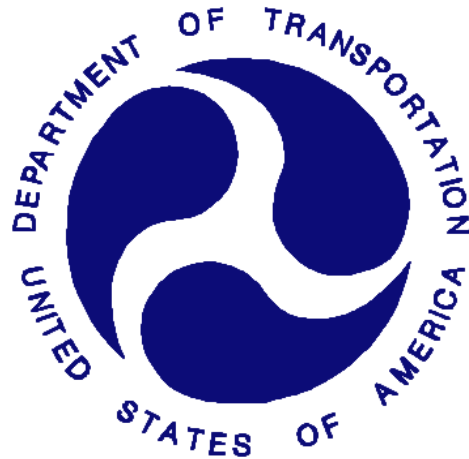


REPORT NUMBER: NCAP-MGA-2012-040

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

**HONDA MOTOR CO., LTD.
2012 Honda Fit 5-Dr Hatchback
NHTSA No.: MC5316**

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



Test Date: December 16, 2011

Final Report Date: January 9, 2012

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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Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: January 9, 2012

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: _____

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16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on the 2012 Honda Fit 5-Dr Hatchback 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), 301, and foot well intrusion performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on December 16, 2011. The impact velocity was 56.5 km/h and the ambient temperature at the barrier face at the time of impact was 21.6°C. The target vehicle post-test maximum crush was 530 mm located left of the vehicle's centerline. The test vehicle's performance was as follows:																																																							
<table border="1" style="width: 100%; border-collapse: collapse; background-color: #ffff00;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Threshold</th> <th rowspan="2">Driver ATD</th> <th rowspan="2">Passenger ATD</th> </tr> <tr> <th>50th</th> <th>5th</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700</td> <td>700</td> <td>203</td> <td>294</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>52</td> <td>25</td> <td>14</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>1</td> <td>0.27</td> <td>0.40</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>2620</td> <td>1322</td> <td>878</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>2520</td> <td>143</td> <td>529</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>6805</td> <td>672</td> <td>2693</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>6805</td> <td>1573</td> <td>2388</td> </tr> </tbody> </table>						Measurement Description	Units	Threshold		Driver ATD	Passenger ATD	50 th	5 th	Head Injury Criteria (HIC ₁₅)	N/A	700	700	203	294	Maximum Chest Compression	mm	63	52	25	14	Nij	N/A	1	1	0.27	0.40	Neck Tension	N	4170	2620	1322	878	Neck Compression	N	4000	2520	143	529	Left Femur Force	N	10008	6805	672	2693	Right Femur Force	N	10008	6805	1573	2388
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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 DTNH22-06-D-00028. 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 was impacted by a 2012 Honda Fit 5-Dr Hatchback at a velocity of 56.5 kph. The test was performed at MGA Research Corporation on December 16, 2011. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two 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 on the driver and passenger's lap belts to measure dummy torso and pelvic section loading.

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

The 228 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy head, chest displacement, neck, and femur 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 530 mm 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 and chest contacted the airbag. The driver's head also contacted the headrest and the handle on the ceiling. The driver's knees contacted the knee bolster. The passenger's visible contact points were as follows: The passenger's head and chest contacted the airbag. The passenger's head also contacted the headrest and seatback. 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)	203	0.27	1322	143	43	25	672	1573
Passenger (5 th)	294	0.40	878	529	47	14	2693	2388

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

TEST NOTES

Load Cell 6-13 is questionable data from 179-243 ms.

Left Rear Seat Crossmember load cell is questionable data from 63-65 ms.

The shoulder belt load cells for the driver and passenger were not used on this test per Form 1.

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: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MC5316	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	No
Make	Honda	Automatic Door Locks (ADLs)	Yes
Model	Fit	Power Window Auto-Reverse	Yes
Body Style	Hatchback	Other Optional Feature	N/A
VIN	JHMGE8G38CC004331	Driver Front Airbag	Yes
Body Color	Vortex Blue Pearl	Driver Curtain Airbag	Yes
Odometer (km/mi)	182 / 113	Driver Head/Torso Airbag	No
Engine Displacement (L)	1.5	Driver Torso Airbag	Yes
Type/No. Cylinders	4	Driver Torso/Pelvis Airbag	No
Engine Placement	Lateral	Driver Knee Airbag	No
Transmission Type	Manual	Pass. Front Airbag	Yes
Transmission Speeds	5	Pass. Curtain Airbag	Yes
Overdrive	Yes	Pass. Head/Torso Airbag	No
Final Drive	Front	Pass. Torso Airbag	Yes
Roof Rack	No	Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Pass. Seat Belt Pretensioner	Yes
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Pass. Load Limiter	Yes
All-Wheel Drive (AWD)	No	Other Safety Restraint	N/A
Does owner's manual provide instructions to turn off automatic door locks?			Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda Motor Co., Ltd.	GVWR (kg)	1594
Date of Manufacture	09/11	GAWR Front (kg)	872
Vehicle Type	Passenger Car	GAWR Rear (kg)	735

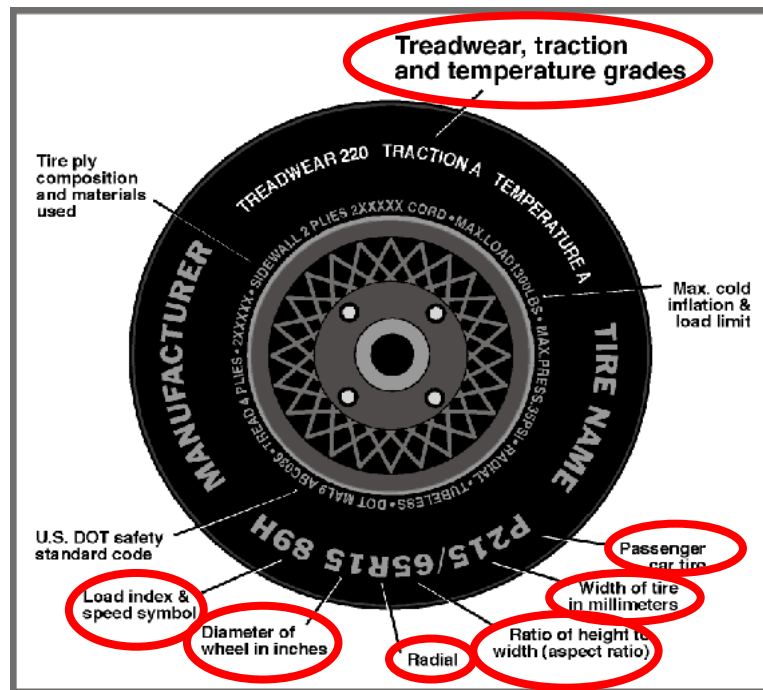
VEHICLE SEATING AND WEIGHT CAPACITY DATA

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: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	220	220
Recommended Tire Size	175/65R15	175/65R15

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Tire Size on Vehicle	175/65R15	175/65R15
Tire Manufacturer	Dunlop	Dunlop
Tire Name	SP37	SP37
Tire Type	Passenger	Passenger
Tire Width	175	175
Aspect Ratio	65	65
Radial	Yes	Yes
Wheel Diameter	15	15
Load Index/Speed Symbol	84S	84S
Treadwear	320	320
Traction Grade	A	A
Temperature Grade	B	B
Tire Material	Rubber	Rubber

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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	367.0	201.4		385.6	278.5	
Right	kg	336.5	225.9		383.7	262.2	
Ratio	%	62.2	37.8		58.7	41.3	
Totals	kg	703.5	427.3	1130.8	769.3	540.7	1310.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1130.8
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.6
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1316.4

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	650	656	662	666	945
As Tested	mm	644	641	625	631	1032
Post Test	mm	647	644	643	621	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2500
Total Vehicle Length at Left Side	mm	3924
Total Vehicle Length at Centerline	mm	4107
Total Vehicle Length at Right Side	mm	3924
Weight of Ballast in Cargo Area	kg	16.8
Weight of Vehicle Components Removed	kg	16.3
Amount of Stoddard Solvent in Fuel Tank	L	37.3

List of components removed to meet test weight: Right taillight, trunk carpet, jack/tools, spare tire, and hub caps.

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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4107
2	Total Width	1692
3	Bumper Top Height	525
4	Bumper Bottom Height	420
5	Longitudinal Member Top Height	500
6	Distance between Longitudinal Members	890
7	Longitudinal Member Width	100
8	Engine Top Height	854
9	Engine Bottom Height	195
10	Engine and Gearbox Width	1000
11	Front Bumper-Engine Distance	355
12	Front Shock Absorber Fixing Height	856
13	Bonnet Leading Edge Height	672
14	Front Shock Absorber Fixing Width	1245
15	Front Bumper – Front Axle Distance	906
16	Front Axle – A-Pillar Distance	416
17	A-Pillar – B-Pillar Distance	1070
18	B-Pillar – Rear Axle Distance	1020
19	B-Pillar – C-Pillar Distance	617
20	Roof Sill Bottom Height	1364
21	Roof Sill Top Height	1479
22	Floor Sill Bottom Height	194
23	Floor Sill Top Height	330

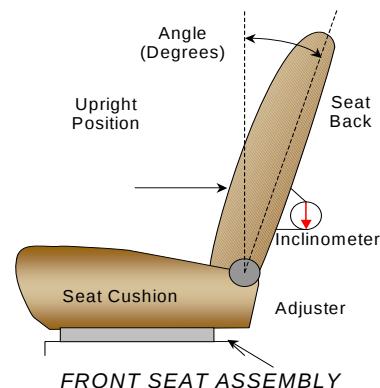
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

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 January 2010.



SEAT BACK ANGLE	Degrees
Driver Seat Back Angle	8.7° on headrest post
Passenger Seat Back Angle	5.7° on headrest post

SEAT FORE/AFT POSITIONS

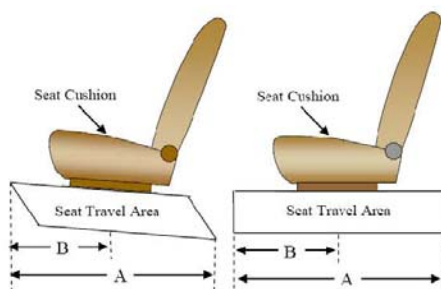
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated January 2010.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	25 detents	12 th detent (forward-most as 0)
Passenger Seat	25 detents	0 detent (forward-most 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)	1 (uppermost as 0)
Passenger Seat	4 (1 st as 1)	1 (uppermost as 0)



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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

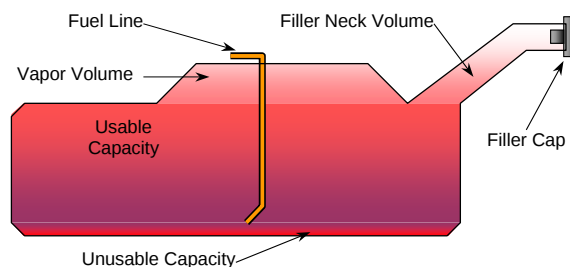
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	40.1
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	36.9 to 37.7
Actual Amount of Solvent used	37.3
1/3 of Usable Capacity	13.4

FUEL PUMP

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

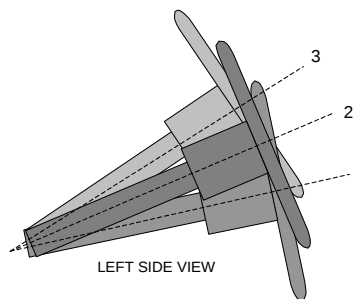
The vehicle is equipped with an electric fuel pump. After the ignition key is turned from LOCK (O) to ON (II) position, the pump will be filled up for two seconds, and then the pressure is maintained. The fuel pipe is on the left side.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

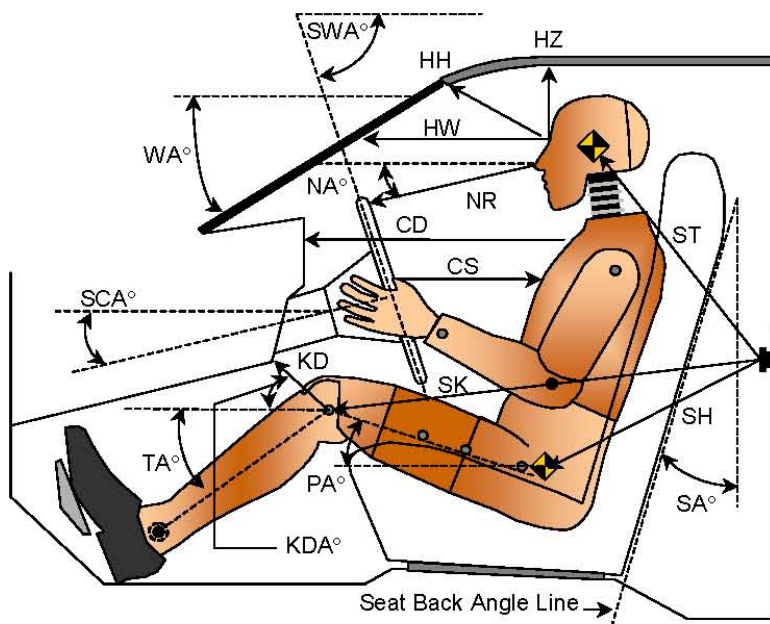
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost – Position 1	68.0	197
Geometric Center – Position 2	65.2	184
Uppermost – Position 3	62.4	172
Telescoping Steering Wheel Travel		25
Test Position	65.2	184

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
Test Date: 12/16/2011



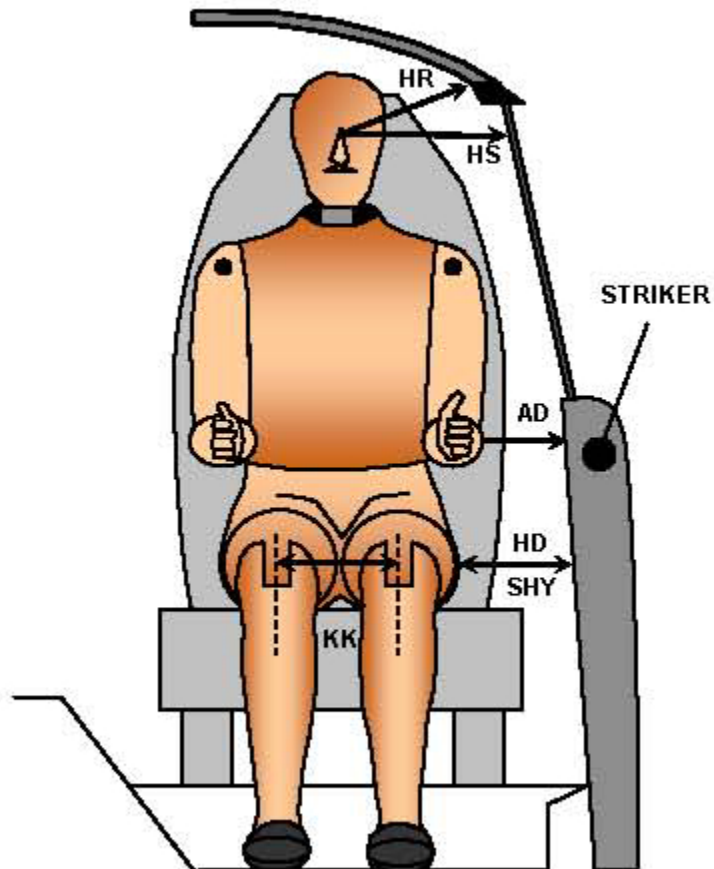
LEFT SIDE VIEW

Code	Measurement Description	Driver S/N 351		Passenger S/N 634	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		23.0		
SWA°	Steering Wheel Angle		65.2		
SCA°	Steering Column Angle		24.8		
SA°	Seat Back Angle (on headrest post)		8.7		5.7
HZ	Head to Roof (Z)	211	90	231	90
HH	Head to Header	321	23.3	275	48.1
HW	Head to Windshield	691	0	728	0
NR	Nose to Rim	415	13.5		
CD	Chest to Dash	581		377	
CS	Chest to Steering Hub	323	7.4		
RA	Rim to Abdomen	192	0		
KDL	Left Knee to Dash	150	29.6	63	32.3
KDR	Right Knee to Dash	133	31.2	80	29.5
PA°	Pelvic Angle		23.5		19.4
TA°	Tibia Angle		53.3		49.2
SK	Striker to Knee	588	88.3	687	92.3
ST	Striker to Head	540	8.3	492	23.6
SH	Striker to H-Point	247	118.6	376	109.0

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011



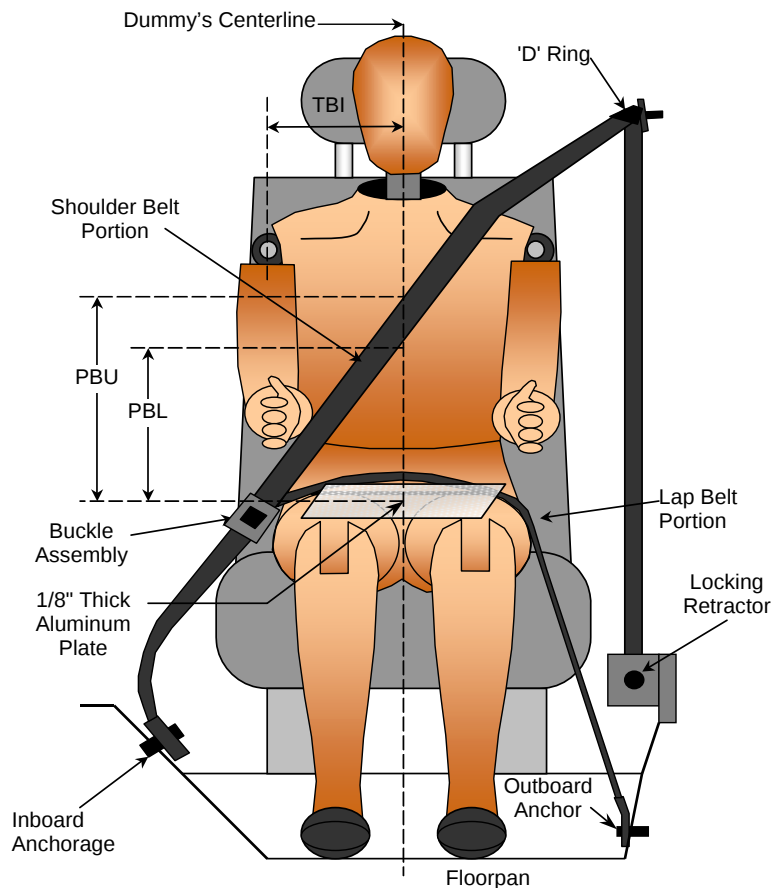
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver S/N 351	Passenger S/N 634
		Length (mm)	
AD	Arm to Door	108	82
HD	H-Point to Door	135	188
HR	Head to Side Header	215	259
HS	Head to Side Window	321	346
KK	Knee to Knee	340	231
SHY	Striker to H-Point (Y Direction)	255	294
AA	Ankle to Ankle	342	172

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
Test Date: 12/16/2011



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	380	340
PBL - Top surface of reference to belt lower edge	mm	295	250

BELT LENGTH DATA

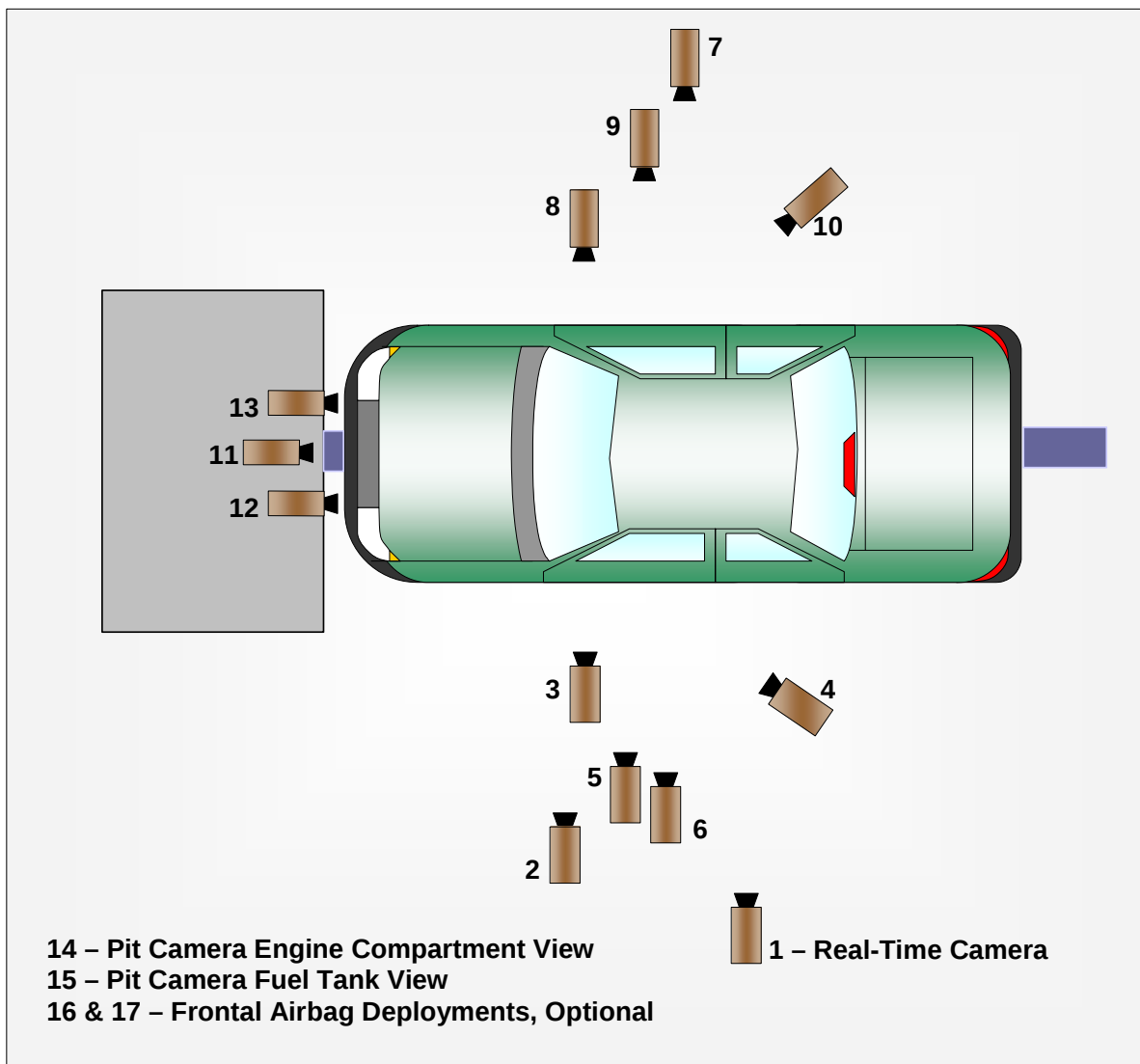
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	920	973
Lap Belt Length as measured on ATD	mm	880	480
Remainder of belt on reel	mm	1480	1507
Total Belt Length for Continuous Webbing Systems	mm	3280	2960

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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
Test Date: 12/16/2011

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	1350	-6600	-1820	35	1000
3	Left Front Half	1080	-4800	-1080	24	1000
4	Left Angle	5600	-5020	-1940	50	1000
5	Steering Column - Top	660	-5370	-1230	24	1000
6	Steering Column - Bottom	610	-5340	-830	24	1000
7	Right Overall	2120	6340	-1070	20	1000
8	Passenger Close-Up	1390	6770	-1830	35	1000
9	Right Front Half	1110	4820	-1040	24	1000
10	Right Angle	5670	4940	-1930	50	1000
11	Windshield	-130	0	-2810	24	1000
12	Driver Windshield	250	-450	-2030	12.5	1000
13	Passenger Windshield	250	450	-2030	12.5	1000
14	Pit Front	1210	0	3150	24	1000
15	Pit Rear	2680	0	3150	24	1000
16	Onboard Driver Side (optional)					
17	Onboard Passenger Side (optional)					
18	Real-Time Pan View					30

***COORDINATES:**

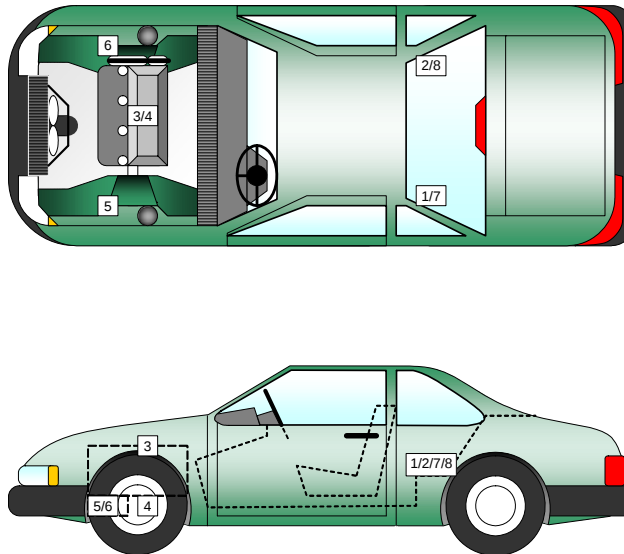
- +X = forward of impact plane
- +Y = right of monorail centerline
- +Z = below ground level

Cameras 16 & 17 were not used for this test.

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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	1780	-270	-200
2	Right Rear Accelerometer – X Direction	1780	300	-200
3	Engine Top X	3430	0	-863
4	Engine Bottom X	3411	31	-215
5	Left Brake Caliper X	3278	-655	-238
6	Right Brake Caliper X	3278	655	-238
7	Left Rear Accelerometer Redundant – X Direction			
8	Right Rear Accelerometer Redundant – X Direction			

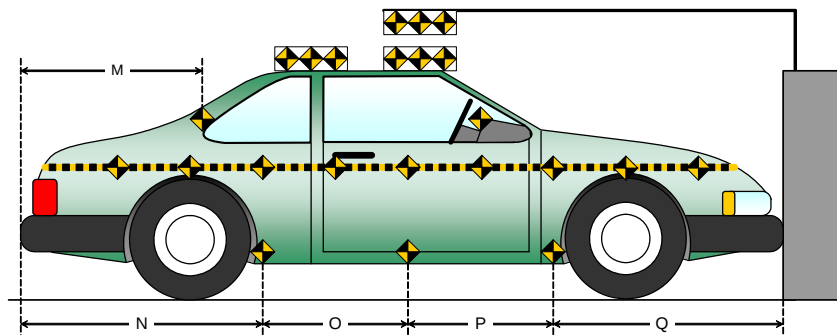
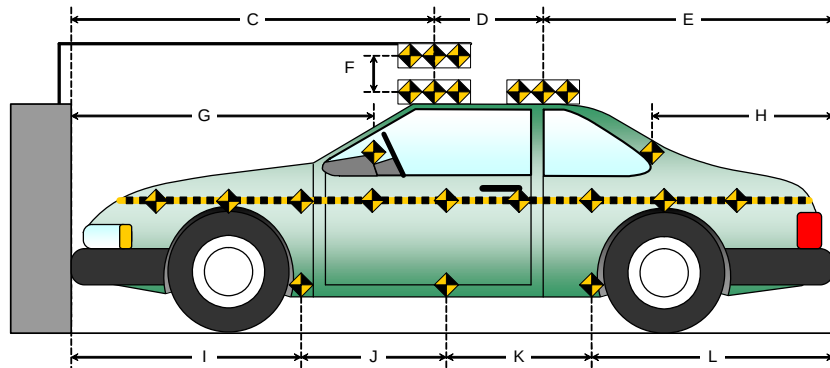
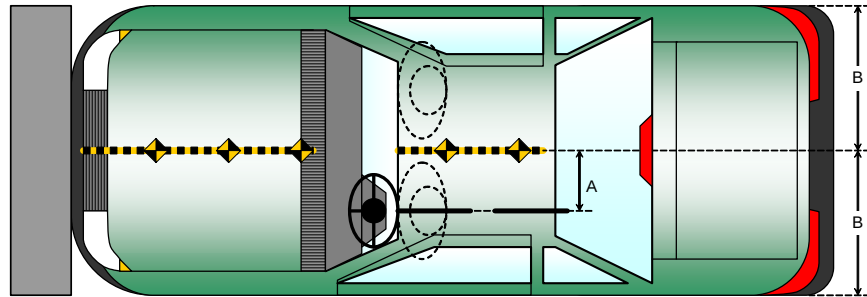
Reference Points: X - Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

Item	Value (mm)
A	307
B	846
C	2150
D	665
E	1292
F	145
G	
H	936
I	1345
J	843
K	843
L	1076
M	936
N	1076
O	843
P	843
Q	1345

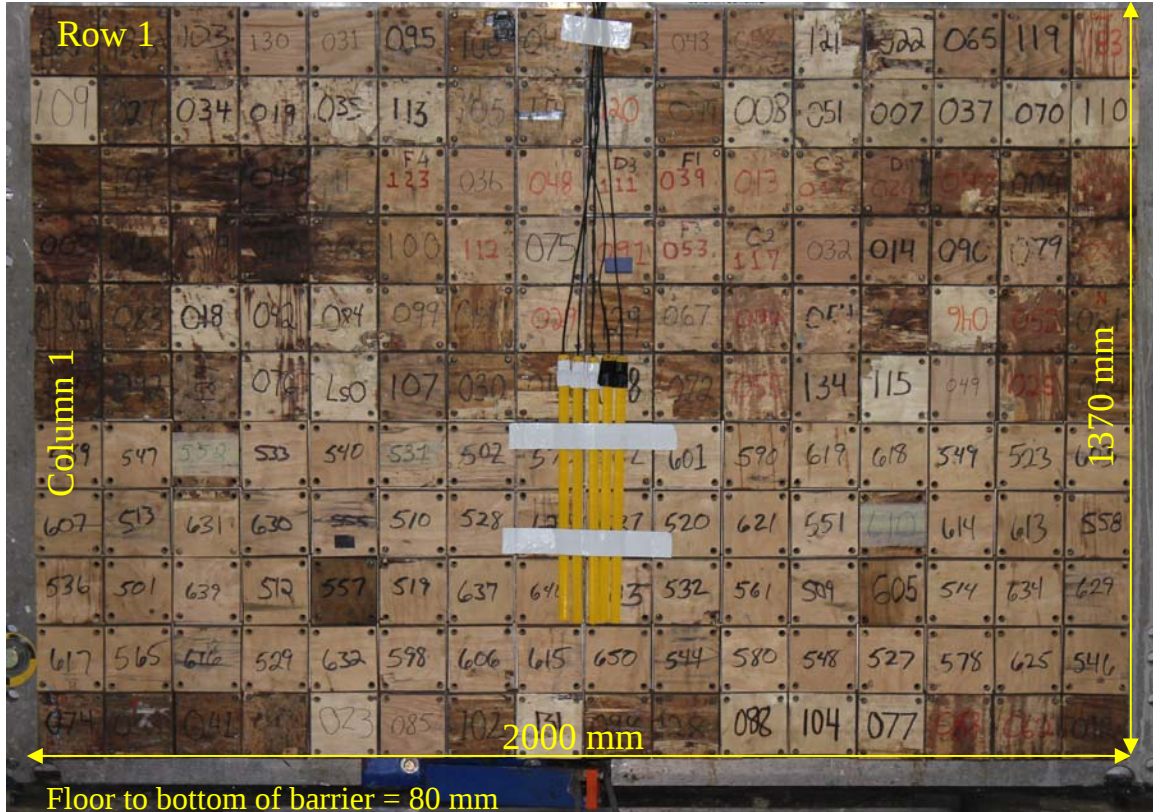


DATA SHEET NO. 9 **LOAD CELL LOCATIONS ON FIXED BARRIER**

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

Advanced Research Load Cell Barrier



1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14	1-15	1-16
2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-11	2-12	2-13	2-14	2-15	2-16
3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	3-9	3-10	3-11	3-12	3-13	3-14	3-15	3-16
4-1	4-2	4-3	4-4	4-5	4-6	4-7	4-8	4-9	4-10	4-11	4-12	4-13	4-14	4-15	4-16
5-1	5-2	5-3	5-4	5-5	5-6	5-7	5-8	5-9	5-10	5-11	5-12	5-13	5-14	5-15	5-16
6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9	6-10	6-11	6-12	6-13	6-14	6-15	6-16
7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8	7-9	7-10	7-11	7-12	7-13	7-14	7-15	7-16
8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8	8-9	8-10	8-11	8-12	8-13	8-14	8-15	8-16
9-1	9-2	9-3	9-4	9-5	9-6	9-7	9-8	9-9	9-10	9-11	9-12	9-13	9-14	9-15	9-16
10-1	10-2	10-3	10-4	10-5	10-6	10-7	10-8	10-9	10-10	10-11	10-12	10-13	10-14	10-15	10-16
11-1	11-2	11-3	11-4	11-5	11-6	11-7	11-8	11-9	11-10	11-11	11-12	11-13	11-14	11-15	11-16

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: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
Test Date: 12/16/2011

INSTRUMENTATION

Driver Dummy Data Channels	46
Passenger Dummy Data Channels	46
Vehicle Structure Accelerometers	8
Barrier Channels	128
Total	228

CAMERA COVERAGE

High-Speed Vehicle Onboard	0
High-Speed Offboard	14
Real-Time	2
Total	16

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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
Test Date: 12/16/2011

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial	HIII 50% / 351	HIII 5% / 634
Head Contact	Airbag, Headrest, Seatback, Handle on Ceiling	Airbag, Headrest, Seat Back
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	Cracked
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1015
Center	mm	950
Right Side	mm	1000
Average	mm	988

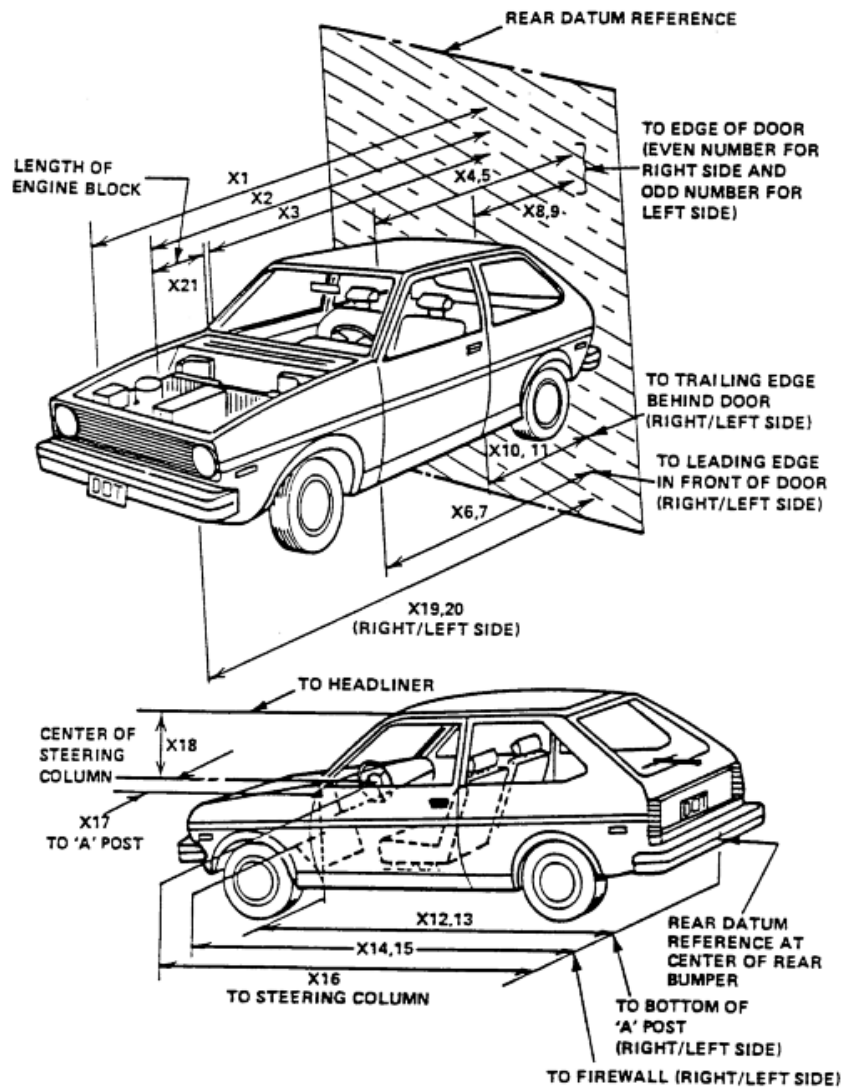
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) P1		Right Front (Passenger)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	Yes	Yes
Knee Airbag	No		No	
Curtain Side Airbag	Yes	No	Yes	No
Side Torso Airbag	Yes	No	Yes	No
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes		Yes	

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
Test Date: 12/16/2011



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4107	3599	508
2	RSOV to Front of Engine	mm	3575	3285	290
3	RSOV to Firewall	mm	3412	3315	97
4	RSOV to Upper Leading Edge of Right Door	mm	2735	2733	2
5	RSOV to Upper Leading Edge of Left Door	mm	2735	2732	3
6	RSOV to Lower Leading Edge of Right Door	mm	2701	2700	1
7	RSOV to Lower Leading Edge of Left Door	mm	2701	2700	1
8	RSOV to Upper Trailing Edge of Right Door	mm	1672	1672	0
9	RSOV to Upper Trailing Edge of Left Door	mm	1672	1672	0
10	RSOV to Lower Trailing Edge of Right Door	mm	1688	1686	2
11	RSOV to Lower Trailing Edge of Left Door	mm	1688	1688	0
12	RSOV to Bottom of "A" Post of Right Side	mm	2742	2740	2
13	RSOV to Bottom of "A" Post of Left Side	mm	2742	2739	3
14	RSOV to Firewall, Right Side	mm	3256	3248	8
15	RSOV to Firewall, Left Side	mm	3256	3220	36
16	RSOV to Steering Column	mm	2298	2317	-19
17	Center of Steering Column to "A" Post	mm	405	375	30
18	Center of Steering Column to Headliner	mm	445	410	35
19	RSOV to Right Side of Front Bumper	mm	3924	3578	346
20	RSOV to Left Side of Front Bumper	mm	3924	3445	479
21	Length of Engine Block	mm	430	430	0
RD	RSOV to Right Side of Dash Panel	mm	2518	2523	-5
CD	RSOV to Center of Dash Panel	mm	2562	2562	0
LD	RSOV to Left Side of Dash Panel	mm	2504	2500	4

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

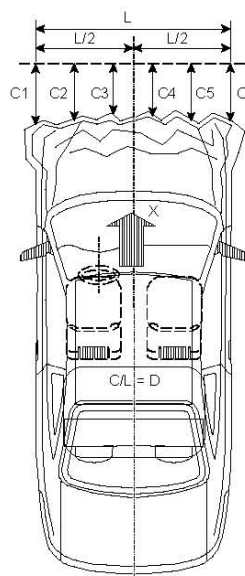
NHTSA No.: MC5316
Test Date: 12/16/2011

VEHICLE INFORMATION

VIN: JHMGE8G38CC004331 Wheelbase (mm): 2500
Vehicle Size Category: Passenger Car Test Weight (kg): 1310.0

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): 56.5
Velocity Change (km/h): 63.5
Time of Separation (msec): 114.9



CRUSH PROFILE

Collision Deformation Classification: Frontal
Midpoint of Damage: Centerline
Damage Region Length (mm): 1196
Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	3924	3445	479
C2	Crush zone 2 at left side	mm	4030	3500	530
C3	Crush zone 3 at left side	mm	4072	3581	491
C4	Crush zone 4 at right side	mm	4072	3593	479
C5	Crush zone 5 at right side	mm	4030	3600	430
C6	Crush zone 6 at right side	mm	3924	3578	346
L	C1 TO C6	mm	1196	1185	11

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

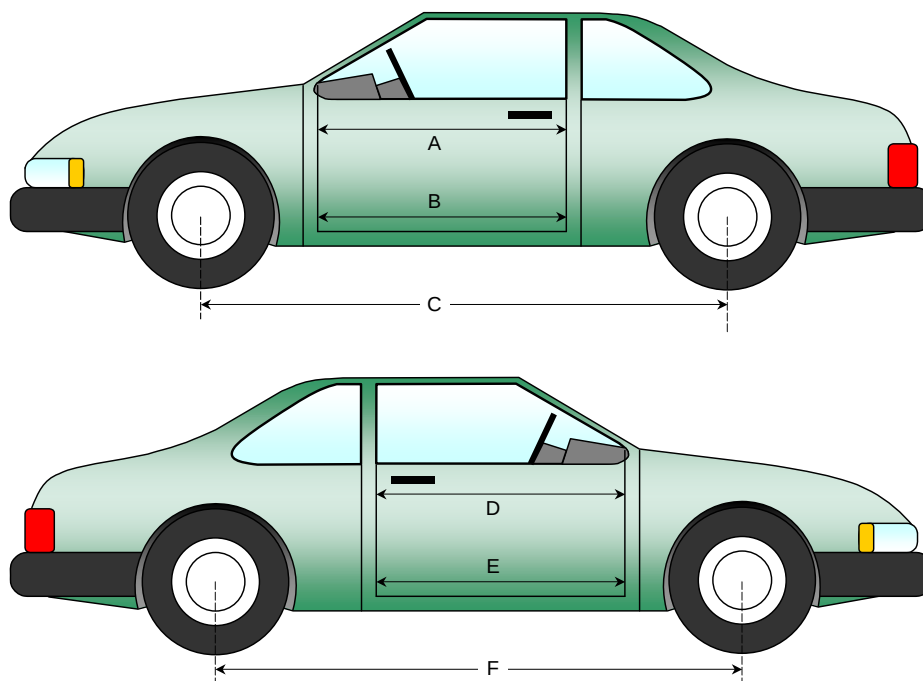
NHTSA No.: MC5316
Test Date: 12/16/2011

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	860	860	0
B	Left Side Lower	mm	925	925	0
D	Right Side Upper	mm	860	860	0
E	Right Side Lower	mm	925	925	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2500	2438	62
F	Right Side Wheelbase	mm	2500	2438	62



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

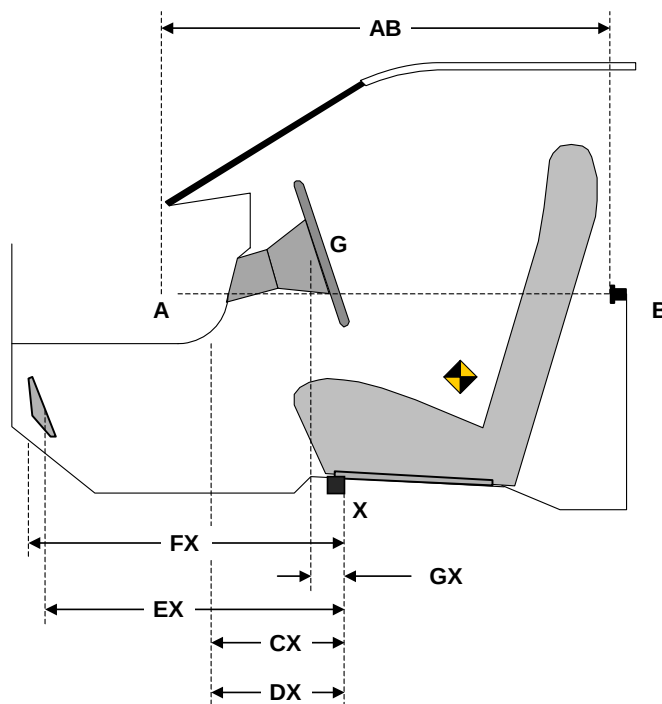
Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	818	818	0
CX	Left Knee Bolster to X	mm	231	245	-14
DX	Right Knee Bolster to X	mm	207	228	-21
EX	Brake Pedal to X	mm	496	465	31
FX	Foot Rest to X	mm	525	513	12
GX	Center of Steering Column Wheel Hub to X	mm	113	130	-17

X = Front of Seat Track (stationary)

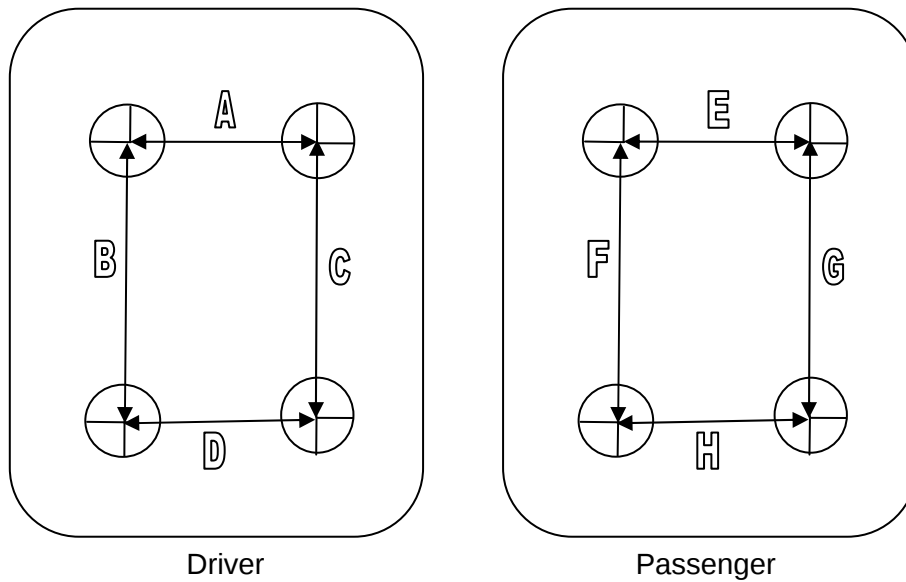


DRIVER COMPARTMENT

DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011



TOP VIEW THROUGH FLOOR PAN

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Units	Pre-Test	Post-Test	Difference
A	mm	140	133	7
B	mm	217	217	0
C	mm	210	208	2
D	mm	137	136	1
E	mm	145	133	12
F	mm	234	223	11
G	mm	234	230	4
H	mm	110	110	0

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

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

Windshield Mounting Details:

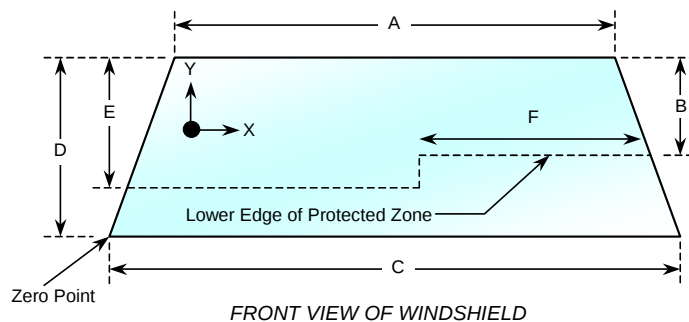
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest 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: 21.6°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2197	2197	100
Right Side	2197	2197	100
Total	4394	4394	100



