

REPORT NUMBER: NCAP-KAR-12-012

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

**CHRYSLER GROUP LLC
2012 FIAT 500 3-DOOR HATCHBACK**

NHTSA NUMBER: MC0325

**PREPARED BY:
KARCO ENGINEERING, LLC.
9270 HOLLY ROAD
ADELANTO, CA 92301**



NOVEMBER 22, 2011

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE
ROOM W43-410
WASHINGTON, DC 20590**

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. NCAP-KAR-12-012		2. Government Accession No.		3. Recipient's Catalog No.																																																					
4. Title and Subtitle Final Report of New Car Assessment Program Testing of a 2012 Fiat 500 3-Door Hatchback NHTSA No. MC0325				5. Report Date November 22, 2011																																																					
				6. Performing Organization Code KAR																																																					
7. Authors Mr. Denver Schaffarzick, Project Engineer, KARCO Mr. Frank Richardson, Program Manager, KARCO				8. Performing Organization Report No. TR-P30001-25-NC																																																					
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301				10. Work Unit No.																																																					
				11. Contract or Grant No. DTNH22-06-D-00027																																																					
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C 20590				13. Type of Report and Period Covered Final Test Report, November 8, 2011 - November 22, 2011																																																					
				14. Sponsoring Agency Code NVS-111																																																					
15. Supplementary Notes																																																									
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2012 Fiat 500 3-door hatchback in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on November 8, 2011. The impact velocity of the vehicle was 56.03 km/h and the ambient temperature at the barrier face at the time of impact was 13.3 deg. C. The target vehicle's post-test maximum crush was 310 mm at 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>383.6</td> <td>700.0</td> <td>301.4</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-23</td> <td>52</td> <td>-16</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.30</td> <td>1</td> <td>0.49</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1805.7</td> <td>2620</td> <td>1138.3</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-674.2</td> <td>2520</td> <td>-106.9</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-1941.0</td> <td>6805</td> <td>-2131.3</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-2540.0</td> <td>6805</td> <td>-3853.4</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	383.6	700.0	301.4	Maximum Chest Compression	mm	63	-23	52	-16	Nij	N/A	1	0.30	1	0.49	Neck Tension	N	4170	1805.7	2620	1138.3	Neck Compression	N	4000	-674.2	2520	-106.9	Left Femur Force	N	10008	-1941.0	6805	-2131.3	Right Femur Force	N	10008	-2540.0	6805	-3853.4
Measurement Description	Units	Driver ATD		Passenger ATD																																																					
		Threshold	Result	Threshold	Result																																																				
Head Injury Criteria (HIC ₁₅)	N/A	700.0	383.6	700.0	301.4																																																				
Maximum Chest Compression	mm	63	-23	52	-16																																																				
Nij	N/A	1	0.30	1	0.49																																																				
Neck Tension	N	4170	1805.7	2620	1138.3																																																				
Neck Compression	N	4000	-674.2	2520	-106.9																																																				
Left Femur Force	N	10008	-1941.0	6805	-2131.3																																																				
Right Femur Force	N	10008	-2540.0	6805	-3853.4																																																				
17. Key Words 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP)				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 1200 New Jersey Ave., SE Washington, DC 20590																																																					
19. Security Classification of this report UNCLASSIFIED		20. Security Classification of this page UNCLASSIFIED		21. No. of Pages 149	22. Price																																																				

TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	Purpose and Summary of the Test	1
2	Occupant and Vehicle Information / Data Sheets	3
<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	4
2	Seat Adjustment, Fuel Systems, and Steering Wheel Data	8
3	Dummy Longitudinal Clearance Dimensions	10
4	Dummy Lateral Clearance Dimensions	11
5	Seat Belt Positioning Data	12
6	High-Speed Camera Locations and Data	13
7	Vehicle Accelerometer Locations	15
8	Photographic Reference Target Locations	16
9	Load Cell Locations on Fixed Barrier	17
10	Test Vehicle Camera and Instrumentation Summary	18
11	Post-Test Observations	19
12	Vehicle Profile Measurements	20
13	Accident Investigation Division Data	22
14	Vehicle Intrusion Measurements	23
15	Summary of FMVSS 212 and FMVSS 219 (Partial) Data	28
16	FMVSS 301 Fuel Static Rollover Data	30
17	Dummy / Vehicle Temperature Stabilization	31
<u>Appendix</u>		<u>Page No.</u>
A	Photographs	A
B	Dummy Response Data Traces	B
C	Dummy Calibration and Performance Verification Data	C

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 Fiat 500 3-door hatchback at a velocity of 56.03 km/h. The test was performed at KARCO Engineering, LLC. on November 8, 2011. 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 fourteen (14) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in 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 also on the driver's and the passenger's lap and shoulder 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 310 mm located at 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 airbag.

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)	383.6	51.4	66.4	-23	0.30	1805.7	-674.2	-1941.0	-2540.0
Passenger (5th)	301.4	55.0	70.0	-16	0.49	1138.3	-106.9	-2131.3	-3853.4

SECTION 2
DATA SHEETS

Test Vehicle:	2012 Fiat 500 3-Door Hatchback	NHTSA No.:	MC0325
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	11/8/11

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	Fluid Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Temperature	General Use	°F	°C	$=(tf - 32)/1.8$
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 Fiat 500 3-Door Hatchback	NHTSA No.:	MC0325
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	11/8/11

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MC0325
Model Year	2012
Make	Fiat
Model	500
Body Style	3-Door Hatchback
VIN	3C3CFFARXCT119553
Body Color	Espresso Brown
Odometer Reading (km / mi)	16 / 10
Engine Displacement (L)	1.4
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Front
Roof Rack	No
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	No

Auto-Levelling System	No
Automatic Door Locks	Yes
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	Yes
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?

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group LLC
Date of Manufacture	Jun-11

GVWR (kg)	1497
GAWR Front (kg)	850
GAWR Rear (kg)	810

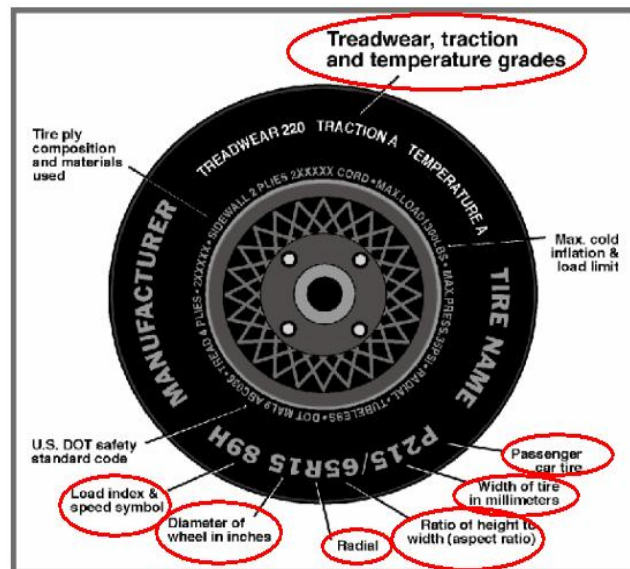
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	2	2		4	
Capacity Weight (VCW) (kg)				340.0	A
DSC x 68.04 (kg)				272.2	B
Cargo Weight (RCLW) (kg)				67.8	A-B

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2012 Fiat 500 3-Door Hatchback	NHTSA No.:	MC0325
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	11/8/11



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	210
Recommended Tire Size	185/55R15	185/55R15
Tire Size on Vehicle	185/55R15	185/55R15
Tire Manufacturer	Continental	Continental
Tire Model	ContiPro Contact	ContiPro Contact
Treadwear	500	500
Traction	AA	AA
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 1 Polyester, 2 Polyamide	2 Steel, 1 Polyester, 2 Polyamide
Load Index / Speed Symbol	82H	82H
Tire Material	Steel, Polyester, Polyamide	Steel, Polyester, Polyamide
DOT Safety Code Left	P58X 3X4 1911	P58X 3X4 1911
DOT Safety Code Right	P58X 3X4 1911	P58X 3X4 1911

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

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	366.0	190.5		418.0	270.5	
Right	kg	358.0	193.5		369.5	250.0	
Ratio	%	65.3%	34.7%	100.0%	60.2%	39.8%	100.0%
Total	kg	724.0	384.0	1108.0	787.5	520.5	1308.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1108.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	67.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1316.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	636	650	670	683	799
As Tested	mm	624	638	633	647	917
Post-Test	mm	618	624	631	644	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2305
Total Vehicle Length at Left Side	mm	3043
Total Vehicle Length at Centerline	mm	3520
Total Vehicle Length at Right Side	mm	3036
Weight of Ballast in Cargo Area	kg	66.5
Weight of Vehicle Components Removed	kg	6.0
Amount of Stoddard Solvent in Fuel Tank	L	37.32

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Rear trunk cover (2.0 kg), Wheel covers (1.5 kg), Tire repair kit (2.5 kg)

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

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length	3520	3210	-310
2	Total Width	1625	1695	70
3	Bumper Top Height	685	752	67
4	Bumper Bottom Height	468	470	2
5	Longitudinal Member Top Height	490	600	110
6	Distance Between Longitudinal Members	860	700	-160
7	Longitudinal Member Width	40	57	17
8	Engine Top Height	835	890	55
9	Engine Bottom Height	158	213	55
10	Engine and Gearbox Width	445	445	0
11	Front Bumper to Engine Distance	270	125	-145
12	Front Shock Absorber Fixing Height	840	815	-25
13	Bonnet Leading Edge Height	730	812	82
14	Front Shock Absorber Fixing Width	1100	1080	-20
15	Front Bumper to Front Axle Distance	710	360	-350
16	Front Axle to A-Pillar Distance	430	440	10
17	A-Pillar to B-Pillar Distance	1198	1098	-100
18	B-Pillar to Rear Axle Distance	705	710	5
19	B-Pillar to C-Pillar Distance	557	558	1
20	Roof Sill Bottom Height	1334	1343	9
21	Roof Sill Top Height	1434	1445	11
22	Floor Sill Bottom Height	183	188	5
23	Floor Sill Top Height	300	317	17

All measurements in millimeters.

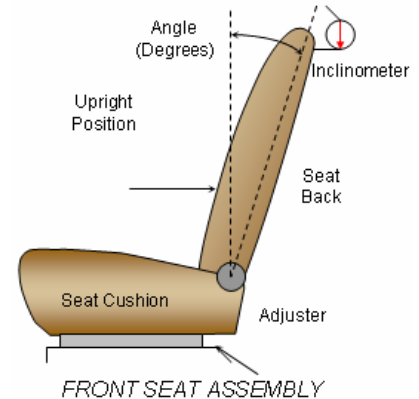
DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle:	2012 Fiat 500 3-Door Hatchback	NHTSA No.:	MC0325
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	11/8/11

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 at the headrest post using a digital inclinometer.

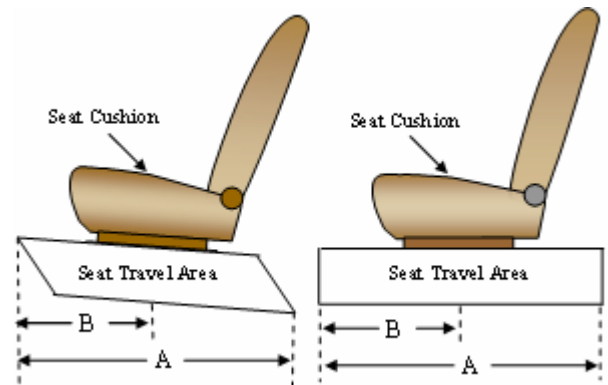


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	1.0
Passenger Seat Back Angle	3.8

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	270 mm	140 mm
Passenger Seat	210 mm	0 mm

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	Fixed	Fixed
Passenger Seat	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

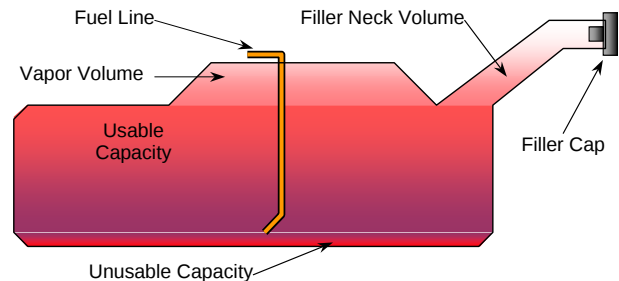
Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	40.12
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	36.91 to 37.71
Actual Amount of Stoddard Solvent Used	37.32
1/3 of Usable Capacity	13.37

FUEL PUMP

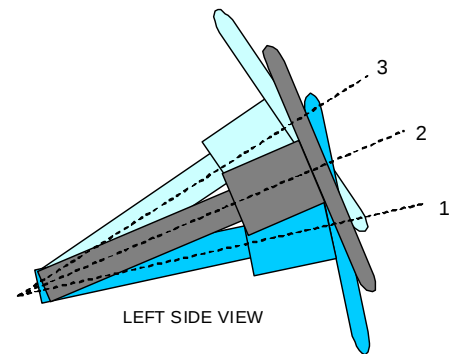
The vehicle is equipped with an electric fuel pump.
The fuel pump will pump fuel when the ignition key is turned to the "on" position.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. 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 ASSEMBLY

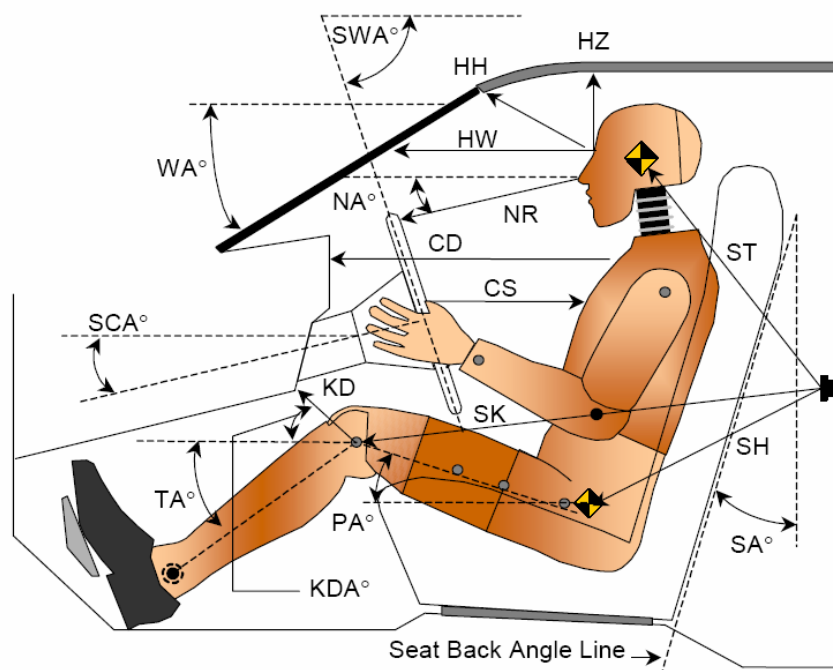
STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	24.4	0
Geometric Center Position, No. 2	27.0	0
Uppermost Position, No. 3	29.6	0
Telescoping Steering Wheel Travel		0
Test Position	27.0	0

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11



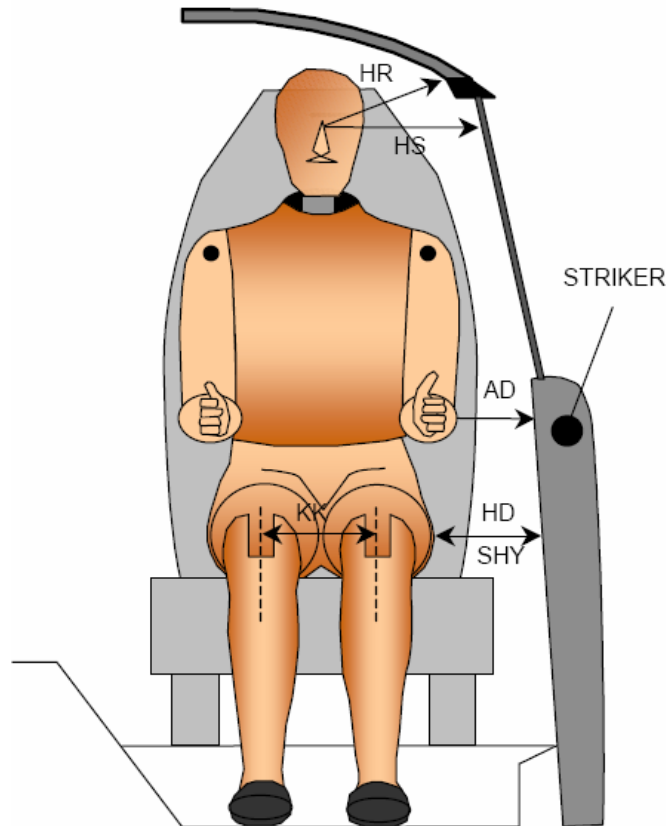
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		26.7		
SWA°	Steering Wheel Angle		63.0		
SCA°	Steering Column Angle		27.0		
SA°	Seat Back Angle (On Headrest Post)		1.0		3.8
HZ	Head to Roof	234	90.0	283	90.0
HH	Head to Header	381	21.5	339	35.0
HW	Head to Windshield	705	0.0	726	0.0
NR	Nose to Rim	417	6.7	485	29.5
CD	Chest to Dash	575	11.2	439	11.1
CS	Chest to Steering Hub	303	0.0		
RA	Rim to Abdomen	210	0.0		
KDL	Left Knee to Dash	195	13.0	91	37.0
KDR	Right Knee to Dash	106	27.0	120	20.5
PA°	Pelvic Angle		24.9		21.4
TA°	Tibia Angle		52.1		57.3
SK	Striker to Knee	800	0.5	867	1.2
ST	Striker to Head	601	62.2	605	48.3
SH	Striker to H-Point	432	16.1	533	12.1

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2012 Fiat 500 3-Door Hatchback	NHTSA No.:	MC0325
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	11/8/11



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	110	78
HD	H-Point to Door	93	145
HR	Head to Side Header	210	238
HS	Head to Side Window	309	311
KK	Knee to Knee	298	230
SHY	Striker to H-Point (Y-Direction)	196	250
AA	Ankle to Ankle	340	200

DATA SHEET NO. 5

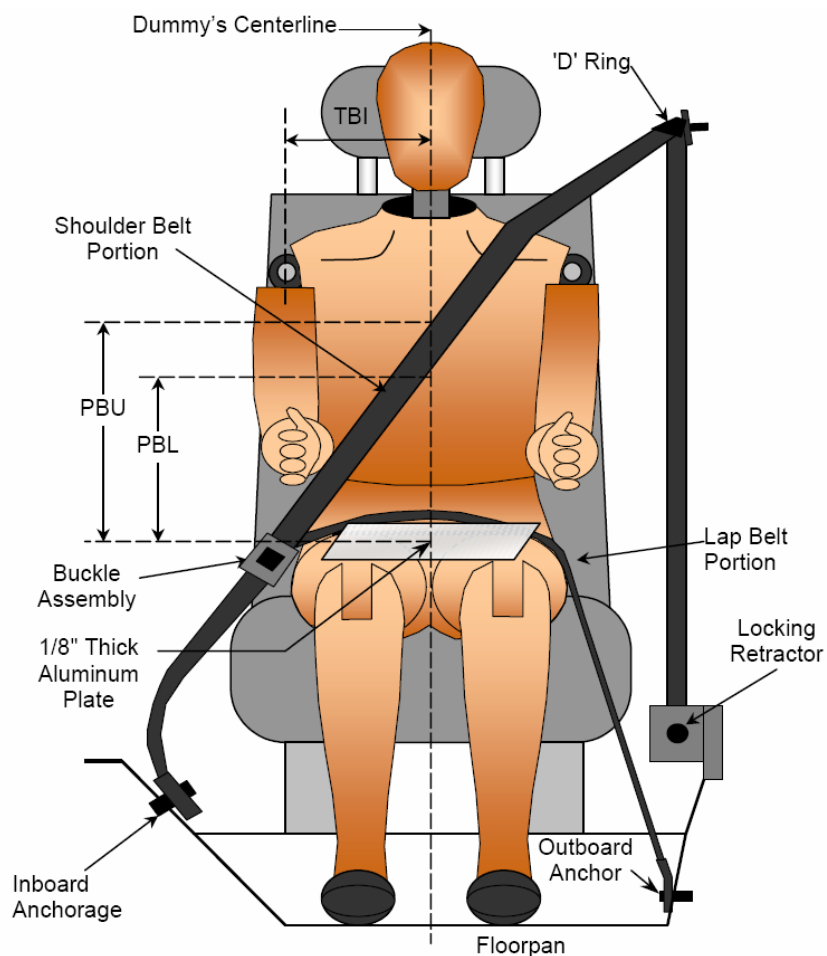
SEAT BELT POSITIONING DATA

Test Vehicle: 2012 Fiat 500 3-Door Hatchback

NHTSA No.: MC0325

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/8/11



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	317	280
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	241	203

BELT LENGTH DATA

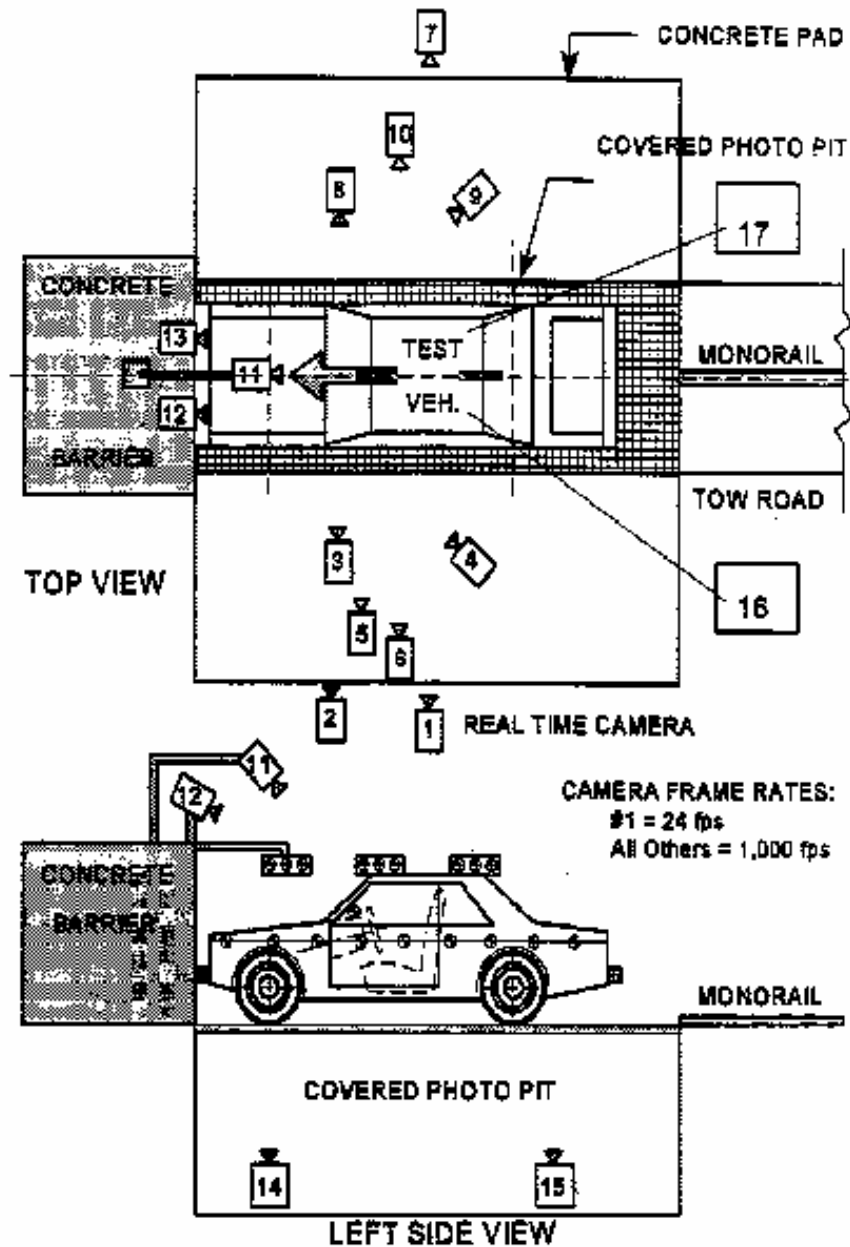
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	941	977
Lap Belt Length as Measured on ATD	mm	863	918
Remainder of Belt on Reel	mm	1021	878
Total Belt Length for Continuous Webbing Systems	mm	2825	2773

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

CAMERA LOCATIONS

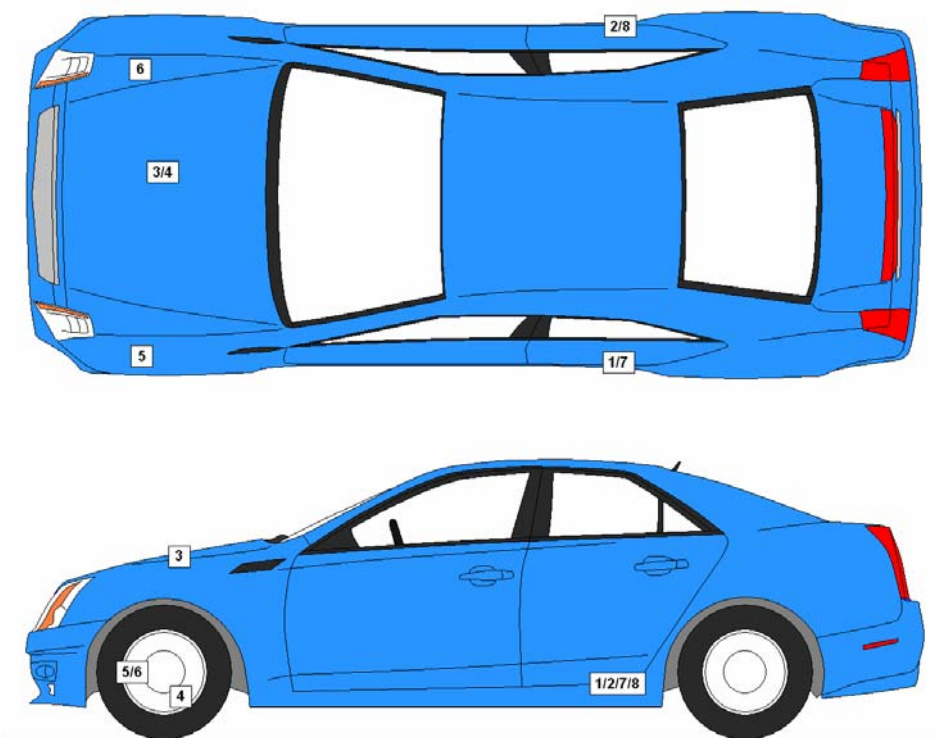
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering 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					
17	Onboard Passenger Airbag (Optional)					
18	Real-Time Left View of Impact (Optional)					
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 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1630	-560	-340
2	Right Rear Accelerometer X-Direction	1630	560	-340
3	Engine Top X	3140	210	-835
4	Engine Bottom X	2810	350	-158
5	Left Brake Caliper X	3140	-695	-280
6	Right Brake Caliper X	3140	695	-280
7	Left Rear Accelerometer Z-Direction	1630	-560	-340
8	Right Rear Accelerometer Z-Direction	1630	560	-340

