

REPORT NUMBER: NCAP-KAR-12-035

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**MISTUBISHI MOTORS CORPORATION
2012 MITSUBISHI OUTLANDER 2.4 SE 4X4 5-DOOR MPV**

NHTSA NUMBER: MC5606

**PREPARED BY:
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JANUARY 23, 2012

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE
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WASHINGTON, DC 20590**

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NHTSA, Office of Crashworthiness Standards

Date: 


COTR, New Car Assessment Program
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Date: 

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16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2012 Mitsubishi Outlander 2.4 SE 4x4 5-door MPV 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 footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on January 10, 2012. The impact velocity of the vehicle was 56.23 km/h and the ambient temperature at the barrier face at the time of impact was 18.3 deg. C. The target vehicle's post-test maximum crush was 485 mm at DPD 5, to the right of the vehicle's centerline. The test vehicle's performance is as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700.0</td> <td>235.5</td> <td>700.0</td> <td>195.1</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-32</td> <td>52</td> <td>-26</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.29</td> <td>1</td> <td>0.54</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1434.5</td> <td>2620</td> <td>1007.7</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-550.1</td> <td>2520</td> <td>-362.3</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-498.8</td> <td>6805</td> <td>-1619.3</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-878.8</td> <td>6805</td> <td>-1467.6</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	235.5	700.0	195.1	Maximum Chest Compression	mm	63	-32	52	-26	Nij	N/A	1	0.29	1	0.54	Neck Tension	N	4170	1434.5	2620	1007.7	Neck Compression	N	4000	-550.1	2520	-362.3	Left Femur Force	N	10008	-498.8	6805	-1619.3	Right Femur Force	N	10008	-878.8	6805	-1467.6
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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-00027. 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 test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure, dated August, 2011.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2012 Mitsubishi Outlander 2.4 SE 4x4 5-door MPV at a velocity of 56.23 km/h. The test was performed at KARCO Engineering, LLC. on January 10, 2012. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of 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 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 force transducers, right / left femur load cells, and lower leg instrumentation. Seat belt load cells were installed on the driver's and the passenger's shoulder and lap belts to measure the dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 035) and the right-front passenger (position 2) ATD (Serial No. 635) were calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 136 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 100% 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 test vehicle was 485 mm located at DPD 5, to the right of the vehicle's centerline. 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 ATD's head contacted the airbag and the headrest. The upper torso contacted the airbag. Both the left and right knees contacted the knee bolster. The right knee also contacted the steering column.

The passenger's visible contact points were as follows: The passenger ATD's head contacted the airbag and the headrest. The upper torso contacted the airbag. Both the left and right knees contacted the glovebox.

The occupant data is summarized below:

ATD Position	HIC ₁₅	T ¹	T ²	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	235.5	71.1	86.1	-32	0.29	1434.5	-550.1	-498.8	-878.8
Passenger (5th)	195.1	71.2	86.2	-26	0.54	1007.7	-362.3	-1619.3	-1467.6

SECTION 2
DATA SHEETS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in ²	kPa	6.895
Temperature	General Use	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV	NHTSA No.:	MC5606
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	1/10/12

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MC5606
Model Year	2012
Make	Mitsubishi
Model	Outlander 2.4 SE 4x4
Body Style	5-Door MPV
VIN	JA4JT3AW9CU001400
Body Color	Quartz Brown
Odometer Reading (km / mi)	127 / 79
Engine Displacement (L)	2.4
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	CVT
Transmission Speeds	n/a
Overdrive	Yes
Final Drive	4x4
Roof Rack	Yes
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
All Wheel Drive (AWD)	No
Traction Control System	Yes

Auto-Leveling System	No
Automatic Door Locks	No
Power Window Auto-Reverse	Yes
Other Optional Feature	None
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Pass. Front Airbag	Yes
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	No
Pass. Torso/Pelvis Airbag	Yes
Pass. Pelvis Airbag	No
Pass. Knee Airbag	No
Driver Seat Belt Pretensioner	Yes
Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Pass. Load Limiter	Yes
Other Safety Restraint	None

Does Owner's Manual provide instructions to turn off automatic door locks?

DATA FROM CERTIFICATION LABEL

Manufactured By	Mitsubishi Motors Corporation
Date of Manufacture	Jun-11

GVWR (kg)	2290
GAWR Front (kg)	1090
GAWR Rear (kg)	1270

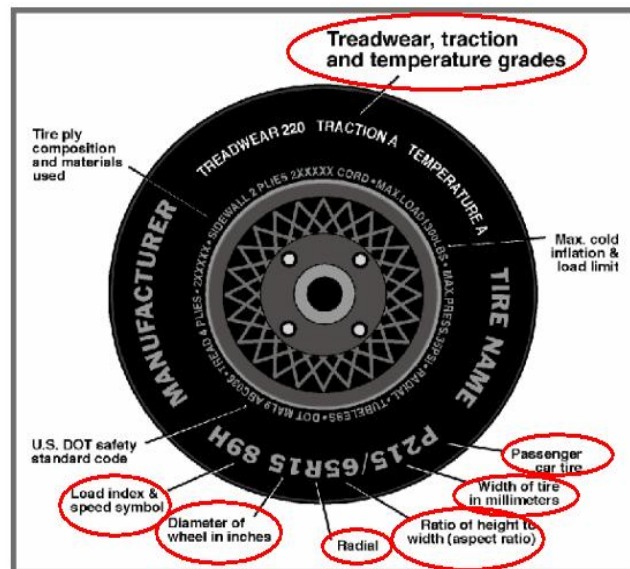
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench	Bench		
Designated Seating Capacity	2	3	2	7	
Capacity Weight (VCW) (kg)				525.0	A
DSC x 68.04 (kg)				476.3	B
Cargo Weight (RCLW) (kg)				48.7	A-B

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV	NHTSA No.:	MC5606
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VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P225/55R18	P225/55R18
Tire Size on Vehicle	P225/55R18	P225/55R18
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Eagle LS2	Eagle LS2
Treadwear	400	400
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 2 Polyester, 1 Nylon	2 Steel, 2 Polyester, 1 Nylon
Load Index / Speed Symbol	97H	97H
Tire Material	Steel, Polyester, Nylon	Steel, Polyester, Nylon
DOT Safety Code Left	EU00 3MXR 2711	EU00 3MXR 2711
DOT Safety Code Right	EU00 3MXR 2711	EU00 3MXR 2711

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

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	462.0	389.0		495.0	455.5	
Right	kg	433.5	383.0		454.0	445.5	
Ratio	%	53.7%	46.3%	100.0%	51.3%	48.7%	100.0%
Total	kg	895.5	772.0	1667.5	949.0	901.0	1850.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1667.5	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	48.7	C
Calculated Vehicle Target Weight (TVTW)	kg	1857.2	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	795	797	776	778	1236
As Tested	mm	784	786	758	764	1300
Post-Test	mm	789	771	752	756	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2670
Total Vehicle Length at Left Side	mm	3943
Total Vehicle Length at Centerline	mm	4660
Total Vehicle Length at Right Side	mm	3948
Weight of Ballast in Cargo Area	kg	73.5
Weight of Vehicle Components Removed	kg	37.0
Amount of Stoddard Solvent in Fuel Tank	L	55.62

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Rear Trim (4.0 kg), 3rd Row Seat (30.0 kg), Spare Tire Tools (3.0 kg).

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

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length	4660	4180	-480
2	Total Width	1800	1905	105
3	Bumper Top Height	645	500	-145
4	Bumper Bottom Height	425	235	-190
5	Longitudinal Member Top Height	590	630	40
6	Distance Between Longitudinal Members	950	900	-50
7	Longitudinal Member Width	60	120	60
8	Engine Top Height	870	870	0
9	Engine Bottom Height	243	243	0
10	Engine and Gearbox Width	700	700	0
11	Front Bumper to Engine Distance	497	210	-287
12	Front Shock Absorber Fixing Height	935	925	-10
13	Bonnet Leading Edge Height	905	935	30
14	Front Shock Absorber Fixing Width	1125	1115	-10
15	Front Bumper to Front Axle Distance	988	400	-588
16	Front Axle to A-Pillar Distance	513	452	-61
17	A-Pillar to B-Pillar Distance	1013	1011	-2
18	B-Pillar to Rear Axle Distance	1056	1063	7
19	B-Pillar to C-Pillar Distance	824	823	-1
20	Roof Sill Bottom Height	1496	1495	-1
21	Roof Sill Top Height	1617	1618	1
22	Floor Sill Bottom Height	318	261	-57
23	Floor Sill Top Height	404	395	-9

All measurements in millimeters.

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV

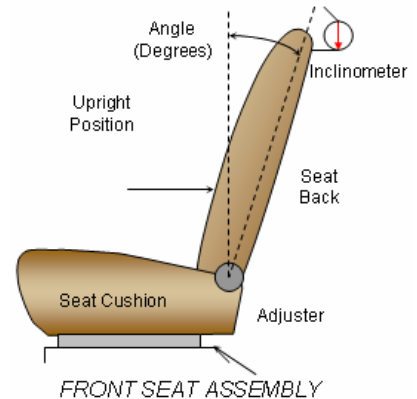
NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 1/10/12

NOMINAL DESIGN RIDING POSITION

The procedure for the driver is as follows: the seat back is set to the manufacturer's designated angle. The procedure for the passenger is as follows: the seat back is set to position the transverse instrumentation platform of the dummy's head at $0^\circ \pm 0.5^\circ$. Seat back angle is measured at the headrest post using a digital inclinometer.

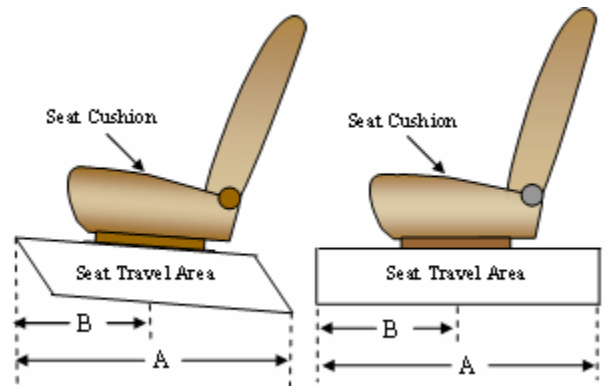


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	1.5
Passenger Seat Back Angle	3.7

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rear most possible position. The driver's seat is set to the middle of the fore-aft travel. The passenger's seat is set to the forward most position where the ATD will not contact any interior panels.



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	258 mm (22 detents)	119mm (10th detent)
Passenger Seat	220 mm (22 detents)	0 mm (1st detent)

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position for a 50th percentile adult male ATD for the driver, and a 5th percentile adult female ATD for the passenger. Position "H" is the uppermost position, followed by position "M1". Position "L" is the lowermost position.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	M1
Passenger Seat	4	H

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV

NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

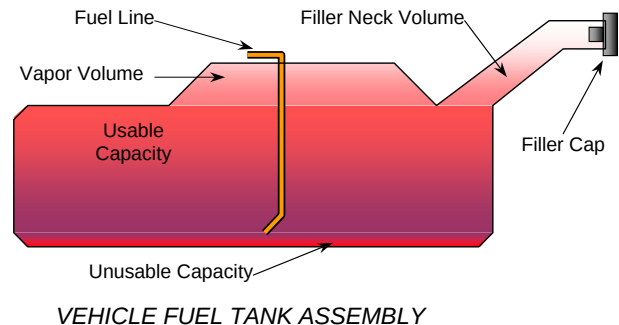
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FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	59.80
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	55.02 to 56.21
Actual Amount of Stoddard Solvent Used	55.62
1/3 of Usable Capacity	19.93

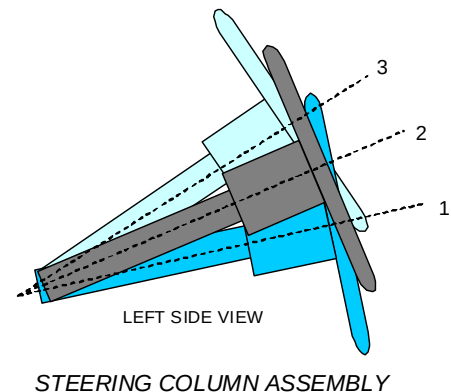
FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump will pump fuel when the ignition is turned to the "ON" position.



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. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. A tape measure is used to measure telescoping steering wheel travel.



STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	21.6	
Geometric Center Position, No. 2	23.8	
Uppermost Position, No. 3	26.0	
Telescoping Steering Wheel Travel		
Test Position	23.8	

DATA SHEET NO. 3

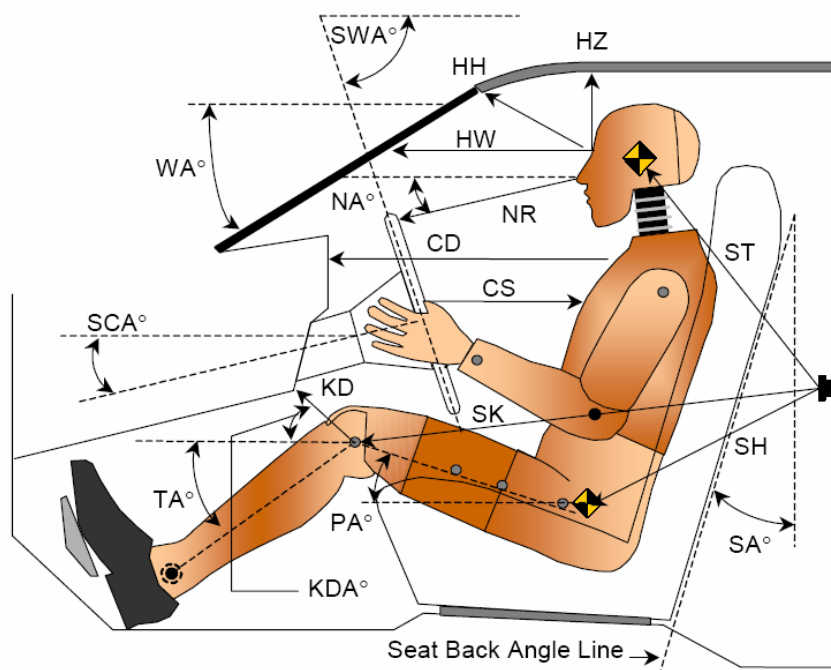
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV

NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 1/10/12



LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		26.7		
SWA°	Steering Wheel Angle		66.2		
SCA°	Steering Column Angle		23.8		
SA°	Seat Back Angle (On Headrest Post)		1.5		3.7
HZ	Head to Roof	222	90.0	243	90.0
HH	Head to Header	323	28.8	315	44.6
HW	Head to Windshield	708	0.0	679	0.0
NR	Nose to Rim	392	11.8	425	6.0
CD	Chest to Dash	565	7.6	400	8.4
CS	Chest to Steering Hub	280	0.0		
RA	Rim to Abdomen	200	0.0		
KDL	Left Knee to Dash	153	12.8	60	
KDR	Right Knee to Dash	130	28.2	109	37.5
PA°	Pelvic Angle		20.5		22.2
TA°	Tibia Angle		53.3		60.0
SK	Striker to Knee	607	1.2	694	4.8
ST	Striker to Head	553	78.2	518	65.5
SH	Striker to H-Point	249	29.9	378	15.0

DATA SHEET NO. 4

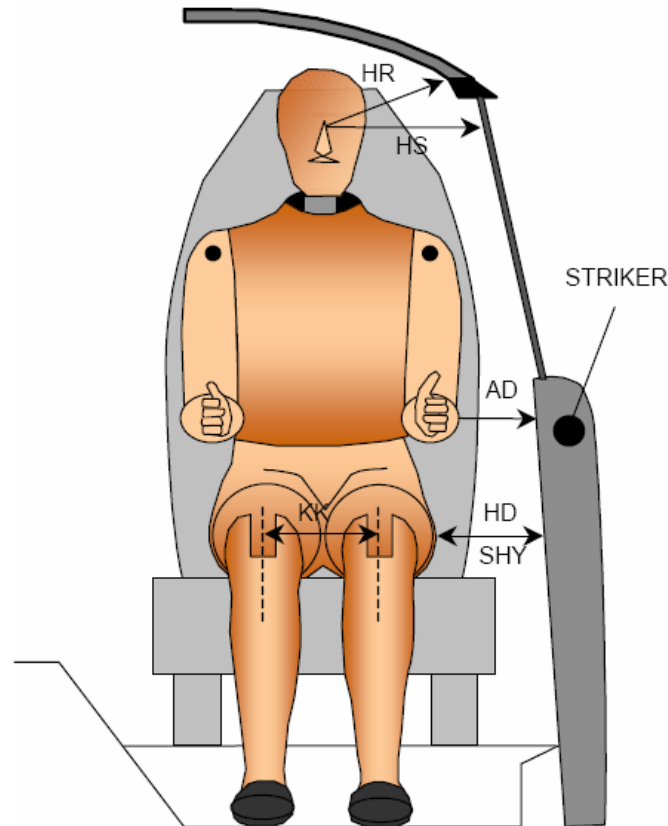
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV

NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

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Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	132	79
HD	H-Point to Door	109	225
HR	Head to Side Header	248	292
HS	Head to Side Window	347	378
KK	Knee to Knee	355	223
SHY	Striker to H-Point (Y-Direction)	218	258
AA	Ankle to Ankle	323	174

DATA SHEET NO. 5

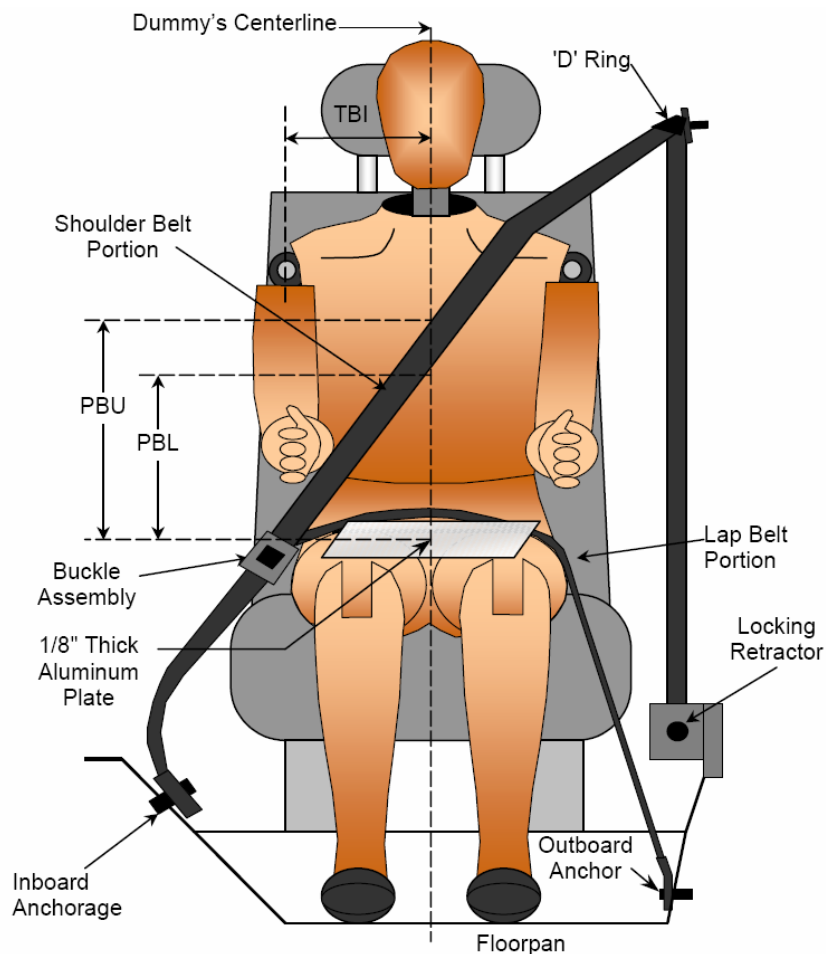
SEAT BELT POSITIONING DATA

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV

NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 1/10/12



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Code	Measurement Description	Units	Driver	Passenger
PBU	Top Surface of Aluminum Plate to Belt Upper Edge	mm	361	275
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	272	196

BELT LENGTH DATA

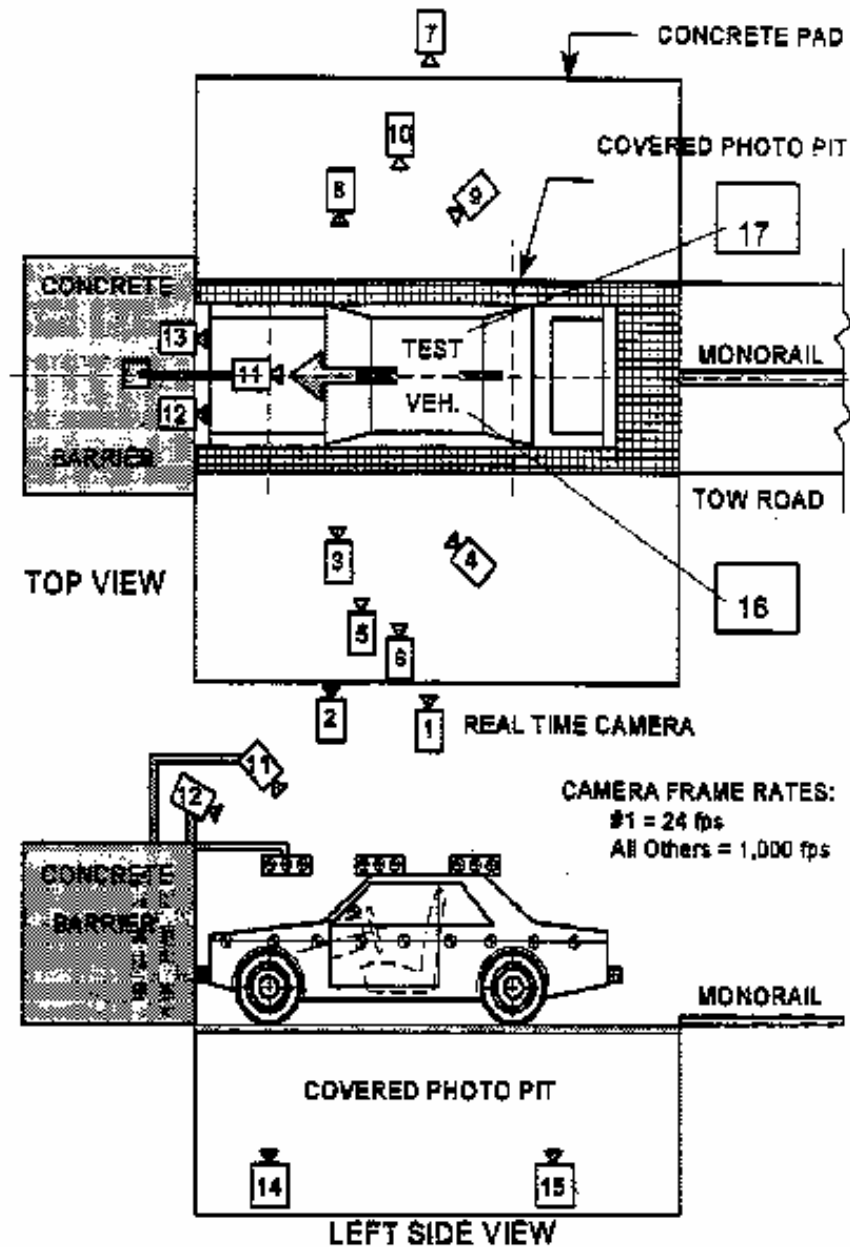
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	949	991
Lap Belt Length as Measured on ATD	mm	735	847
Remainder of Belt on Reel	mm	819	739
Total Belt Length for Continuous Webbing Systems	mm	2503	2577

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	<u>2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV</u>	NHTSA No.:	<u>MC5606</u>
Test Program:	<u>56 km/h Frontal Impact NCAP Test</u>	Test Date:	<u>1/10/12</u>

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

CAMERA LOCATIONS

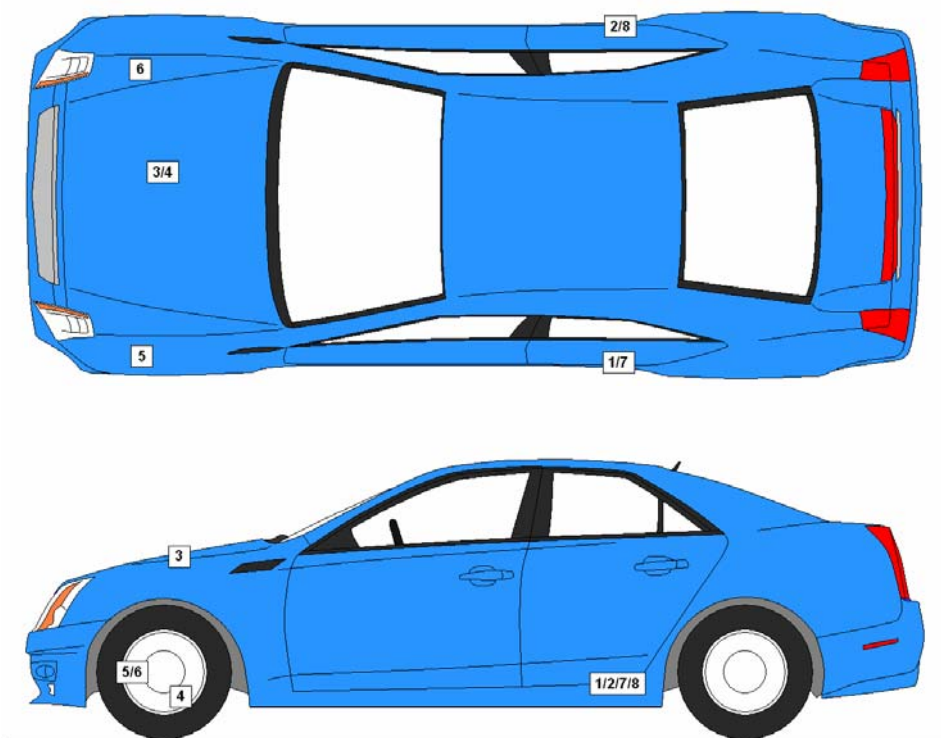
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering Column - Bottom	-1972	-10412	-3379	50	1000
7	Right Overall	-2336	7569	-1012	24	1000
8	Passenger Close-Up	-1733	7581	-1408	50	1000
9	Right Front Half	-1600	8214	-1811	ZOOM	1000
10	Right Angle	-6217	9516	-4830	ZOOM	1000
11	Windshield	-354	0	-5749	12	1000
12	Driver Windshield	297	-366	-2460	12	1000
13	Passenger Windshield	297	366	-2460	24	1000
14	Pit Front	-756	0	1495	12	1000
15	Pit Rear	-3398	0	1495	8	1000
16	Onboard Driver Airbag (Optional)	-3250	-385	-1605	12	1000
17	Onboard Passenger Airbag (Optional)	-3250	385	-1605	12	1000
18	Real-Time Left View of Impact					
19	Real-Time Right View of Impact					

Coordinates: +X = forward impact plane
 +Y = right of monorail center
 +Z = into ground

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1895	-711	-389
2	Right Rear Accelerometer X-Direction	1895	711	-389
3	Engine Top X	3859	373	-893
4	Engine Bottom X	3898	392	-251
5	Left Brake Caliper X	3756	-658	-307
6	Right Brake Caliper X	3756	658	-307
7	Left Rear Accelerometer Z-Direction	1895	-711	-389
8	Right Rear Accelerometer Z-Direction	1895	711	-389