Item	Units	Value
A	mm	1108
B	mm	688
C	mm	1446
D	mm	920
E	mm	710
F	mm	488

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, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
Test Date: 12/16/2011

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Time: 10:24 am

Temperature: 21.6° C

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

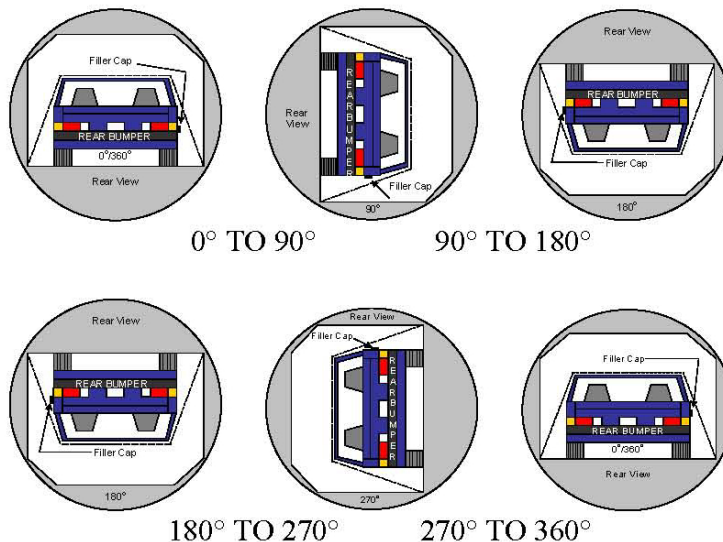
DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011

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°	117	300	417
90° to 180°	114	300	414
180° to 270°	107	300	407
270° to 360°	115	300	415

FMVSS 301 ROLLOVER 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

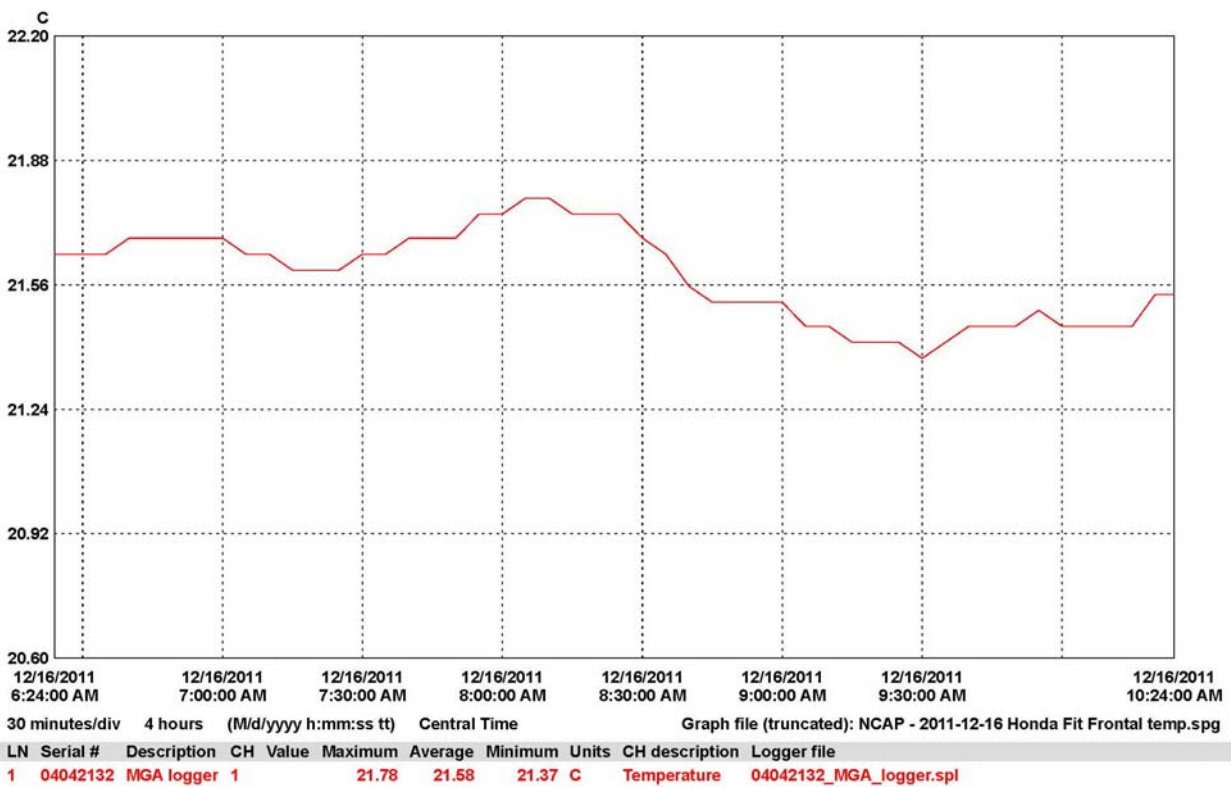
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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: 2012 Honda Fit 5-Dr Hatchback
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC5316
 Test Date: 12/16/2011



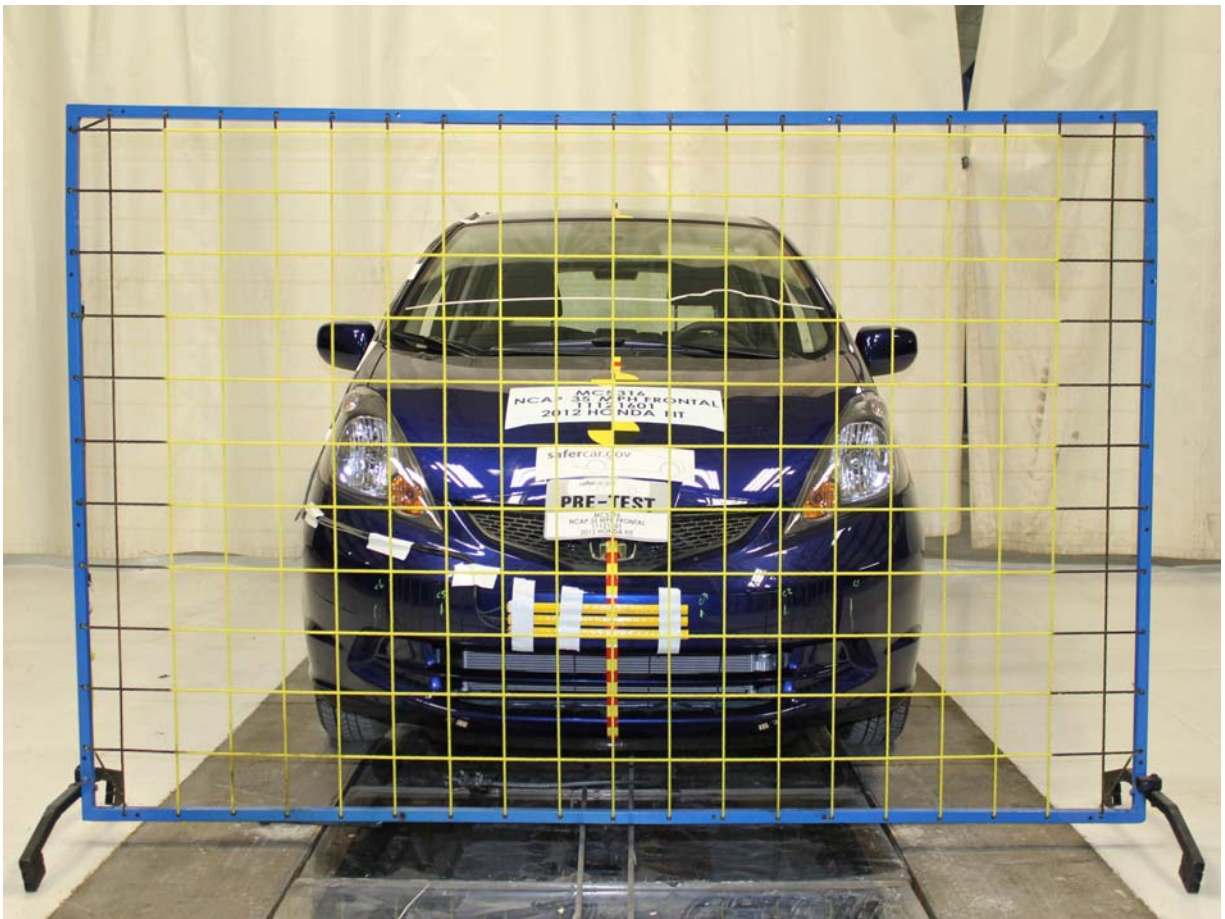
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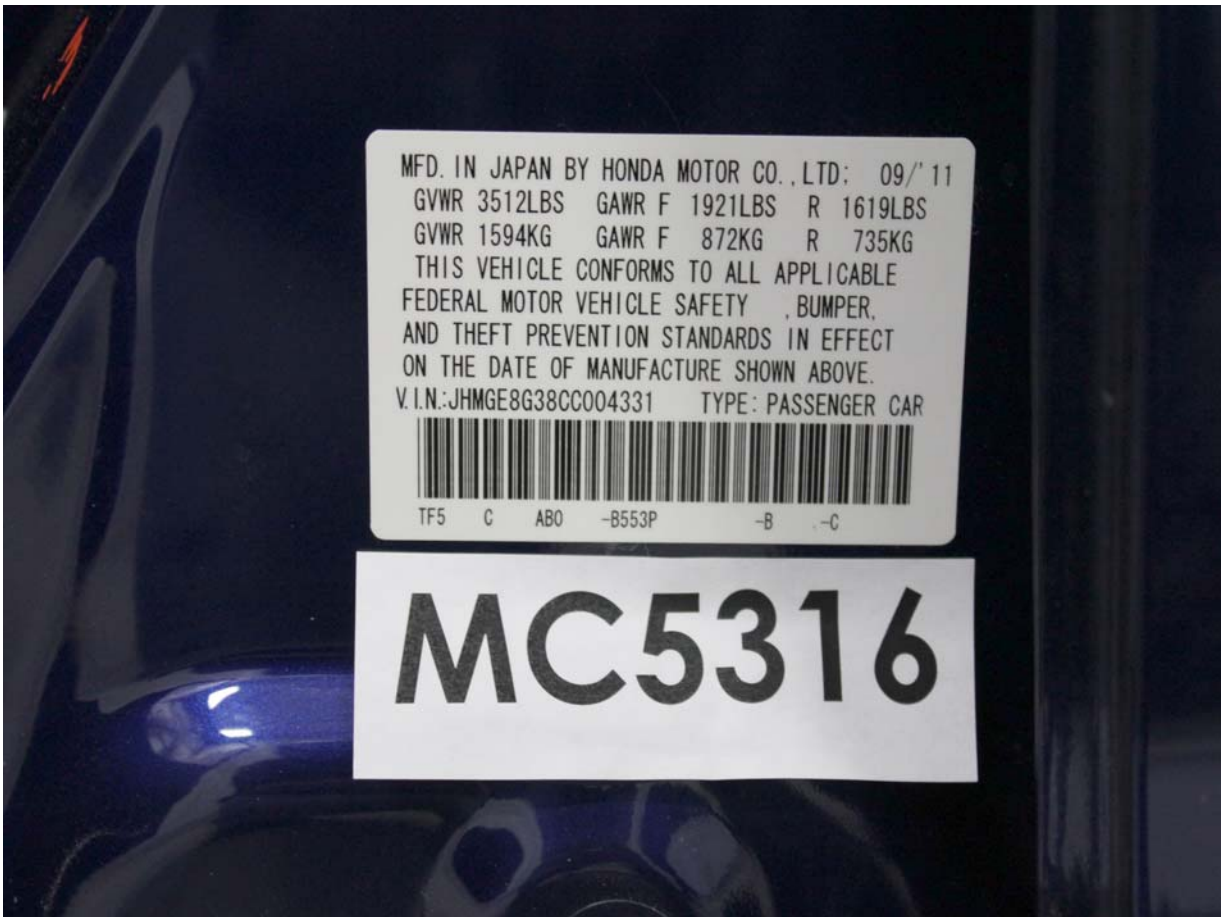
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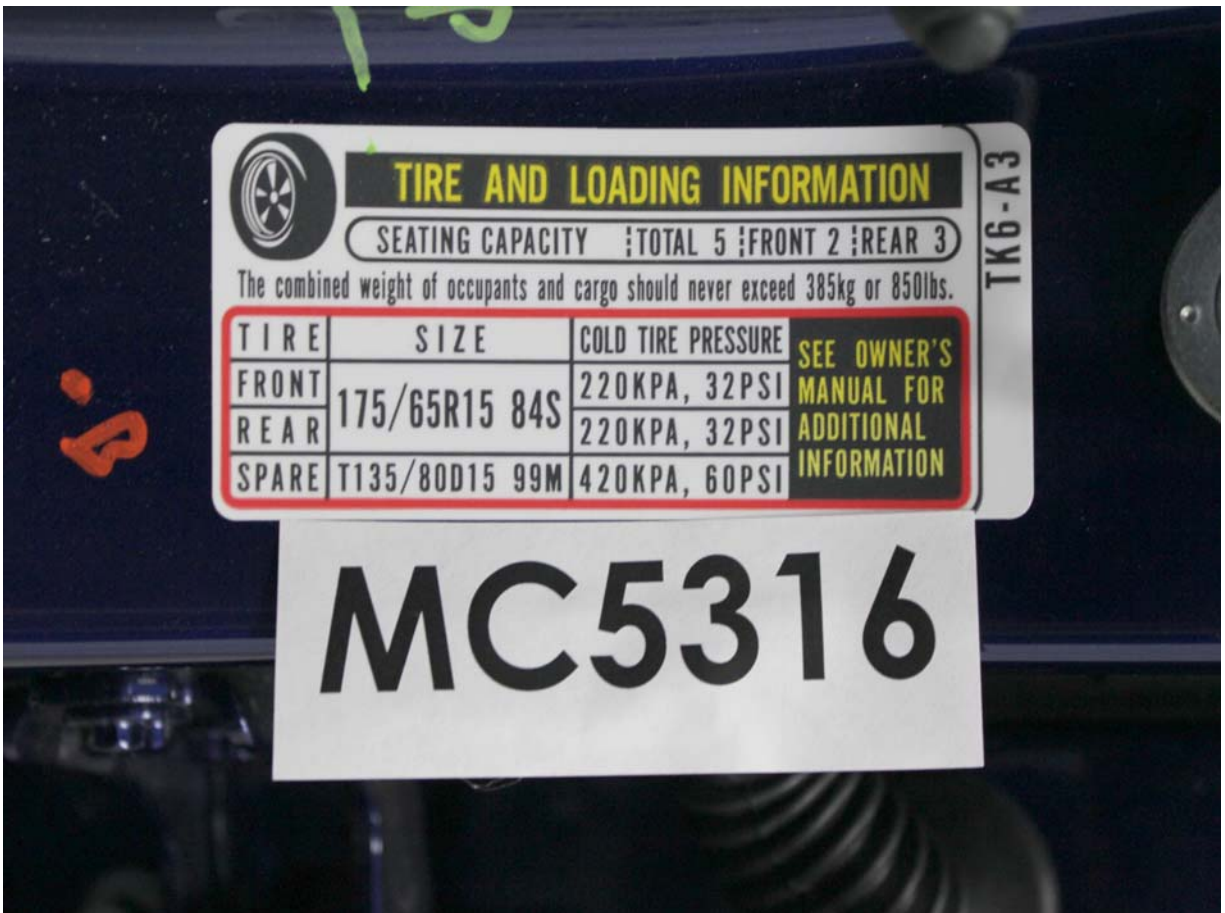
Load Cell Location



Load Cell Wall



Manufacturer's Label



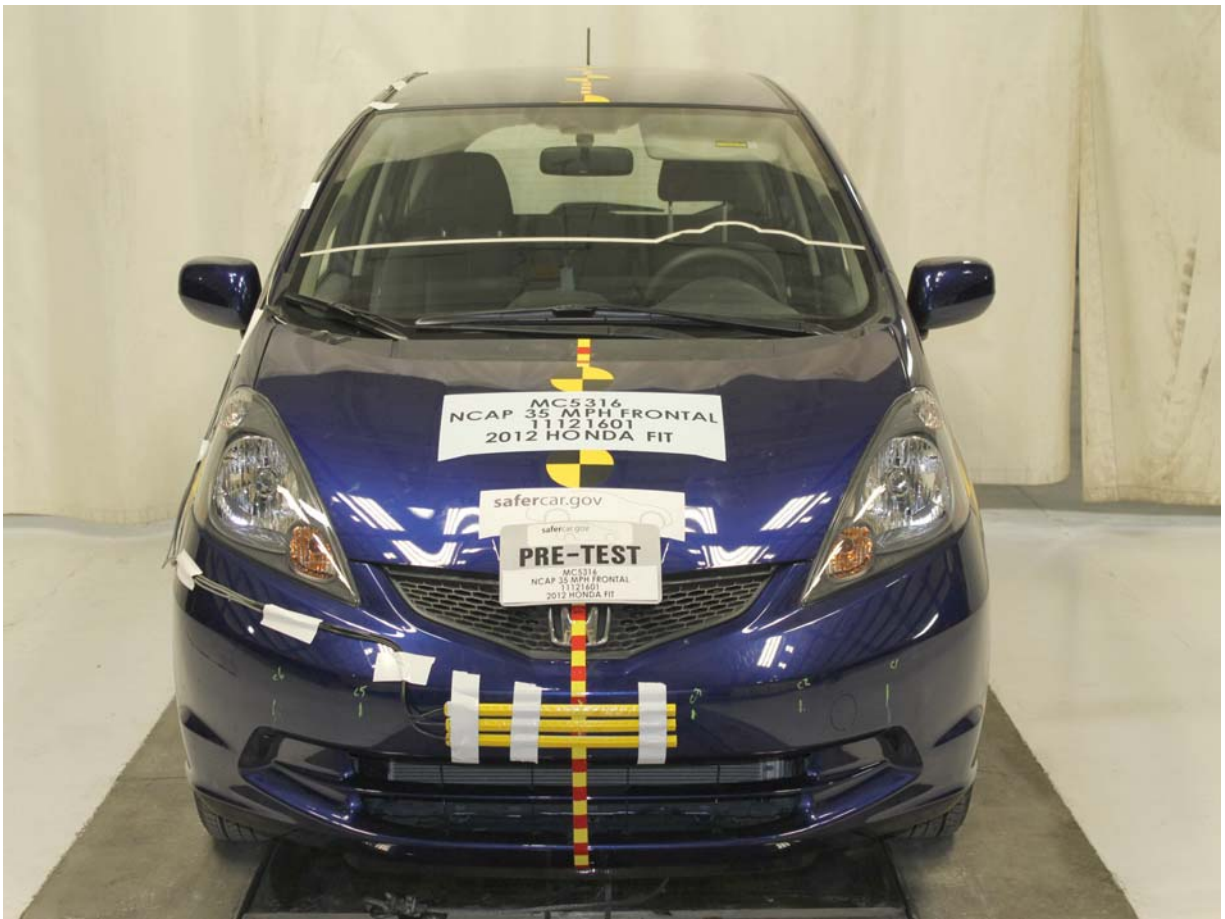
Tire Placard



2012 Honda Fit Frontal As Delivered



Left Rear Three-Quarter View, As Received



Pre-Test Front View of Test Vehicle



Post-Test Front View of Test Vehicle



Pre-Test Left View of Test Vehicle



Post-Test Left View of Test Vehicle



Pre-Test Right View of Test Vehicle



Post-Test Right View of Test Vehicle



Pre-Test Right Front Three-Quarter View



Post-Test Right Front Three-Quarter View



Pre-Test Left Rear Three-Quarter View



Post-Test Left Rear Three-Quarter View



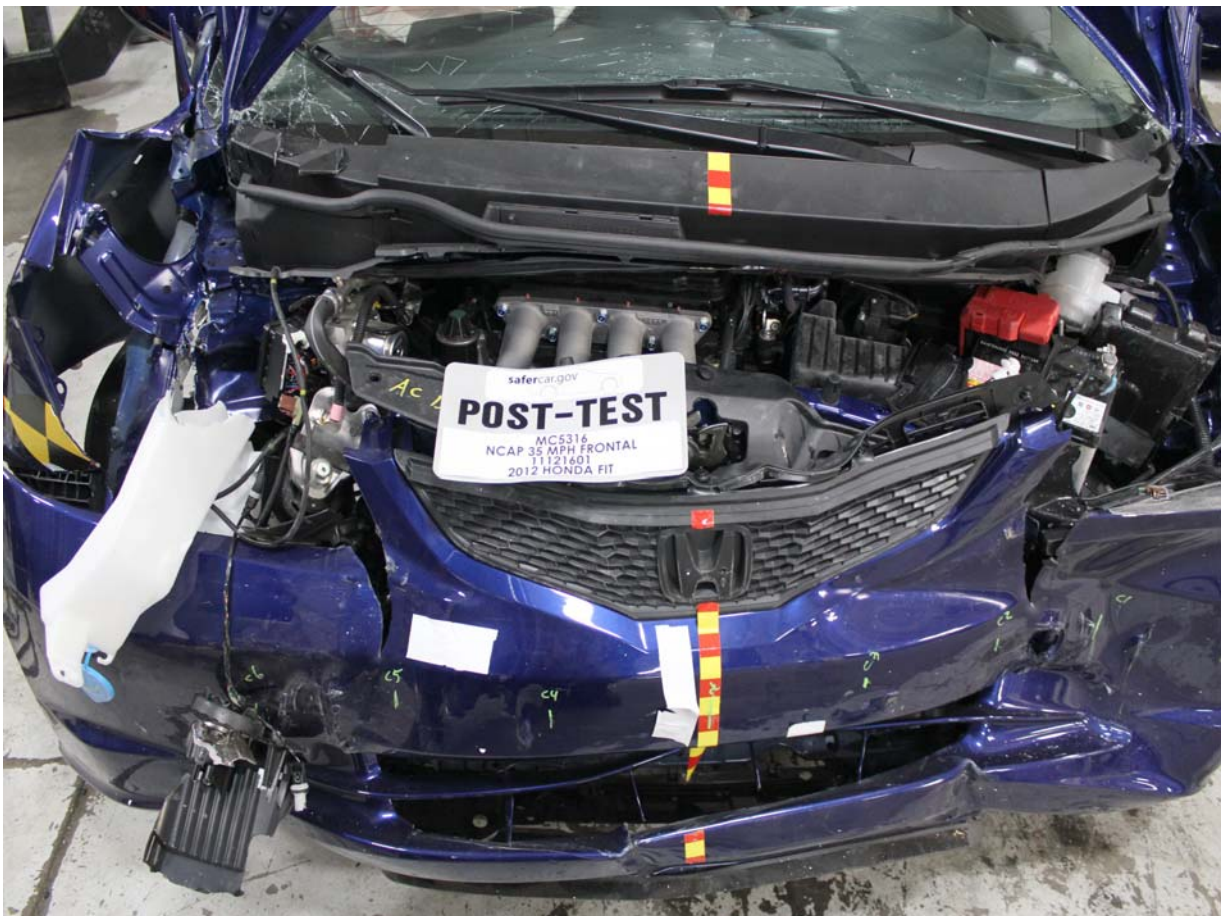
Pre-Test Windshield View



Post-Test Windshield View



Pre-Test Engine Compartment View



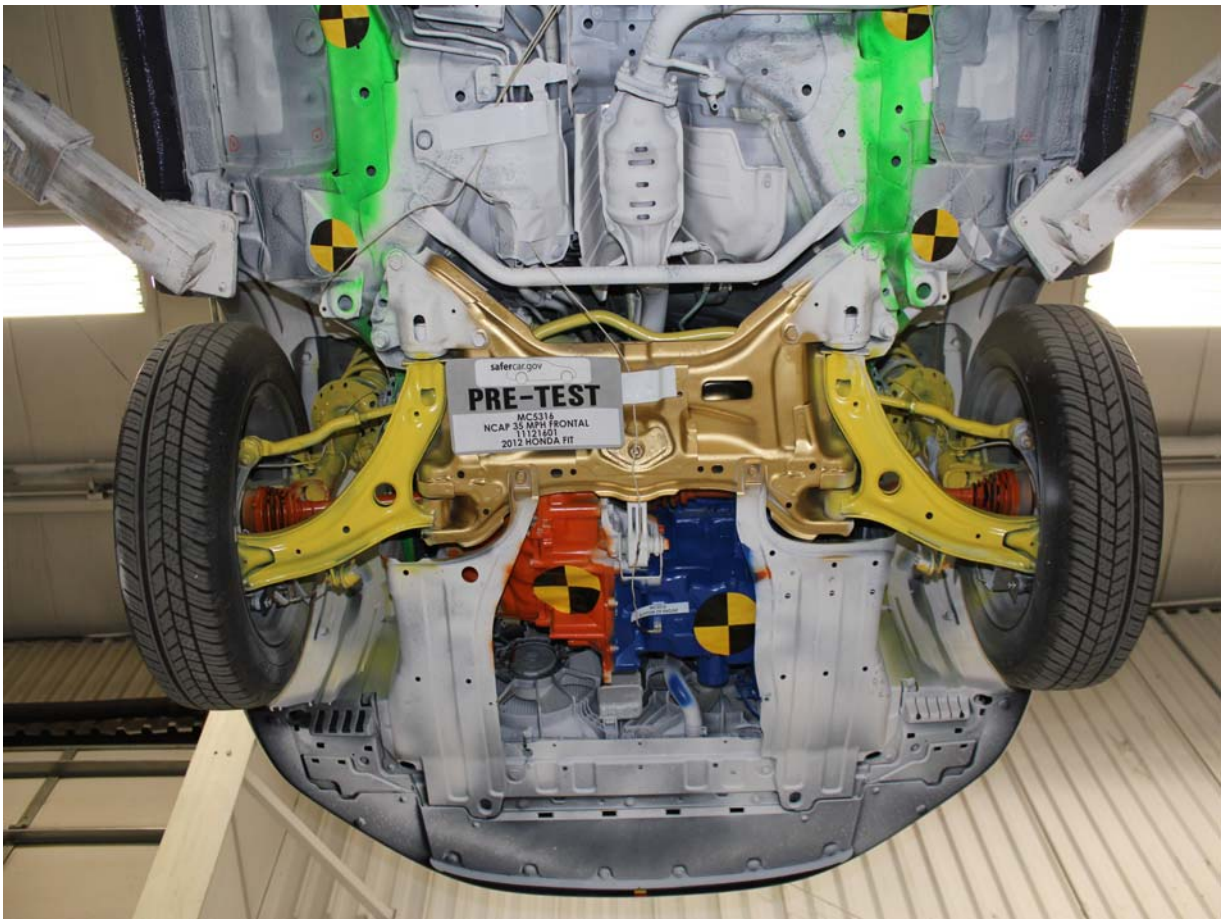
Post-Test Engine Compartment View



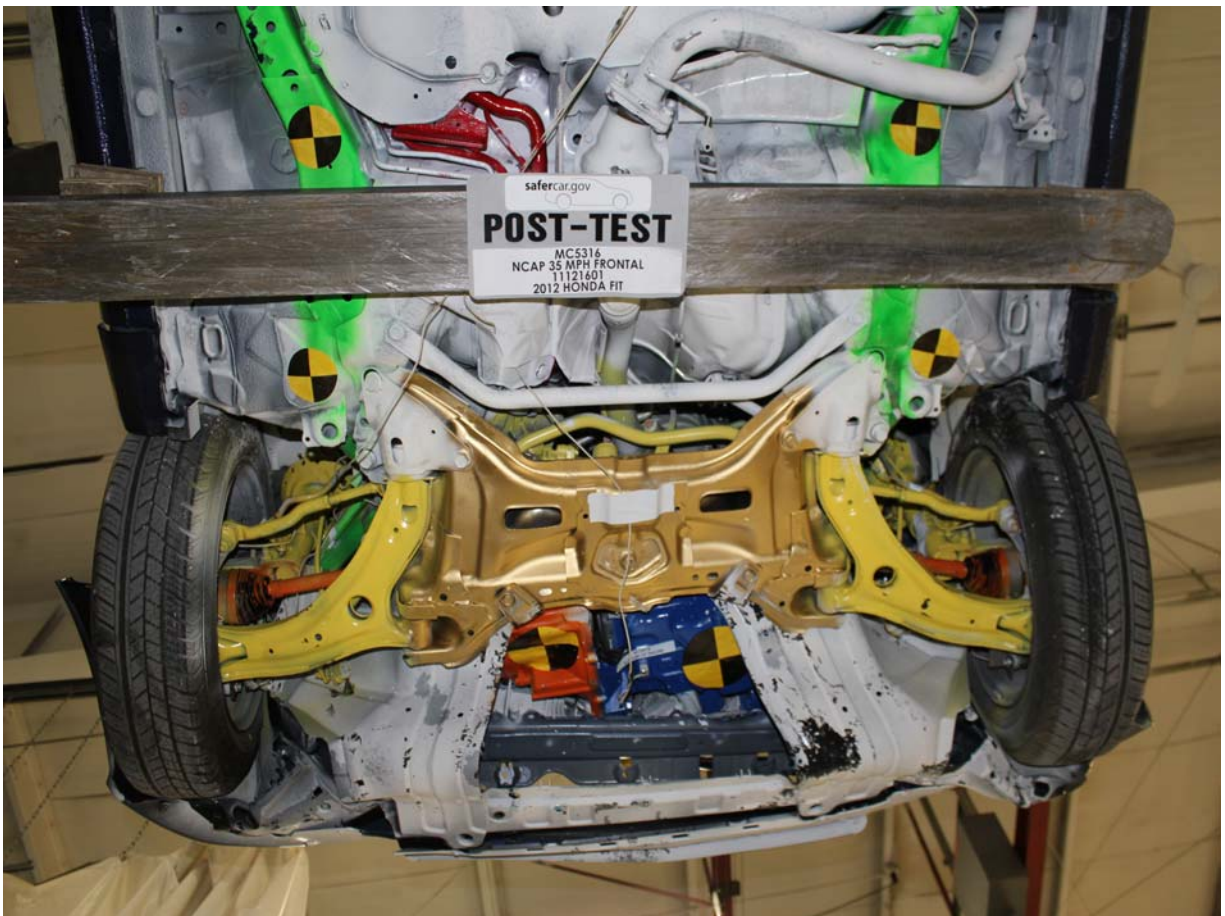
Pre-Test Fuel Filler Cap View



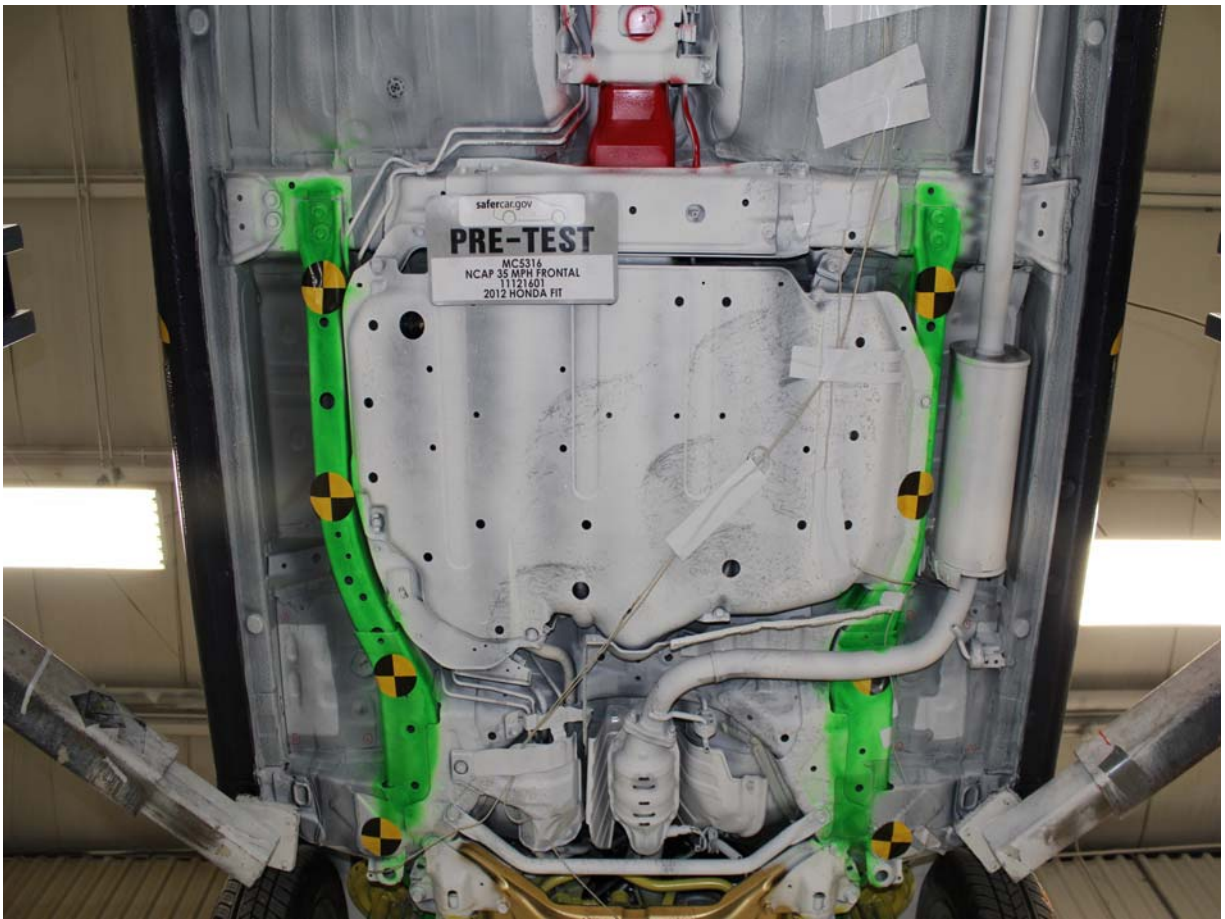
Post-Test Fuel Filler Cap View



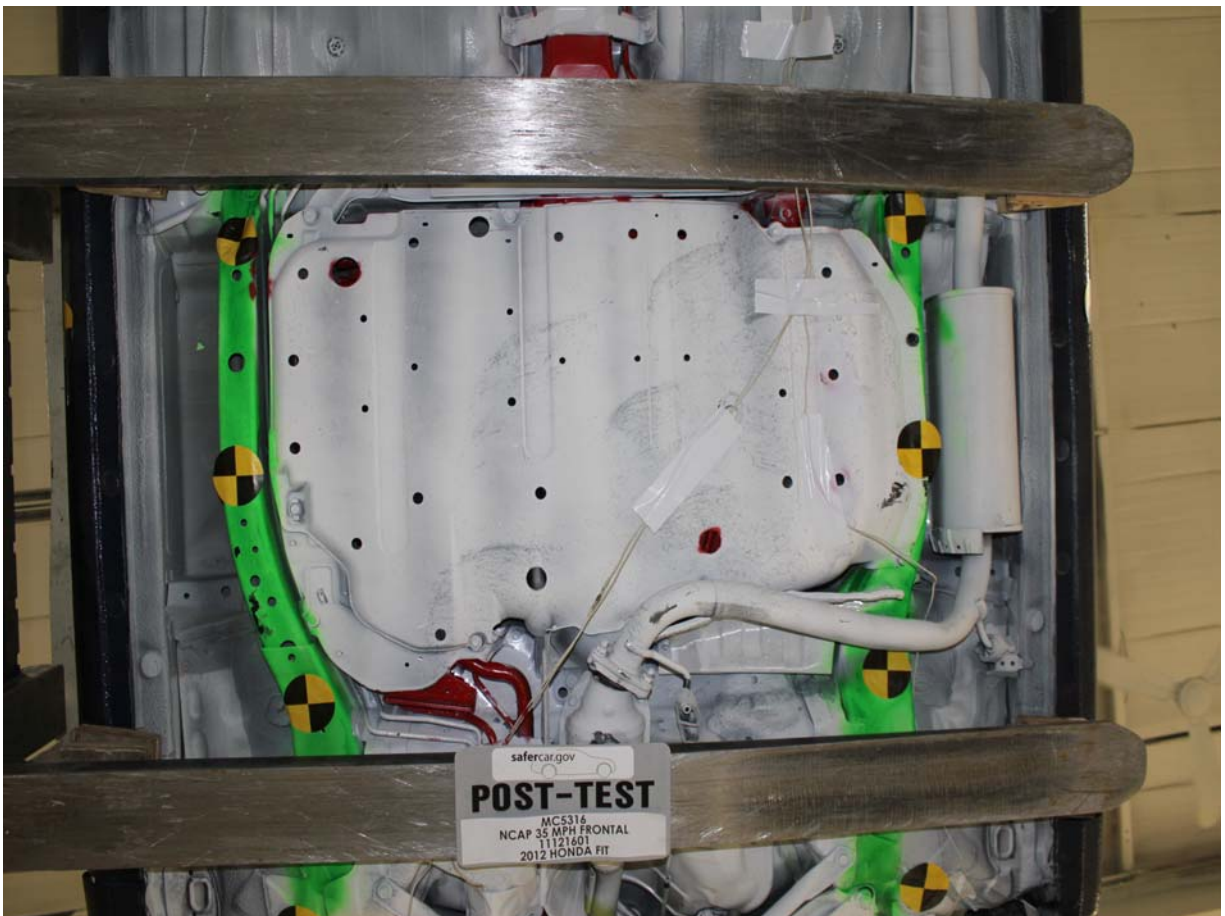
Pre-Test Front Underbody View



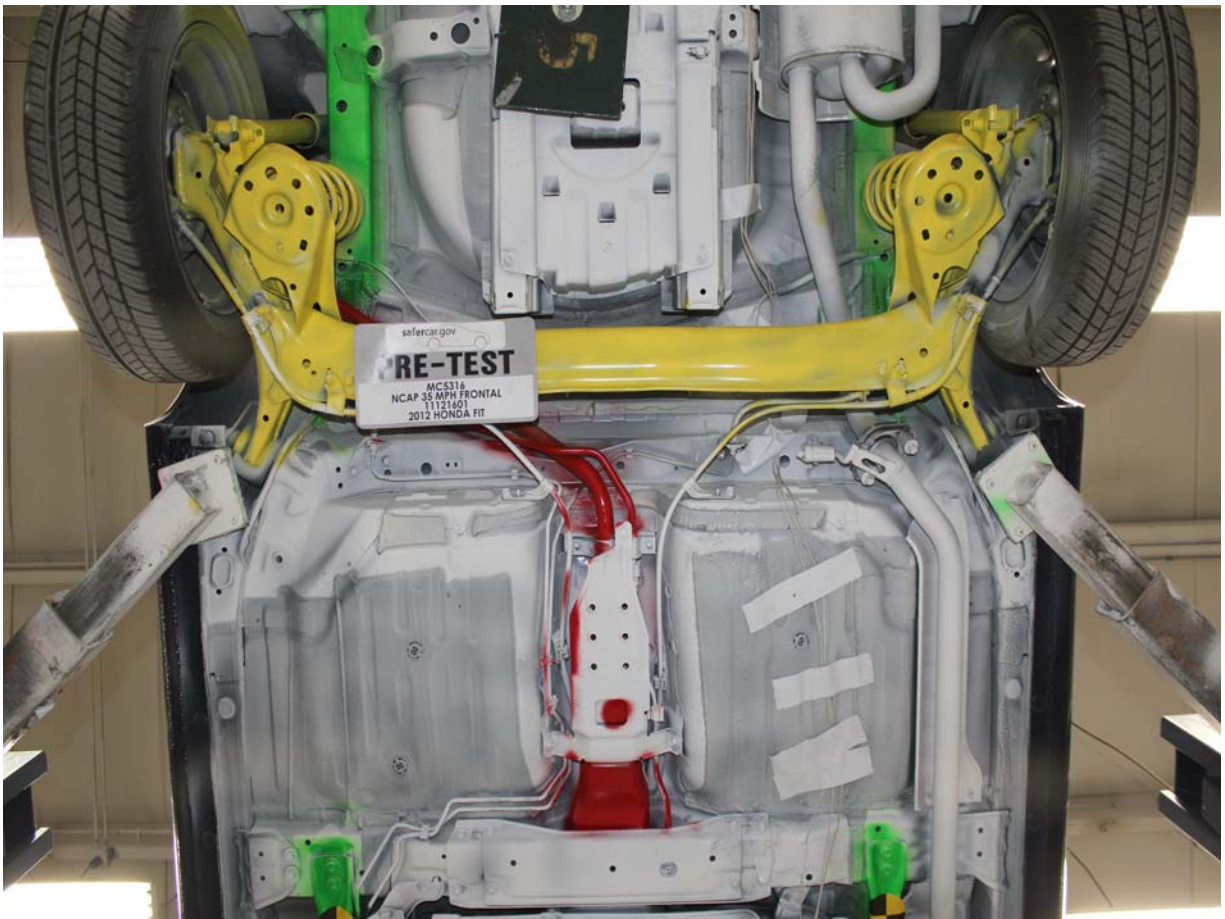
Post-Test Front Underbody View



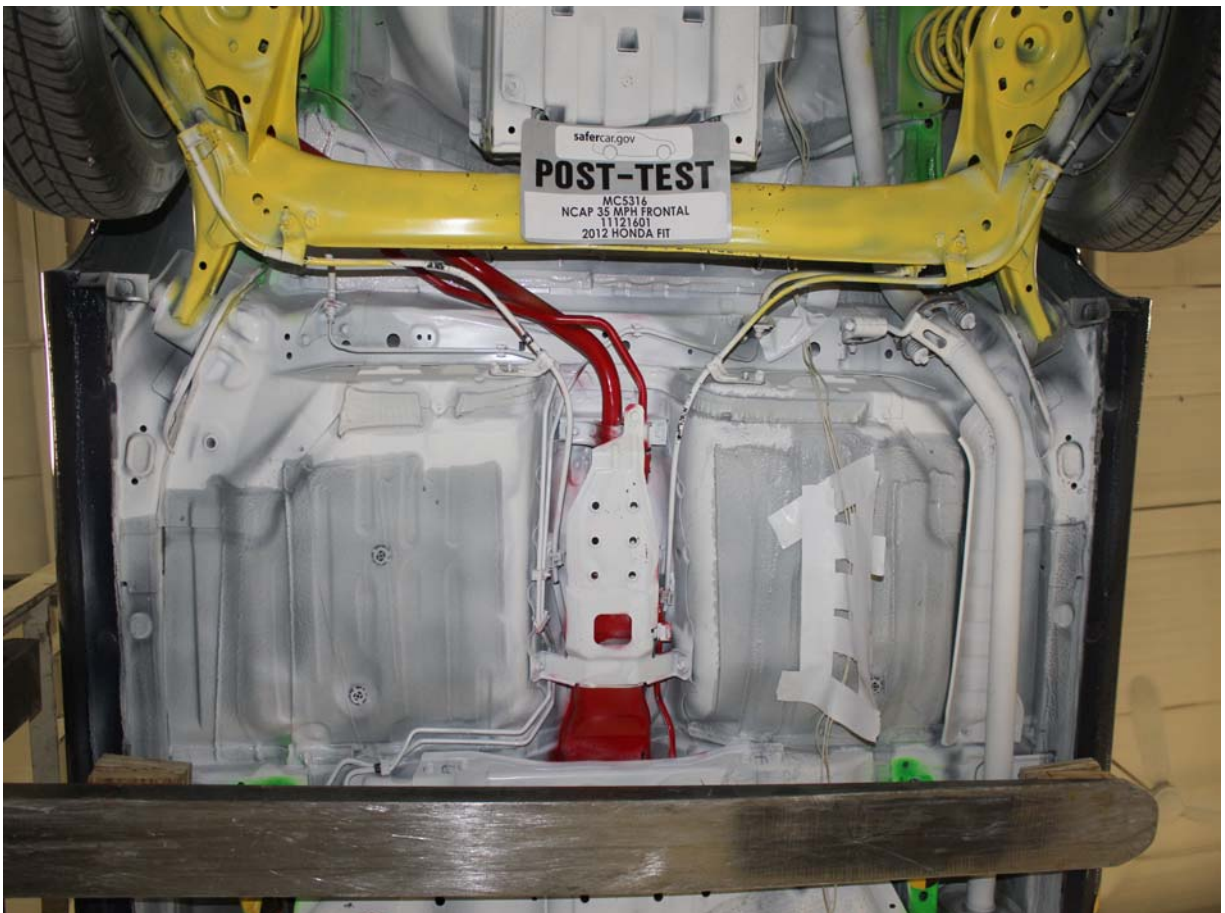
Pre-Test Mid Front Underbody View



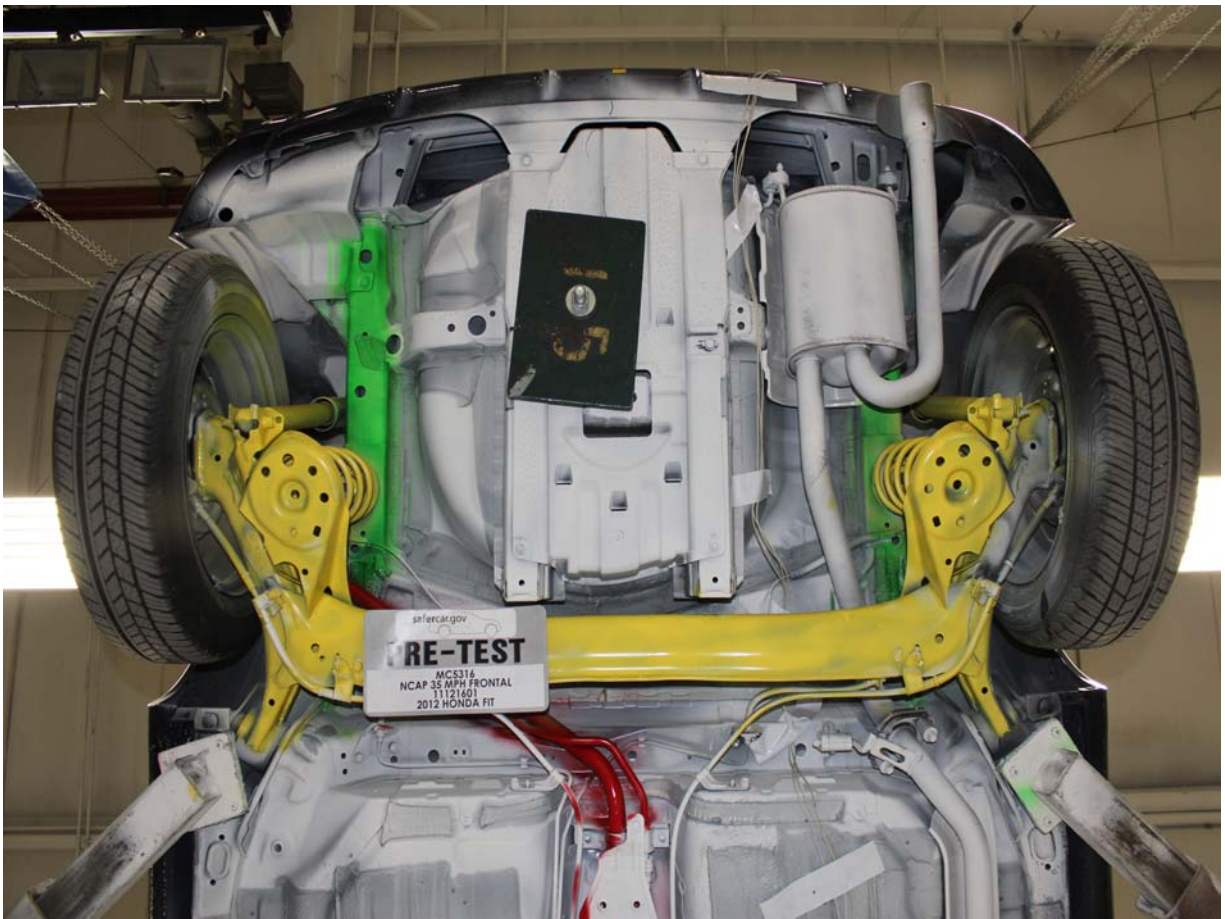
Post-Test Mid Front Underbody View



Pre-Test Mid Rear Underbody View



Post-Test Mid Rear Underbody View



Pre-Test Rear Underbody View



Post-Test Rear Underbody View



Pre-Test Dummy Cable Routing



Post-Test Dummy Cable Routing



Pre-Test Driver Dummy Front View



Post-Test Driver Dummy Front View



Pre-Test Driver Dummy Window View



Post-Test Driver Dummy Window View



Pre-Test Driver Dummy and Vehicle Interior (Door Open)



