

**REPORT NUMBER: NCAP-KAR-16-011**

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

**NISSAN MOTOR CO., LTD.  
2016 NISSAN VERSA S 4-DOOR SEDAN**

**NHTSA NUMBER: M20165203**

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



**DECEMBER 30, 2015**

**FINAL REPORT**

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



## TECHNICAL REPORT DOCUMENTATION PAGE

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		<b>15. Supplementary Notes</b>																																																					
<b>16. Abstract</b> <p>A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2016 Nissan Versa S 4-door sedan in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on December 16, 2015.</p> <p>The impact velocity of the vehicle was 56.56 km/h and the ambient temperature at the barrier face at the time of impact was 10° C. The target vehicle's post-test maximum crush was 537 mm at the vehicle's crush zone 5. The test vehicle's performance is as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <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 (HIC<sub>15</sub>)</td> <td>N/A</td> <td>700.0</td> <td>208.0</td> <td>700.0</td> <td>400.6</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-21</td> <td>52</td> <td>-11</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.29</td> <td>1</td> <td>0.62</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1488.4</td> <td>2620</td> <td>1180.7</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-795.6</td> <td>2520</td> <td>-614.1</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10000</td> <td>-2422.7</td> <td>6800</td> <td>-2276.9</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10000</td> <td>-3849.3</td> <td>6800</td> <td>-2217.2</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC <sub>15</sub> )	N/A	700.0	208.0	700.0	400.6	Maximum Chest Compression	mm	63	-21	52	-11	Nij	N/A	1	0.29	1	0.62	Neck Tension	N	4170	1488.4	2620	1180.7	Neck Compression	N	4000	-795.6	2520	-614.1	Left Femur Force	N	10000	-2422.7	6800	-2276.9	Right Femur Force	N	10000	-3849.3	6800	-2217.2
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<b>17. Key Words</b> 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP)		<b>18. Distribution Statement</b> Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																																																					
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## **SECTION 1**

### **PURPOSE AND SUMMARY OF TEST**

#### **PURPOSE**

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program, sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-12-D-00259. 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 October 2015.

#### **SUMMARY**

A load cell barrier consisting of 176 load cells was impacted by a 2016 Nissan Versa S 4-door sedan at a velocity of 56.56 km/h. The test was performed at KARCO Engineering, LLC. on December 16, 2015. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

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

One Part 572E 50<sup>th</sup> percentile male anthropomorphic test device (ATD) was placed in the driver seating position and one Part 572O 5<sup>th</sup> 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 placed on both the driver's and passenger's shoulder and lap belts to measure the dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 360) 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 102 channels of dummy and vehicle response data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 100% windshield retention and no intrusion into the protected zone of the windshield during the event.

The maximum static crush of the test vehicle was 537 mm located at the crush zone 5. 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 and lower torso contacted the airbag. The left knee contacted the knee bolster, steering column, and steering rim. The right knee 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 and lower torso contacted the airbag. Both the left and right knees contacted the knee bolster.

The occupant data is summarized below:

ATD Position	HIC <sub>15</sub>	T <sup>1</sup>	T <sup>2</sup>	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	208.0	66.7	81.7	-21	0.29	1488.4	-795.6	-2422.7	-3849.3
Passenger (5th)	400.6	65.3	80.3	-11	0.62	1180.7	-614.1	-2276.9	-2217.2

## SECTION 2

### OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

#### CONVERSION FACTORS

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

**DATA SHEET NO. 1**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA Number	M20165203
Model Year	2016
Make	Nissan
Model	Versa S
Body Style	4-Door Sedan
VIN	3N1CN7AP3GL821970
Body Color	Graphite Blue
Odometer Reading (km / mi)	127 / 79
Engine Displacement (L)	1.6
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	4
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	No

Traction Control System	Yes
Power Steering	Yes
Power Window Auto-Reverse	No
Driver Frontal 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
Front Pass. Frontal Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	No
Front Pass. Torso/Pelvis Airbag	Yes
Front Pass. Pelvis Airbag	No
Front Pass. Knee Airbag	No
Driver Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Seat Belt Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other Safety Restraint	No

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

**DATA FROM CERTIFICATION LABEL**

Manufactured By	Nissan Motor Co., LTD.
Date of Manufacture	Sep-15

GVWR (kg)	1528
GAWR Front (kg)	794
GAWR Rear (kg)	775

**VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION**

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				385.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				44.8	A-B

## DATA SHEET NO. 1 ... (CONTINUED)

### GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15



### VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	P185/65R15	P185/65R15
Tire Size on Vehicle	P185/65R15	P185/65R15
Tire Manufacturer	Continental	Continental
Tire Model	ContiProContact	ContiProContact
Treadwear	500	500
Traction	AA	AA
Temperature Grades	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index / Speed Symbol	86H	86H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	P5FP 3YP 2915	P5FP 3YP 3315
DOT Safety Code Right	P5FP 3YP 2915	P5FP 3YP 3315

**DATA SHEET NO. 1 ... (CONTINUED)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	326.0	222.5		361.0	289.0	
Right	kg	316.0	234.5		338.5	290.5	
Ratio	%	58.4%	41.6%	100.0%	54.7%	45.3%	100.0%
Total	kg	642.0	457.0	1099.0	699.5	579.5	1279.0

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1099.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	44.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1284.8	A+B+C

**TEST VEHICLE ATTITUDES**

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	701	695	675	671	1085
As Tested	mm	686	680	651	650	1183
Post-Test	mm	649	673	663	634	

**GENERAL TEST VEHICLE DATA**

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2610
Total Vehicle Length at Left Side	mm	3827
Total Vehicle Length at Centerline	mm	4490
Total Vehicle Length at Right Side	mm	3823
Weight of Ballast in Cargo Area	kg	72.9
Weight of Vehicle Components Removed	kg	30.5

**VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:**

Rear Door Panels (4.0 kg), Tail Lights (3.0 kg), Rear Trim (3.0 kg), Trunk Lid (9.5 kg), Spare Tires and Tools (11.0 kg)

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

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**TARGET VEHICLE STRUCTURAL MEASUREMENTS**

No.	Description	Pre-Test
1	Total Length	4490
2	Total Width	1695
3	Bumper Top Height	590
4	Bumper Bottom Height	295
5	Longitudinal Member Top Height	550
6	Distance Between Longitudinal Members	860
7	Longitudinal Member Width	70
8	Engine Top Height	840
9	Engine Bottom Height	176
10	Engine and Gearbox Width	420
11	Front Bumper to Engine Distance	505
12	Front Shock Absorber Fixing Height	860
13	Bonnet Leading Edge Height	840
14	Front Shock Absorber Fixing Width	1130
15	Front Bumper to Front Axle Distance	842
16	Front Axle to A-Pillar Distance	430
17	A-Pillar to B-Pillar Distance	1030
18	B-Pillar to Rear Axle Distance	1045
19	B-Pillar to C-Pillar Distance	888
20	Roof Sill Bottom Height	1365
21	Roof Sill Top Height	1470
22	Floor Sill Bottom Height	191
23	Floor Sill Top Height	315

All measurements in millimeters.

## DATA SHEET NO. 2

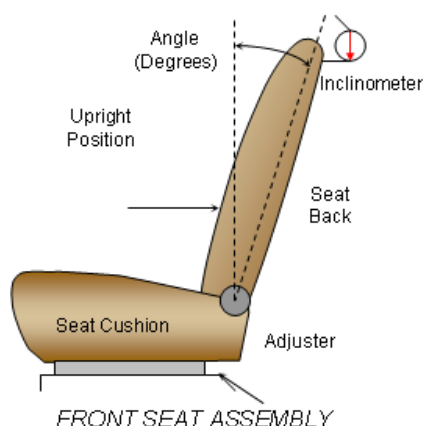
### SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56.3 km/h Frontal Impact NCAP Test

NHTSA No.: M20165203  
 Test Date: 12/16/15

#### 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.

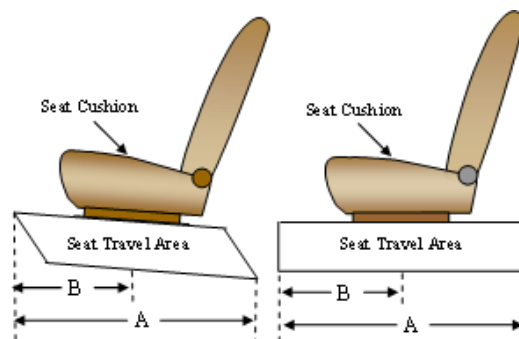


#### SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	0.3
Passenger Seat Back Angle	5.0

#### SEAT FORE / AFT POSITIONING

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



#### SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	231 mm	116 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 50<sup>th</sup> percentile adult male ATD for the driver, and a 5<sup>th</sup> percentile adult female ATD for the passenger. Position “H” is the uppermost position, followed by position “M1”. Position “L” is the lowermost position.

#### SEAT BELT UPPER ANCHORAGES

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

**DATA SHEET NO. 2 ... (CONTINUED)**

**SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA**

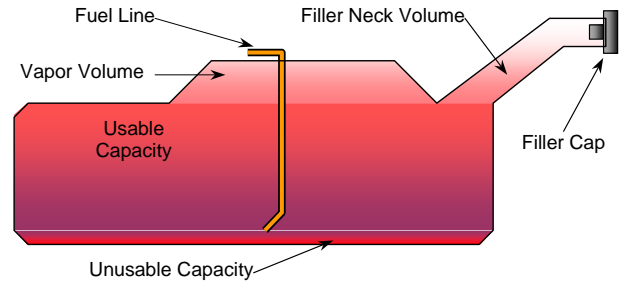
Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**FUEL TANK CAPACITY**

Description	Liters
Usable Capacity of "Standard Tank"	40.88
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	37.61 to 38.43
Actual Amount of Stoddard Solvent Used	38.00
1/3 of Usable Capacity	13.63

**FUEL PUMP**

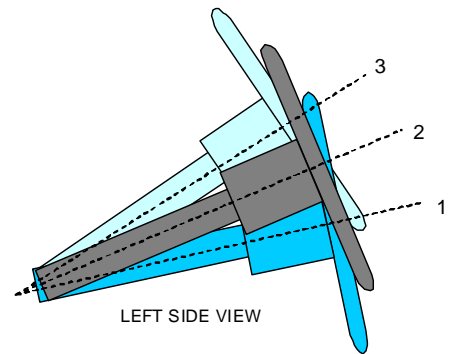
The vehicle is equipped with an electric fuel pump. The fuel pump will pump fuel for 1.0 second after the ignition is switched to the "ON" position and while the engine is running.



VEHICLE FUEL TANK ASSEMBLY

**STEERING COLUMN ADJUSTMENT**

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. A tape measure is used to measure telescoping steering wheel travel.



STEERING COLUMN ASSEMBLY

**STEERING COLUMN POSITIONING**

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	24.8	
Geometric Center Position, No. 2	26.9	
Uppermost Position, No. 3	29.0	
Telescoping Steering Wheel Travel		
Test Position	26.9	Fixed

### DATA SHEET NO. 3

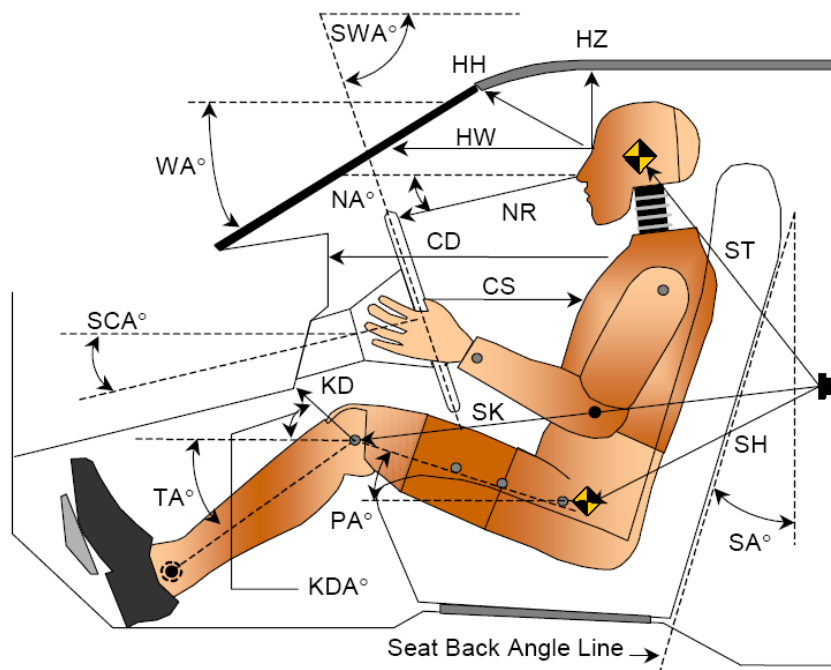
### DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan

NHTSA No.: M20165203

Test Program: 56.3 km/h Frontal Impact NCAP Test

Test Date: 12/16/15



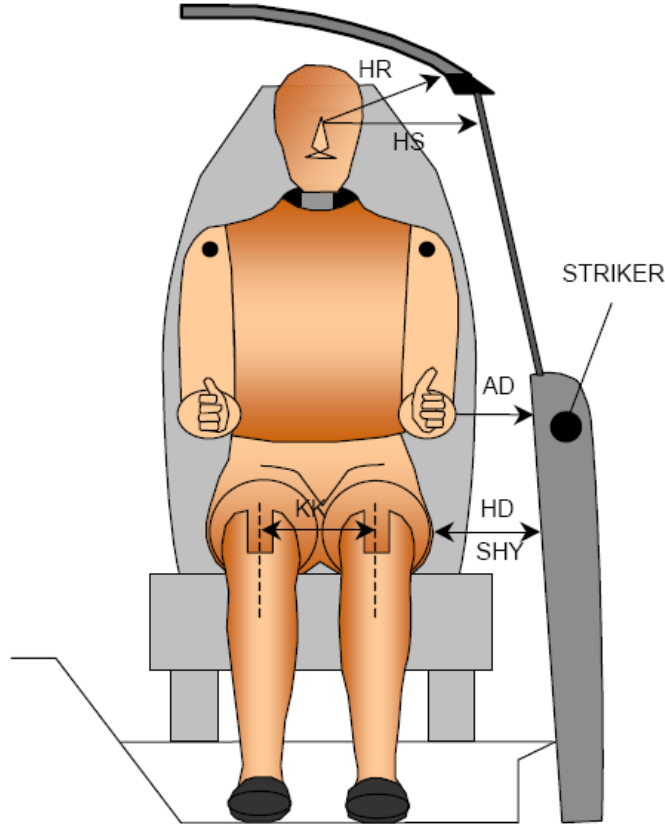
**LEFT SIDE VIEW**

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		27.4		
SWA°	Steering Wheel Angle		63.3		
SCA°	Steering Column Angle		26.7		
SA°	Seat Back Angle (On Headrest Post)		0.3		5.0
HZ	Head to Roof	204	90.0	215	90.0
HH	Head to Header	334	20.5	293	40.8
HW	Head to Windshield	605	0.0	620	0.0
NR	Nose to Rim	379	10.0	436	28.0
CD	Chest to Dash	524	16.1	399	10.0
CS	Chest to Steering Hub	290	2.1		
RA	Rim to Abdomen	192	0.0		
KDL	Left Knee to Dash	160	29.6	71	34.0
KDR	Right Knee to Dash	134	33.7	99	29.0
PA°	Pelvic Angle		24.8		21.5
TA°	Tibia Angle		53.3		52.9
SK	Striker to Knee	617	3.3	728	1.5
ST	Striker to Head	562	78.5	546	59.4
SH	Striker to H-Point	284	24.8	413	12.5

## DATA SHEET NO. 4

### DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

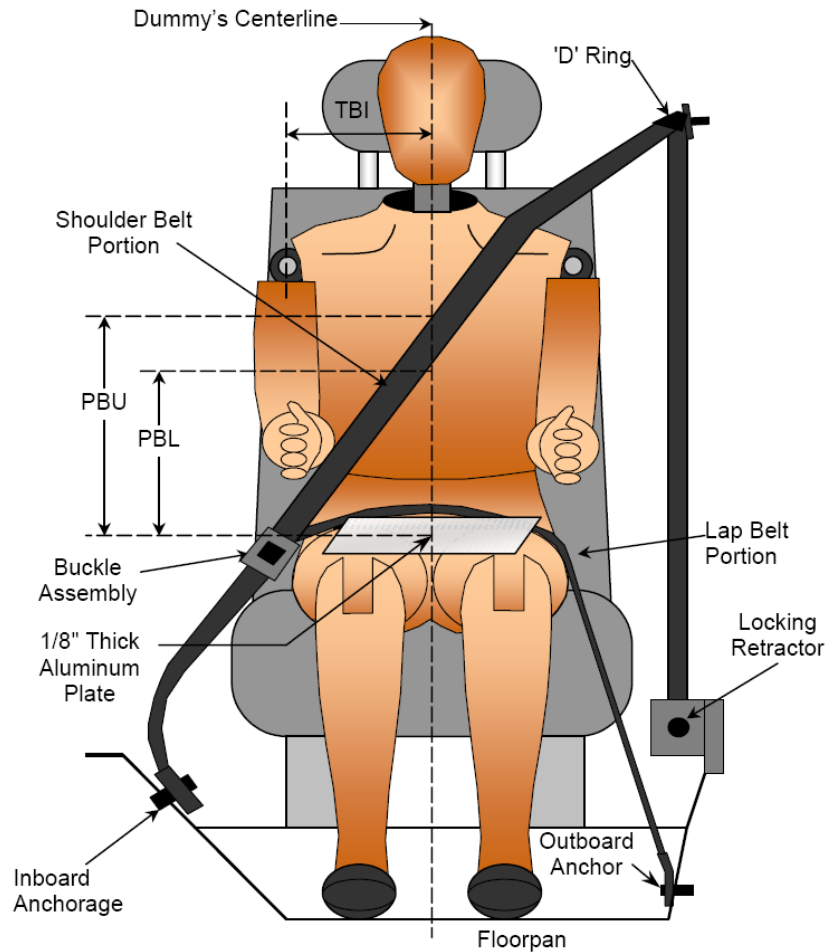


Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	89	50
HD	H-Point to Door	126	166
HR	Head to Side Header	208	253
HS	Head to Side Window	333	355
KK	Knee to Knee	295	166
SHY	Striker to H-Point (Y-Direction)	217	267
AA	Ankle to Ankle	315	167

**DATA SHEET NO. 5**  
**SEAT BELT POSITIONING DATA**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
Test Program: 56.3 km/h Frontal Impact NCAP Test

NHTSA No.: M20165203  
Test Date: 12/16/15



**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	304	279
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	222	198

**BELT LENGTH DATA**

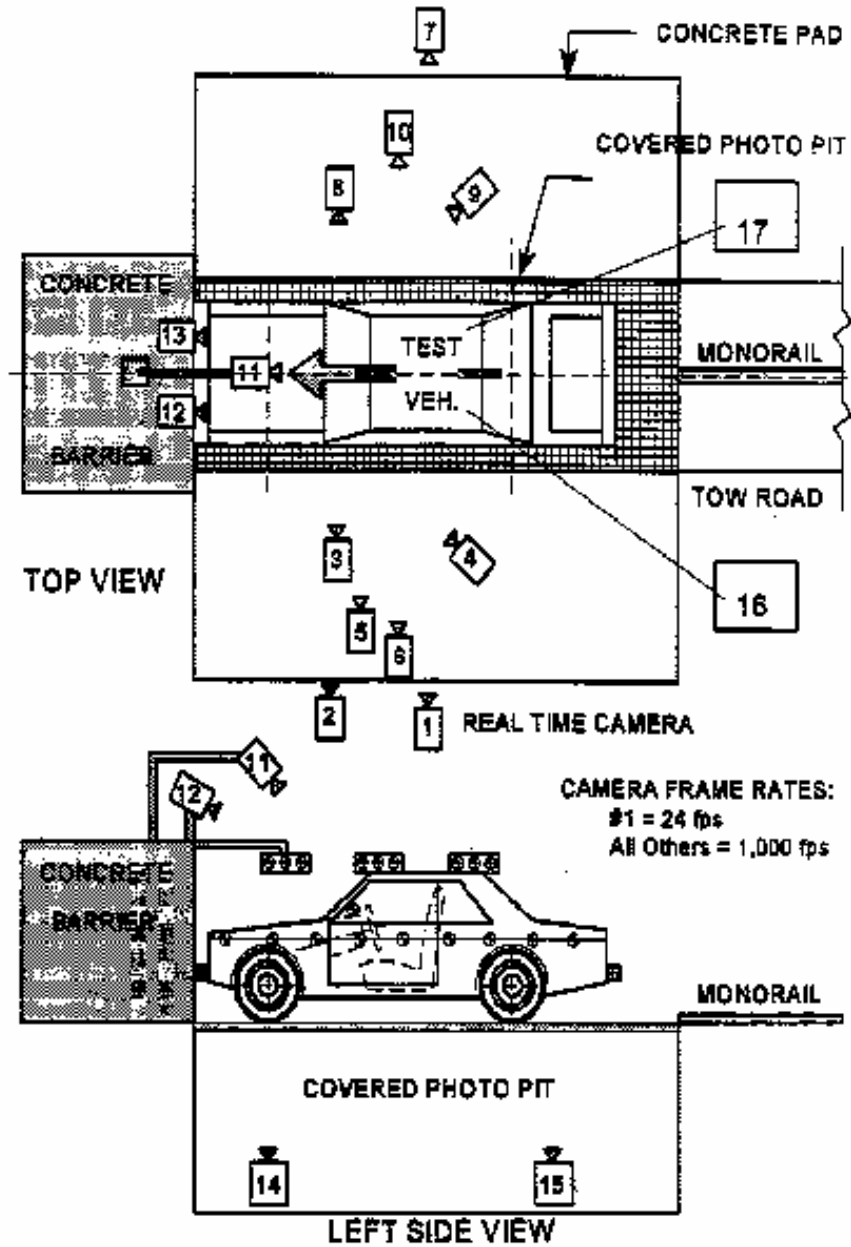
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	923	972
Lap Belt Length as Measured on ATD	mm	973	1006
Remainder of Belt on Reel	mm	952	835
Total Belt Length for Continuous Webbing Systems	mm	2848	2813

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

CAMERA POSITIONS FOR FRONTAL IMPACTS



**DATA SHEET NO. 6 ... (CONTINUED)**

**HIGH-SPEED CAMERA LOCATIONS AND DATA**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**CAMERA LOCATIONS**

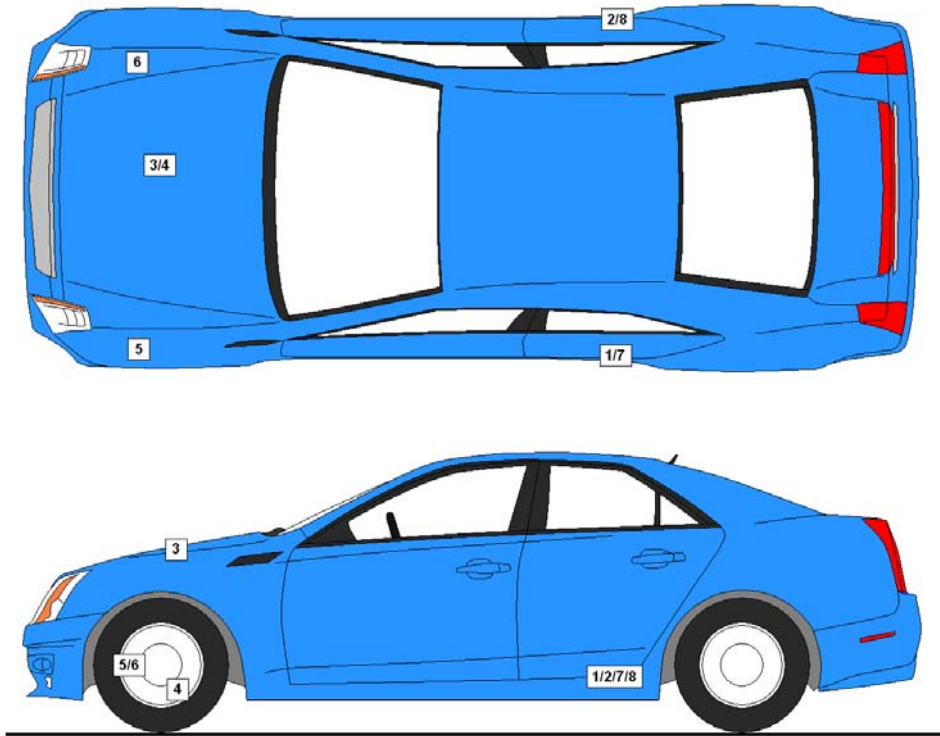
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering Column - Bottom	-1972	-10412	-3379	50	1000
7	Right Overall	-2336	7569	-1012	24	1000
8	Passenger Close-Up	-1733	7581	-1408	50	1000
9	Right Front Half	-1600	8214	-1811	ZOOM	1000
10	Right Angle	-6217	9516	-4830	ZOOM	1000
11	Windshield	-354	0	-5749	12	1000
12	Driver Windshield	297	-366	-2460	12	1000
13	Passenger Windshield	297	366	-2460	24	1000
14	Pit Front	-756	0	1495	20	1000
15	Pit Rear	-3398	0	1495	20	1000
16	Onboard Driver Airbag (Optional)	-1400	-530	-1250	12	1000
17	Onboard Passenger Airbag (Optional)	-1400	530	-1250	12	1000
18	Real-Time Left View of Impact					
19	Real-Time Right View of Impact					

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

**DATA SHEET NO. 7**

**VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15



**VEHICLE ACCELEROMETER PRE-TEST LOCATIONS**

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1786	-667	-314
2	Right Rear Accelerometer X-Direction	1781	667	-314
3	Engine Top X	358	181	-883
4	Engine Bottom X	3872	232	-210
5	Left Rear Accelerometer Z-Direction	1786	-667	-314
6	Right Rear Accelerometer Z-Direction	1781	667	-314
7	Left Rear Accelerometer X-Direction Redundant	1786	-667	-314
8	Right Rear Accelerometer X-Direction Redundant	1781	667	-314

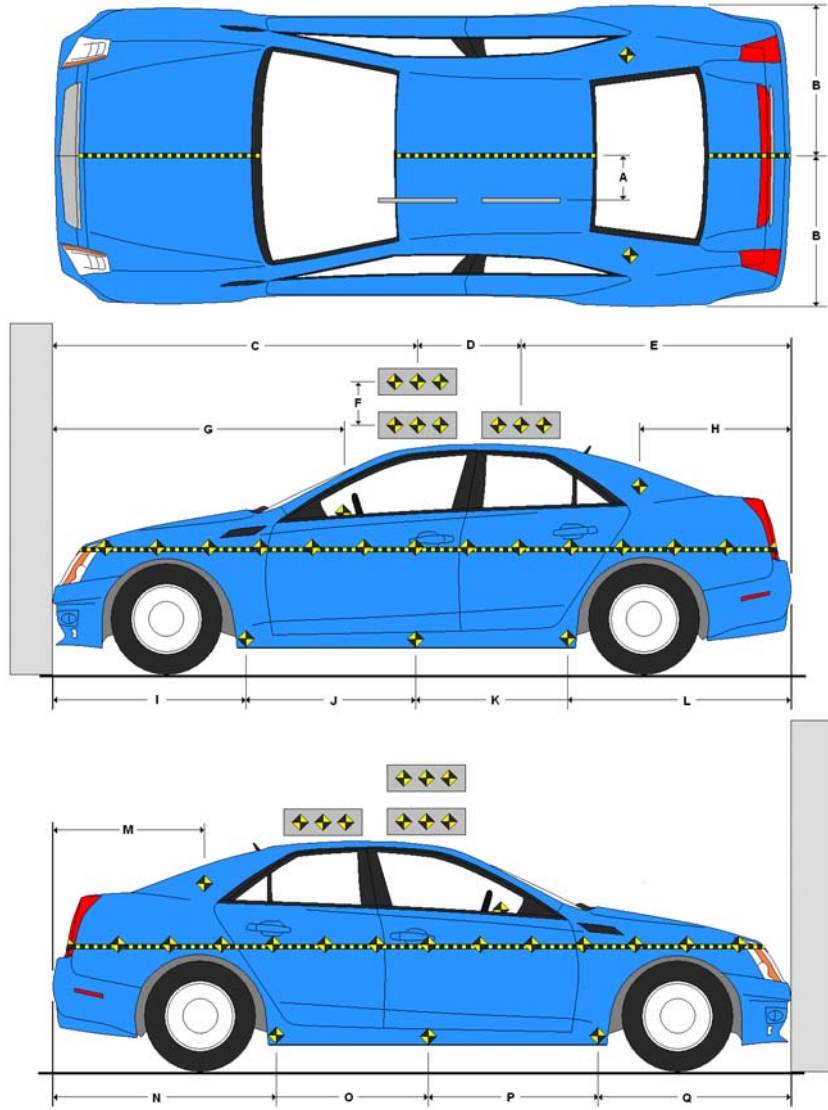
Reference Points: X – Rear Surface of Vehicle (+ forward)  
 Y – Vehicle Centerline (+ to right)  
 Z – Ground Plane (+ down)

**DATA SHEET NO. 8**

**PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

Item	Value
A	345
B	848
C	2050
D	610
E	1805
F	305
G	1600
H	890
I	1275
J	890
K	890
L	1441
M	902
N	1440
O	893
P	893
Q	1265



All measurements in millimeters.

