

REPORT NUMBER: NCAP-KAR-11-051

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

**NISSAN MOTOR CO., LTD.
2011 NISSAN MURANO S AWD 5-DOOR MPV**

NHTSA NUMBER: MB5208

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



DECEMBER 16, 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

1. Report No. NCAP-KAR-11-051	2. Government Accession No.	3. Recipient's Catalog No.																																																					
4. Title and Subtitle Final Report of New Car Assessment Program Testing of a 2011 Nissan Murano S AWD 5-Door MPV NHTSA No. MB5208		5. Report Date December 23, 2010																																																					
		6. Performing Organization Code KAR																																																					
7. Authors Mr. Kelsey A. Chiu, Engineering Department Supervisor, KARCO Mr. Frank Richardson, Program Manager, KARCO		8. Performing Organization Report No. TR-P30001-16-NC																																																					
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA, 92301		10. Work Unit No.																																																					
		11. Contract or Grant No. DTNH22-06-D-00027																																																					
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C 20590		13. Type of Report and Period Covered Final Test Report, December 2010																																																					
		14. Sponsoring Agency Code NVS-111																																																					
15. Supplementary Notes																																																							
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2011 Nissan Murano S AWD 5-Door MPV in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and foot well intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on December 16, 2010. The impact velocity of the vehicle was 56.60 km/h and the ambient temperature at the barrier face at the time of impact was 16.7 deg. C. The target vehicle's post-test maximum crush was 410 mm at DPD 2, to the left of 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>353.4</td> <td>700.0</td> <td>309.5</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-30</td> <td>52</td> <td>-21</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.25</td> <td>1</td> <td>0.64</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1338.7</td> <td>2620</td> <td>1373.2</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-386.5</td> <td>2520</td> <td>-244.6</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-2331.9</td> <td>6805</td> <td>-167.8</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-2742.1</td> <td>6805</td> <td>-421.2</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	353.4	700.0	309.5	Maximum Chest Compression	mm	63	-30	52	-21	Nij	N/A	1	0.25	1	0.64	Neck Tension	N	4170	1338.7	2620	1373.2	Neck Compression	N	4000	-386.5	2520	-244.6	Left Femur Force	N	10008	-2331.9	6805	-167.8	Right Femur Force	N	10008	-2742.1	6805	-421.2
Measurement Description	Units	Driver ATD				Passenger ATD																																																	
		Threshold	Result	Threshold	Result																																																		
Head Injury Criteria (HIC ₁₅)	N/A	700.0	353.4	700.0	309.5																																																		
Maximum Chest Compression	mm	63	-30	52	-21																																																		
Nij	N/A	1	0.25	1	0.64																																																		
Neck Tension	N	4170	1338.7	2620	1373.2																																																		
Neck Compression	N	4000	-386.5	2520	-244.6																																																		
Left Femur Force	N	10008	-2331.9	6805	-167.8																																																		
Right Femur Force	N	10008	-2742.1	6805	-421.2																																																		
17. Key Words 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP)		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 1200 New Jersey Ave., SE Washington, DC 20590																																																					
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 124	22. Price																																																				

TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	Purpose and Summary of the Test	1
2	Occupant and Vehicle Information / Data Sheets	3
<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	4
2	Seat Adjustment, Fuel Systems, and Steering Wheel Data	8
3	Dummy Longitudinal Clearance Dimensions	10
4	Dummy Lateral Clearance Dimensions	11
5	Seat Belt Positioning Data	12
6	High-Speed Camera Locations and Data	13
7	Vehicle Accelerometer Locations	15
8	Photographic Reference Target Locations	16
9	Load Cell Locations on Fixed Barrier	17
10	Test Vehicle Camera and Instrumentation Summary	18
11	Post-Test Observations	19
12	Vehicle Profile Measurements	20
13	Accident Investigation Division Data	22
14	Vehicle Intrusion Measurements	23
15	Summary of FMVSS 212 and FMVSS 219 (Partial) Data	28
16	FMVSS 301 Fuel 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 Nissan Murano S AWD 5-Door MPV at a velocity of 56.60 km/h. The test was performed at KARCO Engineering, LLC. on December 16, 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. 034) and the right-front passenger (position 2) ATD (Serial No. 141) were calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 132 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 91.1% 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 410 mm located at DPD2 to the left of the 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. Both the left and right knees contacted the knee bolster.

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 knee and right knee 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)	353.4	71.6	86.6	-30	0.25	1338.7	-386.5	-2331.9	-2742.1
Passenger (5th)	309.5	72.4	87.4	-21	0.64	1373.2	-244.6	-167.8	-421.2

SECTION 2
DATA SHEETS

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10

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	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf•ft	N•m	1.355

DATA SHEET NO. 1**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5208
Make	Nissan
Model	Murano S AWD
Body Style	5-Door MPV
VIN	JN8AZ1MW5BW153007
Body Color	Platinum Graphite
Delivery Date	11/12/2010
Odometer Reading (mi)	115
Odometer Reading (km)	185
Dealer	Glendale Nissan
Transmission	CVT
Final Drive	AWD
Type / No. of Cylinders	V6
Engine Displacement (L)	3.5
Engine Placement	Transverse
Roof Rack	No
Sunroof / T-Top	No
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	Yes
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?

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co., Ltd.
Date of Manufacture	Sep-10

GVWR (kg)	2397
GAWR Front (kg)	1249
GAWR Rear (kg)	1170

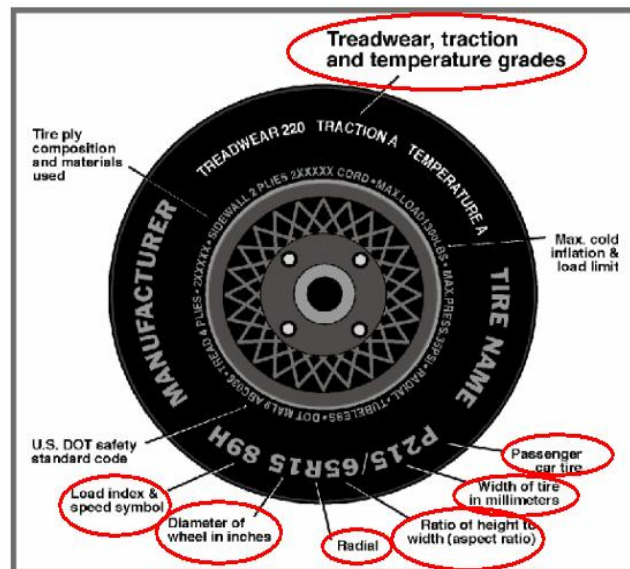
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				408.0
Cargo Weight (RCLW) (kg)				67.8

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2011 Nissan Murano S AWD 5-Door MPV	NHTSA No.:	MB5208
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	12/16/10



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	230	230
Recommended Tire Size	P235/65R18	P235/65R18
Tire Size on Vehicle	P235/65R18	P235/65R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Dueler H/T 687	Dueler H/T 687
Treadwear	300	300
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1Nylon	2 Polyester, 2 Steel, 1Nylon
Load Index / Speed Symbol	104T	104T
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	EJVK JKN 3610	EJVK JKN 3610
DOT Safety Code Right	EJVK JKN 3610	EJVK JKN 3610

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

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	531.0	388.5		584.5	449.5	
Right	kg	523.0	355.5		525.5	440.0	
Ratio	%	58.6%	41.4%	100.0%	55.5%	44.5%	100.0%
Total	kg	1054.0	744.0	1798.0	1110.0	889.5	1999.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1798.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	67.8	C
Calculated Vehicle Target Weightt (TVTW)	kg	2006.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	856	856	873	877	1169
As Tested	mm	838	841	851	857	1256
Post-Test	mm	868	842	856	828	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2824
Total Vehicle Length at Left Side	mm	4048
Total Vehicle Length at Centerline	mm	4830
Total Vehicle Length at Right Side	mm	4048
Weight of Ballast in Cargo Area	kg	87.0
Weight of Vehicle Components Removed	kg	51.0
Amount of Stoddard Solvent in Fuel Tank	L	75.7

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Side Mirrors (3.5 kg), Rear Bumper (6.0 kg), Spare Tire (20.5 kg), Tools (4.5 kg), Cargo Lining (14.0 kg), Cargo Mat (2.5 kg)

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

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length	4830	4460	-370
2	Total Width	1885	2080	195
3	Bumper Top Height	723	709	-14
4	Bumper Bottom Height	542	523	-19
5	Longitudinal Member Top Height	620	695	75
6	Distance Between Longitudinal Members	930	990	60
7	Longitudinal Member Width	70	95	25
8	Engine Top Height	943	893	-50
9	Engine Bottom Height	232	243	11
10	Engine and Gearbox Width	515	515	0
11	Front Bumper to Engine Distance	497	485	-12
12	Front Shock Absorber Fixing Height	983	1012	29
13	Bonnet Leading Edge Height	920	1007	87
14	Front Shock Absorber Fixing Width	1120	1190	70
15	Front Bumper to Front Axle Distance	1000	540	-460
16	Front Axle to A-Pillar Distance	545	495	-50
17	A-Pillar to B-Pillar Distance	1015	1017	2
18	B-Pillar to Rear Axle Distance	1170	1165	-5
19	B-Pillar to C-Pillar Distance	913	913	0
20	Roof Sill Bottom Height	1520	1548	28
21	Roof Sill Top Height	1640	1654	14
22	Floor Sill Bottom Height	317	333	16
23	Floor Sill Top Height	460	475	15

All measurements in millimeters.

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

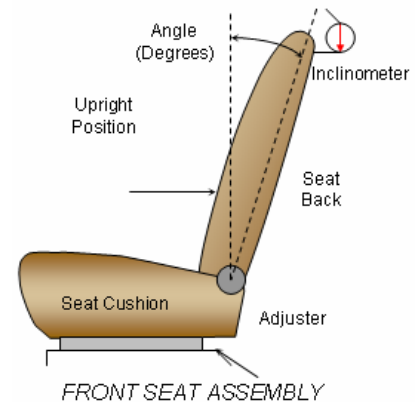
NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10

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.

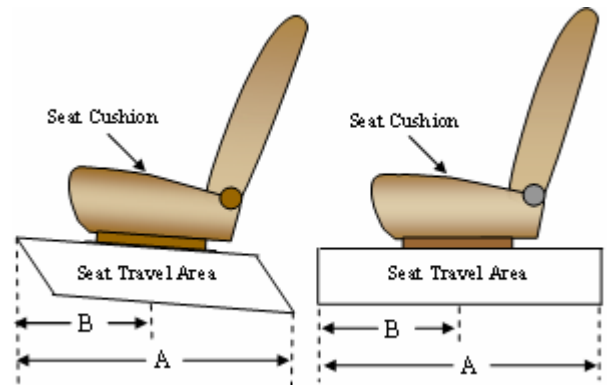


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	1.2
Passenger Seat Back Angle	0.2

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	288 mm	144 mm
Passenger Seat	240 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

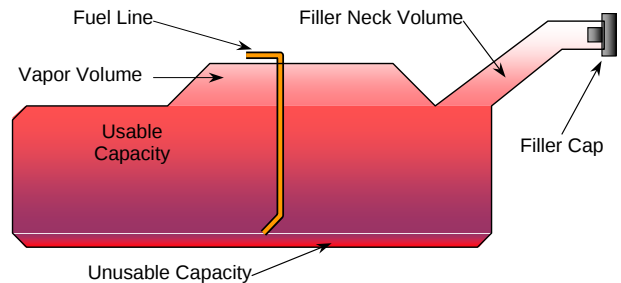
Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	81.38
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	74.87 to 76.5
Actual Amount of Stoddard Solvent Used	75.70
1/3 of Usable Capacity	27.13

FUEL PUMP

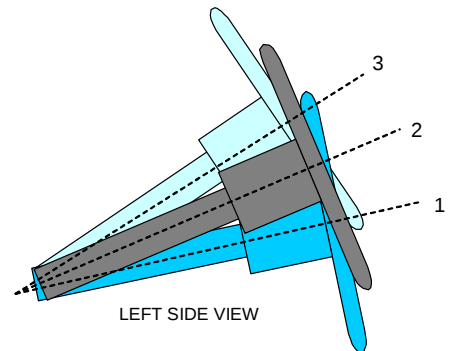
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate when the ignition is turned to the 'ON' position. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



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	16.6	0
Geometric Center Position, No. 2	24.1	20
Uppermost Position, No. 3	31.6	40
Telescoping Steering Wheel Travel		40
Test Position	24.1	20

DATA SHEET NO. 3

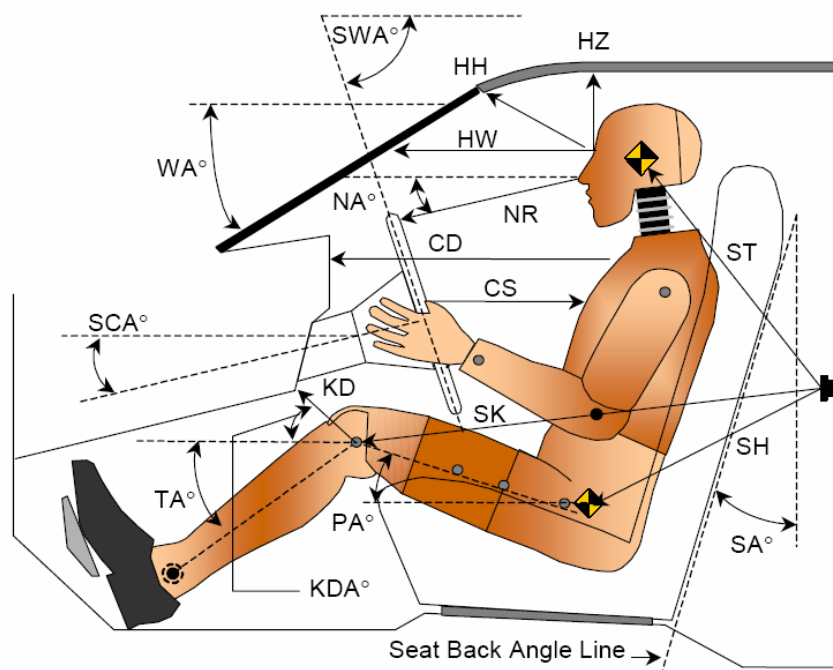
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10

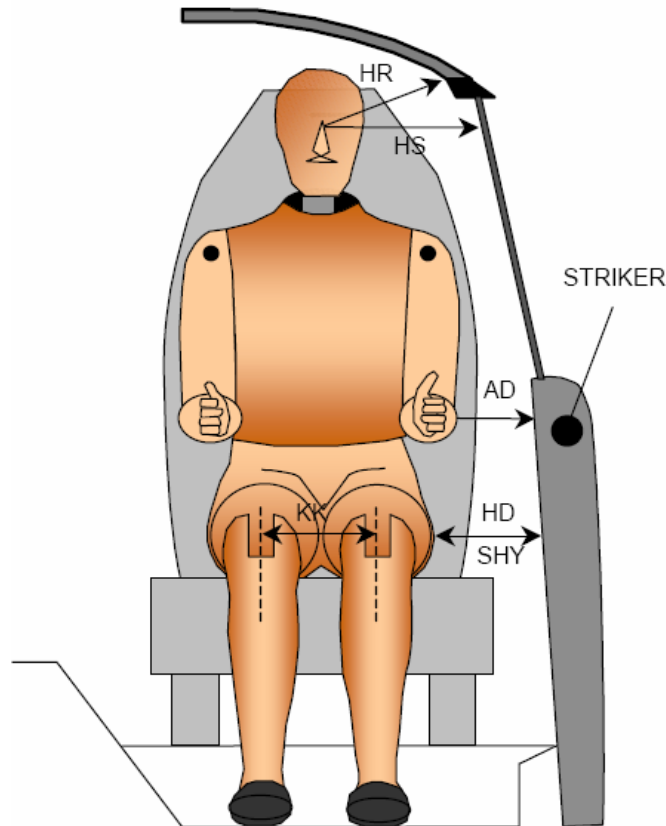


Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		22.9		
SWA°	Steering Wheel Angle		64.2		
SCA°	Steering Column Angle		25.8		
SA°	Seat Back Angle (On Headrest Post)		1.2		0.2
HZ	Head to Roof	205	90.0	254	90.0
HH	Head to Header	375	26.6	351	43.7
HW	Head to Windshield	750	0.0	770	0.0
HR	Head to Side Header	254	36.4	312	
NR	Nose to Rim	386	8.6	467	34.8
CD	Chest to Dash	534	10.5	407	12.1
CS	Chest to Steering Hub	265	4.1		
RA	Rim to Abdomen	164	0.0		
KDL	Left Knee to Dash	130	32.3	127	34.7
KDR	Right Knee to Dash	105	33.6	131	40.7
PA°	Pelvic Angle		23.1		21.3
TA°	Tibia Angle		55.5		59.2
SK	Striker to Knee	612	2.9	710	1.7
ST	Striker to Head	560	79.1	662	67.8
SH	Striker to H-Point	262	26.6	368	14.3

DUMMY LATERAL CLEARANCE DIMENSIONS

NHTSA No.: MB5208

Test Date: 12/16/10



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	61	94
HD	H-Point to Door	146	179
HR	Head to Side Header	375	312
HS	Head to Side Window	361	365
KK	Knee to Knee	349	208
SHY	Striker to H-Point (Y-Direction)	246	278
AA	Ankle to Ankle	345	180

DATA SHEET NO. 5

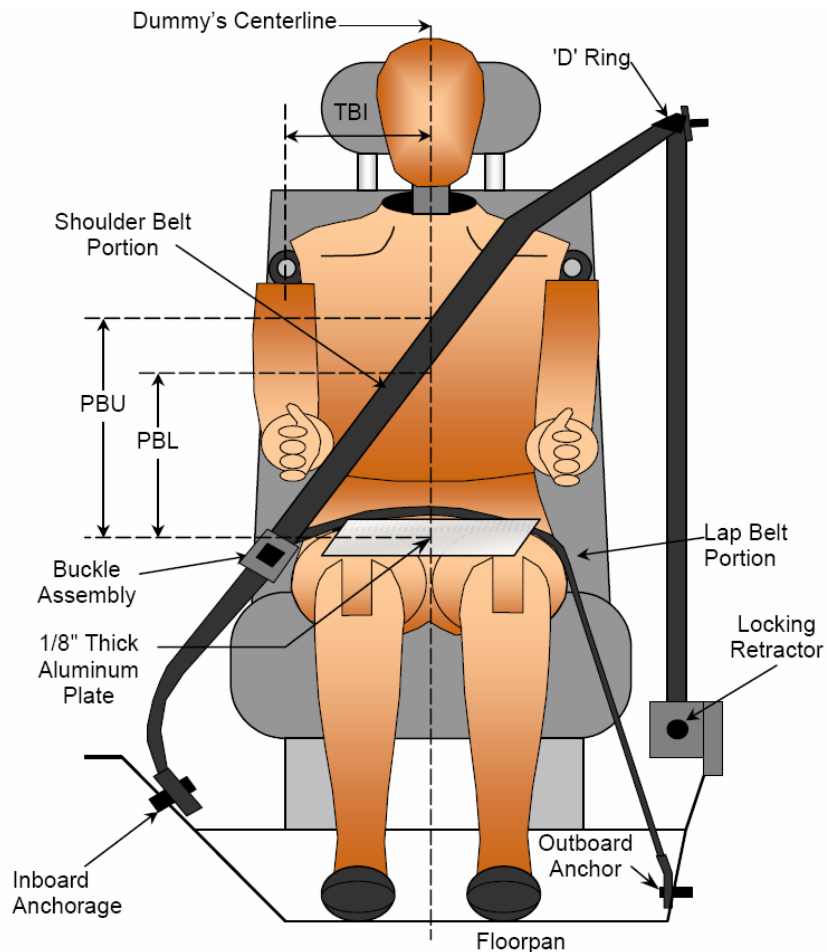
SEAT BELT POSITIONING DATA

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10



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	405	268
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	324	188

BELT LENGTH DATA

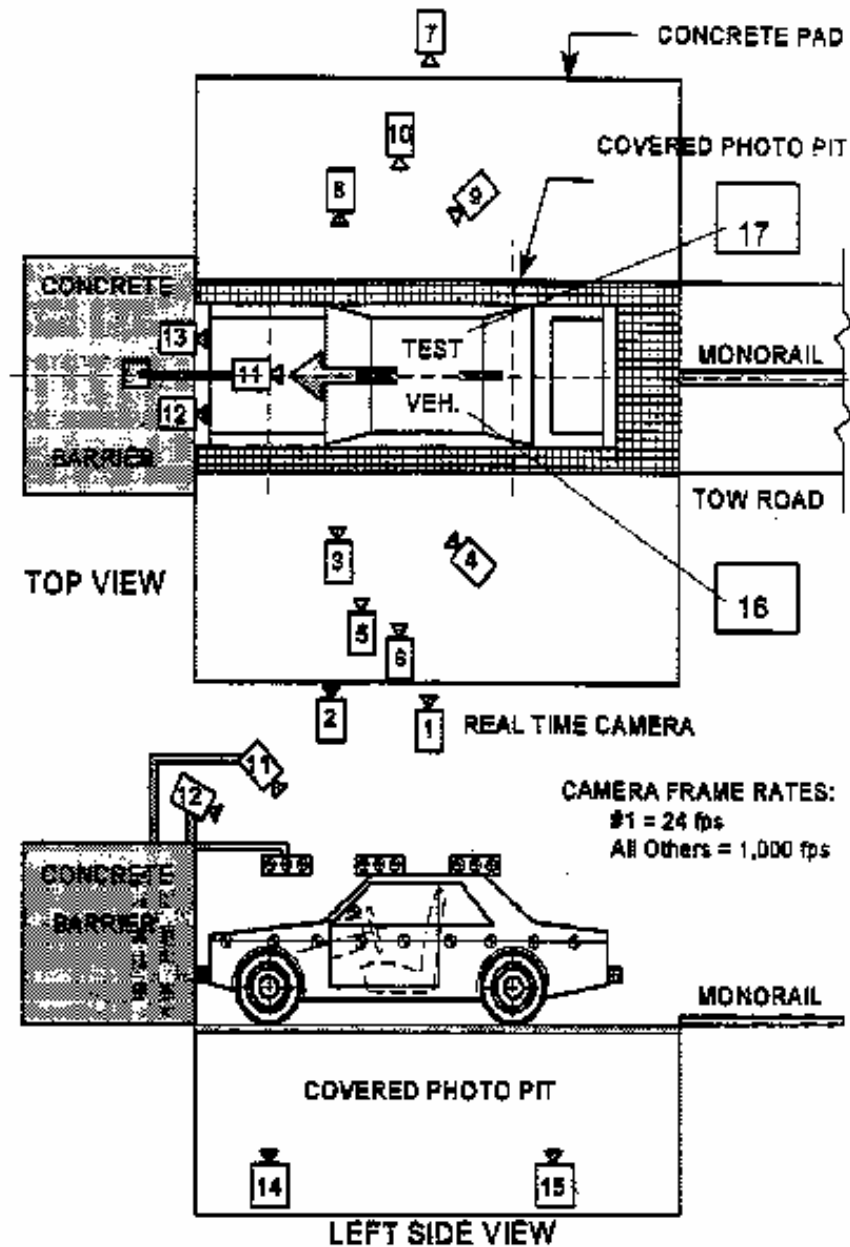
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	966	987
Lap Belt Length as Measured on ATD	mm	864	977
Remainder of Belt on Reel	mm	924	720
Total Belt Length for Continuous Webbing Systems	mm	2754	2684

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10

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	50	1000
4	Left Side B-Pillar	-6696	-10308	-3211	-17	11281	ZOOM	1000
5	Steering Column Upper	-1966	-10412	-3688	-13	9887	50	1000
6	Steering Column Lower	-1972	-10412	-3379	-13	9870	50	1000
7	Overall Right Side	-2336	7569	-1012	0	9417	24	1000
8	Right Side A-Pillar	-1733	7581	-1408	0	7789	50	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	-1320	-170	-1590	-22		12	1000
17	Passenger's On Board View	0	170	-1590	-22		12	1000

