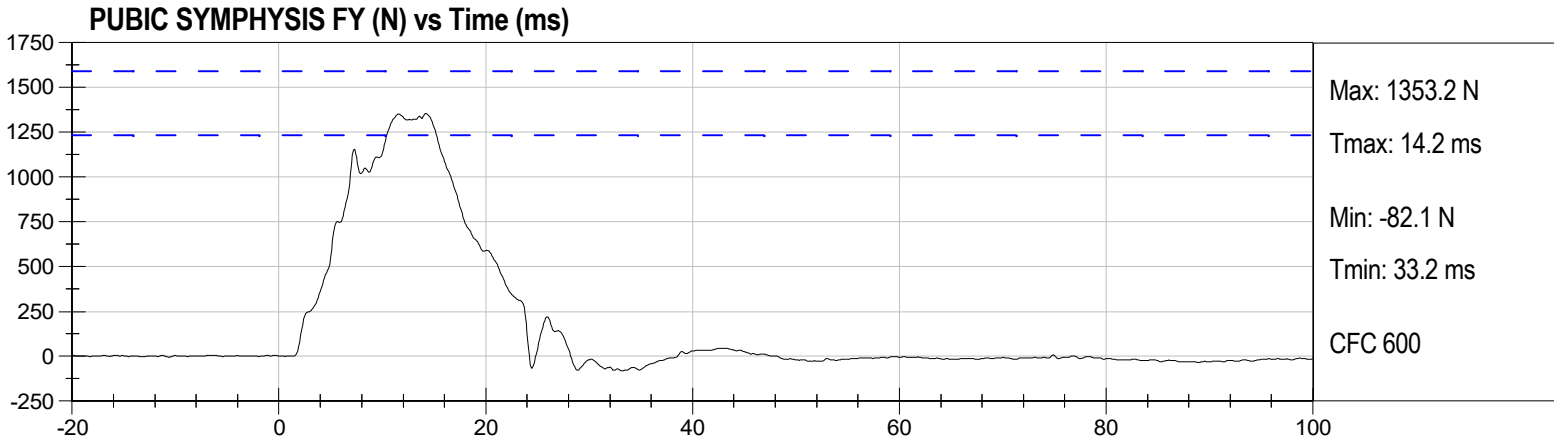
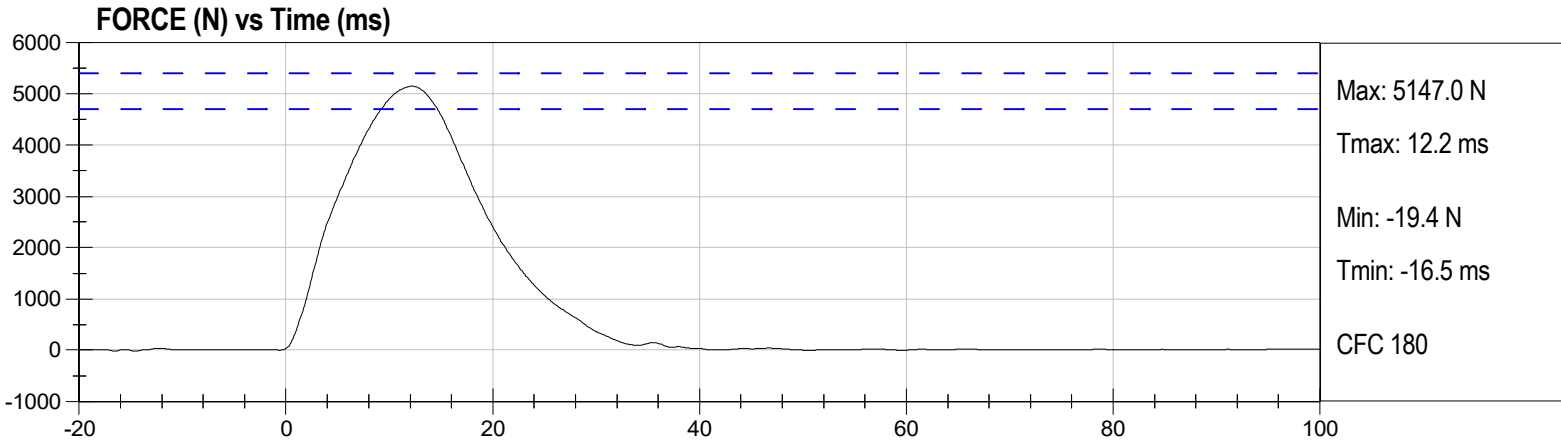


Pelvis Impact Test
 ES2re
 ATD Serial No: F032

Test Date: 02/19/2025
 Test ID: D250539
 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	22	Pass
Impact Velocity	m/s	4.2 to 4.4	4.38	Pass
Peak Probe Force	N	4700 to 5400	5147	Pass
Time of Peak Probe Force	ms	11.8 to 16.1	12.2	Pass
Peak Pubic Force	N	1230 to 1590	1353	Pass
Time of Peak Pubic Force	ms	12.2 to 17.0	14.2	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



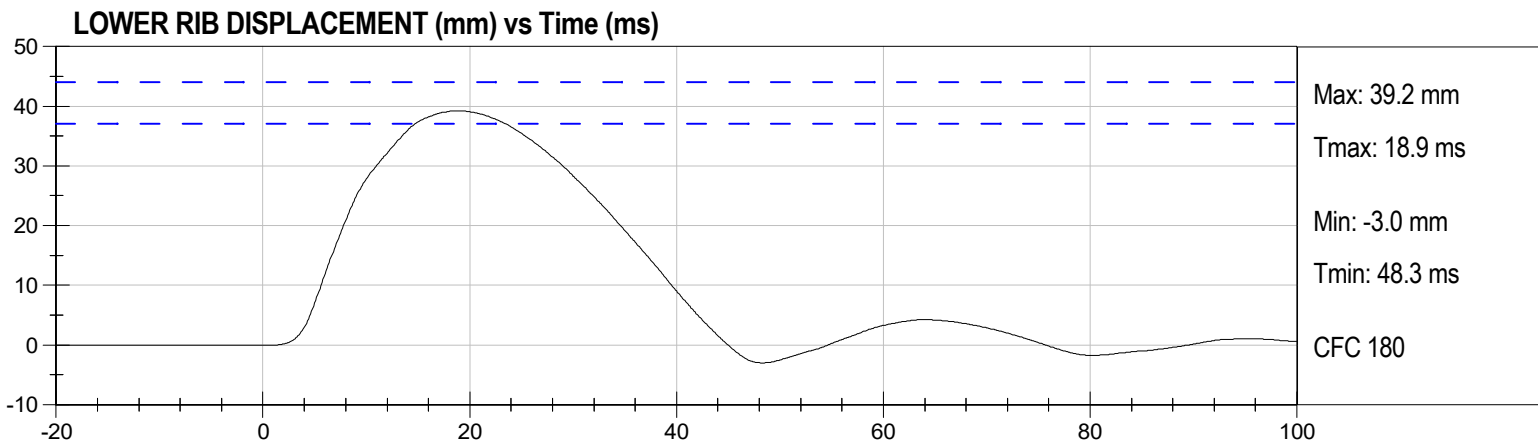
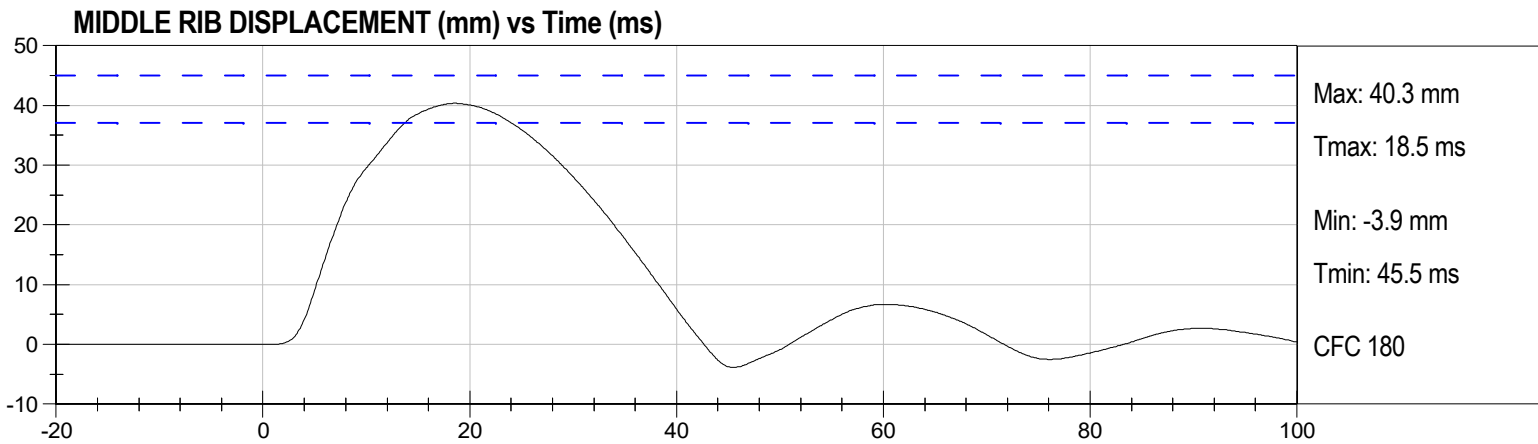
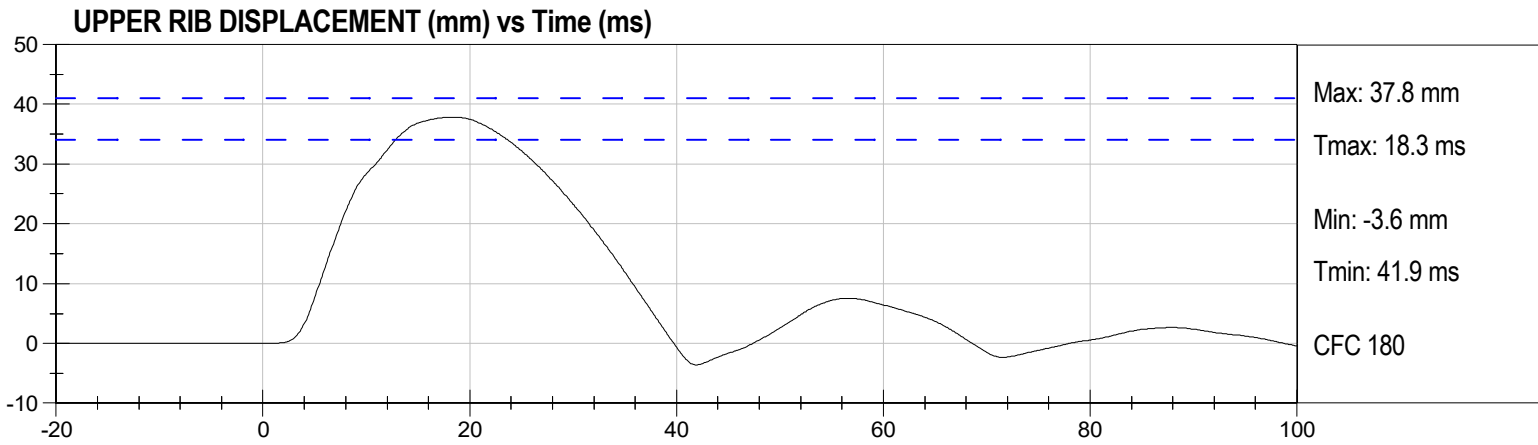
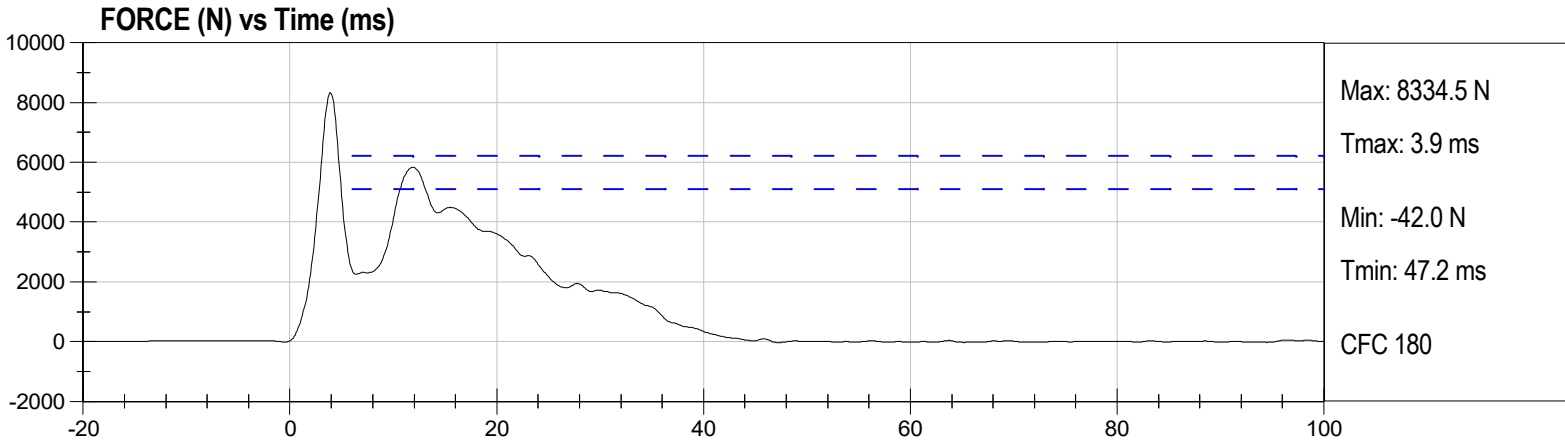


Thorax Impact Test
ES2re
ATD Serial No: F032

Test Date: 02/19/2025
 Test ID: D250530
 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	22	Pass
Impact Velocity	m/s	5.4 to 5.6	5.52	Pass
Peak Probe Force after 6 ms	N	5100 to 6200	5820	Pass
Maximum Upper Thorax Rib Displacement	mm	34 to 41	37.8	Pass
Maximum Middle Thorax Rib Displacement	mm	37 to 45	40.3	Pass
Maximum Lower Thorax Rib Displacement	mm	37 to 44	39.2	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



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

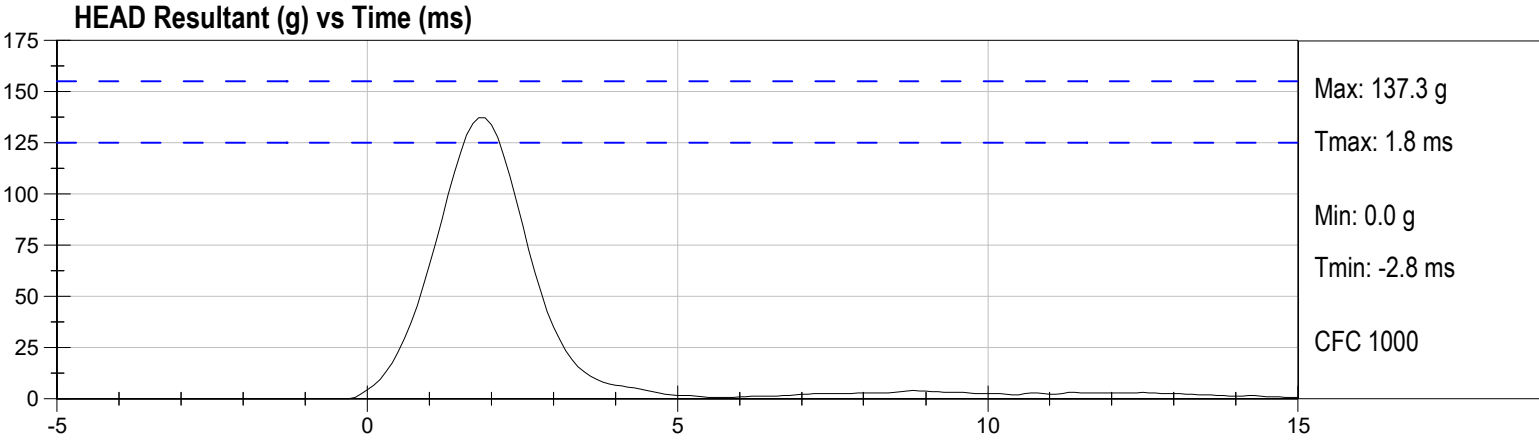
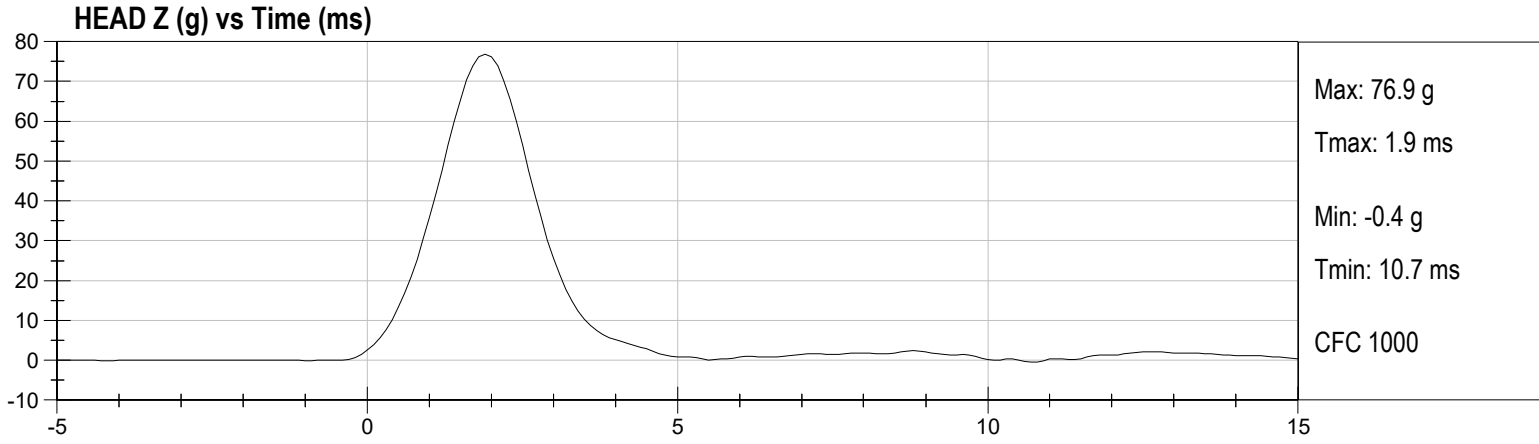
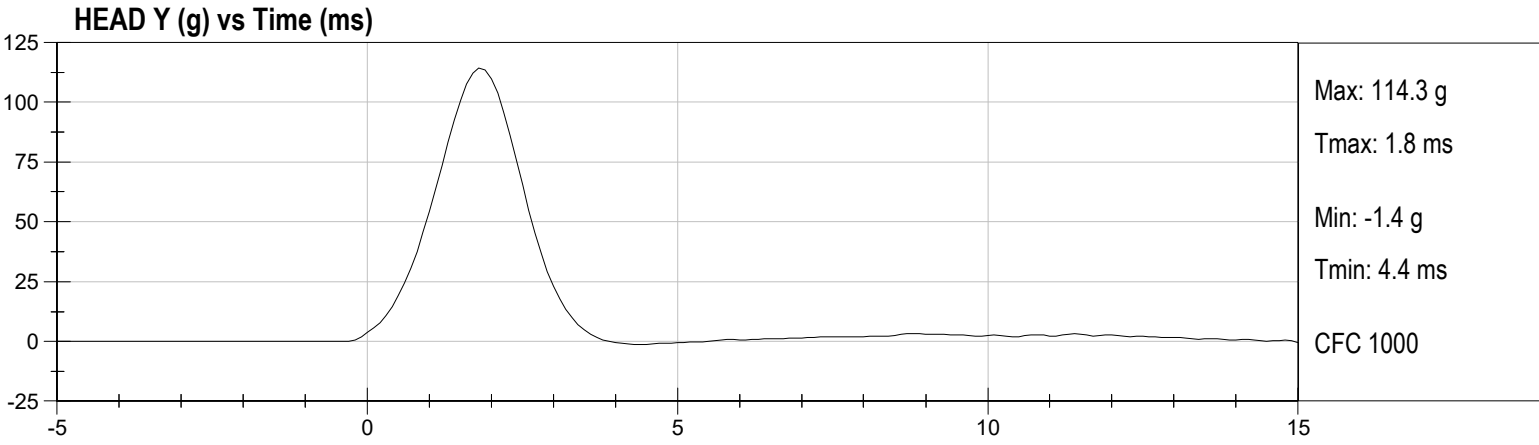
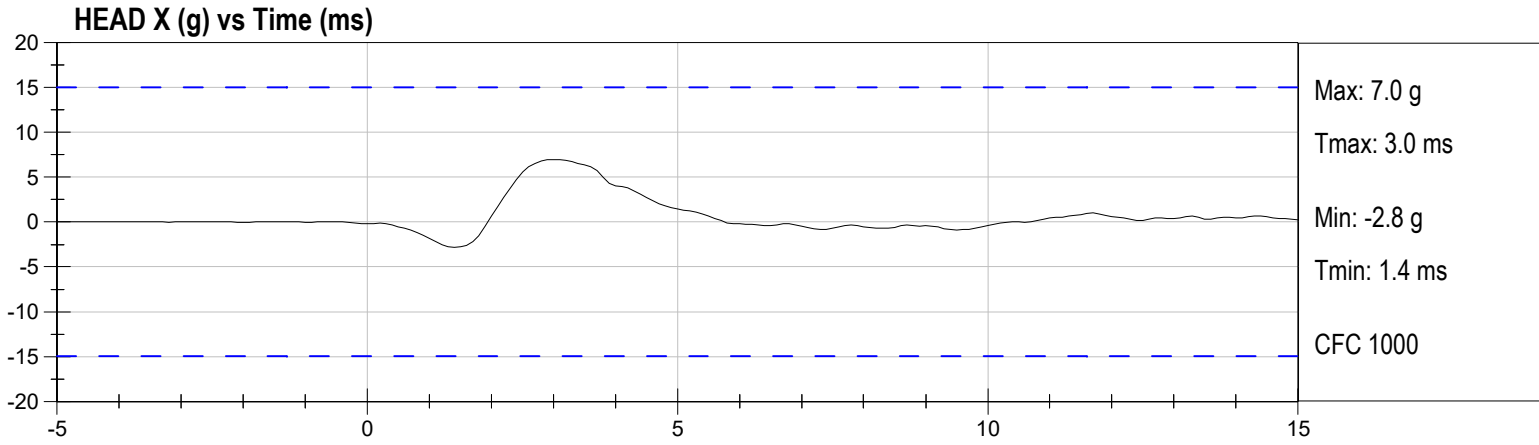


Lateral Head Drop Test
ES2re
ATD Serial No: F032

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





Lateral Neck Bending Test

ES2re

ATD Serial No: F032

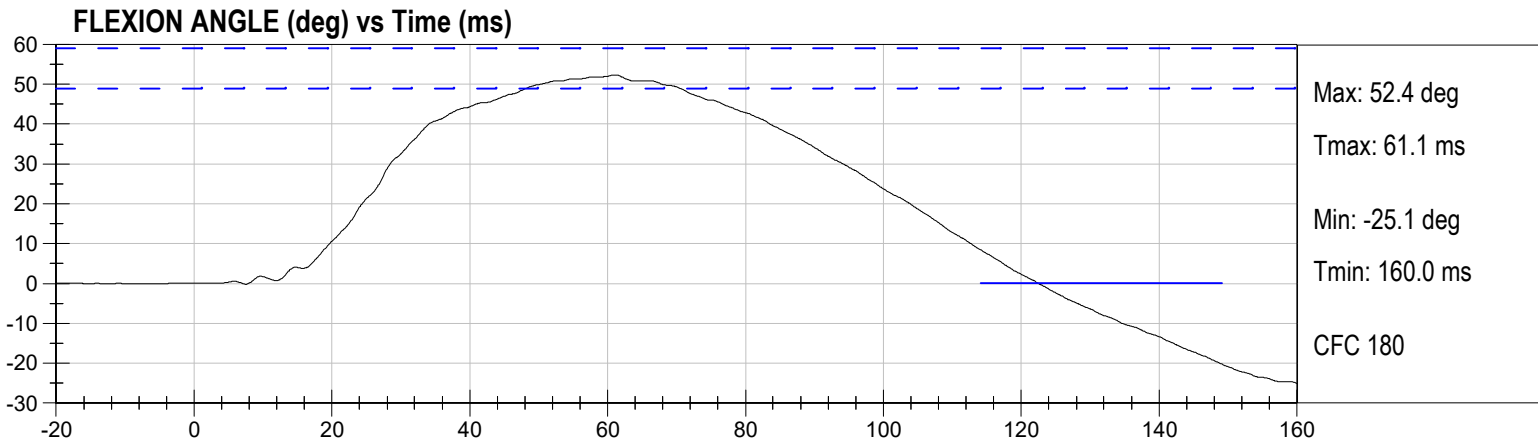
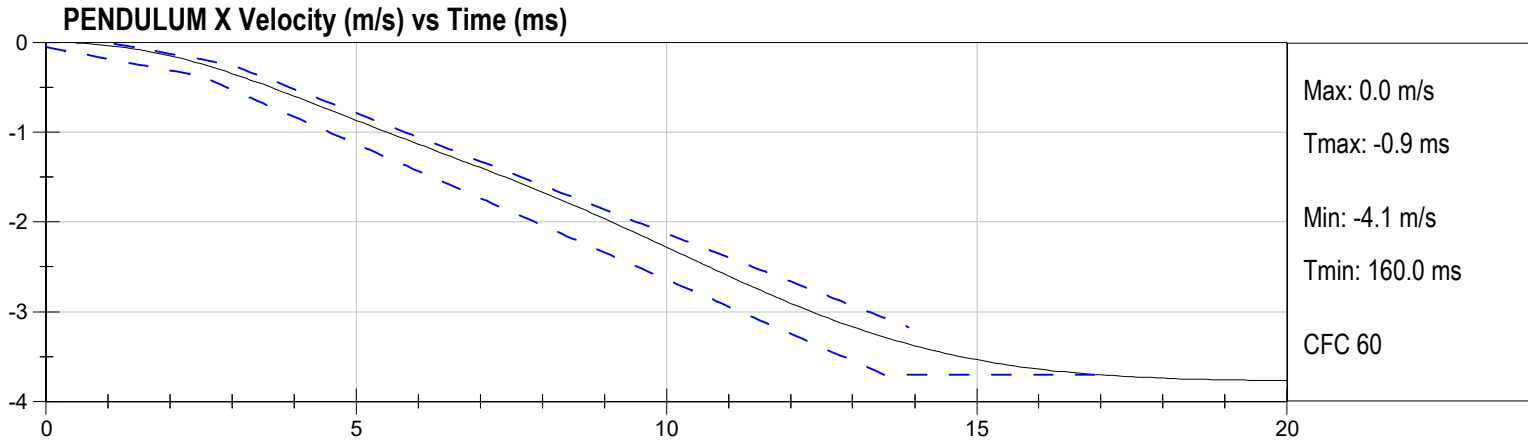
Test Date: 03/04/2025