Post-Test Driver Dummy and Vehicle Interior (Door Open)



Pre-Test Driver's Seat Fore-Aft Markings



Post-Test Driver's Seat Fore-Aft Markings



Pre-Test Driver Dummy Feet



Post-Test Driver Dummy Feet



Pre-Test Driver's Side Knee Bolster (without dummy)



Post-Test Driver's Side Knee Bolster (without dummy)



Post-Test Driver's Side Knee Bolster (without dummy)



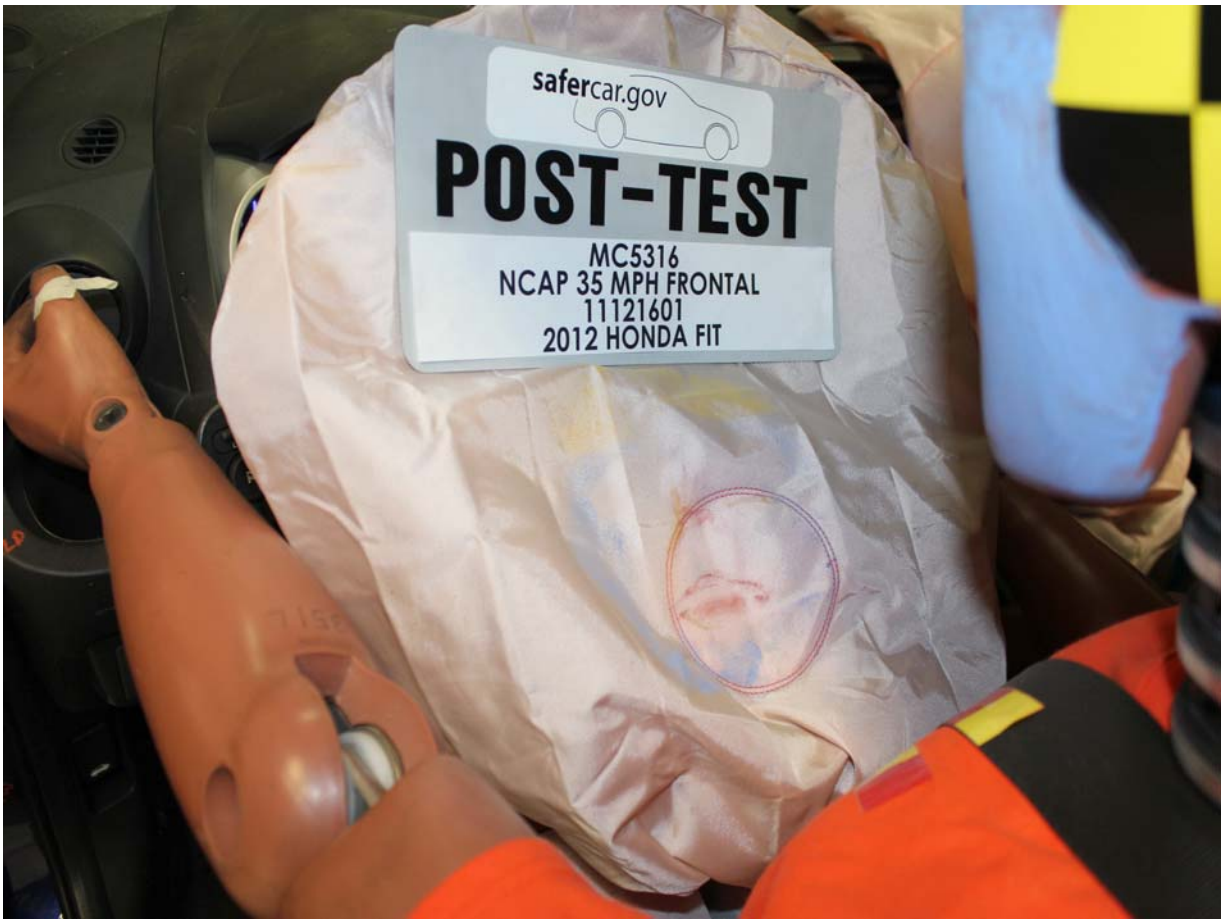
Pre-Test Driver's Side Floorpan



Post-Test Driver's Side Floorpan



Post-Test Driver Dummy Face



Post-Test Driver Dummy Contact with Airbag



Post-Test Driver Dummy Contact with Headrest



Post-Test Driver Dummy Contact with Handle on Ceiling



Pre-Test View of the Steering Wheel



Post-Test View of the Steering Wheel



Pre-Test Passenger Dummy Front View



Post-Test Passenger Dummy Front View



Pre-Test Passenger Dummy Window View



Post-Test Passenger Dummy Window View



Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



Post-Test Passenger Dummy and Vehicle Interior (Door Open)



Pre-Test Passenger's Seat Fore-Aft Markings



Post-Test Passenger's Seat Fore-Aft Markings



Pre-Test Passenger Dummy Feet



Post-Test Passenger Dummy Feet



Pre-Test Passenger's Side Knee Bolster (without dummy)



Post-Test Passenger's Side Knee Bolster (without dummy)



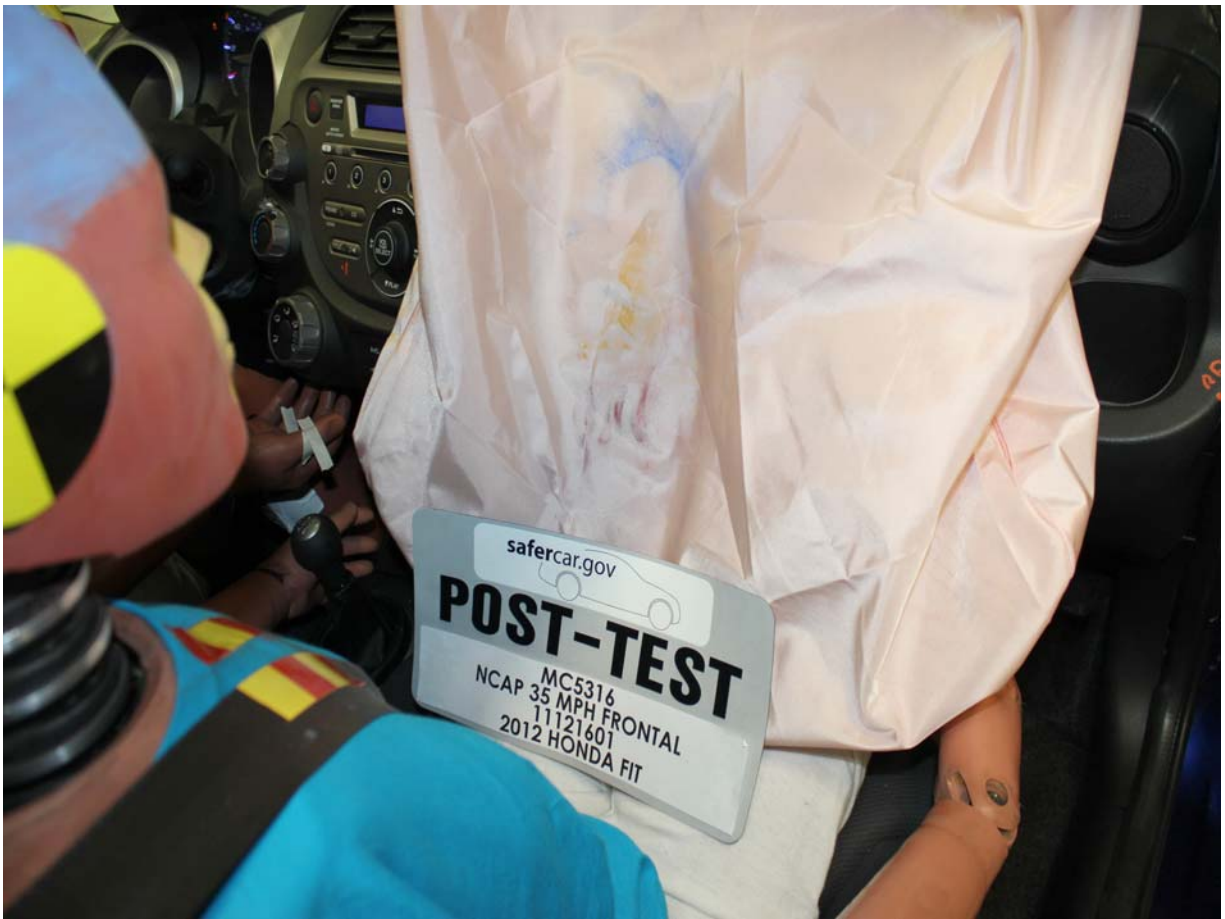
Post-Test Passenger's Side Knee Bolster (without dummy)



Pre-Test Passenger's Side Floorpan



Post-Test Passenger's Side Floorpan



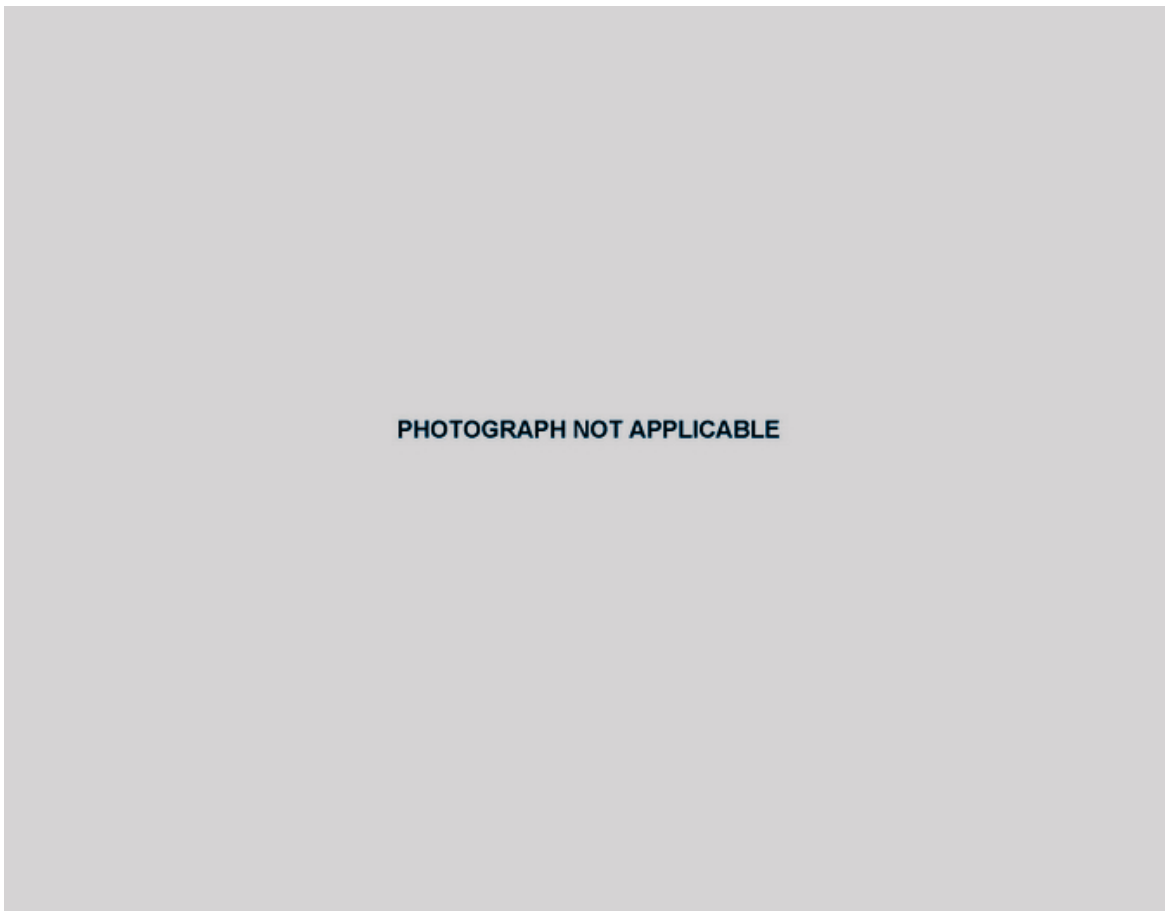
Post-Test Passenger Dummy Contact with Airbag



Post-Test Passenger Dummy Contact with Headrest



Ballast Installed in Vehicle



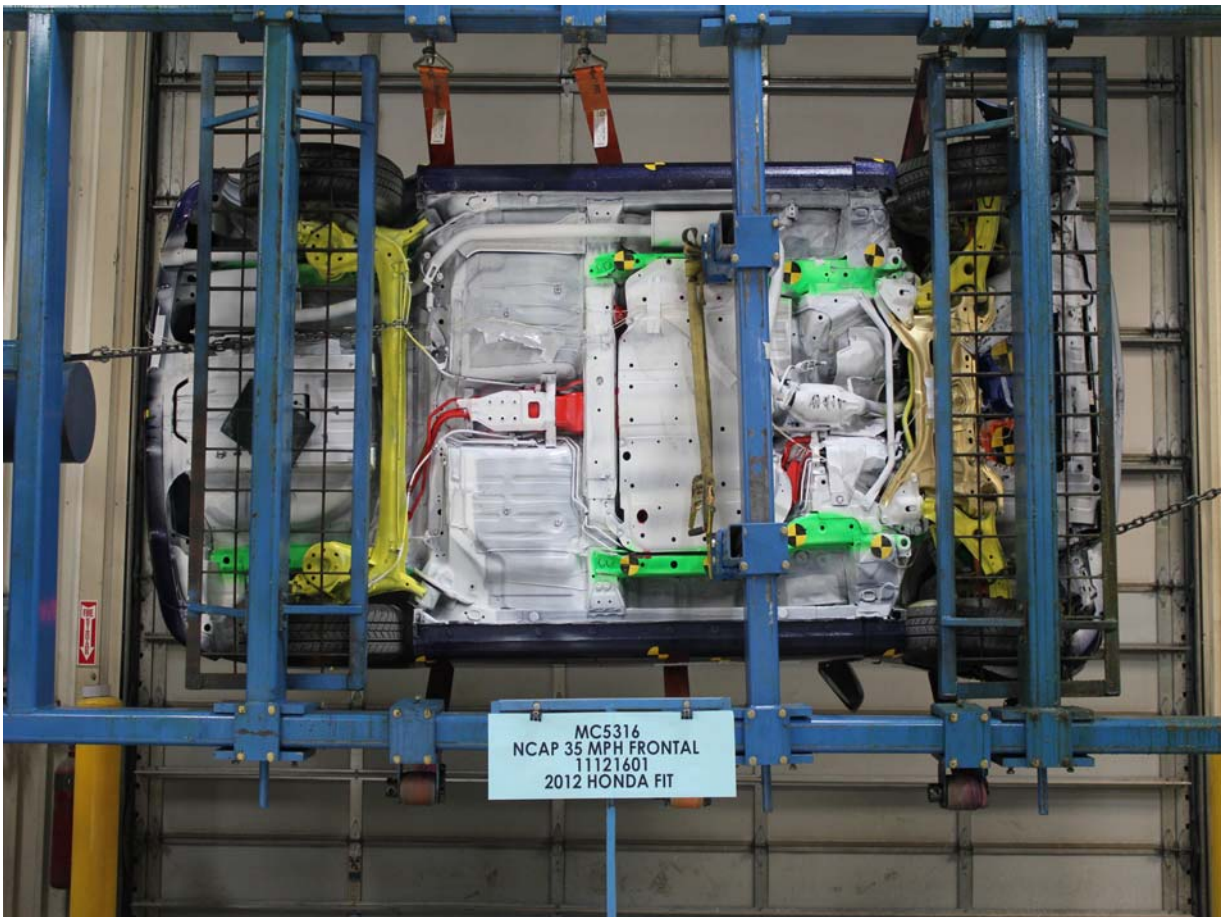
Post-Test Stoddard Solvent Spillage Location View



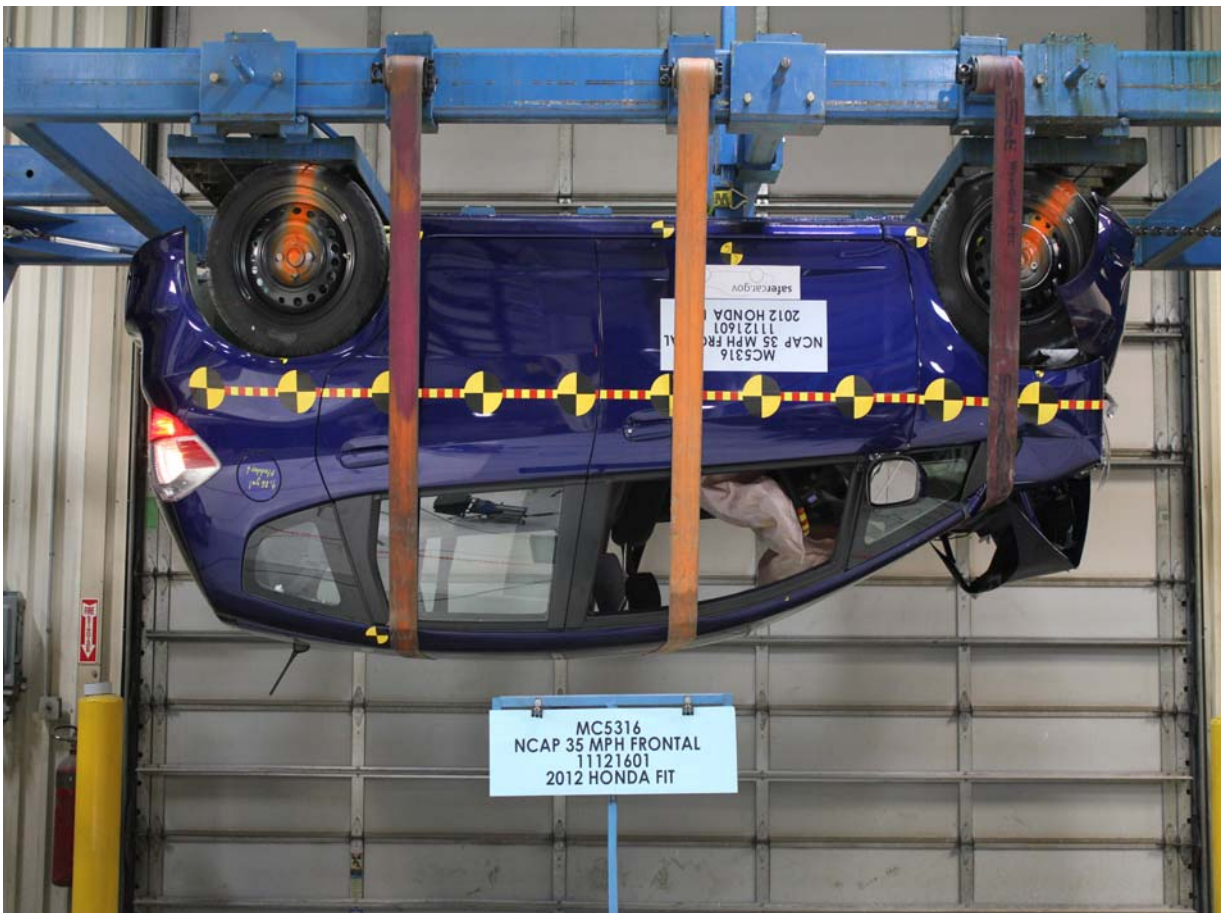
Post-Test Speed Trap Read-Out



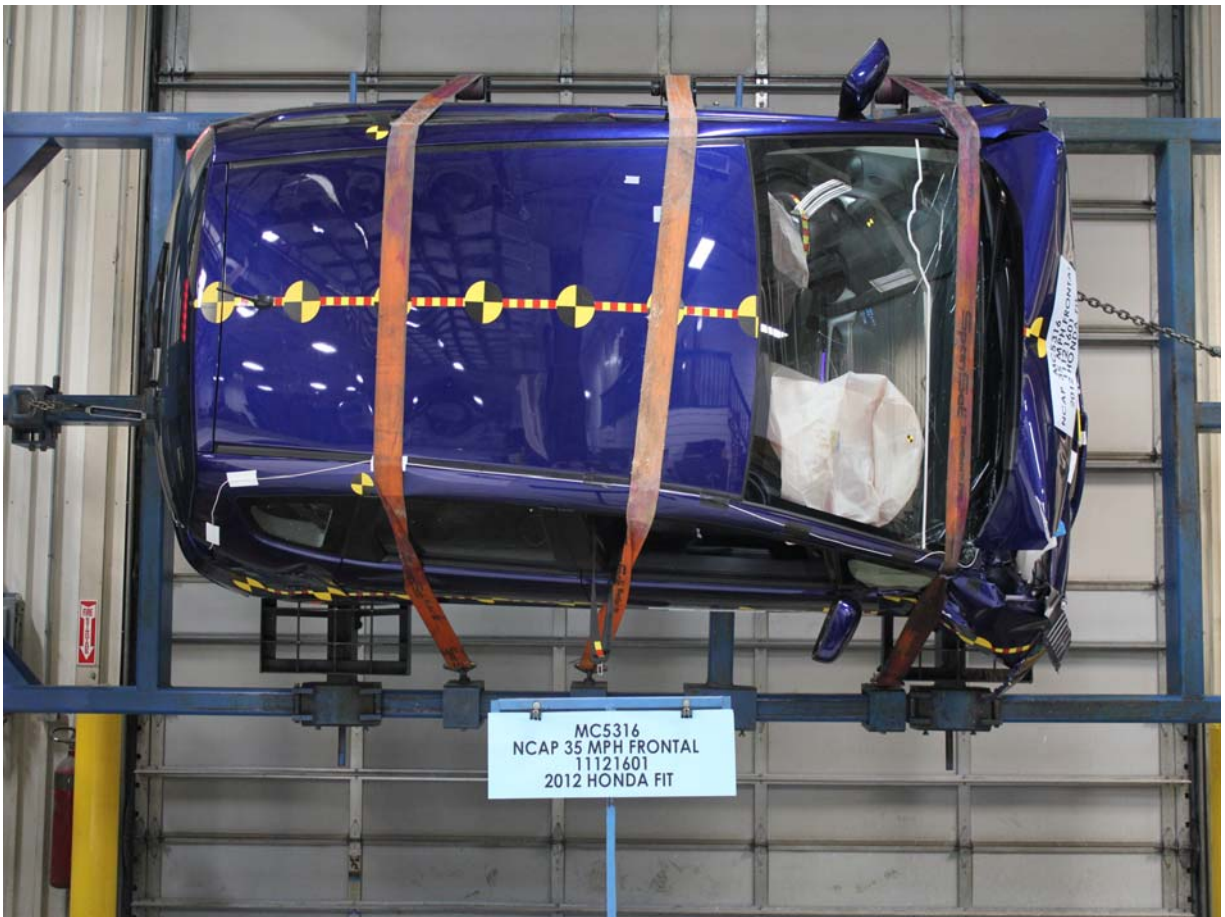
Vehicle at 0 Degrees on Static Rollover Device



Vehicle at 90 Degrees on Static Rollover Device



Vehicle at 180 Degrees on Static Rollover Device



Vehicle at 270 Degrees on Static Rollover Device



Vehicle at 360 Degrees on Static Rollover Device



2012 Honda Fit Frontal Impact Event

HONDA

2012 FIT 5DR BASE
 VEHICLE NUMBER: JHMGE038CC004331
 ENGINE NUMBER: L15A1-650737 INT: GRAY
 CONTROL NUMBER: 025905

STANDARD EQUIPMENT AT NO EXTRA COST

*** TECHNICAL FEATURES ***

- 117hp 1.8-Liter SOHC 16-Valve
- VTEC 4-Cylinder Engine
- 5-Speed Manual Transmission
- Drive-by-Wire Throttle System
- Electric Power-Assisted Rack-and-Pinion Steering
- Front MacPherson Strut Suspension
- Rear Torsion Beam Suspension
- Immobilizer Theft-Deterrent System

*** SAFETY FEATURES ***

- Driver's and Front Passenger's Dual-Stage Airbags (SRS)
- Driver's and Front Passenger's Side Airbags
- Side Curtain Airbags
- Anti-Lock Braking System (ABS)
- Brake Assist
- Electronic Brake Distribution (EBD)
- Vehicle Stability Assist (VSA)
- 3-Point Seat Belts
- Front Seat Belts with Automatic Tensioning System
- Tire Pressure Monitoring System
- Active Front Head Restraints
- Side-Impact Door Beams
- Front and Rear Crumple Zones
- ACE Body Structure
- LATCH System for Child Seats

*** INTERIOR FEATURES ***

- 160-Watt AM/FM/CD Audio System with 4 Speakers Incl. MP3/WMA Playback
- USB Audio Interface
- MP3/Auxiliary Input Jack
- Air Conditioning with Air Filtration System
- 60/40 Fold-Flat Rear Magic Seat
- Power Windows and Programmable Auto Door Locks
- Driver's Auto Up/Down Window
- Tilt & Telescopic Steering Column
- Passenger Seat Back Pocket
- Rear Under-Seat Hidden Storage Box
- Driver's Side Ambient Console Lighting
- Driver's and Passenger's Visor Vanity Mirrors
- Cruise Control
- Cargo Area Light
- 12-Volt Power Outlet
- Maintenance Minder System

*** EXTERIOR FEATURES ***

- 15" x 5.5" Steel Wheels with Full Wheel Covers
- P175/65 R15 All-Season Tires
- Intermittent Windshield Wipers
- Rear Wiper with Washer
- Rear Window Defroster
- Body-Colored Power Door Mirrors
- Halogen Headlights
- Remote Entry with Security System

Manufacturer's Suggested Retail Price **\$15,175.00**

Full Tank of Fuel No Charge

437323
80 miles

9%

Destination and Handling 770.00

TOTAL VEHICLE PRICE (includes Pre-Delivery Service)
\$15,945.00

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

EPA Fuel Economy Estimates

CITY MPG 27
Expected range for most drivers 22 to 32 MPG

Estimated Annual Fuel Cost \$1,915
based on 15,000 miles at \$3.70 per gallon

HIGHWAY MPG 33
Expected range for most drivers 27 to 39 MPG

Combined Fuel Economy This Vehicle 29
14 29 34 ALL SMALL WAGONS

Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

Environmental Performance

Protect the environment, choose vehicles with higher scores:

Global Warming Score 9
Average new vehicle 10 Cleanest

Smog Score 5
Average new vehicle 10 Cleanest

Vehicle emissions are a primary contributor to global warming and smog. Scores are determined by the California Air Resources Board based on the vehicle's estimated emissions. Please visit www.DriveClean.ca.gov for more information.

NAPLETON'S HONDA
 8600 E RIVERSIDE BLVD.
 LOVES PARK, IL 61111

PORT OF ENTRY: PORTLAND
DELIVERY POINT: SCHAMBURG
SHIP#: 875-655653
ROWS/SPACE: TRANS METHOD: NSD ELIWOOD
VIN: JHMGE038CC004331

ORIG. DLR: 208125
REF NO: 42391
HW CODE: HW-8287
EMISSION: 50 STATE
DEALER: 208125

FOR THIS VEHICLE
Final Assembly Point: SAYAMA, SAITAMA JAPAN
Country of Origin: Engine: JAPAN
Transmission: JAPAN

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
 U.S./Canadian Parts Content: **0 %**
 Major Sources of Foreign Parts Content: **JAPAN 65 %**

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

GOVERNMENT SAFETY RATINGS

Crash	Driver Passenger	Not Rated
Frontal Crash	Not Rated	Not Rated
Side Crash	Front seat Not Rated Rear seat Not Rated	Not Rated
Rollover	★★★★	

Star ratings based on the risk of injury in a frontal impact.
 Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Star ratings based on the risk of injury in a side impact.

Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.
 Source: National Highway Traffic Safety Administration (NHTSA).

www.safercar.gov or 1-888-327-4236

This vehicle is equipped with a front bumper of a type that has been tested at an impact speed of 5 miles per hour, and a rear bumper of a type that has been tested at an impact speed of 5 miles per hour, resulting in no damage to the vehicle's body and safety systems and minimal damage to the bumper and attachment hardware. "Minimal damage to the bumper" means minor cosmetic damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper, the less likely the vehicle will require repair after a low-speed collision. This vehicle exceeds the current federal bumper standard of 2.5 miles per hour.

Monroney Label

APPENDIX B
DUMMY RESPONSE DATA TRACES

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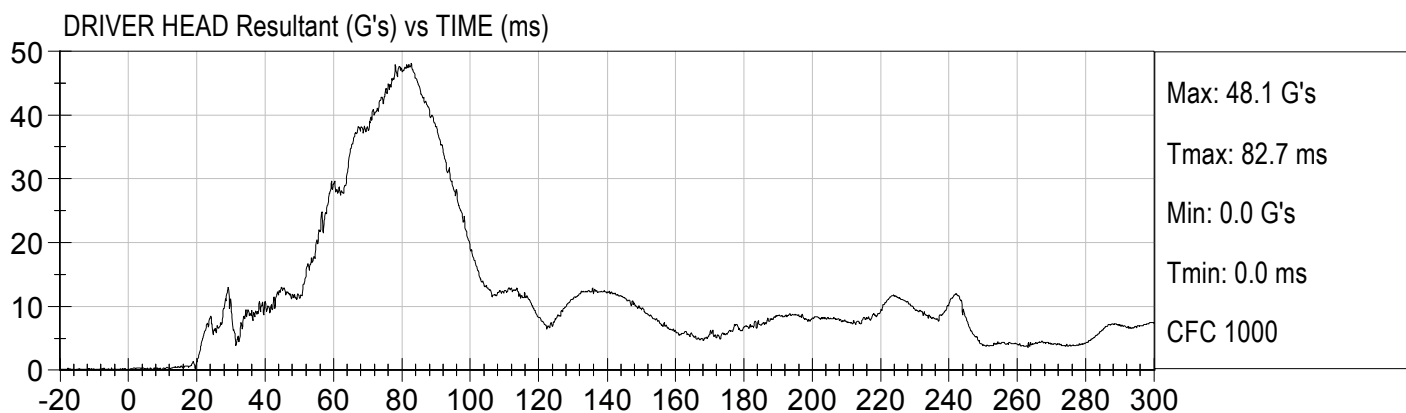
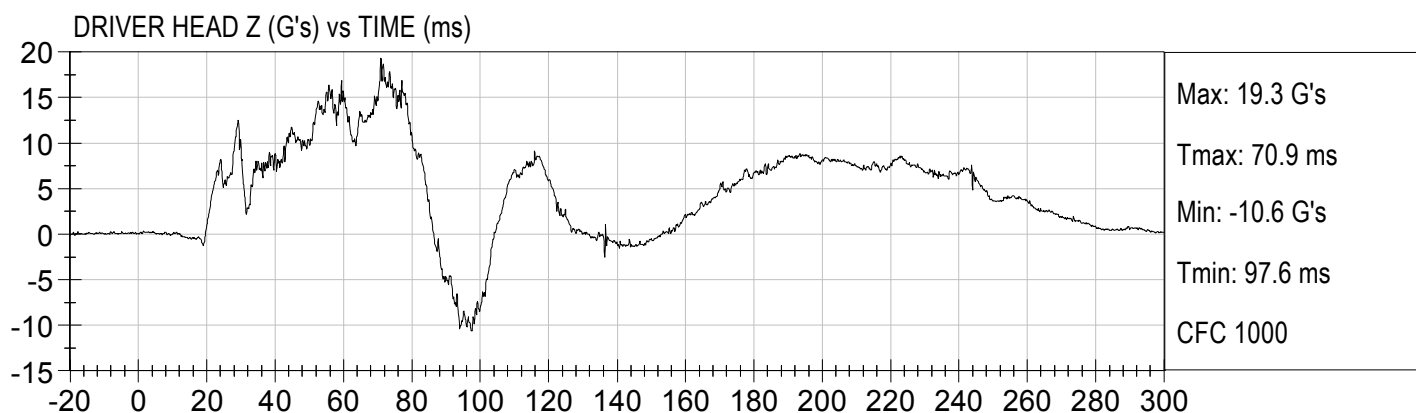
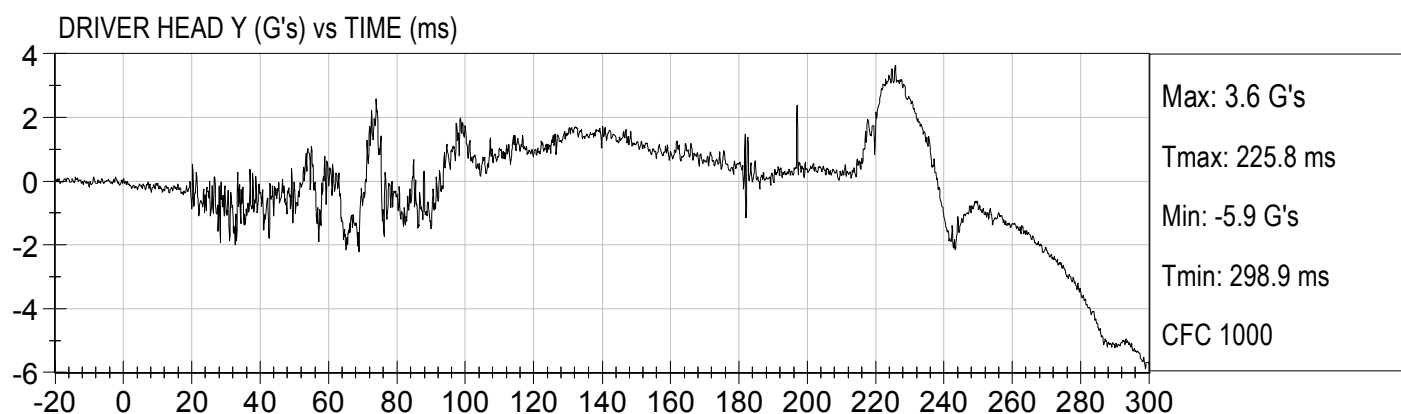
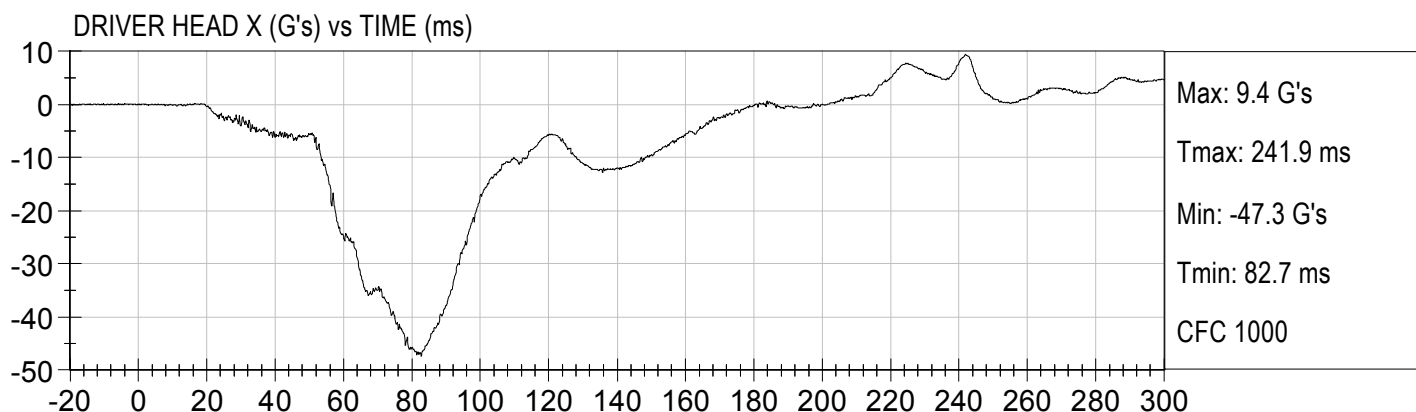
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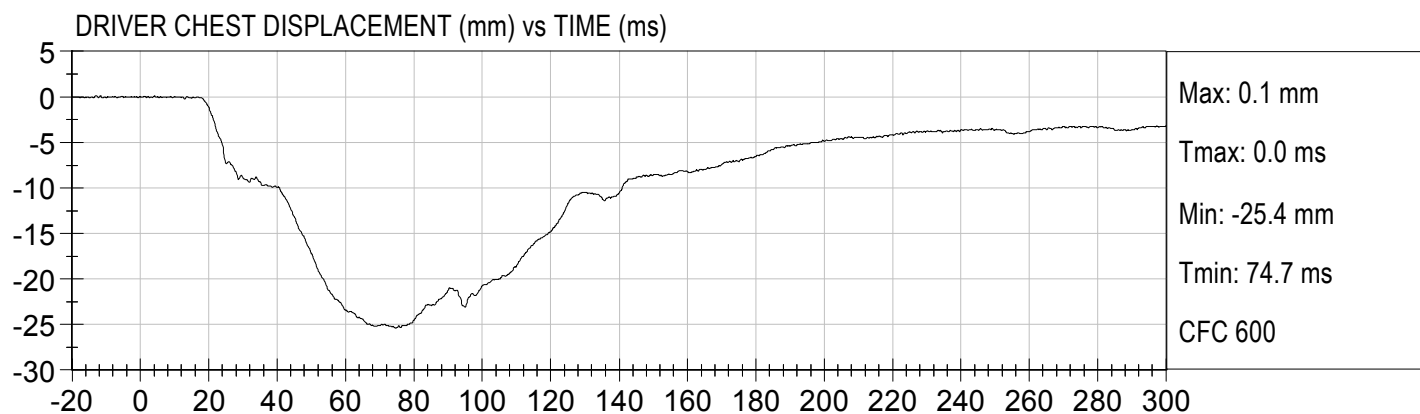
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

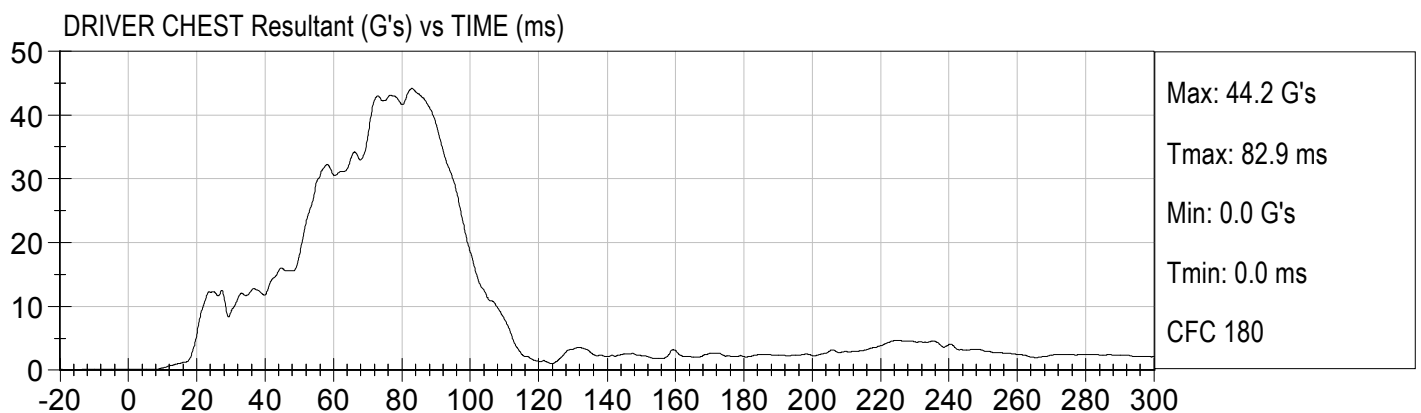
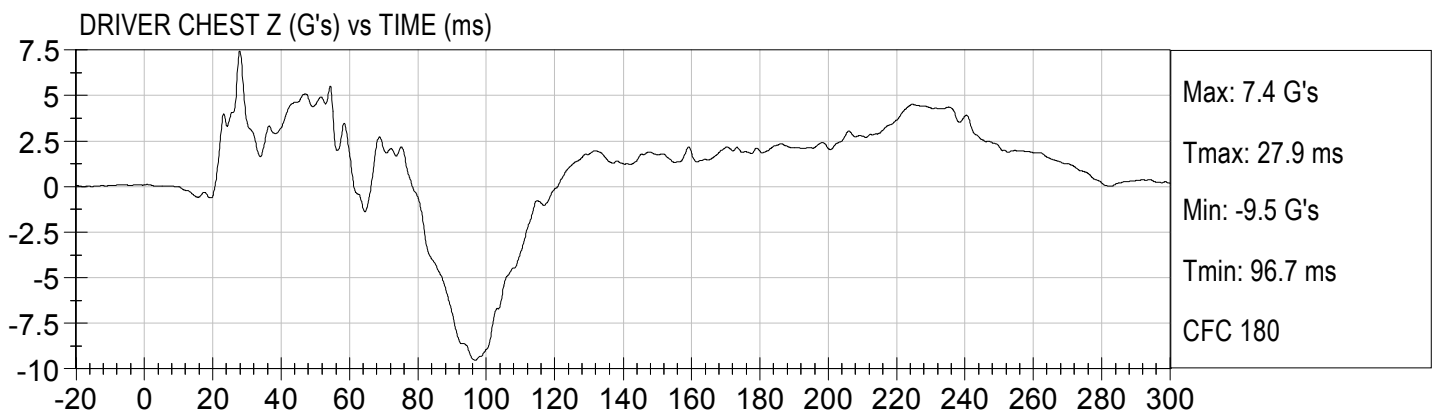
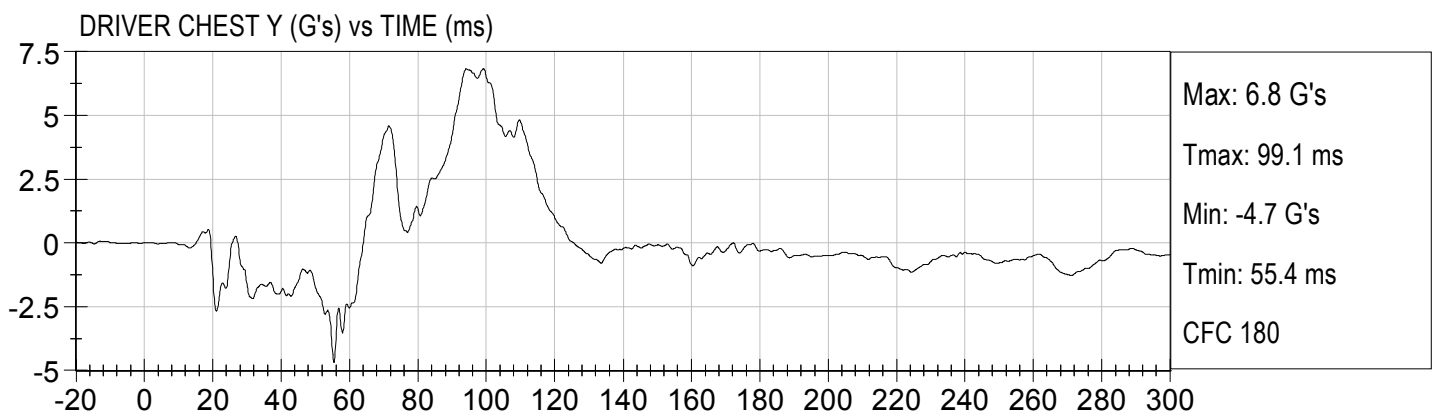
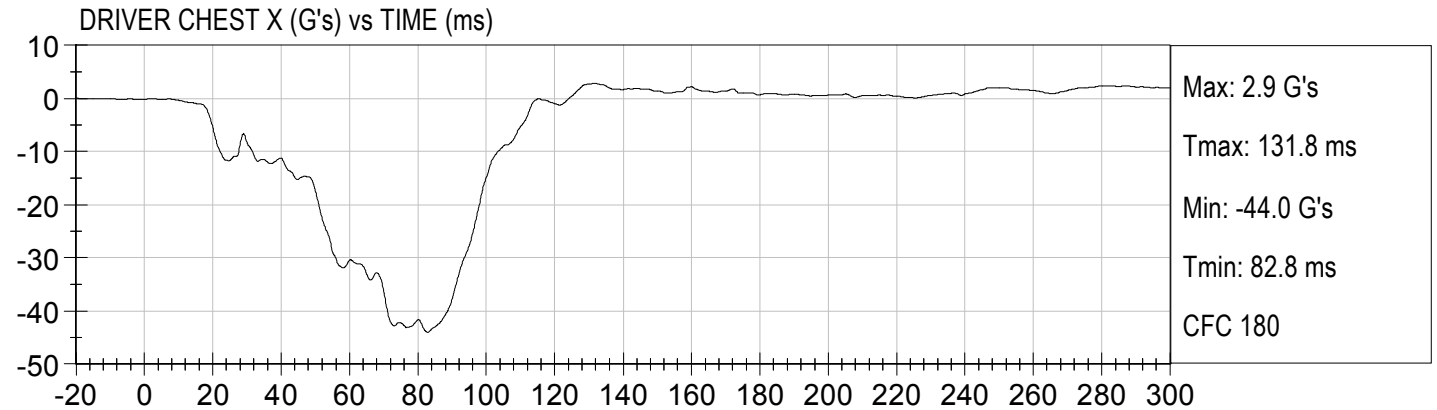
Driver Head X Redundant
 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 Driver Chest Y Redundant
 Driver Chest Z Redundant
 Driver Pelvis X
 Driver Pelvis Y
 Driver Pelvis Z
 Driver Left Femur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