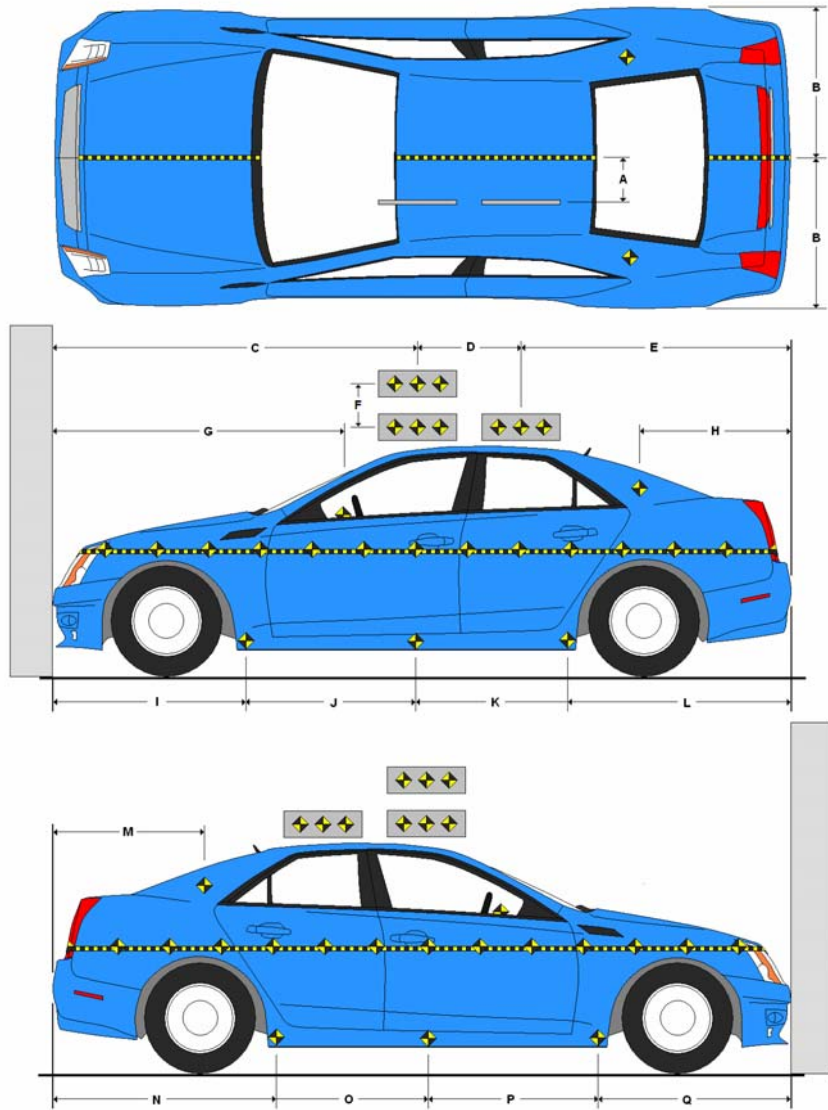
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

Item	Value
A	335
B	1760
C	1875
D	610
E	1028
F	305
G	1350
H	583
I	1103
J	749
K	749
L	922
M	610
N	932
O	748
P	748
Q	1102



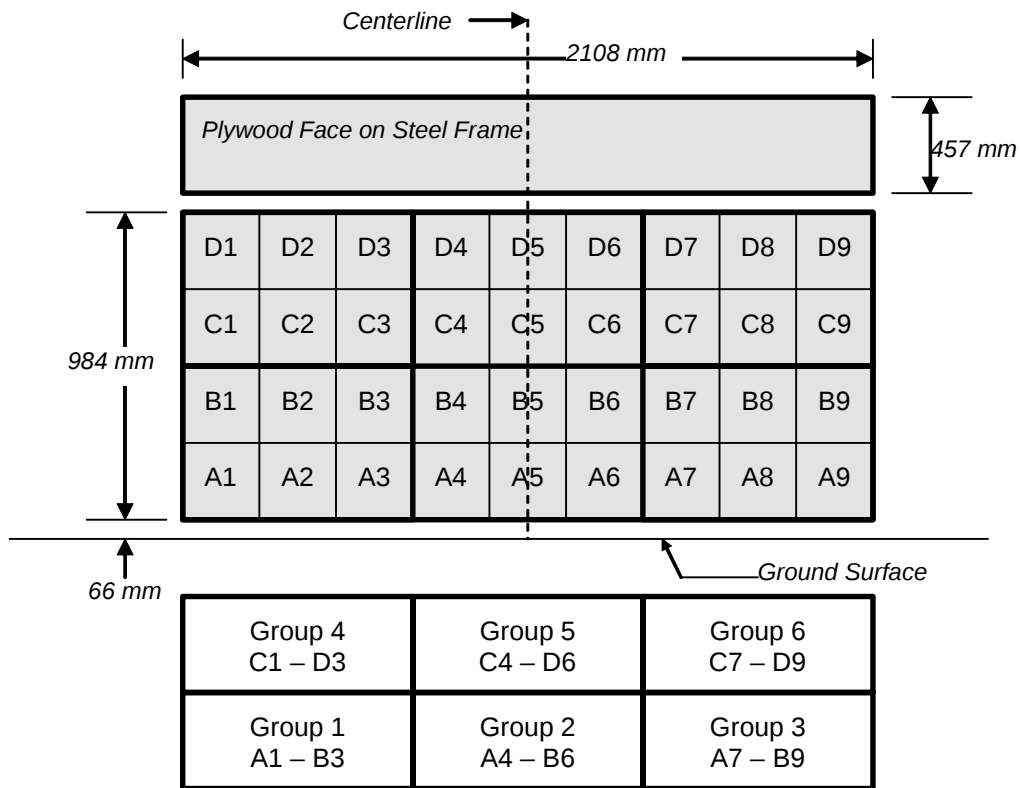
All measurements in millimeters.

DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

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 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

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	0
High-Speed Off board	14
Real Time	3
Total	17

DATA SHEET NO. 11

POST-TEST OBSERVATIONS

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

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 Airbag	Glovebox
Right Knee Contact	Knee Airbag	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		
Seat Track Shift (mm)	18	13
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

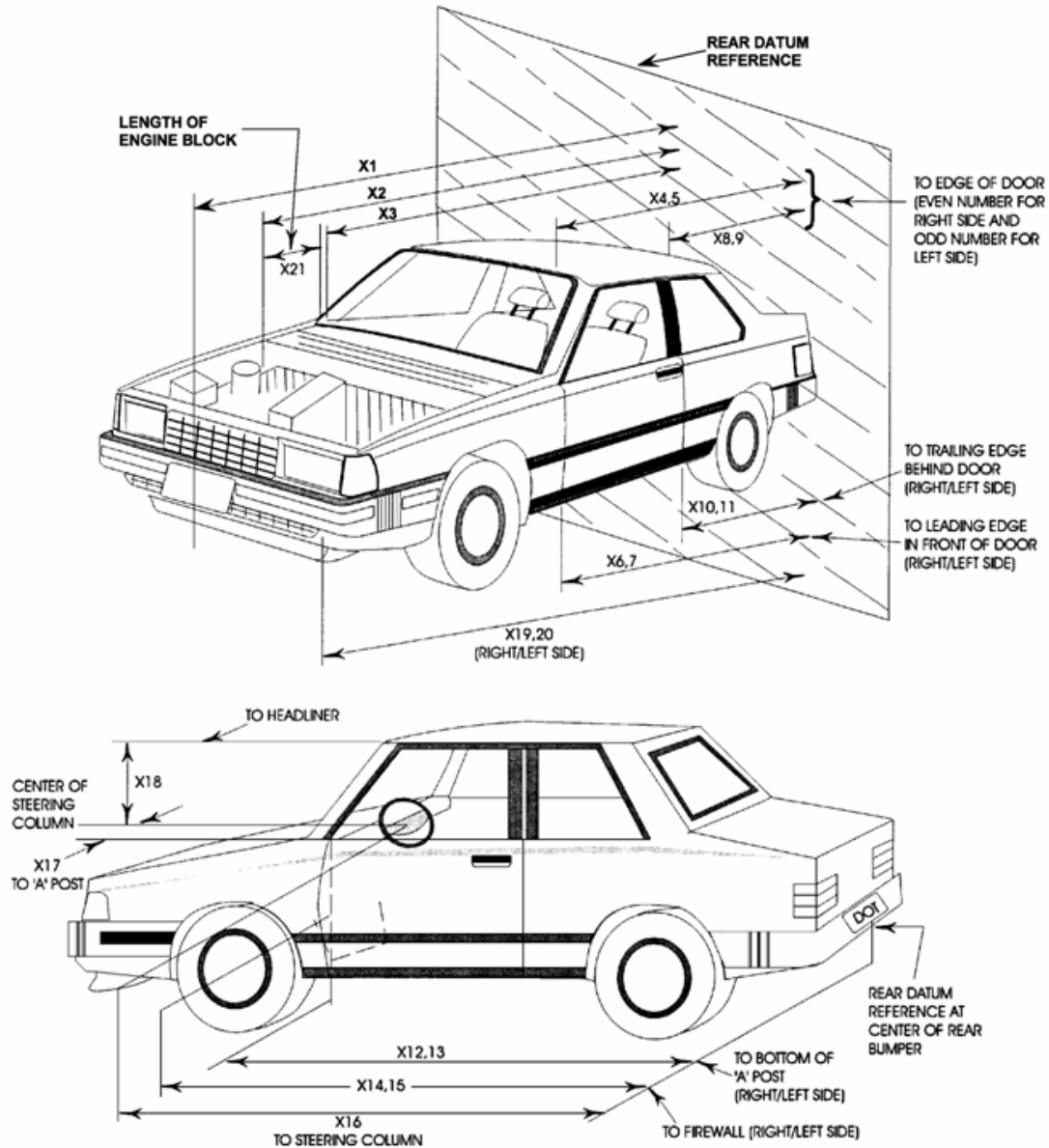
Measured Parameter	Units	Value
Left Side	mm	1170
Center	mm	1195
Right Side	mm	1220
Average	mm	1195

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 (Torso/Pelvis)	Yes	No	Yes	No
Side Airbag 2 (Curtain)	Yes	No	Yes	No
Knee Airbag	Yes	Yes	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 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

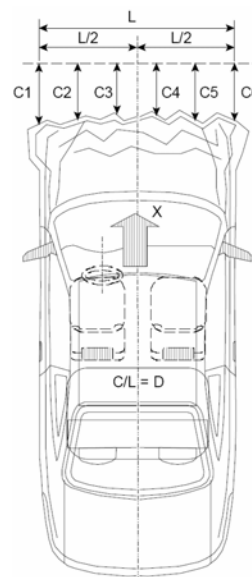


DATA SHEET NO. 12 ... (CONTINUED)**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	3520	3210	-310
2	Rear Surface of Vehicle to Front of Engine	3250	3068	-182
3	RSOV to Firewall	2815	2805	-10
4	RSOV to Upper Leading Edge of Right Door	2402	2432	30
5	RSOV to Upper Leading Edge of Left Door	2401	2431	30
6	RSOV to Lower Leading Edge of Right Door	2402	2405	3
7	RSOV to Lower Leading Edge of Left Door	2401	2406	5
8	RSOV to Upper Trailing Edge of Right Door	1182	1212	30
9	RSOV to Upper Trailing Edge of Left Door	1182	1211	29
10	RSOV to Lower Trailing Edge of Right Door	1225	1246	21
11	RSOV to Lower Trailing Edge of Left Door	1233	1237	4
12	RSOV to Bottom of A-Pillar, Right Side	2343	2378	35
13	RSOV to Bottom of A-Pillar, Left Side	2351	2378	27
14	RSOV to Firewall, Right Side	2865	2545	-320
15	RSOV to Firewall, Left Side	2885	2780	-105
16	RSOV to Steering Column	1950	1982	32
17	Center of Steering Column to A-Pillar	370	360	-10
18	Center of Steering Column to Headliner	415	387	-28
19	RSOV to Right Side of Front Bumper	3036	3150	114
20	RSOV to Left Side of Front Bumper	3043	3113	70
21	Length of Engine Block	570	570	0
RD	RSOV to Right Side of Dash Panel	2260	2296	36
CD	RSOV to Center of Dash Panel	2170	2205	35
LD	RSOV to Left Side of Dash Panel	2260	2295	35

All measurements in millimeters.

DATA SHEET NO. 13**ACCIDENT INVESTIGATION DATA**Test Vehicle: 2012 Fiat 500 3-Door HatchbackNHTSA No.: MC0325Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 11/8/11**VEHICLE INFORMATION**VIN: 3C3CFFARXCT119553Wheelbase (mm): 2305Vehicle Size Category: 3-Door HatchbackTest Weight (kg): 1308.0**ACCELEROMETER DATA**Accelerometer Locations: Left Rear CrossmemberCal. Procedure/Interval: Drop Test / 6 monthsIntegration Algorithm: NHTSA StandardImpact Velocity (km/h): 56.03Velocity Change (km/h): 64.4Time of Separation (msec): 41.3Linearity: Good**CRUSH PROFILE**Collision Deformation Classification: 12FDEW2Midpoint of Damage: Vehicle CenterlineDamage Region Length (mm): 1255Impact Mode: Full Frontal

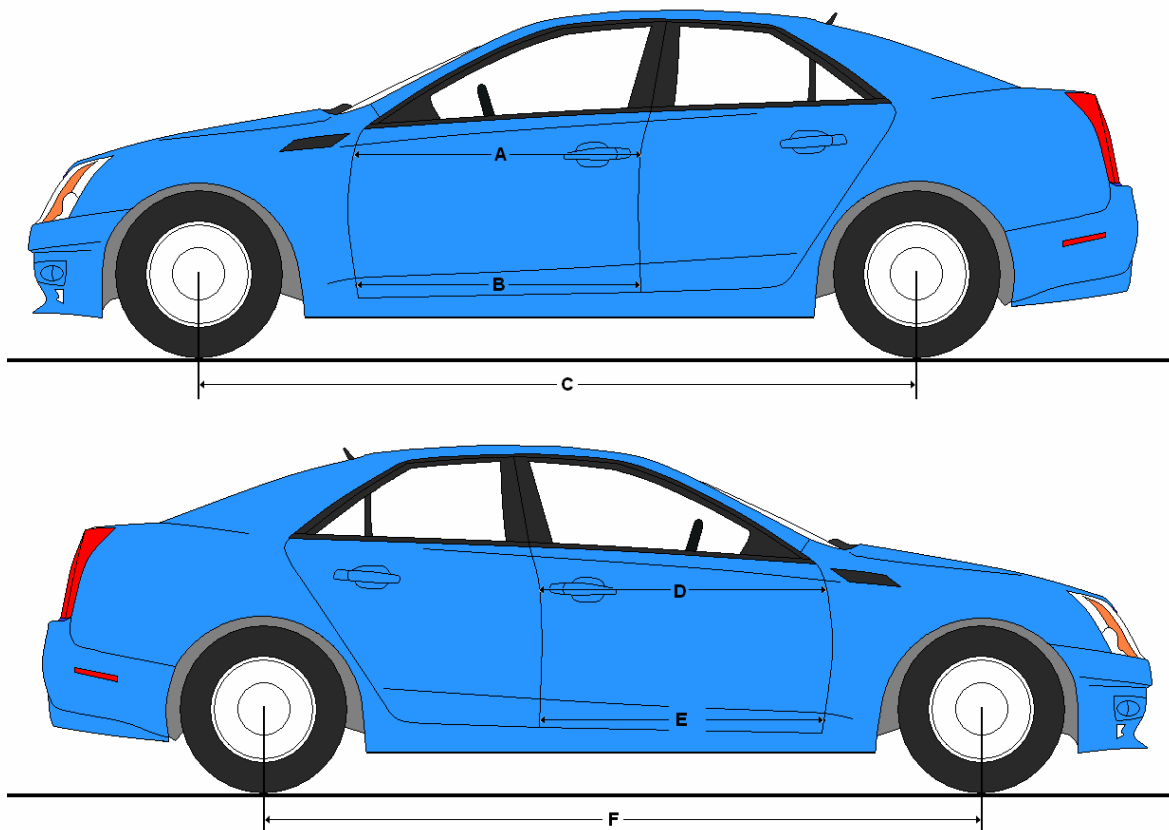
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	194	354	160
C2	Crush Zone 2 at Left Side	mm	73	325	252
C3	Crush Zone 3 at Left Side	mm	37	310	273
C4	Crush Zone 4 at Right Side	mm	37	306	269
C5	Crush Zone 5 at Right Side	mm	73	323	250
C6	Crush Zone 6 at Right Side	mm	194	337	143
L	C1 to C6	mm	1255		

DATA SHEET NO. 14**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2012 Fiat 500 3-Door HatchbackNHTSA No.: MC0325Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 11/8/11**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1090	1098	-8
B	Left Side Lower	mm	1121	1202	-81
D	Right Side Upper	mm	1090	1093	-3
E	Right Side Lower	mm	1090	1090	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2305	2320	-15
F	Right Side Wheelbase	mm	2305	2310	-5



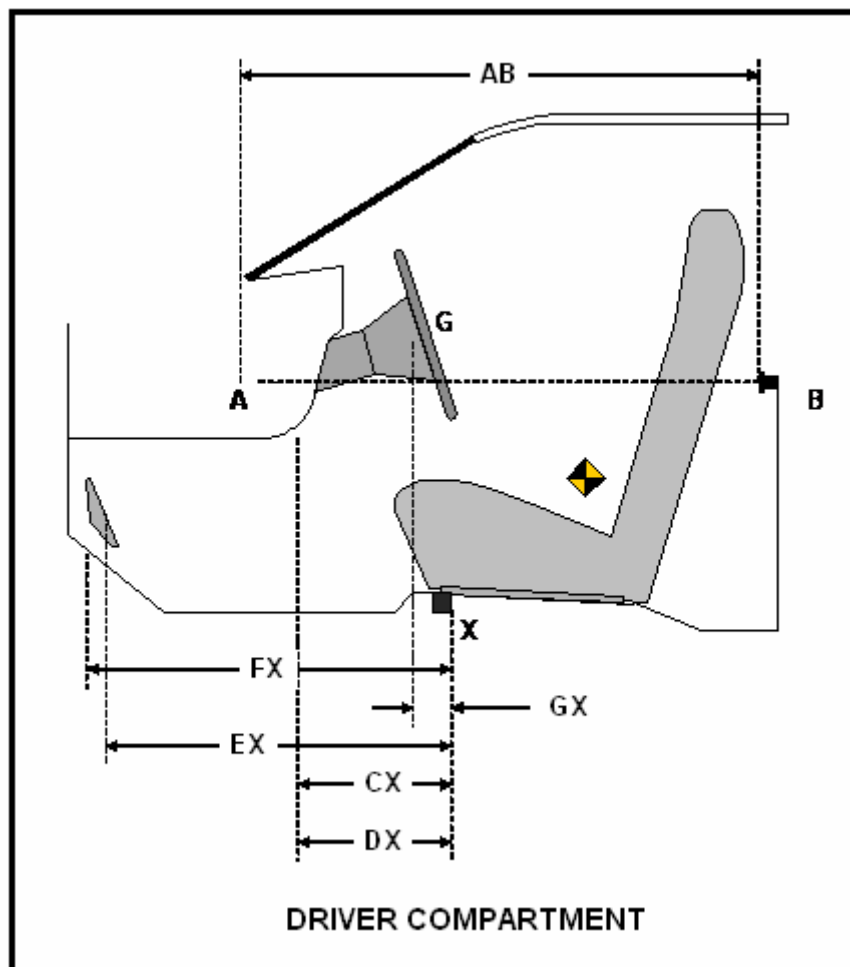
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

DRIVER COMPARTMENT INTRUSION

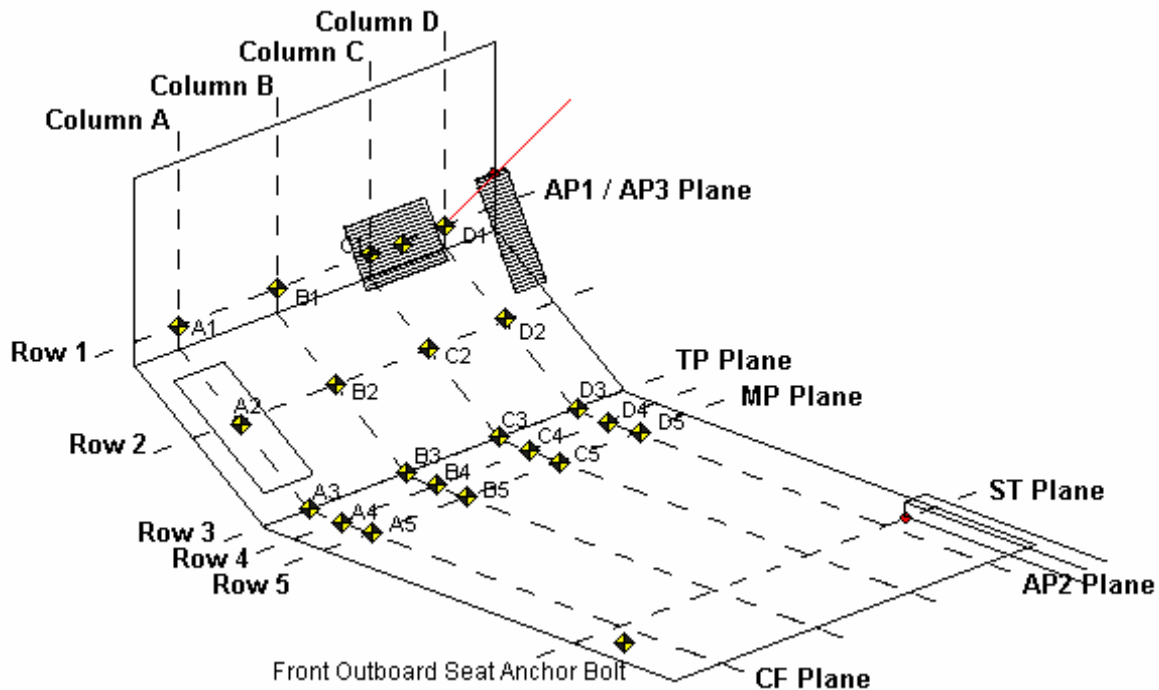
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	1011	1013	-2
CX	Left Knee Bolster to X	mm	380	350	30
DX	Right Knee Bolster to X	mm	355	330	25
EX	Brake Pedal to X	mm	560	510	50
FX	Foot Rest to X	mm	600	610	-10
GX	Center of Steering Wheel Hub to X	mm	154	50	104

X = Front of Seat Track (Stationary)



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

Test Vehicle:	2012 Fiat 500 3-Door Hatchback	NHTSA No.:	MC0325
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	11/8/11



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 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	628	688	684	680	613	669	660	646	15	19	24	34
2	600	609	610	608	584	590	594	602	16	19	16	6
3	532	530	529	530	522	518	519	520	10	12	10	10
4	395	392	391	390	385	382	381	380	10	10	10	10
5	255	254	251	250	246	245	243	240	9	9	8	10

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-67	-178	-279	-408	-70	-185	-284	-410	3	7	5	2
2	-70	-176	-275	-408	-72	-179	-278	-408	2	3	3	0
3	-71	-176	-274	-408	-71	-176	-274	-408	0	0	0	0
4	-70	-171	-273	-408	-71	-171	-272	-408	1	0	-1	0
5	-67	-168	-270	-404	-68	-169	-270	-404	1	1	0	0

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	33	-17	-20	-22	34	-21	-26	-28	-1	4	6	6
2	-63	-72	-71	-70	-63	-75	-84	-94	0	3	13	24
3	-118	-117	-116	-113	-124	-130	-134	-128	6	13	18	15
4	-122	-116	-118	-119	-124	-123	-129	-126	2	7	11	7
5	-117	-116	-123	-118	-115	-119	-129	-122	-2	3	6	4

All measurements in millimeters

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

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	711	701	692	627	700	690	680	616	11	11	12	11
2	639	629	625	611	635	618	614	601	4	11	11	10
3	567	557	550	541	559	548	540	532	8	9	10	9
4	413	406	402	399	404	397	395	391	9	9	7	8
5	268	265	259	258	259	257	251	250	9	8	8	8

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	385	252	152	71	384	255	156	74	1	-3	-4	-3
2	393	260	156	70	393	262	158	71	0	-2	-2	-1
3	402	267	160	72	402	266	160	71	0	1	0	1
4	416	273	166	73	414	272	165	73	2	1	1	0
5	420	278	173	70	419	277	172	70	1	1	1	0

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-3	-9	-15	10	-31	-30	-29	-3	28	21	14	13
2	-53	-60	-64	-61	-86	-80	-80	-73	33	20	16	12
3	-96	-103	-108	-114	-122	-127	-126	-128	26	24	18	14
4	-117	-116	-111	-119	-135	-135	-126	-130	18	19	15	11
5	-122	-122	-115	-116	-137	-138	-127	-123	15	16	12	7

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

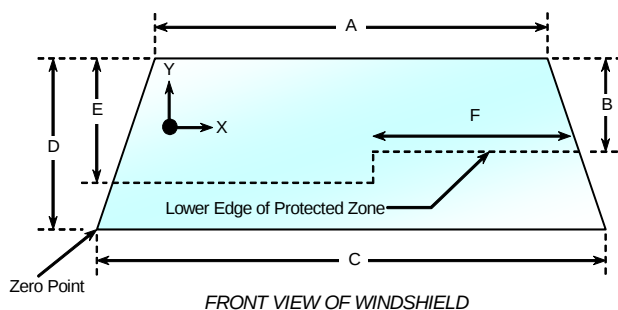
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic and rubber molding sealed with rubber cement.

