

**REPORT NUMBER: NCAP-MGA-23-027**

**NEW CAR ASSESSMENT PROGRAM (NCAP)  
Frontal Barrier Impact Test**

**HONDA DEVELOPMENT & MANUFACTURING OF AMERICA, LLC  
2023 Honda Pilot AWD LX 5-Door SUV  
NHTSA No.: O20235312**

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



**Test Date: July 12, 2023**

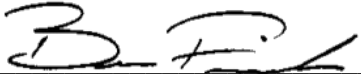
**Final Report Date: April 1, 2024**

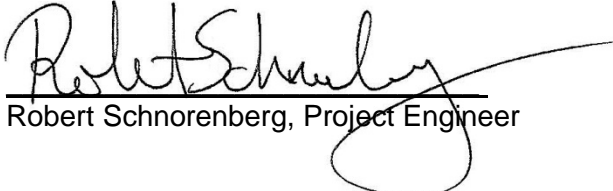
**FINAL REPORT**

**U.S. DEPARTMENT OF TRANSPORTATION  
National Highway Traffic Safety Administration  
Office of Crashworthiness Standards  
1200 New Jersey Ave, SE  
Washington, DC 20590**

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Approval Date: April 1, 2024

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: \_\_\_\_\_

\_\_\_\_\_  
COTR, New Car Assessment Program  
NHTSA, Office of Crashworthiness Standards

Date: \_\_\_\_\_

## TECHNICAL REPORT DOCUMENTATION PAGE

<b>1. Report No.</b> NCAP-MGA-23-027	<b>2. Government Accession No.</b>	<b>3. Recipient's Catalog No.</b>																																																							
<b>4. Title and Subtitle</b> Final Report of New Car Assessment Program Frontal Impact Testing of a 2023 Honda Pilot AWD LX 5-Door SUV, NHTSA No.: O20235312		<b>5. Report Date</b> April 1, 2024																																																							
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<b>12. Sponsoring Agency Name and Address</b> U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-110) 1200 New Jersey Ave, SE Washington, D.C. 20590		<b>13. Type of Report and Period Covered</b> Final Test Report July 12, 2023 to April 1, 2024																																																							
		<b>14. Sponsoring Agency Code</b> NRM-110																																																							
<b>15. Supplementary Notes</b>																																																									
<b>16. Abstract</b> A 56.3 km/h NCAP Frontal Rigid Barrier Impact Test was conducted on a 2023 Honda Pilot AWD LX 5-Door SUV in accordance with the specifications of the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on July 12, 2023.  The impact velocity of the vehicle was 56.34 km/h and the ambient temperature at the barrier face at the time of impact was 20.9°C. The target vehicle post-test maximum crush was 508 mm located to the right of the vehicle centerline. The test vehicle's performance was as follows:																																																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC<sub>15</sub>)</td> <td></td> <td>700</td> <td>381.959</td> <td>700</td> <td>440.293</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>25.220</td> <td>52</td> <td>12.079</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.289</td> <td>1</td> <td>0.336</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1555.673</td> <td>2620</td> <td>1033.249</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>449.102</td> <td>2520</td> <td>436.351</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>792.590</td> <td>6805</td> <td>1759.588</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>1036.374</td> <td>6805</td> <td>1725.938</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC <sub>15</sub> )		700	381.959	700	440.293	Maximum Chest Compression	mm	63	25.220	52	12.079	Nij		1	0.289	1	0.336	Neck Tension	N	4170	1555.673	2620	1033.249	Neck Compression	N	4000	449.102	2520	436.351	Left Femur Force	N	10008	792.590	6805	1759.588	Right Femur Force	N	10008	1036.374	6805	1725.938
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## **SECTION 1 PURPOSE AND SUMMARY OF TEST**

### **PURPOSE**

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number 693JJ919D000006. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact was conducted in accordance with the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing.

### **SUMMARY**

A load cell barrier consisting of 176 load cells was impacted by a 2023 Honda Pilot AWD LX 5-Door SUV at a velocity of 56.34 km/h. The test was performed at MGA Research Corporation on July 12, 2023. Pre-test and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two (2) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

One Part 572E 50<sup>th</sup> percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5<sup>th</sup> percentile female test device (ATD) was placed in the right-front passenger seating position according to dummy placement instructions specified in the Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were installed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading.

The driver (position 1) ATD (Serial No. 351) and the right-front passenger (position 2) ATD (Serial No. 142) were qualified previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 634 channels of data were recorded on a data acquisition system. Appendix B contains the dummy response data traces.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard Solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 508 mm located to the right of the vehicle centerline and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver's head contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the knee airbag.

The passenger's visible contact points were as follows: The passenger's head contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the knee airbag.

The occupant data is summarized below:

<b>ATD position</b>	<b>HIC<sub>15</sub></b>	<b>Nij</b>	<b>Neck Tension (N)</b>	<b>Neck Comp. (N)</b>	<b>3ms Chest Clip (g)</b>	<b>Chest Disp. (mm)</b>	<b>Left Femur (N)</b>	<b>Right Femur (N)</b>
Driver (50 <sup>th</sup> )	381.959	0.289	1555.673	449.102	45.408	25.220	792.590	1036.374
Passenger (5 <sup>th</sup> )	440.293	0.336	1033.249	436.351	46.077	12.079	1759.588	1725.938

The test data can be found on the NHTSA website at [www.nhtsa.gov](http://www.nhtsa.gov)

#### **TEST NOTES**

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: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA No.	O20235312	Traction Control System (TCS)	Yes
Model Year	2023	Power Steering	Yes
Make	Honda	Power Window Auto-Reverse	Yes
Model	Pilot AWD LX	Driver Frontal Airbag	Yes
Body Style	5-Door SUV	Driver Curtain Airbag	Yes
VIN	5FNYG1H25PB026647	Driver Head/Torso Airbag	No
Body Color	Crystal Black Pearl	Driver Torso Airbag	No
Odometer (km/mi)	154 km / 96 mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	3.5 L	Driver Pelvis Airbag	No
Type/No. Cylinders	V6	Driver Knee Airbag	Yes
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	10	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	AWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

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

**DATA FROM CERTIFICATION LABEL**

Manufactured By	HONDA DEVELOPMENT & MANUFACTURING OF AMERICA, LLC	GVWR (kg)	2810
		GAWR Front (kg)	1360
Date of Manufacture	04/23	GAWR Rear (kg)	1515

**VEHICLE SEATING AND WEIGHT CAPACITY DATA**

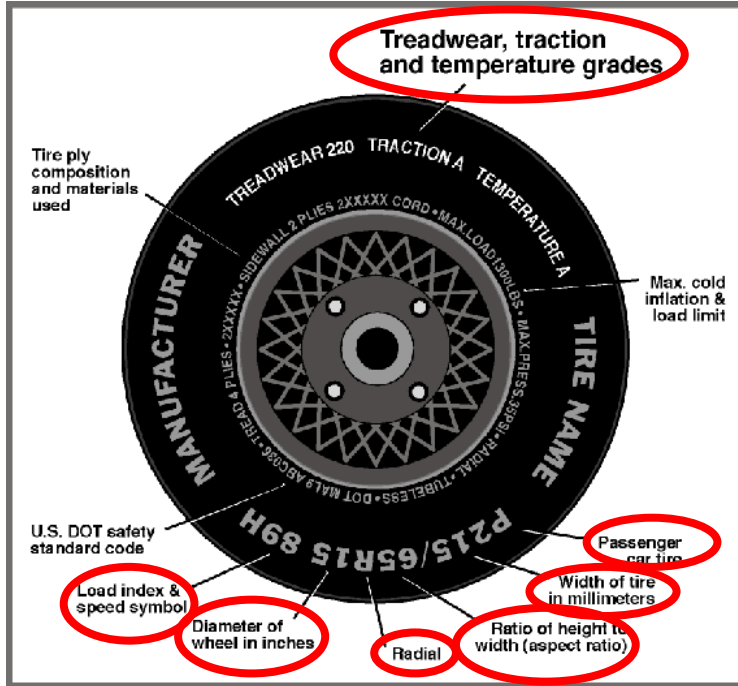
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	Contoured	
Designated Seating Capacity (DSC)	2	3	3	8
Capacity Weight (VCW) (kg)				608
Cargo Weight (RCLW) (kg)				64

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

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**VEHICLE TIRE INFORMATION**



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	255/60R18	255/60R18
Tire Size on Vehicle	255/60R18	255/60R18
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Eagle Touring	Eagle Touring
Treadwear	500	500
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	108H	108H
Tire Material	Rubber	Rubber
DOT Safety Code Left	1M6W4 JN1R 1223	1M6W4 JN1R 1223
DOT Safety Code Right	1M6W4 JN1R 1223	1M6W4 JN1R 1223

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

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	598.0	428.5		634.0	497.5	
Right	kg	549.5	441.5		574.0	509.5	
Ratio	%	56.9%	43.1%		54.5%	45.5%	
Totals	kg	1147.5	870.0	2017.5	1208.0	1007.0	2215.0

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2017.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	64
Calculated Test Vehicle Target Weight (TVTW)	kg	2222.5

**TEST VEHICLE ATTITUDES AND CG**

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	838	843	861	862	1249
As Tested	mm	830	830	842	848	1317
Post Test	mm	890	925	853	846	

**GENERAL TEST VEHICLE DATA**

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2896
Total Vehicle Length at Left Side	mm	4894
Total Vehicle Length at Centerline	mm	5062
Total Vehicle Length at Right Side	mm	4894
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	12
Amount of Stoddard Solvent in Fuel Tank	L	65.1

List of components removed to meet test weight: None.

List of components removed for instrumentation, data box, and equipment installation: Cargo Area Carpet, Cargo Area Divider/Organizer, Jack/Tool Kit, Right Rear Taillight, Front Underbody Plastic.

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

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**TARGET VEHICLE STRUCTURAL MEASUREMENT**

	<b>Elements</b>	<b>Pre-Test (mm)</b>
1	Total Length	5062
2	Total Width	2022
3	Bumper Top Height	565
4	Bumper Bottom Height	450
5	Longitudinal Member Top Height	610
6	Distance between Longitudinal Members	970
7	Longitudinal Member Width	98
8	Engine Top Height	955
9	Engine Bottom Height	262
10	Engine and Gearbox Width	801
11	Front Bumper-Engine Distance	558
12	Front Shock Absorber Fixing Height	1013
13	Bonnet Leading Edge Height	1000
14	Front Shock Absorber Fixing Width	1220
15	Front Bumper – Front Axle Distance	990
16	Front Axle – A-Pillar Distance	556
17	A-Pillar – B-Pillar Distance	1063
18	B-Pillar – Rear Axle Distance	1280
19	B-Pillar – C-Pillar Distance	713
20	Roof Sill Bottom Height	1570
21	Roof Sill Top Height	1695
22	Floor Sill Bottom Height	270
23	Floor Sill Top Height	450

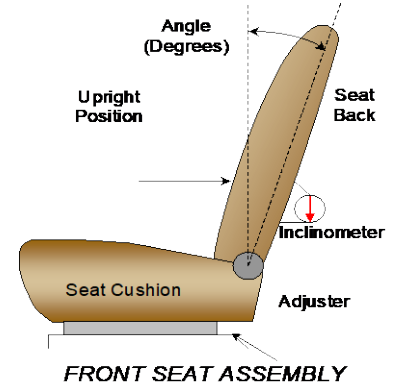
**DATA SHEET NO. 2  
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**NOMINAL DESIGN RIDING POSITION**

The driver seat back is positioned as close as possible to the manufacturer's design angle. For the passenger seat back, seat back is adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated May 2018.



	Degrees
Driver Seat Back Angle	3.4° on outboard headrest post
Passenger Seat Back Angle	-1.7° on outboard headrest post

**SEAT FORE/AFT POSITIONS**

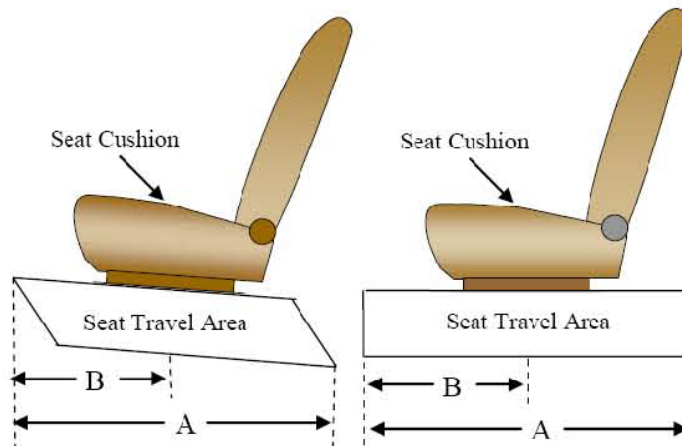
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated May 2018.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	288 mm / 25 detents (1 <sup>st</sup> as 1)	149 mm / 10 <sup>th</sup> detent (1 <sup>st</sup> as 0)
Passenger Seat	210 mm / 22 detents (1 <sup>st</sup> as 1)	0 mm / 0 <sup>th</sup> detent (1 <sup>st</sup> as 0)

**SEAT BELT UPPER ANCHORAGES**

The seat belt upper anchorages are set following the manufacturer's specified position as listed in Form 1.

	Total # of Positions	Placed in Position #
Driver Seat	4 (1 <sup>st</sup> as 1)	0 (1 <sup>st</sup> as 0)
Passenger Seat	4 (1 <sup>st</sup> as 1)	0 (1 <sup>st</sup> as 0)



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

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

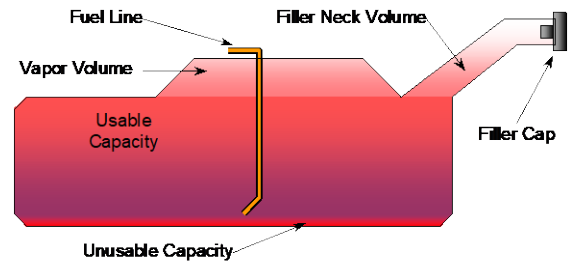
NHTSA No.: O20235312  
 Test Date: 7/12/2023

**FUEL TANK CAPACITY DATA**

	<b>Liters</b>
Usable Capacity of "Standard Tank"	70.0
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	64.4 to 65.8
Actual Amount of Solvent used	65.1
1/3 of Usable Capacity	23.3

**FUEL PUMP**

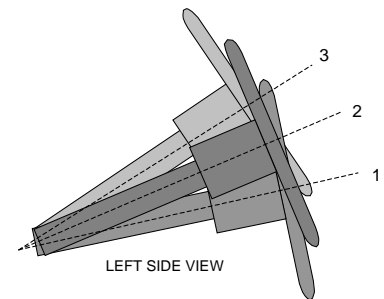
The vehicle is equipped with an electronic fuel pump. With IG2 ignition position, the fuel pump will only run for less than 5 seconds. With the vehicle running, the fuel pump will continue to run. The filler neck is located on the driver's side.



VEHICLE FUEL TANK ASSEMBLY

**STEERING COLUMN ADJUSTMENT**

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

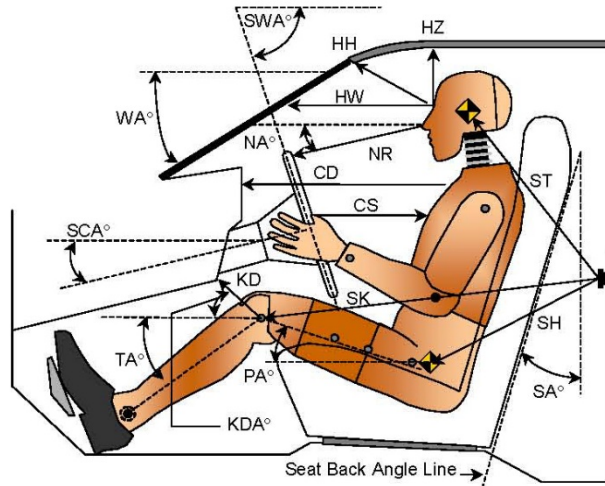
**STEERING COLUMN POSITION**

	<b>Degrees</b>	<b>Fore/Aft Position (mm)</b>
Lowermost Position 1	67.6	
Geometric Center Position 2	64.9	
Uppermost Position 3	62.1	
Telescoping Steering Wheel Travel		61
Test Position	64.9	31

**DATA SHEET NO. 3  
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023



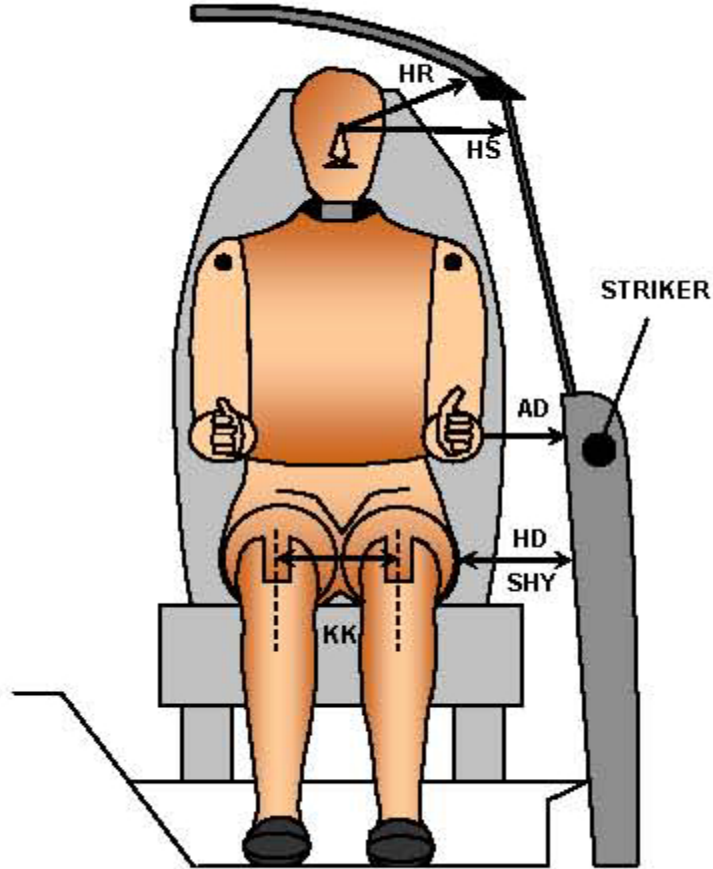
**LEFT SIDE VIEW**

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		29.4		
SWA°	Steering Wheel Angle		64.9		
SCA°	Steering Column Angle		25.1		
SA°	Seat Back Angle		3.4		-1.7
HZ	Head to Roof (Z)	240	90	276	90
HH	Head to Header	477	24.2	407	36.2
HW	Head to Windshield	742	0	759	0
NR	Nose to Rim	395	10.3		
CD	Chest to Dash	547		413	
CS	Chest to Steering Hub	306	3.2		
RA	Rim to Abdomen	184	0		
KDL	Left Knee to Dash	197	49.5	144	19.4
KDR	Right Knee to Dash	173	50.1	149	17.8
PA°	Pelvic Angle		23.9		22.1
TA°	Tibia Angle		48.1		53.0
SK	Striker to Knee	596	99.1	661	97.4
ST	Striker to Head	470	11.4	454	29.7
SH	Striker to H-Point	288	135.4	350	116.4

**DATA SHEET NO. 4  
DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
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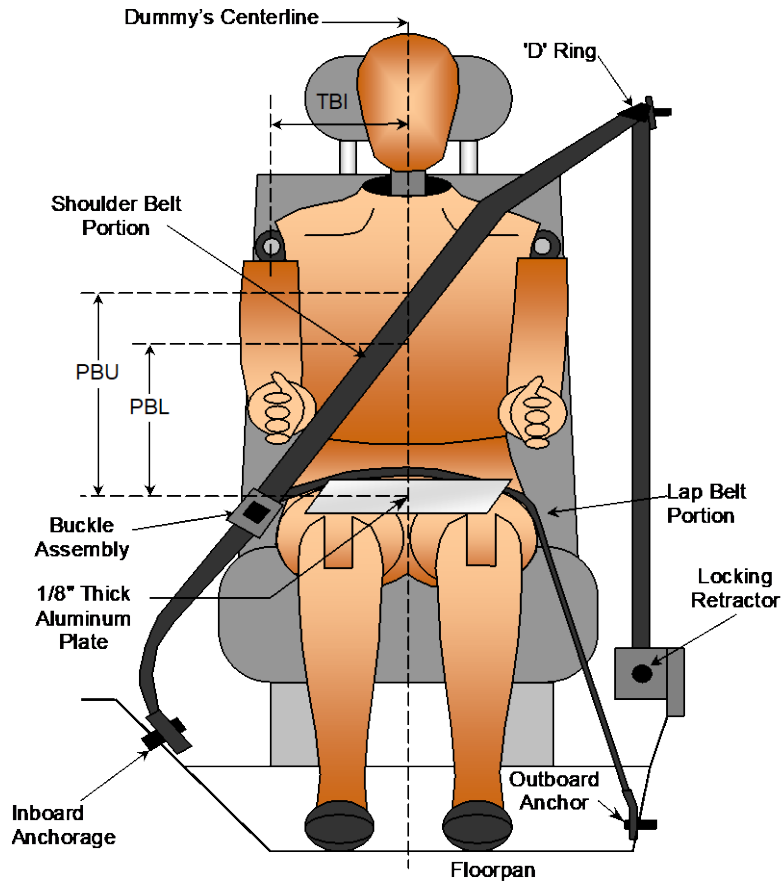
**FRONT VIEW OF DUMMY**

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	109	81
HD	H-Point to Door	139	183
HR	Head to Side Header	261	300
HS	Head to Side Window	473	391
KK	Knee to Knee	330	227
SHY	Striker to H-Point (Y Direction)	293	330
AA	Ankle to Ankle	296	162

**DATA SHEET NO. 5  
SEAT BELT POSITIONING DATA**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023



**FRONT VIEW OF DUMMY**

**SEAT BELT POSITIONING MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	360	315
PBL - Top surface of reference to belt lower edge	mm	275	225

**BELT LENGTH DATA**

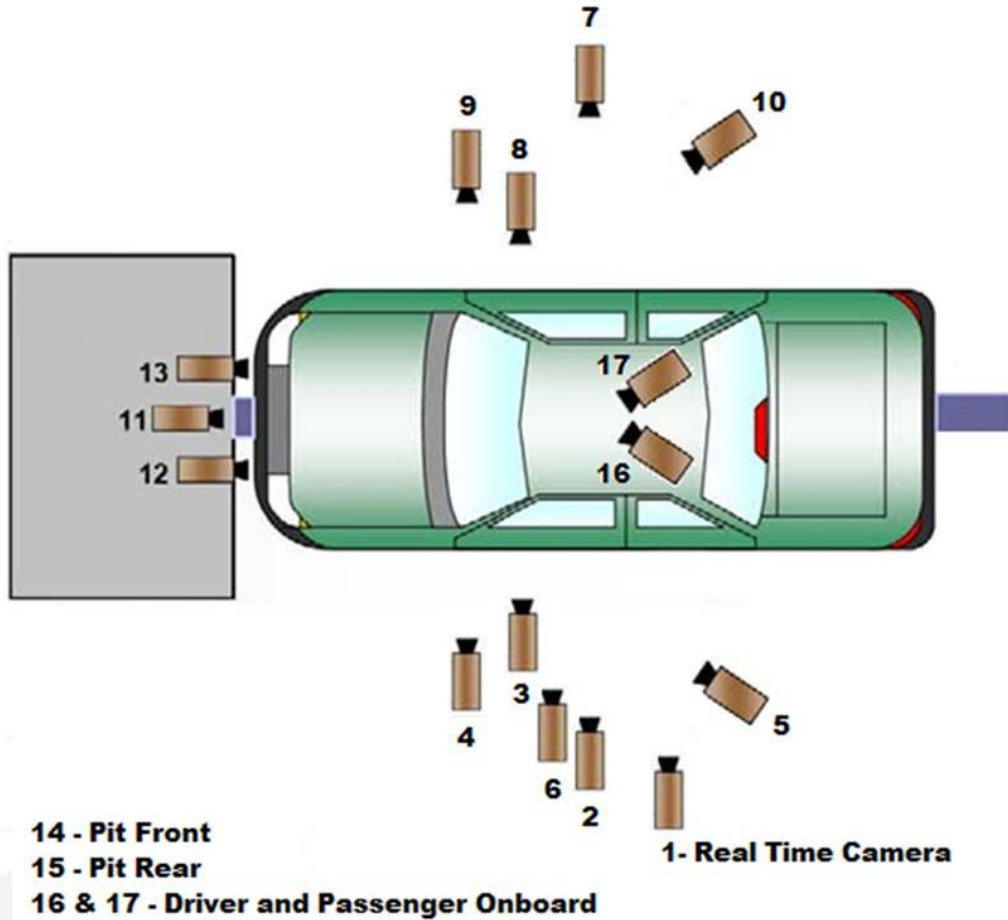
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	885	875
Lap Belt Length as measured on ATD	mm	810	850
Remainder of belt on reel	mm	460	425
Total Belt Length for Continuous Webbing Systems	mm	2765	2745

**DATA SHEET NO. 6  
HIGH-SPEED CAMERA LOCATIONS AND DATA**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
Test Date: 7/12/2023

**CAMERA POSITIONS FOR FRONTAL IMPACTS**



*\*\*Camera locations are approximate and not to scale*

**DATA SHEET NO. 6 (CONTINUED)**  
**HIGH-SPEED CAMERA LOCATIONS AND DATA**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**CAMERA LOCATIONS**

No.	Camera View	Coordinates* (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall					30
2	Left Overall	-2570	-6000	-1450	12	1000
3	Driver Close-Up	-1850	-7050	-1920	50	1000
4	Left Front Half	-1490	-5700	-1410	24	1000
5	Left Angle	-7310	-5750	-2030	75	1000
6	Steering Column	-970	-5640	-1240	50	1000
7	Right Overall	-2310	6100	-1500	12	1000
8	Passenger Close-Up	-1720	6920	-1970	50	1000
9	Right Front Half	-1200	5650	-1460	24	1000
10	Right Angle	-7470	5490	-2030	75	1000
11	Windshield	180	0	-2310	12	1000
12	Driver Windshield	200	-370	-2230	25	1000
13	Passenger Windshield	200	370	-2230	25	1000
14	Pit Front	-1090	0	3340	24	1000
15	Pit Rear	-3380	0	3340	24	1000
16	Driver Onboard				12	1000
17	Passenger Onboard				12	1000
18	Real-Time Pan View					30

\*COORDINATES:

+X = forward of impact plane

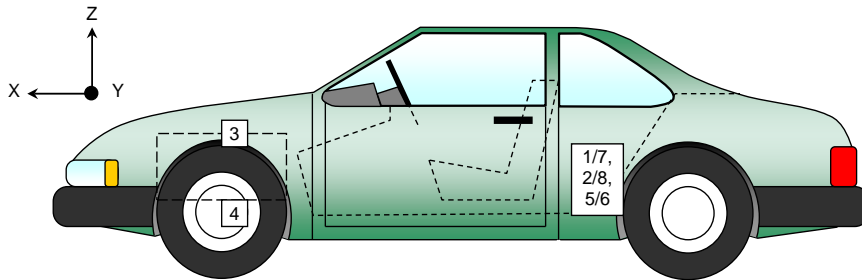
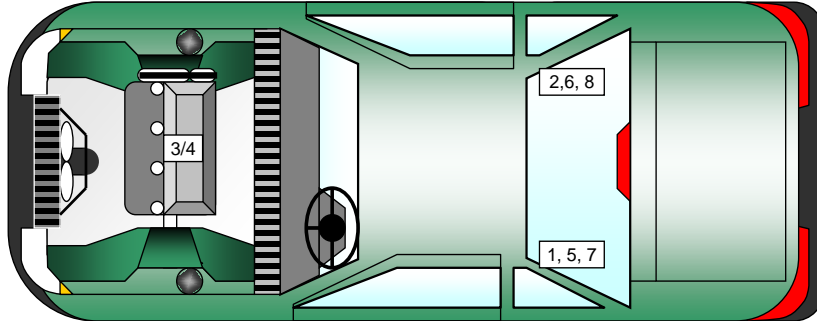
+Y = right of monorail centerline

+Z = below ground level

**DATA SHEET NO. 7**  
**VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
Test Date: 7/12/2023



**VEHICLE ACCELEROMETER PRE-TEST LOCATIONS**

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	2161	-375	-427
2	Right Rear Crossmember Accelerometer – X Direction	2161	-375	-425
3	Engine Top X	4245	-5	-919
4	Engine Bottom X	4206	0	-286
5	Left Rear Crossmember Accelerometer – Z Direction	2161	-375	-427
6	Right Rear Crossmember Accelerometer – Z Direction	2161	-375	-425
7	Left Rear Crossmember Accelerometer Redundant – X Direction	2161	-410	-427
8	Right Rear Crossmember Accelerometer Redundant – X Direction	2161	410	-425

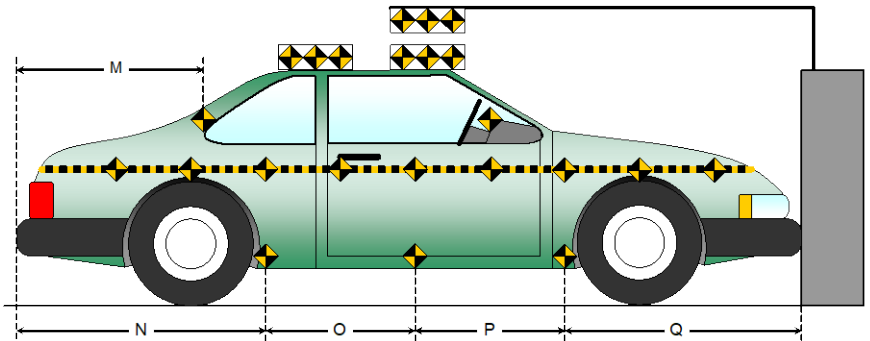
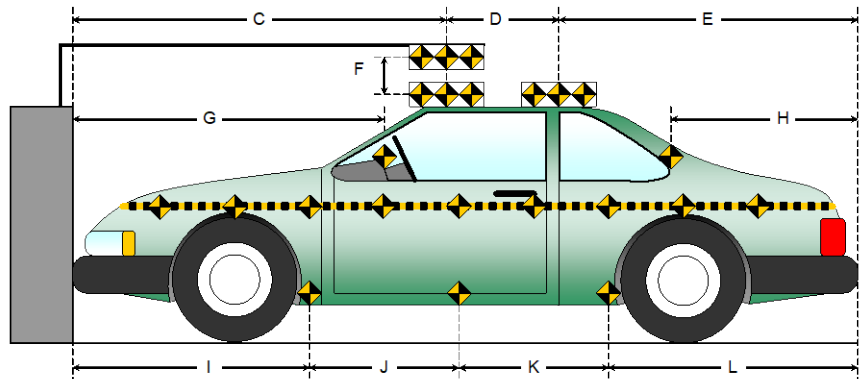
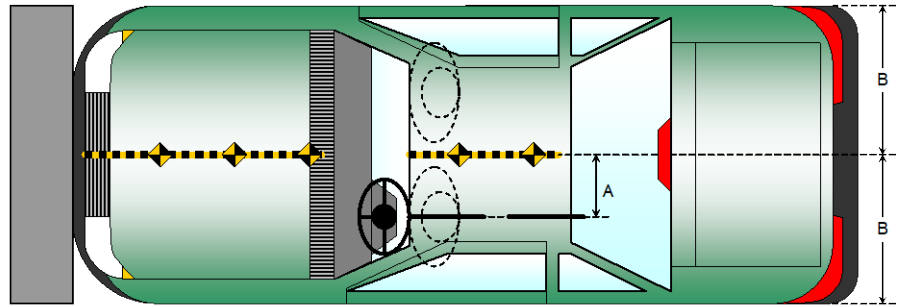
Reference Points: X - Rear Surface of Vehicle (+ forward)  
Y - Vehicle Centerline (+ to right)  
Z - Ground Plane (+ down)

**DATA SHEET NO. 8**  
**PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

Item	Value (mm)
A	425
B	1011
C	2415
D	610
E	2037
F	50
G	
H	1307
I	2117
J	890
K	890
L	1165
M	1307
N	1165
O	890
P	890
Q	2117



**DATA SHEET NO. 9  
LOAD CELL LOCATIONS ON FIXED BARRIER**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**ADVANCED RESEARCH LOAD CELL BARRIER**

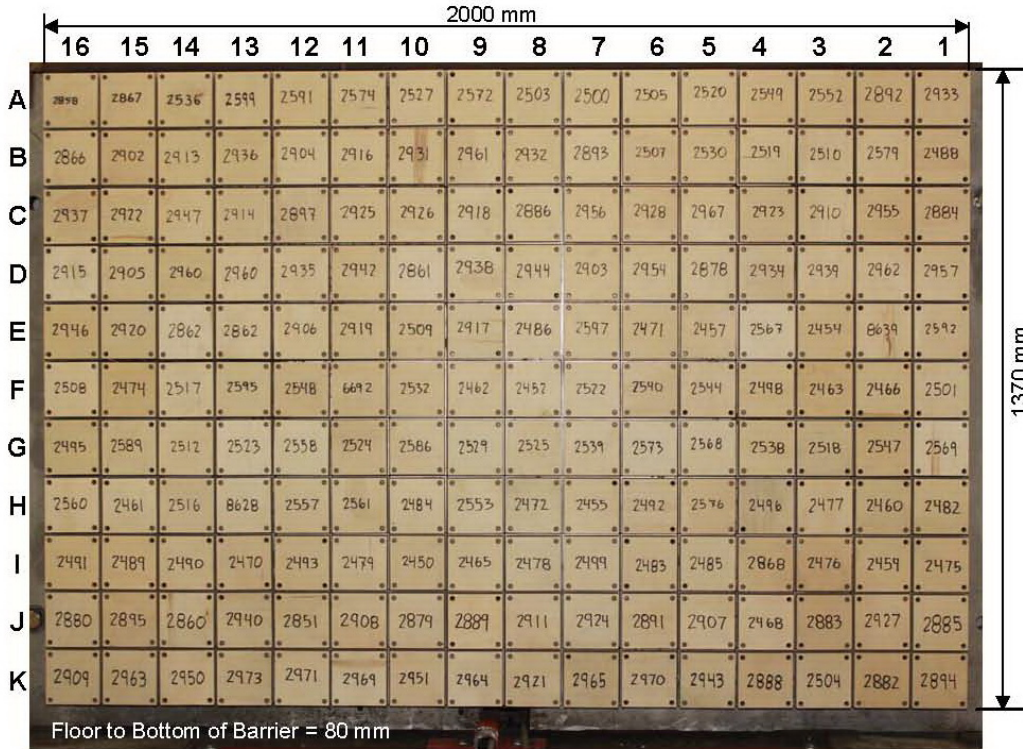


Photo for Reference Only

Centerline

A-16	A-15	A-14	A-13	A-12	A-11	A-10	A-09	A-08	A-07	A-06	A-05	A-04	A-03	A-02	A-01
B-16	B-15	B-14	B-13	B-12	B-11	B-10	B-09	B-08	B-07	B-06	B-05	B-04	B-03	B-02	B-01
C-16	C-15	C-14	C-13	C-12	C-11	C-10	C-09	C-08	C-07	C-06	C-05	C-04	C-03	C-02	C-01
D-16	D-15	D-14	D-13	D-12	D-11	D-10	D-09	D-08	D-07	D-06	D-05	D-04	D-03	D-02	D-01
E-16	E-15	E-14	E-13	E-12	E-11	E-10	E-09	E-08	E-07	E-06	E-05	E-04	E-03	E-02	E-01
F-16	F-15	F-14	F-13	F-12	F-11	F-10	F-09	F-08	F-07	F-06	F-05	F-04	F-03	F-02	F-01
G-16	G-15	G-14	G-13	G-12	G-11	G-10	G-09	G-08	G-07	G-06	G-05	G-04	G-03	G-02	G-01
H-16	H-15	H-14	H-13	H-12	H-11	H-10	H-09	H-08	H-07	H-06	H-05	H-04	H-03	H-02	H-01
I-16	I-15	I-14	I-13	I-12	I-11	I-10	I-09	I-08	I-07	I-06	I-05	I-04	I-03	I-02	I-01
J-16	J-15	J-14	J-13	J-12	J-11	J-10	J-09	J-08	J-07	J-06	J-05	J-04	J-03	J-02	J-01
K-16	K-15	K-14	K-13	K-12	K-11	K-10	K-09	K-08	K-07	K-06	K-05	K-04	K-03	K-02	K-01

Load Cells are 121 mm x 121 mm with a 7 mm gap in between each load cell.

**DATA SHEET NO. 10**  
**TEST VEHICLE SUMMARY OF RESULTS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**INSTRUMENTATION**

Instrumentation	Number of Channels Collected
Driver Dummy Data Channels	49
Passenger Dummy Data Channels	49
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	634

**CAMERA COVERAGE**

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	2
High-Speed Offboard	15
Real-Time	2
Total	19

**DATA SHEET NO. 11  
POST-TEST OBSERVATIONS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**TEST DUMMY INFORMATION AND CONTACT LOCATIONS**

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50% / 351	HIII 5% / 142
Head Contact	Frontal Airbag, Headrest	Frontal Airbag, Headrest
Upper Torso Contact	Frontal Airbag	Frontal Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

**DOOR OPENING, TRUNK OPENING, AND SEAT TRACK INFORMATION**

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were unlocked	Doors were unlocked
Front Door Opening	Remained closed and unlocked; opened without tools	Remained closed and unlocked; opened without tools
Rear Door Opening	Remained closed and unlocked; opened without tools	Remained closed and unlocked; opened without tools
Trunk/Hatch/Tailgate Opening	Remained closed; opened without tools	
Seat Track Shift (mm)	0	0
Seat Back Movement	None	None

**OTHER VEHICLE POST-TEST OBSERVATIONS**

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	None
Window Damage	None
Other Notable Effects	None

**VEHICLE REBOUND FROM BARRIER**

Measured Parameter	Units	Value
Left Side	mm	900
Center	mm	905
Right Side	mm	953
Average	mm	919

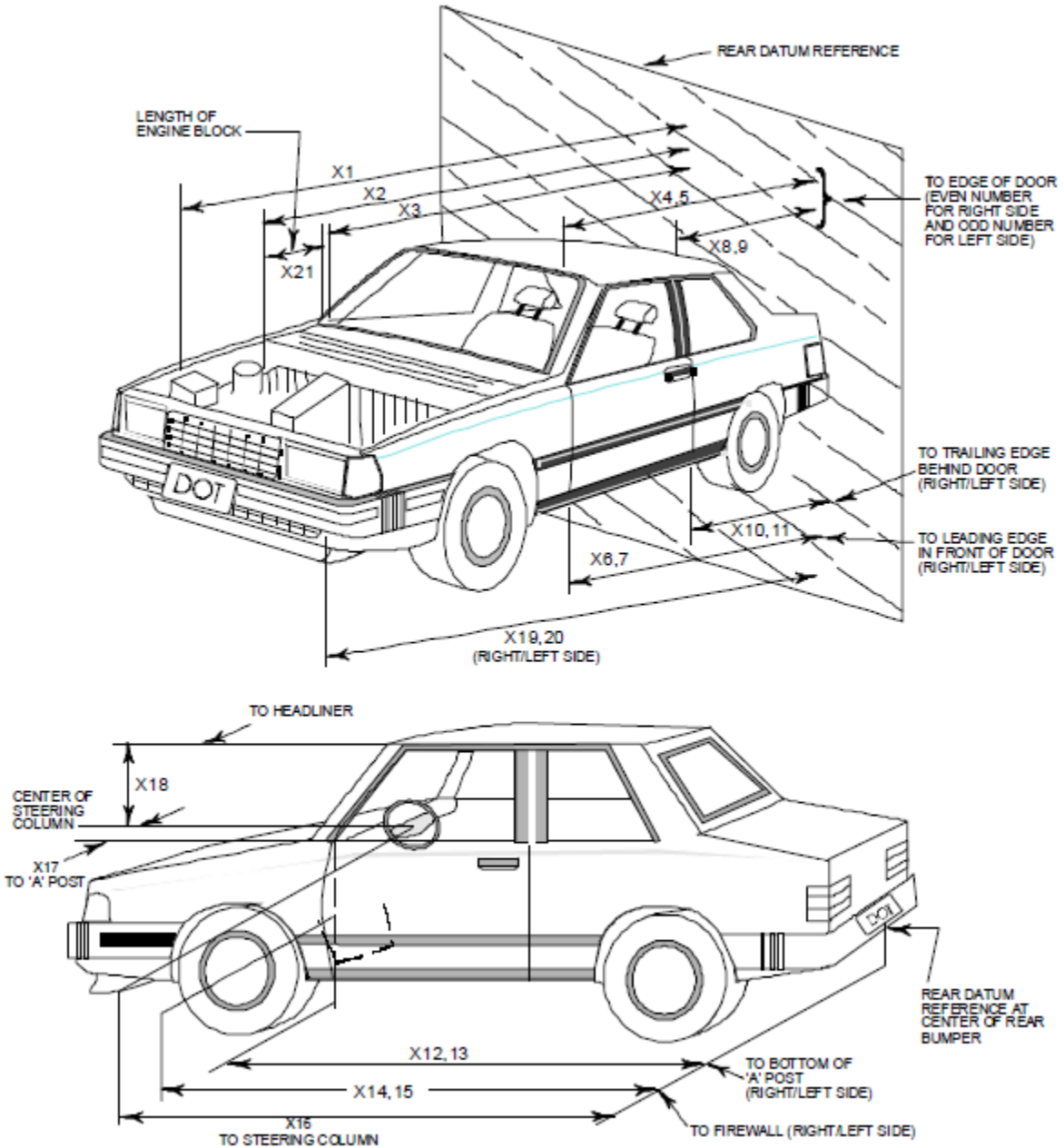
**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

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

## DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023



**DATA SHEET NO. 12 (CONTINUED)  
VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
Test Date: 7/12/2023

No.	Measurement Description	Pre-Test	Post-Test	Change
1	Total Length of Vehicle at Centerline	5062	4586	-476
2	RSOV to Front of Engine	4541	4238	-303
3	RSOV to Firewall	3991	3986	-5
4	RSOV to Upper Leading Edge of Right Door	3482	3482	0
5	RSOV to Upper Leading Edge of Left Door	3482	3482	0
6	RSOV to Lower Leading Edge of Right Door	3451	3451	0
7	RSOV to Lower Leading Edge of Left Door	3451	3451	0
8	RSOV to Upper Trailing Edge of Right Door	2416	2416	0
9	RSOV to Upper Trailing Edge of Left Door	2416	2416	0
10	RSOV to Lower Trailing Edge of Right Door	2427	2427	0
11	RSOV to Lower Trailing Edge of Left Door	2427	2427	0
12	RSOV to Bottom of "A" Post of Right Side	3423	3421	-2
13	RSOV to Bottom of "A" Post of Left Side	3422	3420	-2
14	RSOV to Firewall, Right Side	3863	3860	-3
15	RSOV to Firewall, Left Side	3863	3859	-4
16	RSOV to Steering Column	3030	3082	52
17	Center of Steering Column to "A" Post	388	368	-20
18	Center of Steering Column to Headliner	442	414	-28
19	RSOV to Right Side of Front Bumper	4894	4575	-319
20	RSOV to Left Side of Front Bumper	4894	4588	-306
21	Length of Engine Block	416	416	0
RD	RSOV to Right Side of Dash Panel	3281	3278	-3
CD	RSOV to Center of Dash Panel	2426	2425	-1
LD	RSOV to Left Side of Dash Panel	3276	3274	-2

All dimensions in mm

**DATA SHEET NO. 13**  
**ACCIDENT INVESTIGATION DIVISION DATA**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
Test Program: NCAP Frontal Barrier Impact Test

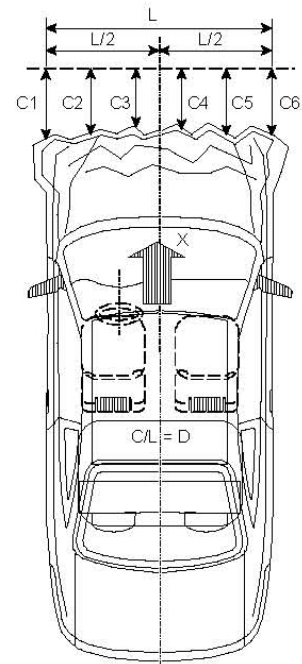
NHTSA No.: O20235312  
Test Date: 7/12/2023

**VEHICLE INFORMATION**

VIN:	<u>5FNYG1H25PB026647</u>	Wheelbase (mm):	<u>2896</u>
Vehicle Size Category:	<u>MPV</u>	Test Weight (kg):	<u>2215.0</u>

**ACCELEROMETER DATA**

Accelerometer Locations:	<u>As per Data Sheet No. 7</u>
Cal. Procedure/Interval:	<u>MGA Procedure / 6 month</u>
Integration Algorithm:	<u>Trapezoidal</u>
Linearity:	<u>&gt; 99%</u>
Impact Velocity (km/h):	<u>56.34</u>
Velocity Change (km/h):	<u>64.8</u>
Time of Separation (msec)	<u>98</u>



**CRUSH PROFILE**

Collision Deformation Classification:	<u>12FDEW3</u>
Midpoint of Damage:	<u>Centerline</u>
Damage Region Length (mm):	<u>1632</u>
Impact Mode:	<u>Frontal</u>

No.	Measurement Description	Units	Pre-Test	Post-Test	Exterior Crush
C1	Crush zone 1 at left side	mm	4894	4588	306
C2	Crush zone 2 at left side	mm	5029	4575	454
C3	Crush zone 3 at left side	mm	5060	4568	492
C4	Crush zone 4 at right side	mm	5060	4552	508
C5	Crush zone 5 at right side	mm	5029	4548	481
C6	Crush zone 6 at right side	mm	4894	4575	319
L	C1 TO C6	mm	1632	1560	-72

**DATA SHEET NO. 14**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
Test Program: NCAP Frontal Barrier Impact Test

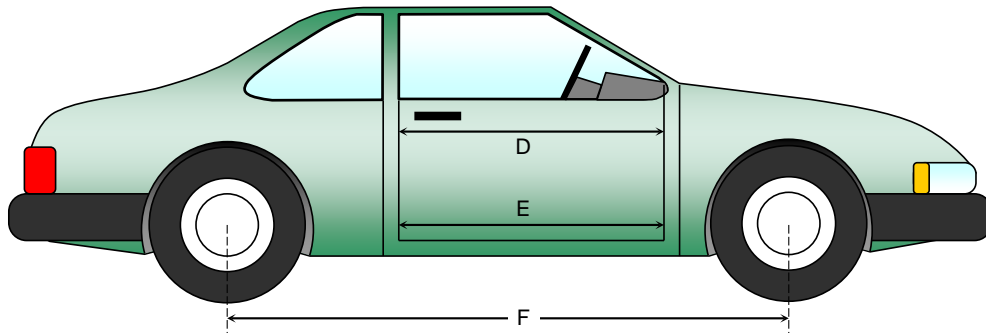
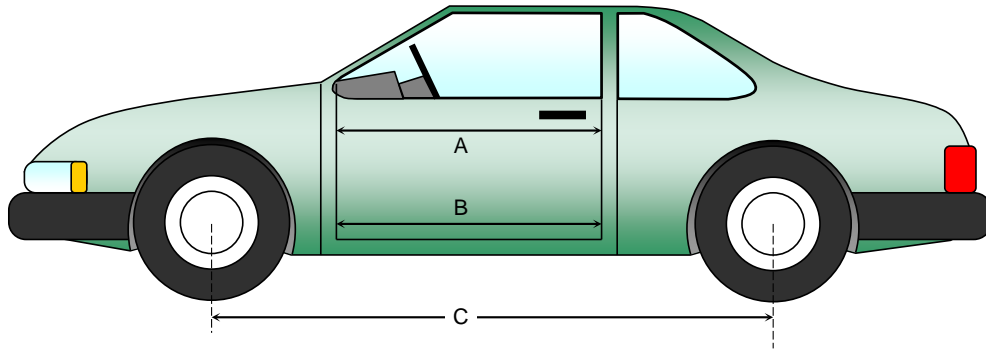
NHTSA No.: O20235312  
Test Date: 7/12/2023

**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Change
A	Left Side Upper	mm	970	968	-2
B	Left Side Lower	mm	912	912	0
D	Right Side Upper	mm	971	970	-1
E	Right Side Lower	mm	912	912	0

**WHEELBASE MEASUREMENTS**

Item	Description	Units	Pre-Test	Post-Test	Change
C	Left Side Wheelbase	mm	2896	2896	0
F	Right Side Wheelbase	mm	2896	2896	0



**DATA SHEET NO. 14 (CONTINUED)  
VEHICLE INTRUSION MEASUREMENTS**

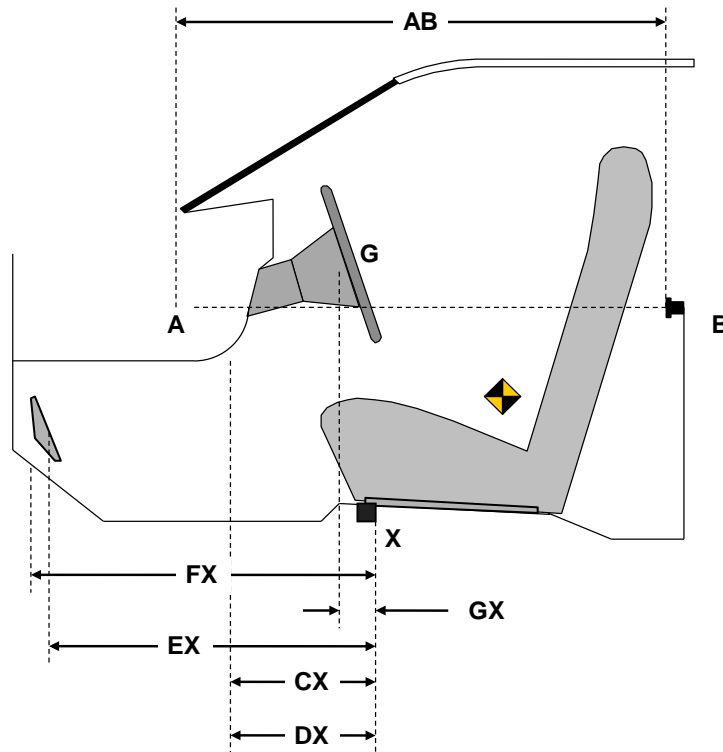
Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**DRIVER COMPARTMENT INTRUSION**

Item	Description	Units	Pre-Test	Post-Test	Change
AB	Door Opening (Inside Window Jam)	mm	782	780	-2
CX	Left Knee Bolster to X	mm	298	369	71
DX	Right Knee Bolster to X	mm	309	378	69
EX	Brake Pedal to X	mm	512	507	-5
FX	Foot Rest to X	mm	531	600	69
GX	Center of Steering Column Wheel Hub to X	mm	8	108	100

X = Front of Seat Track (stationary)



**DRIVER COMPARTMENT**

**DATA SHEET NO. 15**  
**SUMMARY OF FMVSS 212 AND FMVSS 219 (PARTIAL) DATA**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**WINDSHIELD MOUNTING DETAILS**

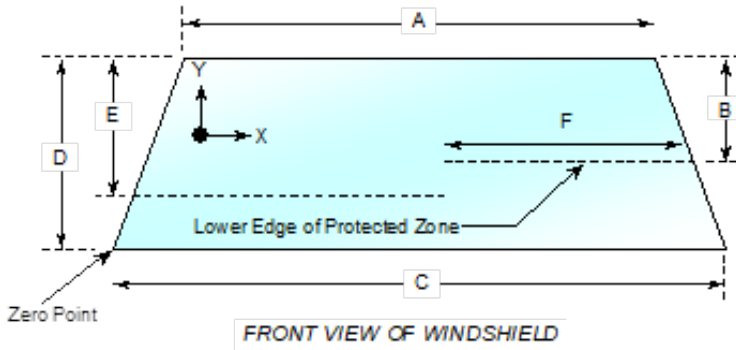
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 20.9°C.

