

REPORT NUMBER: NCAP-MGA-23-008

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

**VOLKSWAGEN DE MEXICO S.A. DE C.V. MEXICO
2023 Volkswagen Tiguan S 5-Door SUV
NHTSA No.: M20235803**

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



Test Date: February 6, 2023

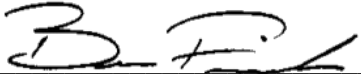
Final Report Date: November 22, 2023

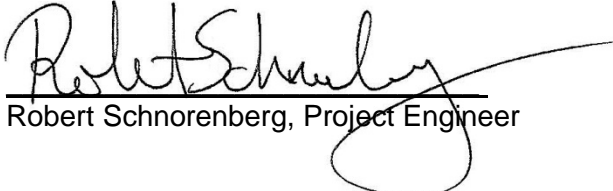
FINAL REPORT

**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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Approved by: 
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Approval Date: November 22, 2023

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

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16. Abstract A 56.3 km/h NCAP Frontal Rigid Barrier Impact Test was conducted on a 2023 Volkswagen Tiguan S 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 February 6, 2023. The impact velocity of the vehicle was 56.36 km/h and the ambient temperature at the barrier face at the time of impact was 21.5°C. The target vehicle post-test maximum crush was 550 mm located to the left 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 (HIC₁₅)</td> <td></td> <td>700</td> <td>260</td> <td>700</td> <td>198</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>32</td> <td>52</td> <td>19</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.37</td> <td>1</td> <td>0.37</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1856</td> <td>2620</td> <td>1160</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>358</td> <td>2520</td> <td>277</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>1815</td> <td>6805</td> <td>1905</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>2850</td> <td>6805</td> <td>2097</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)		700	260	700	198	Maximum Chest Compression	mm	63	32	52	19	Nij		1	0.37	1	0.37	Neck Tension	N	4170	1856	2620	1160	Neck Compression	N	4000	358	2520	277	Left Femur Force	N	10008	1815	6805	1905	Right Femur Force	N	10008	2850	6805	2097
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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 Volkswagen Tiguan S 5-Door SUV at a velocity of 56.36 km/h. The test was performed at MGA Research Corporation on February 6, 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 50th percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5th 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 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 632 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 354 mm located at 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 bolster.

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 glove box.

The occupant data is summarized below:

ATD position	HIC₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	260	0.37	1856	358	50.4	32	1815	2850
Passenger (5 th)	198	0.37	1160	277	47.4	19	1905	2097

The test data can be found on the NHTSA website at 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 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20235803	Traction Control System (TCS)	Yes
Model Year	2023	Power Steering	Yes
Make	Volkswagen	Power Window Auto-Reverse	Yes
Model	Tiguan S	Driver Frontal Airbag	Yes
Body Style	5-Door SUV	Driver Curtain Airbag	Yes
VIN	3VVFB7AXXPM026395	Driver Head/Torso Airbag	No
Body Color	Pure White	Driver Torso Airbag	No
Odometer (km/mi)	98 km / 61 mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.0 L	Driver Pelvis Airbag	No
Type/No. Cylinders	Inline 4	Driver Knee Airbag	No
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	8	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	No
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	VOLKSWAGEN DE MEXICO S.A. DE C.V. MEXICO	GVWR (kg)	2300
		GAWR Front (kg)	1180
Date of Manufacture	10/22	GAWR Rear (kg)	1170

VEHICLE SEATING AND WEIGHT CAPACITY DATA

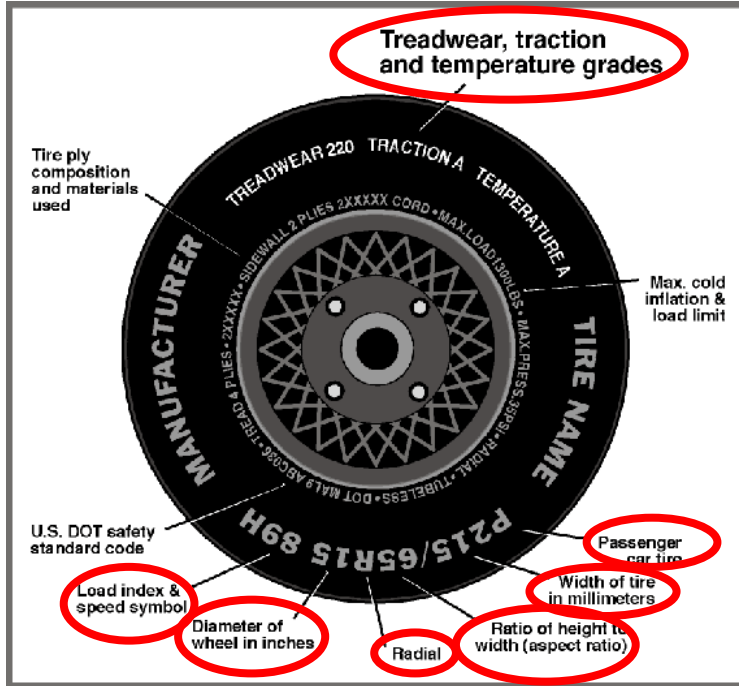
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				455
Cargo Weight (RCLW) (kg)				115

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	280	280
Recommended Tire Size	215/65R17	215/65R17
Tire Size on Vehicle	215/65R17	215/65R17
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Ecopia H/L 422 Plus	Ecopia H/L 422 Plus
Treadwear	700	700
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	99H	99H
Tire Material	Rubber	Rubber
DOT Safety Code Left	1V6 E3EC11 4022	1V6 E3EC11 4022
DOT Safety Code Right	1V6 E3EC11 4022	1V6 E3EC11 4022

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	506.0	367.0		535.0	476.0	
Right	kg	477.5	385.5		490.0	484.5	
Ratio	%	56.7%	43.3%		51.6%	48.4%	
Totals	kg	983.5	752.5	1736.0	1025.0	960.5	1985.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1736.0
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	115
Calculated Test Vehicle Target Weight (TVTW)	kg	1992.0

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	790	789	803	805	1209
As Tested	mm	780	777	762	773	1349
Post Test	mm	899	894	744	756	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2788
Total Vehicle Length at Left Side	mm	4622
Total Vehicle Length at Centerline	mm	4734
Total Vehicle Length at Right Side	mm	4622
Weight of Ballast in Cargo Area	kg	83
Weight of Vehicle Components Removed	kg	34
Amount of Stoddard Solvent in Fuel Tank	L	56.0

List of components removed to meet test weight: None.

List of components removed for instrumentation, data box, and equipment installation: Cargo area carpet/trim/divider, jack and tools, spare tire and cover, underbody plastic.

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4734
2	Total Width	1832
3	Bumper Top Height	544
4	Bumper Bottom Height	453
5	Longitudinal Member Top Height	593
6	Distance between Longitudinal Members	857
7	Longitudinal Member Width	74
8	Engine Top Height	814
9	Engine Bottom Height	228
10	Engine and Gearbox Width	793
11	Front Bumper-Engine Distance	506
12	Front Shock Absorber Fixing Height	906
13	Bonnet Leading Edge Height	858
14	Front Shock Absorber Fixing Width	135
15	Front Bumper – Front Axle Distance	834
16	Front Axle – A-Pillar Distance	503
17	A-Pillar – B-Pillar Distance	1041
18	B-Pillar – Rear Axle Distance	1247
19	B-Pillar – C-Pillar Distance	1062
20	Roof Sill Bottom Height	1478
21	Roof Sill Top Height	1554
22	Floor Sill Bottom Height	260
23	Floor Sill Top Height	403

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

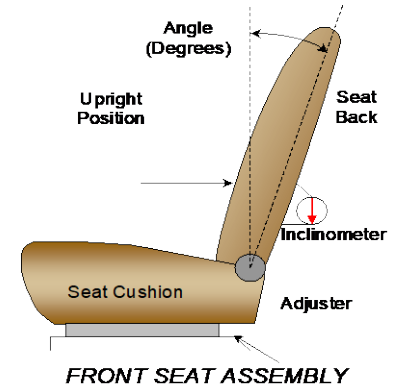
Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

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	18.3° on seatback centerline
Passenger Seat Back Angle	15.8° on seatback centerline



SEAT FORE/AFT POSITIONS

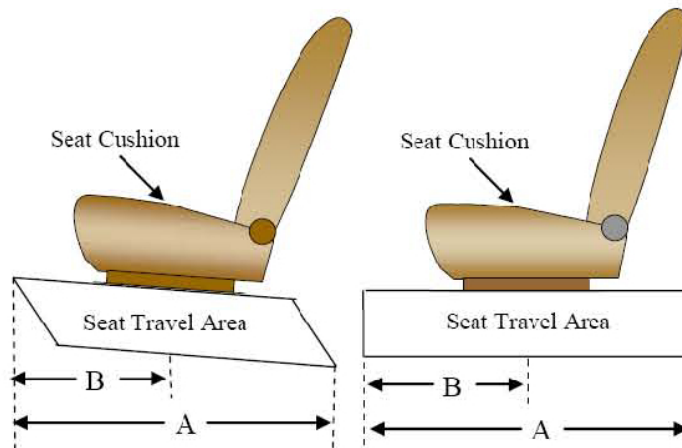
The driver and passenger seat fore/aft positions are adjusted following Appendix F, “Driver & Passenger Dummy Seating & Positioning Procedures” in the NCAP Test Procedure dated May 2018.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	316 mm / 39 detents (1 st as 1)	163 mm / 15 th detent (1 st as 0)
Passenger Seat	212 mm / 33 detents (1 st as 1)	0 mm / 0 th detent (1 st 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 st as 1)	0 (1 st as 0)
Passenger Seat	4 (1 st as 1)	0 (1 st as 0)



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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

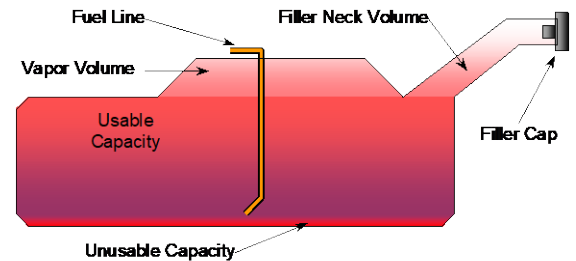
NHTSA No.: M20235803
 Test Date: 2/6/2023

FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	60.2
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	55.4 to 56.6
Actual Amount of Solvent used	56.0
1/3 of Usable Capacity	20.1

FUEL PUMP

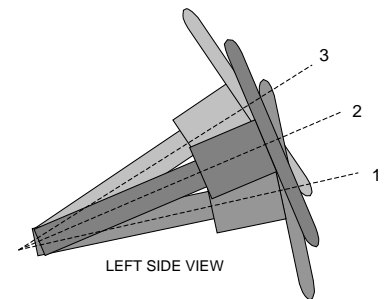
The vehicle is equipped with an electronic fuel pump. The fuel pump runs for 2 seconds after ignition is switched on. If the engine doesn't run, the fuel pump stops running. If there is a crash signal, it will also stop running. The filler neck is located on the passenger's side.



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

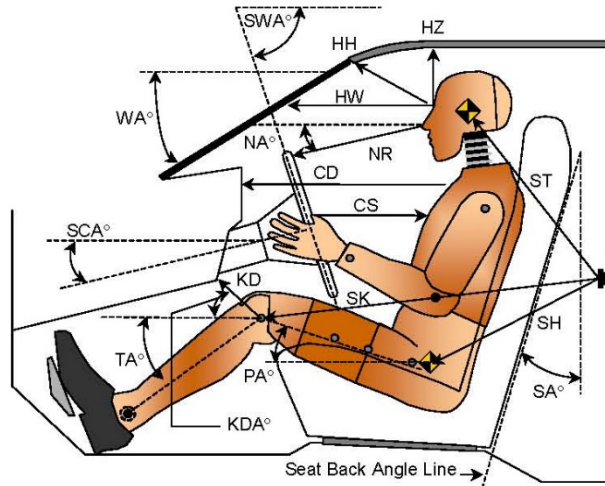
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	67.2	
Geometric Center Position 2	64.6	
Uppermost Position 3	61.9	
Telescoping Steering Wheel Travel		56
Test Position	64.6	28

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023



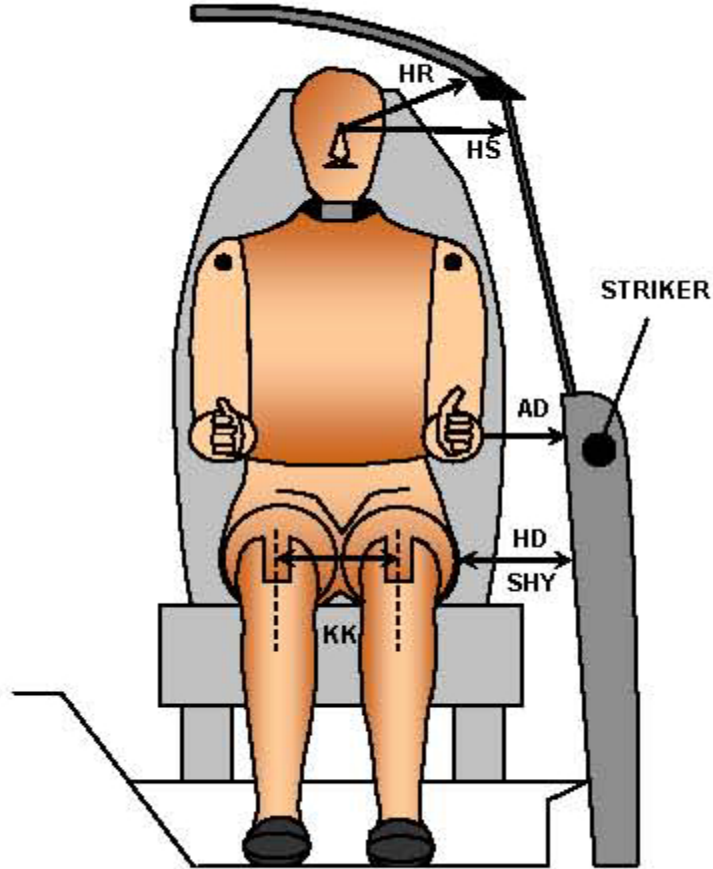
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		28.3		
SWA°	Steering Wheel Angle		64.6		
SCA°	Steering Column Angle		25.4		
SA°	Seat Back Angle		18.3		15.8
HZ	Head to Roof (Z)	212	90	253	90
HH	Head to Header	373	20.0	367	29.8
HW	Head to Windshield	656	0	696	0
NR	Nose to Rim	404	12.7		
CD	Chest to Dash	550		416	
CS	Chest to Steering Hub	334	4.4		
RA	Rim to Abdomen	215	0		
KDL	Left Knee to Dash	202	24.9	129	32.6
KDR	Right Knee to Dash	180	27.2	126	32.2
PA°	Pelvic Angle		21.7		21.3
TA°	Tibia Angle		50.7		69.9
SK	Striker to Knee	580	10.0	671	100.7
ST	Striker to Head	467	70.9	419	35.6
SH	Striker to H-Point	313	42.9	405	121.6

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023



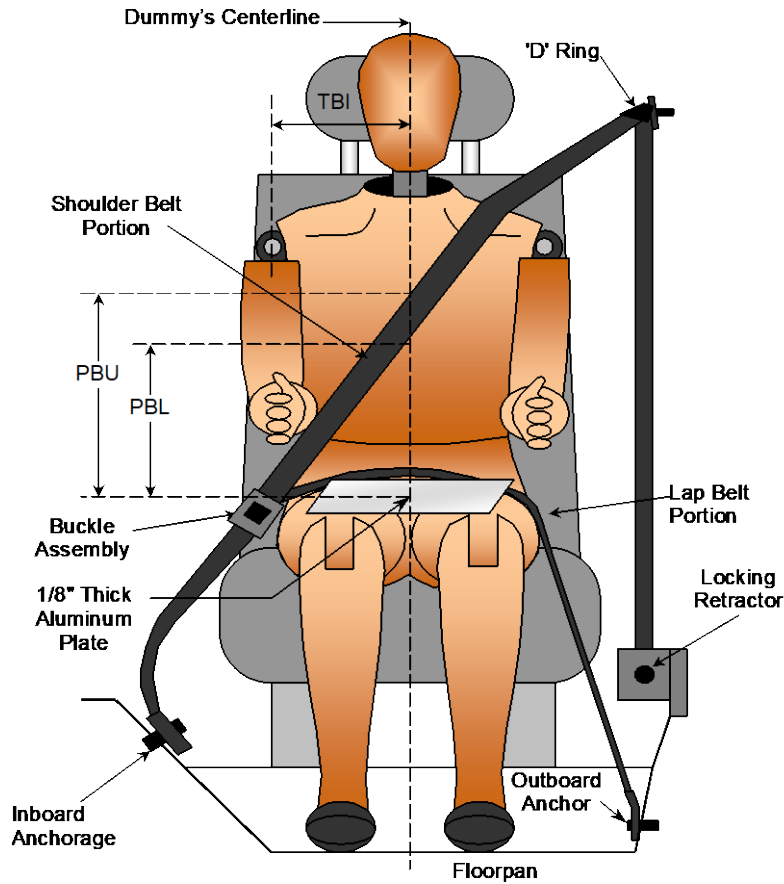
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	136	101
HD	H-Point to Door	139	185
HR	Head to Side Header	226	272
HS	Head to Side Window	340	365
KK	Knee to Knee	370	230
SHY	Striker to H-Point (Y Direction)	271	311
AA	Ankle to Ankle	269	195

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	355	310
PBL - Top surface of reference to belt lower edge	mm	265	220

BELT LENGTH DATA

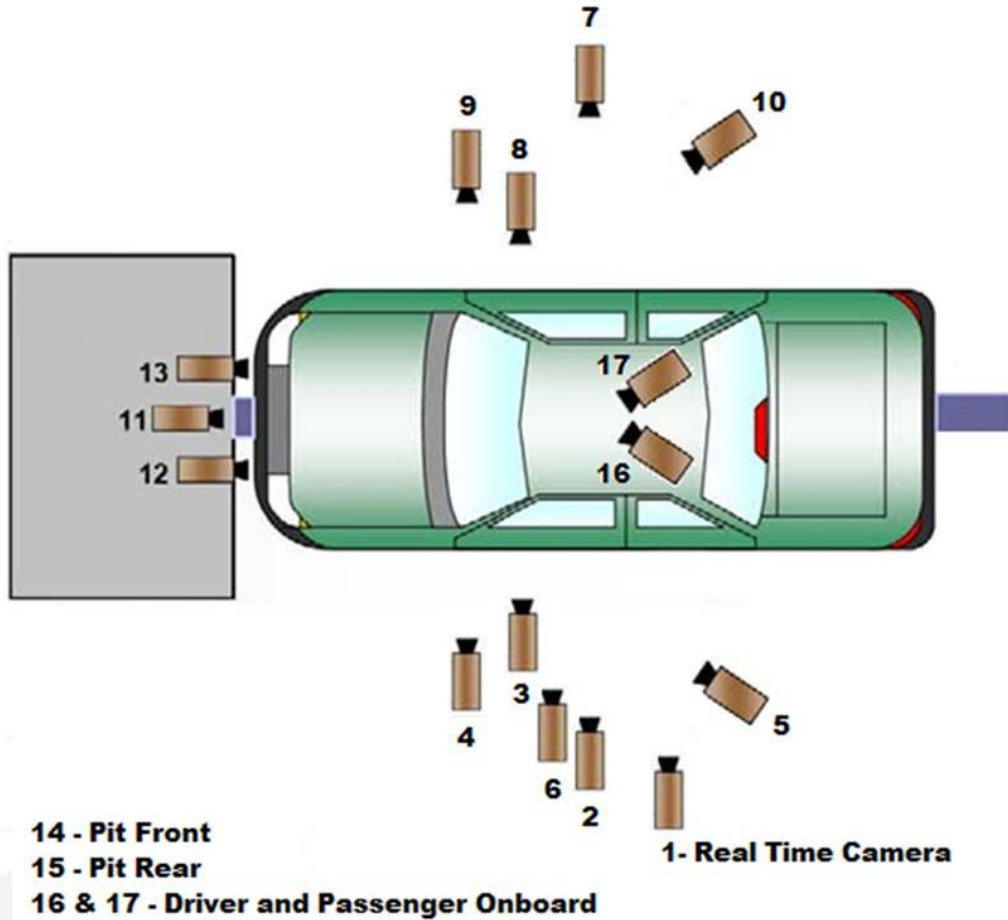
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	890	910
Lap Belt Length as measured on ATD	mm	595	570
Remainder of belt on reel	mm	1015	1020
Total Belt Length for Continuous Webbing Systems	mm	3000	3000

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
Test Date: 2/6/2023

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 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

CAMERA LOCATIONS

No.	Camera View	Coordinates* (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall					30
2	Left Overall	-2335	-6120	-1475	12	1000
3	Driver Close-Up	-1880	-6805	-1675	50	1000
4	Left Front Half	-1550	-5960	-1340	24	1000
5	Left Angle	-7245	-5655	-1890	75	1000
6	Steering Column	-1125	-6445	-1245	50	1000
7	Right Overall	-2190	5640	-1465	12	1000
8	Passenger Close-Up	-1720	5595	-1710	50	1000
9	Right Front Half	-1120	5490	-1380	24	1000
10	Right Angle	-7290	5400	-1915	75	1000
11	Windshield	45	0	-2310	12	1000
12	Driver Windshield	165	-370	-2230	25	1000
13	Passenger Windshield	165	370	-2230	25	1000
14	Pit Front	-1045	0	3340	24	1000
15	Pit Rear	-3220	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

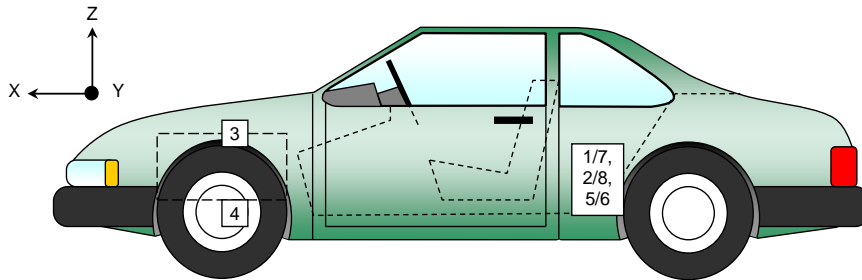
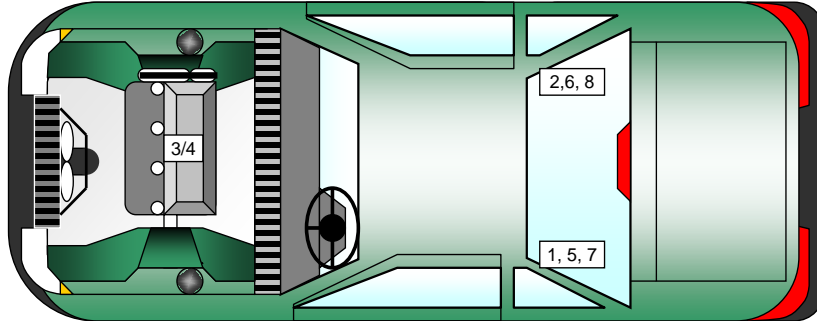
+Y = right of monorail centerline

+Z = below ground level

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	1823	-413	-284
2	Right Rear Crossmember Accelerometer – X Direction	1823	413	-284
3	Engine Top X	3989	262	-814
4	Engine Bottom X	4094	103	-228
5	Left Rear Crossmember Accelerometer – Z Direction	1823	-413	-284
6	Right Rear Crossmember Accelerometer – Z Direction	1823	413	-284
7	Left Rear Crossmember Accelerometer Redundant – X Direction	1823	-343	-284
8	Right Rear Crossmember Accelerometer Redundant – X Direction	1823	343	-284

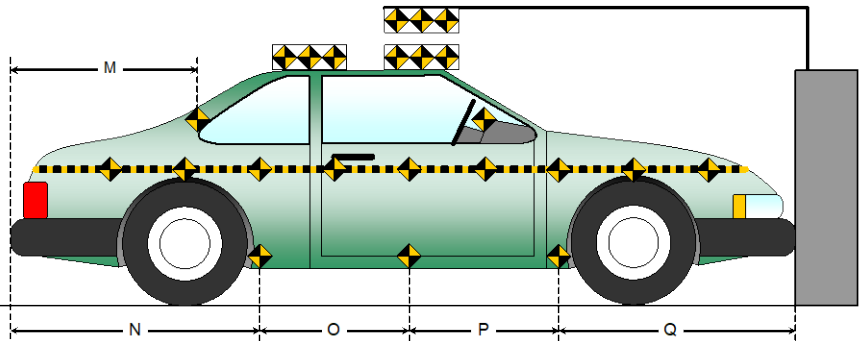
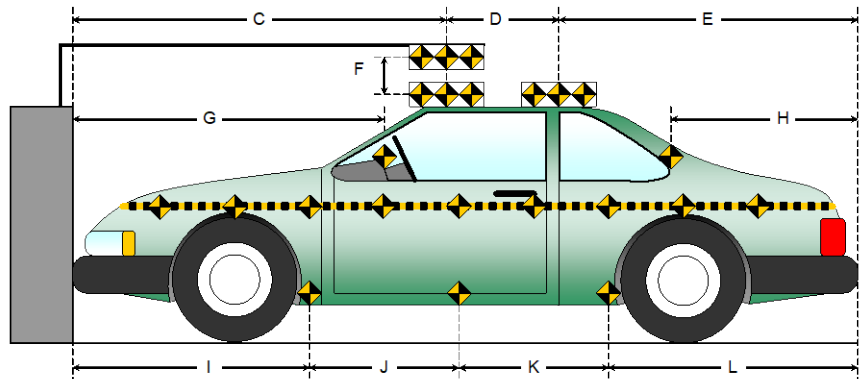
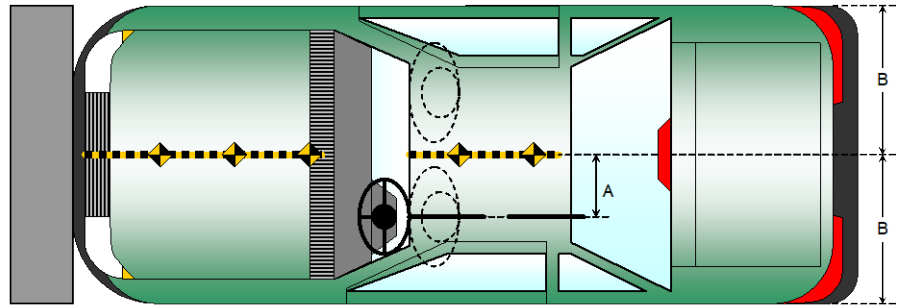
Reference Points: X - Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

Item	Value (mm)
A	375
B	916
C	2295
D	610
E	1829
F	60
G	
H	1043
I	1418
J	927
K	927
L	1462
M	1043
N	1462
O	927
P	927
Q	1418



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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

ADVANCED RESEARCH LOAD CELL BARRIER

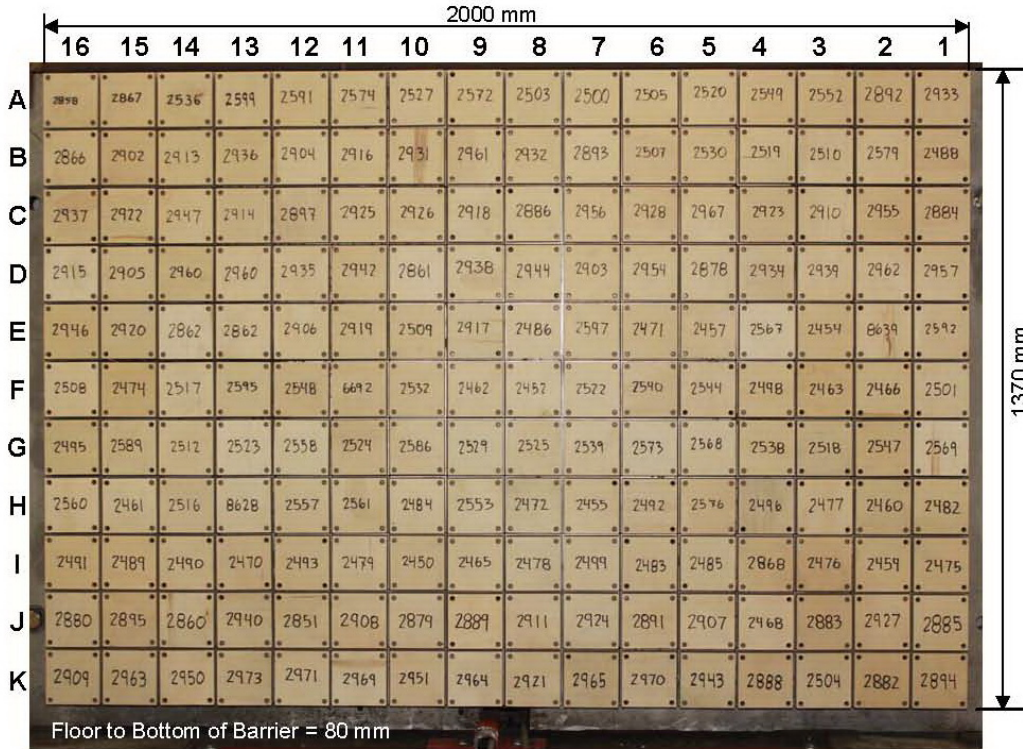


Photo for Reference Only

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 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Data Channels	48
Passenger Dummy Data Channels	48
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	632

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	2
High-Speed Offboard	14
Real-Time	2
Total	18

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

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 Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

DOOR OPENING, TRUNK OPENING, AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were locked	Doors were locked
Front Door Opening	Remained closed and locked; opened without tools	Remained closed and locked; opened without tools
Rear Door Opening	Remained closed and locked; opened without tools	Remained closed and locked; 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	Small cracks from driver/passenger side hood
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1230
Center	mm	1125
Right Side	mm	1220
Average	mm	1192

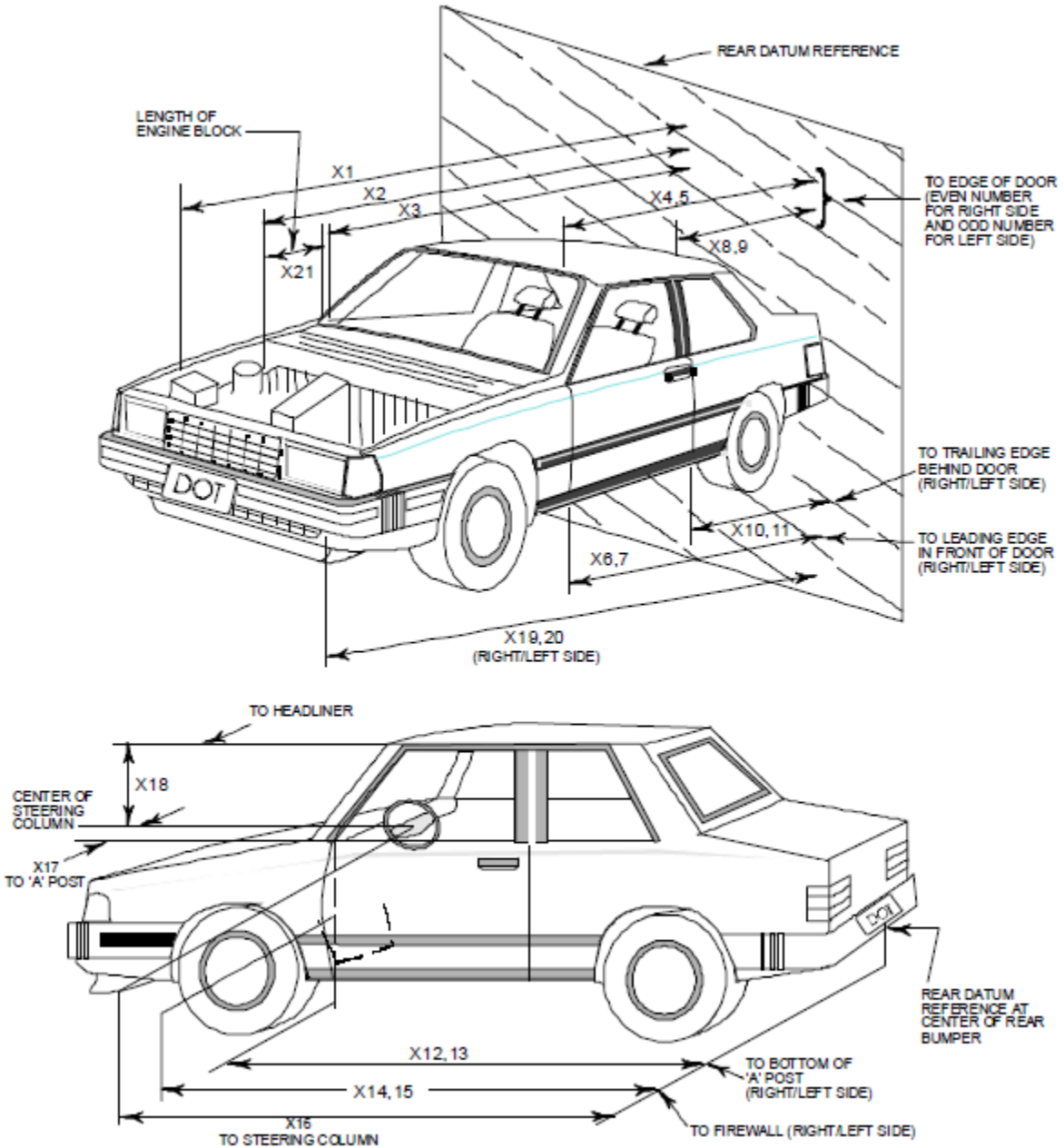
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
Test Date: 2/6/2023

No.	Measurement Description	Pre-Test	Post-Test	Change
1	Total Length of Vehicle at Centerline	4734	4380	-354
2	RSOV to Front of Engine	4068	4080	12
3	RSOV to Firewall	3749	3750	1
4	RSOV to Upper Leading Edge of Right Door	3261	3273	12
5	RSOV to Upper Leading Edge of Left Door	3259	3274	15
6	RSOV to Lower Leading Edge of Right Door	3284	3282	-2
7	RSOV to Lower Leading Edge of Left Door	3289	3293	4
8	RSOV to Upper Trailing Edge of Right Door	2183	2191	8
9	RSOV to Upper Trailing Edge of Left Door	2188	2200	12
10	RSOV to Lower Trailing Edge of Right Door	2250	2250	0
11	RSOV to Lower Trailing Edge of Left Door	2246	2250	4
12	RSOV to Bottom of "A" Post of Right Side	3272	3270	-2
13	RSOV to Bottom of "A" Post of Left Side	3279	3269	-10
14	RSOV to Firewall, Right Side	3677	3690	13
15	RSOV to Firewall, Left Side	3674	3690	16
16	RSOV to Steering Column	2803	2927	124
17	Center of Steering Column to "A" Post	377	372	-5
18	Center of Steering Column to Headliner	416	445	29
19	RSOV to Right Side of Front Bumper	4622	4366	-256
20	RSOV to Left Side of Front Bumper	4622	4350	-272
21	Length of Engine Block	433	433	0
RD	RSOV to Right Side of Dash Panel	3097	3084	-13
CD	RSOV to Center of Dash Panel	3071	3025	-46
LD	RSOV to Left Side of Dash Panel	3091	3094	3

All dimensions in mm

* The post-test measurements presented in this table were revised on 12/27/2023 due to the original values being affected by a measurement setup error.

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

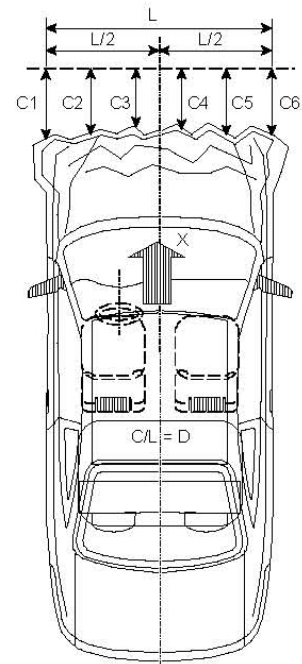
NHTSA No.: M20235803
Test Date: 2/6/2023

VEHICLE INFORMATION

VIN:	<u>3VVFB7AXXPM026395</u>	Wheelbase (mm):	<u>2788</u>
Vehicle Size Category:	<u>MPV</u>	Test Weight (kg):	<u>1985.5</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>> 99%</u>
Impact Velocity (km/h):	<u>56.36</u>
Velocity Change (km/h):	<u>65.6</u>
Time of Separation (msec)	<u>100</u>



CRUSH PROFILE

Collision Deformation Classification:	<u>12FDEW3</u>
Midpoint of Damage:	<u>Centerline</u>
Damage Region Length (mm):	<u>1268</u>
Impact Mode:	<u>Frontal</u>

No.	Measurement Description	Units	Pre-Test	Post-Test	Exterior Crush
C1	Crush zone 1 at left side	mm	4622	4350	272
C2	Crush zone 2 at left side	mm	4711	4370	341
C3	Crush zone 3 at left side	mm	4732	4410	322
C4	Crush zone 4 at right side	mm	4732	4435	297
C5	Crush zone 5 at right side	mm	4711	4387	324
C6	Crush zone 6 at right side	mm	4622	4366	256
L	C1 TO C6	mm	1268	1307	-39

* The post-test measurements presented in this table were revised on 12/27/2023 due to the original values being affected by a measurement setup error.

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
Test Program: NCAP Frontal Barrier Impact Test

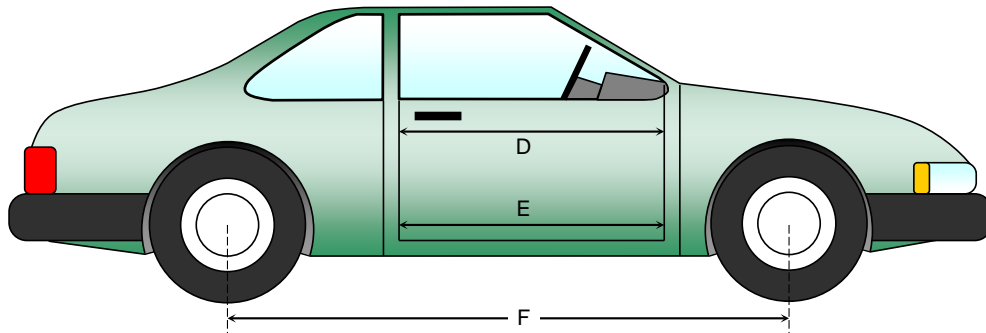
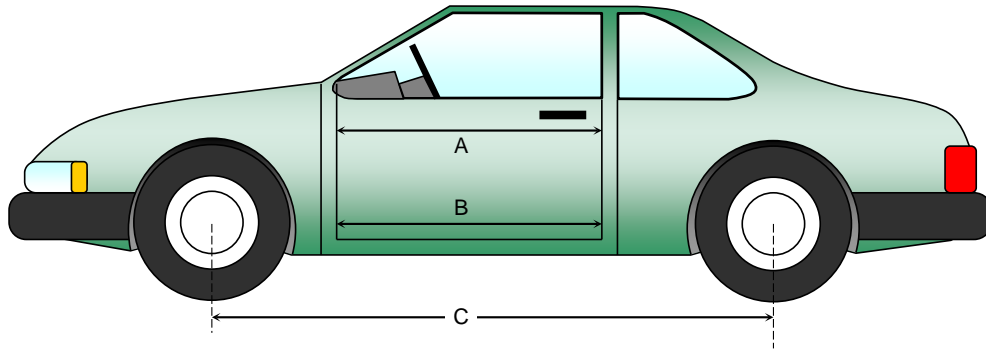
NHTSA No.: M20235803
Test Date: 2/6/2023

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Change
A	Left Side Upper	mm	987	989	2
B	Left Side Lower	mm	903	905	2
D	Right Side Upper	mm	982	988	6
E	Right Side Lower	mm	902	891	-11

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Change
C	Left Side Wheelbase	mm	2788	2743	-45
F	Right Side Wheelbase	mm	2788	2728	-60



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

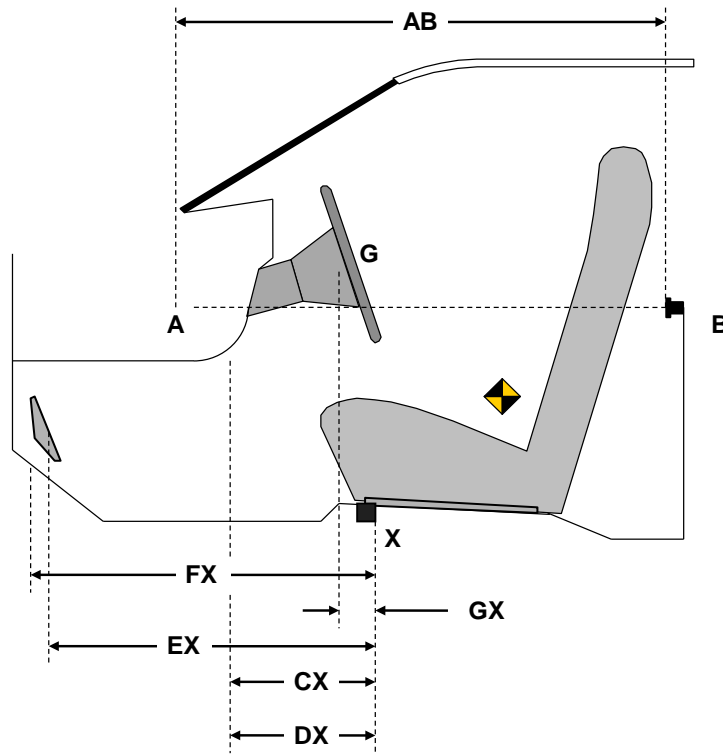
Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Change
AB	Door Opening (Inside Window Jam)	mm	743	743	0
CX	Left Knee Bolster to X	mm	310	326	16
DX	Right Knee Bolster to X	mm	321	325	4
EX	Brake Pedal to X	mm	548	540	-8
FX	Foot Rest to X	mm	563	539	-24
GX	Center of Steering Column Wheel Hub to X	mm	114	118	4

X = Front of Seat Track (stationary)



DRIVER COMPARTMENT

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

WINDSHIELD MOUNTING DETAILS

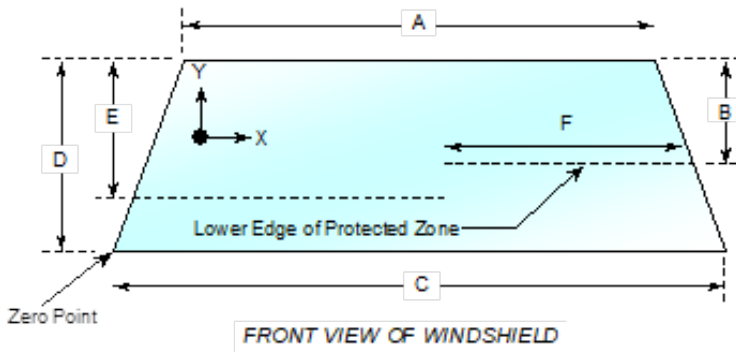
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 21.5°C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2209	2209	100
Right Side	2209	2209	100
Total	4418	4418	100



Item	Units	Value
A	mm	1268
B	mm	393
C	mm	1602
D	mm	774
E	mm	454
F	mm	609

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 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

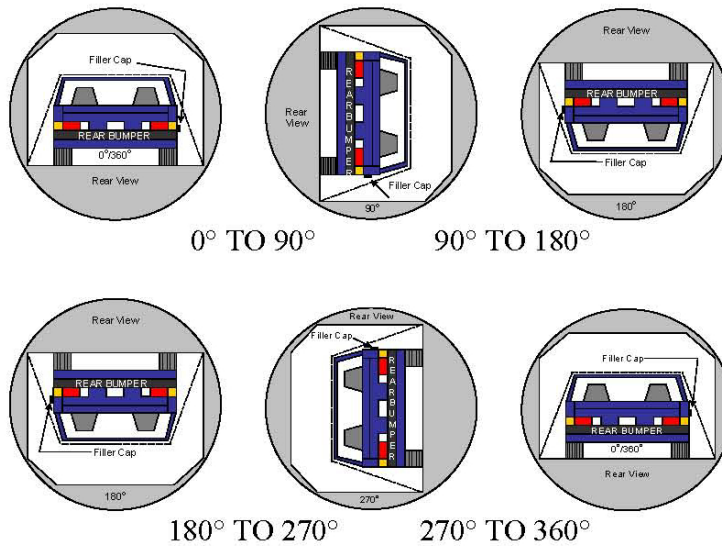
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.5°C

Test Time: 10:57 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°	112	300	412
90° to 180°	110	300	410
180° to 270°	107	300	407
270° to 360°	111	300	411

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

Test Vehicle: 2023 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023

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	

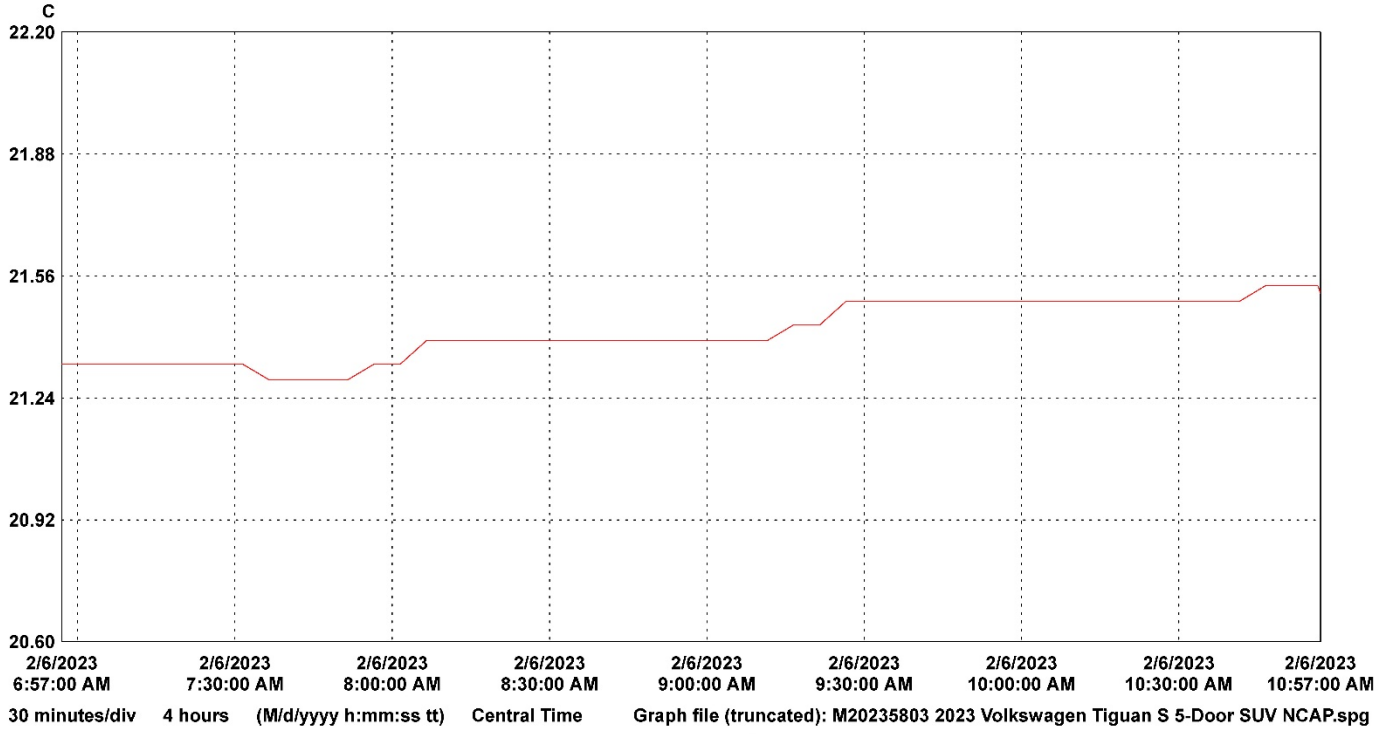
SOLVENT SPILLAGE LOCATION TABLE

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 Volkswagen Tiguan S 5-Door SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20235803
 Test Date: 2/6/2023



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	18352040	VSC_Prep_Room	1	21.53	21.42	21.29	C	Temperature	18352040_VSC_Prep_Room.spl	

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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 Volkswagen Tiguan S 5-Door SUV Frontal As Delivered