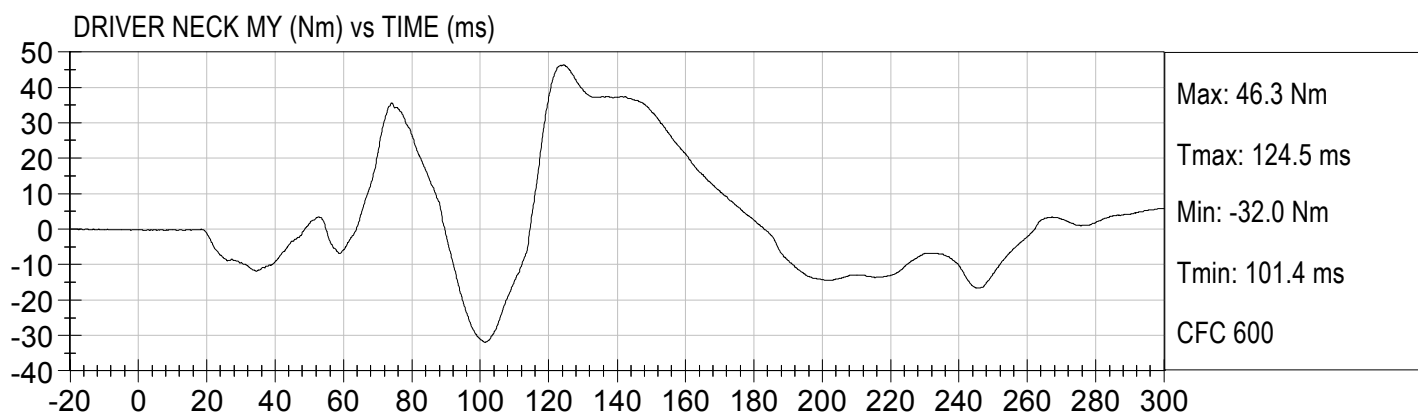
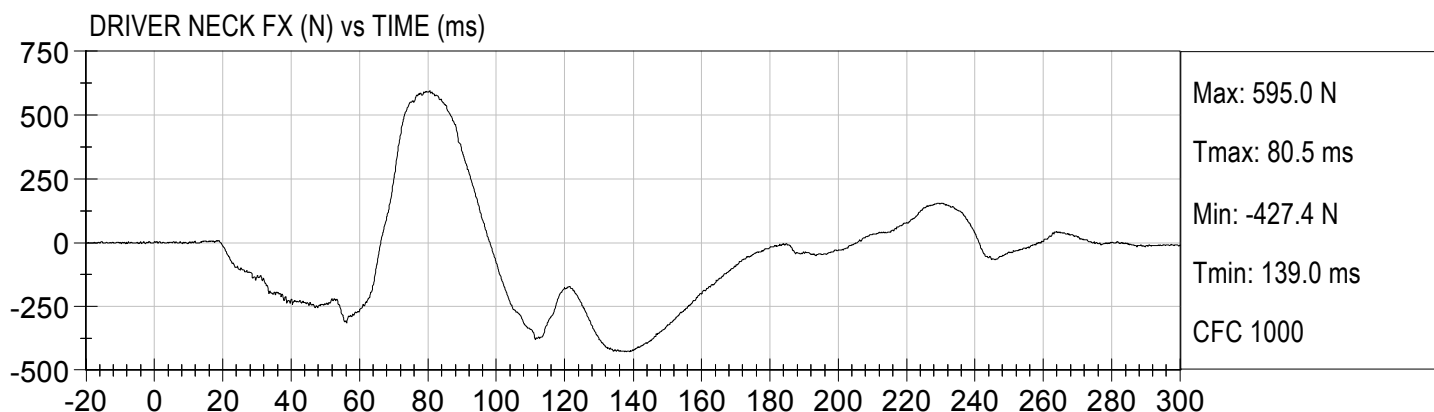
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left 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 – Not Installed
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
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

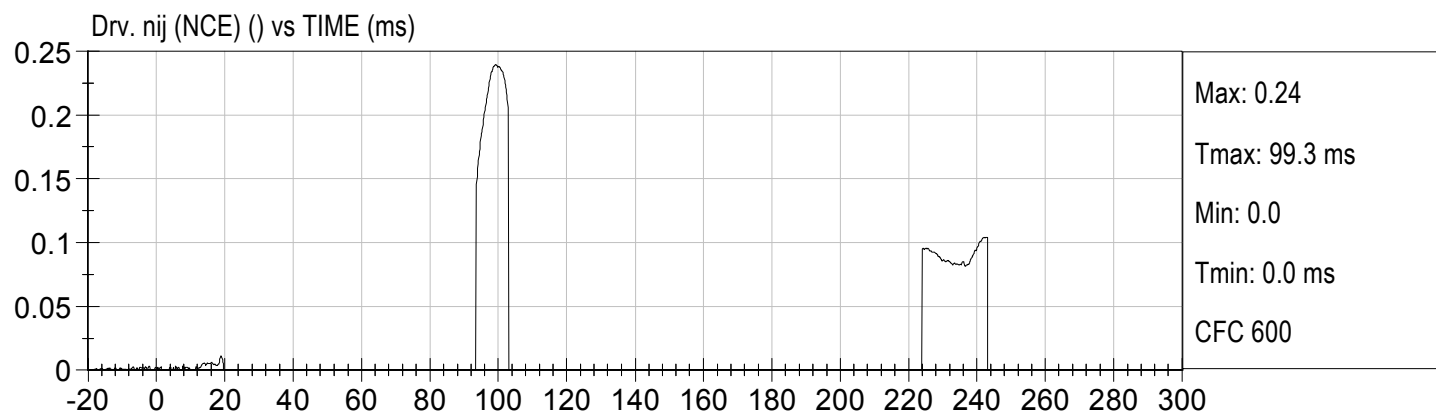
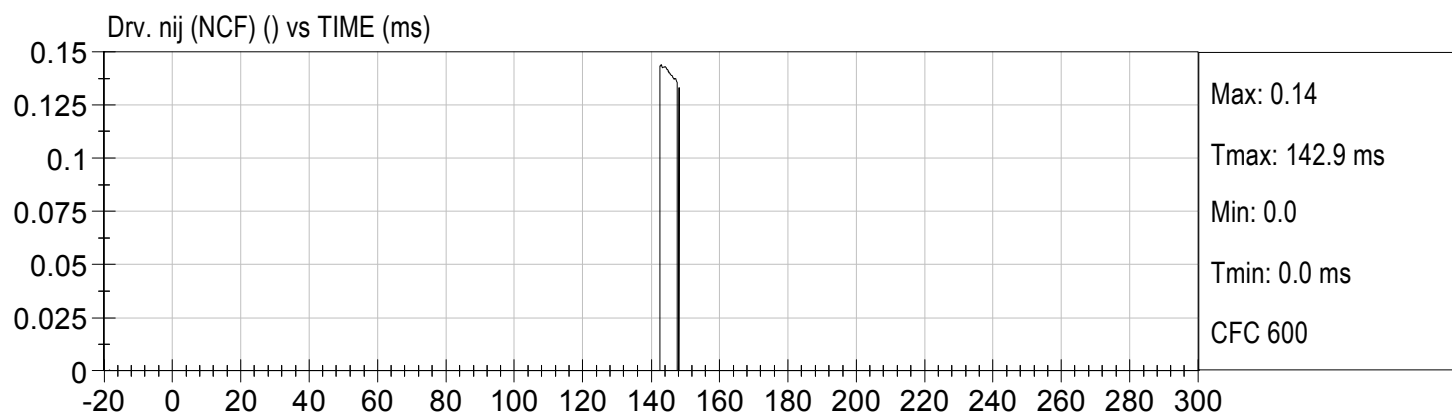
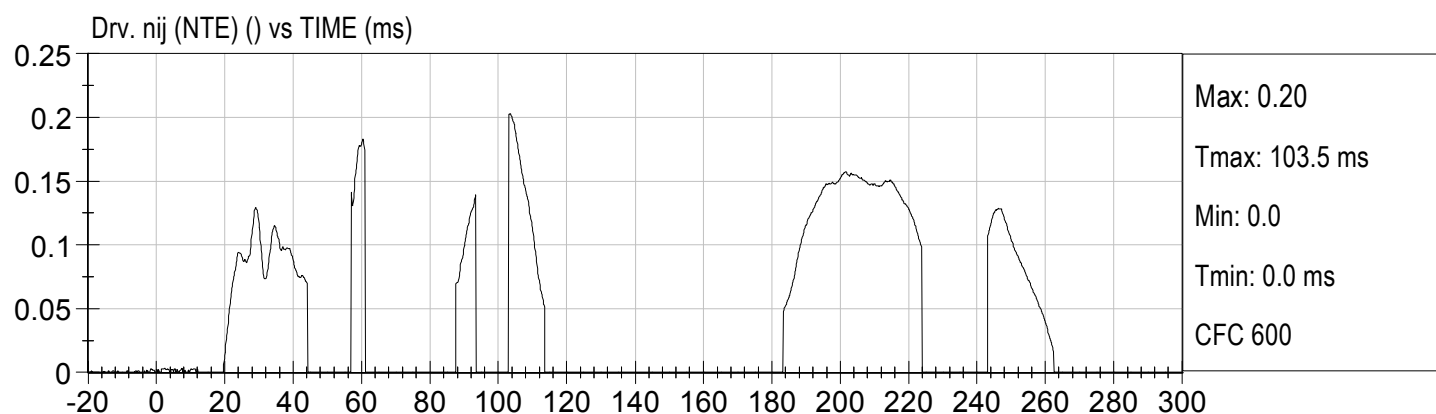
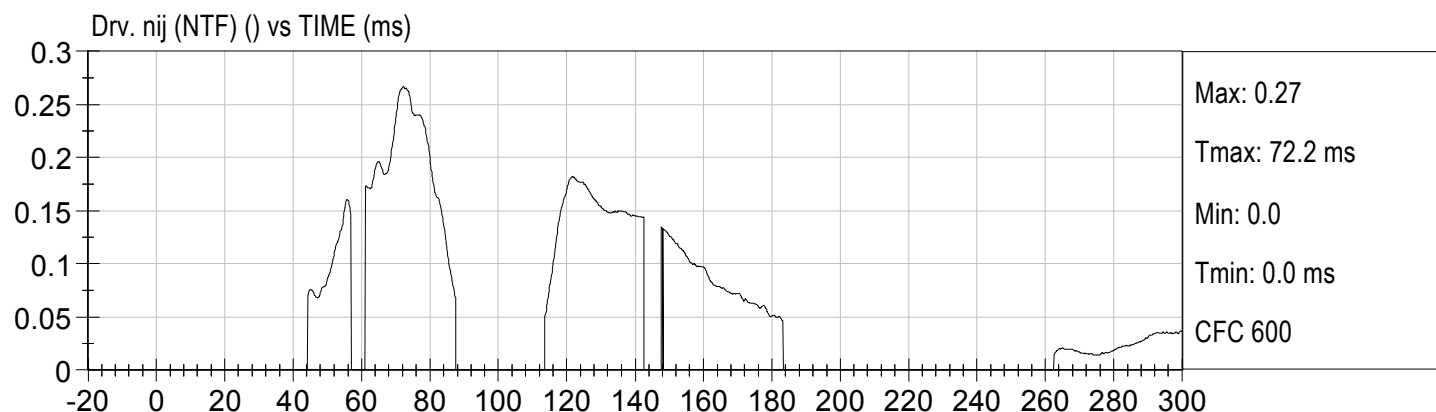
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right 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 – Not Installed
Left Rear Seat Crossmember X
Right Rear Seat Crossmember X
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Left Rear Seat Crossmember Xr
Right Rear Seat Crossmember Xr
Advanced Research Load Cell Barrier – 128 channels

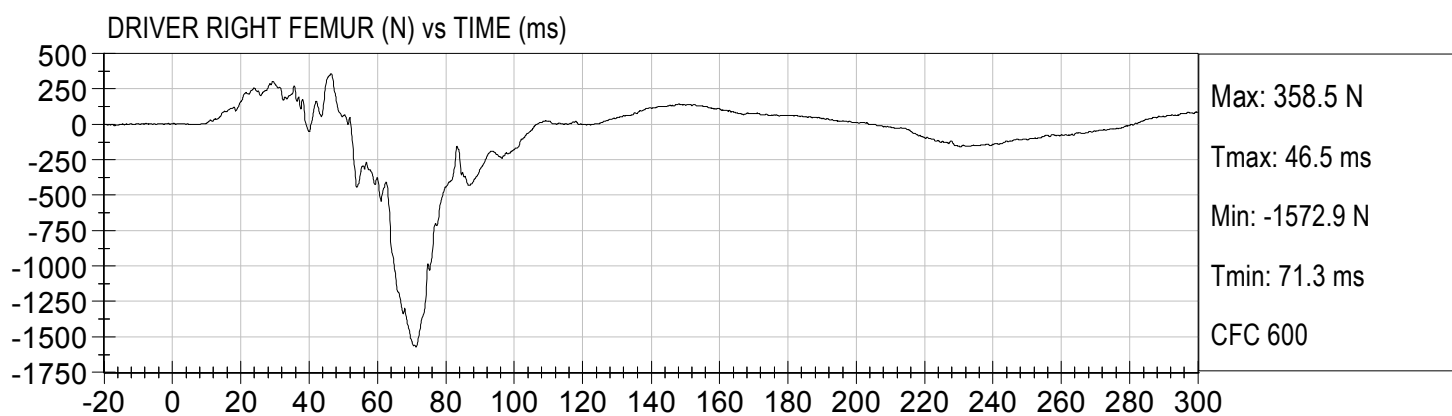
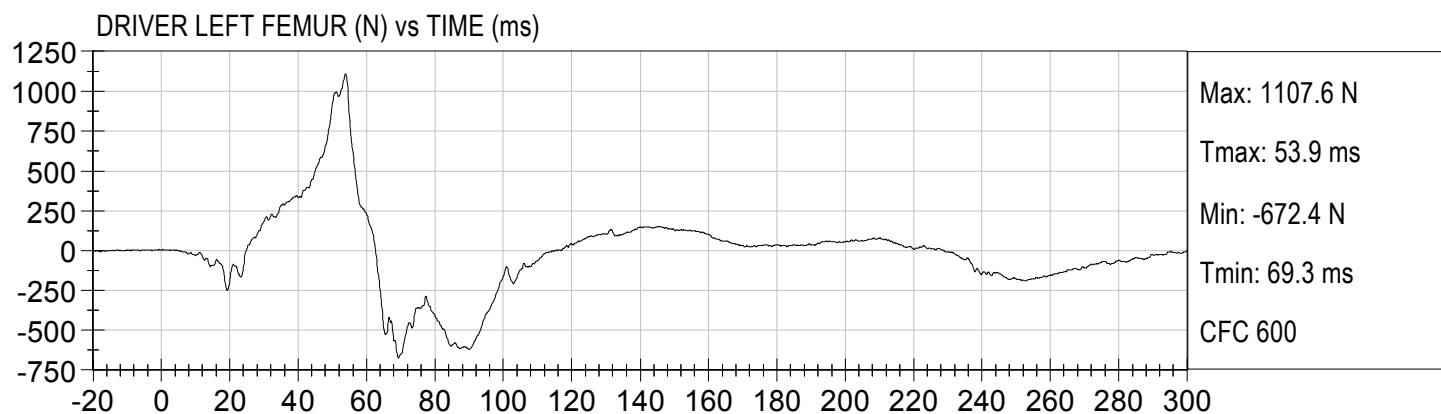






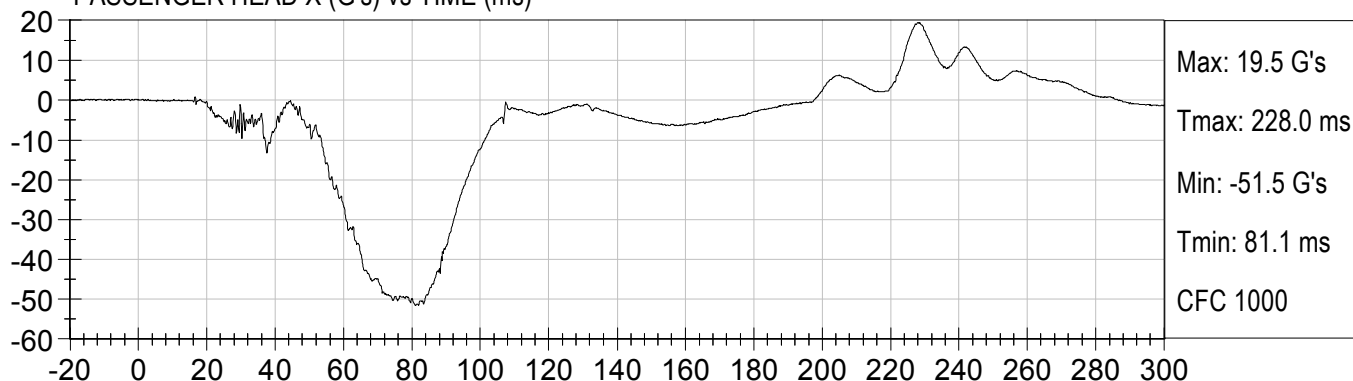




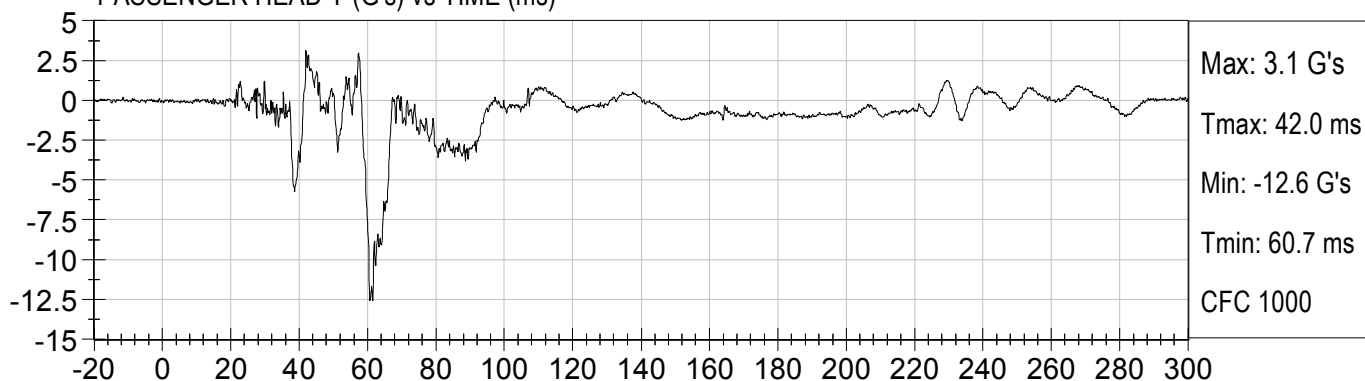




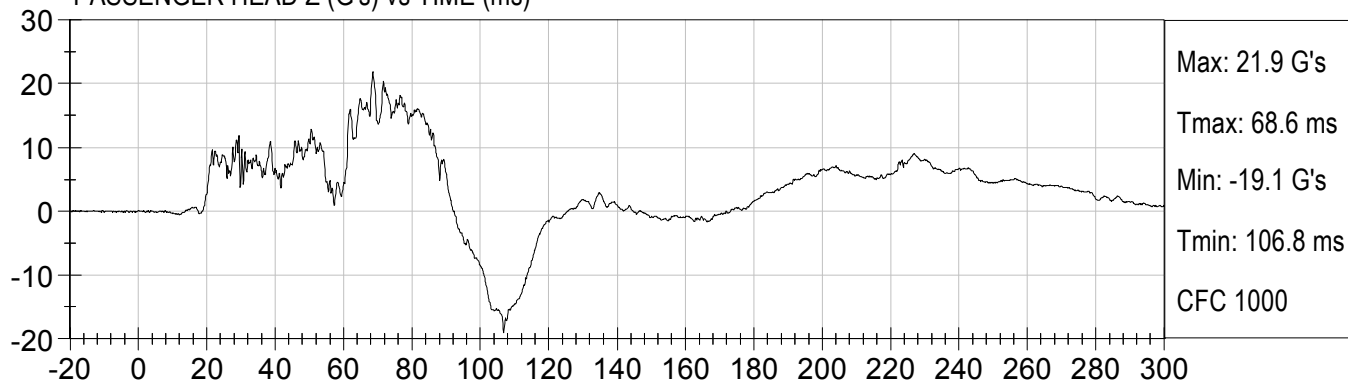
PASSENGER HEAD X (G's) vs TIME (ms)



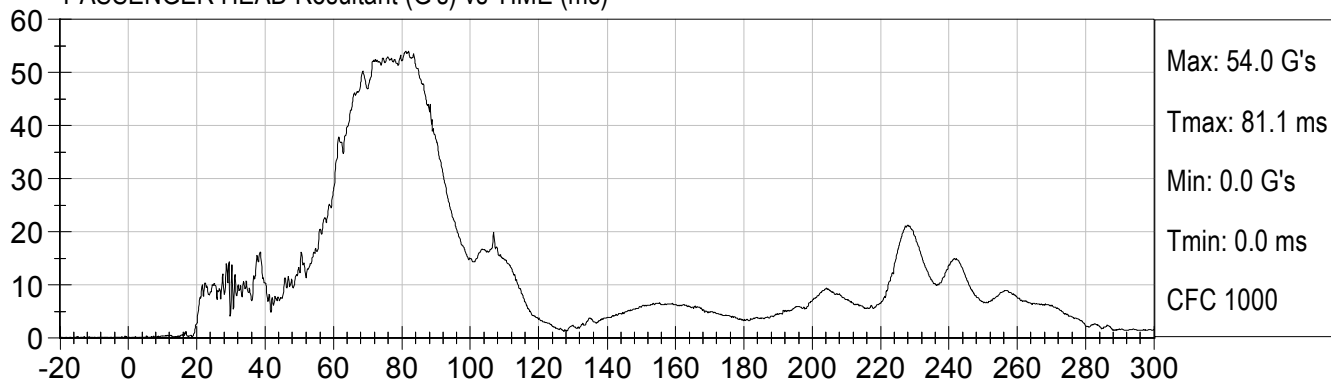
PASSENGER HEAD Y (G's) vs TIME (ms)

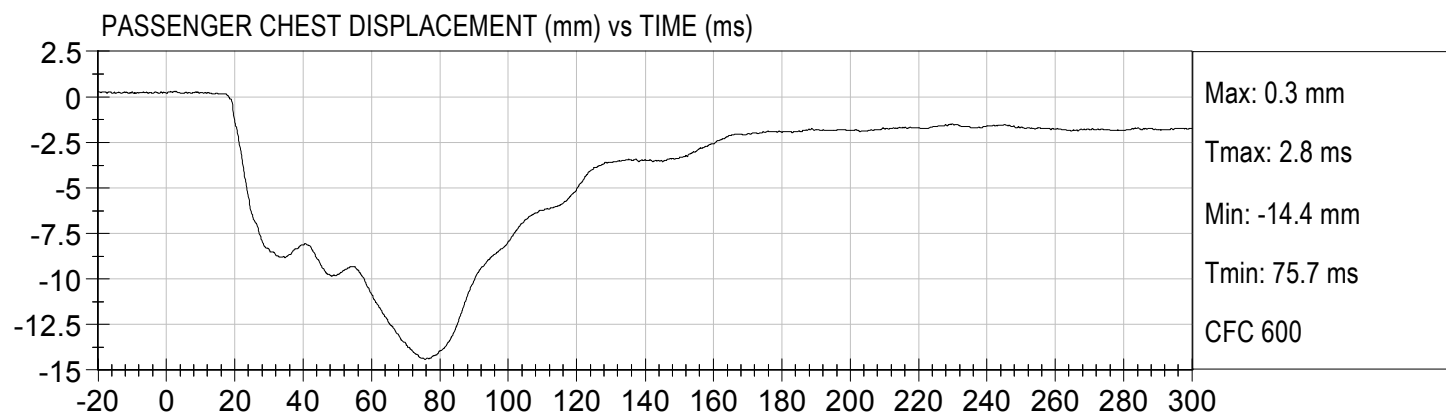


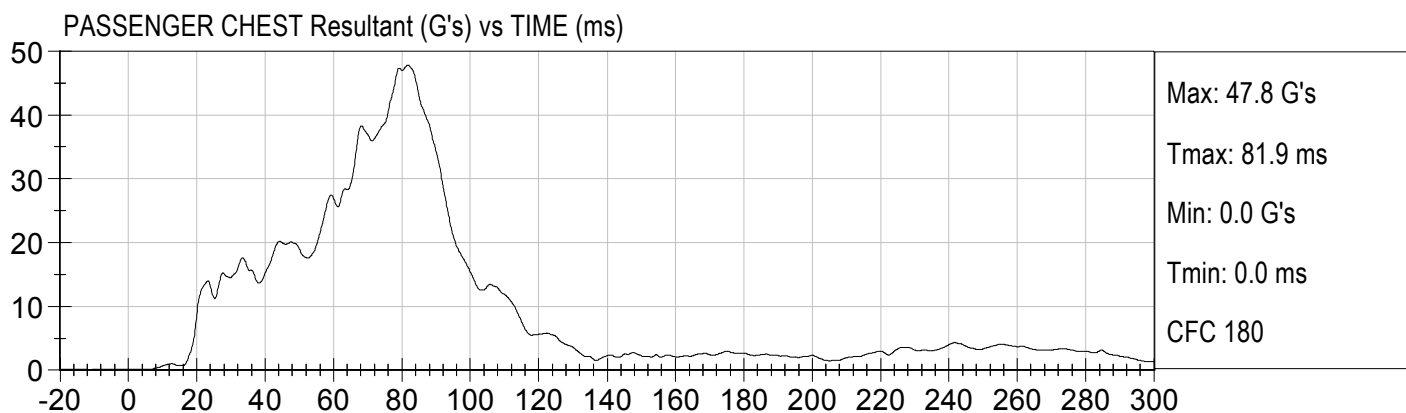
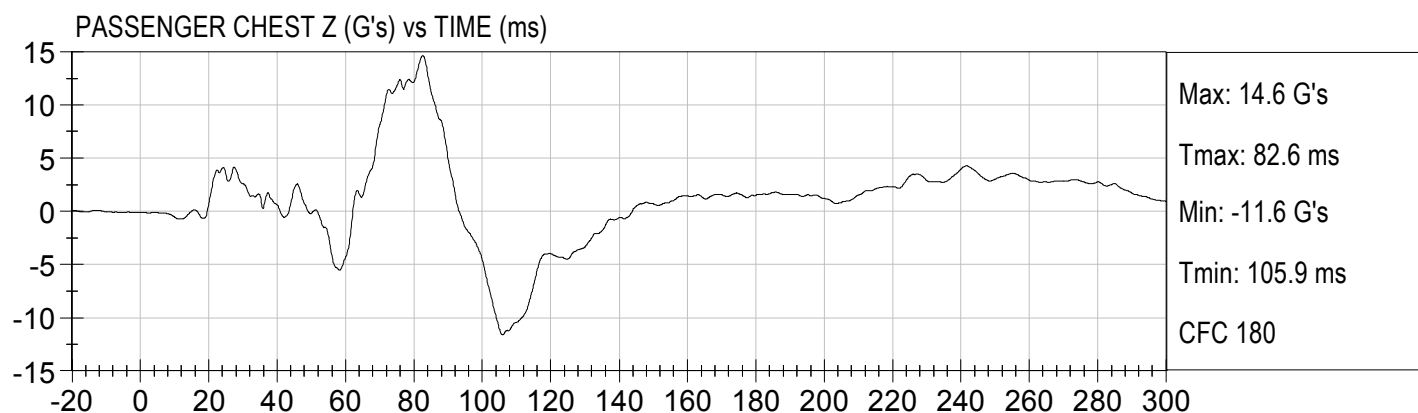
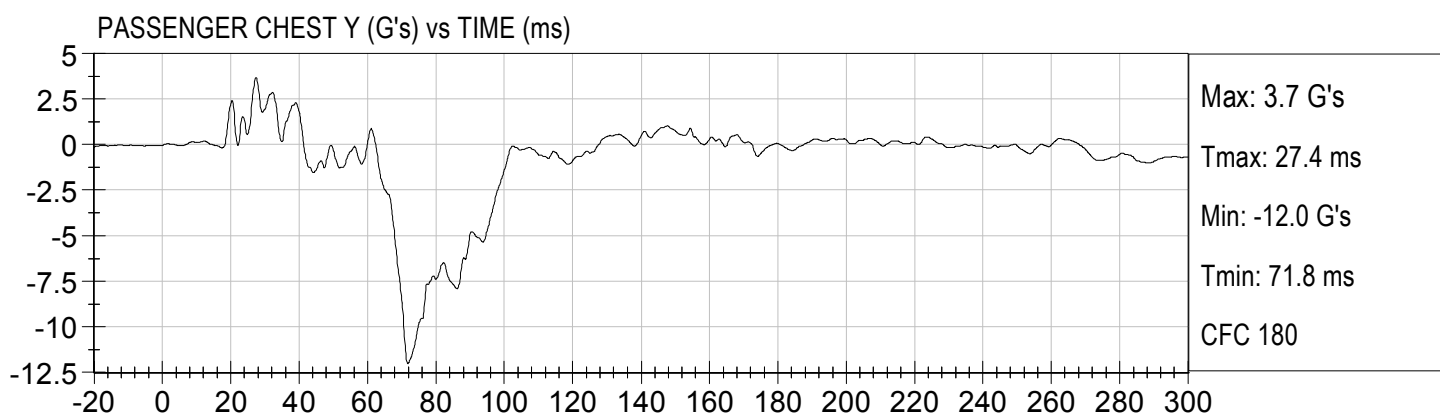
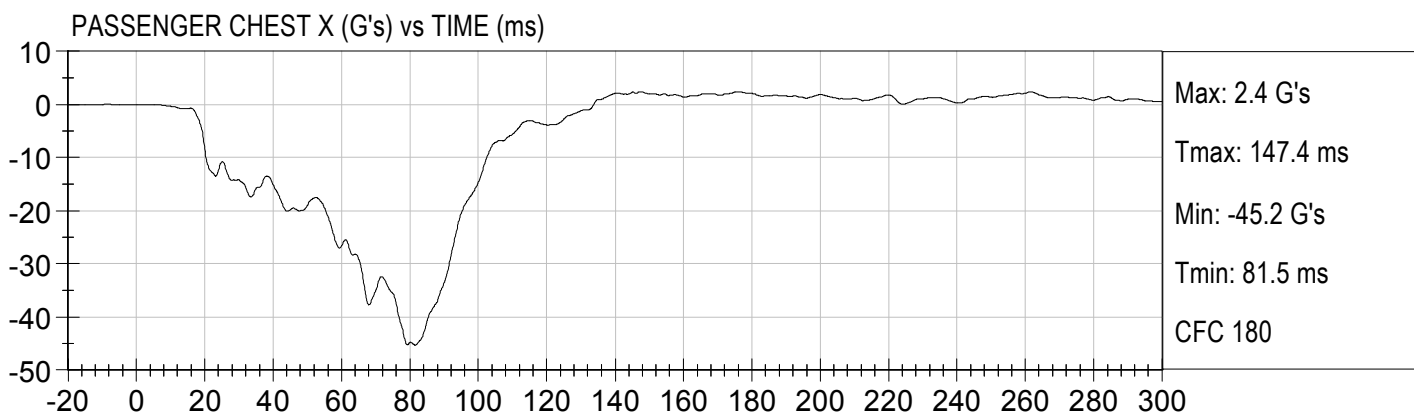
PASSENGER HEAD Z (G's) vs TIME (ms)

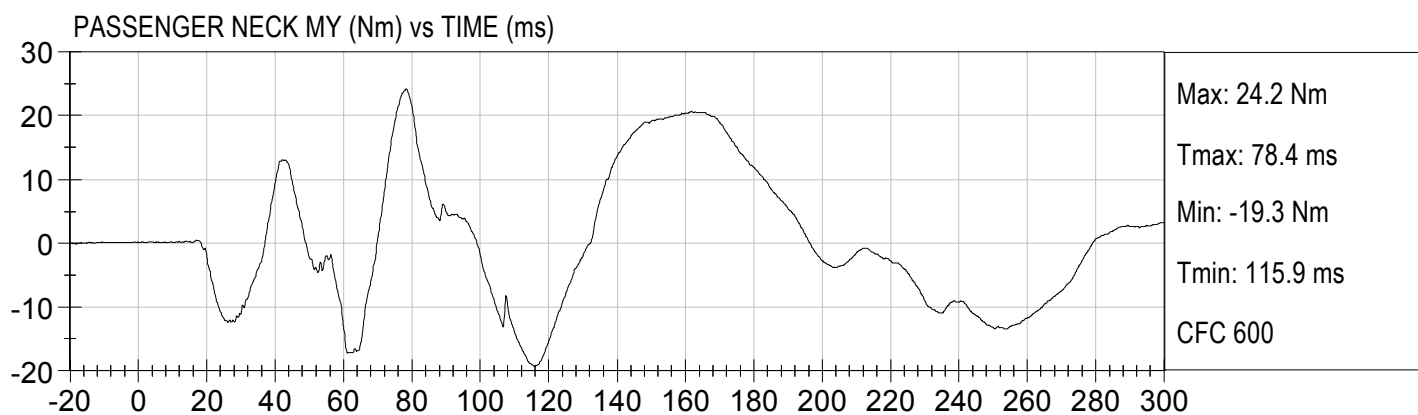
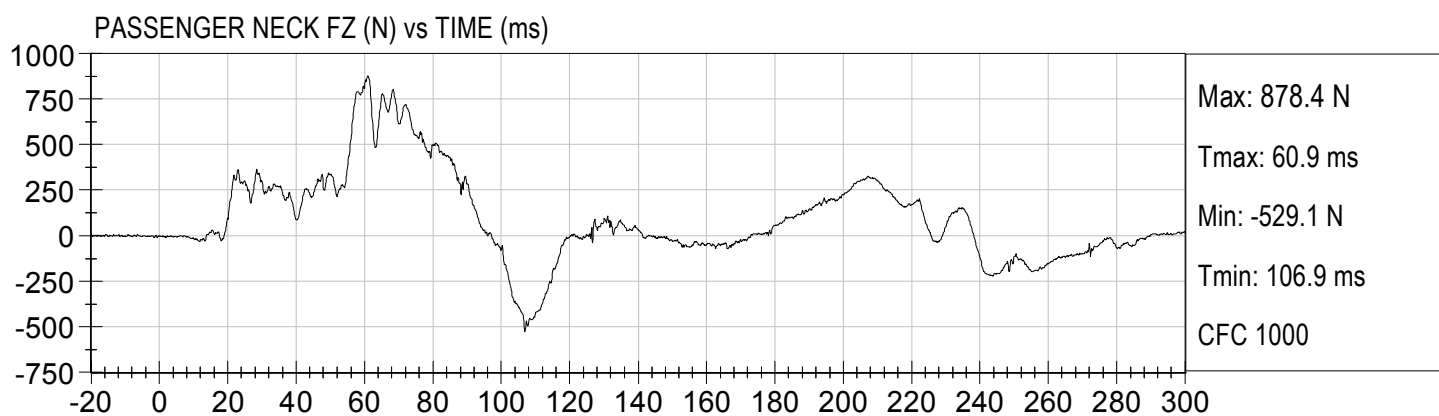
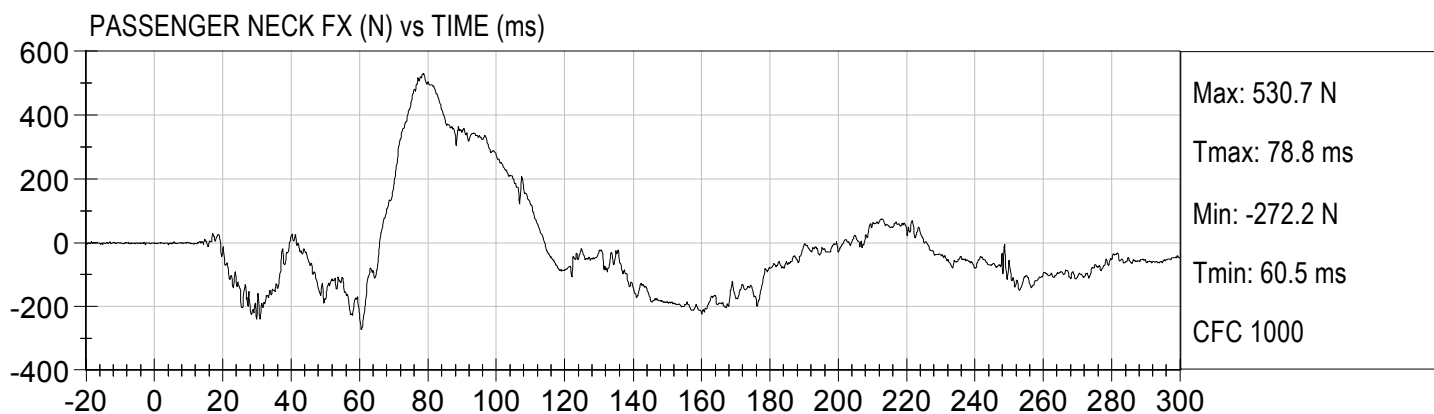


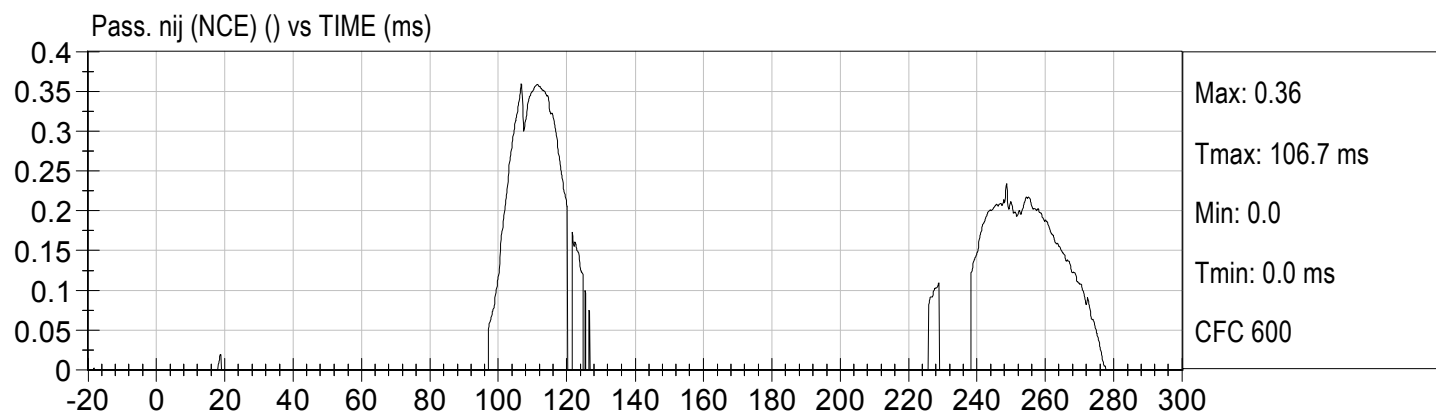
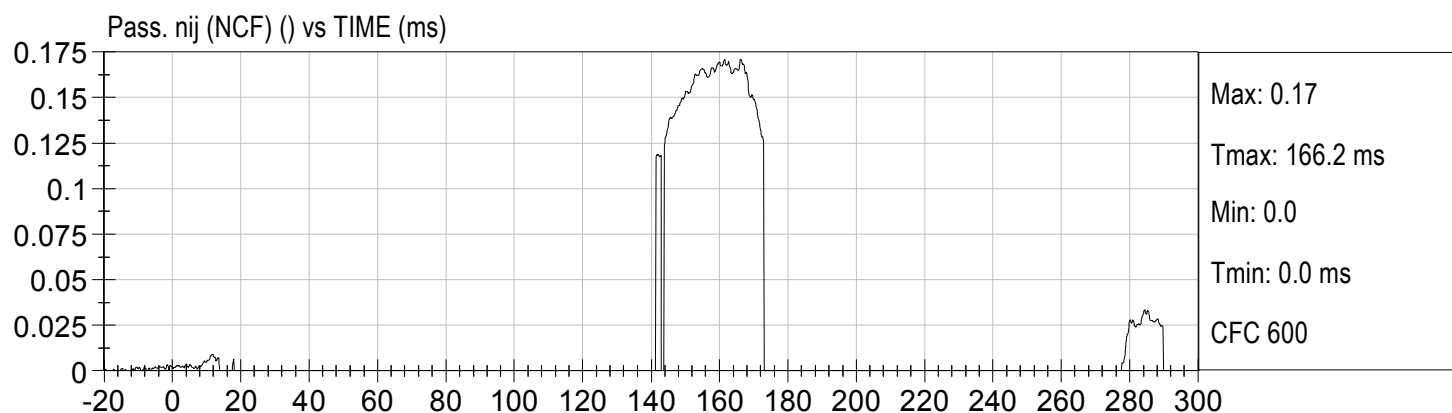
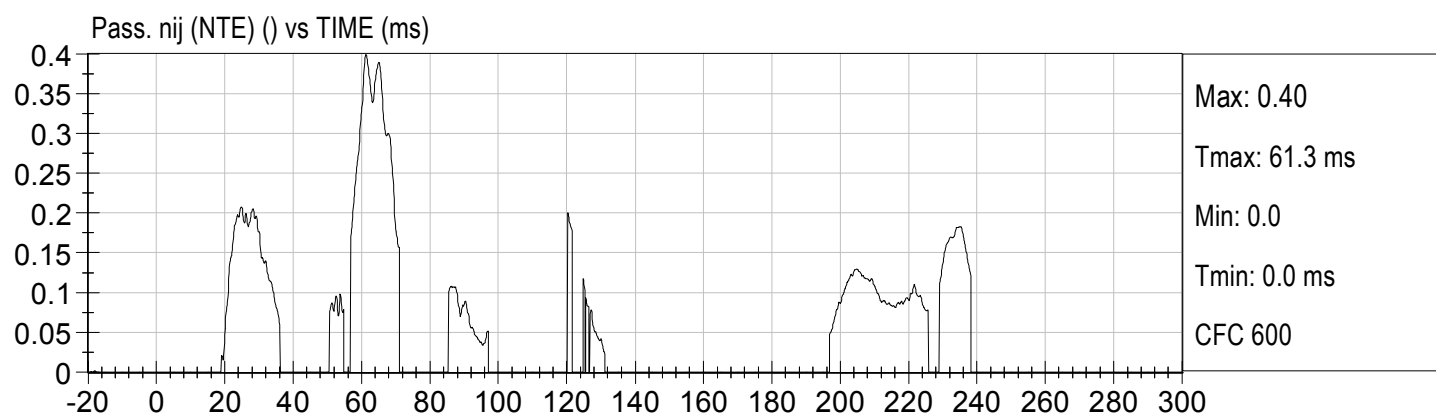
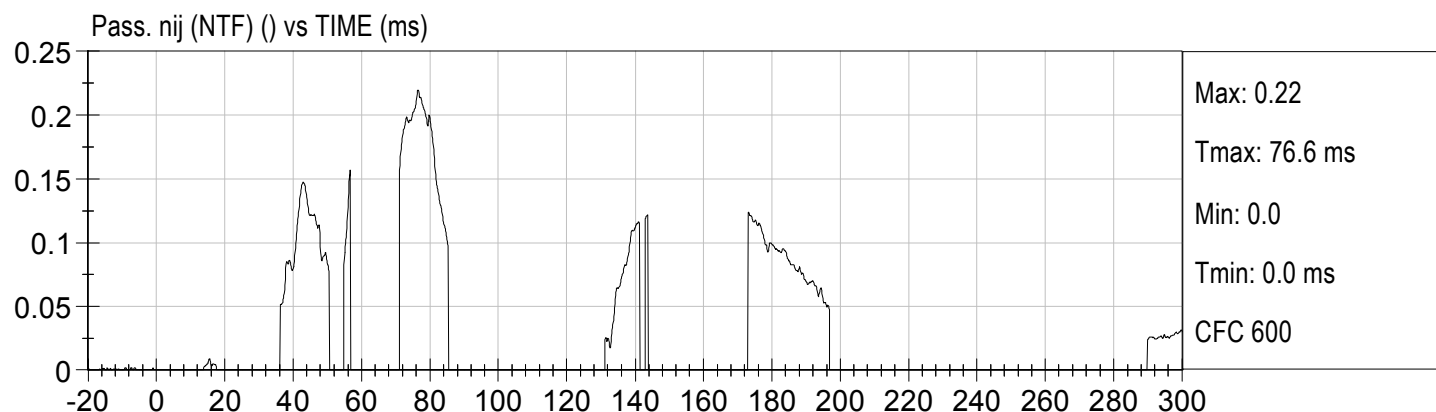
PASSENGER HEAD Resultant (G's) vs TIME (ms)

