

REPORT NUMBER: NCAP-MGA-2016-012

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

**HONDA DE MEXICO S.A. DE C.V.
2016 Honda HR-V AWD LX 5-Dr SUV
NHTSA No.: O20165305**

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



Test Date: July 13, 2015

Final Report Date: August 21, 2015

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NVS-111
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590**

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Approval Date: August 21, 2015

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

1. Report No. NCAP-MGA-2016-012	2. Government Accession No.	3. Recipient's Catalog No.																																																							
4. Title and Subtitle Final Report of New Car Assessment Program Frontal Impact Testing of a 2016 Honda HR-V AWD LX 5-Dr SUV, NHTSA No.: O20165305		5. Report Date August 21, 2015																																																							
		6. Performing Organization Code MGA																																																							
7. Author(s) Ben Fischer, Project Engineer		8. Performing Organization Report No. NCAP-MGA-2016-012																																																							
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		10. Work Unit No.																																																							
		11. Contract or Grant No. DTNH22-12-D-00258																																																							
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered Final Test Report July 13, 2015 to August 21, 2015																																																							
		14. Sponsoring Agency Code NVS-111																																																							
15. Supplementary Notes																																																									
<p>16. Abstract</p> <p>A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2016 Honda HR-V AWD LX 5-Dr SUV 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 July 13, 2015.</p> <p>The impact velocity of the vehicle was 56.3 km/h and the ambient temperature at the barrier face at the time of impact was 21.9°C. The target vehicle post-test maximum crush was 445 located to the right of the vehicle's centerline. The test vehicle's performance was as follows:</p>																																																									
<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 style="background-color: yellow;">481</td> <td>700</td> <td style="background-color: yellow;">205</td> </tr> <tr> <td>Maximum Chest</td> <td>mm</td> <td>63</td> <td style="background-color: yellow;">24</td> <td>52</td> <td style="background-color: yellow;">12</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td style="background-color: yellow;">0.19</td> <td>1</td> <td style="background-color: yellow;">0.41</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td style="background-color: yellow;">1085</td> <td>2620</td> <td style="background-color: yellow;">970</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td style="background-color: yellow;">23</td> <td>2520</td> <td style="background-color: yellow;">206</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td style="background-color: yellow;">149</td> <td>6805</td> <td style="background-color: yellow;">2553</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td style="background-color: yellow;">605</td> <td>6805</td> <td style="background-color: yellow;">2223</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	481	700	205	Maximum Chest	mm	63	24	52	12	Nij	N/A	1	0.19	1	0.41	Neck Tension	N	4170	1085	2620	970	Neck Compression	N	4000	23	2520	206	Left Femur Force	N	10008	149	6805	2553	Right Femur Force	N	10008	605	6805	2223
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19. Security Classification of Report Unclassified	20. Security Classification of Page Unclassified	21. No. of Pages 167		22. Price																																																					

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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 2016 Honda HR-V AWD LX 5-Dr SUV at a velocity of 56.3 km/h. The test was performed at MGA Research Corporation on July 13, 2015. 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. Seat belt load cells were also installed on the driver's shoulder belt, driver's lap belt, passenger's shoulder belt, and passenger's lap belt to measure dummy torso section loading.

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

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

The maximum static crush of the vehicle was 445mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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

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)	481	0.19	1085	23	42	24	149	605
Passenger (5 th)	205	0.41	970	206	53	12	2553	2223

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

TEST NOTES

BOTTOM OF ENGINE X has no valid data after 60 msec.
 BARRIER K-16 MY has no valid data.
 BARRIER D-06 MY has no valid data.
 BARRIER C-04 FX has no valid data.
 BARRIER C-04 MY has no valid data.
 BARRIER C-04 MZ has no valid data.

The incorrect NHTSA number was used for pre and post-test pictures. O20165207 was used on small labels in close-up views instead of the correct NHTSA No.: O20165305.

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: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20165305	Traction Control System (TCS)	Yes
Model Year	2016	Power Steering	Yes
Make	Honda	Power Window Auto-Reverse	Yes
Model	HR-V	Driver Frontal Airbag	Yes
Body Style	5-Door SUV	Driver Curtain Airbag	Yes
VIN	3CZRU6H35GM709697	Driver Head/Torso Airbag	No
Body Color	Deep Ocean Pearl	Driver Torso Airbag	No
Odometer (km/mi)	58km / 36mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	1.8	Driver Pelvis Airbag	No
Type/No. Cylinders	4	Driver Knee Airbag	No
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	CVT	Front Pass. Curtain Airbag	Yes
Transmission Speeds	Variable	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	AWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	No
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda De Mexico S.A. DE C.V.	GVWR (kg)	1890
Date of Manufacture	05/15	GAWR Front (kg)	988
		GAWR Rear (kg)	902

VEHICLE SEATING AND WEIGHT CAPACITY DATA

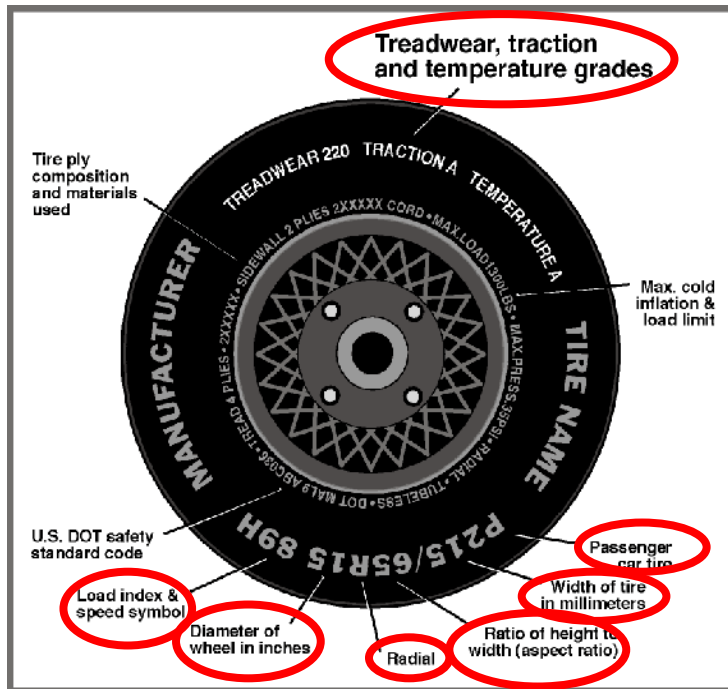
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				385
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	210
Recommended Tire Size	215/55R17	215/55R17
Tire Size on Vehicle	215/55R17	215/55R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Primacy MXV4	Primacy MXV4
Treadwear	500	500
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Polyamide, 1 Steel	2 Polyester, 1 Polyamide, 1 Steel
Load Index/Speed Symbol	94V	94V
Tire Material	Rubber	Rubber
DOT Safety Code Left	B33F 01VX 0915	B33F 01VX 1015
DOT Safety Code Right	B33F 01VX 1015	B33F 01VX 1015

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	423.0	276.5		468.5	333.5	
Right	kg	408.5	277.0		441.5	321.0	
Ratio	%	60.0	40.0		58.2	41.8	
Totals	kg	831.5	553.5	1385.0	910.0	654.5	1564.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1385.0
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Test Vehicle Target Weight (TVTW)	kg	1571.0

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	720	726	737	738	1045
As Tested	mm	706	711	706	714	1094
Post Test	mm	620	704	705	720	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2614
Total Vehicle Length at Left Side	mm	4176
Total Vehicle Length at Centerline	mm	4285
Total Vehicle Length at Right Side	mm	4176
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	45
Amount of Stoddard Solvent in Fuel Tank	L	46.6

List of components removed to meet test weight: Rear headrests, left/right side mirrors, and rear lift gate.

List of components removed for instrumentation, data box, and equipment installation: Cargo arear cover, jack/tool kit, spare tire, and spare tire cover.

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4285
2	Total Width	1770
3	Bumper Top Height	611
4	Bumper Bottom Height	457
5	Longitudinal Member Top Height	591
6	Distance between Longitudinal Members	915
7	Longitudinal Member Width	90
8	Engine Top Height	873
9	Engine Bottom Height	230
10	Engine and Gearbox Width	800
11	Front Bumper-Engine Distance	454
12	Front Shock Absorber Fixing Height	951
13	Bonnet Leading Edge Height	862
14	Front Shock Absorber Fixing Width	1100
15	Front Bumper – Front Axle Distance	864
16	Front Axle – A-Pillar Distance	500
17	A-Pillar – B-Pillar Distance	1072
18	B-Pillar – Rear Axle Distance	1042
19	B-Pillar – C-Pillar Distance	1011
20	Roof Sill Bottom Height	1445
21	Roof Sill Top Height	1560
22	Floor Sill Bottom Height	250
23	Floor Sill Top Height	440

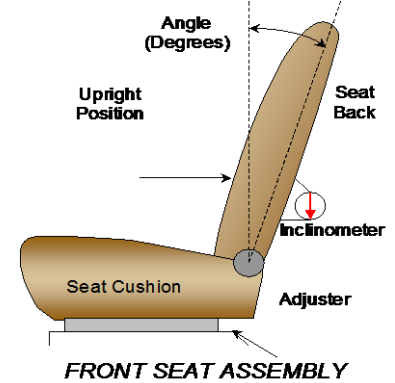
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

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 August 2013.



	Degrees
Driver Seat Back Angle	0.0° on headrest post
Passenger Seat Back Angle	-2.1° on headrest post

SEAT FORE/AFT POSITIONS

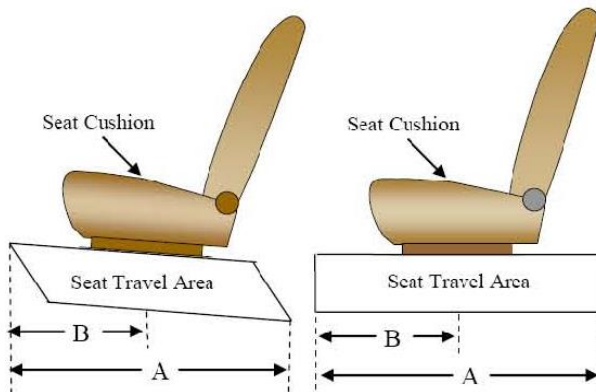
The driver and passenger seat fore/aft positions are adjusted following Appendix F, “Driver & Passenger Dummy Seating & Positioning Procedures” in the NCAP Test Procedure dated August 2013.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	262 mm / 35 detents (1 st as 1)	131 mm / 15 th detent (1 st as 0)
Passenger Seat	234mm / 35 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: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

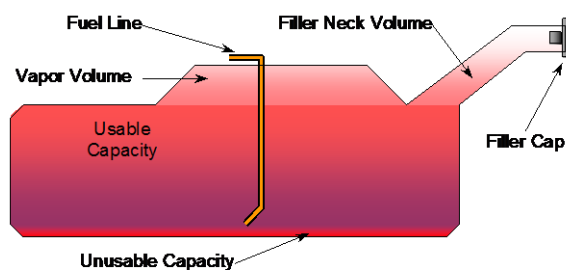
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	50.0
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	46.0 to 47.0
Actual Amount of Solvent used	46.6
1/3 of Usable Capacity	16.7

FUEL PUMP

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

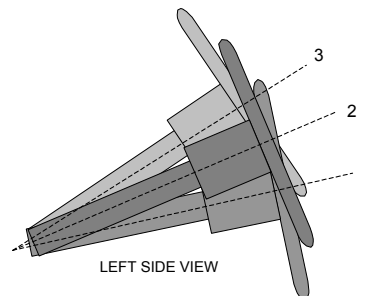
The electric fuel pump operates when starter or engine is activated.



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

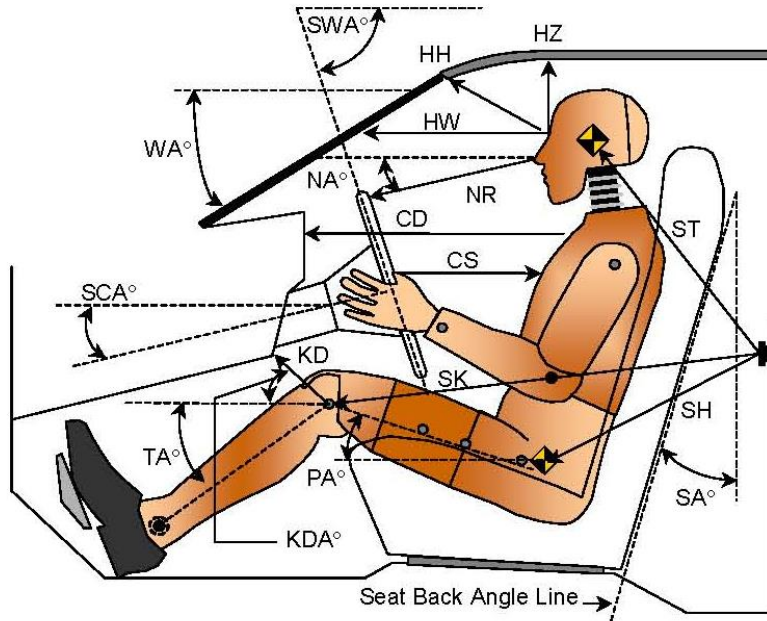
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	66.0	166
Geometric Center Position 2	63.5	186
Uppermost Position 3	61.0	206
Telescoping Steering Wheel Travel		40
Test Position	63.5	186

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015



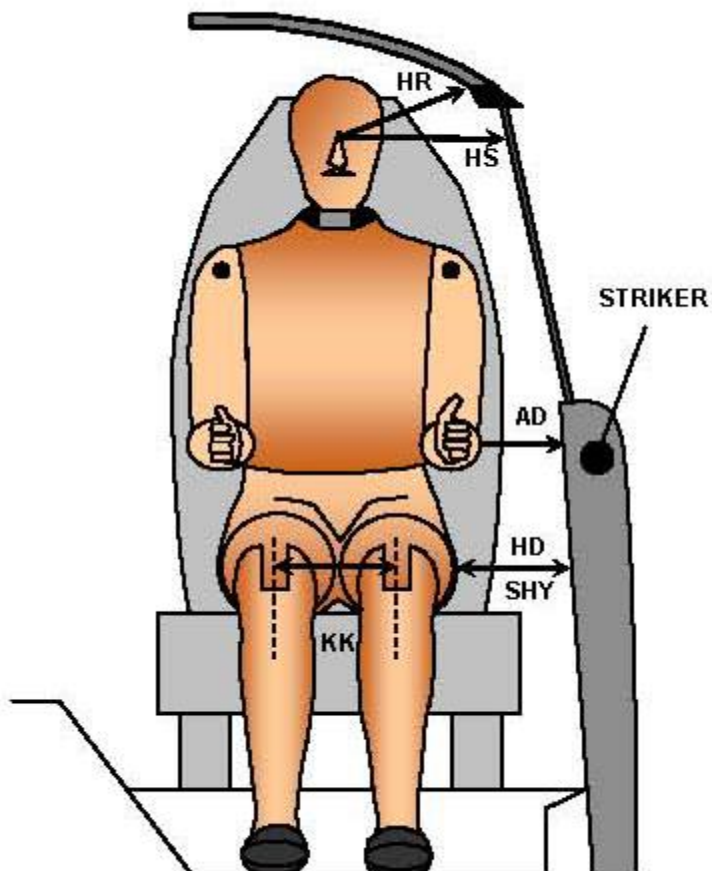
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		25.3		
SWA°	Steering Wheel Angle		63.5		
SCA°	Steering Column Angle		26.5		
SA°	Seat Back Angle (on headrest post)		0.0		-2.1
HZ	Head to Roof (Z)	202	90.0	224	90.0
HH	Head to Header	339	21.8	293	25.6
HW	Head to Windshield	653	0.0	655	0.0
NR	Nose to Rim	420	9.3		
CD	Chest to Dash	547		365	
CS	Chest to Steering Hub	338	3.3		
RA	Rim to Abdomen	190	0.0		
KDL	Left Knee to Dash	133	31.0	85	33.8
KDR	Right Knee to Dash	126	33.2	98	34.9
PA°	Pelvic Angle		22.6		20.3
TA°	Tibia Angle		53.9		44.8
SK	Striker to Knee	643	101.8	749	105.3
ST	Striker to Head	433	19.6	407	43.3
SH	Striker to H-Point	369	136.3	456	120.0

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015



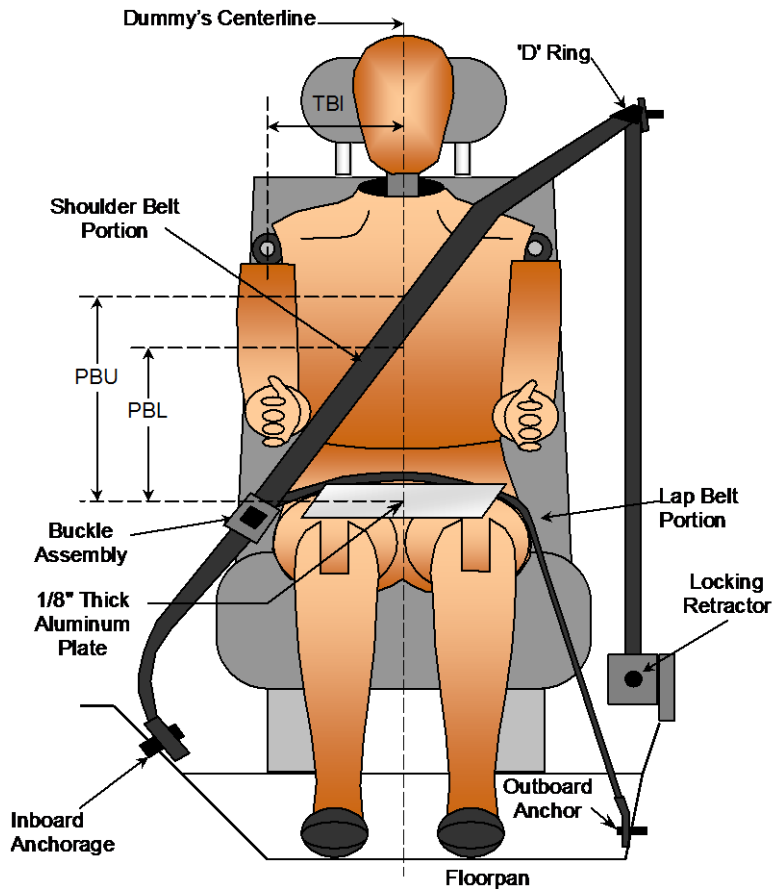
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	135	97
HD	H-Point to Door	153	182
HR	Head to Side Header	223	259
HS	Head to Side Window	323	360
KK	Knee to Knee	357	229
SHY	Striker to H-Point (Y Direction)	291	323
AA	Ankle to Ankle	330	174

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	370	350
PBL - Top surface of reference to belt lower edge	mm	290	255

BELT LENGTH DATA

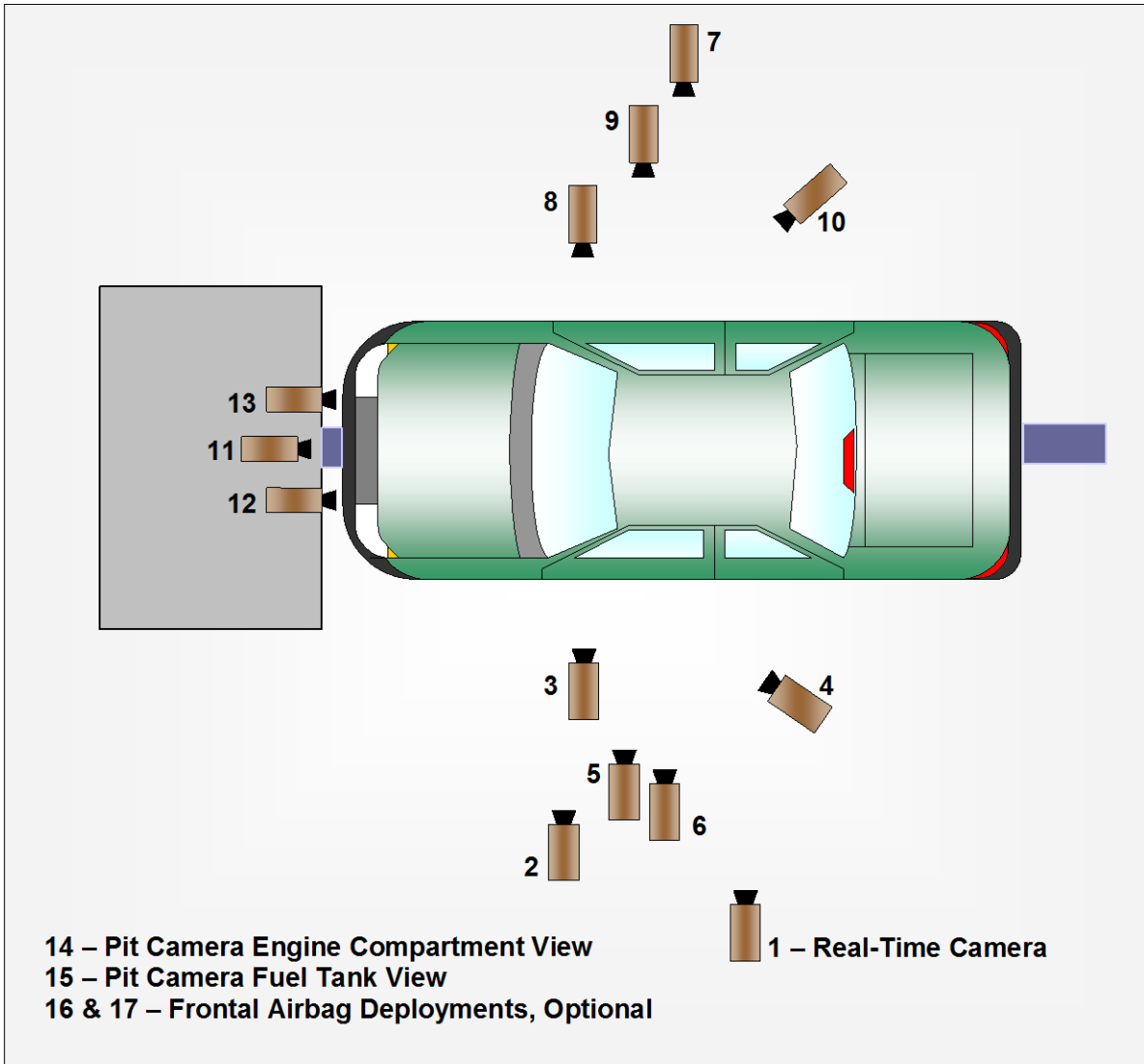
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	860	930
Lap Belt Length as measured on ATD	mm	650	445
Remainder of belt on reel	mm	920	1055
Total Belt Length for Continuous Webbing Systems	mm	3130	3130

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	-1080	-6370	-1840	35	1000
3	Left Front Half	-1160	-5000	-1150	24	1000
4	Left Angle	-5320	-5010	-1830	50	1000
5	Steering Column - Top					
6	Steering Column - Bottom					
7	Right Overall	-1890	6040	-1160	20	1000
8	Passenger Close-Up	-1500	6350	-1810	35	1000
9	Right Front Half	-1070	5030	-1140	24	1000
10	Right Angle	-5510	5000	-1830	50	1000
11	Windshield	430	0	-2810	20	1000
12	Driver Windshield	30	-450	-2030	8.5	1000
13	Passenger Windshield	30	450	-2030	8.5	1000
14	Pit Front	-1050	0	3150	24	1000
15	Pit Rear	-3110	0	3150	24	1000
16	Onboard Driver Side				12	1000
17	Onboard Passenger Side				12	1000
18	Real-Time Pan View					30

***COORDINATES:**

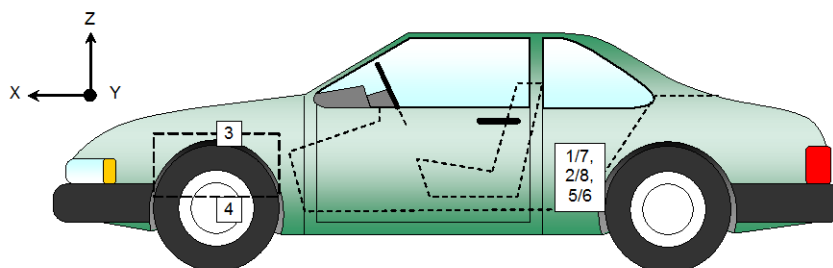
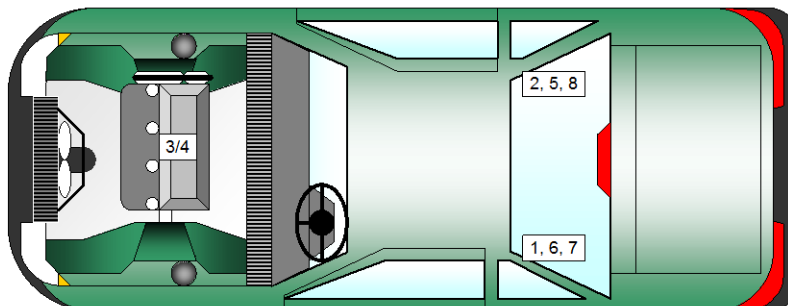
- +X = forward of impact plane
- +Y = right of monorail centerline
- +Z = below ground level

Cameras 5 & 6 were not used for this test.

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	1208	-320	-481
2	Right Rear Crossmember Accelerometer – X Direction	1202	275	-481
3	Engine Top X	3643	0	-873
4	Engine Bottom X	3536	150	-225
5	Left Rear Crossmember Accelerometer – Z Direction	1208	-385	-481
6	Right Rear Crossmember Accelerometer – Z Direction	1208	340	-481
7	Left Rear Crossmember Accelerometer Redundant – X Direction	1208	-385	-481
8	Right Rear Crossmember Accelerometer Redundant – X Direction	1208	340	-481

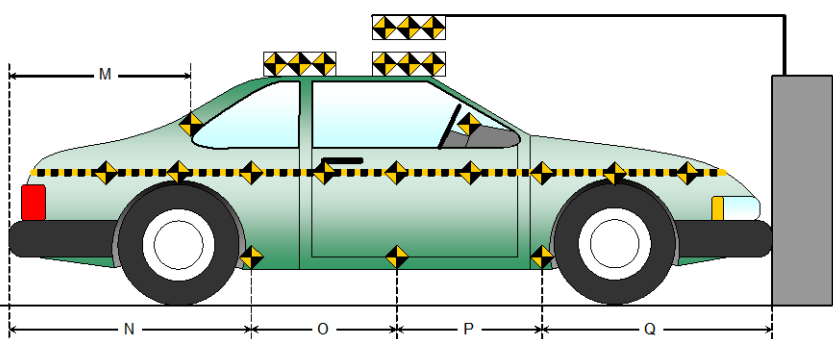
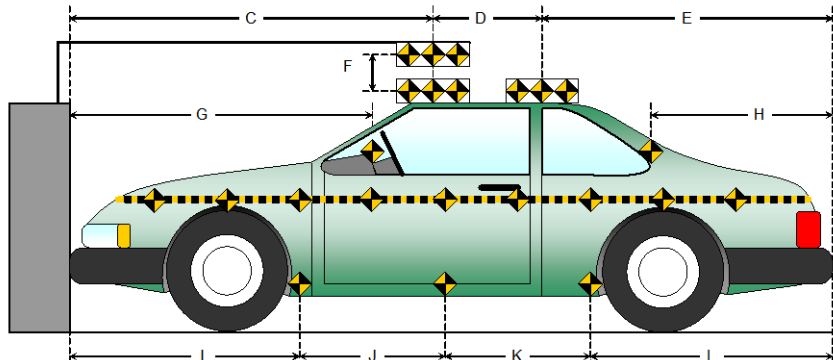
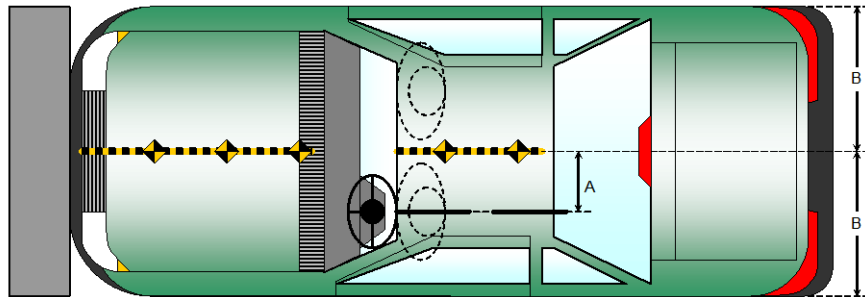
Reference Points: X - Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

Item	Value (mm)
A	360
B	885
C	2175
D	613
E	1497
F	75
G	
H	838
I	1318
J	865
K	865
L	1237
M	838
N	1237
O	865
P	865
Q	1318



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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

Advanced Research Load Cell Barrier

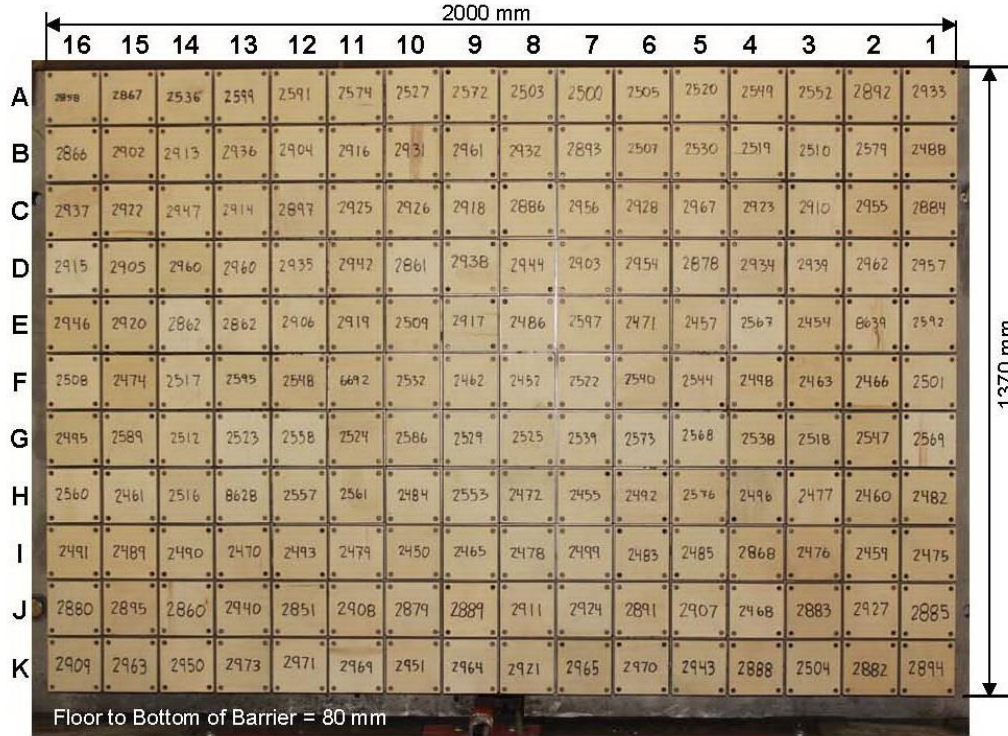


Photo for Reference Only

									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	
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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: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

INSTRUMENTATION

Driver Dummy Data Channels	49
Passenger Dummy Data Channels	49
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	634

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: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

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

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	None
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	730
Center	mm	680
Right Side	mm	680
Average	mm	697

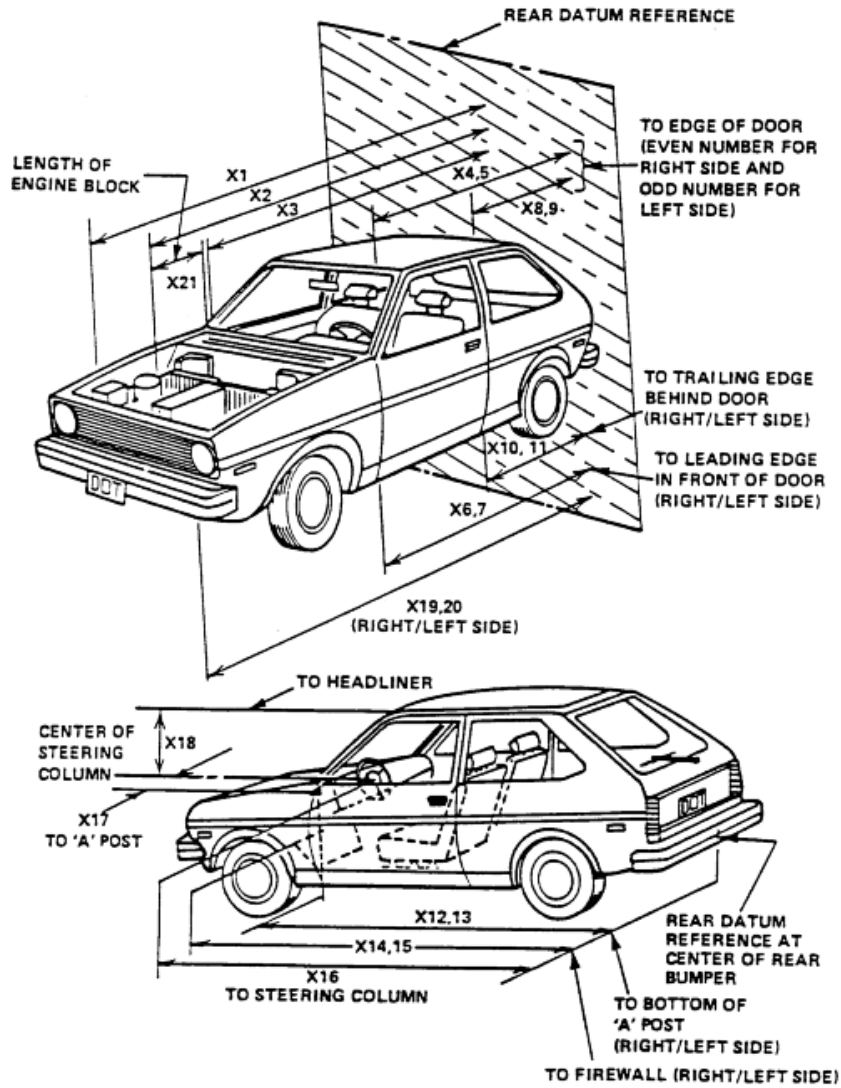
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015



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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4285	3851	434
2	RSOV to Front of Engine	mm	3804	3453	351
3	RSOV to Firewall	mm	3395	3285	110
4	RSOV to Upper Leading Edge of Right Door	mm	2944	2943	1
5	RSOV to Upper Leading Edge of Left Door	mm	2944	2944	0
6	RSOV to Lower Leading Edge of Right Door	mm	2892	2892	0
7	RSOV to Lower Leading Edge of Left Door	mm	2892	2892	0
8	RSOV to Upper Trailing Edge of Right Door	mm	1826	1825	1
9	RSOV to Upper Trailing Edge of Left Door	mm	1826	1826	0
10	RSOV to Lower Trailing Edge of Right Door	mm	1850	1850	0
11	RSOV to Lower Trailing Edge of Left Door	mm	1850	1849	1
12	RSOV to Bottom of "A" Post of Right Side	mm	2898	2896	2
13	RSOV to Bottom of "A" Post of Left Side	mm	2898	2898	0
14	RSOV to Firewall, Right Side	mm	3147	3147	0
15	RSOV to Firewall, Left Side	mm	3146	3148	-2
16	RSOV to Steering Column	mm	2499	2563	-64
17	Center of Steering Column to "A" Post	mm	420	500	-80
18	Center of Steering Column to Headliner	mm	432	545	-113
19	RSOV to Right Side of Front Bumper	mm	4176	3805	371
20	RSOV to Left Side of Front Bumper	mm	4176	3755	421
21	Length of Engine Block	mm	257	257	0
RD	RSOV to Right Side of Dash Panel	mm	2771	2770	1
CD	RSOV to Center of Dash Panel	mm	2733	2732	1
LD	RSOV to Left Side of Dash Panel	mm	2780	2780	0

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

VEHICLE INFORMATION

VIN: 3CZRU6H35GM709697 Wheelbase (mm): 2614
Vehicle Size Category: MPV Test Weight (kg): 1564.5

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): 56.3

Velocity Change (km/h): 65.3

Time of Separation (msec): 113.3

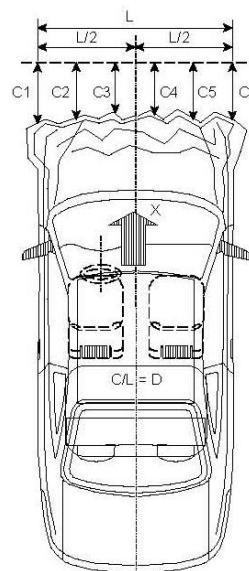
CRUSH PROFILE

Collision Deformation Classification: Frontal

Midpoint of Damage: Centerline

Damage Region Length (mm): 1100

Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4176	3755	421
C2	Crush zone 2 at left side	mm	4239	3831	408
C3	Crush zone 3 at left side	mm	4248	3830	418
C4	Crush zone 4 at right side	mm	4248	3803	445
C5	Crush zone 5 at right side	mm	4239	3810	429
C6	Crush zone 6 at right side	mm	4176	3805	371
L	C1 TO C6	mm	1100	958	142

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

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

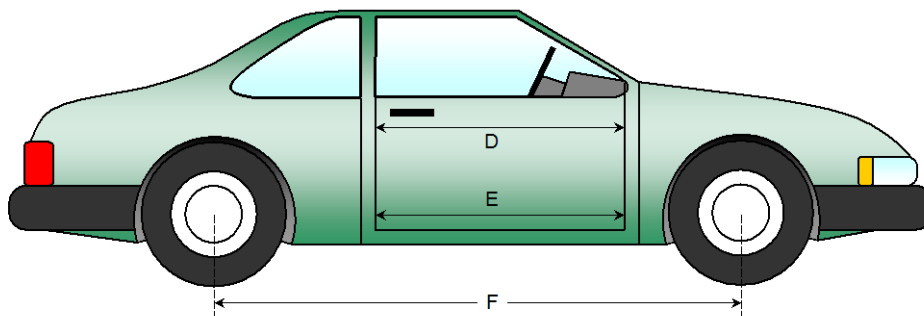
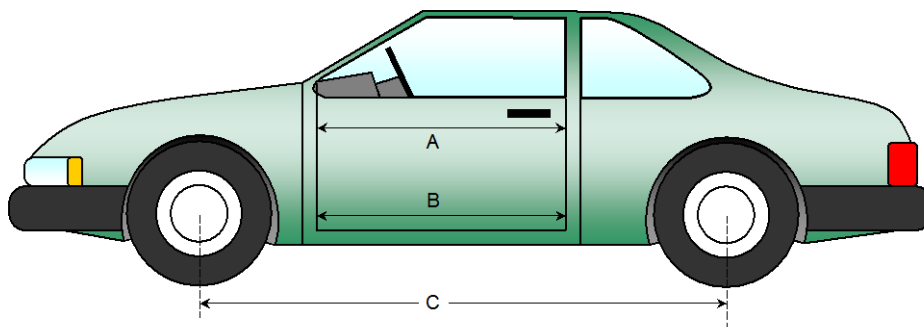
NHTSA No.: O20165305
 Test Date: 7/13/2015

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1018	1018	0
B	Left Side Lower	mm	874	874	0
D	Right Side Upper	mm	1018	1018	0
E	Right Side Lower	mm	874	874	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2614	2500	114
F	Right Side Wheelbase	mm	2614	2504	110



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

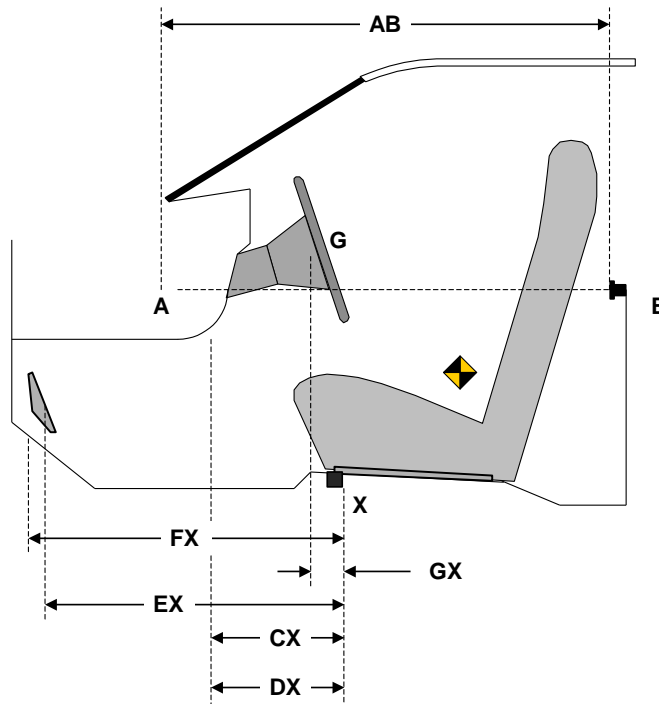
Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	820	820	0
CX	Left Knee Bolster to X	mm	190	190	0
DX	Right Knee Bolster to X	mm	192	192	0
EX	Brake Pedal to X	mm	512	465	47
FX	Foot Rest to X	mm	468	428	40
GX	Center of Steering Column Wheel Hub to X	mm	20	22	-2

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: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

Windshield Mounting Details:

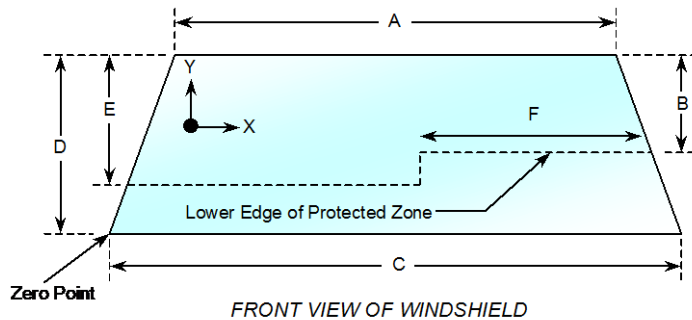
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 21.9° C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2193	2193	100
Right Side	2193	2193	100
Total	4386	4386	100



Item	Units	Value
A	mm	1204
B	mm	504
C	mm	1620
D	mm	781
E	mm	558
F	mm	595

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: 2016 Honda HR-V AWD LX 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
Test Date: 7/13/2015

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.9°C

Test Time: 11:22 a.m.

