REPORT NUMBER: CAL-08-19

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

NISSAN MOTOR COMPANY LTD.
2009 NISSAN MAXIMA
4-DOOR SEDAN

NHTSA NUMBER: M95202

CALSPAN TEST NUMBER: 8806-NCAP-19

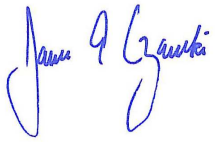
CALSPAN CORPORATION
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225

July 16, 2008

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking
Office of Crashworthiness Standards
Mail Code: NVS-111
1200 New Jersey Ave SE, Room W43-410
Washington, DC 20590

Prepared by: 

James Czarnecki, Project Engineer

Approved by: 

David J. Travale, Program Manager
Transportation Science Center

Approval Date: APPROVED
By James.Czarnecki at 10:20 pm, 8/10/08

TECHNICAL REPORT STANDARD TITLE PAGE

1. *Report No.* CAL-08-19	*2. Government Accession No.*	*3. Recipient's Catalog No.*
4. Title and Subtitle Final Report of NEW CAR ASSESSMENT PROGRAM (NCAP) Testing of a 2009 Nissan Maxima 4-door Sedan NHTSA No. M95202		*5. Report Date* July 16, 2008
		6. Performing Organization Code CAL
7. Author(s) David J. Travale, Program Manager James Czarnecki, Project Engineer		*8. Performing Organization Report No.* 8806-NCAP-19
9. Performing Organization Name and Address Calspan Corporation 4455 Genesee Street Buffalo, New York 14225		*10. Work Unit No.*
		11. Contract or Grant No. DTNH22-06-D-00024
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards Mail Code: NVS-111 1200 New Jersey Ave SE, Room W43-410 Washington, DC 20590		*13. Type of Report and Period Covered* Final Report July 2008
		14. Sponsoring Agency Code NVS-111

15. Supplementary Notes

16. Abstract

A frontal load cell barrier test of a 2009 Nissan Maxima 4-door Sedan was performed at Calspan Corporation's crash test facility in Buffalo, New York, on July 16, 2008.

The impact velocity was 56.0 kph and the temperature at the barrier face was 21°C. The maximum post-test vehicle crush was 361 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements. The occupant injury criteria summary is as follows:

Measurement Description	**Units**	**Threshold**	**Driver (1046)**	**Passenger (1047)**
Head Injury Criteria (HIC - 36 ms)	-	1000	255.4	365.8
Maximum Thorax Acceleration (3 ms Clip)	g's	60 g's	42.8	41.4
Chest Displacement	mm	-76 mm	25.5	27.0
Left Femur Force	Newtons	-10000 N	-1338.4	-3035.4
Right Femur Force	Newtons	-10000 N	-592.8	-1683.4

17. Key Words 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)	*18. Distribution Statement* Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 1200 New Jersey Ave SE Washington, DC 20590

19. Security Classif. (of this report) UNCLASSIFIED	*20. Security Classif. (of this page)* UNCLASSIFIED	*21. No. of Pages* 105	*22. Price*

Form DOT F1700.7 (8-69)

TABLE OF CONTENTS

Section		Page No.
1	PURPOSE AND SUMMARY OF NCAP TEST	1-1
2	OCCUPANT AND VEHICLE INFORMATION	2-1
Data Sheet	Description	
1.	CRASH TEST SUMMARY	2-1
2.	GENERAL TEST AND VEHICLE PARAMETER DATA	2-2
3.	TEST VEHICLE TIRE INFORMATION	2-4
4.	TEST VEHICLE INFORMATION	2-5
5.	DUMMY POSITIONING IN VEHICLE	2-7
6.	SEAT BELT POSITIONING DATA	2-9
7.	VEHICLE ACCELEROMETER LOCATIONS	2-10
8.	SUMMARY OF FMVSS 212 and FMVSS 219 (Partial) DATA	2-11
9.	SUMMARY OF FMVSS NO. 301 DATA	2-12
10.	VEHICLE MEASUREMENTS	2-13
11.	HIGH-SPEED CAMERA LOCATIONS	2-16
12.	VEHICLE REFERENCE PHOTO TARGET LOCATIONS	2-18
13.	VEHICLE INTRUSION MEASUREMENTS	2-19
14.	LOAD CELL LOCATIONS ON FIXED BARRIER	2-23
15.	ACCIDENT INVESTIGATION DIVISION DATA	2-24
16.	VEHICLE AND DUMMY TEMPERATURE STABILIZATION CHART	2-25
APPENDIX A	PHOTOGRAPHS	A-1
APPENDIX B	VEHICLE, LOAD CELL BARRIER AND DUMMY RESPONSE DATA	B-1
APPENDIX C	PART 572E DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION TESTS	C-1
APPENDIX D	DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION	D-1
APPENDIX E	VEHICLE INTERIOR INTRUSION MEASUREMENTS	E-1

SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.0 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-06-D-00024. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.0 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.0 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 1046) and the right-front passenger (position 2) ATD (Serial No.1047) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 129 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2009 Nissan Maxima 4-door Sedan at a velocity of 56.0 kph. The test was performed at Calspan on July 16, 2008. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

ATD	HIC	T_1	T_2	Clip (g)	T_1	T_2	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver	255.4	66.8	102.8	42.8	67.0	70.0	25.5	-1338.4	-592.8
Passenger	365.8	60.5	96.5	41.4	73.0	76.0	27.0	-3035.4	-1683.4

The test data can be found on the NHTSA website at www.nhtsa.dot.gov

TEST NOTES	
Data Channel	Anomalies
V1P1 Left Foot Aft x	Data inaccurate after 85 msecs
V1 Right Caliper #5x	Data inaccurate after 47 msecs
V1P2 Head CG y Red	Data inaccurate after 57 msecs

SECTION 2
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
CRASH TEST SUMMARY

Vehicle NHTSA No.: M95202 Test Mode: 56.3 kph Frontal Barrier
Test Date: July 16, 2008 Time: 11:30 Temperature: 21 °C
Vehicle Make/Model/Body Style: 2009 Nissan Maxima 4-door Sedan
Vehicle Test Weight: 1850 kg Impact Velocity: 56.0 kph (55.5 – 57.1 kph)
Vehicle/Barrier Impact Angle: 0 ° Max Static Crush: 361 mm

ATD INFORMATION AND VISIBLE CONTACT POINTS

	DRIVER	PASSENGER
ATD Type:	Part 572E	Part 572E
Restraint System:	Seatbelt, Airbag, Knee Bolster	Seatbelt, Airbag, Knee Bolster
Head Contact:	Airbag / Back of head to head restraint	Airbag / Back of head to head restraint / Top of head to roof interior
Abdomen Contact:	Airbag	Airbag
Chest Contact:	None	None
Left Knee Contact:	Knee Bolster	Knee Bolster
Right Knee Contact:	Knee Bolster	Knee Bolster

DOOR OPENING, SEAT TRACK AND GLAZING INFORMATION

Description	Driver Side	Passenger Side
Door Lock Status	Unlocked	Unlocked
Front Door Opening	Closed / Operable without tools	Closed / Operable without tools
Rear Door Opening	Closed / Operable without tools	Closed / Operable without tools
Hatch/Other Door Opening	Closed / Operable without tools	
Front Seat Track Shift (mm)	0	0
Front Seat Back Failure	None	None
Glazing Damage	None	

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Left Side (mm)	Center (mm)	Right Side (mm)	Average (mm)
Value	795	729	761	762

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	830	820
Lap belt length as measured on ATD	mm	780	755
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems	mm	240	240

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2009 Nissan Maxima 4-door Sedan

NHTSA No. : M95202 ; VIN: 1N4AA51E69C801252 ; Color: Silver

Engine Data: 6 cylinders; - CID; 3.5 Liters; - cc

Placement: - Longitudinal or In-Line; x Transverse or Lateral

Transmission Data: 5 speeds; - Manual; x Automatic; - Overdrive

Final Drive: - Rear Wheel Drive; x Front Wheel Drive; - Four Wheel Drive

AUTOMATIC DOOR LOCKS:

Is test vehicle equipped with Automatic Door Locks (ADLs)? x Yes; - No;

Does vehicle owner's manual describe how to deactivate ADLs? x Yes; - No; - N/A

DEALER AND DELIVERY INFORMATION:

Date Received: 6/30 ; Odometer Reading 43 km

Selling Dealer: West Herr Nissan

Dealer Address: 3580 Southwestern Blvd. Orchard Park 14127

TEST VEHICLE OPTIONS:

x AC; x Power Steering; x Power Brakes; x Power Locks; x Power Seats

x ABS; x Tilt Wheel; x Stability Control x Traction Control x Anti-Theft

SAFETY BELT FEATURES:

Driver: x Pretensioner (Shoulder); x Load Limiter; x Adjustable Anchorage

Passenger: x Pretensioner (Shoulder); x Load Limiter; x Adjustable Anchorage

AIRBAG FEATURES:

Position	Frontal	Knee Bolster	Side Torso	Side Head/Torso Combination	Side Curtain
Driver:	YES	N/A	YES	N/A	YES
Passenger:	YES	N/A	YES	N/A	YES
Rear Passenger:	NO	N/A	NO	N/A	YES

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Nissan Motor Company LTD.

Date of Manufacture 06/08

GVWR: 2131 kg; GAWR: 1140 kg FRONT; 1000 kg REAR

VEHICLE CAPACITY DATA:

Type of Front Seats: - Bench; x Bucket; - Split Bench

Number of Occupants: 2 Front; 3 Rear; 5 Total

Vehicle Capacity Weight (VCW) = 408 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 67.8 kg

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	501.0	505.0	61.4	1006.0
Rear =	326.0	307.0	38.6	633.0
			Total Delivered Weight (UDW) =	1639.0

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW)	=	1639.0	kg
Rated Cargo/Luggage Weight (RCLW)	=	67.8	kg
Weight of 2 p.572 Dummies @ 76 each	=	152	kg
TARGET TEST WEIGHT	=	1858.8	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 59.0 KG OF CARGO WEIGHT:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	535.5	536.0	57.9	1071.5
Rear =	399.0	379.5	42.1	778.5
			Total Vehicle Test Weight (ATW) =	1850.0

Weight of Ballast Secured in Vehicle Trunk Area[1] = 25 kg

Vehicle Components Removed for Weight Reduction: None

VEHICLE ATTITUDE (all dimension in millimeters):

	Left Front	Right Front	Left Rear	Right Rear	CG[2]
AS DELIVERED:	725	724	738	743	1072.1
FULLY LOADED:	715	714	714	720	-
AS TESTED:	720	720	718	722	1168.2

Vehicle's Wheel Base: 2776 mm

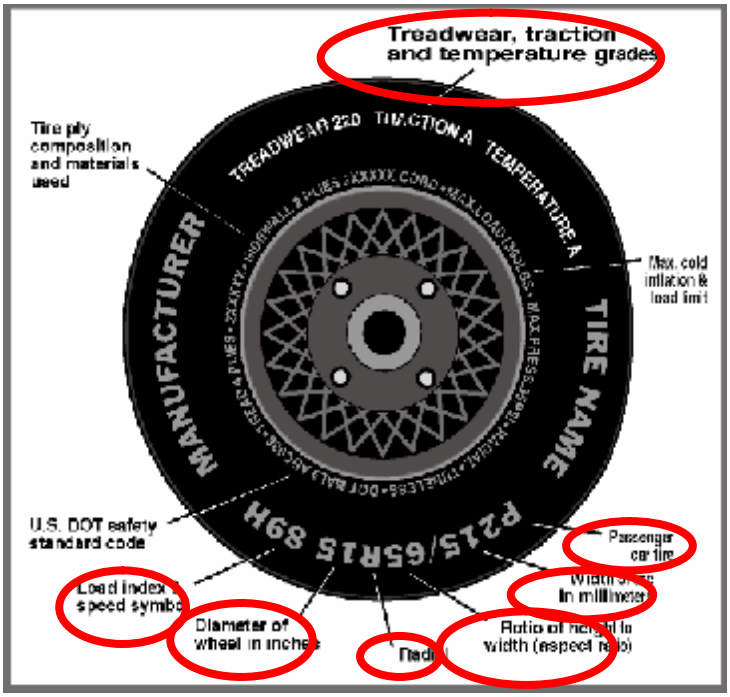
[1]Ballast weight does not include the weight of instrumentation, on-board cameras and data acquisition system

[2]Rearward of the front axle centerline.

DATA SHEET NO. 3
TEST VEHICLE TIRE INFORMATION

Vehicle Year/Make/Model/Body Style: 2009 Nissan Maxima 4-door Sedan

NHTSA Test No.: M95202 Test Date: July 16, 2008



Measured Parameter	Front	Rear
Maximum Tire Pressure (from sidewall - kPa)	350	350
Cold Pressure (from tire placard - kPa)*	230	230
Recommended Tire Size (from tire placard)	P245/40R19	P245/40R19
Tire size on Vehicle	P245/40R19	P245/40R19
Tire Manufacturer	Goodyear	Goodyear
Tire Name	Eagle RS A	Eagle RS A
Tire Type	Passenger	Passenger
Tire Width (mm)	245	245
Ratio of Height to Width (aspect ratio)	40	40
Radial	R	R
Wheel Diameter	19	19
Load Index & Speed Symbol	94V	94V
Treadwear	260	260
Traction Grade	A	A
Temperature Grade	A	A

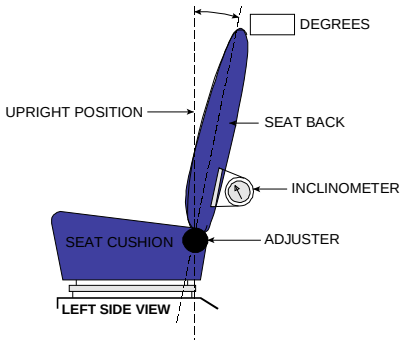
*Tire pressure used for test

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2009 Vehicle Model: Nissan Maxima Body Style : 4-door Sedan

1. NOMINAL DESIGN RIDING POSITION:
for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat: 9.6

Measurement instructions: Rotate seat to full forward. Rotate seat back 14 degrees measuring on head restraint post.

Seat back angle for passenger's seat: 10.6

Measurement instructions: Rotate seat to full forward. Rotate seat back 14 degrees measuring on head restraint post.

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: Seat travel is 320 mm. Placed in middle of 160 mm.

Positioning of the passenger's seat: Seat travel is 280 mm. Placed in middle of 140 mm.

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 72 liters

B. "Usable Capacity" of the optional equipment fuel tank is 0 liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 66.2 to 67.7 liters

3.2 Actual Amount of Stoddard solvent added to vehicle for test = 66.5 liters

3.3 One-Third of Useable Capacity = 24.0 liters

3.4 Is vehicle equipped with electric fuel pump? Yes- x ; No- -

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

With ignition turned “On”

DATA SHEET NO. 4
TEST VEHICLE INFORMATION (cont.)

4. STEERING COLUMN ADJUSTMENTS:

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: Telescoping distance is 40 mm, placed column at 20 mm. Steering wheel angle was placed at 22.5 degrees.

5. SEAT BELT UPPER ANCHORAGE:

Nominal design riding position: Placed in full-up position

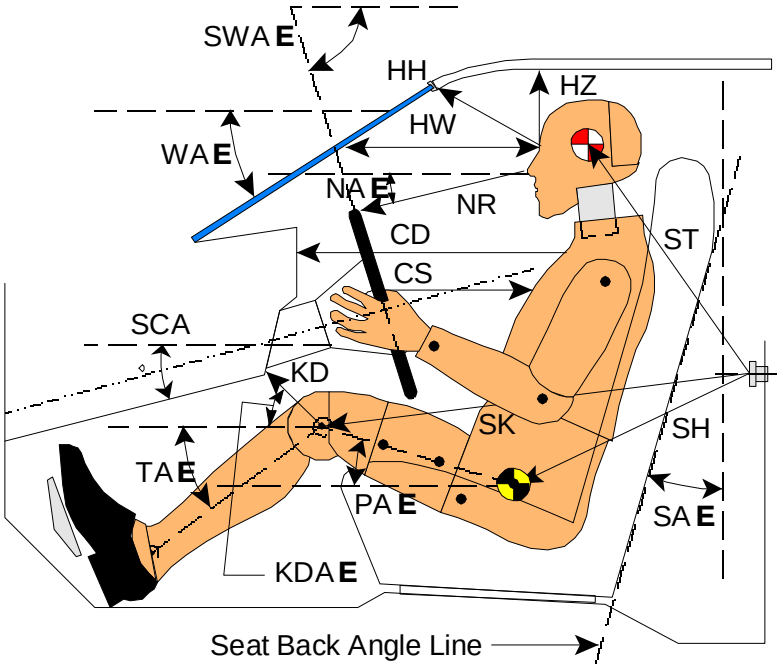
6. AUTOMATIC DOOR LOCKS: Is test vehicle equipped with ADLs? x Yes; - No;

Does vehicle owner's manual describe how to deactivate ADLs? x Yes; - No; - N/A

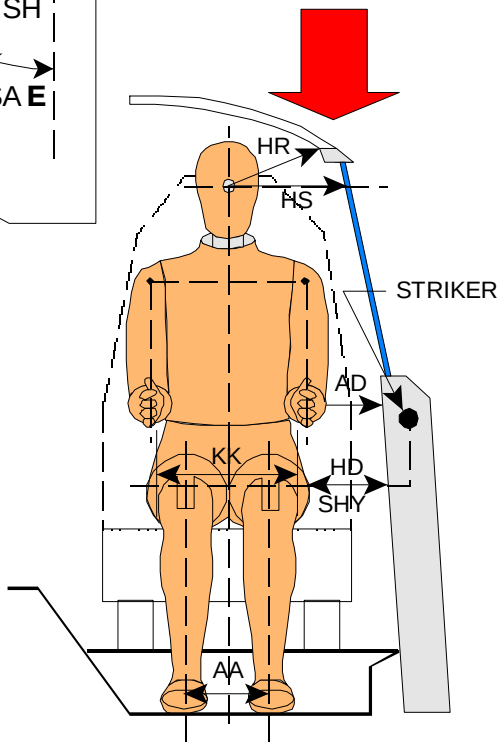
Comments: None – followed owners manual to deactivate.

DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE

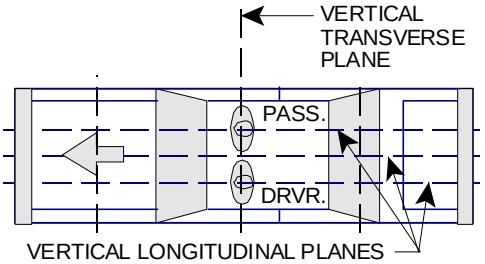
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
AA - Ankle to Ankle
SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA - Knee to Dash Angle
KDL- Left Knee to Dash
KDR - Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA - Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA- Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle



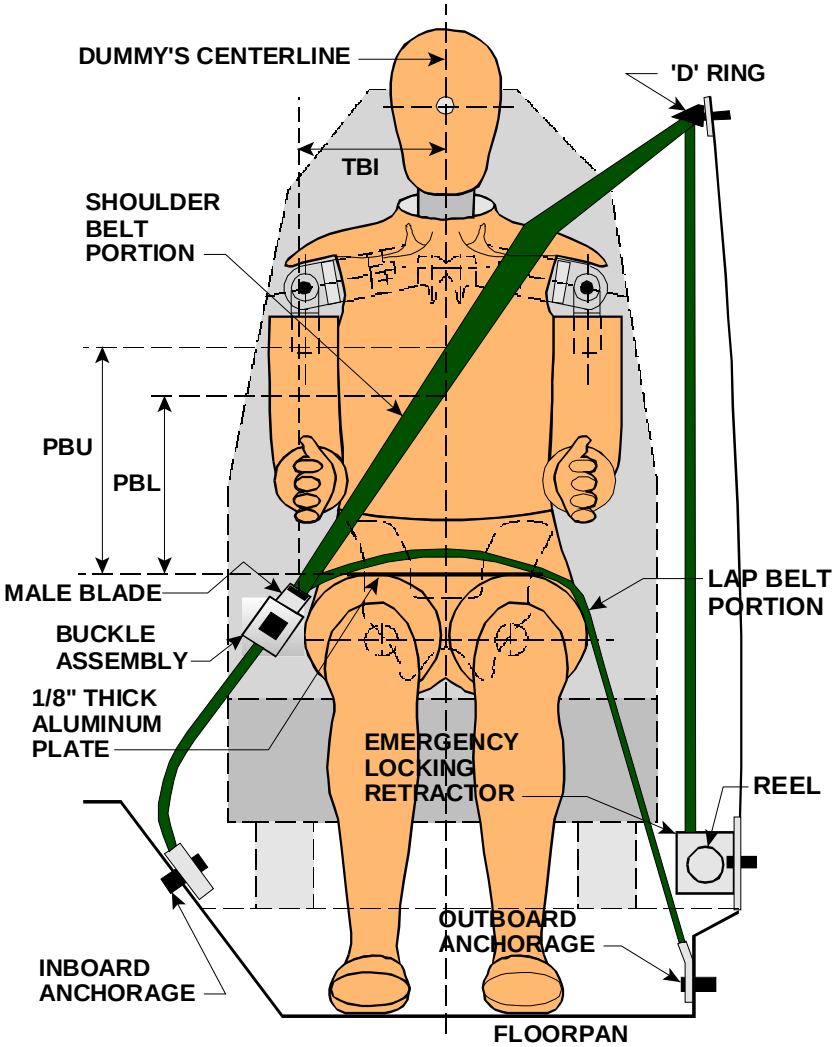
DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #1046)			PASS. (Serial #1047)		
WA^O	26 deg.			N/A		
SWA^O	67.5 deg.			N/A		
SCA^O	22.5 deg.			N/A		
SA^O	9.6 deg.			10.6 deg.		
HZ	195			171		
HH	378			365		
HW	721			715		
HR	220			211		
NR	375	Angle	10 deg.	N/A		
CD	536			556		
CS	294			N/A		
RA	196			N/A		
KDL	211	Angle (KDA)	39 deg.	199		
KDR	207			199	Angle (KDA)	37 deg.
PA^O	21 deg.			24 deg.		
TA^O	39 deg.			41 deg.		
KK	329			270		
AA	359			275		
ST	471	Angle	75 deg.	461	Angle	81 deg.
SK	620	Angle	11 deg.	617	Angle	11 deg.
SH	226	Angle	38 deg.	216	Angle	34 deg.
SHY	258			266		
HS	320			315		
HD	155			174		
AD	122			141		

Dimensions in millimeters

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

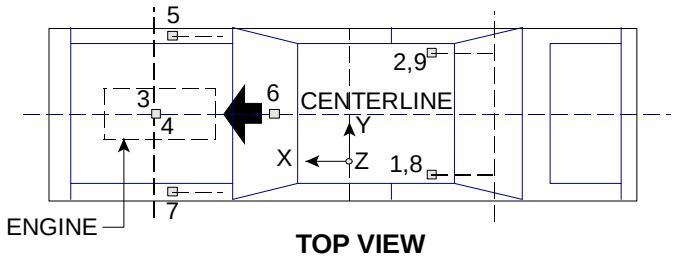


FRONT VIEW OF DUMMY

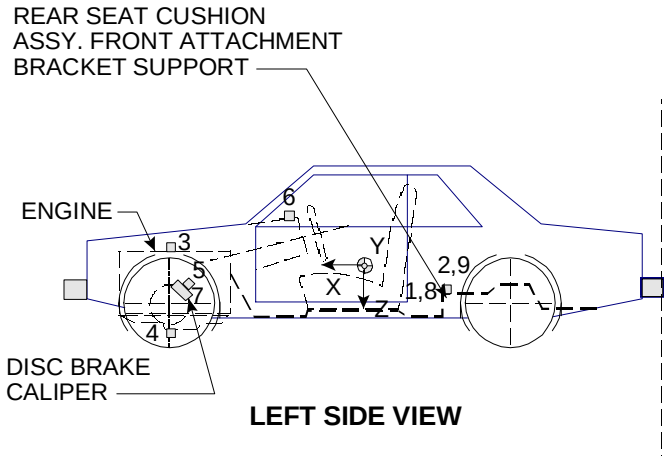
	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	340	350
PBL-- Top surface of alum. plate to belt lower edge	250	265
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS

VEHICLE ACCELEROMETER LOCATIONS



TOP VIEW



LEFT SIDE VIEW

		PRE-TEST LENGTH (mm)		
No.	LOCATION	X	Y	Z
1	Left Rear Seat Cross Member X	2092	570	211
2	Right Rear Seat Cross Member X	2132	-553	196
3	Top of Engine Block	4125	-399	799
4	Bottom of Engine	4076	0	200
5	Disc Brake Caliper @ Right Side	3960	712	437
6	Instrument Panel**	-	-	-
7	Disc Brake Caliper @Left Side	3954	709	437
8	Left Rear Seat Cross Member Z	2092	570	211
9	Right Rear Seat Cross Member Z	2132	-553	196

X – From rear surface of vehicle (+ forward)
Y – From vehicle centerline (+ right)
Z – From ground plane (+ up)
** Accelerometer was not requested by the COTR

DATA SHEET NO.8
SUMMARY OF FMVSS 212 and FMVSS 219 (Partial) DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with a 5 mm molding.

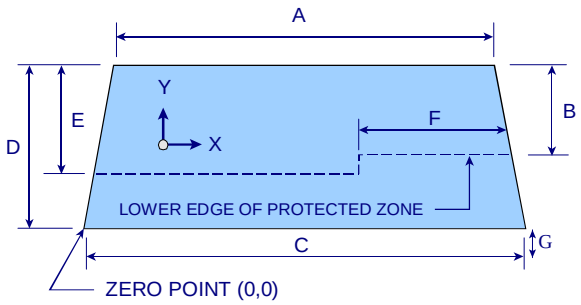
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

Temperature of windshield molding during test: 21ºC.

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2045.0	2045.0	100.0%
LEFT SIDE	2045.0	2045.0	100.0%
TOTAL	4090	4090	100.0%



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1212
B	485
C	1528
D	675
E	564
F	441
G	5

FAILURE DETAILS:

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

	COORDINATES	
	X	Y
1.	-	-
2.	-	-
3.	-	-
4.	-	-

DATA SHEET NO. 9
SUMMARY OF FMVSS NO. 301 DATA

NHTSA TEST No.: M95202 TEST DATE: July 16, 2008

VEHICLE MAKE/MODEL: 2009 Nissan Maxima 4-door Sedan

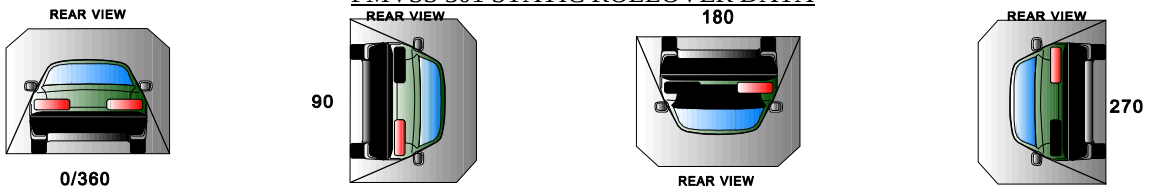
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

FUEL SPILLAGE MEASUREMENT:

Time Interval	Amount	Maximum Allowable Spillage
Impact Until Motion Ceases	0	**28 g**
First Five Minutes Following Impact	0	**142 g**
Next 25 Minutes	0	**28 g / 1 minute**

SOLVENT SPILLAGE DETAILS: None

FMVSS 301 STATIC ROLLOVER DATA



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0º - 90º	1	minutes	8	seconds	5	minutes	6	minutes	8	seconds	7	minutes
90º - 180º	1	minutes	12	seconds	5	minutes	6	minutes	12	seconds	7	minutes
180º-270º	1	minutes	14	seconds	5	minutes	6	minutes	14	seconds	7	minutes
270º-360º	1	minutes	7	seconds	5	minutes	6	minutes	7	seconds	7	minutes

II. FMVSS 301 REQUIREMENTS: (Maximum allowable solvent spillage):

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
142 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

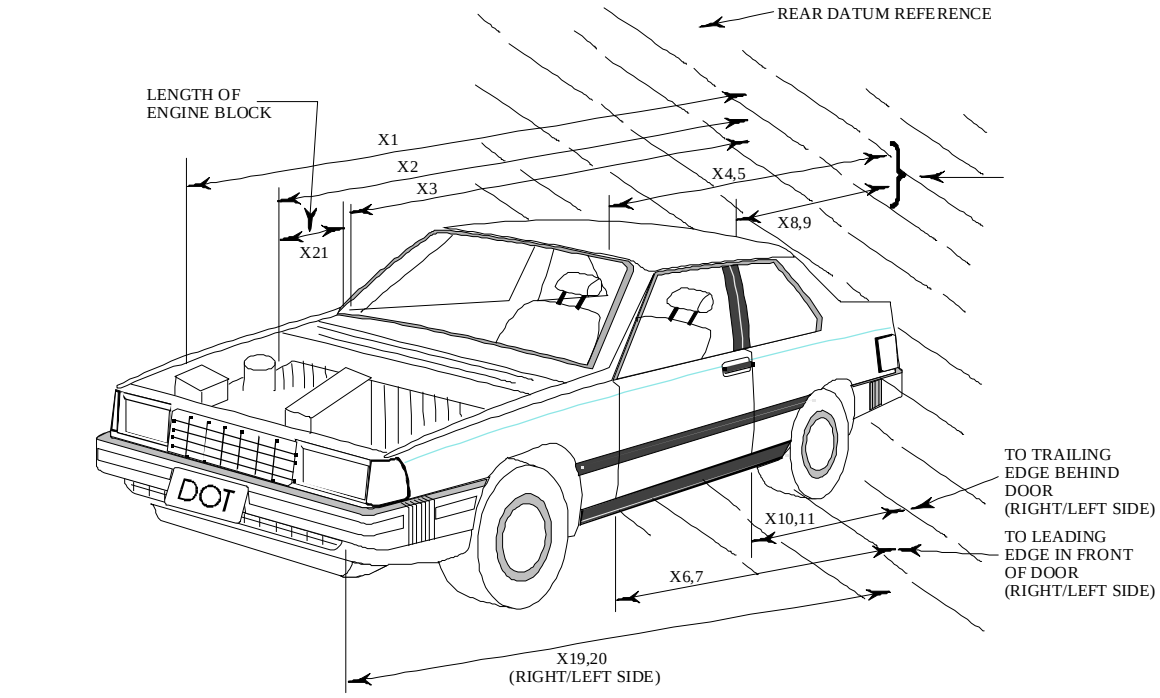
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0º - 90º	0	0	0	N/A
90º - 180º	0	0	0	N/A
180º-270º	0	0	0	N/A
270º-360º	0	0	0	N/A

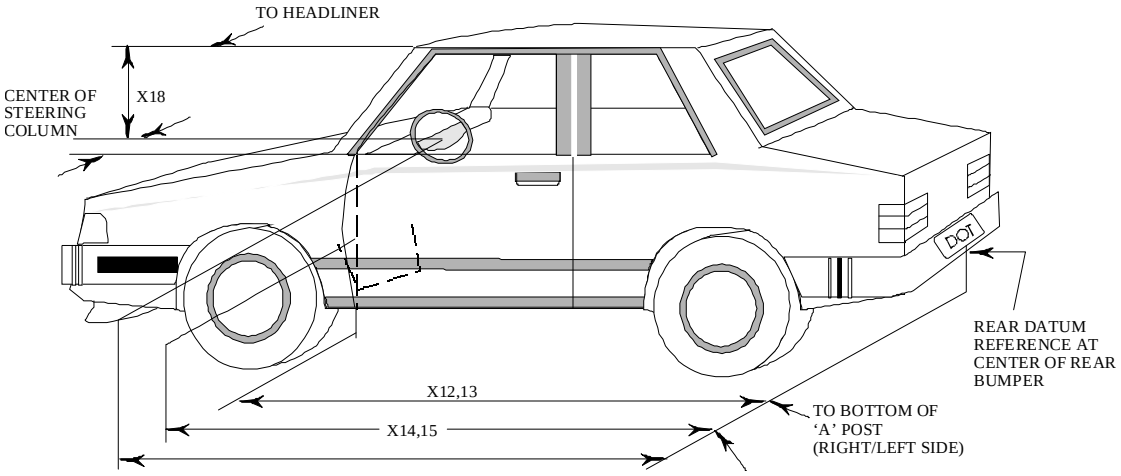
Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0º - 90º	None
90º - 180º	None
180º-270º	None
270º-360º	None

DATA SHEET NO. 10
TEST VEHICLE MEASUREMENTS





DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

NHTSA TEST No.: M95202 TEST DATE: July 16, 2008

VEHICLE MAKE/MODEL: 2009 Nissan Maxima 4-door Sedan

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4843	4506	337
X2	Rear Surface of Vehicle to Front of Engine	4376	4137	239
X3	Rear Surface of Vehicle to Firewall	3795	3767	28
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3398	3399	-1
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3396	3393	3
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3363	3367	-4
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3366	3361	5
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2222	2222	0
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2221	2215	6
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2218	2222	-4
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2213	2205	8
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3474	3474	0
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3379	3371	8
X14	Rear Surface of Vehicle to Firewall, Right Side	3710	N/A	N/A
X15	Rear Surface of Vehicle to Firewall, Left Side	3710	3702	8
X16	Rear Surface of Vehicle to Steering Column	2830	2836	-6
X17	Center of Steering Column to "A" Post	287	277	10
X18	Center of Steering Column to Headliner	419	498	-79
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4787	4479	308
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4788	4427	361
X21	Length of Engine Block	457	457	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	3125	3130	-5
CD	Rear Surface of Vehicle to Center of Dash Panel	3089	3081	8
LD	Rear Surface of Vehicle to Left Side of Dash Panel	3145	3142	3

All Dimensions in mm

DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

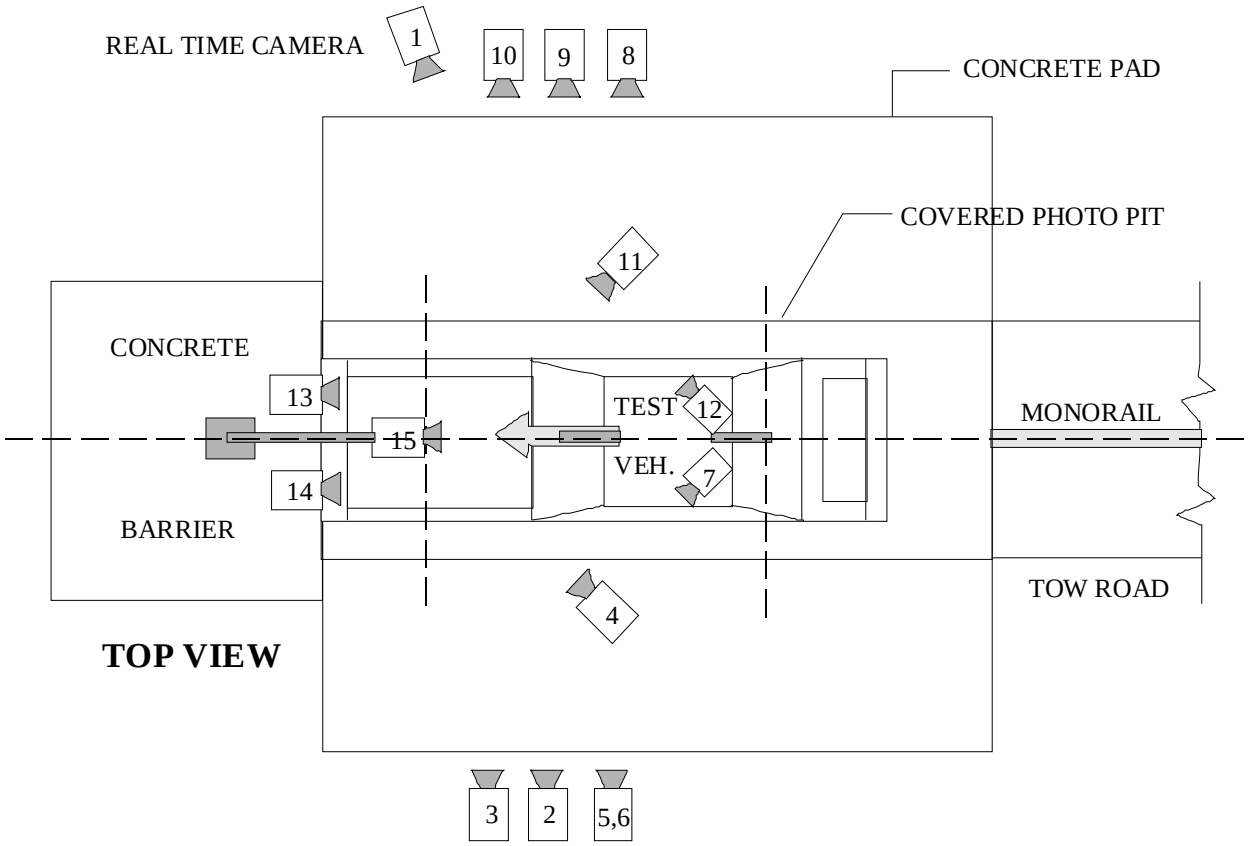
NHTSA TEST No.: M95202 TEST DATE: July 16, 2008

VEHICLE MAKE/MODEL: 2009 Nissan Maxima 4-door Sedan

TARGET VEHICLE STRUCTURAL MEASUREMENTS

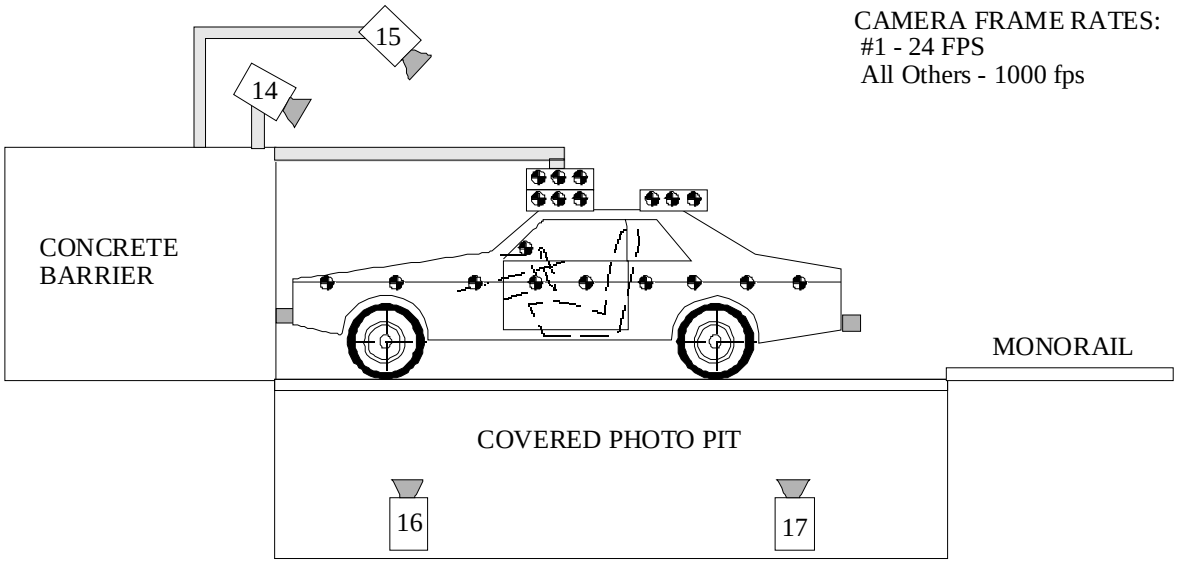
	Elements	Pre-Test (mm)
1	Total length	4843
2	Total Width	1810
3	Bumper Top Height	504
4	Bumper Bottom Height	392
5	Longitudinal Member Top Height	552
6	Distance Between Longitudinal Members	982
7	Longitudinal Member Width	103
8	Engine top height	880
9	Engine bottom height	227
10	Engine and gearbox width	0
11	Front bumper-engine distance	467
12	Front shock absorber fixing height	882
13	Bonnet leading edge height	793
14	Front shock absorber fixing width	1280
15	Front bumper – front axle distance	4843
16	Front axle – A pillar distance	559
17	A-pillar – B pillar distance	1126
18	B-pillar – rear axle distance	1090
19	B-pillar – C Pillar distance	1027
20	Roof sill bottom height	1319
21	Roof sill top height	1402
22	Floor sill bottom height	209
23	Floor sill top height	285

DATA SHEET NO.11
HIGH-SPEED CAMERA LOCATIONS



TOP VIEW

CAMERA FRAME RATES:
#1 - 24 FPS
All Others - 1000 fps



LEFT SIDE VIEW

DATA SHEET NO.11
HIGH-SPEED CAMERA LOCATIONS (cont.)

NHTSA Test No.: M95202 Vehicle: 2009 Nissan Maxima 4-door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)* X	Y	Z	ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	30
2	Overall Left Side	7830	2380	925	-2	7391	28	1000
3	Left Side View	1949	1780	905	-1	1510	50	1000
4	Driver and Interior View	4712	3440	2025	-15	-	35	500
5	Steering Column (Bottom)	7683	2670	1200	-6	7244	25	1000
6	Steering Column (Top)	7683	2670	1800	-10	7244	28-70	1000
7	Left CRS Lateral View	-	-	-	-	-	-	-
8	Overall Right Side	7820	2710	925	-1	7381	28	500
9	Right Side View	9354	1880	985	-3	8915	50	1000
10	Right Passenger View	8231	2360	1155	-4	7792	35	1000
11	Passenger and Interior View	7669	3770	2010	-9	-	35	500
12	Right CRS Lateral View	-	-	-	-	-	-	-
13	Passenger Front View	620	-92	1960	-35	-	13	500
14	Driver Front View	620	-92	1960	-34	-	13	500
15	Windshield View	0	-530	3374	-53	-	20	500
16	Pit View of Engine	0	615	-3048	90	-	13	500
17	Pit View of Fuel Tank	0	2534	-3048	90	-	13	500

*X = film plane to monorail centerline ** = referenced to horizontal plane

Y = film plane to impact location N.T. indicates No Timing

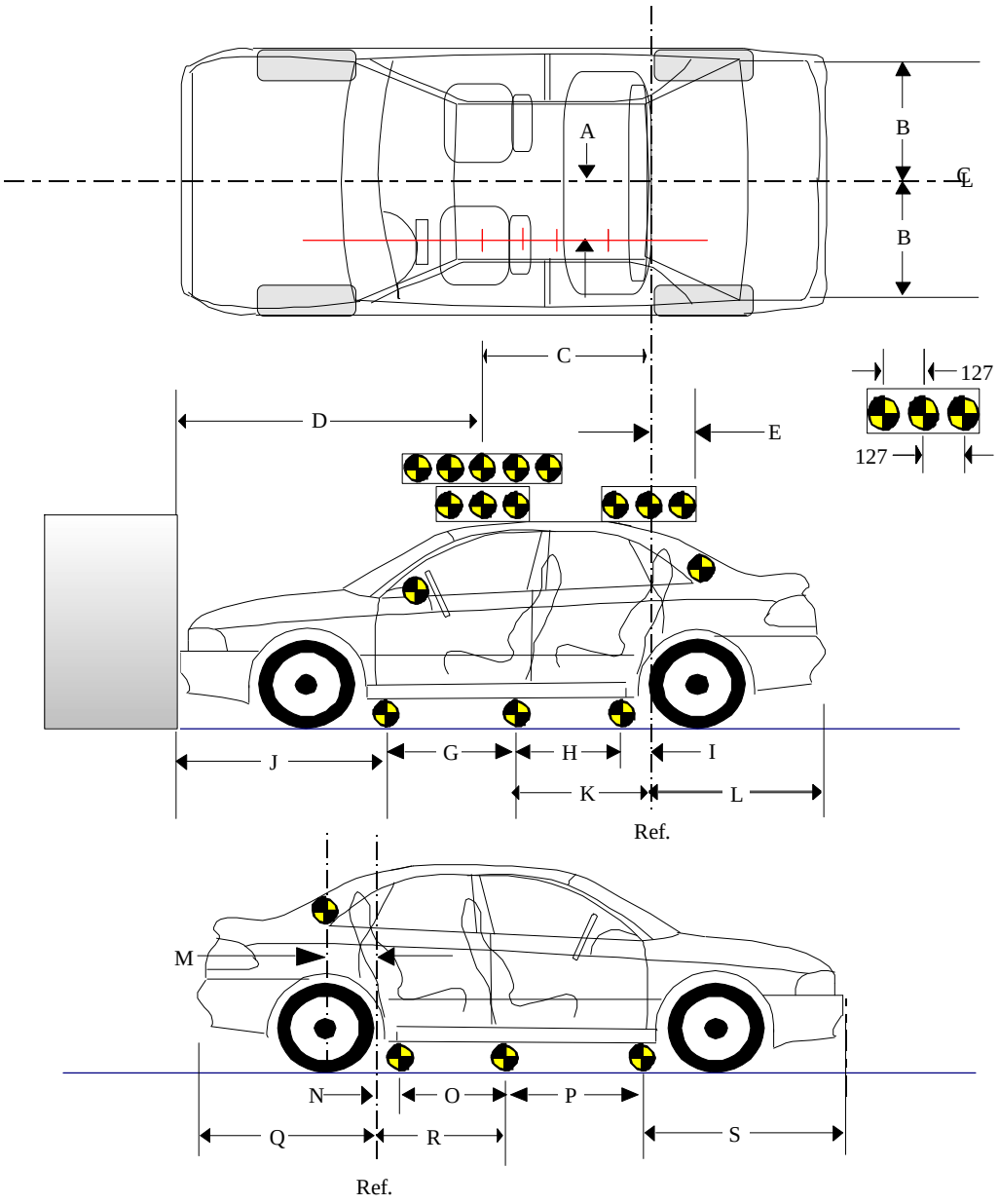
Z = film plane to ground

DATA SHEET NO. 12
VEHICLE REFERENCE PHOTO TARGET LOCATIONS

NHTSA Test No.: M95202 Vehicle: 2009 Nissan Maxima 4-door Sedan

(Dimensions in millimeters)

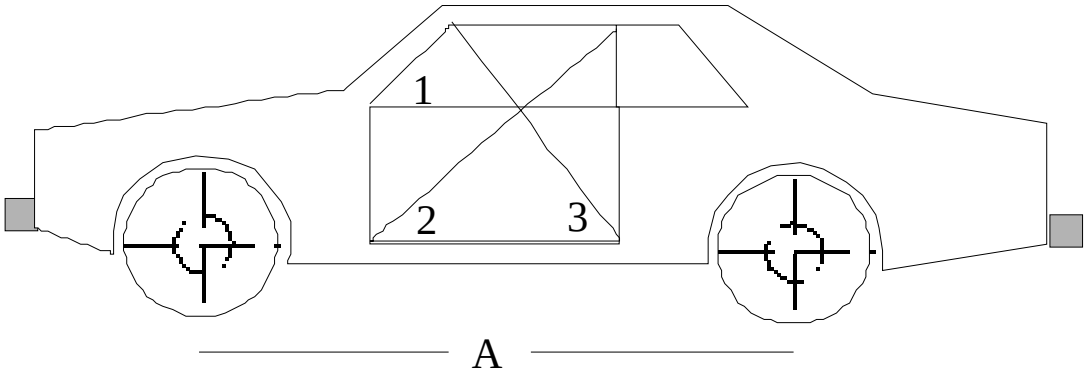
A	363
B	647
C	1223
D	2184
E	290
F	1582
G	925
H	940
I	111
J	1426
K	1051
L	1442
M	315
N	107
O	934
P	934
Q	1444
R	1041
S	1424



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

NHTSA Test No.: M95202 Vehicle: 2009 Nissan Maxima 4-door Sedan

DOOR OPENING WIDTH AND WHEELBASE MEASUREMENTS



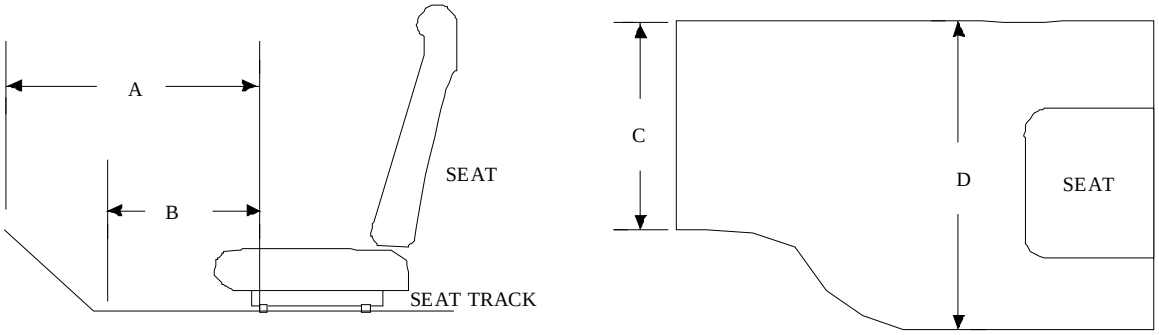
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	1070	950	1503	1059	943	1507
AFTER TEST	1070	952	1501	1057	943	1504
DIFFERENCE	0	-2	2	2	0	3

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2776	2775
AFTER TEST	2755	2697
DIFFERENCE	21	78

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont)

NHTSA Test No.: M95202 Vehicle: 2009 Nissan Maxima 4-door Sedan

STATIC FOOTWELL DEFORMATION



DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	720	682	38
B	550	539	11
C	474	473	1
D	506	494	12

PASSENGER

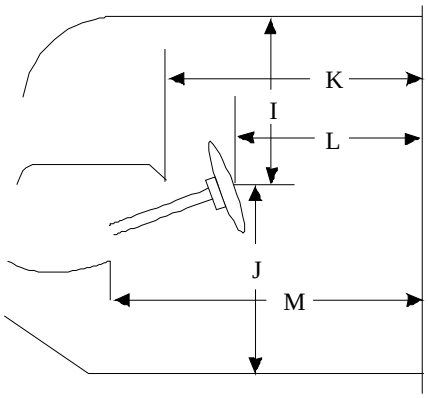
Measurement	Pre-Test	Post-Test	Difference
A	690	614	76
B	540	511	29
C	463	458	5
D	509	513	-4

Units = mm

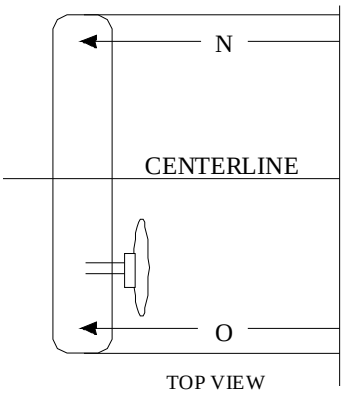
DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M95202 Vehicle: 2009 Nissan Maxima 4-door Sedan

STATIC PASSENGER COMPARTMENT INTRUSION

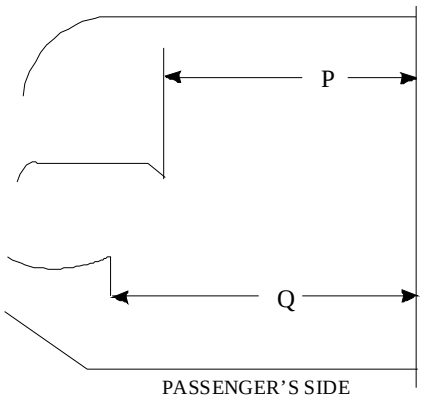


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



PASSENGER'S SIDE

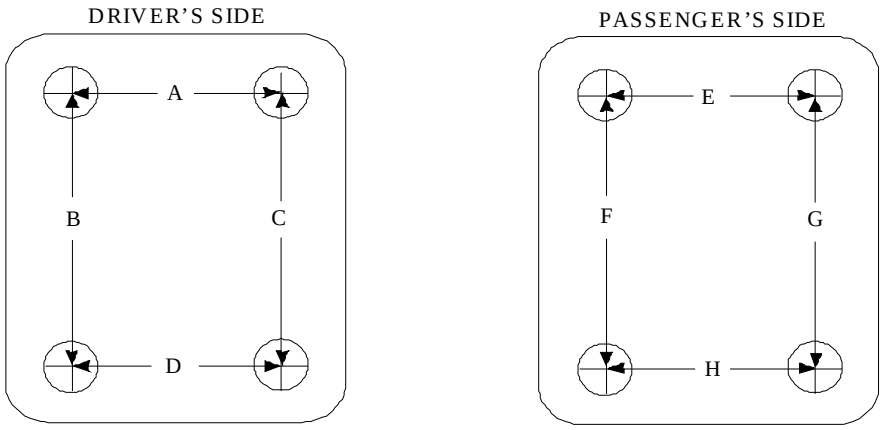
Measurement	Pre-Test	Post-Test	Difference
I	419	498	-79
J	676	604	72
K	750	743	7
L	540	546	-6
M	840	841	-1
N	834	839	-5
O	855	852	3
P = K (PASS.)	787	786	1
Q = M (PASS.)	787	748	39

Units = mm

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M95202 Vehicle: 2009 Nissan Maxima 4-door Sedan

FLOORBOARD DEFORMATION



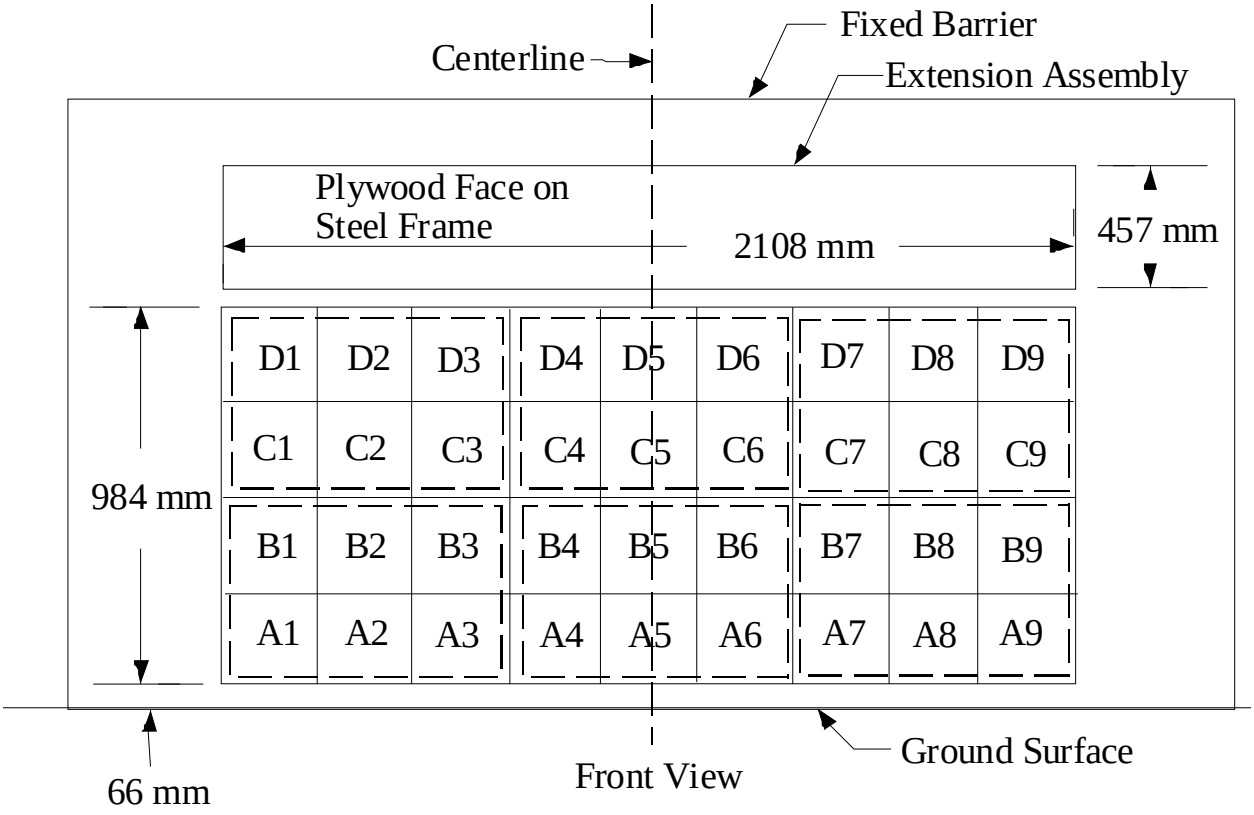
TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	474	473	1
B	355	365	-10
C	340	359	-19
D	506	494	12
E	463	458	5
F	491	524	-33
G	505	489	16
H	509	513	-4

Units = mm

DATA SHEET NO.14
LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load Cells
4 Rows
9 Columns



Momentum Plot

DATA SHEET NO. 15
ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Nissan Maxima 4-door Sedan

NHTSA Test No.: M95202 VIN: 1N4AA51E69C801252

Model Year: 2009 Build Date: 06/08 Test Date: July 16, 2008

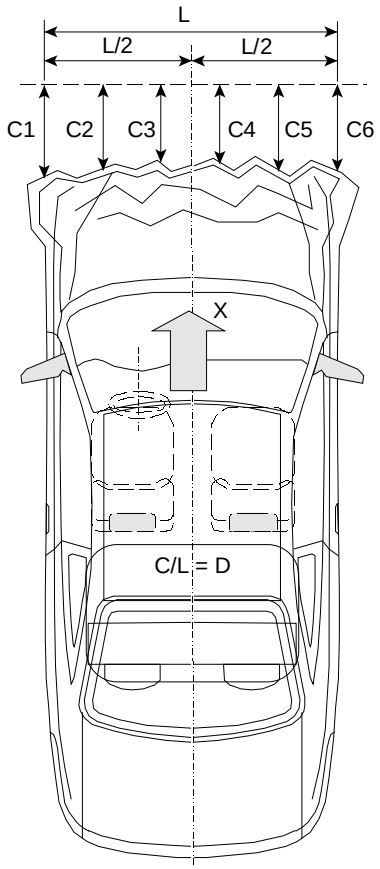
Vehicle Size Category: Sedan Test Weight: 1850 kg

Vehicle Wheelbase: 2776 mm; Front Overhang: 966 mm; Overall Width: 1810 mm

Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4612	4361	251
C2 =	4781	4429	352
C3 =	4835	4486	349
C4 =	4835	4508	327
C5 =	4780	4483	297
C6 =	4612	4360	252



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

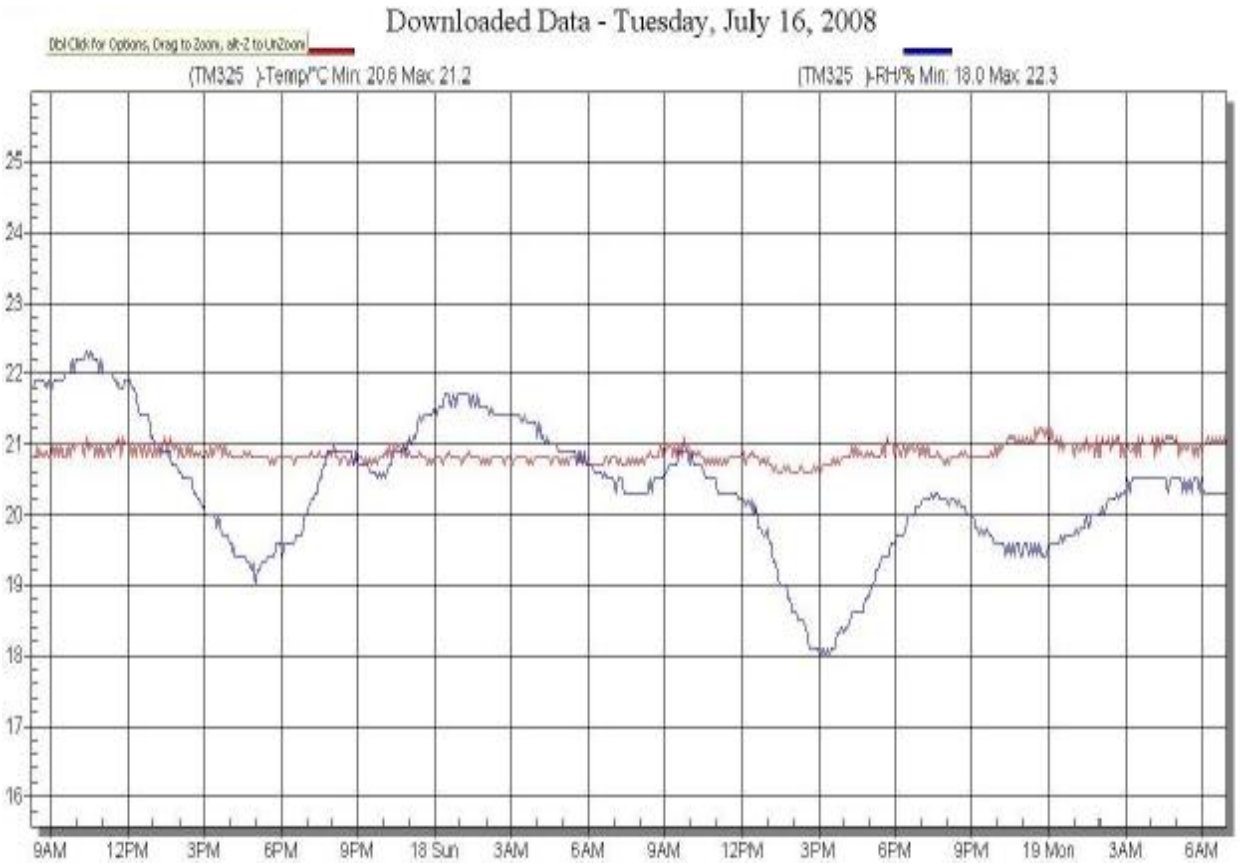
Length of Damaged Region: L1= 1163 mm

L2= 581.5 mm

L5= 232.6 mm

DATA SHEET NO.16
VEHICLE AND DUMMY TEMPERATURE STABILIZATION CHART

NHTSA Test No.: M95202 Vehicle: 2009 Nissan Maxima 4-door Sedan



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Figure	Title	Page
A-1	Load Cell Locations	A-4
A-2	Vehicle Certification Placard	A-5
A-3	Tire Placard	A-5
A-4	Right Front, As Received	A-6
A-5	Left Rear, As Received	A-6
A-6	Pre-Test Front View	A-7
A-7	Post-Test Front View	A-7
A-8	Pre-Test Left Side View	A-8
A-9	Post-Test Left Side View	A-8
A-10	Pre-Test Right Side View	A-9
A-11	Post-Test Right Side View	A-9
A-12	Pre-Test Right Front Three-Quarter View	A-10
A-13	Post-Test Right Front Three-Quarter View	A-10
A-14	Pre-Test Left Rear Three-Quarter View	A-11
A-15	Post-Test Left Rear Three-Quarter View	A-11
A-16	Left Rear Three-Quarter View Of Doors After Impact	A-12
A-17	Right Rear Three-Quarter View Of Doors After Impact	A-12
A-18	Pre-Test Windshield View	A-13
A-19	Post-Test Windshield View	A-13
A-20	Pre-Test Engine Compartment View	A-14
A-21	Post-Test Engine Compartment View	A-14
A-22	Pre-Test Fuel Cap View	A-15
A-23	Post-Test Fuel Cap View	A-15
A-24	Pre-Test Front Underbody View	A-16
A-25	Post-Test Front Underbody View	A-16
A-26	Pre-Test Mid Underbody View	A-17
A-27	Post-Test Mid Underbody View	A-17
A-28	Pre-Test Rear Underbody View	A-18
A-29	Post-Test Rear Underbody View	A-18
A-30	Pre-Test Driver Head Location	A-19
A-31	Post-Test Driver Head Location	A-19
A-32	Pre-Test Driver Position View	A-20
A-33	Post-Test Driver Position View	A-20
A-34	Pre-Test Driver And Interior View	A-21
A-35	Post-Test Driver And Interior View	A-21
A-36	Pre-Test Driver Feet View	A-22
A-37	Post-Test Driver Feet View	A-22
A-38	Pre-Test Driver Knee Bolster View	A-23
A-39	Post-Test Driver Knee Bolster View	A-23
A-40	Pre-Test Driver Floor Pan View	A-24
A-41	Post-Test Driver Floor Pan View	A-24
A-42	Post-Test Driver Head View	A-25
A-43	Post-Test Driver Contact To Airbag	A-25

TABLE OF PHOTOGRAPHS (CONTINUED)

Figure	Title	Page
A-44	Pre-Test Passenger Head Location	A-26
A-45	Post-Test Passenger Head Location	A-26
A-46	Pre-Test Passenger Position View	A-27
A-47	Post-Test Passenger Position View	A-27
A-48	Pre-Test Passenger And Interior View	A-28
A-49	Post-Test Passenger And Interior View	A-28
A-50	Pre-Test Passenger Feet View	A-29
A-51	Post-Test Passenger Feet View	A-29
A-52	Pre-Test Passenger Knee Bolster View	A-30
A-53	Post-Test Passenger Knee Bolster View	A-30
A-54	Pre-Test Passenger Floor Pan View	A-31
A-55	Post-Test Passenger Floor Pan View	A-31
A-56	Post-Test Passenger Head View	A-32
A-57	Post-Test Passenger Contact To Airbag	A-32
A-58	Rollover View - 90°	A-33
A-59	Rollover View - 180°	A-33
A-60	Rollover View - 270°	A-34
A-61	Rollover View - 360°	A-34
A-62	Impact View	A-35

Figure A-1: Load Cell Locations

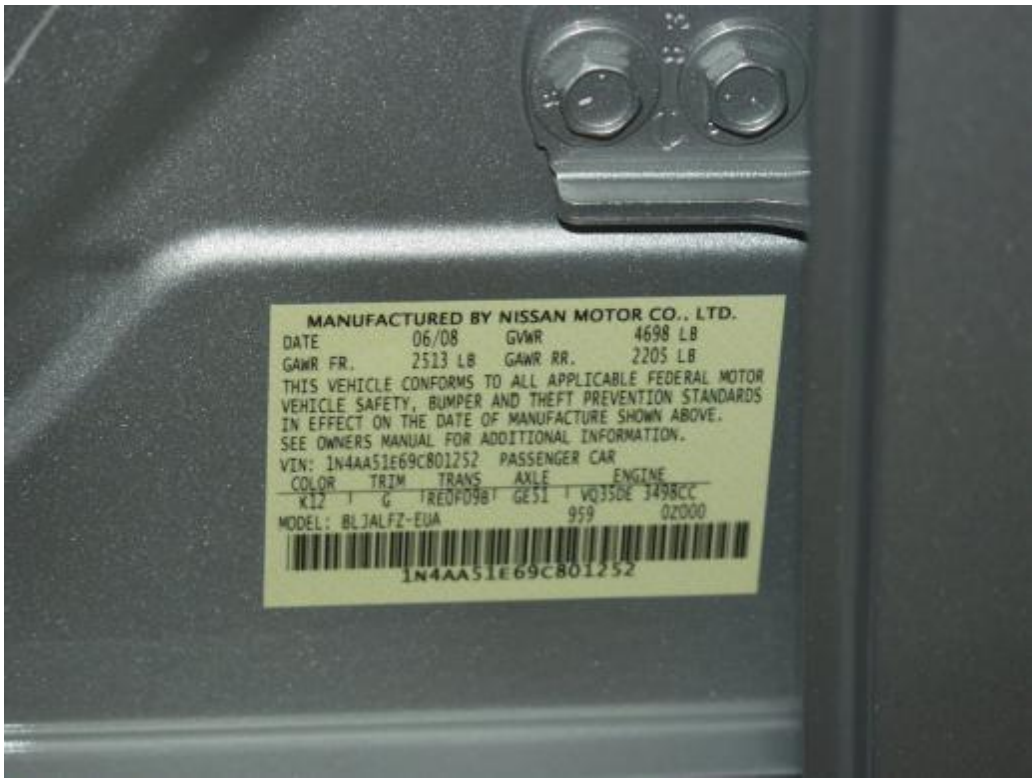


Figure A-2: Vehicle Certification Placard

Figure A-3: Vehicle Tire Placard

Figure A-4: Right Front, As Received

Figure A-5: Left Rear, As Received

Figure A-6: Pre-Test Front View

Figure A-7: Post-Test Front View

Figure A-8: Pre-Test Left Side View

Figure A-9: Post-Test Left Side View

Figure A-10: Pre-Test Right Side View

Figure A-11: Post-Test Right Side View

Figure A-12: Pre-Test Right Front Three-Quarter View

Figure A-13: Post-Test Right Front Three-Quarter View

Figure A-14: Pre-Test Left Rear Three-Quarter View

Figure A-15: Post-Test Left Rear Three-Quarter View

Figure A-16: Left Rear Three-Quarter View of Doors After Impact

Figure A-17: Right Rear Three-Quarter View of Doors After Impact

Figure A-18: Pre-Test Windshield View

Figure A-19: Post-Test Windshield View

Figure A-20: Pre-Test Engine Compartment View

Figure A-21: Post-Test Engine Compartment View

Figure A-22: Pre-Test Fuel Cap View

Figure A-23: Post-Test Fuel Cap View

Figure A-24: Pre-Test Front Underbody View

Figure A-25: Post-Test Front Underbody View

Figure A-26: Pre-Test Mid Underbody View

Figure A-27: Post-Test Mid Underbody View

Figure A-28: Pre-Test Rear Underbody View

Figure A-29: Post-Test Rear Underbody View

Figure A-30: Pre-Test Driver Head Location

Figure A-31: Post-Test Driver Head Location

Figure A-32: Pre-Test Driver Position View

Figure A-33: Post-Test Driver Position View

Figure A-34: Pre-Test Driver and Interior View

Figure A-35: Post-Test Driver and Interior View

Figure A-36: Pre-Test Driver Feet View

Figure A-37: Post-Test Driver Feet View

Figure A-38: Pre-Test Driver Knee Bolster View

Figure A-39: Post-Test Driver Knee Bolster View

PHOTO NOT AVAILABLE

Figure A-40: Pre-Test Driver Floor Pan View

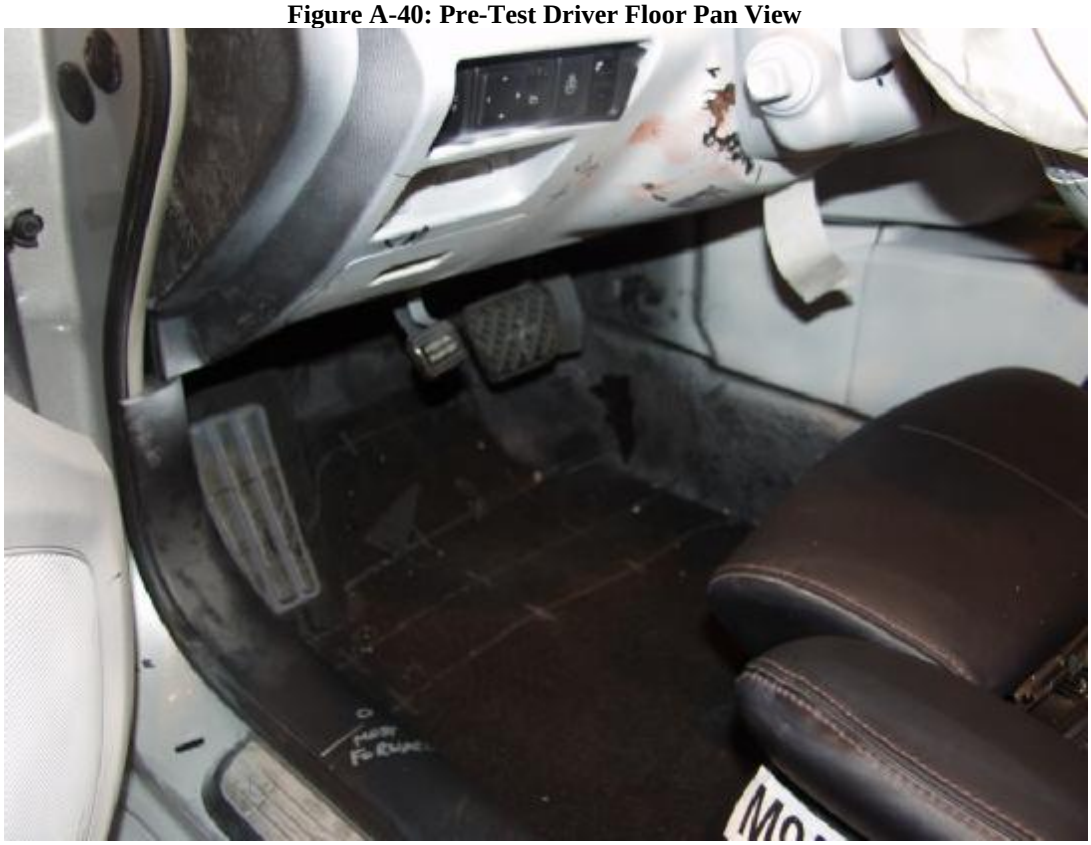


Figure A-41: Post-Test Driver Floor Pan View

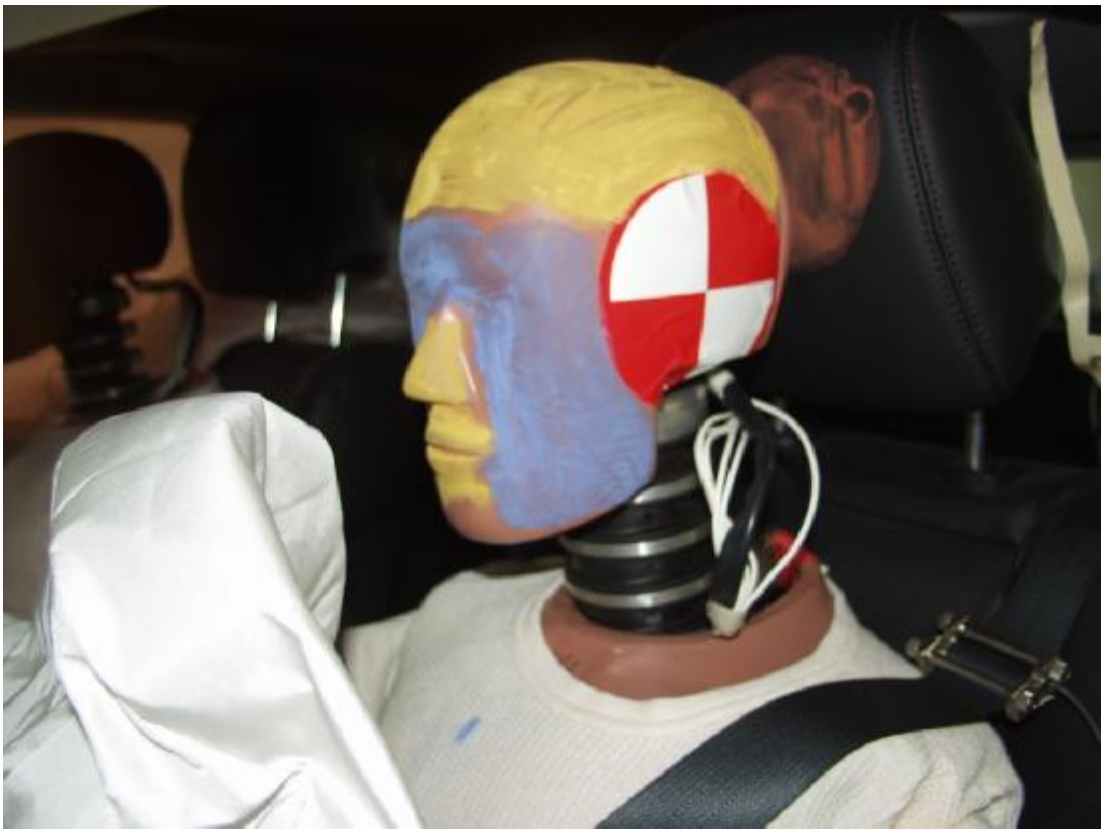


Figure A-42: Post-Test Driver Head View

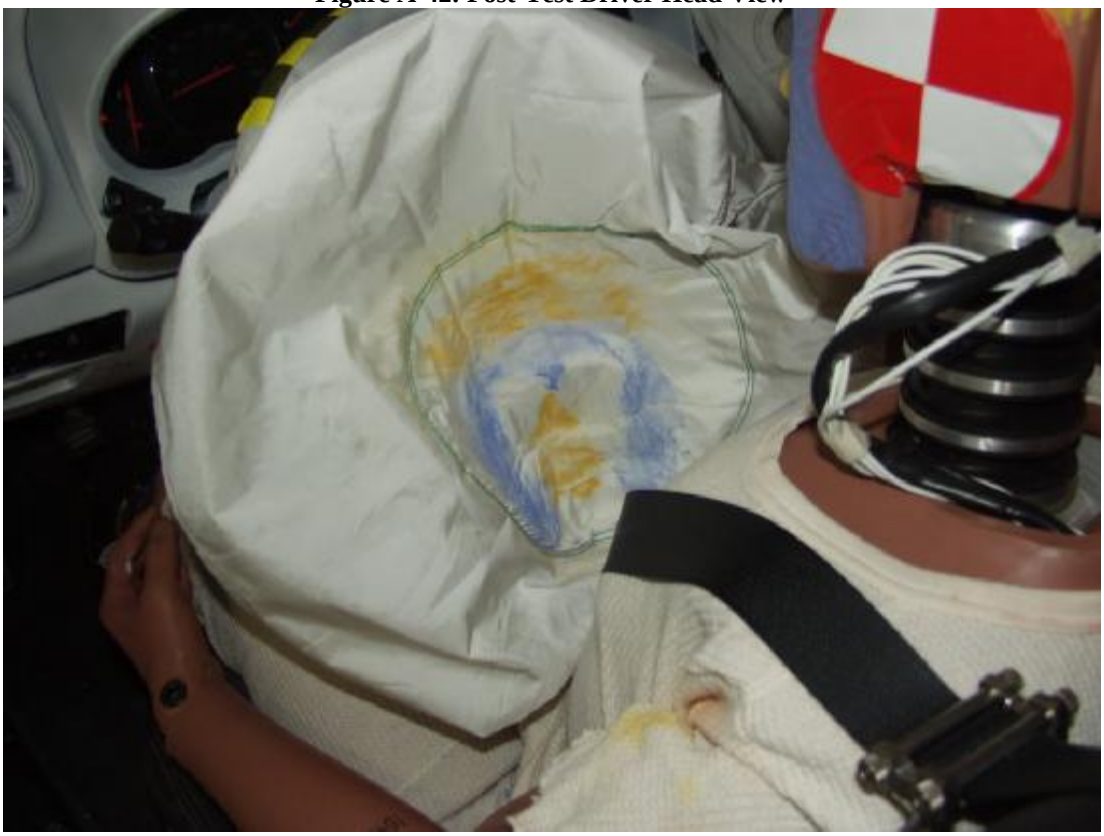


Figure A-43: Post-Test Driver Contact to Airbag

Figure A-44: Pre-Test Passenger Head Location

Figure A-45: Post-Test Passenger Head Location

Figure A-46: Pre-Test Passenger Position View

Figure A-47: Post-Test Passenger Position View

Figure A-48: Pre-Test Passenger and Interior View

Figure A-49: Post-Test Passenger and Interior View

Figure A-50: Pre-Test Passenger Feet View

Figure A-51: Post-Test Passenger Feet View

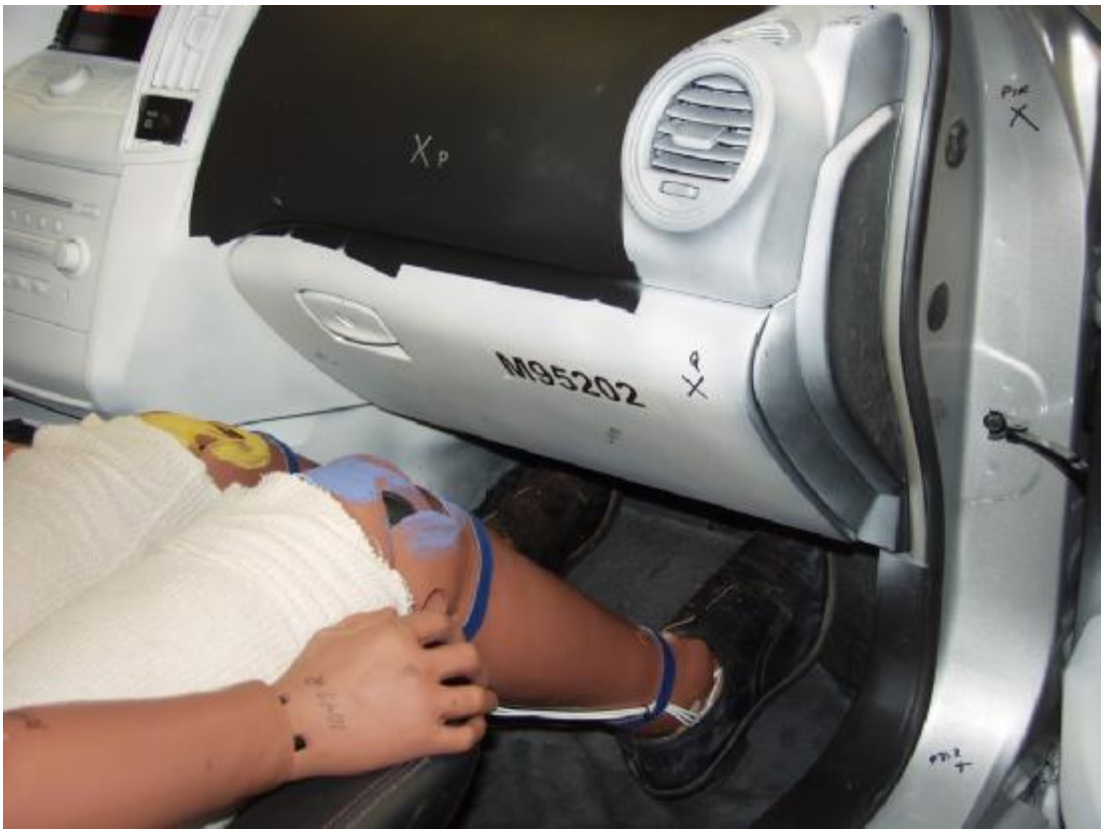


Figure A-52: Pre-Test Passenger Knee Bolster View

Figure A-53: Post-Test Passenger Knee Bolster View

PHOTO NOT AVAILABLE

Figure A-54: Pre-Test Passenger Floor Pan View

Figure A-55: Post-Test Passenger Floor Pan View

Figure A-56: Post-Test Passenger Head View

Figure A-57: Post-Test Passenger Contact to Airbag

Figure A-58: Rollover View - 90°

Figure A-59: Rollover View - 180°

Figure A-60: Rollover View - 270°

Figure A-61: Rollover View - 360°

Figure A-62: Impact View

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

Transducer	**SAE Sign Convention (positive unless noted)**
Upper Neck Load Cell	Fx Head rearward Fy Head left Fz Neck in tension Mx Left ear to left shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest rearward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fz Tibia in tension Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO.: M95202

DATA TYPE	**SAE FILTER CLASS (Hz)**
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	600
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle Displacement Integrations	180
Load Cell Barrier Forces	60

Table of Data Plots

PLOT	PLOT NAME[UNITS, CHANNEL FILTER CLASS]	PAGE
1	V1P1 Head CG x [g, CFC_1000]	B-8
2	V1P1 Head CG y [g, CFC_1000]	B-8
3	V1P1 Head CG z [g, CFC_1000]	B-8
4	V1P1 Head CG Resultant [g, CFC_1000]	B-8
5	V1P1 Chest x [g, CFC_180]	B-9
6	V1P1 Chest y [g, CFC_180]	B-9
7	V1P1 Chest z [g, CFC_180]	B-9
8	V1P1 Chest Resultant [g, CFC_180]	B-9
9	V1P1 Chest Compression x [mm, CFC_600]	B-10
10	V1P1 Left Femur z [N, CFC_600]	B-11
11	V1P1 Right Femur z [N, CFC_600]	B-11
12	V1P2 Head CG x [g, CFC_1000]	B-12
13	V1P2 Head CG y [g, CFC_1000]	B-12
14	V1P2 Head CG z [g, CFC_1000]	B-12
15	V1P2 Head CG Resultant [g, CFC_1000]	B-12
16	V1P2 Chest x [g, CFC_180]	B-13
17	V1P2 Chest y [g, CFC_180]	B-13
18	V1P2 Chest z [g, CFC_180]	B-13
19	V1P2 Chest Resultant [g, CFC_180]	B-13
20	V1P2 Chest Compression x [mm, CFC_600]	B-14
21	V1P2 Left Femur z [N, CFC_600]	B-15
22	V1P2 Right Femur z [N, CFC_600]	B-15

The following dummy, vehicle and load cell response data can be found in the research and development section of the NHTSA website at: www.nhtsa.dot.gov

V1P1 Head CG Ax	V1P1 Lap Belt Load
V1P1 Head CG Ay	V1P1 Shoulder Belt Load
V1P1 Head CG Az	V1P2 Lap Belt Load
V1P1 Head CG Red Ax	V1P2 Shoulder Belt Load
V1P1 Head CG Red Ay	V1 Left Rear #1x
V1P1 Head CG Red Az	V1 Right Rear #2x
V1P1 Upper Neck Fx	V1 Engine Top #3x
V1P1 Upper Neck Fy	V1 Engine Bottom #4x
V1P1 Upper Neck Fz	V1 Right Caliper #5x
V1P1 Upper Neck Mx	V1 Left Caliper #7x
V1P1 Upper Neck My	V1 Left Rear #8z
V1P1 Upper Neck Mz	V1 Right Rear #9z
V1P1 Chest Ax	
V1P1 Chest Ay	
V1P1 Chest Az	
V1P1 Chest Red Ax	
V1P1 Chest Red Ay	
V1P1 Chest Red Az	
V1P1 Chest Compression	
V1P1 Pelvic Ax	
V1P1 Pelvic Ay	
V1P1 Pelvic Az	
V1P1 Left Femur Fz	
V1P1 Right Femur Fz	
V1P1 Left Upper Tibia Mx	
V1P1 Left Upper Tibia My	
V1P1 Left Lower Tibia Fz	
V1P1 Left Lower Tibia Mx	
V1P1 Left Lower Tibia My	
V1P1 Right Upper Tibia Fz	
V1P1 Right Upper Tibia Mx	
V1P1 Right Upper Tibia My	
V1P1 Right Lower Tibia Mx	
V1P1 Right Lower Tibia My	
V1P1 Left Foot Aft Ax	
V1P1 Left Foot Aft Az	
V1P1 Left Foot Fore Az	
V1P1 Right Foot Aft Ax	
V1P1 Right Foot Aft Az	
V1P1 Right Foot Fore z	
V1P2 Head CG Ax	
V1P2 Head CG Ay	
V1P2 Head CG Az	
V1P2 Head CG Red Ax	
V1P2 Head CG Red Ay	
V1P2 Head CG Red Az	
V1P2 Upper Neck Fx	
V1P2 Upper Neck Fy	

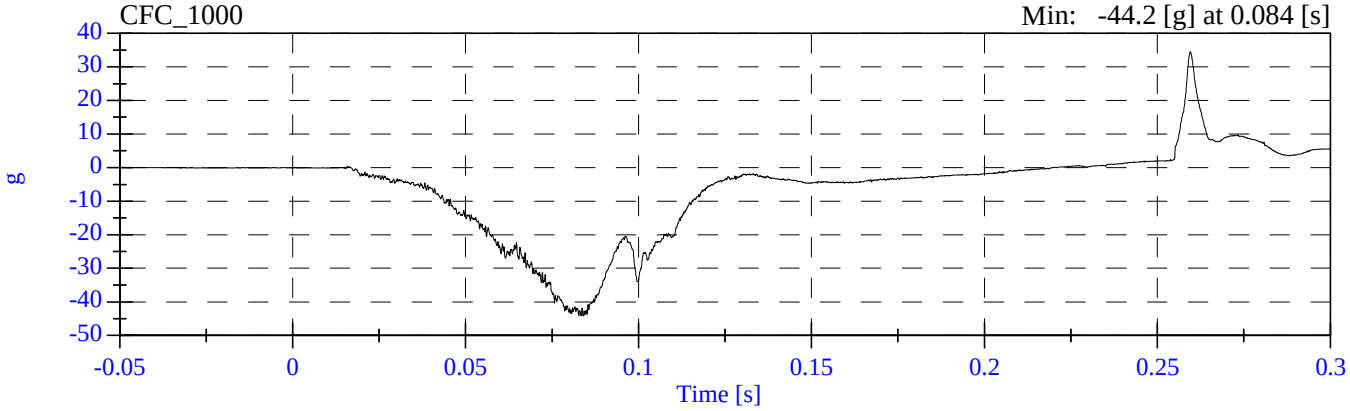
V1P2 Upper Neck Fz	
V1P2 Upper Neck Mx	
V1P2 Upper Neck My	
V1P2 Upper Neck Mz	
V1P2 Chest Ax	
V1P2 Chest Ay	
V1P2 Chest Az	
V1P2 Chest Red Ax	
V1P2 Chest Red Ay	
V1P2 Chest Red Az	
V1P2 Chest Compression	
V1P2 Pelvic Ax	
V1P2 Pelvic Ay	
V1P2 Pelvic Az	
V1P2 Left Femur Fz	
V1P2 Right Femur Fz	
V1P2 Left Upper Tibia Fz	
V1P2 Left Upper Tibia Mx	
V1P2 Left Upper Tibia My	
V1P2 Left Lower Tibia Mx	
V1P2 Left Lower Tibia My	
V1P2 Right Upper Tibia Mx	
V1P2 Right Upper Tibia My	
V1P2 Right Lower Tibia Fz	
V1P2 Right Lower Tibia Mx	
V1P2 Right Lower Tibia My	
V1P2 Left Foot Aft Ax	
V1P2 Left Foot Aft Az	
V1P2 Left Foot Fore Az	
V1P2 Right Foot Aft Ax	
V1P2 Right Foot Aft Az	
V1P2 Right Foot Fore Az	
Barrier Load Cell A1 Fx	
Barrier Load Cell A2 Fx	
Barrier Load Cell A3 Fx	
Barrier Load Cell A4 Fx	
Barrier Load Cell A5 Fx	
Barrier Load Cell A6 Fx	
Barrier Load Cell A7 Fx	
Barrier Load Cell A8 Fx	
Barrier Load Cell A9 Fx	
Barrier Load Cell B1 Fx	
Barrier Load Cell B2 Fx	
Barrier Load Cell B3 Fx	
Barrier Load Cell B4 Fx	
Barrier Load Cell B5 Fx	
Barrier Load Cell B6 Fx	
Barrier Load Cell B7 Fx	
Barrier Load Cell B8 Fx	

Barrier Load Cell B9 Fx	
Barrier Load Cell C1 Fx	
Barrier Load Cell C2 Fx	
Barrier Load Cell C3 Fx	
Barrier Load Cell C4 Fx	
Barrier Load Cell C5 Fx	
Barrier Load Cell C6 Fx	
Barrier Load Cell C7 Fx	
Barrier Load Cell C8 Fx	
Barrier Load Cell C9 Fx	
Barrier Load Cell D1 Fx	
Barrier Load Cell D2 Fx	
Barrier Load Cell D3 Fx	
Barrier Load Cell D4 Fx	
Barrier Load Cell D5 Fx	
Barrier Load Cell D6 Fx	
Barrier Load Cell D7 Fx	
Barrier Load Cell D8 Fx	
Barrier Load Cell D9 Fx	

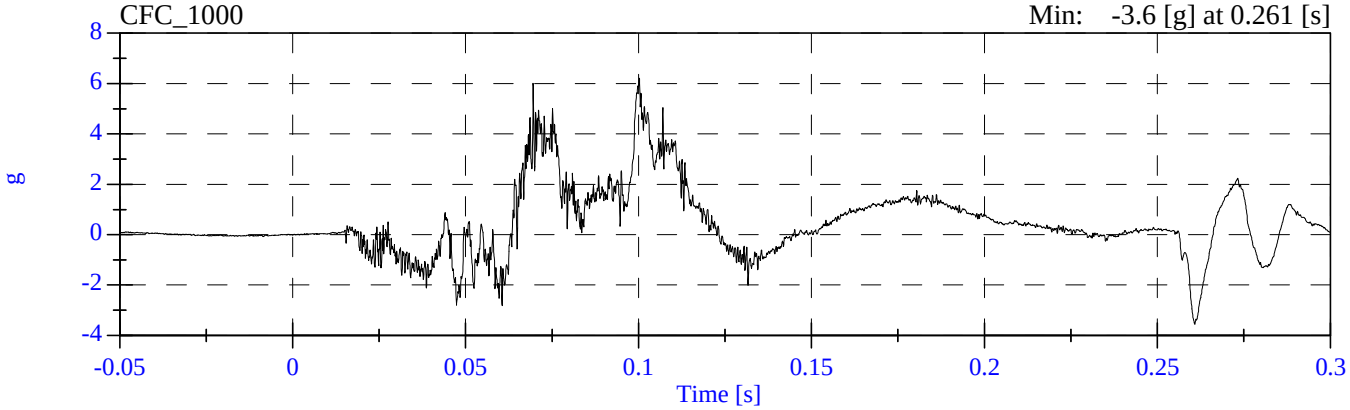
TEST NOTES	
Data Channel	Anomalies
V1P1 Left Foot Aft x	Data inaccurate after 85 msecs
V1 Right Caliper #5x	Data inaccurate after 47 msecs
V1P2 Head CG y Red	Data inaccurate after 57 msecs

2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008

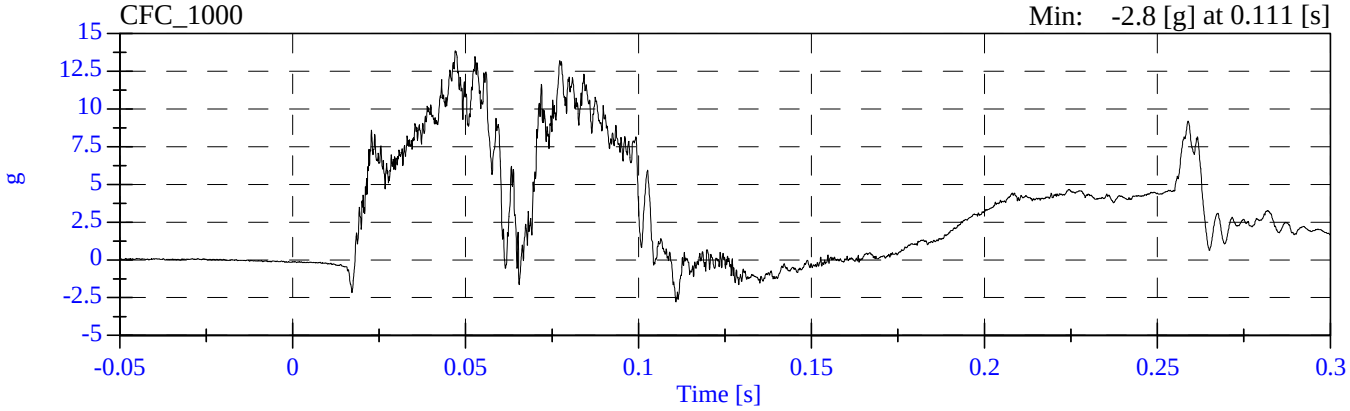
V1P1 Head x
CFC_1000
Max: 34.5 [g] at 0.259 [s]
Min: -44.2 [g] at 0.084 [s]



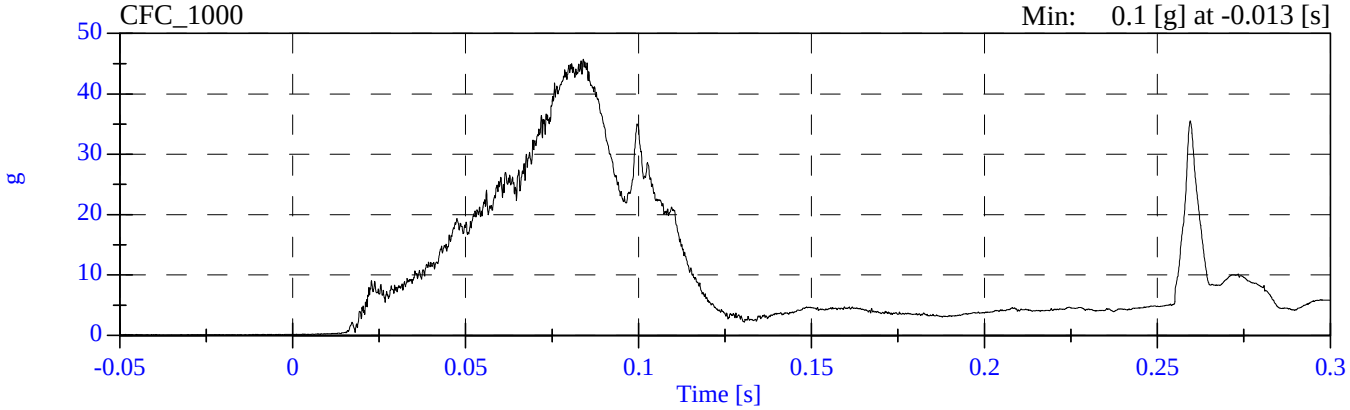
V1P1 Head y
CFC_1000
Max: 6.2 [g] at 0.100 [s]
Min: -3.6 [g] at 0.261 [s]



V1P1 Head z
CFC_1000
Max: 13.9 [g] at 0.047 [s]
Min: -2.8 [g] at 0.111 [s]

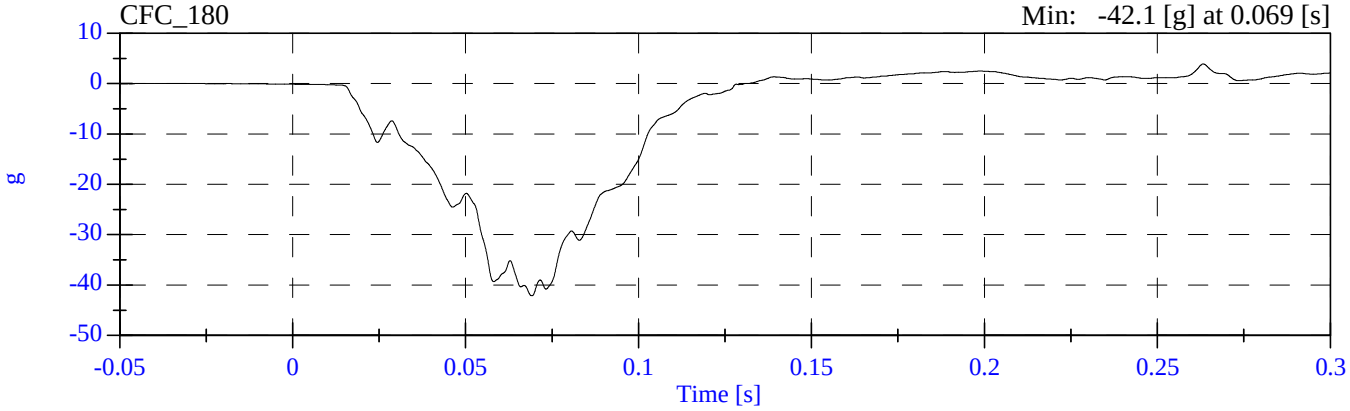


V1P1 Head Resultant
CFC_1000
Max: 45.8 [g] at 0.084 [s]
Min: 0.1 [g] at -0.013 [s]

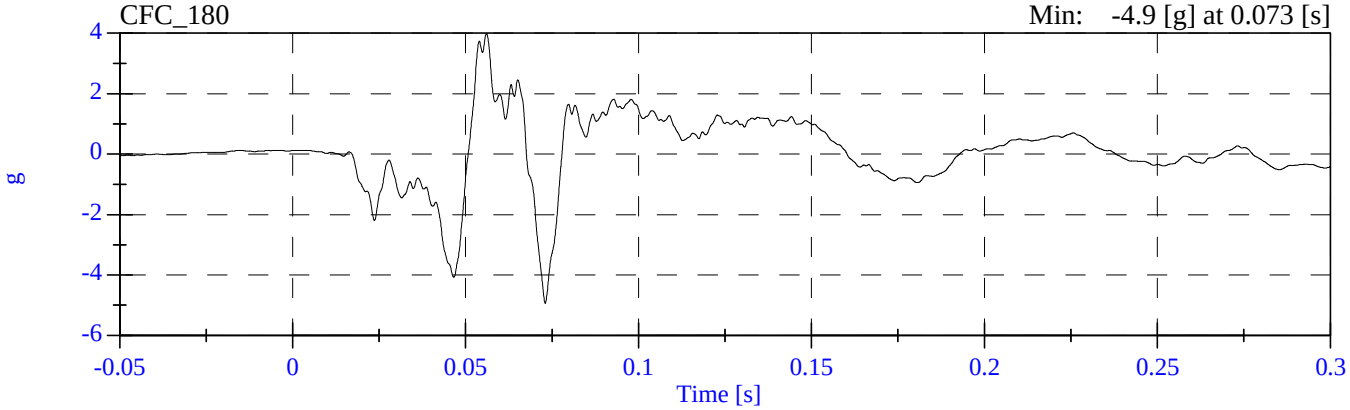


2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008

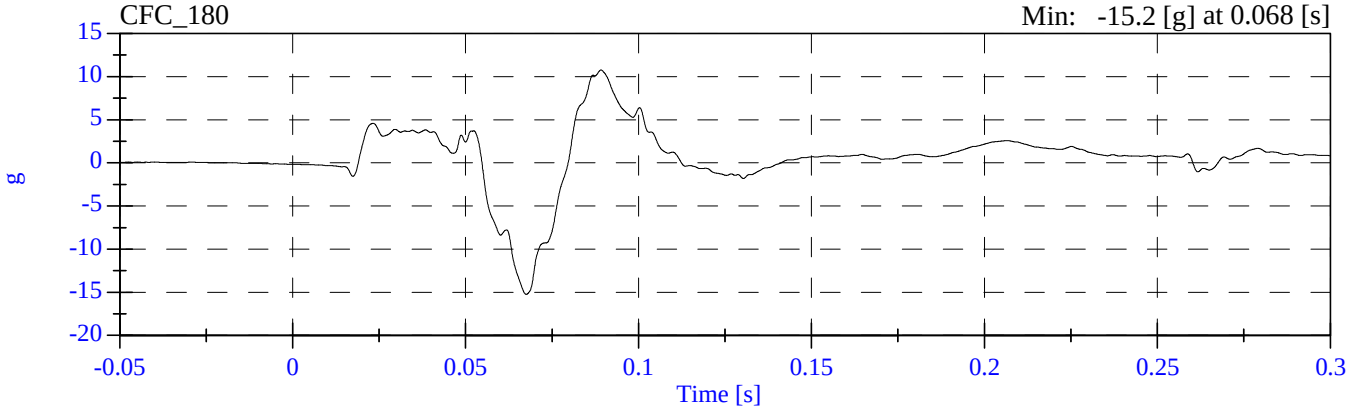
V1P1 Chest x
CFC_180
Max: 3.9 [g] at 0.263 [s]
Min: -42.1 [g] at 0.069 [s]



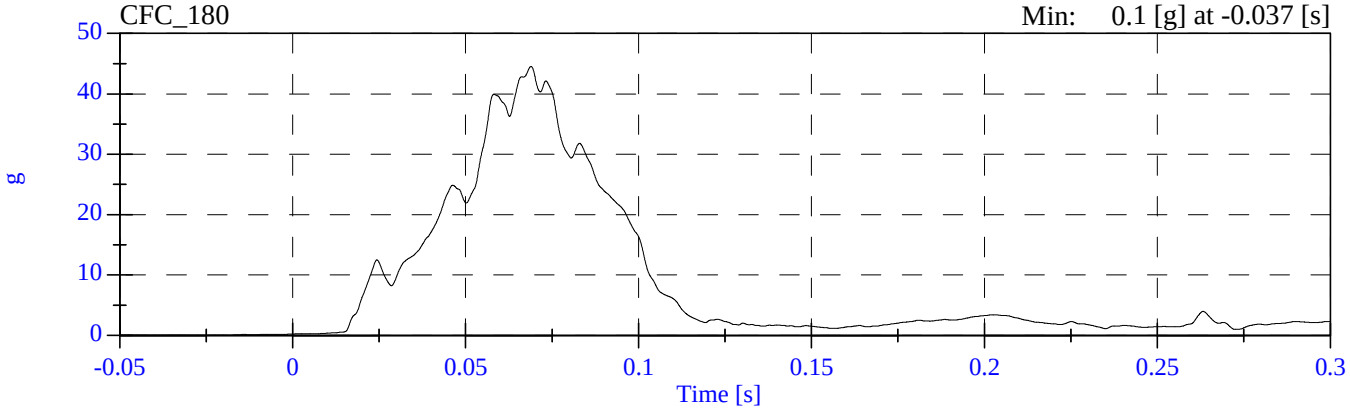
V1P1 Chest y
CFC_180
Max: 4.0 [g] at 0.056 [s]
Min: -4.9 [g] at 0.073 [s]



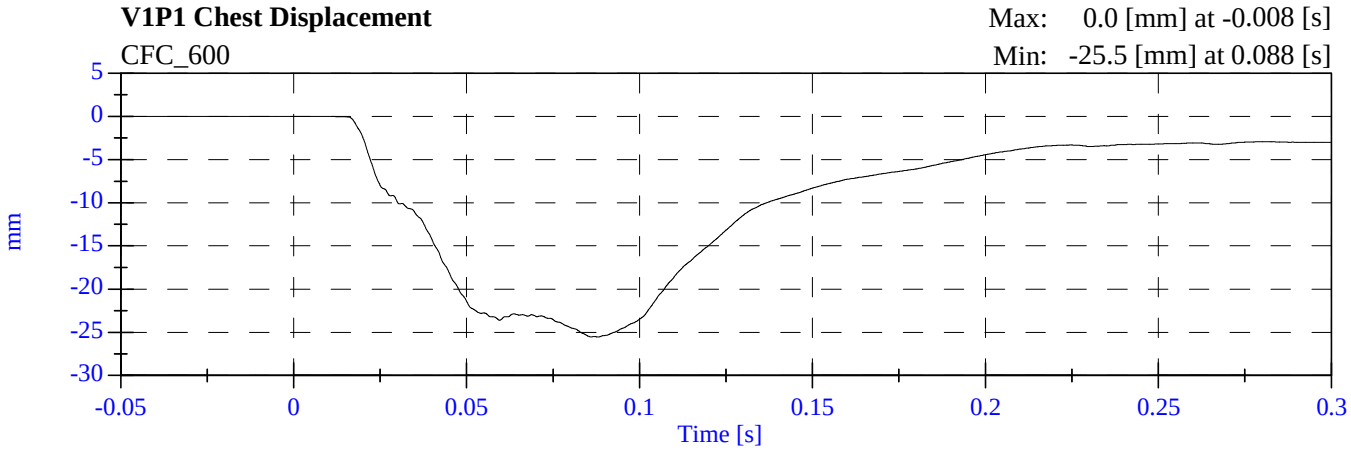
V1P1 Chest z
CFC_180
Max: 10.8 [g] at 0.089 [s]
Min: -15.2 [g] at 0.068 [s]



V1P1 Chest Resultant
CFC_180
Max: 44.5 [g] at 0.069 [s]
Min: 0.1 [g] at -0.037 [s]



2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008



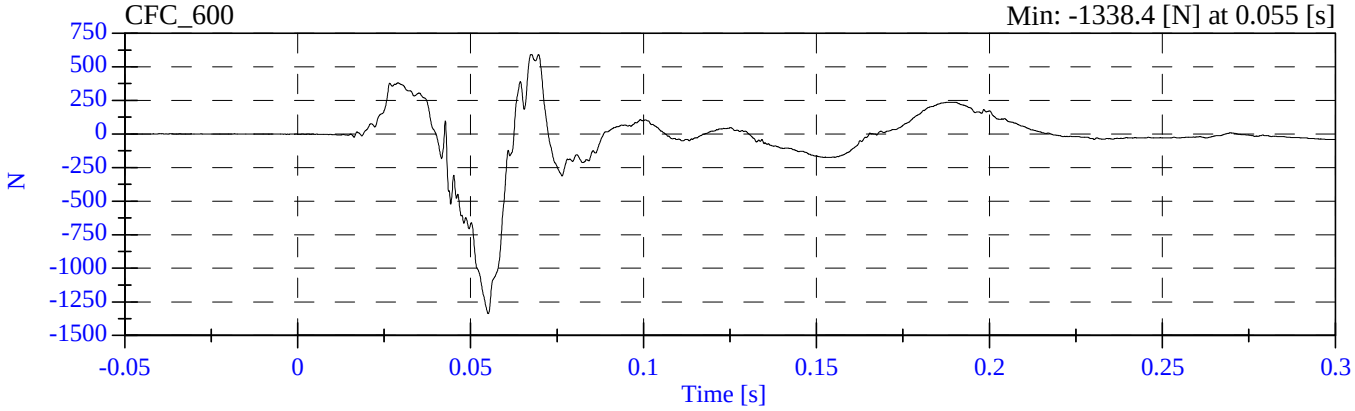
2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008

V1P1 Left Femur

Max: 591.9 [N] at 0.070 [s]

CFC_600

Min: -1338.4 [N] at 0.055 [s]

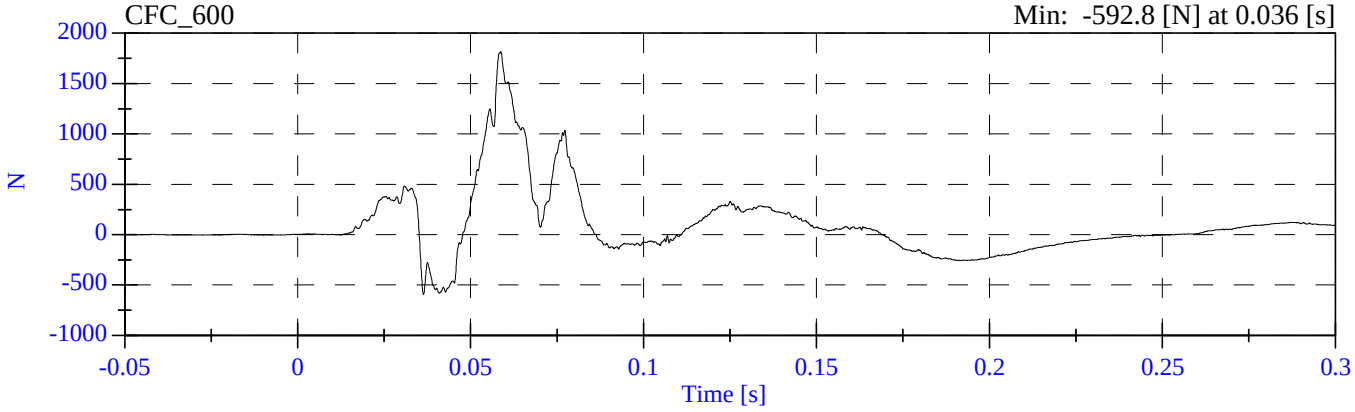


V1P1 Right Femur

Max: 1818.0 [N] at 0.059 [s]

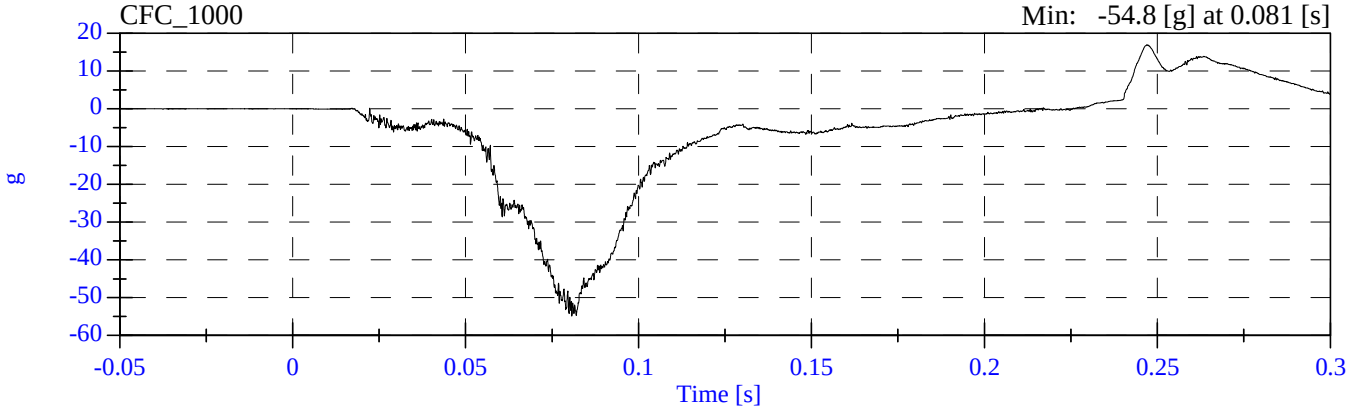
CFC_600

Min: -592.8 [N] at 0.036 [s]

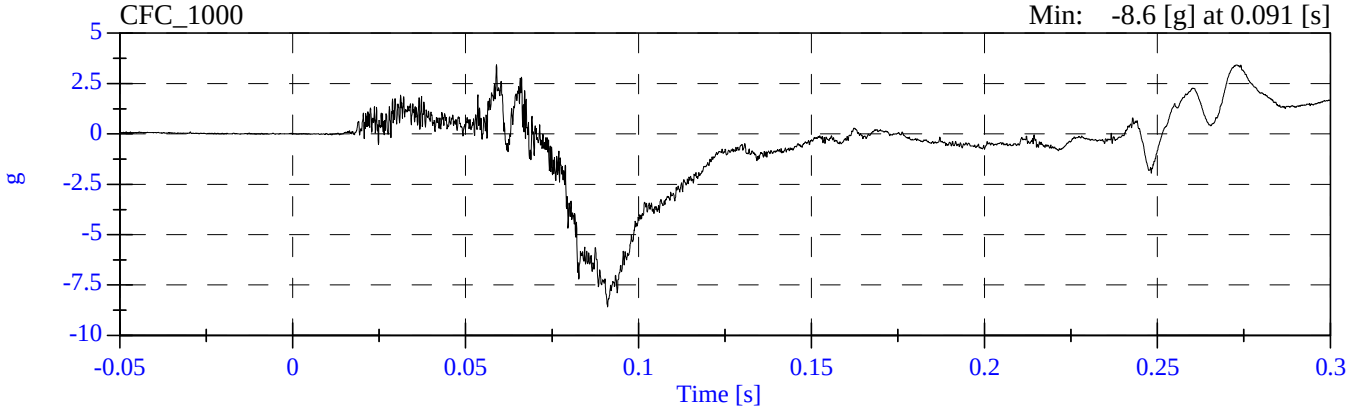


2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008

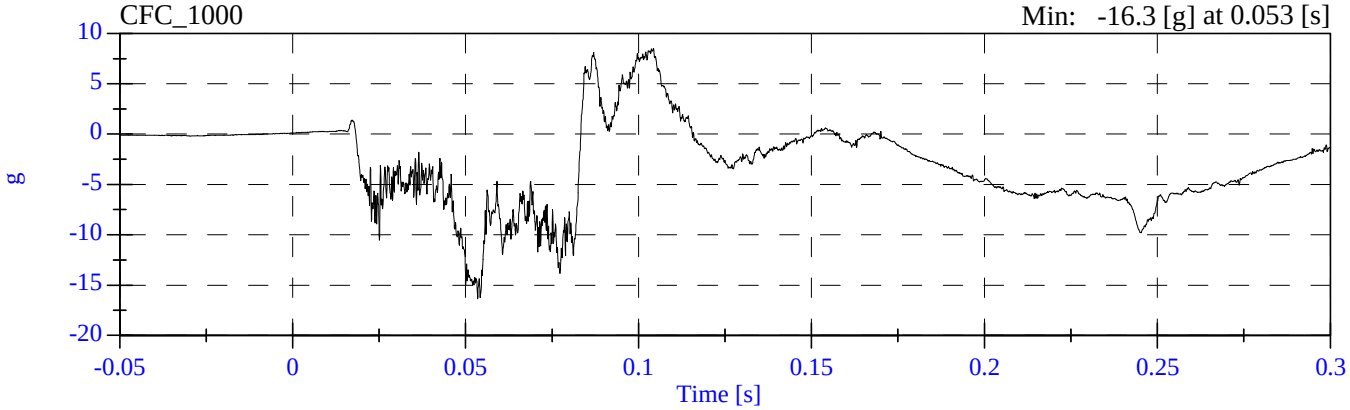
V1P2 Head x
CFC_1000
Max: 17.0 [g] at 0.247 [s]
Min: -54.8 [g] at 0.081 [s]



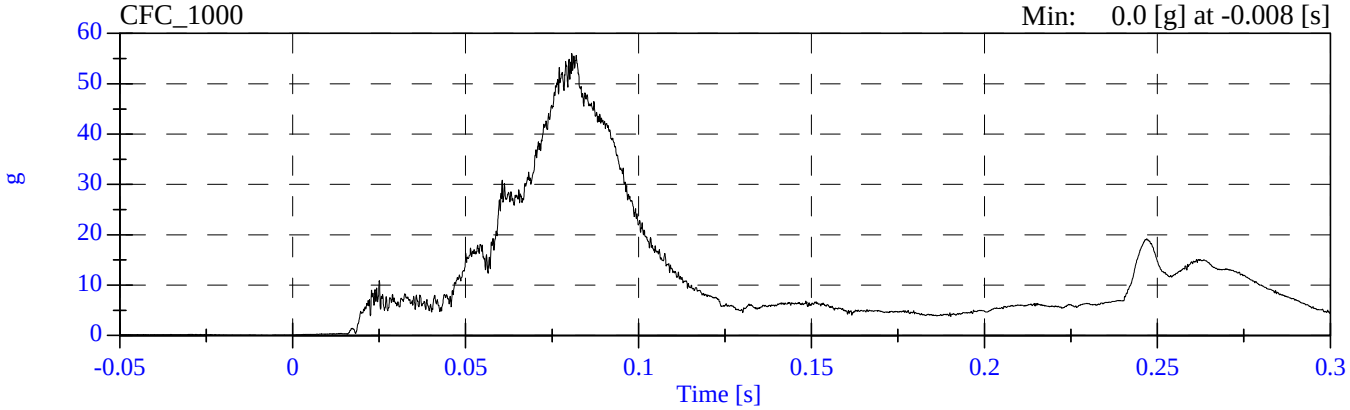
V1P2 Head y
CFC_1000
Max: 3.4 [g] at 0.059 [s]
Min: -8.6 [g] at 0.091 [s]



V1P2 Head z
CFC_1000
Max: 8.5 [g] at 0.104 [s]
Min: -16.3 [g] at 0.053 [s]

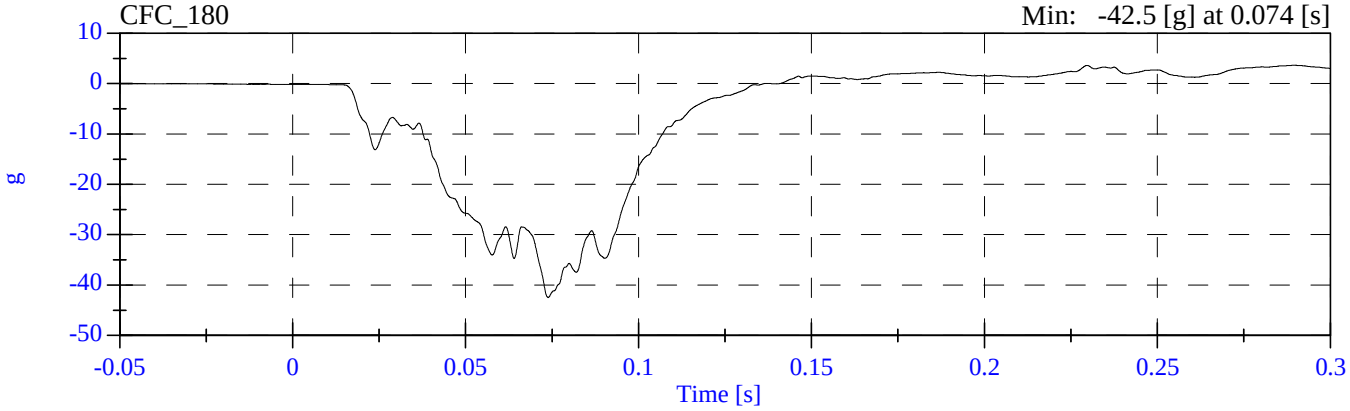


V1P2 Head Resultant
CFC_1000
Max: 56.0 [g] at 0.081 [s]
Min: 0.0 [g] at -0.008 [s]

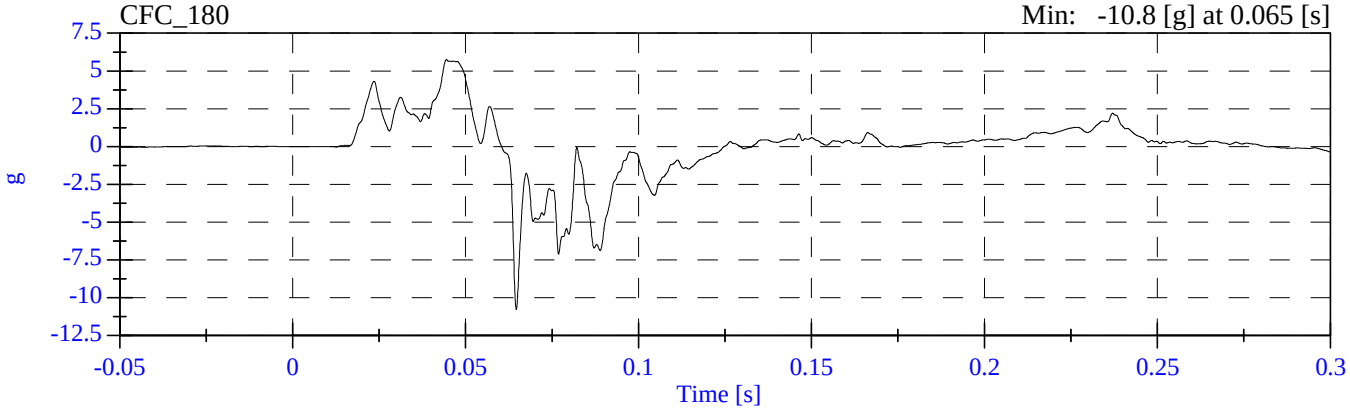


2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008

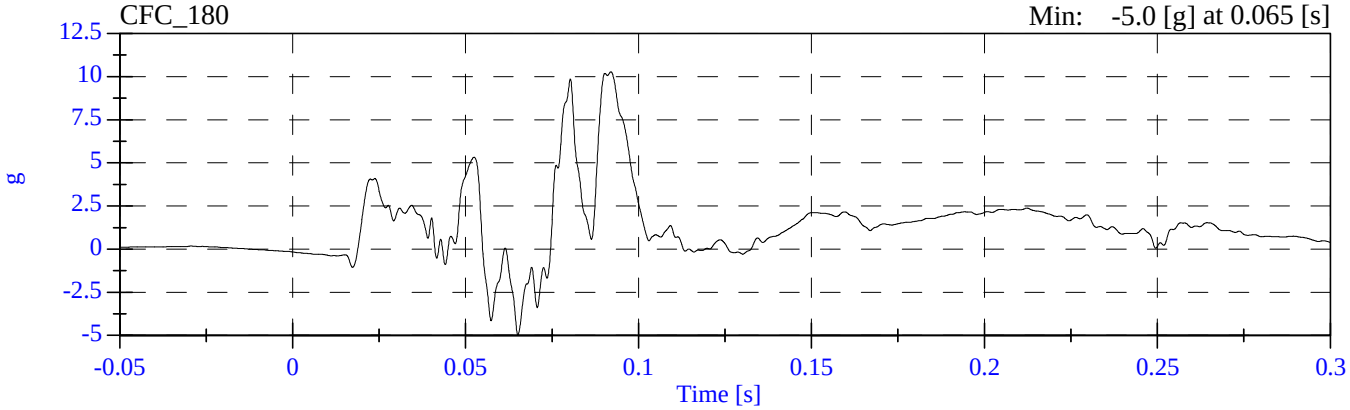
V1P2 Chest x
CFC_180
Max: 3.7 [g] at 0.290 [s]
Min: -42.5 [g] at 0.074 [s]



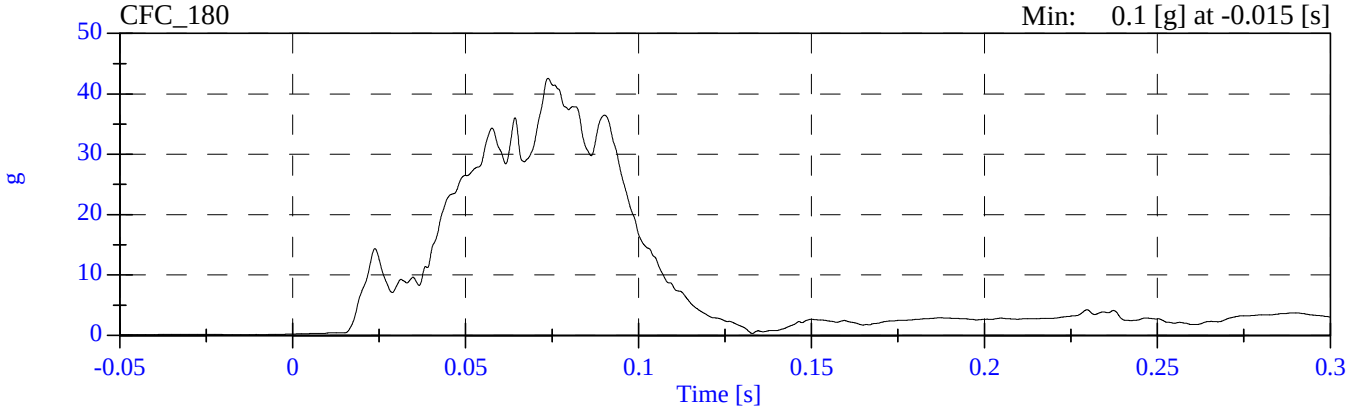
V1P2 Chest y
CFC_180
Max: 5.8 [g] at 0.044 [s]
Min: -10.8 [g] at 0.065 [s]



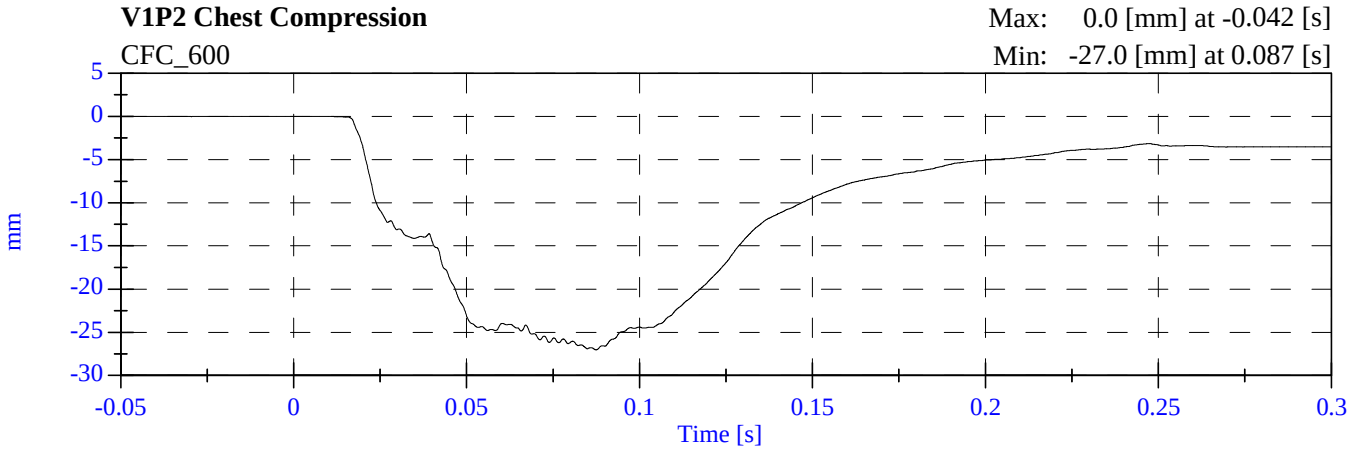
V1P2 Chest z
CFC_180
Max: 10.3 [g] at 0.092 [s]
Min: -5.0 [g] at 0.065 [s]



V1P2 Chest Resultant
CFC_180
Max: 42.6 [g] at 0.074 [s]
Min: 0.1 [g] at -0.015 [s]



2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008



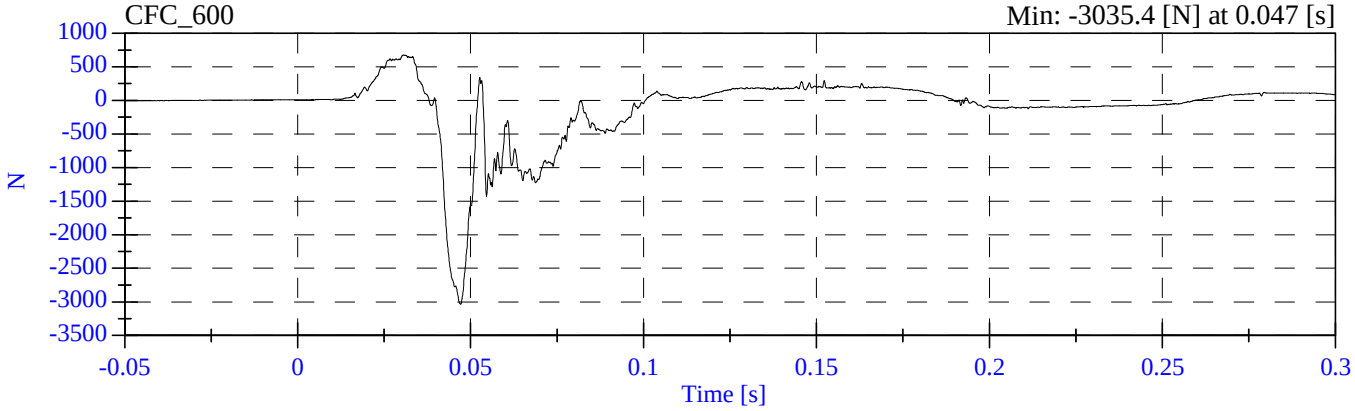
2009 NCAP Test 19 2009 Nissan Maxima
M95202 - July 16, 2008

V1P2 Left Femur

CFC_600

Max: 678.1 [N] at 0.031 [s]

Min: -3035.4 [N] at 0.047 [s]

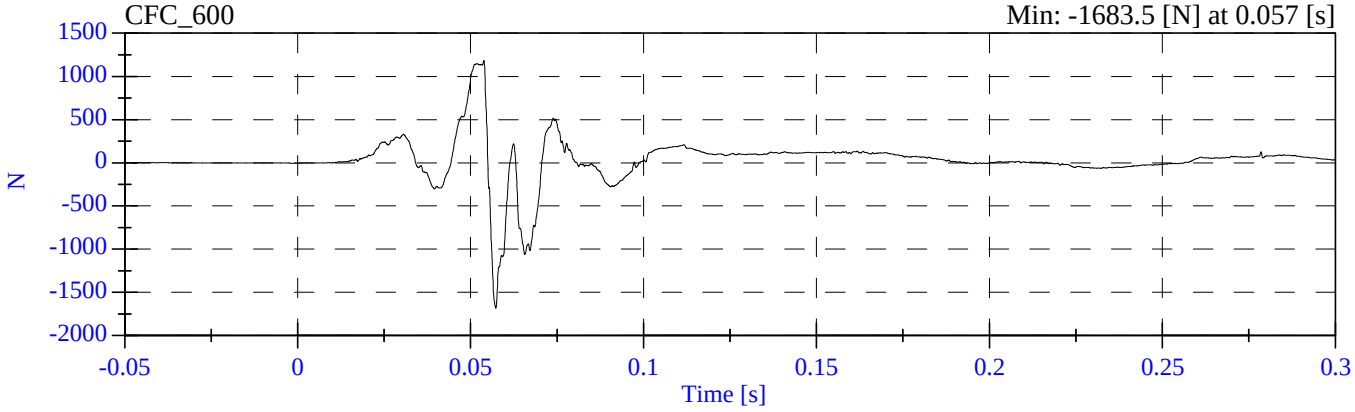


V1P2 Right Femur

CFC_600

Max: 1184.6 [N] at 0.054 [s]

Min: -1683.5 [N] at 0.057 [s]



APPENDIX C

PART 572B/E DUMMY CONFIGURATION
AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan. A summary of the test results, and Part 572 specifications are included in this Appendix.

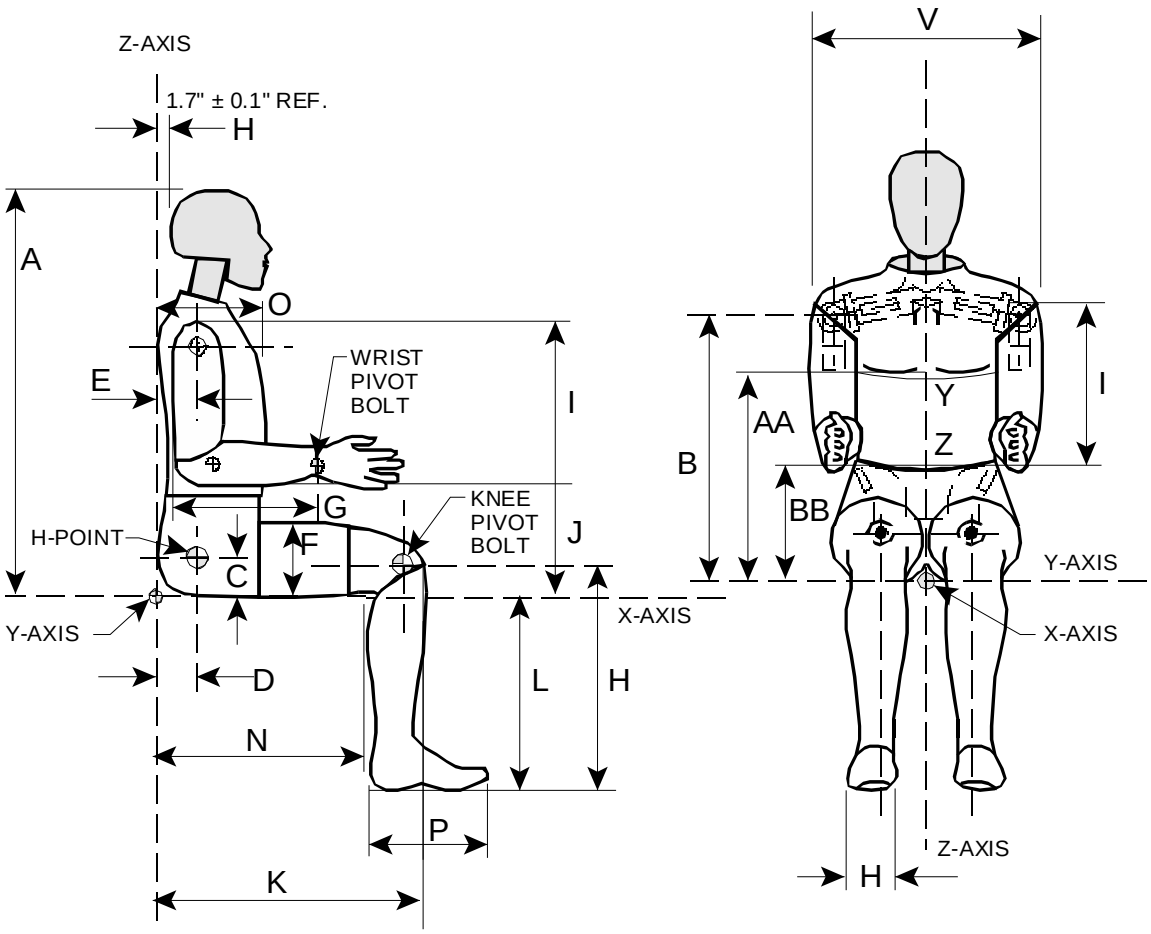
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	1046	3/26/08
#2/Right Front Passenger	1047	3/26/08

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Indicant Testing Final Report No. 6525-V-1.

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude. (REF: S572.31(A)(6))

PART 572E
HEAD DROP TEST

Dummy Serial Number	1046
Sequential Test Number	1
Date	3/20/08
Workfile	1046H 3-20-08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Peak Resultant Acceleration	225-275 G's	247.79
Peak Lateral Acceleration	15 G's Max	4.65
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	1046	
Sequential Test Number	1	
Date	3/24/08	6 Axis Neck Transducer
Workfile	1046NF7 3/21/08	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	33.0
Impact Velocity		6.89 – 7.13 m/s	7.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.68
	20 ms	17.60 - 22.60 G's	21.02
	30 ms	12.50 - 18.50 G's	15.79
Max Pendulum G's Above 30 ms		29 G's Max	15.79
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	40.00
D Plane Rotation	Max	64 - 78 Deg	66.17
	Time	57 - 64 ms	59.50
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	96.68
	Time	47 - 58 ms	52.50
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	116.10
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.20

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	1046	
Sequential Test Number	1	
Date	3/24/08	6 Axis Neck Transducer
Workfile	1046NE5 3/24/08	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	33.0
Impact Velocity		5.94 – 6.19 m/s	6.07
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.19
	20 ms	14.00 - 19.00 G's	17.66
	30 ms	11.00 - 16.00 G's	13.31
Max Pendulum G's Above 30 ms		22 G's Max	13.31
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	42.10
D Plane Rotation	Max	81 - 106 Deg	94.37
	Time	72 - 82 ms	75.30
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-71.76
	Time	65 - 79 ms	70.90
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	153.20
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	135.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	1046
Sequential Test Number	1
Date	3/25/08
Workfile	1046T 3/25/08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Pendulum Velocity	6.58 – 6.83 m/s	6.70
Maximum Deflection	63.50 – 72.64 mm	63.55
Maximum Resistive Force	5159.9 – 5893.9 N	5563
Internal Hysteresis	69 - 85 %	72.63

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	1046
Sequential Test Number	1
Date	3/26/08
Workfile	1046 LF RF

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5006.63
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5416.02

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 1046
Sequential Test Number 1
Date 3/26/08

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.1
Relative Humidity			33.0
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Total Sitting Height	A	34.6 - 35.0 in	34.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.0
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.3
Thigh Clearance	F	5.5 - 6.1 in	5.6
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.9
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.3
Elbow Rest Height	J	7.5 - 8.3 in	7.8
Buttock Knee Length	K	22.8 - 23.8 in	23.1
Popliteal Height	L	16.9 - 17.9 in	17.6
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Buttock Popliteal Length	N	17.8 - 18.8 in	18.3
Chest Depth	O	8.4 - 9.0 in	8.7
Foot Length	P	9.9 - 10.5 in	9.9
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Foot Breadth	W	3.6 - 4.2 in	3.8
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.7
Waist Circumference	Z	32.9 - 34.1 in	33.5

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number	1047
Sequential Test Number	1
Date	3/20/08
Workfile	1047H 3/20/08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Peak Resultant Acceleration	225-275 G's	261.65
Peak Lateral Acceleration	15 G's Max	7.47
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	1047	
Sequential Test Number	1	
Date	3/24/08	6 Axis Neck Transducer
Workfile	1047NF 3/24/08	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	33.0
Impact Velocity		6.89 – 7.13 m/s	7.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.96
	20 ms	17.60 - 22.60 G's	20.79
	30 ms	12.50 - 18.50 G's	16.16
Max Pendulum G's Above 30 ms		29 G's Max	16.16
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.50
D Plane Rotation	Max	64 - 78 Deg	70.23
	Time	57 - 64 ms	59.80
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	91.95
	Time	47 - 58 ms	49.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	115.20
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	100.40

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	1047	
Sequential Test Number	1	
Date	3/24/08	6 Axis Neck Transducer
Workfile	1047NE 3/24/08	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	33.0
Impact Velocity		5.94 – 6.19 m/s	6.07
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.32
	20 ms	14.00 - 19.00 G's	16.79
	30 ms	11.00 - 16.00 G's	13.55
Max Pendulum G's Above 30 ms		22 G's Max	13.55
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	43.00
D Plane Rotation	Max	81 - 106 Deg	91.75
	Time	72 - 82 ms	75.40
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-68.96
	Time	65 - 79 ms	71.20
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	155.10
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	136.80

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	1047
Sequential Test Number	1
Date	3/25/08
Workfile	1047T 3/25/08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Pendulum Velocity	6.58 – 6.83 m/s	6.73
Maximum Deflection	63.50 – 72.64 mm	66.8
Maximum Resistive Force	5159.9 – 5893.9 N	5403.9
Internal Hysteresis	69 - 85 %	71.35

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number 1047
Sequential Test Number 1
Date
Workfile

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5307.84
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	33.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5225.34

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 1047
Sequential Test Number 1
Date 3/26/08

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.1
Relative Humidity			33.0
Location for Chest Circumference	AA	16.9 -17.1 in	16.9
Location for Waist Circumference	BB	8.9 - 9.1 in	8.9
Total Sitting Height	A	34.6 - 35.0 in	34.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.4
Thigh Clearance	F	5.5 - 6.1 in	5.7
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.6
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.3
Elbow Rest Height	J	7.5 - 8.3 in	7.6
Buttock Knee Length	K	22.8 - 23.8 in	22.9
Popliteal Height	L	16.9 - 17.9 in	17.3
Knee Pivot Height	M	19.1 - 19.7 in	19.4
Buttock Popliteal Length	N	17.8 - 18.8 in	17.9
Chest Depth	O	8.4 - 9.0 in	8.6
Foot Length	P	9.9 - 10.5 in	10.2
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Foot Breadth	W	3.6 - 4.2 in	3.8
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.6
Waist Circumference	Z	32.9 - 34.1 in	33.2

Remarks:

Laboratory Technician: B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 1046)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	P50060	3/10/2008	9/10/08
	Y	ENDEVCO	P59009	3/4/2008	9/4/08
	Z	ENDEVCO	P49239	3/10/2008	9/10/08
Head	X (R)	ENDEVCO	P50098	3/10/2008	9/10/08
	Y (R)	ENDEVCO	P58975	3/4/2008	9/4/08
	Z (R)	ENDEVCO	P58894	2/22/2008	8/22/08
Neck Load Cell	X	DENTON	1911Fx	3/13/2008	9/13/08
	Y	DENTON	1911Fy	3/13/2008	9/13/08
	Z	DENTON	1911Fz	3/19/2008	9/19/08
Neck Moment	X	DENTON	1911Mx	3/19/2008	9/19/08
	Y	DENTON	1911My	3/19/2008	9/19/08
	Z	DENTON	1911Mz	3/19/2008	9/19/08
Chest	X	ENDEVCO	P49224	3/10/2008	9/10/08
	Y	ENDEVCO	P49200	3/10/2008	9/10/08
	Z	ENDEVCO	P49231	3/10/2008	9/10/08
Chest	X (R)	ENDEVCO	P58779	2/22/2008	8/22/08
	Y (R)	ENDEVCO	P58893	2/22/2008	8/22/08
	Z (R)	ENDEVCO	P59008	3/4/2008	9/4/08
Chest Deflection	X	SERVO	1046	3/19/2008	9/19/08
Pelvic	X	ENDEVCO	P49206	3/10/2008	9/10/08
	Y	ENDEVCO	P49195	3/10/2008	9/10/08
	Z	ENDEVCO	P49185	3/10/2008	9/10/08

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 1046)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	256	3/11/2008	9/11/08
Right Femur Load Cell	Fz	DENTON	261	3/11/2008	9/11/08
Left Upper Tibia	Mx	DENTON	114Mx	3/19/2008	9/19/08
	My	DENTON	114My	3/19/2008	9/19/08
Left Lower Tibia	Fz	DENTON	115Fz	3/18/2008	9/18/08
	Mx	DENTON	115Mx	3/18/2008	9/18/08
	My	DENTON	115My	3/18/2008	9/18/08
Right Upper Tibia	Mx	DENTON	92UMx	3/18/2008	9/18/08
	My	DENTON	92UMy	3/18/2008	9/18/08
Right Lower Tibia	Fz	DENTON	92LFz	3/18/2008	9/18/08
	Mx	DENTON	92LMx	3/18/2008	9/18/08
	My	DENTON	92LMy	3/18/2008	9/18/08
Left Foot Rear	X	ENDEVCO	P49235	3/14/2008	9/14/08
	Z	ENDEVCO	P49205	3/14/2008	9/14/08
Left Foot Front	Z	ENDEVCO	P49211	3/14/2008	9/14/08
Right Foot Rear	X	ENDEVCO	P52105	3/14/2008	9/14/08
	Z	ENDEVCO	P49222	3/14/2008	9/14/08
Right Foot Front	Z	ENDEVCO	P49440	3/14/2008	9/14/08
Lap Belt Load Cell		First Technology	156	9/7/2007	-
Shoulder Belt Load Cell		First Technology	159	9/7/2007	-

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 1047)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	P50073	3/11/2008	9/11/08
	Y	ENDEVCO	P50062	3/11/2008	9/11/08
	Z	ENDEVCO	P50097	3/11/2008	9/11/08
Head	X (R)	ENDEVCO	P58984	2/22/2008	8/22/08
	Y (R)	ENDEVCO	P58786	3/1/2008	9/14/08
	Z (R)	ENDEVCO	P58787	2/22/2008	8/22/08
Neck Load Cell	X	DENTON	441Fx	3/14/2008	9/14/08
	Y	DENTON	441Fy	3/14/2008	9/14/08
	Z	DENTON	441Fz	3/14/2008	9/14/08
Neck Moment	X	DENTON	441Mx	3/14/2008	9/14/08
	Y	DENTON	441My	3/14/2008	9/14/08
	Z	DENTON	441Mz	3/14/2008	9/14/08
Chest	X	ENDEVCO	P49459	3/11/2008	9/11/08
	Y	ENDEVCO	P52108	3/11/2008	9/11/08
	Z	ENDEVCO	P49213	3/11/2008	9/11/08
Chest	X (R)	ENDEVCO	P58892	2/22/2008	8/22/08
	Y (R)	ENDEVCO	P58885	2/22/2008	8/22/08
	Z (R)	ENDEVCO	P58899	2/22/2008	8/22/08
Chest Deflection	X	SERVO	DS-1047	3/19/2008	9/19/08
Pelvic	X	ENDEVCO	P49186	3/11/2008	9/11/08
	Y	ENDEVCO	P49164	3/11/2008	9/11/08
	Z	ENDEVCO	P52126	3/11/2008	9/11/08

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

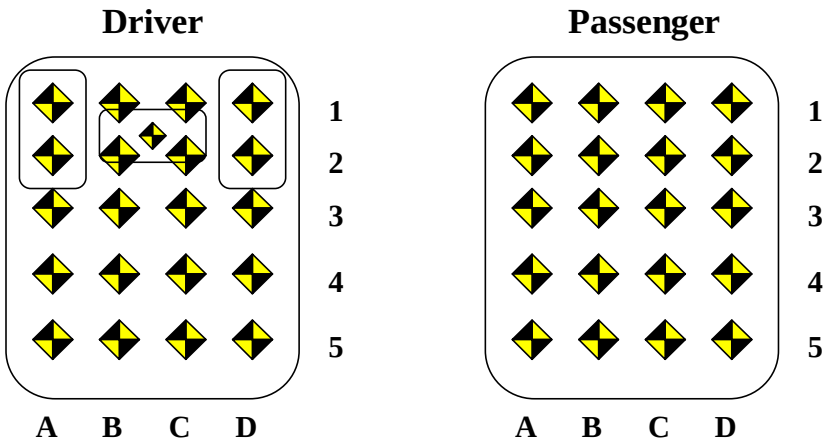
PASSENGER DUMMY (S/N 1047)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	255	3/11/2008	9/11/08
Right Femur Load Cell	Fz	DENTON	257	3/11/2008	9/11/08
Left Upper Tibia	Mx	DENTON	368Mx	3/19/2008	9/19/08
	My	DENTON	368My	3/19/2008	9/19/08
Left Lower Tibia	Fz	DENTON	364Fz	3/18/2008	9/18/08
	Mx	DENTON	364Mx	3/18/2008	9/18/08
	My	DENTON	364My	3/18/2008	9/18/08
Right Upper Tibia	Mx	DENTON	370Mx	3/19/2008	9/19/08
	My	DENTON	370MY	3/19/2008	9/19/08
Right Lower Tibia	Fz	DENTON	368LFz	3/18/2008	9/18/08
	Mx	DENTON	368LMx	3/18/2008	9/18/08
	My	DENTON	368LMy	3/18/2008	9/18/08
Left Foot Rear	X	ENDEVCO	P52149	3/18/2008	9/18/08
	Z	ENDEVCO	P50065	3/18/2008	9/18/08
Left Foot Front	Z	ENDEVCO	P52123	3/18/2008	9/18/08
Right Foot Rear	X	ENDEVCO	P50092	3/18/2008	9/18/08
	Z	ENDEVCO	P50089	3/18/2008	9/18/08
Right Foot Front	Z	ENDEVCO	P49463	3/18/2008	9/18/08
Lap Belt Load Cell		First Technology	173	9/7/2007	-
Shoulder Belt Load Cell		First Technology	178	9/7/2007	-

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	ENDEVCO	P23993	2/1/2008	8/1/08
Right Rear Seat Crossmember X	ENDEVCO	P32455	2/1/2008	8/1/08
Top of Engine	ICS	FA2489	3/27/2008	9/27/08
Bottom of Engine	ICS	FA2477	7/2/2008	2/2/09
Right Disc Brake Caliper	ICS	FA2486	3/3/2008	9/3/08
Left Disc Brake Caliper	ICS	FA2475	7/2/2008	2/2/09
Left Seat Rear Crossmember Z	ENDEVCO	P23939	2/1/2008	8/1/08
Right Seat Rear Crossmember Z	ENDEVCO	P32139	2/1/2008	8/1/08

APPENDIX E

VEHICLE INTERIOR INTRUSION MEASUREMENTS

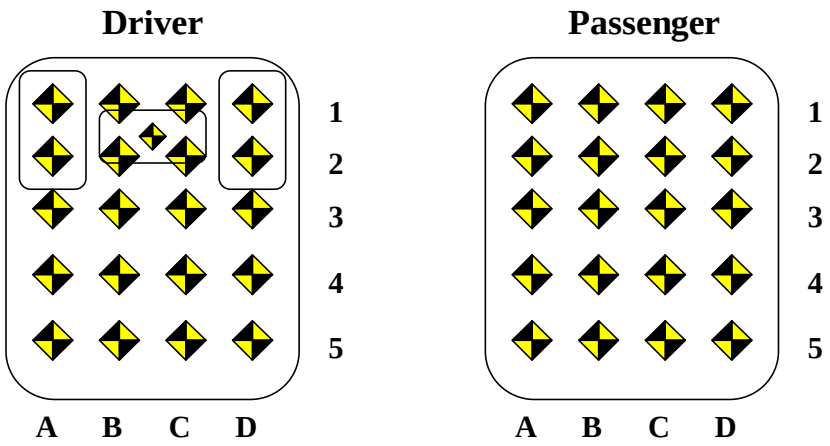


Driver Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3389	626	-652	3374	621	-644	15	5	-8
B1	3514	488	-646	3491	481	-631	23	7	-15
C1	3523	332	-651	3474	326	-639	49	6	-12
D1	3520	191	-664	3476	187	-656	44	4	-8
A2	3359	626	-693	3346	621	-686	13	5	-7
B2	3459	471	-711	3446	467	-702	13	4	-9
C2	3461	332	-710	3460	327	-704	1	5	-6
D2	3432	198	-705	3423	194	-724	9	4	19
A3	3312	624	-763	3301	620	-759	11	4	-4
B3	3348	467	-761	3342	466	-760	6	1	-1
C3	3356	328	-760	3350	333	-764	6	-5	4
D3	3351	198	-757	3341	194	-773	10	4	16
A4	3253	618	-766	3250	618	-757	3	0	-9
B4	3271	466	-765	3265	464	-768	6	2	3
C4	3274	331	-769	3272	331	-782	2	0	13
D4	3269	199	-767	3261	197	-781	8	2	14
A5	3192	618	-770	3190	615	-766	2	3	-4
B5	3199	463	-765	3197	464	-770	2	-1	5
C5	3201	334	-770	3196	334	-785	5	0	15
D5	3186	198	-768	3177	198	-781	9	0	13
BP	3363	330	-593	3339	342	-588	24	-12	-5
G	3126	526	-359	3125	526	-367	1	0	8
H	3130	233	-363	3127	233	-370	3	0	7
L	2830	369	-85	2836	375	-168	-6	-6	83
AB	2806	600	-715	NA	NA	NA	NA	NA	NA

BP=Brake Pedal, G=Left side of bolster, H=Right side of bolster, L=Steering wheel center;
AB = Front outboard seat anchor bolt

PASSENGER SIDE INTRUSION MEASUREMENTS



Passenger Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3514	-194	-649	3442	-189	-613	72	-5	-36
B1	3512	-323	-650	3432	-325	-602	80	2	-48
C1	3519	-469	-646	3456	-464	-609	63	-5	-37
D1	3442	-605	-661	3411	-608	-647	31	3	-14
A2	3447	-191	-708	3387	-190	-685	60	-1	-23
B2	3451	-323	-707	3383	-321	-673	68	-2	-34
C2	3449	-465	-710	3403	-463	-684	46	-2	-26
D2	3439	-606	-709	3415	-598	-698	24	-8	-11
A3	3368	-183	-754	3338	-189	-764	30	6	10
B3	3367	-324	-758	3333	-328	-757	34	4	-1
C3	3367	-463	-758	3349	-467	-761	18	4	3
D3	3373	-602	-763	3365	-601	-765	8	-1	2
A4	3278	-184	-767	3264	-191	-780	14	7	13
B4	3279	-322	-773	3269	-327	-781	10	5	8
C4	3279	-462	-773	3274	-466	-787	5	4	14
D4	3282	-608	-775	3278	-612	-778	4	4	3
A5	3189	-181	-769	3179	-189	-780	10	8	11
B5	3189	-320	-776	3183	-330	-780	6	10	4
C5	3189	-463	-772	3184	-467	-785	5	4	13
D5	3184	-606	-779	3184	-610	-776	0	4	-3
R	3163	-221	-401	3101	-238	-431	62	17	30
S	3173	-510	-408	3132	-525	-438	41	15	30
AB	2826	-605	-727	NA	NA	NA	NA	NA	NA

R=Left side of bolster, S=Right side of bolster, L=Steering wheel center;
AB = Front outboard seat anchor bolt