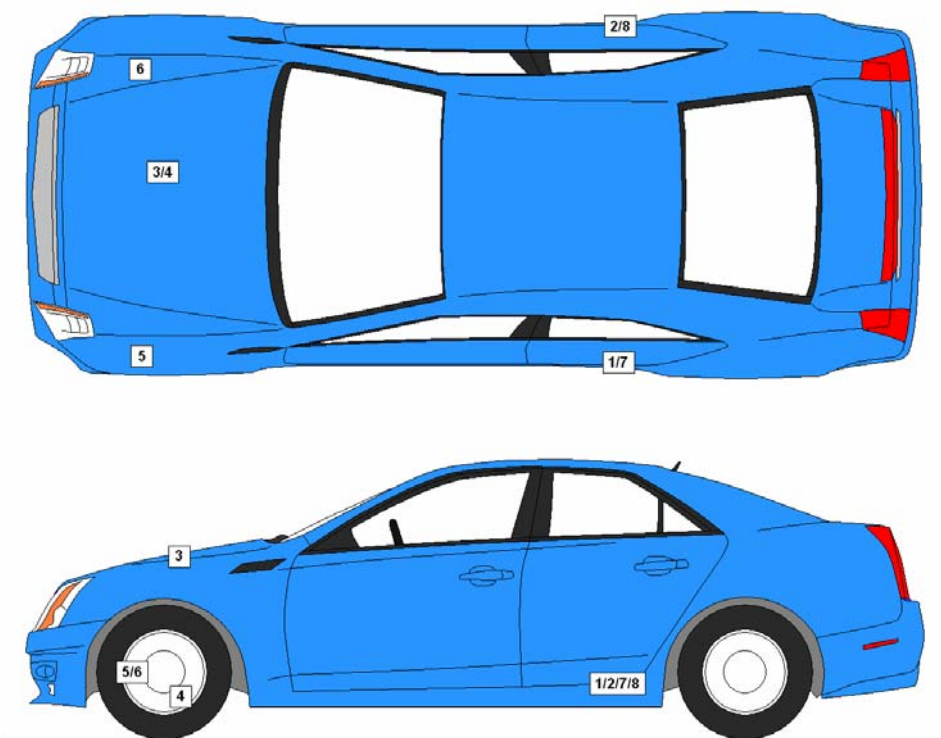
Coordinates:

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

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Cross Member X	1970	710	480
2	Right Rear Cross Member X	1970	-710	480
3	Engine Top X	3882	150	943
4	Engine Bottom X	4170	330	232
5	Left Brake Caliper X	3980	790	360
6	Right Brake Caliper X	3980	-790	360
7	Left Rear Cross Member Z	1970	710	480
8	Right Rear Cross Member Z	1970	-710	480

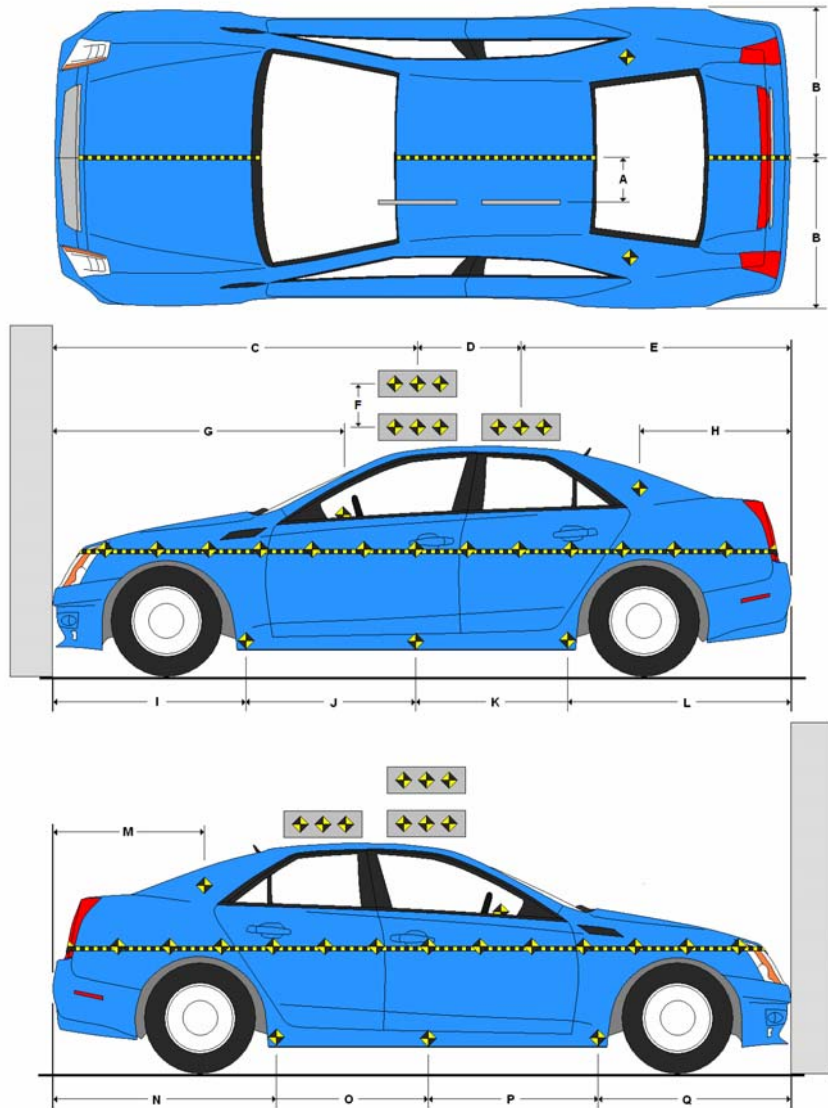
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

Item	Value
A	390
B	943
C	2358
D	608
E	1783
F	
G	1820
H	750
I	1550
J	866
K	866
L	1540
M	735
N	1538
O	869
P	869
Q	1547



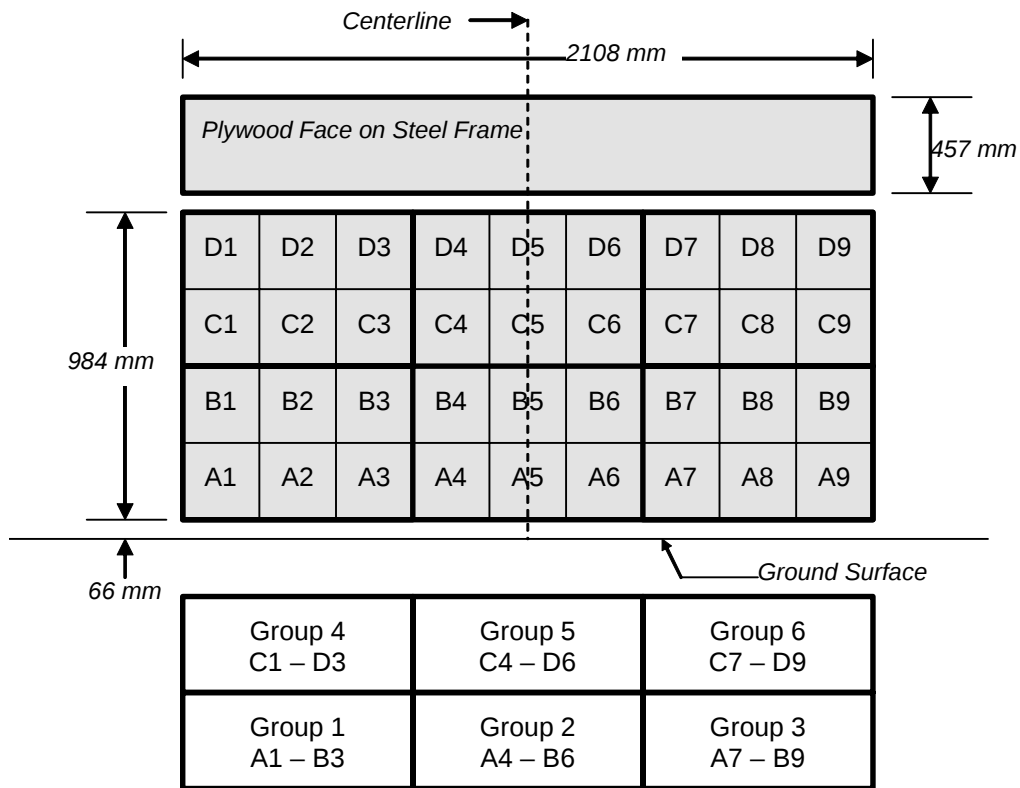
All measurements in millimeters.

DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

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 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

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 Nissan Murano S AWD 5-Door MPVNHTSA No.: MB5208Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 12/16/10**TEST DUMMY INFORMATION AND CONTACT**

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 034	P572O 5th Percentile Female ATD / 141
Head Contact	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Bolster	Glovebox
Right Knee Contact	Knee Bolster	Glovebox

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	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)	5 mm	3 mm
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	4131
Center	mm	3898
Right Side	mm	3943
Average	mm	3991

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

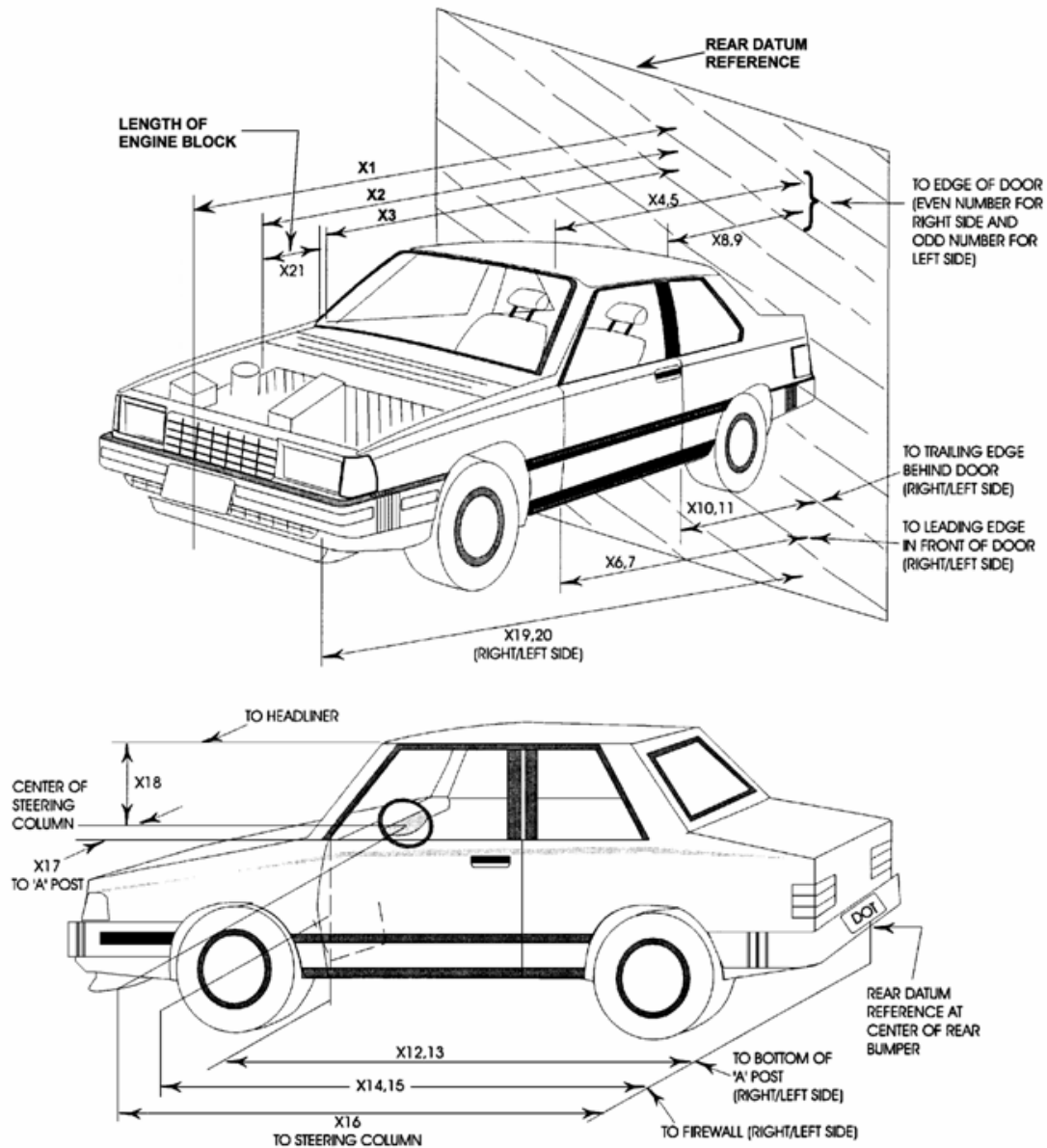
DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10

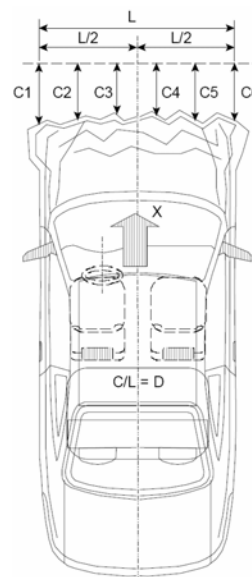


DATA SHEET NO. 12 ... (CONTINUED)**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4830	4460	-370
2	Rear Surface of Vehicle to Front of Engine	4333	4022	-311
3	RSOV to Firewall	3873	3755	-118
4	RSOV to Upper Leading Edge of Right Door	3295	3307	12
5	RSOV to Upper Leading Edge of Left Door	3301	3313	12
6	RSOV to Lower Leading Edge of Right Door	3280	3272	-8
7	RSOV to Lower Leading Edge of Left Door	3278	3273	-5
8	RSOV to Upper Trailing Edge of Right Door	2182	2197	15
9	RSOV to Upper Trailing Edge of Left Door	2184	2200	16
10	RSOV to Lower Trailing Edge of Right Door	2183	2182	-1
11	RSOV to Lower Trailing Edge of Left Door	2180	2182	2
12	RSOV to Bottom of A-Pillar of Right Side	3200	3230	30
13	RSOV to Bottom of A-Pillar Left Side	3282	3298	16
14	RSOV to Firewall, Right Side	3875	3750	-125
15	RSOV to Firewall, Left Side	3873	3865	-8
16	RSOV to Steering Column	2800	2785	-15
17	Center of Steering Column to A-Pillar	430	445	15
18	Center of Steering Column to Headliner	435	440	5
19	RSOV to Right Side of Front Bumper	4048	3850	-198
20	RSOV to Left Side of Front Bumper	4048	3985	-63
21	Length of Engine Block	590	590	0
RD	RSOV to Right Side of Dash Panel	3040	3060	20
CD	RSOV to Center of Dash Panel	2985	2970	-15
LD	RSOV to Left Side of Dash Panel	3054	3080	26

All measurements in millimeters.

DATA SHEET NO. 13**ACCIDENT INVESTIGATION DATA**Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPVNHTSA No.: MB5208Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 12/16/10**VEHICLE INFORMATION**VIN: JN8AZ1MW5BW153007Wheelbase (mm): 2824Vehicle Size Category: 5-Door MPVTest Weight (kg): 1999.5**ACCELEROMETER DATA**Accelerometer Locations: Left Rear CrossmemberCal. Procedure/Interval: Drop Test / 6 monthsIntegration Algorithm: NHTSA StandardImpact Velocity (km/h): 56.60Velocity Change (km/h): 65.8Time of Separation (msec): 76.8Linearity: Good**CRUSH PROFILE**Collision Deformation Classification: 12FDEW2Midpoint of Damage: Vehicle CenterlineDamage Region Length (mm): 1397Impact Mode: Full Frontal

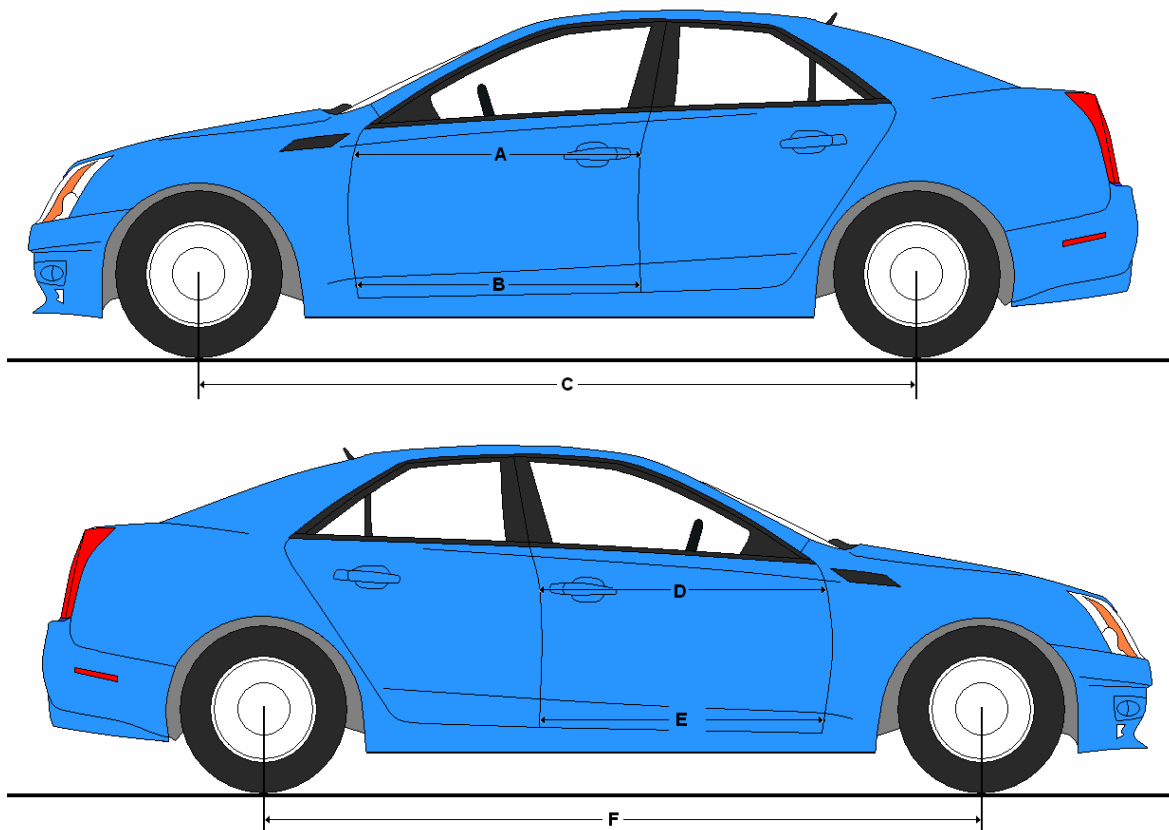
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	250	505	255
C2	Crush Zone 2 at Left Side	mm	65	475	410
C3	Crush Zone 3 at Left Side	mm	12	385	373
C4	Crush Zone 4 at Right Side	mm	12	330	318
C5	Crush Zone 5 at Right Side	mm	65	335	270
C6	Crush Zone 6 at Right Side	mm	250	470	220
L	C1 to C6	mm	1397		

DATA SHEET NO. 14**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPVNHTSA No.: MB5208Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 12/16/10**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1018	1018	0
B	Left Side Lower	mm	918	913	5
D	Right Side Upper	mm	1028	1023	5
E	Right Side Lower	mm	907	908	-1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2824	2777	47
F	Right Side Wheelbase	mm	2824	2760	64



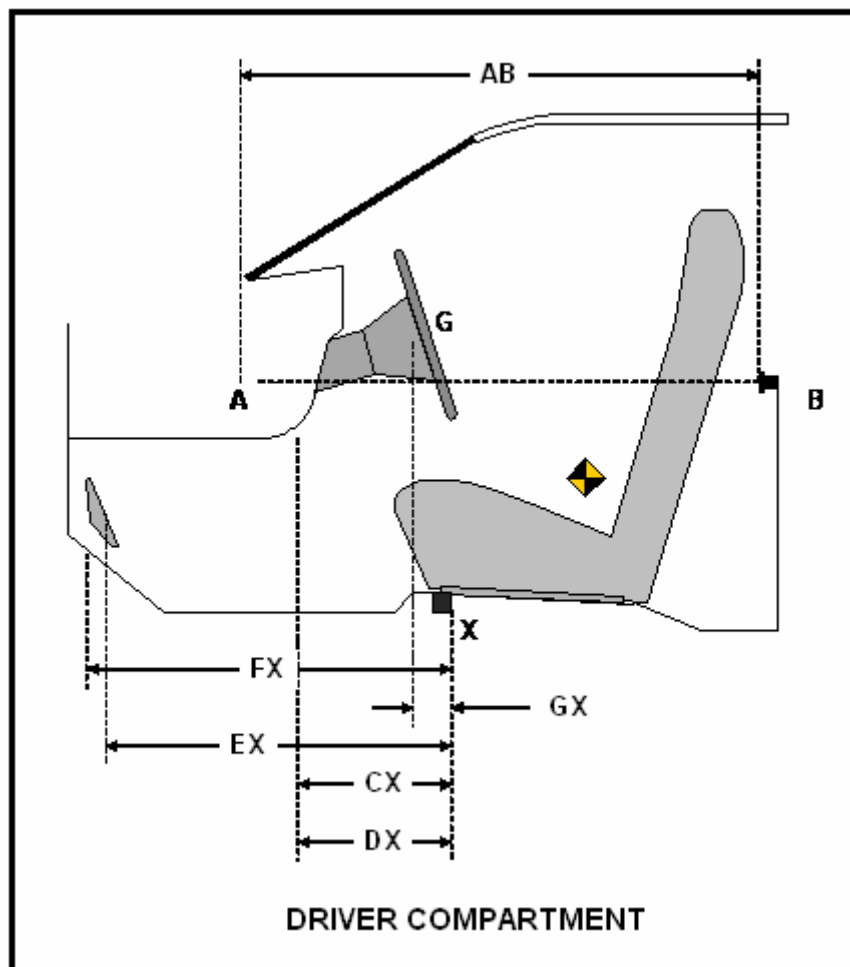
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

DRIVER COMPARTMENT INTRUSION

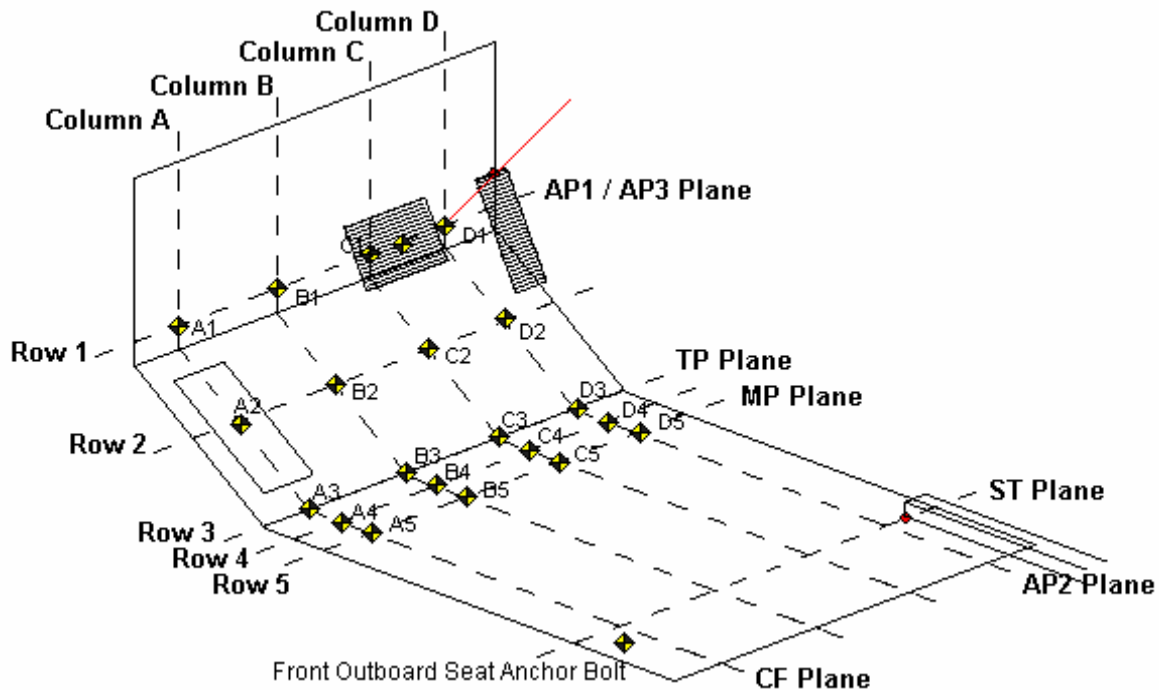
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	891	888	3
CX	Left Knee Bolster to X	mm	280	290	-10
DX	Right Knee Bolster to X	mm	310	330	-20
EX	Brake Pedal to X	mm	580	440	140
FX	Foot Rest to X	mm	560	640	-80
GX	Center of Steering Wheel Hub to X	mm	85	35	50