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: 21.3° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2068	2068	100.0%
Right Side	2068	2068	100.0%
Total	4136	4136	100.0%



Item	Units	Value
A	mm	1105
B	mm	290
C	mm	1330
D	mm	850
E	mm	450
F	mm	400

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 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 13.3° C Test Time: 12:20 PM

Stoddard Solvent Spillage Measurements

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

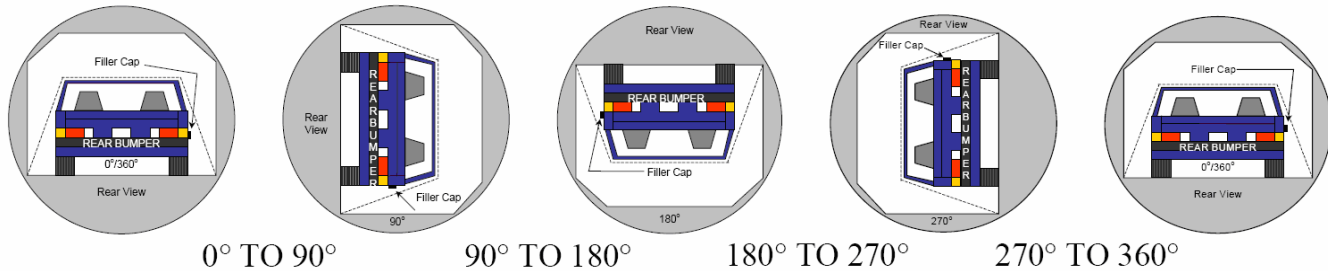
DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2012 Fiat 500 3-Door Hatchback

NHTSA No.: MC0325

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/8/11



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°	81	300	381
90° To 180°	80	300	380
180° To 270°	79	310	389
270° To 360°	83	300	383

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	0		
270° To 360°	0			

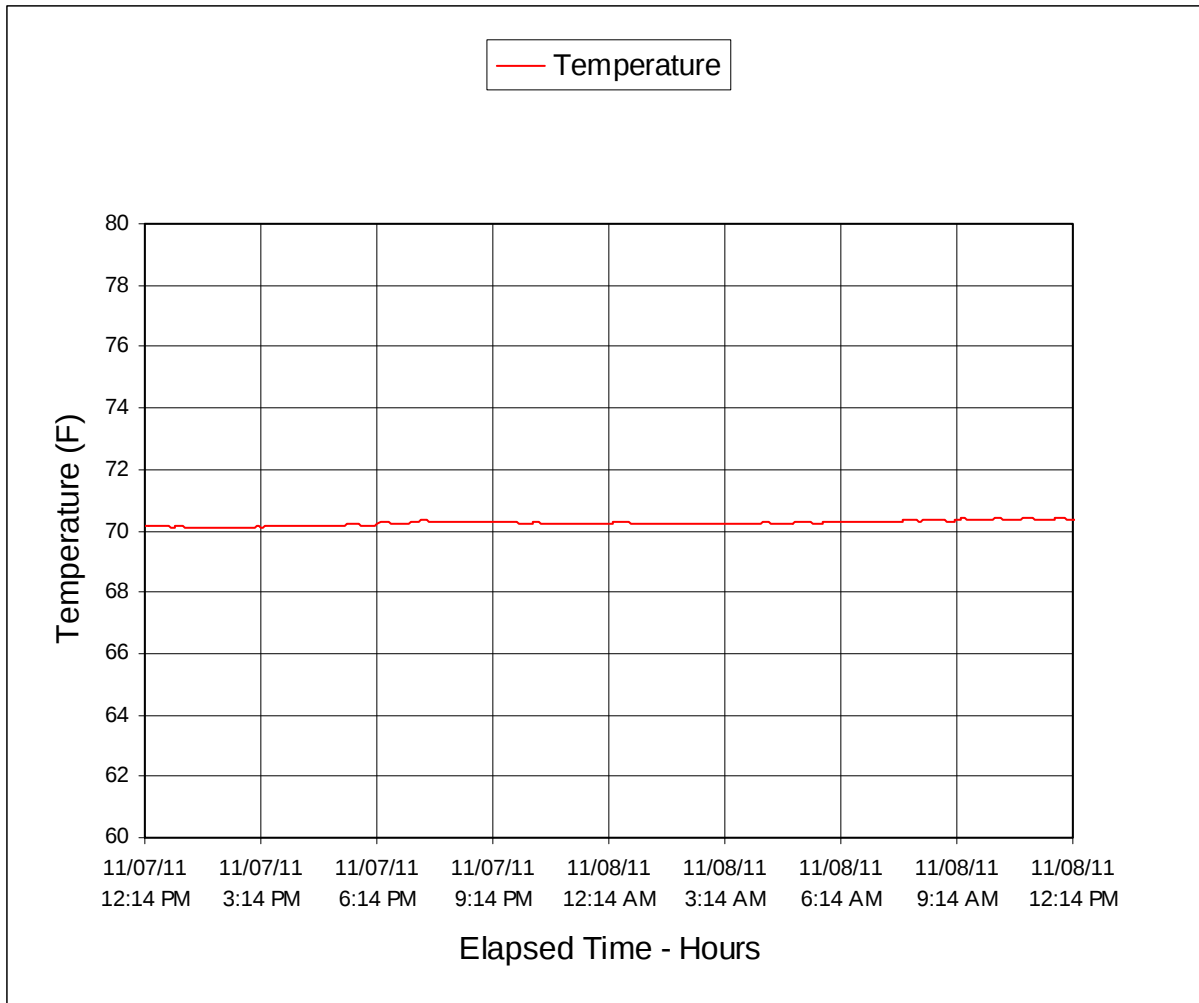
SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° To 90°	N/A
90° To 180°	N/A
180° To 270°	N/A
270° To 360°	N/A

DATA SHEET NO. 17

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2012 Fiat 500 3-Door Hatchback NHTSA No.: MC0325
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/8/11



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Figure		Page
1	Load Cell Location	A-1
2	Load Cell Wall	A-1
3	Manufacturer's Label	A-2
4	Tire Placard	A-2
5	2012 Fiat 500 Frontal as Delivered	A-3
6	Left Rear 3-4 View, As Received	A-3
7	Pre-Test Front View of Test Vehicle	A-4
8	Post-Test Front View of Test Vehicle	A-4
9	Pre-Test Left View of Test Vehicle	A-5
10	Post-Test Left View of Test Vehicle	A-5
11	Pre-Test Right View of Test Vehicle	A-6
12	Post-Test Right View of Test Vehicle	A-6
13	Pre-Test Right Front 3-4 View	A-7
14	Post-Test Right Front 3-4 View	A-7
15	Pre-Test Left Rear 3-4 View	A-8
16	Post-Test Left Rear 3-4 View	A-8
17	Pre-Test Windshield View	A-9
18	Post-Test Windshield View	A-9
19	Pre-Test Engine Compartment View	A-10
20	Post-Test Engine Compartment View	A-10
21	Pre-Test Fuel Filler Cap View	A-11
22	Post-Test Fuel Filler Cap View	A-11
23	Pre-Test Front Underbody View	A-12
24	Post-Test Front Underbody View	A-12
25	Pre-Test Rear Underbody View	A-13
26	Post-Test Rear Underbody View	A-13
27	Pre-Test Dummy Cable Routing	A-14
28	Post-Test Dummy Cable Routing	A-14
29	Pre-Test Driver Dummy Front View	A-15
30	Post-Test Driver Dummy Front View	A-15
31	Pre-Test Driver Dummy Window View	A-16
32	Post-Test Driver Dummy Window View	A-16
33	Pre-Test Driver Dummy and Vehicle Interior View	A-17
34	Post-Test Driver Dummy and Vehicle Interior View	A-17
35	Pre-Test Driver's Seat Fore-Aft Markings	A-18

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
36	Post-Test Driver's Seat Fore-Aft Markings	A-18
37	Pre-Test Driver Dummy Feet	A-19
38	Post-Test Driver Dummy Feet	A-19
39	Pre-Test Driver's Side Knee Bolster	A-20
40	Post-Test Driver's Side Knee Bolster	A-20
41	Pre-Test Driver's Side Floorpan	A-21
42	Post-Test Driver's Side Floorpan	A-21
43	Post-Test Driver Dummy Face	A-22
44	Post-Test Driver Dummy Contact With Airbag	A-22
45	Post-Test Driver Dummy Contact With Headrest	A-23
45a	Post-Test Driver Dummy Contact With Knee Airbag	A-23
46	Pre-Test View of the Steering Wheel	A-24
47	Post-Test View of the Steering Wheel	A-24
48	Pre-Test Passenger Dummy Front View	A-25
49	Post-Test Passenger Dummy Front View	A-25
50	Pre-Test Passenger Dummy Window View	A-26
51	Post-Test Passenger Dummy Window View	A-26
52	Pre-Test Passenger Dummy and Vehicle Interior View	A-27
53	Post-Test Passenger Dummy and Vehicle Interior View	A-27
54	Pre-Test Passenger's Seat Fore-Aft Markings	A-28
55	Post-Test Passenger's Seat Fore-Aft Markings	A-28
56	Pre-Test Passenger Dummy Feet	A-29
57	Post-Test Passenger Dummy Feet	A-29
58	Pre-Test Passenger's Side Knee Bolster	A-30
59	Post-Test Passenger's Side Knee Bolster	A-30
60	Pre-Test Passenger's Side Floorpan	A-31
61	Post-Test Passenger's Side Floorpan	A-31
62	Post-Test Passenger Dummy Contact With Airbag	A-32
62a	Post-Test Passenger Dummy Contact With Headrest	A-32
62b	Post-Test Passenger Dummy Contact With Glovebox	A-33
63	Photograph of Ballast Installed in Vehicle	A-33
64	Post-Test Stoddard Solvent Spillage Location View	A-34
65	Post-Test Speed Trap Read-Out	A-34
66	Vehicle at 0° on Static Rollover Device	A-35
67	Vehicle at 90° on Static Rollover Device	A-35

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
68	Vehicle at 180° on Static Rollover Device	A-36
69	Vehicle at 270° on Static Rollover Device	A-36
70	Vehicle at 360° on Static Rollover Device	A-37
71	2012 Fiat 500 Frontal Impact Event	A-37
72	Monroney Label Photograph	A-38



FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. 2012 Fiat 500 Frontal as Delivered



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



FIGURE 7. Pre-Test Front View of Test Vehicle

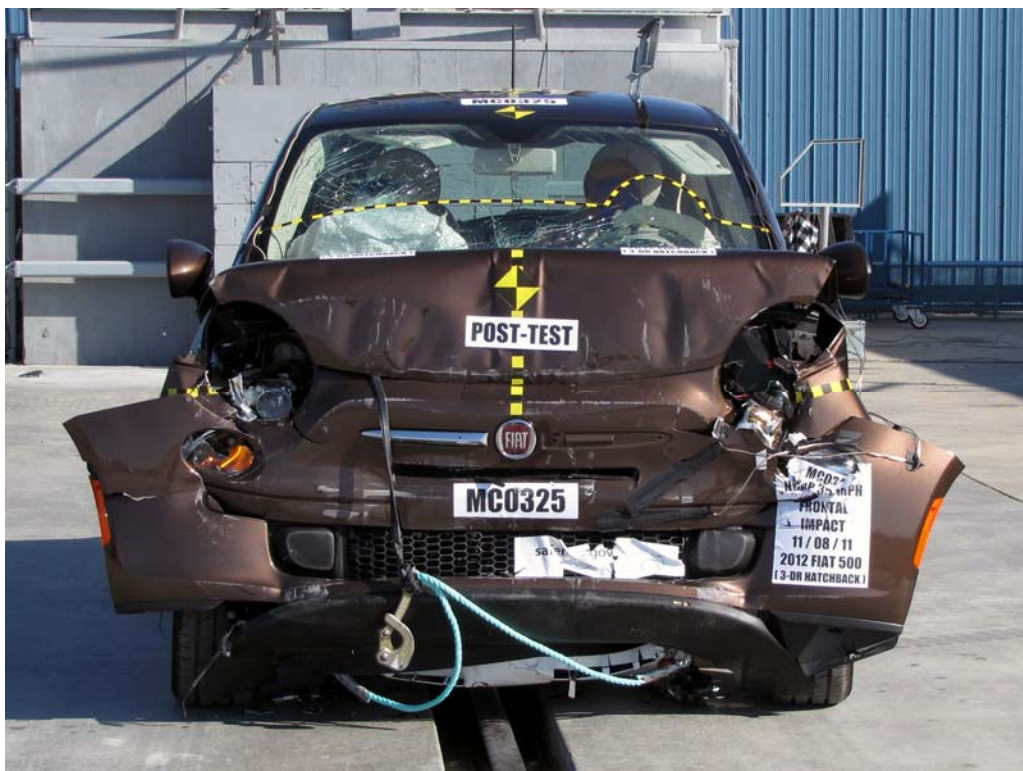


FIGURE 8. Post-Test Front View of Test Vehicle



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

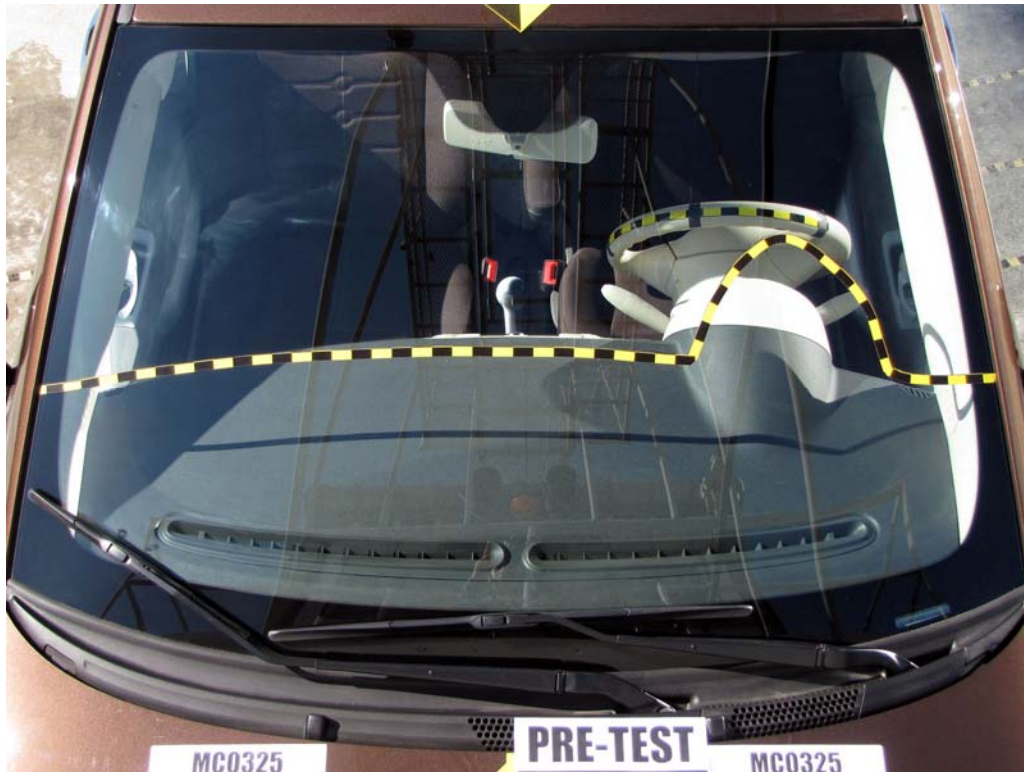


FIGURE 17. Pre-Test Windshield View



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

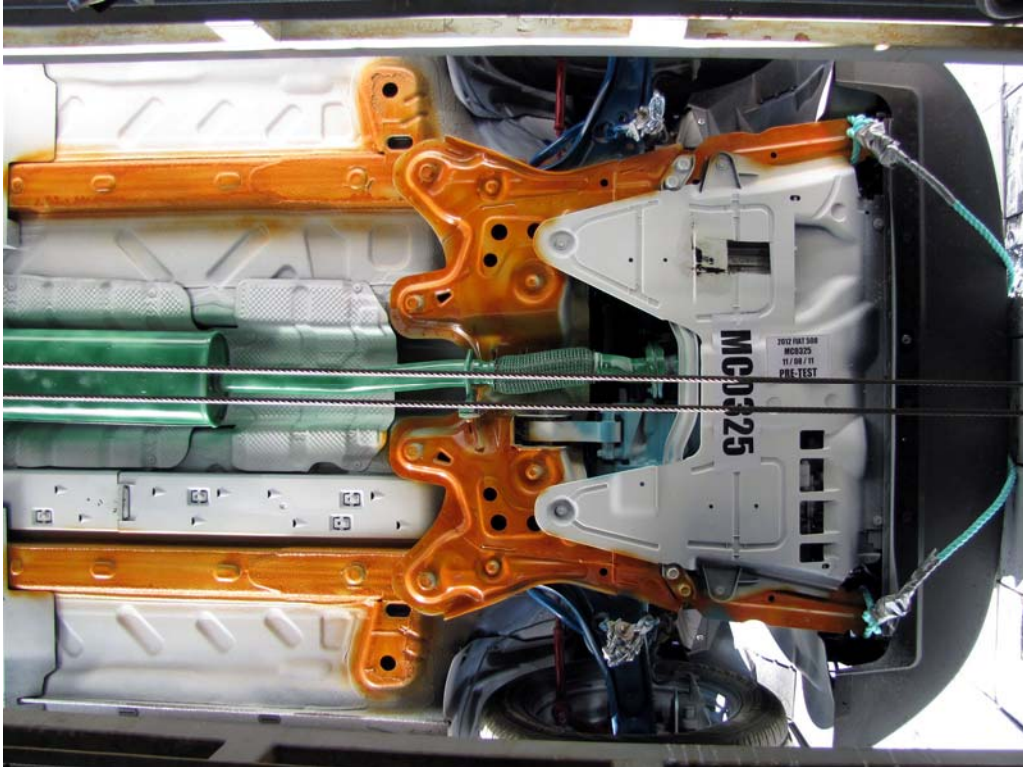


FIGURE 23. Pre-Test Front Underbody View

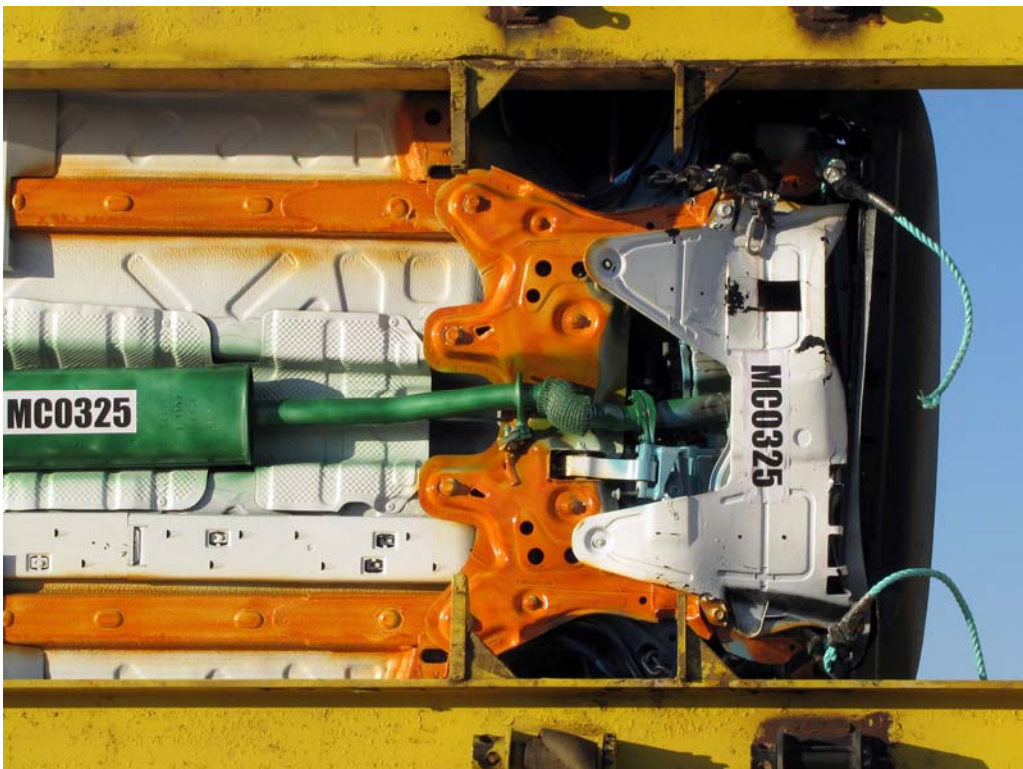


FIGURE 24. Post-Test Front Underbody View

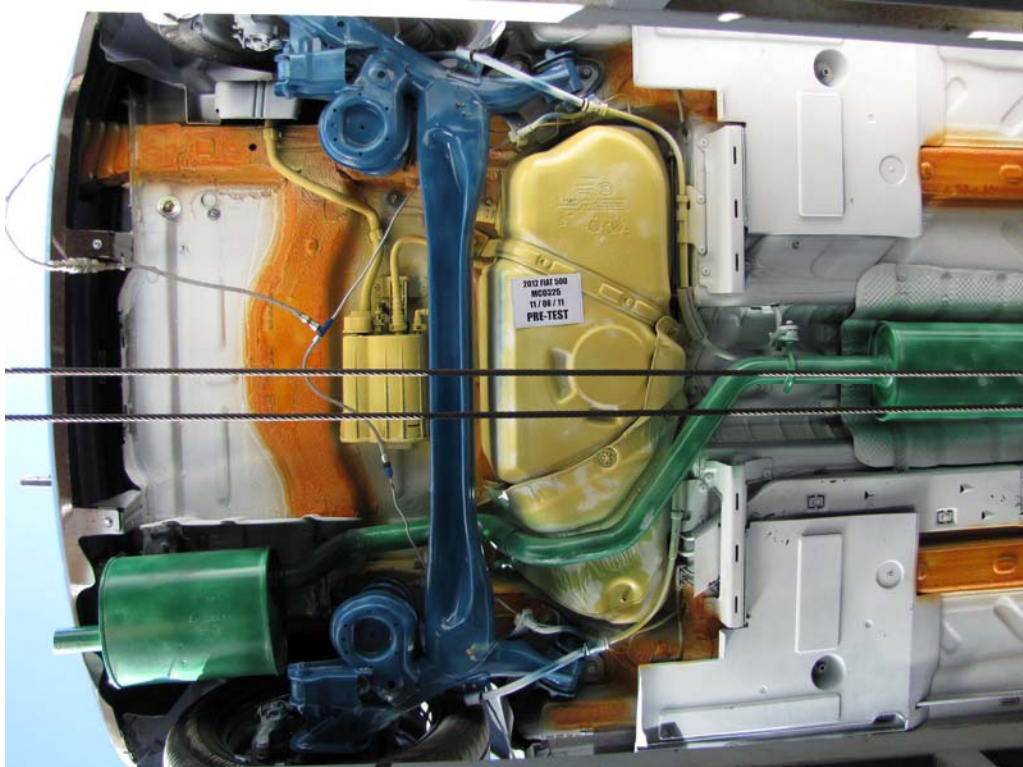


FIGURE 25. Pre-Test Rear Underbody View

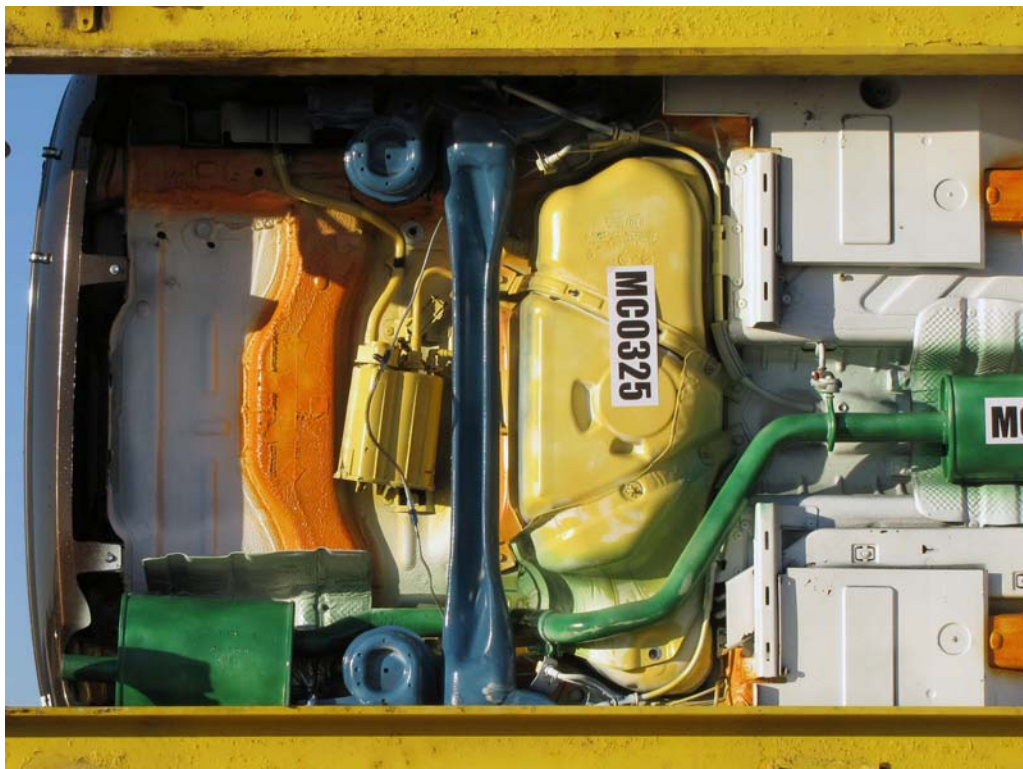


FIGURE 26. Post-Test Rear Underbody View

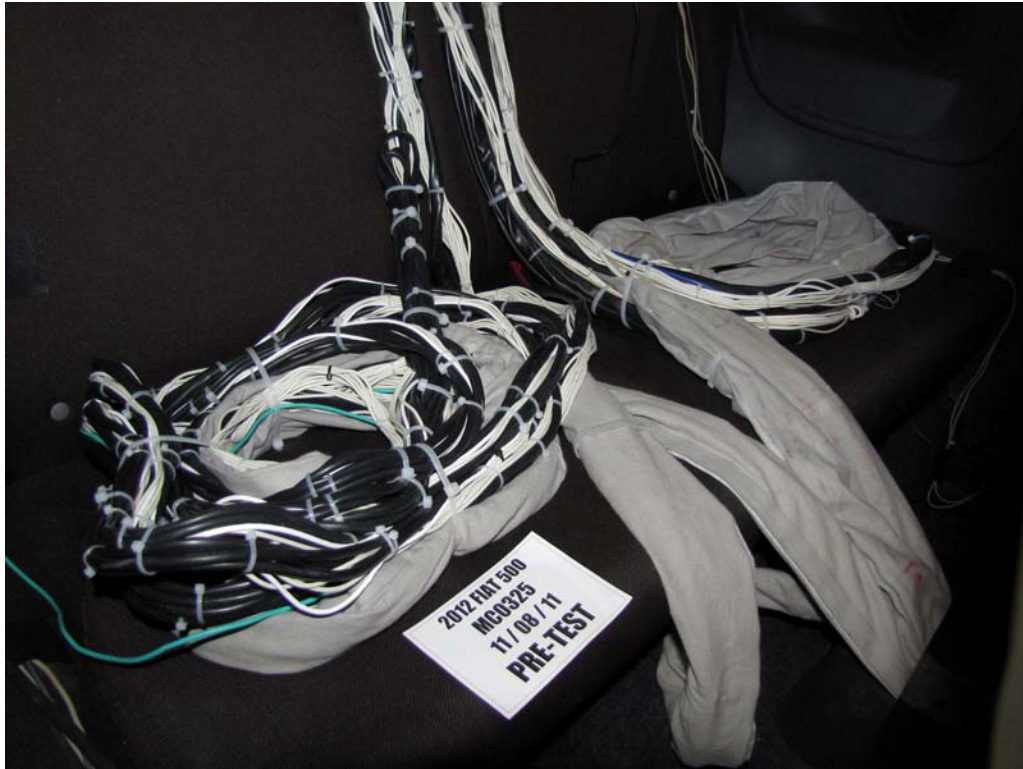


FIGURE 27. Pre-Test Dummy Cable Routing



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 Airbag



FIGURE 46. Pre-Test View of the Steering Wheel



FIGURE 47. Post-Test View of the 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

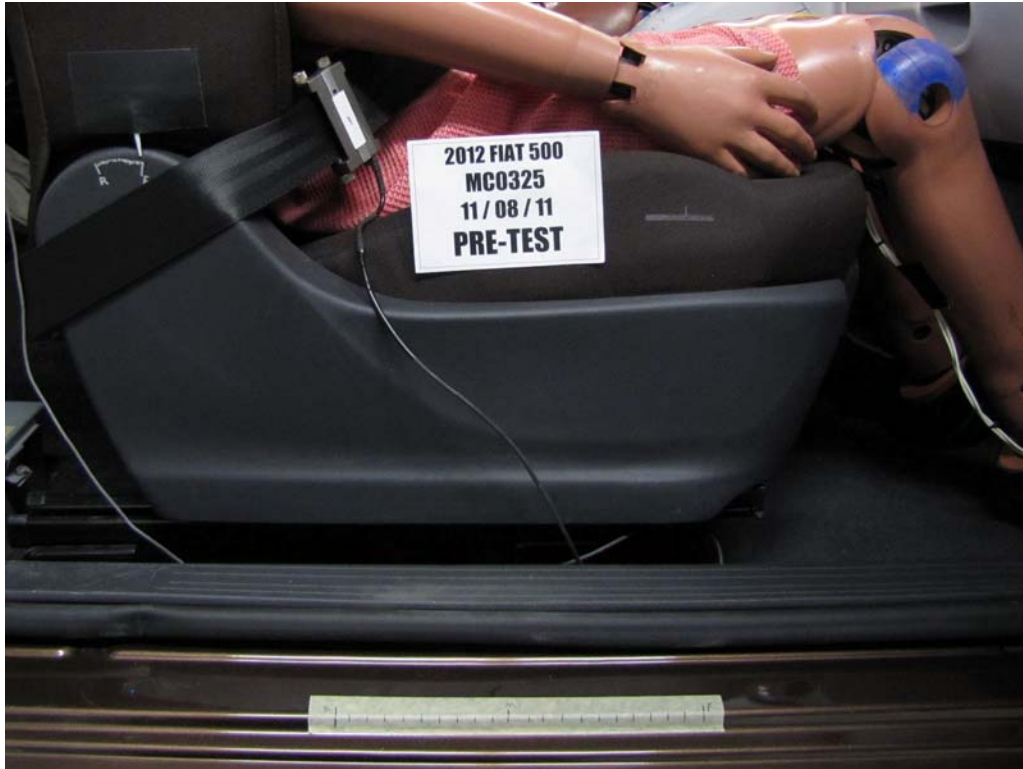


FIGURE 54. Pre-Test Passenger's Seat Fore-Aft Markings



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 With Glovebox



FIGURE 63. Photograph of Ballast Installed in Vehicle

Photograph Not Applicable No Stoddard Solvent Spillage

FIGURE 64. Post-Test Stoddard Solvent Spillage Location View



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

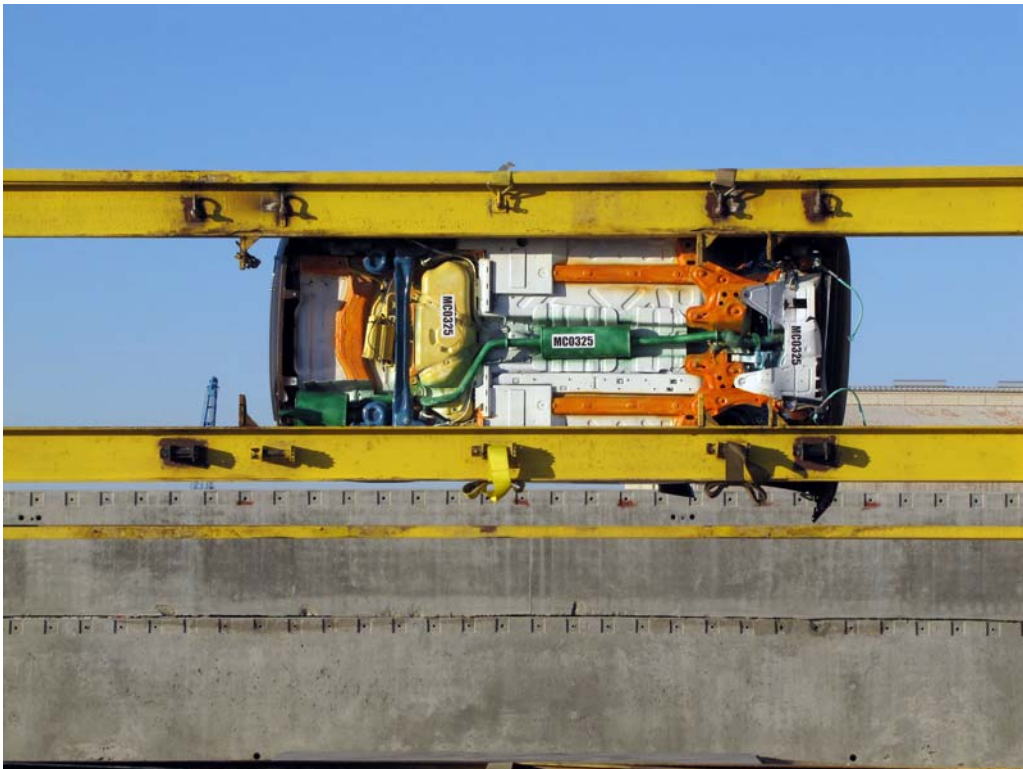


FIGURE 69. Vehicle at 270° on Static Rollover Device



FIGURE 70. Vehicle at 360° on Static Rollover Device



FIGURE 71. 2012 Fiat 500 Frontal Impact Event

2012 MODEL YEAR

THIS VEHICLE IS MANUFACTURED TO MEET SPECIFIC UNITED STATES REQUIREMENTS. THIS VEHICLE IS NOT MANUFACTURED FOR SALE OR REGISTRATION OUTSIDE OF THE UNITED STATES.

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL, INCLUDING DEALER PREPARATION

Base Price: \$15,500

FIAT 100 POP HATCHBACK
 Exterior Color: Espresso (Brown) Exterior Paint
 Interior Color: Journey (Dark) Interior Ambient
 Interior: Cloth Bucket Seat
 Engine: 1.4 Liter (4 Cylinder) Engine
 Transmission: 6-Speed Automatic Transmission

STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)

FUNCTIONAL SAFETY FEATURES
 Advanced Multistage Front Air Bags
 Supplemental Front Seat-Mounted Side Airbags
 Side-Curtain Front and Rear Airbags
 Driver Side Knee Airbag
 Front Seat Reactive Head Restraints
 LATCH Ready Child Seat Anchor System
 4-Wheel Antilock Disc Brakes
 Electronic Stability Control
 Power Windows with Front One-Touch-Down Feature
 Power Door Locks
 Remote Keyless Entry
 Speed Control
 Hill Start Assist
 Rear Window Defroster
 Variable Intermittent Windshield Wipers
 Rear Window Wiper / Washer
 Security Key Immobilizer
 Tire Pressure Monitoring System
 10-Volt Auxiliary Center Console Power Outlet
 10.5-Gallon Fuel Tank

INTERIOR FEATURES
 Air Conditioning with Micro Filter
 Driver Seat Memory
 Driver Height Adjustable Seat
 Driver and Passenger Front Seatback Pockets
 Rear 60 / 40 Split Fold-Down Seat
 Passenger Under-Seat Storage
 AM / FM / CD / MP3 Radio
 6 Speakers
 Auxiliary Audio Input Jack

EXTERIOR FEATURES
 18 Steering Column
 Variable Information Center
 Sun Vents with Vanity Mirrors
 Tachometer
 Two Rear Floor Mounted Cupholders
 Rearview Day / Night Mirror
 Front Floor Mats
 15-Inch x 6.8-Inch Dual Wheel
 185/65 R15 All Season Tires
 15-Inch Wheel Covers
 Bi-Function Halogen Projector Headlamps
 Body Color Power Heated Mirrors
 Front Reading / Map Lamp
 Body Color Instrument Panel Insert
 Chrome Door Handles
 Tire Service Kit

OPTIONAL EQUIPMENT
Customer Preferred Package 22A
 Maroon (Brown) Seats \$1,000
 6-Speed Automatic Transmission \$500
DESTINATION CHARGE

TOTAL PRICE: * \$17,000

FIAT FORWARD CARE™
 Basic Warranty: 4 Year / 50,000 Miles.
 Powertrain Warranty: 4 Year / 50,000 Miles.
 Maintenance: 3 Year / 36,000 Miles.
 Roadside Assistance: 4 Year / Unlimited Miles.

For more information visit: www.fiatusa.com
 or call 1-888-CIAOFIAT

Chrysler Group LLC

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

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

Estimated Annual Fuel Cost
\$1,598
 Based on 15,000 miles
 at \$3.20 per gallon

HIGHWAY MPG
34
 Expected range for most drivers
 28 to 40 MPG

Combined Fuel Economy
 This vehicle
30
 AT SUBCOMPACT CARS

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

GOVERNMENT SAFETY RATINGS

This vehicle has not been rated by the government for frontal crash, side crash or rollover risk.
 Source: National Highway Traffic Safety Administration (NHTSA).

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

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
 U.S./CANADIAN PARTS CONTENT: 11 %
 MAJOR SOURCES OF FOREIGN PARTS CONTENT:
 MEXICO: 59 %
 NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
 FINAL ASSEMBLY POINT:
 TOLUCA, MEXICO
 COUNTRY OF ORIGIN:
 ENGINE: UNITED STATES
 TRANSMISSION: JAPAN

FIGURE 72. Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head X Acceleration vs. Time Primary	B-1
2	Driver Head Y Acceleration vs. Time Primary	B-1
3	Driver Head Z Acceleration vs. Time Primary	B-1
4	Driver Head Resultant Acceleration vs. Time Primary	B-1
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
9	Driver Chest Resultant Acceleration vs. Time Primary	B-3
10	Driver Upper Neck Force X vs. Time Primary	B-4
11	Driver Upper Neck Force Z vs. Time Primary	B-4
12	Driver Upper Neck Moment Y vs. Time Primary	B-4
13	Driver Nij vs. Time Primary	B-4
14	Driver Left Femur Force vs. Time	B-5
15	Driver Right Femur Force vs. Time	B-5
16	Passenger Head X Acceleration vs. Time Primary	B-6
17	Passenger Head Y Acceleration vs. Time Primary	B-6
18	Passenger Head Z Acceleration vs. Time Primary	B-6
19	Passenger Head Resultant Acceleration vs. Time Primary	B-6
20	Passenger Chest X Deflection vs. Time	B-7
21	Passenger Chest X Acceleration vs. Time Primary	B-8
22	Passenger Chest Y Acceleration vs. Time Primary	B-8
23	Passenger Chest Z Acceleration vs. Time Primary	B-8
24	Passenger Chest Resultant Acceleration vs. Time Primary	B-8
25	Passenger Upper Neck Force X vs. Time Primary	B-9
26	Passenger Upper Neck Force Z vs. Time Primary	B-9
27	Passenger Upper Neck Moment Y vs. Time Primary	B-9
28	Passenger Nij vs. Time Primary	B-9
29	Passenger Left Femur Force vs. Time	B-10
30	Passenger Right Femur Force vs. Time	B-10

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

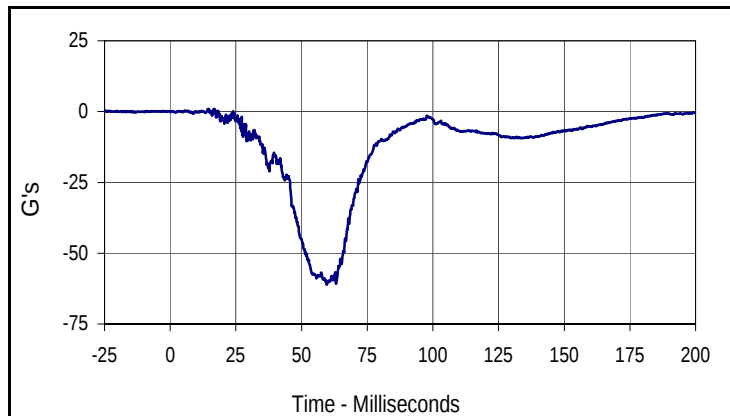
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant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

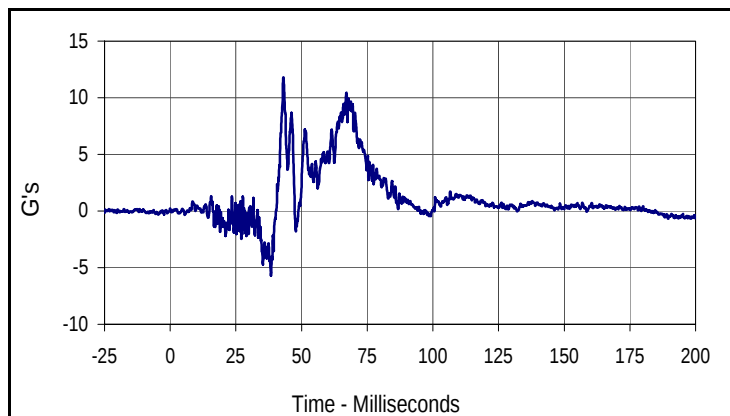
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-B9
Load Cell Barrier C1-C9
Load Cell Barrier D1-D9

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

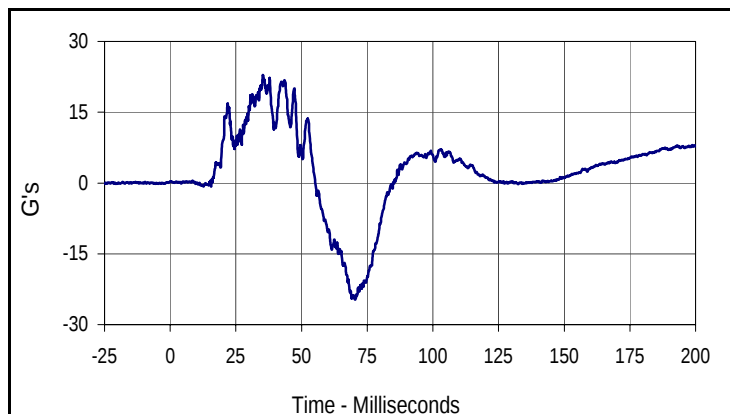
Test Date: 11/8/11
 NHTSA No.: MC0325



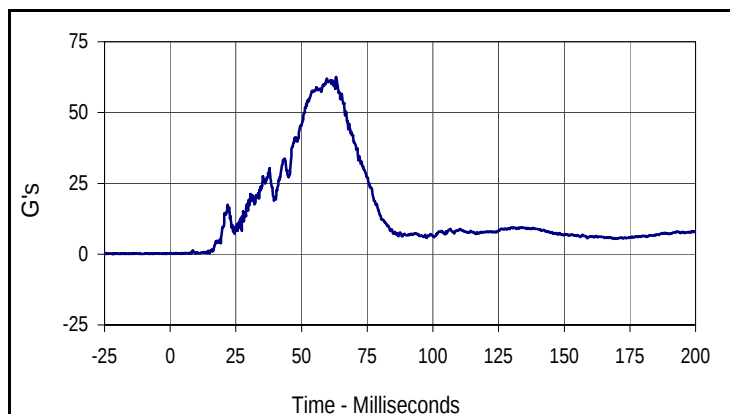
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
1.0	16.9	-61.1	59.7



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
11.8	43.1	-5.7	38.4



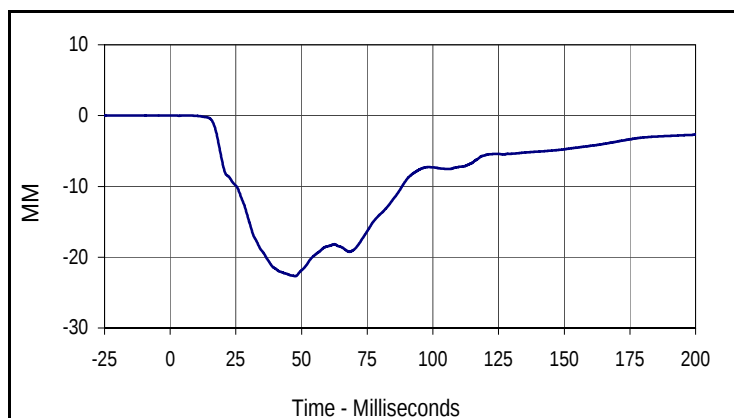
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
22.9	35.3	-24.7	70.4



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
62.6	63.2	0.1	4.3

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

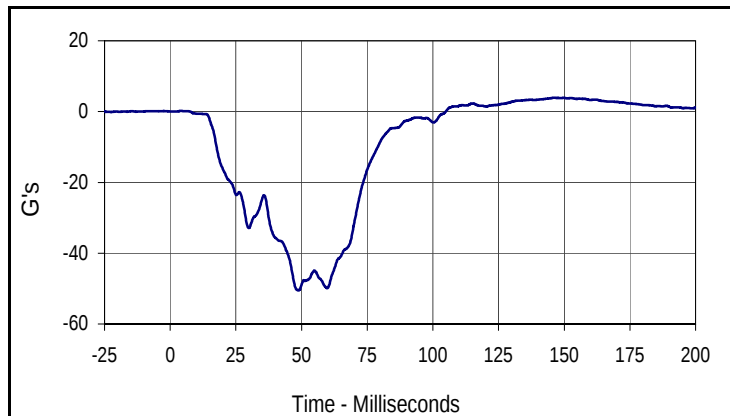
Test Date: 11/8/11
 NHTSA No.: MC0325



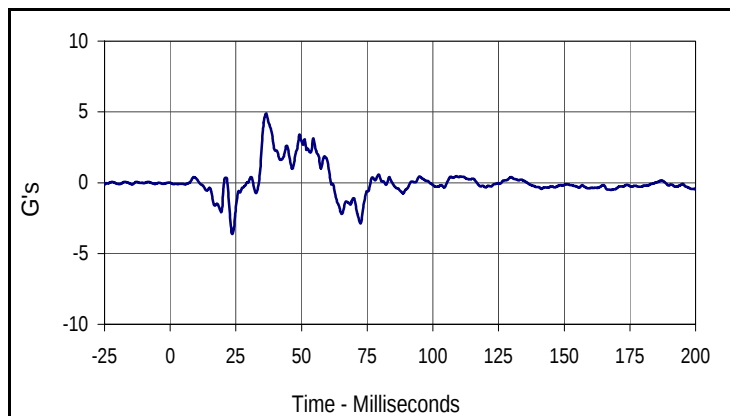
Curve Description			
Driver Chest Deflection			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
0.0	7.9	-22.7	47.6

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

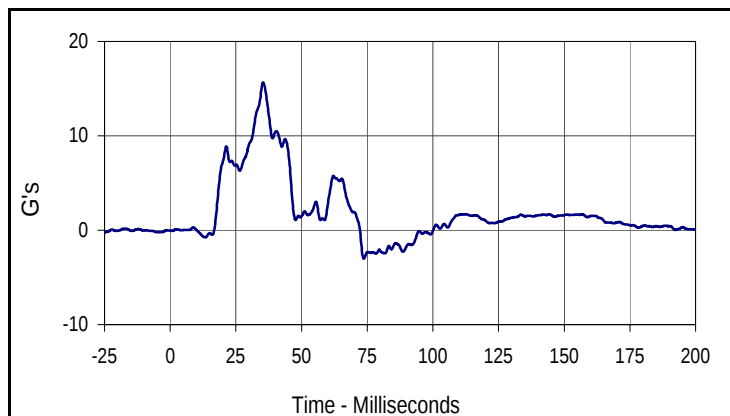
Test Date: 11/8/11
 NHTSA No.: MC0325



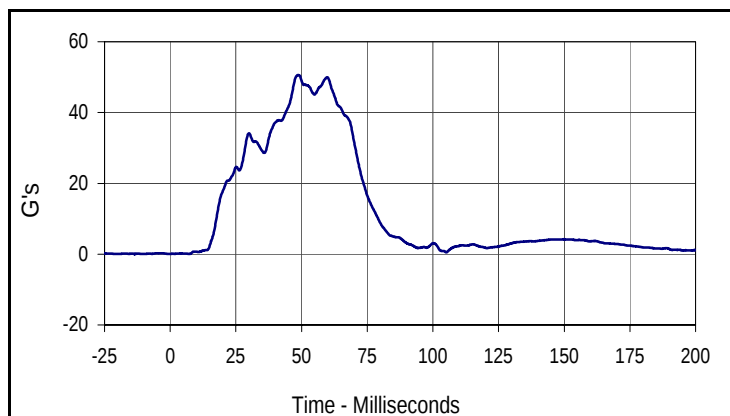
Curve Description			
Driver Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
3.9	146.2	-50.5	48.8



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
4.9	36.5	-3.6	23.6



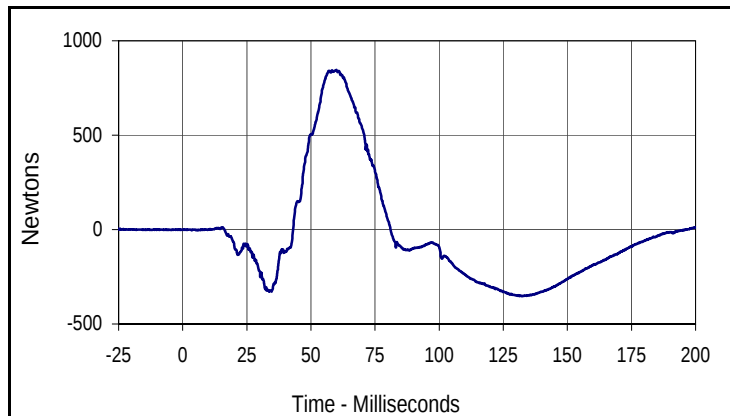
Curve Description			
Driver Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
008	FIL	180	G's
Max	Time	Min	Time
15.7	35.3	-3.0	73.7



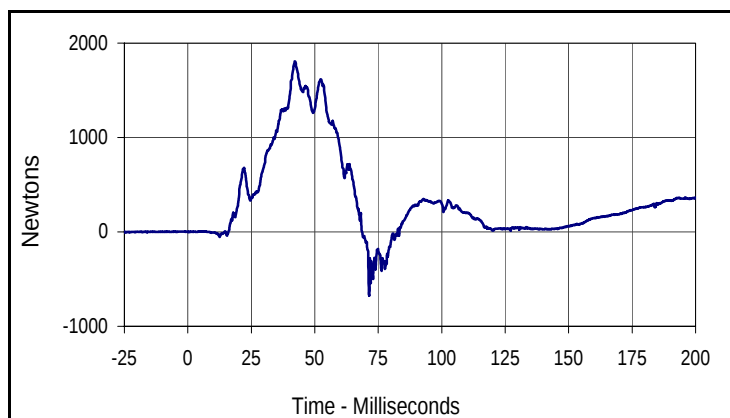
Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
009	RES	180	G's
Max	Time	Min	Time
50.6	48.8	0.0	0.0

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

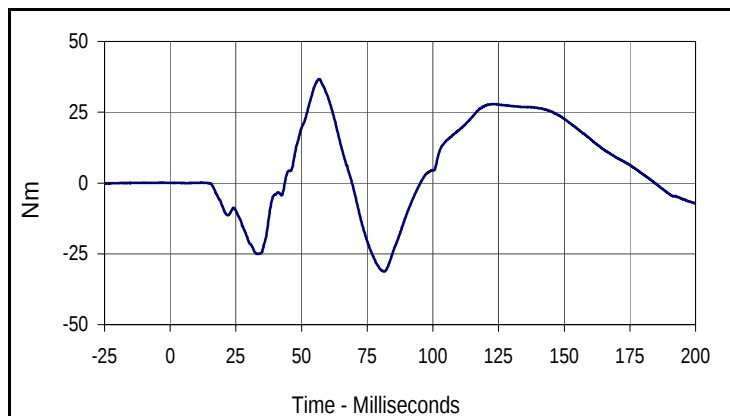
Test Date: 11/8/11
 NHTSA No.: MC0325



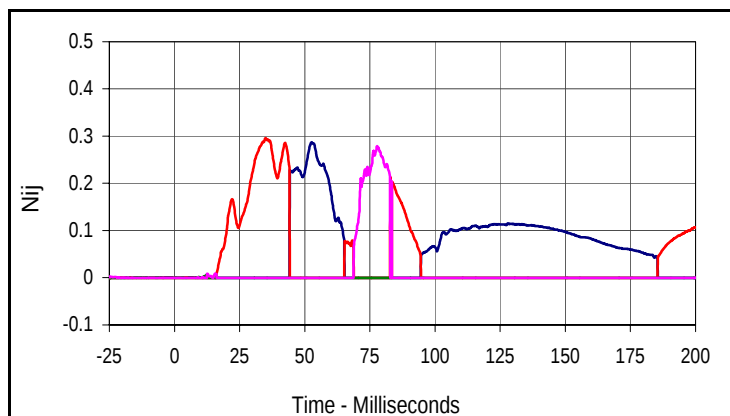
Curve Description			
Driver Upper Neck Force X			
Plot No.	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
846.4	59.9	-353.1	132.4



Curve Description			
Driver Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
1805.7	42.1	-674.2	71.4



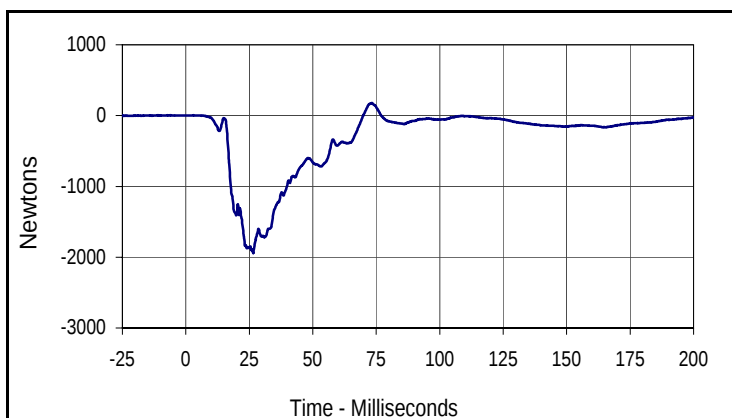
Curve Description			
Driver Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
36.7	56.8	-31.3	81.4



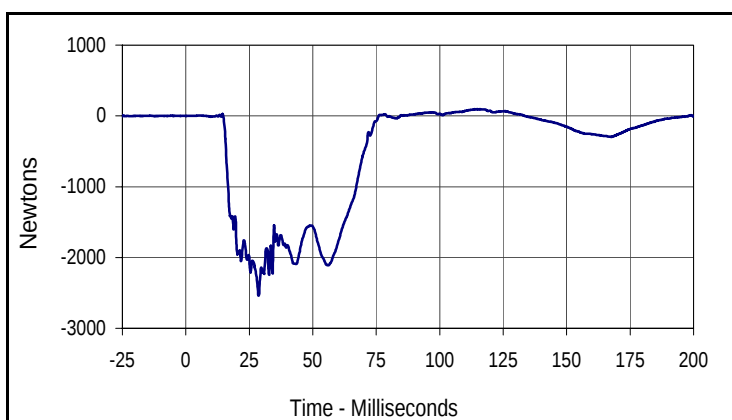
Curve Description			
Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.29	52.6
Units	Type	Max	Time
Nte	FIL	0.30	34.9
Units	Type	Max	Time
Ncf	FIL	0.02	292.9
Units	Type	Max	Time
Nce	FIL	0.28	77.8

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

Test Date: 11/8/11
 NHTSA No.: MC0325



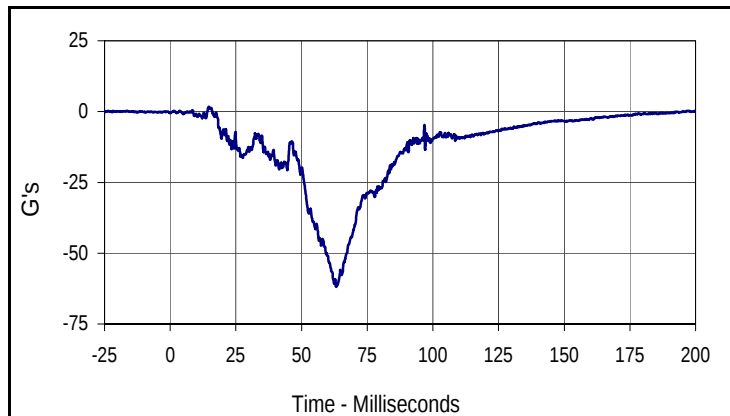
Curve Description			
Driver Driver Left Femur			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
176.4	73.3	-1941.0	26.5



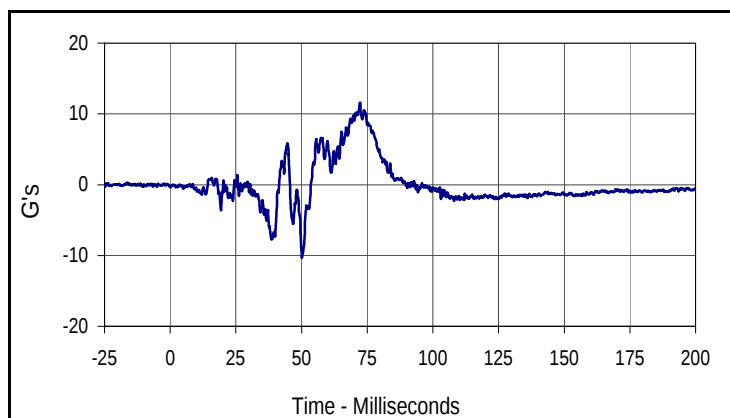
Curve Description			
Driver Driver Right Femur			
Plot No.	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
94.6	115.9	-2540.0	28.7

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

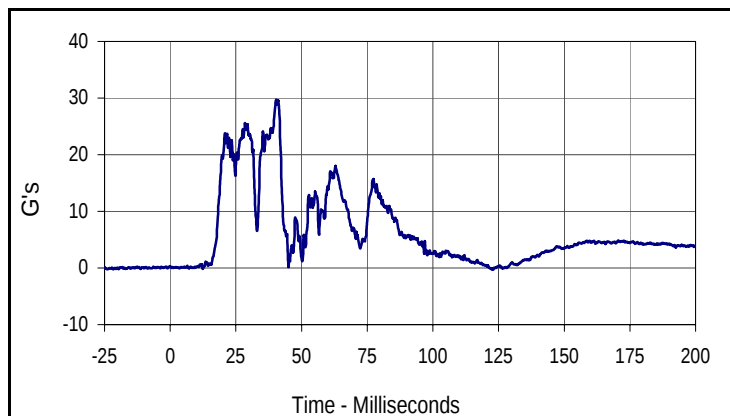
Test Date: 11/8/11
 NHTSA No.: MC0325



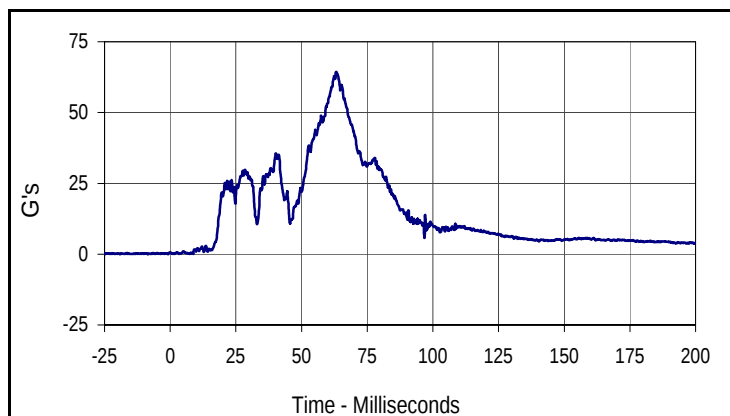
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
1.7	14.7	-61.9	63.2



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
11.6	72.2	-10.3	50.2



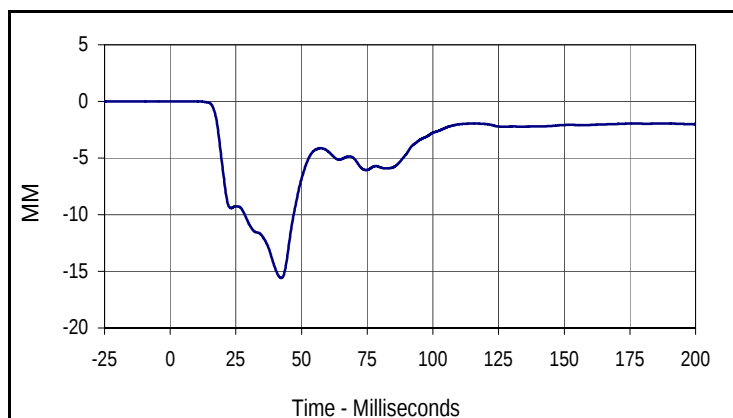
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
017	FIL	1000	G's
Max	Time	Min	Time
29.7	40.4	-0.3	123.0



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
018	RES	1000	G's
Max	Time	Min	Time
64.4	63.2	0.1	1.1

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

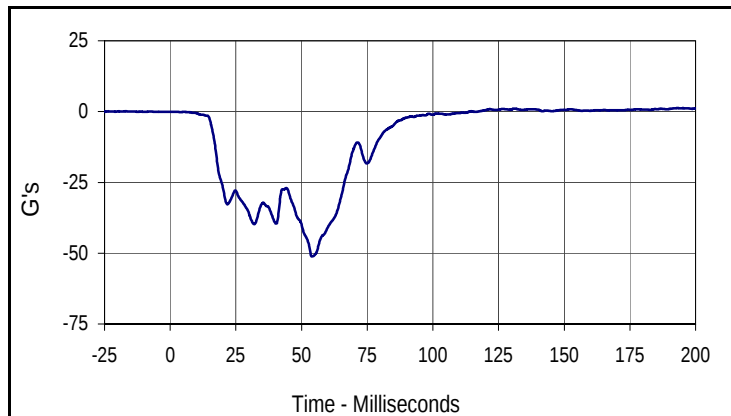
Test Date: 11/8/11
 NHTSA No.: MC0325



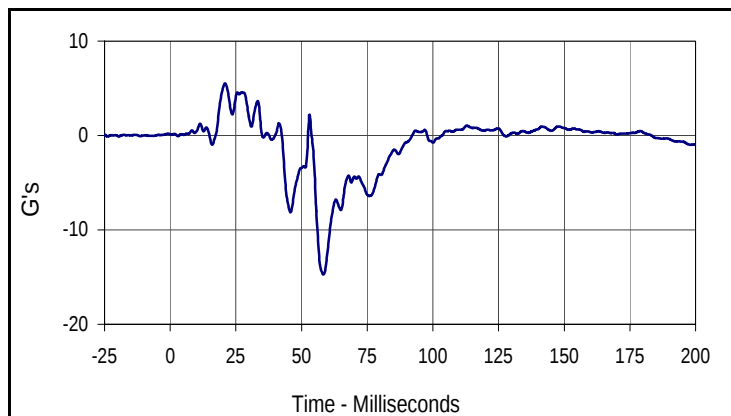
Curve Description			
Passenger Chest Deflection			
Plot No.	Type	SAE Class	Units
019	FIL	180	MM
Max	Time	Min	Time
0.0	10.4	-15.6	42.2

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

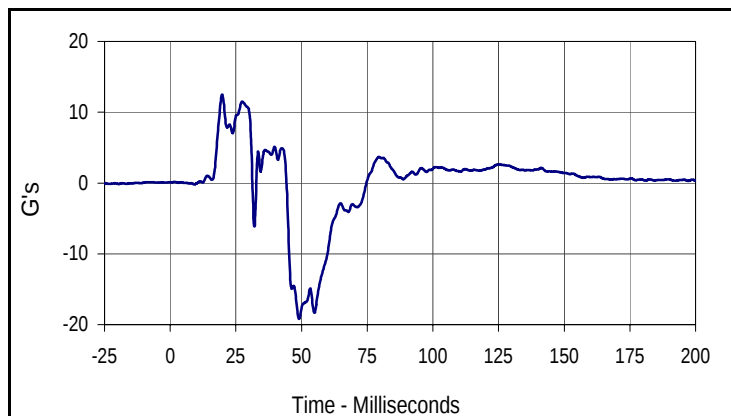
Test Date: 11/8/11
 NHTSA No.: MC0325



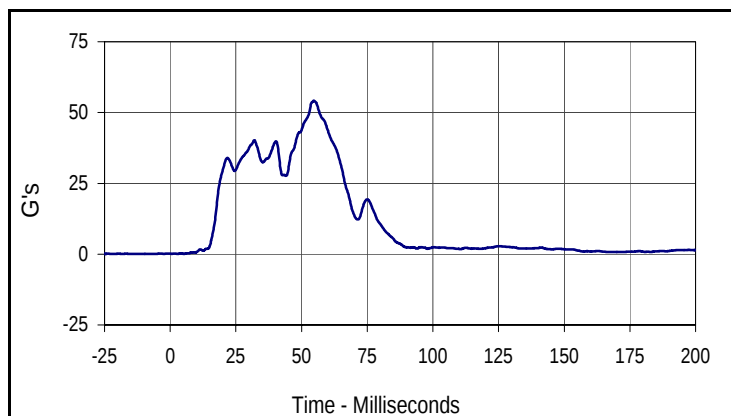
Curve Description			
Passenger Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
1.2	193.2	-51.1	53.8



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
5.5	20.9	-14.7	58.3



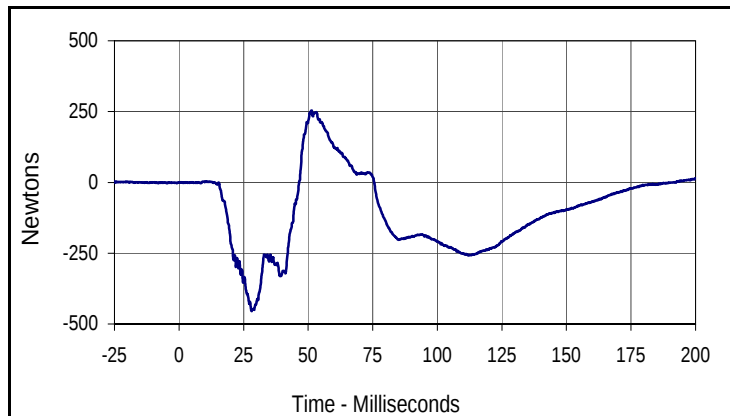
Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
022	FIL	180	G's
Max	Time	Min	Time
12.5	19.8	-19.2	49.0



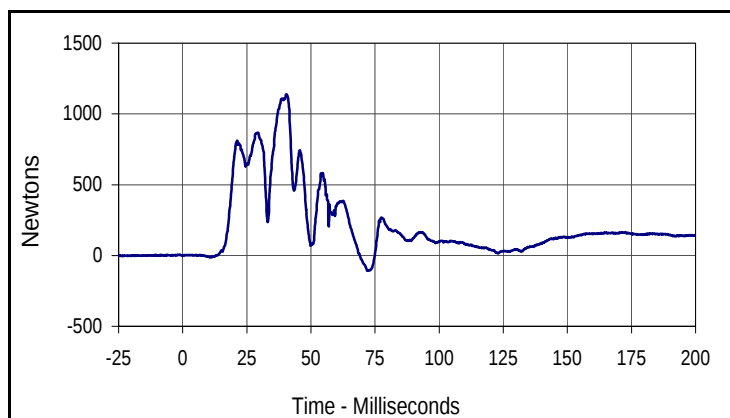
Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
023	RES	180	G's
Max	Time	Min	Time
54.2	54.7	0.1	5.2

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

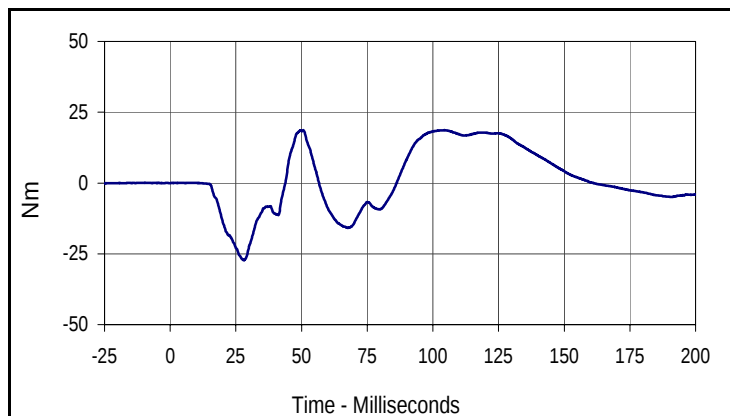
Test Date: 11/8/11
 NHTSA No.: MC0325



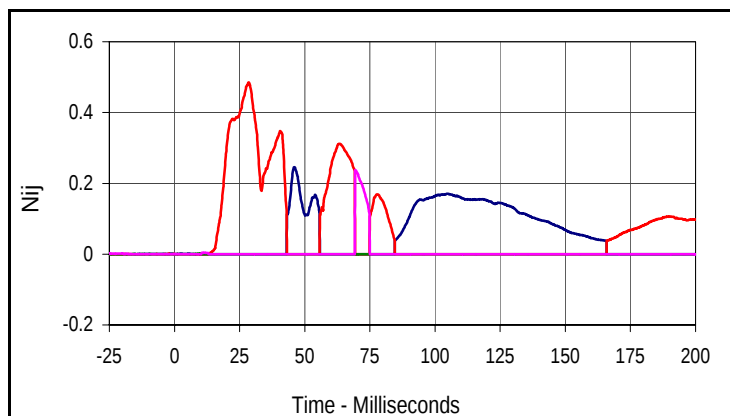
Curve Description			
Passenger Upper Neck Force X			
Plot No.	Type	SAE Class	Units
024	FIL	1000	Newtons
Max	Time	Min	Time
253.9	51.3	-454.3	28.1



Curve Description			
Passenger Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
025	FIL	1000	Newtons
Max	Time	Min	Time
1138.3	40.4	-106.9	72.2



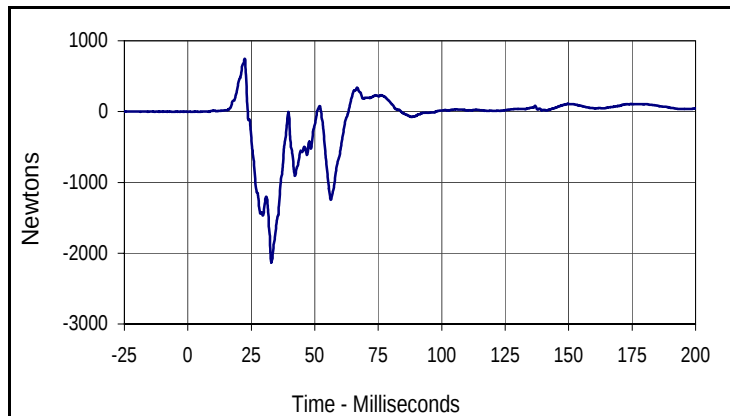
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
18.7	50.6	-27.3	28.1



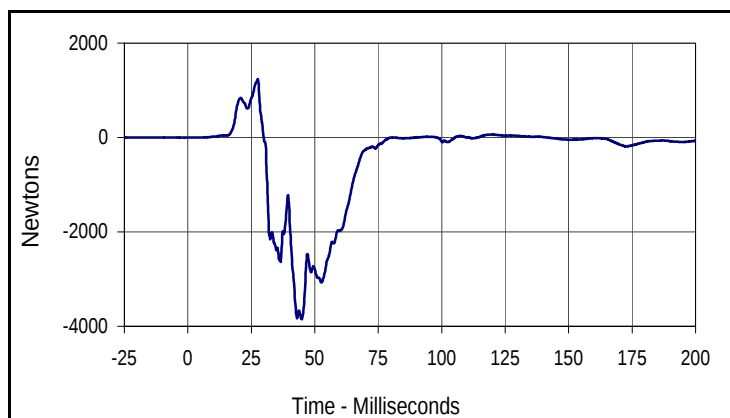
Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.25	46.0
Units	Type	Max	Time
Nte	FIL	0.49	28.5
Units	Type	Max	Time
Ncf	FIL	0.00	10.0
Units	Type	Max	Time
Nce	FIL	0.24	69.4

Test Vehicle: 2012 Fiat 500 3-Door Hatchback
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

Test Date: 11/8/11
 NHTSA No.: MC0325



Curve Description			
Passenger Passenger Left Femur			
Plot No.	Type	SAE Class	Units
027	FIL	600	Newtons
Max	Time	Min	Time
748.5	22.4	-2131.3	32.8



Curve Description			
Passenger Passenger Right Femur			
Plot No.	Type	SAE Class	Units
028	FIL	600	Newtons
Max	Time	Min	Time
1234.2	27.5	-3853.4	44.8

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

Test Date: 10/17/11

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: 10/17/11

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.25	Pass
Laboratory Relative Humidity	%	10 to 70	29.5	Pass
A - Total sitting height	mm	879 to 889	881	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - H point height	mm	84 to 89	85	Pass
D - H point location from backline	mm	135 to 140	137	Pass
E - Shoulder pivot from backline	mm	84 to 94	86	Pass
F - Thigh clearance	mm	140 to 155	148	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	297	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	589	Pass
L - Popliteal length	mm	429 to 455	436	Pass
M - Knee pivot height	mm	485 to 500	488	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	432	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	433	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

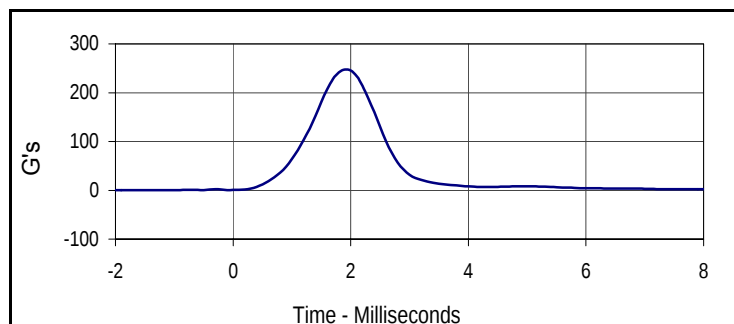
Test Date: 10/17/11

ATD Serial No.: 035

Test I.D.: M035HD023



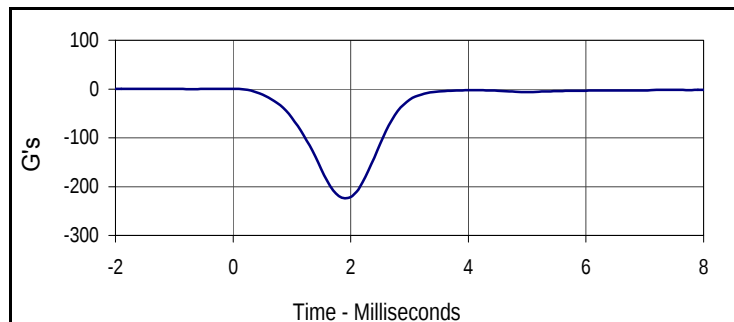
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	245	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.0	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	247.7	Pass
Peak Lateral Acceleration		G's	≤15.0	3.8	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	3.4	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

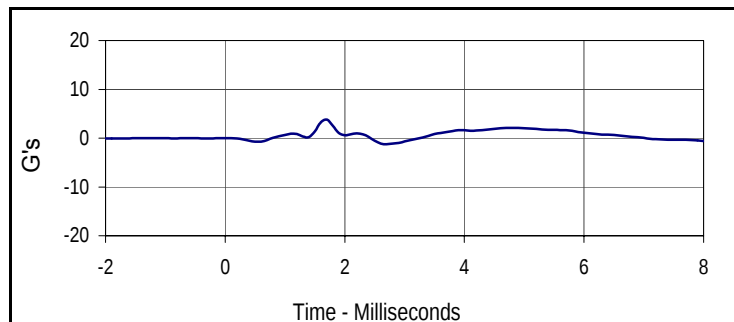
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
247.7	1.9	0.1	-2.0



Curve Description

Head X

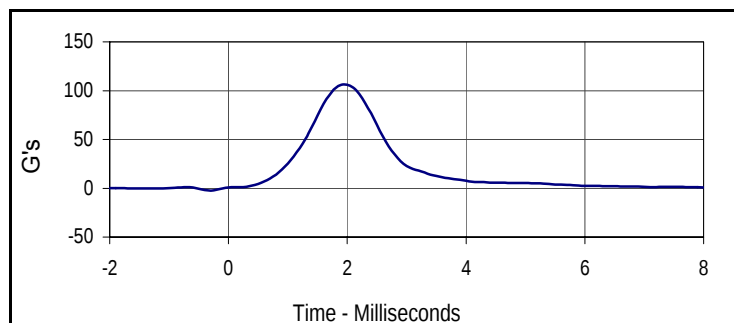
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	0.0	-223.9	1.9



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
3.8	1.7	-1.2	2.7



Curve Description

Head Z

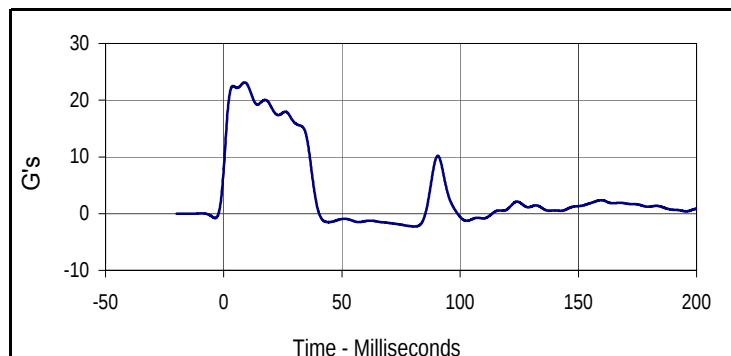
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
106.2	2.0	-2.3	-0.3

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

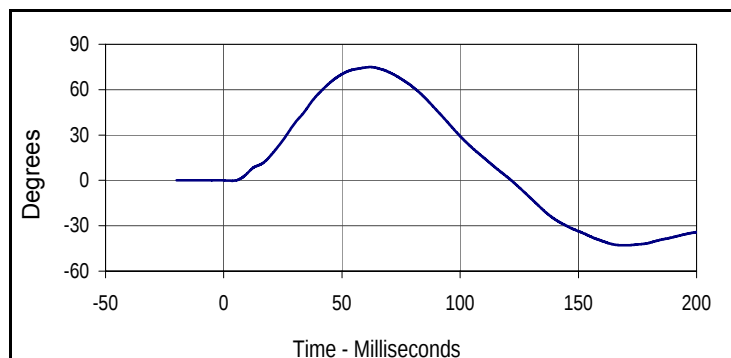
Test Date: 10/17/11
 Test I.D.: M035NF023



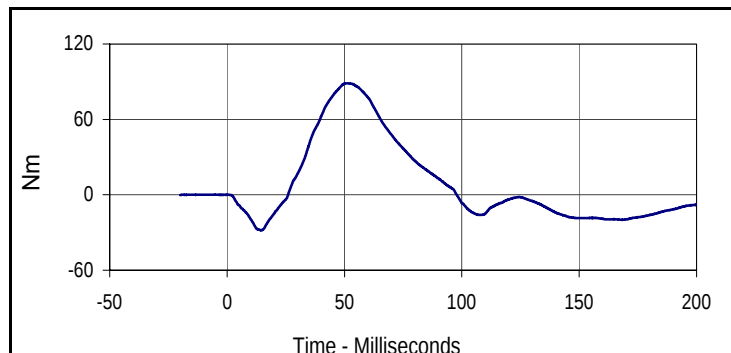
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	265	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.6	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.02	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.7	Pass
	20 Msec.	G's	17.6 to 22.6	18.9	Pass
	30 Msec.	G's	12.5 to 18.5	16.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	74.9	Pass
	Time	Msec.	57.0 to 64.0	62.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.7	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	88.8	Pass
	Time	Msec.	47.0 to 58.0	51.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.9	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.1	8.8	-2.3	80.8



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
74.9	62.0	-42.9	169.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
88.8	51.4	-28.2	14.3

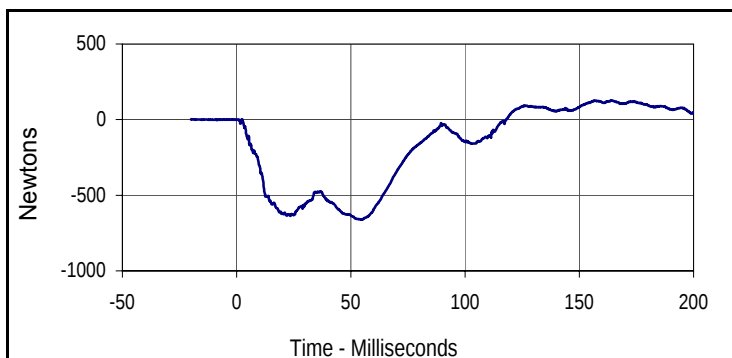
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 10/17/11

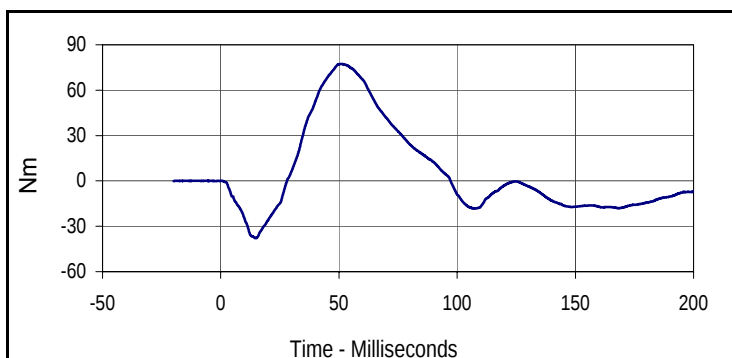


ATD Serial No.: 035

Test I.D.: M035NF023



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
126.7	164.2	-660.9	55.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
77.3	51.1	-37.8	14.5

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

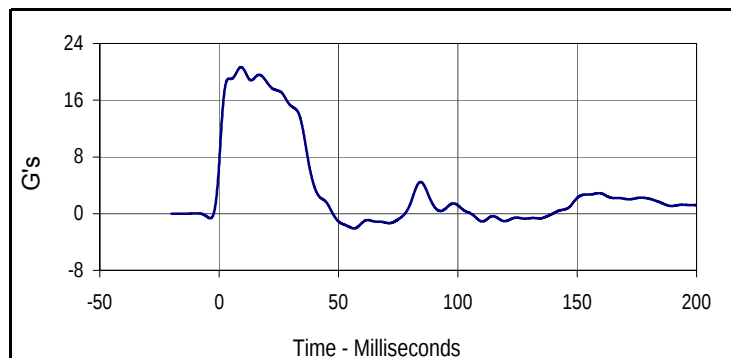
Test Date: 10/17/11

ATD Serial No.: 035

Test I.D.: M035NE023



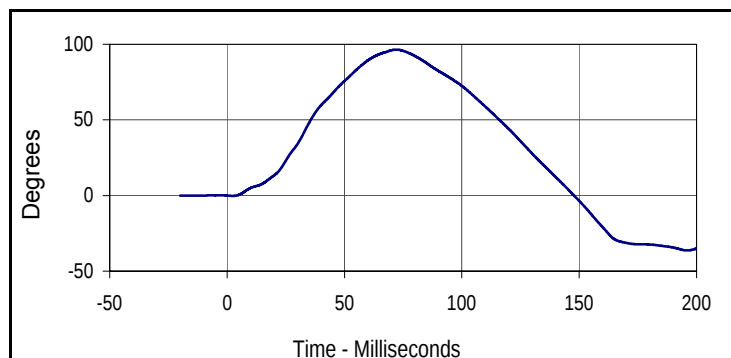
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	285	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.0	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.08	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.5	Pass
	20 Msec.	G's	14.0 to 19.0	18.6	Pass
	30 Msec.	G's	11.0 to 16.0	15.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	38.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	96.5	Pass
	Time	Msec.	72.0 to 82.0	72.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	147.8	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-72.7	Pass
	Time	Msec.	65.0 to 79.0	65.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	132.0	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

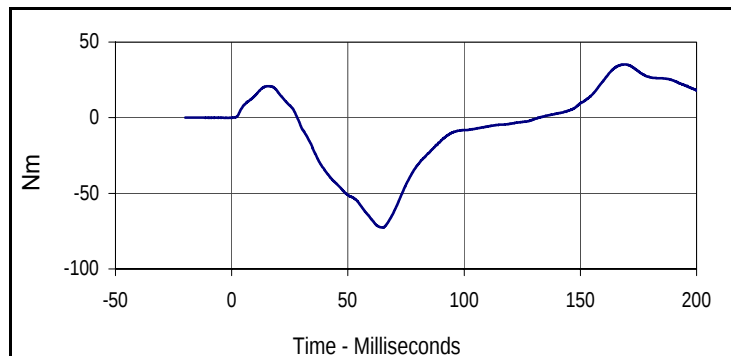
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.7	9.2	-2.1	56.5



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
96.5	72.1	-36.3	195.9



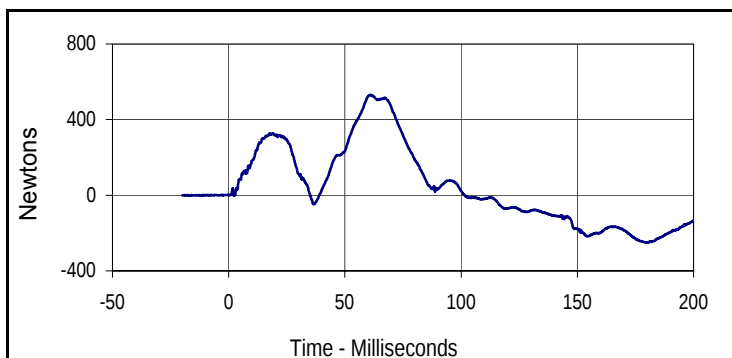
Curve Description

Moment About Occipital Condyle

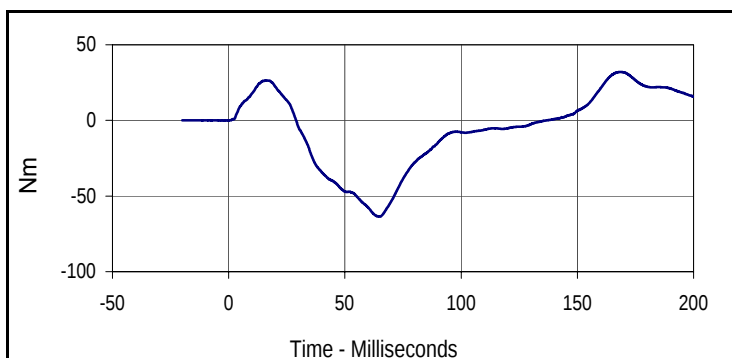
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
35.2	168.6	-72.7	65.1

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

Test Date: 10/17/11
 Test I.D.: M035NE023



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
530.8	61.0	-250.4	179.7



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
32.0	168.1	-63.7	65.1

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

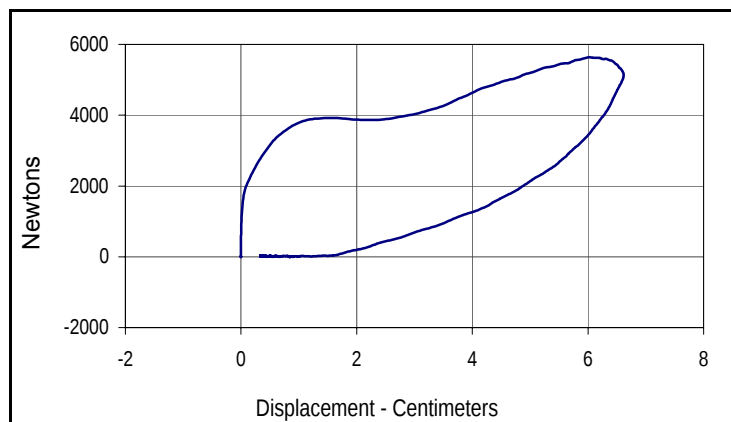
Test Date: 10/17/11

ATD Serial No.: 035

Test I.D.: M035CH023



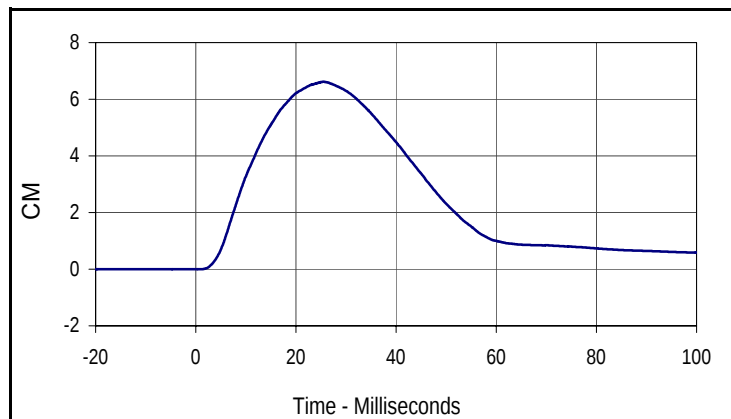
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	305	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.0	Pass
Probe Velocity		m/s	6.58 to 6.82	6.62	Pass
Peak Probe Force		Newtons	5159 to 5893	5635	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.62	Pass
Internal Hysteresis		%	69 to 85	70.9	Pass
Overall Test Results				Pass	



Curve Description

Probe Force vs. Chest Deflection

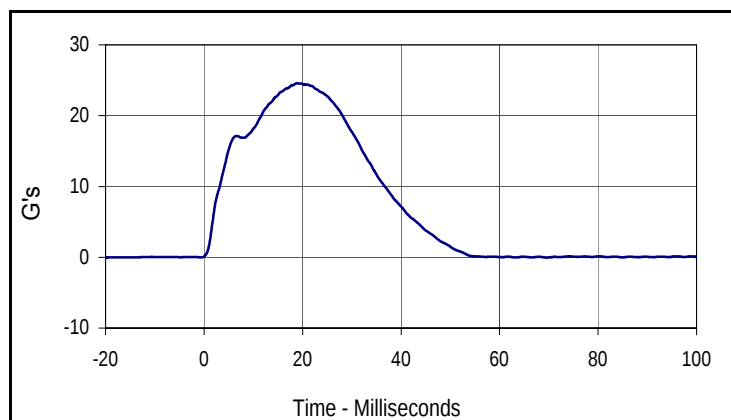
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	70.9
Peak Probe Force		Peak Chest Deflection	
5635		6.62	



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.6	25.5	0.0	0.8



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.6	18.8	-0.1	-20.0

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

Test Date: 10/17/11

ATD Serial No.: 035

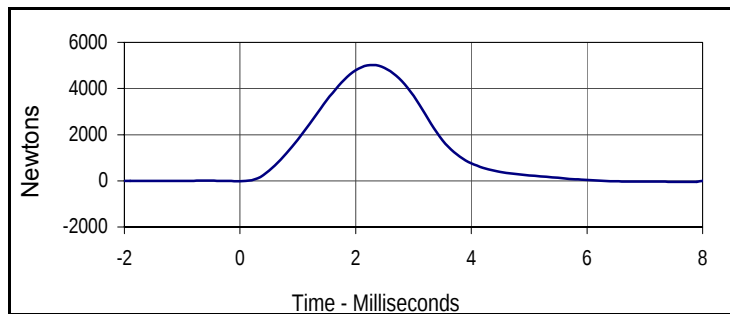
Test I.D.: M035LK023 , M035RK023

**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		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force		Newtons	4715 to 5782	5021	Pass
Overall Test Results				Pass	

Right Knee

Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force		Newtons	4715 to 5782	5013	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
5021.0	2.3	-42.0	7.6

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

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
102.6	2.3	-0.9	7.6

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

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5012.9	2.2	-50.6	7.4

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

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
102.5	2.2	-1.0	7.4

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

Test Date: 10/17/11
 Test I.D.: M035LF023, M035RF023

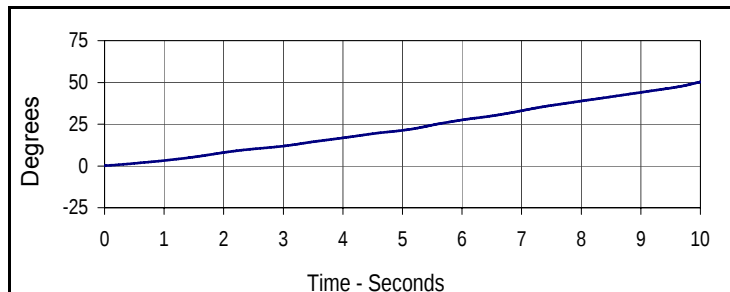


Left Hip Joint-Femur Results

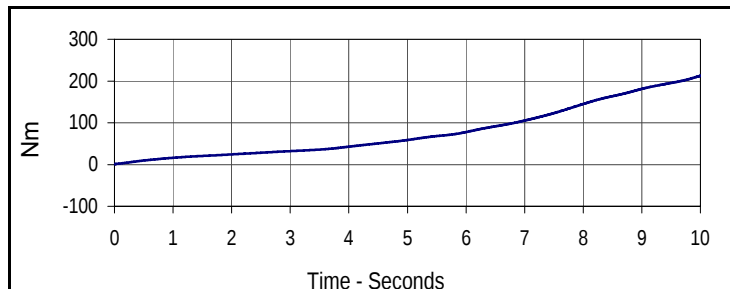
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	395	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Rotation Rate	deg/sec	5 to 10	5.0	Pass
Femur Torque at 30°	Nm	≤ 95	91.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.3	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

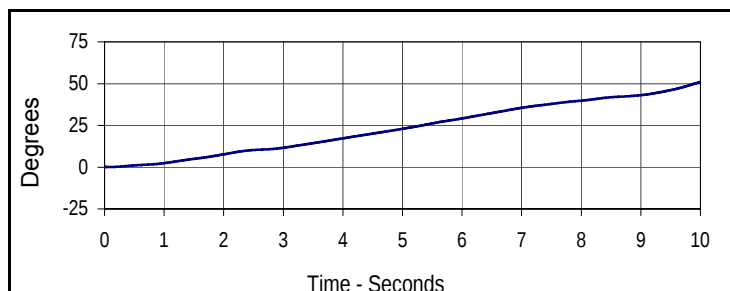
Rotation Rate	deg/sec	5 to 10	5.1	Pass
Femur Torque at 30°	Nm	≤ 95	86.6	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.4	Pass
Overall Test Results				Pass



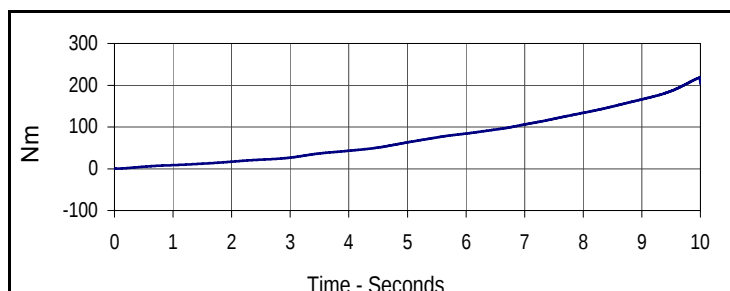
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
50.3	10.0	0.2	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
213.7	10.0	1.2	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
50.9	10.0	0.0	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
218.8	10.0	0.1	0.0

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

Test Date: 11/2/11

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: 11/2/11

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.30	Pass
Laboratory Relative Humidity	%	10 to 70	40.0	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	86	Pass
D - H point location from backline	mm	144.8 to 149.8	147	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	78	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	246	Pass
H - Head back to backline	mm	40.7 to 45.7	45	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	284	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	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	430	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	187	Pass
P - Foot length	mm	218.5 to 233.7	220	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	475	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	546	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

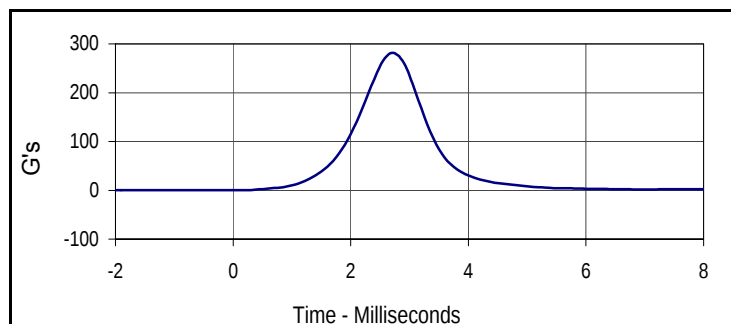
Test Date: 11/2/11

ATD Serial No.: 635

Test I.D.: F635HD020



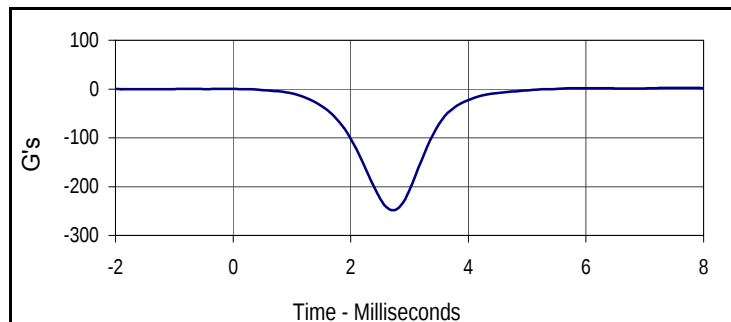
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	245	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	39.3	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	281.4	Pass
Peak Lateral Acceleration		G's	≤15.0	2.7	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.2	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

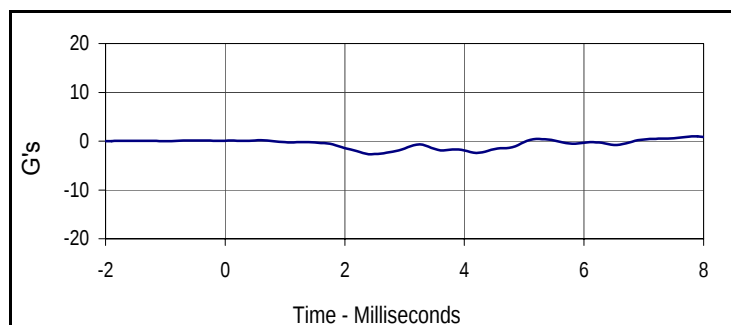
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
281.4	2.7	0.0	-1.1



Curve Description

Head X

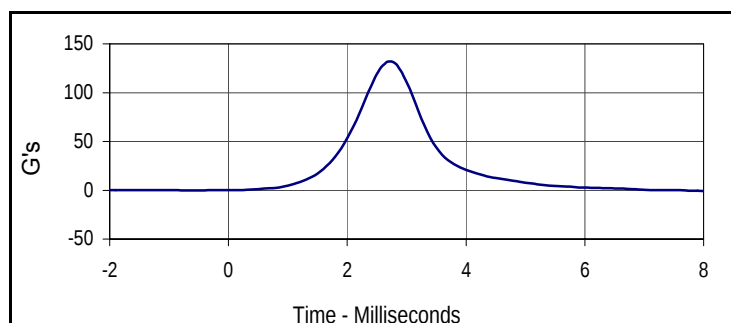
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.9	5.9	-248.4	2.7



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
0.4	5.2	-2.7	2.4



Curve Description

Head Z

Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
132.1	2.7	-0.2	-0.7

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

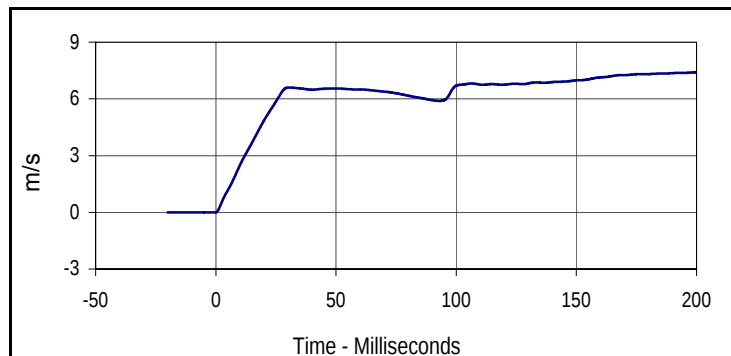
Test Date: 11/2/11

ATD Serial No.: 635

Test I.D.: F635NF020



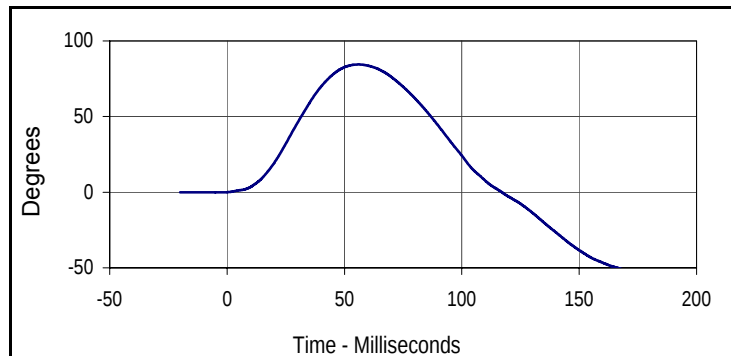
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	275	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	39.1	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.5	Pass
	20 Msec.	m/s	4.0 to 5.0	4.9	Pass
	30 Msec.	m/s	5.8 to 7.0	6.6	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	84.5	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	77.7	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	85.1	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

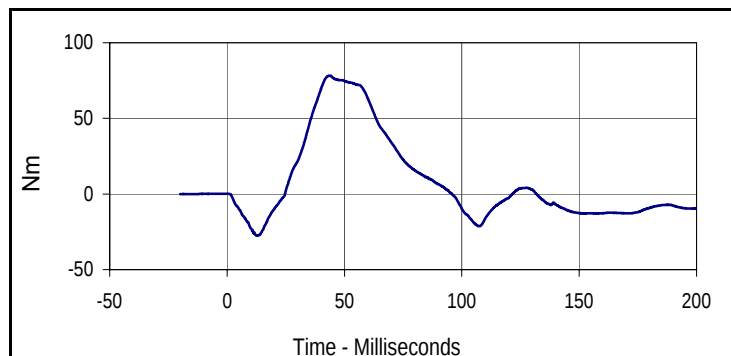
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.4	200.0	0.0	-0.5



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
84.5	56.1	-53.9	187.0



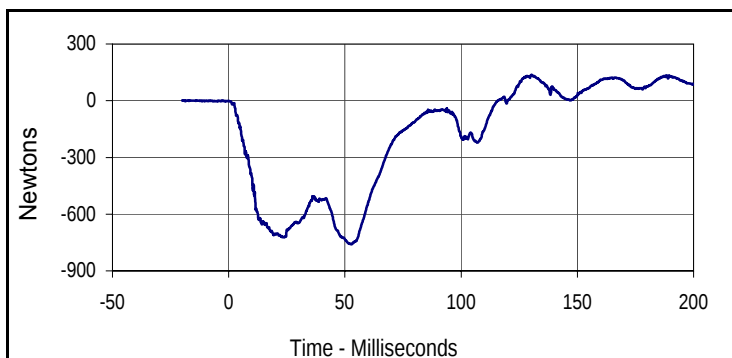
Curve Description

Moment About Occipital Condyle

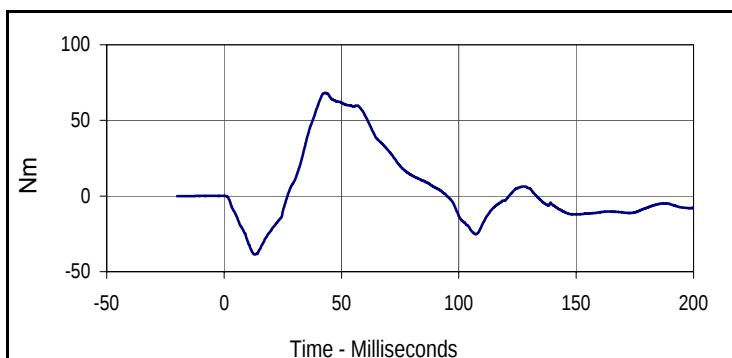
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
78.2	43.6	-27.6	12.6

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

Test Date: 11/2/11
 Test I.D.: F635NF020



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
137.3	130.4	-759.9	52.9



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
68.2	43.1	-38.6	12.9

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

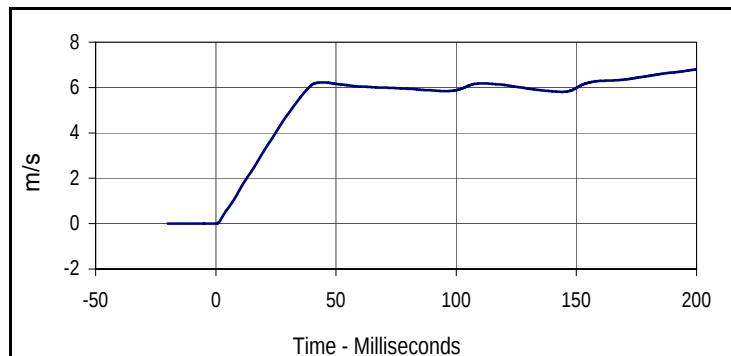
Test Date: 11/2/11

ATD Serial No.: 635

Test I.D.: F635NE020



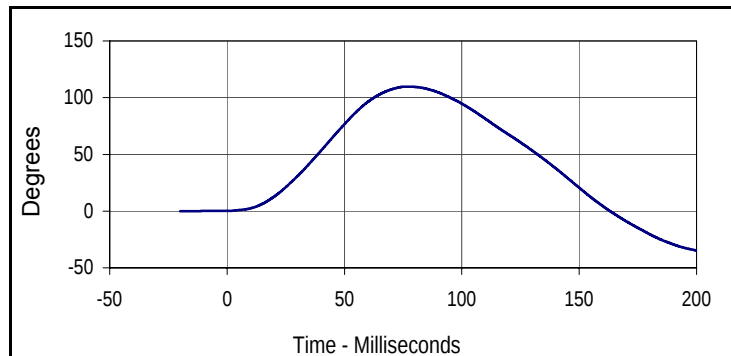
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	320	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	39.5	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.13	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	4.8	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	109.8	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-57.9	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	105.7	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

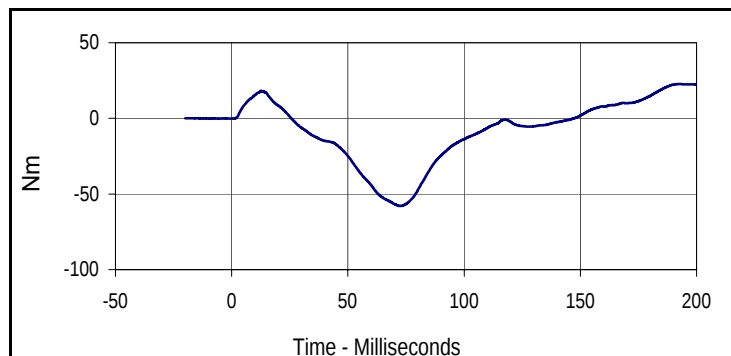
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.8	200.0	0.0	-0.3



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
109.8	77.0	-34.7	200.0



Curve Description

Moment About Occipital Condyle

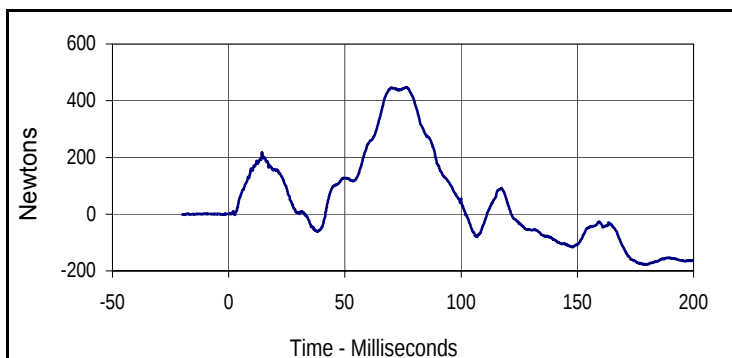
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
22.7	192.0	-57.9	72.8

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

ATD Serial No.: 635

Test Date: 11/2/11

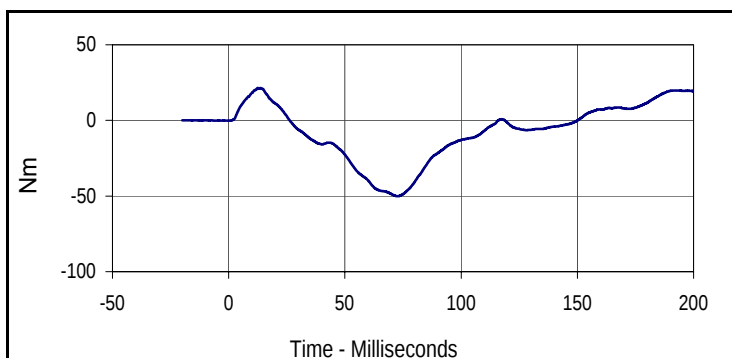
Test I.D.: F635NE020



Curve Description

Upper Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
447.8	76.4	-177.8	180.0



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
21.4	12.4	-50.1	72.8

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

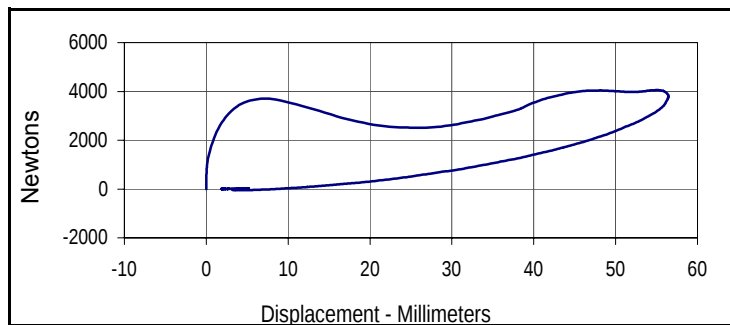
Test Date: 11/2/11

ATD Serial No.: 635

Test I.D.: F635CH020



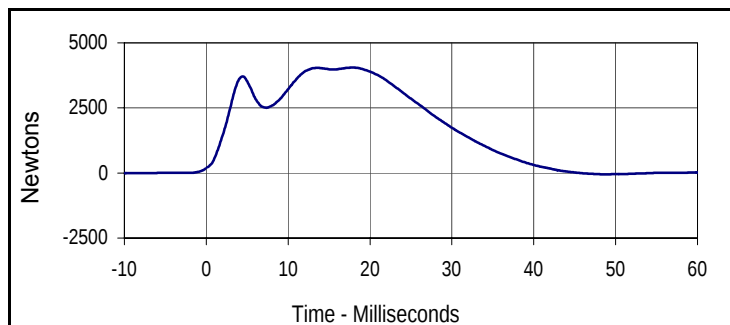
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	400	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	39.9	Pass
Probe Velocity		m/s	6.59 to 6.83	6.64	Pass
Peak Chest Deflection		mm	50.0 to 58.0	56.5	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4040	Pass
Peak Force Between 18 and 50 MM		Newtons	≥4600	4054	Pass
Internal Hysteresis		%	69 to 85	70.2	Pass
Overall Test Results					Pass



Curve Description

Probe Force vs. Chest Deflection

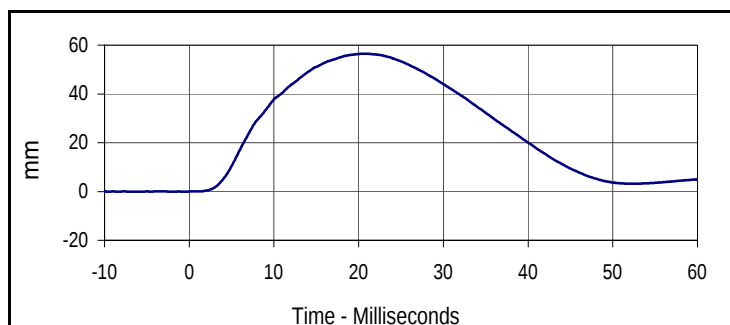
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	70.2
Peak Probe Force		Peak Chest Deflection	
4054.0		56.5	



Curve Description

Probe Force

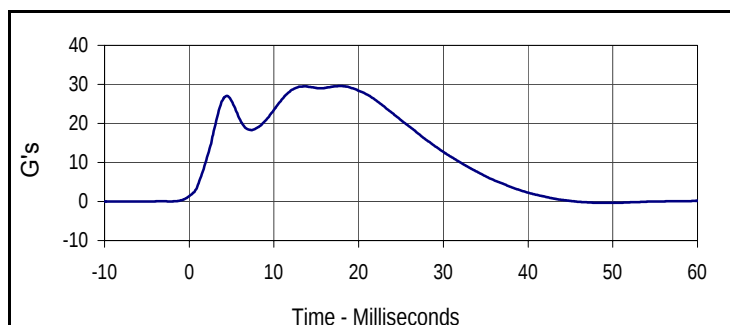
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4054.0	17.9	-50.4	48.6



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.5	20.6	0.0	-5.6



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
29.6	17.9	-0.4	48.6

Test Program: Hybrid III 5th Percentile Female Knee Impact Test
 ATD Serial No.: 635

Test Date: 11/2/11
 Test I.D.: F635LK020, F635LK020

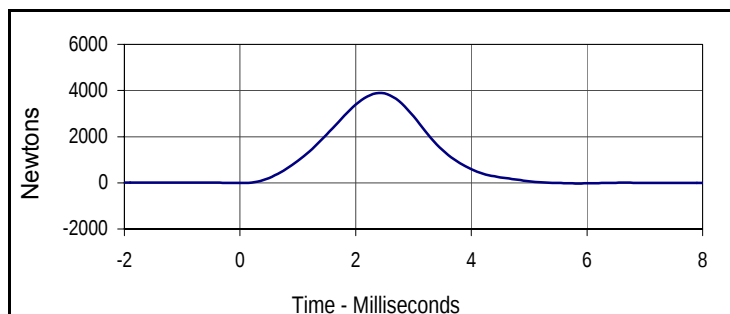


Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	445	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	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	34.2	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3892	Pass
Overall Test Results				Pass

Right Knee

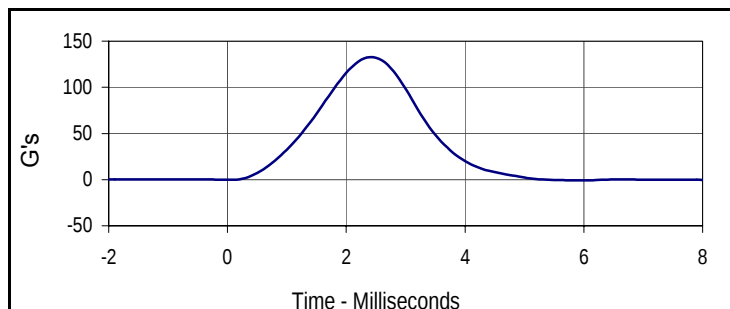
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.091	Pass
Peak Probe Force	Newtons	3450 to 4060	3982	Pass
Overall Test Results				Pass



Curve Description

Left Knee Probe Force

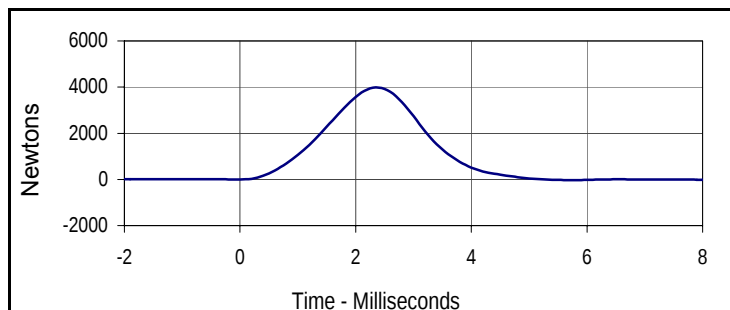
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3892.0	2.4	-26.7	5.9



Curve Description

Left Knee Acceleration

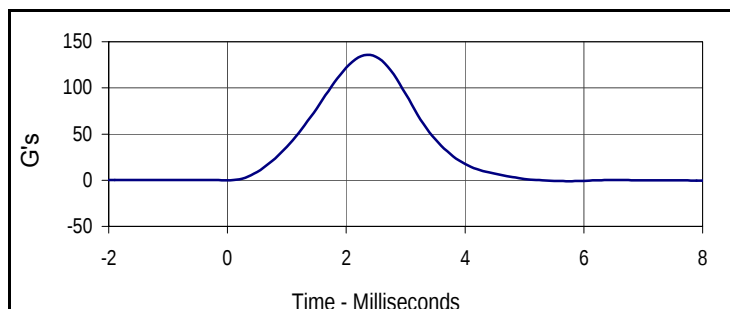
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
132.8	2.4	-0.9	5.9



Curve Description

Right Knee Probe Force

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3981.7	2.4	-29.7	5.8



Curve Description

Right Knee Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
135.8	2.4	-1.0	5.8

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

Test Date: 11/2/11

ATD Serial No.: 635

Test I.D.: F635TF020



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	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Initial Reference Plane Angle		Degrees	≤ 20	8.7	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	341.0	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	0.7	Pass
Final Reference Plane Angle		Degrees	+/-8	4.5	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: 11/9/11

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: 11/9/11

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	39.9	Pass
A - Total sitting height	mm	879 to 889	882	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - H point height	mm	84 to 89	86	Pass
D - H point location from backline	mm	135 to 140	137	Pass
E - Shoulder pivot from backline	mm	84 to 94	86	Pass
F - Thigh clearance	mm	140 to 155	148	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	297	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	589	Pass
L - Popliteal length	mm	429 to 455	436	Pass
M - Knee pivot height	mm	485 to 500	488	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	432	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	433	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

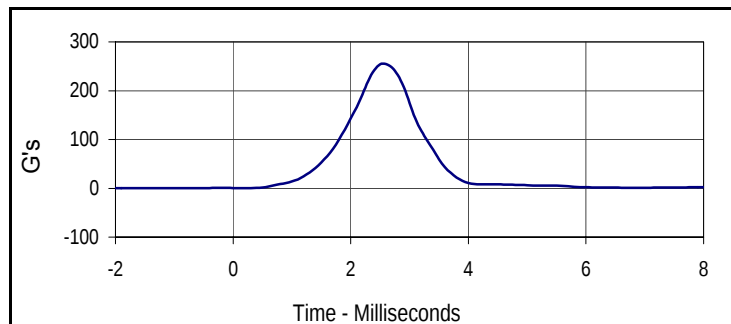
Test Date: 11/9/11

ATD Serial No.: 035

Test I.D.: M035HD024



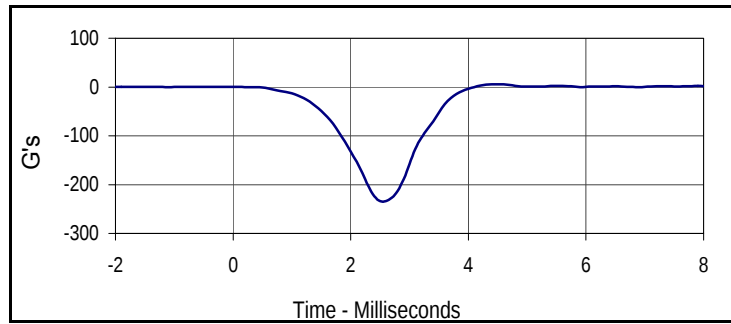
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	255	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.2	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	254.5	Pass
Peak Lateral Acceleration		G's	≤15.0	3.3	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	4.2	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

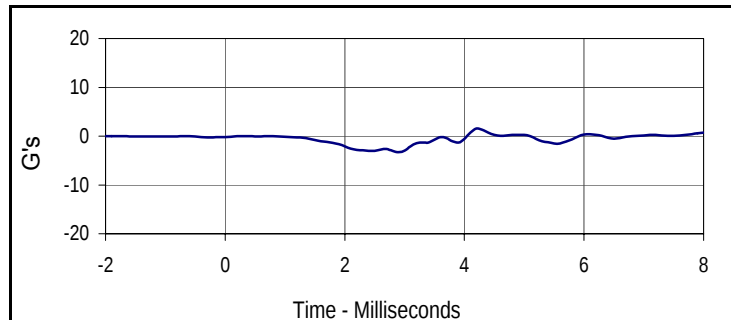
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
254.5	2.6	0.0	-2.0



Curve Description

Head X

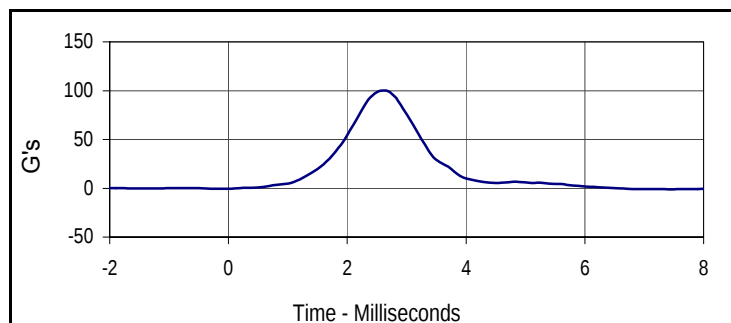
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.8	4.5	-234.0	2.5



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.6	4.2	-3.3	2.9



Curve Description

Head Z

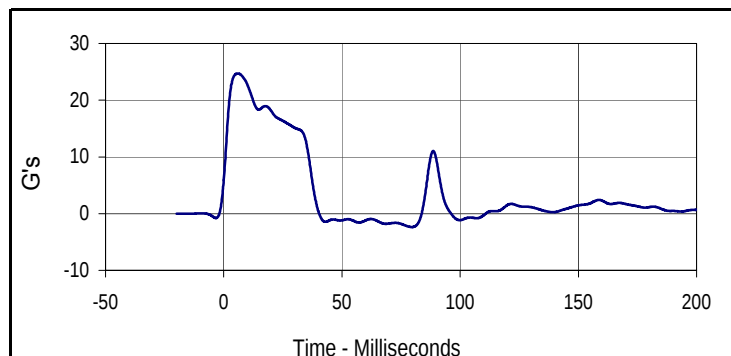
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
100.3	2.6	-0.6	-0.2

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

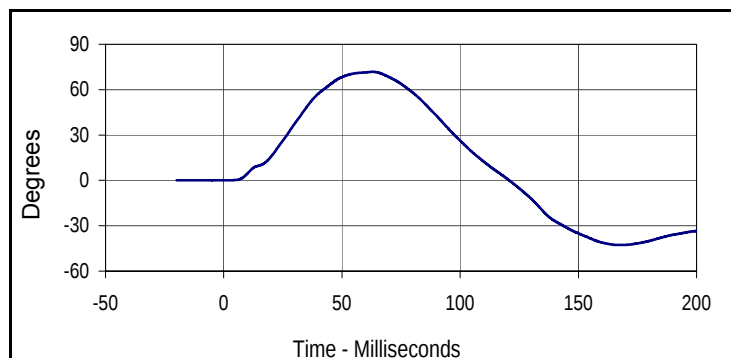
Test Date: 11/9/11
 Test I.D.: M035NF024



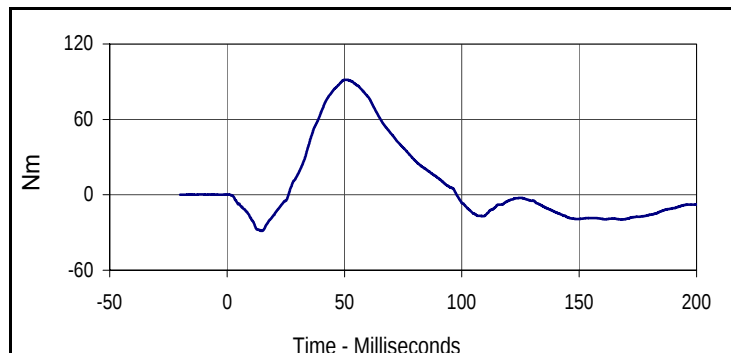
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	285	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.2	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	20.9	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	39.6	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.7	Pass
	20 Msec.	G's	17.6 to 22.6	18.1	Pass
	30 Msec.	G's	12.5 to 18.5	15.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	15.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	37.8	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	71.8	Pass
	Time	Msec.	57.0 to 64.0	63.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	120.8	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	91.6	Pass
	Time	Msec.	47.0 to 58.0	50.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.8	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.7	5.9	-2.4	79.6



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
71.8	63.1	-42.8	167.7



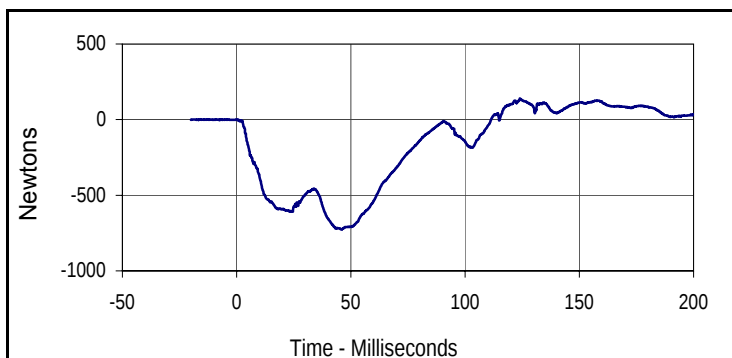
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
91.6	50.9	-28.7	14.5

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

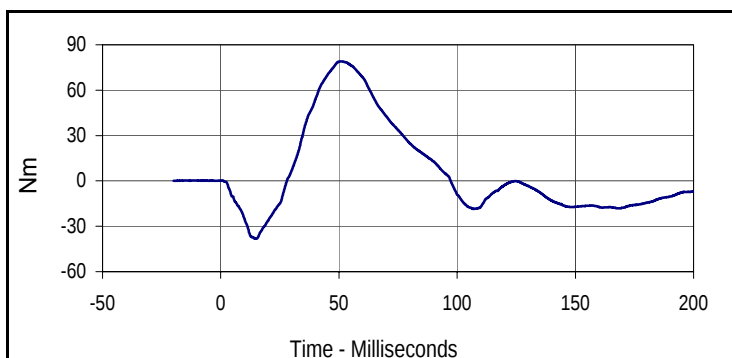
Test Date: 11/9/11

ATD Serial No.: 035

Test I.D.: M035NF024



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
140.0	124.0	-726.2	45.9



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
79.0	51.1	-38.3	14.5

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

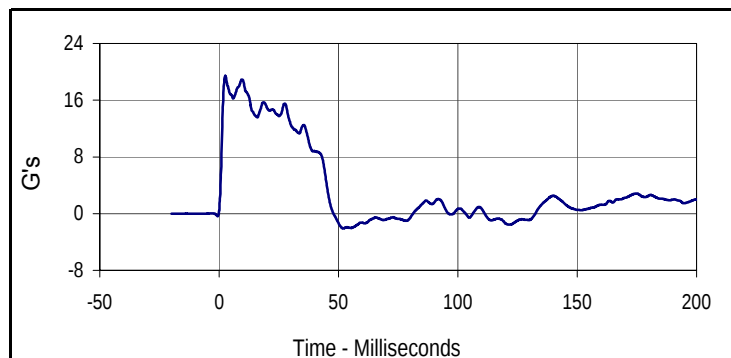
Test Date: 11/9/11

ATD Serial No.: 035

Test I.D.: M035NE024



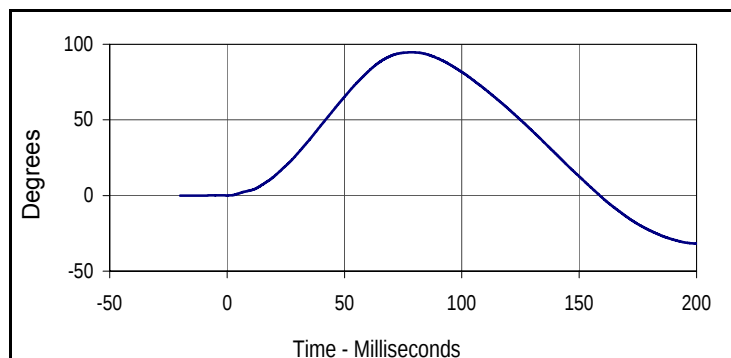
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	330	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	39.4	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.00	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.8	Pass
	20 Msec.	G's	14.0 to 19.0	15.0	Pass
	30 Msec.	G's	11.0 to 16.0	12.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	12.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.7	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	94.7	Pass
	Time	Msec.	72.0 to 82.0	78.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	158.8	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-66.1	Pass
	Time	Msec.	65.0 to 79.0	68.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	141.4	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

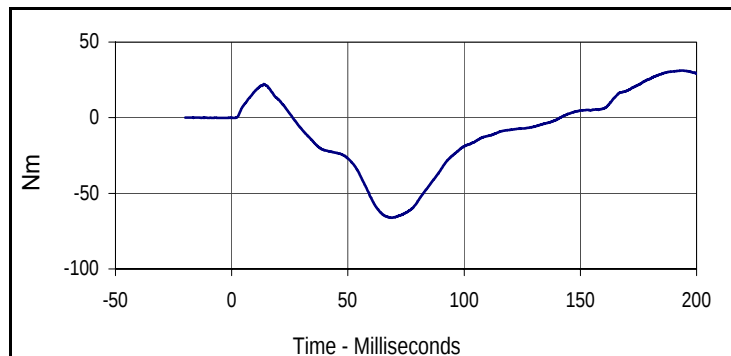
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.4	2.6	-2.1	52.0



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
94.7	78.6	-31.8	200.0



Curve Description

Moment About Occipital Condyle

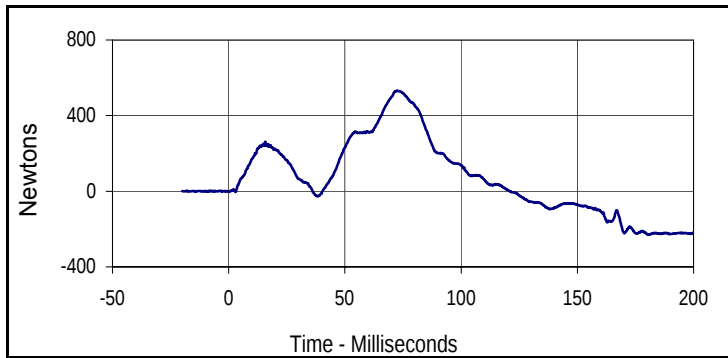
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.1	194.2	-66.1	68.5

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

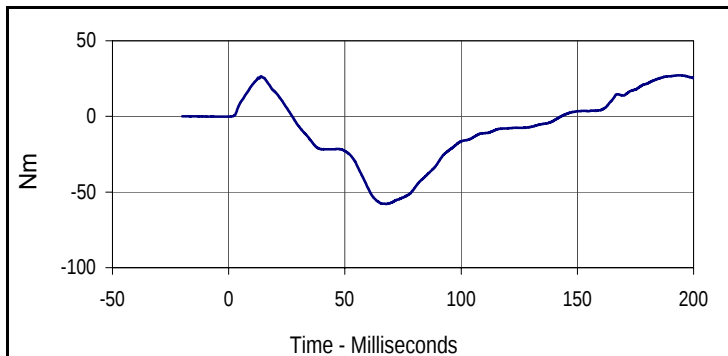
Test Date: 11/9/11

ATD Serial No.: 035

Test I.D.: M035NE024



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
532.7	72.3	-230.7	180.5



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
27.2	194.0	-57.9	67.8

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

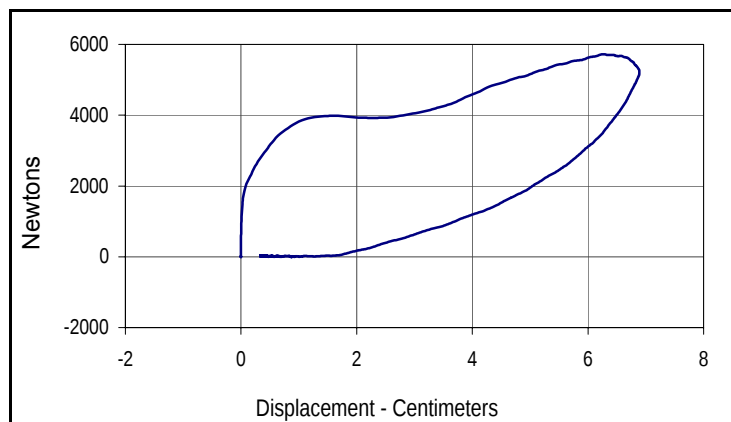
Test Date: 11/9/11

ATD Serial No.: 035

Test I.D.: M035CH024



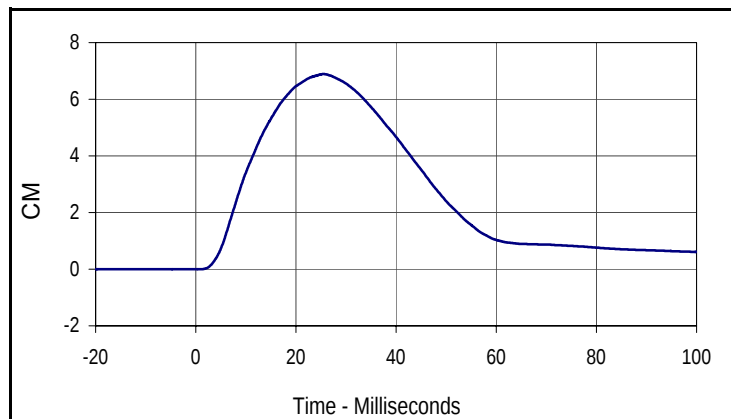
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	410	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	39.9	Pass
Probe Velocity		m/s	6.58 to 6.82	6.63	Pass
Peak Probe Force		Newtons	5159 to 5893	5720	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.89	Pass
Internal Hysteresis		%	69 to 85	70.9	Pass
Overall Test Results				Pass	



Curve Description

Probe Force vs. Chest Deflection

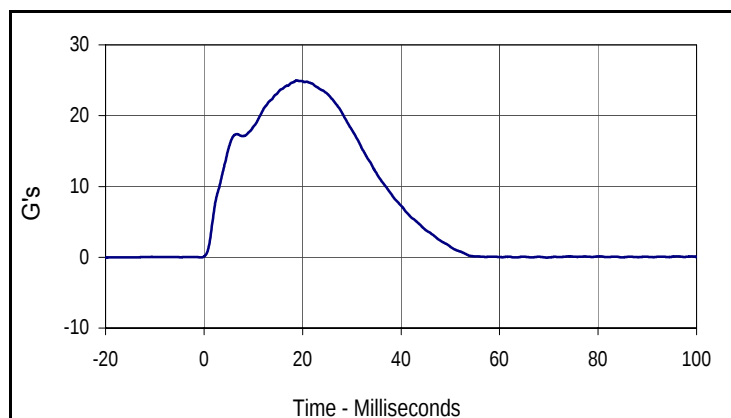
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	70.9
Peak Probe Force		Peak Chest Deflection	
5720		6.89	



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.9	25.5	0.0	0.8



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
25.0	18.8	-0.1	-20.0

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

Test Date: 11/9/11
 Test I.D.: M035LK024 , M035RK024

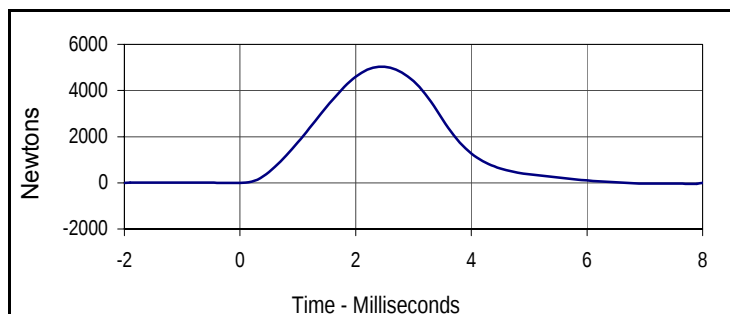


Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	460	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	40.0	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	32.5	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force		Newtons	4715 to 5782	5035	Pass
Overall Test Results				Pass	

Right Knee

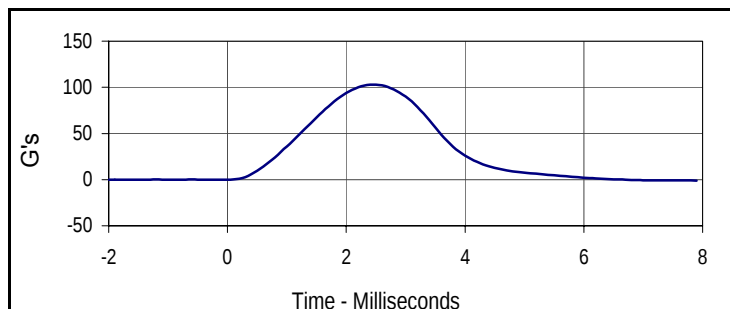
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force		Newtons	4715 to 5782	5029	Pass
Overall Test Results				Pass	



Curve Description

Left Knee Probe Force

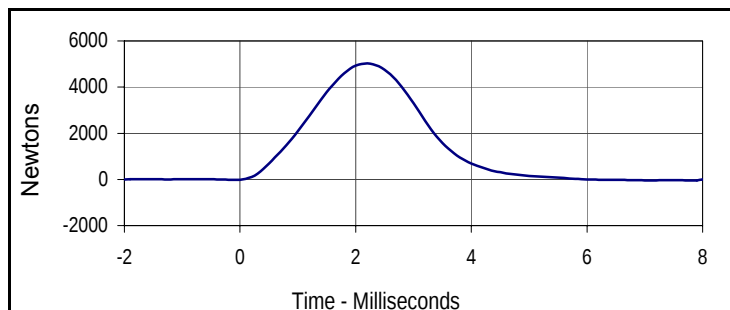
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5035.3	2.5	-47.4	7.9



Curve Description

Left Knee Acceleration

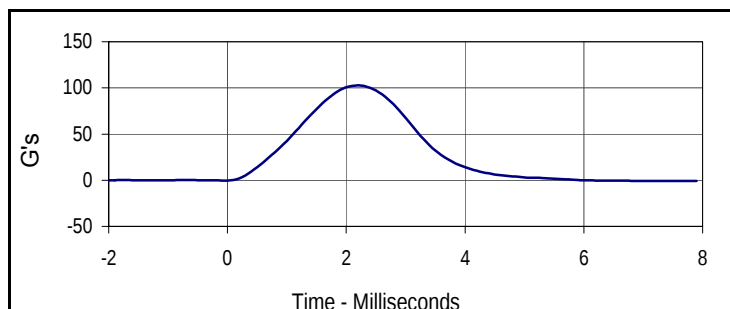
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
102.9	2.5	-1.0	7.9



Curve Description

Right Knee Probe Force

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5029.3	2.2	-44.2	7.9



Curve Description

Right Knee Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
102.8	2.2	-0.9	7.9

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

Test Date: 11/9/11
 Test I.D.: M035LF024, M035RF024

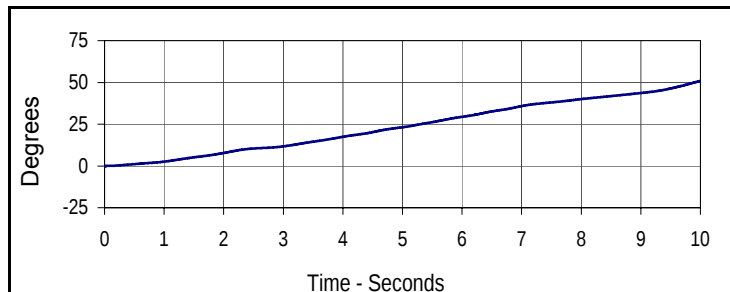


Left Hip Joint-Femur Results

Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	530	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.9	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	39.6	Pass
Rotation Rate	deg/sec	5 to 10	5.1	Pass
Femur Torque at 30°	Nm	≤ 95	86.9	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.6	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

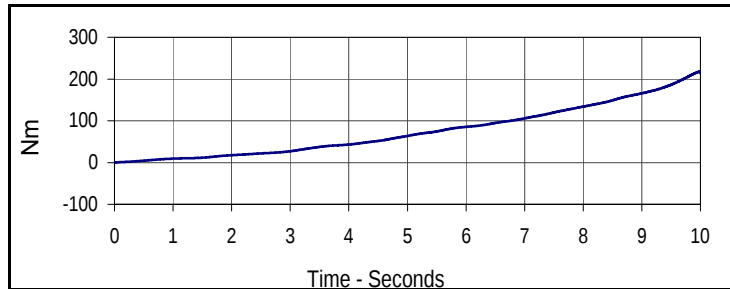
Rotation Rate	deg/sec	5 to 10	5.1	Pass
Femur Torque at 30°	Nm	≤ 95	84.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.5	Pass
Overall Test Results				Pass



Curve Description

Left Hip-Femur Rotation

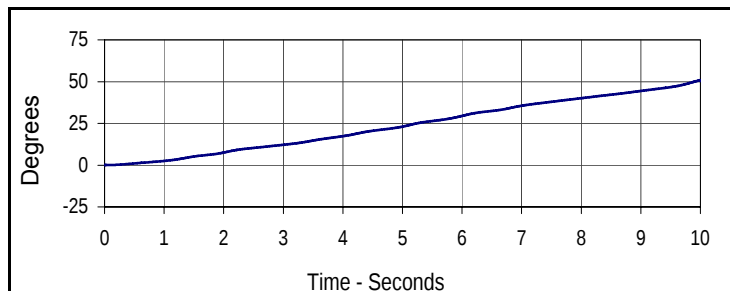
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
50.8	10.0	0.0	0.0



Curve Description

Left Femur Torque

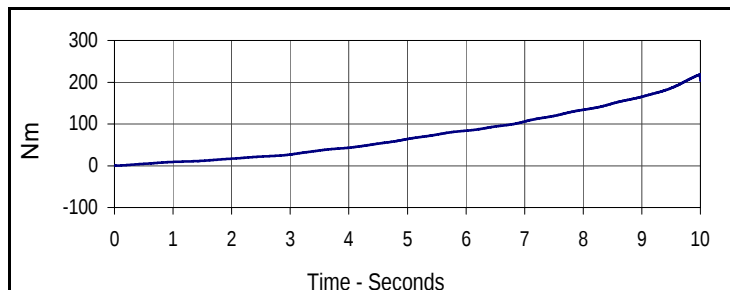
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
218.4	10.0	0.4	0.0



Curve Description

Right Hip-Femur Rotation

Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
50.8	10.0	0.0	0.0



Curve Description

Right Femur Torque

Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
218.5	10.0	0.1	0.0

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

Test Date: 11/9/11

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: 11/9/11

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	20.92	Pass
Laboratory Relative Humidity	%	10 to 70	39.6	Pass
A - Total sitting height	mm	774.7 to 800.1	778	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	434	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	147	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	78	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	246	Pass
H - Head back to backline	mm	40.7 to 45.7	45	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	284	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	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	395	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	430	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	187	Pass
P - Foot length	mm	218.5 to 233.7	220	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	475	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	546	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

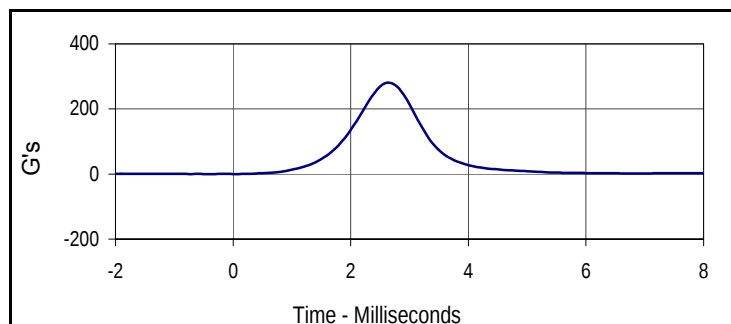
Test Date: 11/9/11

ATD Serial No.: 635

Test I.D.: F635HD021



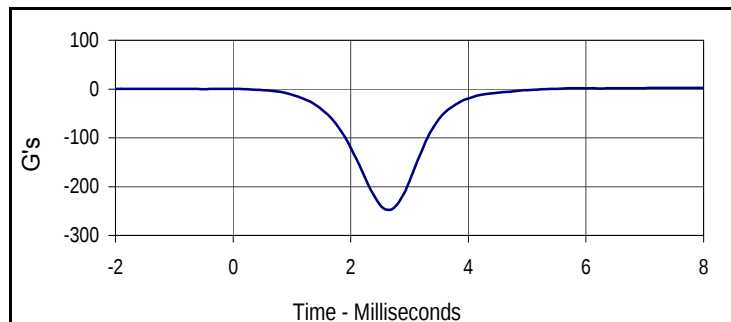
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	275	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.6	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	279.8	Pass
Peak Lateral Acceleration		G's	≤15.0	2.4	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

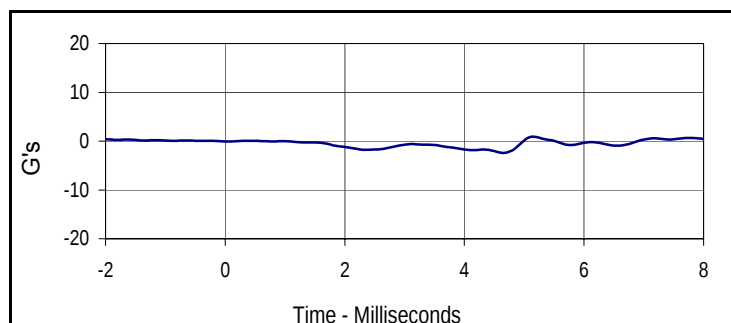
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
279.8	2.6	0.1	-0.4



Curve Description

Head X

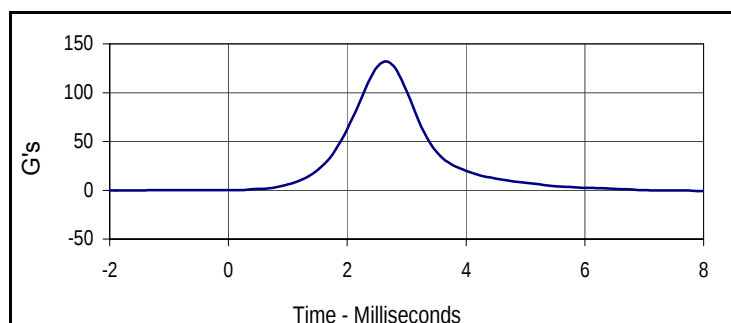
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.6	5.9	-247.1	2.6



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
0.9	5.2	-2.4	4.7



Curve Description

Head Z

Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
131.3	2.6	-0.2	-2.0

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

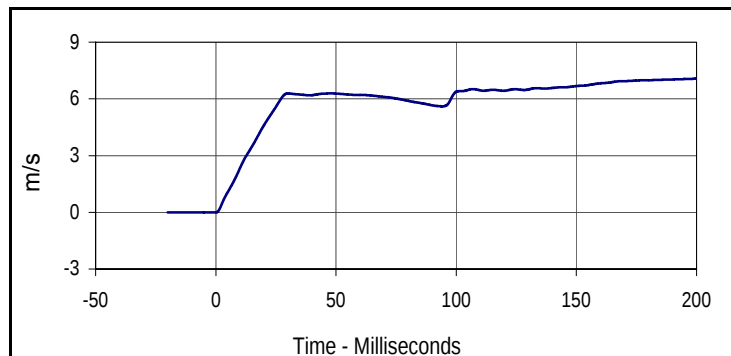
Test Date: 11/9/11

ATD Serial No.: 635

Test I.D.: F635NF021



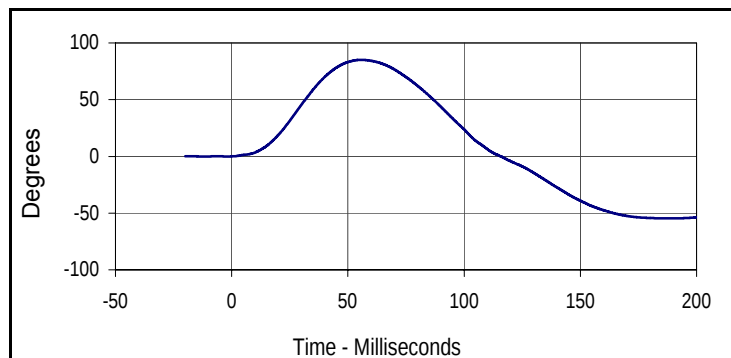
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	305	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.6	Pass
	30 Msec.	m/s	5.8 to 7.0	6.3	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	85.1	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	77.7	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	84.5	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

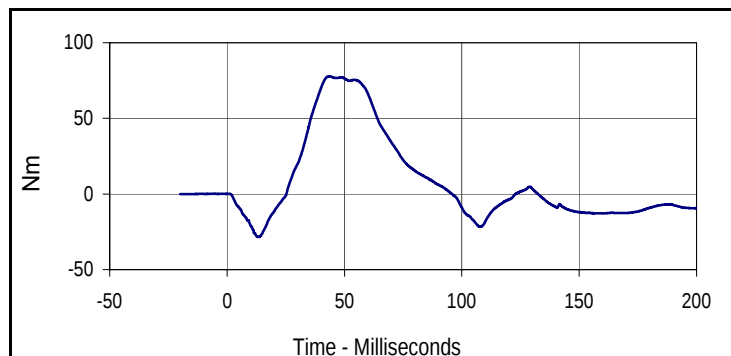
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.1	200.0	0.0	-0.2



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
85.1	55.7	-54.6	186.7



Curve Description

Moment About Occipital Condyle

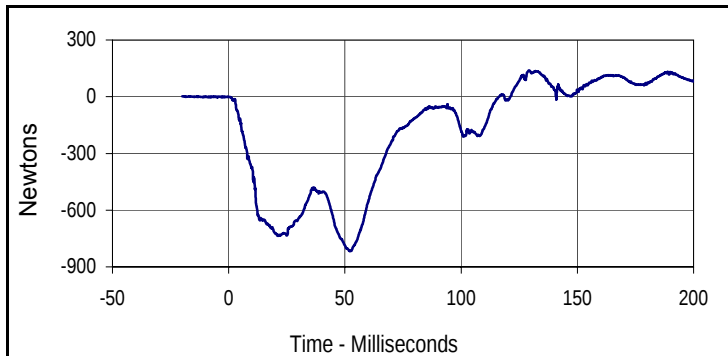
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
77.7	43.9	-28.4	13.0

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

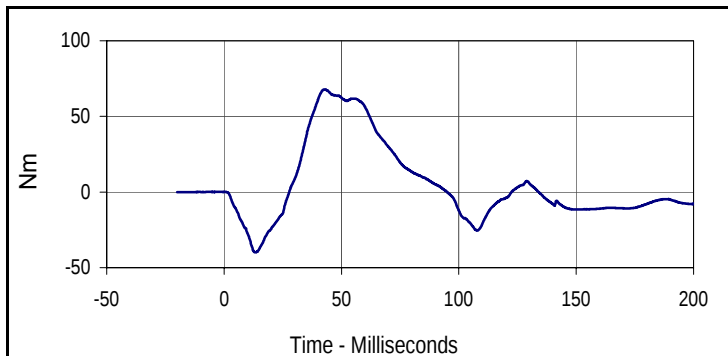
ATD Serial No.: 635

Test Date: 11/9/11

Test I.D.: F635NF021



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
139.4	129.2	-816.5	52.3



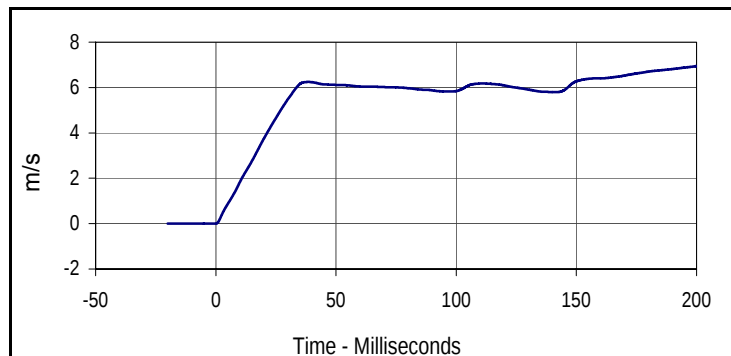
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
67.9	42.9	-39.9	13.4

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

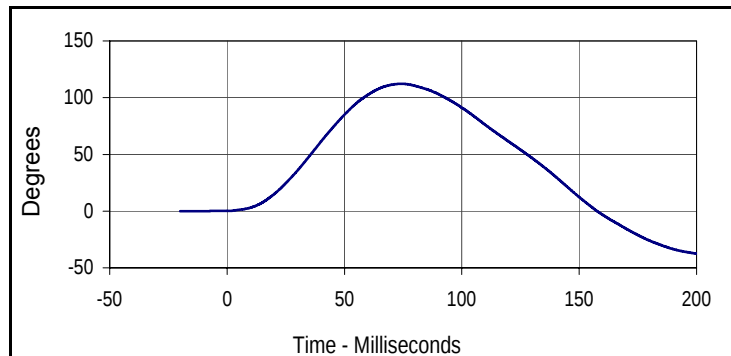
Test Date: 11/9/11
 Test I.D.: F635NE021



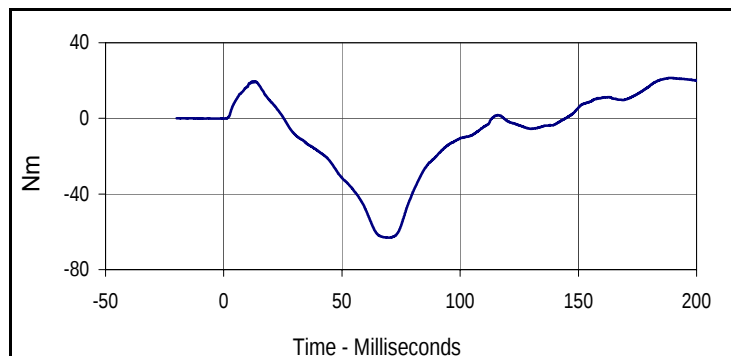
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	365	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.3	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.14	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.8	Pass
	30 Msec.	m/s	4.6 to 5.6	5.5	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	-63.1	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	101.9	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	-0.4



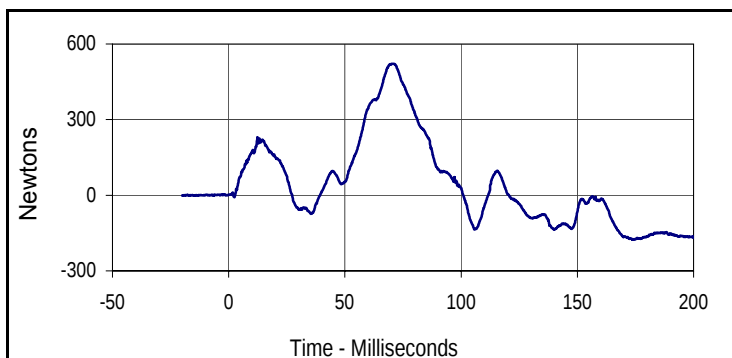
Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
112.2	74.1	-37.5	200.0



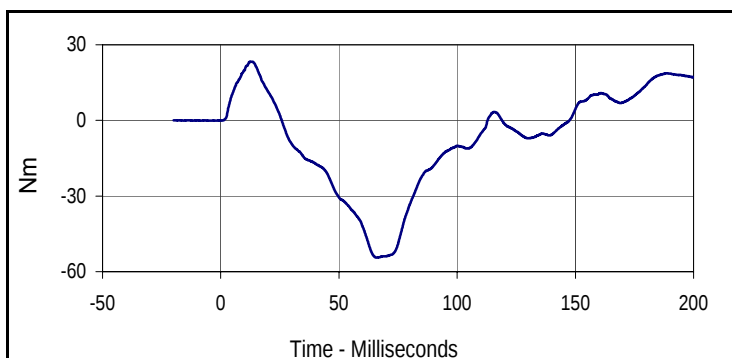
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
21.5	189.0	-63.1	69.4

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

Test Date: 11/9/11
Test I.D.: F635NE021



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
521.8	71.0	-176.2	174.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
23.3	13.5	-54.4	65.9

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

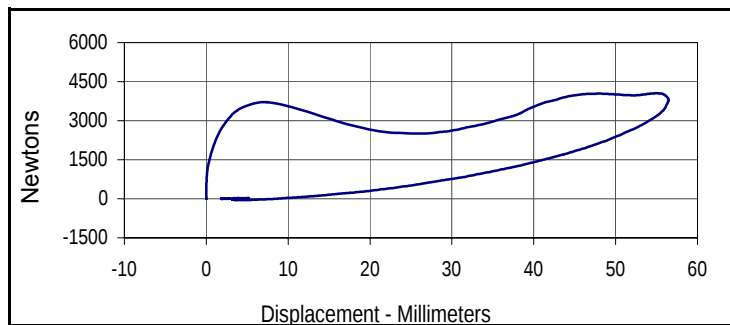
Test Date: 11/9/11

ATD Serial No.: 635

Test I.D.: F635CH021



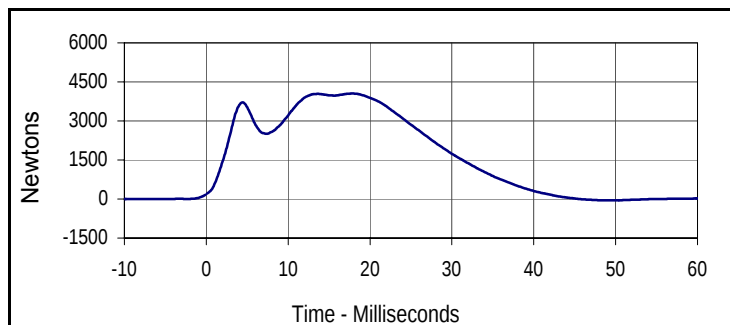
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	485	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.3	Pass
Probe Velocity		m/s	6.59 to 6.83	6.63	Pass
Peak Chest Deflection		mm	50.0 to 58.0	56.5	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4040	Pass
Peak Force Between 18 and 50 MM		Newtons	≥4600	4054	Pass
Internal Hysteresis		%	69 to 85	70.2	Pass
Overall Test Results					Pass



Curve Description

Probe Force vs. Chest Deflection

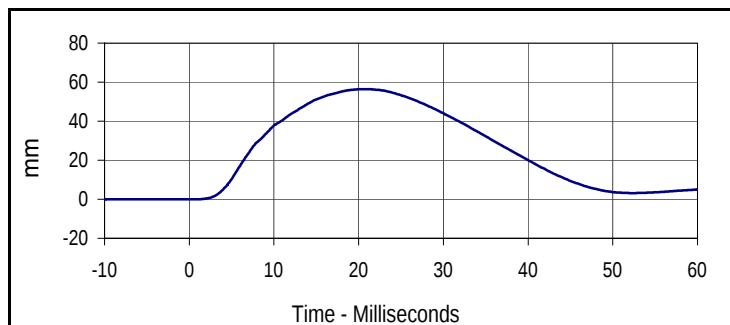
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	70.2
Peak Probe Force		Peak Chest Deflection	
4054.0		56.5	



Curve Description

Probe Force

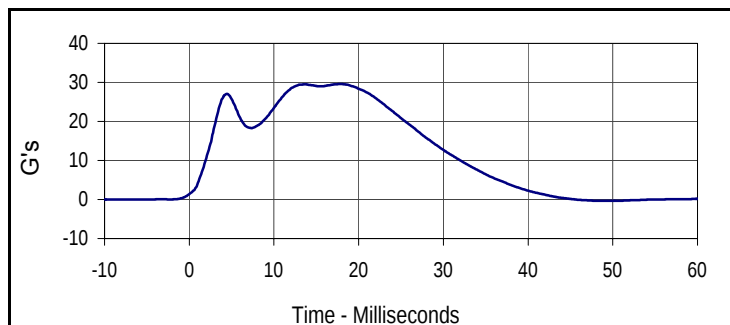
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4054.0	17.9	-50.4	48.6



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.5	20.6	0.0	-5.6



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
29.6	17.9	-0.4	48.6

Test Program: Hybrid III 5th Percentile Female Knee Impact Test
 ATD Serial No.: 635

Test Date: 11/9/11
 Test I.D.: F635LK021, F635RK021

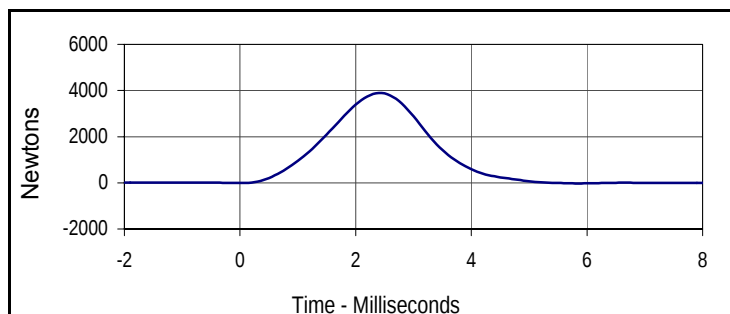


Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	425	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	40.0	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	35.2	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force		Newtons	3450 to 4060	3892	Pass
Overall Test Results				Pass	

Right Knee

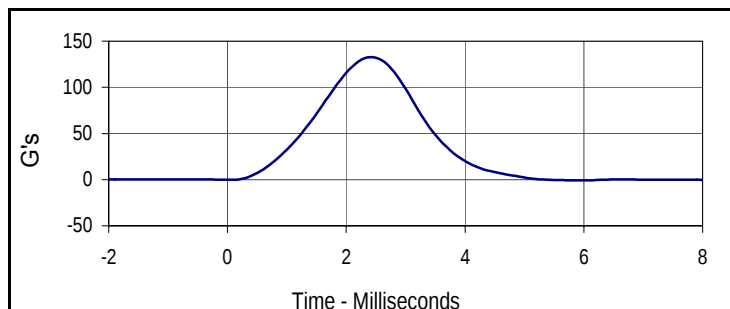
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.088	Pass
Peak Probe Force		Newtons	3450 to 4060	3982	Pass
Overall Test Results				Pass	



Curve Description

Left Knee Probe Force

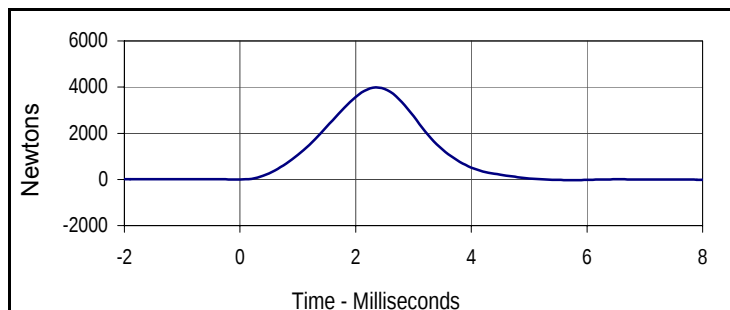
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3892.0	2.4	-26.7	5.9



Curve Description

Left Knee Acceleration

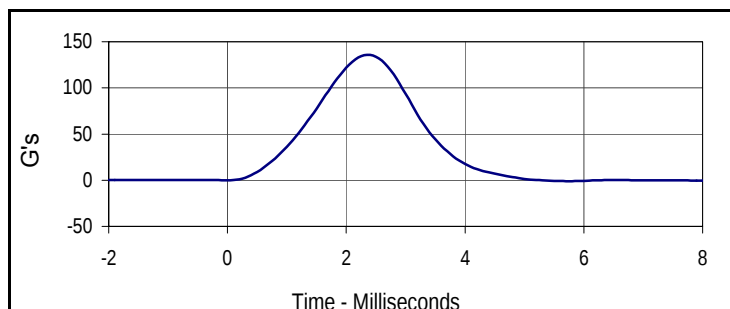
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
132.8	2.4	-0.9	5.9



Curve Description

Right Knee Probe Force

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3981.7	2.4	-29.7	5.8



Curve Description

Right Knee Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
135.8	2.4	-1.0	5.8

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

Test Date: 11/9/11

ATD Serial No.: 635

Test I.D.: F635TF021



Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	545	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	40.0	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Initial Reference Plane Angle		Degrees	≤ 20	9.2	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	371.0	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	0.7	Pass
Final Reference Plane Angle		Degrees	+/-8	4.6	Pass
Overall Test Results					Pass