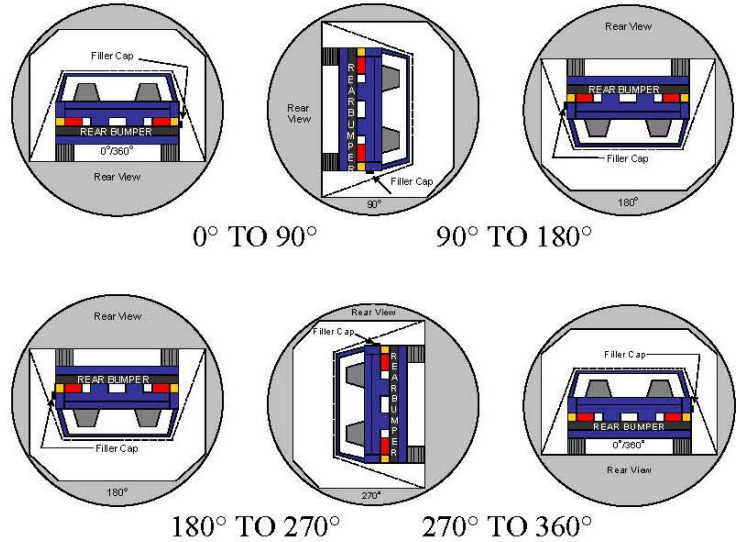
- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: None

**DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015

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°	119	300	419
90° to 180°	115	300	415
180° to 270°	112	300	412
270° to 360°	117	300	417

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

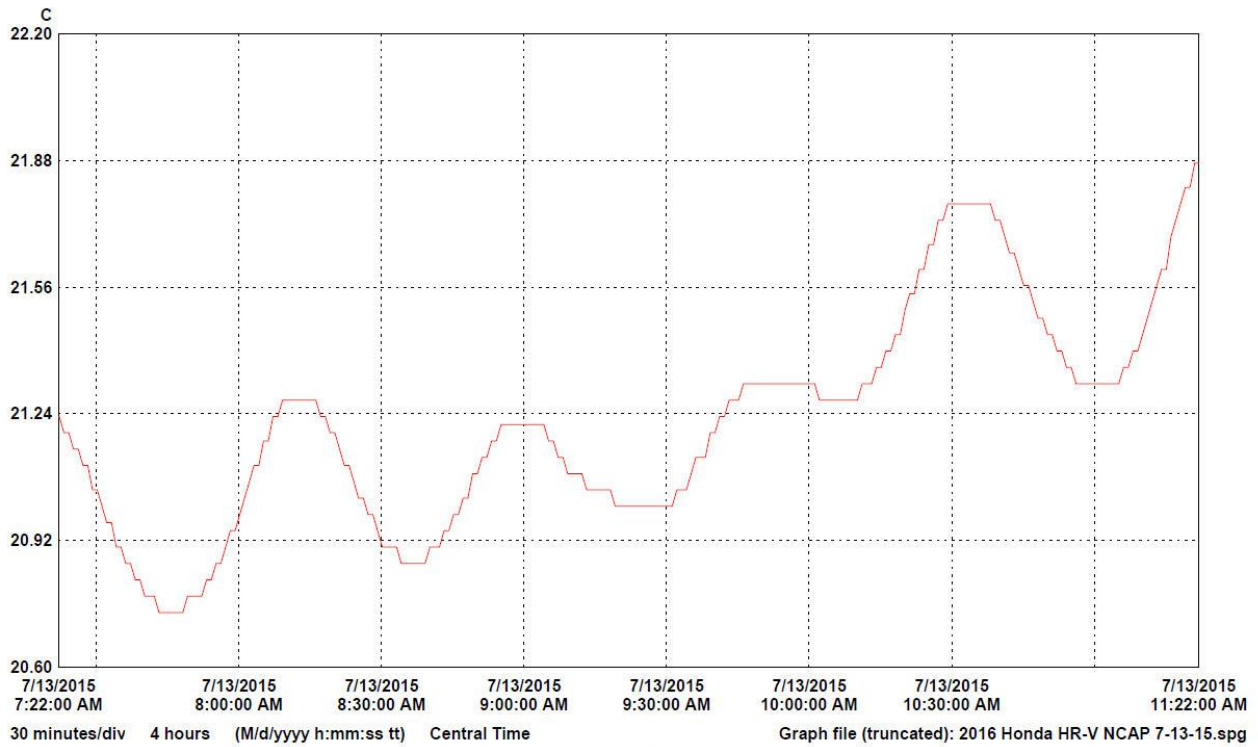
SOLVENT SPILLAGE LOCATION TABLE

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: 2016 Honda HR-V AWD LX 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165305
 Test Date: 7/13/2015



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	10102056	Crash Prep	1		21.87	21.21	20.74	C	Temperature	10102056_Crash_Prep.spl

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Photo No. 77.	2016 Honda HR-V AWD LX Frontal Impact Event	A-40
Photo No. 78.	Monroney Label Photograph	A-41

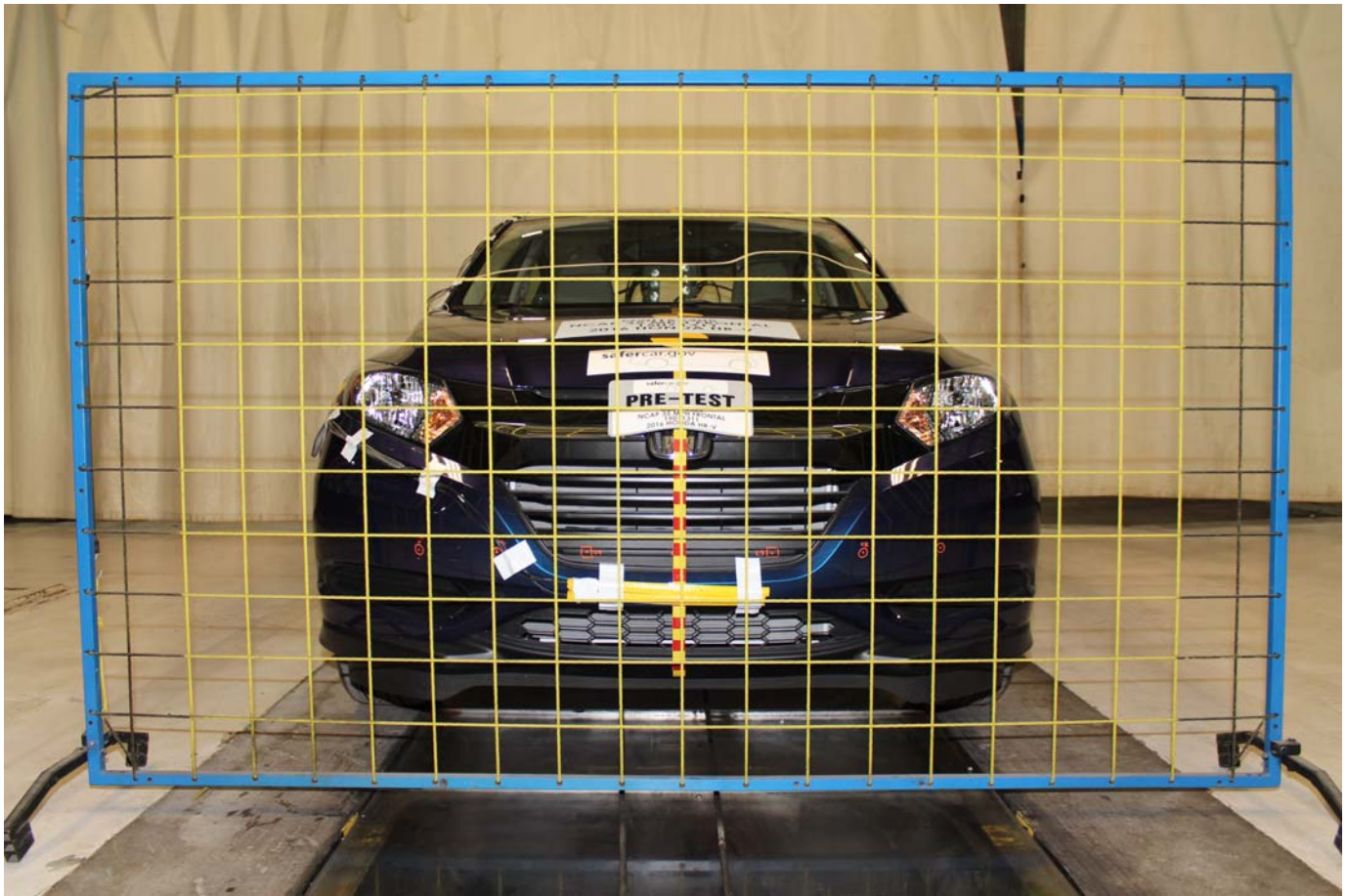


Photo No. 001 - Load Cell Location

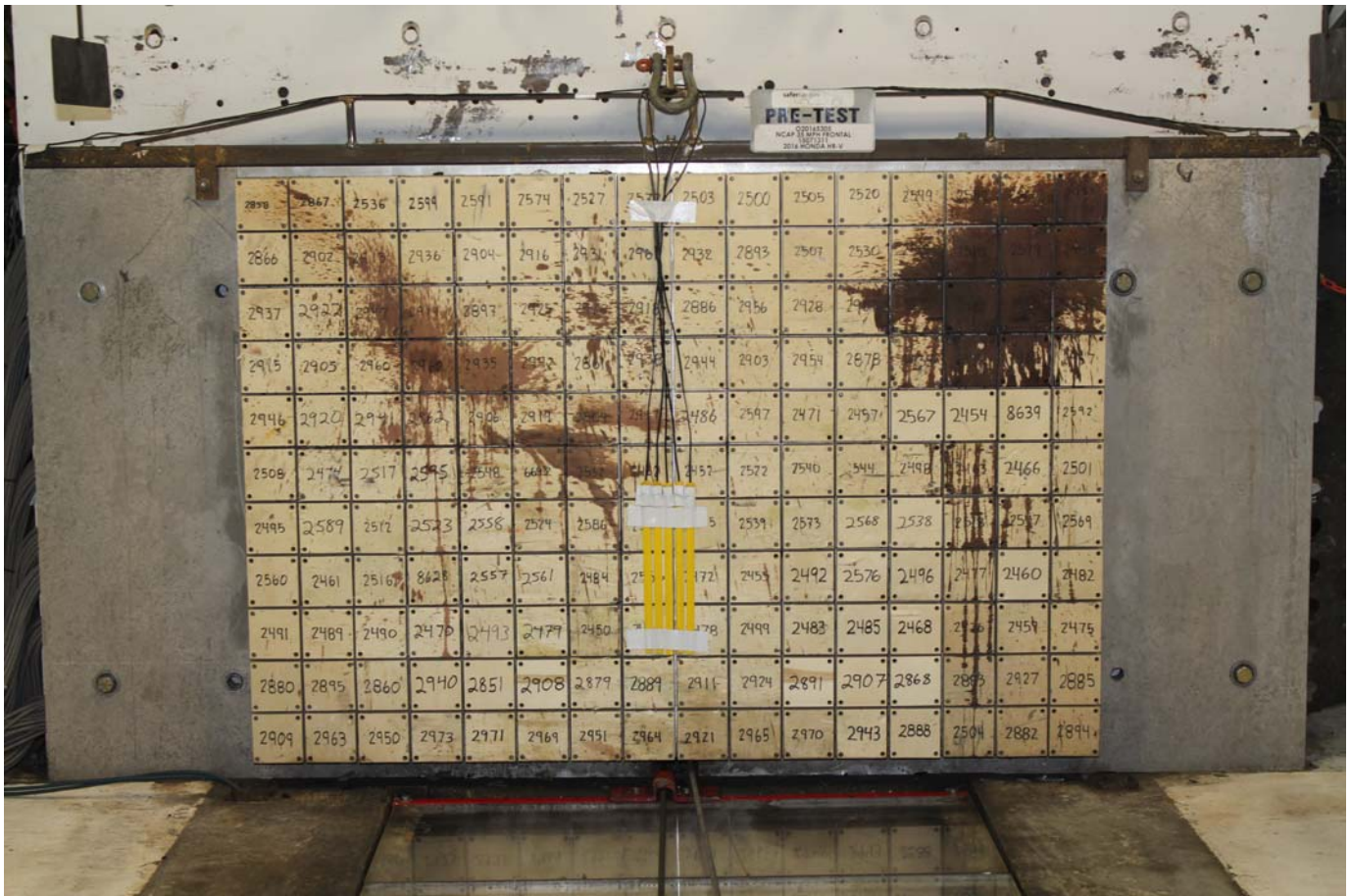


Photo No. 002 - Load Cell Wall

020165207

MFD. BY HONDA DE MEXICO S.A. DE C.V.

GVWR 1890KG (4166LBS) TIRE SIZE 215/55R17 94V RIM SIZE 17X7.5J
GAWR F 988KG (2178LBS) 215/55R17 94V 17X7.5J
GAWR R 902KG (1988LBS) 215/55R17 94V 17X7.5J

THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY
AND THEFT PREVENTION STANDARDS IN EFFECT
ON THE DATE OF MANUFACTURE SHOWN ABOVE.
V.I.N.: 3CZRUG6H35GM709697 TYPE: MPV



T7X G AA6 -B594P -B -M

MADE IN MEXICO

Photo No. 003 - Manufacturer's 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	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	215/55R17 94V	220KPA, 32PSI	
REAR		210KPA, 30PSI	
SPARE	T135/90D16 102M	420KPA, 60PSI	

020165207

Photo No. 004 - Tire Placard



Photo No. 005 - 2016 Honda HR-V AWD LX Frontal As Delivered



Photo No. 006 - Left Rear 3-4 View, As Received

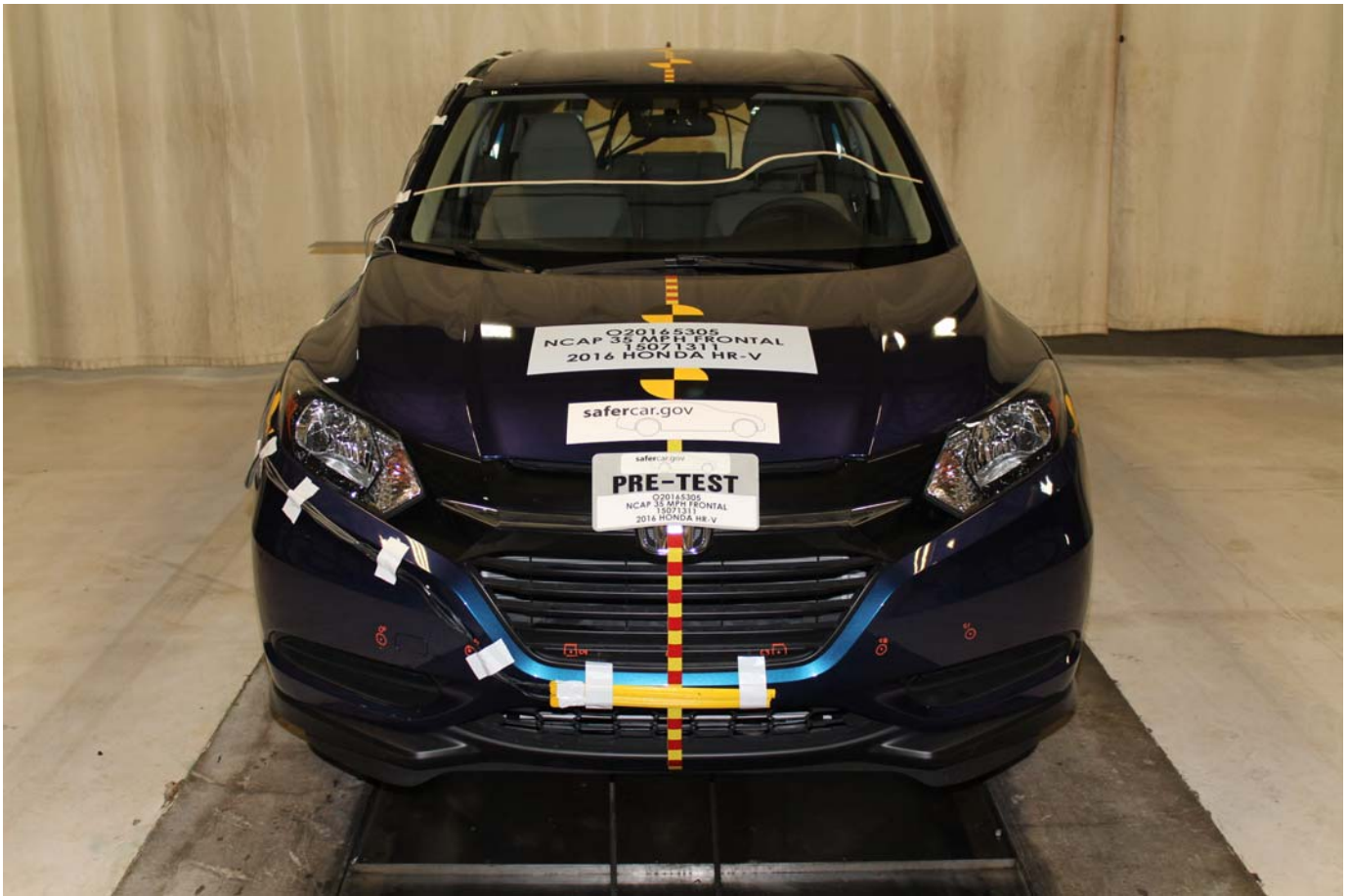


Photo No. 007 - Pre-Test Front View of Test Vehicle

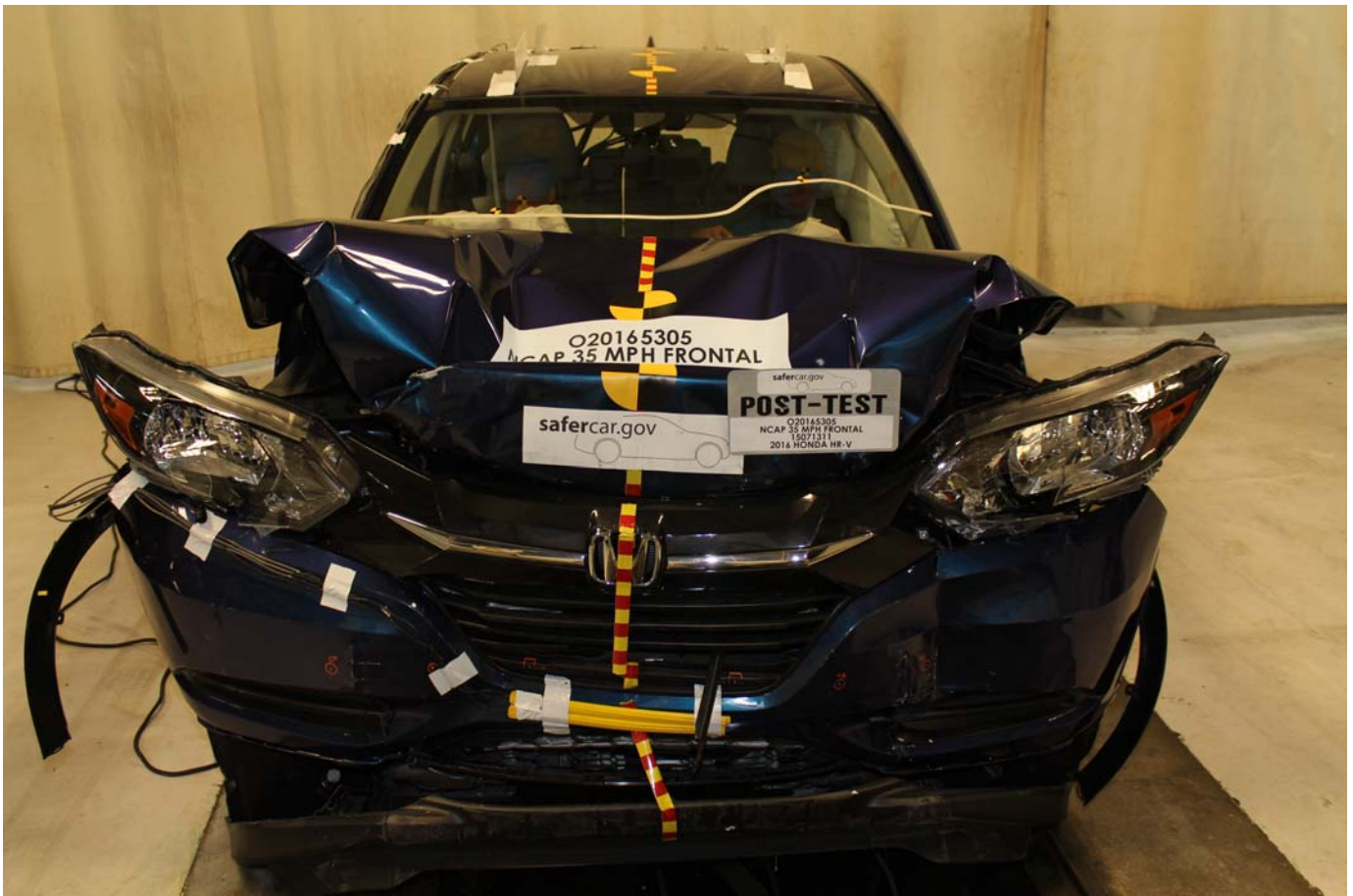


Photo No. 008 - Post-Test Front View of Test Vehicle



Photo No. 009 - Pre-Test Left View of Test Vehicle



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



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



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



Photo No. 013 - Pre-Test Right Front 3-4 View



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



Photo No. 015 - Pre-Test Left Rear 3-4 View



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



Photo No. 017 - Pre-Test Windshield View



Photo No. 018 - Post-Test Windshield View



Photo No. 019 - Pre-Test Engine Compartment View

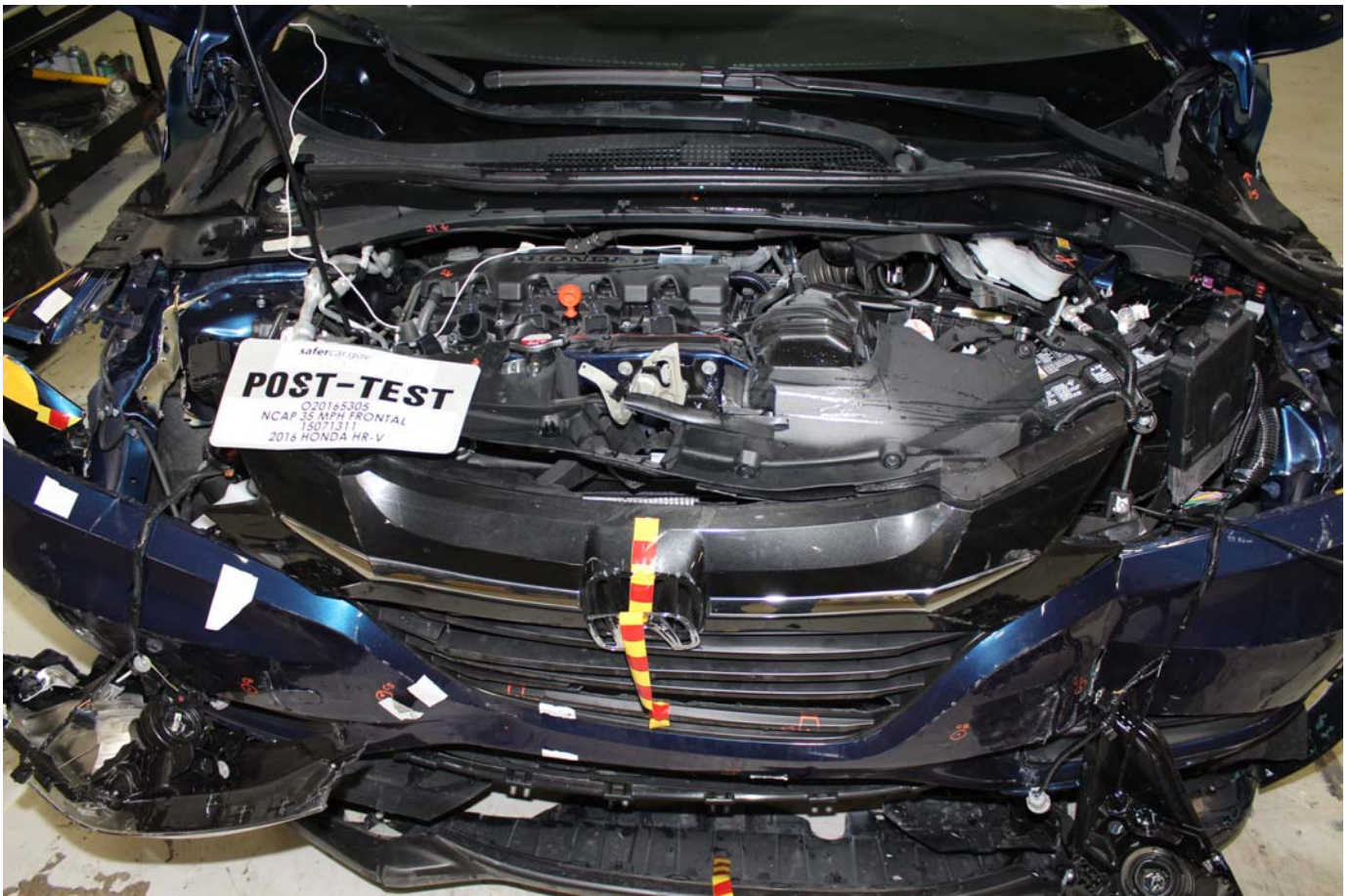


Photo No. 020 - Post-Test Engine Compartment View



Photo No. 021 - Pre-Test Fuel Filler Cap View



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

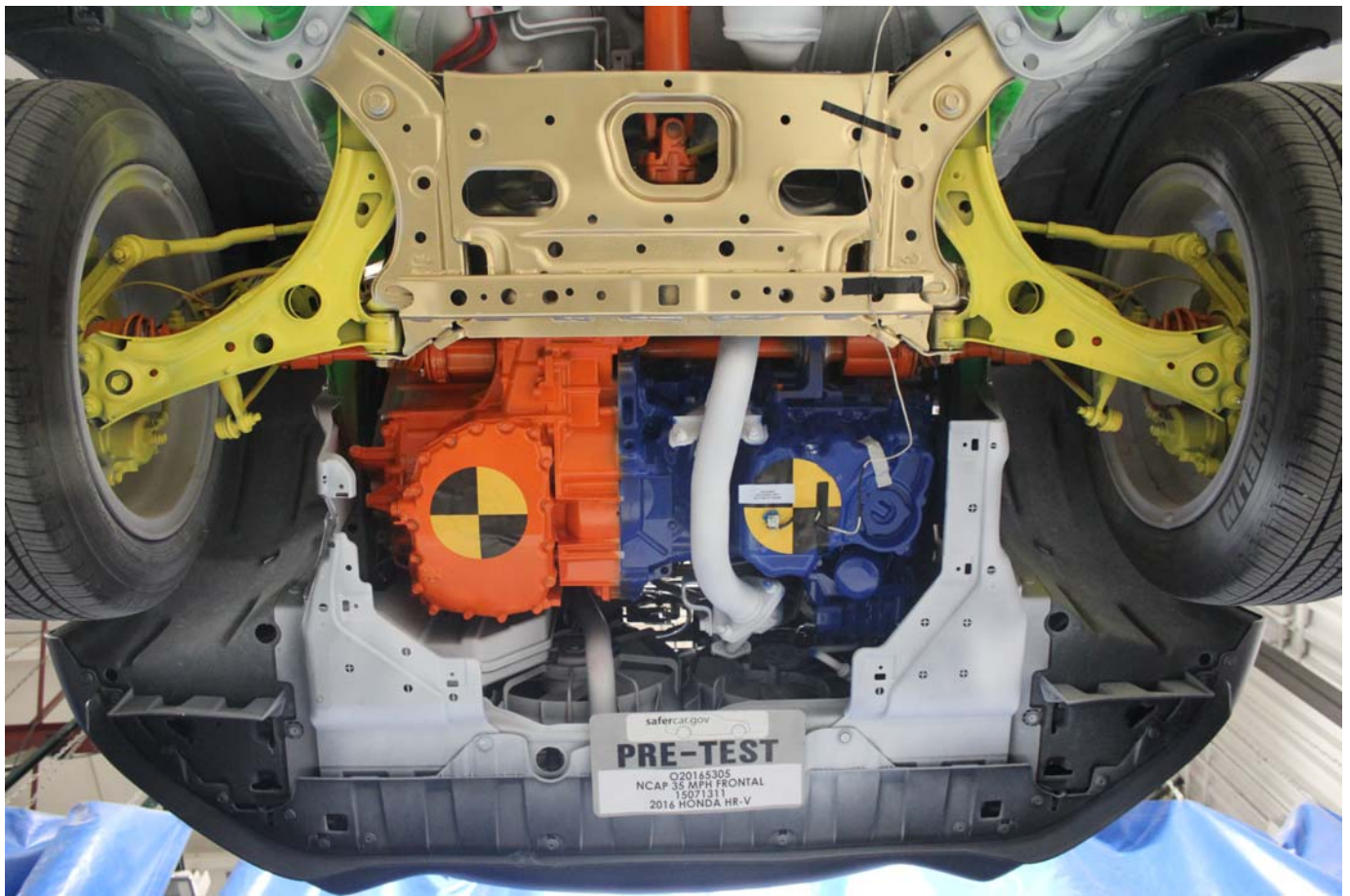


Photo No. 023 - Pre-Test Front Underbody View

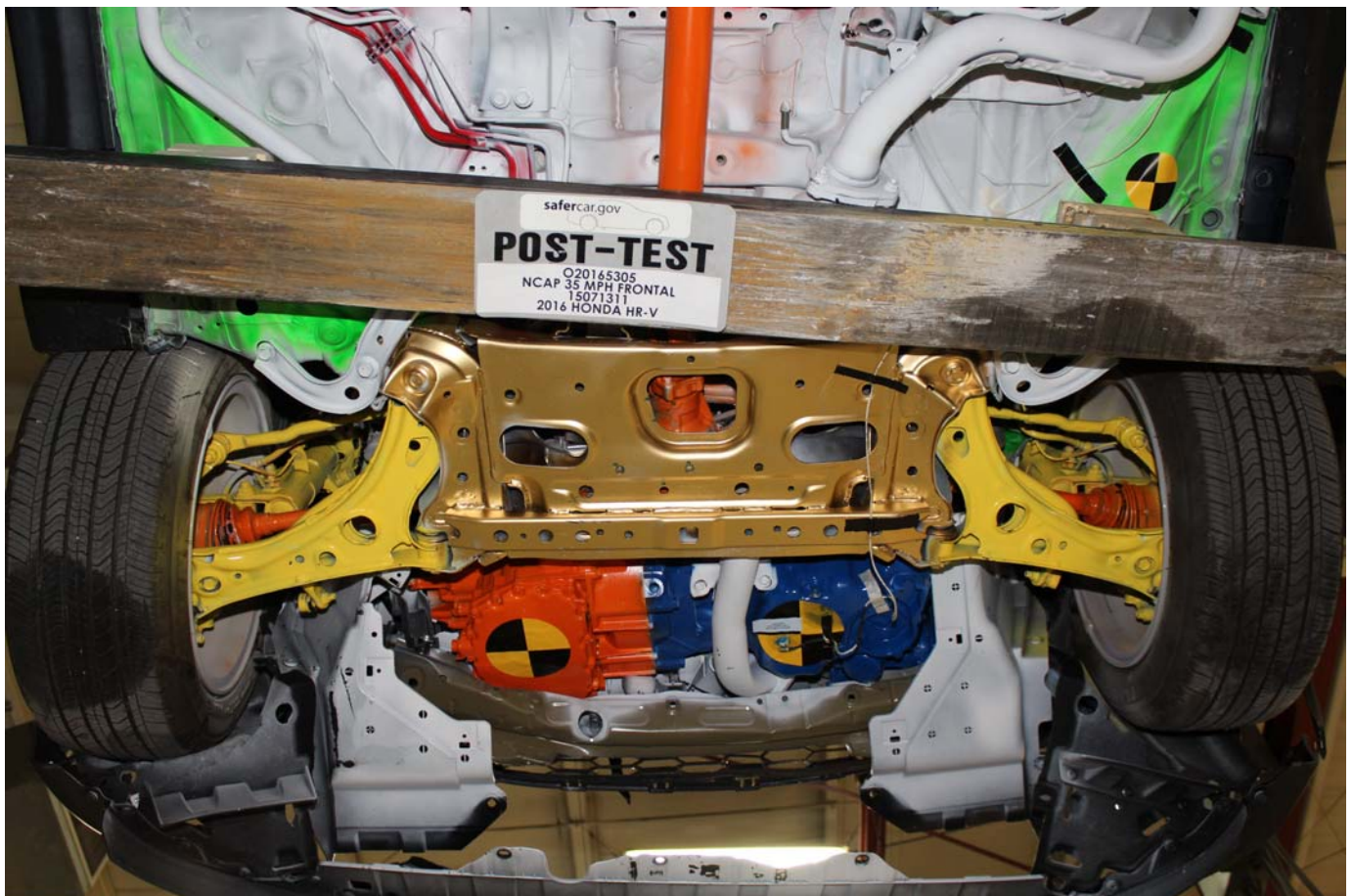


Photo No. 024 - Post-Test Front Underbody View

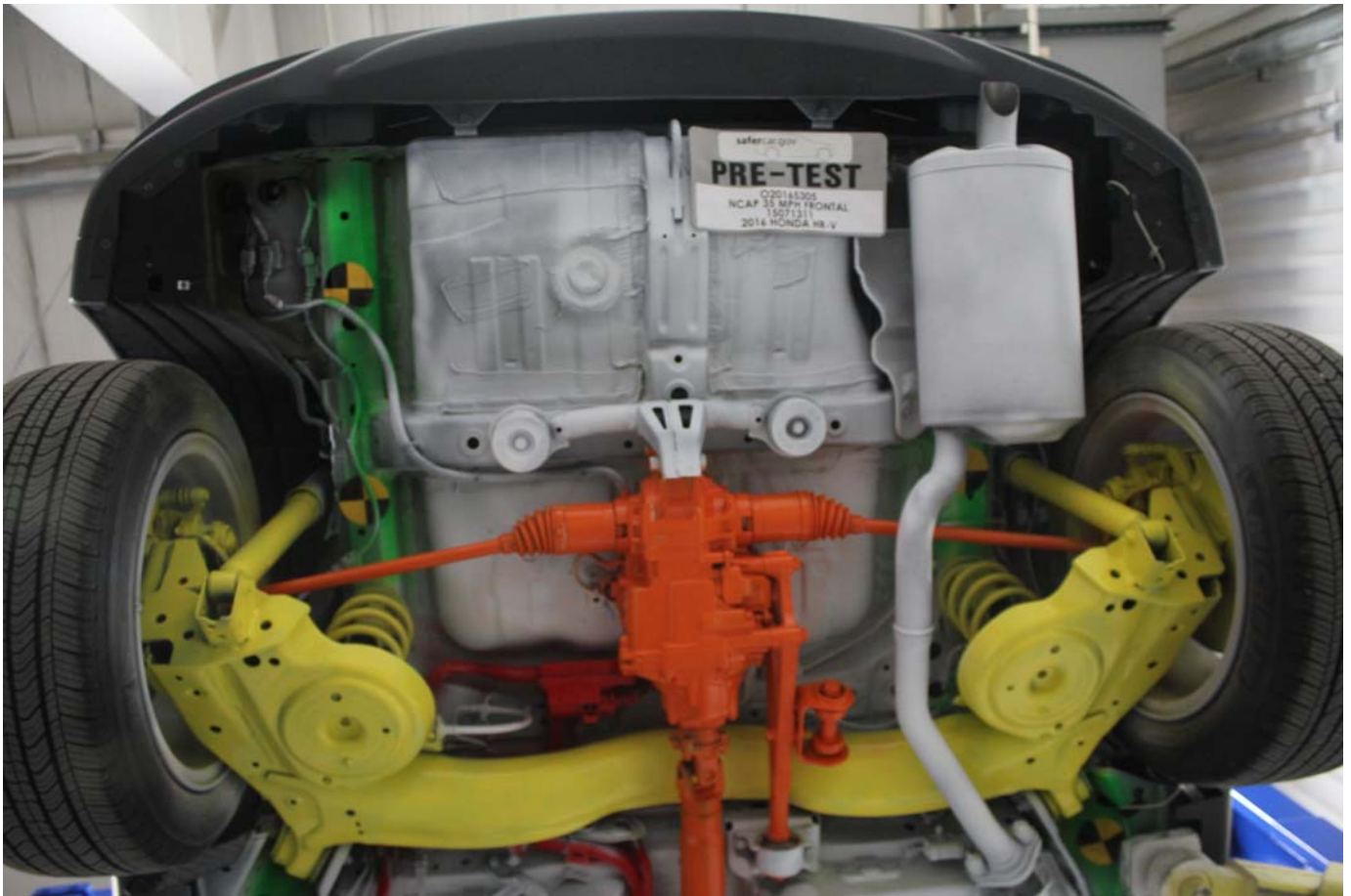


Photo No. 025 - Pre-Test Rear Underbody View

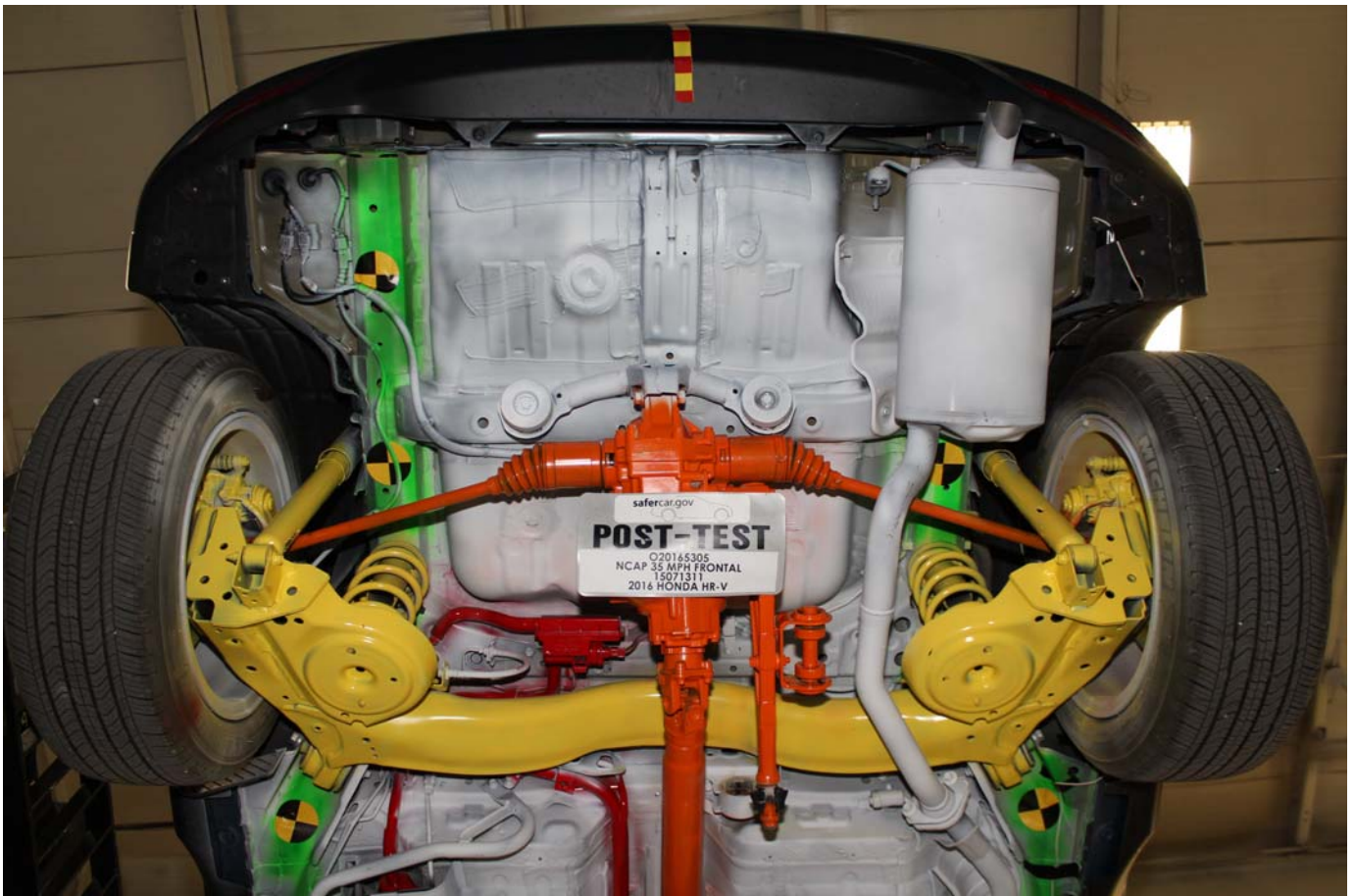


Photo No. 026 - Post-Test Rear Underbody View



Photo No. 027 - Pre-Test Dummy Cable Routing



Photo No. 028 - Post-Test Dummy Cable Routing



Photo No. 029 - Pre-Test Driver Dummy Front View



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



Photo No. 031 - Pre-Test Driver Dummy Window View



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



Photo No. 033 - Pre-Test Driver Dummy and Vehicle Interior (Door Open)



Photo No. 034 - Post-Test Driver Dummy and Vehicle Interior (Door Open)



Photo No. 035 - Pre-Test Driver's Seat Fore-Aft Markings



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



Photo No. 037 - Pre-Test View of Belt Anchorage for Driver Dummy



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



Photo No. 039 - Pre-Test Driver Dummy Feet



Photo No. 040 - Post-Test Driver Dummy Feet



Photo No. 041 - Pre-Test Driver's Side Knee Bolster (without dummy)

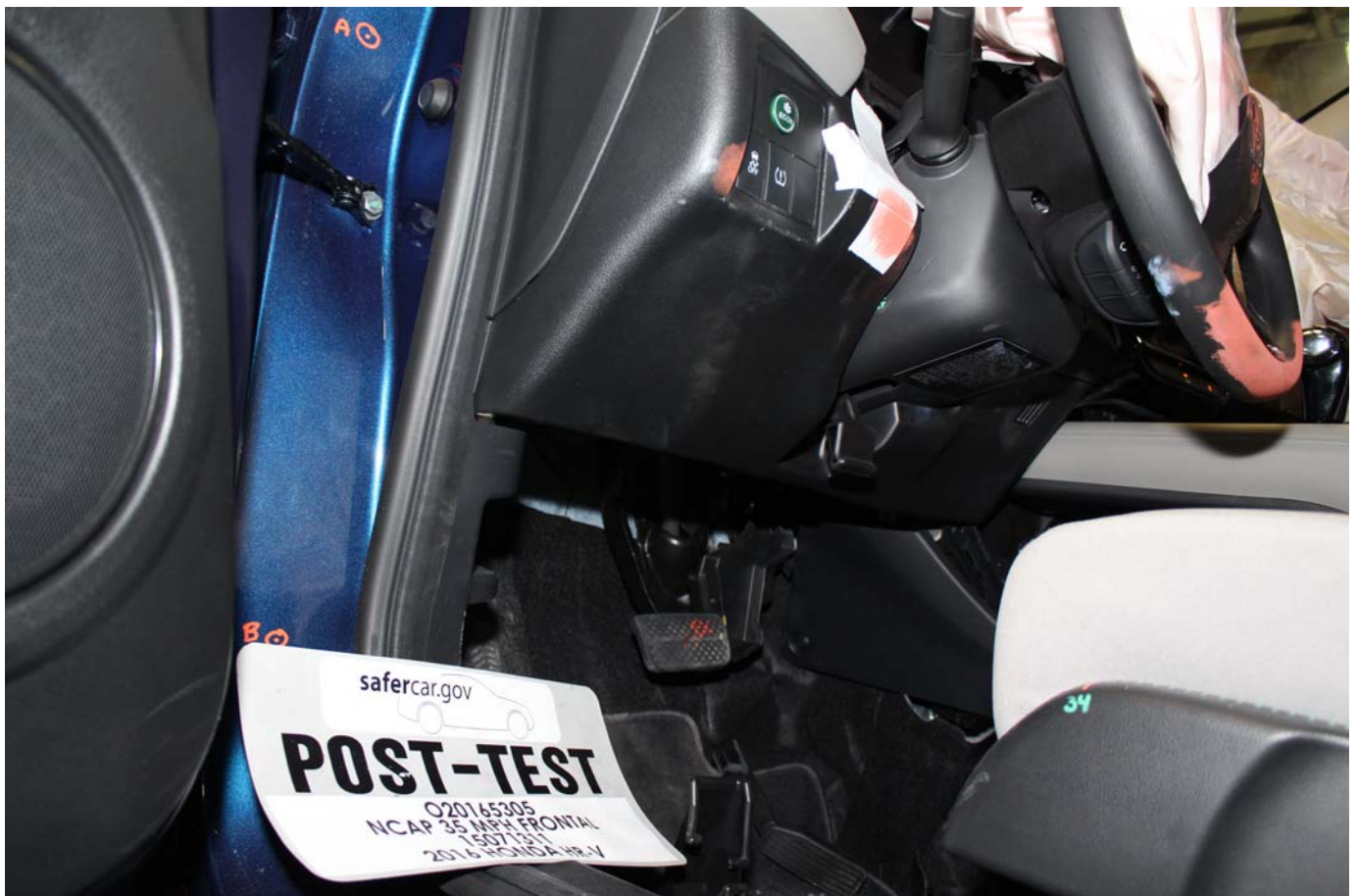


Photo No. 042 - Post-Test Driver's Side Knee Bolster (without dummy)



Photo No. 043 - Pre-Test Driver's Side Floorpan



Photo No. 044 - Post-Test Driver's Side Floorpan



Photo No. 045 - Post-Test Driver Dummy Face



Photo No. 046 - Post-Test Driver Dummy Contact with Airbag



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



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



Photo No. 047b - Post-Test Driver Dummy Contact with Knee Bolster



Photo No. 048 - Pre-Test View of the Steering Wheel



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



Photo No. 050 - Pre-Test Passenger Dummy Front View



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



Photo No. 052 - Pre-Test Passenger Dummy Window View



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



Photo No. 054 - Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



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



Photo No. 056 - Pre-Test Passenger's Seat Fore-Aft Markings



Photo No. 057 - Post-Test Passenger's Seat Fore-Aft Markings



Photo No. 058 - Pre-Test View of Belt Anchorage for Passenger Dummy



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



Photo No. 060 - Pre-Test Passenger Dummy Feet



Photo No. 061 - Post-Test Passenger Dummy Feet



Photo No. 062 - Pre-Test Passenger's Side Knee Bolster (without dummy)



Photo No. 063 - Post-Test Passenger's Side Knee Bolster (without dummy)