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

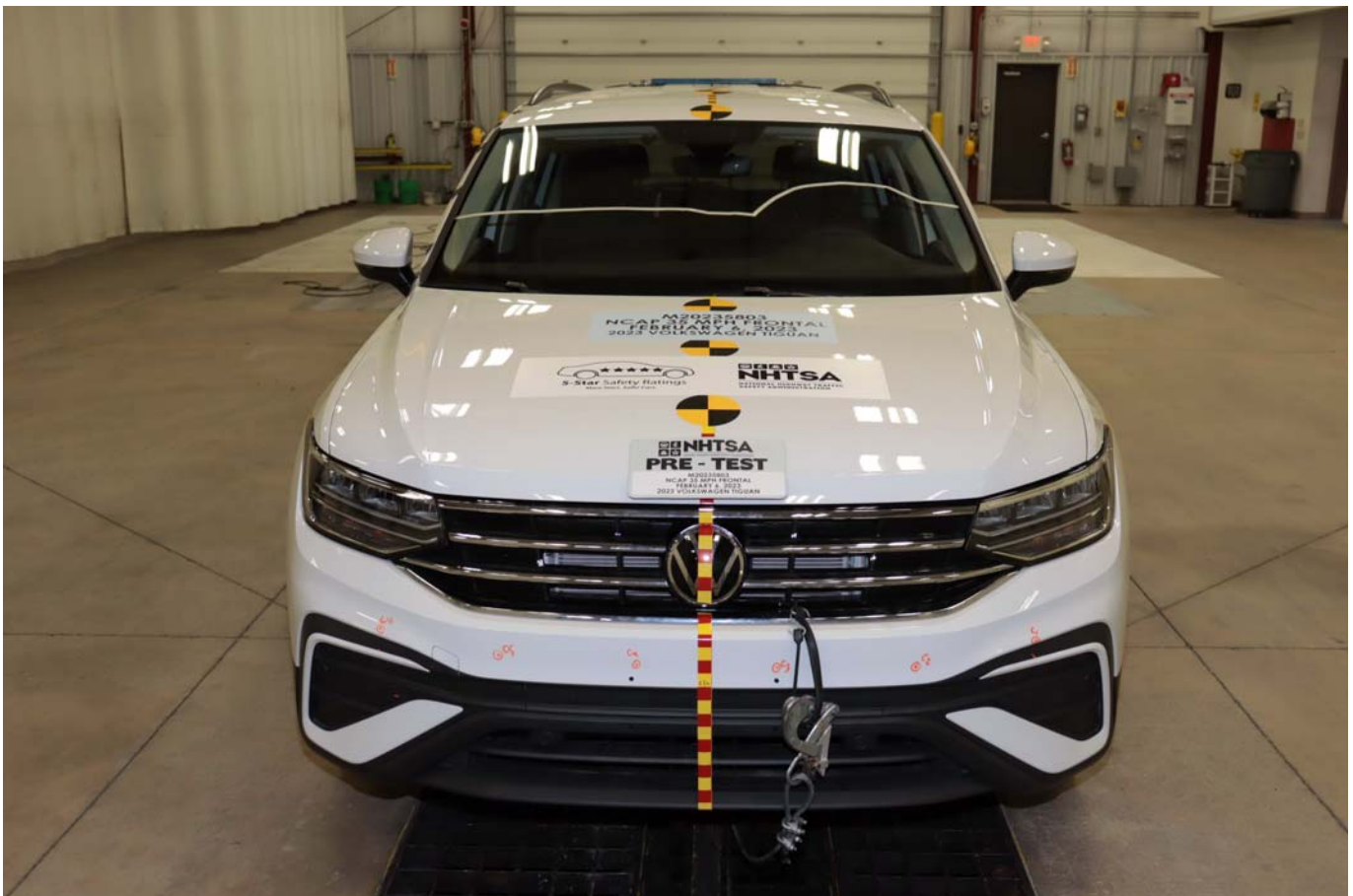


Photo No. 008 - Pre-Test Front View of Test Vehicle



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

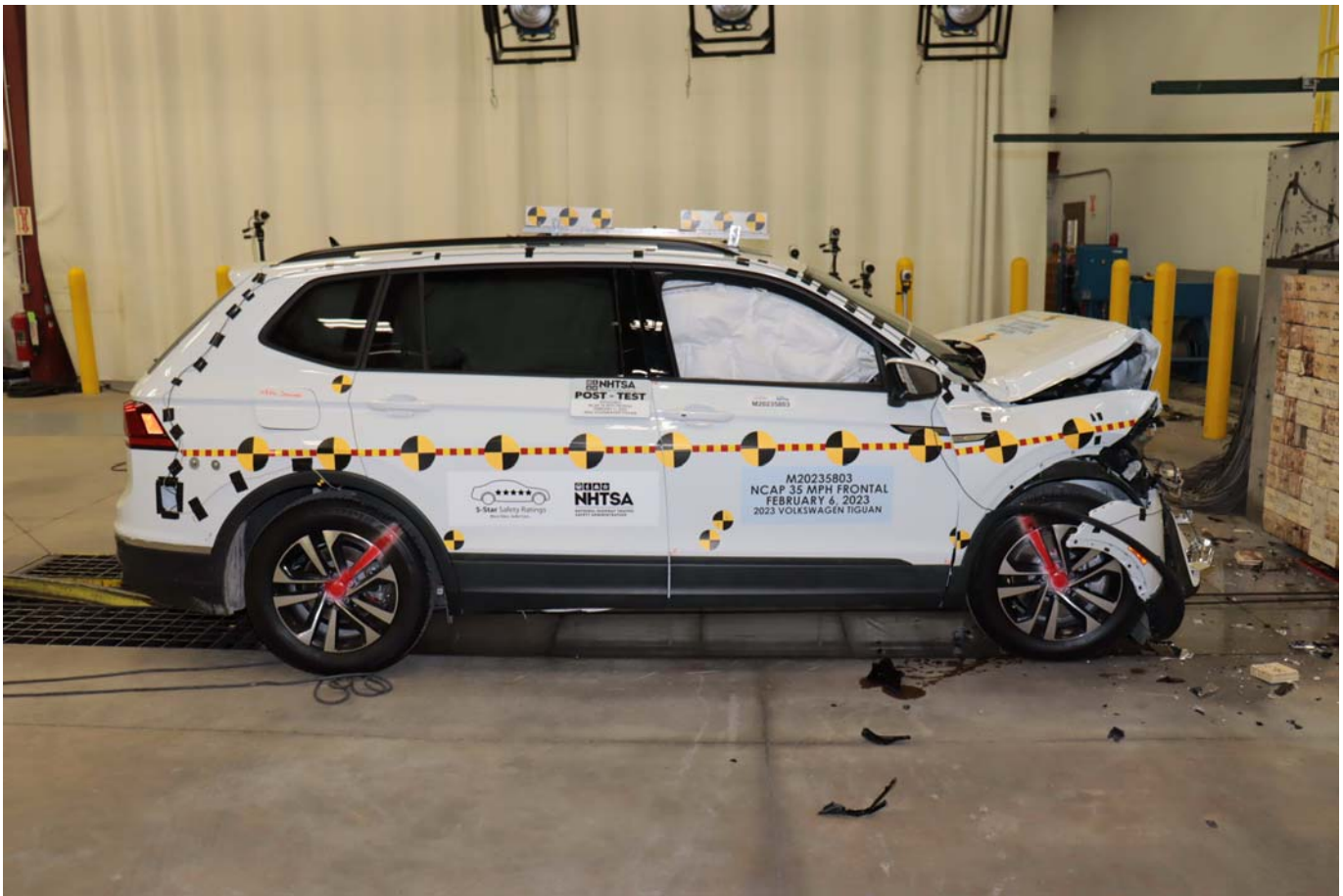


Photo No. 013 - Post-Test Right View of Test Vehicle



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



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

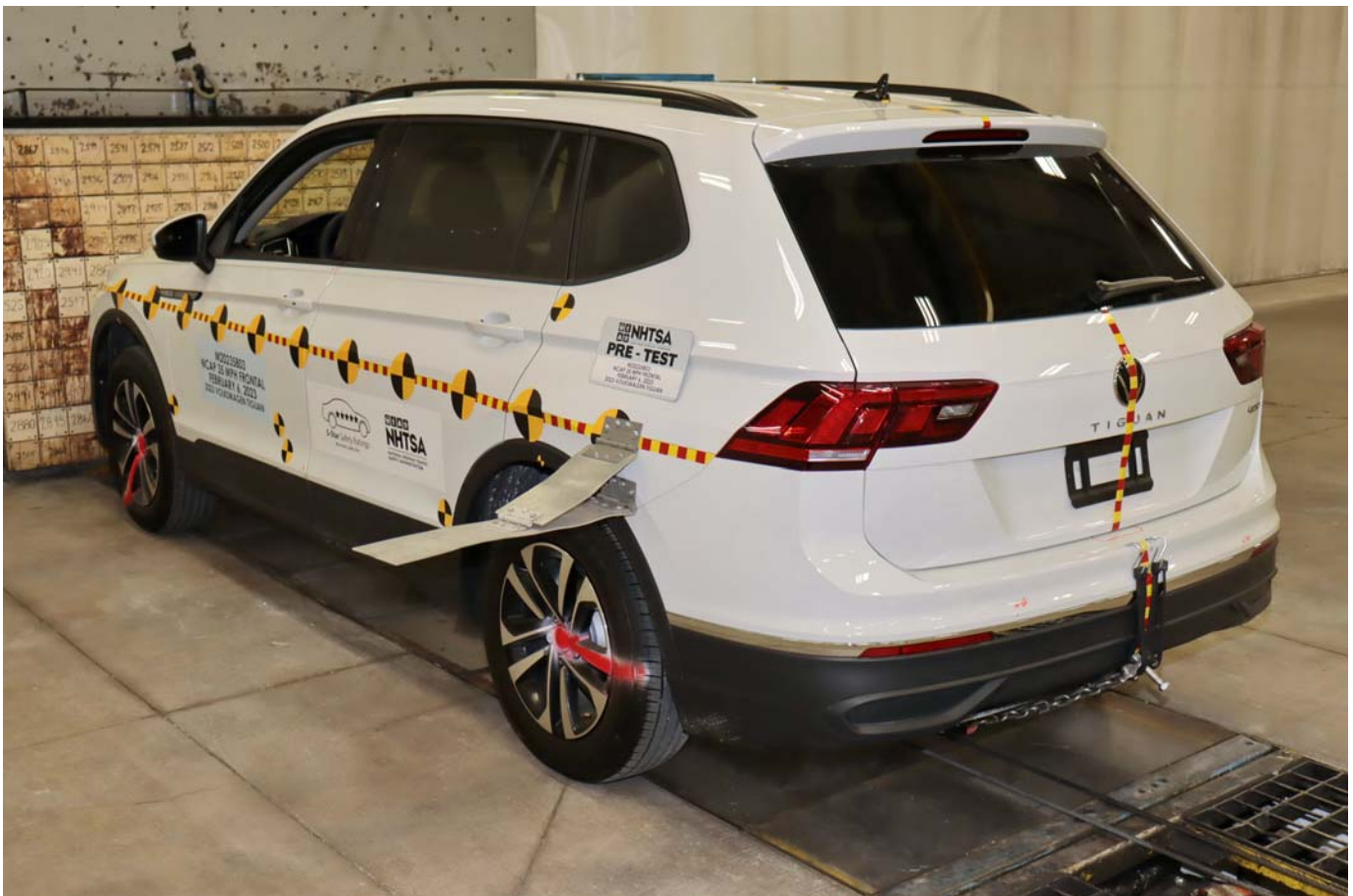


Photo No. 016 - Pre-Test Left Rear 3-4 View

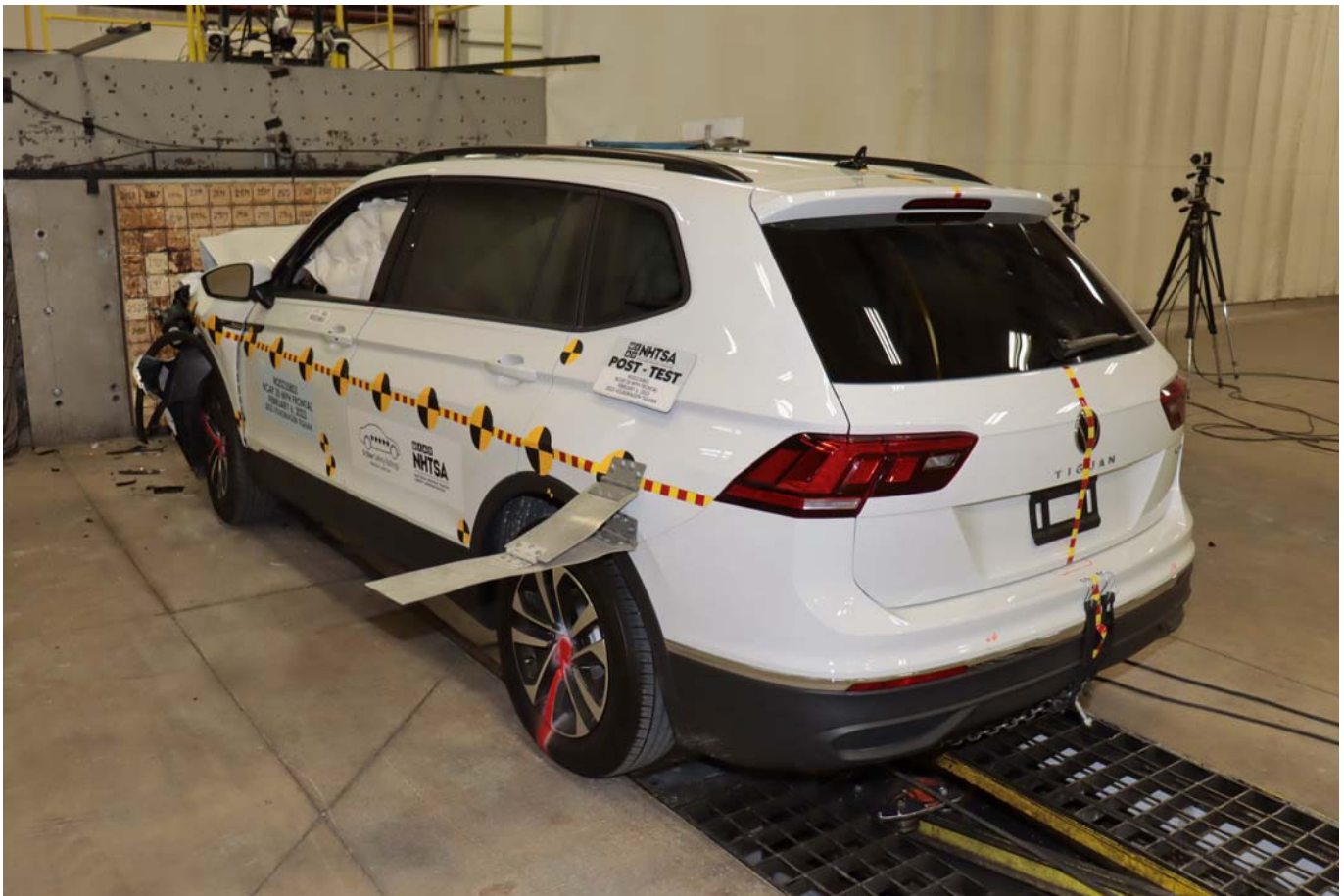


Photo No. 017 - Post-Test Left Rear 3-4 View



Photo No. 018 - Pre-Test Windshield View



Photo No. 019 - Post-Test Windshield View



Photo No. 020 - Pre-Test Engine Compartment View



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

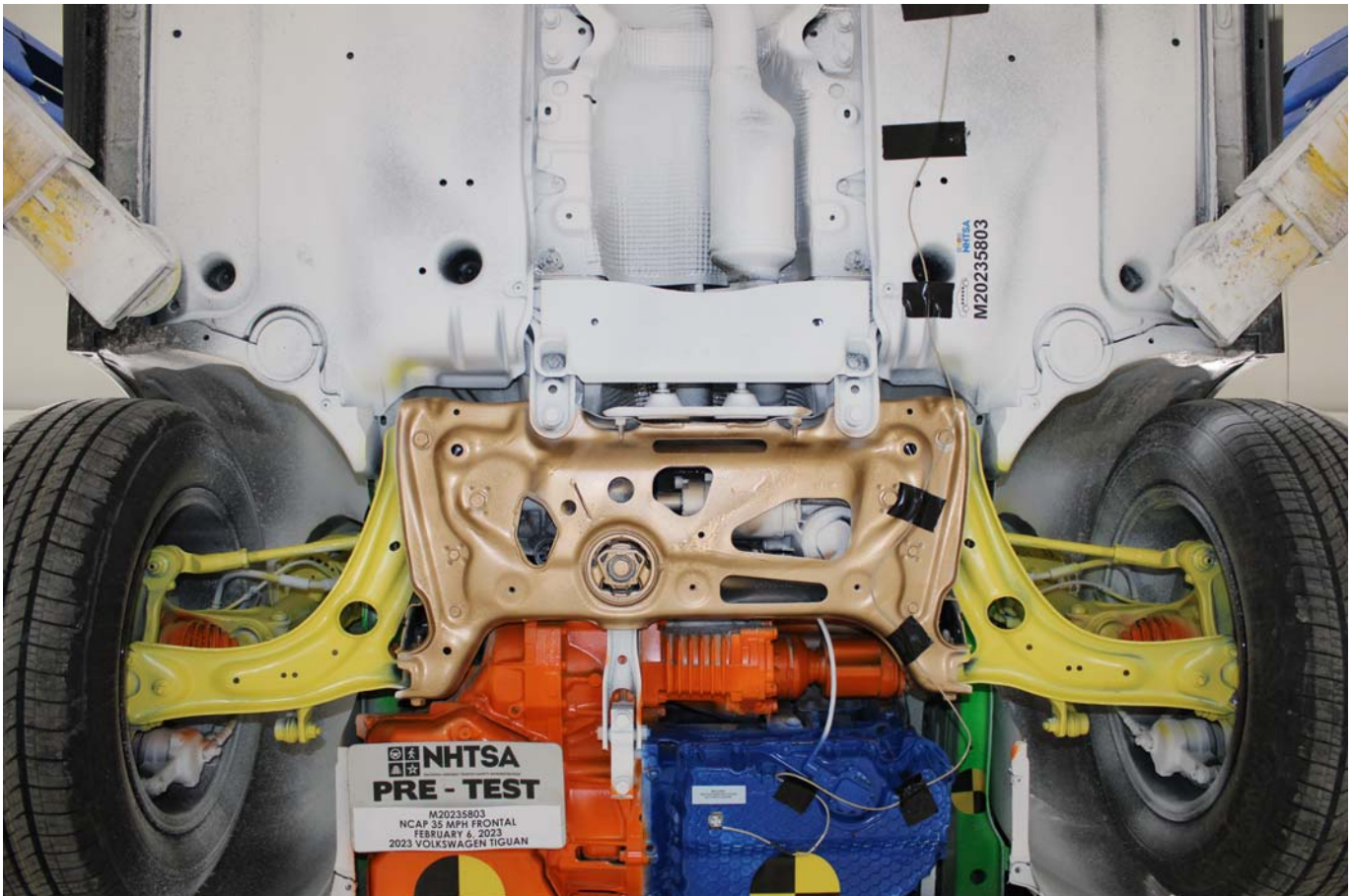


Photo No. 024 - Pre-Test Front Underbody View

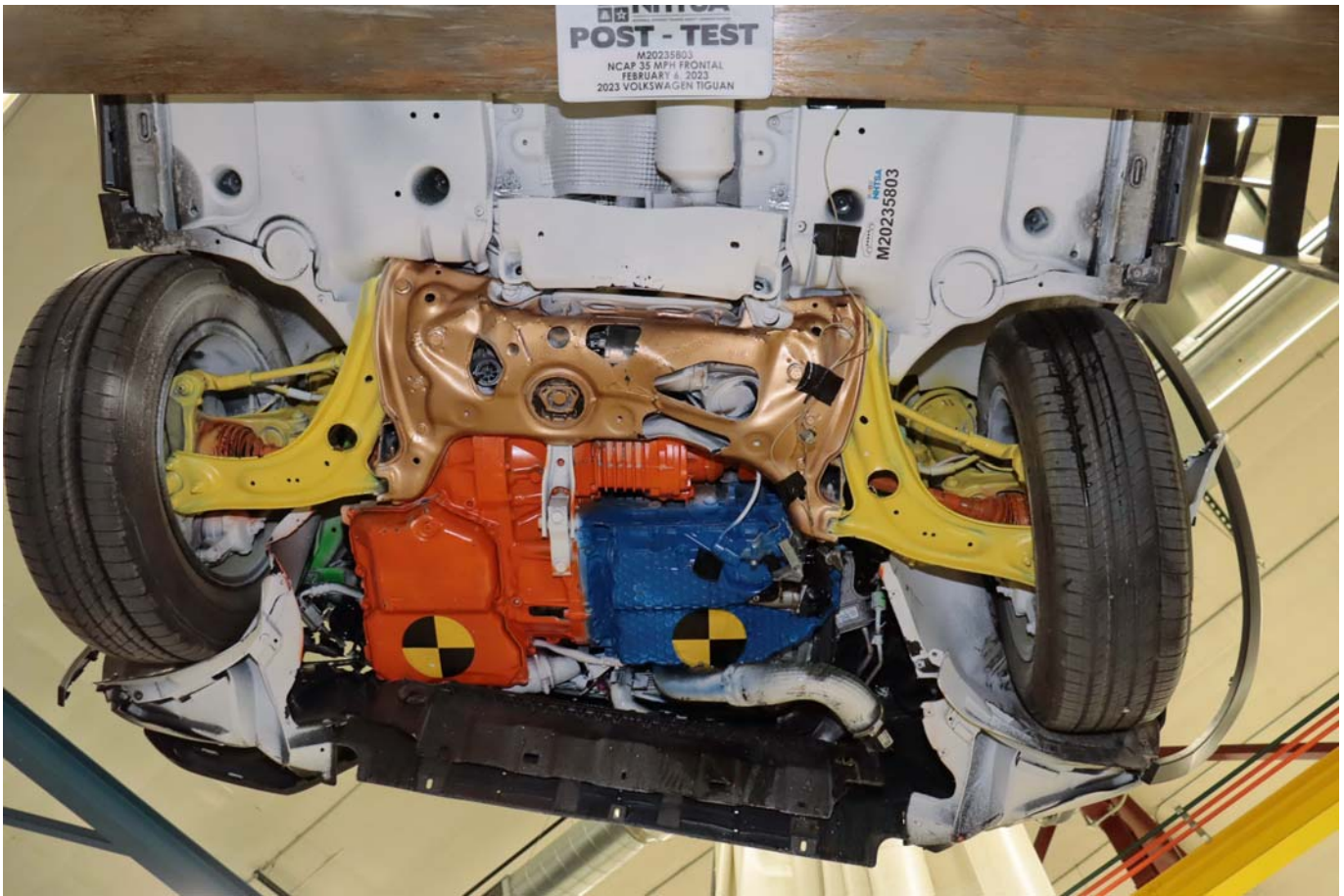


Photo No. 025 - Post-Test Front Underbody View



Photo No. 026 - Pre-Test Rear Underbody View

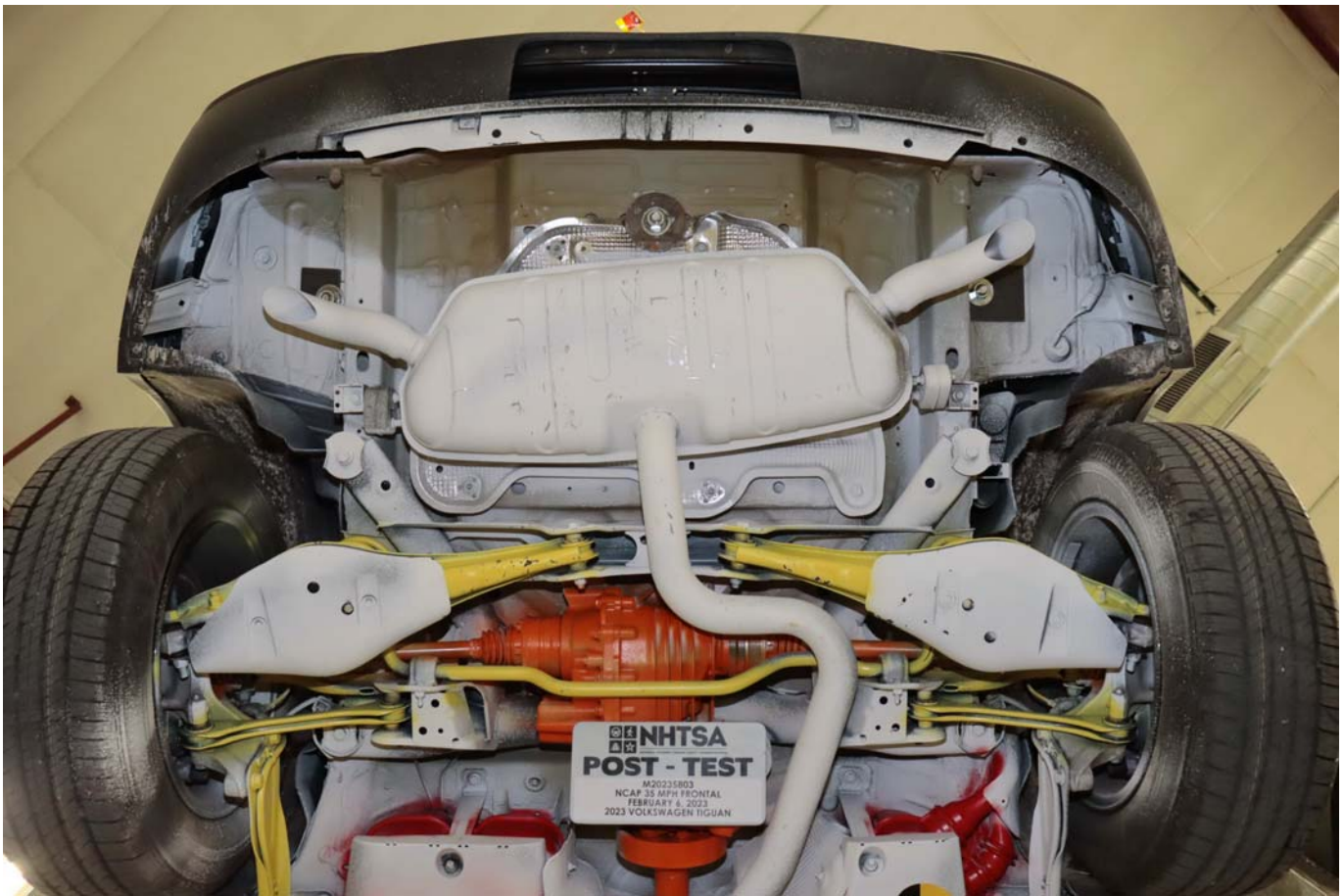


Photo No. 027 - Post-Test Rear Underbody View



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

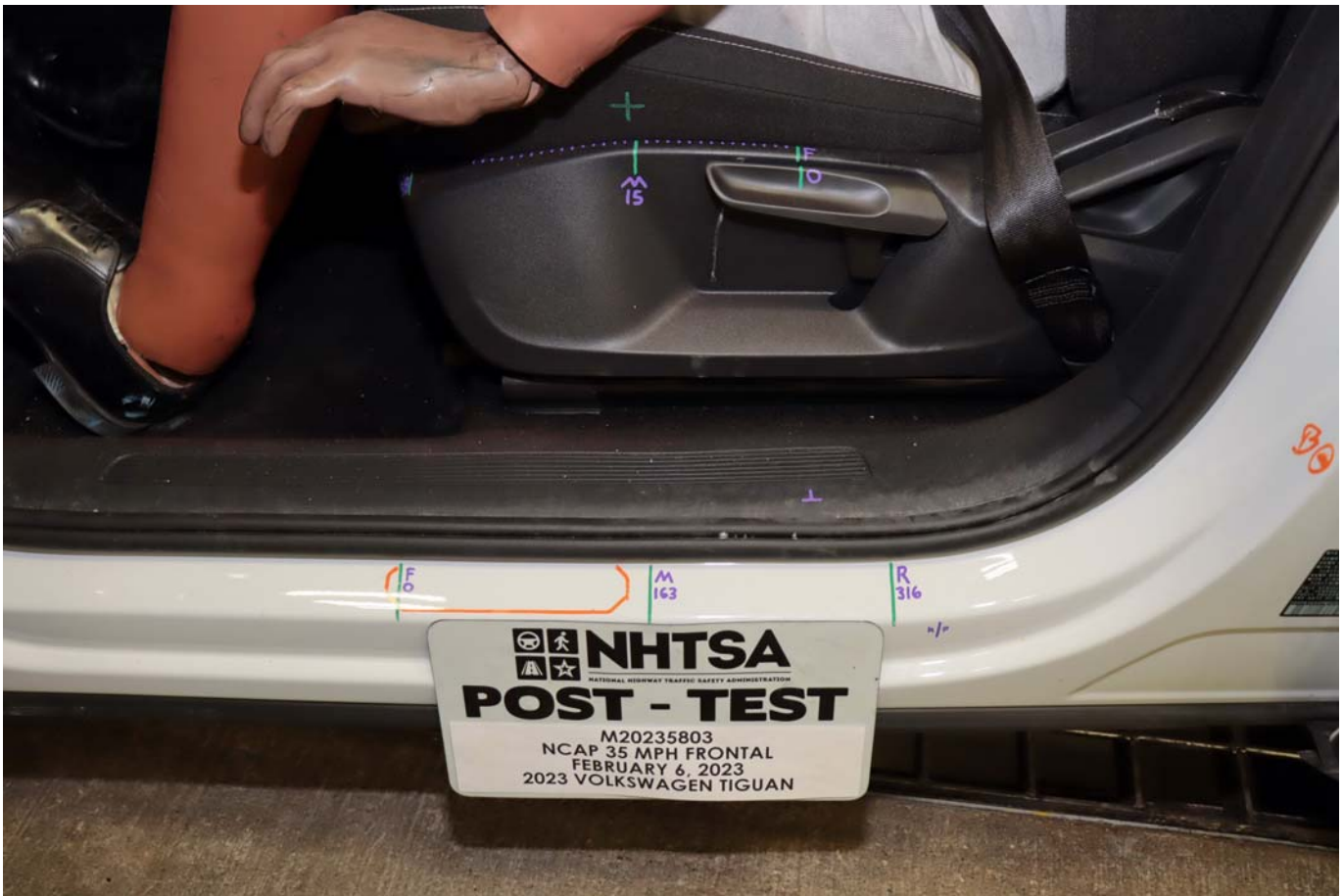


Photo No. 037 - Post-Test Driver's Seat Fore-Aft Markings



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

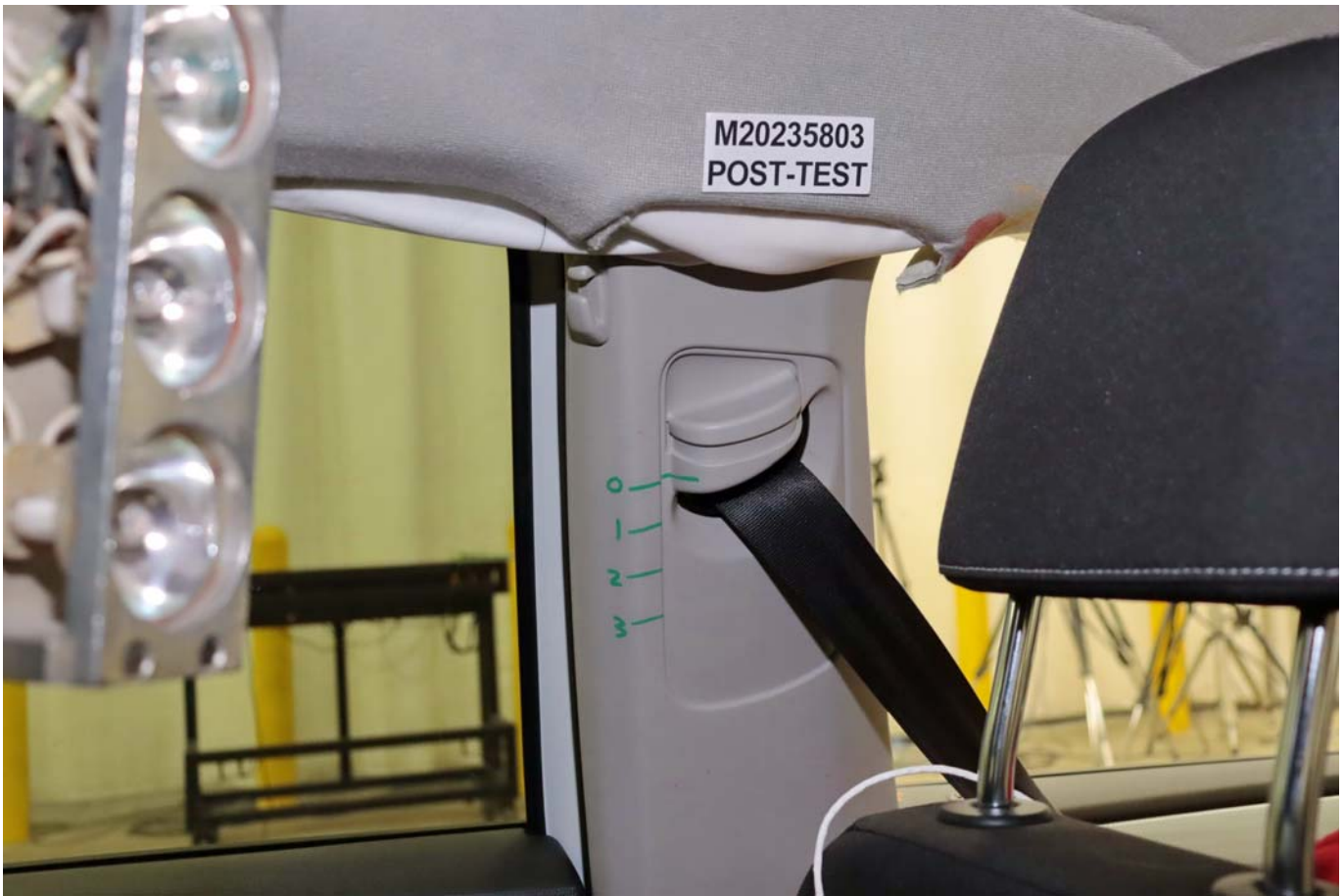


Photo No. 039 - Post-Test View of Belt Anchorage for Driver Dummy



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

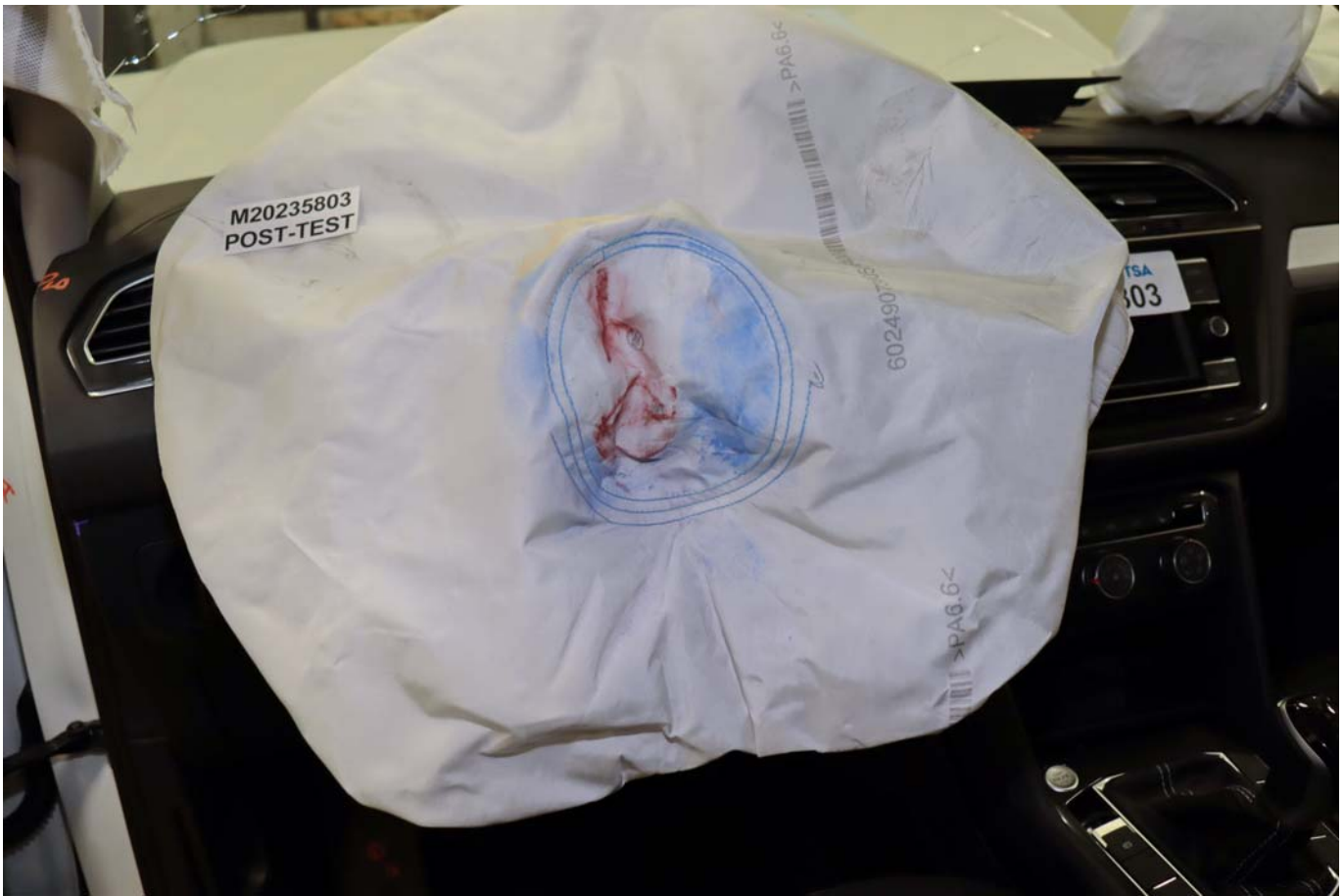


Photo No. 049 - Post-Test Driver Dummy Contact with Airbag



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



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

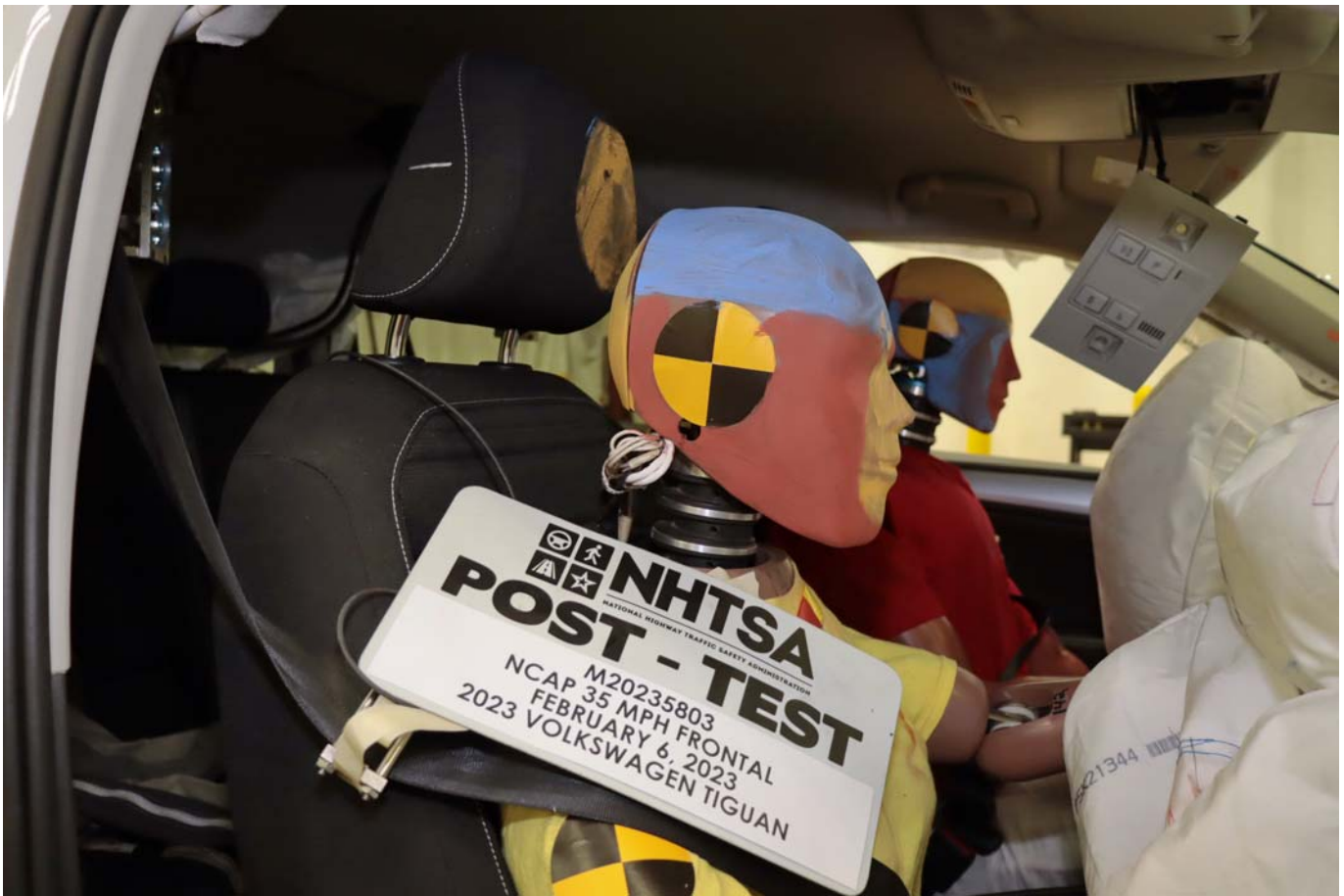


Photo No. 071 - Post-Test Passenger Dummy Face

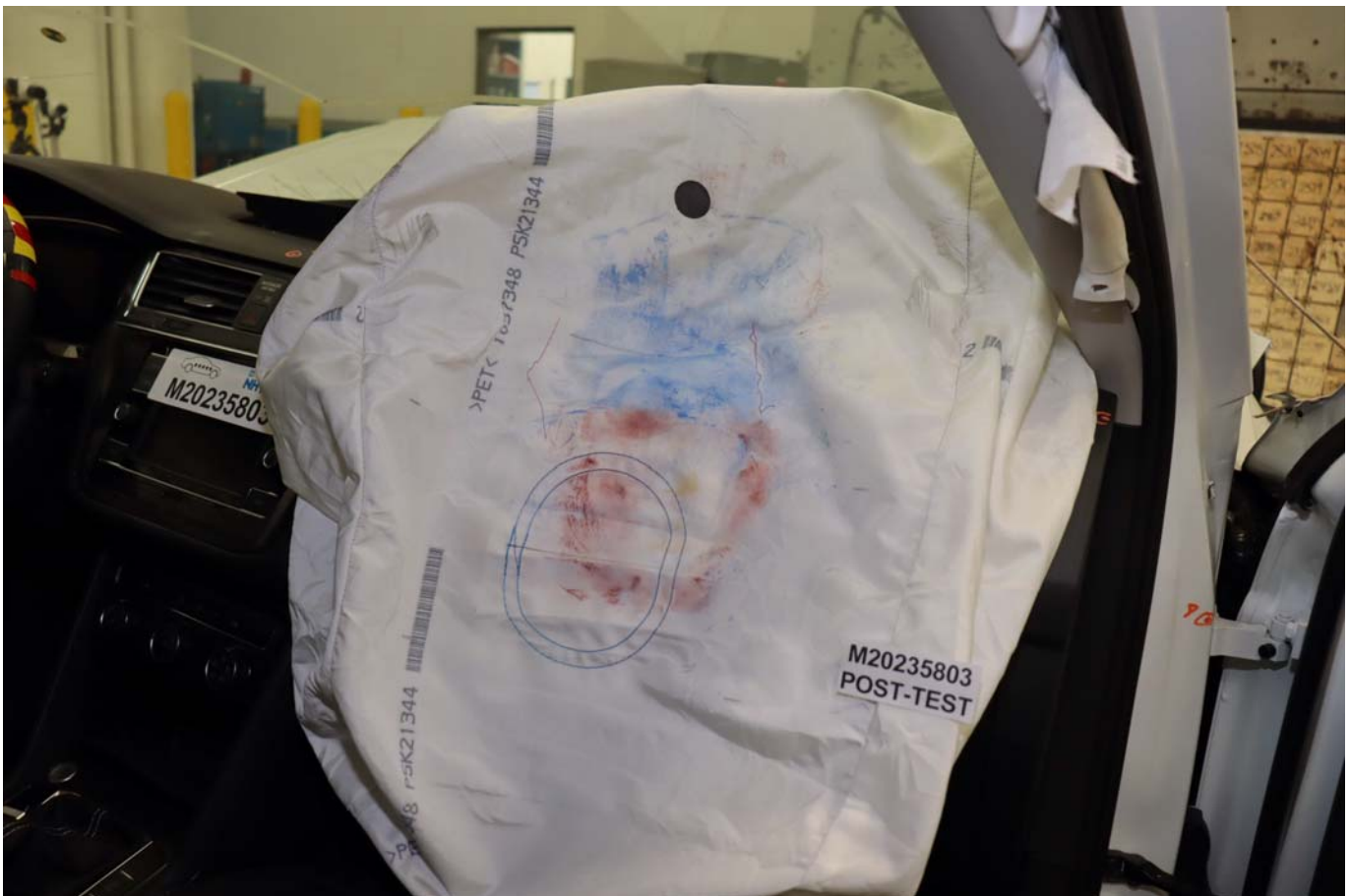


Photo No. 072 - Post-Test Passenger Dummy Contact with Airbag



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

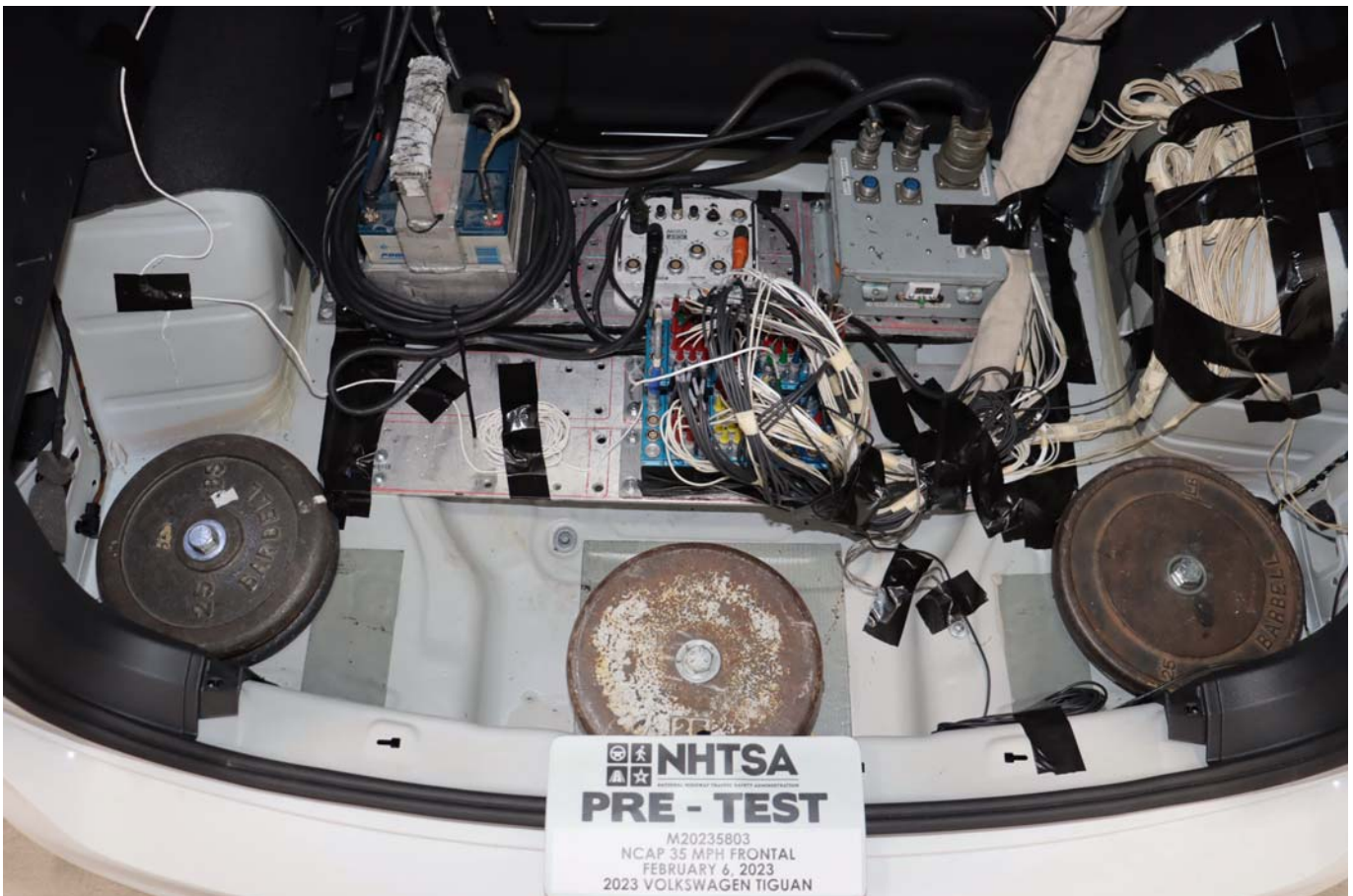


Photo No. 074 - Photograph of Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