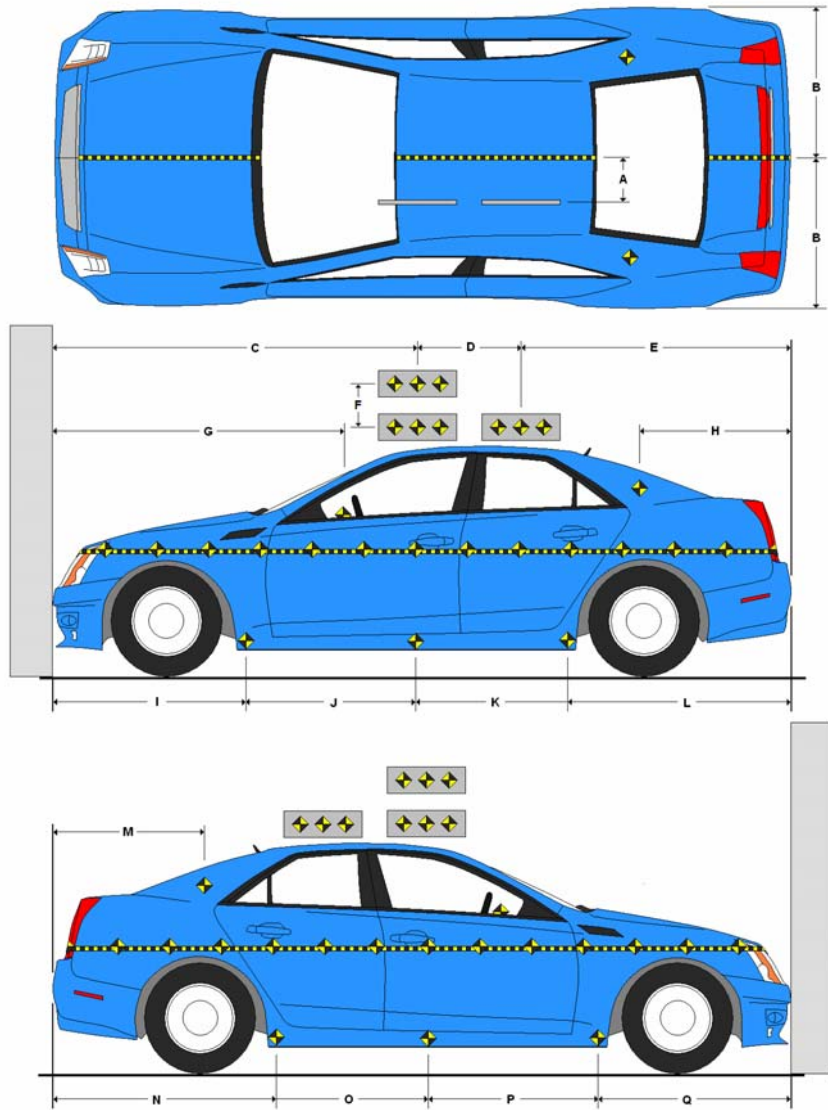
Reference Points: X – Rear Surface of Vehicle (+ forward)
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

Item	Value
A	360
B	900
C	2253
D	610
E	1810
F	305
G	1810
H	546
I	1476
J	846
K	846
L	1497
M	572
N	1490
O	850
P	850
Q	1476



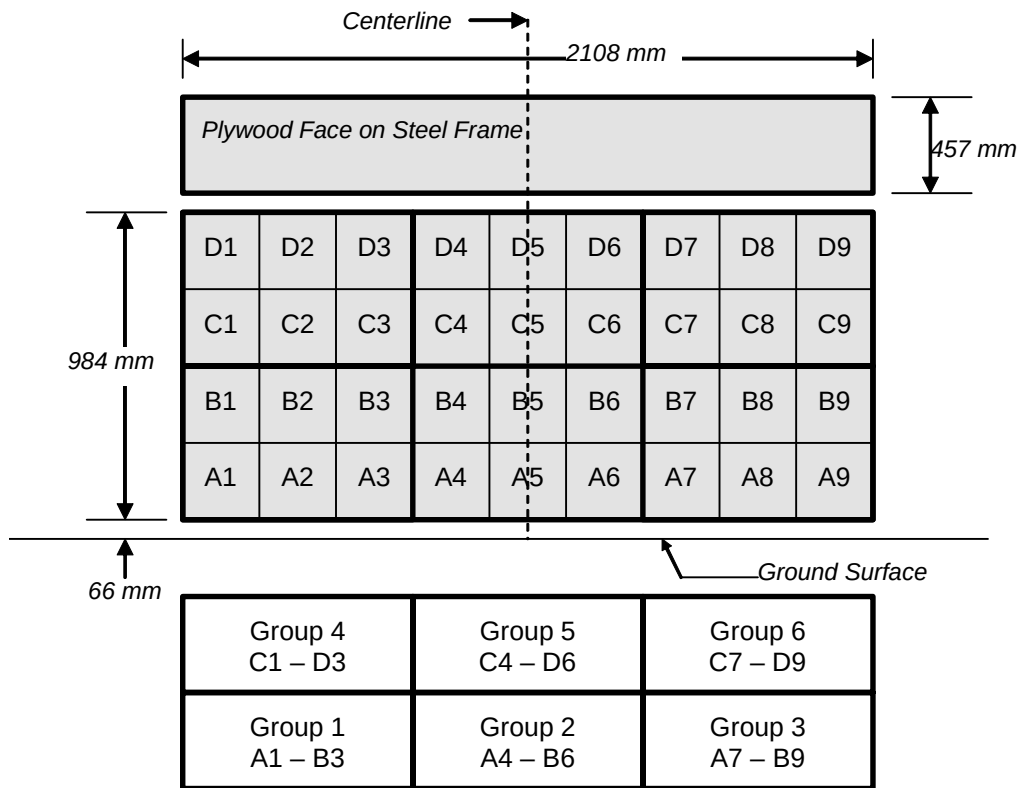
All measurements in millimeters.

DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

36 Load Cell Rigid Barrier (NHTSA Standard) Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

INSTRUMENTATION

Driver Dummy Accelerometers	44
Passenger Dummy Accelerometers	44
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	4
Load Cell Barrier	36
Total	136

CAMERA COVERAGE

High-Speed Vehicle On Board	2
High-Speed Off board	14
Real Time	3
Total	19

DATA SHEET NO. 11

POST-TEST OBSERVATIONS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 035	P572O 5th Percentile Female ATD / 635
Head Contact	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Bolster	Glovebox
Right Knee Contact	Knee Bolster, Steering Column	Glovebox

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Rear Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Track Shift (mm)	5	1
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

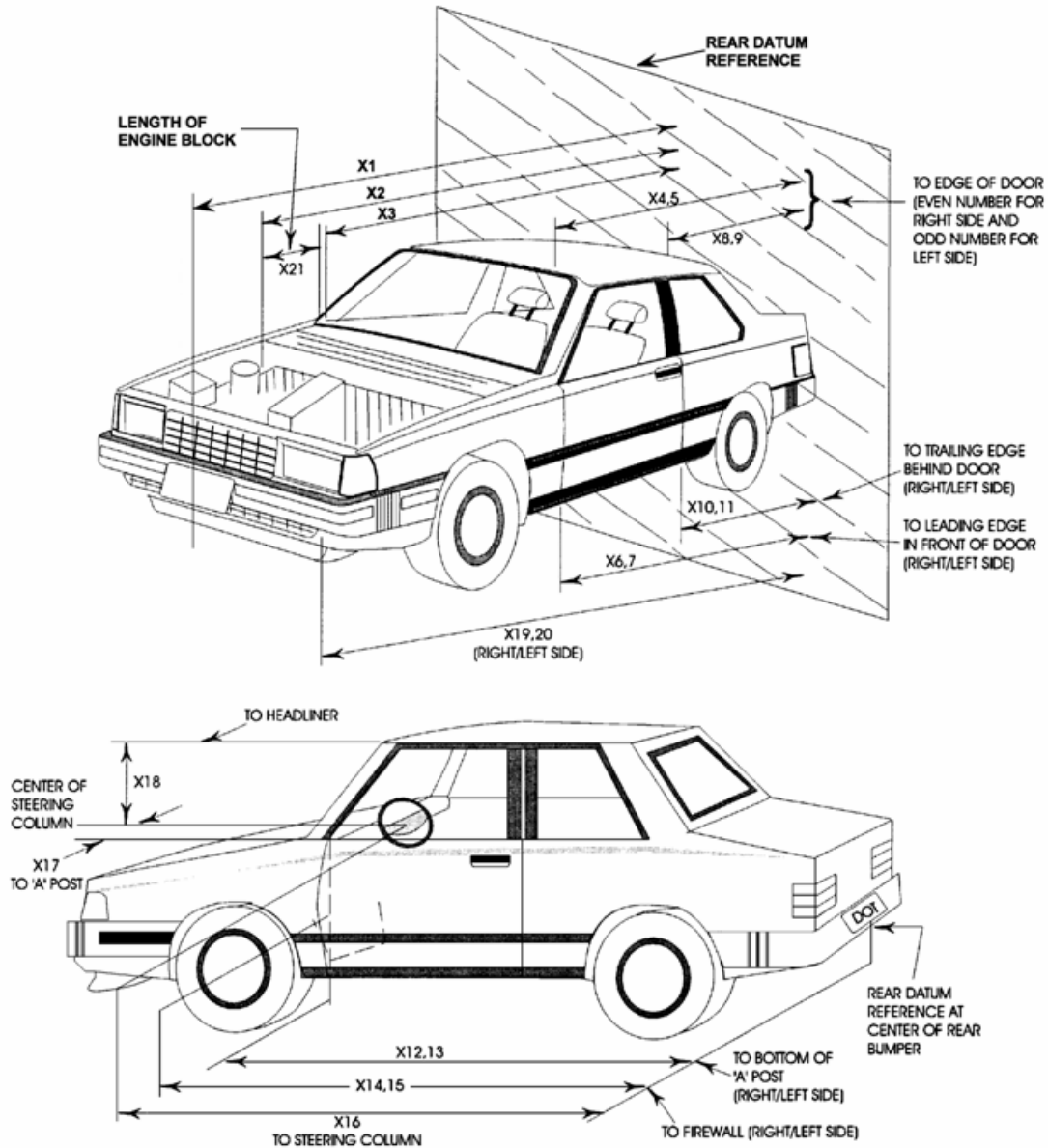
Measured Parameter	Units	Value
Left Side	mm	910
Center	mm	864
Right Side	mm	955
Average	mm	910

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 (Curtain)	Yes	No	Yes	No
Side Airbag 2 (Torso/Pelvis)	Yes	No	Yes	No
Knee Airbag	No		No	
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

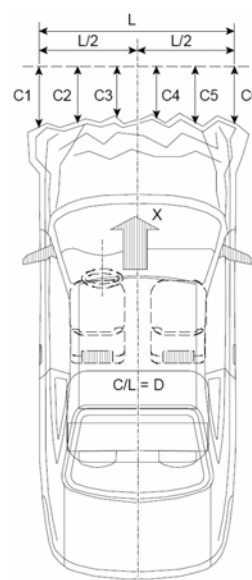


DATA SHEET NO. 12 ... (CONTINUED)**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4660	4180	-480
2	Rear Surface of Vehicle to Front of Engine	4163	3900	-263
3	RSOV to Firewall	3405	3630	225
4	RSOV to Upper Leading Edge of Right Door	3195	3195	0
5	RSOV to Upper Leading Edge of Left Door	3190	3195	5
6	RSOV to Lower Leading Edge of Right Door	3154	3142	-12
7	RSOV to Lower Leading Edge of Left Door	3153	3143	-10
8	RSOV to Upper Trailing Edge of Right Door	2057	2075	18
9	RSOV to Upper Trailing Edge of Left Door	2061	2080	19
10	RSOV to Lower Trailing Edge of Right Door	2070	2055	-15
11	RSOV to Lower Trailing Edge of Left Door	2063	2058	-5
12	RSOV to Bottom of A-Pillar, Right Side	3130	3138	8
13	RSOV to Bottom of A-Pillar, Left Side	3130	3136	6
14	RSOV to Firewall, Right Side	3386	3530	144
15	RSOV to Firewall, Left Side	3440	3550	110
16	RSOV to Steering Column	2700	2820	120
17	Center of Steering Column to A-Pillar	445	445	0
18	Center of Steering Column to Headliner	460	520	60
19	RSOV to Right Side of Front Bumper	3948	4160	212
20	RSOV to Left Side of Front Bumper	3943	4295	352
21	Length of Engine Block	480	480	0
RD	RSOV to Right Side of Dash Panel	2920	2956	36
CD	RSOV to Center of Dash Panel	2840	2870	30
LD	RSOV to Left Side of Dash Panel	2914	2956	42

All measurements in millimeters.

DATA SHEET NO. 13**ACCIDENT INVESTIGATION DATA**Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPVNHTSA No.: MC5606Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 1/10/12**VEHICLE INFORMATION**VIN: JA4JT3AW9CU001400
Vehicle Size Category: 5-Door MPVWheelbase (mm): 2670
Test Weight (kg): 1850.0**ACCELEROMETER DATA**Accelerometer Locations: Left Rear Crossmember
Cal. Procedure/Interval: Drop Test / 6 months
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 56.23
Velocity Change (km/h): 65.8
Time of Separation (msec): 72.5Linearity: Good**CRUSH PROFILE**Collision Deformation Classification: 12FDEW2
Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1350
Impact Mode: Full Frontal

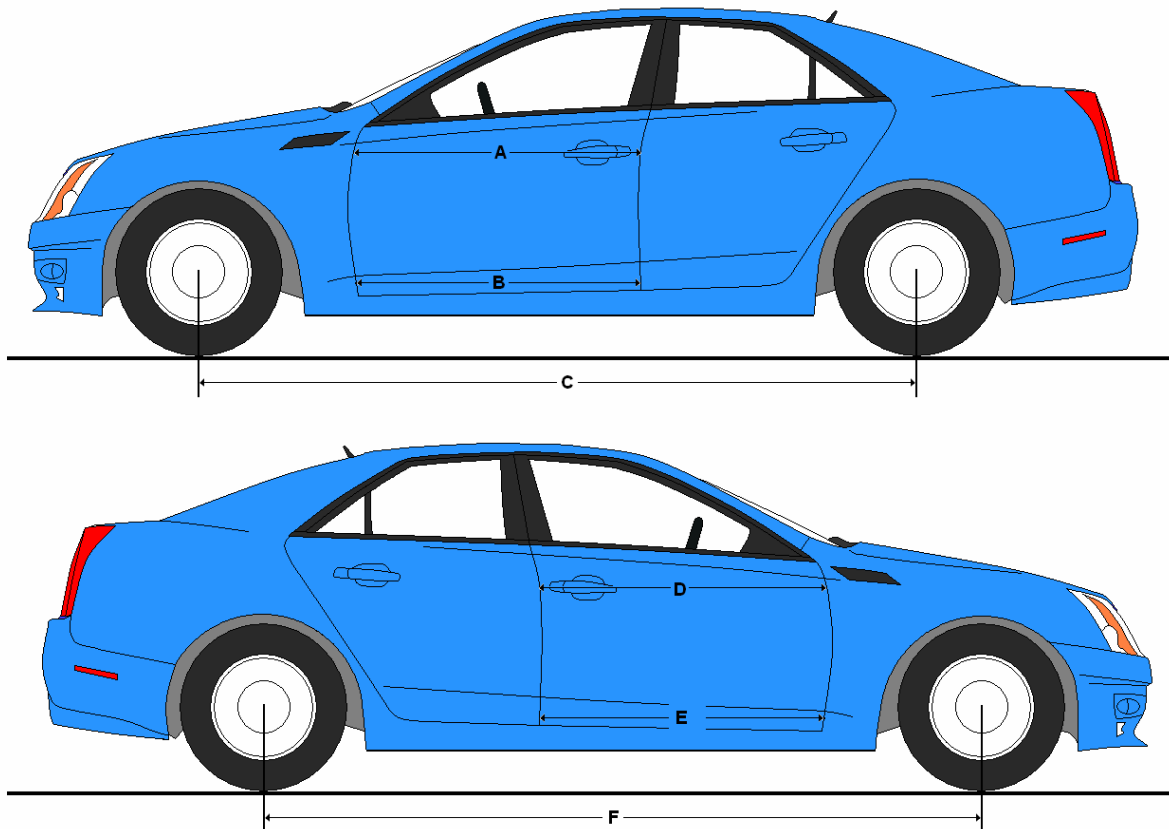
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	215	380	165
C2	Crush Zone 2 at Left Side	mm	60	510	450
C3	Crush Zone 3 at Left Side	mm	3	480	477
C4	Crush Zone 4 at Right Side	mm	3	482	479
C5	Crush Zone 5 at Right Side	mm	60	545	485
C6	Crush Zone 6 at Right Side	mm	215	490	275
L	C1 to C6	mm	1350		

DATA SHEET NO. 14**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPVNHTSA No.: MC5606Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 1/10/12**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1016	1011	5
B	Left Side Lower	mm	976	986	-10
D	Right Side Upper	mm	1007	1009	-2
E	Right Side Lower	mm	961	919	42

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2670	2596	74
F	Right Side Wheelbase	mm	2670	2590	80



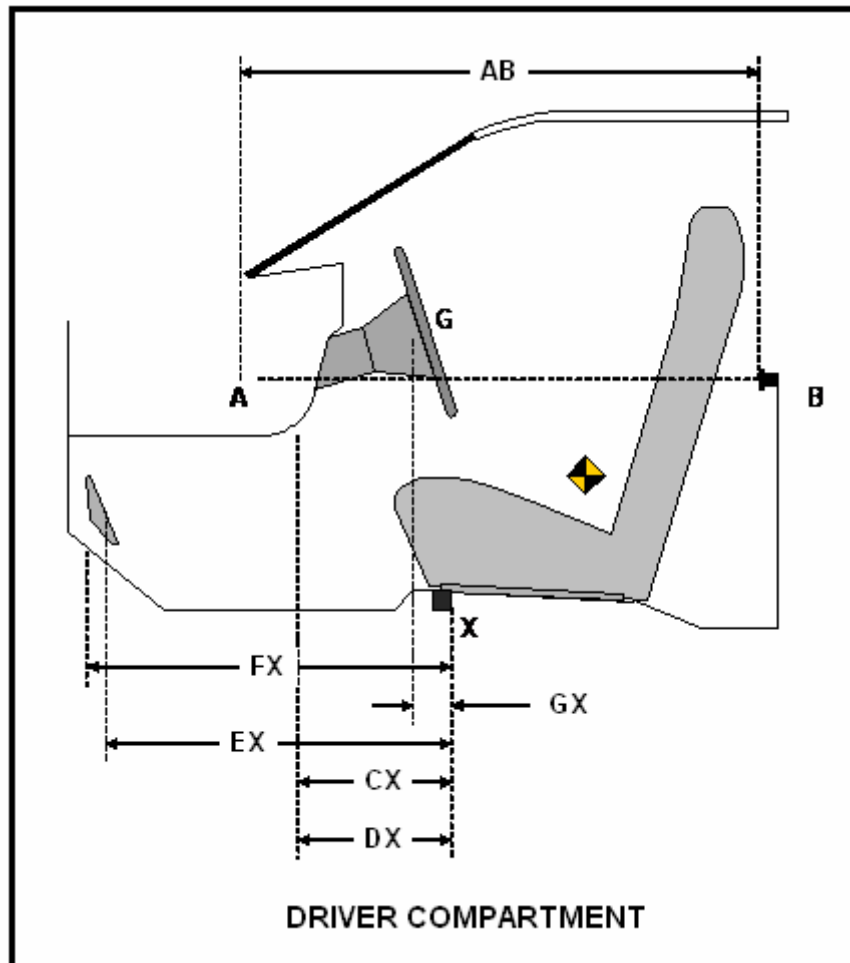
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

DRIVER COMPARTMENT INTRUSION

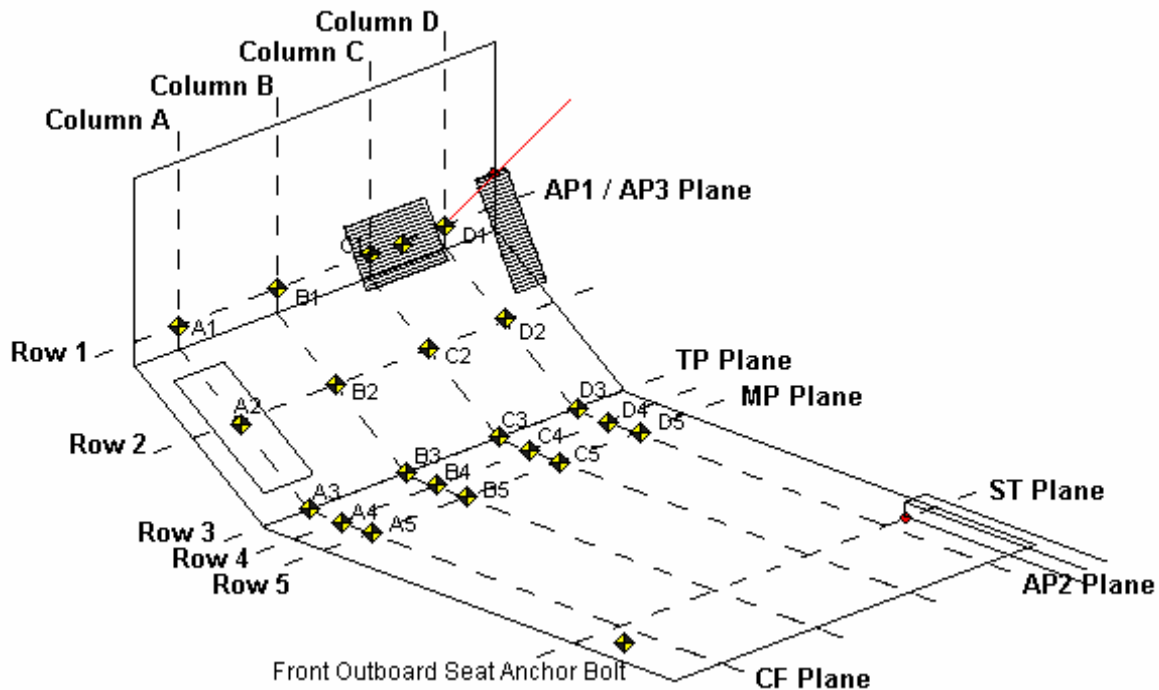
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	894	903	-9
CX	Left Knee Bolster to X	mm	300	280	20
DX	Right Knee Bolster to X	mm	285	260	25
EX	Brake Pedal to X	mm	503	460	43
FX	Foot Rest to X	mm	510	575	-65
GX	Center of Steering Wheel Hub to X	mm	40	92	-52

X = Front of Seat Track (Stationary)



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

Test Vehicle:	<u>2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV</u>	NHTSA No.:	<u>MC5606</u>
Test Program:	<u>56 km/h Frontal Impact NCAP Test</u>	Test Date:	<u>1/10/12</u>



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

MP: Y-Z plane, halfway between the ST plane and AP1 plane

CF Plane: X-Z plane passes through center of footrest.

BP Plane: X-Z plane passes through center of brake pedal

TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

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

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	628	636	639	641	618	627	624	599	10	9	15	42
2	559	551	551	551	563	548	535	521	-4	3	16	30
3	472	463	459	457	475	466	454	441	-3	-3	5	16
4	344	338	339	331	349	343	341	330	-5	-5	-2	1
5	212	211	211	210	216	215	212	213	-4	-4	-1	-3

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-43	-155	-260	-398	-52	-166	-271	-404	9	11	11	6
2	-35	-150	-255	-398	-41	-154	-258	-400	6	4	3	2
3	-32	-145	-257	-397	-31	-142	-254	-392	-1	-3	-3	-5
4	-31	-138	-251	-393	-27	-132	-244	-380	-4	-6	-7	-13
5	-27	-131	-249	-390	-22	-122	-239	-378	-5	-9	-10	-12

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	5	-16	-19	-16	15	-4	-12	2	-10	-12	-7	-18
2	-73	-69	-74	-74	-68	-66	-67	-65	-5	-3	-7	-9
3	-117	-119	-119	-117	-113	-124	-124	-109	-4	5	5	-8
4	-126	-119	-130	-122	-124	-119	-136	-129	-2	0	6	7
5	-136	-119	-132	-125	-134	-122	-139	-138	-2	3	7	13

All measurements in millimeters

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

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	636	648	643	620	625	645	646	618	11	3	-3	2
2	549	554	550	550	544	557	557	559	5	-3	-7	-9
3	466	461	459	458	463	470	469	469	3	-9	-10	-11
4	337	334	334	333	343	342	342	342	-6	-8	-8	-9
5	212	211	211	212	217	223	221	224	-5	-12	-10	-12

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	387	249	145	27	391	250	147	32	-4	-1	-2	-5
2	403	244	137	24	406	245	139	22	-3	-1	-2	2
3	416	244	136	23	415	243	135	22	1	1	1	1
4	398	243	136	24	384	238	134	24	14	5	2	0
5	396	240	133	26	377	240	131	25	19	0	2	1

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-4	-20	-13	10	25	4	6	26	-29	-24	-19	-16
2	-56	-78	-72	-72	-41	-63	-59	-59	-15	-15	-13	-13
3	-84	-122	-122	-117	-80	-115	-113	-107	-4	-7	-9	-10
4	-73	-124	-122	-132	-62	-119	-115	-120	-11	-5	-7	-12
5	-74	-131	-121	-138	-68	-129	-118	-132	-6	-2	-3	-6

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

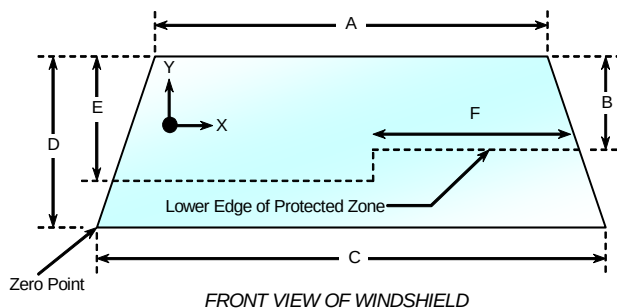
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber molding and rubber cement.

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

Temperature of windshield molding during test: 21.8 ° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2250	2250	100.0%
Right Side	2250	2250	100.0%
Total	4500	4500	100.0%



Item	Units	Value
A	mm	1250
B	mm	470
C	mm	1470
D	mm	890
E	mm	550
F	mm	512

AREAS OF PROTECTED ZONE FAILURES

- A. Provide Coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield.

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.

X	Y

DATA SHEET NO. 15 ... (CONTINUED)

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV NHTSA No.: MC5606
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 1/10/12

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 18.3° C Test Time: 1:40 PM

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: There was no Stoddard solvent spillage.

DATA SHEET NO. 16

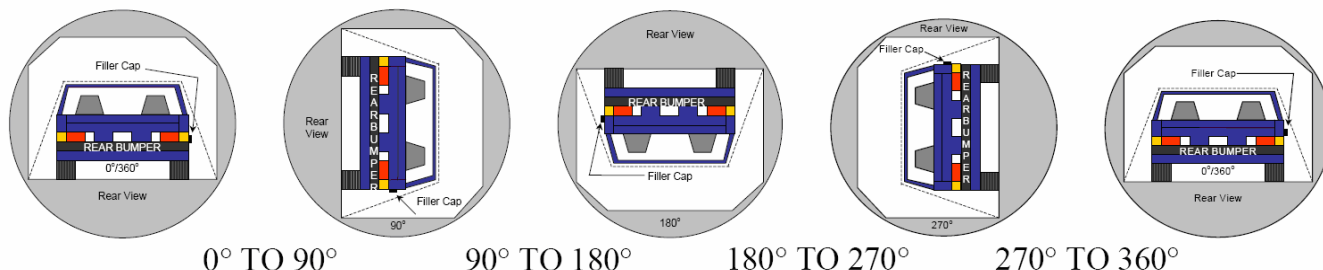
FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV

NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 1/10/12



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: There was no Stoddard solvent spillage.