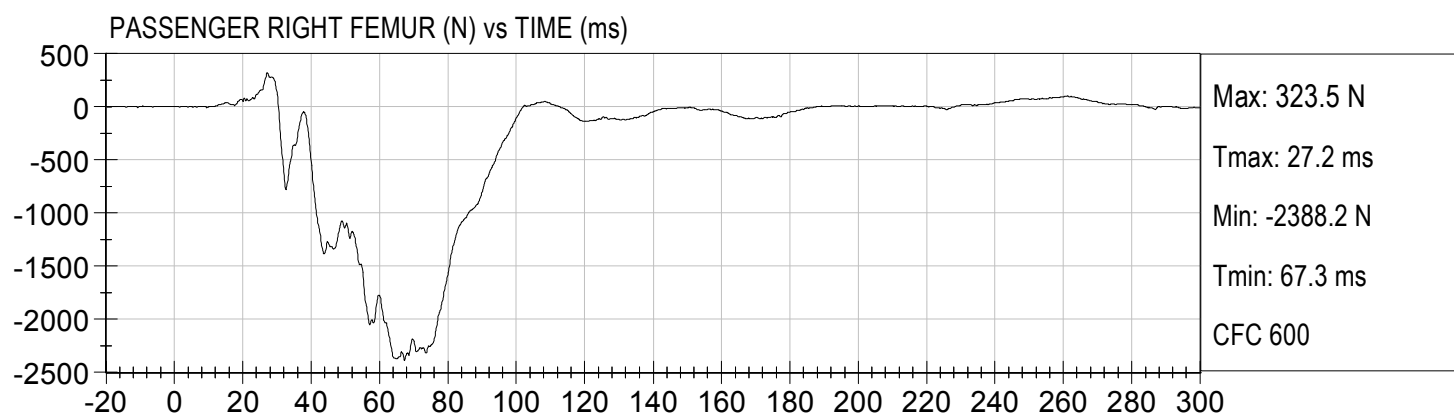
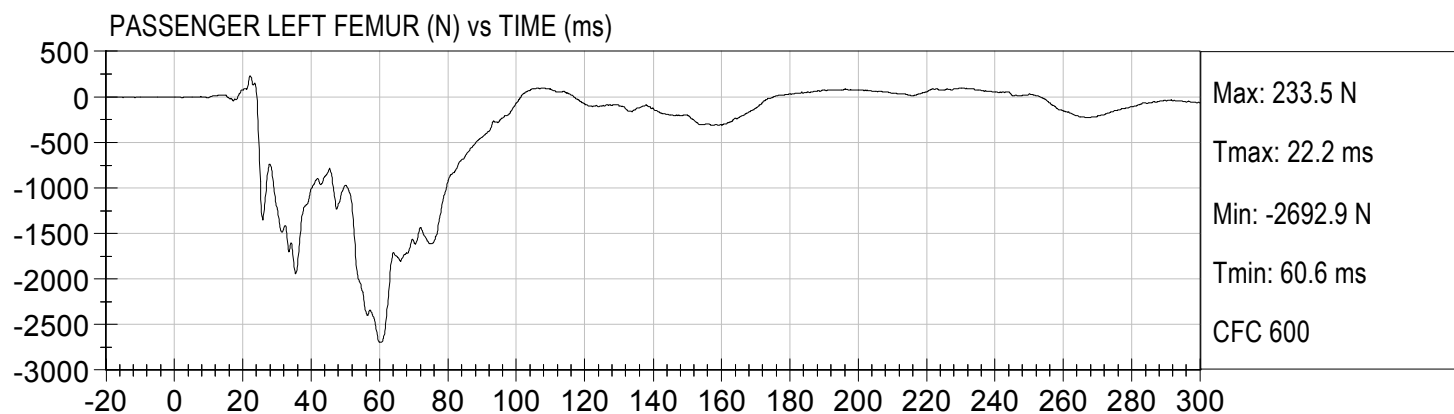












APPENDIX C

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: D114201

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	225 - 275	272	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	3.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

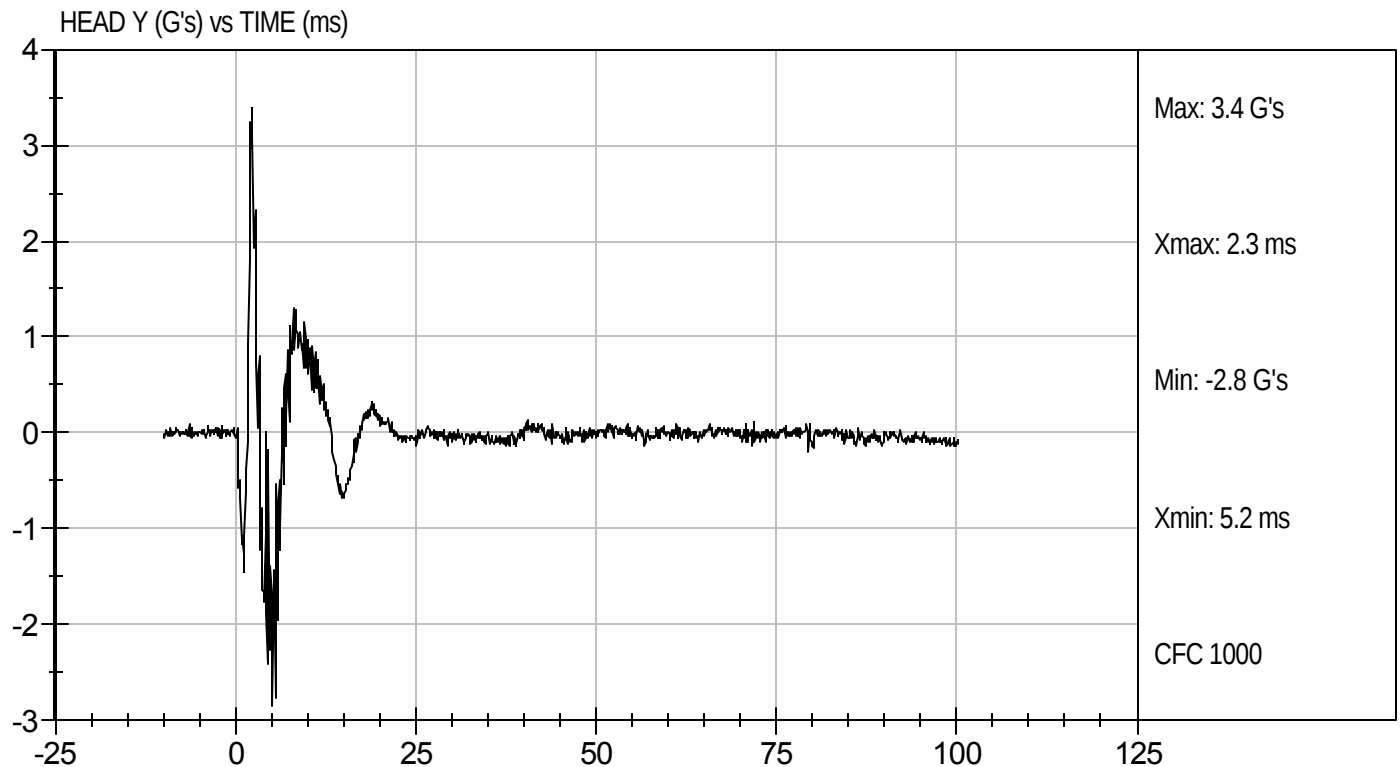
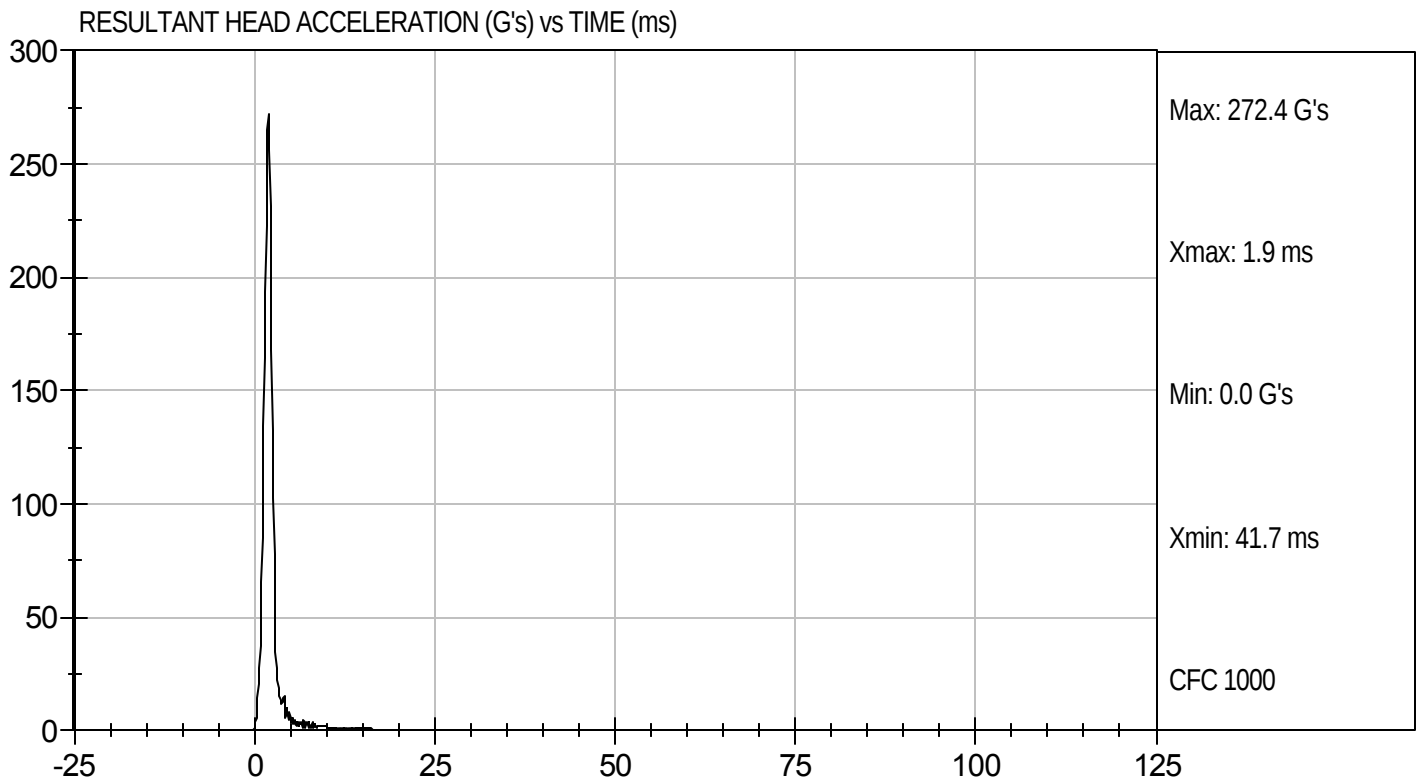
12/14/11
Test Date


Approved By



Test Desc: Head Drop
Component ID: D114201

Test Date: 12/14/11
Velocity: 0 ft/s, 0 m/s



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

ATD Serial No: 351

Test I.D.: D114202

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	39	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.68	Pass
	20 ms	G's	17.60 to 22.60	18.97	Pass
	30 ms	G's	12.50 to 18.50	17.86	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	17.8	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	34.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	70.7	Pass
	Time	ms	57.0 to 64.0	58.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	113.4	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	98.7	Pass
	Time	ms	47.0 to 58.0	48.1	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	100.3	Pass
Overall Test Results					Pass


Laboratory Technician

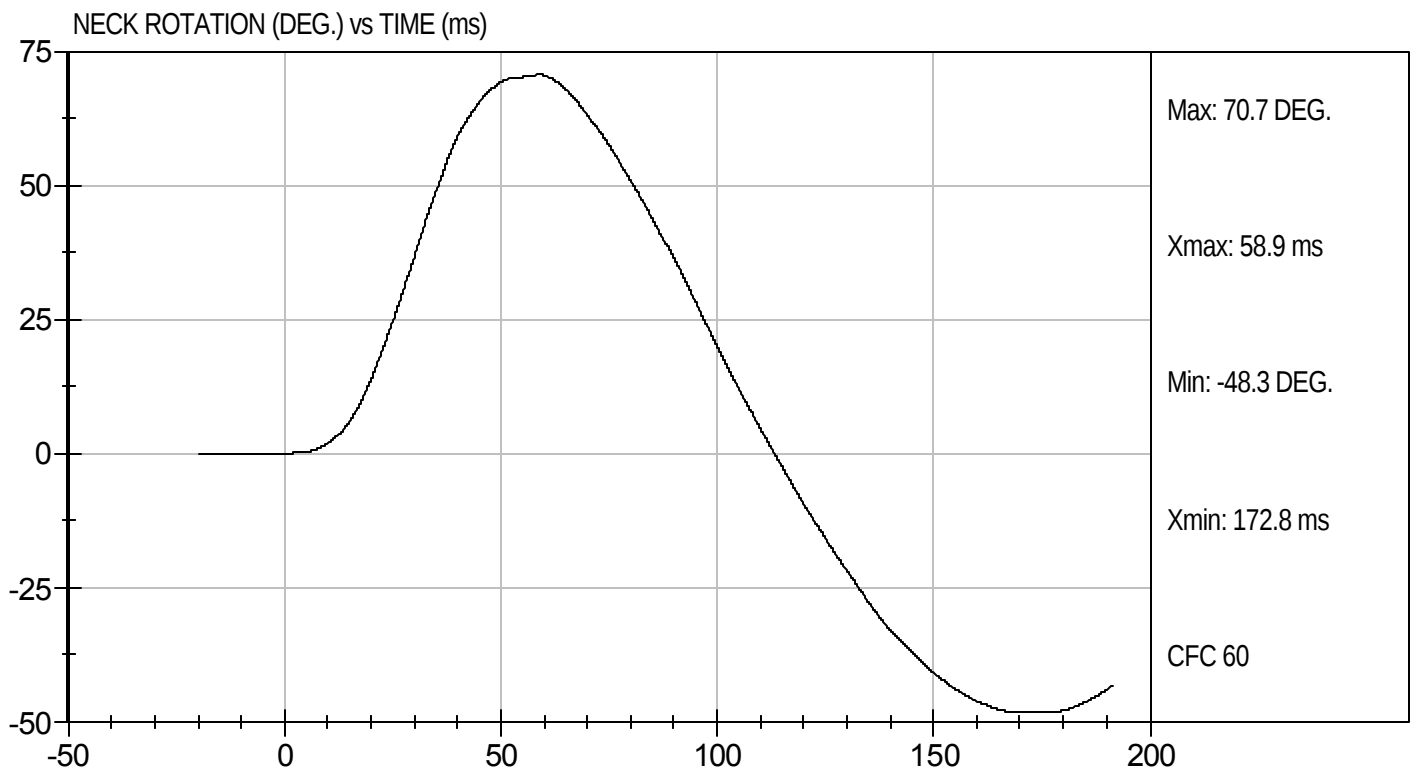
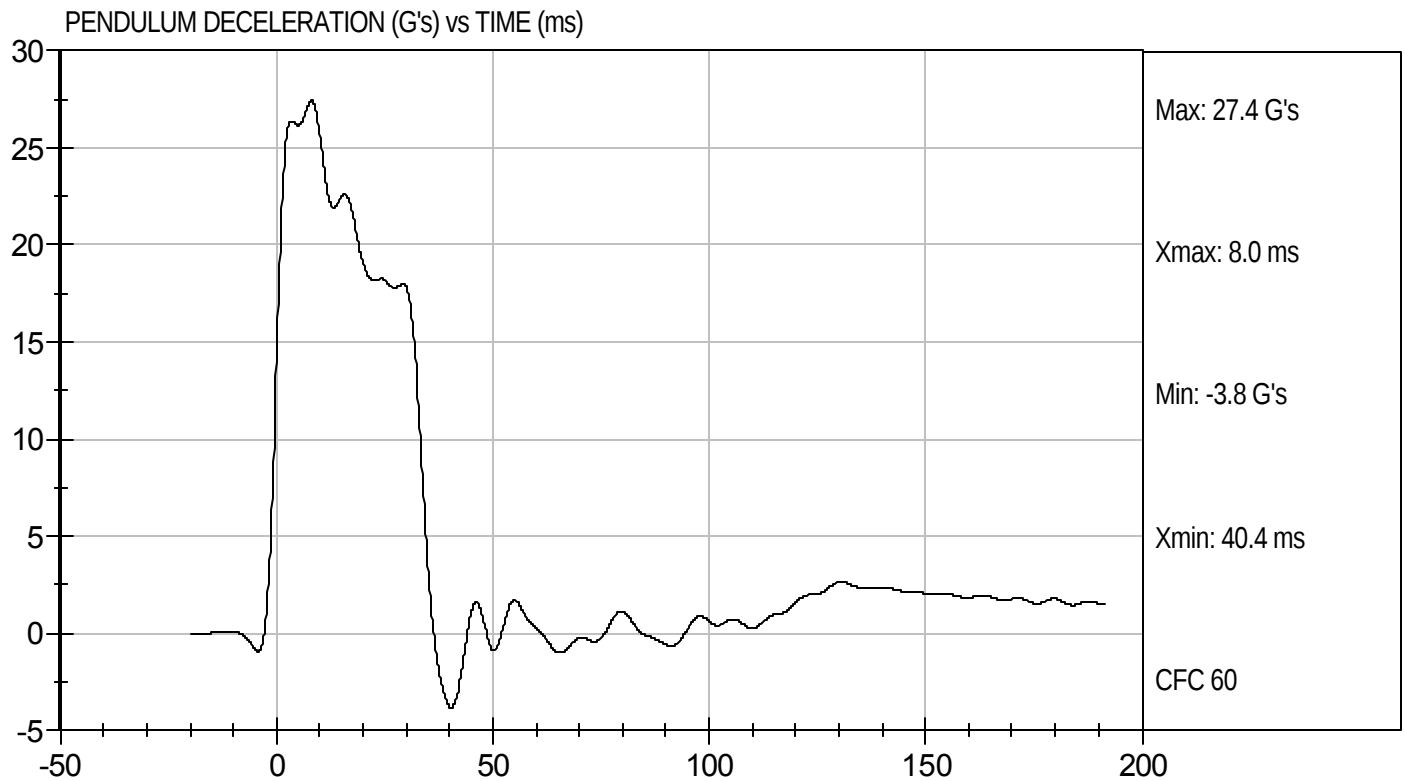
12/14/11
Test Date


Approved By



Test Desc: Neck Flexion
Component ID: D114202

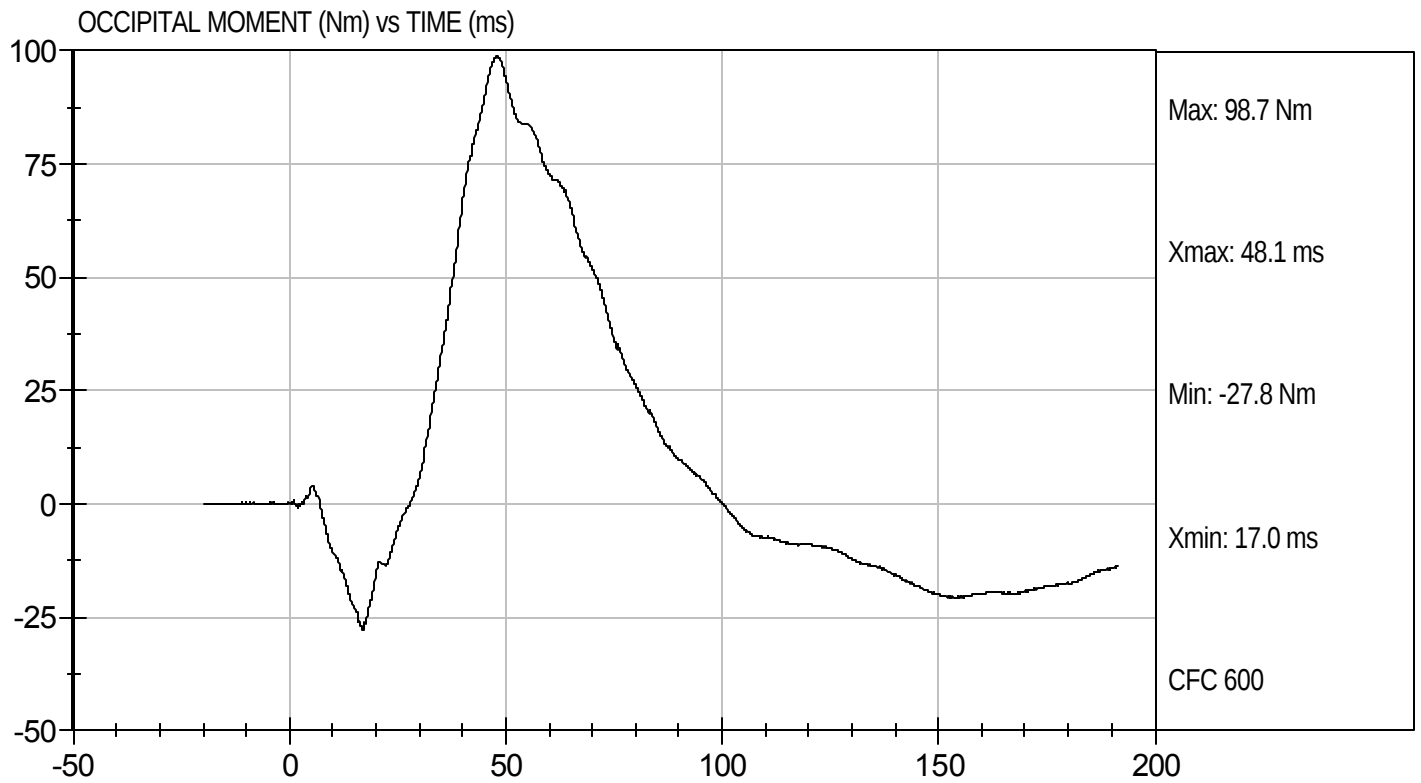
Test Date: 12/14/11
Velocity: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Flexion
Component ID: D114202

Test Date: 12/14/11
Velocity: 23.15 ft/s, 7.06 m/s



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

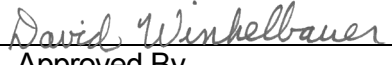
ATD Serial No: 351

Test I.D.: D114203

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.2	Pass
Laboratory Relative Humidity		%	10 to 70	39	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	20.58	Pass
	20 ms	G's	14.00 to 19.00	16.87	Pass
	30 ms	G's	11.00 to 16.00	15.55	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	15.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	96.6	Pass
	Time	ms	72.0 to 82.0	78.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	155.0	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-64.3	Pass
	Time	ms	65.0 to 79.0	69.6	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	143.2	Pass
Overall Test Results					Pass


 Laboratory Technician

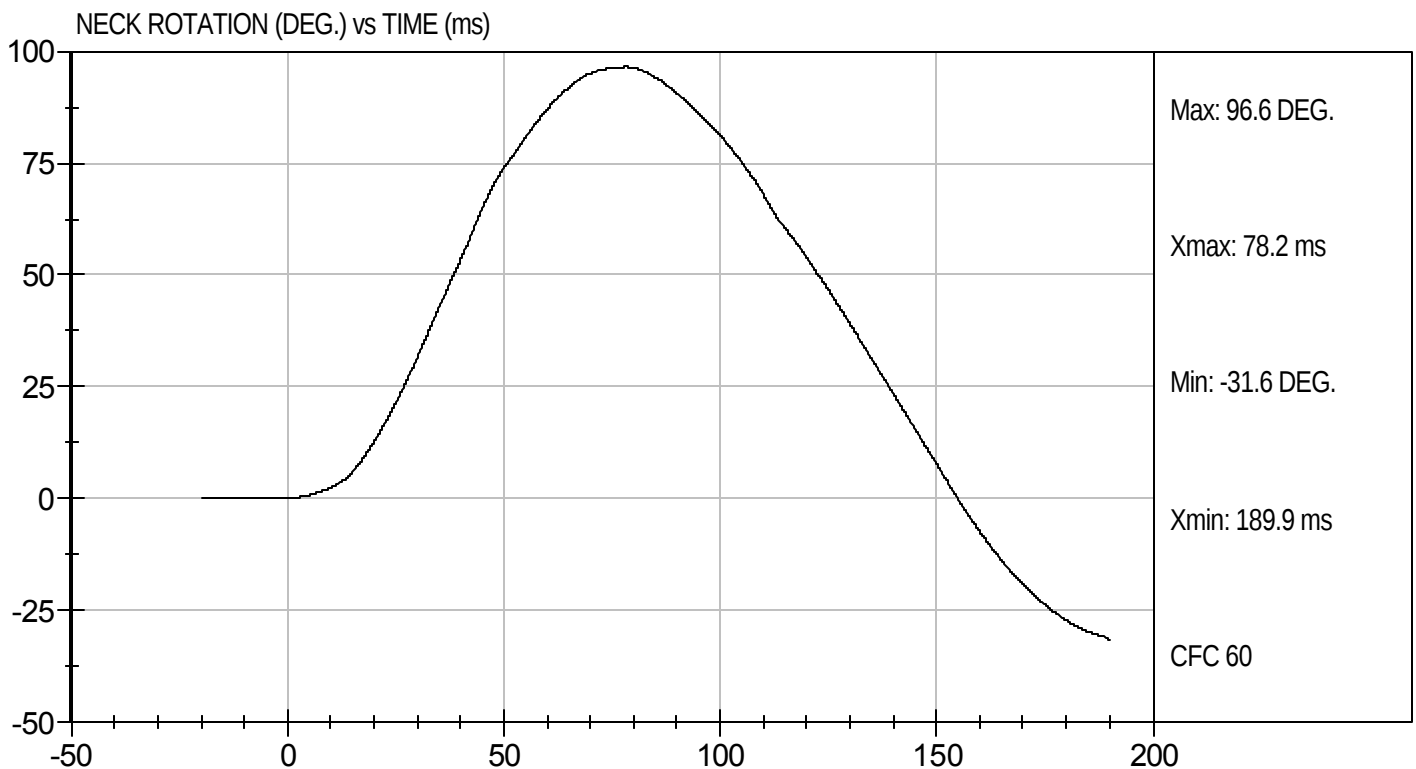
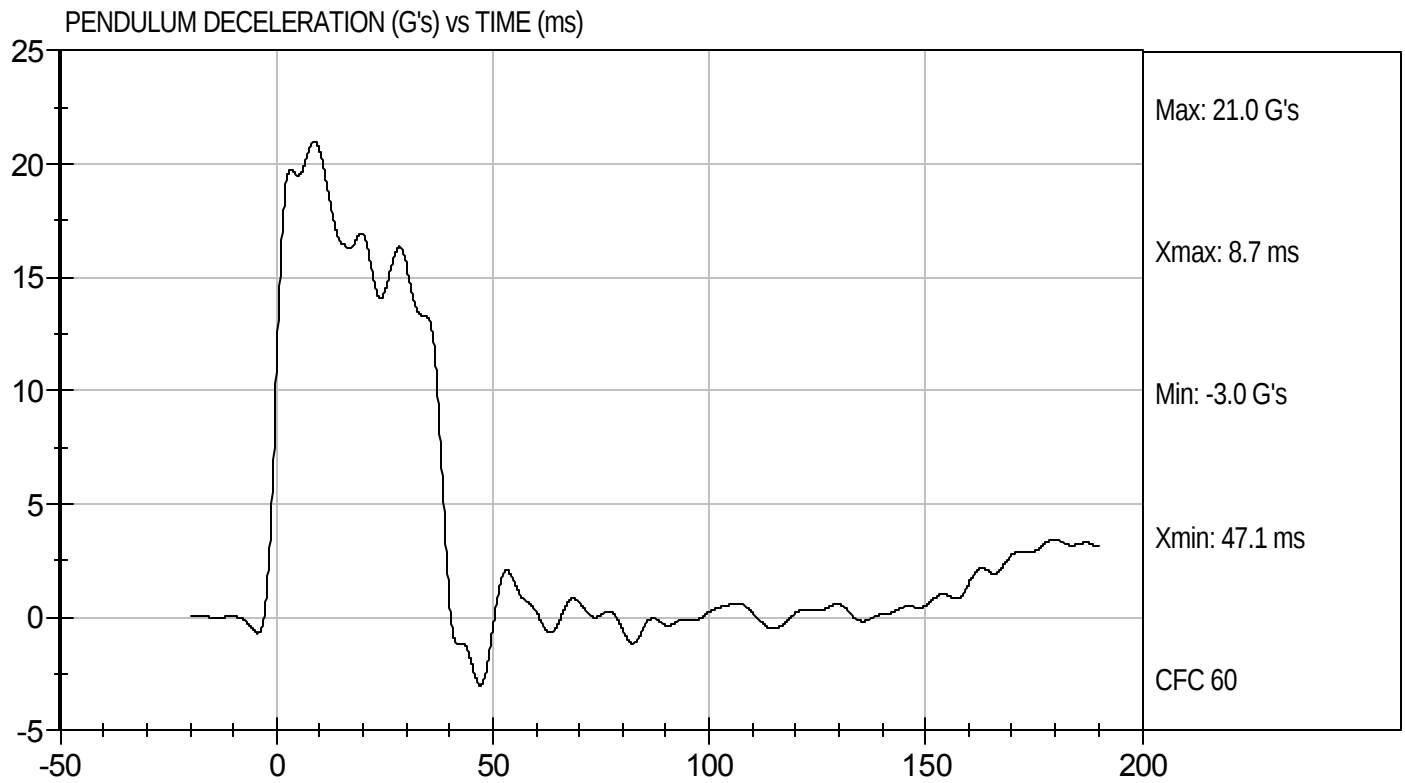
12/14/11
 Test Date


 Approved By



Test Desc: Neck Extension
Component ID: D114203

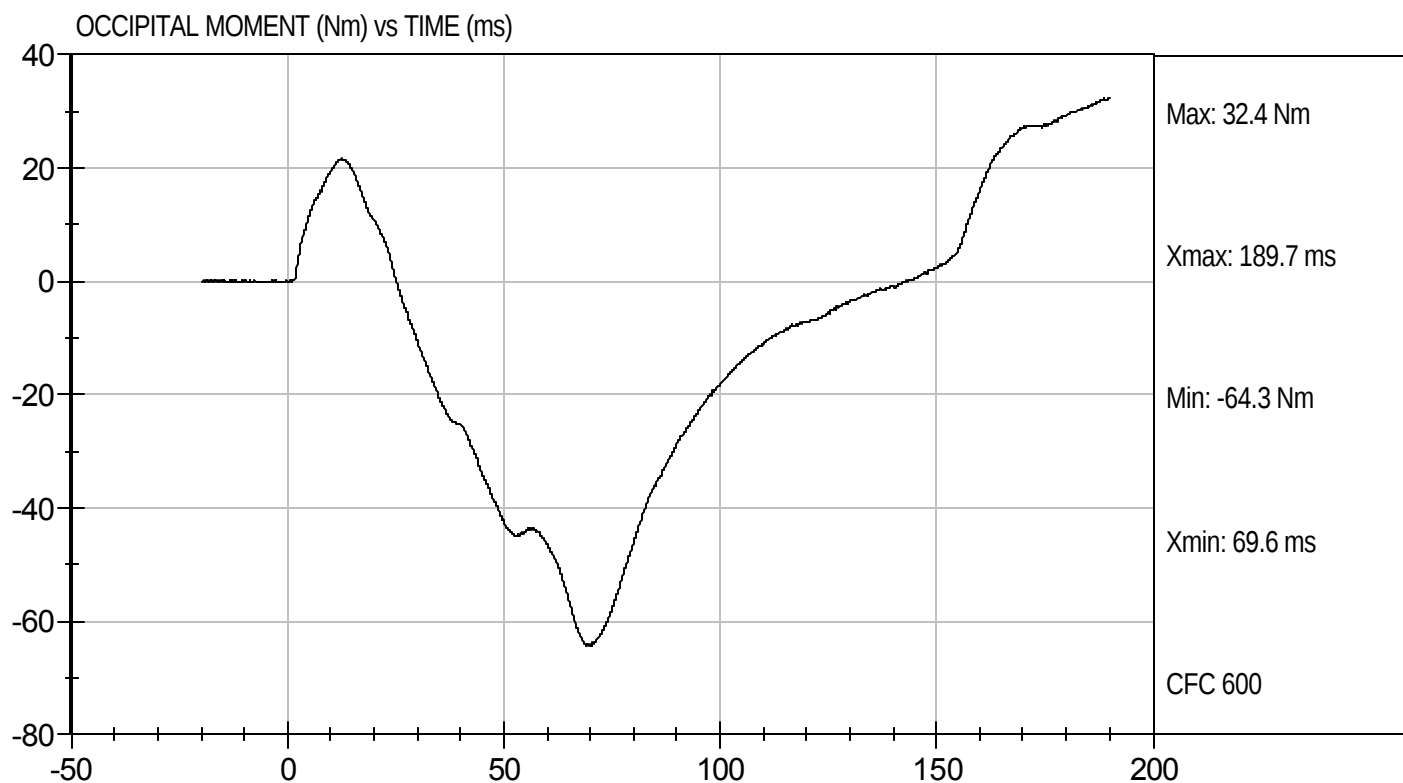
Test Date: 12/14/11
Velocity: 20.08 ft/s, 6.12 m/s





Test Desc: Neck Extension
Component ID: D114203

Test Date: 12/14/11
Velocity: 20.08 ft/s, 6.12 m/s

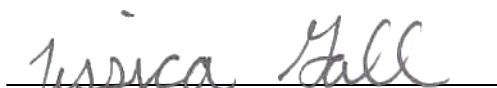


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

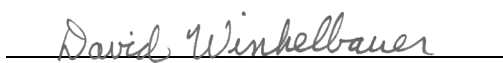
ATD Serial No: 351

Test I.D: D114204

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,284	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.80	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Overall Test Results			Pass	


Laboratory Technician

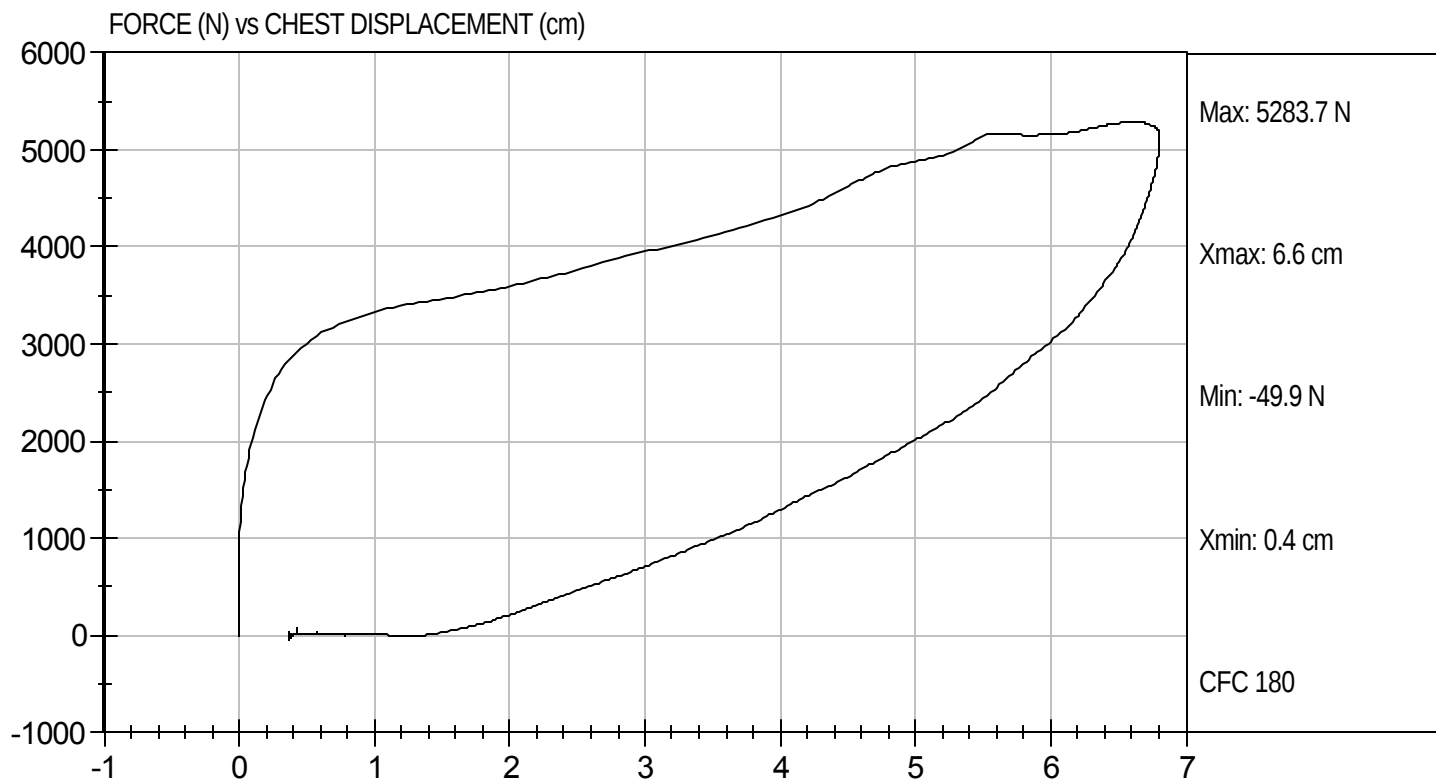
12/14/11
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D114204

Test Date: 12/14/11
Velocity: 22.22 ft/s, 6.77 m/s



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

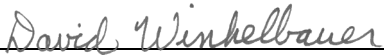
ATD Serial No: 351

Test I.D: D114205

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5,184	Pass
Overall Test Results				Pass


Laboratory Technician

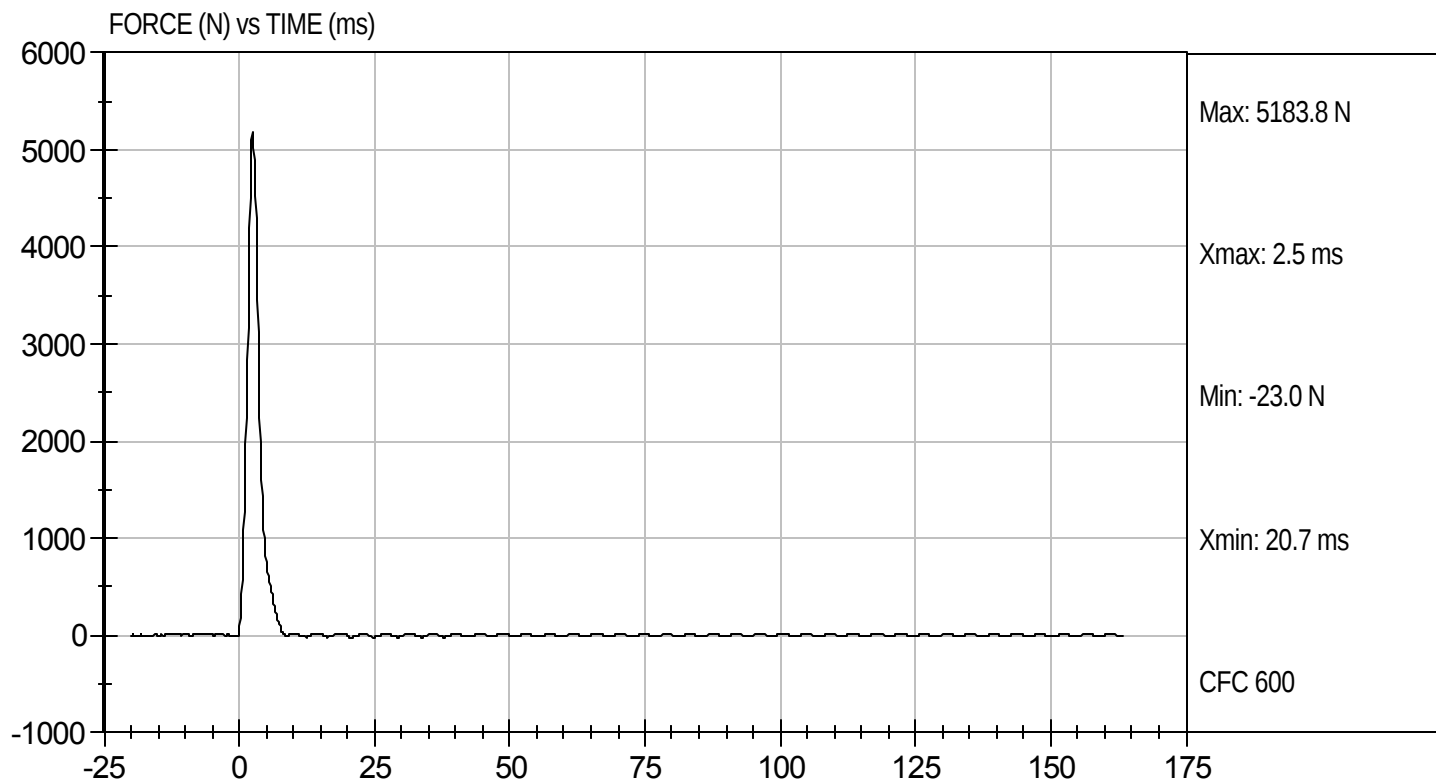
12/14/11
Test Date


Approved By



Test Desc: Right Knee
Component ID: D114205

Test Date: 12/14/11
Velocity: 6.89 ft/s, 2.10 m/s



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

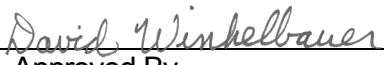
ATD Serial No: 351

Test I.D: D114206

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Velocity	m/s	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	4,993	Pass
Overall Test Results				Pass


Laboratory Technician

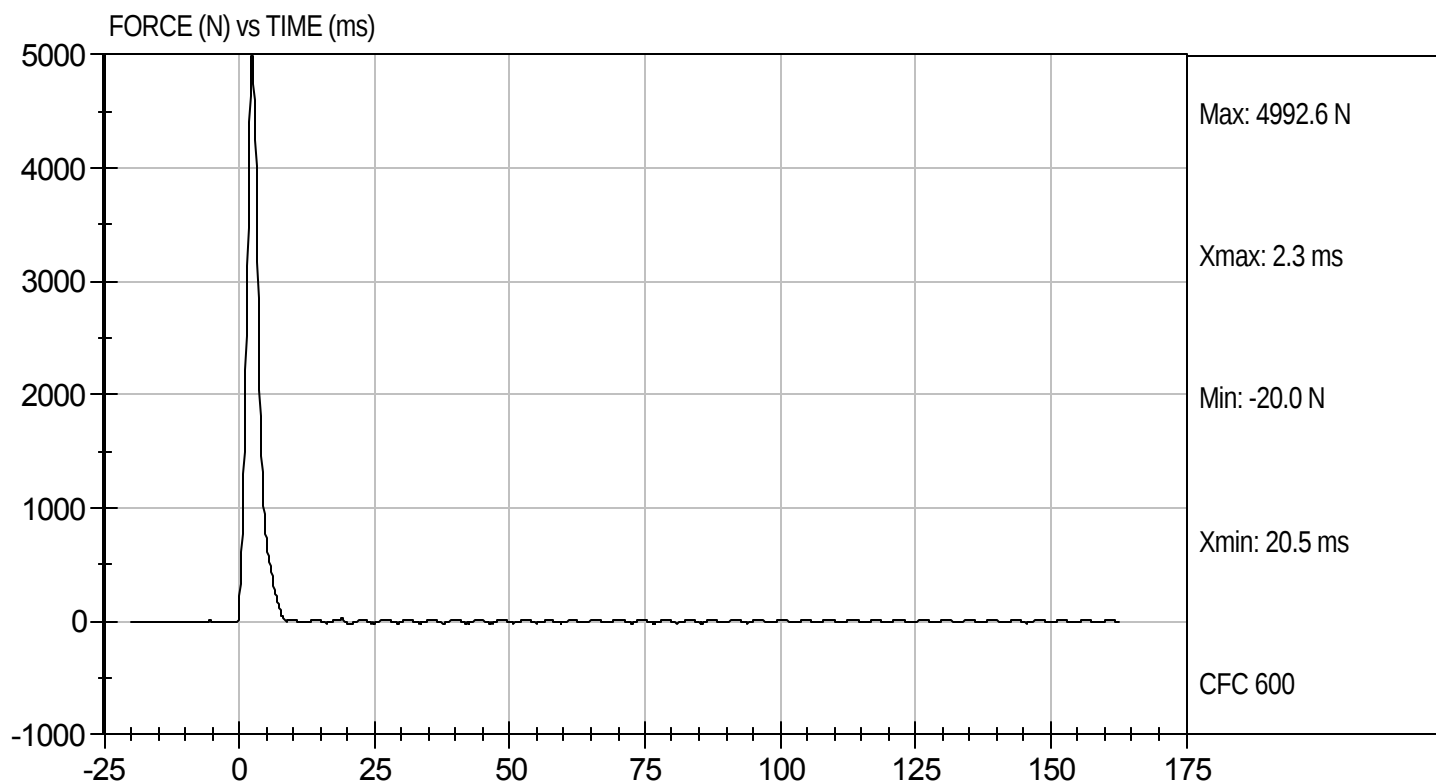
12/14/11
Test Date


Approved By



Test Desc: Left Knee
Component ID: D114206

Test Date: 12/14/11
Velocity: 6.86 ft/s, 2.09 m/s



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

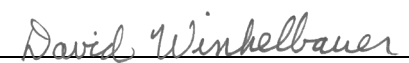
ATD Serial No: 351

Test I.D: D114200

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	43	43	Pass
Rotation Rate	deg/s	5.0 -10.0	5.7	5.7	Pass
30 Degrees	Nm	94.9 Nm Max	62.9	61.0	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 - 50.0 Degree Max Rotation	42.7	42.1	Pass
Overall Test Results					Pass