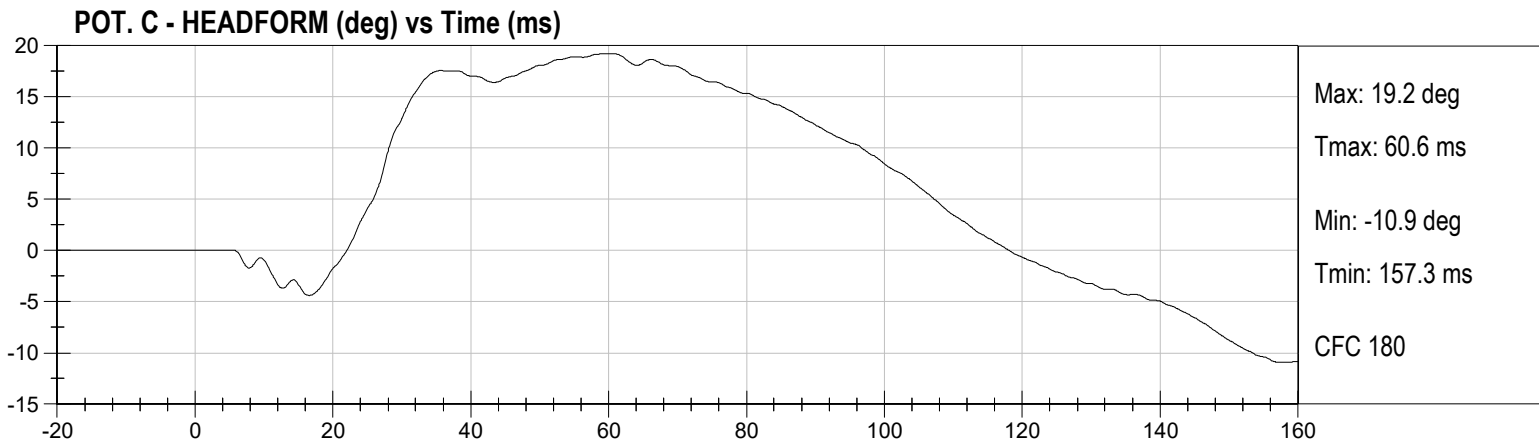
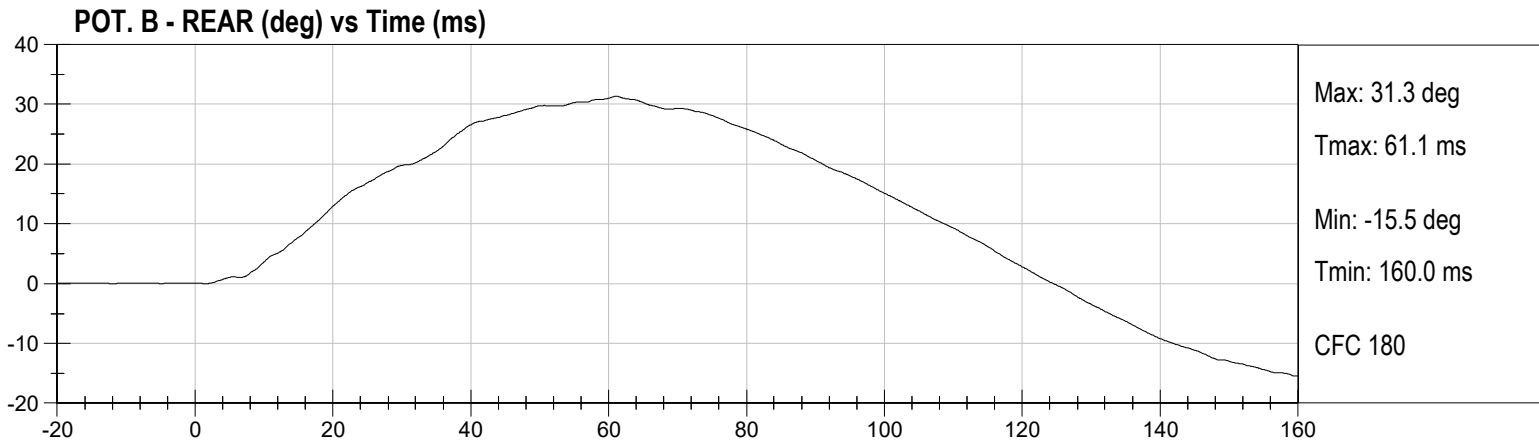
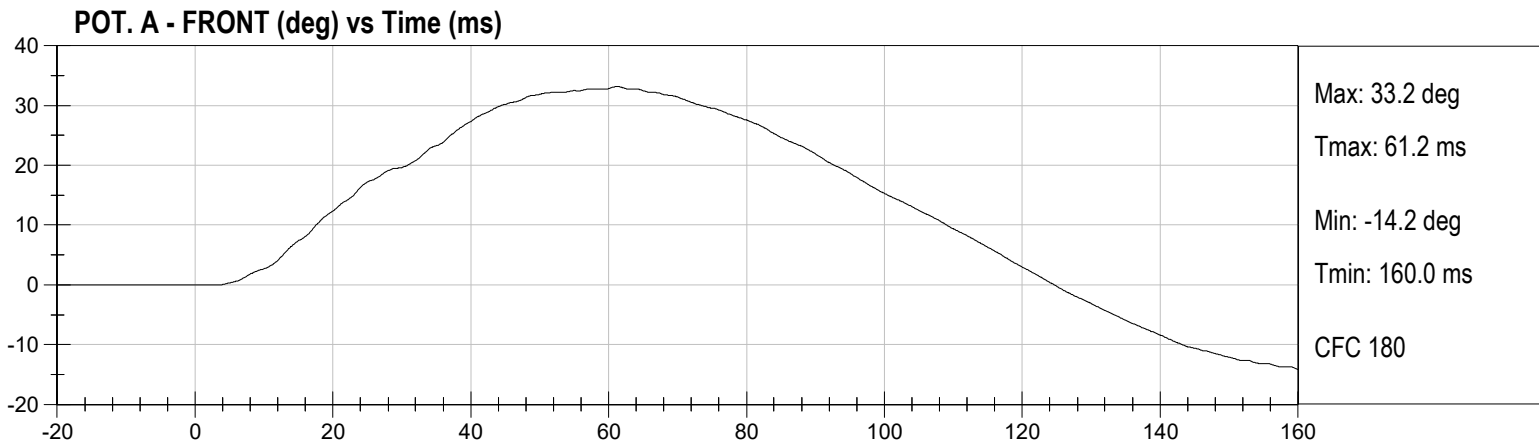
Test ID: D250652

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





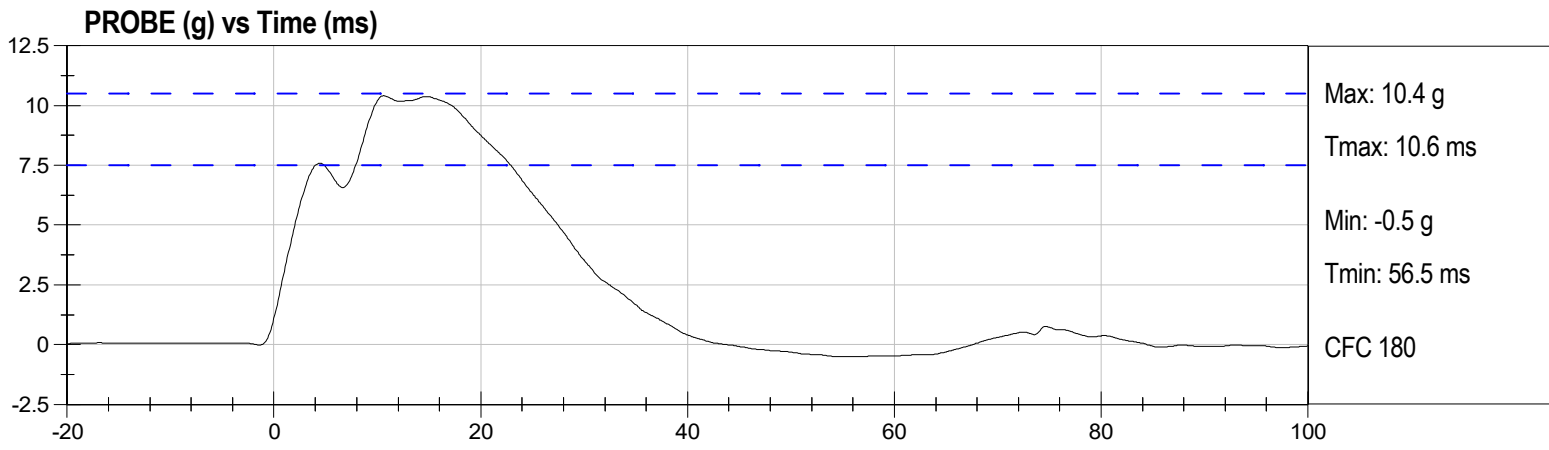


Shoulder Impact Test
ES2re
ATD Serial No: F032

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





Upper Rib Drop Test - 815mm

ES2re

ATD Serial No: F032

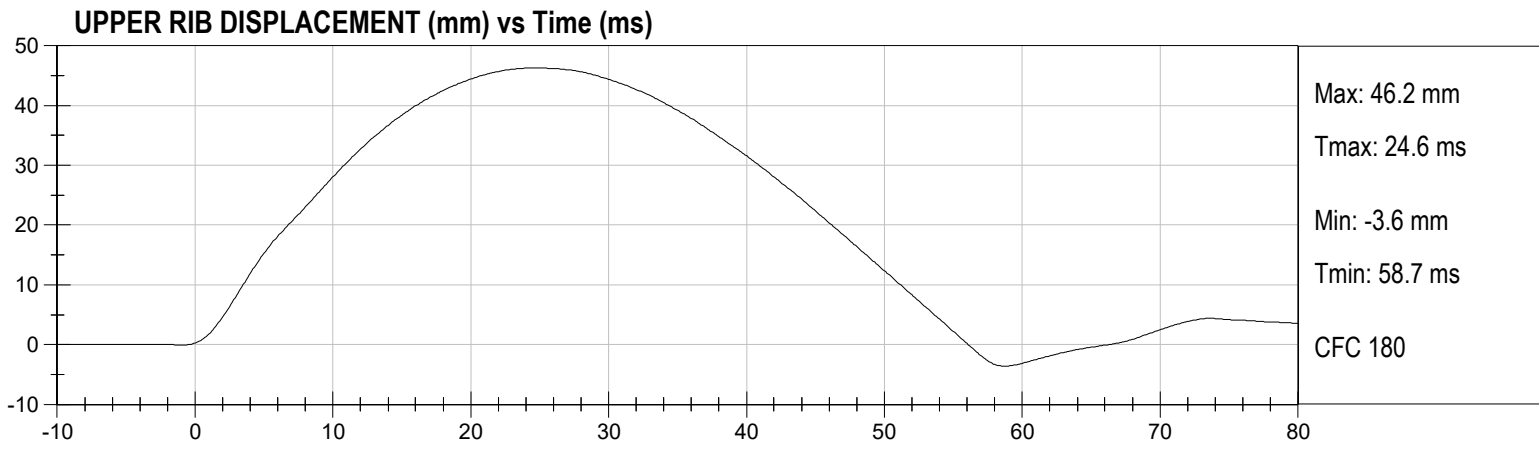
Test Date: 03/04/2025

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 Drop Test - 459mm

ES2re

ATD Serial No: F032

Test Date: 03/04/2025

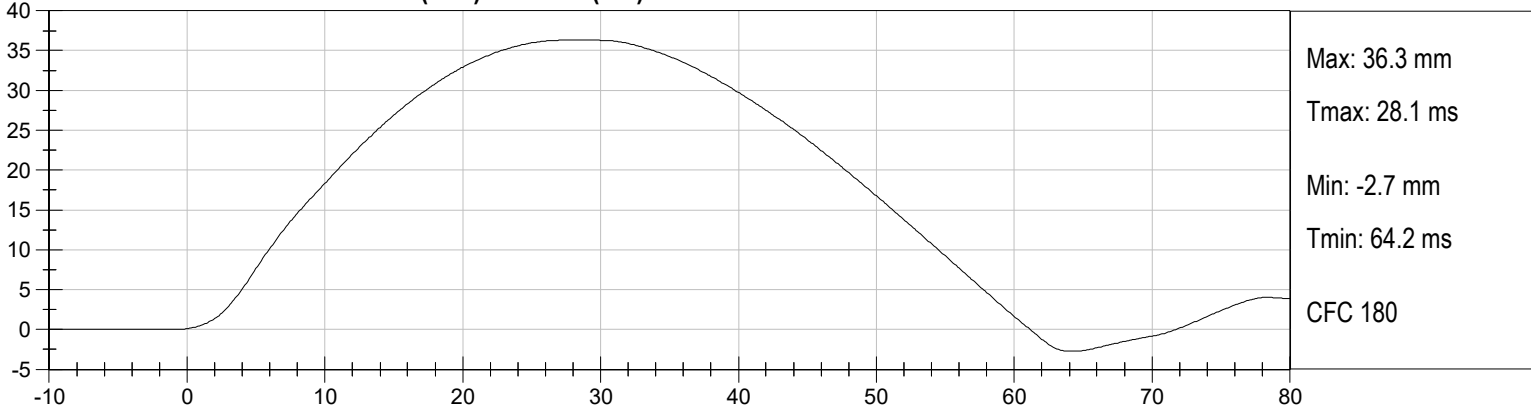
Test ID: D250654L

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)





Middle Rib Drop Test - 815mm

ES2re

ATD Serial No: F032

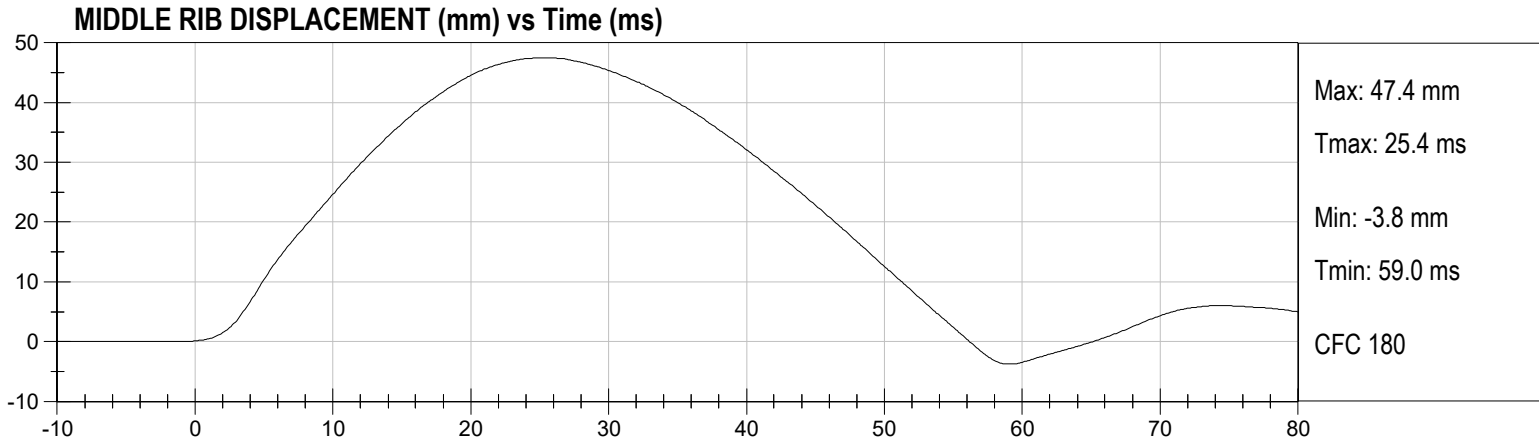
Test Date: 03/04/2025

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 Drop Test - 459mm

ES2re

ATD Serial No: F032

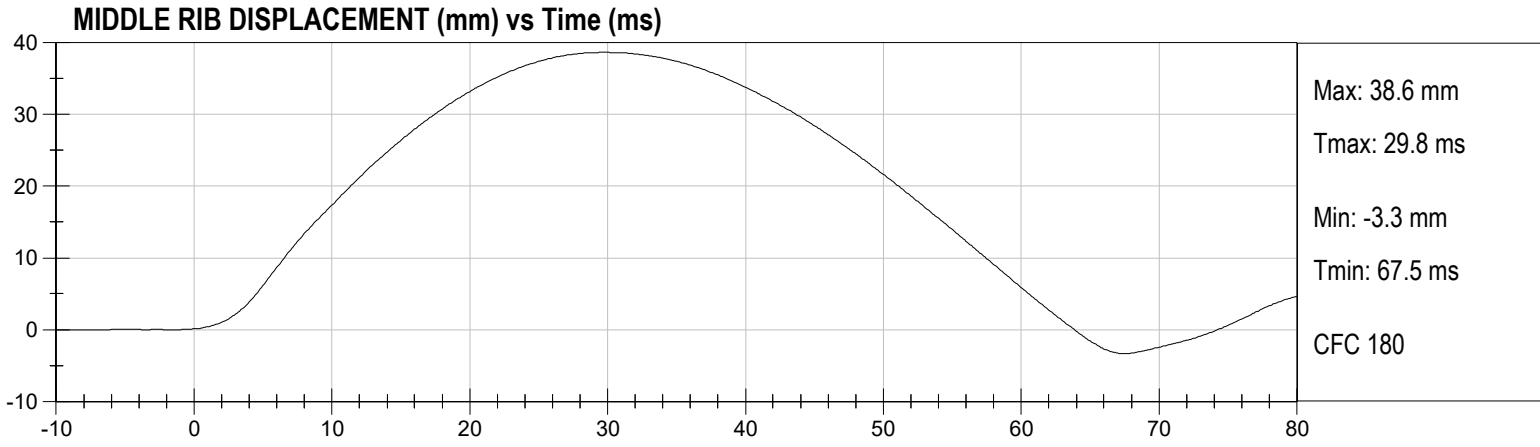
Test Date: 03/04/2025

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





Lower Rib Drop Test - 815mm

ES2re

ATD Serial No: F032

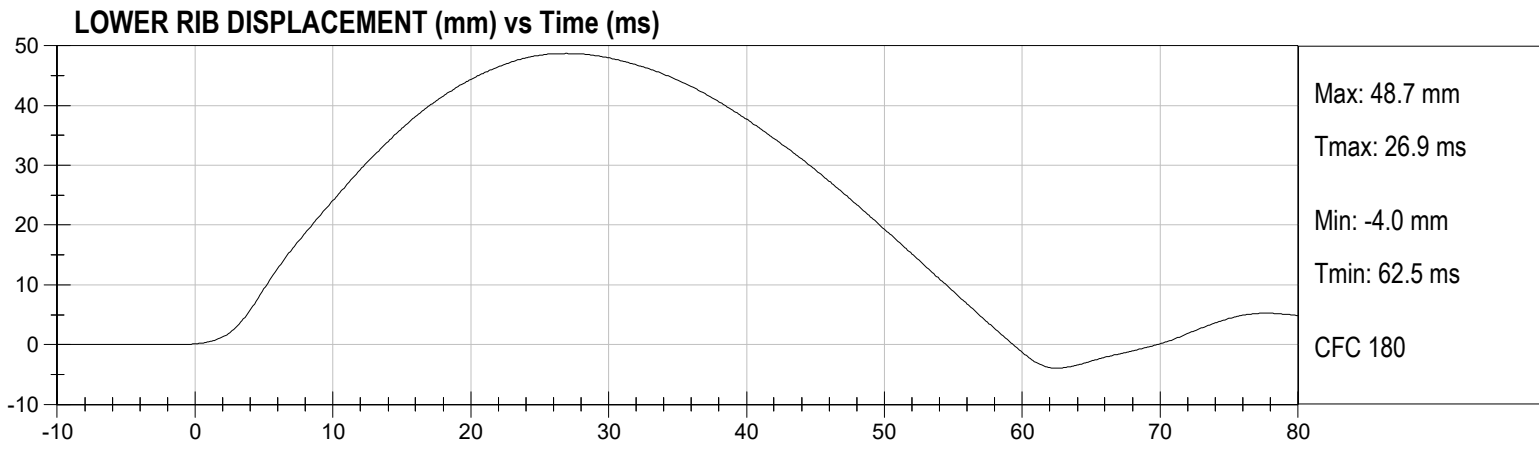
Test Date: 03/04/2025

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 Drop Test - 459mm

ES2re

ATD Serial No: F032

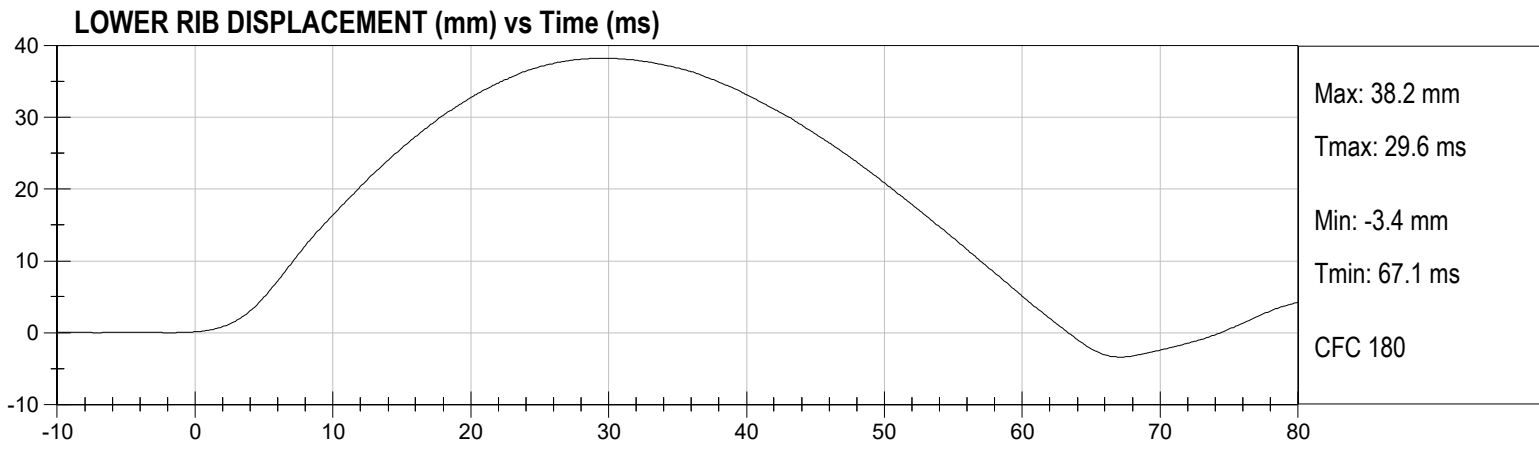
Test Date: 03/04/2025

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

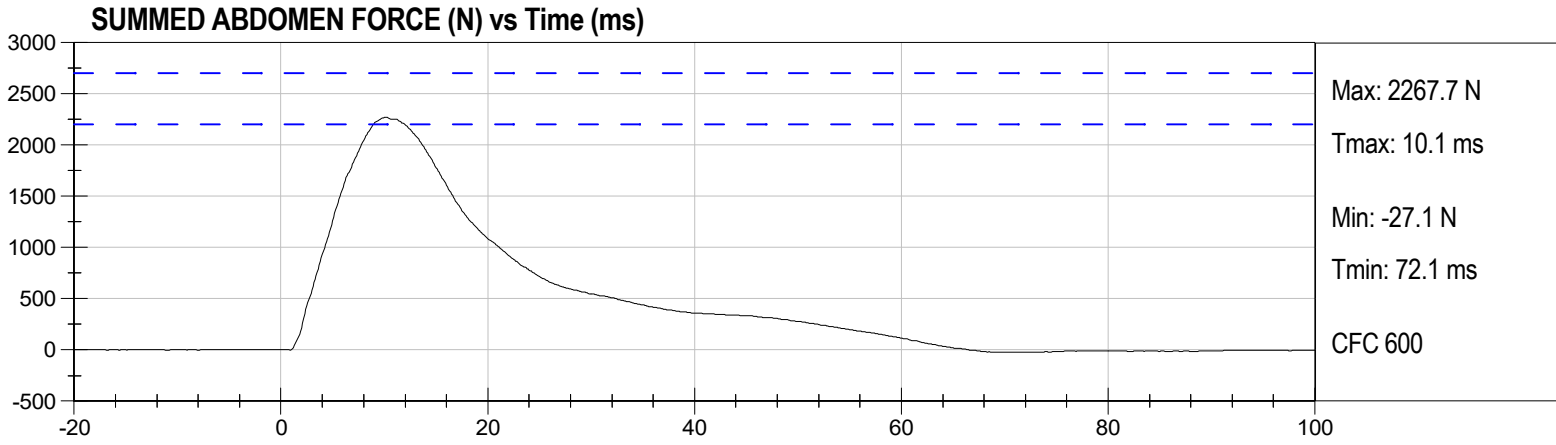
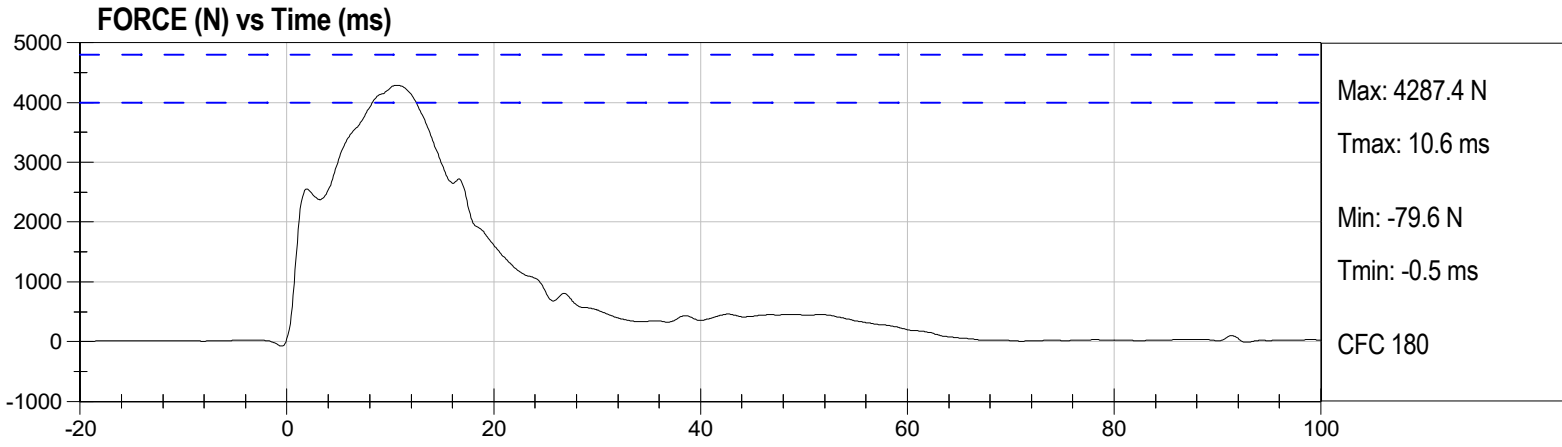
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
LOWER RIB DISPLACEMENT	Honeywell	G164	11/21/2024	5/23/2025



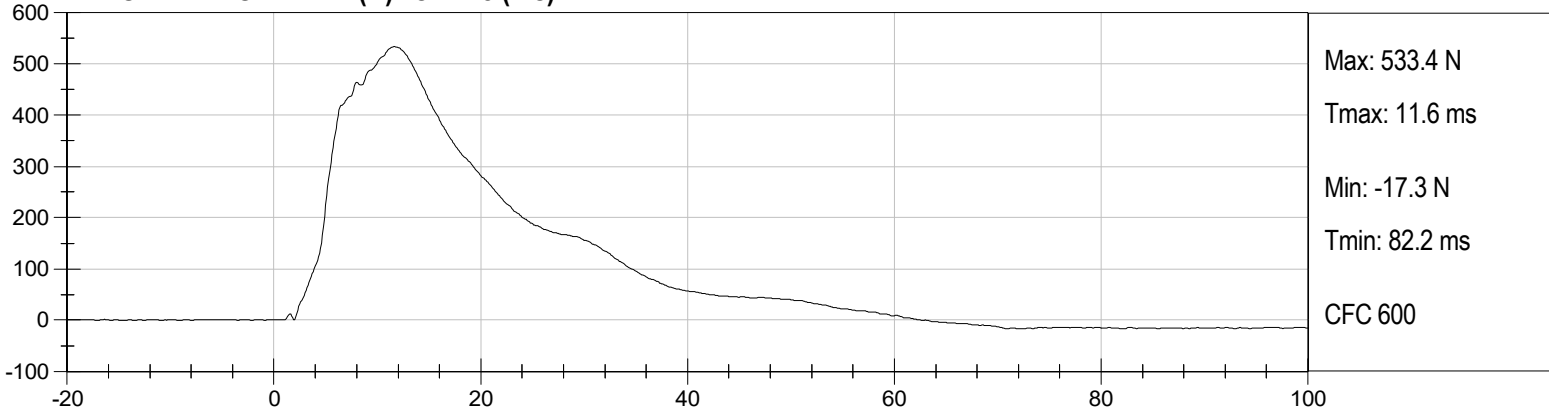


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	3.9 to 4.1	4.0	Pass
Peak Probe Force	N	4000 to 4800	4287	Pass
Time of Peak Probe Force	ms	10.6 to 13.0	10.6	Pass
Peak Abdomen Force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

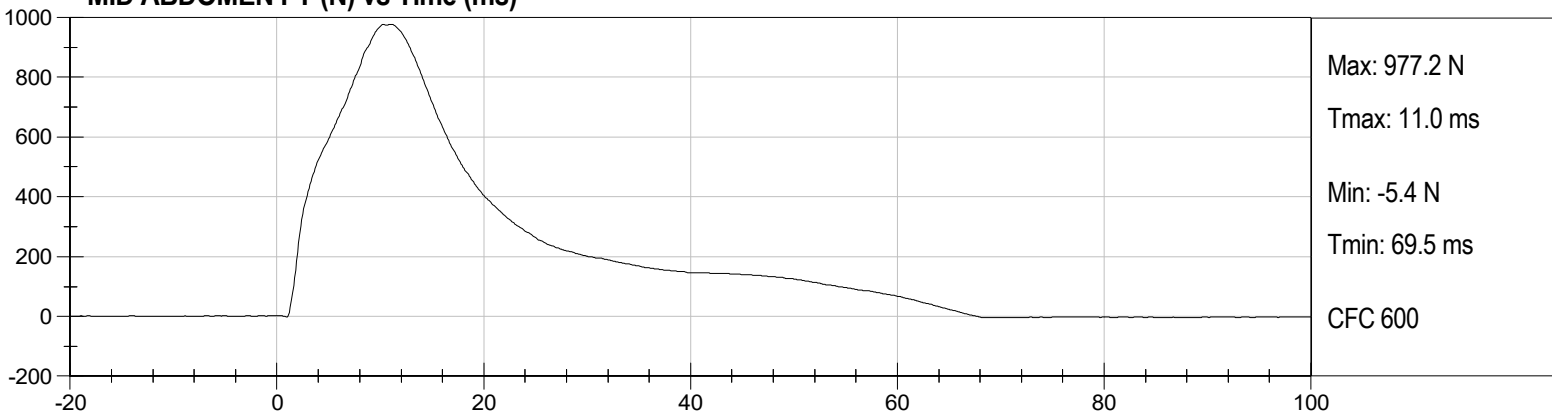
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
FRONT ABDOMEN FY	Denton	ABG1532FY	01/20/2025	1/20/2026
MID ABDOMEN FY	Denton	ABG1534FY	01/20/2025	1/20/2026
REAR ABDOMEN FY	Denton	ABG1535FY	01/20/2025	1/20/2026



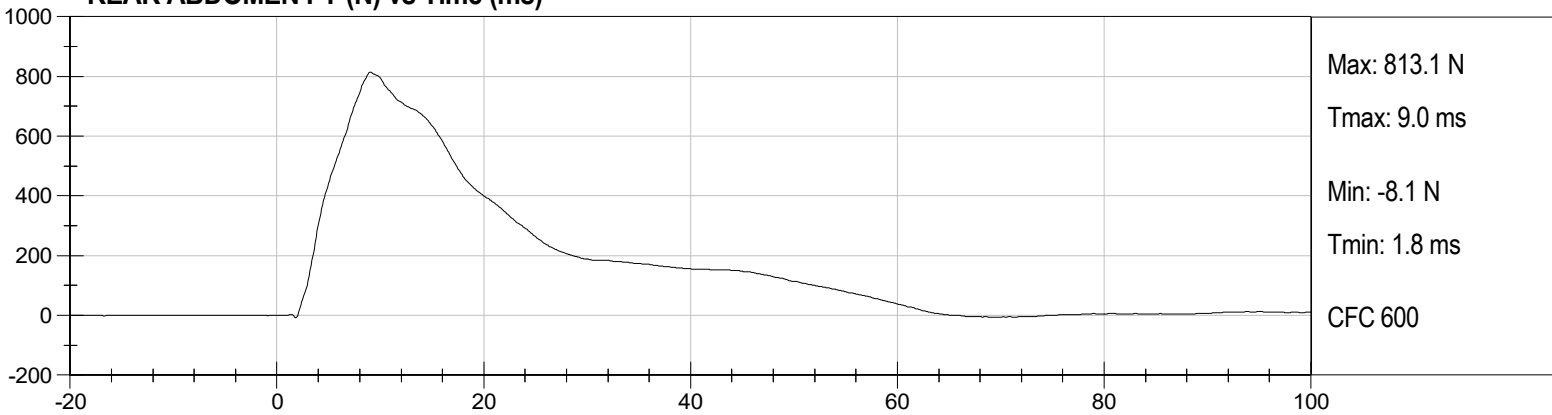
FRONT ABDOMEN FY (N) vs Time (ms)



MID ABDOMEN FY (N) vs Time (ms)



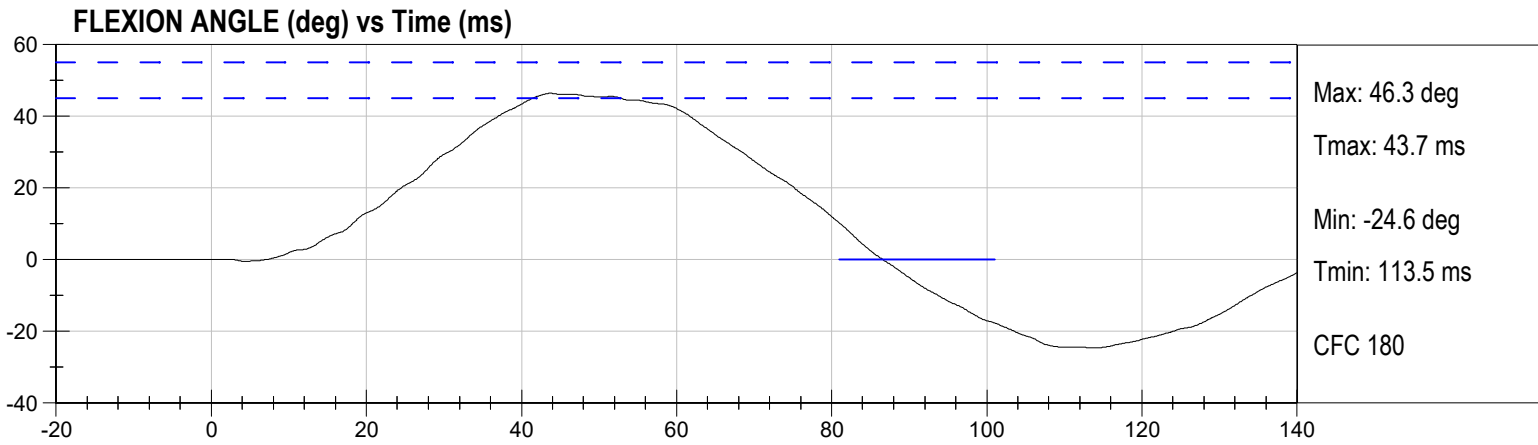
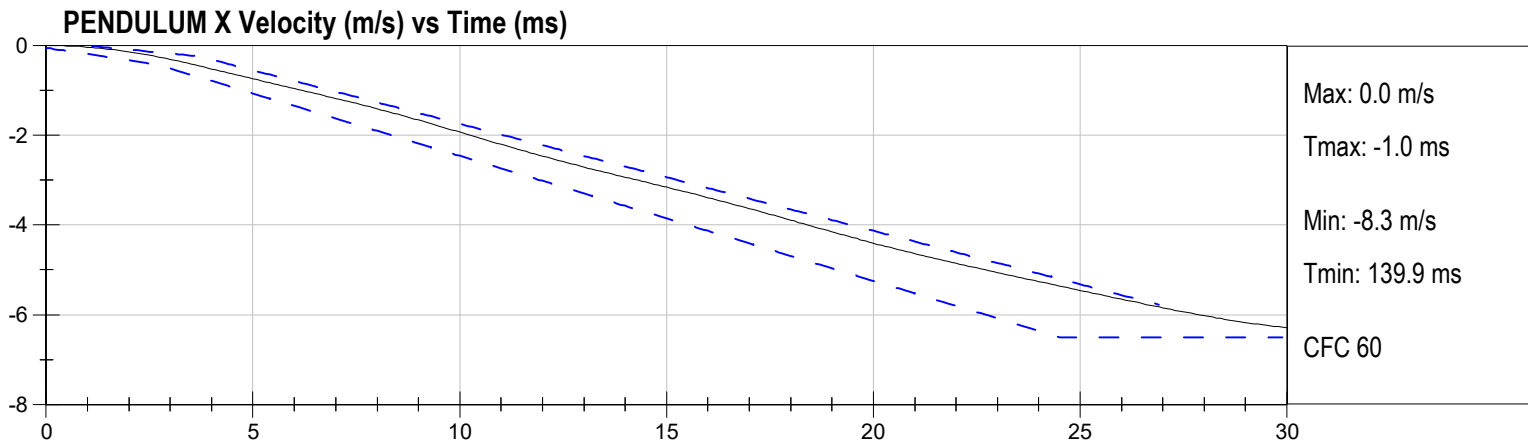
REAR ABDOMEN FY (N) vs Time (ms)

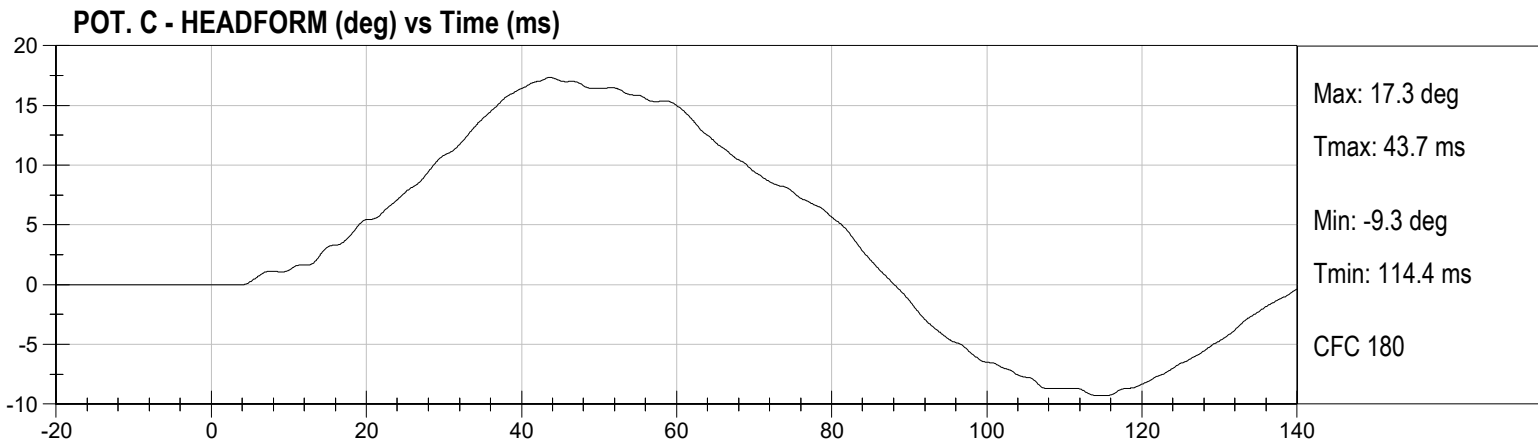
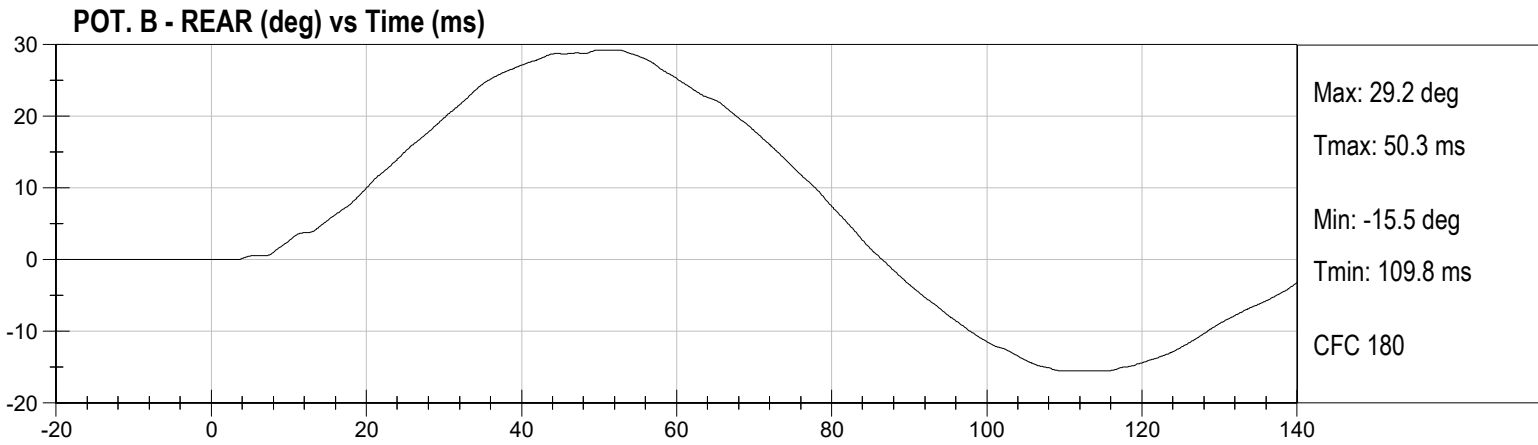
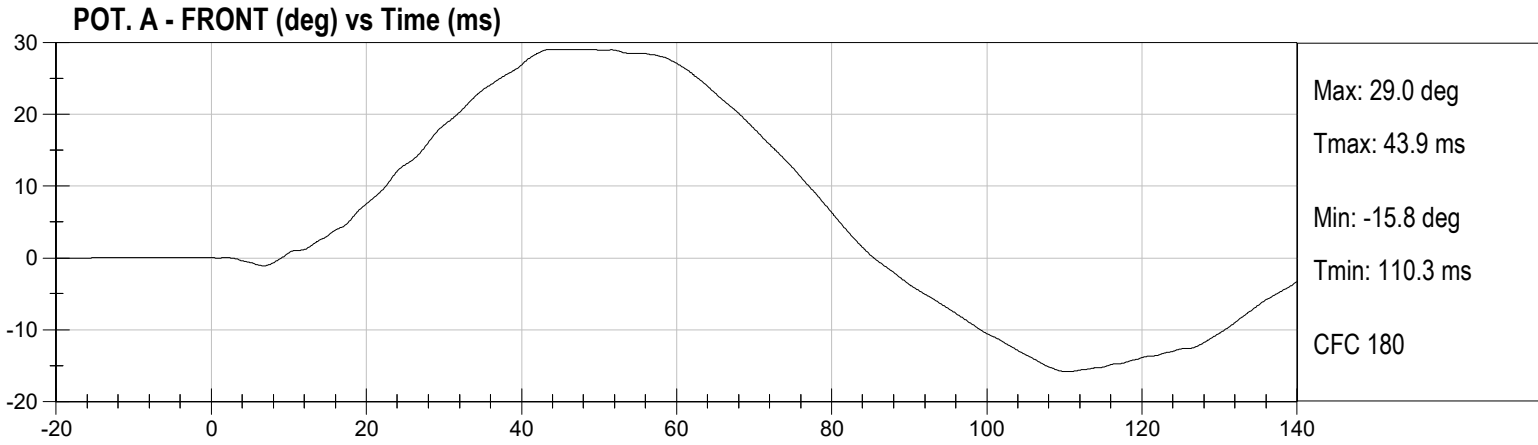




Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Impact Velocity	m/s	5.95 to 6.15	6.05	Pass
Pendulum Velocity Within Corridor	m/s	Within	Yes	Pass
Maximum Flexion Angle	deg	45 to 55	46	Pass
Time of Maximum 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





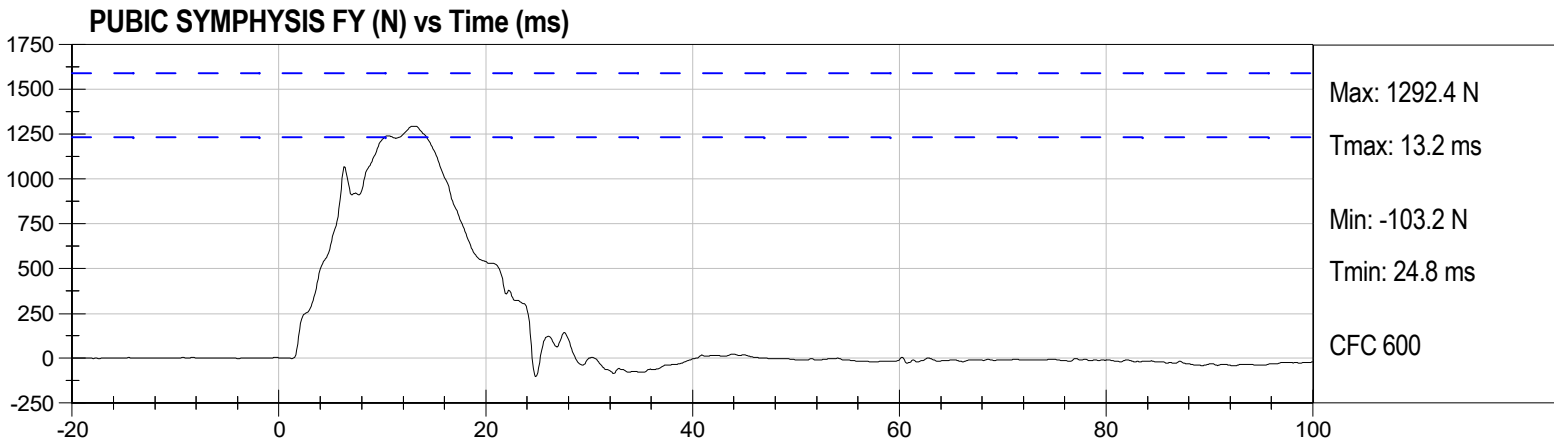
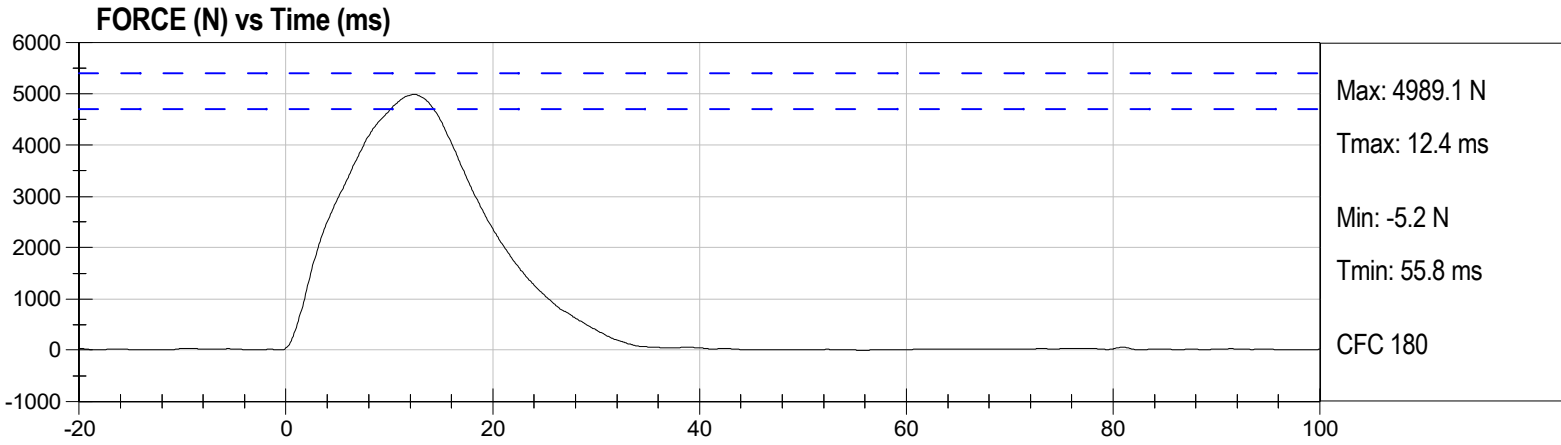


Pelvis Impact Test
ES2re
ATD Serial No: F032

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



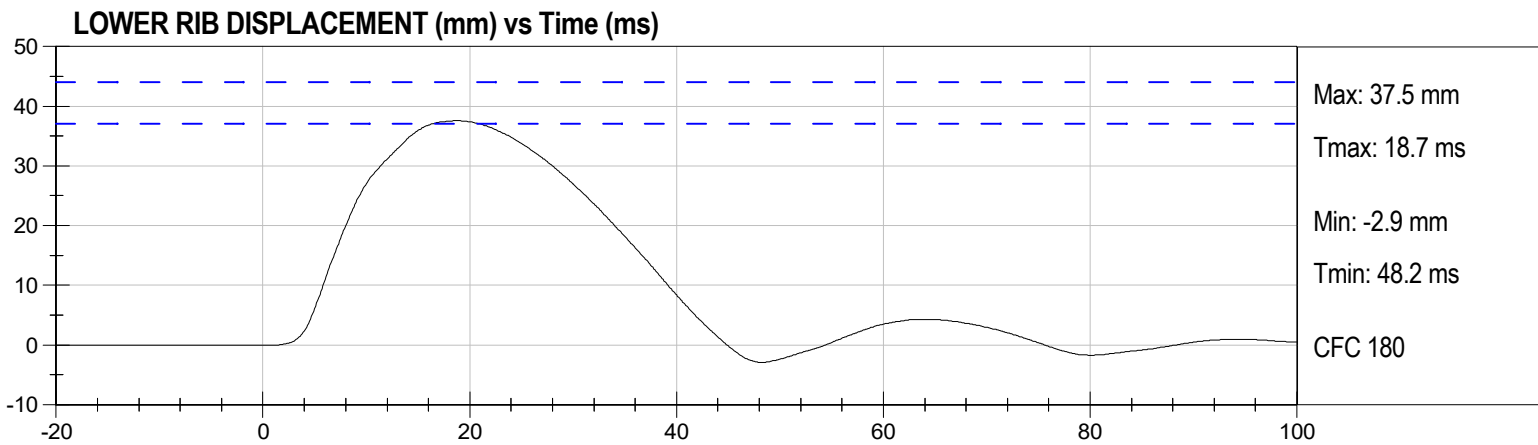
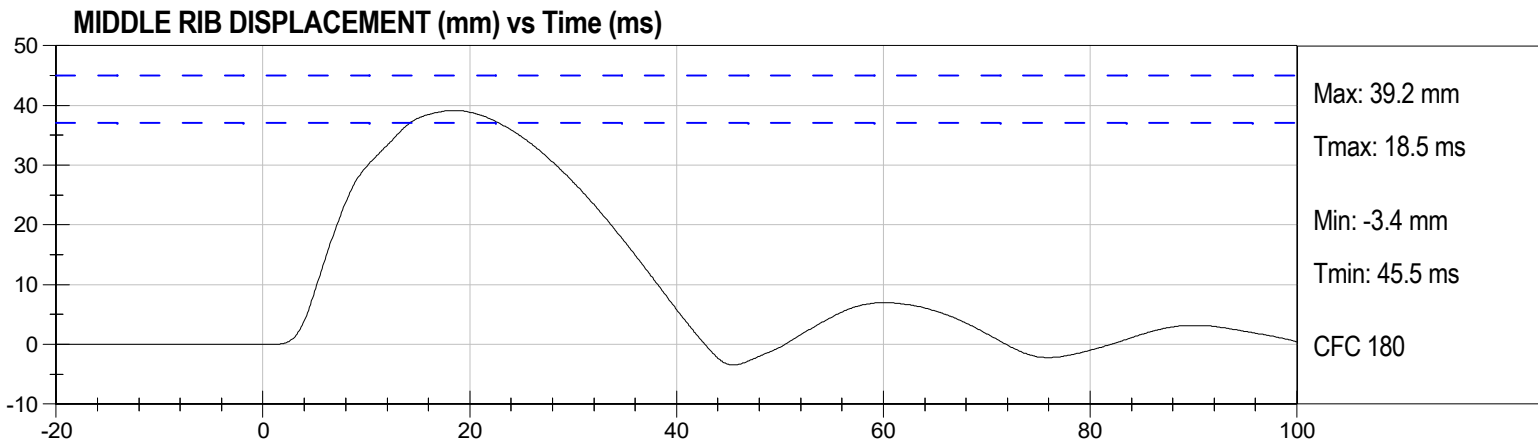
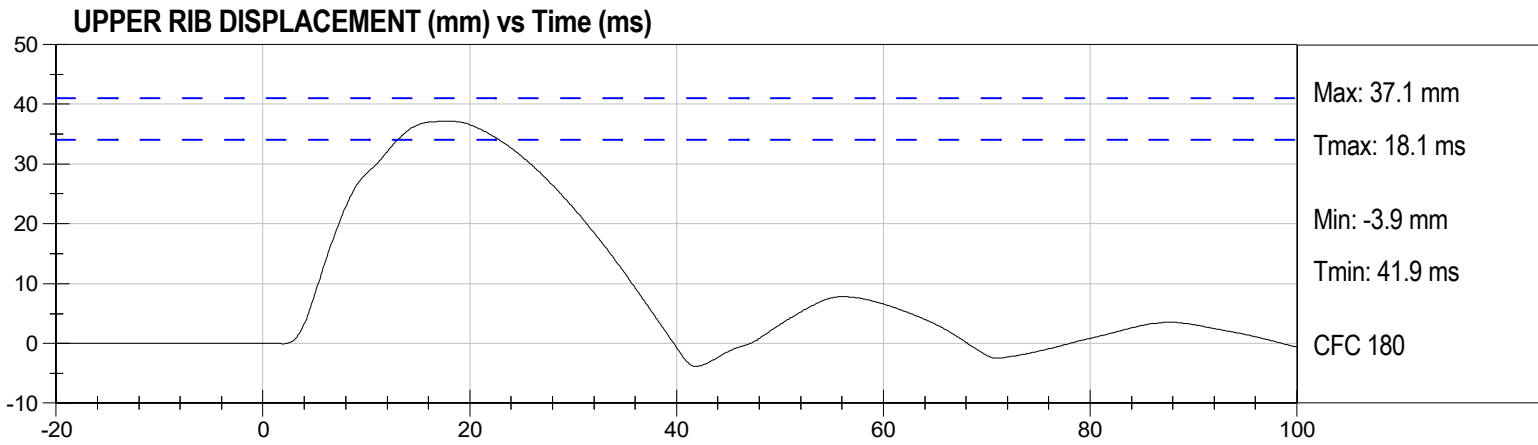
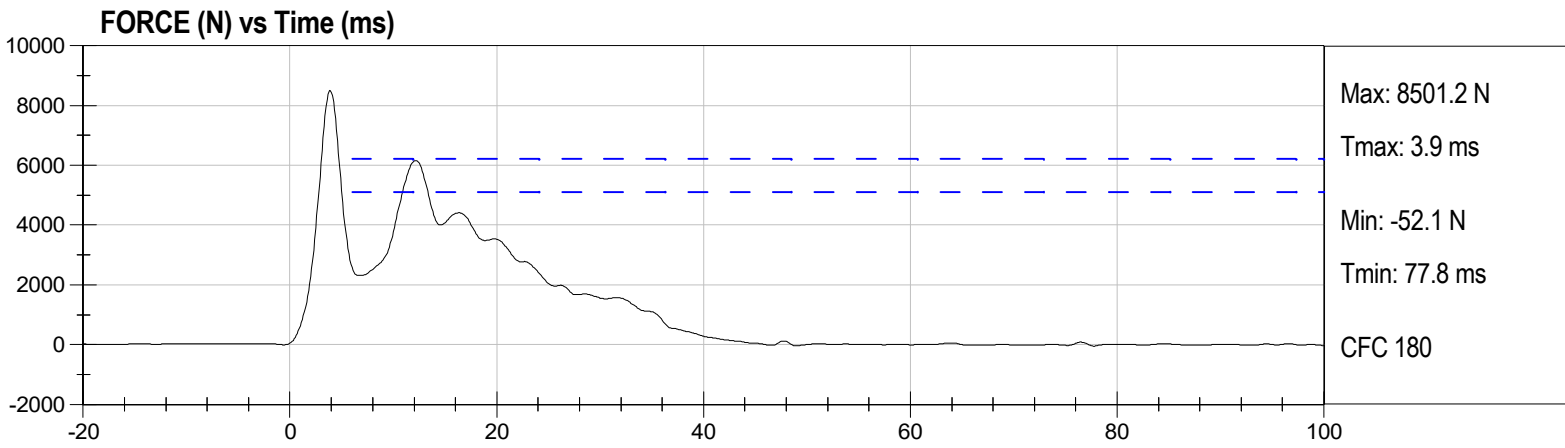


