

REPORT NUMBER: NCAP-MGA-2018-024

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

**HONDA OF AMERICA MFG., INC.
2018 Honda Accord 1.5T LX 4-Door Sedan
NHTSA No.: M20185300**

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



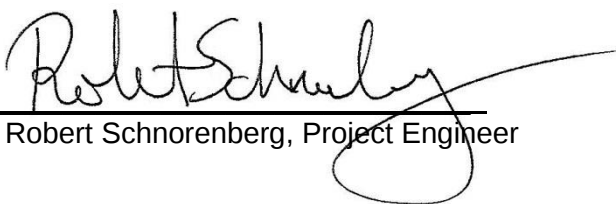
Test Date: December 14, 2017

Final Report Date: February 8, 2018

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NRM-110
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590**

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Prepared by: 
Robert Schnorenberg, Project Engineer

Approved by: 
David Winkelbauer, Project Manager

Approval Date: February 8, 2018

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2018 Honda Accord 1.5T LX 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), and 301 performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on December 14, 2017. The impact velocity of the vehicle was 56.52 km/h and the ambient temperature at the barrier face at the time of impact was 21.7°C. The target vehicle post-test maximum crush was 498mm located at 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>N/A</td> <td>700</td> <td>261</td> <td>700</td> <td>266</td> </tr> <tr> <td>Maximum Chest</td> <td>mm</td> <td>63</td> <td>18</td> <td>52</td> <td>11</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.23</td> <td>1</td> <td>0.34</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>819</td> <td>2620</td> <td>621</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>328</td> <td>2520</td> <td>238</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>1027</td> <td>6805</td> <td>1681</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>1503</td> <td>6805</td> <td>963</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	261	700	266	Maximum Chest	mm	63	18	52	11	Nij	N/A	1	0.23	1	0.34	Neck Tension	N	4170	819	2620	621	Neck Compression	N	4000	328	2520	238	Left Femur Force	N	10008	1027	6805	1681	Right Femur Force	N	10008	1503	6805	963
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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 DTNH22-12-D-00258. 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 Frontal NCAP Laboratory Test Procedure.

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2018 Honda Accord 1.5T LX 4-Door Sedan at a velocity of 56.52 km/h. The test was performed at MGA Research Corporation on December 14, 2017. Pre-test and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two (2) real-time cameras and fourteen (14) 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 Frontal NCAP Laboratory Test Procedure.

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.

The driver (position 1) ATD (Serial No. 351) and the right-front passenger (position 2) ATD (Serial No. 634) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 630 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 498mm 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 airbag. The passenger's visible contact points were as follows: The passenger's head contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the knee airbag.

The occupant data is summarized below:

ATD position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	261	0.23	819	328	47	18	1027	1503
Passenger (5 th)	266	0.34	621	238	44	11	1681	963

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

TEST NOTES

Driver Shoulder and Lap Belt load cell were not installed.
 Passenger Shoulder and Lap Belt load cell were not installed.
 Driver Head Xr recorded questionable data between 40 to 95m.
 Barrier K-16 My recorded no valid data.
 Barrier G-08 My recorded no valid data.
 Barrier F-01 Fx recorded no valid data.
 Barrier F-01 My recorded no valid data.
 Barrier F-01 Mz recorded no valid data.
 Barrier C-04 Fx recorded no valid data.
 Barrier C-04 My recorded no valid data.
 Barrier C-04 Mz recorded no valid data.

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: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20185300	Traction Control System (TCS)	Yes
Model Year	2018	Power Steering	Yes
Make	Honda	Power Window Auto-Reverse	Yes
Model	Accord 1.5T LX	Driver Frontal Airbag	Yes
Body Style	4-Door Sedan	Driver Curtain Airbag	Yes
VIN	1HGCV1F12JA010000	Driver Head/Torso Airbag	No
Body Color	Champagne Frost Pearl	Driver Torso Airbag	No
Odometer (km/mi)	164km / 102mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	1.5 L	Driver Pelvis Airbag	No
Type/No. Cylinders	Inline 4	Driver Knee Airbag	Yes
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	CVT	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	FWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	HONDA OF AMERICA MFG., INC.
Date of Manufacture	10/17

GVWR (kg)	1950
GAWR Front (kg)	1070
GAWR Rear (kg)	960

VEHICLE SEATING AND WEIGHT CAPACITY DATA

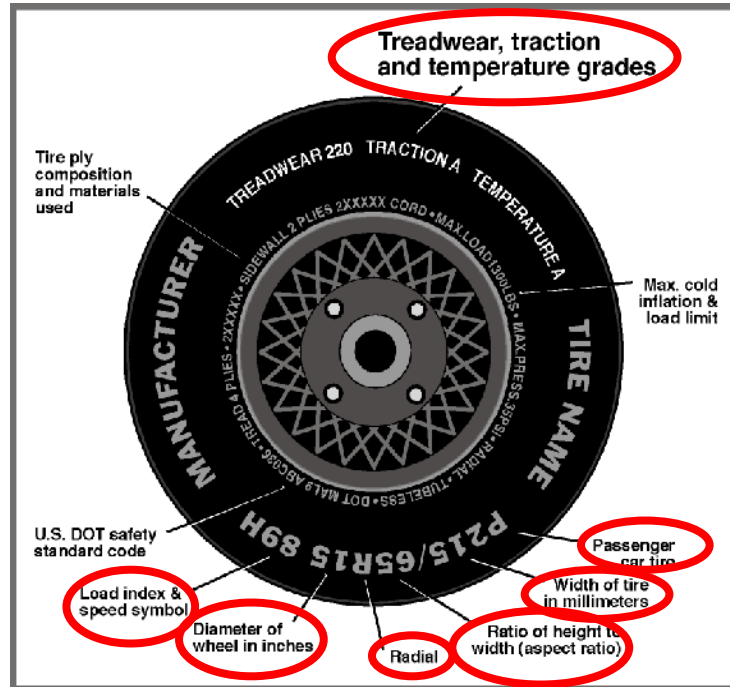
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Contoured		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				385
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	220	220
Recommended Tire Size	225/50R17	225/50R17
Tire Size on Vehicle	225/50R17	225/50R17
Tire Manufacturer	Hankook	Hankook
Tire Model	Kinergy GT	Kinergy GT
Treadwear	500	500
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	94V	94V
Tire Material	Rubber	Rubber
DOT Safety Code Left	1T7AB 1BH0 2717	1T7AB 1BH0 2817
DOT Safety Code Right	1T7AB 1BH0 2817	1T7AB 1BH0 2717

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

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

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 Test Date: 12/14/2017

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	436.5	281.0		472.5	341.5	
Right	kg	421.0	280.0		451.5	334.0	
Ratio	%	60.5%	39.5%		57.8%	42.2%	
Totals	kg	857.5	561.0	1418.5	924.0	675.5	1599.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1418.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Test Vehicle Target Weight (TVTW)	kg	1604.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	692	694	709	713	1119
As Tested	mm	683	685	683	686	1195
Post Test	mm	799	790	697	677	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2830
Total Vehicle Length at Left Side	mm	4515
Total Vehicle Length at Centerline	mm	4787
Total Vehicle Length at Right Side	mm	4515
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	46
Amount of Stoddard Solvent in Fuel Tank	L	52.2

List of components removed to meet test weight: LR and RR tail light, rear bumper and cover, trunk lid.

List of components removed for instrumentation, data box, and equipment installation: Cargo area carpet and trim, jack and tool kit, spare tire.

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

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4787
2	Total Width	1862
3	Bumper Top Height	480
4	Bumper Bottom Height	385
5	Longitudinal Member Top Height	502
6	Distance between Longitudinal Members	916
7	Longitudinal Member Width	95
8	Engine Top Height	777
9	Engine Bottom Height	161
10	Engine and Gearbox Width	750
11	Front Bumper-Engine Distance	N/A
12	Front Shock Absorber Fixing Height	868
13	Bonnet Leading Edge Height	770
14	Front Shock Absorber Fixing Width	110
15	Front Bumper – Front Axle Distance	932
16	Front Axle – A-Pillar Distance	392
17	A-Pillar – B-Pillar Distance	1278
18	B-Pillar – Rear Axle Distance	1160
19	B-Pillar – C-Pillar Distance	667
20	Roof Sill Bottom Height	1352
21	Roof Sill Top Height	1457
22	Floor Sill Bottom Height	180
23	Floor Sill Top Height	261

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

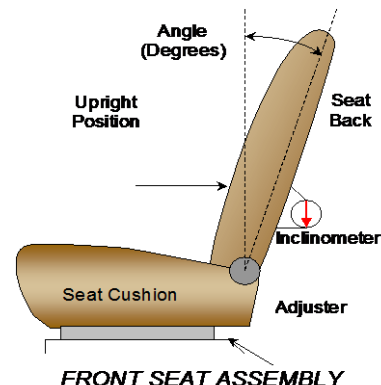
Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

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 October 2015.

	Degrees
Driver Seat Back Angle	3.9° on outboard headrest post
Passenger Seat Back Angle	0.7° on outboard headrest post



SEAT FORE/AFT POSITIONS

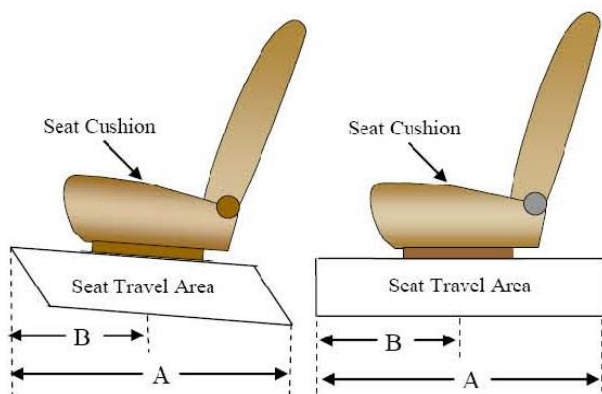
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated October 2015.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	288 mm / 25 detents (1 st as 1)	149 mm / 10 th detent (1 st as 0)
Passenger Seat	240 mm / 25 detents (1 st as 1)	0 mm / 0 th detent (1 st as 0)

SEAT BELT UPPER ANCHORAGES

The seat belt upper anchorages are positioning 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: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

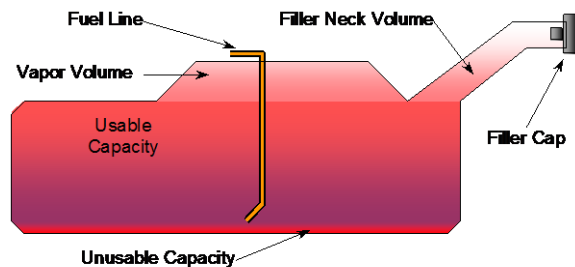
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	56.0
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	51.5 to 52.6
Actual Amount of Solvent used	52.2
1/3 of Usable Capacity	18.7

FUEL PUMP

Describe the fuel pump type, its behavior, and the location of the fuel filler pipe.

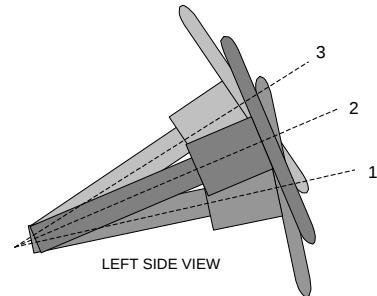
The vehicle is equipped with an electronic fuel pump. Ignition Stage 2 (push the engine start button twice) will activate the fuel pump to prime the system. The filler neck is located on the driver's side.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

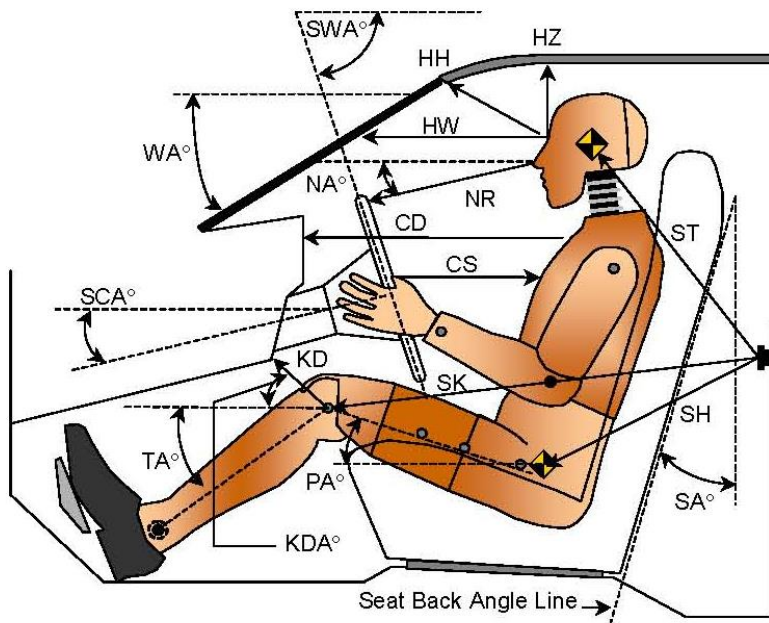
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	72.6	149
Geometric Center Position 2	69.9	169
Uppermost Position 3	67.2	189
Telescoping Steering Wheel Travel		40
Test Position	69.9	169

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017



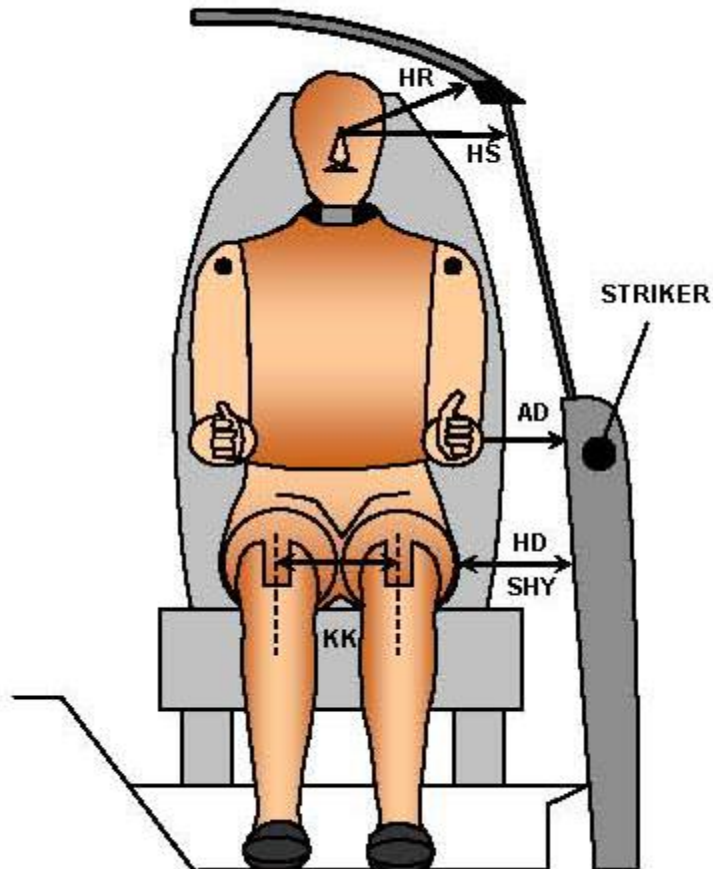
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		24.9		
SWA°	Steering Wheel Angle		69.9		
SCA°	Steering Column Angle		20.1		
SA°	Seat Back Angle		3.9		0.7
HZ	Head to Roof (Z)	206	90	195	90
HH	Head to Header	344	27.7	266	45.1
HW	Head to Windshield	639	0	599	0
NR	Nose to Rim	385	4.0		
CD	Chest to Dash	535		349	
CS	Chest to Steering Hub	324	3.6		
RA	Rim to Abdomen	207	0		
KDL	Left Knee to Dash	178	29.8	114	34.0
KDR	Right Knee to Dash	112	38.3	124	39.1
PA°	Pelvic Angle		23.8		19.9
TA°	Tibia Angle		39.8		42.1
SK	Striker to Knee	646	102.1	727	104.9
ST	Striker to Head	404	19.6	416	45.9
SH	Striker to H-Point	389	139.2	478	122.5

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017



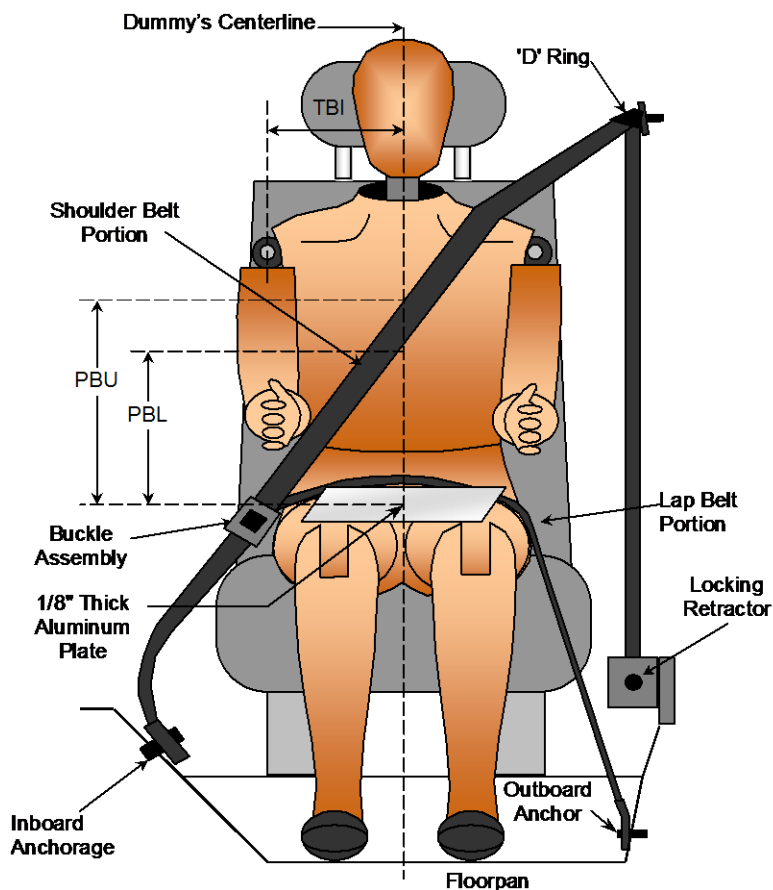
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	150	104
HD	H-Point to Door	156	173
HR	Head to Side Header	232	246
HS	Head to Side Window	363	381
KK	Knee to Knee	355	227
SHY	Striker to H-Point (Y Direction)	312	315
AA	Ankle to Ankle	353	165

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	390	345
PBL - Top surface of reference to belt lower edge	mm	300	255

BELT LENGTH DATA

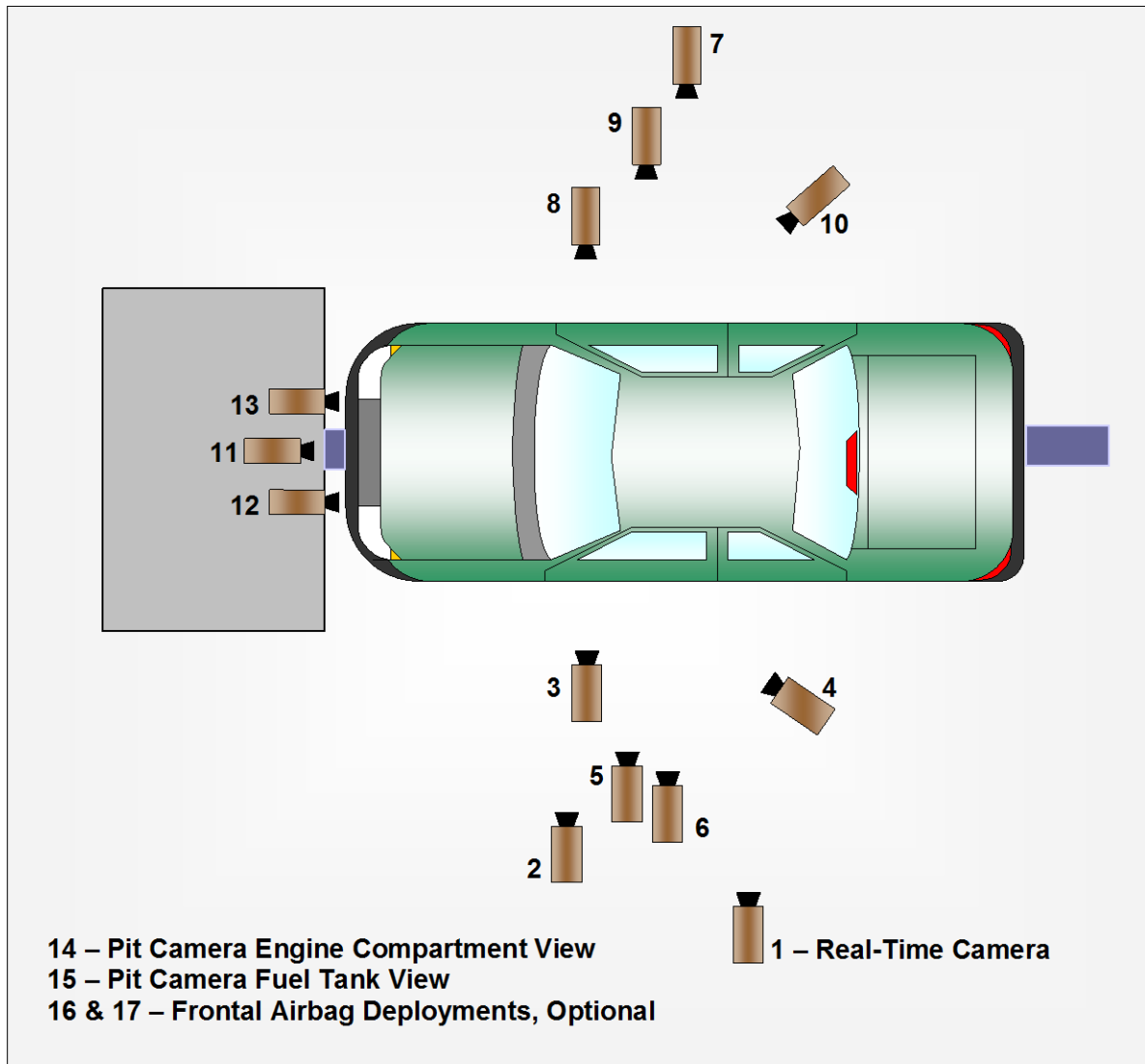
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	905	975
Lap Belt Length as measured on ATD	mm	560	630
Remainder of belt on reel	mm	935	795
Total Belt Length for Continuous Webbing Systems	mm	3000	3000

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

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 (CONTINUED)
CAMERA LOCATIONS AND DATA

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	-1640	-6345	-1760	50	1000
3	Left Front Half	-1180	-5840	-1360	25	1000
4	Left Angle	-6730	-7537	-2071	75	1000
5	Steering Column - Top					
6	Steering Column - Bottom					
7	Right Overall	-2220	6080	-1405	16	1000
8	Passenger Close-Up	-1560	6294	-1795	50	1000
9	Right Front Half	-1080	5821	-1455	25	1000
10	Right Angle	-6770	7288	-2090	75	1000
11	Windshield	150	0	-2310	16	1000
12	Driver Windshield	280	-370	-2230	25	1000
13	Passenger Windshield	280	370	-2230	25	1000
14	Pit Front	-990	0	3340	24	1000
15	Pit Rear	-3160	0	3340	24	1000
16	Onboard Driver Side				12	1000
17	Onboard Passenger Side				12	1000
18	Real-Time Pan View					30

***COORDINATES:**

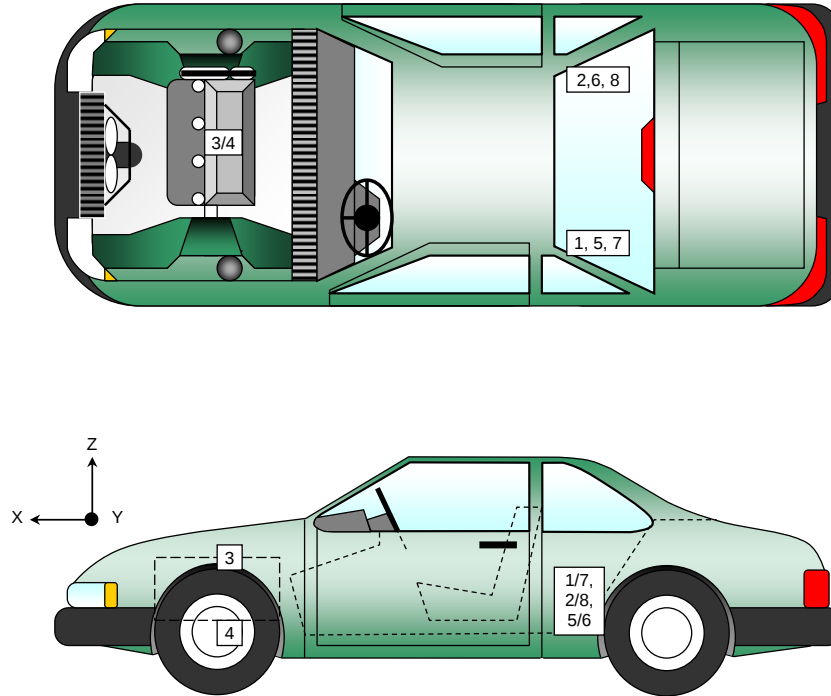
+X = forward of impact plane
 +Y = right of monorail centerline
 +Z = below ground level

Cameras 5 & 6 were not used for this test.

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	1832	-380	-226
2	Right Rear Crossmember Accelerometer – X Direction	1832	380	-229
3	Engine Top X	4031	25	-747
4	Engine Bottom X	3845	15	-225
5	Left Rear Crossmember Accelerometer – Z Direction	1832	-380	-226
6	Right Rear Crossmember Accelerometer – Z Direction	1832	380	-229
7	Left Rear Crossmember Accelerometer Redundant – X Direction	1857	-380	-226
8	Right Rear Crossmember Accelerometer Redundant – X Direction	1857	380	-229

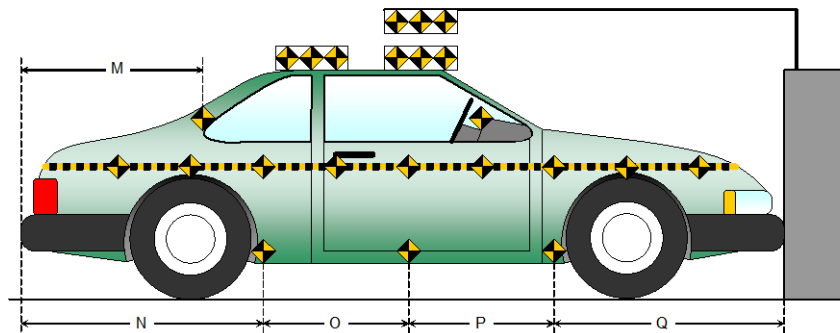
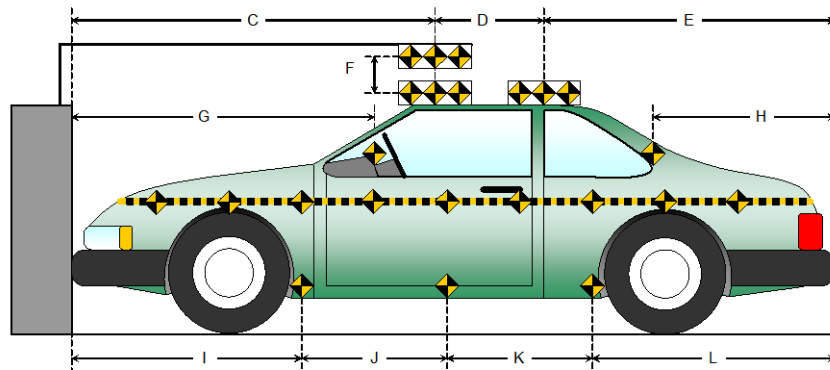
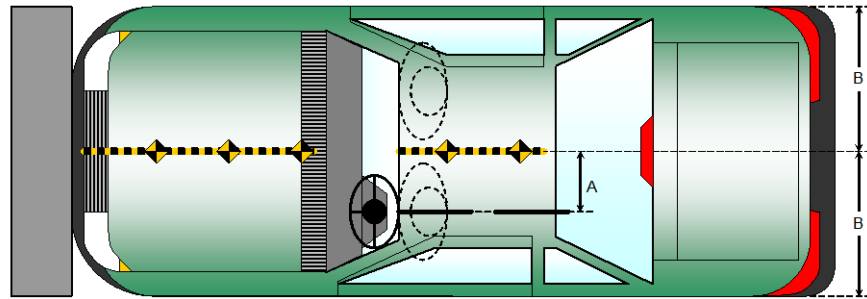
Reference Points: X - Rear Surface of Vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

Item	Value (mm)
A	361
B	931
C	2325
D	615
E	1847
F	430
G	
H	1271
I	1377
J	980
K	980
L	1450
M	1271
N	1450
O	980
P	980
Q	1377



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

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

Advanced Research Load Cell Barrier

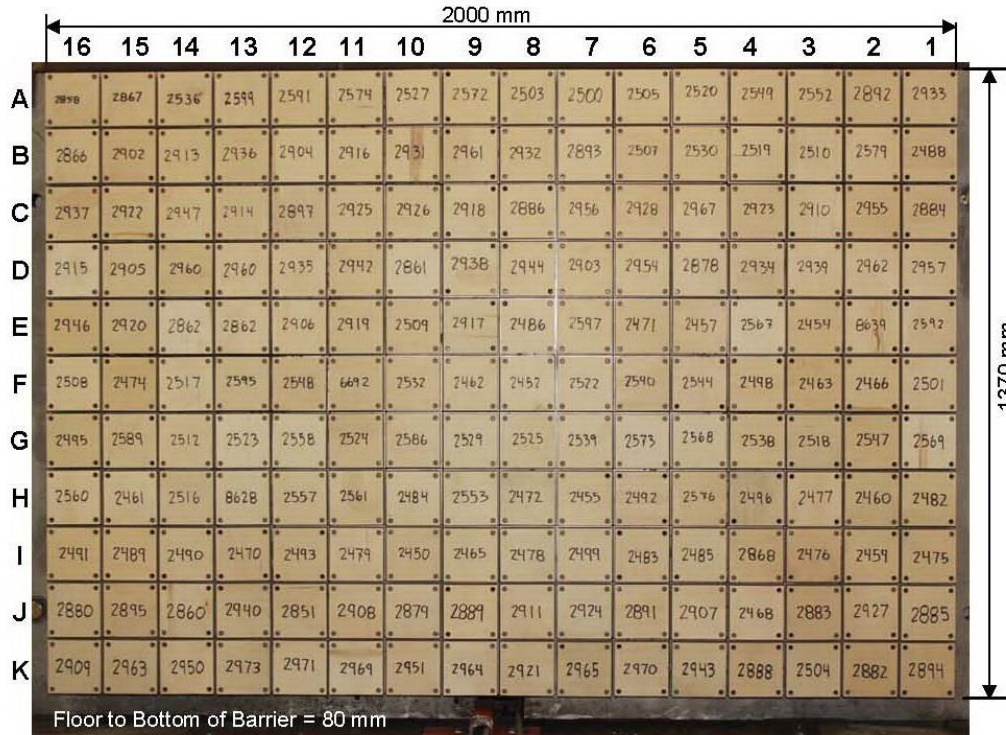


Photo for Reference Only

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: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017

INSTRUMENTATION

Driver Dummy Data Channels	47
Passenger Dummy Data Channels	47
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	630

CAMERA COVERAGE

High-Speed Vehicle Onboard	2
High-Speed Offboard	12
Real-Time	2
Total	16

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

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	HIIL 50% / 351	HIIL 5% / 634
Head Contact	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were unlocked	Doors were unlocked
Front Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Rear Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Seat Track Shift (mm)	0	0
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	795
Center	mm	760
Right Side	mm	815
Average	mm	790

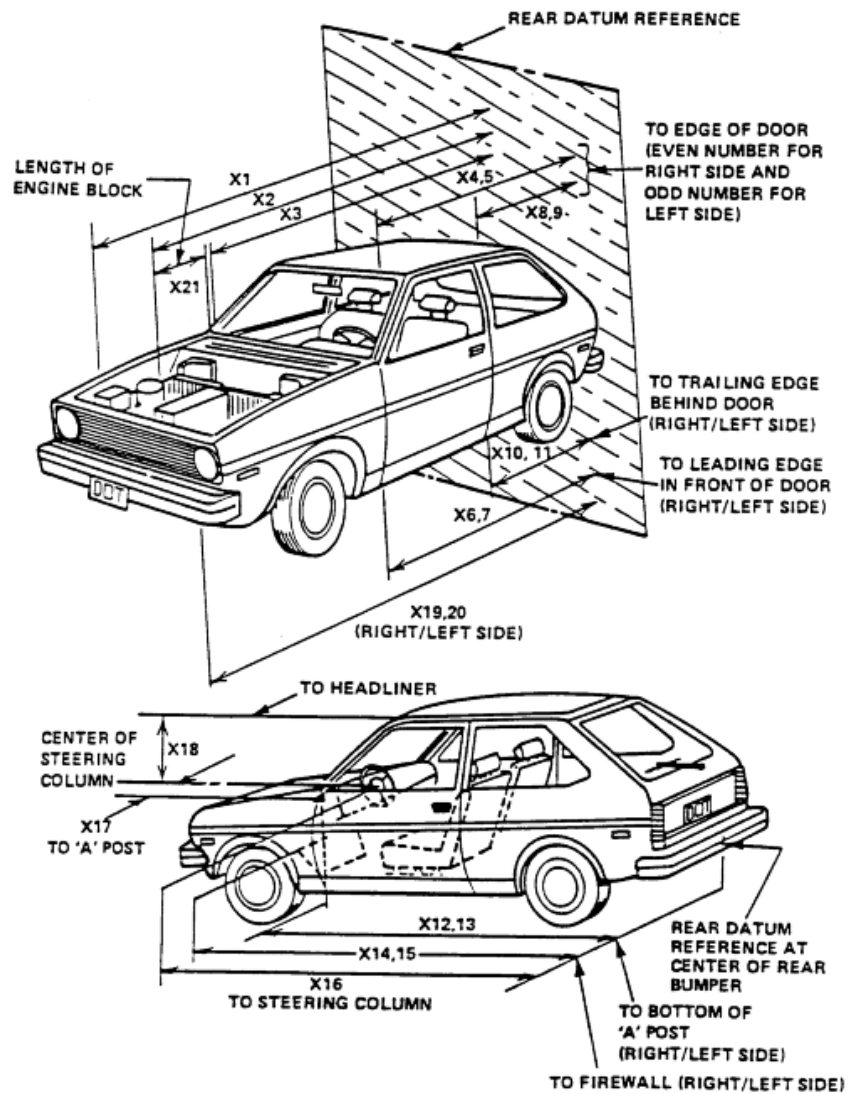
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	Yes	Yes
Curtain Side Airbag	Yes	No	Yes	No
Torso/Pelvis Side Airbag	Yes	No	Yes	No
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes		Yes	

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4787	4289	498
2	RSOV to Front of Engine	mm	4046	3825	221
3	RSOV to Firewall	mm	3660	3626	34
4	RSOV to Upper Leading Edge of Right Door	mm	3176	3175	1
5	RSOV to Upper Leading Edge of Left Door	mm	3176	3164	12
6	RSOV to Lower Leading Edge of Right Door	mm	3241	3249	-8
7	RSOV to Lower Leading Edge of Left Door	mm	3241	3249	-8
8	RSOV to Upper Trailing Edge of Right Door	mm	2102	2087	15
9	RSOV to Upper Trailing Edge of Left Door	mm	2102	2088	14
10	RSOV to Lower Trailing Edge of Right Door	mm	2098	2104	-6
11	RSOV to Lower Trailing Edge of Left Door	mm	2098	2102	-4
12	RSOV to Bottom of "A" Post of Right Side	mm	3274	3289	-15
13	RSOV to Bottom of "A" Post of Left Side	mm	3271	3278	-7
14	RSOV to Firewall, Right Side	mm	3618	3601	17
15	RSOV to Firewall, Left Side	mm	3621	3608	13
16	RSOV to Steering Column	mm	2757	2795	-38
17	Center of Steering Column to "A" Post	mm	362	351	11
18	Center of Steering Column to Headliner	mm	415	416	-1
19	RSOV to Right Side of Front Bumper	mm	4515	4172	343
20	RSOV to Left Side of Front Bumper	mm	4515	4164	351
21	Length of Engine Block	mm	521	521	0
RD	RSOV to Right Side of Dash Panel	mm	2969	2979	-10
CD	RSOV to Center of Dash Panel	mm	3131	3128	3
LD	RSOV to Left Side of Dash Panel	mm	3012	2984	28

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017

VEHICLE INFORMATION

VIN: 1HGCV1F12JA010000 Wheelbase (mm): 2830
Vehicle Size Category: Passenger Car Test Weight (kg): 1599.5

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 15

Cal. Procedure/Interval: MGA procedure / 6 month

Integration Algorithm: Trapezoidal

Linearity: > 99%

Impact Velocity (km/h): 56.52

Velocity Change (km/h): 64.9

Time of Separation (msec): 97

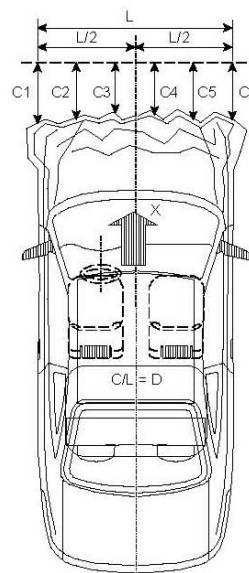
CRUSH PROFILE

Collision Deformation Classification: 12FDEW2

Midpoint of Damage: Centerline

Damage Region Length (mm): 1480

Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4515	4164	351
C2	Crush zone 2 at left side	mm	4651	4195	456
C3	Crush zone 3 at left side	mm	4690	4206	484
C4	Crush zone 4 at right side	mm	4690	4207	483
C5	Crush zone 5 at right side	mm	4651	4174	477
C6	Crush zone 6 at right side	mm	4515	4172	343
L	C1 TO C6	mm	1480	1471	9

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

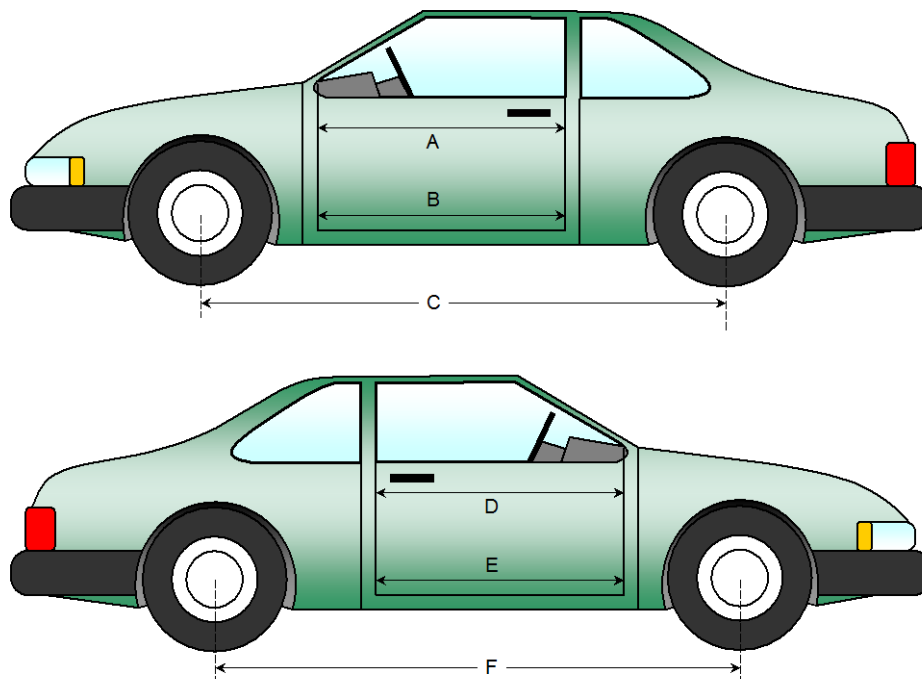
NHTSA No.: M20185300
Test Date: 12/14/2017

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1075	1075	0
B	Left Side Lower	mm	1000	1000	0
D	Right Side Upper	mm	1080	1080	0
E	Right Side Lower	mm	1005	1005	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2830	2714	116
F	Right Side Wheelbase	mm	2830	2743	87



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

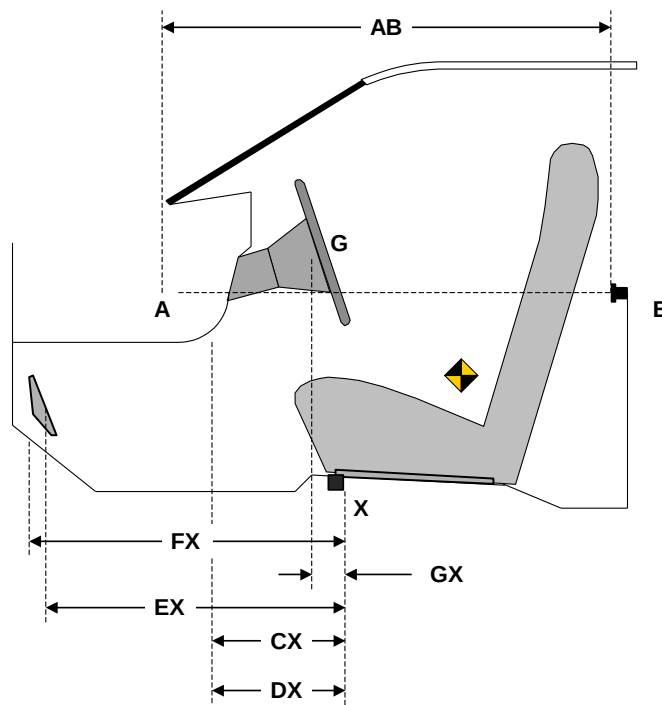
Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	781	781	0
CX	Left Knee Bolster to X	mm	371	362	9
DX	Right Knee Bolster to X	mm	380	368	12
EX	Brake Pedal to X	mm	605	561	44
FX	Foot Rest to X	mm	619	612	7
GX	Center of Steering Column Wheel Hub to X	mm	107	115	-8

X = Front of Seat Track (stationary)



DRIVER COMPARTMENT

DATA SHEET NO. 15
SUMMARY OF FMVSS 212, FMVSS 219 (PARTIAL) DATA, AND 301 DATA

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

Windshield Mounting Details:

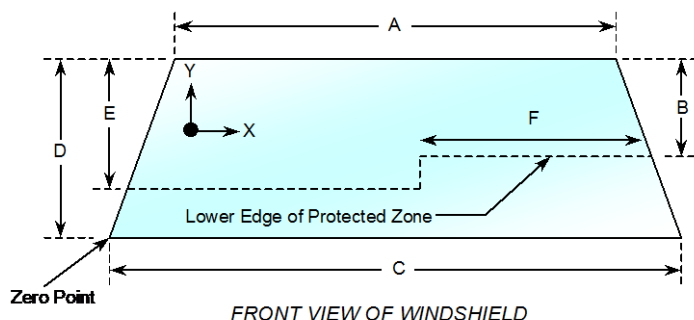
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 21.7° C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2130	2130	100.0
Right Side	2130	2130	100.0
Total	4260	4260	100.0



Item	Units	Value
A	mm	1242
B	mm	434
C	mm	1662
D	mm	678
E	mm	508
F	mm	549

AREA OF PROTECTED ZONE FAILURES - NONE

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. 15 (CONTINUED)
SUMMARY OF FMVSS 212, FMVSS 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
Test Date: 12/14/2017

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.7°C

Test Time: 10:48 a.m.

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: None

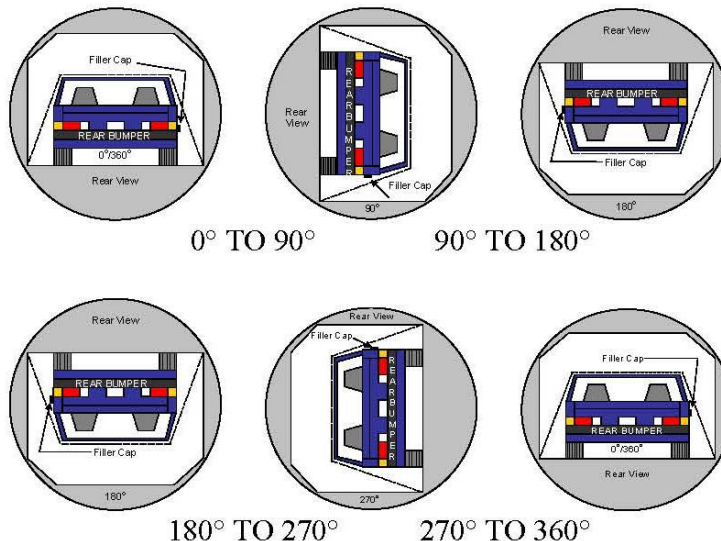
DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017

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°	111	300	411
90° to 180°	111	300	411
180° to 270°	108	300	408
270° to 360°	109	300	409

FMVSS 301 SPILLAGE TABLE (units in ounces)

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

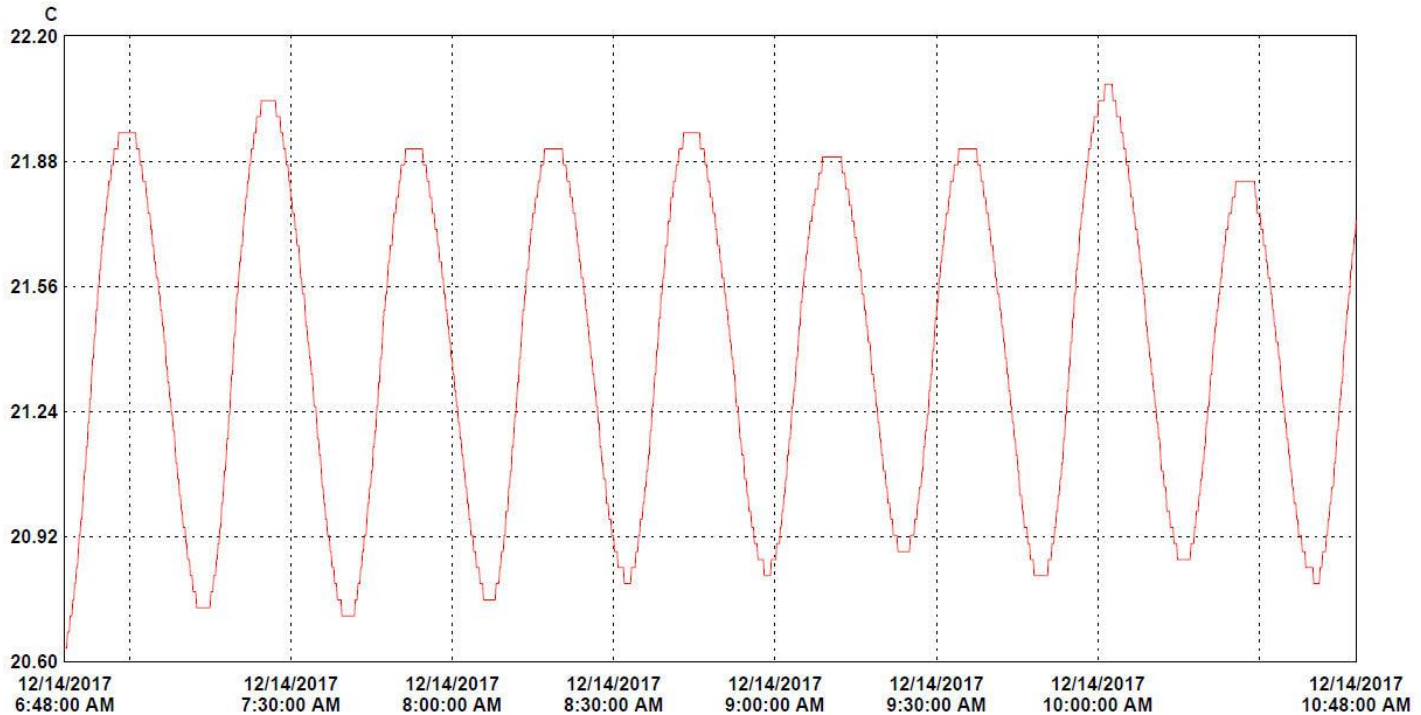
SOLVENT SPILLAGE LOCATION TABLE

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: 2018 Honda Accord 1.5T LX 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: M20185300
 Test Date: 12/14/2017



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	17162078	CrashPrep	1		22.08	21.39	20.63	C	Temperature	M20185300 2018 Honda Accord LX 4-Door Sedan NCAP - Temp.

**APPENDIX A
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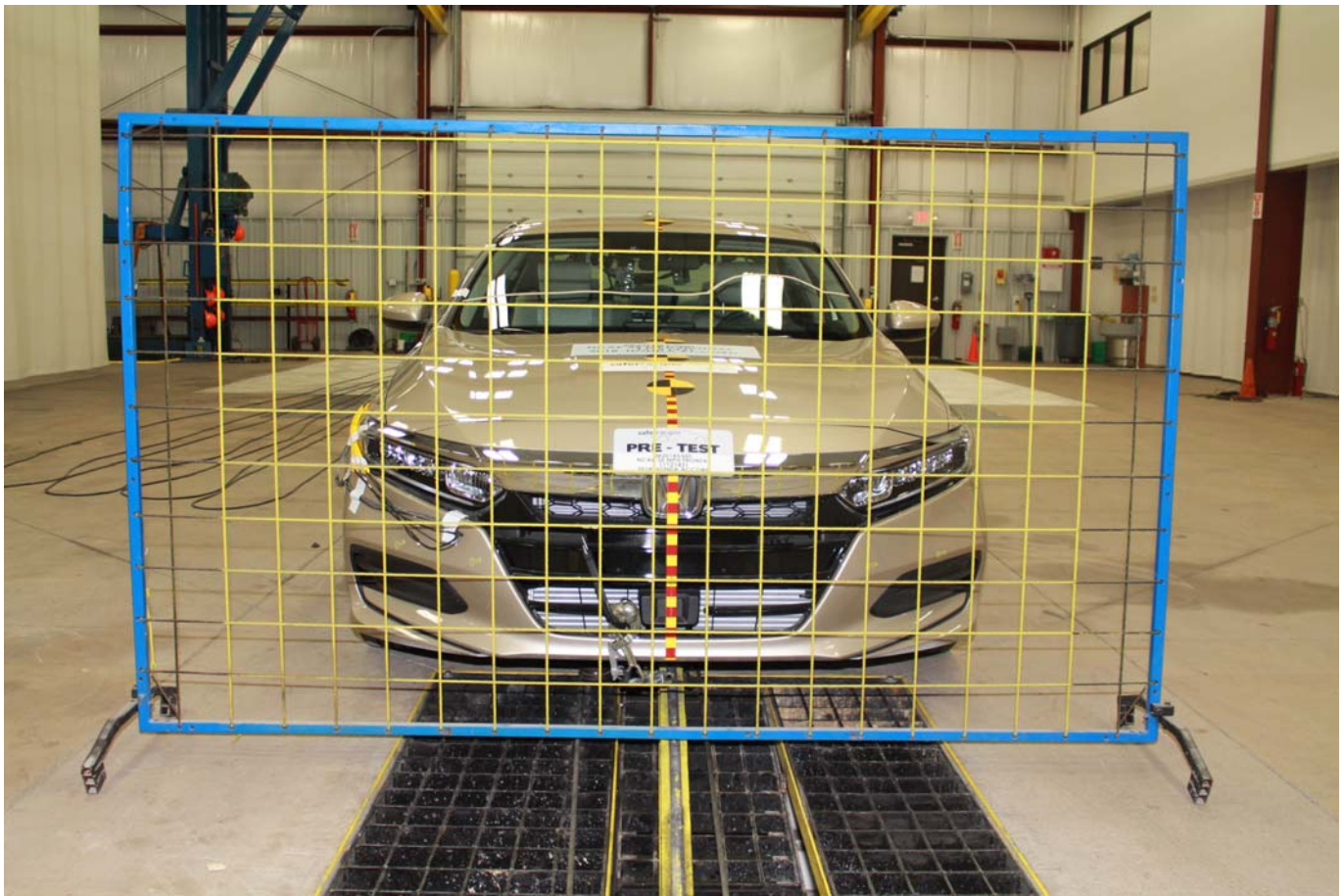


Photo No. 001 - Load Cell Location

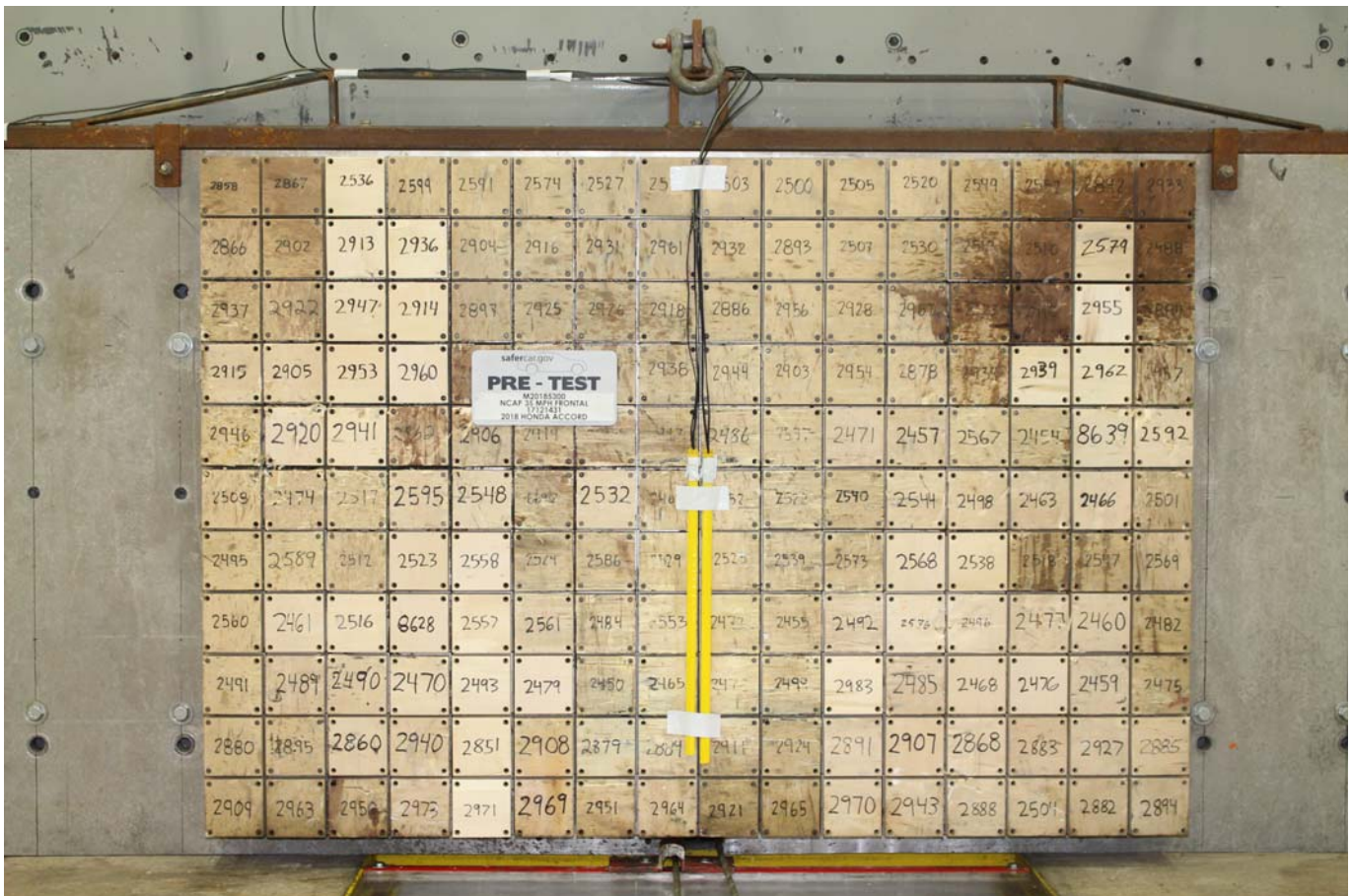


Photo No. 002 - Pre-Test Load Cell Wall

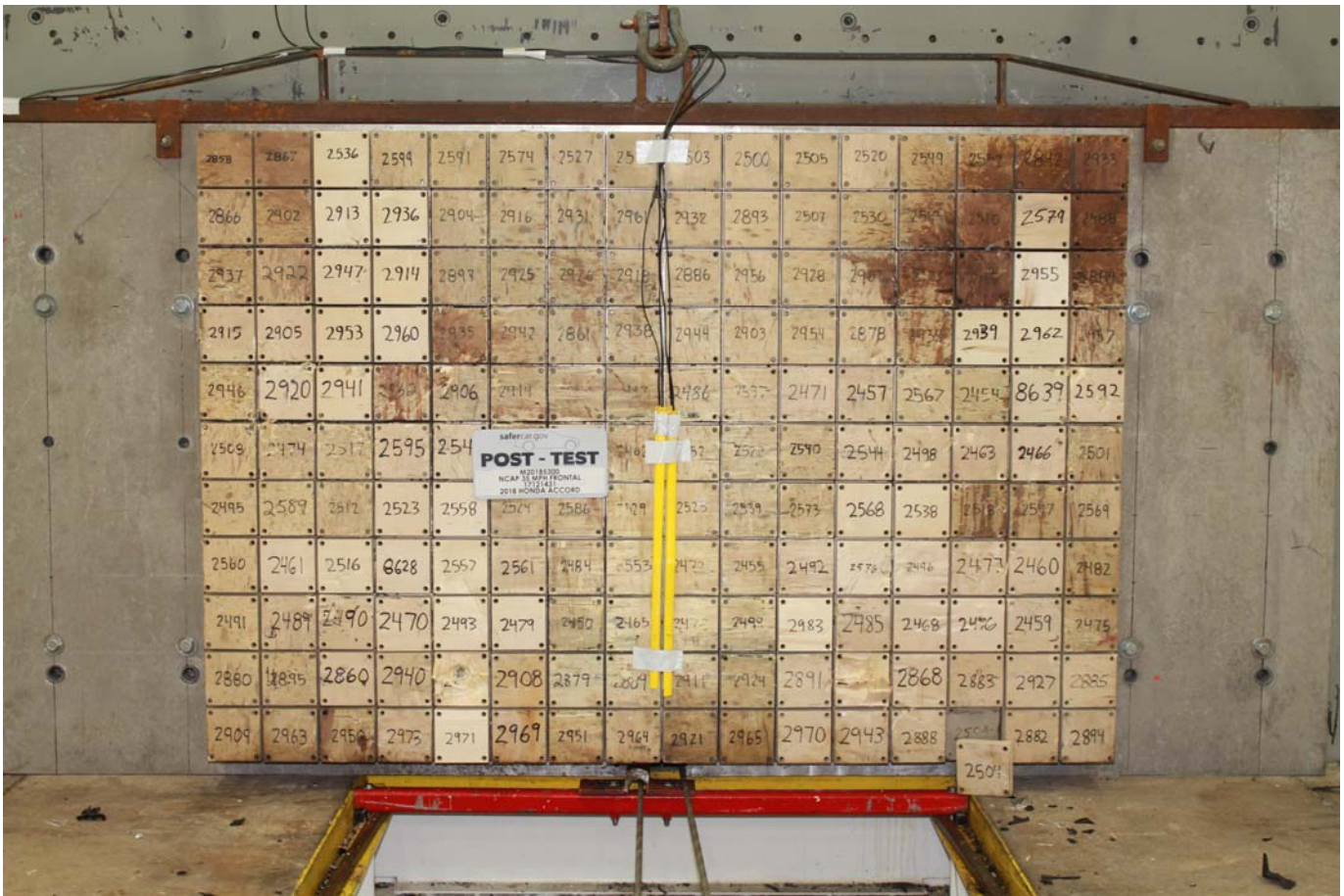


Photo No. 003 - Post-Test Load Cell Wall

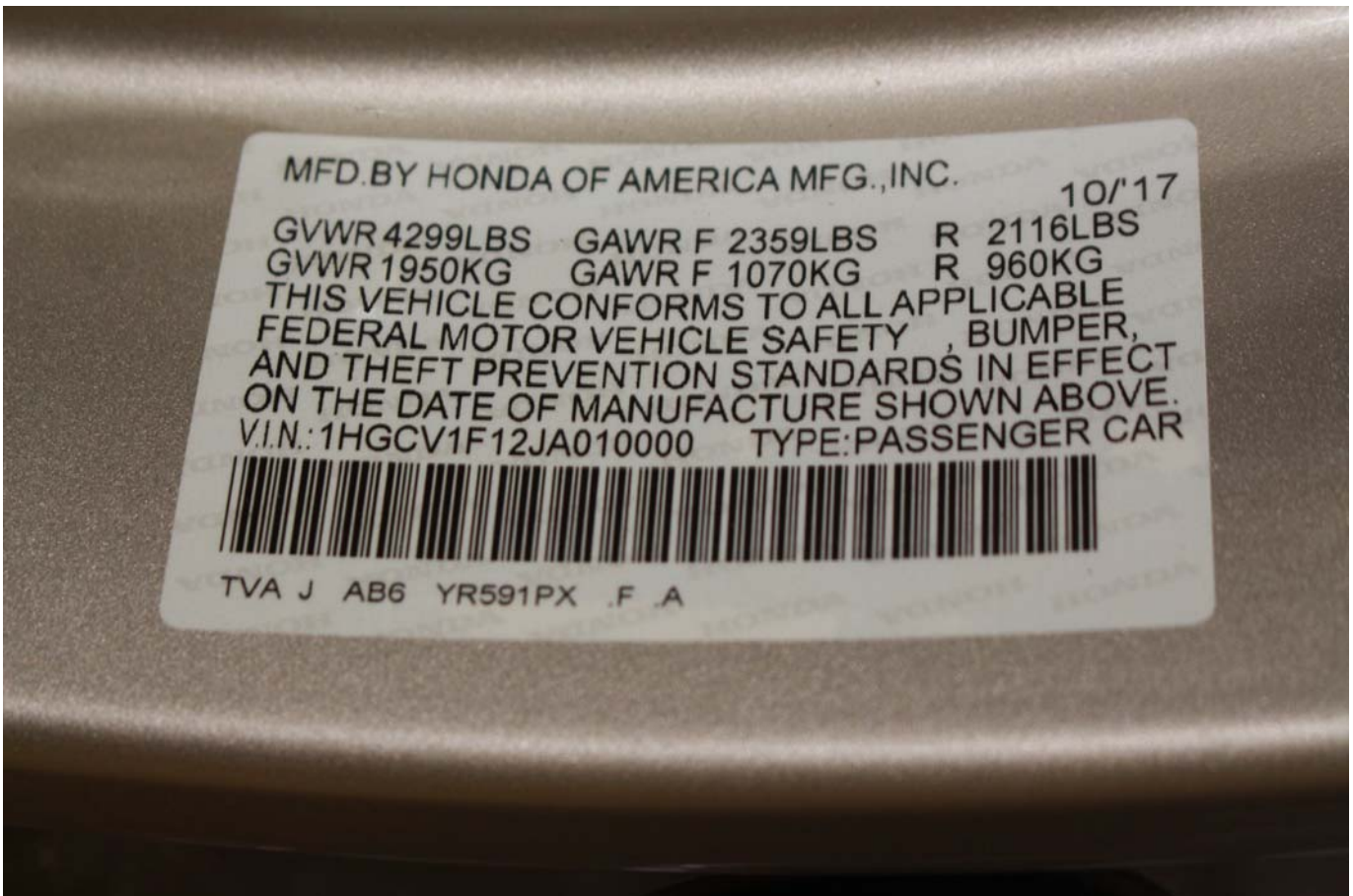


Photo No. 004 - Manufacturer Label

TIRE AND LOADING INFORMATION

SEATING CAPACITY: TOTAL 5 | FRONT 2 | REAR 3

The combined weight of occupants and cargo should never exceed 385kg or 850lbs.

TIRE	SIZE	COLD TIRE PRESSURE
FRONT	225/50R17 94V	220KPA, 32PSI
REAR		220KPA, 32PSI
SPARE	T135/90D16	420KPA, 60PSI

SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION

V7



Photo No. 005 - Tire Placard



Photo No. 006 - 2018 Honda Accord 1.5T LX 4-Door Sedan Frontal As Delivered



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

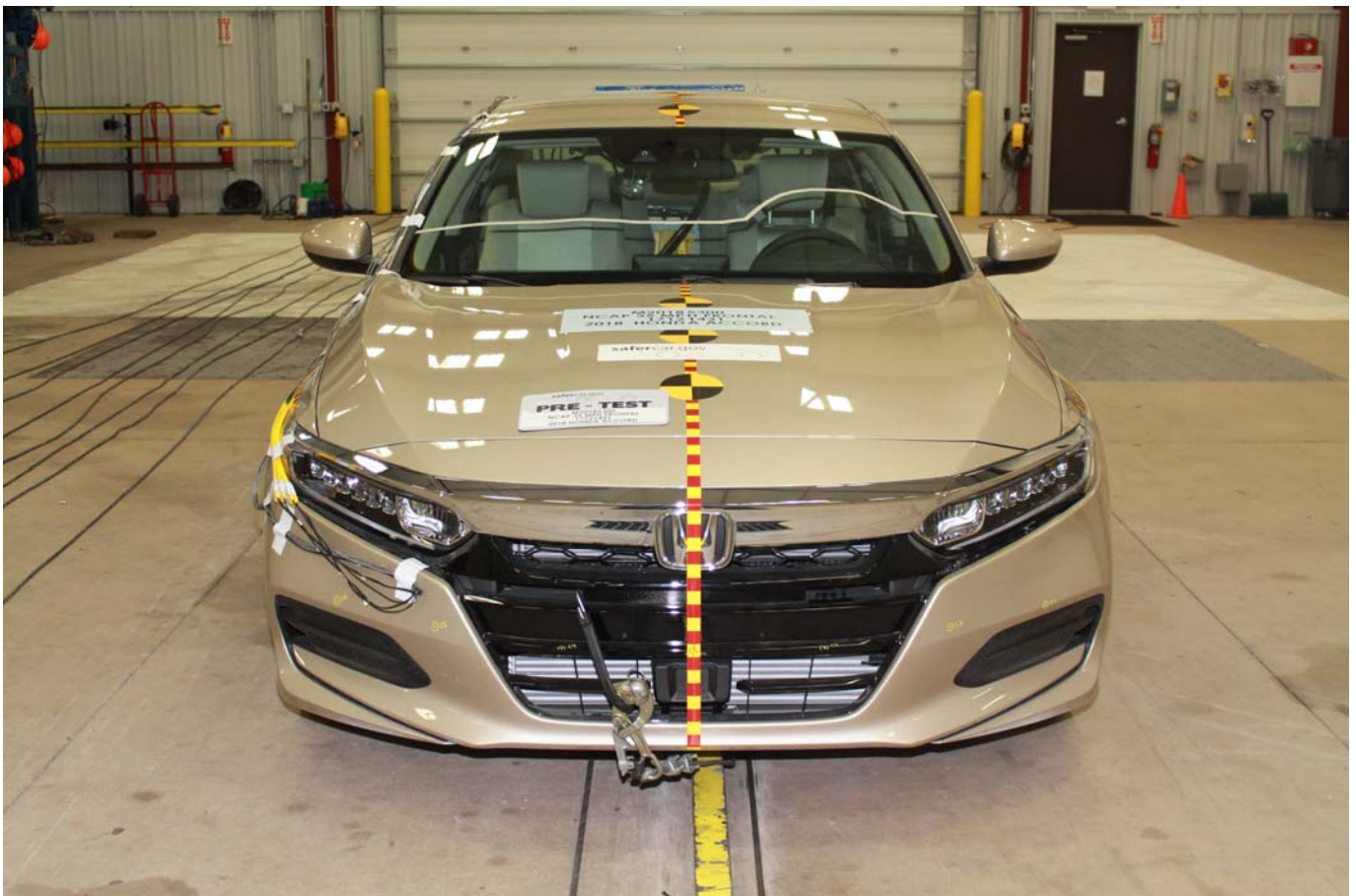


Photo No. 008 - Pre-Test Front View of Test Vehicle

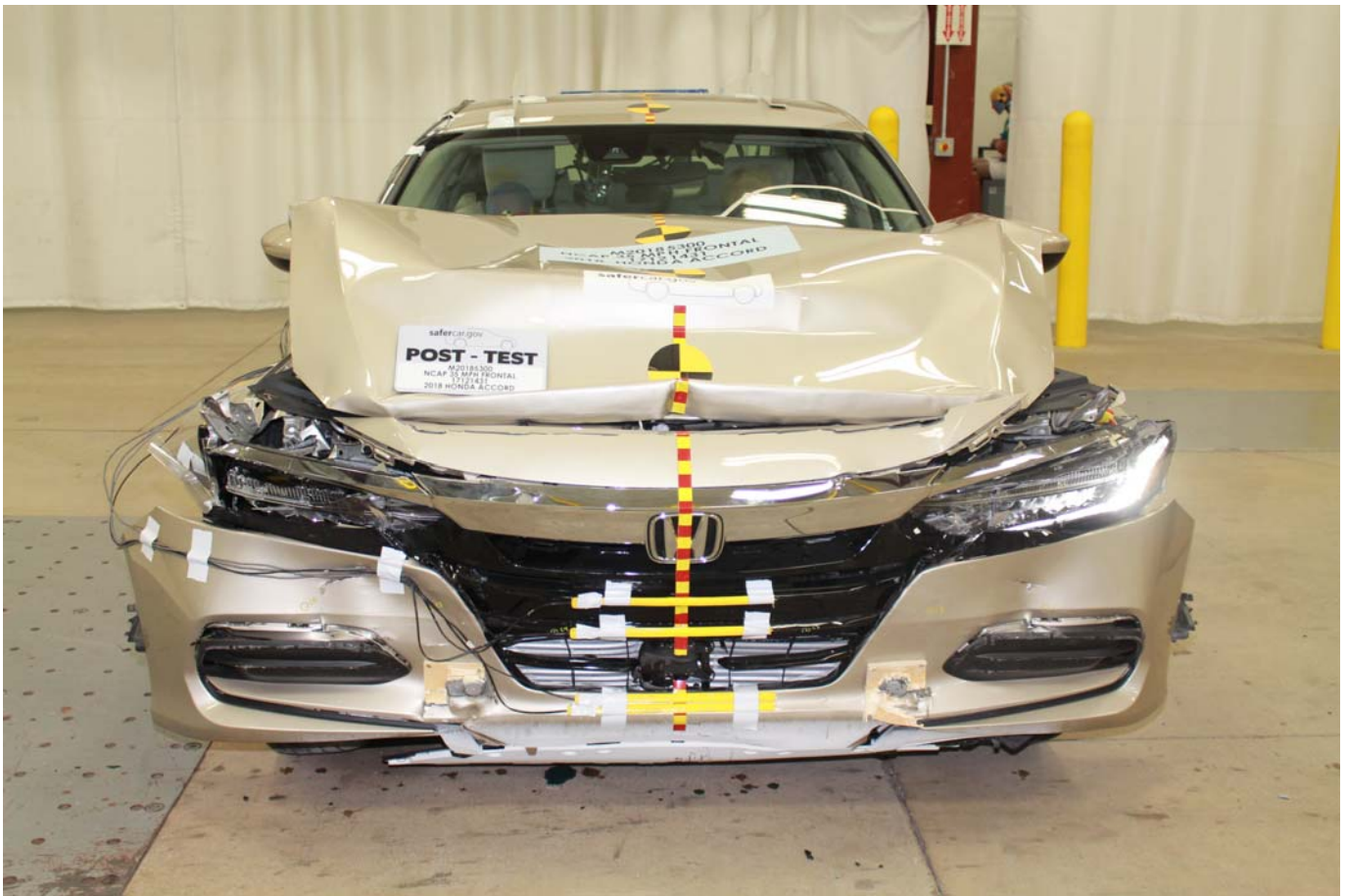


Photo No. 009 - Post-Test Front View of Test Vehicle



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



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

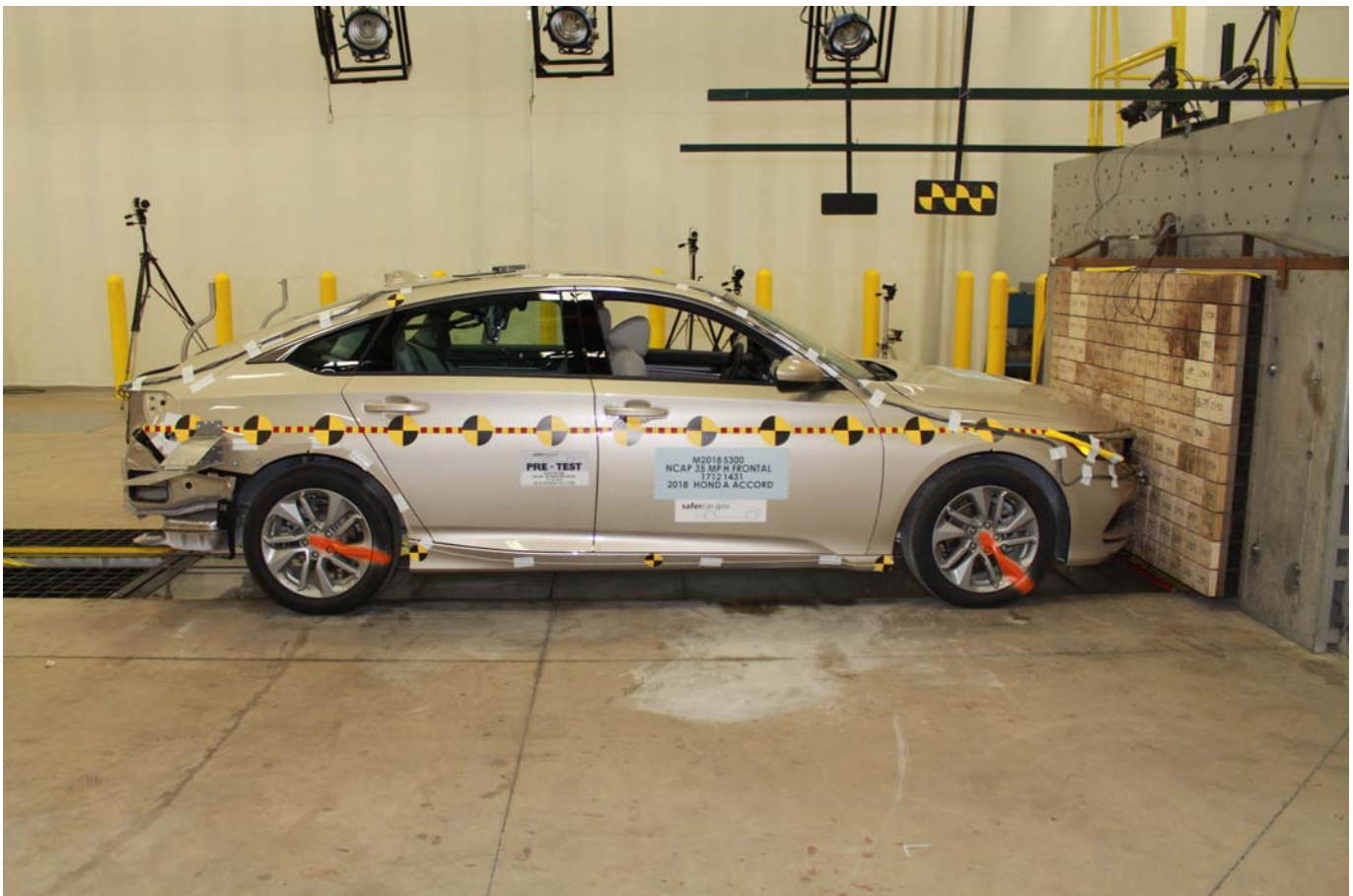


Photo No. 012 - Pre-Test Right View of Test Vehicle



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

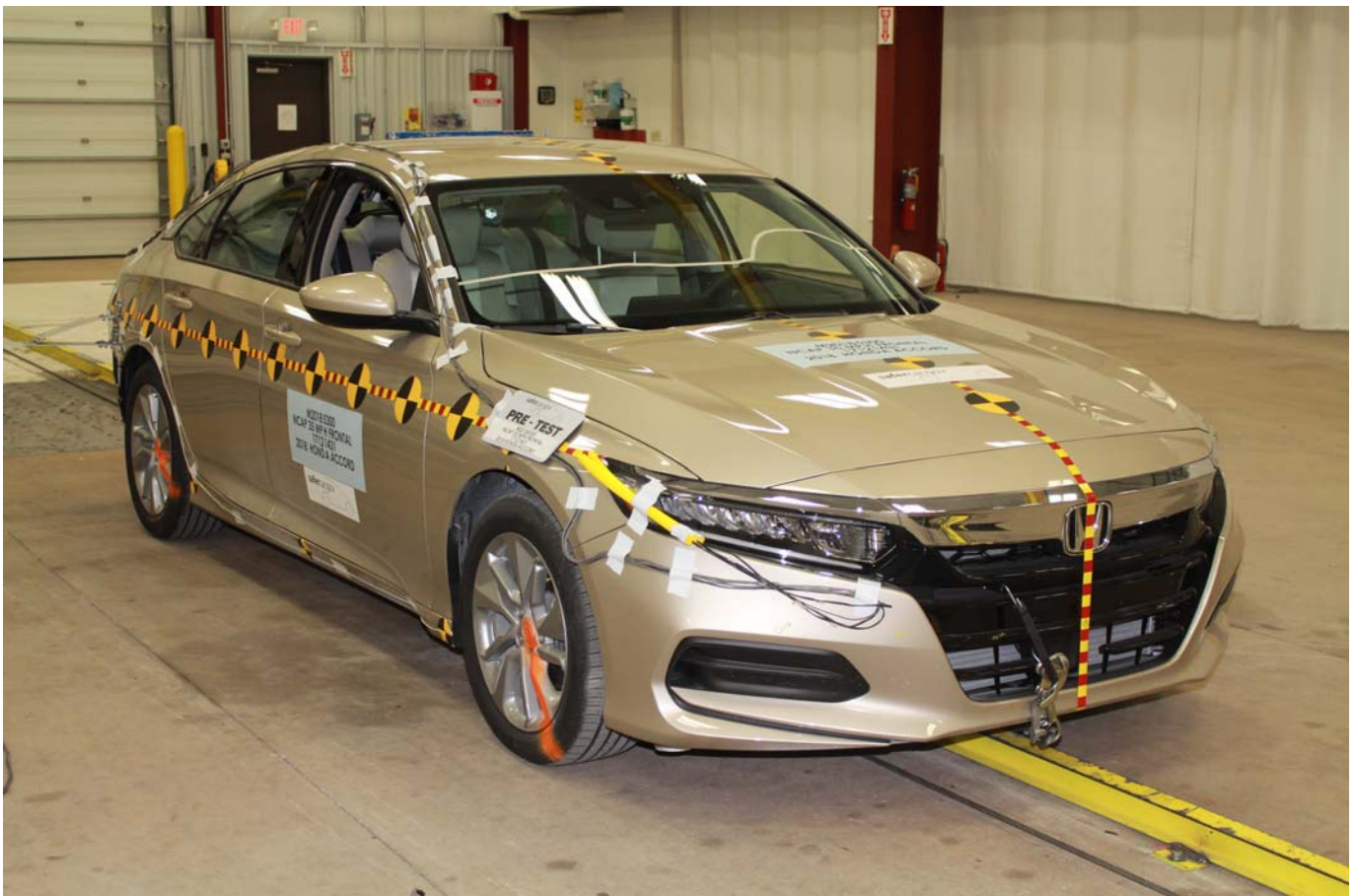


Photo No. 014 - Pre-Test Right Front 3-4 View



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

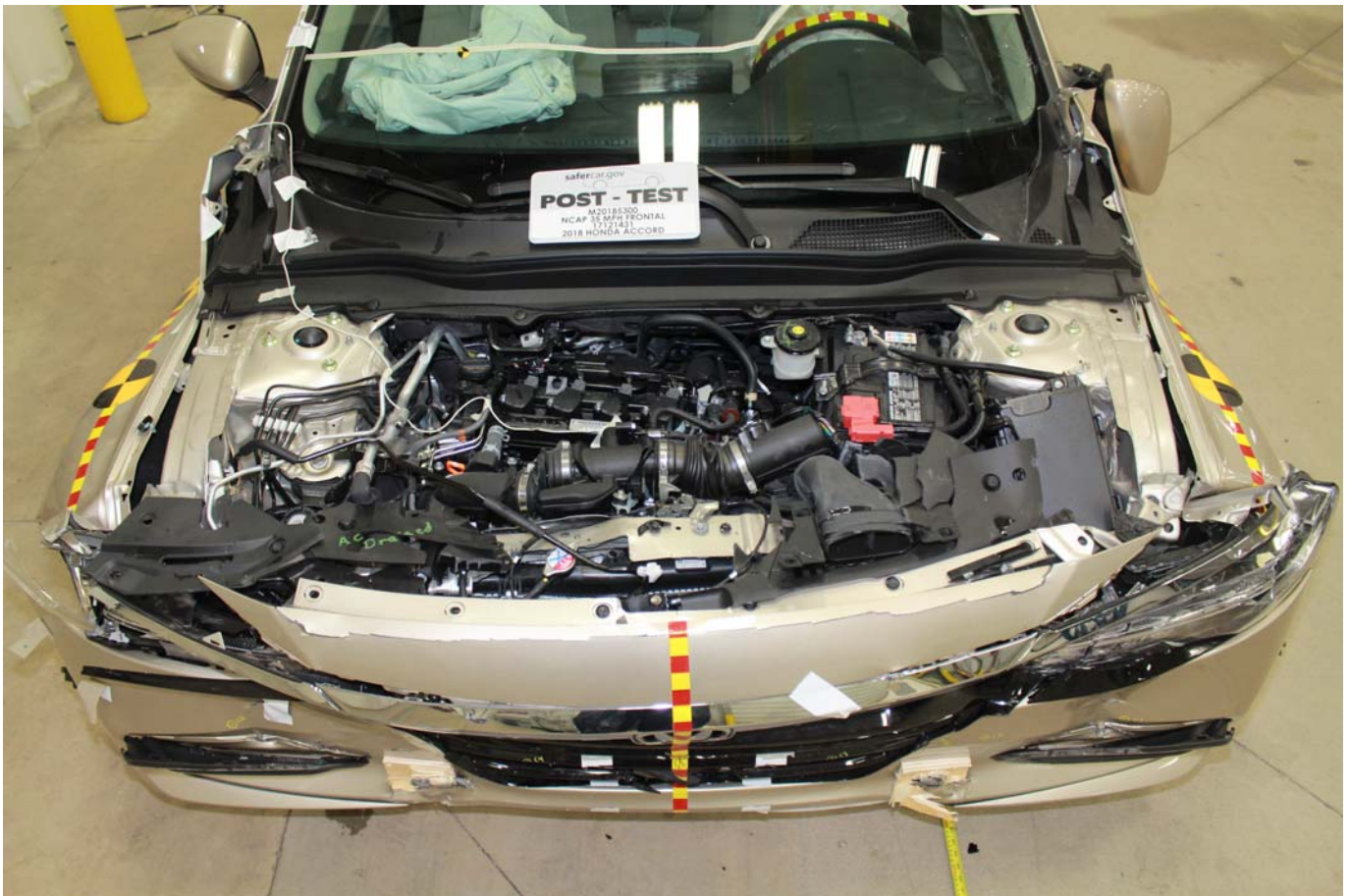


Photo No. 021 - Post-Test Engine Compartment View



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



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

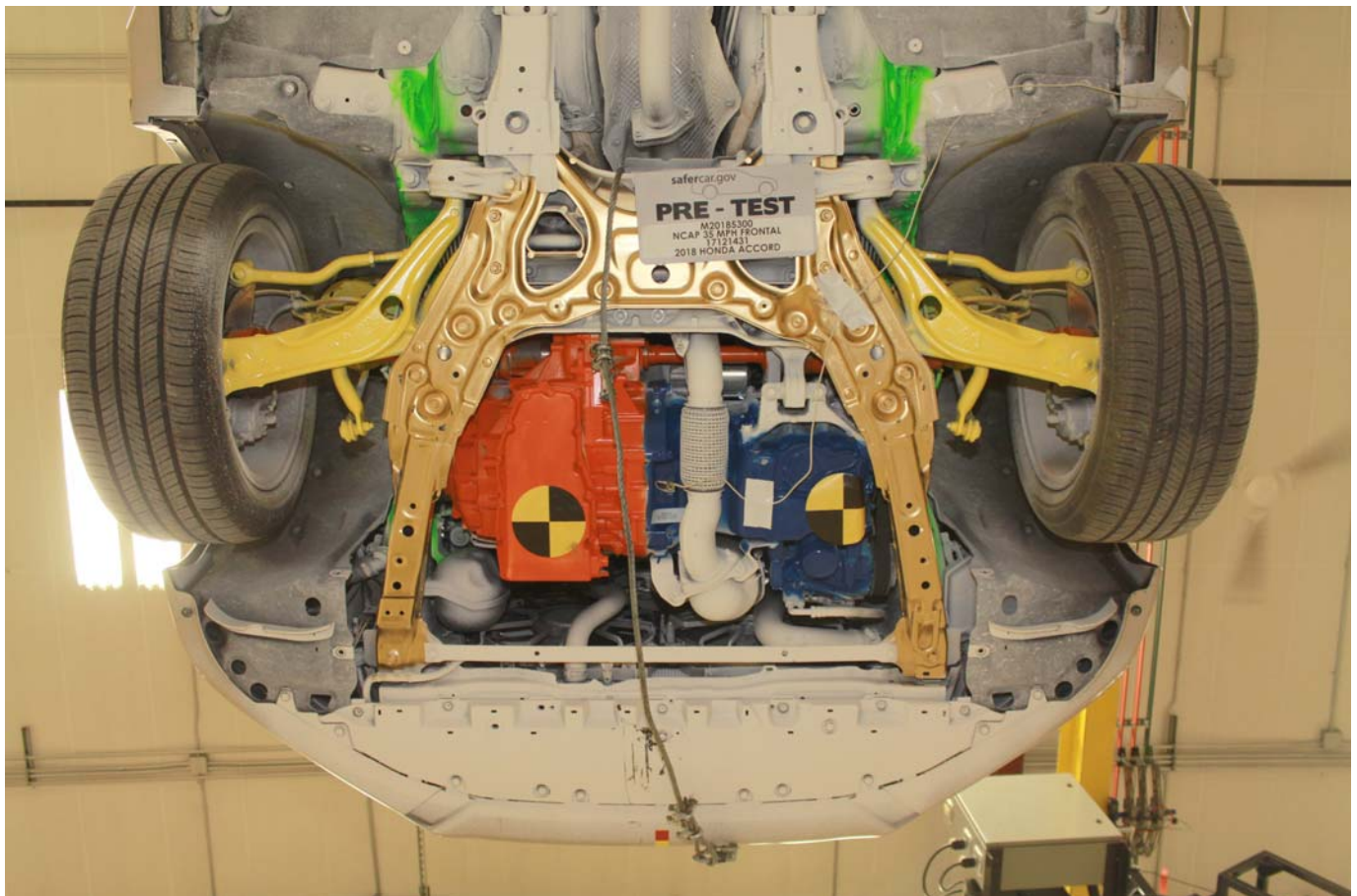


Photo No. 024 - Pre-Test Front Underbody View

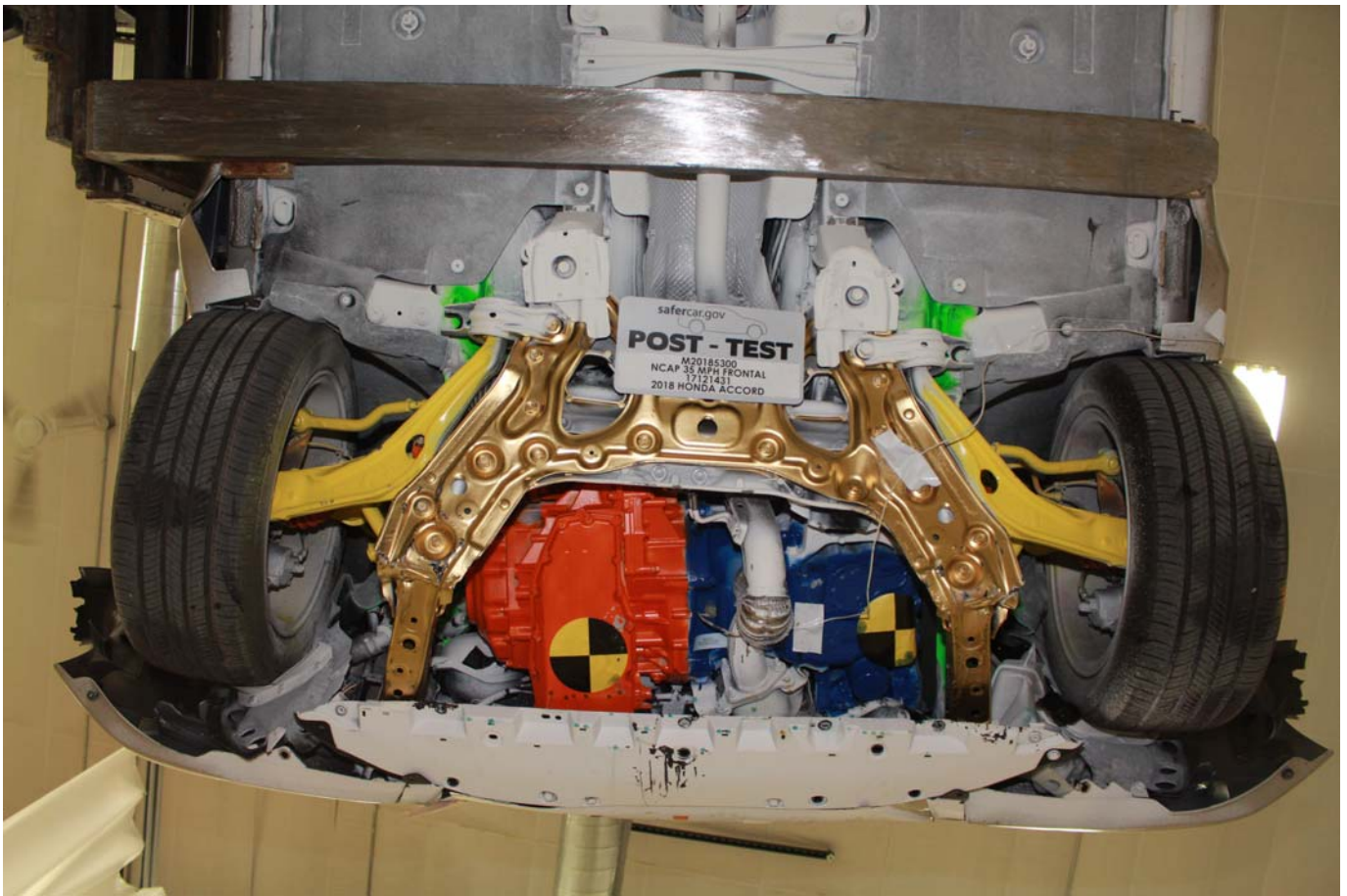


Photo No. 025 - Post-Test Front Underbody View

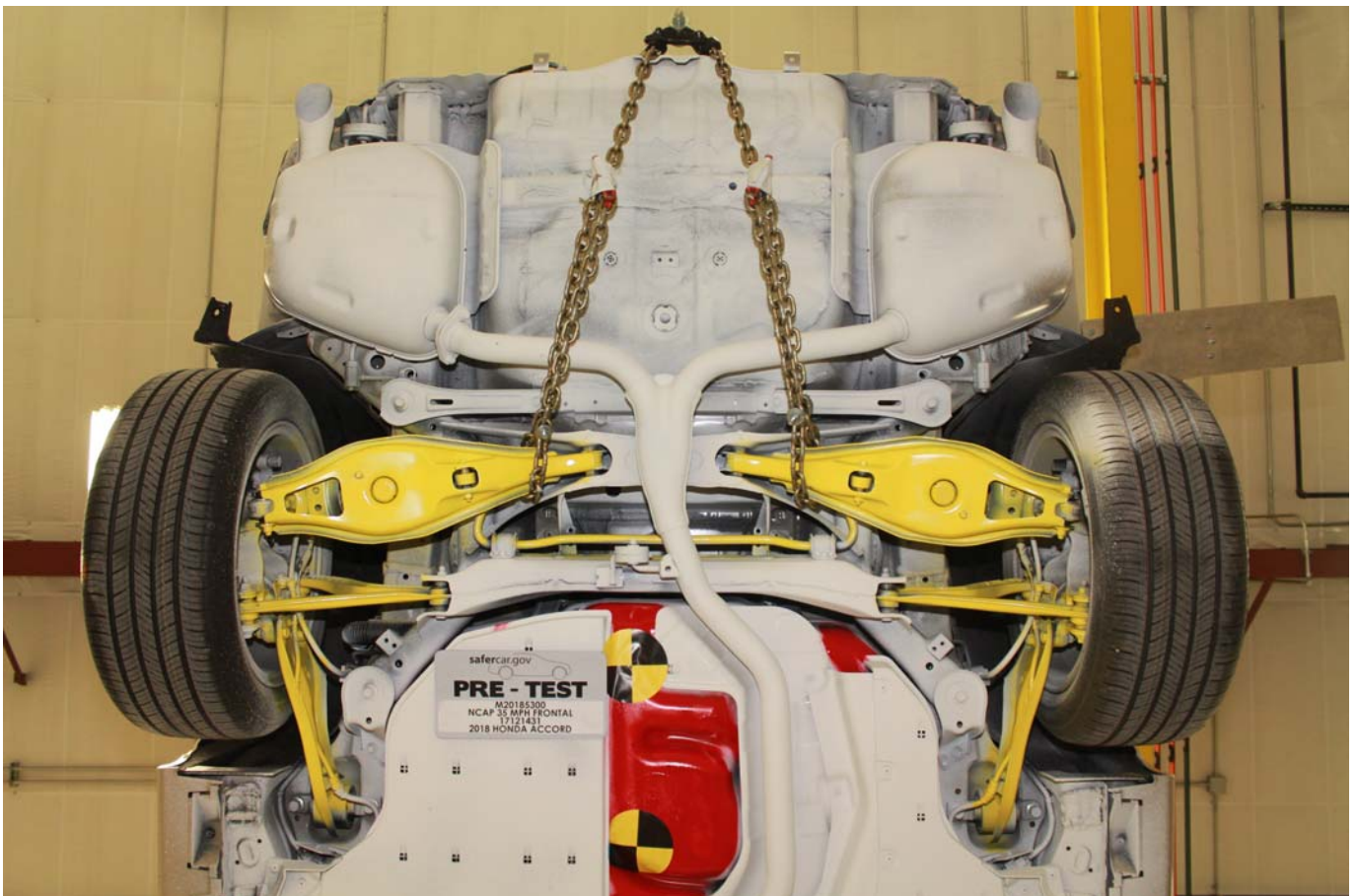


Photo No. 026 - Pre-Test Rear Underbody View

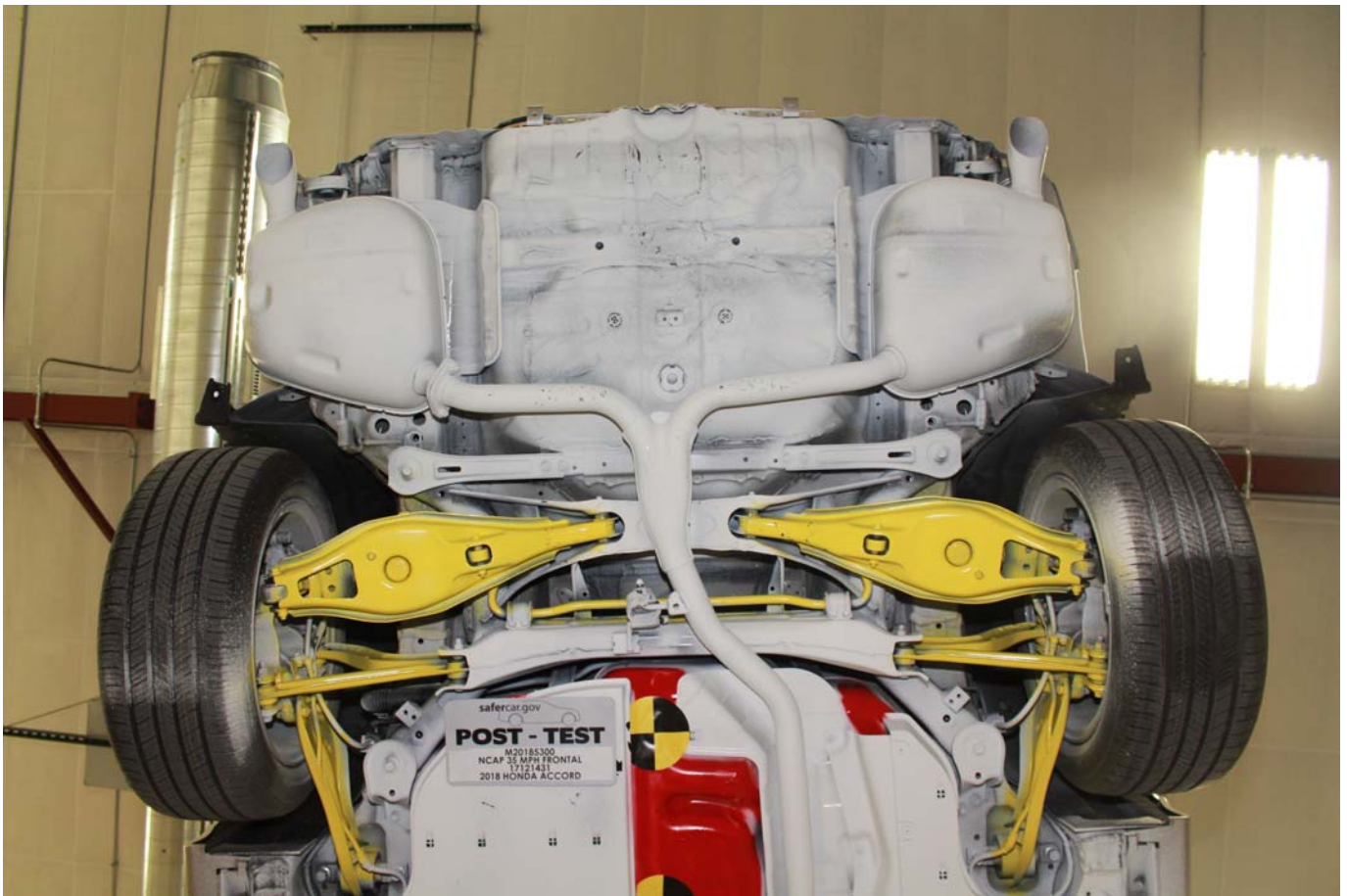


Photo No. 027 - Post-Test Rear Underbody View



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 (Door Open)



Photo No. 035 - Post-Test Driver Dummy and Vehicle Interior (Door Open)



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



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



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

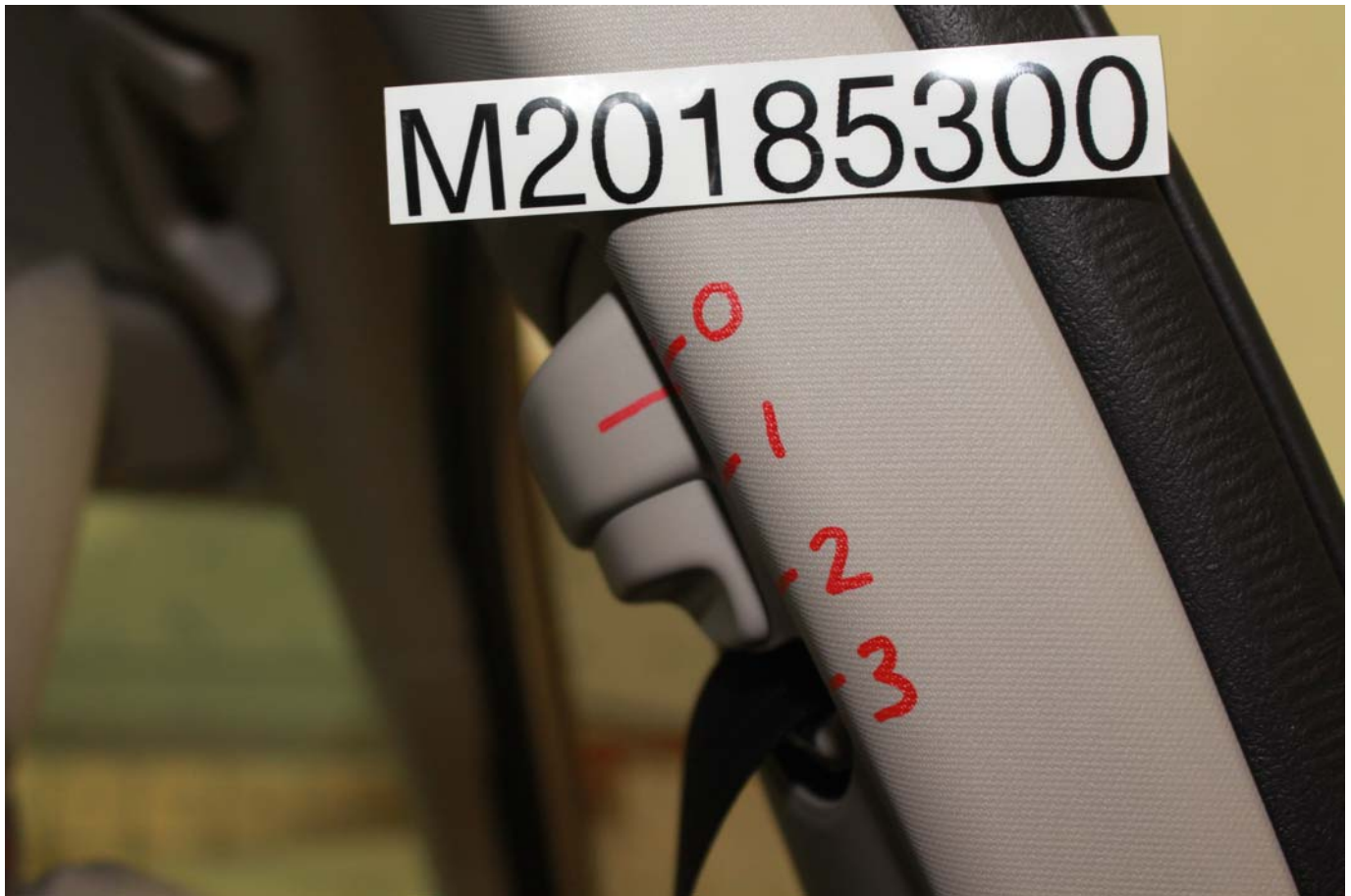


Photo No. 039 - Post-Test View of Belt Anchorage for Driver Dummy



Photo No. 040 - Pre-Test Driver Dummy Feet



Photo No. 041 - Post-Test Driver Dummy Feet



Photo No. 042 - Pre-Test Driver Side Knee Bolster (without dummy)



Photo No. 043 - Post-Test Driver Side Knee Bolster (without dummy)



Photo No. 044 - Pre-Test Driver Side Floorpan



Photo No. 045 - Post-Test Driver Side Floorpan



Photo No. 046 - Post-Test Driver Dummy Face



Photo No. 047 - Post-Test Driver Dummy Contact with Airbag



Photo No. 048 - Post-Test Driver Dummy Contact with Headrest



Photo No. 049 - Pre-Test View of the Steering Wheel



Photo No. 050 - Post-Test View of the Steering Wheel



Photo No. 051 - Pre-Test Passenger Dummy Front View



Photo No. 052 - Post-Test Passenger Dummy Front View



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



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



Photo No. 055 - Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



Photo No. 056 - Post-Test Passenger Dummy and Vehicle Interior (Door Open)

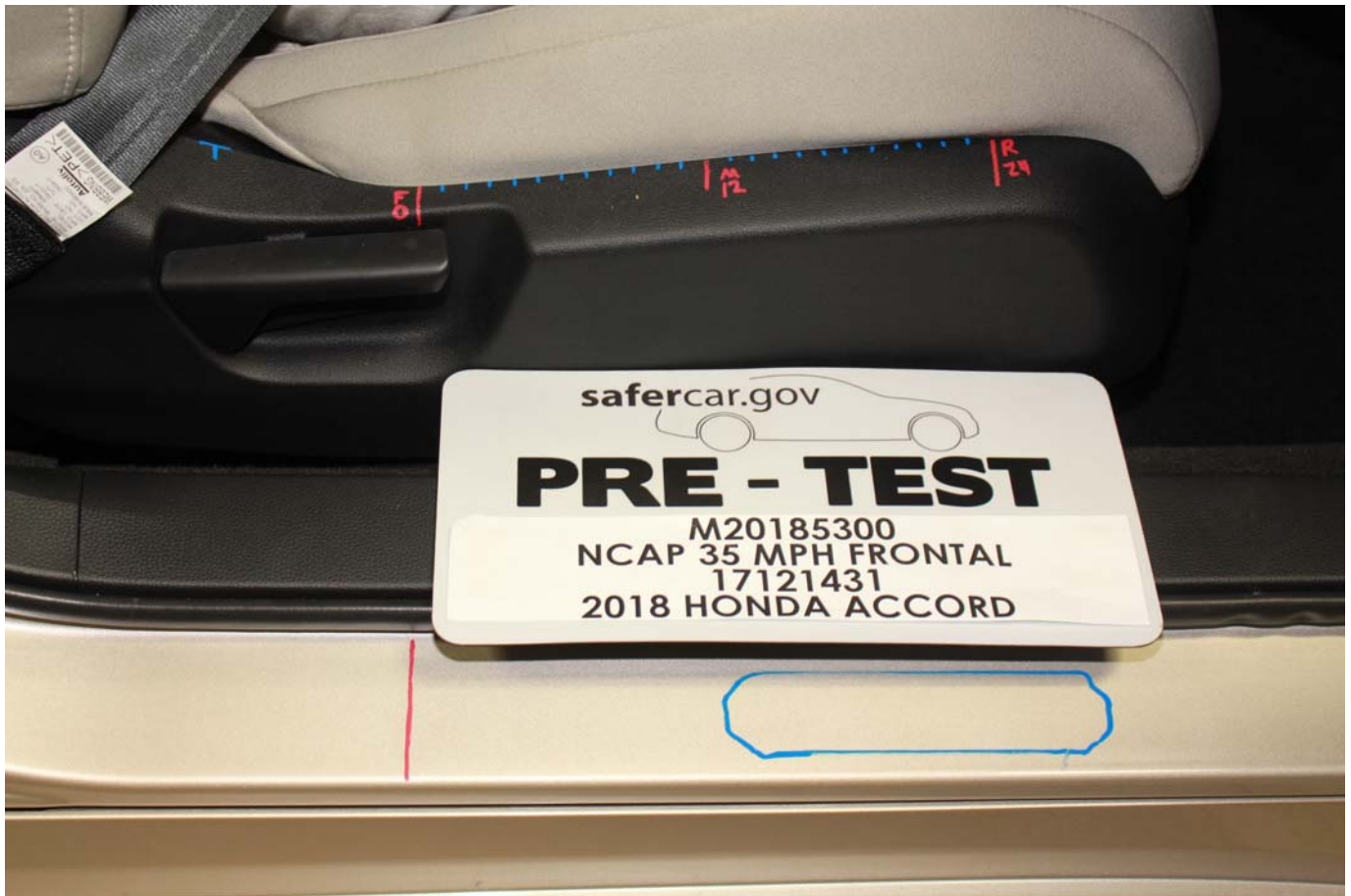


Photo No. 057 - Pre-Test Passenger Seat Fore-Aft Markings

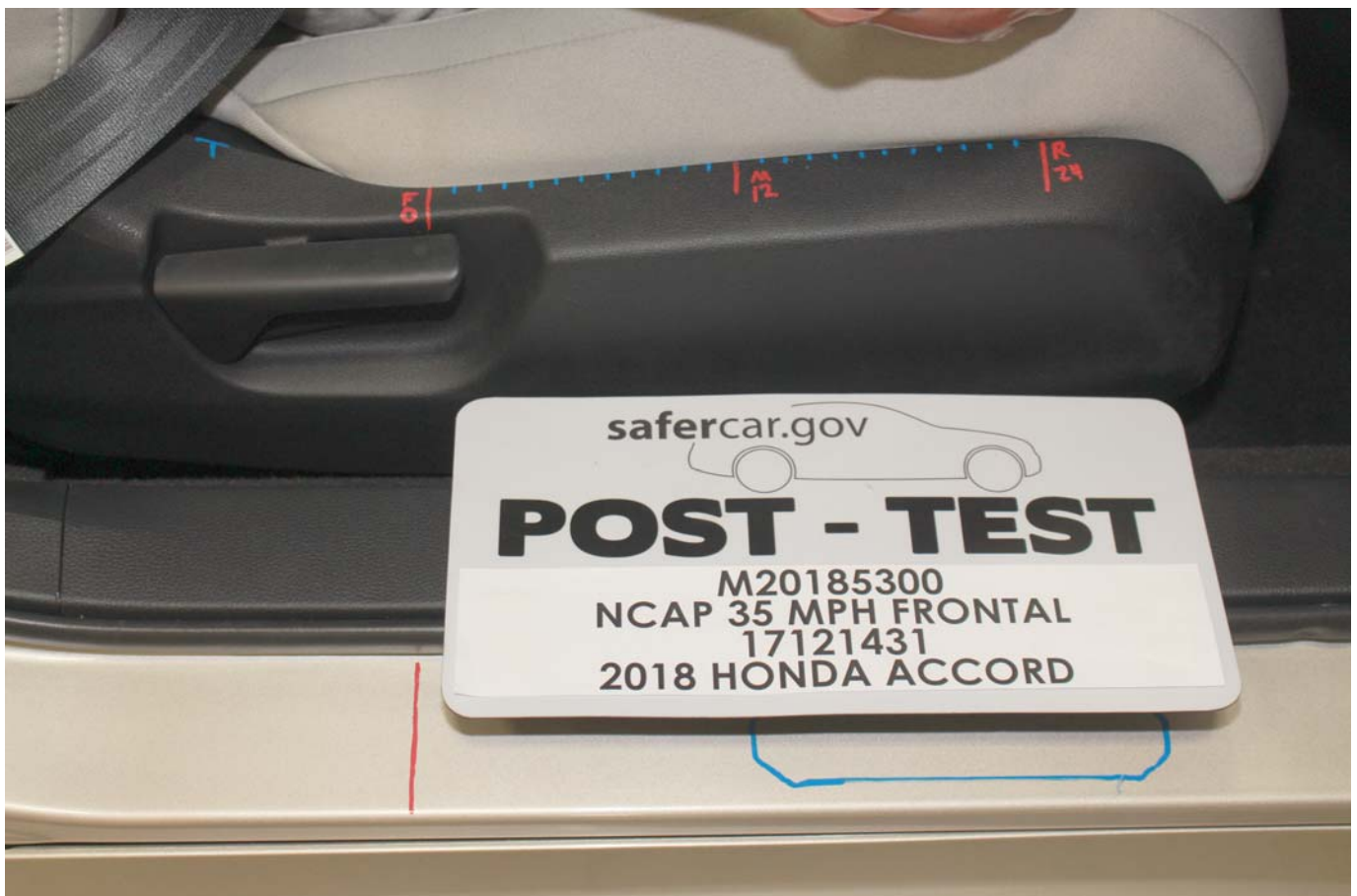


Photo No. 058 - Post-Test Passenger Seat Fore-Aft Markings



Photo No. 059 - Pre-Test View of Belt Anchorage for Passenger Dummy

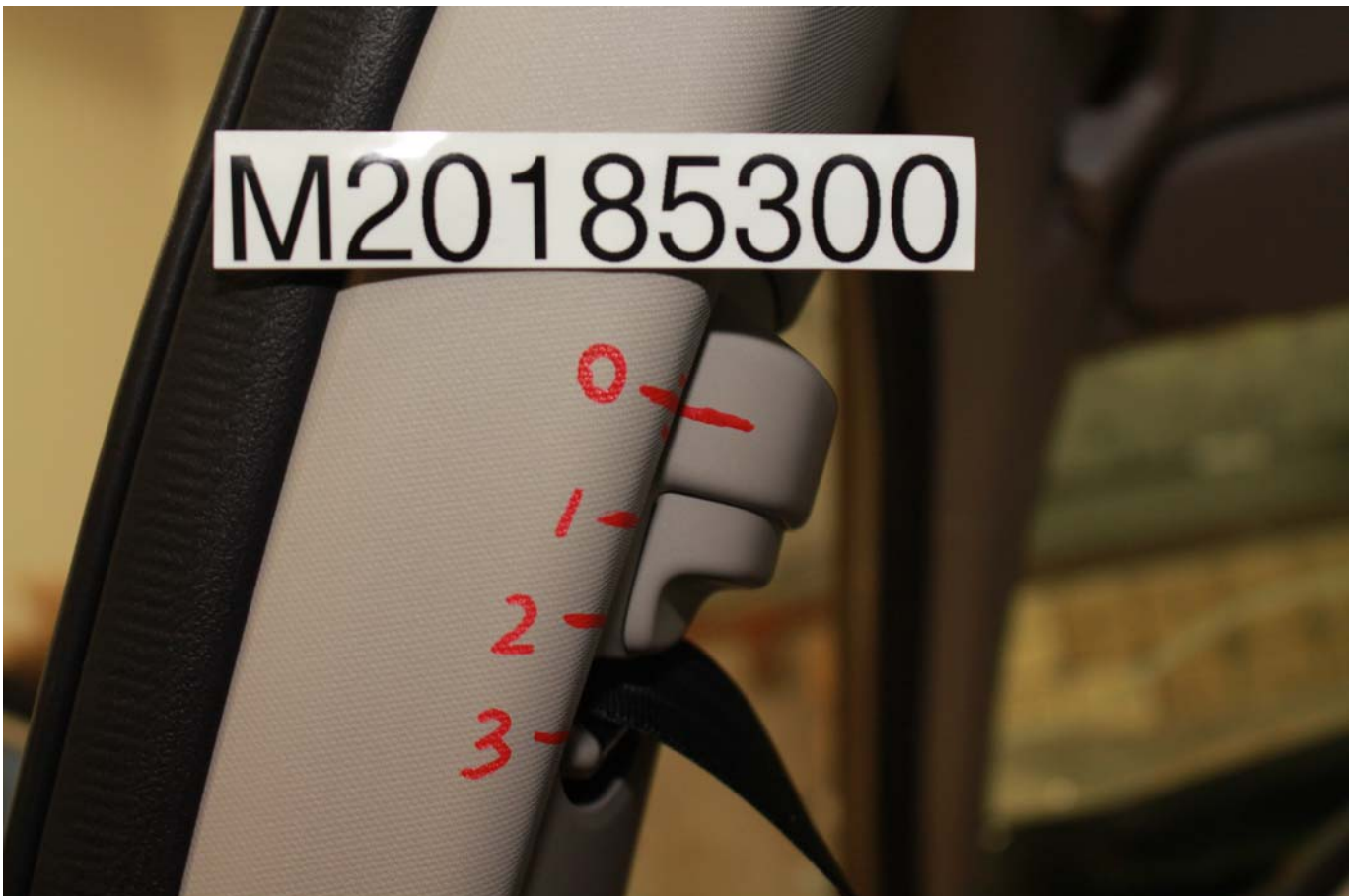


Photo No. 060 - Post-Test View of Belt Anchorage for Passenger Dummy



Photo No. 061 - Pre-Test Passenger Dummy Feet



Photo No. 062 - Post-Test Passenger Dummy Feet



Photo No. 063 - Pre-Test Passenger Side Knee Bolster (without dummy)



Photo No. 064 - Post-Test Passenger Side Knee Bolster (without dummy)



Photo No. 065 - Pre-Test Passenger Side Floorpan



Photo No. 066 - Post-Test Passenger Side Floorpan

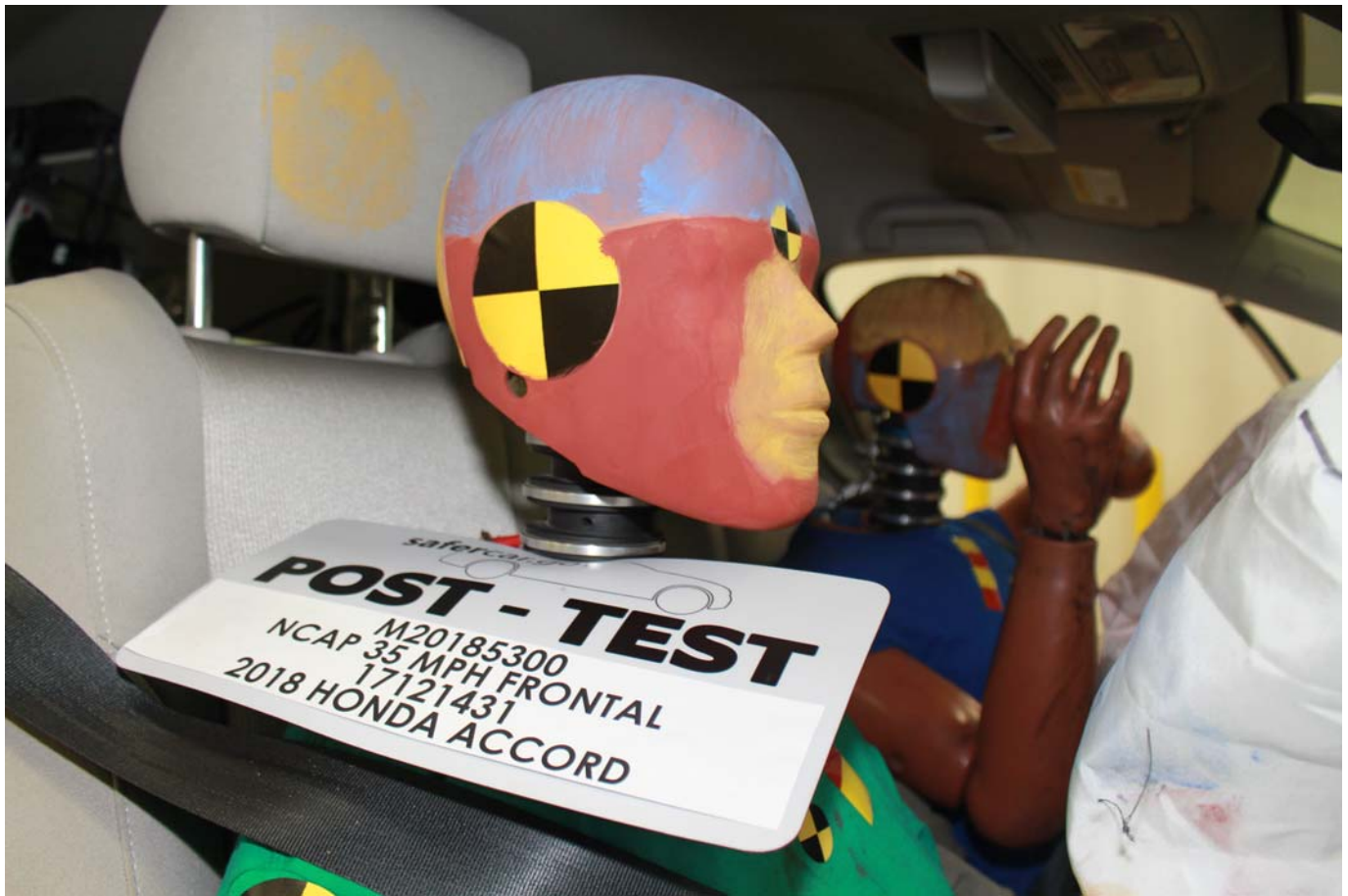


Photo No. 067 - Post-Test Passenger Dummy Face



Photo No. 068 - Post-Test Passenger Dummy Contact with Airbag



Photo No. 069 - Post-Test Passenger Dummy Contact with Headrest



Photo No. 070 - Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

Photo No. 071 - Post-Test Stoddard Solvent Spillage Location View



Photo No. 072 - Post-Test Speed Trap Read-Out



Photo No. 073 - Vehicle at 0 Degree on Static Rollover Device



Photo No. 074 - Vehicle at 90 Degrees on Static Rollover Device



Photo No. 075 - Vehicle at 180 Degrees on Static Rollover Device



Photo No. 076 - Vehicle at 270 Degrees on Static Rollover Device

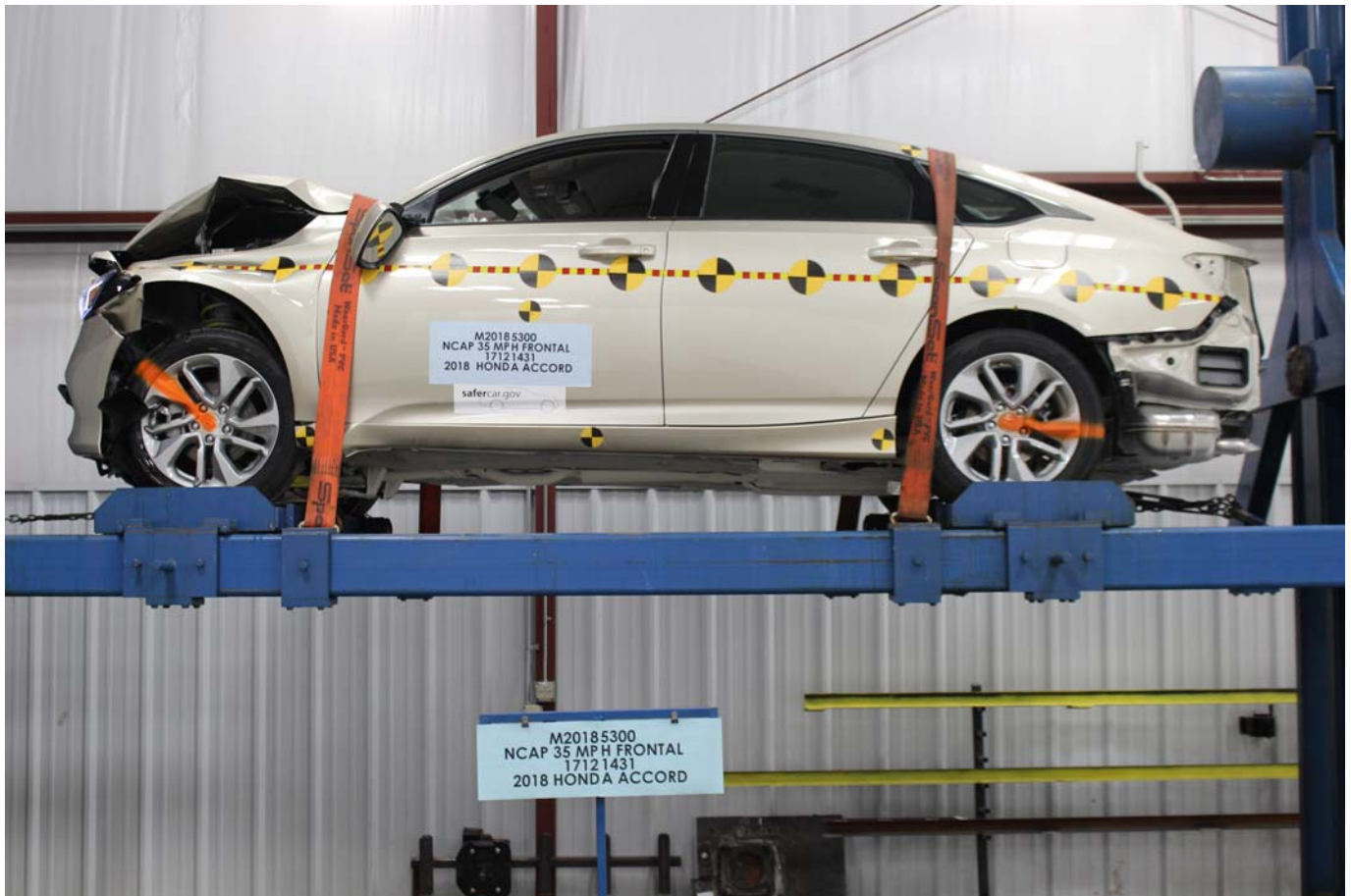


Photo No. 077 - Vehicle at 360 Degrees on Static Rollover Device



Photo No. 078 - 2018 Honda Accord 1.5T LX 4-Door Sedan Frontal Impact Event



2018 ACCORD 1.5T LX

EXT: CHAMPAGNE FROST P. ENGINE NUMBER: L15BE-2612028
INT: IVORY

STANDARD EQUIPMENT AT NO EXTRA COST

- * TECHNICAL FEATURES ***
 - 192hp 1.5-Liter Direct Injection Turbo-Charged 4-Cylinder Engine
 - Continuously Variable Transmission (CVT)
 - 4-Wheel Disc Brakes
 - Electric Power Steering
 - Hill Start Assist
- * SAFETY FEATURES ***
 - Driver's and Front Passenger's Airbags
 - Driver's and Front Passenger's Side Airbags
 - Driver's and Front Passenger's Knee Airbags
 - Side Curtain Airbags with Rollover Sensor
 - Anti-Lock Braking System (ABS)
 - Electronic Brake Distribution (EBD)
 - Vehicle Stability Assist (VSA)
 - Tire Pressure Monitoring System
 - LED Daytime Running Lights
 - LATCH System for Child Seats
- * INTERIOR FEATURES ***
 - Audio System with 4 Speakers
 - Color LCD Screen and Multi-View Rear Camera
 - Bluetooth HandsFreeLink
 - USB Audio Interface
 - Driver Attention Monitor

- * EXTERIOR FEATURES ***
 - 17" Alloy Wheels
 - P225/50 R17 All-Season Tires
 - Auto-On/Off Headlights
 - Power Door Mirrors
 - Remote Entry with Security System
 - Capless Fuel Filler
- * HONDA SENSING ***
 - Adaptive Cruise Control (ACC) w/ Low-Speed Follow
 - Collision Mitigation Braking System (CMBS)
 - Lane Keeping Assist System (LKAS)
 - Road Departure Mitigation (RDM)

Manufacturer's Suggested Retail Price **\$23,570.00**

Full Tank of Fuel **No Charge**

-Honda Roadside Assistance
3YR/36K Mile Warranty Term

Destination and Handling **875.00**

TOTAL VEHICLE PRICE
(Includes Pre-Delivery Service)
\$24,445.00

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

HSC 39037.05 Low-Emission Motor Vehicle

VALLEY HONDA
4040 WESTBROOK DR.
AURORA, IL 60504

PORT OF ENTRY: MARYSVILLE
DELIVERY POINT: SCHAUMBURG
SHIP: 628-018
ROW/SPACE: 628-018
TRANS METHOD: TRUCK

VIN: 1HGCV1F12JA010000



ORIG. DLR: 208390
REF. NO: 43503
HN CODE: HN-5940
EMISSION: 50 STATE
CONTROL NO: 498987
DEALER: 208390



EPA DOT Fuel Economy and Environment

Gasoline Vehicle

Fuel Economy
33 MPG
combined city/hwy
3.0 gallons per 100 miles

These estimates reflect new EPA methods beginning with 2017 models.
Large Cars range from 14 to 104 MPG.
The best vehicle rates 136 MPG.

You save
\$1,250
in fuel costs
over 5 years
compared to the
average new vehicle.

Annual fuel cost
\$1,100

Fuel Economy & Greenhouse Gas Rating (tailpipe only)



Smog Rating (tailpipe only)



Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$8,750 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.40 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
Calculate personalized estimates and compare vehicles



PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
U.S./Canadian Parts Content: **60 %**

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

FOR THIS VEHICLE
Final Assembly Point:
MARYSVILLE, OHIO USA
Country of Origin: Engine:
U.S.A.
Transmission:
U.S.A.

GOVERNMENT 5-STAR SAFETY RATING

Overall Vehicle Score **Not Rated**

Based on the combined ratings of frontal, side and rollover.
Should ONLY be compared to other vehicles of similar size and weight.

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

Side Crash **Not Rated**
Front seat Rear seat
Based on the risk of injury in a side impact.

Rollover **Not Rated**
Based on the risk of rollover in a single vehicle crash.

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

This vehicle is equipped with bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety systems, although the bumper and related components may sustain damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

ST# H48578 H-000065
10-17

Photo No. 079 - Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

Page No.

List of Data Plots Provided in the Test Report

Figure No. 1.	Driver Head X Acceleration vs. Time	B-1
Figure No. 2.	Driver Head Y Acceleration vs. Time	B-1
Figure No. 3.	Driver Head Z Acceleration vs. Time	B-1
Figure No. 4.	Driver Head Resultant Acceleration vs. Time	B-1
Figure No. 5.	Driver Chest Displacement vs. Time	B-2
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Figure No. 7.	Driver Chest Y Acceleration vs. Time	B-3
Figure No. 8.	Driver Chest Z Acceleration vs. Time	B-3
Figure No. 9.	Driver Chest Resultant Acceleration vs. Time	B-3
Figure No. 10.	Driver Neck Force X vs. Time	B-4
Figure No. 11.	Driver Neck Force Z vs. Time	B-4
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Figure No. 14.	Driver Nij (NTE) vs. Time	B-5
Figure No. 15.	Driver Nij (NCF) vs. Time	B-5
Figure No. 16.	Driver Nij (NCE) vs. Time	B-5
Figure No. 17.	Driver Left Femur Force vs. Time	B-6
Figure No. 18.	Driver Right Femur Force vs. Time	B-6
Figure No. 19.	Passenger Head X Acceleration vs. Time	B-7
Figure No. 20.	Passenger Head Y Acceleration vs. Time	B-7
Figure No. 21.	Passenger Head Z Acceleration vs. Time	B-7
Figure No. 22.	Passenger Head Resultant Acceleration vs. Time	B-7
Figure No. 23.	Passenger Chest Displacement vs. Time	B-8
Figure No. 24.	Passenger Chest X Acceleration vs. Time	B-9
Figure No. 25.	Passenger Chest Y Acceleration vs. Time	B-9
Figure No. 26.	Passenger Chest Z Acceleration vs. Time	B-9
Figure No. 27.	Passenger Chest Resultant Z Acceleration vs. Time	B-9

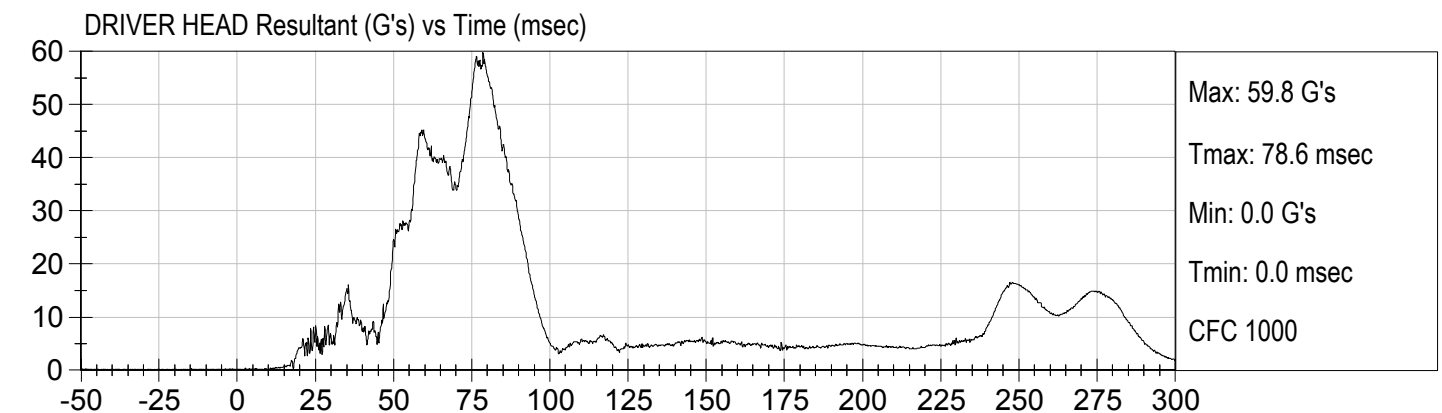
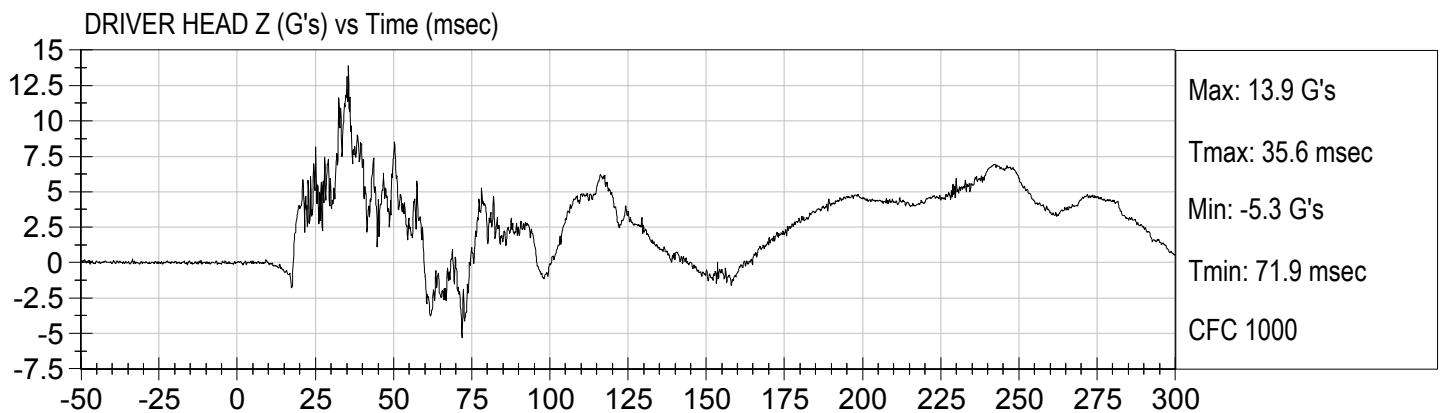
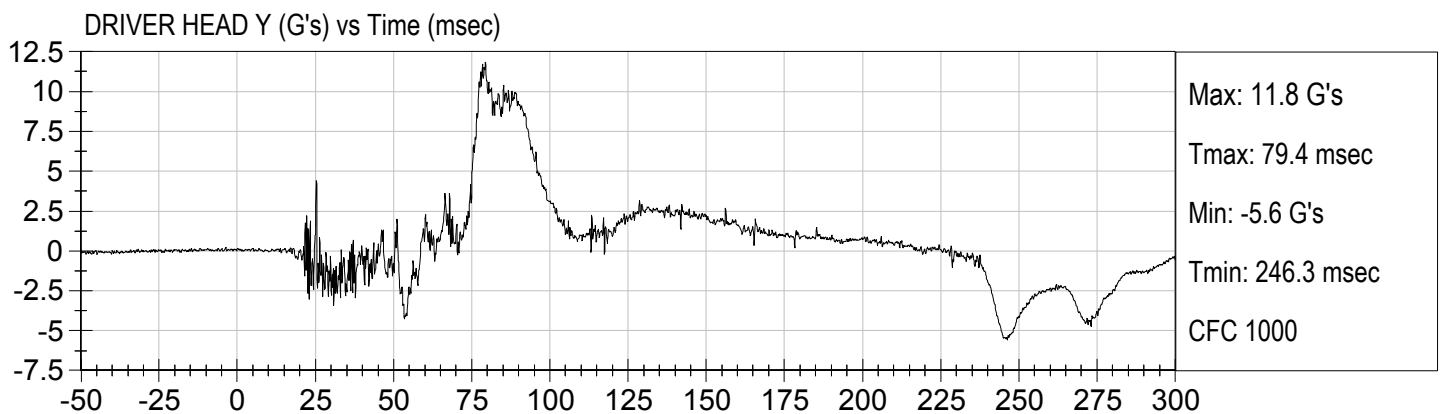
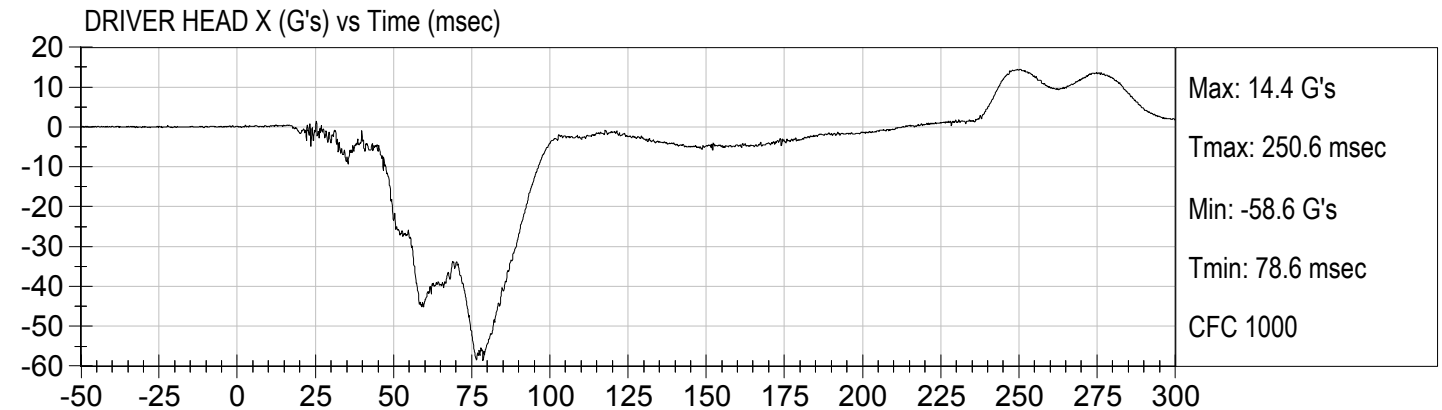
	<u>Page No.</u>
Figure No. 28. Passenger Neck Force X vs. Time	B-10
Figure No. 29. Passenger Neck Force Z vs. Time	B-10
Figure No. 30. Passenger Neck Moment Y vs. Time	B-10
Figure No. 31. Passenger Nij (NTF) vs. Time	B-11
Figure No. 32. Passenger Nij (NTE) vs. Time	B-11
Figure No. 33. Passenger Nij (NCF) vs. Time	B-11
Figure No. 34. Passenger Nij (NCE) vs. Time	B-11
Figure No. 35. Passenger Left Femur Force vs. Time	B-12
Figure No. 36. Passenger Right Femur Force vs. Time	B-12

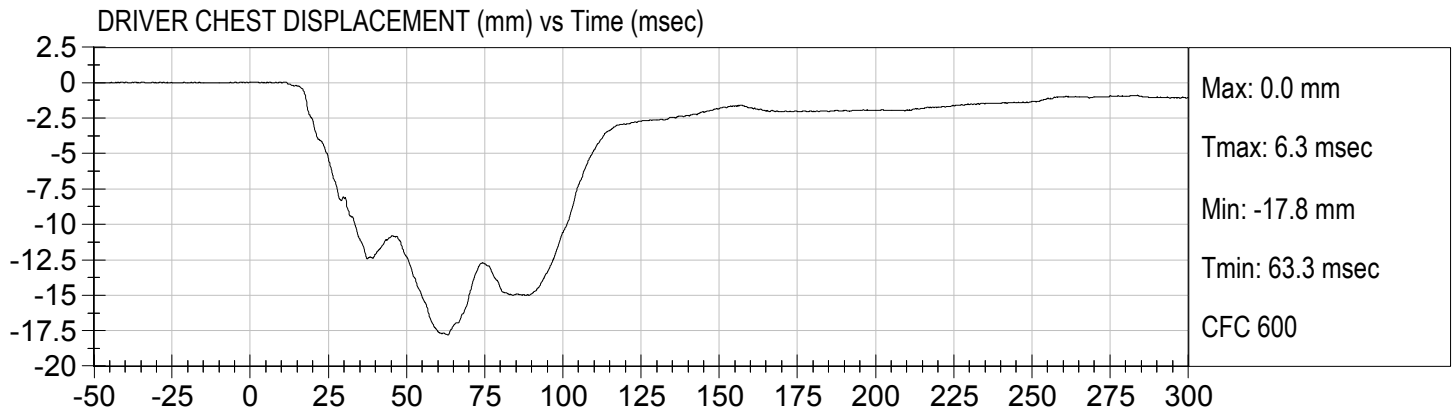
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

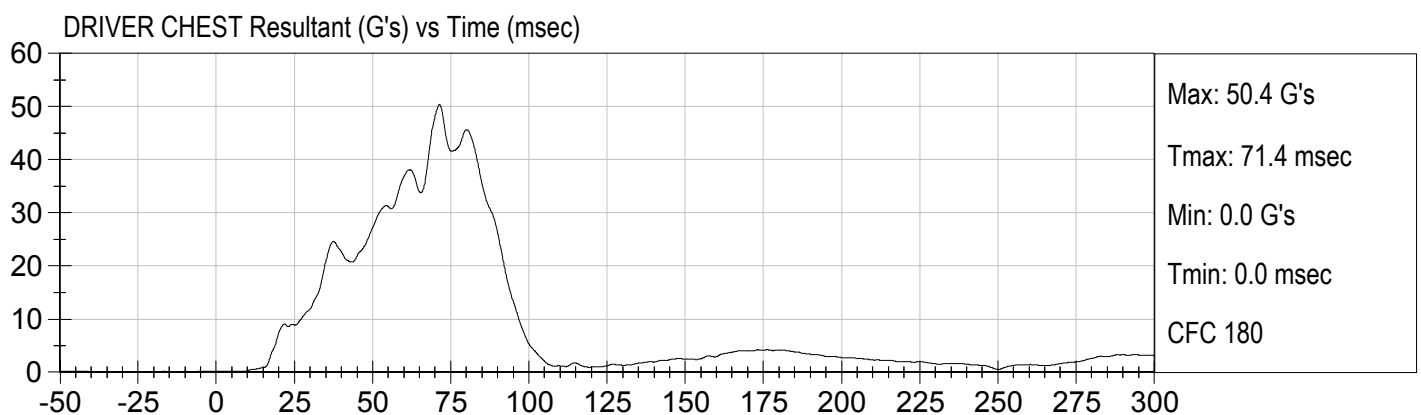
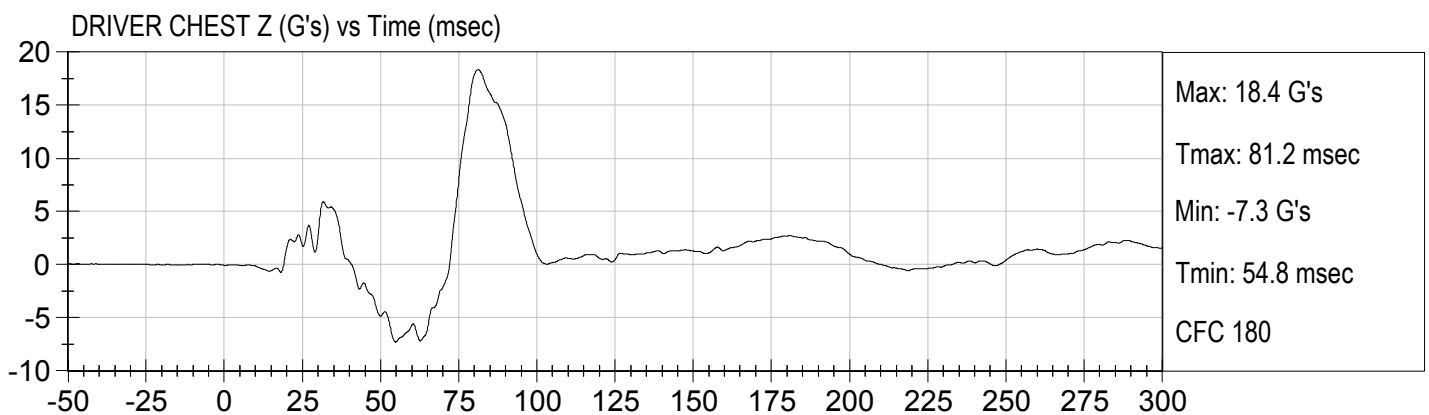
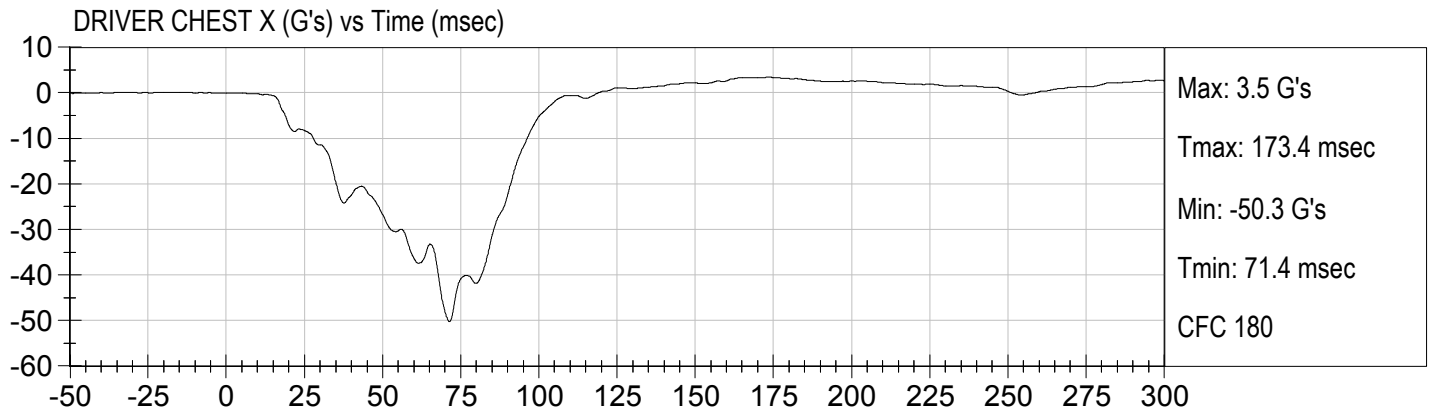
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 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Head Angular Velocity X
 Driver Head Angular Velocity Y
 Driver Head Angular Velocity Z
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant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

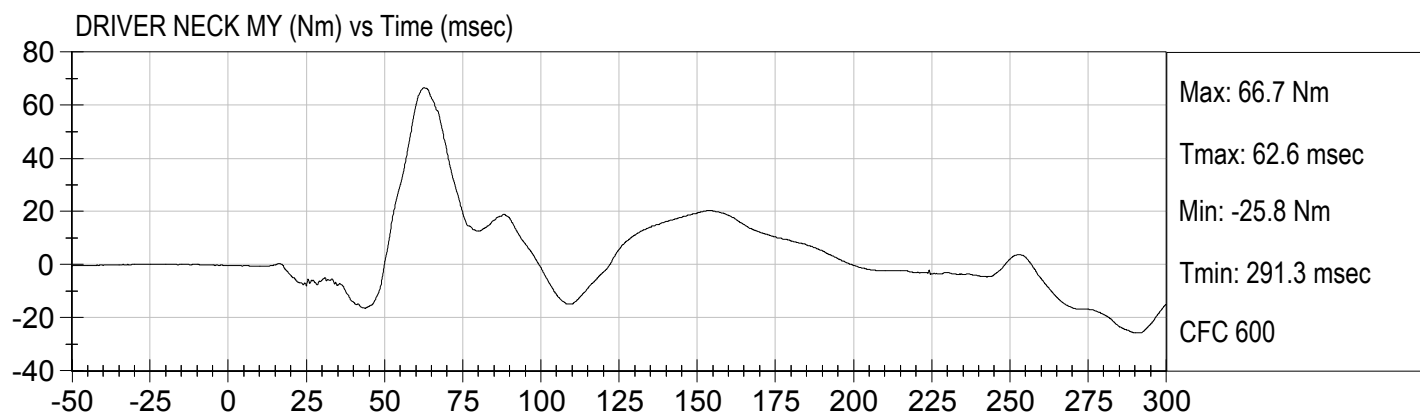
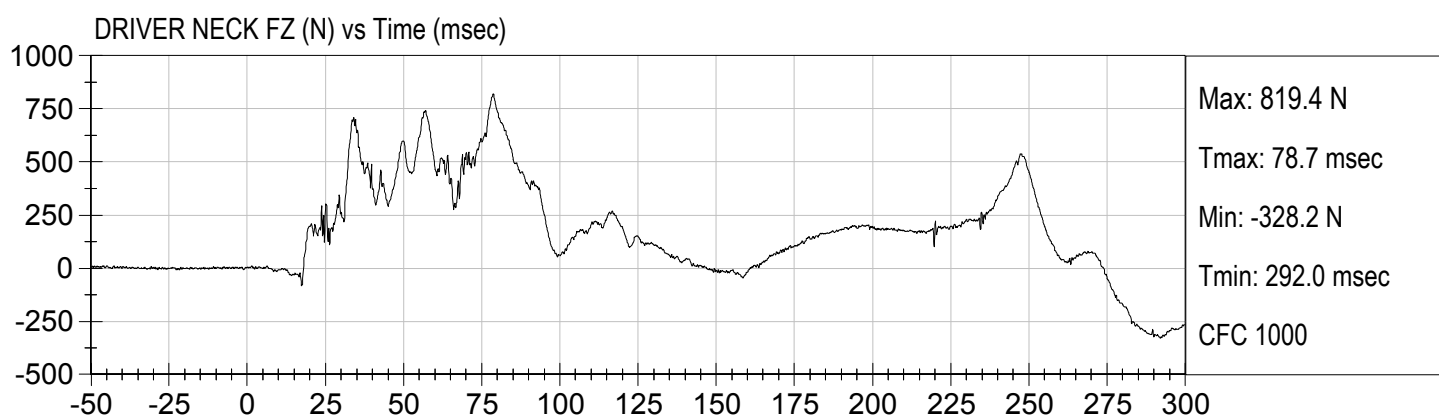
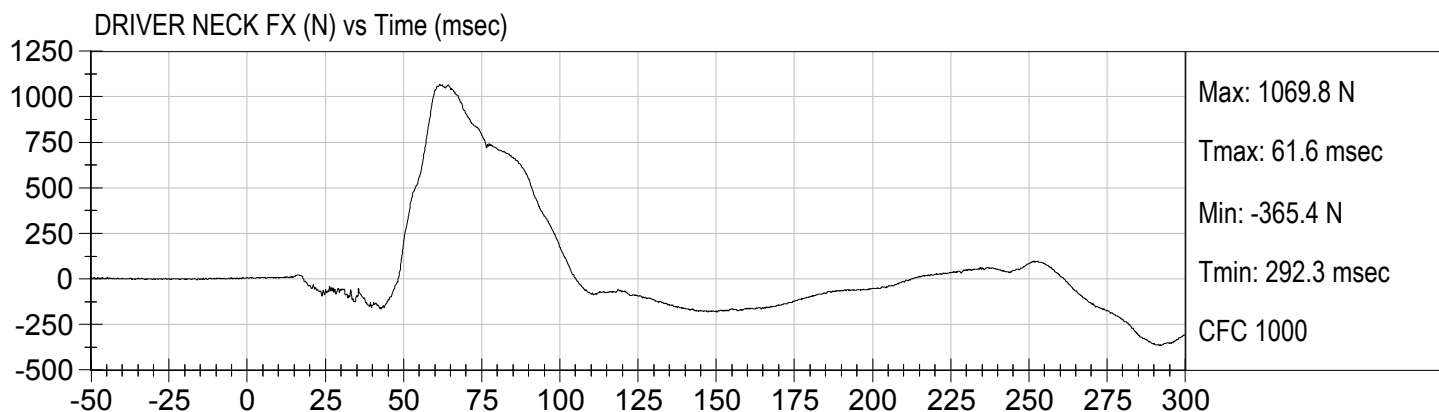
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Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower 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

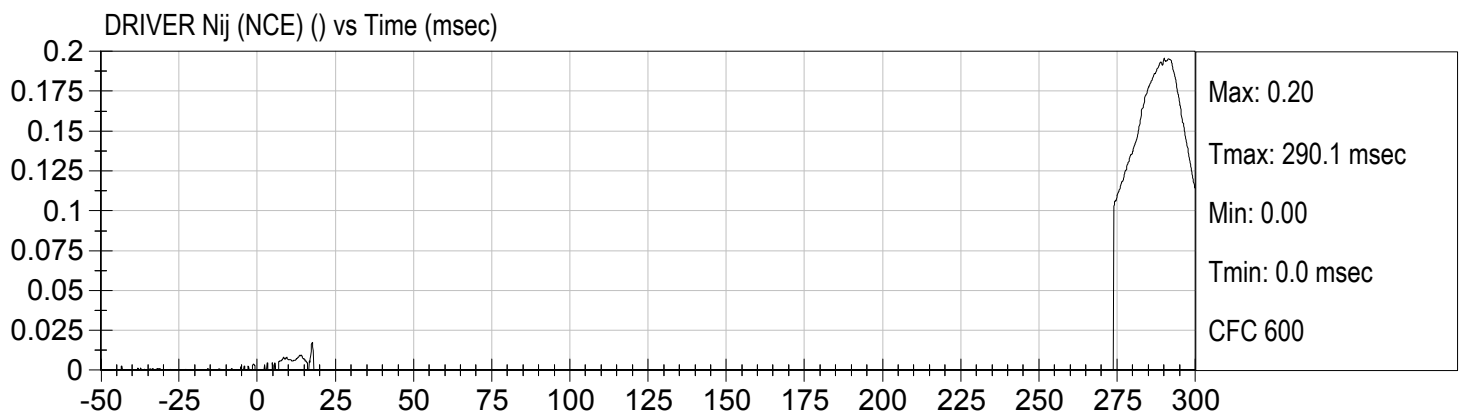
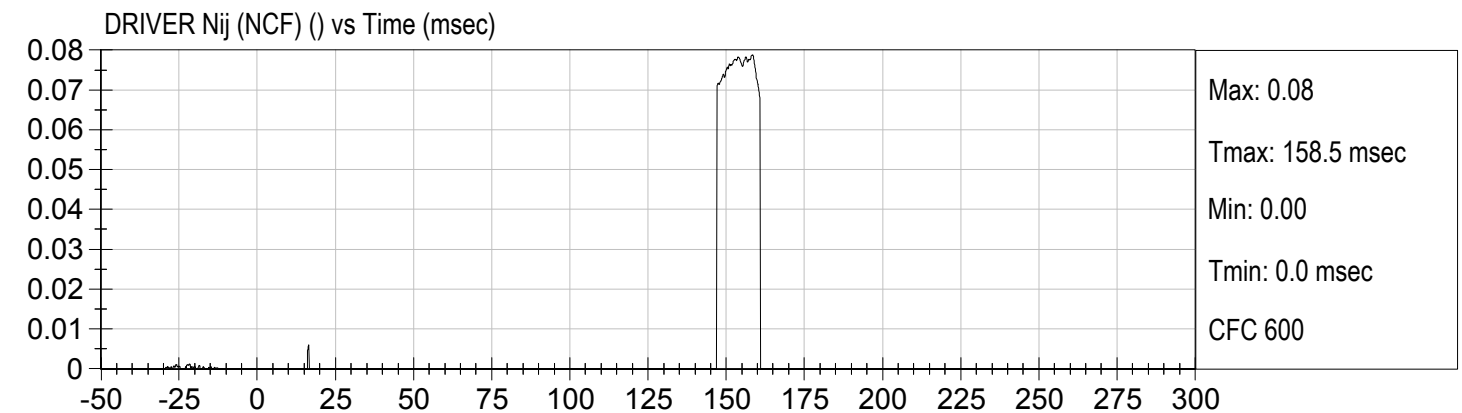
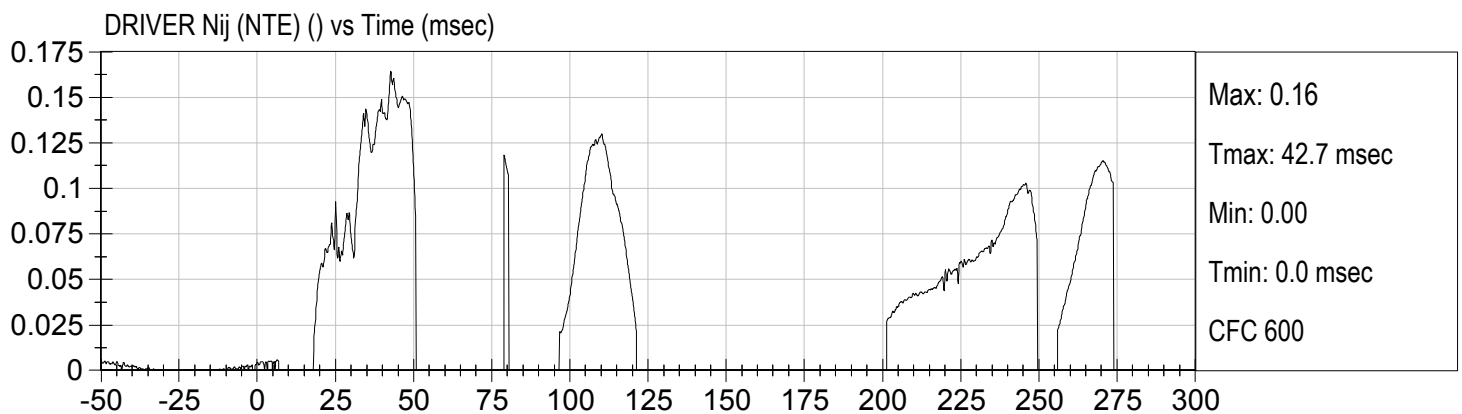
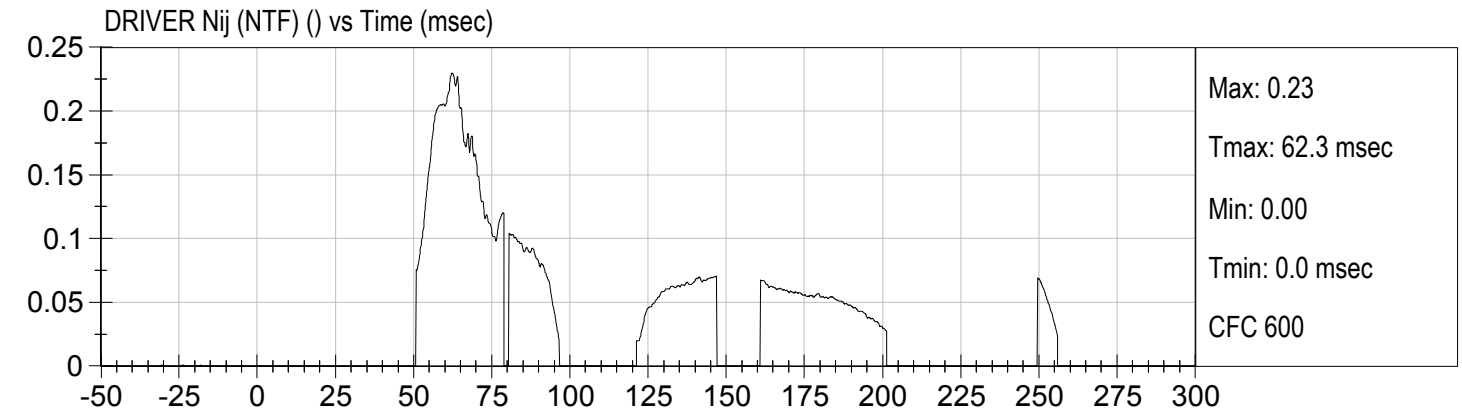
Passenger Pelvis Z
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Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower 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
Passenger Right Foot Aft Z
Passenger Lap Belt Force
Passenger Shoulder Belt Force
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

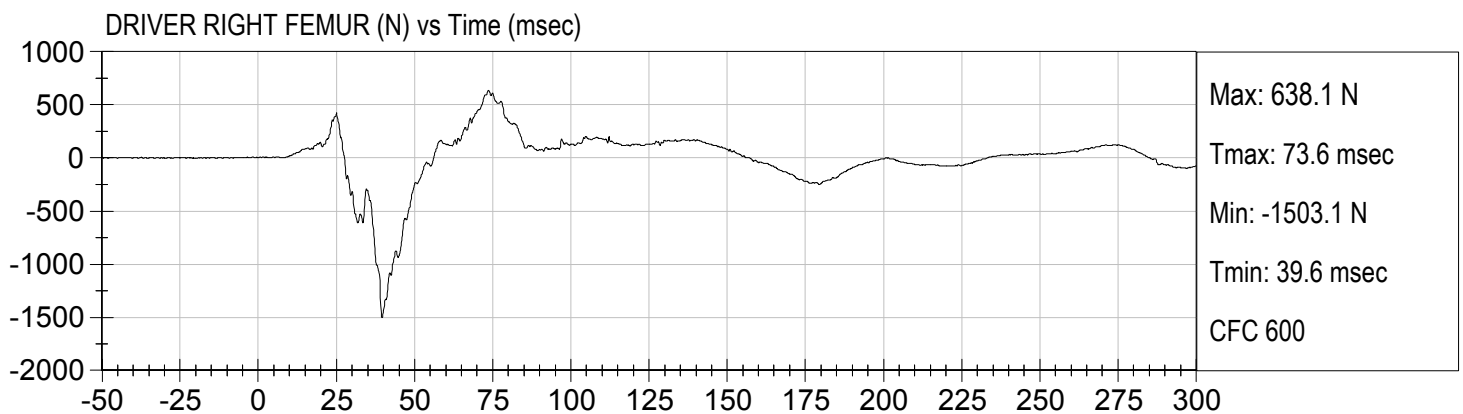
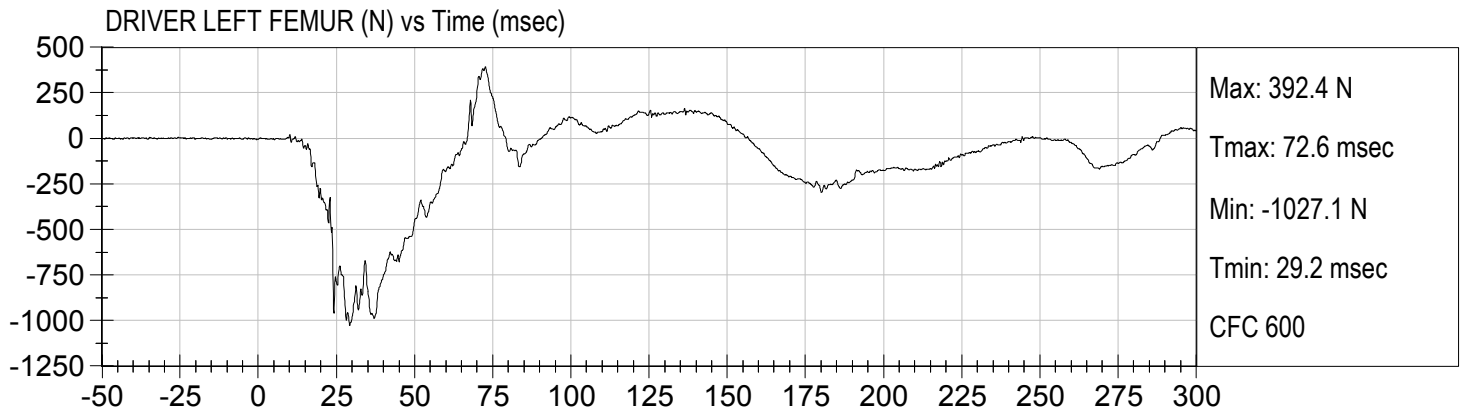


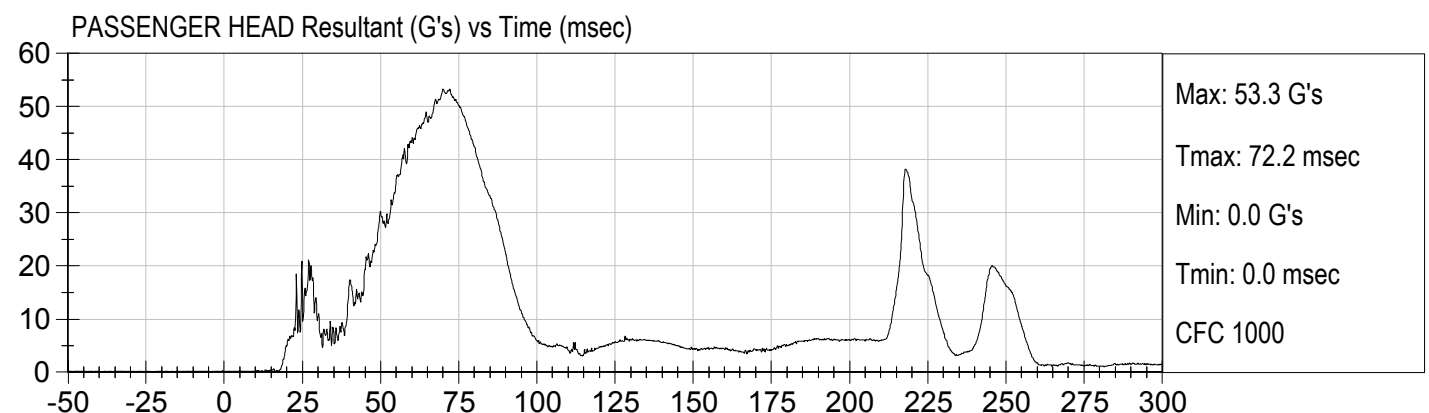
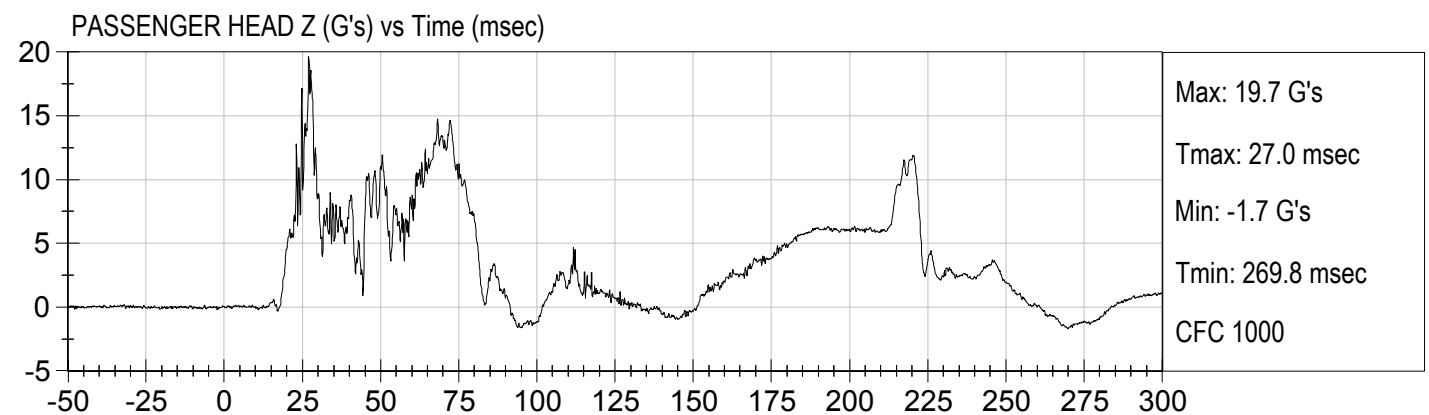
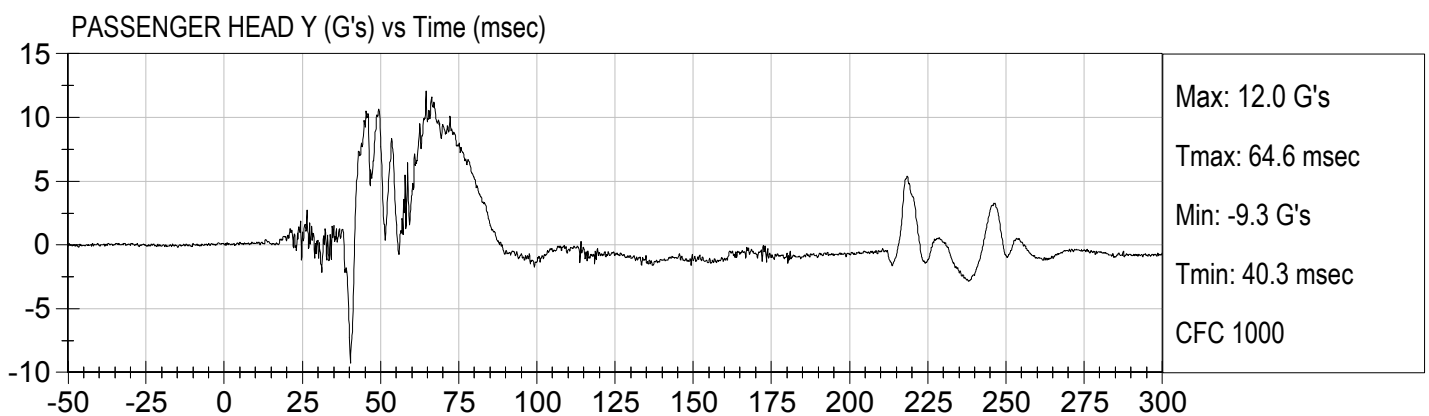
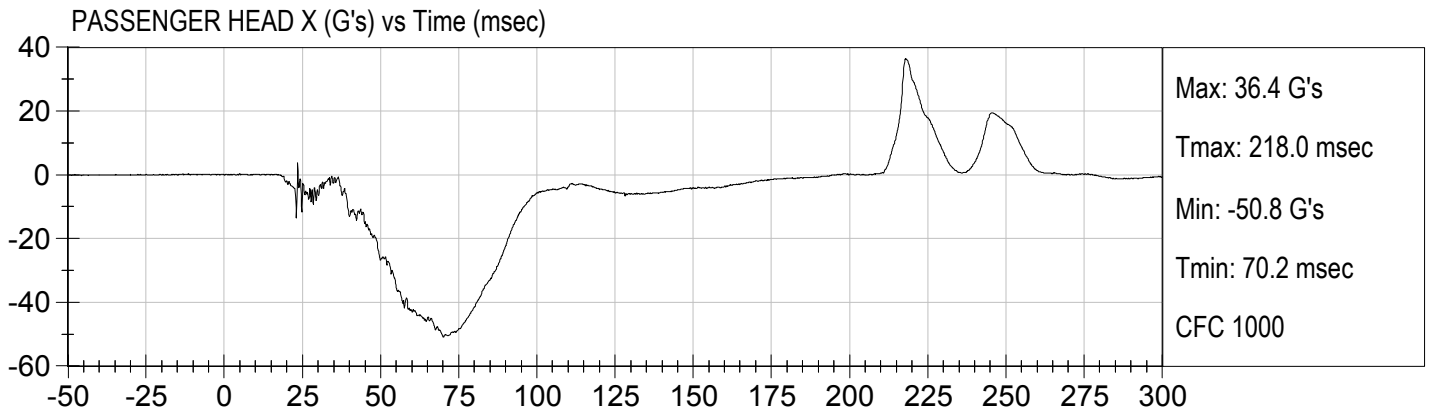


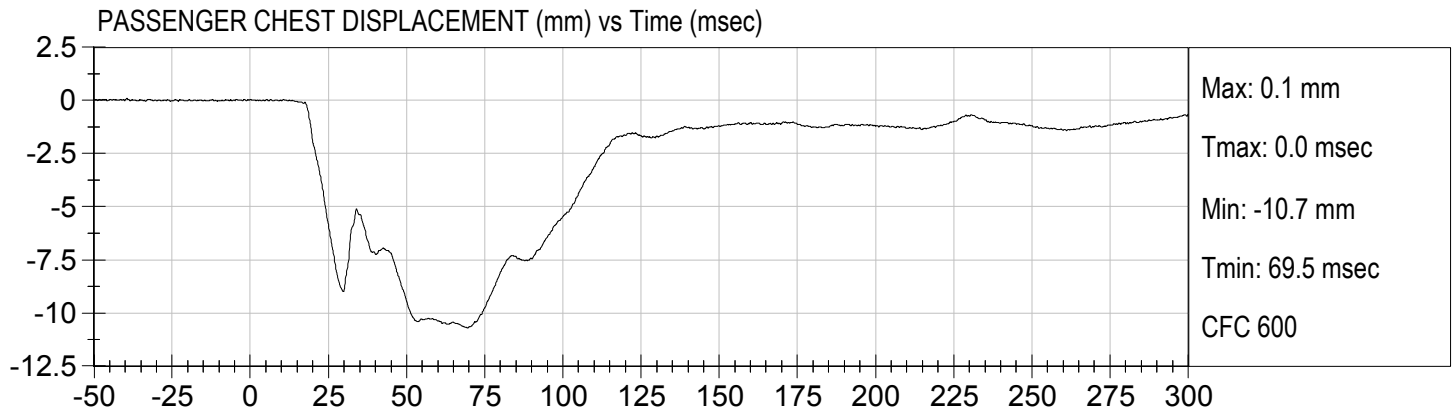


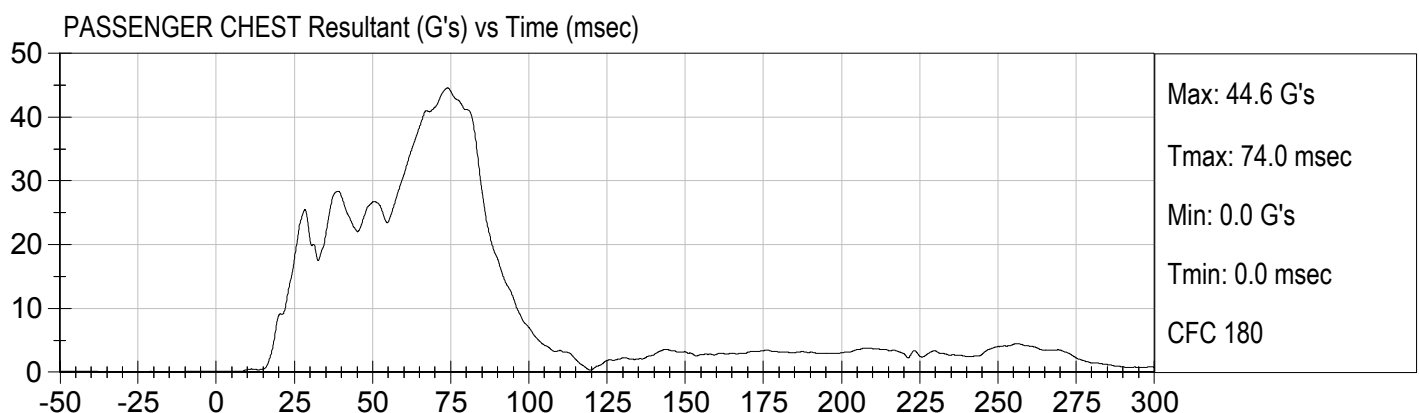
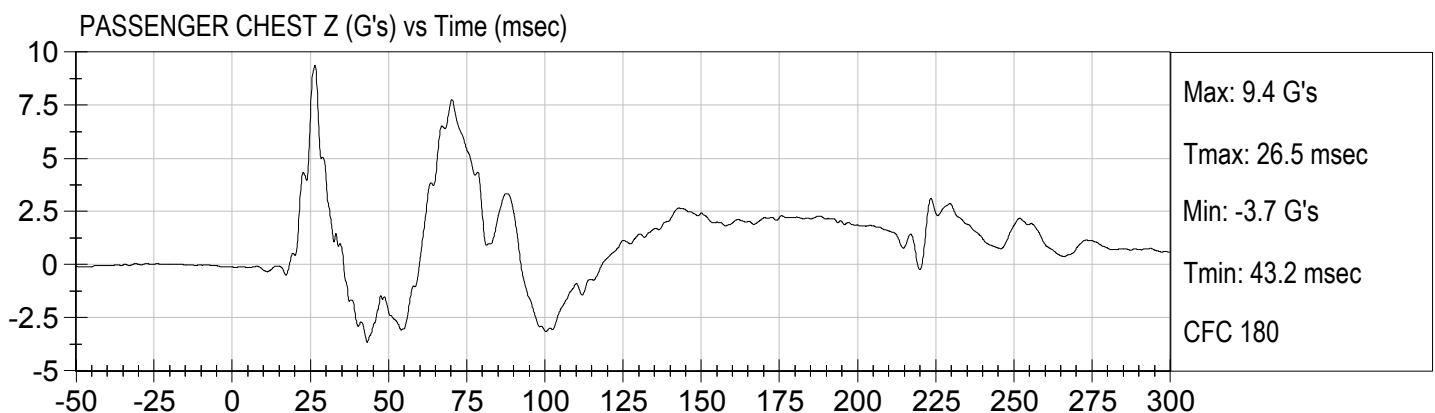
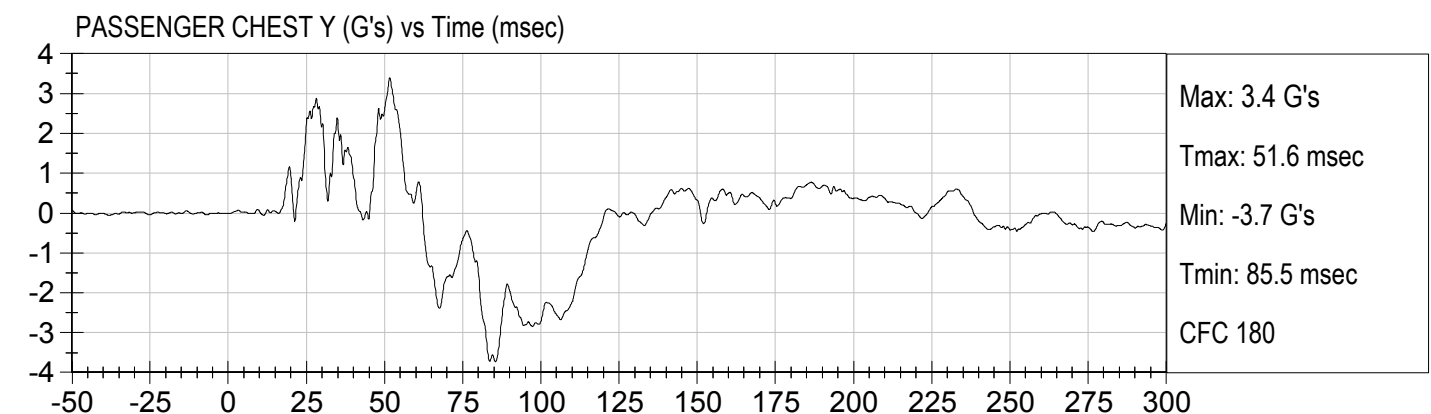
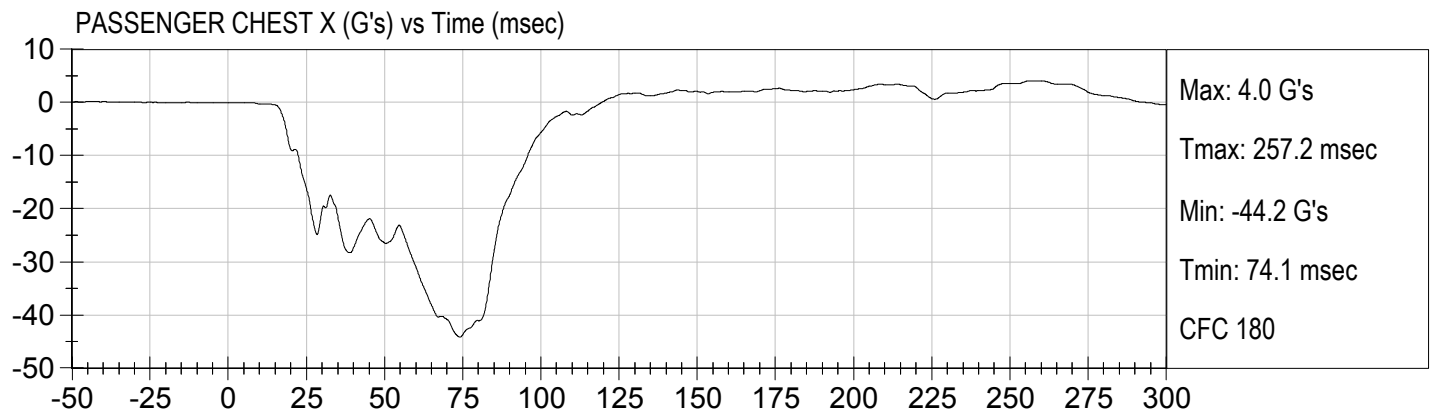


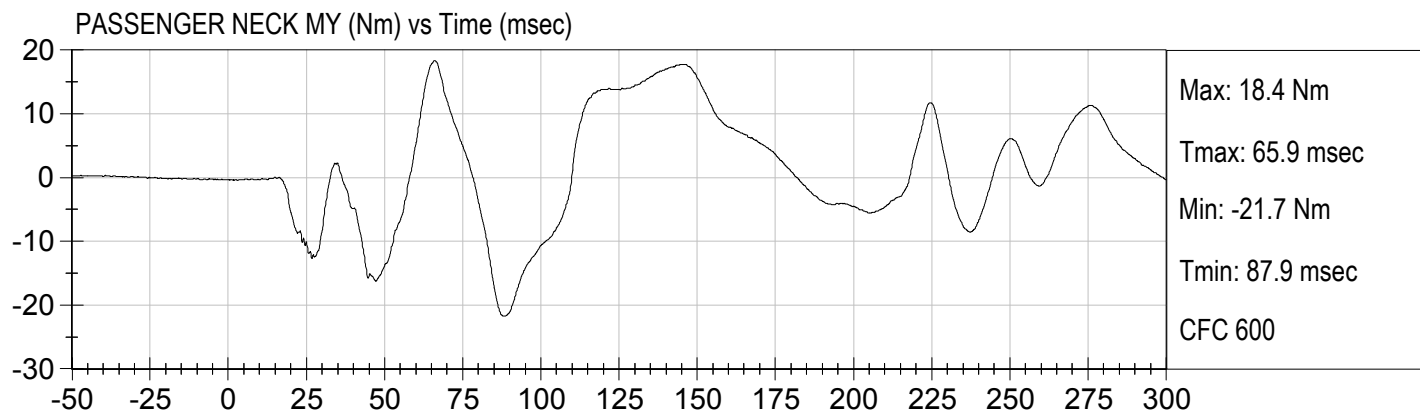
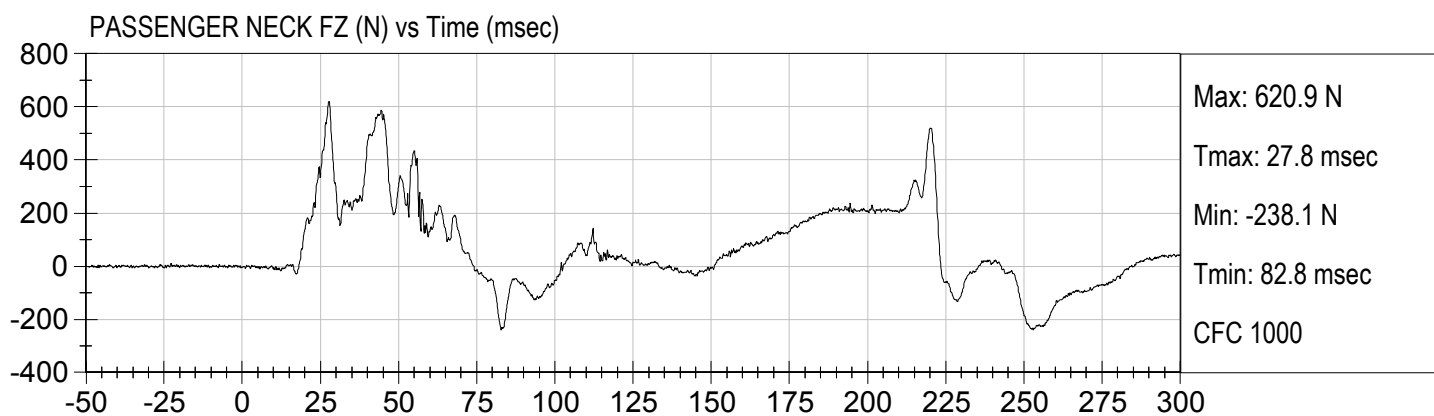
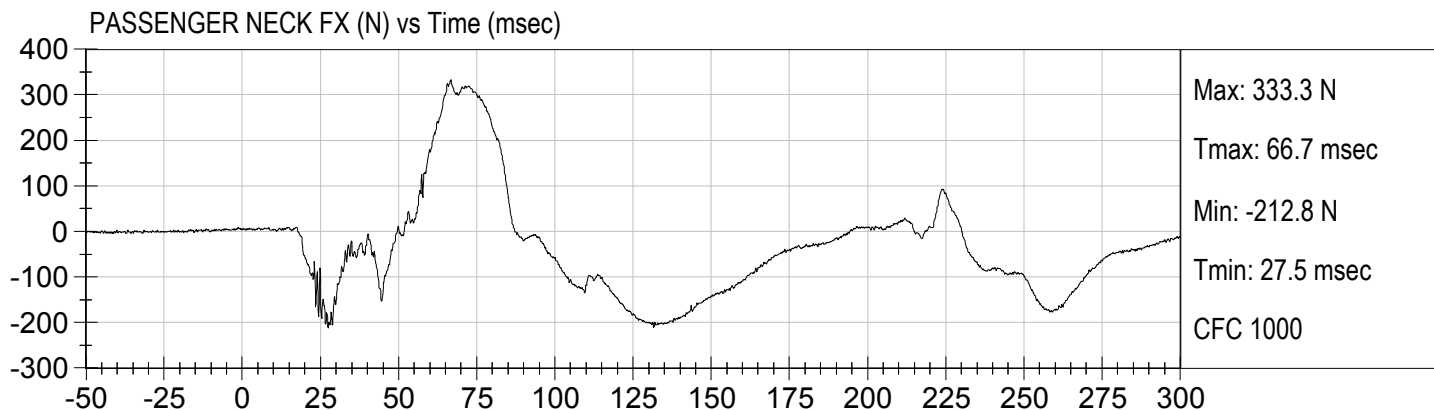


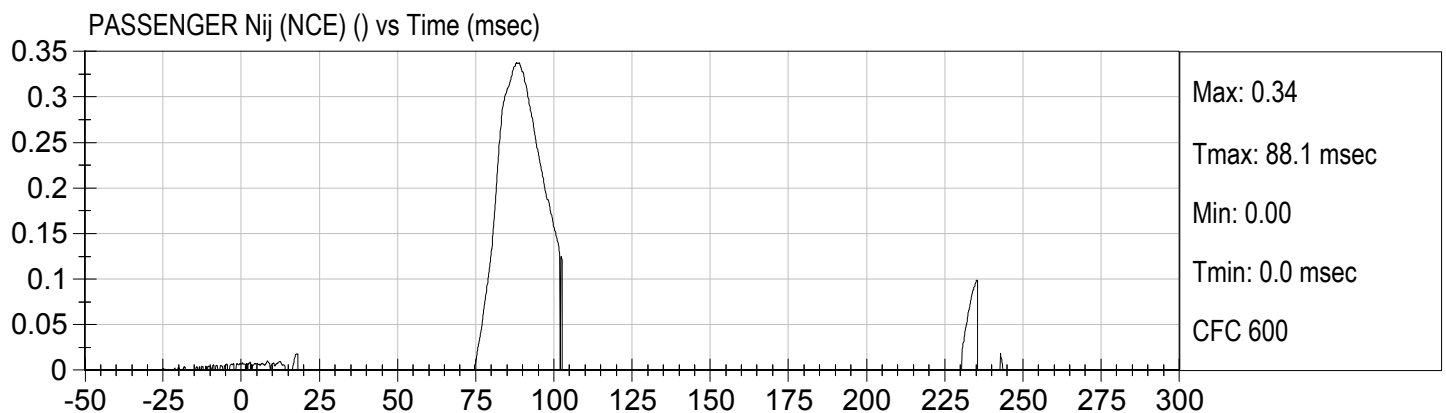
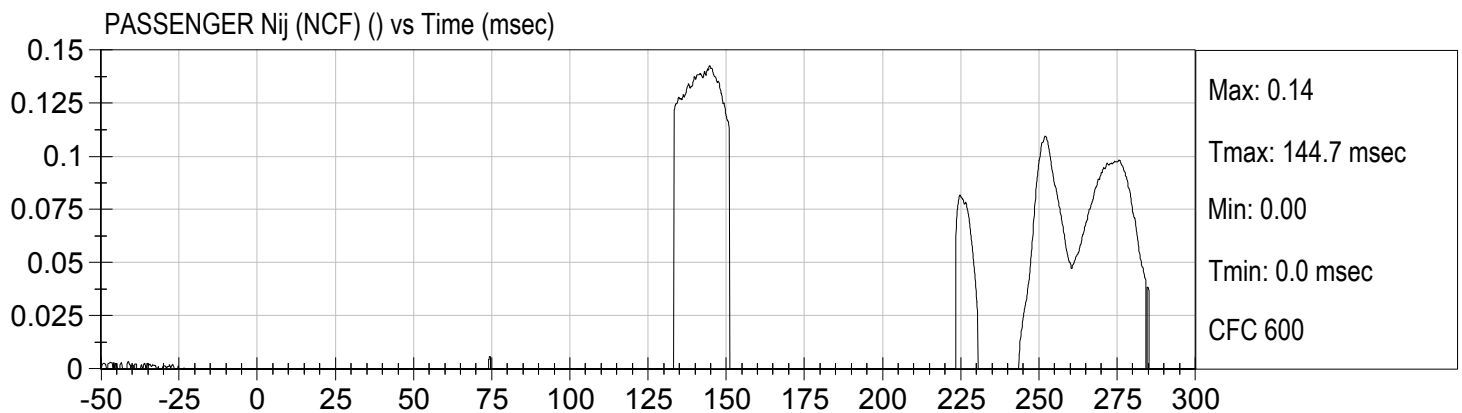
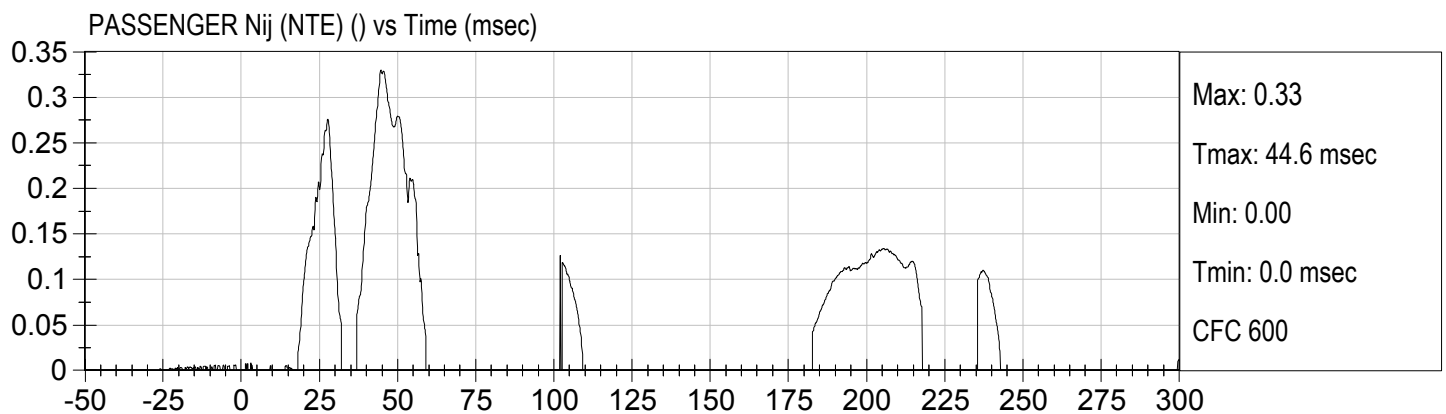
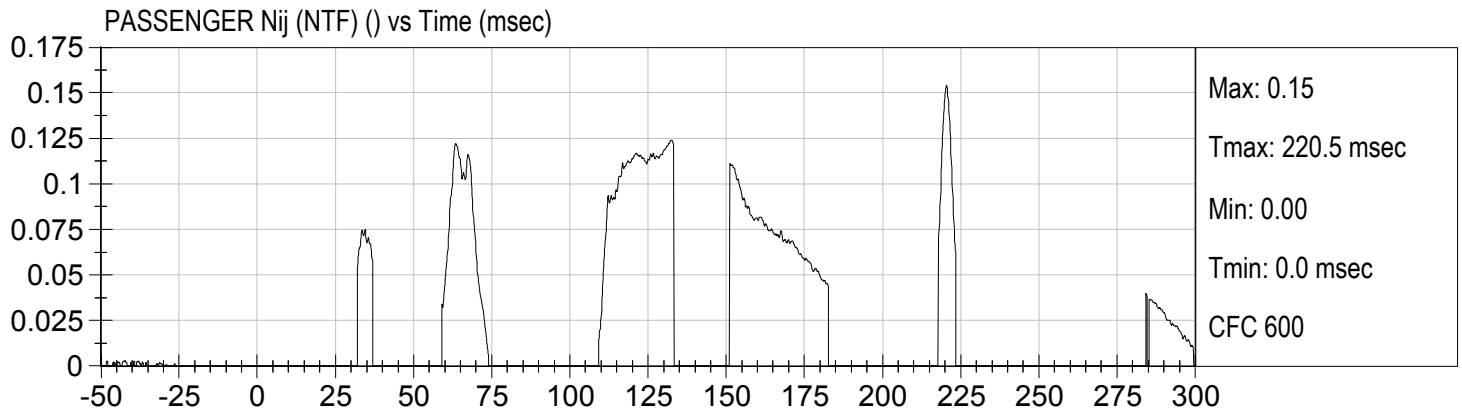


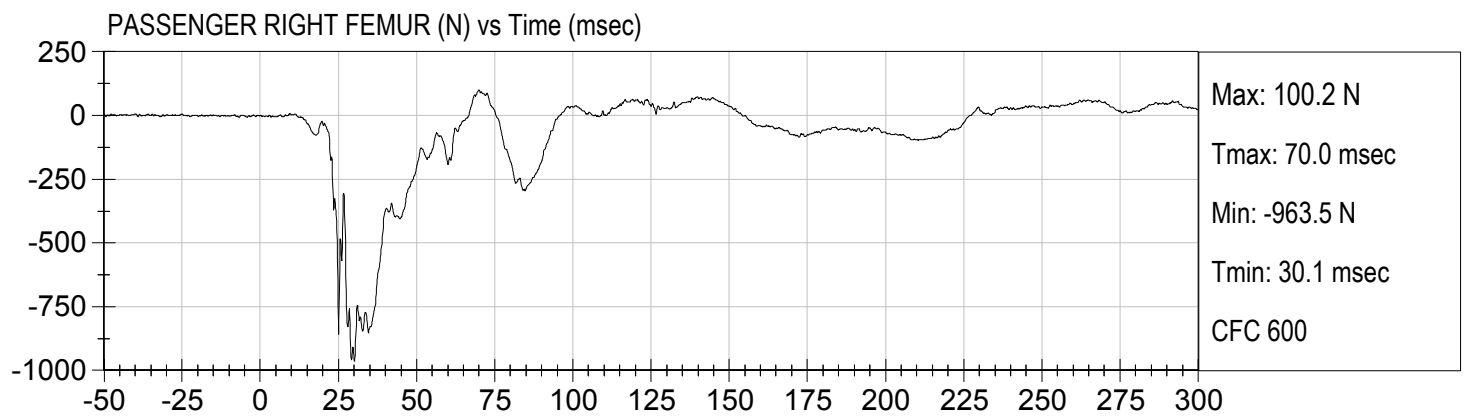
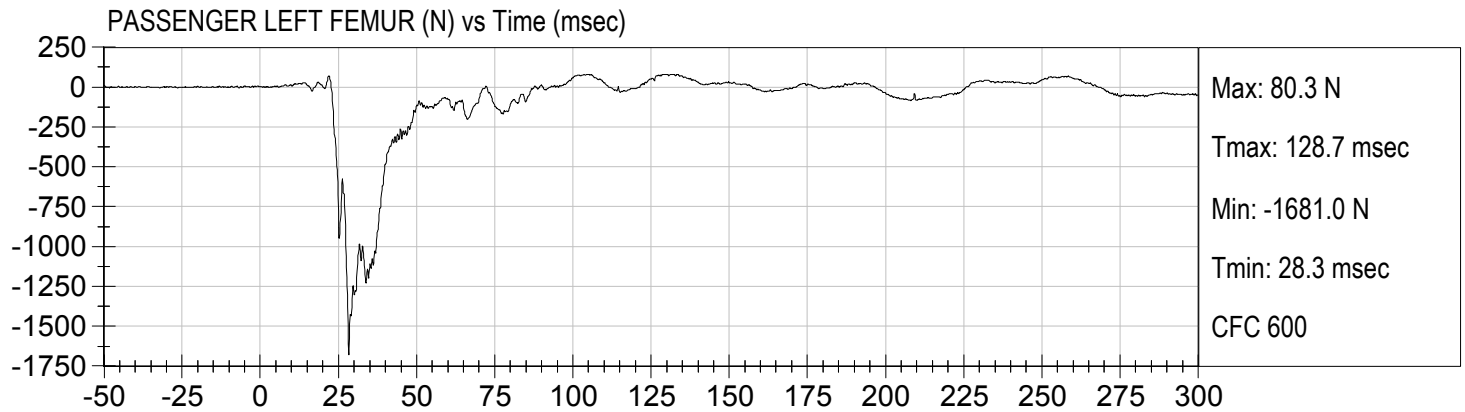












APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

Hybrid III, 50th External Measurements
SN: 351

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

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

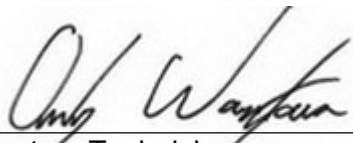
NOTE: THE H-POINT IS LOCATED 1.83 INCHES FORWARD AND 2.57 INCHES DOWN FROM THE CENTER OF THE PELVIS ANGLE REFERENCE HOLE.

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

ATD Serial No: 351

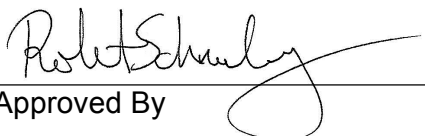
Test ID: D173601

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	22	Pass
Peak Resultant Acceleration	G's	225 to 275	266	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	12.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results			Pass	

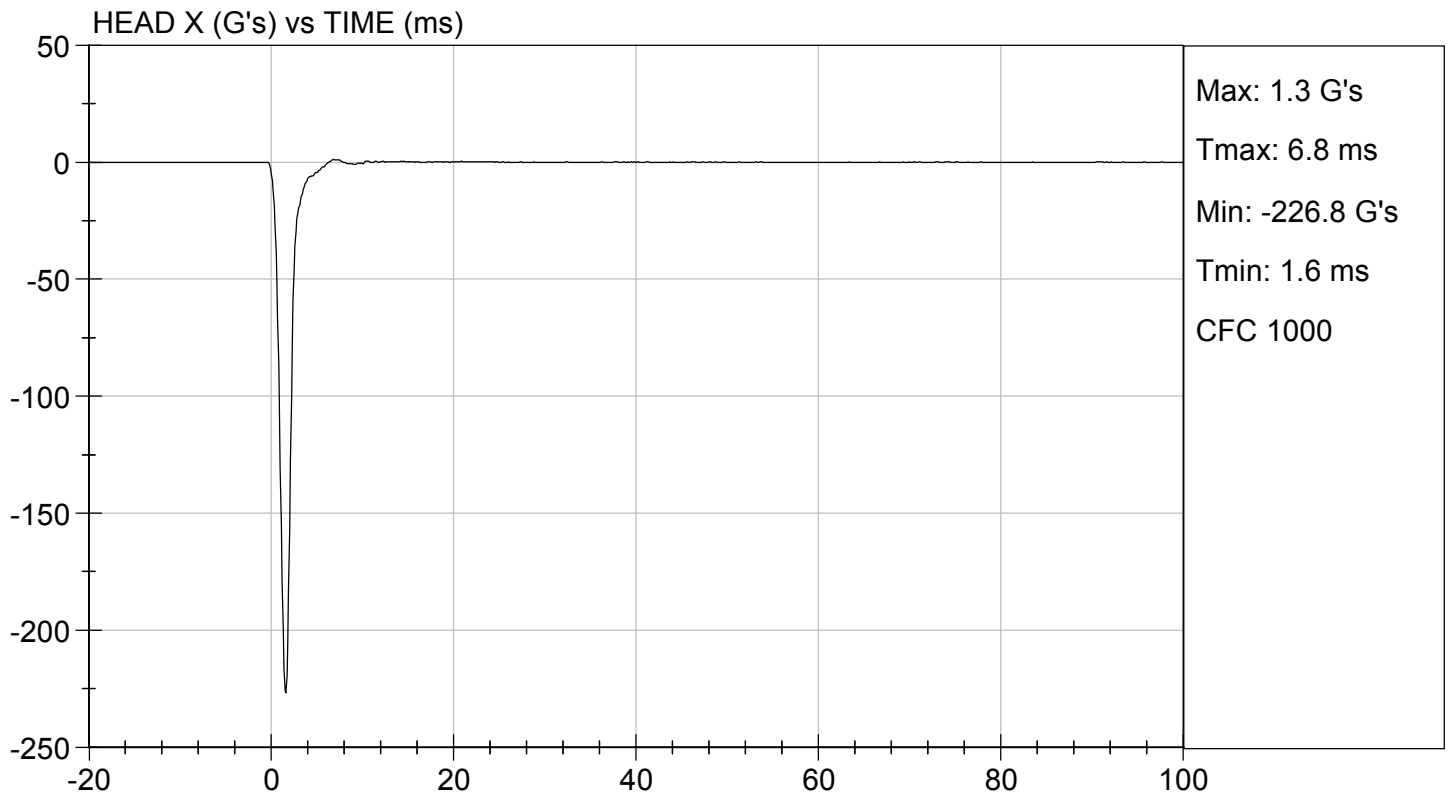
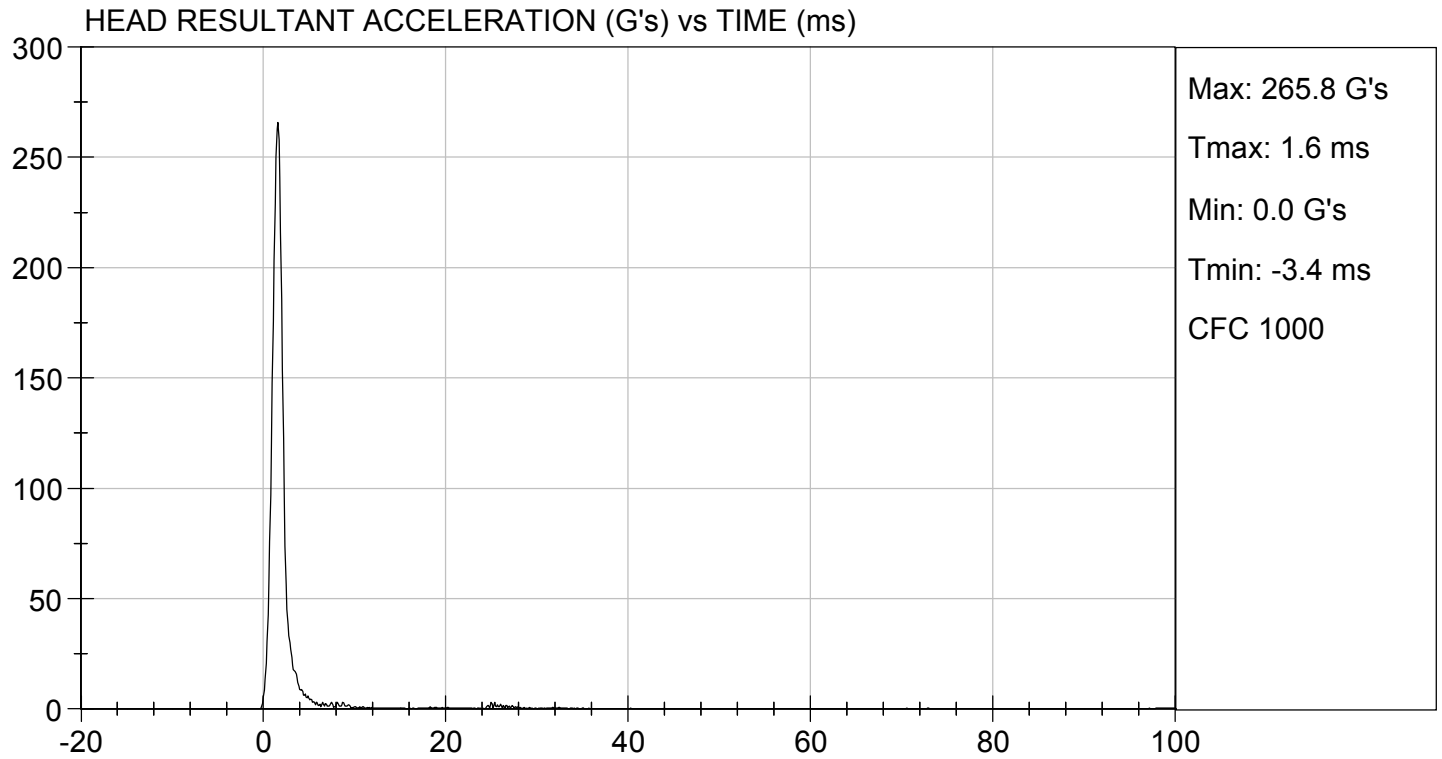


Laboratory Technician

12/11/2017
Test Date

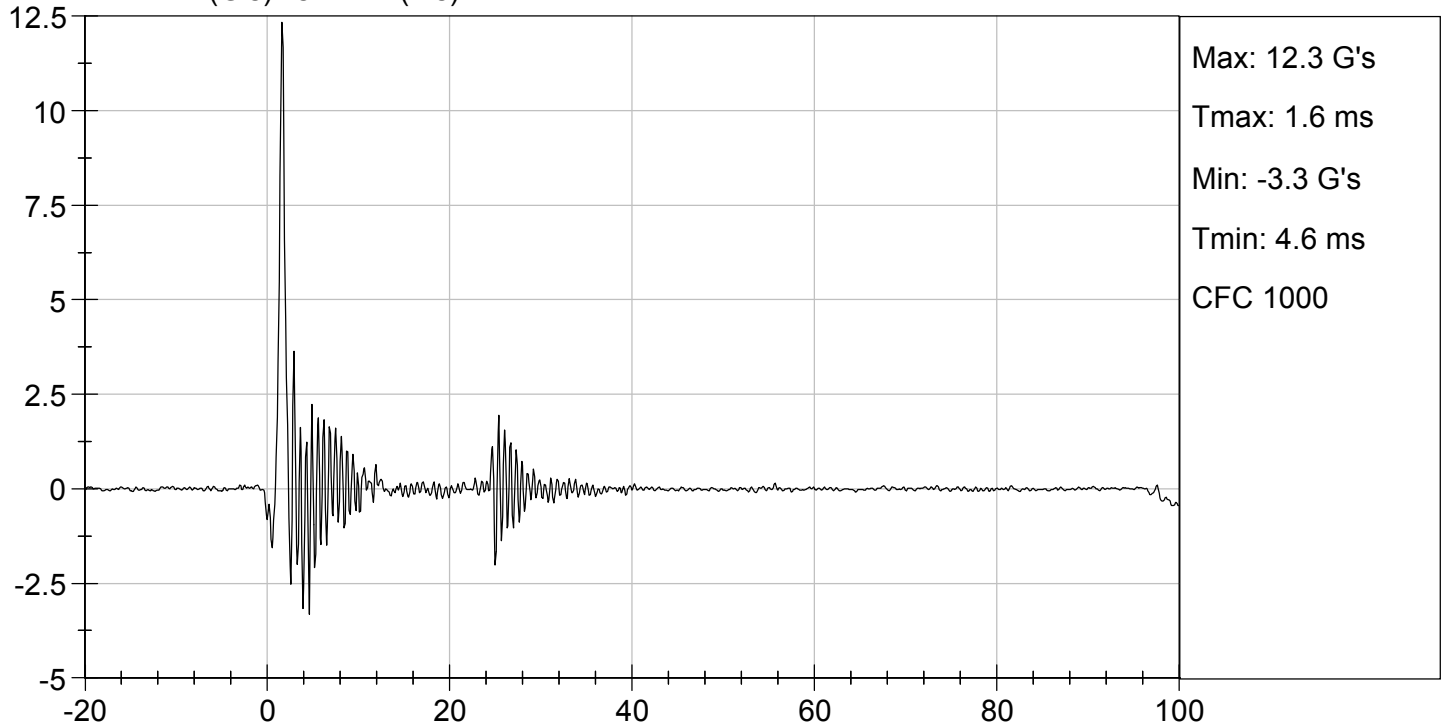


Approved By

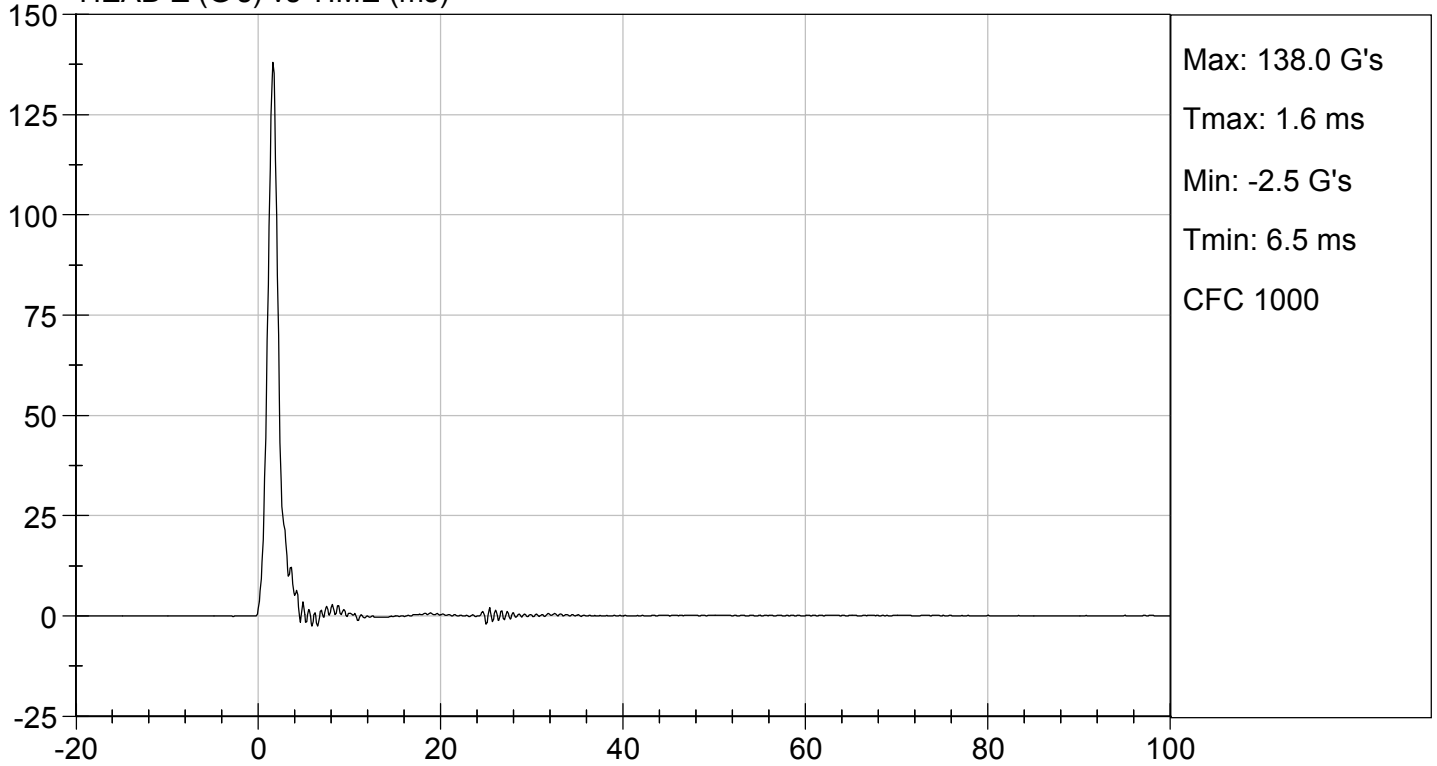




HEAD Y (G's) vs TIME (ms)



HEAD Z (G's) vs TIME (ms)



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

ATD Serial No: 351

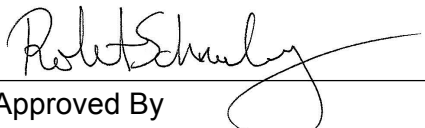
Test I.D: D173602

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	17	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.95	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.71	Pass
	20 ms	G's	17.60 to 22.60	21.33	Pass
	30 ms	G's	12.50 to 18.50	13.76	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	13.7	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	35.6	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	74.7	Pass
	Time	ms	57.0 to 64.0	60.5	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	119.8	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	88.6	Pass
	Time	ms	47.0 to 58.0	49.8	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	99.1	Pass
Overall Test Results					Pass


 Laboratory Technician

12/12/2017

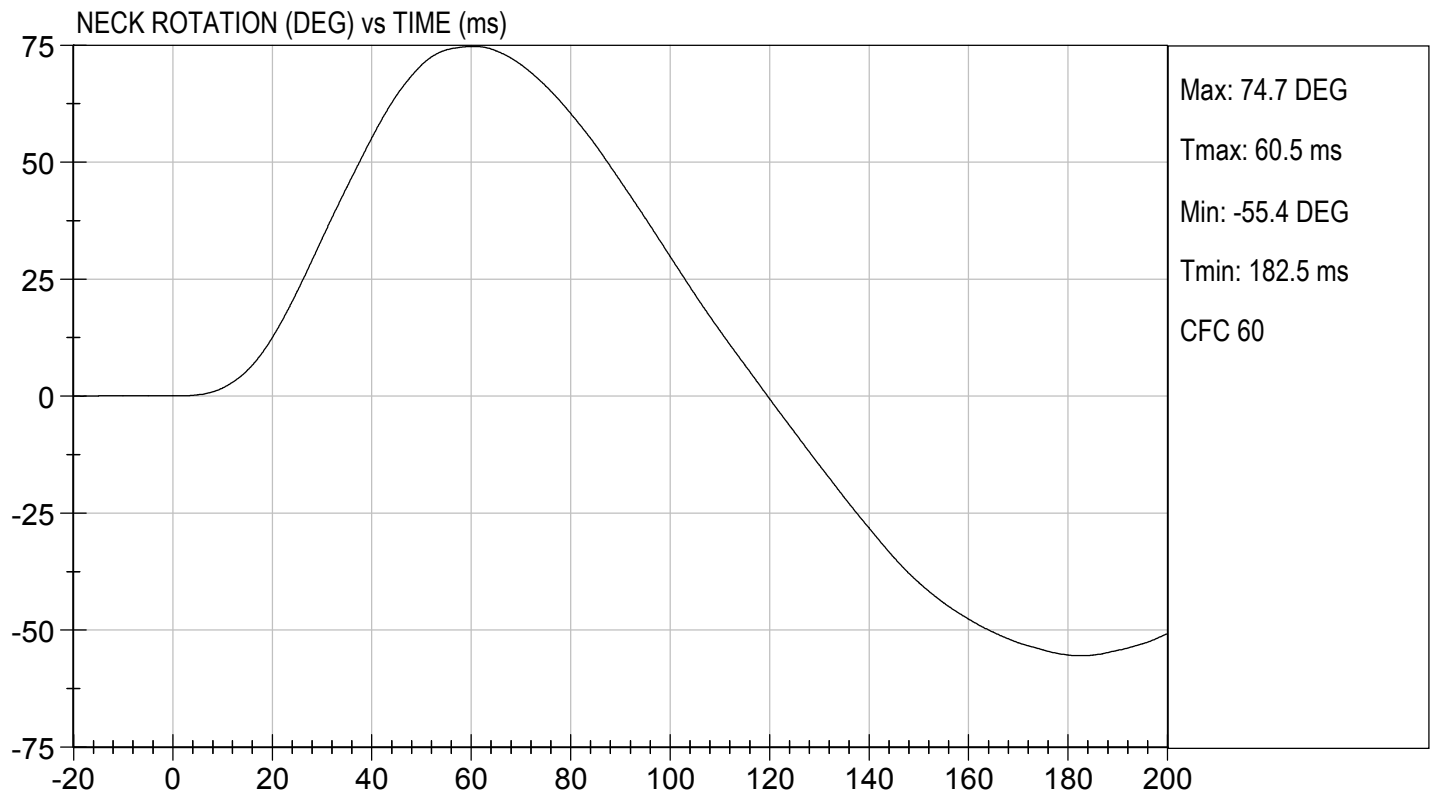
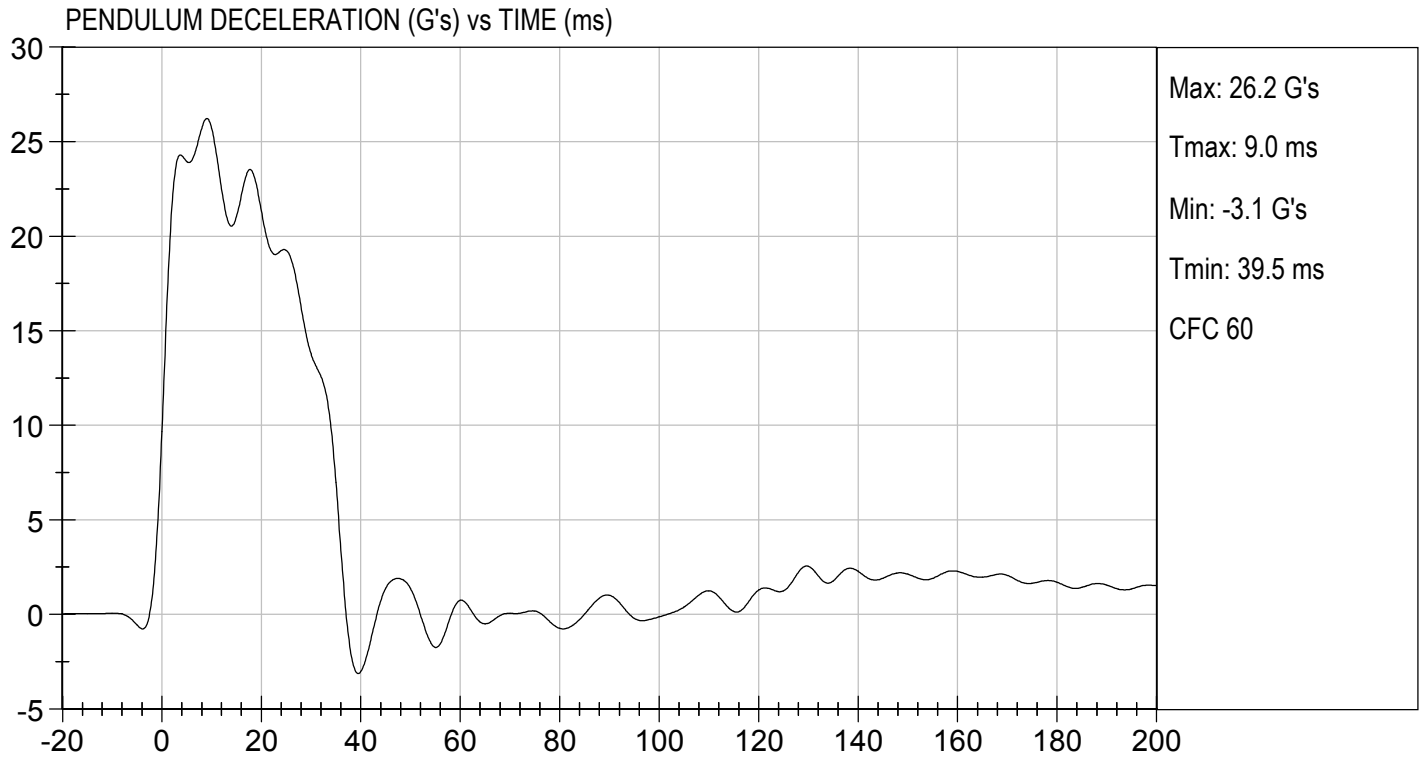
Test Date


 Approved By



TEST DESC: NECK FLEXION
VELOCITY: 22.80 ft/s, 6.95 m/s

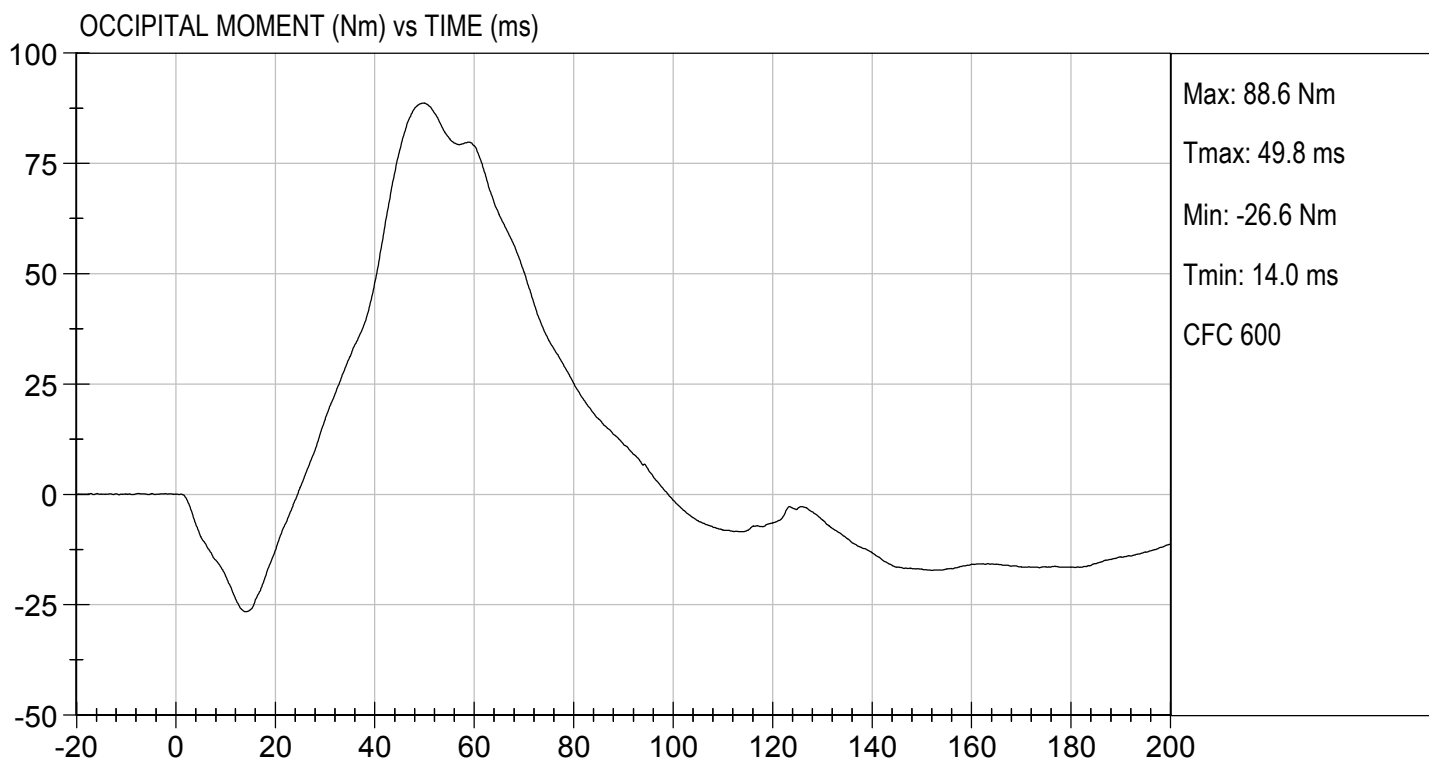
TEST DATE: 12/12/2017
TEST #: D173602





TEST DESC: NECK FLEXION
VELOCITY: 22.80 ft/s, 6.95 m/s

TEST DATE: 12/12/2017
TEST #: D173602

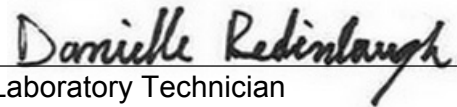


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

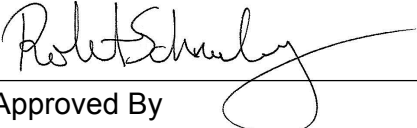
Test I.D: D173603

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	17	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.71	Pass
	20 ms	G's	14.00 to 19.00	16.90	Pass
	30 ms	G's	11.00 to 16.00	12.18	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	12.1	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	98.5	Pass
	Time	ms	72.0 to 82.0	80.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	163.5	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-57.4	Pass
	Time	ms	65.0 to 79.0	72.4	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	144.3	Pass
Overall Test Results					Pass


Laboratory Technician

12/12/2017

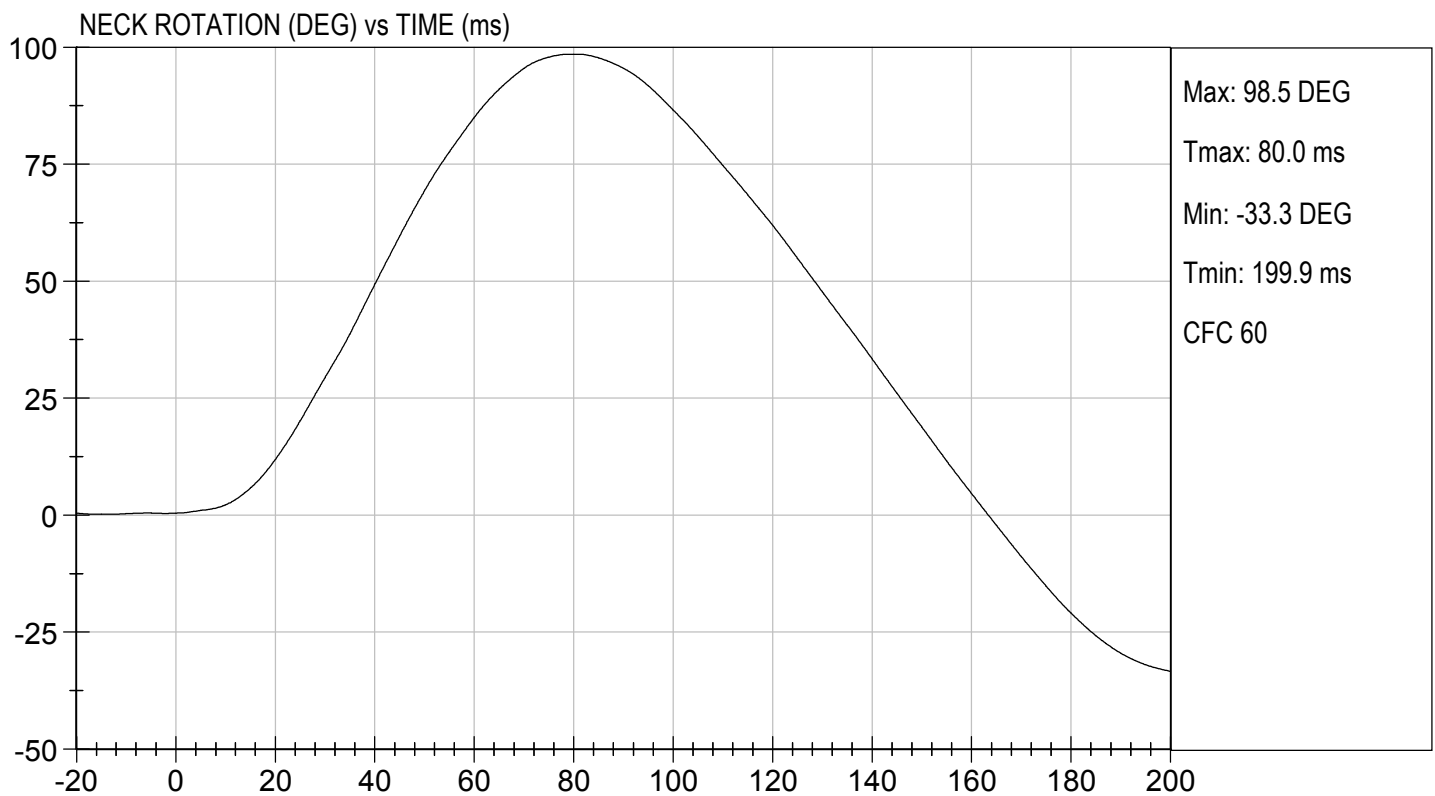
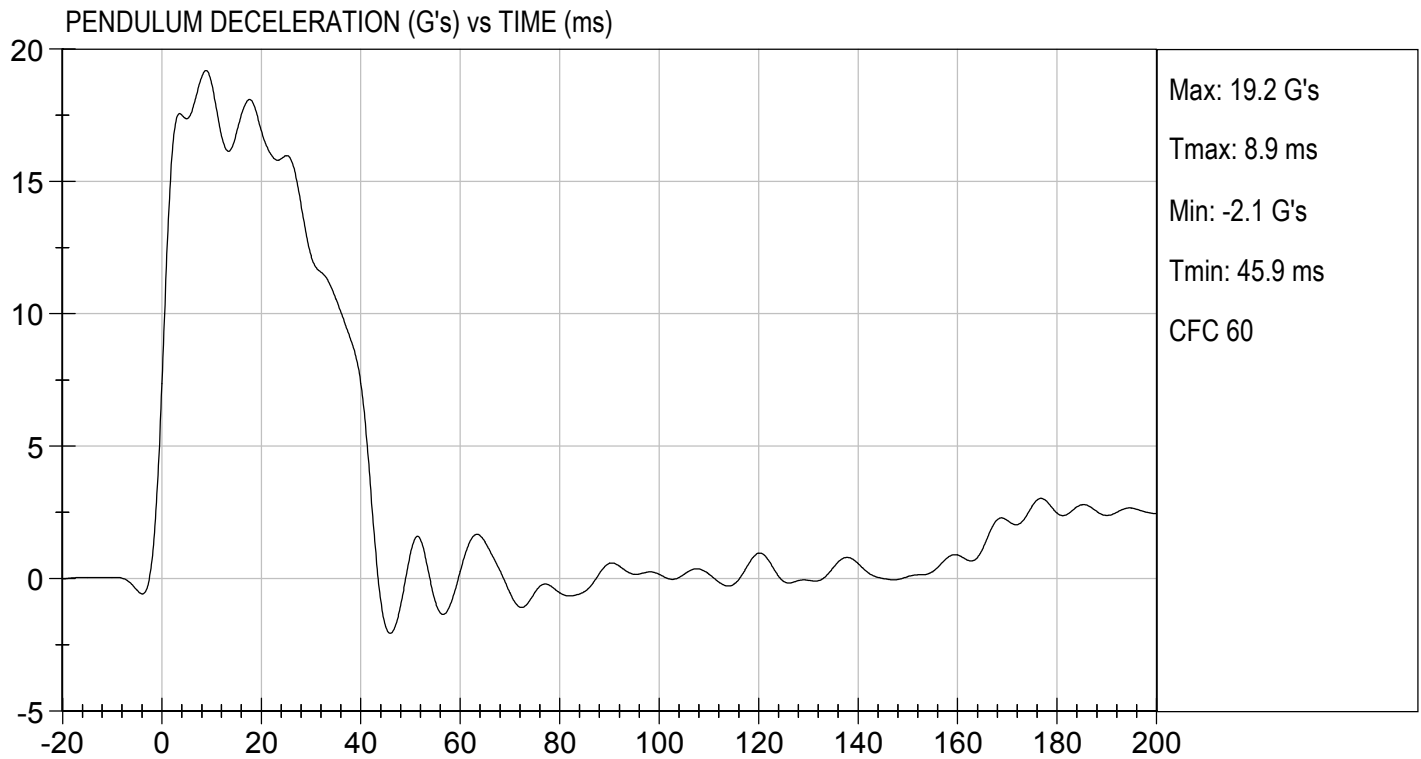
Test Date


Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 19.61 ft/s, 5.98 m/s

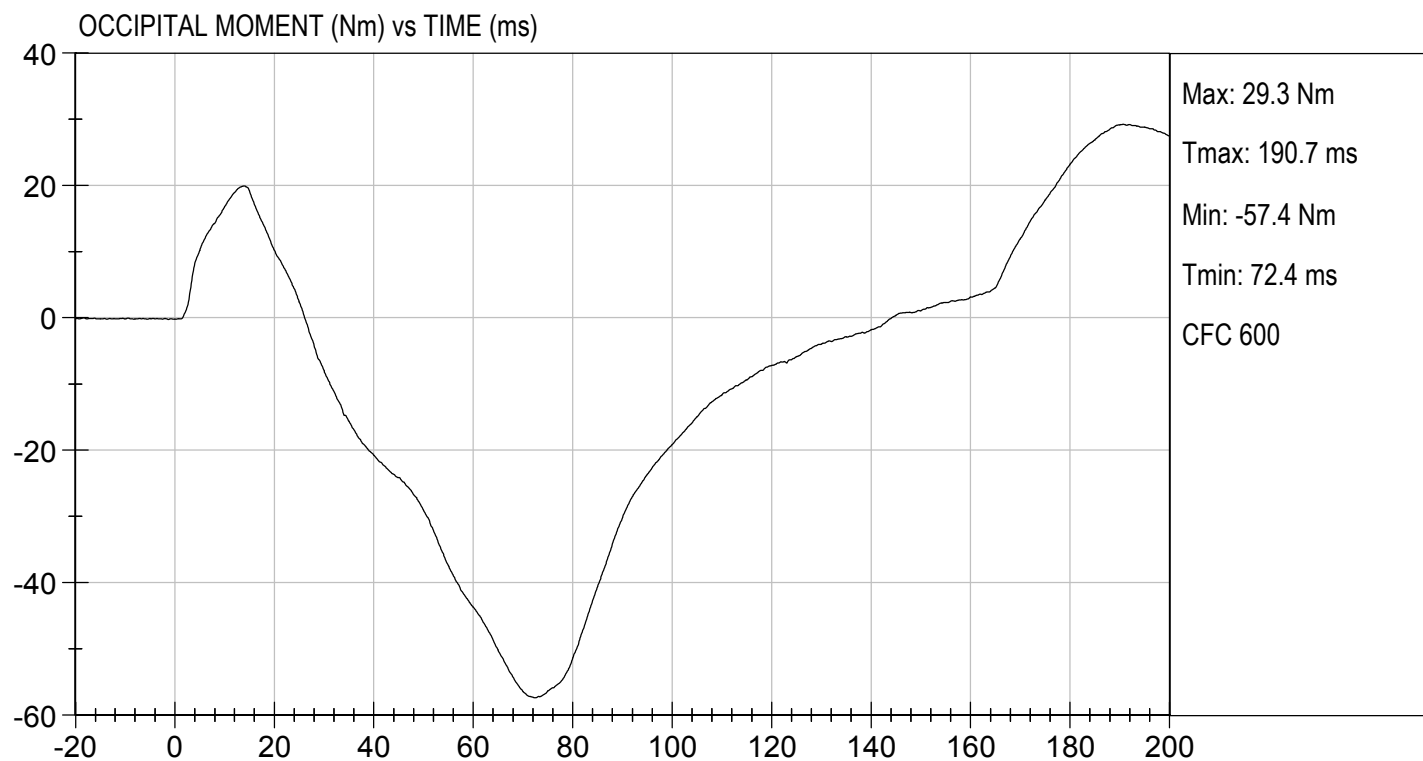
TEST DATE: 12/12/2017
TEST #: D173603





TEST DESC: NECK EXTENSION
VELOCITY: 19.61 ft/s, 5.98 m/s

TEST DATE: 12/12/2017
TEST #: D173603

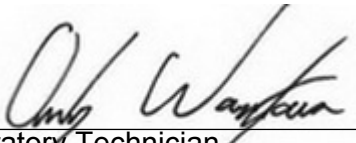


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D173604

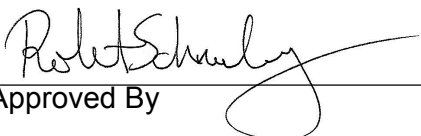
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,579	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.66	Pass
Internal Hysteresis	%	69 to 85	71	Pass
			Overall Test Results	Pass



Laboratory Technician

12/11/2017

Test Date

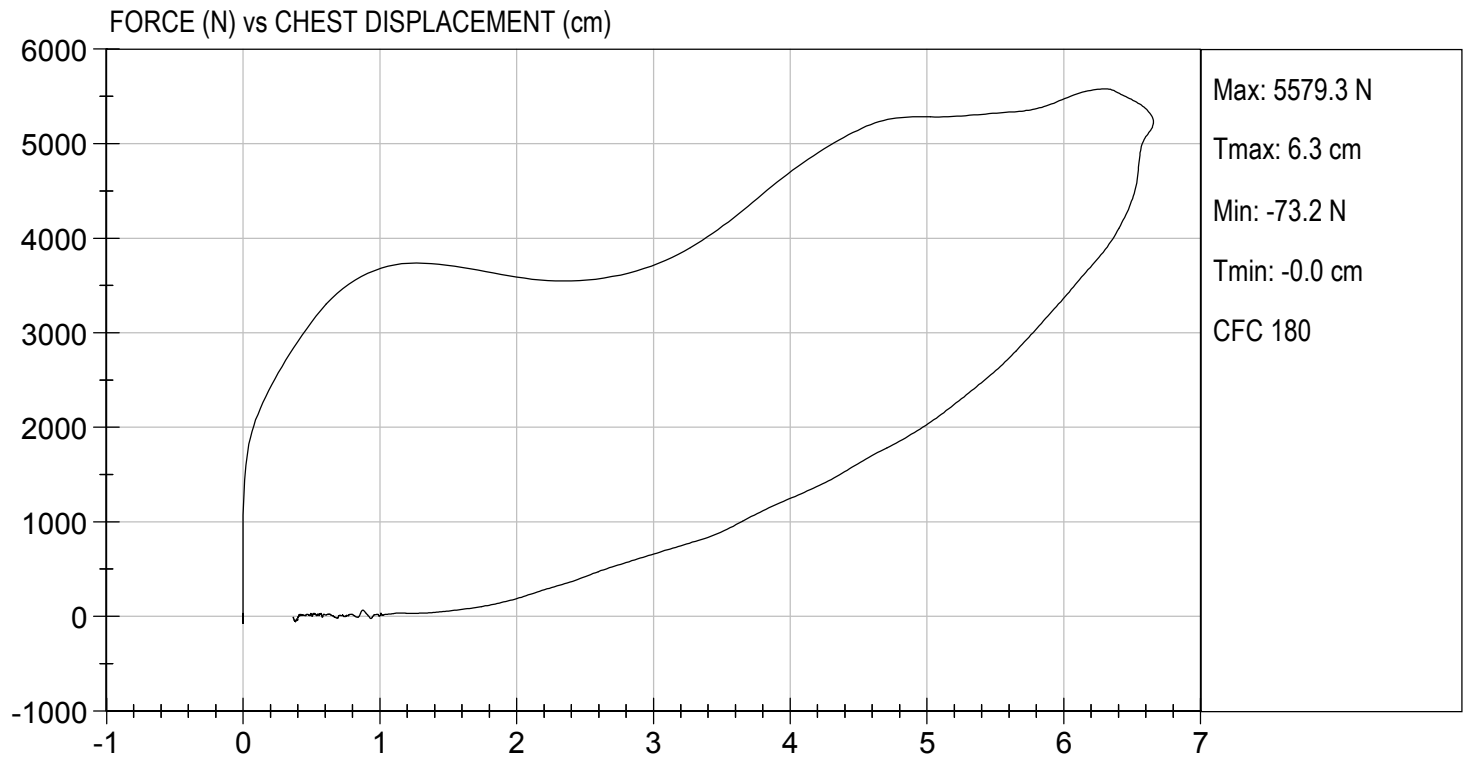


Approved By



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

TEST DATE: 12/11/2017
TEST #: D173604

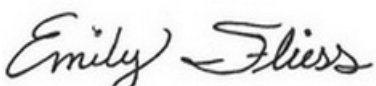


MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

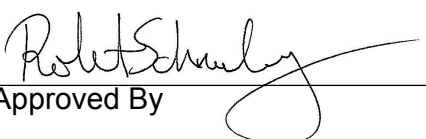
ATD Serial No: 351

Test I.D: D173605

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	25	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	4,759	Pass
Overall Test Results				Pass


Laboratory Technician

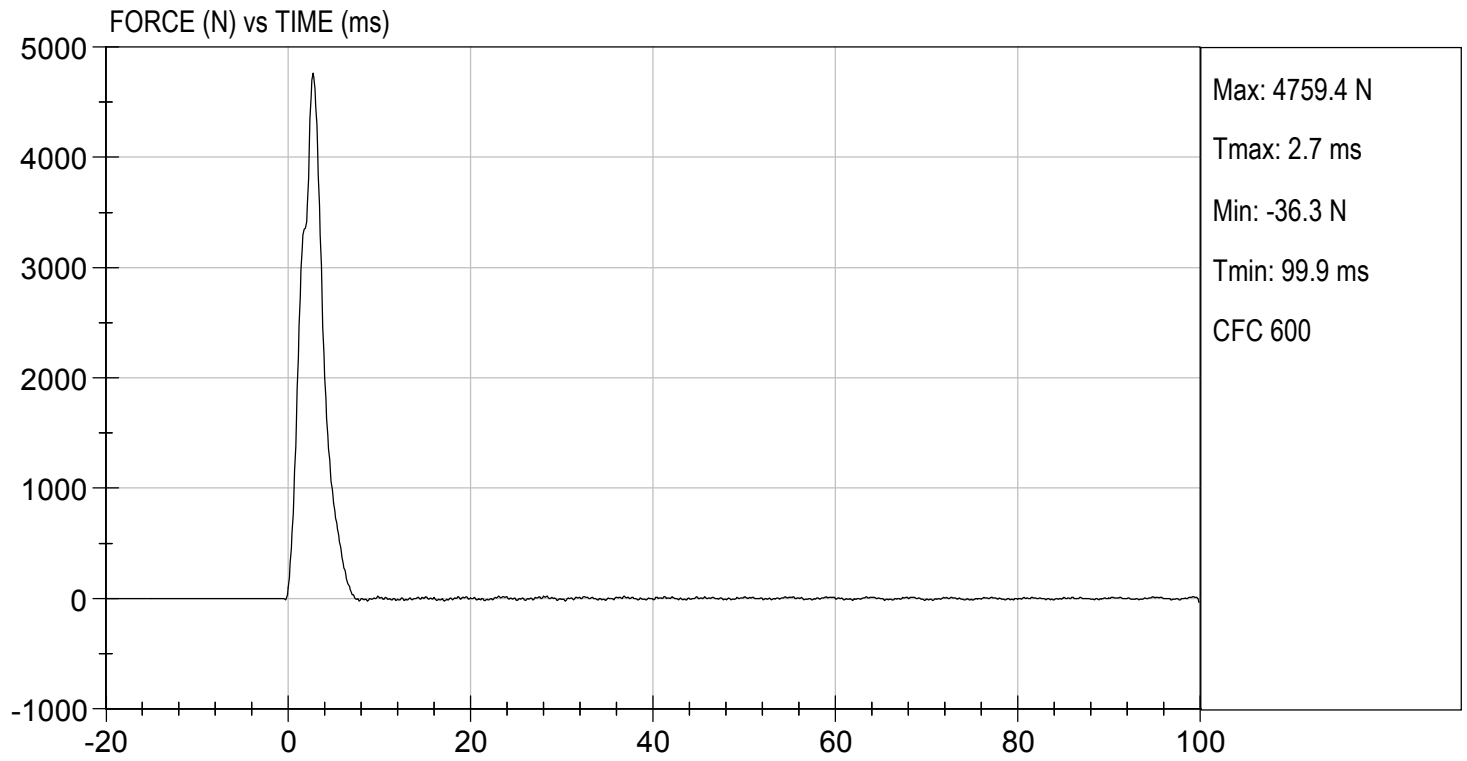
12/11/2017
Test Date


Approved By



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

TEST DATE: 12/11/2017
TEST #: D173605

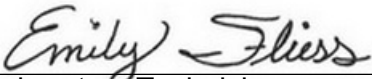


MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

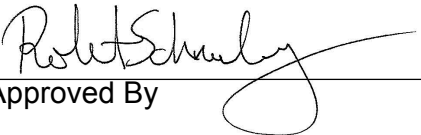
ATD Serial No: 351

Test I.D: D173606

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	25	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	5,555	Pass
Overall Test Results				Pass


Laboratory Technician

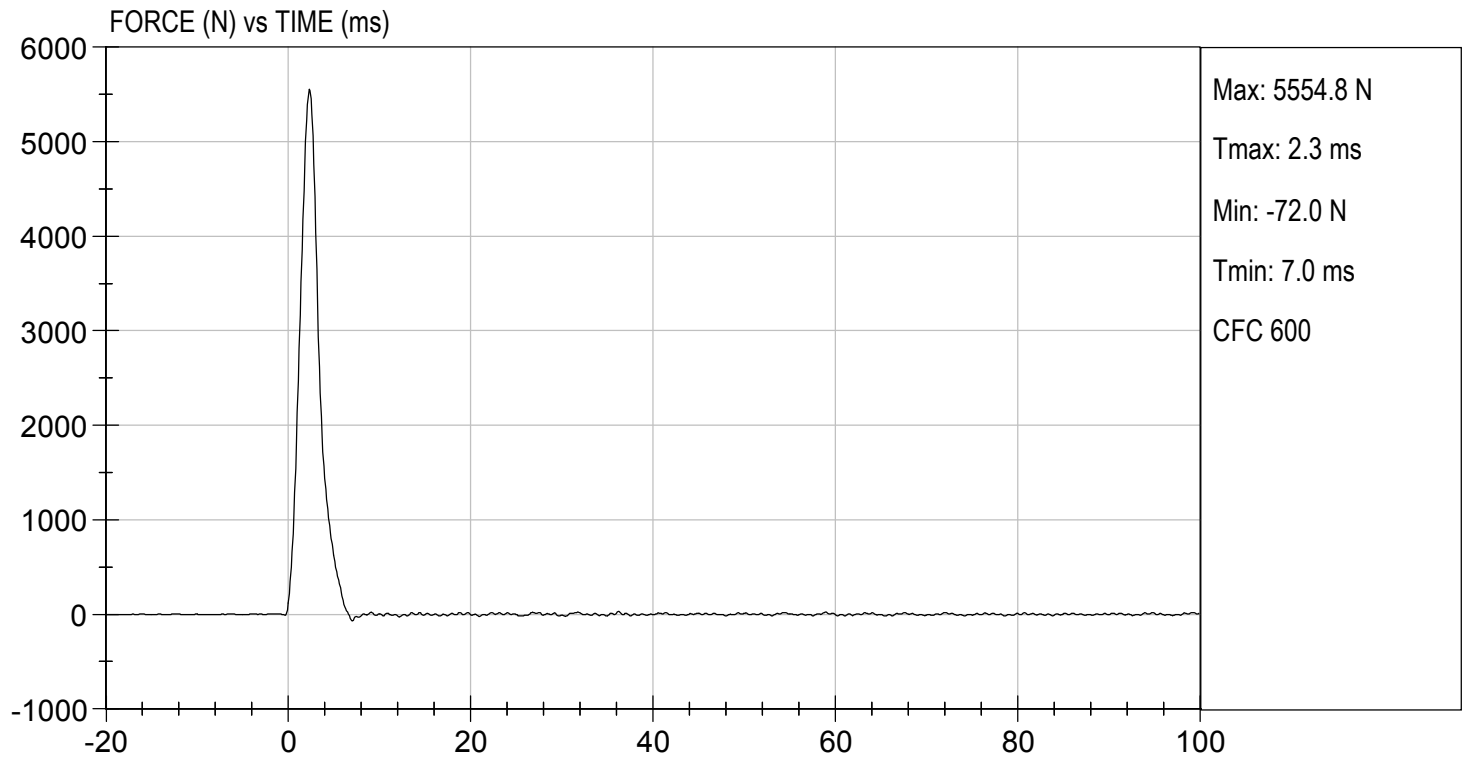
12/11/2017
Test Date


Approved By



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

TEST DATE: 12/11/2017
TEST #: D173606



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

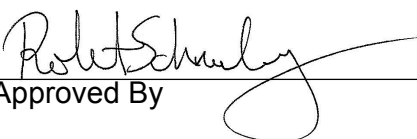
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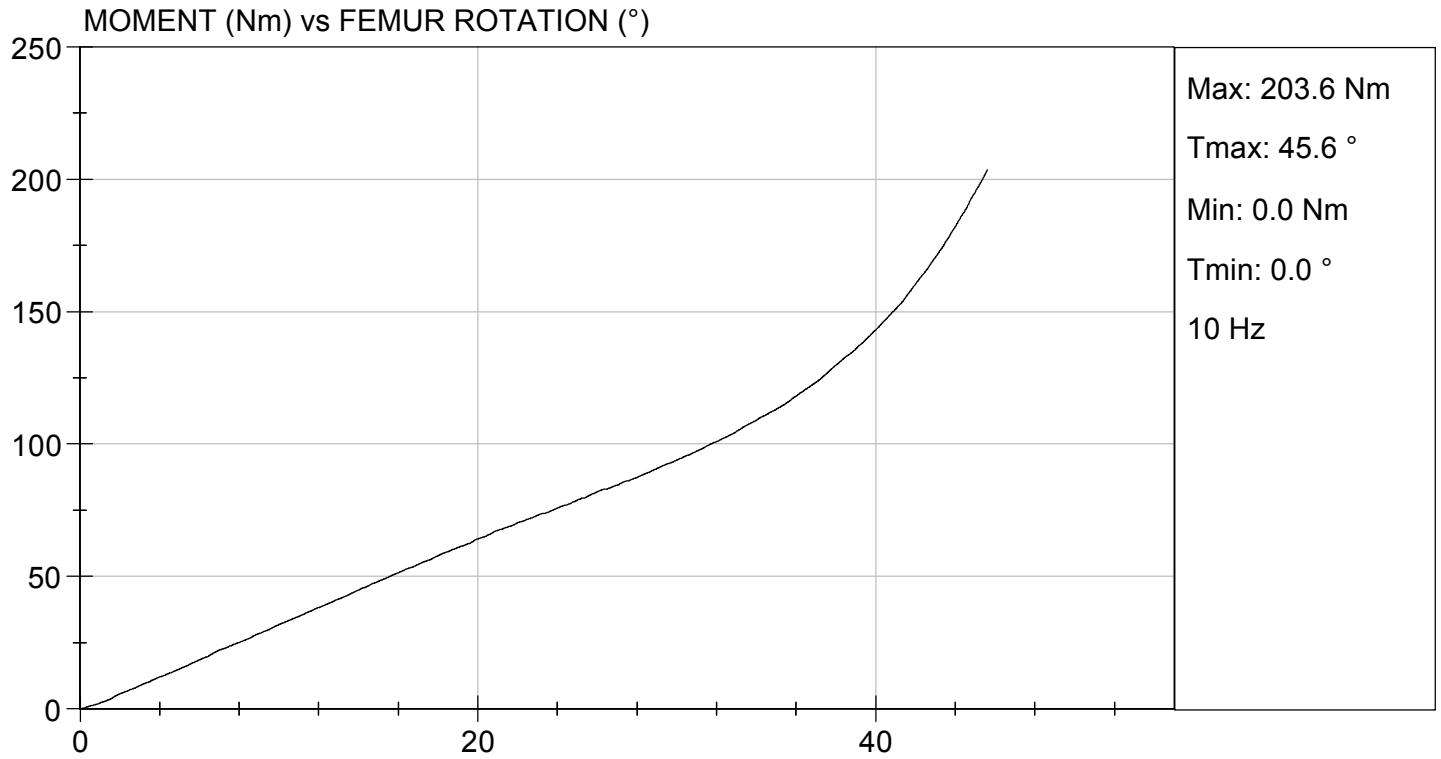
Test I.D: D173600

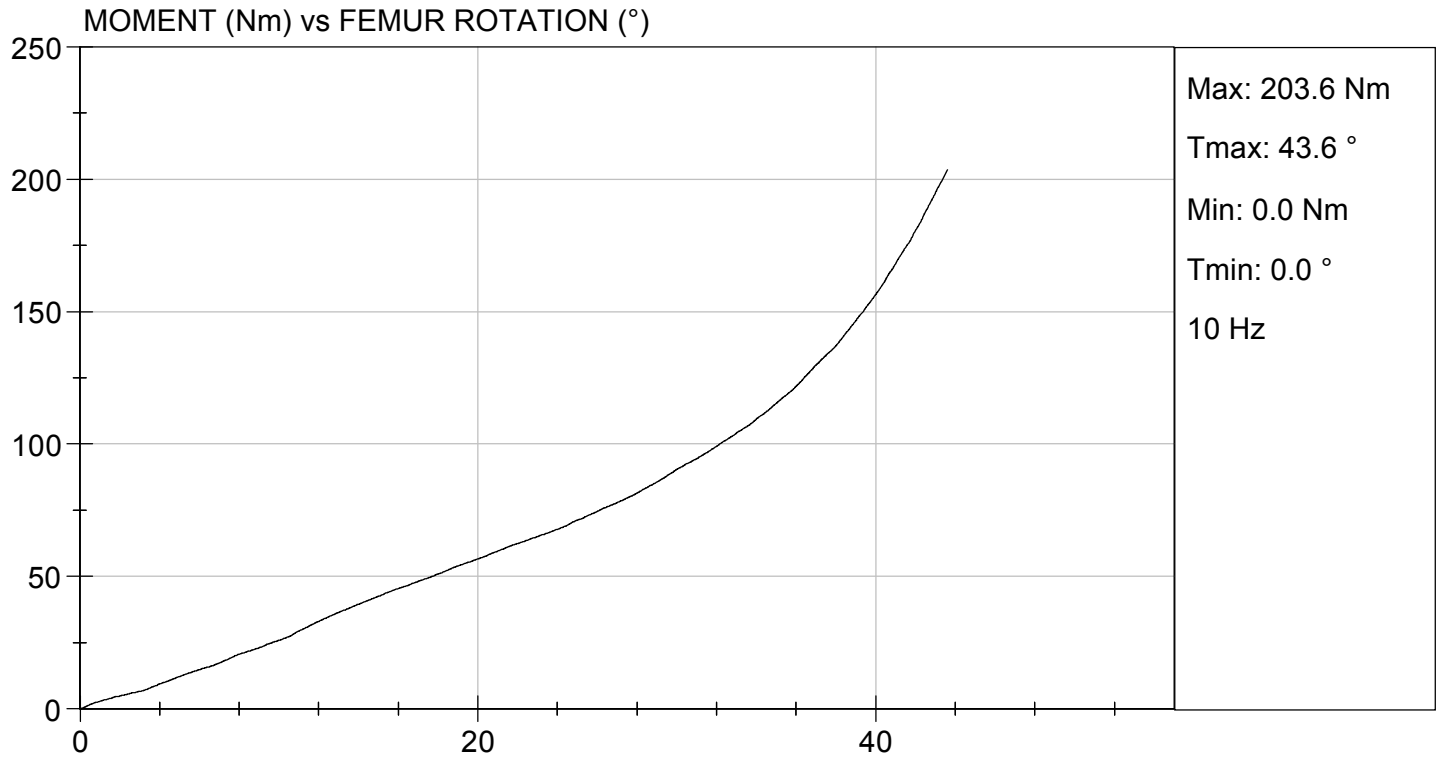
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	22	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.5	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	94.0	90.4	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	45.6	43.6	Pass
Overall Test Results					Pass


 Laboratory Technician

12/11/2017
 Test Date


 Approved By





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

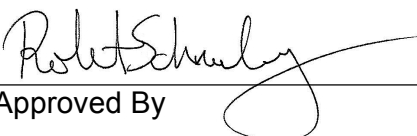
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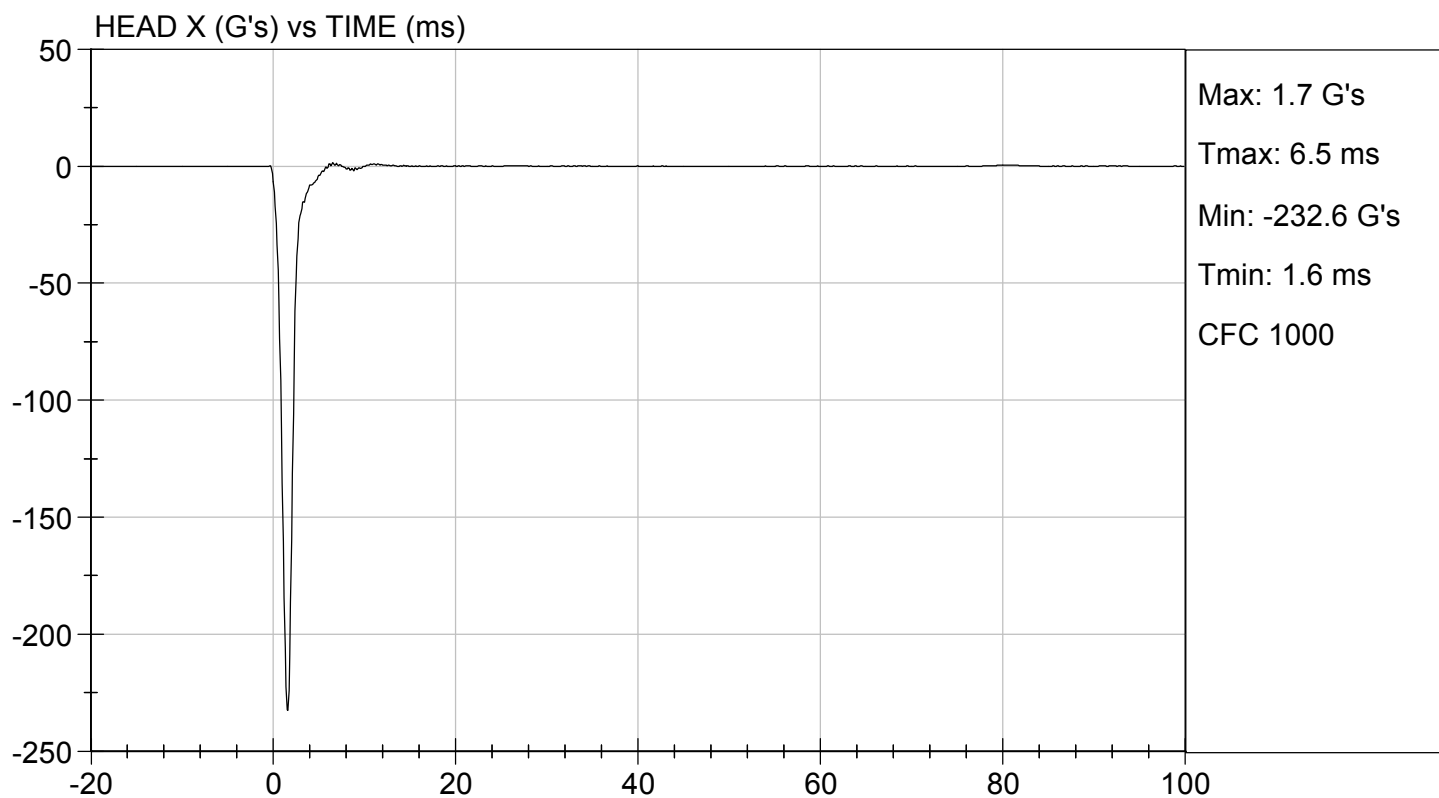
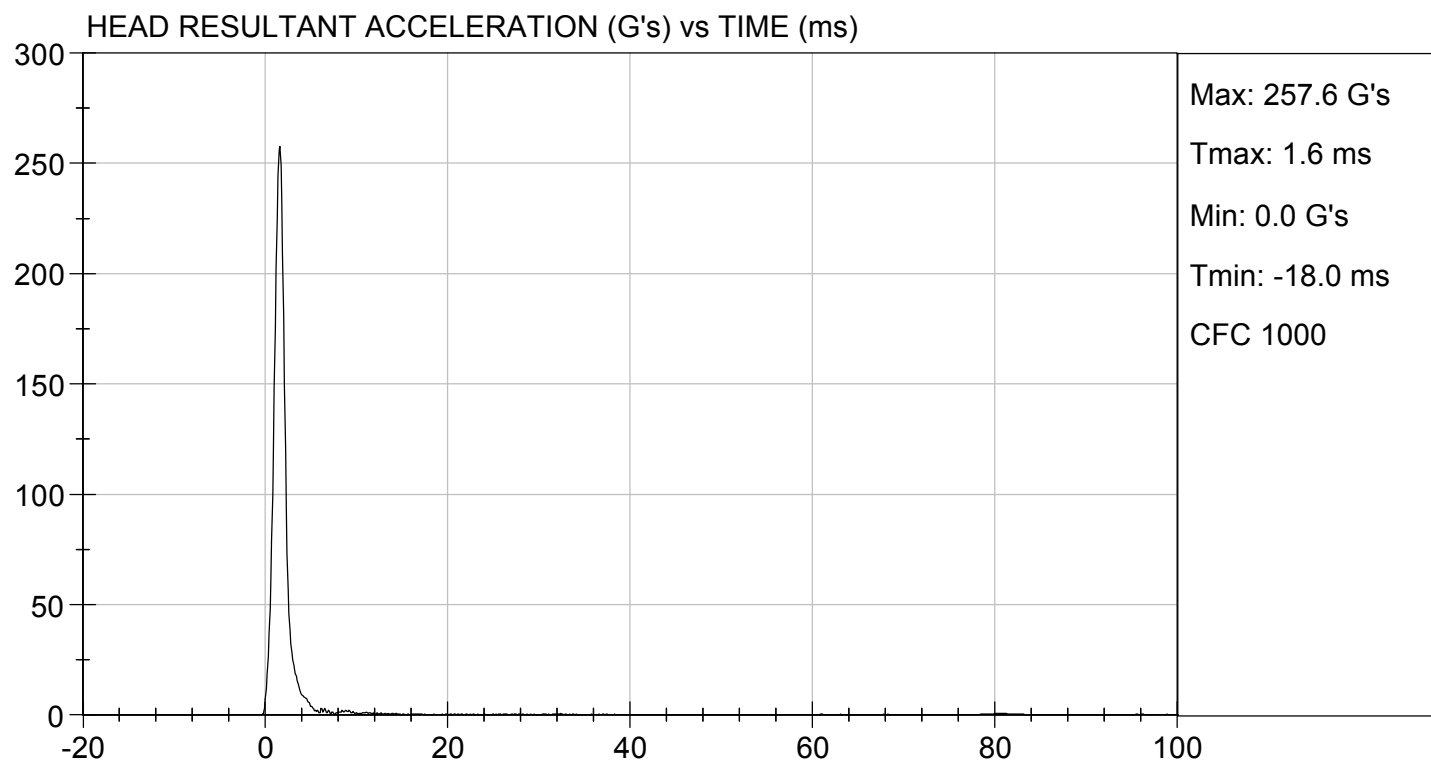
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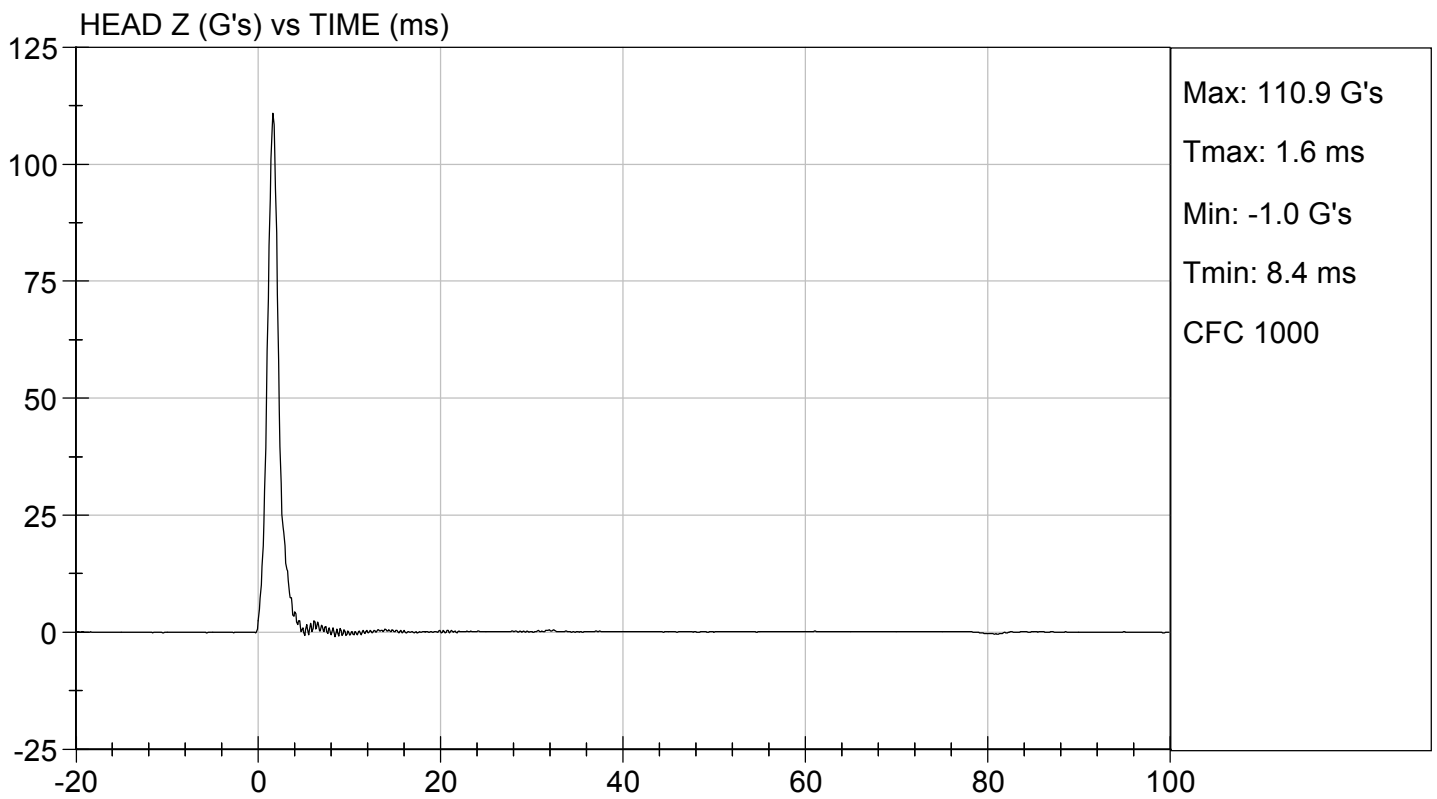
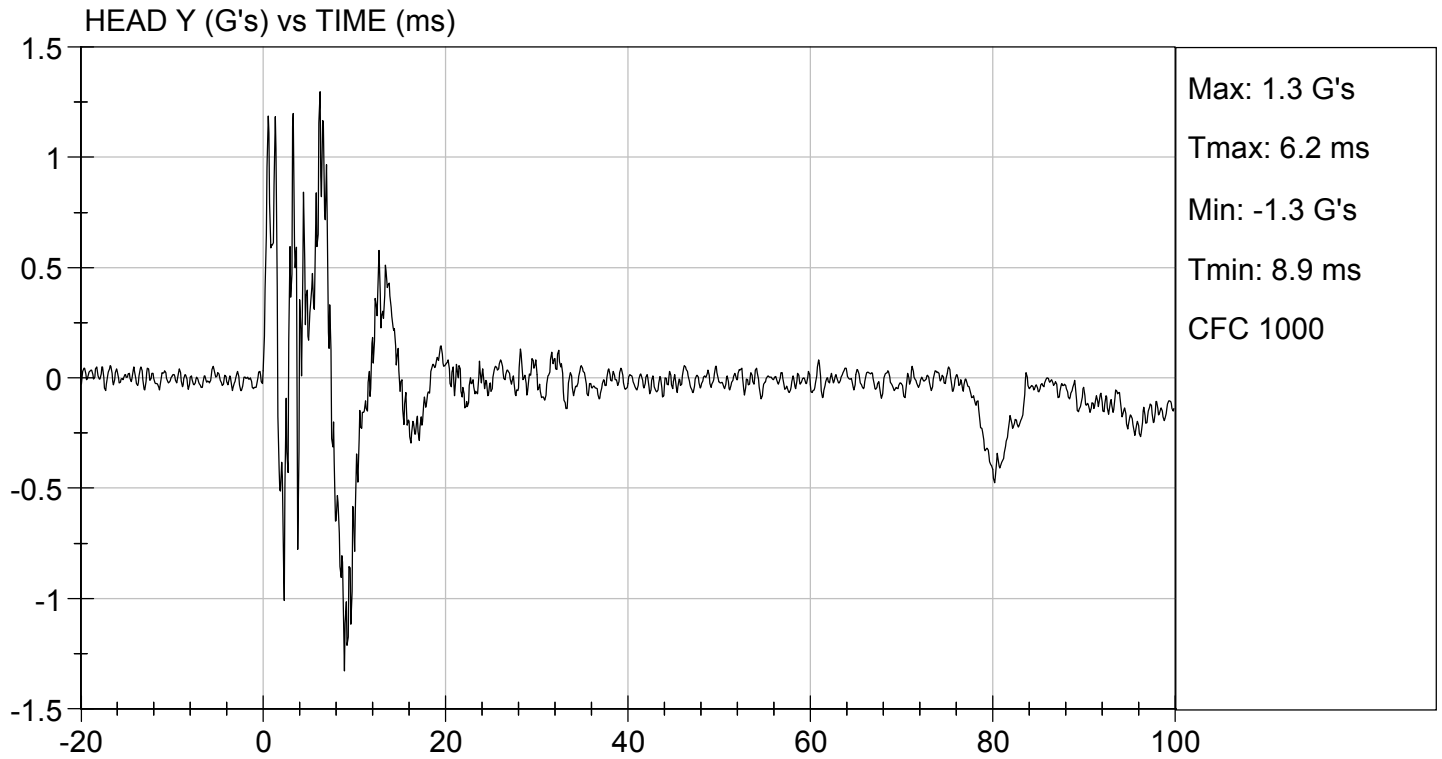
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Peak Resultant Acceleration	G's	225 to 275	258	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

12/14/2017
Test Date


Approved By





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

ATD Serial No: 351

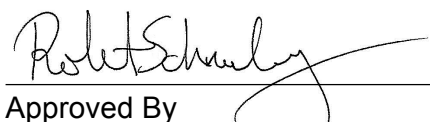
Test I.D: D173682

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	25	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.44	Pass
	20 ms	G's	17.60 to 22.60	20.04	Pass
	30 ms	G's	12.50 to 18.50	14.82	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.7	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	35.7	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	65.1	Pass
	Time	ms	57.0 to 64.0	59.6	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	115.2	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	88.7	Pass
	Time	ms	47.0 to 58.0	49.1	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	98.3	Pass
Overall Test Results					Pass


 Laboratory Technician

12/14/2017

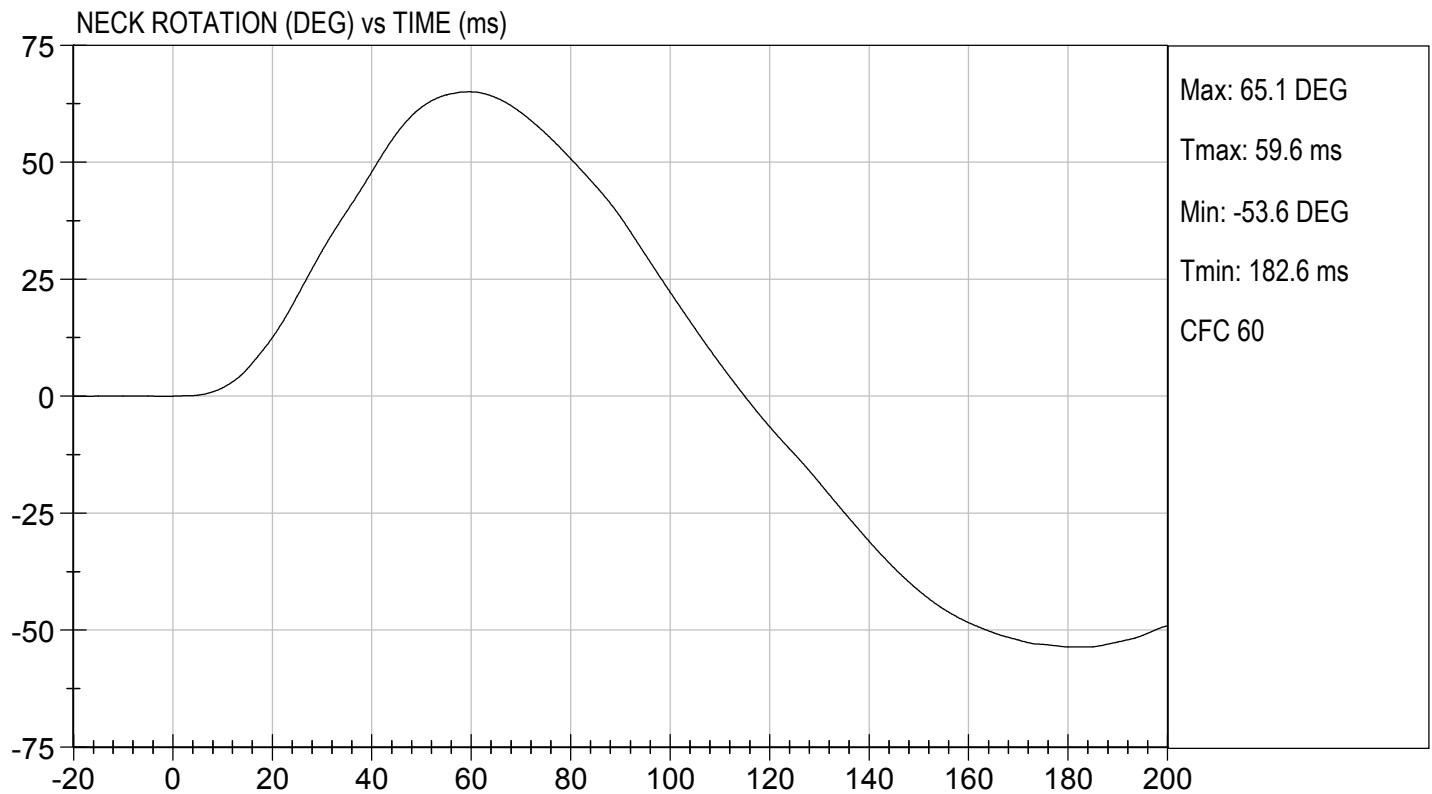
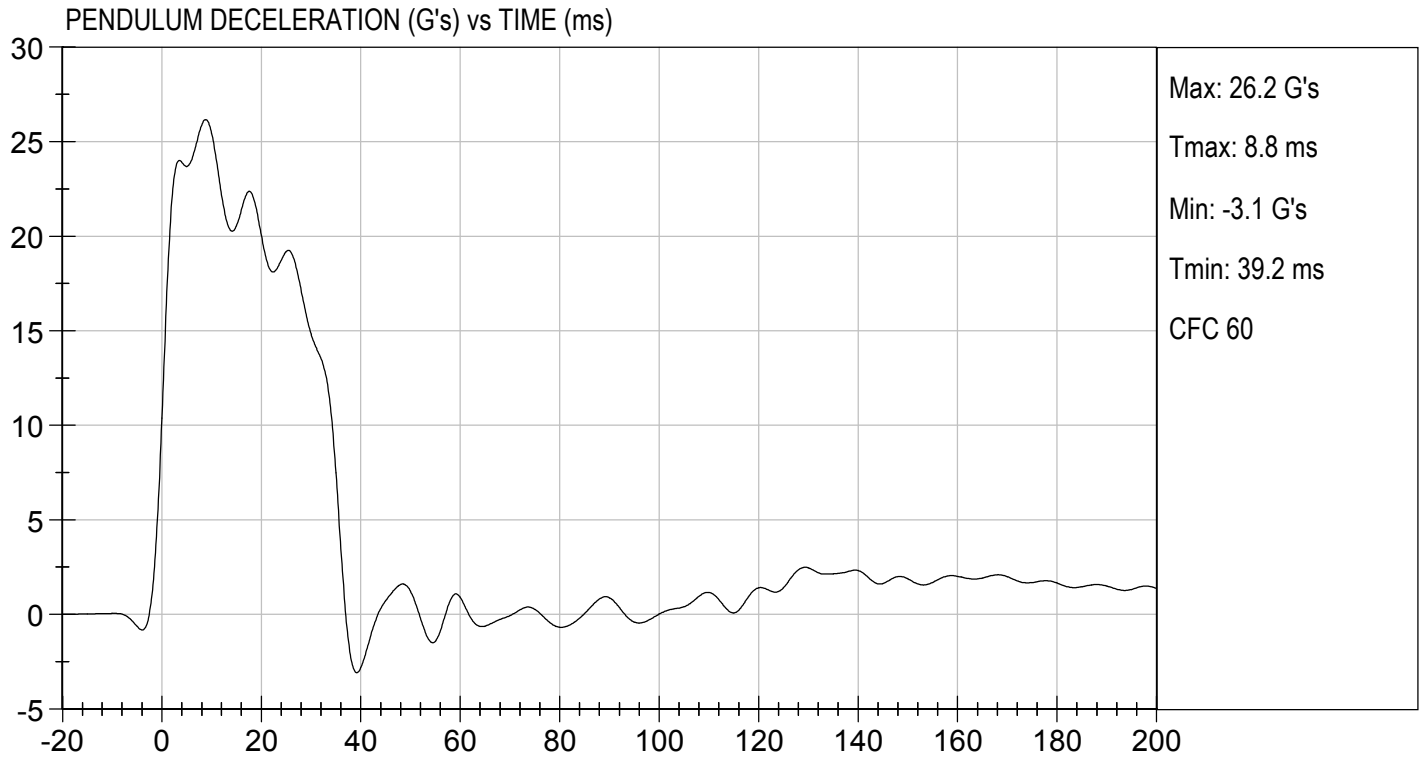
Test Date


 Approved By



TEST DESC: NECK FLEXION
VELOCITY: 22.60 ft/s, 6.89 m/s

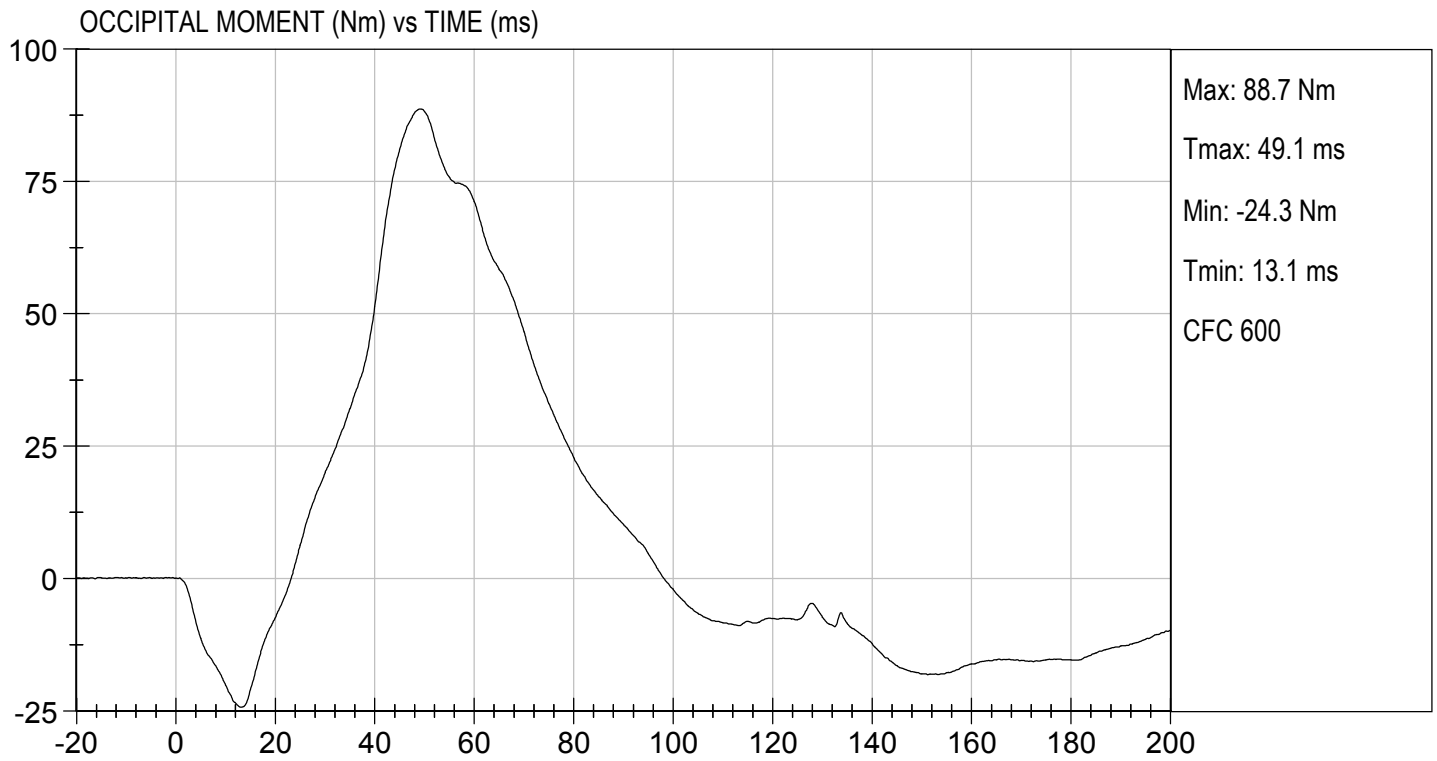
TEST DATE: 12/14/2017
TEST #: D173682





TEST DESC: NECK FLEXION
VELOCITY: 22.60 ft/s, 6.89 m/s

TEST DATE: 12/14/2017
TEST #: D173682



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

ATD Serial No: 351

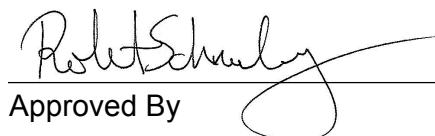
Test I.D: D173683

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	25	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.67	Pass
	20 ms	G's	14.00 to 19.00	15.40	Pass
	30 ms	G's	11.00 to 16.00	12.62	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	12.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	40.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	95.9	Pass
	Time	ms	72.0 to 82.0	79.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	164.8	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-61.0	Pass
	Time	ms	65.0 to 79.0	71.9	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	143.5	Pass
Overall Test Results					Pass


 Laboratory Technician

12/14/2017

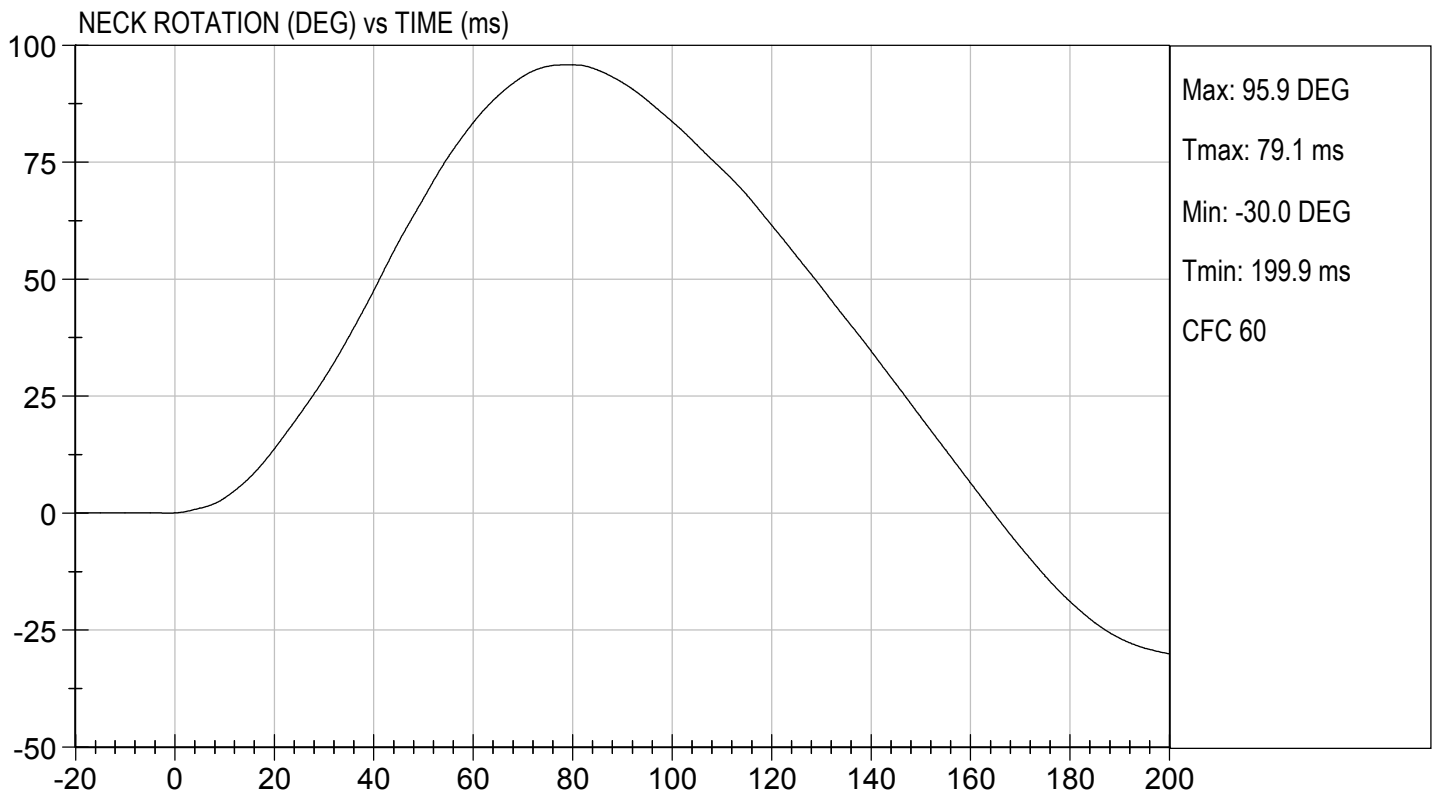
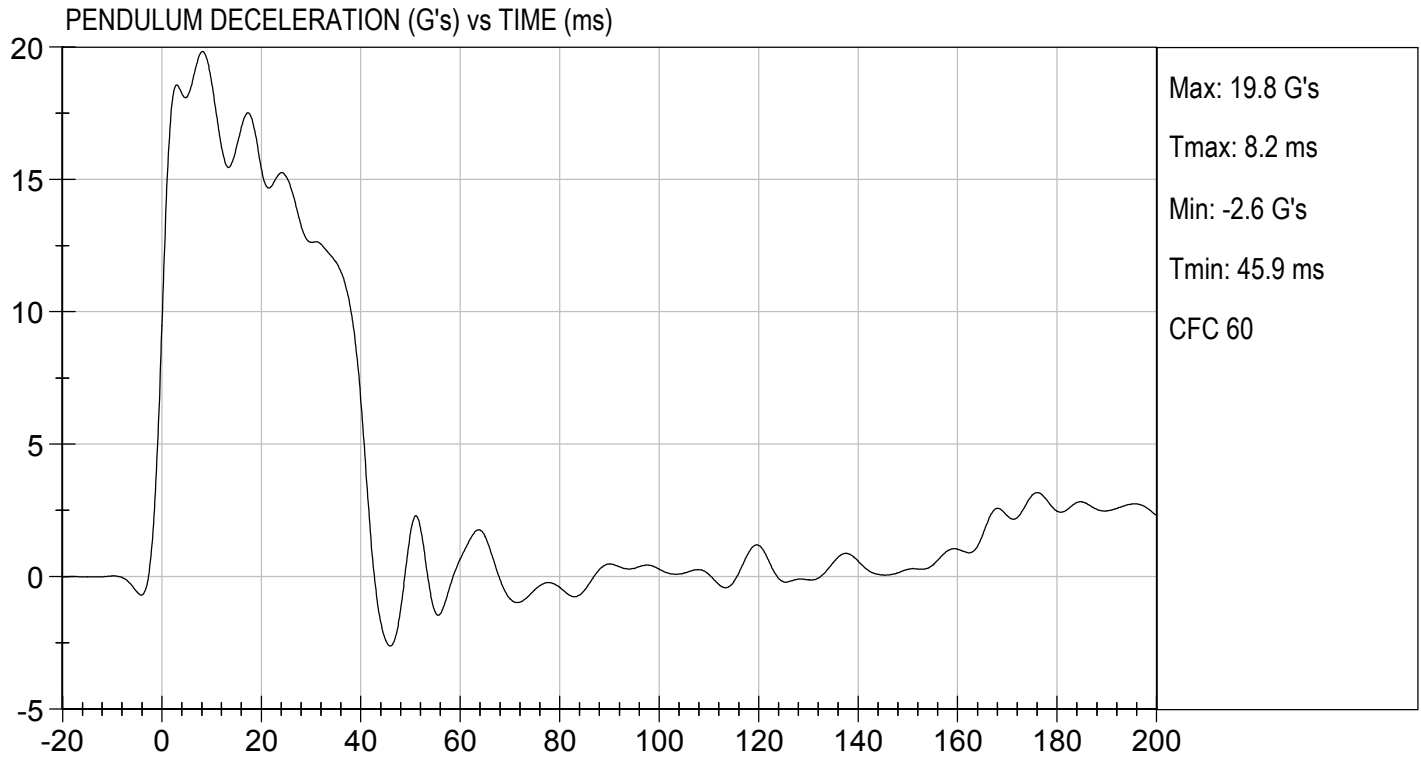
Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 19.61 ft/s, 5.98 m/s

TEST DATE: 12/14/2017
TEST #: D173683





TEST DESC: NECK EXTENSION
VELOCITY: 19.61 ft/s, 5.98 m/s

TEST DATE: 12/14/2017
TEST #: D173683

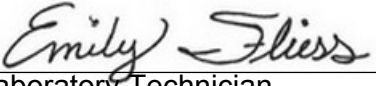


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

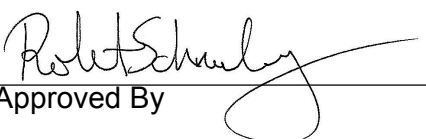
ATD Serial No: 351

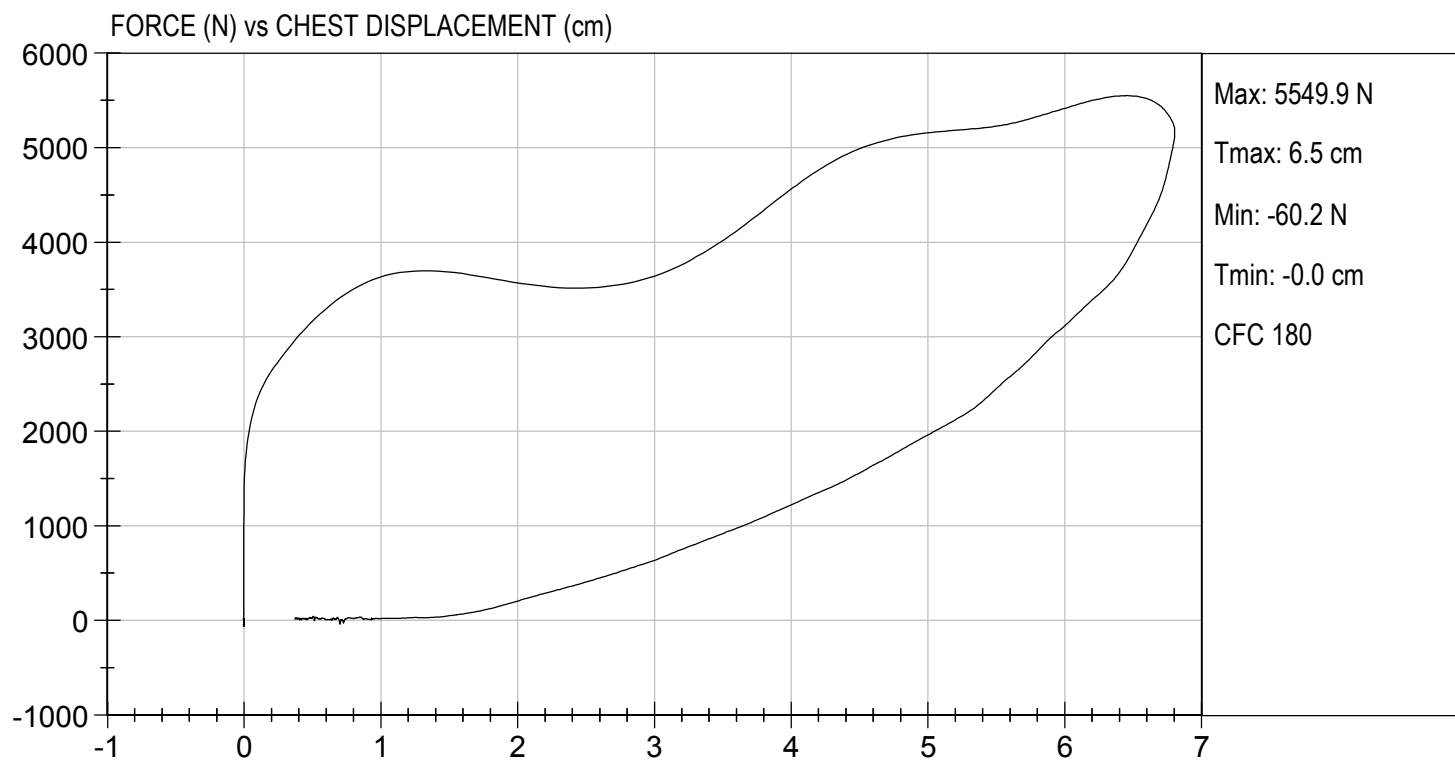
Test I.D: D173684

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	21	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,550	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.81	Pass
Internal Hysteresis	%	69 to 85	70	Pass
			Overall Test Results	Pass


Laboratory Technician

12/18/2017
Test Date


Approved By

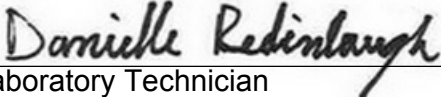


MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

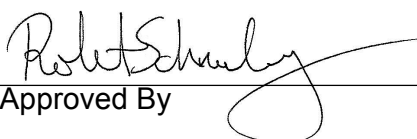
Test I.D: D173685

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	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,085	Pass
Overall Test Results				Pass


Laboratory Technician

12/15/2017

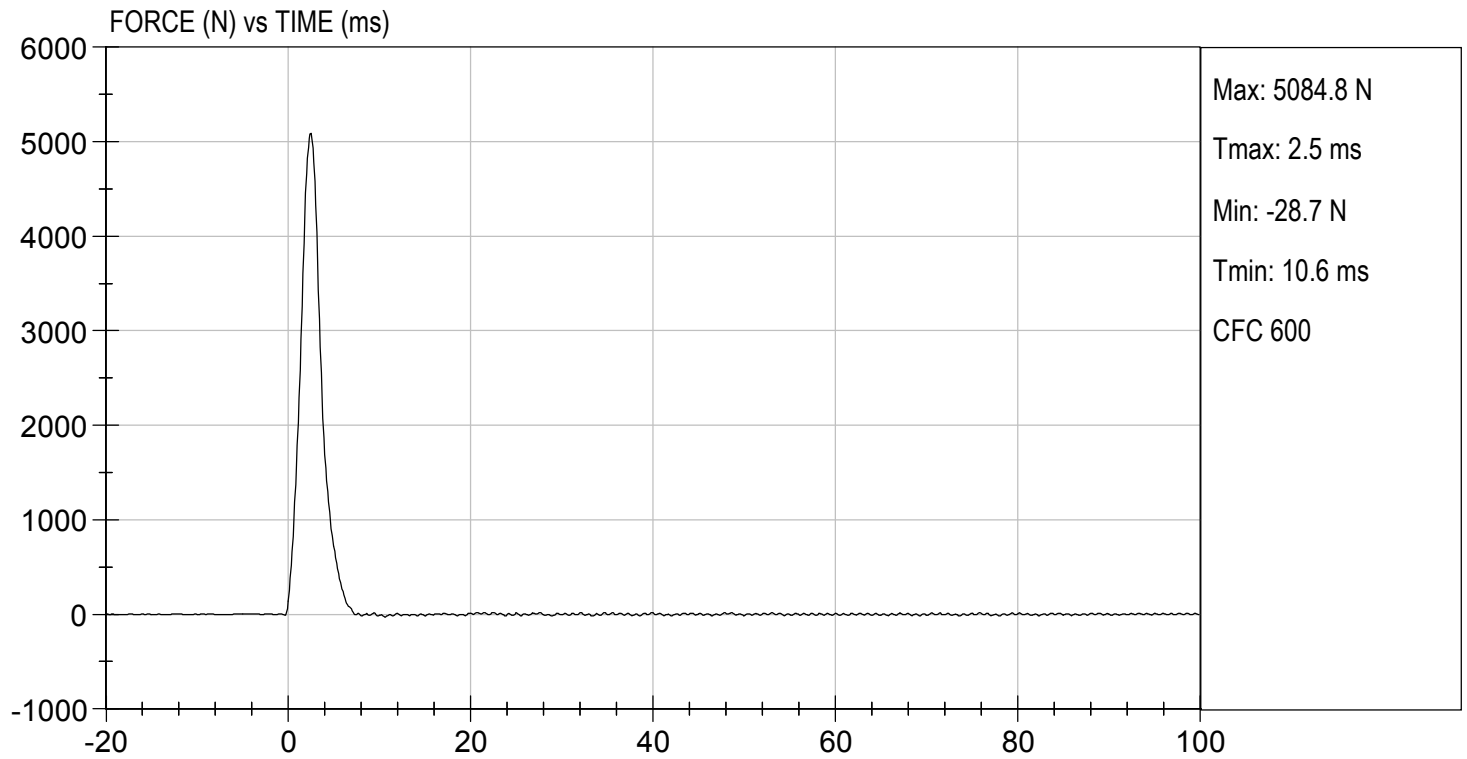
Test Date


Approved By



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

TEST DATE: 12/15/2017
TEST #: D173685



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

ATD Serial No: 351

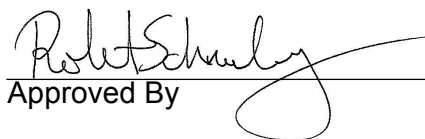
Test I.D: D173686

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	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	4,900	Pass
Overall Test Results				Pass


Laboratory Technician

12/15/2017

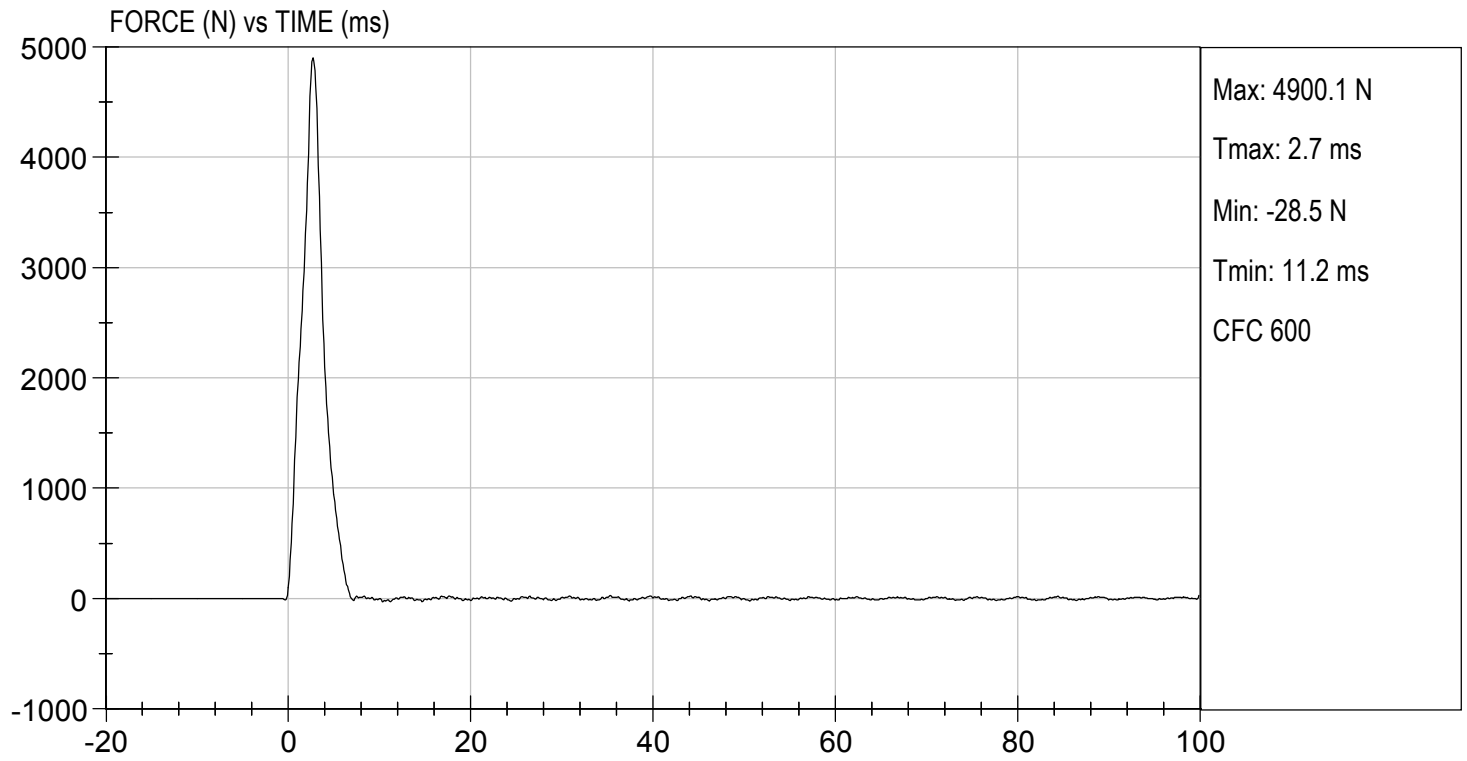
Test Date


Approved By



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

TEST DATE: 12/15/2017
TEST #: D173686

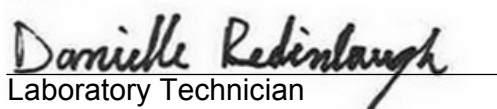


MGA RESEARCH CORPORATION
HIP-FEMUR FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

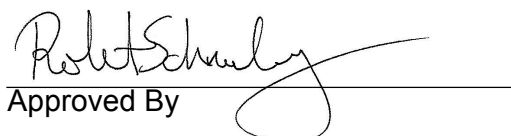
ATD Serial No: 351

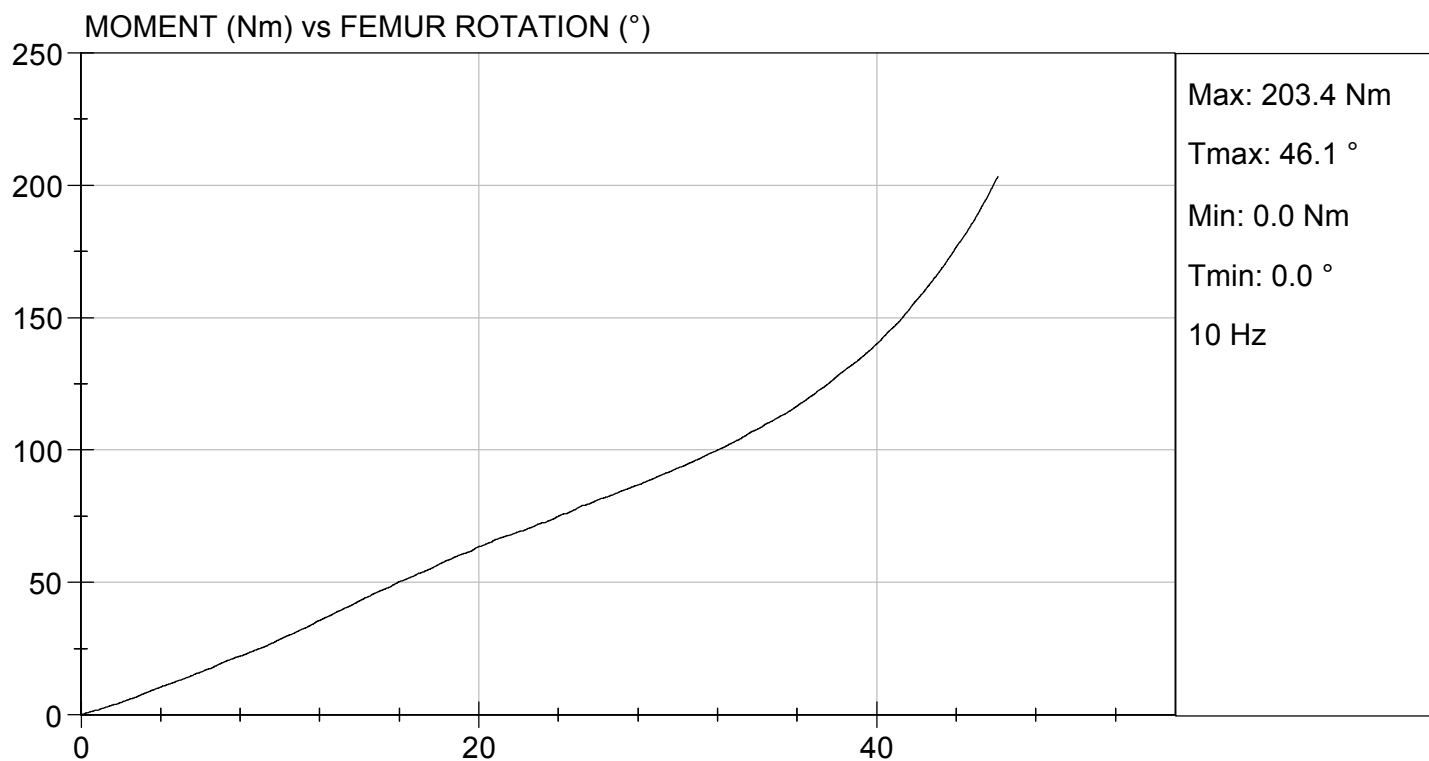
Test I.D: D173680

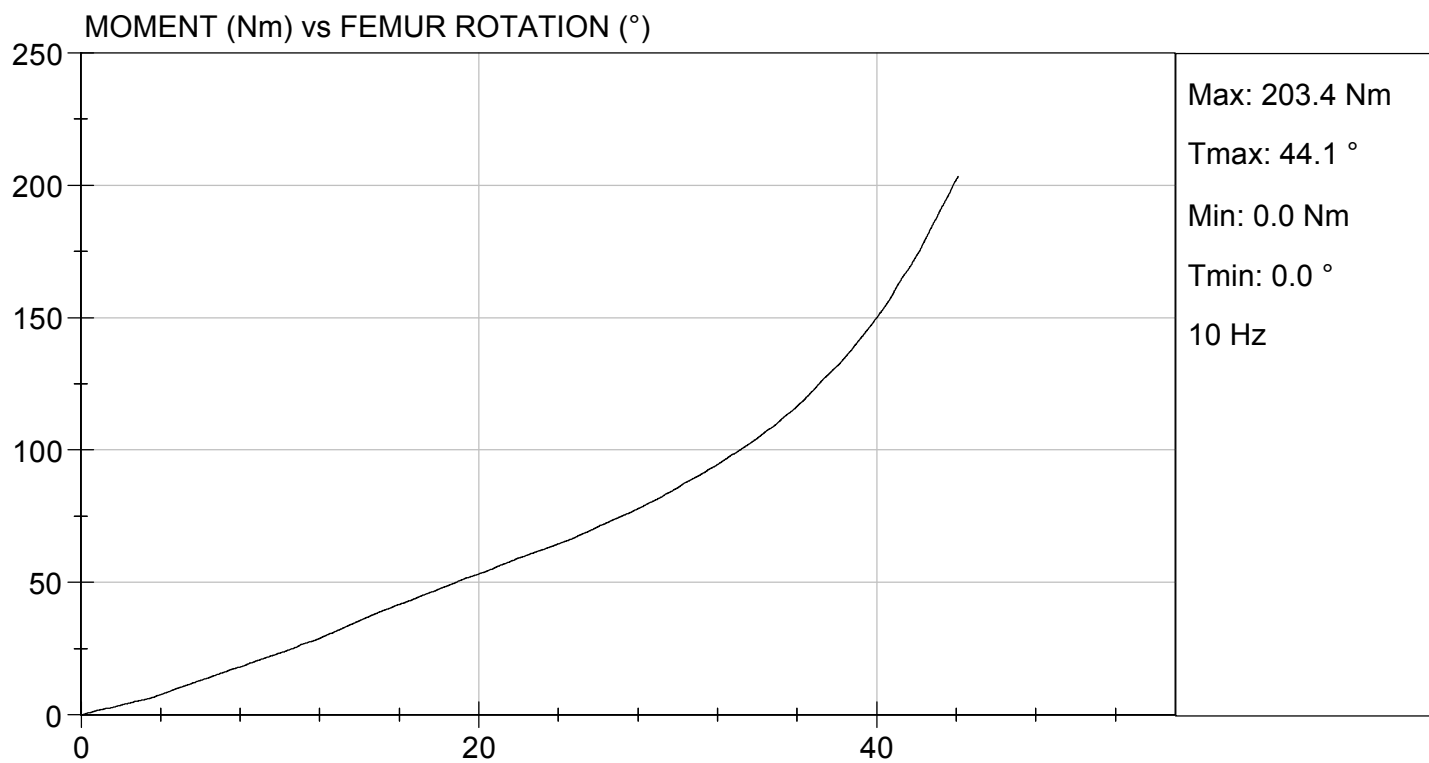
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	23	23	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.5	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	93.2	85.8	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	46.1	44.1	Pass
Overall Test Results					Pass


Laboratory Technician

12/14/2017
Test Date


Approved By





Hybrid III, 5th External Measurements
SN: 634

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	784.6
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	449.0
C	H-POINT HEIGHT	Reference	81.3-86.3	85.0
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	145.0
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	79.2
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	125.6
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	253.4
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	45.0
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	277.8
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	197.5
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	541.4
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376.0	362.1
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	400.4
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	428.6

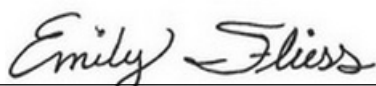
HYBRID III, SUBPART O EXTERNAL DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 304.8 ± 5.1 mm above seat surface	175.3-190.5	181.6
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	224.7
Q	STANDING HEIGHT	(THEORETICAL)	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	482.0
S	HEAD BREADTH	The widest part of the head	137.1-147.3	139.6
T	HEAD DEPTH	Back of the head to the forehead	177.8-188.0	179.2
U	HIP BREADTH	The widest part of the hip	299.7-314.9	306.1
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	355.5
W	FOOT BREADTH	The widest part of the foot	78.8-94.0	90.0
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	540.6
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	868.7
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	786.8
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	345.4
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	165.1

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

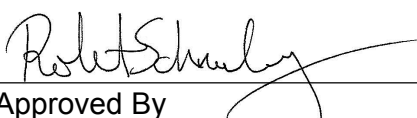
Test ID: D173511

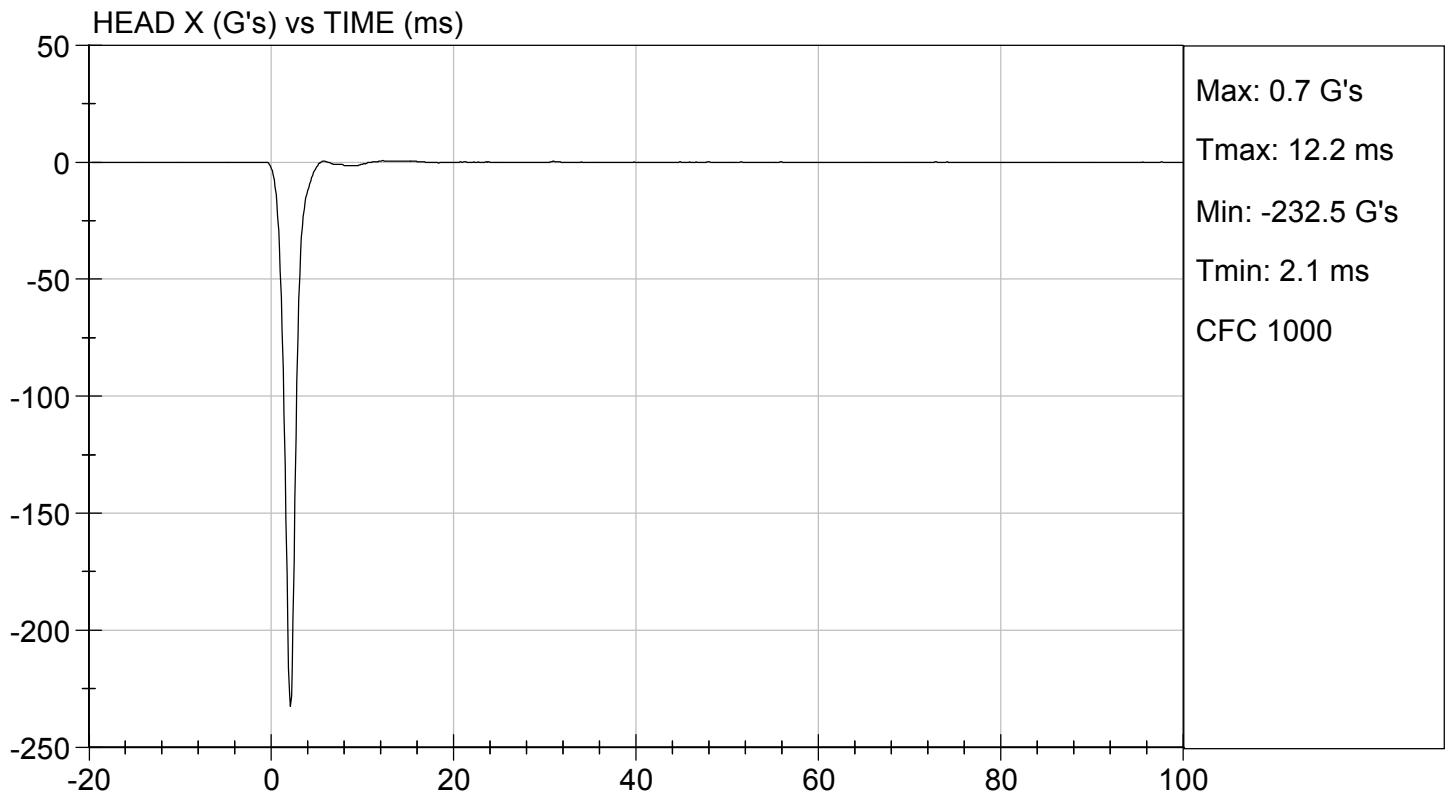
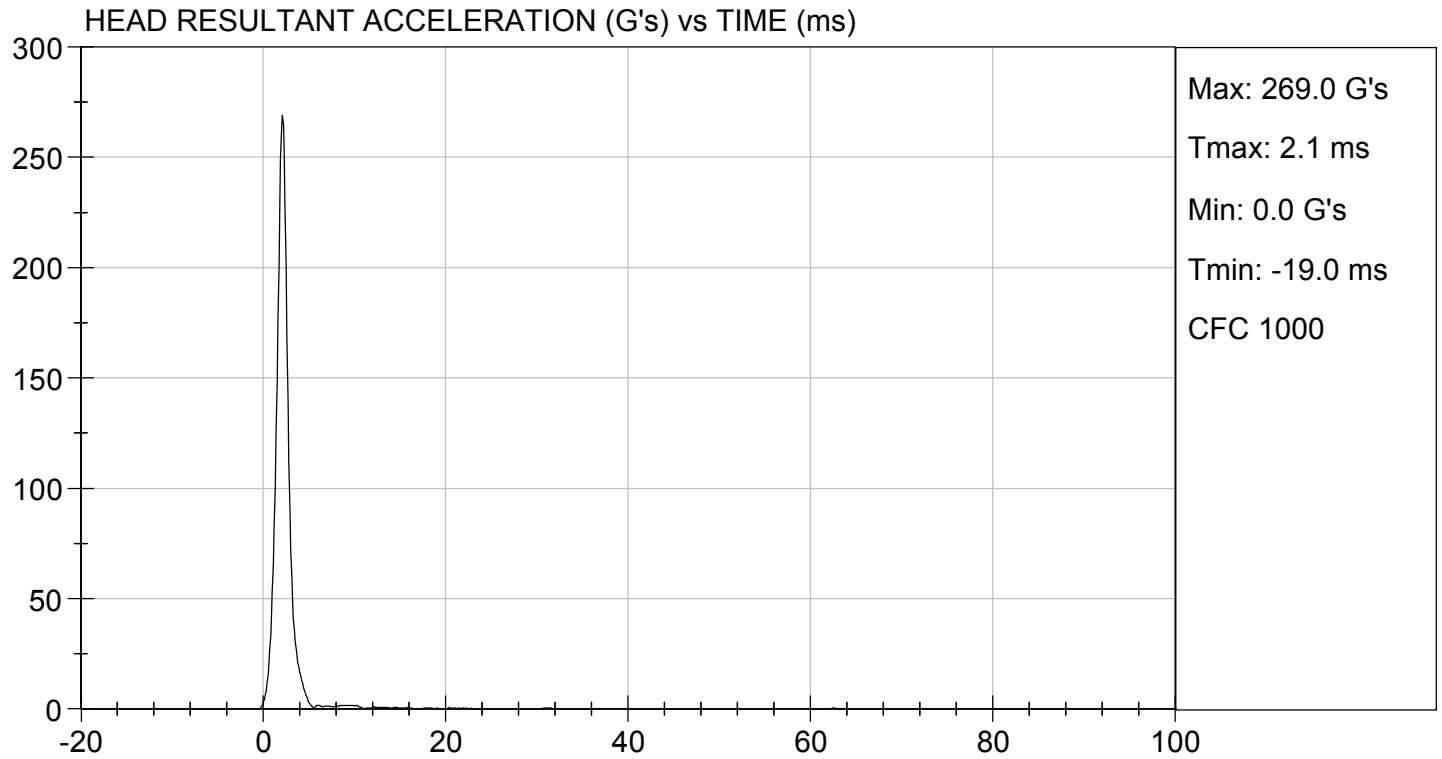
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	250 to 300	269	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-6.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

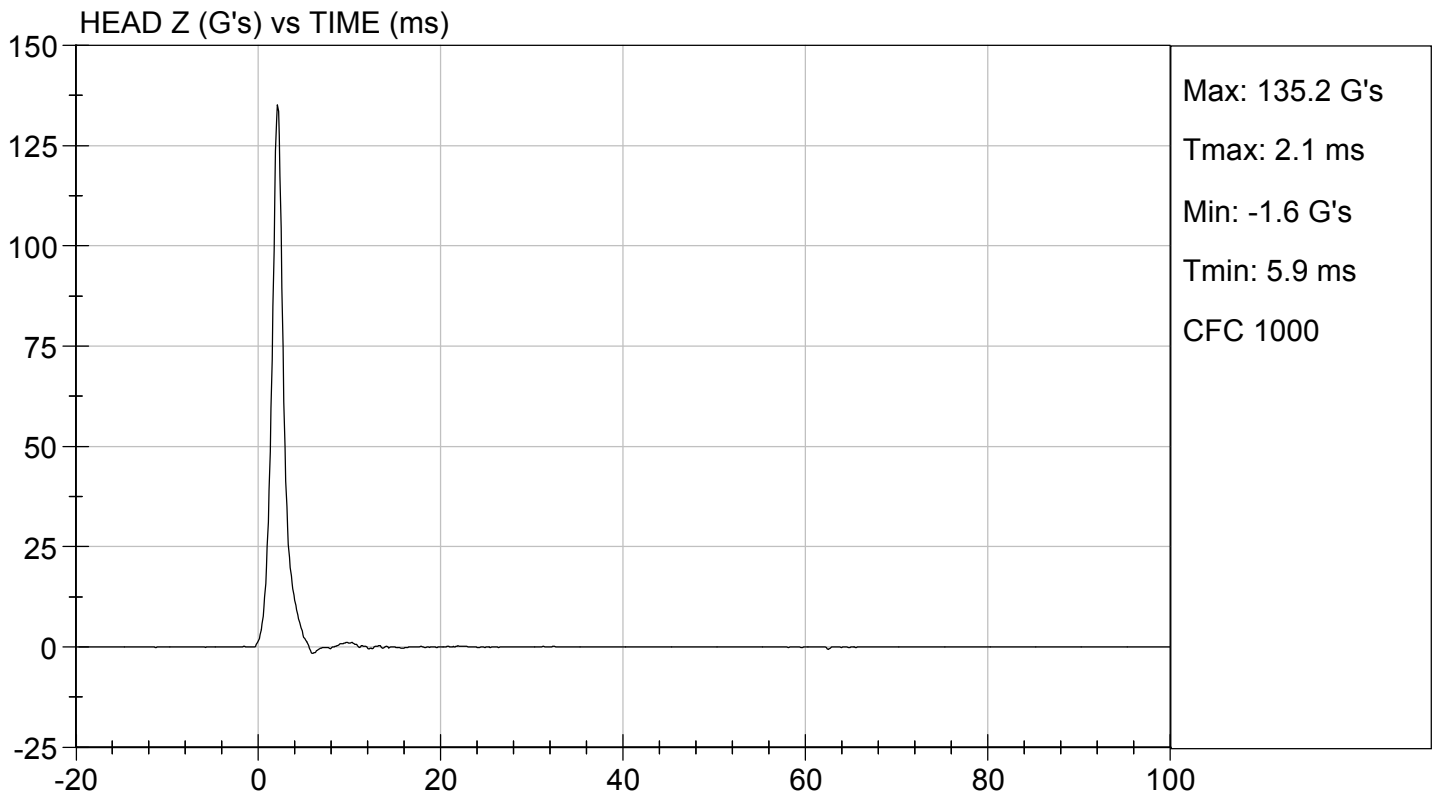
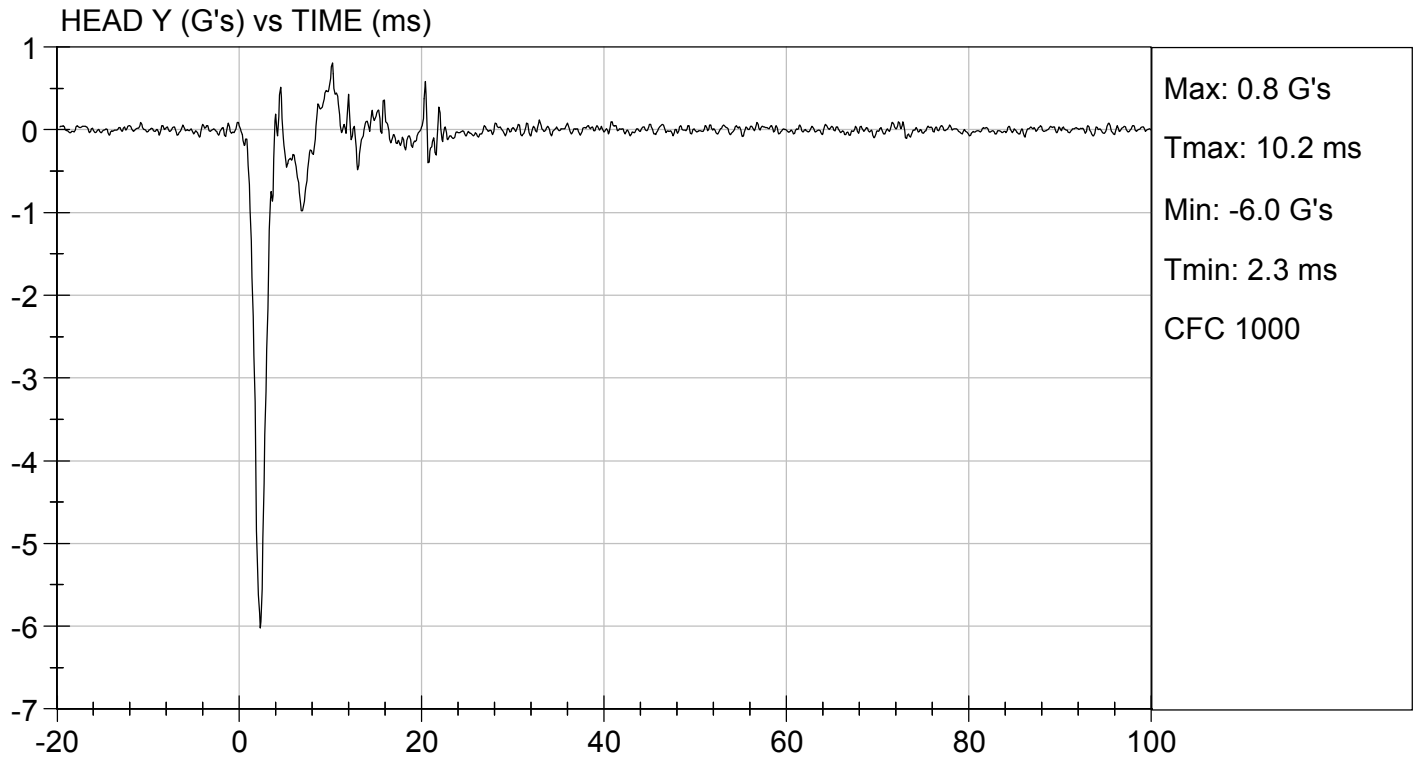

Laboratory Technician

11/30/2017

Test Date


Approved By





MGA RESEARCH CORPORATION

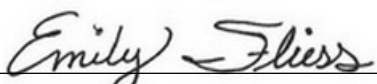
NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

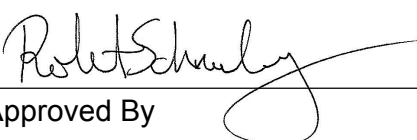
ATD Serial No: 634

Test I.D: D173512

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
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	6.6	Pass
D Plane Rotation	Max	deg	77 to 91	84	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	87	Pass
Overall Results					Pass


 Laboratory Technician

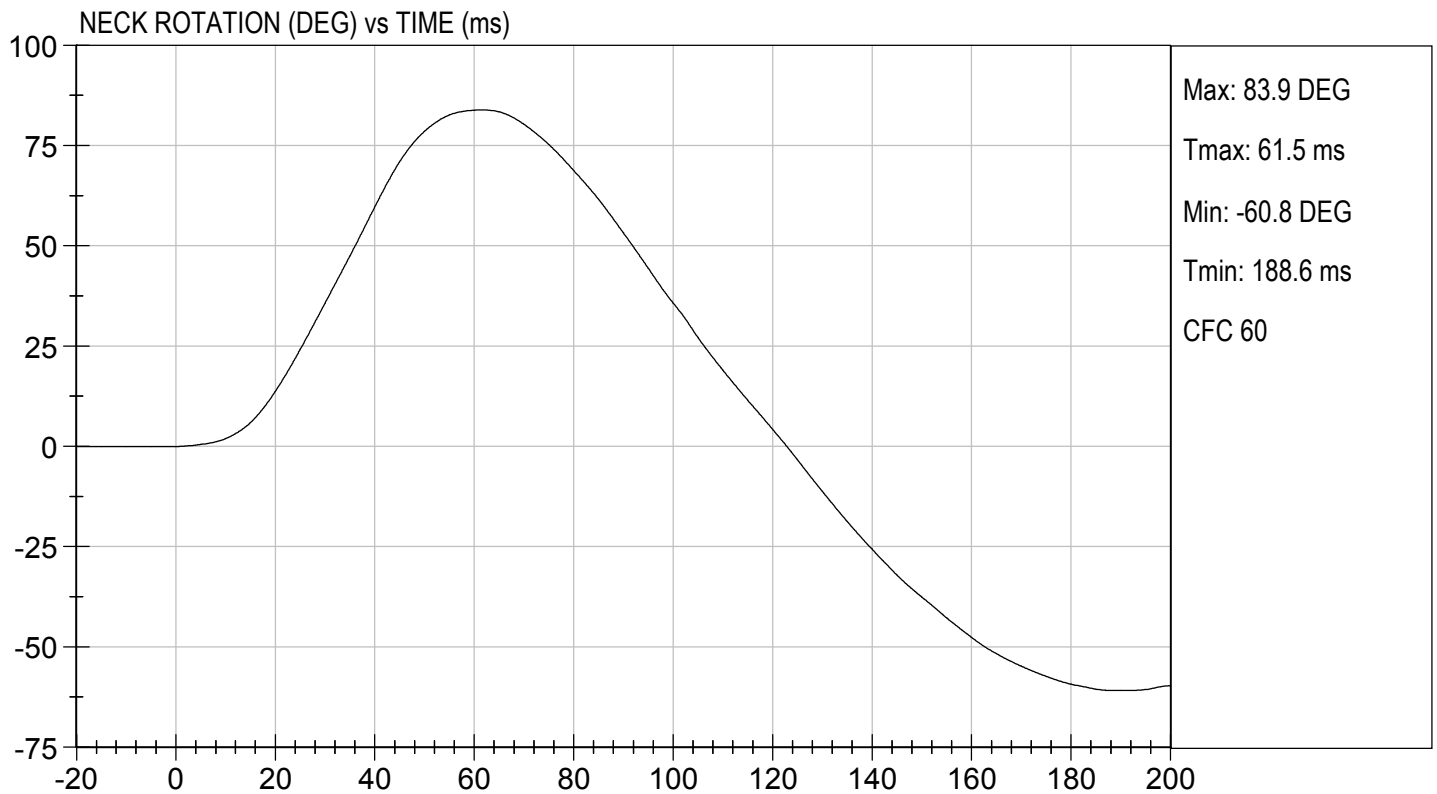
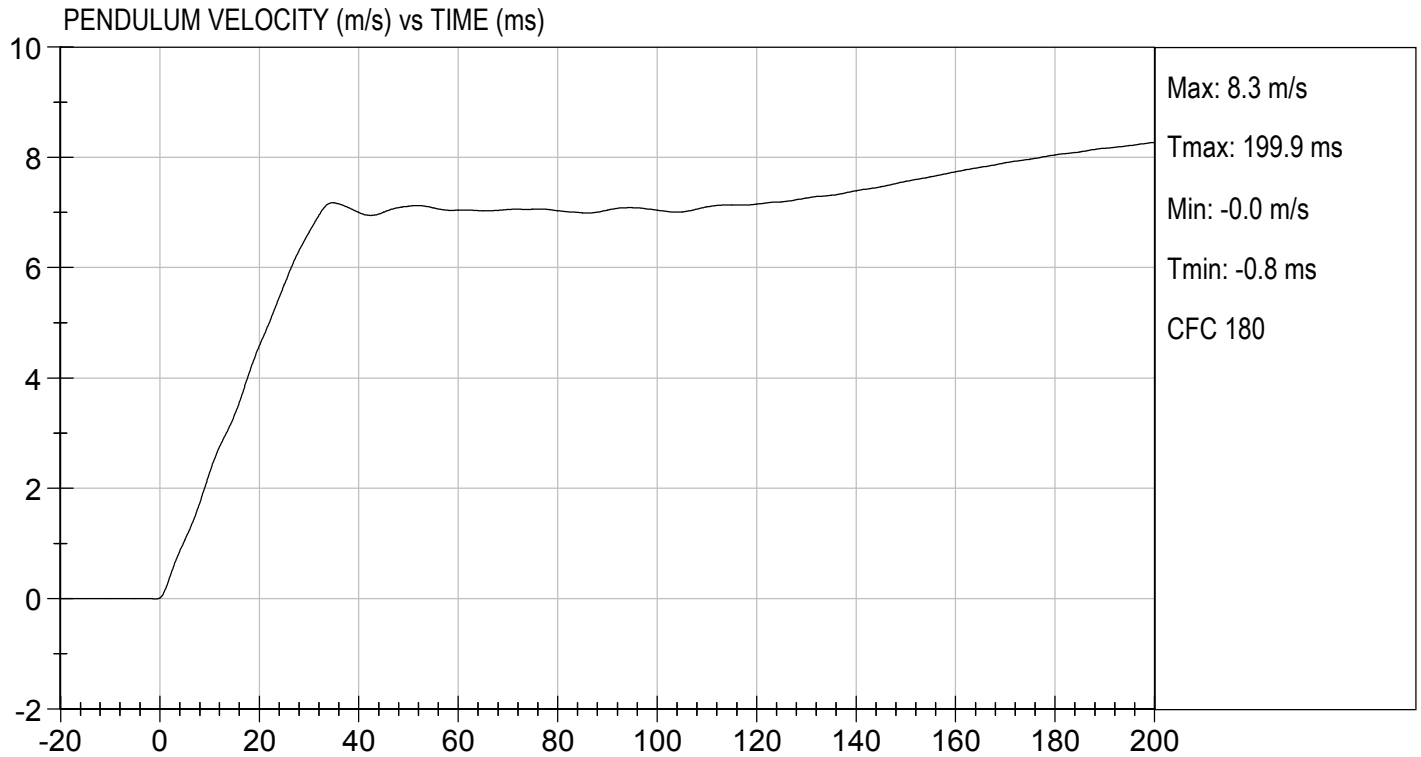
11/30/2017
 Test Date


 Approved By



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

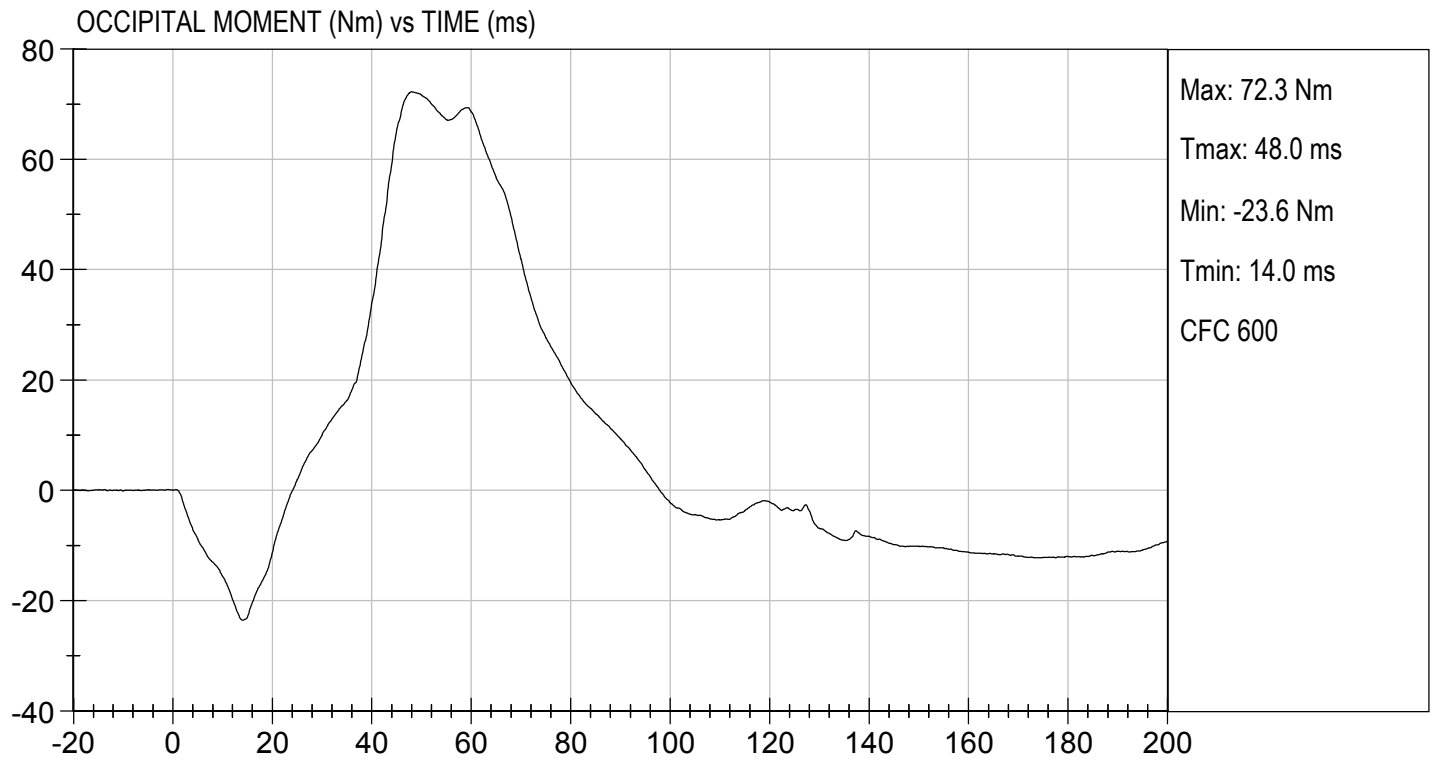
TEST DATE: 11/30/2017
TEST #: D173512





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

TEST DATE: 11/30/2017
TEST #: D173512

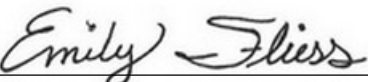


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

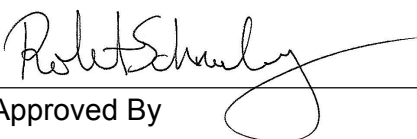
ATD Serial No: 634

Test I.D: D173513

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
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.6	Pass
	20 ms	m/s	3.1 to 3.9	3.5	Pass
	30 ms	m/s	4.6 to 5.6	5.2	Pass
D Plane Rotation	Max	deg	99 to 114	111	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-54	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	105	Pass
Overall Results					Pass


Laboratory Technician

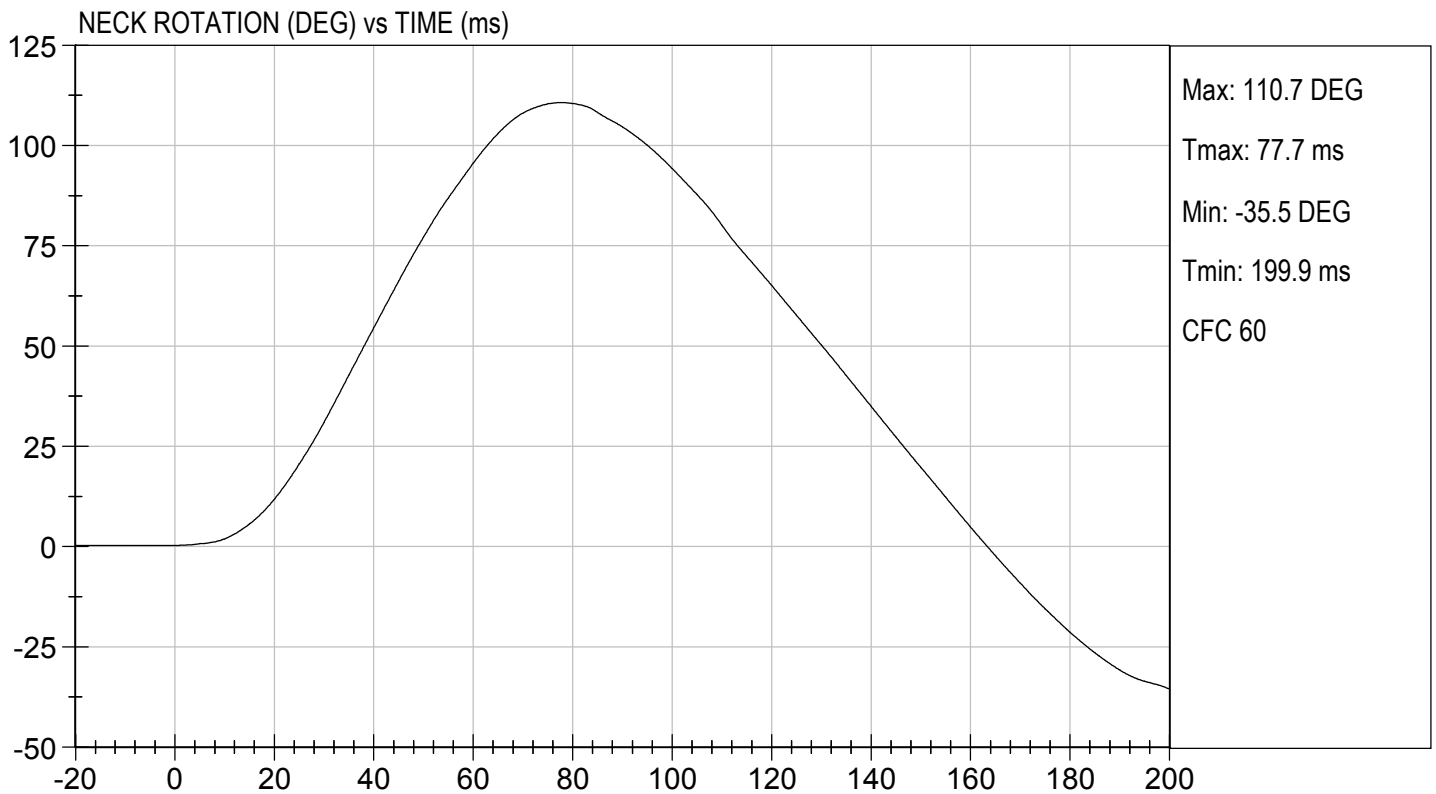
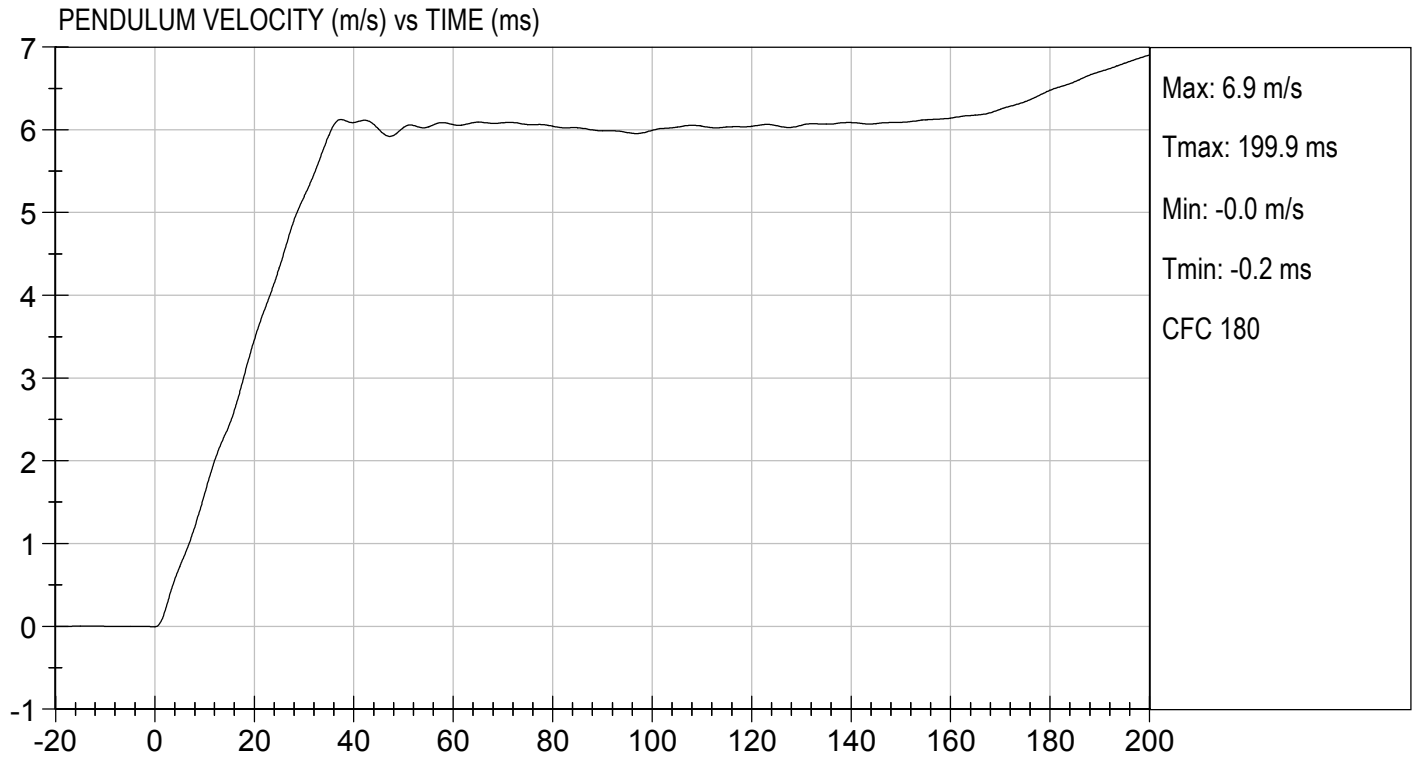
11/30/2017
Test Date


Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

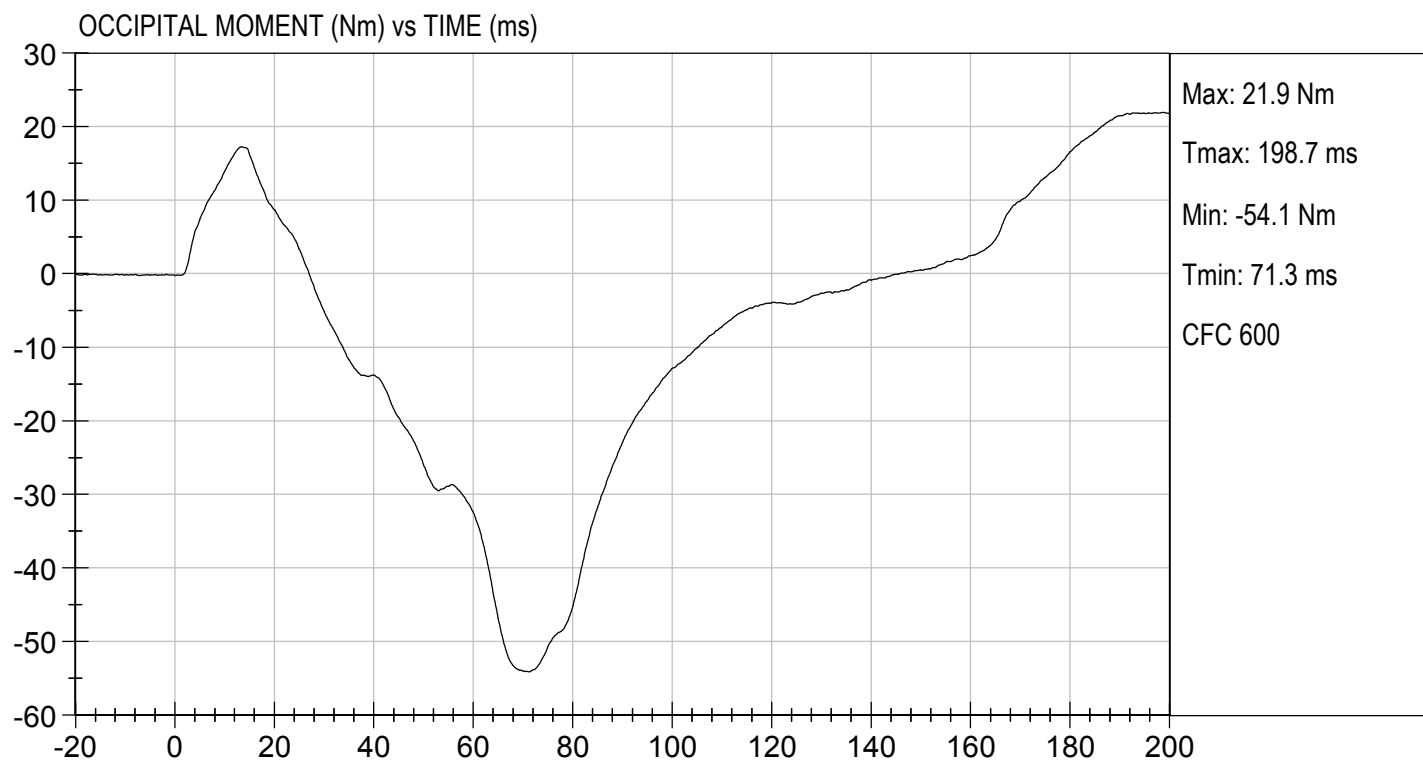
TEST DATE: 11/30/2017
TEST #: D173513





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 11/30/2017
TEST #: D173513

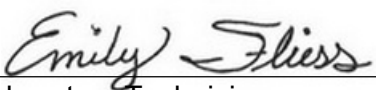


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

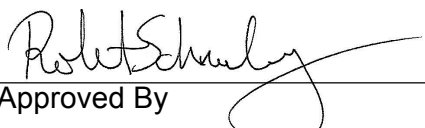
Test I.D: D173514

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	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	51	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4295	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4390	Pass
			Overall Test Results	Pass


Laboratory Technician

12/01/2017

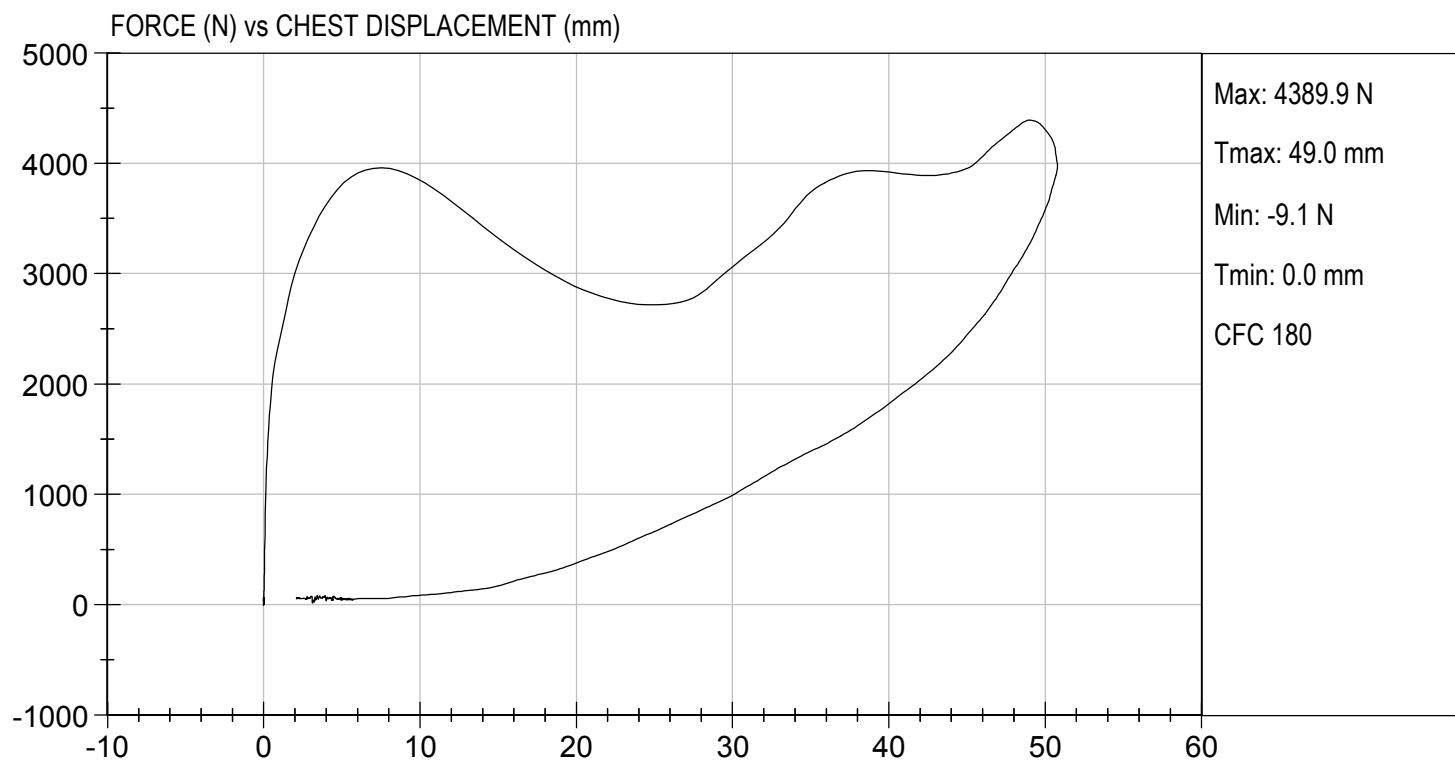
Test Date


Approved By



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

TEST DATE: 12/01/2017
TEST #: D173514



MGA RESEARCH CORPORATION

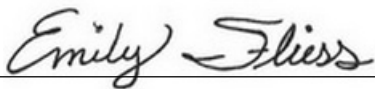
RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D173515

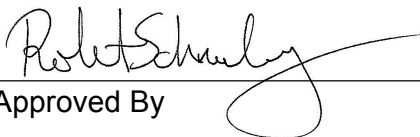
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3544	Pass
Overall Test Results				Pass



Laboratory Technician

11/30/2017

Test Date

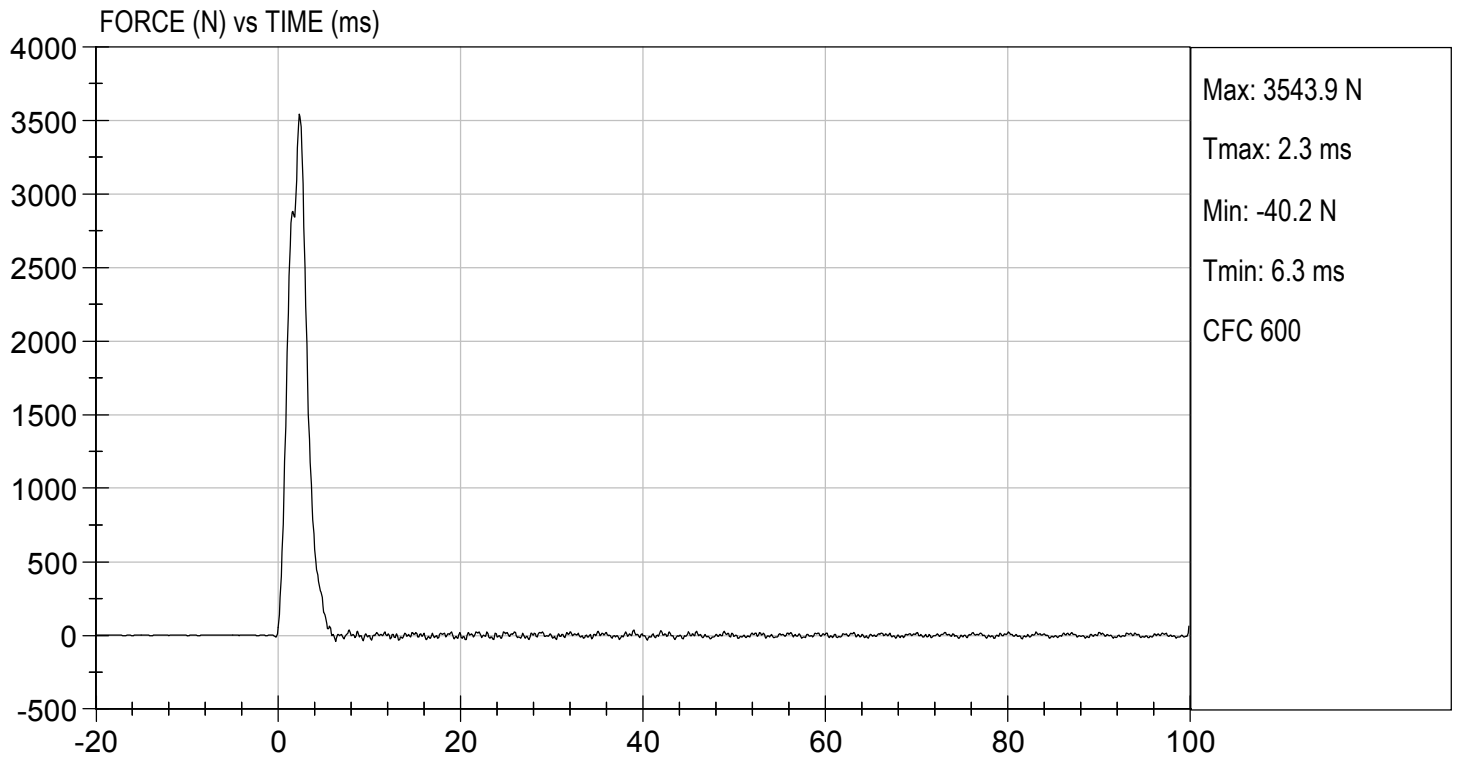


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 7.00 ft/s, 2.13 m/s

TEST DATE: 11/30/2017
TEST #: D173515



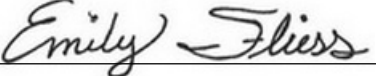
MGA RESEARCH CORPORATION

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

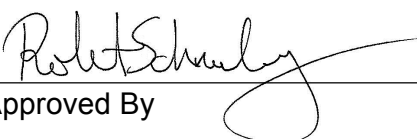
ATD Serial No: 634

Test I.D: D173516

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Probe Speed	m/s	2.07 to 2.13	2.07	Pass
Maximum Force	N	3450 to 4060	3890	Pass
Overall Test Results				Pass


Laboratory Technician

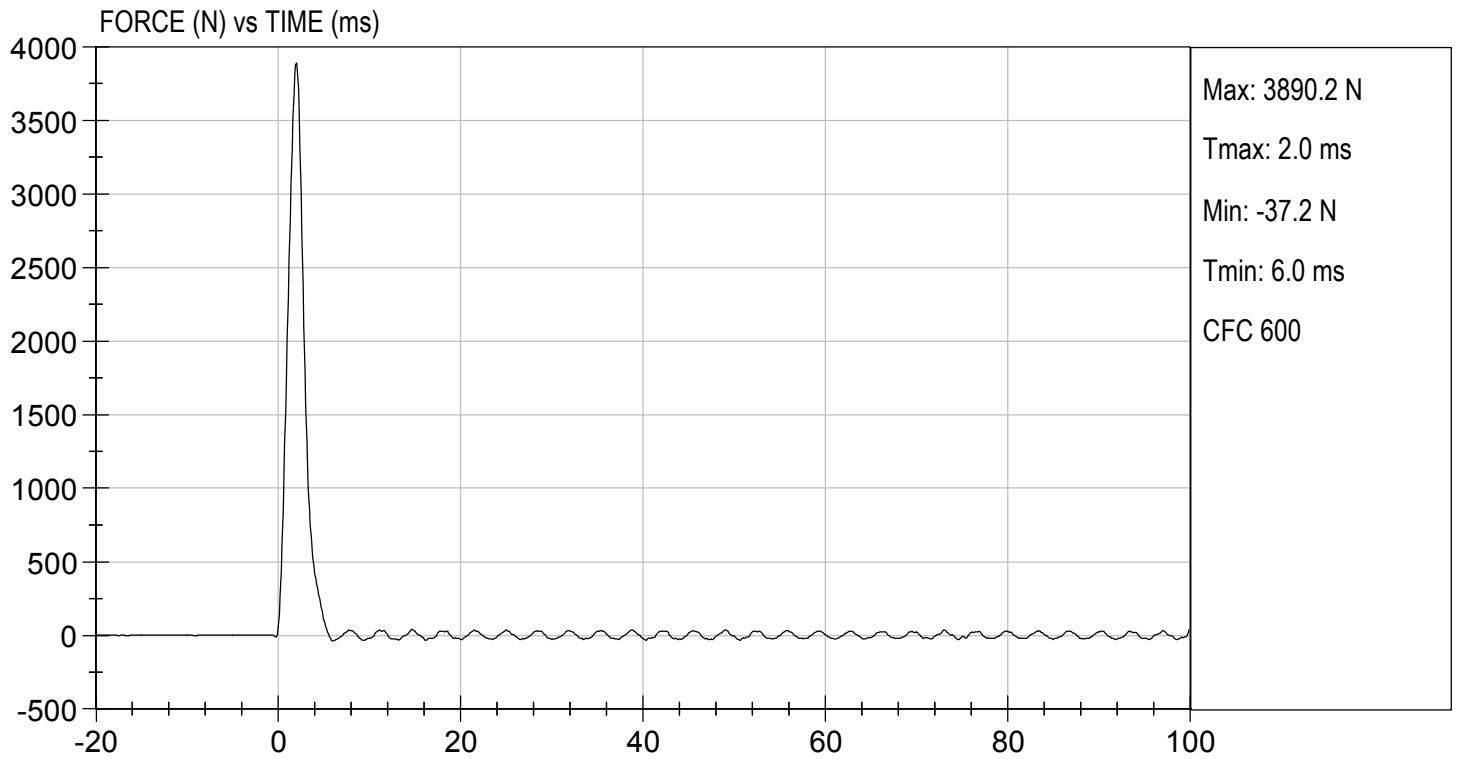
11/30/2017
Test Date


Approved By



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

TEST DATE: 11/30/2017
TEST #: D173516



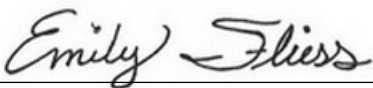
MGA RESEARCH CORPORATION

**TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: 634

Test I.D: D173517

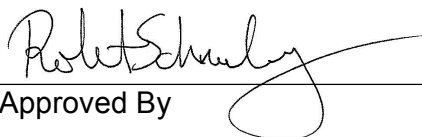
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	369	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.6	Pass
Overall Result				Pass



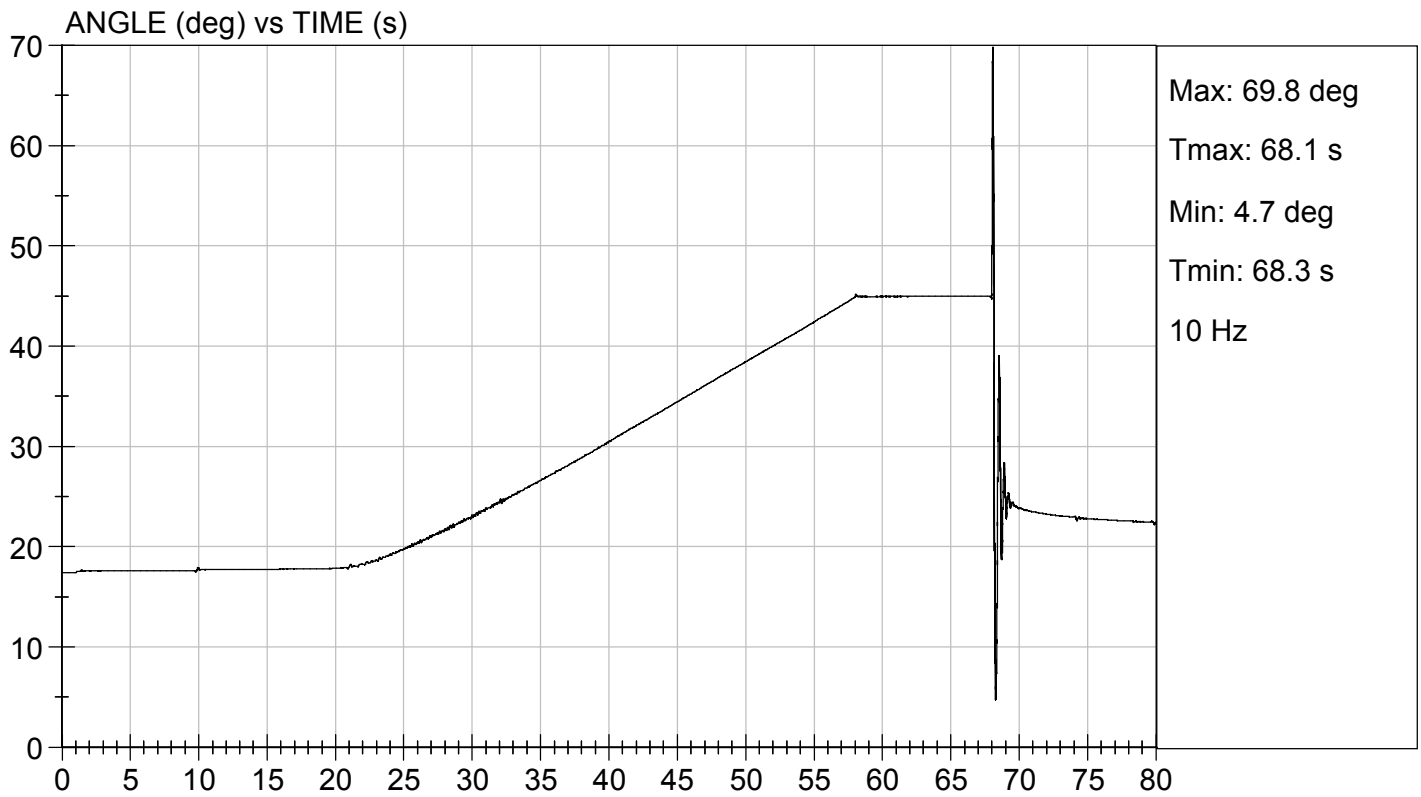
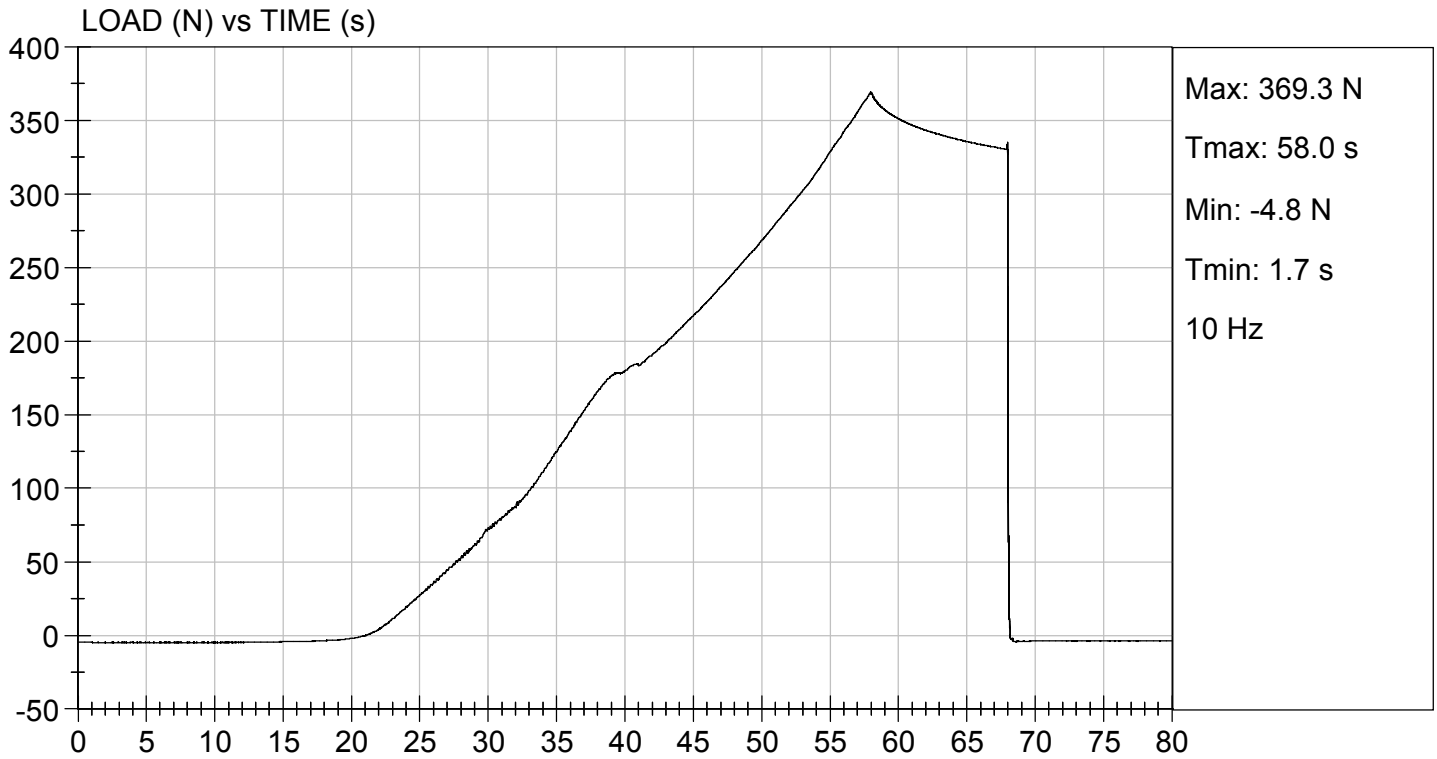
Laboratory Technician

12/01/2017

Test Date



Approved By



MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

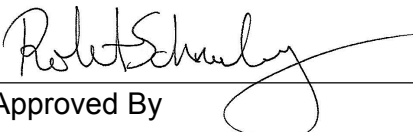
Test ID: D173691

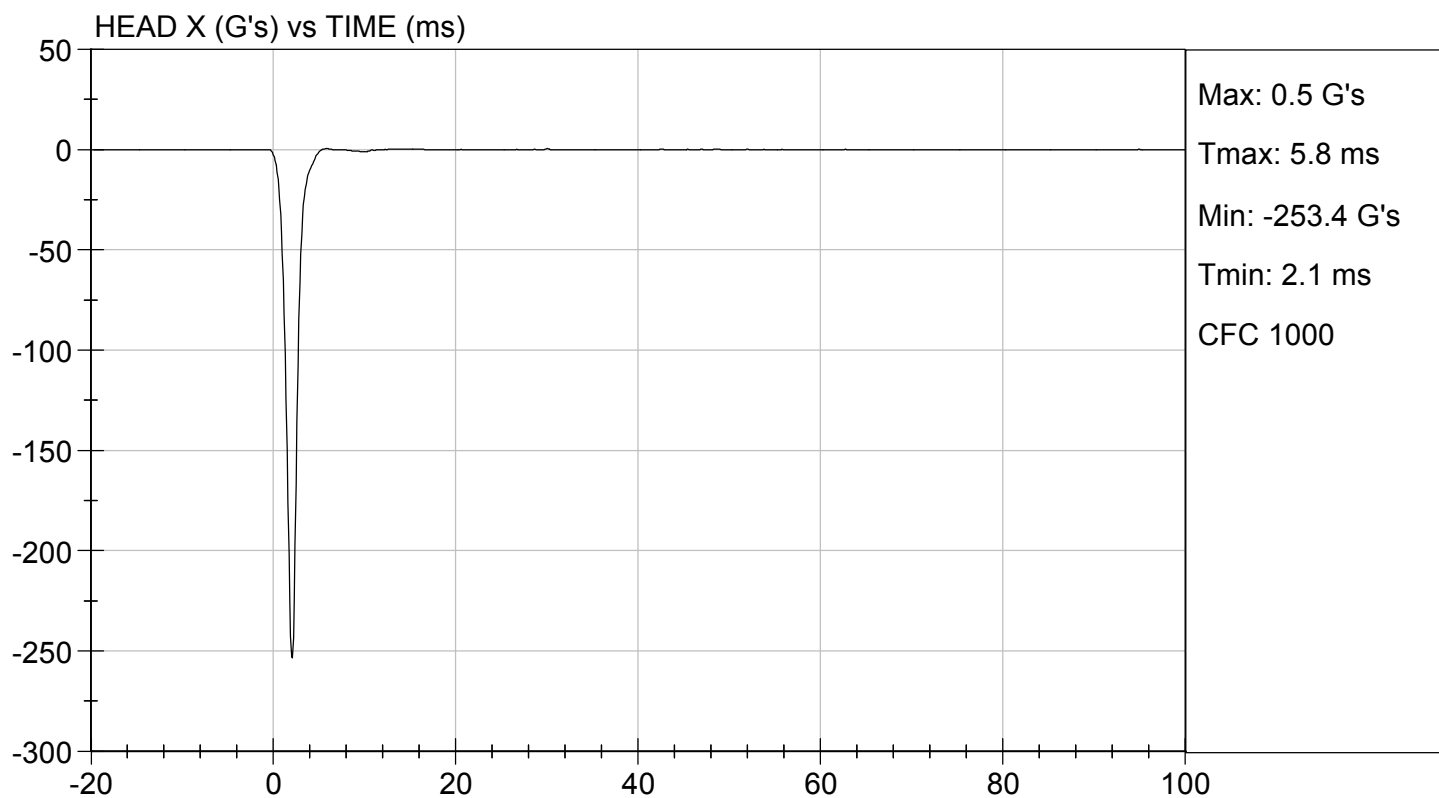
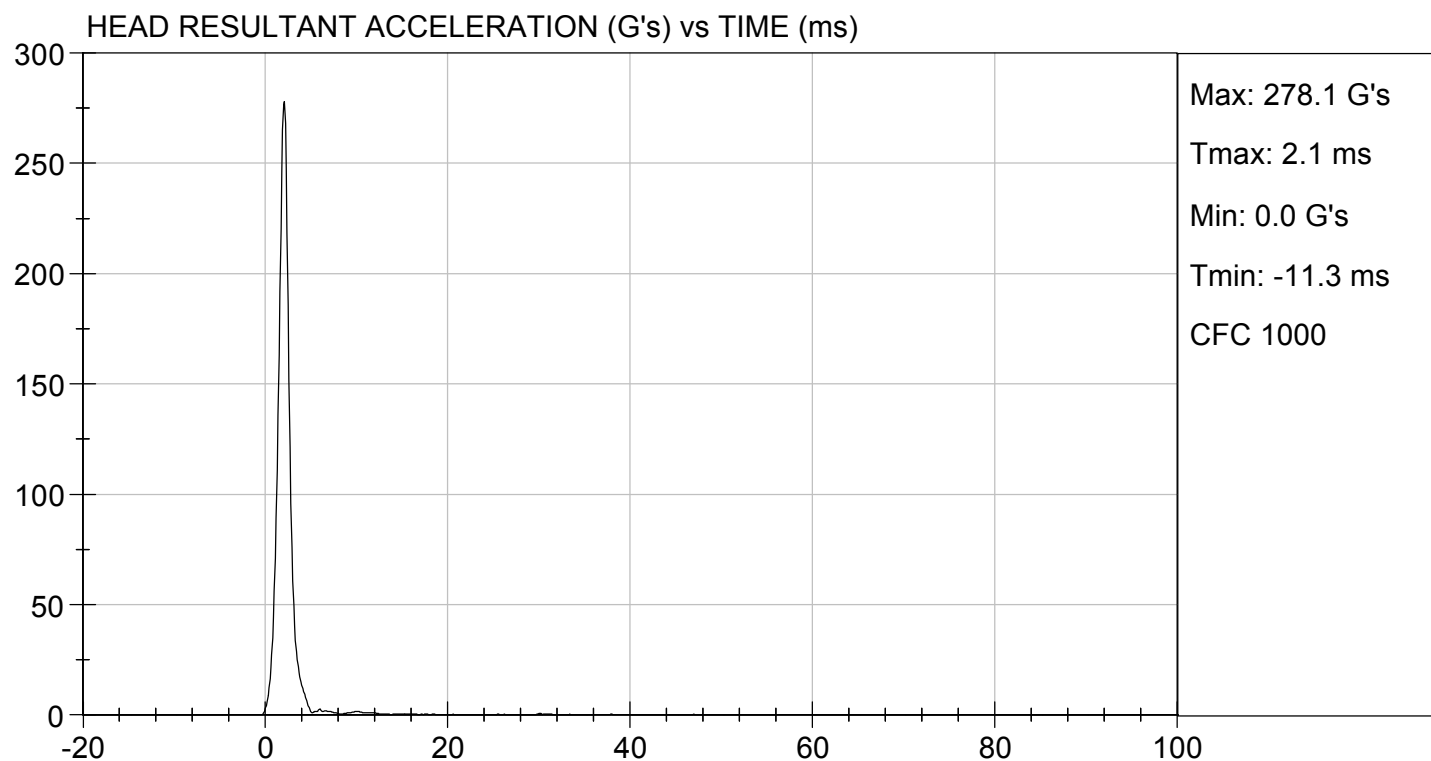
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Peak Resultant Acceleration	G's	250 to 300	278	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	1.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

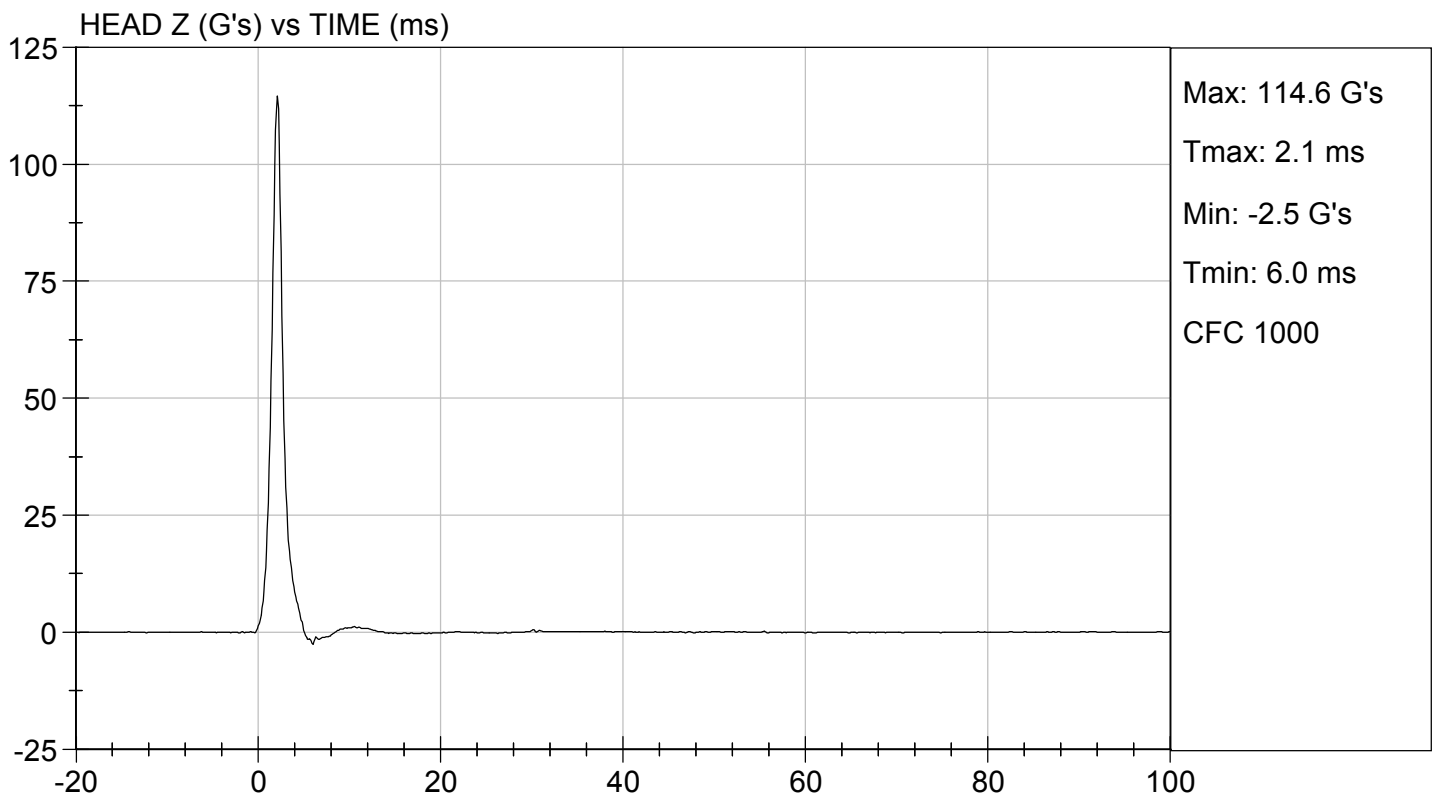
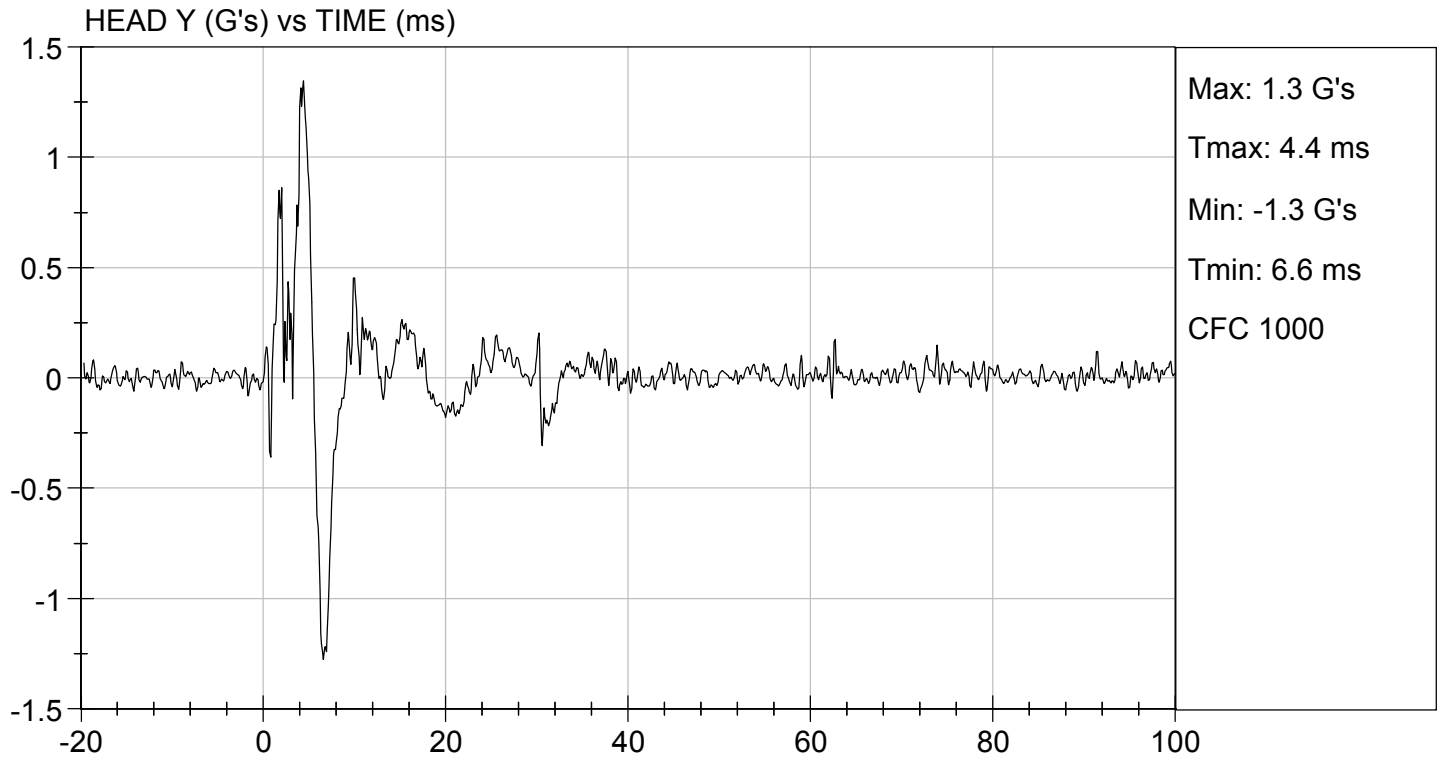

Laboratory Technician

12/14/2017

Test Date


Approved By





MGA RESEARCH CORPORATION

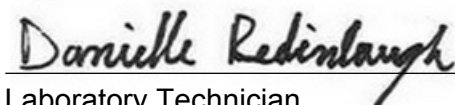
NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

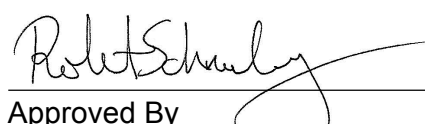
Test I.D: D173692

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	25	Pass
Pendulum Speed		m/s	6.89 to 7.13	6.96	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.6	Pass
	30 ms	m/s	5.8 to 7.0	6.5	Pass
D Plane Rotation	Max	deg	77 to 91	82	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	86	Pass
Overall Results				Pass	


Laboratory Technician

12/15/2017

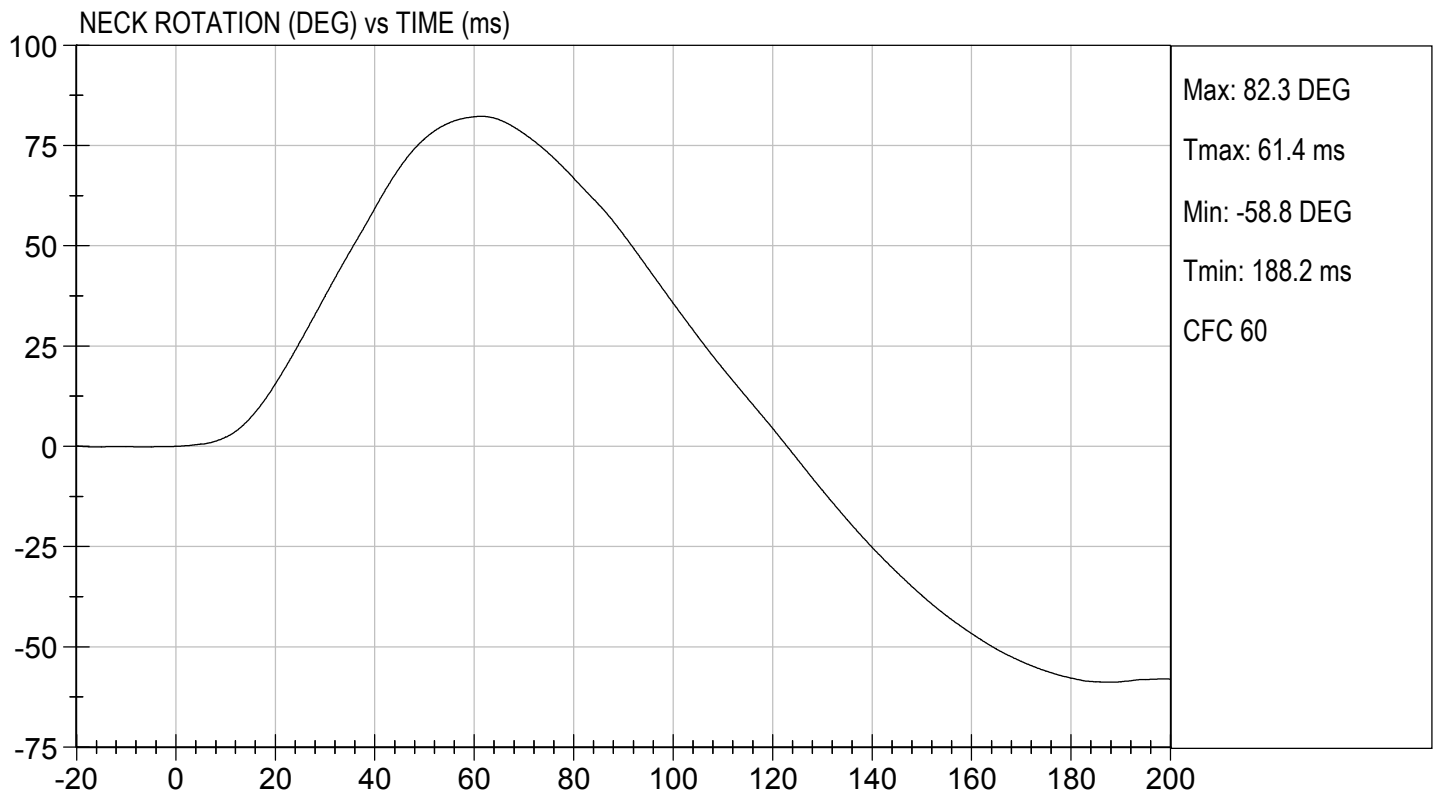
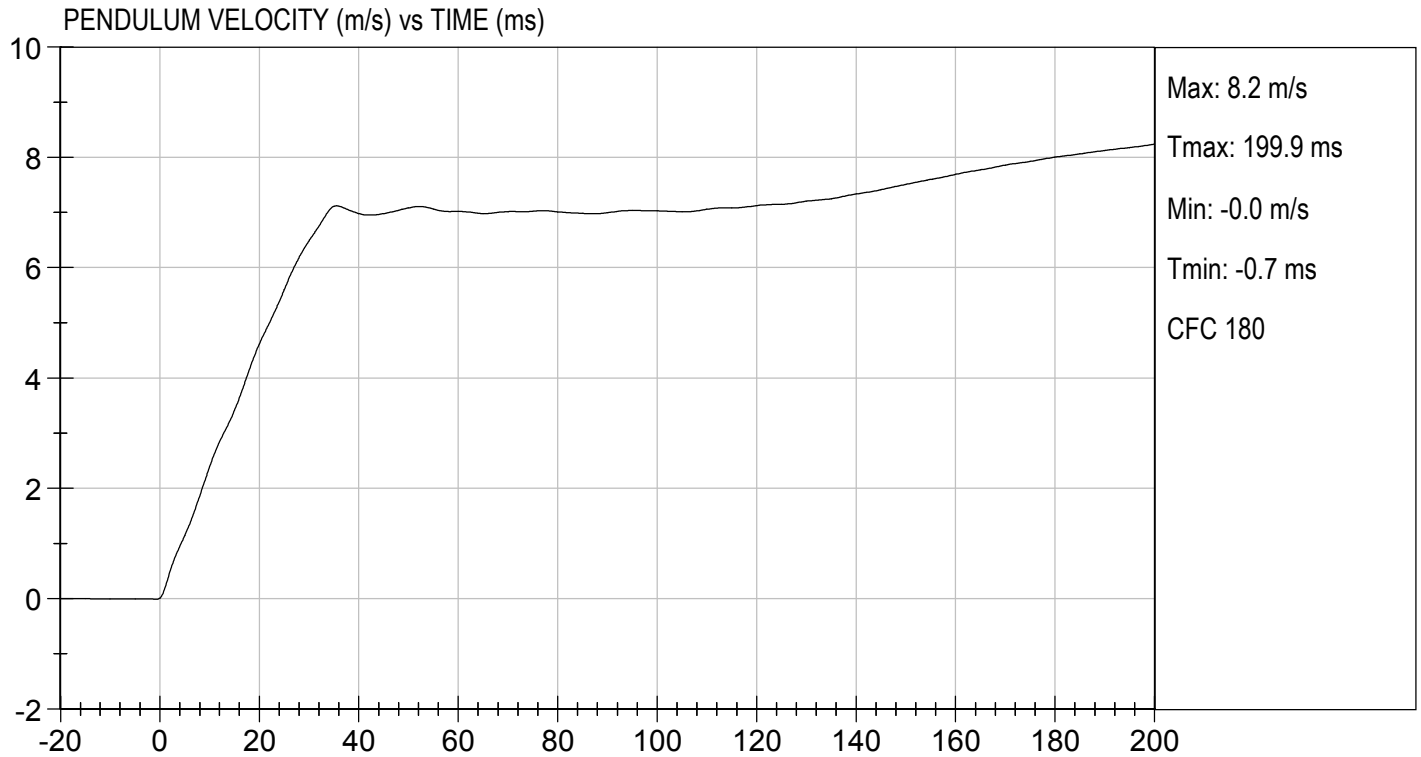
Test Date


Approved By



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

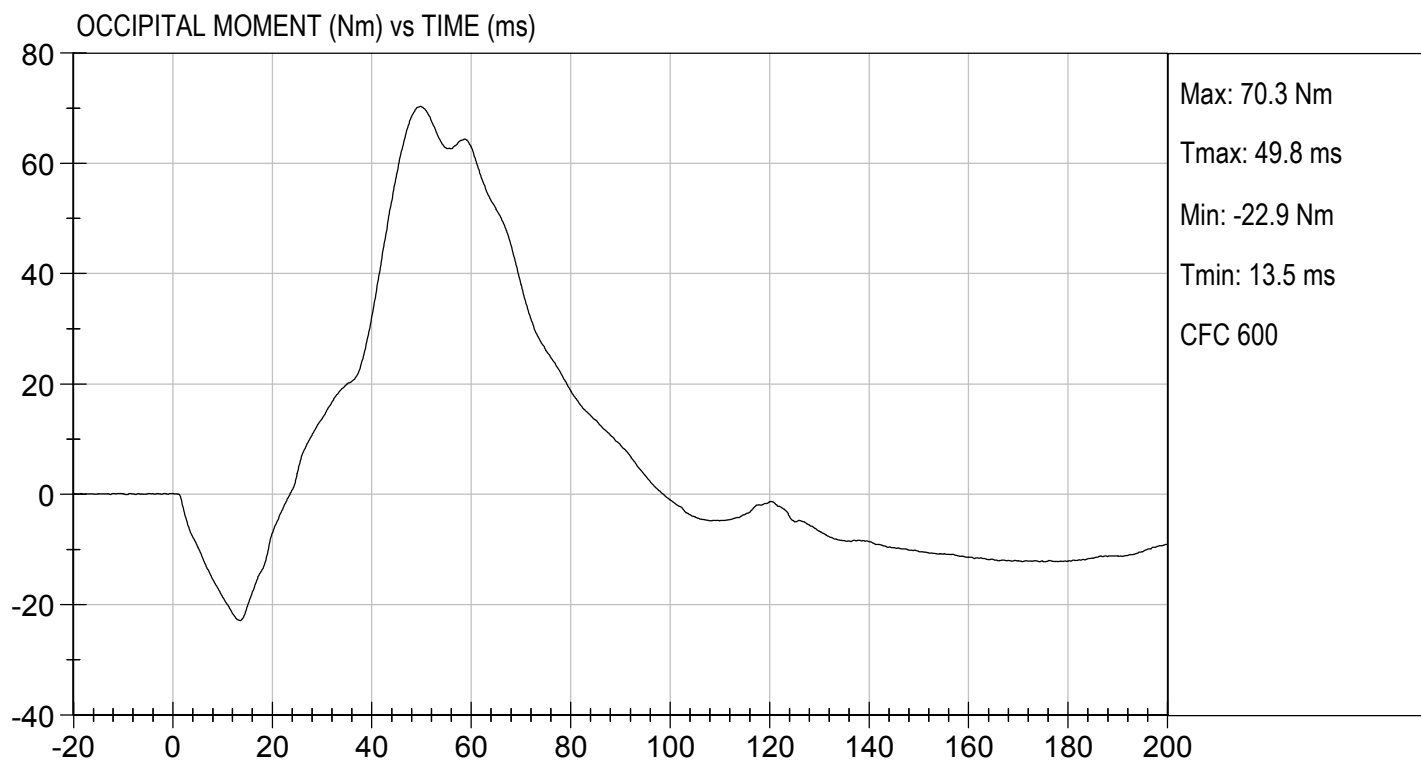
TEST DATE: 12/15/2017
TEST #: D173692





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

TEST DATE: 12/15/2017
TEST #: D173692



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

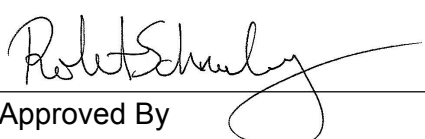
ATD Serial No: 634

Test I.D: D173693

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	25	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.6	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	111	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-53	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	105	Pass
Overall Results					Pass


Laboratory Technician

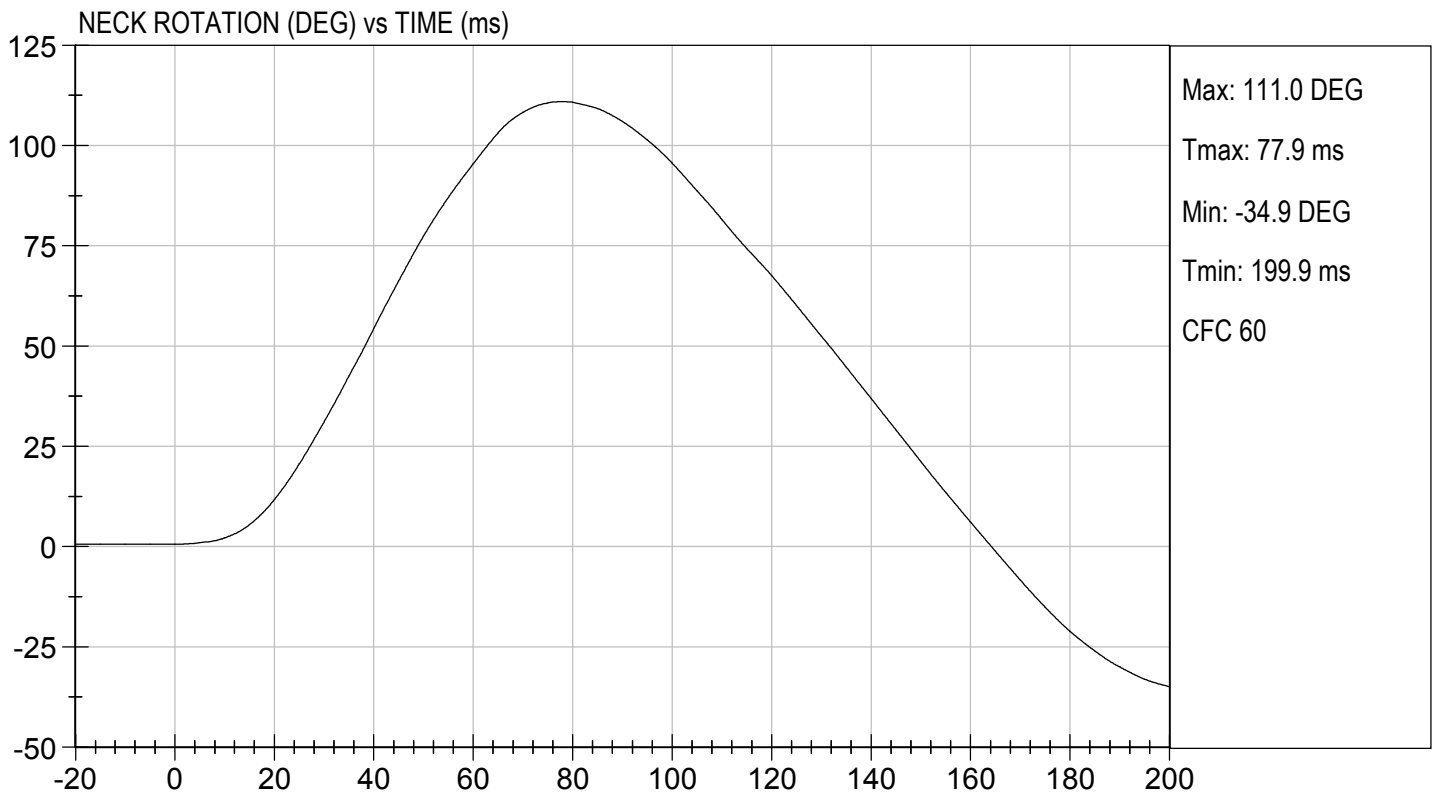
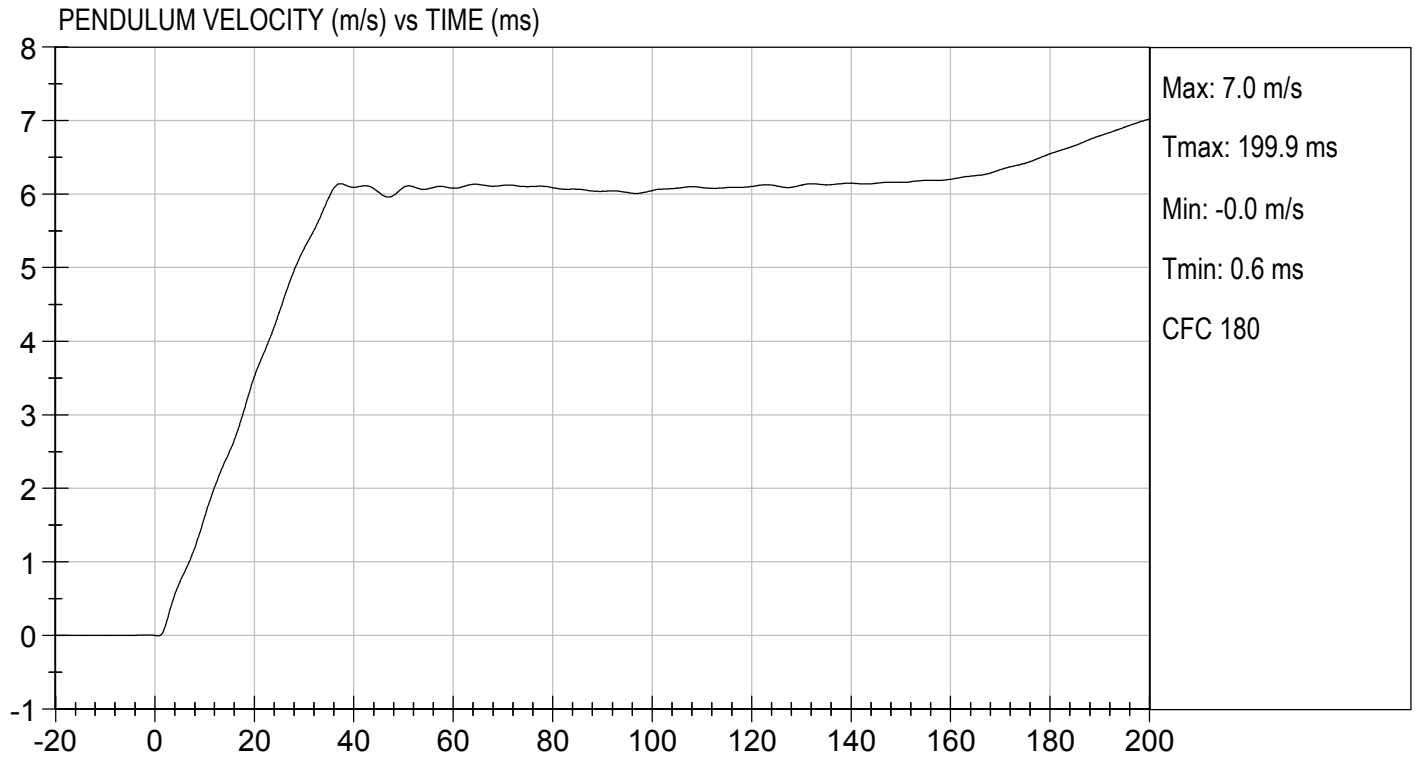
12/15/2017
Test Date


Approved By



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

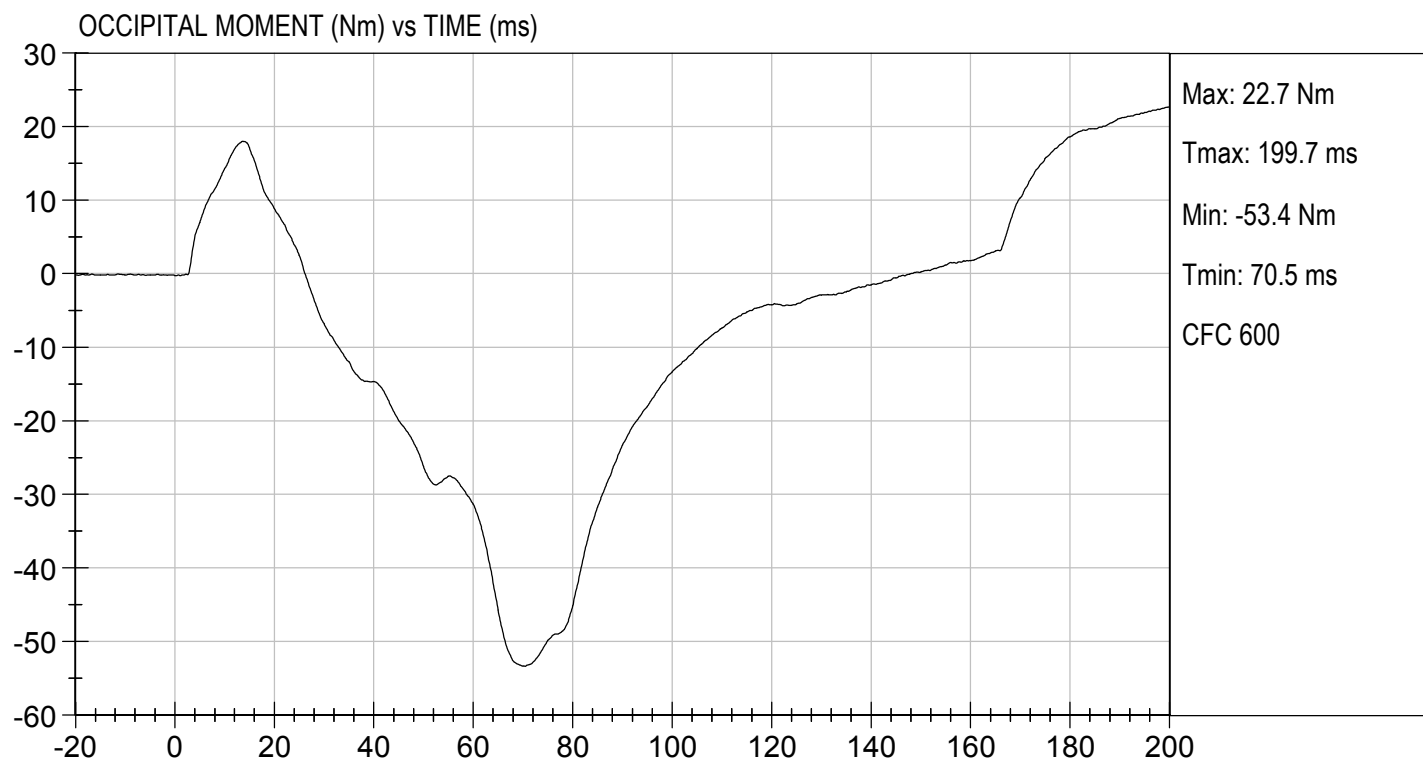
TEST DATE: 12/15/2017
TEST #: D173693





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

TEST DATE: 12/15/2017
TEST #: D173693



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

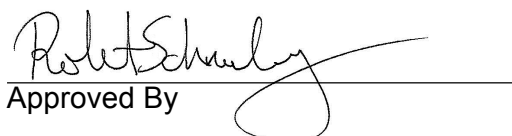
Test I.D: D173694

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Relative Humidity	%	10 to 70	21	Pass
Probe Speed	m/s	6.59 to 6.83	6.60	Pass
Peak Deflection	mm	50 to 58	50	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4143	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4326	Pass
Overall Test Results				Pass


Laboratory Technician

12/14/2017

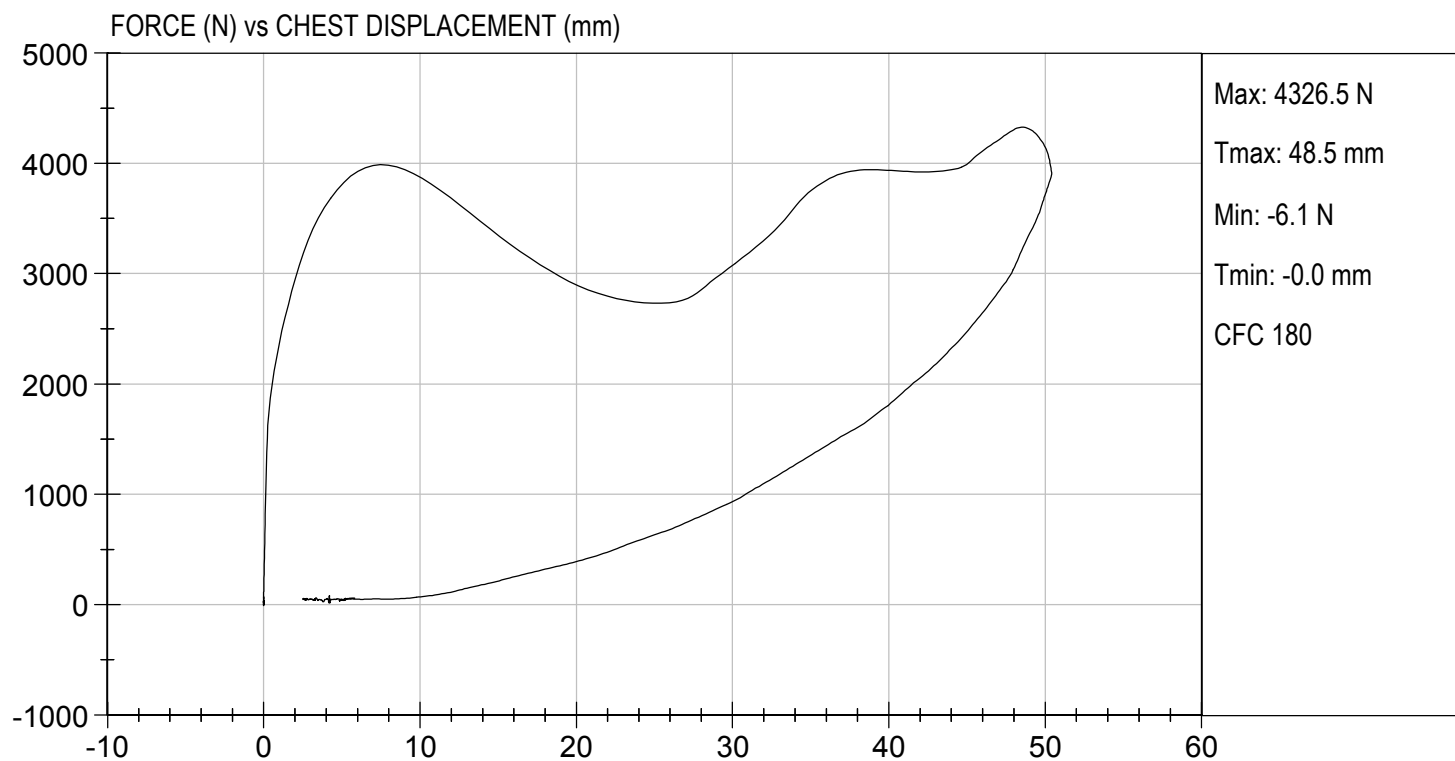
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.65 ft/s, 6.60 m/s

TEST DATE: 12/14/2017
TEST #: D173694



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

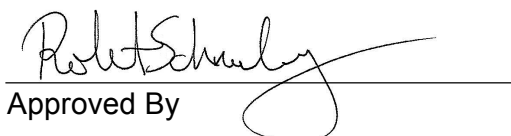
Test I.D: D173695

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	26	Pass
Probe Speed	m/s	2.07 to 2.13	2.08	Pass
Maximum Force	N	3450 to 4060	3456	Pass
Overall Test Results				Pass


Laboratory Technician

12/15/2017

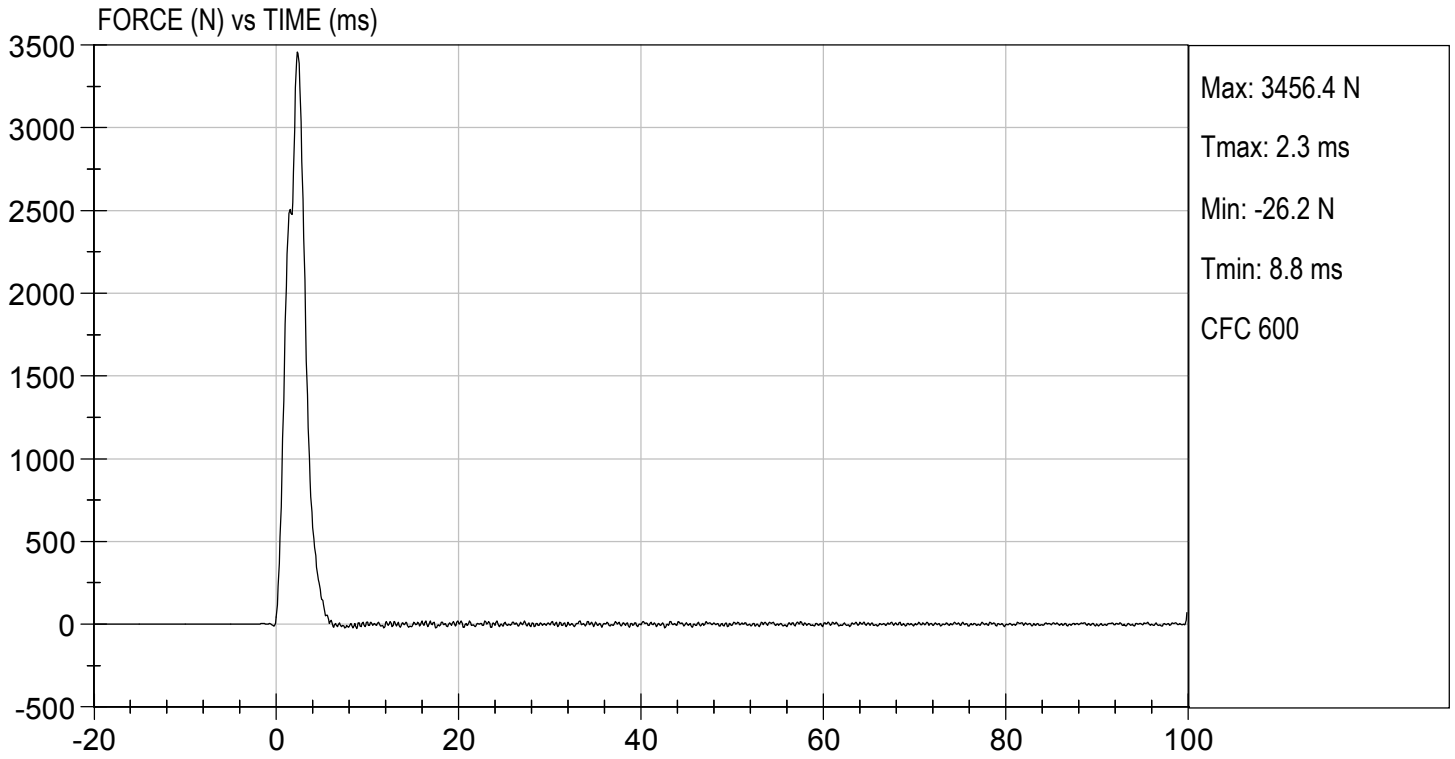
Test Date


Approved By



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

TEST DATE: 12/15/2017
TEST #: D173695



MGA RESEARCH CORPORATION

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

ATD Serial No: 634

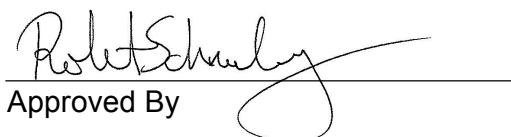
Test I.D: D173696

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	26	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3659	Pass
Overall Test Results				Pass


Laboratory Technician

12/15/2017

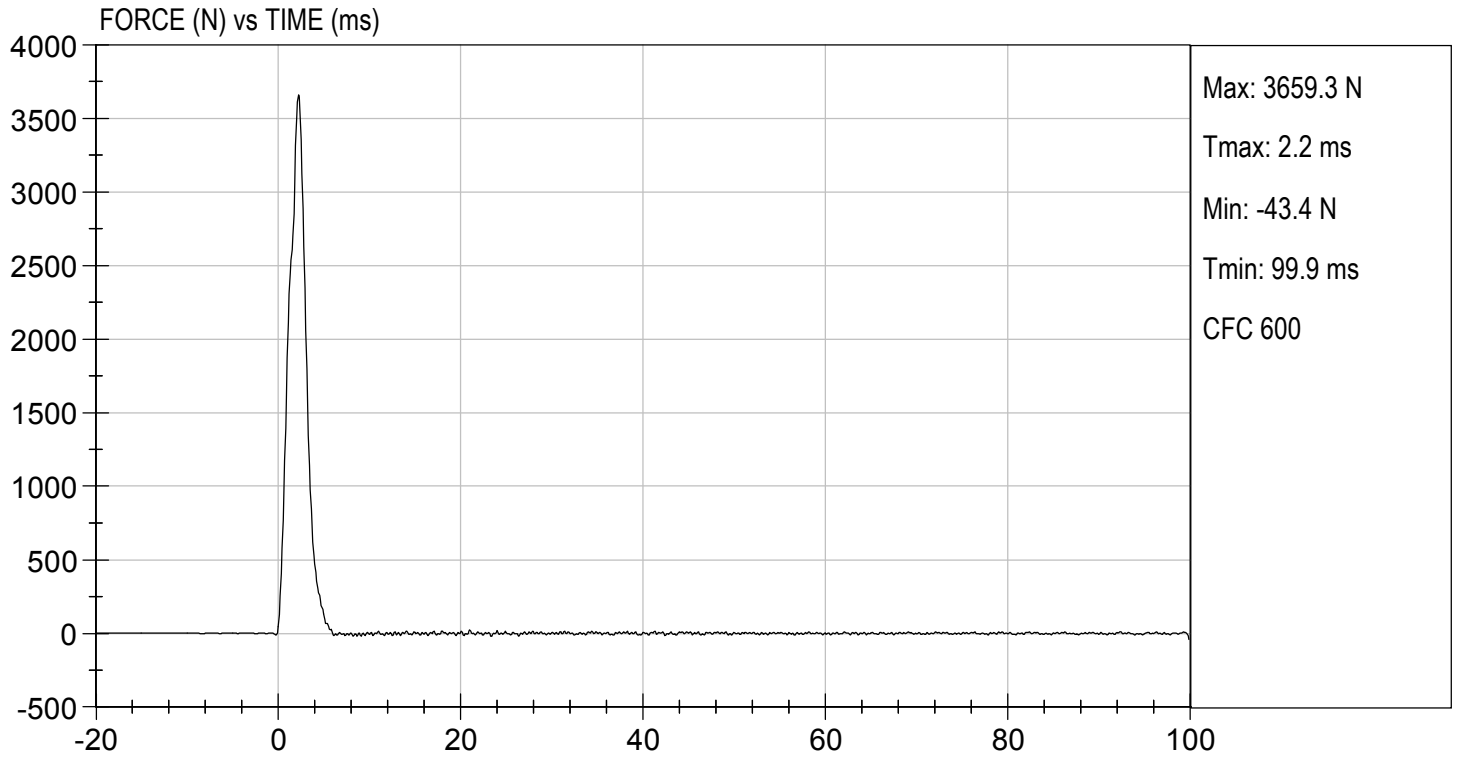
Test Date


Approved By



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

TEST DATE: 12/15/2017
TEST #: D173696



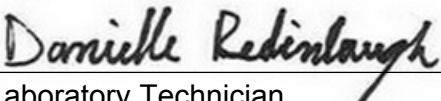
MGA RESEARCH CORPORATION

**TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE**

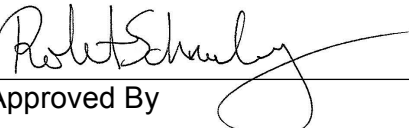
ATD Serial No: 634

Test I.D: D173697

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	27	Pass
Initial Angle	deg	0 to 20	19	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	368	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.5	Pass
Overall Result				Pass


Laboratory Technician

12/18/2017
Test Date


Approved By