X = Front of Seat Track (Stationary)



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

Test Vehicle:	2011 Nissan Murano S AWD 5-Door MPV	NHTSA No.:	MB5208
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	12/16/10



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 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	703	734	728	749	677	694	689	732	-26	-40	-39	-17
2	679	657	675	679	669	642	668	673	-10	-15	-7	-6
3	581	577	587	591	576	570	581	584	-5	-7	-6	-7
4	471	471	482	489	466	465	476	482	-5	-6	-6	-7
5	366	366	374	376	361	361	367	369	-5	-5	-7	-7

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-80	-171	-261	-450	-85	-186	-274	-456	-5	-15	-13	-6
2	-80	-169	-261	-454	-84	-174	-267	-456	-4	-5	-6	-2
3	-82	-173	-264	-450	-86	-180	-267	-453	-4	-7	-3	-3
4	-85	-176	-265	-450	-87	-180	-268	-453	-2	-4	-3	-3
5	-84	-176	-265	-445	-87	-180	-267	-448	-3	-4	-2	-3

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	97	85	81	67	91	98	83	52	-6	13	2	-15
2	-9	13	-6	-9	-12	7	-12	-24	-3	-6	-6	-15
3	-66	-31	-60	-63	-76	-39	-68	-76	-10	-8	-8	-13
4	-75	-41	-69	-70	-80	-48	-76	-78	-5	-7	-7	-8
5	-73	-42	-71	-69	-73	-47	-76	-74	0	-5	-5	-5

All measurements in millimeters

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

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	764	754	742	709	654	656	618	616	-110	-98	-124	-93
2	692	689	668	680	631	626	598	619	-61	-63	-70	-61
3	585	585	575	582	529	528	519	526	-56	-57	-56	-56
4	476	474	466	470	419	416	409	414	-57	-58	-57	-56
5	361	365	364	366	305	310	309	309	-56	-55	-55	-57

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	432	256	168	70	452	290	217	92	20	34	49	22
2	442	263	170	69	459	289	199	90	17	26	29	21
3	442	264	166	69	463	288	191	95	21	24	25	26
4	444	264	165	76	465	289	189	100	21	25	24	24
5	439	265	167	79	461	289	191	102	22	24	24	23

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	96	90	99	110	76	78	120	89	-20	-12	21	-21
2	-4	0	19	0	-37	-11	13	-21	-33	-11	-6	-21
3	-67	-64	-34	-68	-89	-81	-51	-97	-22	-17	-17	-29
4	-74	-72	-44	-77	-82	-90	-65	-102	-8	-18	-21	-25
5	-71	-73	-45	-75	-76	-91	-66	-96	-5	-18	-21	-21

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

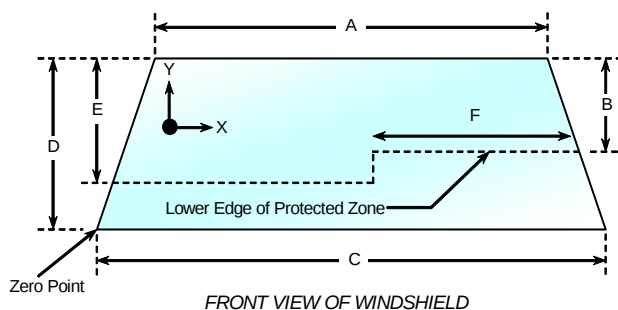
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber plastic and rubber molding sealed with rubber cement.

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: 21.0° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2252	2252	100.0%
Right Side	2252	1852	82.2%
Total	4504	4104	91.1%



Item	Units	Value
A	mm	1290
B	mm	635
C	mm	1332
D	mm	941
E	mm	626
F	mm	560

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 Nissan Murano S AWD 5-Door MPV NHTSA No.: MB5208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 12/16/10

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

Temperature at Time of Impact: 16.7° C Test Time: 1:00 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

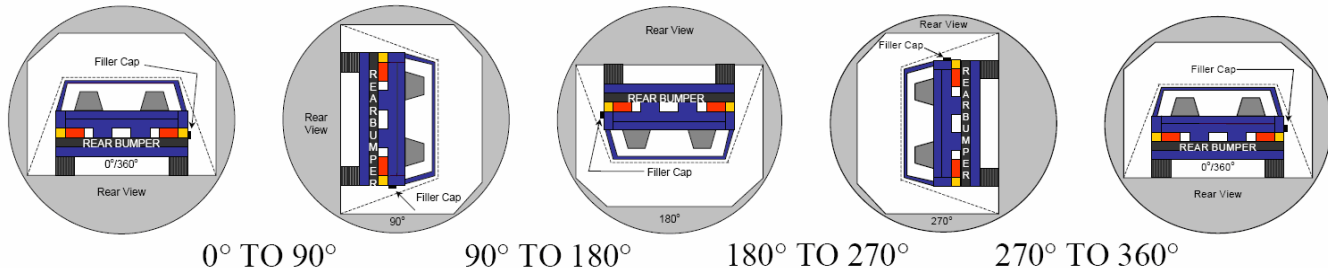
DATA SHEET NO. 17
FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10



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°	83	300	383
90° To 180°	81	305	386
180° To 270°	78	300	378
270° To 360°	79	300	379

FMVSS 301 SPILLAGE TABLE

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

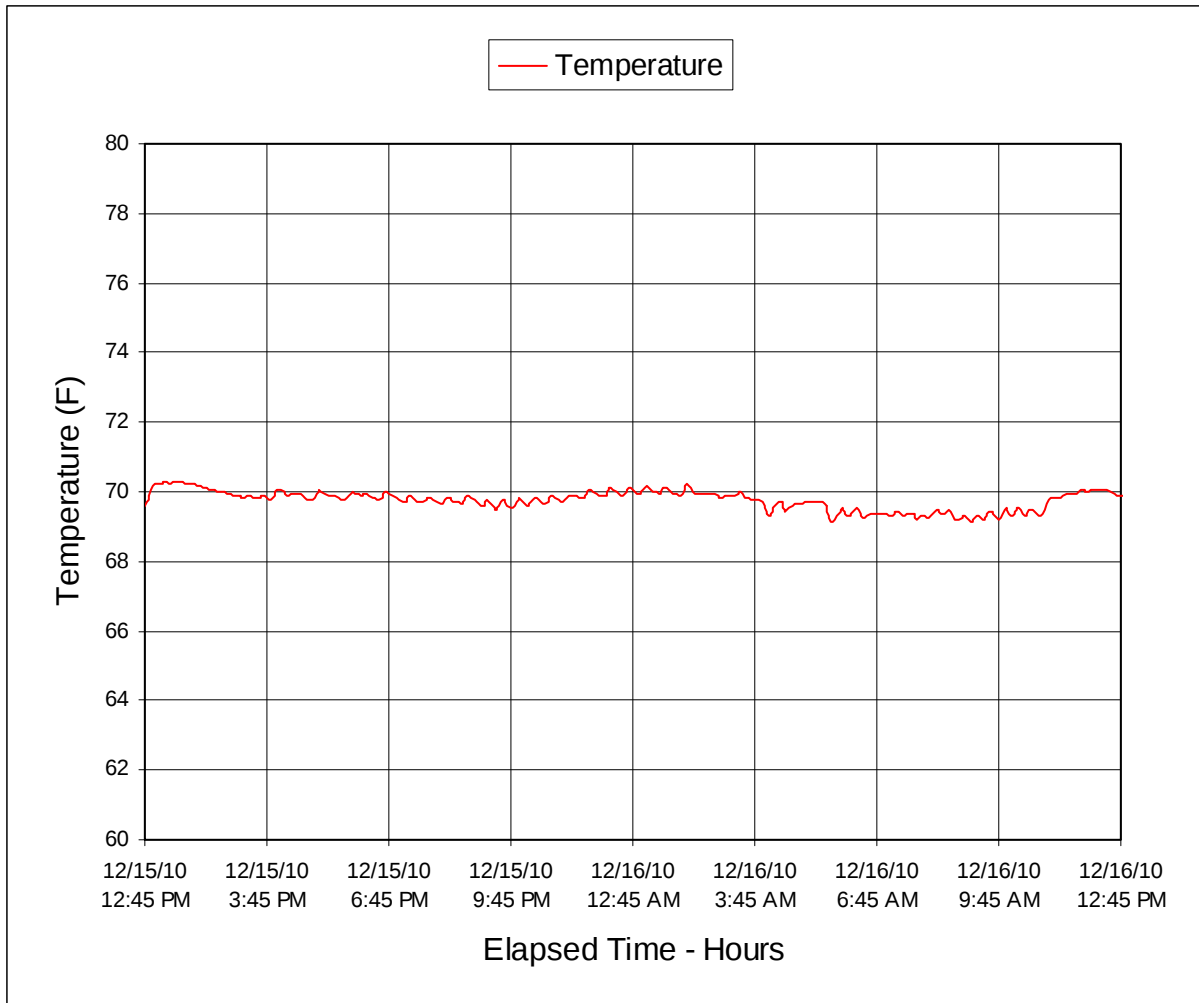
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV

NHTSA No.: MB5208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 12/16/10



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 Side Header	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

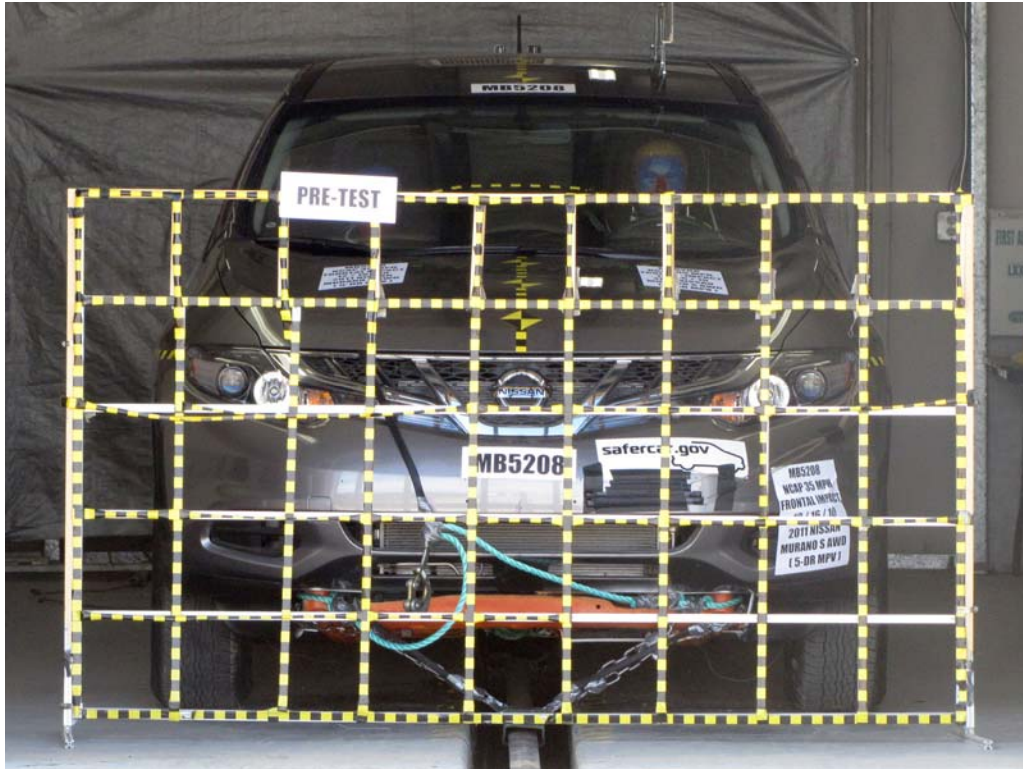


FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. Right Front $\frac{3}{4}$ View, As Received