Thorax Impact Test
ES2re
ATD Serial No: F032

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



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

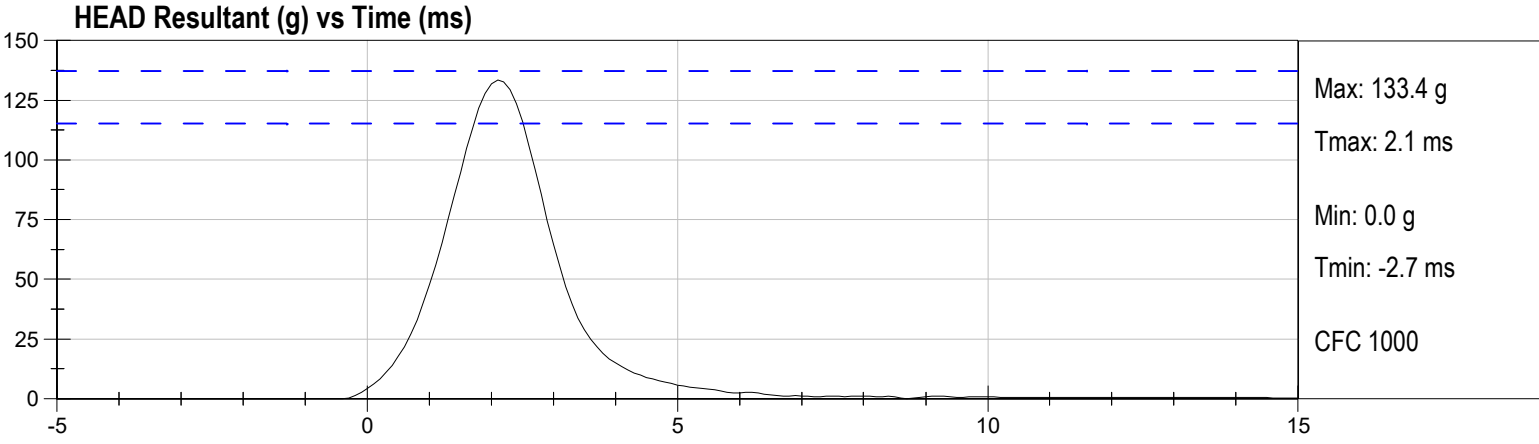
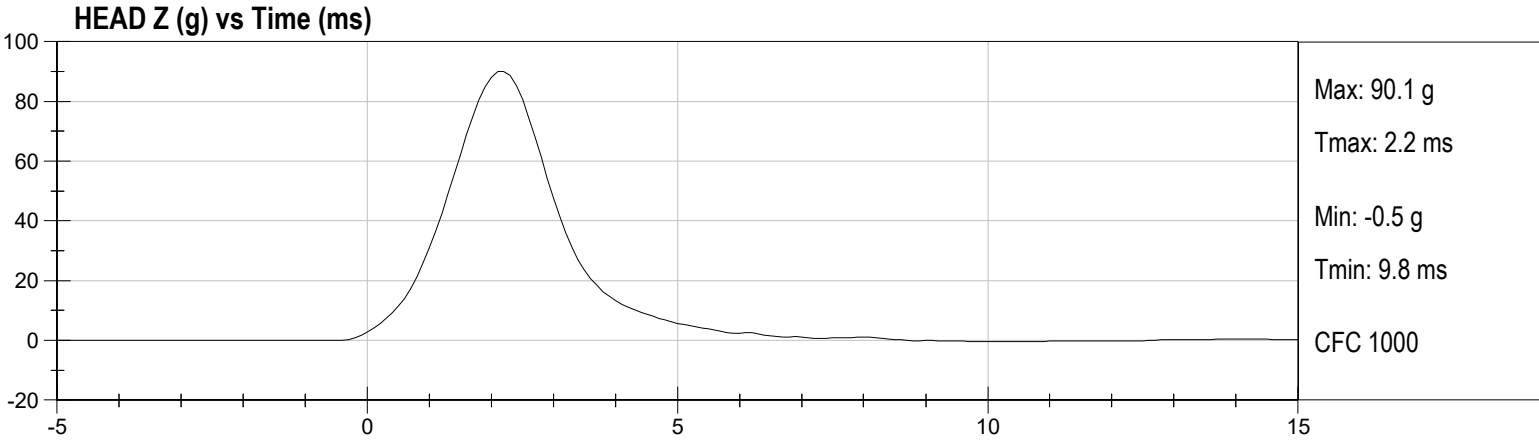
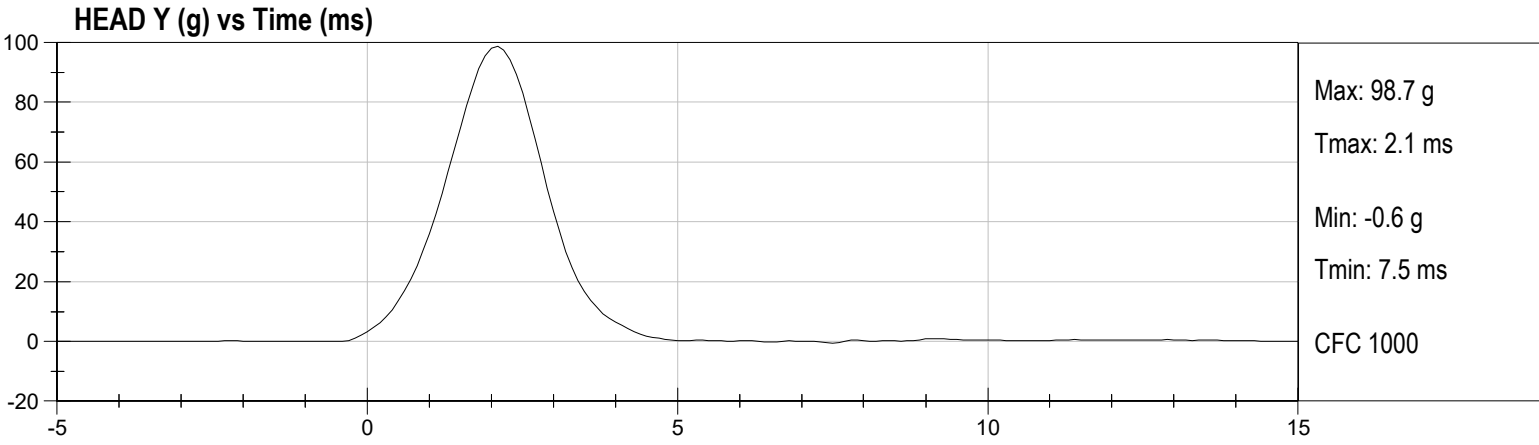
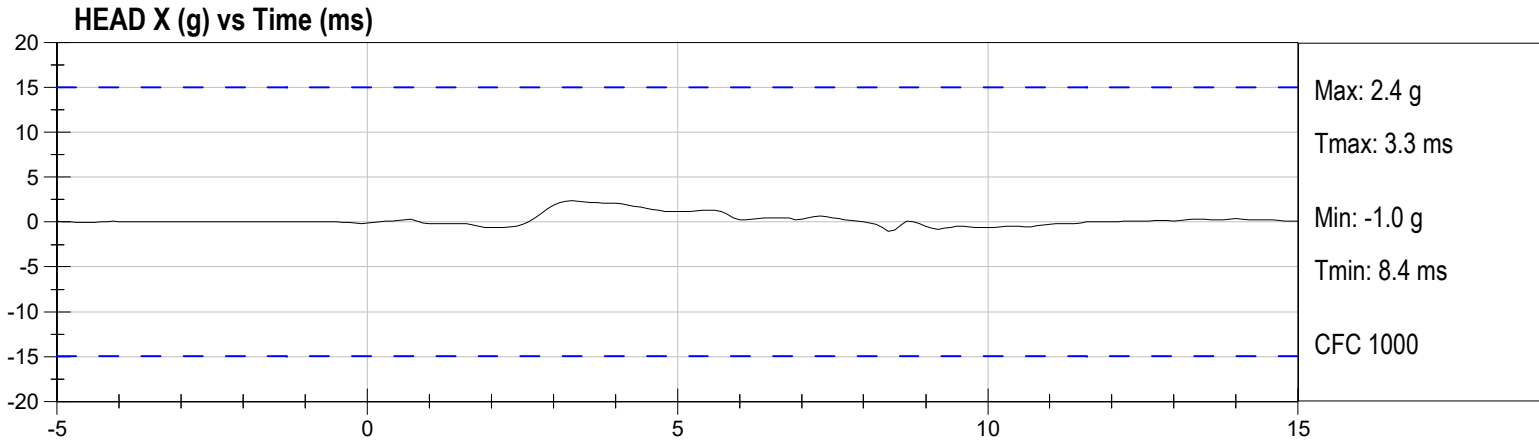


Lateral Head Drop Test
SID IIs
ATD Serial No: 306

Test Date: 02/19/2025
Test ID: D250521
Test Technician: Brian Lucas

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	g	115 to 137	133	Pass
Peak Longitudinal Acceleration	g	-15.0 to 15.0	2.4	Pass
Unimodal	%	within 15% of peak	2	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

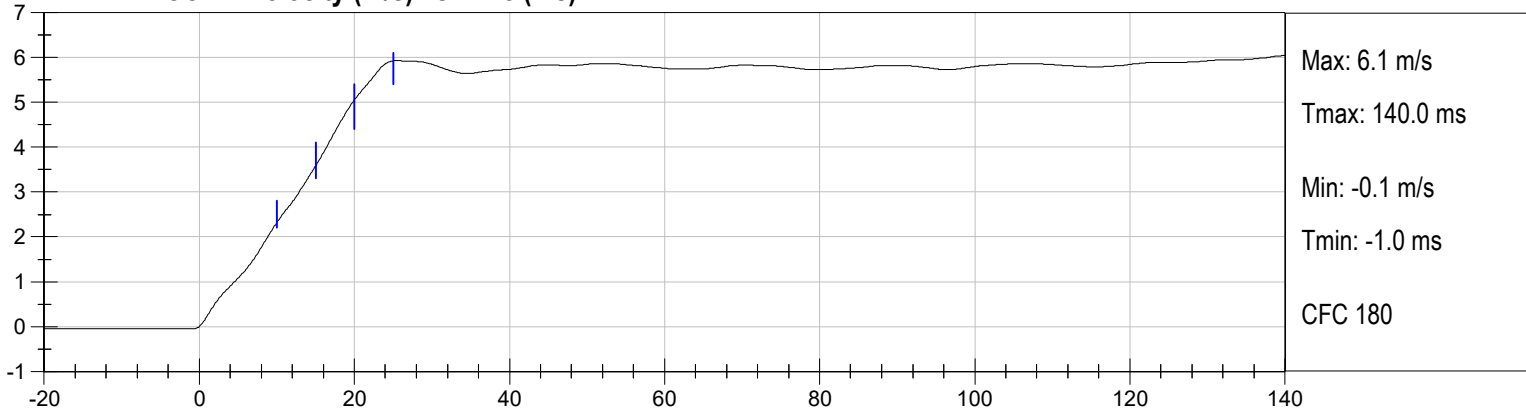




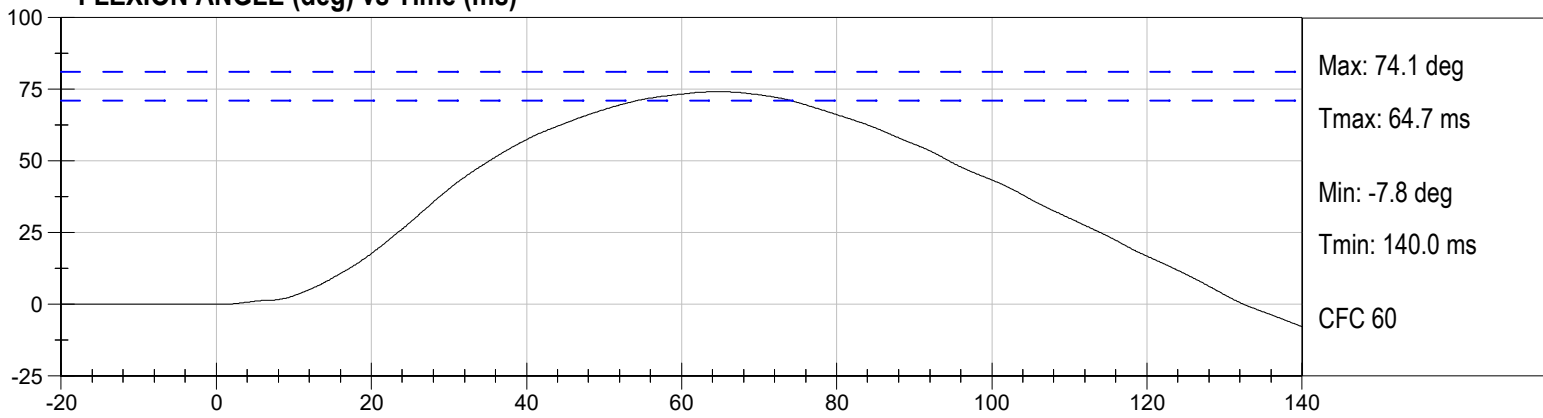
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity at 10 ms	m/s	2.2 to 2.8	2.29	Pass
Pendulum Velocity at 15 ms	m/s	3.30 to 4.10	3.56	Pass
Pendulum Velocity at 20 ms	m/s	4.40 to 5.40	5.03	Pass
Pendulum Velocity at 25 ms	m/s	5.40 to 6.10	5.92	Pass
Peak Pendulum Velocity from 25 to 100 ms	m/s	5.50 to 6.20	5.93	Pass
Maximum "D" Plane Rotation	deg	71 to 81	74	Pass
Time of Maximum "D" Plane Rotation	ms	50 to 70	65	Pass
Maximum Moment About Occipital Condyle	Nm	-44 to -36	-38	Pass
Time of Moment Decay Time To 0 Nm	ms	102 to 126	117	Pass

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PEND. ACCEL.	Endevco	AH5P1	01/13/2025	7/15/2025
NECK FORCE Y	Denton	N252FY	02/05/2025	8/7/2025
NECK MOMENT X	Denton	N252MX	02/05/2025	8/7/2025
POT. A - FRONT	Servo	2732	01/09/2025	7/11/2025
POT. C - HEADFORM	Servo	2204	01/09/2025	7/11/2025

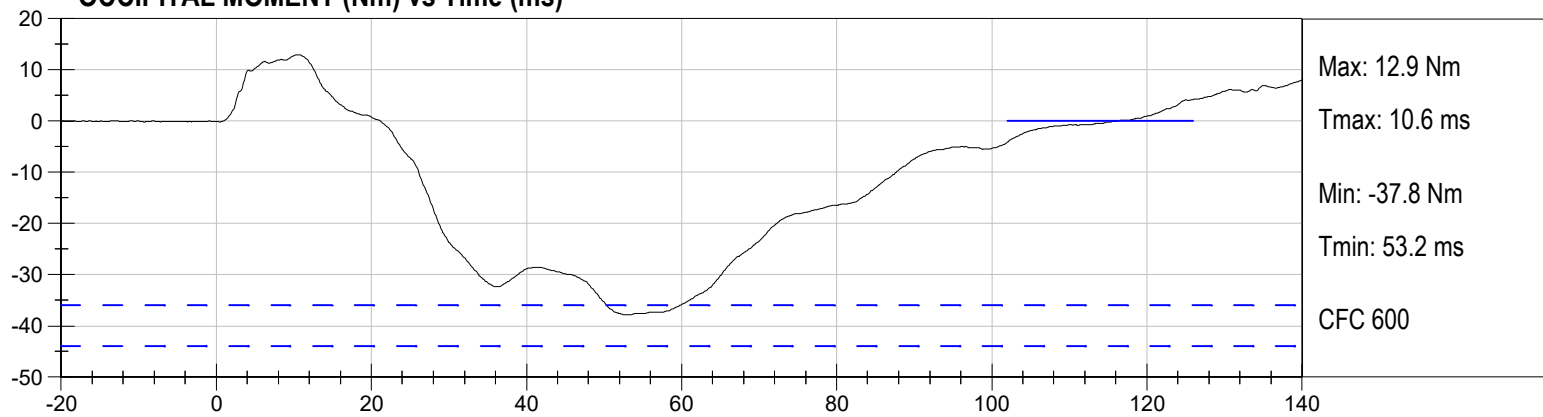
PEND. ACCEL. Velocity (m/s) vs Time (ms)



FLEXION ANGLE (deg) vs Time (ms)



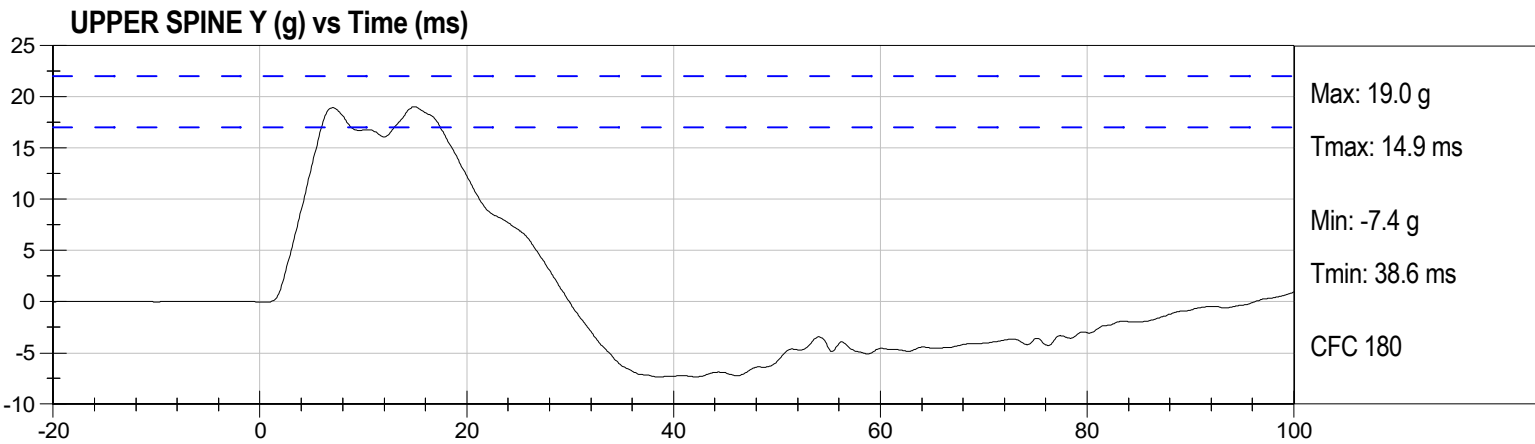
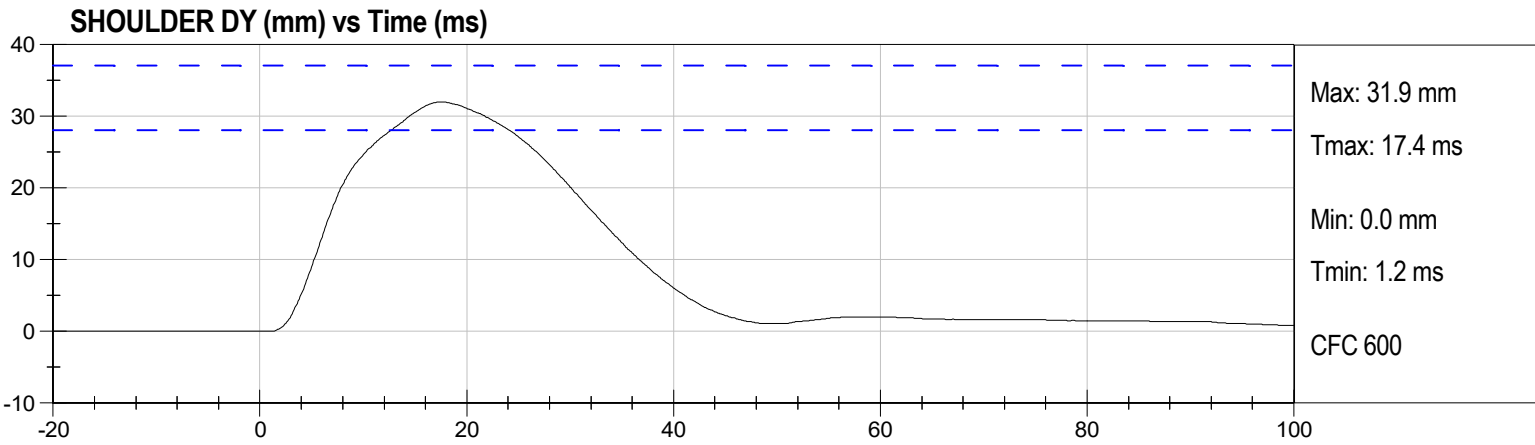
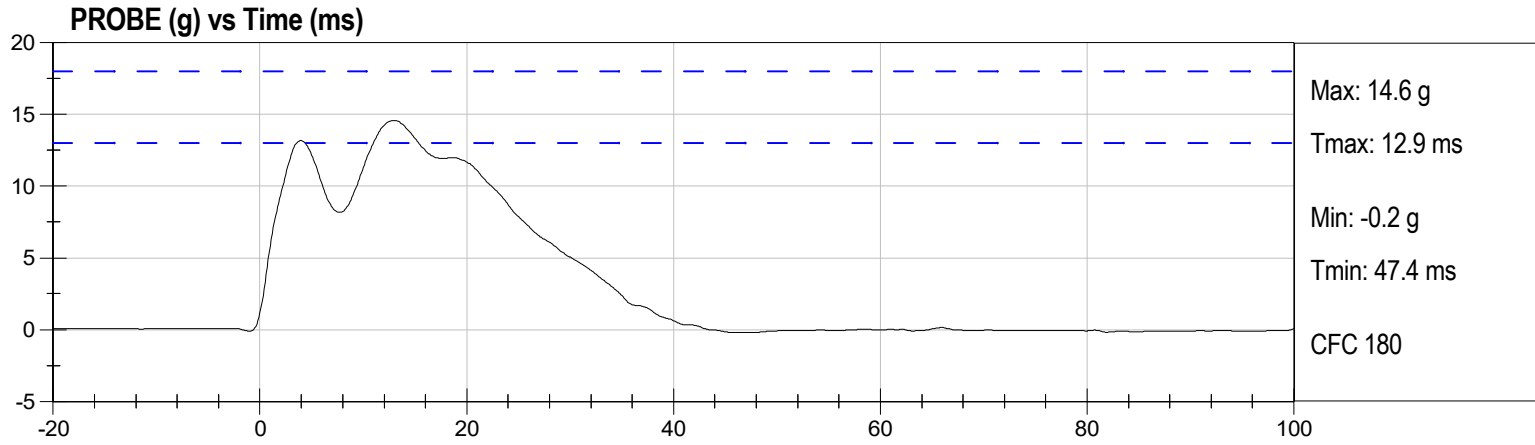
OCCIPITAL MOMENT (Nm) vs Time (ms)





Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	23	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	19	Pass

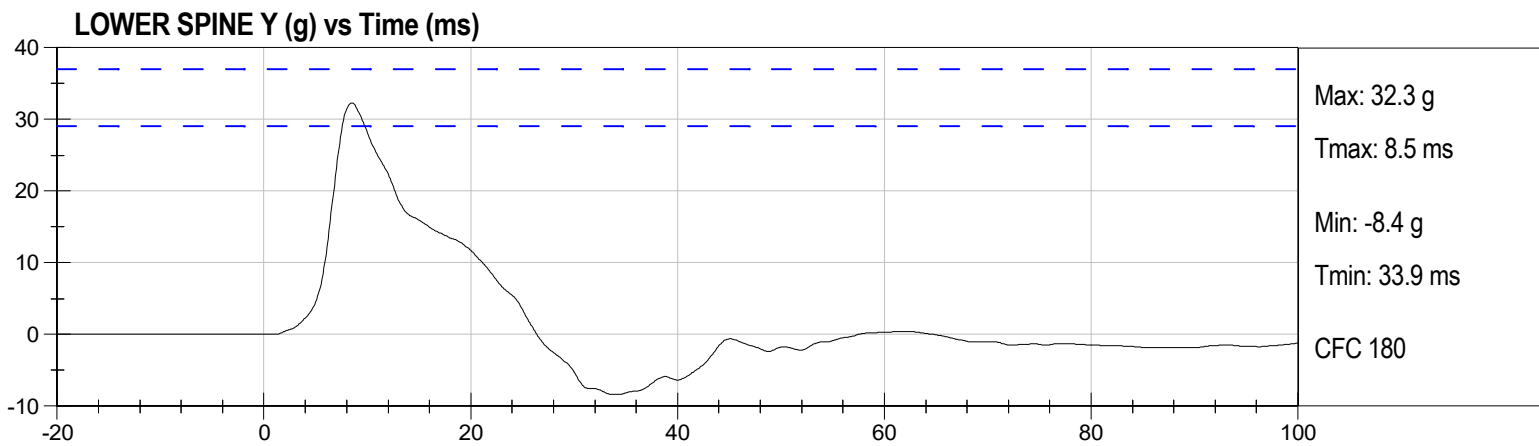
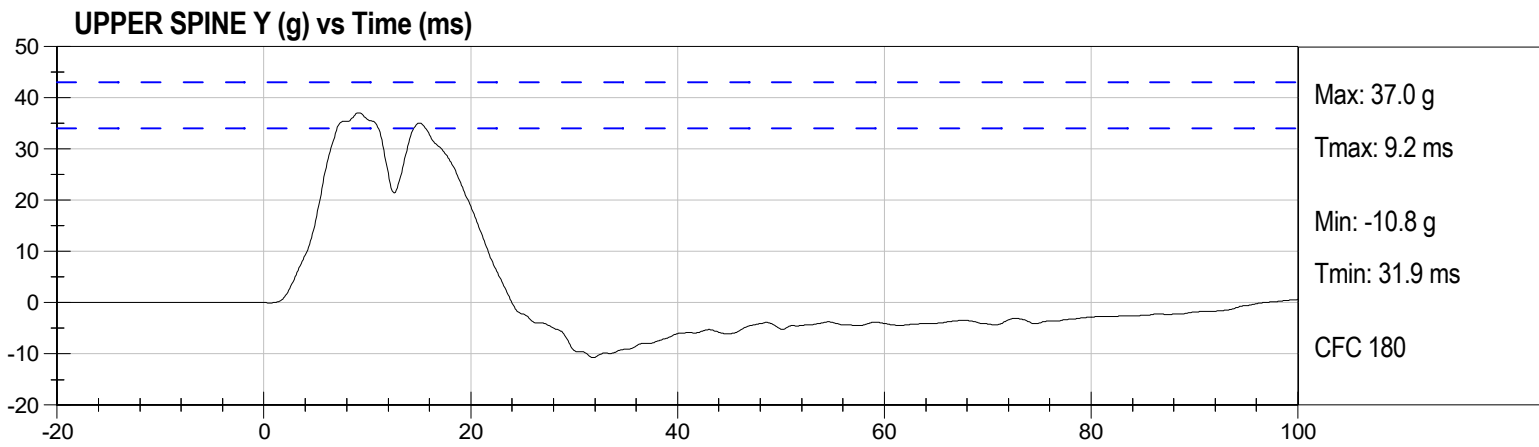
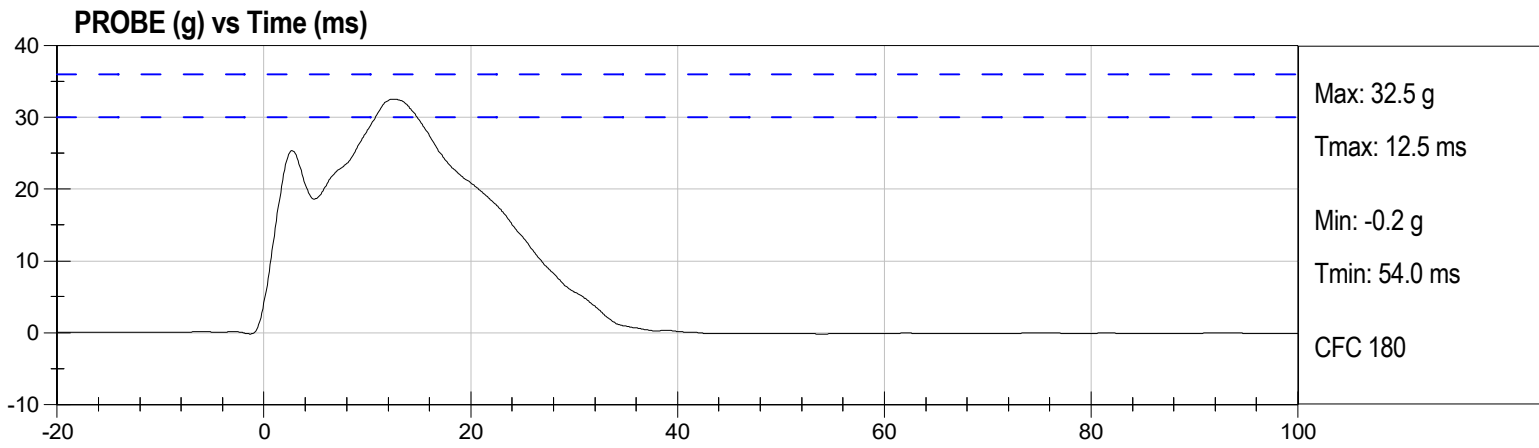
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
SHOULDER DY	FTSS	G050	12/11/2024	6/12/2025

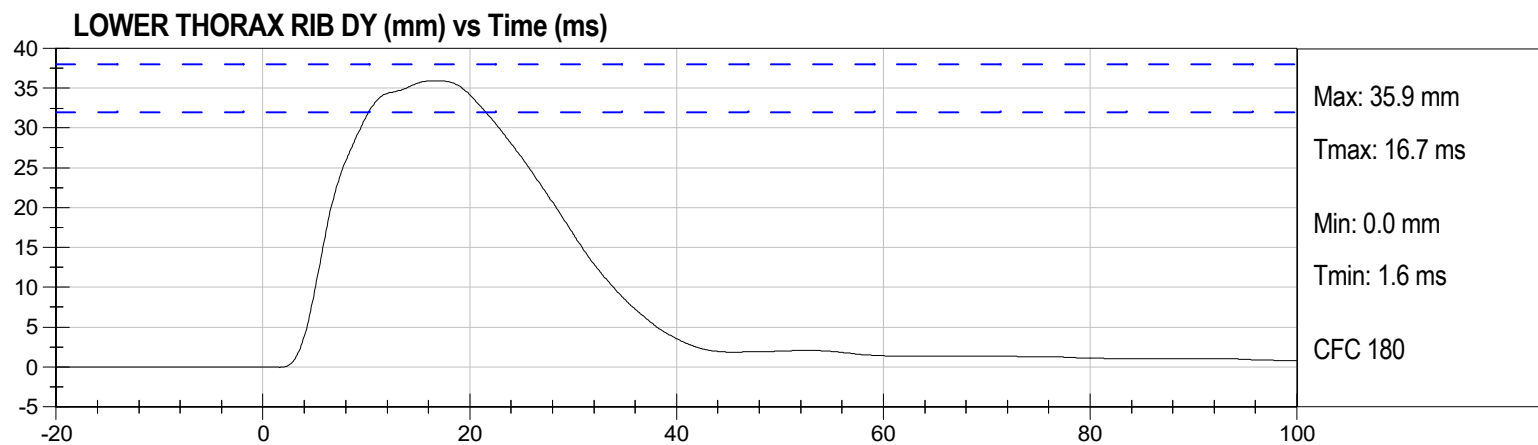
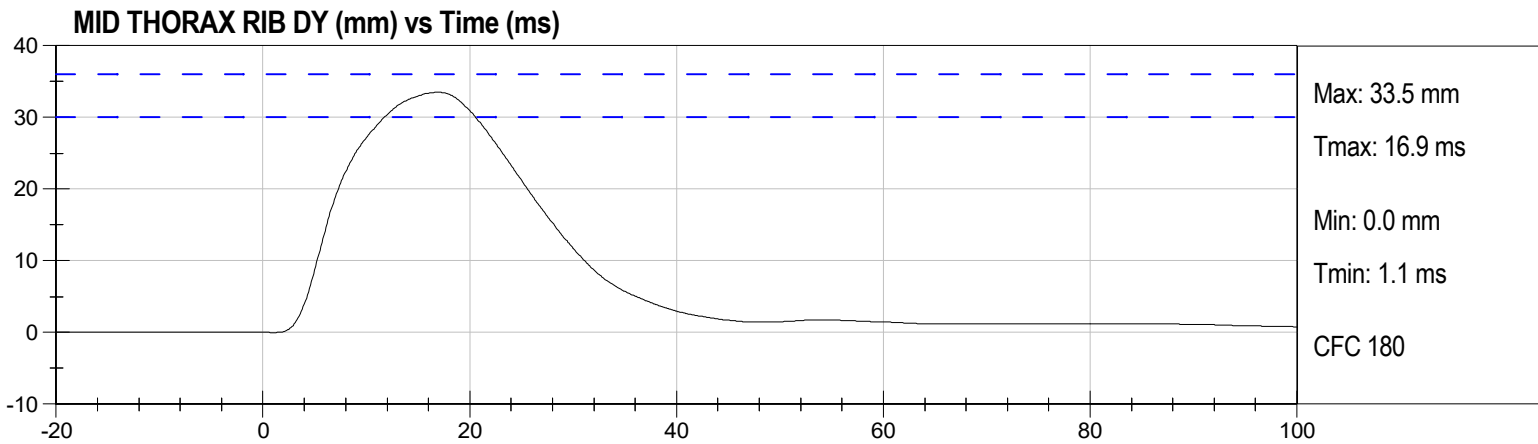
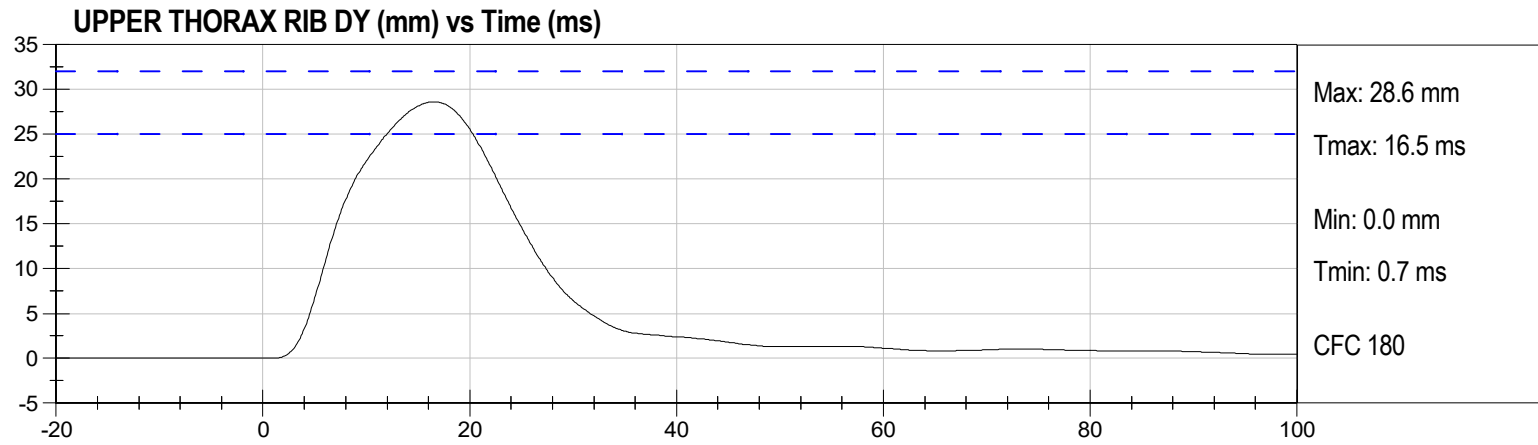
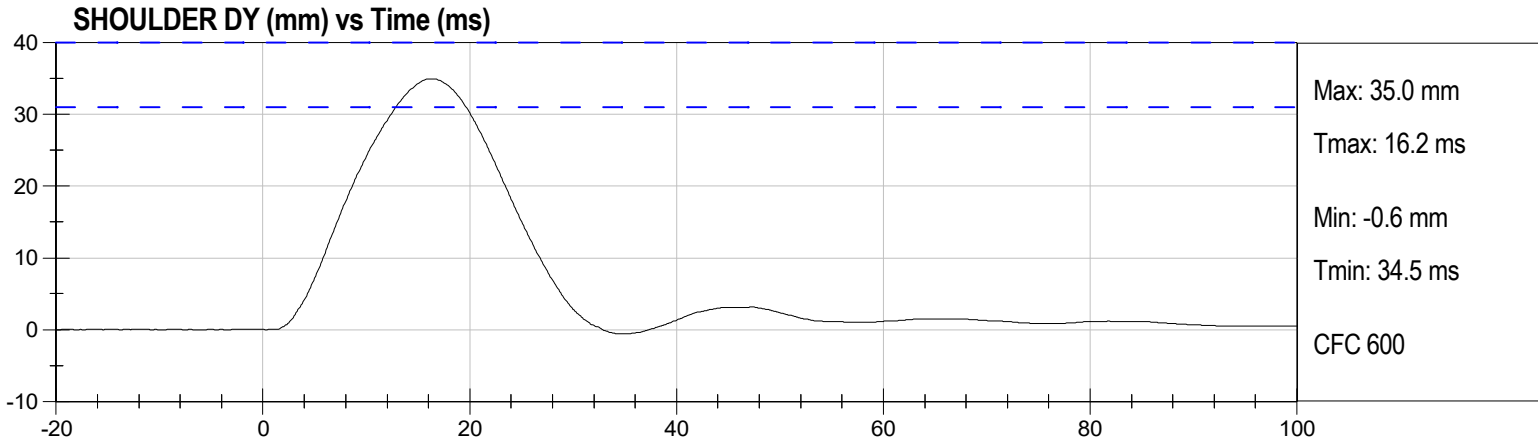




Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	6.6 to 6.8	6.77	Pass
Peak Probe Acceleration after 5 ms	g	30 to 36	33	Pass
Upper Spine (T1) Y Acceleration	g	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	g	29 to 37	32	Pass
Shoulder Displacement	mm	31 to 40	35	Pass
Upper Thorax Rib Displacement	mm	25 to 32	29	Pass
Middle Thorax Rib Displacement	mm	30 to 36	33	Pass
Lower Thorax Rib Displacement	mm	32 to 38	36	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

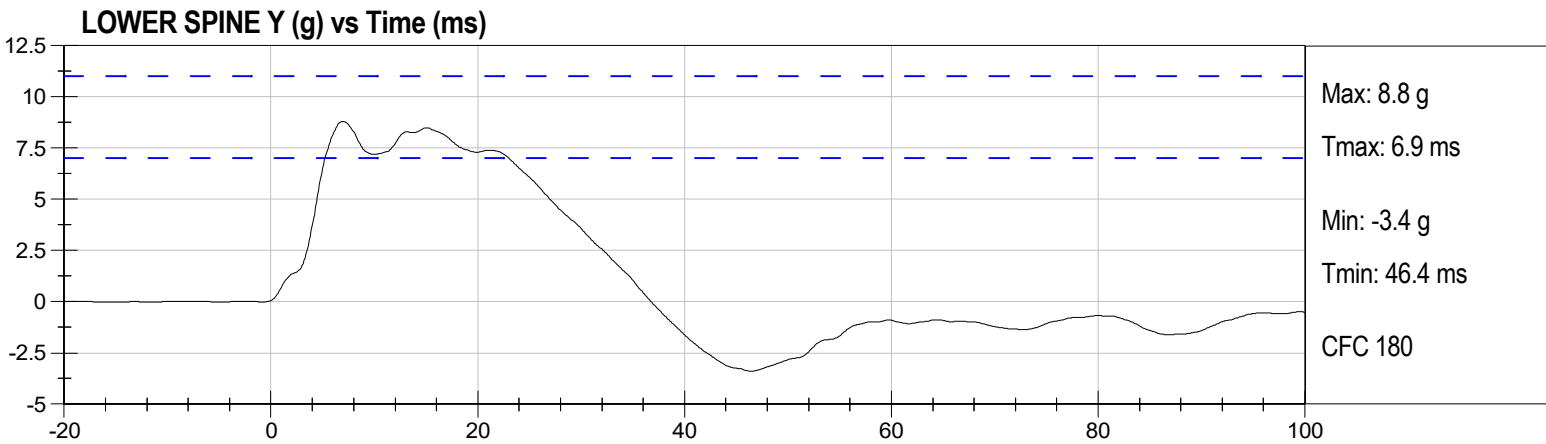
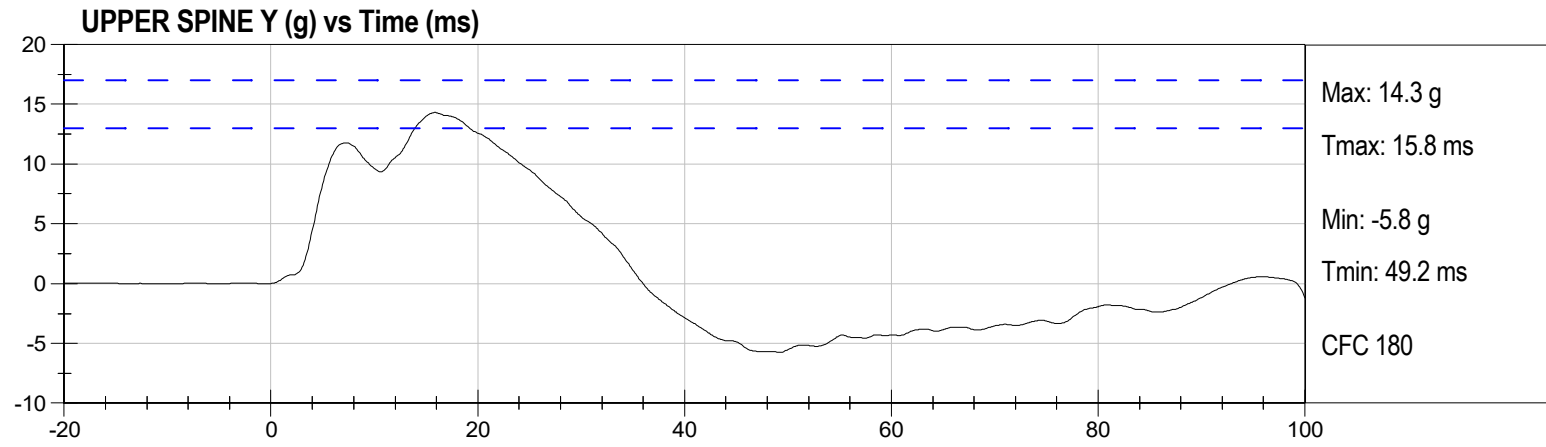
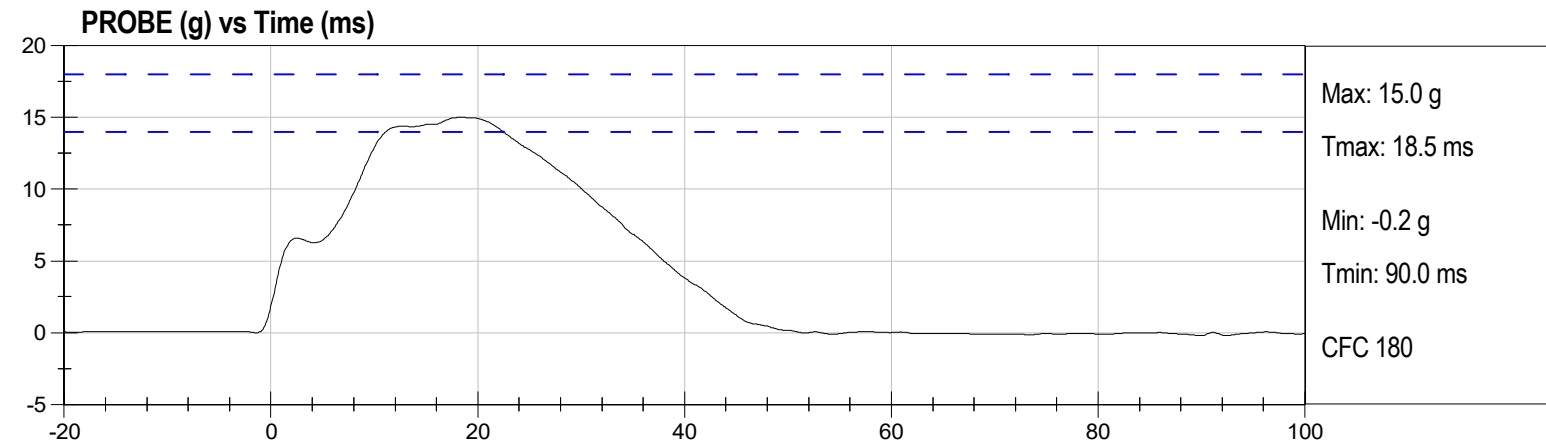




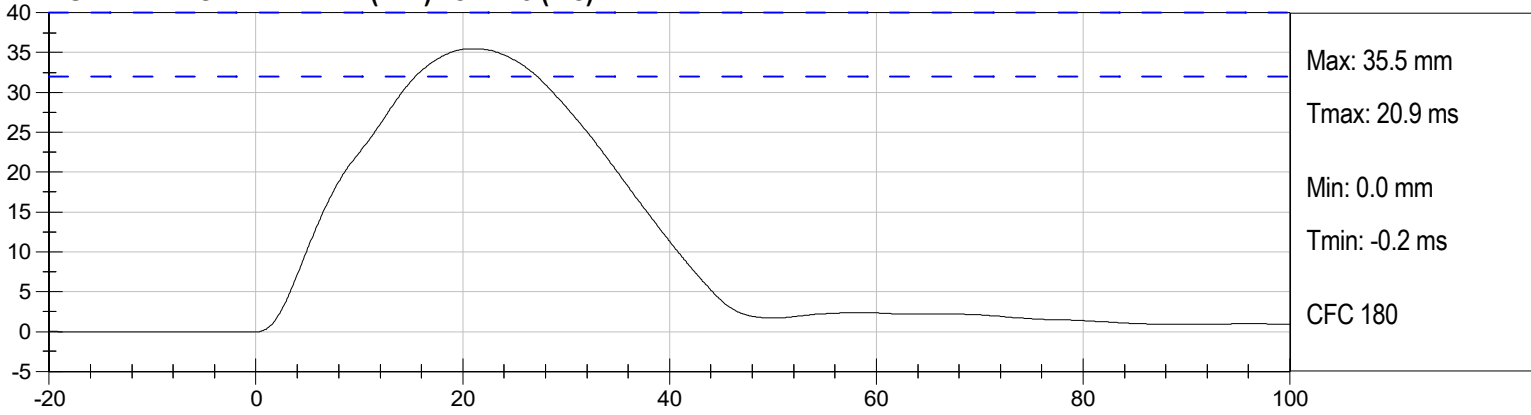


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Impact Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Probe Acceleration	g	14 to 18	15	Pass
Upper Spine (T1) Y Acceleration	g	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	g	7 to 11	9	Pass
Upper Thorax Rib Displacement	mm	32 to 40	35	Pass
Middle Thorax Rib Displacement	mm	39 to 45	42	Pass
Lower Thorax Rib Displacement	mm	35 to 43	39	Pass

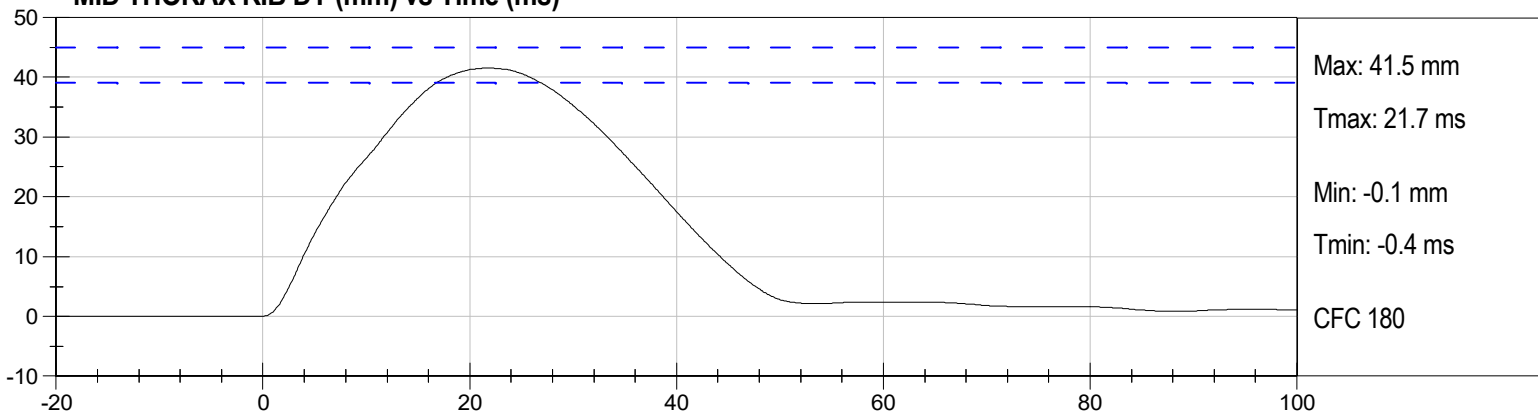
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
UPPER THORAX RIB DY	FTSS	G033	12/11/2024	6/12/2025
MID THORAX RIB DY	Servo	G2403	12/11/2024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



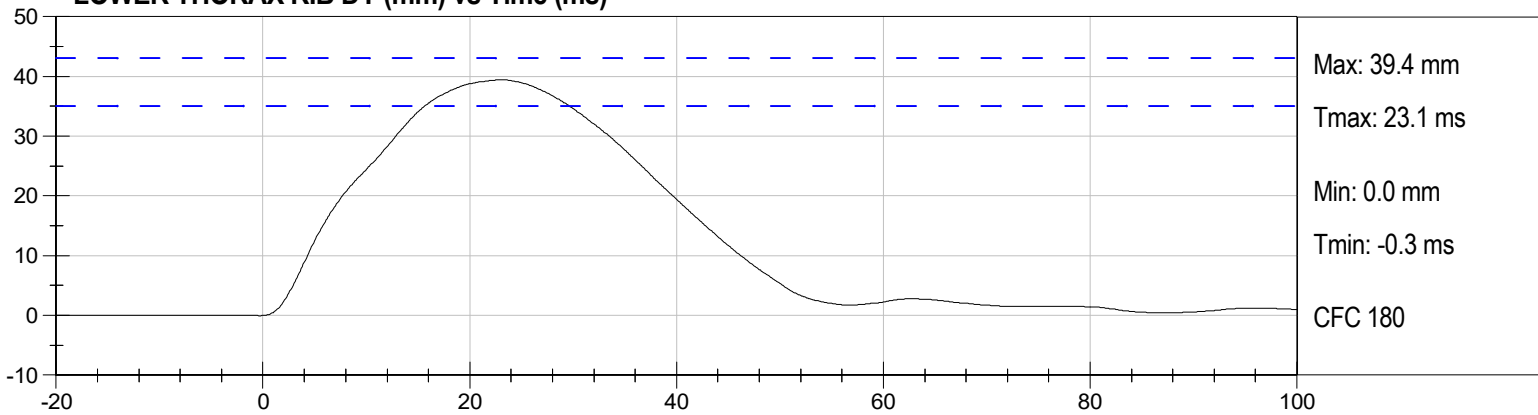
UPPER THORAX RIB DY (mm) vs Time (ms)



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



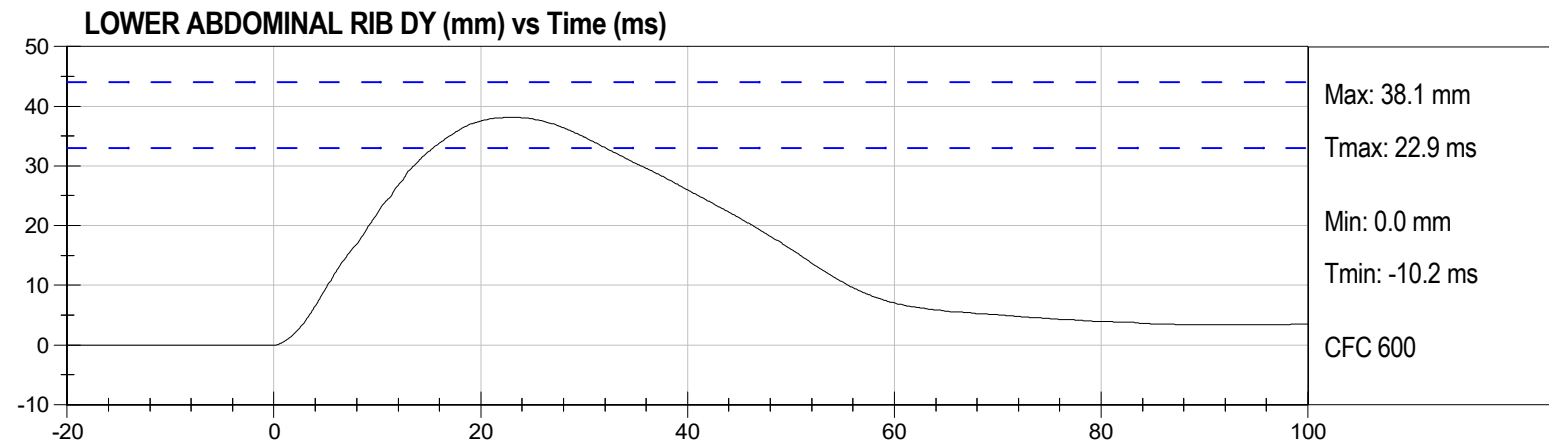
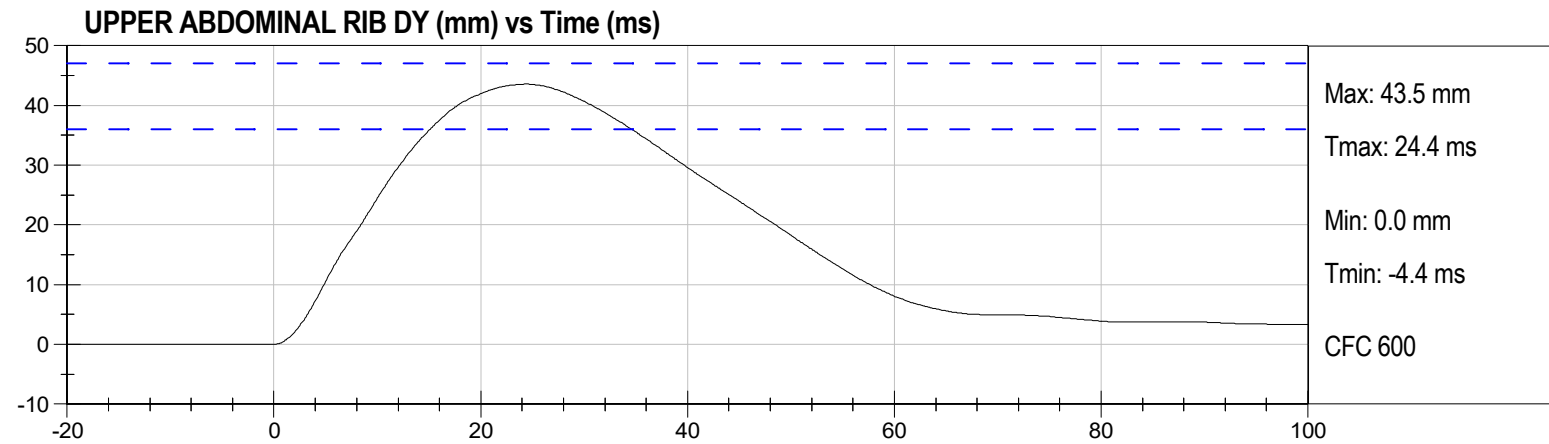
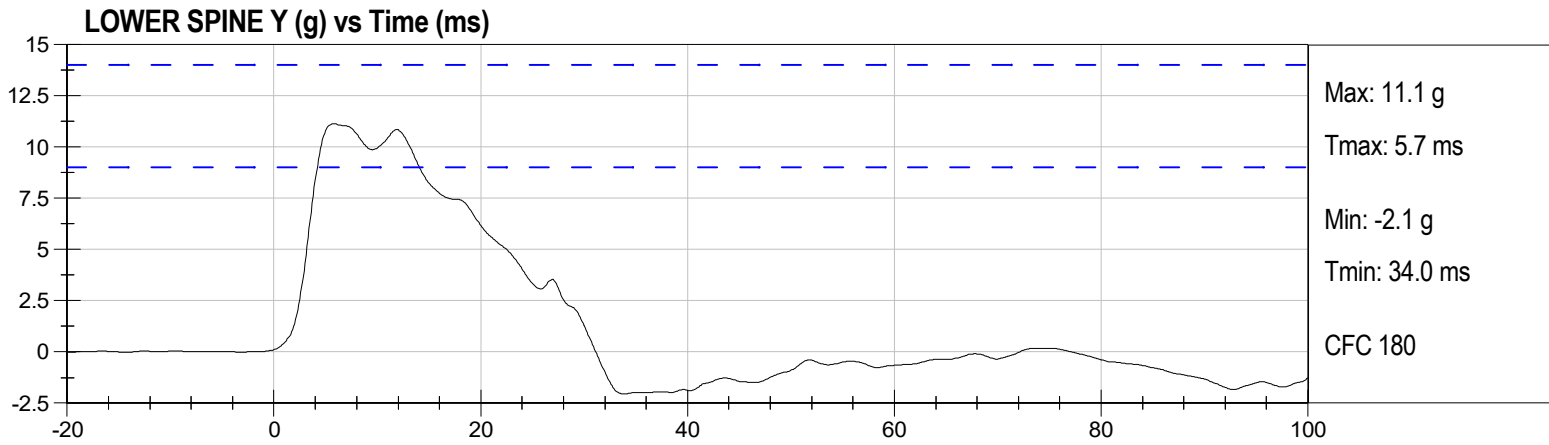
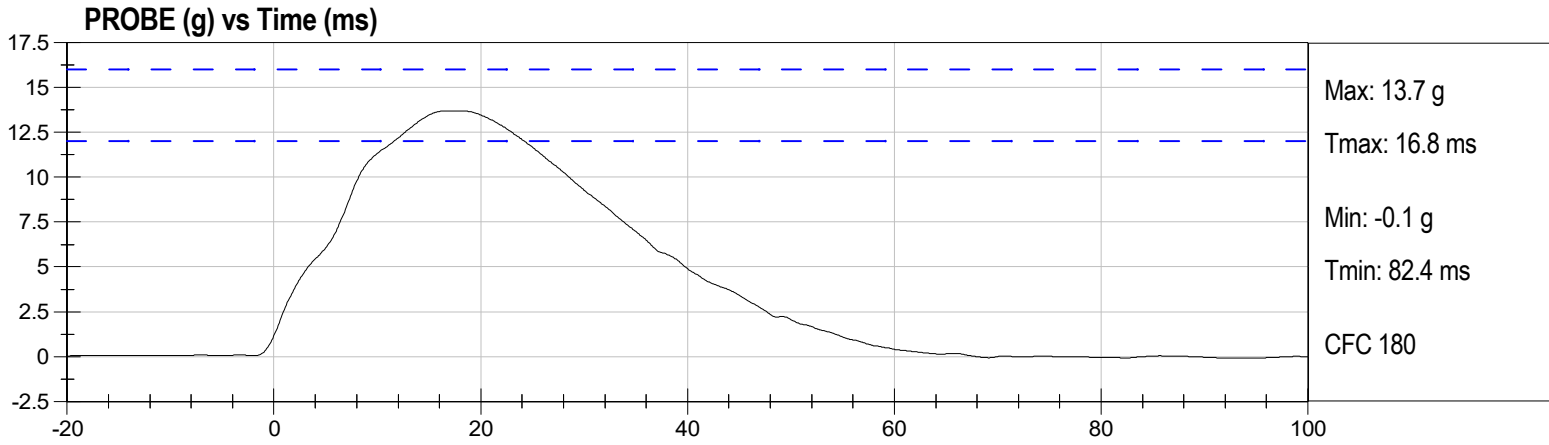
LOWER THORAX RIB DY (mm) vs Time (ms)





Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	23	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	38	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



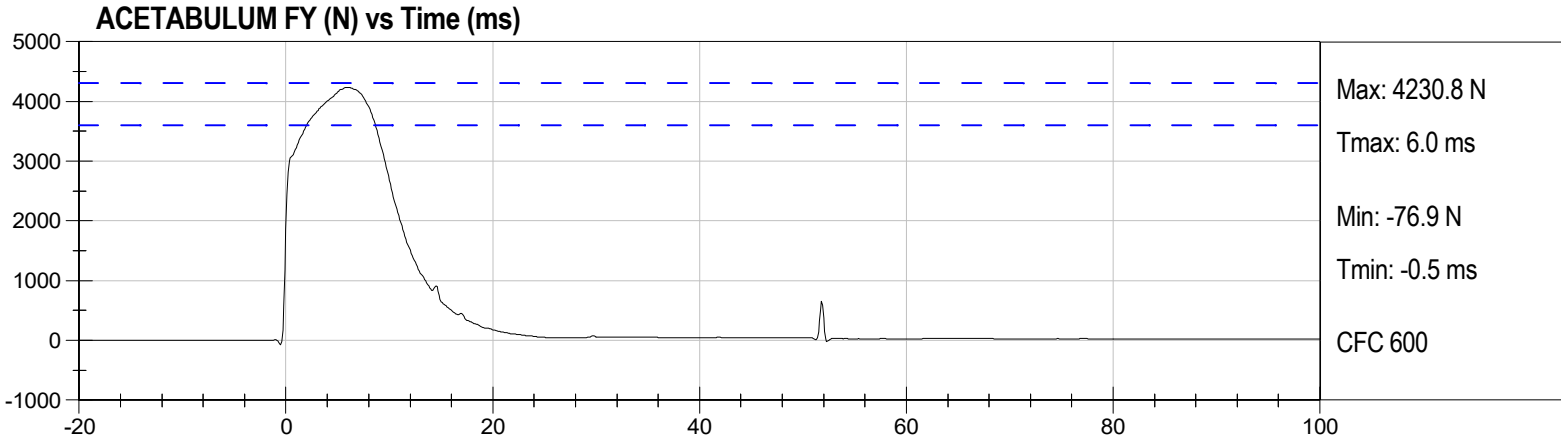
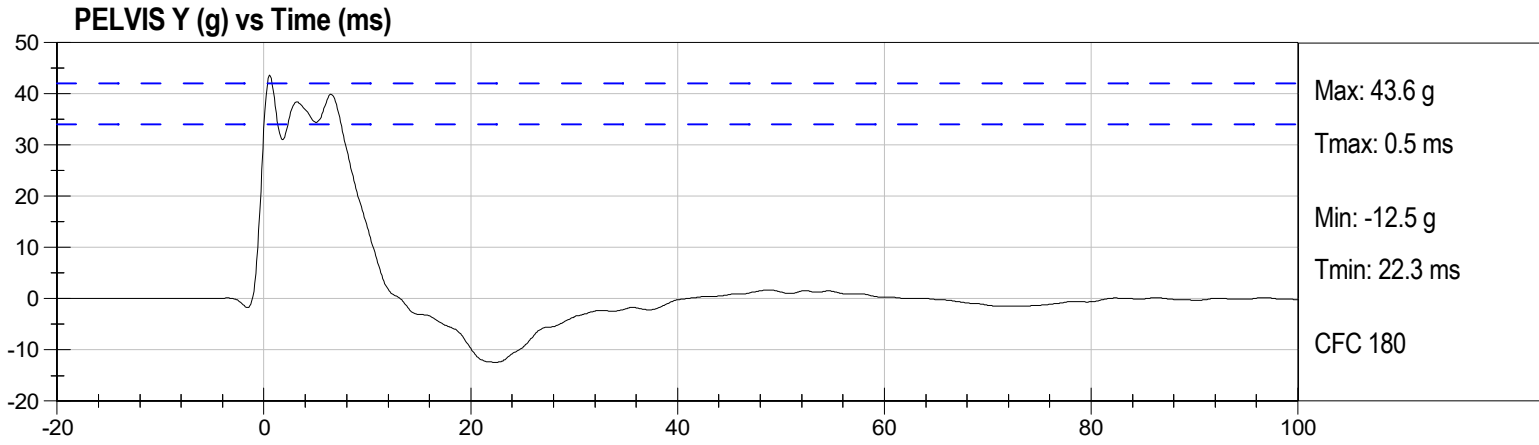
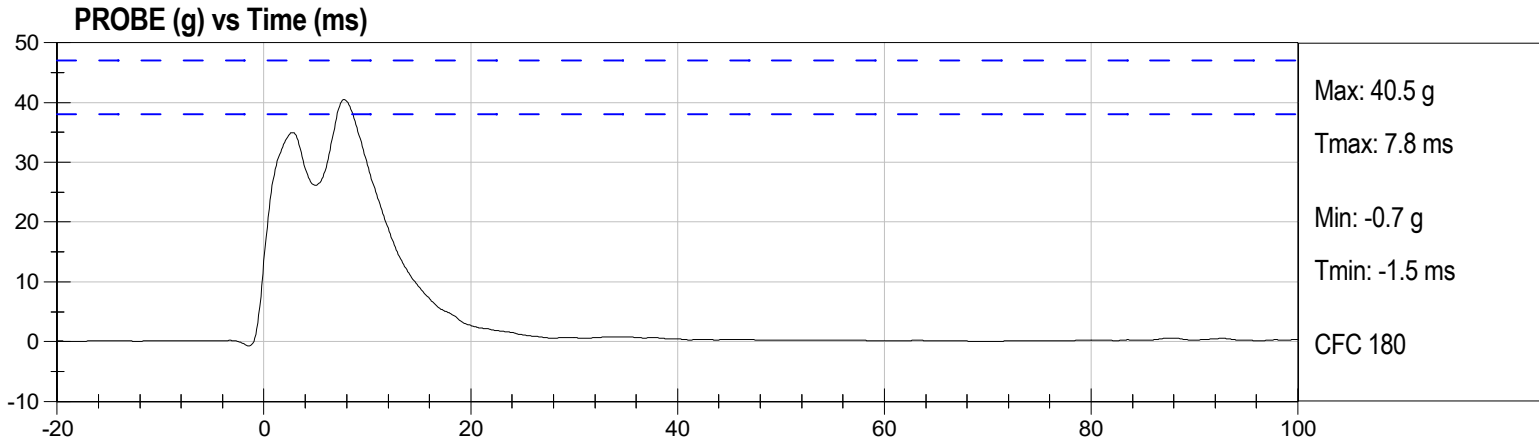


Acetabulum Impact Test
SID IIs
ATD Serial No: 306

Test Date: 02/19/2025
Test ID: D250527
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	24	Pass
Impact Velocity	m/s	6.6 to 6.8	6.70	Pass
Peak Probe Acceleration	g	38 to 47	40	Pass
Peak Pelvis Y Acceleration after 6 ms	g	34 to 42	40	Pass
Acetabulum Force	N	3600 to 4300	4231	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



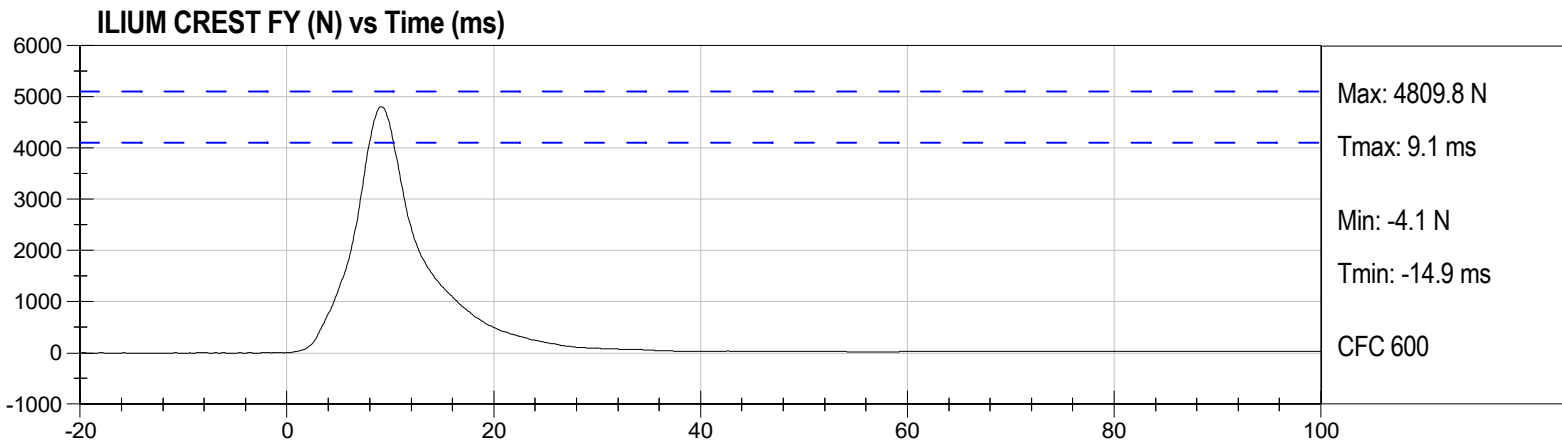
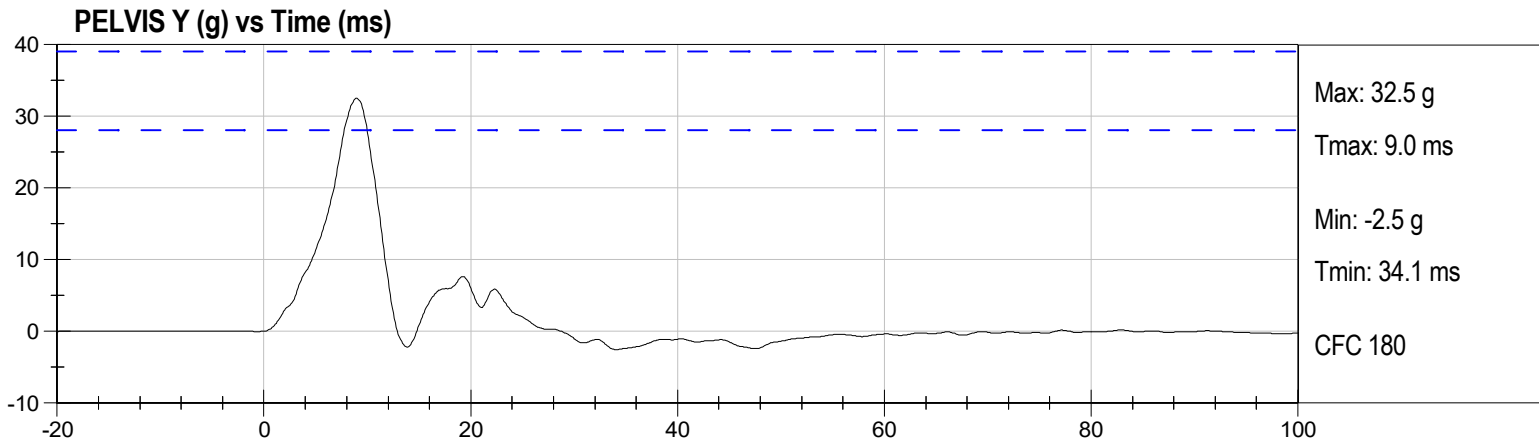
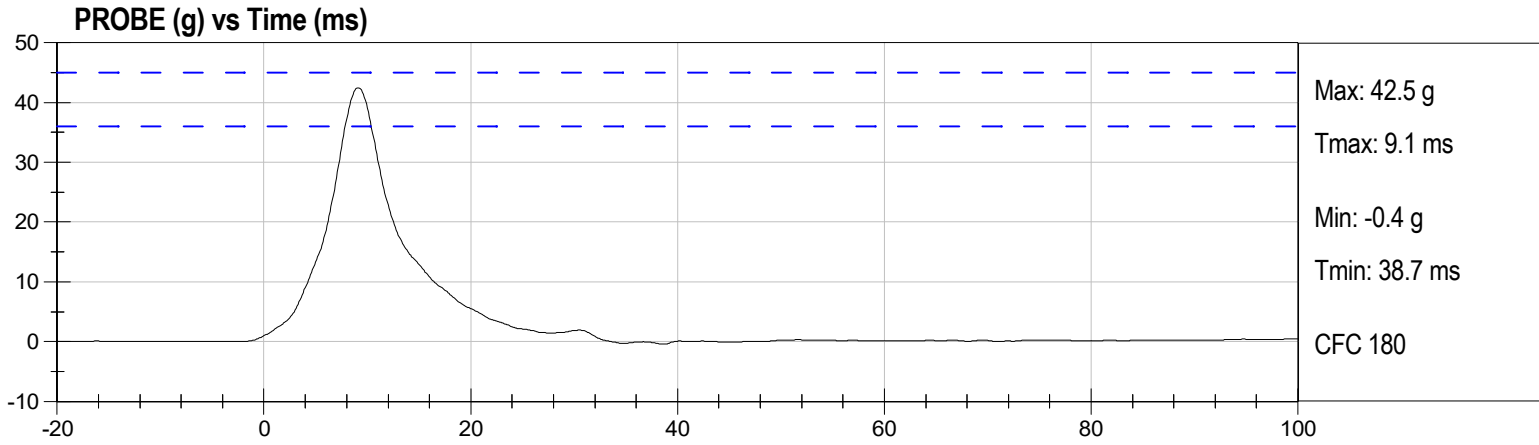


Iliac Impact Test
SID IIs
ATD Serial No: 306

Test Date: 02/19/2025
Test ID: D250528
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	22	Pass
Impact Velocity	m/s	4.2 to 4.4	4.38	Pass
Peak Probe Acceleration	g	36 to 45	42	Pass
Peak Pelvis Y Acceleration	g	28 to 39	33	Pass
Iliac Force	N	4100 to 5100	4810	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



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

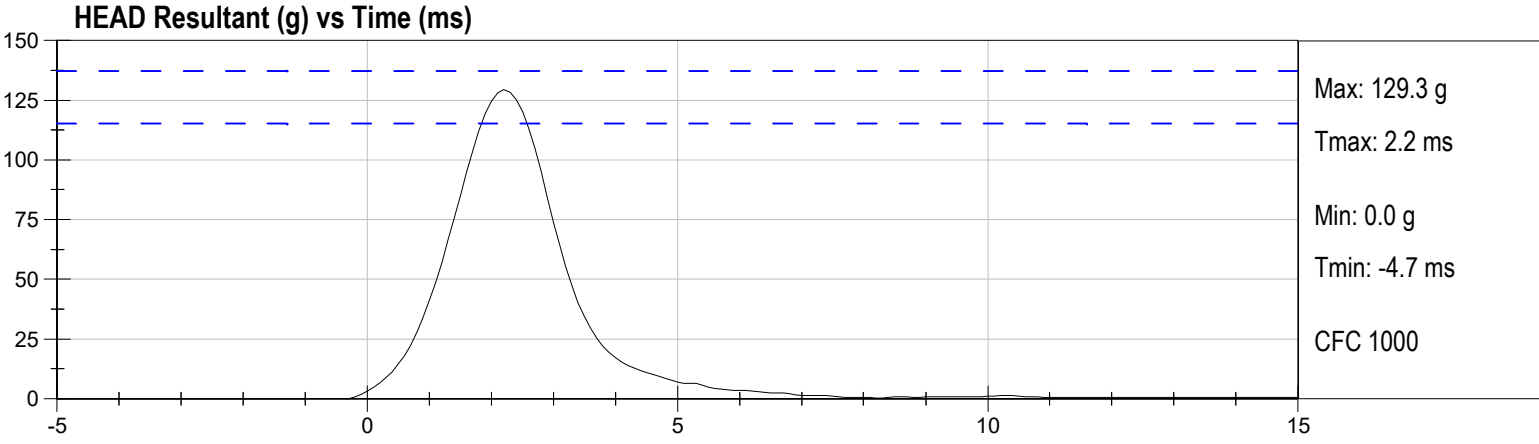
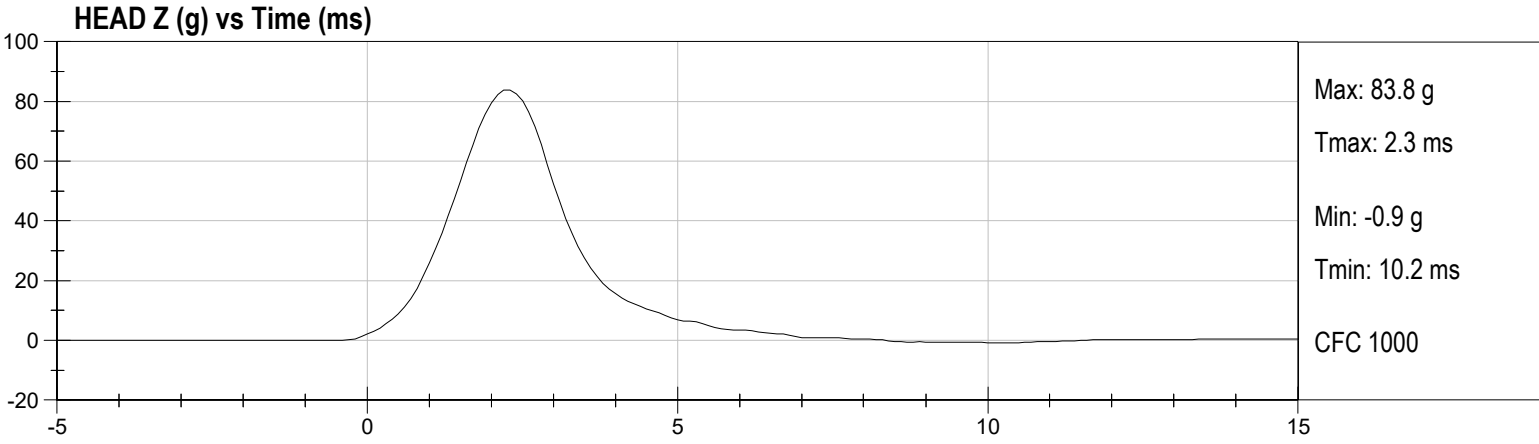
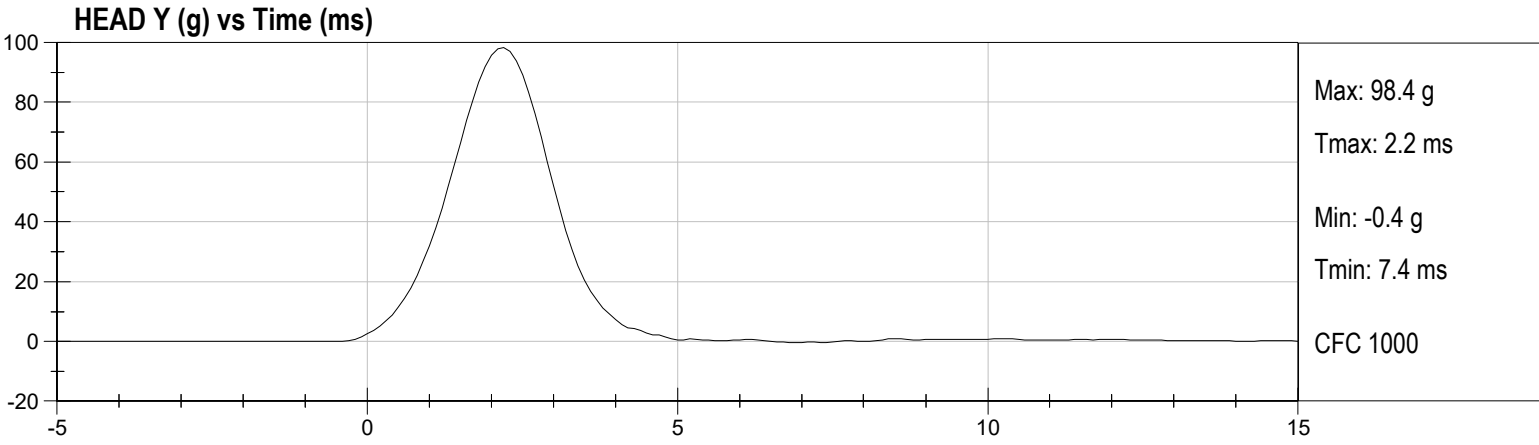
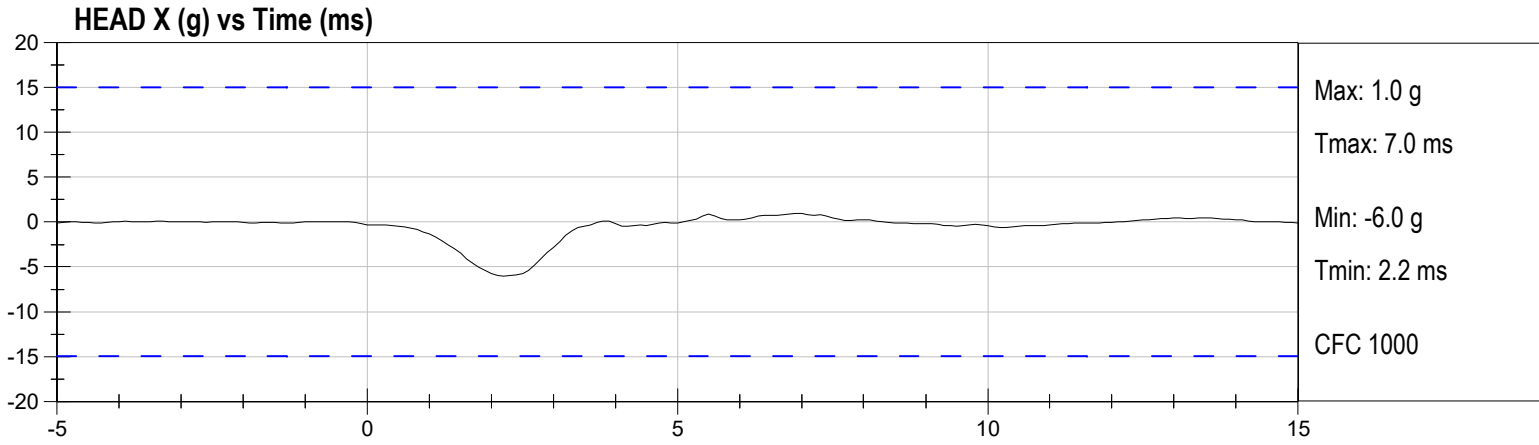


Lateral Head Drop Test
SID IIs
ATD Serial No: 306

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

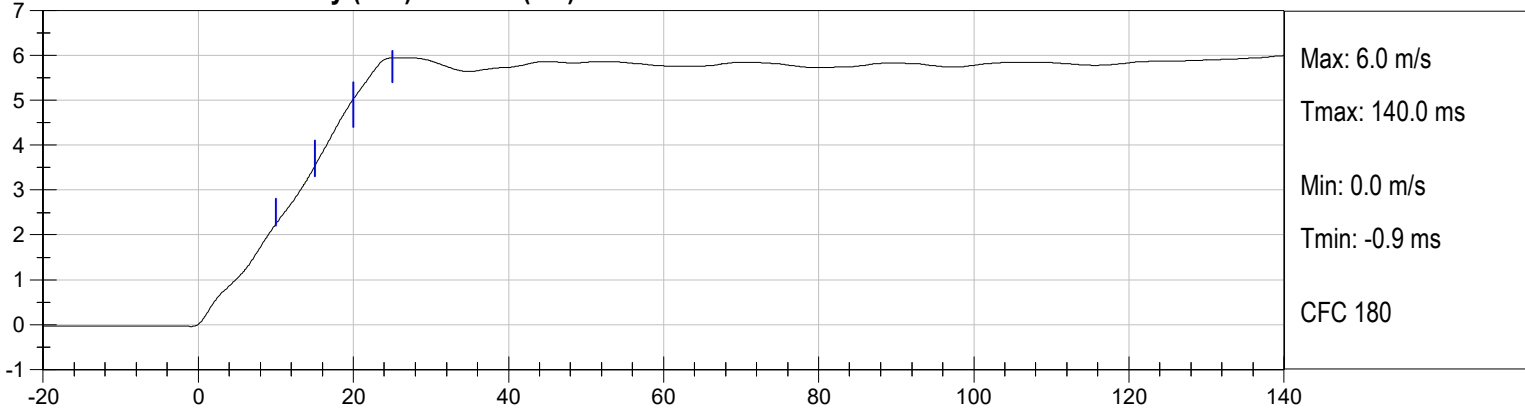




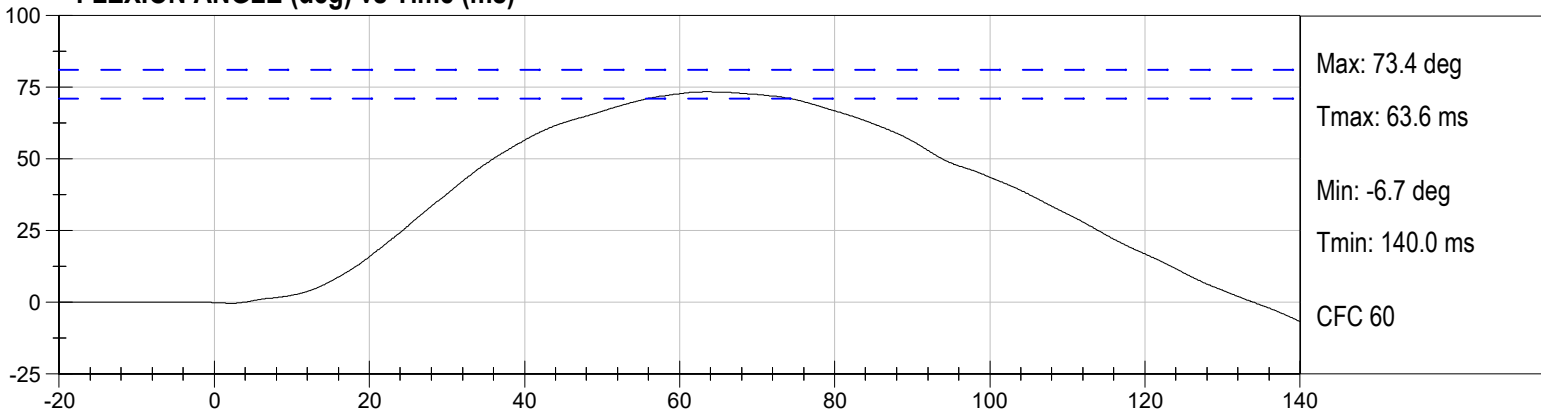
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	37	Pass
Impact Velocity	m/s	5.51 to 5.63	5.52	Pass
Pendulum Velocity at 10 ms	m/s	2.20 to 2.80	2.22	Pass
Pendulum Velocity at 15 ms	m/s	3.30 to 4.10	3.49	Pass
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

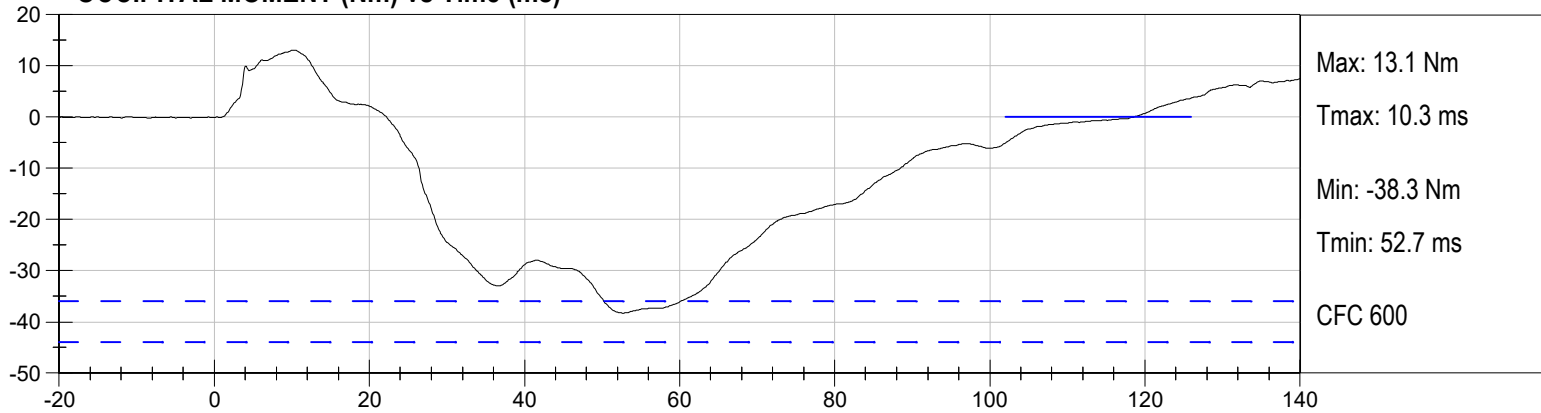
PEND. ACCEL. Velocity (m/s) vs Time (ms)



FLEXION ANGLE (deg) vs Time (ms)



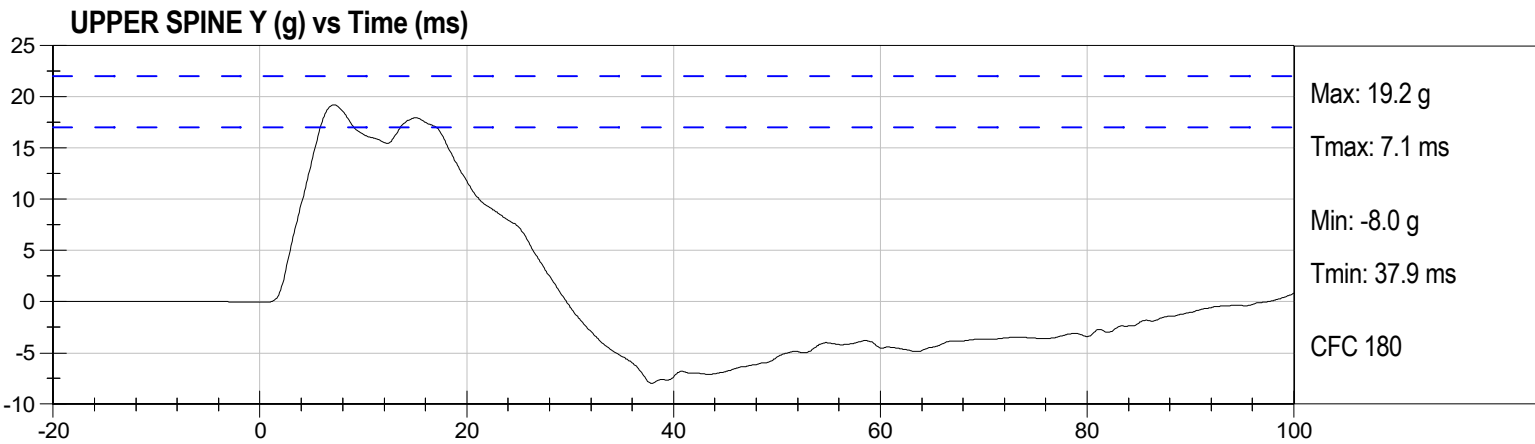
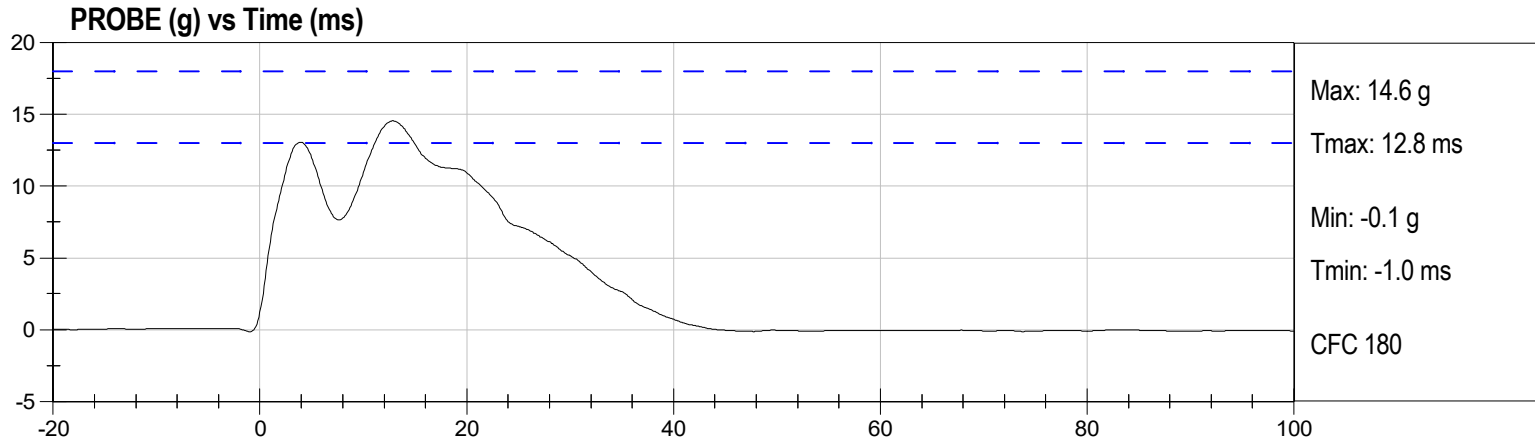
OCCIPITAL MOMENT (Nm) vs Time (ms)





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

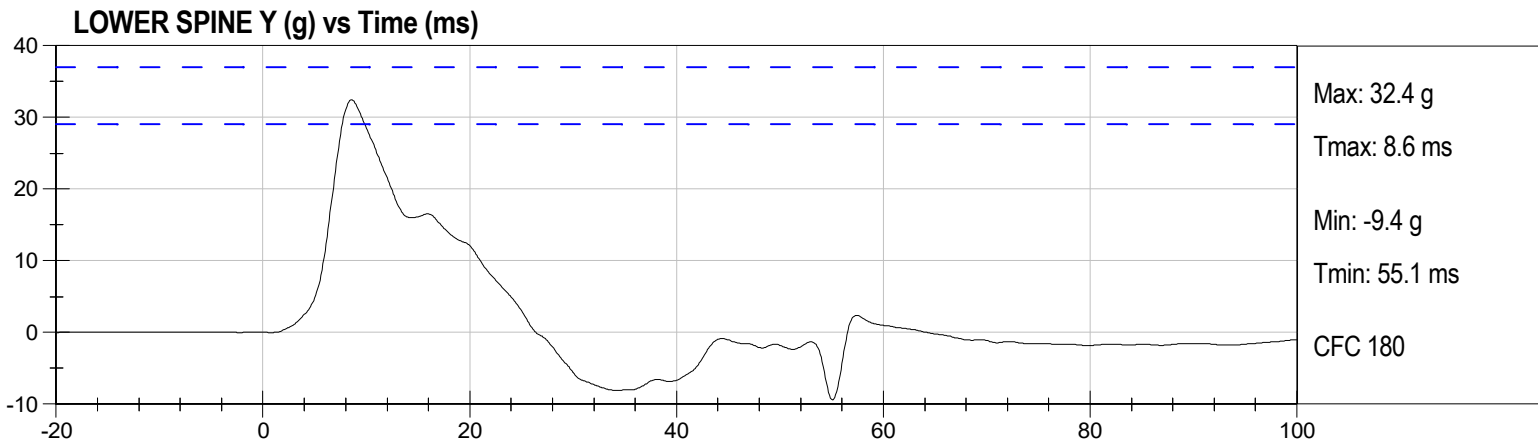
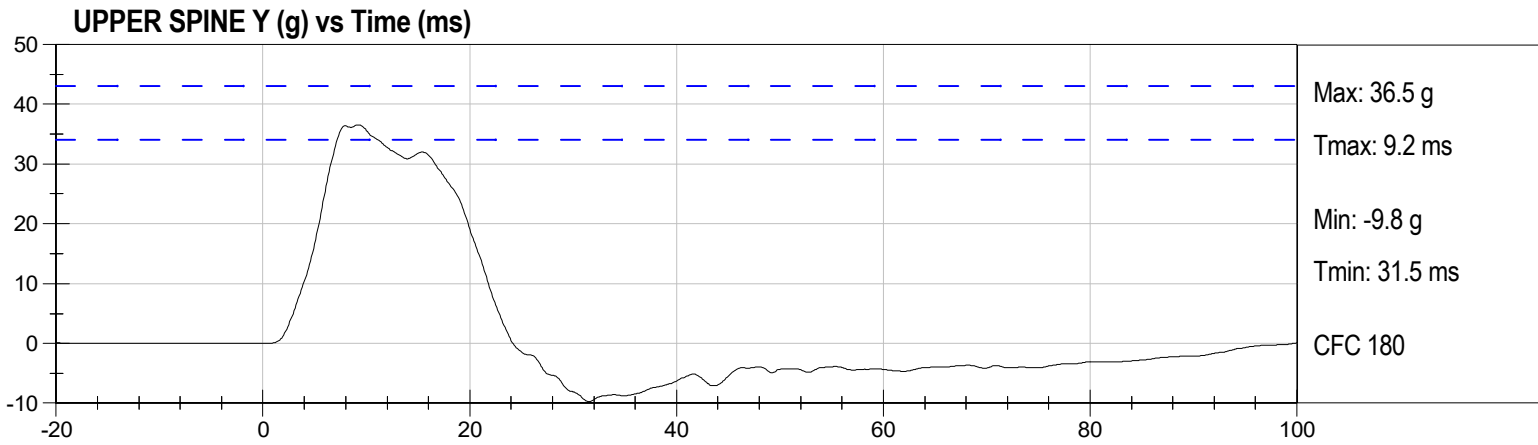
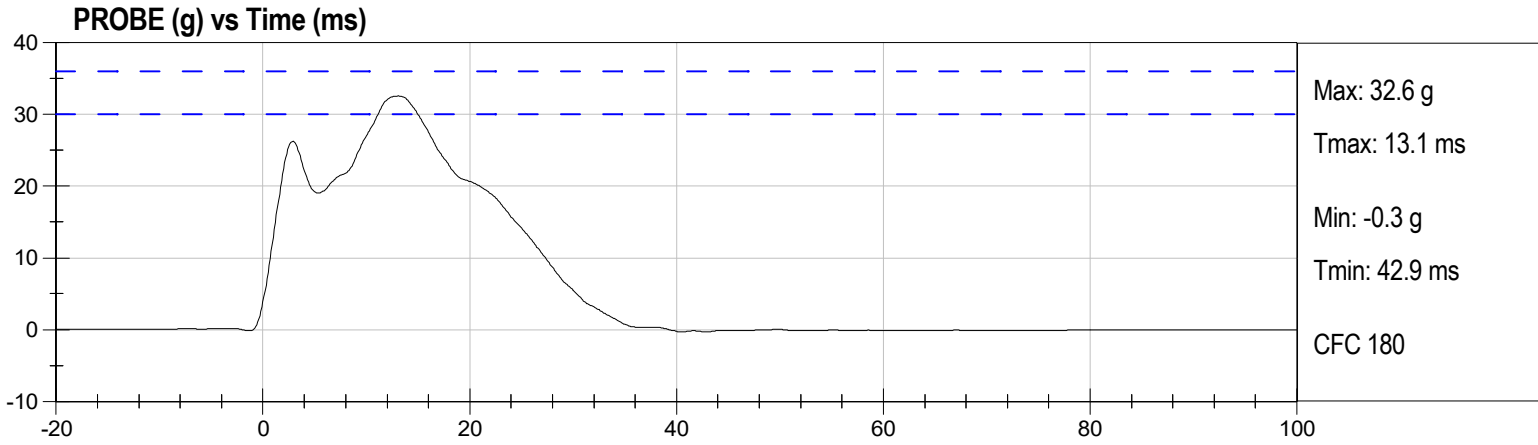
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
SHOULDER DY	FTSS	G050	12/11/2024	6/12/2025



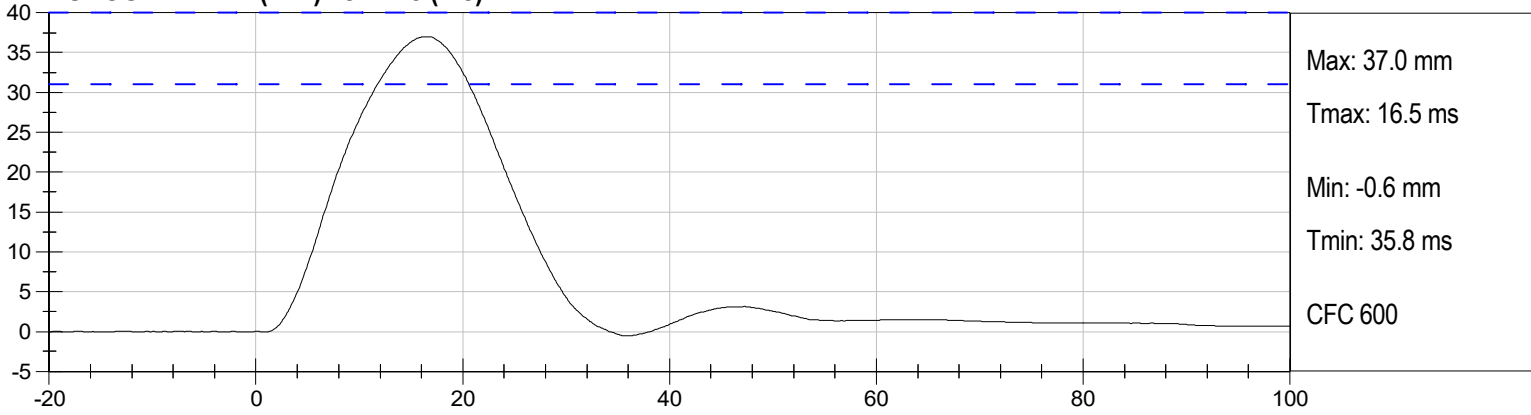


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	6.6 to 6.8	6.70	Pass
Peak Probe Acceleration after 5 ms	g	30 to 36	33	Pass
Upper Spine (T1) Y Acceleration	g	34 to 43	37	Pass
Lower 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

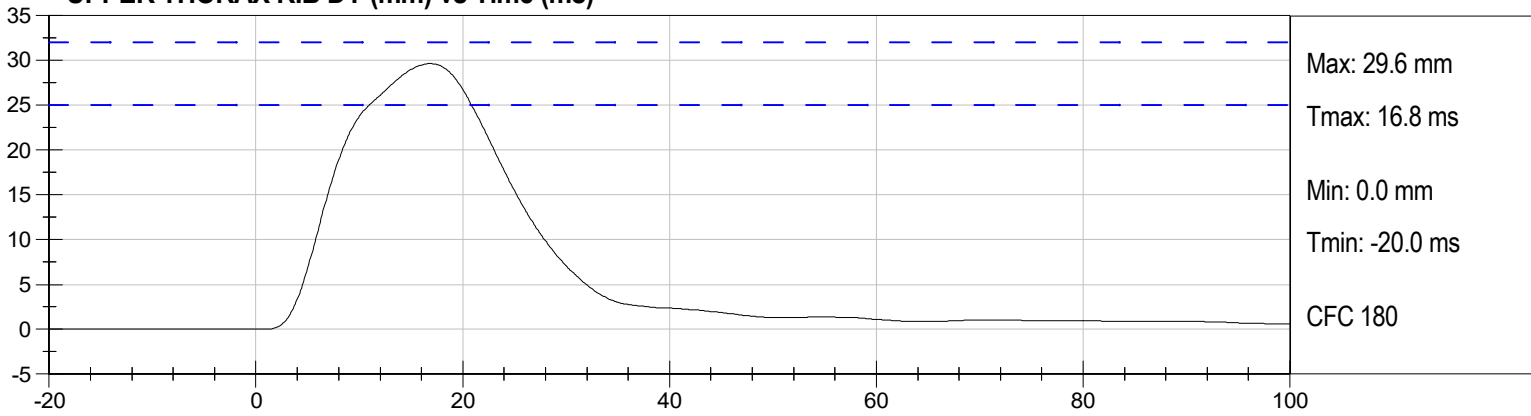
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
SHOULDER DY	FTSS	G050	12/11/2024	6/12/2025
UPPER THORAX RIB DY	FTSS	G033	12/11/2024	6/12/2025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



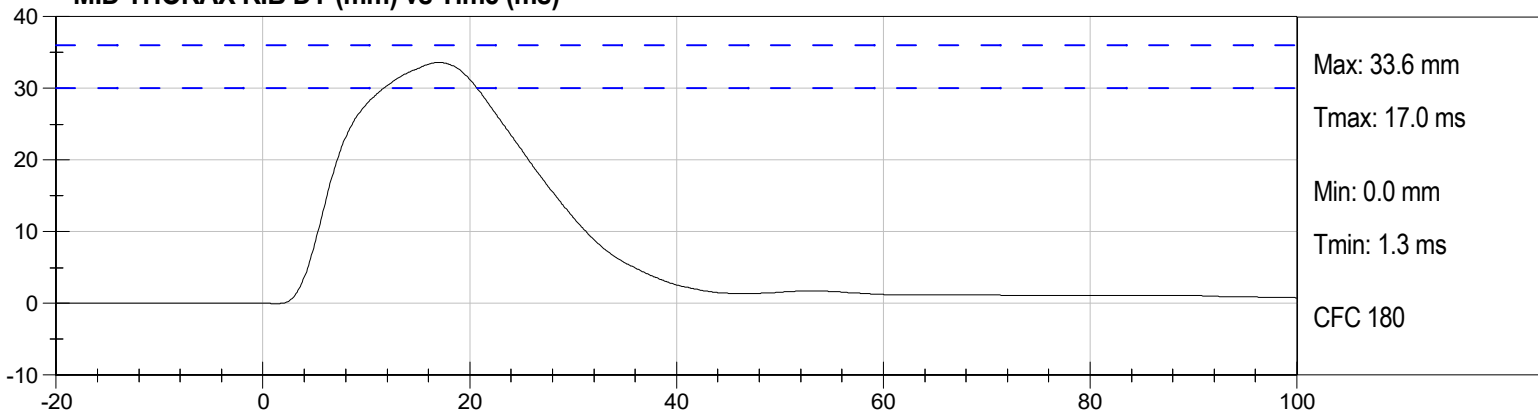
SHOULDER DY (mm) vs Time (ms)



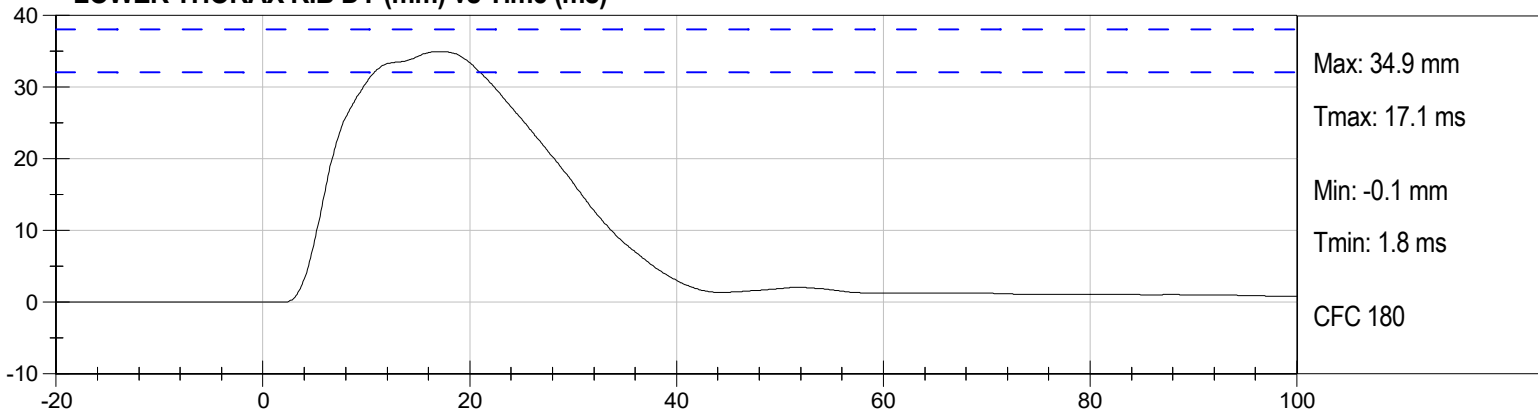
UPPER THORAX RIB DY (mm) vs Time (ms)



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



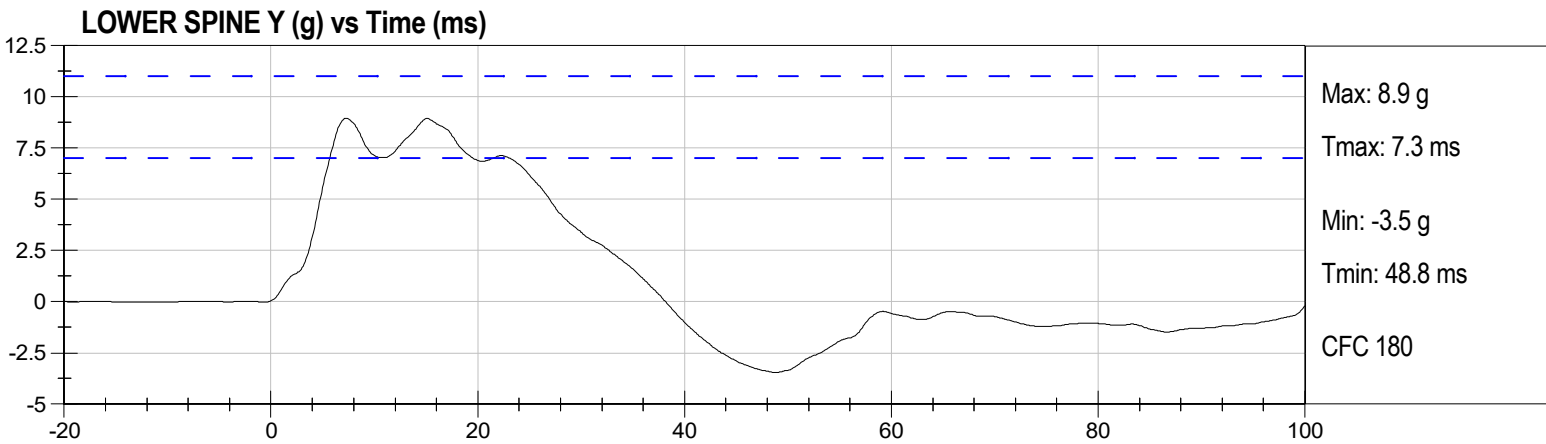
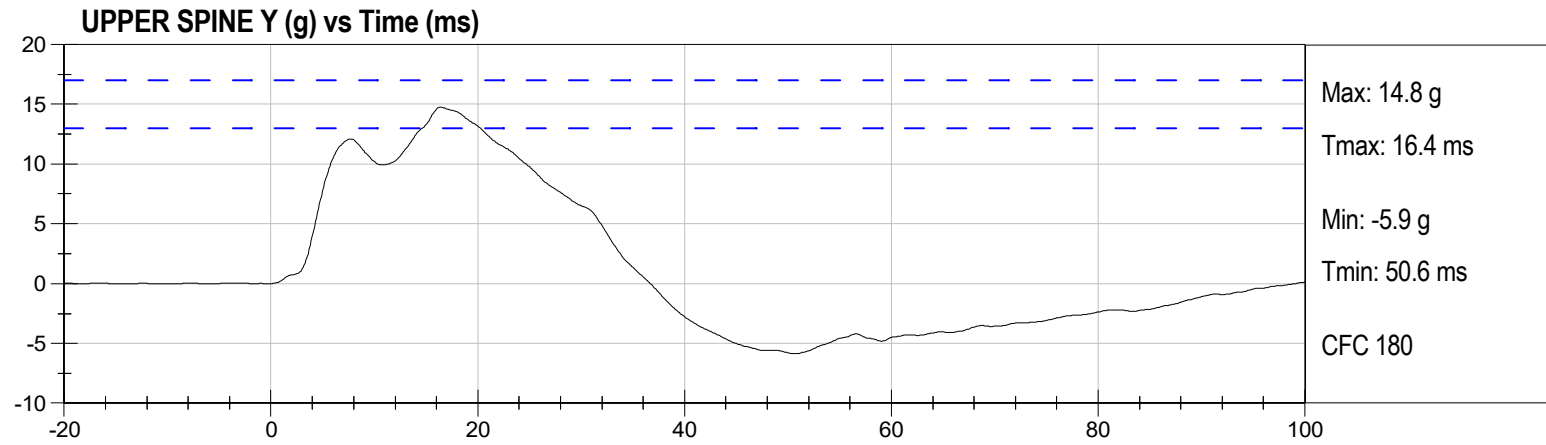
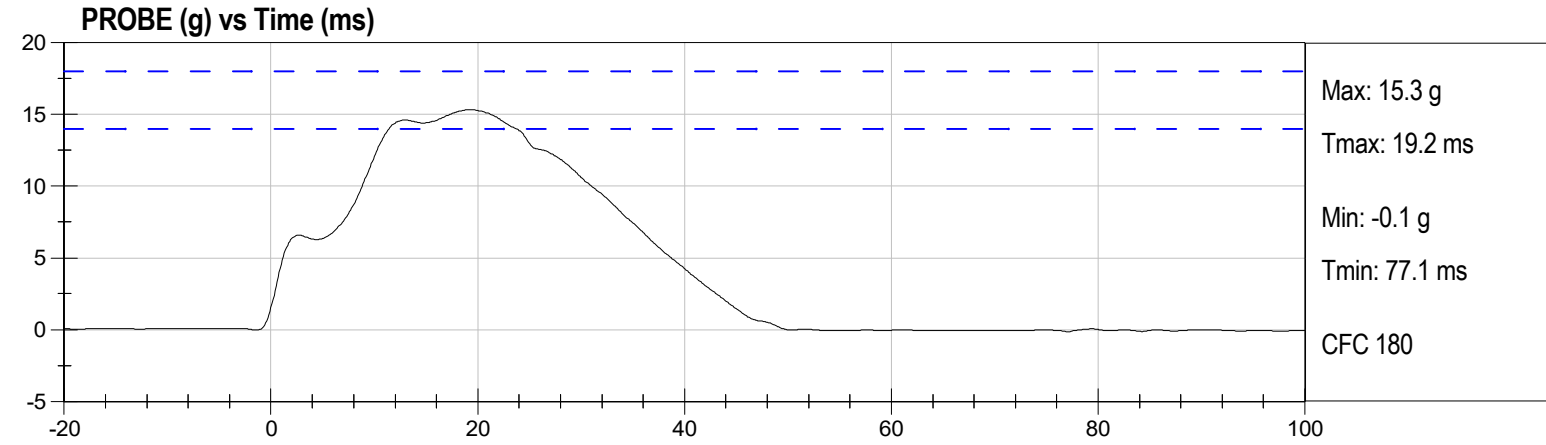
LOWER THORAX RIB DY (mm) vs Time (ms)



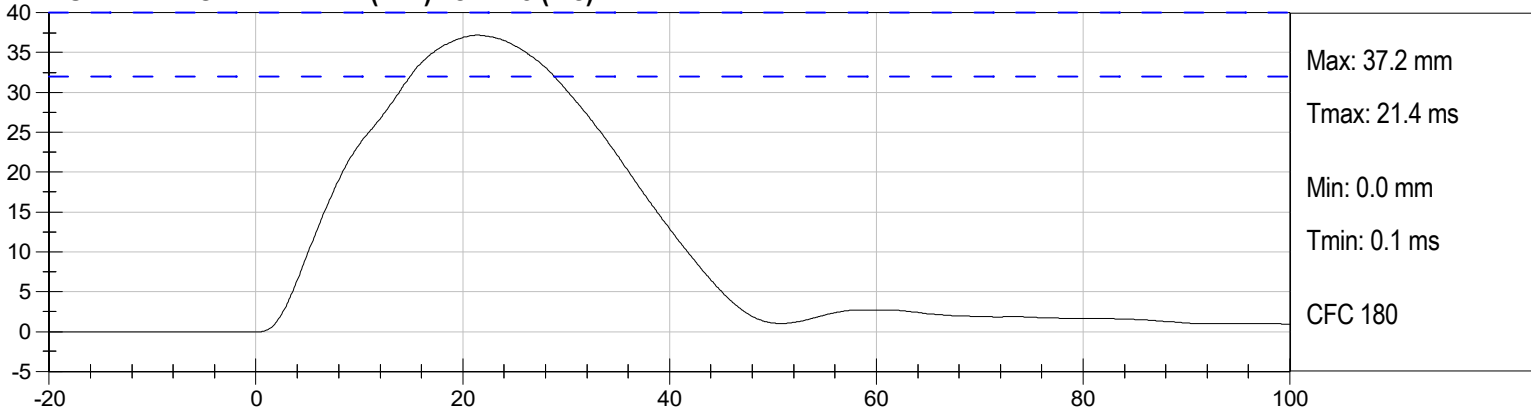


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Probe Acceleration	g	14 to 18	15	Pass
Upper Spine (T1) Y Acceleration	g	13 to 17	15	Pass
Lower Spine (T12) 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

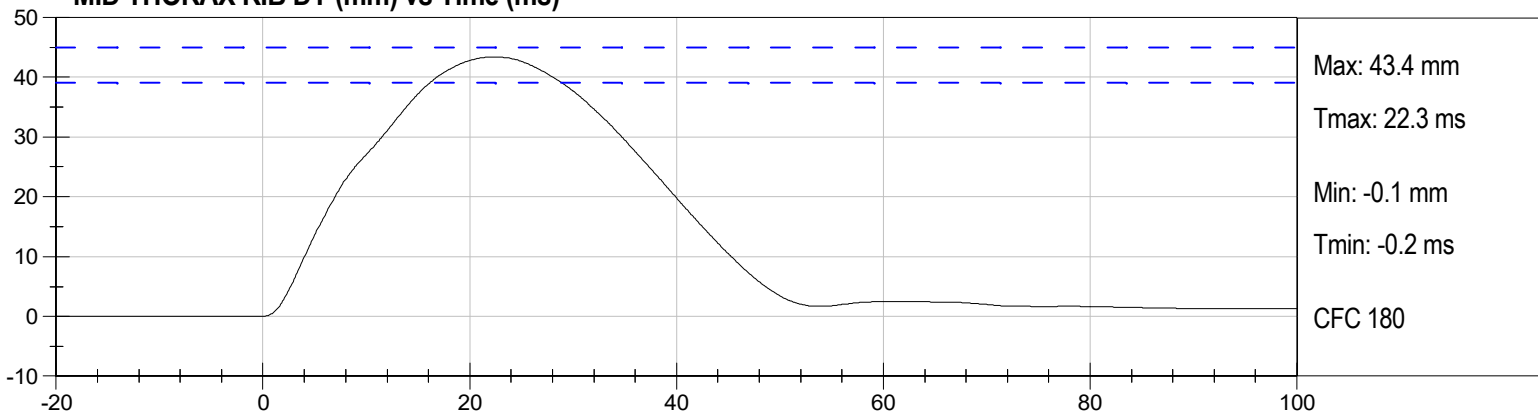
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
PROBE	Endevco	P79577	09/18/2024	3/20/2025
UPPER SPINE Y	Endevco	P82319	12/10/2024	6/11/2025
LOWER SPINE Y	Endevco	P96335	12/10/2024	6/11/2025
UPPER THORAX RIB DY	FTSS	G033	12/11/2024	6/12/2025
MID THORAX RIB DY	Servo	G2403	12/11/2024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



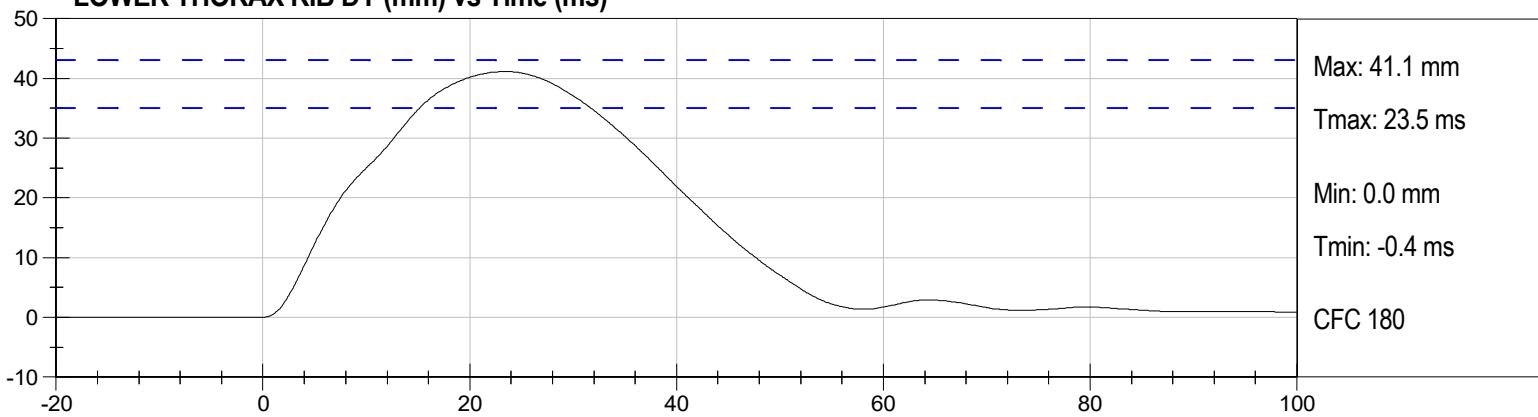
UPPER THORAX RIB DY (mm) vs Time (ms)



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



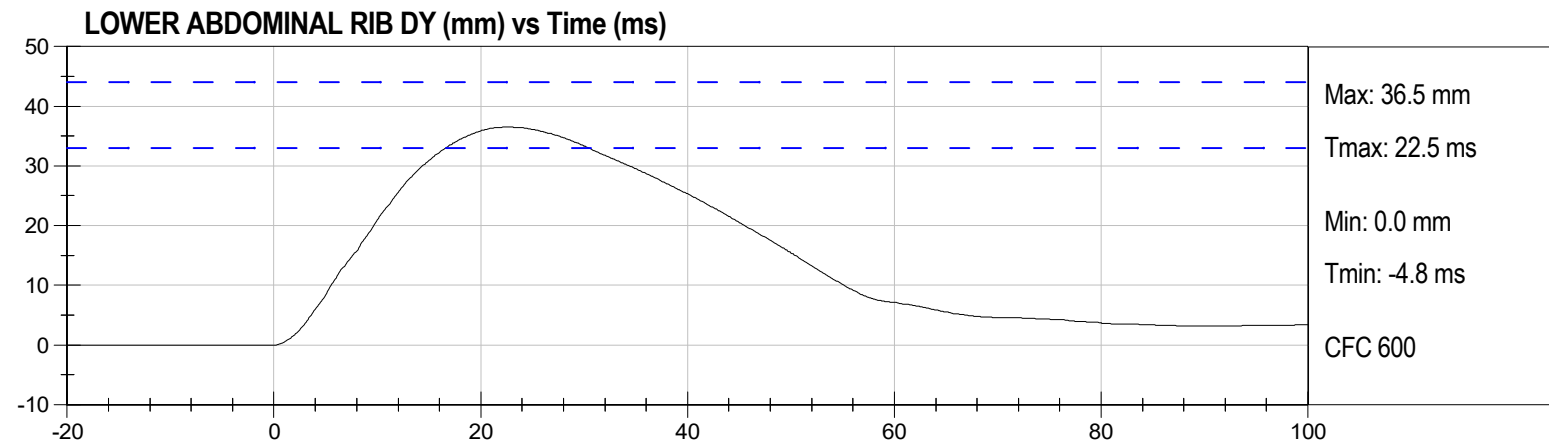
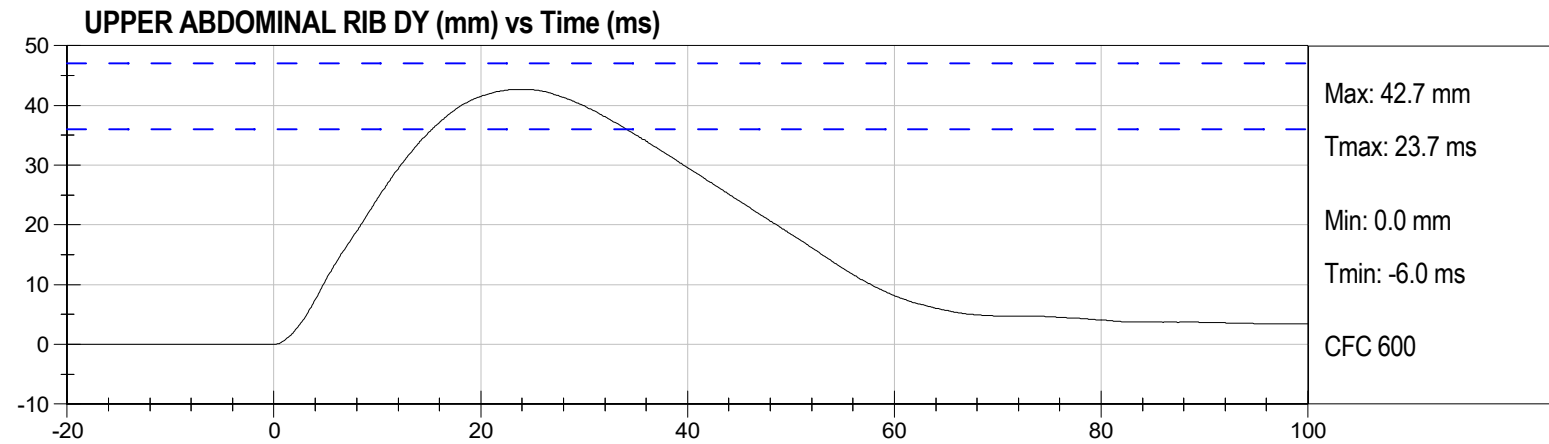
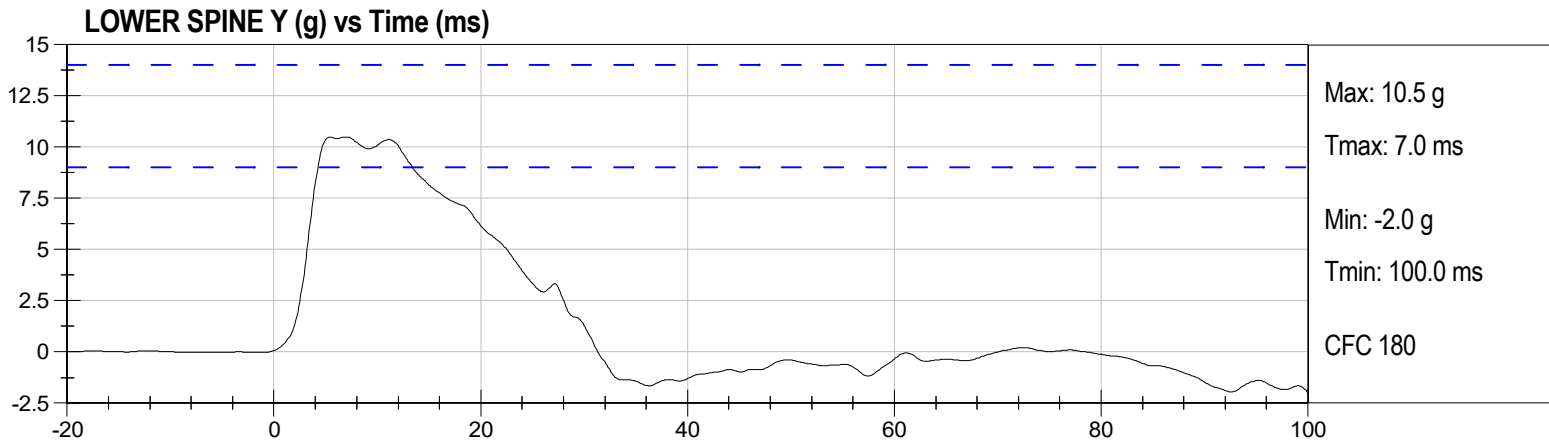
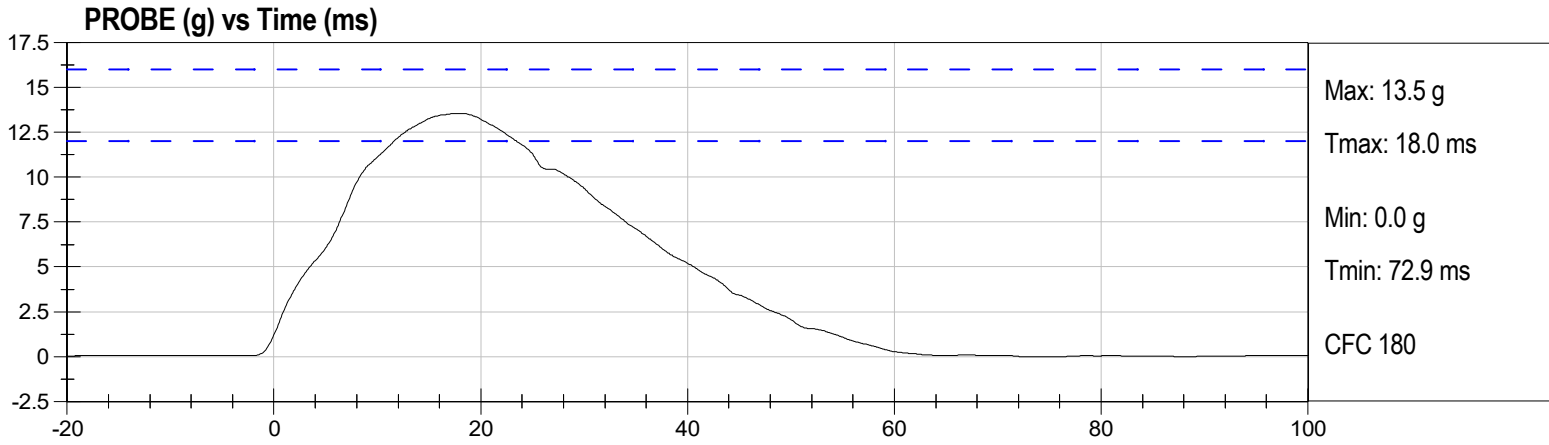
LOWER THORAX RIB DY (mm) vs Time (ms)





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



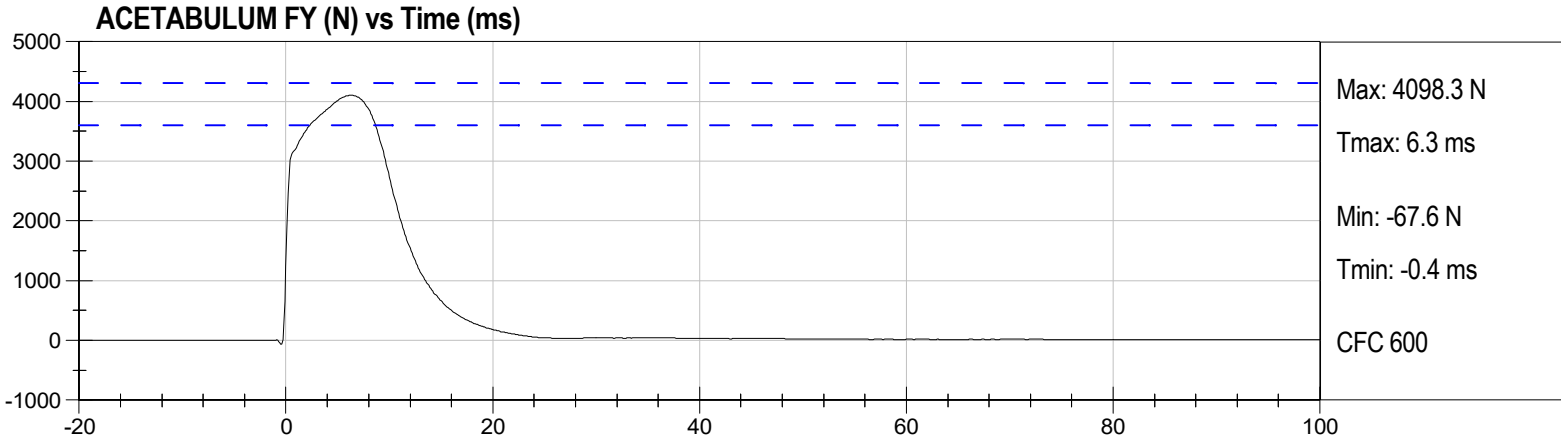
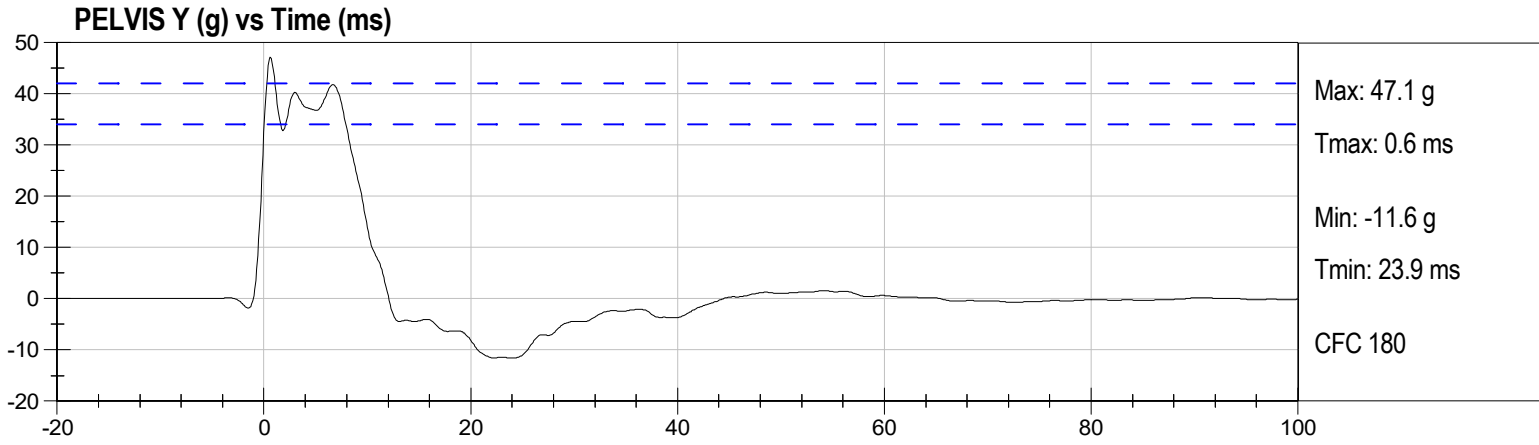
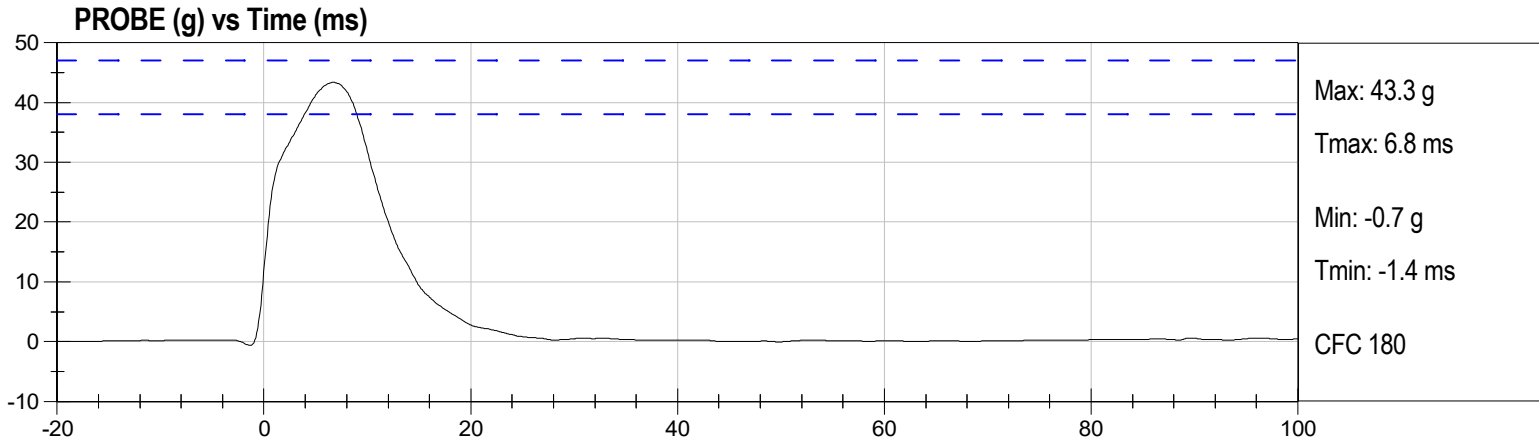


Acetabulum Impact Test
SID IIs
ATD Serial No: 306

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



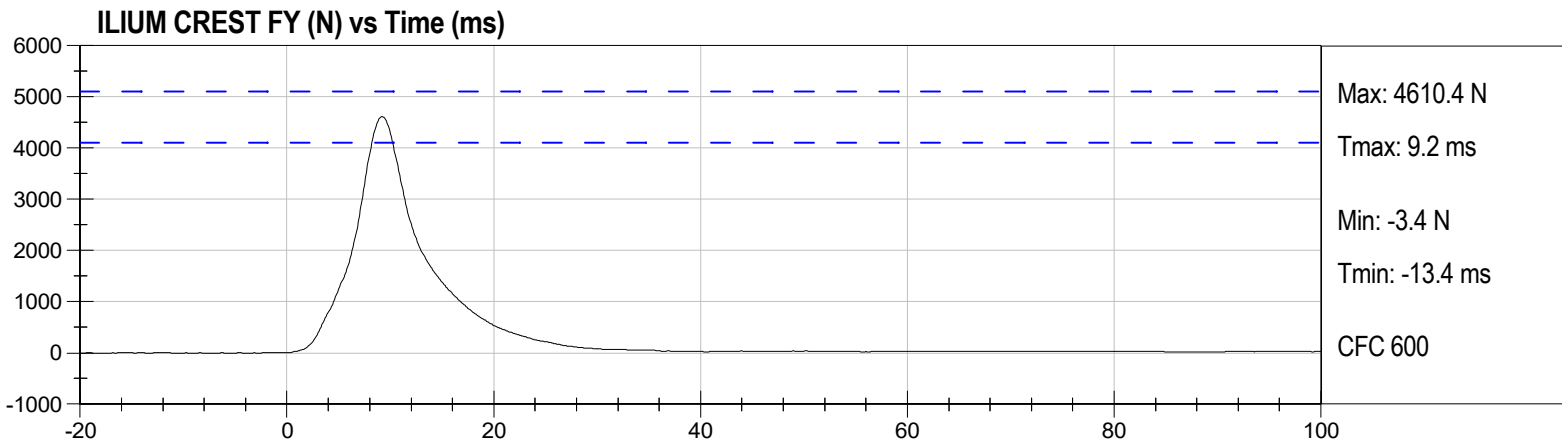
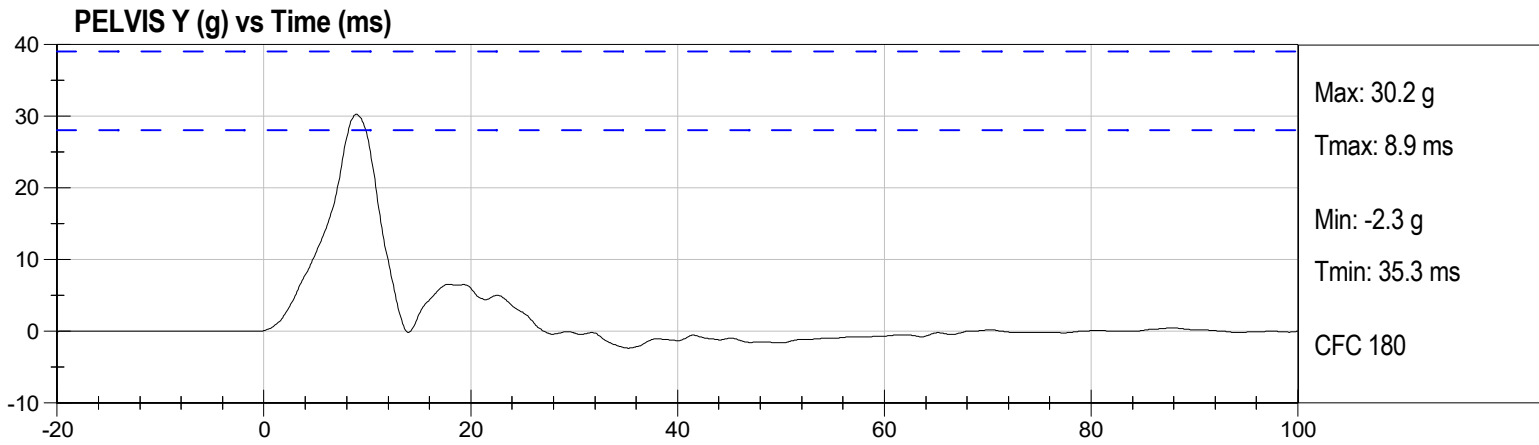
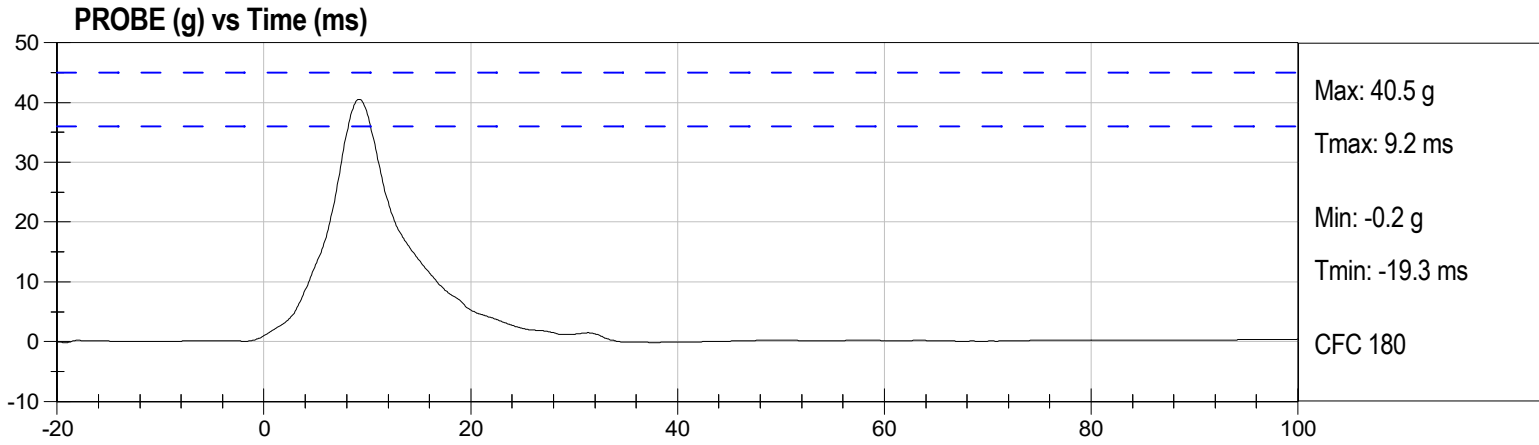


Iliac Impact Test
SID IIs
ATD Serial No: 306

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





SID-IIs Pelvis Plug Certification Test

Plug S/N 16336

Test Number 22903

Report Number 22960

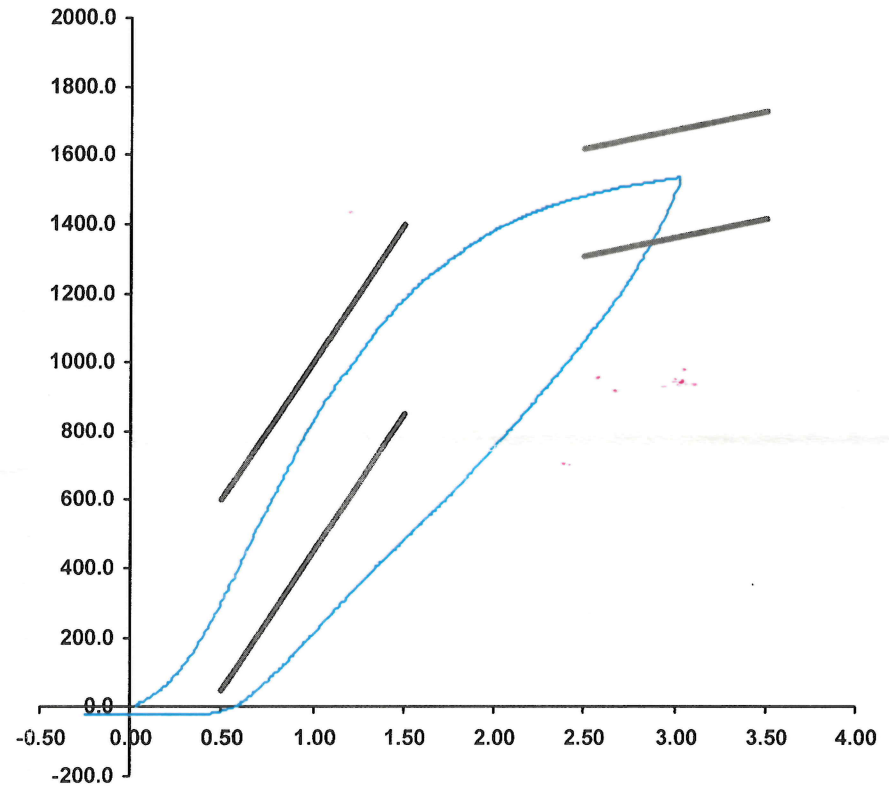
Test Date 5/20/2022 11:48:35 AM

	<u>Test Results</u>	<u>Spec Min</u>	<u>Spec Max</u>
Force @ 0.5 mm (N)	308	50	600
Force @ 1.5 mm (N)	1,183	850	1,400
Force @ 2.5 mm (N)	1,483	1,306	1,618
Force @ 3.0 mm (N)	1,534	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-May-22

SACO Research

By : DC Date : 5/20/2022



SID-IIs Pelvis Plug Certification Test

Plug S/N 16325

Test Number 22891

Report Number 22948

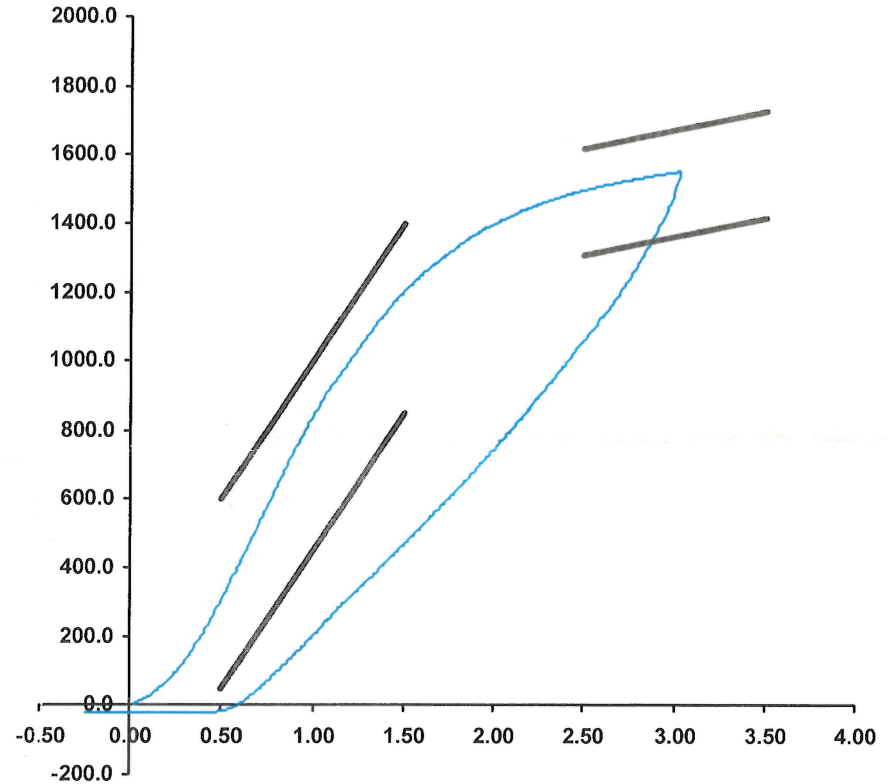
Test Date 5/20/2022 11:23:13 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	314	50	600
Force @ 1.5 mm (N)	1,202	850	1,400
Force @ 2.5 mm (N)	1,499	1,306	1,618
Force @ 3.0 mm (N)	1,552	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-May-22

SACO Research

By : DC Date : 5/20/2022

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)				16336	SACO	05/20/2022
Pelvis Plug (non-struck side)				16325	SACO	02/20/2022

Table 3 – Vehicle Instrumentation

			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	T44123	Endevco	10/25/2024
	Vehicle Center of Gravity	Y	T44180	Endevco	12/13/2024
	Vehicle Center of Gravity	Z	T39117	Endevco	11/05/2024
2	Right Sill at Front Seat	X	T40103	Endevco	12/13/2024
	Right Sill at Front Seat	Y	T43945	Endevco	02/07/2025
	Right Sill at Front Seat	Z	T44856	Endevco	01/08/2025
3	Right Sill at Rear Seat	X	T45280	Endevco	02/09/2025
	Right Sill at Rear Seat	Y	T45066	Endevco	02/09/2025
	Right Sill at Rear Seat	Z	T45144	Endevco	02/09/2025
4	Left Sill at Front Door	Y	T44439	Endevco	02/14/2025
5	Left Sill at Rear Door	Y	T44007	Endevco	02/14/2025
6	Left A-Post Lower	Y	T29904	Endevco	01/27/2025
7	Left A-Post Middle	Y	T43997	Endevco	02/14/2025
8	Left B-Post Lower	Y			
9	Left B-Post Middle	Y			
10	Front Seat Track	Y	T39922	Endevco	02/24/2025
11	Rear Seat Track or Structure	Y	T43504	Endevco	02/14/2025
12	Right Rear Occ. Compartment	Y	T45014	Endevco	02/14/2025
13	Engine Block	X	T44162	Endevco	10/31/2024
	Engine Block	Y	T41205	Endevco	10/07/2024
14	Rear Floorpan Above Axle	X	T39754	Endevco	01/23/2025
	Rear Floorpan Above Axle	Y	T39056	Endevco	01/23/2025
	Rear Floorpan Above Axle	Z	T40727	Endevco	01/23/2025

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