**WINDSHIELD PERIPHERY MEASUREMENTS**

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2323	2323	100
Right Side	2323	2323	100
Total	4646	4646	100



Item	Units	Value
A	mm	1382
B	mm	486
C	mm	1520
D	mm	872
E	mm	511
F	mm	594

**AREA OF PROTECTED ZONE FAILURES**

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component. **None**

X	Y

**DATA SHEET NO. 16**  
**FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

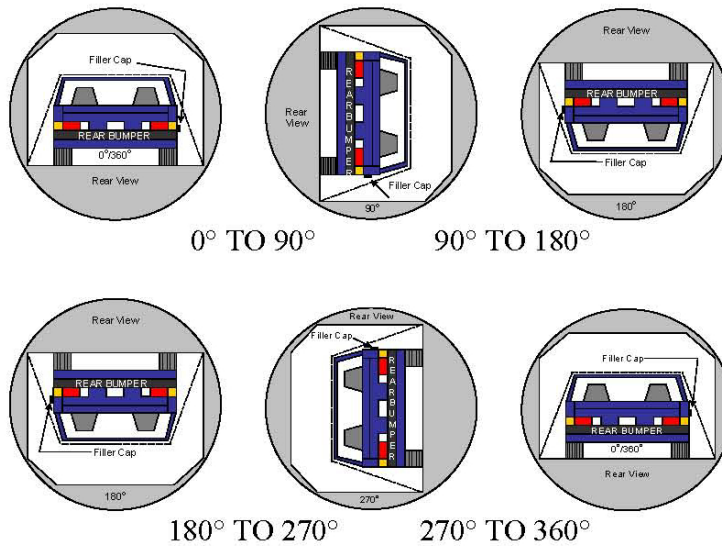
**FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA**

Temperature at Time of Impact: 20.9°C

Test Time: 11:58 a.m.

- 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 RESULTS**



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage: **None**

**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	110	300	410
90° to 180°	111	300	411
180° to 270°	108	300	408
270° to 360°	111	300	411

**DATA SHEET NO. 16 (CONTINUED)**  
**FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023

**FMVSS 301 SPILLAGE TABLE (UNITS IN OUNCES)**

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

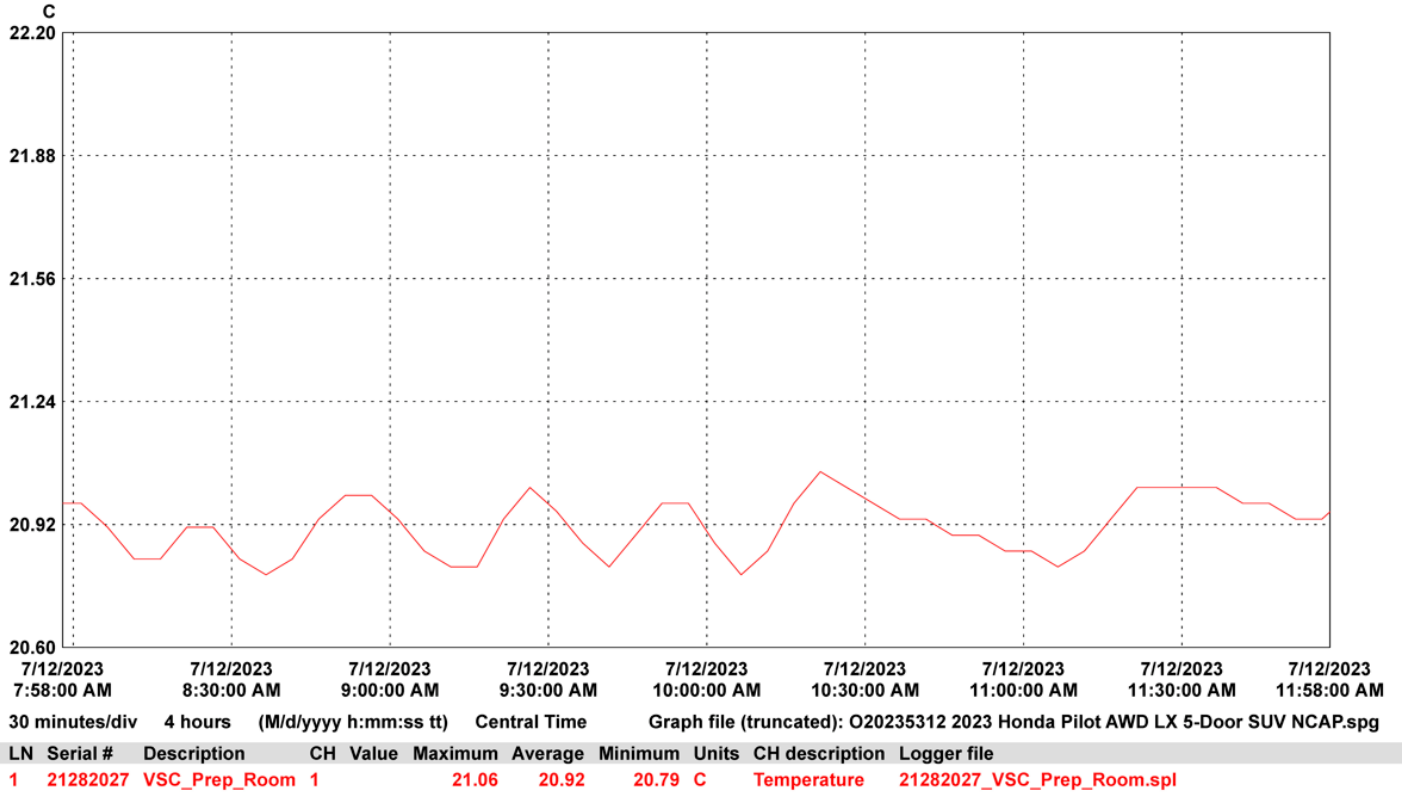
**SOLVENT SPILLAGE LOCATION TABLE**

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

**DATA SHEET NO. 17**  
**DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA**

Test Vehicle: 2023 Honda Pilot AWD LX 5-Door SUV  
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20235312  
 Test Date: 7/12/2023



**APPENDIX A  
PHOTOGRAPHS**

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Photo No. 001 - Load Cell Location



Photo No. 002 - Pre-Test Load Cell Wall



Photo No. 003 - Post-Test Load Cell Wall

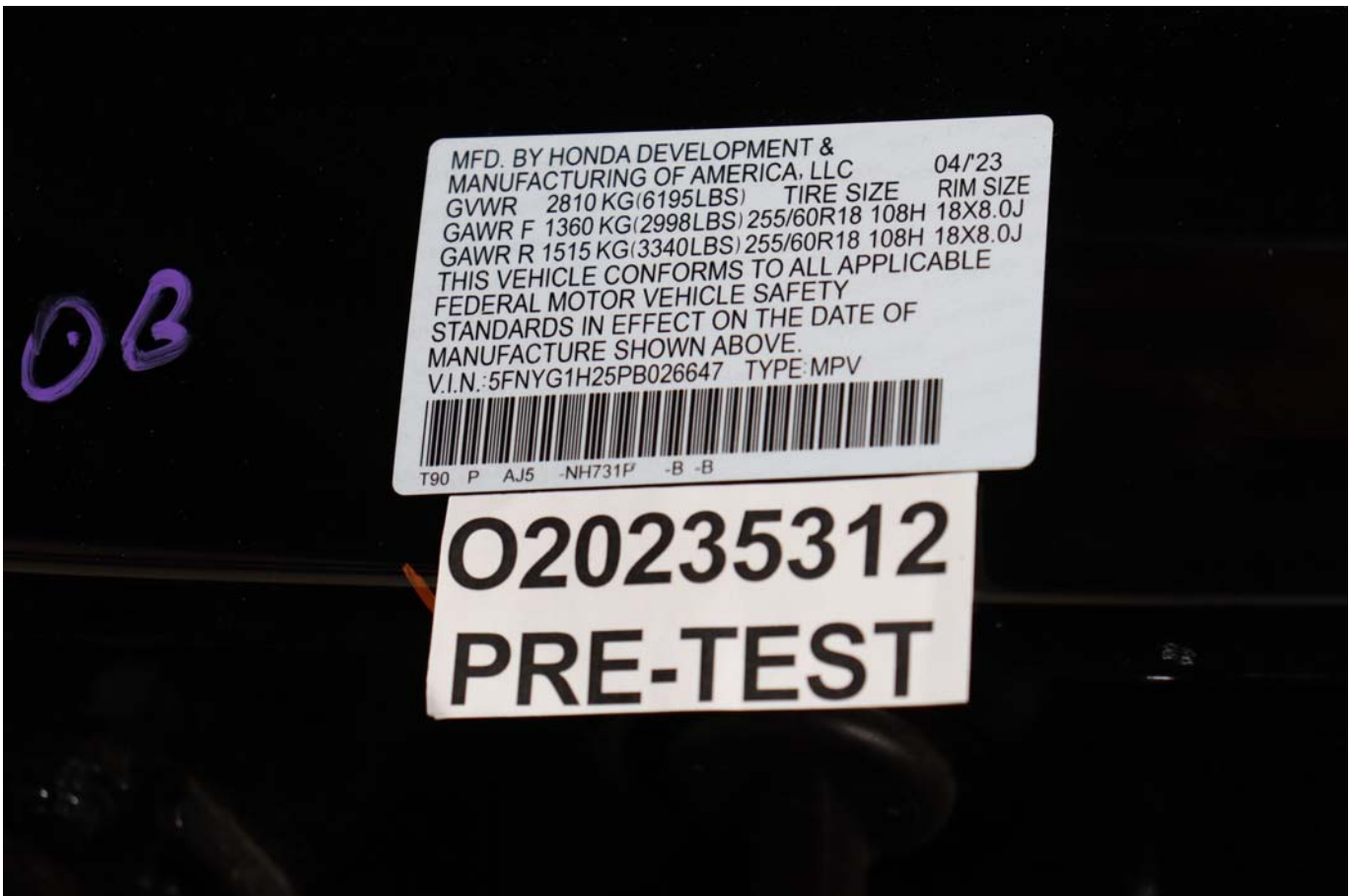


Photo No. 004 - Manufacturer's Label



Photo No. 005 - Tire Placard



Photo No. 006 - 2023 Honda Pilot AWD LX 5-Door SUV Frontal As Delivered



Photo No. 007 - Left Rear 3-4 View, As Received

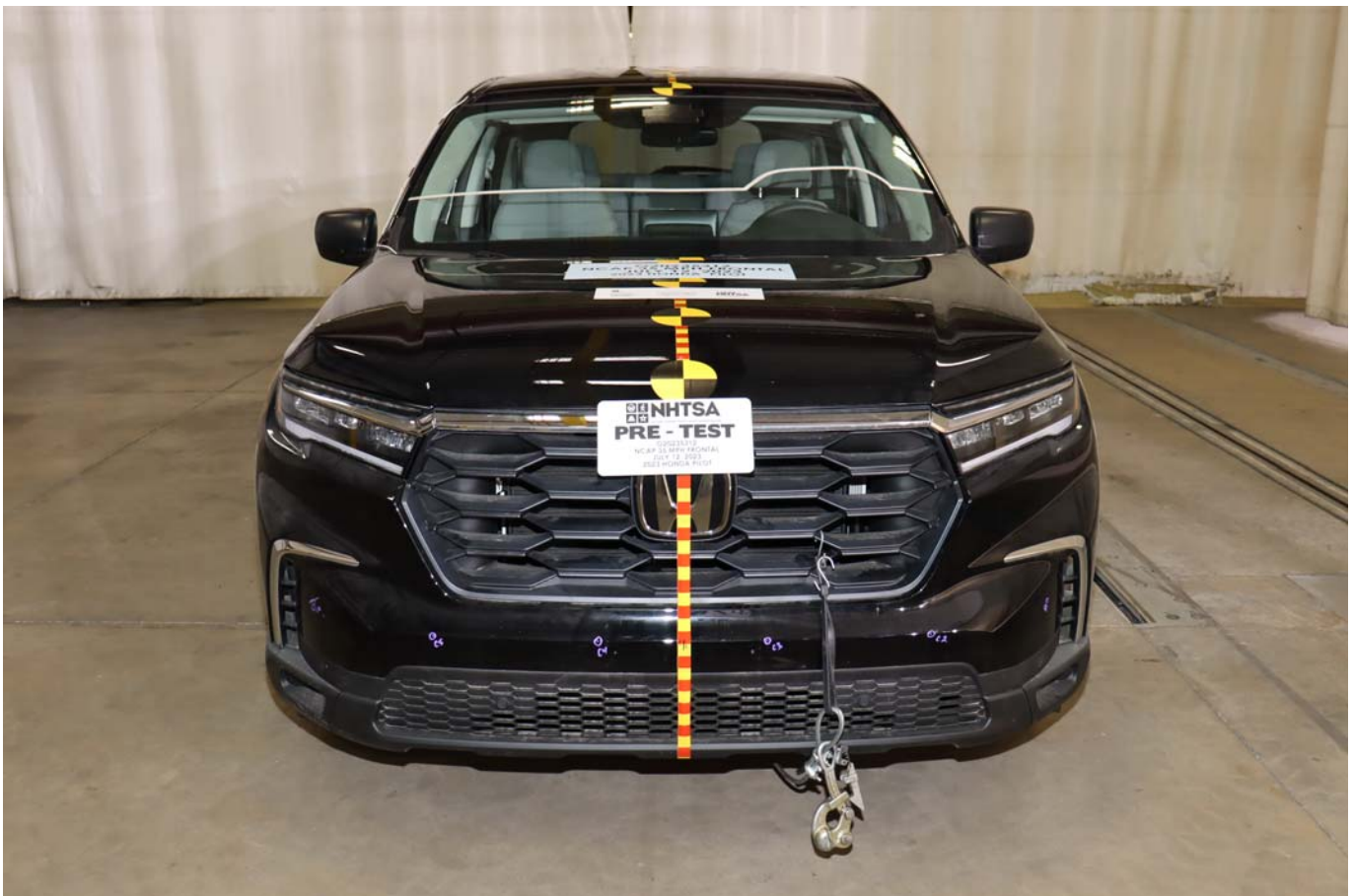


Photo No. 008 - Pre-Test Front View of Test Vehicle



Photo No. 009 - Post-Test Front View of Test Vehicle



Photo No. 010 - Pre-Test Left View of Test Vehicle

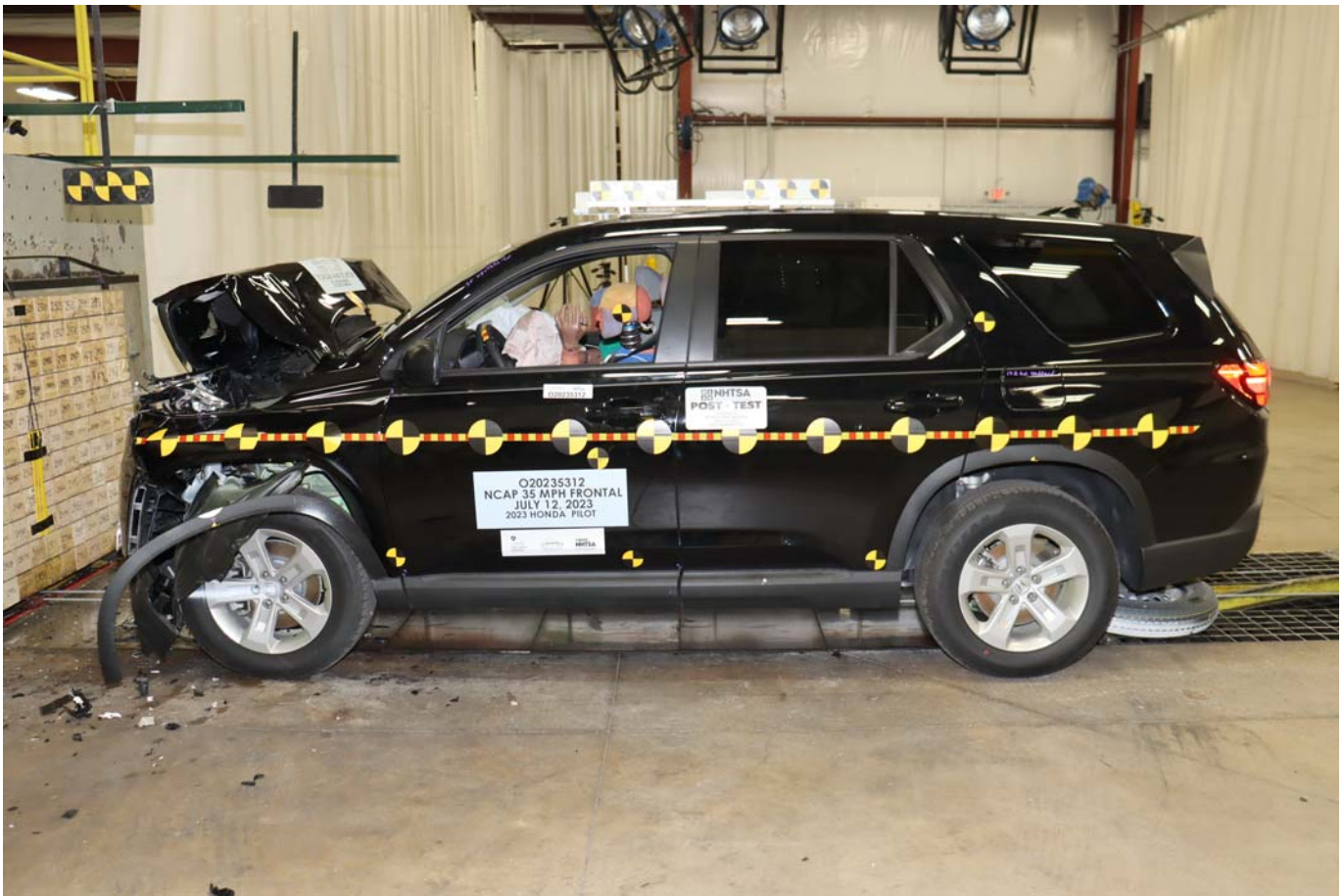


Photo No. 011 - Post-Test Left View of Test Vehicle



Photo No. 012 - Pre-Test Right View of Test Vehicle



Photo No. 013 - Post-Test Right View of Test Vehicle



Photo No. 014 - Pre-Test Right Front 3-4 View



Photo No. 015 - Post-Test Right Front 3-4 View



Photo No. 016 - Pre-Test Left Rear 3-4 View



Photo No. 017 - Post-Test Left Rear 3-4 View



Photo No. 018 - Pre-Test Windshield View



Photo No. 019 - Post-Test Windshield View



Photo No. 020 - Pre-Test Engine Compartment View

**PHOTOGRAPH NOT AVAILABLE**

Photo No. 021 - Post-Test Engine Compartment View



Photo No. 022 - Pre-Test Fuel Filler Cap View



Photo No. 023 - Post-Test Fuel Filler Cap View

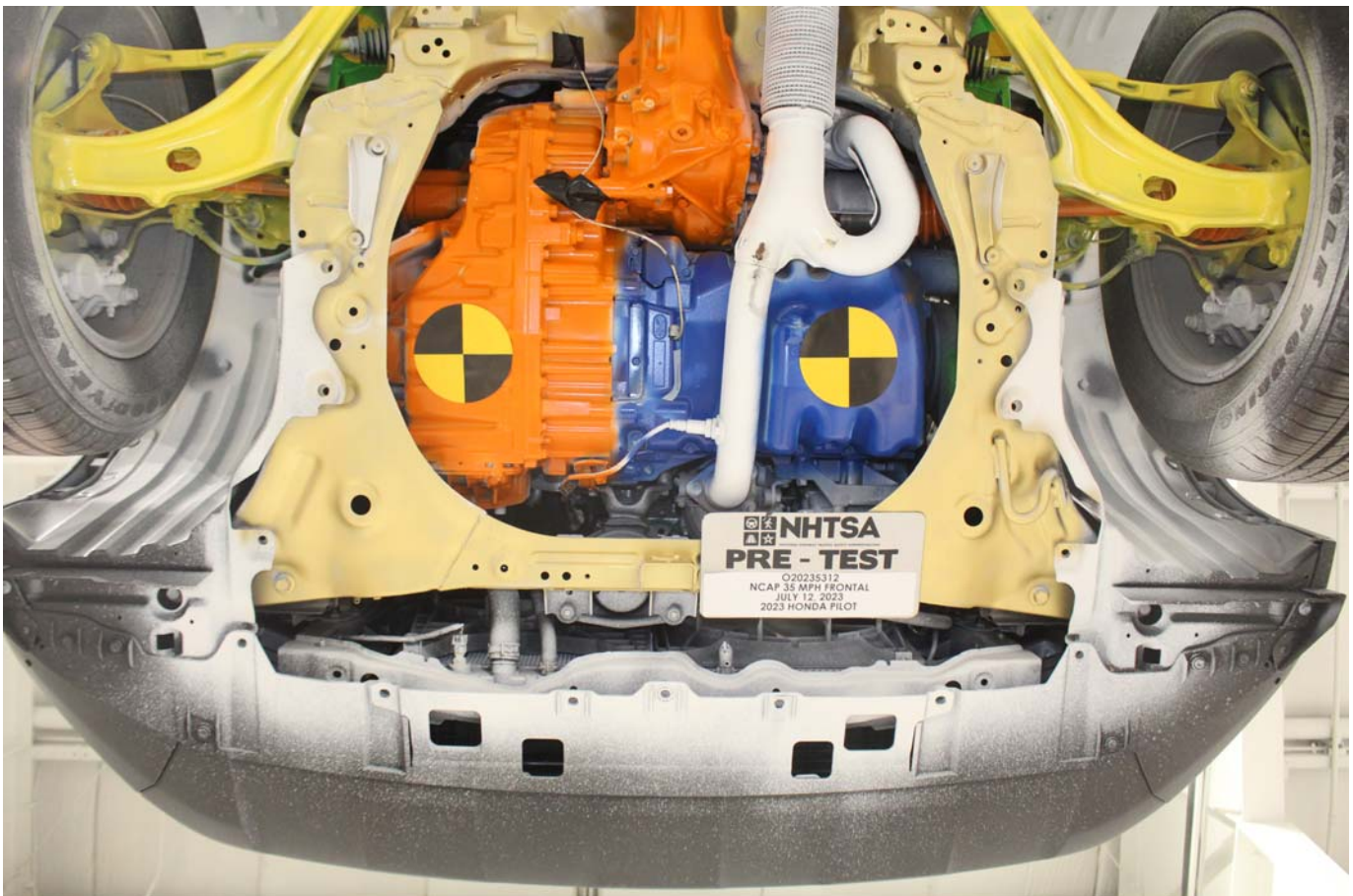


Photo No. 024 - Pre-Test Front Underbody View

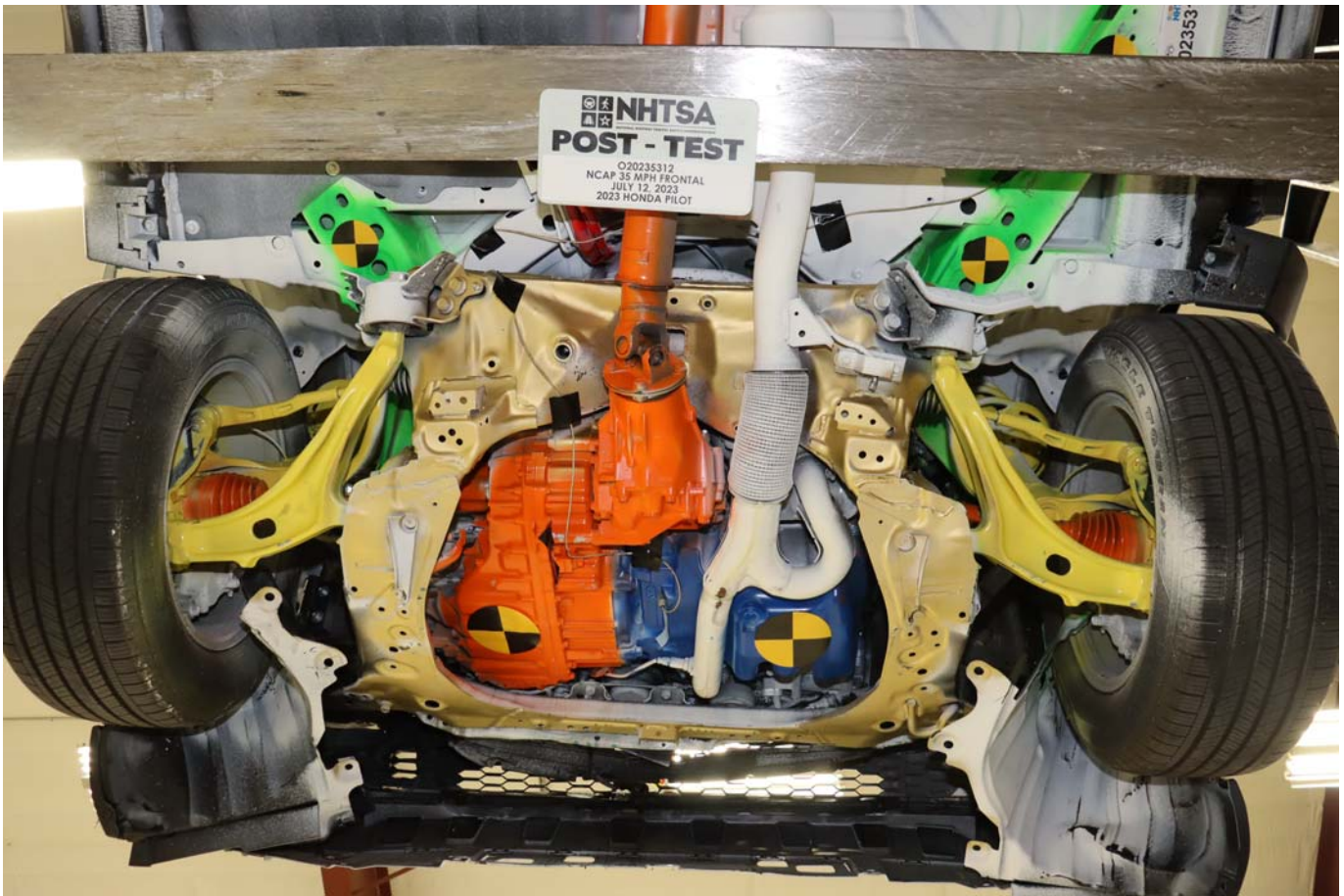


Photo No. 025 - Post-Test Front Underbody View

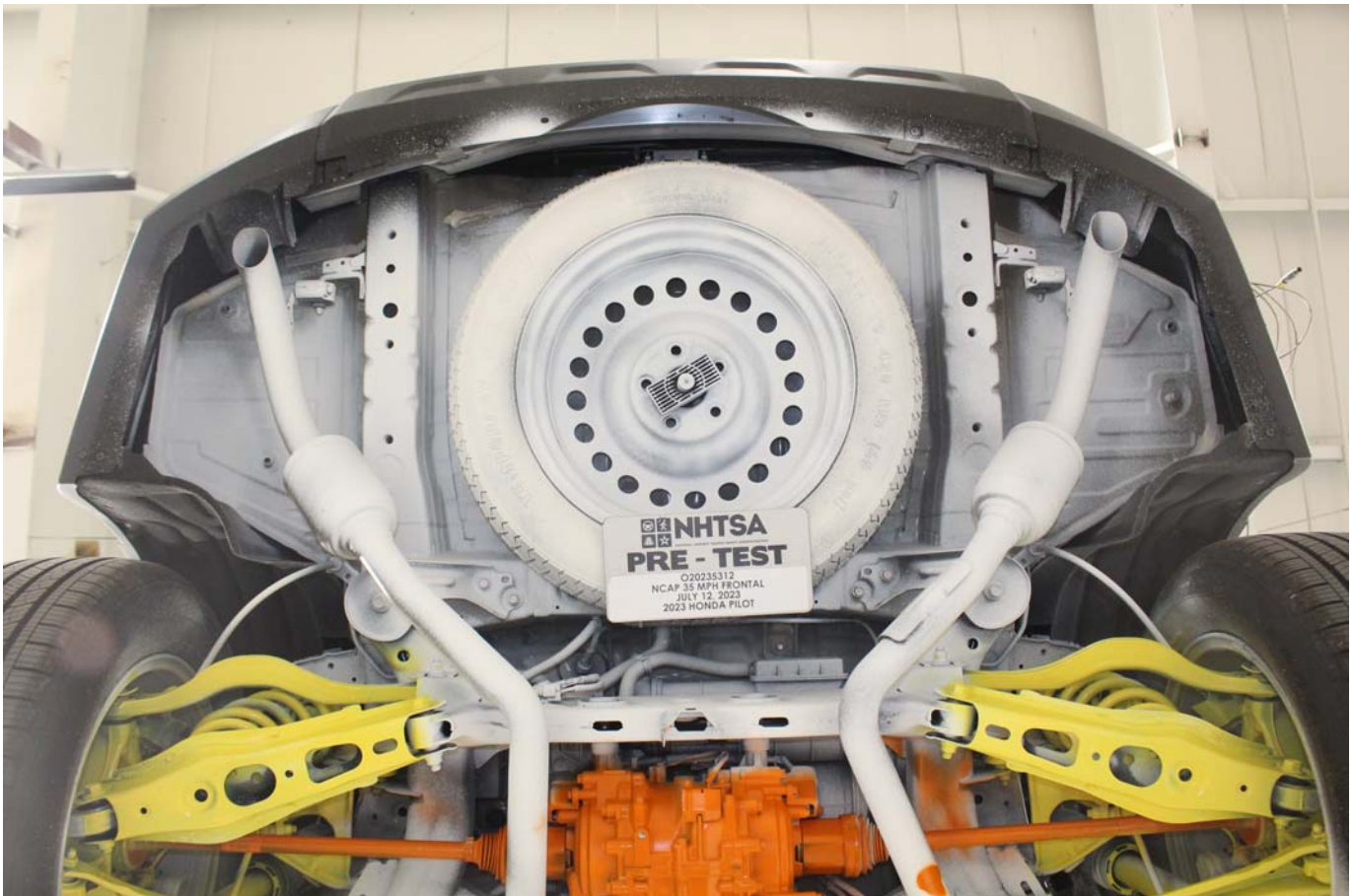


Photo No. 026 - Pre-Test Rear Underbody View

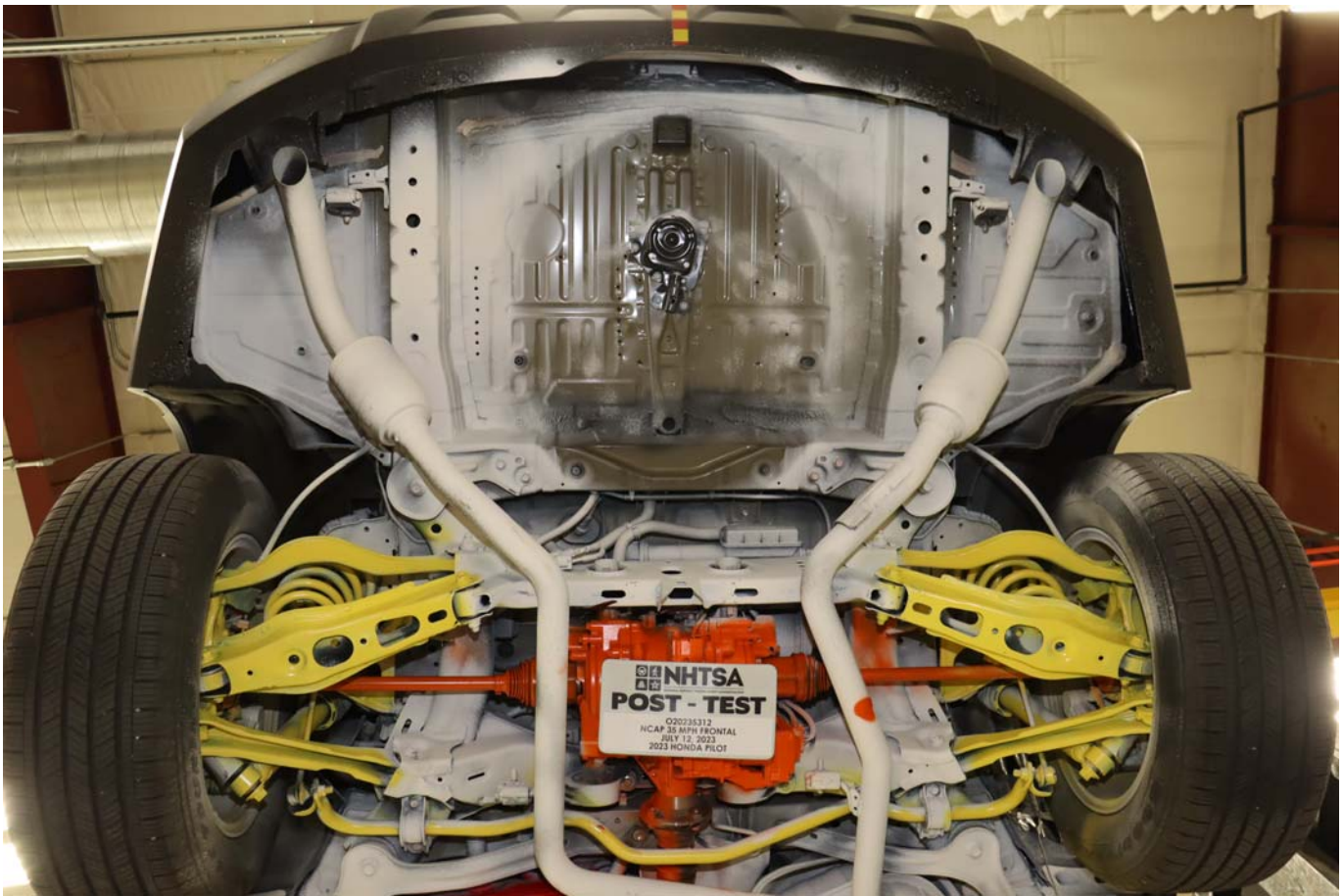


Photo No. 027 - Post-Test Rear Underbody View

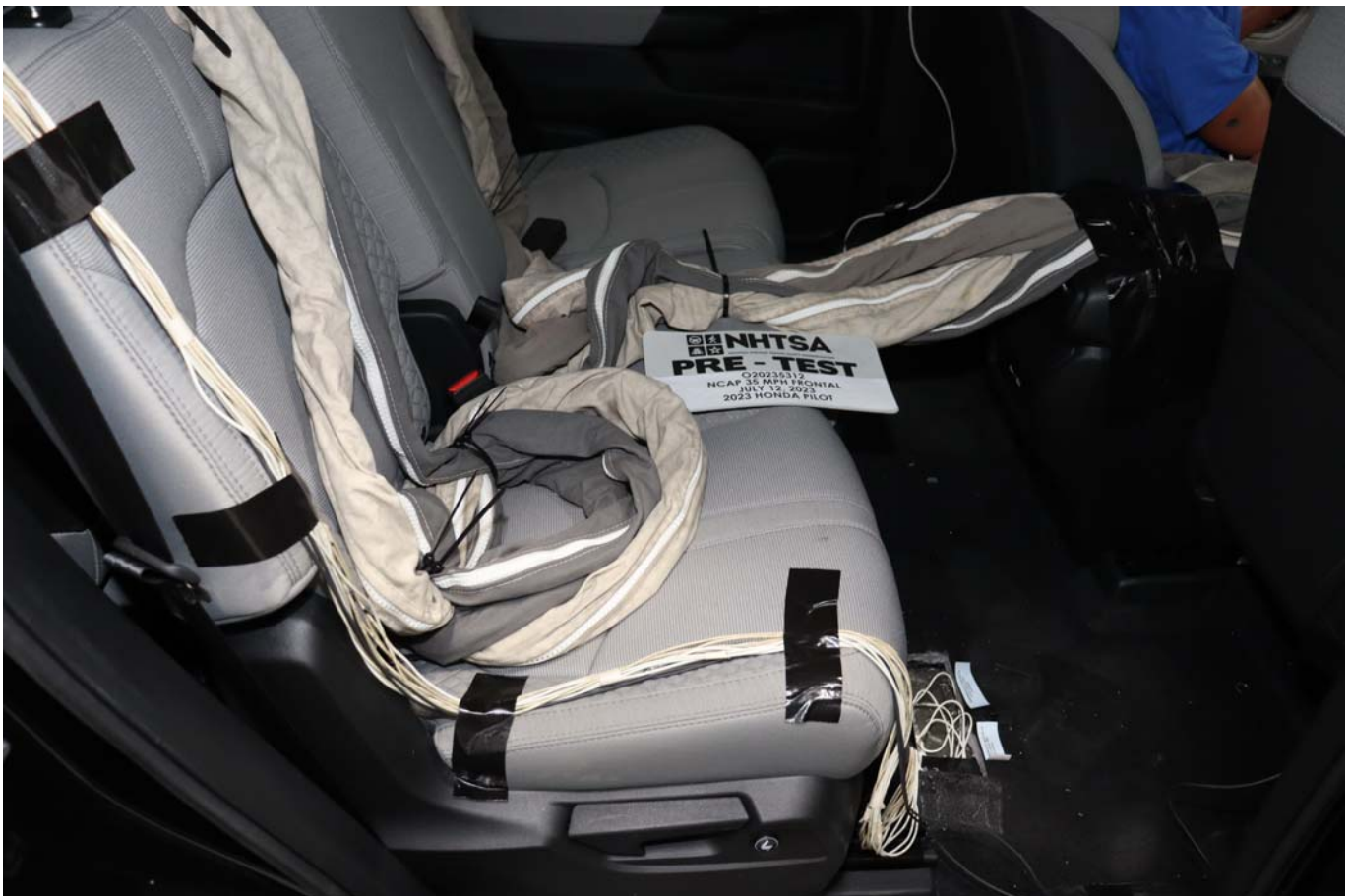


Photo No. 028 - Pre-Test Dummy Cable Routing



Photo No. 029 - Post-Test Dummy Cable Routing



Photo No. 030 - Pre-Test Driver Dummy Front View



Photo No. 031 - Post-Test Driver Dummy Front View



Photo No. 032 - Pre-Test Driver Dummy Window View



Photo No. 033 - Post-Test Driver Dummy Window View



Photo No. 034 - Pre-Test Driver Dummy and Vehicle Interior View



Photo No. 035 - Post-Test Driver Dummy and Vehicle Interior View



Photo No. 036 - Pre-Test Driver's Seat Fore-Aft Markings



Photo No. 037 - Post-Test Driver's Seat Fore-Aft Markings



Photo No. 038 - Pre-Test View of Belt Anchorage for Driver Dummy



Photo No. 039 - Post-Test View of Belt Anchorage for Driver Dummy



Photo No. 040 - Pre-Test View of Belt Buckle and Latch Plate for Driver Dummy

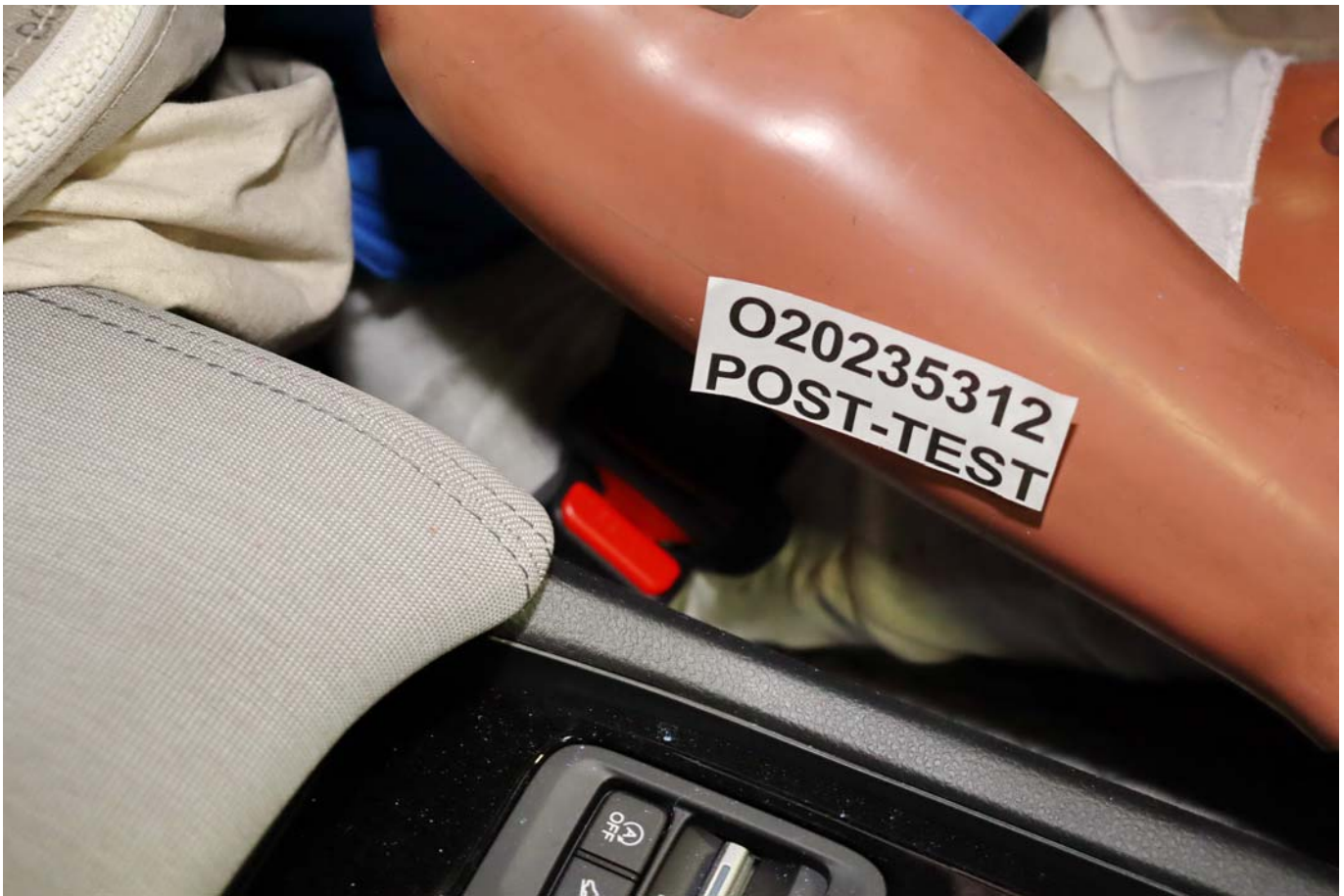


Photo No. 041 - Post-Test View of Belt Buckle and Latch Plate for Driver Dummy



Photo No. 042 - Pre-Test Driver Dummy Feet



Photo No. 043 - Post-Test Driver Dummy Feet



Photo No. 044 - Pre-Test Driver's Side Knee Bolster



Photo No. 045 - Post-Test Driver's Side Knee Bolster



Photo No. 046 - Pre-Test Driver's Side Floorpan



Photo No. 047 - Post-Test Driver's Side Floorpan



Photo No. 048 - Post-Test Driver Dummy Face



Photo No. 049 - Post-Test Driver Dummy Contact with Airbag



Photo No. 050 - Post-Test Driver Dummy Contact with Headrest



Photo No. 051 - Pre-Test View of the Steering Wheel



Photo No. 052 - Post-Test View of the Steering Wheel



Photo No. 053 - Pre-Test Passenger Dummy Front View



Photo No. 054 - Post-Test Passenger Dummy Front View



Photo No. 055 - Pre-Test Passenger Dummy Window View



Photo No. 056 - Post-Test Passenger Dummy Window View



Photo No. 057 - Pre-Test Passenger Dummy and Vehicle Interior View



Photo No. 058 - Post-Test Passenger Dummy and Vehicle Interior View

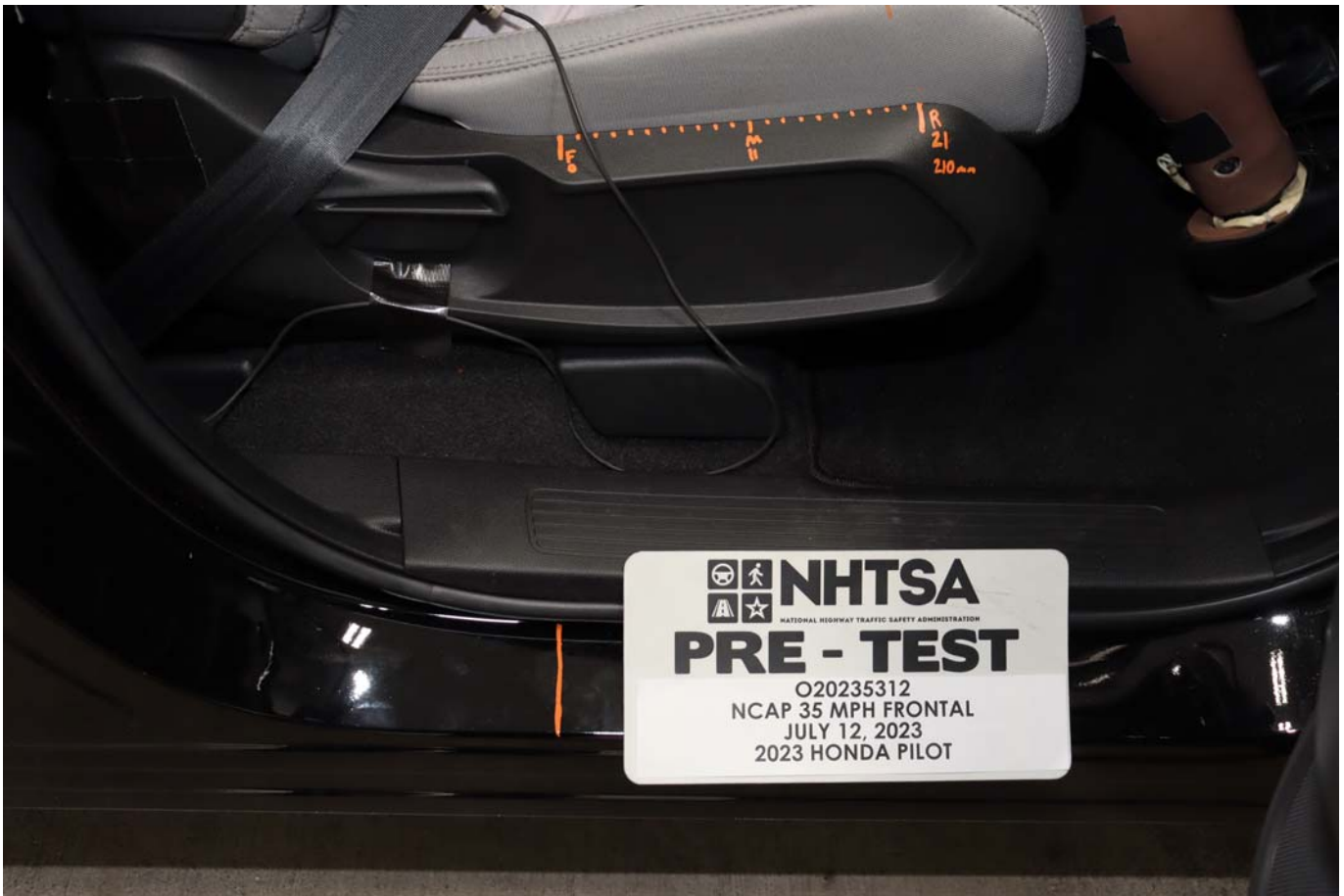


Photo No. 059 - Pre-Test Passenger's Seat Fore-Aft Markings



Photo No. 060 - Post-Test Passenger's Seat Fore-Aft Markings



Photo No. 061 - Pre-Test View of Belt Anchorage for Passenger Dummy



Photo No. 062 - Post-Test View of Belt Anchorage for Passenger Dummy



Photo No. 063 - Pre-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Photo No. 064 - Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Photo No. 065 - Pre-Test Passenger Dummy Feet



Photo No. 066 - Post-Test Passenger Dummy Feet



Photo No. 067 - Pre-Test Passenger's Side Knee Bolster



Photo No. 068 - Post-Test Passenger's Side Knee Bolster

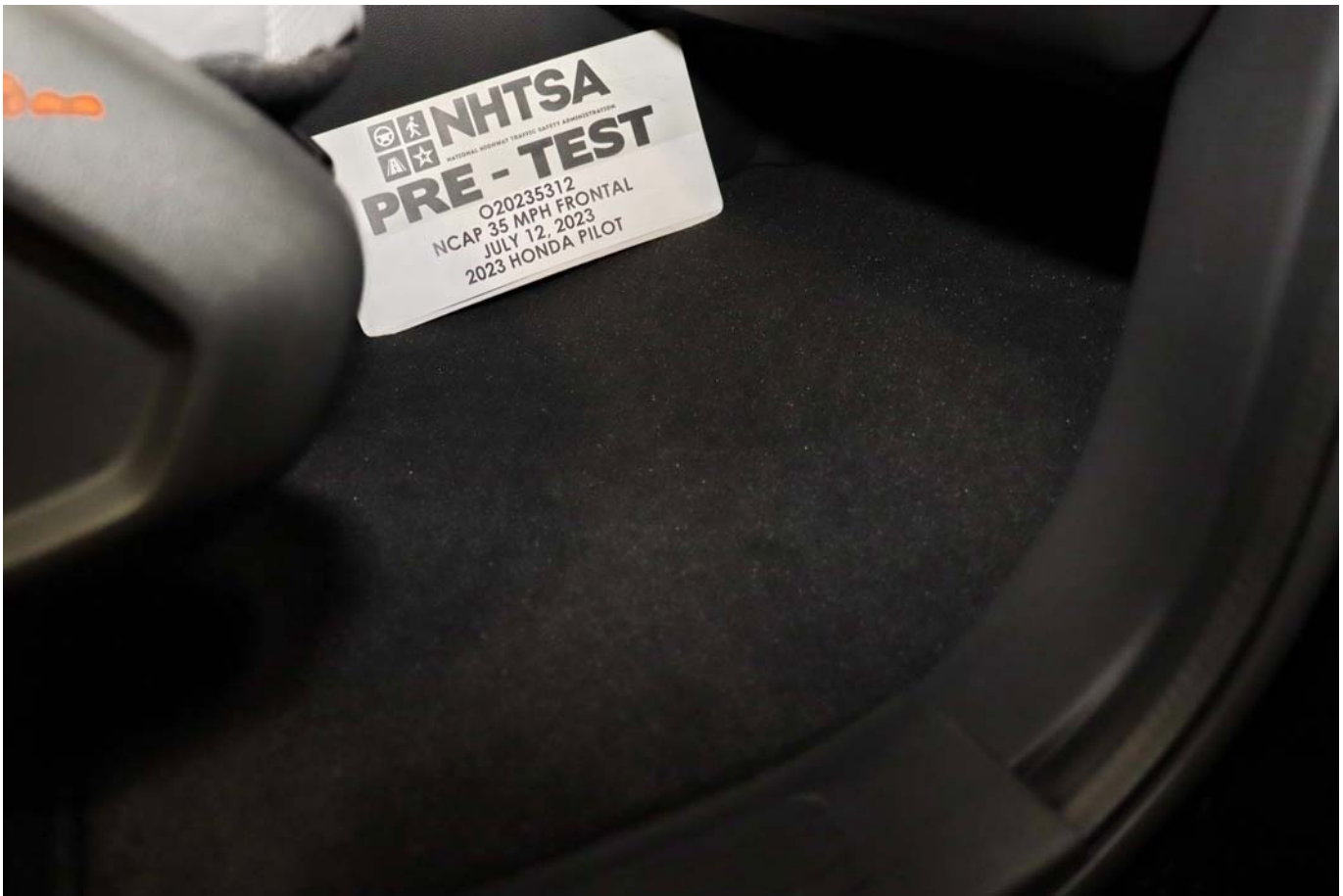


Photo No. 069 - Pre-Test Passenger's Side Floorpan

**PHOTOGRAPH NOT AVAILABLE**

Photo No. 070 - Post-Test Passenger's Side Floorpan



Photo No. 071 - Post-Test Passenger Dummy Face



Photo No. 072 - Post-Test Passenger Dummy Contact with Airbag



Photo No. 073 - Post-Test Passenger Dummy Contact with Headrest



Photo No. 074 - Photograph of Ballast Installed in Vehicle

# PHOTOGRAPH NOT APPLICABLE

Photo No. 075 - Post-Test Stoddard Solvent Spillage Location View



Photo No. 076 - Post-Test Speed Trap Read-Out



Photo No. 077 - Vehicle at 0 Degrees on Static Rollover Device



Photo No. 078 - Vehicle at 90 Degrees on Static Rollover Device



Photo No. 079 - Vehicle at 180 Degrees on Static Rollover Device



Photo No. 080 - Vehicle at 270 Degrees on Static Rollover Device



Photo No. 081 - Vehicle at 360 Degrees on Static Rollover Device



Photo No. 082 - 2023 Honda Pilot AWD LX 5-Door SUV Frontal Impact Event



# 2023 PILOT AWD LX

EXT: CRYSTAL BLACK P ENGINE NUMBER: J35Y8-1036347  
INT: GRAY

## EPA DOT Fuel Economy and Environment

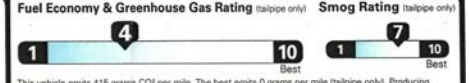
Gasoline Vehicle

**Fuel Economy**  
**21** MPG  
combined city/hwy  
19 city  
25 highway  
4.8 gallons per 100 miles

Standard SUVs range from 13 to 102 MPG. The best vehicle rates 132 MPG.

