REPORT NUMBER TR-P28001-12-NC

NEW CAR ASSESMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

NISSAN MOTOR CO., LTD
2008 NISSAN 350Z
2-DOOR COUPE

NHTSA NUMBER: M85202

Prepared By:
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NOVEMBER 28, 2007

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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Date of Acceptance

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15. Supplementary Notes

16. Abstract

A 35 mph (56.3 km/h) frontal barrier impact test was conducted on the subject 2008 Nissan 350Z 2-Door Coupe at KARCO Engineering, LLC, in Adelanto, CA, on November 28, 2007. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 55.98 km/h. The ambient temperature at the barrier at the time of the crash was 14.4 degrees Celsius. The vehicle's maximum post static crush was 393 mm at the vehicle's centerline. The test vehicle was equipped with a 3-point continuous belt system and a second generation airbag at both front outboard positions. With respect to FMVSS 208 'Occupant Crash Protection', the occupant injury criteria summary is as follows:

Measurement Description	Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC)	N/A	1000	482.2	576
Max. Chest Accel. (3 msec. Chest Clip)	G's	60	48.4	49.5
Left Femur Force	Newtons	10008	-1997.6	-1874.3
Right Femur Force	Newtons	10008	-4066.4	-797.9

17. Key Words	18. Distribution Statement
56.3 km/h NCAP Frontal Impact Test New Car Assesment Program (NCAP) 2008 Nissan 350Z 2-Door Coupe NHTSA No. M85202	Copies of this report are available from: National Highway Traffic Safety Admin. NHTSA Technical Reference Division 1200 New Jersey Ave., SE, Room W43-410 Washington, DC 20590

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SECTION 1
PURPOSE AND SUMMARY OF TEST M85202

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the New Car Assessment Program (NCAP) sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-06-D-00027. 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 30 mph (48.3 km/h) requirements.

The 35 mph (56.3 km/h) 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 July 2005. 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.

1.2 SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2008 Nissan 350Z 2-Door Coupe at a velocity of 55.98 km/h. The test was performed at KARCO Engineering, LLC on November 28, 2007

Three (3) real-time and fourteen (14) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet number 14 (page number 24) of 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 (primary and redundant), chest (primary and redundant) and pelvis triaxial accelerometers, chest displacement potentiometers, six-axis upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were placed on the driver’s and passenger’s lap and shoulder belts to measure dummy torso and pelvic section loading. Shoulder belt spool-off was measured for the driver and passenger dummies. The driver (position 1) ATD (Serial No.035) and the right-front passenger (position 2) ATD (Serial No. 034) were calibrated November 28, 2007.

One hundred and thirty-two (132) channels of data were recorded using a TDAS data acquisition system. Appendix A contains Pre and Post-Test Photographs, Appendix B contains the Dummy Response data traces, and Appendix C contains the Dummy Calibration data.

There was 100% windshield retention and no intrusion into the protected zone of the windshield during impact.. There was no Stoddard solvent leakage after the event, or during any phase of the static rollover.

The maximum static crush of the vehicle was 393 mm at the vehicle's centerline.. Both the driver and passenger side doors remained closed and latched during the impact event, and were operable after the impact.

The driver’s visible contact points were as follows: The driver ATD's head and chest contacted the airbag. The head also contacted the headrest. Both knees contacted the bolster.

The passenger’s visible contact points were as follows: The passenger ATD's head and chest contacted the airbag. The head also contacted the headrest. Both knees contacted the bolster.

Occupant injury data is contained in table below.

OCCUPANT DATA SUMMARY

ATD Position	HIC 36	3 msec Chest Clip	Chest Defl. (mm)	Left Femur (N)	Right Femur (N)
Driver	482.2	48.4	-33.1	-1997.6	-4066.4
Passenger	576	49.5	-30.9	-1874.3	-797.9

Additional data plots for this test are available in the research and development section of the NHTSA website. The website can be found at: www.NHTSA.Dot.Gov

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in^2	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	^oF	^oC	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

CRASH TEST SUMMARY

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.98
Test Weight	kg	1729
Impact Angle	degrees	0
Average Rebound	mm	725
Maximum Static Crush	mm	393

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	None	None
Rear Door Opening		
Seat Track Shift (mm)	None	None
Seatback Failure	No	No

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type/Serial No.	50% Male Hybrid III No.035	50% Male Hybrid III No. 034
Head Contact	Airbag, Headrest	Airbag, Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	None	None
Left Knee Contact	Bolster	Bolster
Right Knee Contact	Bolster	Bolster

MOVIE COVERAGE

Cameras	Standard	Additional
High Speed	14	0
Real Time	1	2
Total	15	2

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Acclerometers	8
Rigid Barrier Load Cells	36
Total	132

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M85202
Make	Nissan
Model	350Z
Body Style	2-Door Coupe
VIN No.	JN1BZ34D28M700154
Color	Silver
Delivery Date	11/08/07
Odometer (Miles)	105.0
Dealer	Valley Hi Nissan
Transmission	6-speed Manual
Final Drive	Rear
Type/No. of Cylinders	V6
Engine Displ. (L)	3.5
Engine Placement	Longitudinal
Roof Rack	No
Sunroof/T-top	No
Tinted Glass	No
Traction Control	No
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Side Torso Airbag	No
Driver Side Head Airbag	No
Driver Curtain Airbag	No
Pass. Airbag	Yes
Pass. Side Airbag	No
Pass. Head Airbag	No
Pass. Curtain Airbag	No
Pre-Tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
Air Conditioning	Yes
AM/FM CD	Yes
Tilt Steering	Yes
Automatic Door Locks	No
Power Windows	Yes
Power Seats	No
Other	0

Does the Owner's Manual provide instructions to turn off automatic door locks? n/a

DATA FROM CERTIFICATION TABLE

Manufactured By	Nissan Motor Co., LTD
Date of Manufacture	Aug-07

GVWR (kg)	1778
GAWR Front (kg)	903
GAWR Rear (kg)	887

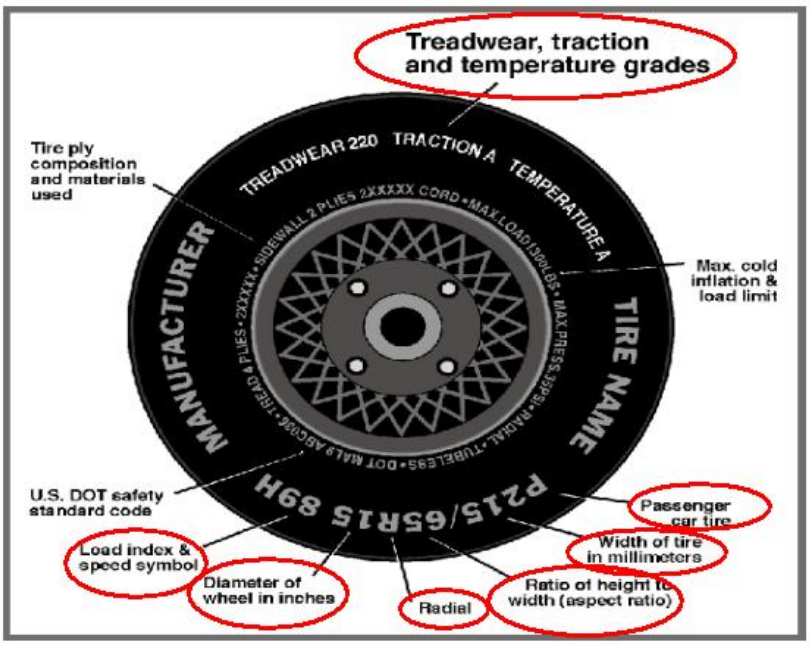
VEHICLE SEATING CAPACITY AND WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket			
Number of Occupants	2			2
Capacity Weight (VCW) (kg)				204
Cargo Weight (RCLW) (kg)				68

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

Collect year, make, model, VIN, items circled in red, and tire manufacturer and tire name.



TIRE INFORMATION

Measured Paramater	Front	Rear
Max. Tire Pressure (kPa)	357	357
Cold Tire Pressure (kPa)	240	240
Recommended Tire Size	245/45R18	245/45R18
Tire Size on Vehicle	245/45R18	245/45R18
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	140	140
Traction	A	A
Temperature Grades	A	A
Tire Plies - Sidewall	3 Rayon	3 Rayon
Tire Plies - Body	2 Rayon, 2 Steel, 1 Nylon	2 Rayon, 2 Steel, 1 Nylon
Load Index/Speed Symbol	96W	96W
Tire Material	Rayon, Steel, Nylon	Rayon, Steel, Nylon
DOT Safety Code Right	EJJ7 JDC 3007	DJIK JMF 3107
DOT Safety Code Left	EJJ7 JDC 3007	EJIK JMF 3107

DATA SHEET NO. 2…(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	415	355	770	440	437	877
Right	kg	415	333	748	438	414	852
Ratio	%	54.7	45.3	100.0	50.8	49.2	100.0
Totals	kg	830	688	1518	878	851	1729

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1518
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	68
Calculated Target Vehicle Test Weight (TVTW)	kg	1738

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	678	676	720	720	1450
As Tested	mm	672	669	700	701	1346

Vehicle Wheel Base (mm): 2650

Weight of Ballast Secured in Cargo Area (kg): 0

Weight of Items Removed (kg): 61

Vehicle Components Removed: Rear carpeting, tail lights, rear bumper, spare tire, exhaust tip.

*Ballast weight does not include cameras, instrumentation or brake abort system.

FUEL SYSTEM DATA

Fuel System Capacity from Owner's Manual (L): 75.7

Actual Test Volume with Entire Fuel System Filled (L): 70.4

Test Fluid Type: Stoddard Solvent

Kinematic Viscosity: as per ASTM Standard D484-71 Red

Is Vehicle Fuel Pump Electric or Mechanical? Electrical

If electric, does pump operate with the ignition switch "ON" & engine "OFF"? Yes

Fuel System Particulars: Electric fuel pump, activated when electrical system is activated. Fuel pump will run during the operation of the engine.

DATA SHEET NO. 3

POST-TEST IMPACT DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

SPEED TRAP DATA

Measured Paramater	Units	Requirement	Value
Trap No. 1 Velocity	km/h	55.1 to 57.12	55.98
Trap No. 2 Velocity	km/h	55.1 to 57.12	55.98

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4145	3850	295
Center	mm	4295	3902	393
Right Side	mm	4145	3890	255

VEHICLE REBOUND FROM BARRIER

Measured Paramater	Units	Value
Left Side	mm	737
Center	mm	600
Right Side	mm	725
Average	mm	687

DATA SHEET NO. 4

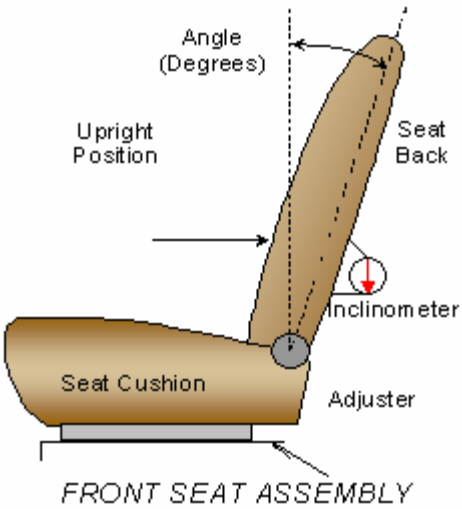
TEST VEHICLE INFORMATION

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturer's designated angle. The procedure is as follows: Seat back angle was measured at the seatback, using a digital inclinometer.



SEAT BACK ANGLES

Position	Degrees
Driver w/ Seated Dummy	20.9° @ Seatback
Passenger w/ Seated Dummy	21.0° @ Seatback

SEAT FORE/AFT POSITIONS

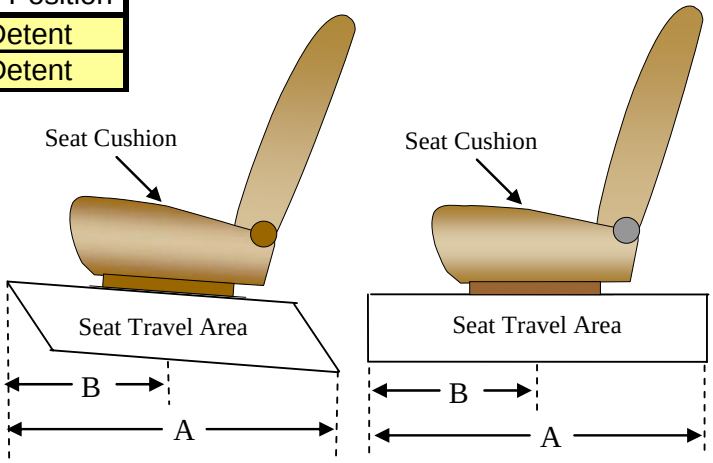
The total seat travel was measured from forward most position to rearmost position. The seat was set at the longitudinal mid position. There were vertical adjustments on the driver seat that was equipped with the vehicle. There were no adjustments on the passenger seat. The driver seat was placed in the lowermost position.

SEAT FORE/AFT POSITIONING

Position	Total Fore/Aft Travel	Placed in Position
Driver Seat	19 Detents	10th Detent
Passenger Seat	19 Detents	10th Detent

SEAT BELT ANCHORAGE

Position number one (1) is the uppermost position.



SEAT BELT ANCHORAGE POSITIONING

	Total Number of Positions	Placed in Position
Driver Seat	Fixed	Fixed
Passenger Seat	Fixed	Fixed

TEST VEHICLE INFORMATION

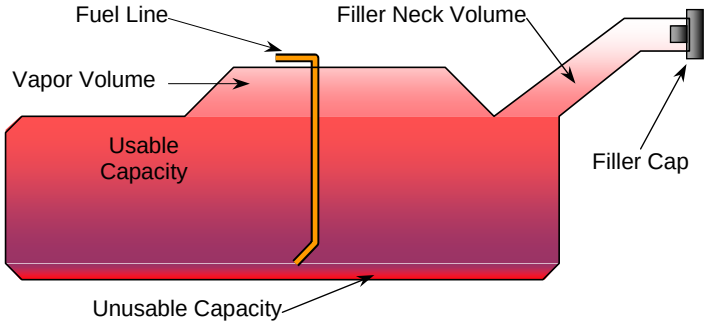
Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

FUEL TANK CAPACITY

	Liters
Usable Capacity of Standard Tank	75.70
Usable Capacity of Optional Tank	
Usable Capacity Used for FMVSS 301	69.64 to 71.16
Actual Amount of Solvent Used	70.40

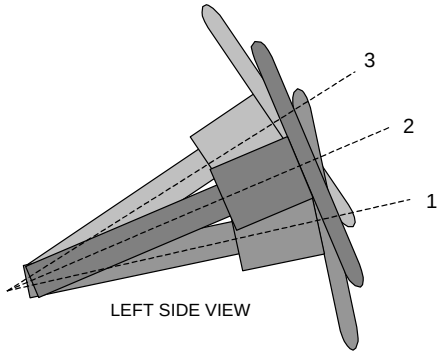
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for approximately two (2) seconds with the ignition in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the right rear fender. The standard fuel tank occupies the area Under the trunk.



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. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position
Lowermost - Position No. 1	15.0	
Geometric Center - Position No. 2	17.3	
Uppermost - Position No. 3	19.6	

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

TEST DUMMY POSITION MEASUREMENTS

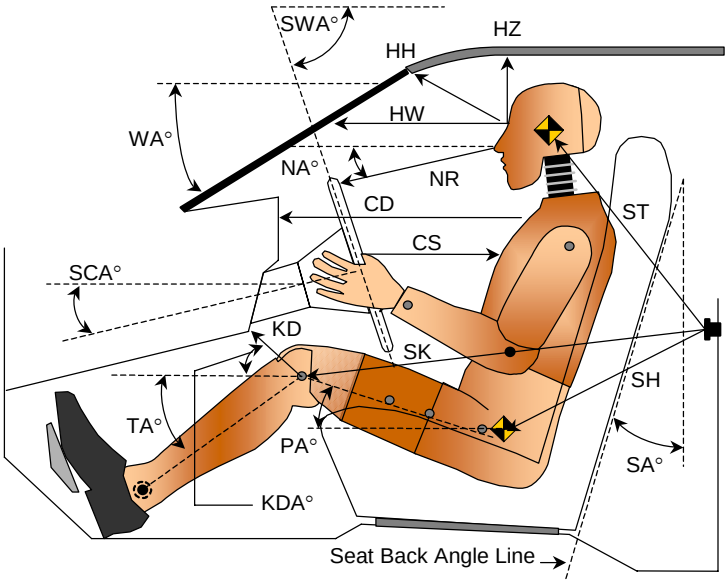
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windsheild angle		27.7		
SWA	Steering wheel angle		72.4		
SCA	Steering column angle		17.6		
SA	Seatback angle		20.9 @ Seatback		21.0 @ Seatback
HZ	Head to roof (Z)	166	90.0	159	90.0
HH	Head to header	308		277	
HW	Head to windshield	506		465	
HR	Head to side header (Y)	240		243	
NR	Nost to rim	342	19.8		
CD	Chest to dash	497		492	
CS	Chest to steering hub	273			
RA	Rim to abdomen	175			
KDL	Left knee to dash	155	55.5	178	
KDR	Right knee to dash	132		170	34.6
PA	Pelvic angle		23.1		23.4
TA	Tibia Angle		32.0		33.1
KK	Knee to knee	290		270	
SK	Striker to outboard knee	830	1.6	820	8.3
ST	Striker to head	518	57.2	543	53.9
SH	Striker to H-Point	449	0.0	438	0.0
SHY	Striker to H-Point (Y)	194		235	
HS	Head to side window	278		288	
HD	H-Point to door	123		120	
AD	Arm to door	64		107	

DATA SHEET NO. 5…(CONTINUED)

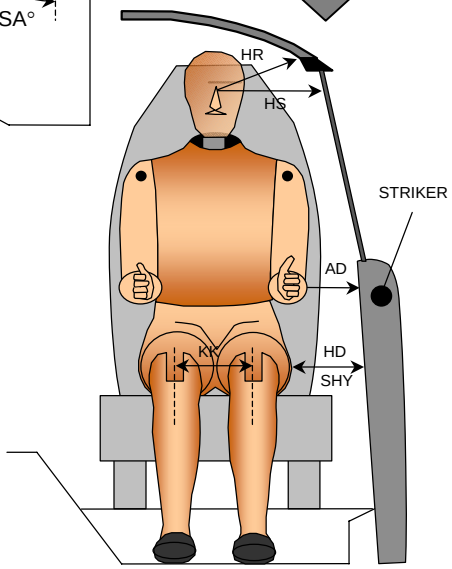
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

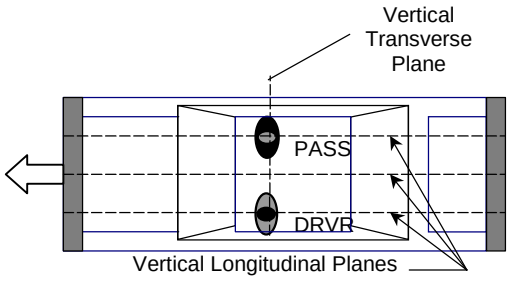
Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007



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



CD	Chest to Dash
CS	Chest to Steering Wheel Hub
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

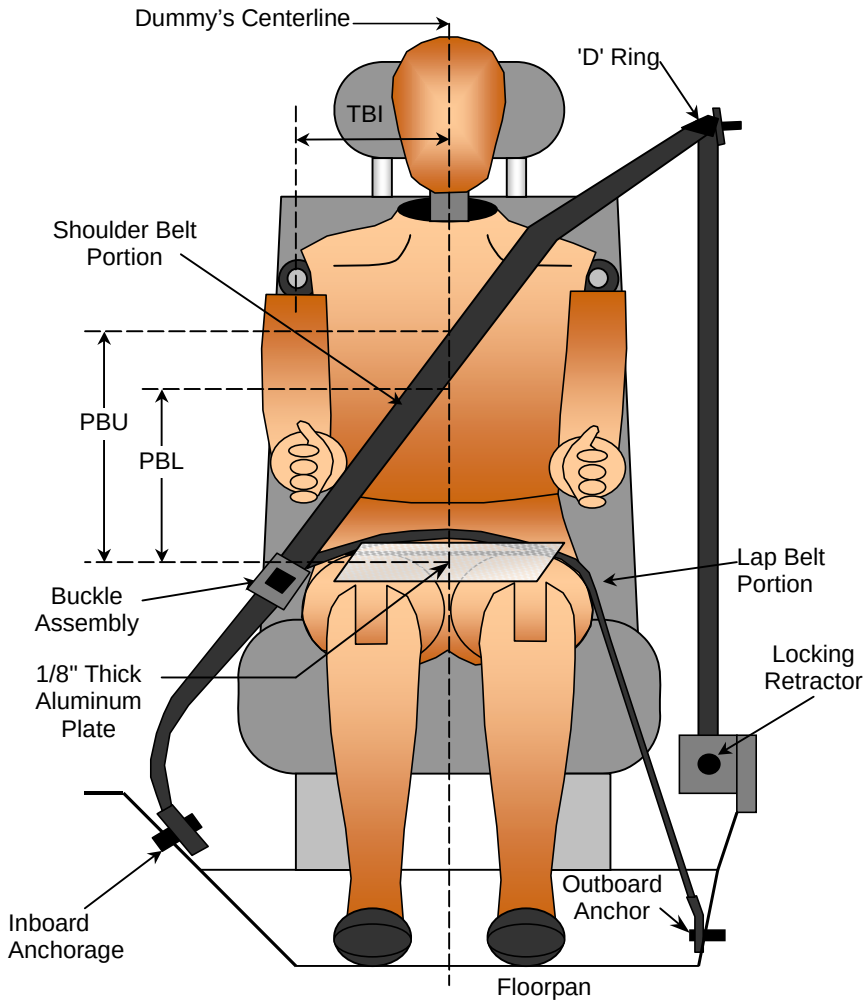


DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007



SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	230	230
PBU - Top Surface of Reference to Belt Upper Edge	mm	305	340
PBL - Top Surface of Reference to Belt Lower Edge	mm	240	280
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurement (mm)		
		X	Y	Z
1	Left Rear X-Member	1940	690	375
2	Right Rear X-Member	1950	690	385
3	Engine Top	3795	40	720
4	Engine Bottom	3675	50	120
5	Left Brake Caliper	3655	710	410
6	Right Brake Caliper	3655	710	410
7	Instrument Panel	0	0	0
8	Left Rear X-Member (Z-Axis)	1940	690	375
9	Right Rear X-Member (Z-Axis)	1950	690	375

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane
1.) Instrument Panel no longer used by NHTSA.

DATA SHEET NO. 8

SEAT BELT ASSESSMENT TEST DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
Retractor Reel to D-Ring	mm	430	430
Shoulder Belt Length as Measured on ATD	mm	1025	980
Lap Belt Length as Measured on ATD	mm	815	800
Remainder of Belt on Reel	mm	605	570
Total Belt Length for Continuous Webbing Systems	mm	2875	2780

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	40	112
As determined electronically	mm	57.2	99.5

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically between belt load cell and D-Ring	mm/cm	*	*
Mechanically	mm/cm		

*Not used with shoulder belt pre-tensioner systems

DATA SHEET NO. 9

SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

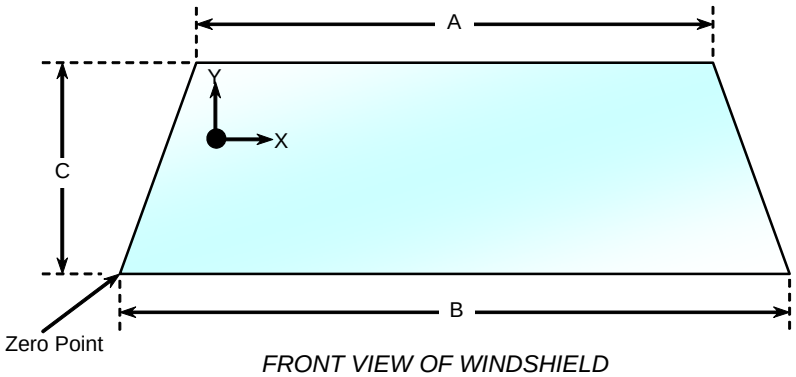
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber cement type adhesive, and rubber and plastic molding covers the windsheild periphery.

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

Temperature of windshield molding during test: 14.4 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	1960	1960	100.0
Right Side	1960	1960	100.0
Total	3920	3920	100.0



FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

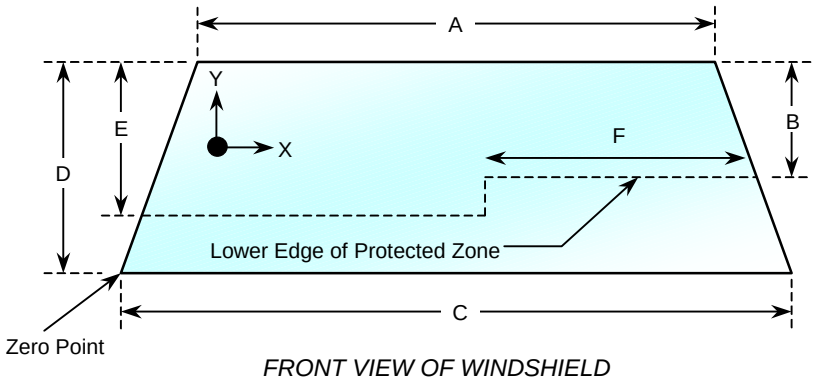
Item	Units	Segment Length	Molding Width
A	mm	1220	10
B	mm	1510	10
C-Left	mm	595	5
C-Right	mm	595	5

DATA SHEET NO. 10

WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007



FRONT VIEW OF WINDSHIELD

WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1220
B	mm	390
C	mm	1510
D	mm	595
E	mm	395
F	mm	480

AREA OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 in. by a vehicle component other than one that is normally in contact with the windshield.

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y

DATA SHEET NO. 11

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

Test Time: 12:47 PM Temperature: 14.4 ° C

STODDARD SOLVENT SPILLAGE MEASUREMENTS

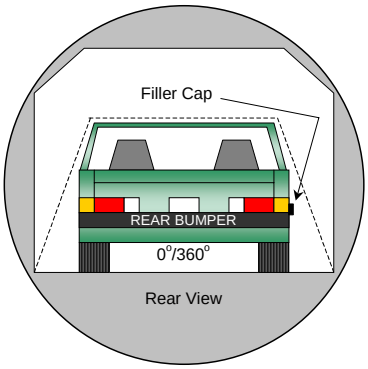
A.	From impact until vehicle motion ceases: (Maximum allowable = 1 ounce)	0
B.	For the 5 minute period after motion ceases: (Maximum allowable = 5 ounces)	0
C.	For the following 25 minutes: (Maximum allowable = 1 oz/minute)	0
D.	Spillage Details:	No leakage occurred

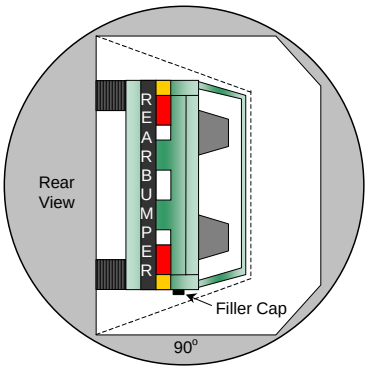
DATA SHEET NO. 12

FMVSS 301 STATIC ROLLOVER DATA

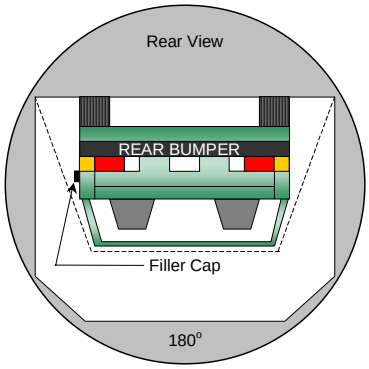
Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

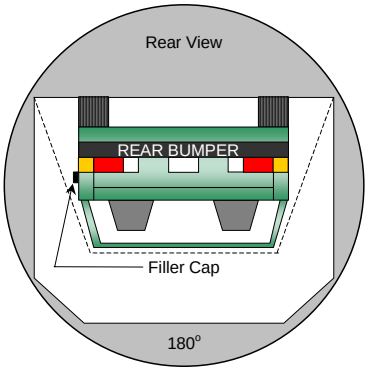




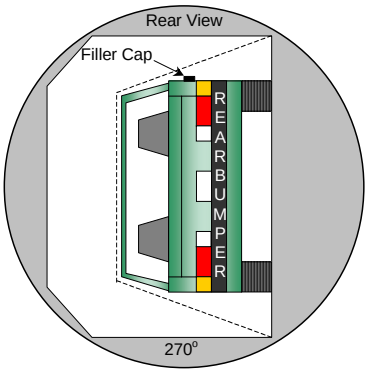
0° to 90°

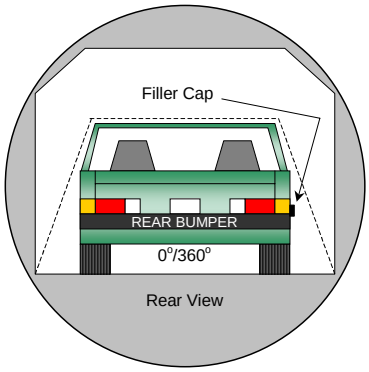


90° to 180°



180° to 270°





270° to 360°

1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. No solvent leakage occurred during rollover.

DATA SHEET NO. 12…(CONTINUED)

FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	82	303	385
90° to 180°	81	306	387
180° to 270°	77	308	385
270° to 360°	84	303	387

FMVSS 301 SPILLAGE TABLE REQUIREMENT

First 5 Minutes	5.0
Sixth Minute	1.0
Seventh Minute	1.0
Eighth Minute	1.0

ACTUAL TEST VEHICLE SOLVENT SPILLAGE TABLE (OZ)

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

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 13

VEHICLE MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Length of test vehicle at centerline	mm	4295	3902	393
2	RSOV to front of engine	mm	3720	3510	210
3	RSOV to firewall centerline	mm	3130	3055	75
4	RSOV to upper leading edge of right door	mm	2693	2692	1
5	RSOV to upper leading edge of left door	mm	2681	2685	-4
6	RSOV to lower leading edge of right door	mm	2803	2802	1
7	RSOV to lower leading edge of left door	mm	2792	2783	9
8	RSOV to upper trailing edge of right door	mm	1475	1483	-8
9	RSOV to upper trailing edge of left door	mm	1476	1477	-1
10	RSOV to lower trailing edge of right door	mm	1728	1725	3
11	RSOV to lower trailing edge of left door	mm	1715	1710	5
12	RSOV to bottom of right A-pillar	mm	2698	2704	-6
13	RSOV to bottom of left A-pillar	mm	2693	2688	5
14	RSOV to firewall on right side	mm	3395	3274	121
15	RSOV to firewall on left side	mm	3435	3325	110
16	RSOV to steering column hub	mm	2365	2340	25
17	Center of steering column to left A-pillar, Y	mm	400	394	6
18	Center of steering column to headlining, Z	mm	380	352	28
19	RSOV to right side of front bumper	mm	4145	3890	255
20	RSOV to left side of front bumper	mm	4145	3850	295
21	Length of engine block	mm	560	560	0
RD	RSOV to right side of dash panel	mm	2565	2540	25
CD	RSOV to center of dash panel	mm	2560	2541	19
LD	RSOV to left side of dash panel	mm	2555	2550	5

DATA SHEET NO. 13…(CONTINUED)

VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

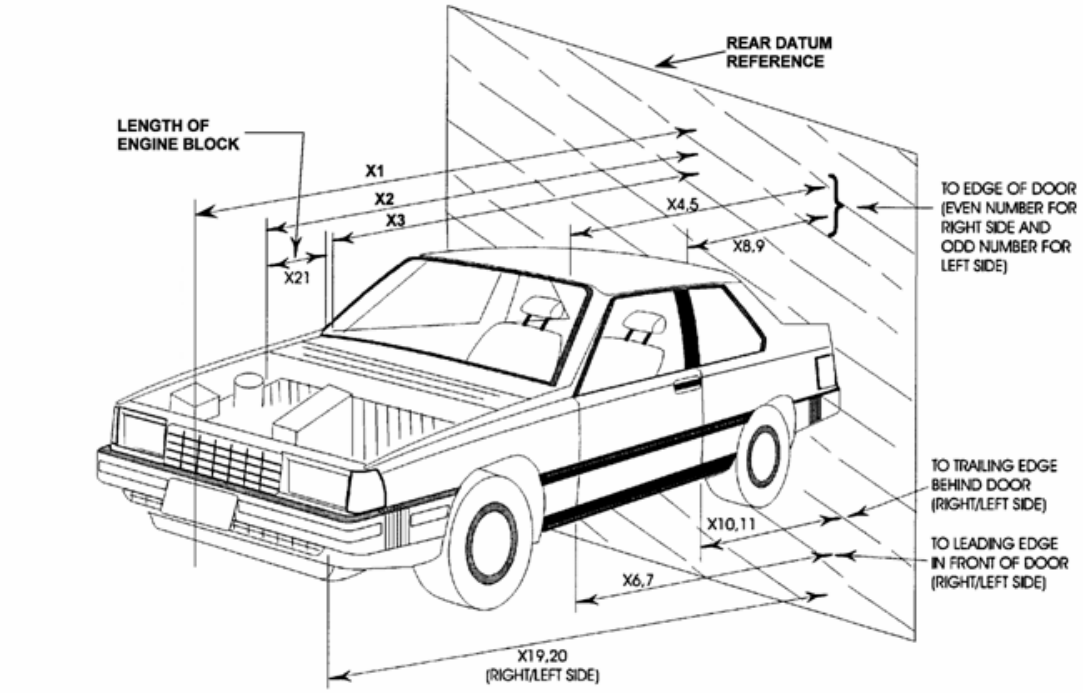
VEHICLE STRUCTURAL MEASUREMENT TABLE

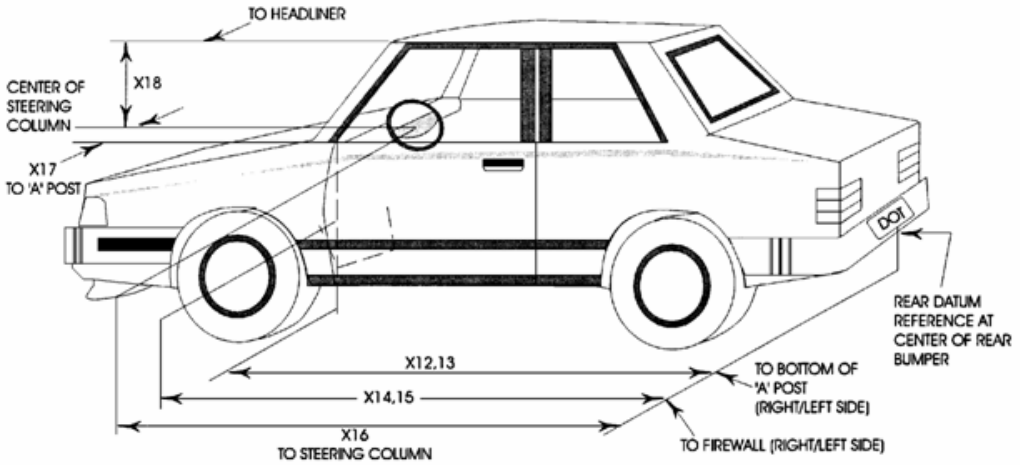
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length	mm	4295	3902	393
2	Total width	mm	1780	1775	5
3	Front bumper top height	mm	570	565	5
4	Front bumper bottom height	mm	156	166	-10
5	Longitudinal member top height	mm	471	468	3
6	Longtidunal member bottom height	mm	381	377	4
7	Destance between longitudinal members	mm	810	807	3
8	Longitudinal member width	mm	50	48	2
9	Engine top height	mm	830	840	-10
10	Engine bottom height	mm	136	142	-6
11	Engine and gearbox width	mm	600	600	0
12	Front bumer-engine distance	mm	575	320	255
13	Front shock absorber height	mm	745	740	5
14	Front hood leading edge height	mm	630	660	-30
15	Deisatnce between front shock absorbers	mm	940	855	85
16	Front bumper-front axle distance	mm	802	460	342
17	Front axle-A-pillar distance	mm	683	600	83
18	A-piilar to B-pillar distance	mm	1310	1290	20
19	B-pillar to rear axle distance	mm	656	656	0
20	B-pillar to C-pillar distance	mm	300	300	0
21	Roof sill bottom height	mm	1195	1180	15
22	Roof sill top height	mm	1280	1260	20
23	Floor sill bottom height	mm	150	140	10
24	Floor sill top height	mm	340	340	0

VEHICLE MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007





DATA SHEET NO. 14

CAMERA LOCATIONS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

VEHICLE CAMERA MEASUREMENT TABLE

No.	Camera View	Location			Angle (deg)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real Time Camera (Panning)	-11412	-8150	-1484	0			30
2	Overall Left Side	-1511	-6753	-1067	0	8105	20	1000
3	Closeup Left Side	-2098	-6197	-1197	0	7844	50	1000
4	Driver and Interior View	-6696	-5987	-1071	-17	15570	ZOOM	1000
5	Steering Column (Bottom)	-1972	-8184	-2879	-13	9453	35	1000
6	Steering Column (Top)	-1966	-8141	-3258	-13	9549	35	1000
7	Overall Right Side	-1609	6729	-1043	0	7409	20	1000
8	Closeup Right Side	-1958	6009	-1093	0	7079	50	1000
9	Passenger and Interior View	-5136	9516	-2460	-10	10211	ZOOM	1000
10	Right Side View	-1582	7995	-1713	-6	7134	ZOOM	1000
11	Windshield View	-354	0	-5749	-90		24	1000
12	Driver Front View	363	-543	-2548	-34		25	1000
13	Passenger Front View	381	445	-2548	-34		25	1000
14	Pit View of Engine	-756	0	1495	90		12	1000
15	Pit View of Fuel Tank	-3398	0	1495	90		8	1000
16	Driver Side Dummy On-Board	-2638	263	-1041	-3	554	12	1000
17	Passenger Side Dummy On-Board	-2638	-268	-1041	-3	559	12	1000
18	Real Time Driver	-1926	-8089	-1704	-1	5483		30
19	Real Time Passenger	-1433	8047	-1704	-1	5503		30

All measurements are made relative to the point of impact.

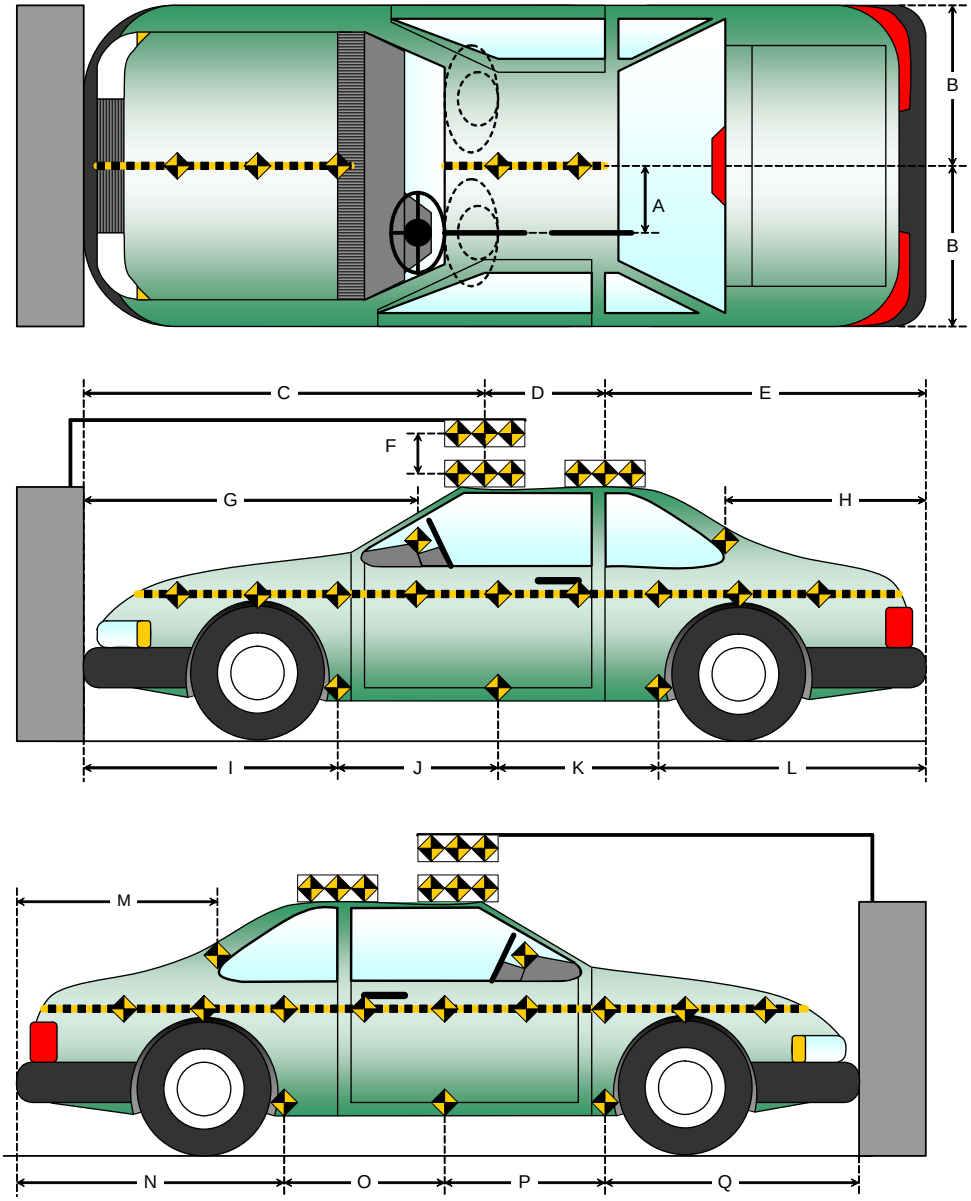
DATA SHEET NO. 15

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

All Dimensions in Millimeters (mm)	
Item	Value
A	335
B	890
C	2385
D	
E	1921
F	155
G	1705
H	1065
I	1243
J	883
K	883
L	1290
M	1095
N	1300
O	883
P	883
Q	1235



DATA SHEET NO. 16

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

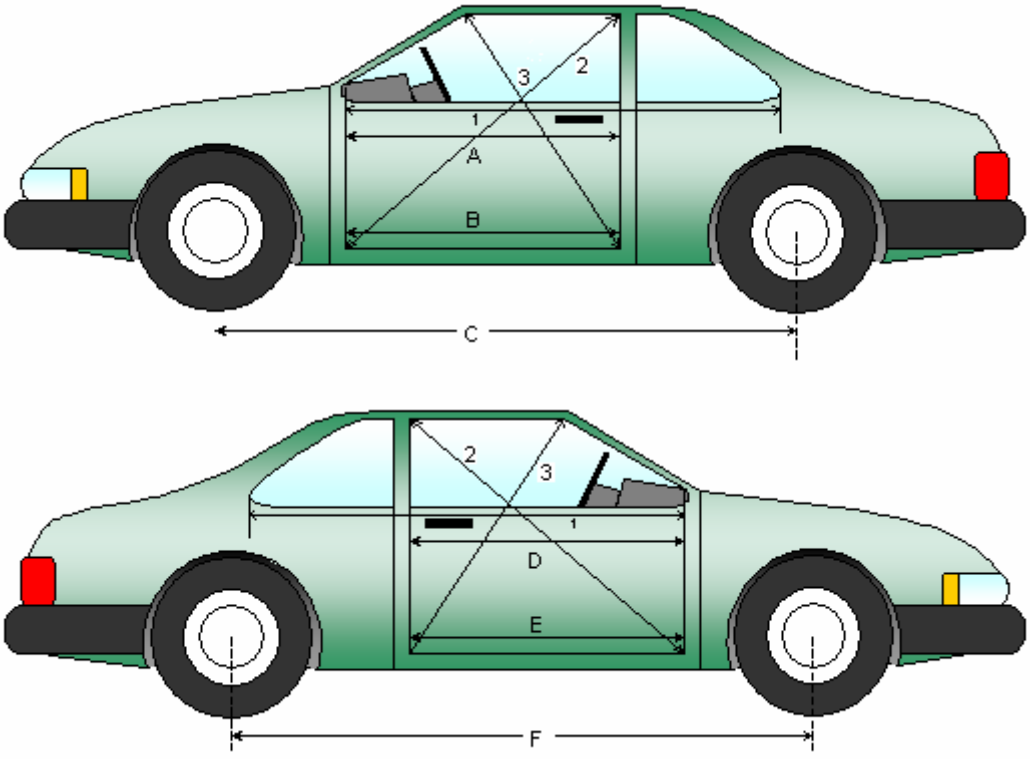
Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Difference
1L	Left Side	mm	1156	1150	6
2L	Left Side (Diagonally)	mm	1386	1384	2
3L	Left Side (Diagonally)	mm	918	919	-1
1R	Right Side	mm	1151	1152	-1
2R	Right Side (Diagonally)	mm	1366	1365	1
3R	Right Side (Diagonally)	mm	936	935	1

WHEELBASE MEASURMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2650	2570	80
F	Right Side Wheelbase	mm	2650	2545	105



DATA SHEET NO. 16…(CONTINUED)

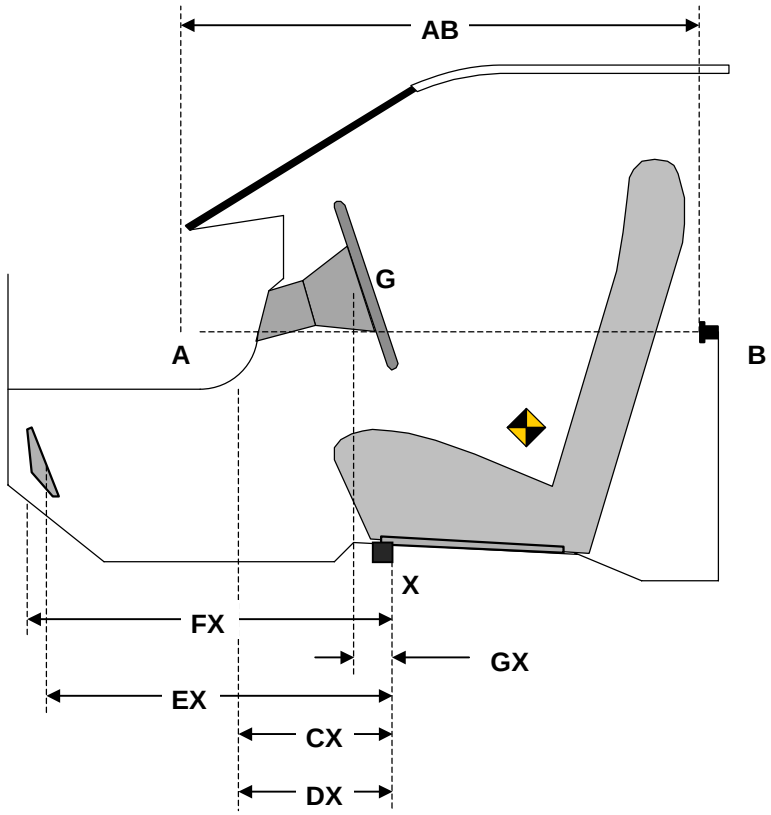
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

DRIVER COMPARTMENT INTRUSION TABLE

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Windown Jam)	mm	1161	1160	1
CX	Left Knee Bolster to X	mm	240	235	5
DX	Right Knee Bolster to X	mm	220	235	-15
EX	Brake Pedal to X	mm	546	546	0
FX	Foot Rest to X	mm	596	551	45
GX	Center of Steering Wheel Hub to X	mm	25	30	-5

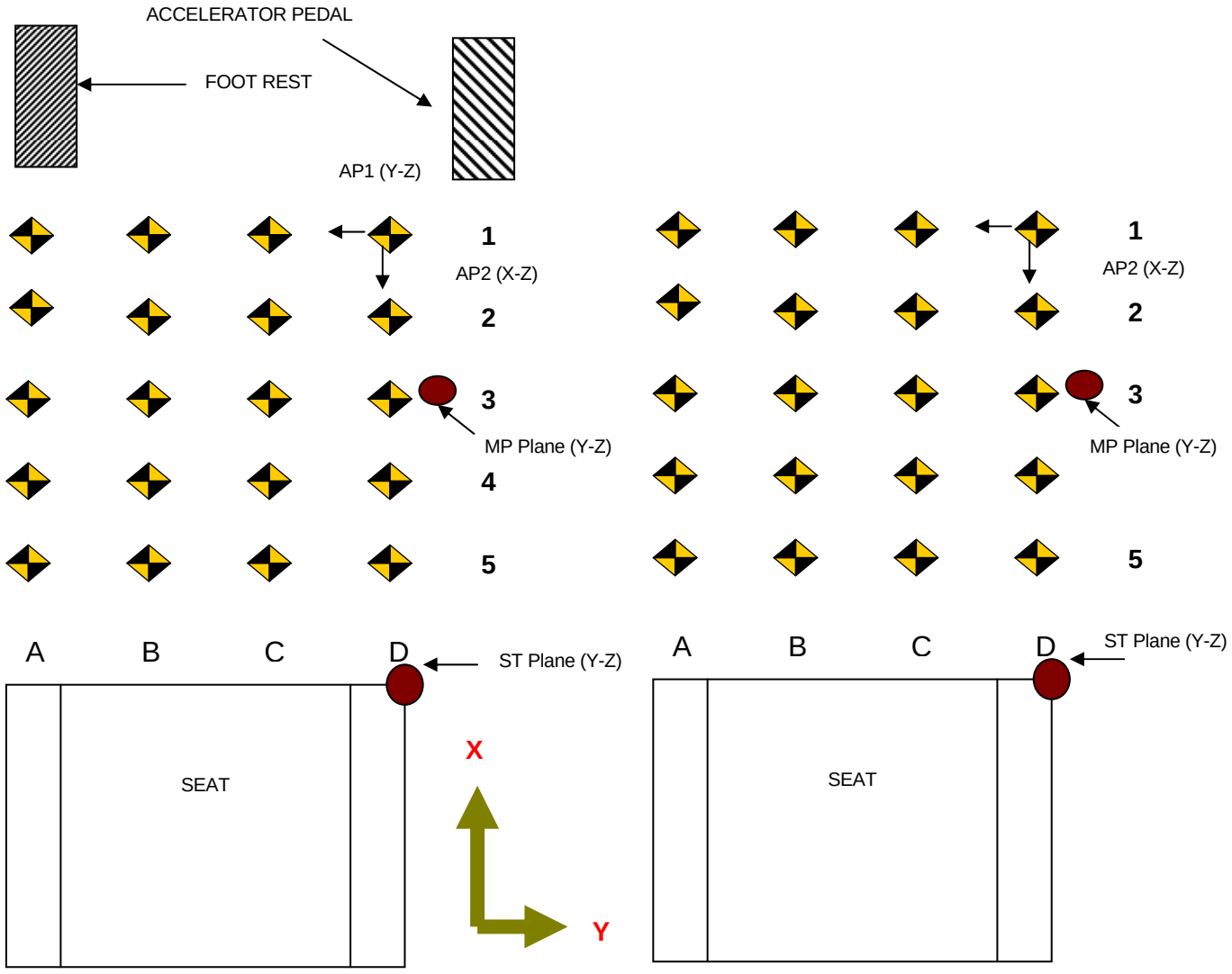


DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007



AP1: Y-Z Plane passing through D1
AP2: X-Z Plane passing through D1
AP3: X-Y plane passing through D1
MP: Y-Z plane, halfway between the ST plane and AP1 plane
CF Plane: X-Z plane passes through center of footrest.
BP Plane: X-Z plane passes through center of brake pedal
TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard
Column A: intersection of vehicle and CF plane
Column D: Intersection of vehicle and AP2 plane
Row 1: intersection of the vehicle and the AP3 Plane
Row 3: intersection of the vehicle and TP plane
Row 5: intersection of the vehicle and MP plane
Row 2: evenly spaced between row 1 and 3
Row 4: evenly spaced between row 3 and 5

DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

All measurements in mm

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	612	615	615	614	593	559	537	528	19	56	78	86
2	515	504	503	497	497	456	439	421	18	48	64	76
3	384	383	383	377	368	344	338	334	16	39	45	43
4	254	264	259	259	239	224	219	219	15	40	40	40
5	138	141	145	146	122	113	108	106	16	28	37	40

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-12	117	237	359	19	141	261	378	-31	-24	-24	-19
2	-15	114	240	352	-3	129	253	356	-12	-15	-13	-4
3	-21	116	236	349	1	125	244	351	-22	-9	-8	-2
4	-15	118	234	346	17	132	240	346	-32	-14	-6	0
5	-16	118	239	350	2	141	238	345	-18	-23	1	5

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	24	27	27	30	15	10	4	1	9	17	23	29
2	81	66	66	66	73	66	63	35	8	0	3	31
3	134	64	65	58	134	79	66	33	0	-15	-1	25
4	142	59	58	53	127	83	70	28	15	-24	-12	25
5	144	100	55	56	126	128	61	33	18	-28	-6	23

DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

All measurements in mm

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	597	586	609	608	546	552	566	580	51	34	43	28
2	492	492	499	382	462	451	464	489	30	41	35	22
3	252	370	370	271	346	342	337	363	26	28	33	19
4	166	253	253	164	223	221	219	258	29	32	34	13
5	166	158	157	164	136	127	123	150	30	31	34	14

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-361	-224	-127	8	-352	-233	-120	3	-9	9	-7	5
2	-358	-239	-127	14	-336	-226	-116	23	-22	-13	-11	-9
3	-360	-241	-126	22	-349	-231	-113	20	-11	-10	-13	2
4	-364	-239	-121	22	-357	-228	-115	18	-7	-11	-6	4
5	-353	-245	-127	16	-344	-239	-125	10	-9	-6	-2	6

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	29	0	30	36	20	22	18	9	9	-22	12	27
2	56	37	67	91	44	65	71	55	12	-28	-4	36
3	46	65	65	134	36	71	77	107	10	-6	-12	27
4	38	58	62	146	29	70	80	129	9	-12	-18	17
5	-3	60	91	145	-8	73	115	126	5	-13	-24	19

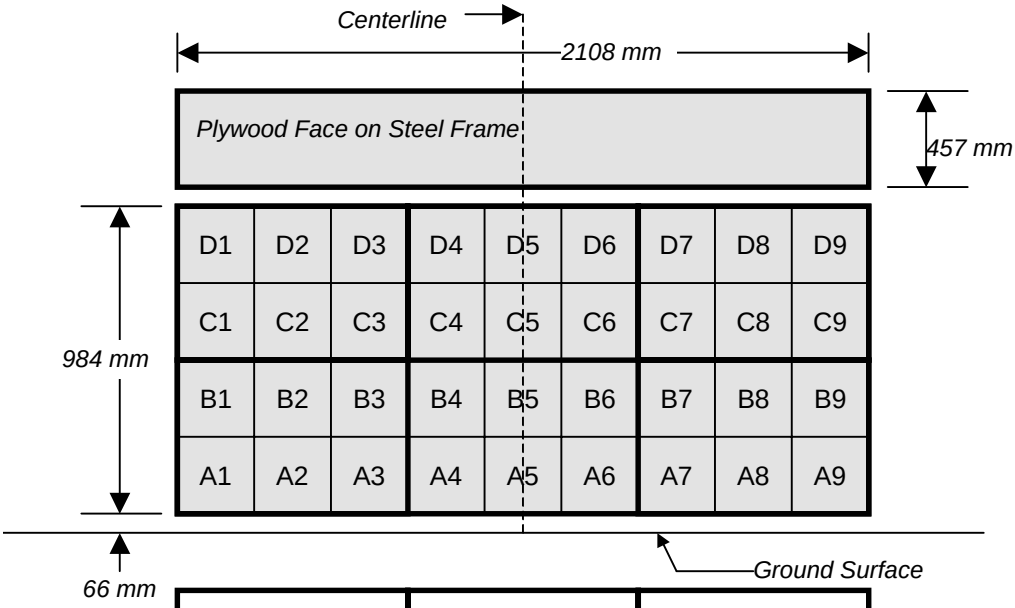
DATA SHEET NO. 17

FIXED BARRIER LOAD CELL LOCATIONS

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

36 Load Cell Rigid Barrier (NHTSA Standard)
Load Cell Locations on Fixed Barrier



D1	D2	D3	D4	D5	D6	D7	D8	D9
C1	C2	C3	C4	C5	C6	C7	C8	C9
B1	B2	B3	B4	B5	B6	B7	B8	B9
A1	A2	A3	A4	A5	A6	A7	A8	A9

Group 4 C1 – D3	Group 5 C4 – D6	Group 6 C7 – D9
Group 1 A1 – B3	Group 2 A4 – B6	Group 3 A7 – B9

6 Groups of 6 Load Cells Each

DATA SHEET NO. 18

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007

VEHICLE INFORMATION

VIN: JN1BZ34D28M700154 Wheelbase (mm): 2650

Vehicle Size Category: 2-Door Coupe Test Weight (kg): 1729

ACCELEROMETER DATA

Accelerometer Location: Left rear cross member

Cal. Procedure/Interval: 6 months/drop test

Integration Algorithm: NHTSA Standard Linearity: Good

Impact Velocity (km/h): 55.98

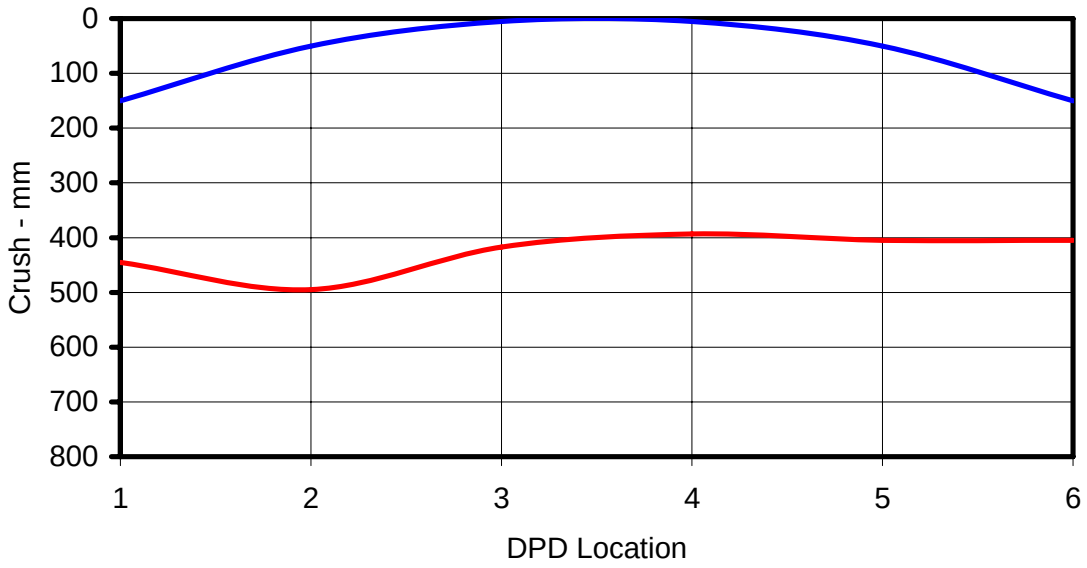
Velocity Change (km/h): 66.5 Time of Separation (msec): 66.6

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline

Damage Region Length: 1245 Impact Mode: Full frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side of vehicle	mm	150	445	-295
C2	Crush zone 2 on left side of vehicle	mm	50	495	-445
C3	Crush zone 3 on left side of vehicle	mm	5	417	-412
C4	Crush zone 4 on right side of vehicle	mm	5	393	-388
C5	Crush zone 5 on right side of vehicle	mm	50	405	-355
C6	Crush zone 6 at right side of vehicle	mm	150	405	-255

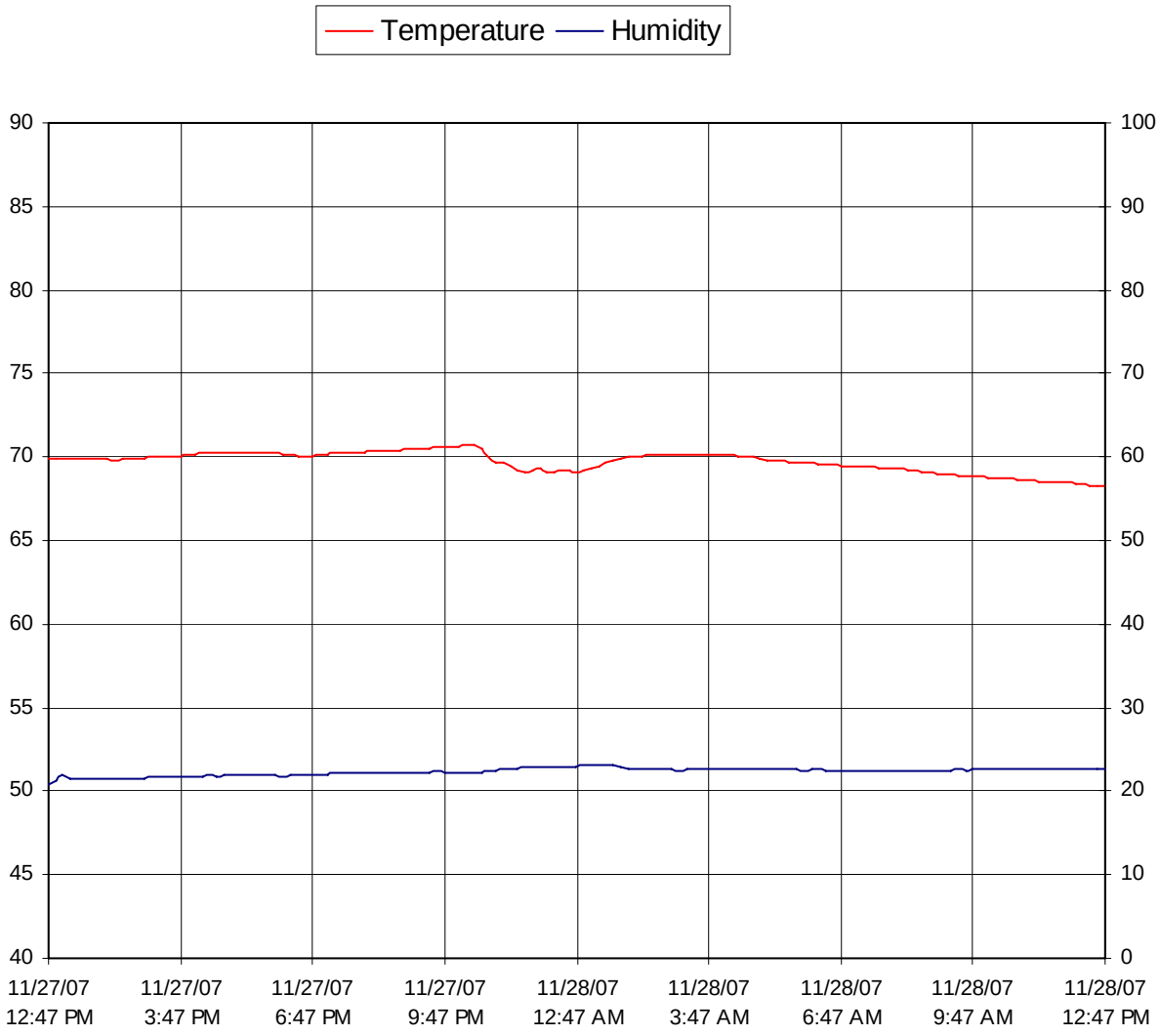


DATA SHEET NO. 19

DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2008 Nissan 350Z 2-Door Coupe NHTSA No.: M85202

Test Program: NHTSA 35mph NCAP Test Date: 11/28/2007



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

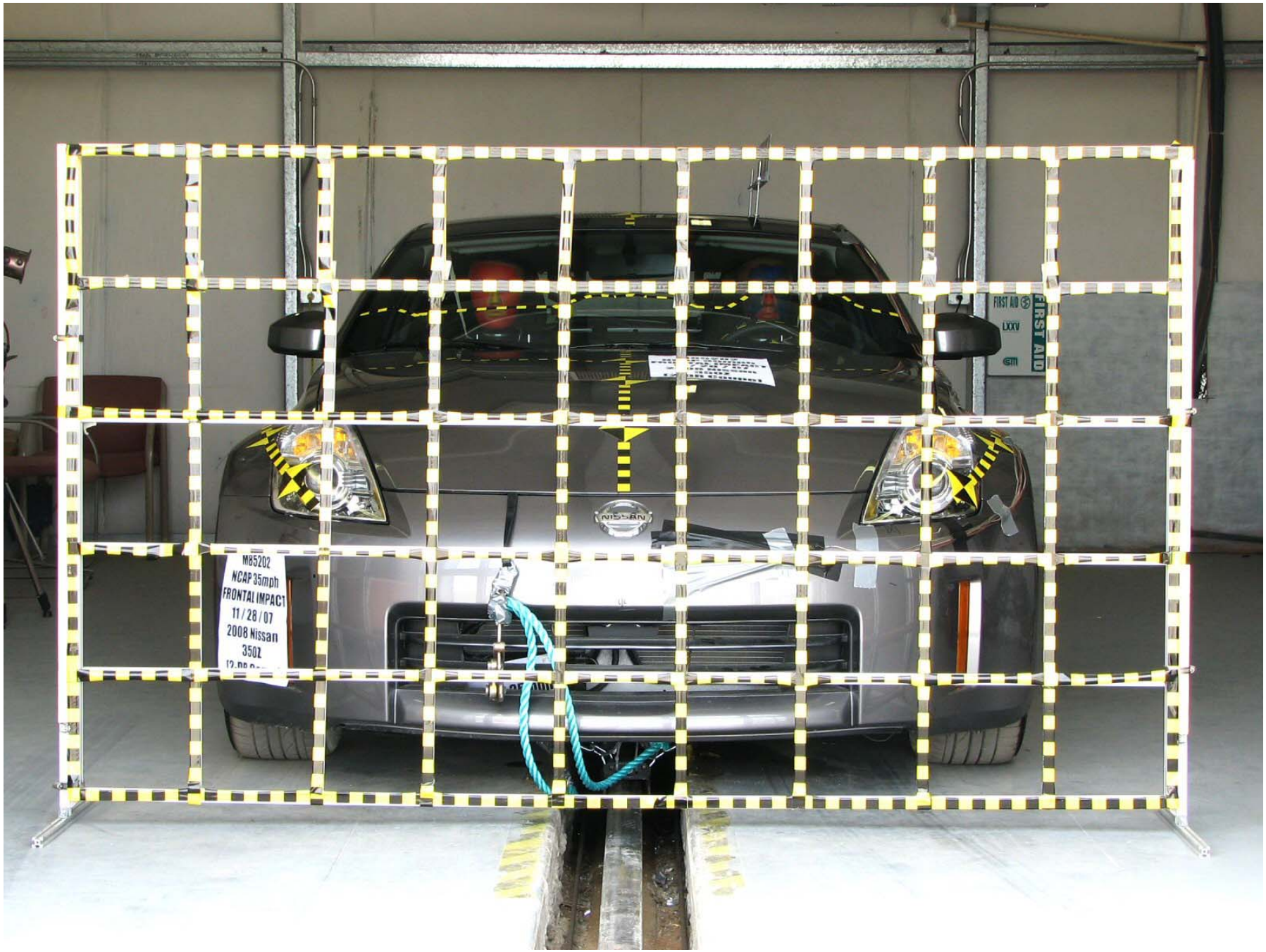


Figure A-1: Load Cell Location

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Figure A-2: Manufacturer's Label

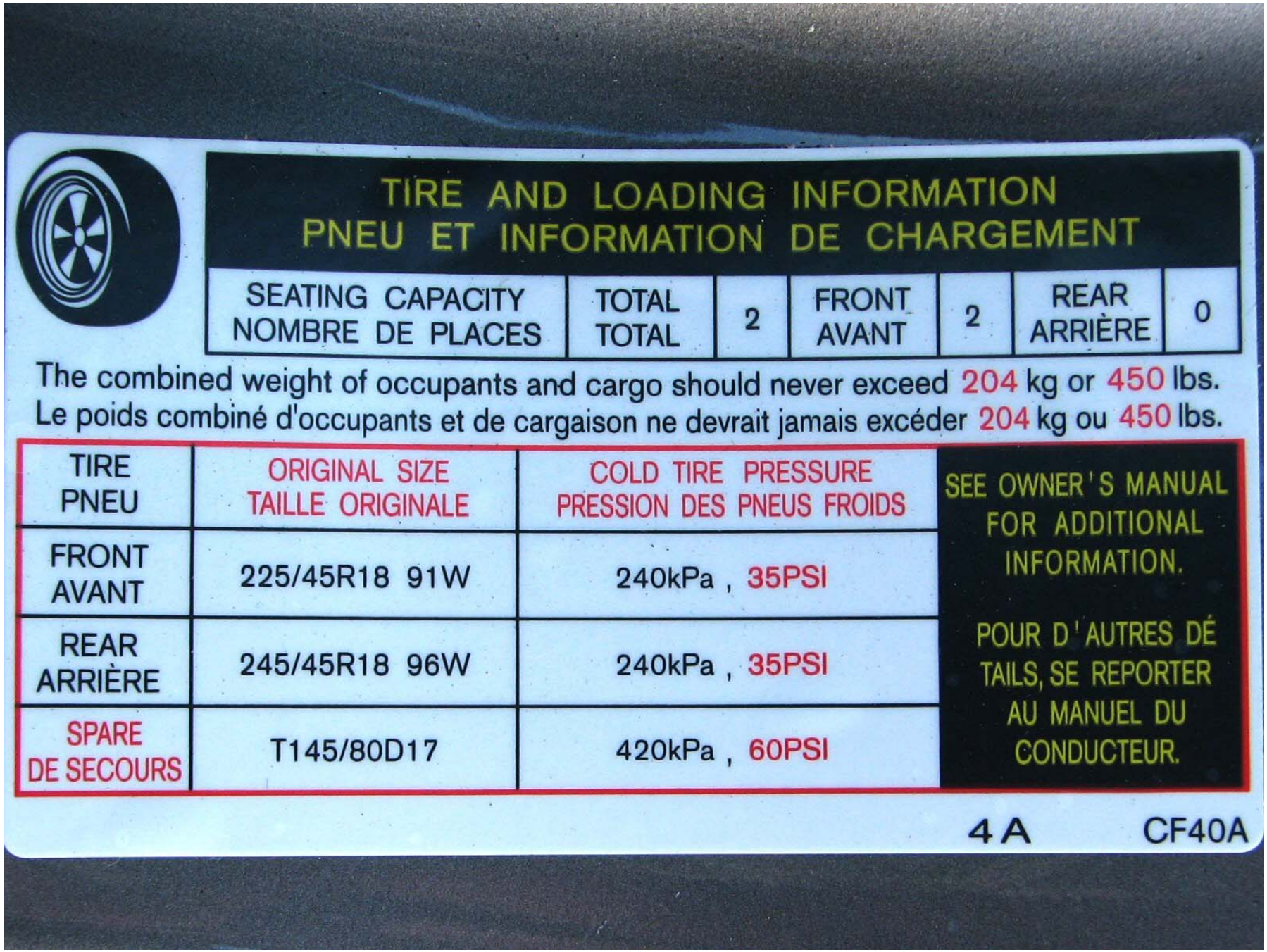


Figure A-3: Tire Placard

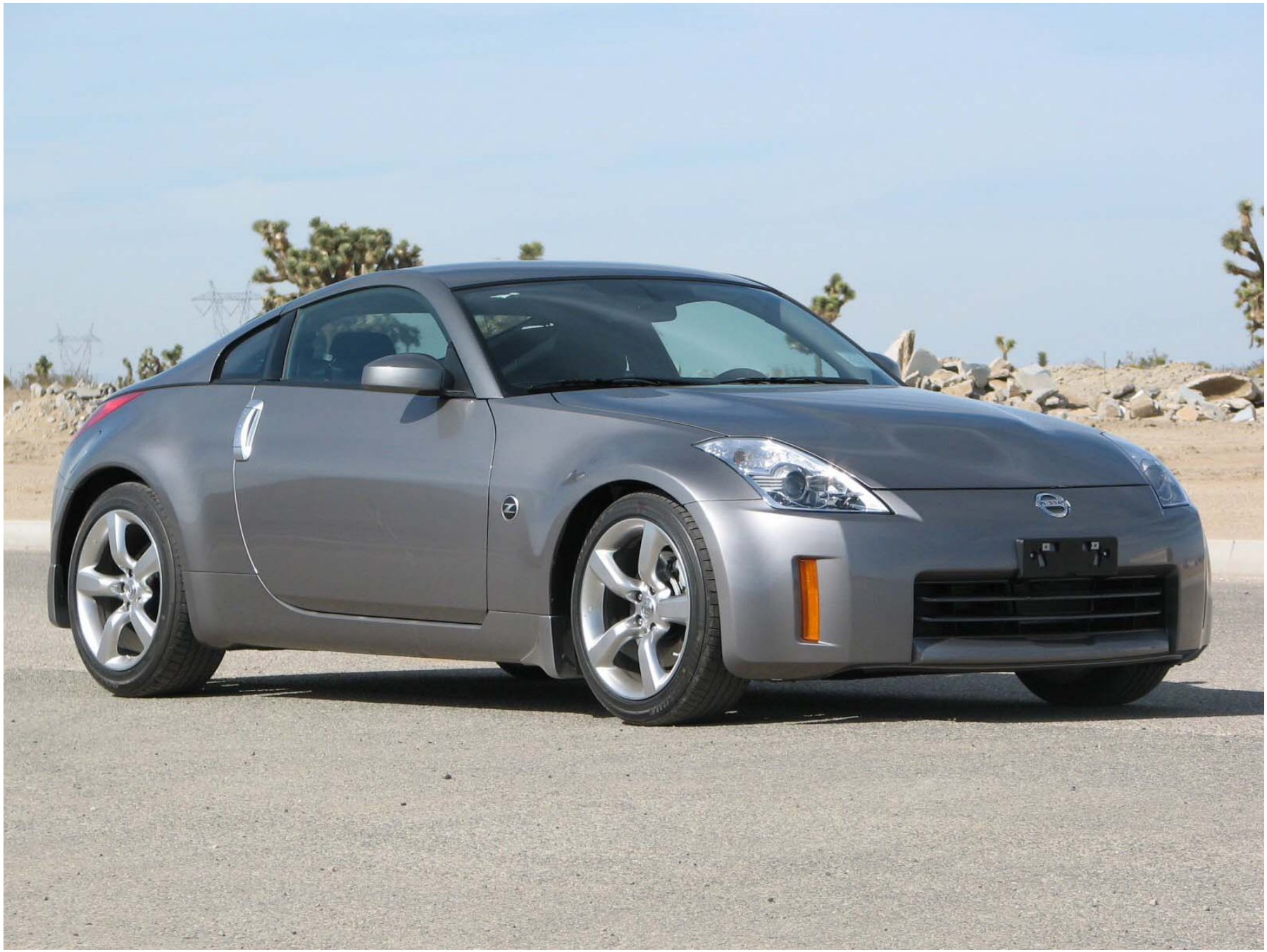


Figure A-4: Right Front ¾ View, As Received

Figure A-5: Left Rear ¾ View, as Received

Figure A-6: Pre-Test Front View

Figure A-7: Post-Test Front View (Vehicle Moved)

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 ¾ View

Figure A-13: Post-Test Right Front ¾ View (Vehicle Moved)

Figure A-14: Pre-Test Left Rear ¾ View

Figure A-15: Post-Test Left Rear ¾ View

Figure A-16: Post-Test Left Side ¾ View of Doors After Impact

Figure A-17: Post-Test Right Side ¾ View of Doors After Impact

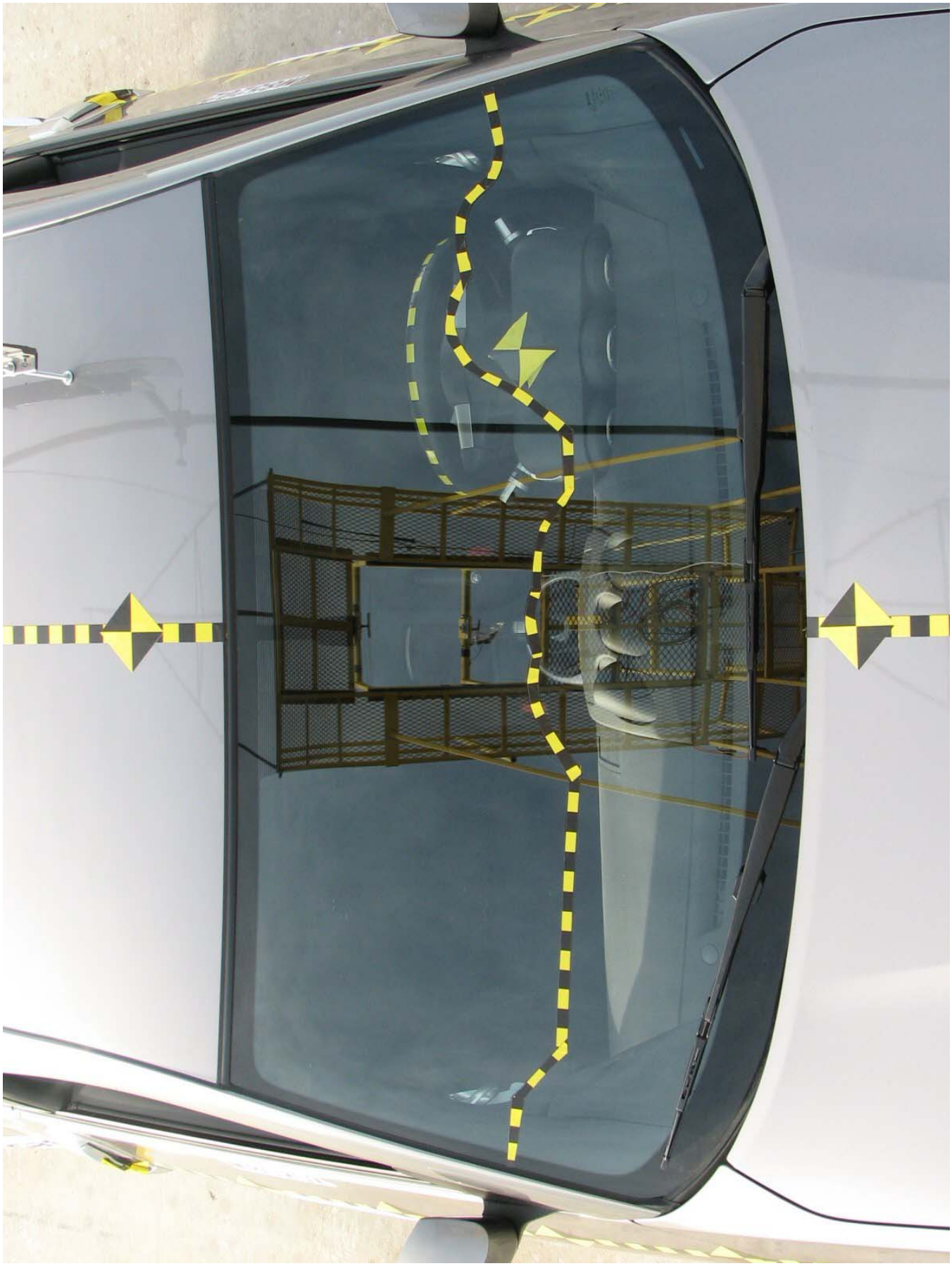


Figure A-18: Pre-Test Windshield

Figure A-19: Post-Test Windshield

Figure A-20: Pre-Test Engine Compartment

Figure A-21: Post-Test Engine Compartment (Vehicle Moved)

Figure A-22: Pre-Test Fuel Cap

Figure A-23: Post-Test Fuel Cap

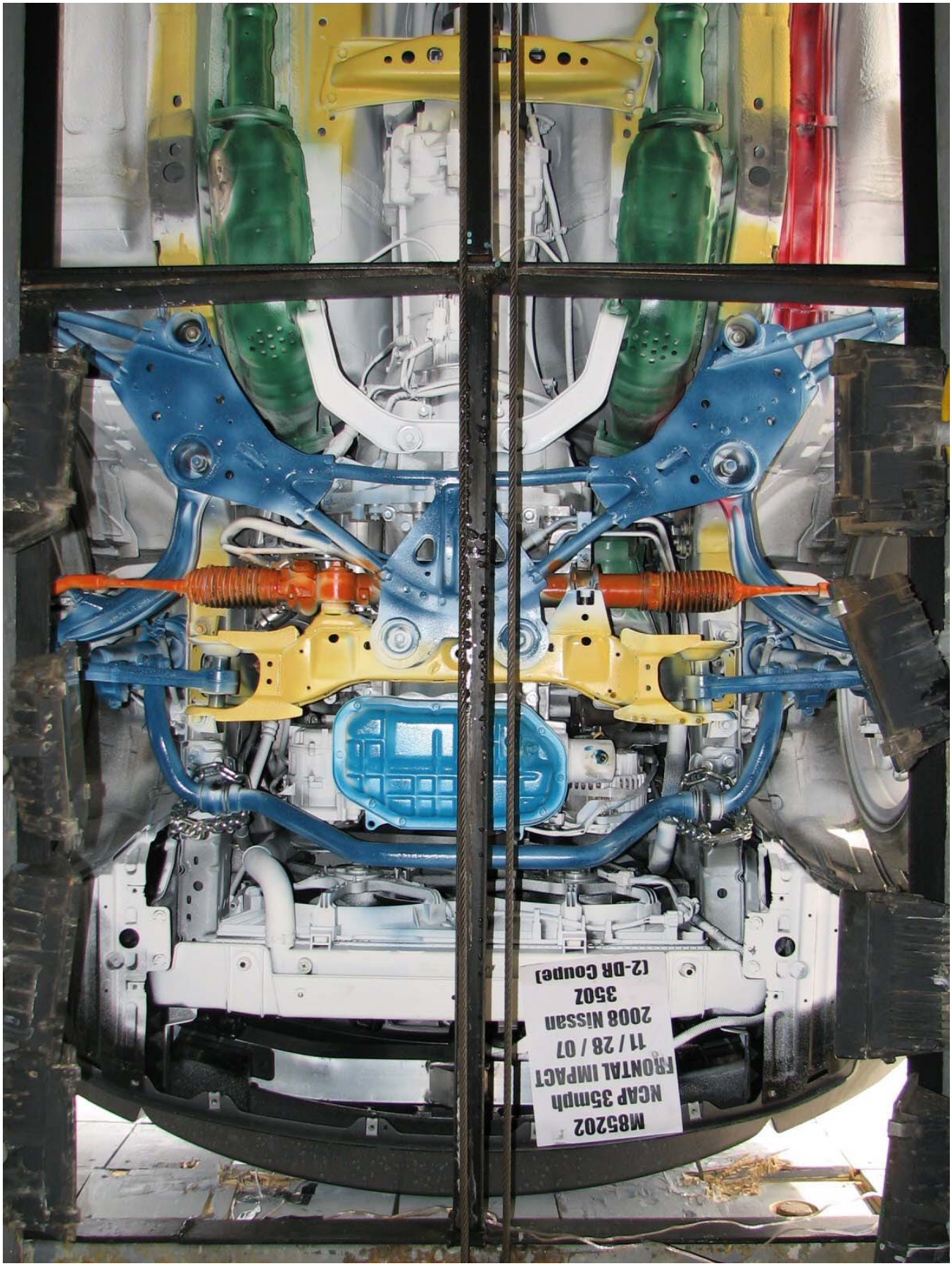


Figure A-24: Pre-Test Front Underbody

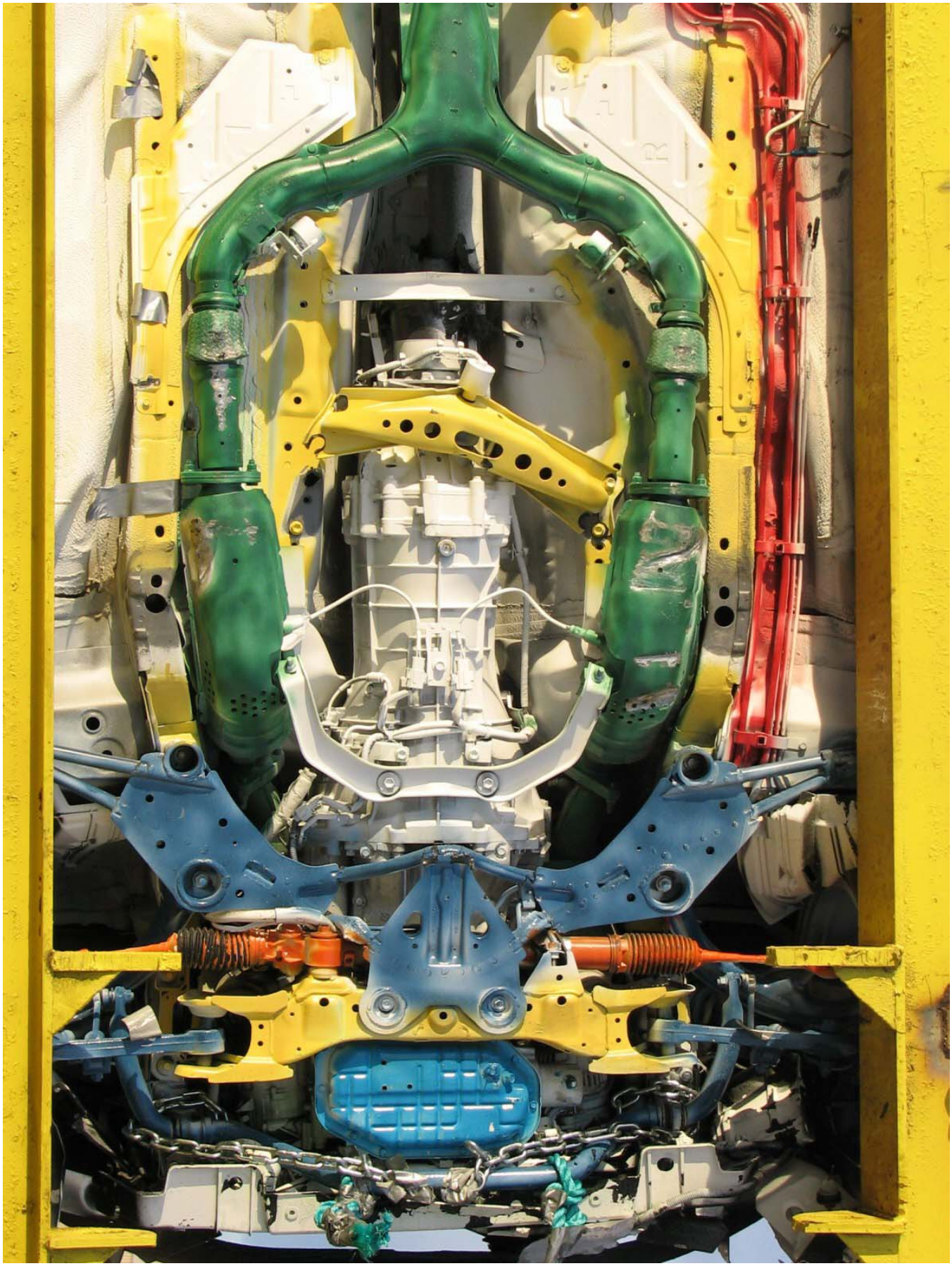


Figure A-25: Post-Test Front Underbody

Figure A-26: Pre-Test Mid Underbody

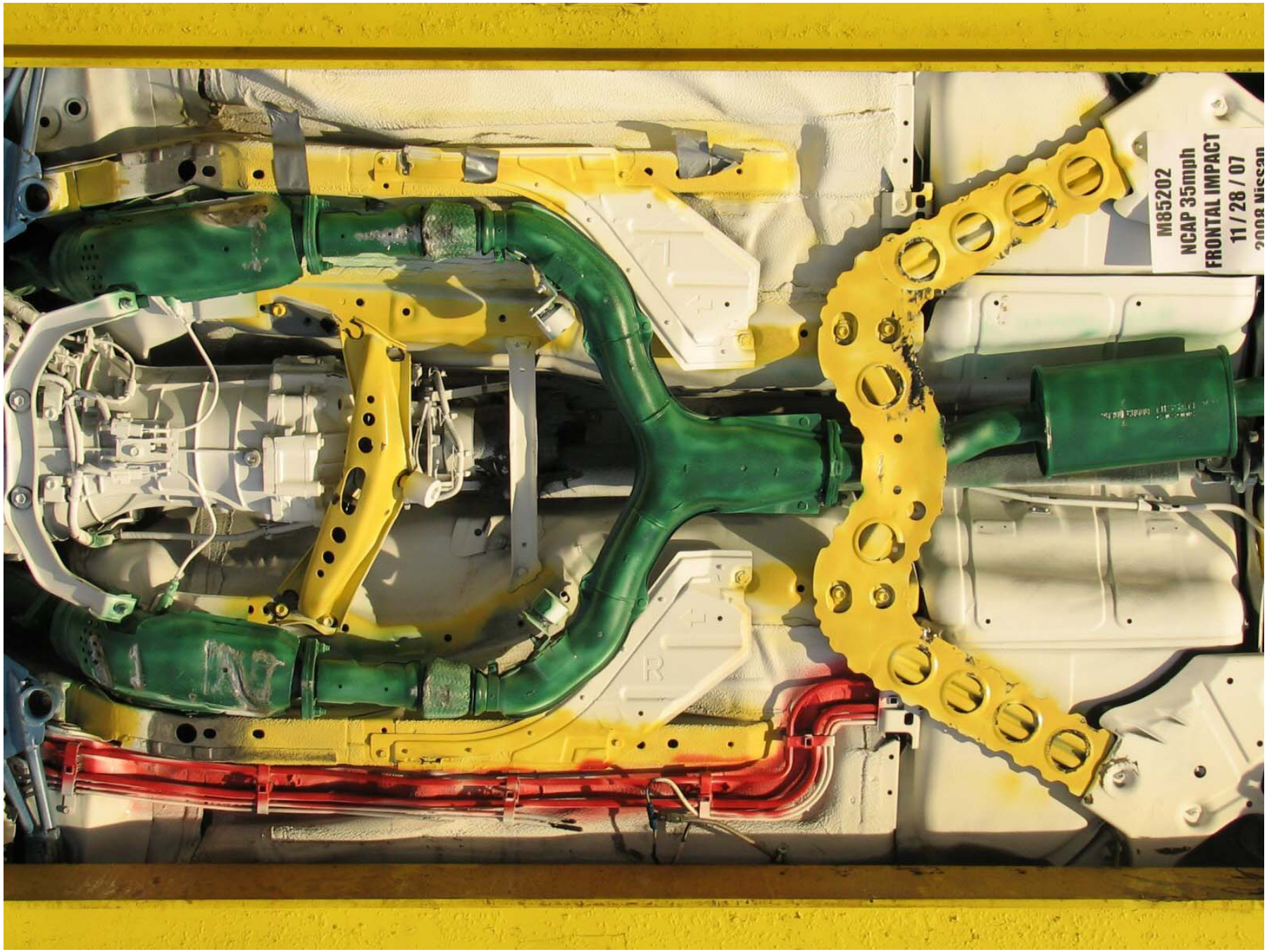


Figure A-27: Post-Test Mid Underbody

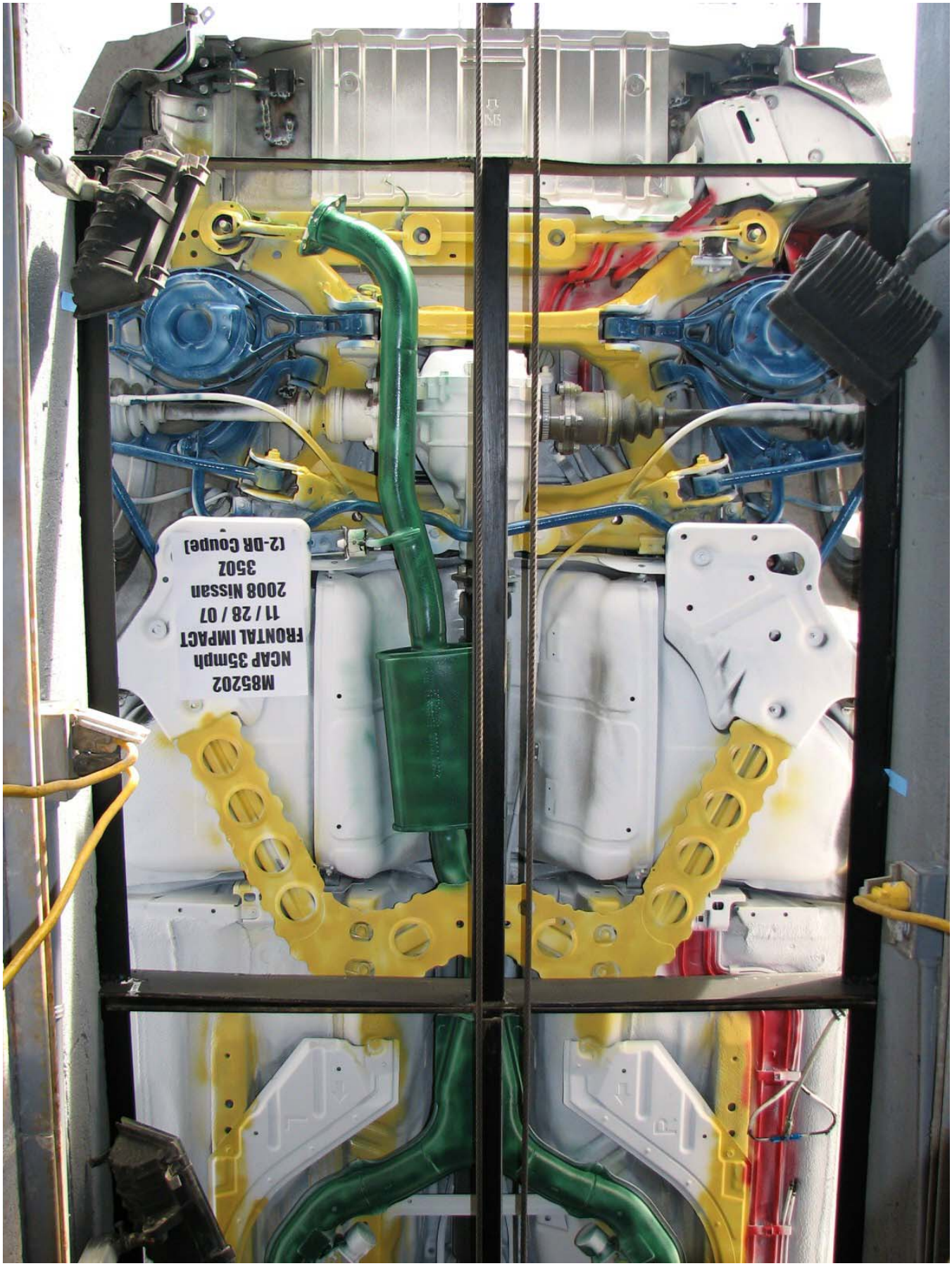


Figure A-28: Pre-Test Rear Underbody

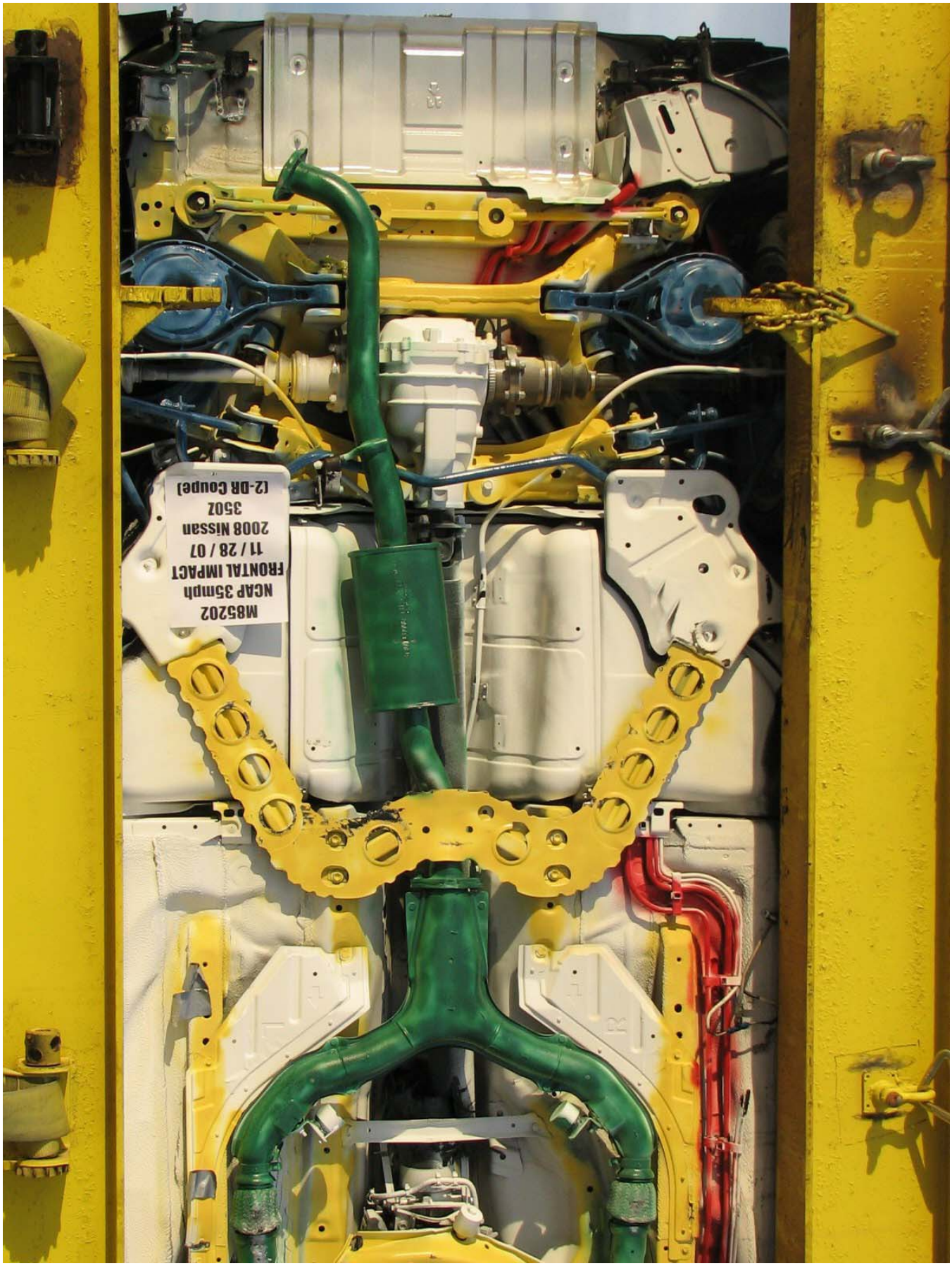


Figure A-29: Post-Test Rear Underbody

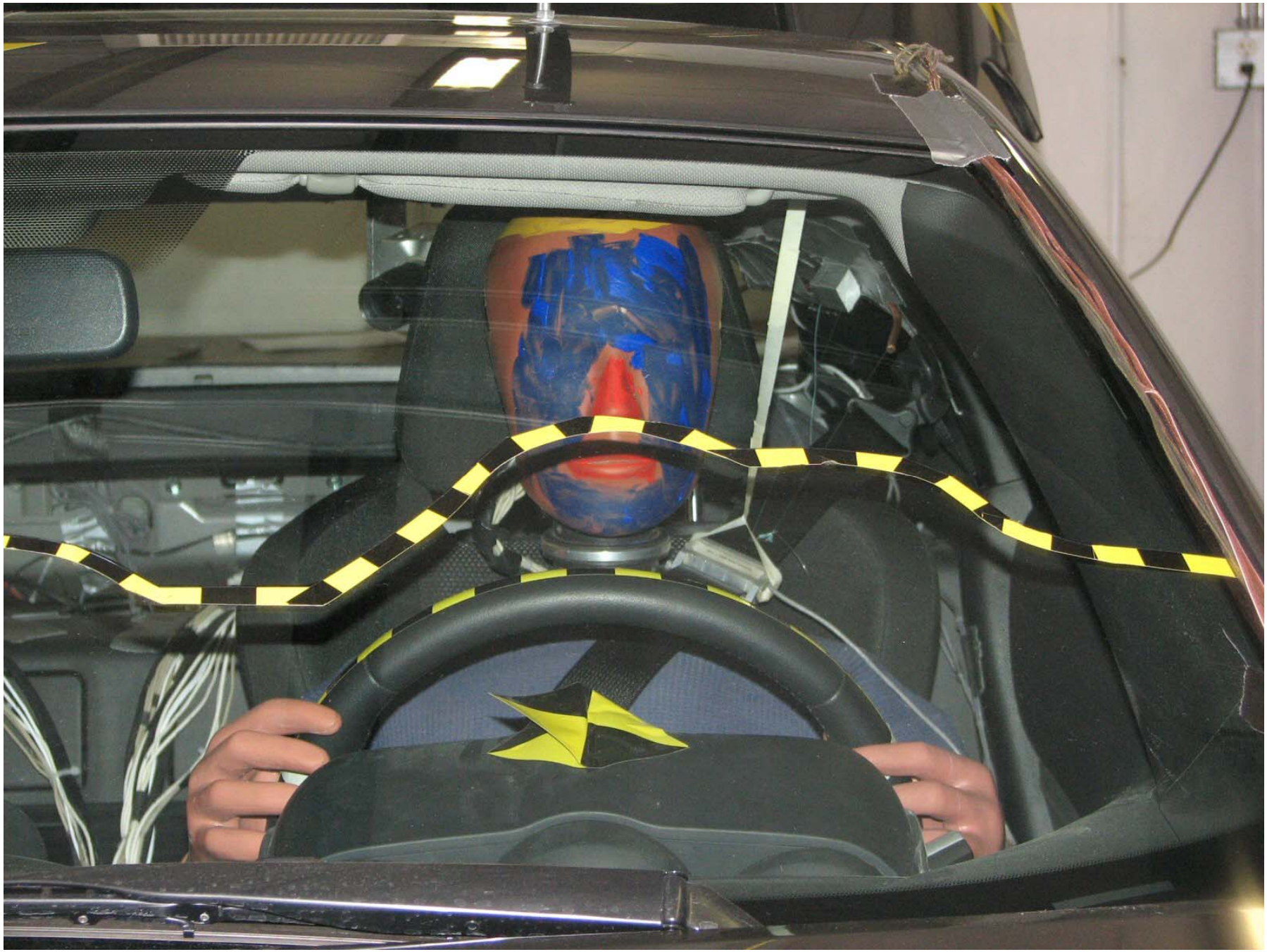


Figure A-30: Pre-Test Driver Dummy Front View (Head Position)

Figure A-31: Post-Test Driver Dummy Front View (Head Position)

Figure A-32: Pre-Test Driver Dummy (Through Window)

Figure A-33: Post-Test Driver Dummy (Through Window)

Figure A-34: Pre-Test Driver Dummy (Door Open)

Figure A-35: Post-Test Driver Dummy (Door Open)

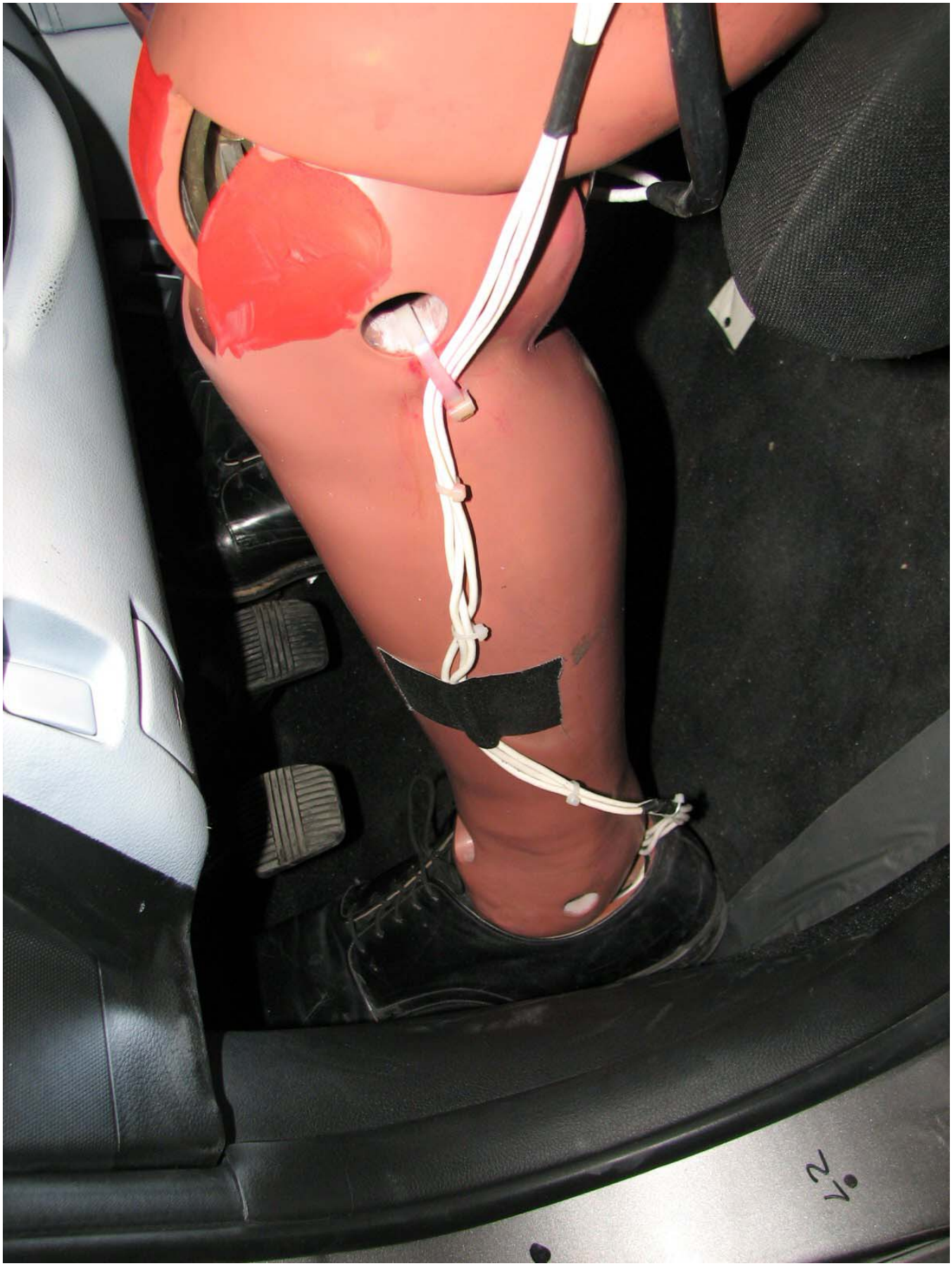


Figure A-36: Pre-Test Driver Dummy Feet

Figure A-37: Post-Test Driver Dummy Feet

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

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

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

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

Figure A-42: Post-Test Driver Dummy Head

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

Figure A-44: Pre-Test Passenger Dummy Front View (Head Position)

Figure A-45: Post-Test Passenger Dummy Front View (Head Position)

Figure A-46: Pre-Test Passenger Dummy (Through Window)

Figure A-47: Post-Test Passenger Dummy (Through Window)

Figure A-48: Pre-Test Passenger Dummy (Door Open)

Figure A-49: Post-Test Passenger Dummy (Door Open)

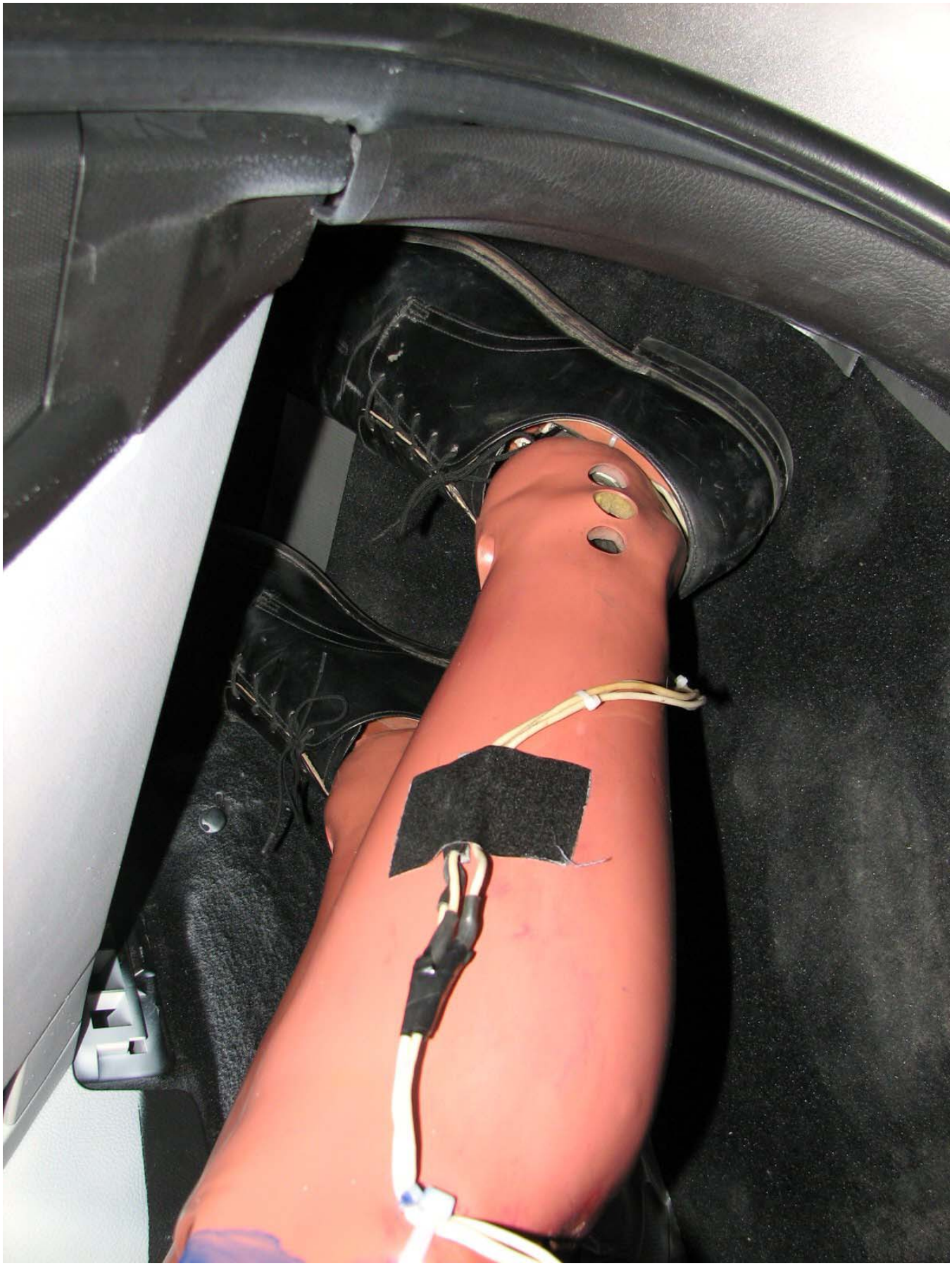


Figure A-50: Pre-Test Passenger Dummy Feet

Figure A-51: Post-Test Passenger Dummy Feet

Figure A-52: Pre-Test Passenger Side Glove Box

Figure A-53: Post-Test Passenger Side Glove Box

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

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

Figure A-56: Post-Test Passenger Dummy Head

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

Figure A-58: Vehicle on Rollover Device (0°)

Figure A-59: Vehicle on Rollover Device (90°)

Figure A-60: Vehicle on Rollover Device (180°)

Figure A-61: Vehicle on Rollover Device (270°)

Figure A-62: Vehicle Impact

APPENDIX B
DATA PLOTS

LIST OF DATA PLOTS

The following additional data plots for this test can be obtained from the research and development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

Driver Head Primary X Velocity
Driver Head Primary X Displacement
Driver Head Redundant X
Driver Head Redundant Y
Driver Head Redundant Z
Driver Head Resultant Redundant
Driver Head Redundant X Velocity
Driver Head Redundant X Displacement
Driver Upper Neck Force X
Driver Upper Neck Force Y
Driver Upper Neck Force Z
Driver Upper Neck Force Resultant
Driver Upper Neck Moment X
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Neck Moment Resultant
Driver Chest Primary X Velocity
Driver Chest Primary X Displacement
Driver Chest Redundant X
Driver Chest Redundant Y
Driver Chest Redundant Z
Driver Chest Resultant Redundant
Driver Chest Redundant X Velocity
Driver Chest Redundant X Displacement
Driver Chest Displacement
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Pelvis Resultant
Driver Pelvis X Velocity
Driver Pelvis X Displacement
Driver Left Upper Tibia Moment X
Driver Left Upper Tibia Moment Y
Driver Right Upper Tibia Moment X

Passenger Chest Redundant Y

Passenger Chest Redundant Z

Passenger Chest Resultant Redundant

Passenger Chest Redundant X Velocity

Passenger Chest Redundant X Displacement

Passenger Chest Displacement

Passenger Pelvis X

Passenger Pelvis Y

Passenger Pelvis Z

Passenger Pelvis Resultant

Passenger Pelvis X Velocity

Passenger Pelvis X Displacement

Passenger Left Femur Force

Passenger Right Femur Force

Passenger Left Upper Tibia Moment X

Passenger Left Upper Tibia Moment Y

Passenger Right Upper Tibia Moment X

Passenger Right Upper Tibia Moment Y

Passenger Left Lower Tibia Moment X

Passenger Left Lower Tibia Moment Y

Passenger Left Lower Tibia Force Z

Passenger Right Lower Tibia Moment X

Passenger Right Lower Tibia Moment Y

Passenger Right Lower Tibia Force Z

Passenger Left Foot Aft X

Passenger Left Foot Aft Z

Passenger Left Foot Fore Z

Passenger Right Foot Aft X

Passenger Right Foot Aft Z

Passenger Right Foot Fore Z

Passenger Lap Belt Force

Passenger Shoulder Belt Force

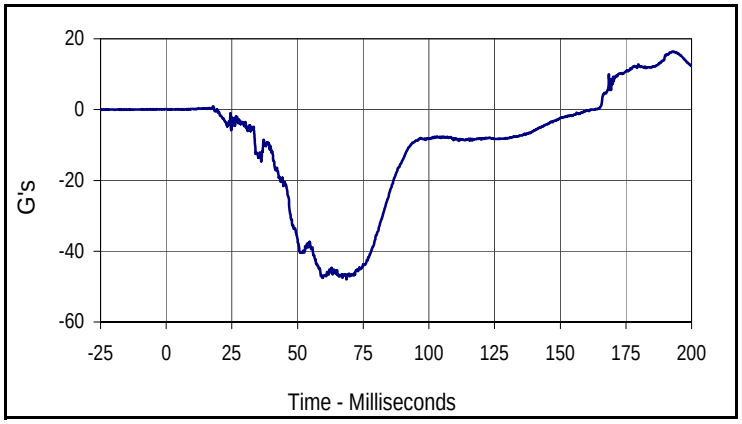
Passenger Shoulder Belt Pullout

Passenger Shoulder Belt Elongation

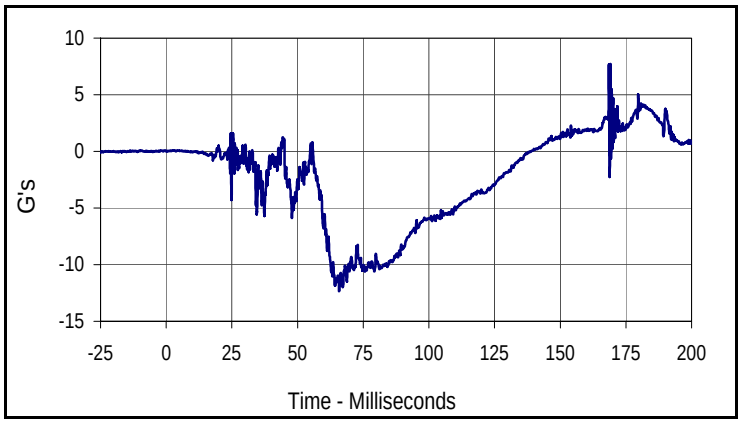
Vehicle Left Rear X

Vehicle Left Rear X Velocity

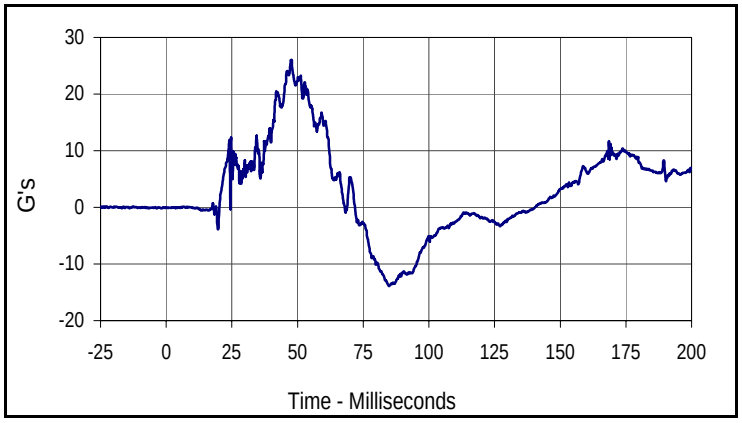
Test Vehicle:	2008 Nissan 350Z 2-Door Coupe	Test Date:	11/28/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85202



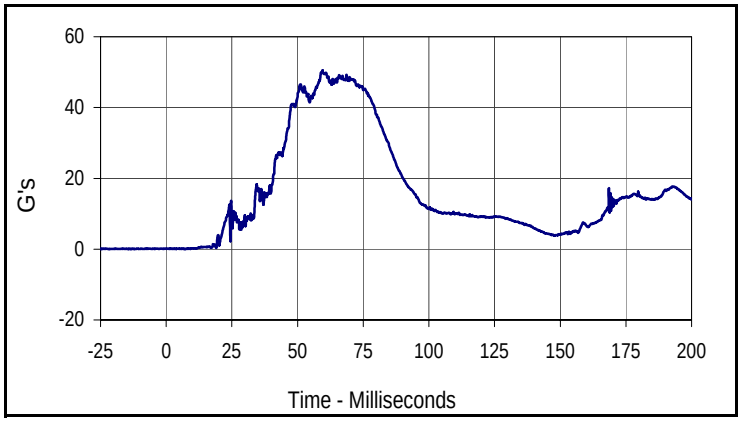
Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
16.4	192.6	-48.0	68.6



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.6	168.6	-12.3	65.8

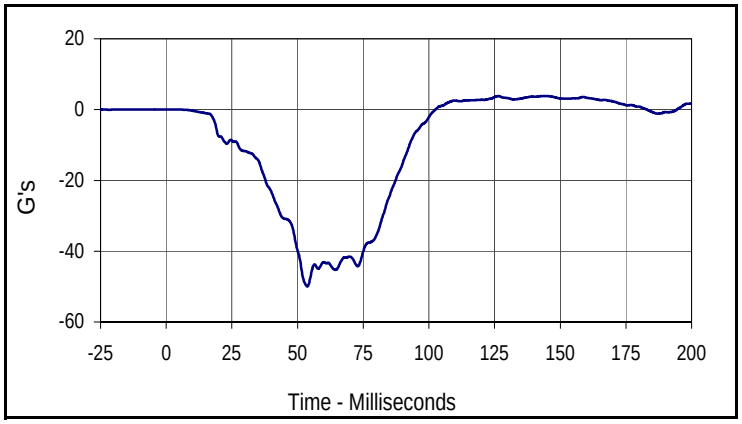


Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
26.1	47.7	-13.9	84.8

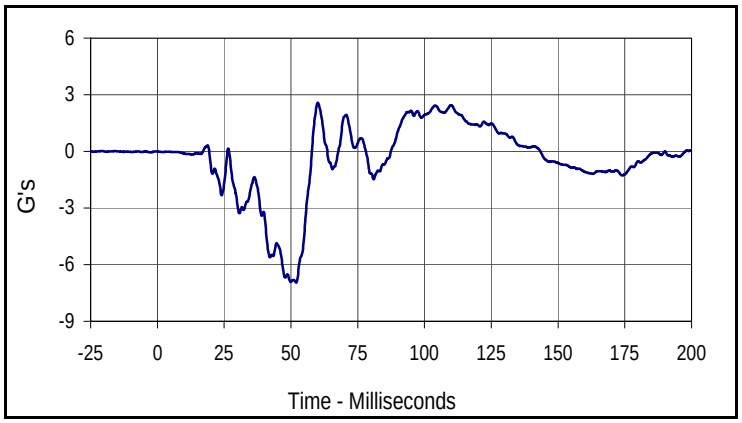


Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
50.5	59.5	0.0	3.8

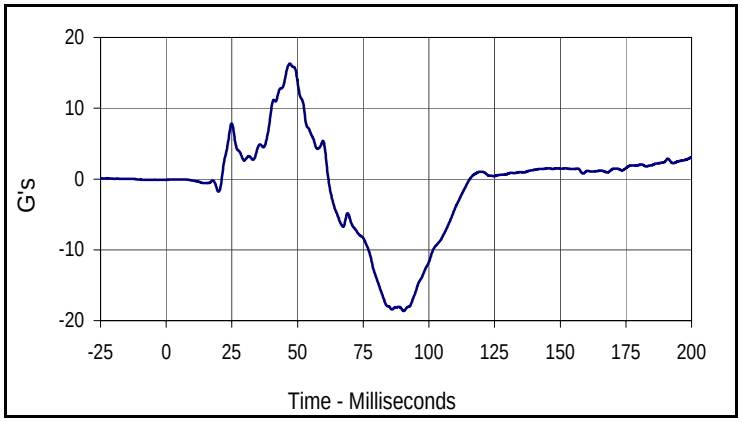
Test Vehicle:	2008 Nissan 350Z 2-Door Coupe	Test Date:	11/28/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85202



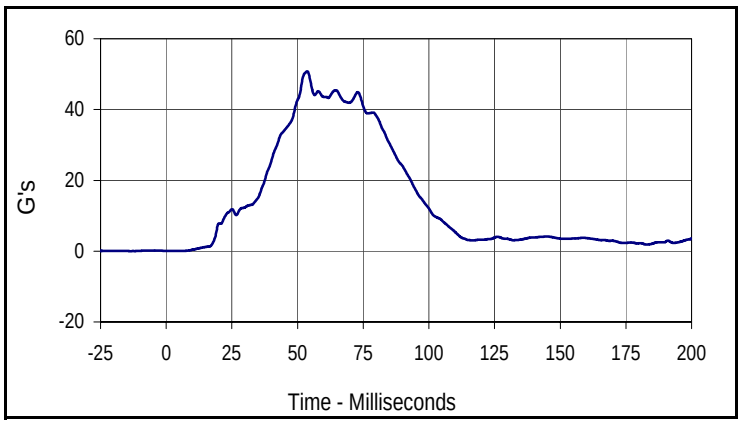
Curve Description			
Driver Chest Primary X			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
3.9	144.5	-50.0	53.7



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
2.6	60.0	-7.0	52.0

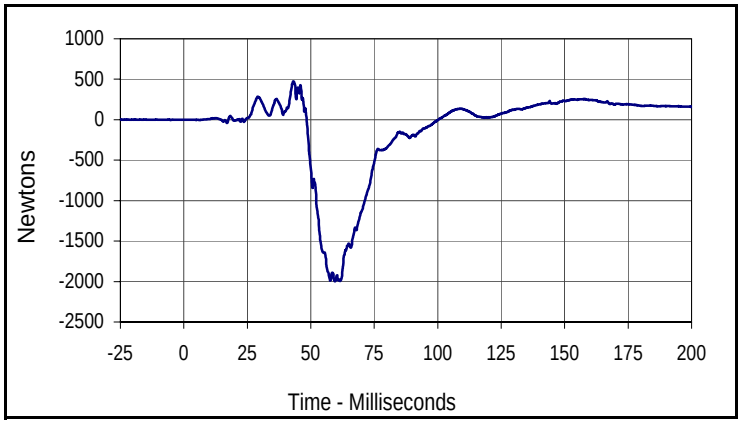


Curve Description			
Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.3	47.1	-18.6	90.4

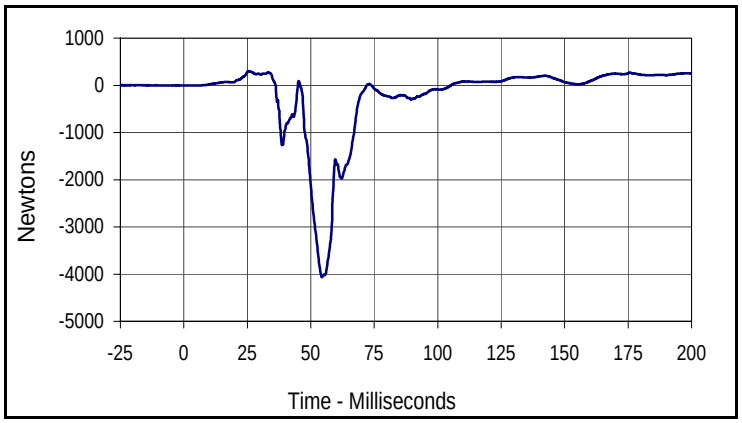


Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
004	RES	180	G's
Max	Time	Min	Time
50.8	53.7	0.1	3.4

Test Vehicle:	2008 Nissan 350Z 2-Door Coupe	Test Date:	11/28/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85202

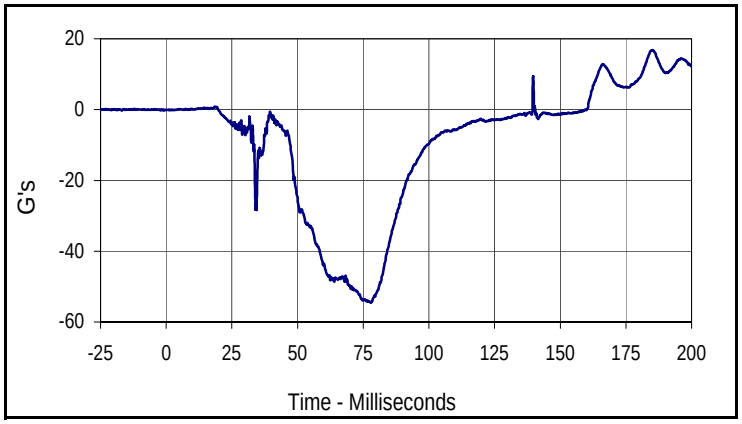


Curve Description			
Driver Left Femur Force Z			
CURNO	Type	SAE Class	Units
007	FIL	600	Newtons
Max	Time	Min	Time
472.6	43.2	-1997.6	59.5

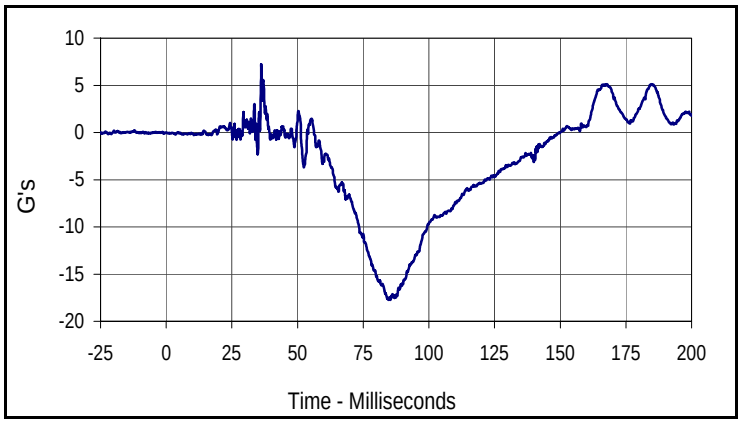


Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
302.8	25.6	-4066.4	54.4

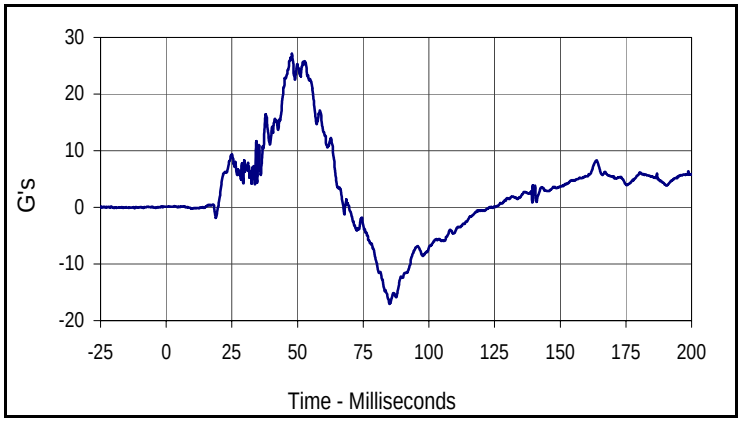
Test Vehicle:	2008 Nissan 350Z 2-Door Coupe	Test Date:	11/28/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85202



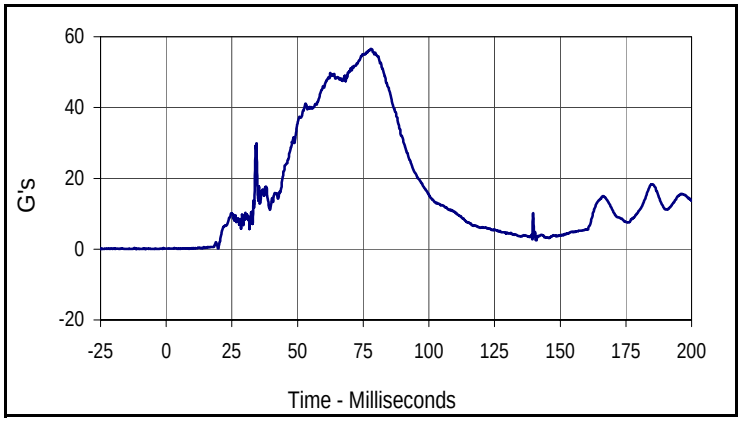
Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
009	FIL	1000	G's
Max	Time	Min	Time
16.8	185.2	-54.6	77.8



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
010	FIL	1000	G's
Max	Time	Min	Time
7.2	36.2	-17.7	84.6

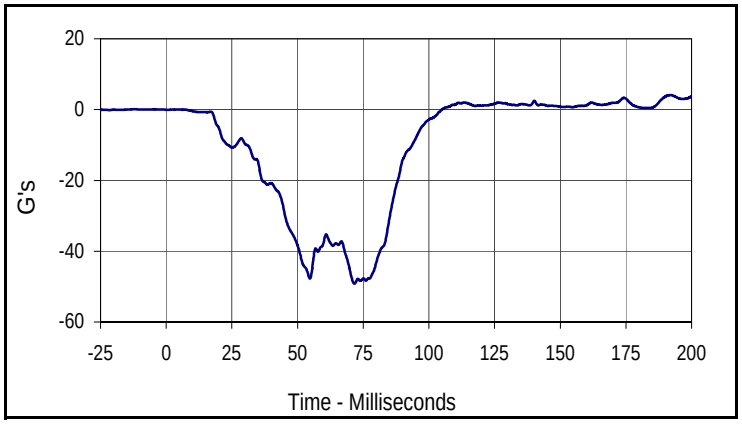


Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
011	FIL	1000	G's
Max	Time	Min	Time
27.1	47.9	-17.1	85.0

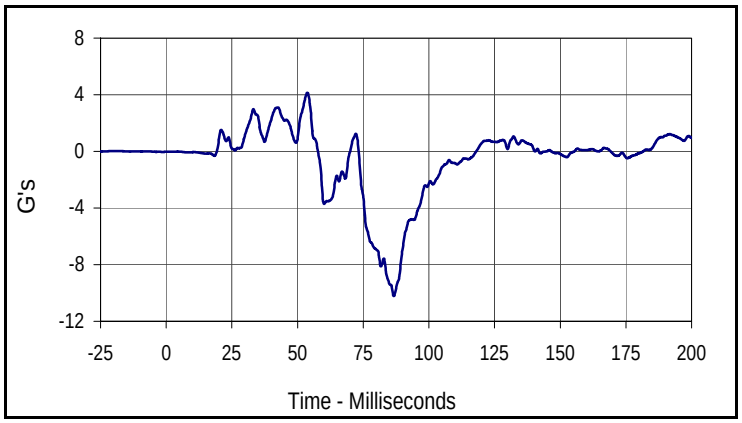


Curve Description			
Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
009	RES	1000	G's
Max	Time	Min	Time
56.6	77.8	0.1	4.2

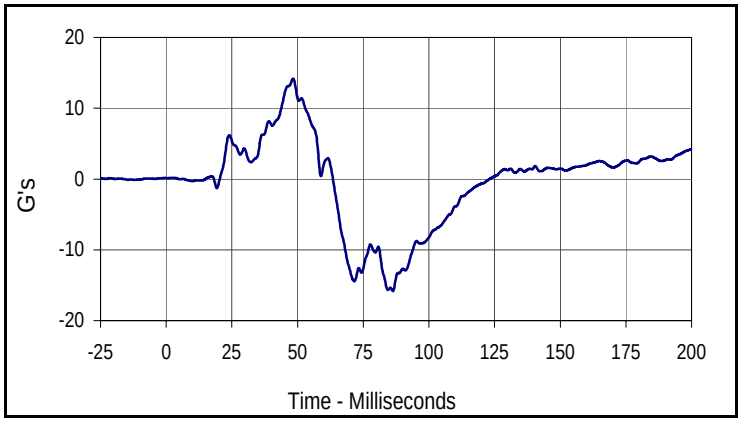
Test Vehicle:	2008 Nissan 350Z 2-Door Coupe	Test Date:	11/28/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85202



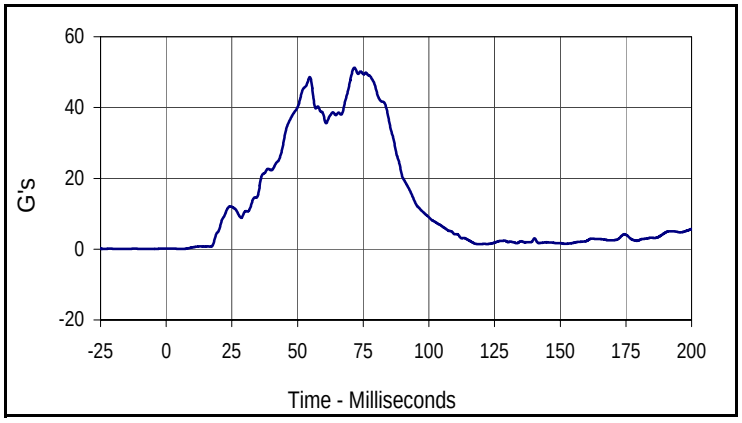
Curve Description			
Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
4.1	192.0	-49.2	71.6



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
4.1	53.7	-10.2	86.6

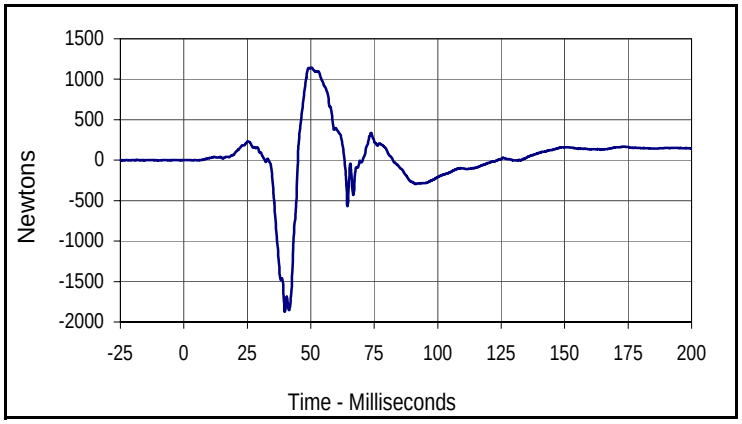


Curve Description			
Passenger Chest Primary Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
14.2	48.3	-15.8	86.3

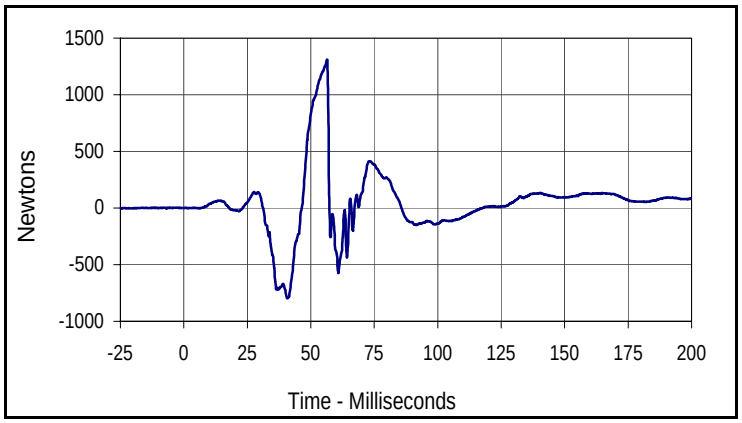


Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
51.3	71.6	0.0	5.7

Test Vehicle:	2008 Nissan 350Z 2-Door Coupe	Test Date:	11/28/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85202



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
1144.7	50.3	-1874.3	39.7

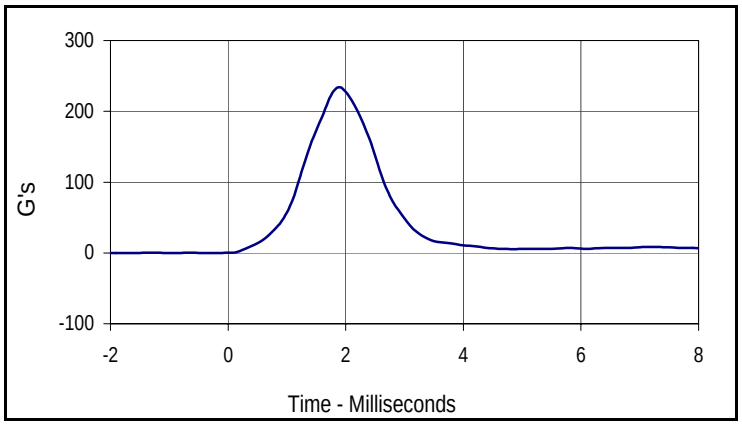


Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
1311.4	56.4	-797.9	40.8

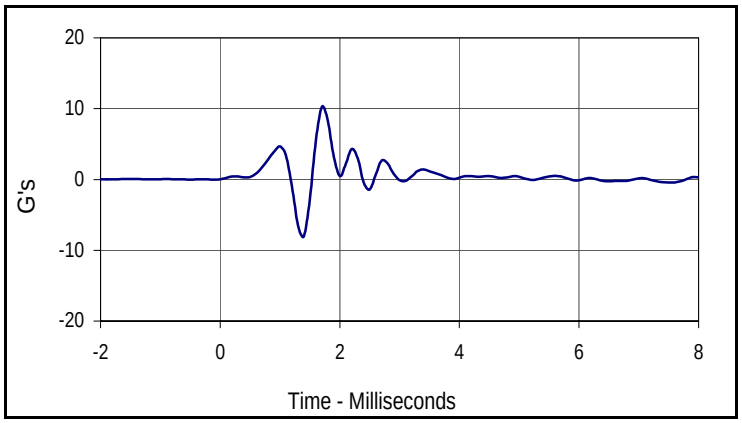
APPENDIX C
DUMMY CALIBRATION DATA

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	11/16/07
ATD Serial No.:	035	Test I.D.:	HD11A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	233.9	Pass
Peak Lateral Acceleration	G's	≤15.0	10.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass



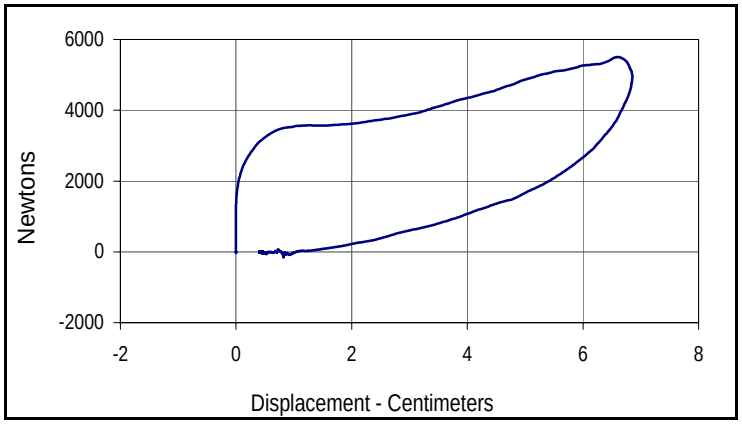
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
233.9	1.9	0.0	-0.2



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
10.3	1.7	-8.1	1.4

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	11/16/07
ATD Serial No.:	035	Test I.D.:	CH11A

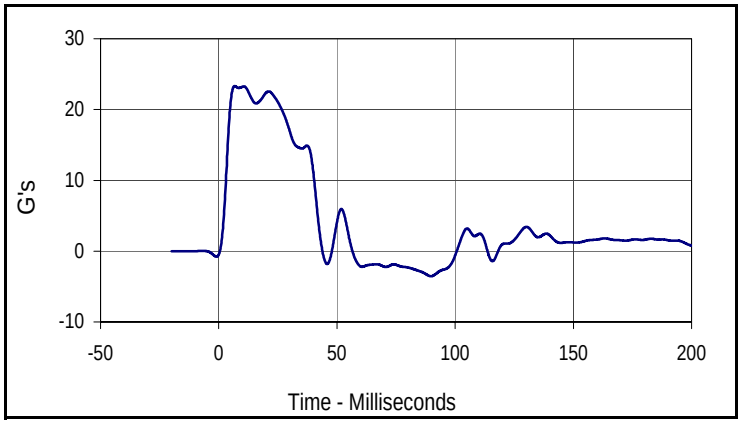
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.62	Pass
Peak Probe Force	Newtons	5159 to 5893	5503	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.85	Pass
Internal Hysterysis	%	69 to 85	73.0	Pass
		Overall Test Results		Pass



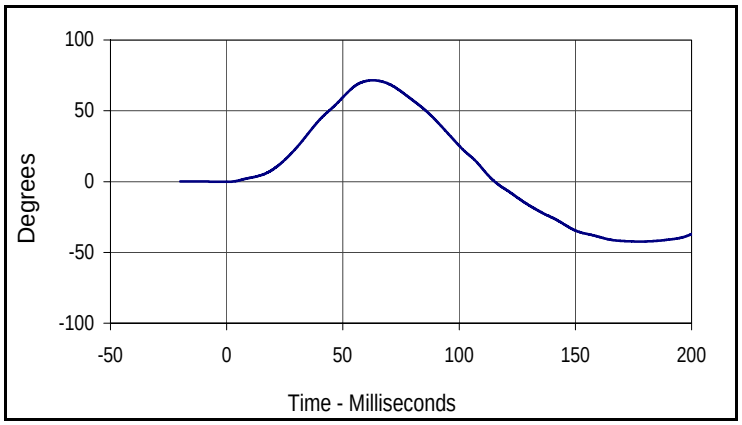
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	73.0
Peak Probe Force		Peak Chest Deflection	
5503		6.85	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	11/13/07
ATD Serial No.:	035	Test I.D.:	NF11A

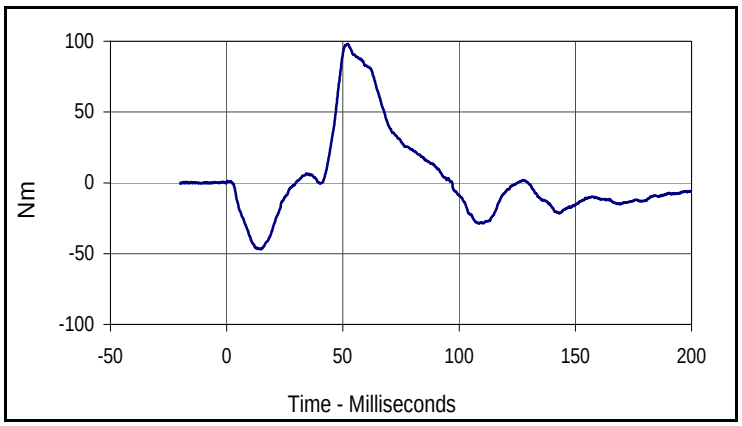
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.92	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.2	Pass
	20 Msec.	G's	17.6 to 22.6	22.4	Pass
	30 Msec.	G's	12.5 to 18.5	17.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	41.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	71.6	Pass
	Time	Msec.	57.0 to 64.0	62.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	115.3	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	98.1	Pass
	Time	Msec.	47.0 to 58.0	52.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.3	6.7	-3.5	89.8



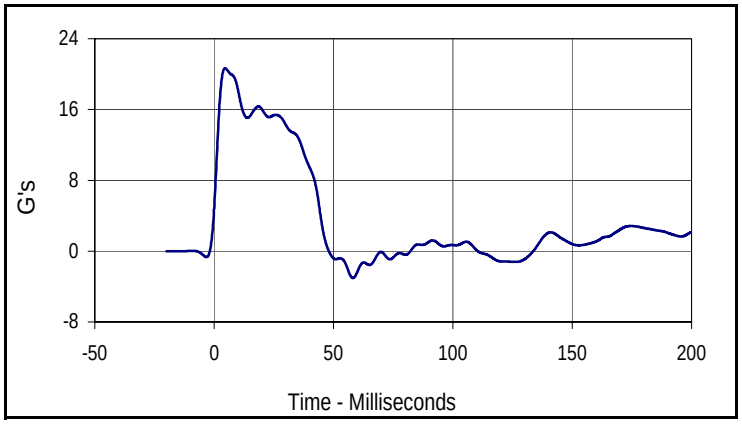
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
71.6	62.8	-42.3	178.6



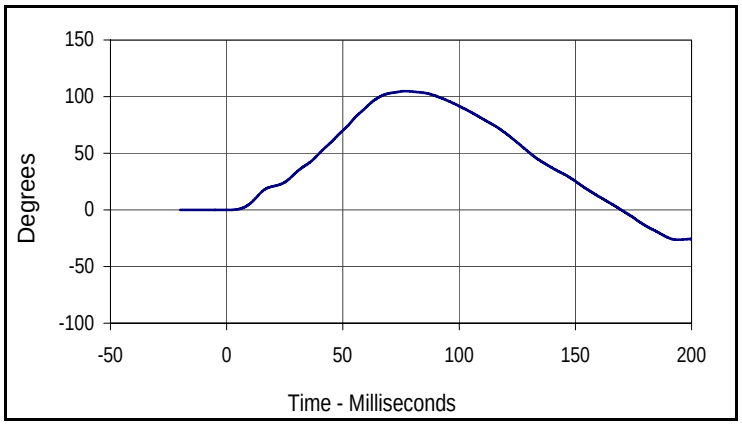
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
98.1	52.1	-47.0	14.7

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	11/14/07
ATD Serial No.:	035	Test I.D.:	NE11A

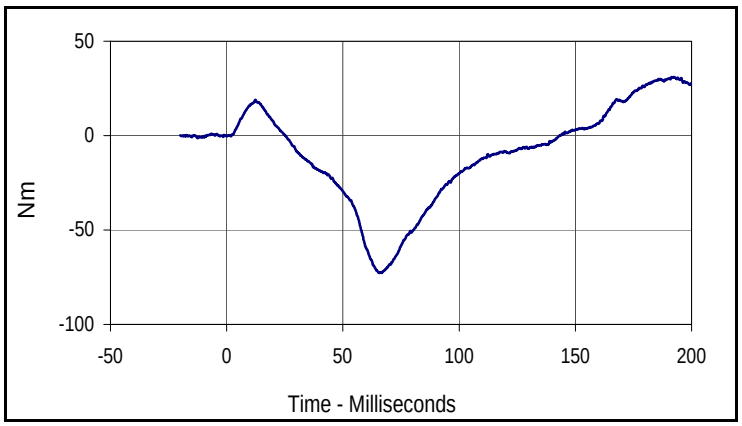
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.09	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.2	Pass
	20 Msec.	G's	14.0 to 19.0	16.0	Pass
	30 Msec.	G's	11.0 to 16.0	14.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.3	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	104.9	Pass
	Time	Msec.	72.0 to 82.0	76.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	169.7	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-72.7	Pass
	Time	Msec.	65.0 to 79.0	65.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	143.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.7	4.6	-3.0	58.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
104.9	76.9	-26.3	194.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
31.1	191.4	-72.7	65.5

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	11/16/07
ATD Serial No.:	035	Test I.D.:	LK11A , RK11A

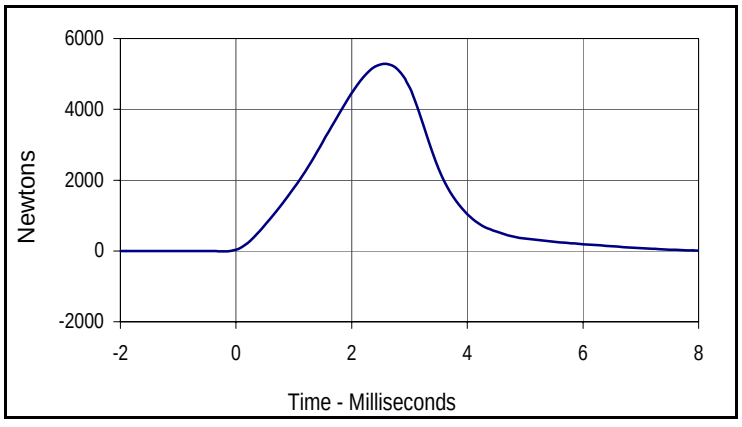
Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5577	Pass
		Overall Test Results		Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5284	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5577.4	2.6	-15.3	-0.2



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5284.0	2.6	-14.2	-0.2

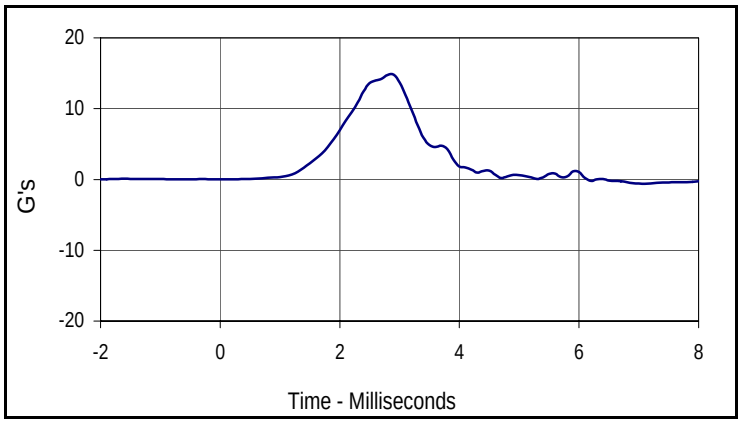
Test Program:	Hybrid III 50th Percentile Male External Measurements	Test Date:	11/16/07
ATD Serial No.:	035	Test I.D.:	N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	882	Pass
B - Shoulder pivot height	mm	505 to 521	516	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	138	Pass
E - Shoulder pivot from back	mm	84 to 94	89	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	301	Pass
H - Skull cap to back line	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	336	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	595	Pass
L - Poplipteal length	mm	429 to 455	446	Pass
M - Knee pivot height	mm	485 to 500	492	Pass
N - Buttock poplipteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	218	Pass
P - Foot length	mm	251 to 267	258	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	104	Pass
Y - Chest circumference	mm	970 to 1001	993	Pass
Z - Waist circumference	mm	836 to 866	857	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
		Overall Test Results		Pass

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	11/16/07
ATD Serial No.:	034	Test I.D.:	HD11B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	232.0	Pass
Peak Lateral Acceleration	G's	≤15.0	14.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

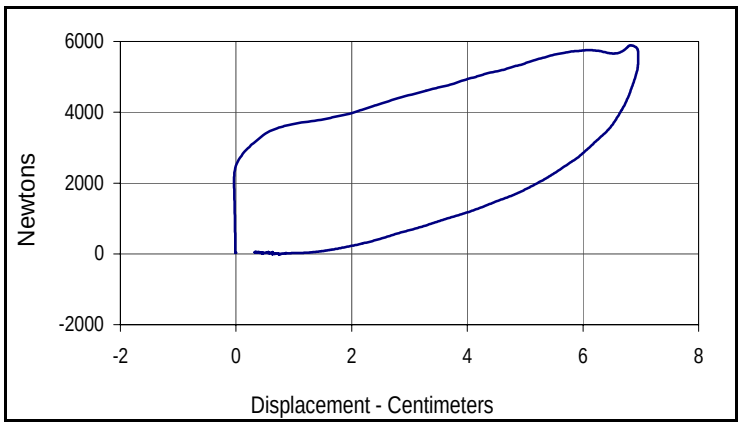
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
232.0	2.7	0.0	0.0



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
14.8	2.9	0.0	0.0

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	11/16/07
ATD Serial No.:	034	Test I.D.:	CH11B

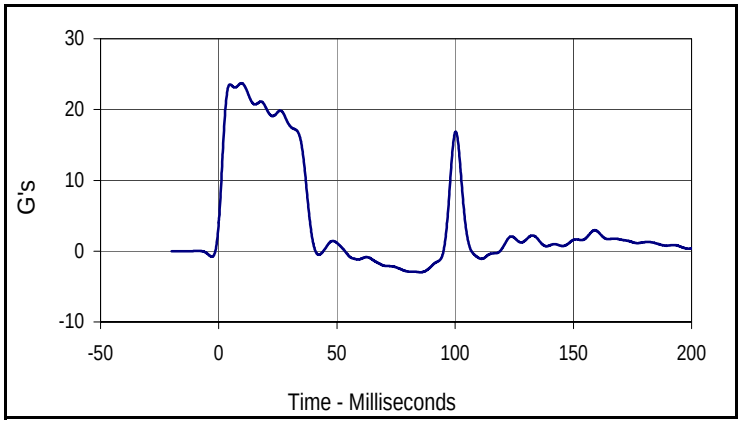
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.63	Pass
Peak Probe Force	Newtons	5159 to 5893	5891	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.96	Pass
Internal Hysterysis	%	69 to 85	72.7	Pass
		Overall Test Results		Pass



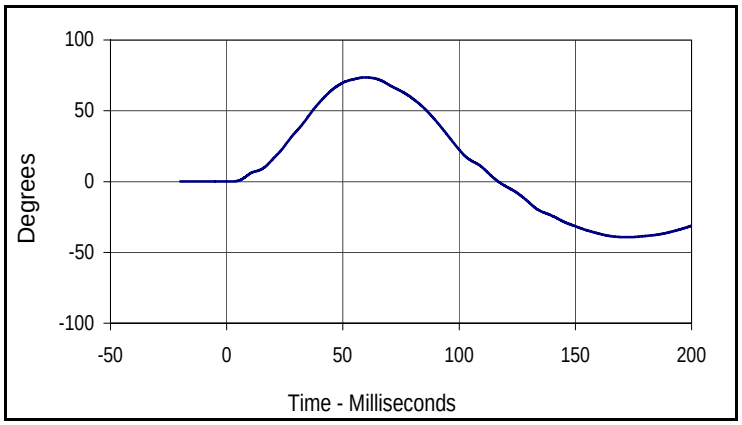
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	72.7
Peak Probe Force		Peak Chest Deflection	
5891		6.96	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	11/14/07
ATD Serial No.:	034	Test I.D.:	NF11B

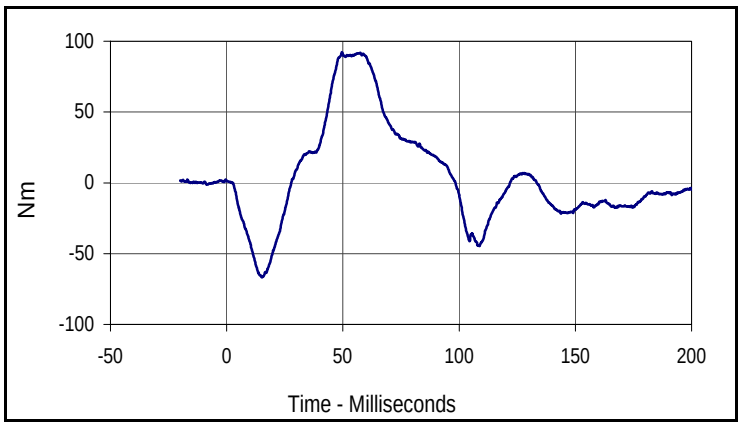
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.90	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	20.2	Pass
	30 Msec.	G's	12.5 to 18.5	17.7	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.7	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.3	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	73.6	Pass
	Time	Msec.	57.0 to 64.0	59.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	116.9	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	92.2	Pass
	Time	Msec.	47.0 to 58.0	49.6	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.7	9.6	-3.0	85.3



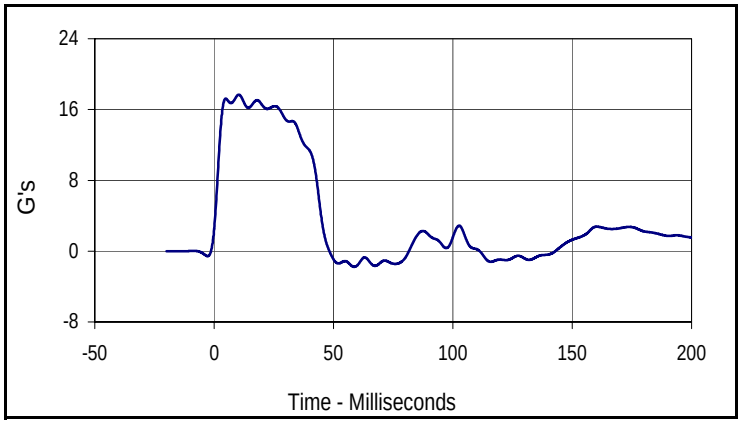
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
73.6	59.5	-39.3	172.4



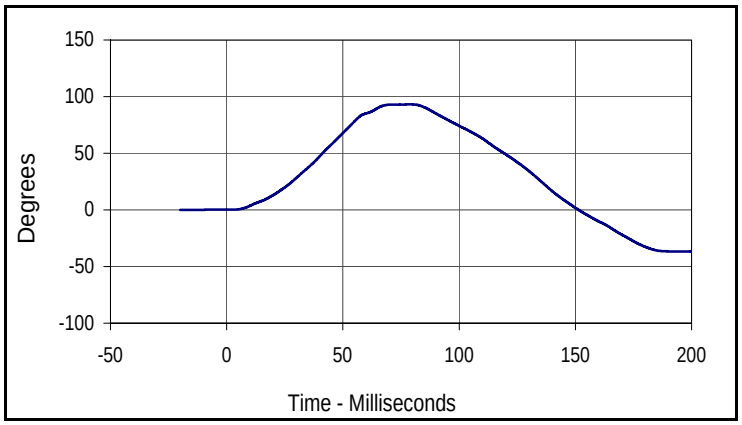
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
92.2	49.6	-66.8	15.1

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	11/16/07
ATD Serial No.:	034	Test I.D.:	NE11B

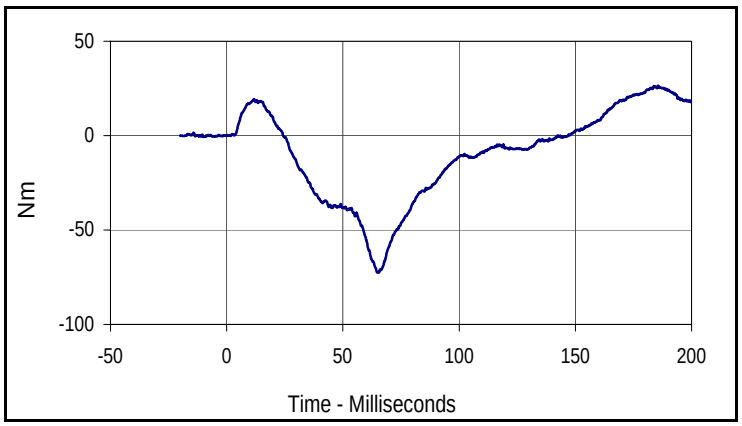
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.04	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.7	Pass
	20 Msec.	G's	14.0 to 19.0	16.6	Pass
	30 Msec.	G's	11.0 to 16.0	14.8	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.8	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.4	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	93.1	Pass
	Time	Msec.	72.0 to 82.0	79.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	151.4	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-72.6	Pass
	Time	Msec.	65.0 to 79.0	65.4	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	146.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
17.7	10.3	-1.8	58.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
93.1	79.4	-36.8	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
26.5	185.7	-72.6	65.4

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	11/16/07
ATD Serial No.:	034	Test I.D.:	LK11B , RK11B

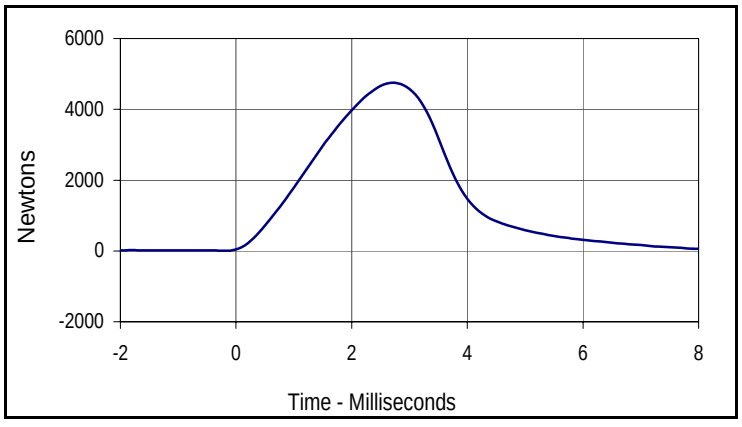
Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5679	Pass
		Overall Test Results		Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	4749	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5678.6	2.5	-4.4	10.0



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
4748.6	2.7	-2.3	9.7

Test Program:	Hybrid III 50th Percentile Male External Measurements	Test Date:	11/16/07
ATD Serial No.:	034	Test I.D.:	N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	883	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	86	Pass
D - "H" point from seat back	mm	135 to 140	137	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	152	Pass
G - Elbow back to wrist pivot	mm	290 to 305	302	Pass
H - Skull cap to back line	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	337	Pass
J - Elbow rest height	mm	190 to 211	204	Pass
K - Buttock to knee length	mm	579 to 604	596	Pass
L - Poplipteal length	mm	429 to 455	447	Pass
M - Knee pivot height	mm	485 to 500	493	Pass
N - Buttock poplipteal length	mm	452 to 477	474	Pass
O - Chest depth	mm	213 to 229	220	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	431	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	996	Pass
Z - Waist circumference	mm	836 to 866	861	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
		Overall Test Results		Pass