**DATA SHEET NO. 9**

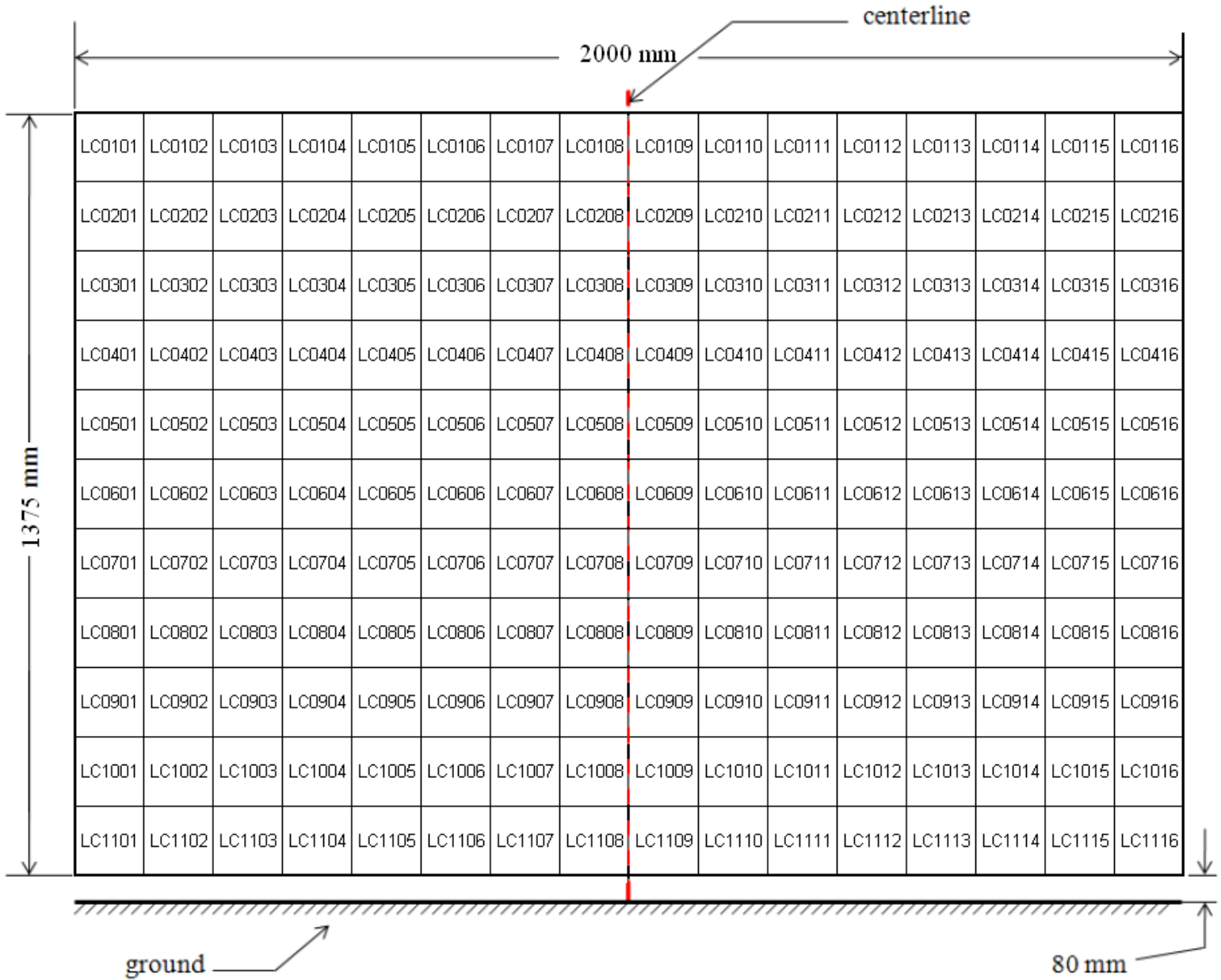
**LOAD CELL LOCATIONS ON FIXED BARRIER**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan

NHTSA No.: M20165203

Test Program: 56.3 km/h Frontal Impact NCAP Test

Test Date: 12/16/15



**DATA SHEET NO. 10**

**TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**INSTRUMENTATION**

Driver Dummy Accelerometers	47
Passenger Dummy Accelerometers	47
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	2
Load Cell Barrier	528
Total	632

**CAMERA COVERAGE**

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

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

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**TEST DUMMY INFORMATION AND CONTACT**

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 360	P572O 5th Percentile Female ATD / 141
Head Contact	Frontal Airbag, Headrest	Frontal Airbag, Headrest
Upper Torso Contact	Frontal Airbag	Frontal Airbag
Lower Torso Contact	Frontal Airbag	Frontal Airbag
Left Knee Contact	Knee Bolster, Steering Column, Steering Wheel Rim	Knee Bolster
Right Knee Contact	Knee Bolster	Knee Bolster

**DOOR OPENING AND SEAT TRACK INFORMATION**

Description	Driver	Passenger
Locked / Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Rear Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Track Shift (mm)	15	3
Seat Back Failure	None	None
Glazing Damage	None	None

**POST TEST STRUCTURAL OBSERVATIONS**

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	Damaged
Window Damage	None
Other Notable Effects	Windshield was pierced below protected edge

**VEHICLE REBOUND FROM BARRIER**

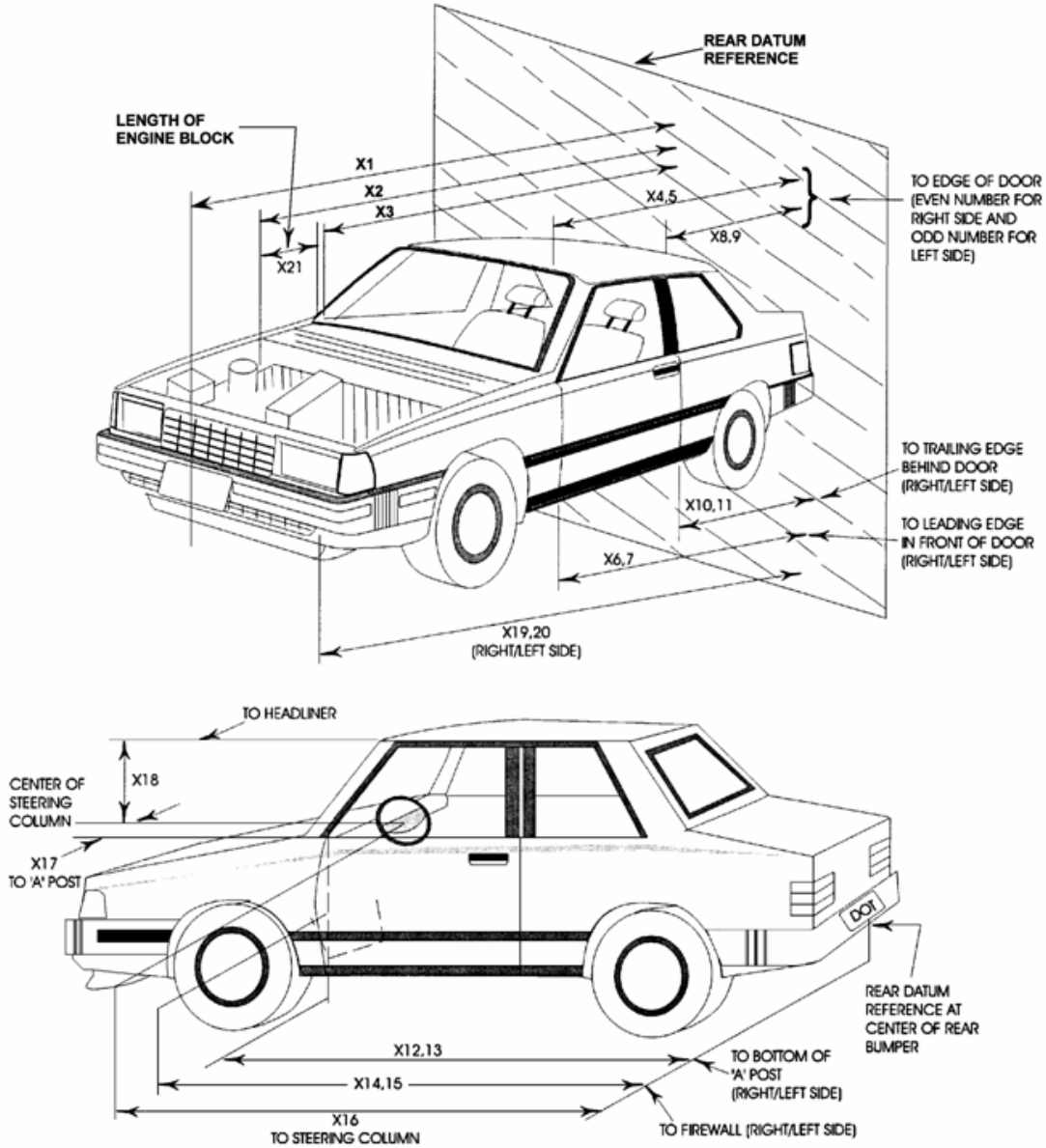
Measured Parameter	Units	Value
Left Side	mm	2670
Center	mm	2635
Right Side	mm	2755
Average	mm	2687

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

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

**DATA SHEET NO. 12**  
**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15



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

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4490	3990	-500
2	Rear Surface of Vehicle to Front of Engine	3985	3678	-307
3	RSOV to Firewall	3530	3520	-10
4	RSOV to Upper Leading Edge of Right Door	3215	3242	27
5	RSOV to Upper Leading Edge of Left Door	3210	3216	6
6	RSOV to Lower Leading Edge of Right Door	3200	3225	25
7	RSOV to Lower Leading Edge of Left Door	3203	3197	-6
8	RSOV to Upper Trailing Edge of Right Door	2072	2109	37
9	RSOV to Upper Trailing Edge of Left Door	2070	2080	10
10	RSOV to Lower Trailing Edge of Right Door	2075	2104	29
11	RSOV to Lower Trailing Edge of Left Door	2075	2067	-8
12	RSOV to Bottom of A-Pillar, Right Side	3173	3193	20
13	RSOV to Bottom of A-Pillar, Left Side	3176	3126	-50
14	RSOV to Firewall, Right Side	3425	3420	-5
15	RSOV to Firewall, Left Side	3540	3540	0
16	RSOV to Steering Column	2700	3004	304
17	Center of Steering Column to A-Pillar	400	400	0
18	Center of Steering Column to Headliner	400	415	15
19	RSOV to Right Side of Front Bumper	3823	3655	-168
20	RSOV to Left Side of Front Bumper	3827	3640	-187
21	Length of Engine Block	630	630	0
RD	RSOV to Right Side of Dash Panel	2925	3012	87
CD	RSOV to Center of Dash Panel	2900	2900	0
LD	RSOV to Left Side of Dash Panel	2920	2970	50

All measurements in millimeters.

**DATA SHEET NO. 13**

**ACCIDENT INVESTIGATION DIVISION DATA**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

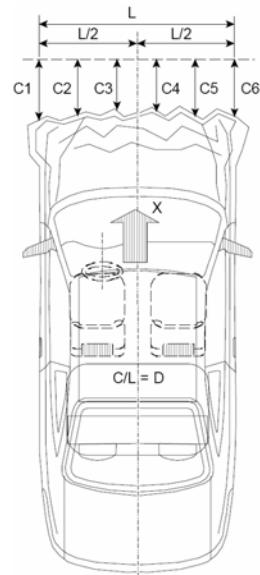
**VEHICLE INFORMATION**

VIN: 3N1CN7AP3GL821970 Wheelbase (mm): 2610  
 Vehicle Size Category: 4-Door Sedan Test Weight (kg): 1279.0

**ACCELEROMETER DATA**

Accelerometer Locations: Left Rear Crossmember  
 Cal. Procedure/Interval: Drop Test / 6 months  
 Integration Algorithm: NHTSA Standard  
 Impact Velocity (km/h): 56.50  
 Velocity Change (km/h): 69.0  
 Time of Separation (msec): 66.5

Linearity: Good



**CRUSH PROFILE**

Collision Deformation Classification: 12FDEW3  
 Midpoint of Damage: Vehicle Centerline  
 Damage Region Length (mm): 1333  
 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	200	556	356
C2	Crush Zone 2 at Left Side	mm	50	465	415
C3	Crush Zone 3 at Left Side	mm	10	480	470
C4	Crush Zone 4 at Right Side	mm	10	525	515
C5	Crush Zone 5 at Right Side	mm	50	587	537
C6	Crush Zone 6 at Right Side	mm	200	590	390
L	C1 to C6	mm	1333		

**DATA SHEET NO. 14**

**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan

NHTSA No.: M20165203

Test Program: 56.3 km/h Frontal Impact NCAP Test

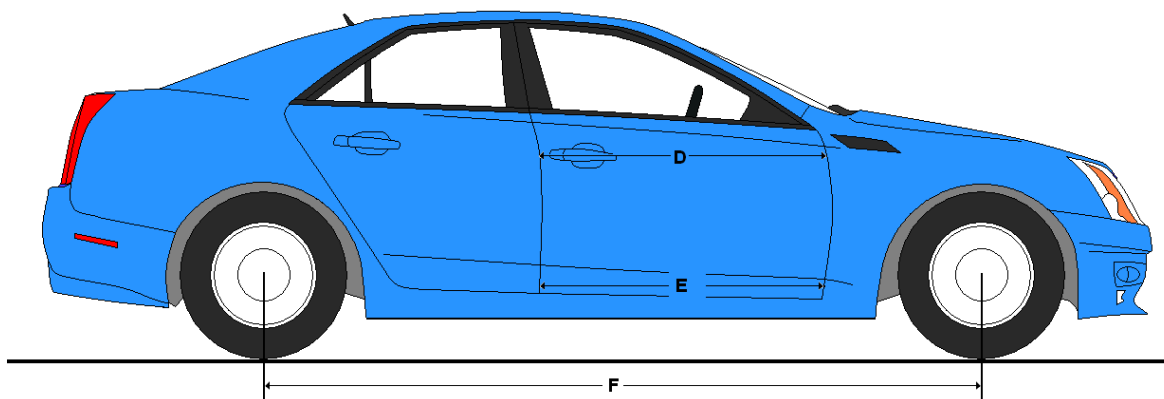
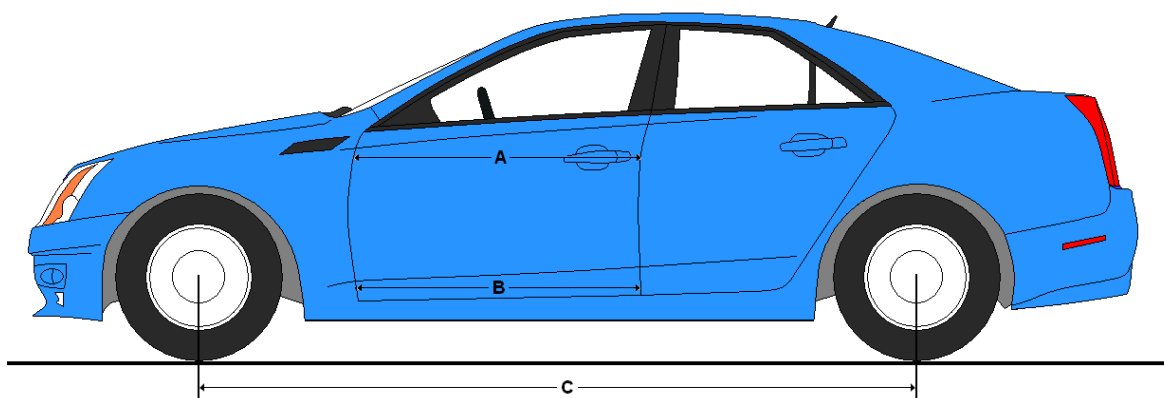
Test Date: 12/16/15

**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1030	1021	9
B	Left Side Lower	mm	946	946	0
D	Right Side Upper	mm	1031	1019	12
E	Right Side Lower	mm	921	976	-55

**WHEELBASE MEASUREMENTS**

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2610	2531	79
F	Right Side Wheelbase	mm	2610	2540	70



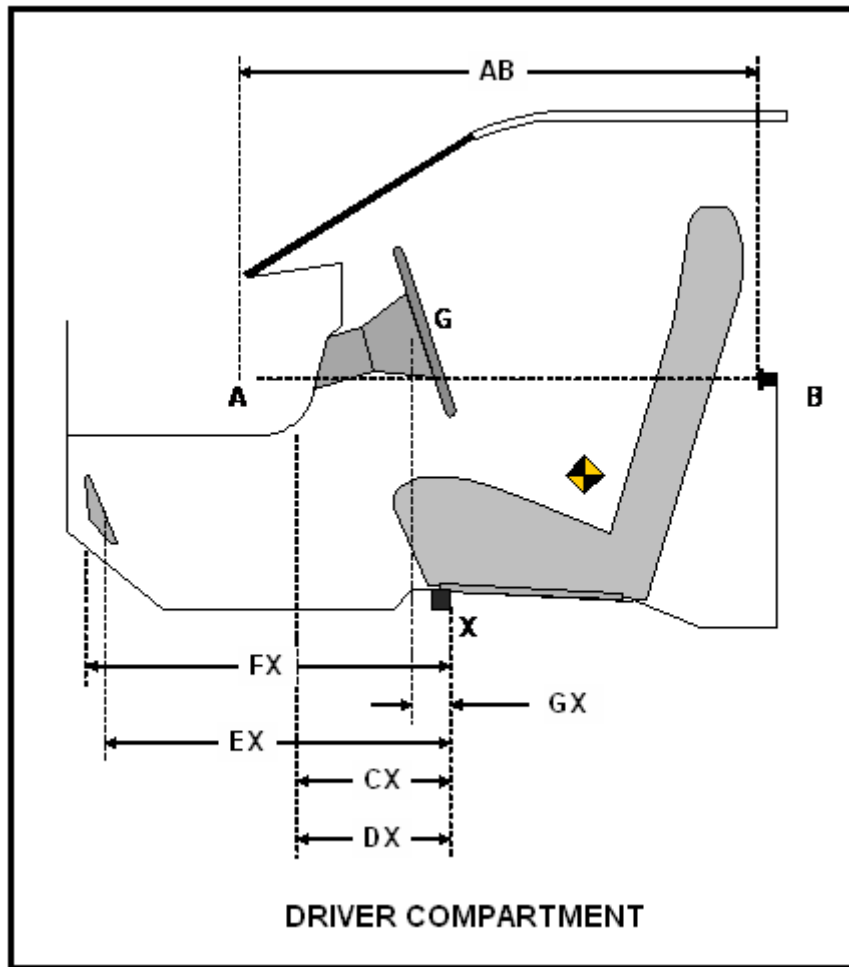
**DATA SHEET NO. 14 ... (CONTINUED)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**DRIVER COMPARTMENT INTRUSION**

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	966	958	8
CX	Left Knee Bolster to X	mm	270	260	10
DX	Right Knee Bolster to X	mm	305	260	45
EX	Brake Pedal to X	mm	520	375	145
FX	Foot Rest to X	mm	540	590	-50
GX	Center of Steering Wheel Hub to X	mm	150	140	10

X = Front of Seat Track (Stationary)



**DATA SHEET NO. 15**

**SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203

Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

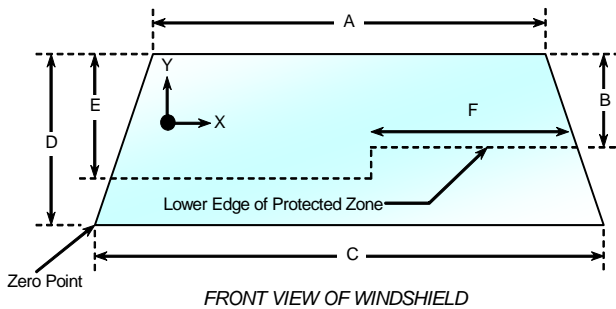
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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

Temperature of windshield molding during test: 21.1° C

**WINDSHIELD PERIPHERY MEASUREMENTS**

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2298	2298	100.0%
Right Side	2298	2298	100.0%
Total	4596	4596	100.0%



Item	Units	Value
A	mm	1110
B	mm	339
C	mm	1295
D	mm	870
E	mm	497
F	mm	485

**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
6	60

**DATA SHEET NO. 15 ... (CONTINUED)**

**SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA**

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15

**FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA**

Temperature at Time of Impact: 10° C Test Time: 2:20 PM

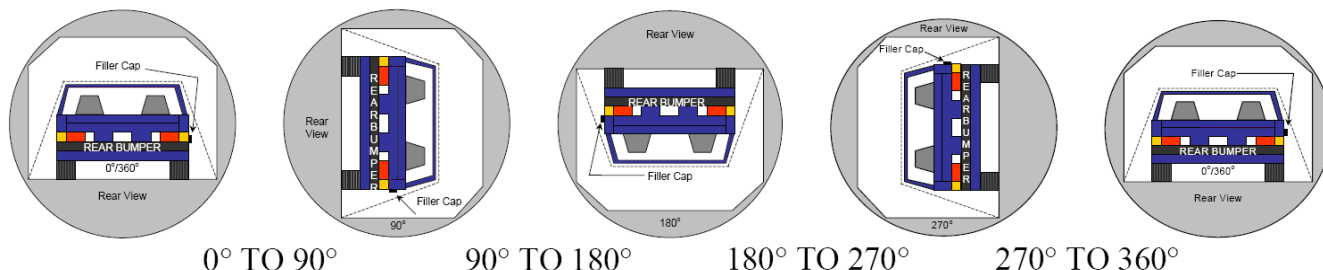
**Stoddard Solvent Spillage Measurements**

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

## DATA SHEET NO. 16

### FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No.: M20165203  
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/16/15



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard solvent spillage: There was no Stoddard solvent spillage.

#### SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	81	300	381
180° To 270°	76	300	376
270° To 360°	85	300	385

#### FMVSS 301 SPILLAGE TABLE

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

#### SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17

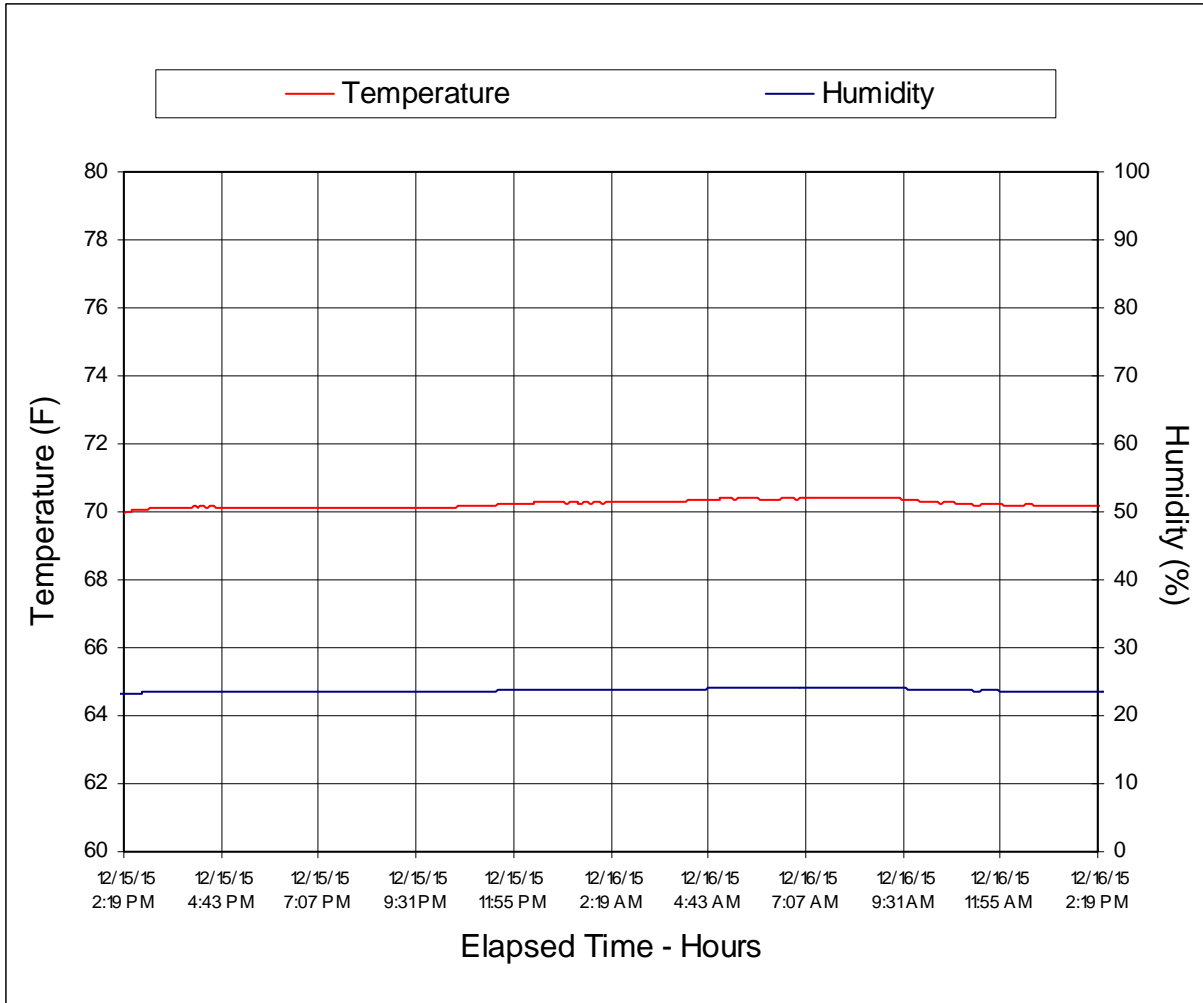
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan

NHTSA No.: M20165203

Test Program: 56.3 km/h Frontal Impact NCAP Test

Test Date: 12/16/15



**APPENDIX A  
PHOTOGRAPHS**

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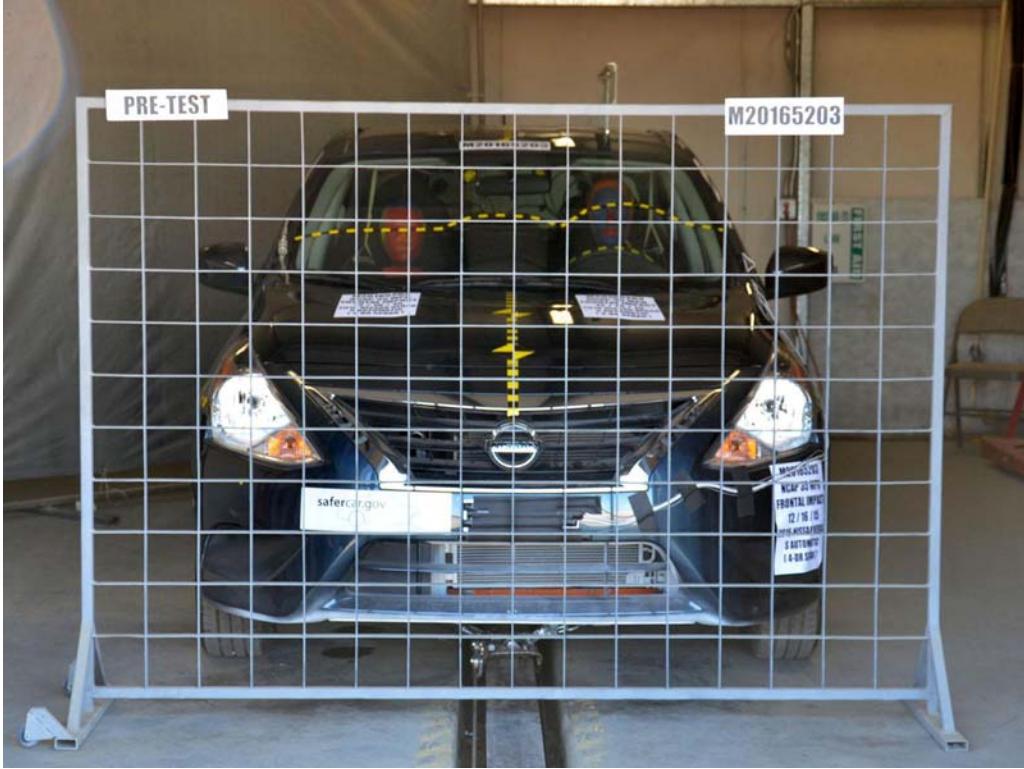


FIGURE 1. Load Cell Location

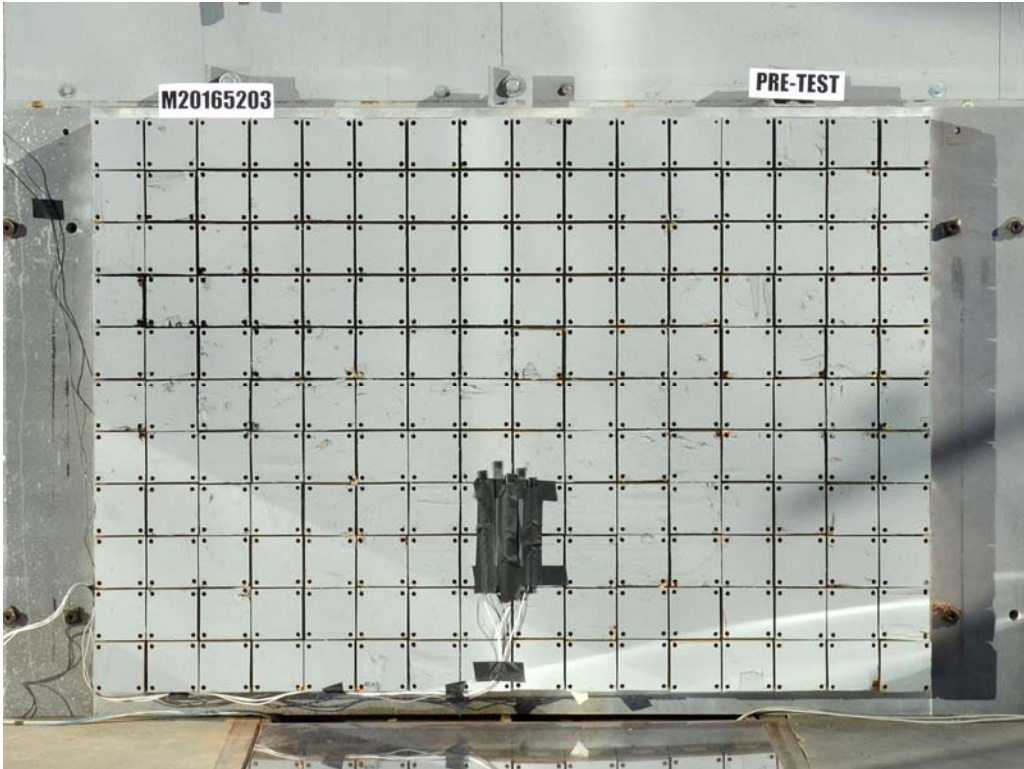


FIGURE 2. Pre-Test Load Cell Wall

# Photograph Not Available

FIGURE 3. Post-Test Load Cell Wall



FIGURE 4. Manufacturer's Label

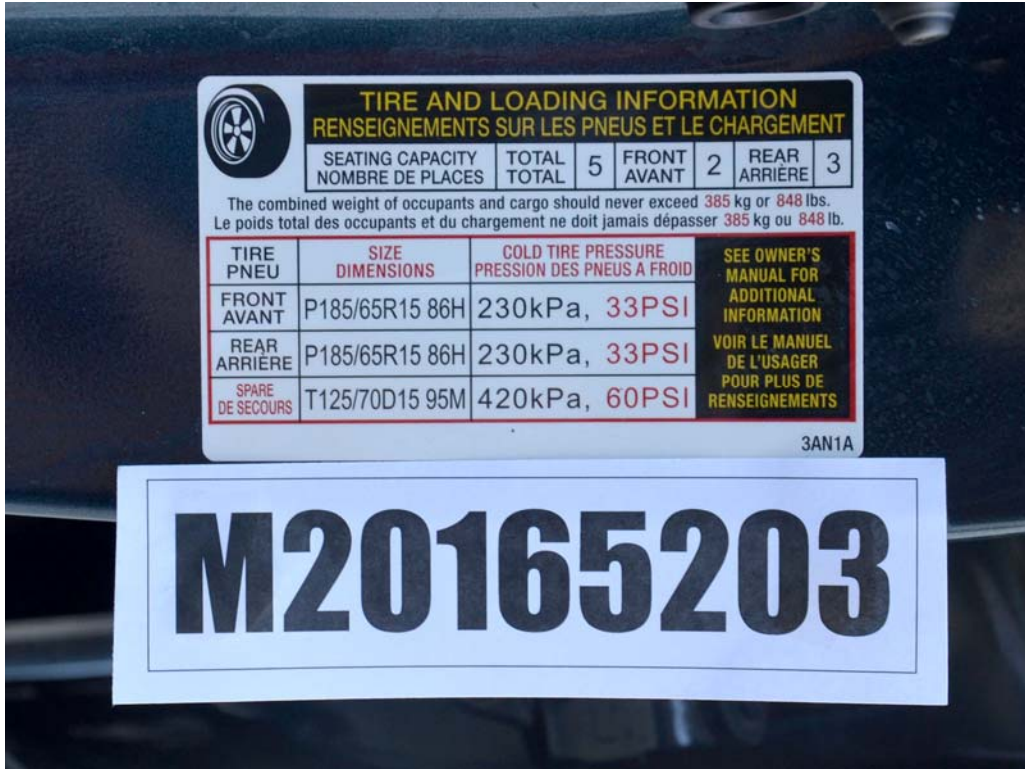


FIGURE 5. Tire Placard



FIGURE 6. 2016 Nissan Versa Frontal as Delivered



FIGURE 7. Left Rear  $\frac{3}{4}$  View, as Received



FIGURE 8. Pre-Test Front View of Test Vehicle



FIGURE 9. Post-Test Front View of Test Vehicle



FIGURE 10. Pre-Test Left View of Test Vehicle



FIGURE 11. Post-Test Left View of Test Vehicle



FIGURE 12. Pre-Test Right View of Test Vehicle



FIGURE 13. Post-Test Right View of Test Vehicle



FIGURE 14. Pre-Test Right Front 3/4 View



FIGURE 15. Post-Test Right Front  $\frac{3}{4}$  View



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



FIGURE 17. Post-Test Left Rear  $\frac{3}{4}$  View



FIGURE 18. Pre-Test Windshield View



FIGURE 19. Post-Test Windshield View



FIGURE 20. Pre-Test Engine Compartment View



FIGURE 21. Post-Test Engine Compartment View



FIGURE 22. Pre-Test Fuel Filler Cap View



FIGURE 23. Post-Test Fuel Filler Cap View

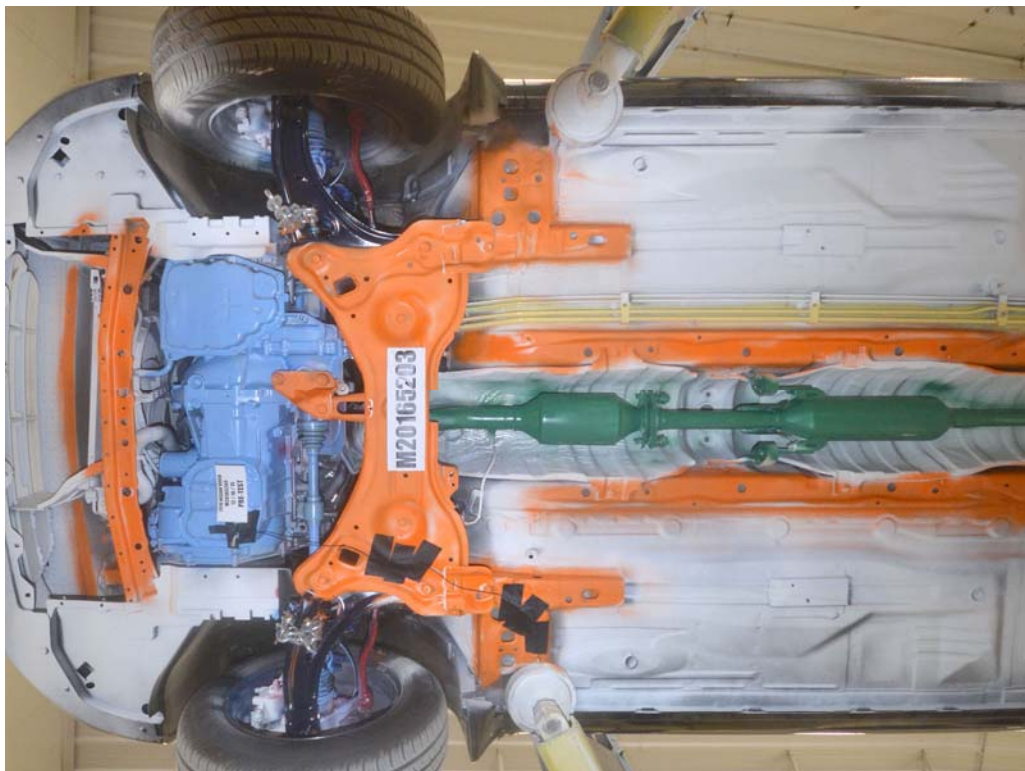


FIGURE 24. Pre-Test Front Underbody View

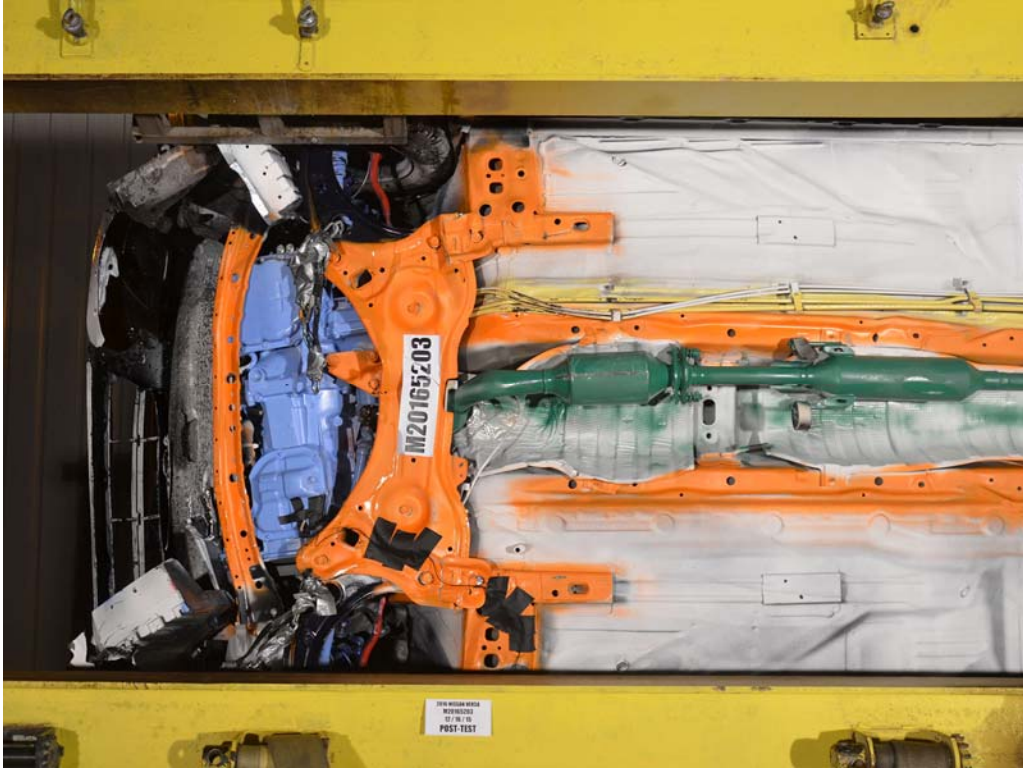


FIGURE 25. Post-Test Front Underbody View

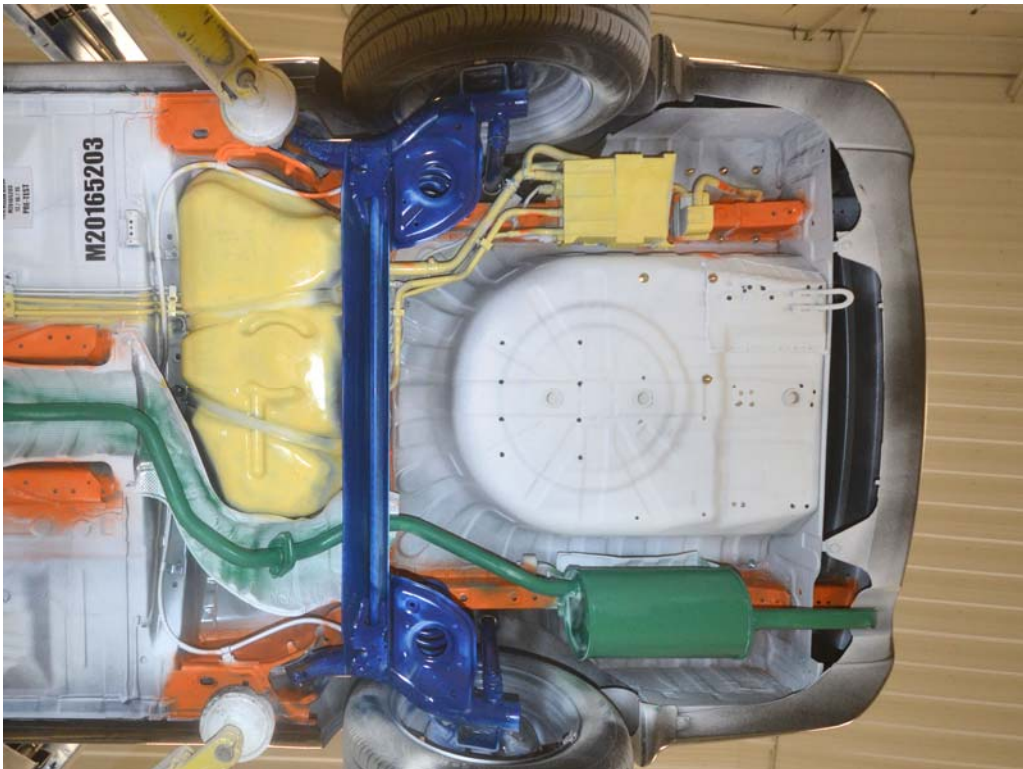


FIGURE 26. Pre-Test Rear Underbody View

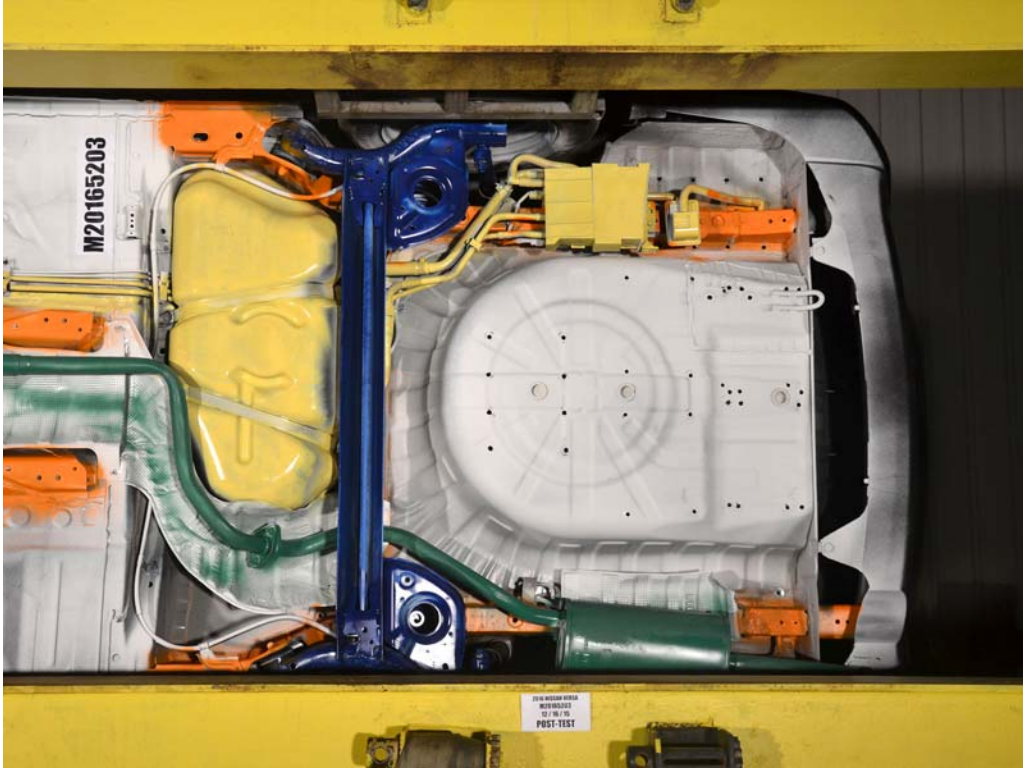


FIGURE 27. Post-Test Rear Underbody View

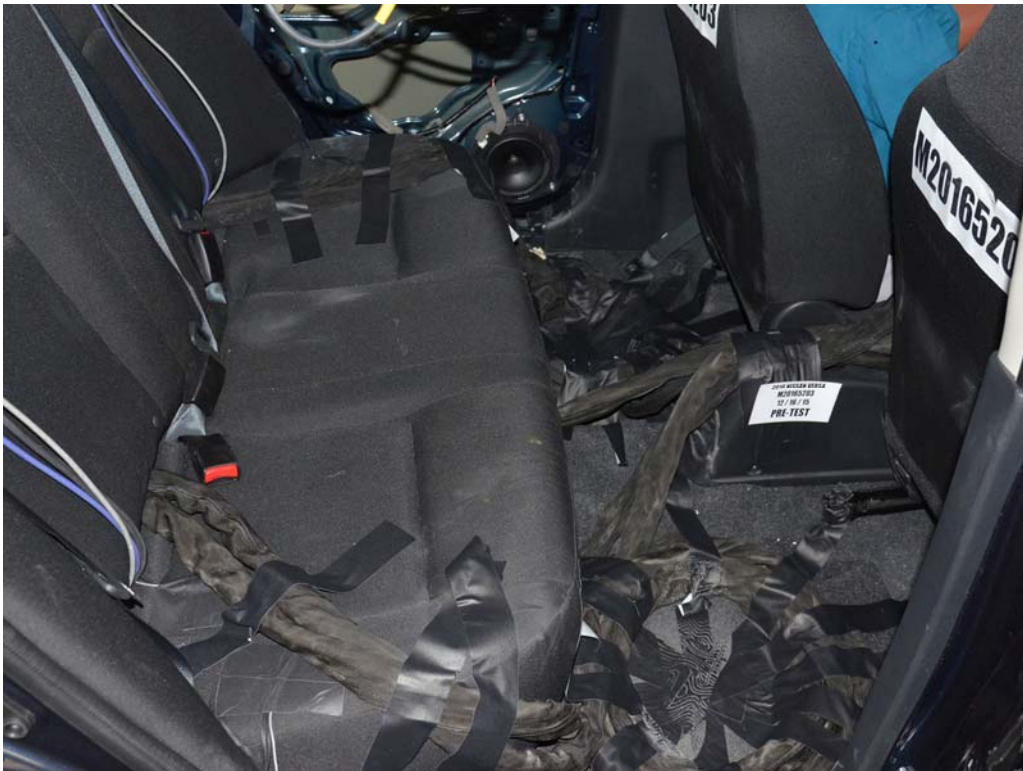


FIGURE 28. Pre-Test Dummy Cable Routing

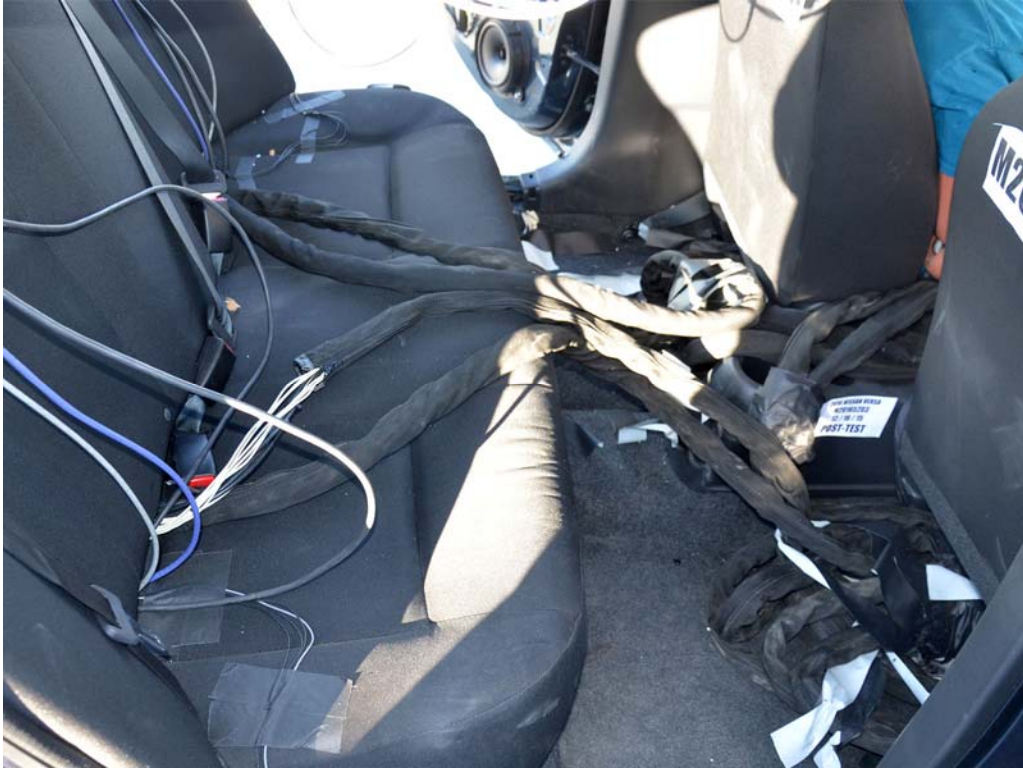


FIGURE 29. Post-Test Dummy Cable Routing



FIGURE 30. Pre-Test Driver Dummy Front View



FIGURE 31. Post-Test Driver Dummy Front View



FIGURE 32. Pre-Test Driver Dummy Window View



FIGURE 33. Post-Test Driver Dummy Window View



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



FIGURE 35. Post-Test Driver Dummy and Vehicle Interior View



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



FIGURE 37. Post-Test Driver's Seat Fore-Aft Markings



FIGURE 38. Pre-Test View of Belt Anchorage for Driver Dummy



FIGURE 39. Post-Test View of Belt Anchorage for Driver Dummy



FIGURE 40. Pre-Test Driver Dummy Feet



FIGURE 41. Post-Test Driver Dummy Feet



FIGURE 42. Pre-Test Driver's Side Knee Bolster



FIGURE 43. Post-Test Driver's Side Knee Bolster



FIGURE 44. Pre-Test Driver's Side Floorpan



FIGURE 45. Post-Test Driver's Side Floorpan



FIGURE 46. Post-Test Driver Dummy Face



FIGURE 47. Post-Test Driver Dummy Contact with Airbag



FIGURE 48. Post-Test Driver Dummy Contact with Headrest

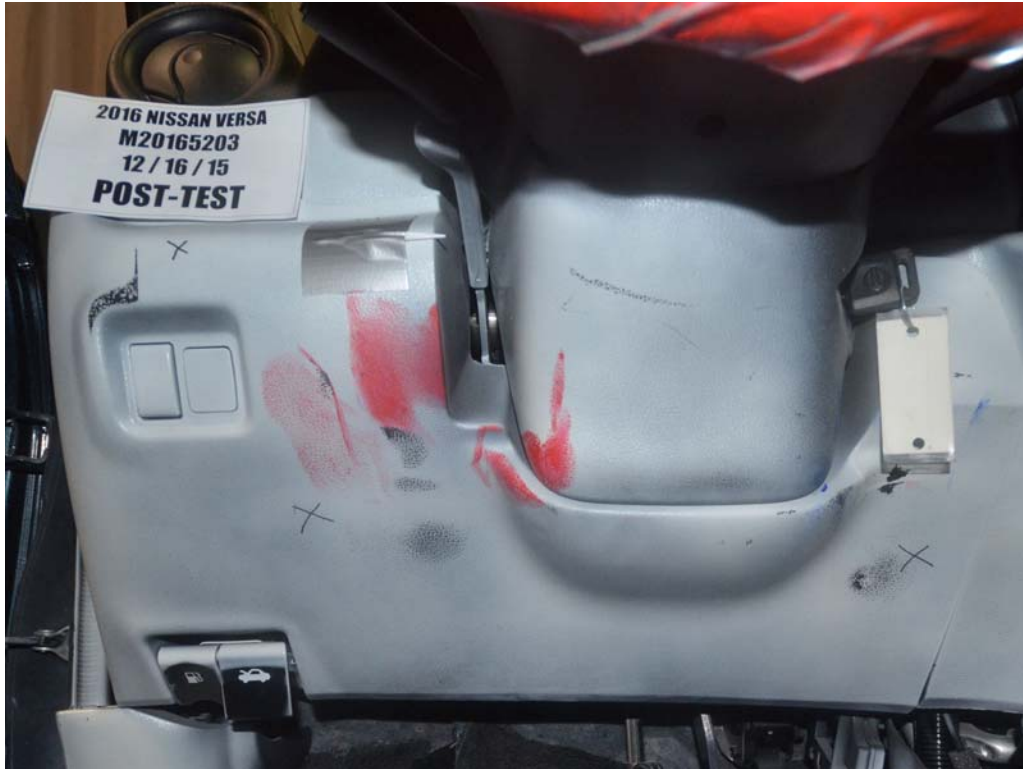


FIGURE 48a. Post-Test Driver Dummy Contact with Knee Bolster



FIGURE 48b. Post-Test Driver Dummy Contact with Steering Column



FIGURE 49. Pre-Test View of the Steering Wheel



FIGURE 50. Post-Test View of the Steering Wheel



FIGURE 51. Pre-Test Passenger Dummy Front View



FIGURE 52. Post-Test Passenger Dummy Front View



FIGURE 53. Pre-Test Passenger Dummy Window View



FIGURE 54. Post-Test Passenger Dummy Window View



FIGURE 55. Pre-Test Passenger Dummy and Vehicle Interior View



FIGURE 56. Post-Test Passenger Dummy and Vehicle Interior View



FIGURE 57. Pre-Test Passenger's Seat Fore-Aft Markings



FIGURE 58. Post-Test Passenger's Seat Fore-Aft Markings



FIGURE 59. Pre-Test View of Belt Anchorage for Passenger Dummy



FIGURE 60. Post-Test View of Belt Anchorage for Passenger Dummy



FIGURE 61. Pre-Test Passenger Dummy Feet



FIGURE 62. Post-Test Passenger Dummy Feet



FIGURE 63. Pre-Test Passenger's Side Knee Bolster



FIGURE 64. Post-Test Passenger's Side Knee Bolster



FIGURE 65. Pre-Test Passenger's Side Floorpan



FIGURE 66. Post-Test Passenger's Side Floorpan



FIGURE 67. Post-Test Passenger Dummy Face



FIGURE 68. Post-Test Passenger Dummy Contact with Airbag



FIGURE 69. Post-Test Passenger Dummy Contact with Headrest



FIGURE 69a. Post-Test Passenger Dummy Contact with Knee Bolster



FIGURE 70. Photograph of Ballast Installed in Vehicle

**Photograph Not Applicable**

**No Stoddard  
Solvent Spillage**

FIGURE 71. Post-Test Stoddard Solvent Spillage Location View



FIGURE 72. Post-Test Speed Trap Read-Out

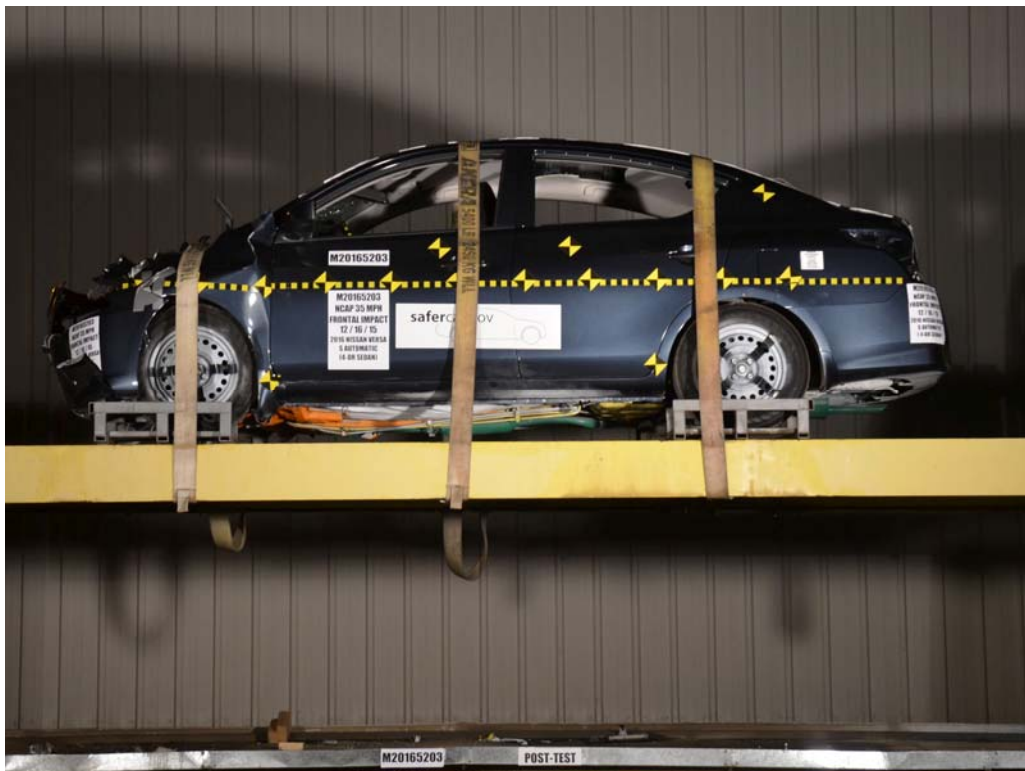


FIGURE 73. Vehicle at 0° on Static Rollover Device



FIGURE 74. Vehicle at 90° on Static Rollover Device

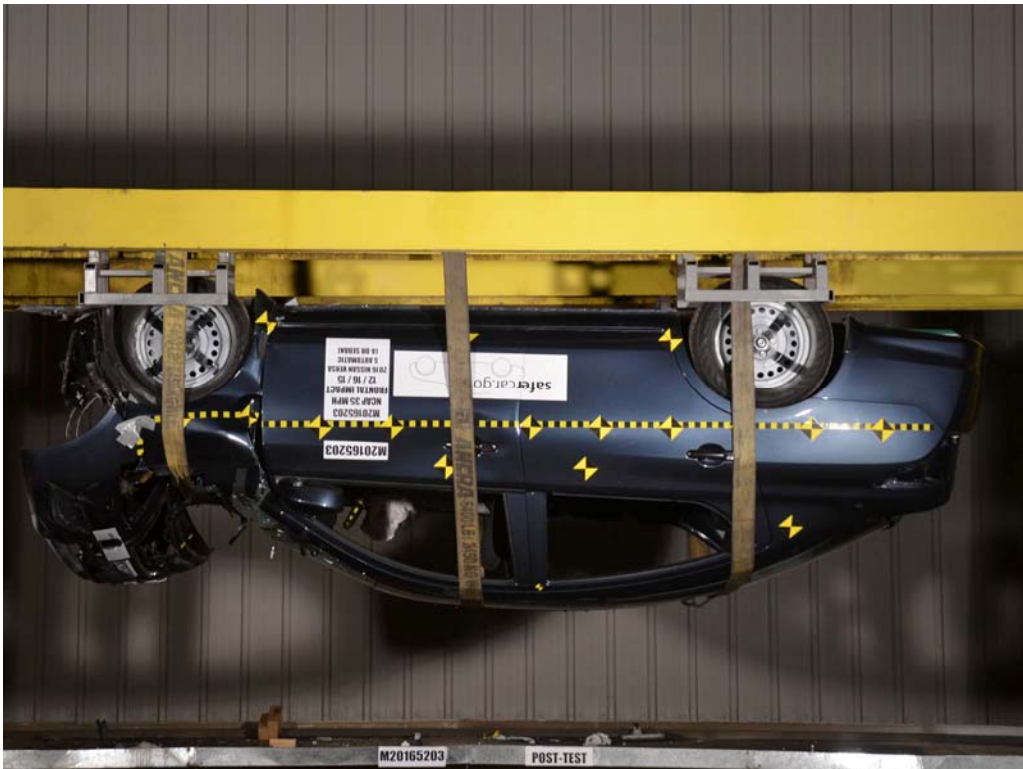


FIGURE 75. Vehicle at 180° on Static Rollover Device

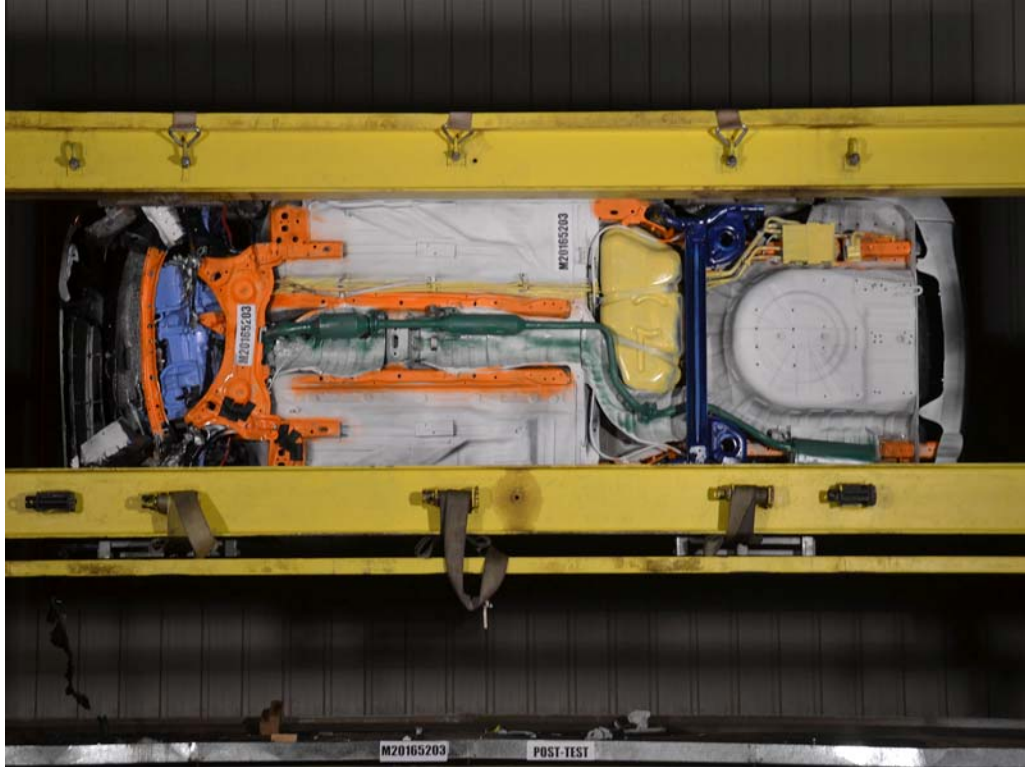


FIGURE 76. Vehicle at 270° on Static Rollover Device



FIGURE 77. Vehicle at 360° on Static Rollover Device



FIGURE 78. 2016 Nissan Versa Frontal Impact Event



 <p><b>2016 NISSAN VERSA S AUTOMATIC</b></p>		 <p>Scan QR code for general model information &amp; options</p>	<p><b>EPA DOT Fuel Economy and Environment</b> Gasoline Vehicle</p> <p><b>Fuel Economy</b> COMPACT CARS range from 14 to 118 MPG. The best vehicle rates 118 MPGe.</p> <p><b>30 MPG</b> combined city/hwy</p> <p><b>26</b> city <b>35</b> highway</p> <p><b>3.3</b> gallons per 100 miles</p> <p><b>You Save \$1,500</b> in fuel costs over 5 years compared to the average new vehicle.</p>
<p><b>VERSA IS AMERICA'S BEST SELLING VEHICLE IN ITS CLASS***</b></p> <p>Standard Equipment Included at No Extra Charge</p> <p><b>MECHANICAL &amp; PERFORMANCE</b> 1.8L D4IC 16-Valve 4-Cylinder Engine 4-Speed Automatic Transmission Front and Rear Stabilizer Bars Power-Assisted Variable Front Disc / Rear Drum Brakes 15" Steel Wheels w/ Full Wheel Covers</p> <p><b>SAFETY &amp; SECURITY</b> Driver and Front Passenger, Side-Impact, and Curtain Air Bags Lap/Shoulder and Tethers for Children (LATCH) Anti-Lock Braking System (ABS) Traction Control System (TCS) Vehicle Dynamic Control (VDC) Electronic Brake Force Distribution (EBD) and Brake Assist Tire Pressure Monitoring System (TPMS)</p>		<p>Manufacturer's Suggested Retail Base Price: \$13,490.00</p> <p>Options Included by Manufacturer SPLASH GUARDS 190.00 CARPETED FLOOR AND TRUNK MATS 190.00</p> <p>DESTINATION CHARGES 825.00</p> <p><b>Total** \$14,685.00</b></p>	<p><b>Annual fuel cost \$1,500</b></p> <p><b>Fuel Economy &amp; Greenhouse Gas Rating</b> (based on EPA Smog Rating) (based on EPA Smog Rating)</p> <p>1 2 3 4 5 6 7 8 9 10 11 12</p> <p>This vehicle emits 302 grams CO<sub>2</sub> per mile. The best emits 0 grams per mile (biofuel only). Producing and distributing fuel also emits emissions, based on all petroleum gas.</p> <p>Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 25 MPG and costs \$8,900 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.00 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.</p> <p><b>GOVERNMENT 5-STAR SAFETY RATINGS</b></p> <p><b>Overall Vehicle Score Not Rated</b> Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.</p> <p><b>Frontal Crash</b> Driver Not Rated, Passenger Not Rated Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</p> <p><b>Side Crash</b> Front seat Not Rated, Rear seat Not Rated Based on the risk of injury in a side impact.</p> <p><b>Rollover</b> ★★★★★ Based on the risk of rollover in a single-vehicle crash.</p> <p>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</p> <p>This Vehicle qualifies for Nissan's <b>Security+Plus Extended Protection Plan</b> The only service agreement backed by Nissan Extended Services North America! Ask your dealer for details, or call 1-800-NISSAN-1 for more information.</p>
<p>***According to IHS Automotive, Pole U.S. New Vehicle Registrations - non-luxury traditional sub-compact segment, January 2010 - January 2015</p> <p>**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.</p>		<p><b>DELIVERY</b></p> <p>VEHICLE COLORS: EXT-GRAPHITE BLUE, INT-CHARCOAL</p> <p>FINAL ASSEMBLY POINT: AGUAS/ABV/JMEX</p> <p>TRANSPORT METHOD: TRUCK</p> <p>DEALER: NISSAN OF SAN BERNARDINO, 735 SHOWCASE DR S, SAN BERNARDINO CA 92408</p> <p>VIN: 3N1CN7AP3GLJ21870 EPA: 30 STATE EMISSIONS MSL: 1118-02-970 RAG-D OPT: 0-890030.02</p> <p>20150621231816AS3472</p>	

FIGURE 79. Monroney Label Photograph

**APPENDIX B**  
**DUMMY RESPONSE DATA TRACES**

## TABLE OF DATA PLOTS

<u>Plot</u>		<u>Page</u>
1	Driver Head Acceleration X Primary	B-1
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7	Driver Chest Acceleration Y Primary	B-3
8	Driver Chest Acceleration Z Primary	B-3
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10	Driver Upper Neck Force X	B-4
11	Driver Upper Neck Force Z	B-4
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16	Passenger Head Acceleration X Primary	B-6
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26	Passenger Upper Neck Force Z	B-9
27	Passenger Upper Neck Moment Y	B-9
28	Passenger Nij	B-9
29	Passenger Left Femur Force Z	B-10
30	Passenger Right Femur Force Z	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](http://www.nhtsa.dot.gov)

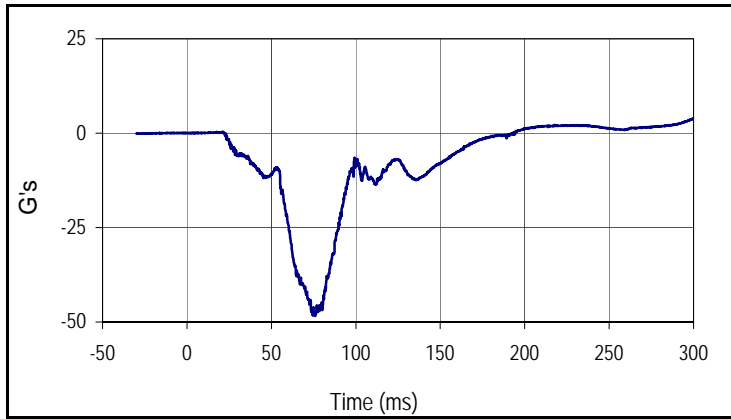
Driver Head X Acceleration Redundant  
Driver Head Y Acceleration Redundant  
Driver Head Z Acceleration Redundant  
Driver Upper Neck Force Y  
Driver Upper Neck Moment X  
Driver Upper Neck Moment Z  
Driver Chest X Acceleration Redundant  
Driver Chest Y Acceleration Redundant  
Driver Chest Z Acceleration Redundant  
Driver Pelvis X  
Driver Pelvis Y  
Driver Pelvis Z  
Driver Left Femur Redundant  
Driver Right Femur Redundant  
Driver Left Upper Tibia Moment X  
Driver Left Upper Tibia Moment Y  
Driver Left Upper Tibia Force Z  
Driver Left Lower Tibia Moment X  
Driver Left Lower Tibia Moment Y  
Driver Left Lower Tibia Force Z  
Driver Right Upper Tibia Moment X  
Driver Right Upper Tibia Moment Y  
Driver Right Upper Tibia Force Z  
Driver Right Lower Tibia Moment X  
Driver Right Lower Tibia Moment Y  
Driver Right Lower Tibia Force Z  
Driver Left Foot Fore Z  
Driver Left Foot Aft X  
Driver Left Foot Aft Z  
Driver Right Foot Fore Z  
Driver Right Foot Aft X  
Driver Right Foot Aft Z  
Driver Shoulder Belt Force

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

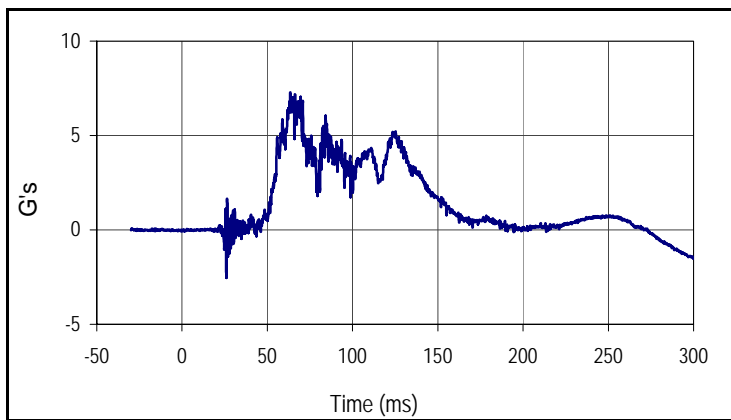
Left Rear Seat Crossmember Z  
Right Rear Seat Crossmember X  
Right Rear Seat Crossmember Z  
Left Rear Seat Crossmember X Redundant  
Right Rear Seat Crossmember X Redundant  
Vehicle Engine Top X  
Vehicle Engine Bottom X  
Load Cell Barrier Forces and Moments

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

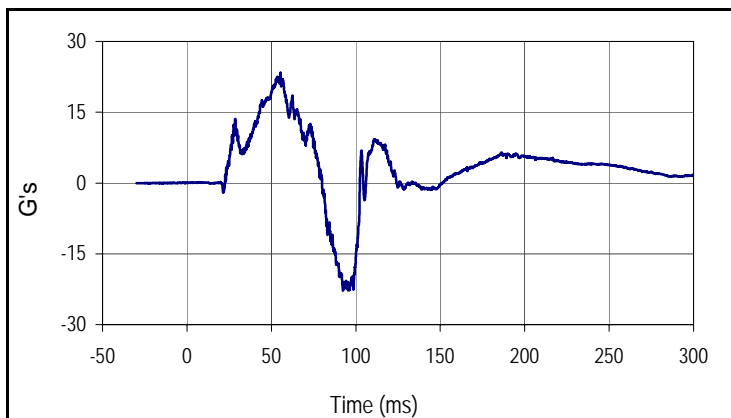
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 Test Date: 12/16/15



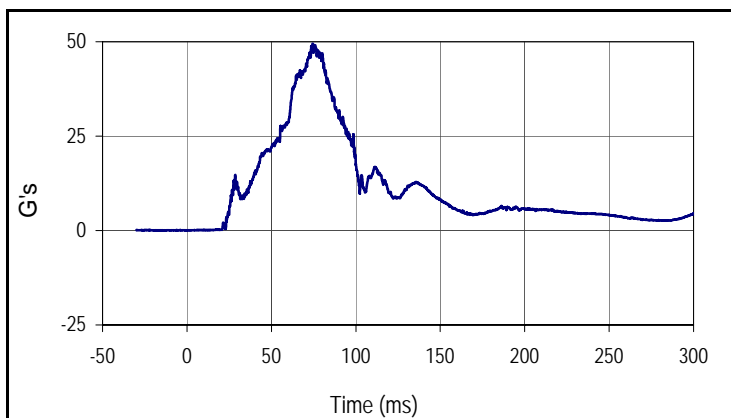
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Plot No.		SAE Class	Units
001		1000	G's
Max	Time	Min	Time
3.9	299.9	-48.4	75.9



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	G's
Max	Time	Min	Time
7.3	63.5	-2.5	26.0



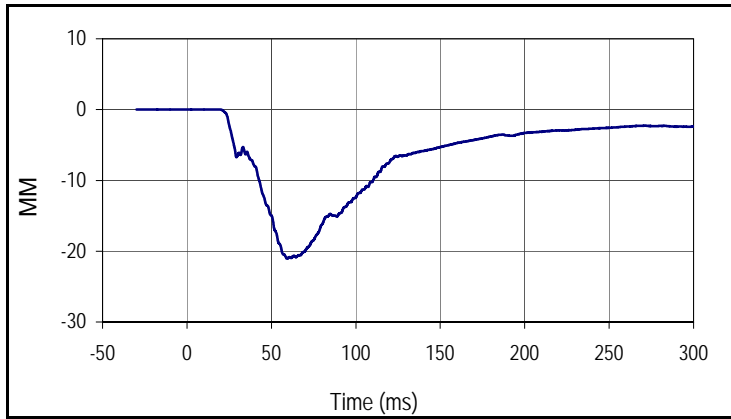
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Plot No.		SAE Class	Units
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23.4	55.3	-22.8	92.4



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
004		1000	G's
Max	Time	Min	Time
49.5	74.5	0.0	2.1

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

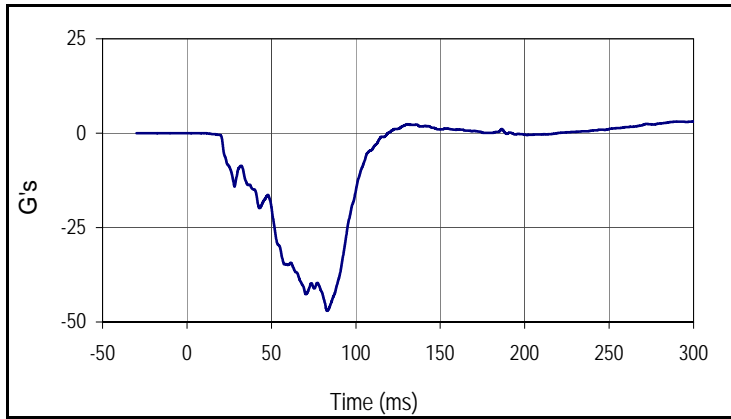
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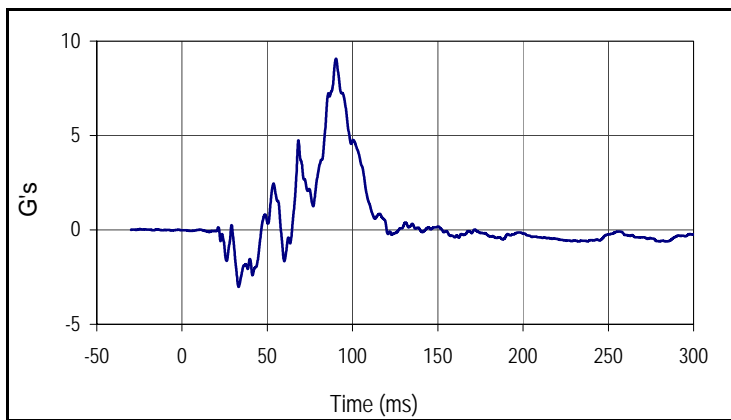
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Driver Chest Deflection			
Plot No.		SAE Class	Units
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0.0	1.5	-21.1	59.3

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

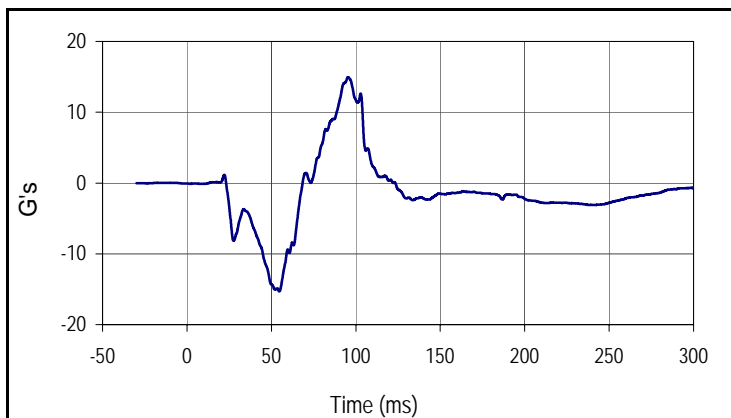
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 Test Date: 12/16/15



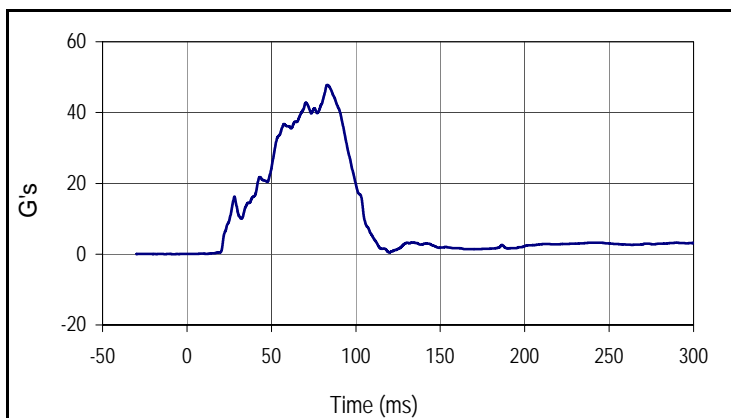
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3.1	290.1	-47.0	83.0



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.		SAE Class	Units
007		180	G's
Max	Time	Min	Time
9.1	90.3	-3.0	33.3



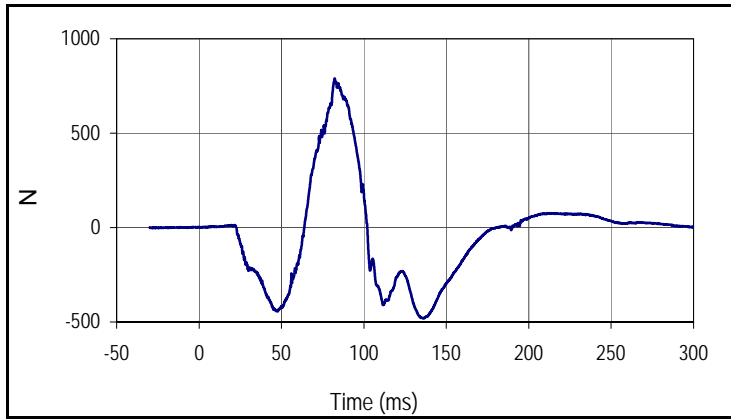
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Driver Chest Acceleration Z Primary			
Plot No.		SAE Class	Units
008		180	G's
Max	Time	Min	Time
15.0	95.4	-15.3	54.7



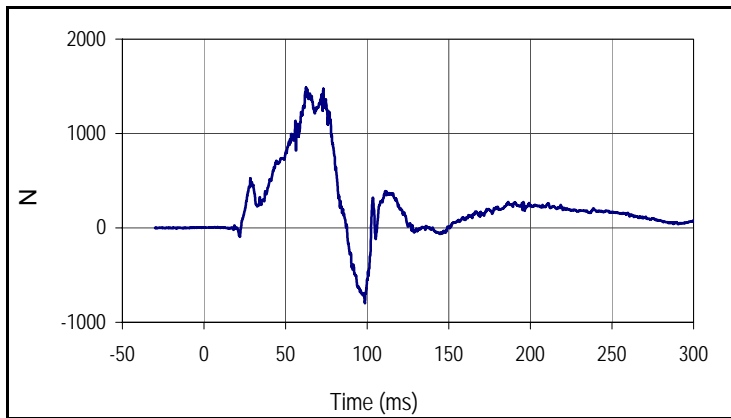
Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.		SAE Class	Units
009		180	G's
Max	Time	Min	Time
47.8	83.1	0.1	0.3

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

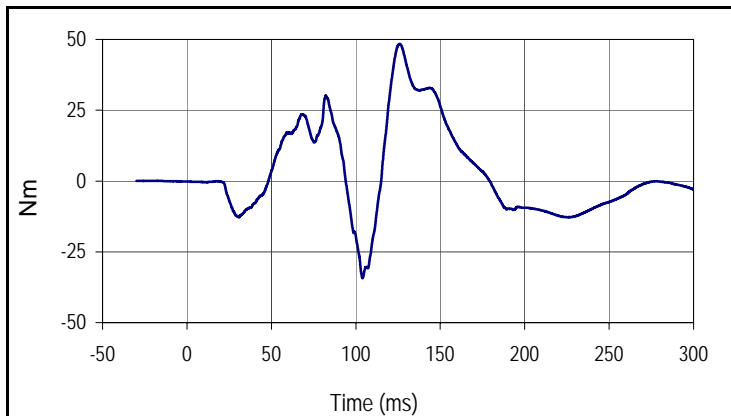
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 Test Date: 12/16/15



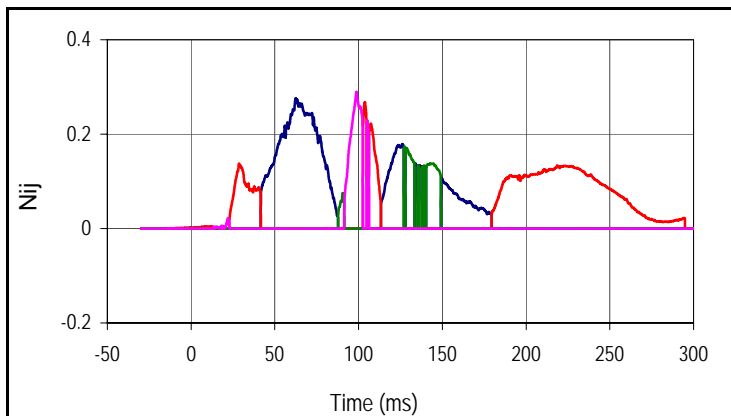
Curve Description			
Driver Upper Neck Force X			
Plot No.		SAE Class	Units
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789.1	82.3	-481.9	136.0



Curve Description			
Driver Upper Neck Force Z			
Plot No.		SAE Class	Units
011		1000	N
Max	Time	Min	Time
1488.4	62.6	-795.6	98.6



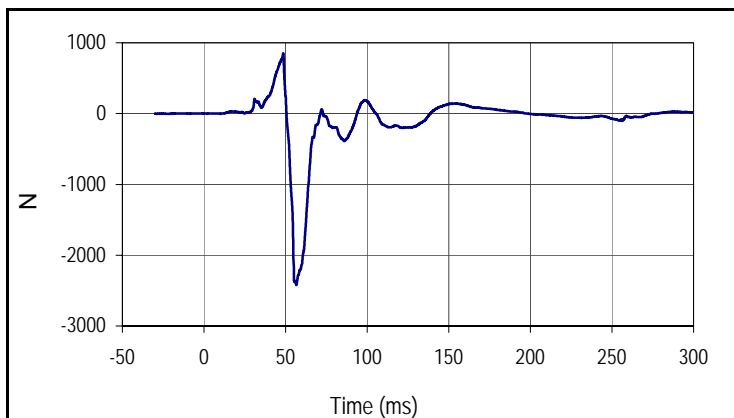
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Driver Upper Neck Moment Y			
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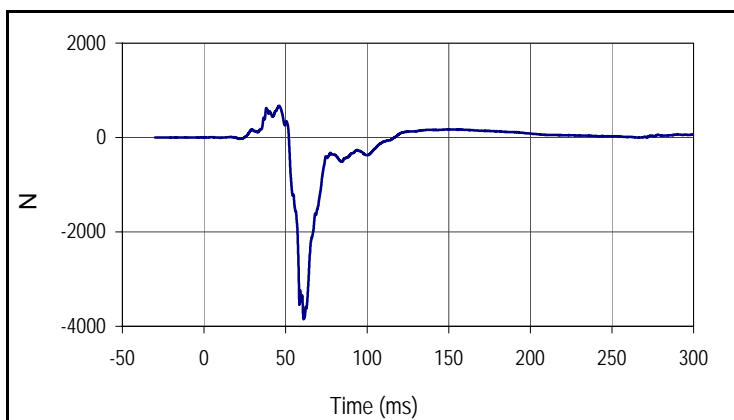
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Driver Nij			
Units	Max	Time	
Ntf	0.28	62.6	
Nte	0.27	103.7	
Ncf	0.17	127.3	
Nce	0.29	98.7	

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20165203  
 Test Date: 12/16/15



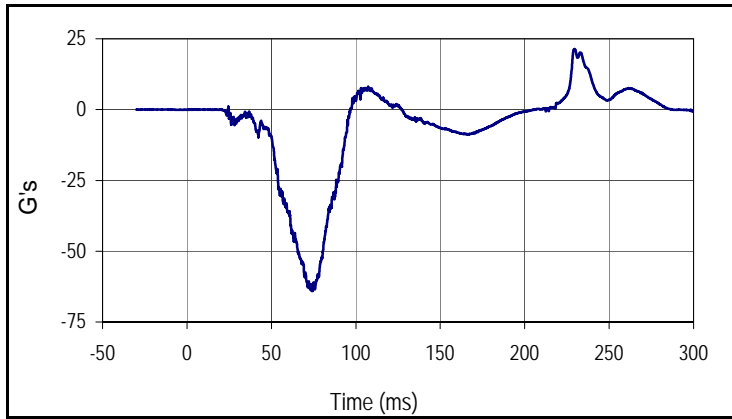
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Driver Left Femur Force Z			
Plot No.		SAE Class	Units
014		600	N
Max	Time	Min	Time
852.3	48.6	-2422.7	56.6



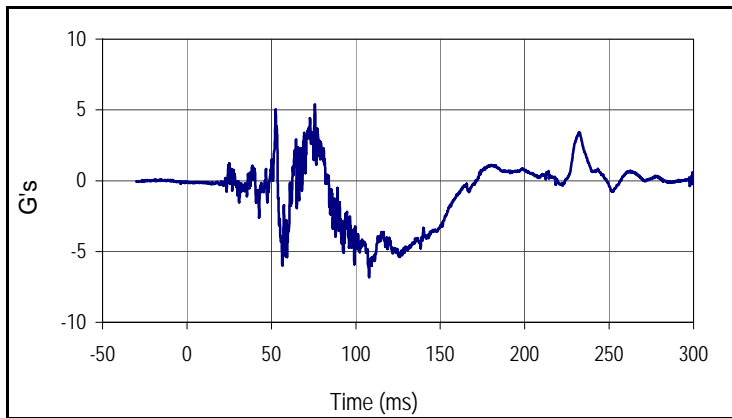
Curve Description			
Driver Right Femur Force Z			
Plot No.		SAE Class	Units
015		600	N
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Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

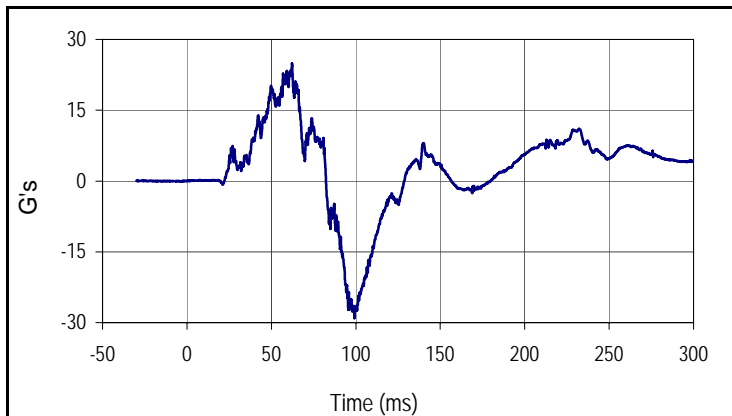
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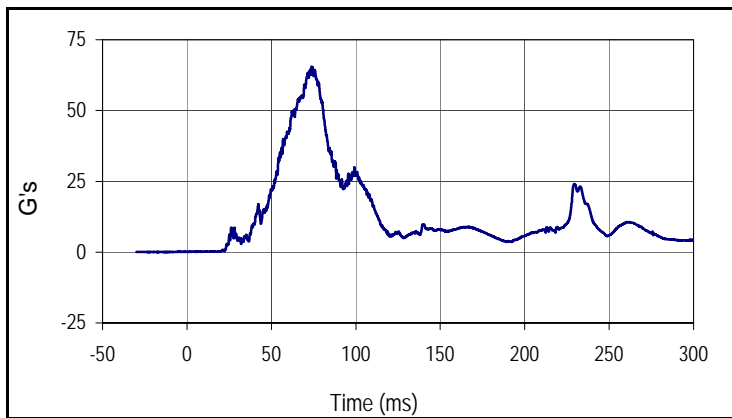
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Plot No.		SAE Class	Units
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Max	Time	Min	Time
21.4	229.5	-64.1	73.8



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.		SAE Class	Units
017		1000	G's
Max	Time	Min	Time
5.4	75.8	-6.8	107.9



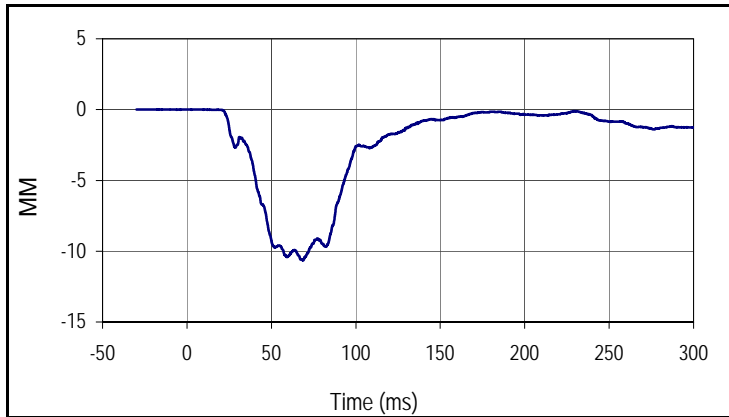
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.		SAE Class	Units
018		1000	G's
Max	Time	Min	Time
24.9	62.2	-29.1	99.2



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
019		1000	G's
Max	Time	Min	Time
65.5	73.8	0.1	0.0

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

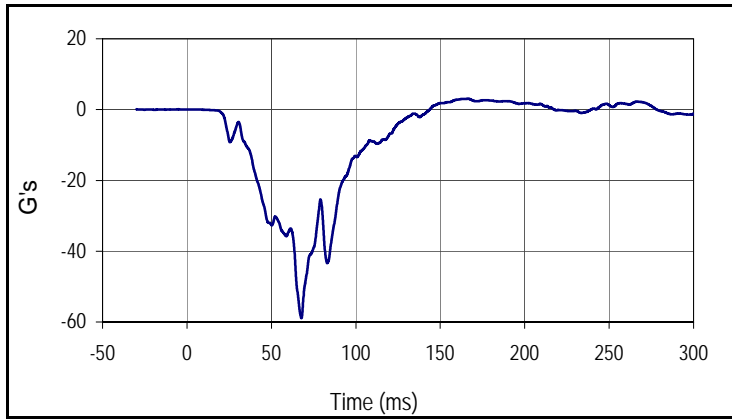
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 Test Date: 12/16/15



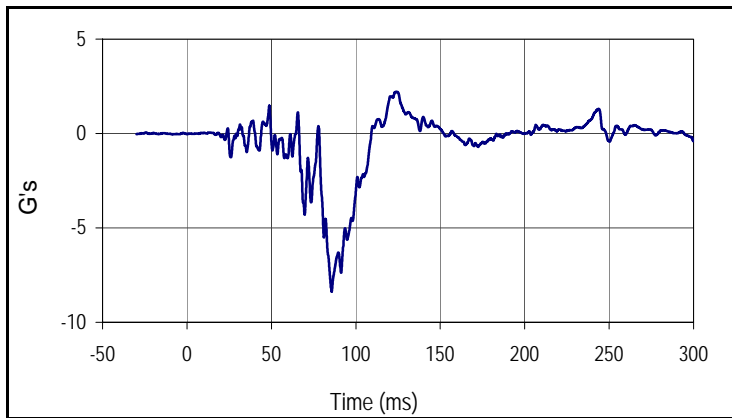
Curve Description			
Passenger Chest Deflection			
Plot No.		SAE Class	Units
020		600	MM
Max	Time	Min	Time
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Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

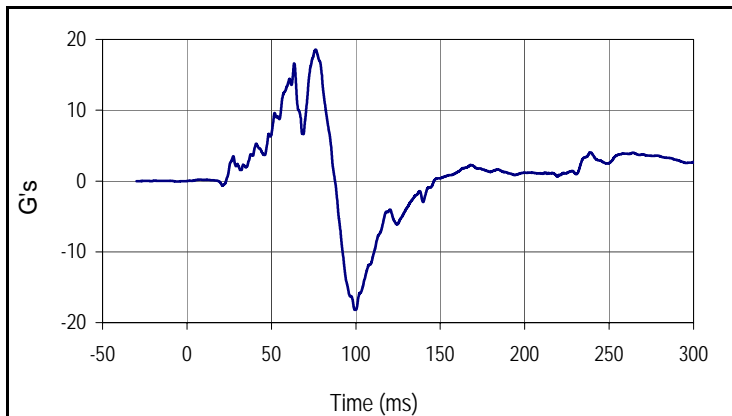
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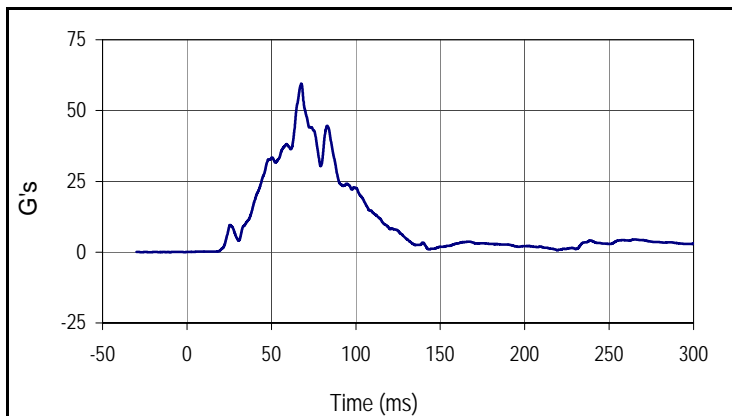
Curve Description			
Passenger Chest Acceleration X Primary			
Plot No.		SAE Class	Units
021		180	G's
Max	Time	Min	Time
3.1	166.4	-58.9	67.7



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.		SAE Class	Units
022		180	G's
Max	Time	Min	Time
2.2	123.4	-8.4	85.7



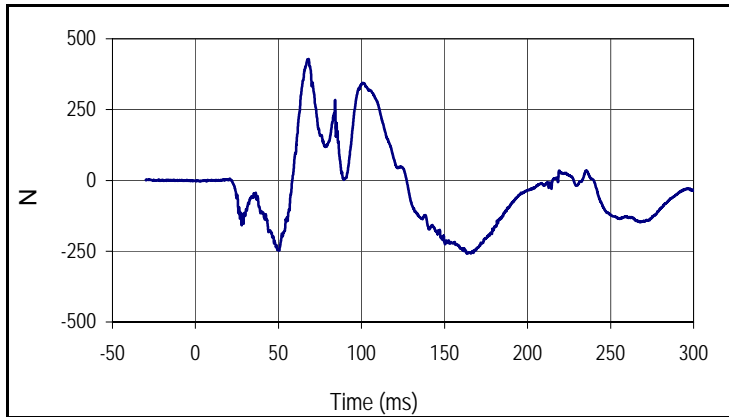
Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.		SAE Class	Units
023		180	G's
Max	Time	Min	Time
18.6	76.3	-18.2	99.9



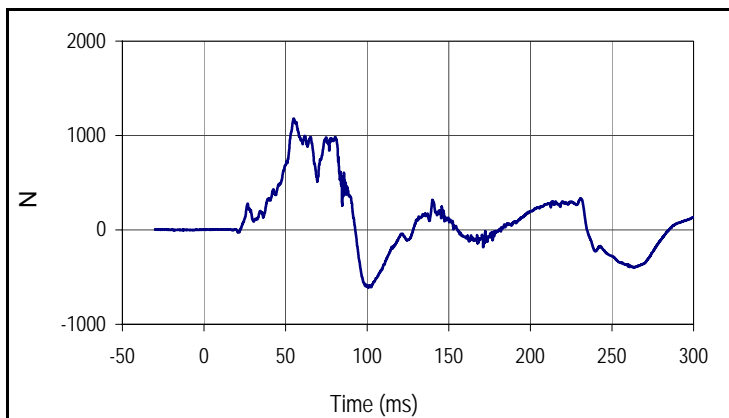
Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.		SAE Class	Units
024		180	G's
Max	Time	Min	Time
59.5	67.7	0.0	2.9

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

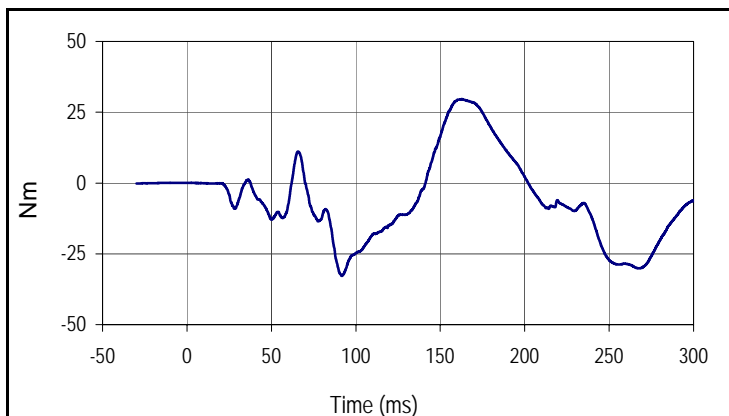
NHTSA No.: M20165203  
 Test Date: 12/16/15



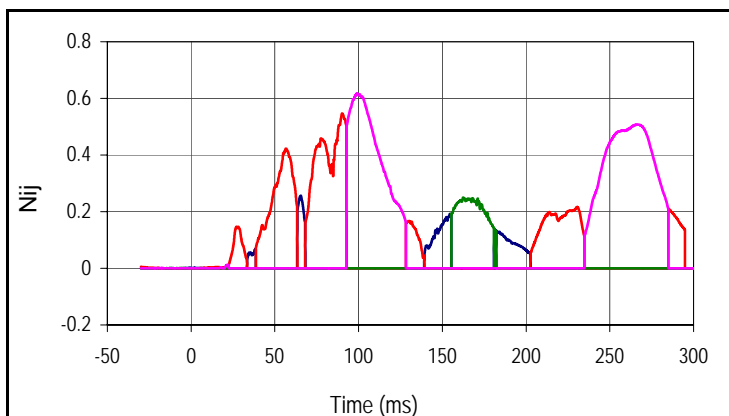
Curve Description			
Passenger Upper Neck Force X			
Plot No.		SAE Class	Units
025		1000	N
Max	Time	Min	Time
428.4	68.1	-257.8	165.9



Curve Description			
Passenger Upper Neck Force Z			
Plot No.		SAE Class	Units
026		1000	N
Max	Time	Min	Time
1180.7	55.0	-614.1	100.6



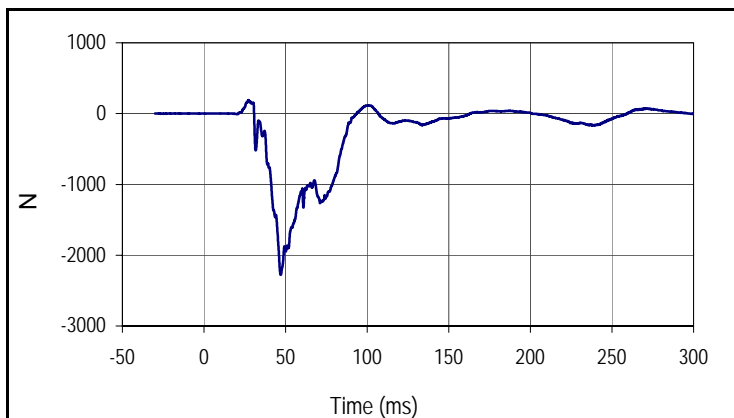
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.		SAE Class	Units
027		600	Nm
Max	Time	Min	Time
29.6	162.7	-32.8	91.7



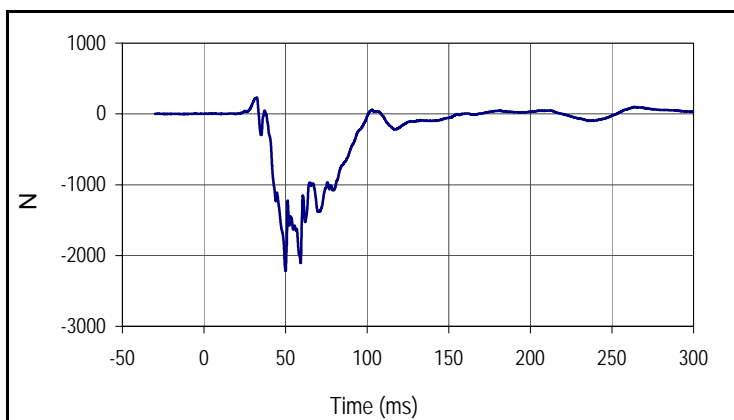
Curve Description		
Passenger Nij		
Units	Max	Time
Ntf	0.26	65.4
Units	Max	Time
Nte	0.55	90.3
Units	Max	Time
Ncf	0.25	162.5
Units	Max	Time
Nce	0.62	99.1

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan  
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20165203  
 Test Date: 12/16/15



Curve Description			
Passenger Left Femur Force Z			
Plot No.		SAE Class	Units
029		600	N
Max	Time	Min	Time
188.8	27.2	-2276.9	47.1



Curve Description			
Passenger Right Femur Force Z			
Plot No.		SAE Class	Units
030		600	N
Max	Time	Min	Time
233.5	32.4	-2217.2	50.0

**APPENDIX C**  
**ATD CALIBRATION AND PERFORMANCE VERIFICATION DATA**

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

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

Test Date: 11/21/15

ATD Serial No.: 360

Test I.D.: N/A



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

Describe the repair on or replacement of parts:

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Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 11/21/15

ATD Serial No.: 360

Test I.D.: N/A



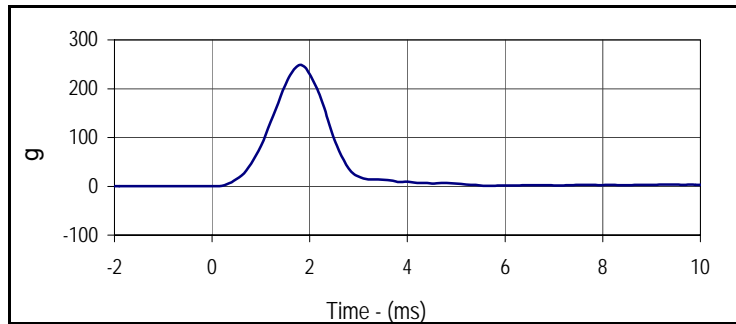
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	29.5	Pass
A - Total sitting height	mm	879 to 889	886	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - H point height	mm	84 to 89	86	Pass
D - H point location from backline	mm	135 to 140	139	Pass
E - Shoulder pivot from backline	mm	84 to 94	91	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	298	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	337	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	437	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	473	Pass
O - Chest depth without jacket	mm	213 to 229	227	Pass
P - Foot length	mm	251 to 267	263	Pass
V - Shoulder breadth	mm	422 to 437	436	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	982	Pass
Z - Waist circumference	mm	836 to 866	865	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 50th Percentile Male Head Drop Test  
 ATD Serial No.: 360

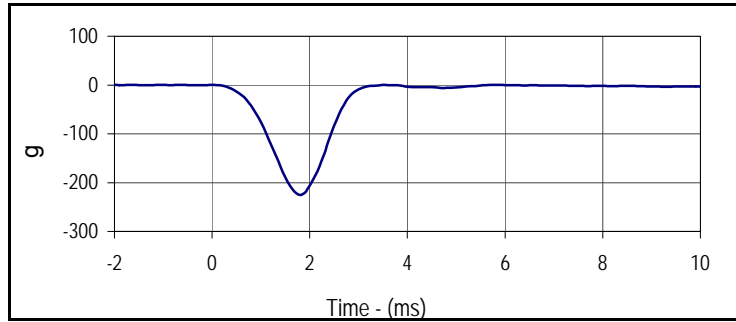
Test Date: 11/21/15  
 Test I.D.: M360HD013



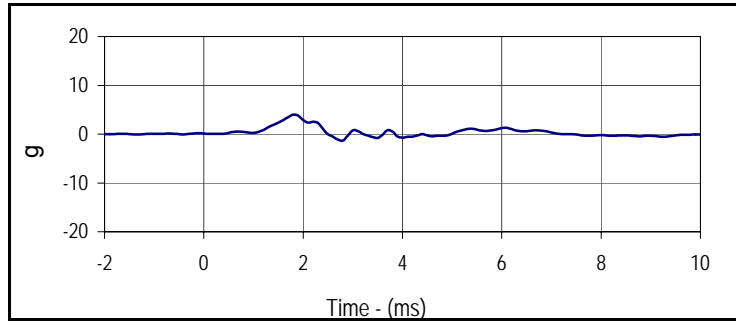
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	355	Pass
Temperature During Soak	Max	18.9 to 25.6	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	18.2	Pass
Peak Resultant Acceleration	g	225.0 to 275.0	248.6	Pass
Peak Lateral Acceleration	g	≤15.0	4.0	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	9.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
<b>Overall Test Results</b>				<b>Pass</b>



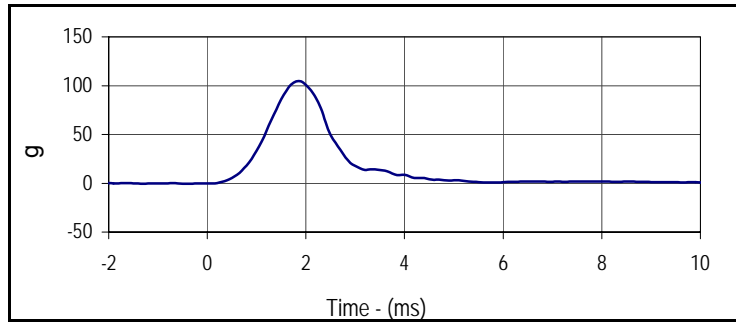
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
248.6	1.8	0.0	70.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.3	12.5	-225.4	1.8



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
4.0	1.8	-1.3	2.8



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
104.6	1.8	-2.3	97.2

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

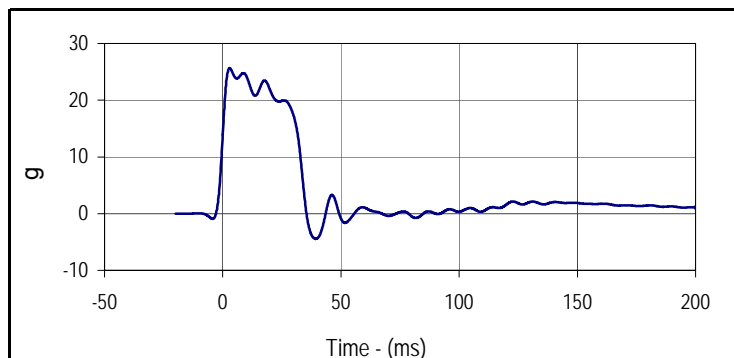
Test Date: 11/21/15



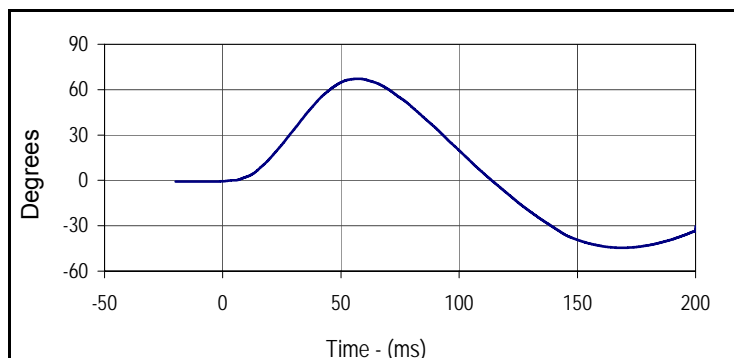
ATD Serial No.: 360

Test I.D.: M360NF013

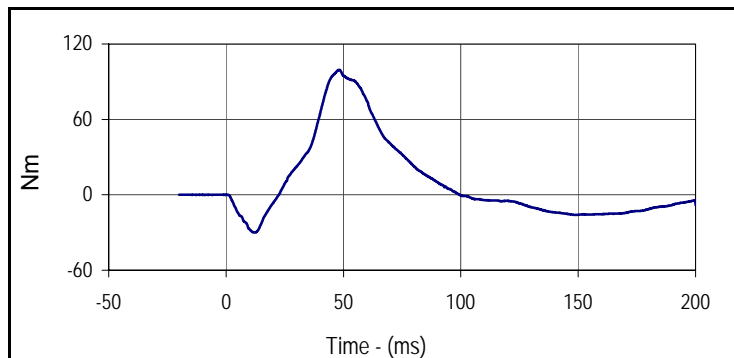
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	420	Pass
Temperature During Soak	Max	20.6 to 22.2	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	20.9	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	18.0	Pass
Pendulum Velocity	m/s	6.89 to 7.13	6.91	Pass
Pendulum Deceleration	10 Msec.	22.5 to 27.5	24.2	Pass
	20 Msec.	17.6 to 22.6	21.8	Pass
	30 Msec.	12.5 to 18.5	17.2	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 29.0	17.2	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	34.1	Pass
Maximum "D" Plane Rotation	Max	64.0 to 78.0	67.2	Pass
	Time	57.0 to 64.0	57.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	113.8	Pass
Moment About Occ. Condyle	Max	88.1 to 108.5	99.4	Pass
	Time	47.0 to 58.0	48.4	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	99.4	Pass
<b>Overall Test Results</b>				<b>Pass</b>



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
25.7	2.9	-4.4	39.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
67.2	57.4	-44.6	168.6



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
99.4	48.4	-30.0	12.1

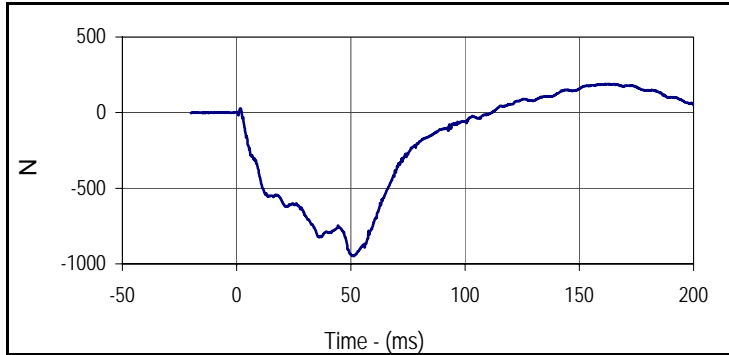
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 11/21/15

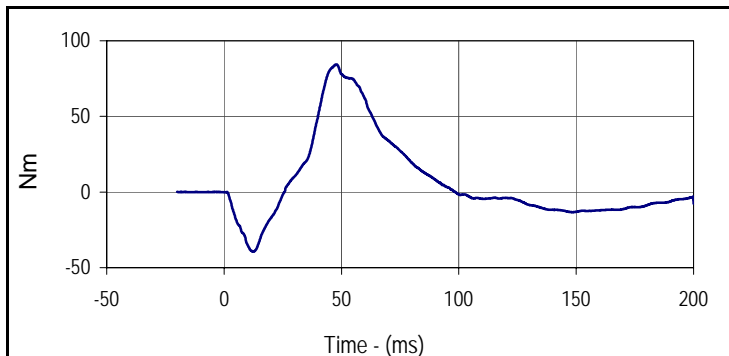


ATD Serial No.: 360

Test I.D.: M360NF013



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
189.5	165.0	-950.2	51.1



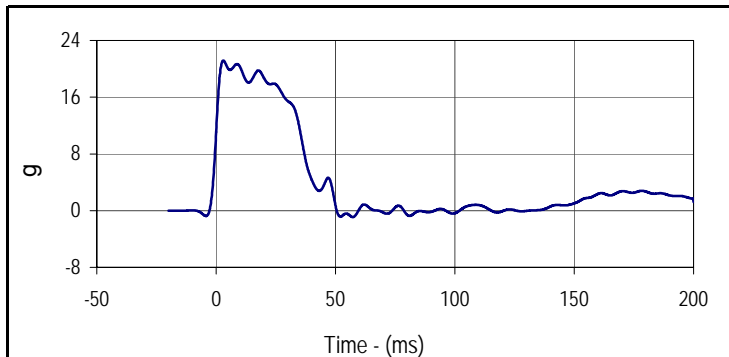
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
84.4	47.9	-39.5	12.5

Test Program: Hybrid III 50th Percentile Male Neck Extension Test  
 ATD Serial No.: 360

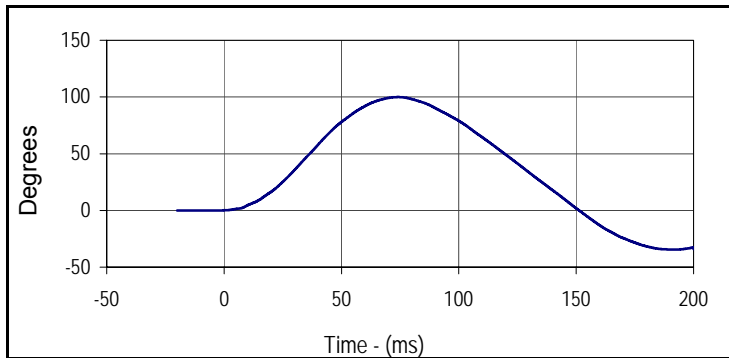
Test Date: 11/21/15  
 Test I.D.: M360NE013



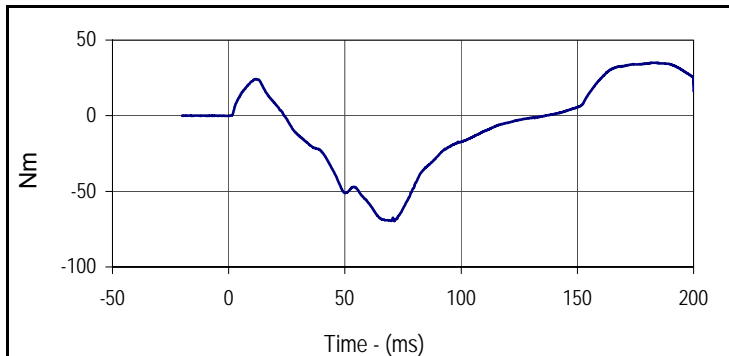
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	465	Pass
Temperature During Soak	Max	20.6 to 22.2	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	20.9	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.9	Pass
Pendulum Velocity	m/s	5.94 to 6.19	5.97	Pass
Pendulum Deceleration	10 Msec.	17.2 to 21.2	20.3	Pass
	20 Msec.	14.0 to 19.0	18.7	Pass
	30 Msec.	11.0 to 16.0	15.4	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 22.0	15.4	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	39.3	Pass
Maximum "D" Plane Rotation	Max	81.0 to 106.0	99.9	Pass
	Time	72.0 to 82.0	74.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	151.3	Pass
Moment About Occ. Condyle	Max	-52.9 to -79.9	-69.7	Pass
	Time	65.0 to 79.0	71.2	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	136.3	Pass
<b>Overall Test Results</b>				<b>Pass</b>



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
21.2	3.0	-0.9	57.2



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
99.9	74.2	-34.6	191.9



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
35.1	183.1	-69.7	71.2

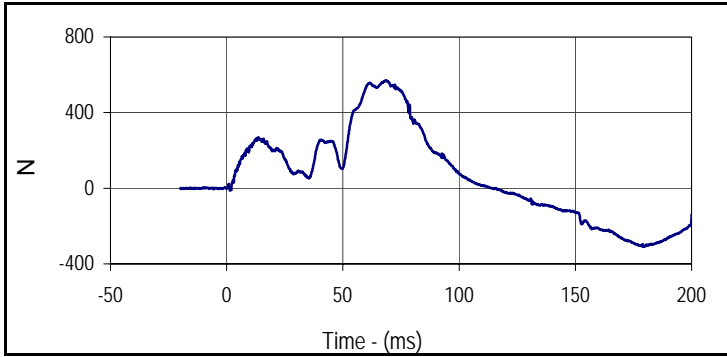
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 11/21/15

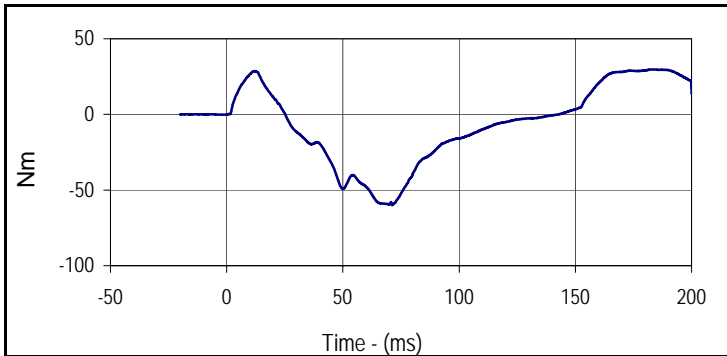


ATD Serial No.: 360

Test I.D.: M360NE013



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
569.4	68.6	-310.0	179.3



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
29.8	183.0	-60.1	71.2

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

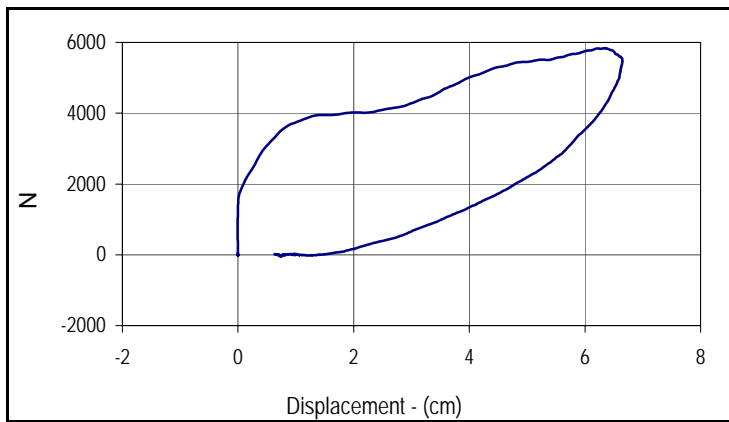
Test Date: 11/21/15



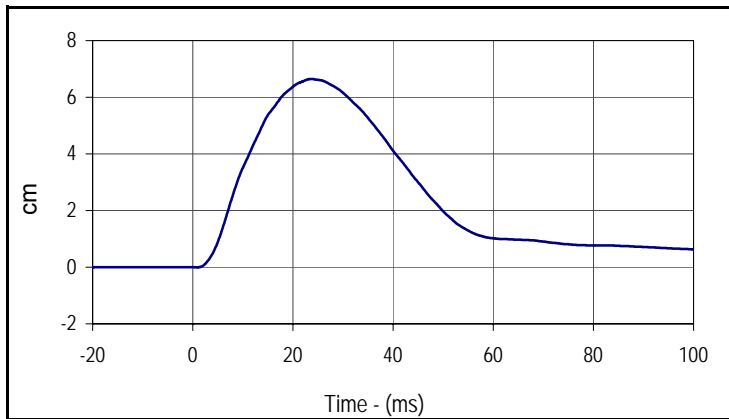
ATD Serial No.: 360

Test I.D.: M360CH013

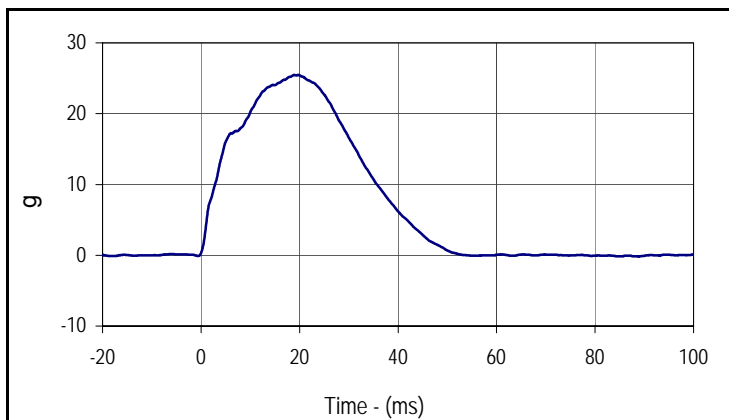
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	540	Pass
Temperature During Soak	Max	20.6 to 22.2	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.8	Pass
Probe Velocity	m/s	6.58 to 6.82	6.76	Pass
Peak Probe Force	Newtons	5159 to 5893	5834	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.65	Pass
Internal Hysteresis	%	69 to 85	71.1	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.1
Peak Probe Force		Peak Chest Deflection	
5834		6.65	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	cm
Max	Time	Min	Time
6.6	23.6	0.0	0.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
25.5	19.8	-0.2	88.8

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

Test Date: 11/21/15



ATD Serial No.: 360

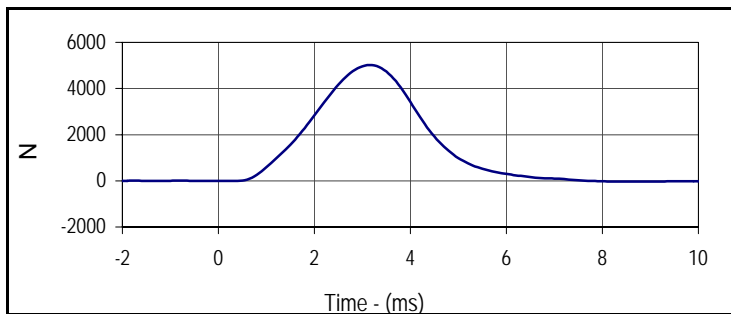
Test I.D.: M360LK013, M360RK013

**Left Knee**

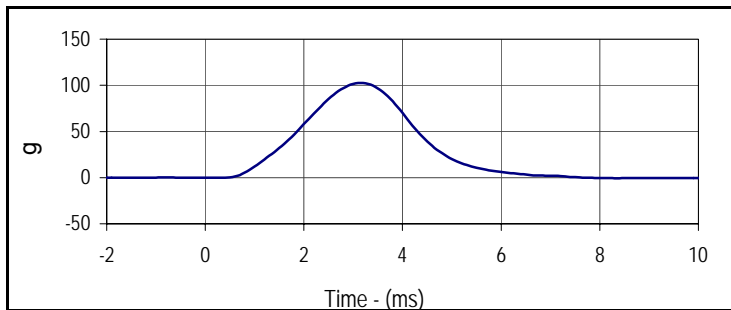
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	595	Pass
Temperature During Soak	Max	18.9 to 25.6	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.8	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5015	Pass
<b>Overall Test Results</b>				<b>Pass</b>

**Right Knee**

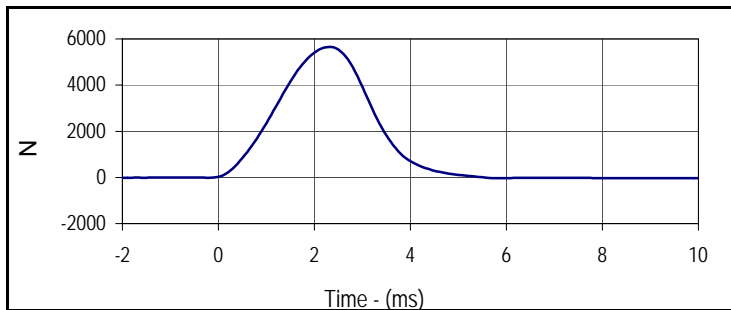
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5658	Pass
<b>Overall Test Results</b>				<b>Pass</b>



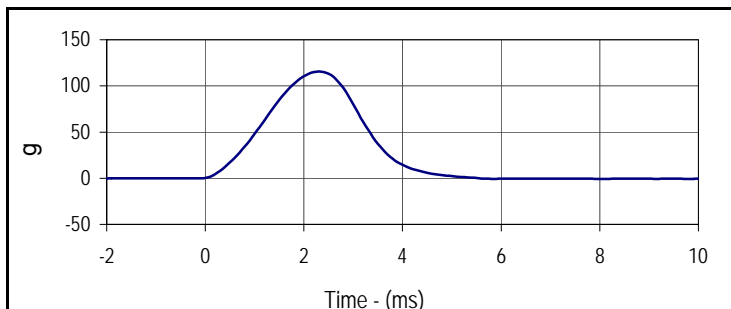
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
5015.3	3.2	-30.0	8.3



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
102.5	3.2	-0.6	8.3



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
5657.8	2.3	-35.4	11.9



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
115.6	2.3	-0.7	11.9

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test  
 ATD Serial No.: 360

Test Date: 11/21/15  
 Test I.D.: M360LF013, M360RF013

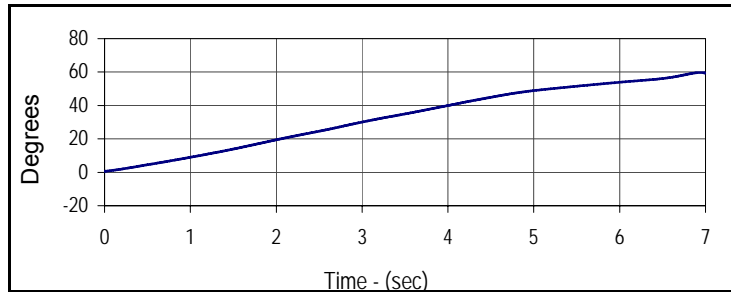


**Left Hip Joint-Femur Results**

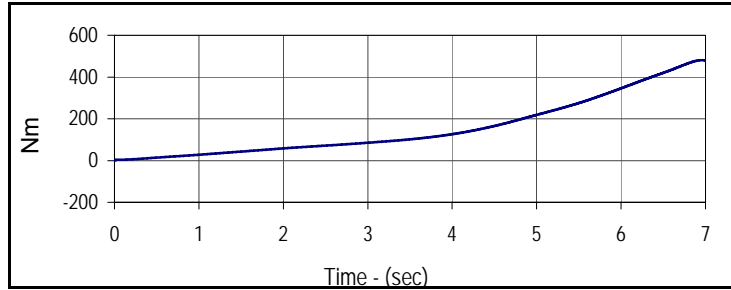
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	670	Pass
Temperature During Soak	Max	18.9 to 25.6	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.7	Pass
Rotation Rate	deg/sec	5 to 10	8.6	Pass
Femur Torque at 30°	Nm	≤ 95	82.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.4	Pass
<b>Overall Test Results</b>				<b>Pass</b>

**Right Hip Joint-Femur Results**

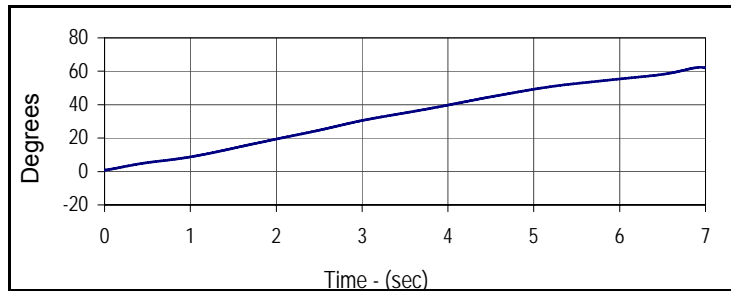
Rotation Rate	deg/sec	5 to 10	9.0	Pass
Femur Torque at 30°	Nm	≤ 95	81.7	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.3	Pass
<b>Overall Test Results</b>				<b>Pass</b>



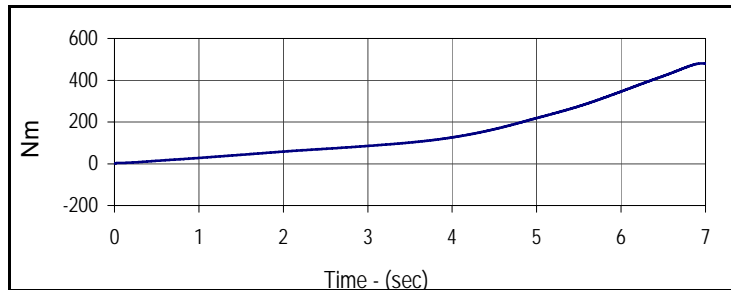
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
59.7	6.9	0.6	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
480.7	7.0	0.6	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
62.3	6.9	0.6	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
480.7	7.0	0.6	0.0

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

Test Date: 11/12/15

ATD Serial No.: 141

Test I.D.: N/A



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

Describe the repair on or replacement of parts:

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Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 11/12/15

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	20.2	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

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

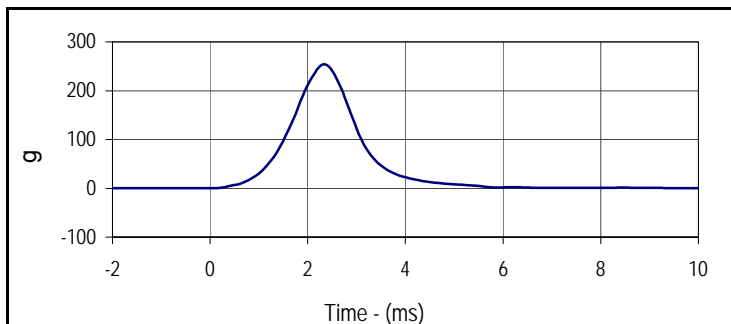
Test Date: 11/12/15



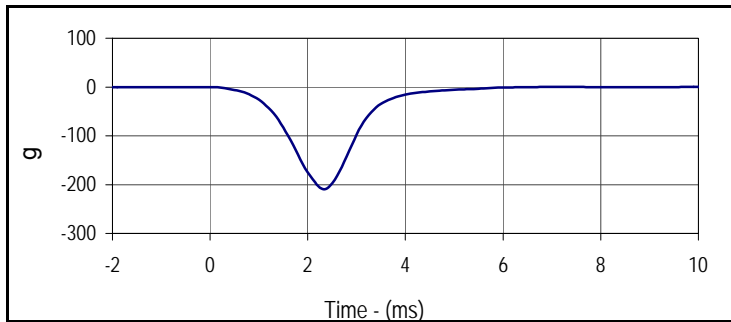
ATD Serial No.: 141

Test I.D.: F141HD070

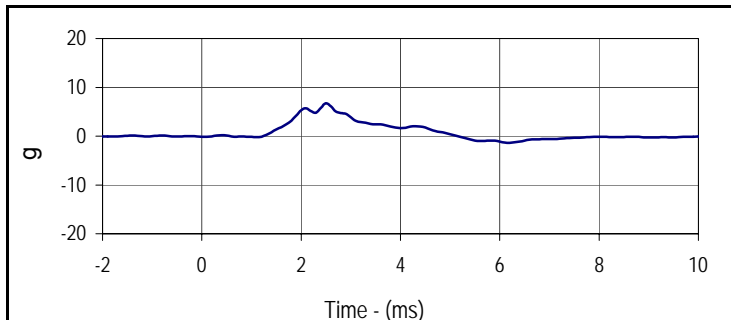
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	542	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.2	Pass
Peak Resultant Acceleration	g	250.0 to 300.0	253.5	Pass
Peak Lateral Acceleration	g	≤15.0	6.7	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	7.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
<b>Overall Test Results</b>				<b>Pass</b>



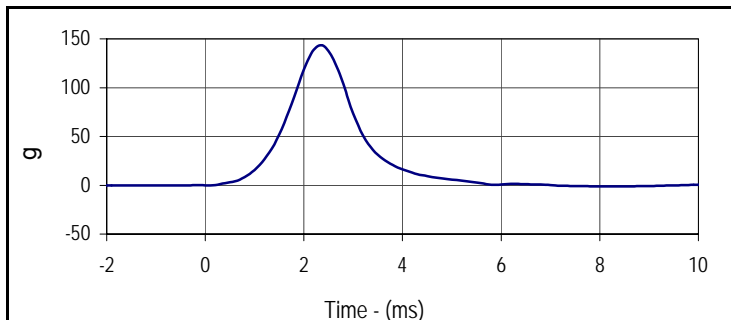
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
253.5	2.3	0.0	172.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
0.5	7.1	-209.1	2.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
6.7	2.5	-1.4	6.2



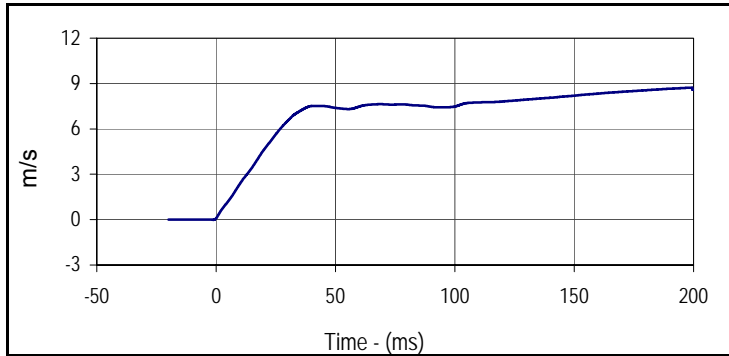
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
143.1	2.3	-1.2	8.5

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

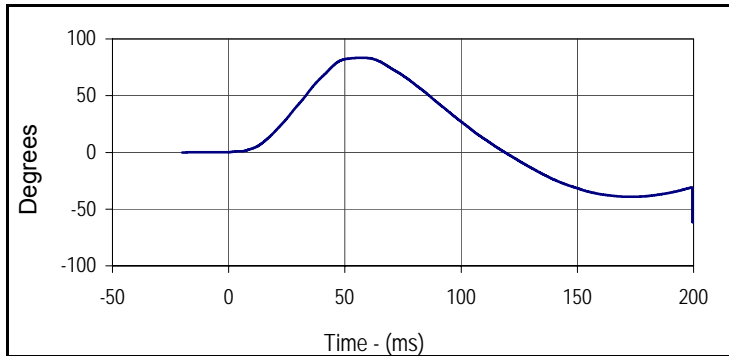
Test Date: 11/12/15  
 Test I.D.: F141NF070



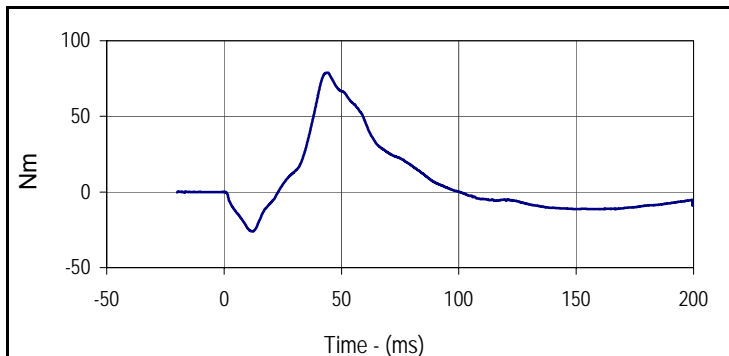
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	607	Pass	
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass	
	Min		20.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.01	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.6	Pass
	30 Msec.	m/s	5.8 to 7.0	6.5	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	83.4	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	76.6	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	85.3	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.7	199.4	0.0	-1.2



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
83.4	57.1	-61.3	199.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
78.8	44.1	-26.0	12.1

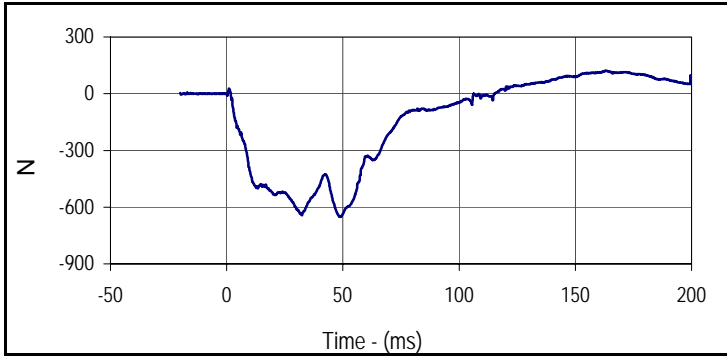
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 11/12/15

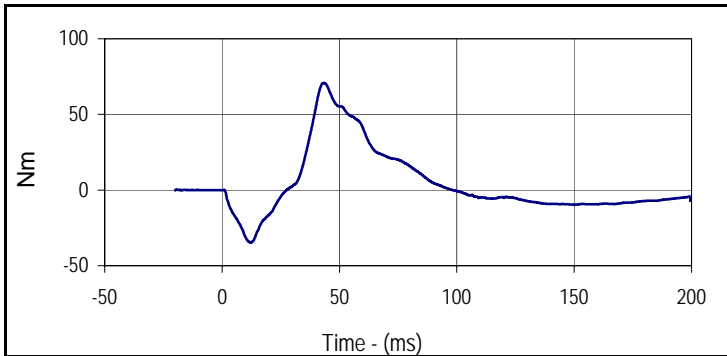


ATD Serial No.: 141

Test I.D.: F141NF070



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
121.4	163.3	-651.5	48.7



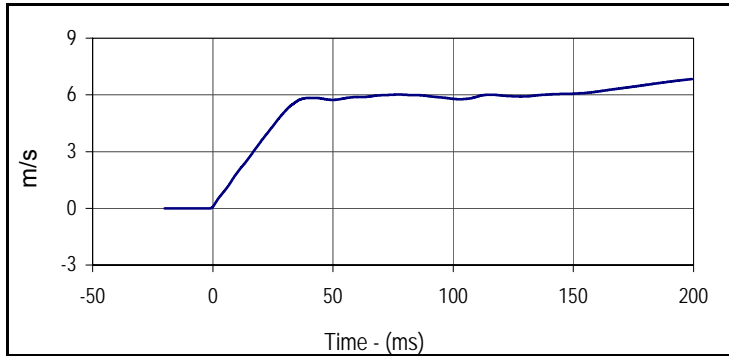
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
70.8	43.2	-34.7	12.2

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

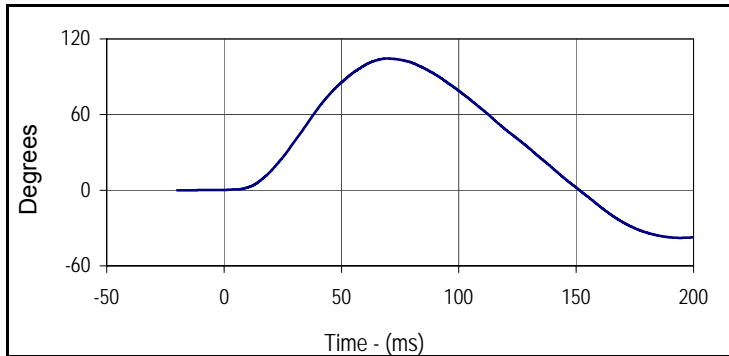
Test Date: 11/12/15  
 Test I.D.: F141NE070



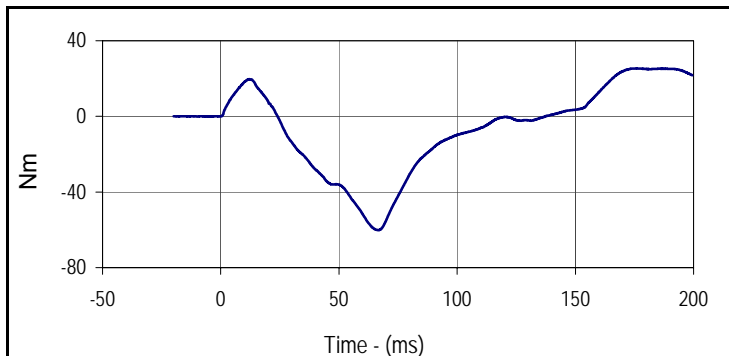
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	672	Pass	
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass	
	Min		20.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	22.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.2	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.02	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.9	Pass
	20 Msec.	m/s	3.1 to 3.9	3.5	Pass
	30 Msec.	m/s	4.6 to 5.6	5.1	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	104.5	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-60.2	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	99.7	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.8	199.4	0.0	-1.4



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
104.5	69.3	-37.8	194.2



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
25.4	175.7	-60.2	66.8

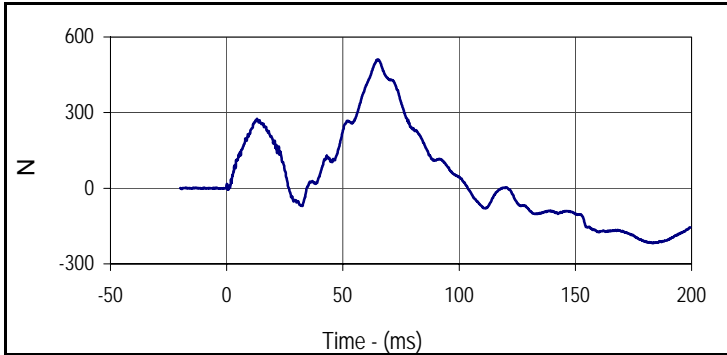
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 11/12/15

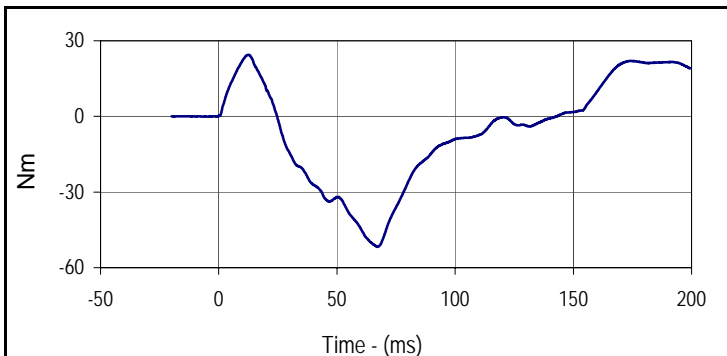


ATD Serial No.: 141

Test I.D.: F141NE070



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
510.8	65.1	-217.5	183.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
24.4	12.4	-51.7	67.0

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

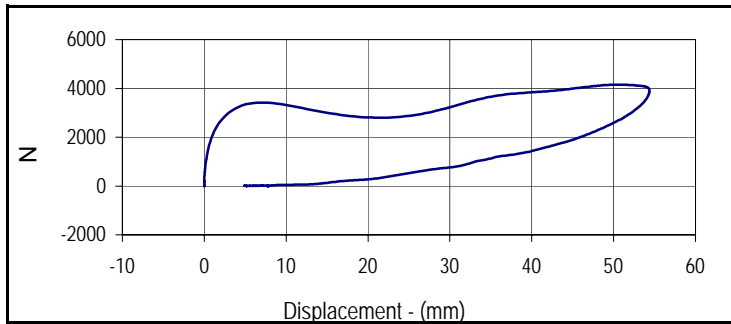
Test Date: 11/12/15



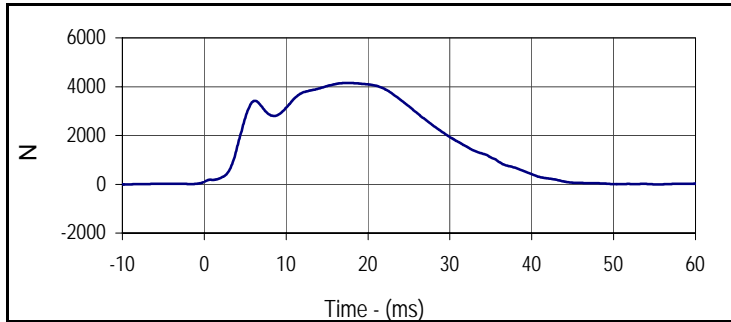
ATD Serial No.: 141

Test I.D.: F141CH070

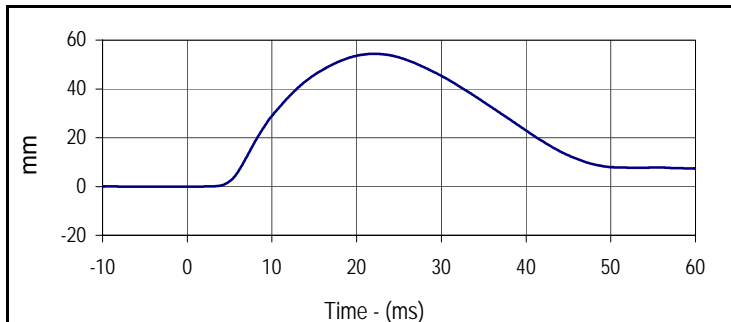
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	717	Pass
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Probe Velocity	m/s	6.59 to 6.83	6.72	Pass
Peak Chest Deflection	mm	50.0 to 58.0	54.4	Pass
Peak Force Between 50 and 58 MM	N	3900 to 4400	4153	Pass
Peak Force Between 18 and 50 MM	N	≤4600	4153	Pass
Internal Hysteresis	%	69 to 85	72.4	Pass
Overall Test Results				Pass



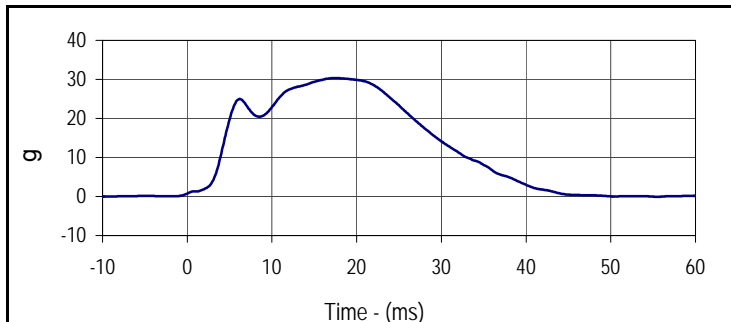
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	72.4
Peak Probe Force		Peak Chest Deflection	
4153.1		54.4	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4153.1	17.3	-9.6	55.5



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
54.4	22.0	0.0	-4.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
30.3	17.3	-0.1	55.5

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

Test Date: 11/12/15



ATD Serial No.: 141

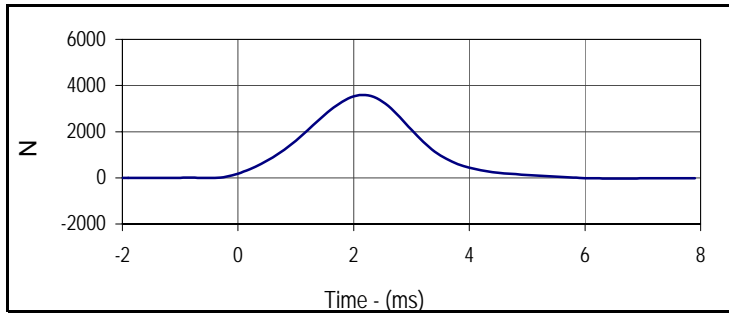
Test I.D.: F141LK070, F141RK070

**Left Knee**

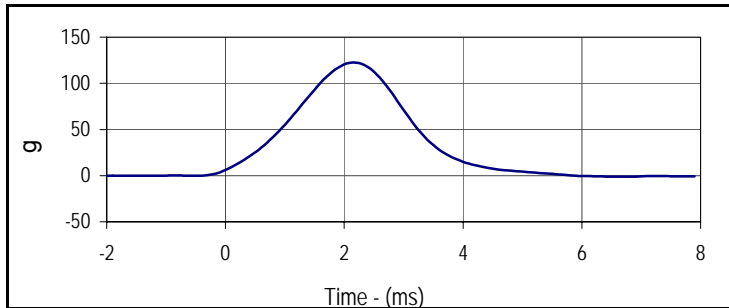
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	772	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	3450 to 4060	3588	Pass
<b>Overall Test Results</b>				<b>Pass</b>

**Right Knee**

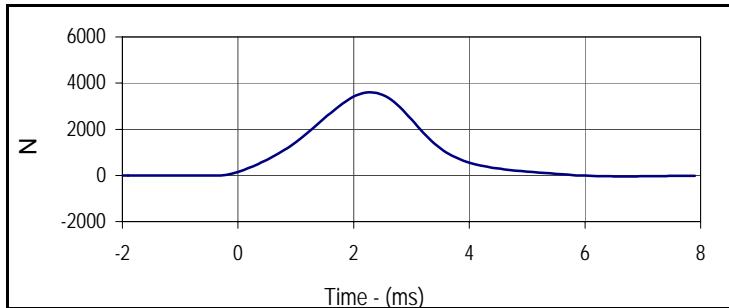
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	3450 to 4060	3607	Pass
<b>Overall Test Results</b>				<b>Pass</b>



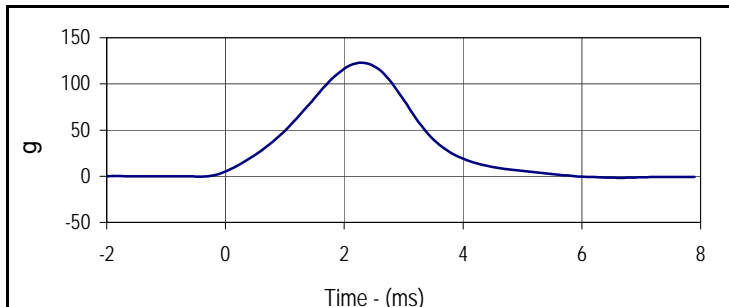
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3587.8	2.2	-34.8	6.7



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
122.4	2.2	-1.2	6.7



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
3607.0	2.3	-50.2	6.7



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
123.1	2.3	-1.7	6.7

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

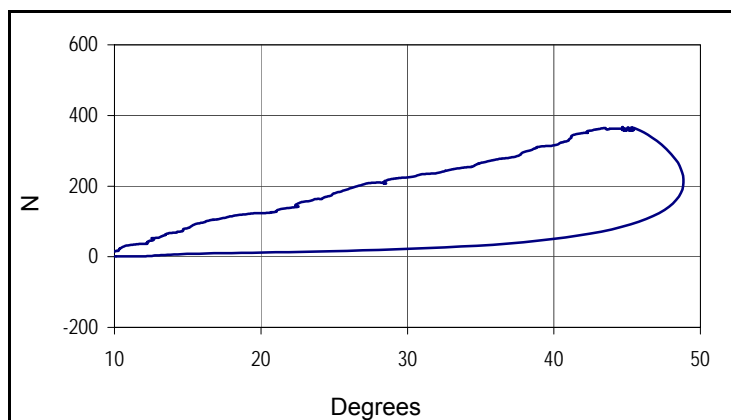
Test Date: 11/12/15



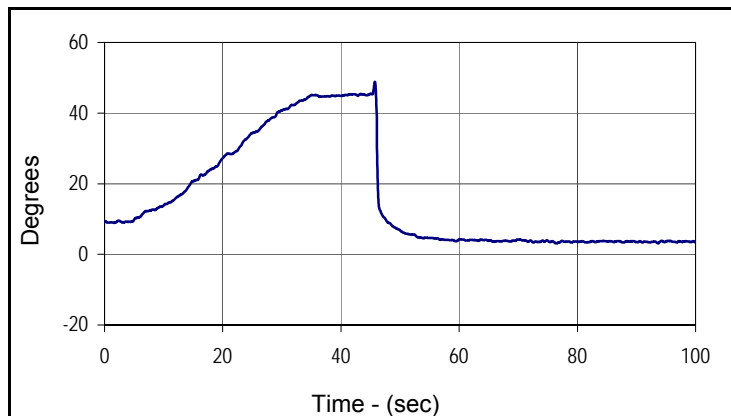
ATD Serial No.: 141

Test I.D.: TF070

Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	837	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Initial Reference Plane Angle	Degrees	≤ 20	9.1	Pass
Peak Force at 45° +/-0.5°	N	320.0 to 390.0	367.0	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle	Degrees	+/-8	3.4	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
367.0		48.8



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
48.8	45.8	3.1	76.5

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

Test Program: Hybrid III 50th Percentile Male Dummy Damage Checklist  
 ATD Serial No.: 360

Test Date: 12/21/15  
 Test I.D.: N/A



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

Describe the repair on or replacement of parts:

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Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 12/21/15

ATD Serial No.: 360

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	29.5	Pass
A - Total sitting height	mm	879 to 889	886	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - H point height	mm	84 to 89	86	Pass
D - H point location from backline	mm	135 to 140	139	Pass
E - Shoulder pivot from backline	mm	84 to 94	91	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	298	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	337	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	437	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	473	Pass
O - Chest depth without jacket	mm	213 to 229	227	Pass
P - Foot length	mm	251 to 267	263	Pass
V - Shoulder breadth	mm	422 to 437	436	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	982	Pass
Z - Waist circumference	mm	836 to 866	865	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 50th Percentile Male Head Drop Test

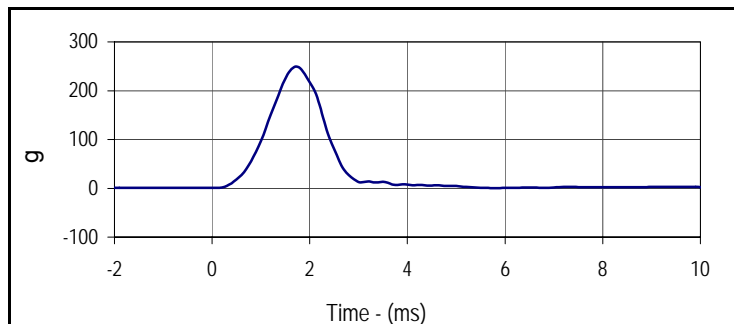
Test Date: 12/21/15



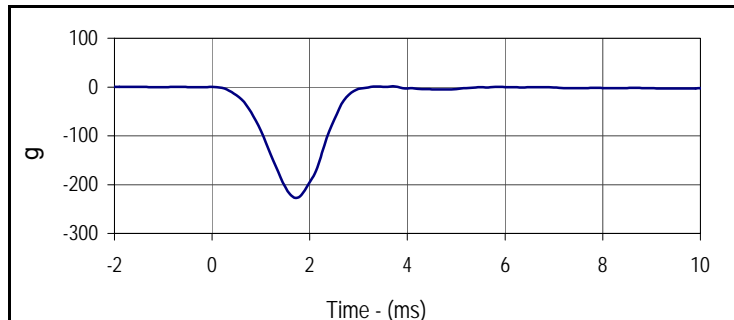
ATD Serial No.: 360

Test I.D.: M360HD014

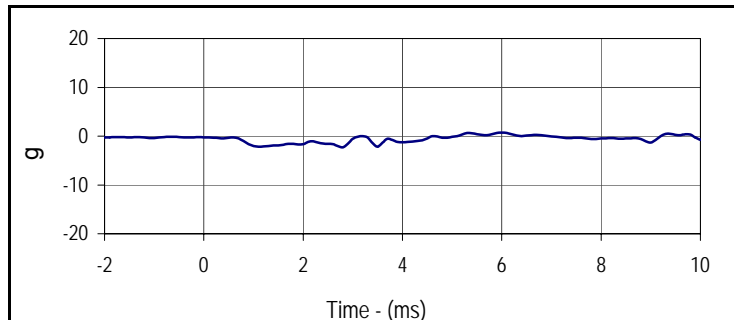
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	305	Pass
Temperature During Soak	Max	18.9 to 25.6	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	18.2	Pass
Peak Resultant Acceleration	g	225.0 to 275.0	249.3	Pass
Peak Lateral Acceleration	g	≤15.0	2.3	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	12.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



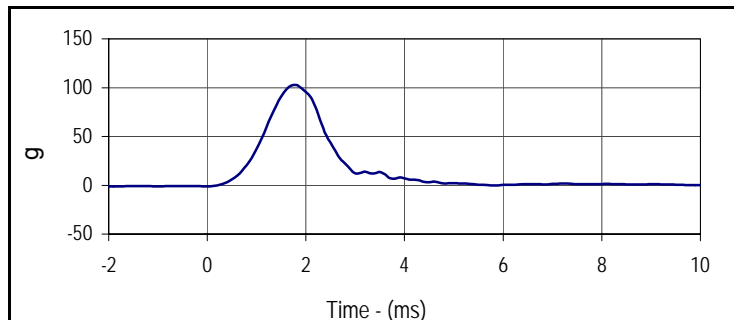
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
249.3	1.7	0.3	88.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.4	3.7	-227.4	1.7



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
0.7	6.0	-2.3	2.8



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
102.7	1.8	-2.7	95.7

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

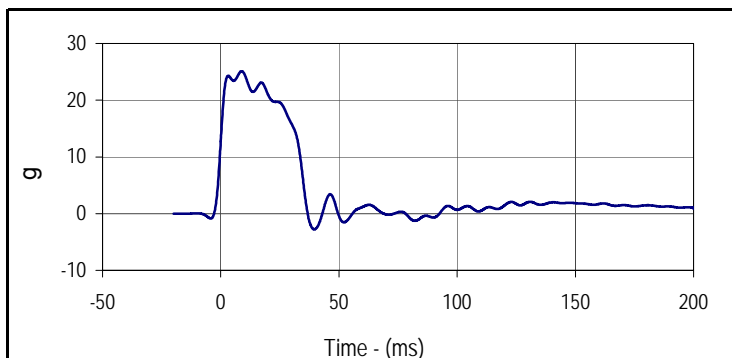
Test Date: 12/21/15



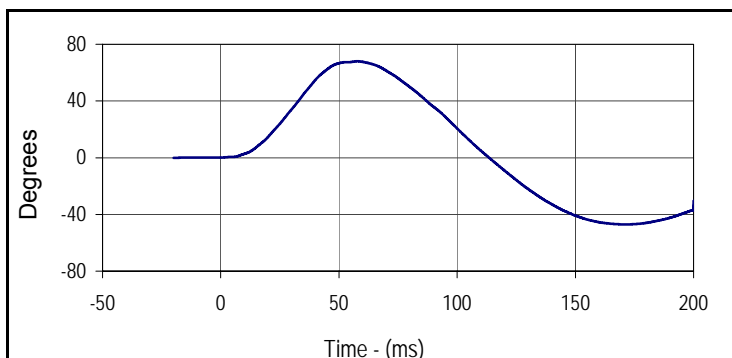
ATD Serial No.: 360

Test I.D.: M360NF014

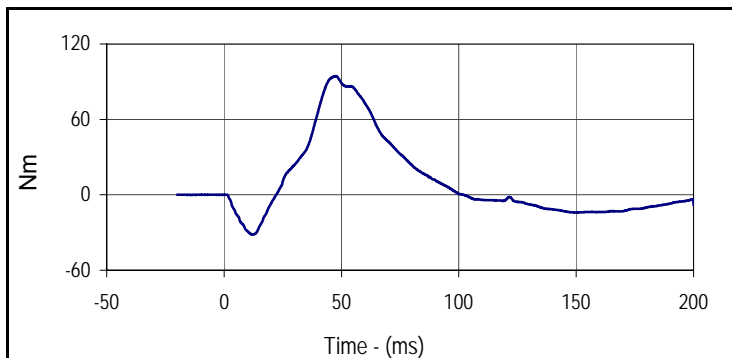
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	370	Pass
Temperature During Soak	Max	20.6 to 22.2	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	20.9	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	18.0	Pass
Pendulum Velocity	m/s	6.89 to 7.13	6.92	Pass
Pendulum Deceleration	10 Msec.	22.5 to 27.5	24.6	Pass
	20 Msec.	17.6 to 22.6	21.0	Pass
	30 Msec.	12.5 to 18.5	15.8	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 29.0	15.8	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	35.1	Pass
Maximum "D" Plane Rotation	Max	64.0 to 78.0	68.0	Pass
	Time	57.0 to 64.0	57.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	113.5	Pass
Moment About Occ. Condyle	Max	88.1 to 108.5	94.4	Pass
	Time	47.0 to 58.0	47.8	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	102.0	Pass
<b>Overall Test Results</b>				<b>Pass</b>



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
25.1	8.8	-2.8	39.6



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
68.0	57.8	-47.0	171.3



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
94.4	47.8	-31.6	11.9

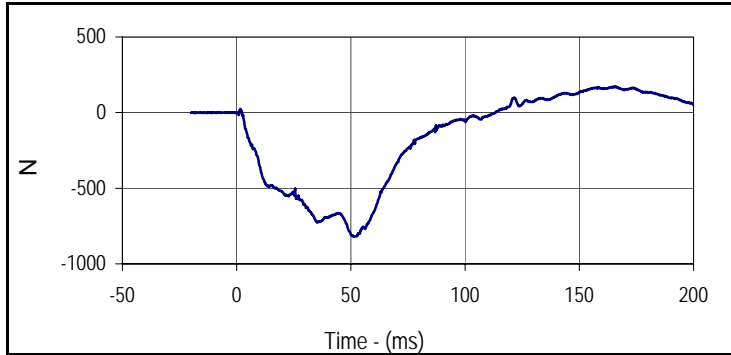
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 12/21/15

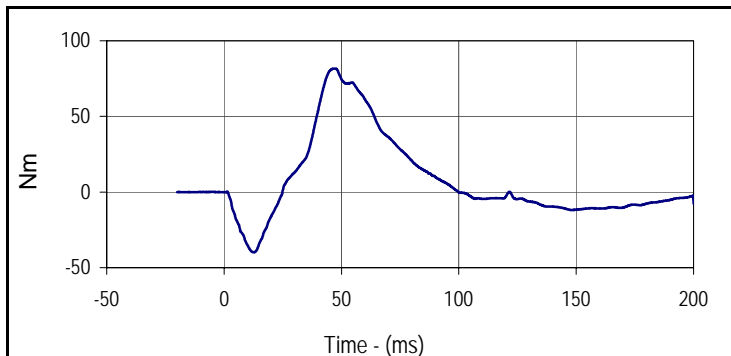


ATD Serial No.: 360

Test I.D.: M360NF014



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
172.7	165.5	-819.5	51.2



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
81.6	47.4	-39.8	12.6

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

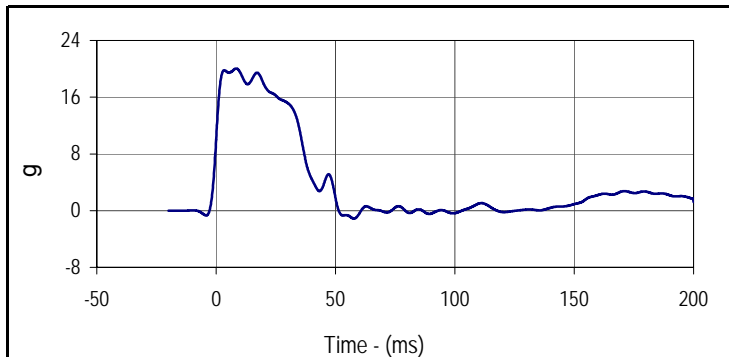
Test Date: 12/21/15



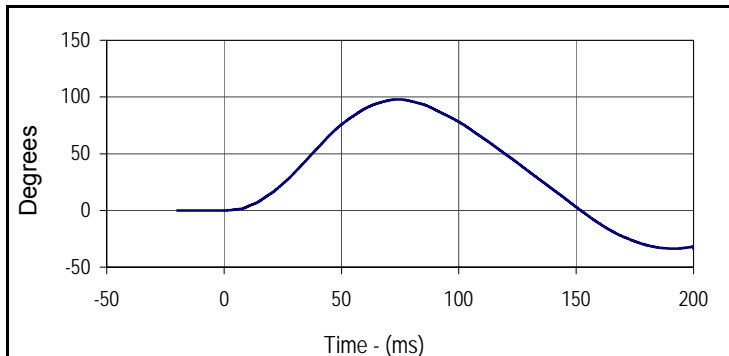
ATD Serial No.: 360

Test I.D.: M360NE014

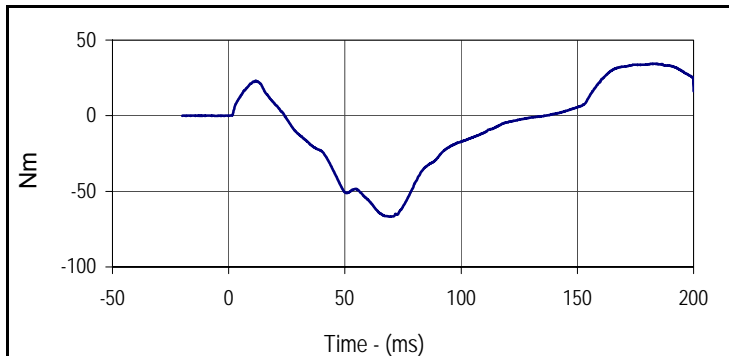
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	415	Pass
Temperature During Soak	Max	20.6 to 22.2	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	20.9	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.9	Pass
Pendulum Velocity	m/s	5.94 to 6.19	5.96	Pass
Pendulum Deceleration	10 Msec.	17.2 to 21.2	19.5	Pass
	20 Msec.	14.0 to 19.0	17.8	Pass
	30 Msec.	11.0 to 16.0	15.2	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 22.0	15.2	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	39.3	Pass
Maximum "D" Plane Rotation	Max	81.0 to 106.0	97.9	Pass
	Time	72.0 to 82.0	74.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	152	Pass
Moment About Occ. Condyle	Max	-52.9 to -79.9	-66.8	Pass
	Time	65.0 to 79.0	69.4	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	135.9	Pass
<b>Overall Test Results</b>				<b>Pass</b>



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
20.0	8.4	-1.1	57.7



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
97.9	74.1	-34.3	200.0



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
34.4	183.3	-66.8	69.4

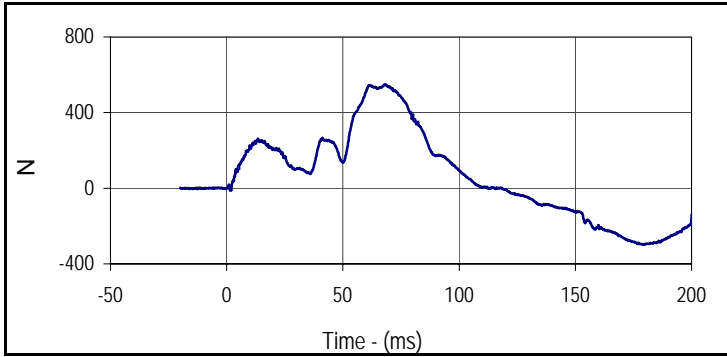
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 12/21/15

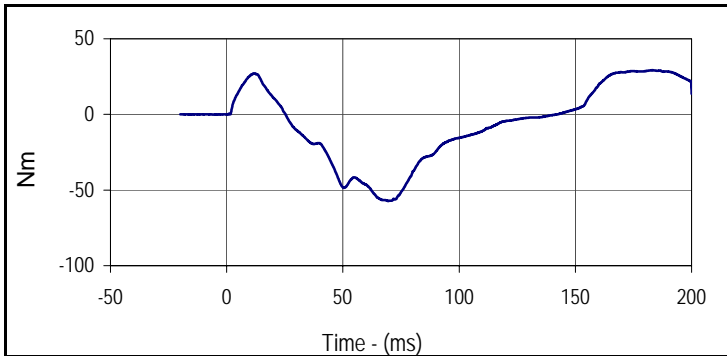


ATD Serial No.: 360

Test I.D.: M360NE014



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
550.3	68.0	-298.2	179.7



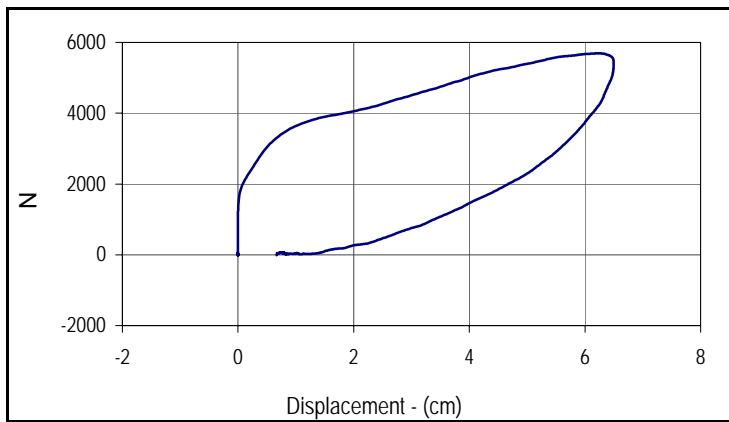
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
29.2	183.2	-57.2	69.5

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test  
 ATD Serial No.: 360

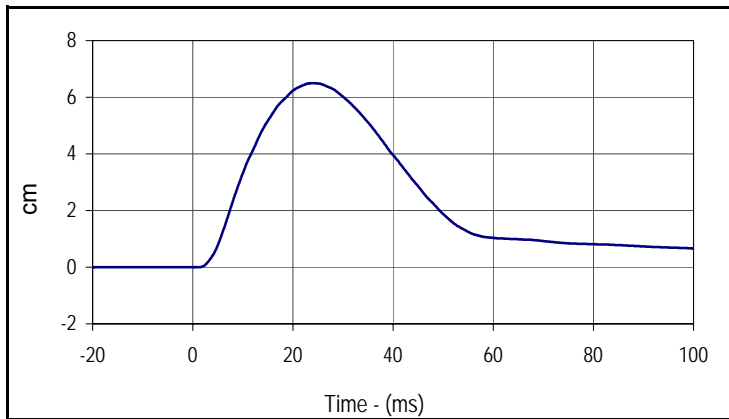
Test Date: 12/21/15  
 Test I.D.: M360CH014



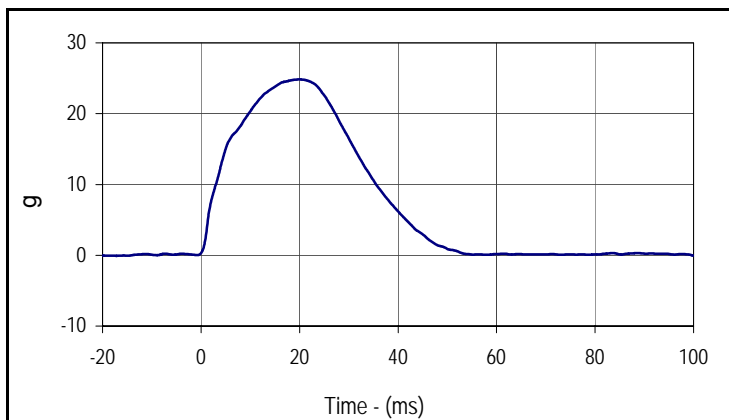
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	490	Pass
Temperature During Soak	Max	20.6 to 22.2	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.8	Pass
Probe Velocity	m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force	Newtons	5159 to 5893	5693	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.49	Pass
Internal Hysteresis	%	69 to 85	70.6	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	70.6
Peak Probe Force		Peak Chest Deflection	
5693		6.49	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	cm
Max	Time	Min	Time
6.5	23.8	0.0	1.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
24.9	19.9	-0.1	-17.2

Test Program: Hybrid III 50th Percentile Male Knee Impact Test  
 ATD Serial No.: 360

Test Date: 12/21/15  
 Test I.D.: M360LK014 , M360RK014

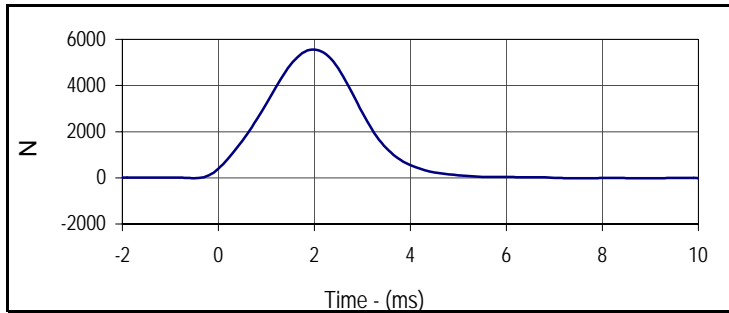


**Left Knee**

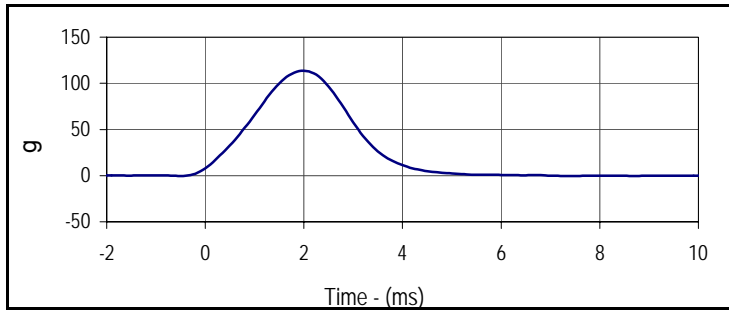
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	545	Pass
Temperature During Soak	Max	18.9 to 25.6	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.8	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5559	Pass
<b>Overall Test Results</b>				<b>Pass</b>

**Right Knee**

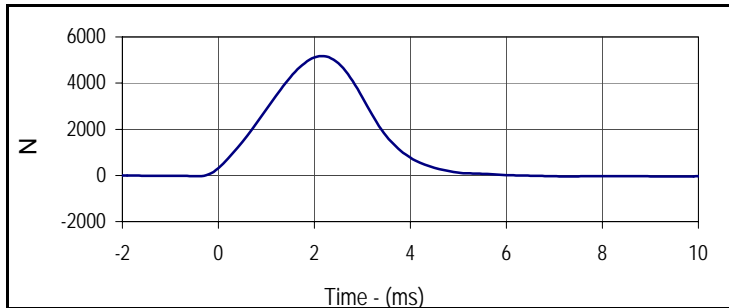
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	5168	Pass
<b>Overall Test Results</b>				<b>Pass</b>



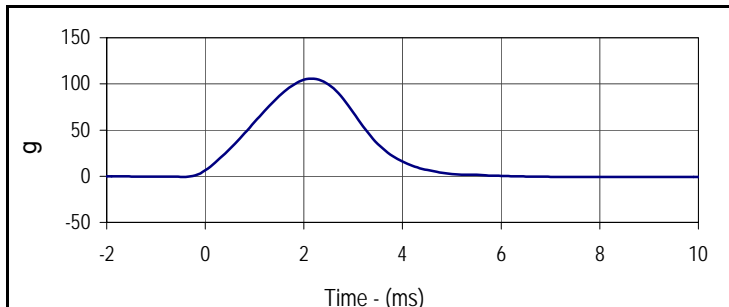
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
5559.4	2.0	-17.8	17.2



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
113.6	2.0	-0.4	17.2



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
5168.3	2.2	-46.3	12.0



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
105.6	2.2	-0.9	12.0

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test  
 ATD Serial No.: 360

Test Date: 12/21/15  
 Test I.D.: M360LF014, M360RF014

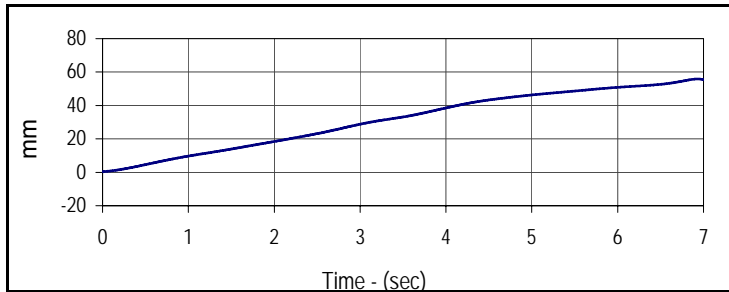


**Left Hip Joint-Femur Results**

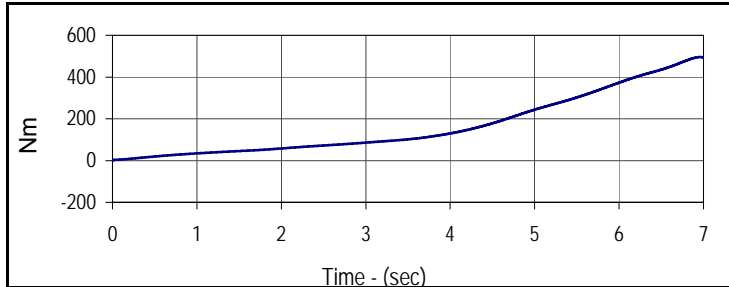
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	620	Pass
Temperature During Soak	Max	18.9 to 25.6	21.0	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	18.3	Pass
	Min		17.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.7	Pass
Rotation Rate	deg/sec	5 to 10	8.1	Pass
Femur Torque at 30°	Nm	≤ 95	87.2	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	44.1	Pass
<b>Overall Test Results</b>				<b>Pass</b>

**Right Hip Joint-Femur Results**

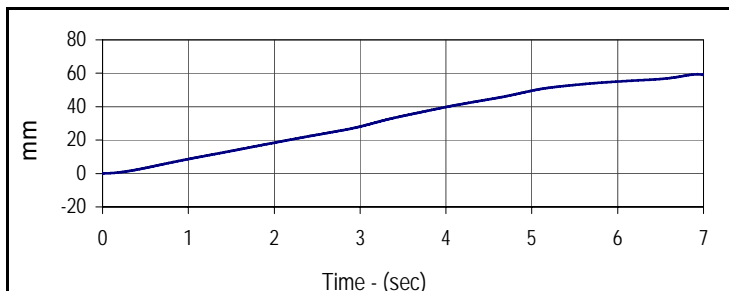
Rotation Rate	deg/sec	5 to 10	8.6	Pass
Femur Torque at 30°	Nm	≤ 95	85.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	45.1	Pass
<b>Overall Test Results</b>				<b>Pass</b>



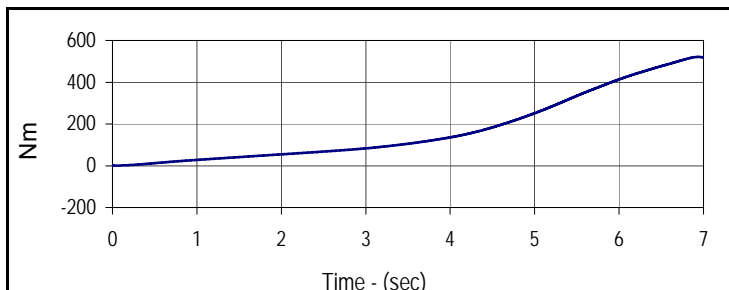
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	mm
Max	Time	Min	Time
55.9	6.9	0.4	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
495.4	7.0	0.4	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	mm
Max	Time	Min	Time
59.4	6.9	0.4	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
521.2	6.9	0.4	0.0

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

Test Date: 12/22/15

ATD Serial No.: 141

Test I.D.: N/A



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

Describe the repair on or replacement of parts:

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Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 12/22/15

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	20.2	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

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

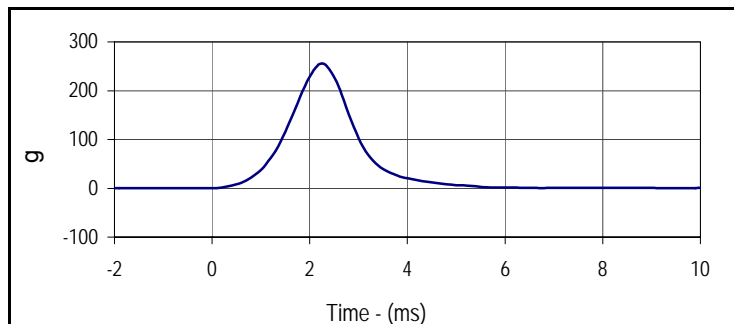
Test Date: 12/22/15



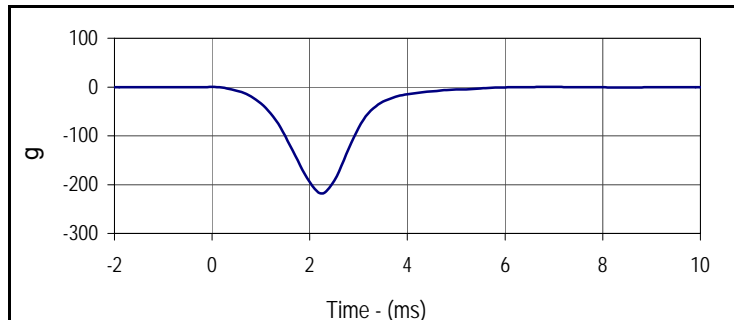
ATD Serial No.: 141

Test I.D.: F141HD071

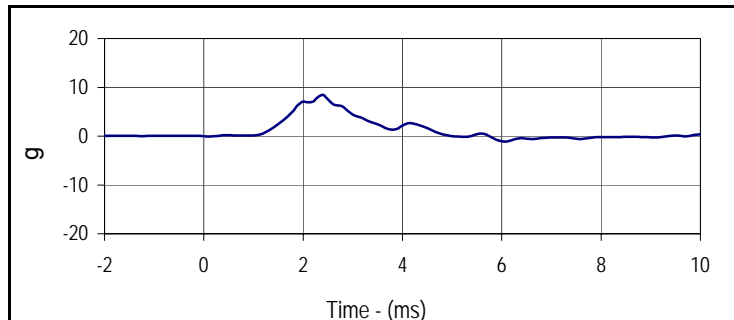
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	401	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.2	Pass
Peak Resultant Acceleration	g	250.0 to 300.0	255.0	Pass
Peak Lateral Acceleration	g	≤15.0	8.5	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	6.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
<b>Overall Test Results</b>				<b>Pass</b>



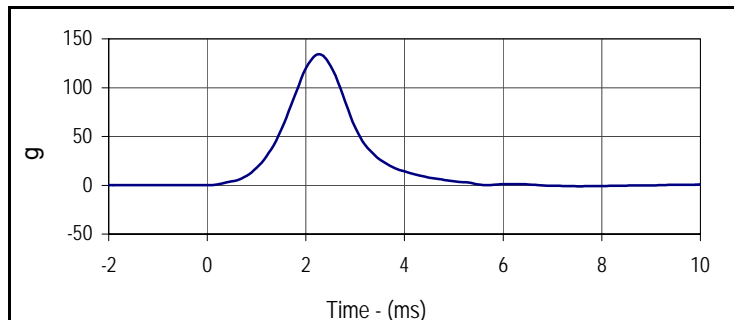
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
255.0	2.2	0.0	0.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
0.4	6.9	-217.3	2.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
8.5	2.4	-1.1	6.1



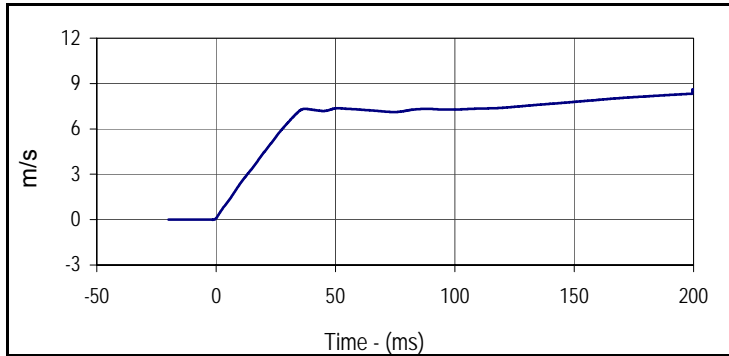
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
133.9	2.3	-1.1	7.5

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

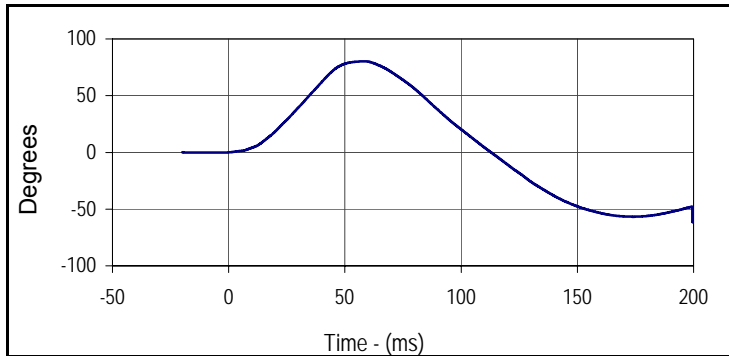
Test Date: 12/22/15  
 Test I.D.: F141NF071



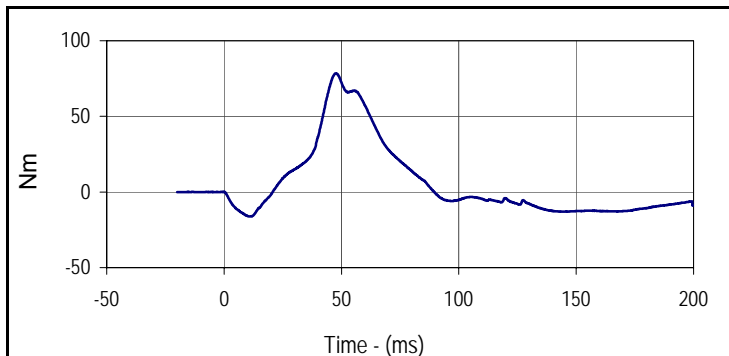
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	466	Pass	
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass	
	Min		20.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.93	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.4	Pass
	30 Msec.	m/s	5.8 to 7.0	6.4	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	80.3	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	77.0	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	81.5	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.6	199.5	0.0	-1.4



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
80.3	58.2	-61.3	199.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
78.4	47.4	-16.1	11.2

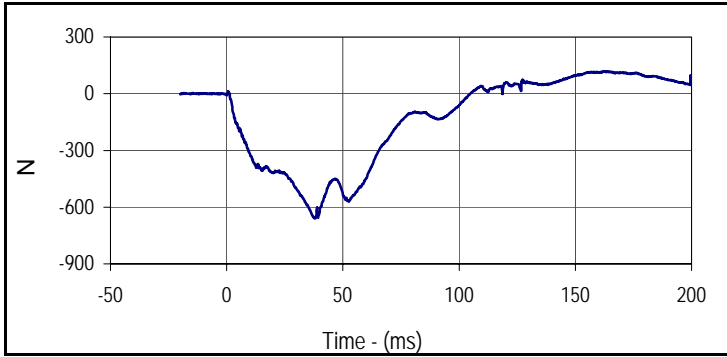
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 12/22/15

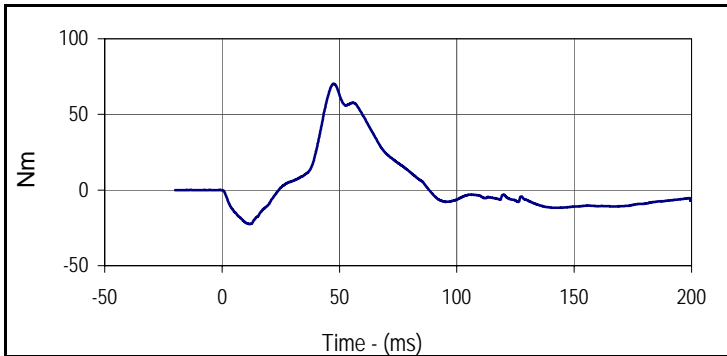


ATD Serial No.: 141

Test I.D.: F141NF071



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
118.8	162.2	-659.2	38.1



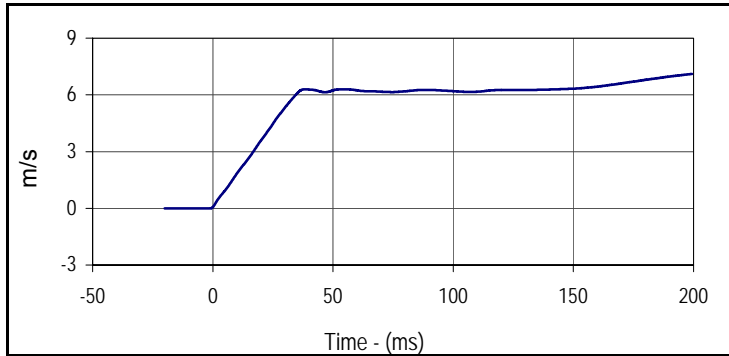
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
70.3	47.4	-22.5	11.6

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

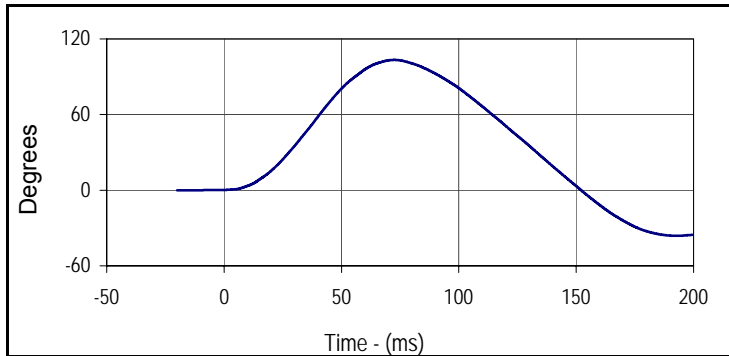
Test Date: 12/22/15  
 Test I.D.: F141NE071



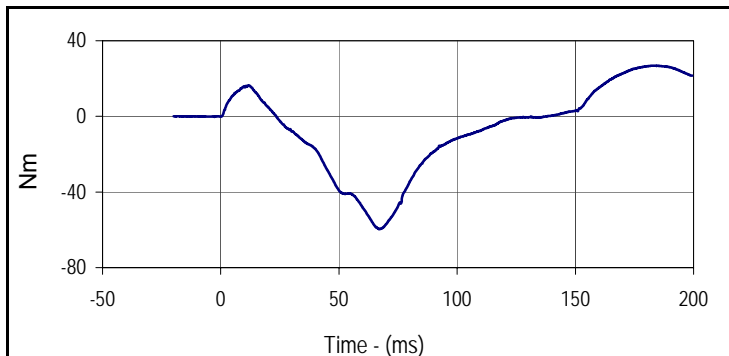
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	531	Pass	
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass	
	Min		20.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	22.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.2	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	5.97	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.6	Pass
	30 Msec.	m/s	4.6 to 5.6	5.3	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	103.4	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-59.6	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	103.9	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.1	199.4	0.0	-1.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
103.4	72.5	-36.2	192.8



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
26.9	183.8	-59.6	67.1

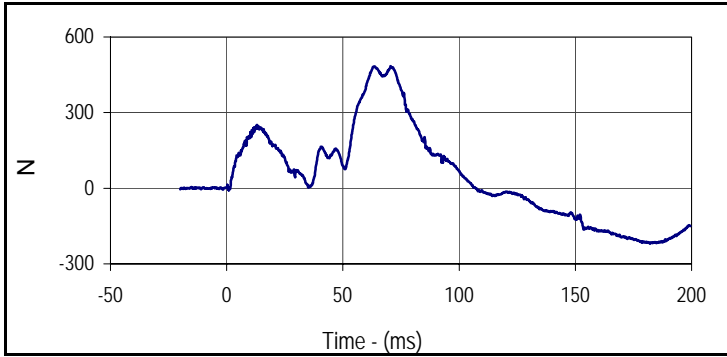
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 12/22/15

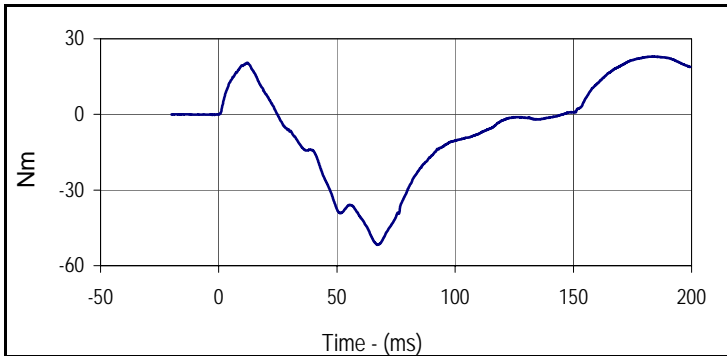


ATD Serial No.: 141

Test I.D.: F141NE071



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
484.3	70.5	-218.6	182.3



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
23.0	183.9	-51.7	67.1

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

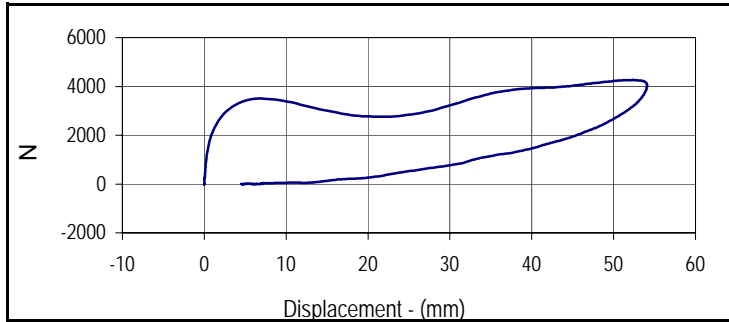
Test Date: 12/22/15



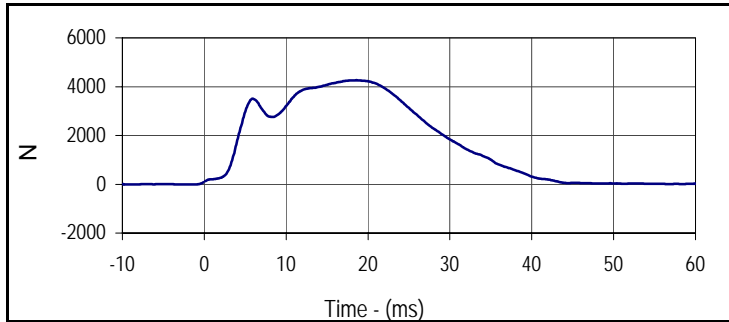
ATD Serial No.: 141

Test I.D.: F141CH071

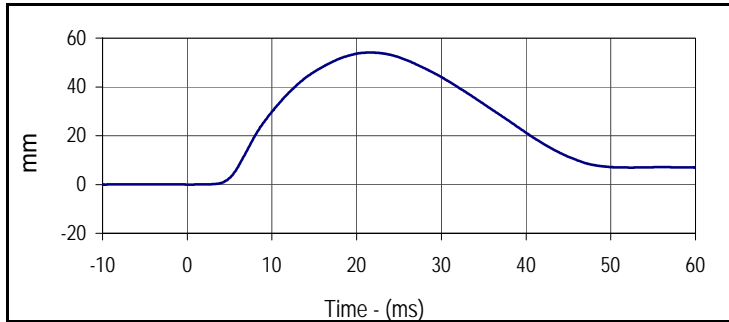
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	576	Pass
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Probe Velocity	m/s	6.59 to 6.83	6.71	Pass
Peak Chest Deflection	mm	50.0 to 58.0	54.1	Pass
Peak Force Between 50 and 58 MM	N	3900 to 4400	4225	Pass
Peak Force Between 18 and 50 MM	N	≤4600	4262	Pass
Internal Hysteresis	%	69 to 85	72.5	Pass
Overall Test Results				Pass



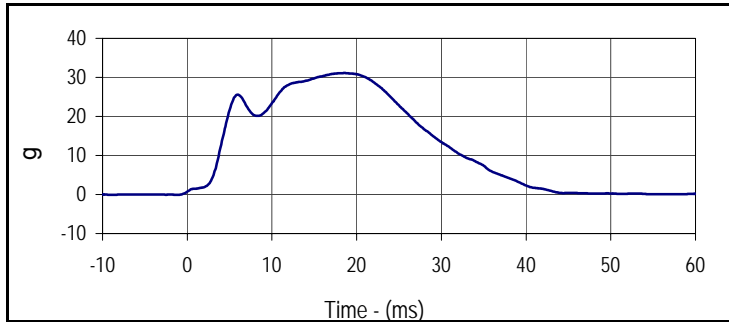
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	72.5
Peak Probe Force		Peak Chest Deflection	
4262.4		54.1	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4262.4	18.6	-13.7	97.7



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
54.1	21.6	0.0	0.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
31.1	18.6	-0.1	97.7

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

Test Date: 12/22/15



ATD Serial No.: 141

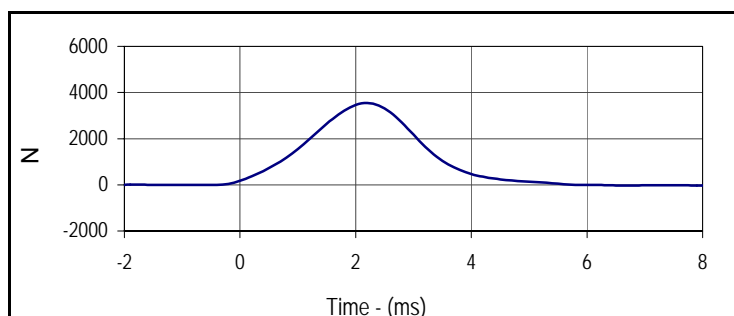
Test I.D.: F141LK071, F141RK071

**Left Knee**

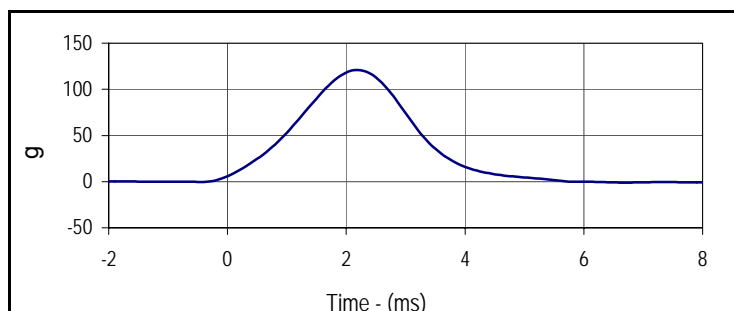
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	631	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	3450 to 4060	3547	Pass
<b>Overall Test Results</b>				<b>Pass</b>

**Right Knee**

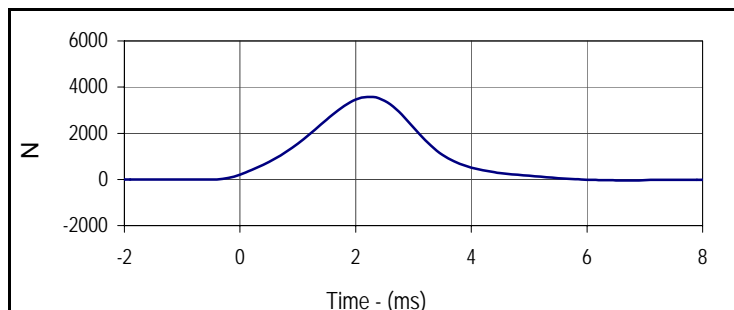
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	3450 to 4060	3580	Pass
<b>Overall Test Results</b>				<b>Pass</b>



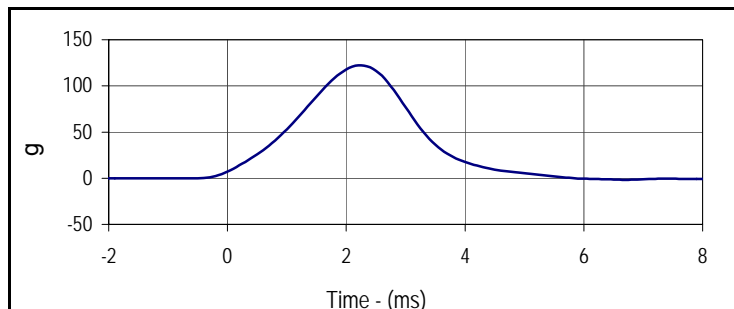
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3547.4	2.2	-32.9	6.7



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
121.0	2.2	-1.1	6.7



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
3579.9	2.2	-49.2	6.7



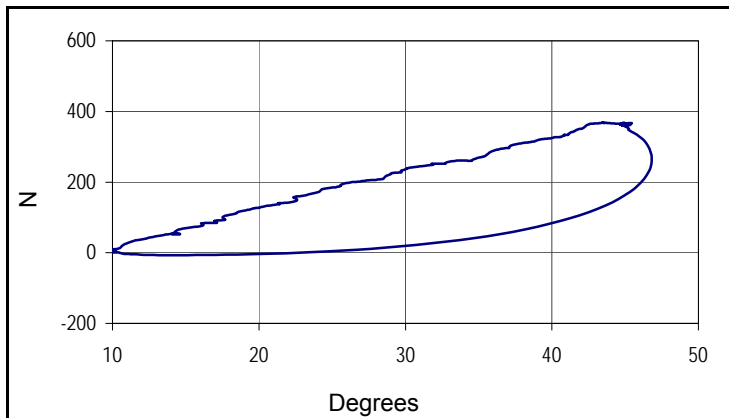
Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
122.1	2.2	-1.7	6.7

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

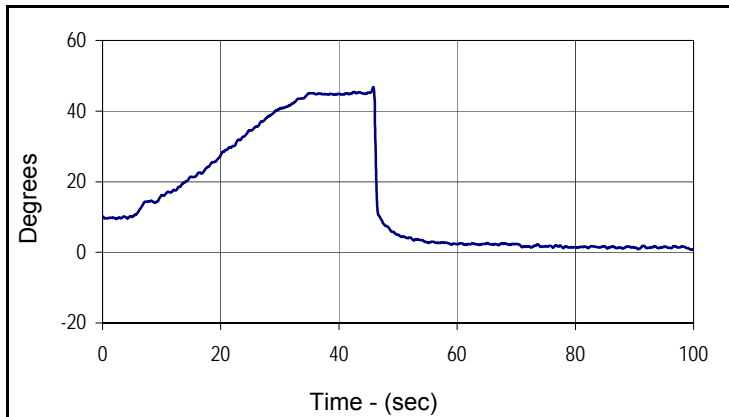
Test Date: 12/22/15  
 Test I.D.: TF071



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	696	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Initial Reference Plane Angle	Degrees	≤ 20	10.2	Pass
Peak Force at 45° +/-0.5°	N	320.0 to 390.0	368.1	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.0	Pass
Final Reference Plane Angle	Degrees	+/-8	0.9	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
369.0		46.8



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
46.8	45.8	0.7	99.7