**You spend \$2,500**  
in fuel costs over 5 years compared to the average new vehicle.

**Annual fuel cost \$2,100**



Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and costs \$8,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.95 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



### PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE  
U.S./Canadian Parts Content: **60 %**  
Major Sources of Foreign Parts Content:  
**MEXICO 15 %**

NOTE: Parts content does not include final assembly, distribution or other non-parts costs.

FOR THIS VEHICLE  
Final Assembly Point:  
**LINCOLN, ALABAMA USA**  
Country of Origin: Engine:  
**U.S.A**  
Transmission:  
**U.S.A**

### GOVERNMENT 5-STAR SAFETY RATING

**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 Not Rated**  
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.

**Side Crash** Front seat Rear seat **Not Rated 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](http://www.safercar.gov) or 1-888-327-4236

### STANDARD EQUIPMENT AT NO EXTRA COST

#### TECHNICAL FEATURES \*

- 285hp 3.5-Liter V6 Engine with Variable Cylinder Management (VCM)
- 10-Speed Automatic Transmission
- i-VTM4 All Wheel Drive System
- Integrated Drive Modes (Normal / Econ / Snow / Tow)
- Hill Start Assist
- Hill Descent Control

#### SAFETY FEATURES \*

- Driver's and Front Passenger's Airbags
- Driver's and Front Passenger's Side Airbags
- Three Row Side Curtain Airbags
- Driver's and Front Passenger's Knee Airbags
- Vehicle Stability Assist (VSA)
- Anti-Lock Braking System (ABS)
- Electronic Brake Distribution (EBD)
- ACE Body Structure
- Tire Pressure Monitoring System
- LED Daytime Running Lights
- LATCH System for Child Seats

#### INTERIOR FEATURES \*

- Audio System with 7 Speakers
- 7" Color Touchscreen with Multi-View Rear Camera
- TFT Meter Display
- Apple CarPlay/Android Auto Integration
- USB Audio Interface
- Push-Button Start
- Push Button Shifter
- Tri-Zone Automatic Climate Control
- One-Touch Second Row Seats

#### EXTERIOR FEATURES \*

- 18" Alloy Wheels
- 255/60 R18 All-Season Tires
- Auto High-Beam
- Power Door Mirrors
- Rear Privacy Glass
- Smart Entry System with Security System
- Walk Away Auto Lock

#### HONDA SENSING \*

- Adaptive Cruise Control (ACC)
- Collision Mitigation Braking System (CMBS)
- Lane Keeping Assist System (LKAS)
- Road Departure Mitigation (RDM)
- Traffic Jam Assist

Manufacturer's Suggested Retail Price **\$38,050.00**

Full Tank of Fuel **No Charge**

-Honda Roadside Assistance  
3YR/50K Mile Warranty Term

Destination and Handling **1,345.00**

**TOTAL VEHICLE PRICE**  
(Includes Pre-Delivery Service)

**\$39,395.00**

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

HAGERSTOWN HONDA  
10307 AUTO PLACE  
HAGERSTOWN, MD 21740

PORT OF ENTRY: ALABAMA  
DELIVERY POINT: JERSEY  
SHIP#:   
ROW/SPACE: 736-020  
TRANS.METHOD: E62 TALLADEGA  
L40 ANNAPOLIS JCT

ORIG. DLR: 207865  
REF.NO: 41185  
HN CODE: HN-8158  
EMISSION: 50 STATE  
CONTROL NO: 089663  
DEALER: 207865

VIN: 5FNVG1H25PB026647



Photo No. 083 - Monroney Label Photograph

**APPENDIX B**  
**DUMMY RESPONSE DATA TRACES**

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Figure No. 22.	Passenger Head Resultant Acceleration vs. Time	B-7
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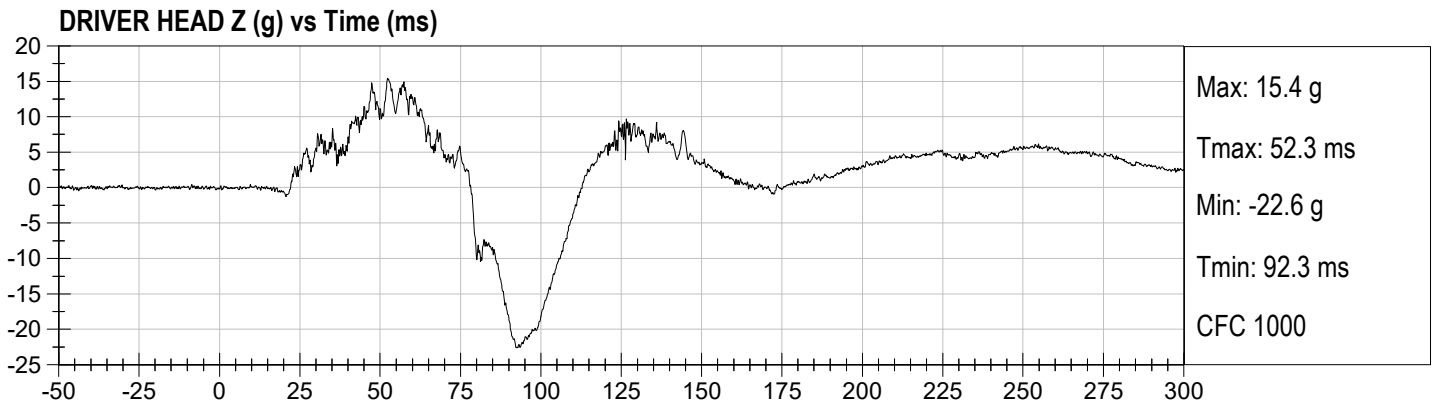
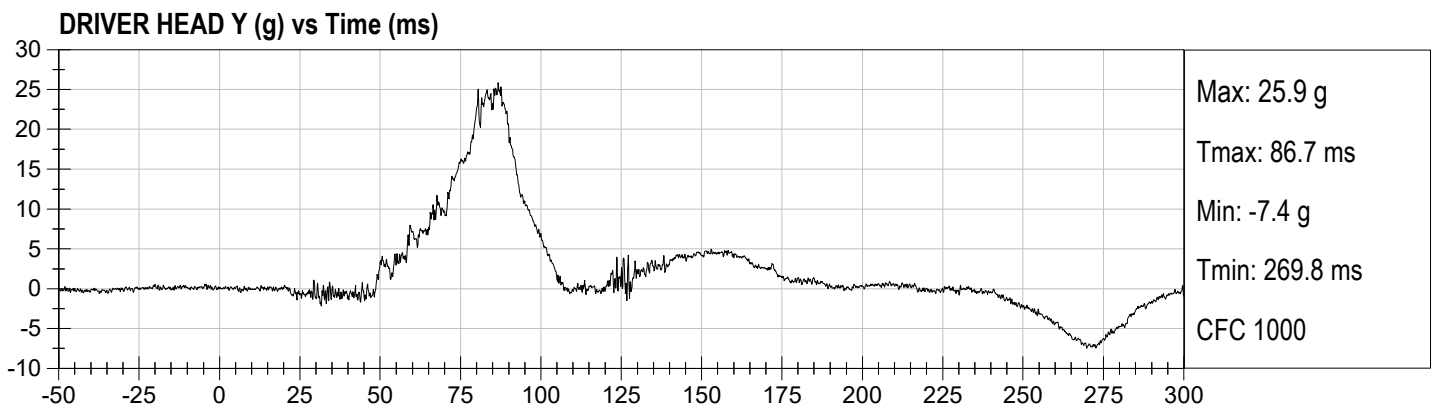
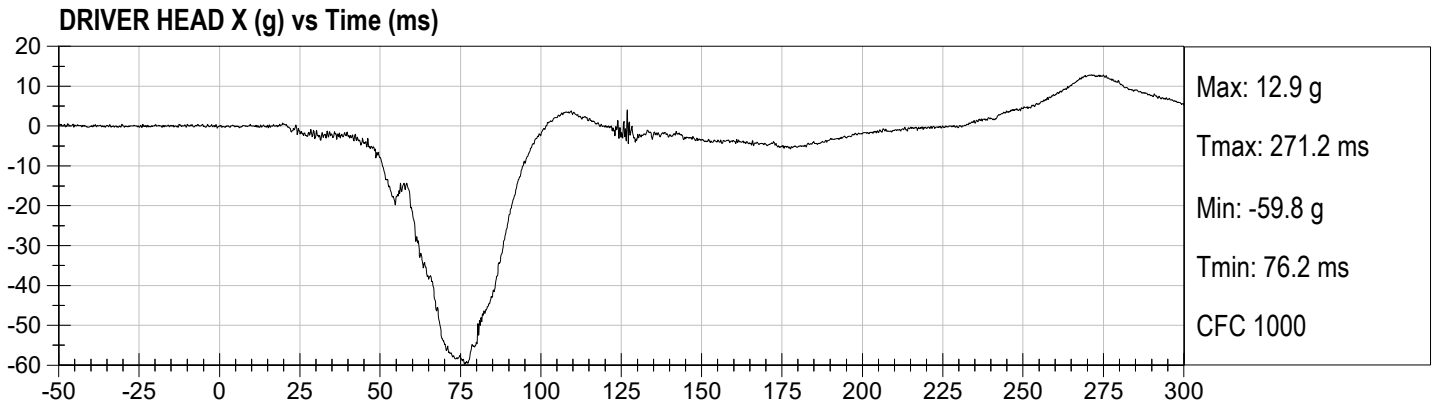
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Figure No. 36. Passenger Right Femur Force vs. Time	B-12

**The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at [www.nhtsa.gov](http://www.nhtsa.gov)**

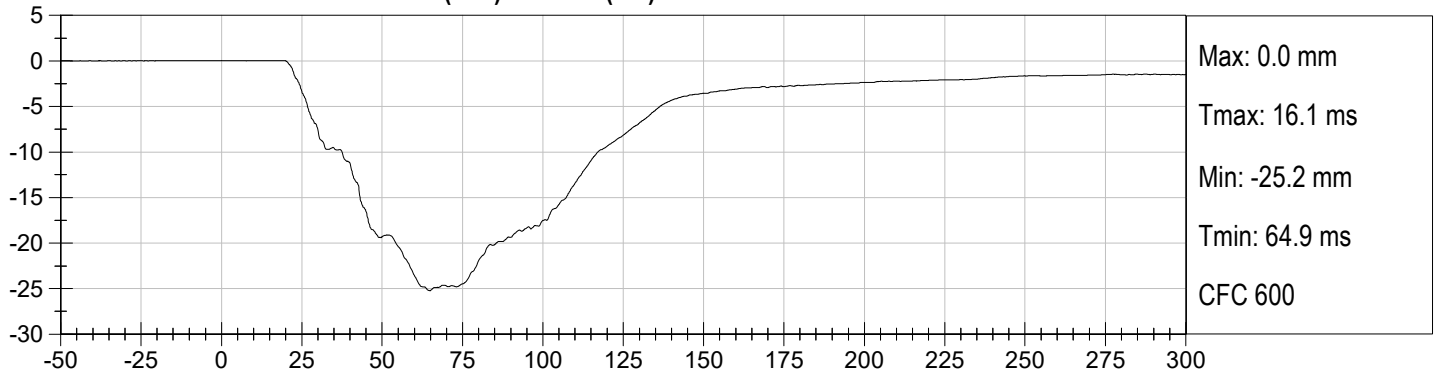
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 Driver Head Z Redundant  
 Driver Head Angular Velocity X  
 Driver Head Angular Velocity Y  
 Driver Head Angular Velocity Z  
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 Driver Upper Neck Moment X  
 Driver Upper Neck Moment Z  
 Driver Chest X Redundant  
 Driver Chest Y Redundant  
 Driver Chest Z Redundant  
 Driver Pelvis X  
 Driver Pelvis Y  
 Driver Pelvis Z  
 Driver Left Femur Redundant  
 Driver Right Femur Redundant  
 Driver Left Upper Tibia Moment X  
 Driver Left Upper Tibia Moment Y

Driver Left Upper Tibia Force Z  
Driver Left Lower Tibia Moment X  
Driver Left Lower Tibia Moment Y  
Driver Left Lower Tibia Force Z  
Driver Right Upper Tibia Moment X  
Driver Right Upper Tibia Moment Y  
Driver Right Upper Tibia Force Z  
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Driver Left Foot Aft Z  
Driver Right Foot Fore Z  
Driver Right Foot Aft X  
Driver Right Foot Aft Z  
Driver Lap Belt Force  
Driver Shoulder Belt Force  
Passenger Head X Redundant  
Passenger Head Y Redundant  
Passenger Head Z Redundant  
Passenger Head Angular Velocity X  
Passenger Head Angular Velocity Y  
Passenger Head Angular Velocity Z  
Passenger Upper Neck Force Y  
Passenger Upper Neck Moment X  
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Passenger Pelvis X  
Passenger Pelvis Y

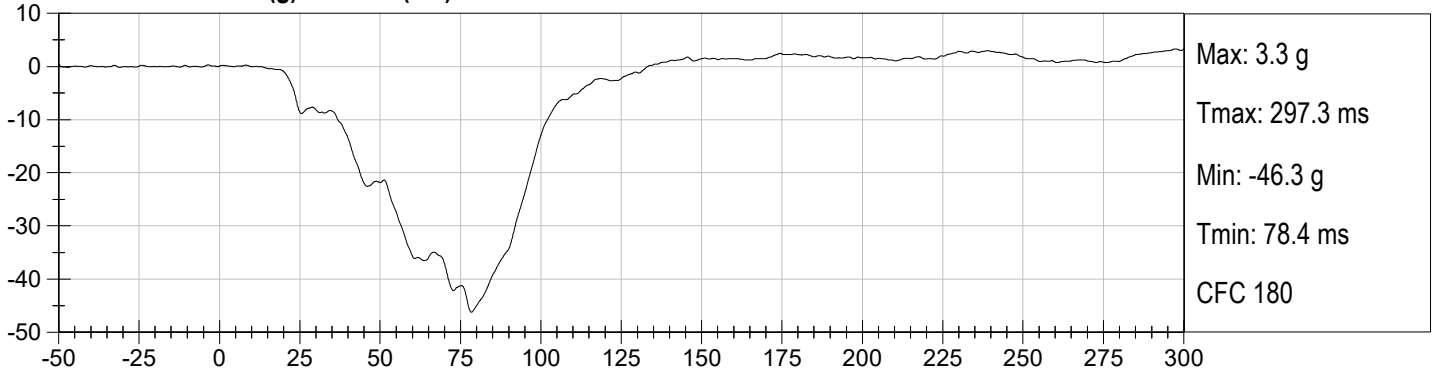
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Passenger Left Lower Tibia Moment Y  
Passenger Left Lower Tibia Force Z  
Passenger Right Upper Tibia Moment X  
Passenger Right Upper Tibia Moment Y  
Passenger Right Upper Tibia Force Z  
Passenger Right Lower Tibia Moment X  
Passenger Right Lower Tibia Moment Y  
Passenger Right Lower Tibia Force Z  
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Passenger Left Foot Aft Z  
Passenger Right Foot Fore Z  
Passenger Right Foot Aft X  
Passenger Right Foot Aft Z  
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Passenger Shoulder Belt Force  
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Right Rear Seat Crossmember X  
Vehicle Engine Top X  
Vehicle Engine Bottom X  
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Left Rear Seat Crossmember Xr  
Right Rear Seat Crossmember Xr  
Advanced Research Load Cell Barrier – 528 channels



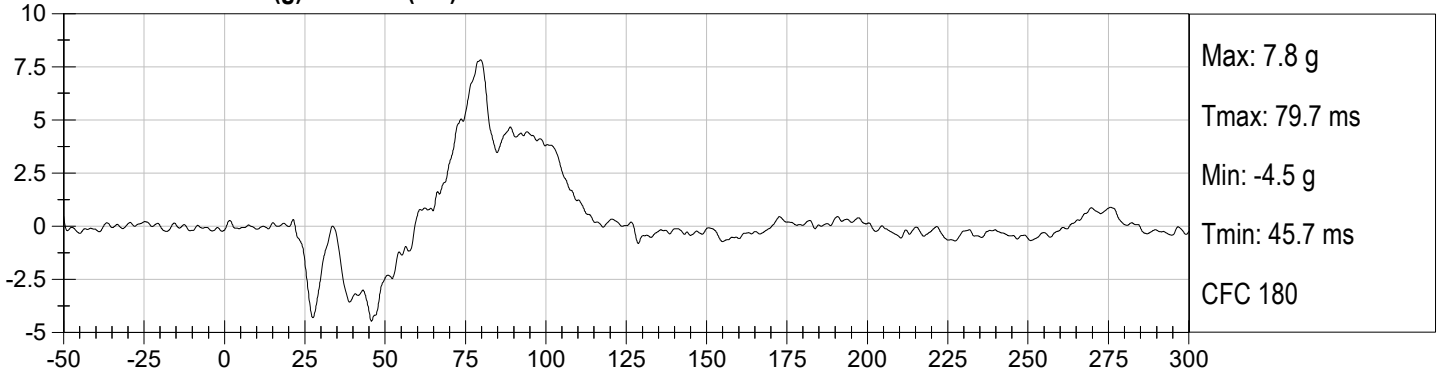
DRIVER CHEST DISPLACEMENT (mm) vs Time (ms)



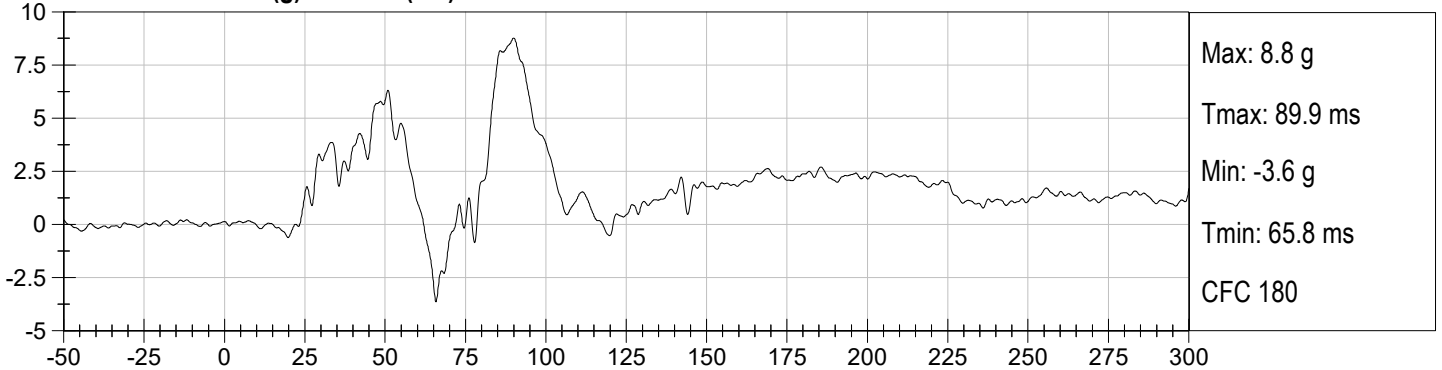
**DRIVER CHEST X (g) vs Time (ms)**



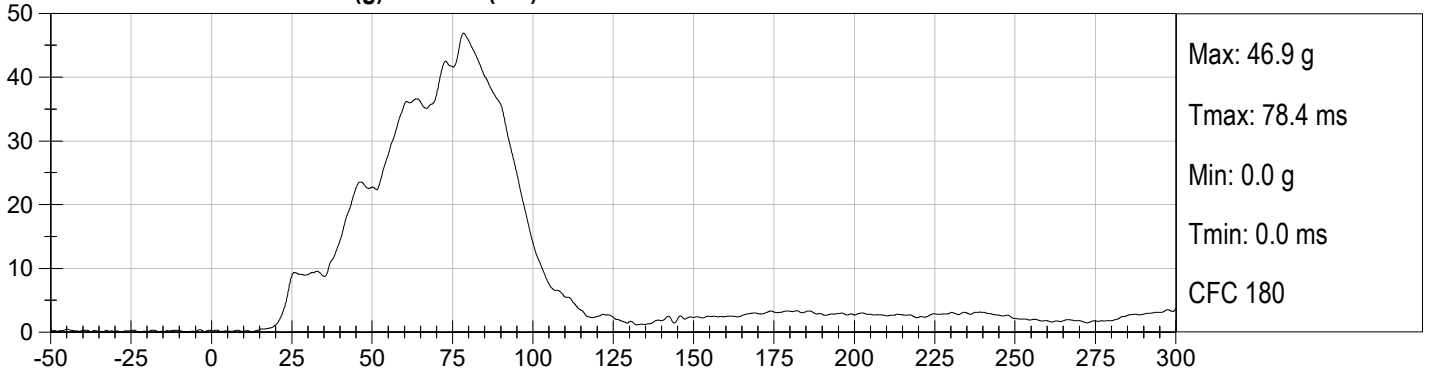
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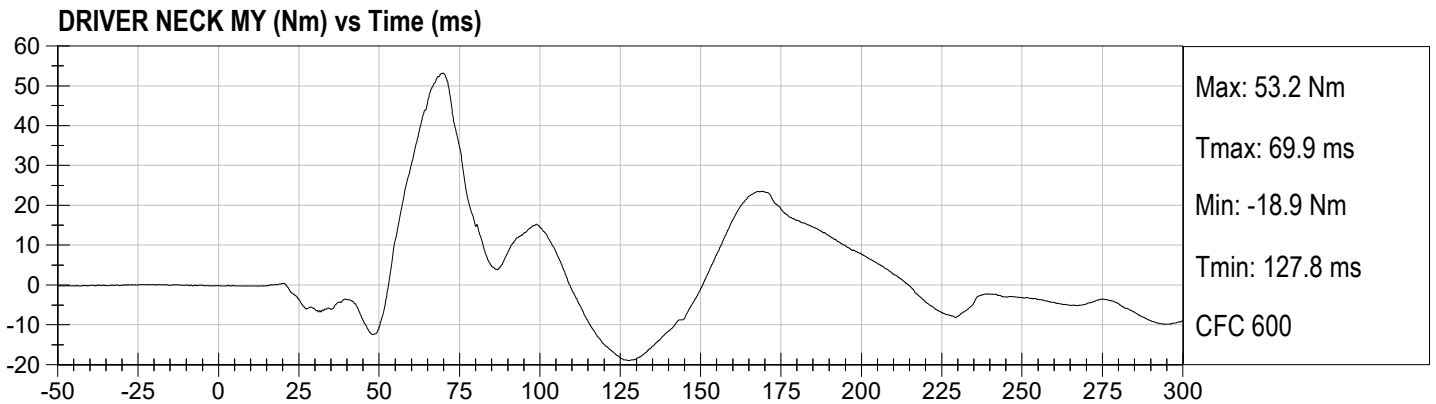
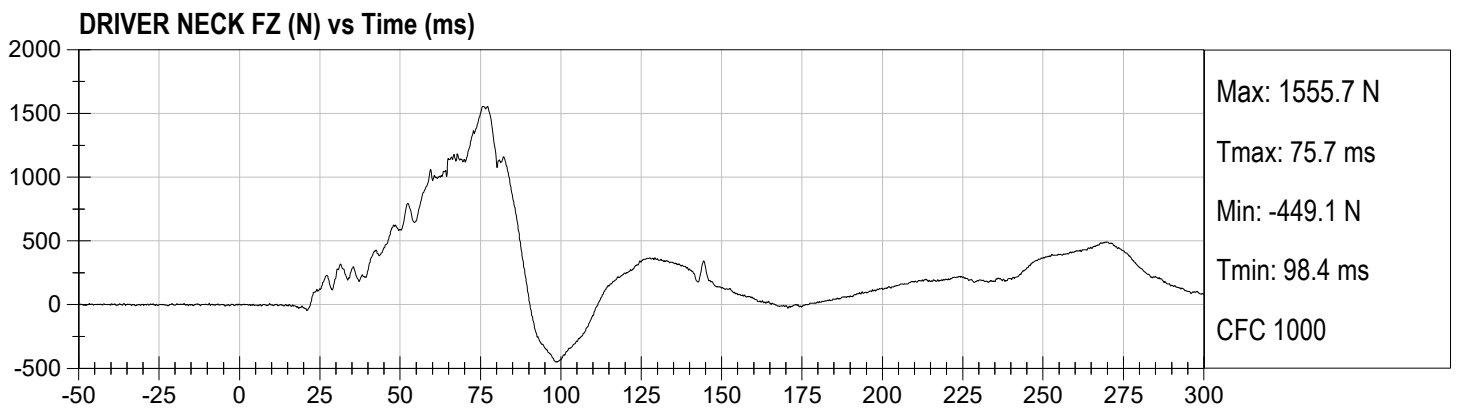
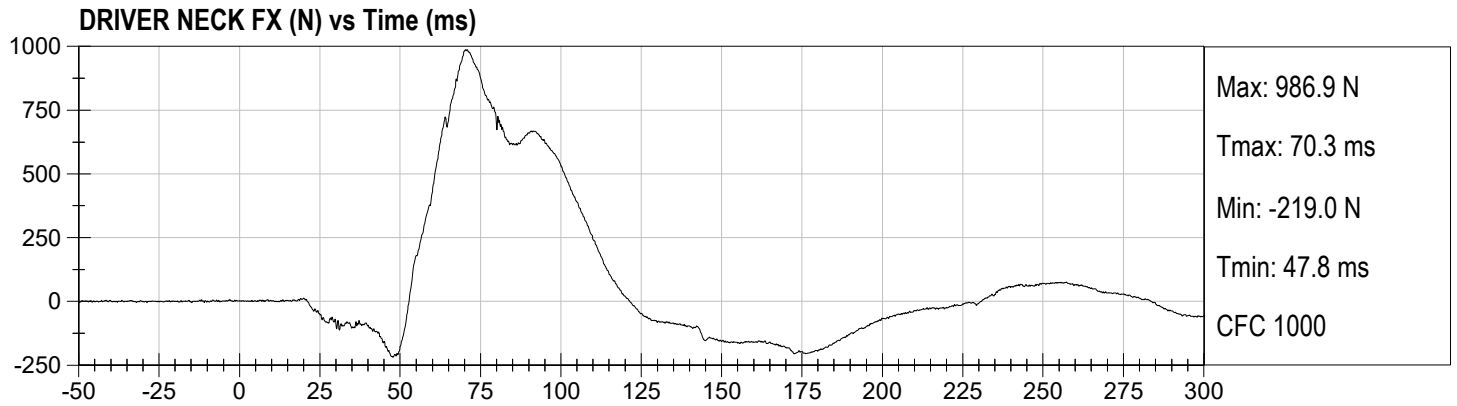


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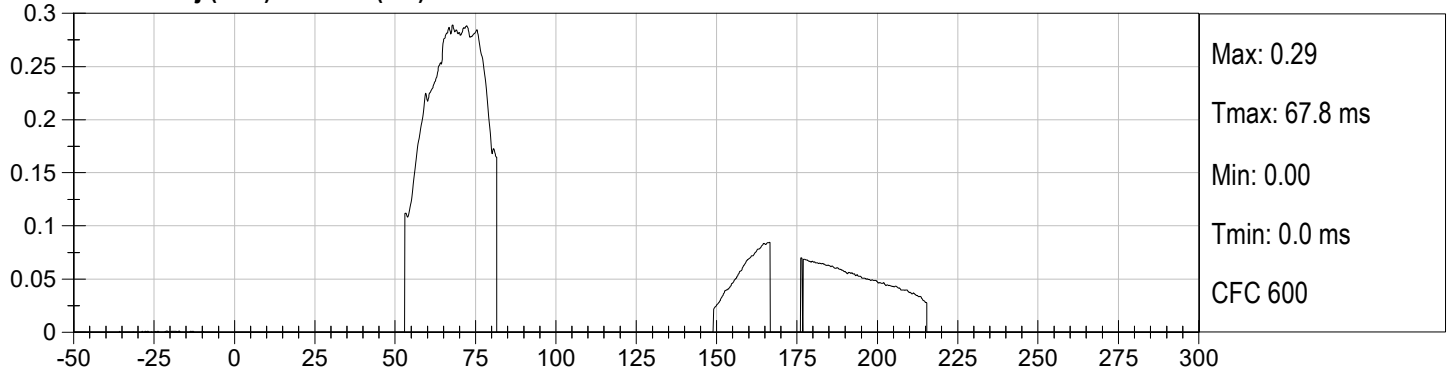


**DRIVER CHEST Resultant (g) vs Time (ms)**

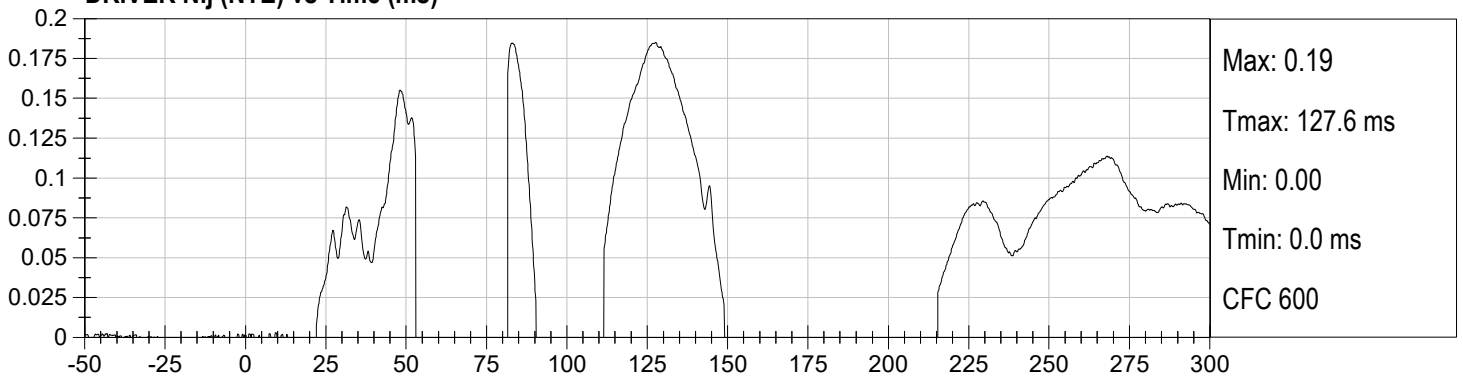




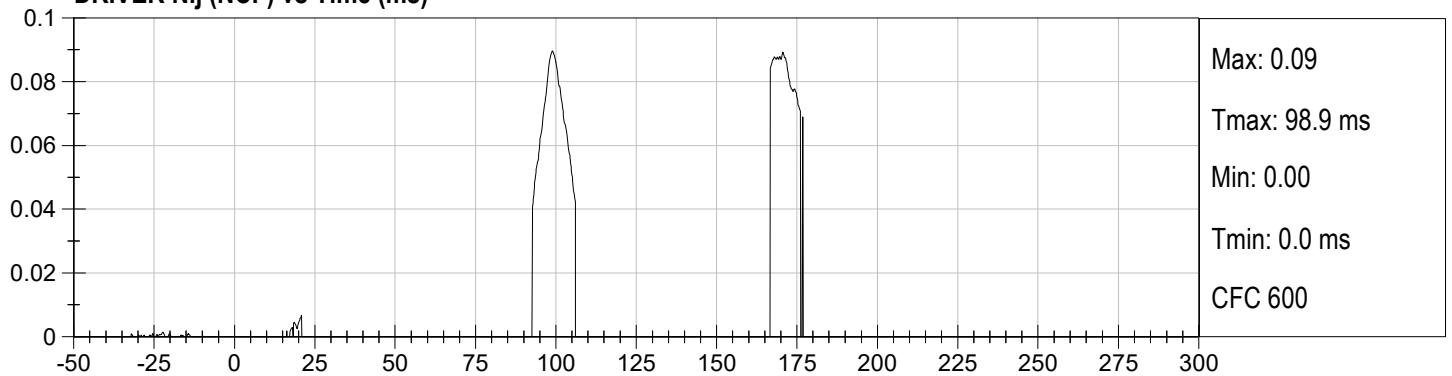
**DRIVER Nij (NTF) vs Time (ms)**



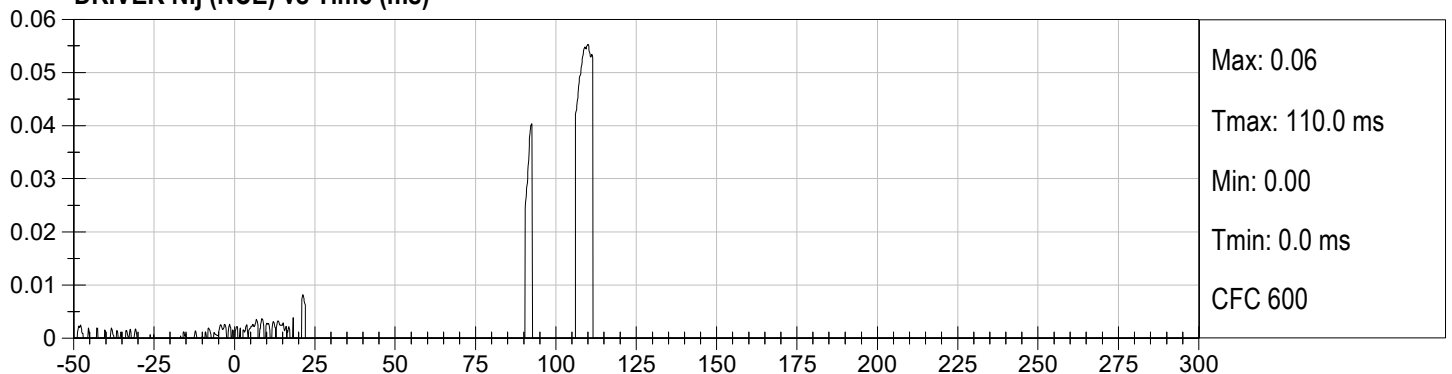
**DRIVER Nij (NTE) vs Time (ms)**



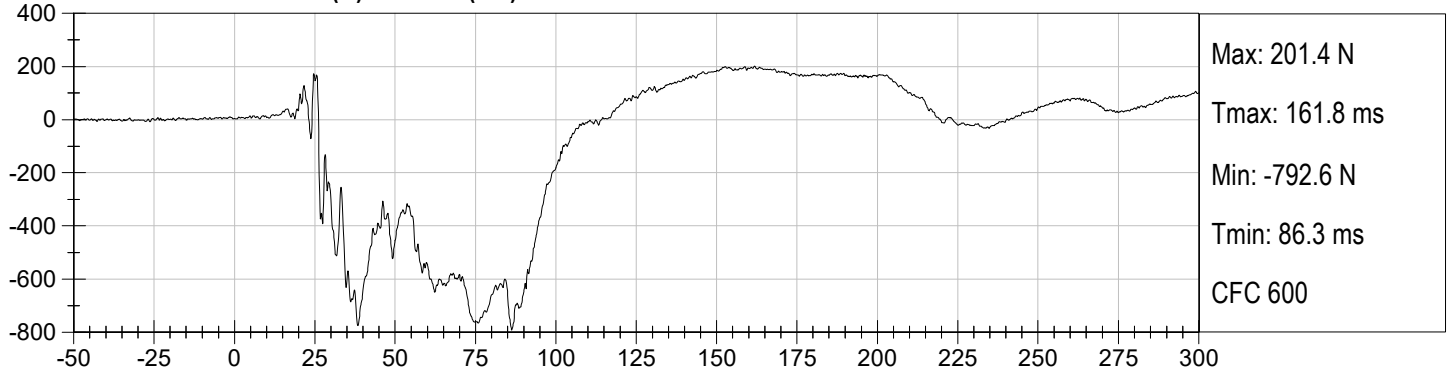
**DRIVER Nij (NCF) vs Time (ms)**



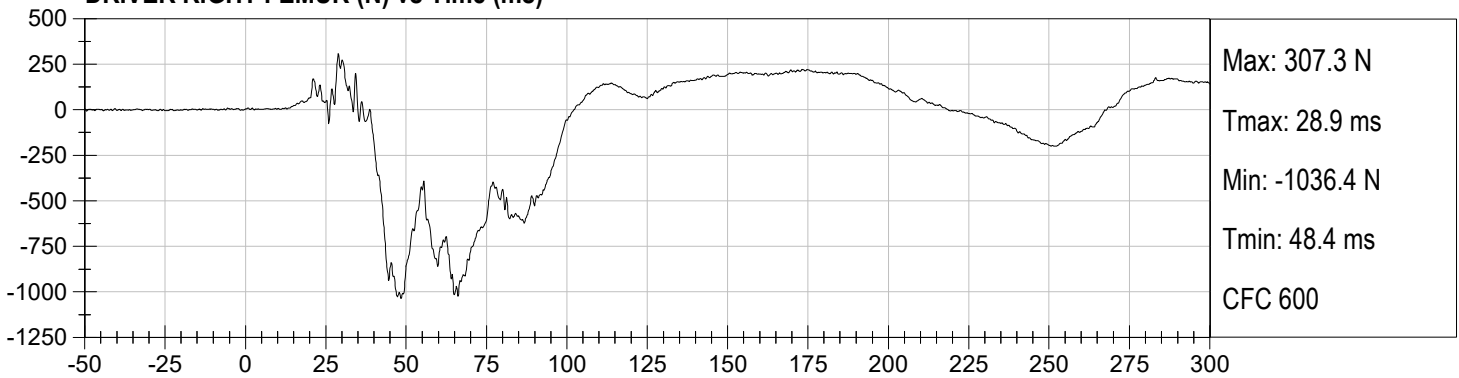
**DRIVER Nij (NCE) vs Time (ms)**

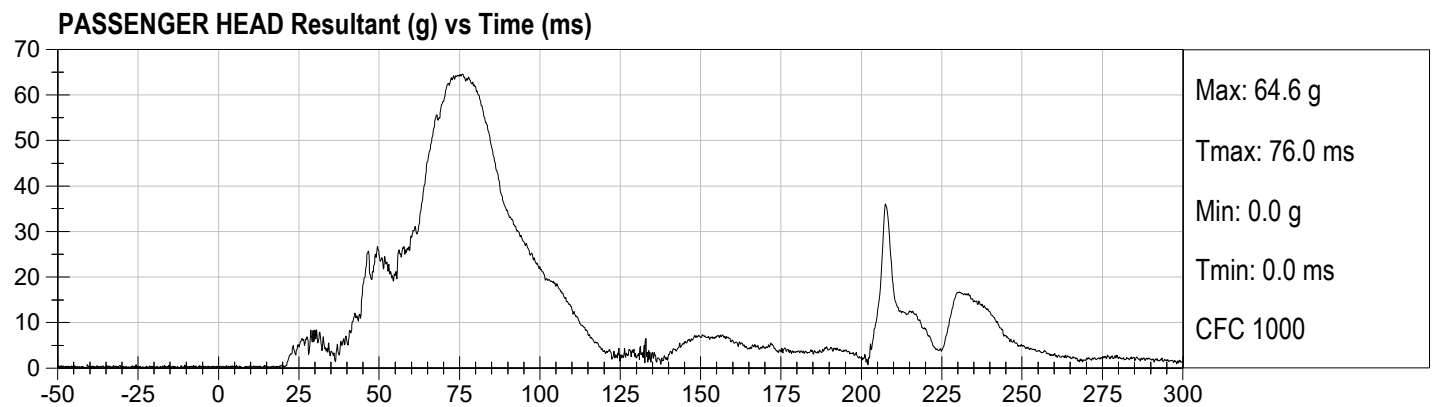
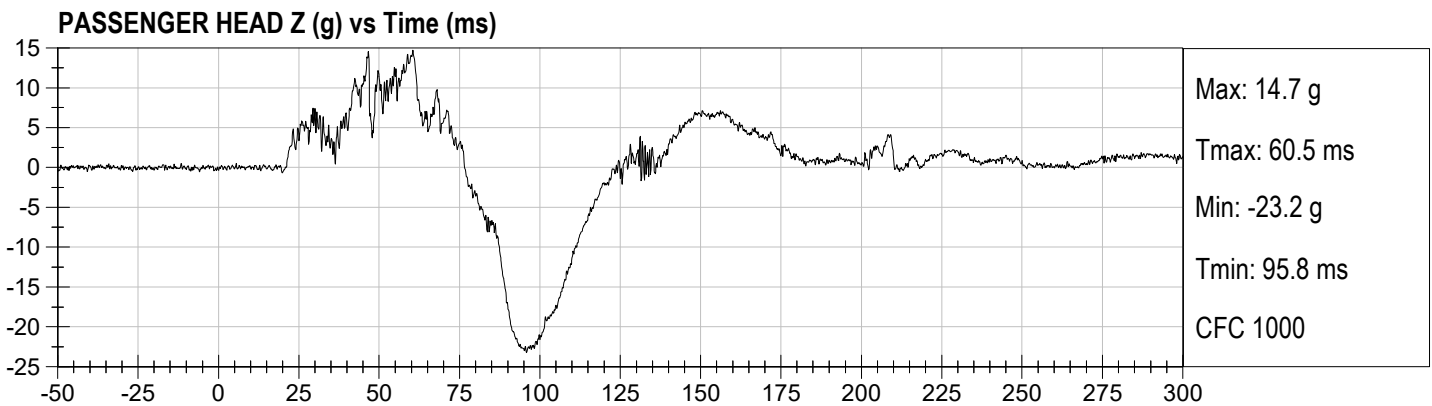
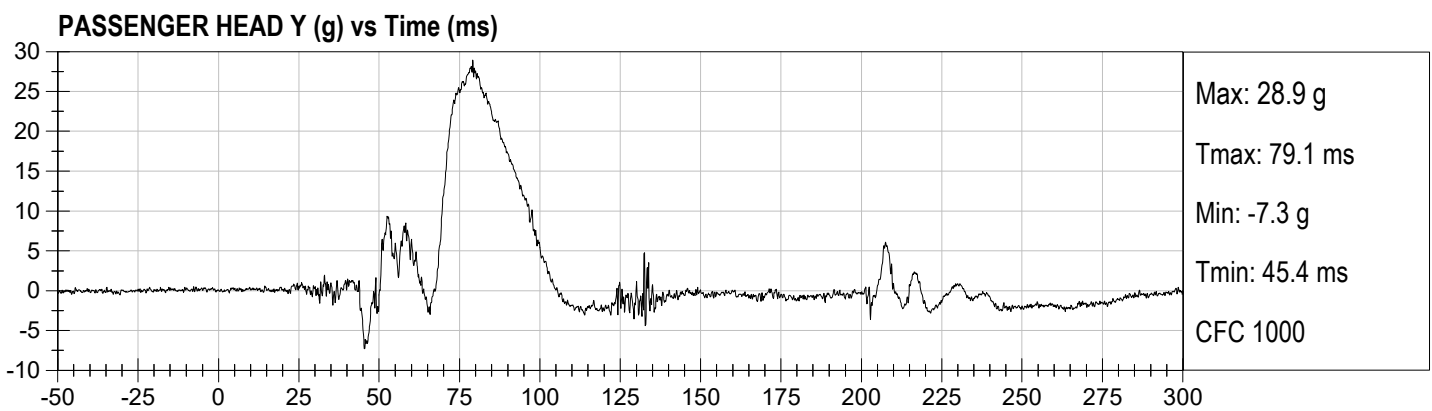
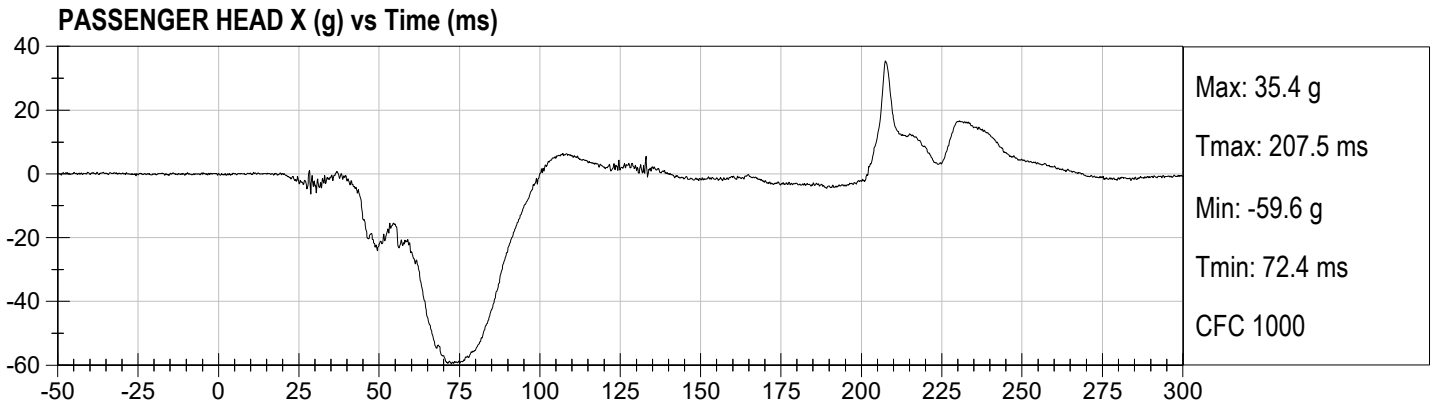