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



FIGURE 7. Pre-Test Front View of Test Vehicle



FIGURE 8. Post-Test Front View of Test Vehicle



FIGURE 9. Pre-Test Left View of Test Vehicle

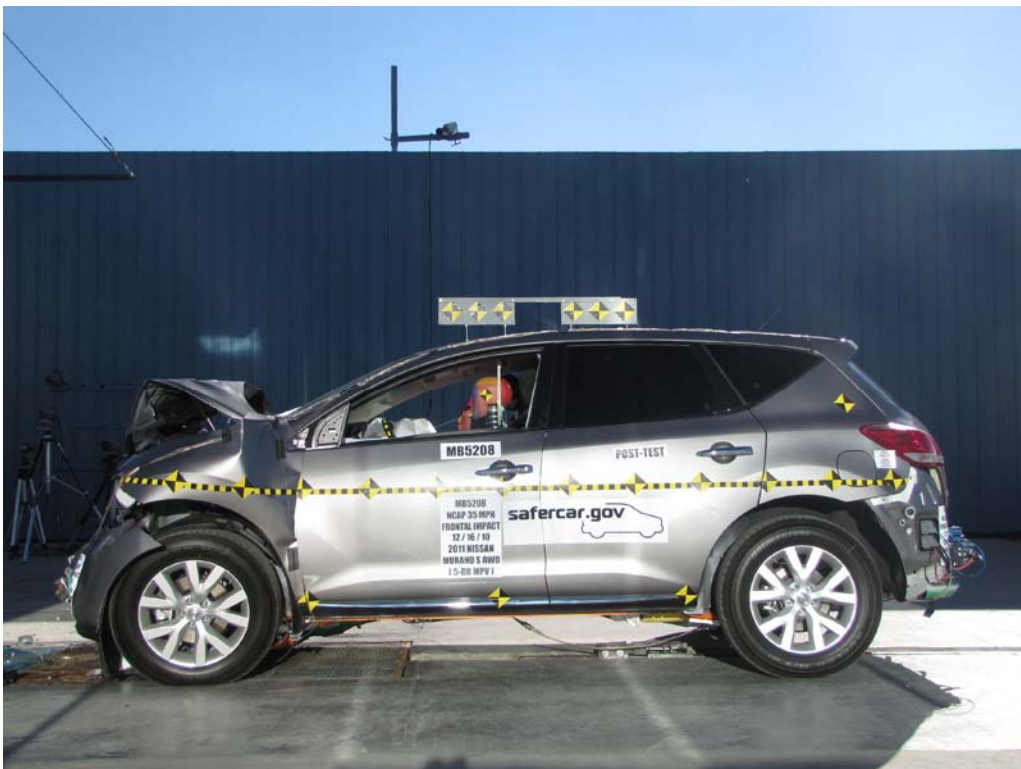


FIGURE 10. Post-Test Left View of Test Vehicle



FIGURE 11. Pre-Test Right View of Test Vehicle



FIGURE 12. Post-Test Right View of Test Vehicle



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



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



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



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

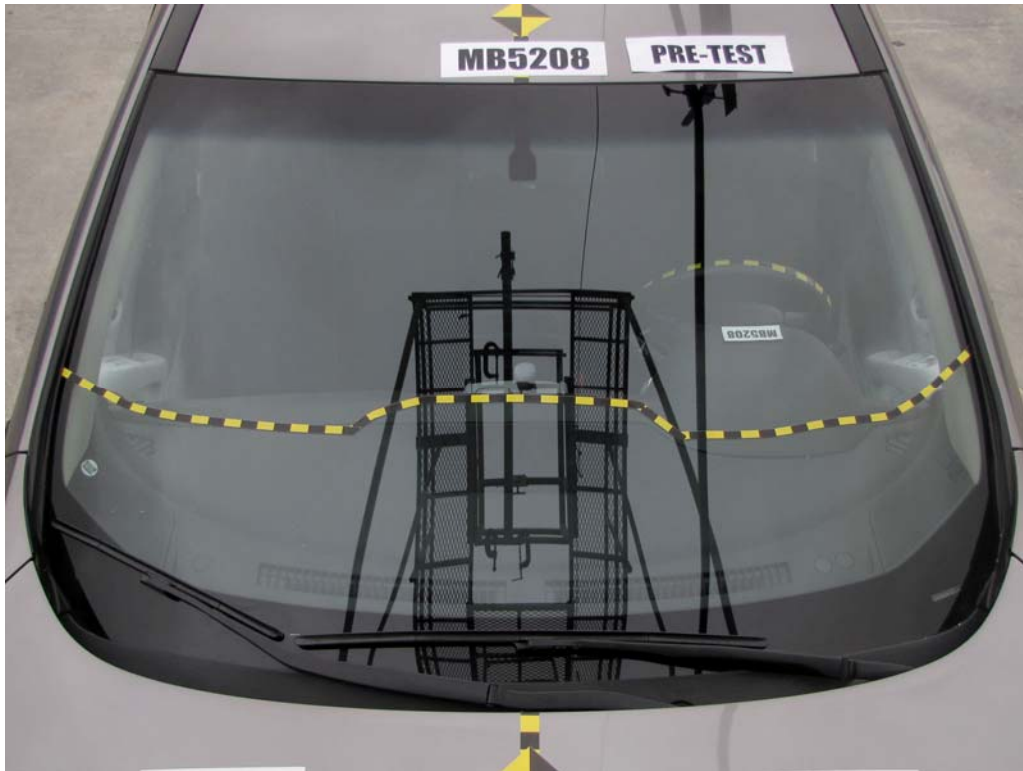


FIGURE 17. Pre-Test Windshield View

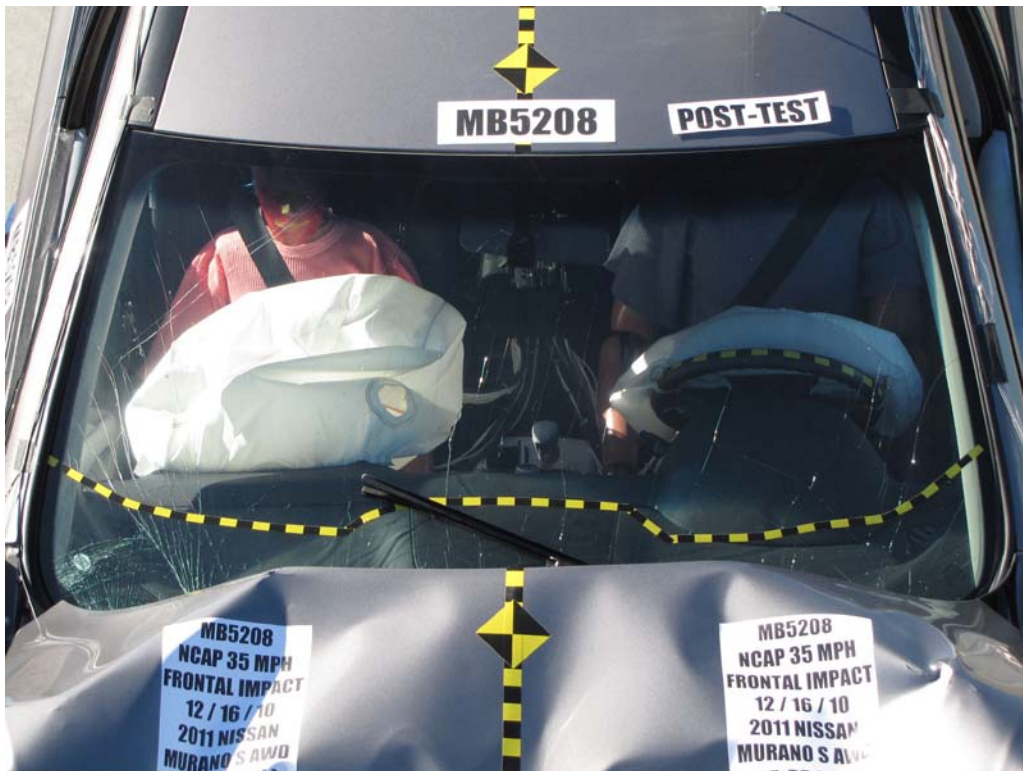


FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View



FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

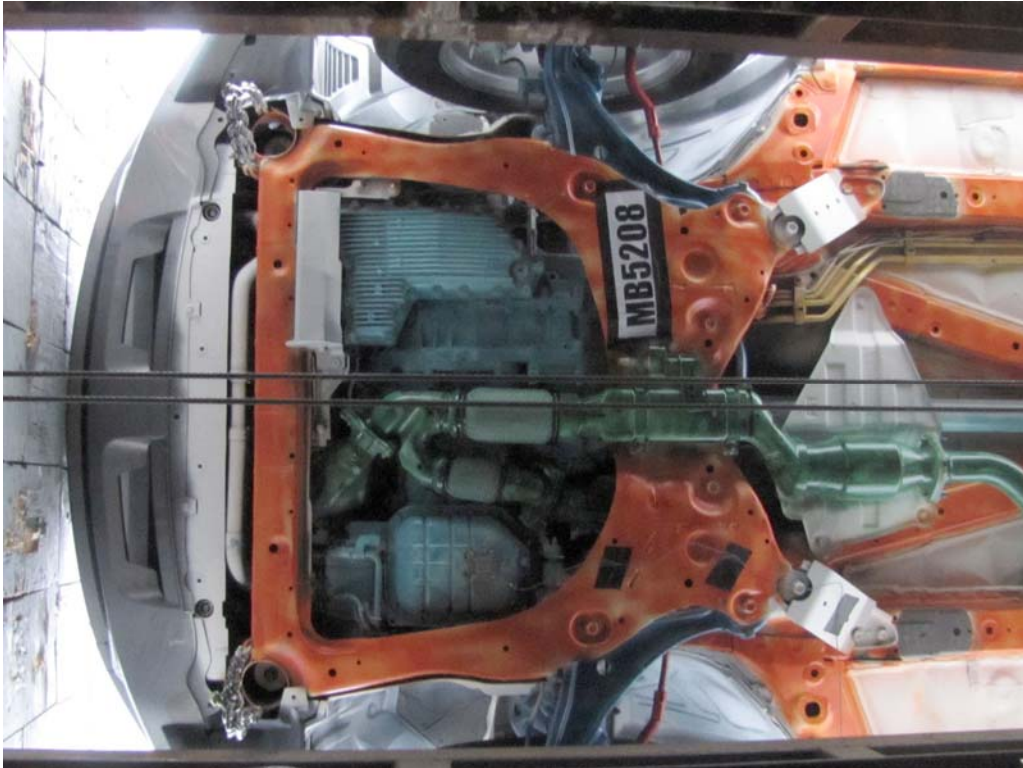


FIGURE 23. Pre-Test Front Underbody View

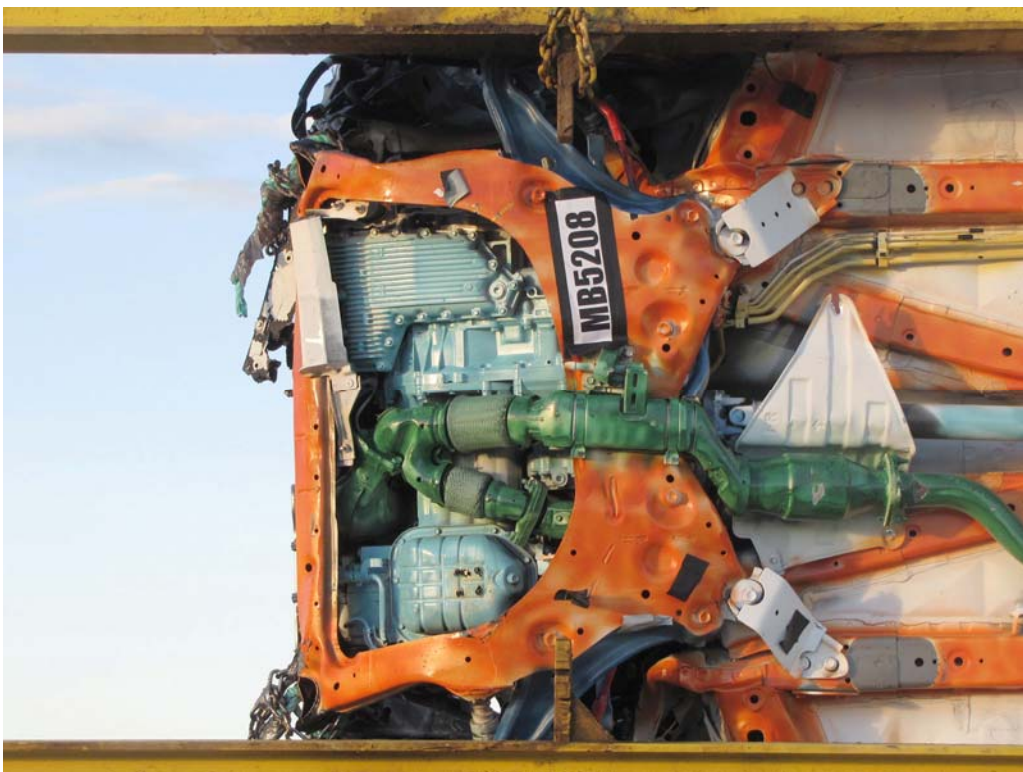


FIGURE 24. Post-Test Front Underbody View



FIGURE 25. Pre-Test Rear Underbody View

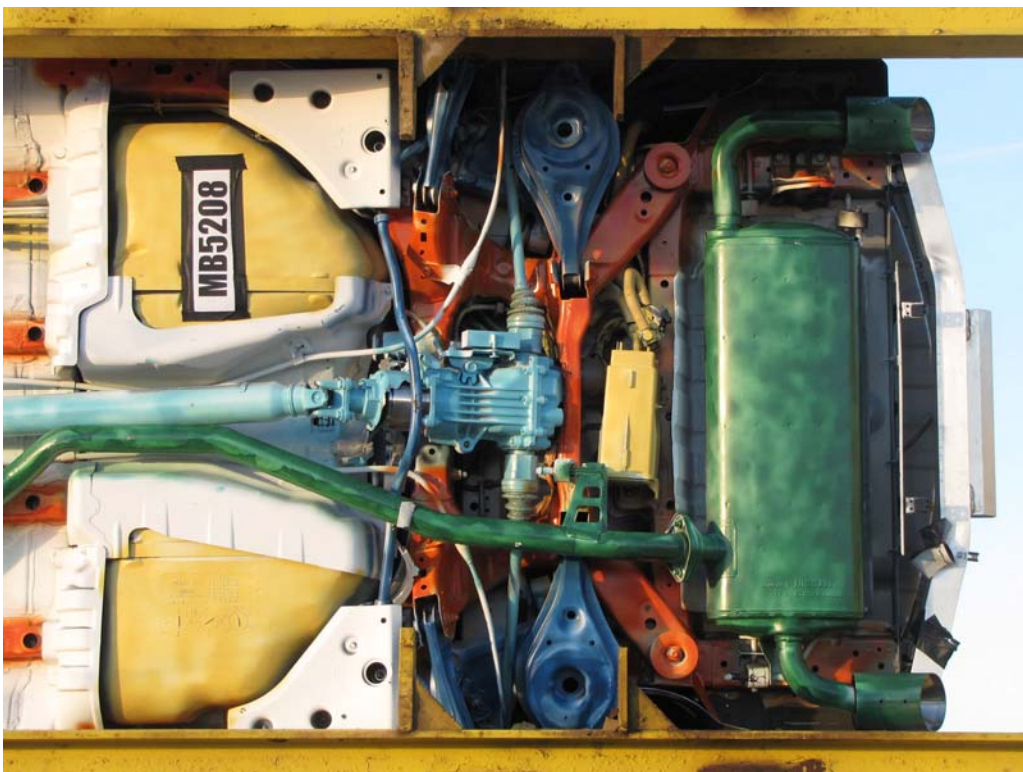


FIGURE 26. Post-Test Rear Underbody View



FIGURE 27. Pre-Test Dummy Cable Routing



FIGURE 28. Post-Test Dummy Cable Routing



FIGURE 29. Pre-Test Driver Dummy Front View



FIGURE 30. Post-Test Driver Dummy Front View



FIGURE 31. Pre-Test Driver Dummy Window View



FIGURE 32. Post-Test Driver Dummy Window View



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



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



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



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

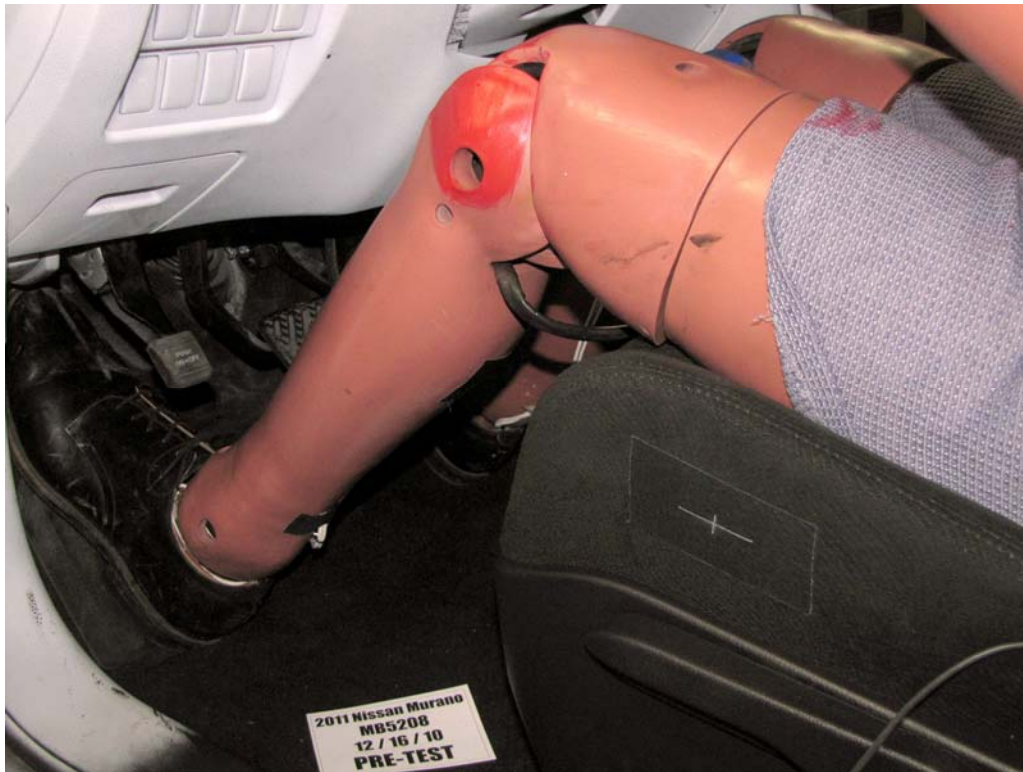


FIGURE 37. Pre-Test Driver Dummy Feet

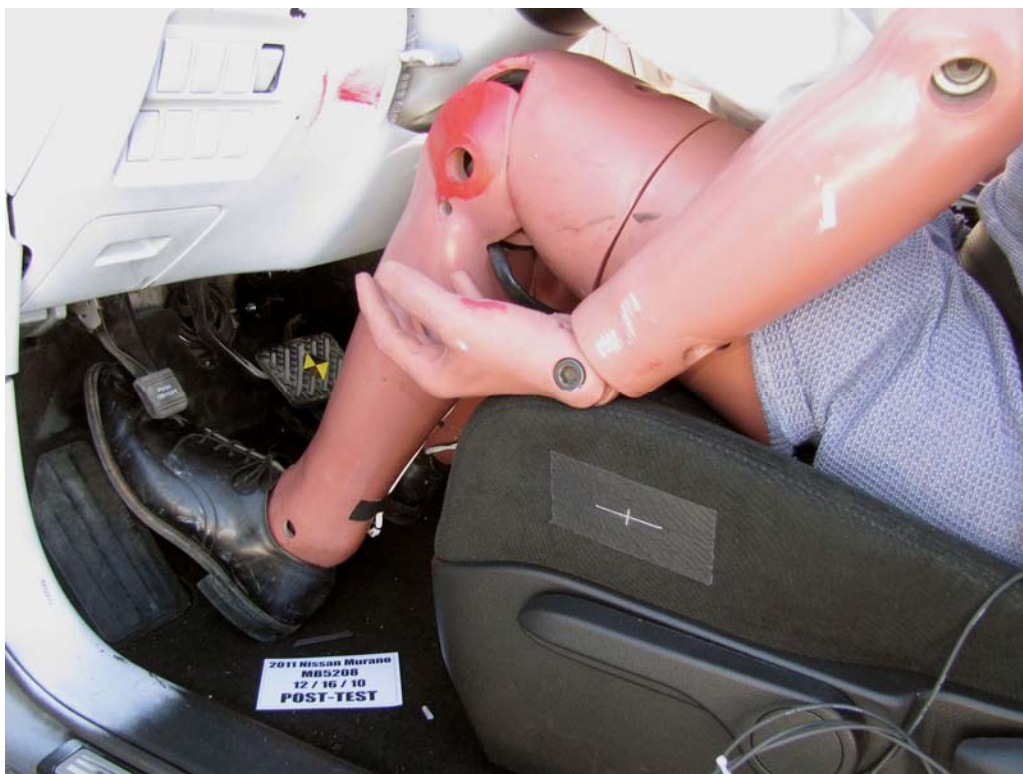


FIGURE 38. Post-Test Driver Dummy Feet



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



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



FIGURE 41. Pre-Test Driver's Side Floorpan



FIGURE 42. Post-Test Driver's Side Floorpan

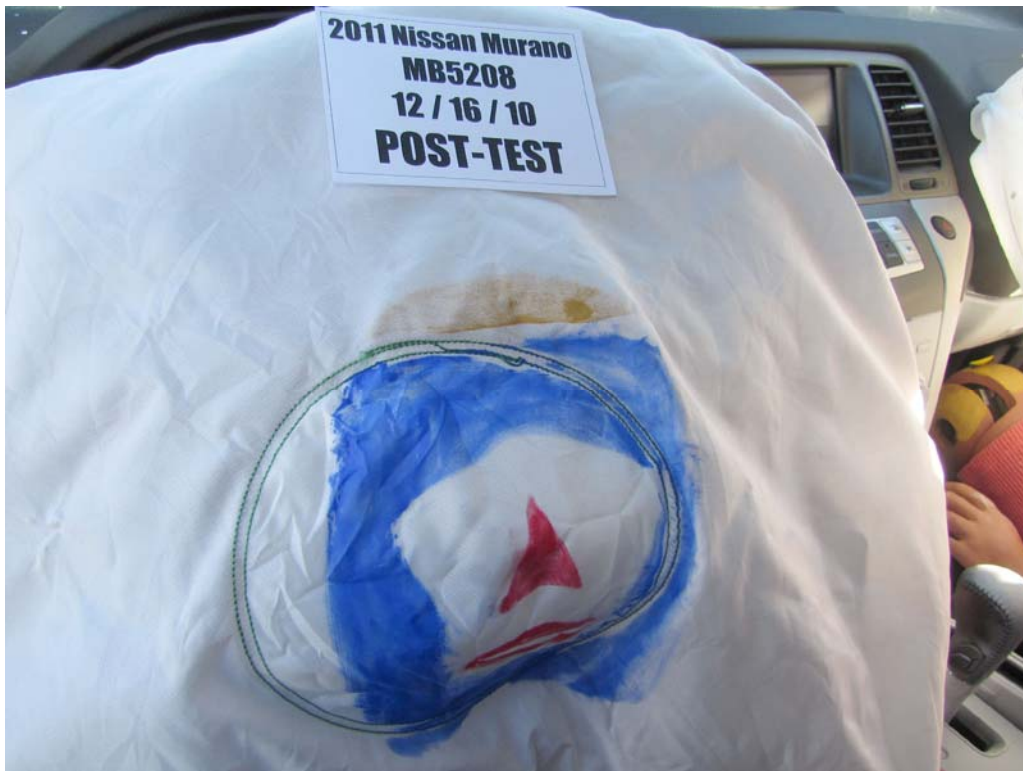


FIGURE 43. Post-Test Driver Dummy Contact With Airbag



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

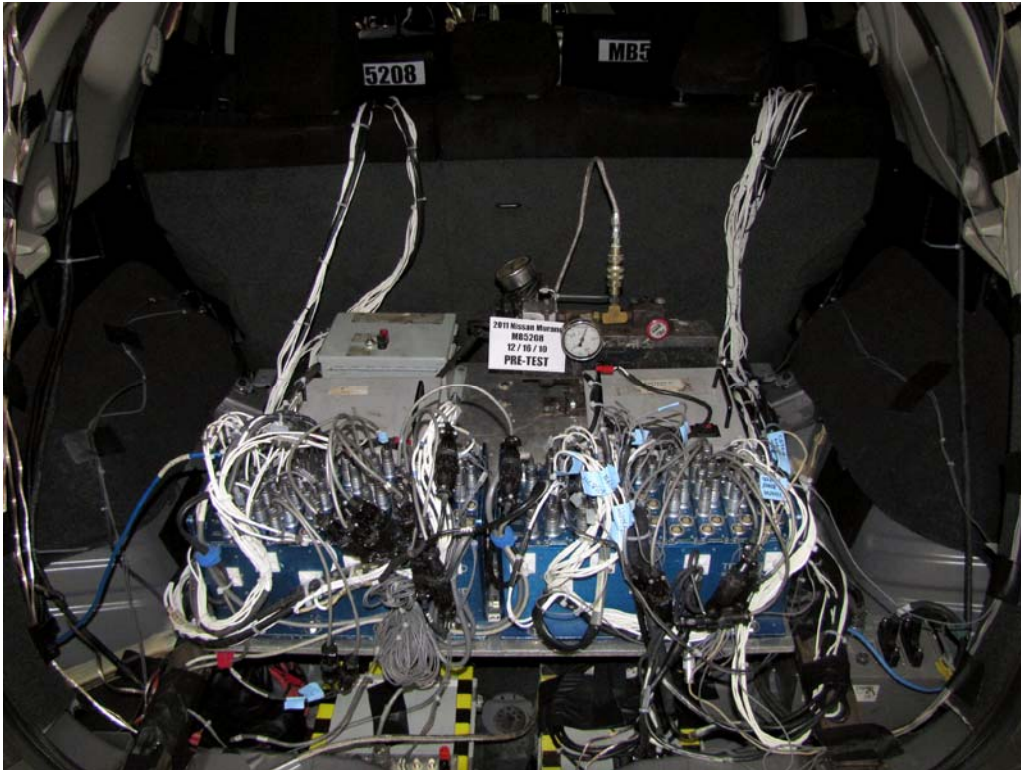


FIGURE 61. Pre-Test of Ballast Installed in Vehicle

Photograph Not Applicable
No Stoddard
Solvent Spillage

FIGURE 62. Post-Test Stoddard Solvent Spillage Location

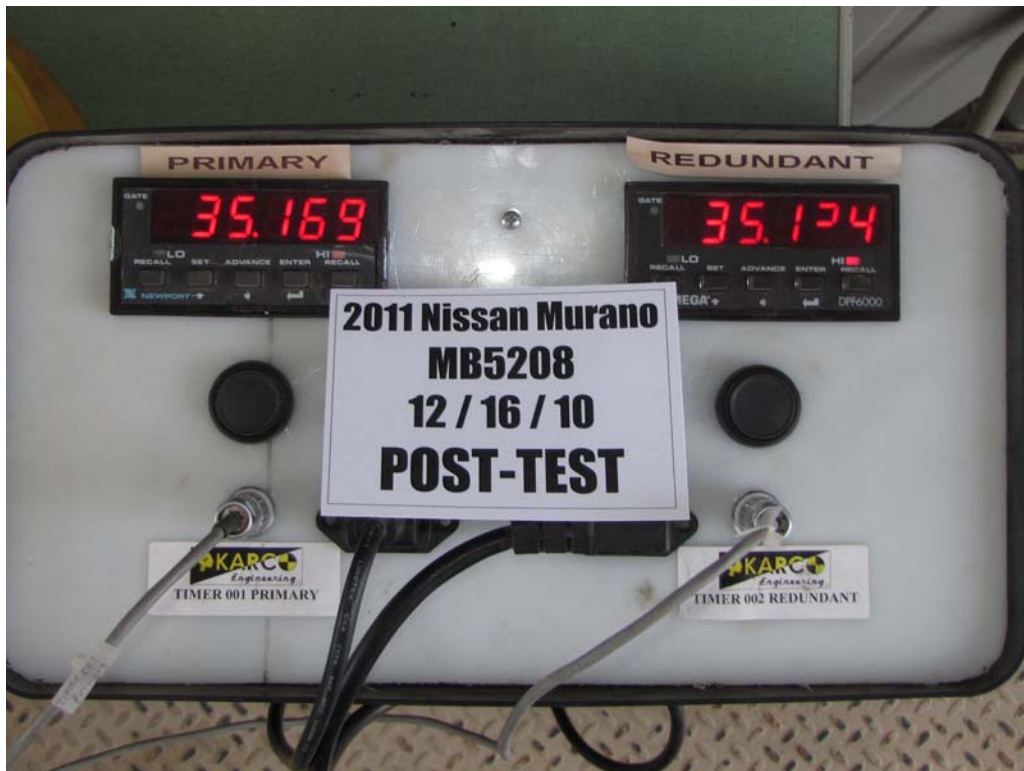


FIGURE 63. Post-Test Speed Trap Read Out



FIGURE 64. Vehicle at 0°on Static Rollover Device



FIGURE 65. Vehicle at 90°on Static Rollover Device

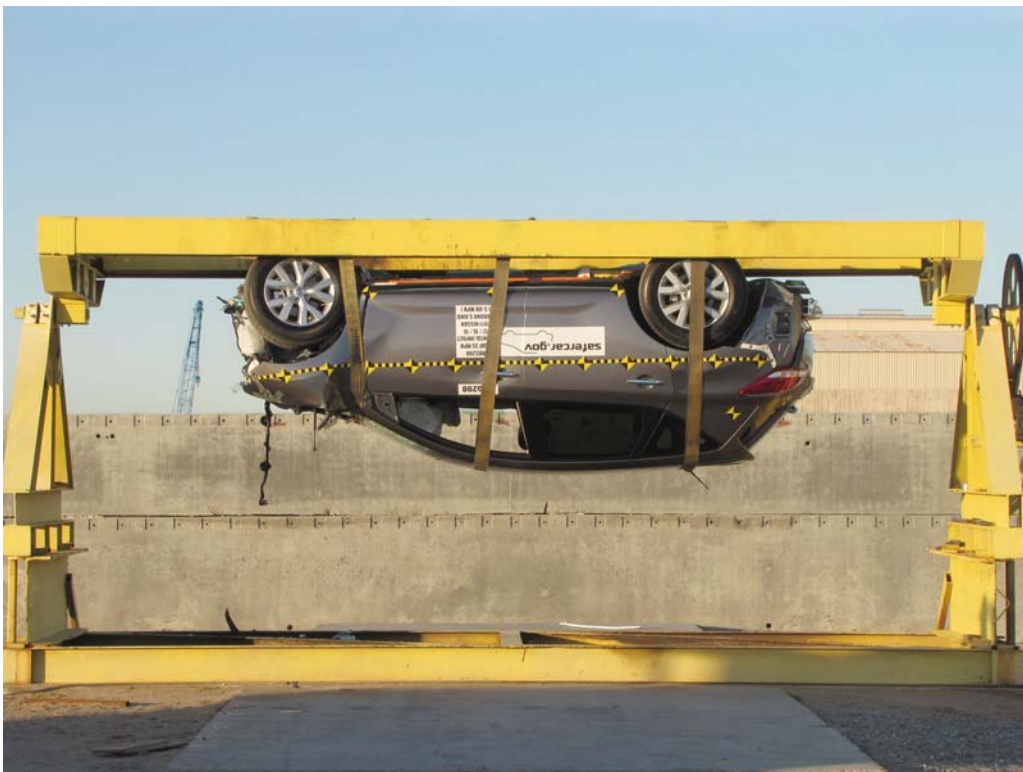


FIGURE 66. Vehicle at 180°on Static Rollover Device



FIGURE 67. Vehicle at 270°on Static Rollover Device

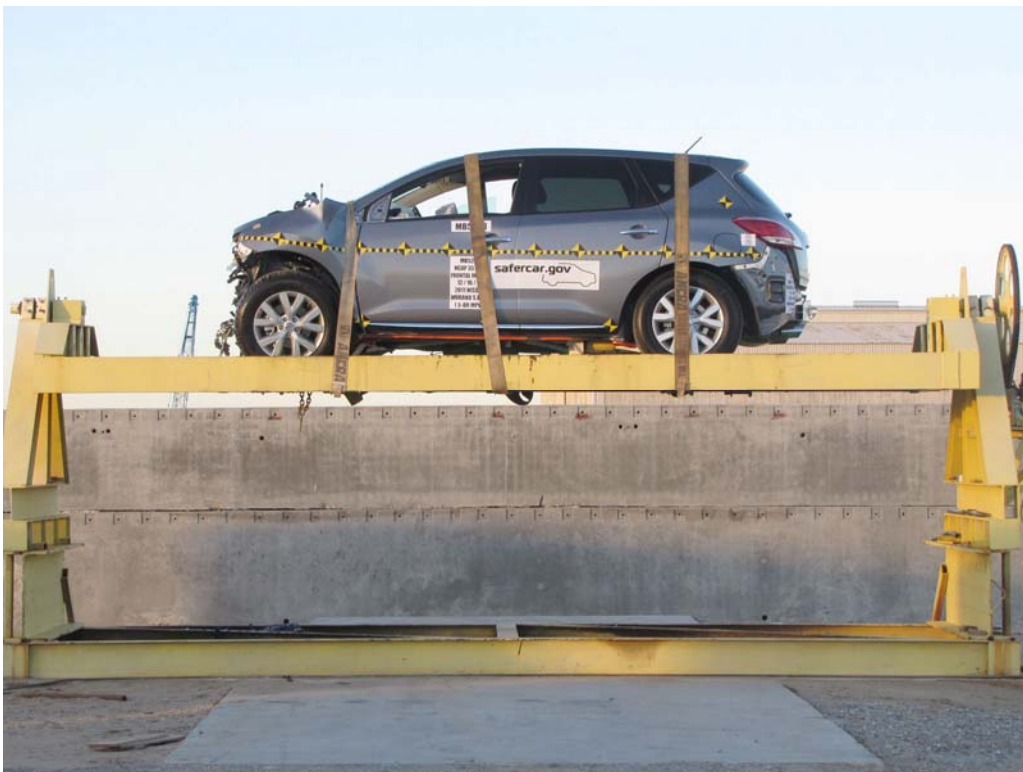


FIGURE 68. Vehicle at 360°on Static Rollover Device



FIGURE 69. Impact Photograph

2011 MURANO S AWD

The Premium Crafted Crossover

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE
201 HP 3.5 Liter DOHC V6 Engine
Continuously Variable Transmission
Vehicle Speed-Sensitive Power
Racks and Pinion Steering
Intelligent Xtronic CVTTM
4-Wheel Drive System
Front and Rear Stabilizer Bars
4-Wheel Independent Suspension
4-Wheel Power Ventilated Disc Brakes
18-inch Aluminum Alloy Wheels w/Center Caps
Temporary Use Spare Tire
PSS/ABS/ESC Air-Session Tires

SAFETY & SECURITY
Nissan Advanced Air Bag System (AABS)
Seat-Mounted Driver & Front
Passenger Side-Impact Supplemental
Air Bags
Rear Mounted Curtain Side-Impact
Supplemental Air Bags for Front & Rear
Seat Outboard Occupant Head Protection
w/Rollover Sensor
Active Head Restraints
3-Point ELVIAL[®] Seat Belts For All
Seating Positions (Driver ELR Only)
Front Seat Belts w/Retensioners
and Load Limiters
Seatbelts w/Height-Adjustable Upper Anchors
for Outboard Passengers
Lower Anchors and Tethers for Children
(LATCH)
Child Safety Rear Door Locks
Energy-Absorbing Steering Column
Zone Body Construction w/Front & Rear
Crumple Zones
High-Strength Side Door Guard Beams
4-Wheel Anti-Lock Braking System (ABS)
Vehicle Dynamic Control (VDC) w/
Traction Control System (TCS)
Electronic Brake Force Distribution (EBD)
and Brake Assist (BA)
Tire Pressure Monitoring System (TPMS)
Nissan Vehicle Immobilizer

COMFORT & CONVENIENCE
6-Way Manual Driver Seat w/Manual
Lumbar Support
4-Way Manual Front Passenger Seat
60/40 Split Fold-Flat Rear Seats
Cloth Seats
Aluminum Trim Accents

EXTERIOR
Halogen Headlights
LED Rear Tailights
Body-Colored Power Sideview Mirror
Dual Exhaust with Chrome Finishers
Body-Color Front and Rear Bumpers
Rear Privacy Glass
UV-Reducing Solar Glass

Options Included by Manufacturer
SPLASH GUARDS 120.00
REAR BUMPER PROTECTOR 100.00
FLOOR MATS & CARPETED 185.00
CARGO MAT

Manufacturer's Suggested Retail Base Price: \$30,100.00

Destination Charges: 800.00

Total* \$31,310.00

EPA Fuel Economy Estimates

CITY MPG **18**
Expected range for most drivers 14 to 22 MPG

Estimated Annual Fuel Cost **\$2,250**
Based on 15,000 miles at \$3.00 per gallon

HIGHWAY MPG **23**
Expected range for most drivers 19 to 27 MPG

Combined Fuel Economy
This Vehicle **20**
AT SUVs

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

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 ratings 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 (★★★★★), with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA).