Photo No. 064 - Pre-Test Passenger's Side Floorpan



Photo No. 065 - Post-Test Passenger's Side Floorpan

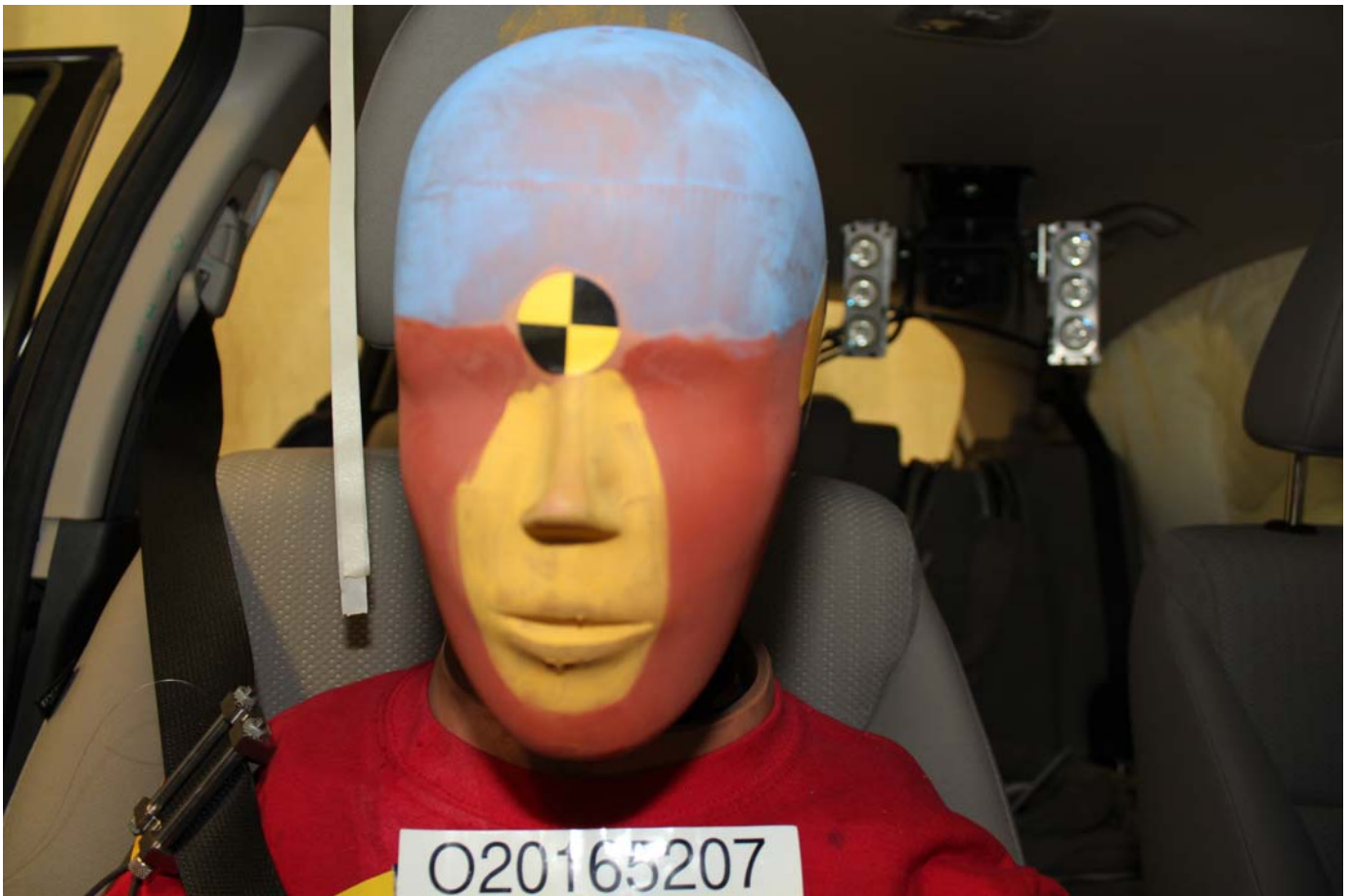


Photo No. 066 - Post-Test Passenger Dummy Face



Photo No. 067 - Post-Test Passenger Dummy Contact with Airbag



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



Photo No. 068a - Post-Test Passenger Dummy Contact with Glovebox

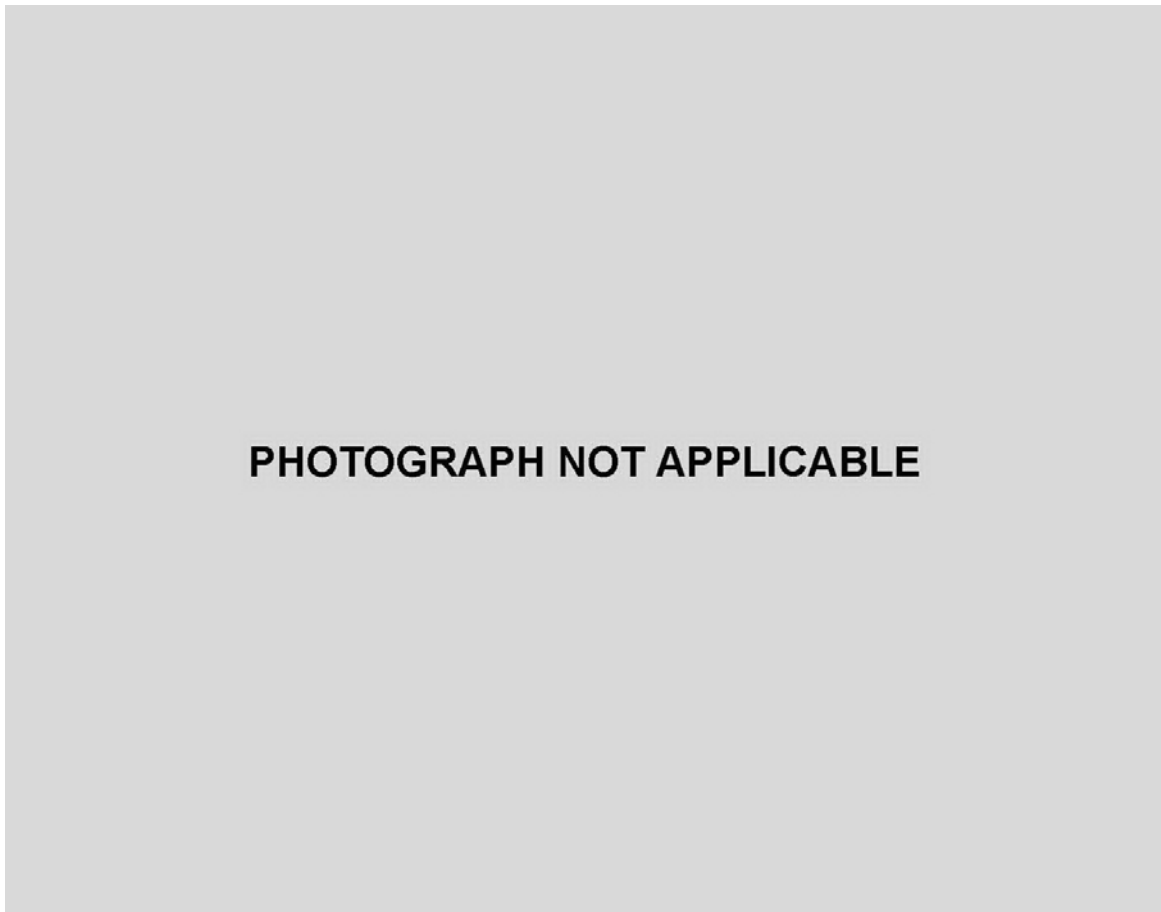


Photo No. 069 - Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

Photo No. 070 - Post-Test Stoddard Solvent Spillage Location View



Photo No. 071 - Post-Test Speed Trap Read-Out



Photo No. 072 - Vehicle at 0 Degree on Static Rollover Device

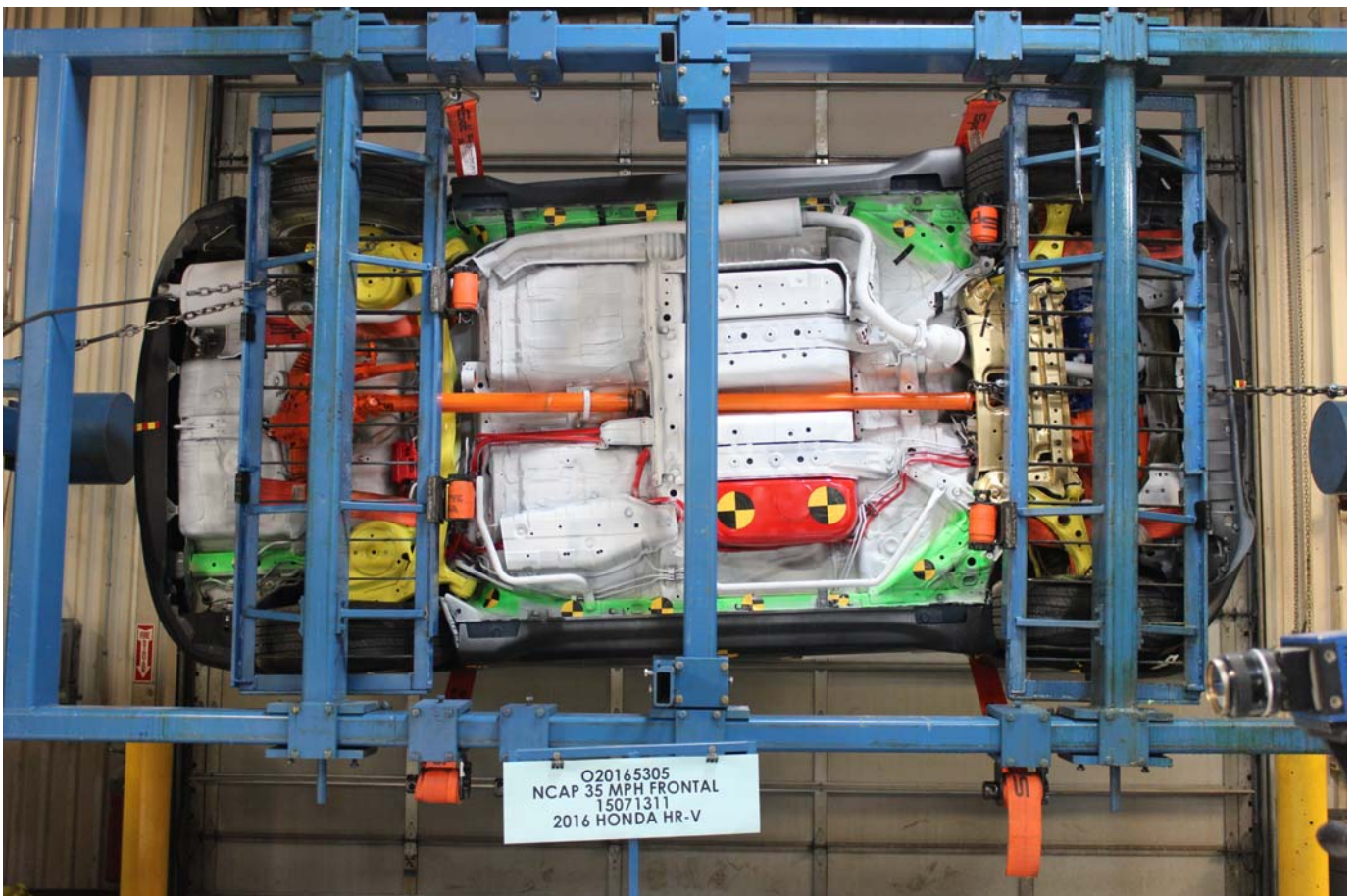


Photo No. 073 - Vehicle at 90 Degrees on Static Rollover Device

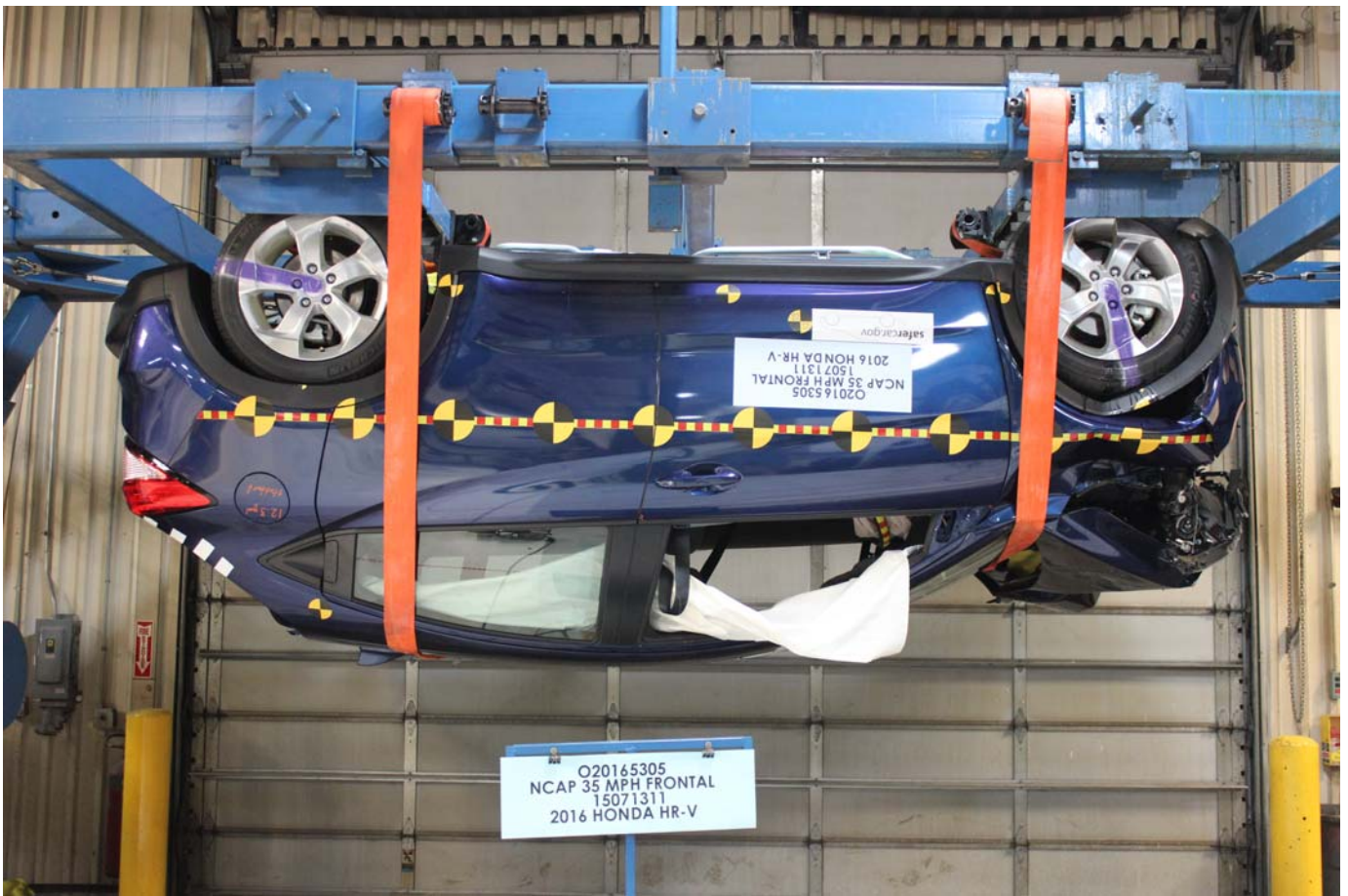


Photo No. 074 - Vehicle at 180 Degrees on Static Rollover Device

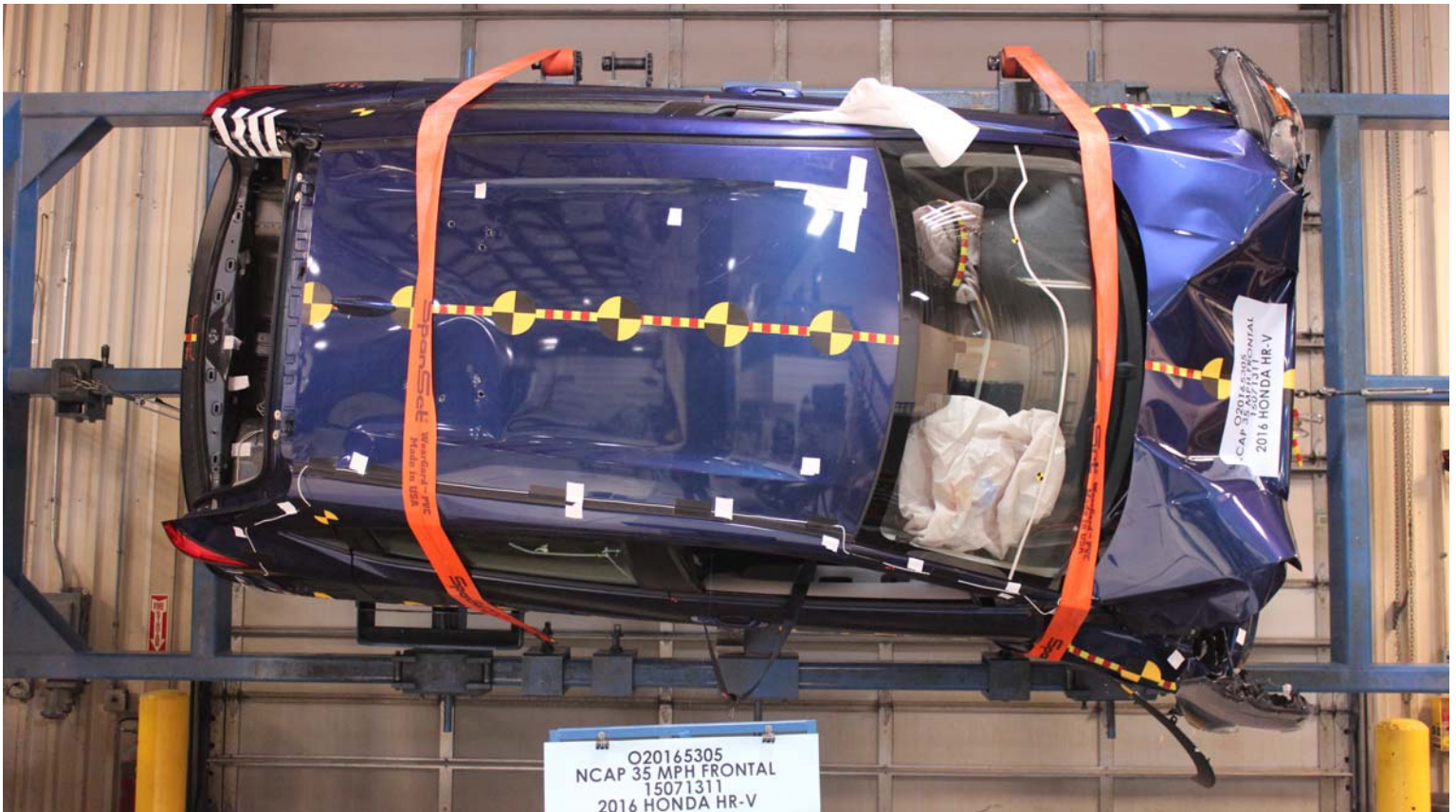


Photo No. 075 - Vehicle at 270 Degrees on Static Rollover Device



Photo No. 076 - Vehicle at 360 Degrees on Static Rollover Device



Photo No. 077 - 2016 Honda HR-V AWD LX Frontal Impact Event



2016 HR-V 5DR AWD LX

EXT: DEEP OCEAN P. ENGINE NUMBER: R1829-1021189
INT: GRAY

STANDARD EQUIPMENT AT NO EXTRA COST

- TECHNICAL FEATURES ***
 - 141hp 1.8-Liter SOHC 16-Valve i-VTEC 4-Cylinder Engine
 - Continuously Variable Transmission (CVT)
 - Real Time AWD with Intelligent Control System
 - 4-Wheel Disc Brakes
 - Front MacPherson Strut Suspension
 - Drive-by-Wire Throttle System
 - Electric Power-Assisted Rack-and-Pinion Steering
 - Hill Start Assist
- SAFETY FEATURES ***
 - Driver's and Front Passenger's Dual-Stage Airbags (SRS)
 - Driver's and Front Passenger's Side Airbags
 - Side Curtain Airbags with Roll-over Sensor
 - Vehicle Stability Assist (VSA)
 - Anti-Lock Braking System (ABS)
 - Brake Assist
 - Electronic Brake Distribution (EBD)
 - Tire Pressure Monitoring System
 - ACE Body Structure
 - Side-Impact Door Beams
 - Daytime Running Lights (DRL)
 - LATCH System for Child Seats

- INTERIOR FEATURES ***
 - AM/FM/CD Audio System with 4 Speakers
 - 5-Inch Color LCD Screen w/ Multi-View Rear Camera
 - Bluetooth Audio
 - Bluetooth HandsFreeLink
 - USB Audio Interface
 - Auxiliary Input Jack
 - Steering Wheel-Mounted Controls
 - Air Conditioning with All Filtration System
 - Center Storage Console w/ Armrest
 - 60/40 Split 2nd-Row Magic Seat
 - Power Windows and Programmable Auto Door Locks
 - Driver's Auto Up/Down Window
 - Tilt & Telescopic Steering Column
 - Map Lights
 - Cargo Area Light
 - Visor Vanity Mirrors
 - Cruise Control
 - 12-Volt Power Outlets
 - Exterior Temperature Display
 - Rear Mirrors
 - Electric Parking Brake
- EXTERIOR FEATURES ***
 - 17" X 7.5" Alloy Wheels
 - P215/55 R17 All-Season Tires
 - Intermittent Windshield Wipers
 - Auto-off Headlights
 - Expanded View Driver's Mirror
 - Body-Colored Power Door Mirrors
 - LED Taillights
 - Remote Entry with Security System
 - Tailgate Spoiler

Manufacturer's Suggested Retail Price **\$21,165.00**
Full Tank of Fuel **No Charge**

Honda Roadside Assistance 3YRS/36K Mile Warranty Term
For more information please visit: <http://owners.honda.com/vehicles/roadside-assistance>

Destination and Handling **880.00**

TOTAL VEHICLE PRICE \$22,045.00
(Includes Pre-Delivery Service)

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

3 Miles
5/15
Hc14330

MULLER HONDA OF GURNEE
7000 GRAND AVENUE
GURNEE, IL 60031
PORT OF ENTRY: EL PASO
DELIVERY POINT: SCHAUMBURG
SHIP#:
ROW/SPACE: 928-011
TRANS METHOD: N50 ELWOOD
VIN: 3CZRU6H35GM709697

ORIG. DLR: 208663
REF. NO: 40030
HN CODE: HN-3901
EMISSION: 50 STATE
CONTROL NO: 626768
DEALER: 208663



EPA Fuel Economy and Environment

Gasoline Vehicle

Fuel Economy 29 MPG
Small SUVs range from 17 to 33 MPG. The best vehicle rates 119 MPG.
combined city/hwy 27 32
3.4 gallons per 100 miles

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

Annual fuel cost \$1,550

Fuel Economy & Greenhouse Gas Rating (tailpipe only) **7**
Smog Rating (tailpipe only) **5**
Best 1 10 Best 1 10 Best
This vehicle emits 309 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fuelconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 26 MPG and costs \$9,386 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.00 per gallon. MPG is miles per gallon (urban equivalent). Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
U.S./Canadian Parts Content: **10 %**
Major Sources of Foreign Parts Content:
MEXICO 60 %
JAPAN 20 %

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

FOR THIS VEHICLE
Final Assembly Point:
CELAYA, GUANAJUATO MEXICO
Country of Origin: Engine:
JAPAN
Transmission:
JAPAN

GOVERNMENT 5-STAR SAFETY RATING

Overall Vehicle Score Not Rated

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

Frontal Crash Driver **Not Rated**
Passenger **Not Rated**

Side Crash Front seat **Not Rated**
Rear seat **Not Rated**

Rollover **Not Rated**

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

Photo No. 078 - Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

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List of Data Plots Provided in the Test Report

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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
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Figure No. 11.	Driver Neck Force Z vs. Time	B-4
Figure No. 12.	Driver Neck Moment Y vs. Time	B-4
Figure No. 13.	Driver Nij (NTF) vs. Time	B-5
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
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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

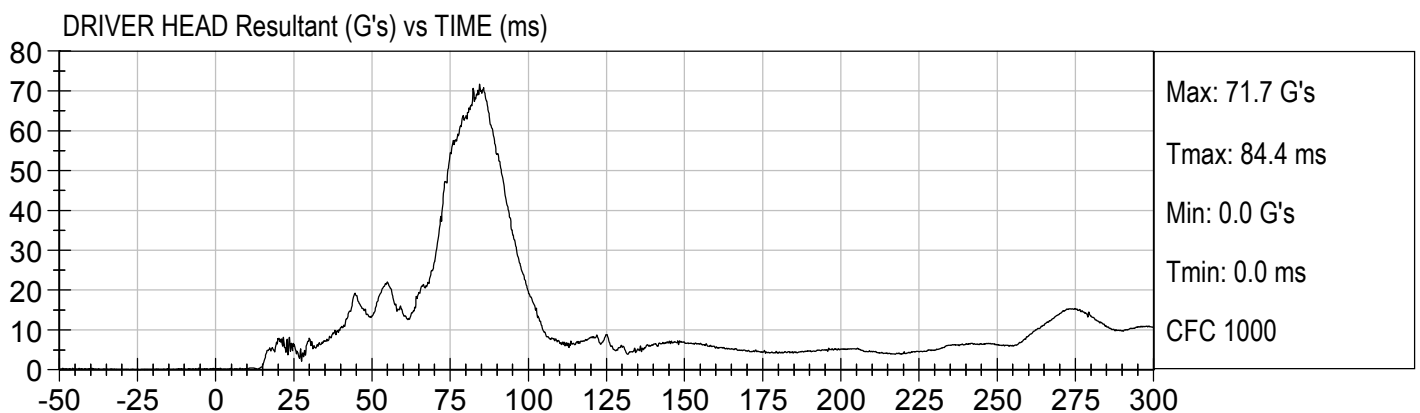
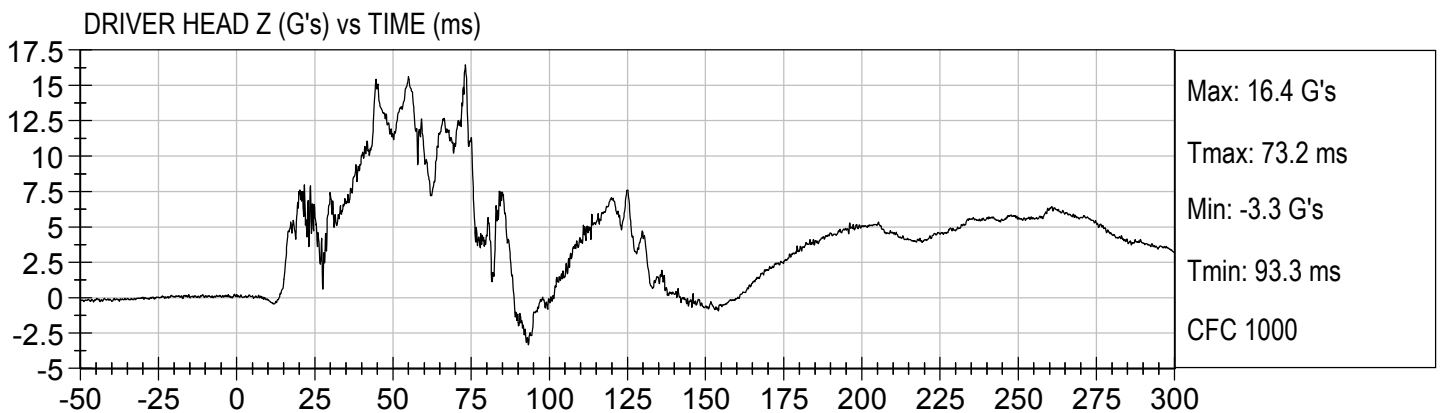
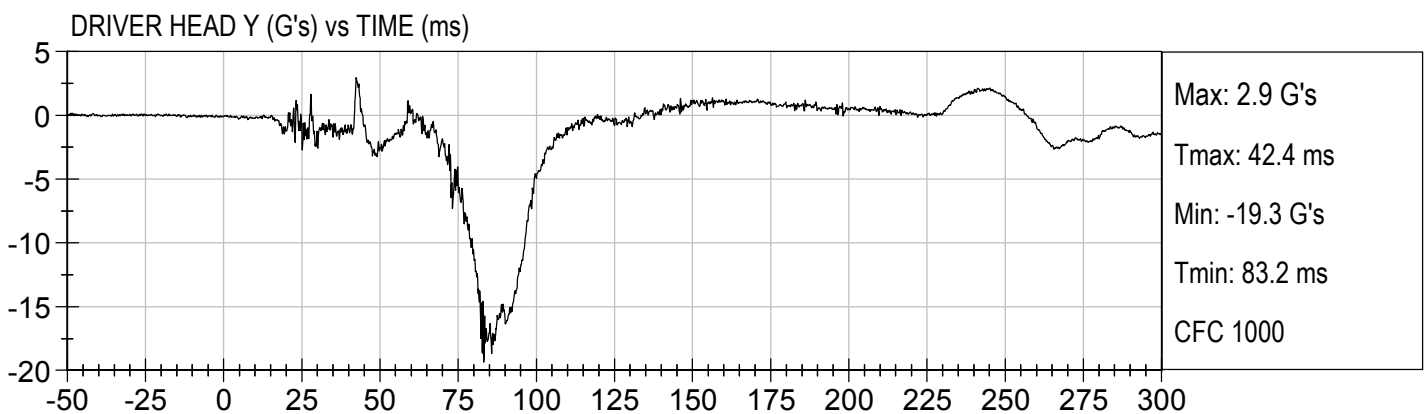
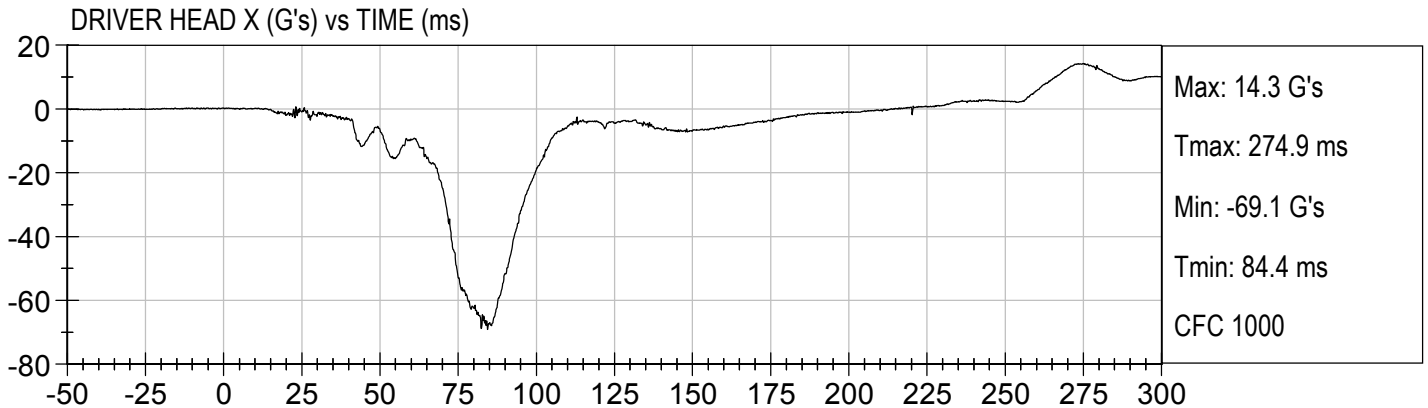
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Figure No. 29. Passenger Neck Force Z vs. Time	B-10
Figure No. 30. Passenger Neck Moment Y vs. Time	B-10
Figure No. 31. Passenger Nij (NTF) vs. Time	B-11
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Figure No. 33. Passenger Nij (NCF) vs. Time	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

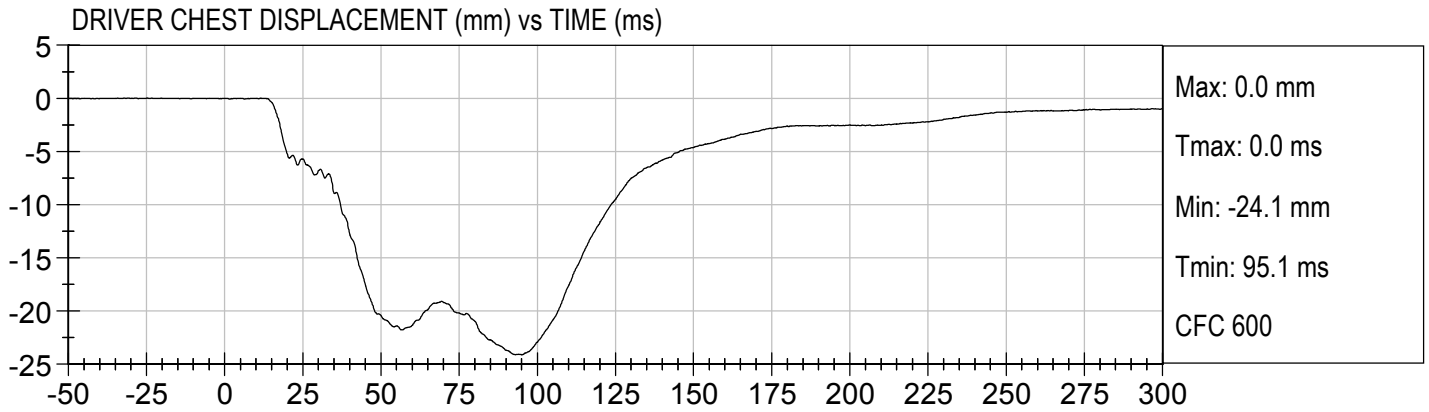
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

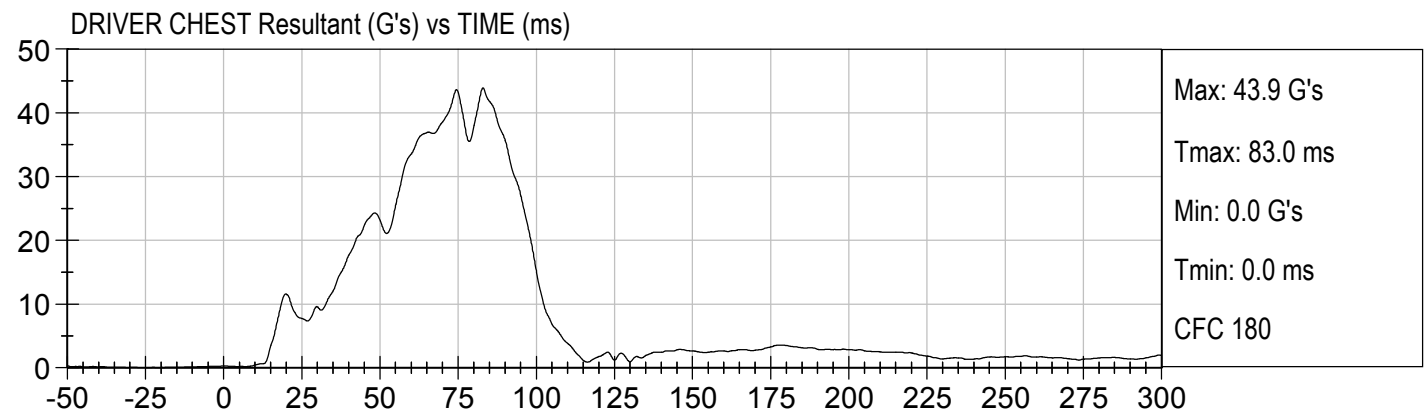
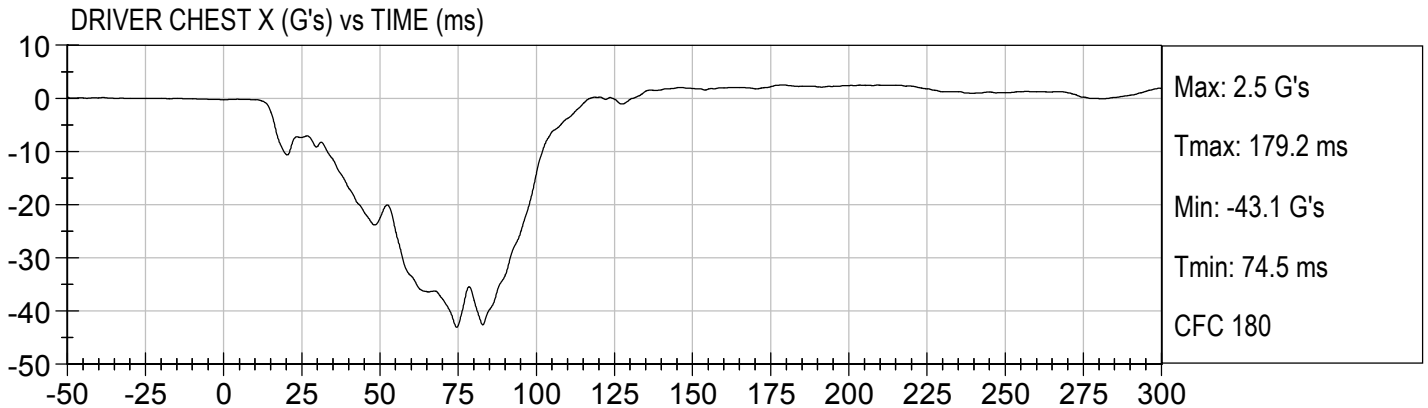
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 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Head Angular Velocity X
 Driver Head Angular Velocity Y
 Driver Head Angular Velocity Z
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 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

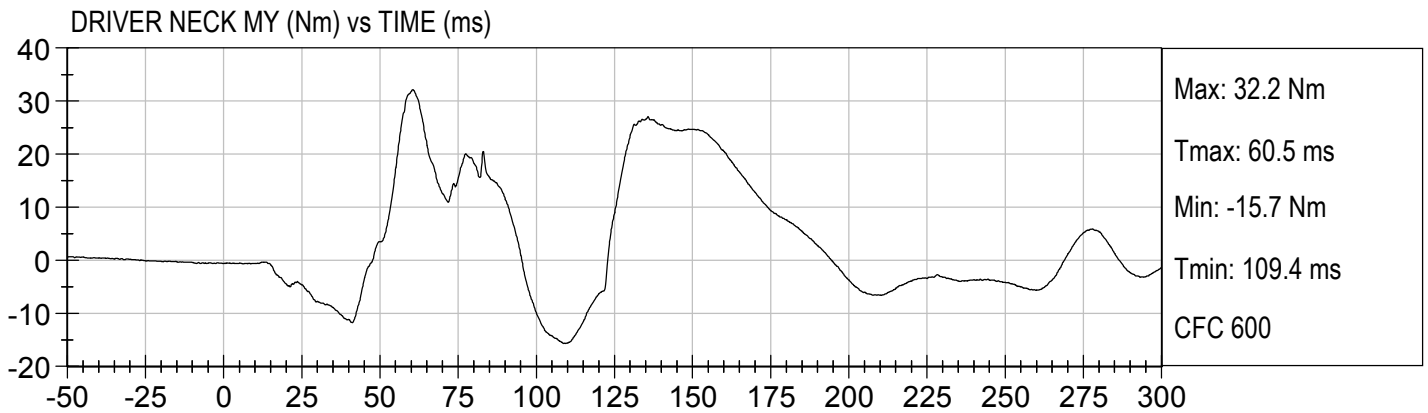
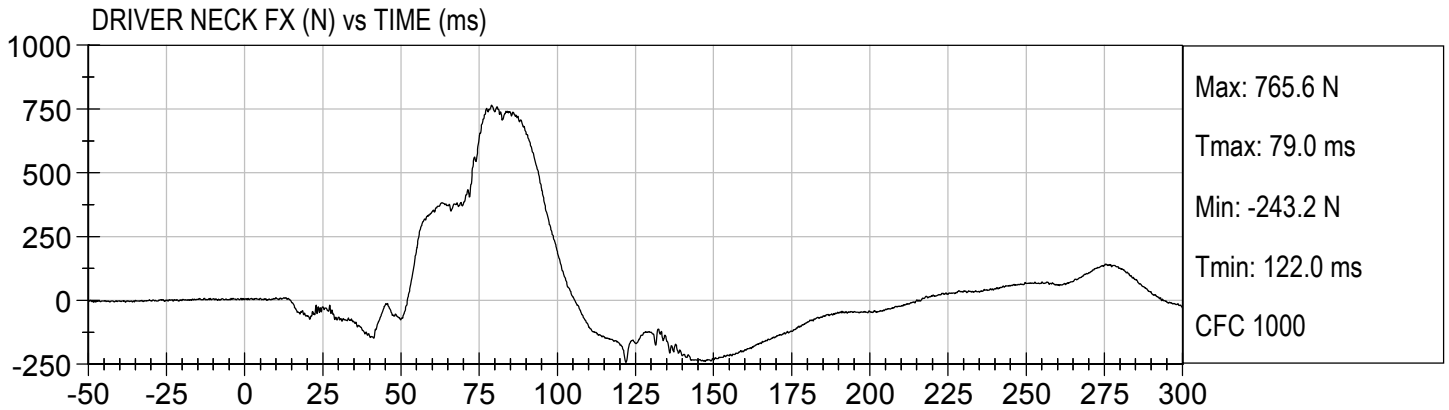
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Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
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Driver Right Lower Tibia Moment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

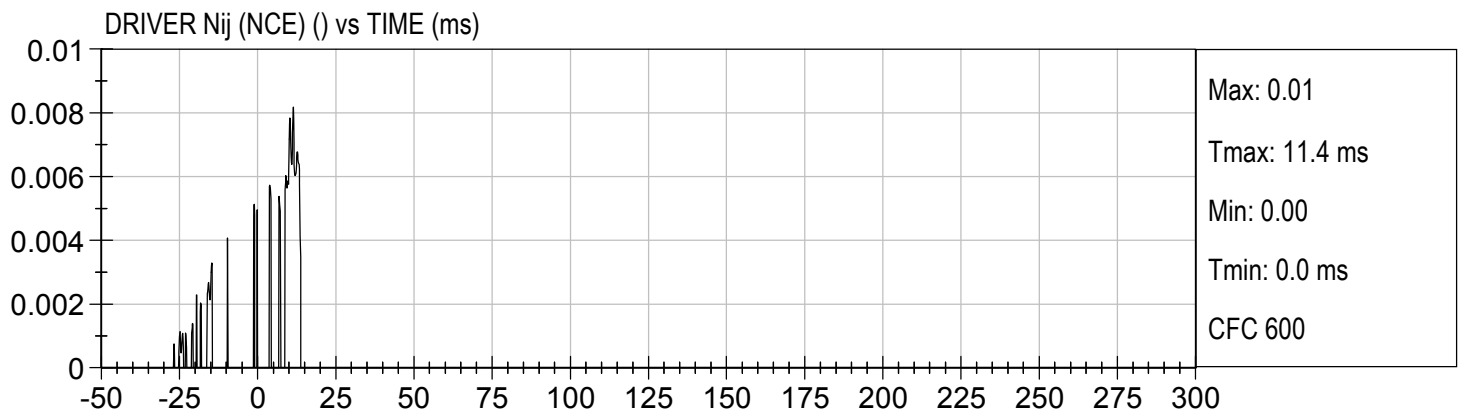
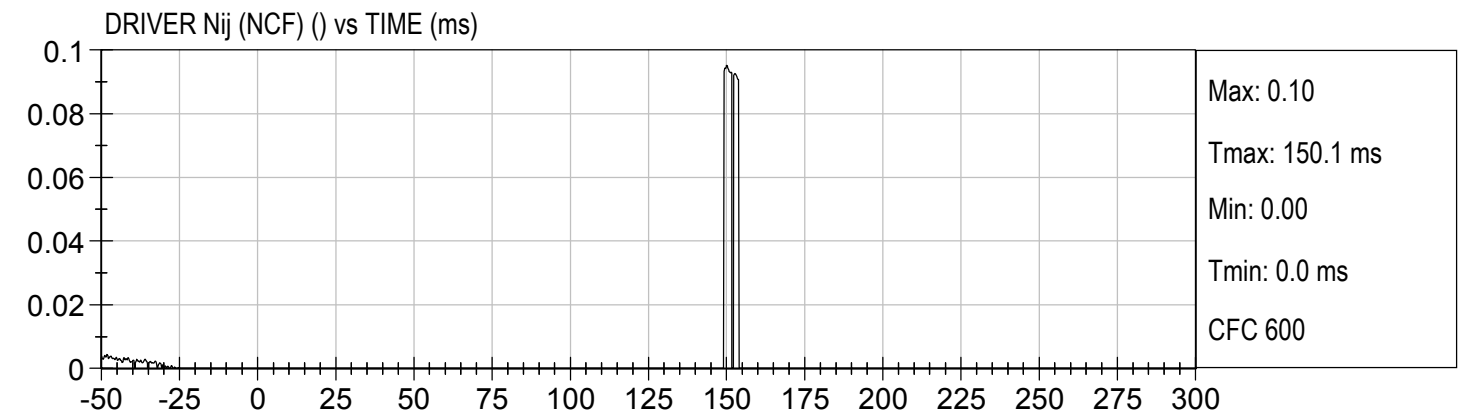
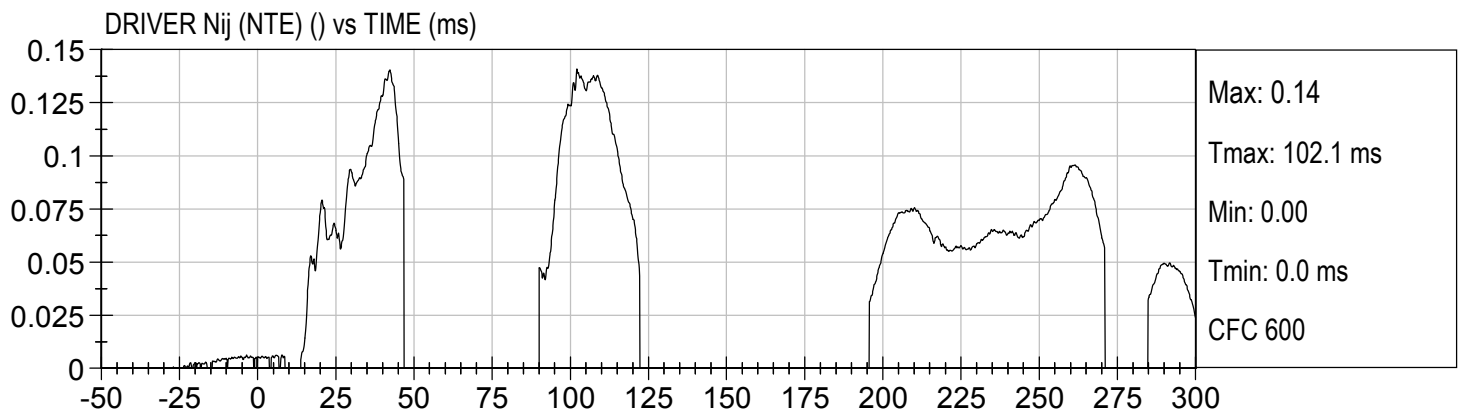
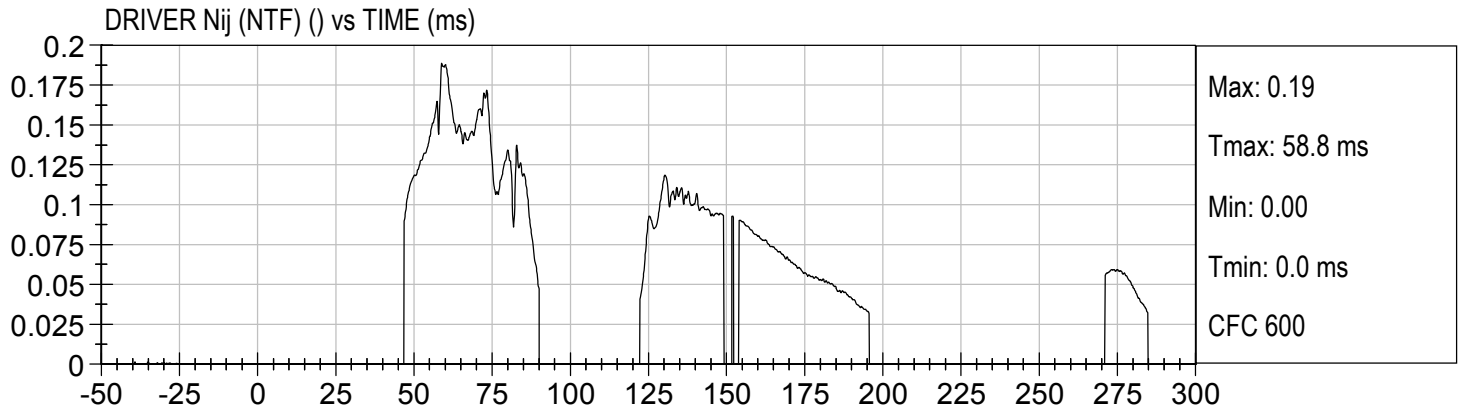
Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger 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

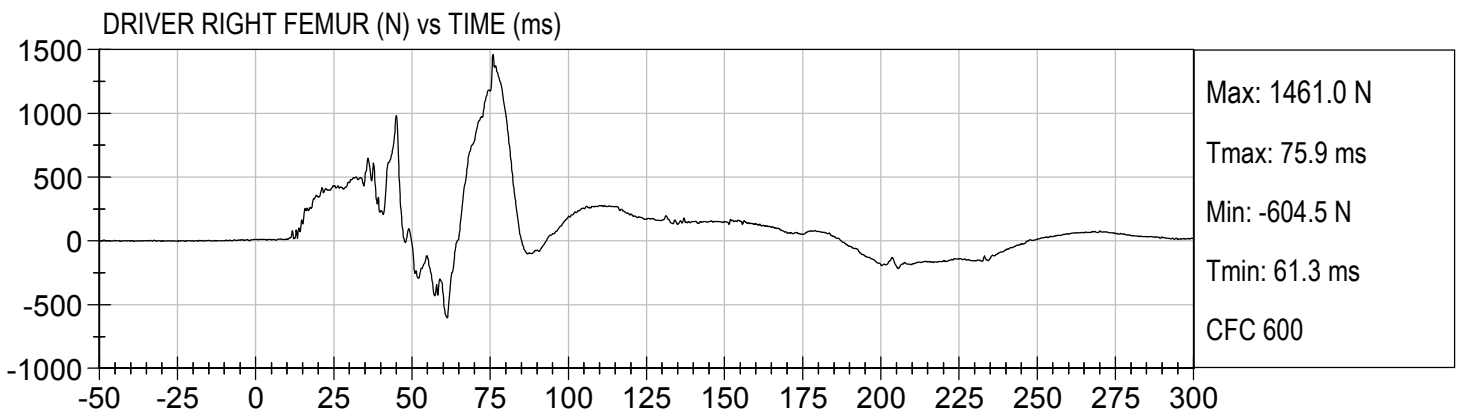
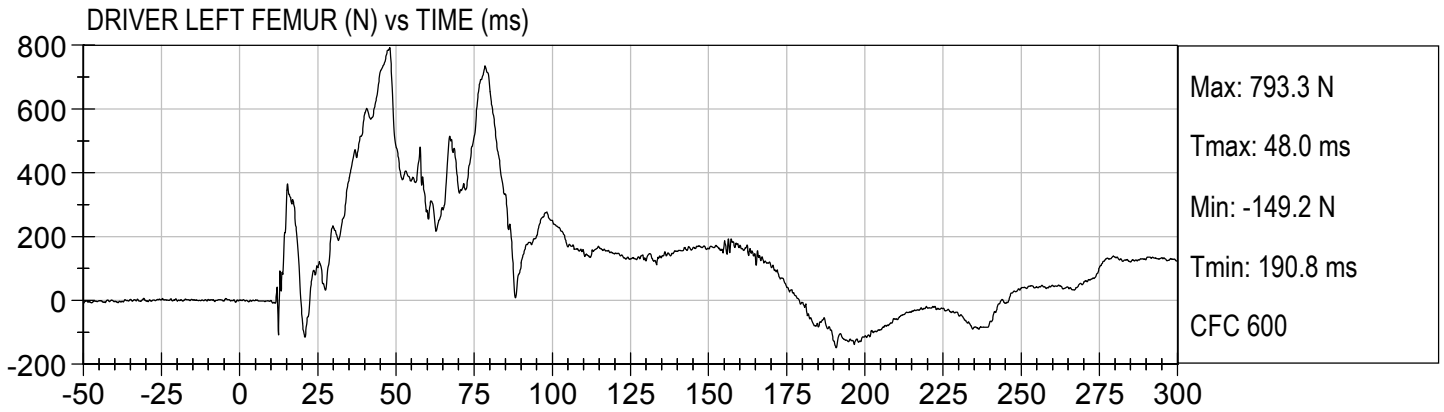