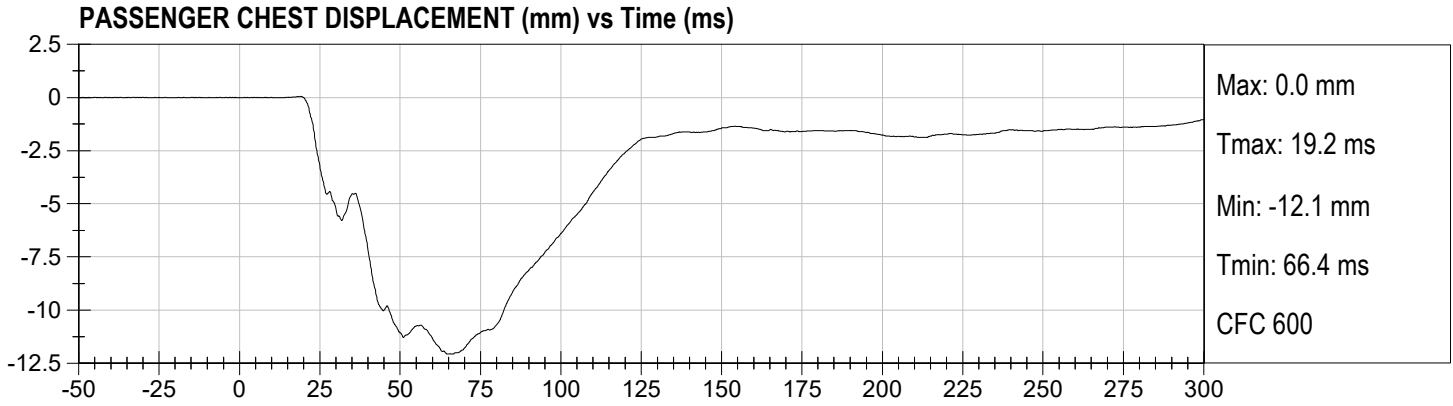
**DRIVER LEFT FEMUR (N) vs Time (ms)**

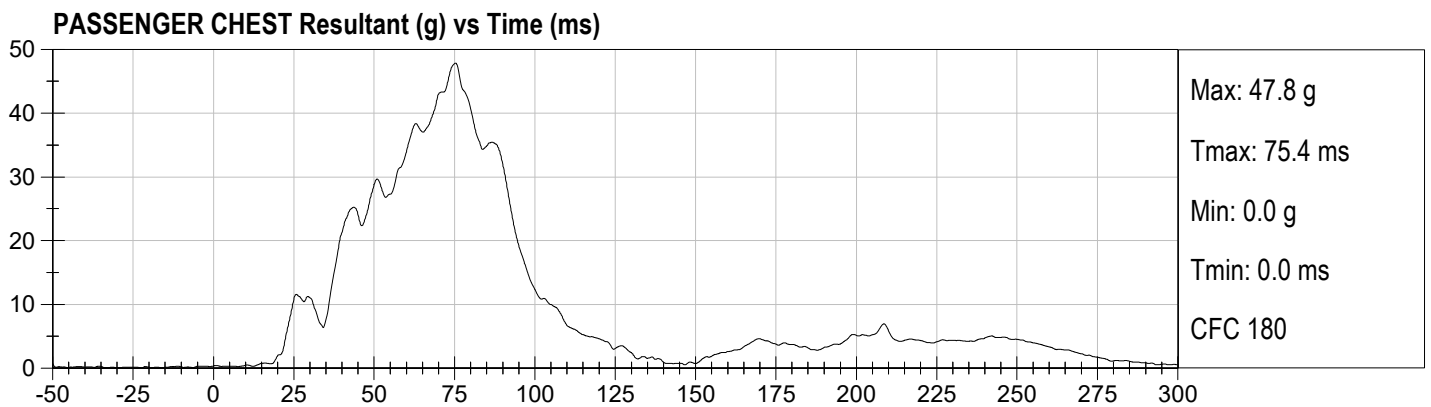
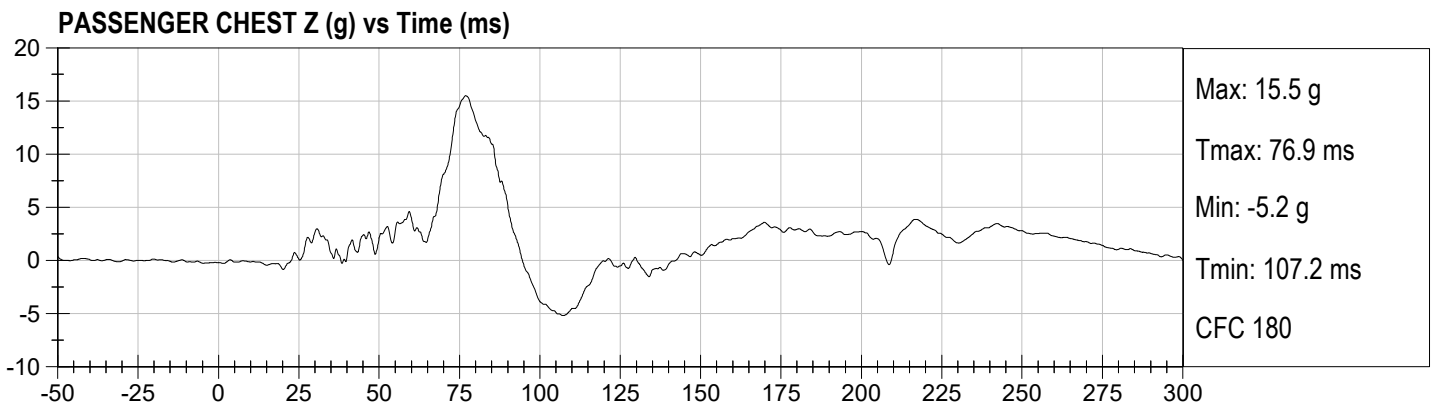
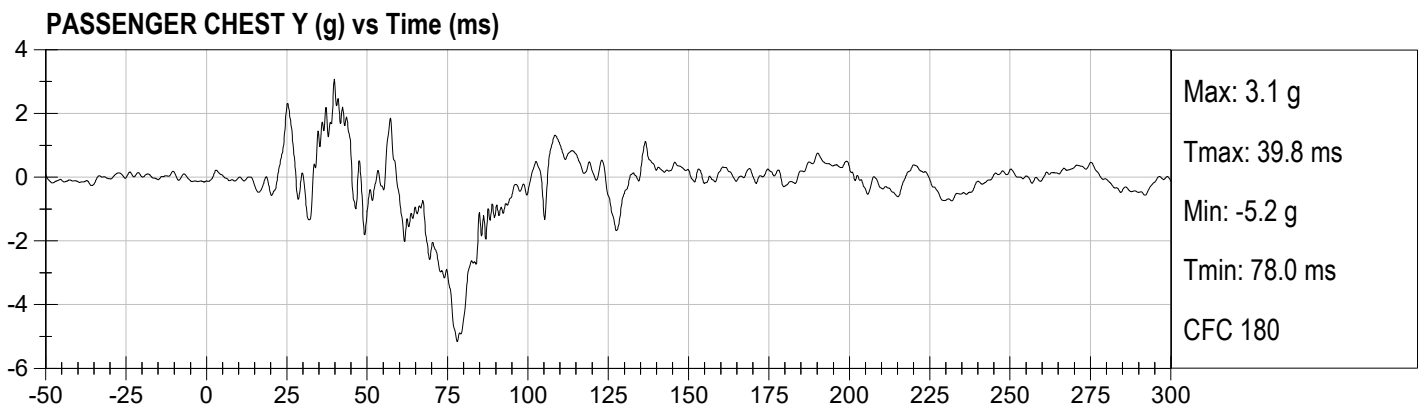
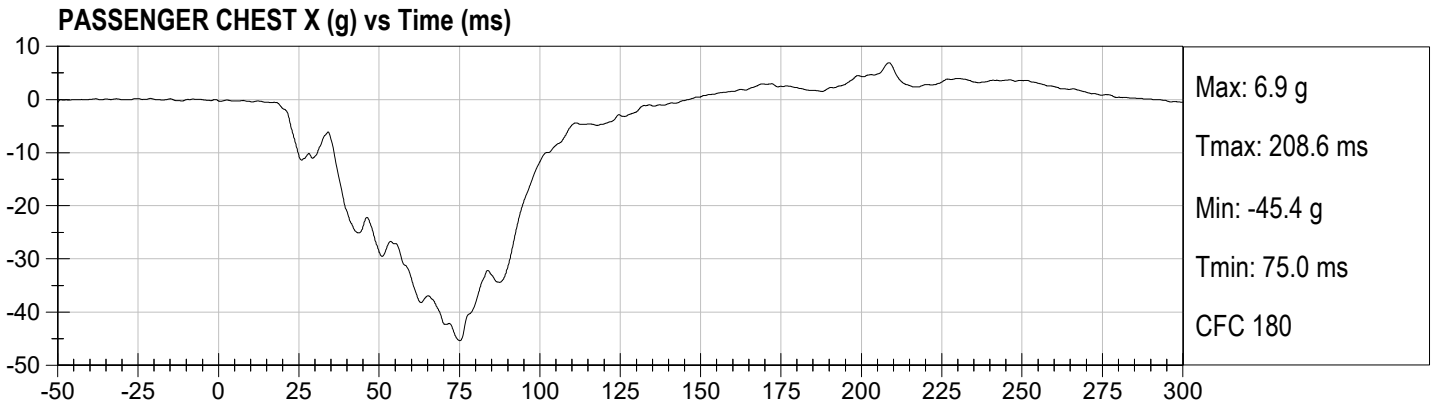


**DRIVER RIGHT FEMUR (N) vs Time (ms)**

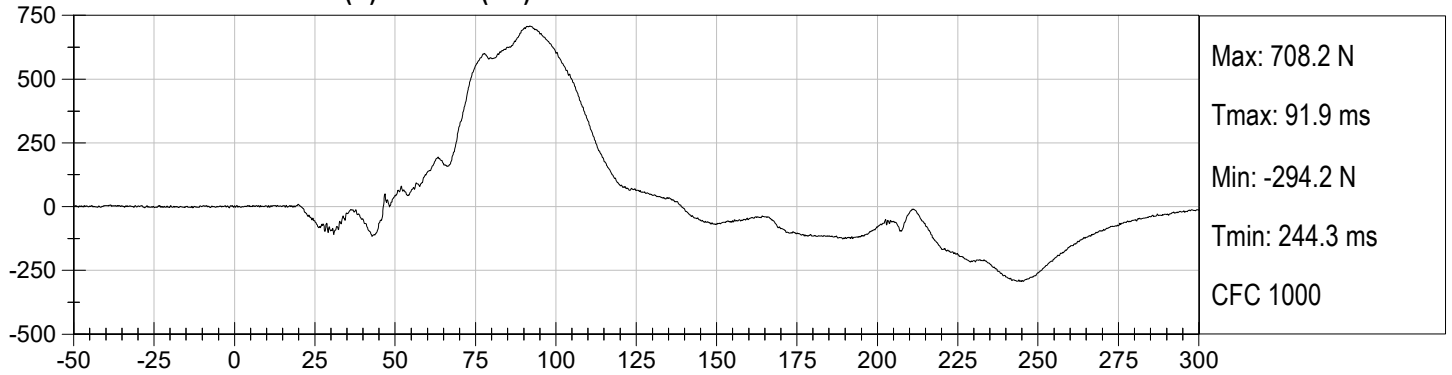




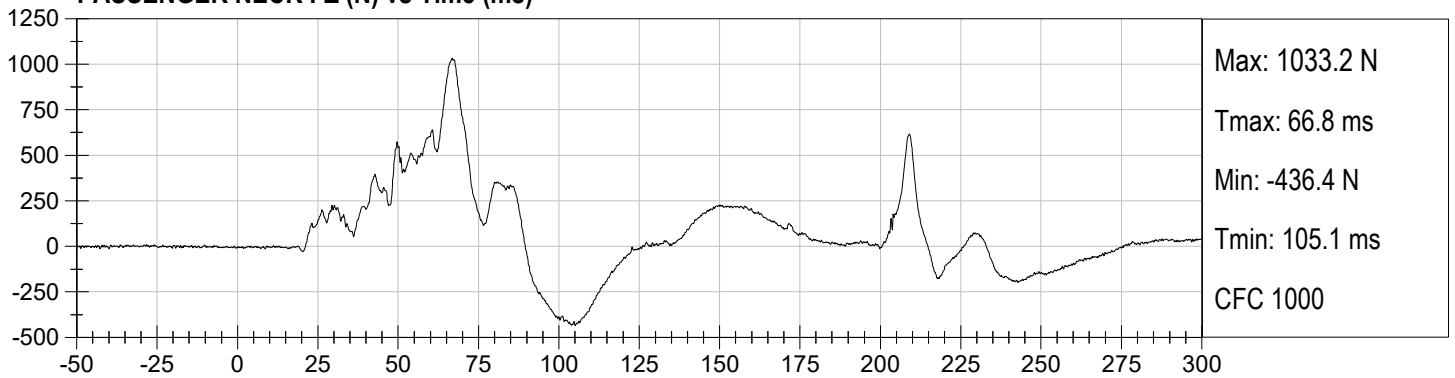




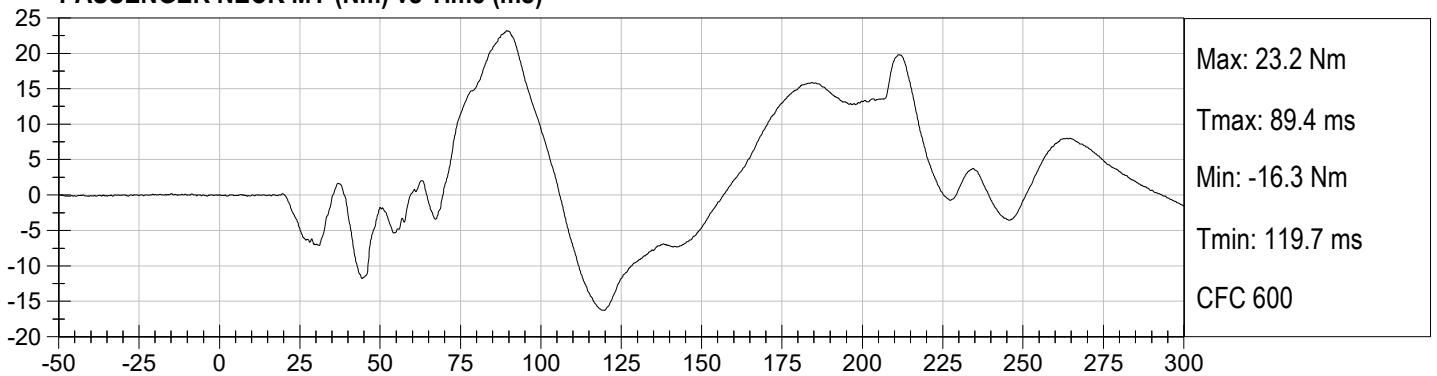
**PASSENGER NECK FX (N) vs Time (ms)**



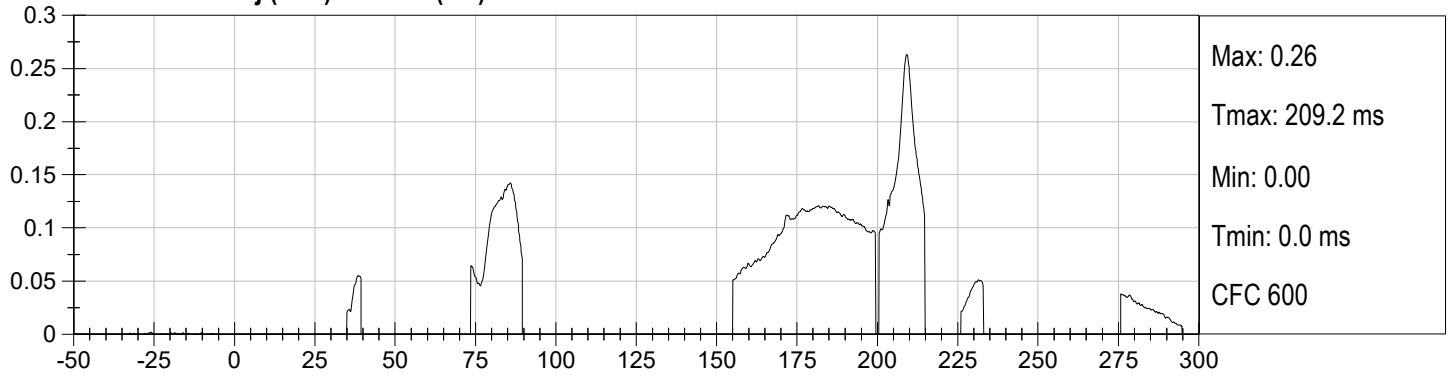
**PASSENGER NECK FZ (N) vs Time (ms)**



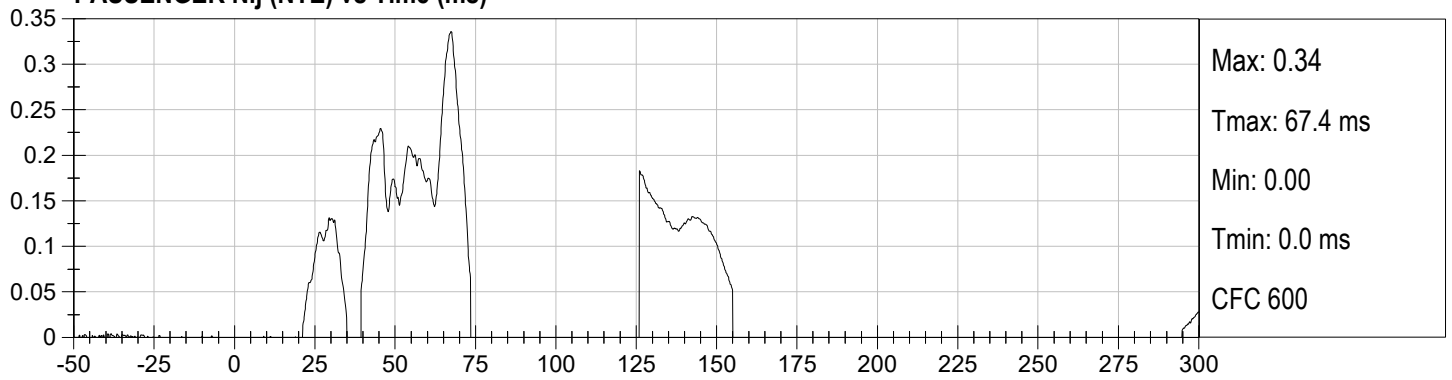
**PASSENGER NECK MY (Nm) vs Time (ms)**



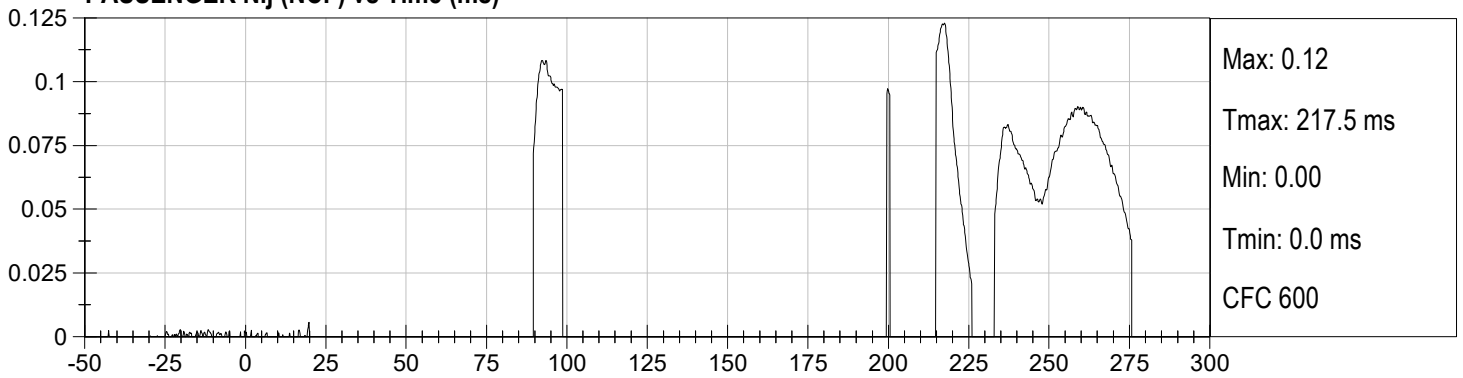
**PASSENGER Nij (NTF) vs Time (ms)**



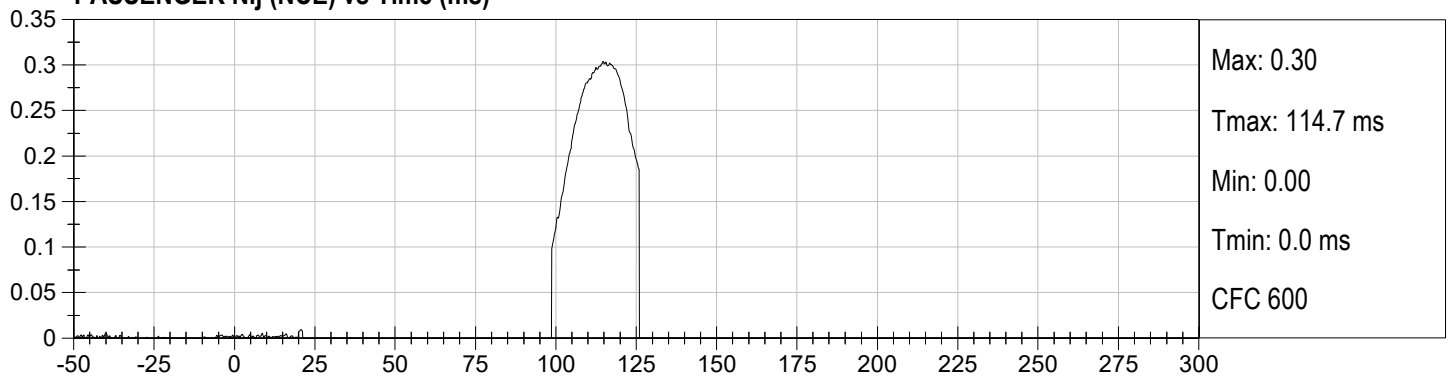
**PASSENGER Nij (NTE) vs Time (ms)**



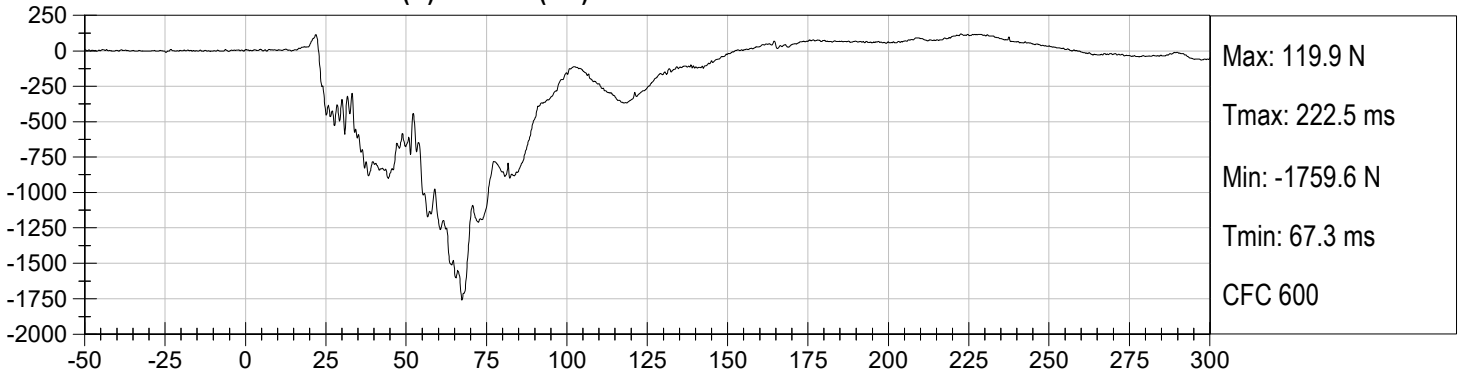
**PASSENGER Nij (NCF) vs Time (ms)**



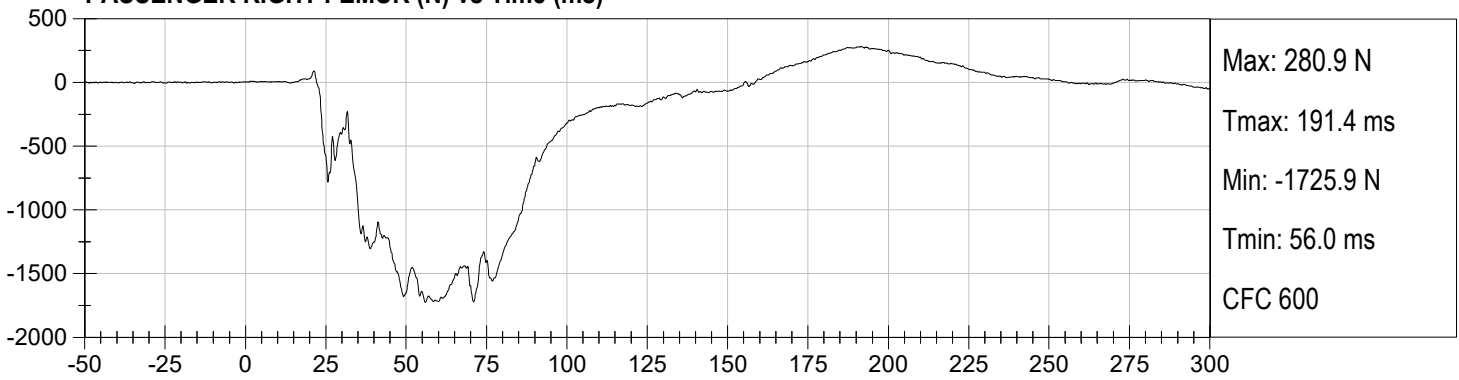
**PASSENGER Nij (NCE) vs Time (ms)**



**PASSENGER LEFT FEMUR (N) vs Time (ms)**



**PASSENGER RIGHT FEMUR (N) vs Time (ms)**



**APPENDIX C**  
**DUMMY QUALIFICATION AND PERFORMANCE VERIFICATION**

**QUALIFICATION TEST RESULTS**

**PRE-TEST**

**HYBRID III 50<sup>TH</sup> PERCENTILE MALE - DRIVER ATD**

**Hybrid III, 50th External Measurements  
SN: 351**

HYBRID III, PART 572, SUBPART E EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (inches)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	34.6-35.0	34.8
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	19.9-20.5	20.0
C	H-POINT HEIGHT	Reference	3.3-3.5	3.4
D	H-POINT LOCATION FROM BACKLINE	Reference	5.3-5.5	5.5
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	3.3-3.7	3.5
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	5.5-6.1	6.0
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	11.4-12.0	11.8
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	1.6-1.8	1.7
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	13.0-13.6	13.3
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	7.5-8.3	7.8
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	22.8-23.8	23.8
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	16.9-17.9	17.0
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	19.1-19.7	19.5
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	17.8-18.8	18.8

HYBRID III, SUBPART E EXTERIOR DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS		ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 16.9-17.1 in. above seat surface	8.4-9.0	8.5
P	FOOT LENGTH	Tip of toe to rear of heel	9.9-10.5	10.3
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	16.3-17.2	16.5
W	FOOT BREADTH	The widest part of the foot	3.6-4.2	4.0
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 16.9-17.1 in. above seat surface	38.2-39.4	39.2
Z	WAIST CIRCUMFERENCE	Measured 8.9-9.1 in. above seat surface	32.9-34.1	33.7
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	16.9-17.1	17.0
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	8.9-9.1	9.0

**NOTE:** THE H-POINT IS LOCATED 1.83 INCHES FORWARD AND 2.57 INCHES DOWN FROM THE CENTER OF THE PELVIS ANGLE REFERENCE HOLE.

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 50TH PERCENTILE MALE**

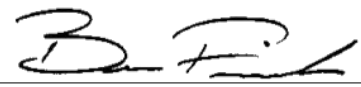
ATD Serial No: 351

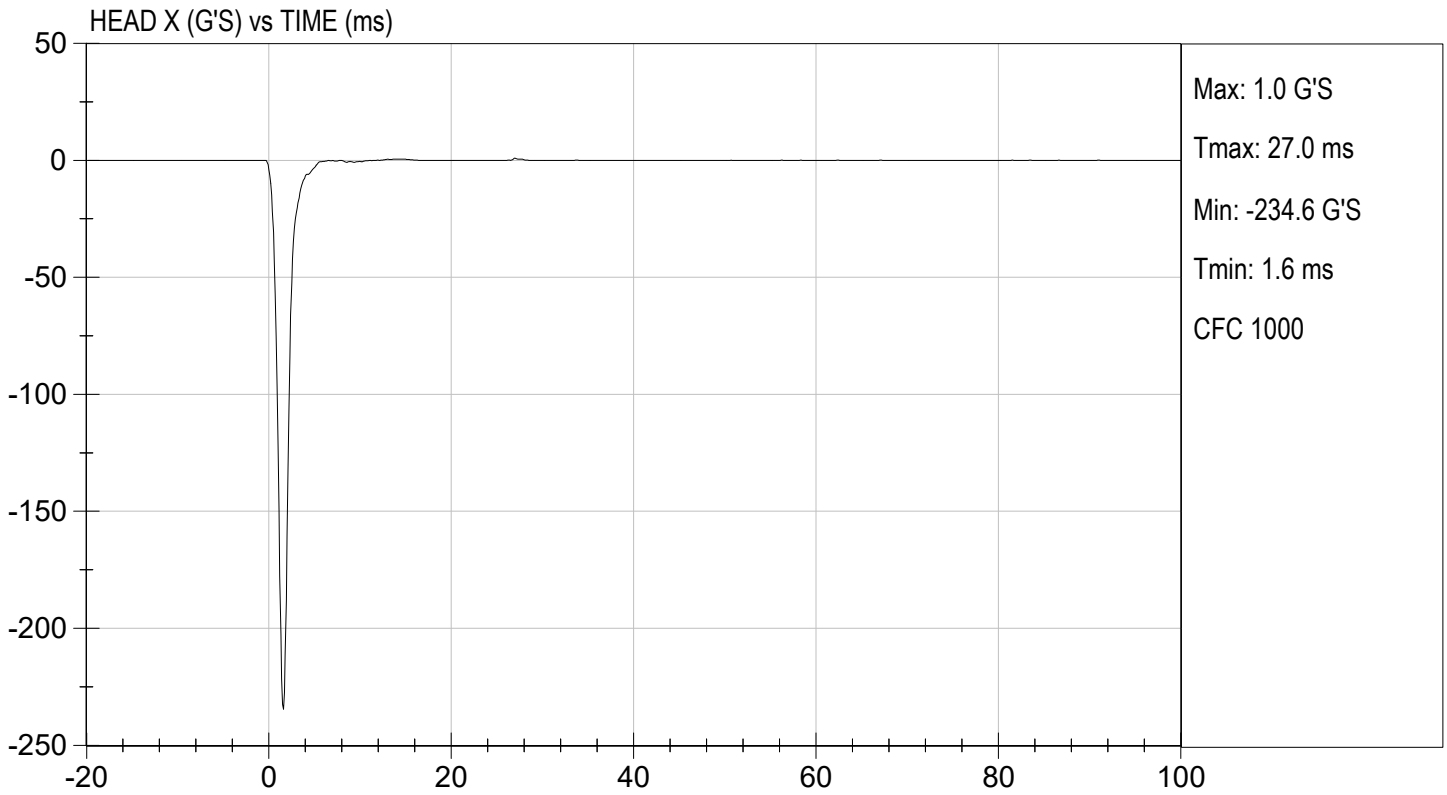
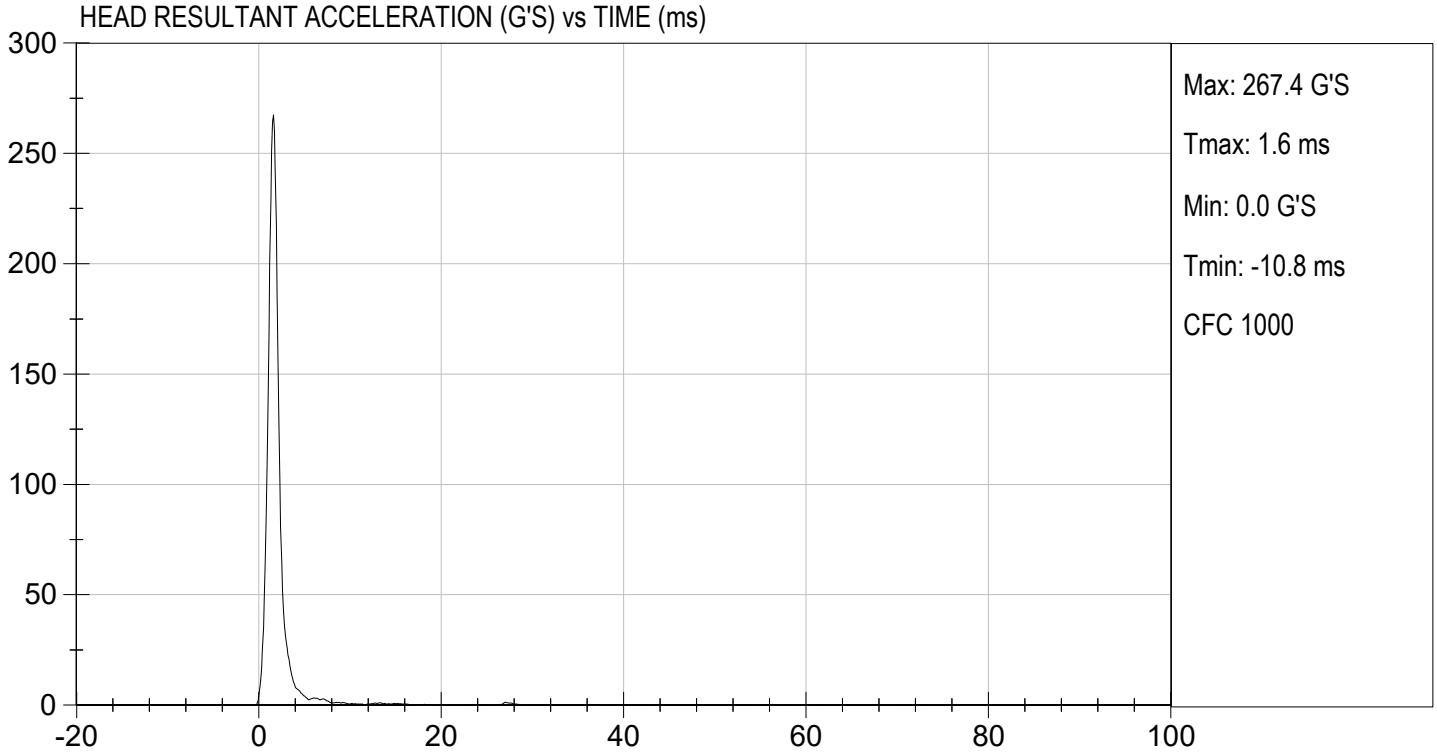
Test ID: D231511

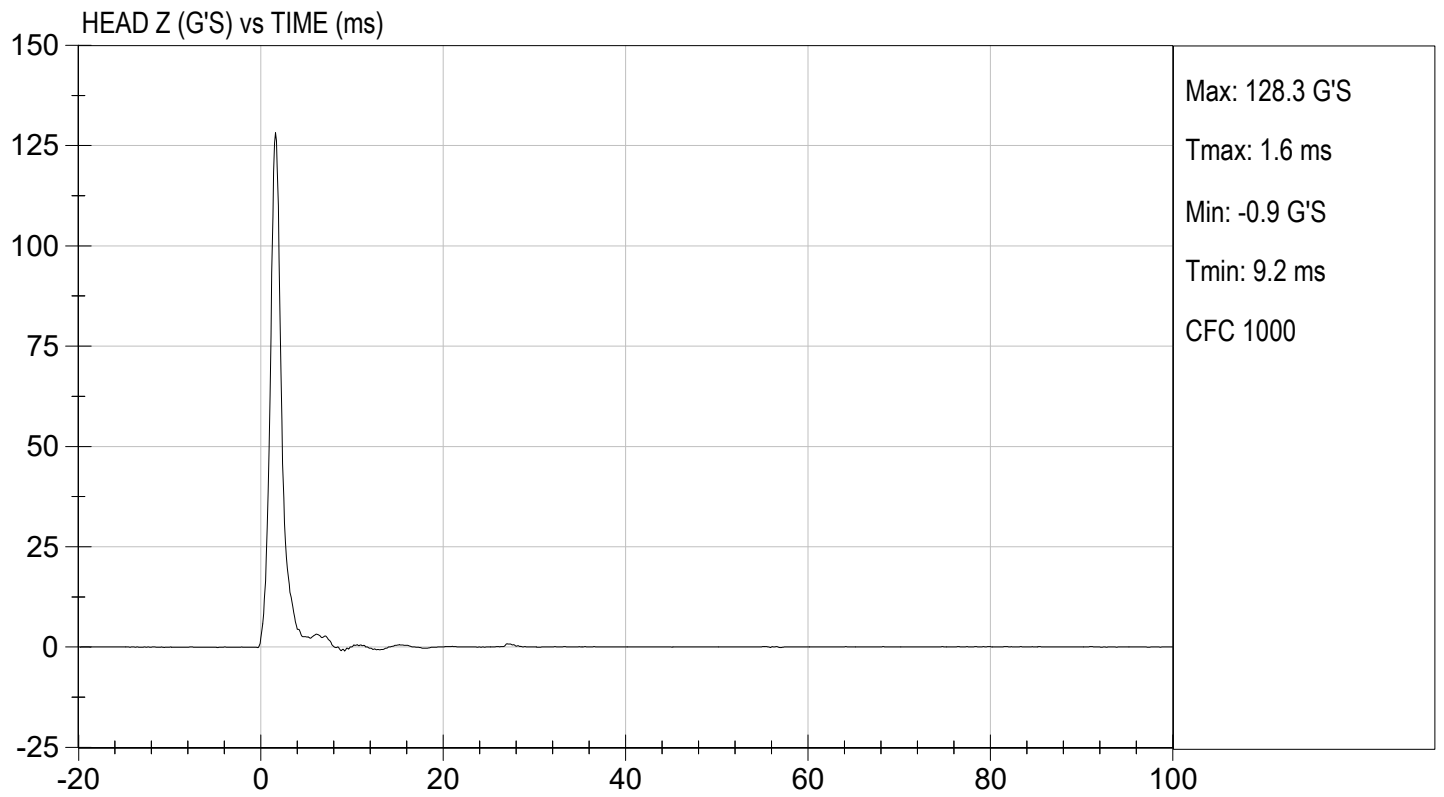
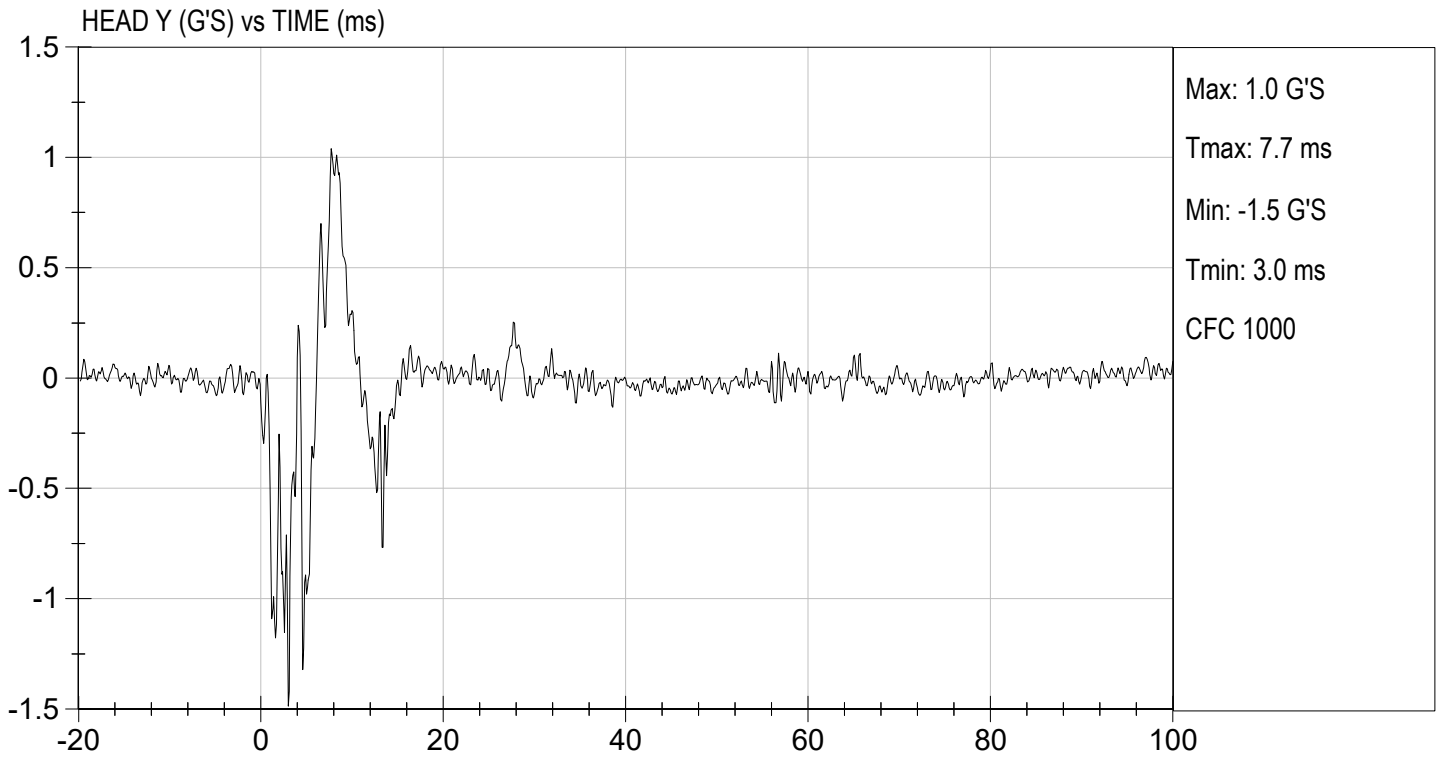
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	225 to 275	267	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

  
 \_\_\_\_\_  
 Laboratory Technician

06/15/2023  
 \_\_\_\_\_  
 Test Date

  
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 Approved By





**MGA RESEARCH CORPORATION**  
**NECK FLEXION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

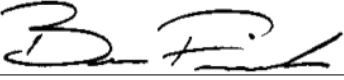
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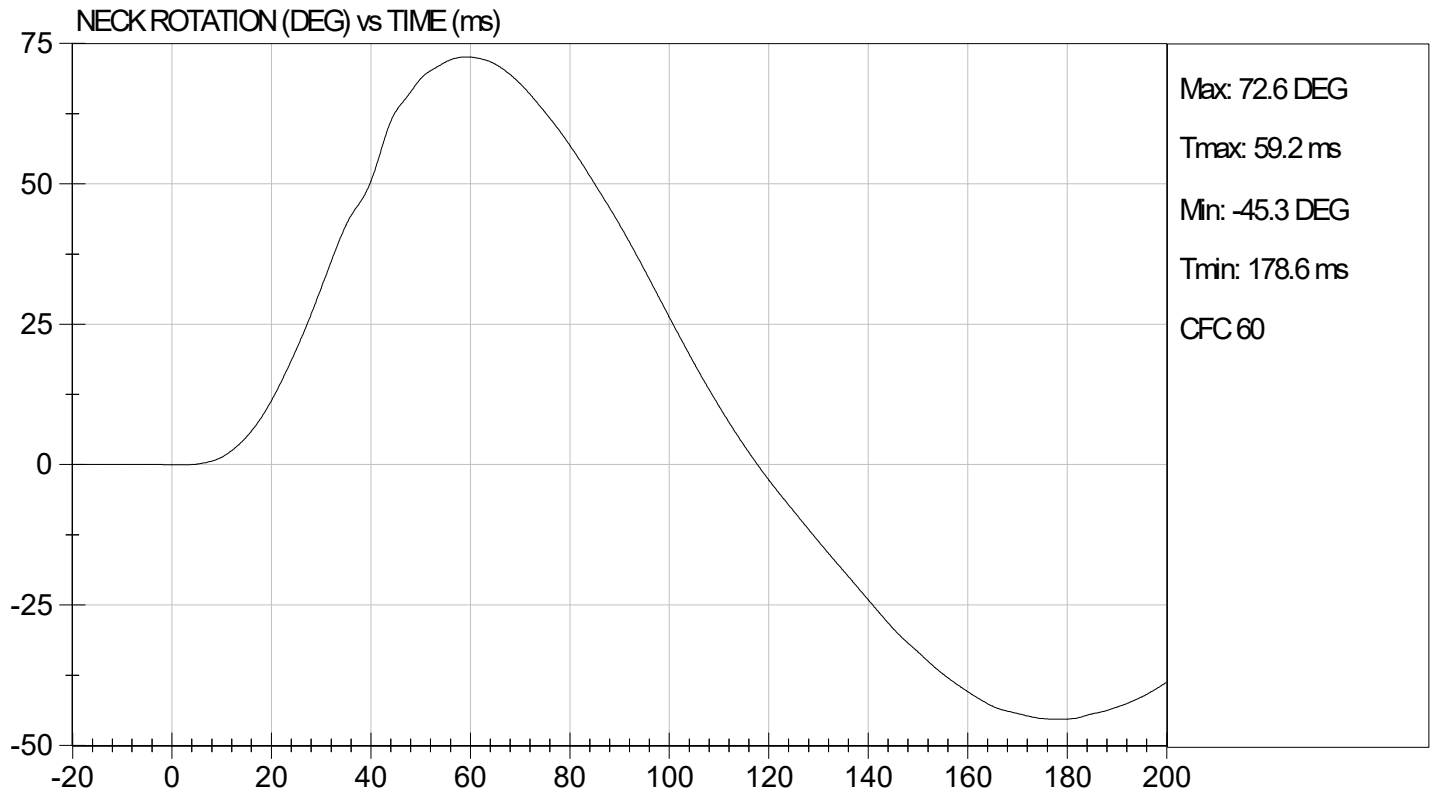
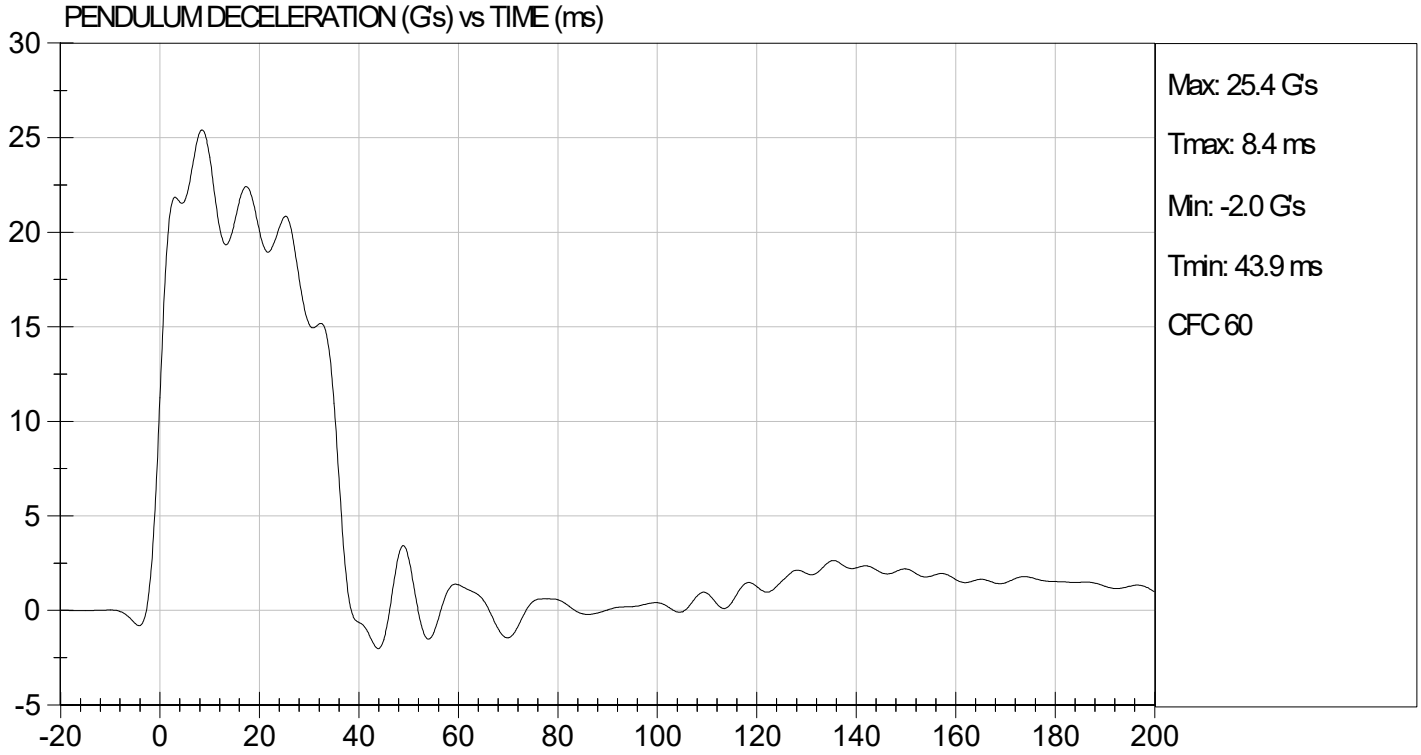
Test I.D.: D231512

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.97	Pass
	20 ms	G's	17.60 to 22.60	20.07	Pass
	30 ms	G's	12.50 to 18.50	15.13	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	15.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	36.6	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	72.6	Pass
	Time	ms	57.0 to 64.0	59.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	117.9	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	95.7	Pass
	Time	ms	47.0 to 58.0	49.0	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	99.2	Pass
Overall Test Results					Pass

  
 \_\_\_\_\_  
 Laboratory Technician

06/15/2023  
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 Test Date

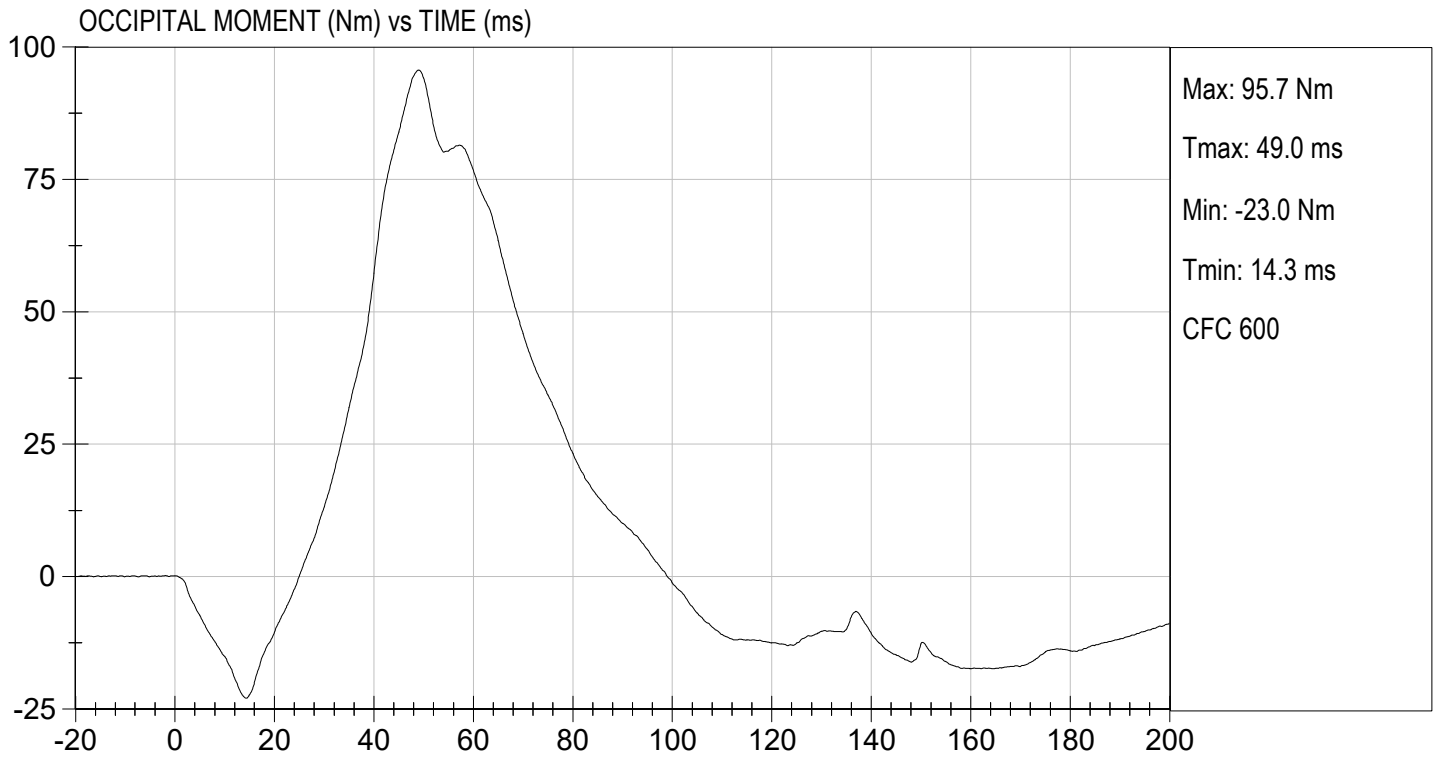
  
 \_\_\_\_\_  
 Approved By





TEST DESC: NECK FLEXION  
VELOCITY: 22.83 ft/s, 6.96 m/s

TEST DATE: 06/15/2023  
TEST #: D231512



**MGA RESEARCH CORPORATION**  
**NECK EXTENSION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

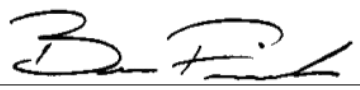
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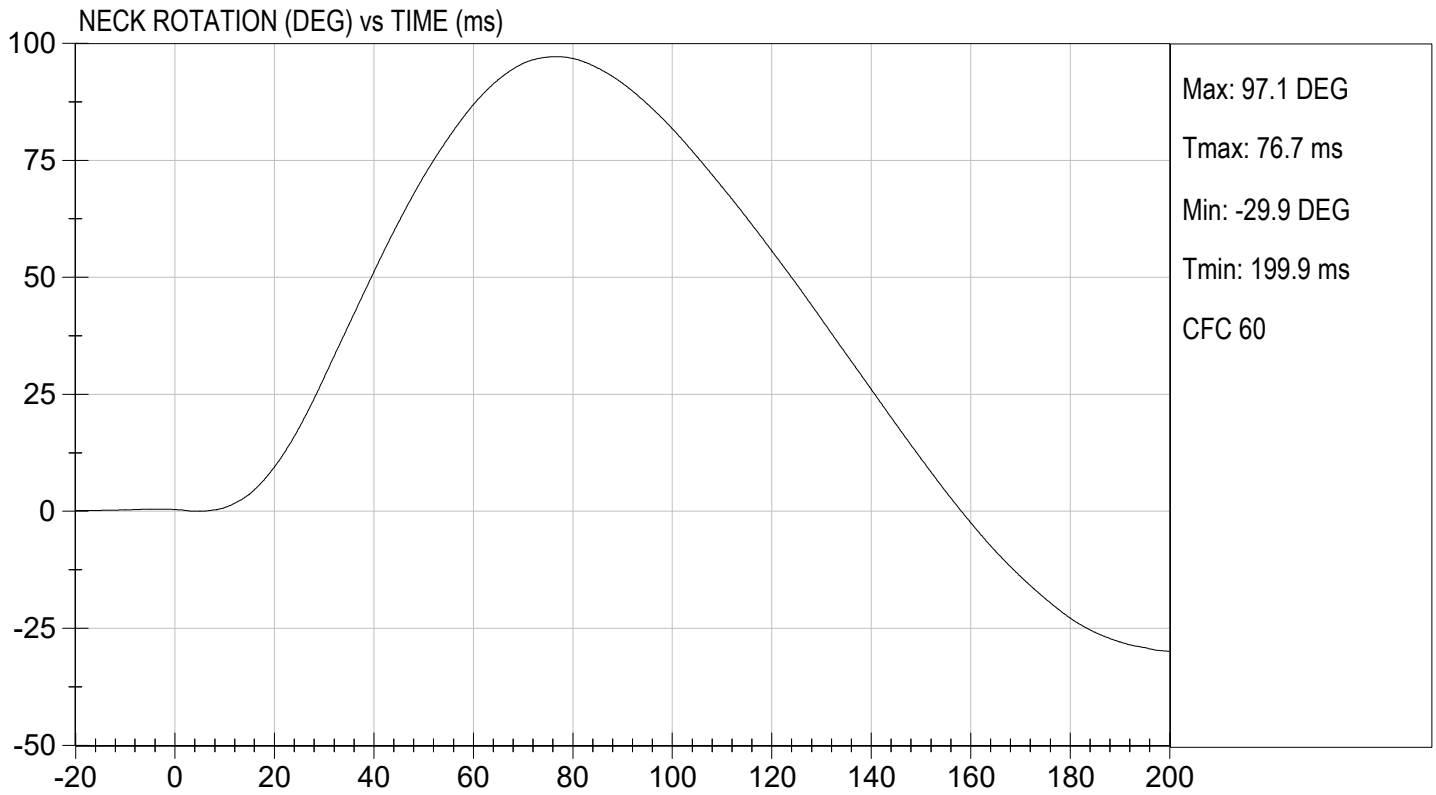
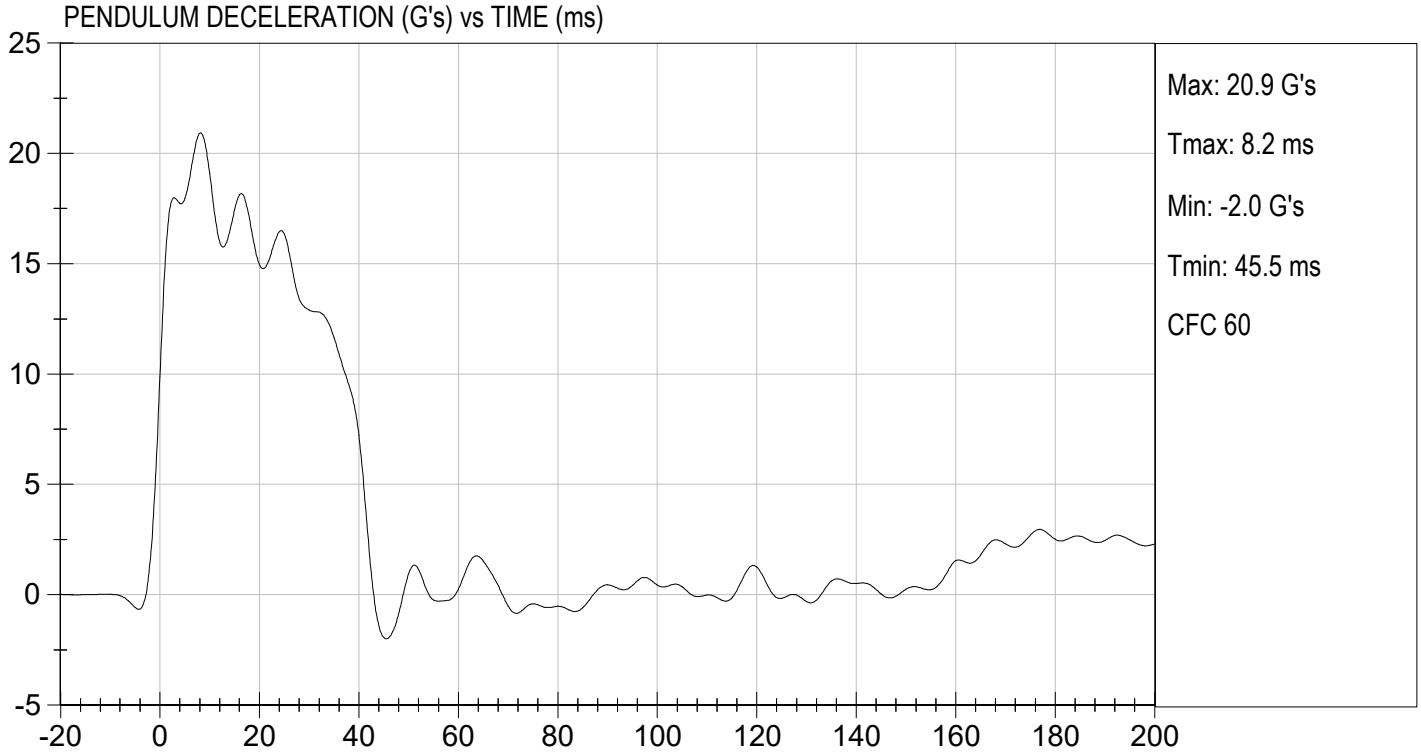
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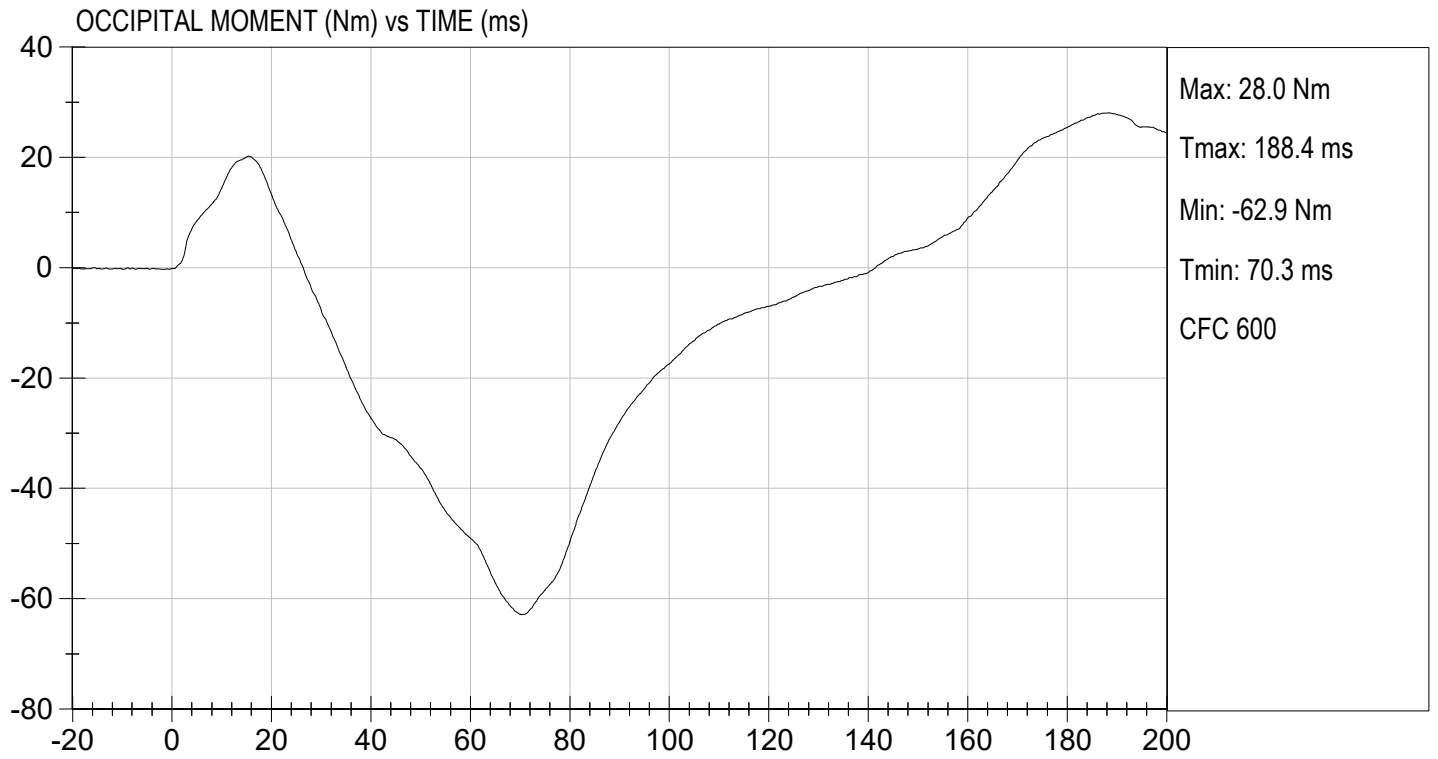
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.08	Pass
	20 ms	G's	14.00 to 19.00	14.96	Pass
	30 ms	G's	11.00 to 16.00	12.90	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	12.9	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.1	Pass
	Time	ms	72.0 to 82.0	76.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	158.3	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-62.9	Pass
	Time	ms	65.0 to 79.0	70.3	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	141.6	Pass
Overall Test Results					Pass

  
 Laboratory Technician

06/15/2023  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**  
**THORAX IMPACT**  
**HYBRID III 50TH PERCENTILE MALE**

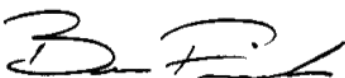
ATD Serial No: 351

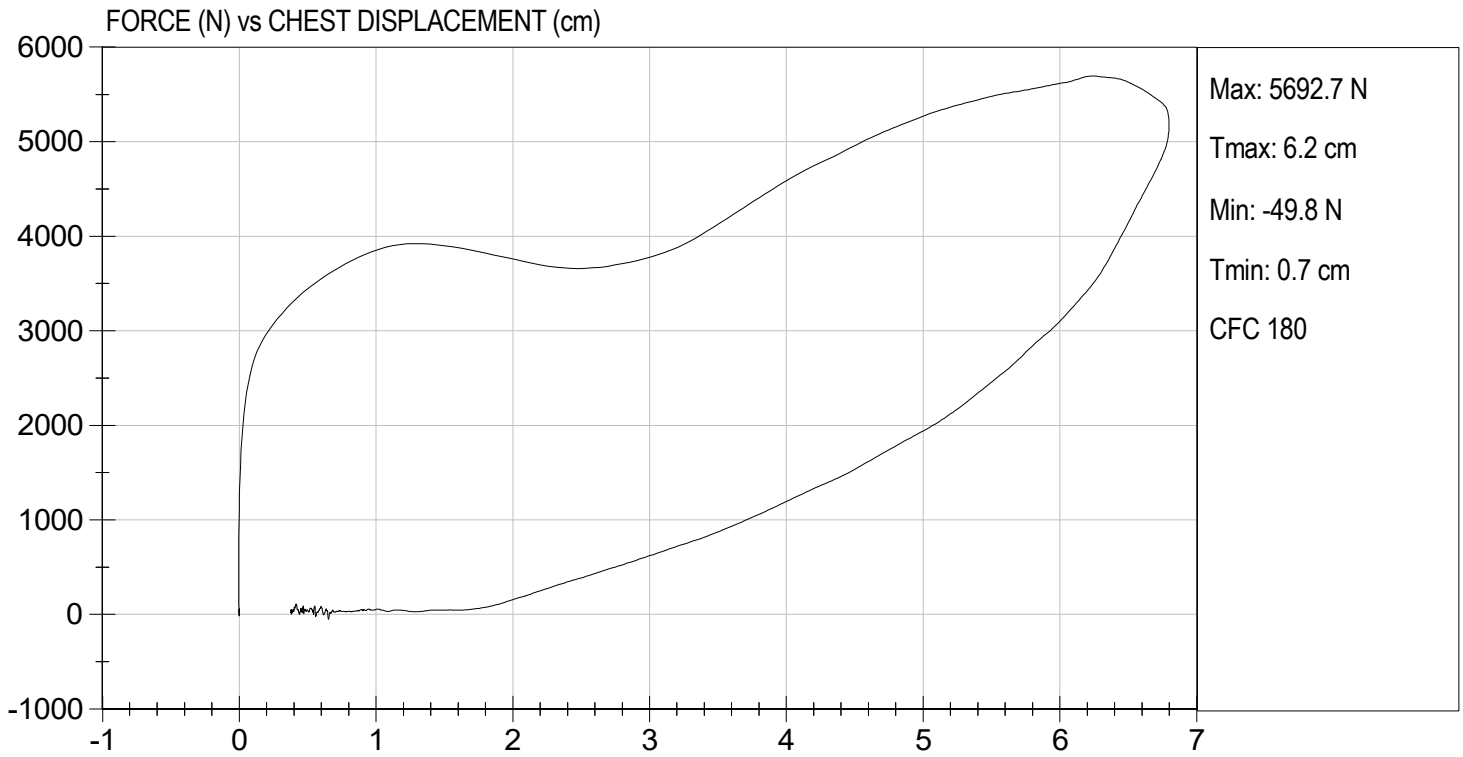
Test I.D: D231514

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,693	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.80	Pass
Internal Hysteresis	%	69 to 85	72	Pass
<b>Overall Test Results</b>				<b>Pass</b>

  
 Laboratory Technician

06/15/2023  
 Test Date

  
 Approved By



**MGA RESEARCH CORPORATION**  
**RIGHT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

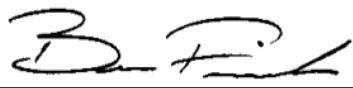
ATD Serial No: 351

Test I.D: D231515

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,091	Pass
Overall Test Results				Pass

  
 Laboratory Technician

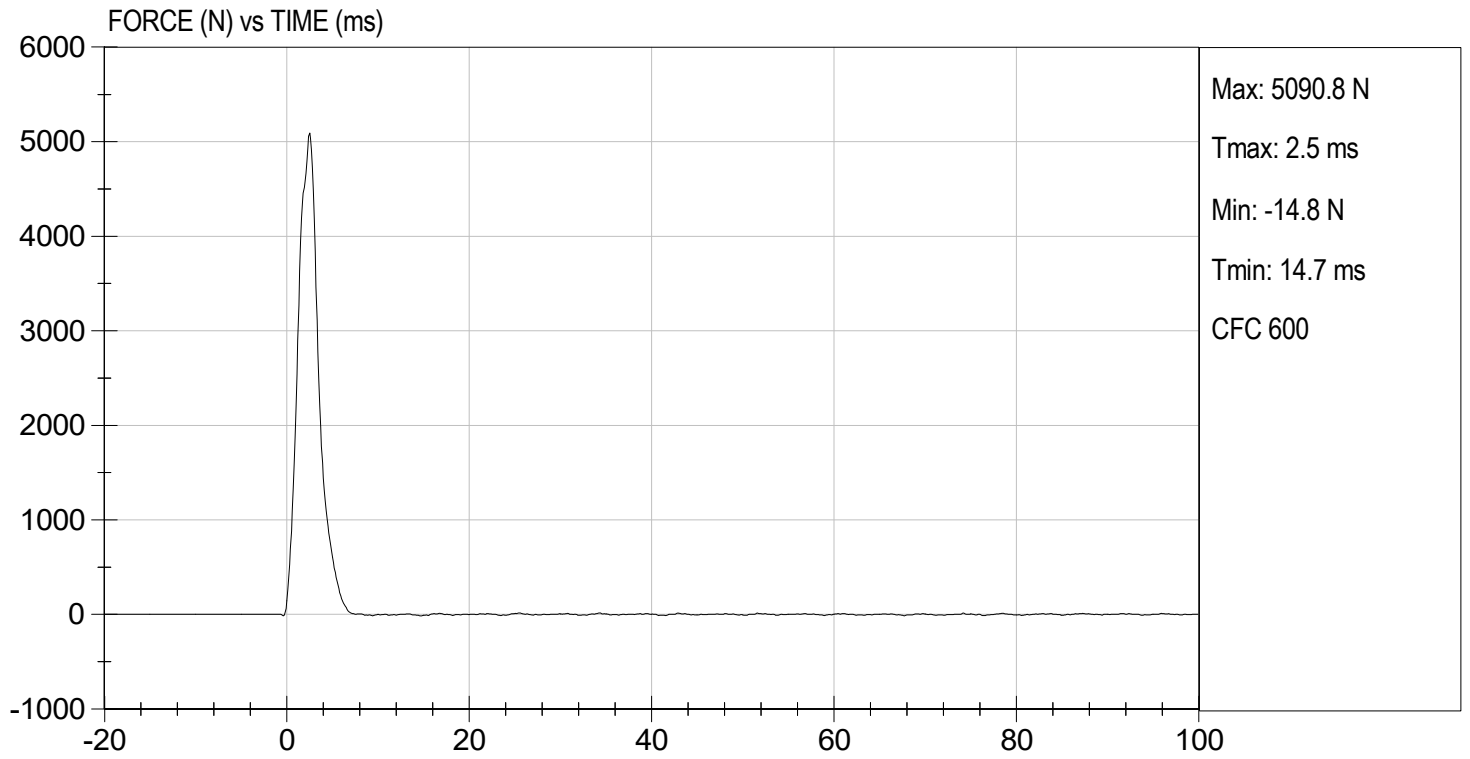
06/15/2023  
 Test Date

  
 Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.92 ft/s, 2.11 m/s

TEST DATE: 06/15/2023  
TEST #: D231515



**MGA RESEARCH CORPORATION**  
**LEFT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

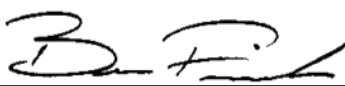
ATD Serial No: 351

Test I.D: D231516

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,076	Pass
Overall Test Results				Pass

  
 Laboratory Technician

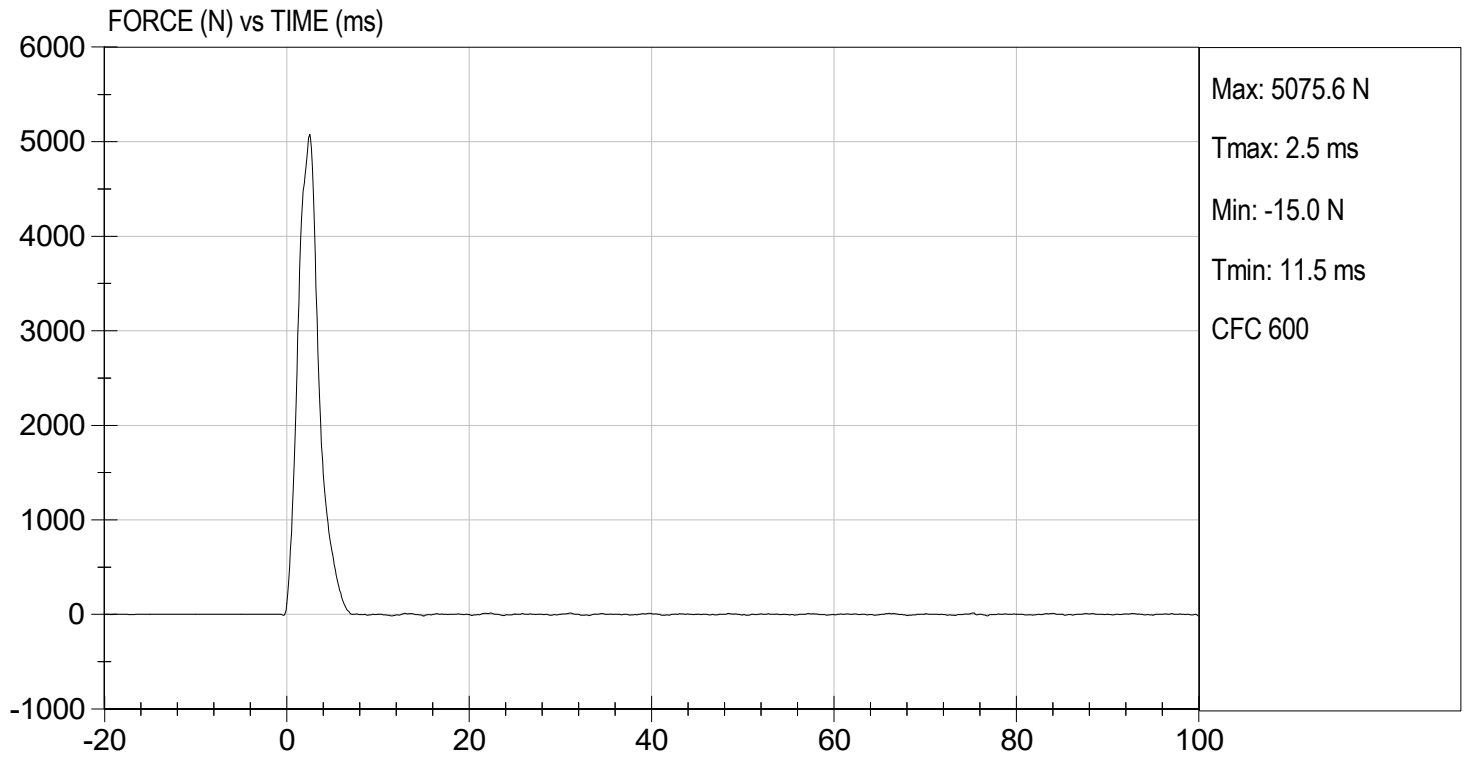
06/15/2023  
 Test Date

  
 Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.92 ft/s, 2.11 m/s

TEST DATE: 06/15/2023  
TEST #: D231516



**MGA RESEARCH CORPORATION**  
**HIP-FEMUR FLEXION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

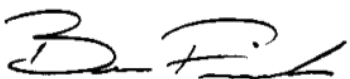
**ATD Serial No:** 351

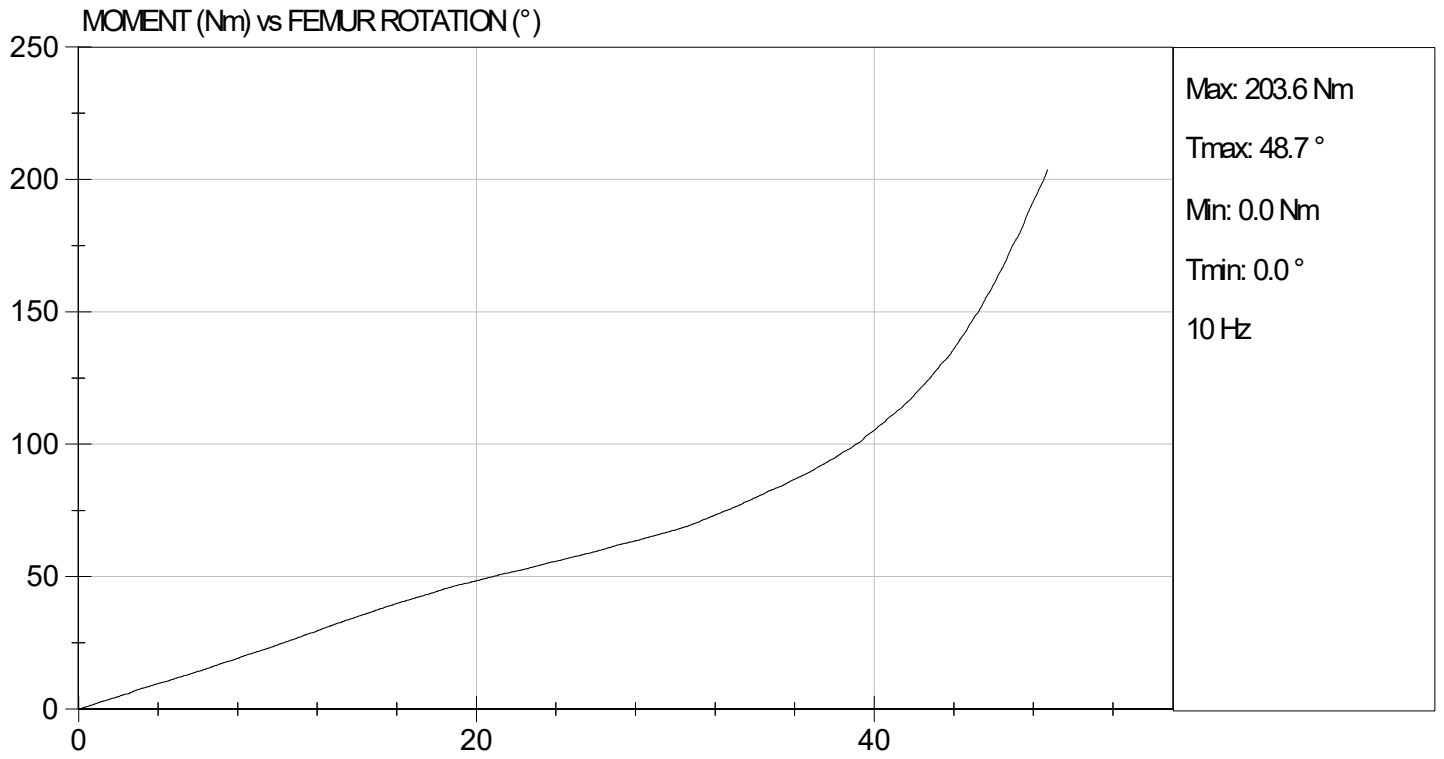
**Test I.D:** D231510

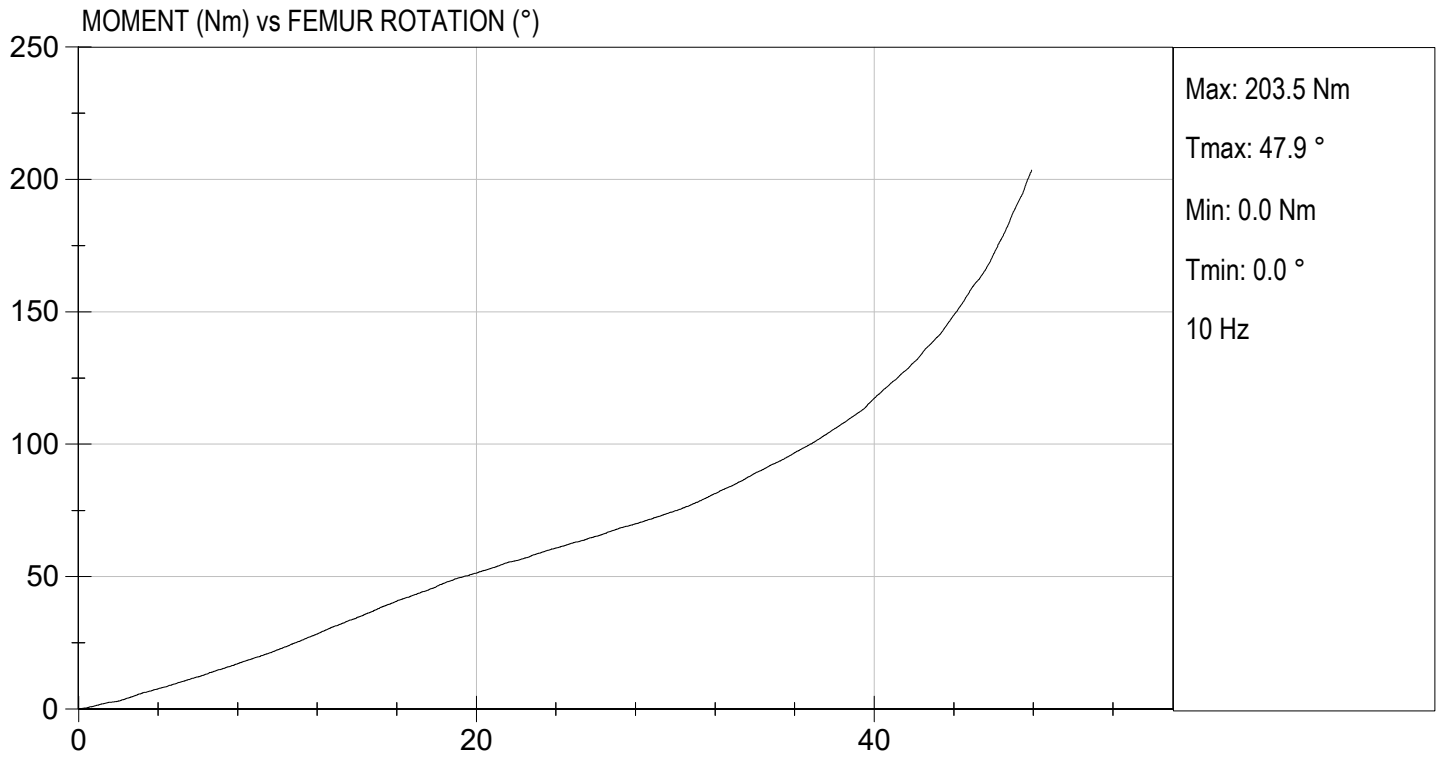
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	45	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.5	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	67.6	74.9	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	48.7	47.9	Pass
Overall Test Results					Pass

  
 Laboratory Technician

06/15/2023  
 Test Date

  
 Approved By





**QUALIFICATION TEST RESULTS**

**POST-TEST**

**HYBRID III 50<sup>TH</sup> PERCENTILE MALE - DRIVER ATD**

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 50TH PERCENTILE MALE**

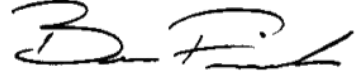
ATD Serial No: 351

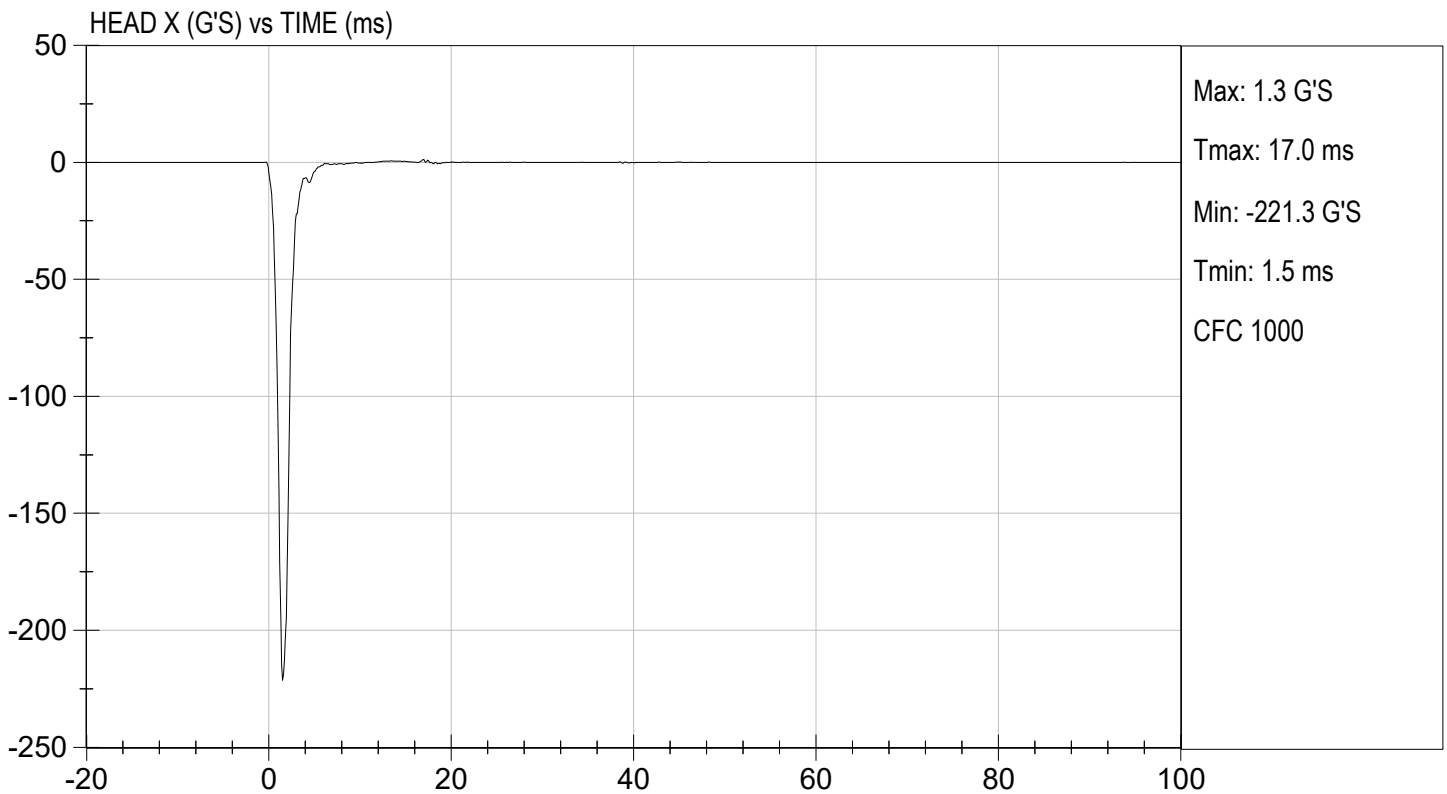
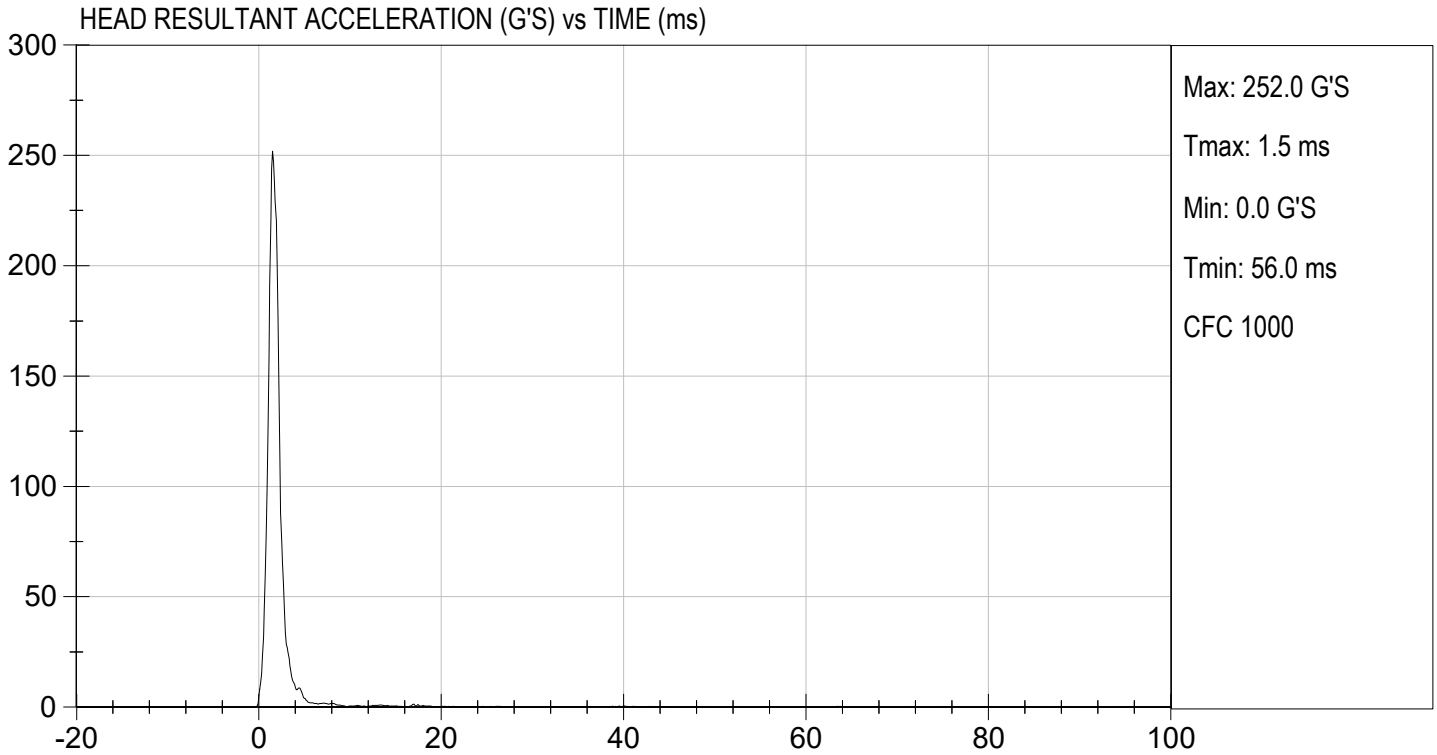
Test ID: D231741

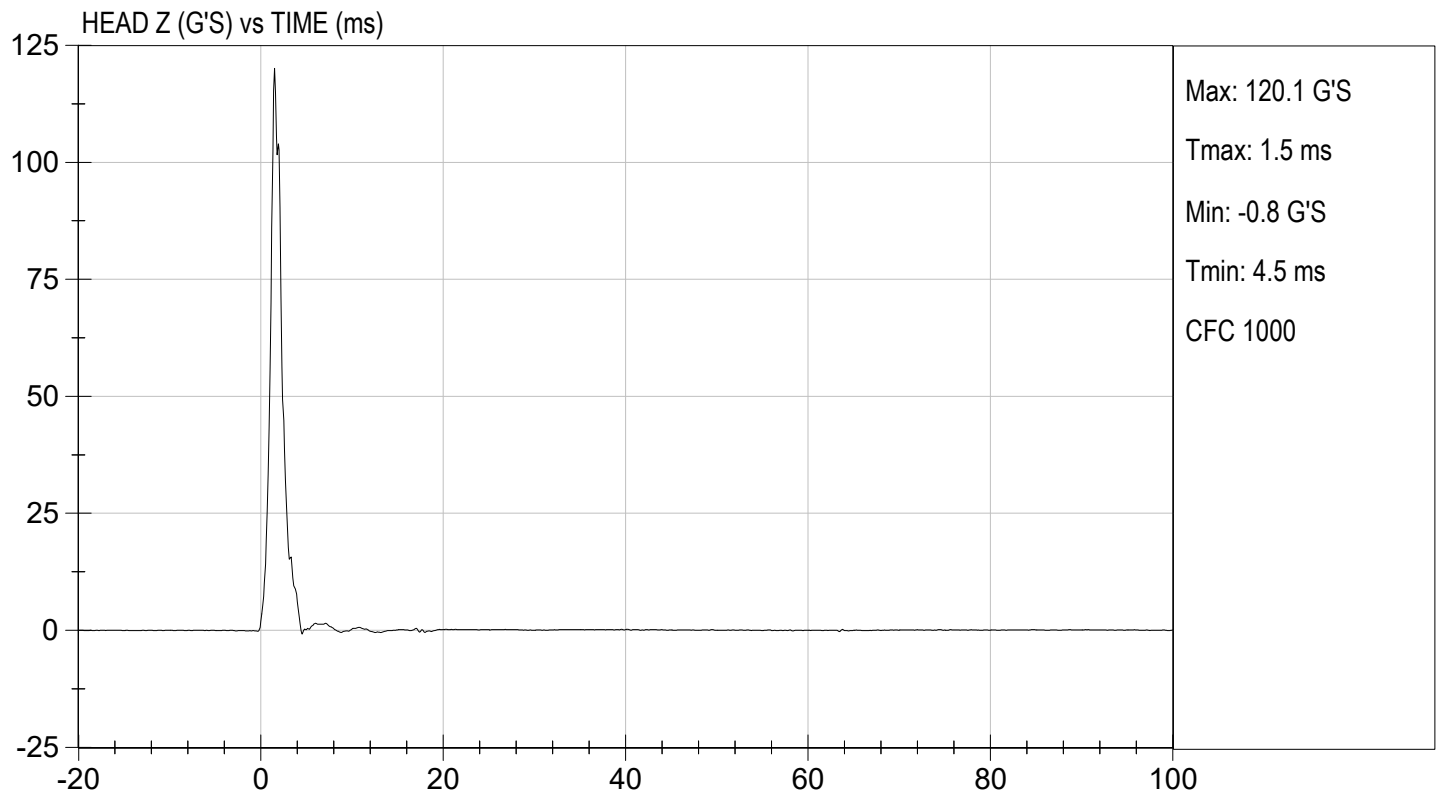
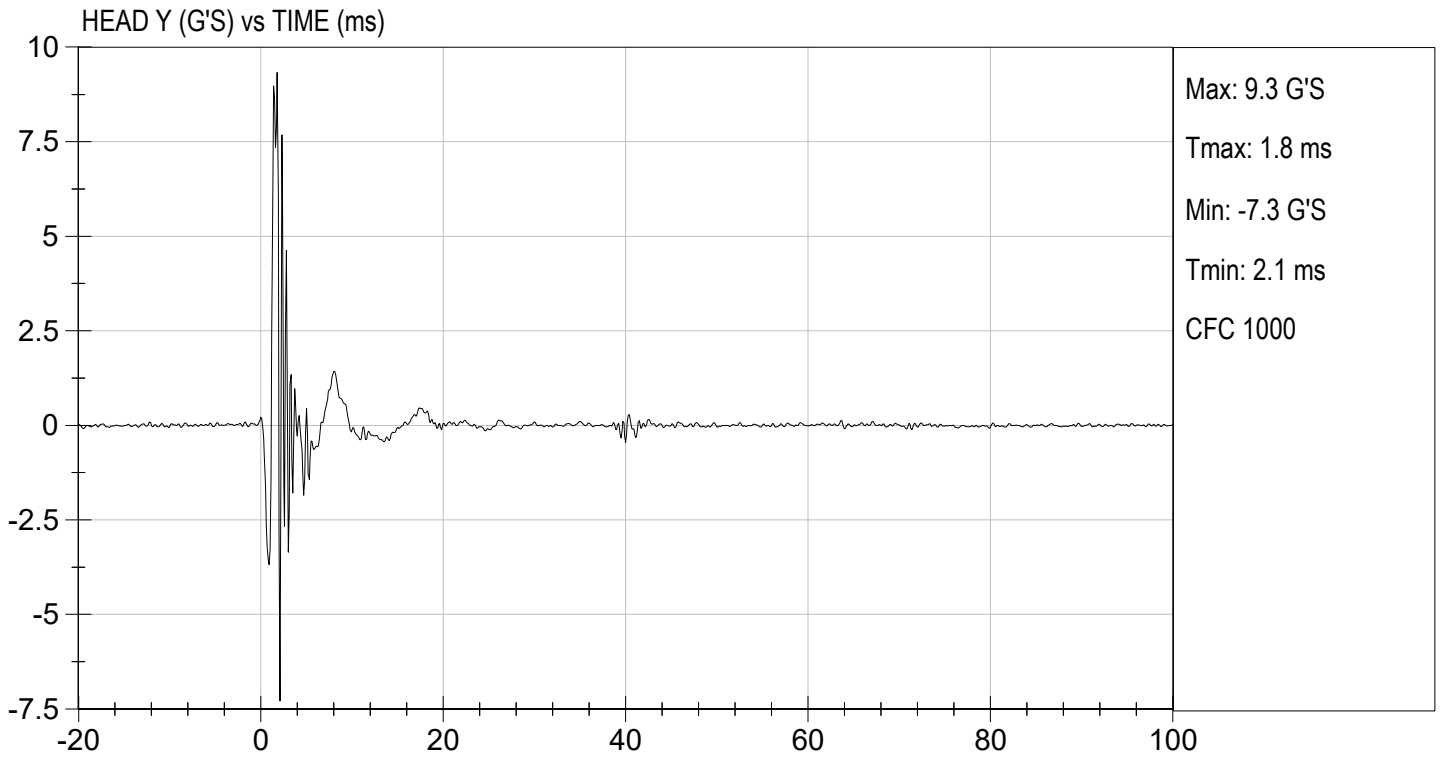
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	225 to 275	252	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	9.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

  
 \_\_\_\_\_  
 Laboratory Technician

07/13/2023  
 \_\_\_\_\_  
 Test Date

  
 \_\_\_\_\_  
 Approved By





**MGA RESEARCH CORPORATION**  
**NECK FLEXION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

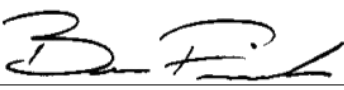
ATD Serial No: 351

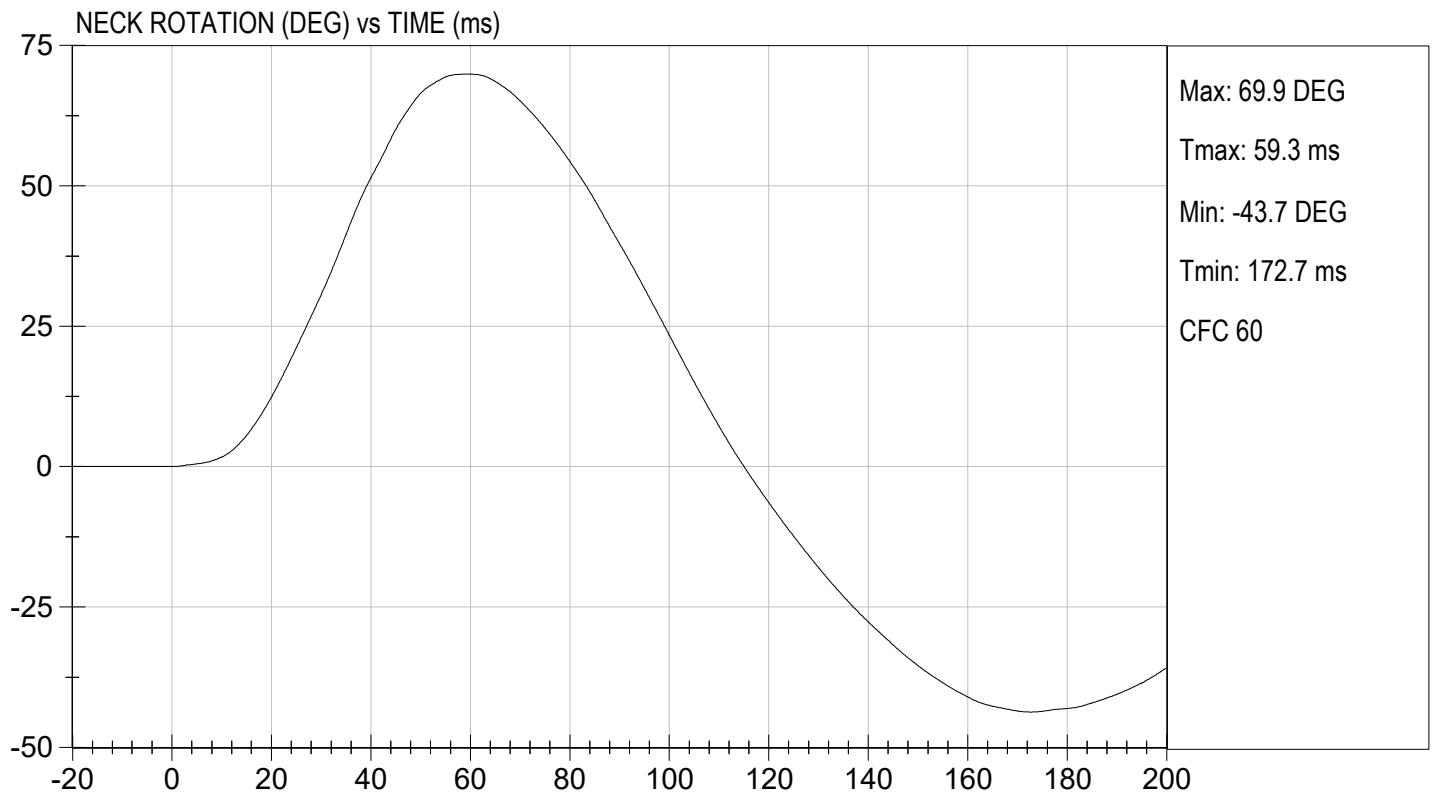
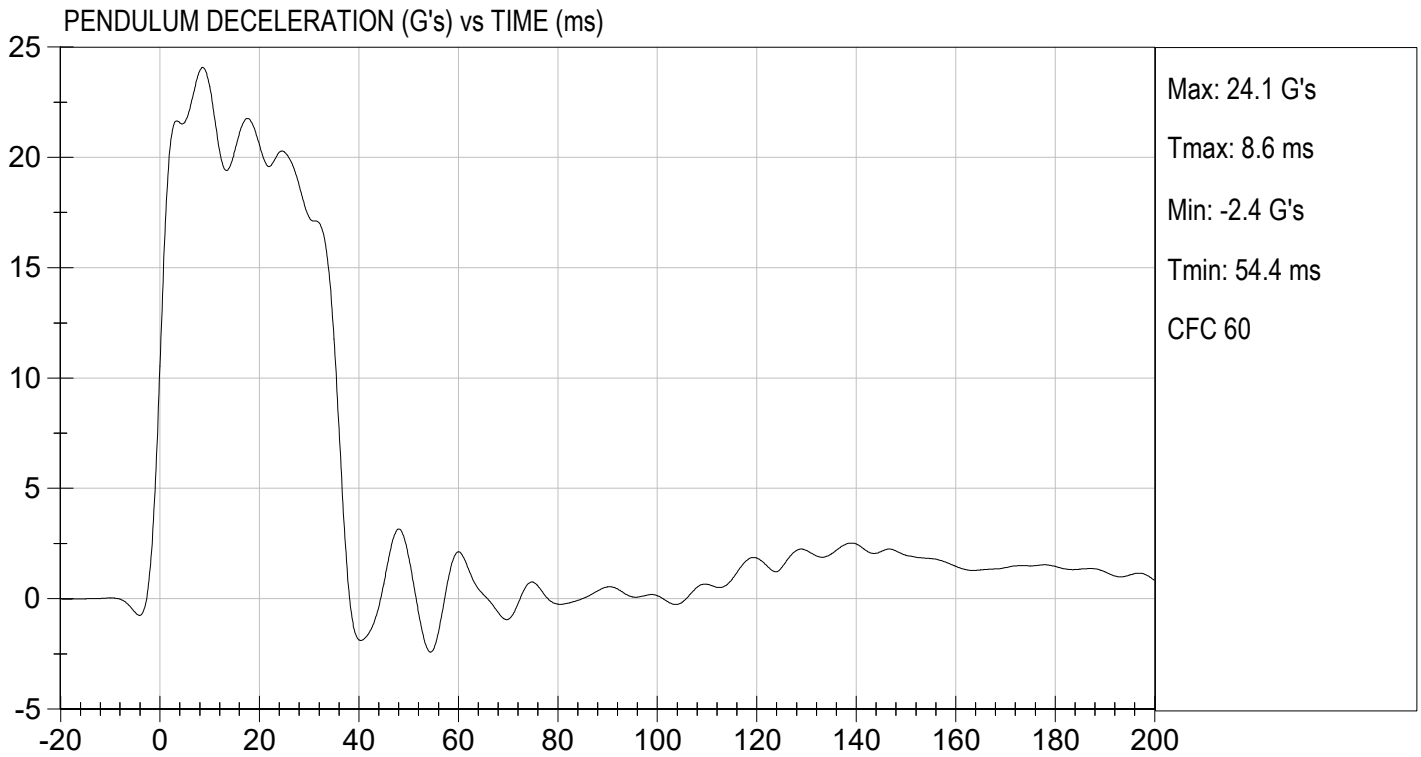
Test I.D.: D231742

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.21	Pass
	20 ms	G's	17.60 to 22.60	20.56	Pass
	30 ms	G's	12.50 to 18.50	17.27	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	17.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	36.7	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	69.9	Pass
	Time	ms	57.0 to 64.0	59.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	115.2	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	96.5	Pass
	Time	ms	47.0 to 58.0	49.0	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	100.4	Pass
Overall Test Results					Pass

  
 Laboratory Technician

07/13/2023  
 Test Date

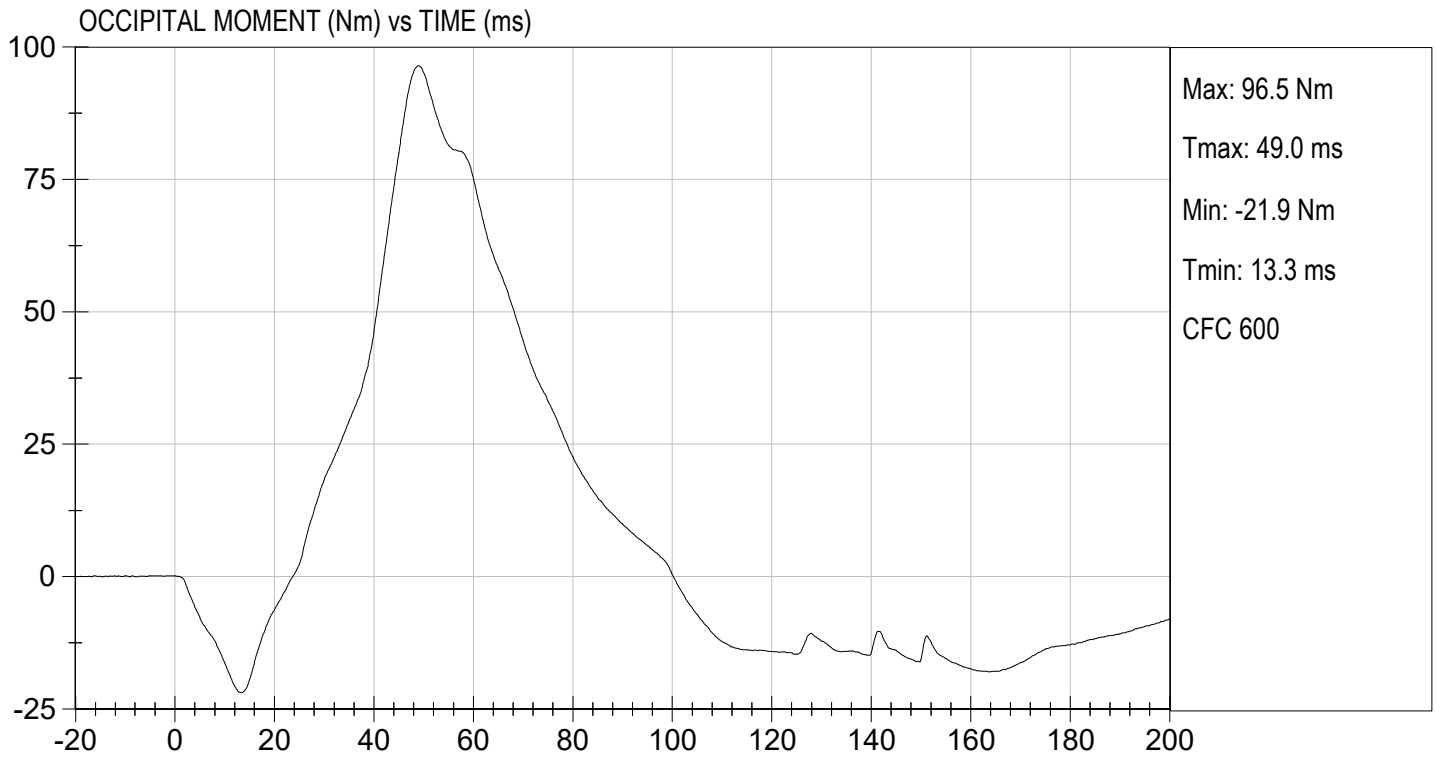
  
 Approved By





TEST DESC: NECK FLEXION  
VELOCITY: 22.83 ft/s, 6.96 m/s

TEST DATE: 07/13/2023  
TEST #: D231742



**MGA RESEARCH CORPORATION**  
**NECK EXTENSION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

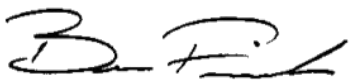
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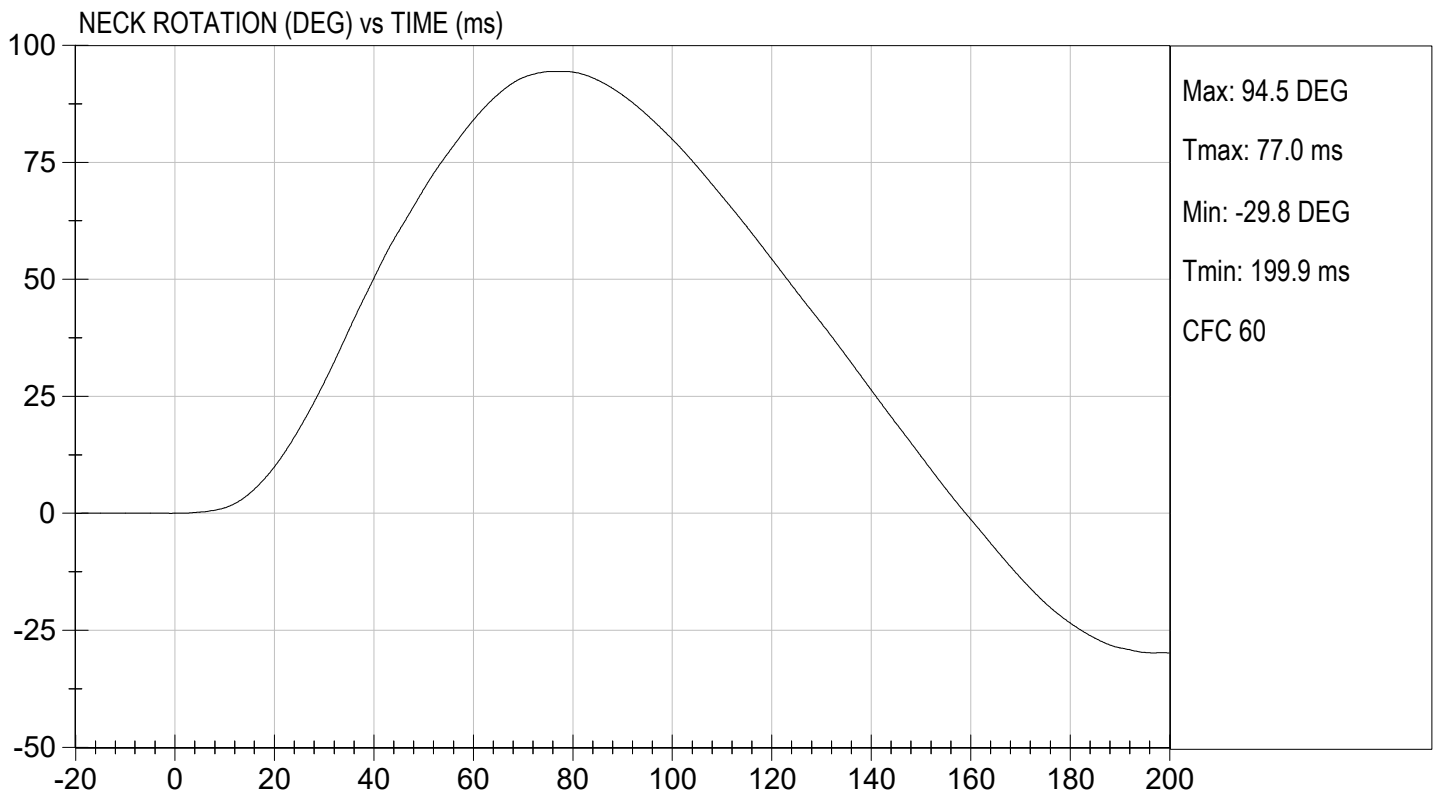
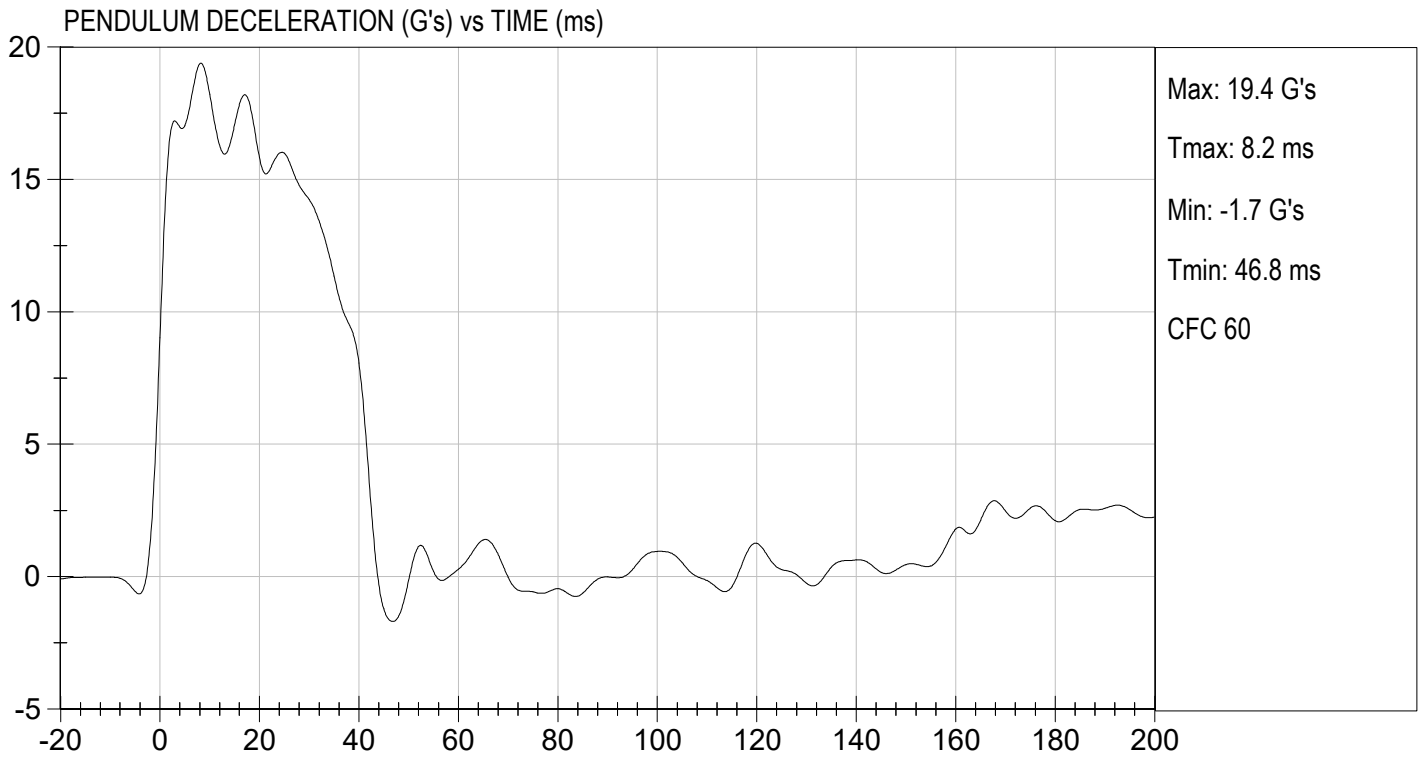
Test I.D.: D231743

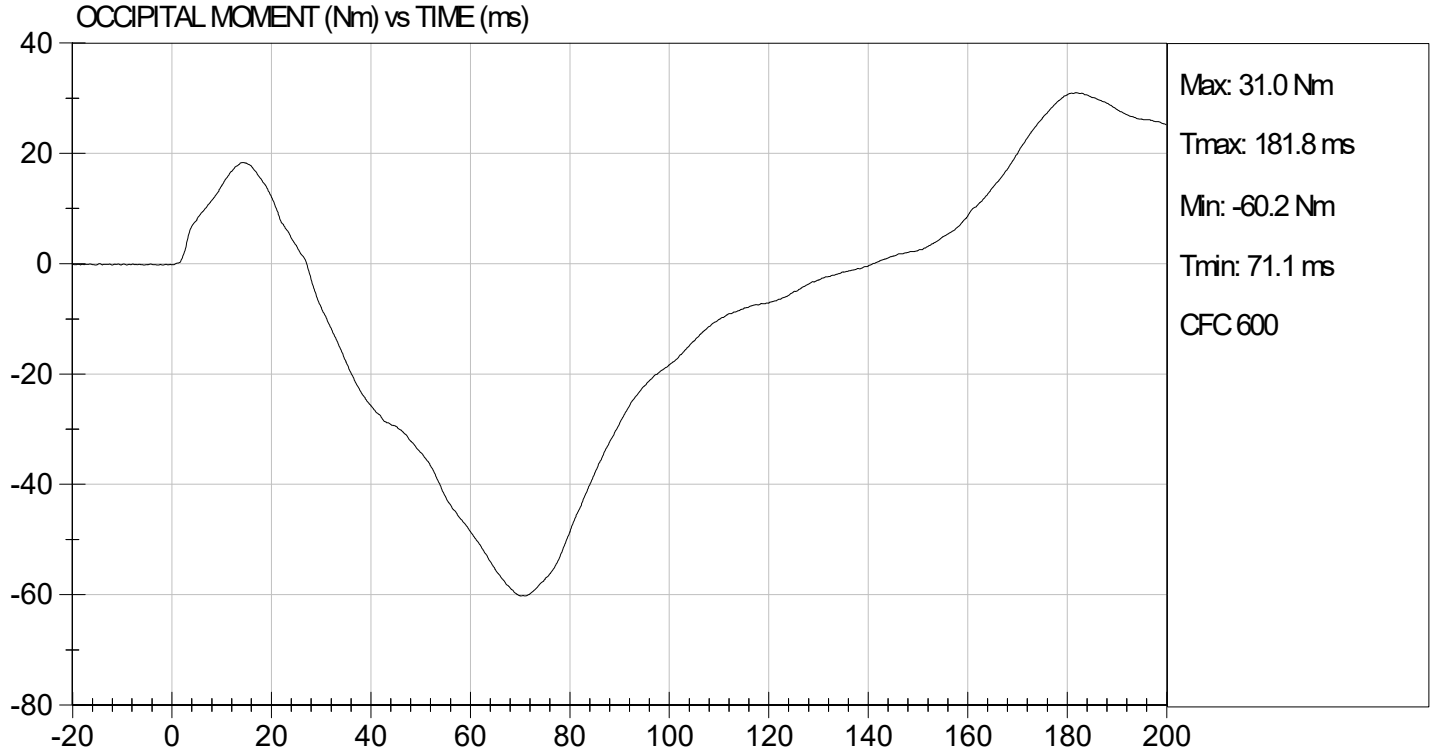
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.22	Pass
	20 ms	G's	14.00 to 19.00	15.83	Pass
	30 ms	G's	11.00 to 16.00	14.24	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	14.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	94.5	Pass
	Time	ms	72.0 to 82.0	77.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	159.2	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-60.2	Pass
	Time	ms	65.0 to 79.0	71.1	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	141.0	Pass
Overall Test Results					Pass

  
 Laboratory Technician

07/13/2023  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**  
**THORAX IMPACT**  
**HYBRID III 50TH PERCENTILE MALE**

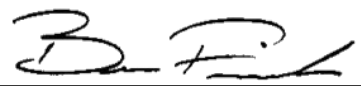
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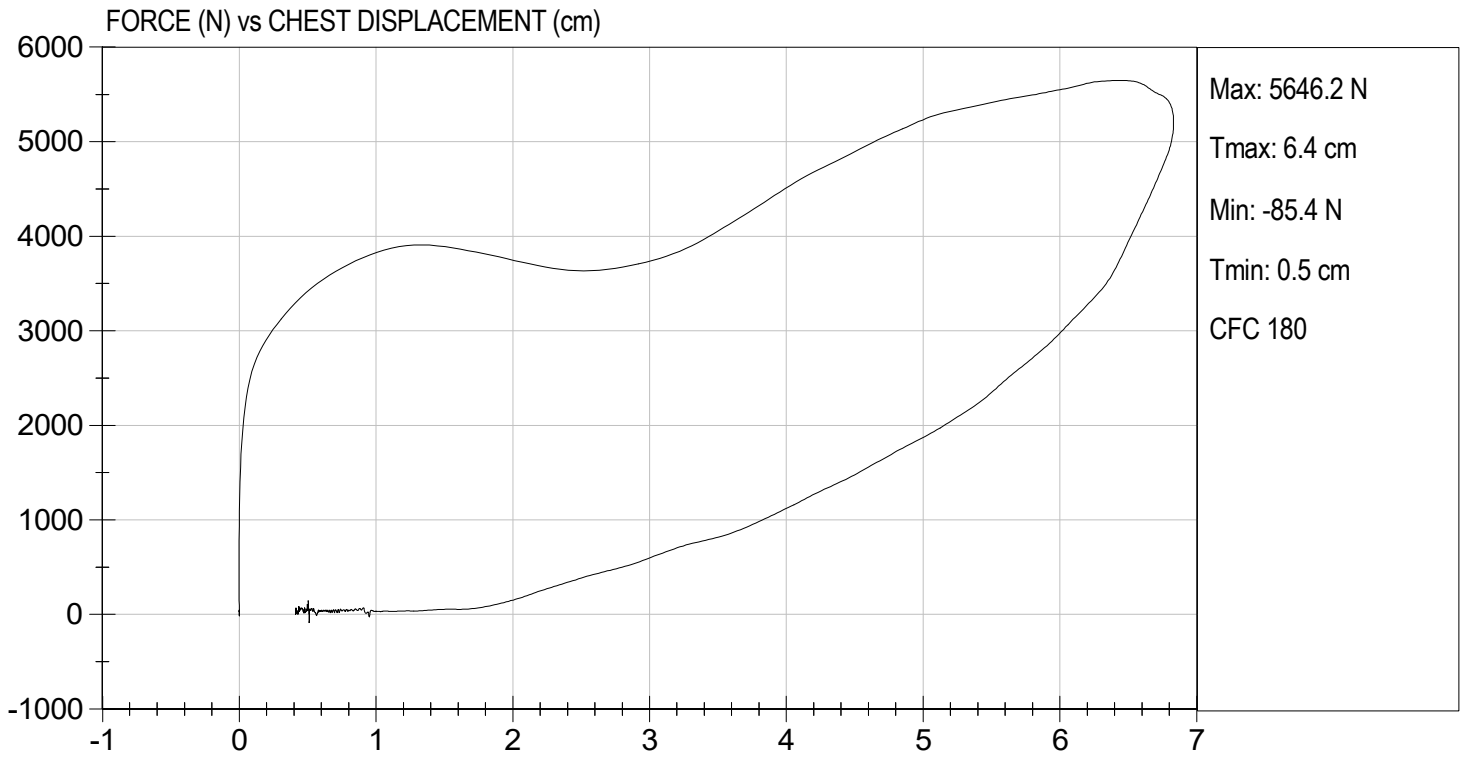
Test I.D: D231744

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,646	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.83	Pass
Internal Hysteresis	%	69 to 85	72	Pass
<b>Overall Test Results</b>				<b>Pass</b>

  
 Laboratory Technician

07/13/2023  
 Test Date

  
 Approved By



**MGA RESEARCH CORPORATION**  
**RIGHT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

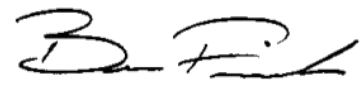
ATD Serial No: 351

Test I.D: D231745

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,506	Pass
Overall Test Results				Pass

  
 Laboratory Technician

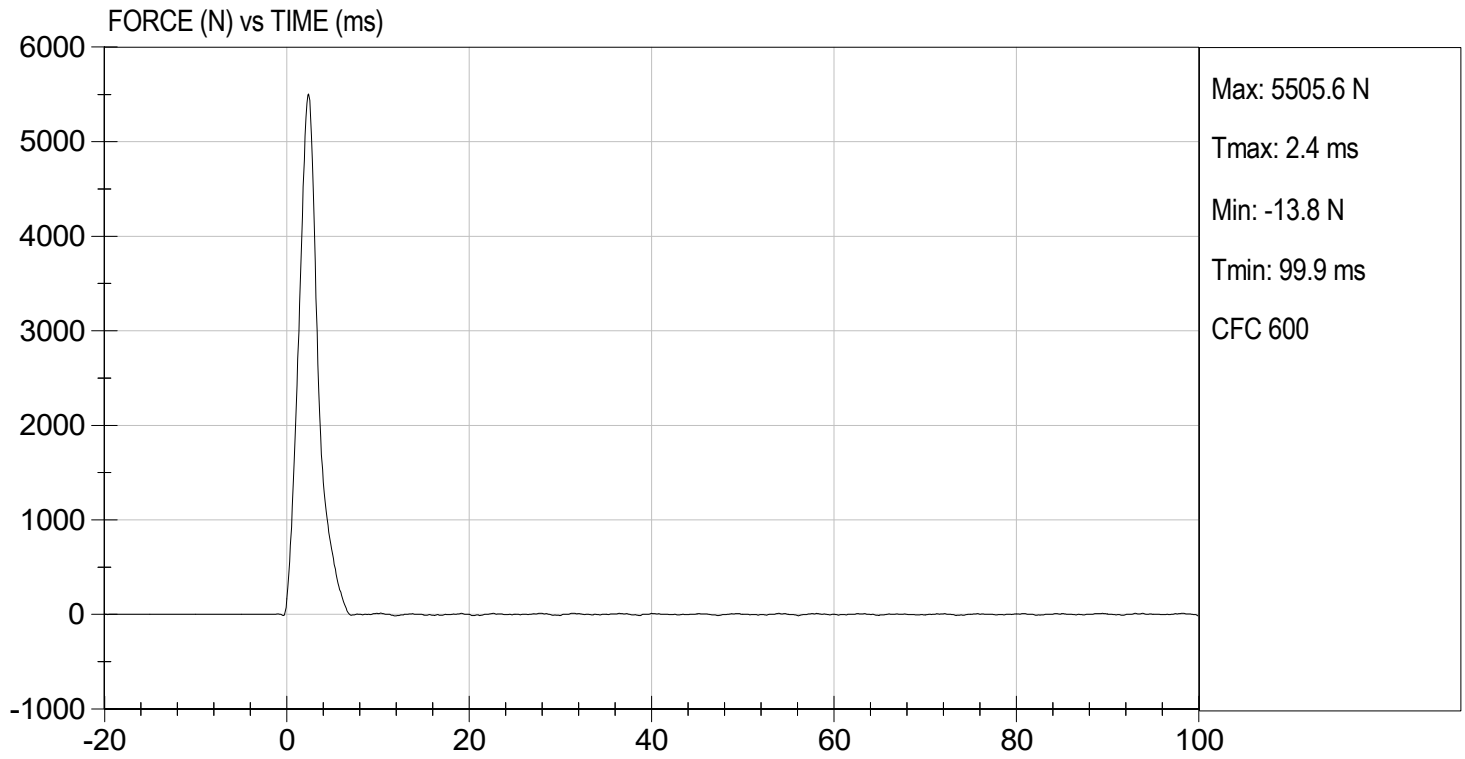
07/13/2023  
 Test Date

  
 Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.94 ft/s, 2.12 m/s

TEST DATE: 07/13/2023  
TEST #: D231745



**MGA RESEARCH CORPORATION**  
**LEFT KNEE IMPACT TEST**  
**HYBRID III 50TH PERCENTILE MALE**

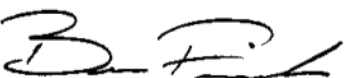
ATD Serial No: 351

Test I.D: D231746

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	5,054	Pass
Overall Test Results				Pass

  
 Laboratory Technician

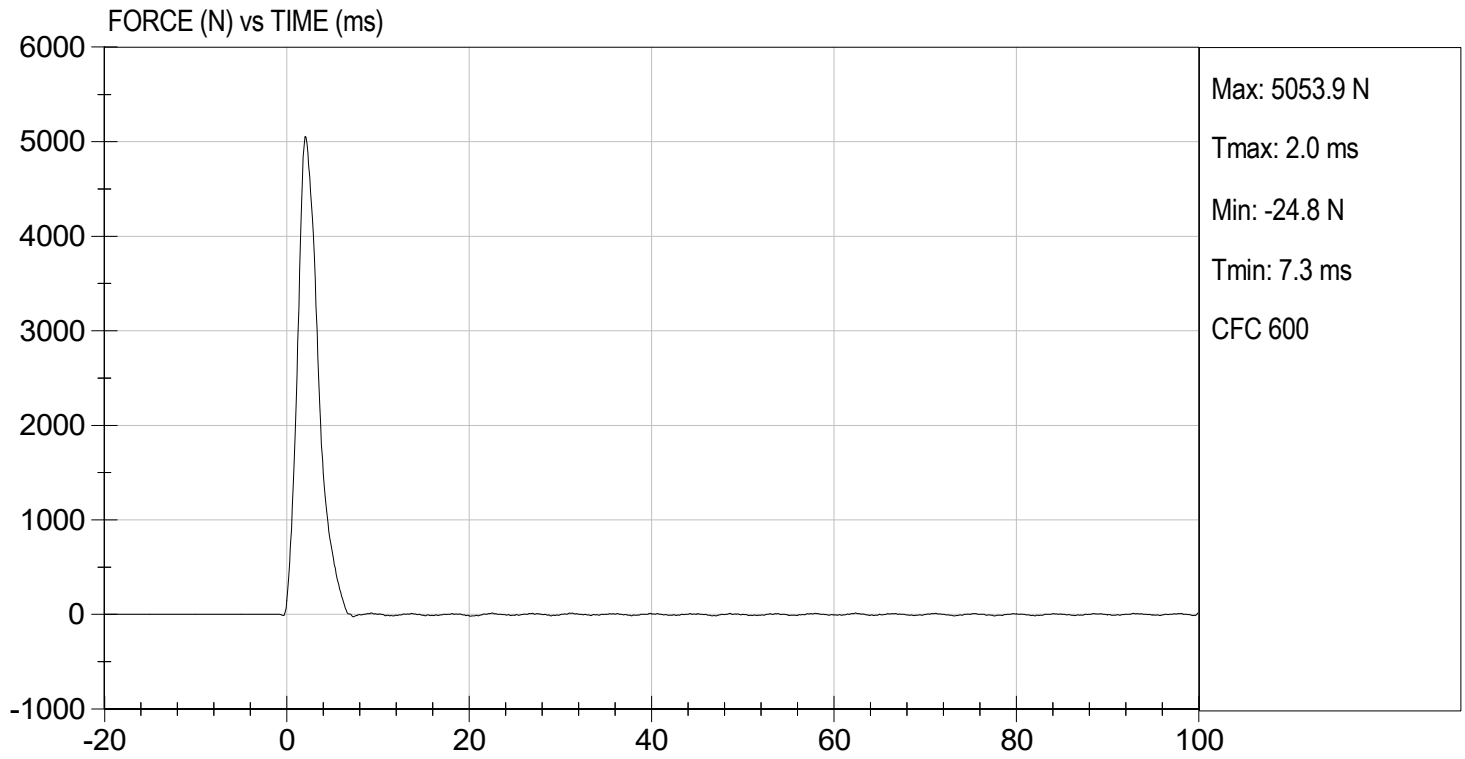
07/13/2023  
 Test Date

  
 Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.83 ft/s, 2.08 m/s

TEST DATE: 07/13/2023  
TEST #: D231746



**MGA RESEARCH CORPORATION**  
**HIP-FEMUR FLEXION TEST**  
**HYBRID III 50TH PERCENTILE MALE**

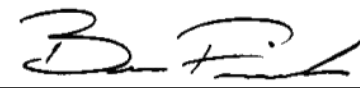
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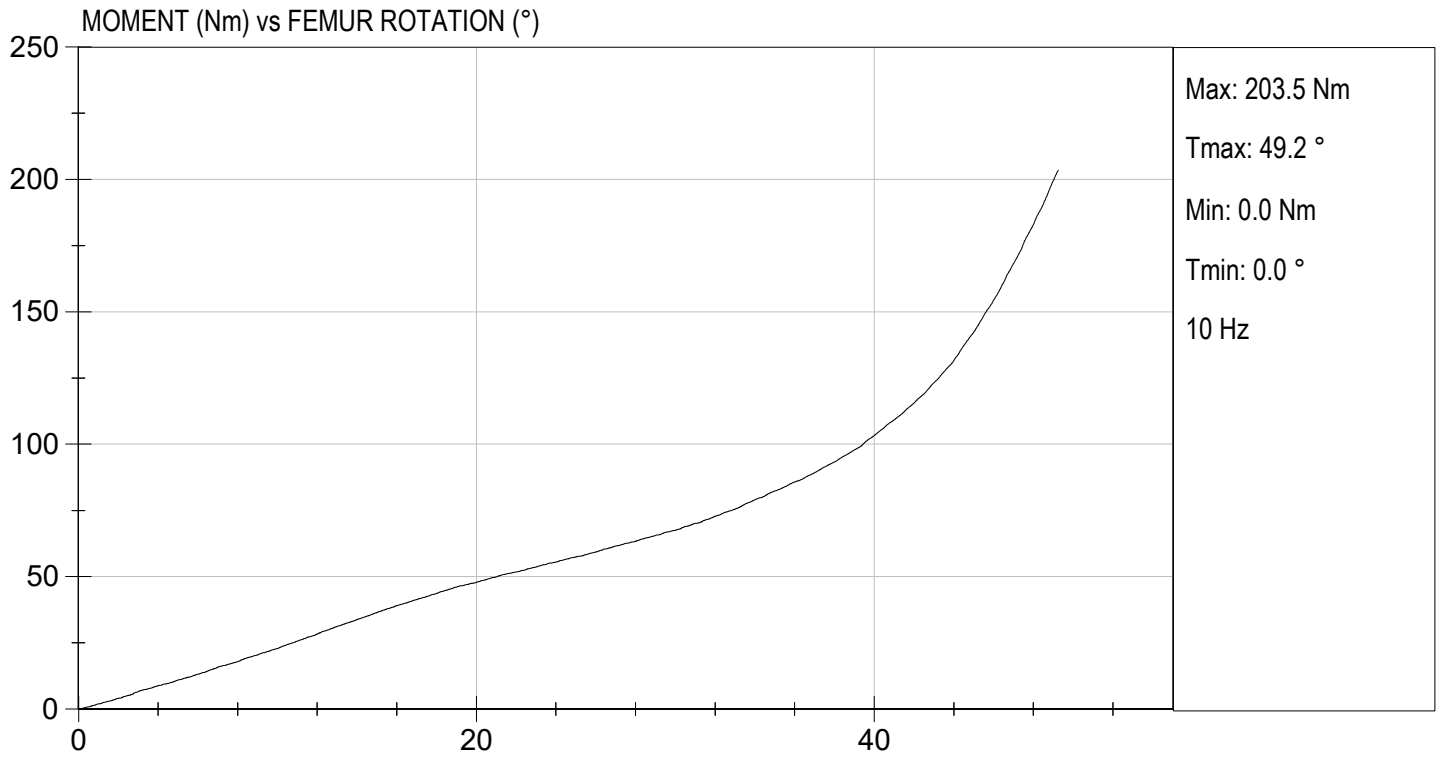
**Test I.D.:** D231740

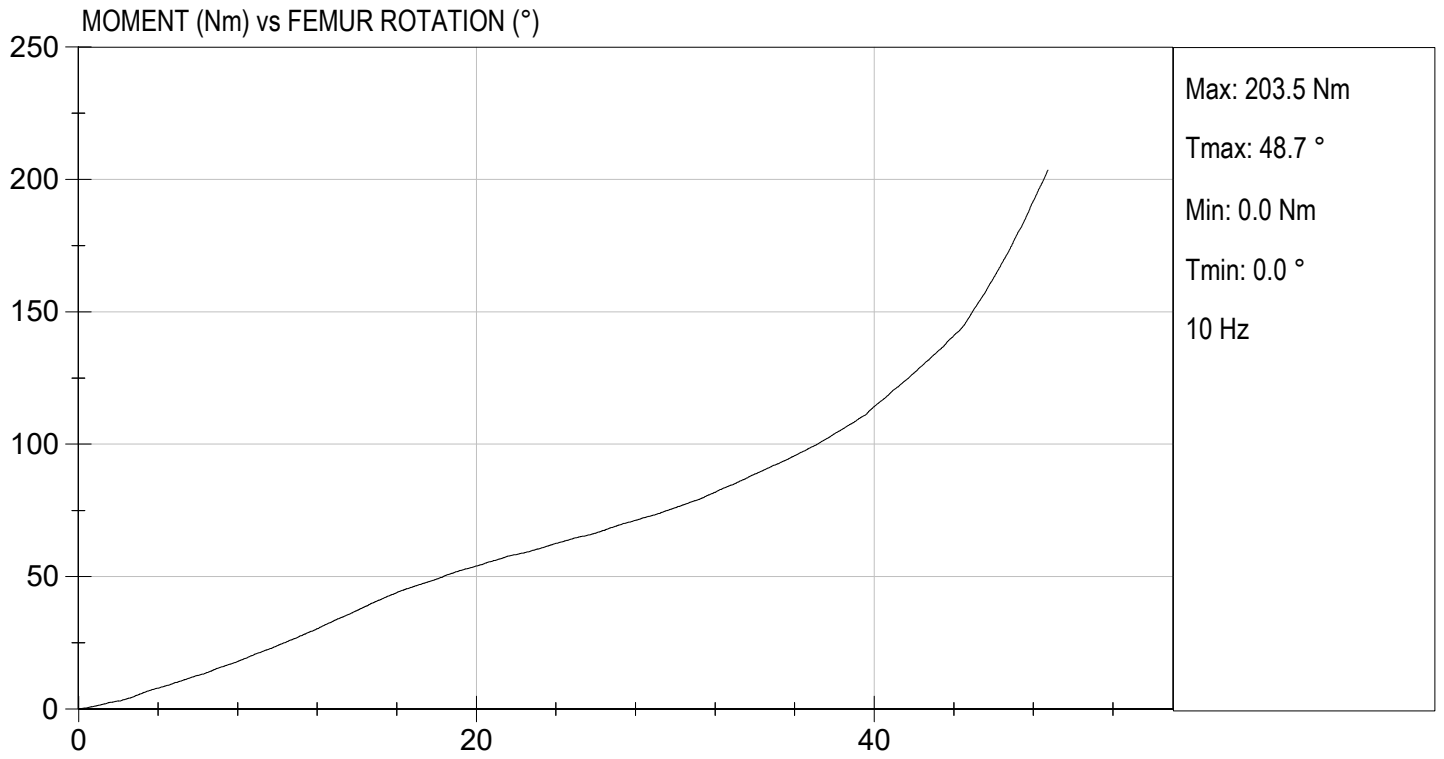
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	46	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.5	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	67.6	76.0	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	49.2	48.7	Pass
Overall Test Results					Pass

  
 Laboratory Technician

07/13/2023  
 Test Date

  
 Approved By





**QUALIFICATION TEST RESULTS**

**PRE-TEST**

**HYBRID III 5<sup>TH</sup> PERCENTILE FEMALE - PASSENGER ATD**

**Hybrid III, 5th External Measurements  
SN: 142**

HYBRID III, PART 572, SUBPART O EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	774.7-800.1	775.0
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	438.2
C	H-POINT HEIGHT	Reference	81.3-86.3	81.8
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	148.3
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	83.0
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	124.4
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	243.9-259.1	245.2
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	43.4
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	276.8-297.2	281.1
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	197.2
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	520.7-546.1	537.2
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376	358.8
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	403.1
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	414-439.4	435.2

HYBRID III, SUBPART O EXTERNAL DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 304.8 ± 5.1 mm above seat surface	175.3-190.5	181.2
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	227.3
Q	STANDING HEIGHT	(THEORETICAL)	1501.1	N/A
R	BUTTOCK TO KNEE PIVOT LENGTH	The rear surface of the buttocks to the knee pivot bolt	457.2-482.6	475.0
S	HEAD BREADTH	The widest part of the head	137.1-147.3	138.6
T	HEAD DEPTH	Back of the head to the forehead	177.8-188	181.0
U	HIP BREADTH	The widest part of the hip	299.7-314.9	308.4
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	362.1
W	FOOT BREADTH	The widest part of the foot	78.8-94	82.8
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	545.2
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	870.7
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	779.9
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	350.1
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	170.0

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 5TH PERCENTILE**

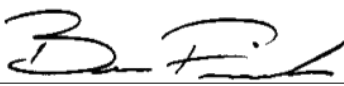
ATD Serial No: 142

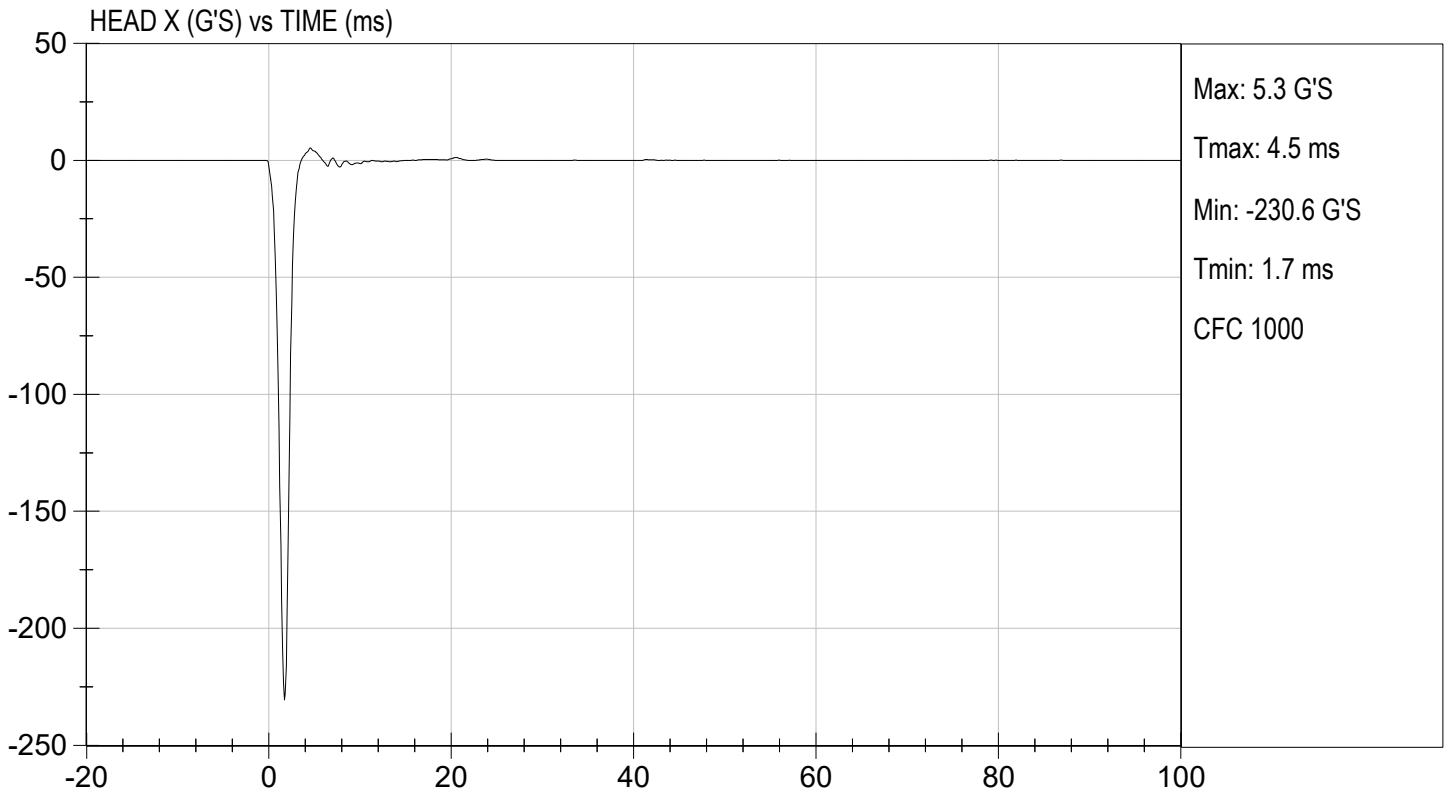
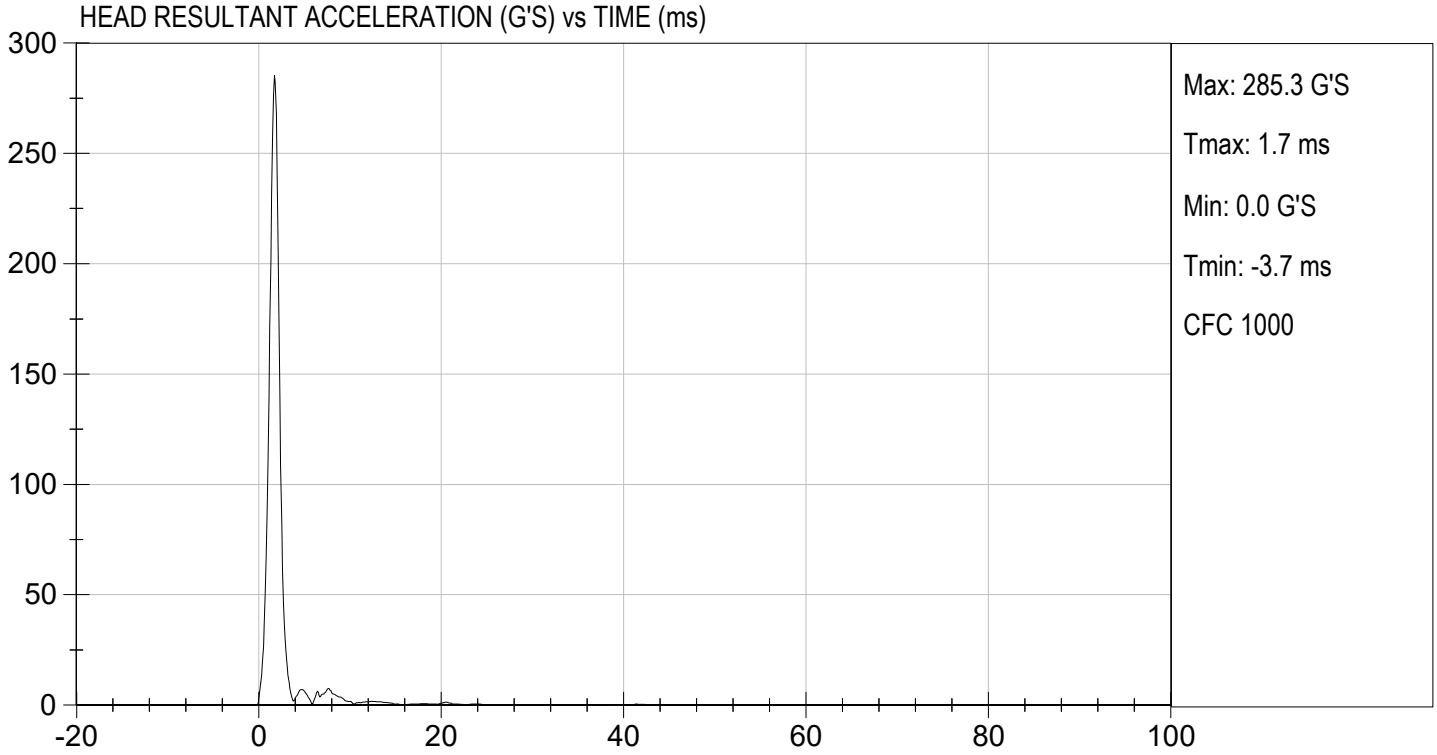
Test ID: D231501

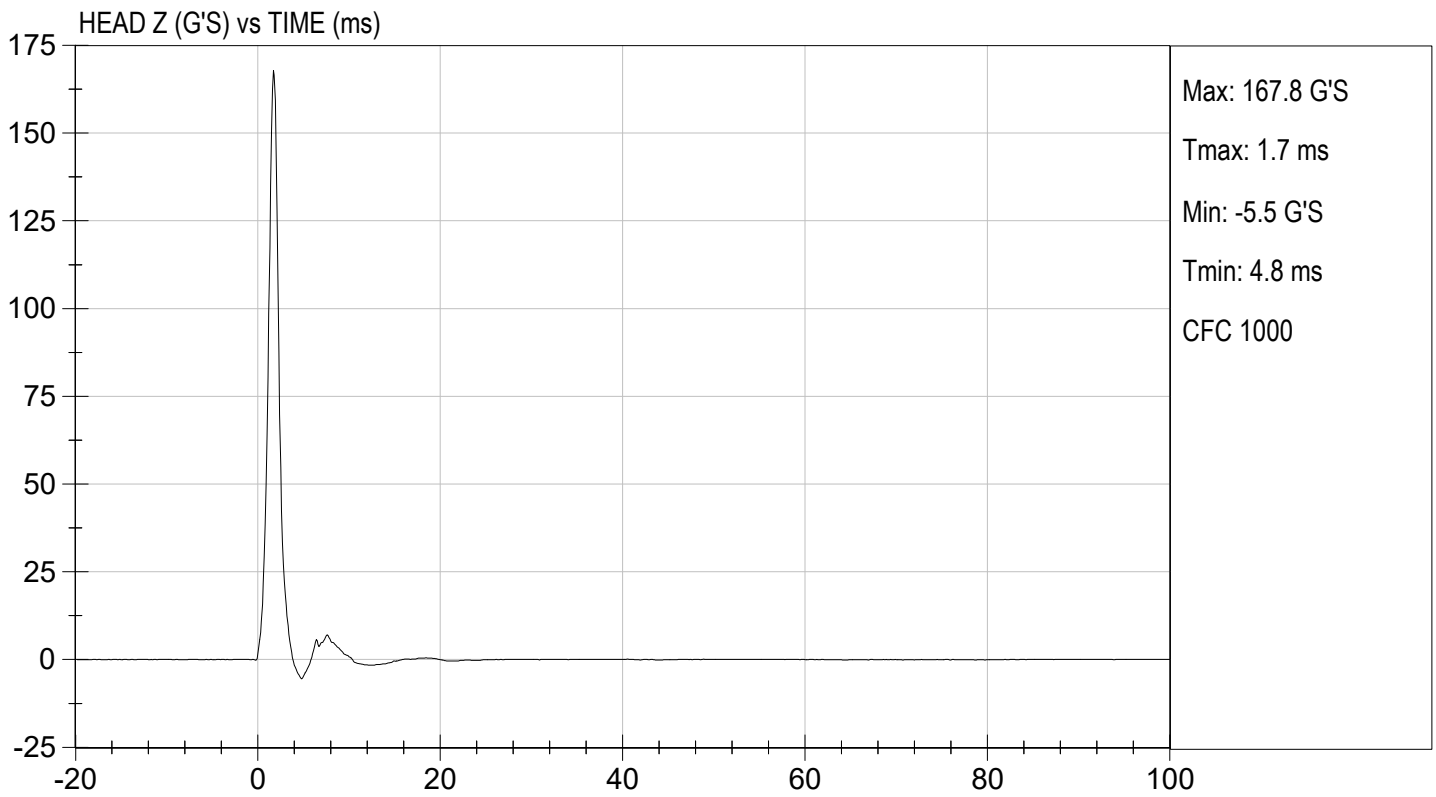
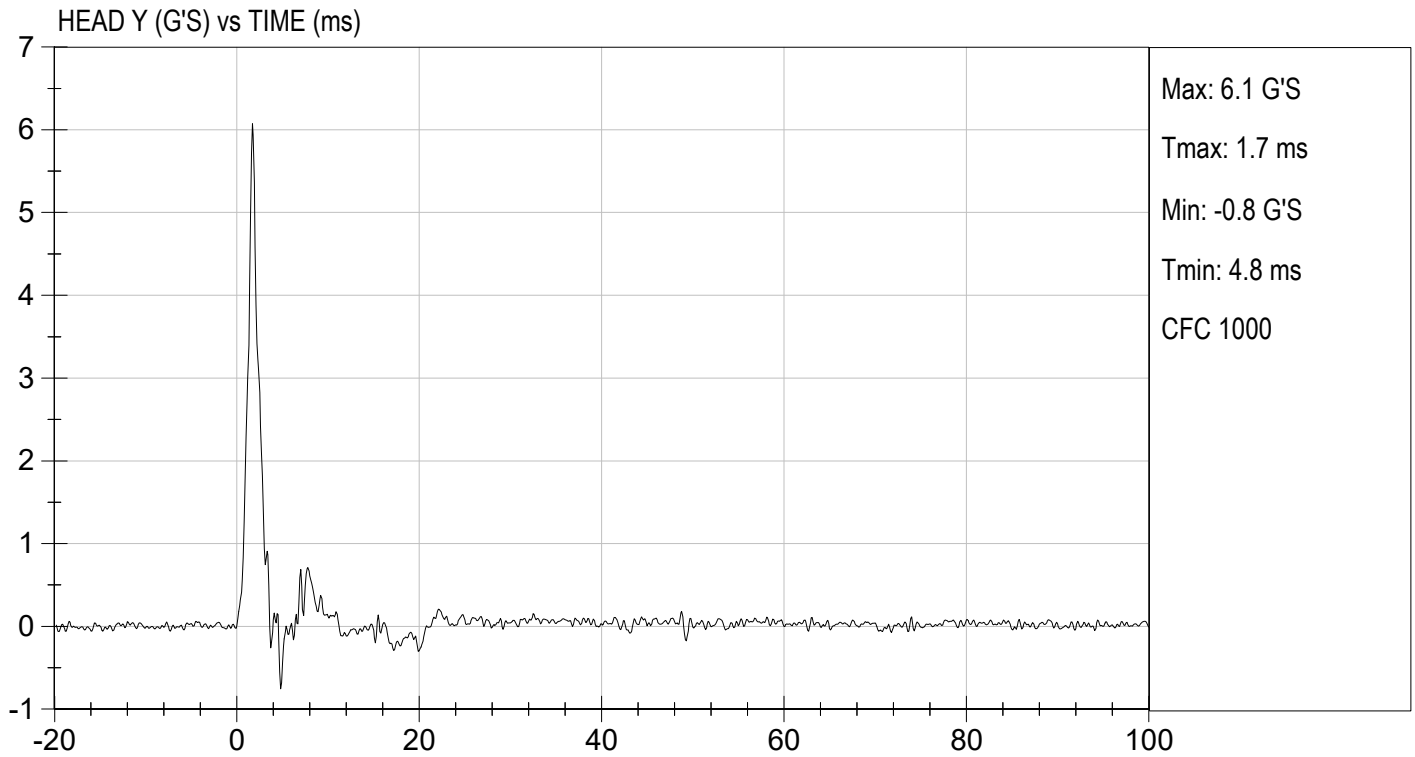
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	250 to 300	285	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	6.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

  
 Laboratory Technician

06/15/2023  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**  
**NECK FLEXION TEST**  
**HYBRID III 5TH PERCENTILE**

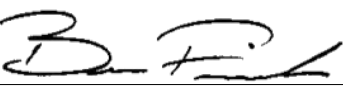
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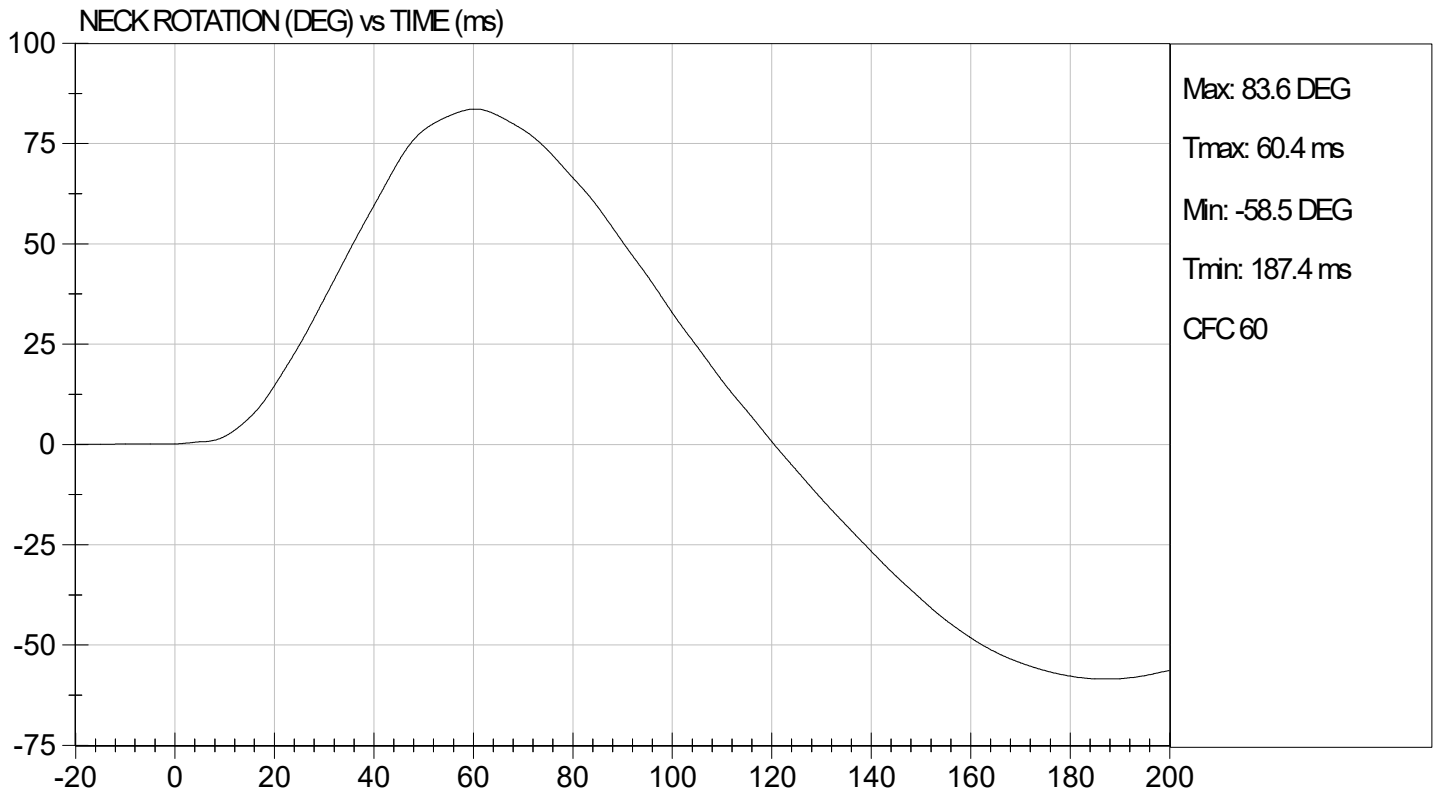
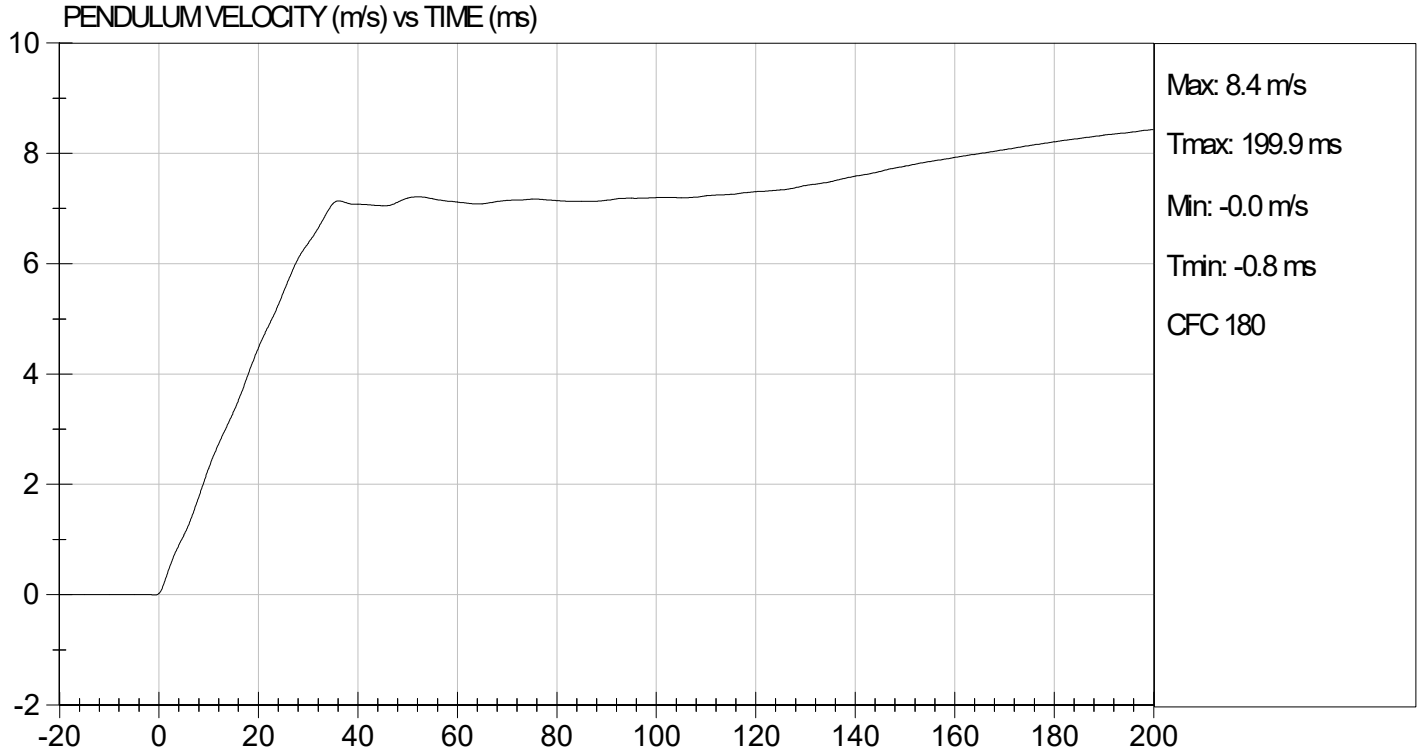
Test I.D: D231502

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	42	Pass
Pendulum Speed		m/s	6.89 to 7.13	6.96	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.3	Pass
	20 ms	m/s	4.0 to 5.0	4.5	Pass
	30 ms	m/s	5.8 to 7.0	6.4	Pass
D Plane Rotation	Max	deg	77 to 91	84	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	75	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	86	Pass
Overall Results					Pass

  
 Laboratory Technician

06/15/2023  
 Test Date

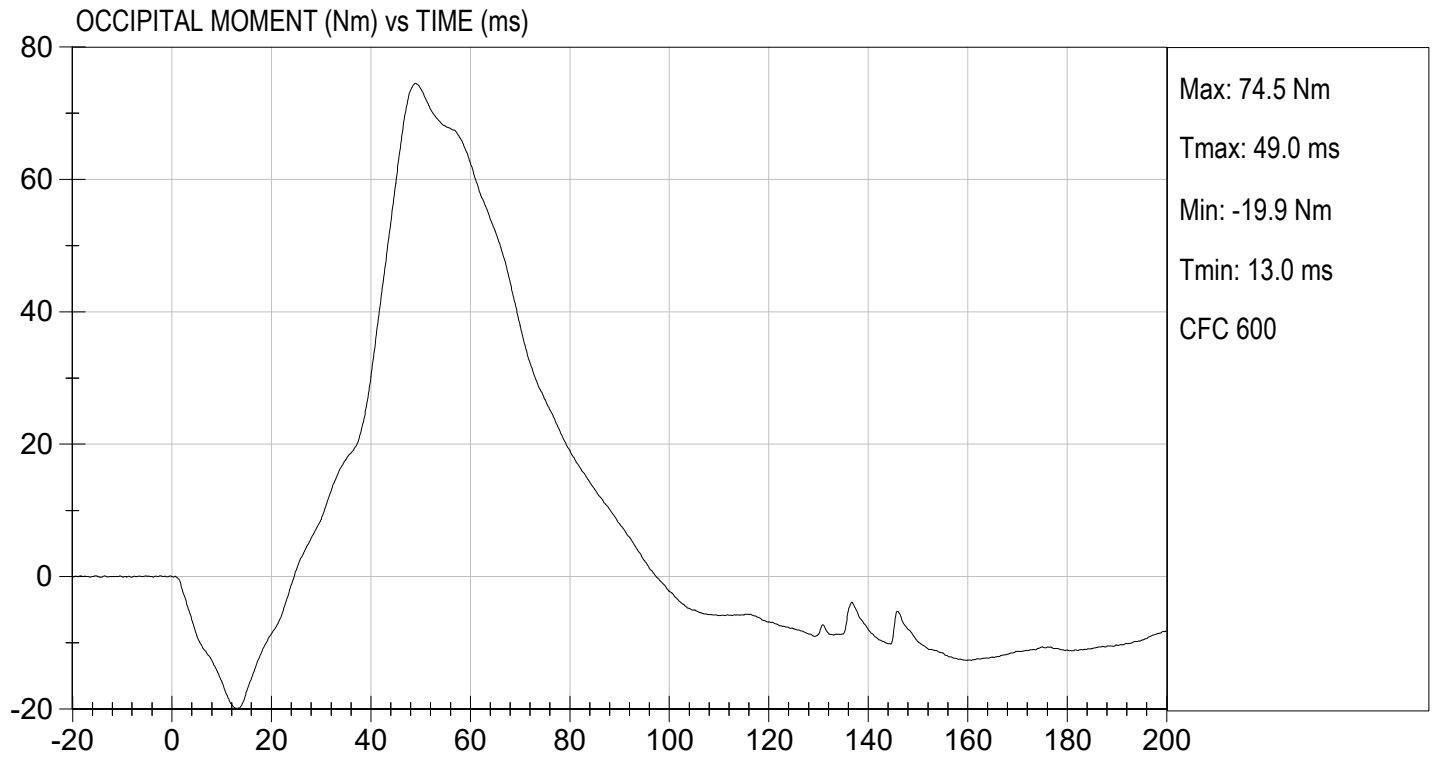
  
 Approved By





TEST DESC: NECK FLEXION  
VELOCITY: 22.83 ft/s, 6.96 m/s

TEST DATE: 06/15/2023  
TEST #: D231502



**MGA RESEARCH CORPORATION  
NECK EXTENSION TEST  
HYBRID III 5TH PERCENTILE**

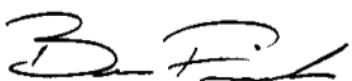
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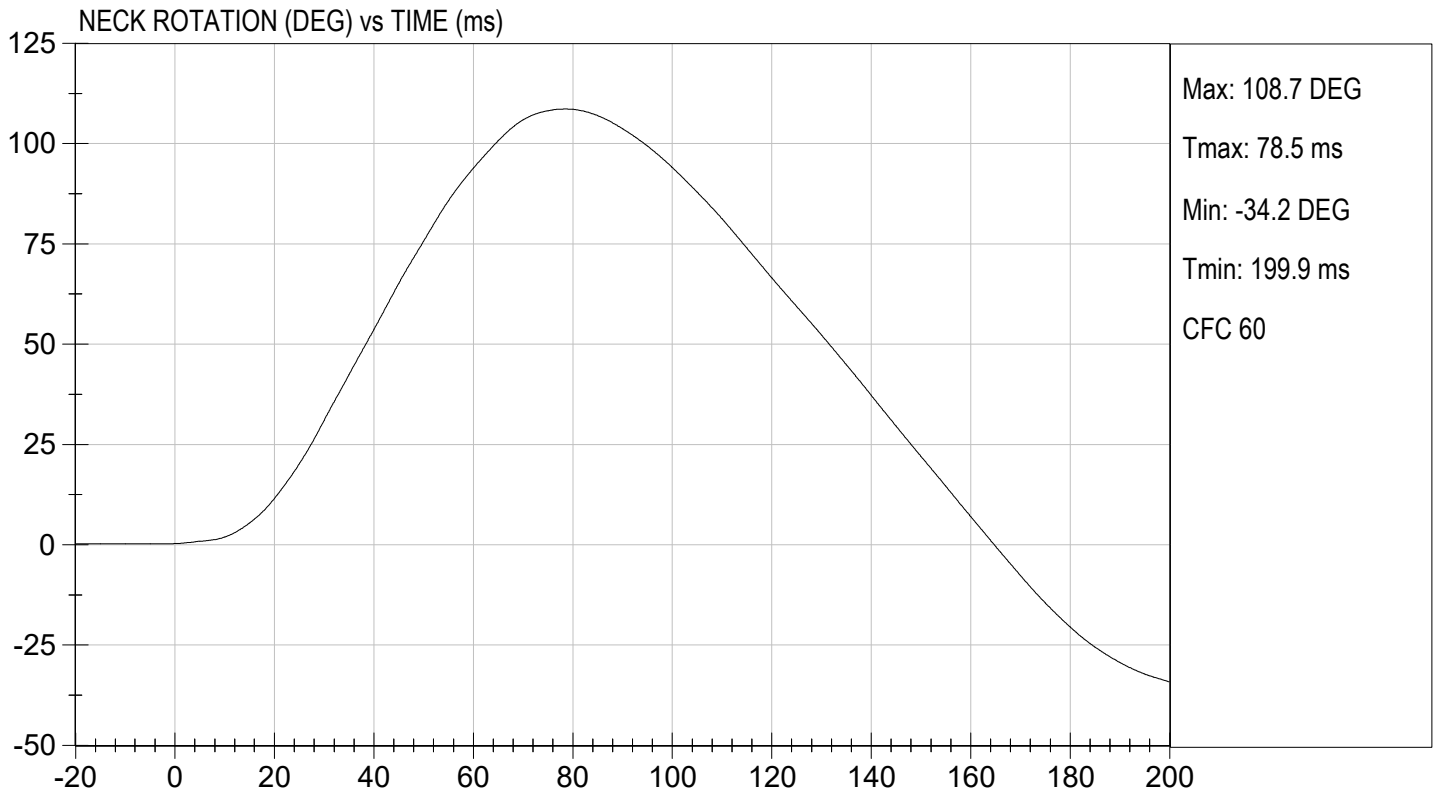
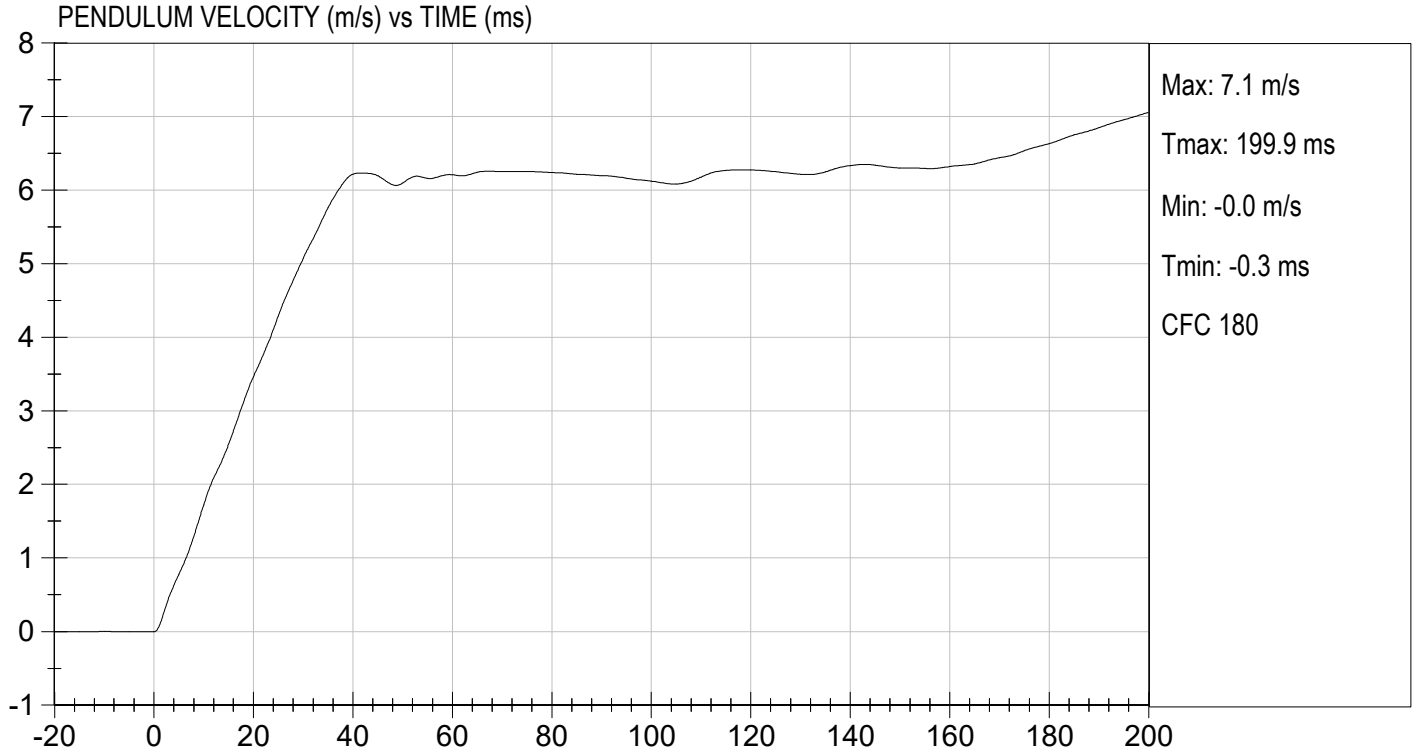
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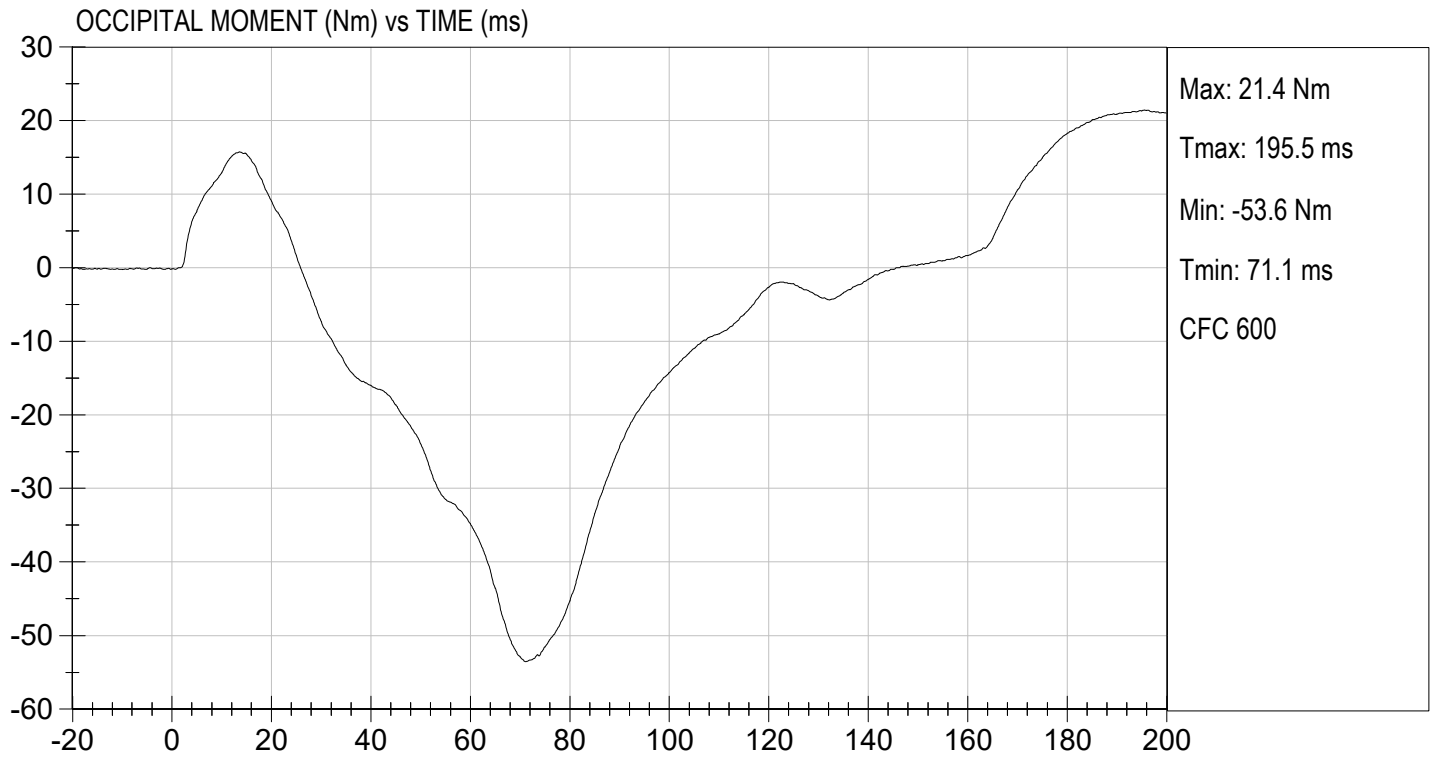
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	44	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.5	Pass
	30 ms	m/s	4.6 to 5.6	5.1	Pass
D Plane Rotation	Max	deg	99 to 114	109	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-54	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	105	Pass
Overall Results					Pass

  
Laboratory Technician

06/15/2023  
Test Date

  
Approved By





**MGA RESEARCH CORPORATION**  
**THORAX IMPACT**  
**HYBRID III 5TH PERCENTILE**

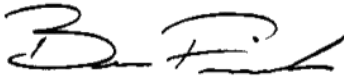
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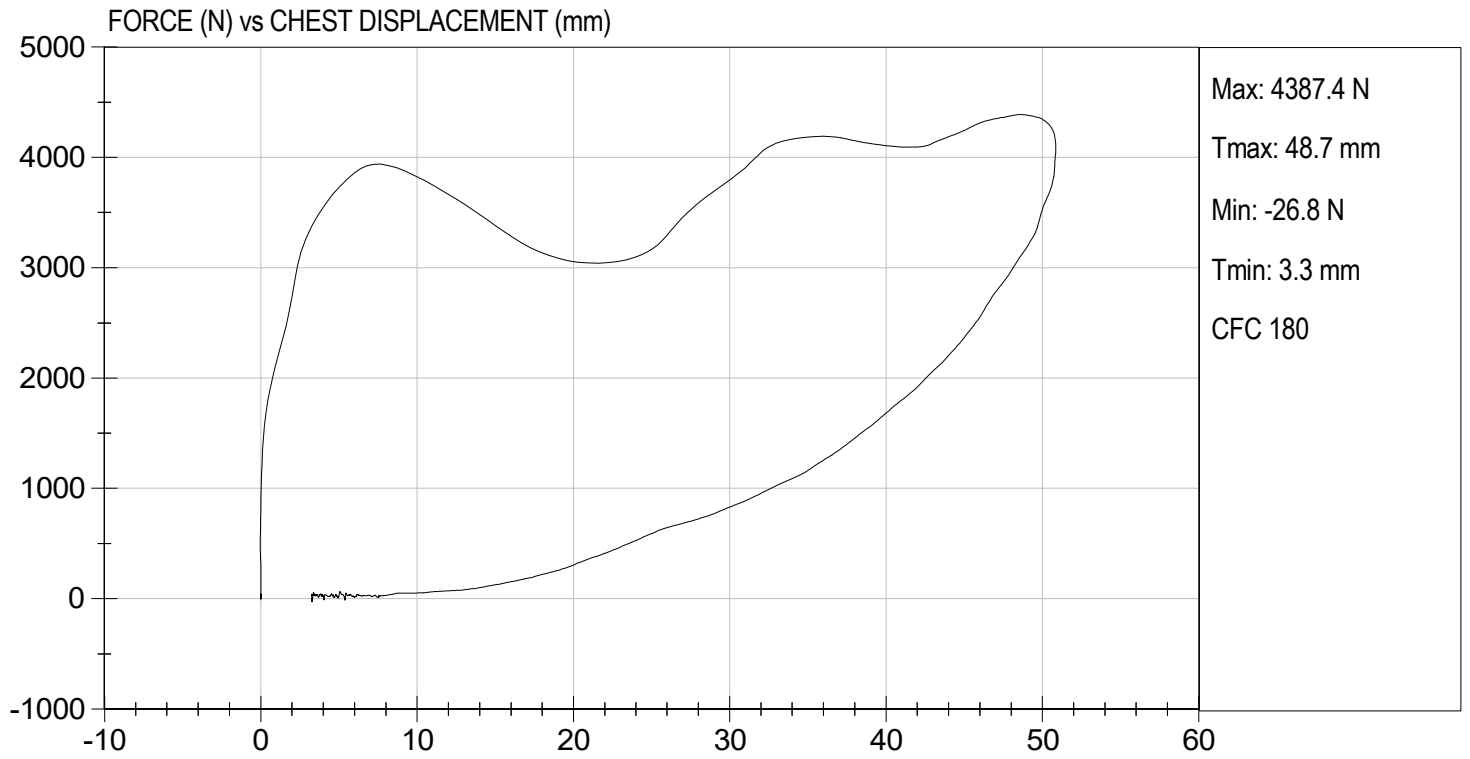
Test I.D: D231504

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.1	Pass
Relative Humidity	%	10 to 70	42	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	51	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4345	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4387	Pass
Overall Test Results				Pass

  
 Laboratory Technician

06/15/2023  
 Test Date

  
 Approved By



**MGA RESEARCH CORPORATION**  
**RIGHT KNEE IMPACT TEST**  
**HYBRID III 5TH PERCENTILE**

ATD Serial No: 142

Test I.D.: D231505

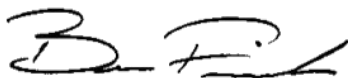
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3724	Pass
Overall Test Results				Pass



Laboratory Technician

06/15/2023

Test Date

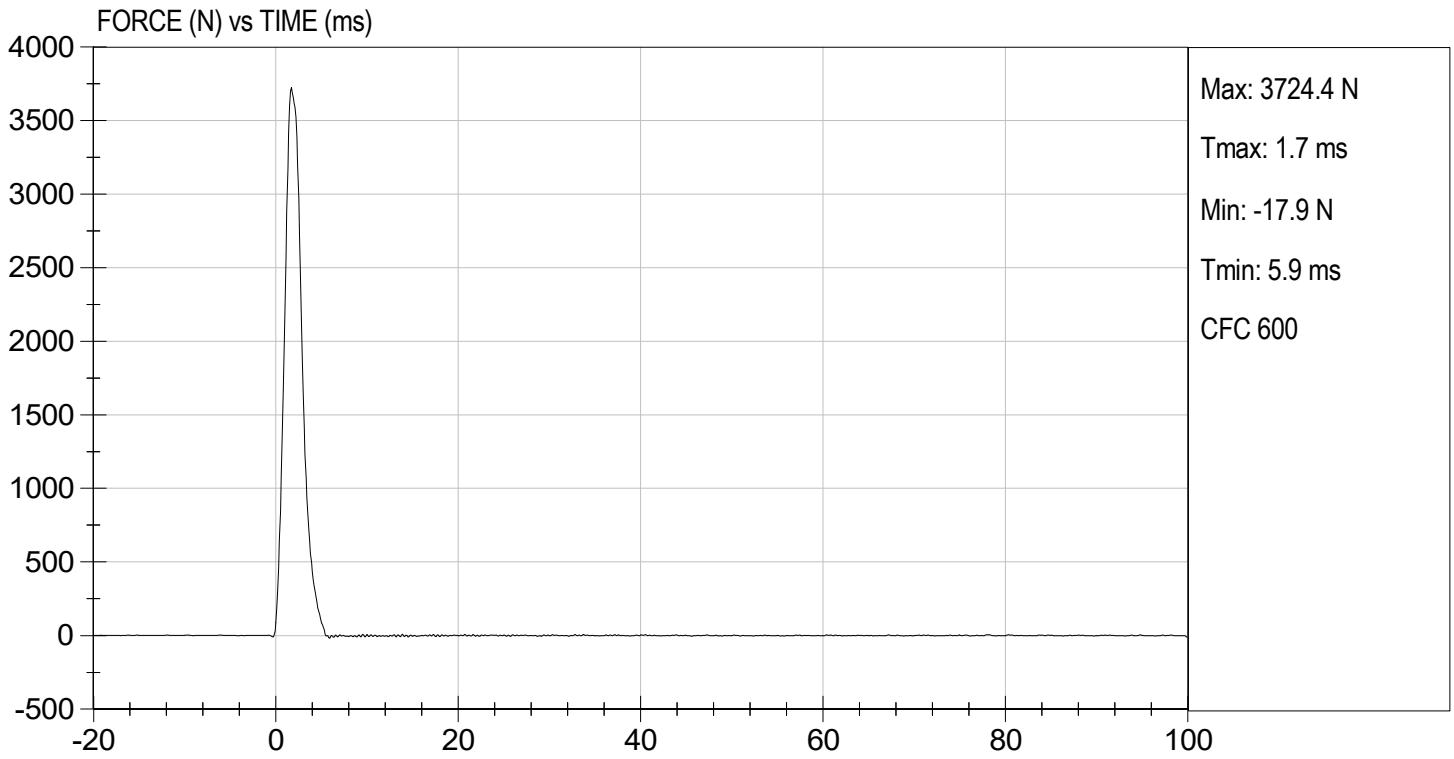


Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.94 ft/s, 2.12 m/s

TEST DATE: 06/15/2023  
TEST #: D231505



**MGA RESEARCH CORPORATION**  
**LEFT KNEE IMPACT TEST**  
**HYBRID III 5TH PERCENTILE**

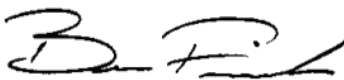
ATD Serial No: 142

Test I.D: D231506

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3939	Pass
Overall Test Results				Pass

  
\_\_\_\_\_  
Laboratory Technician

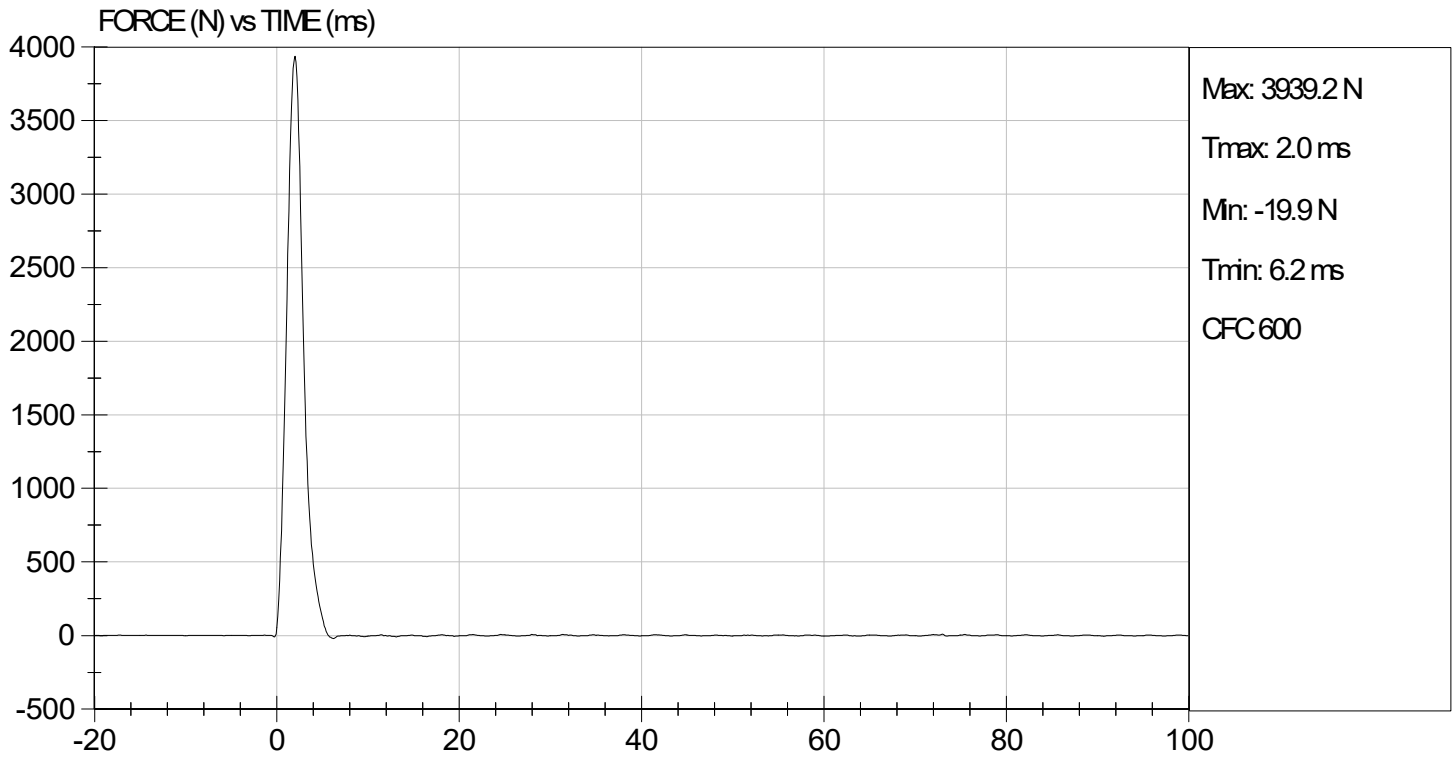
06/15/2023  
\_\_\_\_\_  
Test Date

  
\_\_\_\_\_  
Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.94 ft/s, 2.12 m/s

TEST DATE: 06/15/2023  
TEST #: D231506



**MGA RESEARCH CORPORATION**  
**TORSO FLEXION TEST**  
**HYBRID III 5TH PERCENTILE**

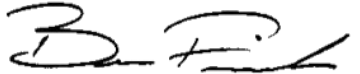
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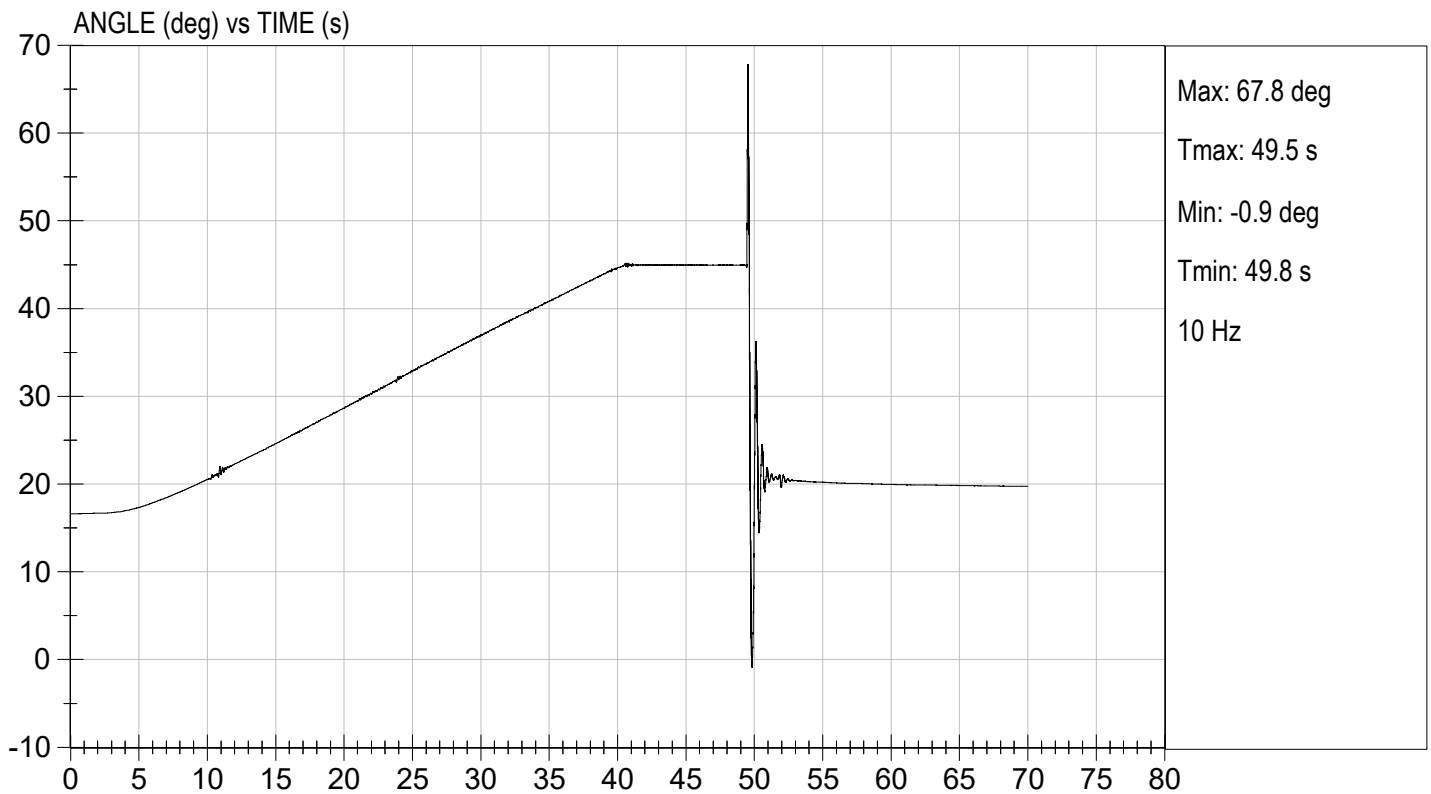
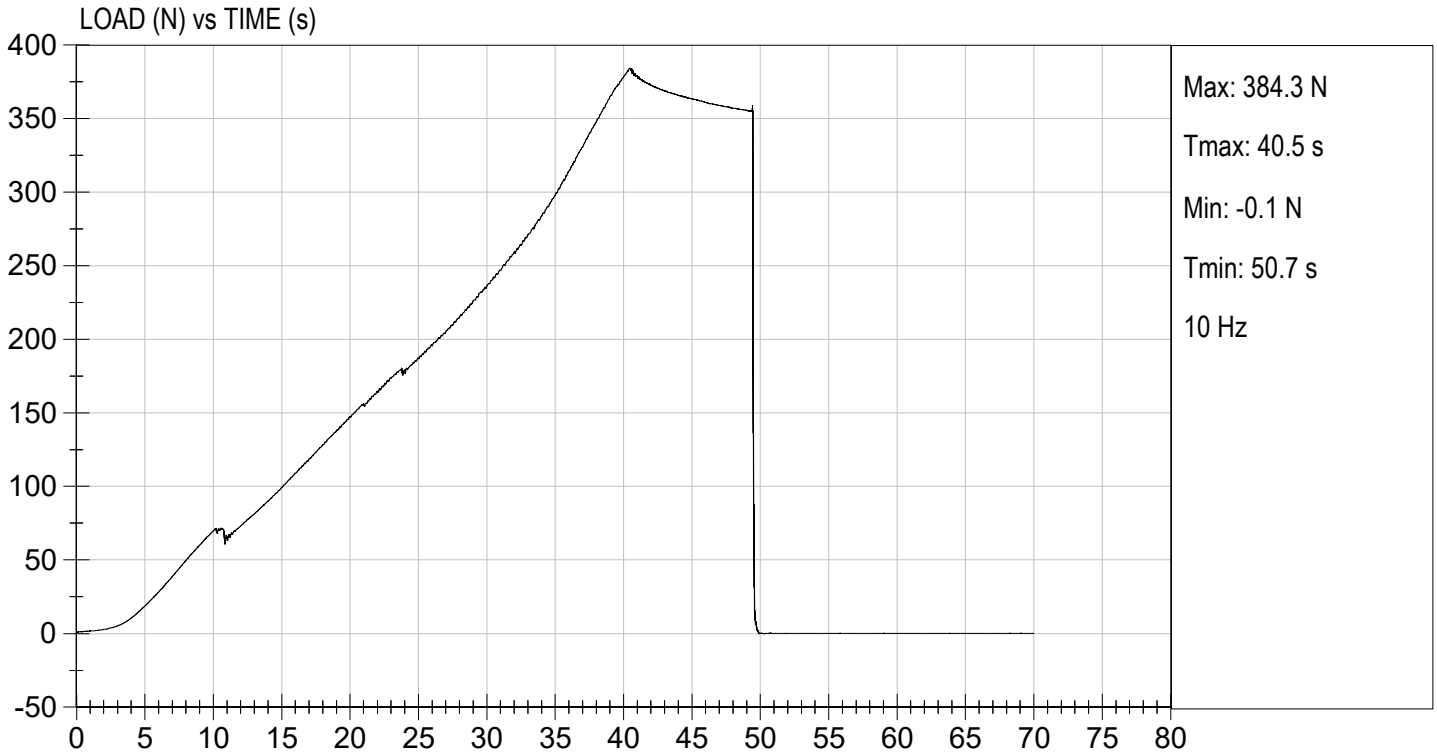
Test I.D: D231507

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	3	Pass
Force at 45 deg	N	320 to 390	384	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.8	Pass
<b>Overall Result</b>				<b>Pass</b>

  
 \_\_\_\_\_  
 Laboratory Technician

06/15/2023  
 \_\_\_\_\_  
 Test Date

  
 \_\_\_\_\_  
 Approved By



**QUALIFICATION TEST RESULTS**

**POST-TEST**

**HYBRID III 5<sup>TH</sup> PERCENTILE FEMALE - PASSENGER ATD**

**MGA RESEARCH CORPORATION**  
**HEAD DROP TEST**  
**HYBRID III 5TH PERCENTILE**

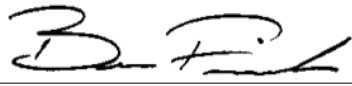
ATD Serial No: 142

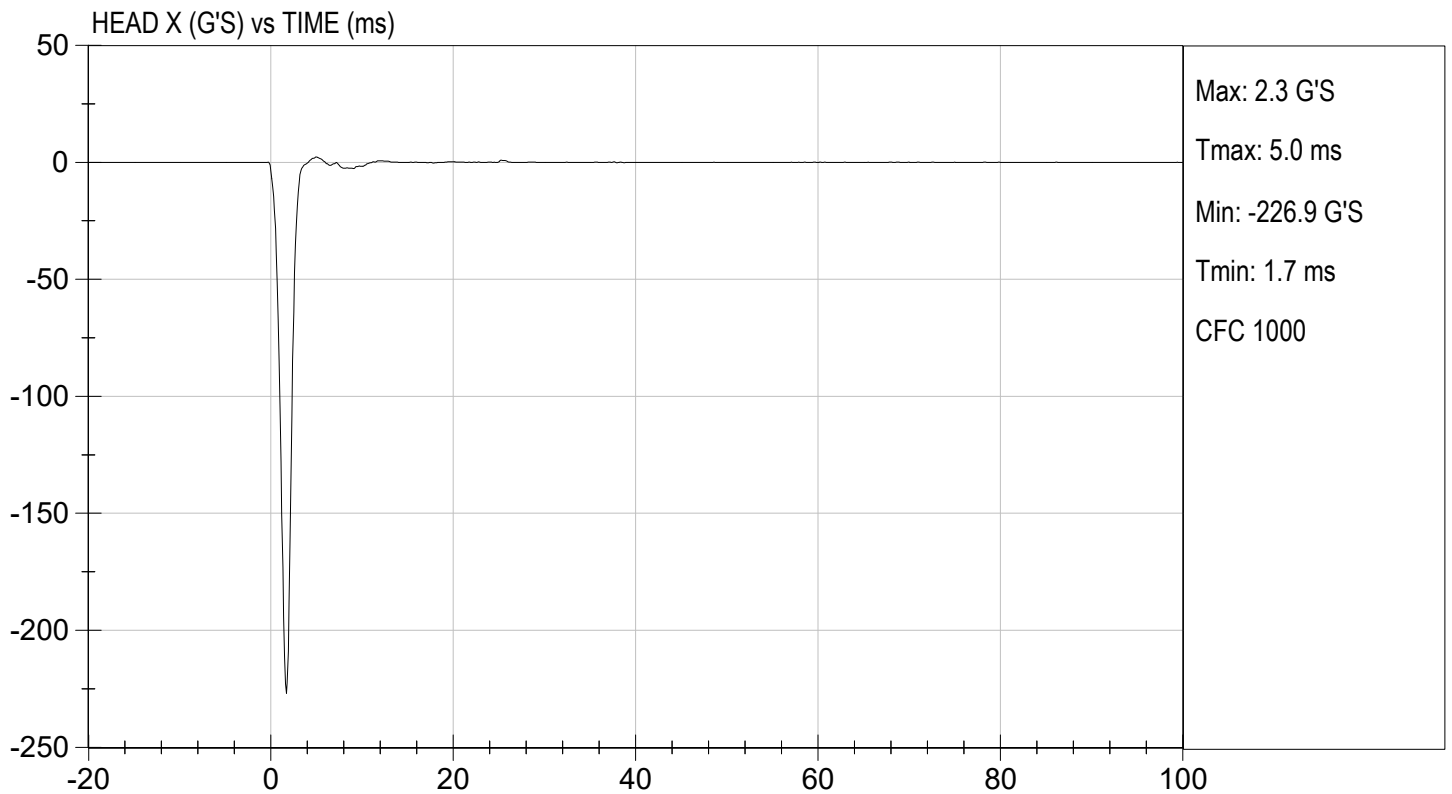
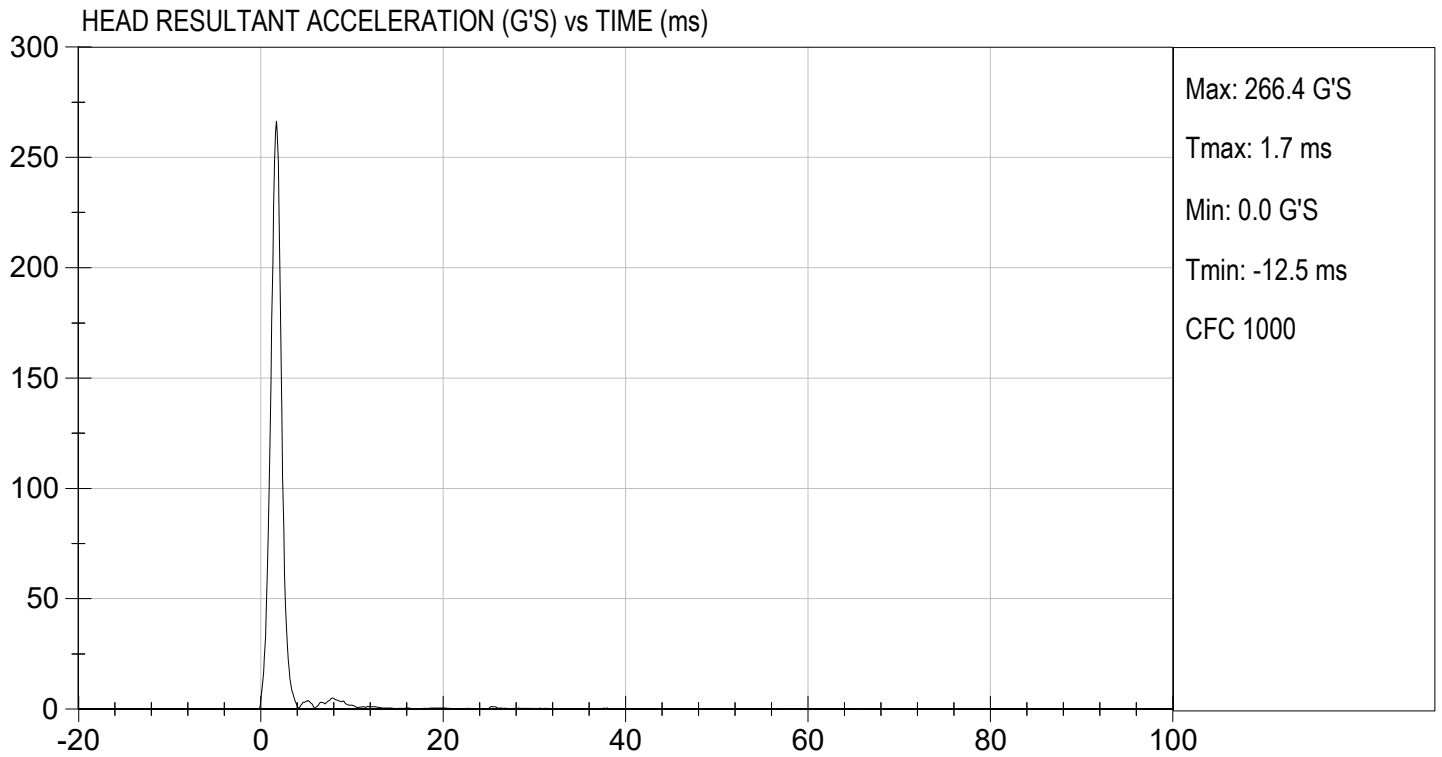
Test ID: D231731