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

This Vehicle qualifies for Nissan's **Security+Plus Vehicle Protection Plan**
The only service agreement backed by Nissan!
Ask your dealer for details, or call 1-800-NISSAN-1 for more information

DELIVERY

VEHICLE COLORS:
EXT: PLATINUM GRAPHIC
INT: BLACK

FINAL ASSEMBLY POINT:
LOS ANGELES

TRANSPORT METHOD:
TRUCK

DEALER:
GLENDALE NISSAN
727 S. BRAND BLVD.
GLENDALE CA 91204

VIN: JNB4Z1M45BW153007
EMS: 50 STATE EMISSIONS
MDL: 23211-153007 K51-G
OPT: B-810894C03L32

20101011232038RF3341

*Does not include dealer installed options and accessories, local taxes or license fees. This label has been applied pursuant to federal law. Do not remove prior to delivery to the ultimate purchaser.

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

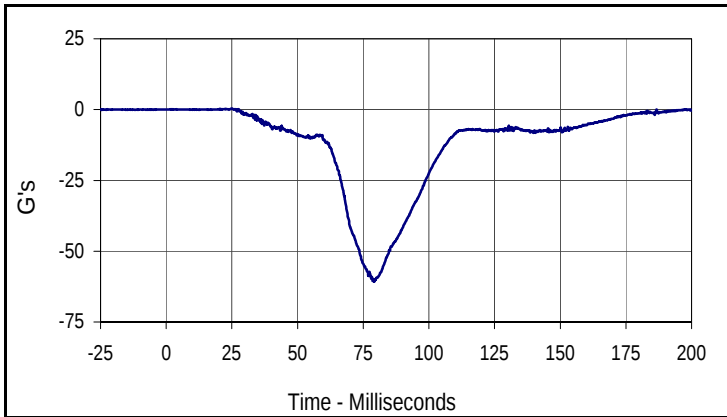
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant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

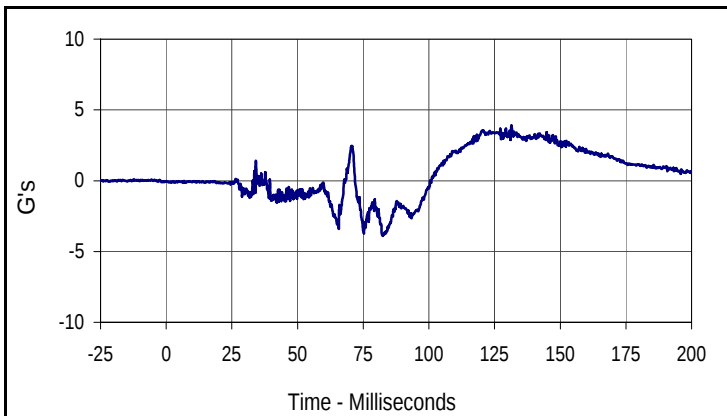
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

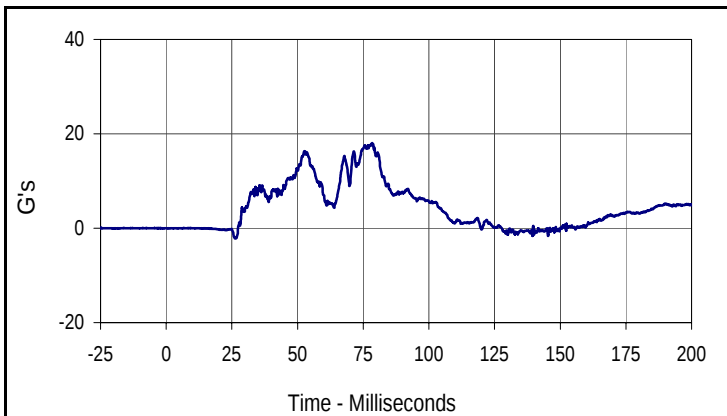
Test Date: 12/16/10
 NHTSA No.: MB5208



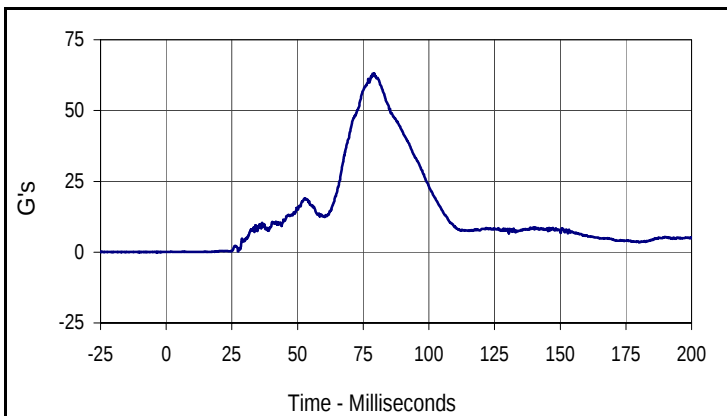
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
0.4	24.8	-60.7	79.2



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.9	131.4	-3.9	82.4



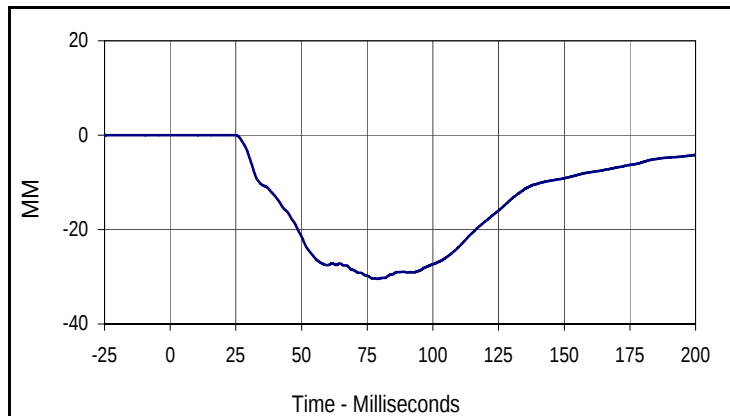
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
18.1	78.4	-2.2	26.4



Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
63.1	79.2	0.0	10.6

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

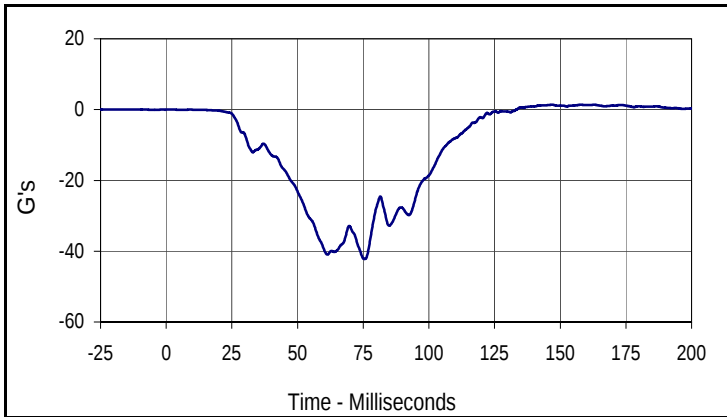
Test Date: 12/16/10
 NHTSA No.: MB5208



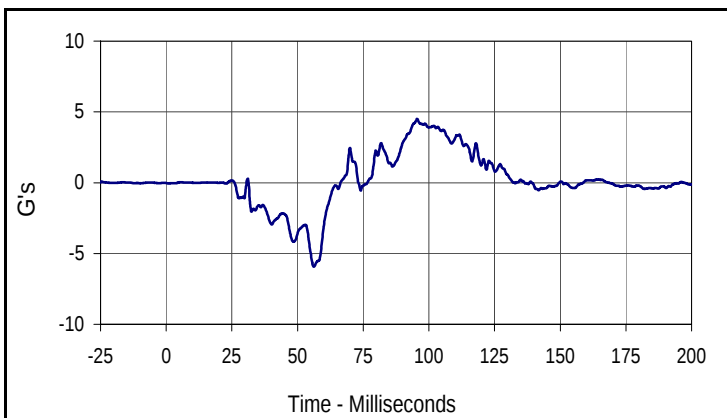
Curve Description			
Driver Chest Deflection			
CURNO	Type	SAE Class	Units
019	FIL	180	MM
Max	Time	Min	Time
0.0	2.1	-30.4	79.1

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

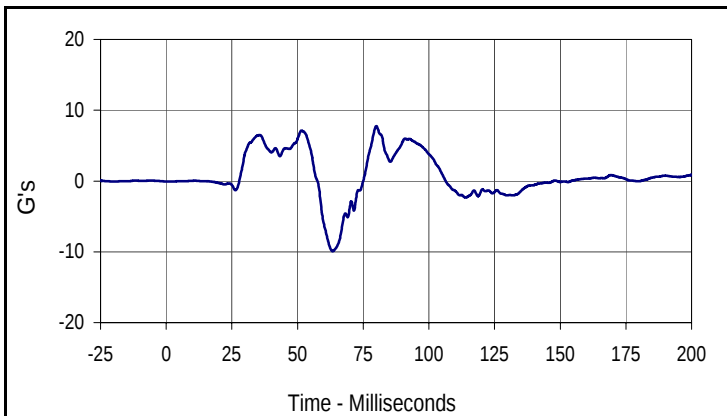
Test Date: 12/16/10
 NHTSA No.: MB5208



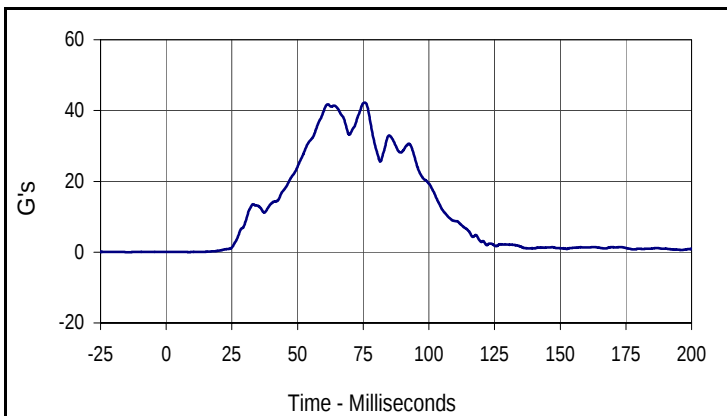
Curve Description			
Driver Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
1.4	147.0	-42.2	75.5



Curve Description			
Driver Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
4.5	95.5	-5.9	56.2



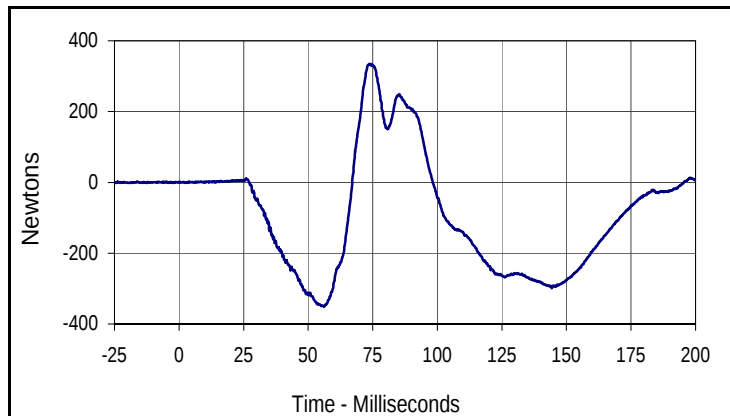
Curve Description			
Driver Chest Acceleration Z Primary			
CURNO	Type	SAE Class	Units
015	FIL	180	G's
Max	Time	Min	Time
7.8	80.0	-9.9	63.3



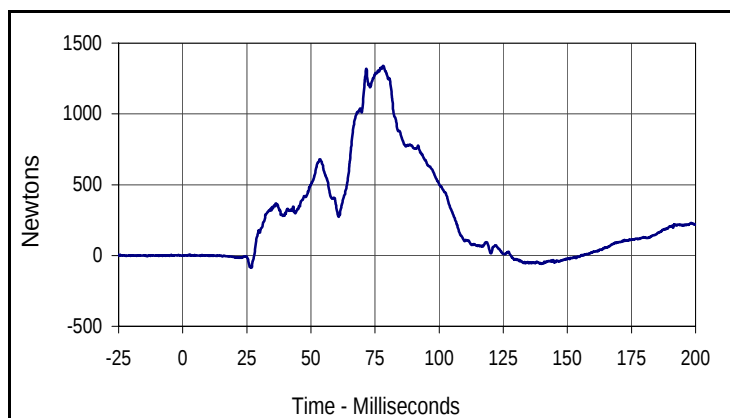
Curve Description			
Driver Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
013	RES	180	G's
Max	Time	Min	Time
42.2	75.6	0.0	8.7

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

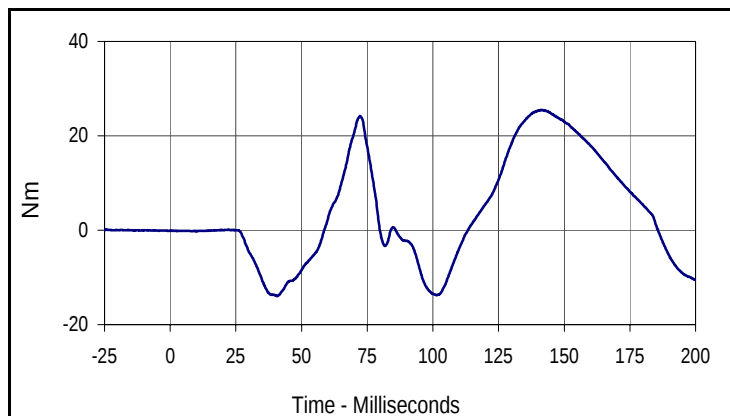
Test Date: 12/16/10
 NHTSA No.: MB5208



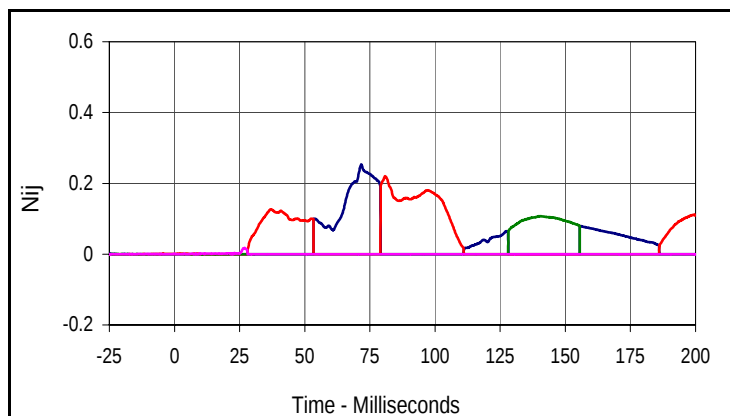
Curve Description			
Driver Upper Neck Force X			
CURNO	Type	SAE Class	Units
007	FIL	1000	Newtons
Max	Time	Min	Time
334.6	73.9	-351.2	56.2



Curve Description			
Driver Upper Neck Force Z			
CURNO	Type	SAE Class	Units
009	FIL	1000	Newtons
Max	Time	Min	Time
1338.7	78.2	-86.4	26.8



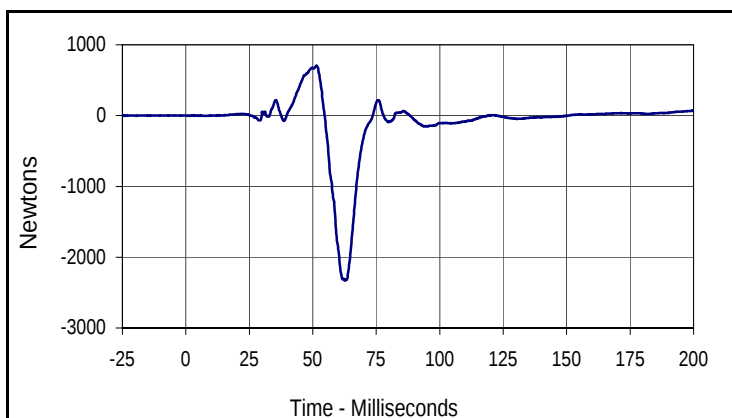
Curve Description			
Driver Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
011	FIL	600	Nm
Max	Time	Min	Time
25.5	141.4	-14.0	40.7



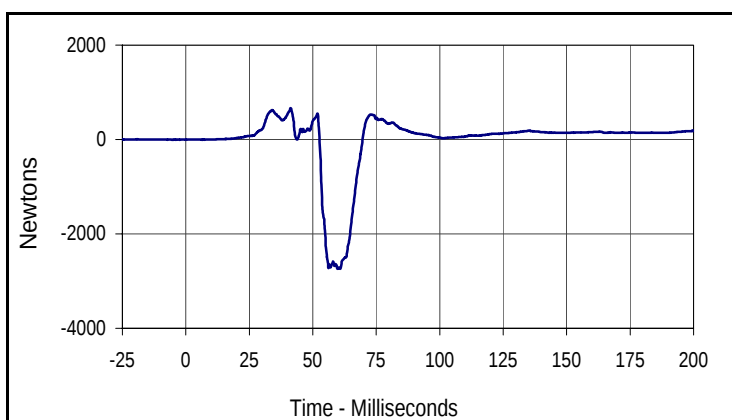
Curve Description			
Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.25	71.7
Units	Type	Max	Time
Nte	FIL	0.22	80.9
Units	Type	Max	Time
Ncf	FIL	0.11	140.6
Units	Type	Max	Time
Nce	FIL	0.20	285.8

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

Test Date: 12/16/10
 NHTSA No.: MB5208



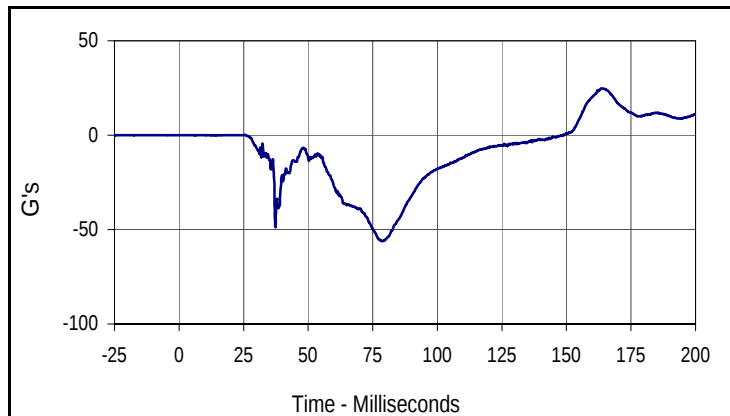
Curve Description			
Driver Left Femur Force Z			
CURNO	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
705.6	51.4	-2331.9	62.7



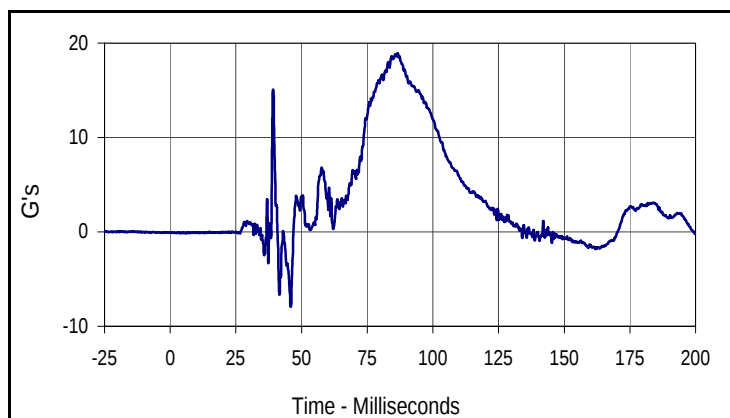
Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
662.0	41.3	-2742.1	60.8

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

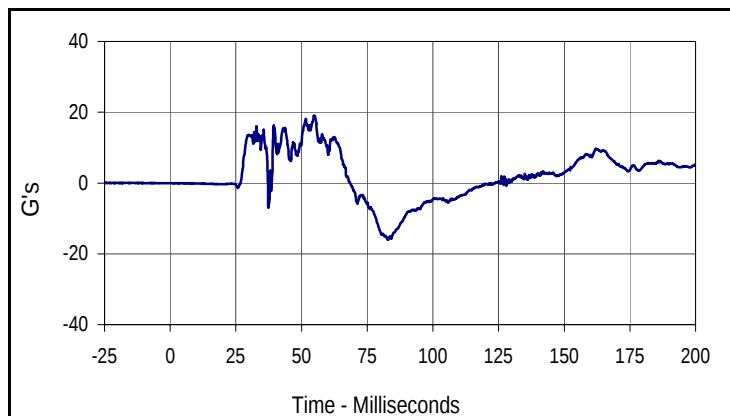
Test Date: 12/16/10
 NHTSA No.: MB5208



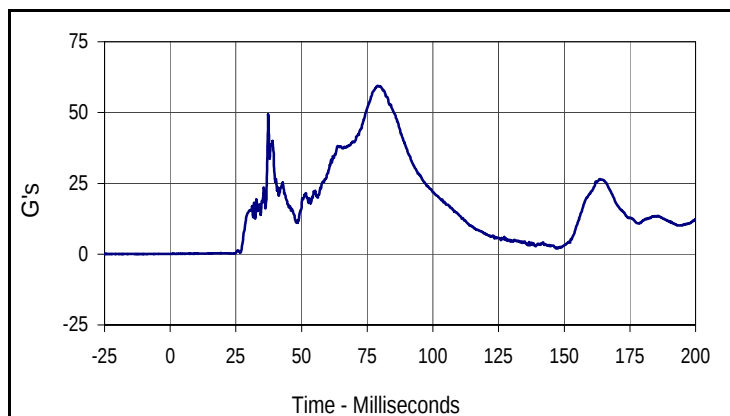
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
045	FIL	1000	G's
Max	Time	Min	Time
24.8	163.7	-56.2	78.9