 Laboratory Technician

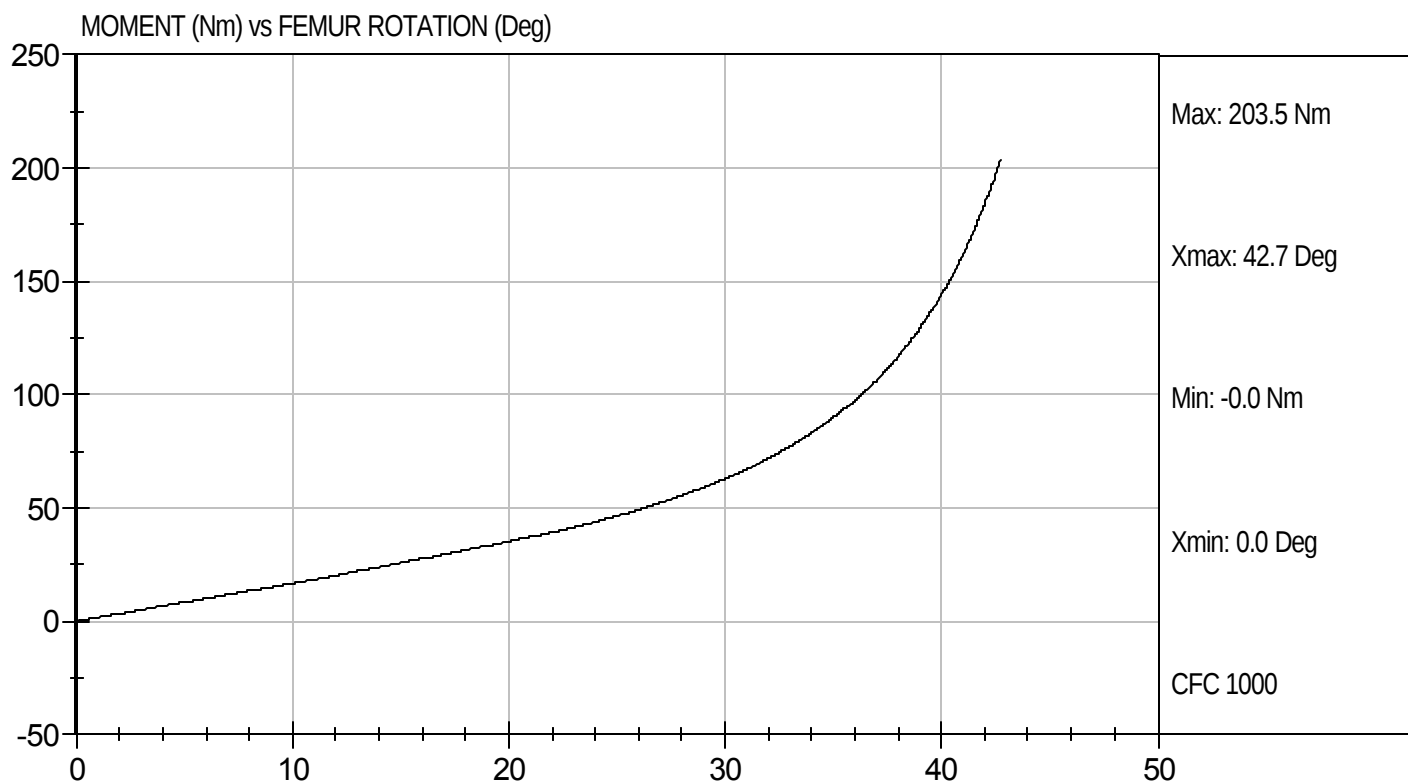
12/14/11
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Component ID: D114209

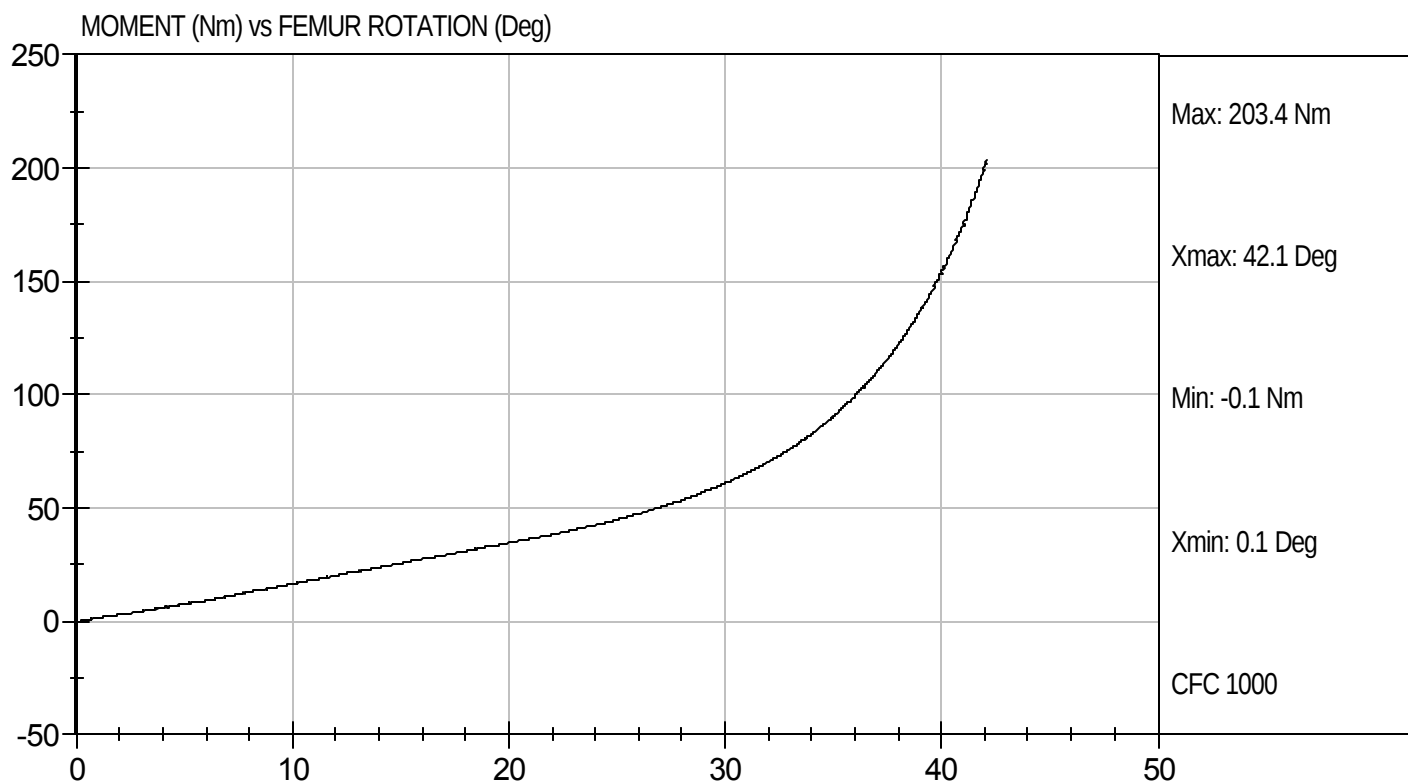
Test Date: 12/14/11
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D114200

Test Date: 12/14/11
Velocity: 0 ft/s, 0.00 m/s



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

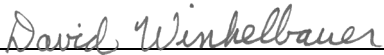
ATD Serial No: 351

Test ID: D114241

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Peak Resultant Acceleration	G's	225 - 275	272	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-2.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

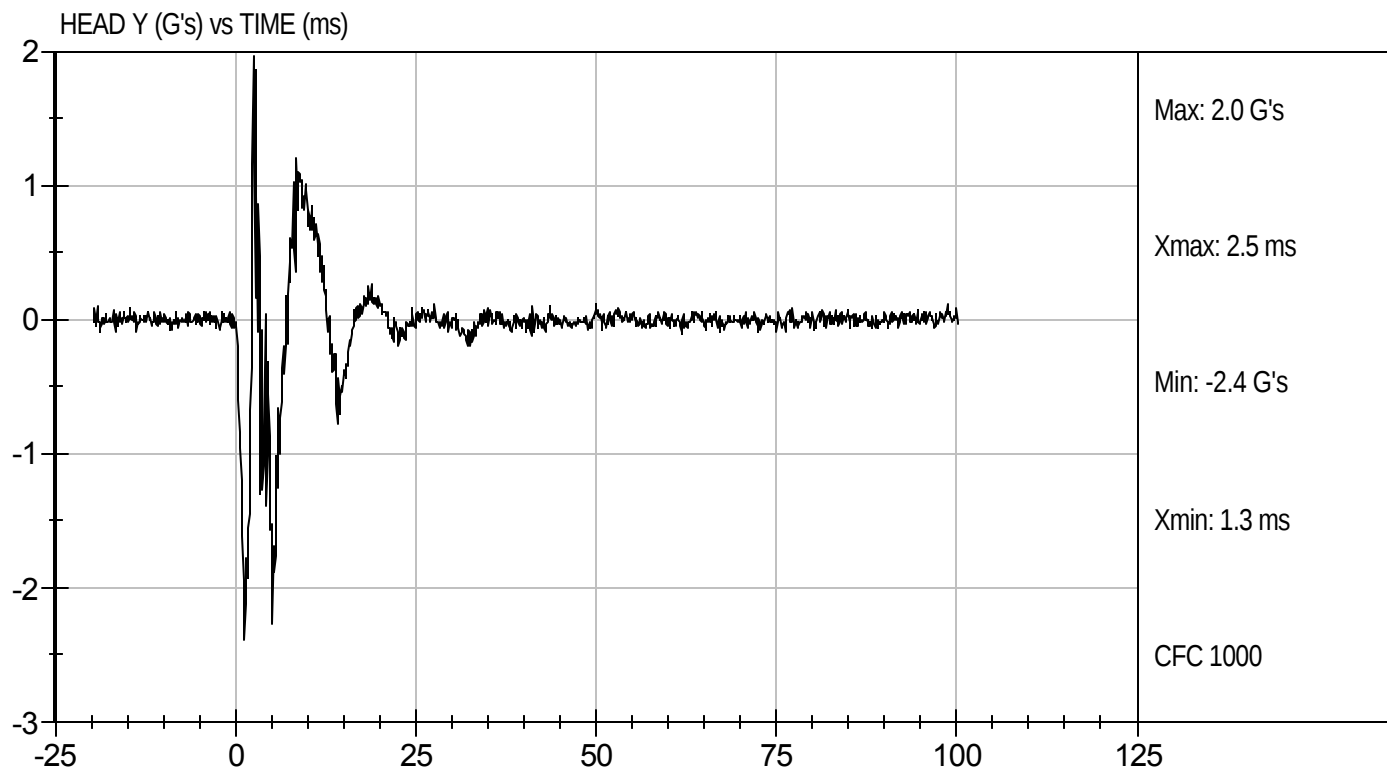
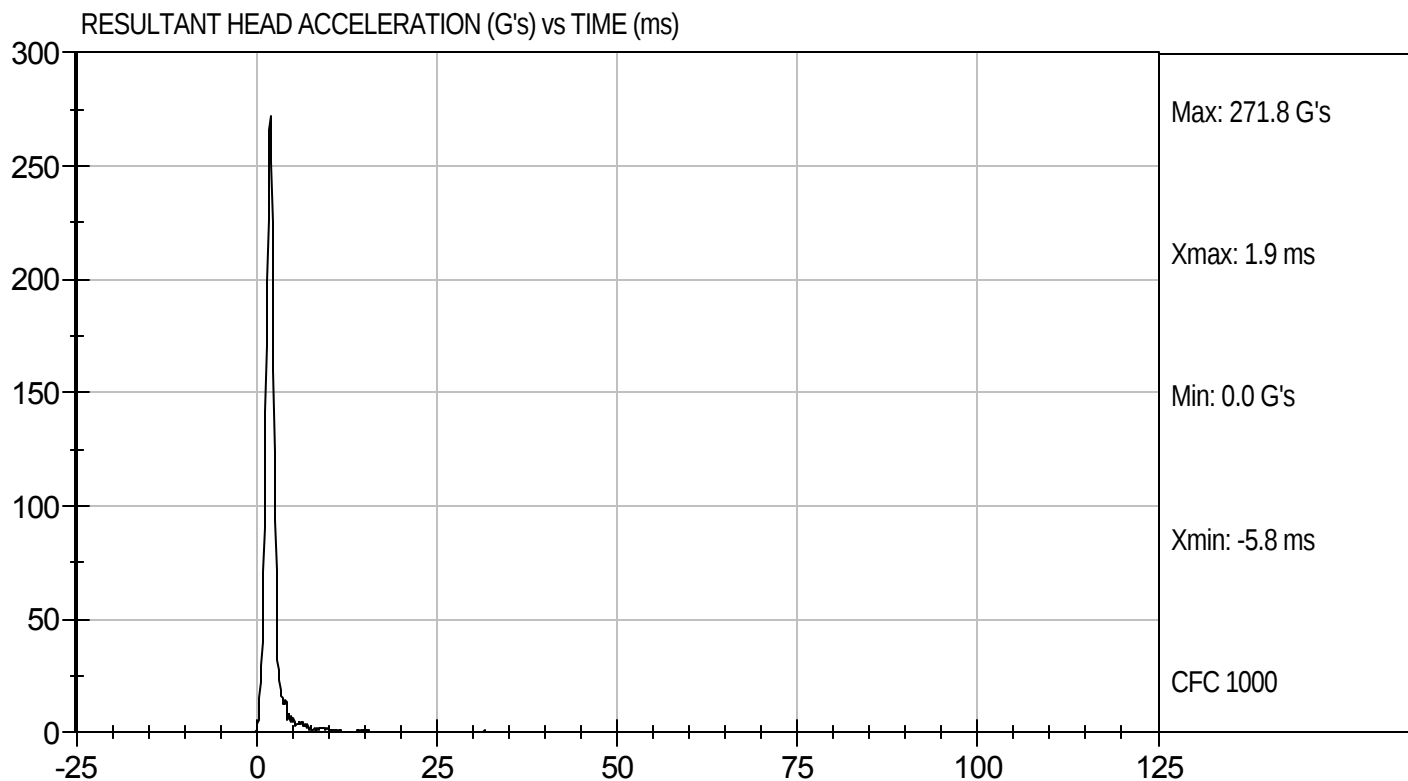
12/16/11
Test Date


Approved By



Test Desc: Head Drop
Component ID: D114241

Test Date: 12/16/11
Velocity: 0 ft/s, 0 m/s



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

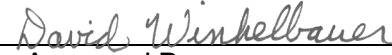
ATD Serial No: 351

Test I.D.: D114242

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	20	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	24.90	Pass
	20 ms	G's	17.60 to 22.60	19.29	Pass
	30 ms	G's	12.50 to 18.50	14.57	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	34.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	70.2	Pass
	Time	ms	57.0 to 64.0	58.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	113.8	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	95.4	Pass
	Time	ms	47.0 to 58.0	47.8	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	101.8	Pass
Overall Test Results					Pass


 Laboratory Technician

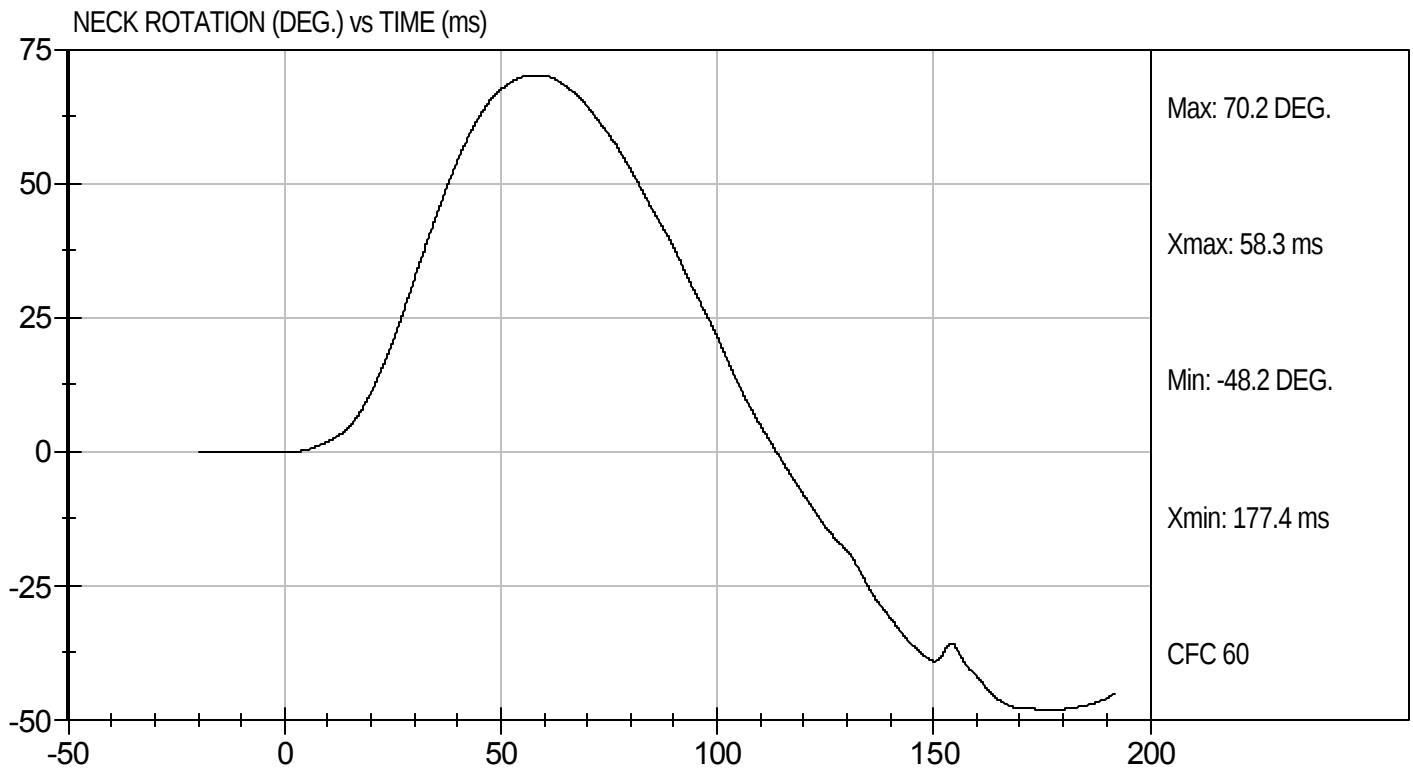
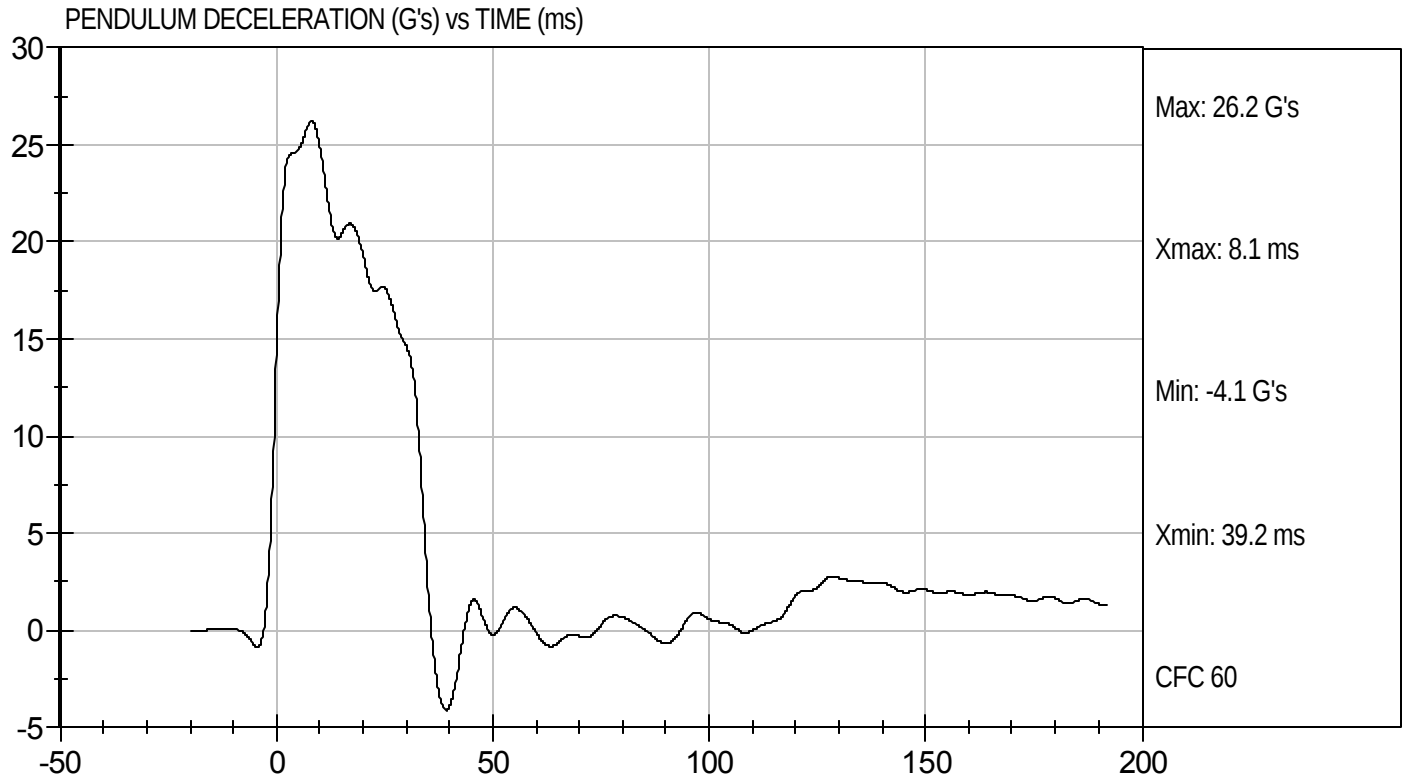
12/16/11
 Test Date


 Approved By



Test Desc: Neck Flexion
Component ID: D114242

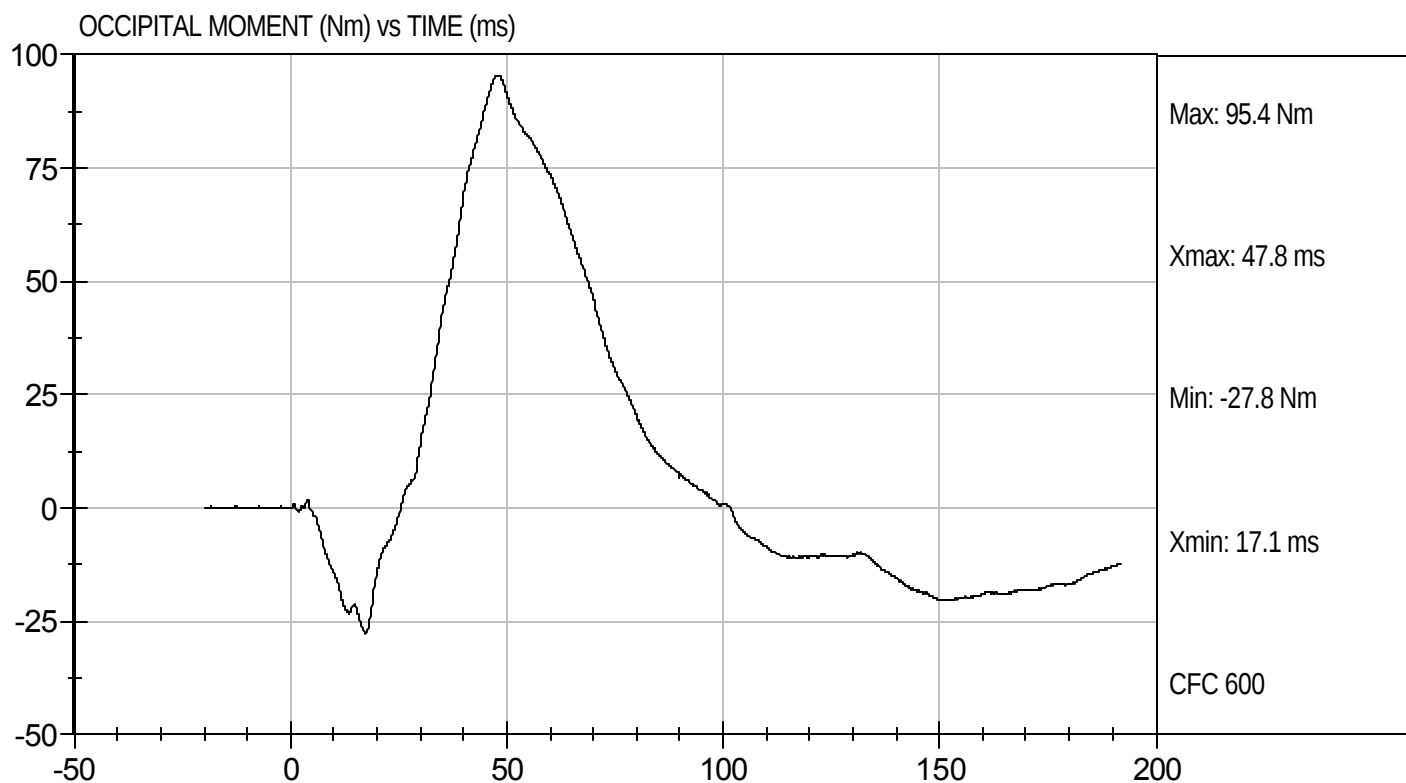
Test Date: 12/16/11
Velocity: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Flexion
Component ID: D114242

Test Date: 12/16/11
Velocity: 23.15 ft/s, 7.06 m/s



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

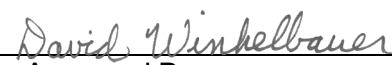
ATD Serial No: 351

Test I.D.: D114243

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	20	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.34	Pass
	20 ms	G's	14.00 to 19.00	16.76	Pass
	30 ms	G's	11.00 to 16.00	13.25	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	13.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	96.4	Pass
	Time	ms	72.0 to 82.0	77.6	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	154.8	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-64.1	Pass
	Time	ms	65.0 to 79.0	70.6	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	143.4	Pass
Overall Test Results					Pass


 Laboratory Technician

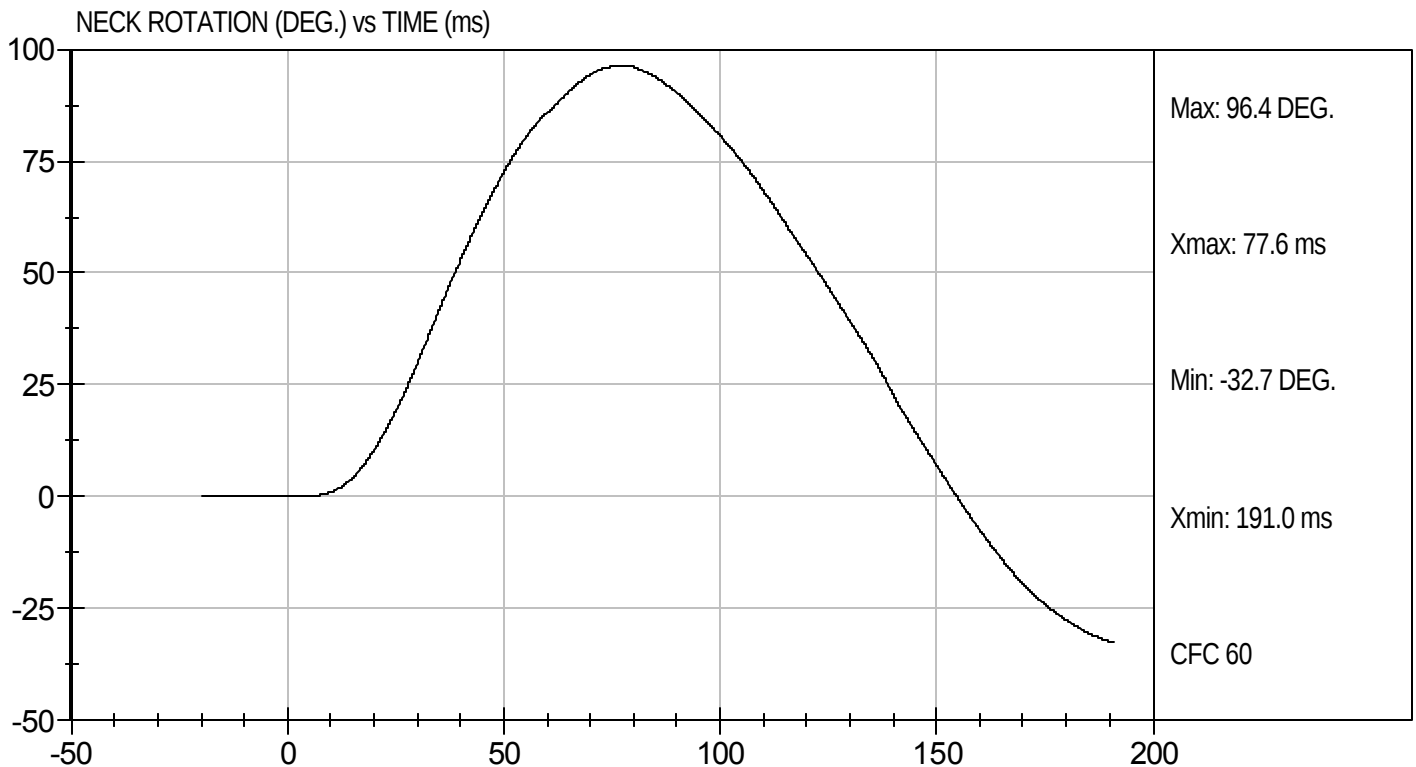
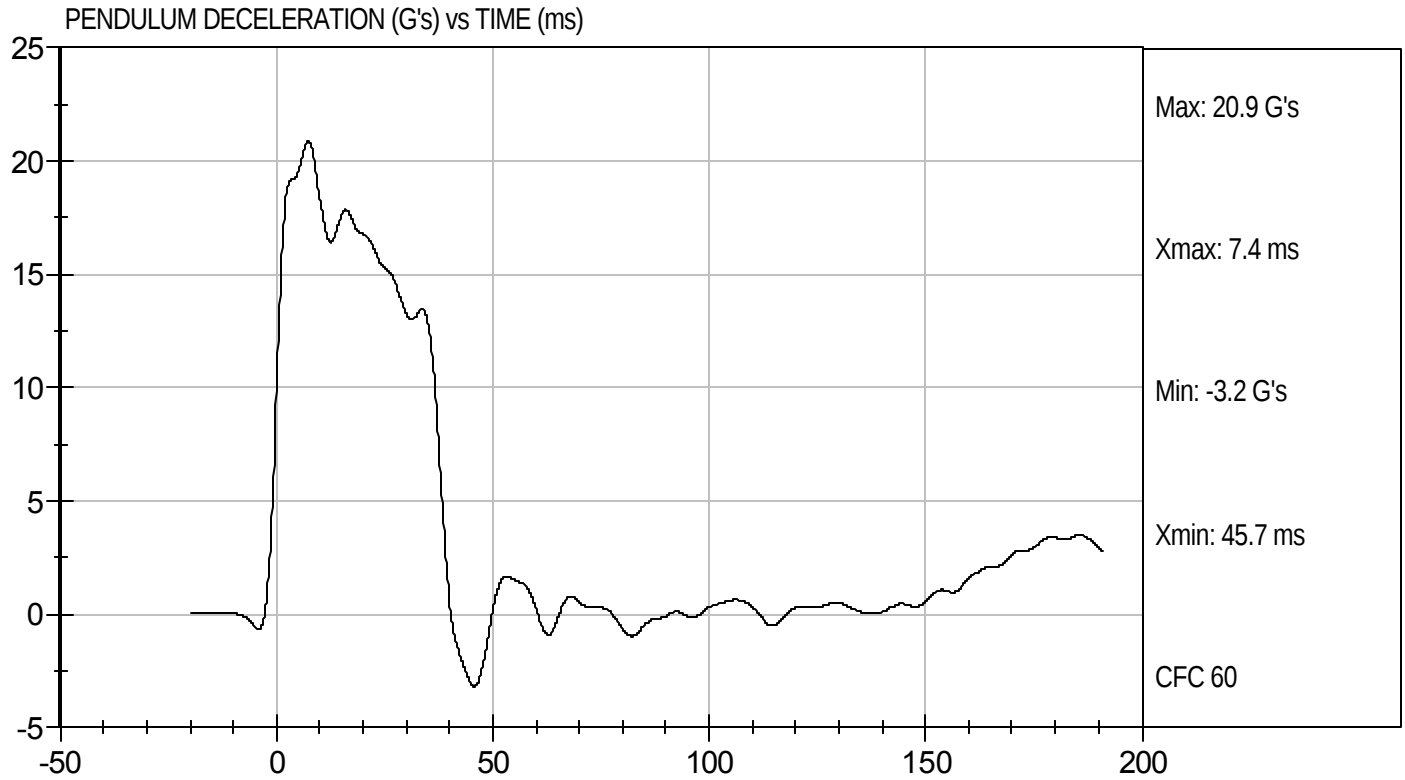
12/16/11
 Test Date


 Approved By



Test Desc: Neck Extension
Component ID: D114243

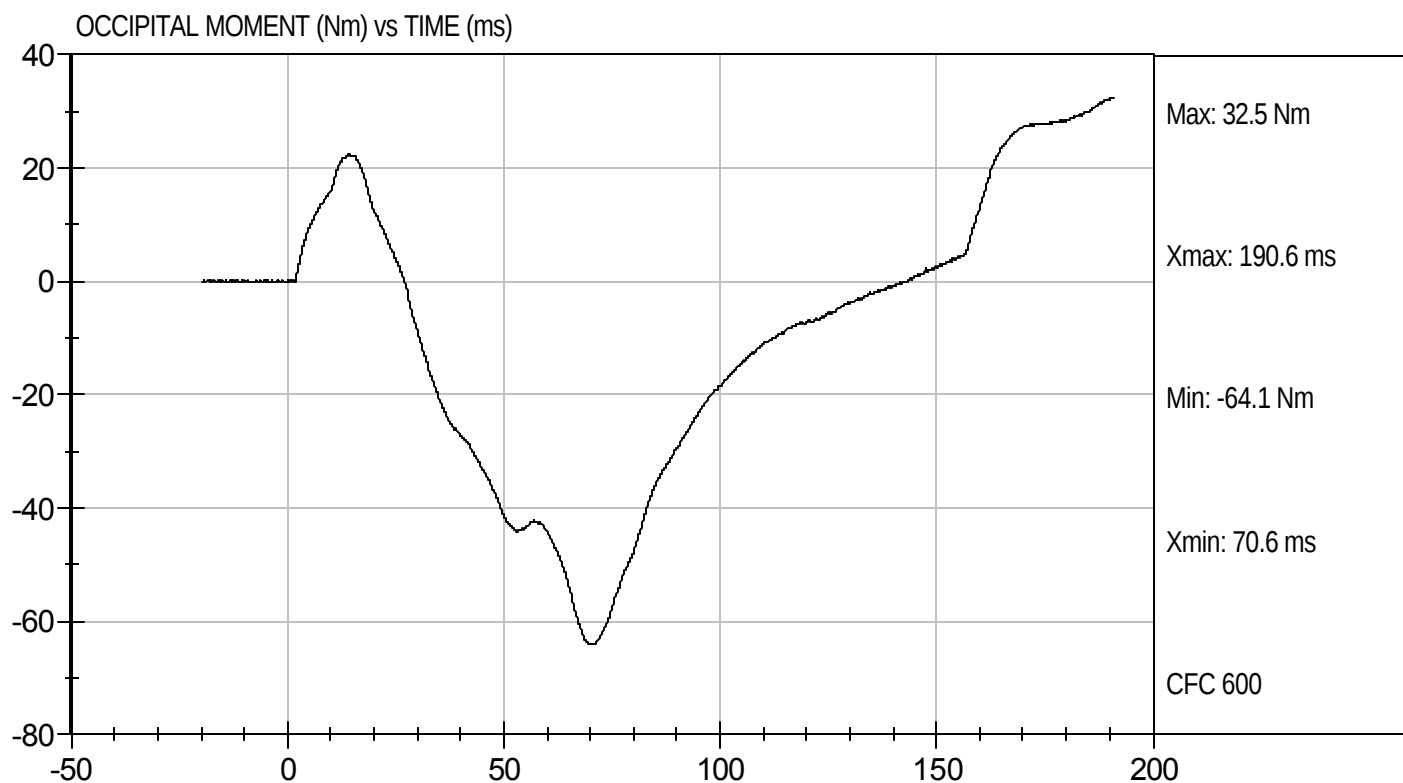
Test Date: 12/16/11
Velocity: 20.08 ft/s, 6.12 m/s





Test Desc: Neck Extension
Component ID: D114243

Test Date: 12/16/11
Velocity: 20.08 ft/s, 6.12 m/s

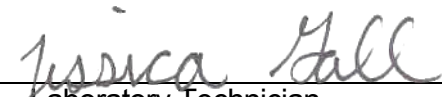


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

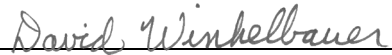
ATD Serial No: 351

Test I.D: D114244

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,306	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.56	Pass
Internal Hysteresis	%	69 to 85	71	Pass
			Overall Test Results	Pass


Laboratory Technician

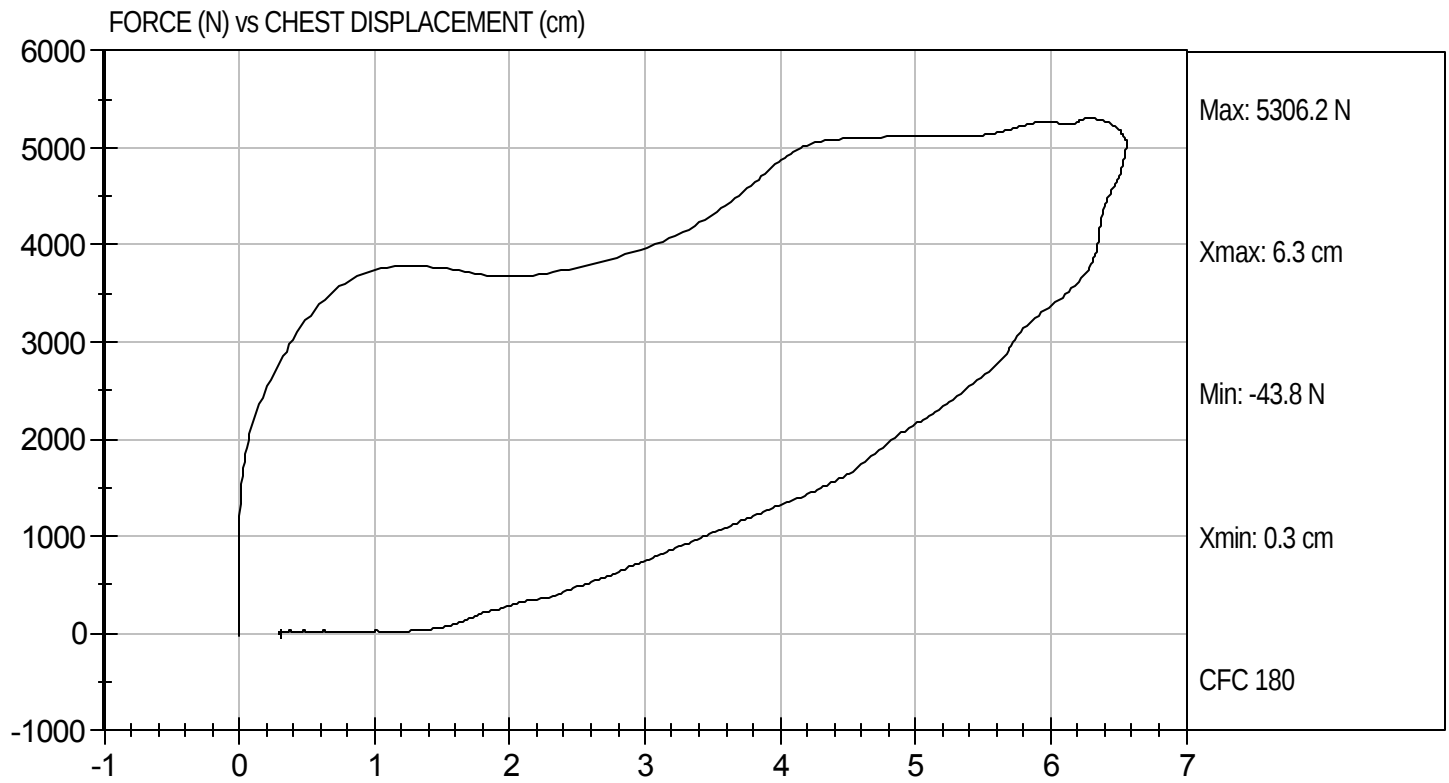
12/16/11
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D114244

Test Date: 12/16/11
Velocity: 22.22 ft/s, 6.77 m/s



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

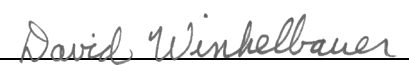
ATD Serial No: 351

Test I.D: D114245

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5,298	Pass
Overall Test Results				Pass


Laboratory Technician

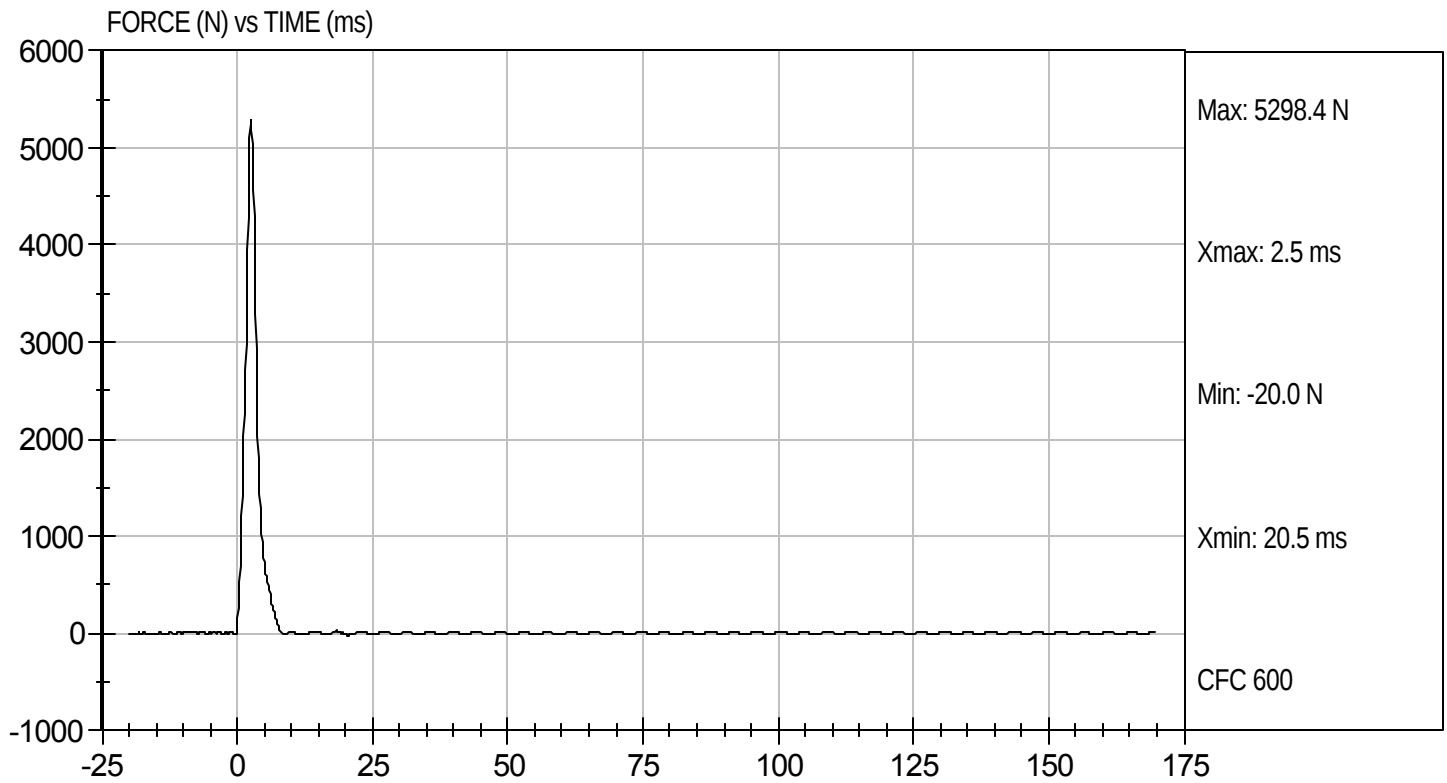
12/16/11
Test Date


Approved By



Test Desc: Right Knee
Component ID: D114245

Test Date: 12/16/11
Velocity: 6.89 ft/s, 2.10 m/s



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

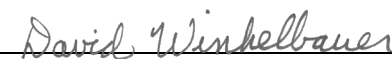
ATD Serial No: 351

Test I.D: D114246

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,076	Pass
Overall Test Results				Pass


Laboratory Technician

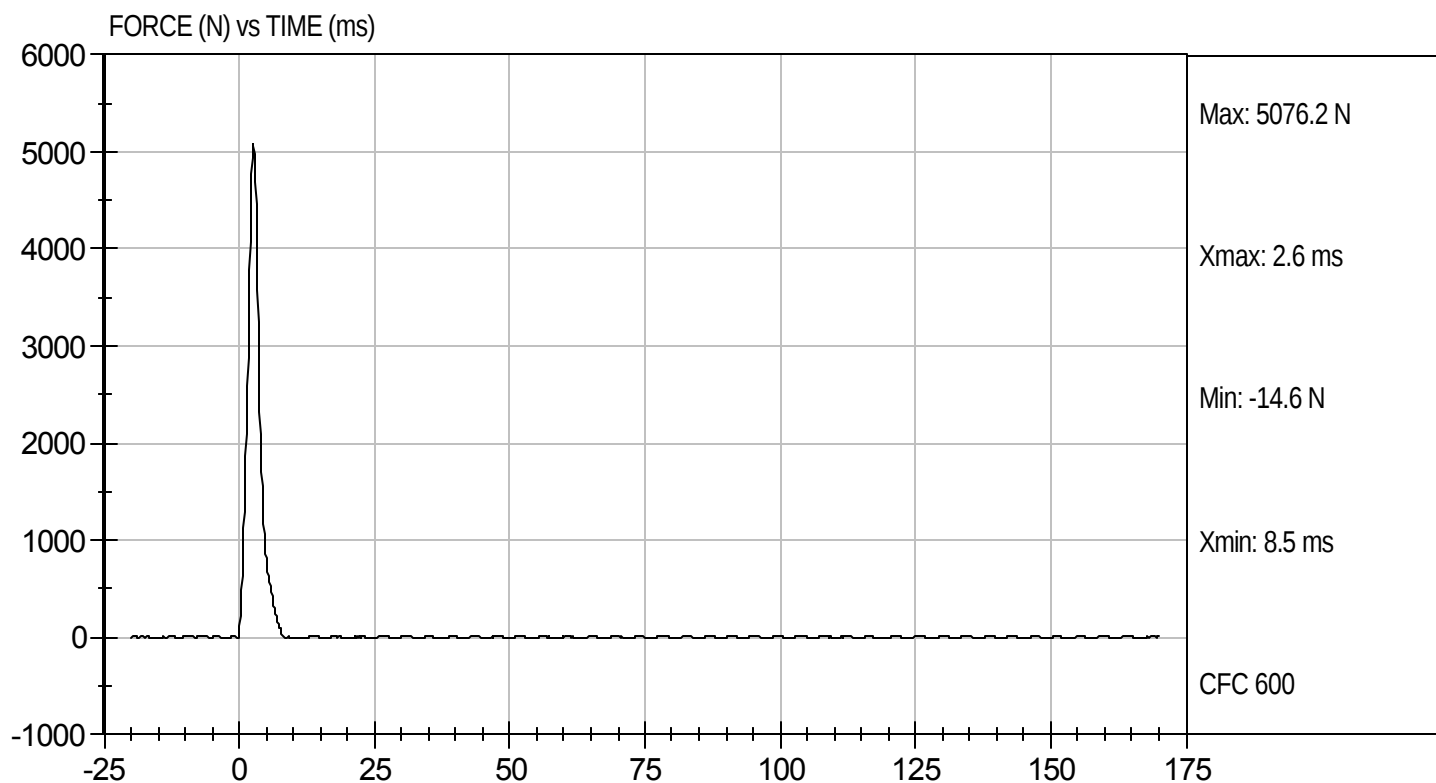
12/16/11
Test Date


Approved By



Test Desc: Left Knee
Component ID: D114246

Test Date: 12/16/11
Velocity: 6.92 ft/s, 2.11 m/s



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

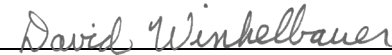
ATD Serial No: 351

Test I.D: D114240

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	22.0	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	21	21	Pass
Rotation Rate	deg/s	5.0 -10.0	5.7	5.7	Pass
30 Degrees	Nm	94.9 Nm Max	60.9	59.8	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 - 50.0 Degree Max Rotation	43.0	42.2	Pass
Overall Test Results					Pass


 Laboratory Technician

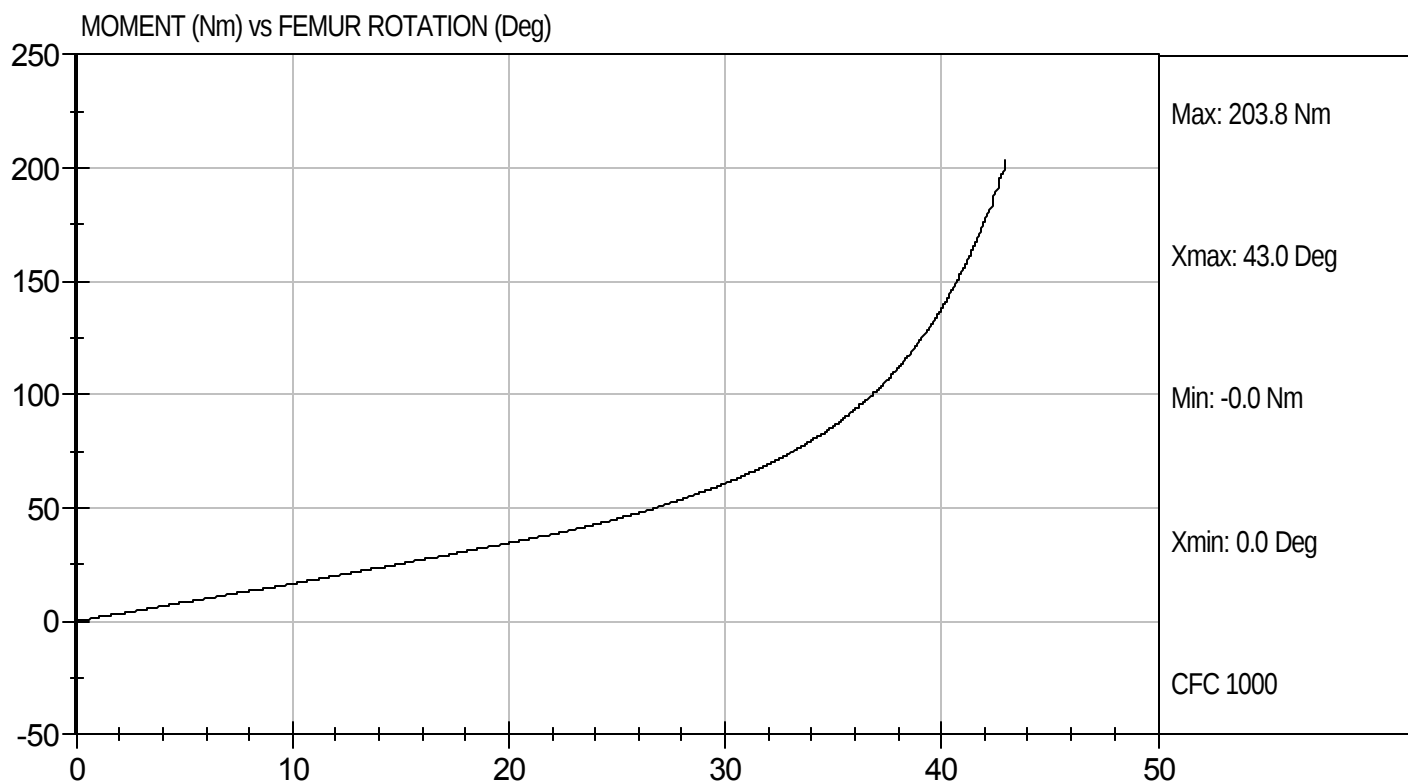
12/16/11
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Component ID: D114249

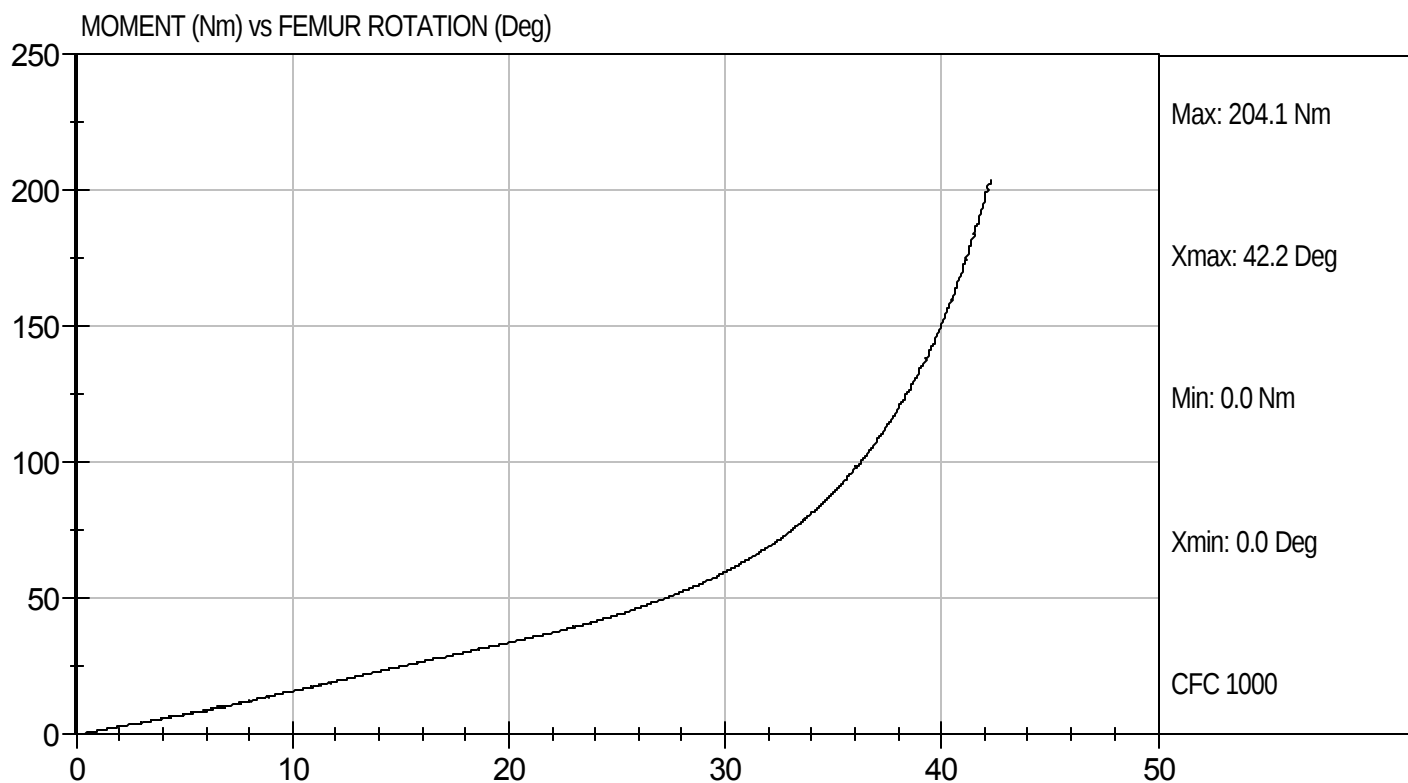
Test Date: 12/16/11
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D114240

Test Date: 12/16/11
Velocity: 0 ft/s, 0.00 m/s



Hybrid III, 5th External Measurements
SN: 634

HYBRID III, PART 572, SUBPART O EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	774.7-800.1	784.6
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	449.0
C	H-POINT HEIGHT	Reference	81.3-86.3	85.0
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	145.0
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	79.2
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	125.6
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	243.9-259.1	253.4
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	45.0
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	276.8-297.2	277.8
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	197.5
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	520.7-546.1	541.4
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376.0	362.1
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	400.4
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	414-439.4	428.6

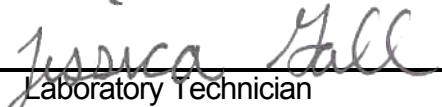
HYBRID III, SUBPART O EXTERNAL DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 304.8 ± 5.1 mm above seat surface	175.3-190.5	181.6
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	224.7
Q	STANDING HEIGHT	(THEORETICAL)	1501.1	N/A
R	BUTTOCK TO KNEE PIVOT LENGTH	The rear surface of the buttocks to the knee pivot bolt	457.2-482.6	482.0
S	HEAD BREADTH	The widest part of the head	137.1-147.3	139.6
T	HEAD DEPTH	Back of the head to the forehead	177.8-188.0	179.2
U	HIP BREADTH	The widest part of the hip	299.7-314.9	306.1
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	355.5
W	FOOT BREADTH	The widest part of the foot	78.8-94.0	90.0
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	540.6
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	868.7
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	786.8
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	345.4
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	165.1

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test ID: D114121

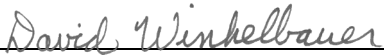
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	G's	250 to 300	273	Pass
Peak Lateral Acceleration	G's	+/- 15	6.8	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass



Laboratory Technician

12/8/11

Test Date

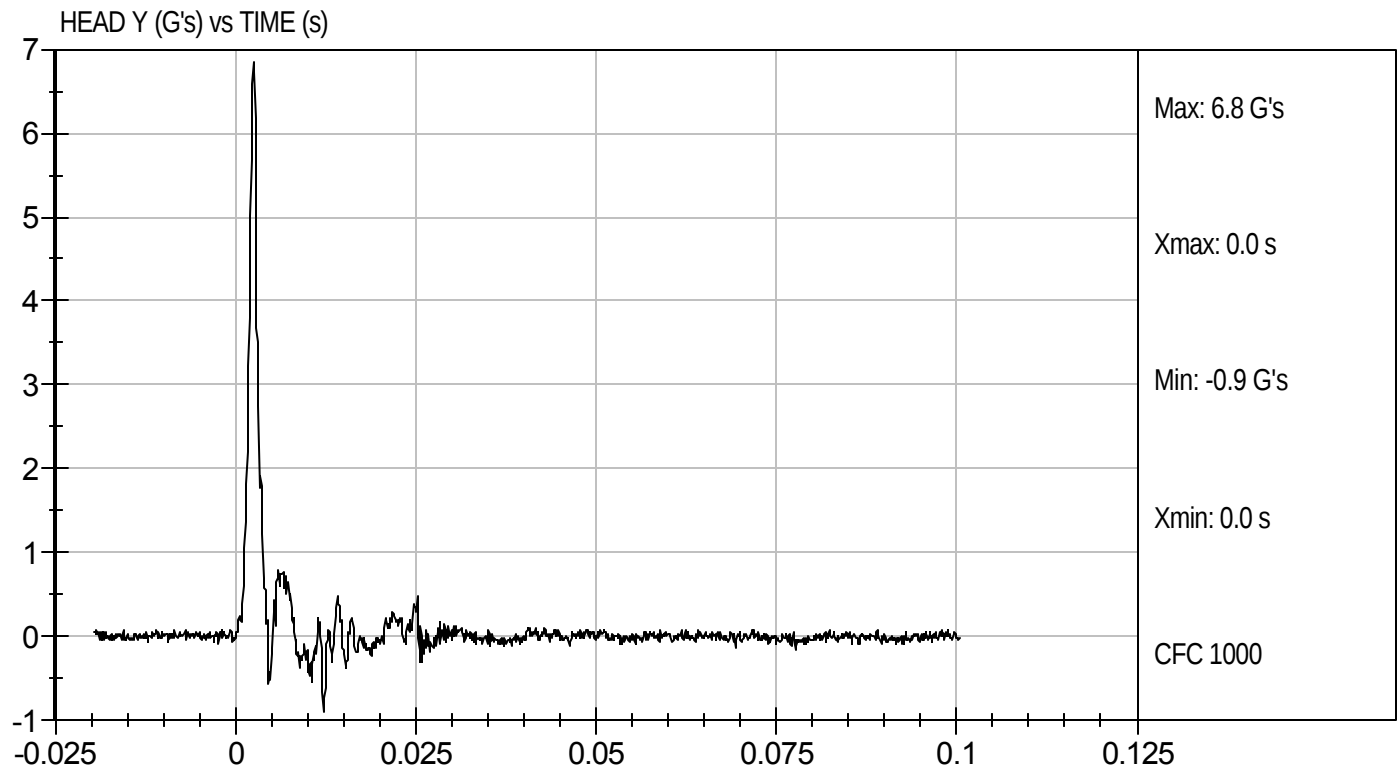
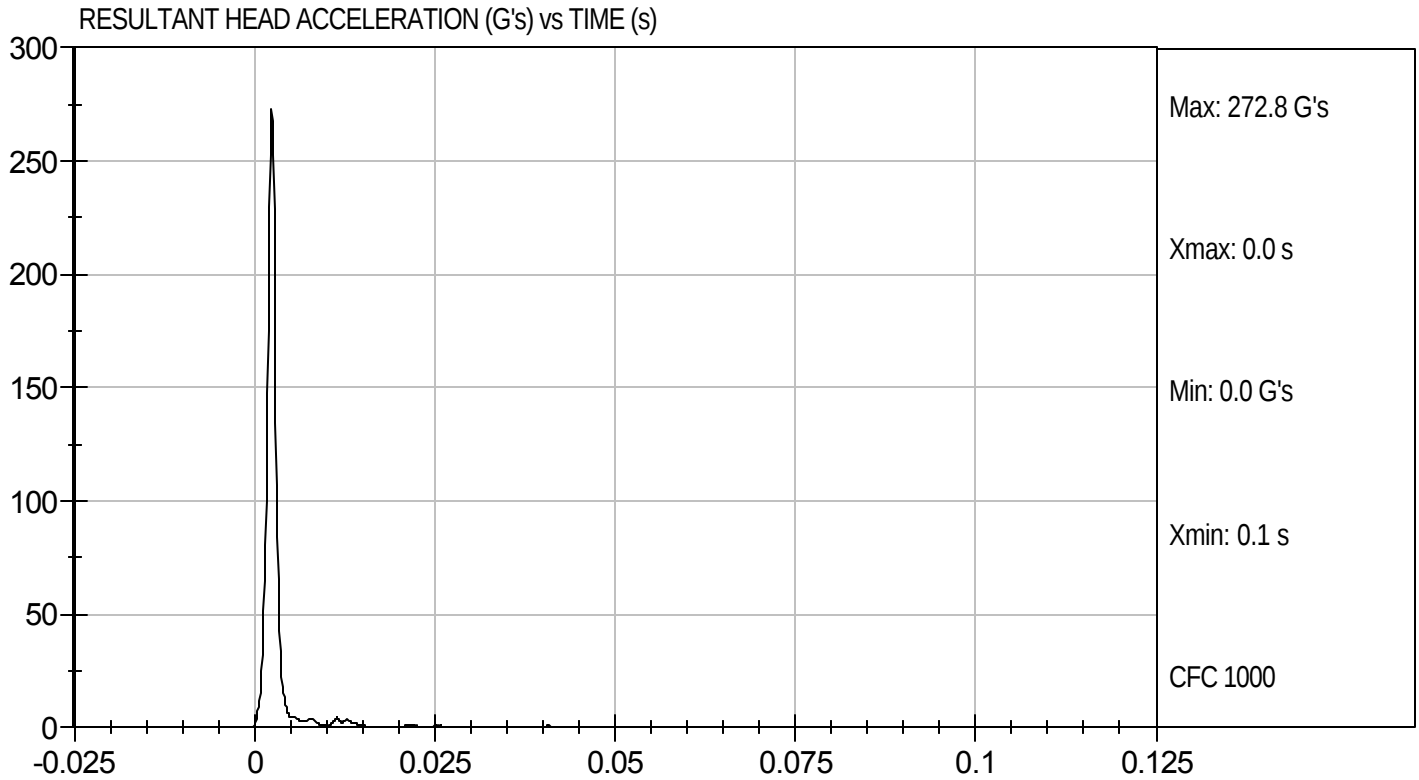


Approved By



Test Desc: Head Drop
Component ID: D114121

Test Date: 12/8/11
Velocity: 0 ft/s, 0 m/s



MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 5TH PERCENTILE

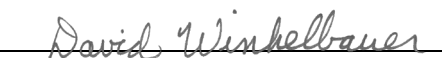
ATD Serial No: 634

Test I.D: D114122

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	18	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Pulse	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	6.0	Pass
D Plane Rotation	Max	deg	77 to 91	78	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	69 to 83	69	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	87	Pass
Overall Results					Pass


Laboratory Technician

12/8/11
Test Date

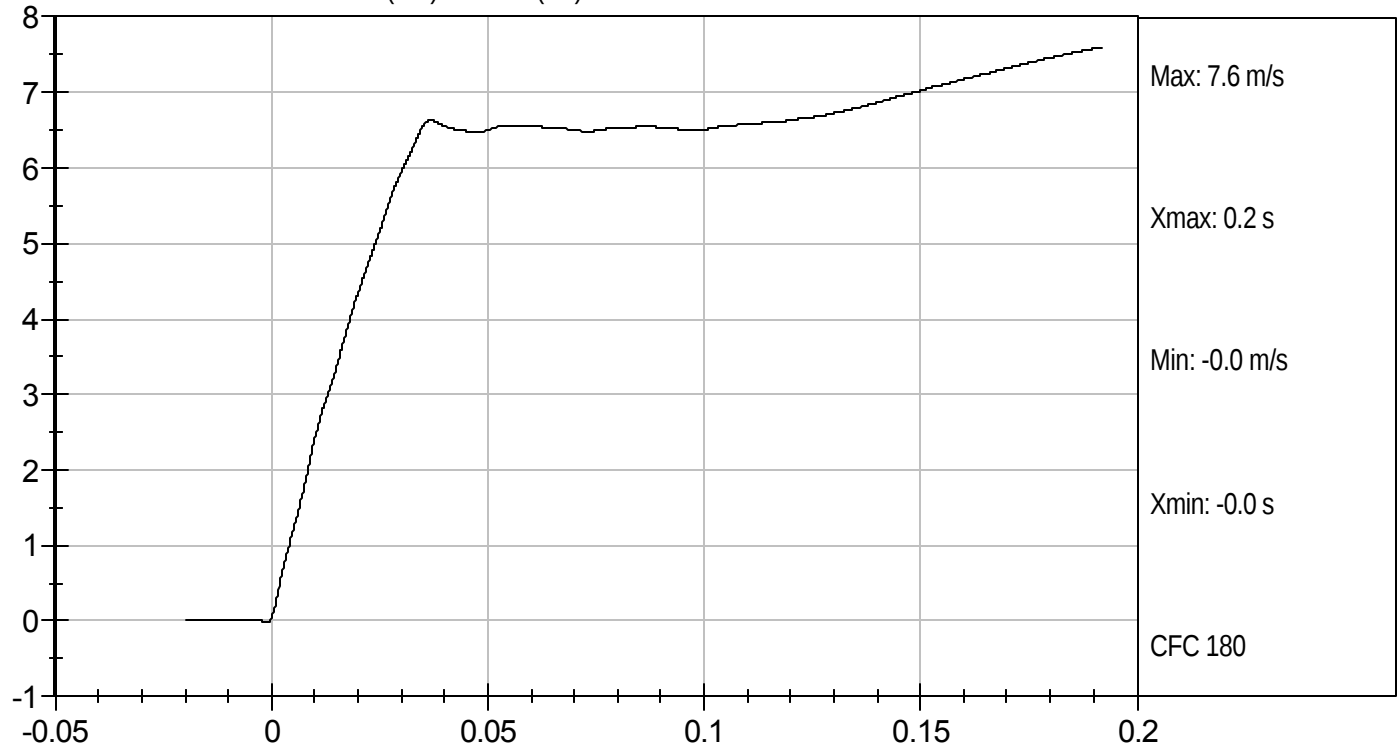

Approved By



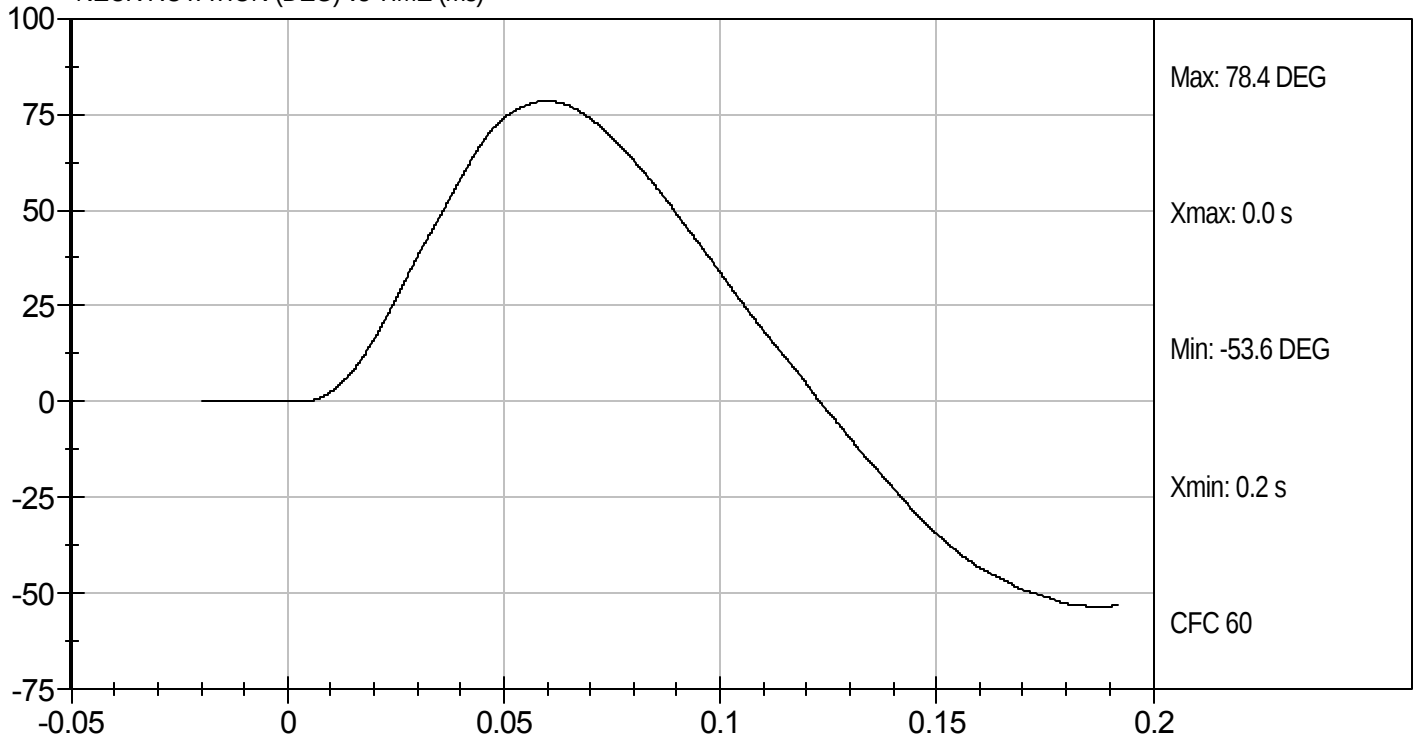
Test Desc: Neck Flexion
Component ID: D114122

Test Date: 12/8/11
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM DECELERATION (m/s) vs TIME (ms)



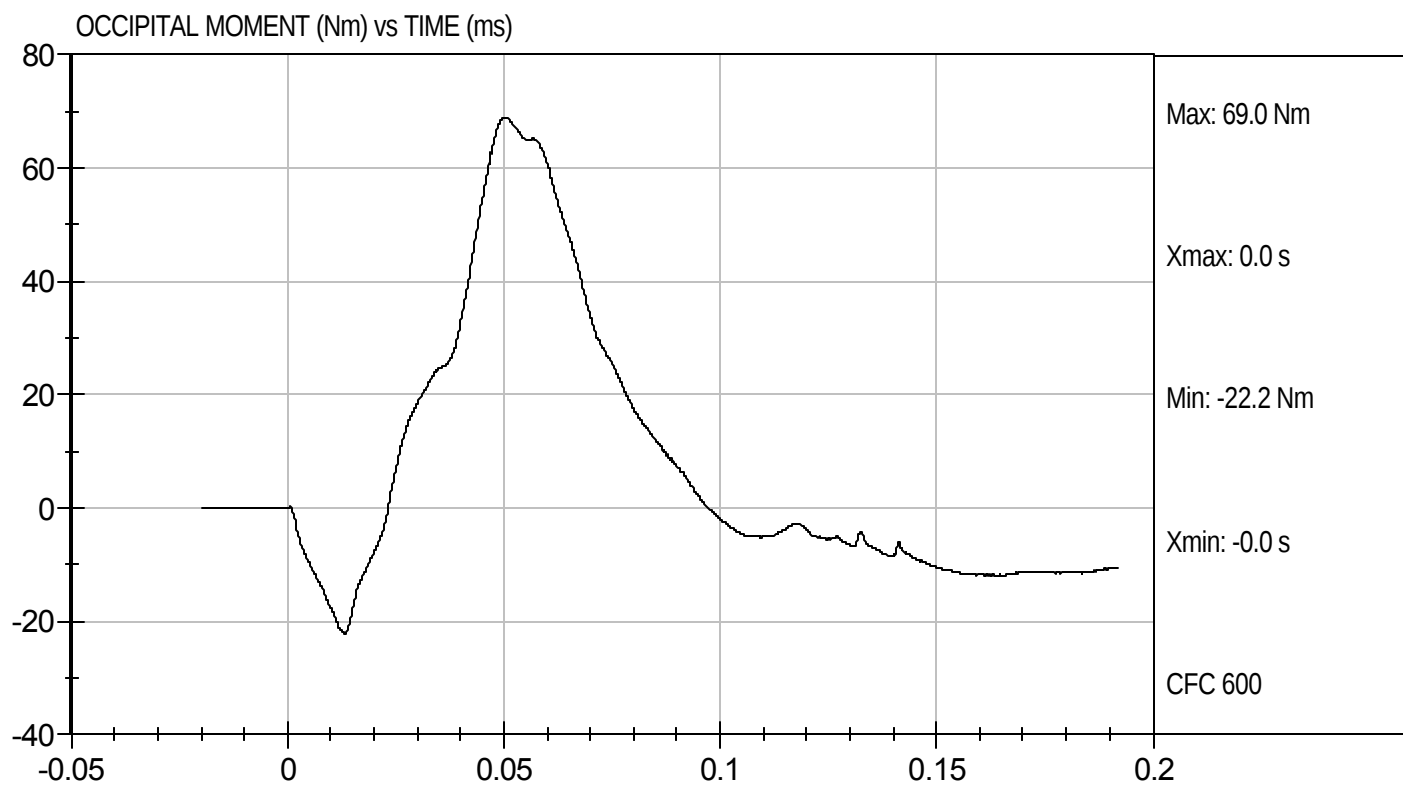
NECK ROTATION (DEG) vs TIME (ms)





Test Desc: Neck Flexion
Component ID: D114122

Test Date: 12/8/11
Velocity: 23.15 ft/s, 7.06 m/s



MGA RESEARCH CORPORATION

NECK EXTENSION TEST

HYBRID III 5TH PERCENTILE

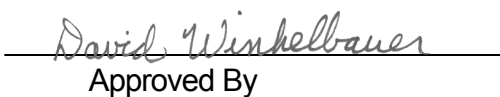
ATD Serial No: 634Test I.D: D114123

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	18	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.16	Pass
Pendulum Pulse	10 ms	m/s	1.5 to 1.9	1.9	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.2	Pass
D Plane Rotation	Max	deg	99 to 114	106	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	-65 to -53	-55	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	102	Pass
Overall Results					Pass


 Laboratory Technician

12/8/11

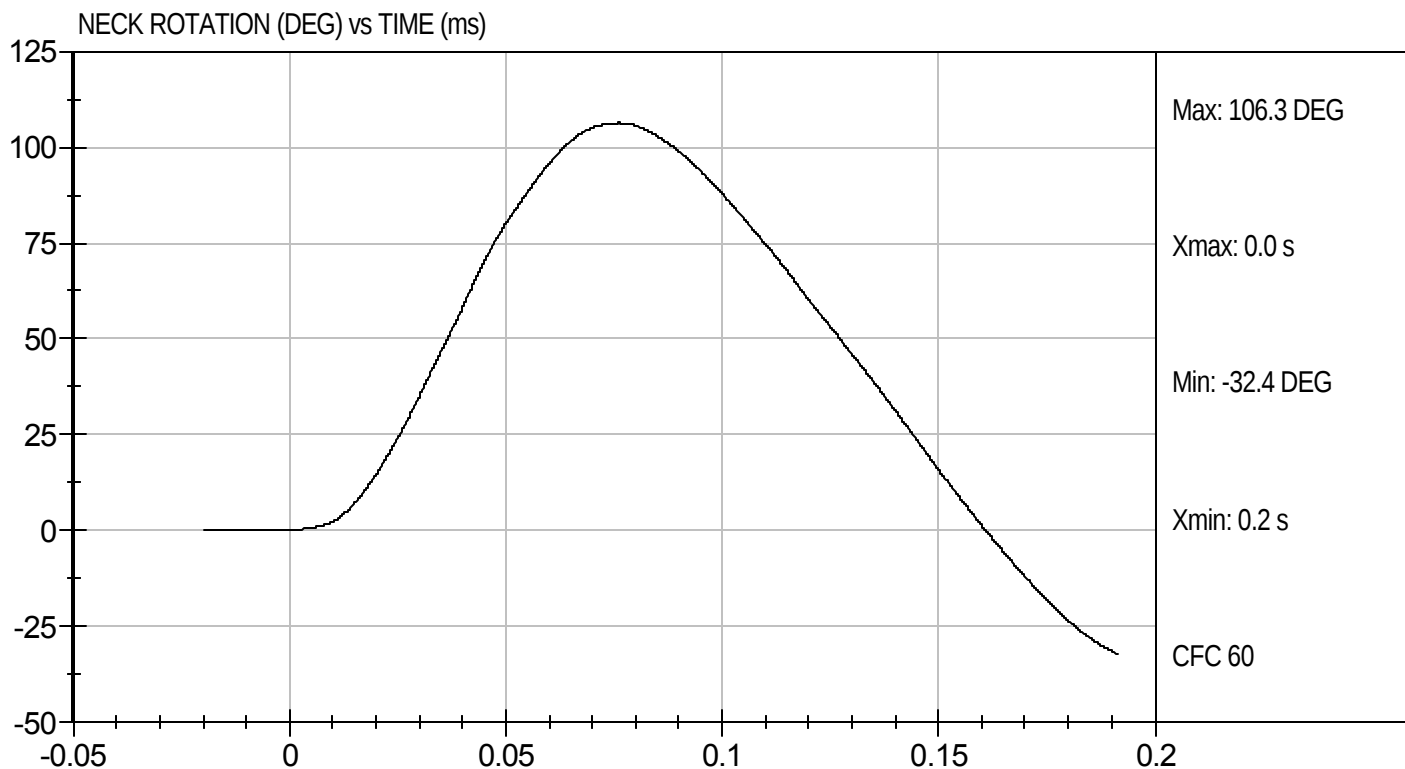
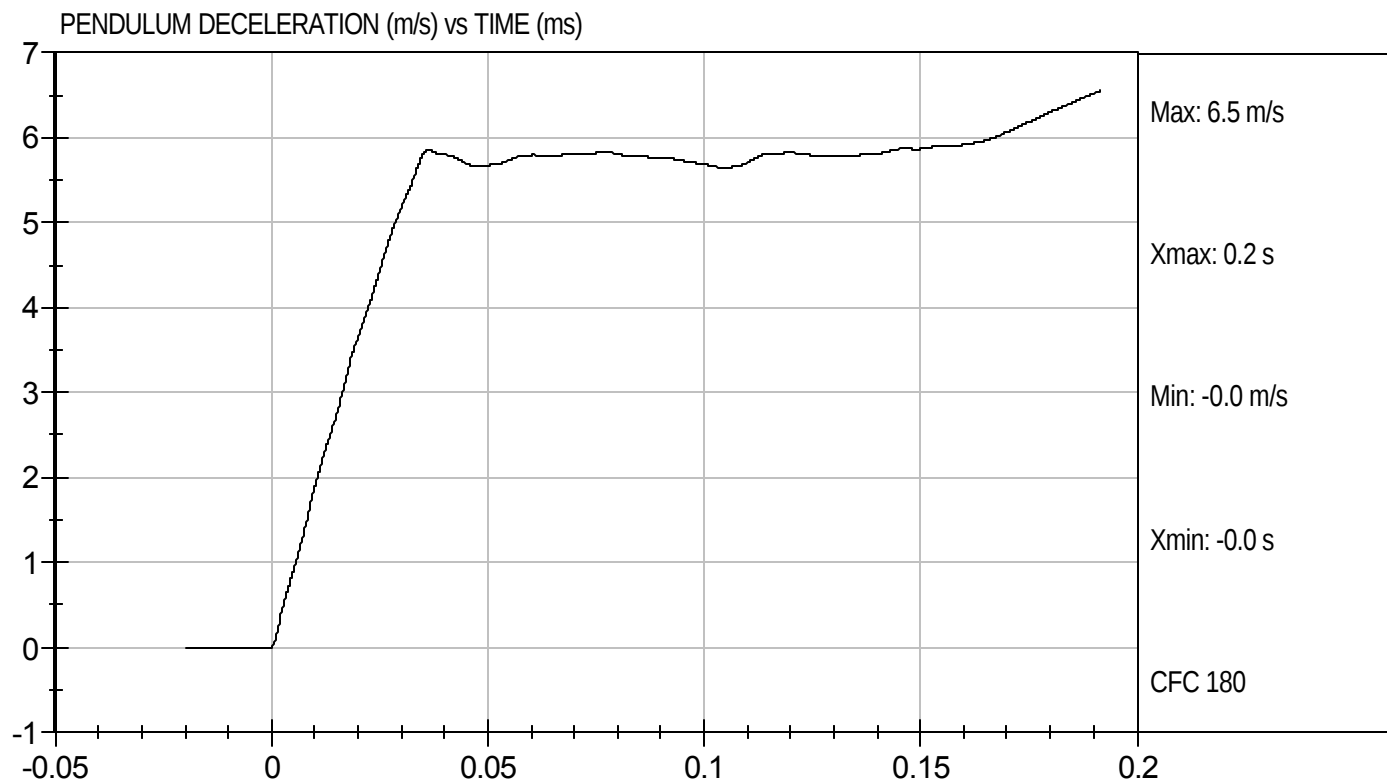
Test Date


 Approved By



Test Desc: Neck Extension
Component ID: D114123

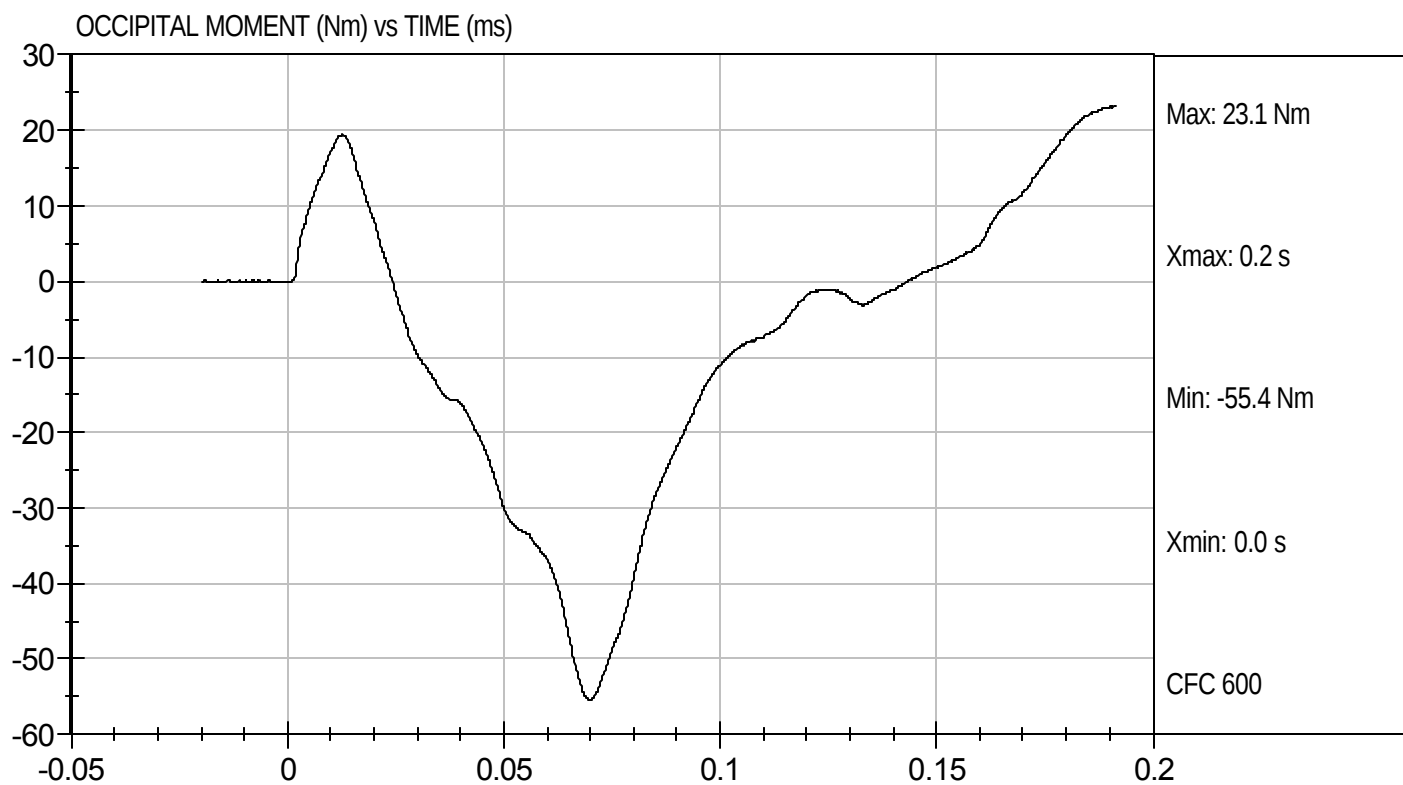
Test Date: 12/8/11
Velocity: 20.2 ft/s, 6.16 m/s





Test Desc: Neck Extension
Component ID: D114123

Test Date: 12/8/11
Velocity: 20.2 ft/s, 6.16 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

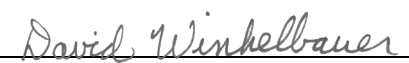
ATD Serial No: 634

Test I.D: D114124

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.0	Pass
Relative Humidity	%	10 to 70	20	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	kN	3.9 to 4.4	4.3	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Peak Force 18 mm - 50 mm	N	<= 4,600 N	4330	Pass
			Overall Test Results	Pass


Laboratory Technician

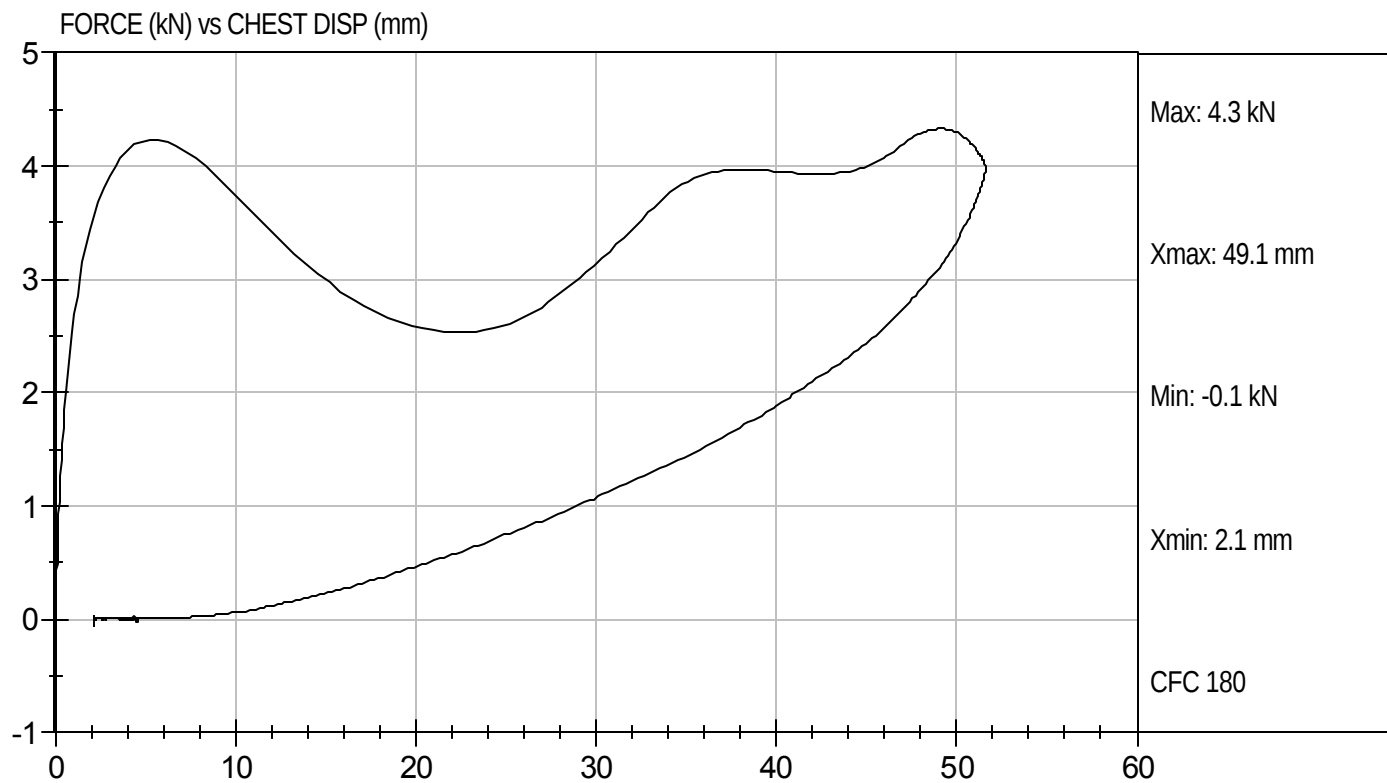
12/8/11
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D114124

Test Date: 12/8/11
Velocity: 22.2 ft/s, 6.77 m/s



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

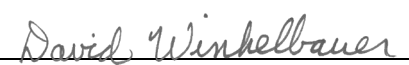
ATD Serial No: 634

Test I.D: D114125

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Speed	m/s	2.07 to 2.13	2.07	Pass
Maximum Force	kN	3.45 to 4.06	3.63	Pass
Overall Test Results				Pass


Laboratory Technician

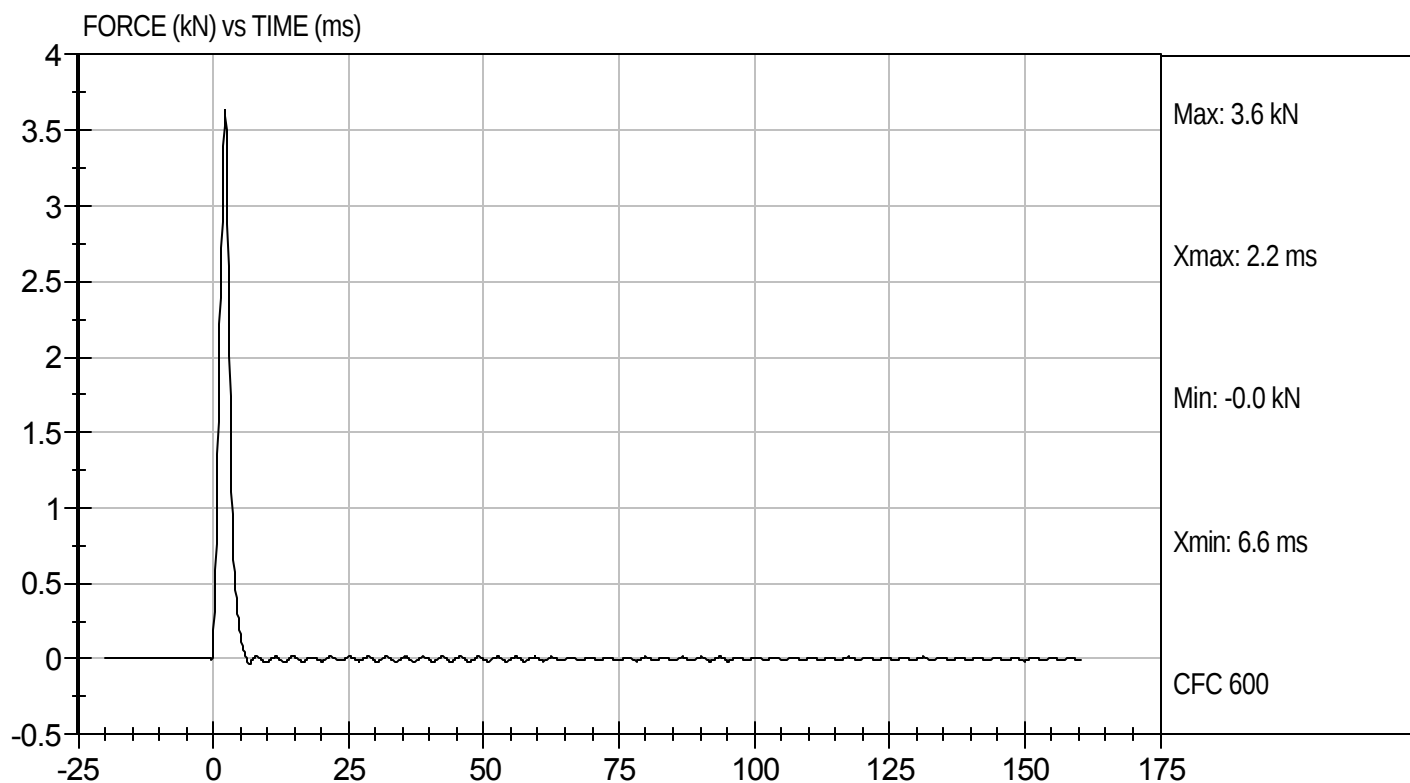
12/8/11
Test Date


Approved By



Test Desc: Right Knee
Component ID: D114125

Test Date: 12/8/11
Velocity: 6.80 ft/s, 2.07 m/s



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D114126

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Speed	m/s	2.07 to 2.13	2.08	Pass
Maximum Force	kN	3.45 to 4.06	4.02	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

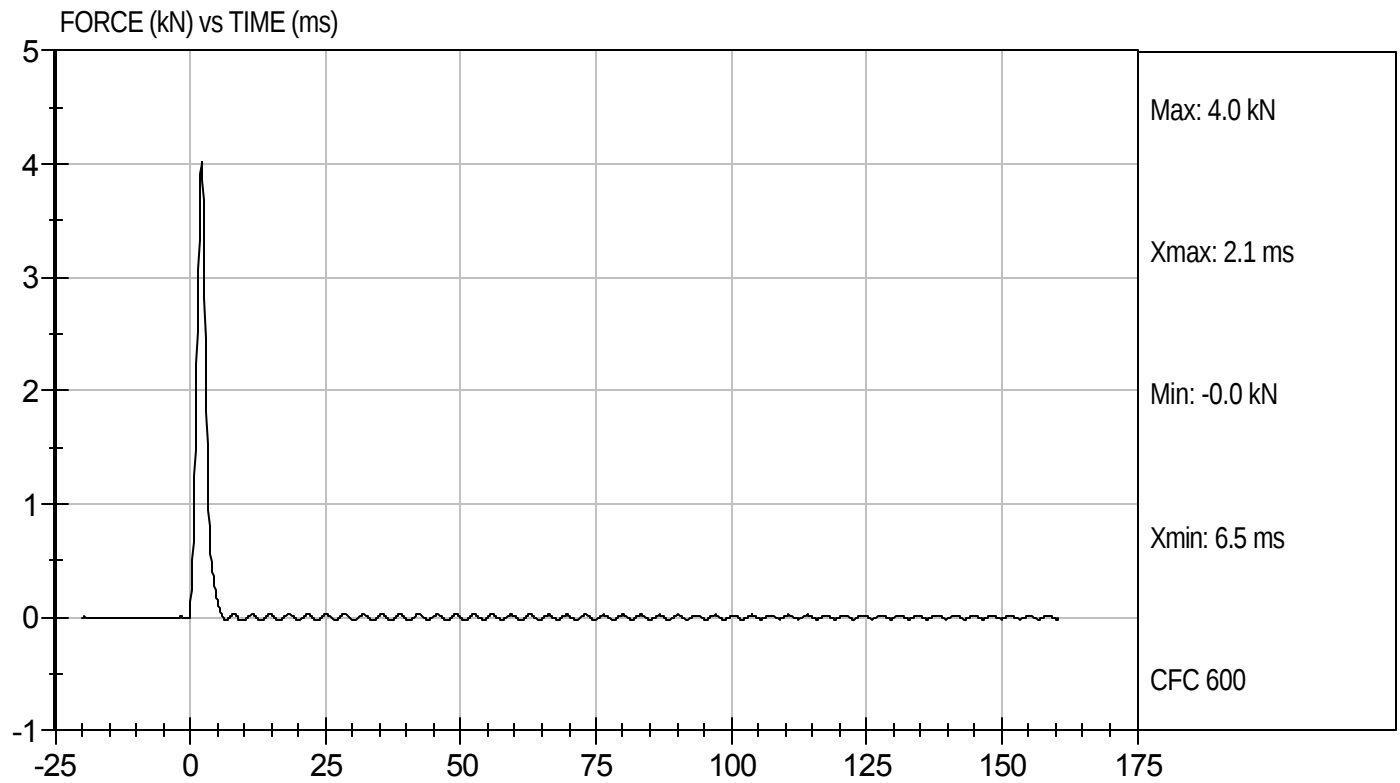
12/8/11
Test Date

David Winkelbauer
Approved By



Test Desc: Left Knee
Component ID: D114126

Test Date: 12/8/11
Velocity: 6.83 ft/s, 2.08 m/s



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

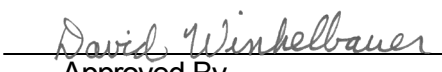
ATD Serial No: 634

Test I.D: D114127

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	20	Pass
Initial Angle	deg	0 to 20	15	Pass
Return Angle	deg	+/- 8	7	Pass
Force at 45 deg	N	320 to 390	372	Pass
Upper Torso Deflection Rate	Deg/sec	0.5 to 1.5	1.0	Pass
Overall Result				Pass


Laboratory Technician

12/8/11
Test Date

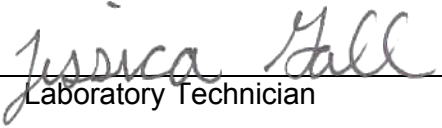

Approved By

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

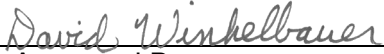
ATD Serial No: 634

Test ID: D114251

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Peak Resultant Acceleration	G's	250 to 300	270	Pass
Peak Lateral Acceleration	G's	+/- 15	-3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

12/16/11
Test Date

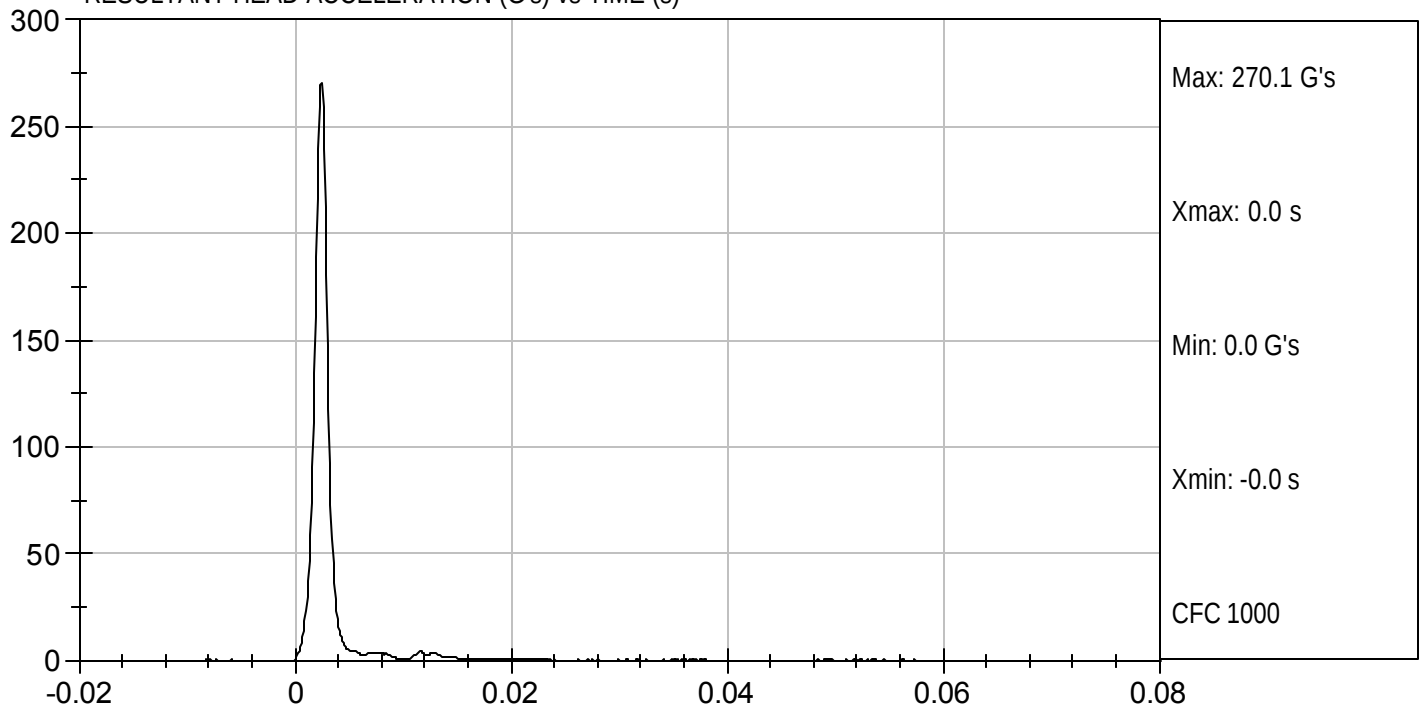

Approved By



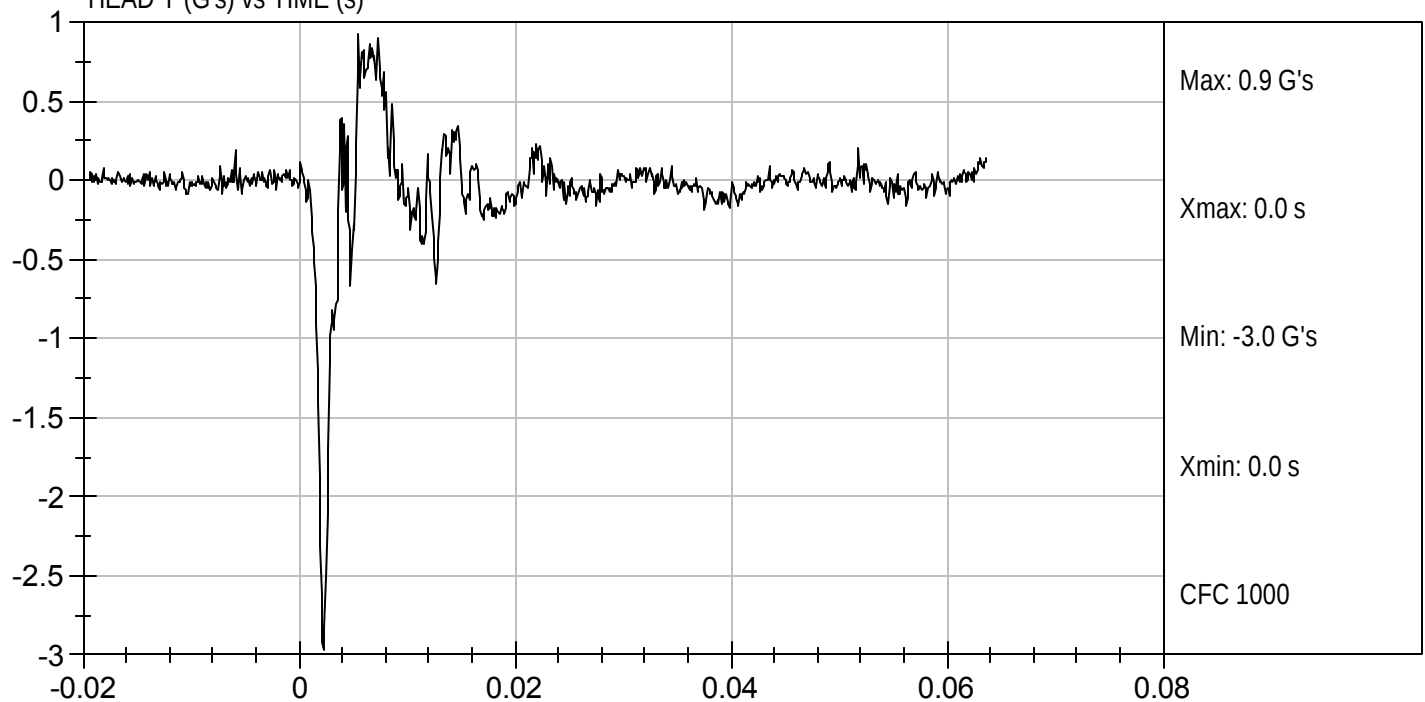
Test Desc: Head Drop
Component ID: D114251

Test Date: 12/16/11
Velocity: 0 ft/s, 0 m/s

RESULTANT HEAD ACCELERATION (G's) vs TIME (s)



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



MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 5TH PERCENTILE

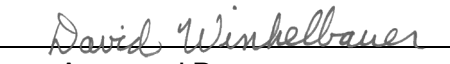
ATD Serial No: 634

Test I.D: D114252

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	20	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Pulse	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.5	Pass
	30 ms	m/s	5.8 to 7.0	6.2	Pass
D Plane Rotation	Max	deg	77 to 91	79	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	69 to 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	85	Pass
Overall Results				Pass	


 Laboratory Technician

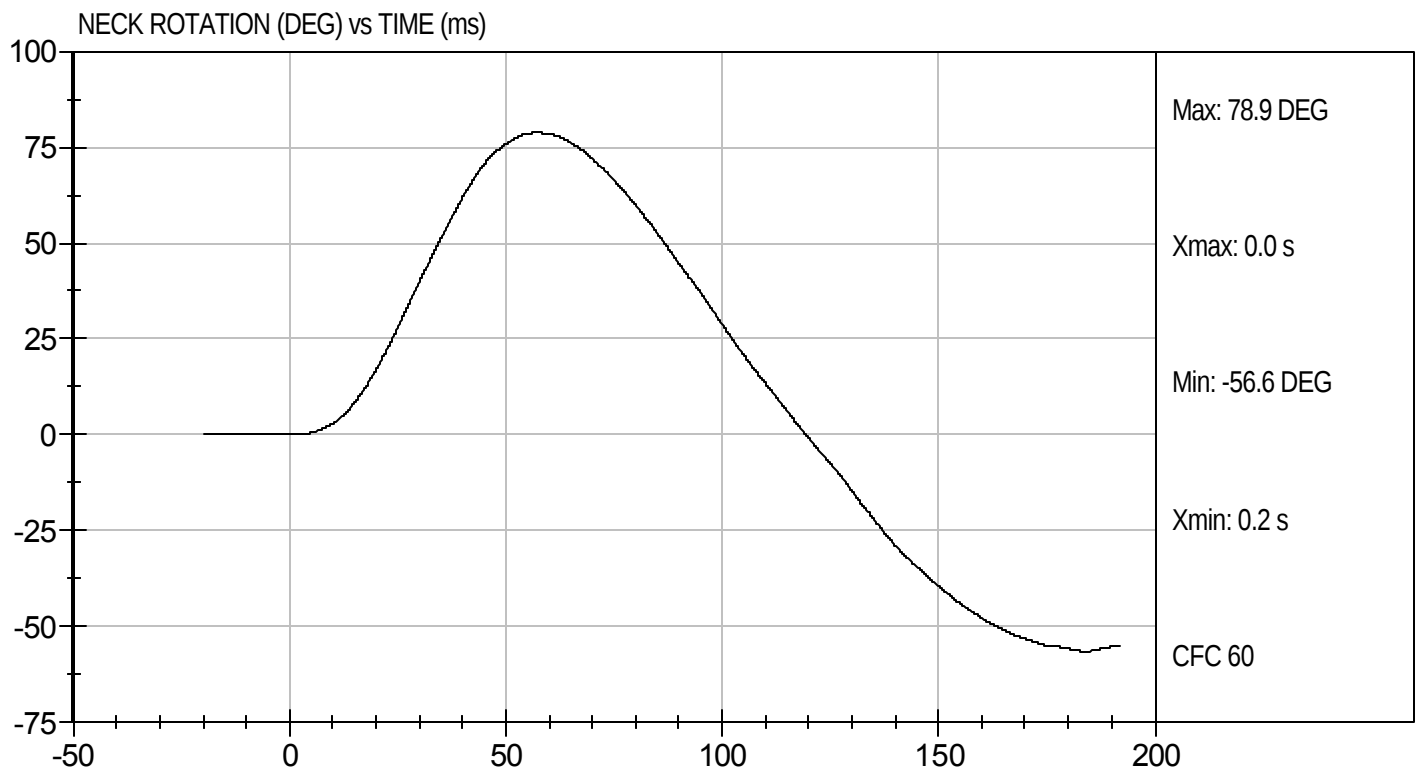
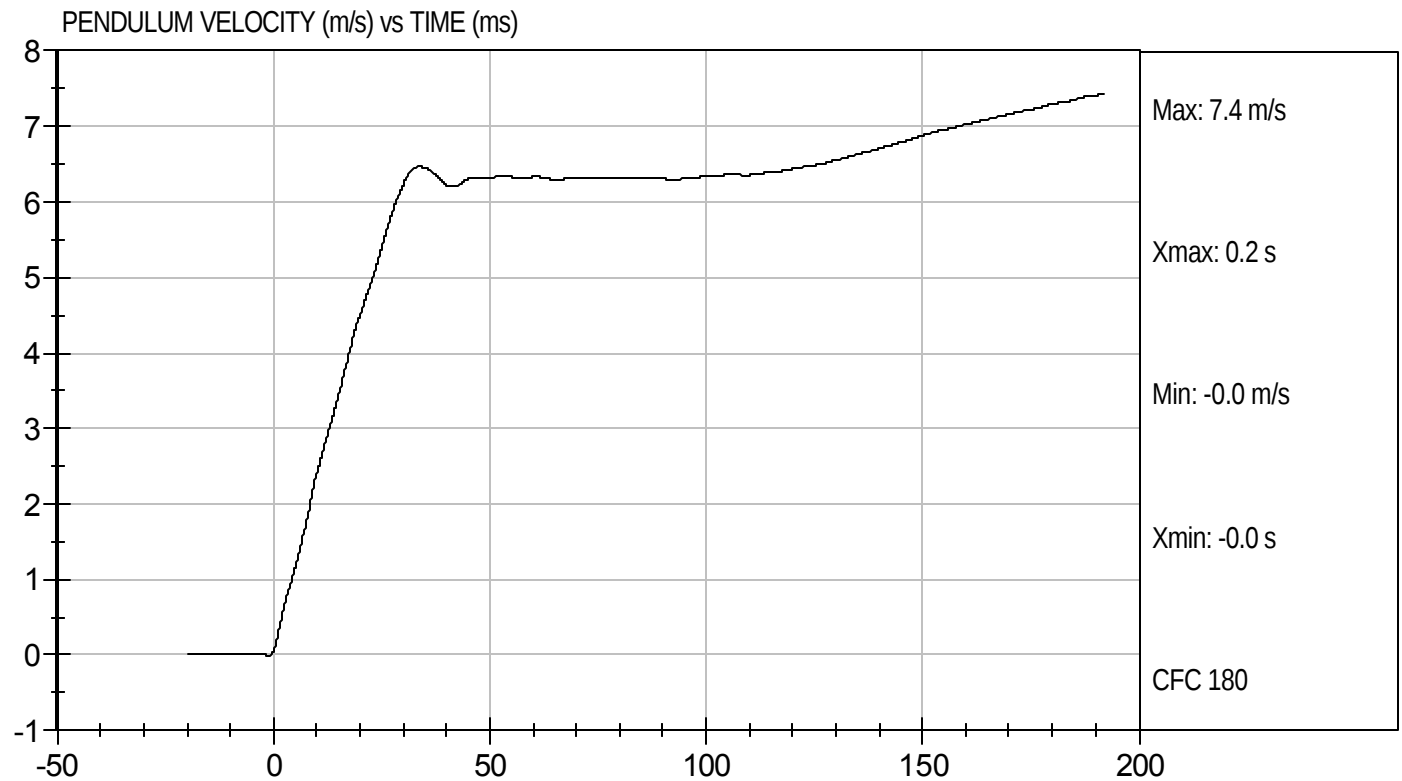
12/16/11
 Test Date


 Approved By



Test Desc: Neck Flexion
Component ID: D114252

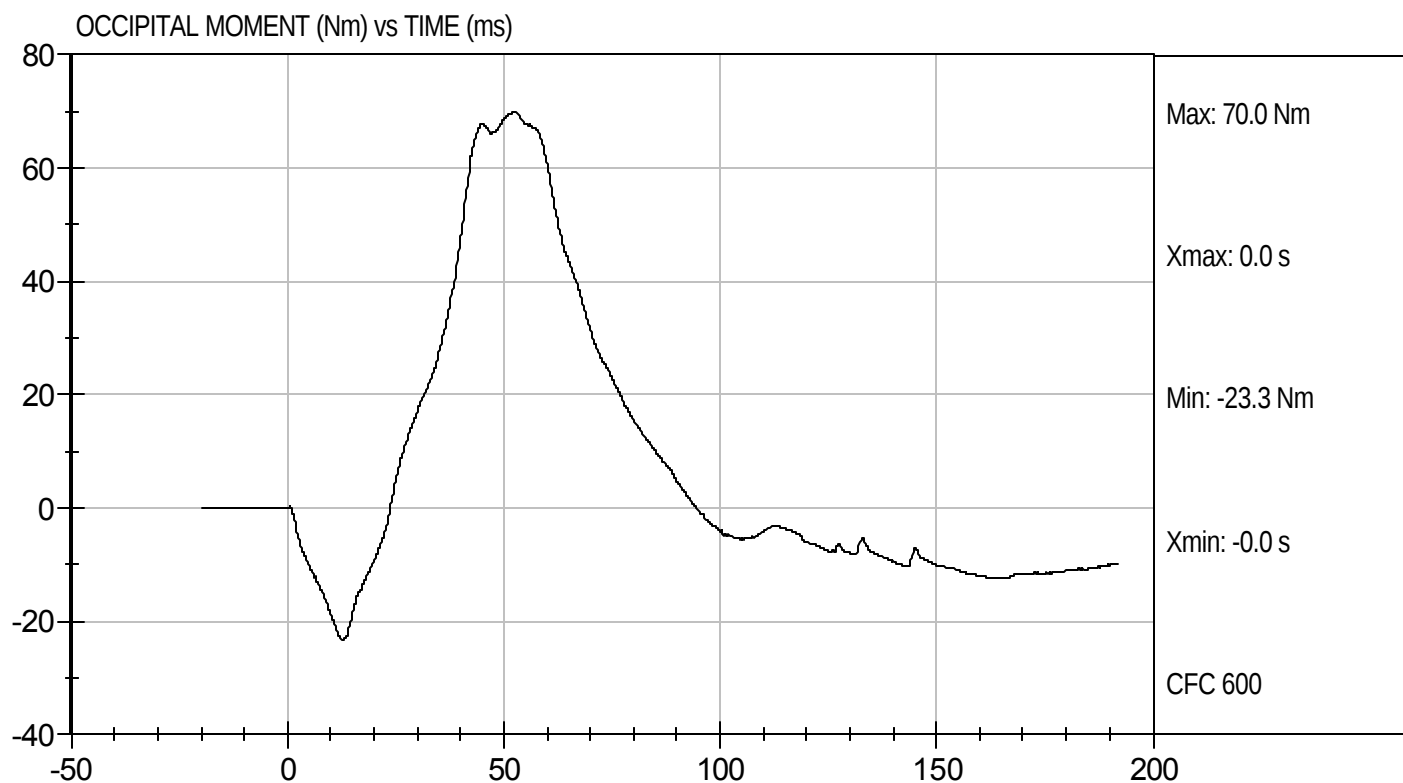
Test Date: 12/16/11
Velocity: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Flexion
Component ID: D114252

Test Date: 12/16/11
Velocity: 23.15 ft/s, 7.06 m/s



MGA RESEARCH CORPORATION

NECK EXTENSION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634Test I.D: D114253

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	20	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Pulse	10 ms	m/s	1.5 to 1.9	1.9	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.0	Pass
D Plane Rotation	Max	deg	99 to 114	107	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	-65 to -53	-54	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	103	Pass
Overall Results					Pass

Jessica Galt
Laboratory Technician

12/16/11

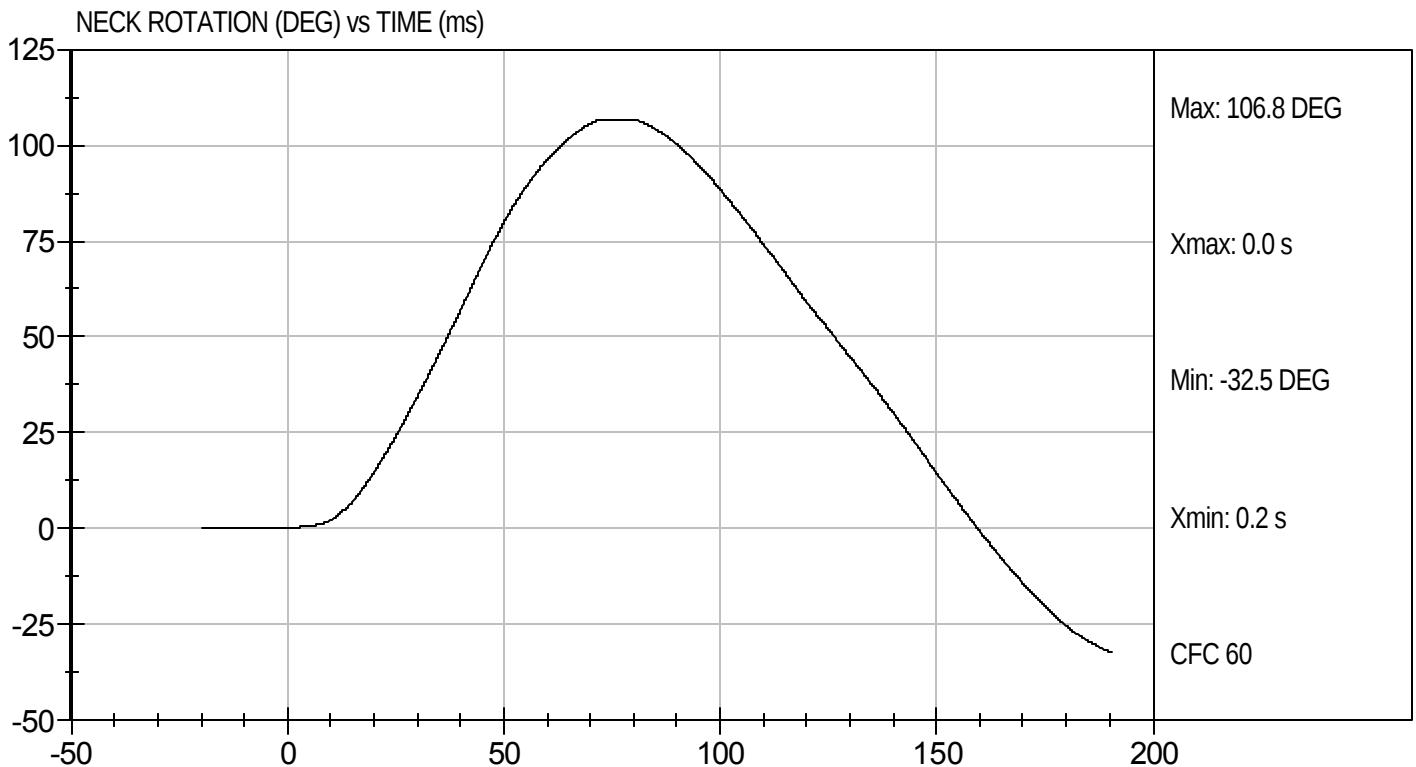
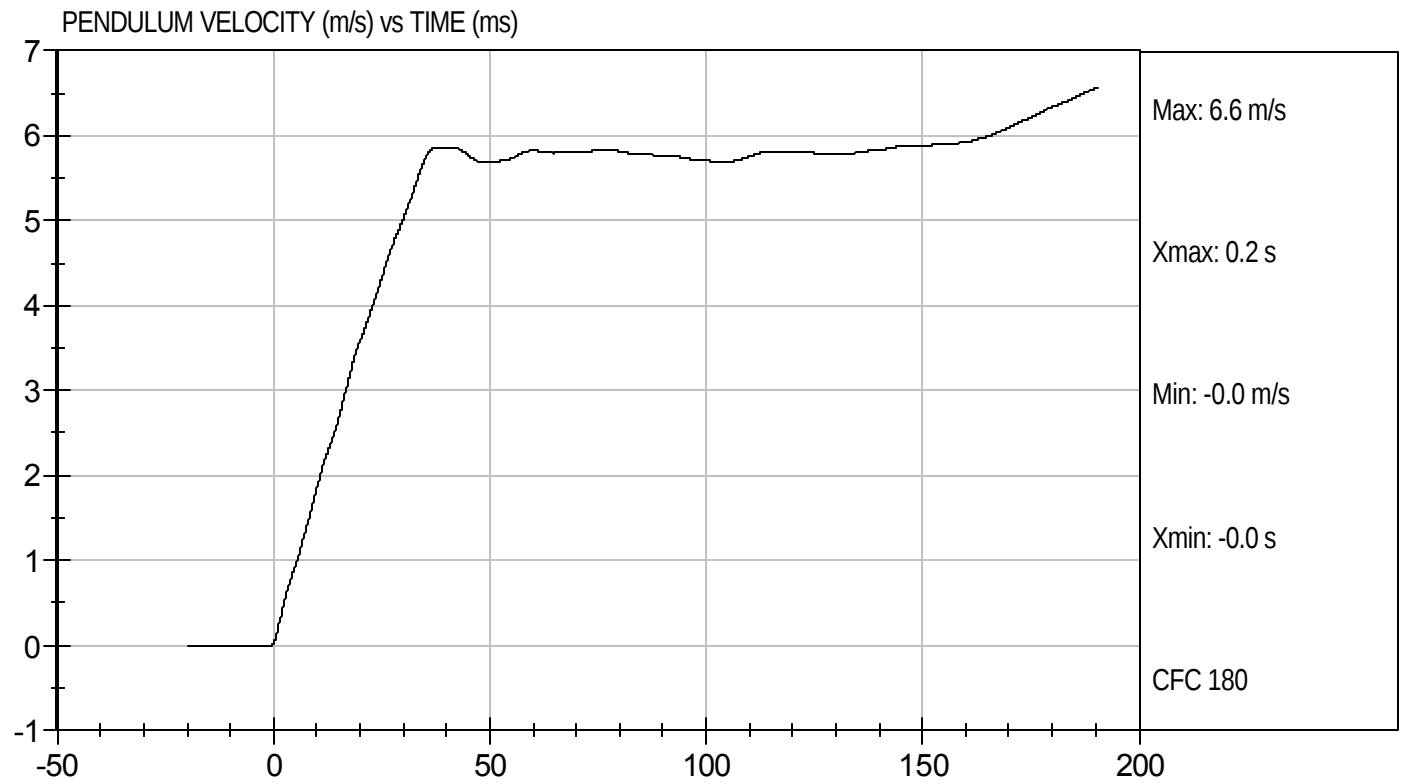
Test Date

David Winkelbauer
Approved By



Test Desc: Neck Extension
Component ID: D114253

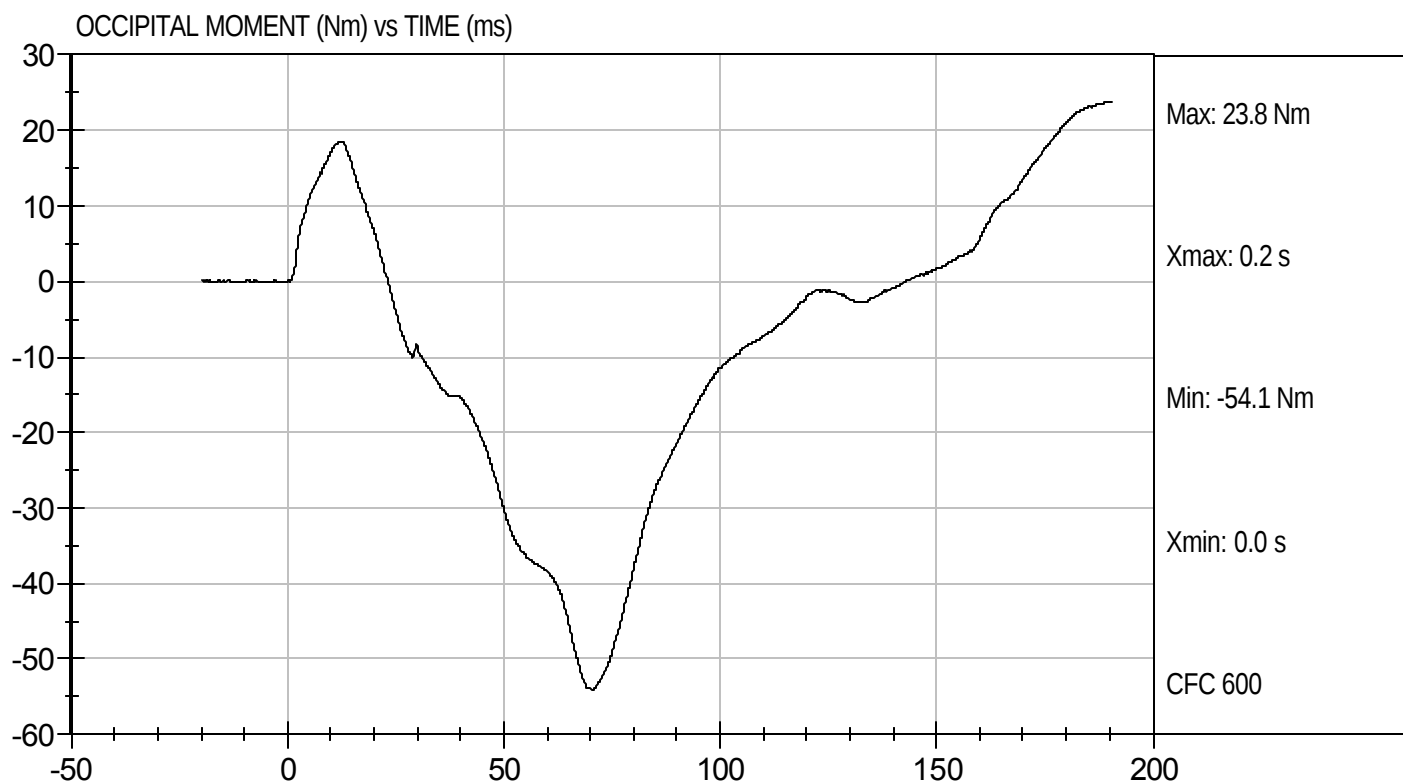
Test Date: 12/16/11
Velocity: 20.08 ft/s, 6.12 m/s





Test Desc: Neck Extension
Component ID: D114253

Test Date: 12/16/11
Velocity: 20.08 ft/s, 6.12 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D114254

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Relative Humidity	%	10 to 70	20	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	kN	3.9 to 4.4	4.29	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Peak Force 18 mm - 50 mm	N	<= 4,600 N	4293	Pass
			Overall Test Results	Pass


Laboratory Technician

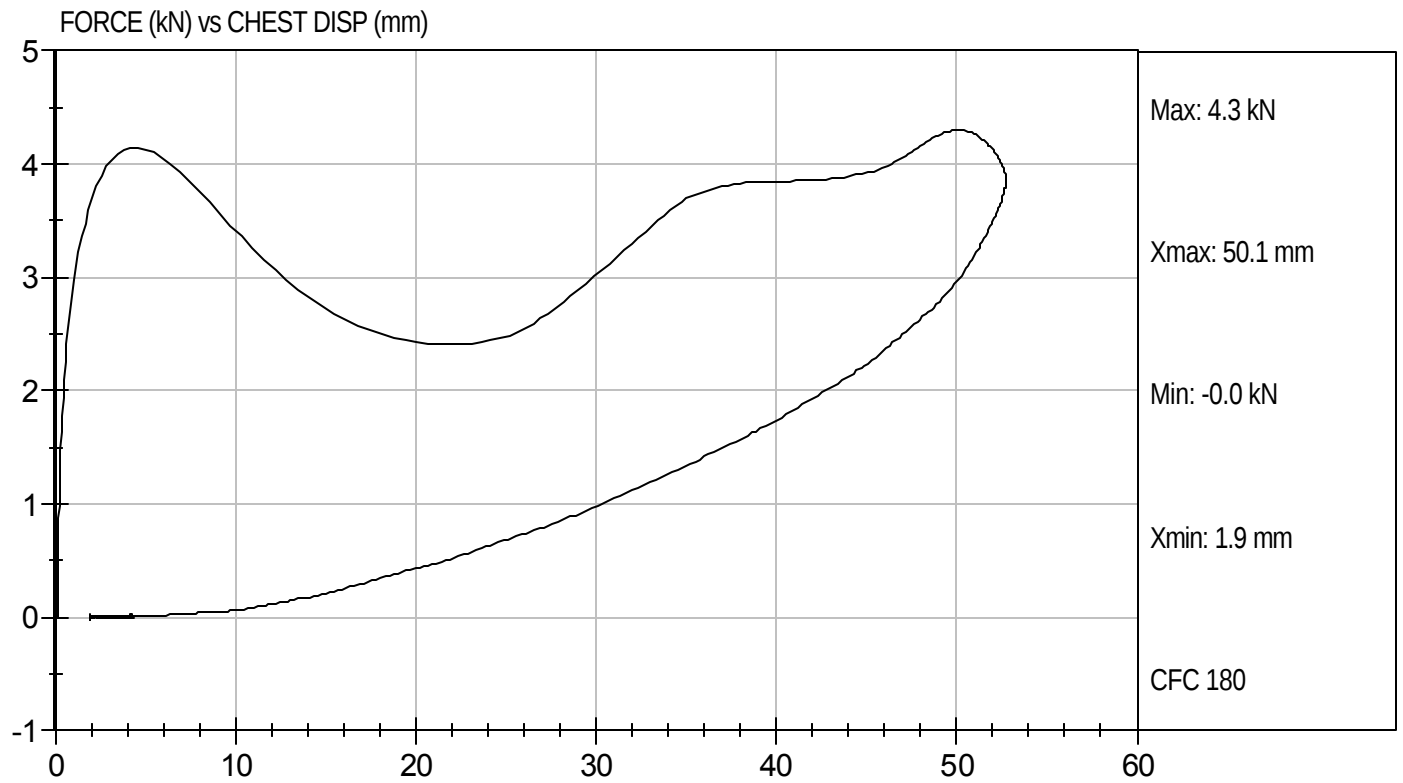
12/16/11
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D114254

Test Date: 12/16/11
Velocity: 22.22 ft/s, 6.77 m/s



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

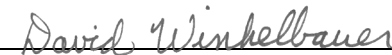
ATD Serial No: 634

Test I.D: D114255

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.74	Pass
Overall Test Results				Pass


Laboratory Technician

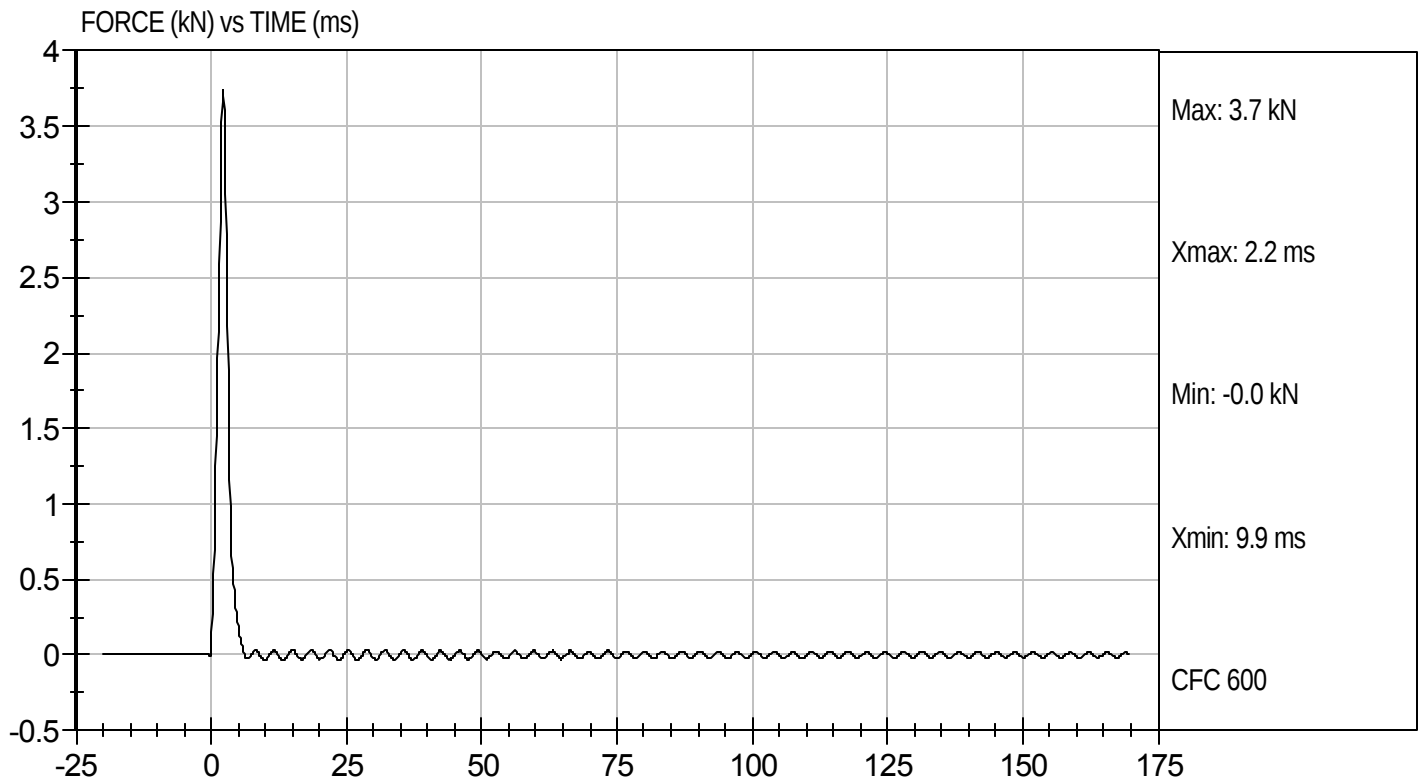
12/16/11
Test Date


Approved By



Test Desc: Right Knee
Component ID: D114255

Test Date: 12/16/11
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

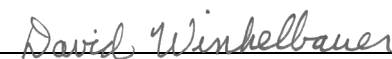
ATD Serial No: 634

Test I.D: D114256

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.64	Pass
Overall Test Results				Pass


Laboratory Technician

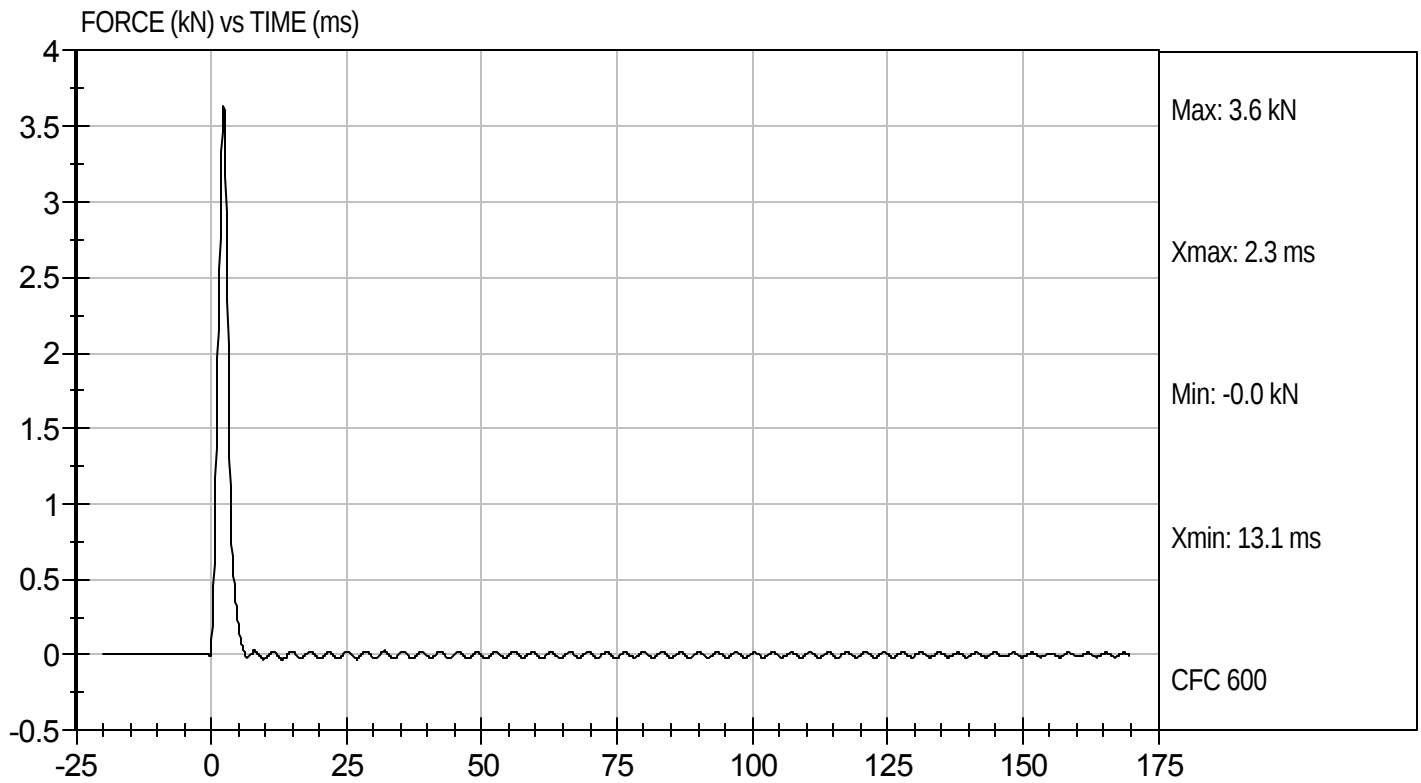
12/16/11
Test Date


Approved By



Test Desc: Left Knee
Component ID: D114256

Test Date: 12/16/11
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

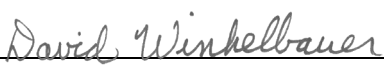
ATD Serial No: 634

Test I.D: D114257

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	21	Pass
Initial Angle	deg	0 to 20	18	Pass
Return Angle	deg	+/- 8	6	Pass
Force at 45 deg	N	320 to 390	358	Pass
Upper Torso Deflection Rate	Deg/sec	0.5 to 1.5	1.0	Pass
Overall Result			Pass	


Laboratory Technician

12/16/11
Test Date


Approved By