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	81	300	381
180° To 270°	80	300	380
270° To 360°	81	300	381

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° To 90°	0			
90° To 180°	0			
180° To 270°	0			
270° To 360°	0			

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17

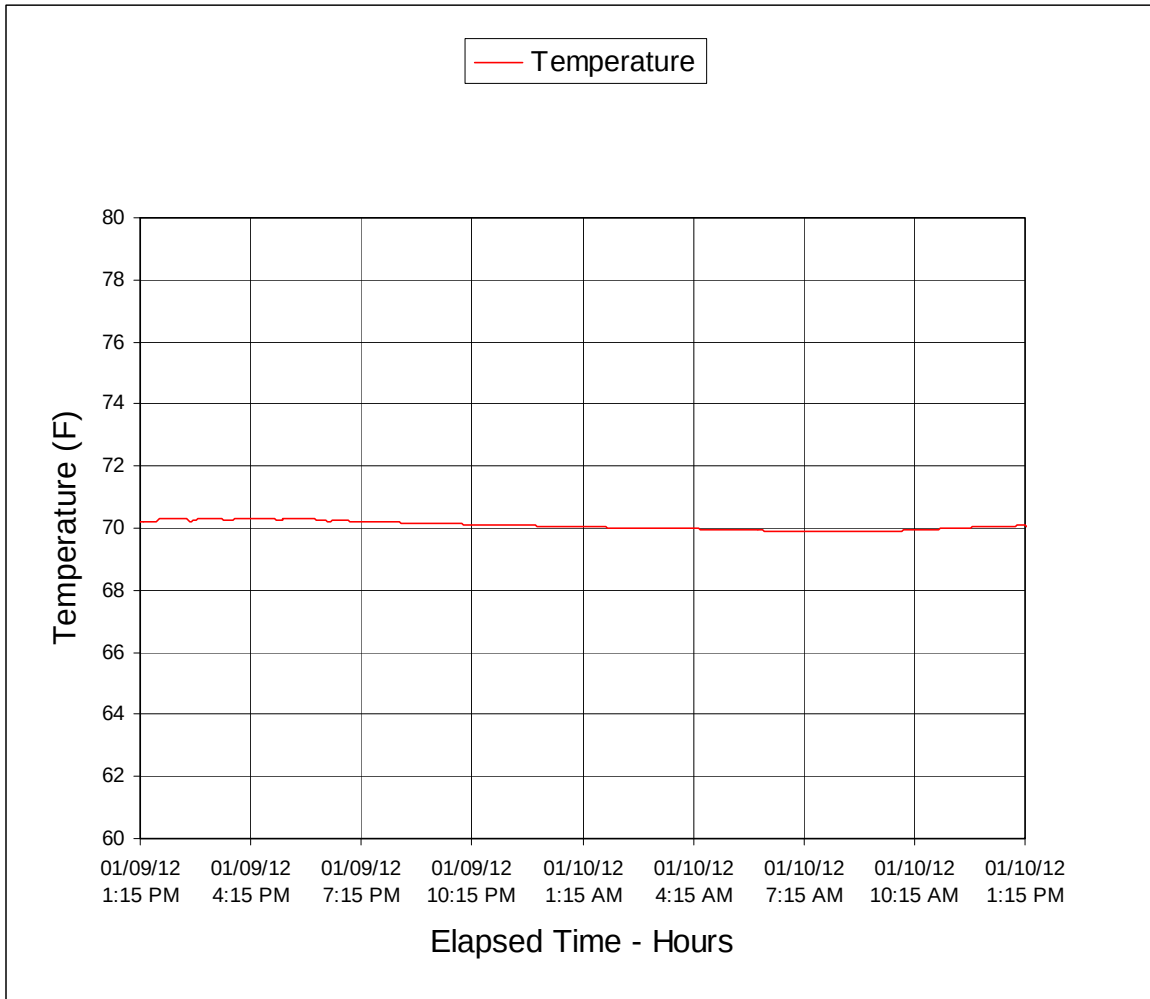
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2012 Mitsubishi Outlander 2.4 SE 4x4 5-Door MPV

NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 1/10/12



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5.2012 Mitsubishi Outlander Right Front $\frac{3}{4}$ View, As Delivered



FIGURE 6. Left Rear $\frac{3}{4}$ View, As Received

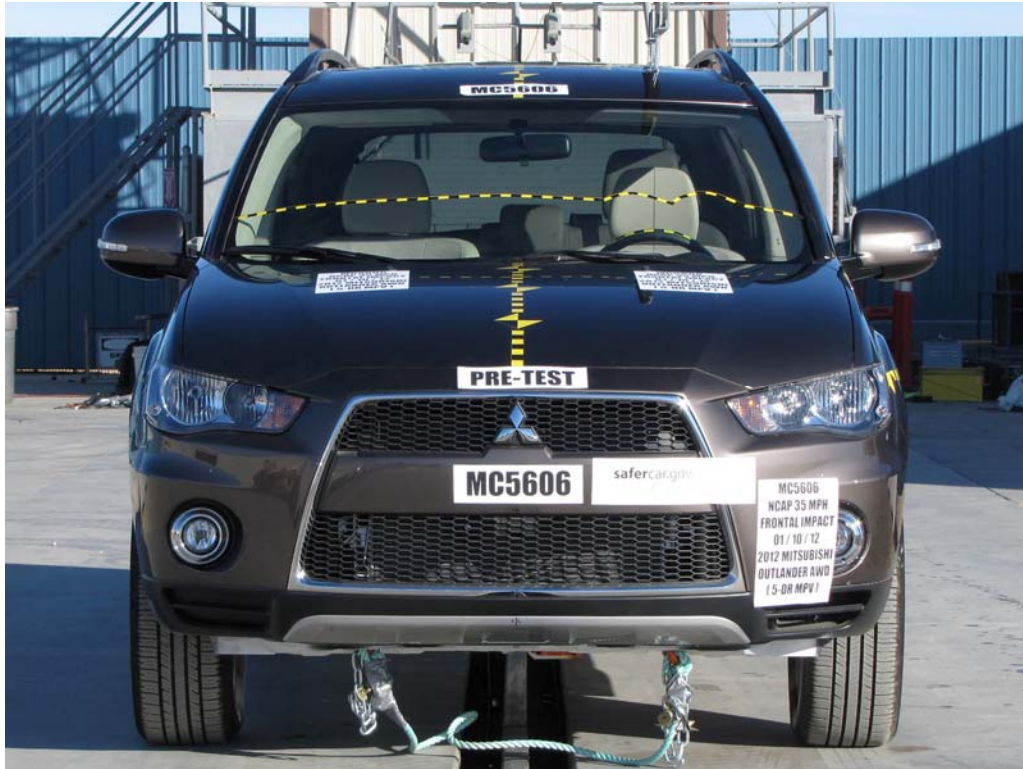


FIGURE 7. Pre-Test Front View of Test Vehicle



FIGURE 8. Post-Test Front View of Test Vehicle



FIGURE 9. Pre-Test Left View of Test Vehicle

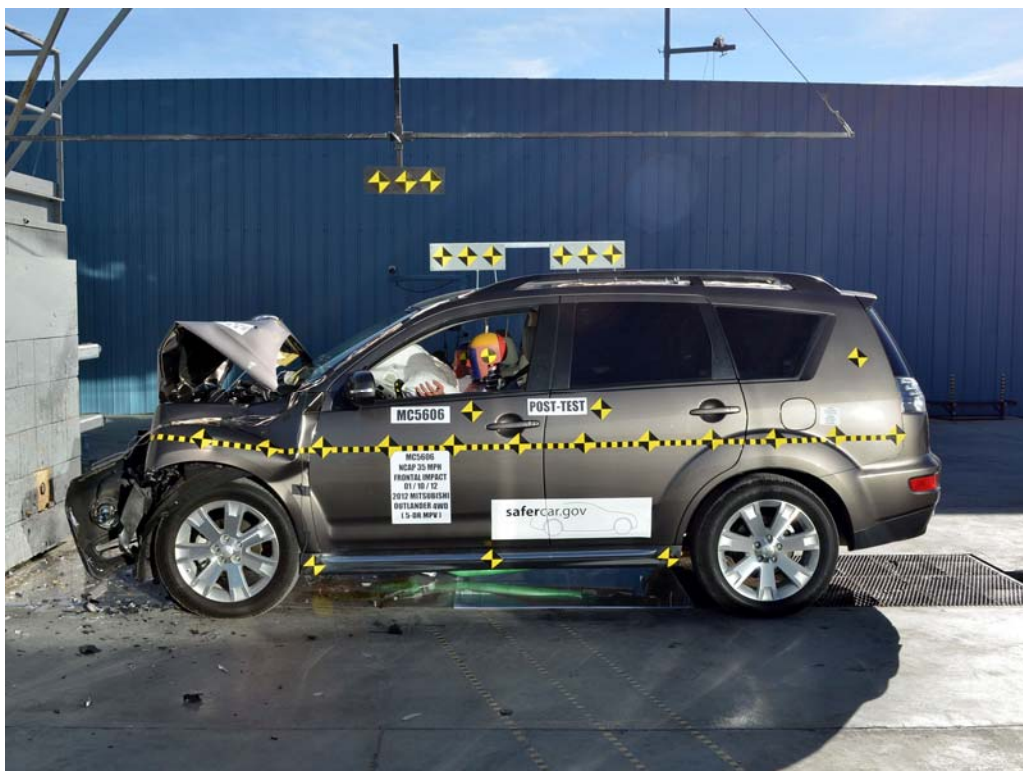


FIGURE 10. Post-Test Left View of Test Vehicle



FIGURE 11. Pre-Test Right View of Test Vehicle



FIGURE 12. Post-Test Right View of Test Vehicle



FIGURE 13. Pre-Test Right Front $\frac{3}{4}$ View

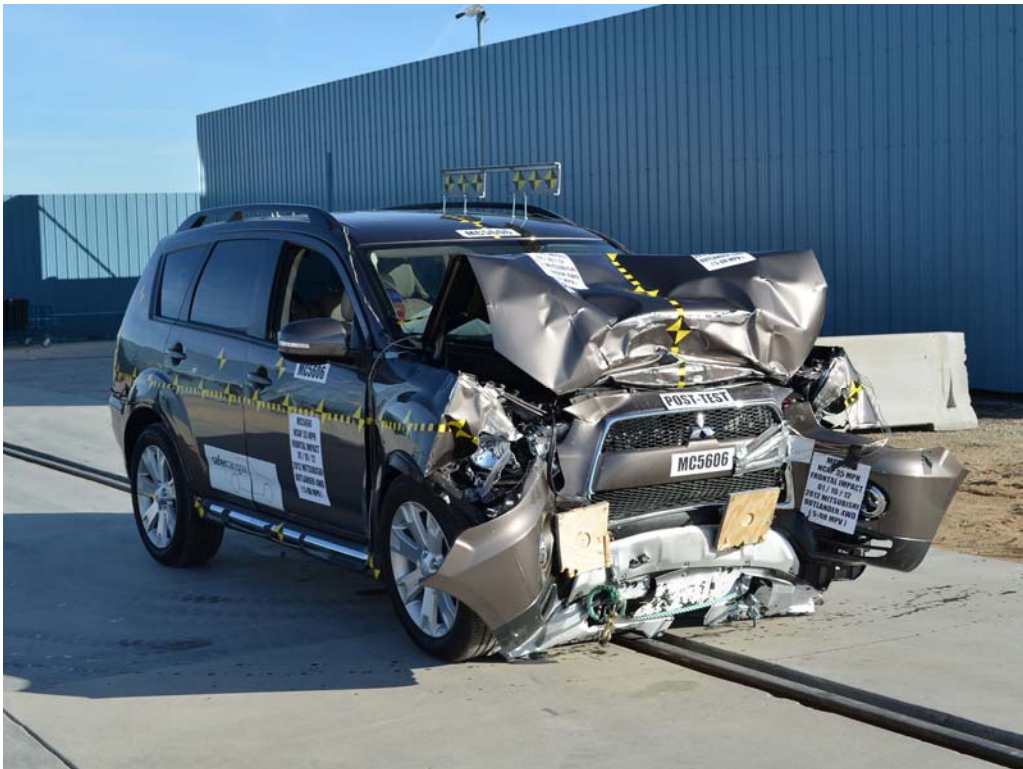


FIGURE 14. Post-Test Right Front $\frac{3}{4}$ View



FIGURE 15. Pre-Test Left Rear $\frac{3}{4}$ View



FIGURE 16. Post-Test Left Rear $\frac{3}{4}$ View

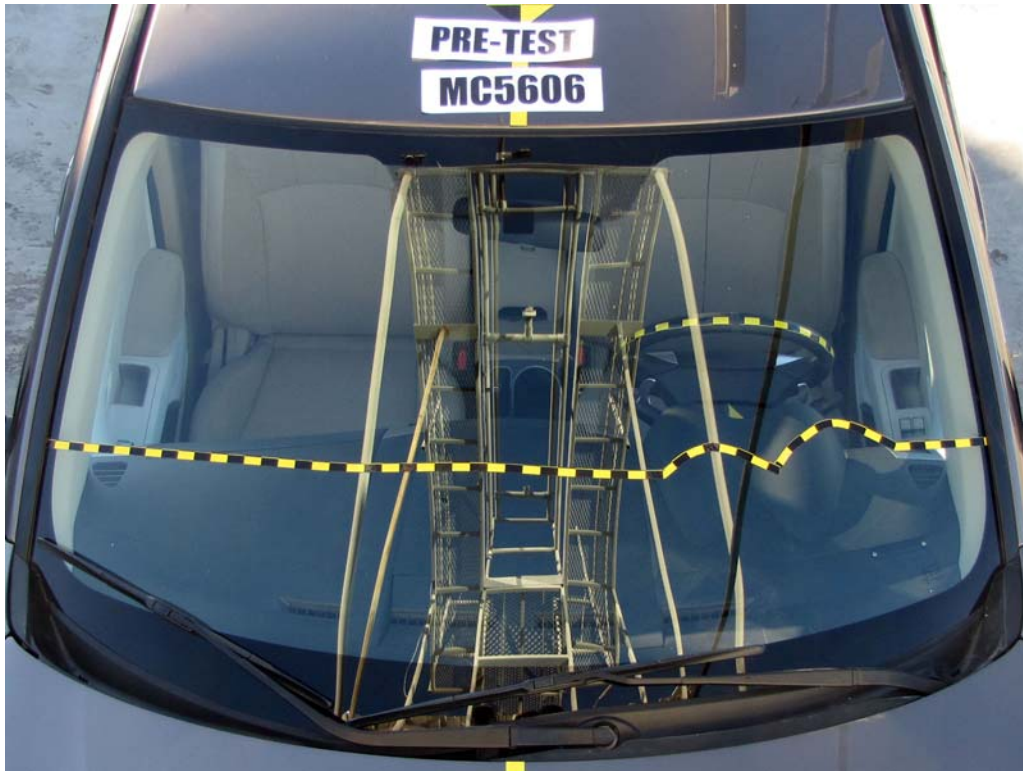


FIGURE 17. Pre-Test Windshield View



FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View



FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

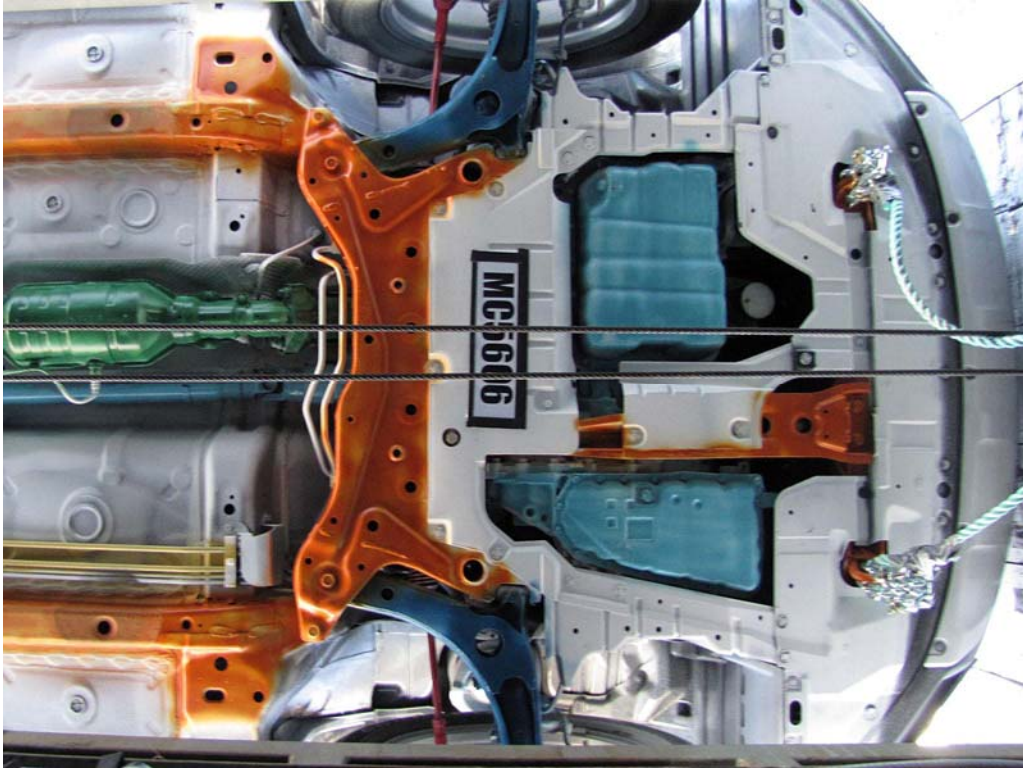


FIGURE 23. Pre-Test Front Underbody View



FIGURE 24. Post-Test Front Underbody View

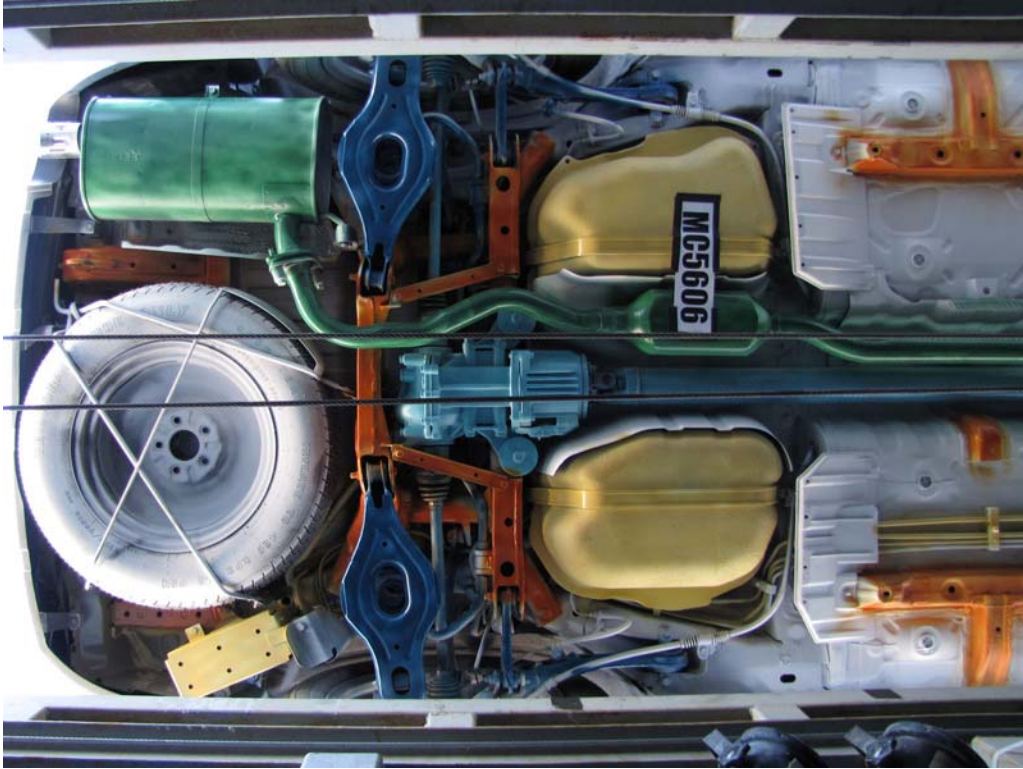


FIGURE 25. Pre-Test Rear Underbody View

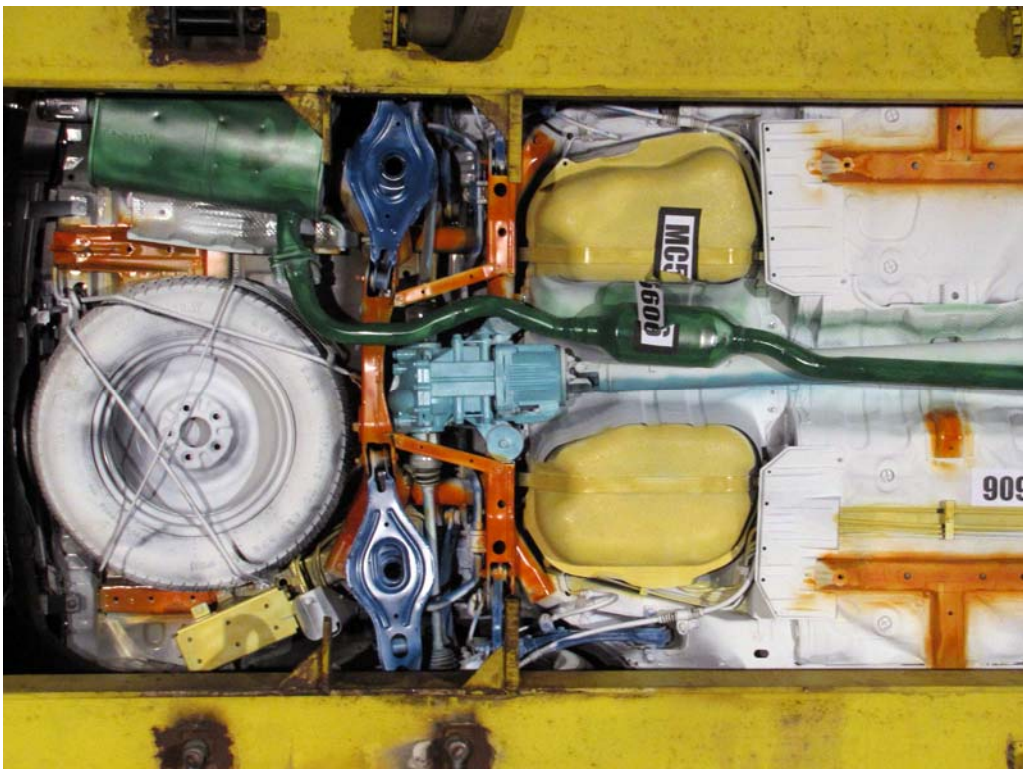


FIGURE 26. Post-Test Rear Underbody View



FIGURE 27. Pre-Test Dummy Cable Routing



FIGURE 28. Post-Test Dummy Cable Routing



FIGURE 29. Pre-Test Driver Dummy Front View



FIGURE 30. Post-Test Driver Dummy Front View



FIGURE 31. Pre-Test Driver Dummy Window View



FIGURE 32. Post-Test Driver Dummy Window View



FIGURE 33. Pre-Test Driver Dummy and Vehicle Interior View



FIGURE 34. Post-Test Driver Dummy and Vehicle Interior View



FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings

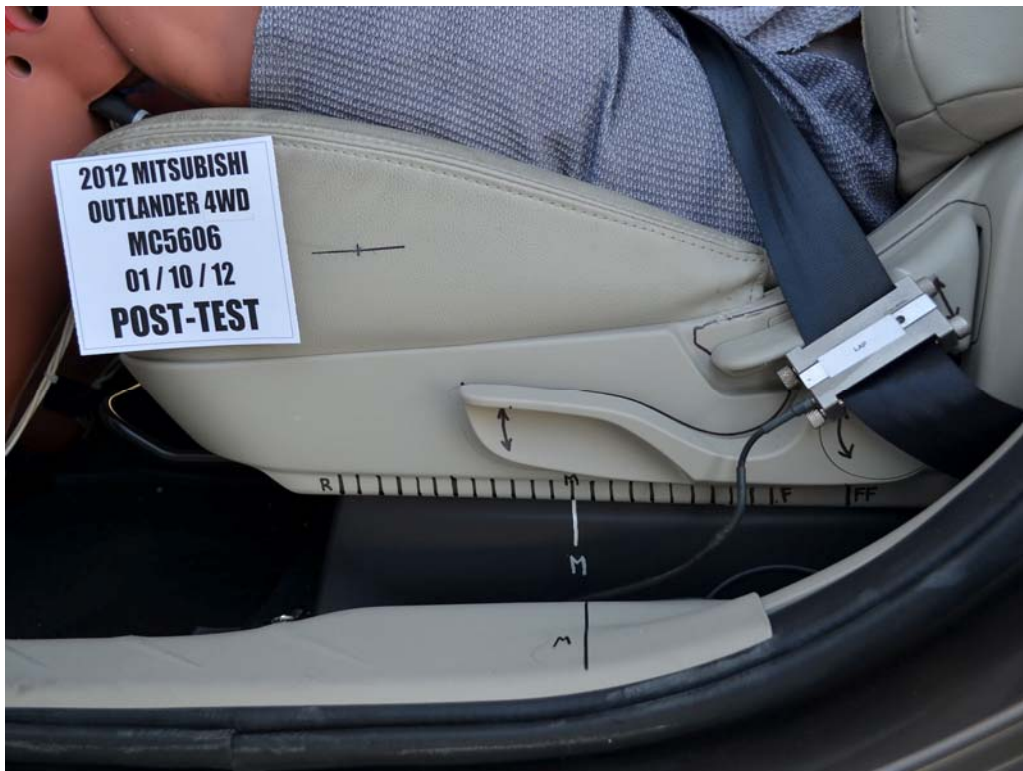


FIGURE 36. Post-Test Driver's Seat Fore-Aft Markings



FIGURE 37. Pre-Test Driver Dummy Feet



FIGURE 38. Post-Test Driver Dummy Feet



FIGURE 39. Pre-Test Driver's Side Knee Bolster



FIGURE 40. Post-Test Driver's Side Knee Bolster



FIGURE 41. Pre-Test Driver's Side Floorpan



FIGURE 42. Post-Test Driver's Side Floorpan



FIGURE 43. Post-Test Driver Dummy Face

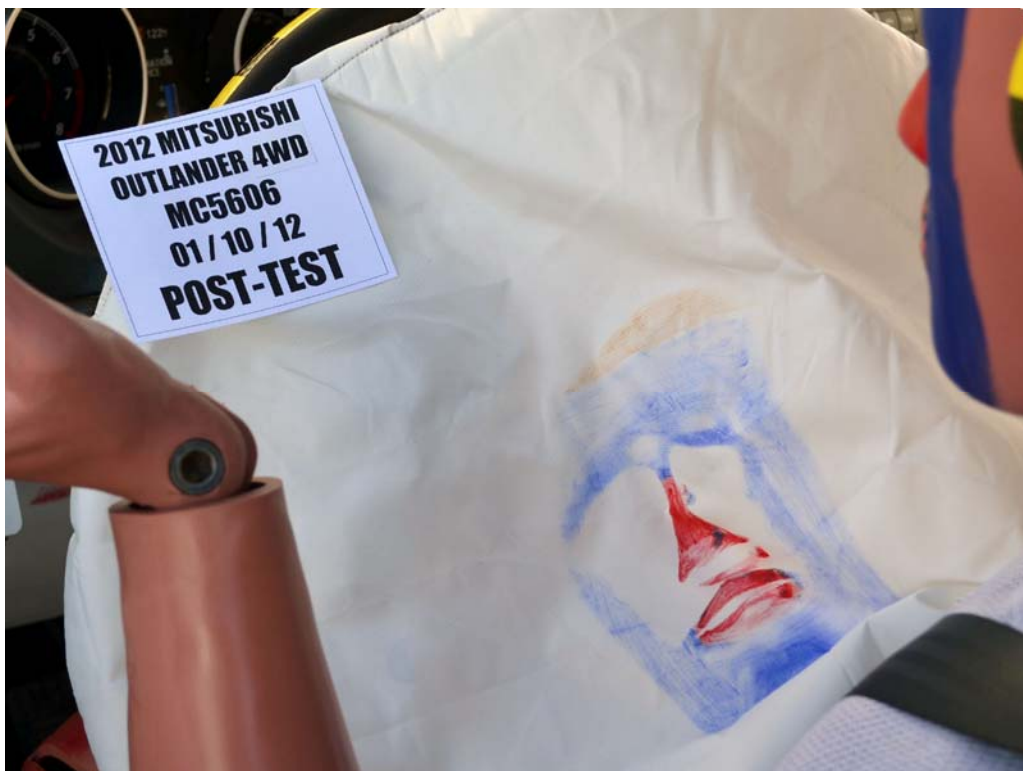


FIGURE 44. Post-Test Driver Dummy Contact With Airbag



FIGURE 45. Post-Test Driver Dummy Contact With Headrest



FIGURE 45a. Post-Test Driver Dummy Contact With Knee Bolster



FIGURE 45b. Post-Test Driver Dummy Contact With Steering Column



FIGURE 46. Pre-Test View Of Steering Wheel



FIGURE 47. Post-Test View Of Steering Wheel



FIGURE 48. Pre-Test Passenger Dummy Front View



FIGURE 49. Post-Test Passenger Dummy Front View



FIGURE 50. Pre-Test Passenger Dummy Window View



FIGURE 51. Post-Test Passenger Dummy Window View



FIGURE 52. Pre-Test Passenger Dummy and Vehicle Interior View



FIGURE 53. Post-Test Passenger Dummy and Vehicle Interior View

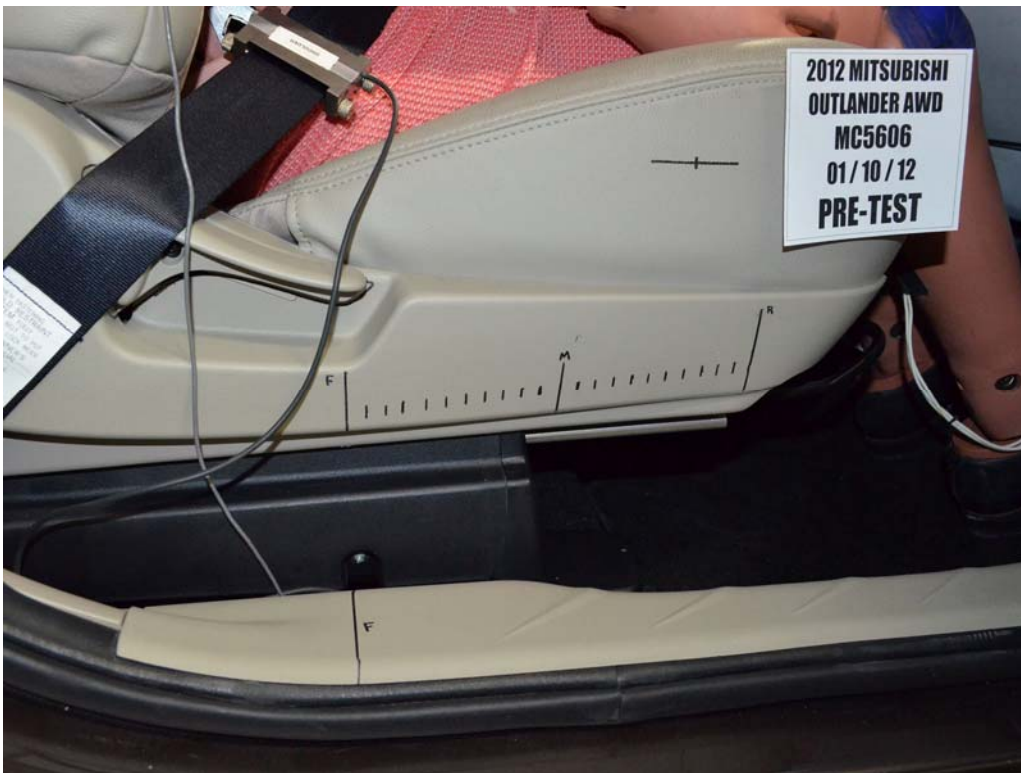


FIGURE 54. Pre-Test Passenger's Seat Fore-Aft Markings



FIGURE 55. Post-Test Passenger's Seat Fore-Aft Markings

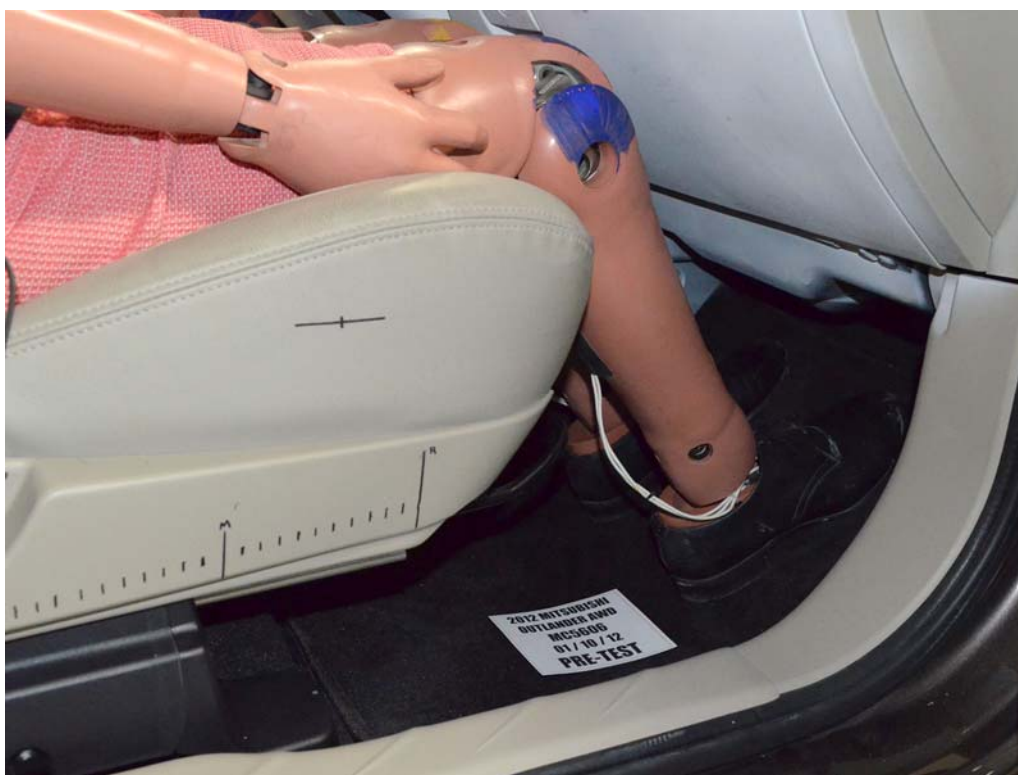


FIGURE 56. Pre-Test Passenger Dummy Feet



FIGURE 57. Post-Test Passenger Dummy Feet



FIGURE 58. Pre-Test Passenger's Side Knee Bolster



FIGURE 59. Post-Test Passenger's Side Knee Bolster



FIGURE 60. Pre-Test Passenger's Side Floorpan



FIGURE 61. Post-Test Passenger's Side Floorpan

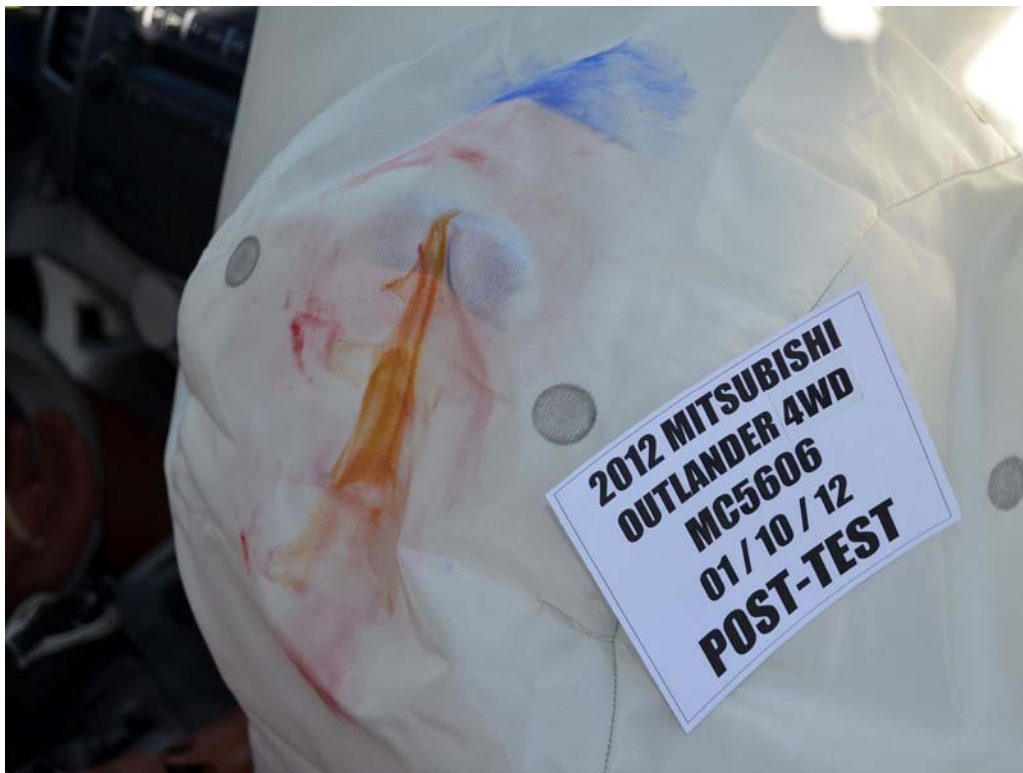


FIGURE 62. Post-Test Passenger Dummy Contact With Airbag



FIGURE 62a. Post-Test Passenger Dummy Contact With Headrest



FIGURE 62b. Post-Test Passenger Dummy Contact Glovebox



FIGURE 63. Pre-Test of Ballast Installed in Vehicle

Photograph Not Applicable
No Stoddard
Solvent Spillage

FIGURE 64. Post-Test Stoddard Solvent Spillage Location



FIGURE 65. Post-Test Speed Trap Read Out

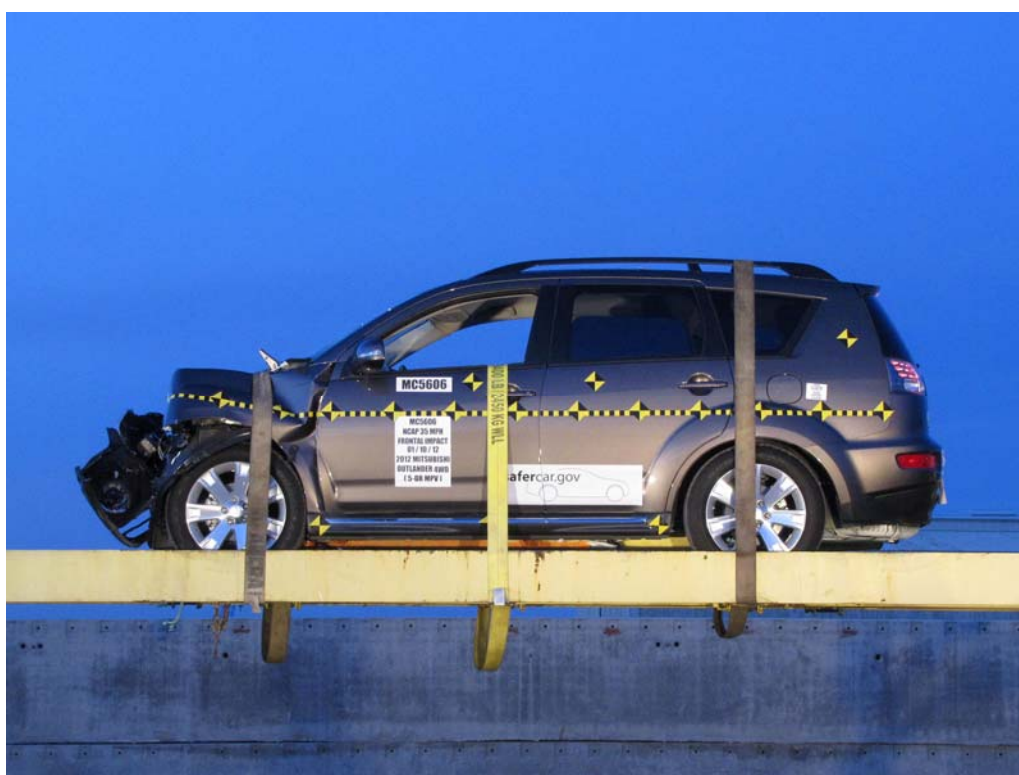


FIGURE 66. Vehicle at 0° on Static Rollover Device

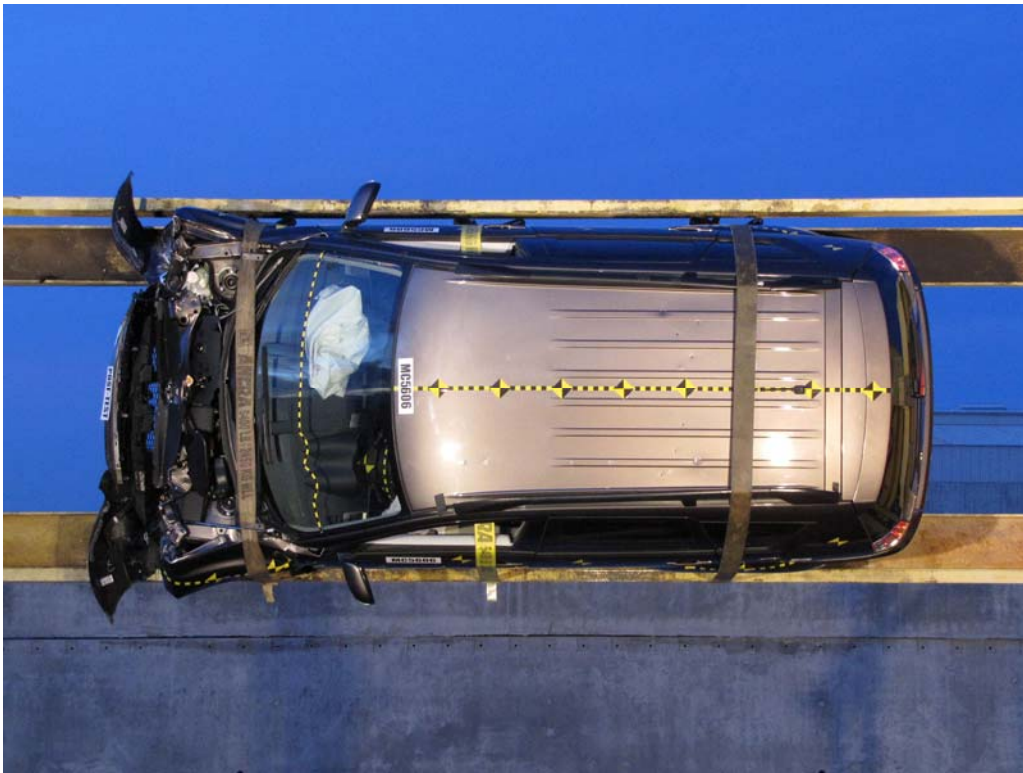


FIGURE 67. Vehicle at 90°on Static Rollover Device

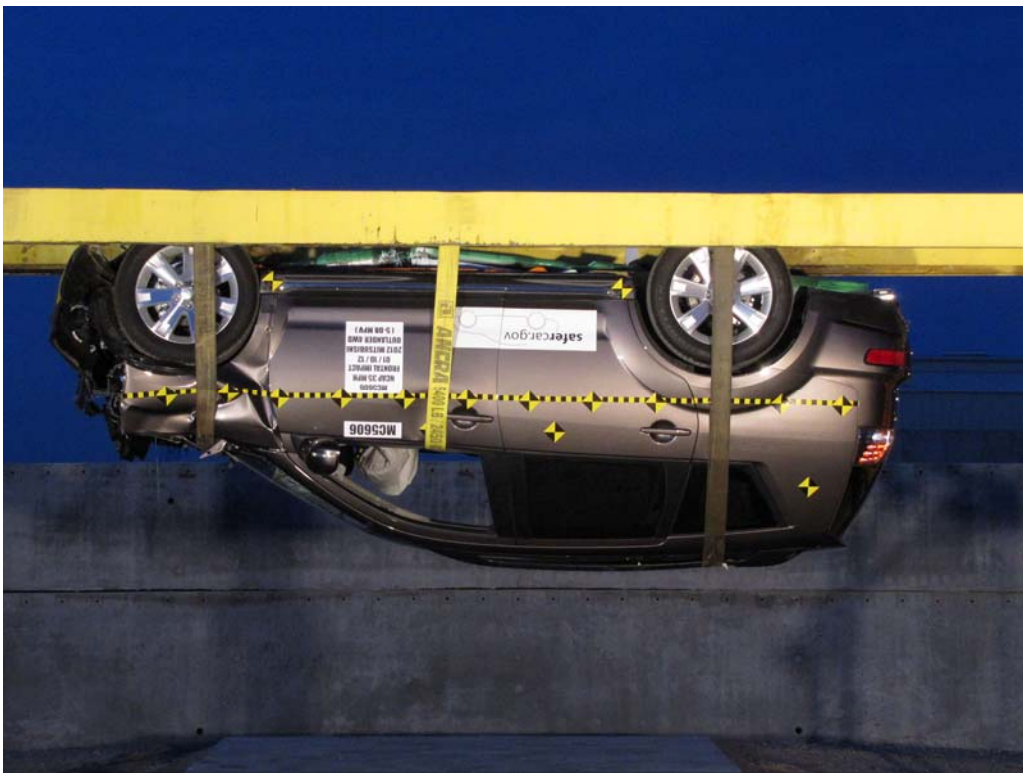


FIGURE 68. Vehicle at 180°on Static Rollover Device



FIGURE 71. 2012 Mitsubishi Outlander Frontal Impact Event

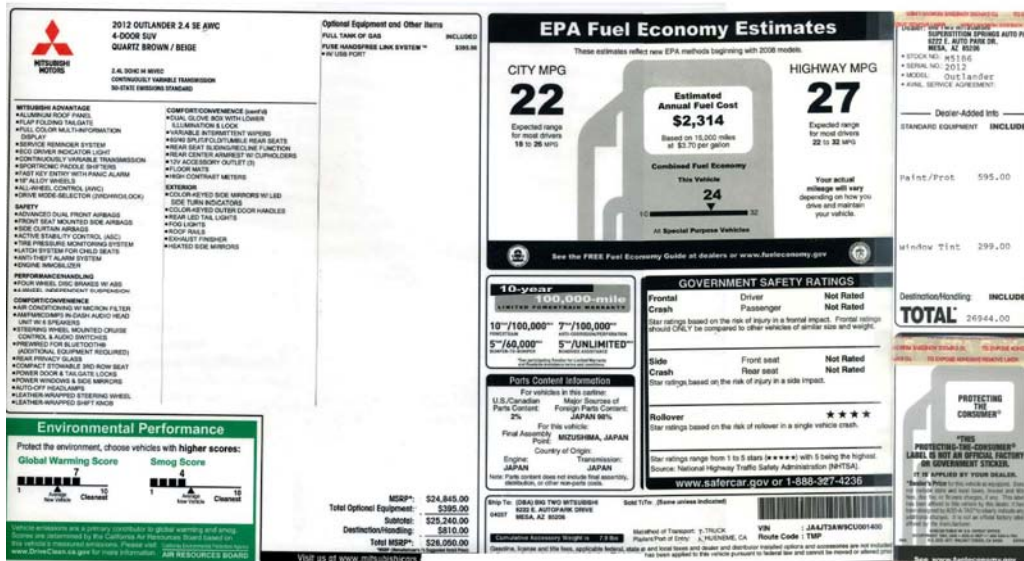


FIGURE 72. Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

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5	Driver Chest X Deflection vs. Time	B-2
6	Driver Chest X Acceleration vs. Time Primary	B-3
7	Driver Chest Y Acceleration vs. Time Primary	B-3
8	Driver Chest Z Acceleration vs. Time Primary	B-3
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12	Driver Upper Neck Moment Y vs. Time Primary	B-4
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29	Passenger Left Femur Force vs. Time	B-10
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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

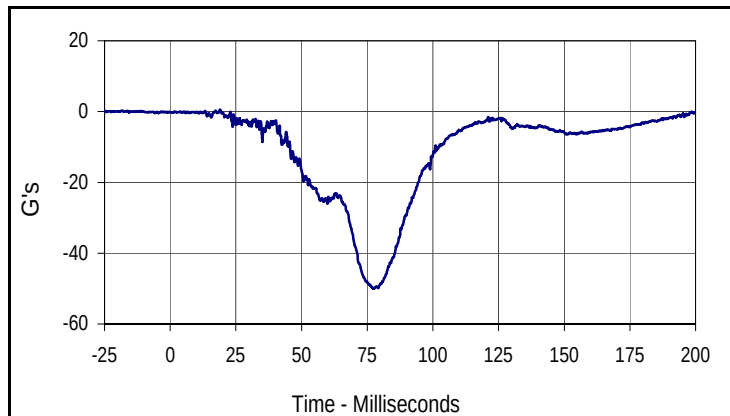
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Left Femur Force Z Redundant
Driver Right Femur Force Z Redundant
Driver Shoulder Belt Force
Driver Lap Belt Force
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
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Force Z Redundant
Passenger Right Femur Force Z Redundant
Passenger Shoulder Belt Force
Passenger Lap Belt Force
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
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Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Left Rear Seat Crossmember X

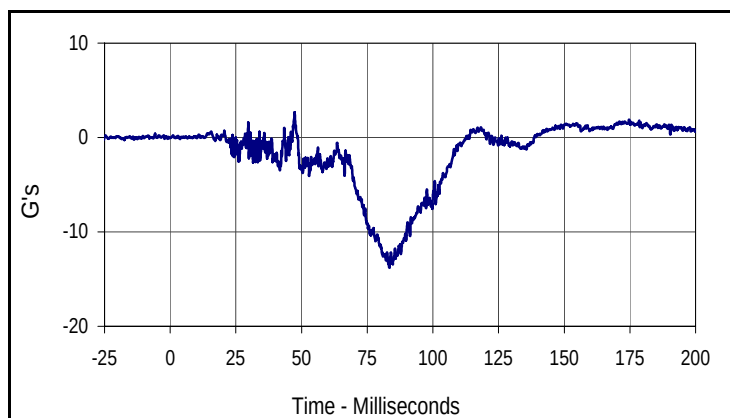
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-B9
Load Cell Barrier C1-C9
Load Cell Barrier D1-D9

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

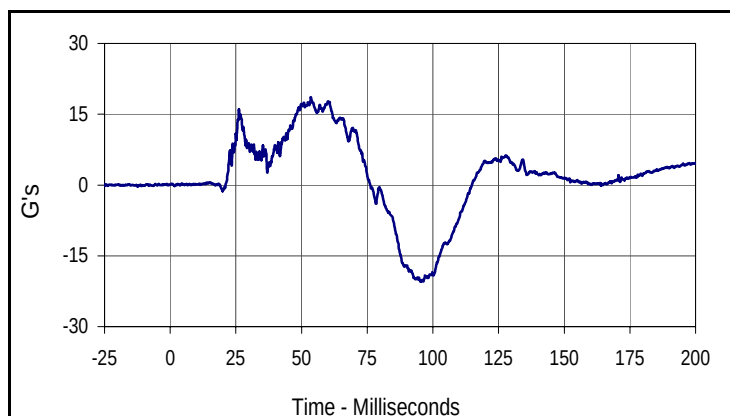
NHTSA No.: MC5606
 Test Date: 1/10/12



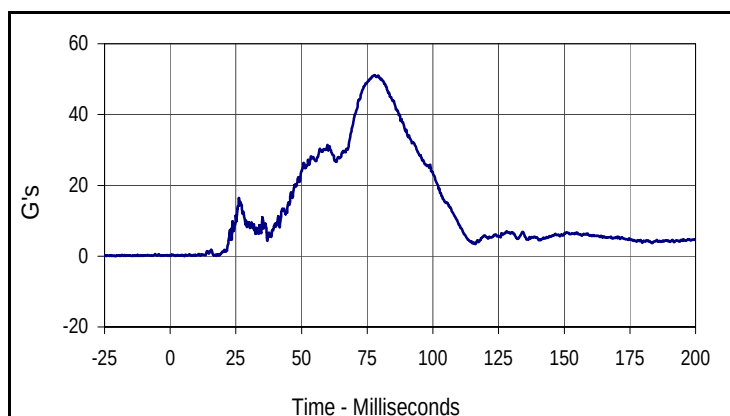
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001	FIL	1000	G's
Max	Time	Min	Time
0.5	19.0	-50.0	77.4



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.7	47.4	-13.8	83.4



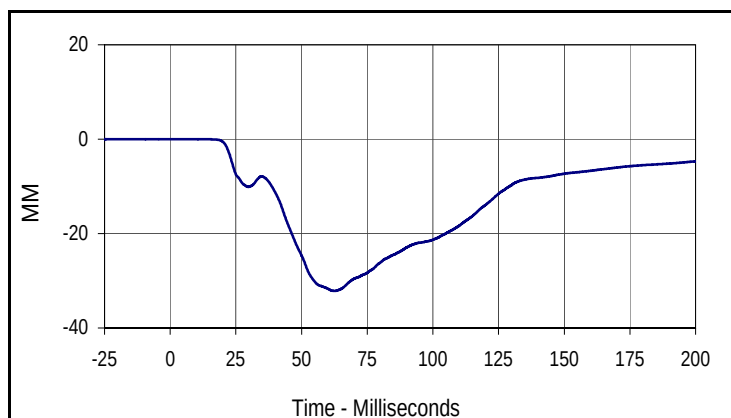
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Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
18.6	53.6	-20.5	95.4



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
51.1	77.8	0.0	5.4

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

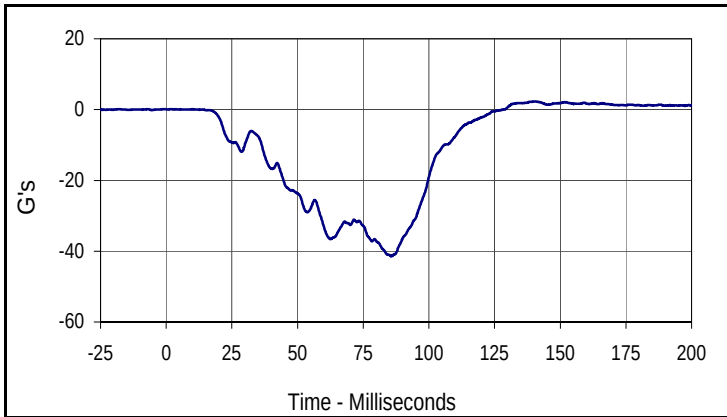
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 Test Date: 1/10/12



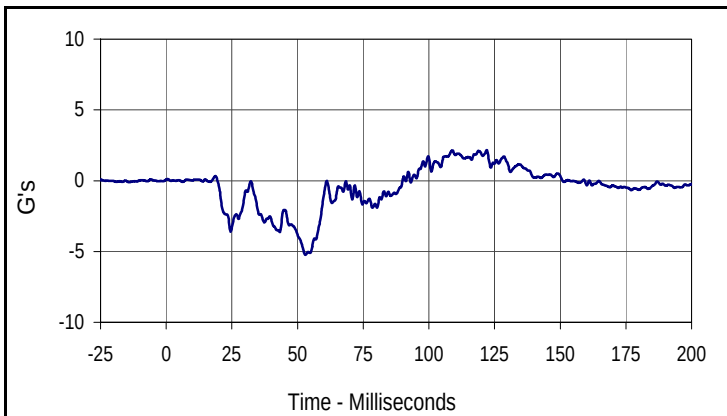
Curve Description			
Driver Chest Deflection			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
0.0	5.3	-32.1	62.5

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

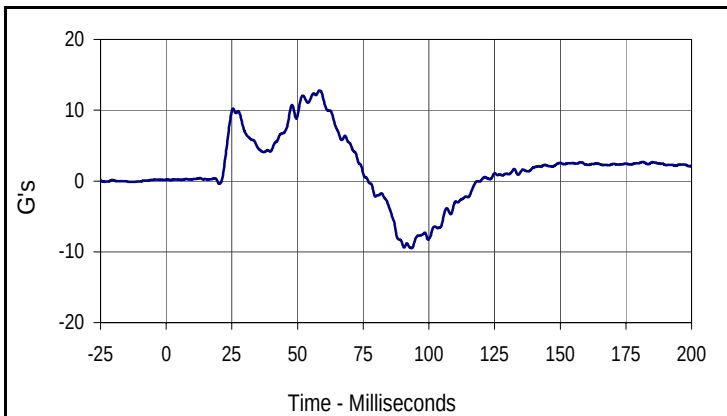
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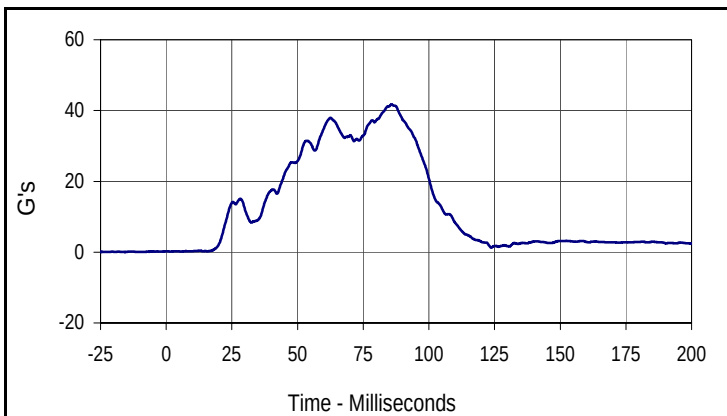
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Driver Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
2.3	140.4	-41.4	85.7



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
2.2	122.0	-5.2	53.0



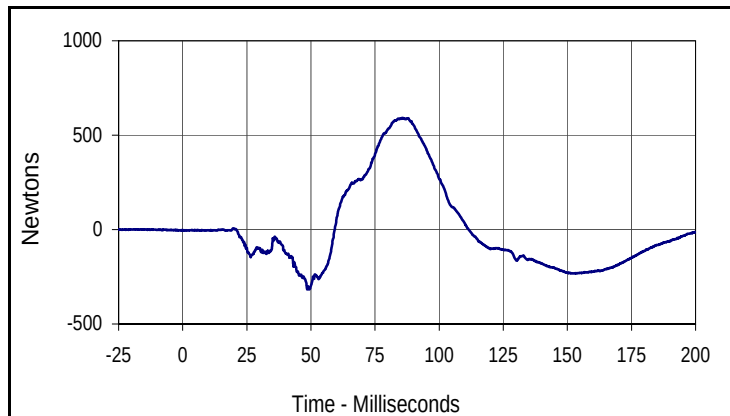
Curve Description			
Driver Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
008	FIL	180	G's
Max	Time	Min	Time
12.8	58.5	-9.5	93.3



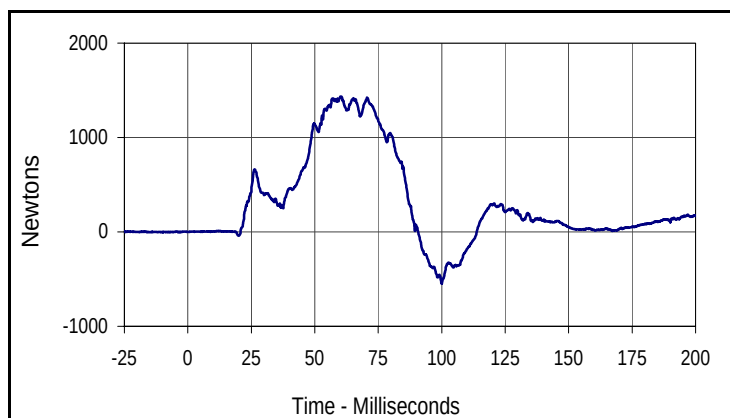
Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
009	RES	180	G's
Max	Time	Min	Time
41.7	85.7	0.2	1.7

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

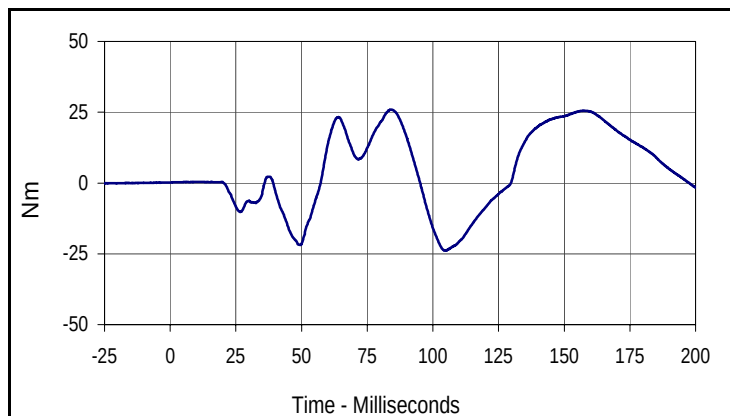
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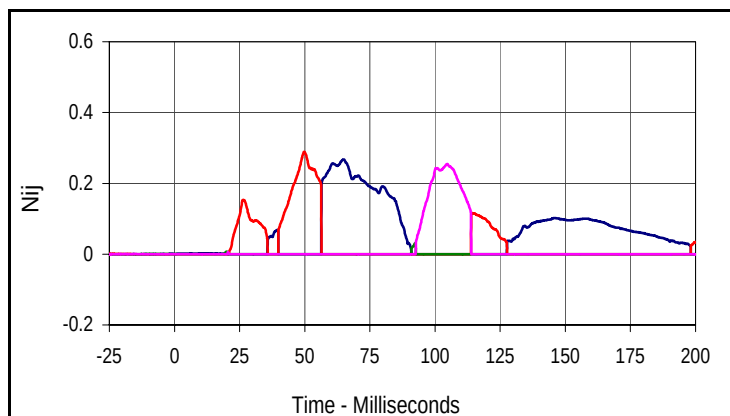
Curve Description			
Driver Upper Neck Force X			
Plot No.	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
591.4	85.5	-317.1	49.3



Curve Description			
Driver Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
1434.5	60.2	-550.1	100.0



Curve Description			
Driver Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
25.9	84.0	-23.9	104.8



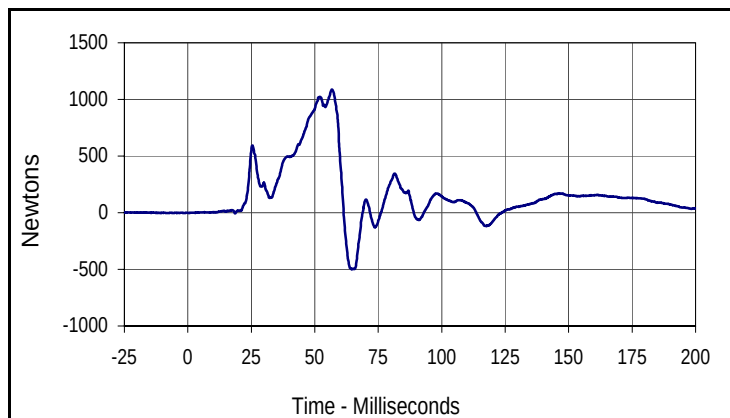
Curve Description			
Driver Nij			
Units	Type	Max	Time
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Units	Type	Max	Time
Nte	FIL	0.29	49.8
Units	Type	Max	Time
Ncf	FIL	0.03	92.5
Units	Type	Max	Time
Nce	FIL	0.25	104.7

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV

NHTSA No.: MC5606

Test Program: 56 km/h Frontal Impact NCAP Test

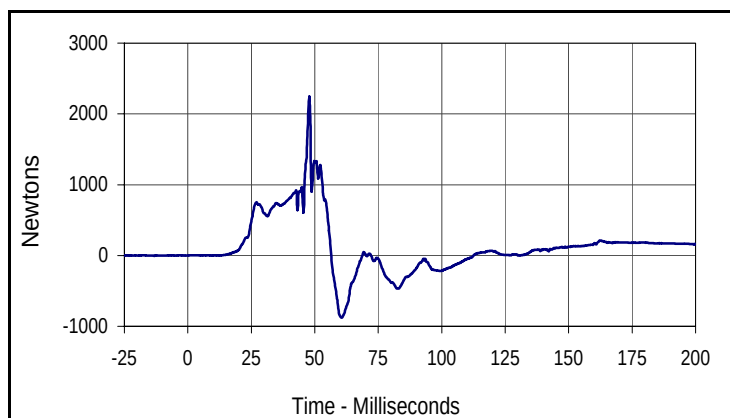
Test Date: 1/10/12



Curve Description

Driver Left Femur Force Z

Plot No.	Type	SAE Class	Units
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Max	Time	Min	Time
1087.1	56.8	-498.8	64.6



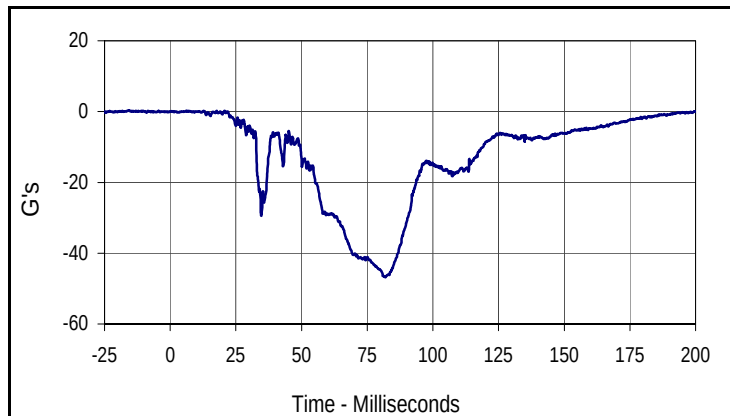
Curve Description

Driver Right Femur Force Z

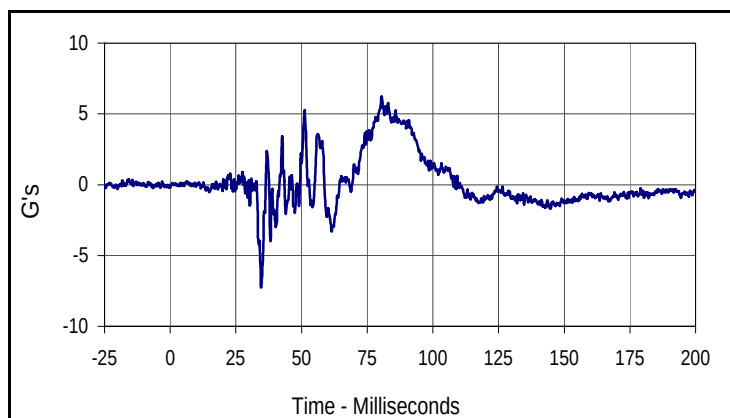
Plot No.	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
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Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

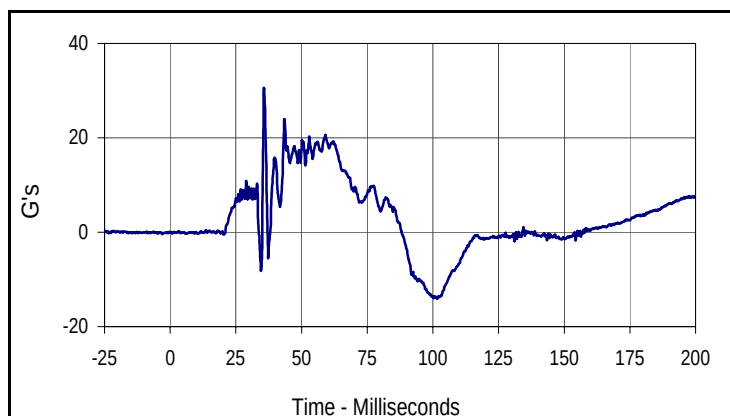
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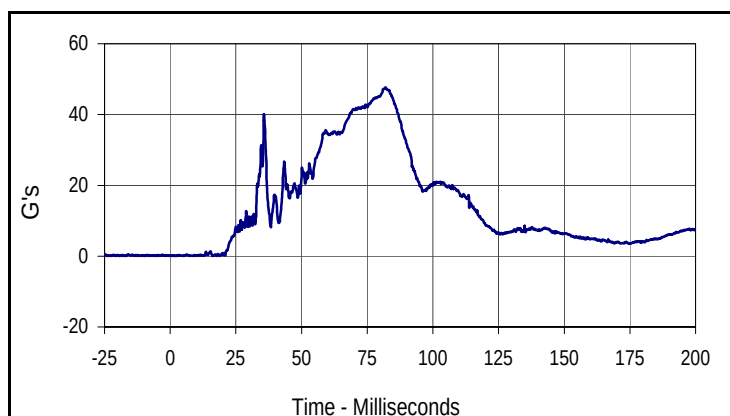
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Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
0.2	20.6	-46.8	81.8



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
6.2	80.5	-7.3	34.6



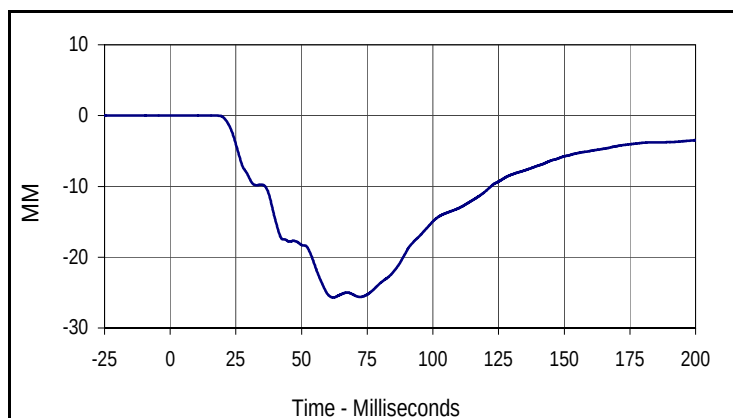
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
017	FIL	1000	G's
Max	Time	Min	Time
30.6	35.7	-14.0	101.8



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
018	RES	1000	G's
Max	Time	Min	Time
47.7	81.9	0.0	5.4

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

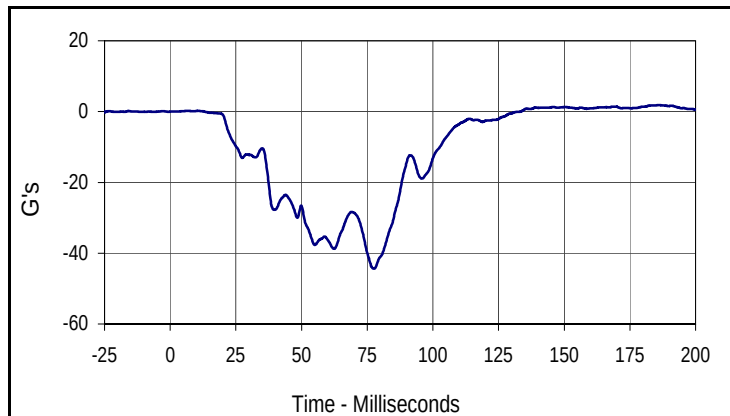
NHTSA No.: MC5606
 Test Date: 1/10/12



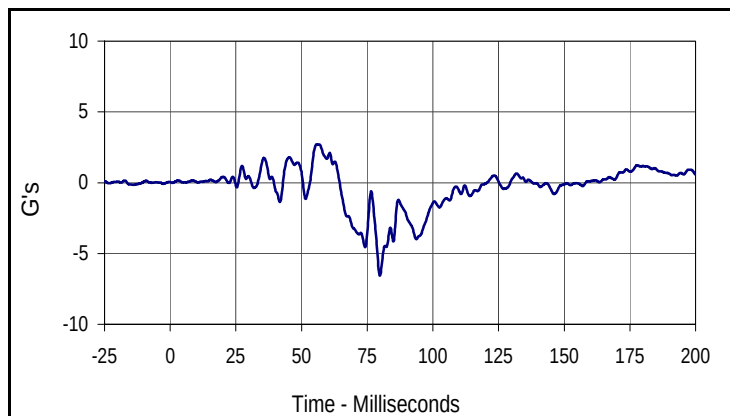
Curve Description			
Passenger Chest Deflection			
Plot No.	Type	SAE Class	Units
019	FIL	180	MM
Max	Time	Min	Time
0.0	13.3	-25.7	62.0

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

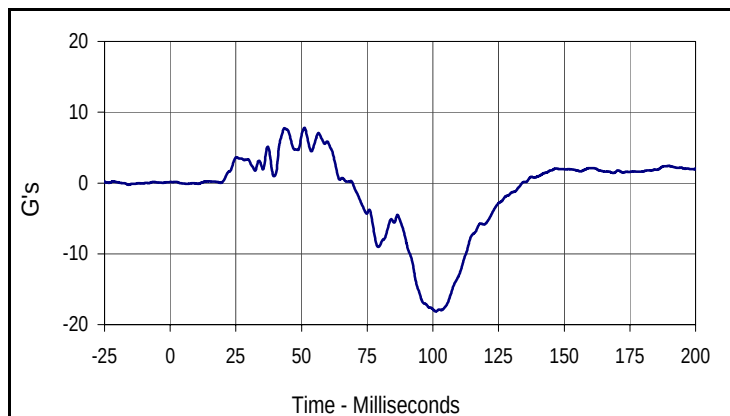
NHTSA No.: MC5606
 Test Date: 1/10/12



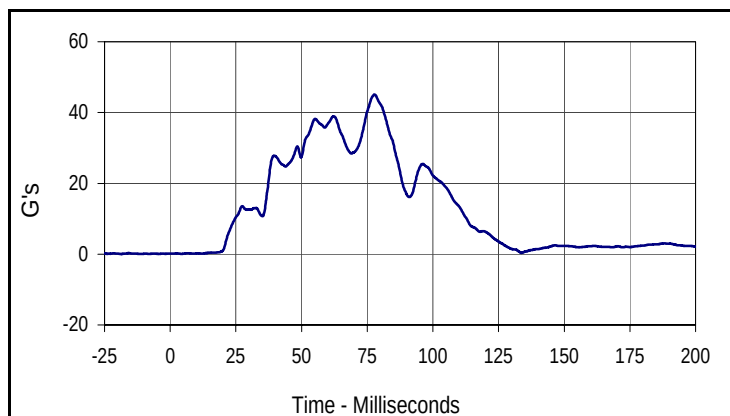
Curve Description			
Passenger Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
1.9	186.0	-44.4	77.6



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
2.7	56.7	-6.6	79.8



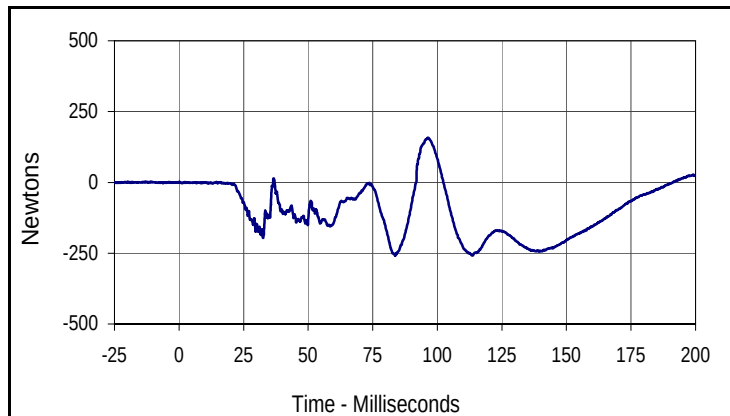
Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
022	FIL	180	G's
Max	Time	Min	Time
7.8	51.1	-18.1	101.1



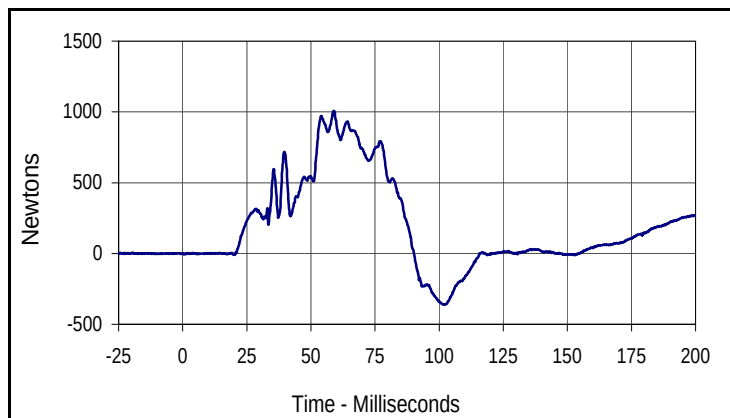
Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
023	RES	180	G's
Max	Time	Min	Time
45.0	77.8	0.1	4.2

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

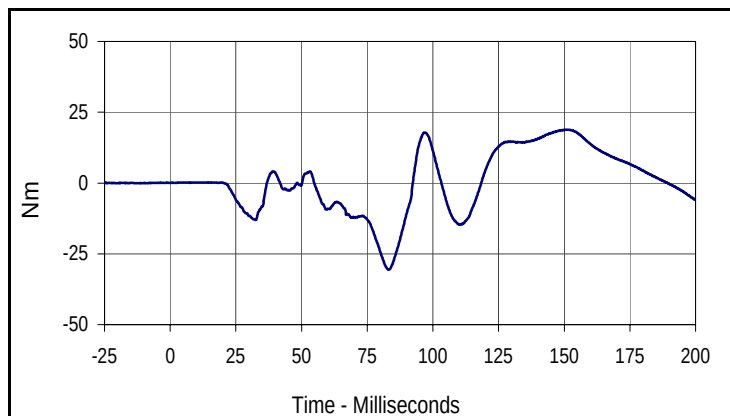
NHTSA No.: MC5606
 Test Date: 1/10/12



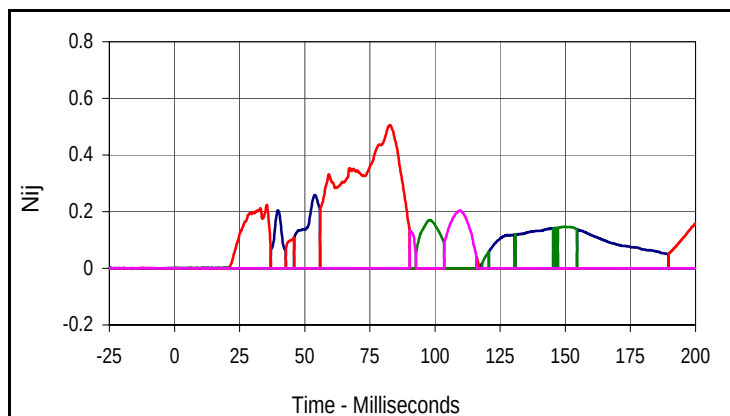
Curve Description			
Passenger Upper Neck Force X			
Plot No.	Type	SAE Class	Units
024	FIL	1000	Newtons
Max	Time	Min	Time
157.6	96.5	-258.8	83.7



Curve Description			
Passenger Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
025	FIL	1000	Newtons
Max	Time	Min	Time
1007.7	58.8	-362.3	102.2



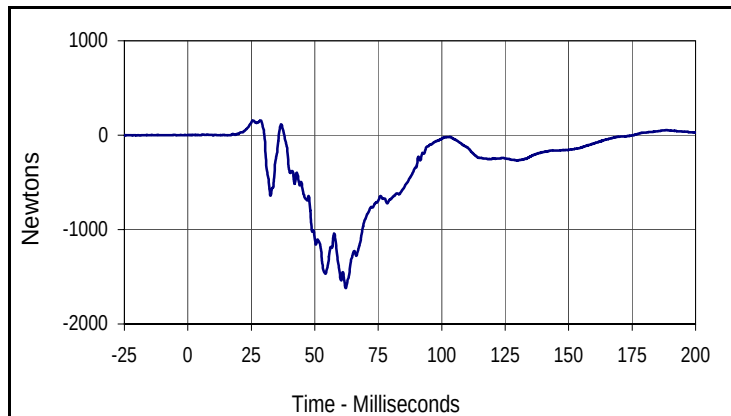
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
18.9	151.6	-30.5	83.1



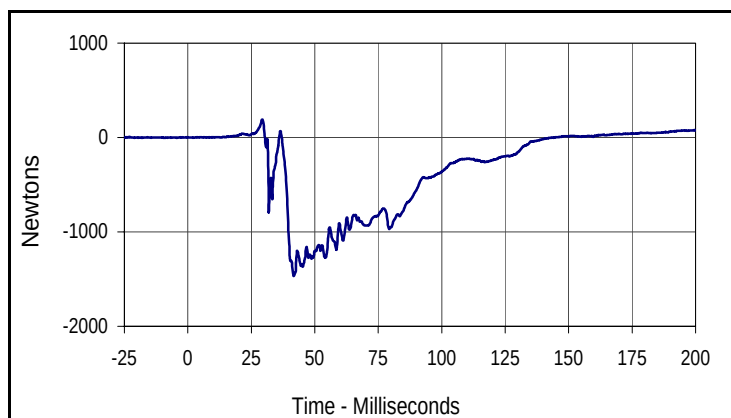
Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.26	53.8
Units	Type	Max	Time
Nte	FIL	0.50	82.8
Units	Type	Max	Time
Ncf	FIL	0.17	98.1
Units	Type	Max	Time
Nce	FIL	0.54	235.4

Test Vehicle: 2012 Mitsubishi Outlander 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: MC5606
 Test Date: 1/10/12



Curve Description			
Passenger Left Femur Force Z			
Plot No.	Type	SAE Class	Units
027	FIL	600	Newtons
Max	Time	Min	Time
155.3	28.7	-1619.3	62.2



Curve Description			
Passenger Right Femur Force Z			
Plot No.	Type	SAE Class	Units
028	FIL	600	Newtons
Max	Time	Min	Time
190.8	29.3	-1467.6	41.7

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Dummy Damage Checklist
 ATD Serial No.: 035

Test Date: 1/7/12
 Test I.D.: N/A



Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 1/7/12

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.33	Pass
Laboratory Relative Humidity	%	10 to 70	33.8	Pass
A - Total sitting height	mm	879 to 889	884	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - H point height	mm	84 to 89	87	Pass
D - H point location from backline	mm	135 to 140	138	Pass
E - Shoulder pivot from backline	mm	84 to 94	87	Pass
F - Thigh clearance	mm	140 to 155	148	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	298	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	334	Pass
J - Elbow rest height	mm	190 to 211	203	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	438	Pass
M - Knee pivot height	mm	485 to 500	489	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	433	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	987	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results			Pass	

Test Program: Hybrid III 50th Percentile Male Head Drop Test

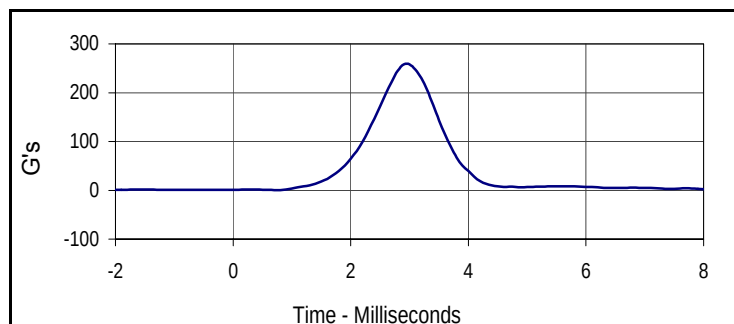
Test Date: 1/7/12

ATD Serial No.: 035

Test I.D.: M035HD028



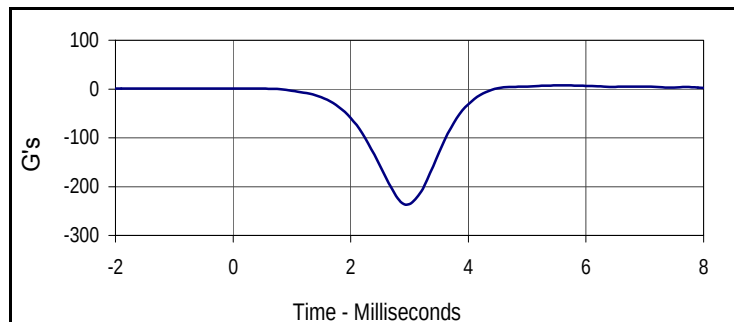
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	245	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.8	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	258.4	Pass
Peak Lateral Acceleration		G's	≤15.0	4.8	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	2.8	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

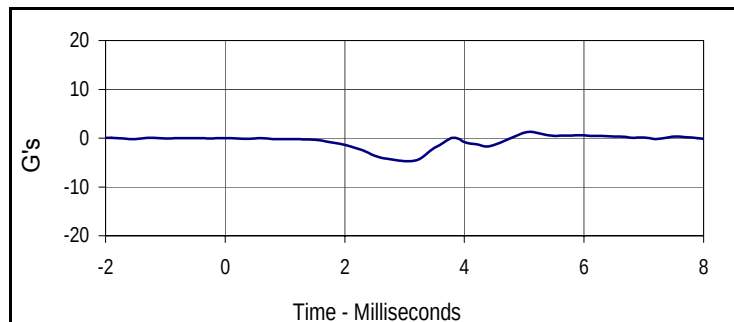
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
258.4	3.0	0.3	0.8



Curve Description

Head X

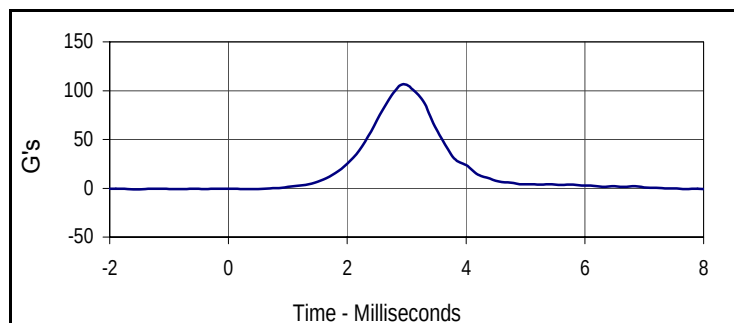
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.6	5.6	-235.6	3.0



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.3	5.1	-4.8	3.0



Curve Description

Head Z

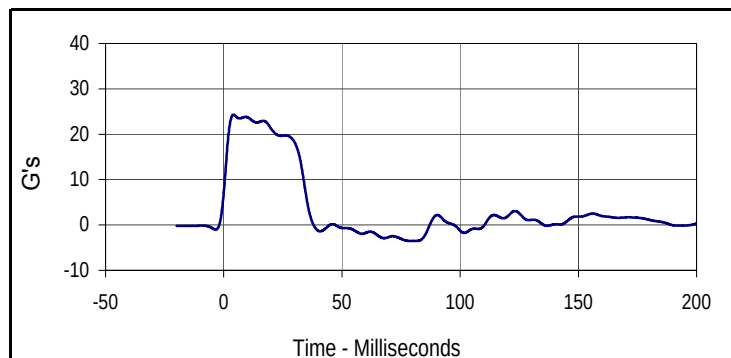
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
105.9	3.0	-1.1	-1.6

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

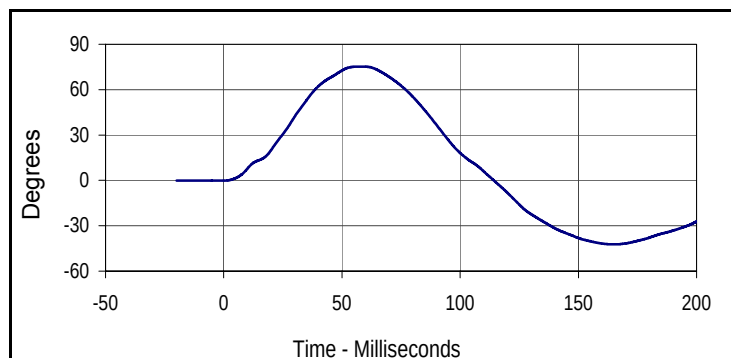
Test Date: 1/7/12
 Test I.D.: M035NF028



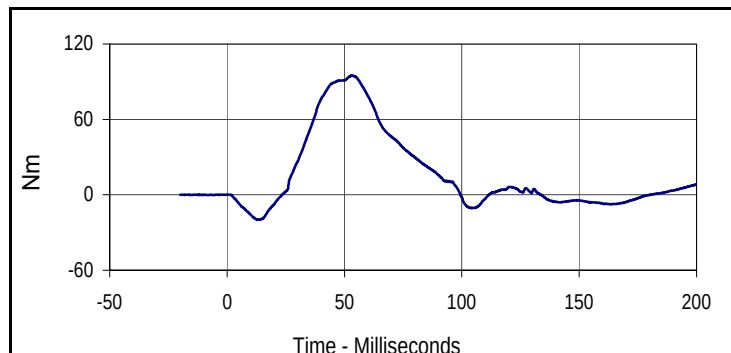
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	280	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.3	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	21.3	Pass
	30 Msec.	G's	12.5 to 18.5	18.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.4	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	75.2	Pass
	Time	Msec.	57.0 to 64.0	57.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	114.3	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	95.0	Pass
	Time	Msec.	47.0 to 58.0	53.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	99.4	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.3	4.1	-3.5	79.0



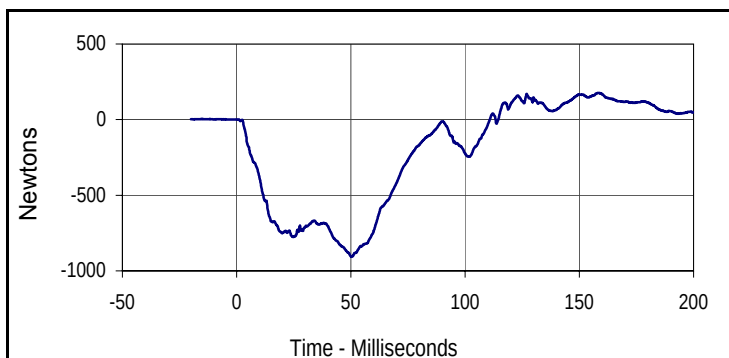
Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
75.2	57.5	-42.3	164.8



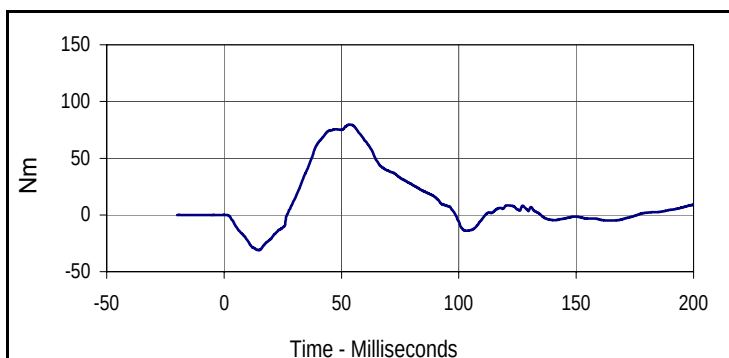
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
95.0	53.1	-19.9	13.7

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

Test Date: 1/7/12
 Test I.D.: M035NF028



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
177.0	158.4	-906.4	50.2



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
79.7	53.2	-31.0	14.9

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

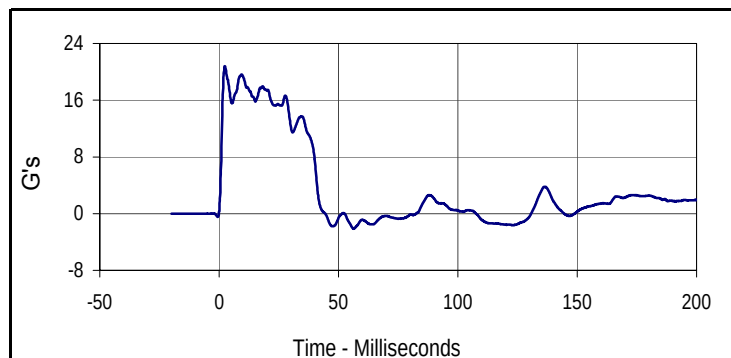
Test Date: 1/7/12

ATD Serial No.: 035

Test I.D.: M035NE028



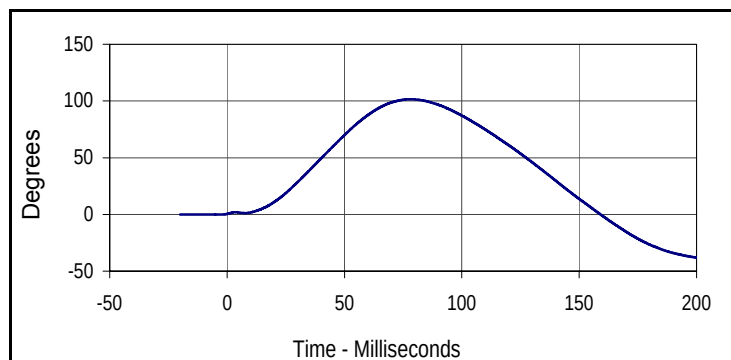
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	310	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.6	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.10	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.3	Pass
	20 Msec.	G's	14.0 to 19.0	17.4	Pass
	30 Msec.	G's	11.0 to 16.0	12.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	13.7	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.8	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	101.5	Pass
	Time	Msec.	72.0 to 82.0	78.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	159.1	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-70.1	Pass
	Time	Msec.	65.0 to 79.0	72.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	140.7	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

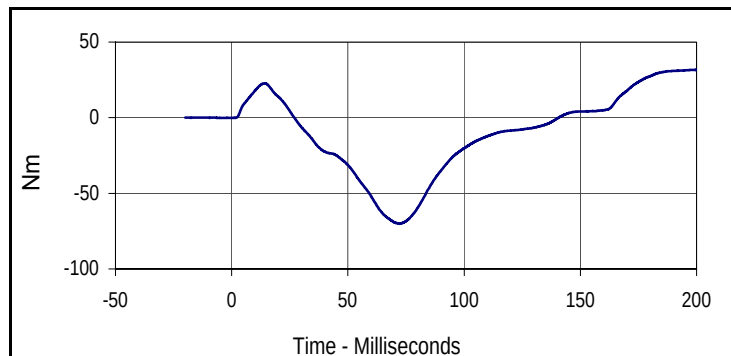
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.8	2.4	-2.1	56.3



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
101.5	78.0	-38.0	200.0



Curve Description

Moment About Occipital Condyle

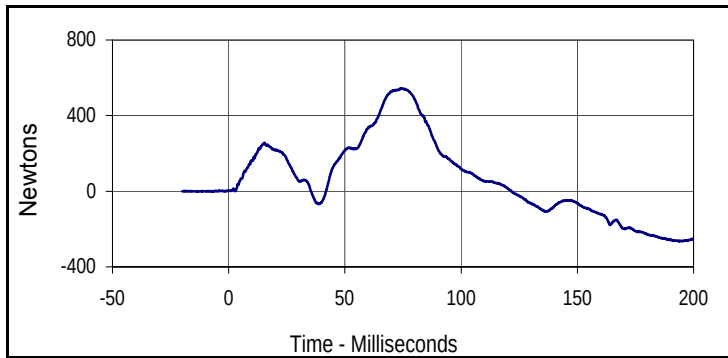
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.7	198.5	-70.1	72.1

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

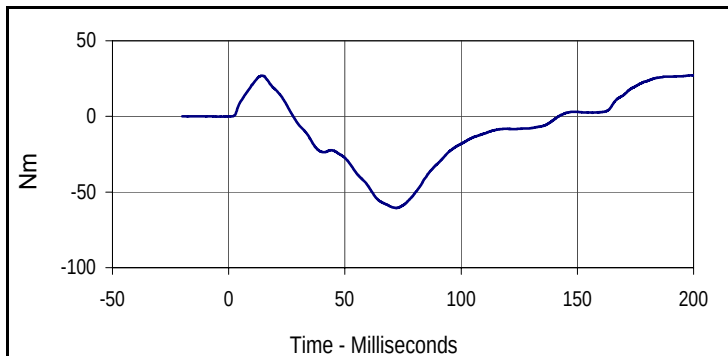
Test Date: 1/7/12

ATD Serial No.: 035

Test I.D.: M035NE028



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
543.0	73.7	-265.4	195.1



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
27.2	199.8	-60.6	72.1

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

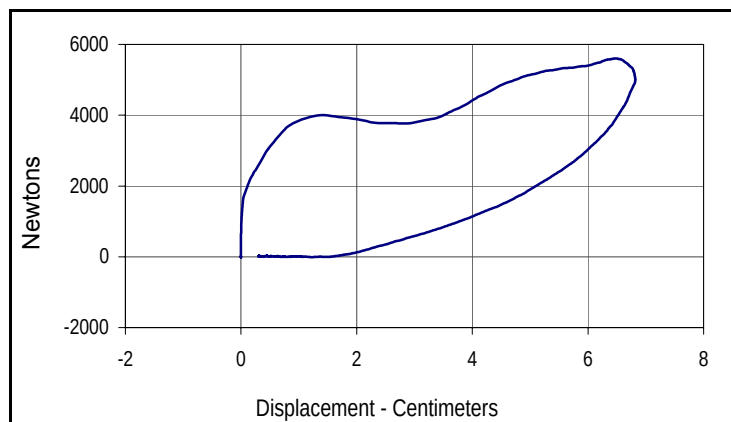
Test Date: 1/7/12

ATD Serial No.: 035

Test I.D.: M035CH028



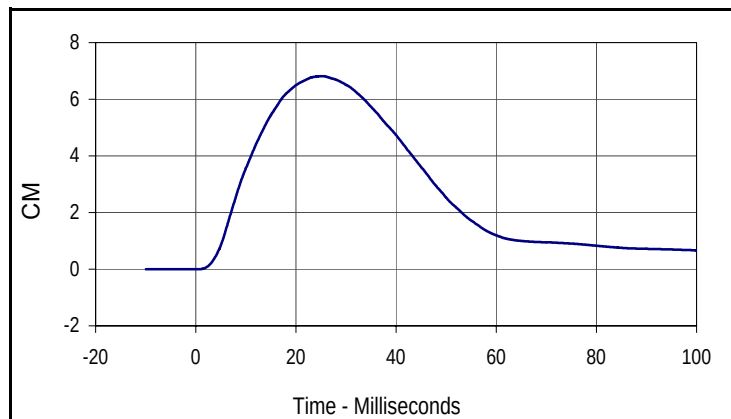
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	400	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.2	Pass
Probe Velocity		m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force		Newtons	5159 to 5893	5601	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.82	Pass
Internal Hysteresis		%	69 to 85	71.8	Pass
Overall Test Results				Pass	



Curve Description

Probe Force vs. Chest Deflection

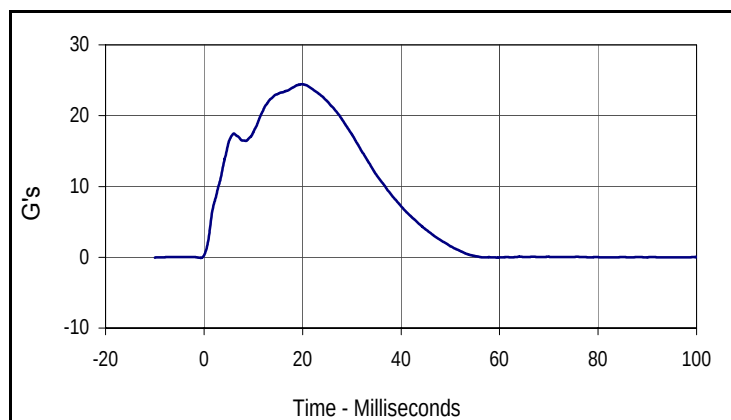
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.8
Peak Probe Force		Peak Chest Deflection	
5601		6.82	



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.8	25.2	0.0	0.4



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.5	19.8	-0.1	-0.7

Test Program: Hybrid III 50th Percentile Male Knee Impact Test
 ATD Serial No.: 035

Test Date: 1/7/12
 Test I.D.: M035LK028 , M035RK028

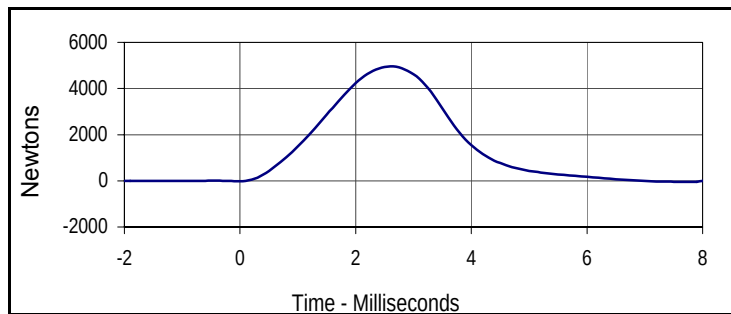


Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	430	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.2	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force		Newtons	4715 to 5782	4962	Pass
Overall Test Results				Pass	

Right Knee

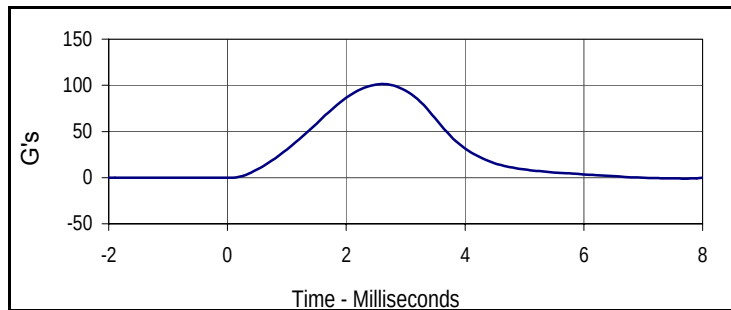
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force		Newtons	4715 to 5782	5023	Pass
Overall Test Results				Pass	



Curve Description

Left Knee Probe Force

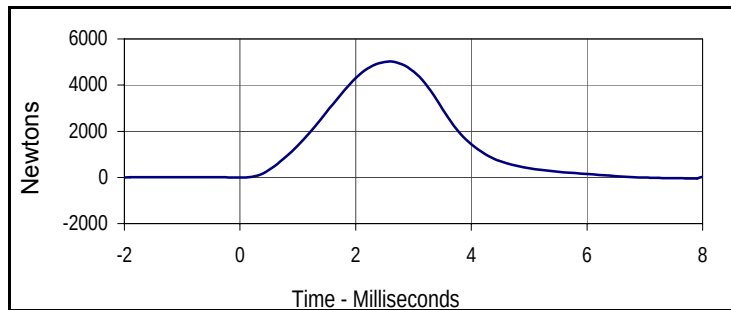
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4961.6	2.6	-47.1	7.7



Curve Description

Left Knee Acceleration

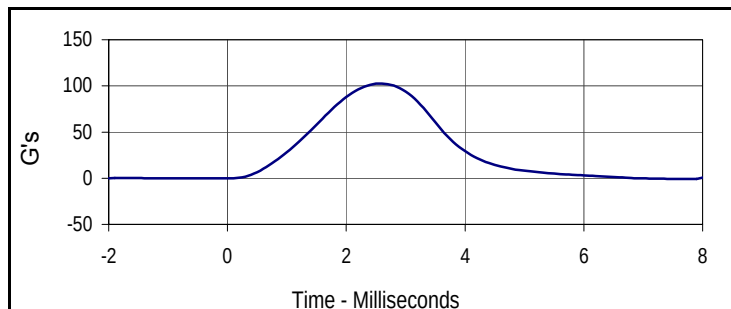
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
101.4	2.6	-1.0	7.7



Curve Description

Right Knee Probe Force

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5022.6	2.6	-43.3	10.0



Curve Description

Right Knee Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
102.7	2.6	-0.9	10.0

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test
 ATD Serial No.: 035

Test Date: 1/7/12
 Test I.D.: M035LF028 , M035RF028

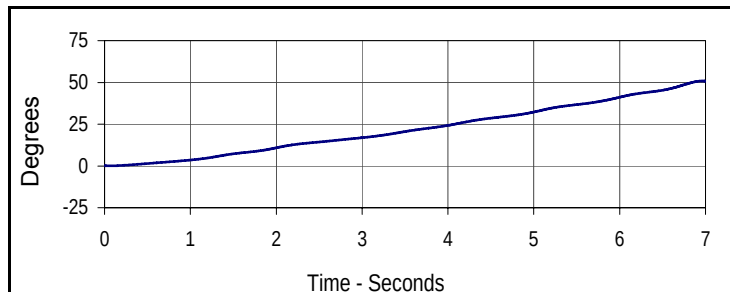


Left Hip Joint-Femur Results

Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	470	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	36.0	Pass
	Min		30.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.5	Pass
Rotation Rate	deg/sec	5 to 10	7.3	Pass
Femur Torque at 30°	Nm	≤ 95	92.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	46.6	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

Rotation Rate	deg/sec	5 to 10	7.4	Pass
Femur Torque at 30°	Nm	≤ 95	93.3	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.8	Pass
Overall Test Results				Pass



Curve Description

Left Hip-Femur Rotation

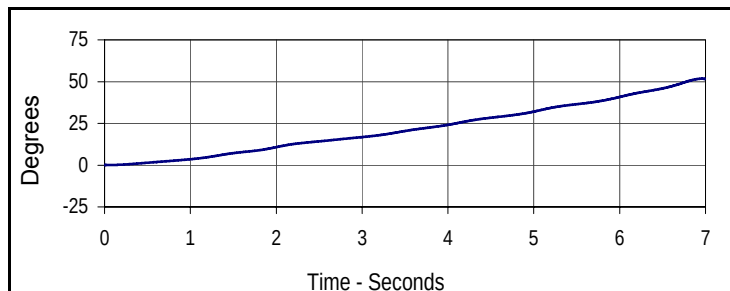
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
50.9	7.0	0.0	0.0



Curve Description

Left Femur Torque

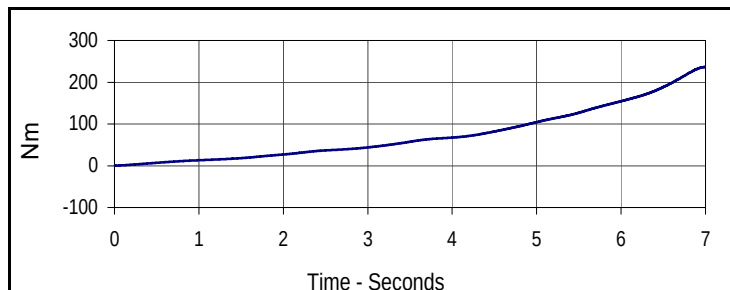
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
239.7	7.0	0.3	0.0



Curve Description

Right Hip-Femur Rotation

Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
51.8	7.0	0.0	0.0



Curve Description

Right Femur Torque

Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
236.2	7.0	0.3	0.0

Test Program: Hybrid III 5th Percentile Female Dummy Damage Checklist

Test Date: 12/15/11

ATD Serial No.: 635

Test I.D.: N/A



Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 12/15/11

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.22	Pass
Laboratory Relative Humidity	%	10 to 70	32.2	Pass
A - Total sitting height	mm	774.7 to 800.1	780	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	435	Pass
C - H point height	mm	81.3 to 86.3	84	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	125	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	247	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	283	Pass
J - Elbow rest height	mm	182.8 to 203.2	196	Pass
K - Buttock to knee length	mm	520.7 to 546.1	535	Pass
L - Popliteal length	mm	355.6 to 376.0	373	Pass
M - Knee pivot height	mm	393.7 to 419.1	396	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	429	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	188	Pass
P - Foot length	mm	218.5 to 233.7	220	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	476	Pass
S - Head Breadth	mm	137.1 to 147.3	142	Pass
T - Head Depth	mm	177.8 to 188.0	182	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	357	Pass
W - Foot breadth	mm	78.8 to 94.0	84	Pass
X - Head circumference	mm	528.3 to 548.7	545	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	858	Pass
Z - Waist circumference	mm	759.5 to 789.9	787	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	165	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop Test

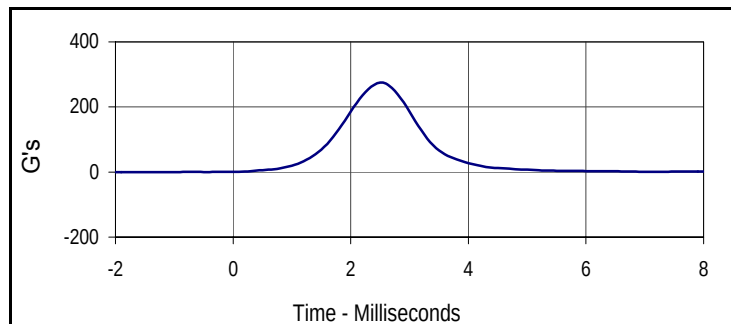
Test Date: 12/15/11

ATD Serial No.: 635

Test I.D.: F635HD026



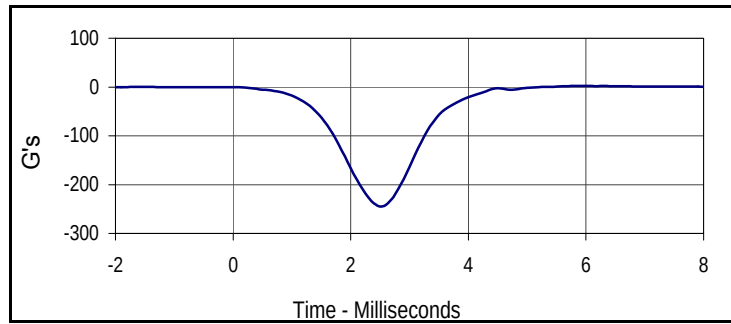
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	310	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.5	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	275.1	Pass
Peak Lateral Acceleration		G's	≤15.0	7.0	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.1	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

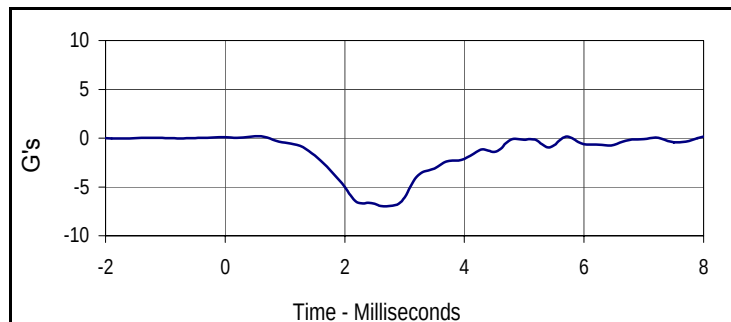
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
275.1	2.5	0.0	-2.0



Curve Description

Head X

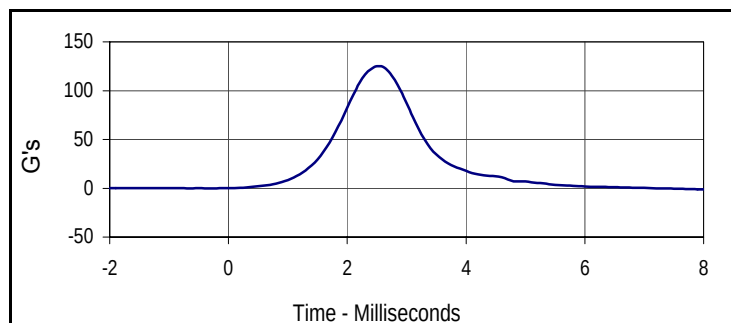
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.4	5.9	-245.0	2.5



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
0.2	0.5	-7.0	2.7



Curve Description

Head Z

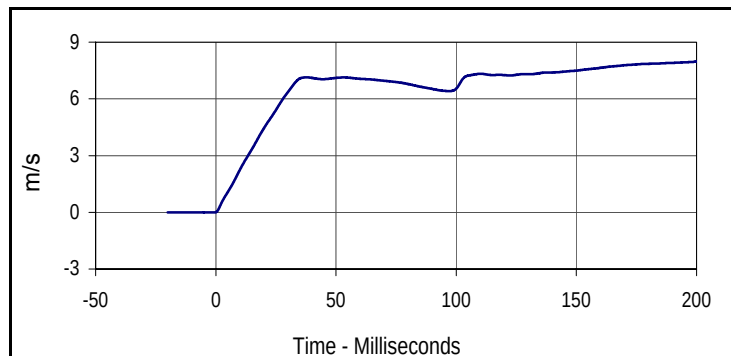
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
125.0	2.5	0.0	-0.7

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 635

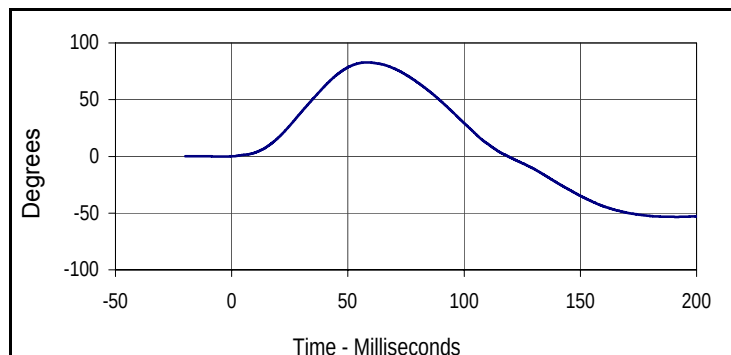
Test Date: 12/15/11
 Test I.D.: F635NF026



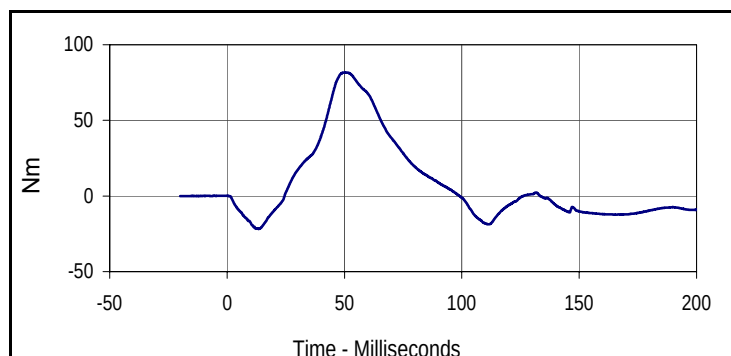
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	250	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	33.2	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.2	Pass
	20 Msec.	m/s	4.0 to 5.0	4.4	Pass
	30 Msec.	m/s	5.8 to 7.0	6.4	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	82.9	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	81.7	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	87.7	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.0	200.0	0.0	-0.6



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
82.9	58.1	-53.3	191.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
81.7	50.5	-21.8	13.5

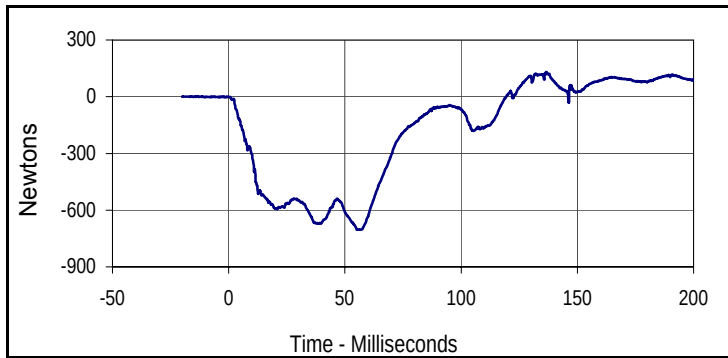
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 12/15/11

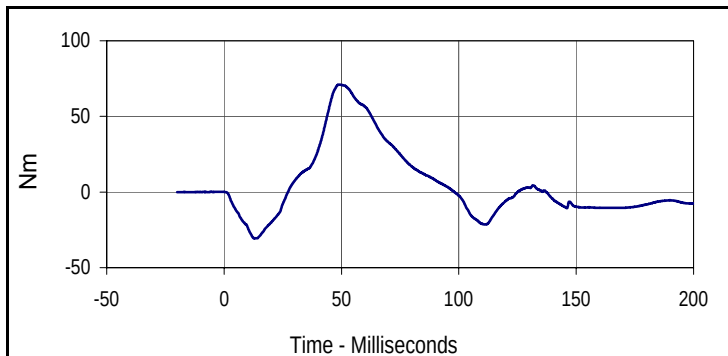


ATD Serial No.: 635

Test I.D.: F635NF026



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
131.1	136.5	-704.1	55.2



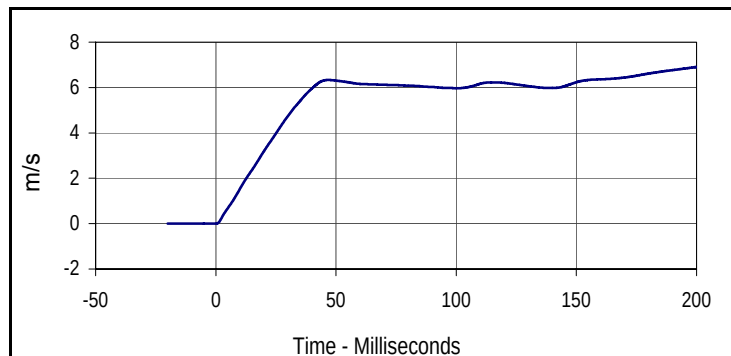
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
71.0	49.2	-30.7	12.8

Test Program: Hybrid III 5th Percentile Female Neck Extension Test
 ATD Serial No.: 635

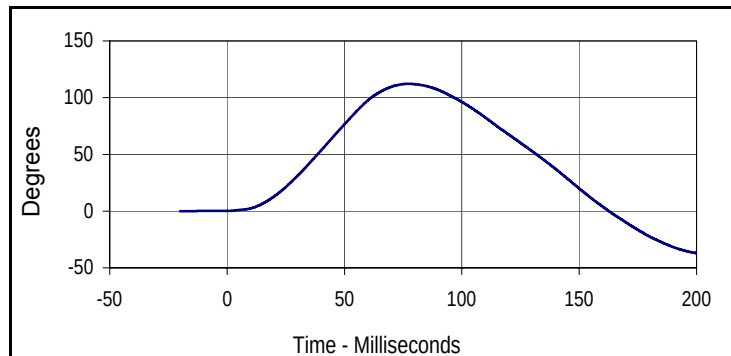
Test Date: 12/15/11
 Test I.D.: F635NE026



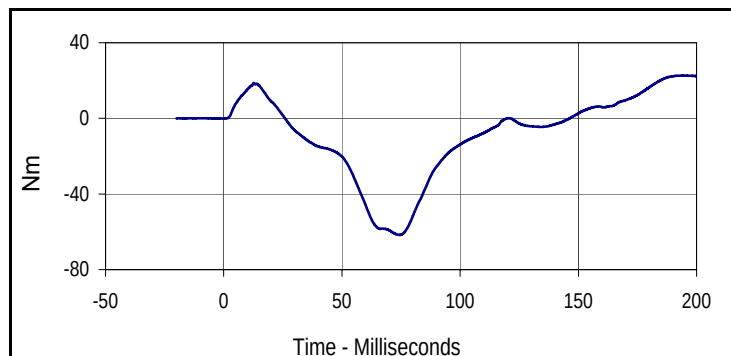
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	260	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.2	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.04	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.5	Pass
	20 Msec.	m/s	3.1 to 3.9	3.2	Pass
	30 Msec.	m/s	4.6 to 5.6	4.7	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	112.2	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-61.6	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	106.0	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.9	200.0	0.0	-0.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
112.2	77.2	-37.0	200.0



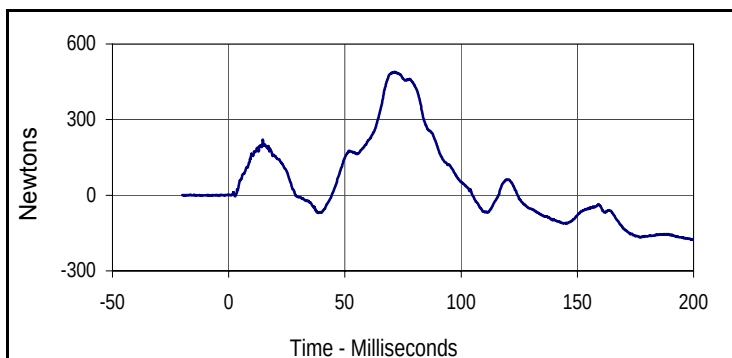
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
22.7	195.8	-61.6	74.5

Test Program: Hybrid III 5th Percentile Female Neck Extension Test

ATD Serial No.: 635

Test Date: 12/15/11

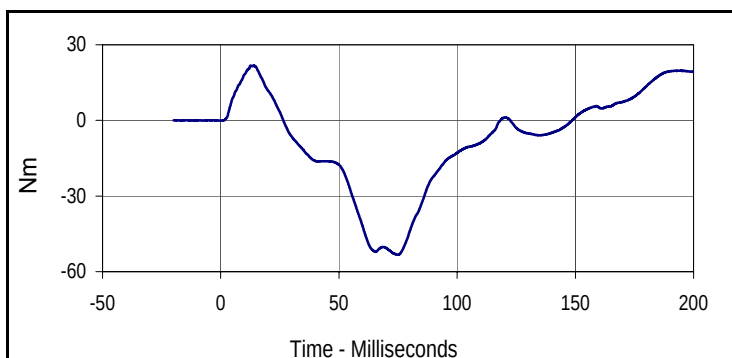
Test I.D.: F635NE026



Curve Description

Upper Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
490.2	71.4	-176.3	199.4



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
21.9	14.0	-53.3	74.8

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test

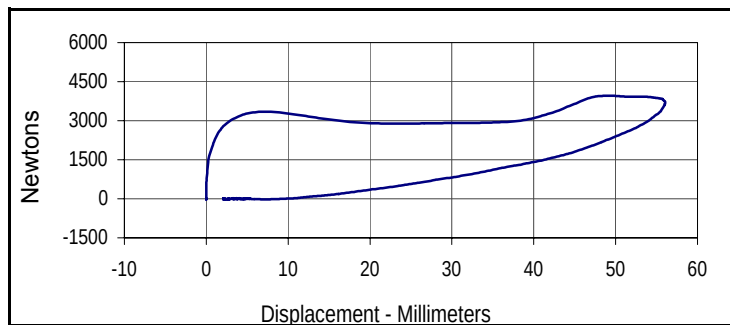
Test Date: 12/15/11

ATD Serial No.: 635

Test I.D.: F635CH026



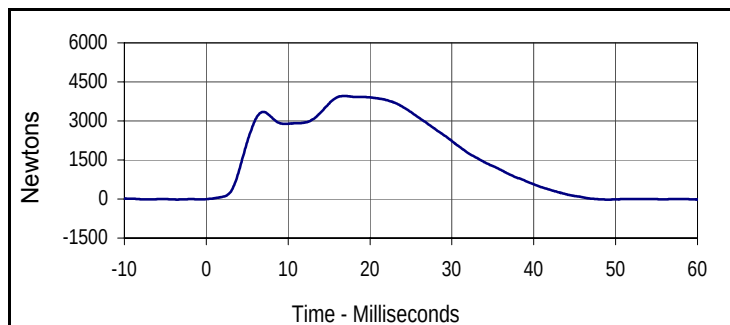
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	280	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.5	Pass
Probe Velocity		m/s	6.59 to 6.83	6.68	Pass
Peak Chest Deflection		mm	50.0 to 58.0	56.1	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	3959	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	3950	Pass
Internal Hysteresis		%	69 to 85	69.6	Pass
Overall Test Results					Pass



Curve Description

Probe Force vs. Chest Deflection

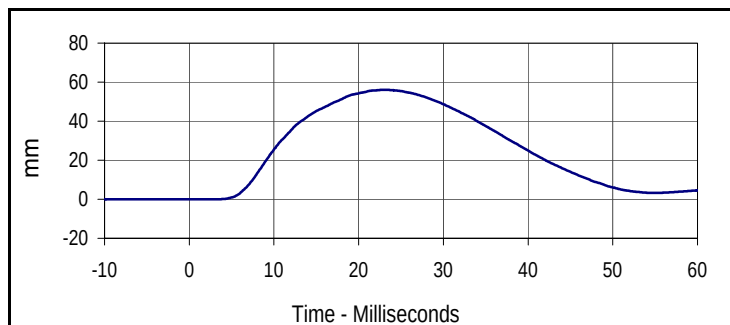
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	69.6
Peak Probe Force		Peak Chest Deflection	
3959.4		56.1	



Curve Description

Probe Force

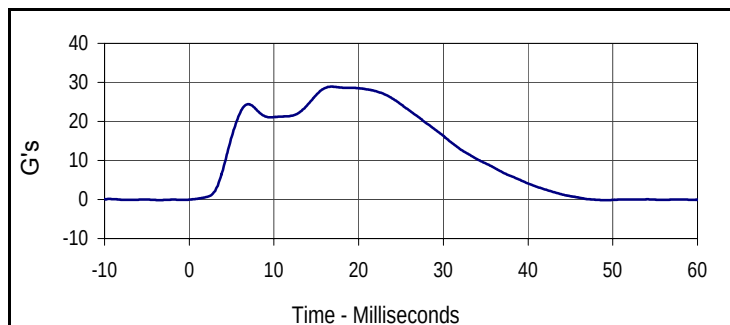
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
3959.4	16.8	-27.2	166.2



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.1	23.0	0.0	-3.6



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
28.9	16.8	-0.1	49.1

Test Program: Hybrid III 5th Percentile Female Knee Impact Test

Test Date: 12/15/11

ATD Serial No.: 635

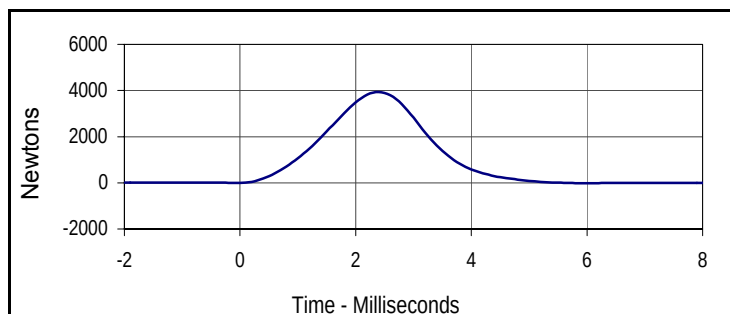
Test I.D.: F635LK026 , F635RK026

**Left Knee**

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	250	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.4	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force		Newtons	3450 to 4060	3937	Pass
Overall Test Results					Pass

Right Knee

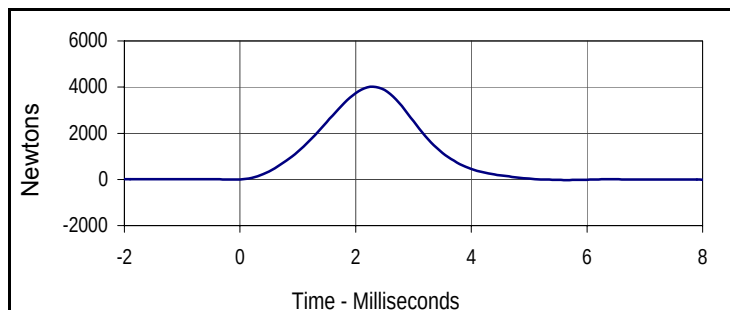
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force		Newtons	3450 to 4060	4022	Pass
Overall Test Results					Pass

**Curve Description****Left Knee Probe Force**

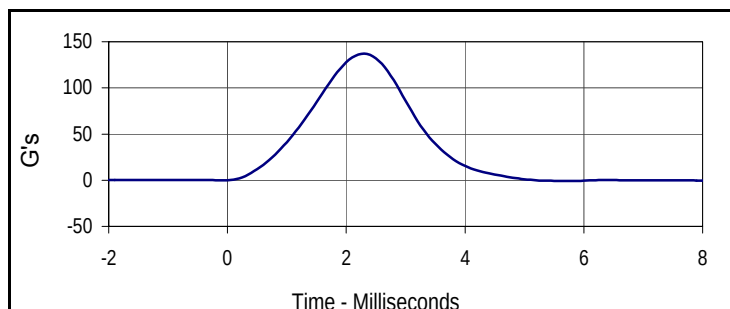
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3936.9	2.4	-16.8	6.0

**Curve Description****Left Knee Acceleration**

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
134.3	2.4	-0.6	6.0

**Curve Description****Right Knee Probe Force**

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
4022.2	2.3	-24.9	5.7

**Curve Description****Right Knee Acceleration**

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
137.2	2.3	-0.8	5.7

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

Test Date: 12/15/11

ATD Serial No.: 635

Test I.D.: F635TF026



Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	280	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.6	Pass
Initial Reference Plane Angle		Degrees	≤ 20	7.4	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	368.2	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle		Degrees	+/-8	2.3	Pass
Overall Test Results					Pass

APPENDIX C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Dummy Damage Checklist

Test Date: 1/11/12

ATD Serial No.: 035

Test I.D.: N/A



Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 1/11/12

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.05	Pass
Laboratory Relative Humidity	%	10 to 70	30.3	Pass
A - Total sitting height	mm	879 to 889	885	Pass
B - Shoulder pivot height	mm	505 to 521	516	Pass
C - H point height	mm	84 to 89	87	Pass
D - H point location from backline	mm	135 to 140	138	Pass
E - Shoulder pivot from backline	mm	84 to 94	87	Pass
F - Thigh clearance	mm	140 to 155	148	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	298	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	334	Pass
J - Elbow rest height	mm	190 to 211	204	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	438	Pass
M - Knee pivot height	mm	485 to 500	489	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	226	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	433	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	987	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results			Pass	

Test Program: Hybrid III 50th Percentile Male Head Drop Test

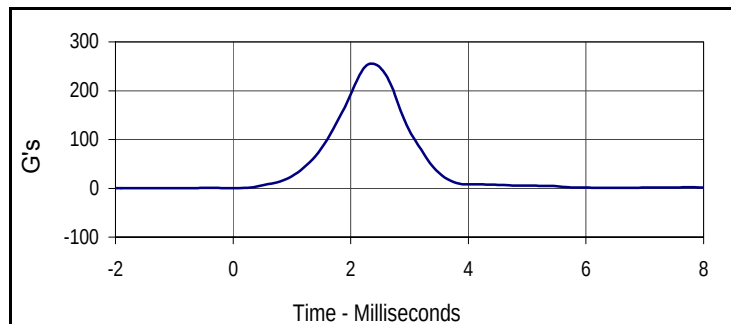
Test Date: 1/11/12

ATD Serial No.: 035

Test I.D.: M035HD029



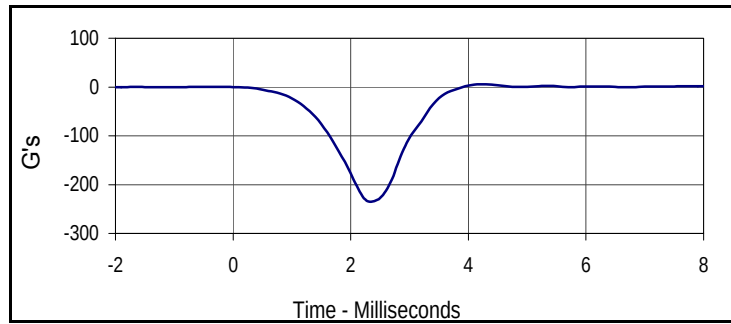
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	245	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.5	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	254.6	Pass
Peak Lateral Acceleration		G's	≤15.0	3.3	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	3.1	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

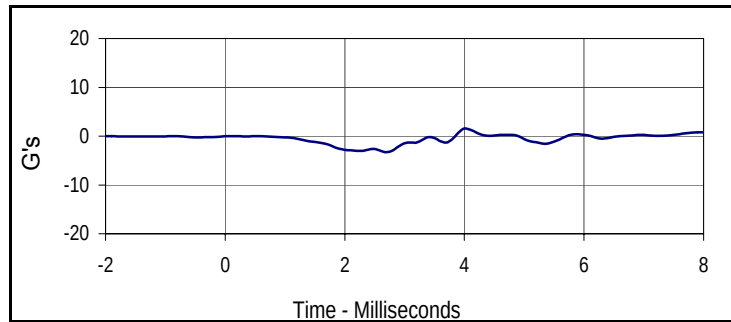
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
254.6	2.4	0.1	-0.8



Curve Description

Head X

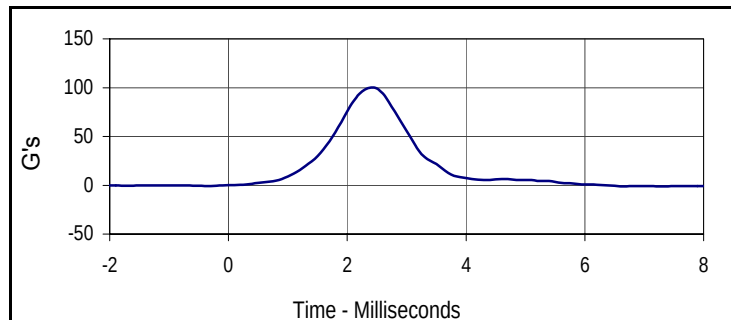
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.6	4.3	-234.2	2.3



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.6	4.0	-3.3	2.7



Curve Description

Head Z

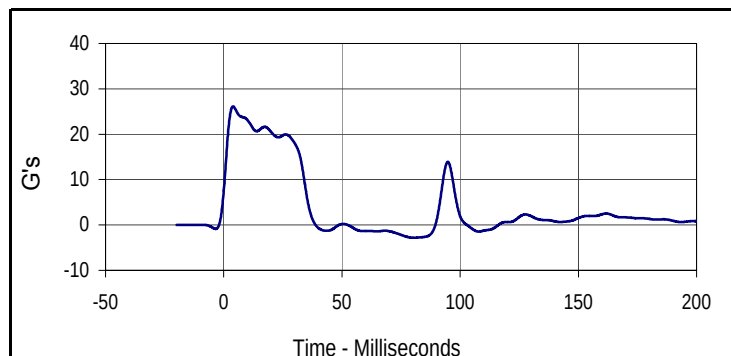
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
100.2	2.4	-0.7	-0.4

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

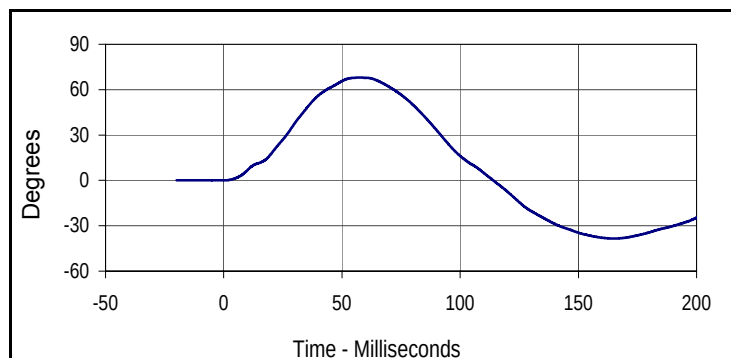
Test Date: 1/11/12
 Test I.D.: M035NF029



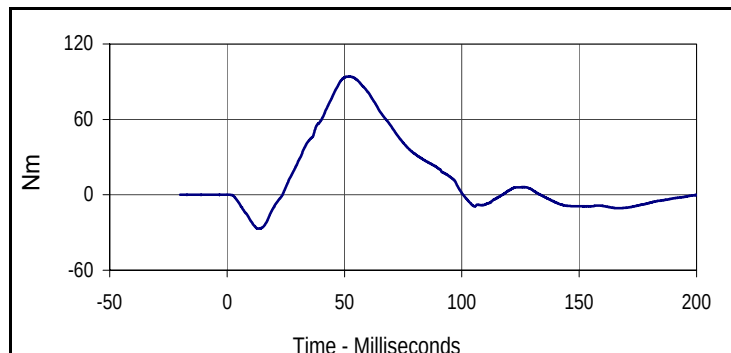
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	285	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.10	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.1	Pass
	20 Msec.	G's	17.6 to 22.6	20.5	Pass
	30 Msec.	G's	12.5 to 18.5	18.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.6	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	67.9	Pass
	Time	Msec.	57.0 to 64.0	57.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	114	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	94.2	Pass
	Time	Msec.	47.0 to 58.0	52.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.6	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
26.1	3.9	-2.8	80.1



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
67.9	57.0	-38.5	164.9



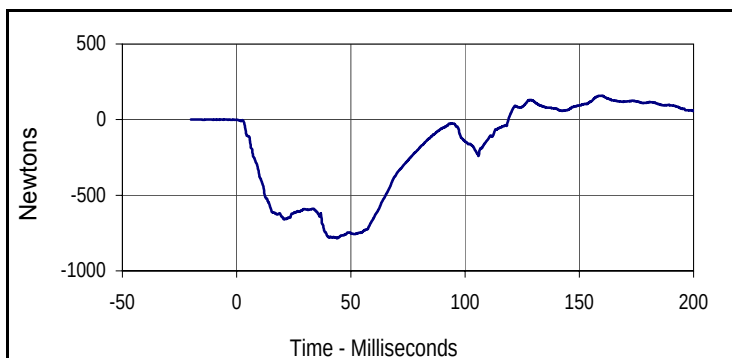
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
94.2	52.1	-26.9	13.7

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

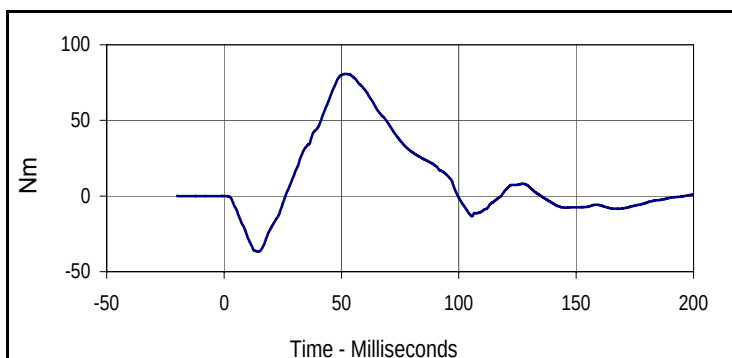
ATD Serial No.: 035

Test Date: 1/11/12

Test I.D.: M035NF029



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
158.2	159.5	-784.5	44.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
80.7	52.2	-36.7	14.6

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

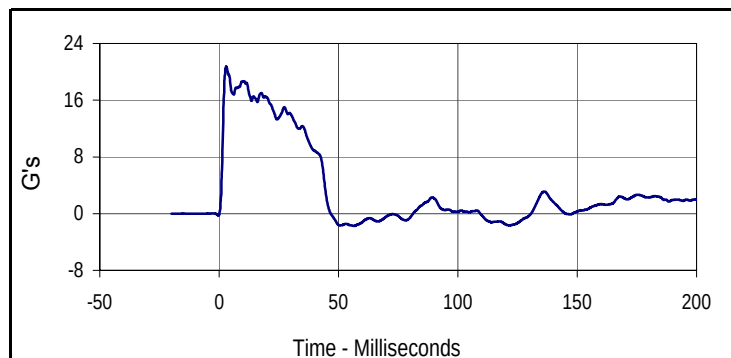
Test Date: 1/11/12

ATD Serial No.: 035

Test I.D.: M035NE029



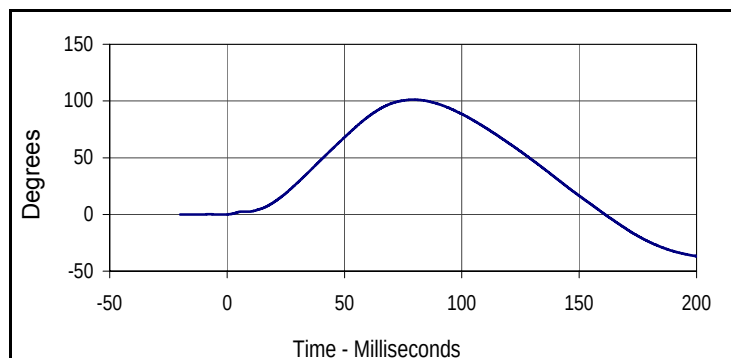
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	320	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.07	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.6	Pass
	20 Msec.	G's	14.0 to 19.0	16.4	Pass
	30 Msec.	G's	11.0 to 16.0	14.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.0	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	101.2	Pass
	Time	Msec.	72.0 to 82.0	79.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	161	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-67.3	Pass
	Time	Msec.	65.0 to 79.0	72.7	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	141.8	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

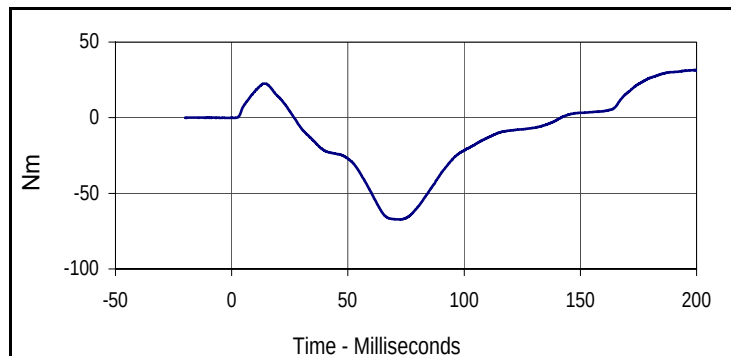
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.7	2.9	-1.7	56.8



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
101.2	79.1	-36.8	200.0



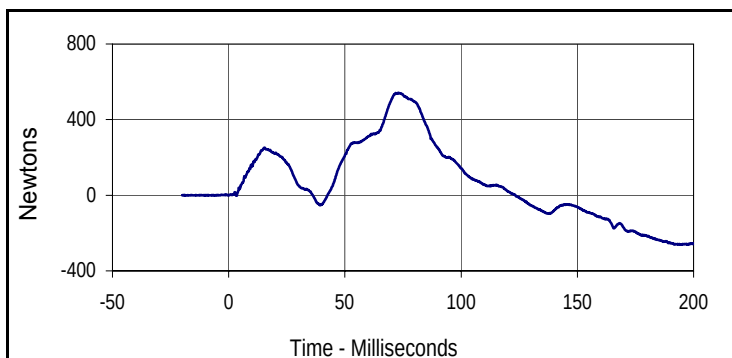
Curve Description

Moment About Occipital Condyle

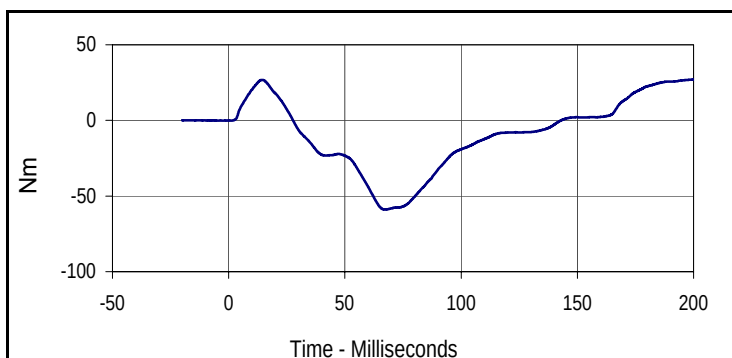
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.5	198.9	-67.3	72.7

Test Program: Hybrid III 50th Percentile Male Neck Extension Test
 ATD Serial No.: 035

Test Date: 1/11/12
 Test I.D.: M035NE029



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
541.4	72.8	-261.6	193.5



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
26.9	199.1	-58.9	67.0

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

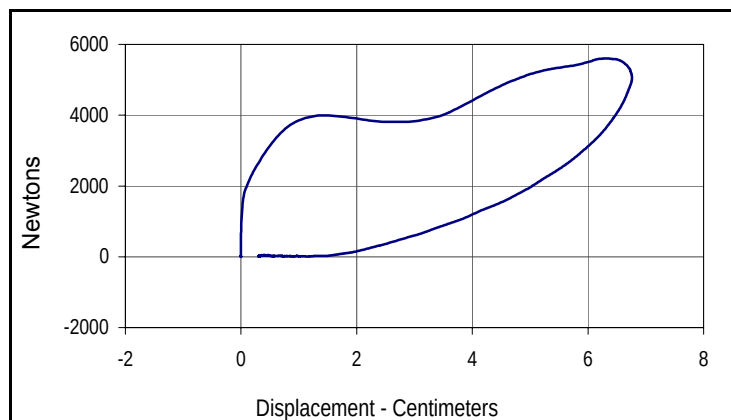
Test Date: 1/11/12

ATD Serial No.: 035

Test I.D.: M035CH029



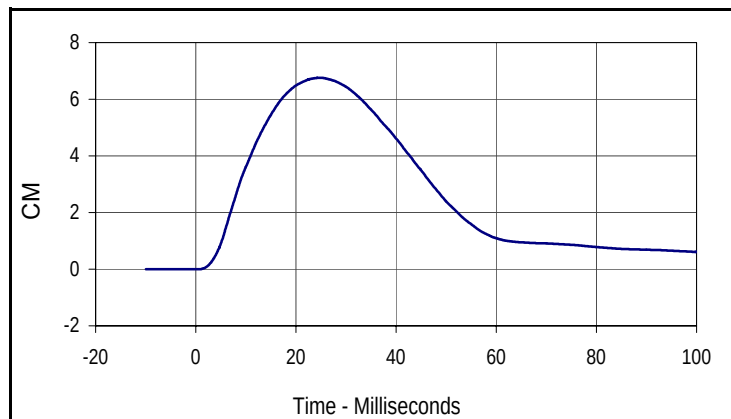
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	435	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Probe Velocity		m/s	6.58 to 6.82	6.76	Pass
Peak Probe Force		Newtons	5159 to 5893	5603	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.76	Pass
Internal Hysteresis		%	69 to 85	71.5	Pass
Overall Test Results				Pass	



Curve Description

Probe Force vs. Chest Deflection

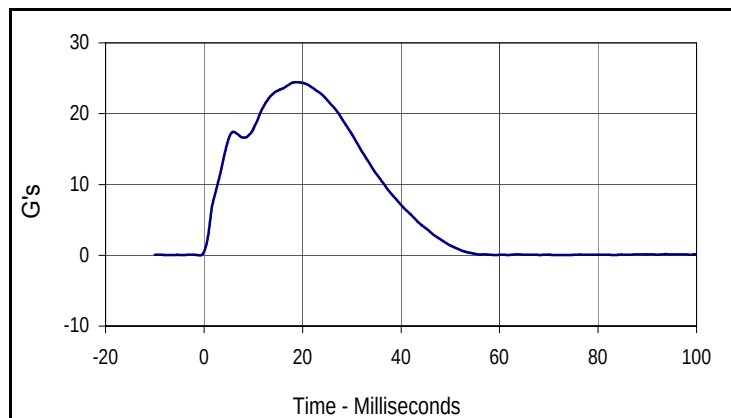
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.5
Peak Probe Force		Peak Chest Deflection	
5603		6.76	



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.8	24.8	0.0	0.4



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.5	18.9	0.0	-0.8

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 1/11/12

ATD Serial No.: 035

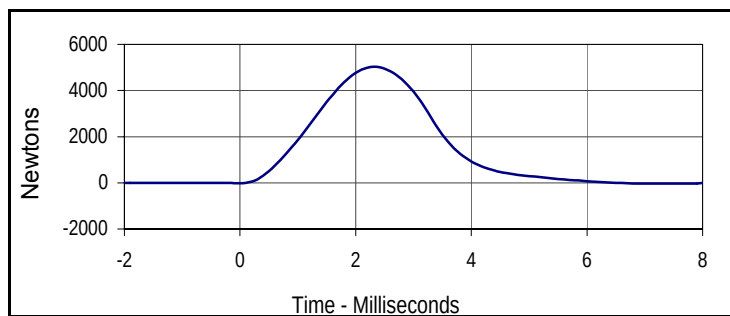
Test I.D.: M035LK029, M035RK029

**Left Knee**

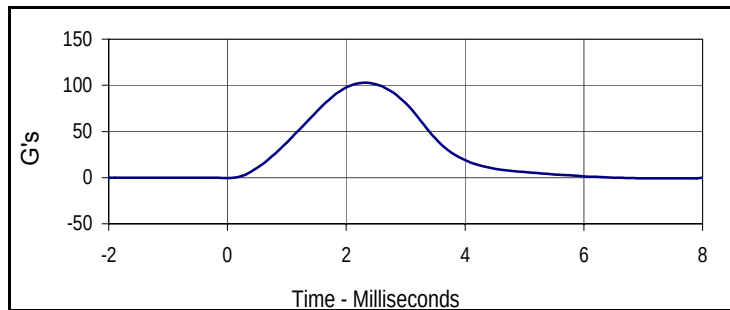
Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	345	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.0	Pass
	Min	%		30.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	4715 to 5782	5026	Pass
Overall Test Results					Pass

Right Knee

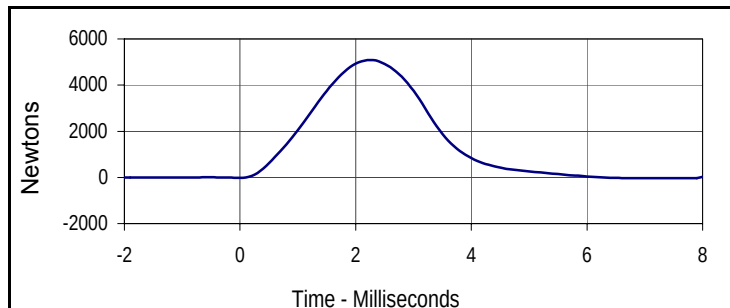
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	4715 to 5782	5081	Pass
Overall Test Results					Pass

**Curve Description****Left Knee Probe Force**

Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5026.4	2.3	-37.6	7.9

**Curve Description****Left Knee Acceleration**

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
102.7	2.3	-0.8	7.9

**Curve Description****Right Knee Probe Force**

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5081.4	2.2	-43.3	10.0

**Curve Description****Right Knee Acceleration**

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
103.9	2.2	-0.9	10.0

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test
 ATD Serial No.: 035

Test Date: 1/11/12
 Test I.D.: M035LF029, M035RF029

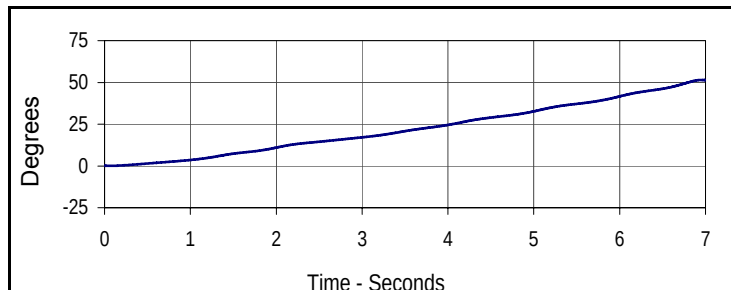


Left Hip Joint-Femur Results

Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	460	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	36.0	Pass
	Min		30.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.5	Pass
Rotation Rate	deg/sec	5 to 10	7.4	Pass
Femur Torque at 30°	Nm	≤ 95	90.7	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.3	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

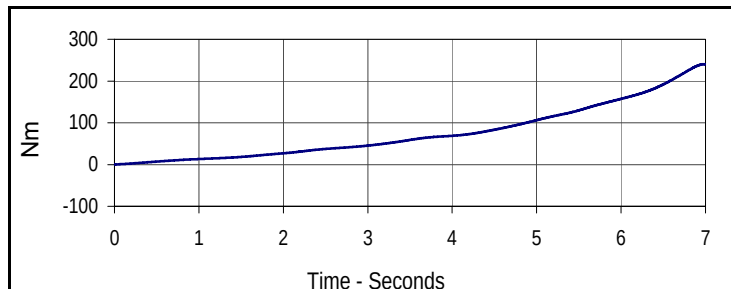
Rotation Rate	deg/sec	5 to 10	7.4	Pass
Femur Torque at 30°	Nm	≤ 95	92.9	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.1	Pass
Overall Test Results				Pass



Curve Description

Left Hip-Femur Rotation

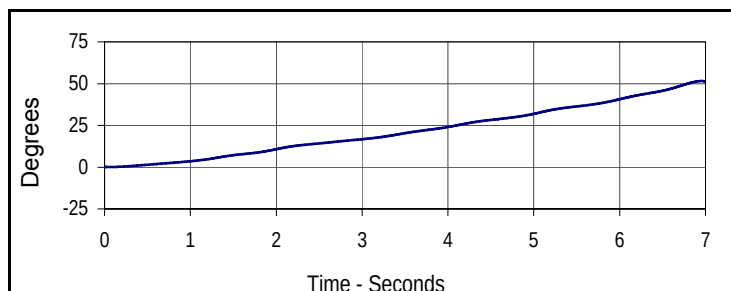
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
51.5	7.0	0.0	0.0



Curve Description

Left Femur Torque

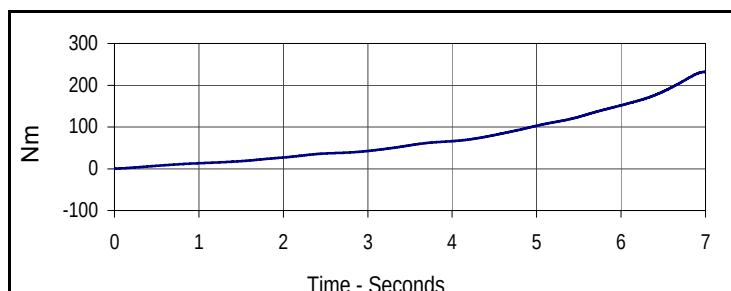
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
240.6	7.0	0.3	0.0



Curve Description

Right Hip-Femur Rotation

Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
51.6	7.0	0.0	0.0



Curve Description

Right Femur Torque

Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
232.0	7.0	0.3	0.0

Test Program: Hybrid III 5th Percentile Female Dummy Damage Checklist

Test Date: 1/11/12

ATD Serial No.: 635

Test I.D.: N/A



Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on repair or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 1/11/12

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.16	Pass
Laboratory Relative Humidity	%	10 to 70	30.2	Pass
A - Total sitting height	mm	774.7 to 800.1	779	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	434	Pass
C - H point height	mm	81.3 to 86.3	84	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	125	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	247	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	283	Pass
J - Elbow rest height	mm	182.8 to 203.2	196	Pass
K - Buttock to knee length	mm	520.7 to 546.1	535	Pass
L - Popliteal length	mm	355.6 to 376.0	373	Pass
M - Knee pivot height	mm	393.7 to 419.1	396	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	429	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	189	Pass
P - Foot length	mm	218.5 to 233.7	220	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	476	Pass
S - Head Breadth	mm	137.1 to 147.3	142	Pass
T - Head Depth	mm	177.8 to 188.0	182	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	357	Pass
W - Foot breadth	mm	78.8 to 94.0	84	Pass
X - Head circumference	mm	528.3 to 548.7	544	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	858	Pass
Z - Waist circumference	mm	759.5 to 789.9	787	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	165	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop Test

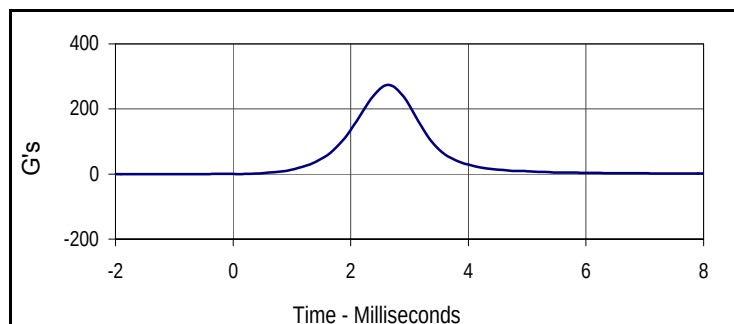
Test Date: 1/11/12

ATD Serial No.: 635

Test I.D.: F635HD027



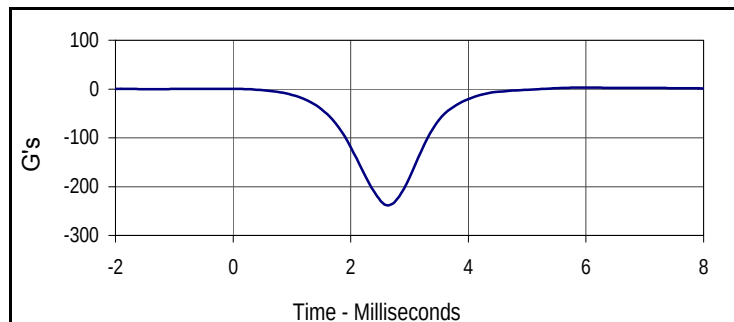
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	260	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	273.1	Pass
Peak Lateral Acceleration		G's	≤15.0	2.5	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.4	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

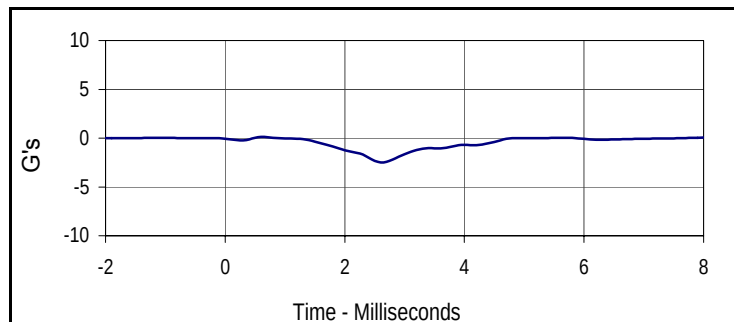
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
273.1	2.6	0.0	-2.0



Curve Description

Head X

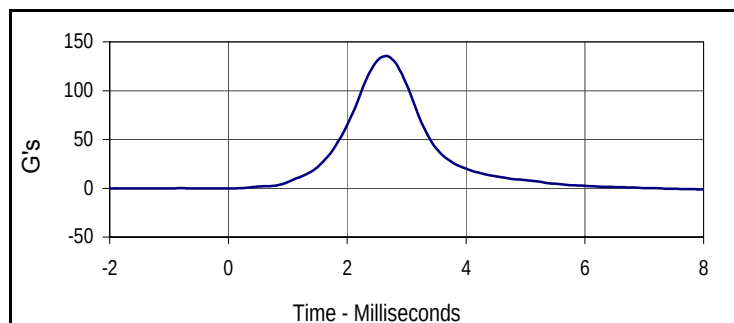
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.9	6.0	-237.4	2.6



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
0.1	0.6	-2.5	2.6



Curve Description

Head Z

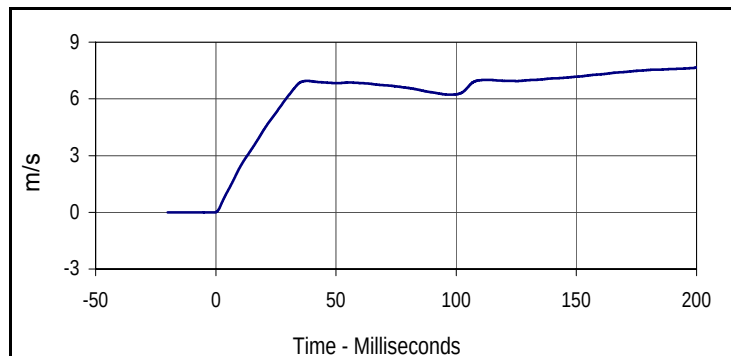
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
135.1	2.6	-0.1	-0.1

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 635

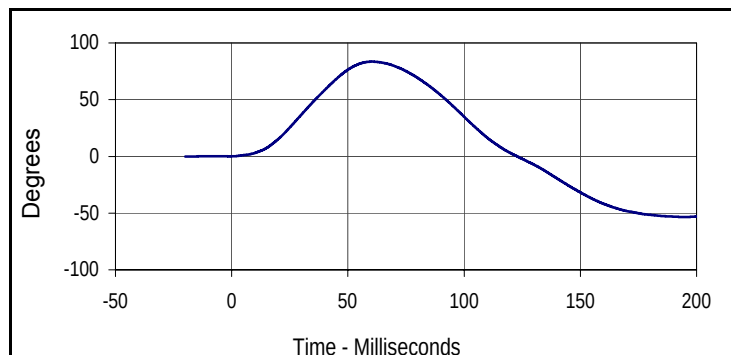
Test Date: 1/11/12
 Test I.D.: F635NF027



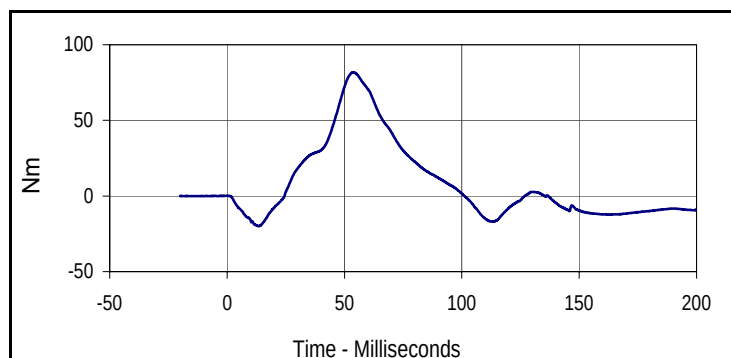
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	400	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.4	Pass
	30 Msec.	m/s	5.8 to 7.0	6.1	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	83.5	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	69.6	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	91.2	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.6	200.0	0.0	-0.8



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
83.5	60.4	-53.4	194.7



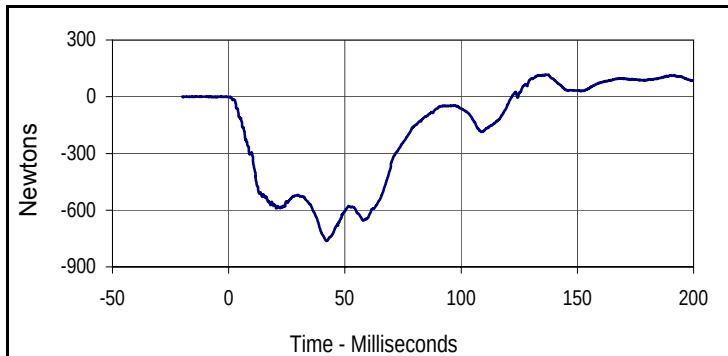
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
81.7	53.7	-19.9	13.3

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

ATD Serial No.: 635

Test Date: 1/11/12

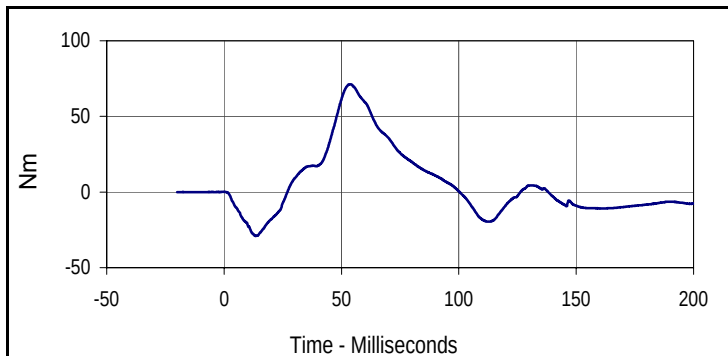
Test I.D.: F635NF027



Curve Description

Upper Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
117.5	136.5	-762.2	41.9



Curve Description

Neck Moment Y

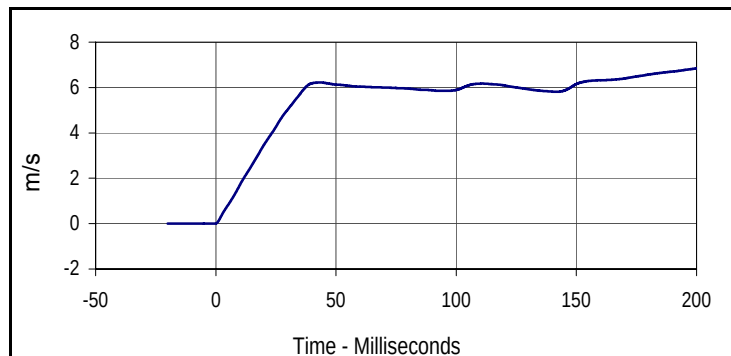
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
71.3	53.7	-29.0	13.4

Test Program: Hybrid III 5th Percentile Female Neck Extension Test
 ATD Serial No.: 635

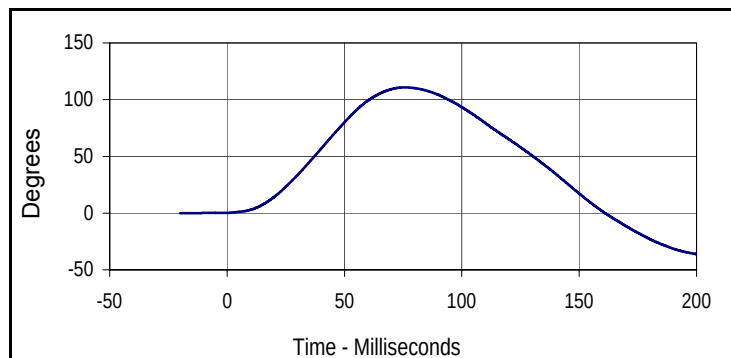
Test Date: 1/11/12
 Test I.D.: F635NE027



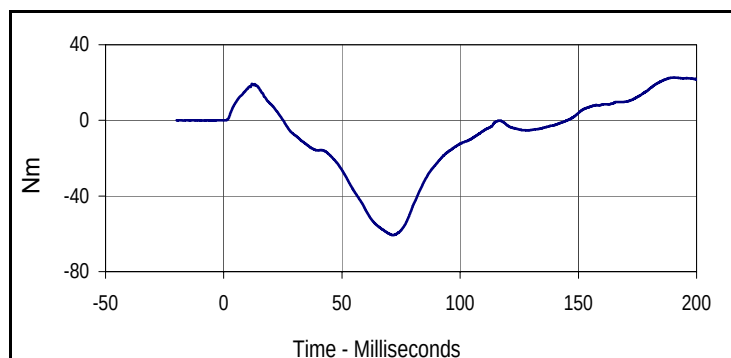
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	430	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.18	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.5	Pass
	30 Msec.	m/s	4.6 to 5.6	5.0	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	110.8	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-60.7	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	104.5	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.8	200.0	0.0	-0.7



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
110.8	75.7	-36.2	200.0



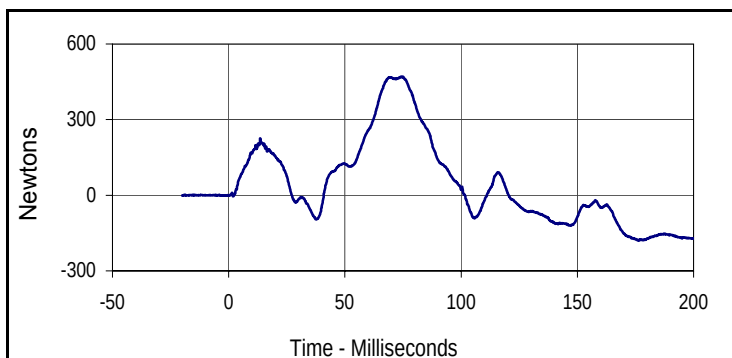
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
22.7	190.4	-60.7	71.6

Test Program: Hybrid III 5th Percentile Female Neck Extension Test

ATD Serial No.: 635

Test Date: 1/11/12

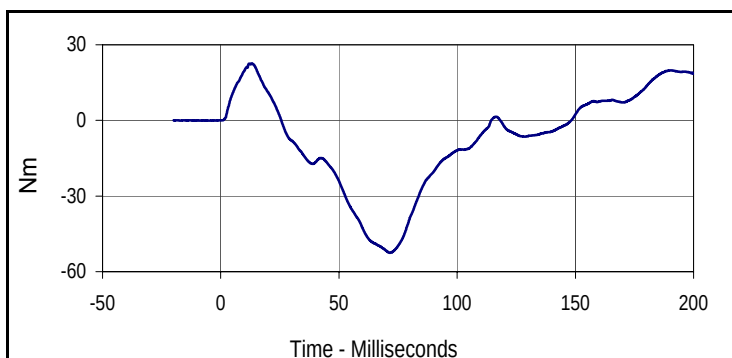
Test I.D.: F635NE027



Curve Description

Upper Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
471.1	74.1	-179.5	176.0



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
22.6	13.2	-52.5	71.6

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test

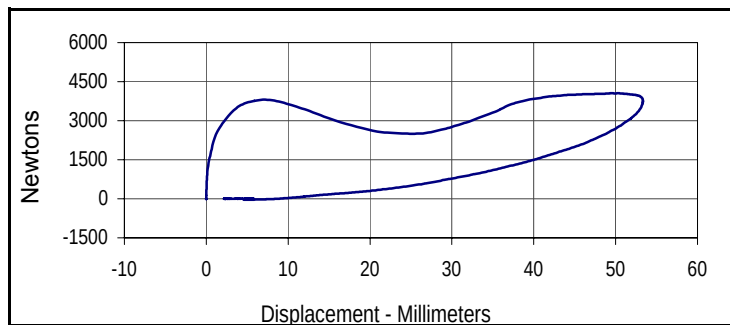
Test Date: 1/11/12

ATD Serial No.: 635

Test I.D.: F635CH027



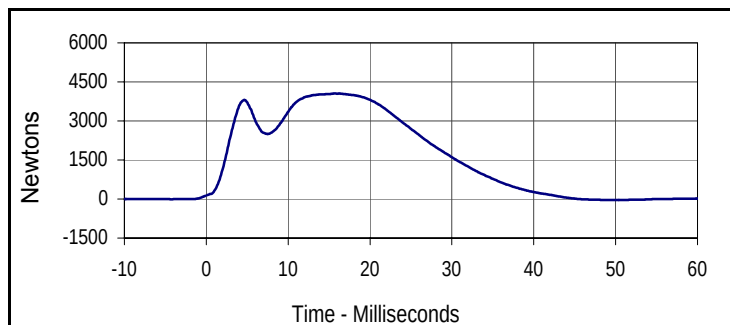
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	475	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Probe Velocity		m/s	6.59 to 6.83	6.67	Pass
Peak Chest Deflection		mm	50.0 to 58.0	53.3	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4054	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	4052	Pass
Internal Hysteresis		%	69 to 85	72.5	Pass
Overall Test Results					Pass



Curve Description

Probe Force vs. Chest Deflection

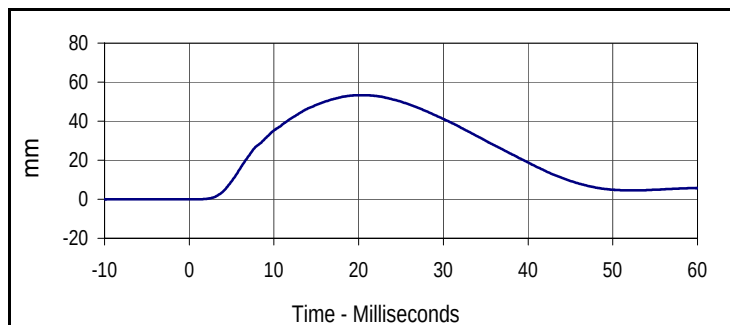
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	72.5
Peak Probe Force		Peak Chest Deflection	
4053.5		53.3	



Curve Description

Probe Force

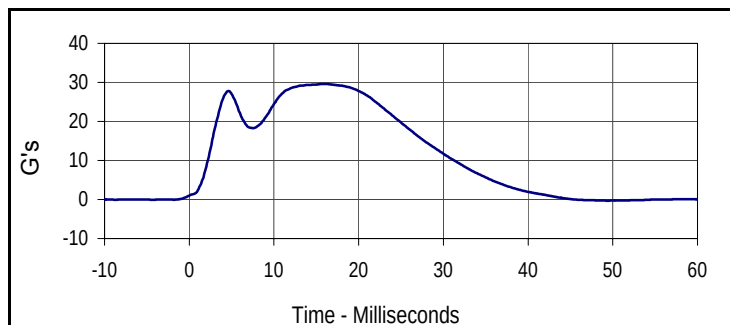
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4053.5	15.7	-39.7	49.4



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
53.3	20.4	0.0	-3.1



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
29.6	15.7	-0.3	49.4

Test Program: Hybrid III 5th Percentile Female Knee Impact Test

Test Date: 1/11/12

ATD Serial No.: 635

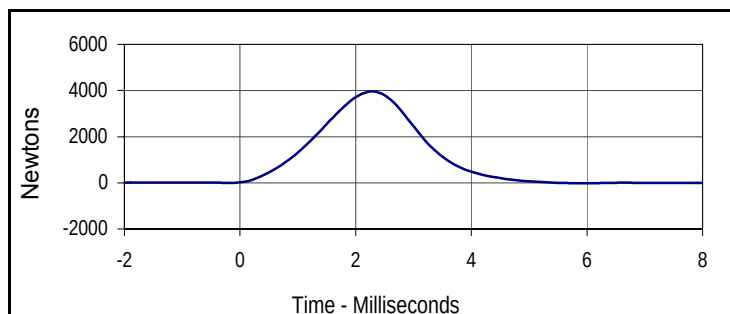
Test I.D.: F635LK027, F635RK027

**Left Knee**

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	330	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	3450 to 4060	3955	Pass
Overall Test Results				Pass	

Right Knee

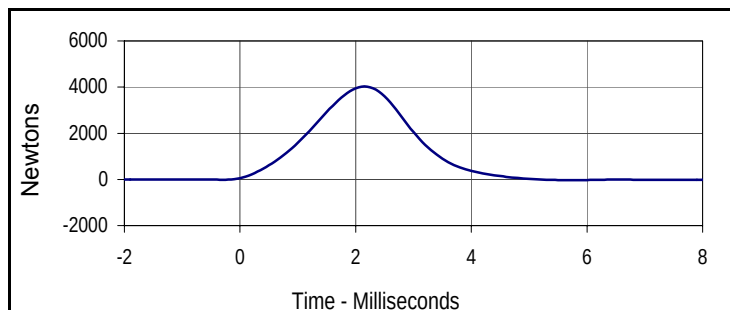
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force		Newtons	3450 to 4060	4018	Pass
Overall Test Results				Pass	

**Curve Description****Left Knee Probe Force**

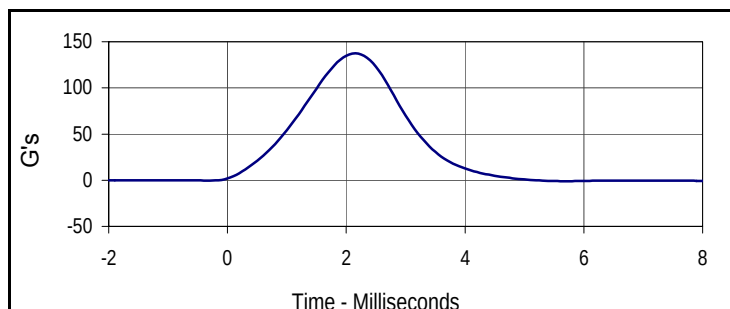
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3955.1	2.3	-22.9	6.0

**Curve Description****Left Knee Acceleration**

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
134.9	2.3	-0.8	6.0

**Curve Description****Right Knee Probe Force**

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
4018.4	2.2	-30.4	5.7

**Curve Description****Right Knee Acceleration**

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
137.1	2.2	-1.0	5.7

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

Test Date: 1/11/12

ATD Serial No.: 635

Test I.D.: F635TF027



Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	520	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	38.0	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Initial Reference Plane Angle		Degrees	≤ 20	7.1	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	371.4	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	1.3	Pass
Final Reference Plane Angle		Degrees	+/-8	2.0	Pass
Overall Test Results					Pass