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
046	FIL	1000	G's
Max	Time	Min	Time
18.9	86.6	-7.9	45.9



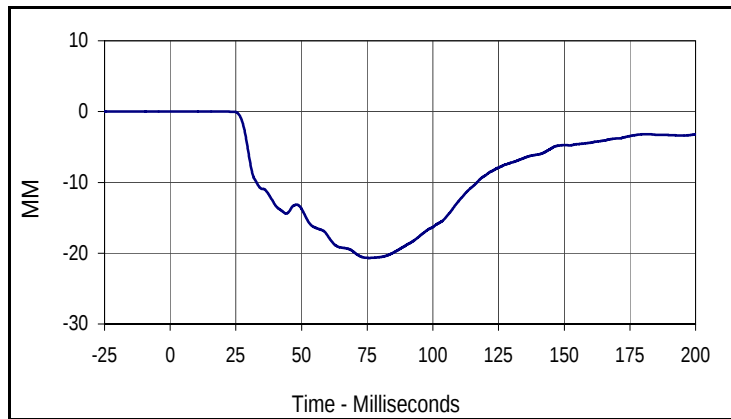
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
047	FIL	1000	G's
Max	Time	Min	Time
19.1	54.8	-16.1	82.9



Curve Description			
Passenger Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
045	RES	1000	G's
Max	Time	Min	Time
59.5	79.0	0.1	0.2

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

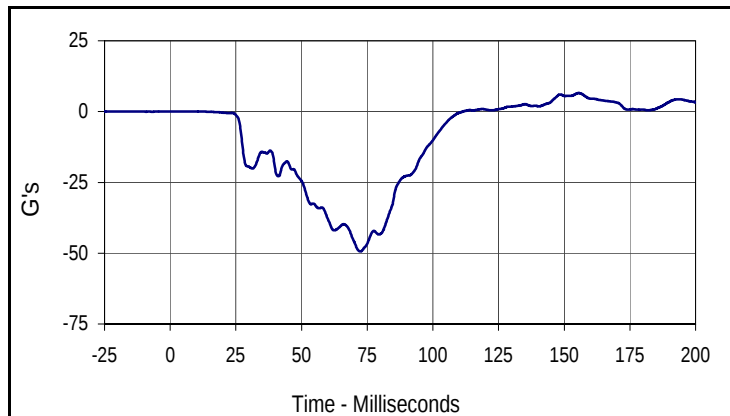
Test Date: 12/16/10
 NHTSA No.: MB5208



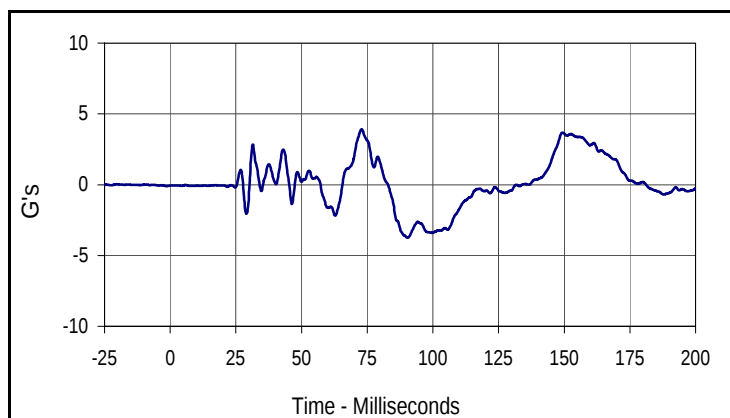
Curve Description			
Passenger Chest Deflection			
CURNO	Type	SAE Class	Units
063	FIL	180	MM
Max	Time	Min	Time
0.0	17.9	-20.7	75.7

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

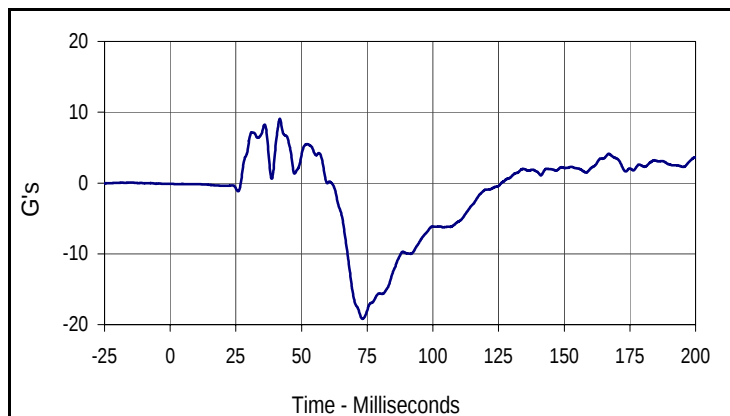
Test Date: 12/16/10
 NHTSA No.: MB5208



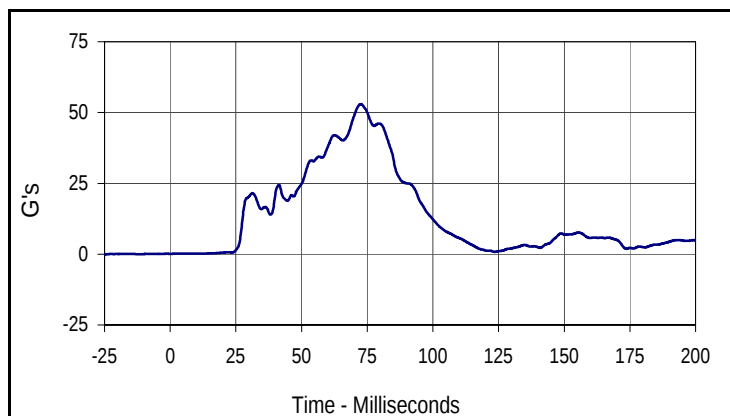
Curve Description			
Passenger Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
057	FIL	180	G's
Max	Time	Min	Time
6.5	155.5	-49.4	72.4



Curve Description			
Passenger Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
058	FIL	180	G's
Max	Time	Min	Time
3.9	72.9	-3.7	90.4



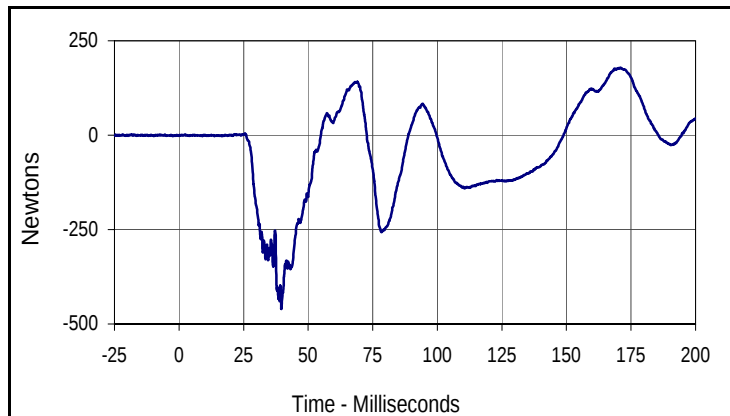
Curve Description			
Passenger Chest Acceleration Z Primary			
CURNO	Type	SAE Class	Units
059	FIL	180	G's
Max	Time	Min	Time
9.0	41.7	-19.2	73.2



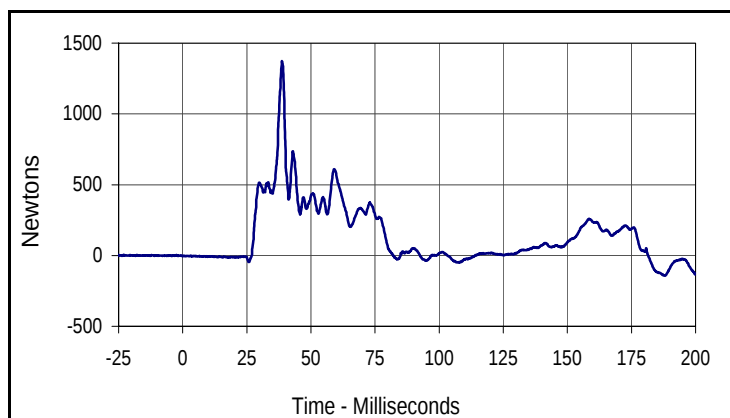
Curve Description			
Passenger Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
057	RES	180	G's
Max	Time	Min	Time
53.0	72.6	0.1	0.2

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

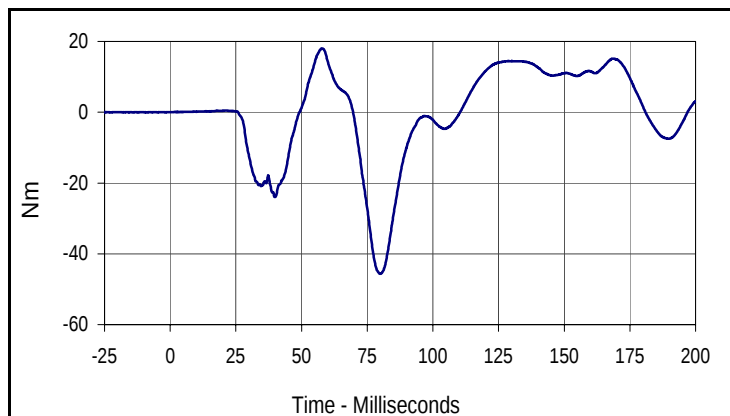
Test Date: 12/16/10
 NHTSA No.: MB5208



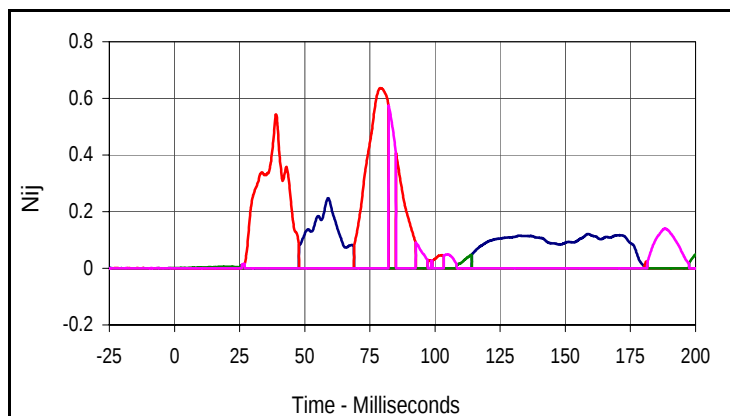
Curve Description			
Passenger Upper Neck Force X			
CURNO	Type	SAE Class	Units
051	FIL	1000	Newtons
Max	Time	Min	Time
178.5	170.9	-460.4	39.6



Curve Description			
Passenger Upper Neck Force Z			
CURNO	Type	SAE Class	Units
053	FIL	1000	Newtons
Max	Time	Min	Time
1373.2	38.7	-142.4	188.1



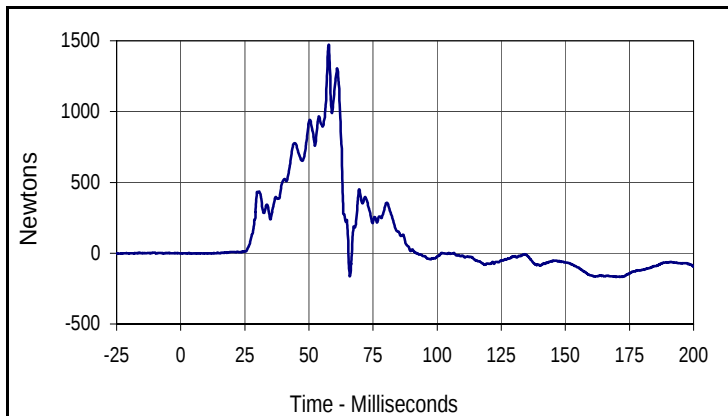
Curve Description			
Passenger Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
055	FIL	600	Nm
Max	Time	Min	Time
18.0	57.9	-45.7	79.9



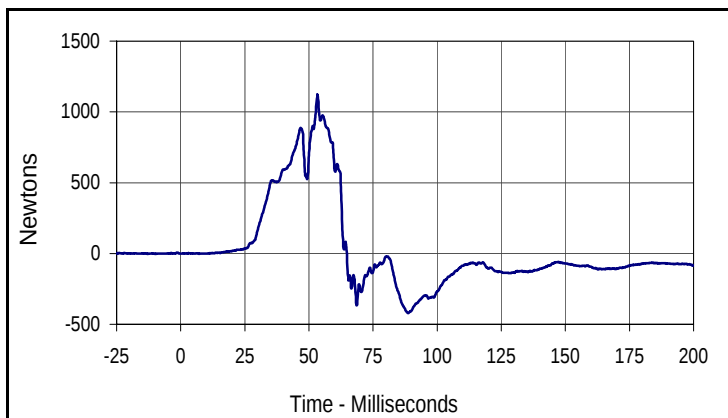
Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.25	58.9
Units	Type	Max	Time
Nte	FIL	0.64	79.0
Units	Type	Max	Time
Ncf	FIL	0.08	203.8
Units	Type	Max	Time
Nce	FIL	0.57	82.2

Test Vehicle: 2011 Nissan Murano S AWD 5-Door MPV
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

Test Date: 12/16/10
 NHTSA No.: MB5208



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
067	FIL	600	Newtons
Max	Time	Min	Time
1472.8	57.7	-167.8	169.8



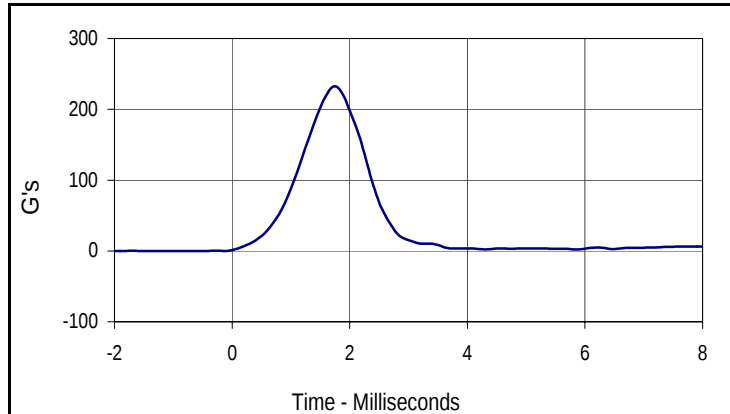
Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
068	FIL	600	Newtons
Max	Time	Min	Time
1121.5	53.3	-421.2	88.6

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 TestTest Date: 12/7/10ATD Serial No.: 034Test I.D.: HDM34D

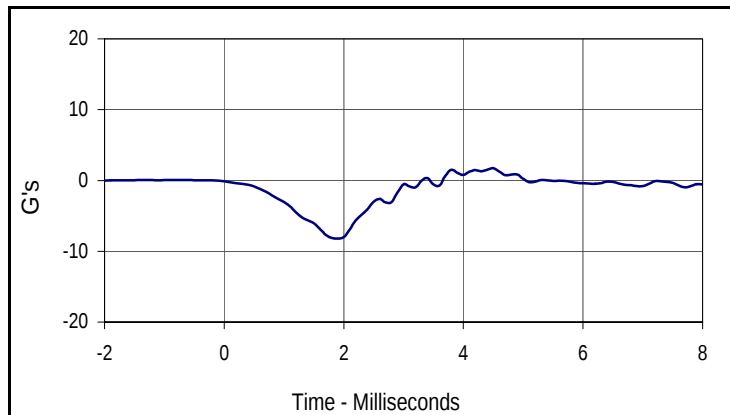
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	231.2	Pass
Peak Lateral Acceleration	G's	≤15.0	8.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
231.2	1.7	0.1	-0.5



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.7	4.5	-8.2	1.9

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

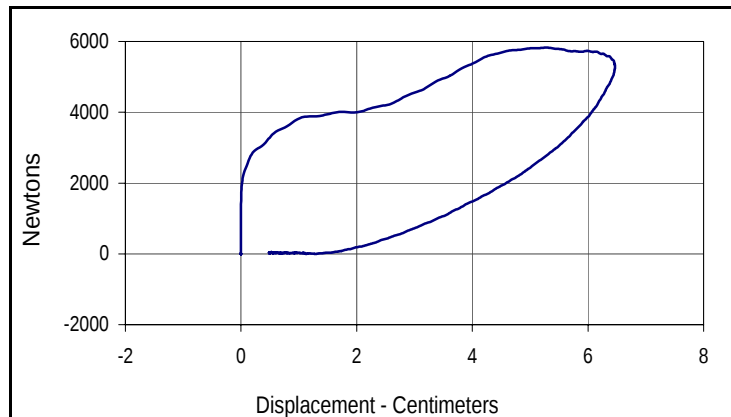
Test Date: 12/7/10

ATD Serial No.: 034

Test I.D.: CHM34D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.75	Pass
Peak Probe Force	Newtons	5159 to 5893	5826	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.47	Pass
Internal Hysteresis	%	69 to 85	71.4	Pass
Overall Test Results				Pass



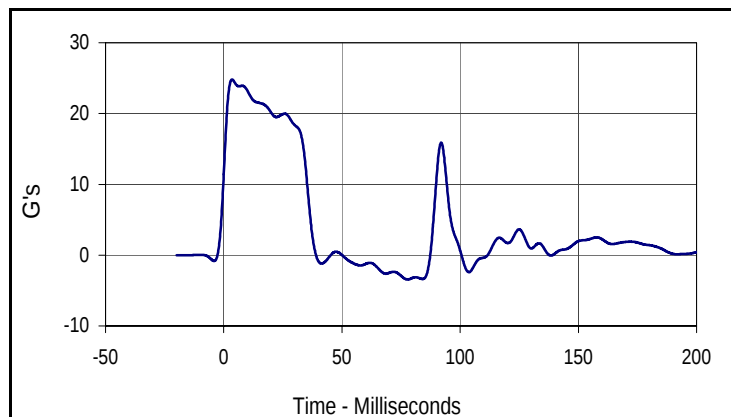
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	71.4
Peak Probe Force		Peak Chest Deflection	
5826		6.47	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 034

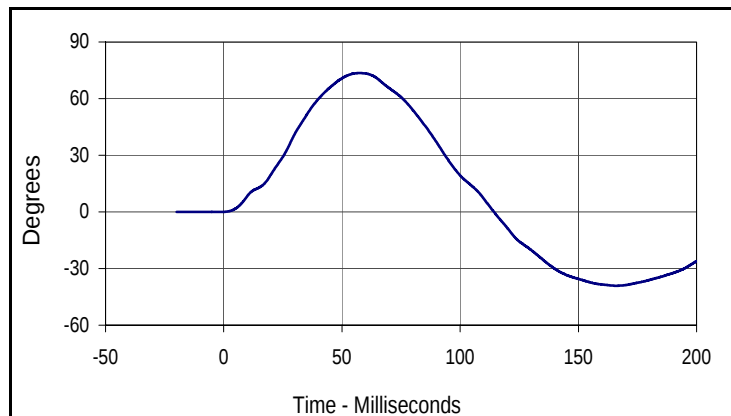
Test Date: 12/7/10
 Test I.D.: NFM34D



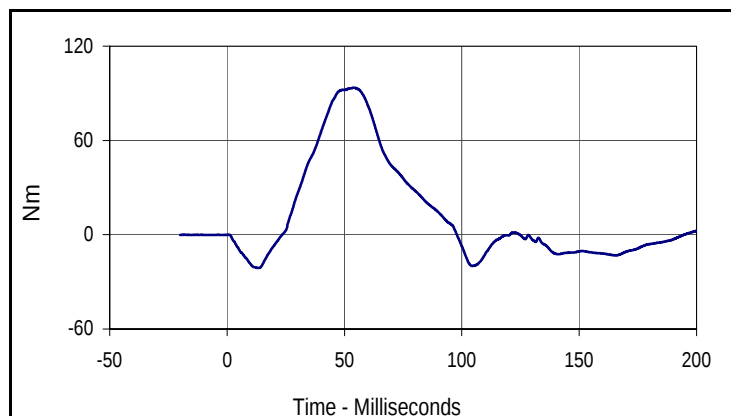
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.91	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.2	Pass
	20 Msec.	G's	17.6 to 22.6	20.2	Pass
	30 Msec.	G's	12.5 to 18.5	18.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.7	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	73.5	Pass
	Time	Msec.	57.0 to 64.0	57.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	114.3	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	93.6	Pass
	Time	Msec.	47.0 to 58.0	54.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.0	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.8	3.5	-3.4	77.8



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
73.5	57.5	-39.1	166.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
93.6	54.2	-21.2	13.0

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

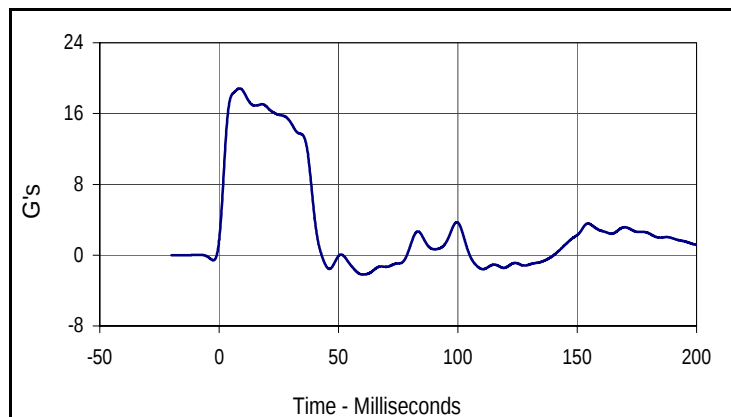
Test Date: 12/7/10

ATD Serial No.: 034

Test I.D.: NEM34D



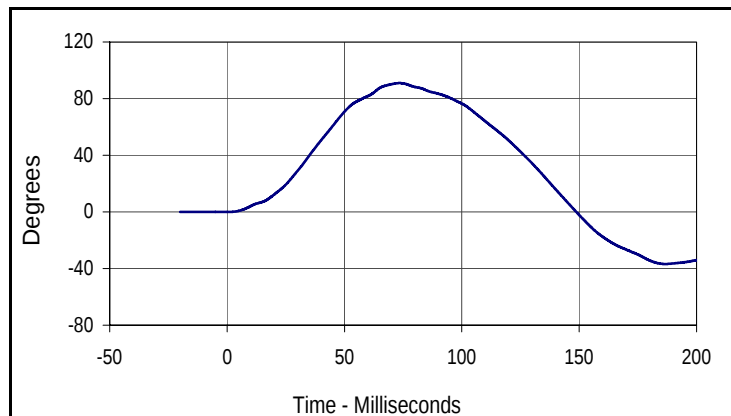
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.05	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.6	Pass
	20 Msec.	G's	14.0 to 19.0	16.8	Pass
	30 Msec.	G's	11.0 to 16.0	15.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.0	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	91.0	Pass
	Time	Msec.	72.0 to 82.0	73.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	148.8	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-69.8	Pass
	Time	Msec.	65.0 to 79.0	69.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	147.2	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

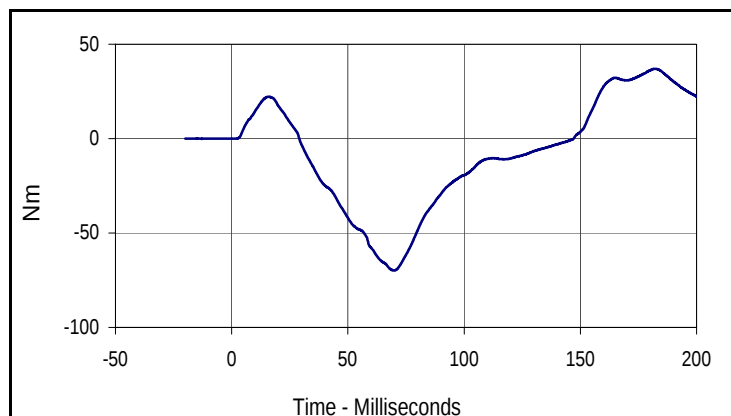
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
18.8	8.6	-2.2	60.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
91.0	73.5	-36.8	186.5