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

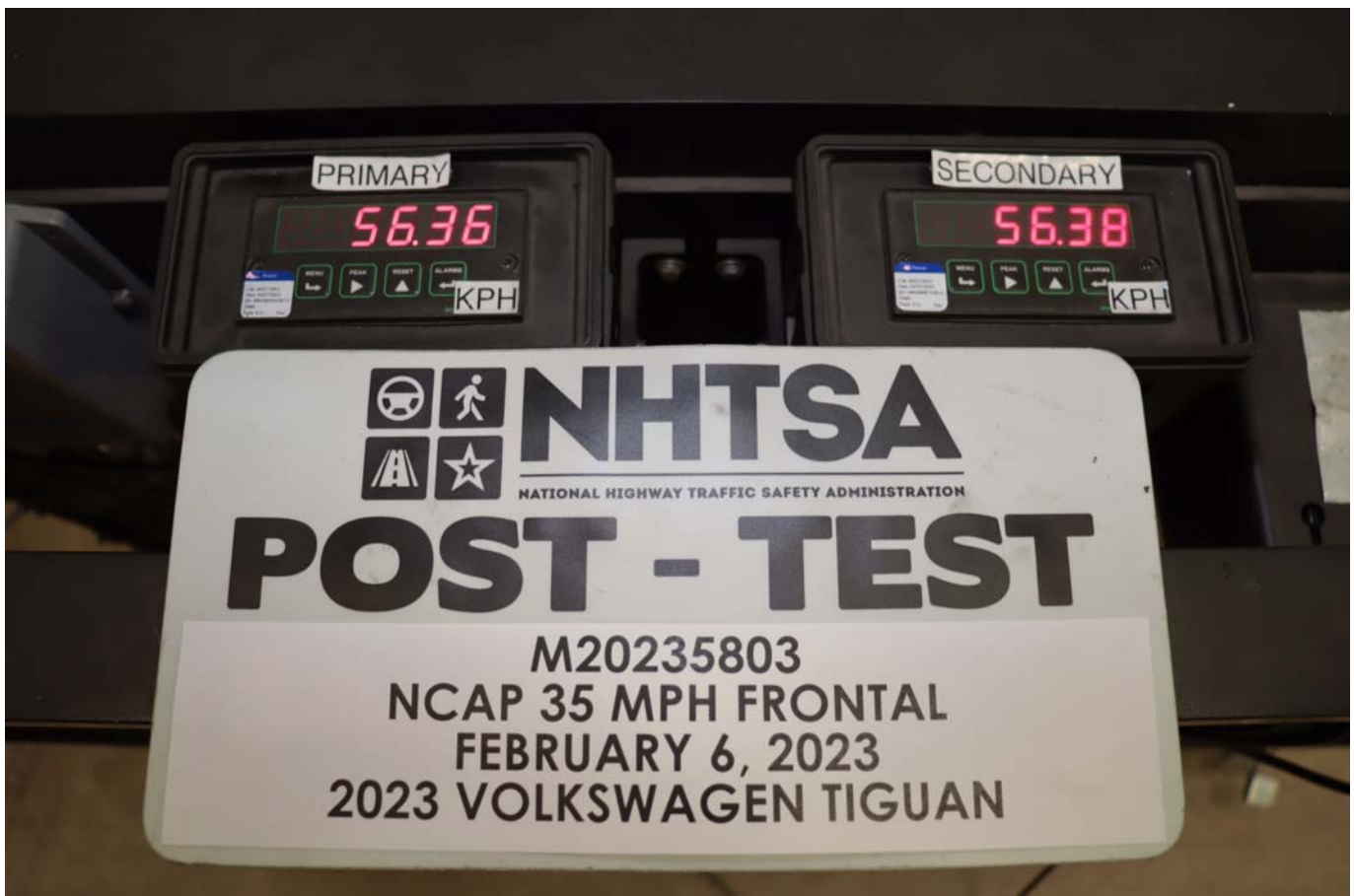


Photo No. 076 - Post-Test Speed Trap Read-Out

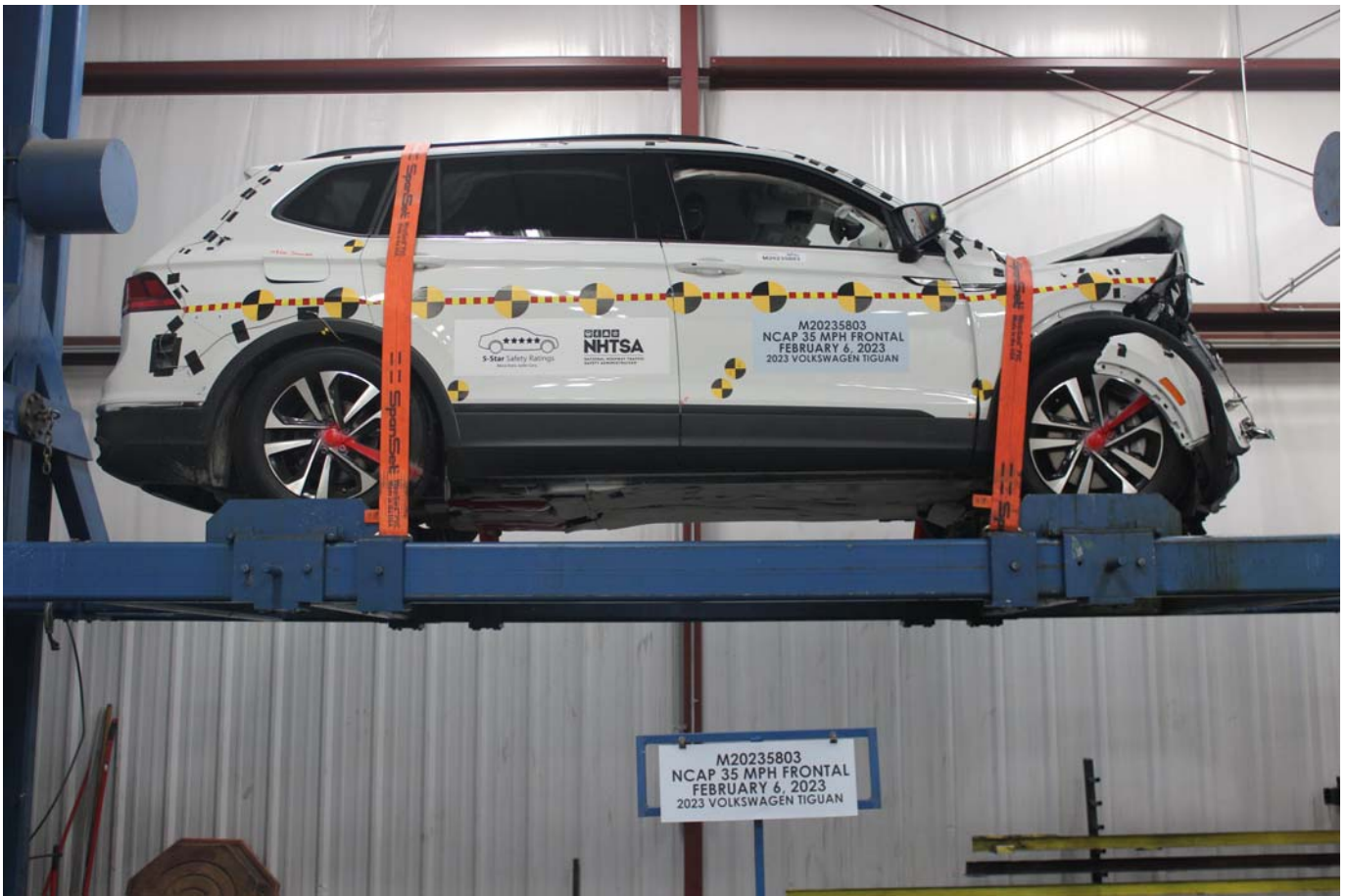


Photo No. 077 - Vehicle at 0 Degrees on Static Rollover Device



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



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

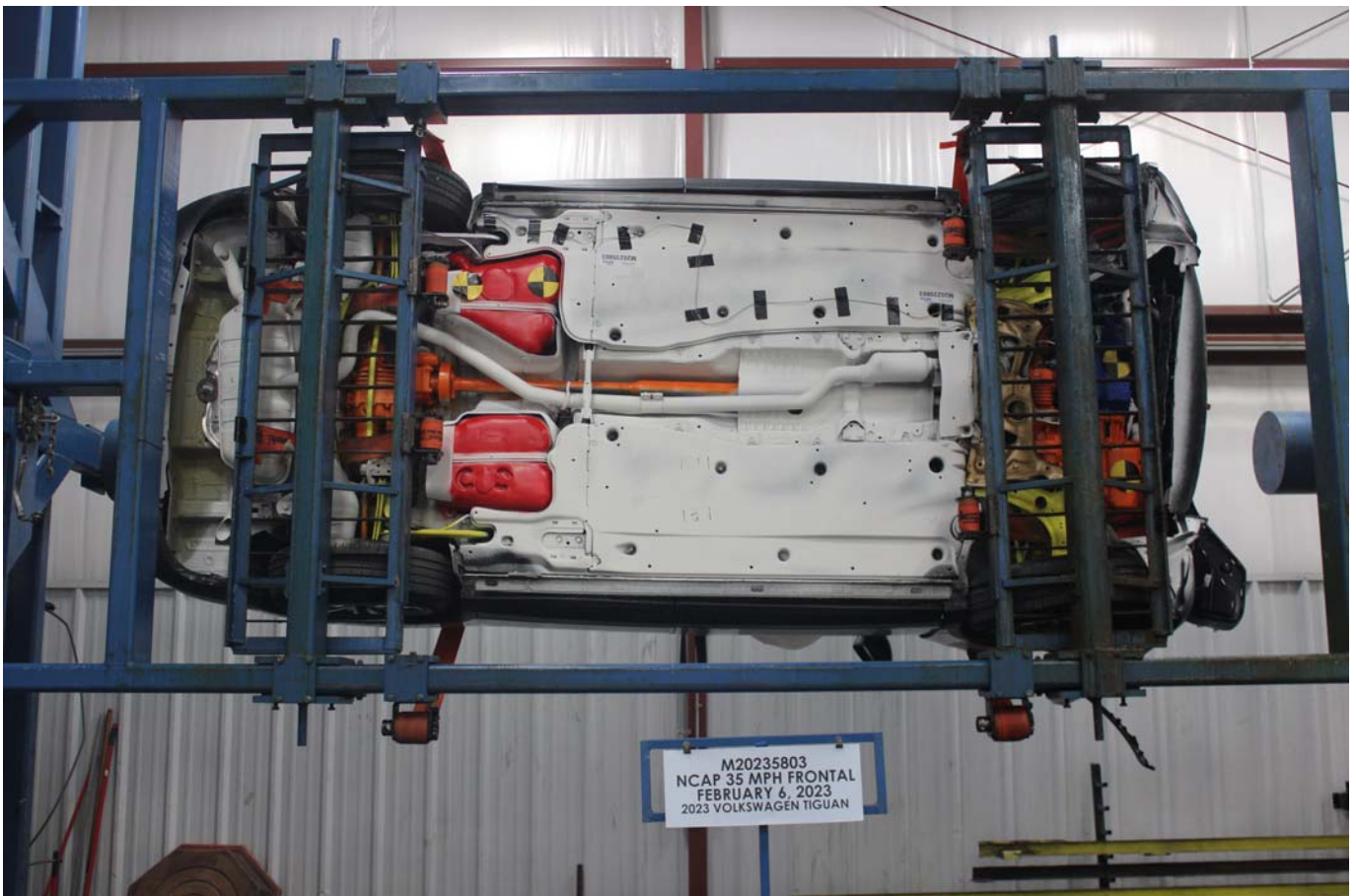


Photo No. 080 - Vehicle at 270 Degrees on Static Rollover Device



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



Photo No. 082 - 2023 Volkswagen Tiguan S 5-Door SUV Frontal Impact Event

EPA DOT Fuel Economy and Environment

Fuel Economy

You spend \$750 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,750

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. MPGe 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

Gasoline Vehicle

2023 Tiguan 2.0T S

Pure White exterior
Titan Black Cloth interior

8-Speed Automatic w/ Tiptronic® 4MOTION®

WARRANTY INFORMATION
 - Volkswagen New Vehicle Limited Warranty: 4 years/50,000 miles (whichever occurs first)*
 - Limited Warranty against Corrosion Perforation: 7 years/100,000 miles (whichever occurs first)*
SCHEDULED CAREFREE MAINTENANCE®
 - 2 years/20,000 miles (whichever occurs first)*
24-HOUR ROADSIDE ASSISTANCE
 - 3 years/36,000 miles (whichever occurs first), for towing, jump starts, tire changes, out-of-fuel & lock-out.* Services provided by third party supplier.

STANDARD FEATURES (unless replaced by packages or options)

PERFORMANCE
 - 2.0L TSI® 16-valve DOHC turbo 4-cylinder engine
 - 4MOTION® all-wheel drive w/ Active Control & Driving Mode Selection
 - Engine Start/Stop System
 - Electric power steering
 - Four-wheel independent suspension

EXTERIOR
 - 17" alloy wheels w/ all-season tires & anti-theft wheel locks
 - Automatic LED headlights & LED Daytime Running Lights (DRL); LED taillights
 - Heated, foldable, power adjustable side mirrors
 - Variable intermittent front wipers w/ heated washer nozzles
 - Rear window washer & wiper
 - Black roof rails

INTERIOR
 - Manual climate control; adjustable air vents in 2nd row
 - Multi-function steering wheel
 - Tilt & telescoping adjustable steering column
 - Driver's seat: heated, manually adjustable
 - Front passenger seat: heated, manually adjustable
 - 2nd-row seat: 40/20/40 split-folding, slides & reclines, w/ center armrest
 - Cloth seating surfaces
 - Center console w/ cup holders, armrest & storage
 - Overhead storage compartment in front row
 - Front-row USB data ports
 - Illuminated, carpeted cargo area w/ 12V power port
 - Illuminated vanity mirrors; reading lights

SAFETY & DRIVER ASSISTANCE
 - Advanced Airbag Protection System w/ 6 airbags
 - Anti-Slip Regulation (ASR); Engine Brake Assist (EBA)
 - Electronic Brake-pressure Distribution (EBD); Hydraulic Brake Assist (HBA)
 - Electronic Stability Control (ESC); Electronic Differential Lock (EDL)
 - Intelligent Crash Response System (ICRS); Automatic Post-Collision Braking System
 - Lower Anchors & Tethers for Children (LATCH); Tire Pressure Monitoring System (TPMS)
 - Rear View Camera System
 - Front Assist (Forward Collision Warning & Autonomous Emergency Braking w/ Pedestrian Monitoring)
 - Side Assist (Blind Spot Monitor)
 - Rear Traffic Alert
 - Cruise Control
 - Hill Hold Control & Hill Descent Control

TECHNOLOGY & CONVENIENCE
 - Volkswagen Digital Cockpit: 8" non-configurable digital instrument display
 - Anti-theft engine immobilizer
 - Keyless access (front doors & liftgate); push-button engine start
 - Composition Color: 6.5" touchscreen AM/FM radio w/ USB input
 - 6-speaker sound system
 - App-Connect® smartphone integration (for compatible devices) via USB
 - Bluetooth® connectivity (for compatible devices)
 - Electronic parking brake

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated ▲
 Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.
 ▲ Safety Concerns: Visit www.safercar.gov or call 1-888-327-4236 for more details.

Frontal Crash	Driver Passenger	Not Rated
Side Crash	Front Seat Rear Seat	★★★★★ ▲
Rollover		★★★★

Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.
 Based on the risk of injury in a side impact.
 Based on the risk of rollover in a single-vehicle crash.

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

PARTS CONTENT INFORMATION

For vehicles in this carline:
U.S./CANADIAN PARTS CONTENT: 4%
MEXICO 34%

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

For this vehicle:
Final assembly point: PUEBLA, MEXICO
Country of origin: MEXICO
ENGINE: JAPAN
TRANSMISSION: JAPAN

VIN: 3VVFB7AXXPM026395

 COMM. NUMBER: 599949
 Port of Entry: MIDLOTHIAN
 GVWR: 2,300 kg/ 5,071 lbs
 GVWR Threshold: 34.5 kg/ 76.07 lbs
 Accessories Weight: 11.1 kg/ 24.47 lbs

Equipped with Next Generation VW Car-Net®
 All services require acceptance of Terms of Service. Some services require a paid subscription. See dealer or visit www.vw.com/car-net for details.

Base Manufacturer's Suggested Retail Price: \$28,450.00

PACKAGES & OPTIONS

Pure White exterior	No Charge
Titan Black Cloth Interior	No Charge
Driver Assistance Package*	\$895.00
Travel Assist (semi-automated driving assistance); Adaptive Cruise Control (ACC) Stop & Go; Lane Assist (Lane Keeping System); Emergency Assist (semi-automated vehicle assistance in a medical emergency)	
*Does not include Side Assist (Blind Spot Monitor) or Rear Traffic Alert.	
Monster Mats® (2-row, set of 4) & Heavy Duty Trunk Liner w/ VW CarGo Blocks	\$278.00
VW Care: Prepaid Scheduled Maintenance Contract w/ 30,000-mile servicing for SUVs	\$235.00
Luggage Net for cargo area	\$110.00
Roadside Assistance Kit	\$90.00
Convenience features (bundled w/ Driver Assistance Pkg.): Leatherette-wrapped steering wheel; auto-dimming interior rearview mirror; rain-sensing front wipers	No Charge
8-Speed Automatic w/ Tiptronic® 4MOTION®	No Charge
Credit issued - vehicle is not equipped with Side Assist (Blind Spot Monitor) or Rear Traffic Alert	-\$450.00

Destination Charge \$1,295.00

Total Manufacturer's Suggested Retail Price: \$30,903.00
 Does not include: fuel, license, title or registration fees; taxes; dealer fees; or any options or items not listed above.

Ready to make this your new ride?
Apply now with Volkswagen Credit!

Photo No. 083 - Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

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List of Data Plots Provided in the Test Report

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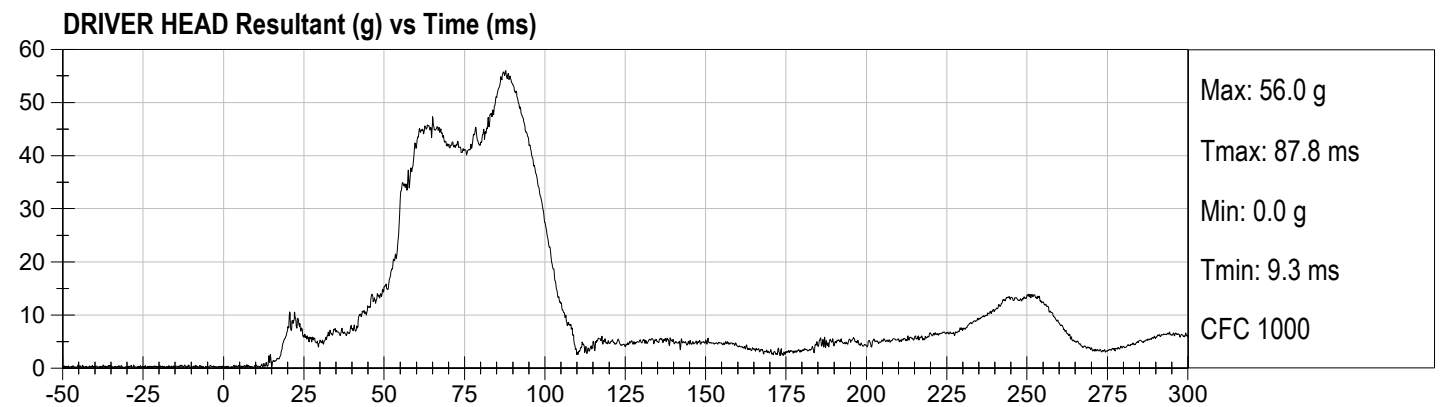
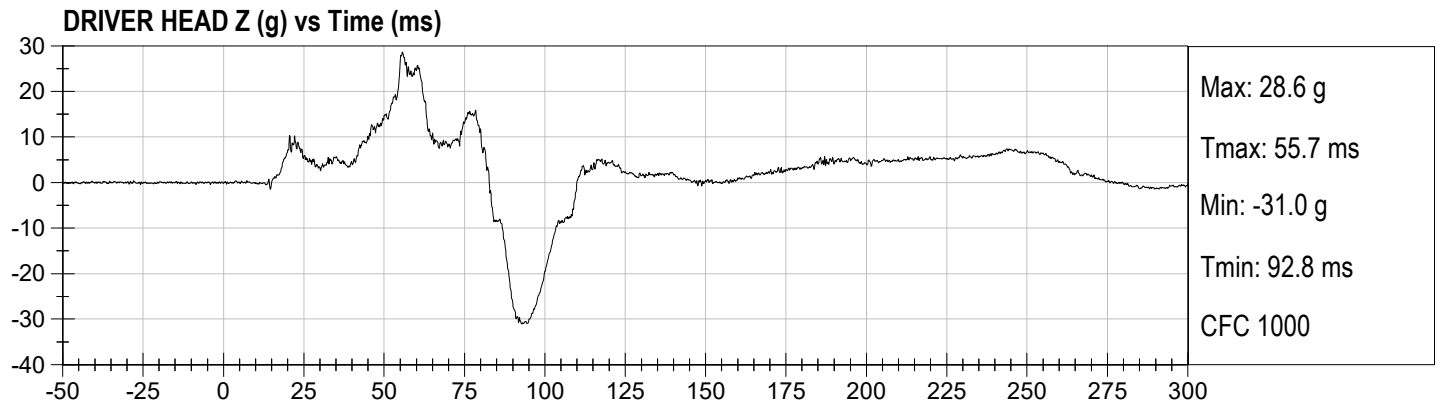
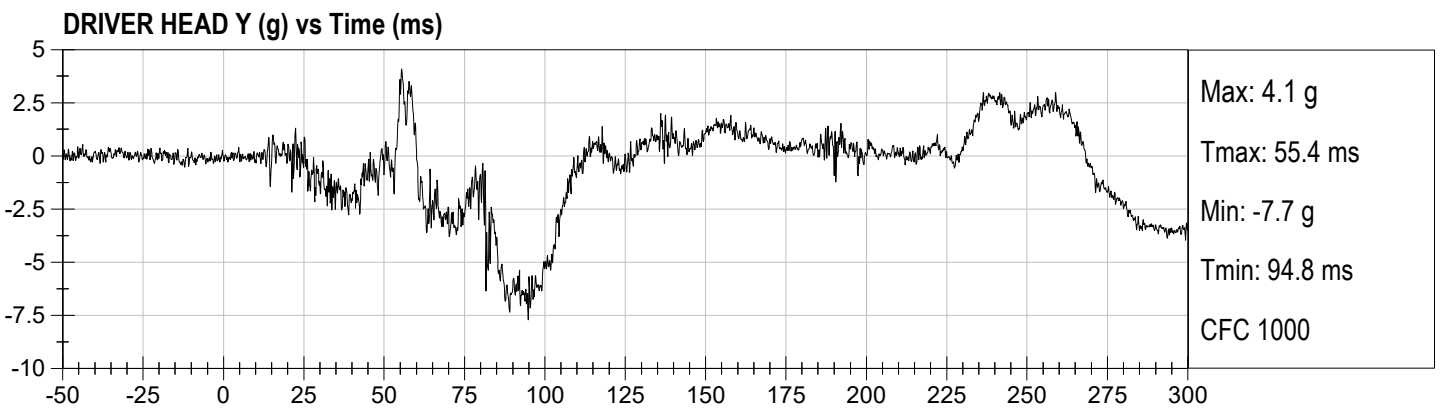
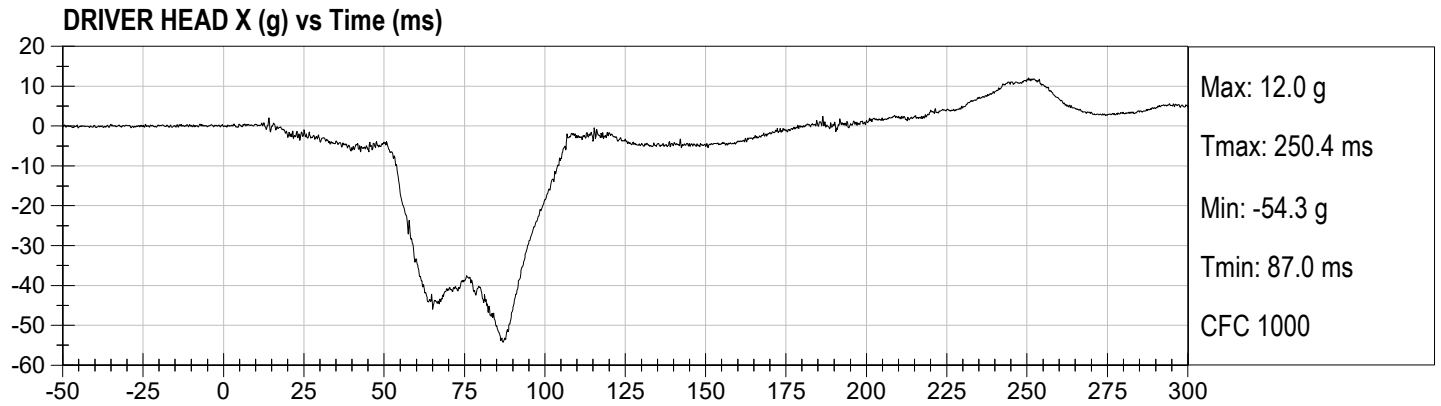
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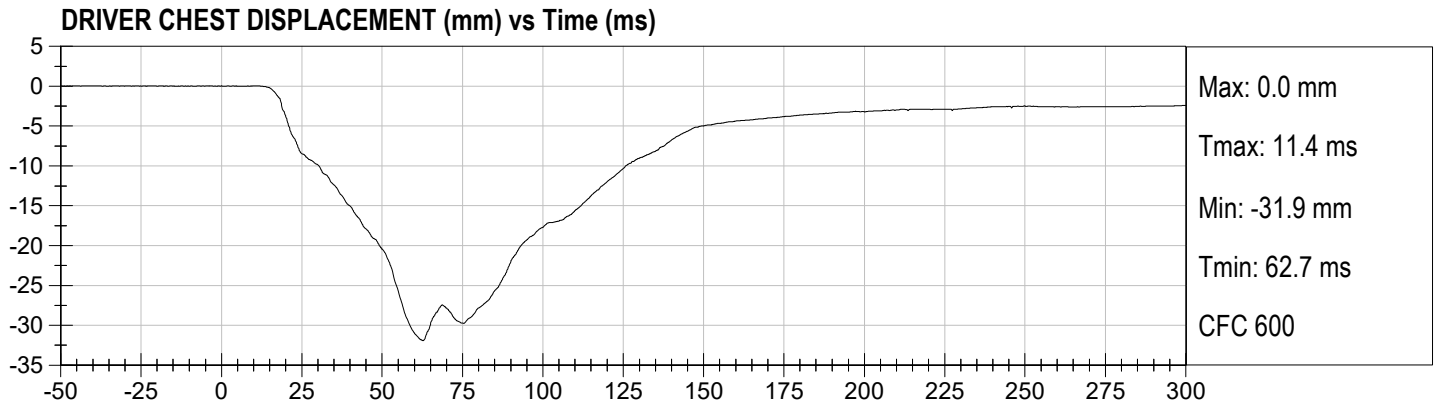
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.gov

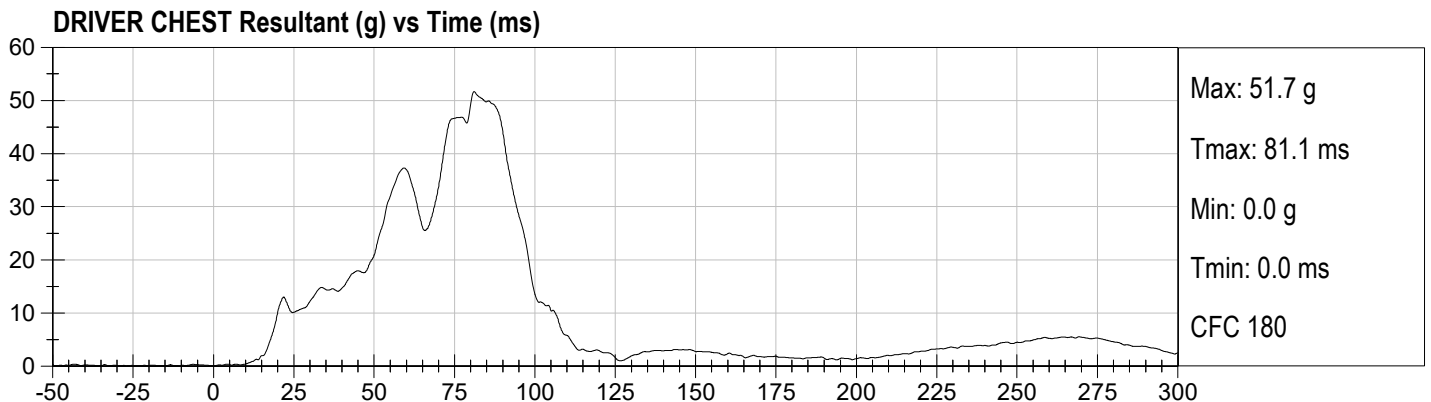
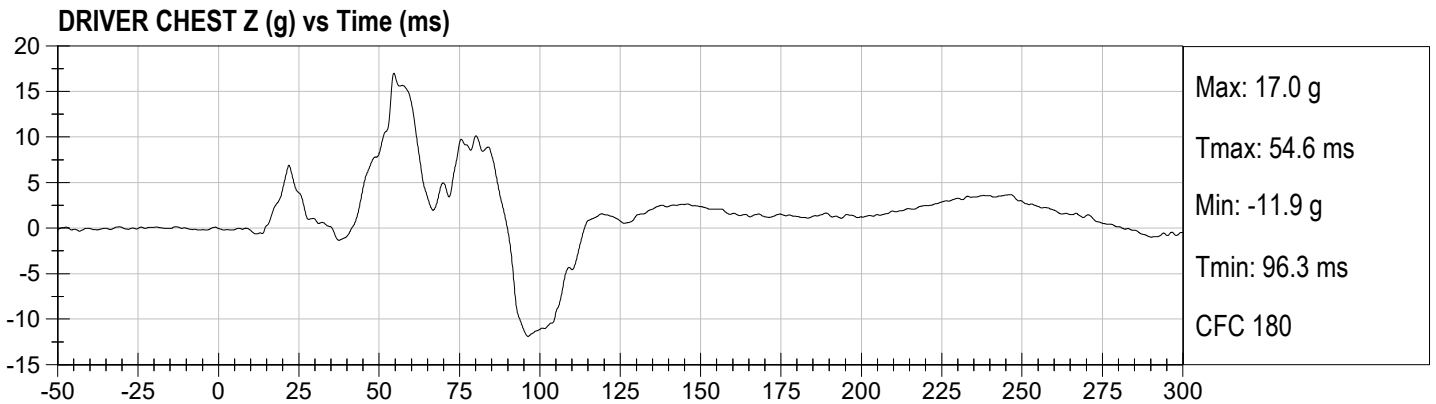
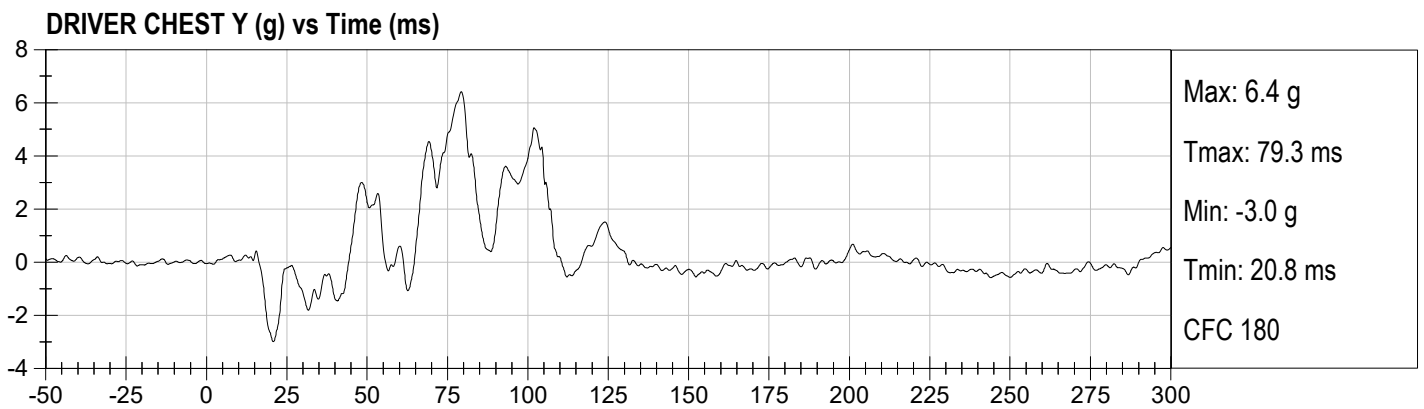
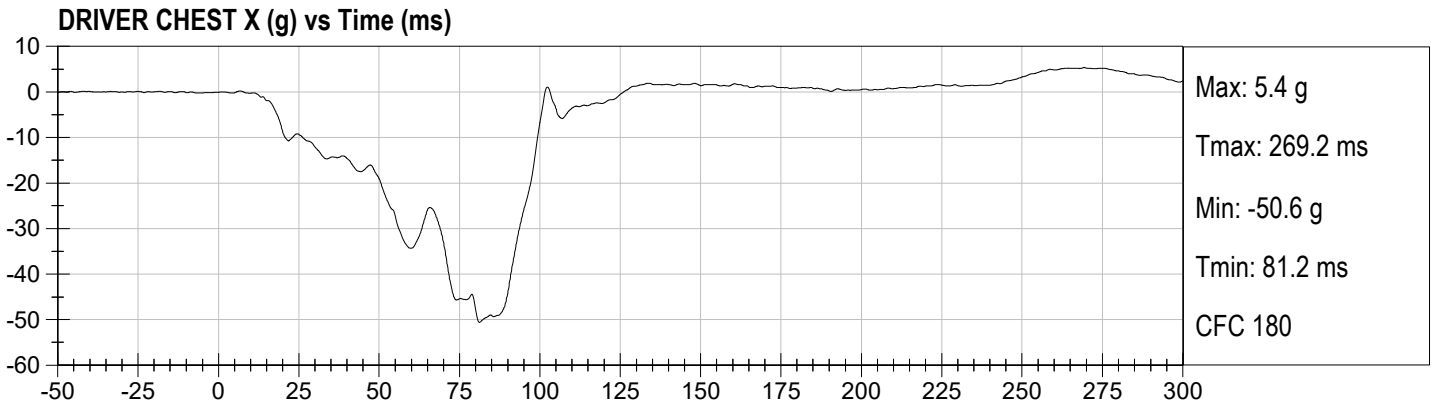
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 Driver Head Z Redundant
 Driver Head Angular Velocity X
 Driver Head Angular Velocity Y
 Driver Head Angular Velocity Z
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 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant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

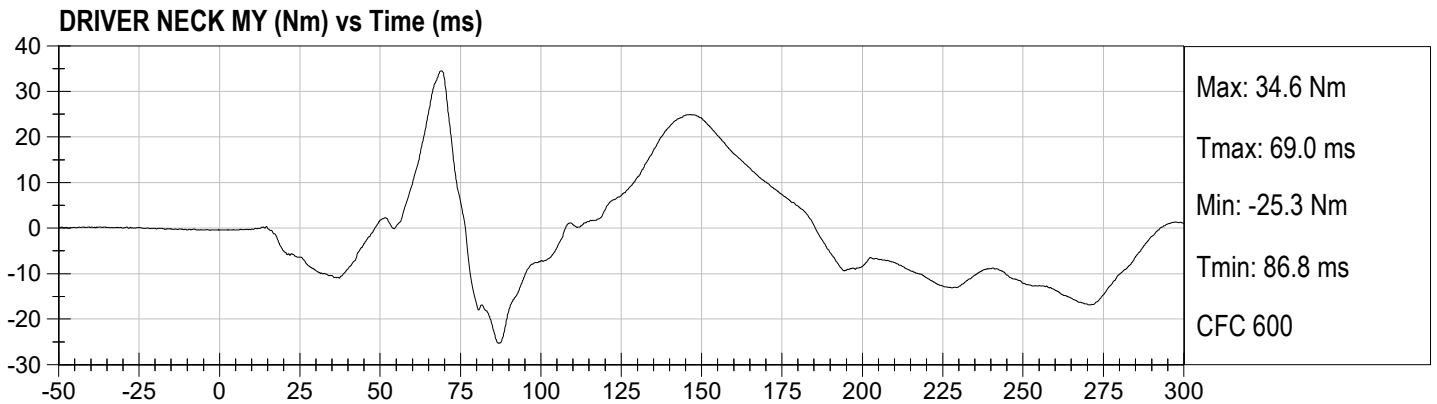
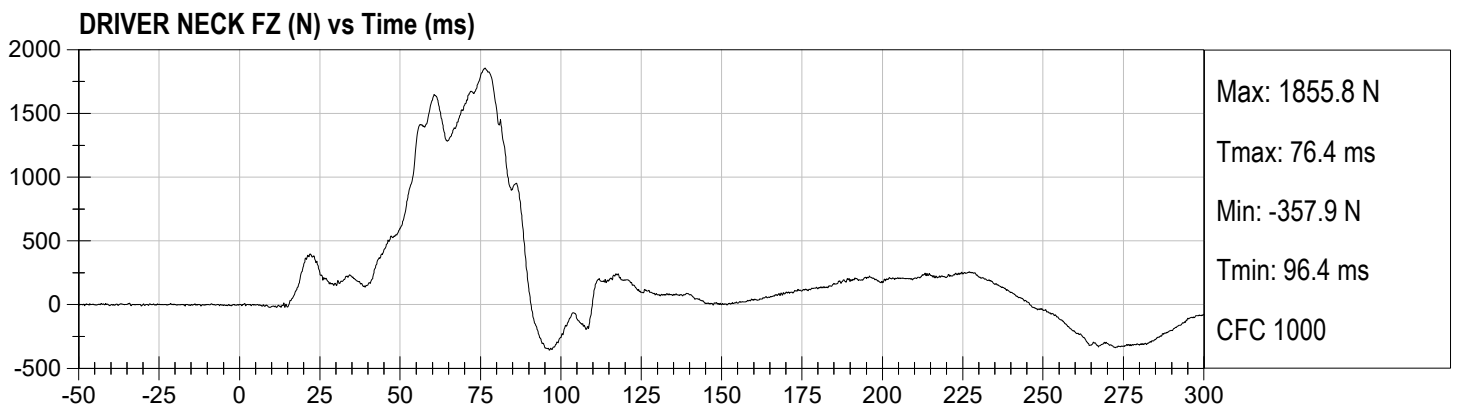
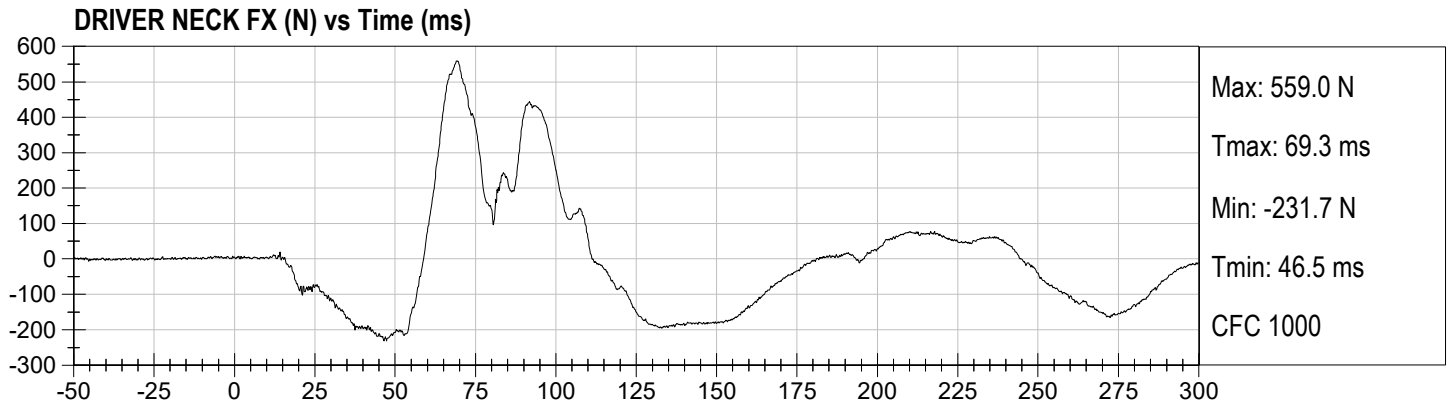
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Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
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
Passenger Upper Neck Moment Z
Passenger Chest X Redundant
Passenger Chest Y Redundant
Passenger Chest Z Redundant
Passenger Pelvis X
Passenger Pelvis Y

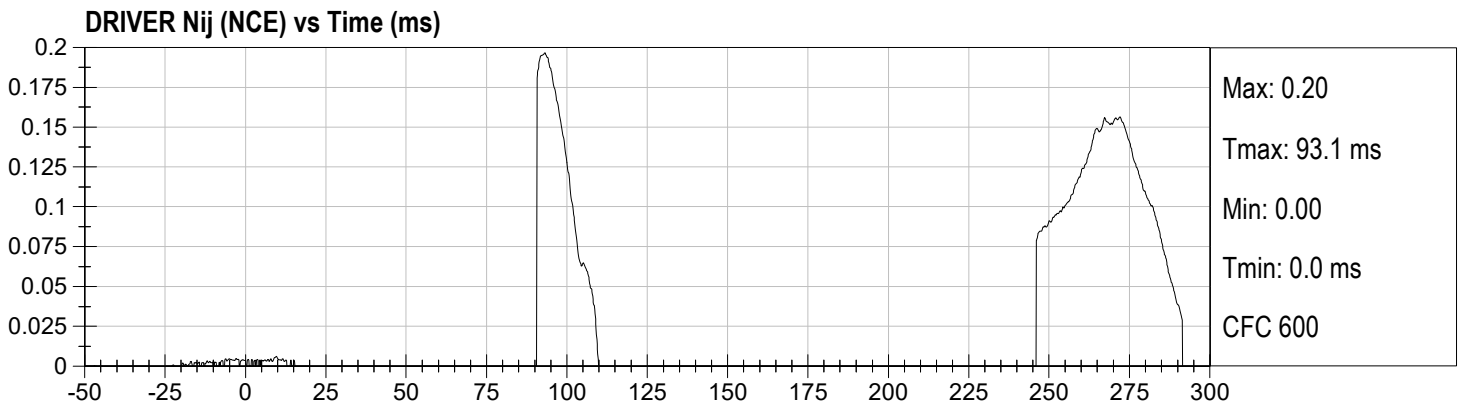
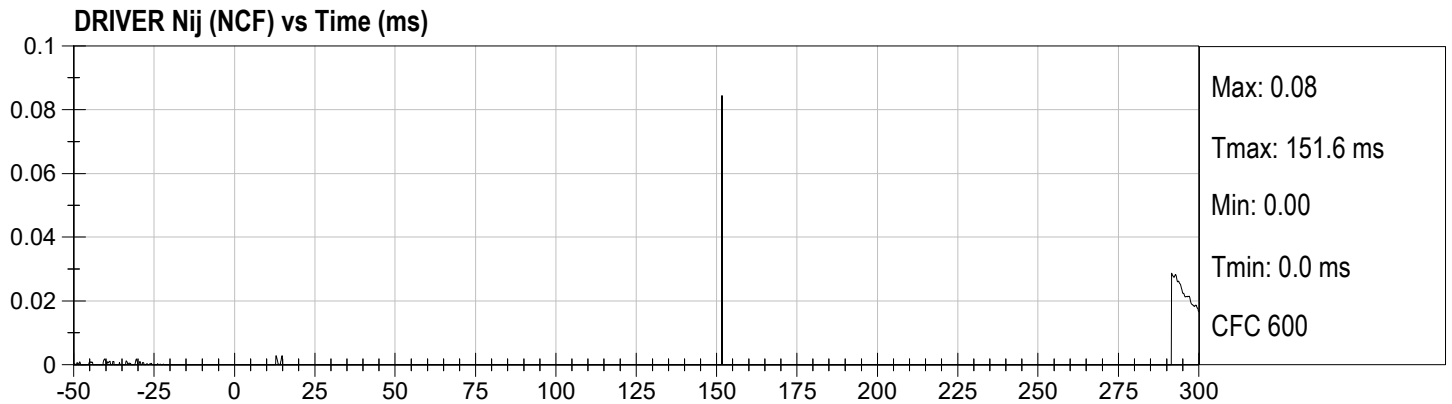
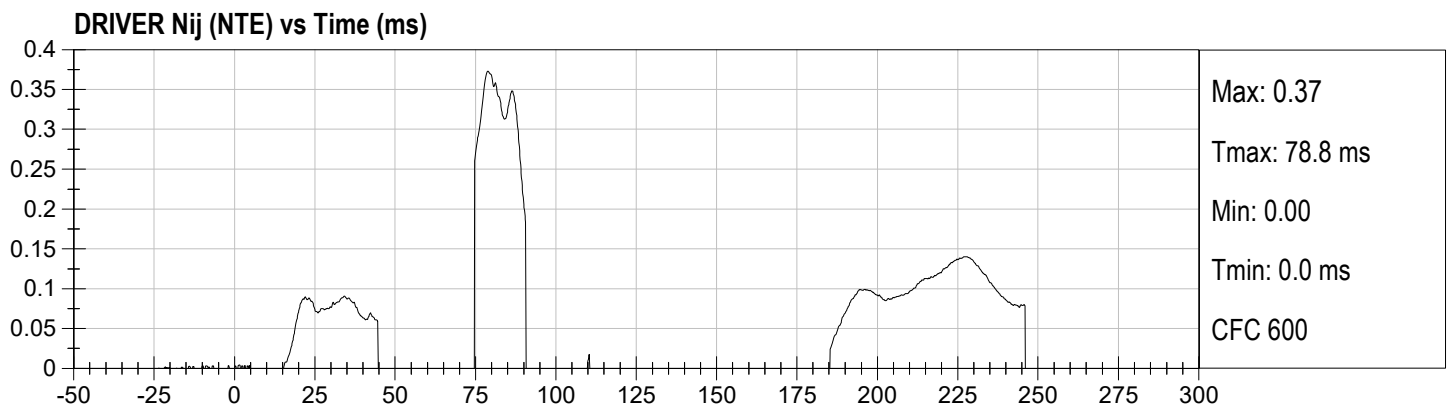
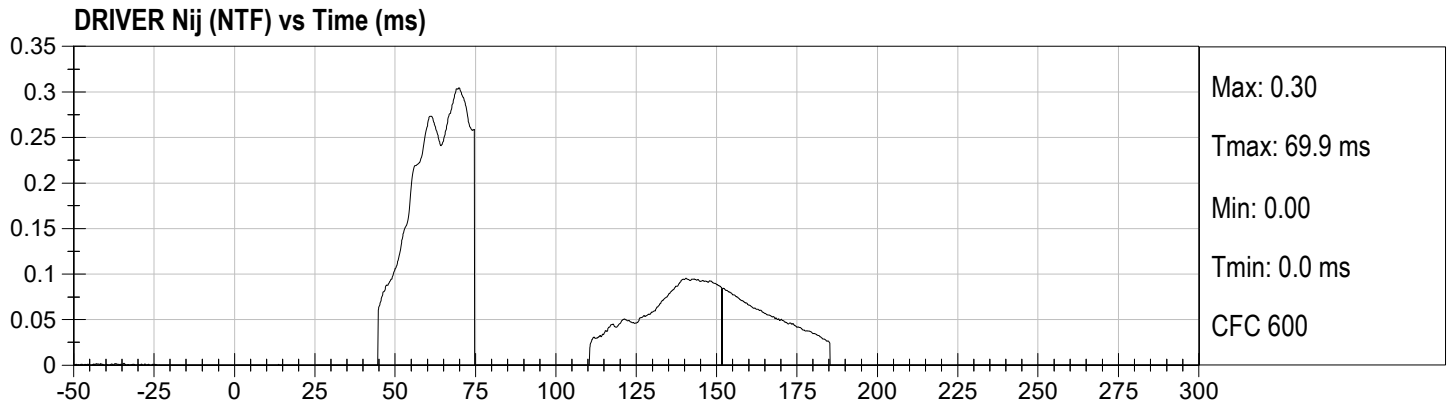
Passenger Pelvis Z
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Passenger Right Femur Redundant
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Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
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Passenger Left Lower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

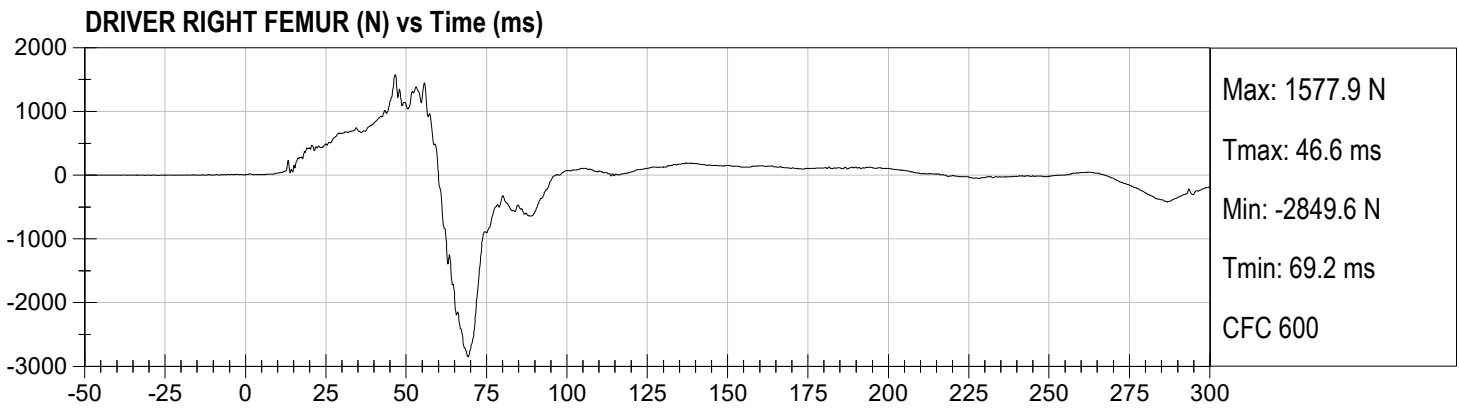
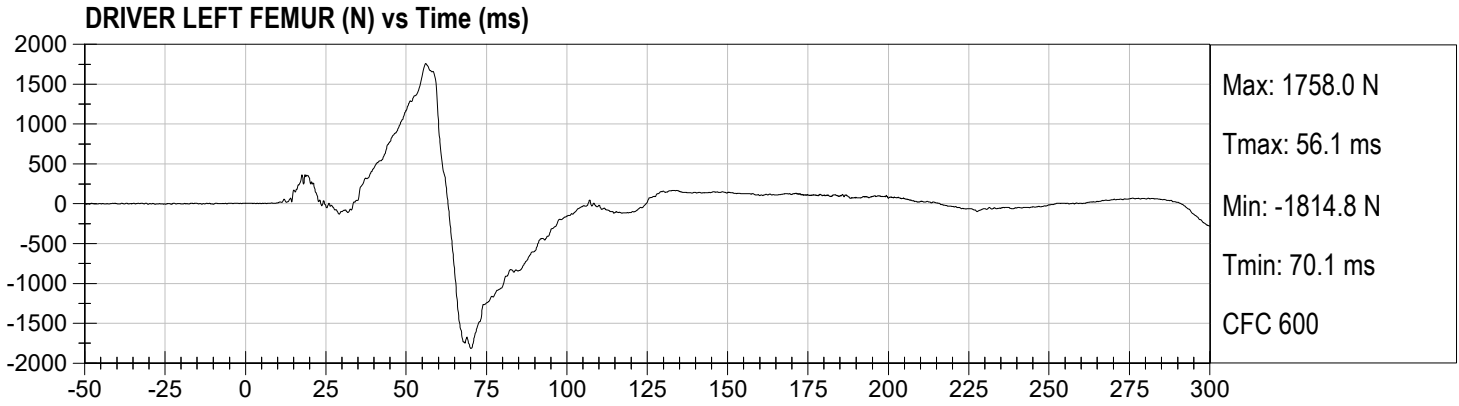