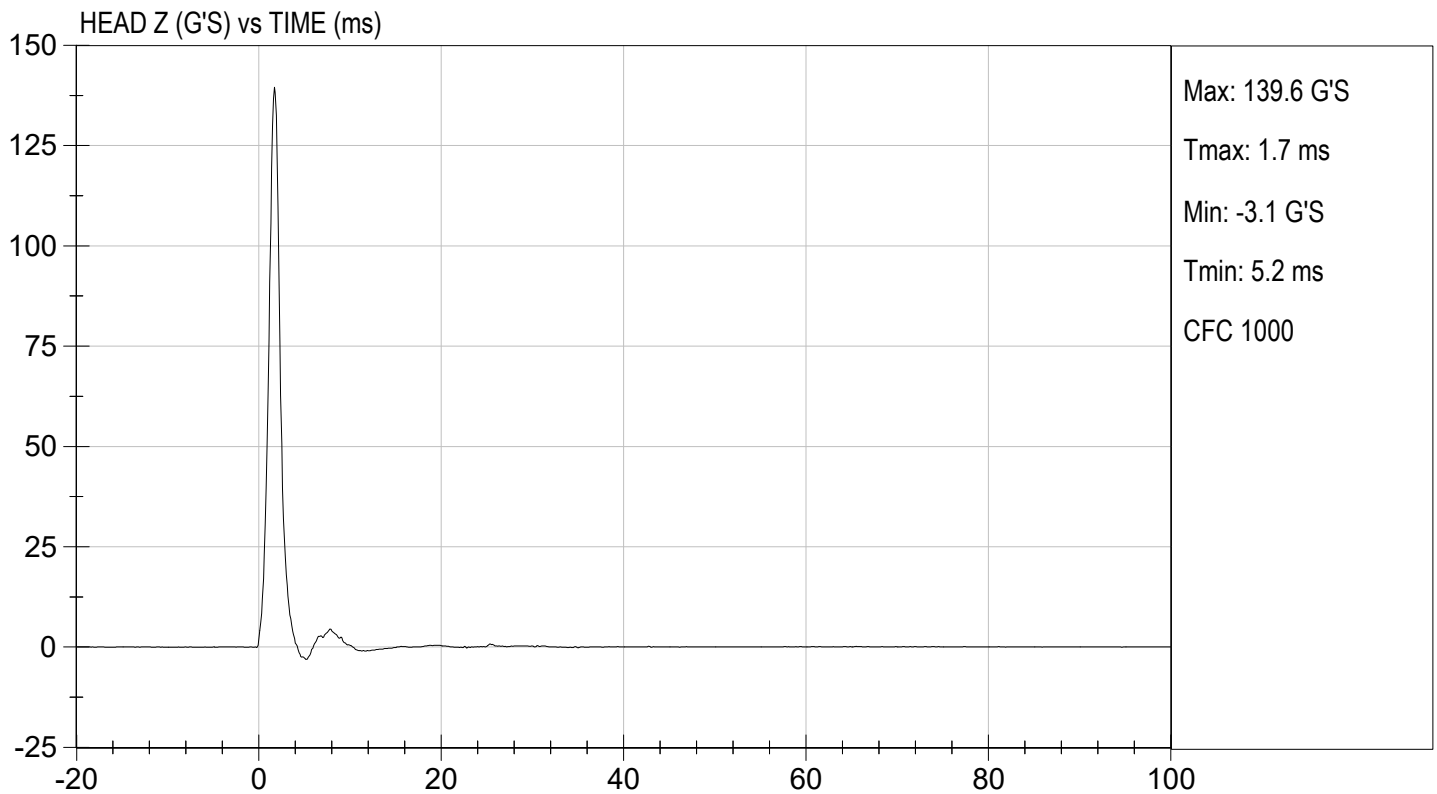
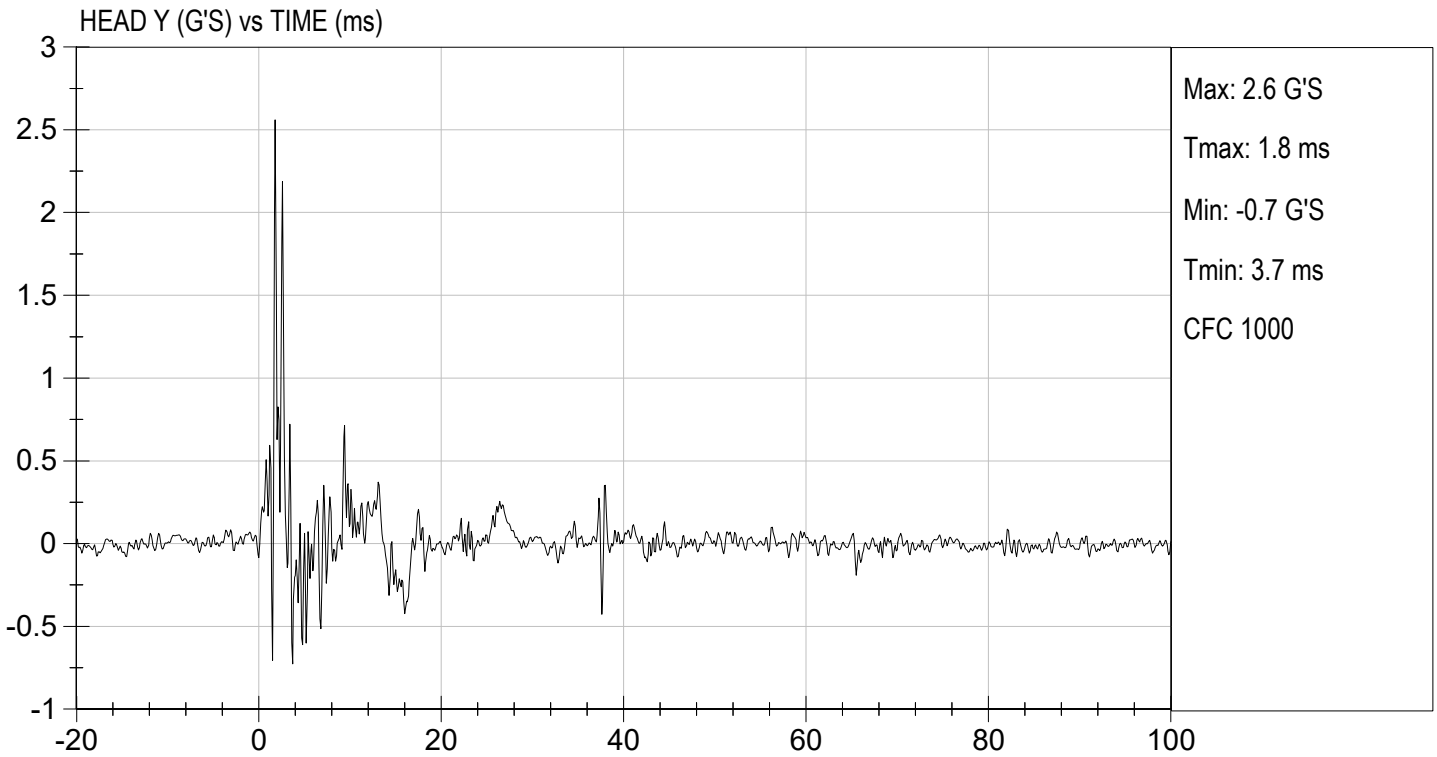
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	250 to 300	266	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	2.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

  
 Laboratory Technician

07/13/2023  
 Test Date

  
 Approved By





**MGA RESEARCH CORPORATION**  
**NECK FLEXION TEST**  
**HYBRID III 5TH PERCENTILE**

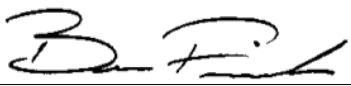
ATD Serial No: 142

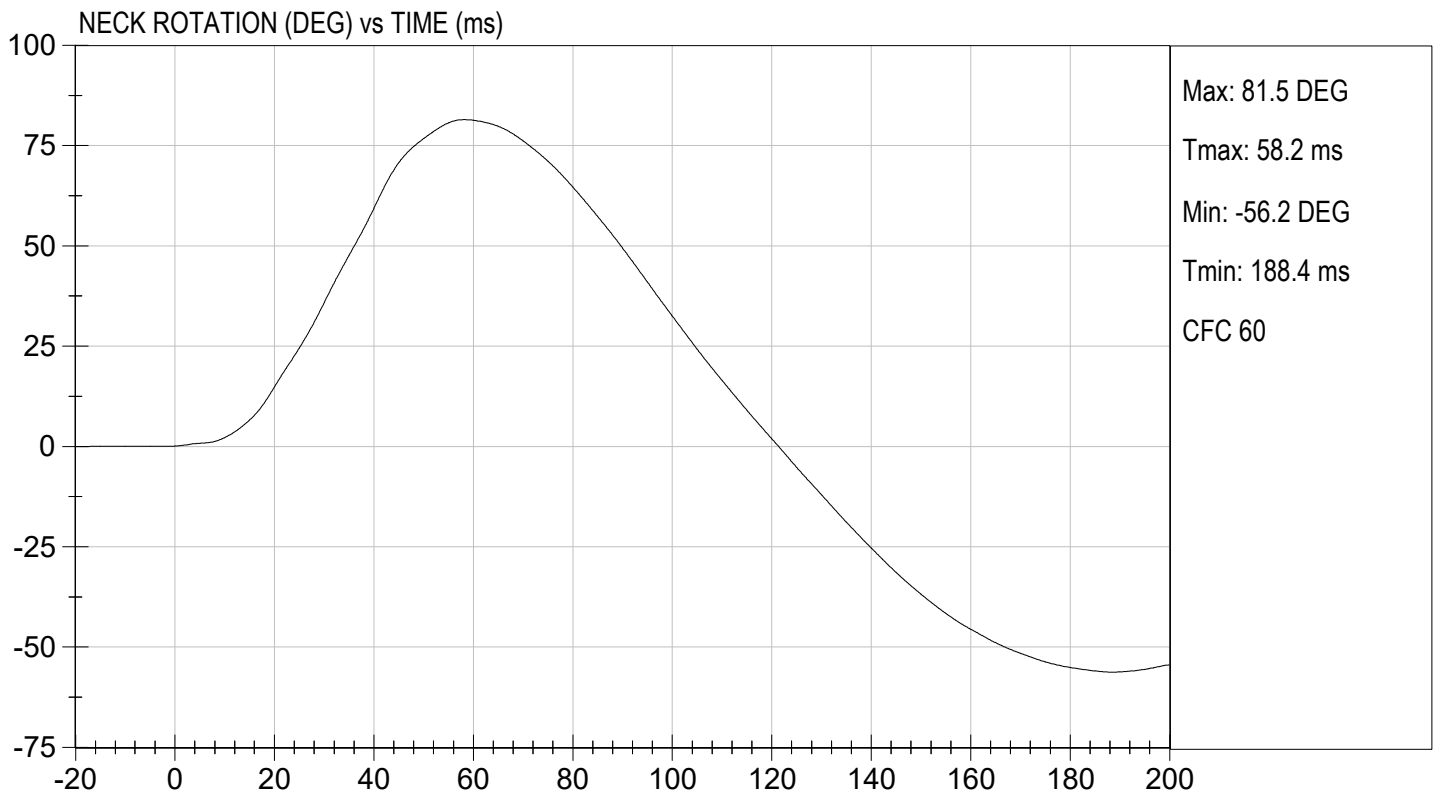
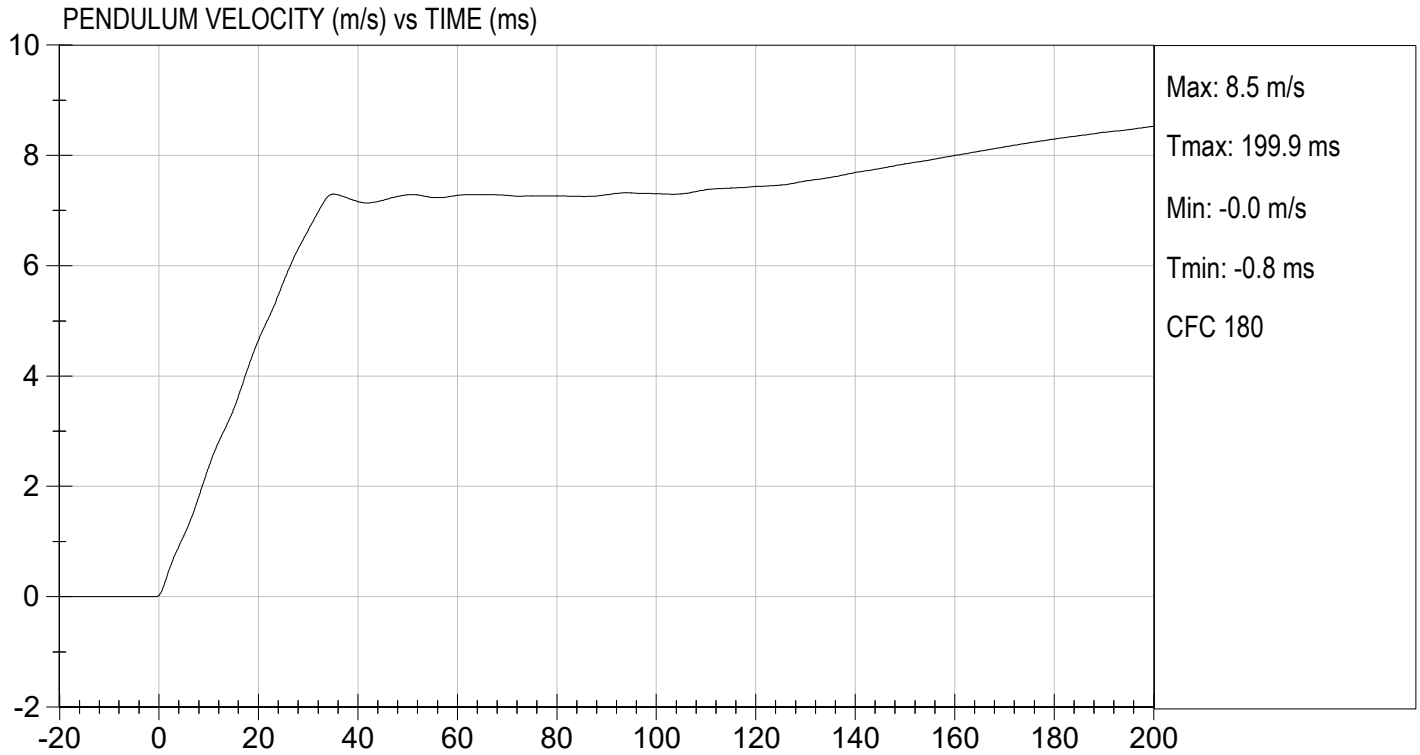
Test I.D: D231732

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	44	Pass
Pendulum Speed		m/s	6.89 to 7.13	6.96	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.7	Pass
	30 ms	m/s	5.8 to 7.0	6.6	Pass
D Plane Rotation	Max	deg	77 to 91	82	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	69	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	84	Pass
Overall Results					Pass

  
 Laboratory Technician

07/13/2023  
 Test Date

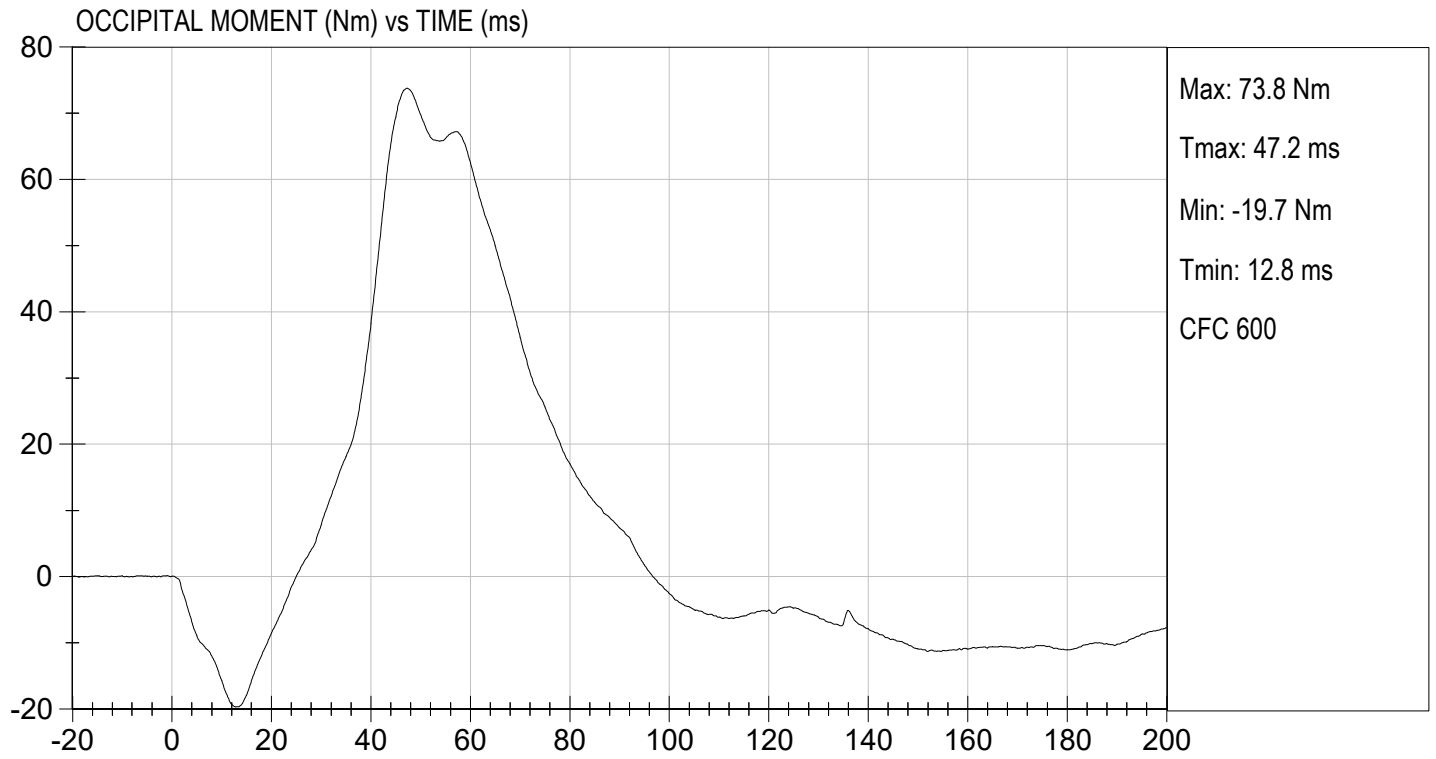
  
 Approved By





TEST DESC: NECK FLEXION  
VELOCITY: 22.83 ft/s, 6.96 m/s

TEST DATE: 07/13/2023  
TEST #: D231732



**MGA RESEARCH CORPORATION  
NECK EXTENSION TEST  
HYBRID III 5TH PERCENTILE**

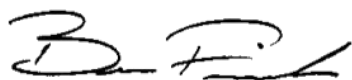
ATD Serial No: 142

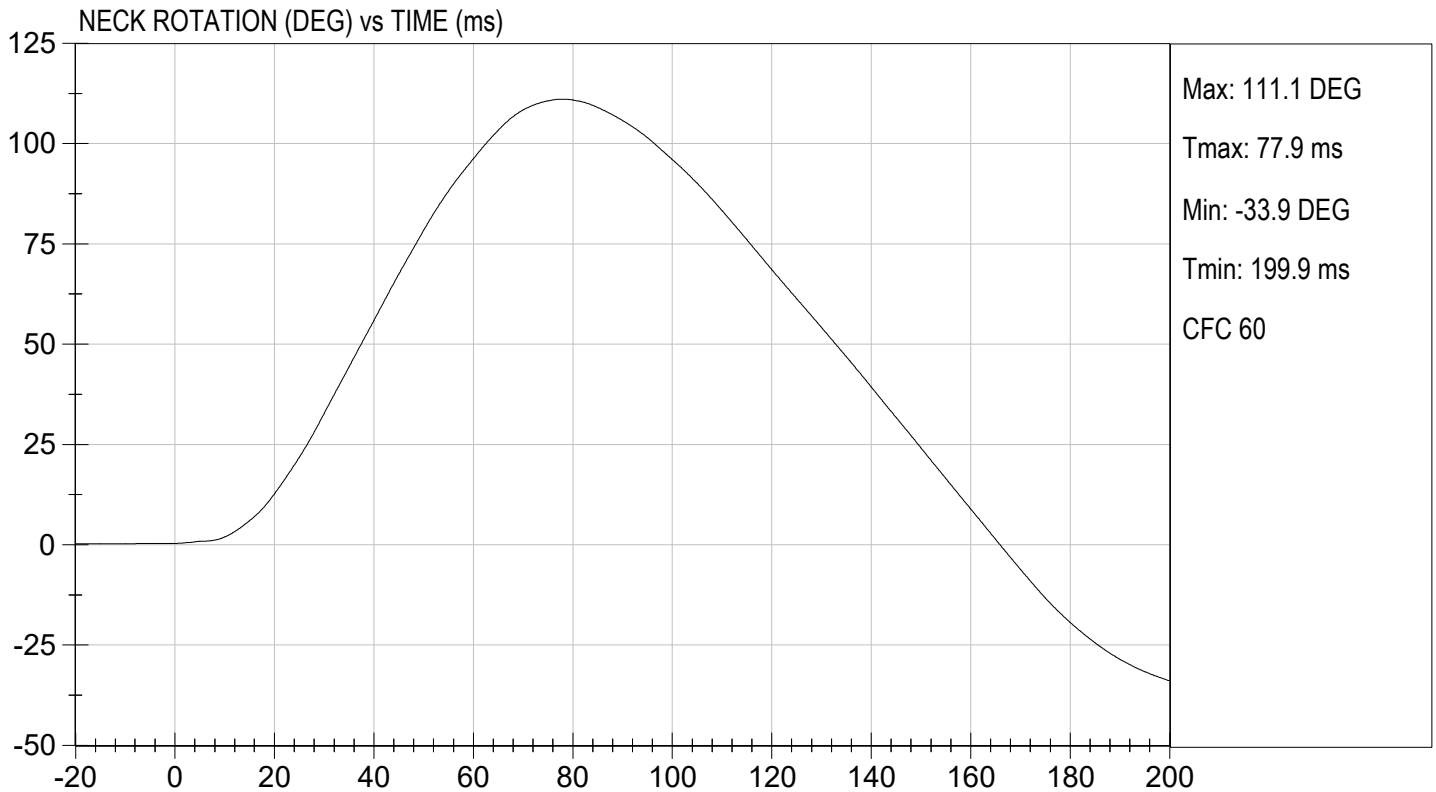
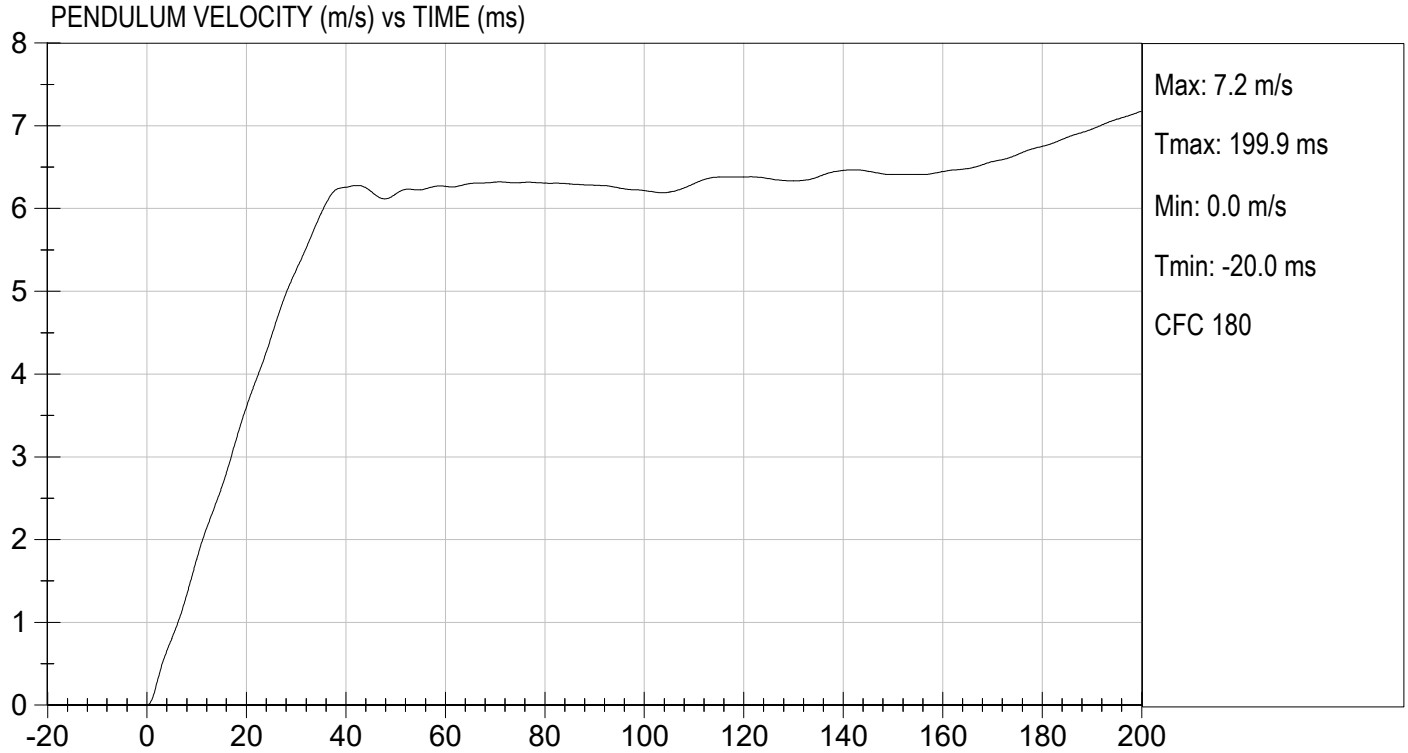
Test I.D: D231733

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	44	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.2	Pass
D Plane Rotation	Max	deg	99 to 114	111	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-54	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	104	Pass
Overall Results					Pass

  
Laboratory Technician

07/13/2023  
Test Date

  
Approved By





**MGA RESEARCH CORPORATION**  
**THORAX IMPACT**  
**HYBRID III 5TH PERCENTILE**

ATD Serial No: 142

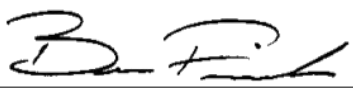
Test I.D: D231734

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Relative Humidity	%	10 to 70	45	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4375	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4407	Pass
Overall Test Results				Pass

  
 Laboratory Technician

07/13/2023

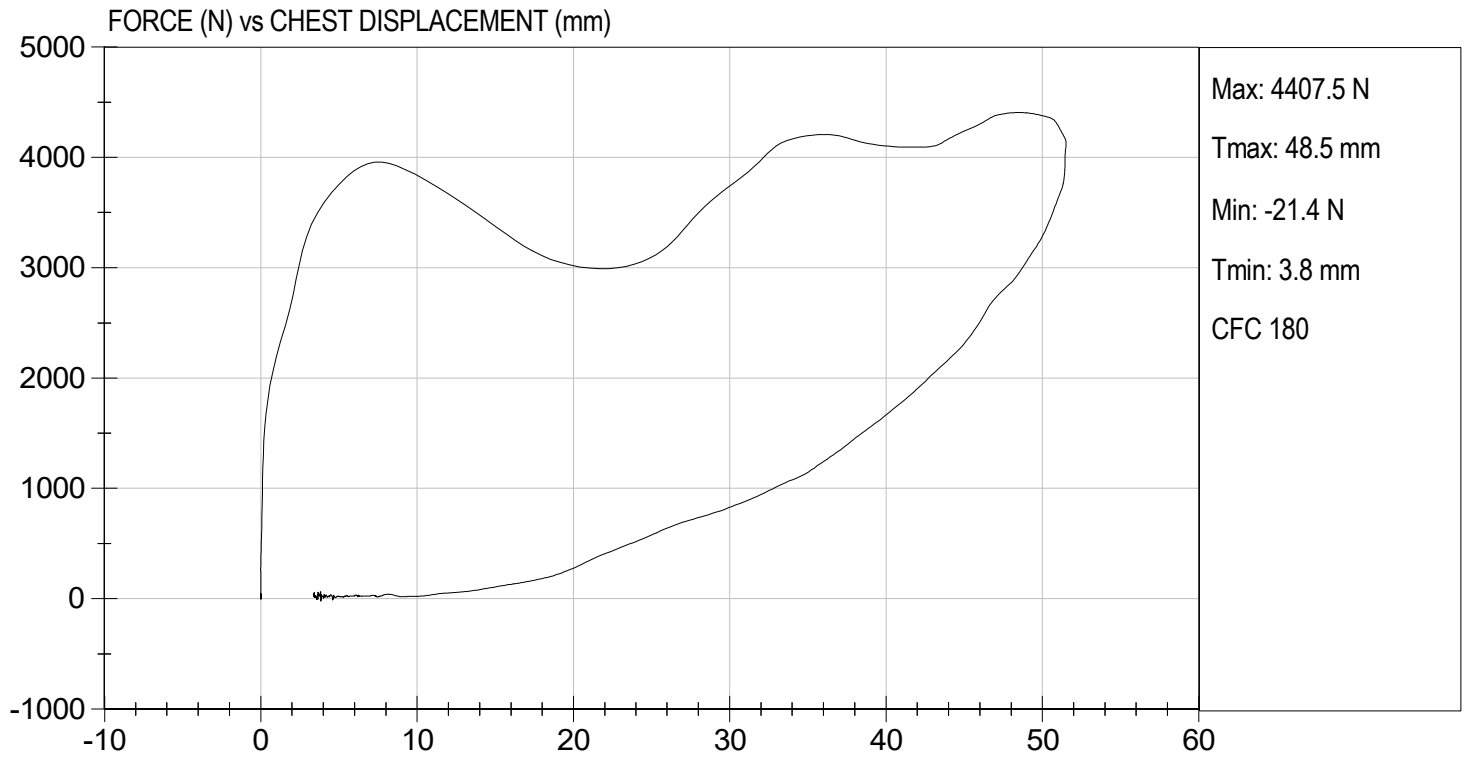
Test Date

  
 Approved By



TEST DESC: THORAX IMPACT  
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 07/13/2023  
TEST #: D231734



MGA RESEARCH CORPORATION  
RIGHT KNEE IMPACT TEST  
HYBRID III 5TH PERCENTILE

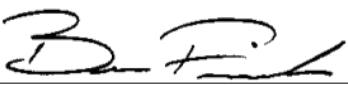
ATD Serial No: 142

Test I.D: D231735

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3590	Pass
Overall Test Results				Pass

  
Laboratory Technician

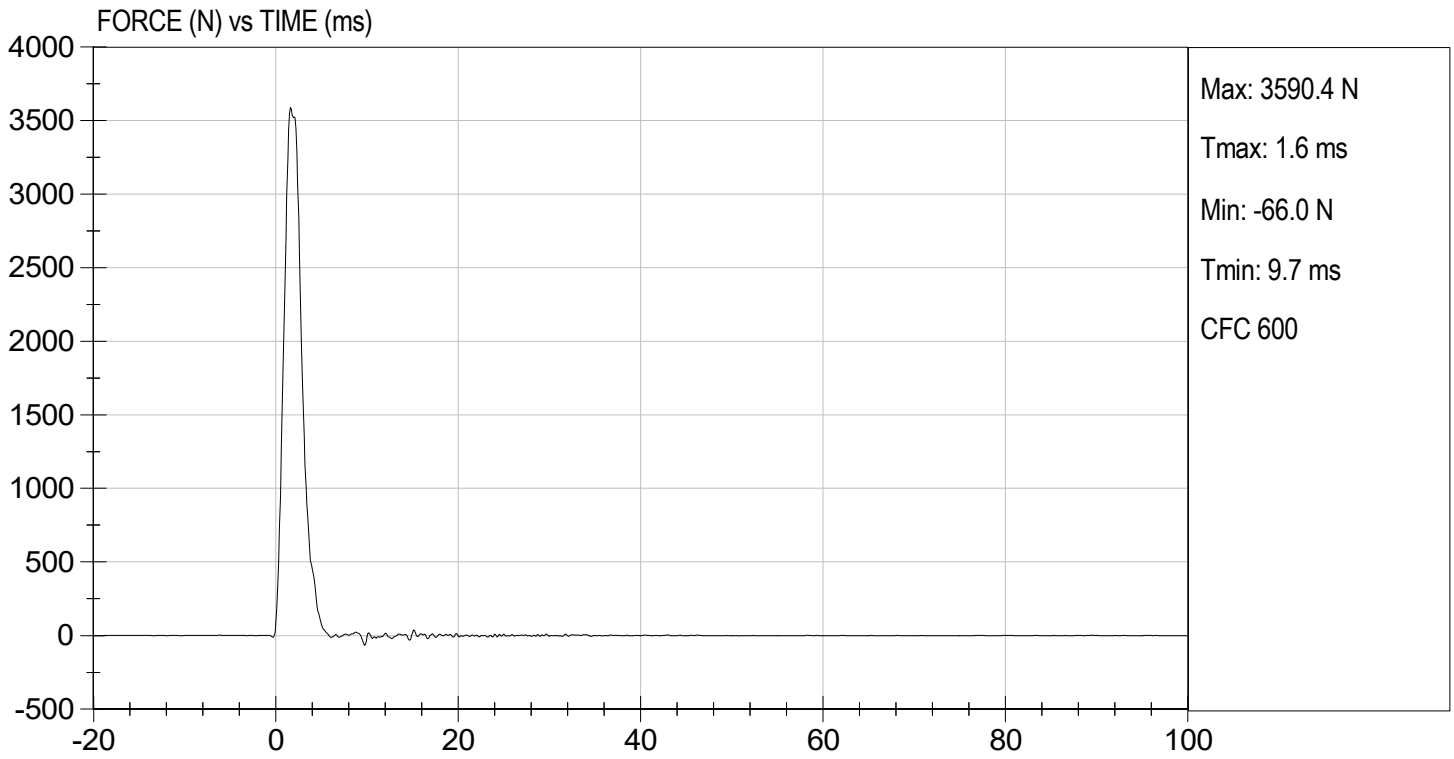
07/13/2023  
Test Date

  
Approved By



TEST DESC: RIGHT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 07/13/2023  
TEST #: D231735



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST  
HYBRID III 5TH PERCENTILE

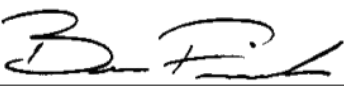
ATD Serial No: 142

Test I.D: D231736

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3760	Pass
Overall Test Results				Pass

  
Laboratory Technician

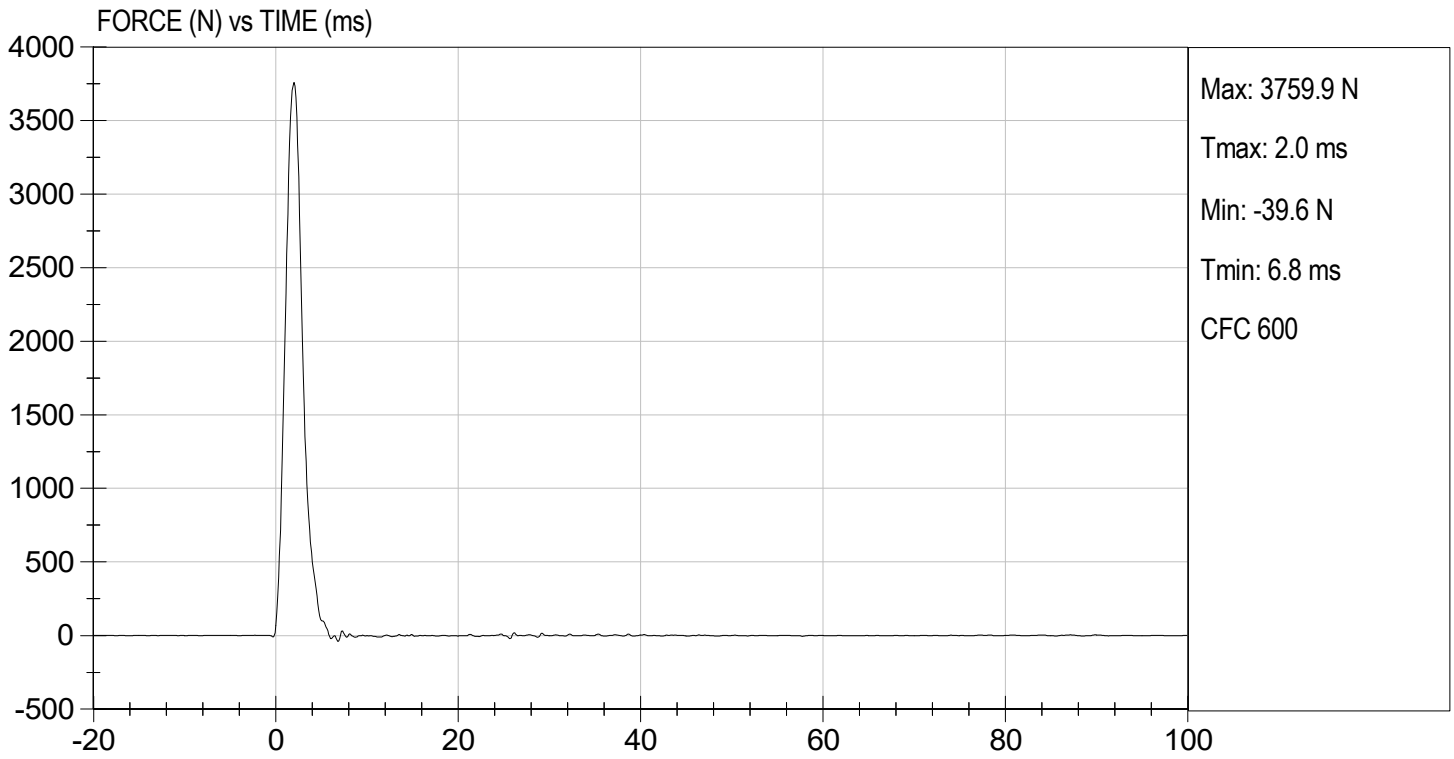
07/13/2023  
Test Date

  
Approved By



TEST DESC: LEFT KNEE  
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 07/13/2023  
TEST #: D231736



**MGA RESEARCH CORPORATION**  
**TORSO FLEXION TEST**  
**HYBRID III 5TH PERCENTILE**

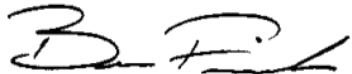
ATD Serial No: 142

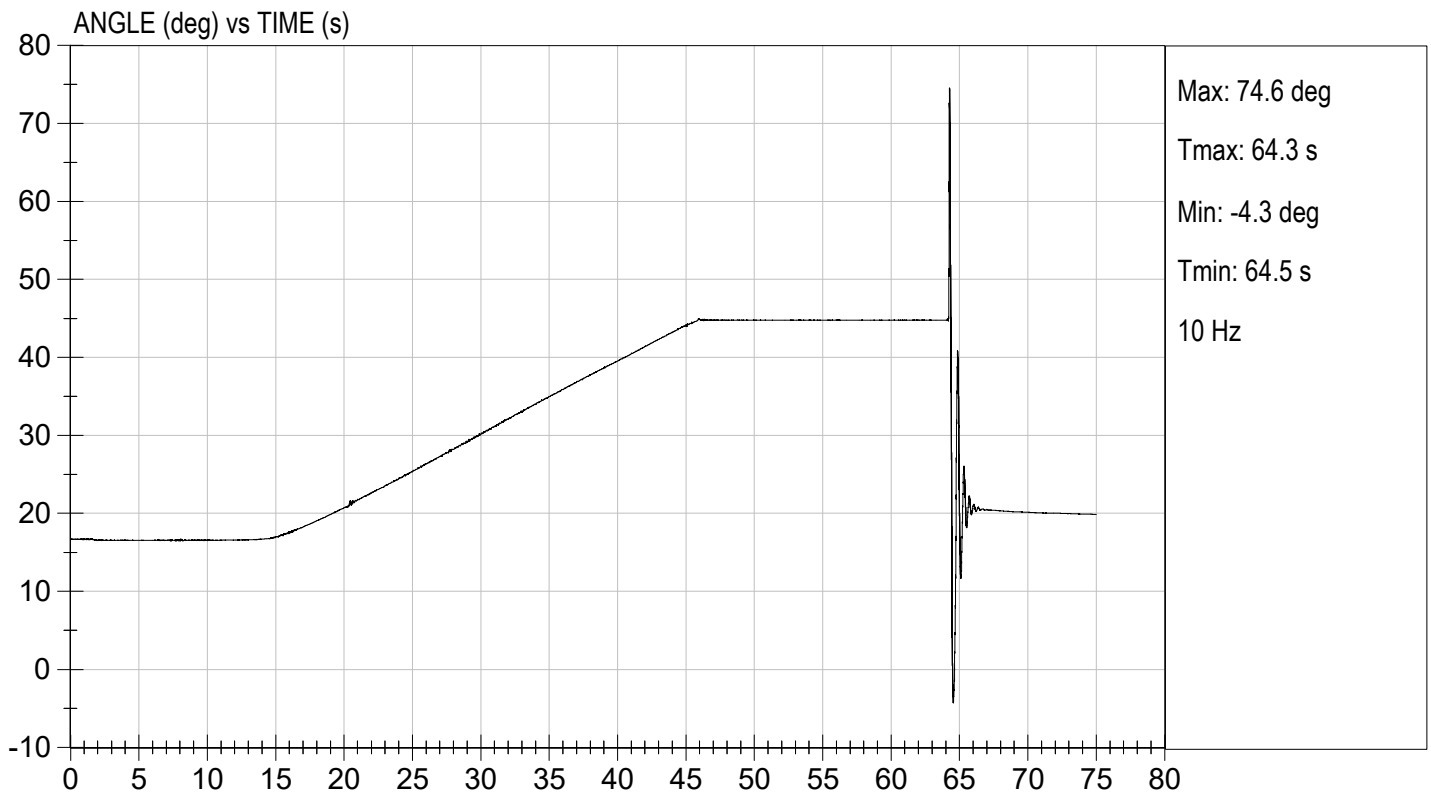
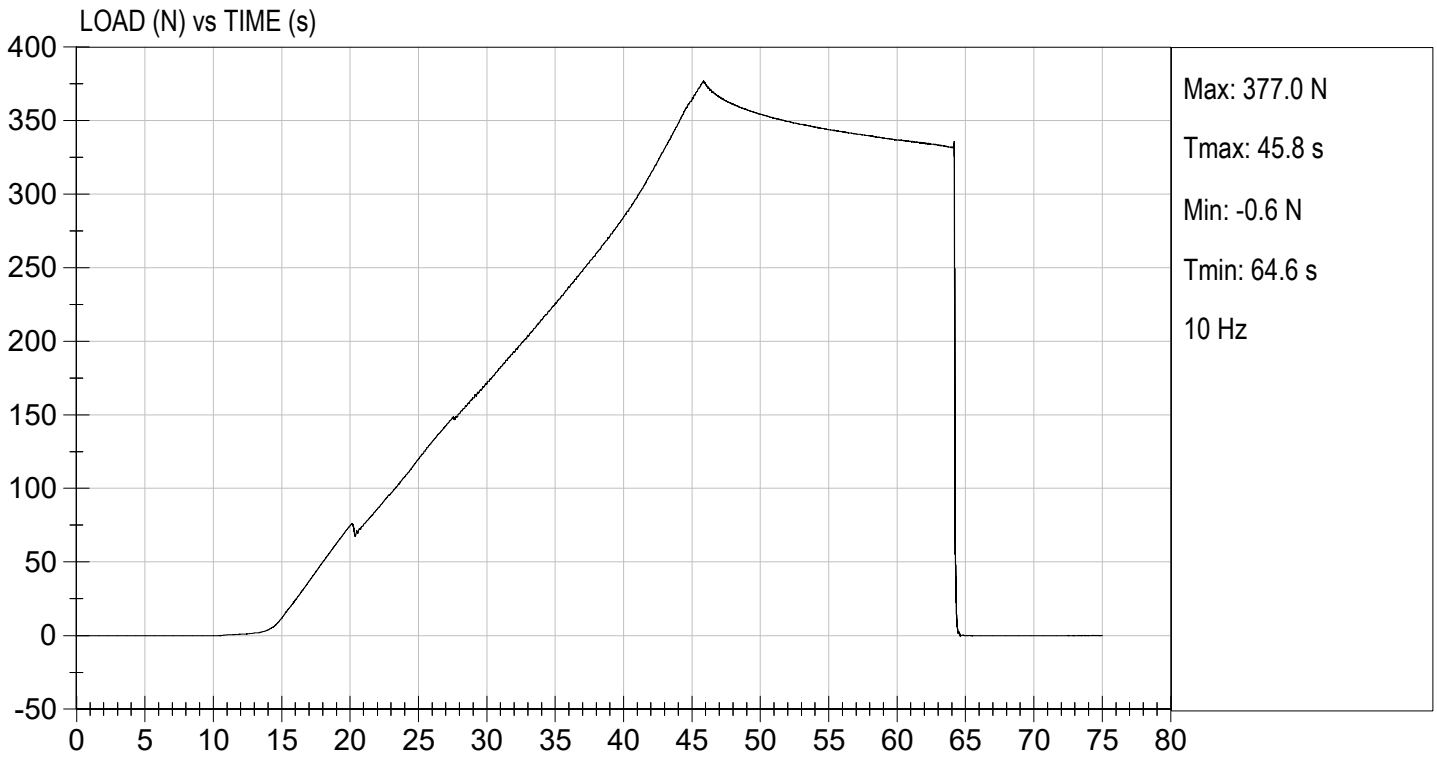
Test I.D: D231737

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	3	Pass
Force at 45 deg	N	320 to 390	377	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.9	Pass
<b>Overall Result</b>				<b>Pass</b>

  
 Laboratory Technician

07/13/2023  
 Test Date

  
 Approved By



**APPENDIX D**  
**TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION**

**TABLE 1 – DRIVER DUMMY INSTRUMENTATION**

Instrument Location			Axis	Hybrid III 50 <sup>th</sup> S/N 351		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X		P79741	Endevco	06/16/2023
		Y		P79743	Endevco	06/16/2023
		Z		P79744	Endevco	06/16/2023
	Redundant	X		P94834	Endevco	06/16/2023
		Y		P94856	Endevco	06/16/2023
		Z		P97412	Endevco	06/16/2023
Head Angular Rate Sensors			X	ARS7442	DTS	09/06/2022
			Y	ARS7475	DTS	09/06/2022
			Z	ARS7516	DTS	09/06/2022
Upper Neck Load Cell			Fx, Fy, Fz Mx, My, Mz	NG2022	Denton	09/21/2022
Chest Accelerometers	Primary	X		P86792	Endevco	06/16/2023
		Y		P88348	Endevco	06/16/2023
		Z		P86793	Endevco	06/16/2023
	Redundant	X		P88666	Endevco	06/16/2023
		Y		P94109	Endevco	06/16/2023
		Z		P88667	Endevco	06/16/2023
Chest Potentiometer			X	351	Humanetics	06/16/2023
Pelvis Accelerometers			X	P95526	Endevco	06/16/2023
			Y	P96038	Endevco	06/16/2023
			Z	P97742	Endevco	06/16/2023
Femur Load Cells	Right	Primary	Z	FG121P	Denton	06/19/2023
		Redundant	Z	FG121R	Denton	06/19/2023
	Left	Primary	Z	FG122P	Denton	06/19/2023
		Redundant	Z	FG122R	Denton	06/19/2023
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG467	Denton	12/21/2022
		Lower	Mx, My, Fz	AG491	Denton	12/21/2022
	Left	Upper	Mx, My, Fz	TG478	Denton	12/21/2022
		Lower	Mx, My, Fz	AG500	Denton	12/21/2022
Foot Accelerometers	Right	Rear	X	T22486	Endevco	06/16/2023
			Z	P97382	Endevco	06/16/2023
		Front	Z	P82120	Endevco	06/16/2023
	Left	Rear	X	T16468	Endevco	06/16/2023
			Z	T32154	Endevco	06/12/2023
		Front	Z	T32190	Endevco	06/12/2023
Seat Belt Load Cells			Lap	SBG161	FTSS	11/13/2019
			Shoulder	SBG157	FTSS	11/13/2019

**TABLE 2 – FRONT PASSENGER DUMMY INSTRUMENTATION**

Instrument Location			Axis	Hybrid III 5 <sup>th</sup> S/N 142		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X		P94799	Endevco	04/26/2023
		Y		P94800	Endevco	04/26/2023
		Z		P94801	Endevco	04/26/2023
	Redundant	X		P94802	Endevco	04/26/2023
		Y		P94803	Endevco	04/26/2023
		Z		P97377	Endevco	04/26/2023
Head Angular Rate Sensors			X	ARS7325	DTS	09/06/2022
			Y	ARS7340	DTS	09/06/2022
			Z	ARS7354	DTS	09/06/2022
Upper Neck Load Cell			Fx, Fy, Fz Mx, My, Mz	NG1915	Denton	02/22/2023
Chest Accelerometers	Primary	X		P88719	Endevco	04/26/2023
		Y		P94785	Endevco	04/26/2023
		Z		P94793	Endevco	04/26/2023
	Redundant	X		P95322	Endevco	04/26/2023
		Y		P95370	Endevco	04/26/2023
		Z		T30901	Endevco	04/26/2023
Chest Potentiometer			X	142	Humanetics	04/25/2023
Pelvis Accelerometers			X	P82646	Endevco	04/25/2023
			Y	P94798	Endevco	04/25/2023
			Z	P97705	Endevco	04/25/2023
Femur Load Cells	Right	Primary	Z	FG126P	Denton	04/25/2023
		Redundant	Z	FG126R	Denton	04/25/2023
	Left	Primary	Z	FG127P	Denton	04/25/2023
		Redundant	Z	FG127R	Denton	04/25/2023
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG405	Denton	02/22/2023
		Lower	Mx, My, Fz	AG368	Denton	02/22/2023
	Left	Upper	Mx, My, Fz	TG475	Denton	02/22/2023
		Lower	Mx, My, Fz	AG504	Denton	02/22/2023
Foot Accelerometers	Right	Rear	X	P94795	Endevco	04/25/2023
			Z	P94796	Endevco	04/25/2023
		Front	Z	P94797	Endevco	04/25/2023
	Left	Rear	X	P83167	Endevco	04/26/2023
			Z	P83168	Endevco	04/26/2023
		Front	Z	P83169	Endevco	04/26/2023
Seat Belt Load Cells			Lap	SBG273	FTSS	11/13/2019
			Shoulder	SBG272	FTSS	11/13/2019

**TABLE 3 – VEHICLE INSTRUMENTATION**

Instrument Location			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember / Rear Seat Accelerometers	Left	Primary	X	A340206	MSI	04/27/2023
			Z	A390900	MSI	04/27/2023
		Redundant	X	A337234	MSI	04/27/2023
	Right	Primary	X	T32165	Endevco	07/10/2023
			Z	T33467	Endevco	04/05/2023
		Redundant	X	T33446	Endevco	04/05/2023
Engine Accelerometers		Top	X	T25652	Endevco	07/10/2023
		Bottom	X	A391134	MSI	06/08/2023