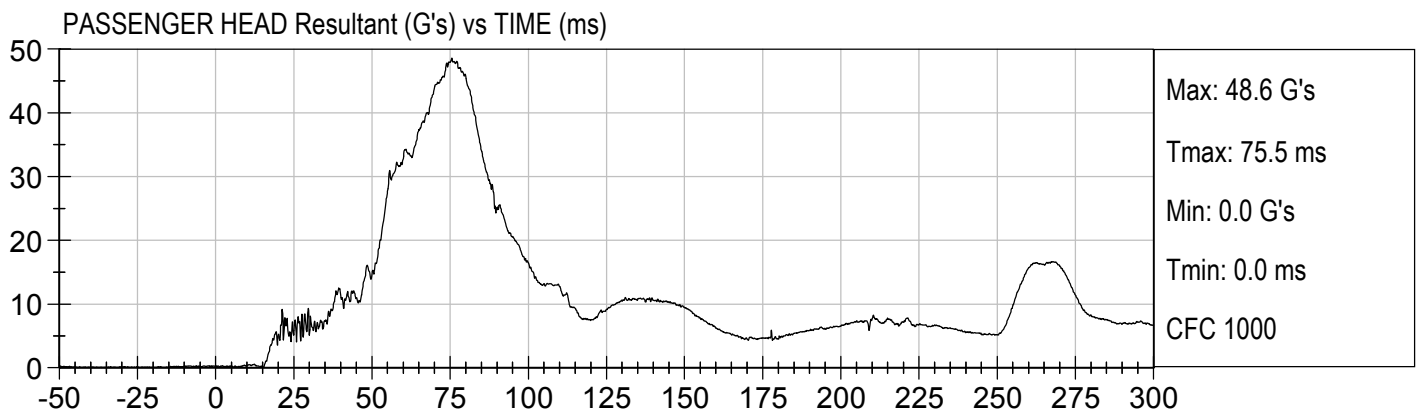
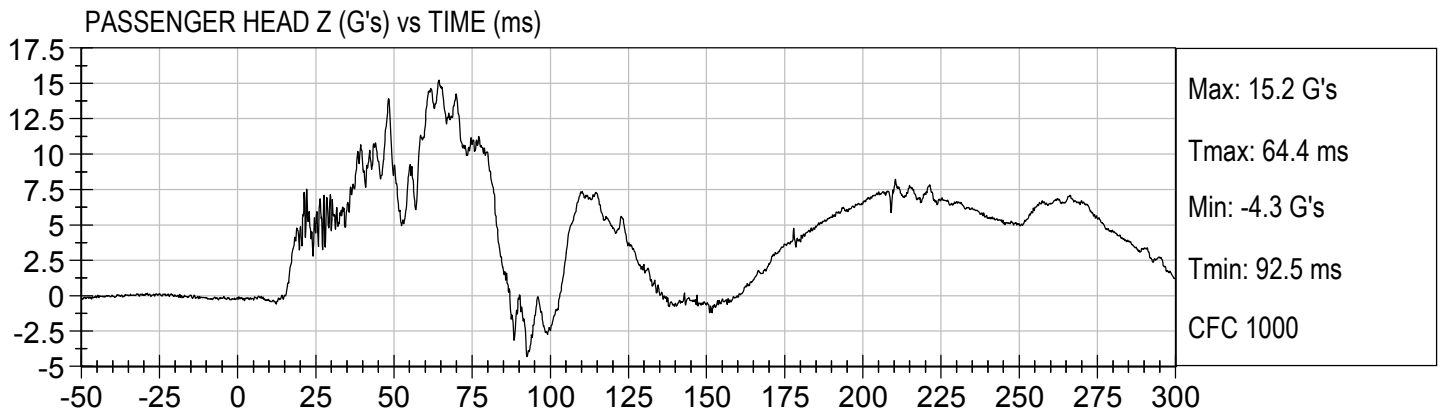
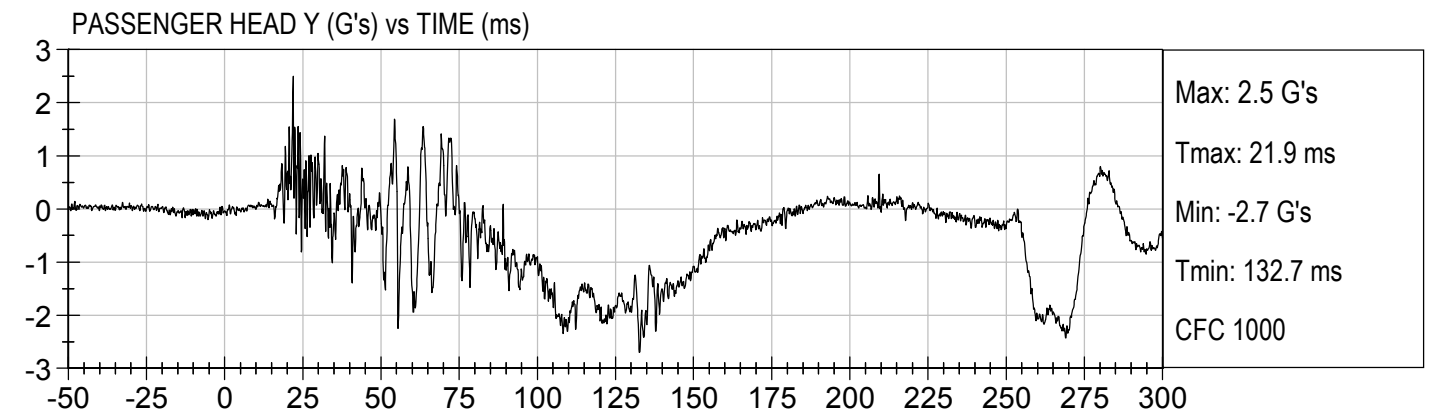
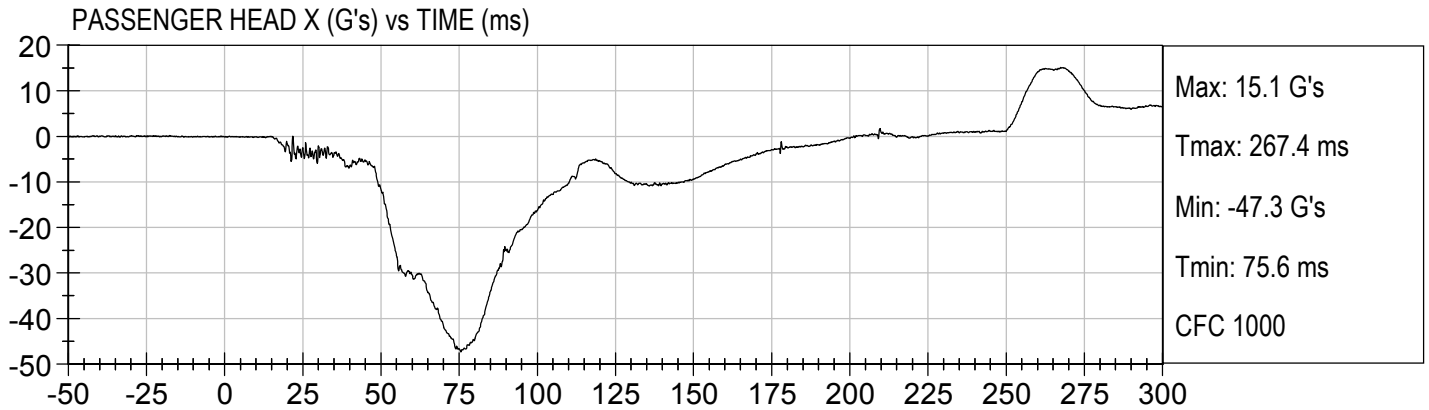


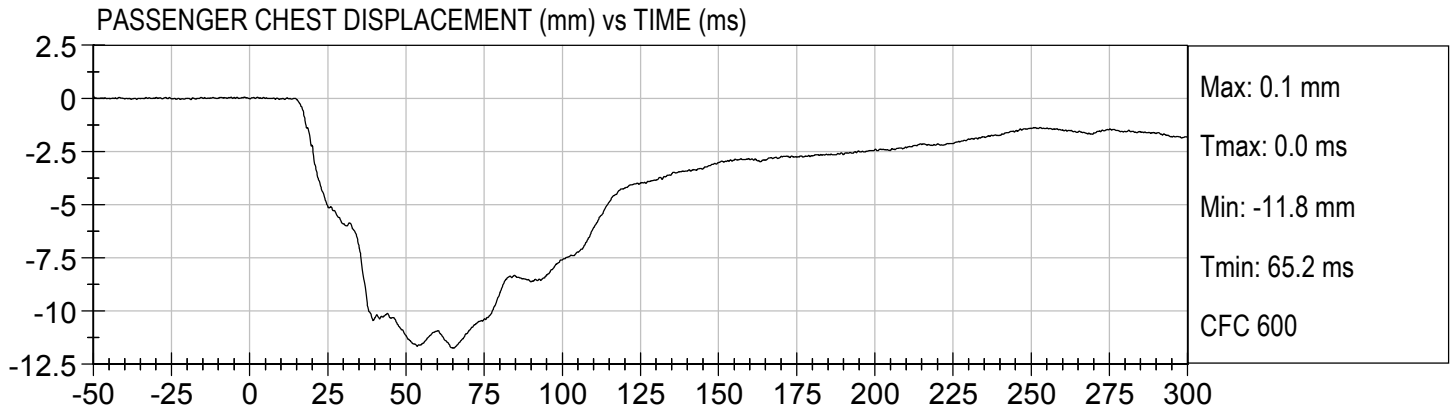


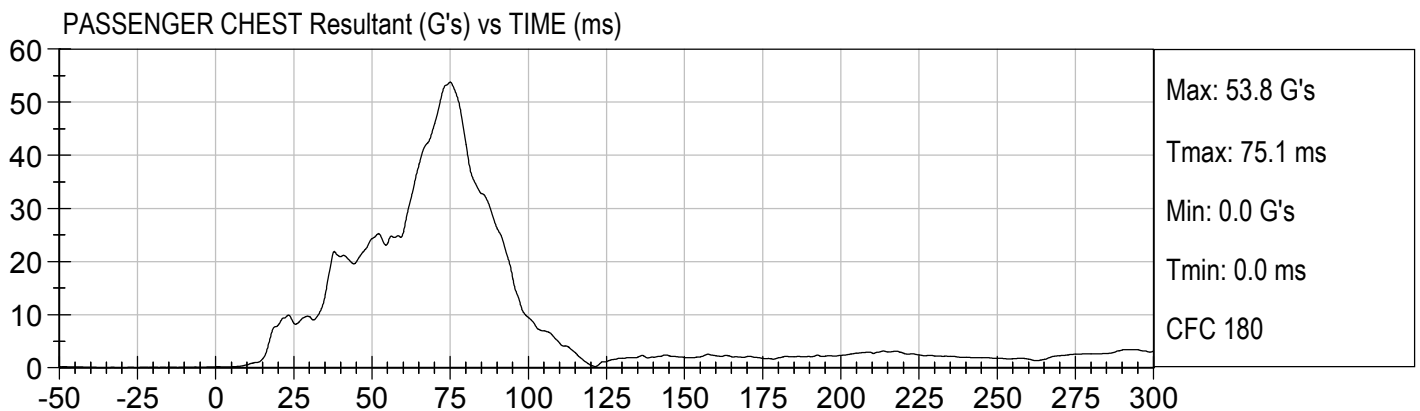
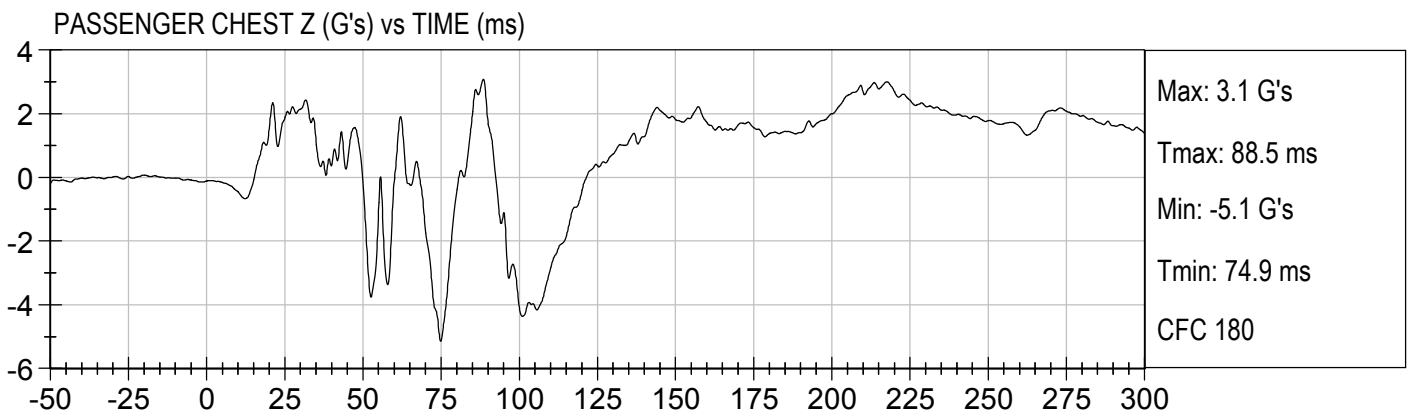
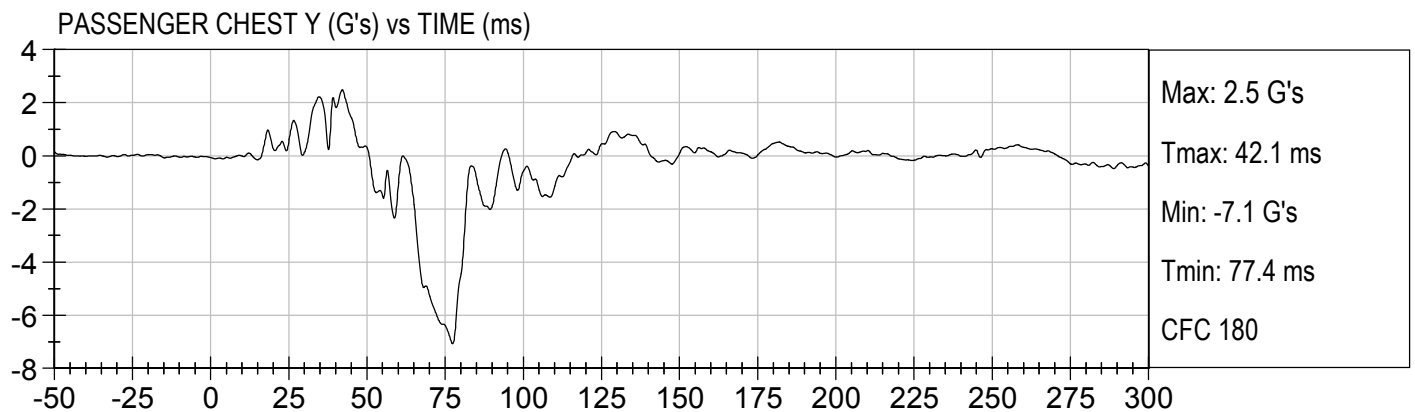
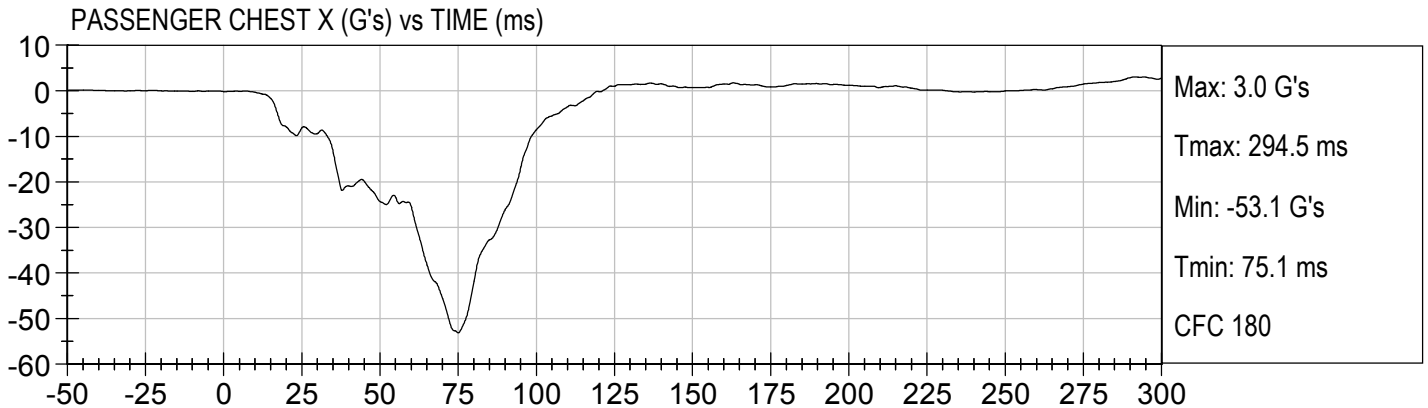


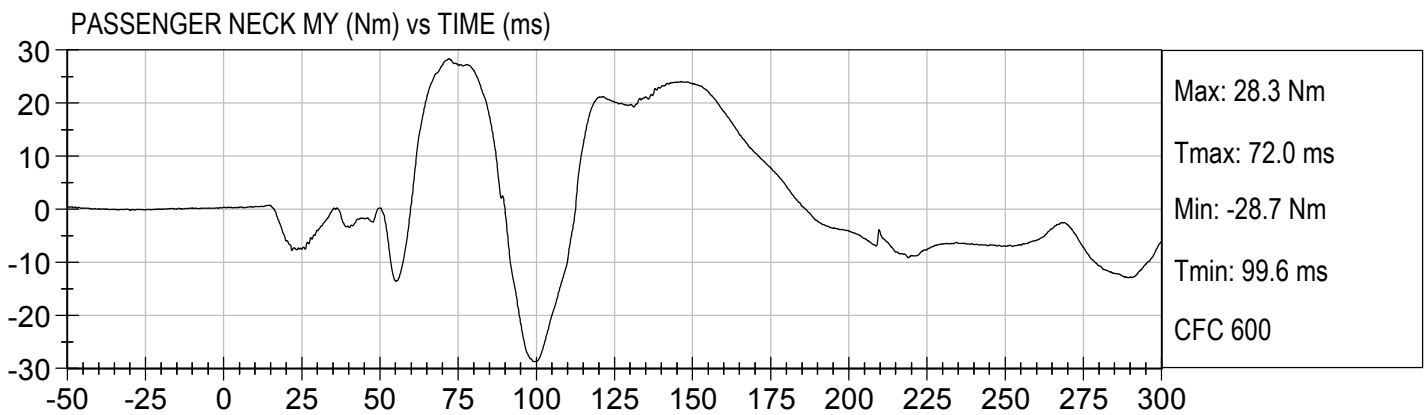
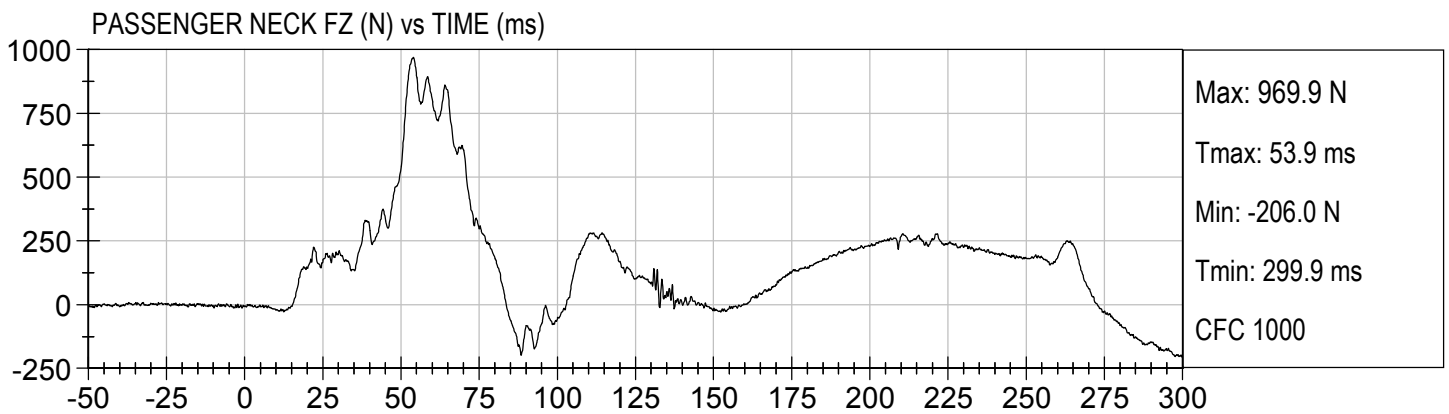
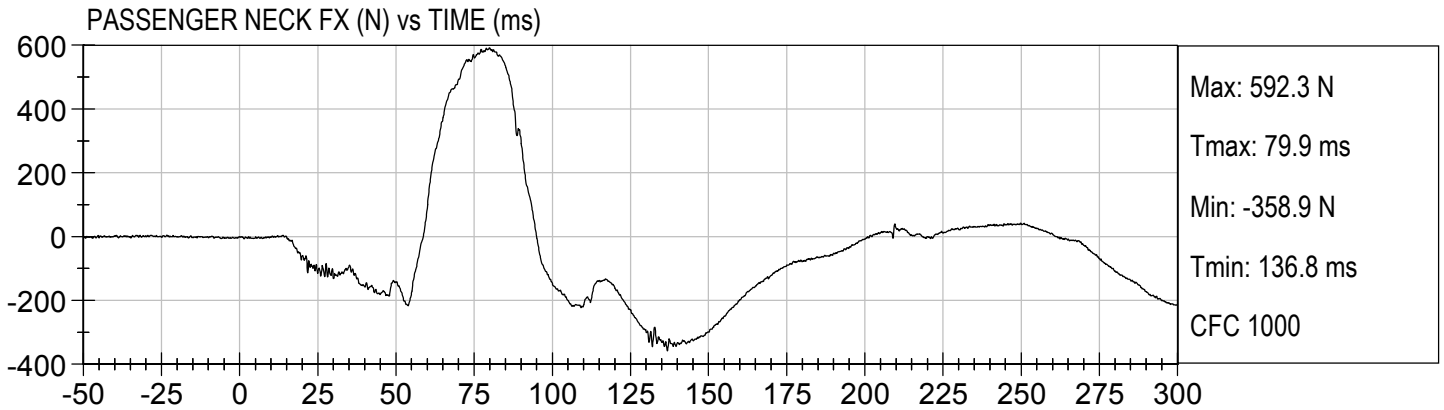


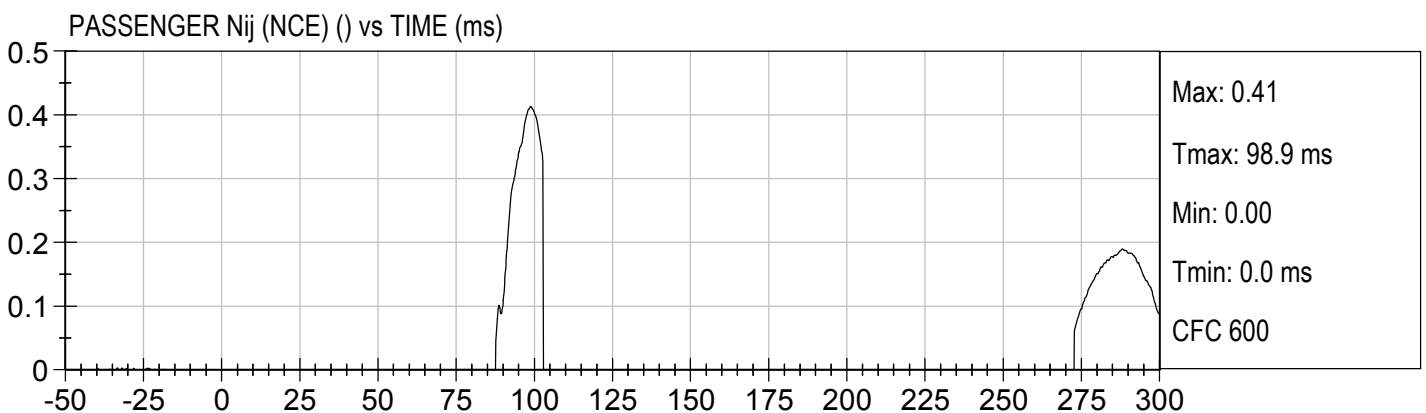
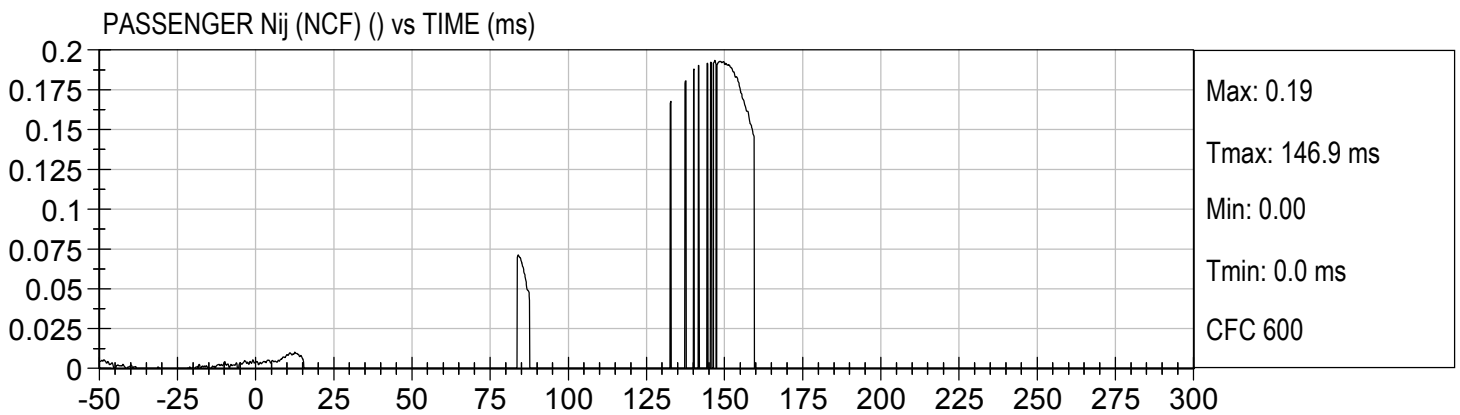
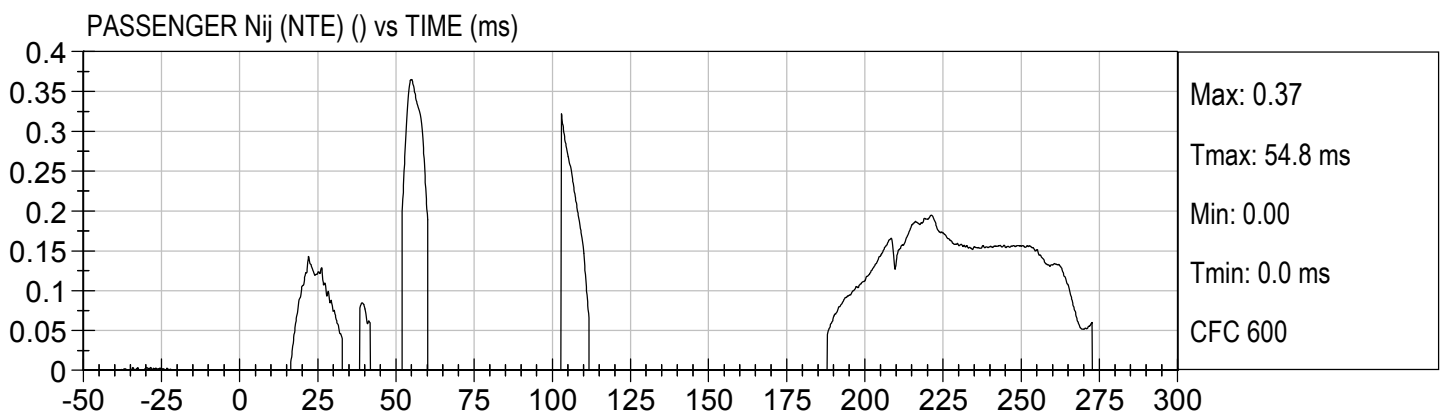
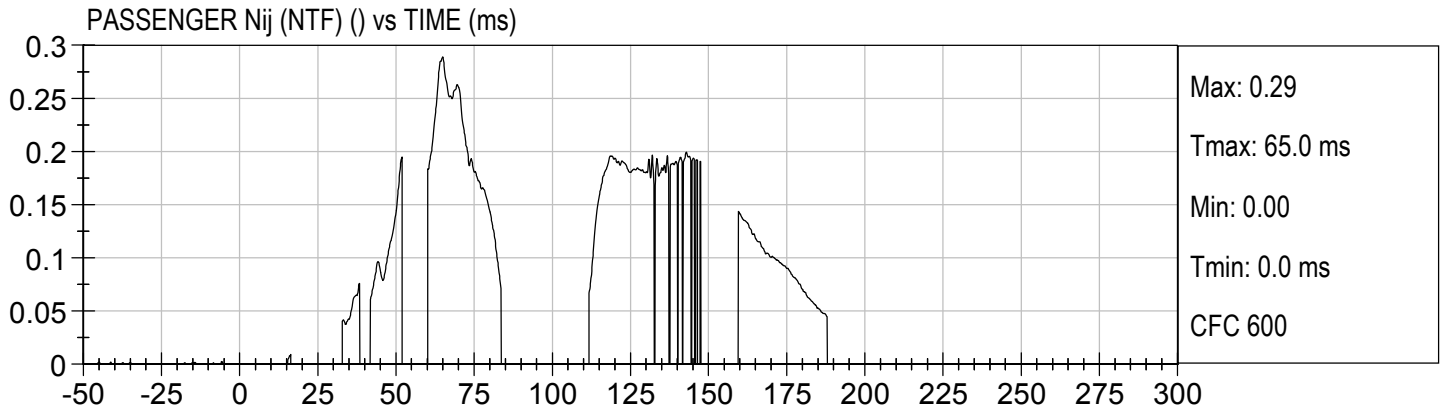


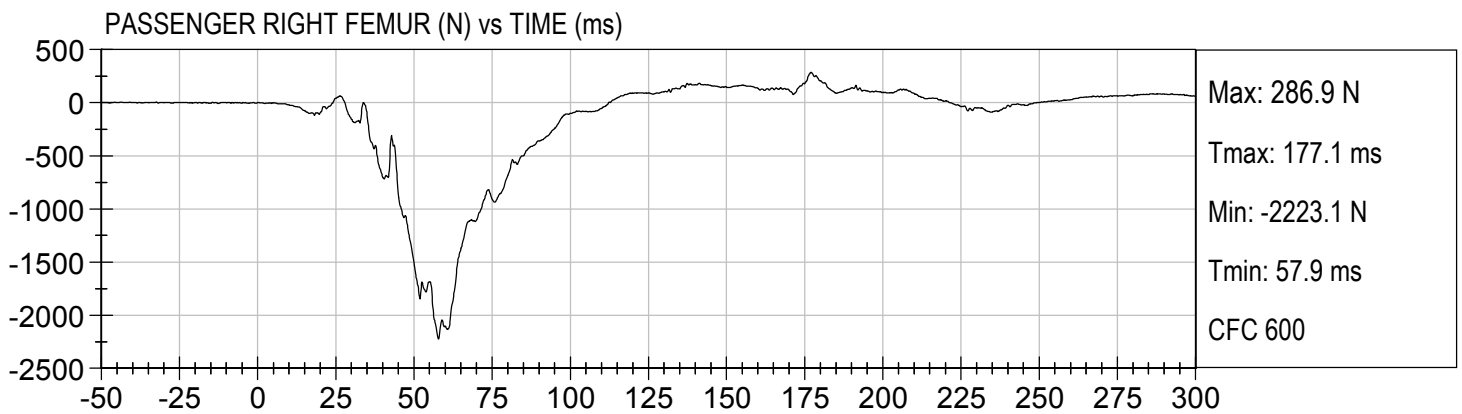
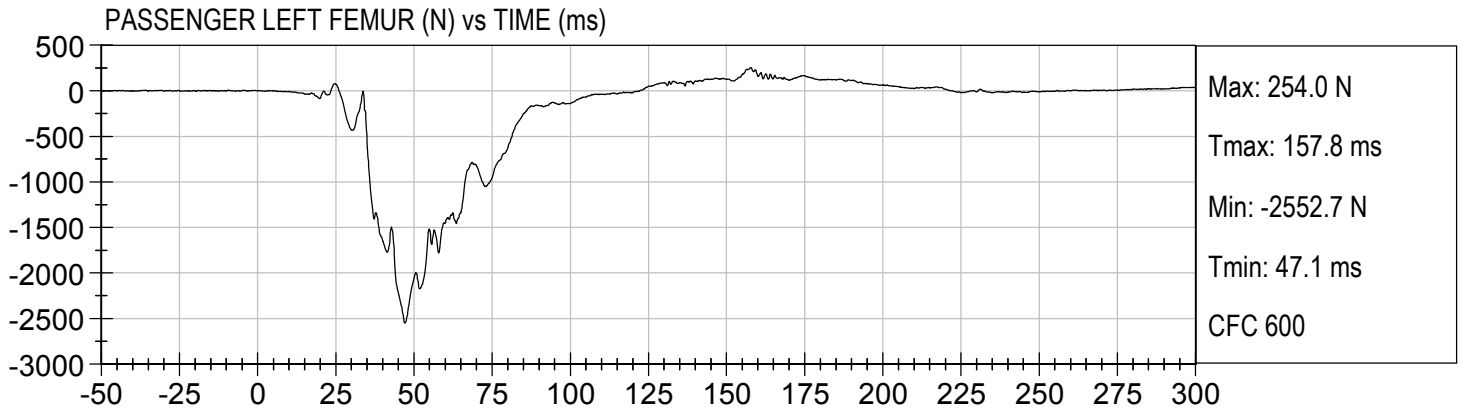












APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

**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: D152021

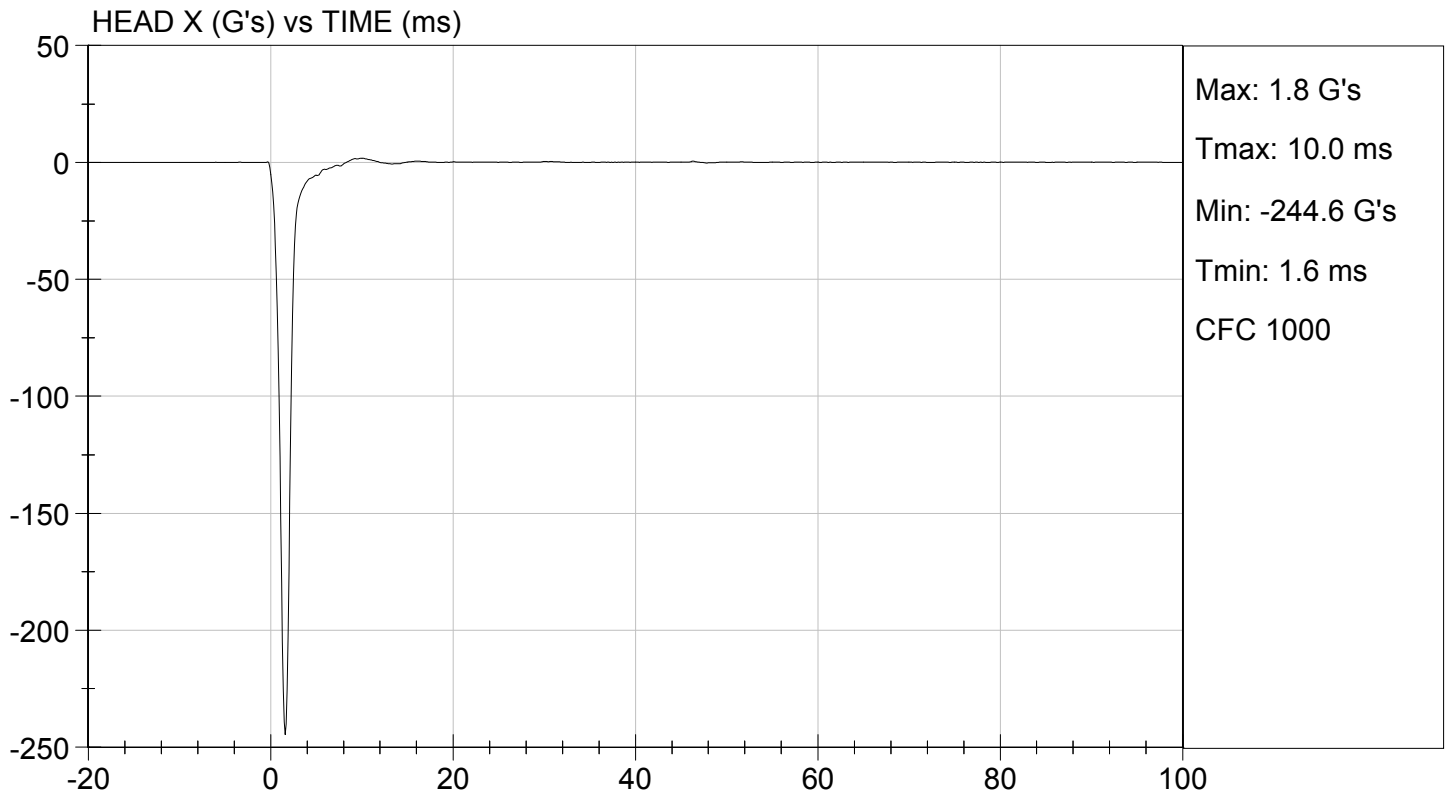
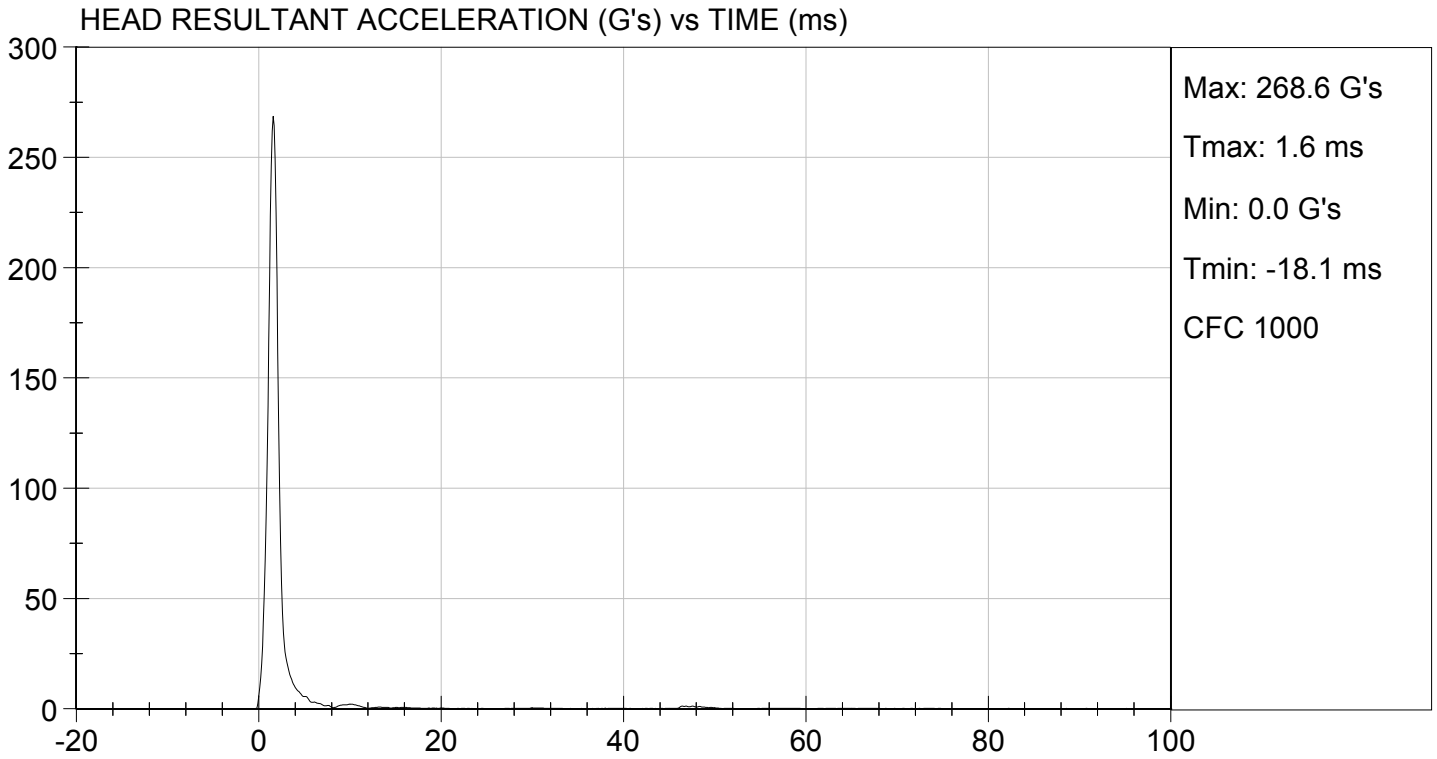
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Peak Resultant Acceleration	G's	225 to 275	269	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	6.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

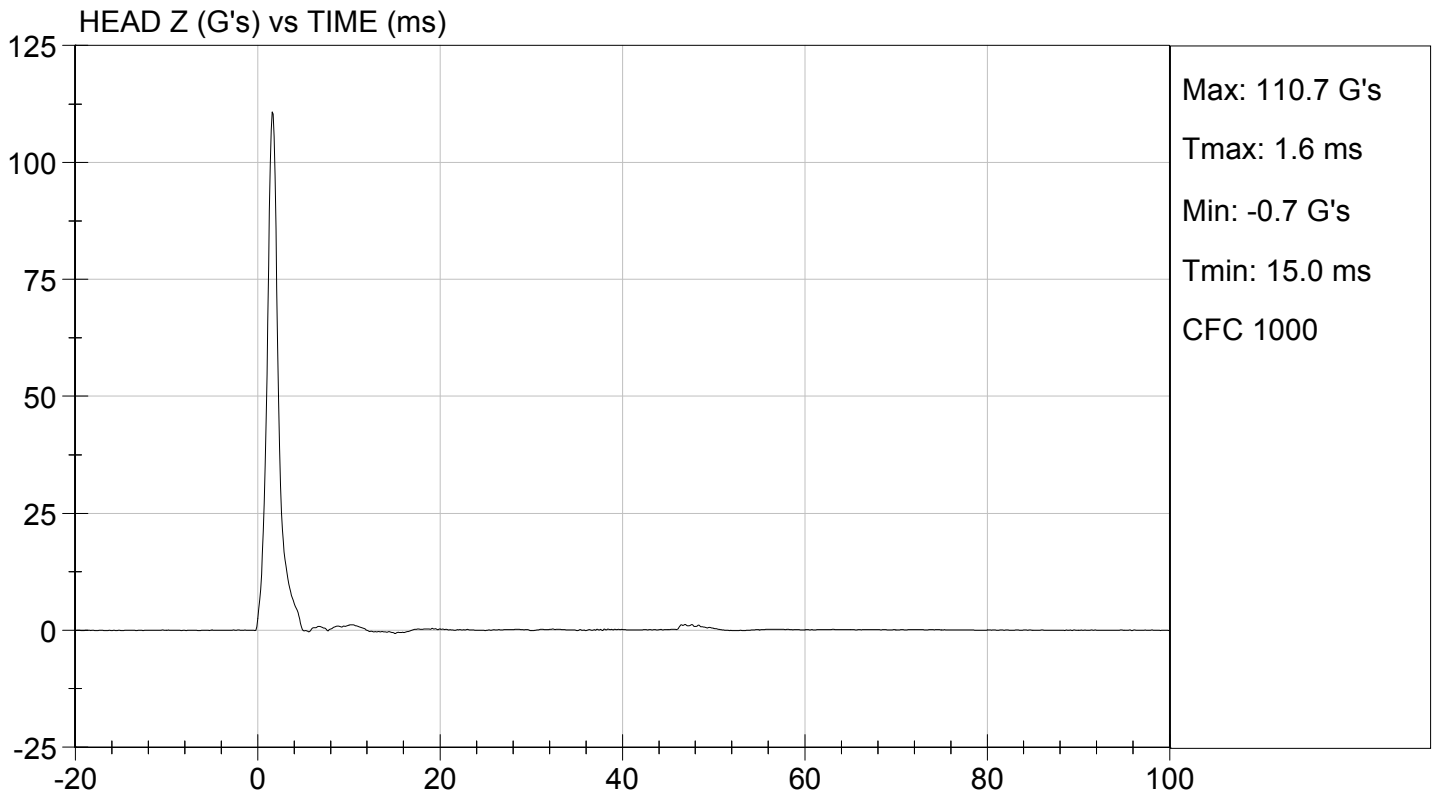
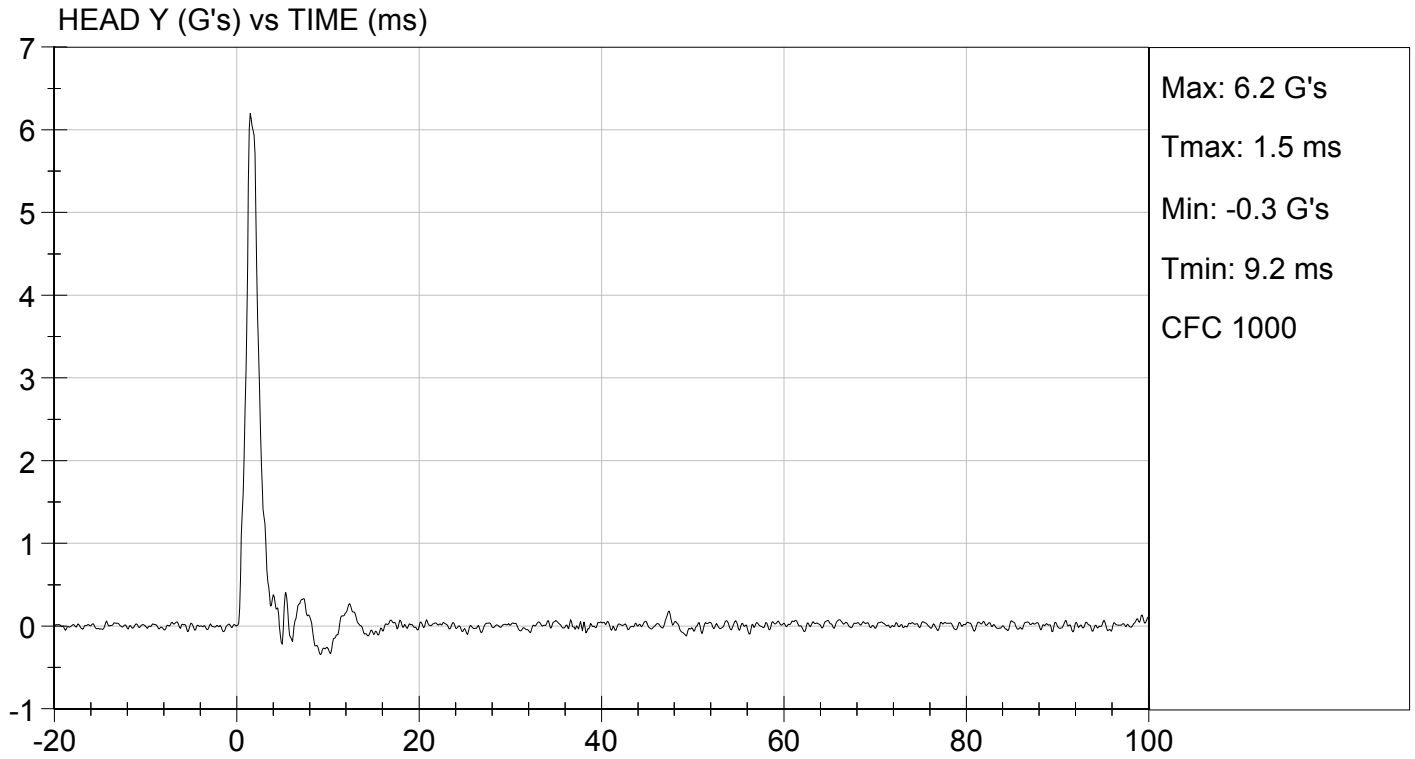
David Schoedel
Laboratory Technician

07/10/2015

Test Date

Jessica Hall
Approved By





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

ATD Serial No: 351

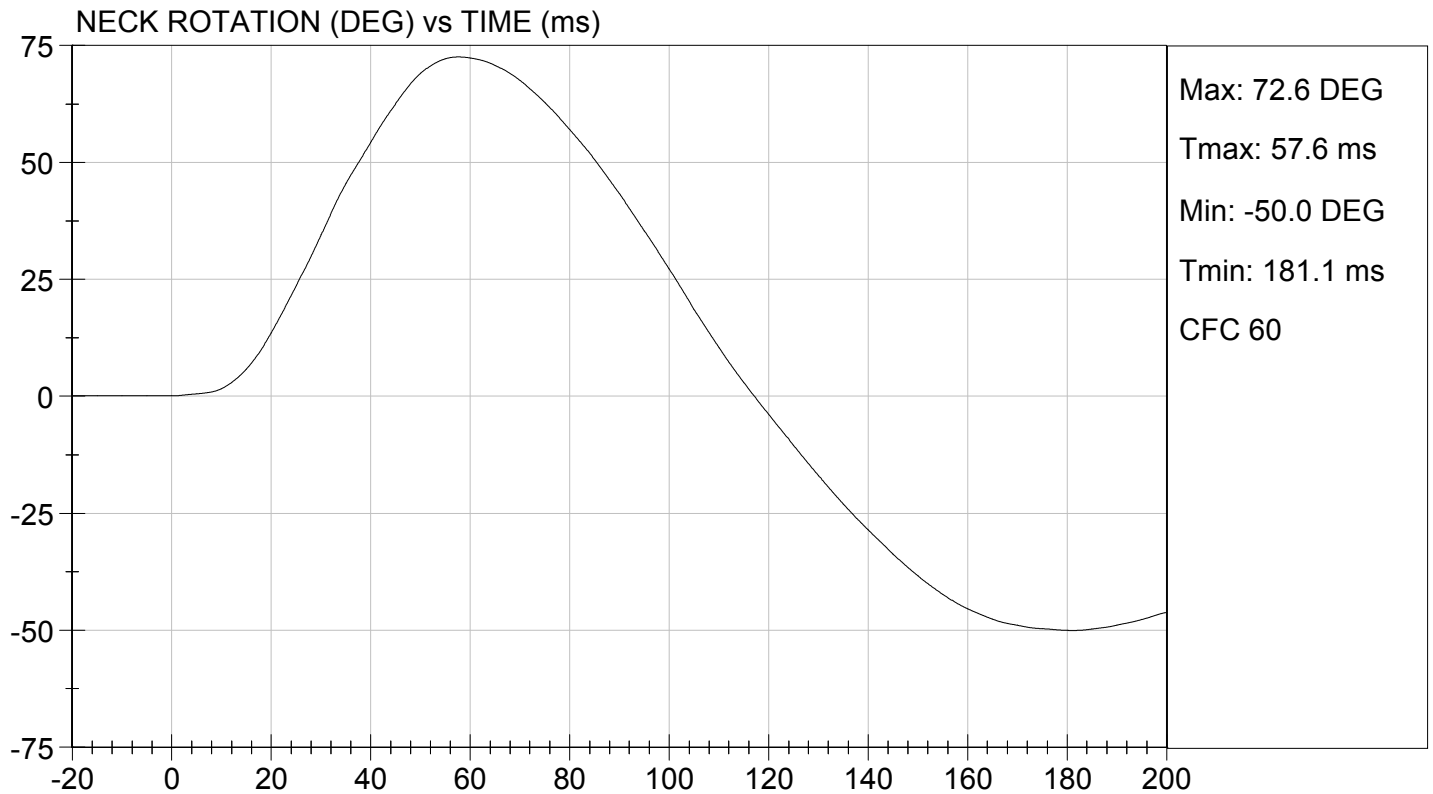
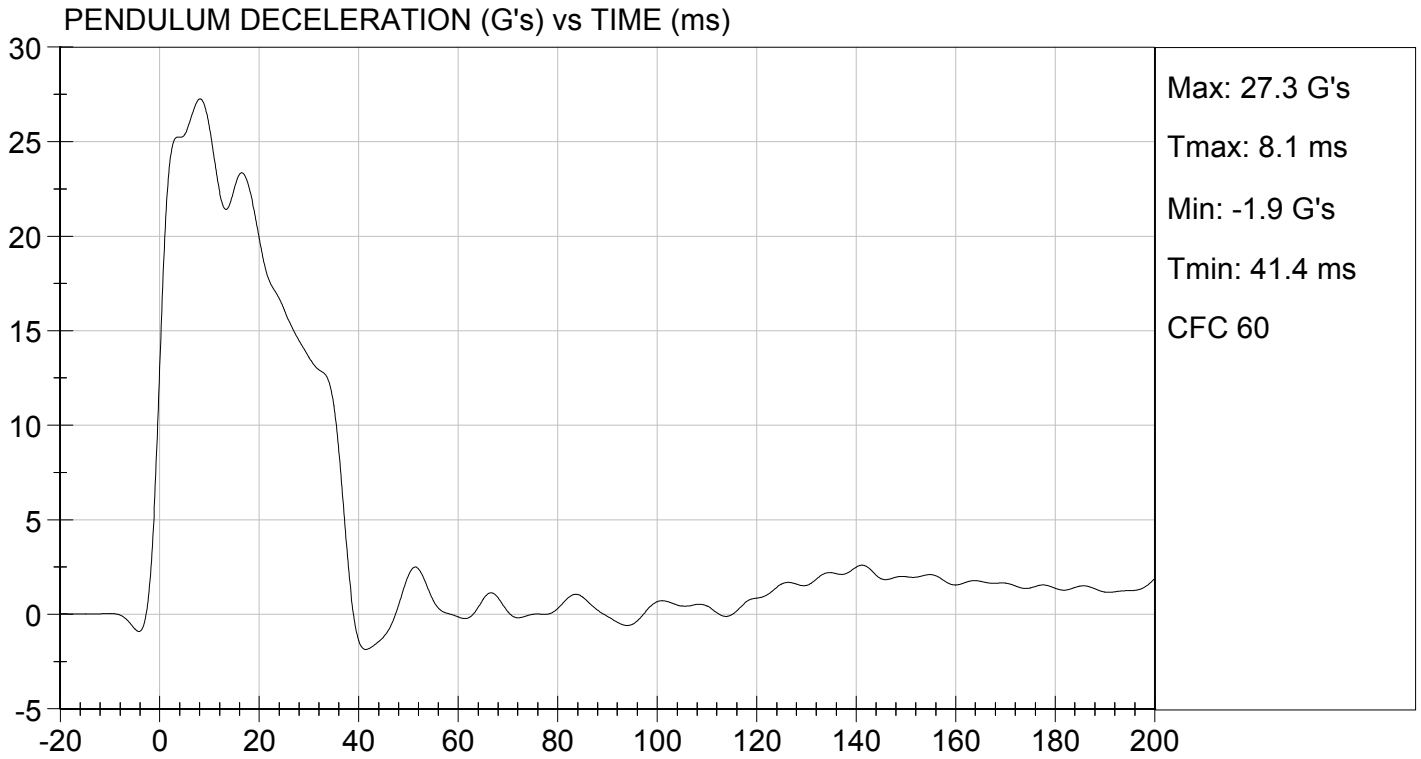
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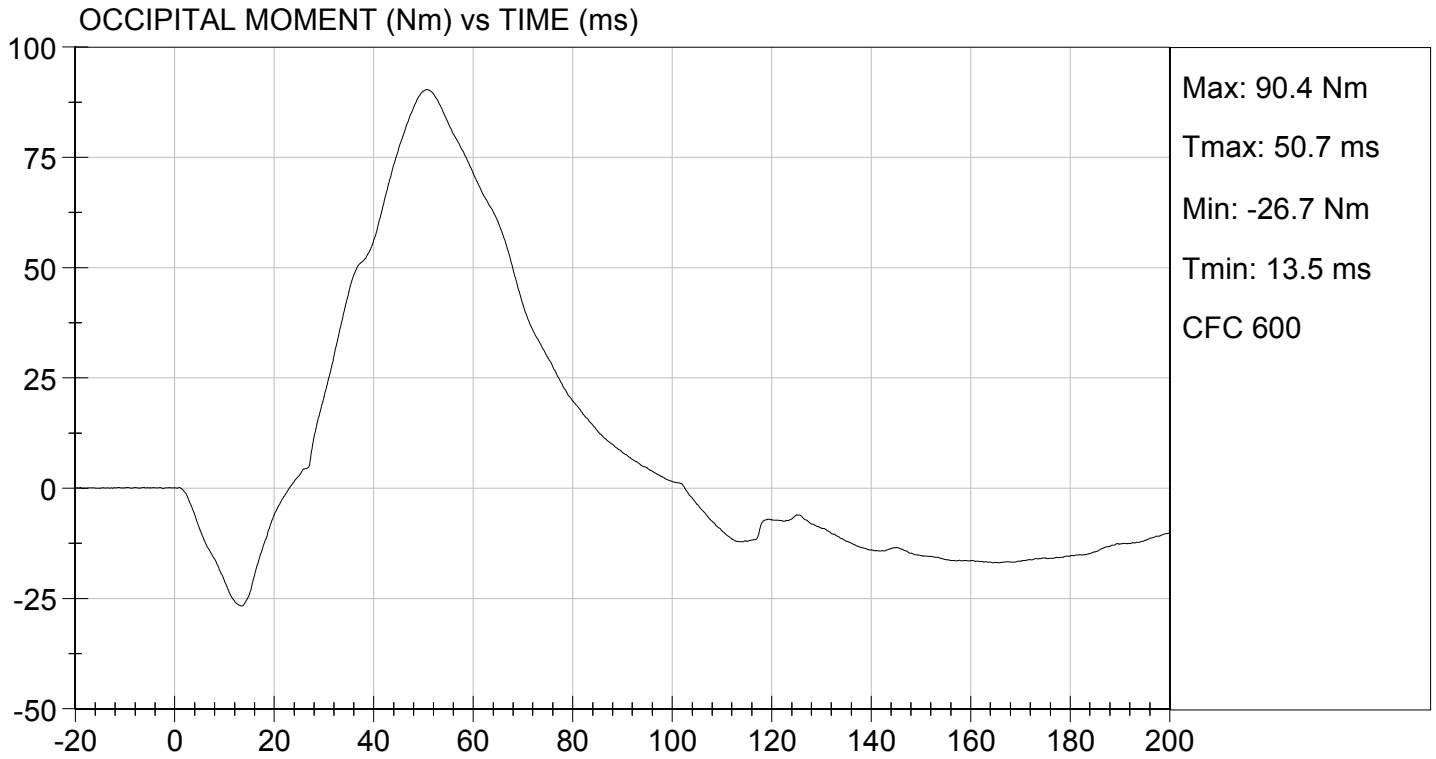
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.69	Pass
	20 ms	G's	17.60 to 22.60	19.90	Pass
	30 ms	G's	12.50 to 18.50	13.59	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	13.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.2	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	72.6	Pass
	Time	ms	57.0 to 64.0	57.6	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	117.3	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	90.4	Pass
	Time	ms	47.0 to 58.0	50.7	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	102.7	Pass
Overall Test Results					Pass

David Schoedel
 Laboratory Technician

07/10/2015
 Test Date

Jessica Hall
 Approved By





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

ATD Serial No: 351

Test I.D.: D152023

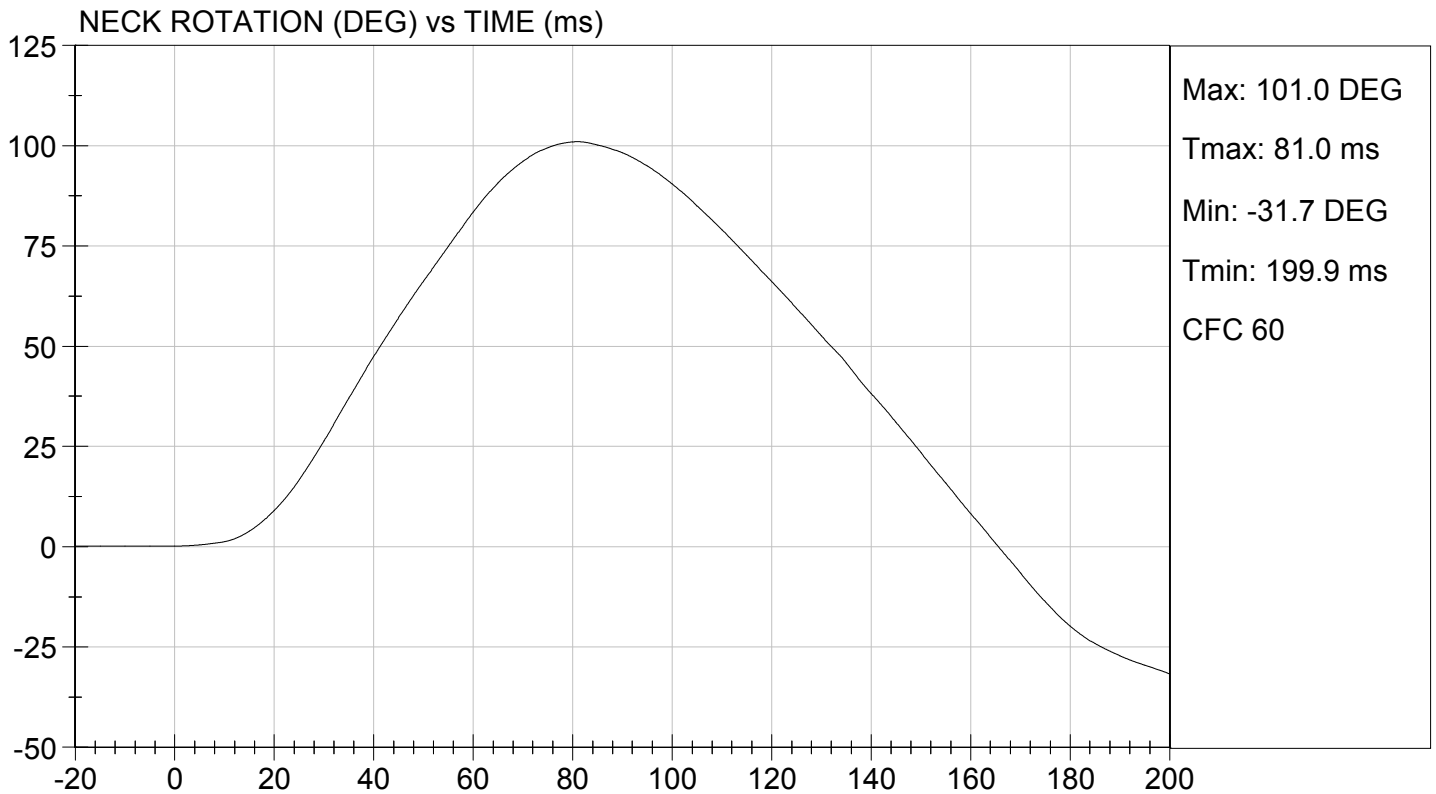
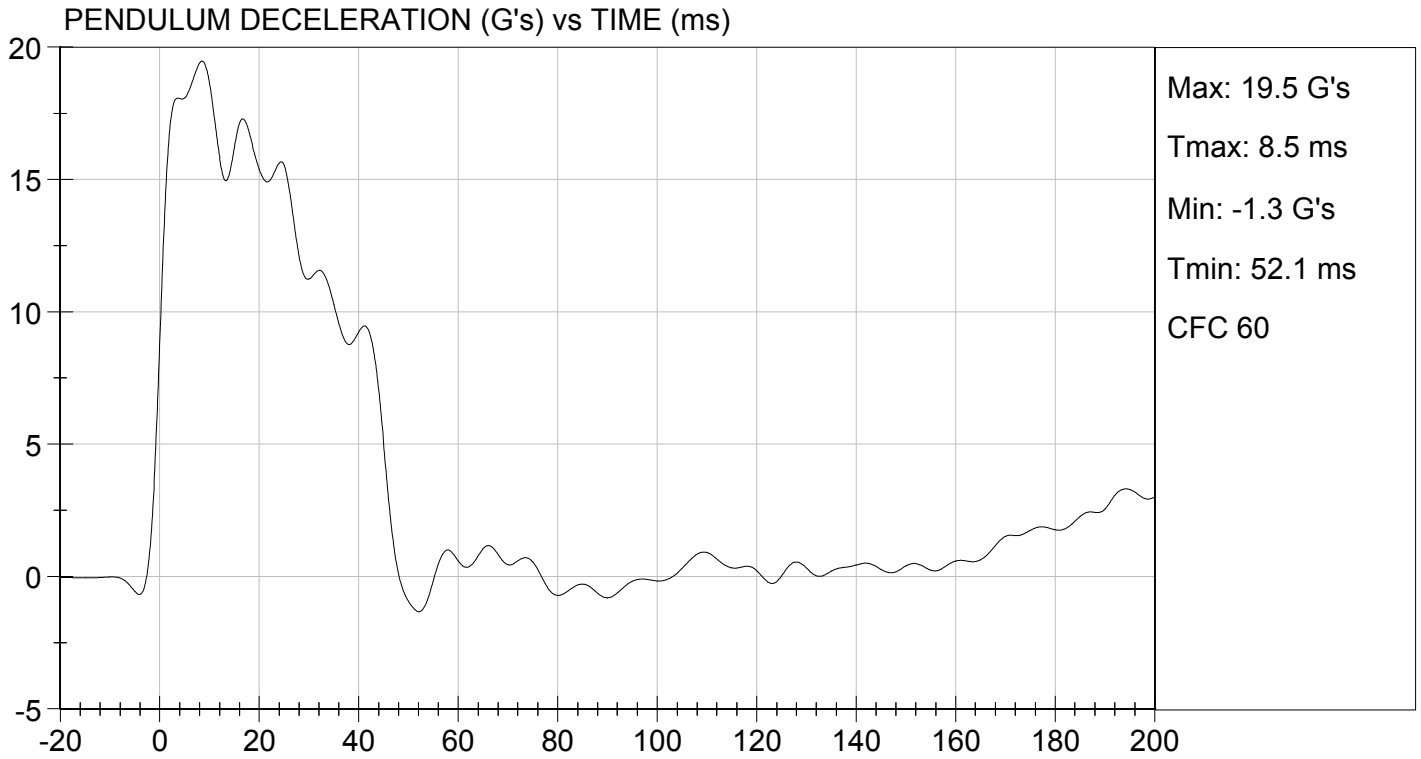
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Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.61	Pass
	20 ms	G's	14.00 to 19.00	15.39	Pass
	30 ms	G's	11.00 to 16.00	11.24	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	11.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	45.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	101.0	Pass
	Time	ms	72.0 to 82.0	81.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	165.7	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-59.6	Pass
	Time	ms	65.0 to 79.0	75.6	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	143.8	Pass
Overall Test Results					Pass

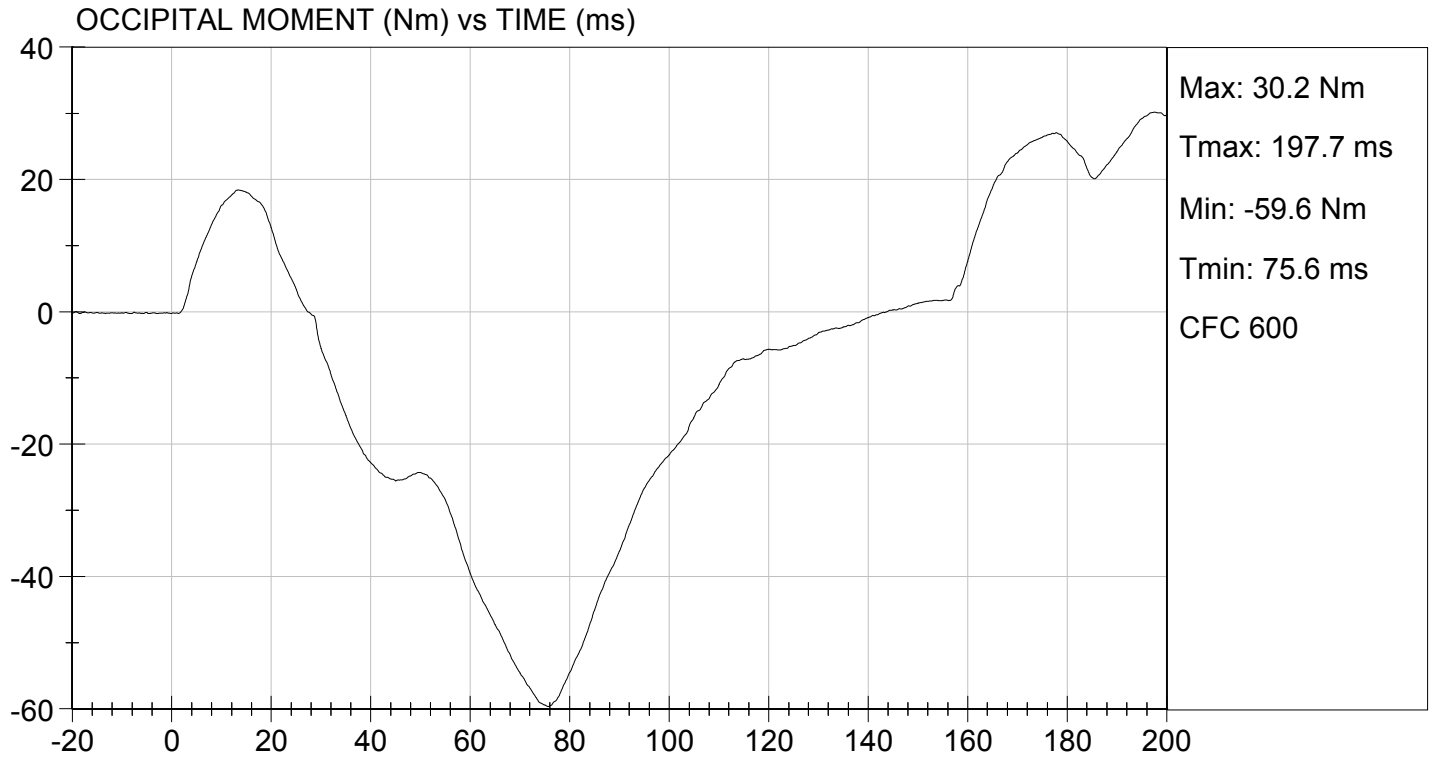
David Schoedel
Laboratory Technician

07/10/2015

Test Date

Jessica Hall
Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE


ATD Serial No: 351

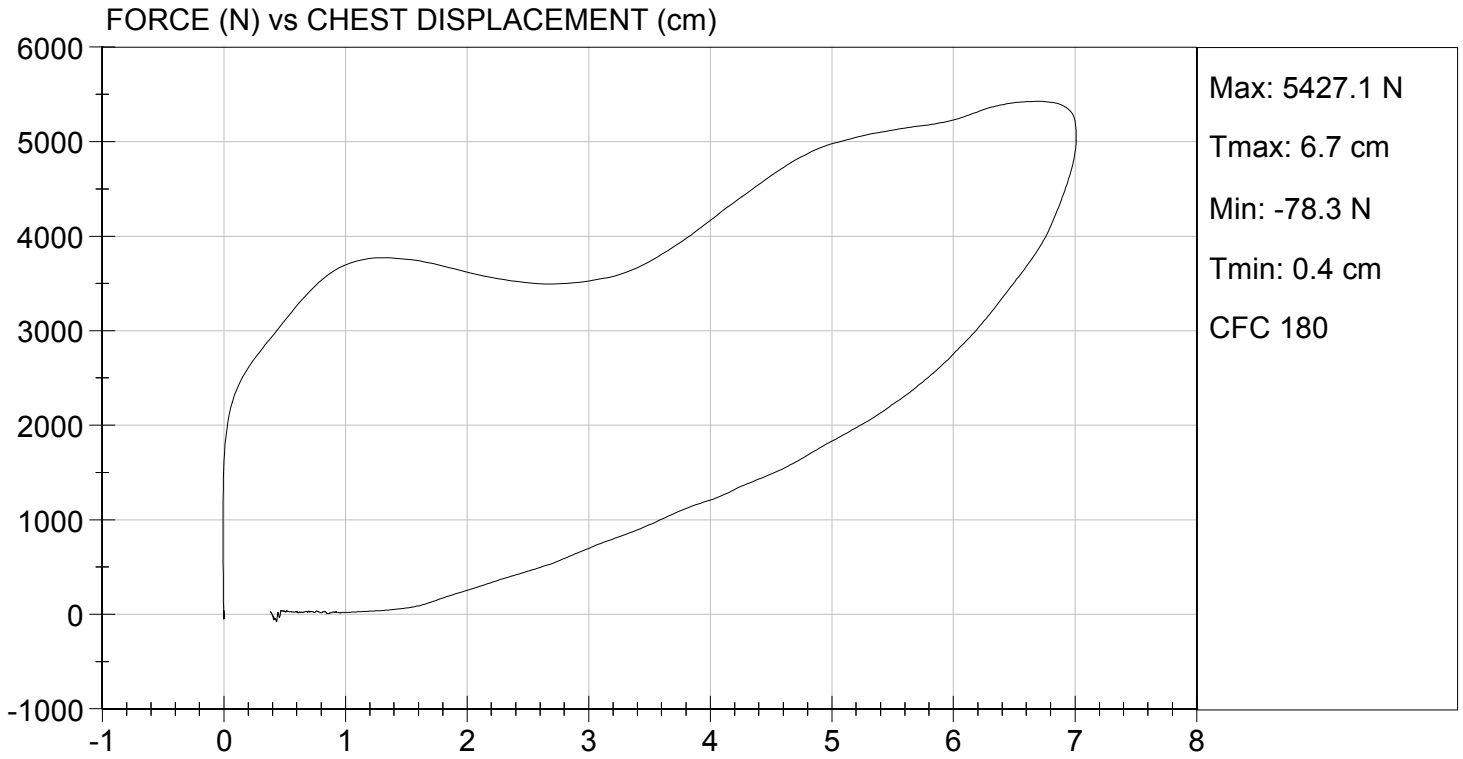
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Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,427	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.01	Pass
Internal Hysteresis	%	69 to 85	70	Pass
Overall Test Results				Pass


 Laboratory Technician

07/10/2015
 Test Date


 Approved By



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

ATD Serial No: 351

Test I.D: D152025

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	43	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,523	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

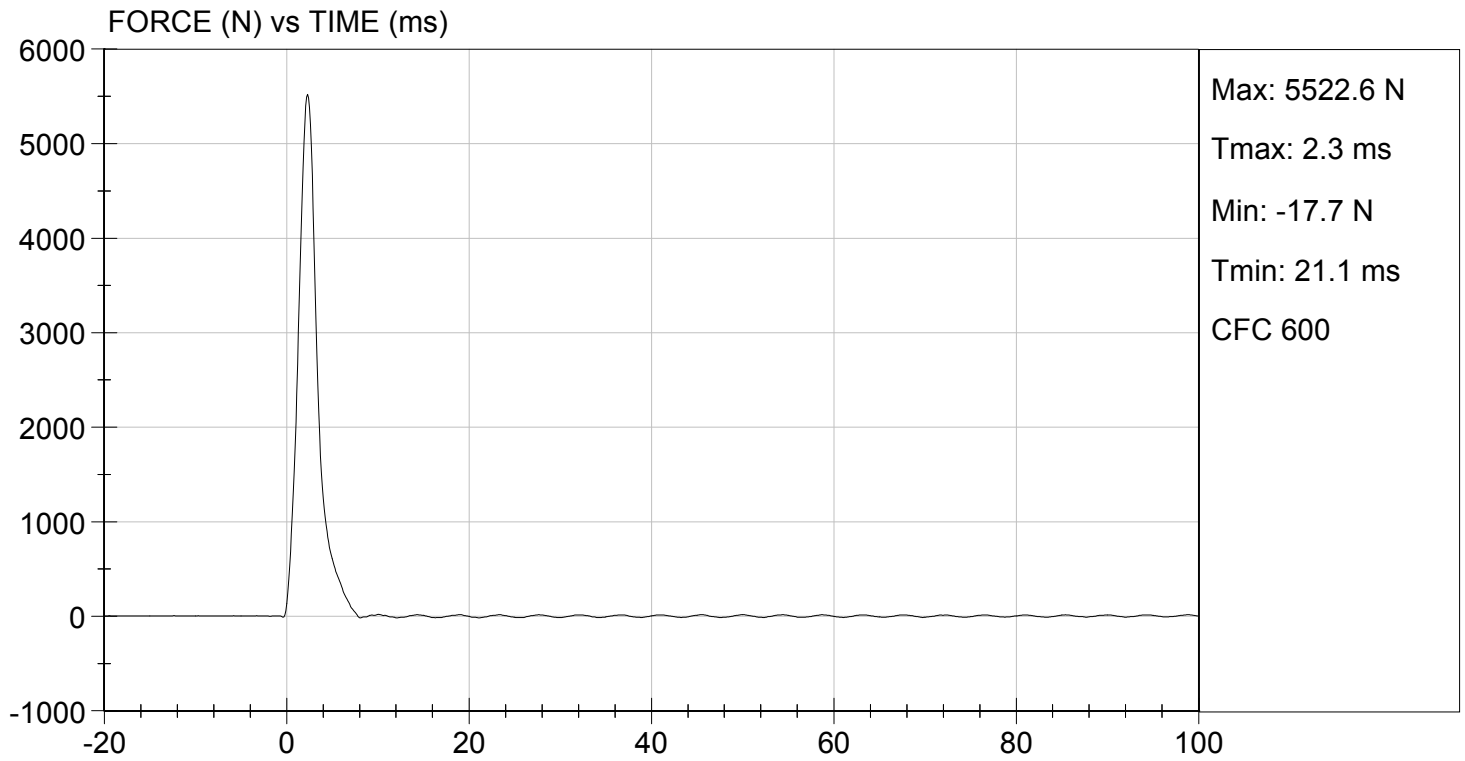
07/10/2015
 Test Date

Jessica Hall
 Approved By



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

TEST DATE: 07/10/2015
TEST #: D152025



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

ATD Serial No: 351

Test I.D: D152026

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	43	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5,179	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

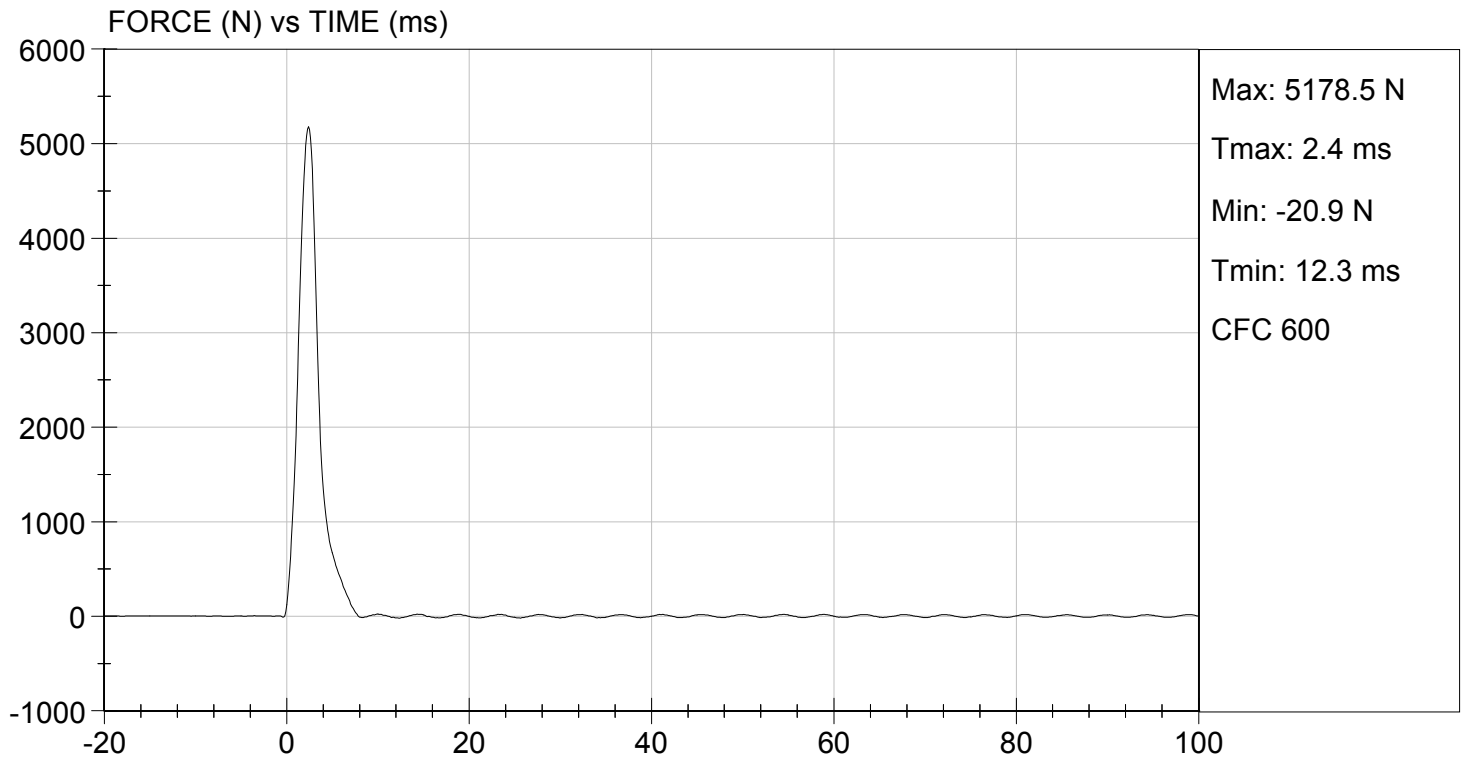
07/10/2015
 Test Date

Jessica Hall
 Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.98 ft/s, 2.13 m/s

TEST DATE: 07/10/2015
TEST #: D152026



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

ATD Serial No: 351

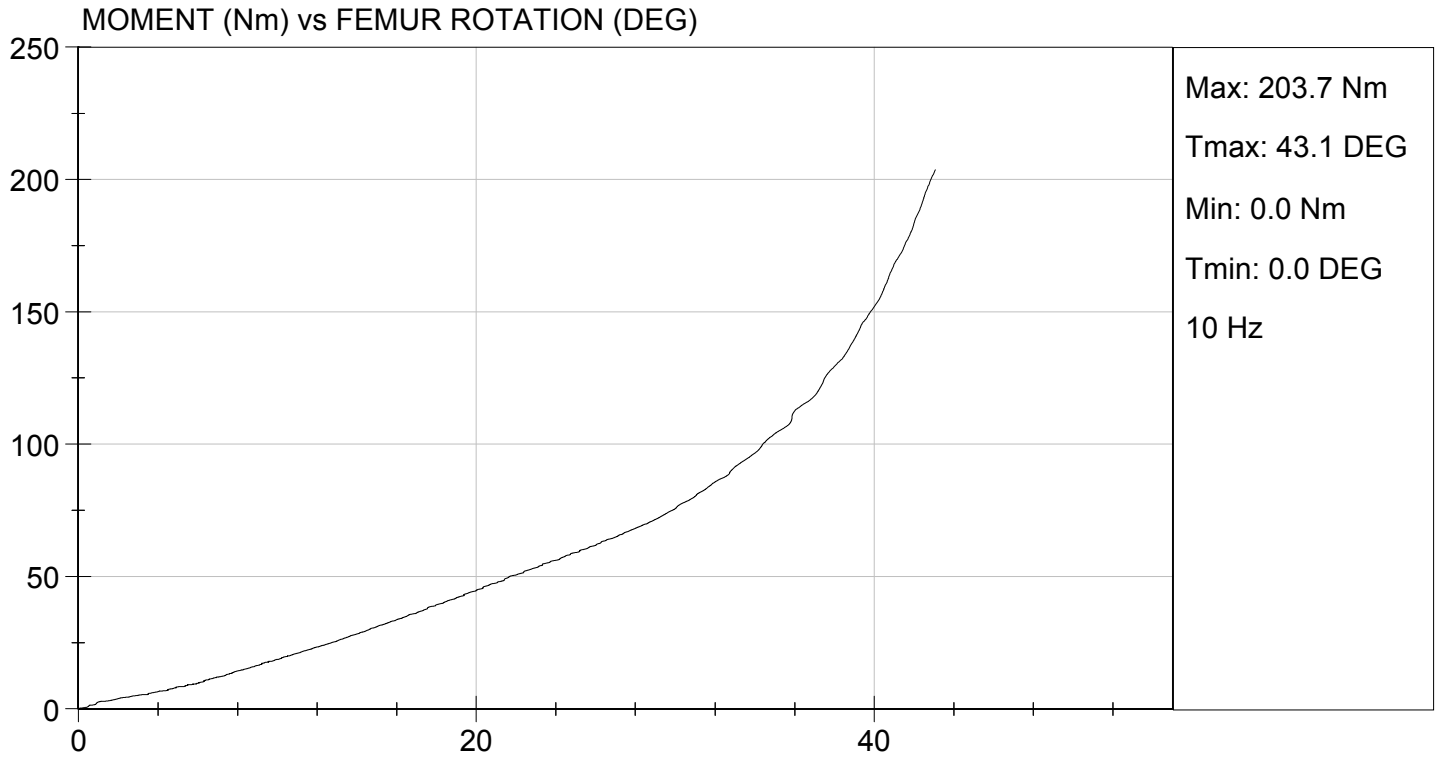
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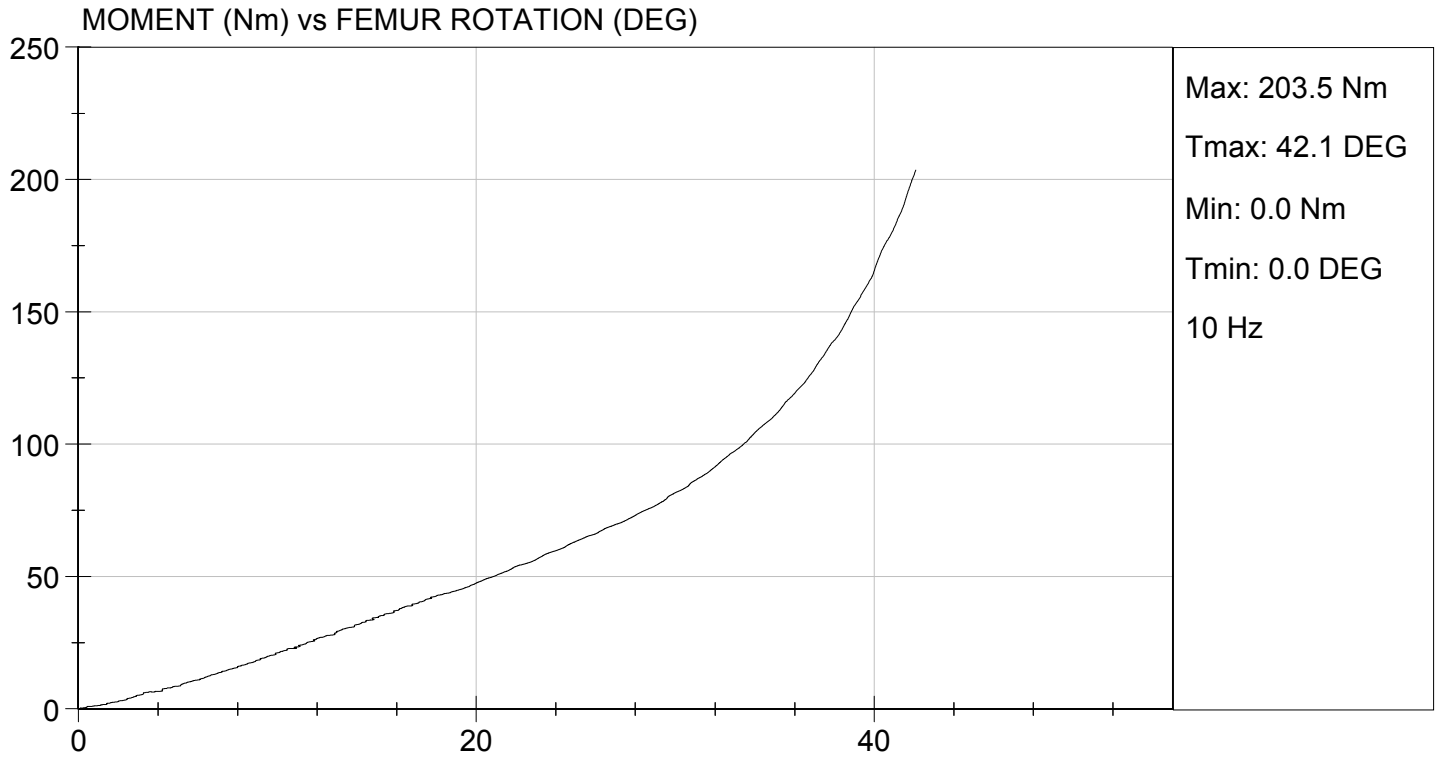
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.9	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	43	43	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.2	6.2	Pass
30 Degrees	Nm	94.9 Nm Max	75.7	81.6	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	43.1	42.1	Pass
Overall Test Results					Pass

Jack Coleman
 Laboratory Technician

07/10/2015
 Test Date

Jessica Hall
 Approved By





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

ATD Serial No: 351

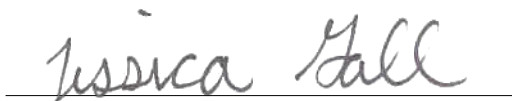
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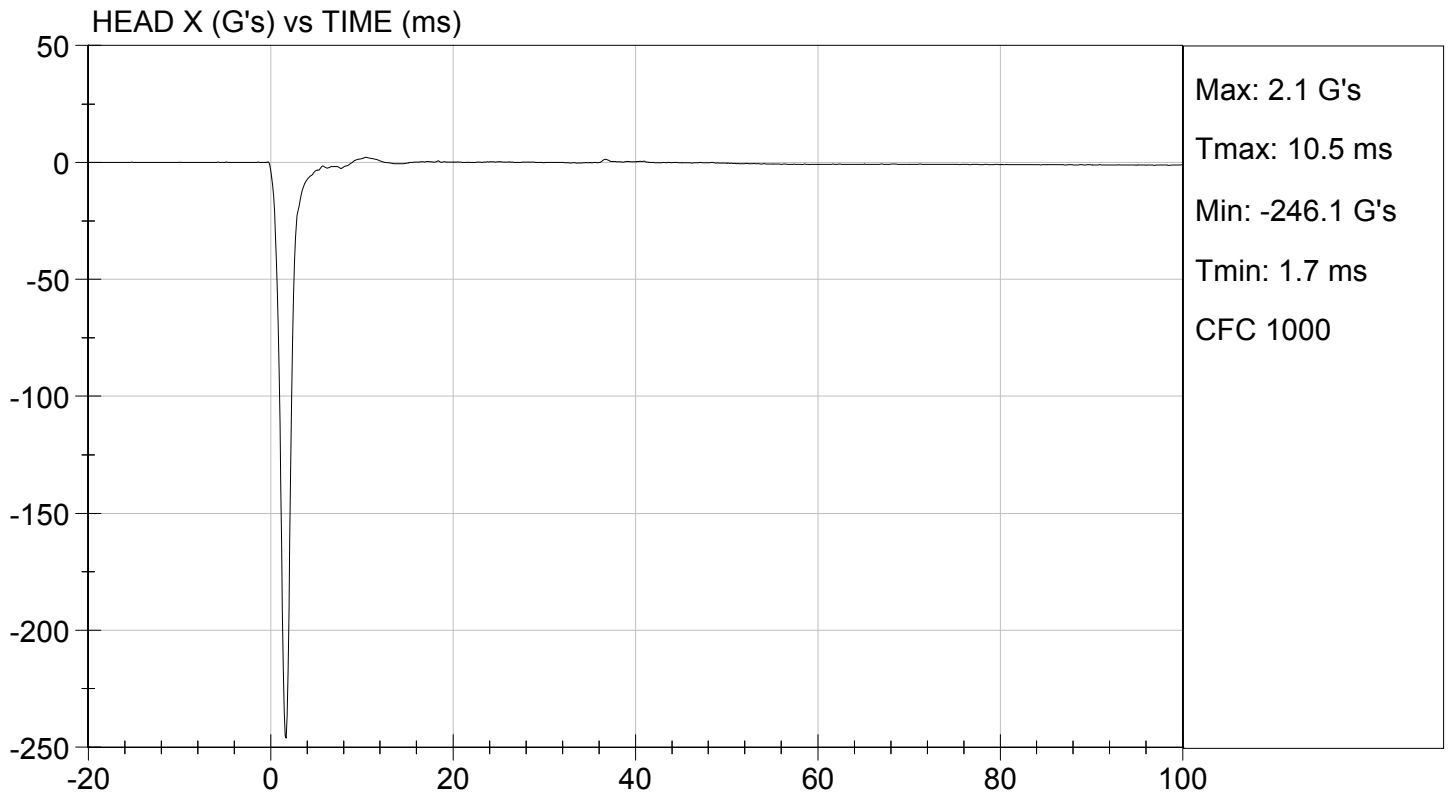
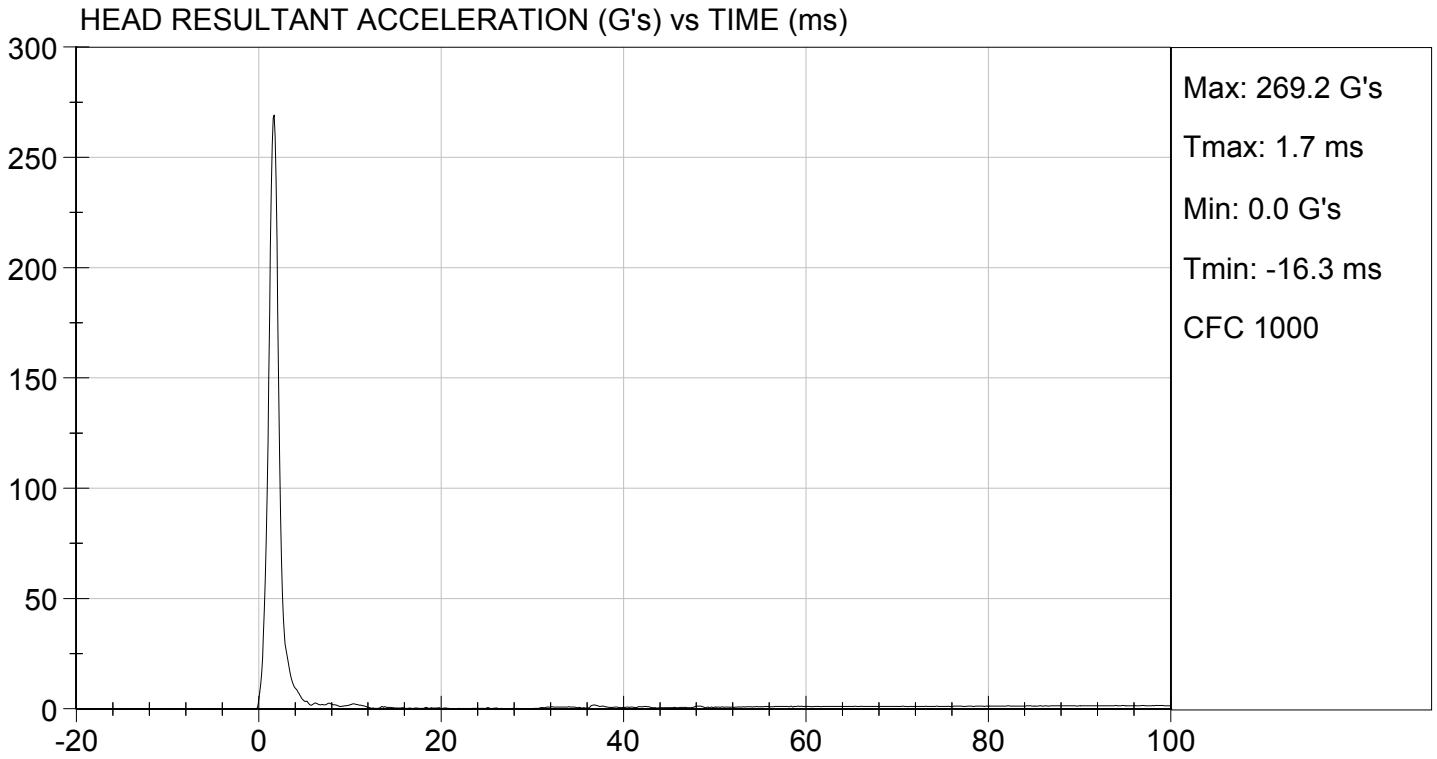
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Peak Resultant Acceleration	G's	225 to 275	269	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	13.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

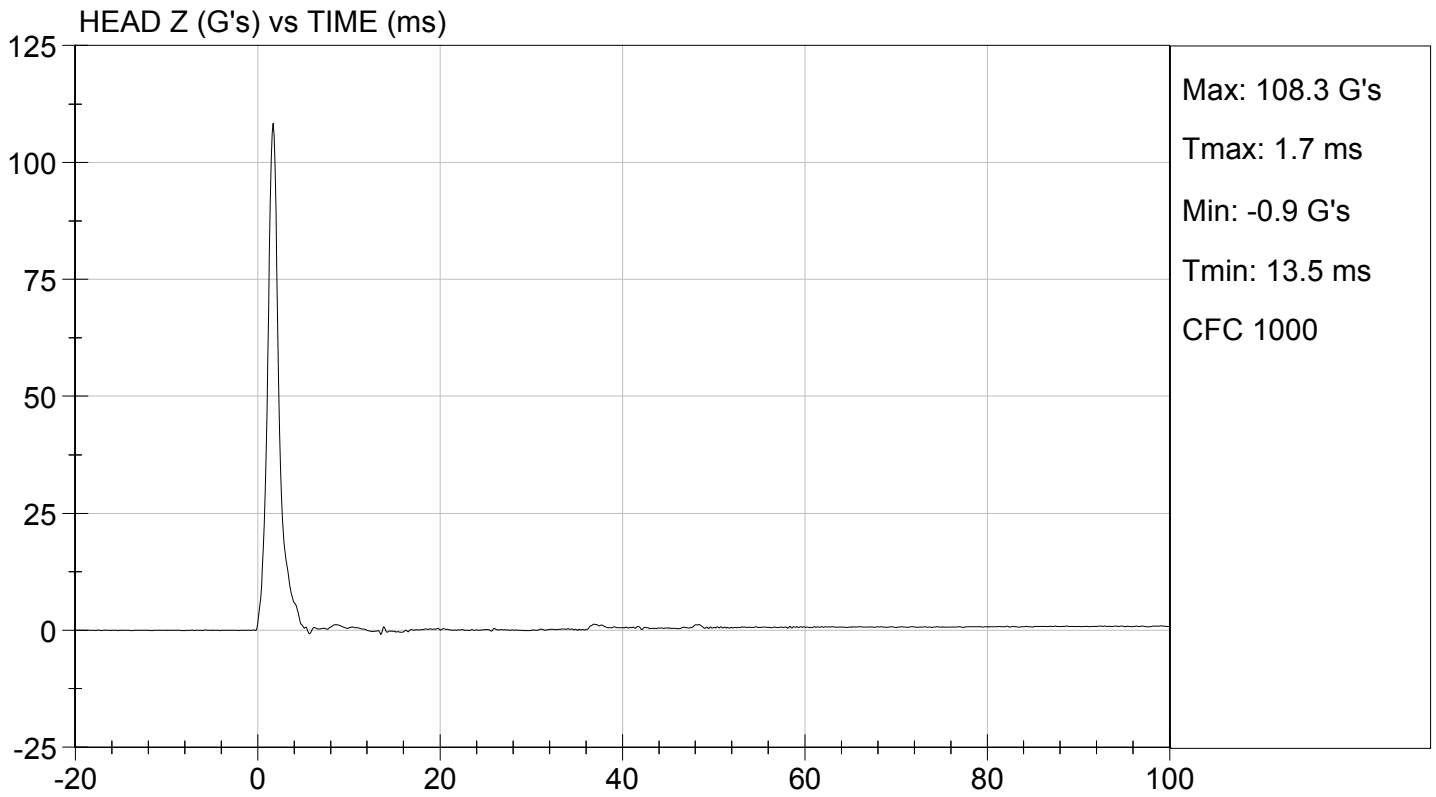
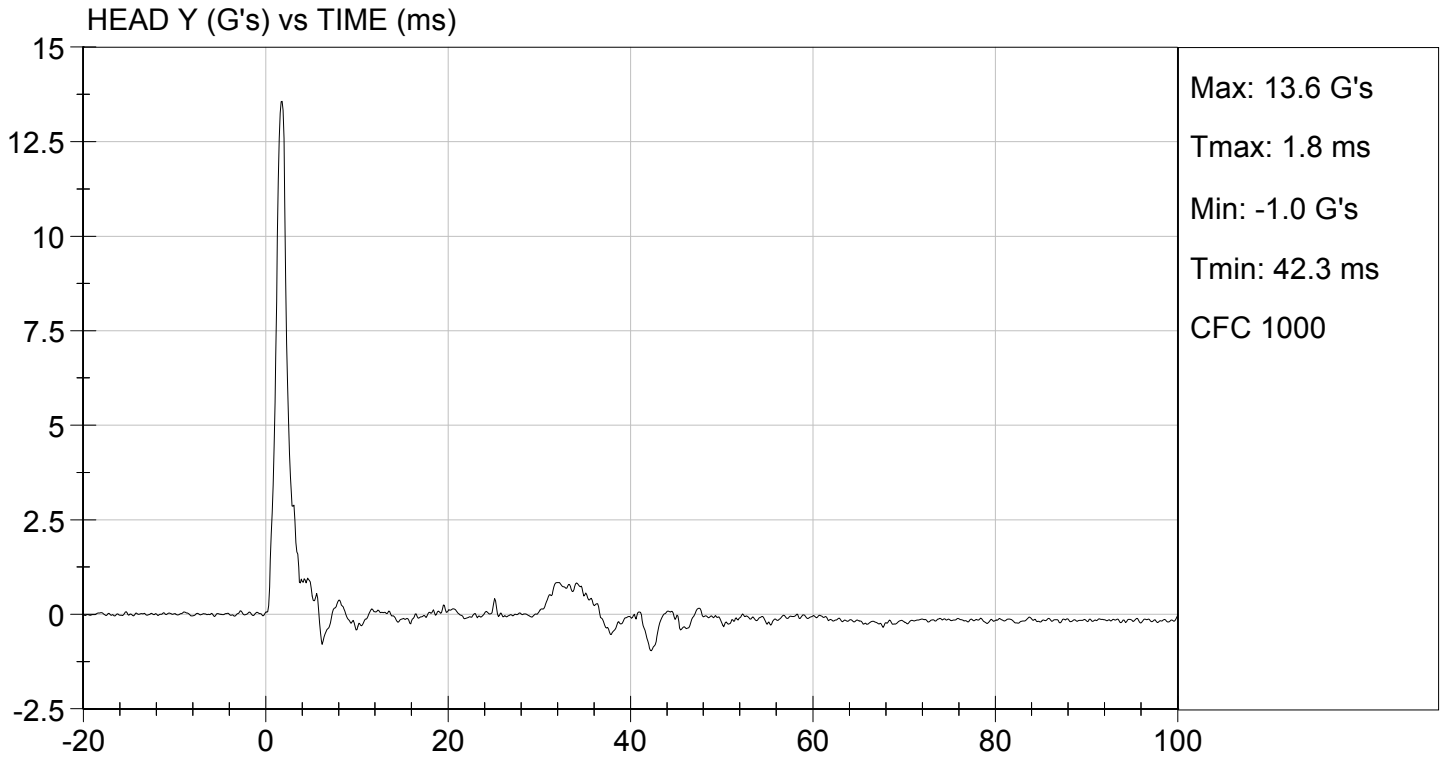

Laboratory Technician

07/13/2015

Test Date


Approved By





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

ATD Serial No: 351

Test I.D: D152042

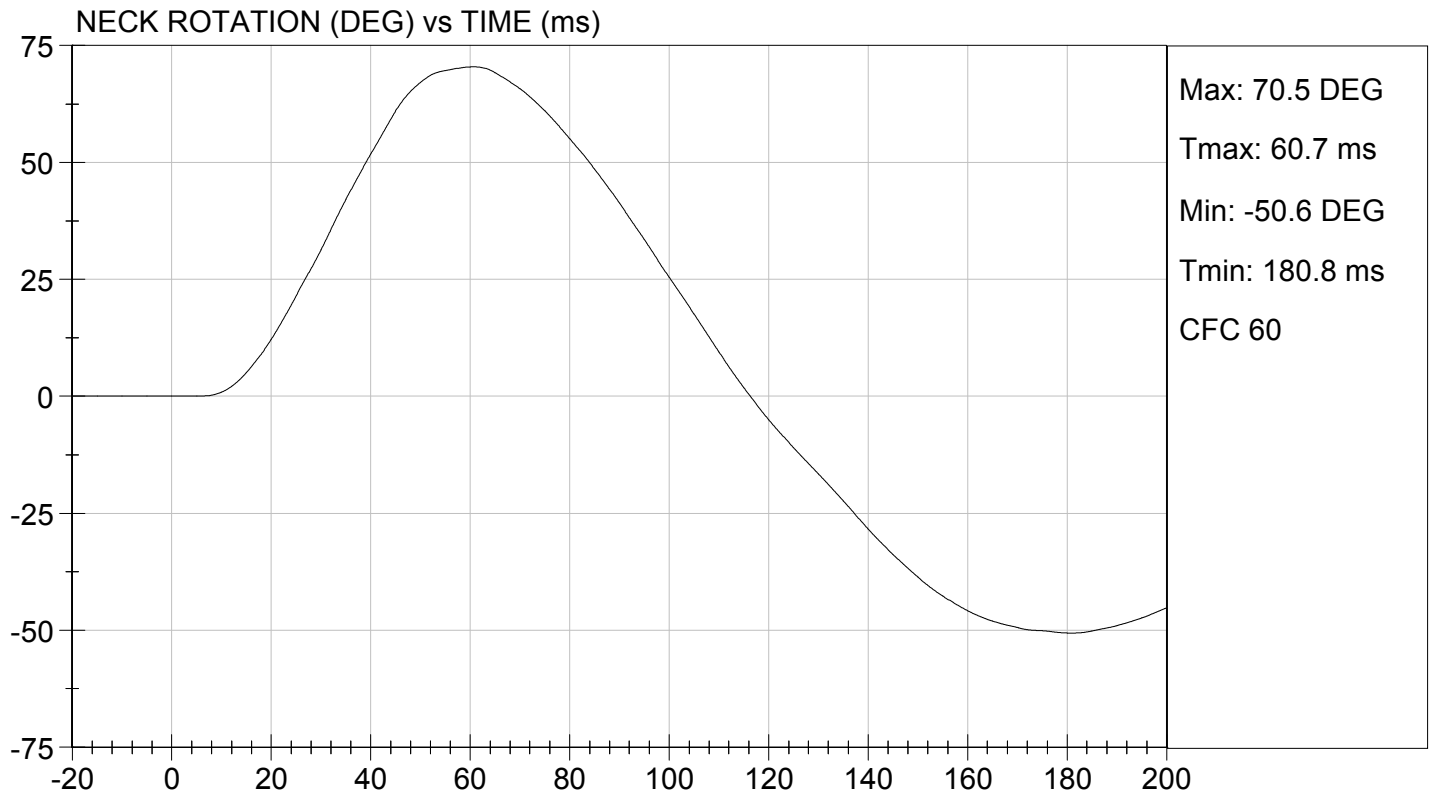
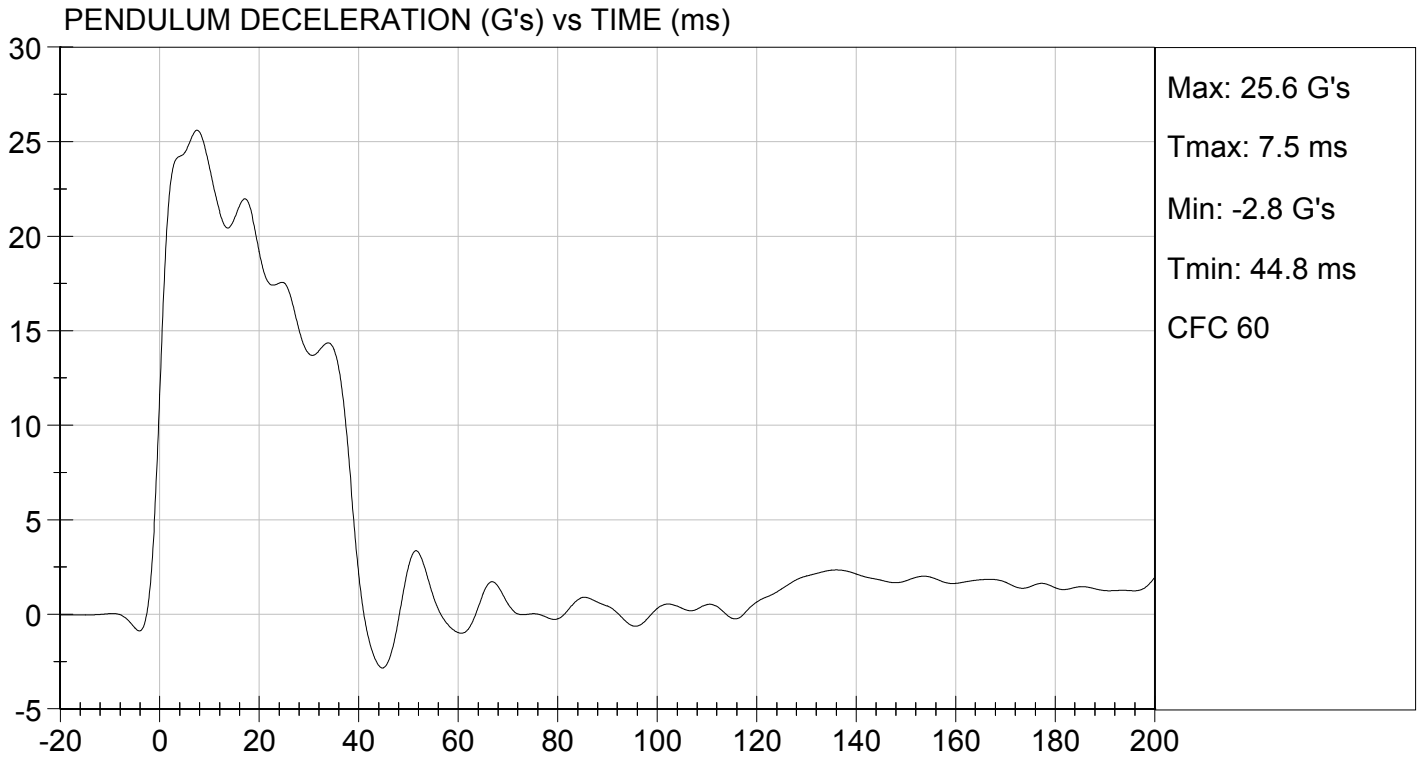
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity		%	10 to 70	55	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.60	Pass
	20 ms	G's	17.60 to 22.60	19.17	Pass
	30 ms	G's	12.50 to 18.50	13.78	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.4	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	39.1	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	70.5	Pass
	Time	ms	57.0 to 64.0	60.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	116.5	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	92.7	Pass
	Time	ms	47.0 to 58.0	51.9	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	104.4	Pass
Overall Test Results					Pass

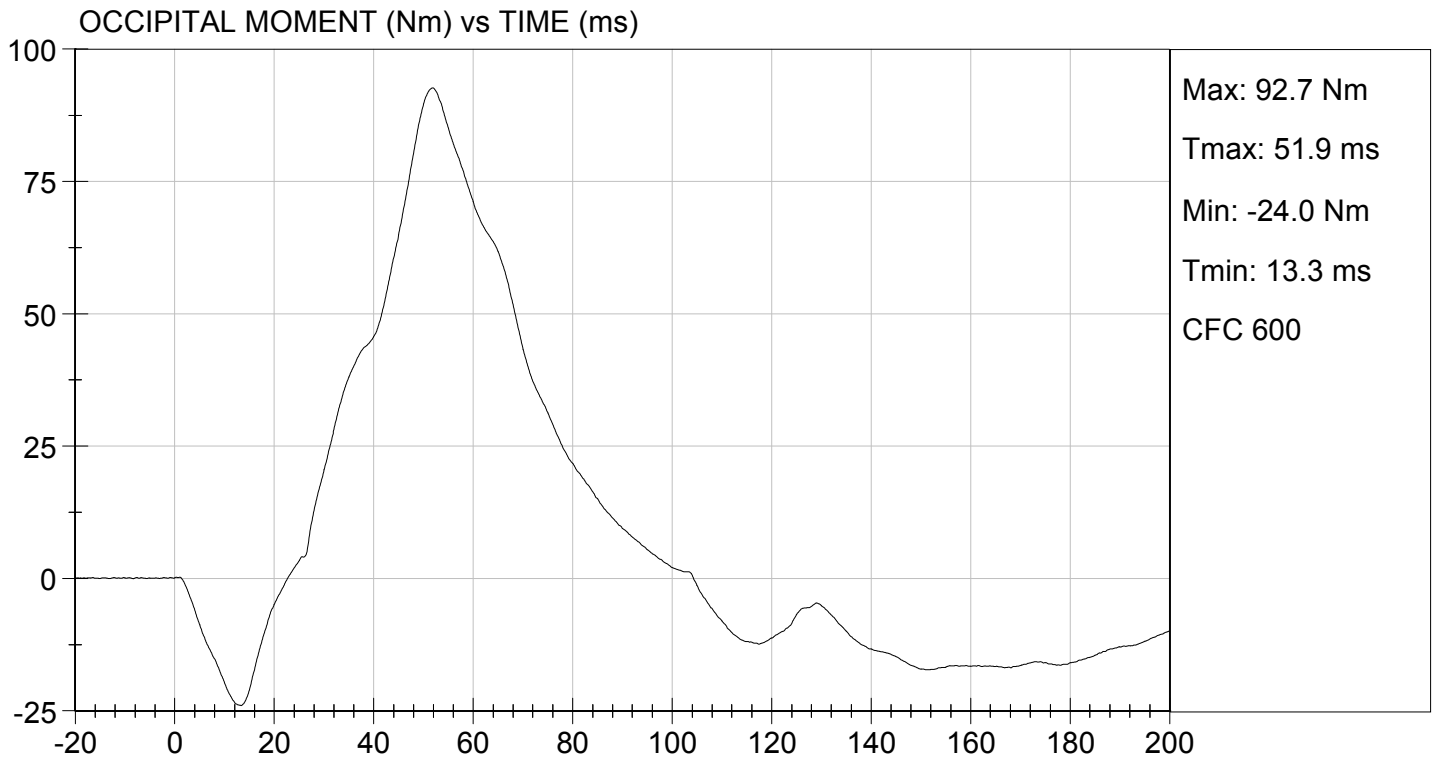
Jack Coleman
Laboratory Technician

07/13/2015

Test Date

Jessica Hall
Approved By





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

ATD Serial No: 351

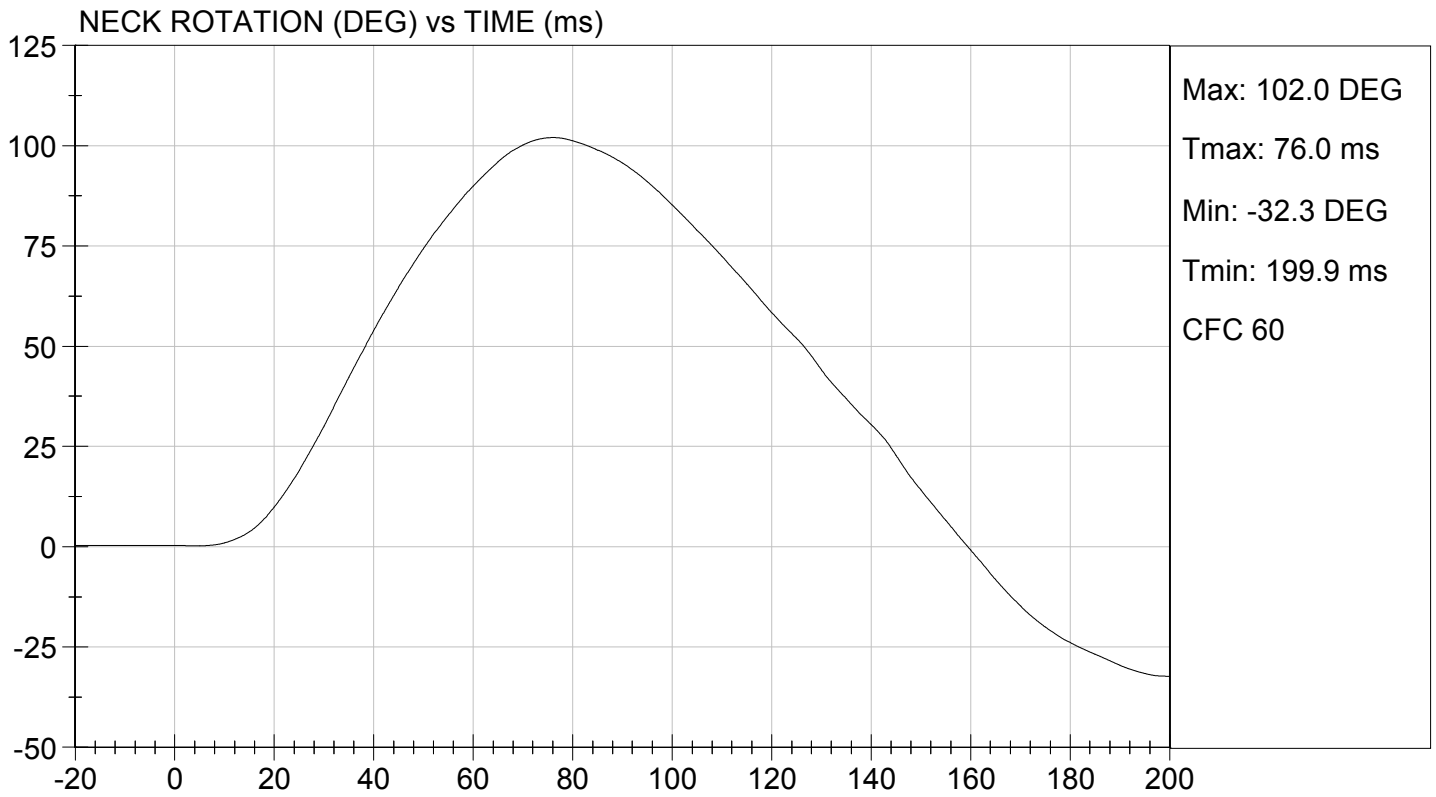
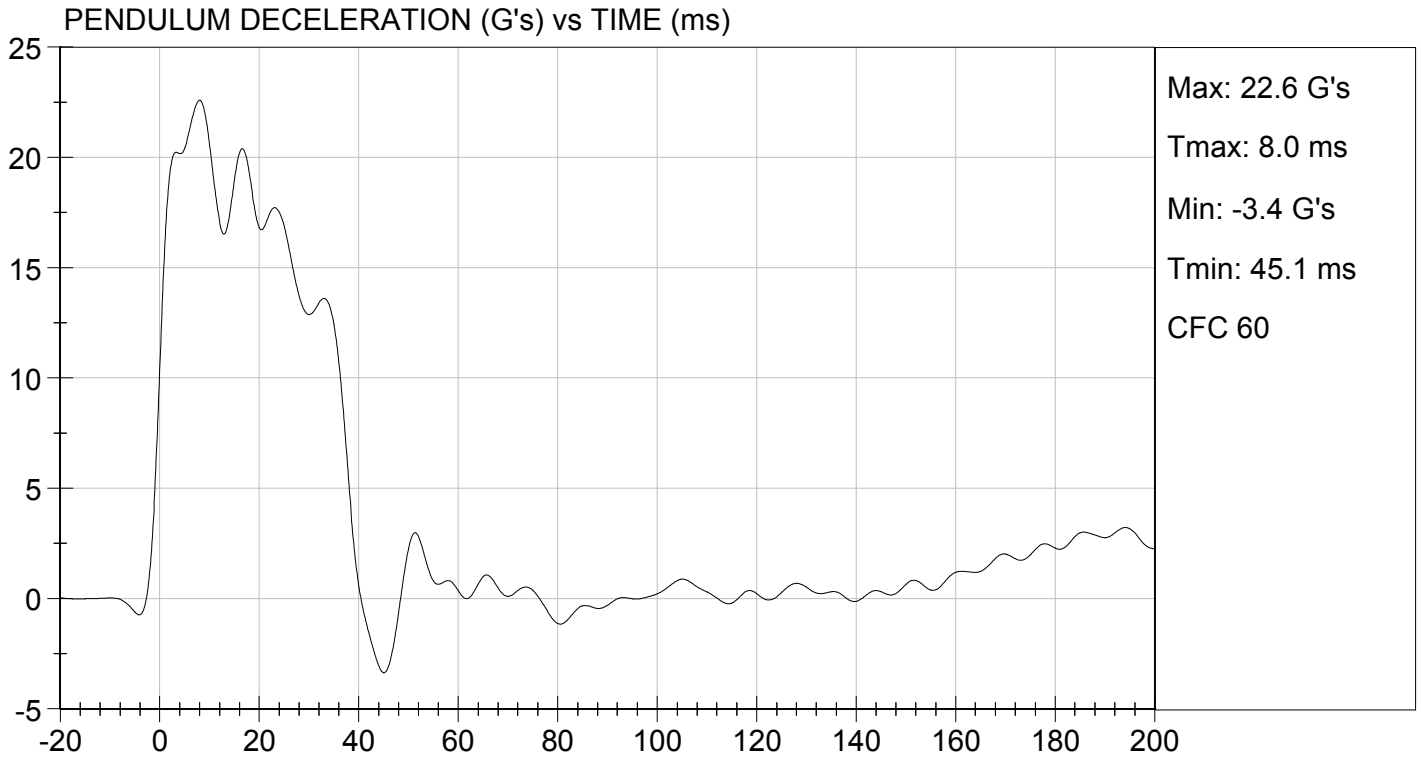
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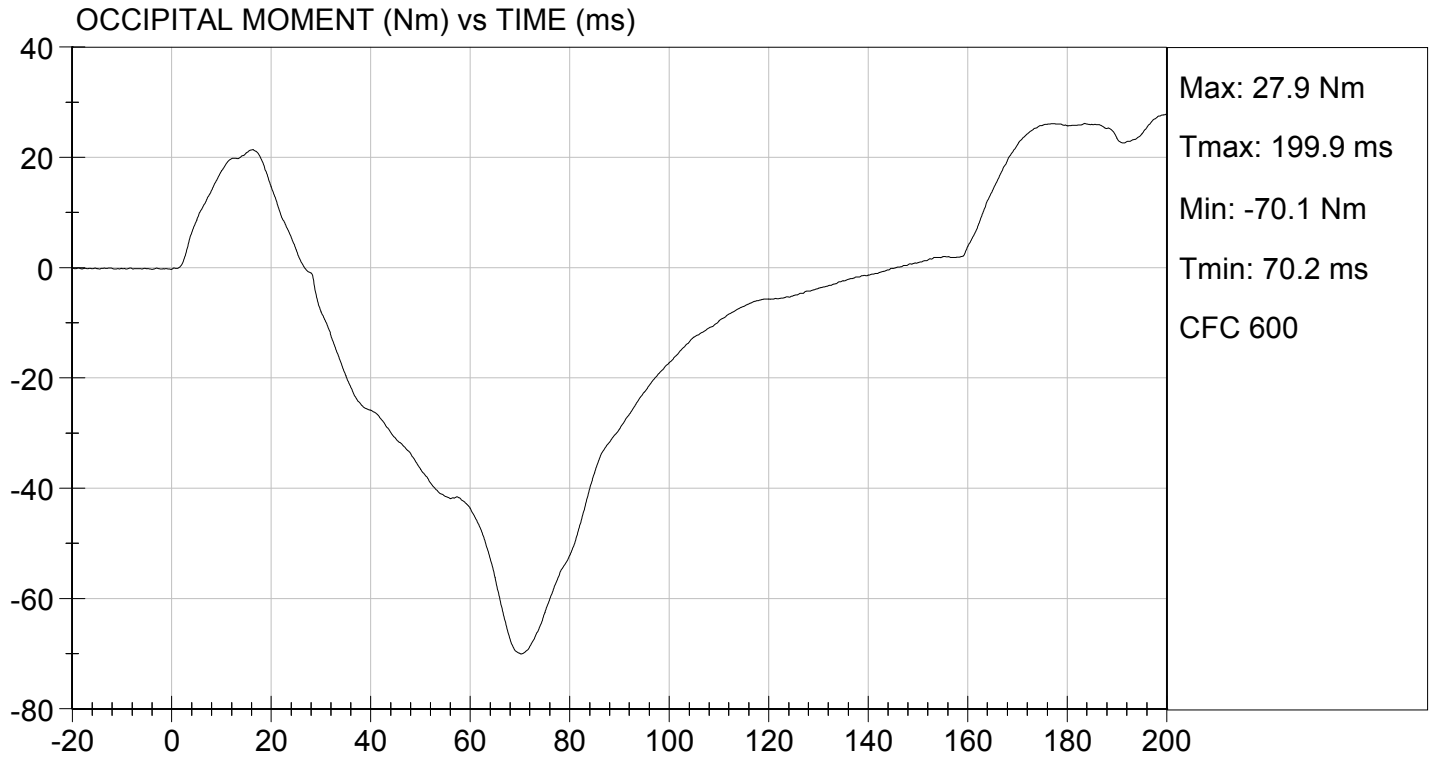
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity		%	10 to 70	55	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	20.56	Pass
	20 ms	G's	14.00 to 19.00	16.83	Pass
	30 ms	G's	11.00 to 16.00	12.88	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	13.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	102.0	Pass
	Time	ms	72.0 to 82.0	76.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	159.6	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-70.1	Pass
	Time	ms	65.0 to 79.0	70.2	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	145.7	Pass
Overall Test Results					Pass

Jack Coleman
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 Approved By





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

ATD Serial No: 351

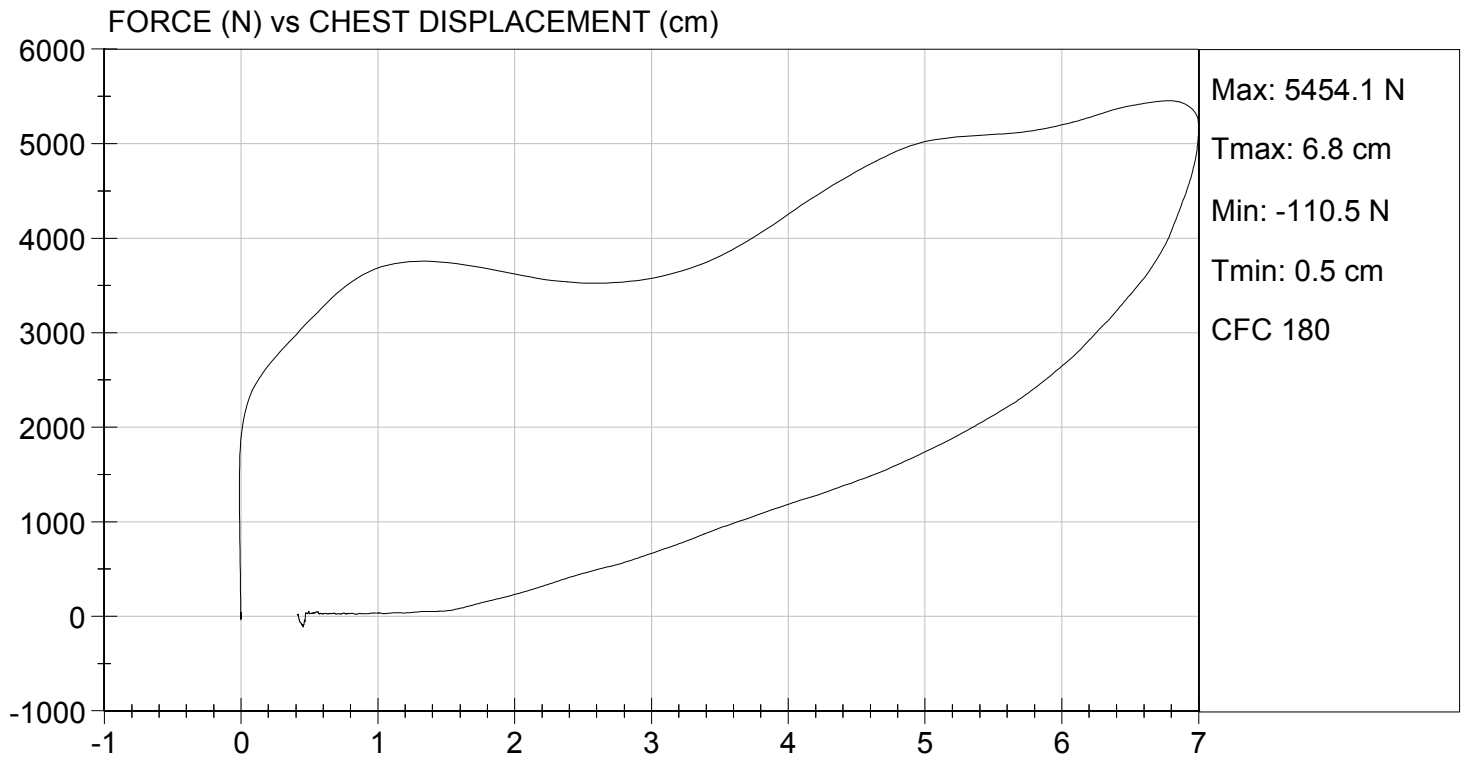
Test I.D: D152044

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Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,454	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.00	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Overall Test Results				Pass

Jack Coleman
Laboratory Technician

07/14/2015
Test Date

Jessica Hall
Approved By



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

ATD Serial No: 351


Test I.D: D152045

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	4,813	Pass
Overall Test Results				Pass


 Laboratory Technician

07/14/2015

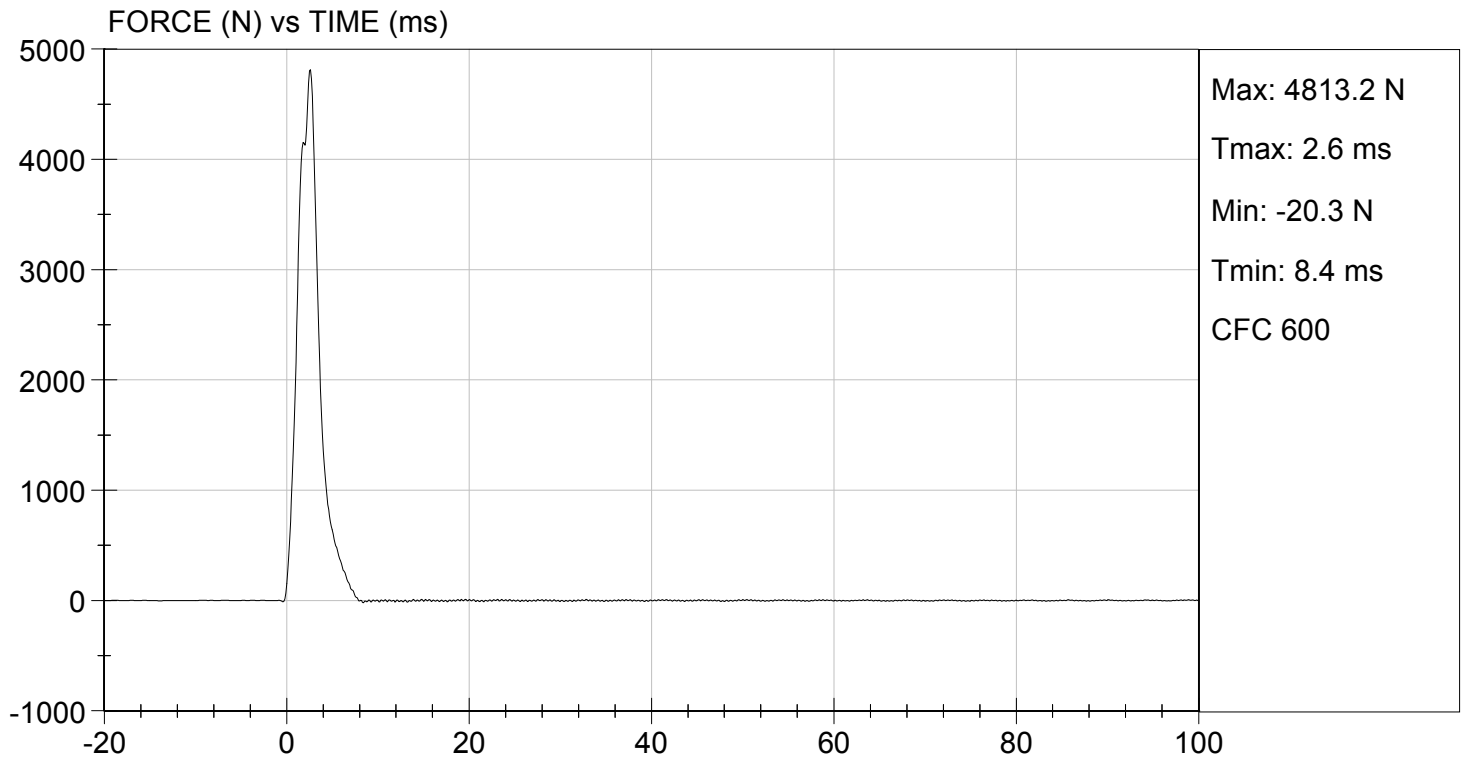
Test Date


 Approved By



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

TEST DATE: 07/14/2015
TEST #: D152045



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

ATD Serial No: 351

Test I.D: D152046

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	55	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,207	Pass
Overall Test Results				Pass

Jack Coleman
 Laboratory Technician

07/13/2015

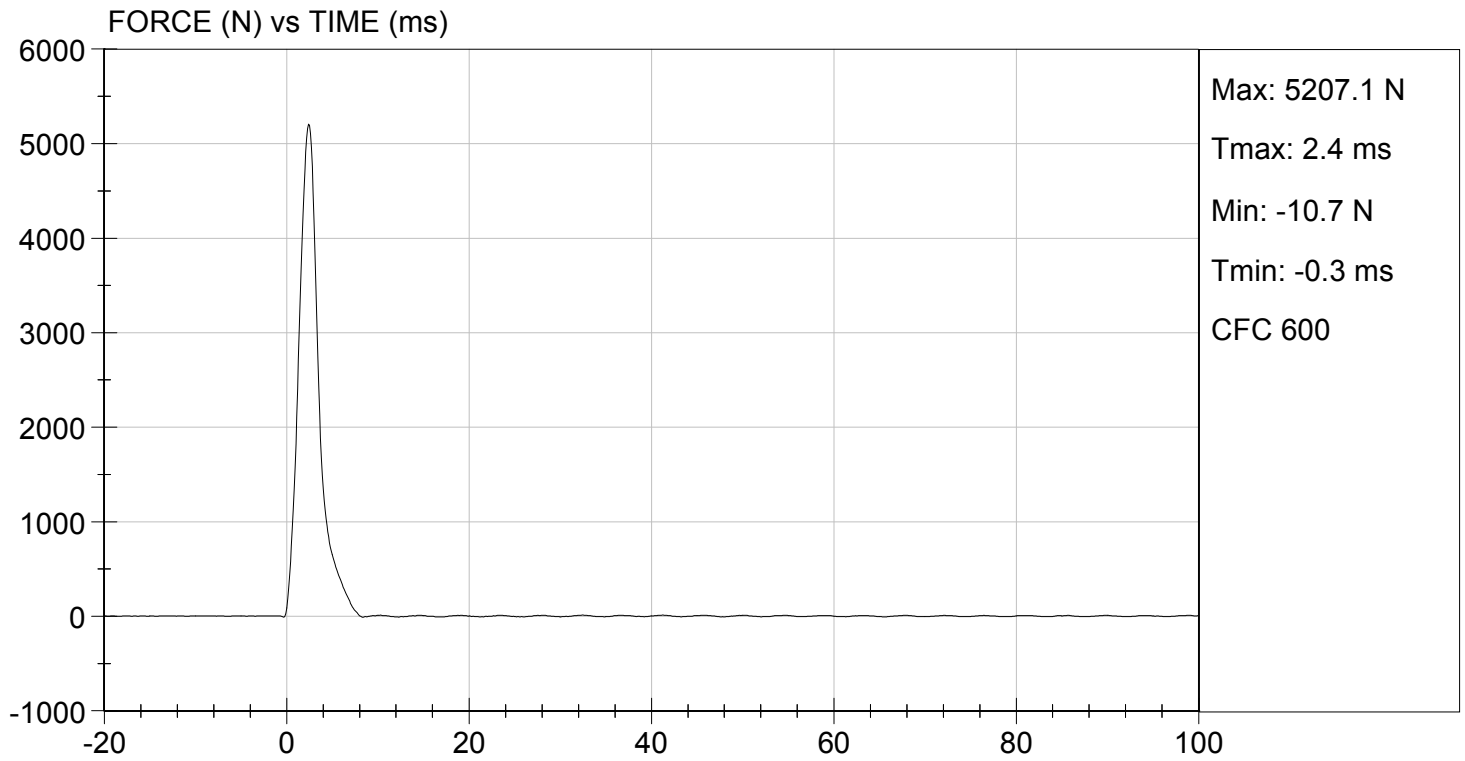
Test Date

Jessica Hall
 Approved By



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

TEST DATE: 07/13/2015
TEST #: D152046



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

ATD Serial No: 351

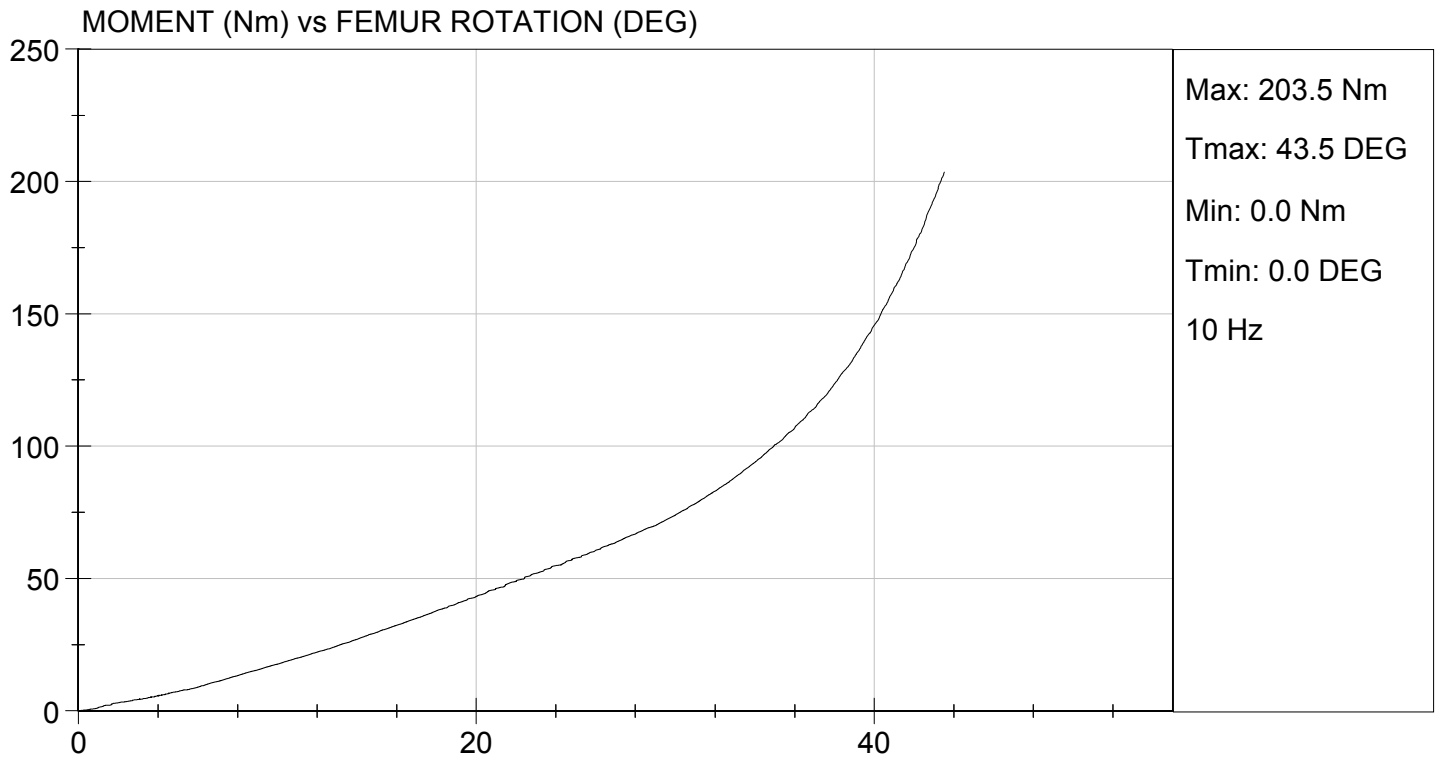
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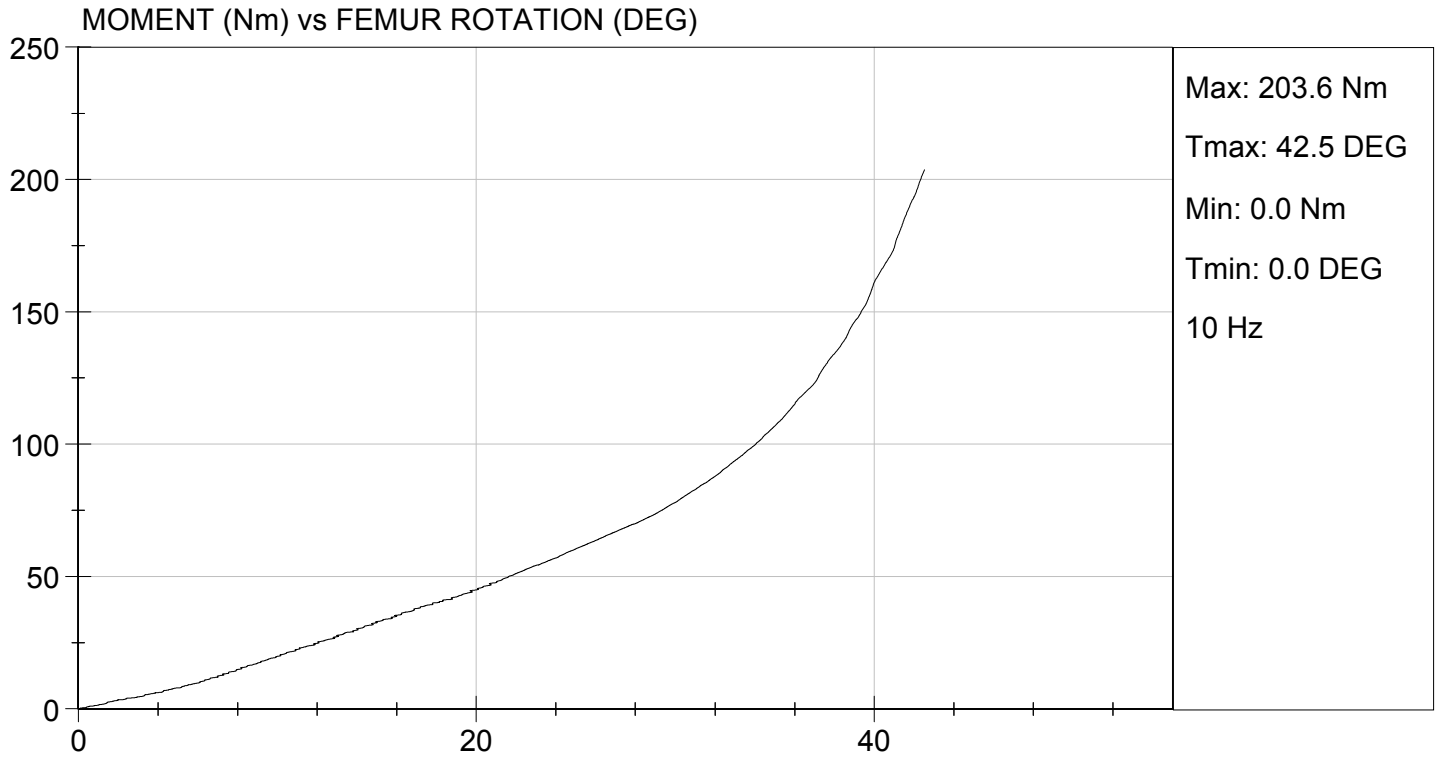
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	54	54	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.2	6.2	Pass
30 Degrees	Nm	94.9 Nm Max	74.0	77.9	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	43.5	42.5	Pass
Overall Test Results					Pass

Jack Coleman
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 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

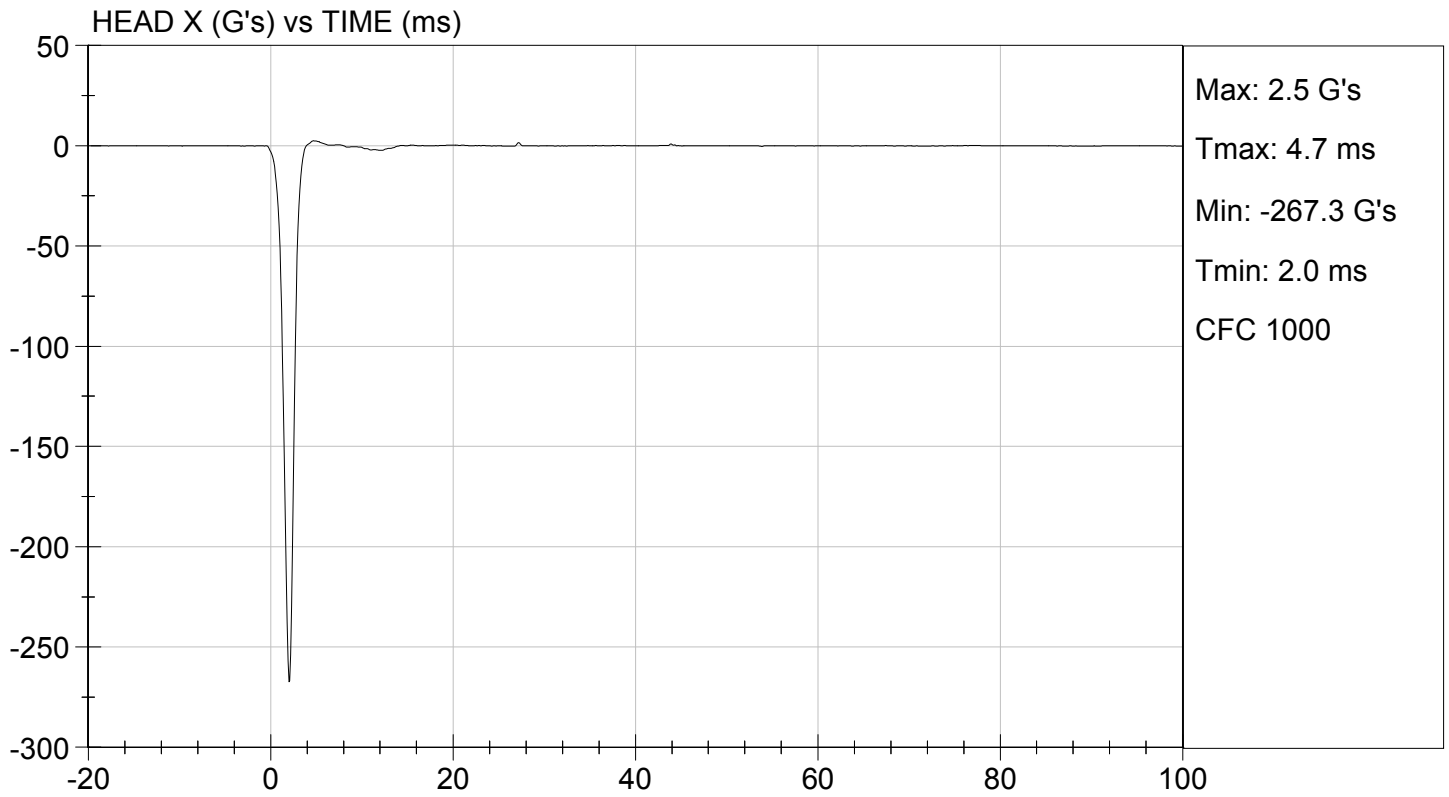
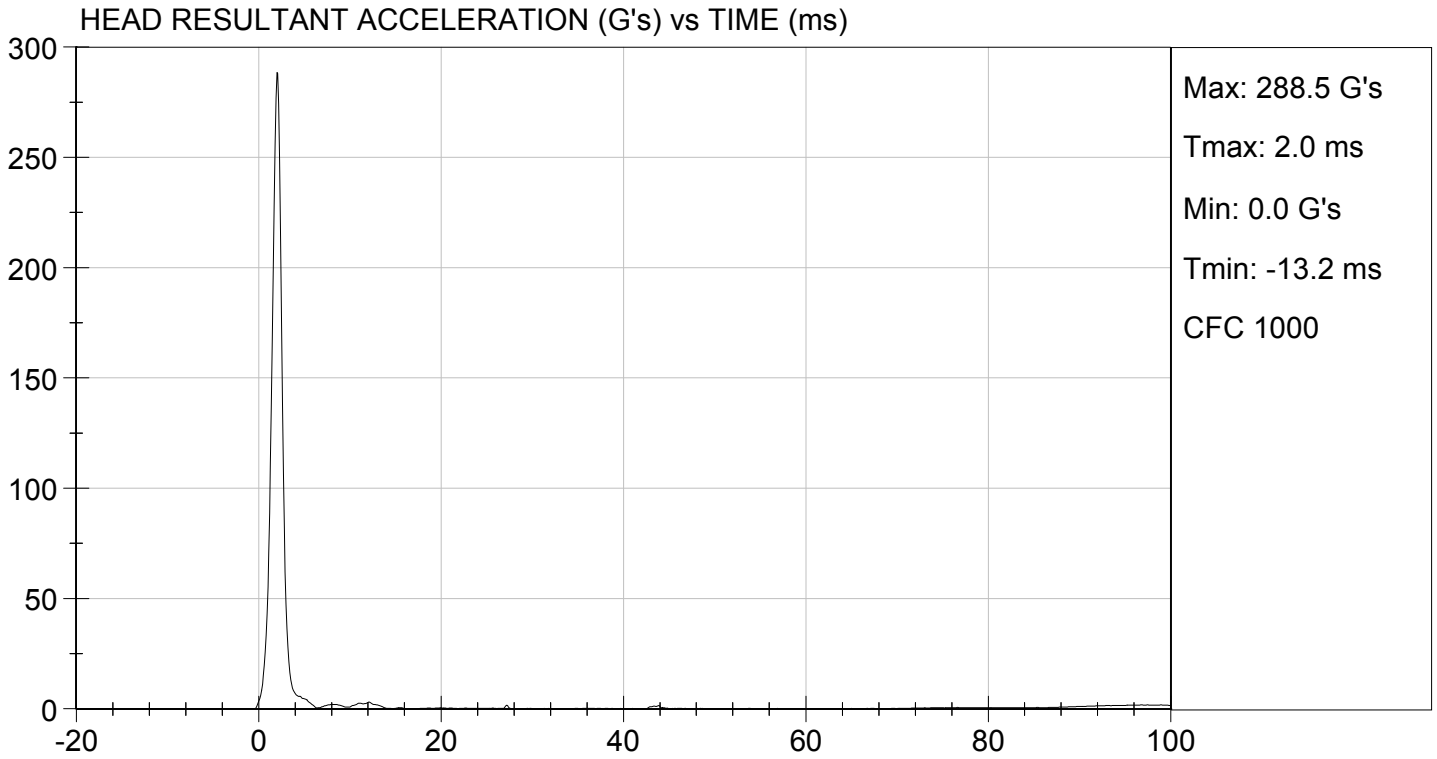
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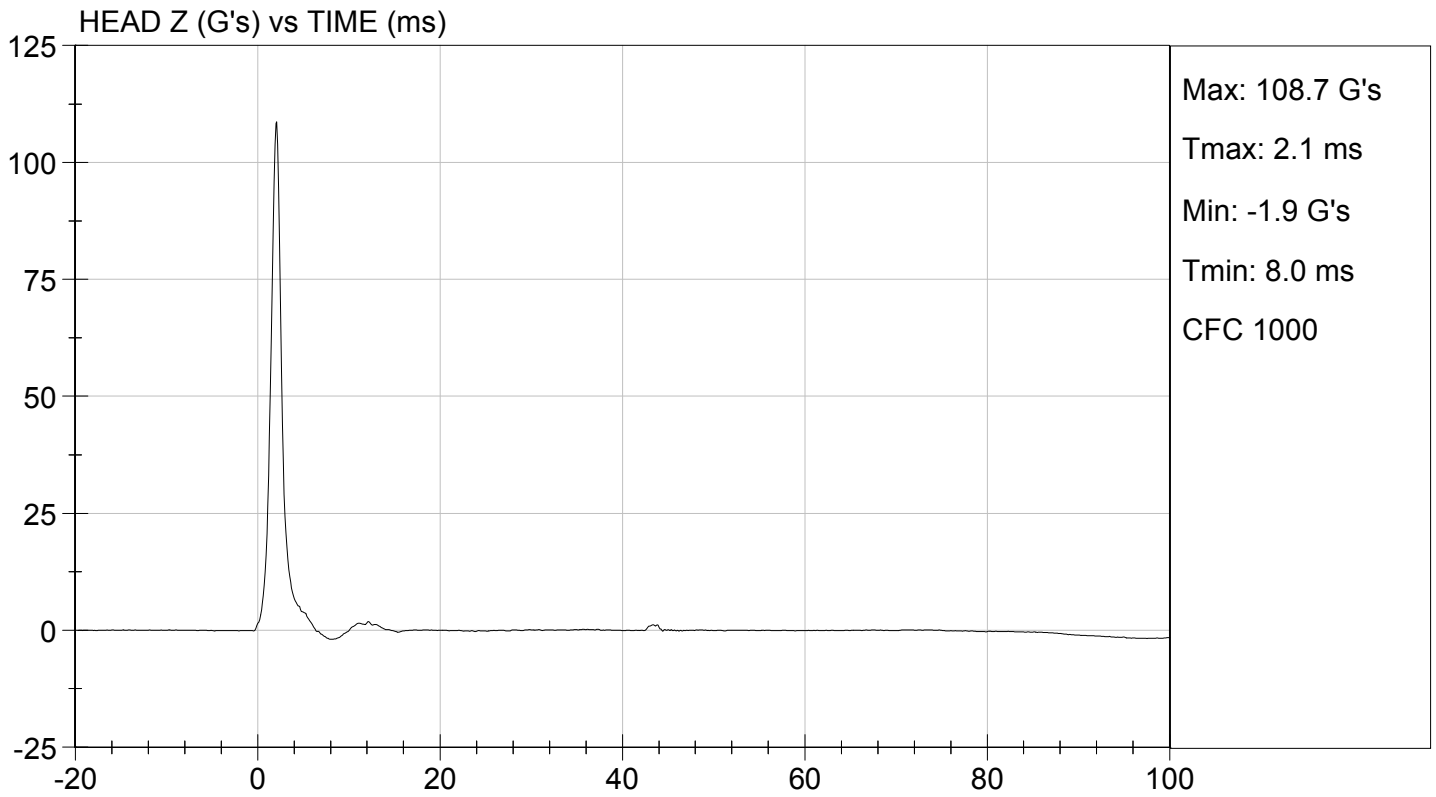
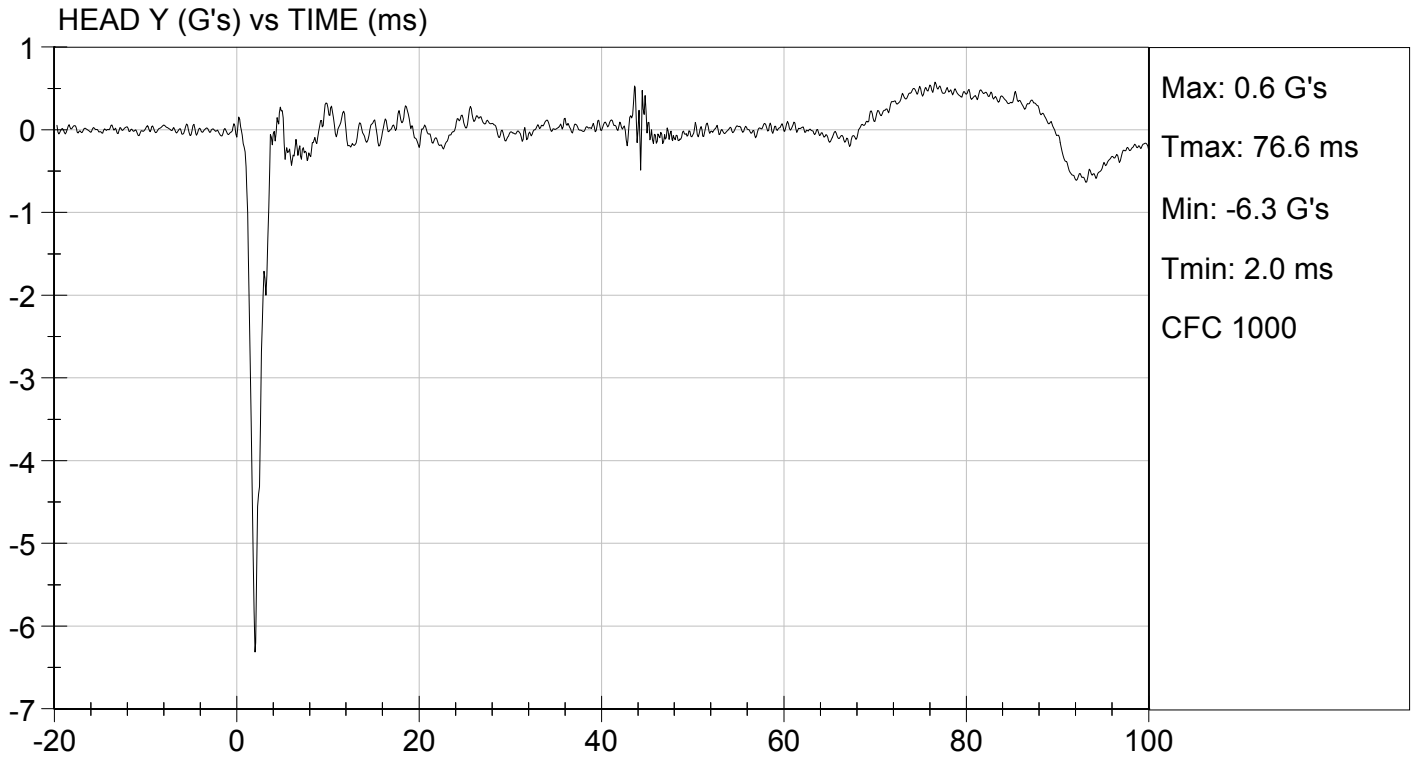
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	250 to 300	289	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-6.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

06/16/2015
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D.: D151742

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	48	Pass
Pendulum Speed		m/s	6.89 to 7.13	6.96	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.5	Pass
	20 ms	m/s	4.0 to 5.0	4.7	Pass
	30 ms	m/s	5.8 to 7.0	6.5	Pass
D Plane Rotation	Max	deg	77 to 91	79	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	84	Pass
Overall Results					Pass

David Schoedel

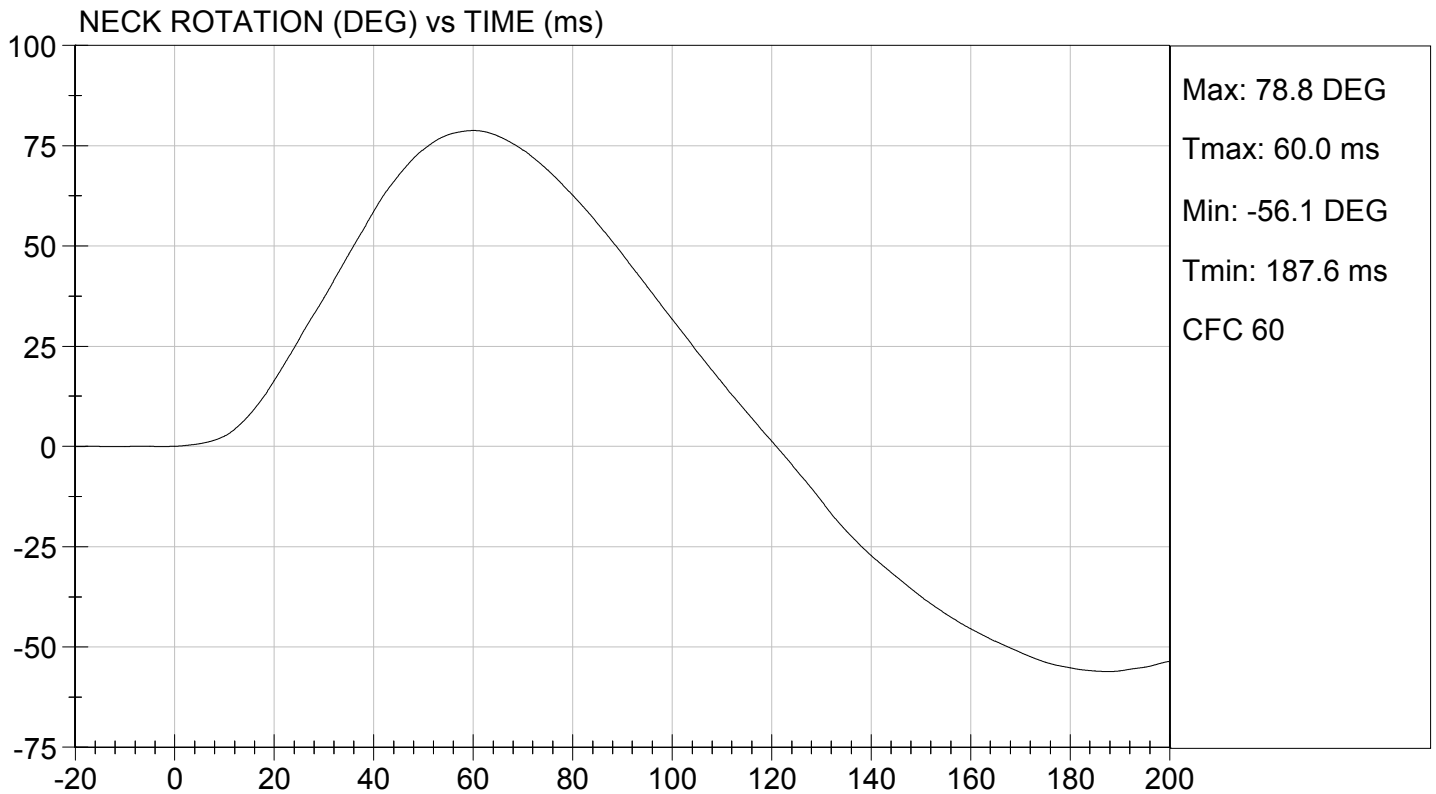
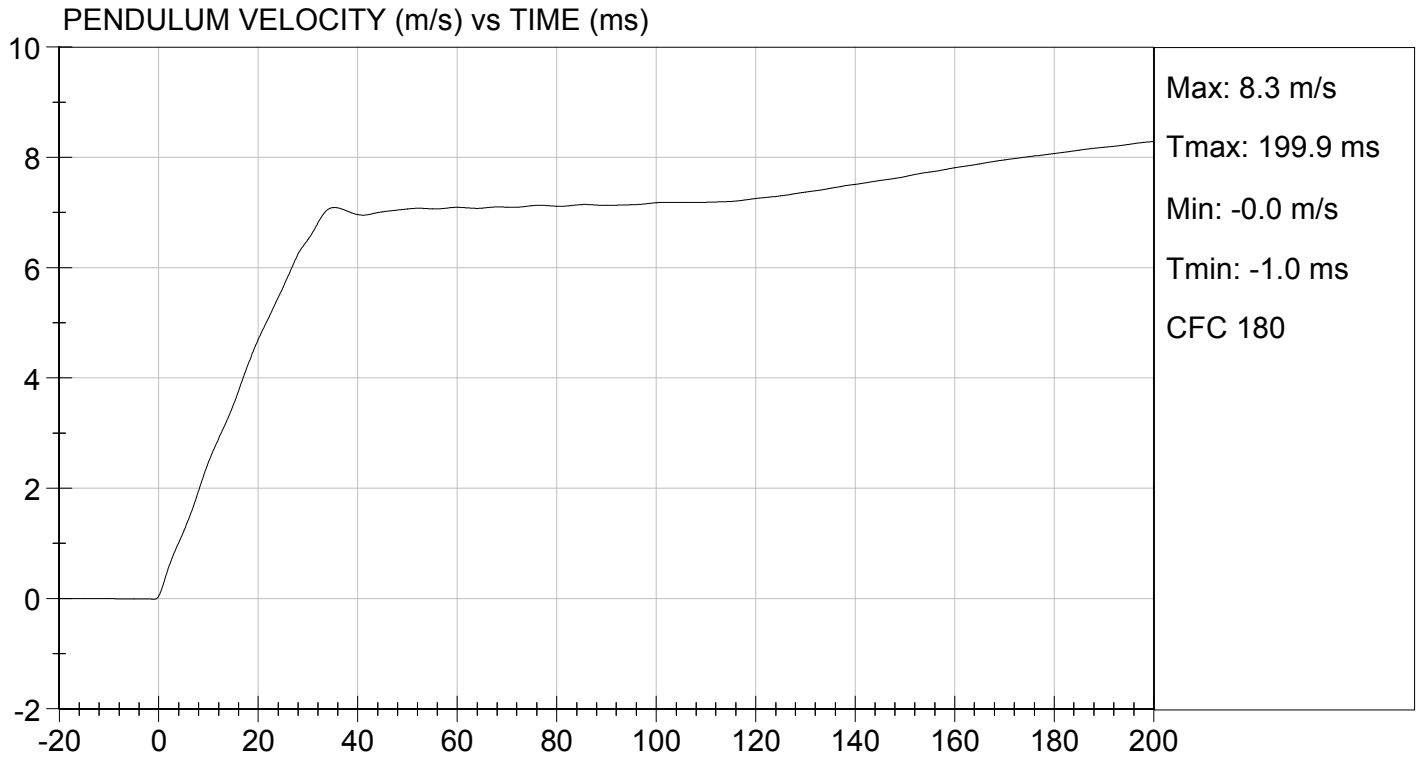
Laboratory Technician

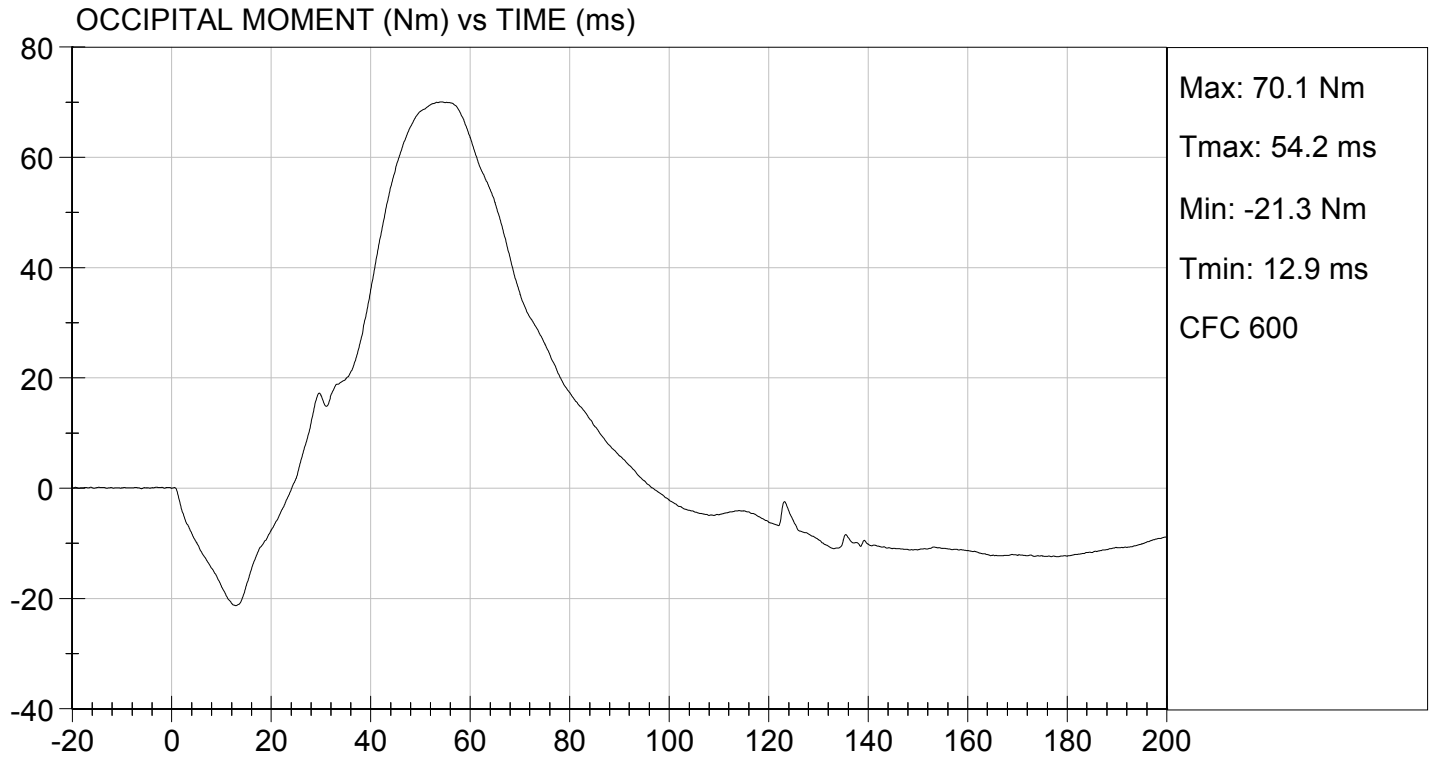
06/16/2015

Test Date

Jessica Hall

Approved By





MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

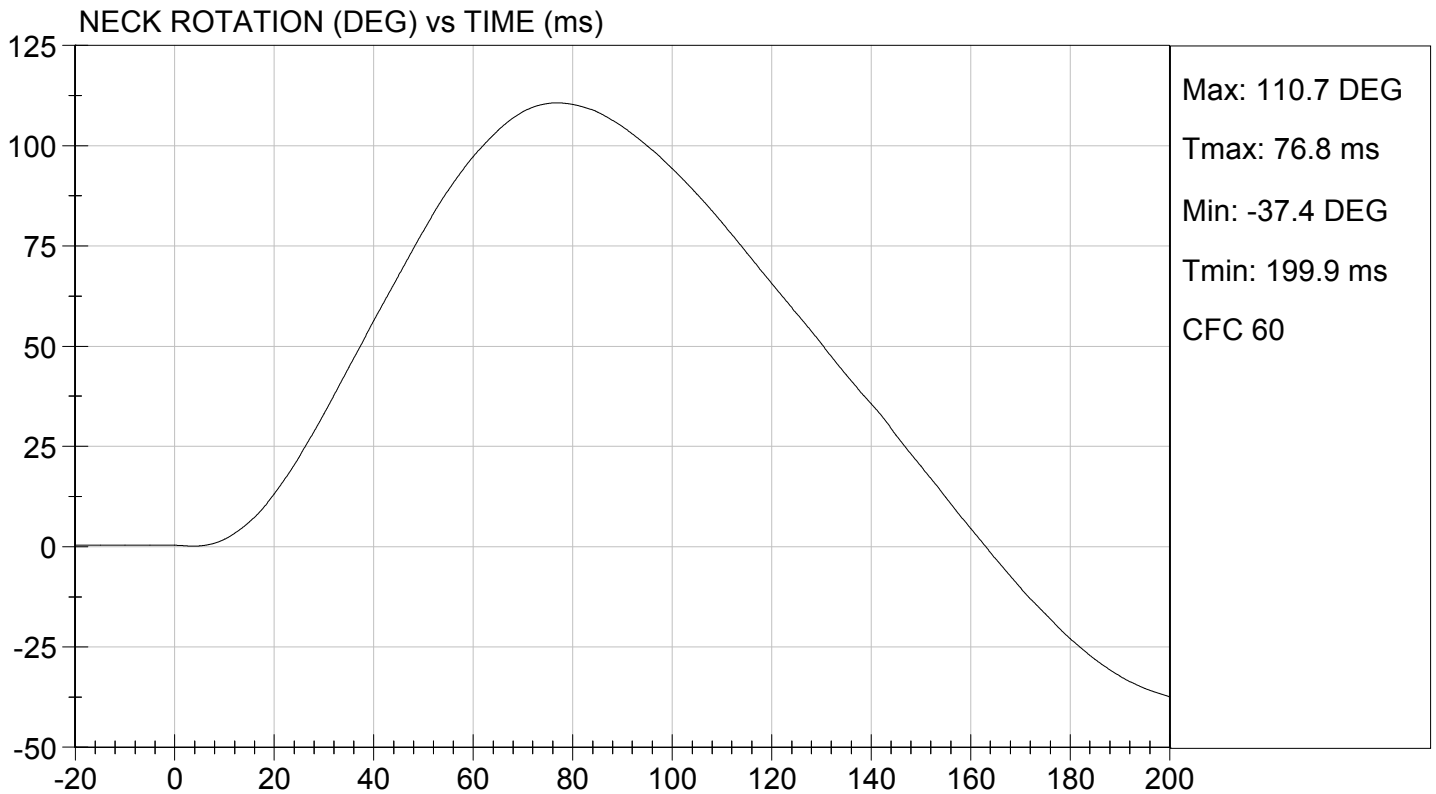
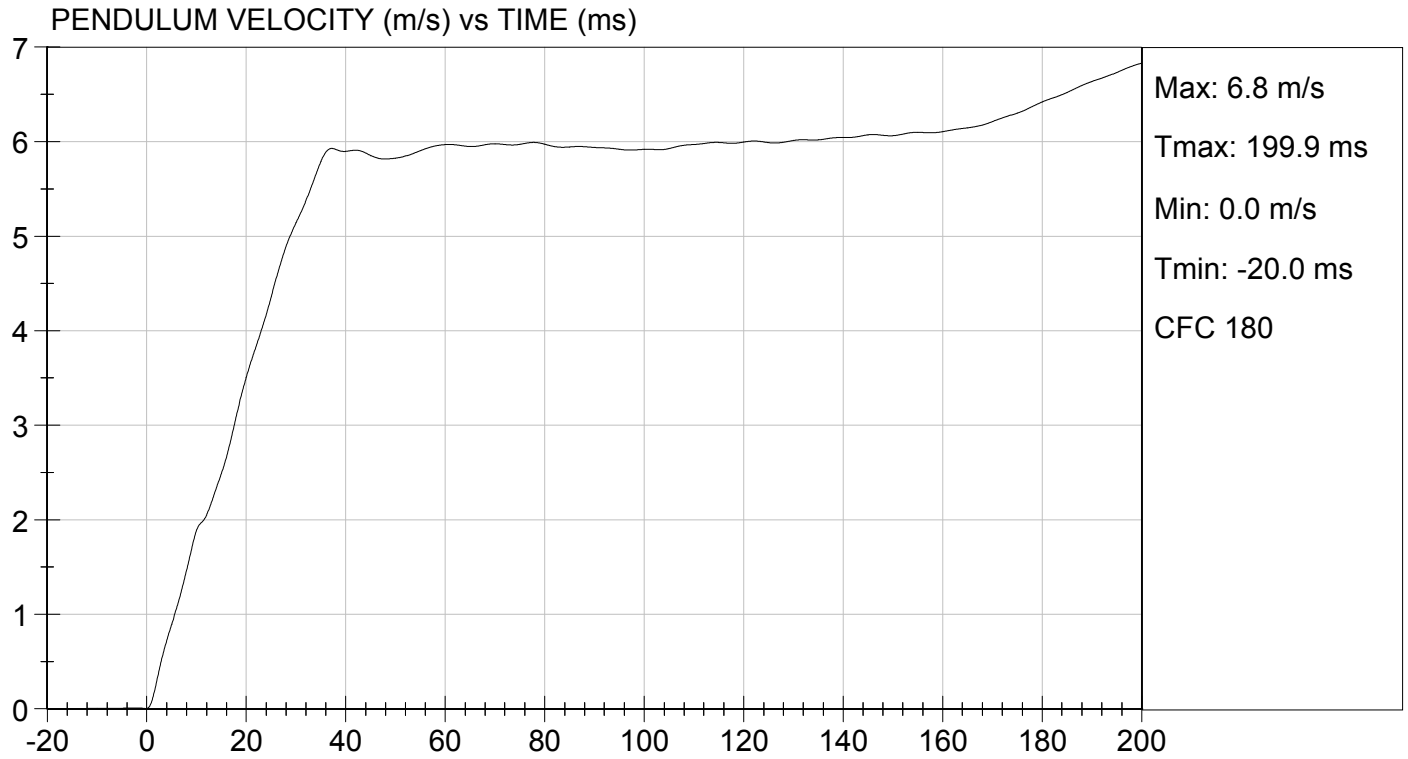
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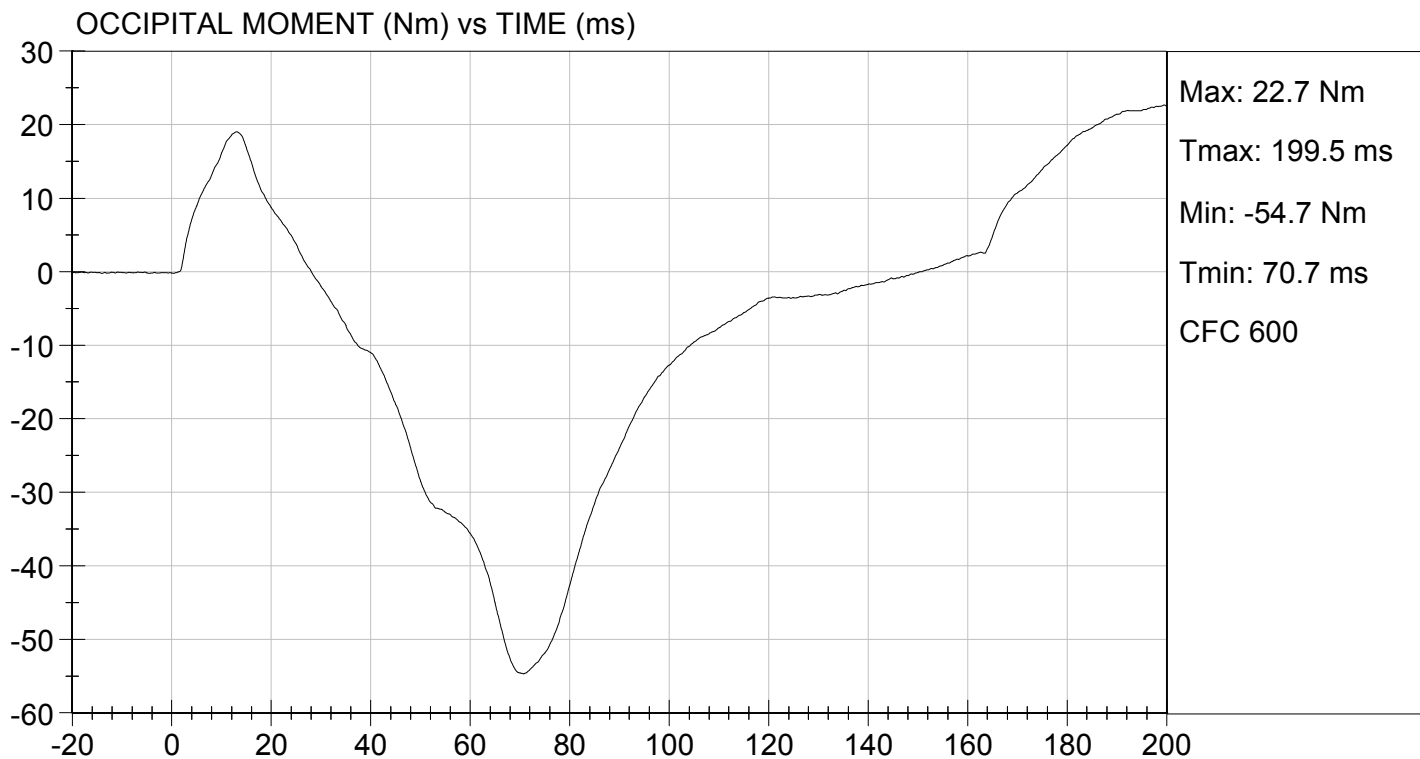
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	48	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.9	Pass
	20 ms	m/s	3.1 to 3.9	3.5	Pass
	30 ms	m/s	4.6 to 5.6	5.1	Pass
D Plane Rotation	Max	deg	99 to 114	111	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-55	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	102	Pass
Overall Results					Pass

David Schoedel
 Laboratory Technician

06/16/2015
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D151744

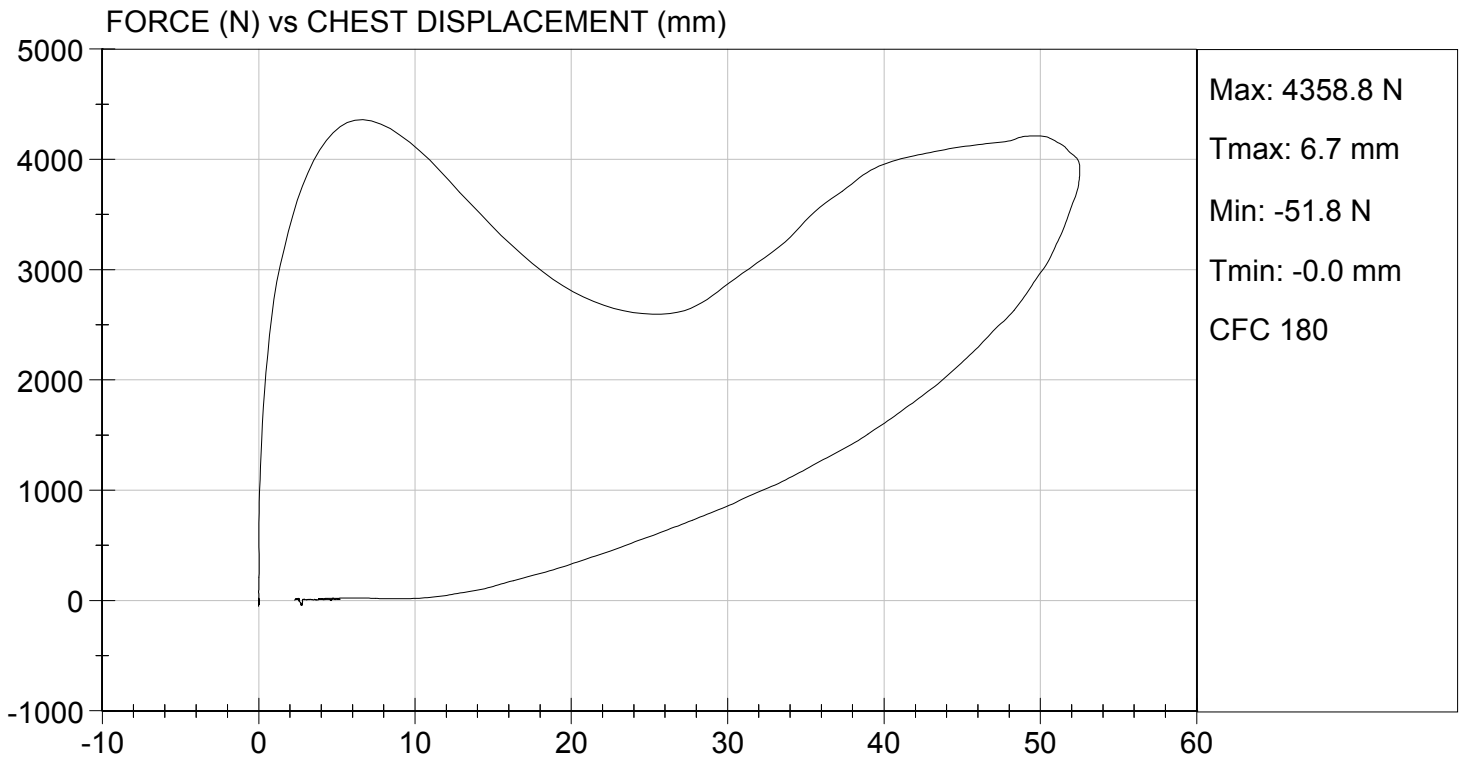
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	53	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4212	Pass
Internal Hysteresis	%	69 to 85	73	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4214	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

06/16/2015

Test Date

Jessica Hall
 Approved By



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

ATD Serial No: 634

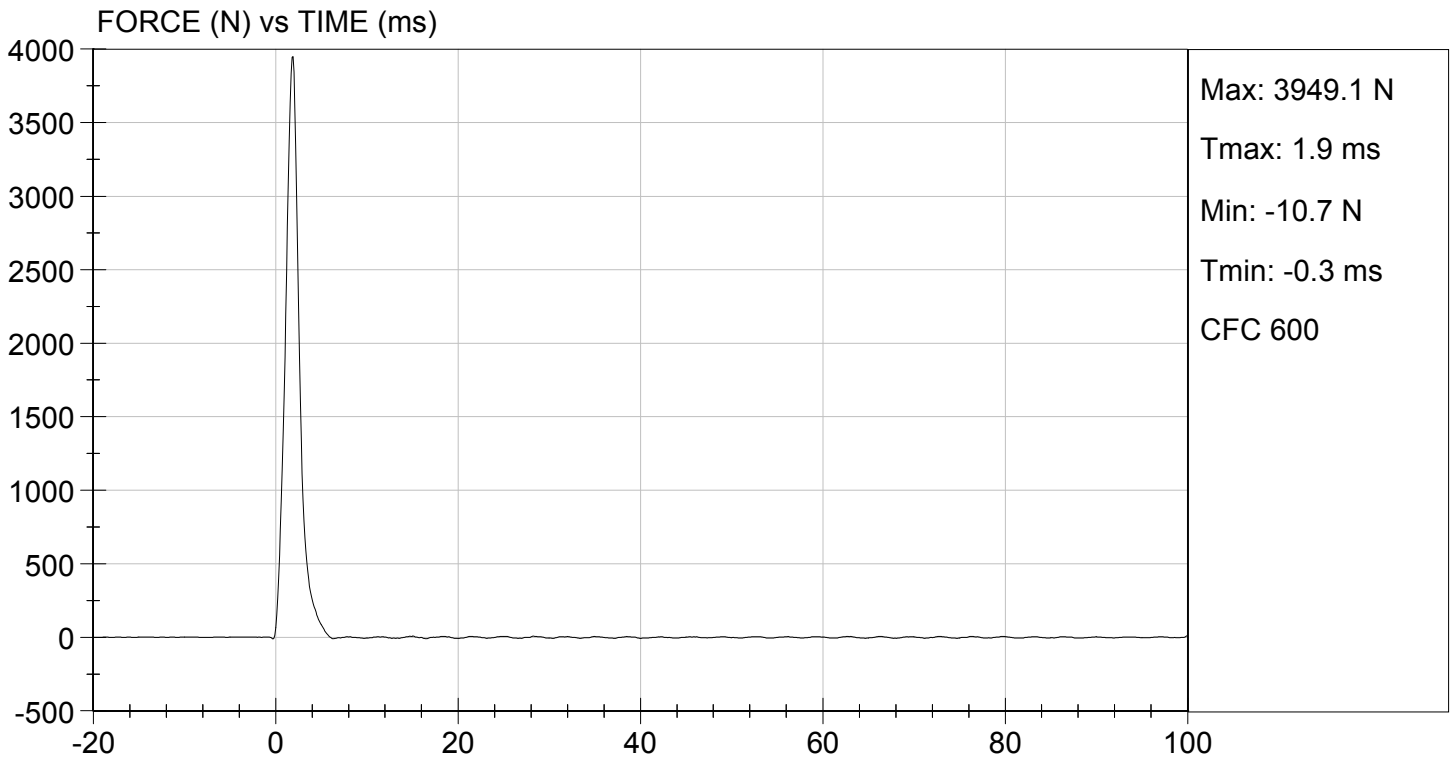
Test I.D.: D151745

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3949	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

06/16/2015
Test Date

Jessica Hall
Approved By



MGA RESEARCH CORPORATION

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

ATD Serial No: 634

Test I.D: D151746

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	2.07 to 2.13	2.09	Pass
Maximum Force	N	3450 to 4060	3822	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

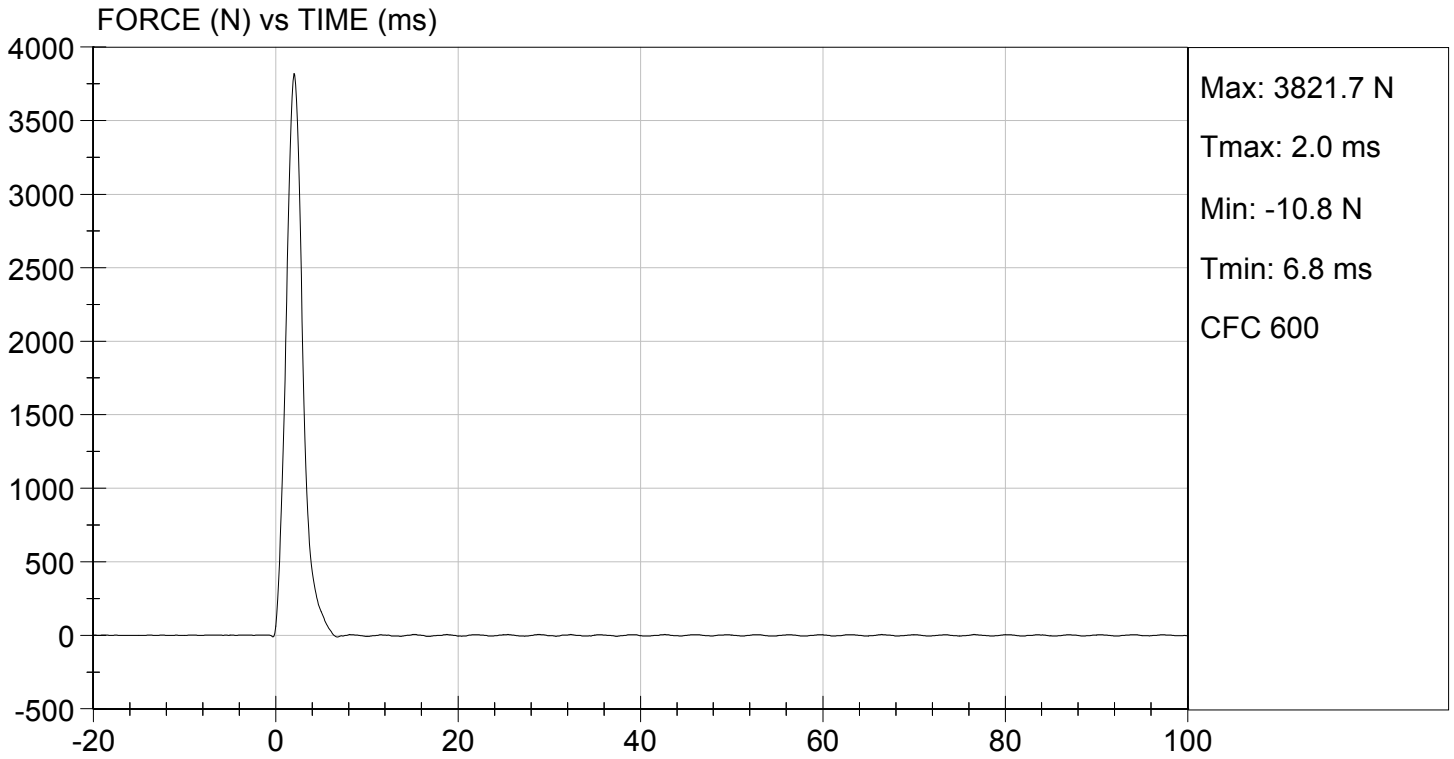
06/16/2015
Test Date

Jessica Hall
Approved By



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

TEST DATE: 06/16/2015
TEST #: D151746



MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D151747

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	6	Pass
Force at 45 deg	N	320 to 390	336	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.9	Pass
Overall Result				Pass

David Schoedel
 Laboratory Technician

06/16/2015
 Test Date

Jessica Hall
 Approved By

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

ATD Serial No: 634

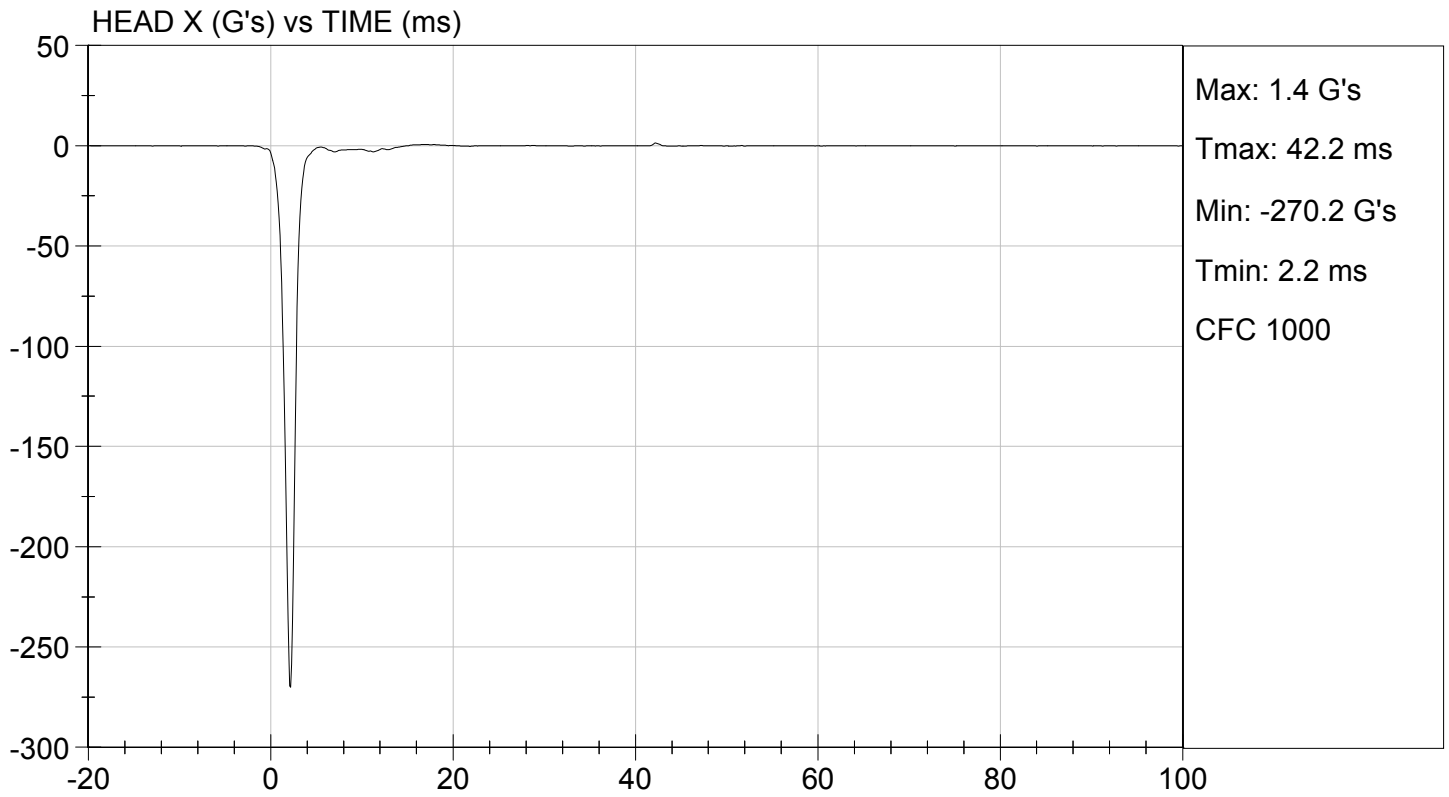
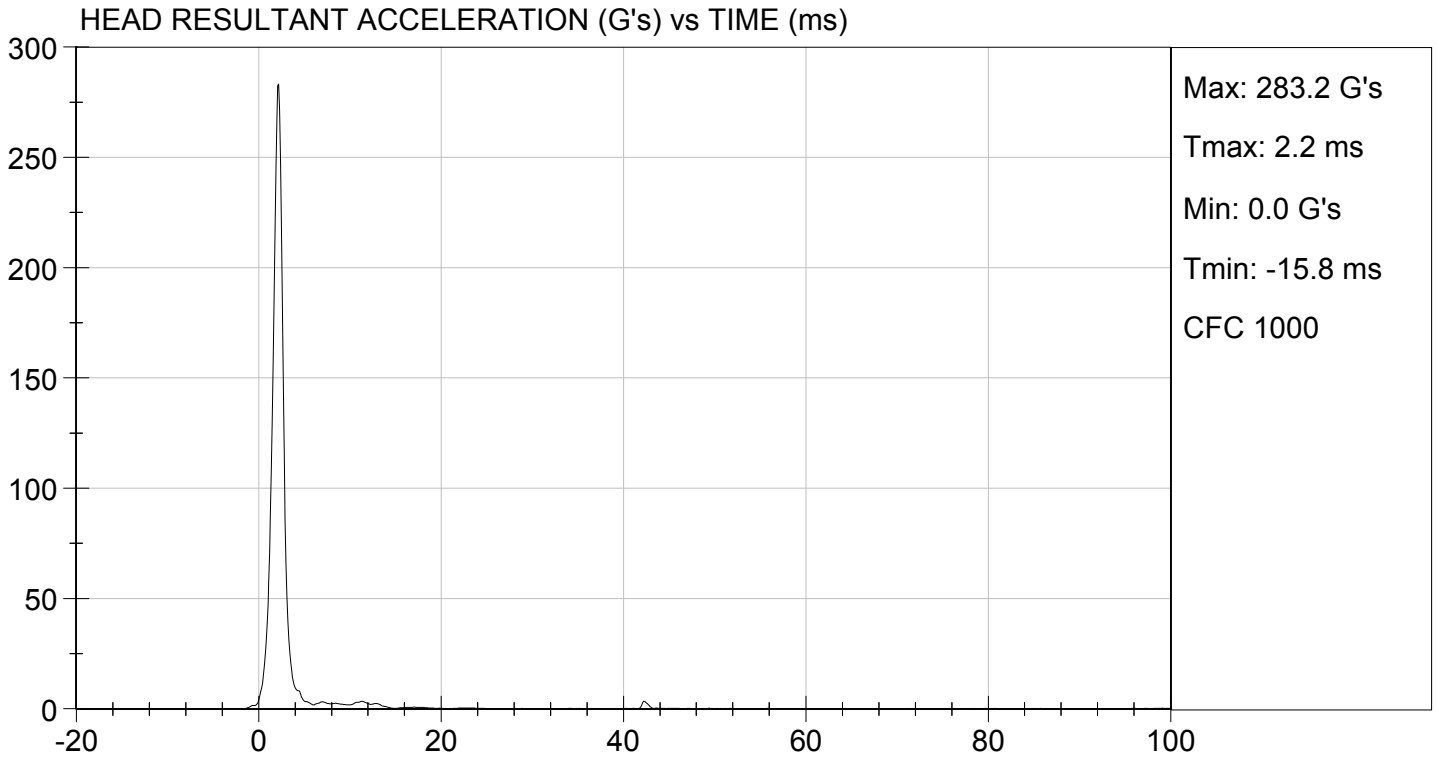
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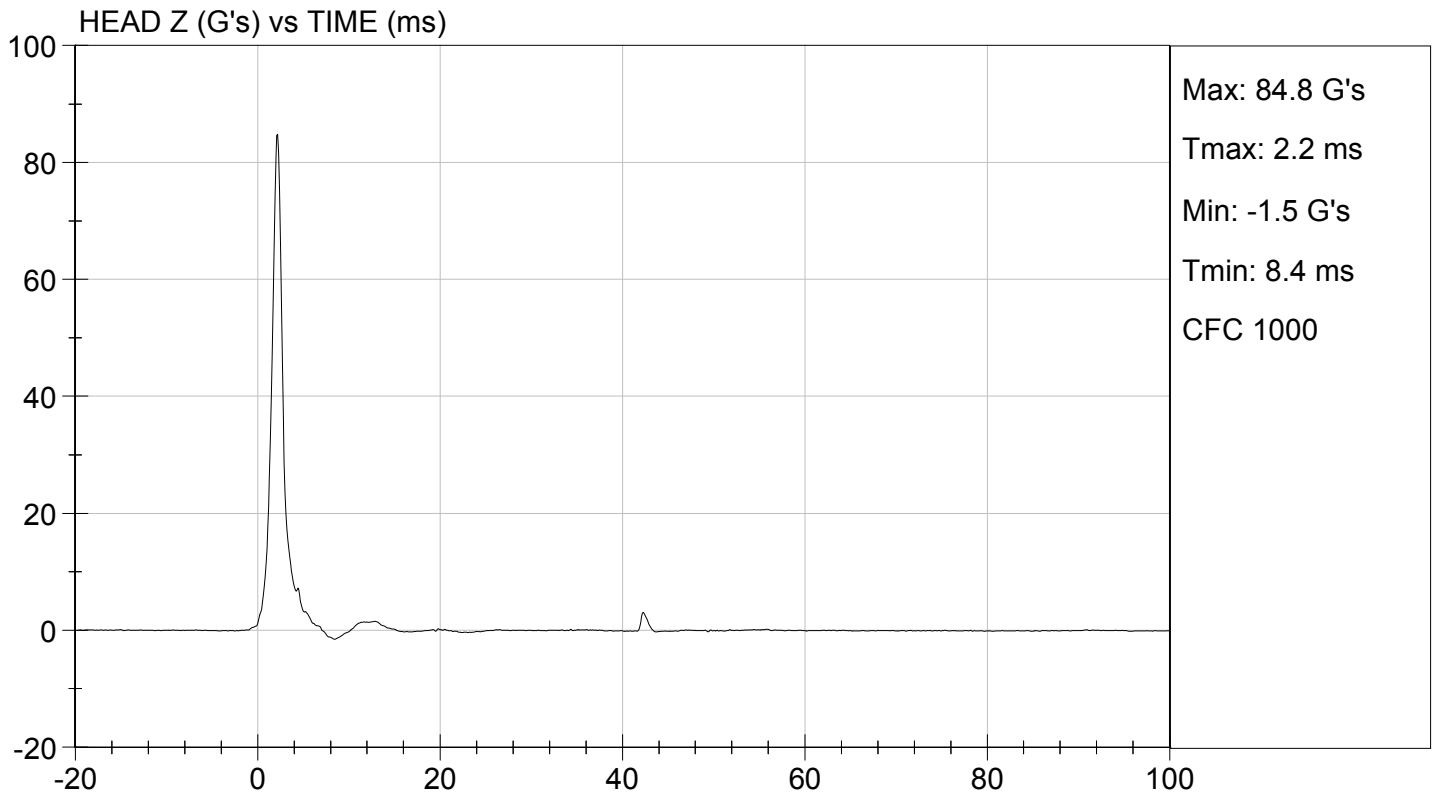
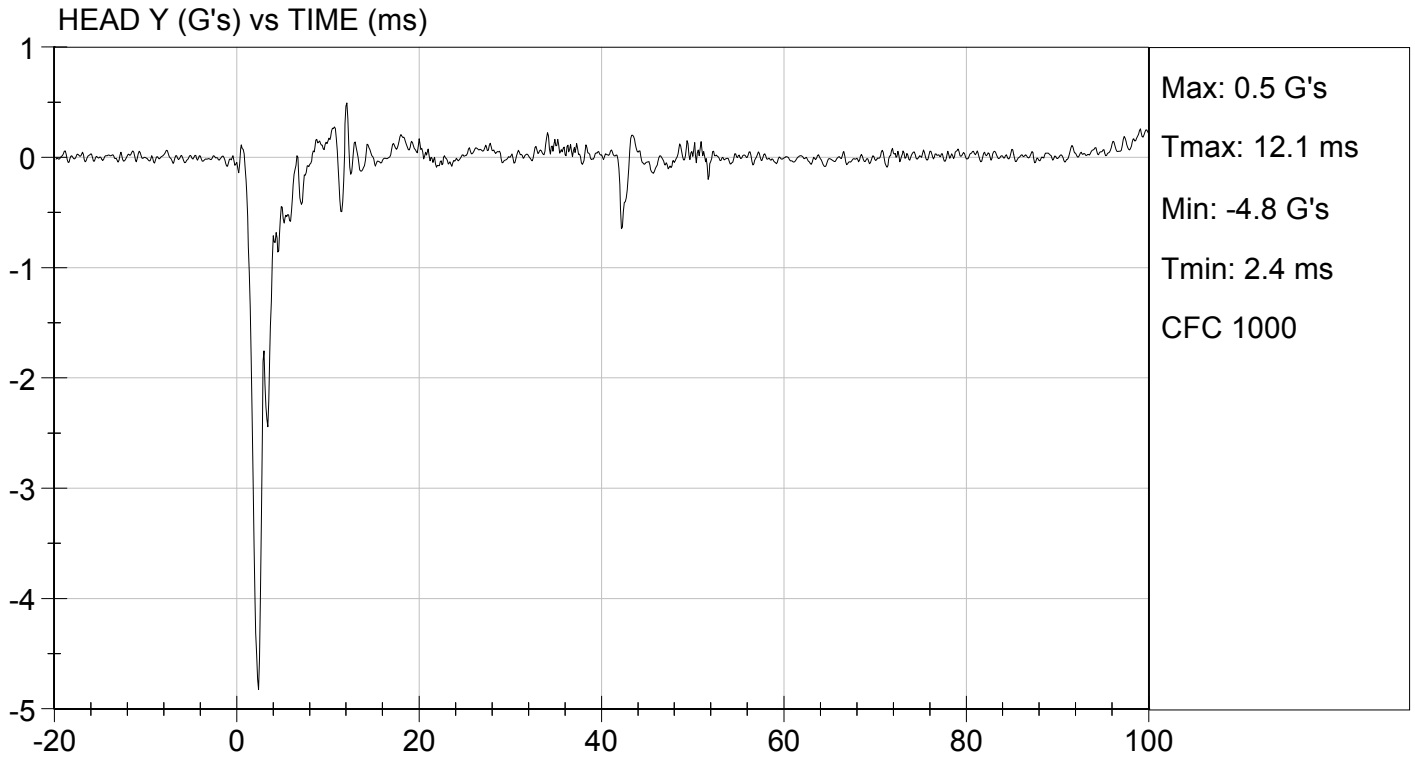
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Peak Resultant Acceleration	G's	250 to 300	283	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-4.8	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

07/13/2015
Test Date

Jessica Hall
Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

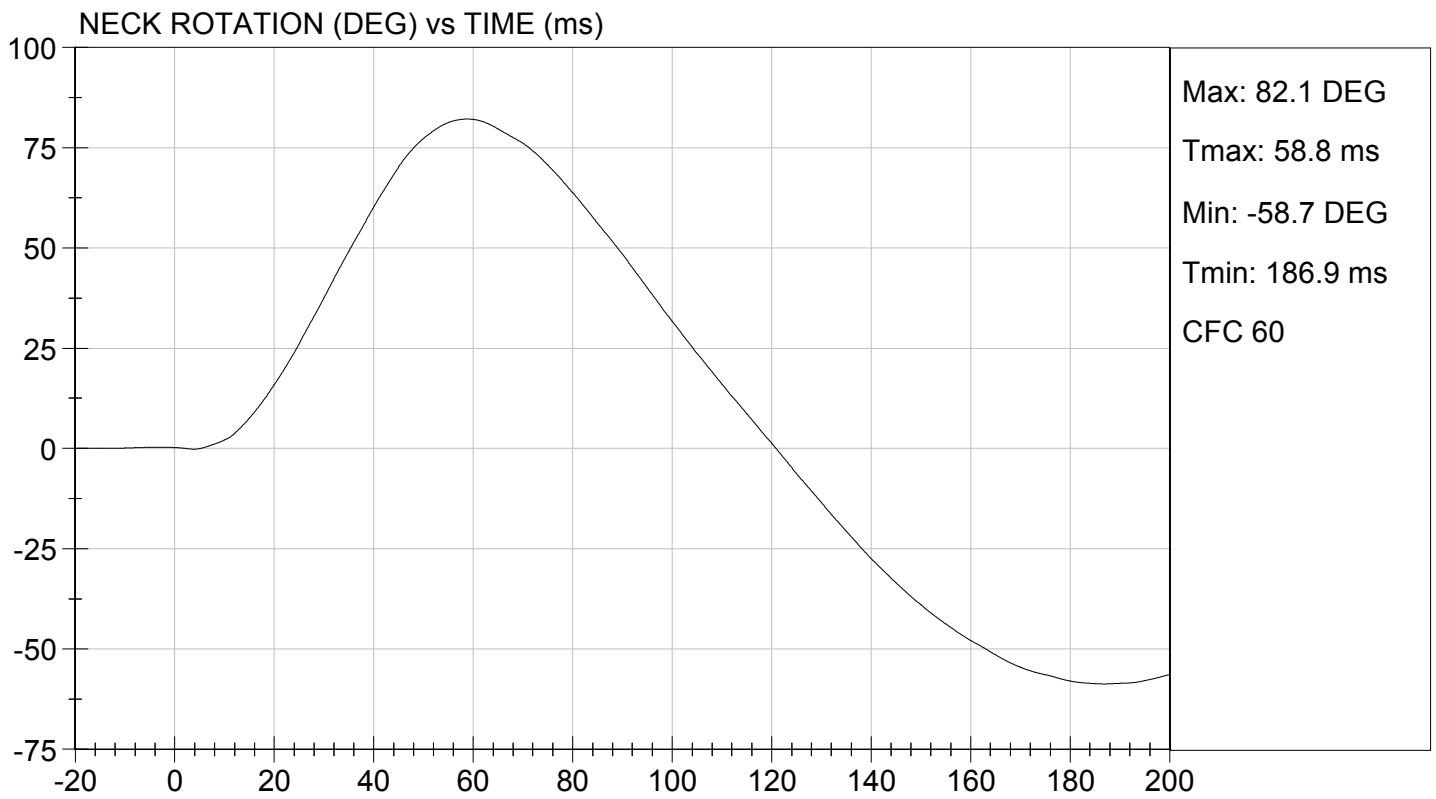
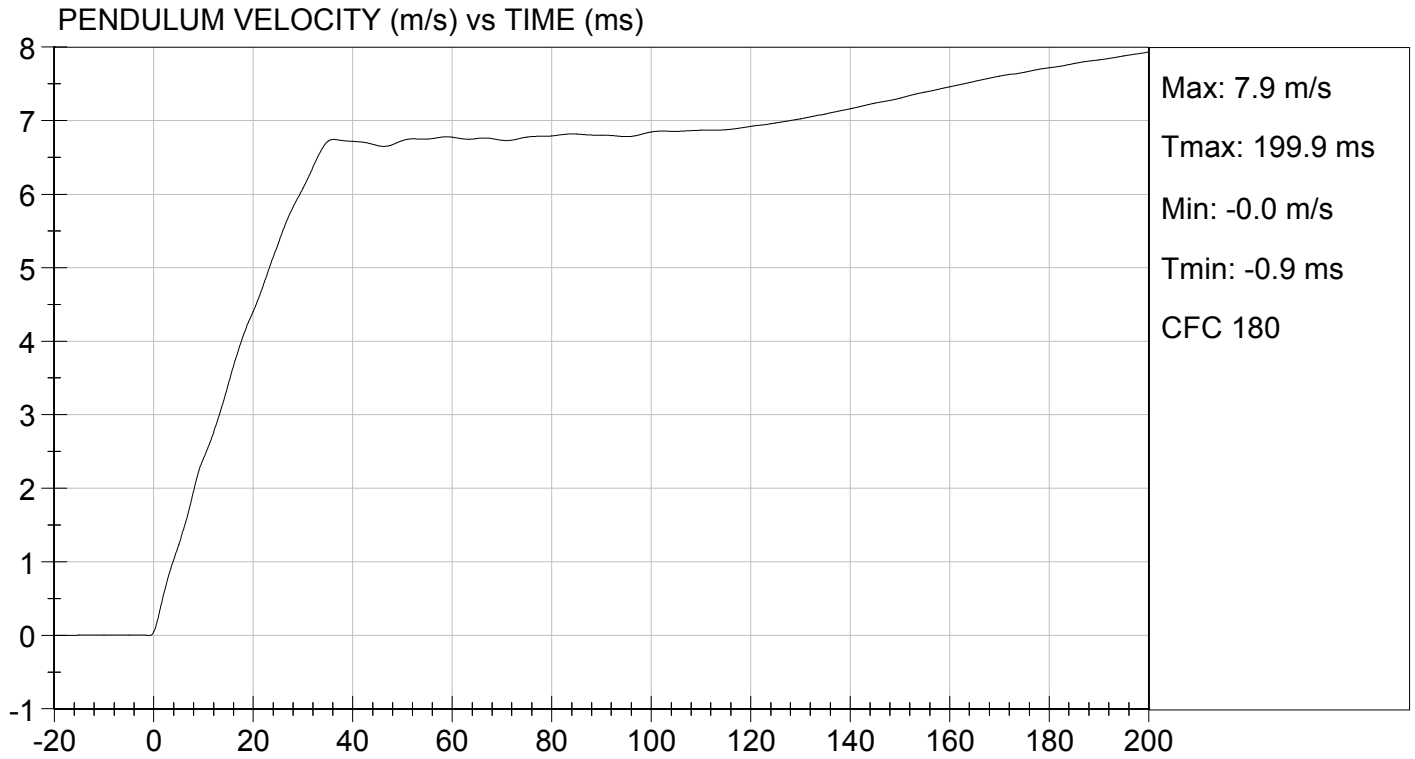
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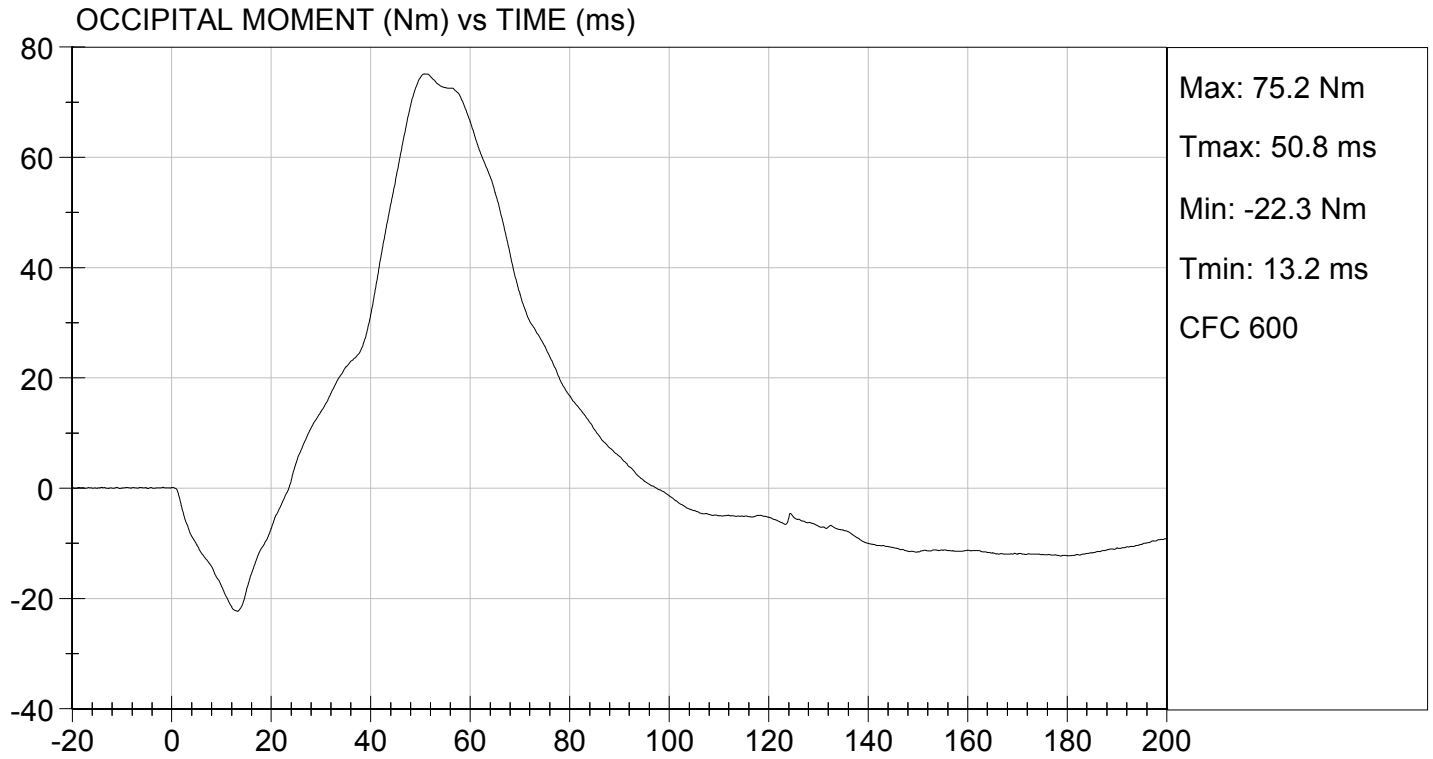
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	47	Pass
Pendulum Speed		m/s	6.89 to 7.13	6.96	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.4	Pass
	30 ms	m/s	5.8 to 7.0	6.1	Pass
D Plane Rotation	Max	deg	77 to 91	82	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	75	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	84	Pass
Overall Results					Pass

David Schoedel
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

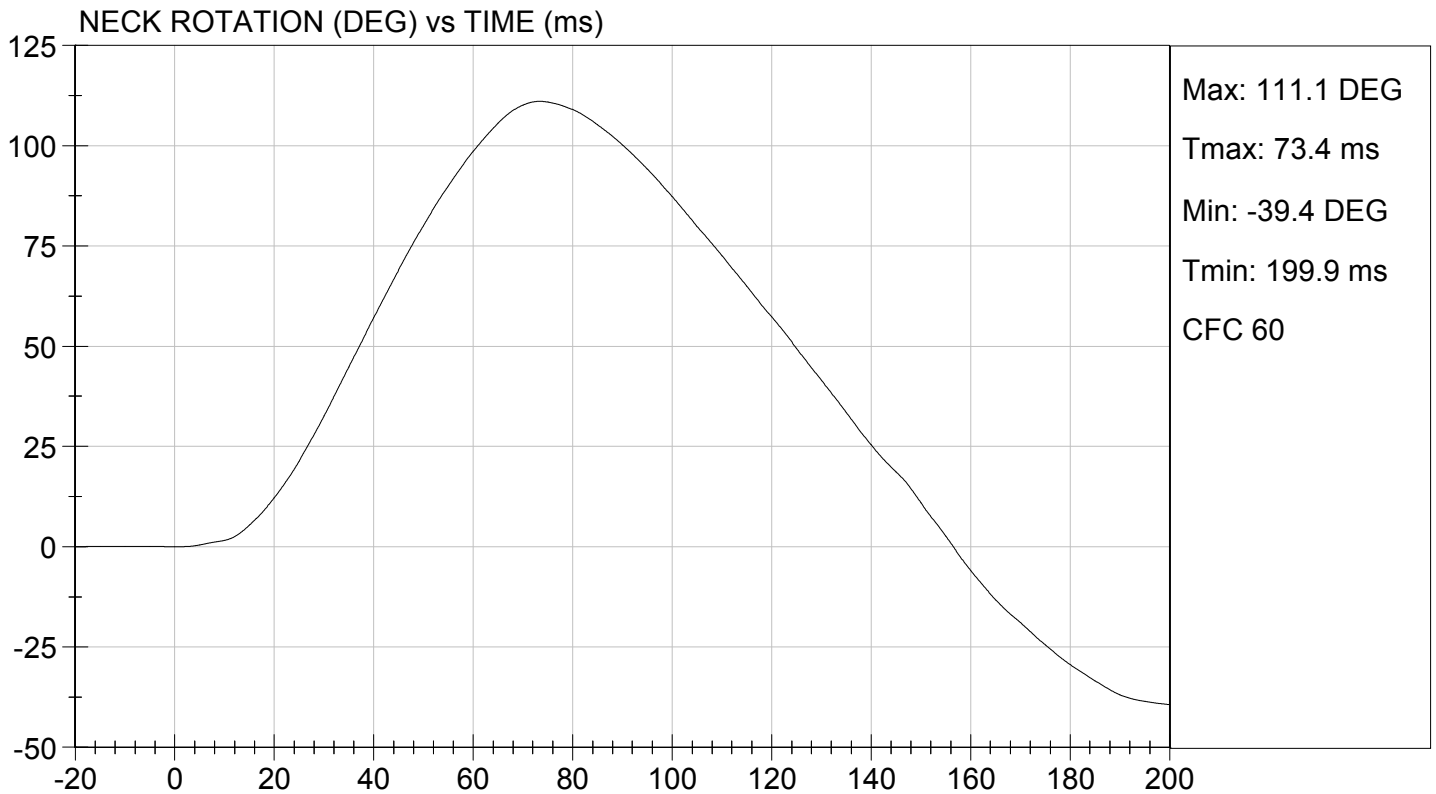
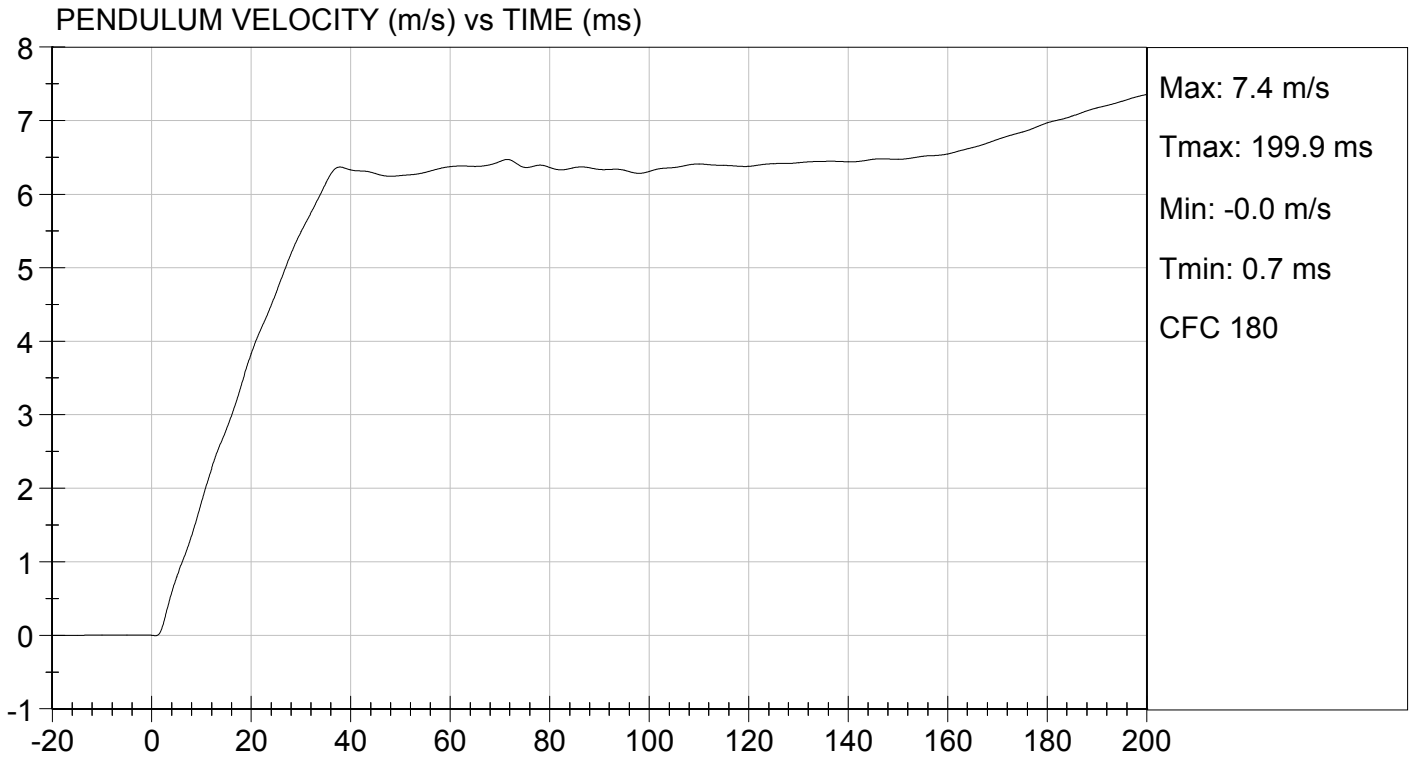
Test I.D: D152053

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	47	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.8	Pass
	30 ms	m/s	4.6 to 5.6	5.5	Pass
D Plane Rotation	Max	deg	99 to 114	111	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-62	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	98	Pass
Overall Results					Pass

David Schoedel
 Laboratory Technician

07/13/2015
 Test Date

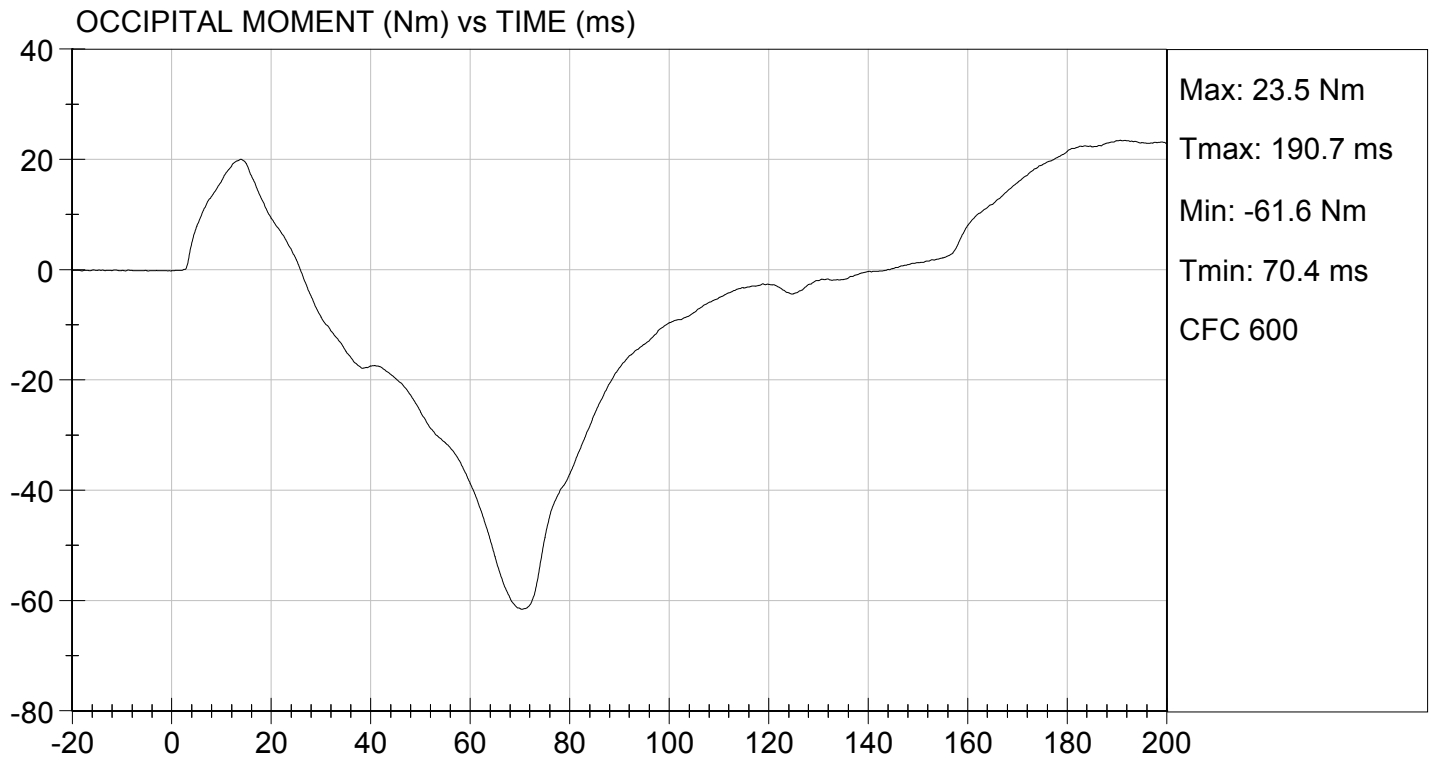
Jessica Hall
 Approved By





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

TEST DATE: 07/13/2015
TEST #: D152053



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D152054

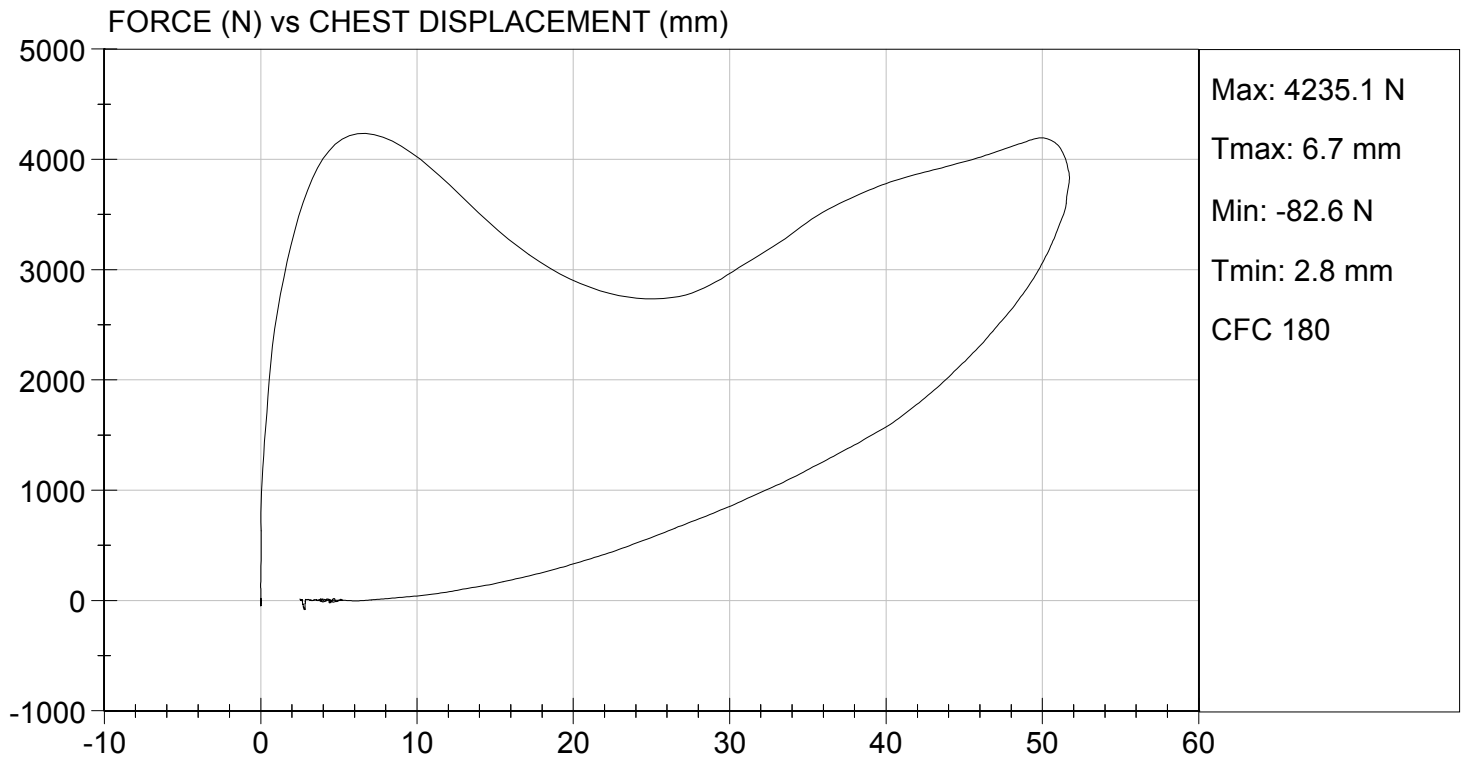
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Relative Humidity	%	10 to 70	54	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4195	Pass
Internal Hysteresis	%	69 to 85	74	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4195	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

07/13/2015

Test Date

Jessica Hall
 Approved By



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

ATD Serial No: 634

Test I.D: D152055

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	47	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3767	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

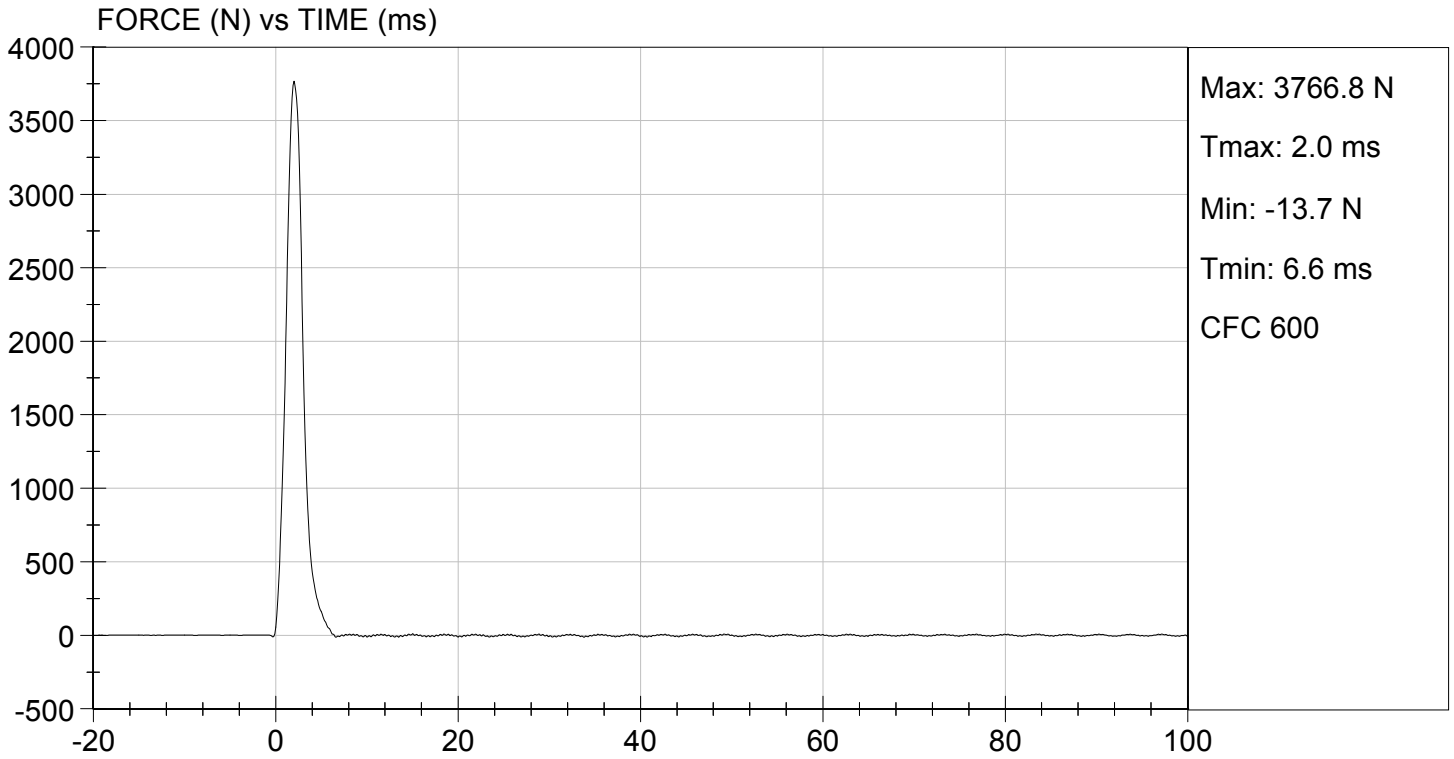
07/13/2015
Test Date

Jessica Hall
Approved By



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

TEST DATE: 07/13/2015
TEST #: D152055



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D152056

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	47	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3770	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

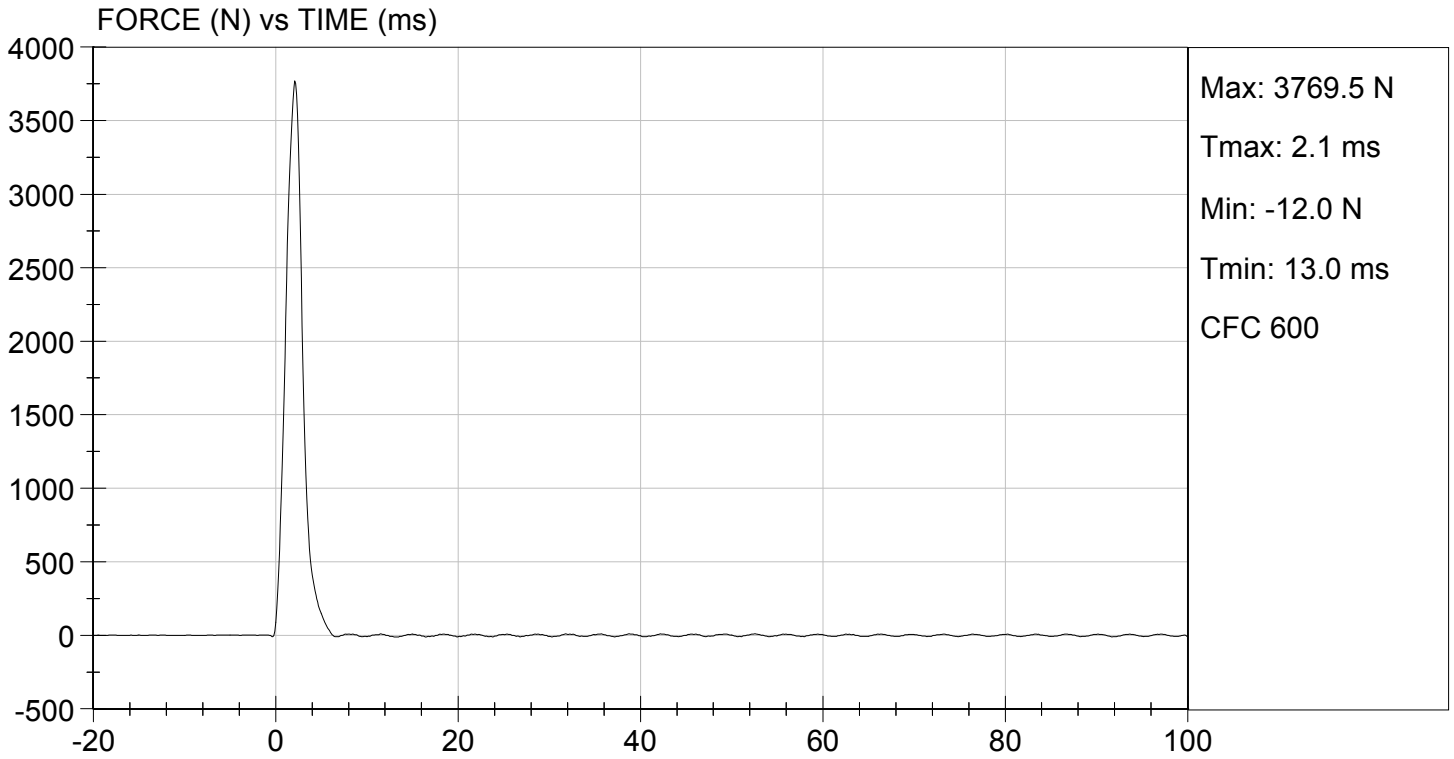
07/13/2015
Test Date

Jessica Hall
Approved By



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

TEST DATE: 07/13/2015
TEST #: D152056



MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D152057

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Initial Angle	deg	0 to 20	16	Pass
Return Angle	deg	+/- 8	3	Pass
Force at 45 deg	N	320 to 390	382	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	1.0	Pass
Overall Result				Pass

David Schoedel
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 Approved By