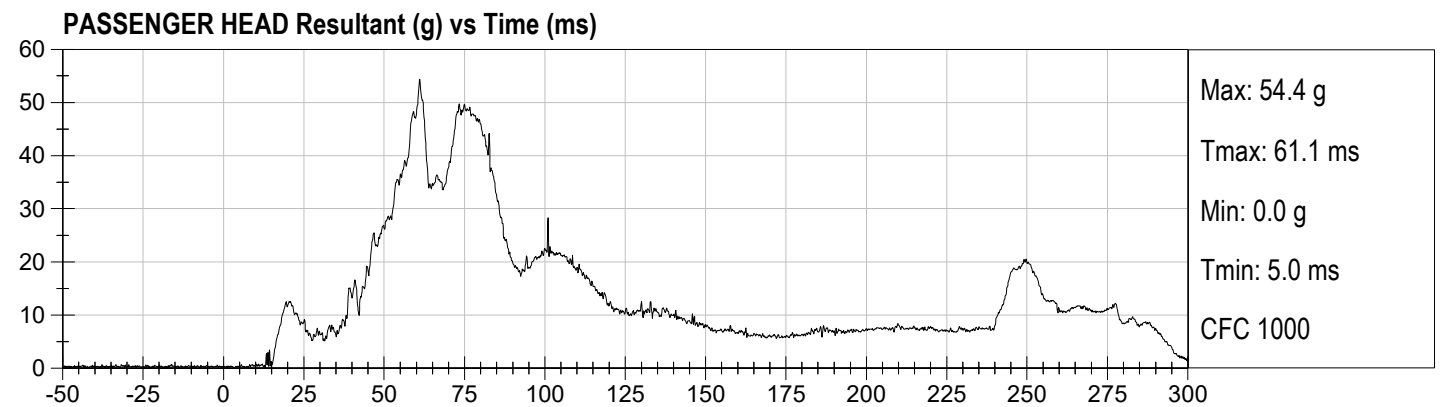
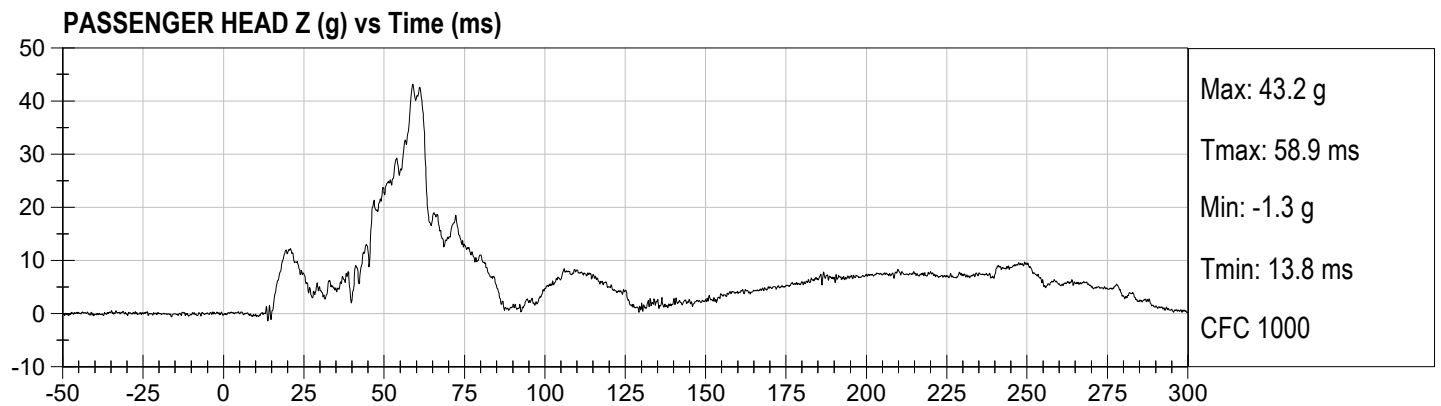
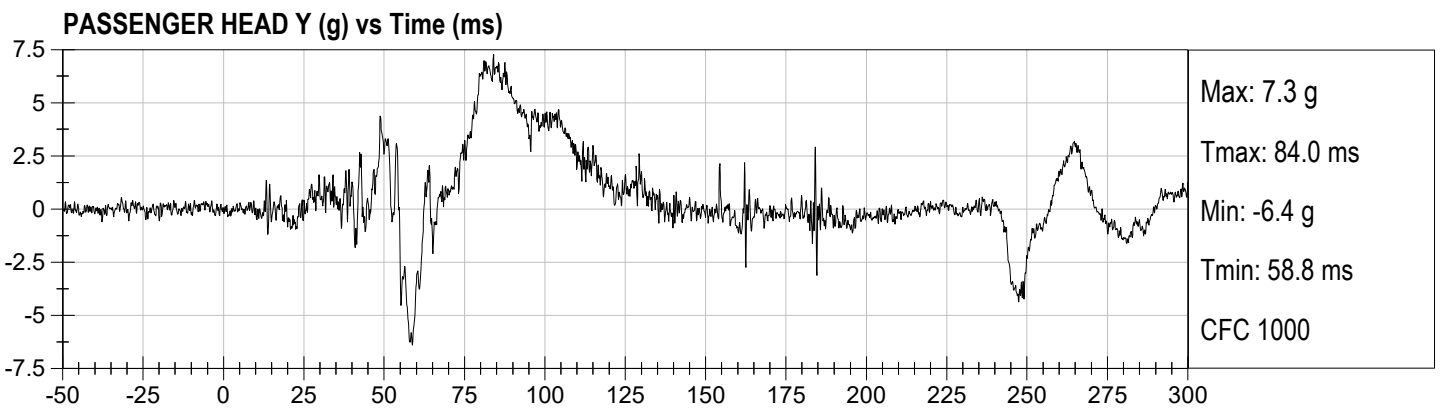
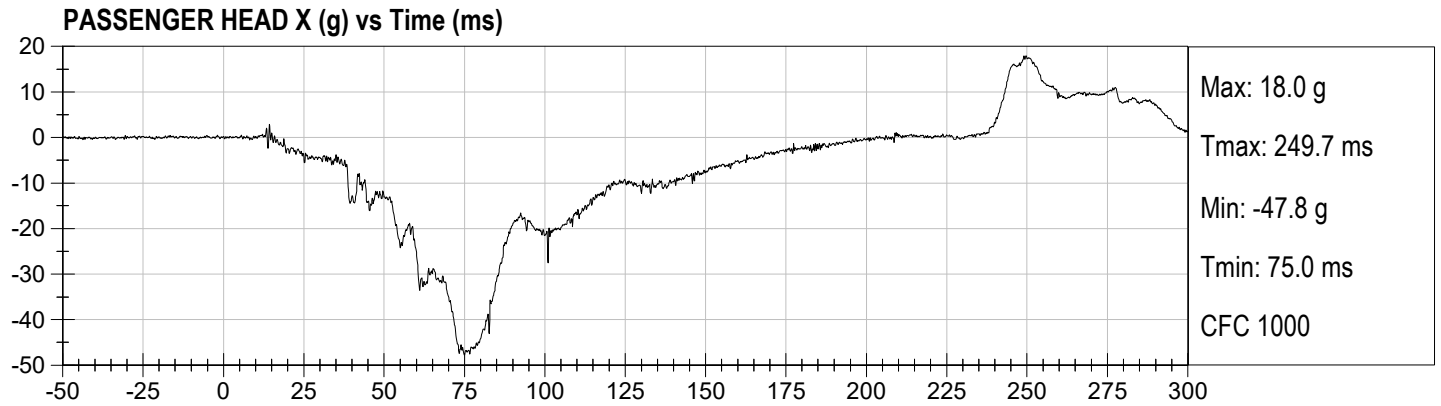


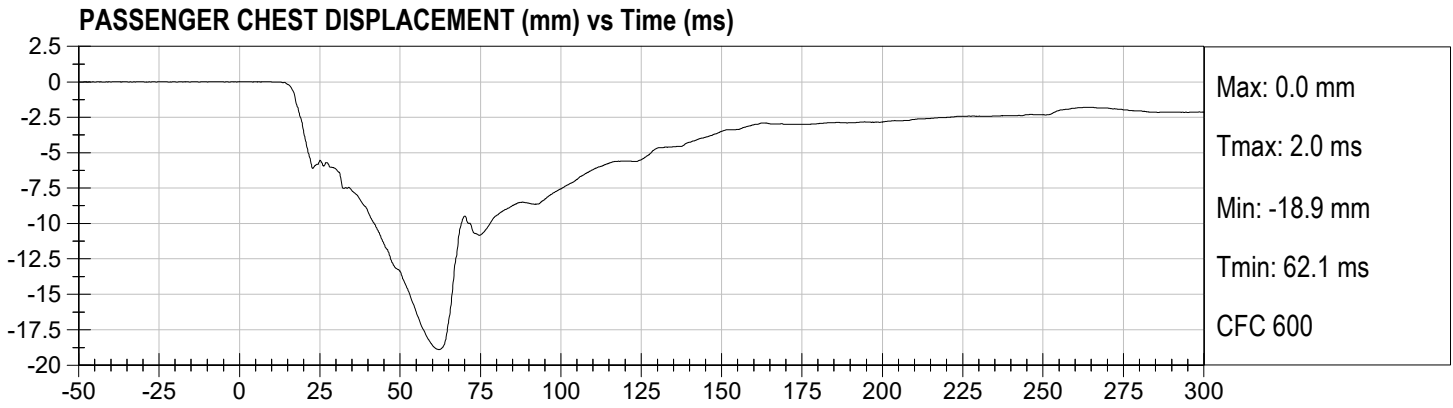


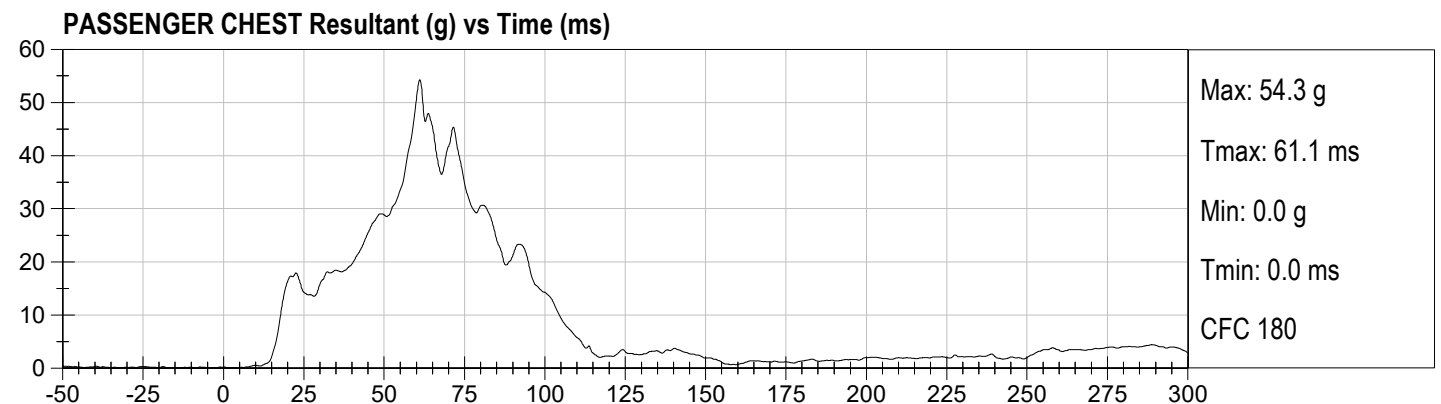
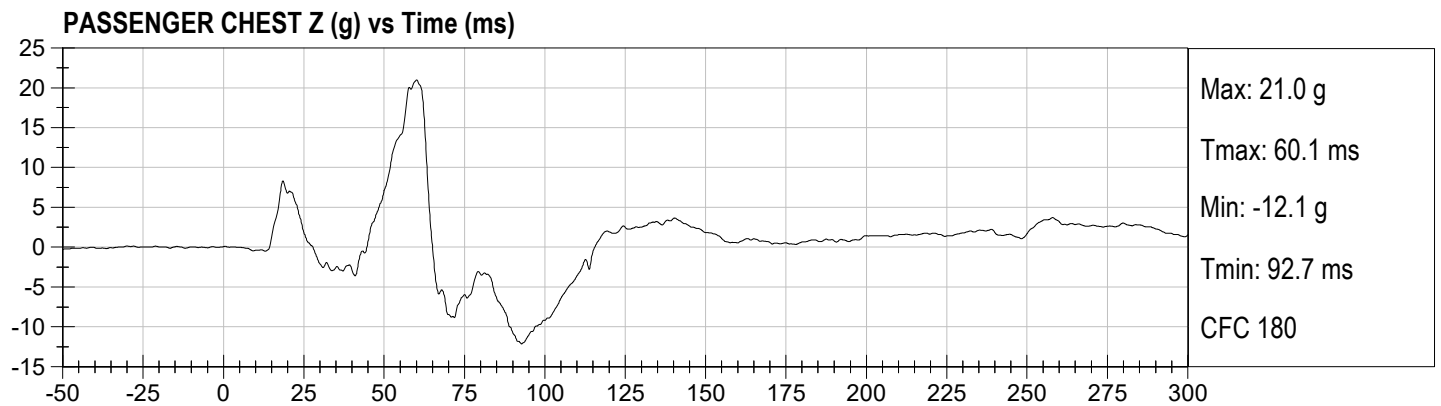
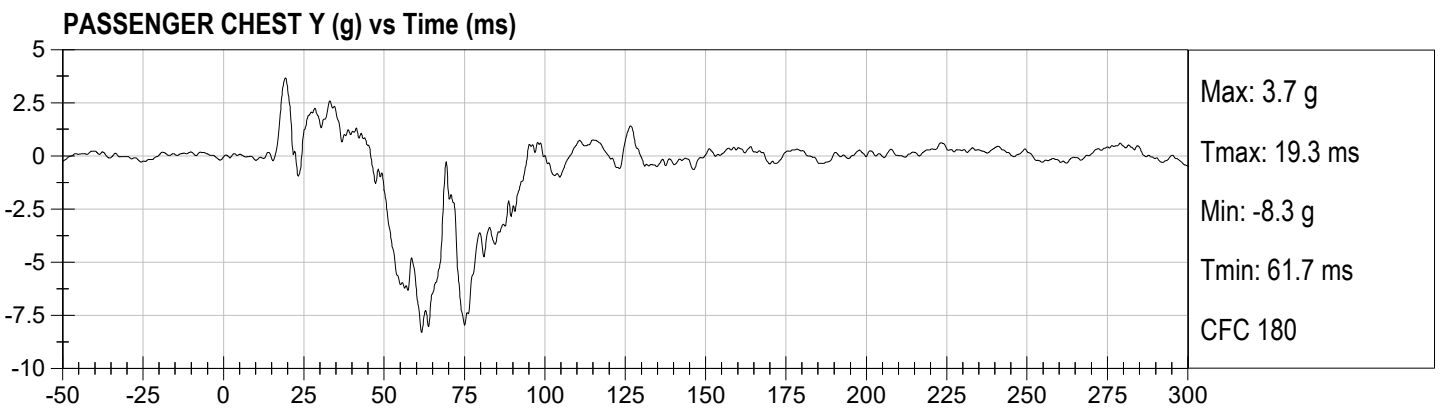
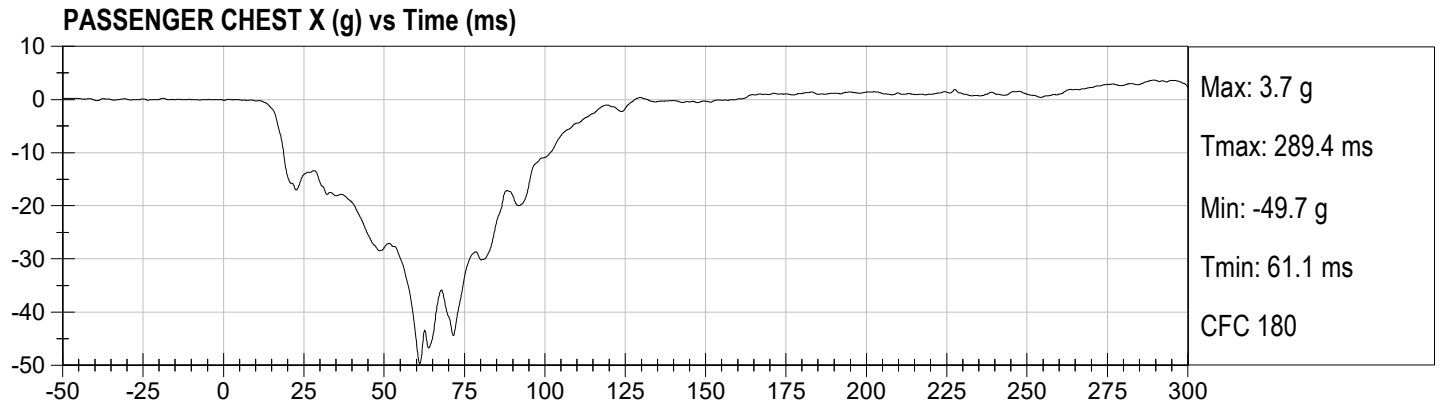




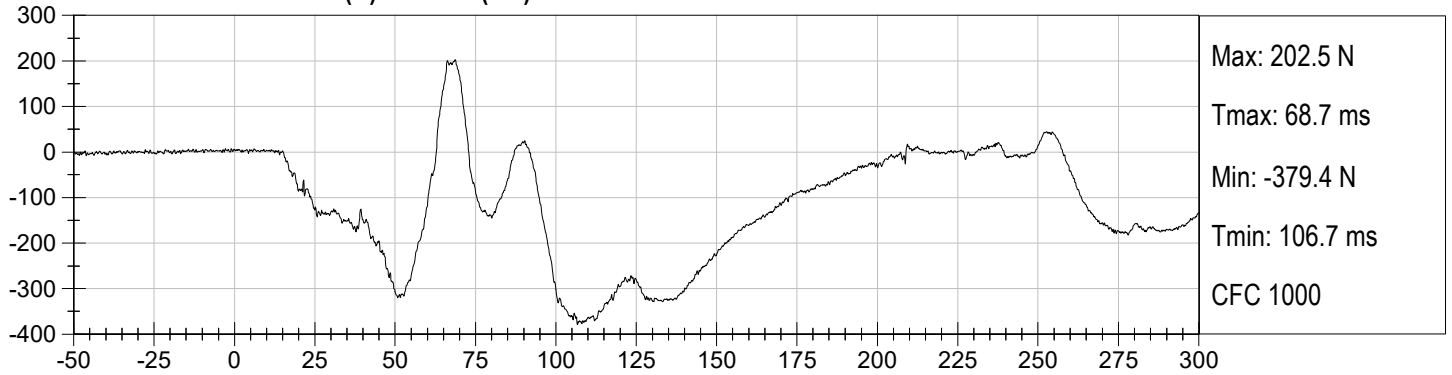




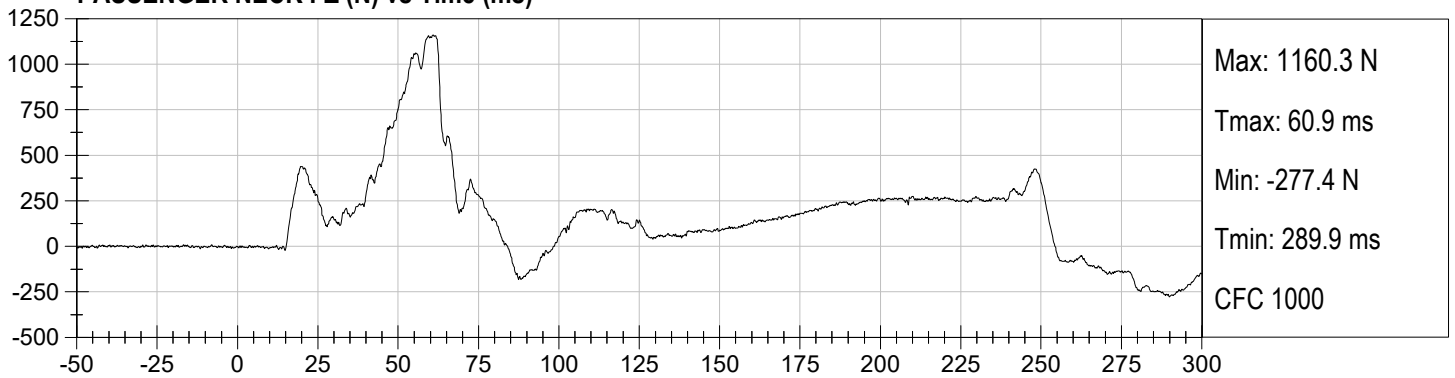




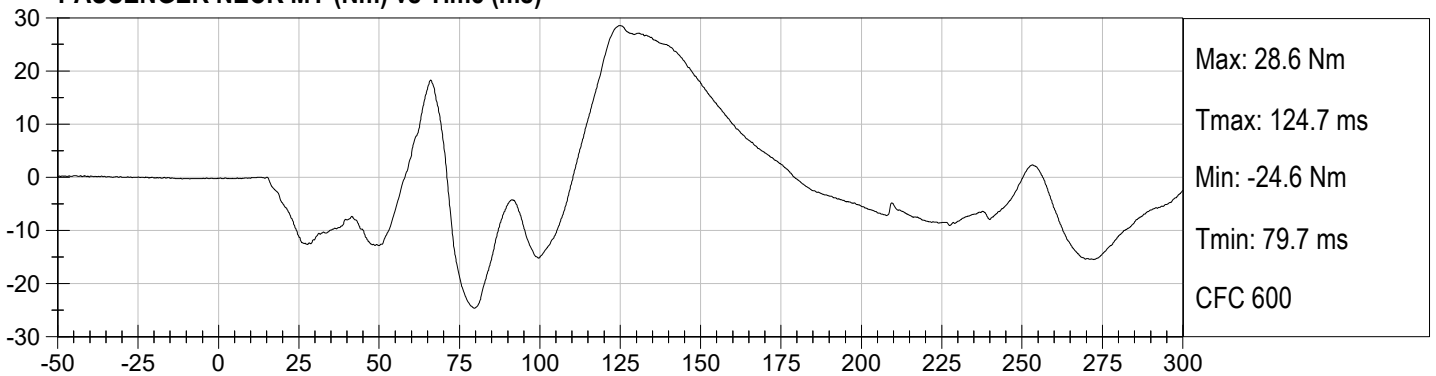
PASSENGER NECK FX (N) vs Time (ms)

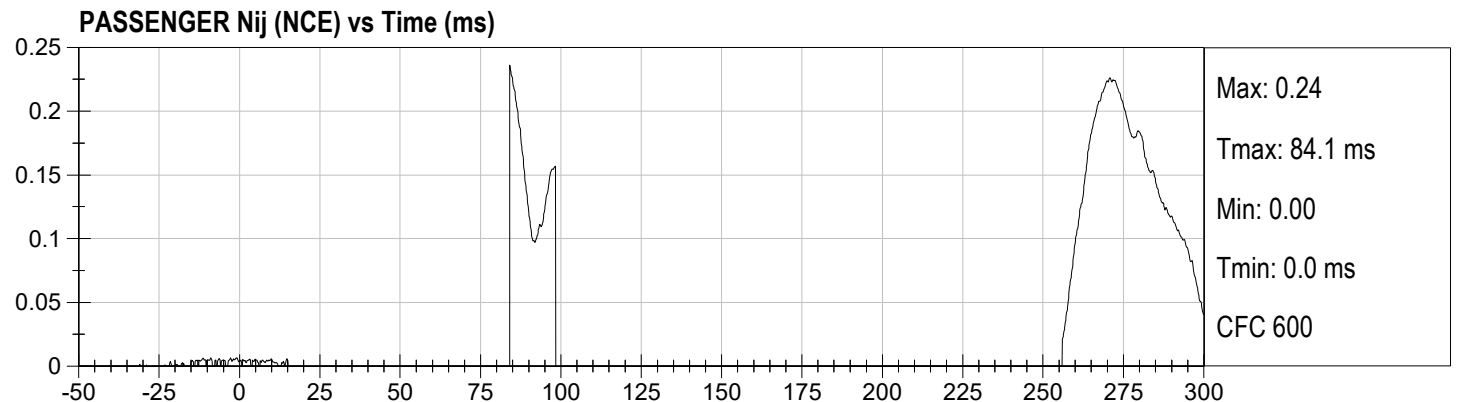
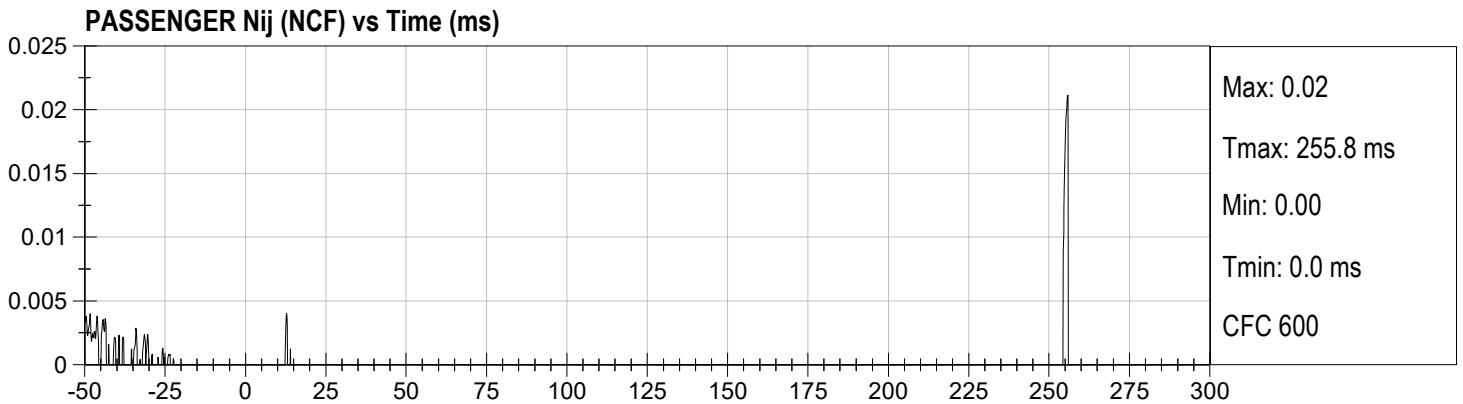
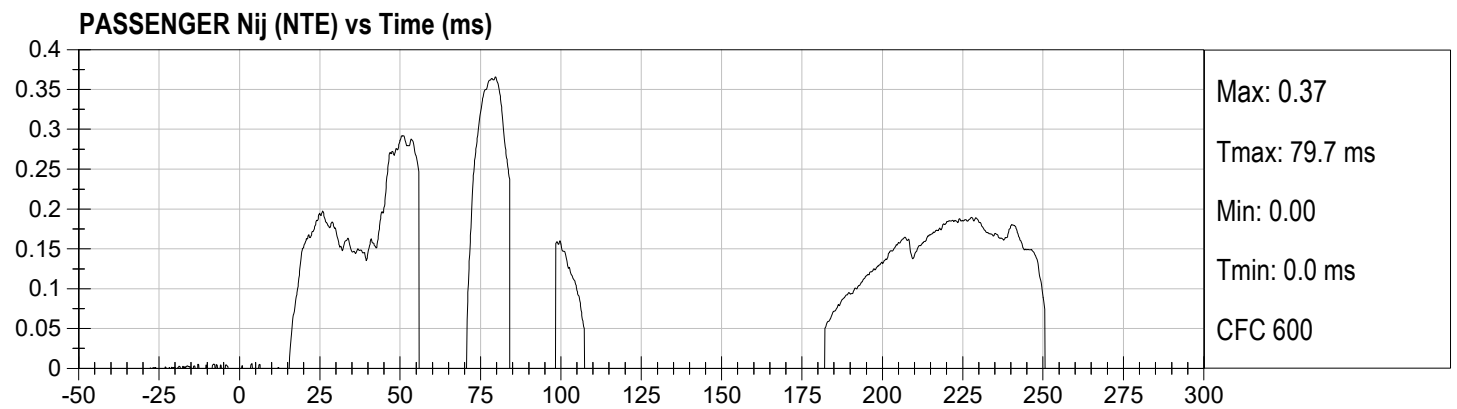
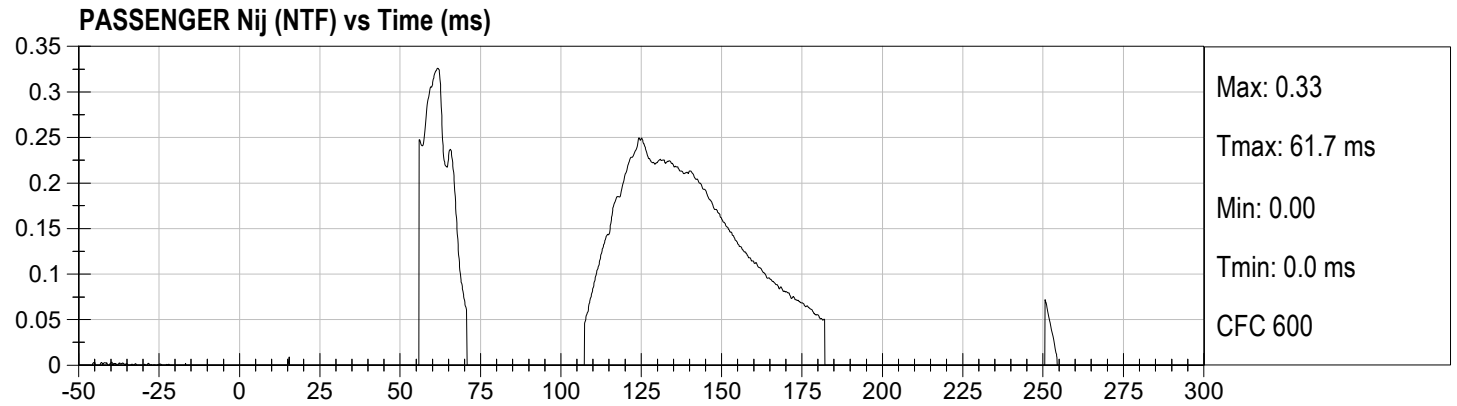


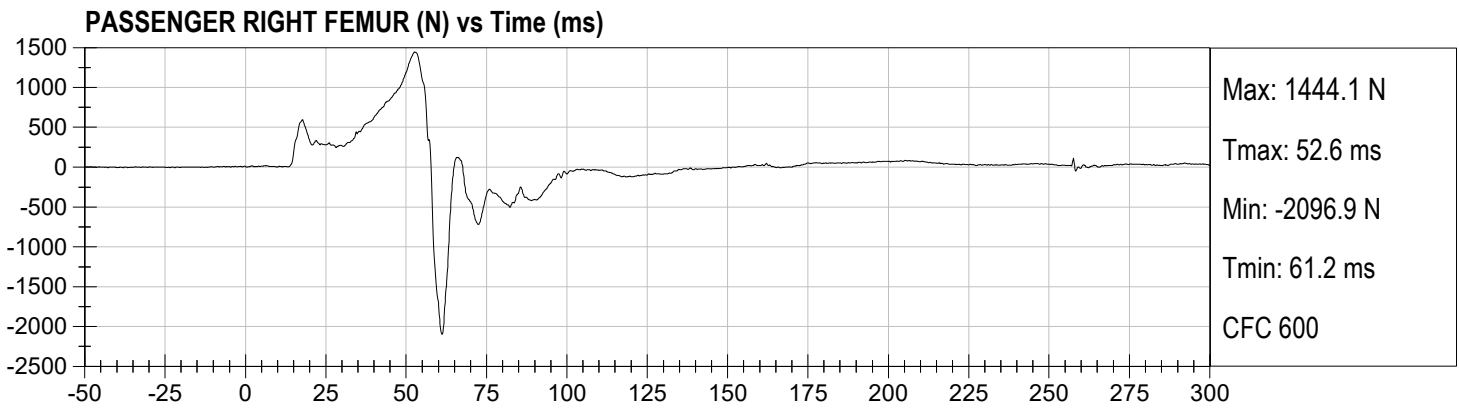
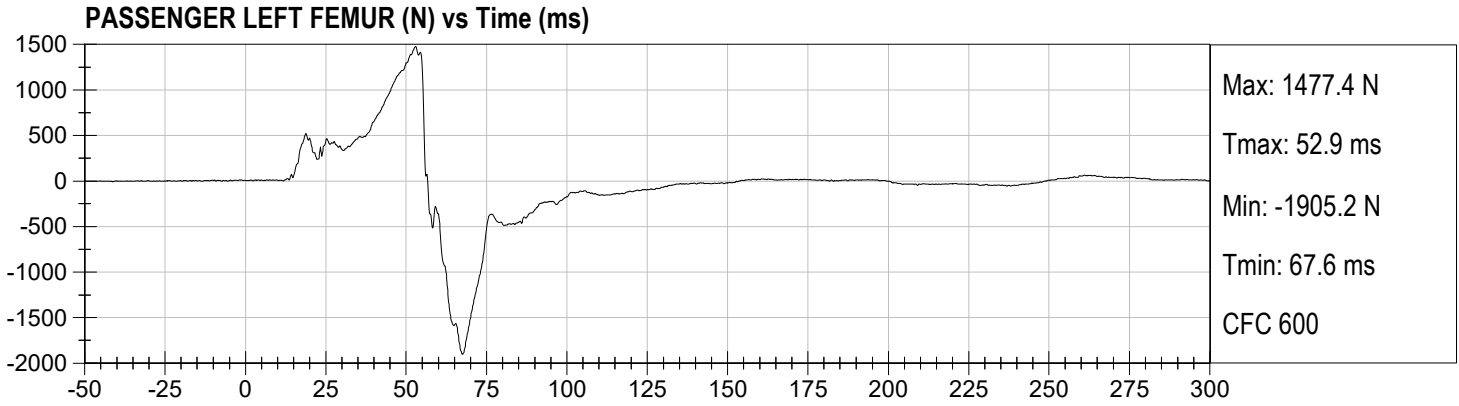
PASSENGER NECK FZ (N) vs Time (ms)



PASSENGER NECK MY (Nm) vs Time (ms)







APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 50TH 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

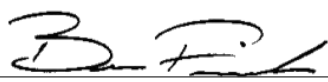
ATD Serial No: 351

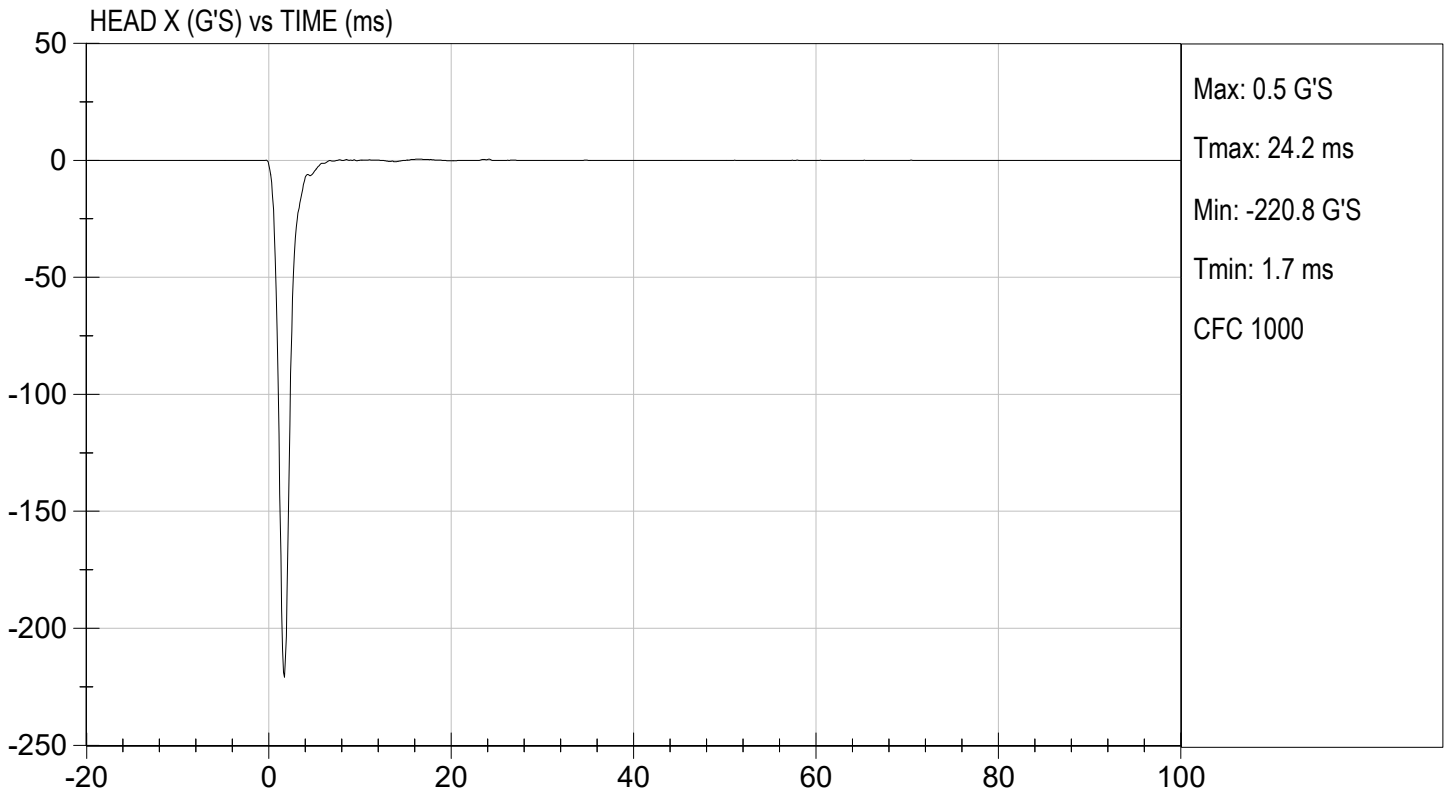
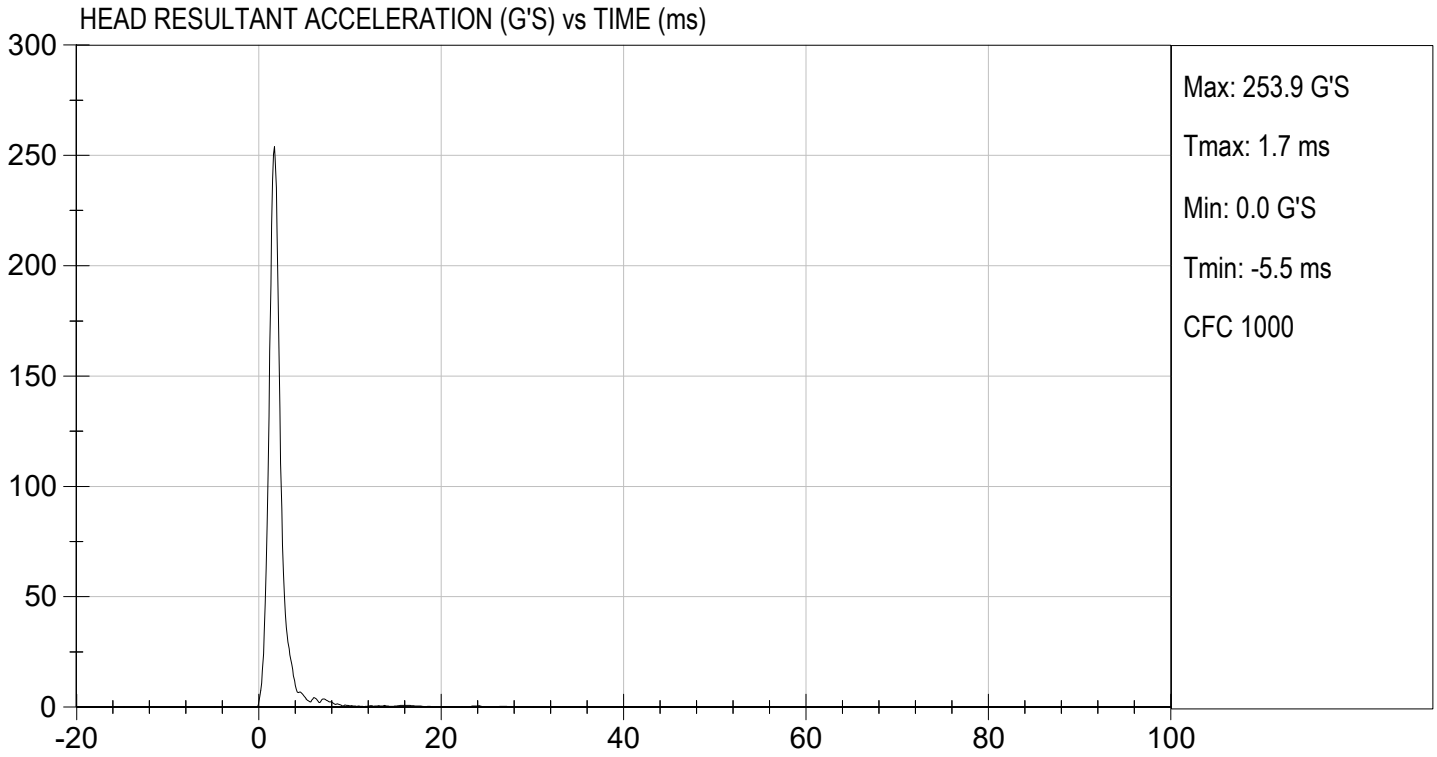
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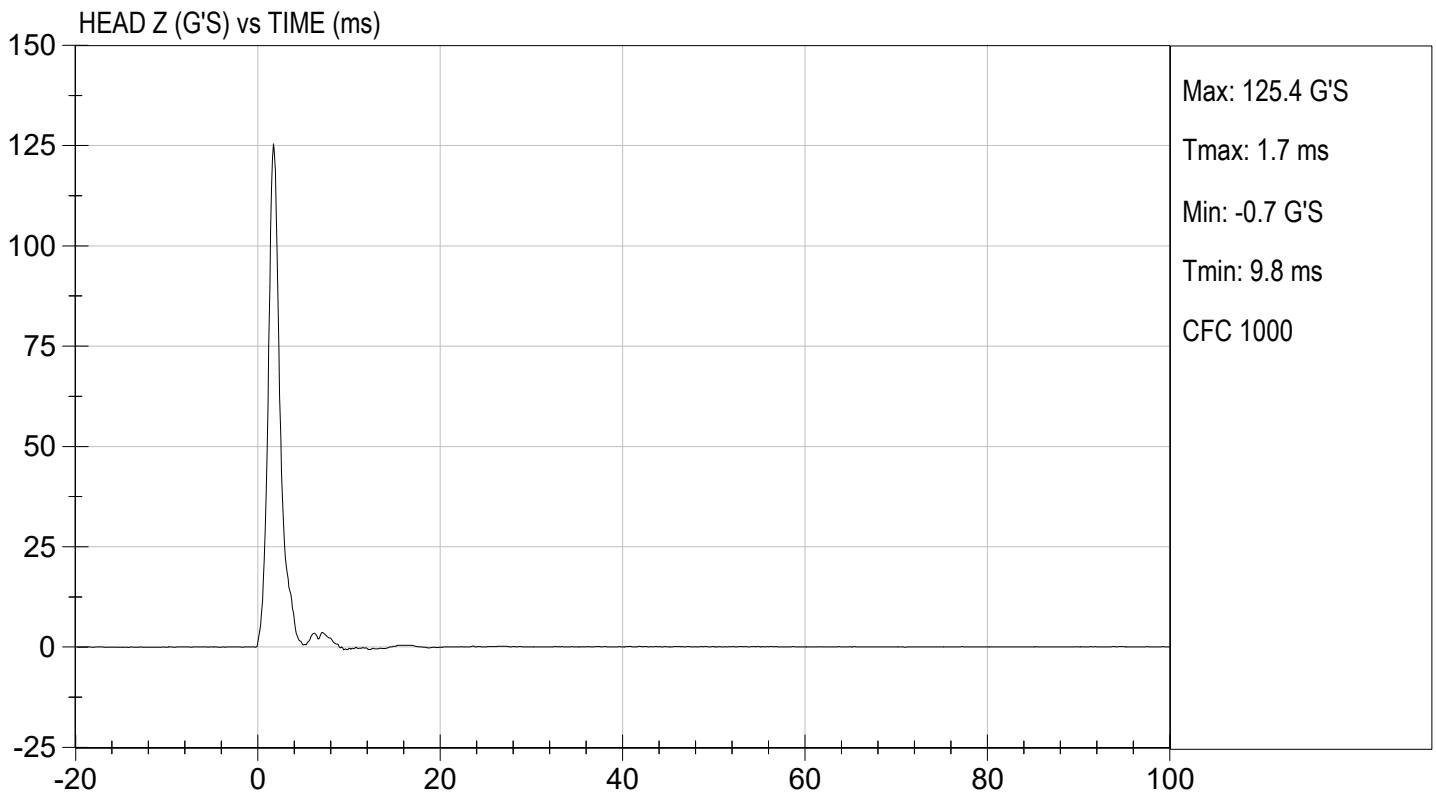
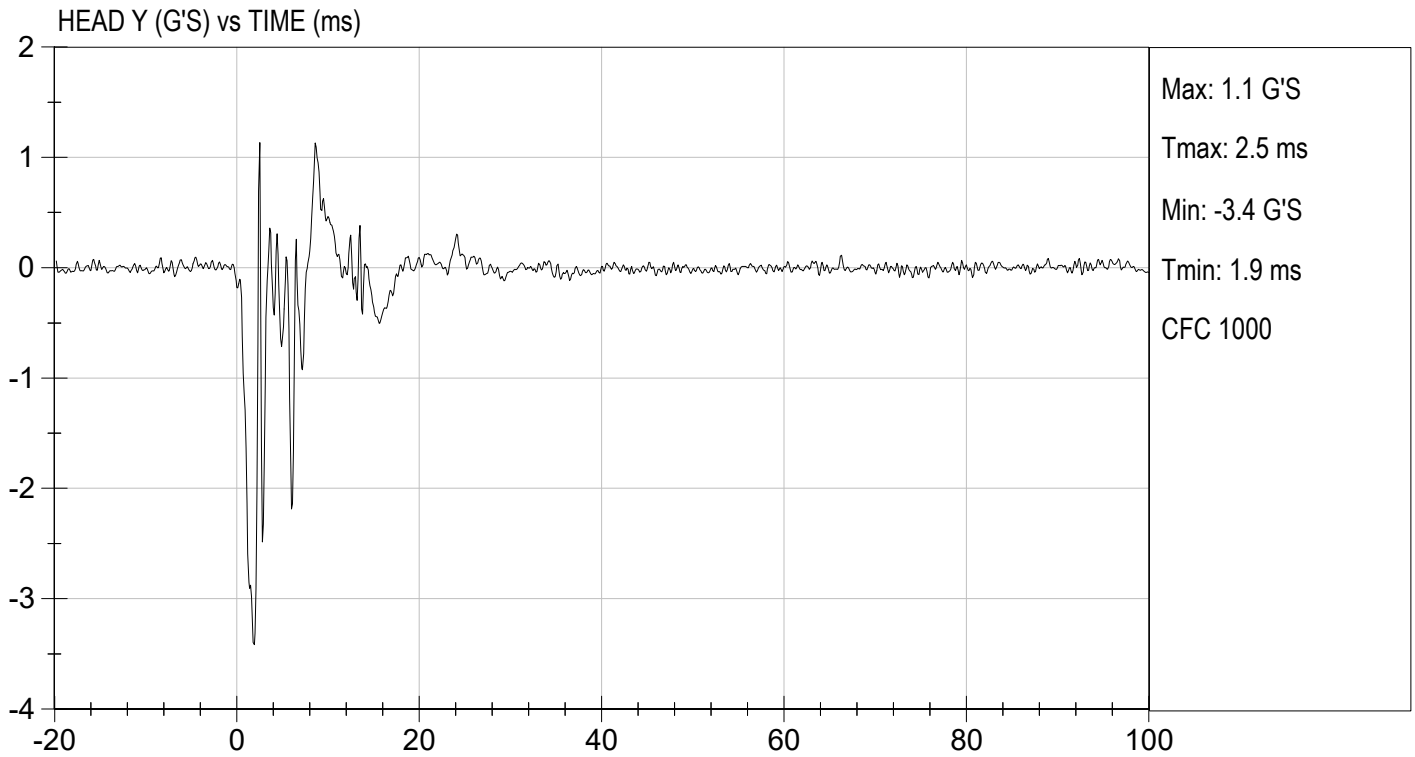
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	225 to 275	254	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-3.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


 Laboratory Technician

01/25/2023
 Test Date


 Approved By





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

ATD Serial No: 351

Test I.D.: D230242

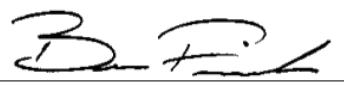
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	28	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.18	Pass
	20 ms	G's	17.60 to 22.60	19.86	Pass
	30 ms	G's	12.50 to 18.50	15.39	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	16.1	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.6	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	70.3	Pass
	Time	ms	57.0 to 64.0	59.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	118.2	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	94.3	Pass
	Time	ms	47.0 to 58.0	49.6	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	100.6	Pass
Overall Test Results					Pass



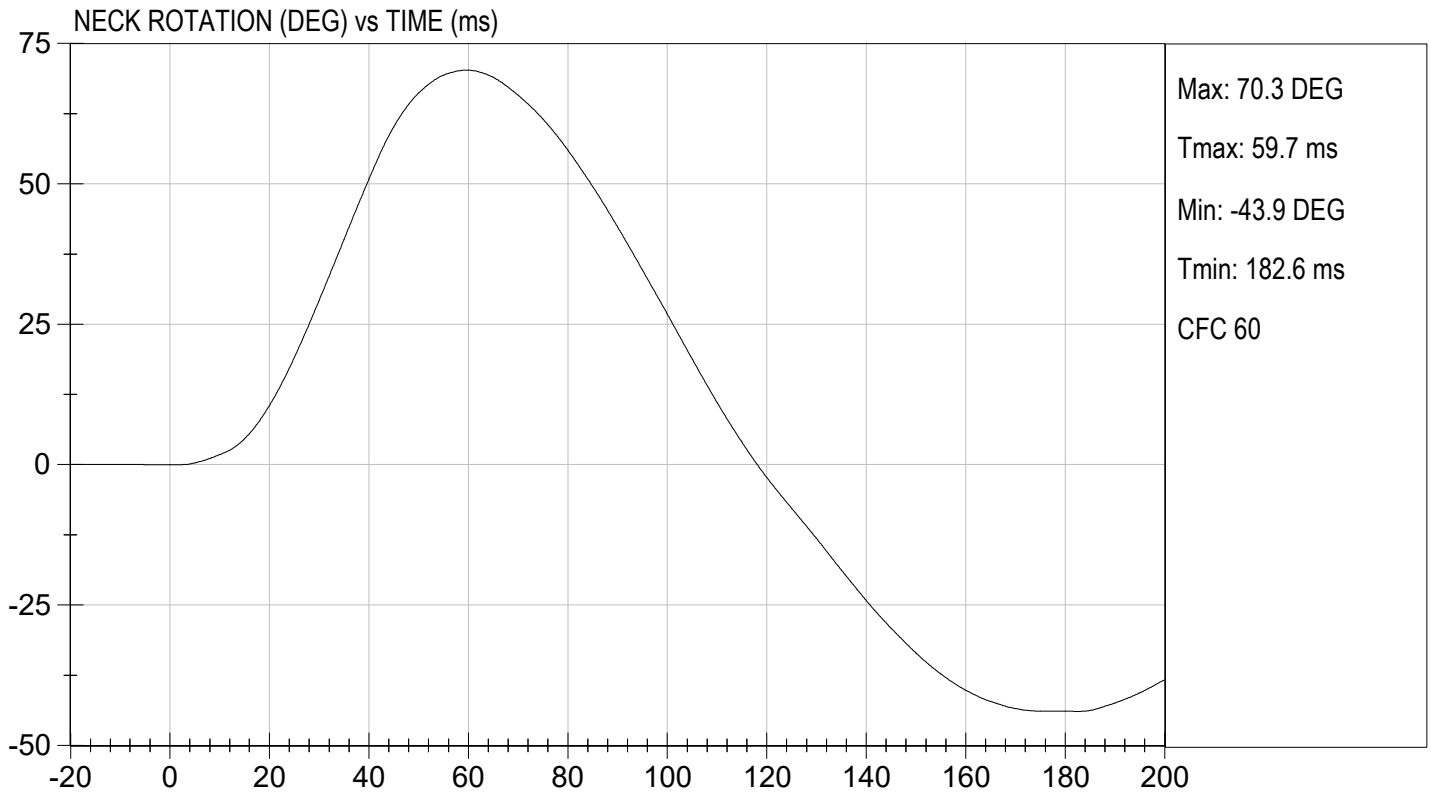
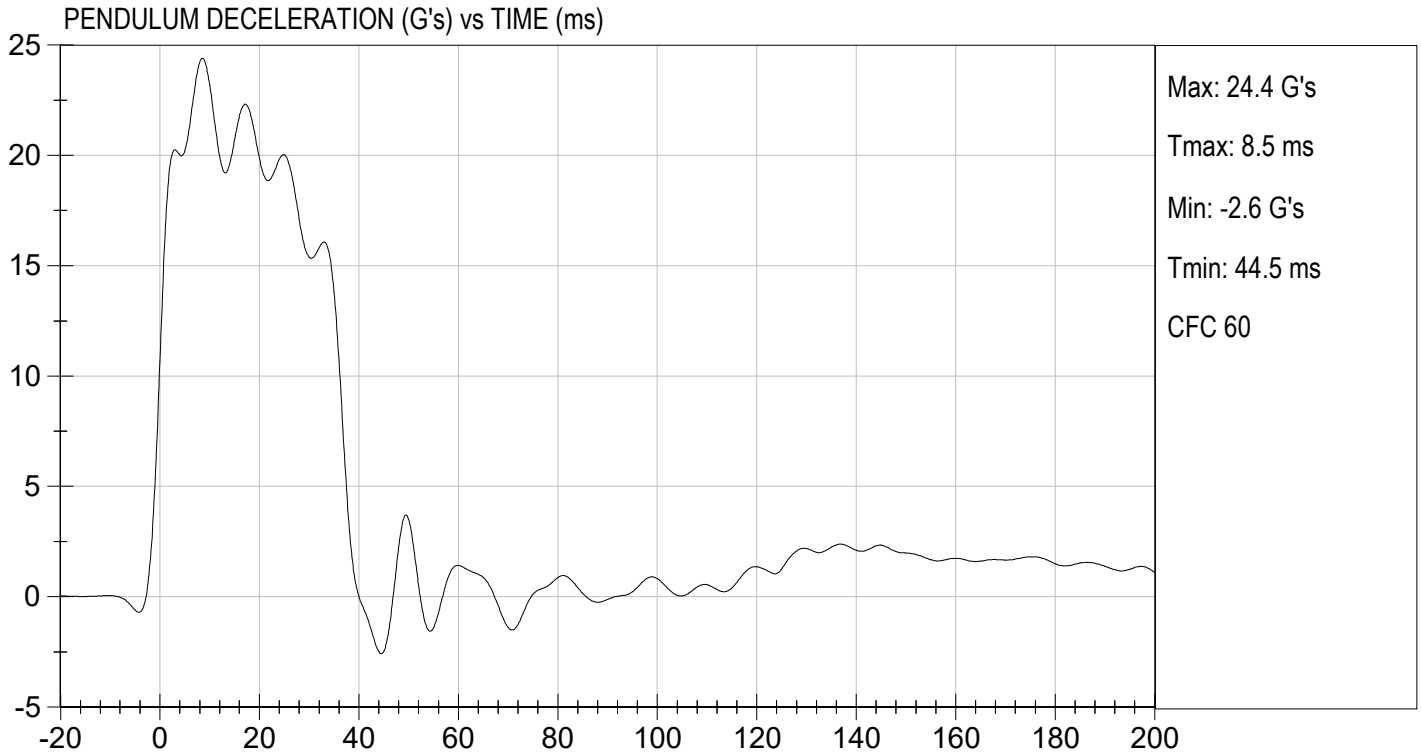
 Laboratory Technician

01/26/2023

 Test Date



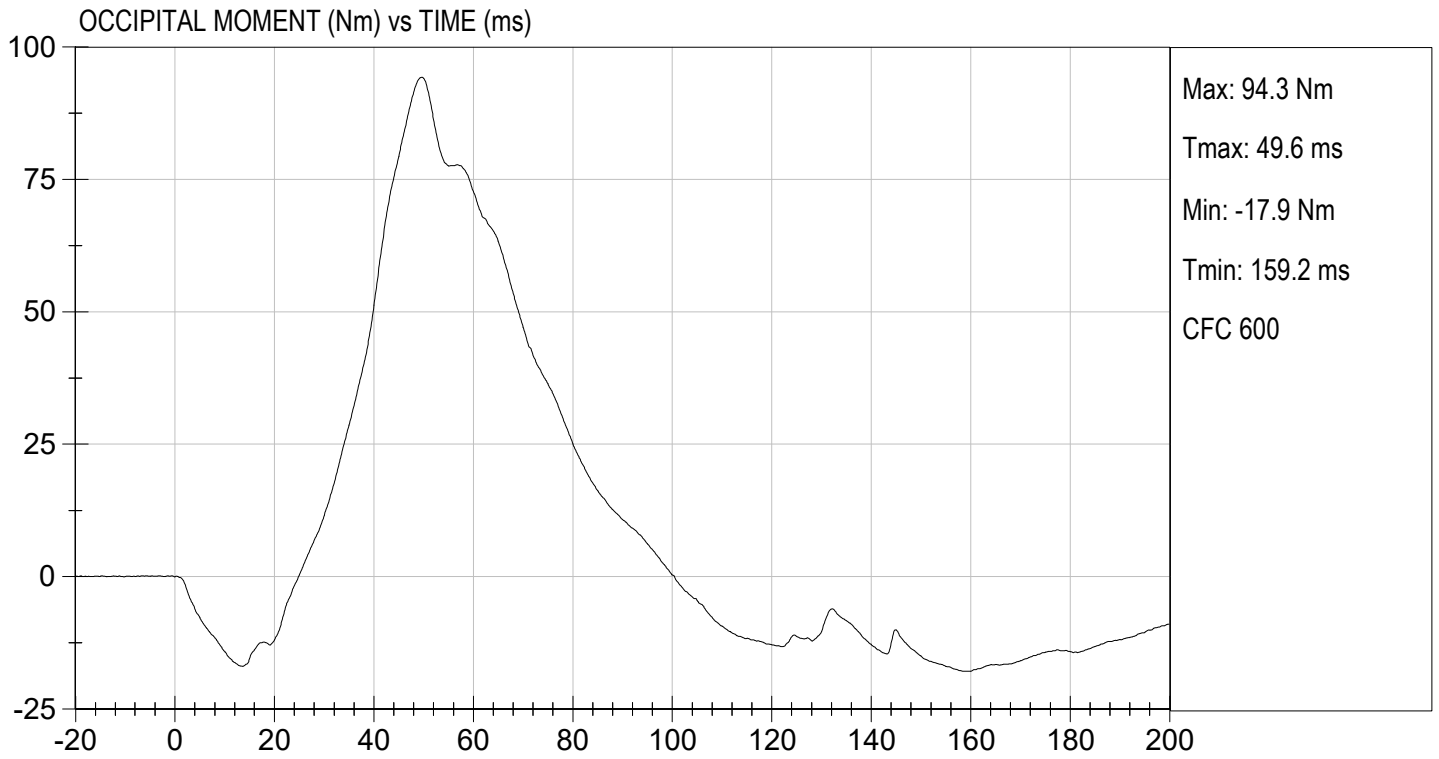
 Approved By





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 01/26/2023
TEST #: D230242



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

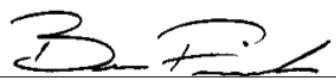
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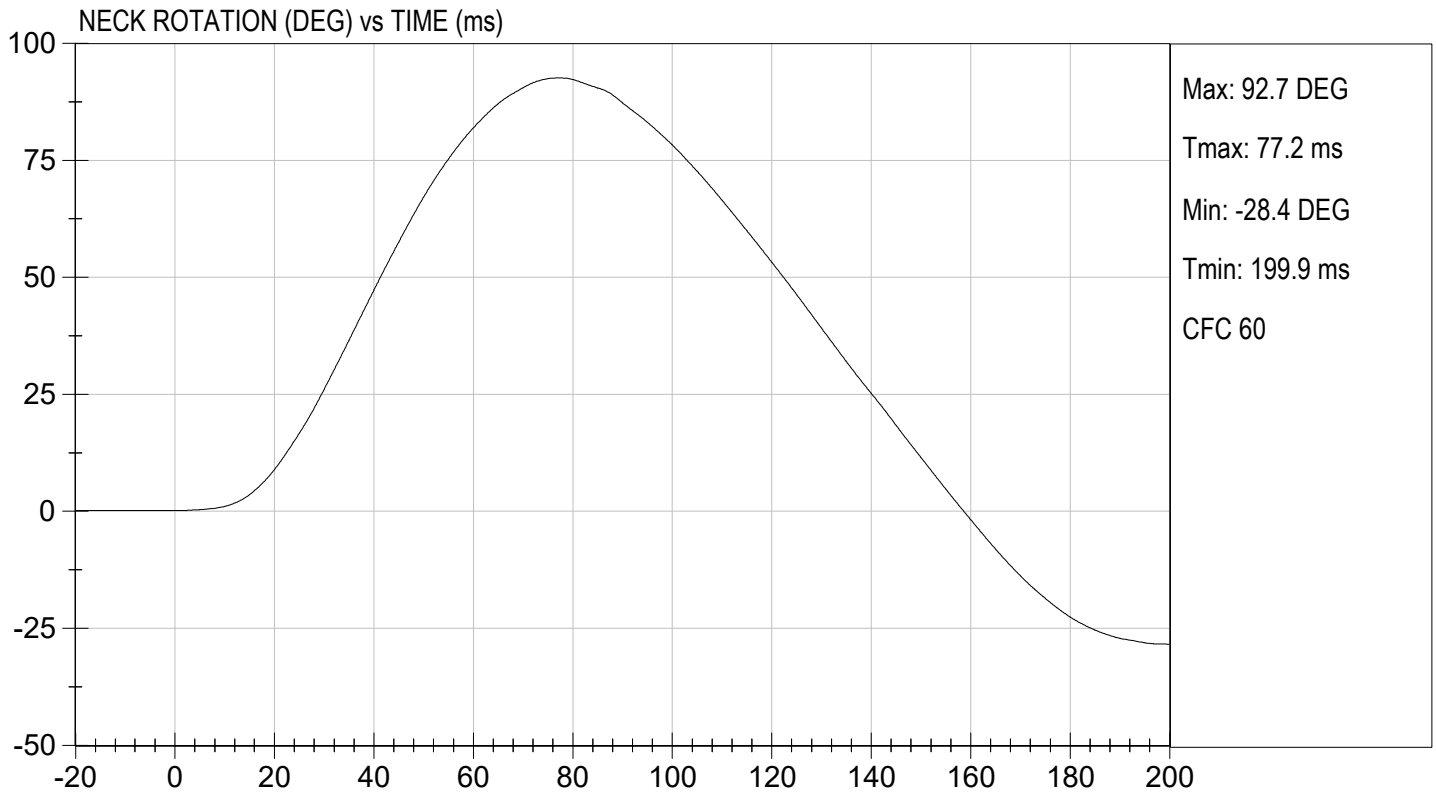
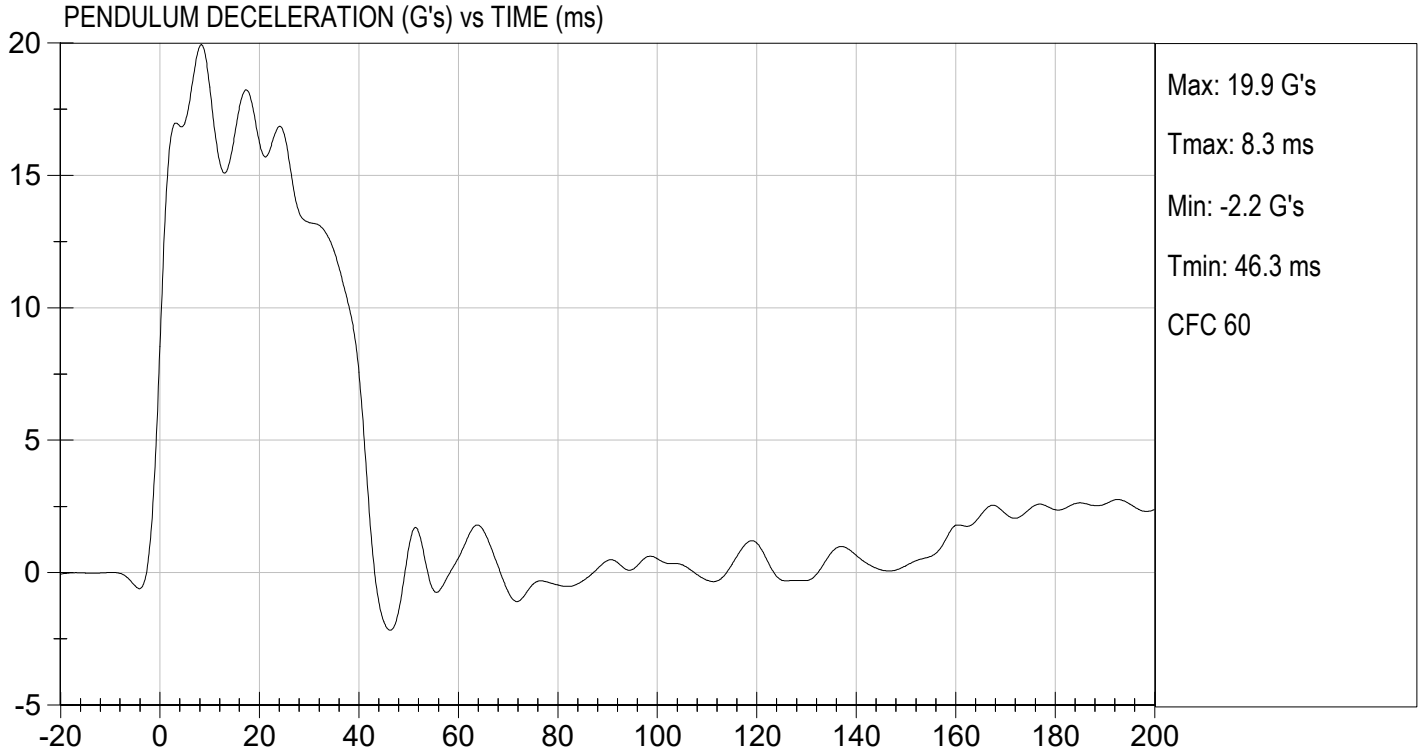
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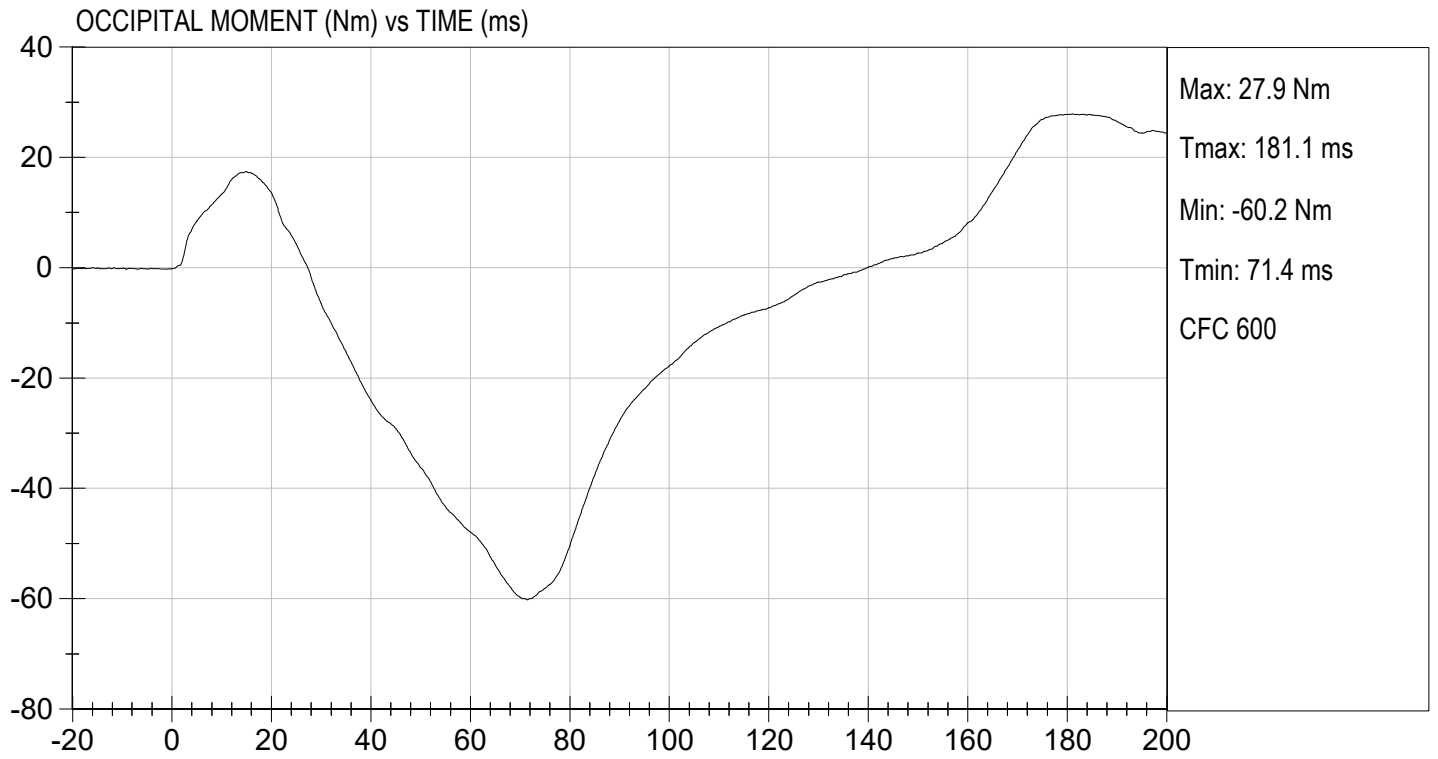
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	28	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.34	Pass
	20 ms	G's	14.00 to 19.00	16.24	Pass
	30 ms	G's	11.00 to 16.00	13.22	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	13.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	92.7	Pass
	Time	ms	72.0 to 82.0	77.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	158.8	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-60.2	Pass
	Time	ms	65.0 to 79.0	71.4	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	139.9	Pass
Overall Test Results					Pass


 Laboratory Technician

01/26/2023
 Test Date


 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

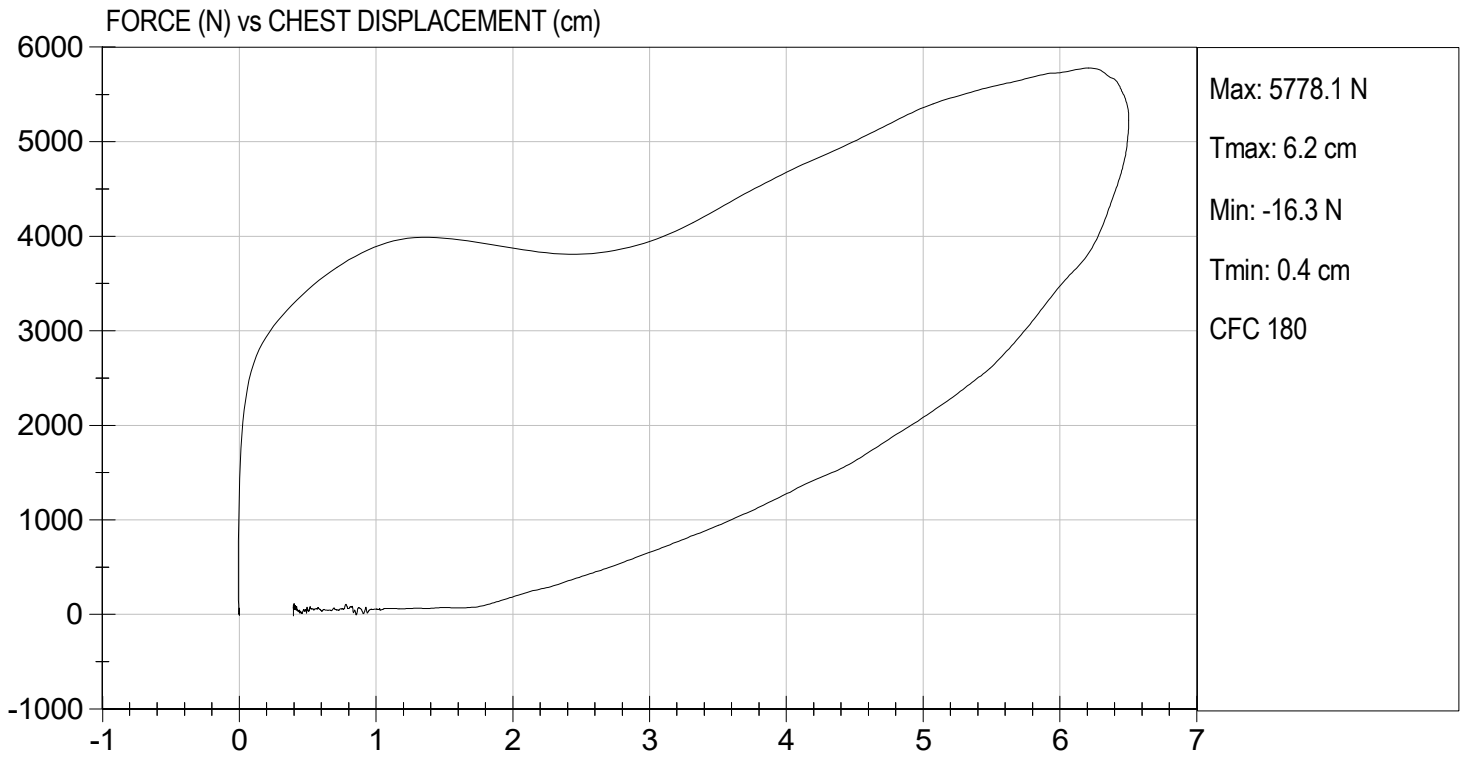
Test I.D: D230244

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.58 to 6.82	6.60	Pass
Peak Probe Force	N	5159 to 5893	5,778	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.50	Pass
Internal Hysteresis	%	69 to 85	73	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

01/25/2023
 Test Date

B. F. L.
 Approved By



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

ATD Serial No: 351

Test I.D: D230245

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	5,121	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

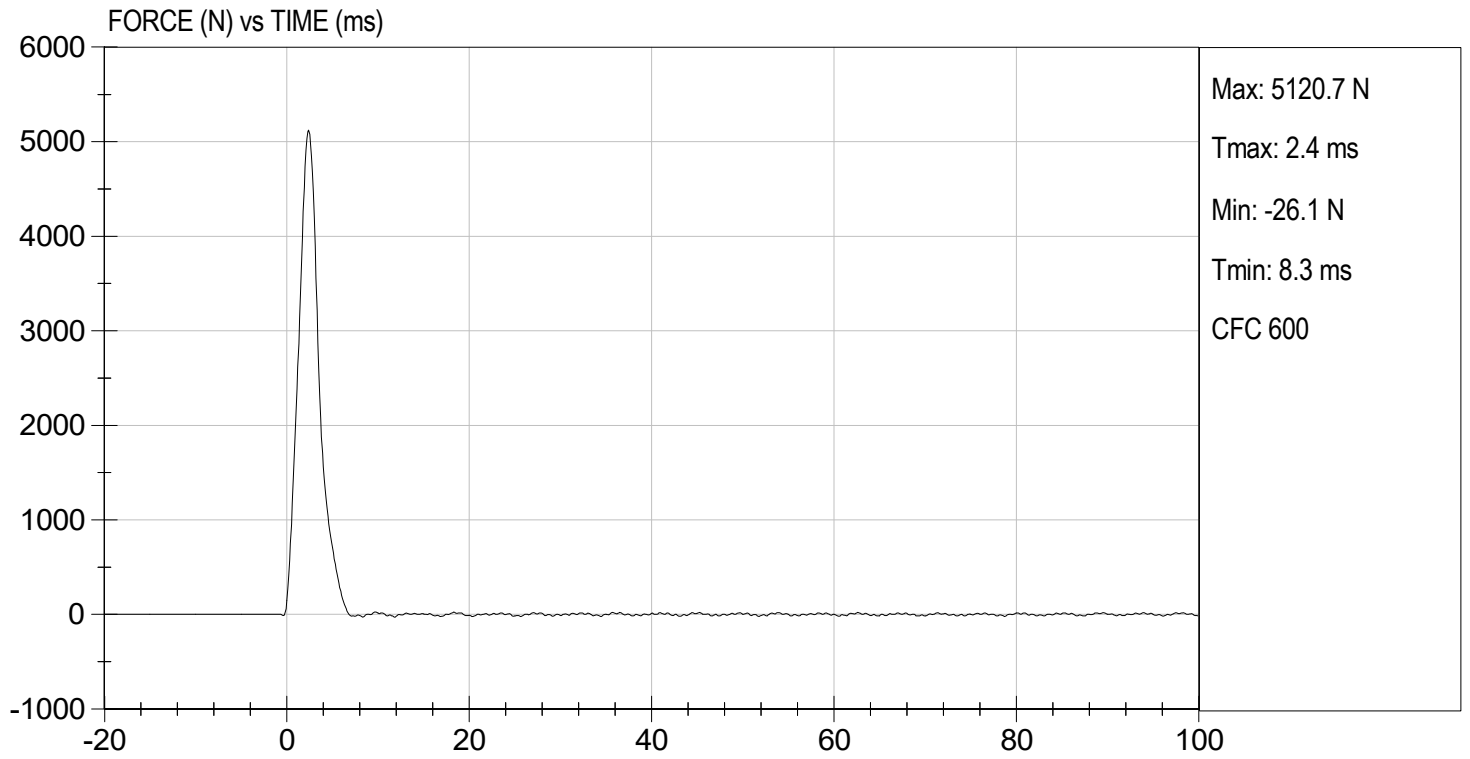
01/25/2023
 Test Date

B. F. K.
 Approved By



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

TEST DATE: 01/25/2023
TEST #: D230245



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

ATD Serial No: 351

Test I.D: D230246

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5,557	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

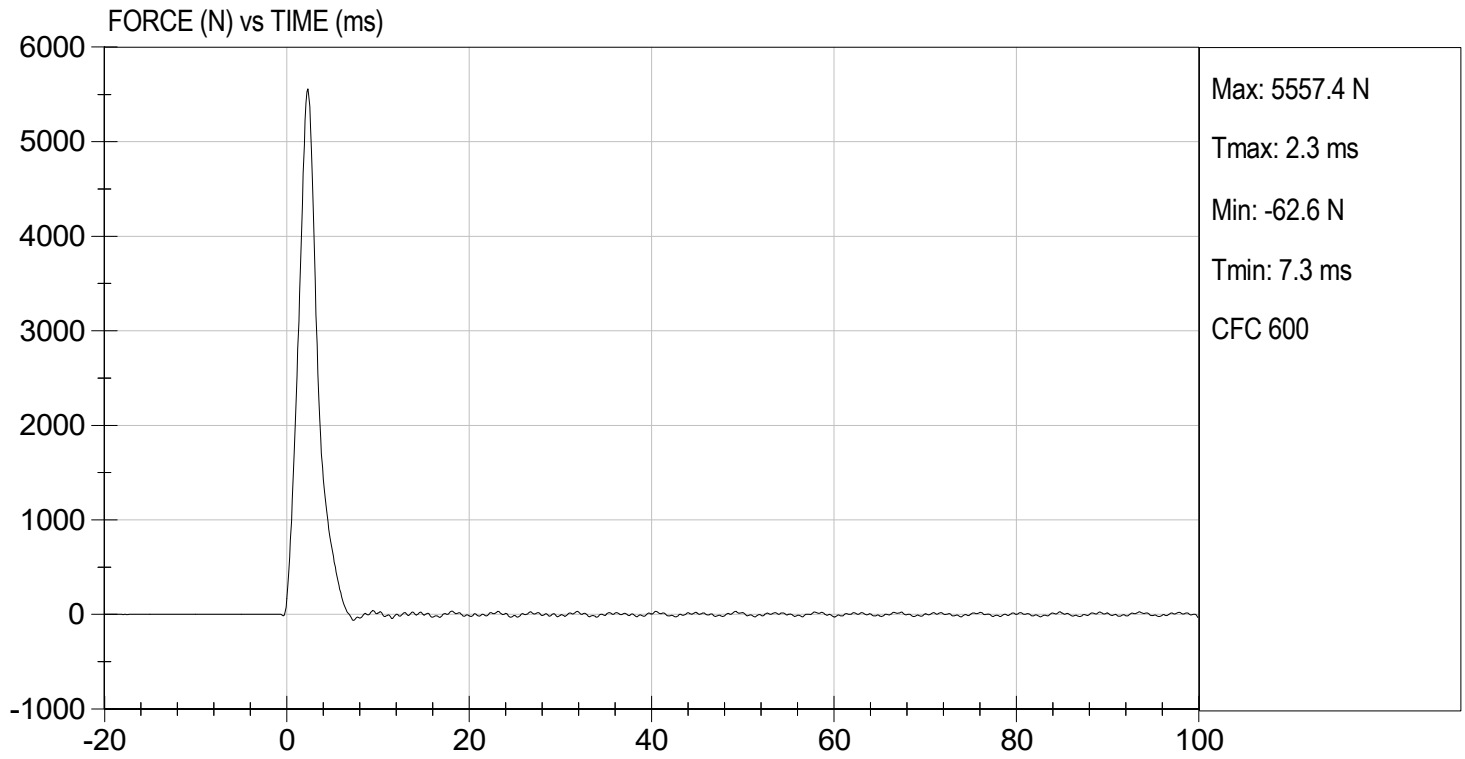
01/25/2023
 Test Date

B. F. H.
 Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.86 ft/s, 2.09 m/s

TEST DATE: 01/25/2023
TEST #: D230246



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

ATD Serial No: 351

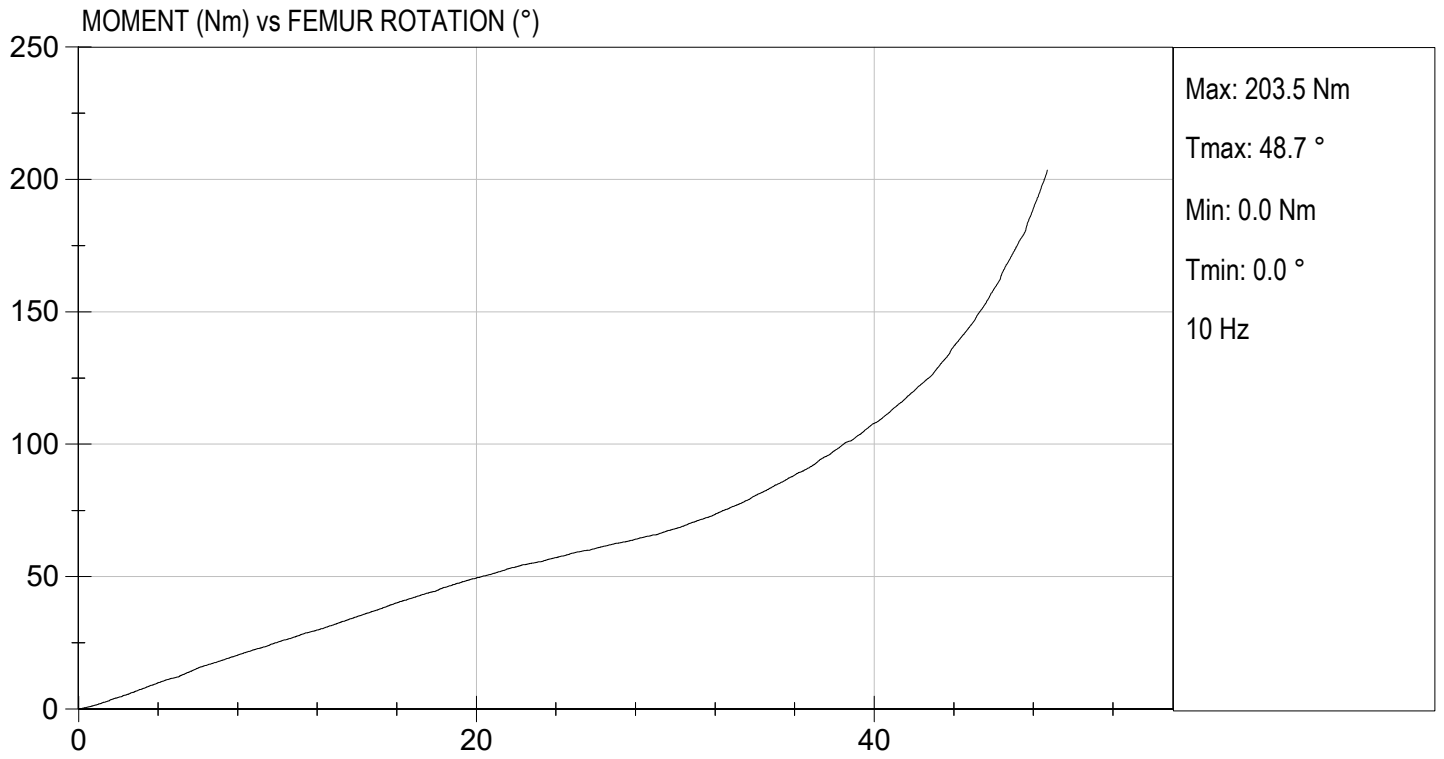
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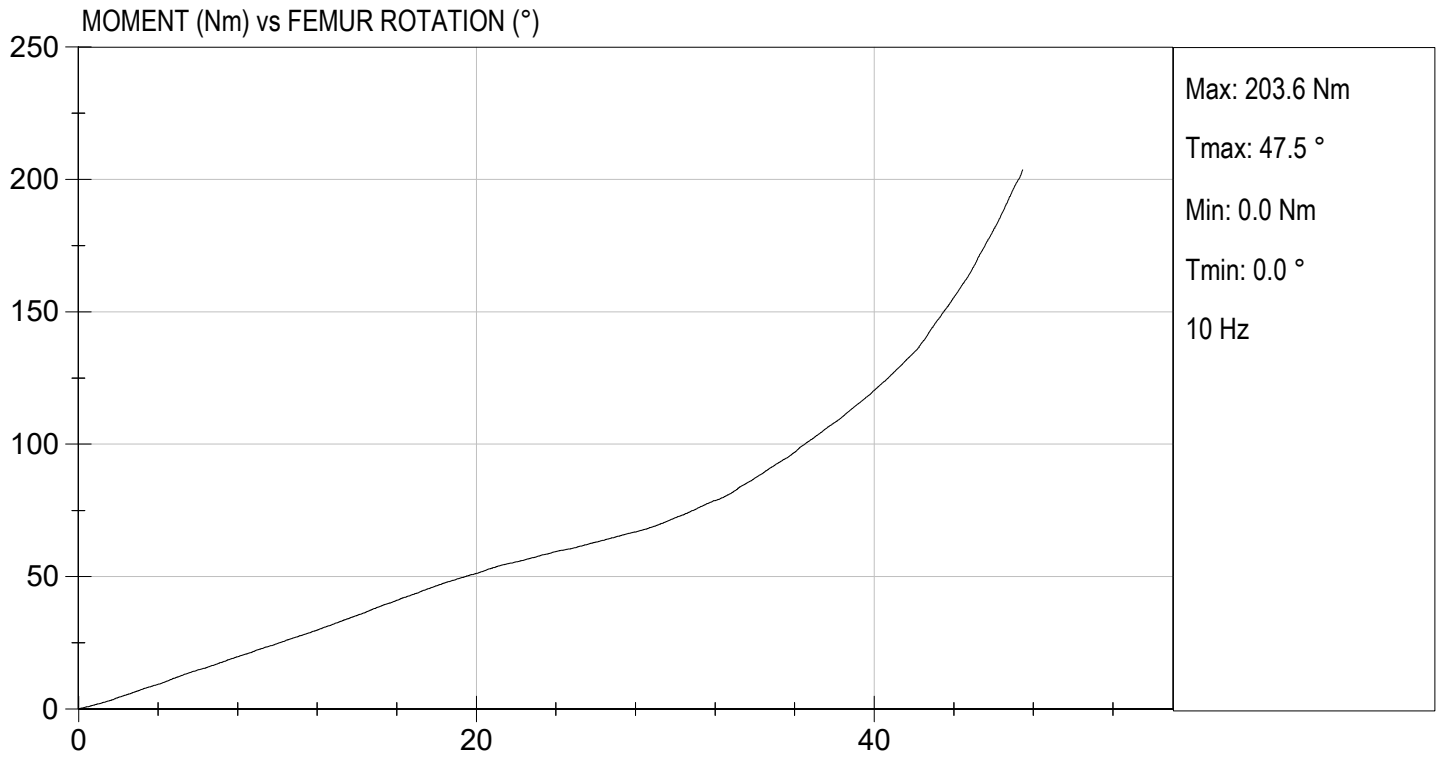
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	27	27	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.5	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	68.1	72.2	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	48.7	47.5	Pass
Overall Test Results					Pass

Nathaniel Benjamin
 Laboratory Technician

01/25/2023
 Test Date

B. F. L.
 Approved By





CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

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

ATD Serial No: 351

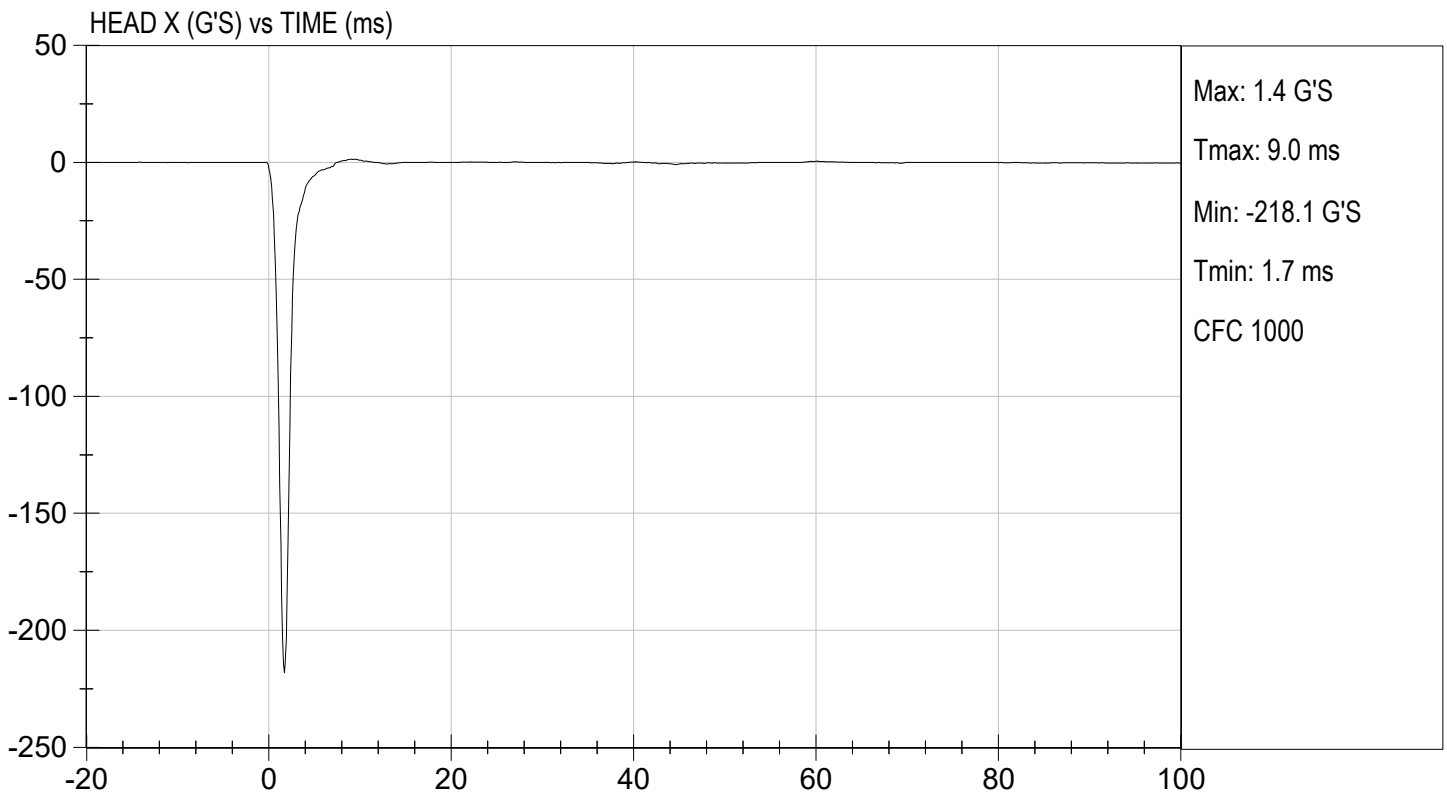
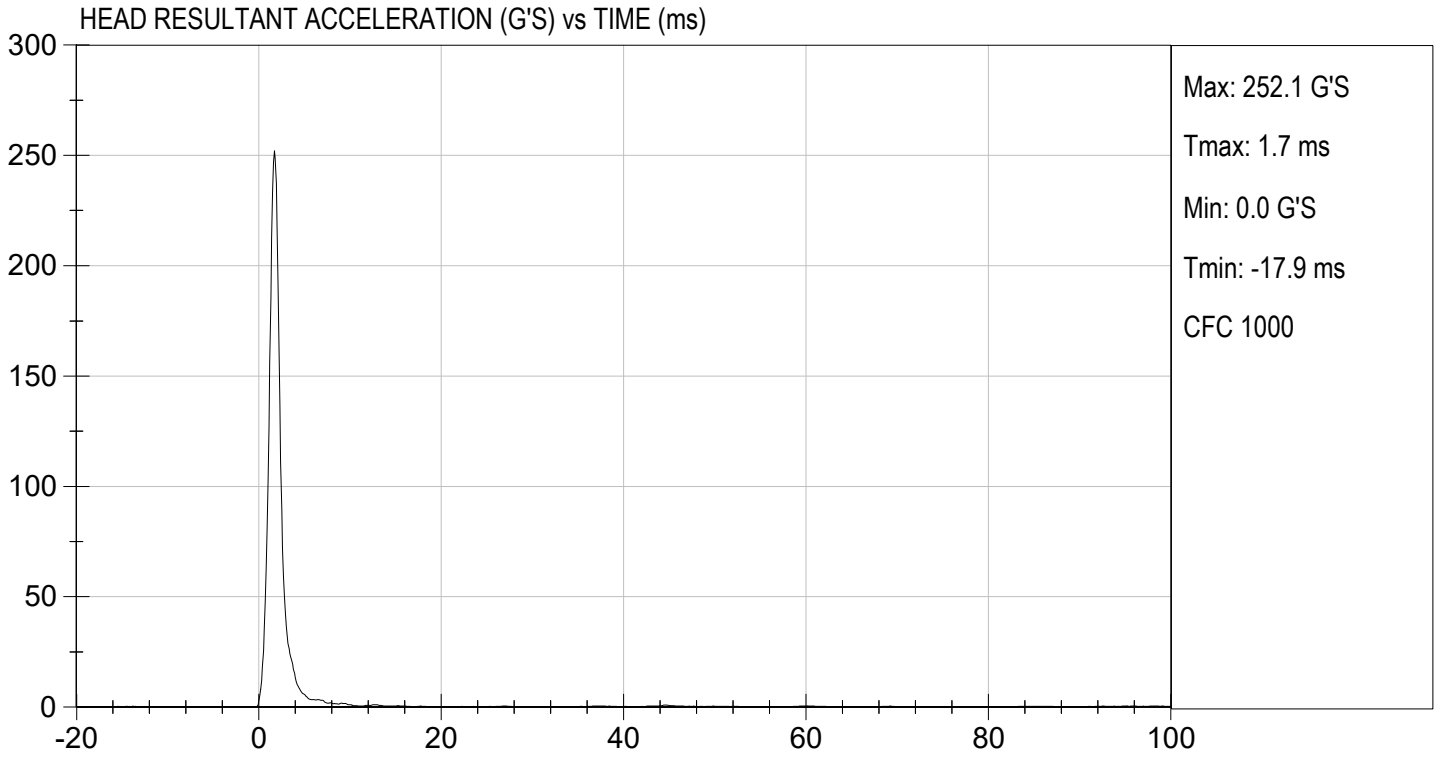
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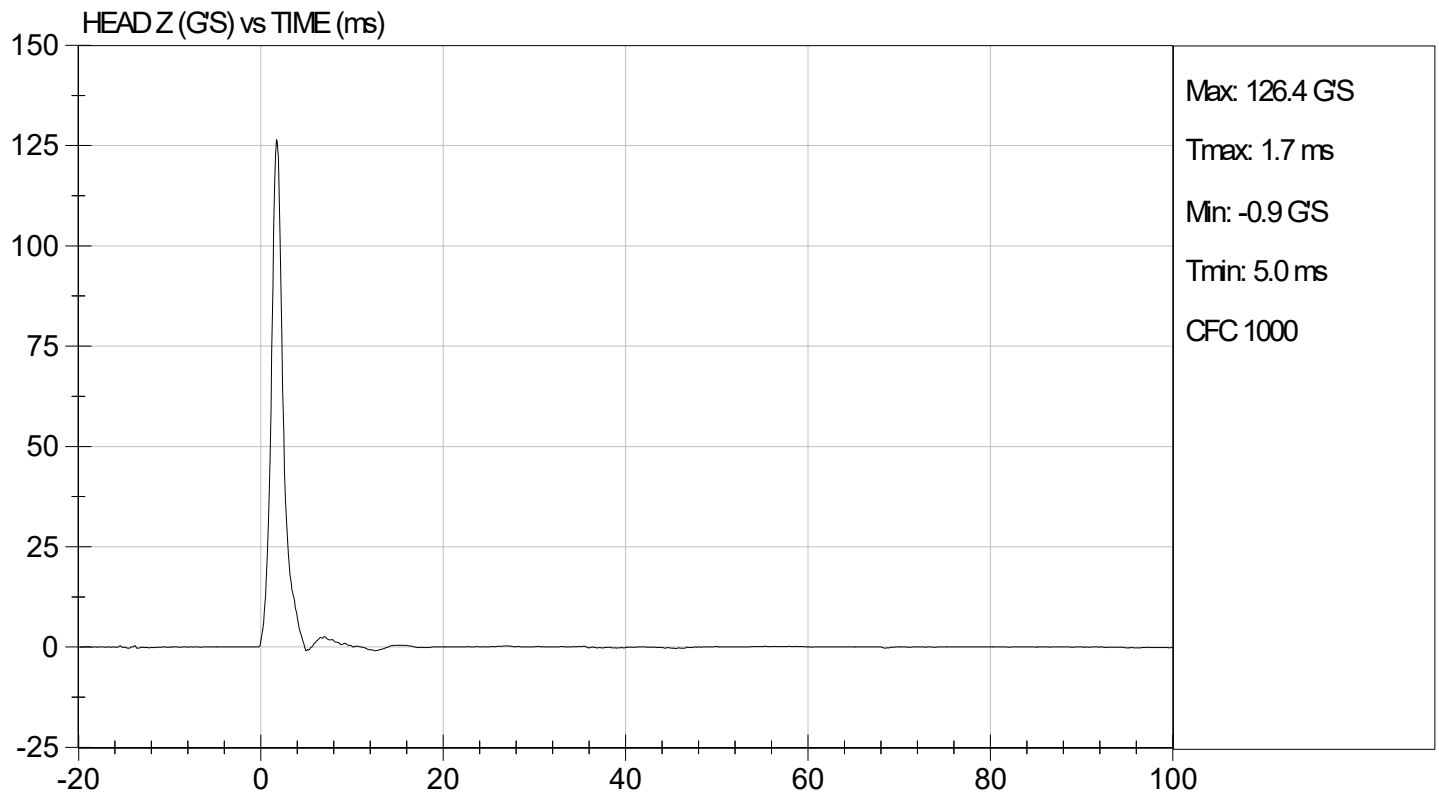
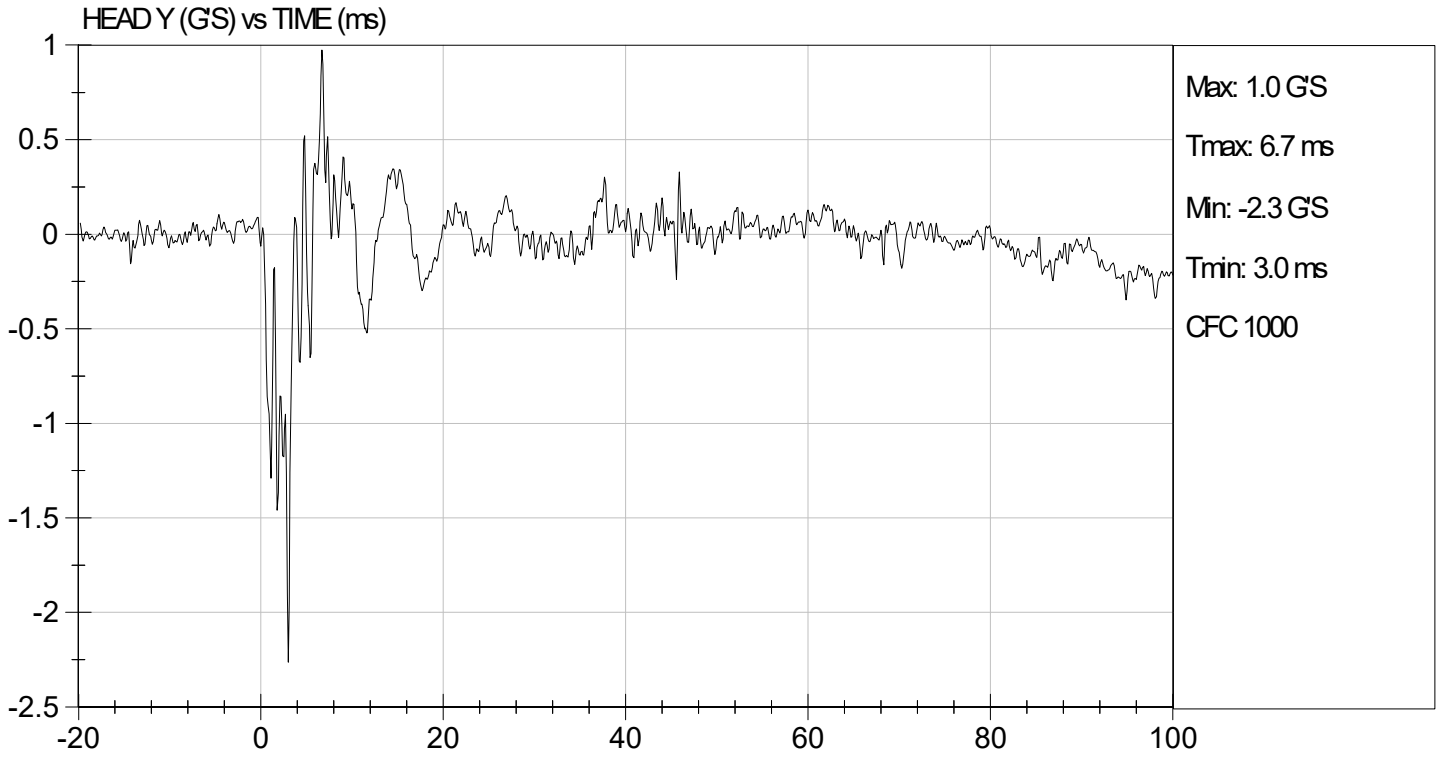
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	225 to 275	252	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-2.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

02/07/2023
 Test Date

B. F. K.
 Approved By





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

ATD Serial No: 351

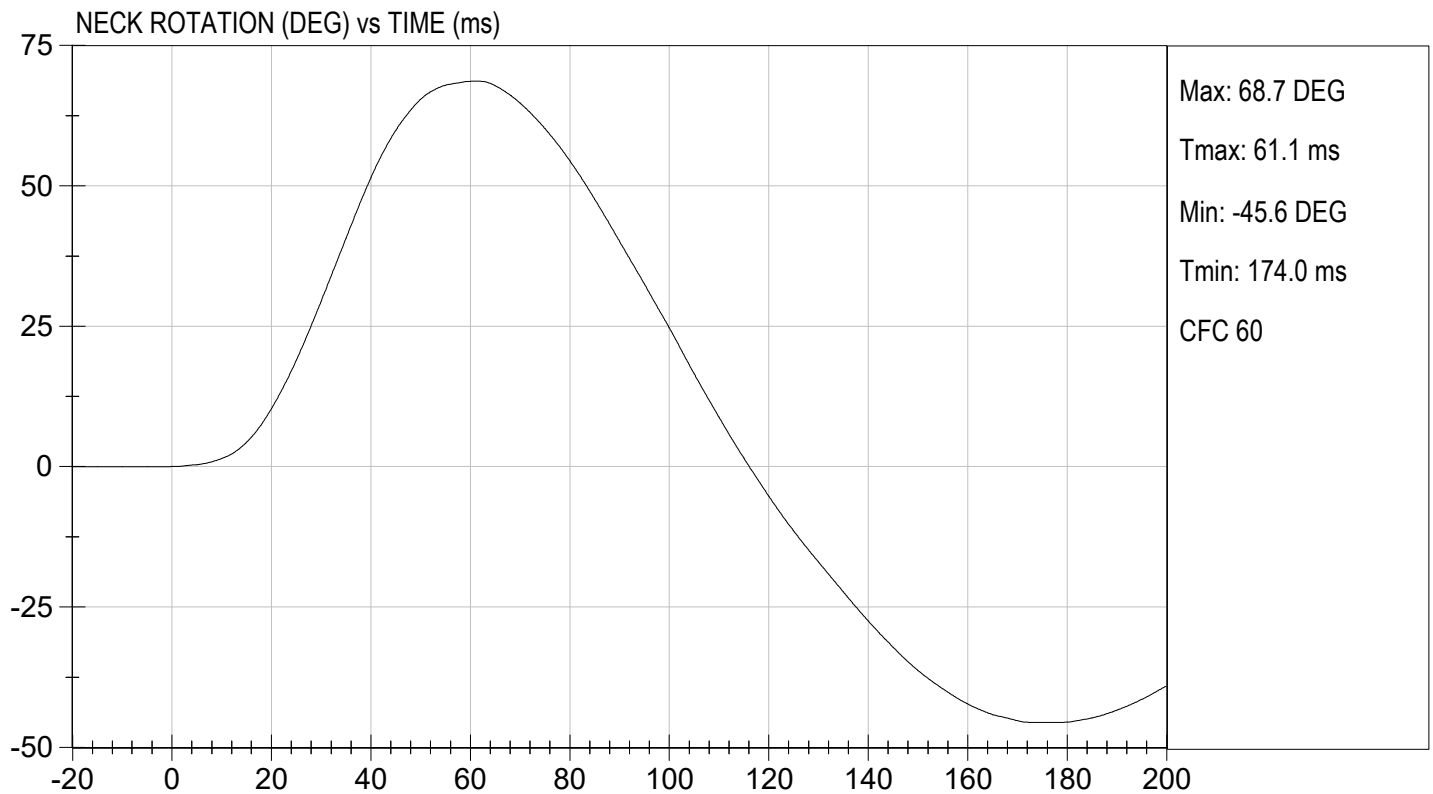
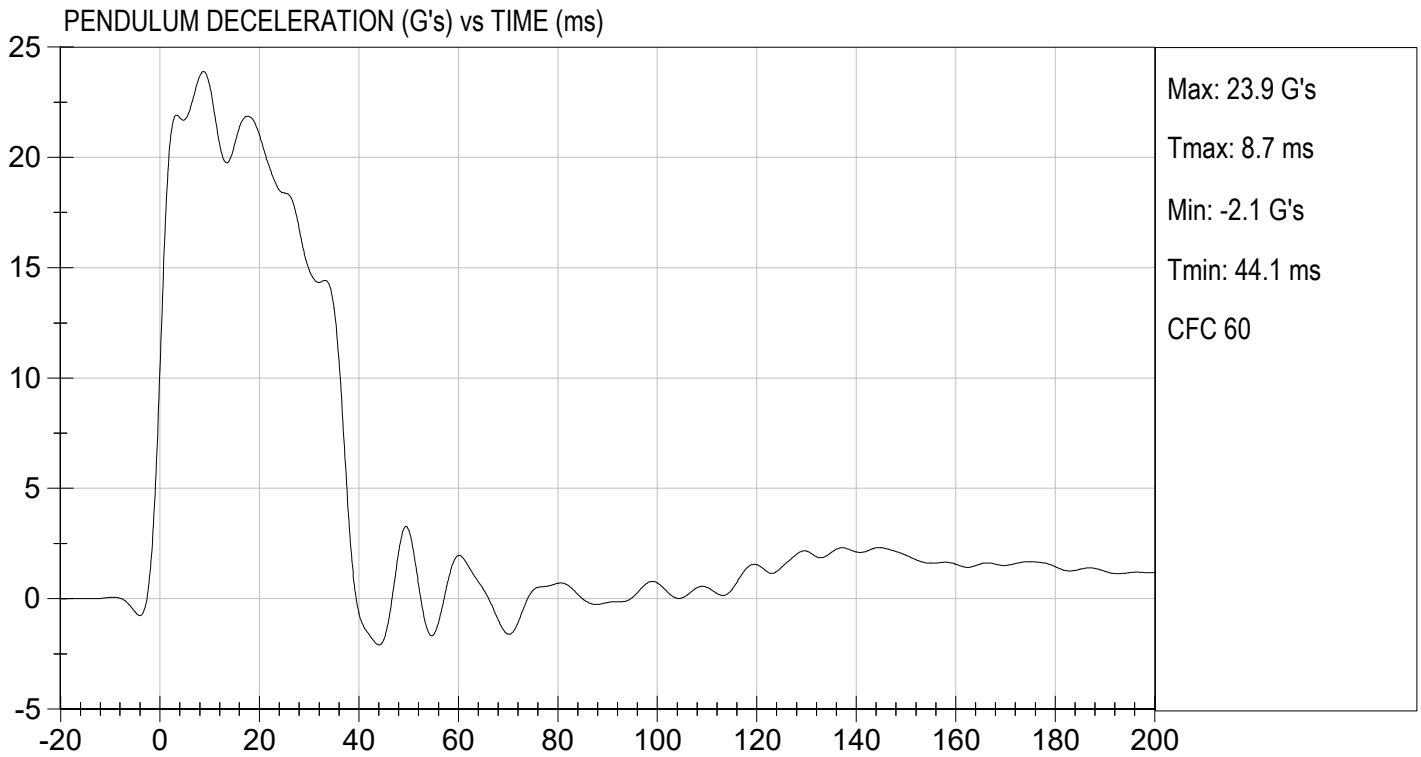
Test I.D: D230392

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	27	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.25	Pass
	20 ms	G's	17.60 to 22.60	21.02	Pass
	30 ms	G's	12.50 to 18.50	14.90	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.8	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.7	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	68.7	Pass
	Time	ms	57.0 to 64.0	61.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	116.2	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	92.7	Pass
	Time	ms	47.0 to 58.0	49.1	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	99.8	Pass
Overall Test Results					Pass

Nathaniel Benjamin
 Laboratory Technician

02/07/2023
 Test Date

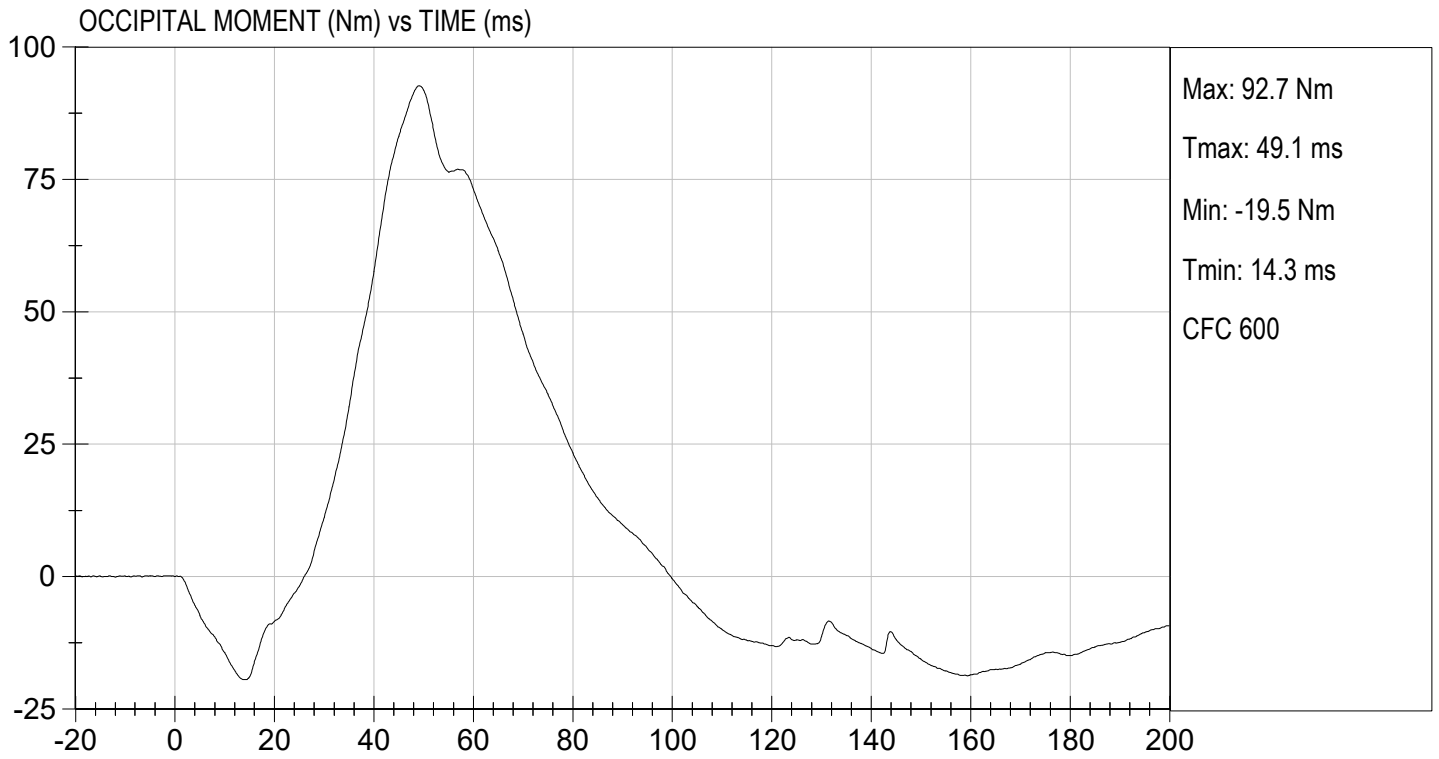
B. F. K.
 Approved By





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

TEST DATE: 02/07/2023
TEST #: D230392



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

ATD Serial No: 351

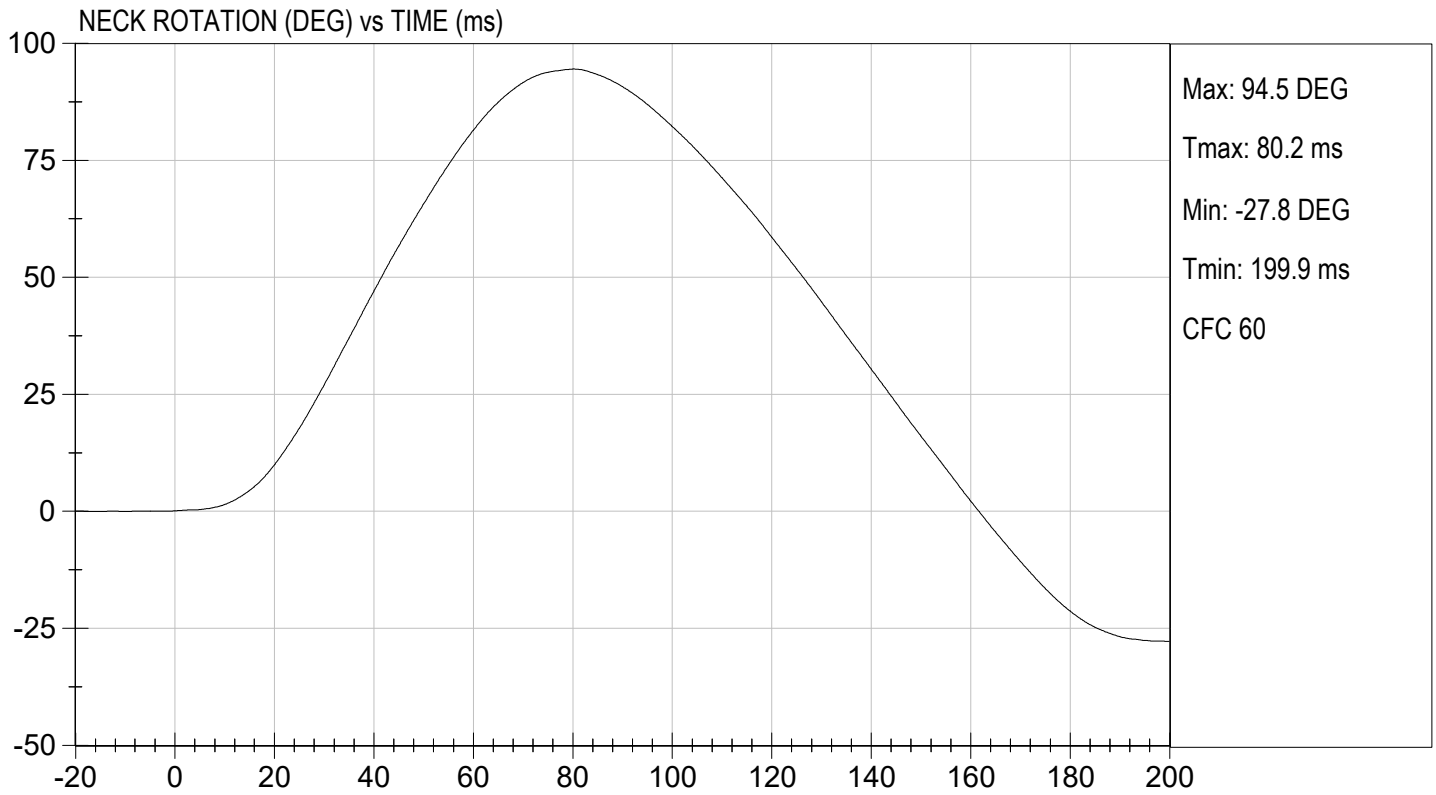
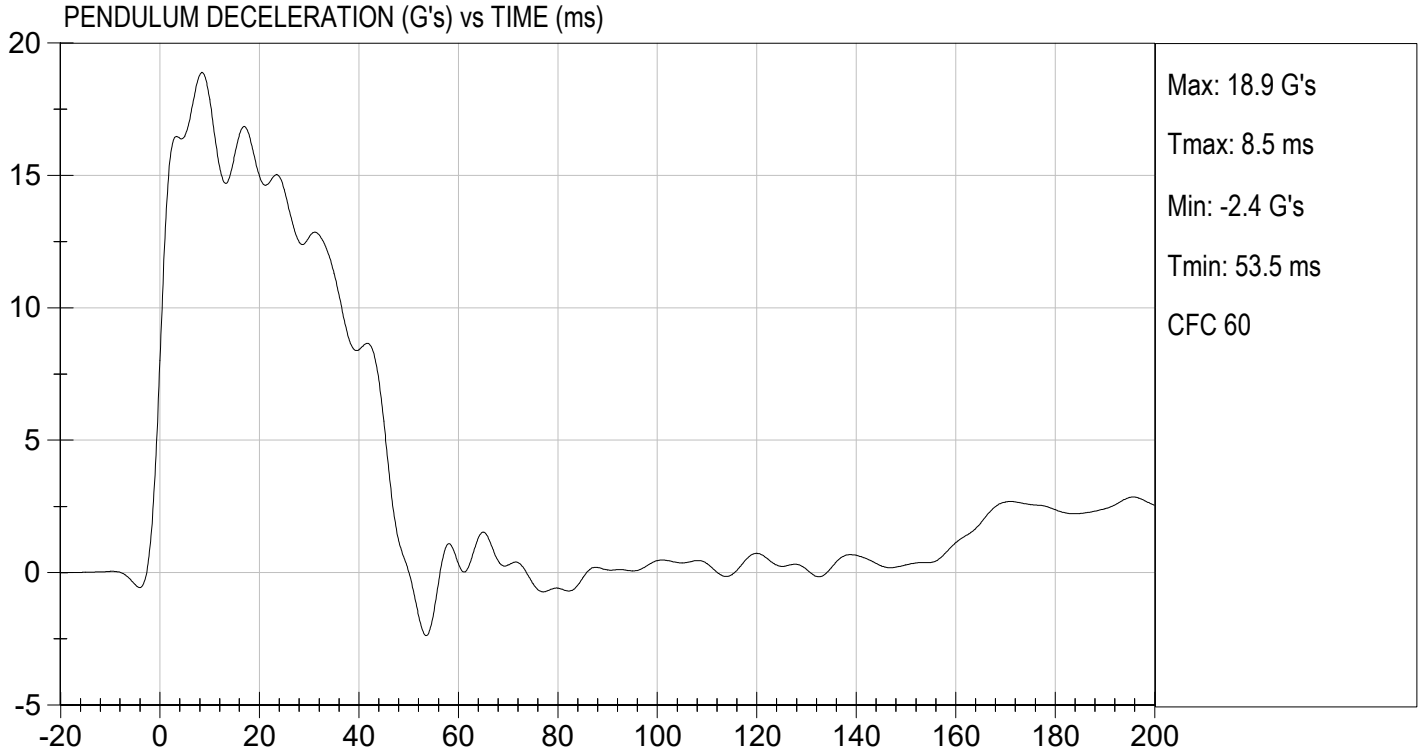
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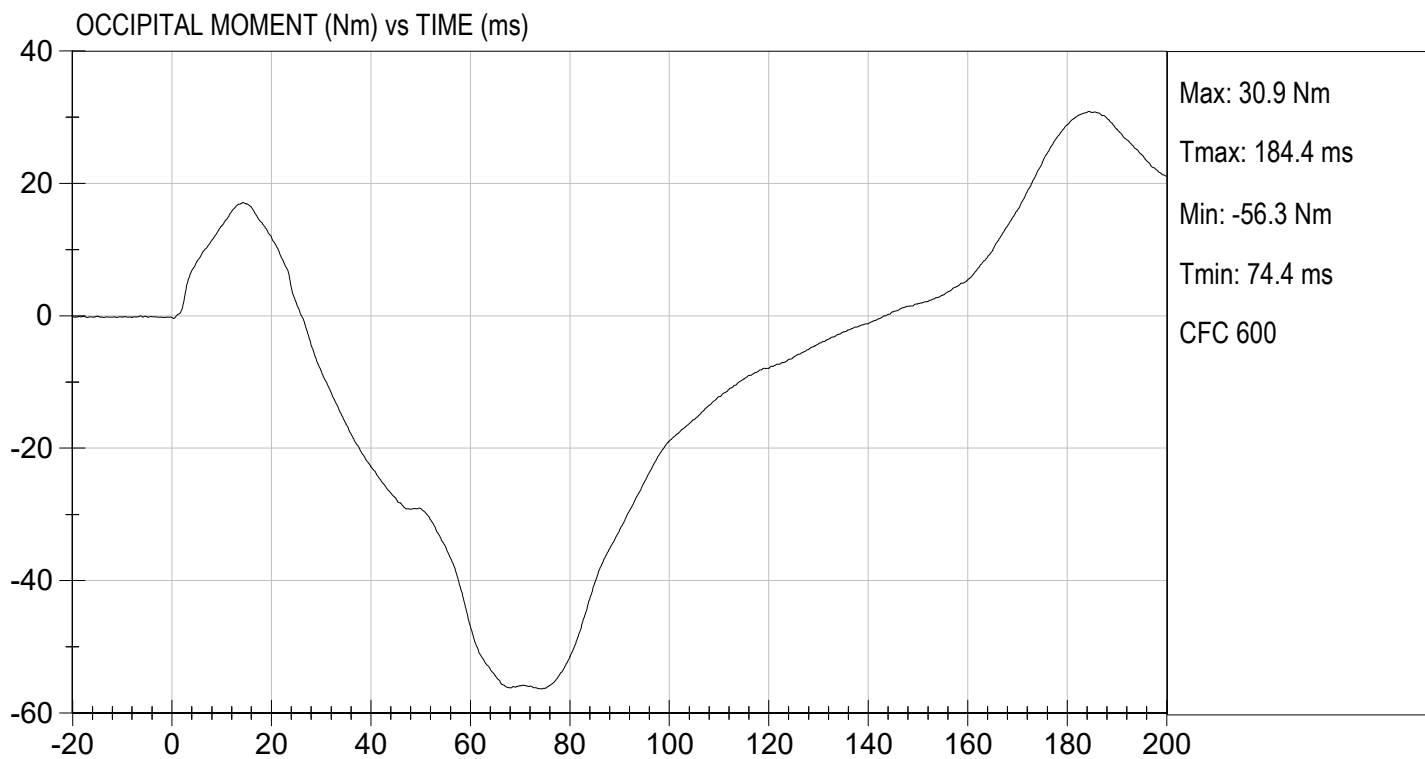
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	27	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	17.87	Pass
	20 ms	G's	14.00 to 19.00	14.98	Pass
	30 ms	G's	11.00 to 16.00	12.68	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	45.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	94.5	Pass
	Time	ms	72.0 to 82.0	80.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	161.8	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-56.3	Pass
	Time	ms	65.0 to 79.0	74.4	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	143.4	Pass
Overall Test Results					Pass

Nathaniel Benjamin
 Laboratory Technician

02/07/2023
 Test Date

B. F. K.
 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

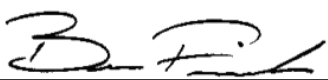
ATD Serial No: 351

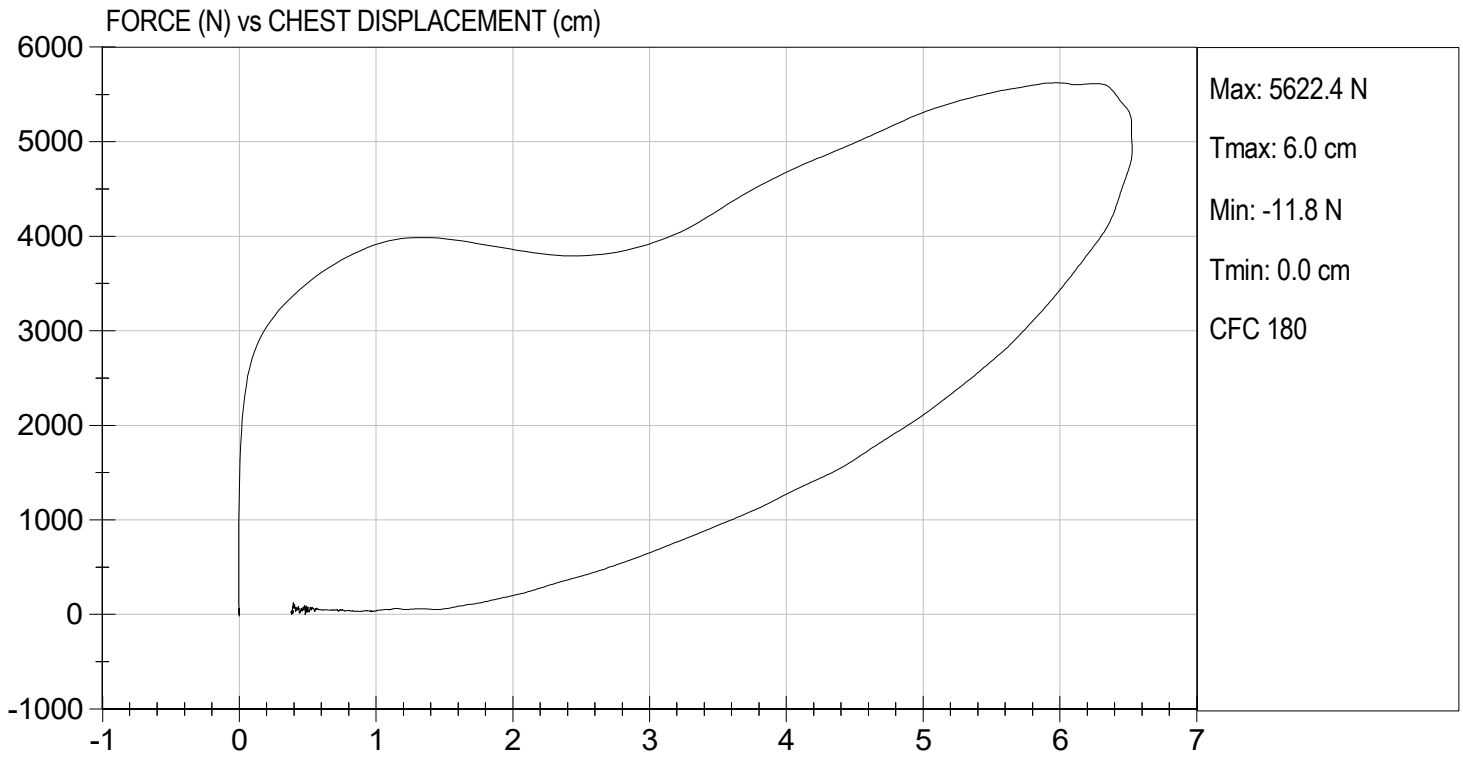
Test I.D.: D230394

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,622	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.53	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Overall Test Results				Pass


 Laboratory Technician

02/09/2023
 Test Date


 Approved By



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

ATD Serial No: 351

Test I.D: D230395

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/s	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5,451	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

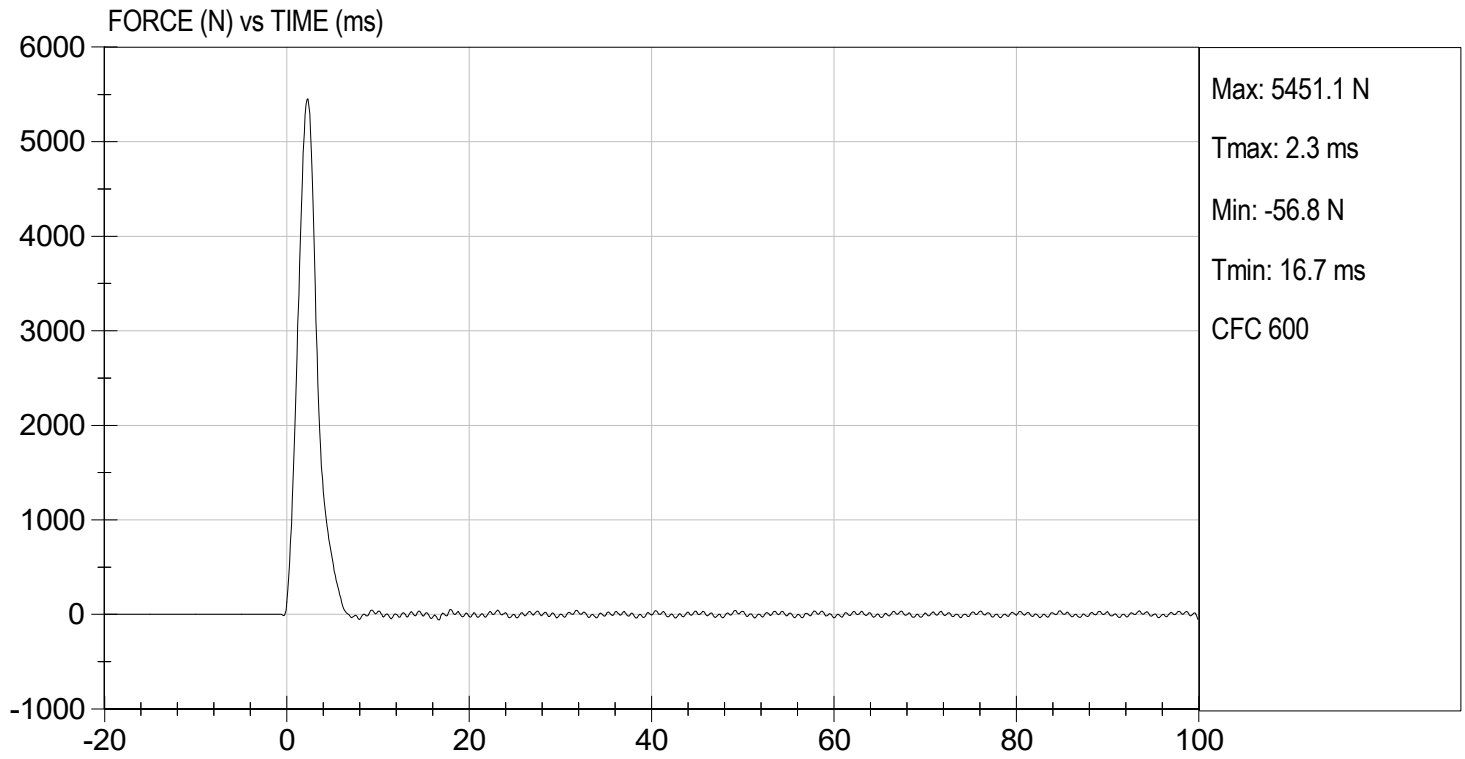
02/09/2023
 Test Date

B.F.L.
 Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.86 ft/s, 2.09 m/s

TEST DATE: 02/09/2023
TEST #: D230395



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

ATD Serial No: 351

Test I.D: D230396

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.07	Pass
Peak Probe Force	N	4715 to 5782	4,974	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

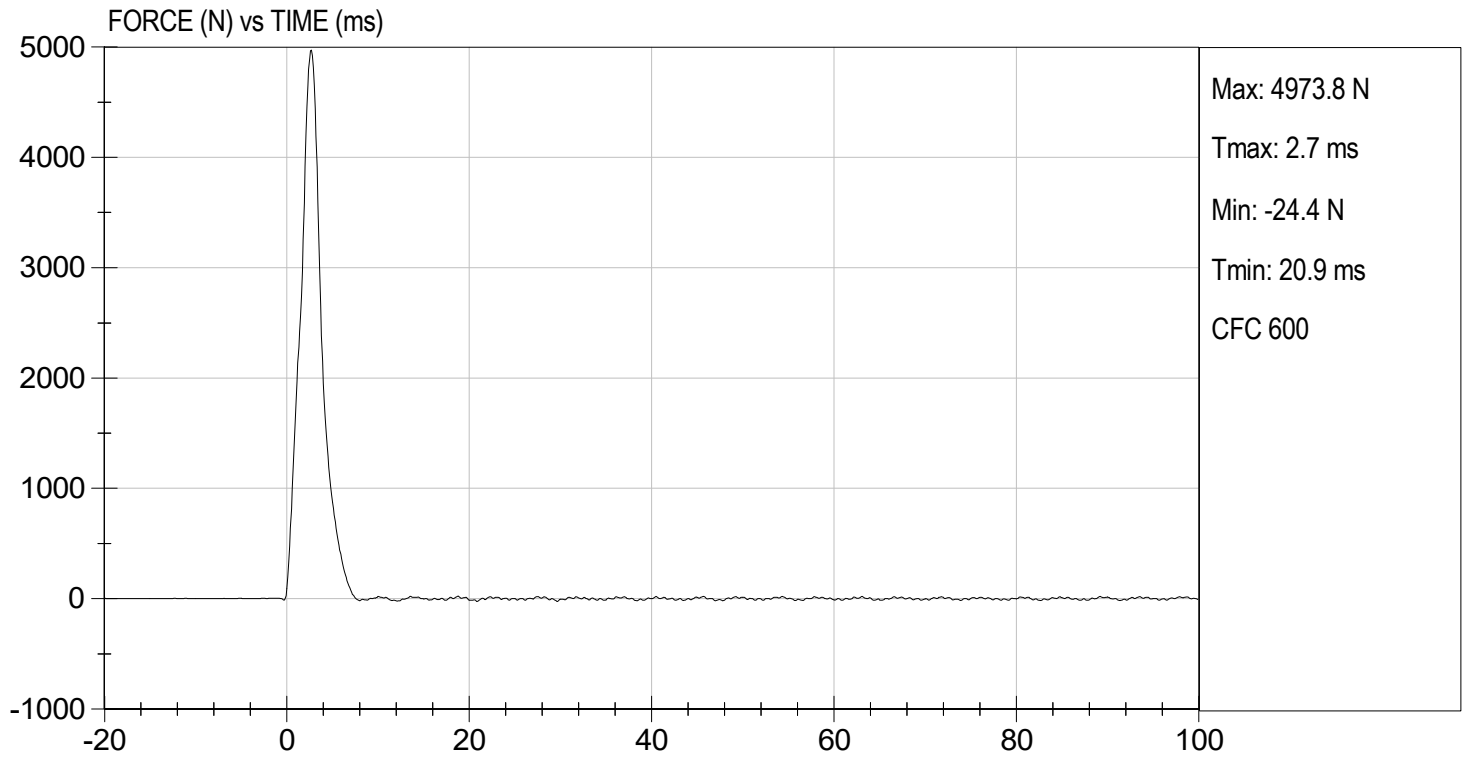
02/09/2023
 Test Date

B. F. L.
 Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.78 ft/s, 2.07 m/s

TEST DATE: 02/09/2023
TEST #: D230396



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

ATD Serial No: 351

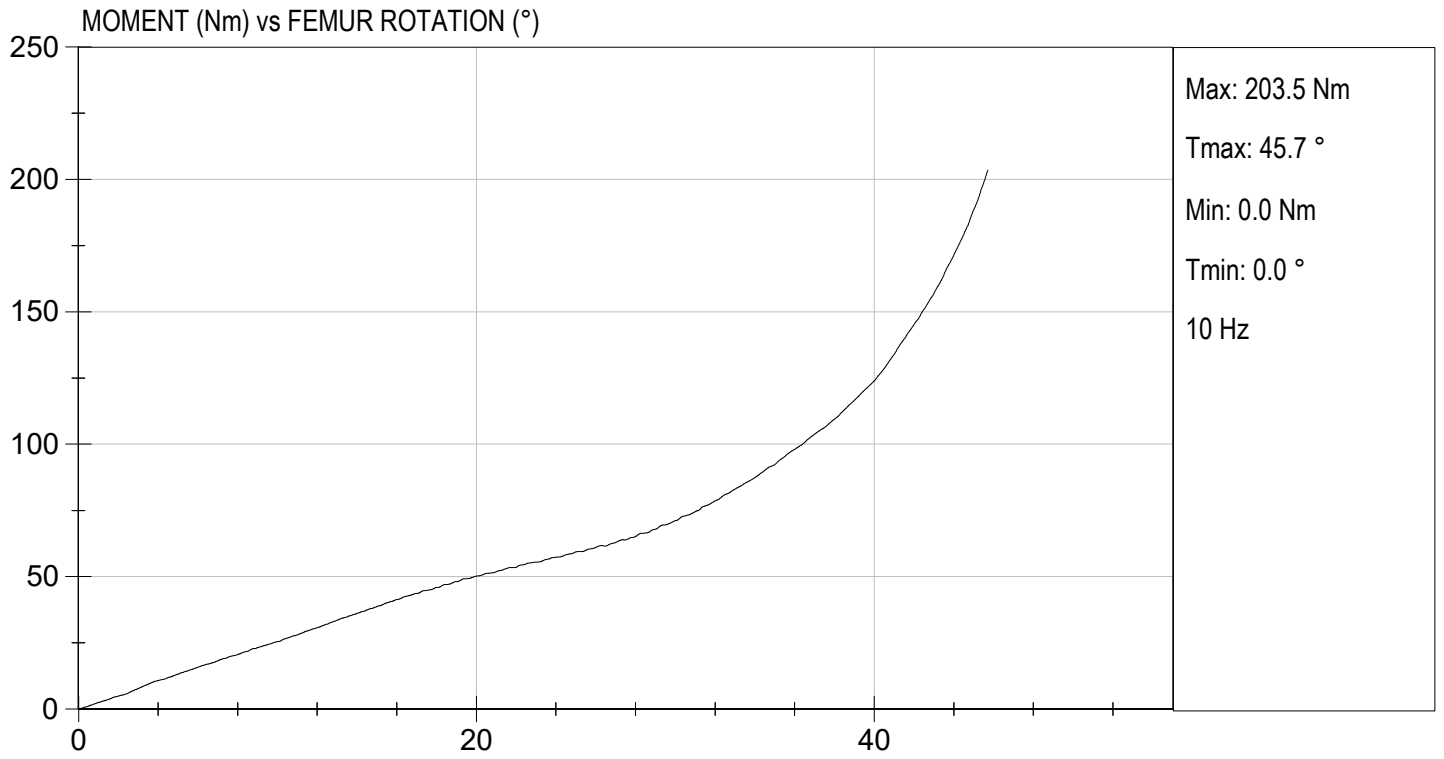
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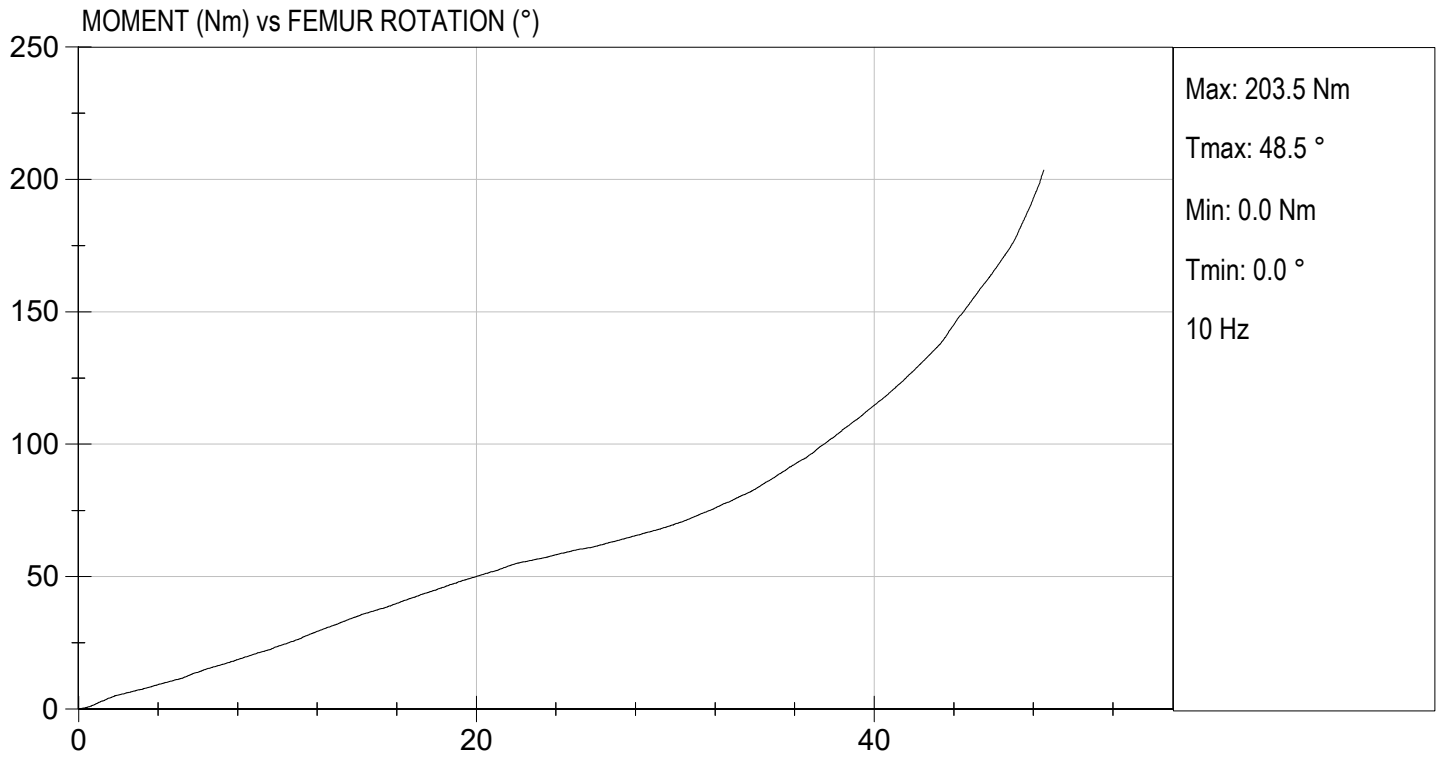
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.7	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	26	26	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.6	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	71.1	69.9	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	45.7	48.5	Pass
Overall Test Results					Pass

Nathaniel Benjamin
 Laboratory Technician

02/09/2023
 Test Date

B. F. L.
 Approved By





CALIBRATION TEST RESULTS

PRE-TEST

HYBRID III 5TH 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: D230231

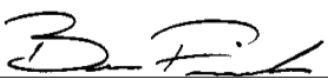
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	250 to 300	291	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-3.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass



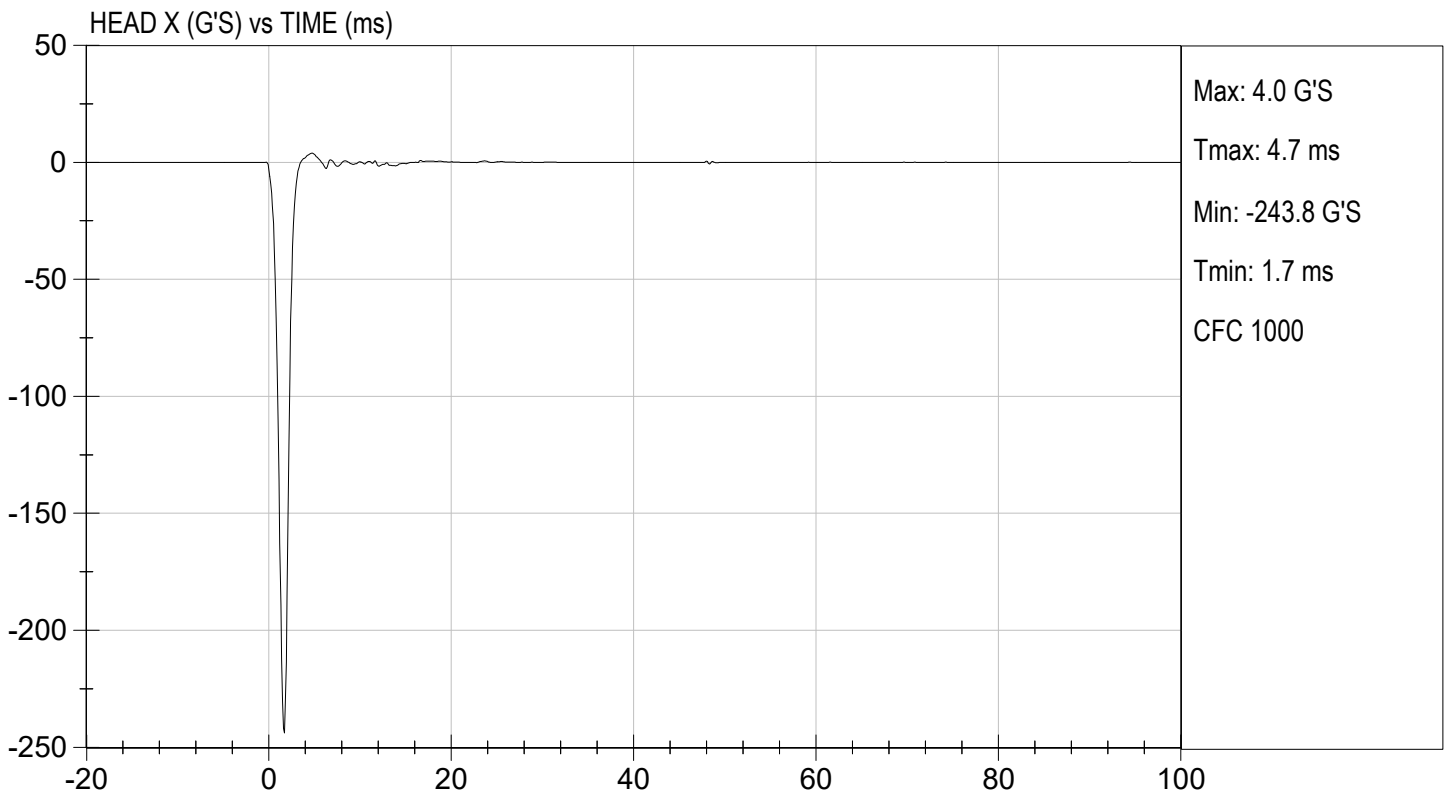
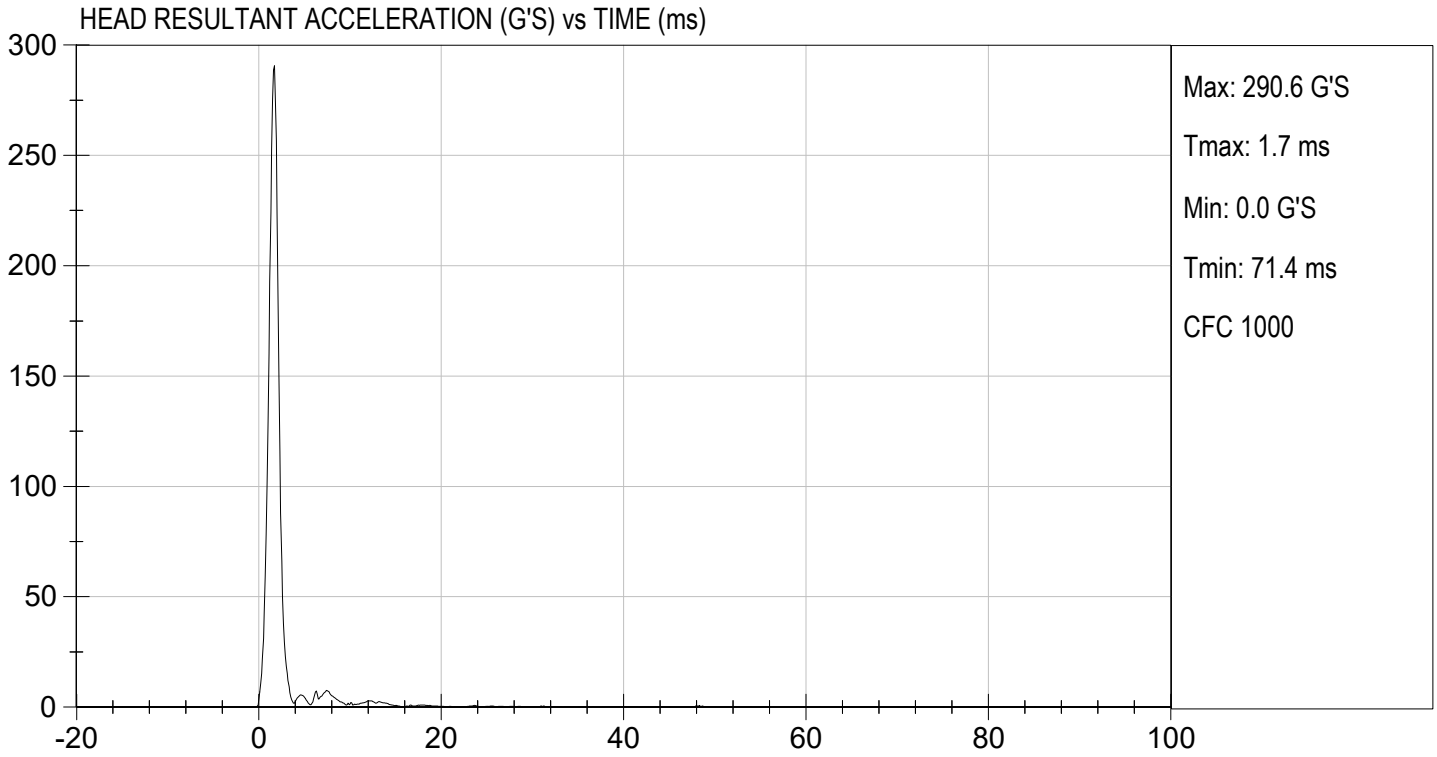
 Laboratory Technician

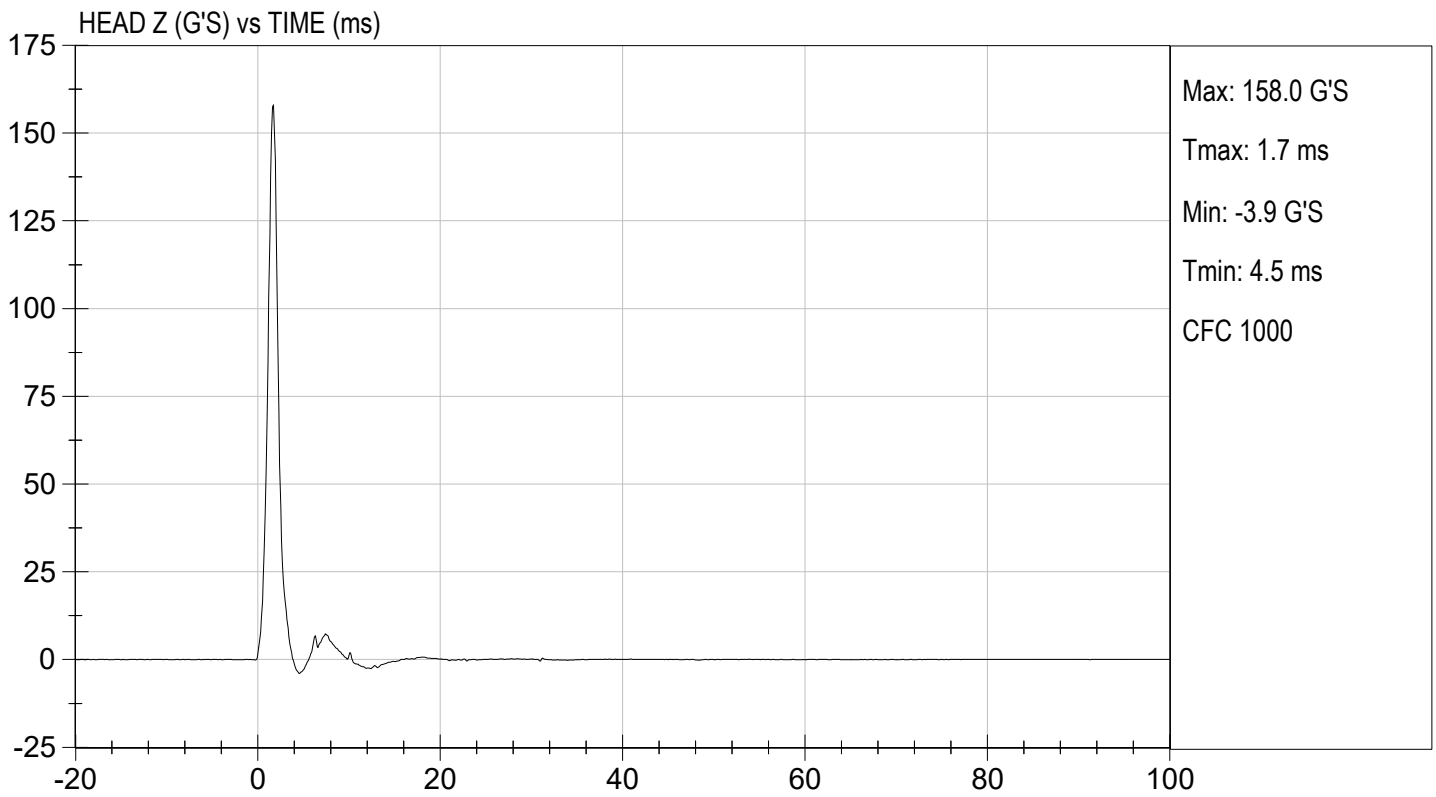
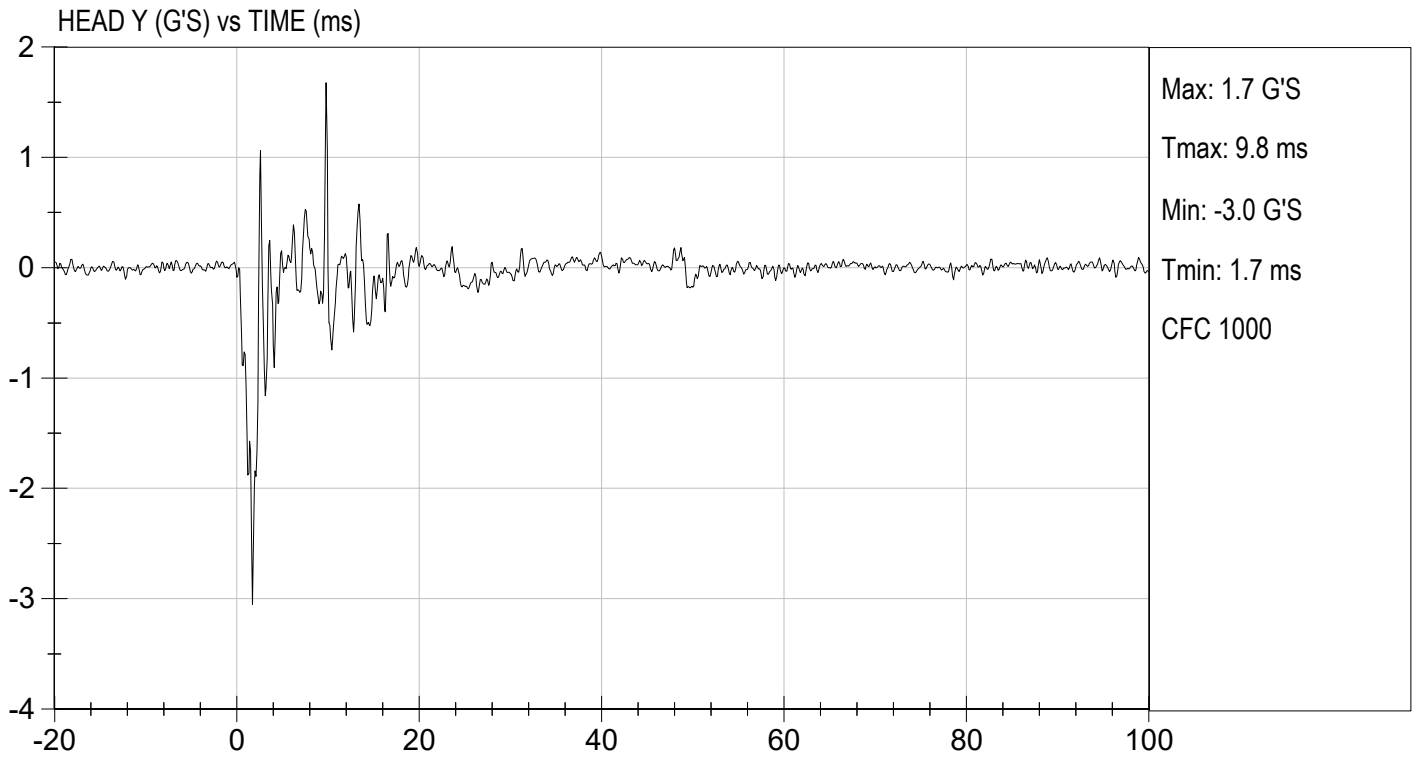
01/25/2023

 Test Date



 Approved By





MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 142

Test I.D: D230232

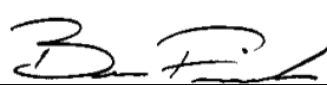
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	28	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.3	Pass
	20 ms	m/s	4.0 to 5.0	4.6	Pass
	30 ms	m/s	5.8 to 7.0	6.7	Pass
D Plane Rotation	Max	deg	77 to 91	82	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	72	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	84	Pass
Overall Results					Pass



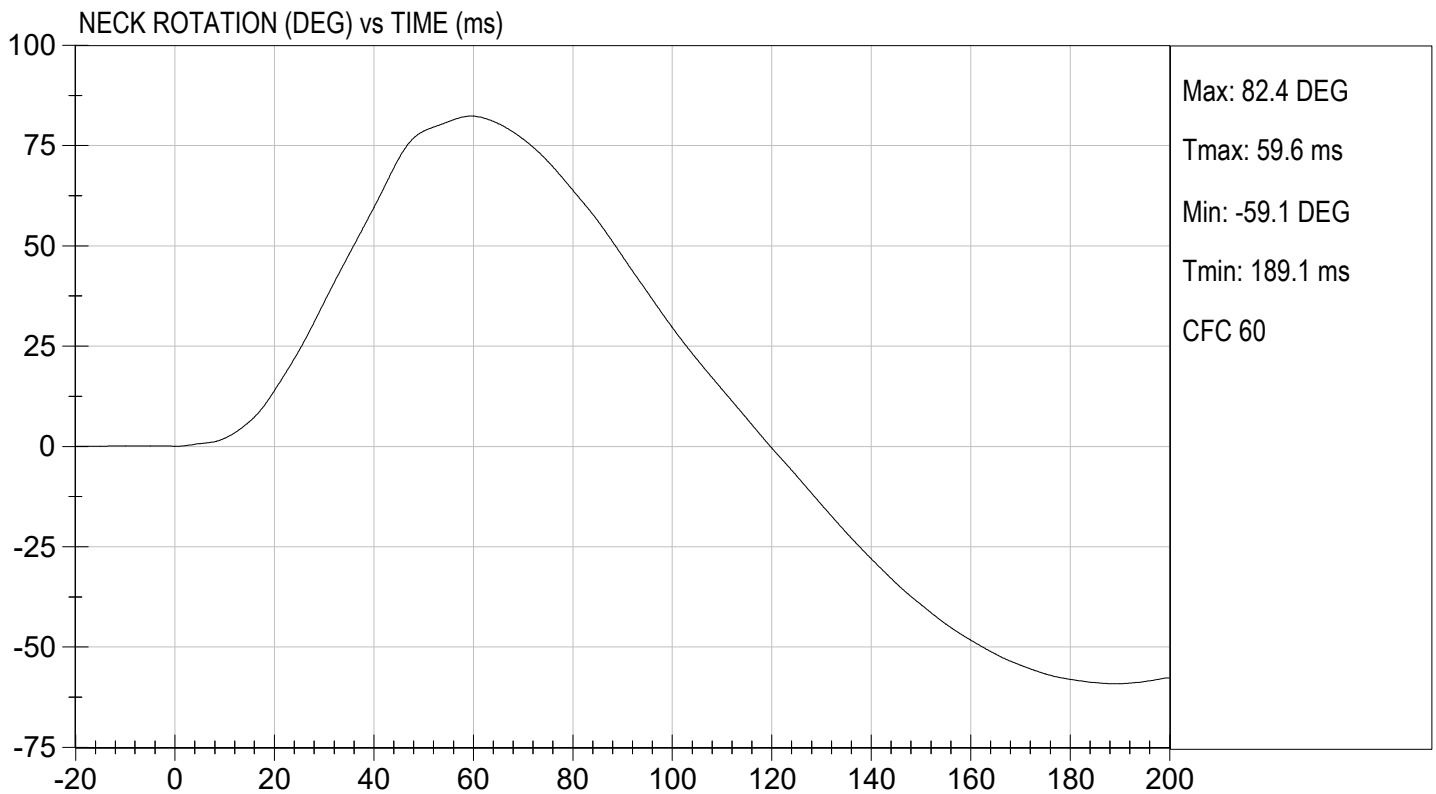
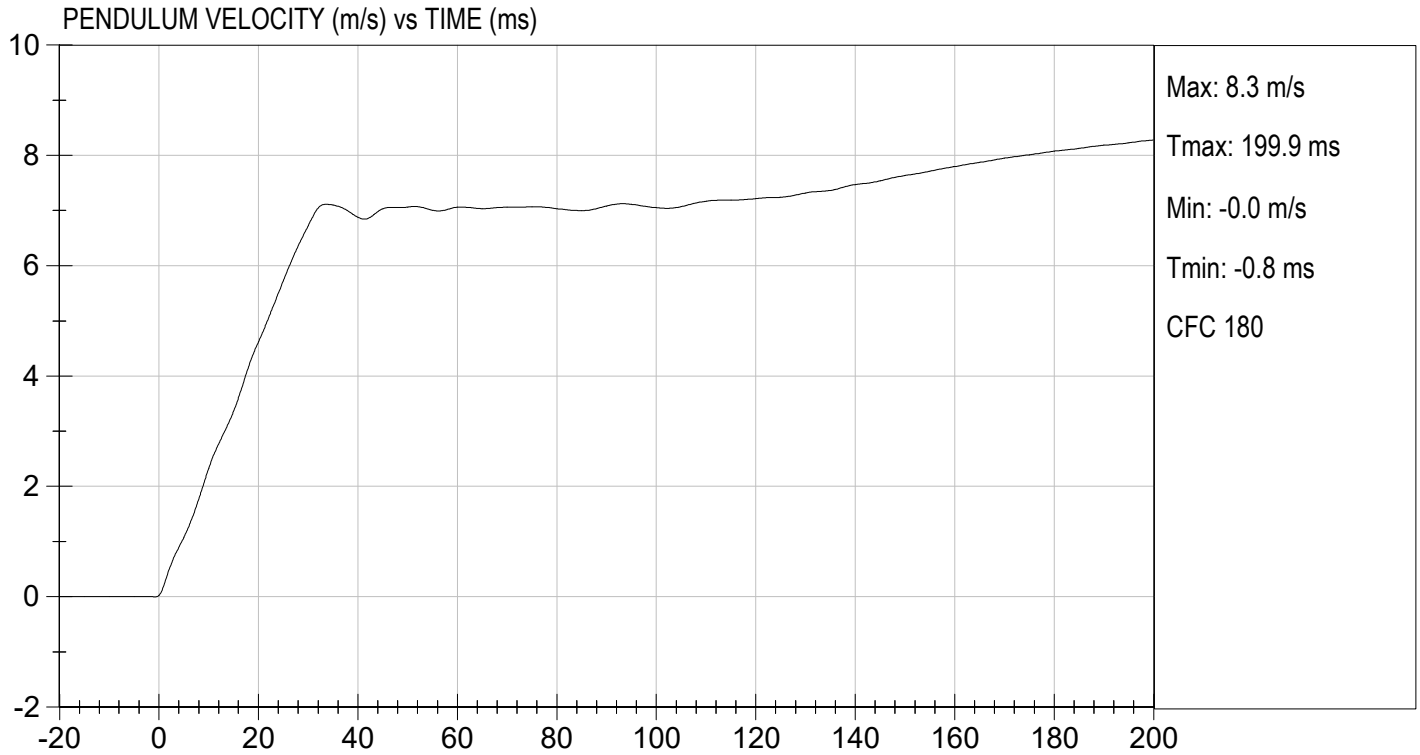
 Laboratory Technician

01/26/2023

 Test Date



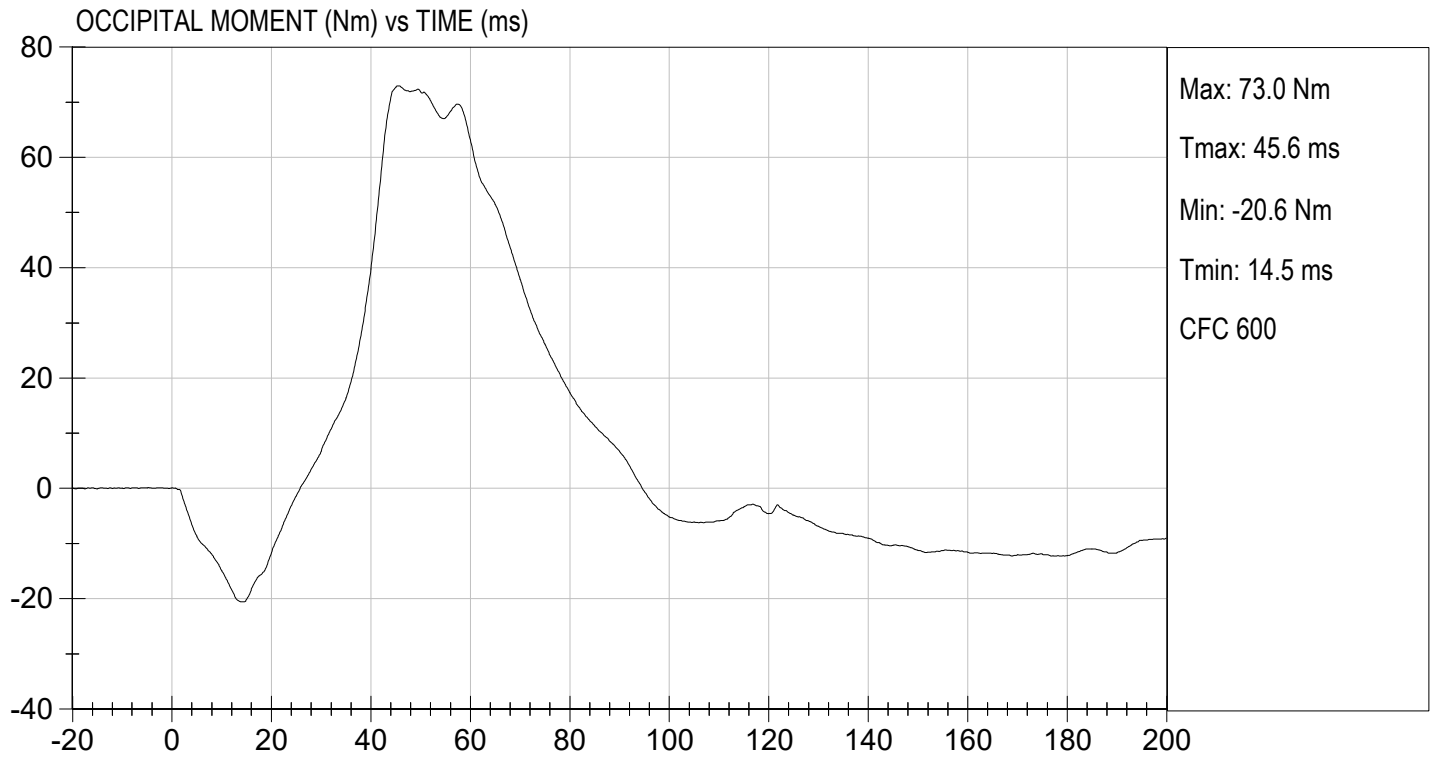
 Approved By





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 01/26/2023
TEST #: D230232



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 142

Test I.D.: D230233

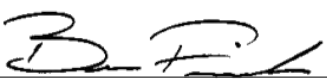
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	28	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.4	Pass
D Plane Rotation	Max	deg	99 to 114	112	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-57	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	104	Pass
Overall Results					Pass



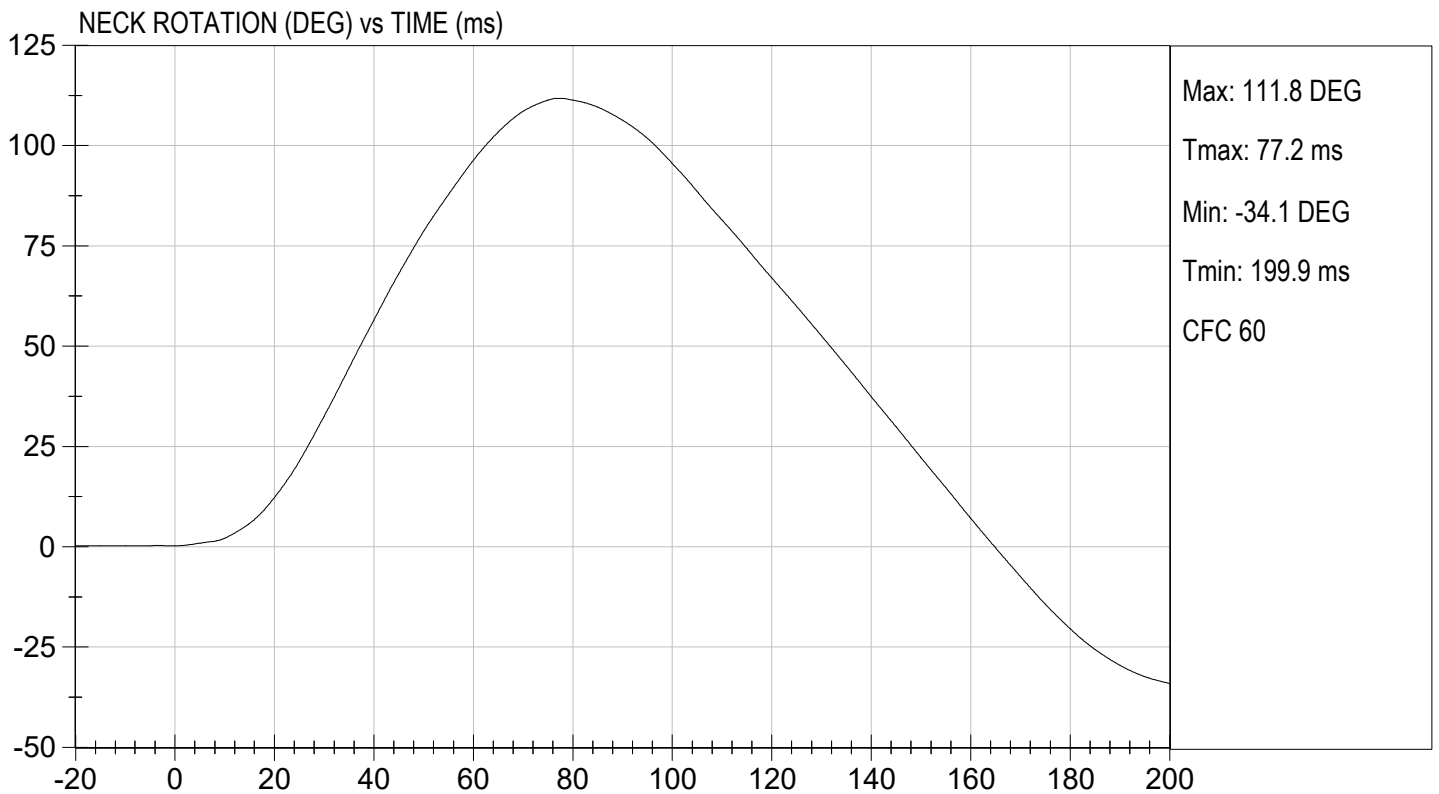
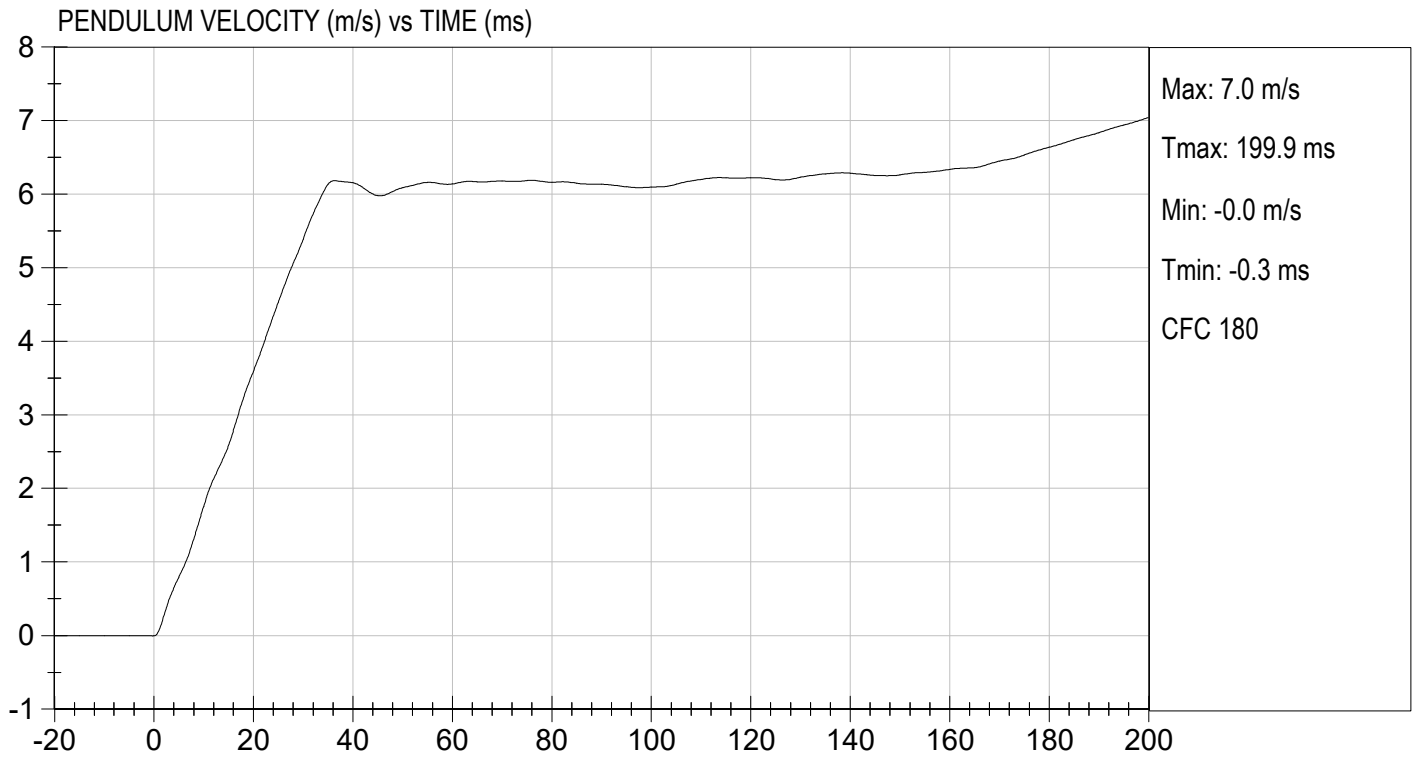
 Laboratory Technician

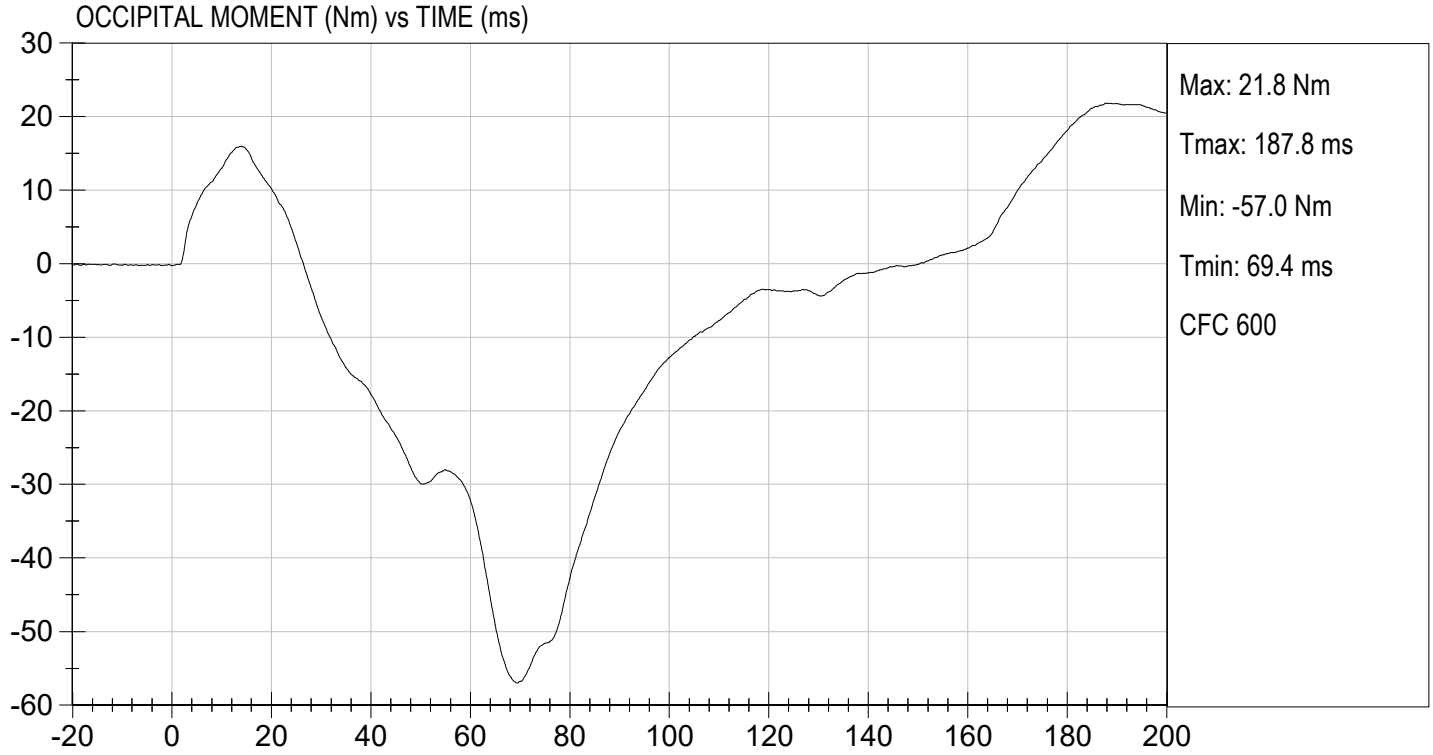
01/26/2023

 Test Date



 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

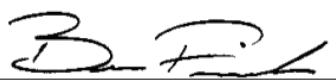
ATD Serial No: 142

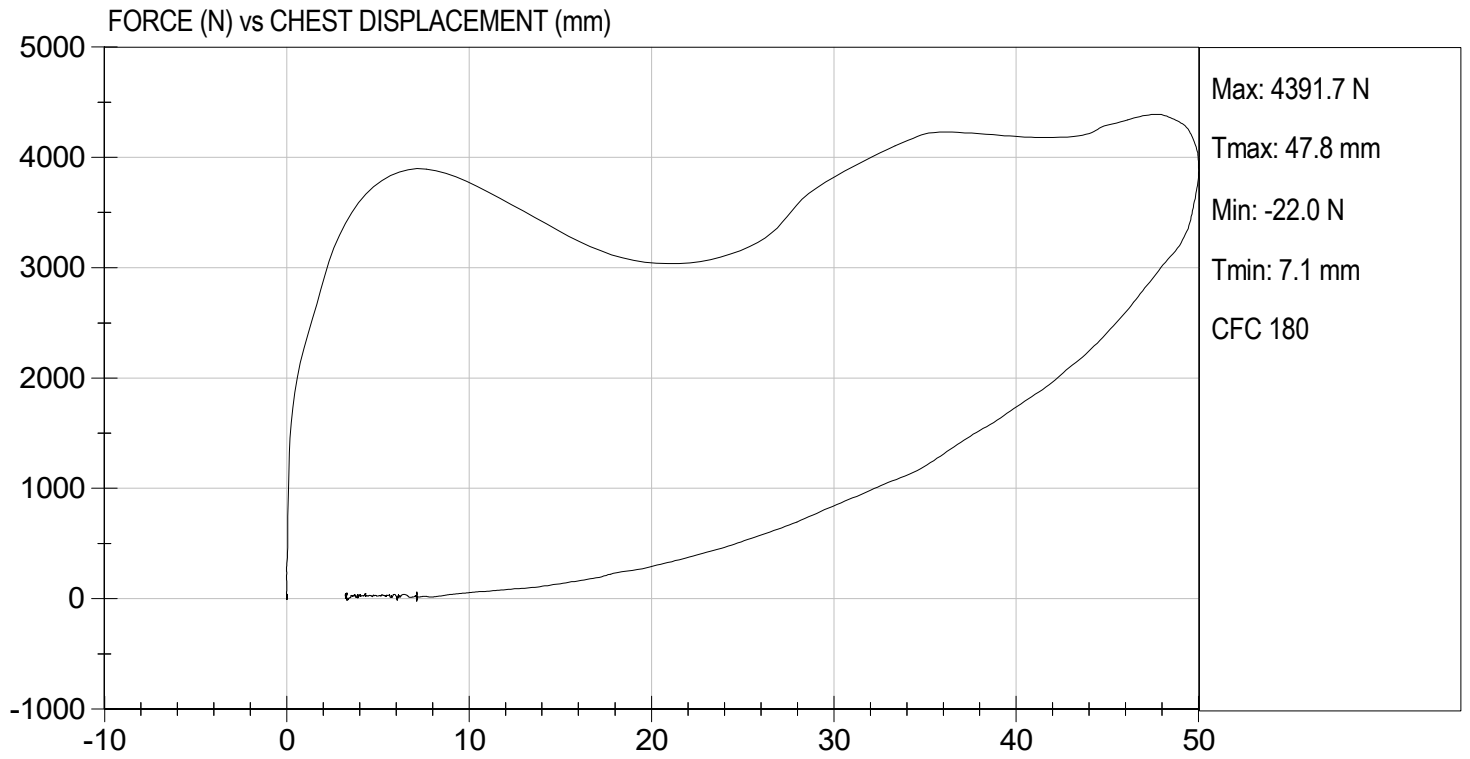
Test I.D: D230234

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Relative Humidity	%	10 to 70	25	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	50	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	3924	Pass
Internal Hysteresis	%	69 to 85	76	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4392	Pass
Overall Test Results				Pass


 Laboratory Technician

01/25/2023
 Test Date


 Approved By



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

ATD Serial No: 142

Test I.D: D230235

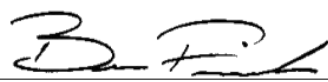
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3530	Pass
Overall Test Results				Pass



 Laboratory Technician

01/25/2023

 Test Date

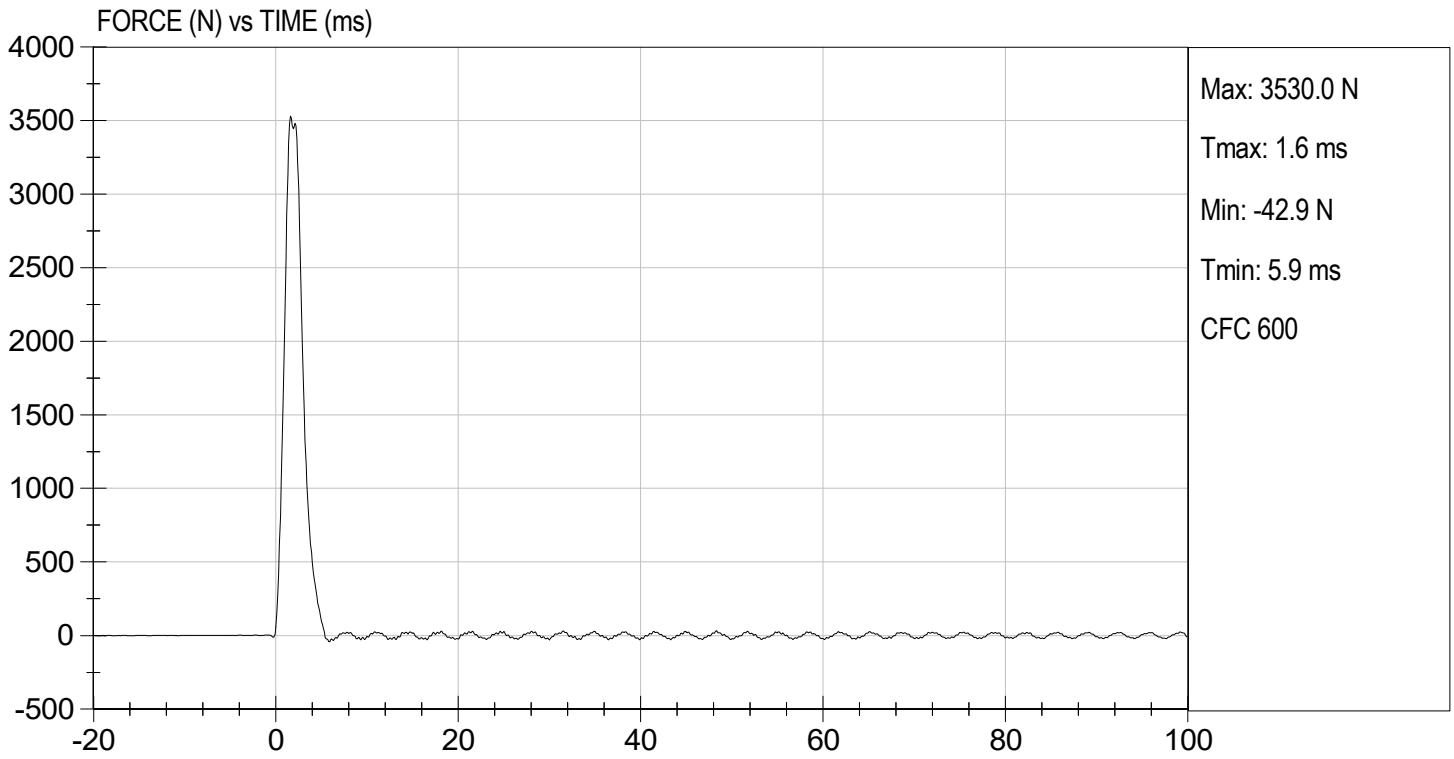


 Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.97 ft/s, 2.12 m/s

TEST DATE: 01/25/2023
TEST #: D230235



MGA RESEARCH CORPORATION

**LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: 142

Test I.D.: D230236

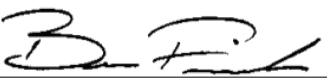
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3895	Pass
Overall Test Results				Pass



Laboratory Technician

01/25/2023

Test Date

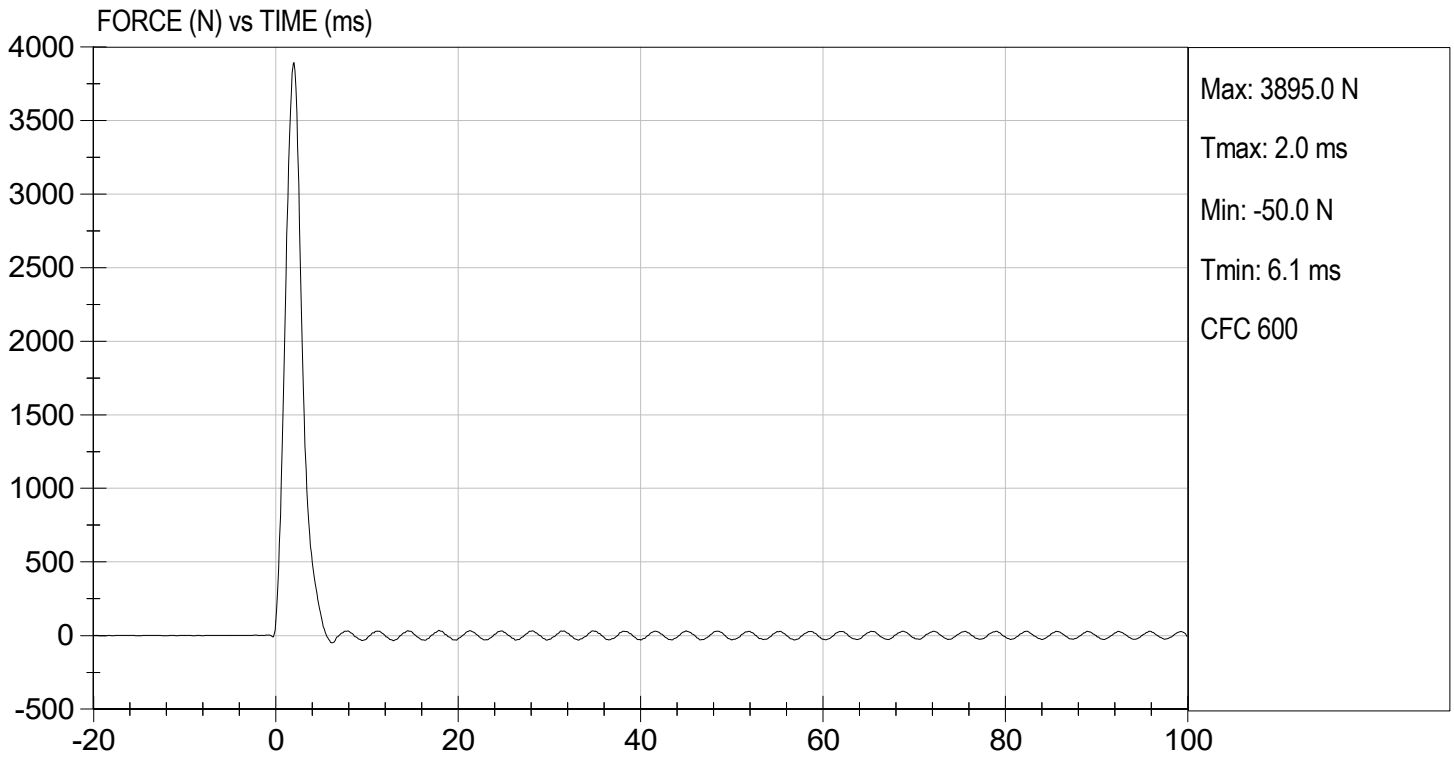


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.97 ft/s, 2.12 m/s

TEST DATE: 01/25/2023
TEST #: D230236



MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 142

Test I.D: D230237

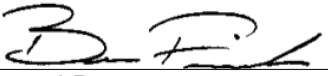
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Initial Angle	deg	0 to 20	18	Pass
Return Angle	deg	+/- 8	2	Pass
Force at 45 deg	N	320 to 390	383	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.5	Pass
Overall Result				Pass



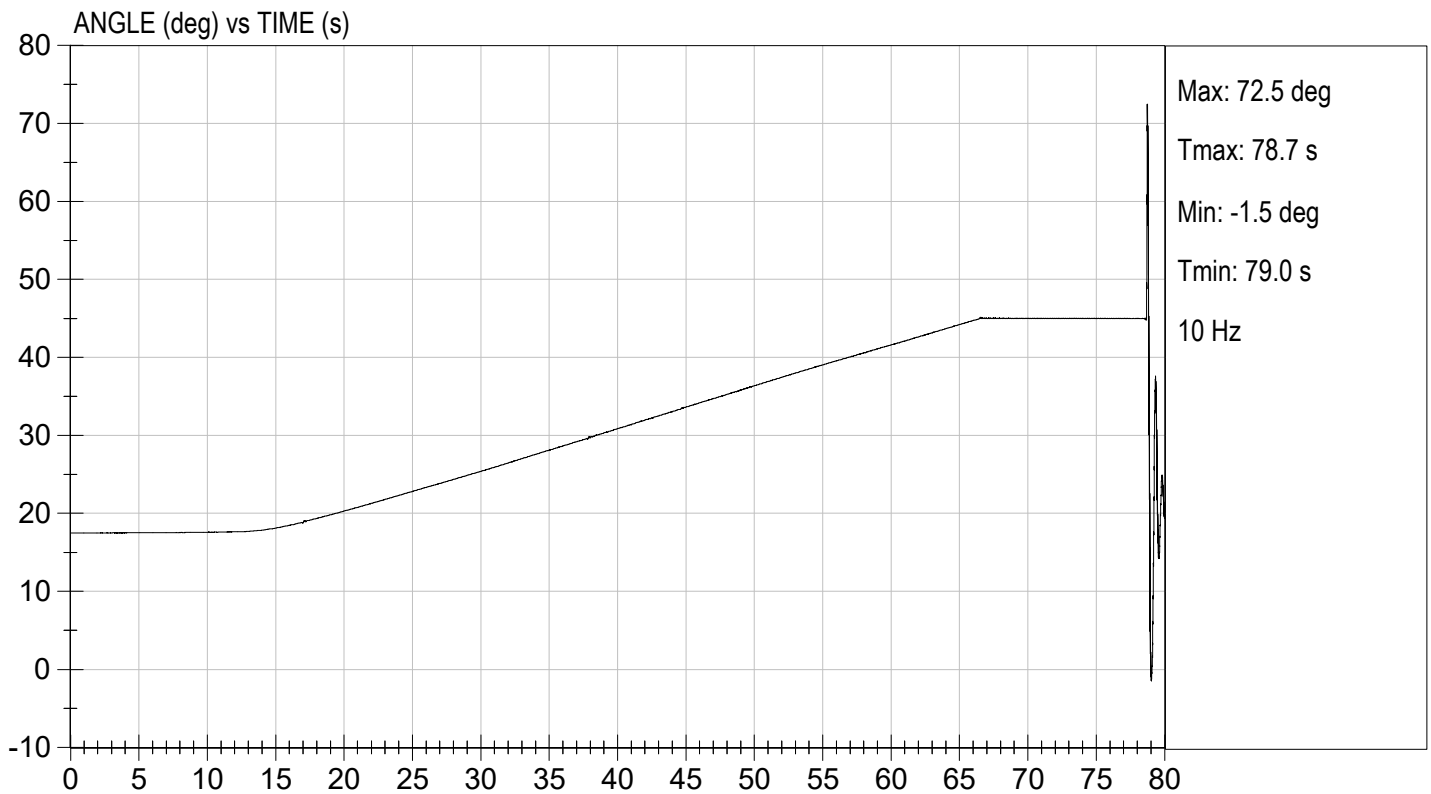
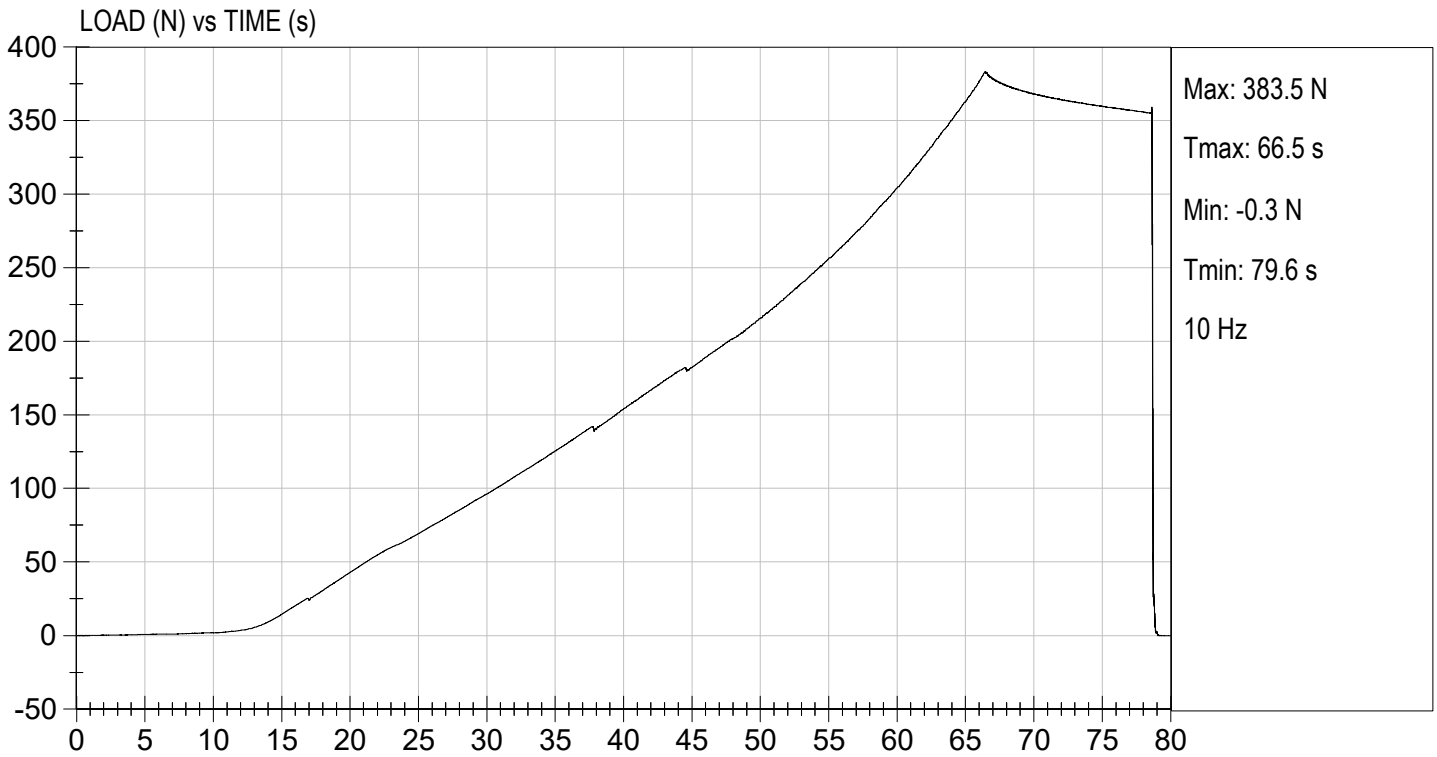
 Laboratory Technician

01/25/2023

 Test Date



 Approved By



CALIBRATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 142

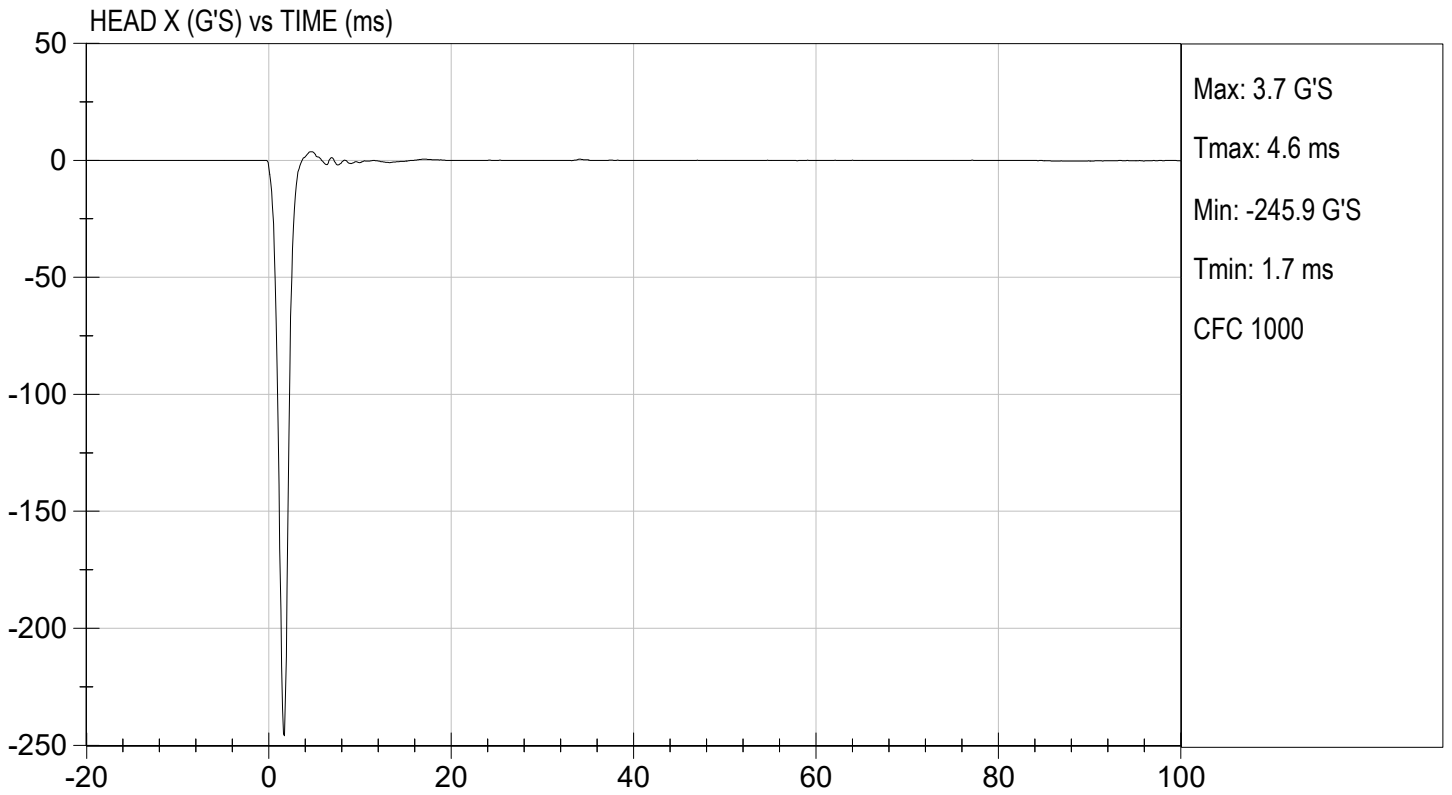
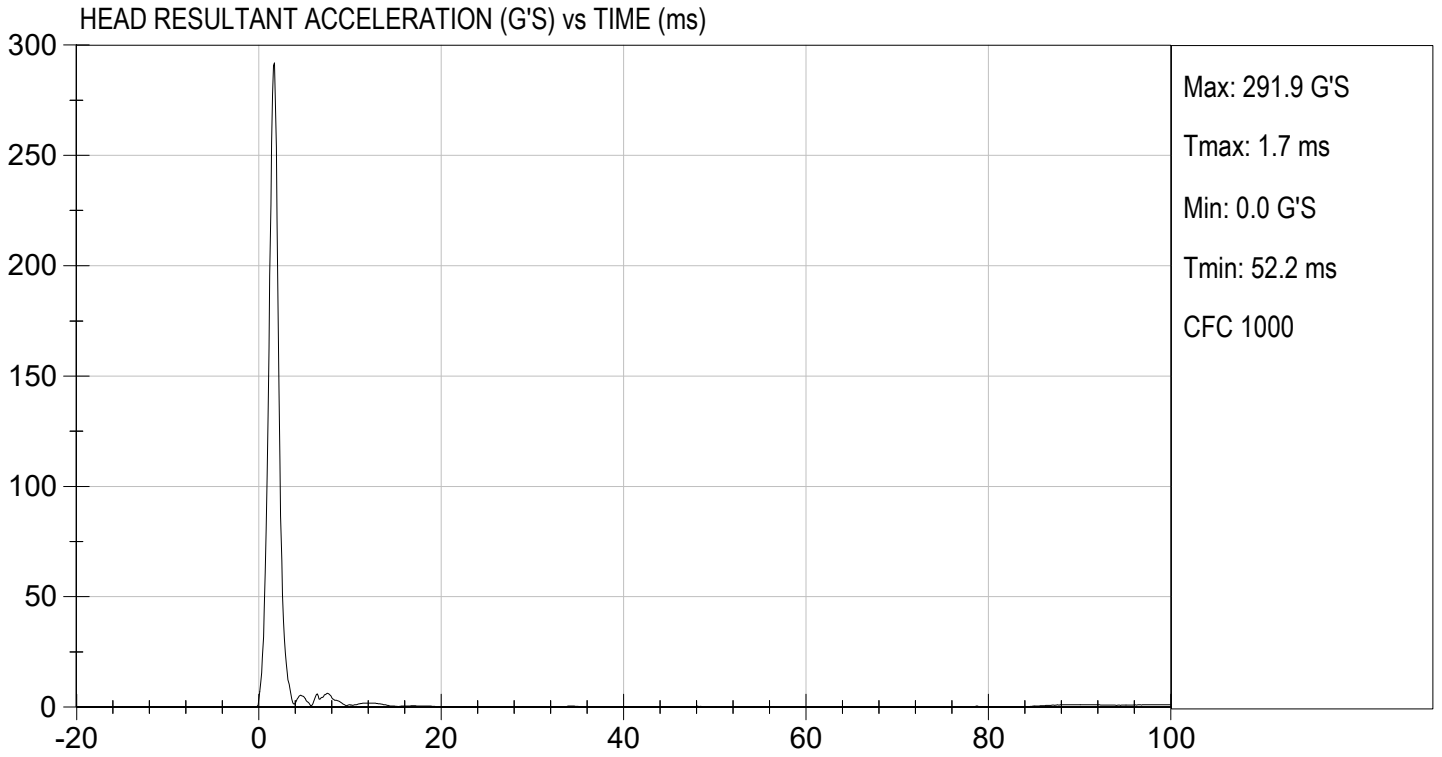
Test ID: D230381

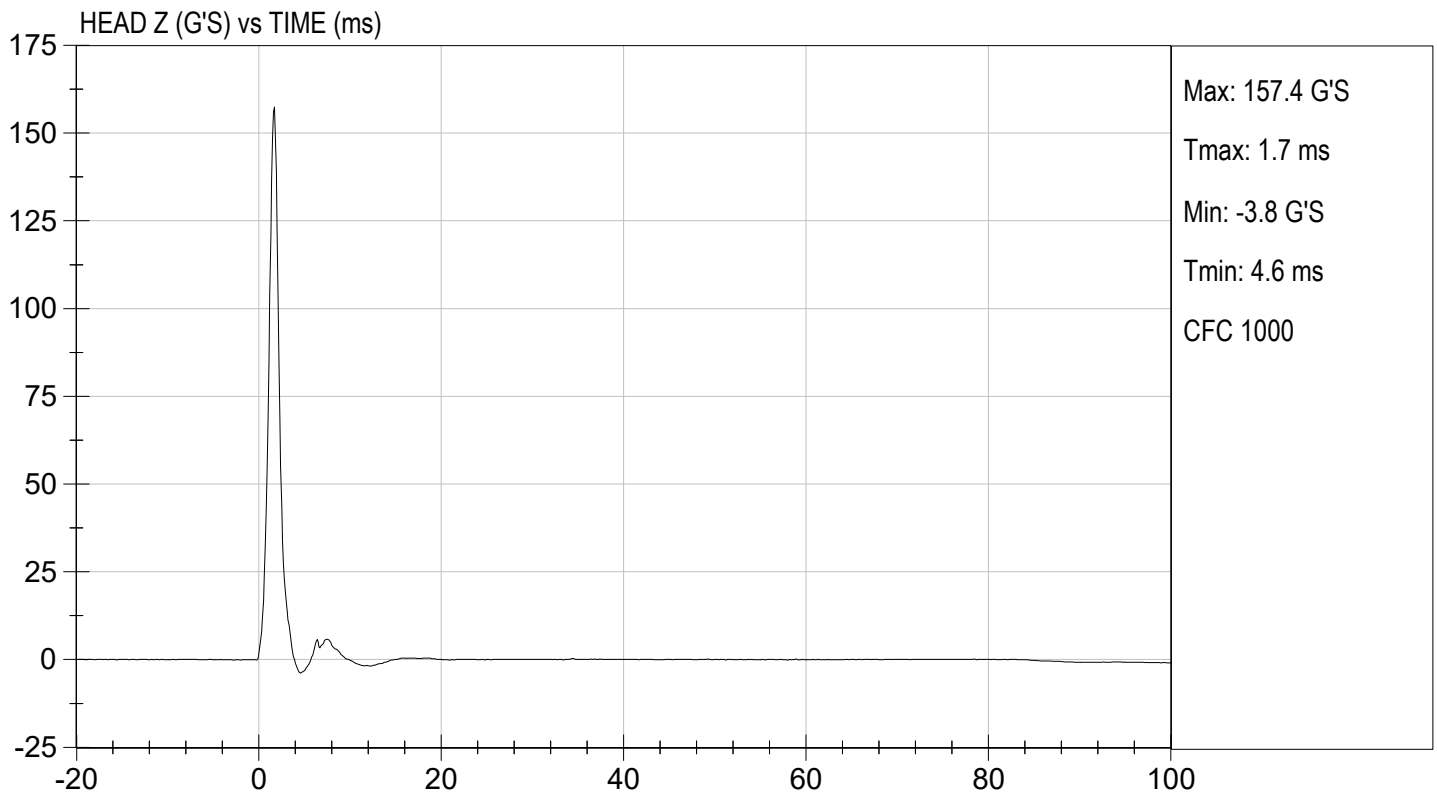
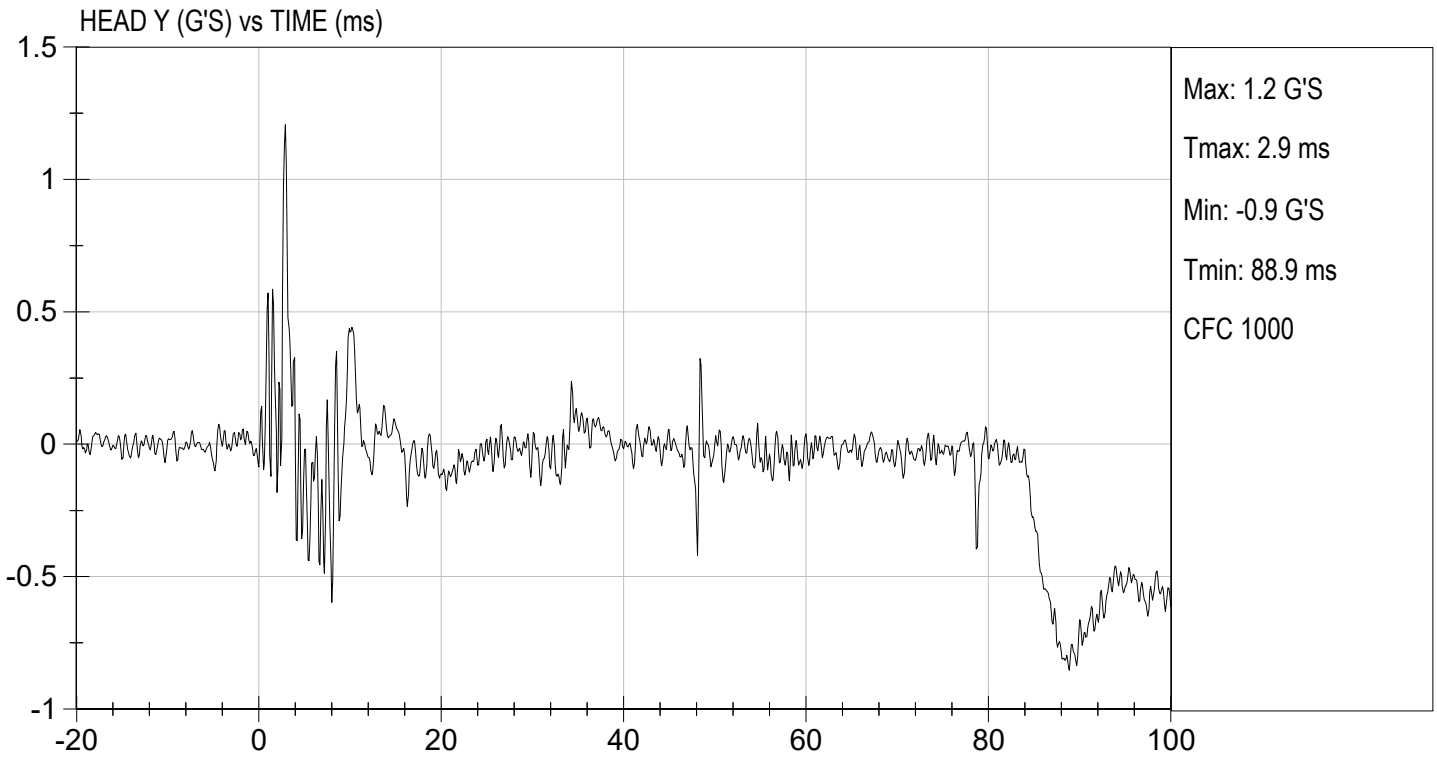
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	250 to 300	292	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	1.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

02/08/2023
 Test Date

B. F. L.
 Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 142

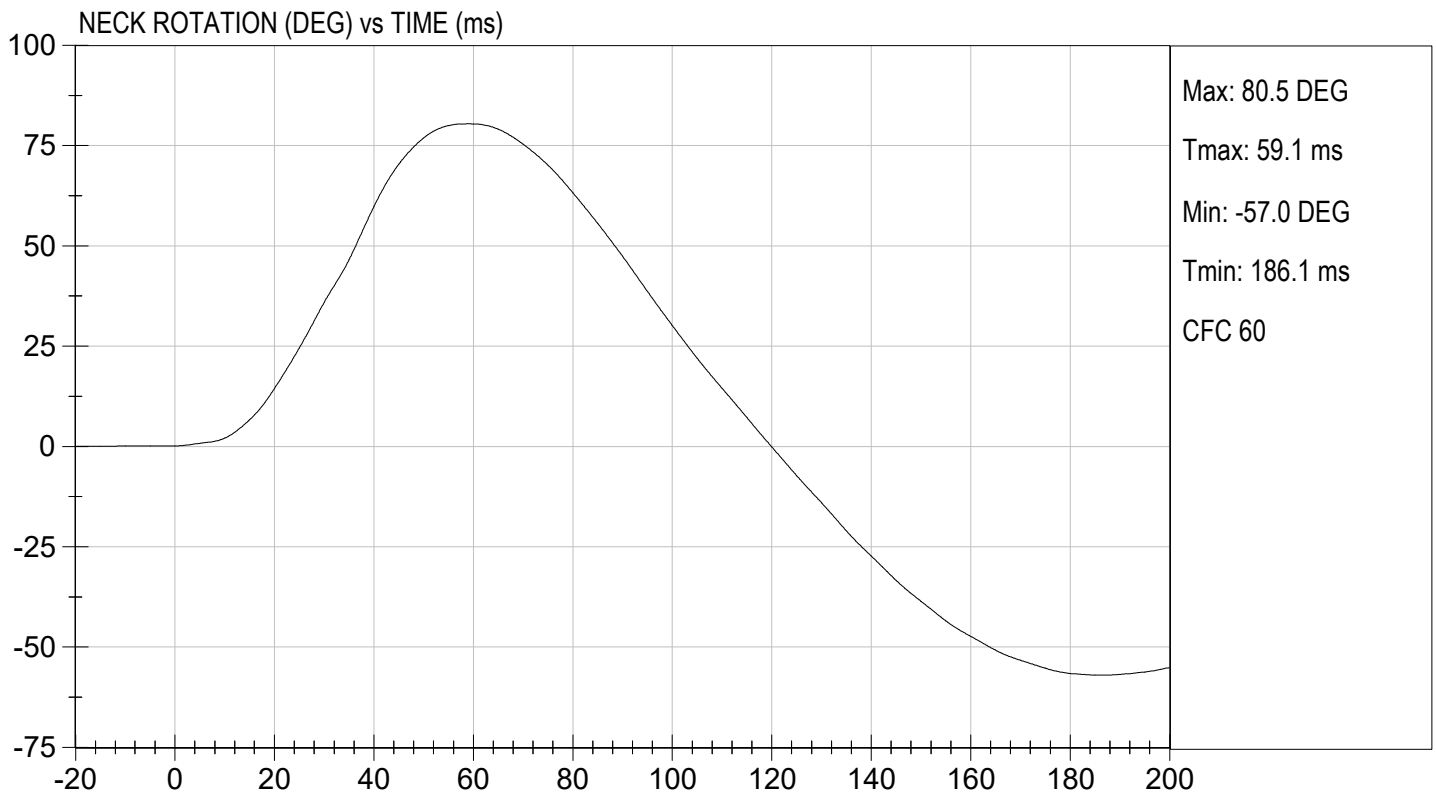
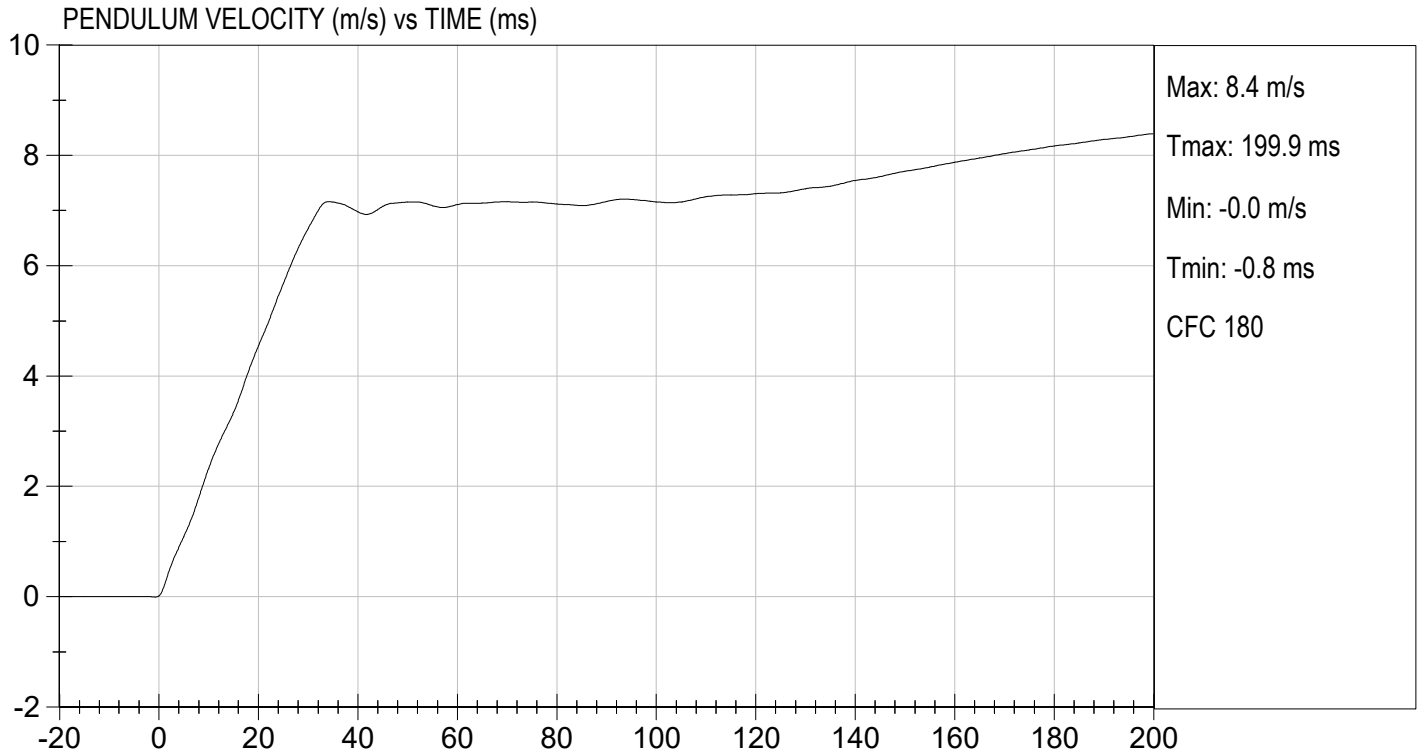
Test I.D: D230382

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	27	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	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	6.7	Pass
D Plane Rotation	Max	deg	77 to 91	80	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	72	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	85	Pass
Overall Results					Pass

Nathaniel Benjamin
Laboratory Technician

02/07/2023
Test Date

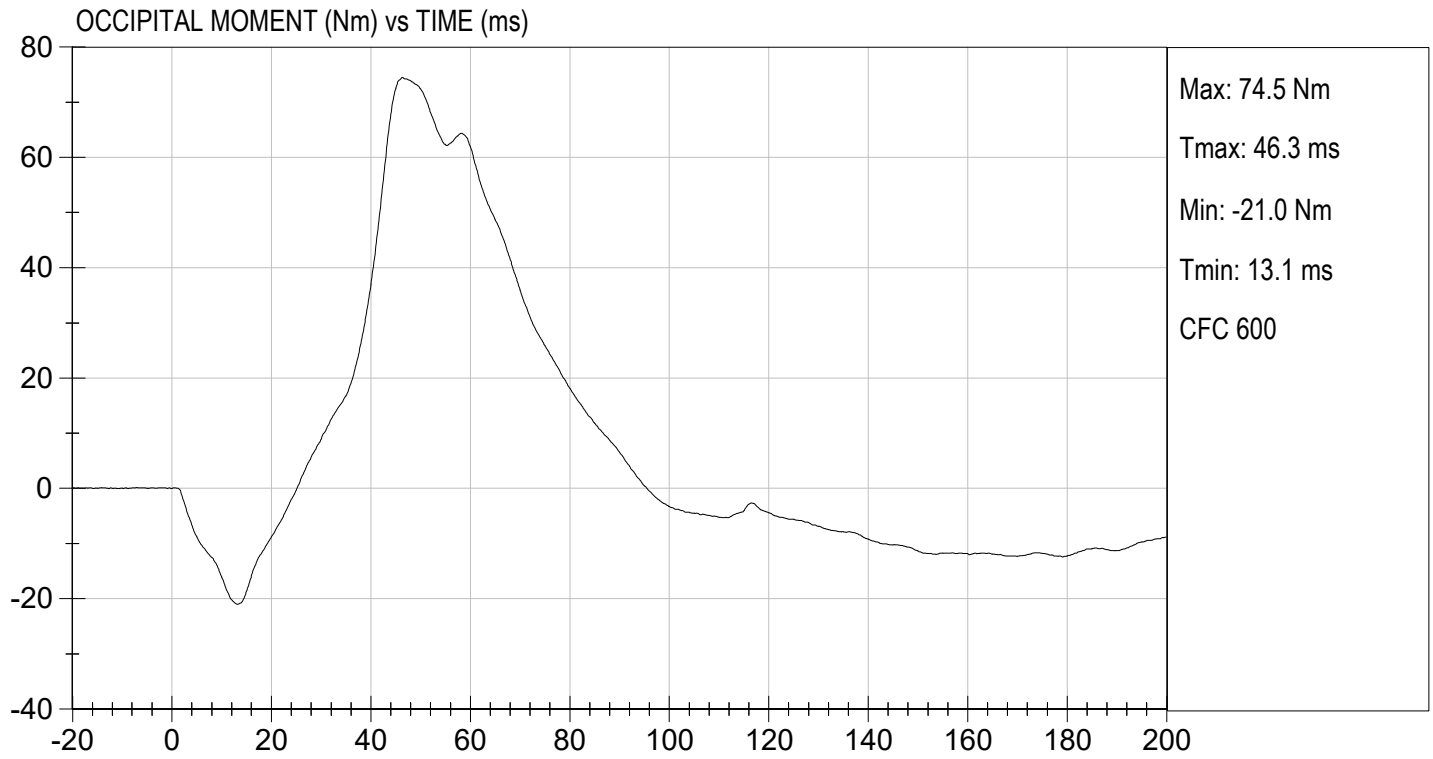
B. F. L.
Approved By





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 02/07/2023
TEST #: D230382



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

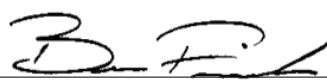
ATD Serial No: 142

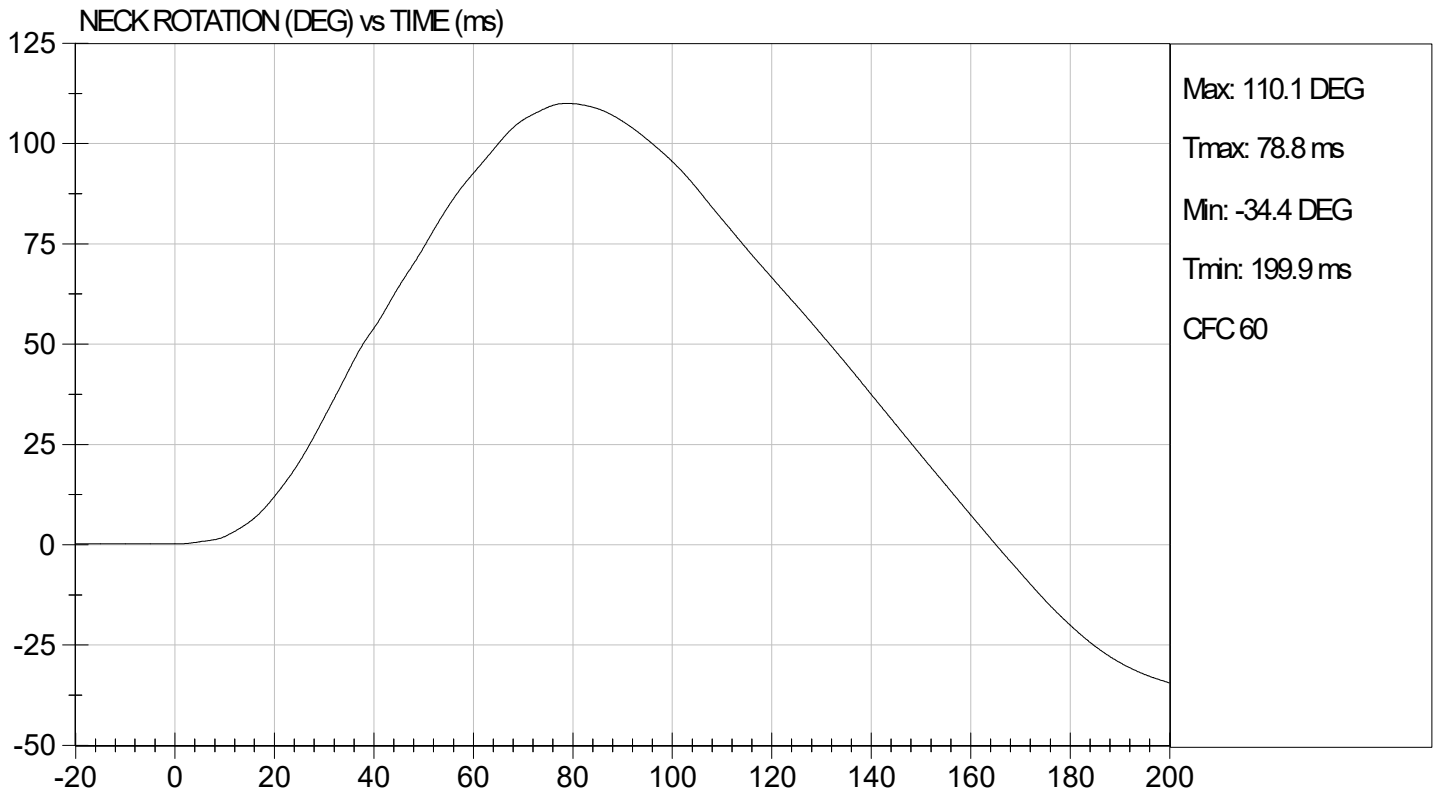
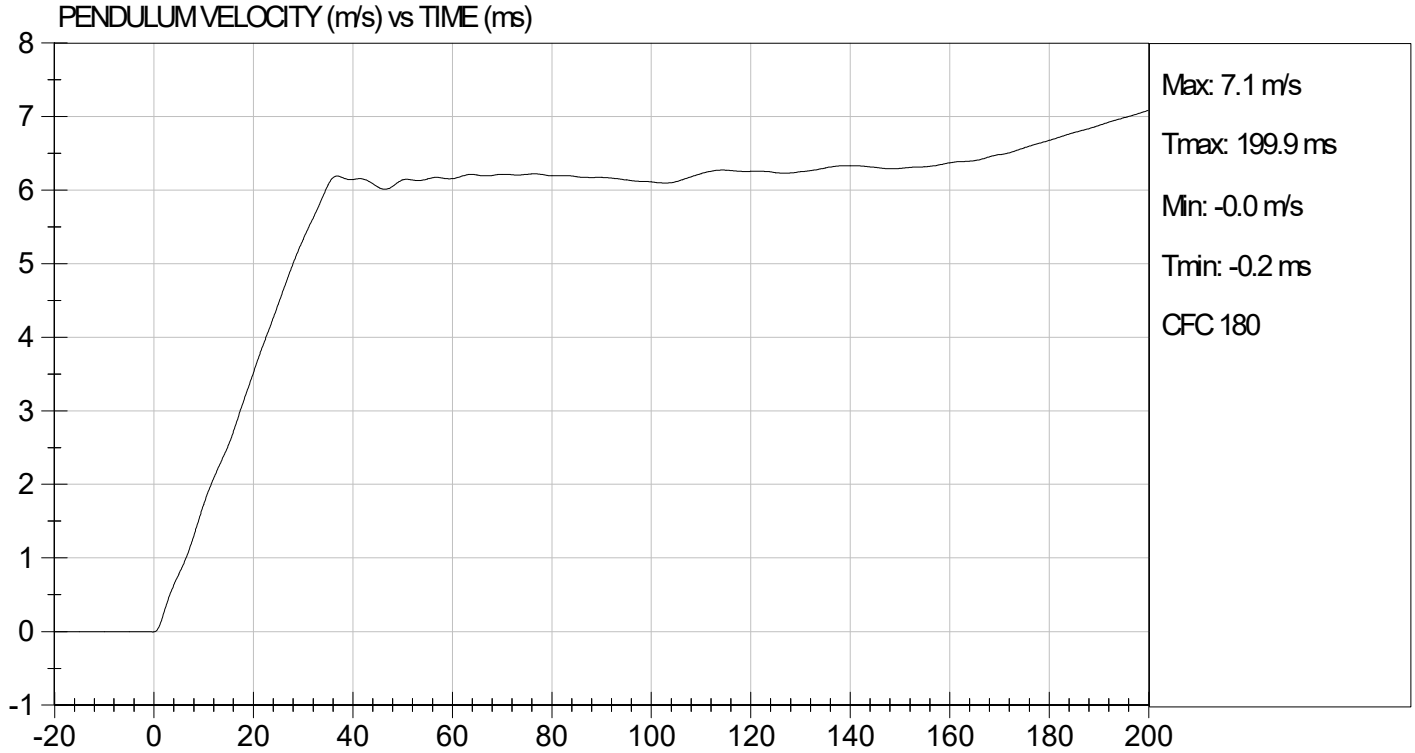
Test I.D.: D230383

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	27	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	5.3	Pass
D Plane Rotation	Max	deg	99 to 114	110	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-56	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	103	Pass
Overall Results					Pass


 Laboratory Technician

02/07/2023
 Test Date

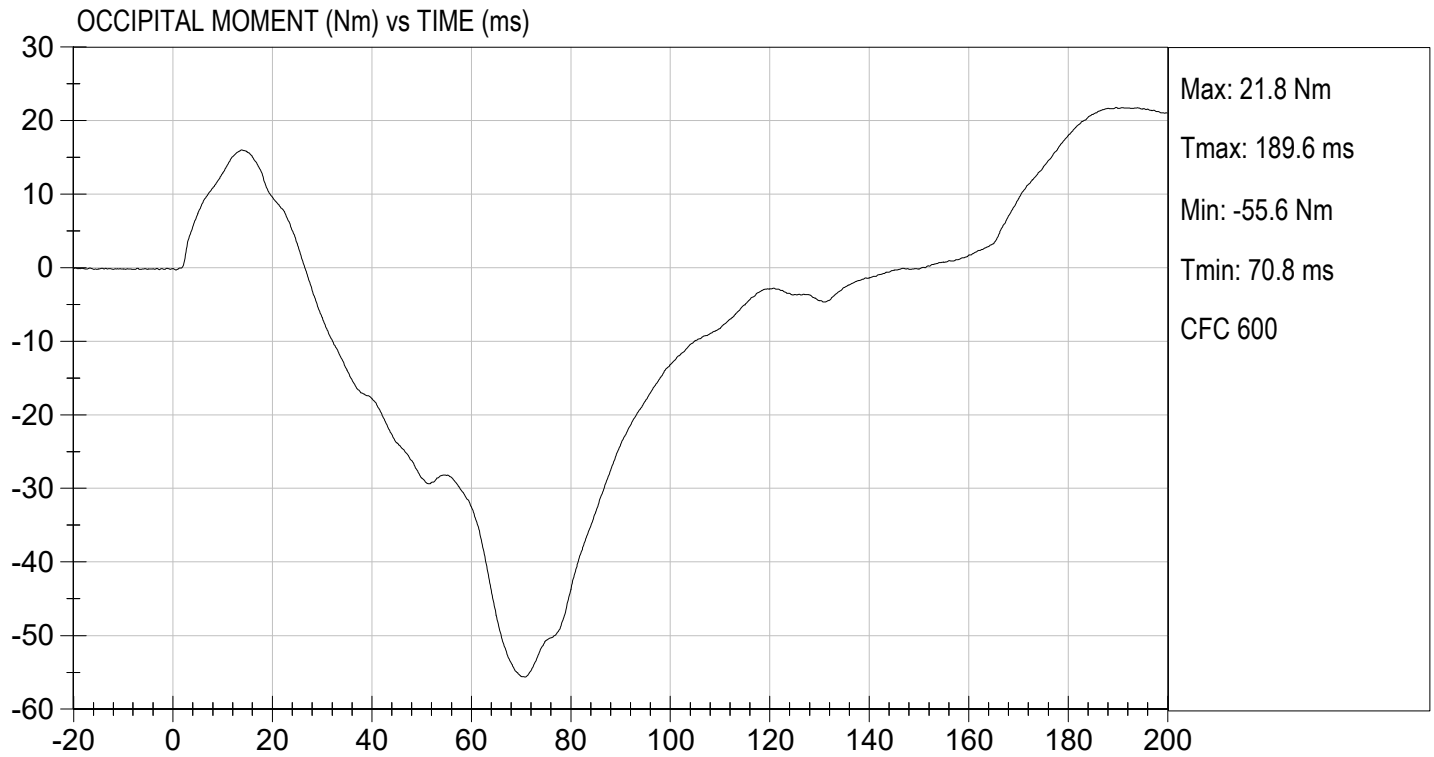

 Approved By





TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

TEST DATE: 02/07/2023
TEST #: D230383



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 142

Test I.D: D230384

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Relative Humidity	%	10 to 70	29	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	50	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4148	Pass
Internal Hysteresis	%	69 to 85	76	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4382	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

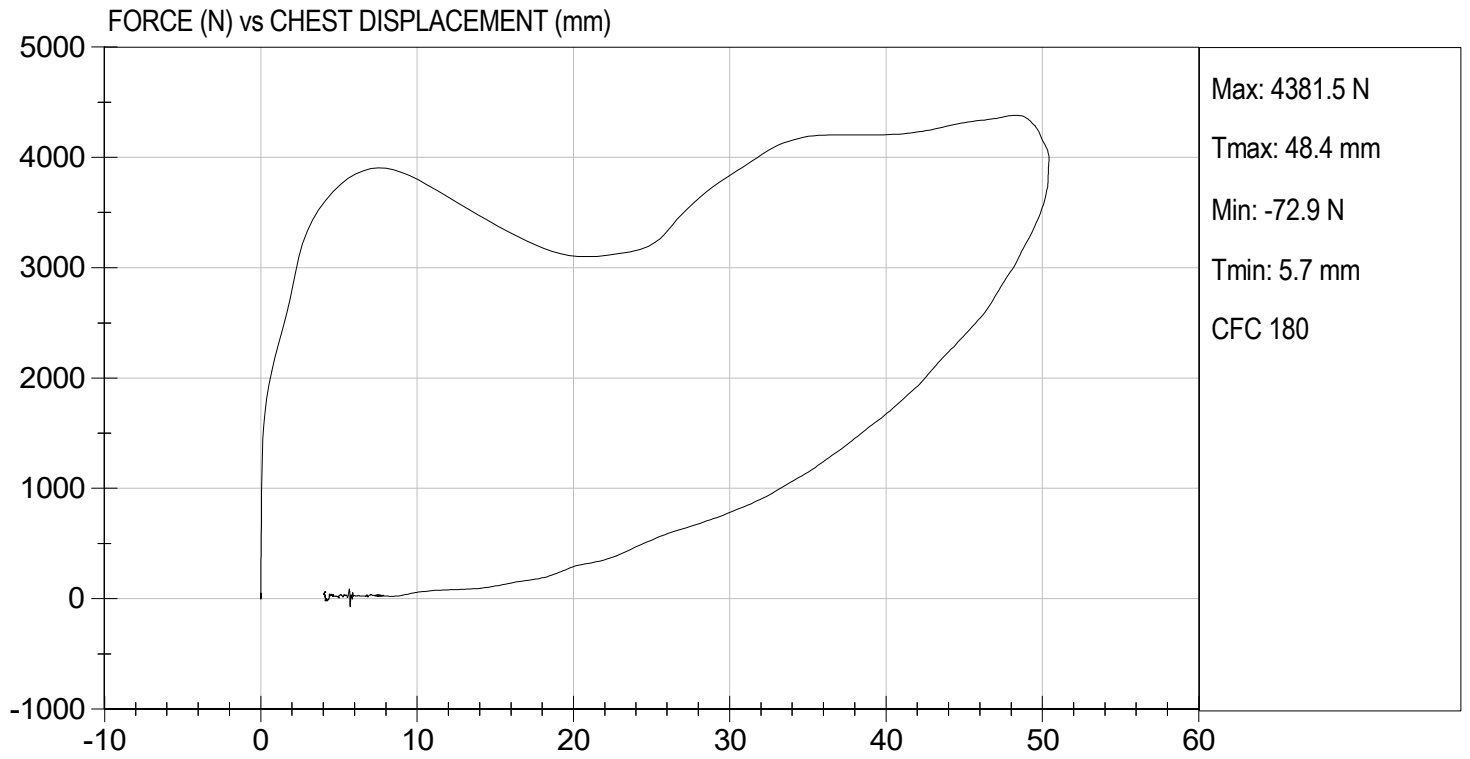
02/09/2023
 Test Date

B.F.L.
 Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 02/09/2023
TEST #: D230384



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

ATD Serial No: 142

Test I.D.: D230385

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	32	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3856	Pass
Overall Test Results				Pass

Nathaniel Benjamin
 Laboratory Technician

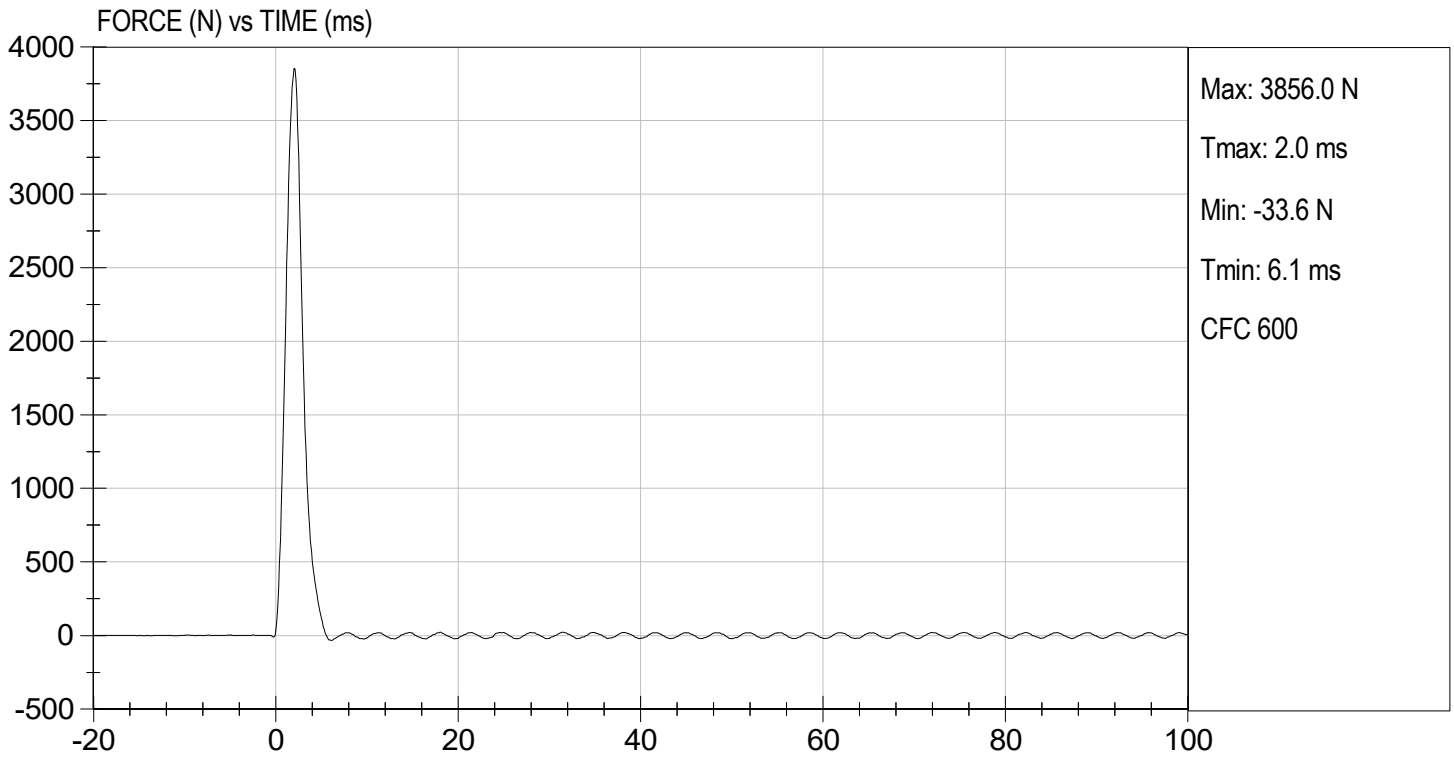
02/08/2023
 Test Date

B.F.L.
 Approved By



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

TEST DATE: 02/08/2023
TEST #: D230385



MGA RESEARCH CORPORATION

**LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: 142

Test I.D.: D230386

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	32	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3691	Pass
Overall Test Results				Pass

Nathaniel Benjamin
Laboratory Technician

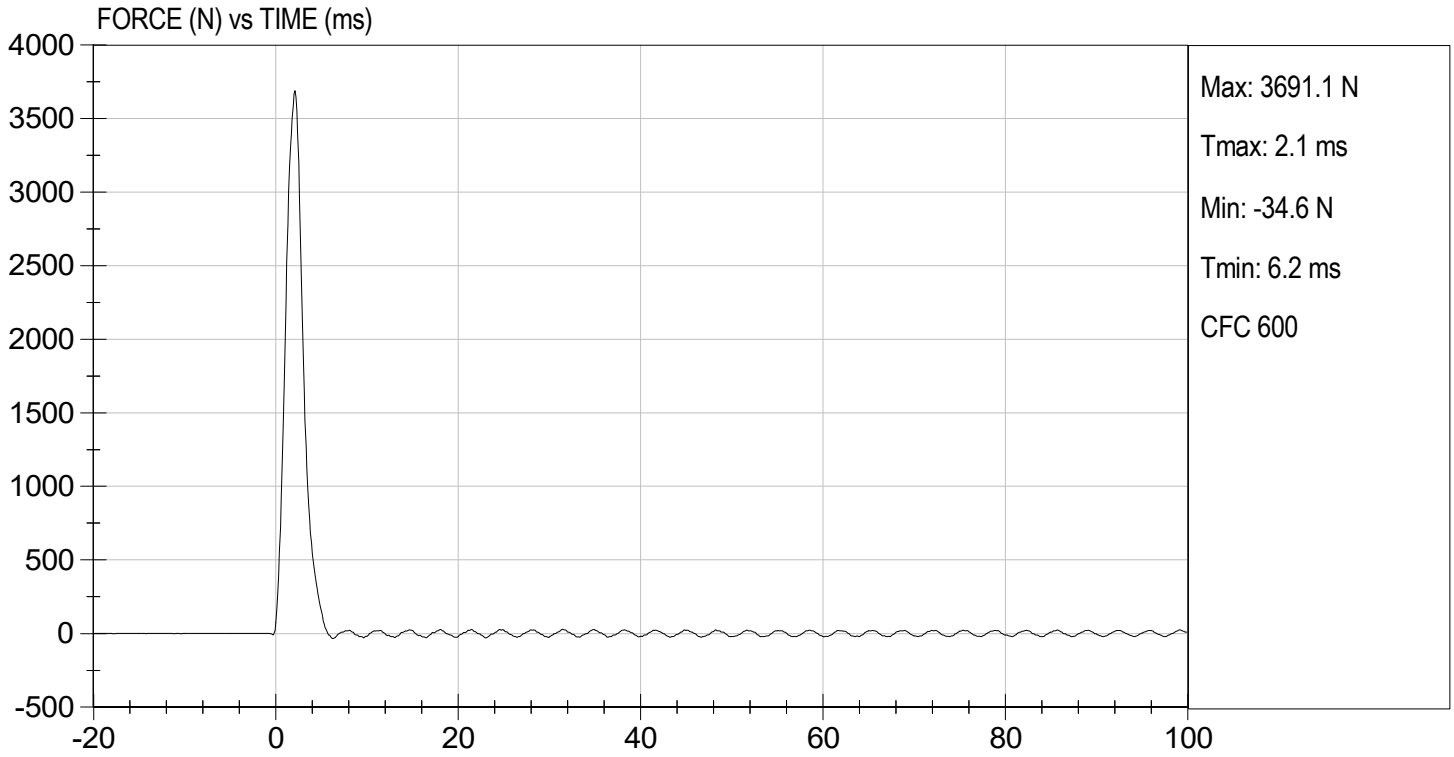
02/08/2023
Test Date

B. F. K.
Approved By



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

TEST DATE: 02/08/2023
TEST #: D230386



MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 142

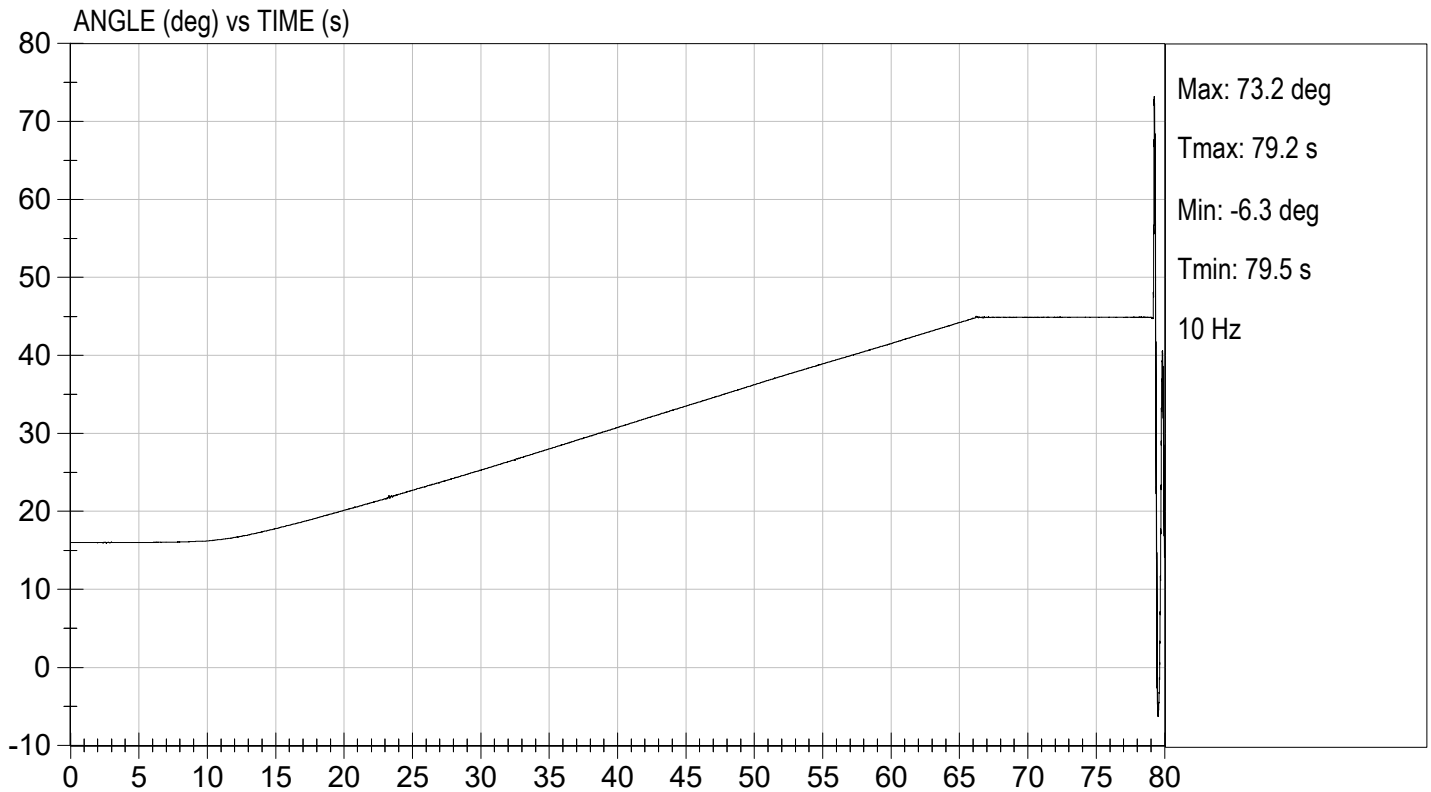
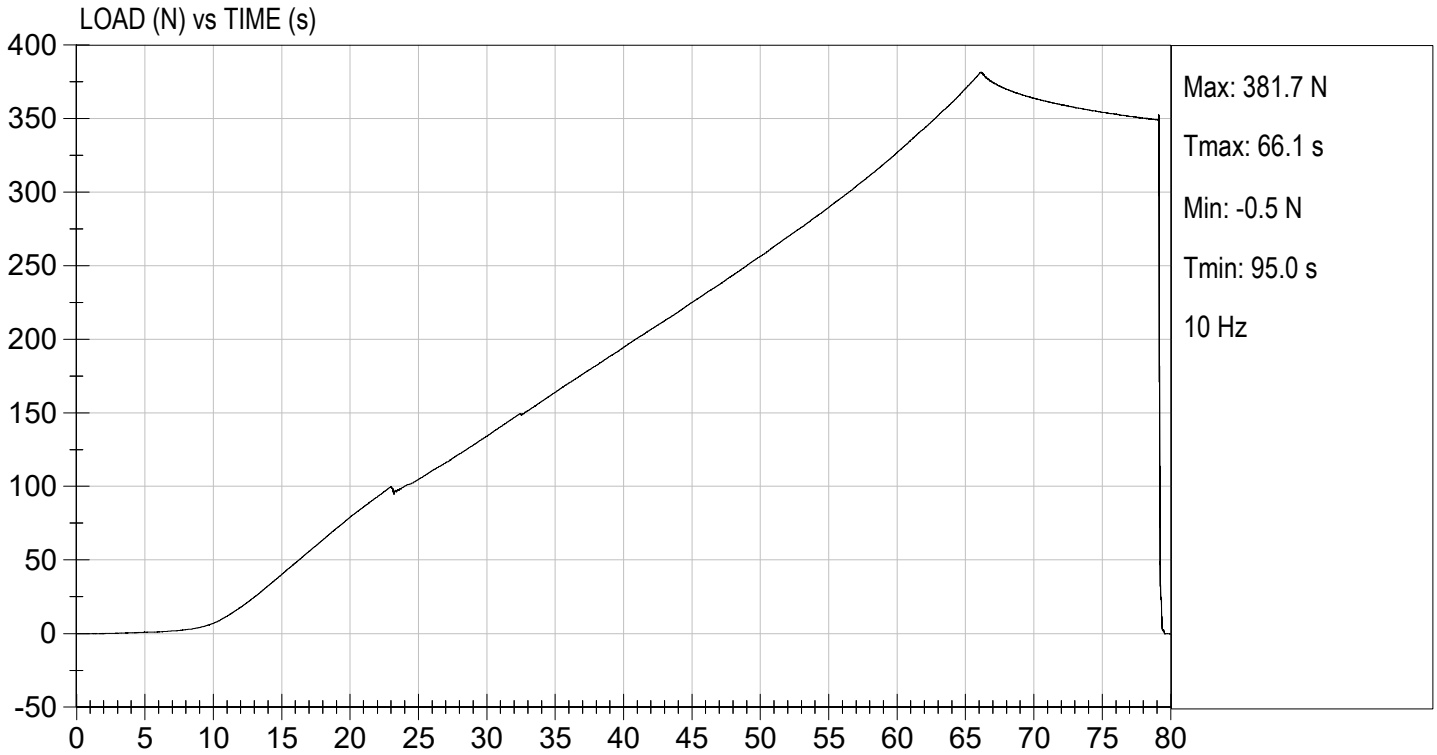
Test I.D: D230387

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Initial Angle	deg	0 to 20	16	Pass
Return Angle	deg	+/- 8	3	Pass
Force at 45 deg	N	320 to 390	382	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.5	Pass
Overall Result				Pass

Nathaniel Benjamin
 Laboratory Technician

02/08/2023
 Test Date

B.F.L.
 Approved By



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – DRIVER DUMMY INSTRUMENTATION

Instrument Location			Axis	Hybrid III 50 th S/N 351		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	P79741	Endevco	12/29/2022	
		Y	P79743	Endevco	12/29/2022	
		Z	P79744	Endevco	12/29/2022	
	Redundant	X	P94834	Endevco	12/29/2022	
		Y	P94856	Endevco	12/29/2022	
		Z	P97412	Endevco	12/29/2022	
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	12/29/2022	
		Y	P88348	Endevco	12/29/2022	
		Z	P86793	Endevco	12/29/2022	
	Redundant	X	P88666	Endevco	12/29/2022	
		Y	P94109	Endevco	12/29/2022	
		Z	P88667	Endevco	12/29/2022	
Chest Potentiometer			X	351	Humanetics	12/29/2022
Pelvis Accelerometers			X	P95526	Endevco	12/29/2022
			Y	P96038	Endevco	12/29/2022
			Z	P97742	Endevco	12/29/2022
Femur Load Cells	Right	Primary	Z	FG121P	Denton	12/29/2022
		Redundant	Z	FG121R	Denton	12/29/2022
	Left	Primary	Z	FG122P	Denton	12/29/2022
		Redundant	Z	FG122R	Denton	12/29/2022
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	12/29/2022
			Z	P97382	Endevco	12/29/2022
		Front	Z	P82120	Endevco	12/29/2022
	Left	Rear	X	T16468	Endevco	12/29/2022
			Z	T16496	Endevco	12/29/2022
		Front	Z	T16501	Endevco	12/29/2022
Seat Belt Load Cells			Lap			
			Shoulder		SBG161	FTSS

TABLE 2 – FRONT PASSENGER DUMMY INSTRUMENTATION

Instrument Location			Axis	Hybrid III 5 th S/N 142		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	P94799	Endevco	10/10/2022	
		Y	P94800	Endevco	10/10/2022	
		Z	P94801	Endevco	10/10/2022	
	Redundant	X	P94802	Endevco	10/10/2022	
		Y	P94803	Endevco	10/10/2022	
		Z	P97377	Endevco	10/10/2022	
Head Angular Rate Sensors			X	ARS7413	DTS	03/14/2022
			Y	ARS7602	DTS	03/14/2022
			Z	ARS15229	DTS	03/15/2022
Upper Neck Load Cell			Fx, Fy, Fz Mx, My, Mz	NG2203	Denton	03/23/2022
Chest Accelerometers	Primary	X	P88719	Endevco	10/10/2022	
		Y	P94785	Endevco	10/10/2022	
		Z	P94793	Endevco	10/10/2022	
	Redundant	X	P95322	Endevco	10/10/2022	
		Y	P95370	Endevco	10/10/2022	
		Z	T30901	Endevco	10/10/2022	
Chest Potentiometer			X	142	Humanetics	10/11/2022
Pelvis Accelerometers			X	P82646	Endevco	10/10/2022
			Y	P94798	Endevco	10/10/2022
			Z	P97705	Endevco	10/10/2022
Femur Load Cells	Right	Primary	Z	FG126P	Denton	10/11/2022
		Redundant	Z	FG126R	Denton	10/11/2022
	Left	Primary	Z	FG127P	Denton	10/11/2022
		Redundant	Z	FG127R	Denton	10/11/2022
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG408	Denton	03/23/2022
		Lower	Mx, My, Fz	AG116	Denton	03/23/2022
	Left	Upper	Mx, My, Fz	TG480	Denton	03/23/2022
		Lower	Mx, My, Fz	AG502	Denton	03/23/2022
Foot Accelerometers	Right	Rear	X	P94795	Endevco	10/10/2022
			Z	P94796	Endevco	10/10/2022
		Front	Z	P94797	Endevco	10/10/2022
	Left	Rear	X	P83167	Endevco	10/10/2022
			Z	P83168	Endevco	10/10/2022
		Front	Z	P83169	Endevco	10/10/2022
Seat Belt Load Cells			Lap			
			Shoulder		SBG273	FTSS

TABLE 3 – VEHICLE INSTRUMENTATION

Instrument Location			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember / Rear Seat Accelerometers	Left	Primary	X	A340273	MSI	11/10/2022
			Z	A414606	MSI	11/10/2022
		Redundant	X	A383106	MSI	11/10/2022
	Right	Primary	X	A340691	MSI	12/15/2022
			Z	A360986	MSI	12/15/2022
		Redundant	X	A340687	MSI	12/15/2022
Engine Accelerometers		Top	X	A390962	MSI	11/15/2022
		Bottom	X	A340183	MSI	11/22/2022