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
36.9	181.8	-69.8	69.9

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

Test Date: 12/7/10

ATD Serial No.: 034

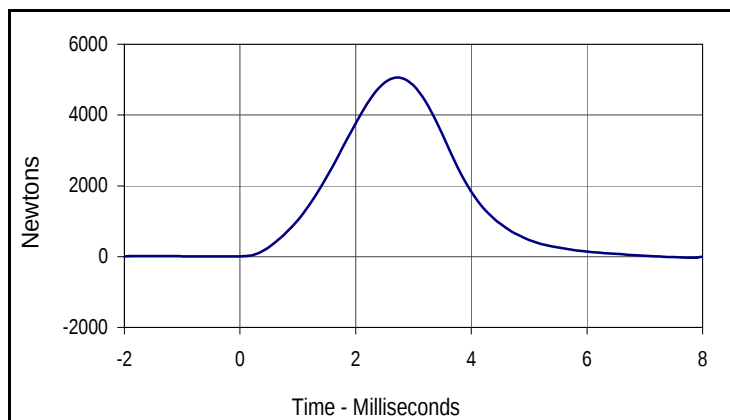
Test I.D.: LKM34D , RKM34D

**Left Knee**

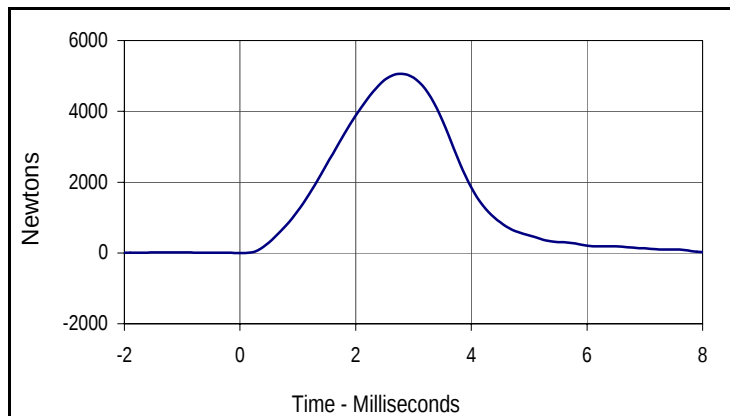
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5057	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5064	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5056.6	2.7	-28.2	7.9

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5063.7	2.8	-43.3	10.0

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 12/7/10

ATD Serial No.: 034

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	85	Pass
D - "H" point from seat back	mm	135 to 140	138	Pass
E - Shoulder pivot from back	mm	84 to 94	87	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Elbow back to wrist pivot	mm	290 to 305	296	Pass
H - Skull cap to back line	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	333	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	432	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock popliteal length	mm	452 to 477	468	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	259	Pass
V - Shoulder breadth	mm	422 to 437	431	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	862	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	231	Pass
Overall Test Results				Pass

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

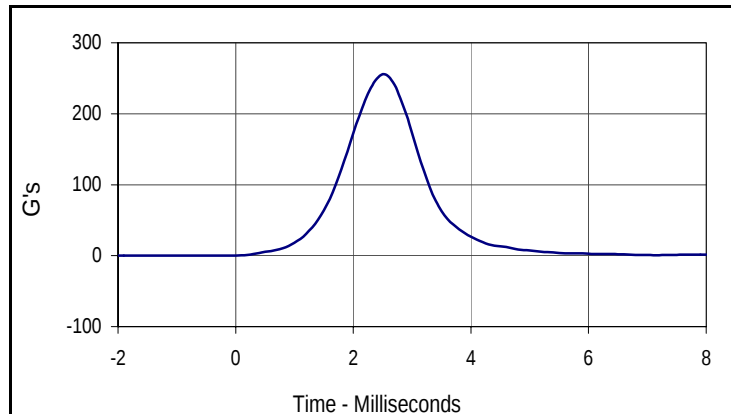
Test Date: 12/7/10

ATD Serial No.: 141

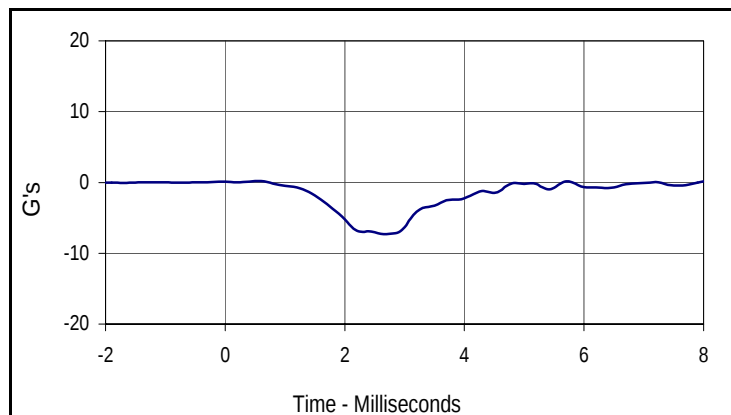
Test I.D.: HDF12B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	255.6	Pass
Peak Lateral Acceleration	G's	≤15.0	7.3	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
255.6	2.5	0.0	-2.0



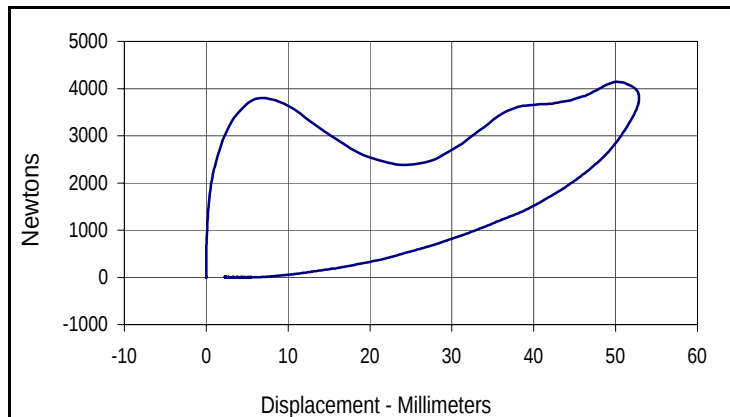
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	0.5	-7.3	2.7

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test
 ATD Serial No.: 141

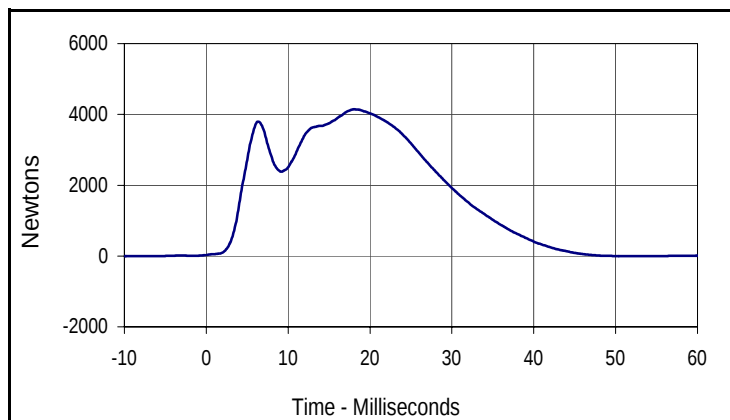
Test Date: 12/7/10
 Test I.D.: CH141B



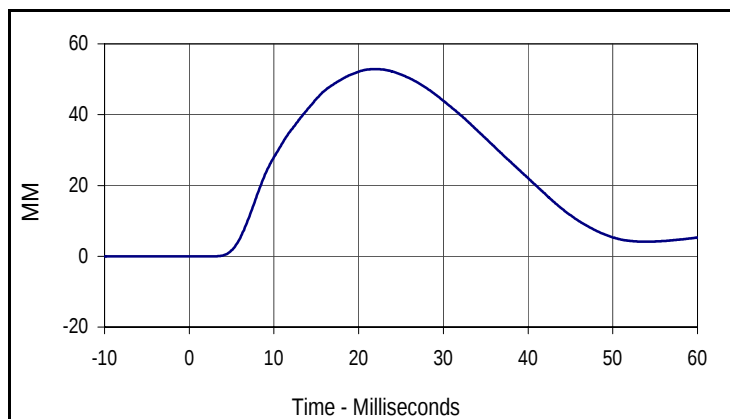
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Probe Velocity	m/s	6.59 to 6.83	6.64	Pass
Peak Chest Deflection	MM	50.0 to 58.0	52.9	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4143	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4143	Pass
Internal Hysteresis	%	69 to 85	71.3	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	71.3
Peak Probe Force		Peak Chest Displ.	
4142.7		52.9	



Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4142.7	18.0	-6.0	144.8



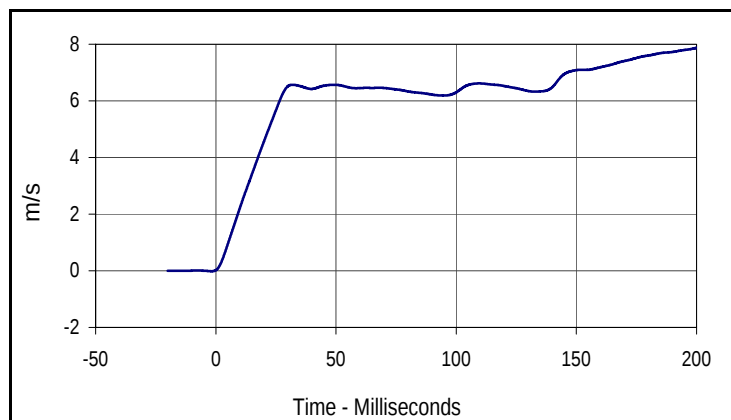
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
52.9	22.0	0.0	2.7

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

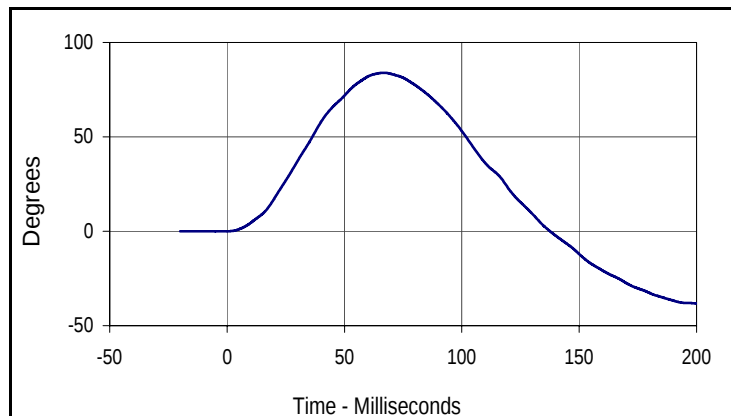
Test Date: 12/7/10
 Test I.D.: NF12B



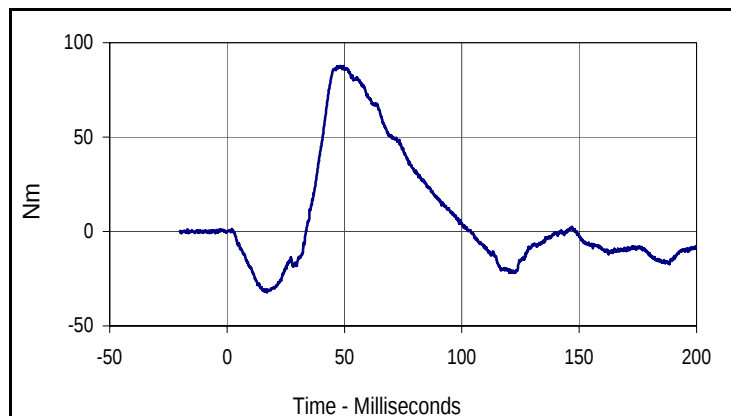
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	29	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.03	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.2	Pass
	20 Msec.	m/s	4.0 to 5.0	4.6	Pass
	30 Msec.	m/s	5.8 to 7.0	6.5	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	84.0	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	81.7	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	93.6	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
84.0	66.8	-38.1	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
87.7	48.0	-32.4	16.9

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

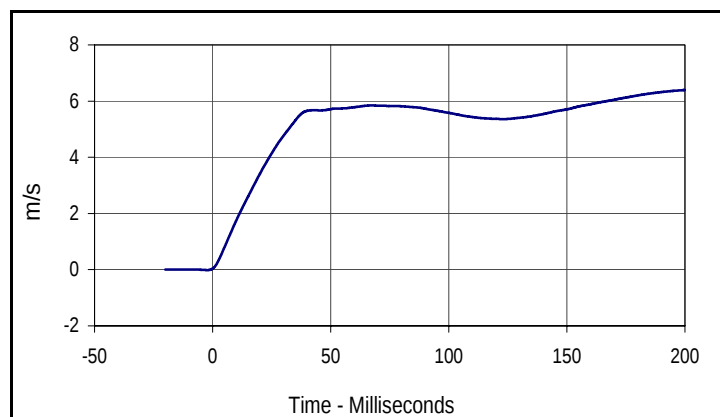
Test Date: 12/7/10



ATD Serial No.: 141

Test I.D.: NE12B

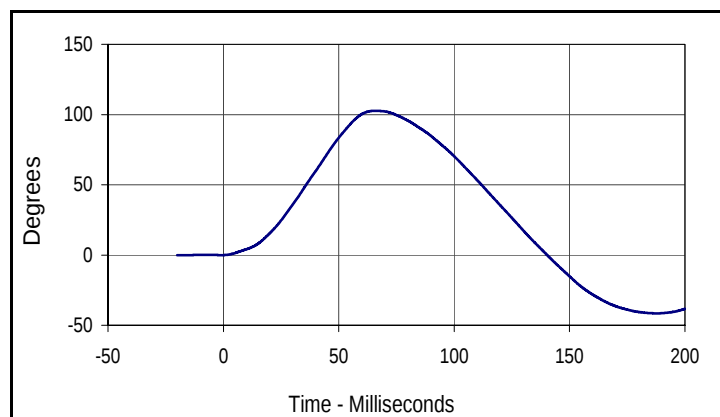
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	29	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.07	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.4	Pass
	30 Msec.	m/s	4.6 to 5.6	4.8	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	102.6	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-60.9	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	95.1	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Velocity

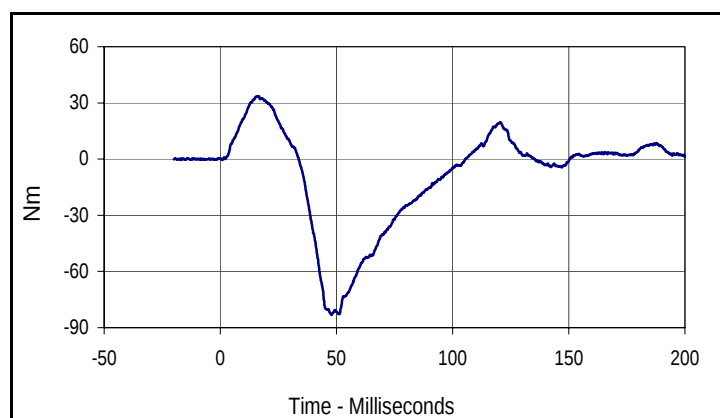
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
6.4	200.0	0.0	-2.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
102.6	65.4	-41.5	187.9



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
33.6	15.8	-83.2	47.8

Test Program: Hybrid III 5th Percentile Female Knee Impact Test
 ATD Serial No.: 141

Test Date: 12/7/10
 Test I.D.: LKF12B , RKB12B

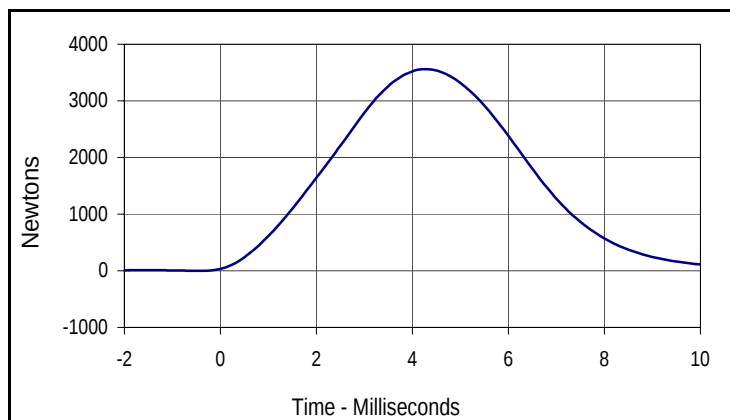


Left Knee

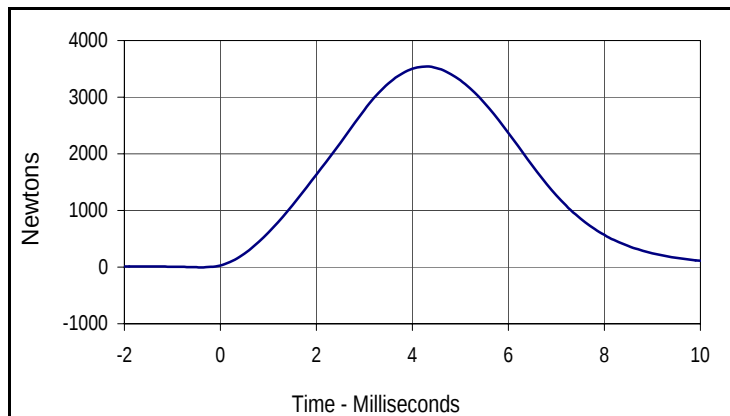
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	3450 to 4060	3561	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	3450 to 4060	3542	Pass
Overall Test Results				Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3561.3	4.3	-2.2	-0.4



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
3542.0	4.3	-2.9	-0.4

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

Test Date: 12/7/10

ATD Serial No.: 141

Test I.D.: TF12B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Initial reference plane angle	Degrees	≤20.0	0.25	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	329.0	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.23	Pass
Final reference plane angle	Degrees	+/-8	0.47	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 12/7/10

ATD Serial No.: 141

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	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	78	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	254	Pass
H - Head to back line	mm	40.7 to 45.7	43	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	281	Pass
J - Elbow rest height	mm	182.8 to 203.2	200	Pass
K - Buttock to knee length	mm	520.7 to 546.1	535	Pass
L - Popliteal height	mm	355.6 to 376.0	365	Pass
M - Knee pivot height	mm	393.7 to 419.1	413	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	421	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	182	Pass
P - Foot length	mm	218.5 to 233.7	227	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	464	Pass
S - Head breadth	mm	137.1 to 147.3	142	Pass
T - Head depth	mm	177.8 to 188.0	181	Pass
U - Hip breadth	mm	299.7 to 314.9	308	Pass
V - Shoulder breadth	mm	350.5 to 365.7	361	Pass
W - Foot breadth	mm	78.8 to 94.0	89	Pass
X - Head circumference	mm	528.3 to 548.7	542	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	854	Pass
Z - Waist circumference	mm	759.5 to 789.9	778	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	302	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	167	Pass
Overall Test Results				Pass

Test Program: Dummy Damage Checklist
 ATD Serial No.: 034

Test Date: 12/7/10
 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.: 141

Test Date: 12/7/10
 Test I.D.: N/A



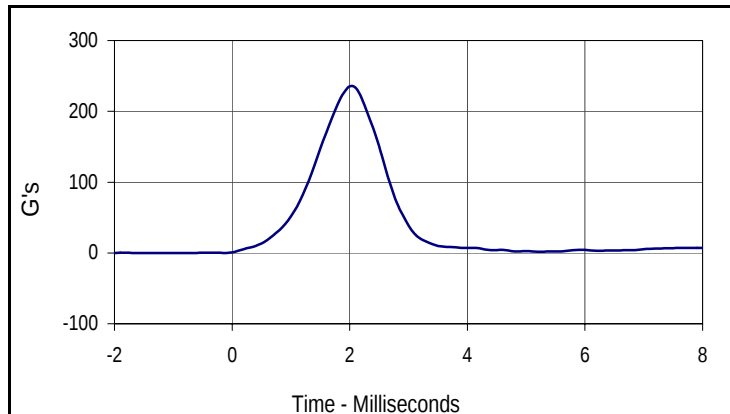
GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for 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:

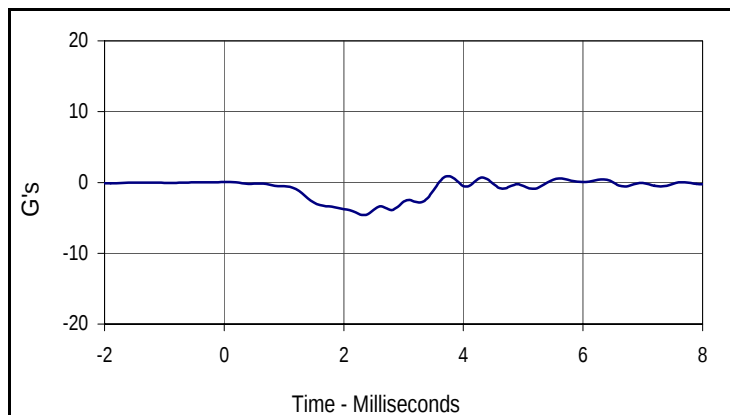
APPENDIX C
POST-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Head Drop TestTest Date: 12/20/10ATD Serial No.: 034Test I.D.: HDM34E

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	235.3	Pass
Peak Lateral Acceleration	G's	≤15.0	4.6	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
235.3	2.0	0.1	-1.6



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.8	3.7	-4.6	2.3

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

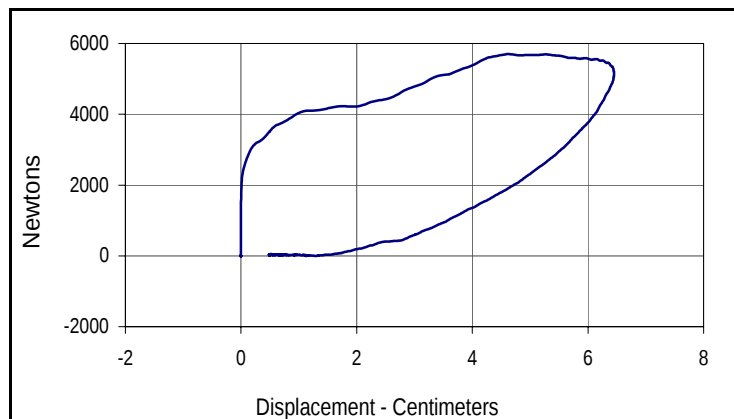
Test Date: 12/20/10

ATD Serial No.: 034

Test I.D.: CHM34E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Probe Velocity	m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force	Newtons	5159 to 5893	5699	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.45	Pass
Internal Hysteresis	%	69 to 85	73.6	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	73.6
Peak Probe Force		Peak Chest Deflection	
5699		6.45	

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

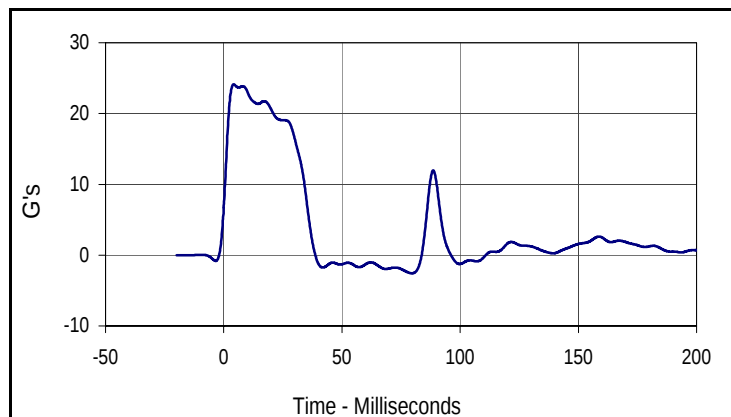
Test Date: 12/20/10

ATD Serial No.: 034

Test I.D.: NFM34E



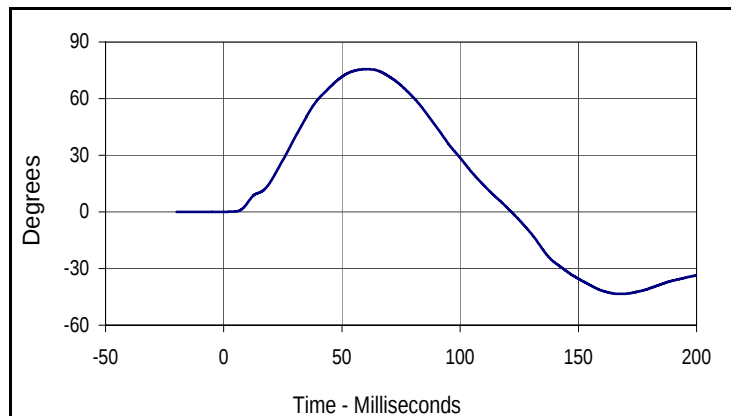
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	29	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.1	Pass
	20 Msec.	G's	17.6 to 22.6	20.6	Pass
	30 Msec.	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	75.6	Pass
	Time	Msec.	57.0 to 64.0	60.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.7	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	92.8	Pass
	Time	Msec.	47.0 to 58.0	51.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.1	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Deceleration

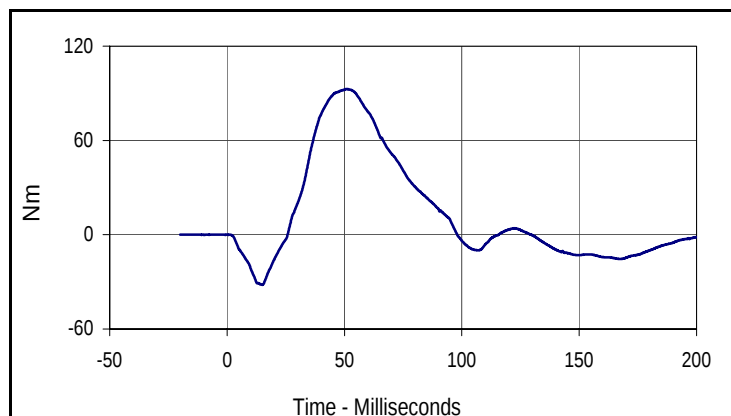
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.1	4.2	-2.6	79.6



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.6	60.2	-43.5	167.7



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
92.8	51.2	-31.8	15.0

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

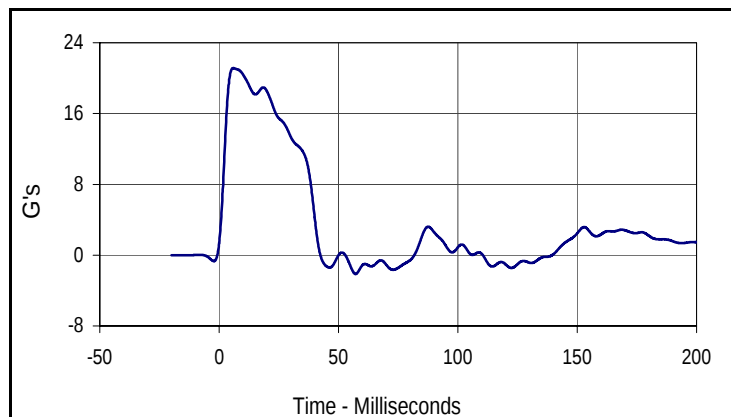
Test Date: 12/20/10

ATD Serial No.: 034

Test I.D.: NEM34E



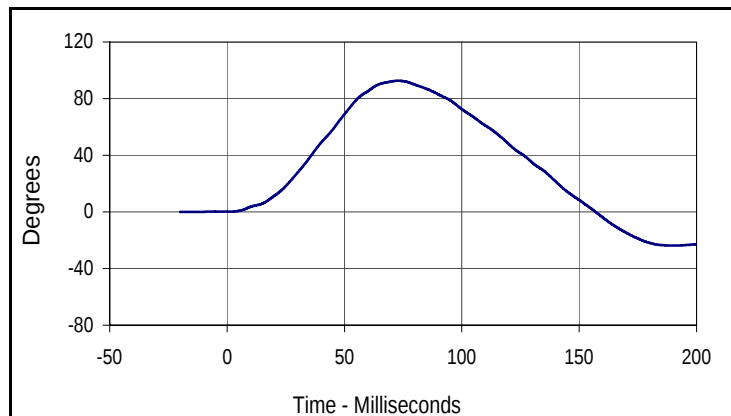
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	29	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.07	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.4	Pass
	20 Msec.	G's	14.0 to 19.0	18.5	Pass
	30 Msec.	G's	11.0 to 16.0	13.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	13.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.8	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	92.6	Pass
	Time	Msec.	72.0 to 82.0	73.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	157	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-77.3	Pass
	Time	Msec.	65.0 to 79.0	65.3	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	144.5	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

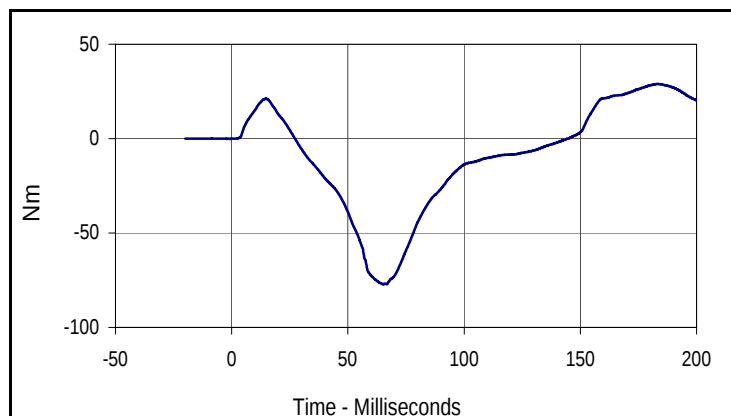
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
21.1	5.9	-2.1	57.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
92.6	73.0	-23.8	190.4



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
29.0	183.3	-77.3	65.3

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

Test Date: 12/20/10

ATD Serial No.: 034

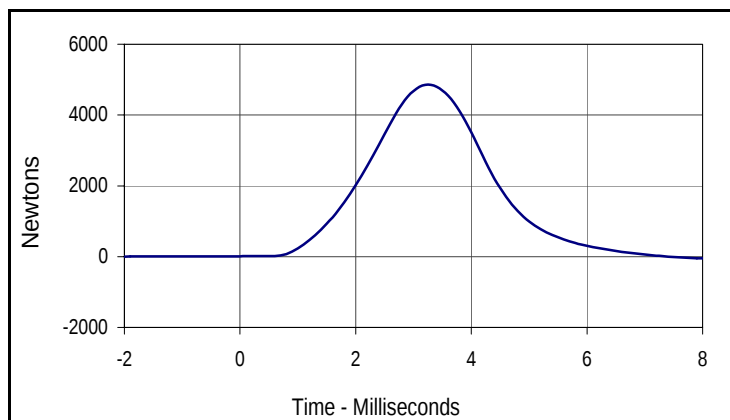
Test I.D.: LKM34E , RKM34E

**Left Knee**

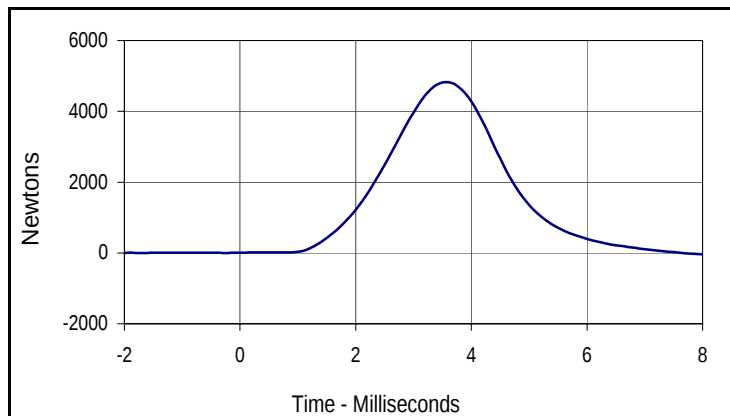
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	4715 to 5782	4855	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	4715 to 5782	4827	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4855.4	3.2	-48.4	8.1

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
4827.0	3.6	-50.0	8.3

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 12/20/10

ATD Serial No.: 034

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	514	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	137	Pass
E - Shoulder pivot from back	mm	84 to 94	87	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Elbow back to wrist pivot	mm	290 to 305	296	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	206	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	431	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock popliteal length	mm	452 to 477	468	Pass
O - Chest depth	mm	213 to 229	216	Pass
P - Foot length	mm	251 to 267	259	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	985	Pass
Z - Waist circumference	mm	836 to 866	862	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop TestTest Date: 12/20/10ATD Serial No.: 141Test I.D.: HDF12C

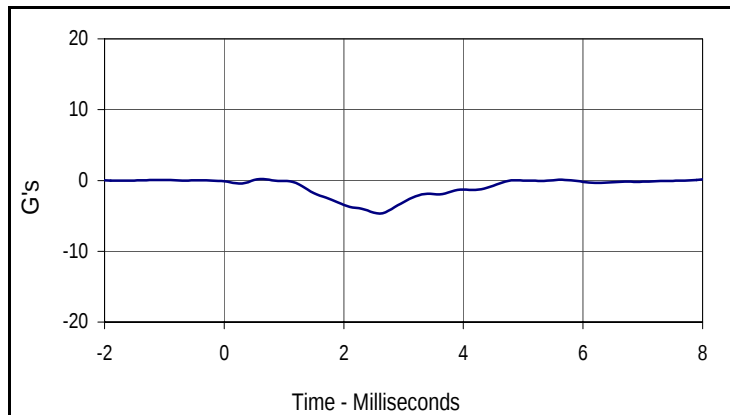
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	256.8	Pass
Peak Lateral Acceleration	G's	≤15.0	4.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
256.8	2.6	0.0	-1.4



Curve Description

Head Y

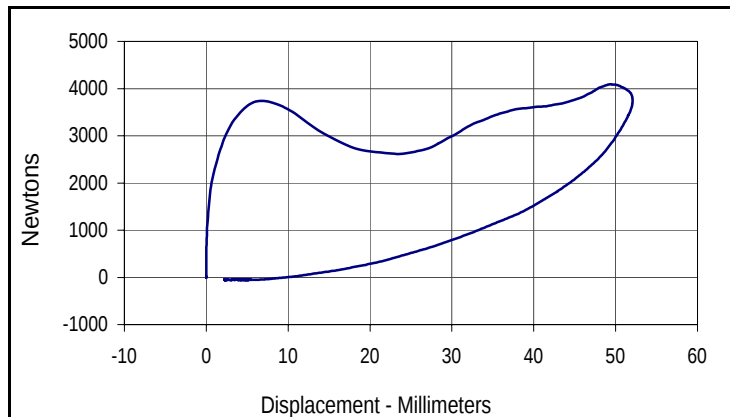
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	0.6	-4.7	2.6

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test
 ATD Serial No.: 141

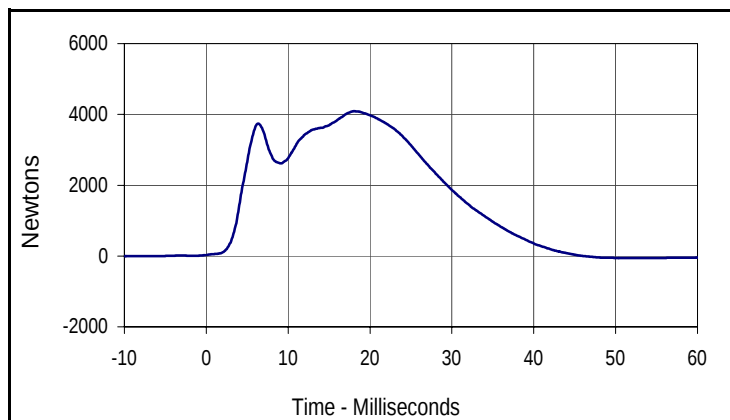
Test Date: 12/20/10
 Test I.D.: CH141C



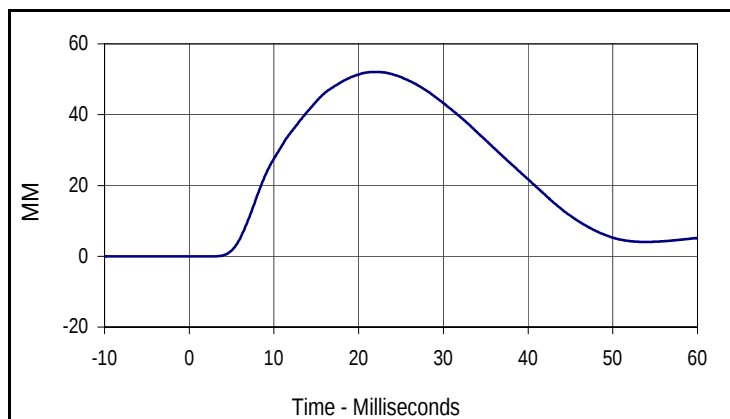
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	29	Pass
Probe Velocity	m/s	6.59 to 6.83	6.63	Pass
Peak Chest Deflection	MM	50.0 to 58.0	52.1	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4090	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4080	Pass
Internal Hysteresis	%	69 to 85	73.0	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	73.0
Peak Probe Force		Peak Chest Displ.	
4089.6		52.1	



Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4089.6	18.0	-59.1	144.8



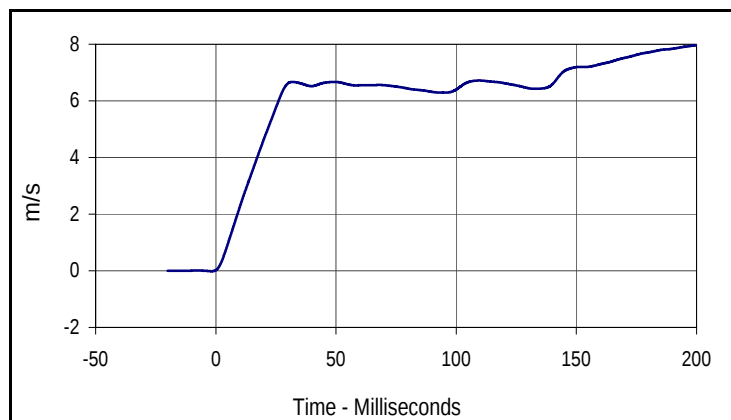
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
52.1	22.0	0.0	2.7

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

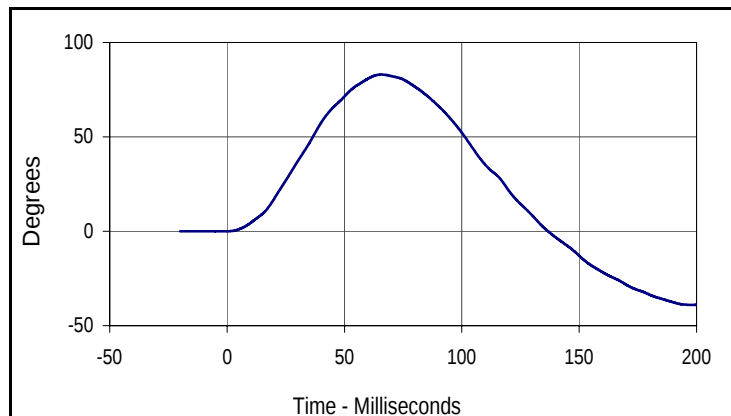
Test Date: 12/20/10
 Test I.D.: NF12C



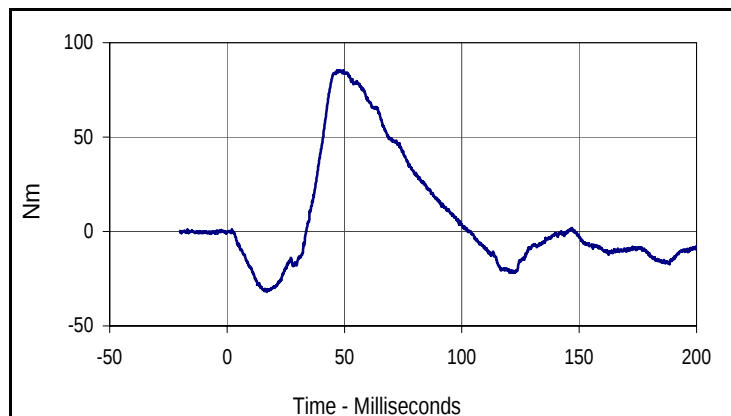
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	29	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.03	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.7	Pass
	30 Msec.	m/s	5.8 to 7.0	6.6	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	83.0	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	79.6	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
8.0	200.0	0.0	-1.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
83.0	65.8	-39.0	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
85.4	48.0	-32.1	16.9

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

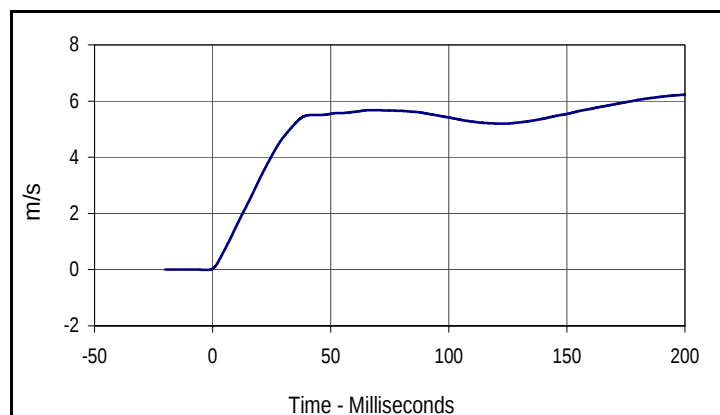
Test Date: 12/20/10



ATD Serial No.: 141

Test I.D.: NE12C

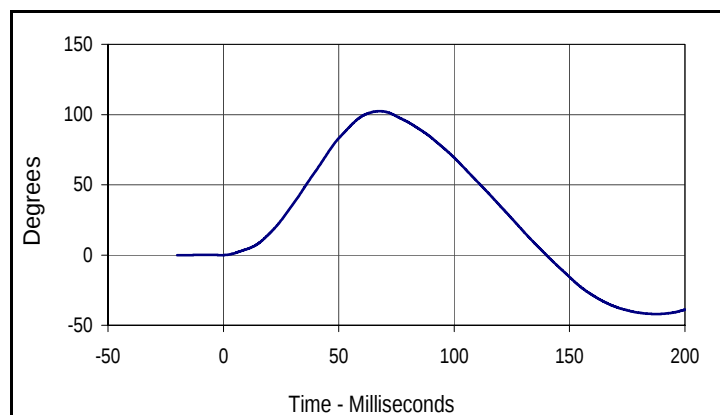
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	28	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.10	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.5	Pass
	20 Msec.	m/s	3.1 to 3.9	3.2	Pass
	30 Msec.	m/s	4.6 to 5.6	4.7	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	102.3	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-60.5	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	96.0	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Velocity

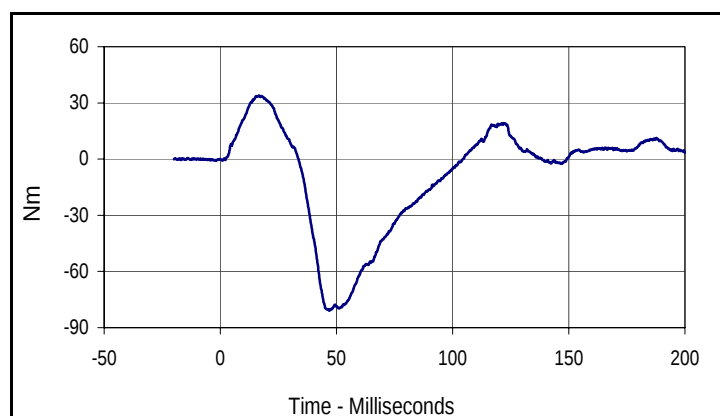
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
6.2	200.0	0.0	-2.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
102.3	67.8	-42.0	187.9



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
34.0	16.7	-81.0	46.9

Test Program: Hybrid III 5th Percentile Female Knee Impact Test
 ATD Serial No.: 141

Test Date: 12/20/10
 Test I.D.: LKF12C , RKB12C

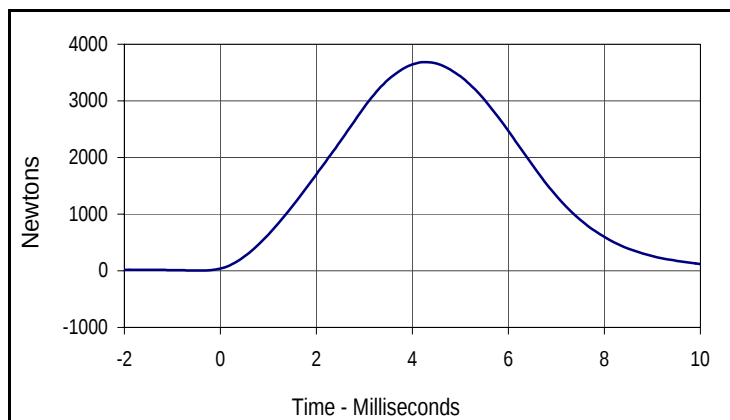


Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3685	Pass
Overall Test Results				Pass

Right Knee

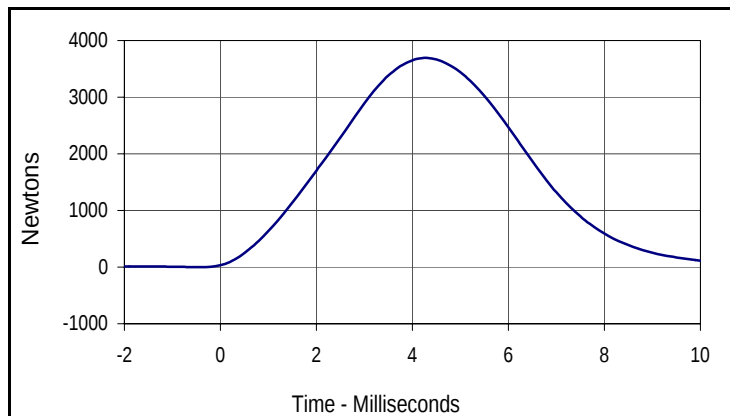
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3692	Pass
Overall Test Results				Pass



Curve Description

Left Knee Probe Force

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3685.4	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
3692.3	4.3	-2.4	-0.4

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

Test Date: 12/20/10

ATD Serial No.: 141

Test I.D.: TF12C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Initial reference plane angle	Degrees	≤20.0	0.15	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	328.2	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.13	Pass
Final reference plane angle	Degrees	+/-8	0.38	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 12/20/10

ATD Serial No.: 141

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	440	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	147	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	78	Pass
F - Thigh clearance	mm	119.4 to 134.6	131	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	254	Pass
H - Head to back line	mm	40.7 to 45.7	43	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	281	Pass
J - Elbow rest height	mm	182.8 to 203.2	200	Pass
K - Buttock to knee length	mm	520.7 to 546.1	535	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	423	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	182	Pass
P - Foot length	mm	218.5 to 233.7	227	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	465	Pass
S - Head breadth	mm	137.1 to 147.3	142	Pass
T - Head depth	mm	177.8 to 188.0	182	Pass
U - Hip breadth	mm	299.7 to 314.9	308	Pass
V - Shoulder breadth	mm	350.5 to 365.7	362	Pass
W - Foot breadth	mm	78.8 to 94.0	89	Pass
X - Head circumference	mm	528.3 to 548.7	543	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	854	Pass
Z - Waist circumference	mm	759.5 to 789.9	779	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	303	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	165	Pass
Overall Test Results				Pass

Test Program: Dummy Damage Checklist
 ATD Serial No.: 034

Test Date: 12/20/10
 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.: 141

Test Date: 12/20/10
 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:
