

REPORT NUMBER: NCAP-KAR-11-028

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

**MAZDA MOTOR CORPORATION
2011 MAZDA3 I SPORT 4-DOOR SEDAN**

NHTSA NUMBER: MB5402

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



OCTOBER 13, 2010

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

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15. Supplementary Notes																																																							
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2011 Mazda3 I Sport 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and foot well intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on October 13, 2010. The impact velocity of the vehicle was 56.36 km/h and the ambient temperature at the barrier face at the time of impact was 30.0 deg. C. The target vehicle's post-test maximum crush was 357 mm at the 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>238.5</td> <td>700.0</td> <td>242.7</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-18</td> <td>52</td> <td>-18</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.21</td> <td>1</td> <td>0.47</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>762.9</td> <td>2620</td> <td>822.1</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-86.4</td> <td>2520</td> <td>-271.3</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-203.3</td> <td>6805</td> <td>-1945.7</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-204.9</td> <td>6805</td> <td>-2051.3</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	238.5	700.0	242.7	Maximum Chest Compression	mm	63	-18	52	-18	Nij	N/A	1	0.21	1	0.47	Neck Tension	N	4170	762.9	2620	822.1	Neck Compression	N	4000	-86.4	2520	-271.3	Left Femur Force	N	10008	-203.3	6805	-1945.7	Right Femur Force	N	10008	-204.9	6805	-2051.3
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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 System Integrity Post-Impact Data	29
17	FMVSS 301 Fuel Static Rollover Data	30
18	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 January, 2010.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2011 Mazda3 I Sport 4-Door Sedan at a velocity of 56.36 km/h. The test was performed at KARCO Engineering, LLC. on October 13, 2010. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time camera and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

One Part 572E 50th percentile male anthropomorphic test device (ATD) was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger seating position according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck force transducers, right / left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and 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 128 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 357 mm located at the vehicle 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 headrest. The upper torso contacted the airbag. The left knee contacted the steering wheel rim. The right knee contacted the knee bolster and steering column.

The passenger's visible contact points were as follows: The passenger ATD's head contacted the airbag and 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)	238.5	71.7	86.7	-18	0.21	762.9	-86.4	-203.3	-204.9
Passenger (5th)	242.7	62.0	77.0	-18	0.47	822.1	-271.3	-1945.7	-2051.3

SECTION 2
DATA SHEETS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
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:	2011 Mazda3 I Sport 4-Door Sedan	NHTSA No.:	MB5402
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	10/13/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5402
Make	Mazda
Model	Mazda3 I Sport
Body Style	4-Door Sedan
VIN	JM1BL1UG8B1361339
Body Color	Gunmetal Blue
Delivery Date	9/4/2010
Odometer Reading (mi)	7
Odometer Reading (km)	11
Dealer	Bob Baker Mazda
Transmission	5-Speed Automatic
Final Drive	Front
Type / No. of Cylinders	Inline 4
Engine Displacement (L)	2.0
Engine Placement	Transverse
Roof Rack	No
Sunroof / T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Pass. Front Airbag	Yes
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	No
Pass. Torso/Pelvis Airbag	Yes
Pass. Pelvis Airbag	No
Pass. Knee Airbag	No
Pre-Tensioners	Yes
Load Limiters	Yes
Automatic Door Locks	Yes
Tilt Steering	Yes
Other	

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Corporation
Date of Manufacture	Jul-10

GVWR (kg)	1800
GAWR Front (kg)	967
GAWR Rear (kg)	833

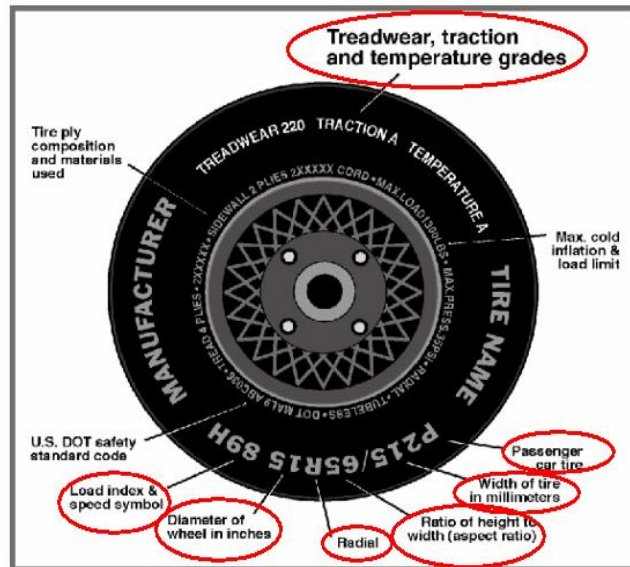
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				385.0
Cargo Weight (RCLW) (kg)				44.8

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2011 Mazda3 I Sport 4-Door Sedan	NHTSA No.:	MB5402
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	10/13/10



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P205/55R16	P205/55R16
Tire Size on Vehicle	P205/55R16	P205/55R16
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Turanza	Turanza
Treadwear	300	300
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index / Speed Symbol	89H	89H
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	H48K DHE 2710	H48K DHE 2710
DOT Safety Code Right	H48K DHE 2710	H48K DHE 2710

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

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	403.0	255.0		441.0	329.0	
Right	kg	405.5	262.0		420.5	312.5	
Ratio	%	61.0%	39.0%	100.0%	57.3%	42.7%	100.0%
Total	kg	808.5	517.0	1325.5	861.5	641.5	1503.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1325.5	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	44.8	C
Calculated Vehicle Target Weightt (TVTW)	kg	1511.3	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	691	693	705	700	1030
As Tested	mm	679	678	672	678	1127
Post-Test	mm	731	678	682	663	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2641
Total Vehicle Length at Left Side	mm	3810
Total Vehicle Length at Centerline	mm	4580
Total Vehicle Length at Right Side	mm	3811
Weight of Ballast in Cargo Area	kg	91.6
Weight of Vehicle Components Removed	kg	25.5
Amount of Stoddard Solvent in Fuel Tank	L	51.04

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Outboard mirrors (2.0 kg), Bumper and cover (16.0 kg), Tail lights (2.5 kg), Rear door panels
(5.0 kg)

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

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length	4580	4223	-357
2	Total Width	1750	1807	57
3	Bumper Top Height	613	548	-65
4	Bumper Bottom Height	243	220	-23
5	Longitudinal Member Top Height	560	530	-30
6	Distance Between Longitudinal Members	953	983	30
7	Longitudinal Member Width	60	72	12
8	Engine Top Height	774	723	-51
9	Engine Bottom Height	201	186	-15
10	Engine and Gearbox Width	501	501	0
11	Front Bumper to Engine Distance	450	391	-59
12	Front Shock Absorber Fixing Height	834	858	24
13	Bonnet Leading Edge Height	752	672	-80
14	Front Shock Absorber Fixing Width	1133	1115	-18
15	Front Bumper to Front Axle Distance	960	664	-296
16	Front Axle to A-Pillar Distance	475	405	-70
17	A-Pillar to B-Pillar Distance	1003	1000	-3
18	B-Pillar to Rear Axle Distance	1105	1092	-13
19	B-Pillar to C-Pillar Distance	718	715	-3
20	Roof Sill Bottom Height	1297	1340	43
21	Roof Sill Top Height	1410	1449	39
22	Floor Sill Bottom Height	187	190	3
23	Floor Sill Top Height	346	586	240

All measurements in millimeters.

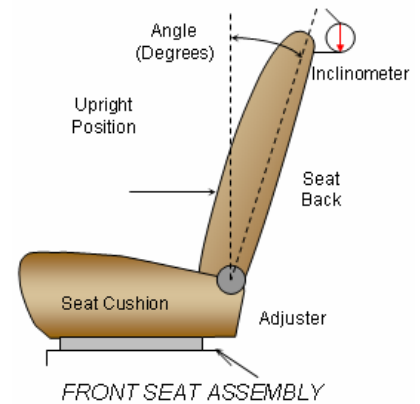
DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

NOMINAL DESIGN RIDING POSITION

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

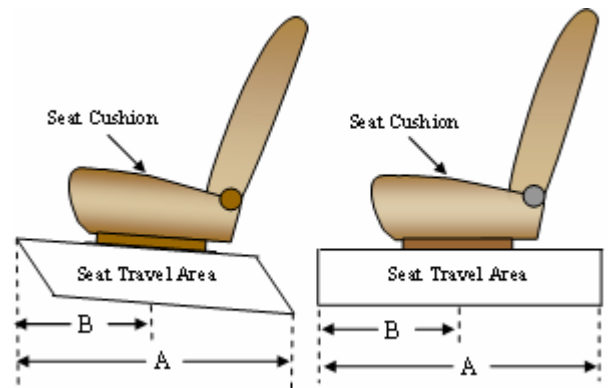


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	16.4
Passenger Seat Back Angle	13.6

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rearmost possible position. The driver's seat is set to the closest detent rearward of the measured mid-travel. The passenger's seat is set to the forward most position where the ATD will not contact any interior panels, full forward for this test.



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	320 mm	165 mm
Passenger Seat	259 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 zero (0) is the uppermost position.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	0
Passenger Seat	4	0

DATA SHEET NO. 2 ... (CONTINUED)

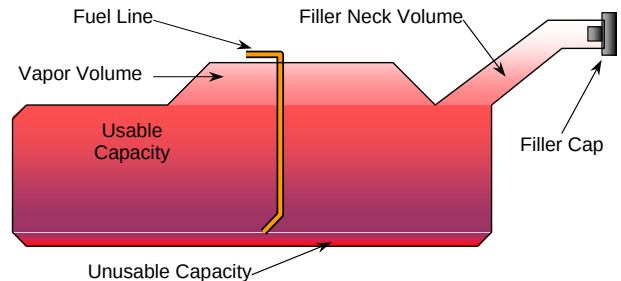
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	54.88
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	50.49 to 51.59
Actual Amount of Stoddard Solvent Used	51.04
1/3 of Usable Capacity	18.29

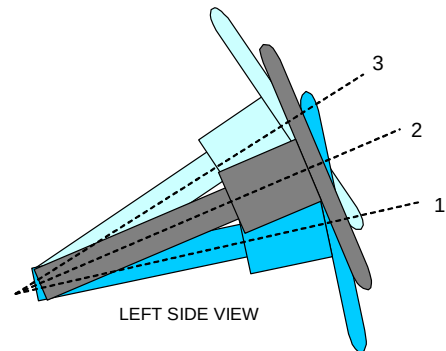
The test vehicle is equipped with an electric fuel pump. The fuel pump operates when the starter or engine is activated. The fuel filler door is located on the right rear fender. The standard fuel tank occupies the area under the rear seat.



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 with a reference mark on the steering column to measure telescoping travel.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	19.7	0
Geometric Center Position, No. 2	22.7	25
Uppermost Position, No. 3	25.7	50
Telescoping Steering Wheel Travel		50
Test Position	22.7	25

DATA SHEET NO. 3

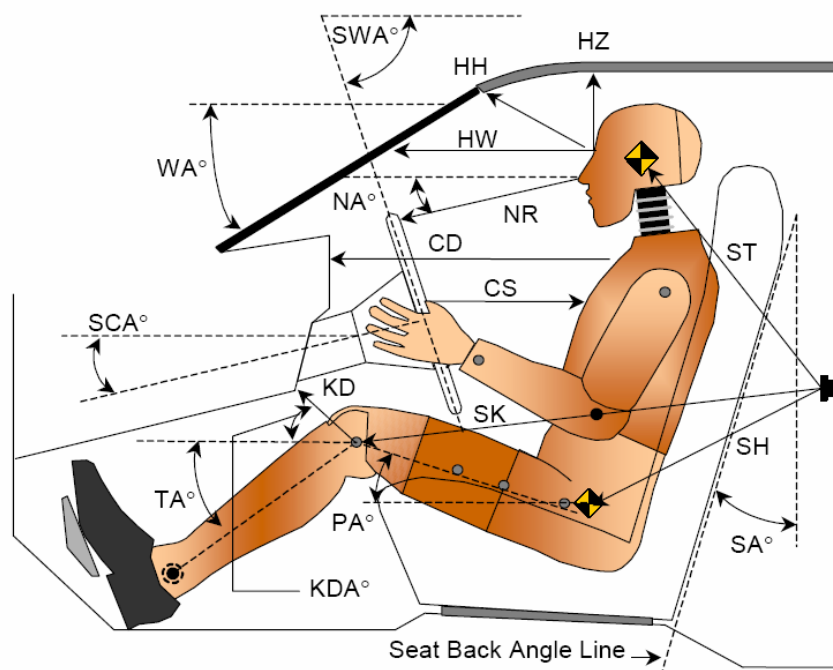
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No.: MB5402

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 10/13/10

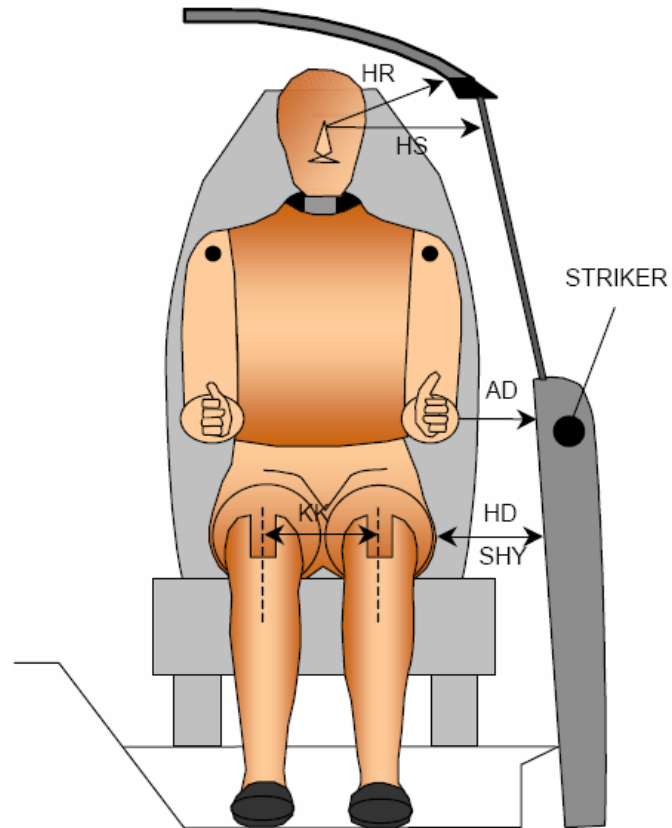


Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		22.8		
SWA°	Steering Wheel Angle		22.8		
SCA°	Steering Column Angle		67.2		
SA°	Seat Back Angle (On Headrest Post)		16.4		13.6
HZ	Head to Roof	200	90.0	219	90.0
HH	Head to Header	327	29.4	292	48.6
HW	Head to Windshield	691	0.0	657	0.0
HR	Head to Side Header	254	31.0	249	39.5
NR	Nose to Rim	376	9.0	455	35.2
CD	Chest to Dash	556	10.2	400	11.2
CS	Chest to Steering Hub	321	5.4		
RA	Rim to Abdomen	205	0.0		
KDL	Left Knee to Dash	183	30.3	75	
KDR	Right Knee to Dash	121	33.4	100	38.5
PA°	Pelvic Angle		23.8		23.7
TA°	Tibia Angle		48.4		44.8
SK	Striker to Knee	598	3.6	703	6.8
ST	Striker to Head	486	81.1	469	63.9
SH	Striker to H-Point	286	38.4	386	21.8

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2011 Mazda3 I Sport 4-Door Sedan	NHTSA No.:	MB5402
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	10/13/10



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	54	30
HD	H-Point to Door	145	80
HR	Head to Side Header	254	249
HS	Head to Side Window	332	342
KK	Knee to Knee	334	220
SHY	Striker to H-Point (Y-Direction)	232	279
AA	Ankle to Ankle	330	145

DATA SHEET NO. 5

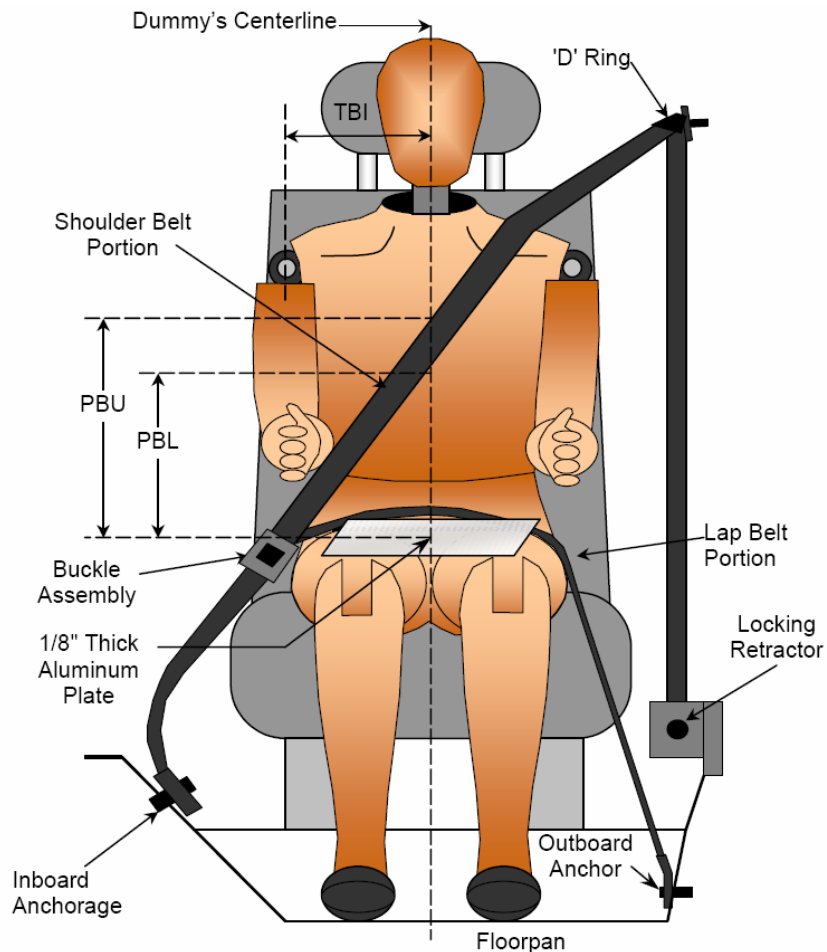
SEAT BELT POSITIONING DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No.: MB5402

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 10/13/10



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	360	293
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	275	210

BELT LENGTH DATA

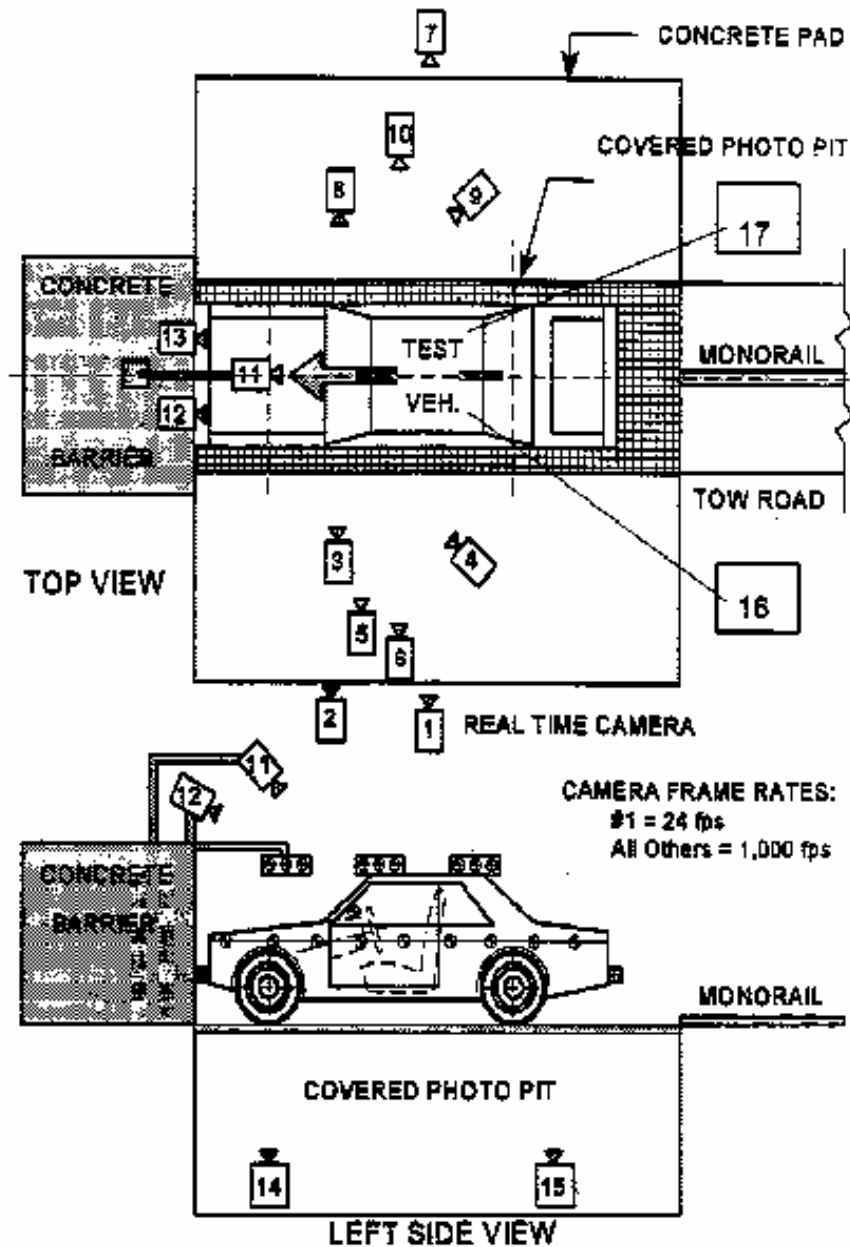
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	907	983
Lap Belt Length as Measured on ATD	mm	776	885
Remainder of Belt on Reel	mm	986	715
Total Belt Length for Continuous Webbing Systems	mm	2669	2583

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

CAMERA LOCATIONS

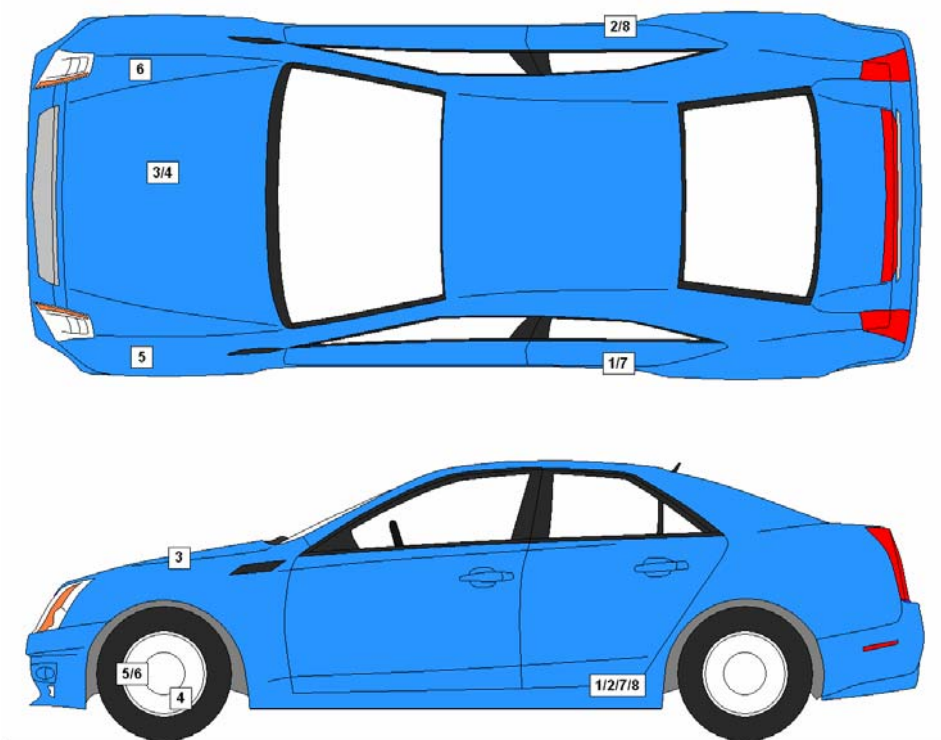
No.	Description	Location			Angle (°)	Film Plane to Head Target	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real-Time Camera	-11412	-8150	-1484				30
2	Overall Left Side	-2590	-7950	-1371	0	9881	24	1000
3	Left Side A-Pillar	-1701	-6197	-1701	0	7921	85	1000
4	Left Side B-Pillar	-6696	-10308	-3211	-17	11281	ZOOM	1000
5	Steering Column Upper	-1966	-10412	-3688	-13	9887	35	1000
6	Steering Column Lower	-1972	-10412	-3379	-13	9870	35	1000
7	Overall Right Side	-2336	7569	-1012	0	9417	24	1000
8	Right Side A-Pillar	-1733	7581	-1408	0	7789	70	1000
9	Passenger IP View	-1600	8214	-1811	0	7795	ZOOM	1000
10	Right Side B-Pillar	-6217	9516	-4830	-10	12626	ZOOM	1000
11	Overhead Windshield View	297	366	-2460	-34		12	1000
12	Overhead Driver View	297	-366	-2460	-34		12	1000
13	Overhead Passenger View	-354	0	-5749	-90		24	1000
14	Pit View of Engine Compartment	-756	0	1495	90		12	1000
15	Pit View of Fuel Tank	-3398	0	1495	90		8	1000
16	Driver's On Board View	-3150	-300	-1335	-22		12	1000
17	Passenger's On Board View	-3150	300	-1335	-22		12	1000

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

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Cross Member X	1800	705	-335
2	Right Rear Cross Member X	1800	-705	-335
3	Engine Top X	3800	170	-830
4	Engine Bottom X	3960	-230	-213
5	Left Brake Caliper X	3680	-733	-310
6	Right Brake Caliper X	3680	733	-310
7	Left Rear Cross Member Z	1800	705	-335
8	Right Rear Cross Member Z	1800	-705	-335

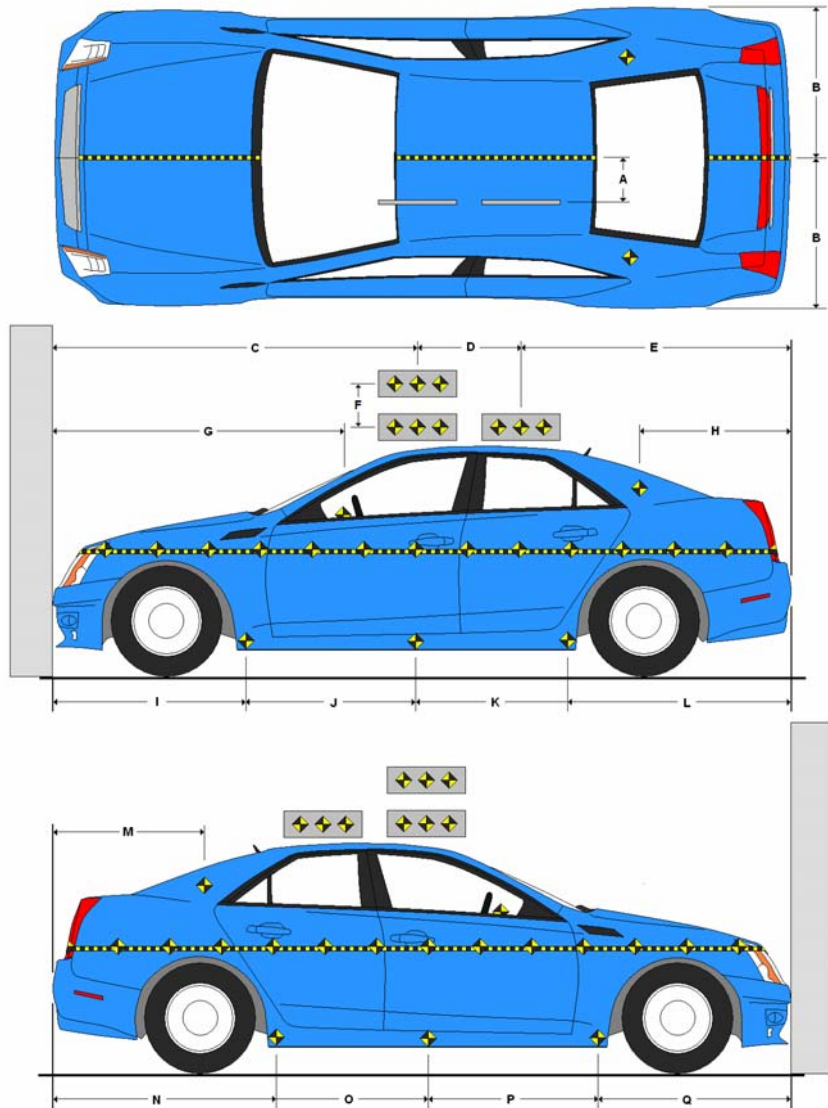
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

Item	Value
A	380
B	875
C	2250
D	610
E	1741
F	155
G	1755
H	997
I	1399
J	875
K	875
L	1417
M	984
N	1422
O	874
P	874
Q	1391



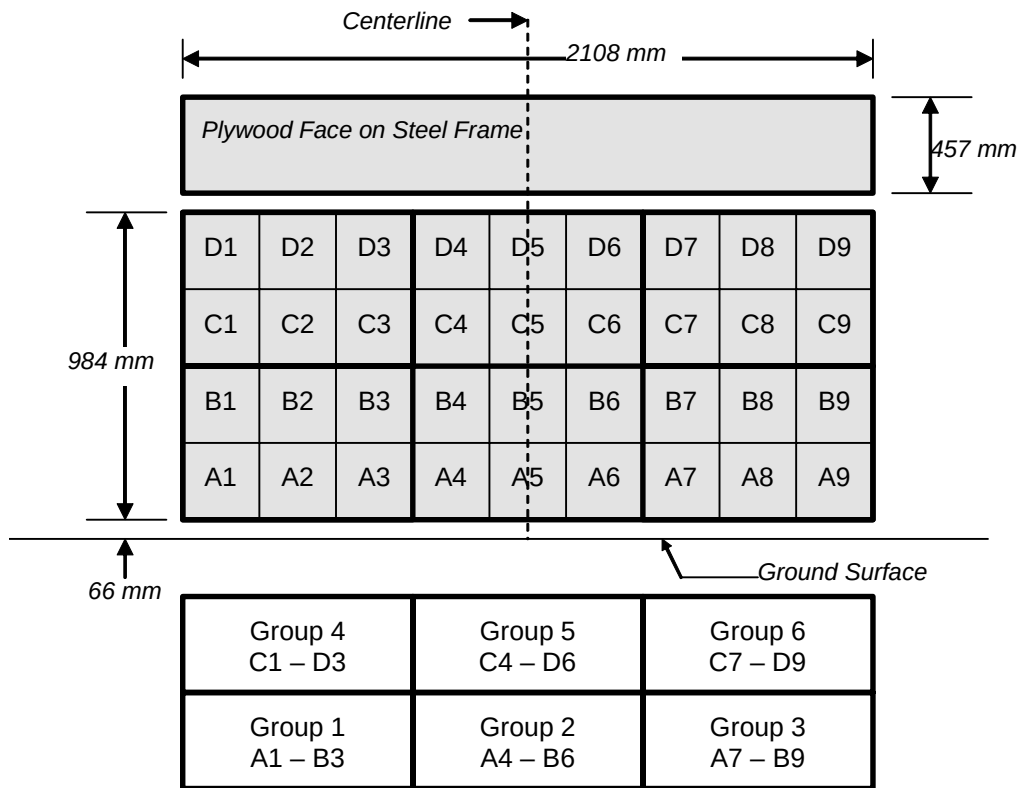
All measurements in millimeters.

DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

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: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

INSTRUMENTATION

Driver Dummy Accelerometers	44
Passenger Dummy Accelerometers	44
Vehicle Structure Accelerometers	8
Load Cell Barrier	36
Total	132

CAMERA COVERAGE

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

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

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	Steering Wheel Rim	Glovebox
Right Knee Contact	Knee Bolster, Steering Column	Glovebox

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Locked	Locked
Front Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Rear Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Track Shift (mm)	17	9
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

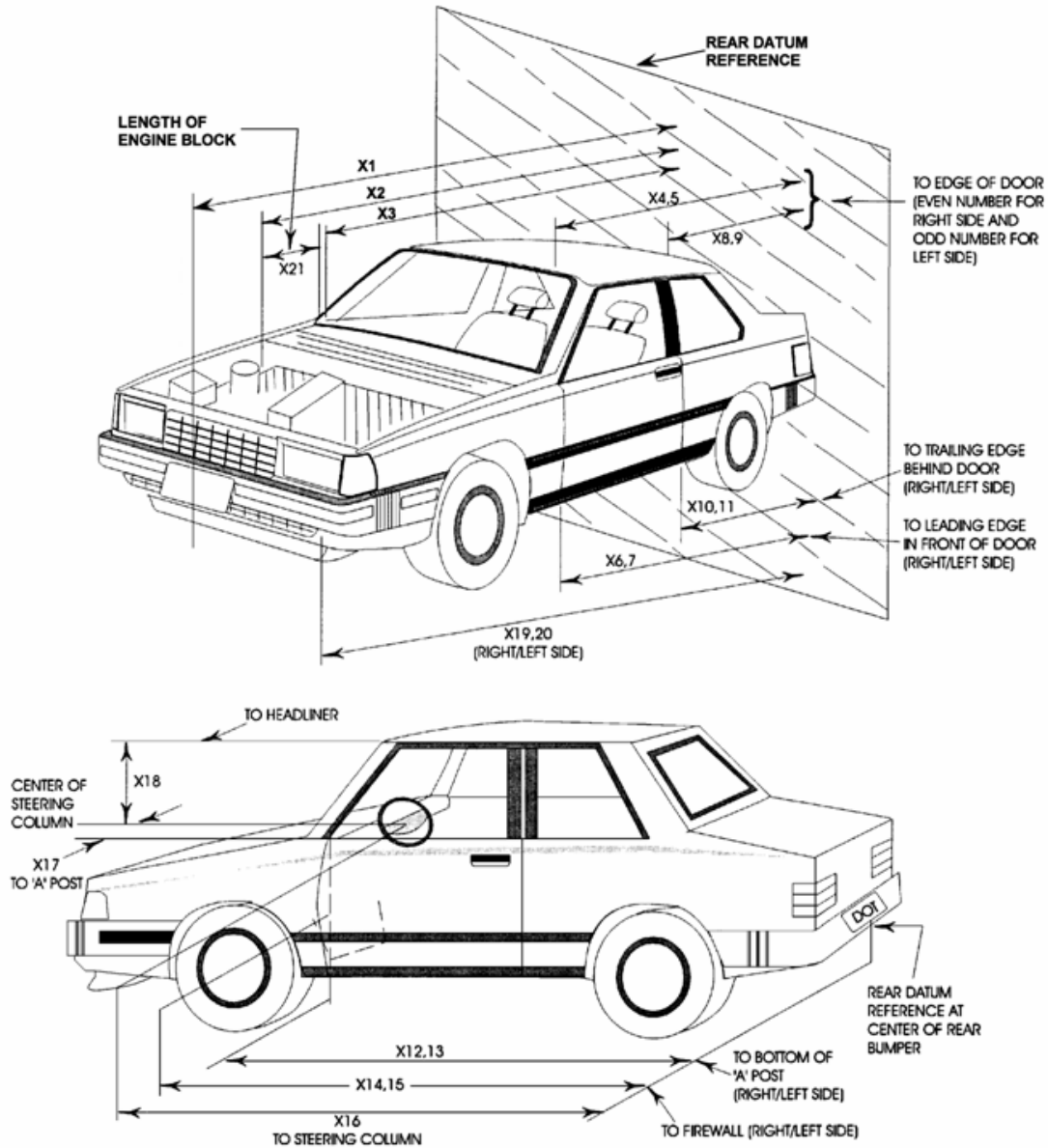
Measured Parameter	Units	Value
Left Side	mm	680
Center	mm	652
Right Side	mm	749
Average	mm	694

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

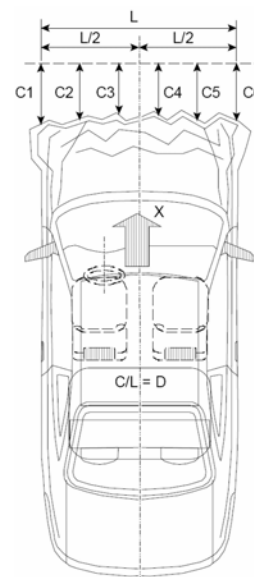


DATA SHEET NO. 12 ... (CONTINUED)**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4580	4223	-357
2	Rear Surface of Vehicle to Front of Engine	4112	3788	-324
3	RSOV to Firewall	3550	3536	-14
4	RSOV to Upper Leading Edge of Right Door	3160	3162	2
5	RSOV to Upper Leading Edge of Left Door	3161	3157	-4
6	RSOV to Lower Leading Edge of Right Door	3126	3124	-2
7	RSOV to Lower Leading Edge of Left Door	3128	3121	-7
8	RSOV to Upper Trailing Edge of Right Door	2041	2051	10
9	RSOV to Upper Trailing Edge of Left Door	2041	2035	-6
10	RSOV to Lower Trailing Edge of Right Door	2068	2069	1
11	RSOV to Lower Trailing Edge of Left Door	2071	2060	-11
12	RSOV to Bottom of A-Pillar of Right Side	3099	3099	0
13	RSOV to Bottom of A-Pillar Left Side	3099	3086	-13
14	RSOV to Firewall, Right Side	3503	3488	-15
15	RSOV to Firewall, Left Side	3503	3486	-17
16	RSOV to Steering Column	2652	2686	34
17	Center of Steering Column to A-Pillar	420	410	-10
18	Center of Steering Column to Headliner	405	410	5
19	RSOV to Right Side of Front Bumper	3811	3702	-109
20	RSOV to Left Side of Front Bumper	3810	3747	-63
21	Length of Engine Block	580	580	0
RD	RSOV to Right Side of Dash Panel	2900	2864	-36
CD	RSOV to Center of Dash Panel	2775	2759	-16
LD	RSOV to Left Side of Dash Panel	2870	2881	11

All measurements in millimeters.

DATA SHEET NO. 13**ACCIDENT INVESTIGATION DATA**Test Vehicle: 2011 Mazda3 I Sport 4-Door SedanNHTSA No.: MB5402Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 10/13/10**VEHICLE INFORMATION**VIN: JM1BL1UG8B1361339Wheelbase (mm): 2641Vehicle Size Category: 4-Door SedanTest Weight (kg): 1503.0**ACCELEROMETER DATA**Accelerometer Locations: Left Rear CrossmemberCal. Procedure/Interval: Drop Test / 6 monthsIntegration Algorithm: NHTSA StandardImpact Velocity (km/h): 56.36Velocity Change (km/h): 63.6Time of Separation (msec): 76.1Linearity: Good**CRUSH PROFILE**Collision Deformation Classification: 12FCEW2Midpoint of Damage: Vehicle CenterlineDamage Region Length (mm): 1740Impact Mode: Full Frontal

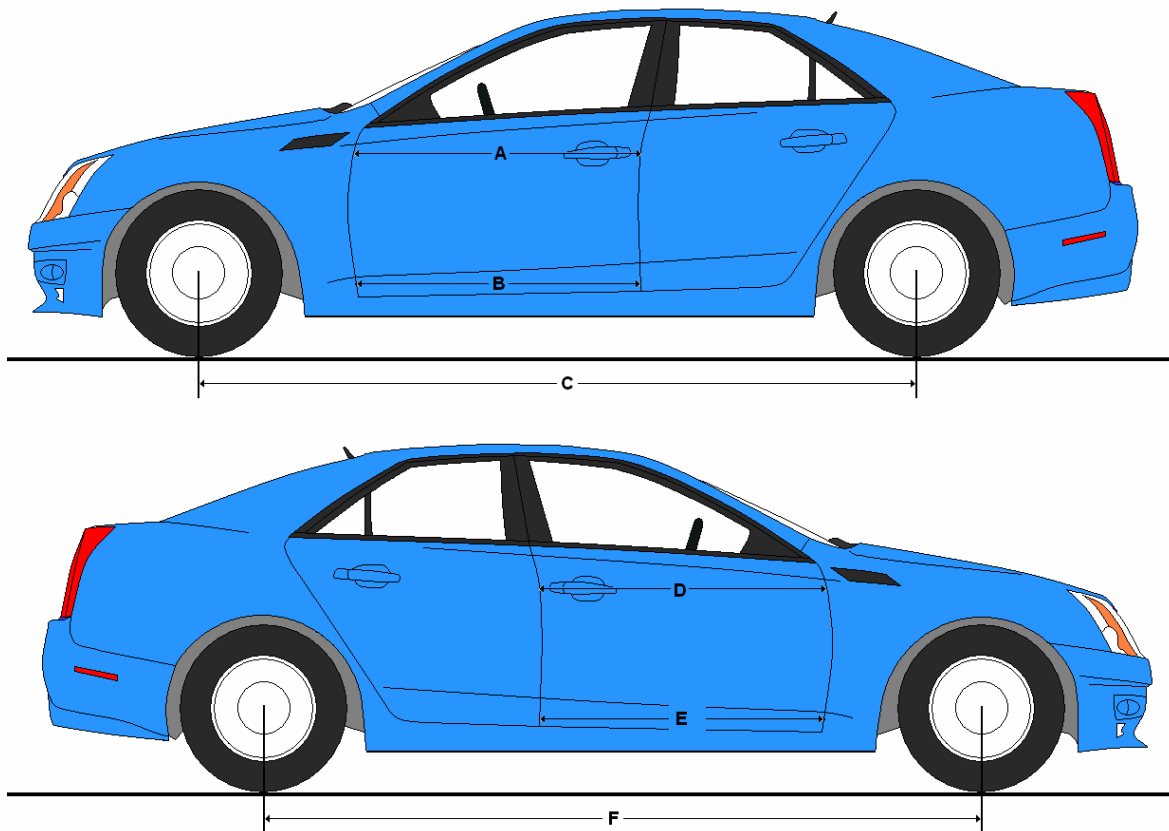
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	768	842	-74
C2	Crush Zone 2 at Left Side	mm	162	408	-246
C3	Crush Zone 3 at Left Side	mm	50	356	-306
C4	Crush Zone 4 at Right Side	mm	50	403	-353
C5	Crush Zone 5 at Right Side	mm	162	489	-327
C6	Crush Zone 6 at Right Side	mm	768	880	-112
L	C1 to C6	mm	1740		

DATA SHEET NO. 14**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2011 Mazda3 I Sport 4-Door SedanNHTSA No.: MB5402Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 10/13/10**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1003	1000	3
B	Left Side Lower	mm	748	742	6
D	Right Side Upper	mm	1013	1006	7
E	Right Side Lower	mm	780	779	1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2641	2549	92
F	Right Side Wheelbase	mm	2641	2543	98



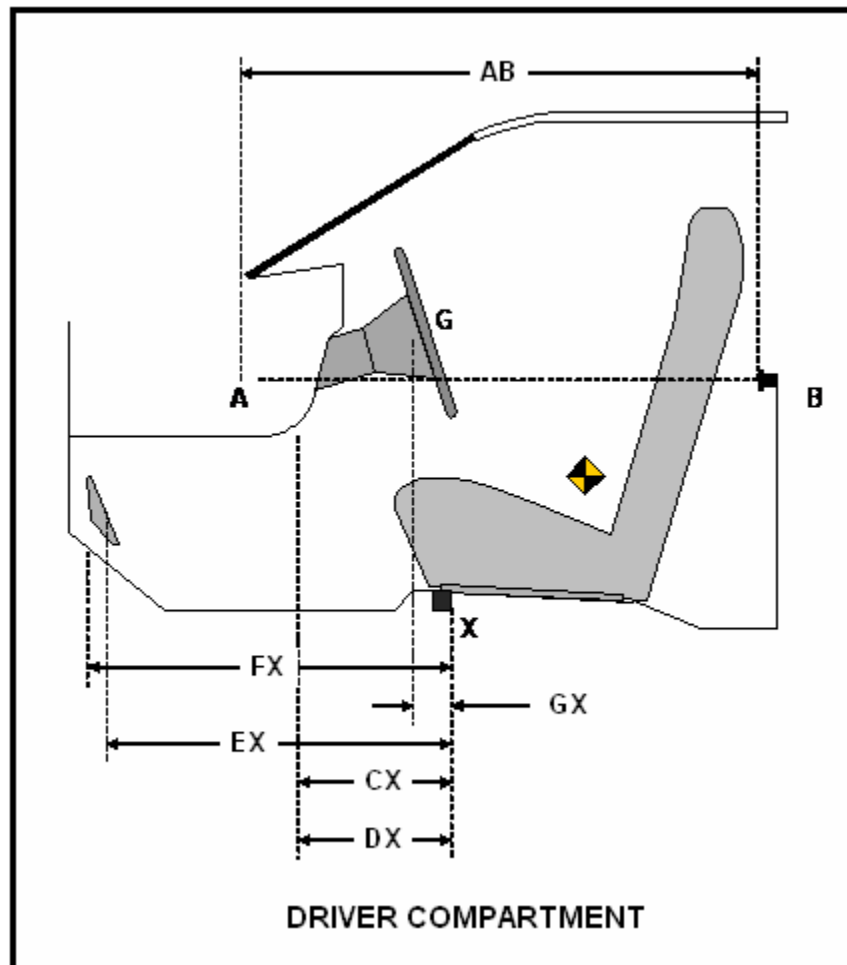
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

DRIVER COMPARTMENT INTRUSION

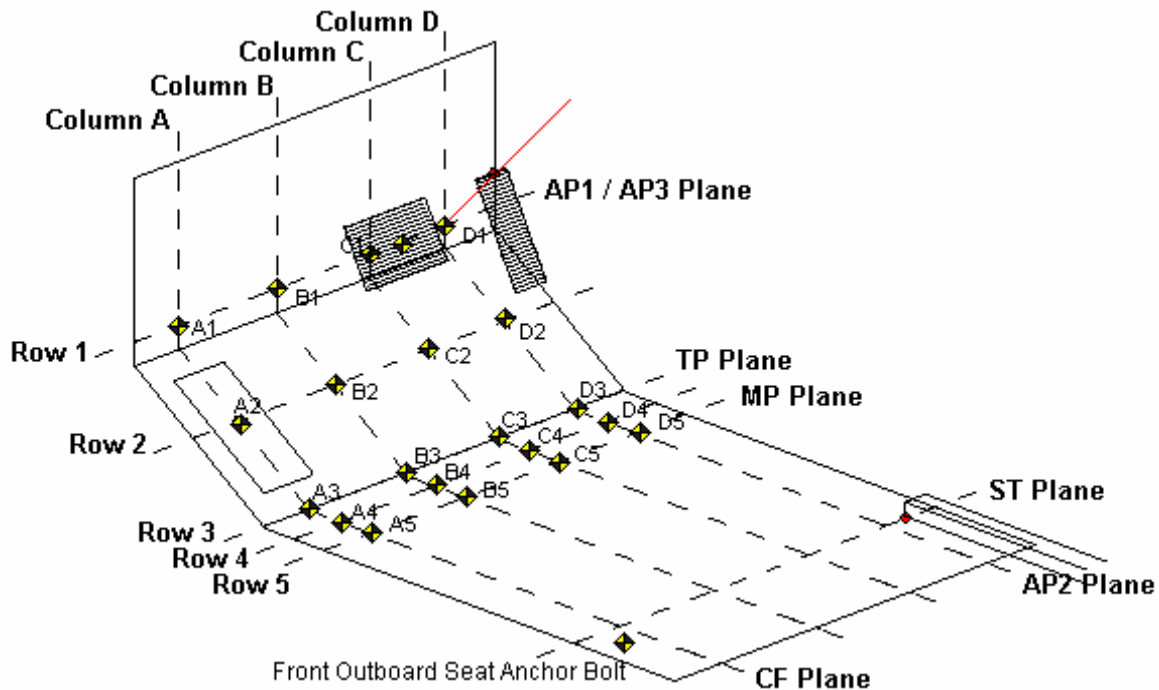
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	906	913	-7
CX	Left Knee Bolster to X	mm	280	260	20
DX	Right Knee Bolster to X	mm	225	224	1
EX	Brake Pedal to X	mm	520	492	28
FX	Foot Rest to X	mm	550	535	15
GX	Center of Steering Wheel Hub to X	mm	43	109	-66

X = Front of Seat Track (Stationary)



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

Test Vehicle:	2011 Mazda3 I Sport 4-Door Sedan	NHTSA No.:	MB5402
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	10/13/10



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: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	627	668	656	648	622	651	637	625	-5	-17	-19	-23
2	574	598	591	588	582	590	584	582	8	-8	-7	-6
3	528	525	525	522	528	527	530	528	0	2	5	6
4	429	427	424	419	442	440	438	432	13	13	14	13
5	323	319	320	314	336	333	334	327	13	14	14	13

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-54	-150	-237	-417	-45	-143	-230	-409	9	7	7	8
2	-56	-145	-235	-413	-33	-134	-224	-401	23	11	11	12
3	-56	-144	-234	-411	-42	-130	-218	-394	14	14	16	17
4	-54	-142	-230	-406	-37	-125	-213	-388	17	17	17	18
5	-52	-141	-230	-403	-35	-124	-213	-386	17	17	17	17

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	55	14	18	14	85	44	39	24	30	30	21	10
2	-13	-33	-34	-35	10	-14	-23	-39	23	19	11	-4
3	-77	-76	-80	-76	-59	-70	-82	-93	18	6	-2	-17
4	-102	-101	-100	-98	-90	-98	-107	-124	12	3	-7	-26
5	-102	-100	-100	-98	-89	-96	-105	-118	13	4	-5	-20

All measurements in millimeters

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

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	695	698	698	681	639	663	674	663	-56	-35	-24	-18
2	636	635	647	629	611	605	632	621	-25	-30	-15	-8
3	570	568	566	577	556	560	559	562	-14	-8	-7	-15
4	467	468	468	472	465	465	466	468	-2	-3	-2	-4
5	361	364	364	365	359	360	362	363	-2	-4	-2	-2

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	393	220	137	66	385	217	141	68	-8	-3	4	2
2	392	220	133	55	389	217	139	53	-3	-3	6	-2
3	393	220	134	42	390	219	137	41	-3	-1	3	-1
4	392	221	129	40	390	219	127	39	-2	-2	-2	-1
5	392	221	127	38	389	219	126	36	-3	-2	-1	-2

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	37	41	42	63	53	48	48	73	16	7	6	10
2	-13	-12	-25	1	-15	-10	-22	6	-2	2	3	5
3	-61	-67	-62	-76	-75	-84	-72	-69	-14	-17	-10	7
4	-102	-104	-103	-104	-133	-124	-119	-110	-31	-20	-16	-6
5	-102	-104	-104	-104	-132	-120	-116	-111	-30	-16	-12	-7

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

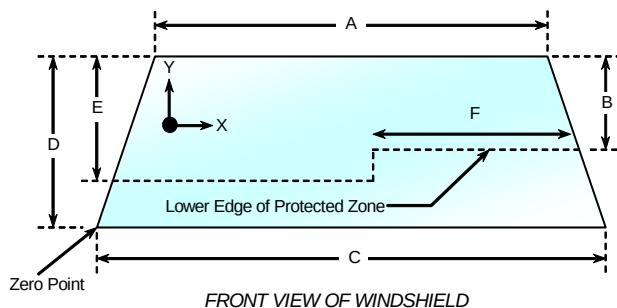
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber plastic and rubber molding sealed with rubber cement.

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: 21.1° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2065.5	2065.5	
Right Side	2065.5	2065.5	
Total	4131	4131	100%



Item	Units	Value
A	mm	1183
B	mm	483
C	mm	1394
D	mm	777
E	mm	562
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. 16

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

Temperature at Time of Impact: 30.0° Test Time: 1:10 PM

Stoddard Solvent Spillage Measurements

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

DATA SHEET NO. 17

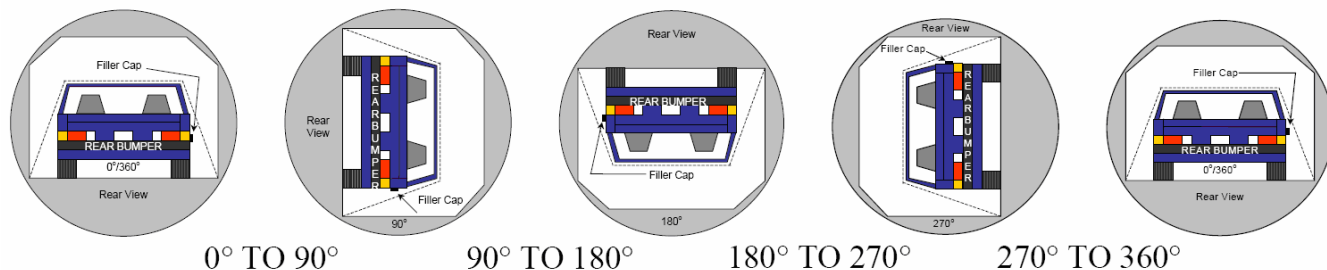
FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No.: MB5402

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 10/13/10



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: No spillage occurred

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	320	404
90° To 180°	80	320	400
180° To 270°	77	305	382
270° To 360°	77	300	377

FMVSS 301 SPILLAGE TABLE

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

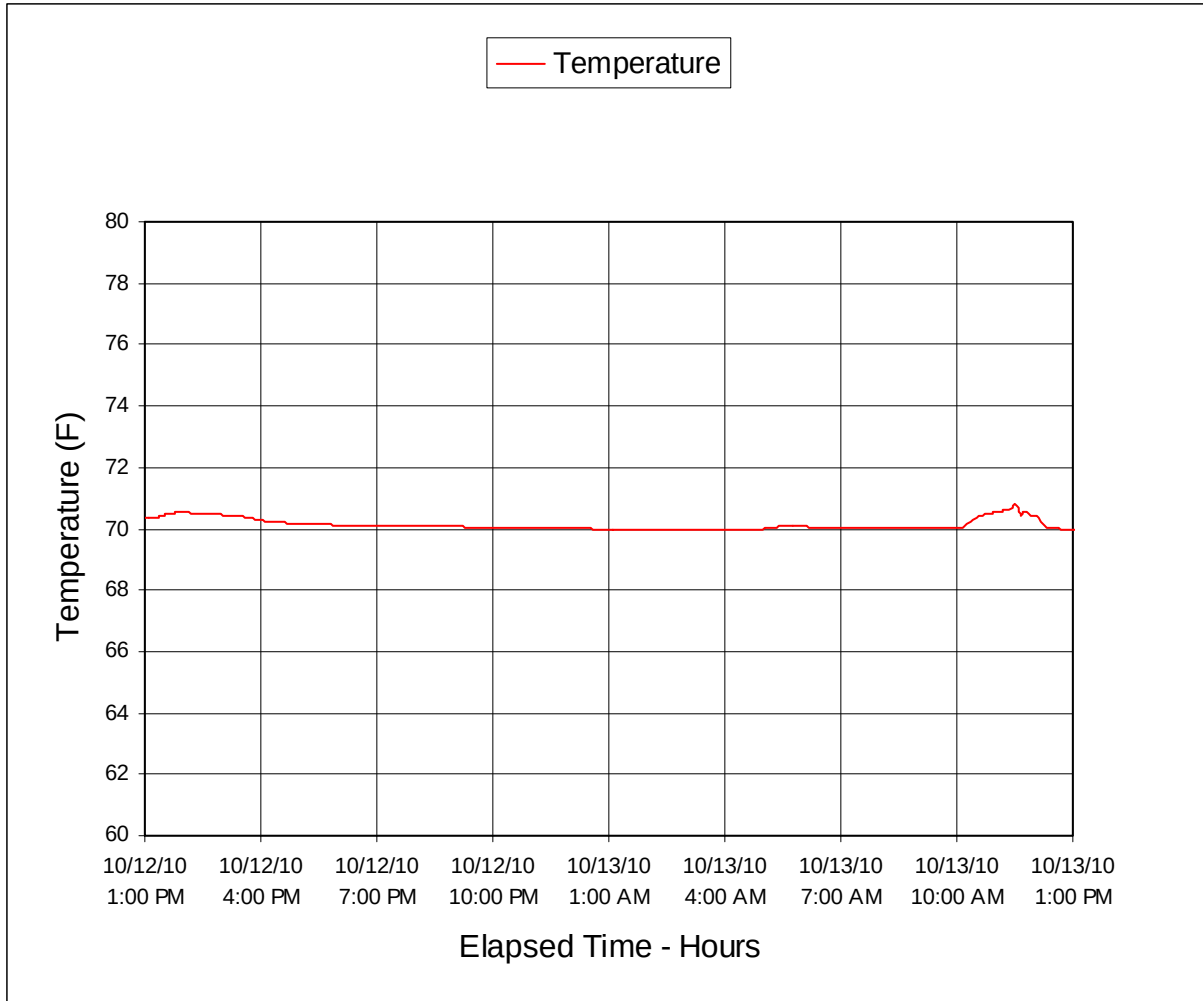
SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° To 90°	None
90° To 180°	None
180° To 270°	None
270° To 360°	None

DATA SHEET NO. 18

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan NHTSA No.: MB5402
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 10/13/10



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	Right Front 3-4 View as Delivered	A-3
6	Left Rear 3-4 View as Delivered	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 View1	A-12
24	Post-Test Front Underbody View1	A-12
25	Pre-Test Rear Underbody View1	A-13
26	Post-Test Rear Underbody View1	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 Contact With Airbag	A-22
43a	Post-Test Driver Dummy Contact With Headrest	A-22
43b	Post-Test Driver Dummy Contact With Knee Bolster	A-23
43c	Post-Test Driver Dummy Contact With Knee Airbag	A-23
44	Pre-Test View of the Steering Column Shear Capsule	A-24
45	Post-Test View of the Steering Column Shear Capsule	A-24
46	Pre-Test Passenger Dummy Front View	A-25
47	Post-Test Passenger Dummy Front View	A-25
48	Pre-Test Passenger Dummy Window View	A-26
49	Post-Test Passenger Dummy Window View	A-26
50	Pre-Test Passenger Dummy and Vehicle Interior View	A-27
51	Post-Test Passenger Dummy and Vehicle Interior View	A-27
52	Pre-Test Passenger's Seat Fore-Aft Markings	A-28
53	Post-Test Passenger's Seat Fore-Aft Markings	A-28
54	Pre-Test Passenger Dummy Feet	A-29
55	Post-Test Passenger Dummy Feet	A-29
56	Pre-Test Passenger's Side Knee Bolster	A-30
57	Post-Test Passenger's Side Knee Bolster	A-30
58	Pre-Test Passenger's Side Floorpan	A-31
59	Post-Test Passenger's Side Floorpan	A-31
60	Post-Test Passenger Dummy Contact With Airbag	A-32
60a	Post-Test Passenger Dummy Contact With Headrest	A-32
60b	Post-Test Passenger Dummy Contact With Knee Bolster	A-33
61	Photograph of Ballast Installed in Vehicle	A-33
62	Post-Test Stoddard Solvent Spillage Location	A-34
63	Post-Test Speed Trap Read-out	A-34
64	Vehicle at 0° on Static Rollover Device	A-35
65	Vehicle at 90° on Static Rollover Device	A-35

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
66	Vehicle at 180° on Static Rollover Device	A-36
67	Vehicle at 270° on Static Rollover Device	A-36
68	Vehicle at 360° on Static Rollover Device	A-37
69	Impact Event	A-37
70	Monroney Label Photograph	A-38

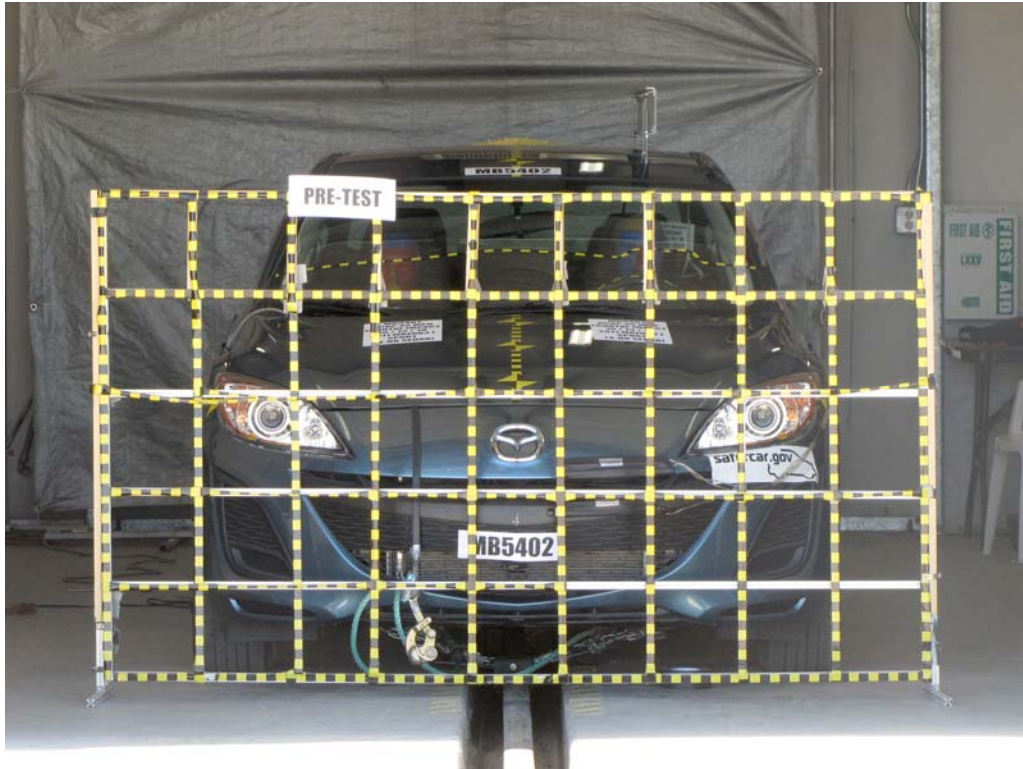


FIGURE 1. Load Cell Location

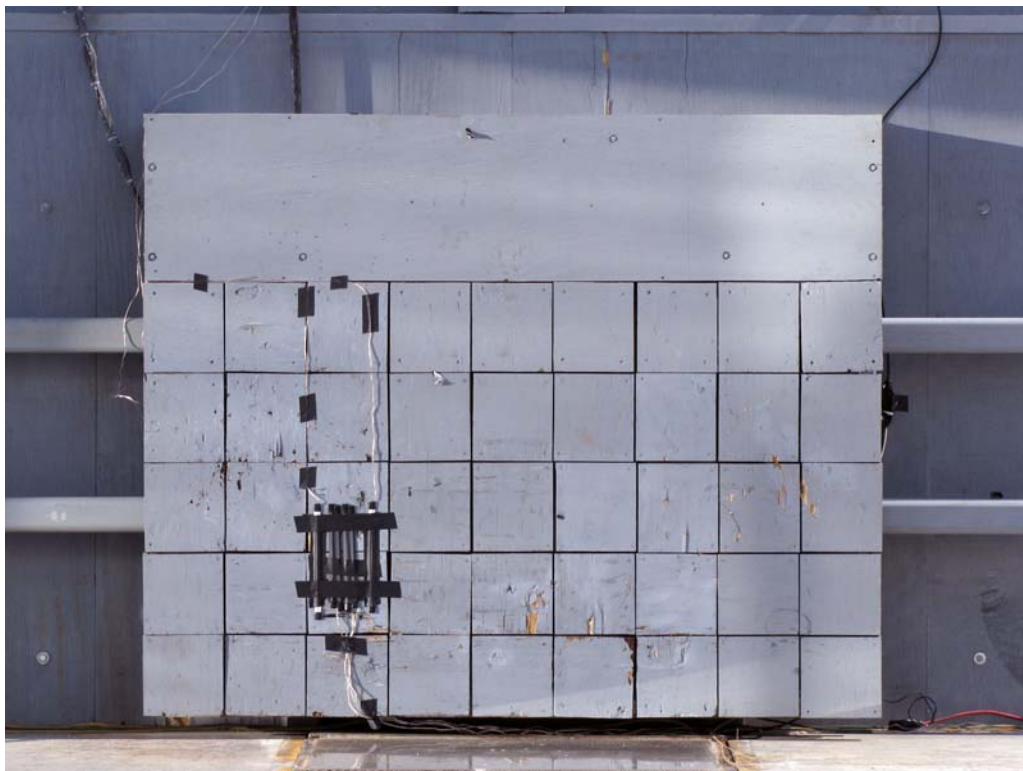


FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. Right Front 3-4 View as Delivered



FIGURE 6. Left Rear 3-4 View as Delivered



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

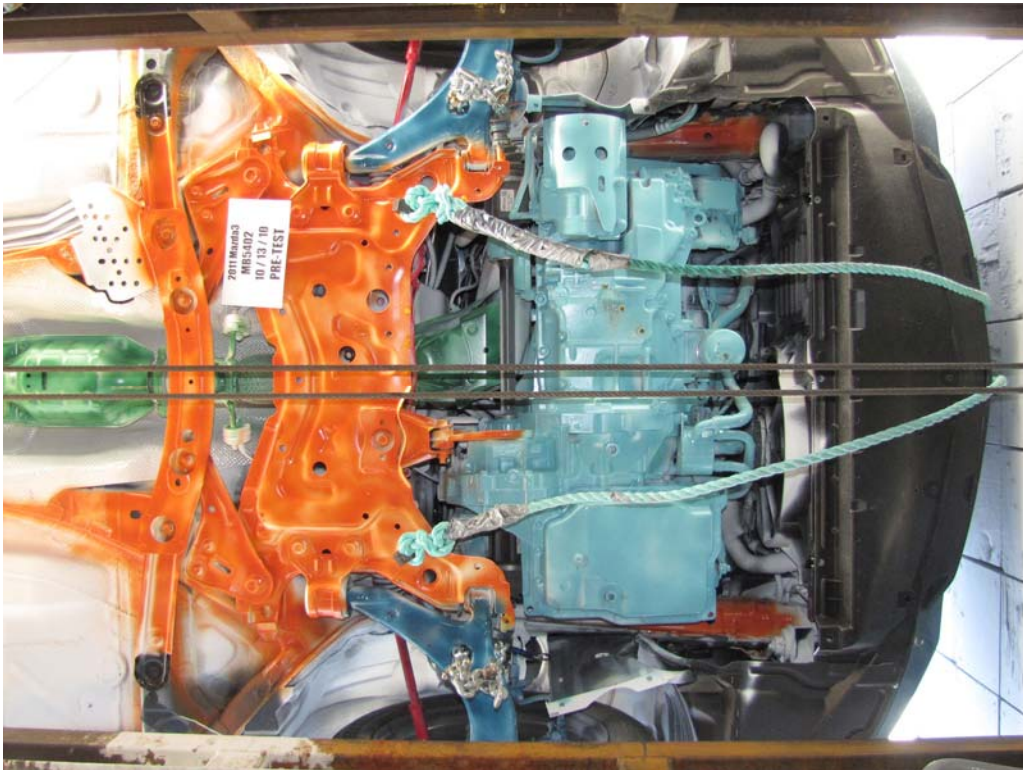


FIGURE 23. Pre-Test Front Underbody View

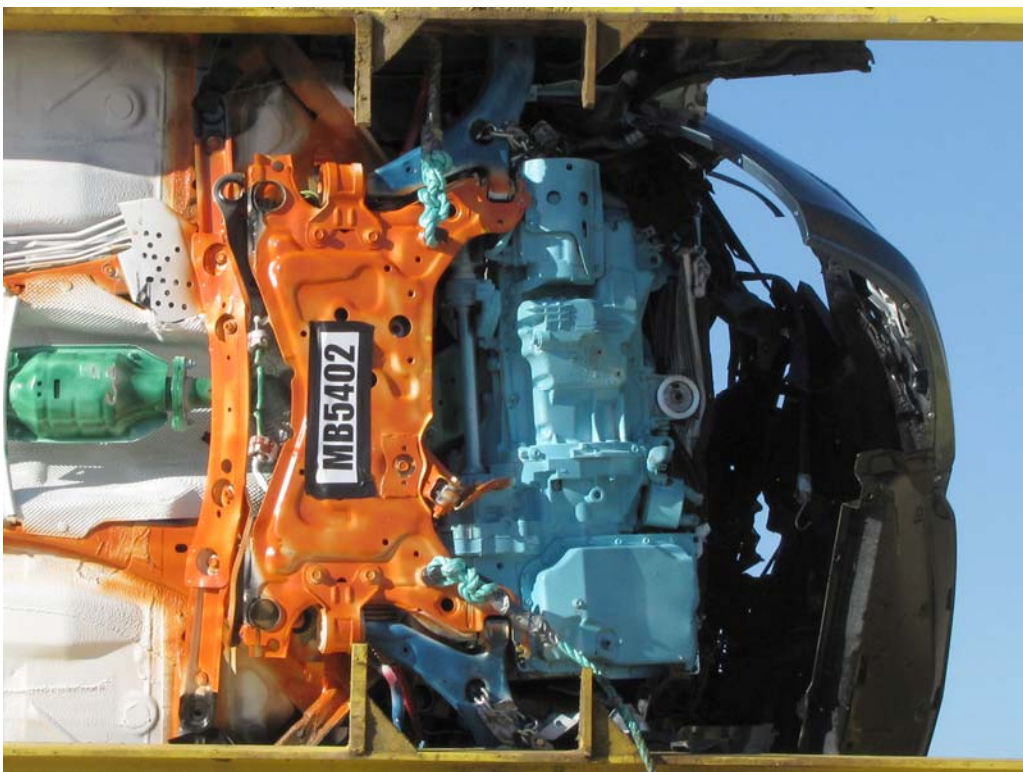


FIGURE 24. Post-Test Front Underbody View

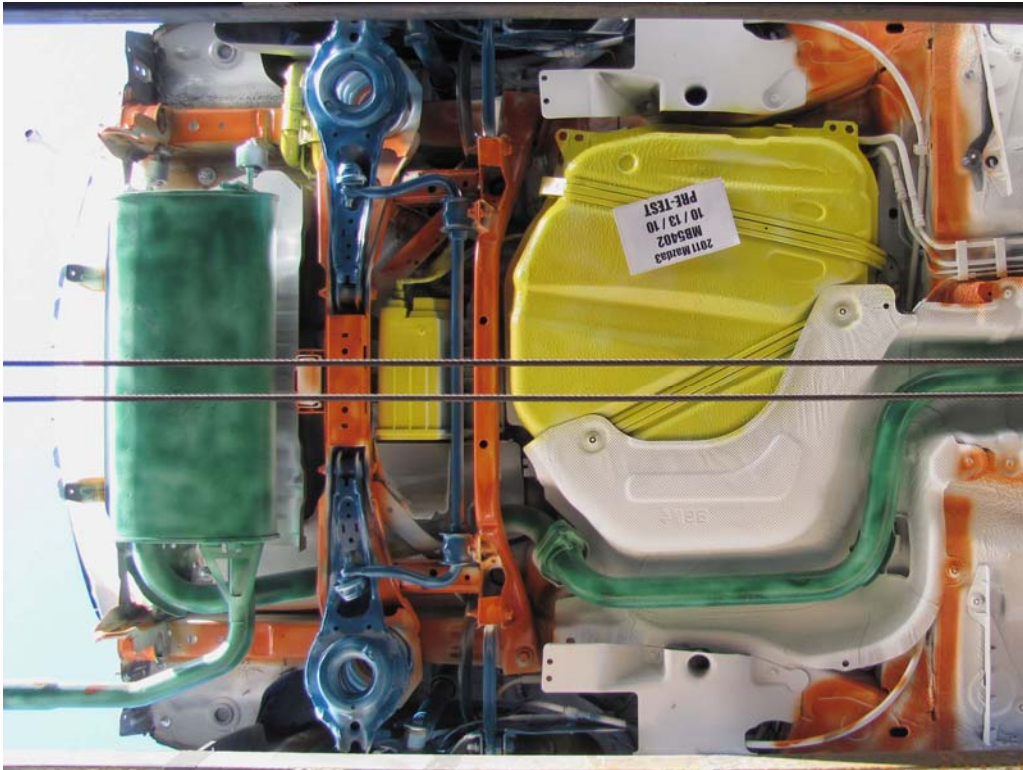


FIGURE 25. Pre-Test Rear Underbody View



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

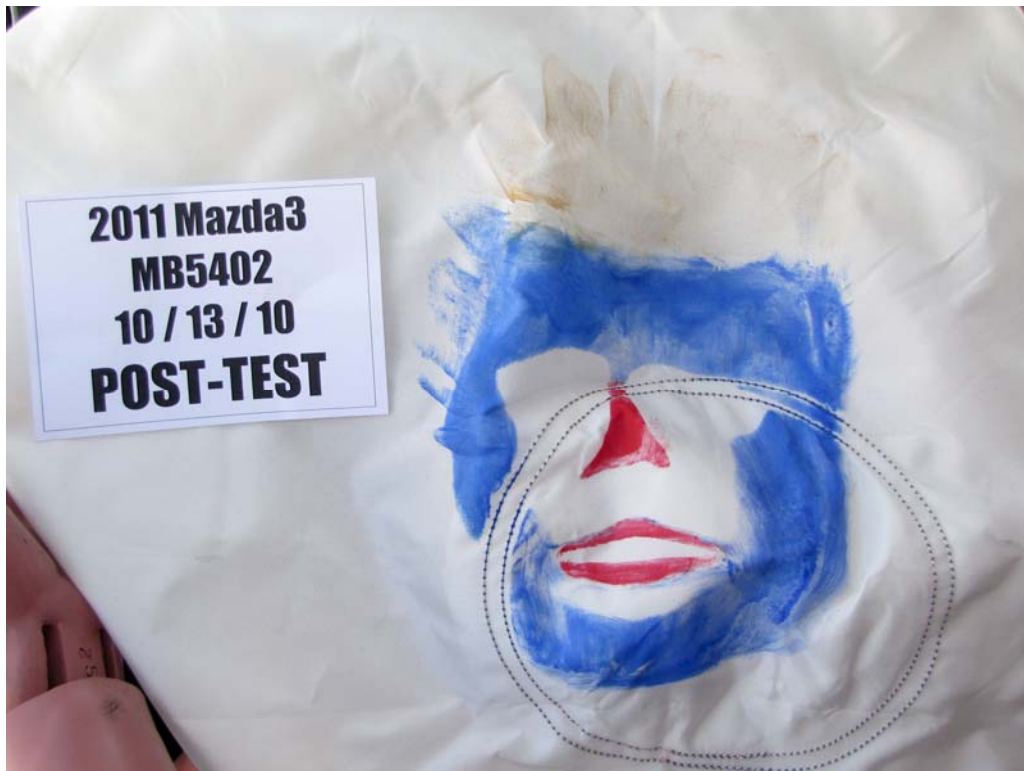


FIGURE 43. Post-Test Driver Dummy Contact With Airbag



FIGURE 43a. Post-Test Driver Dummy Contact With Headrest



FIGURE 43b. Post-Test Driver Dummy Contact With Knee Bolster



FIGURE 44. Pre-Test View of Steering Column Shear Capsule



FIGURE 45. Post-Test View of Steering Column Shear Capsule



FIGURE 46. Pre-Test Passenger Dummy Front View



FIGURE 47. Post-Test Passenger Dummy Front View



FIGURE 48. Pre-Test Passenger Dummy Window View



FIGURE 49. Post-Test Passenger Dummy Window View



FIGURE 50. Pre-Test Passenger Dummy and Vehicle Interior View



FIGURE 51. Post-Test Passenger Dummy and Vehicle Interior View



FIGURE 52. Pre-Test Passenger's Seat Fore-Aft Markings



FIGURE 53. Post-Test Passenger's Seat Fore-Aft Markings



FIGURE 54. Pre-Test Passenger Dummy Feet



FIGURE 55. Post-Test Passenger Dummy Feet



FIGURE 56. Pre-Test Passenger's Side Knee Bolster



FIGURE 57. Post-Test Passenger's Side Knee Bolster



FIGURE 58. Pre-Test Passenger's Side Floorpan



FIGURE 59. Post-Test Passenger's Side Floorpan



FIGURE 60. Post-Test Passenger Dummy Contact With Airbag



FIGURE 60a. Post-Test Passenger Dummy Contact With Headrest



FIGURE 60b. Post-Test Passenger Dummy Contact With Knee Bolster



FIGURE 61. Pre-Test of Ballast Installed in Vehicle

Photograph Not Applicable
No Stoddard
Solvent Spillage

FIGURE 62. Post-Test Stoddard Solvent Spillage Location

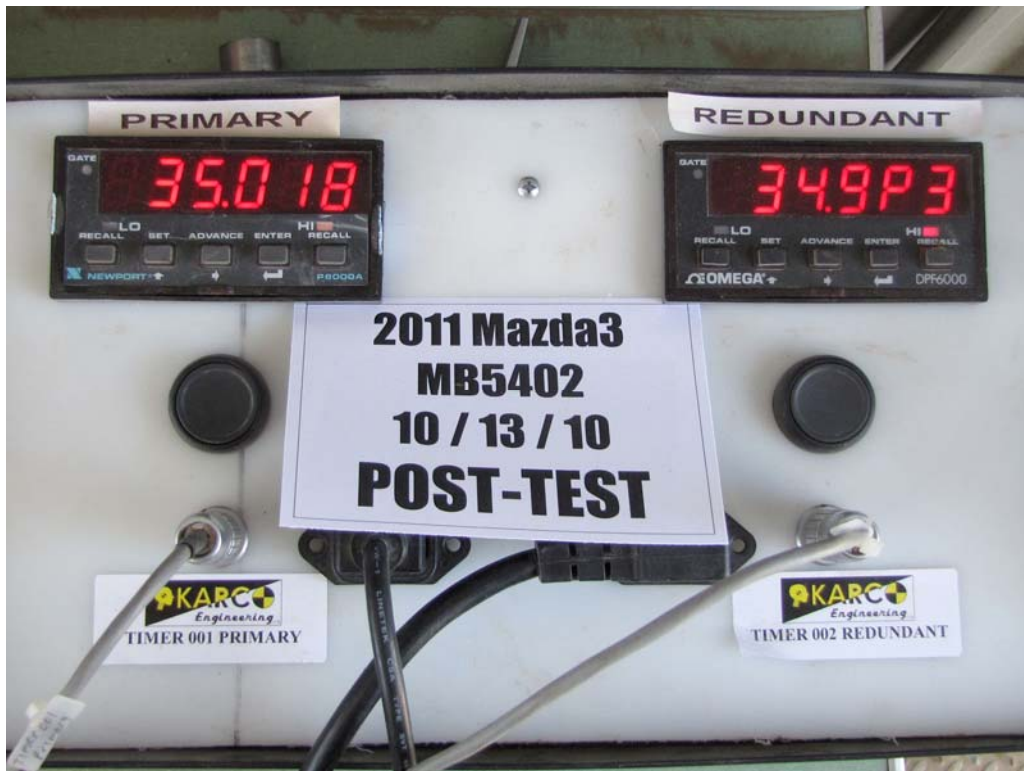


FIGURE 63. Post-Test Speed Trap Read Out

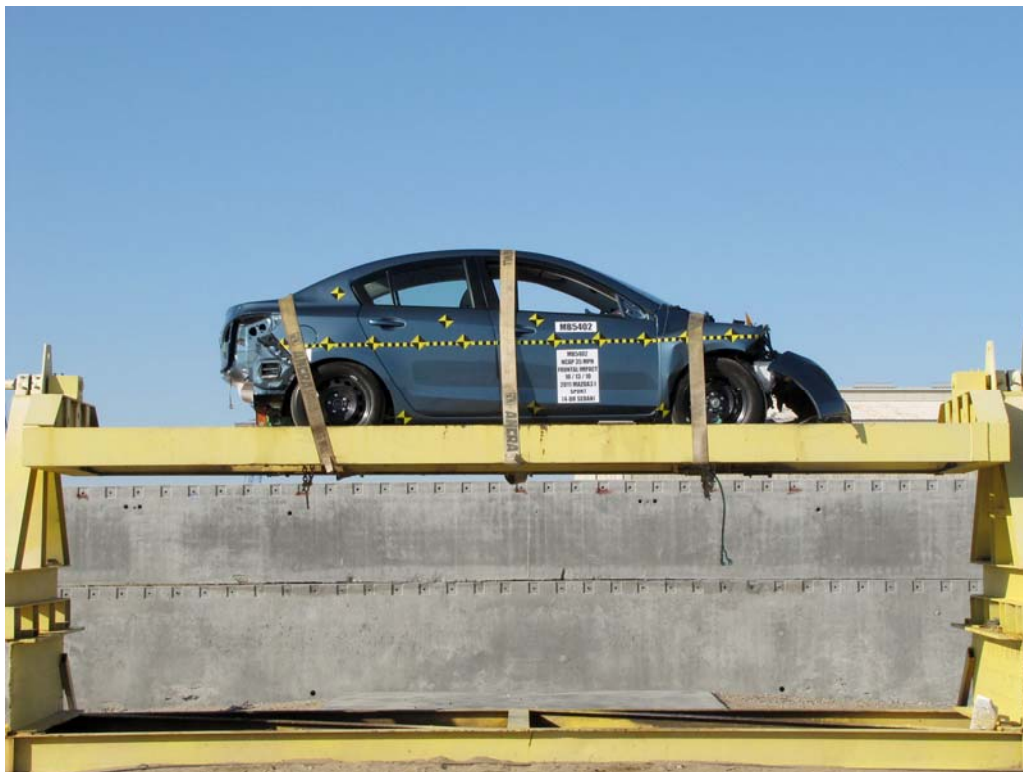


FIGURE 64. Vehicle at 0 Degrees on Static Rollover Device



FIGURE 65. Vehicle at 90 Degrees on Static Rollover Device



FIGURE 66. Vehicle at 180 Degrees on Static Rollover Device

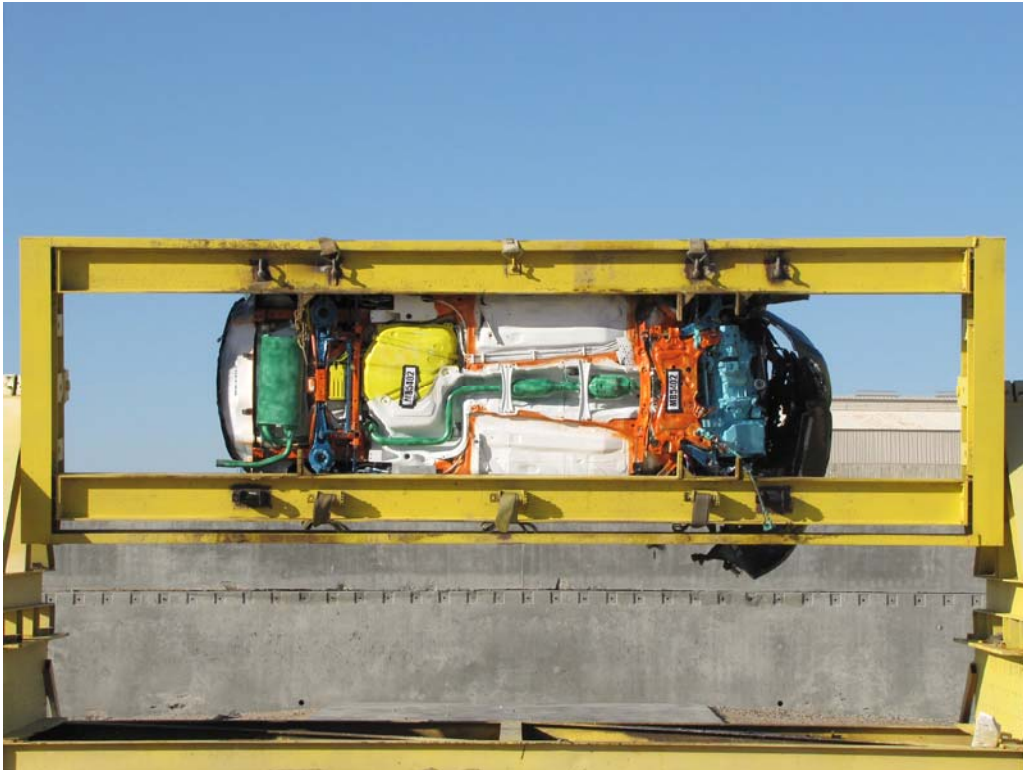


FIGURE 67. Vehicle at 270 Degrees on Static Rollover Device



FIGURE 68. Vehicle at 360 Degrees on Static Rollover Device



FIGURE 69. Impact Event

51025

mazda

2011 MAZDA3

Model: 2011 MAZDA3 4-DOOR SPORT

Exterior Color: GUNMETAL BLUE

Interior Color: BLACK

EPA Fuel Economy Estimates

CITY MPG
24
Expected range for most drivers 19 to 29 mpg

Estimated Annual Fuel Cost
\$1,443
Based on 15,000 miles at \$2.60 per gallon

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

Combined Fuel Economy
27
Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FUEL Economy Guide at dealers or www.fueleconomy.gov

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 95%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN 95%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: HOULI, JAPAN
COUNTRY OF ORIGIN: JAPAN
TRANSMISSION: JAPAN

This label is affixed pursuant to the Federal Automotive Disclosure Act. Gasoline, Lenses and Tires, Seats and Lined Items, and Dealer installed options are not included.

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES

- 2.0L DOHC 16-VALVE VVT-i ENGINE
- 5-SPEED AT WITH MANUAL SHIFT MODE
- 148 HORSEPOWER, 132 LB-FT TORQUE
- FRONT-WHEEL DRIVE
- F2EV EMISSIONS REFER TO OPT CE1

EXTERIOR FEATURES

- 16-1/2" STEEL WHEELS
- POSSIBLE R15 ALL-SEASON TIRES
- REAR WINDOW DEFROSTER
- VARIABLE INTERMITTENT FRONT WIPERS
- BODY-COLOR DUAL POWER MIRRORS

INTERIOR FEATURES

- 6-PASSENGER SEATING
- TLT & TELESCOPIC STEERING COLUMN
- STEERING WHEEL AUDIO CONTROLS
- POWER DOOR LOCKS W/5-STAGE UNLOCK
- CENTRAL LOCKING/AUTO DOOR LOCKS
- POWER WINDOWS W/DRIVER-SIDE ONE-TOUCH DOWN
- CLOTH SEATS & CARPET FLOOR MATS
- AIR CONDITIONING W/ POLLIN FILTER
- DUAL MAP LIGHTS / VANITY MIRRORS

SAFETY AND SECURITY FEATURES

- 36-MONTH/50,000 MILE "BUMPER-TO-BUMPER" WARRANTY
- 60 MONTH / 60,000 MILE POWERTRAIN WARRANTY
- 24-HOUR ROADSIDE ASSISTANCE
- ANTI-LOCK BRAKE SYSTEM (ABS) WITH EBD & BRAKE ASSIST
- 6-PASSENGER 3-POINT SAFETY BELTS
- "CRASHABLE" BRAKE PEDAL
- LATCH CHILD SAFETY SEAT ANCHORS

OPTIONAL EQUIPMENT

- 4-WHEEL DISC BRAKES
- ELECTRONIC POWER ASSISTED RACK AND PINION STEERING
- INDEPENDENT FRONT/REAR SUSPENSION
- FRONT & REAR STABILIZER BARS
- SPORT-TYPE FRONT & REAR BUMPERS
- BLACK GRILLE INSERT & TRIM
- HALOGEN HEADLIGHTS
- SINGLE EXHAUST OUTLET
- BODY-COLOR DOOR HANDLES
- 60/40 SPLIT FOLD-DOWN REAR SEAT
- AUXILIARY AUDIO INPUT JACK
- AM/FM/CD W/MP3-BROADCAST AUDIO
- AMBIENT TEMPERATURE DISPLAY
- TWO 12V POWER OUTLETS
- DUAL FRONT CUP HOLDERS & DOOR POCKETS W/BOTTLE HOLDERS
- CENTER ARMREST W/COVERED STORAGE
- ADJUSTABLE DRIVER'S SEAT HEIGHT
- FRONT SEATBACK MAP POCKET
- DYNAMIC STABILITY CONTROL (DSC)
- TRACITION CONTROL SYSTEM (TCS)
- ADVANCED DUAL FRONT AIR BAGS (SRS)
- ROCK-IMPACT AIR AWNS & CURTAINS
- TRIPLE "H" BODY CONSTRUCTION
- TIRE PRESSURE MONITORING SYSTEM
- ACTIVE FRONT HEADRESTS
- COLLAPSIBLE STEERING COLUMN
- ANTI-THEFT ENGINE IMMOBILIZER

MSRP \$17,205

CE1 F2EV EMISSIONS-144HP, 132 LB FT TORQUE

NO CHARGE

Total Vehicle and Options \$17,205

Delivery, Processing and Handling Fee \$750

Total MSRP \$17,955

Environmental Performance

Protect the environment, choose vehicles with higher scores:

Global Warming Score 8 (Average new vehicle 5, Cleanest 10)

Smog Score 9 (Average new vehicle 5, Cleanest 10)

Vehicle emissions are a primary contributor to global warming and smog. Scores are determined by the California Air Resources Board based on this vehicle's measured emissions. Please visit www.airresourcesboard.org or www.DriveClean.ca for more information. AIR RESOURCES BOARD

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

GOVERNMENT SAFETY RATINGS

Frontal Crash Driver Passenger To Be Rated To Be Rated

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

Side Crash Front seat Rear seat To Be Rated To Be Rated

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

Rollover ★★★★★

Star ratings based on the risk of rollover in a single vehicle crash. Star ratings range from 1 to 5 stars (1 = x = 4) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA).

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

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MAZDAUSA.COM

MS-1-A-0909MAD-NC-NC-090909

ALWAYS THE SOUL OF A SPORTS CAR. zoom-zoom

FIGURE 70. 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

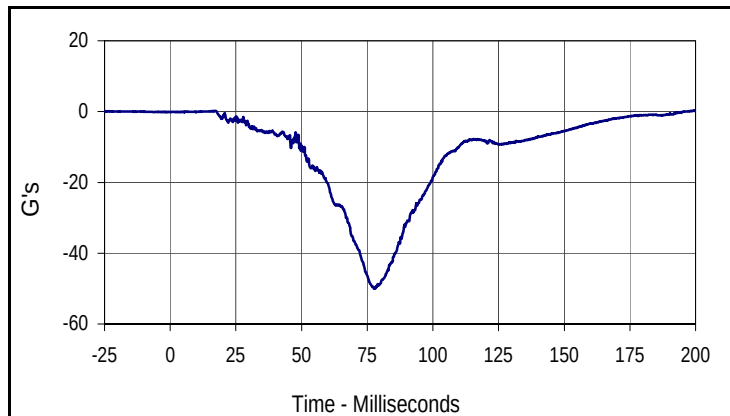
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver 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 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

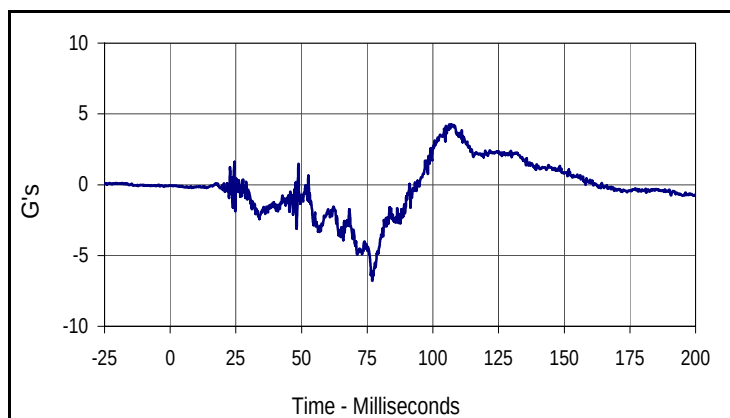
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

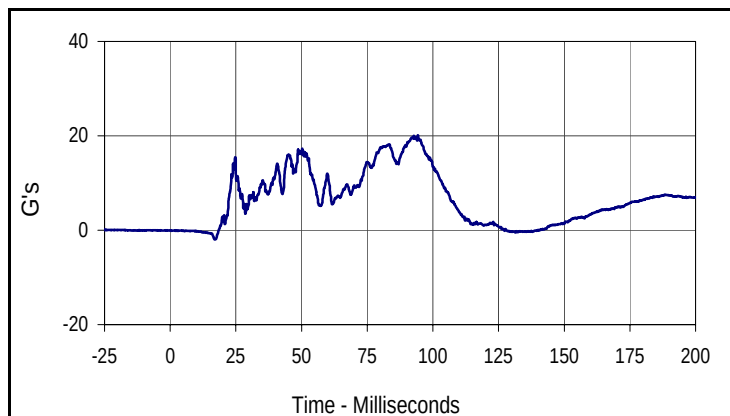
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 NHTSA No.: MB5402



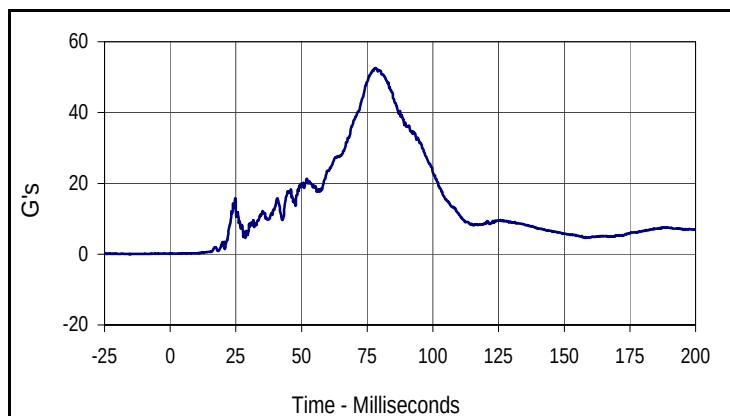
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Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
0.3	200.0	-50.0	77.7



Curve Description			
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002	FIL	1000	G's
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4.3	107.1	-6.8	77.0



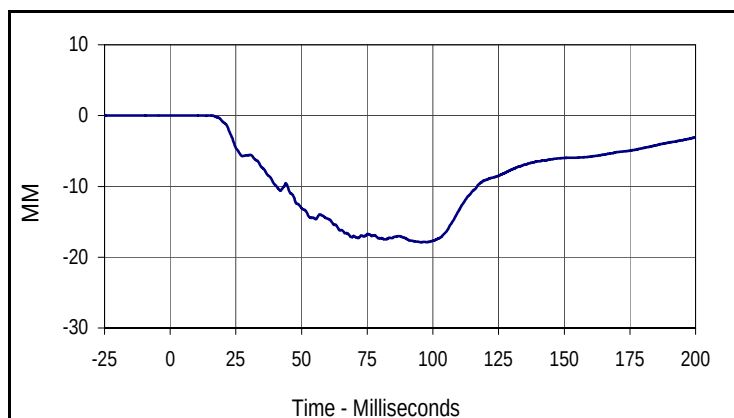
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CURNO	Type	SAE Class	Units
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Max	Time	Min	Time
20.1	94.3	-2.0	17.0



Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
52.6	78.2	0.1	2.1

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

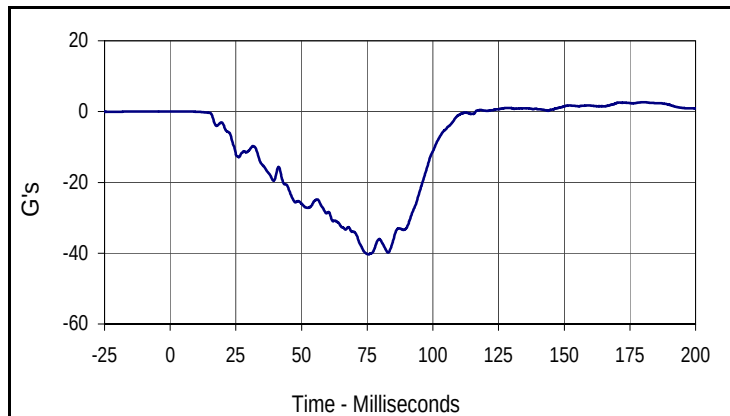
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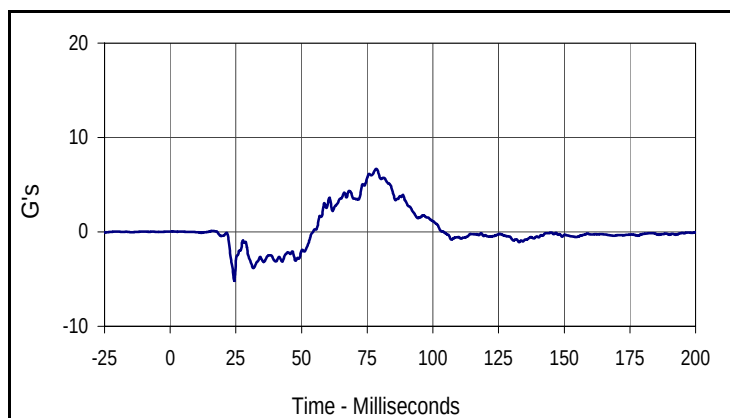
Curve Description			
Driver Chest Deflection			
CURNO	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
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Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

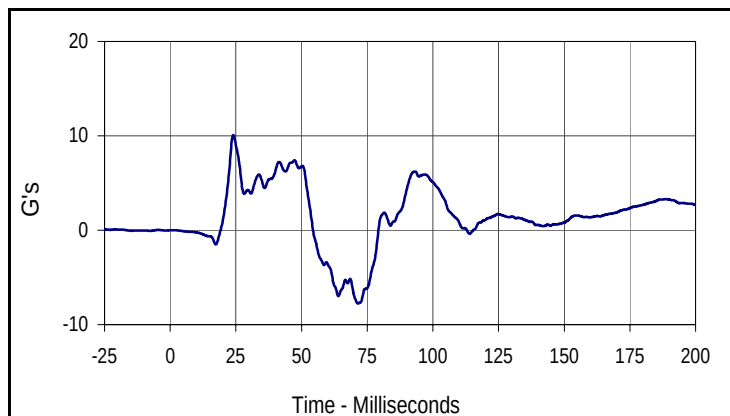
Test Date: 10/13/10
 NHTSA No.: MB5402



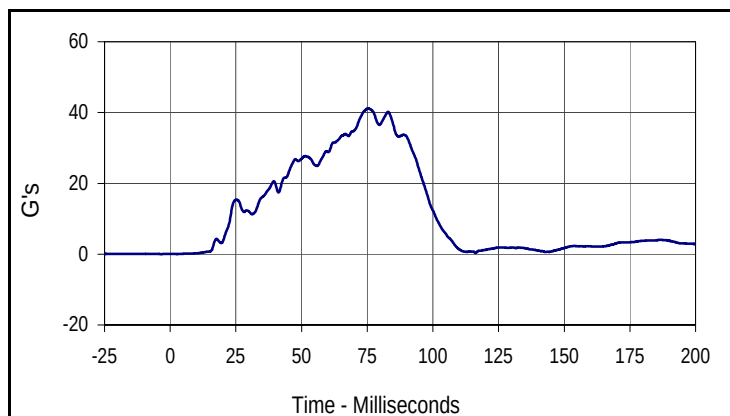
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Driver Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.7	180.3	-40.3	75.4



Curve Description			
Driver Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
6.7	78.4	-5.2	24.4



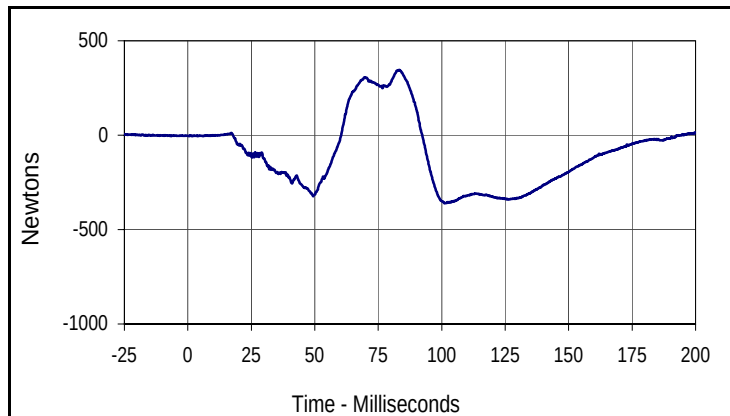
Curve Description			
Driver Chest Acceleration Z Primary			
CURNO	Type	SAE Class	Units
015	FIL	180	G's
Max	Time	Min	Time
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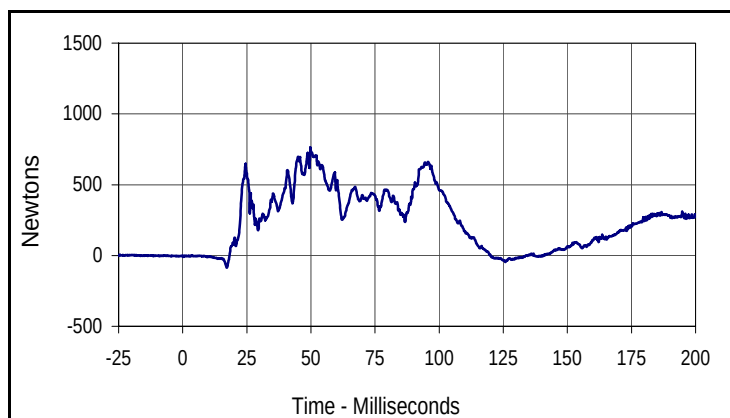
Curve Description			
Driver Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
013	RES	180	G's
Max	Time	Min	Time
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Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

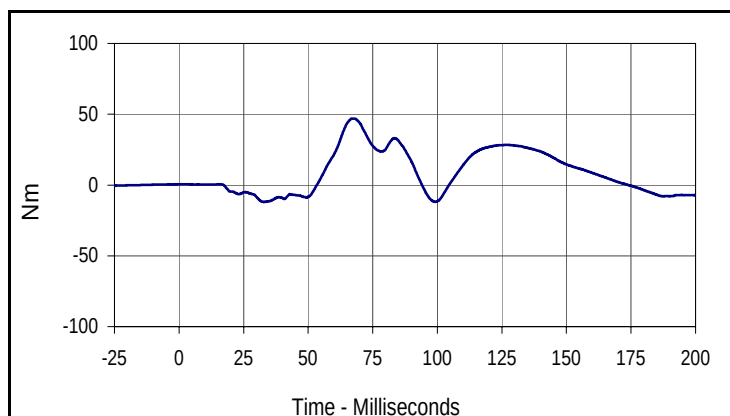
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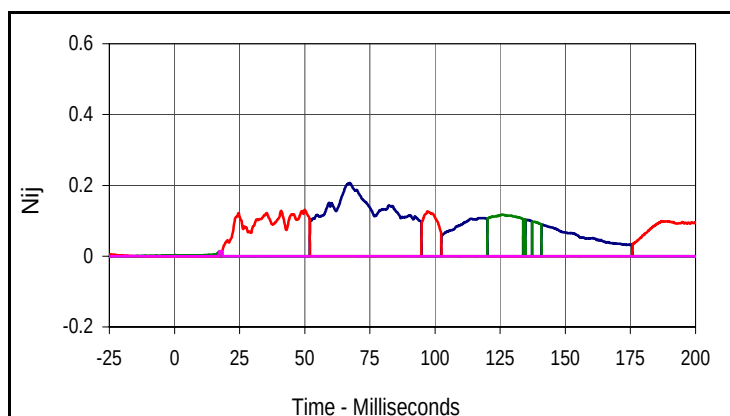
Curve Description			
Driver Upper Neck Force X			
CURNO	Type	SAE Class	Units
007	FIL	1000	Newtons
Max	Time	Min	Time
346.1	83.3	-360.7	101.2



Curve Description			
Driver Upper Neck Force Z			
CURNO	Type	SAE Class	Units
009	FIL	1000	Newtons
Max	Time	Min	Time
762.9	49.8	-86.4	17.2



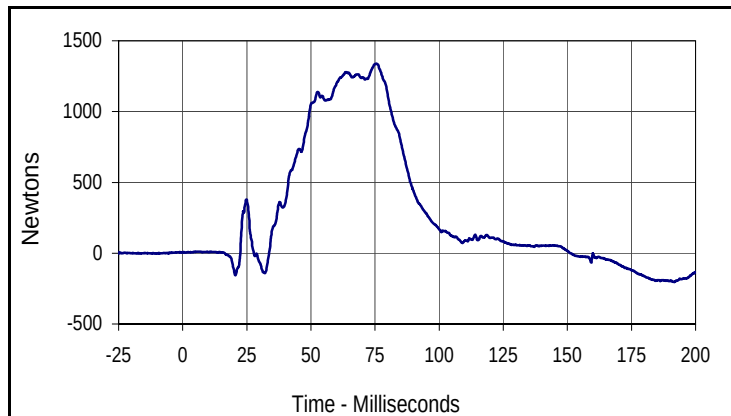
Curve Description			
Driver Upper Neck Moment Y			
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011	FIL	600	Nm
Max	Time	Min	Time
47.0	67.8	-12.0	32.9



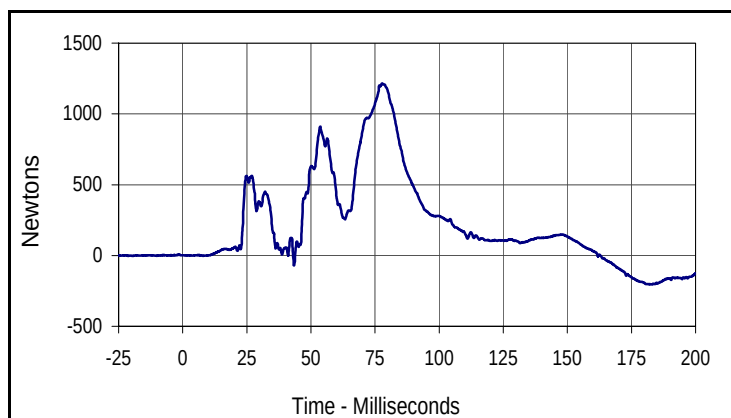
Curve Description			
Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.21	67.3
Units	Type	Max	Time
Nte	FIL	0.13	50.0
Units	Type	Max	Time
Ncf	FIL	0.12	125.9
Units	Type	Max	Time
Nce	FIL	0.10	295.1

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

Test Date: 10/13/10
 NHTSA No.: MB5402



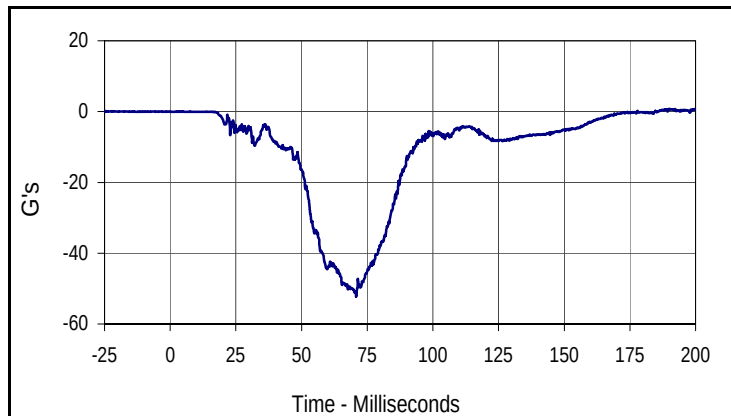
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Driver Left Femur Force Z			
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023	FIL	600	Newtons
Max	Time	Min	Time
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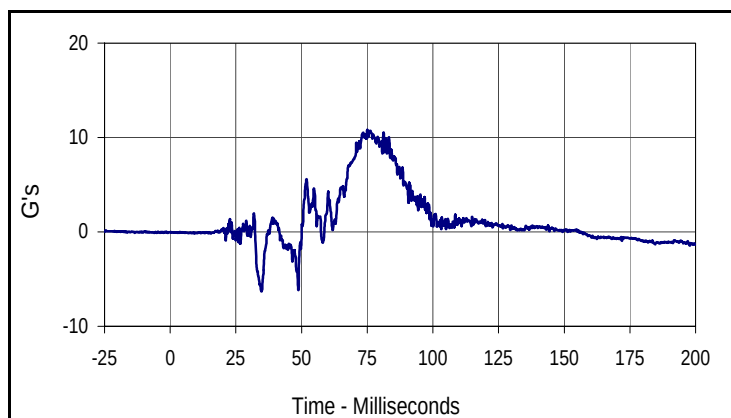
Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
1214.8	77.8	-204.9	182.7

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

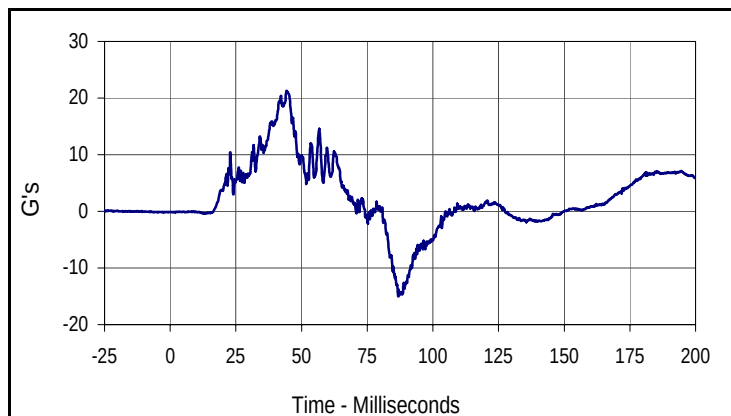
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 NHTSA No.: MB5402



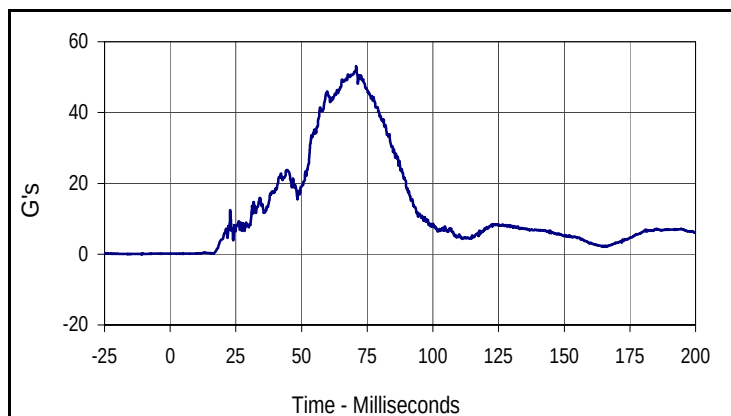
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Max	Time	Min	Time
0.8	189.7	-52.2	70.8



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
046	FIL	1000	G's
Max	Time	Min	Time
10.8	75.0	-6.3	34.8



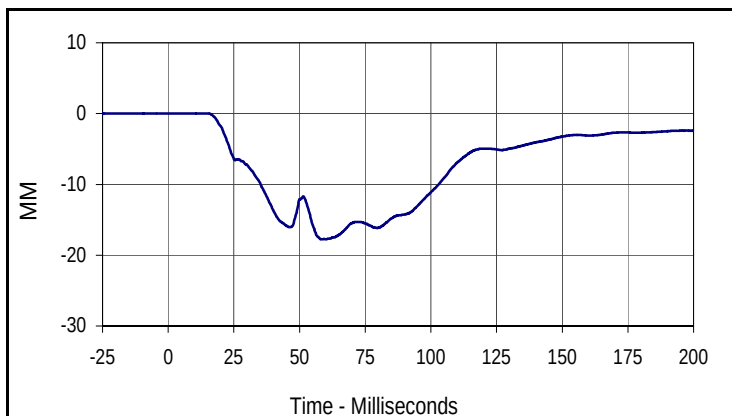
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
047	FIL	1000	G's
Max	Time	Min	Time
21.3	44.3	-15.0	86.8



Curve Description			
Passenger Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
045	RES	1000	G's
Max	Time	Min	Time
53.0	70.8	0.1	3.7

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

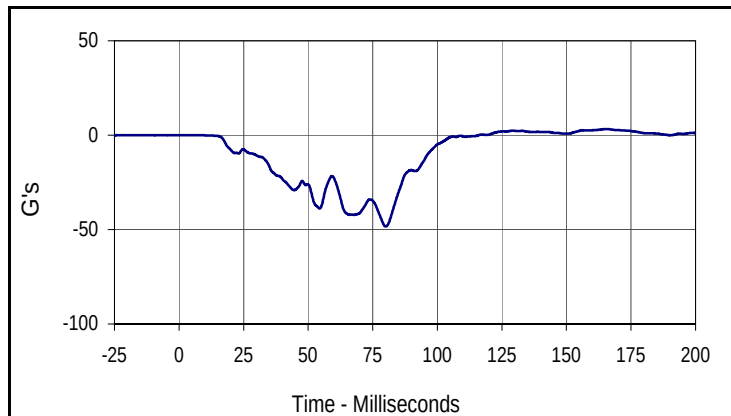
Test Date: 10/13/10
 NHTSA No.: MB5402



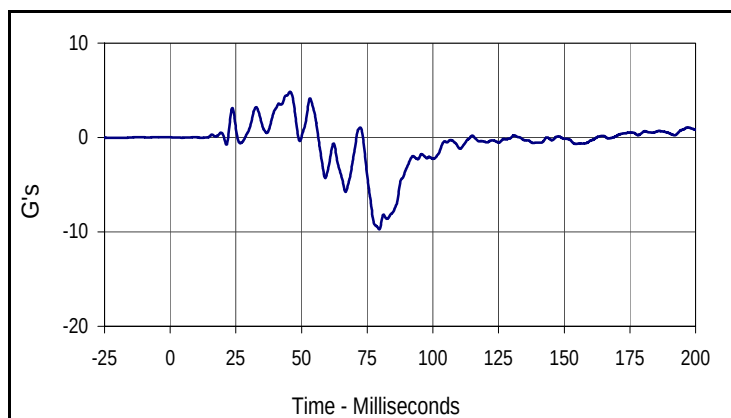
Curve Description			
Passenger Chest Deflection			
CURNO	Type	SAE Class	Units
063	FIL	600	MM
Max	Time	Min	Time
0.0	12.4	-17.8	60.1

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

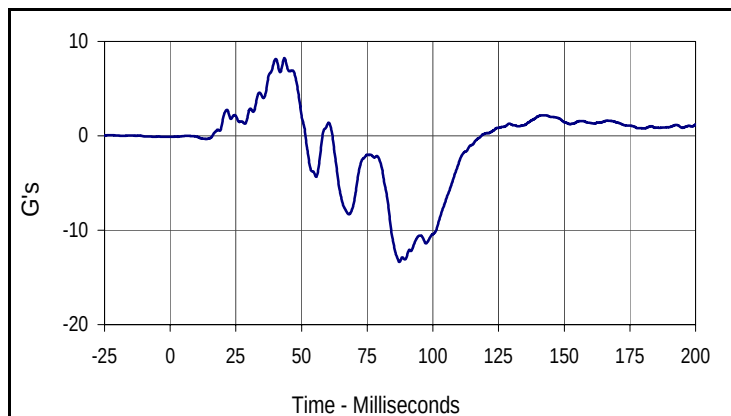
Test Date: 10/13/10
 NHTSA No.: MB5402



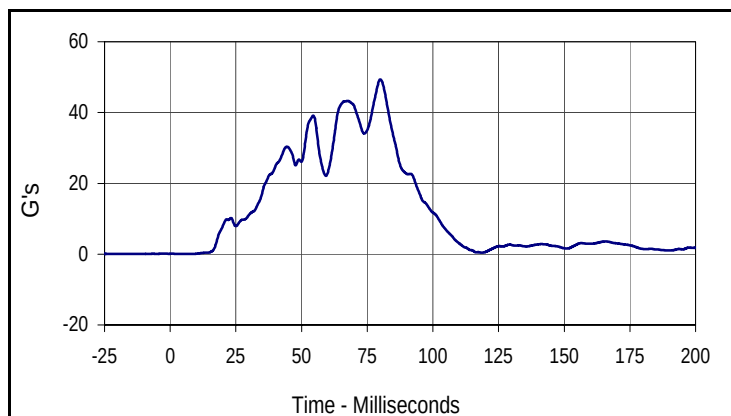
Curve Description			
Passenger Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
057	FIL	180	G's
Max	Time	Min	Time
3.3	165.4	-48.3	80.0



Curve Description			
Passenger Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
058	FIL	180	G's
Max	Time	Min	Time
4.8	45.6	-9.7	79.6



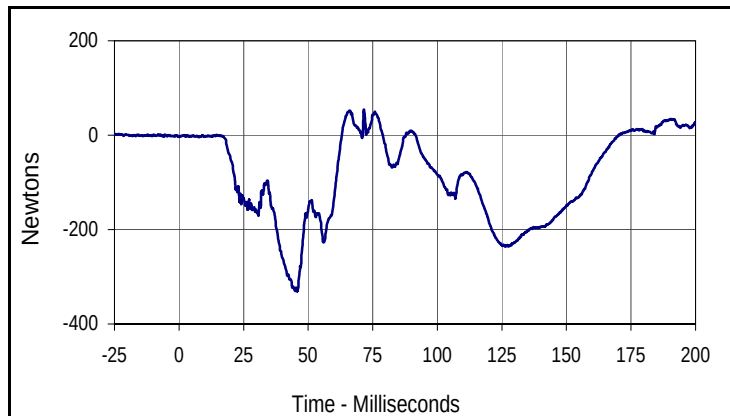
Curve Description			
Passenger Chest Acceleration Z Primary			
CURNO	Type	SAE Class	Units
059	FIL	180	G's
Max	Time	Min	Time
8.2	43.5	-13.4	87.2



Curve Description			
Passenger Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
057	RES	180	G's
Max	Time	Min	Time
49.4	80.0	0.0	8.1

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

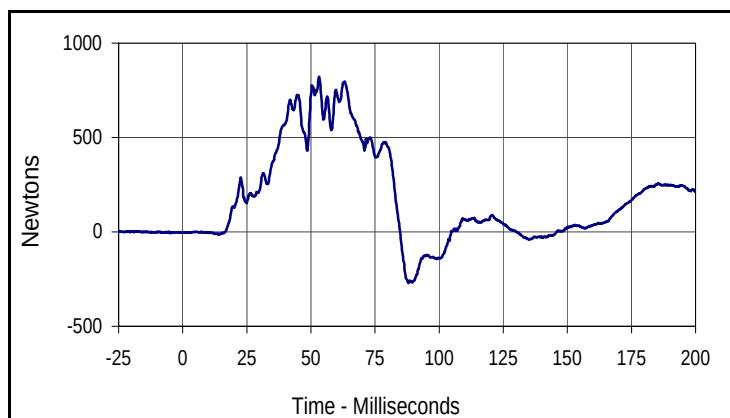
Test Date: 10/13/10
 NHTSA No.: MB5402



Curve Description

Passenger Upper Neck Force X

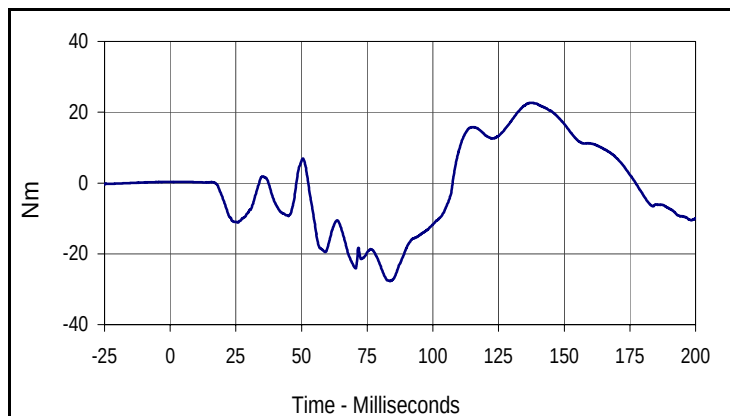
CURNO	Type	SAE Class	Units
051	FIL	1000	Newtons
Max	Time	Min	Time
54.4	71.5	-330.6	45.8



Curve Description

Passenger Upper Neck Force Z

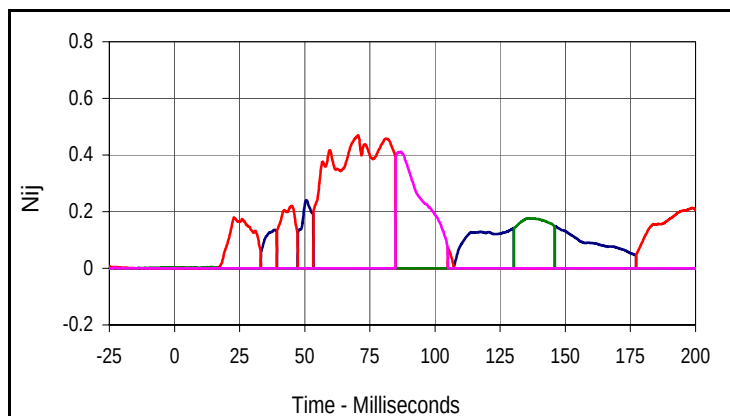
CURNO	Type	SAE Class	Units
053	FIL	1000	Newtons
Max	Time	Min	Time
822.1	53.2	-271.3	88.0



Curve Description

Passenger Upper Neck Moment Y

CURNO	Type	SAE Class	Units
055	FIL	600	Nm
Max	Time	Min	Time
22.7	137.2	-27.7	83.8



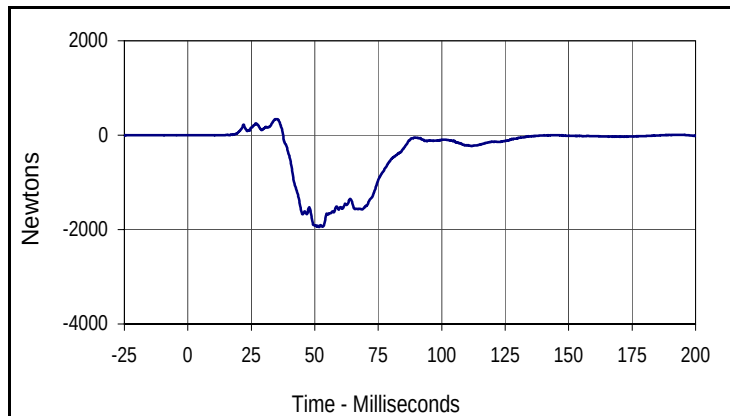
Curve Description

Passenger Nij

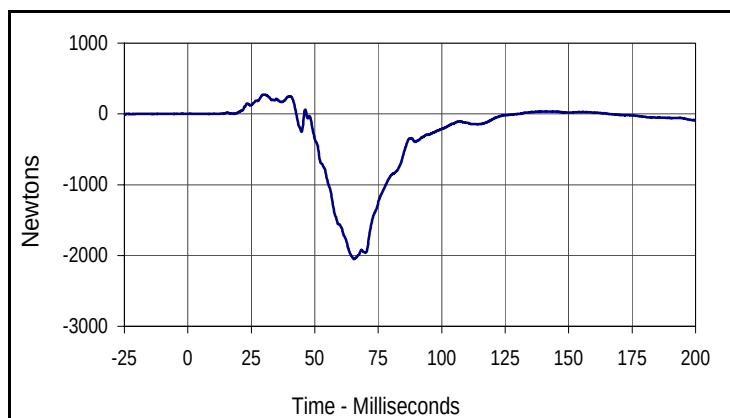
Units	Type	Max	Time
Ntf	FIL	0.24	50.6
Units	Type	Max	Time
Nte	FIL	0.47	70.5
Units	Type	Max	Time
Ncf	FIL	0.18	136.3
Units	Type	Max	Time
Nce	FIL	0.41	86.9

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

Test Date: 10/13/10
 NHTSA No.: MB5402



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
067	FIL	600	Newtons
Max	Time	Min	Time
341.2	35.2	-1945.7	51.7



Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
068	FIL	600	Newtons
Max	Time	Min	Time
274.4	30.0	-2051.3	65.4

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

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

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

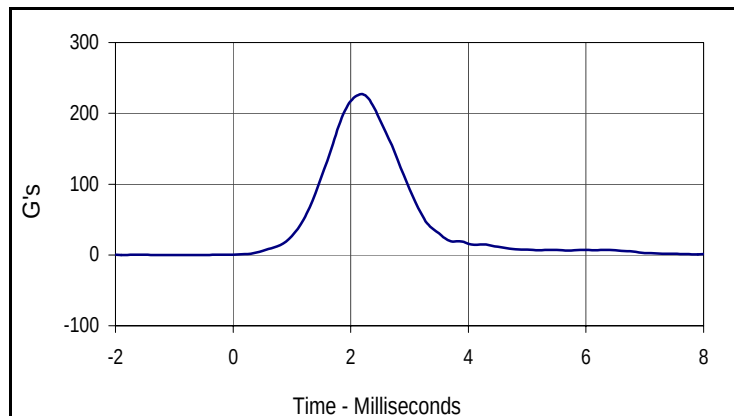
Test Date: 10/7/10

ATD Serial No.: 035

Test I.D.: HDM10A



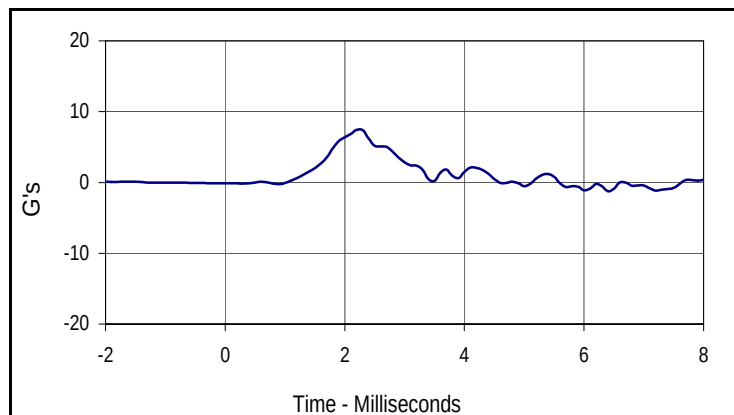
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	227.3	Pass
Peak Lateral Acceleration	G's	≤15.0	7.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
227.3	2.2	0.1	-1.3



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.4	2.2	-1.1	6.0

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

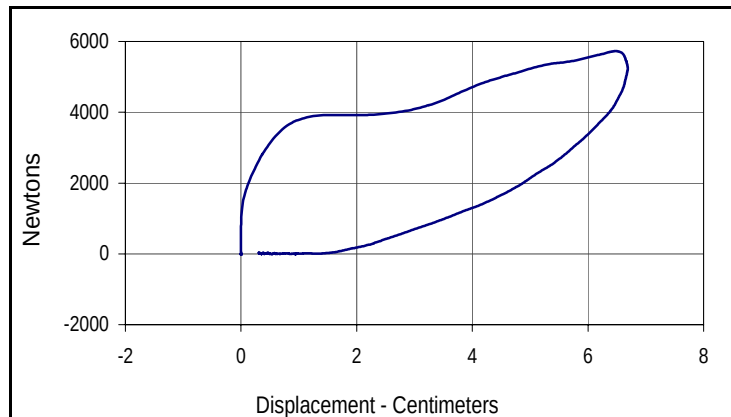
Test Date: 10/7/10

ATD Serial No.: 035

Test I.D.: CHM10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	Newtons	5159 to 5893	5729	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.69	Pass
Internal Hysteresis	%	69 to 85	70.7	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	70.7
Peak Probe Force		Peak Chest Deflection	
5729		6.69	

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

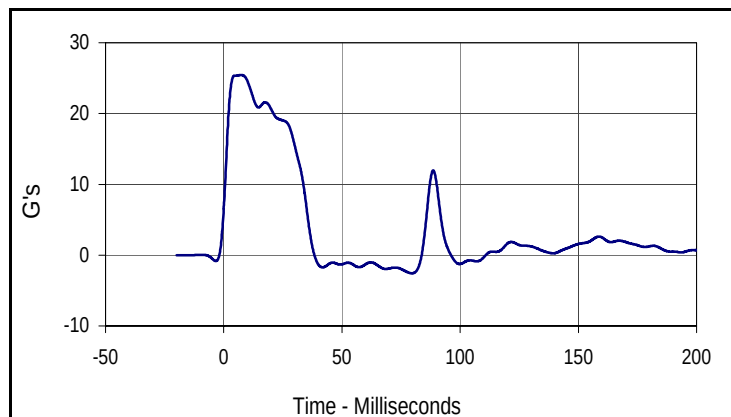
Test Date: 10/7/10

ATD Serial No.: 035

Test I.D.: NFM10A



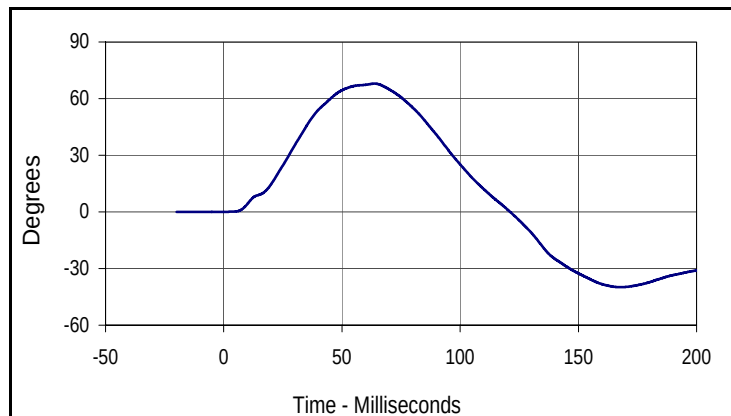
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.92	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.6	Pass
	20 Msec.	G's	17.6 to 22.6	20.7	Pass
	30 Msec.	G's	12.5 to 18.5	15.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	15.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.7	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	68.0	Pass
	Time	Msec.	57.0 to 64.0	63.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.2	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	93.1	Pass
	Time	Msec.	47.0 to 58.0	52.3	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.4	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

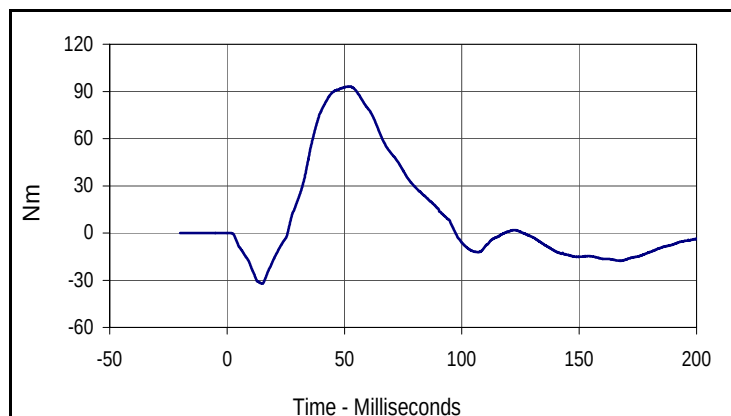
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
25.4	7.3	-2.6	79.6



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
68.0	63.8	-39.8	167.7



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
93.1	52.3	-32.0	15.0

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

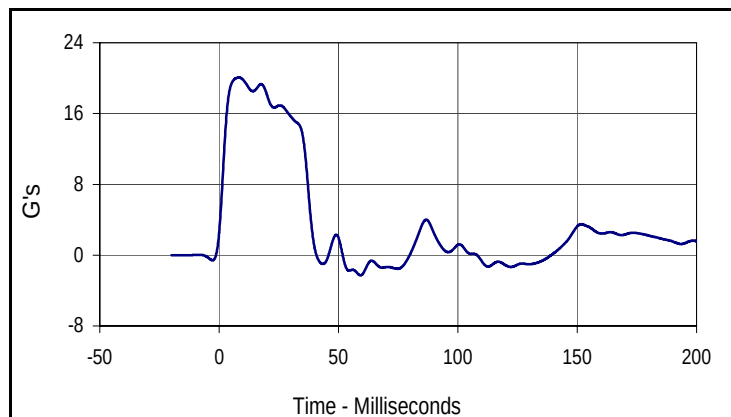
Test Date: 10/7/10

ATD Serial No.: 035

Test I.D.: NEM10A



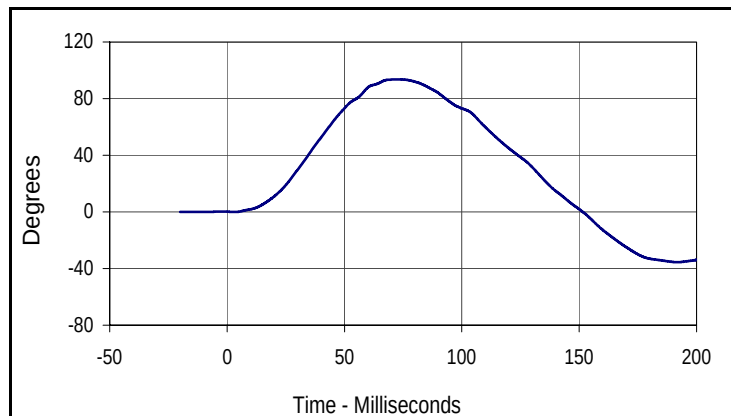
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.17	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.8	Pass
	20 Msec.	G's	14.0 to 19.0	18.1	Pass
	30 Msec.	G's	11.0 to 16.0	15.7	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.7	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	38.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	93.5	Pass
	Time	Msec.	72.0 to 82.0	73.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	151.6	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-69.4	Pass
	Time	Msec.	65.0 to 79.0	70.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	141.6	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

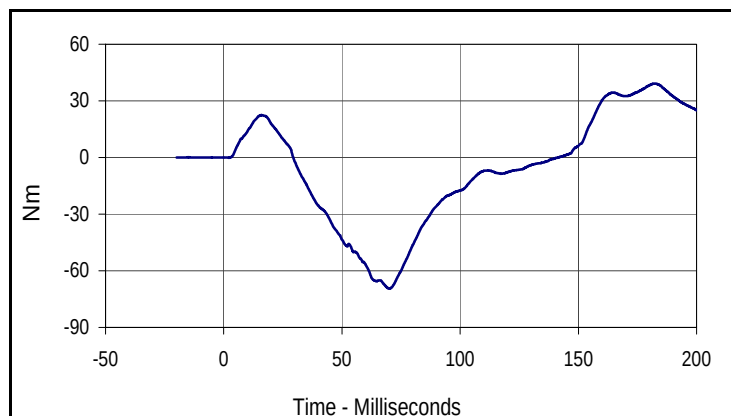
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.1	8.2	-2.3	59.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
93.5	73.9	-35.5	191.8



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
39.2	182.6	-69.4	70.1

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

Test Date: 10/7/10

ATD Serial No.: 035

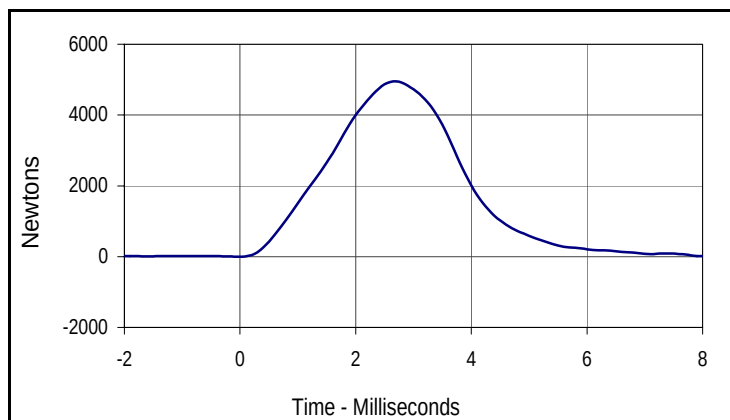
Test I.D.: LKM10A , RKM10A

**Left Knee**

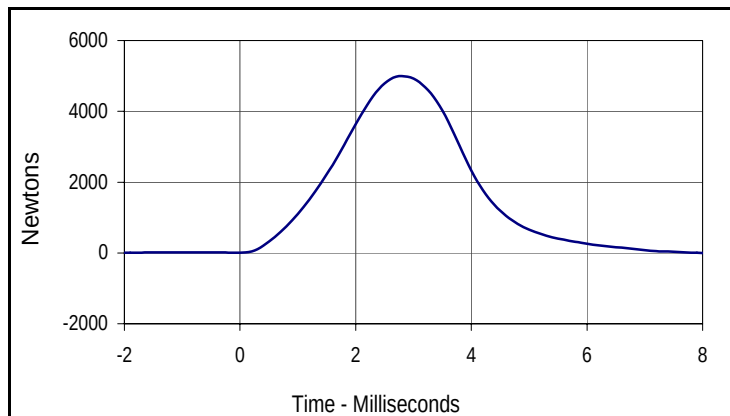
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	4950	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5000	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4950.1	2.7	-45.7	9.0

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5000.3	2.8	-12.8	8.7

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 10/7/10

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	882	Pass
B - Shoulder pivot height	mm	505 to 521	514	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	84	Pass
F - Thigh clearance	mm	140 to 155	146	Pass
G - Elbow back to wrist pivot	mm	290 to 305	299	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	332	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Popliteal length	mm	429 to 455	431	Pass
M - Knee pivot height	mm	485 to 500	485	Pass
N - Buttock popliteal length	mm	452 to 477	467	Pass
O - Chest depth	mm	213 to 229	214	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference	mm	970 to 1001	987	Pass
Z - Waist circumference	mm	836 to 866	865	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
Overall Test Results				Pass

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

Test Date: 9/30/10

ATD Serial No.: 635

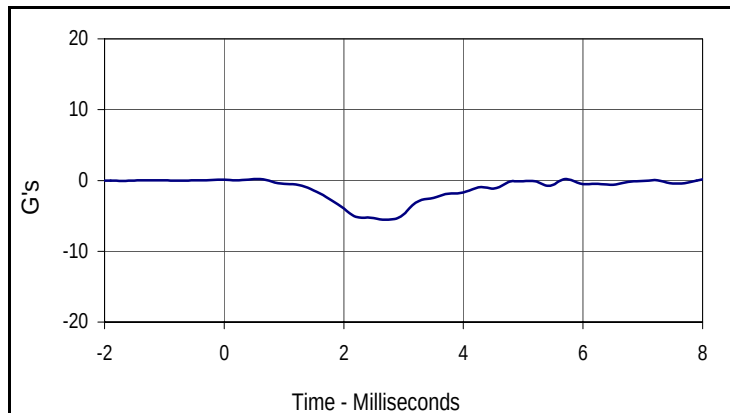
Test I.D.: HDF09D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	261.6	Pass
Peak Lateral Acceleration	G's	≤15.0	5.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
261.6	2.5	0.0	-2.0



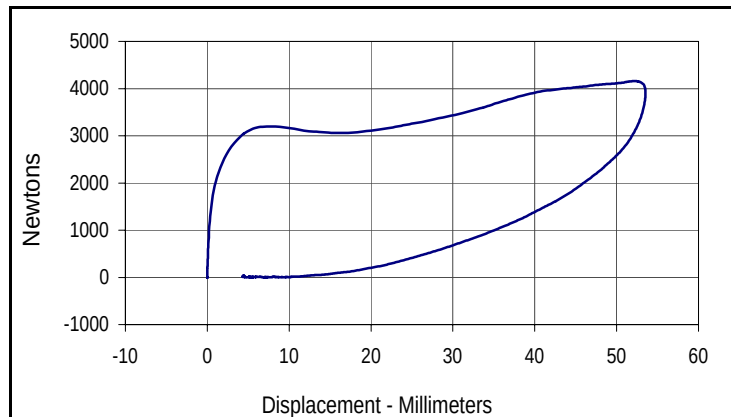
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	0.5	-5.5	2.7

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

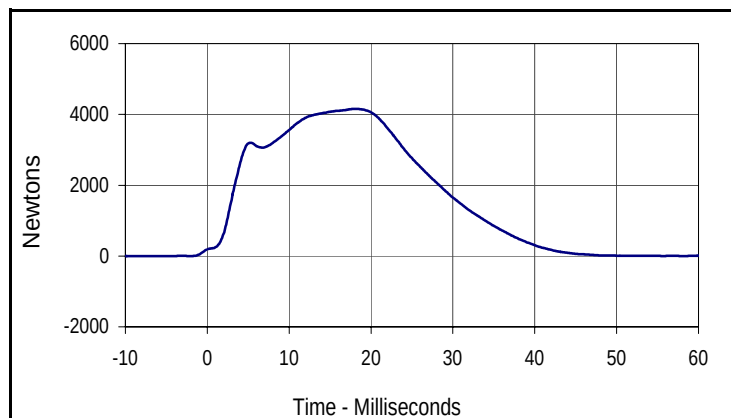
Test Date: 9/30/10
 Test I.D.: CHF09E



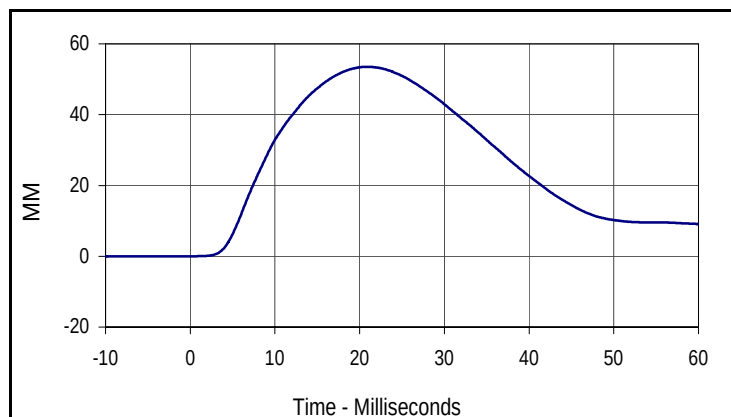
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.59 to 6.83	6.69	Pass
Peak Chest Deflection	MM	50.0 to 58.0	53.5	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4114	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4160	Pass
Internal Hysteresis	%	69 to 85	75.4	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	75.4
Peak Probe Force		Peak Chest Displ.	
4159.9		53.5	



Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4159.9	18.2	-3.2	-7.7



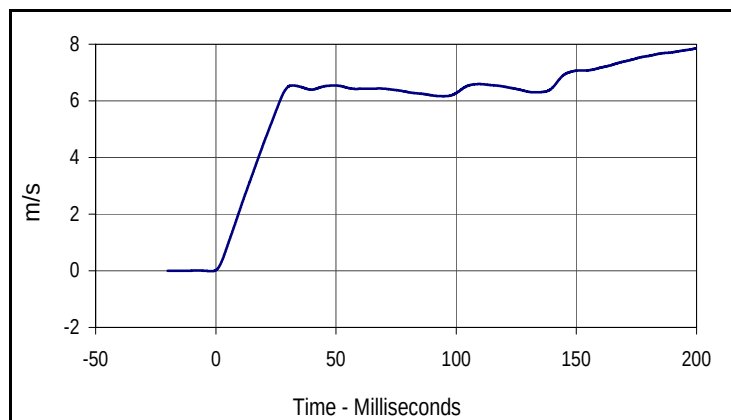
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
53.5	20.9	0.0	-7.0

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

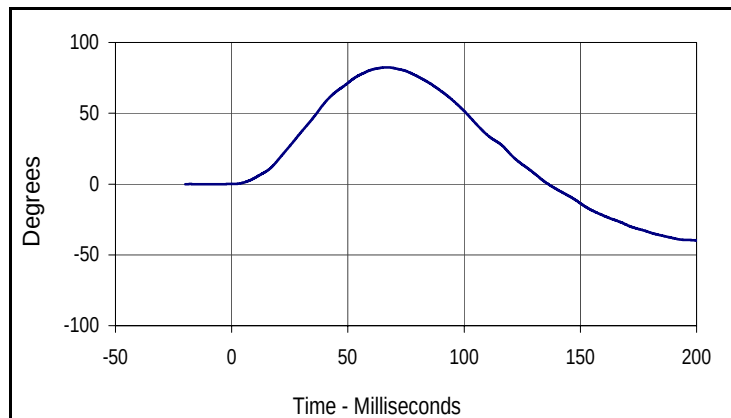
Test Date: 9/30/10
 Test I.D.: NF09C



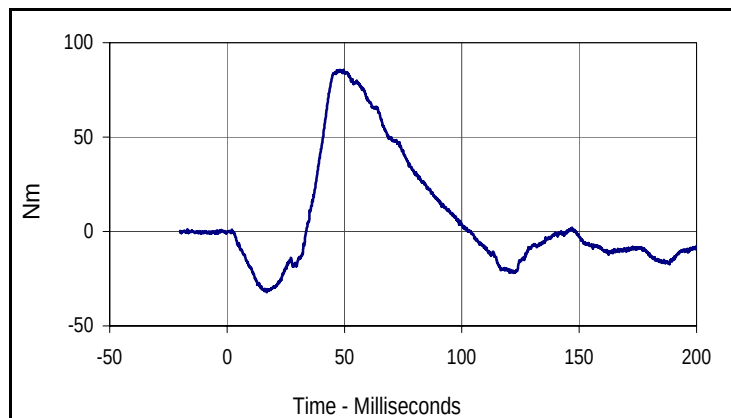
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.94	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.2	Pass
	20 Msec.	m/s	4.0 to 5.0	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.5	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	82.5	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	79.8	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	93.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.9	200.0	0.0	-1.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
82.5	66.8	-39.6	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
85.6	48.0	-32.1	16.9

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

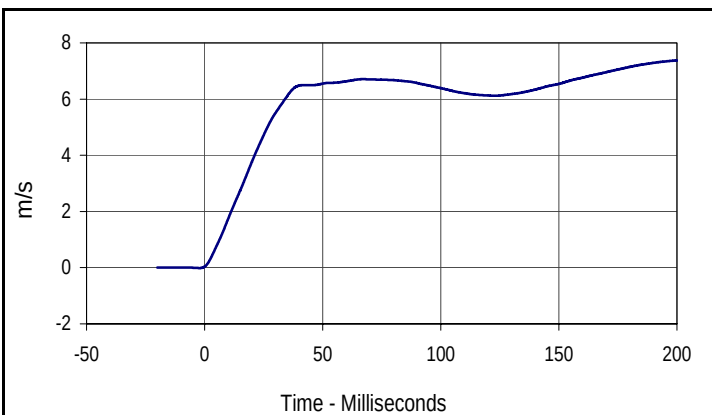
Test Date: 9/30/10



ATD Serial No.: 635

Test I.D.: NE09D

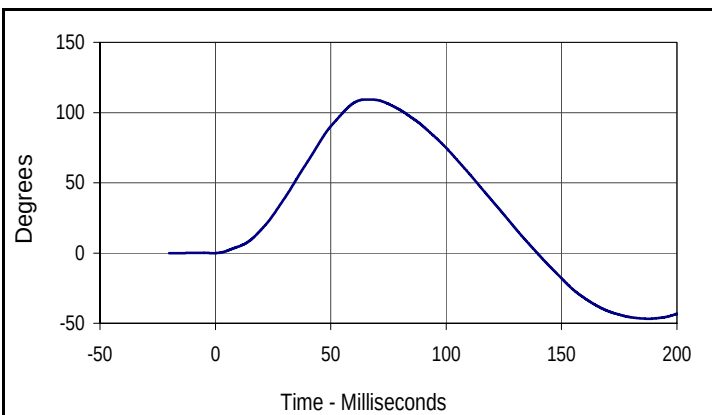
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.07	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.8	Pass
	30 Msec.	m/s	4.6 to 5.6	5.5	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	109.3	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-58.0	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	97.4	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Velocity

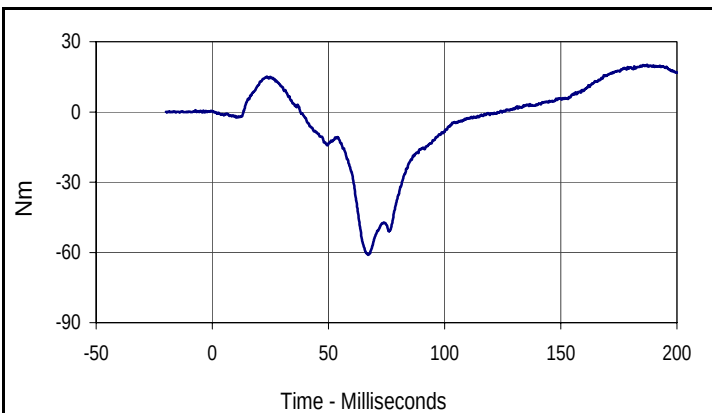
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.4	200.0	0.0	-2.1



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
109.3	65.3	-46.8	187.8



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
20.2	187.1	-61.1	67.1

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

Test Date: 9/30/10

ATD Serial No.: 635

Test I.D.: LKF09D , RKB09D

**Left Knee**

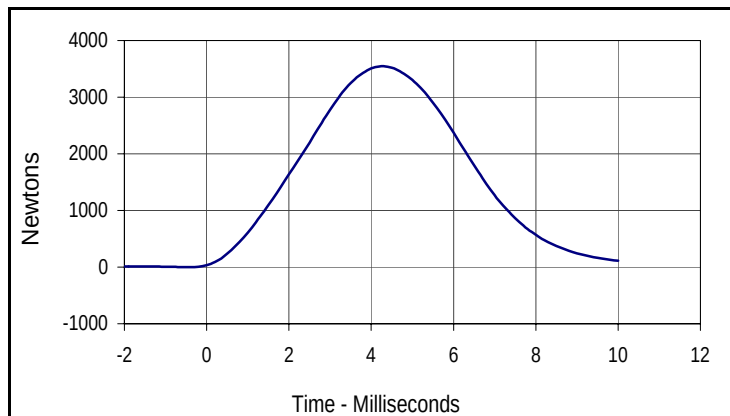
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3574	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	3450 to 4060	3547	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3573.9	4.3	3.1	-0.4

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
3547.4	4.3	-2.4	-0.4

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

Test Date: 9/30/10

ATD Serial No.: 635

Test I.D.: TF09D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Initial reference plane angle	Degrees	≤20.0	1.0	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	343.5	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.2	Pass
Final reference plane angle	Degrees	+/-8	2.3	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 9/30/10

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	774.7 to 800.1	781	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	445	Pass
C - "H" point height (Reference)	mm	81.3 to 86.3	84	Pass
D - "H" point from seat back (Ref.)	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	82	Pass
F - Thigh clearance	mm	119.4 to 134.6	130	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	253	Pass
H - Head to back line	mm	40.7 to 45.7	45	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	201	Pass
K - Buttock to knee length	mm	520.7 to 546.1	530	Pass
L - Popliteal height	mm	355.6 to 376.0	365	Pass
M - Knee pivot height	mm	393.7 to 419.1	414	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	417	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	183	Pass
P - Foot length	mm	218.5 to 233.7	223	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	462	Pass
S - Head breadth	mm	137.1 to 147.3	140	Pass
T - Head depth	mm	177.8 to 188.0	180	Pass
U - Hip breadth	mm	299.7 to 314.9	312	Pass
V - Shoulder breadth	mm	350.5 to 365.7	362	Pass
W - Foot breadth	mm	78.8 to 94.0	85	Pass
X - Head circumference	mm	528.3 to 548.7	543	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	860	Pass
Z - Waist circumference	mm	759.5 to 789.9	783	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	162	Pass
Overall Test Results				Pass

Test Program: Dummy Damage Checklist
 ATD Serial No.: 035

Test Date: 10/7/10
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 635

Test Date: 9/30/10
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

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

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

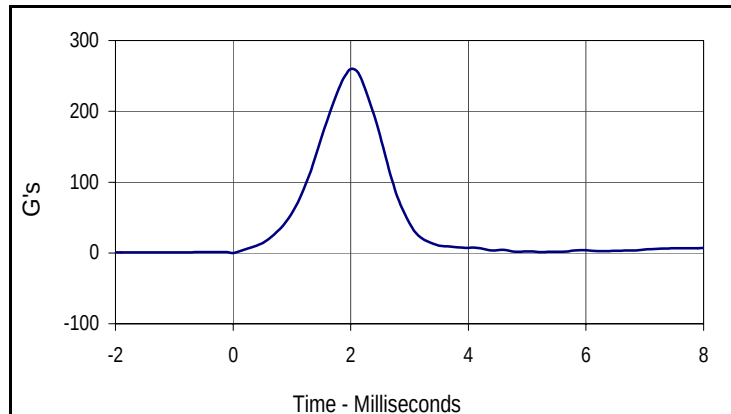
Test Date: 10/14/10

ATD Serial No.: 035

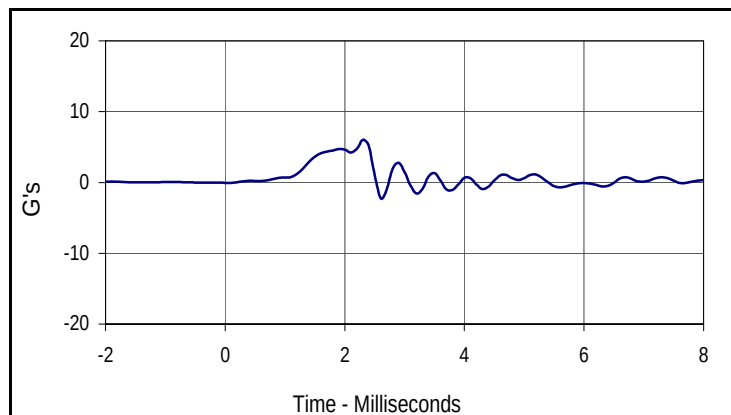
Test I.D.: HDM10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	259.8	Pass
Peak Lateral Acceleration	G's	≤15.0	6.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
259.8	2.0	0.1	0.0



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.0	2.3	-2.2	2.6

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

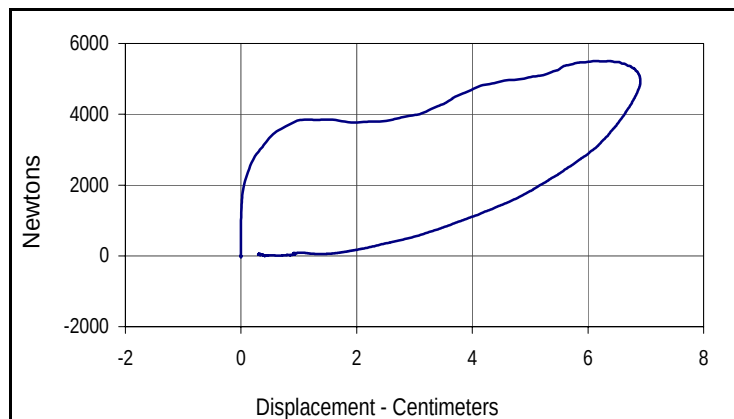
Test Date: 10/14/10

ATD Serial No.: 035

Test I.D.: CHM10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5504	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.91	Pass
Internal Hysteresis	%	69 to 85	72.3	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	72.3
Peak Probe Force		Peak Chest Deflection	
5504		6.91	

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

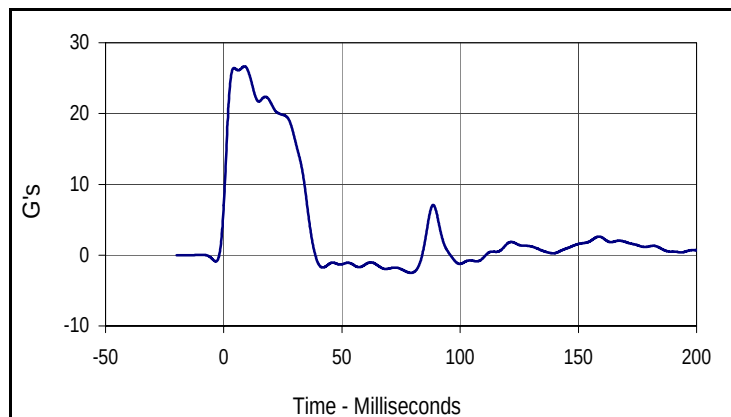
Test Date: 10/14/10

ATD Serial No.: 035

Test I.D.: NFM10B



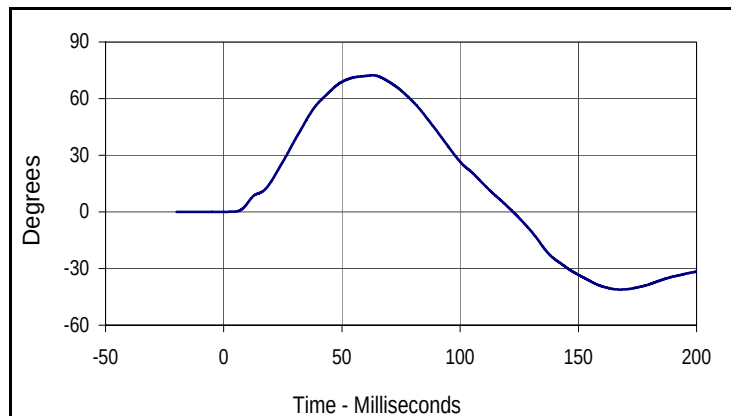
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.94	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	26.2	Pass
	20 Msec.	G's	17.6 to 22.6	21.5	Pass
	30 Msec.	G's	12.5 to 18.5	16.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	72.4	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	122.4	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	91.3	Pass
	Time	Msec.	47.0 to 58.0	51.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.6	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

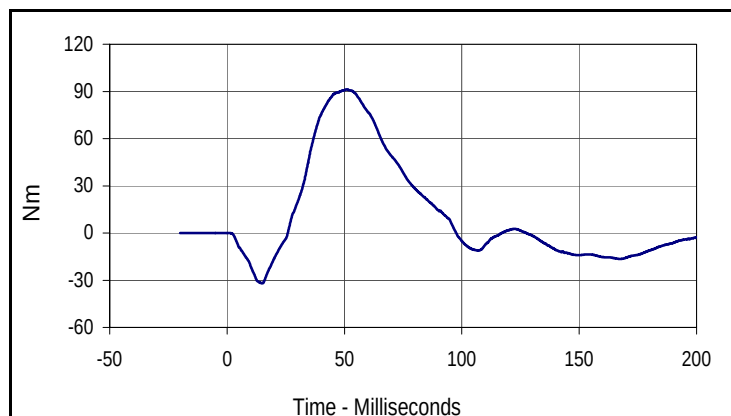
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
26.7	8.8	-2.5	79.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
72.4	63.1	-41.1	167.7



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
91.3	51.2	-31.9	15.0

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

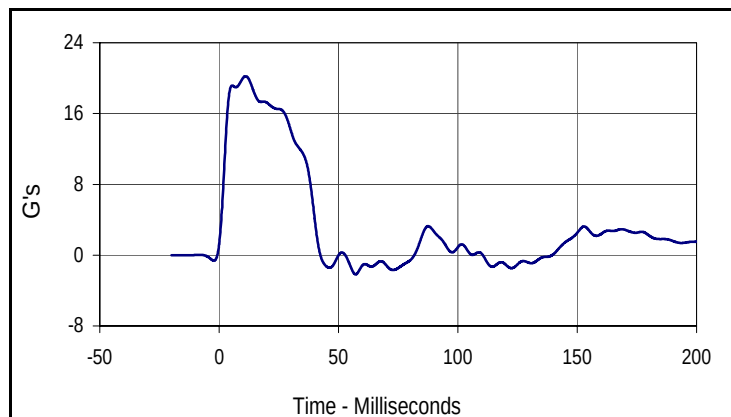
Test Date: 10/14/10

ATD Serial No.: 035

Test I.D.: NEM10B



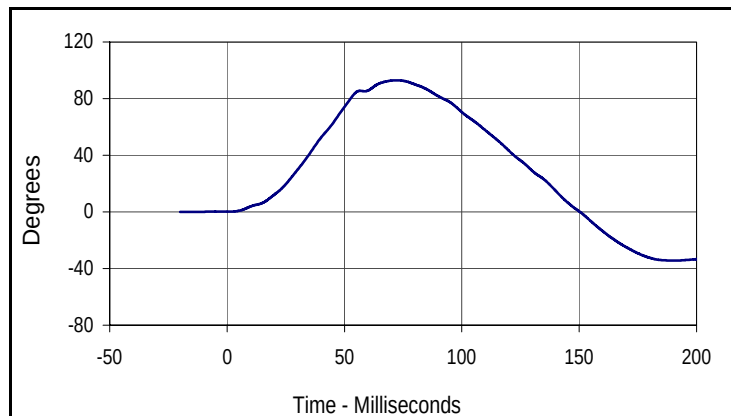
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.09	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.0	Pass
	20 Msec.	G's	14.0 to 19.0	17.2	Pass
	30 Msec.	G's	11.0 to 16.0	14.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.7	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	93.0	Pass
	Time	Msec.	72.0 to 82.0	72.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	150.4	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-77.8	Pass
	Time	Msec.	65.0 to 79.0	65.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	139.9	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

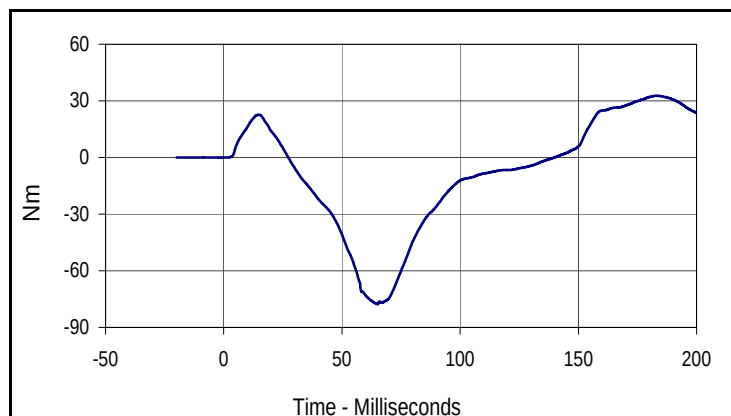
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.2	11.1	-2.2	57.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
93.0	72.2	-34.4	190.4



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
32.8	183.3	-77.8	65.1

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

Test Date: 10/14/10

ATD Serial No.: 035

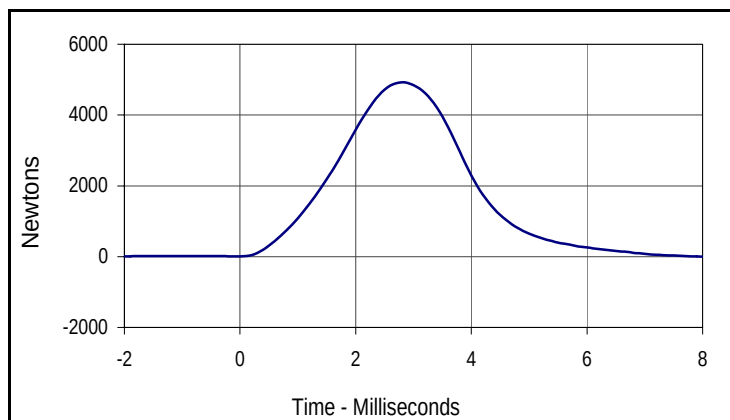
Test I.D.: LKM10B , RKM10B

**Left Knee**

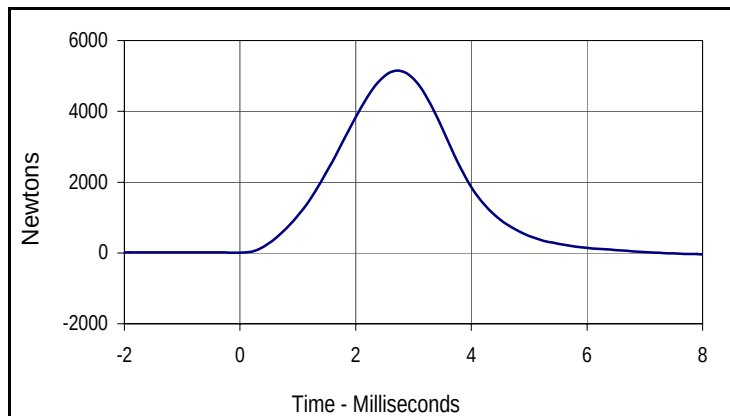
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	4924	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5146	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4924.0	2.8	-13.9	8.7

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5146.1	2.7	-34.2	8.0

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 10/14/10

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	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	84	Pass
D - "H" point from seat back	mm	135 to 140	136	Pass
E - Shoulder pivot from back	mm	84 to 94	85	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Elbow back to wrist pivot	mm	290 to 305	299	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	334	Pass
J - Elbow rest height	mm	190 to 211	204	Pass
K - Buttock to knee length	mm	579 to 604	586	Pass
L - Popliteal length	mm	429 to 455	432	Pass
M - Knee pivot height	mm	485 to 500	485	Pass
N - Buttock popliteal length	mm	452 to 477	469	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	261	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	228	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop TestTest Date: 10/14/10ATD Serial No.: 635Test I.D.: HDF10B

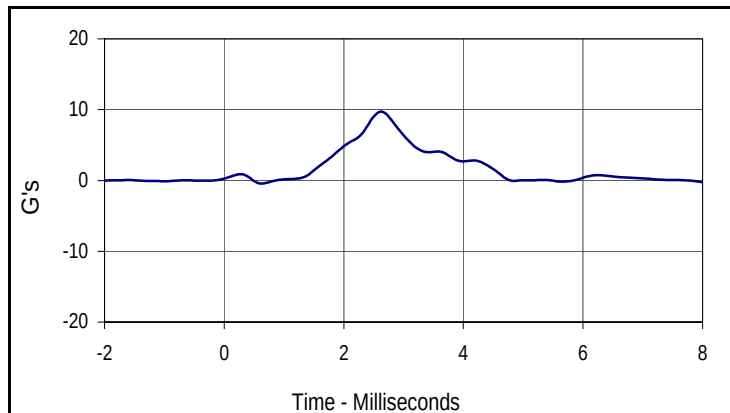
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	263.2	Pass
Peak Lateral Acceleration	G's	≤15.0	9.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
263.2	2.6	0.0	-1.4



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
9.7	2.6	-0.4	0.6

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

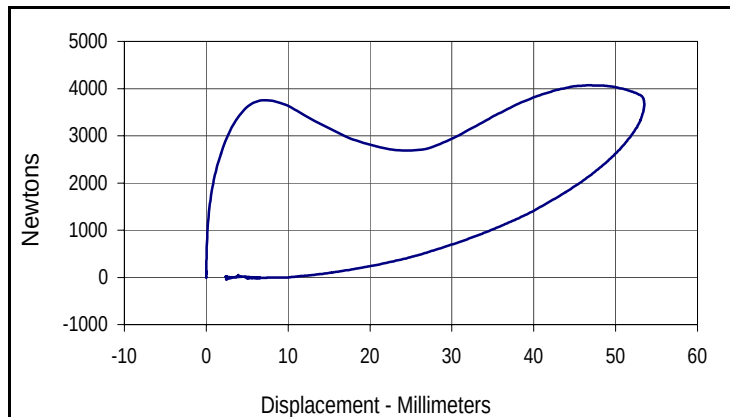
Test Date: 10/14/10

ATD Serial No.: 635

Test I.D.: CHF10B



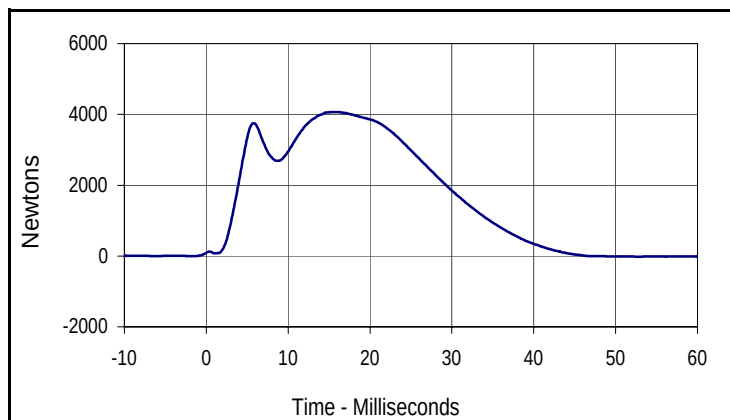
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.59 to 6.83	6.61	Pass
Peak Chest Deflection	MM	50.0 to 58.0	53.5	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4070	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4024	Pass
Internal Hysteresis	%	69 to 85	74.4	Pass
Overall Test Results			Pass	



Curve Description

Probe Force vs. Chest Deflection

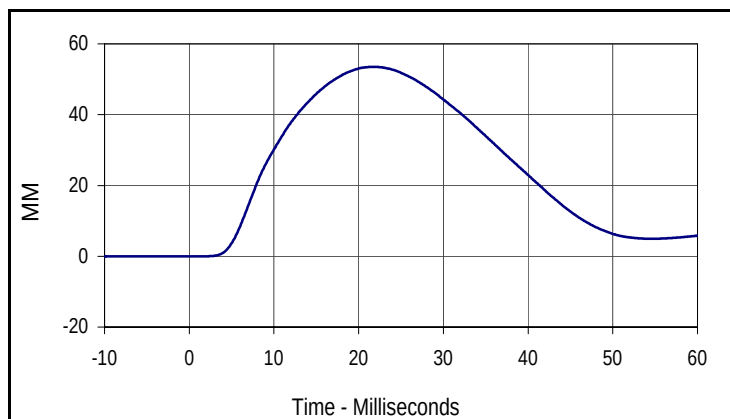
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	74.4
Peak Probe Force		Peak Chest Displ.	
4069.7		53.5	



Curve Description

Probe Force

CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4069.7	15.4	-51.7	187.8



Curve Description

Chest Deflection

CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
53.5	21.7	0.0	-8.3

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

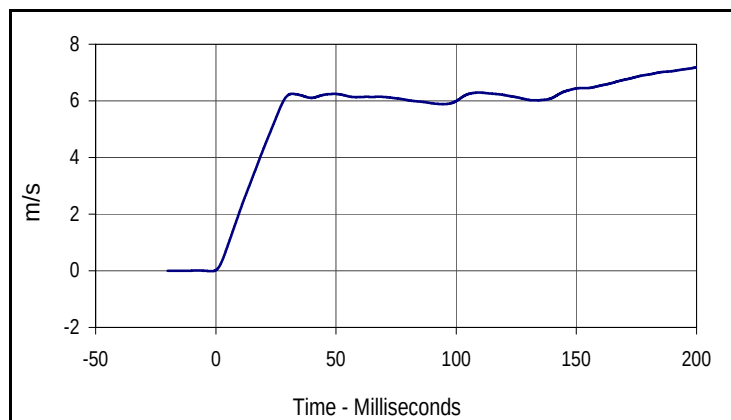
Test Date: 10/14/10

ATD Serial No.: 635

Test I.D.: NF10B



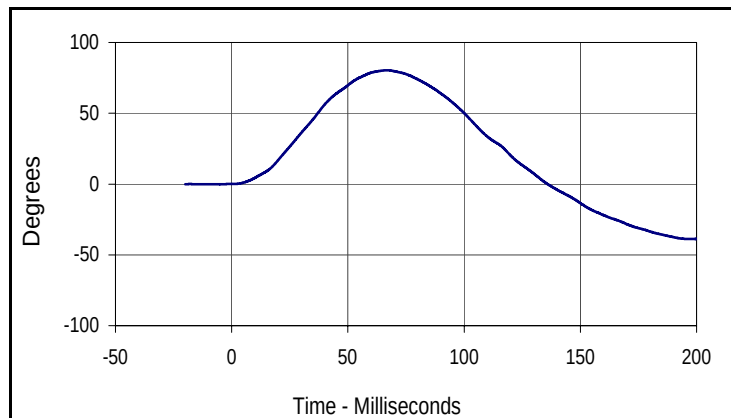
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.92	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.1	Pass
	20 Msec.	m/s	4.0 to 5.0	4.3	Pass
	30 Msec.	m/s	5.8 to 7.0	6.2	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	80.4	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	78.0	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	96.0	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Velocity

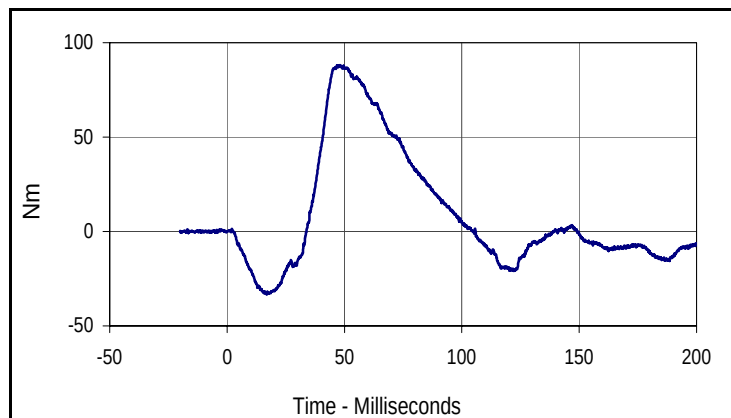
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.2	200.0	0.0	-1.8



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
80.4	66.7	-38.8	200.0



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
88.1	48.0	-33.4	16.9

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

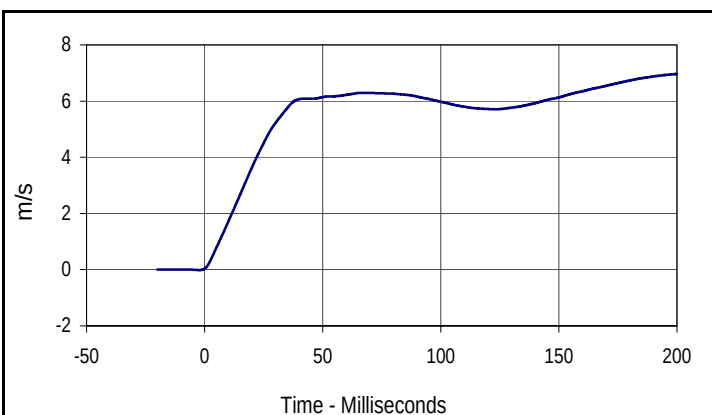
Test Date: 10/14/10



ATD Serial No.: 635

Test I.D.: NE10C

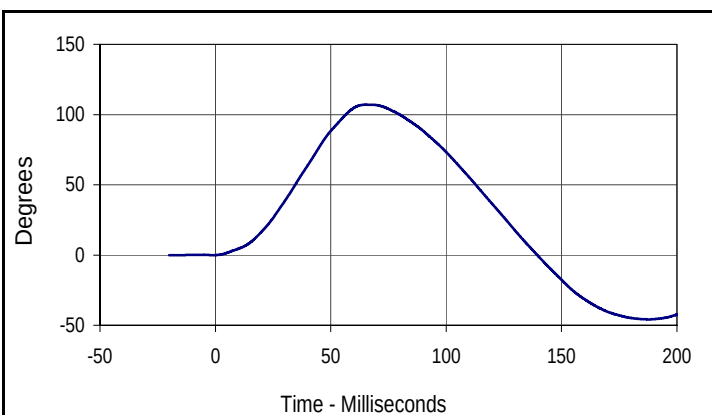
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.03	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.6	Pass
	30 Msec.	m/s	4.6 to 5.6	5.2	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	107.1	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-56.5	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	98.7	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Velocity

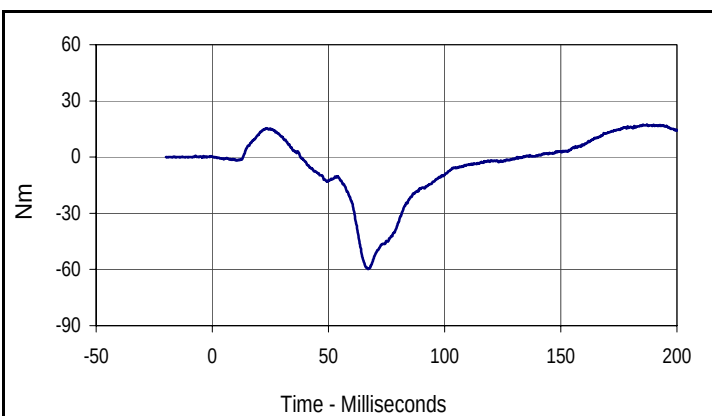
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.0	200.0	0.0	-2.1



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
107.1	65.3	-45.8	187.8



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
17.4	187.1	-59.8	67.1

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

Test Date: 10/14/10
 Test I.D.: LKF10B , RKB10B



Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	3450 to 4060	3679	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	3450 to 4060	3697	Pass
Overall Test Results				Pass



Curve Description

Left Knee Probe Force

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3679.3	4.3	3.3	-0.4



Curve Description

Right Knee Probe Force

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
3696.8	4.3	-2.4	-0.4

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

Test Date: 10/14/10

ATD Serial No.: 635

Test I.D.: TF10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Initial reference plane angle	Degrees	≤20.0	0.5	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	326.0	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	0.9	Pass
Final reference plane angle	Degrees	+/-8	1.4	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 10/14/10

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	774.7 to 800.1	784	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	441	Pass
C - "H" point height (Reference)	mm	81.3 to 86.3	86	Pass
D - "H" point from seat back (Ref.)	mm	144.8 to 149.8	145	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	81	Pass
F - Thigh clearance	mm	119.4 to 134.6	130	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	253	Pass
H - Head to back line	mm	40.7 to 45.7	45	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	201	Pass
K - Buttock to knee length	mm	520.7 to 546.1	539	Pass
L - Popliteal height	mm	355.6 to 376.0	360	Pass
M - Knee pivot height	mm	393.7 to 419.1	415	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	422	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	231	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	467	Pass
S - Head breadth	mm	137.1 to 147.3	145	Pass
T - Head depth	mm	177.8 to 188.0	183	Pass
U - Hip breadth	mm	299.7 to 314.9	310	Pass
V - Shoulder breadth	mm	350.5 to 365.7	362	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	543	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	853	Pass
Z - Waist circumference	mm	759.5 to 789.9	780	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	301	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	166	Pass
Overall Test Results				Pass

Test Program: Dummy Damage Checklist
 ATD Serial No.: 035

Test Date: 10/14/10
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 635

Test Date: 10/14/10
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:
