REPORT NUMBER TR-P30017-01-NC

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

HONDA OF CANADA MFG.
2010 ACURA ZDX ADVANCE
5-DOOR MPV

NHTSA NUMBER: HA5300

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JANUARY 20, 2010

FINAL REPORT

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Date of Acceptance

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COTR, NCAP Frontal Impact Program

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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 2010 Acura ZDX Advance 5-Door MPV at KARCO Engineering, LLC, in Adelanto, CA, on January 20, 2010. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, 305, and footwell intrusion performance. The impact velocity was 56.3 km/h. The ambient temperature at the barrier at the time of the crash was 7.8 degrees Celsius. The vehicle's maximum post static crush was 561 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	211.8	450.0
Max. Chest Accel. (3 msec. Chest Clip)	G's	60	40.6	42.0
Left Femur Force	Newtons	10008	-1251.5	-1335.1
Right Femur Force	Newtons	10008	-663.8	-3417.4

17. Key Words	18. Distribution Statement
56.3 km/h NCAP Frontal Impact Test New Car Assesment Program (NCAP) 2010 Acura ZDX Advance 5-Door MPV NHTSA No. HA5300	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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Form DOT F1700.7 (8-72)

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SECTION 1
PURPOSE AND SUMMARY OF TEST HA5300

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 2010 Acura ZDX Advance 5-Door MPV at a velocity of 56.30 km/h. The test was performed at KARCO Engineering, LLC on January 20, 2010.

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.34) and the right-front passenger (position 2) ATD (Serial No. 35) were calibrated prior to this test.

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 561 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 knee 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 glovebox.

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	211.8	40.6	-23.5	-1251.5	-663.8
Passenger	450.0	42.0	-18.6	-1335.1	-3417.4

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: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

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: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.30
Test Weight	kg	2210
Impact Angle	degrees	0
Average Rebound	mm	522
Maximum Static Crush	mm	561

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Remained closed and latched, opened without tools	Remained closed and latched, opened without tools
Rear Door Opening	Remained closed and latched, opened without tools	Remained closed and latched, opened without tools
Seat Track Shift (mm)	4 mm	16 mm
Seatback Failure	No	No

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type/Serial No.	50% Male Hybrid III No.34	50% Male Hybrid III No. 35
Head Contact	Airbag, Headrest	Airbag, Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	None	None
Left Knee Contact	Knee Bolster	Glovebox
Right Knee Contact	Knee Bolster	Glovebox

MOVIE COVERAGE

Cameras	Standard	Additional
High Speed	16	0
Real Time	1	2
Total	17	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: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	HA5300
Make	Acura
Model	ZDX Advance
Body Style	5-Door MPV
VIN No.	2HNYB1H67AH500174
Color	Palladium Metallic
Delivery Date	01/15/10
Odometer (Miles)	29.0
Dealer	Keyes Acura
Transmission	6-Speed Automatic
Final Drive	AWD
Type/No. of Cylinders	V6
Engine Displ. (L)	3.7
Engine Placement	Transverse
Roof Rack	No
Sunroof/T-top	Yes
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes
Anti-Lock Brakes	Yes
All Wheel Drive	Yes

Power Steering	Yes
Driver Front Airbag	Yes
Driver Knee Airbag	No
Driver Side Torso/Pelvis Airbag	Yes
Driver Side Head Airbag	No
Driver Curtain Airbag	Yes
Pass. Front Airbag	Yes
Pass. Knee Airbag	No
Pass. Side Torso/Pelvis Airbag	Yes
Pass. Head Airbag	No
Pass. Curtain Airbag	Yes
Pre-Tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
Air Conditioning	Yes
AM/FM CD	Yes
Tilt Steering	Yes
Automatic Door Locks	Yes
Power Windows	Yes
Power Seats	Yes
Other	XM Radio, Back-Up Camera, Heated Seats,

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

DATA FROM MANUFACTURER'S LABEL

Manufactured By	Honda of Canada MFG.
Date of Manufacture	Nov-09

GVWR (kg)	2510
GAWR Front (kg)	1325
GAWR Rear (kg)	1215

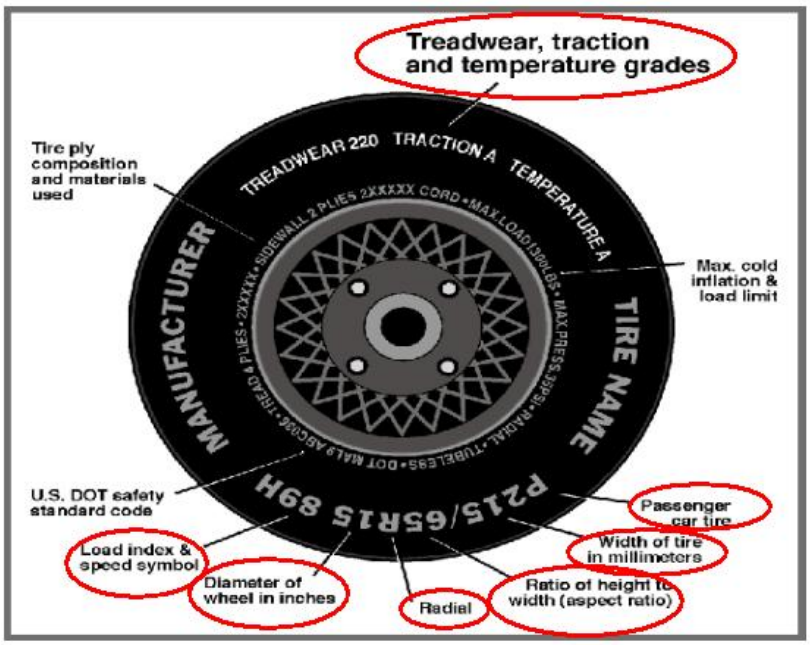
VEHICLE SEATING CAPACITY AND WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				380
Cargo Weight (RCLW) (kg)				40

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

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)	350	350
Cold Tire Pressure (kPa)	220	220
Recommended Tire Size	P255/50R19	P255/50R19
Tire Size on Vehicle	P255/50R19	P255/50R19
Tire Manufacturer	Michelin	Michelin
Treadwear	440	440
Traction	A	A
Temperature Grades	A	A
Tire Plies - Sidewall	2 Polyester	2 Polyester
Tire Plies - Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	103H	103H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Right	B3XX 001X 2309	B3XX 001X 2309
DOT Safety Code Left	B3XX 001X 2309	B3XX 001X 2309

DATA SHEET NO. 2…(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	597.0	442.5	1039.5	642.0	513.5	1155.5
Right	kg	564.0	404.5	968.5	591.5	463.0	1054.5
Ratio	%	57.8	42.2	100.0	55.8	44.2	100.0
Totals	kg	1161.0	847.0	2008.0	1233.5	976.5	2210.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2008
Weight of 2 P572 ATD's	kg	170
Rated Cargo/Luggage Weight (RCLW)	kg	40
Calculated Target Vehicle Test Weight (TVTW)	kg	2218

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	801	798	801	806	1166
As Tested	mm	789	787	784	788	1221

Vehicle Wheel Base (mm) 2763

Weight of Ballast Secured in Cargo Area (kg) 0

Weight of Items Removed (kg) 66

Vehicle Components Removed: Spare tire and tools, trunk lining and mat, right and left rear seat back

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

FUEL SYSTEM DATA

Fuel System Capacity from Owner's Manual (L) 78.73

Actual Test Volume with Entire Fuel System Filled (L) 73.06

Test Fluid Type Stoddard Solvent

Kinematic Viscosity as per ASTM Standard D484-71 Red

Is Vehicle Fuel Pump Electric or Mechanical? electric

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

Fuel System Particulars The fuel pump will operate when the ignition is turned to "ON"

DATA SHEET NO. 3

POST-TEST IMPACT DATA

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

SPEED TRAP DATA

Measured Paramater	Units	Requirement	Value
Trap No. 1 Velocity	km/h	55.1 to 57.12	56.30
Trap No. 2 Velocity	km/h	55.1 to 57.12	Failed

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4173	4007	166
Center	mm	4890	4329	561
Right Side	mm	4173	3916	257

VEHICLE REBOUND FROM BARRIER

Measured Paramater	Units	Value
Left Side	mm	514
Center	mm	505
Right Side	mm	546
Average	mm	522

DATA SHEET NO. 4

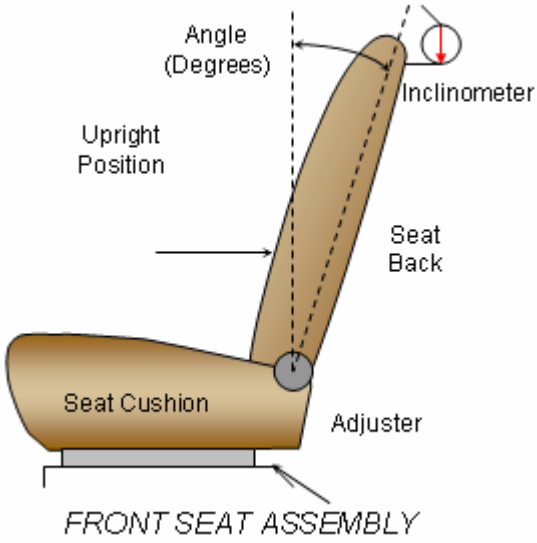
TEST VEHICLE INFORMATION

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

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 headrest, using a digital inclinometer.



SEAT BACK ANGLES

Position	Degrees
Driver w/ Seated Dummy	9.2 @ headrest
Passenger w/ Seated Dummy	9.4 @ headrest

SEAT FORE/AFT POSITIONS

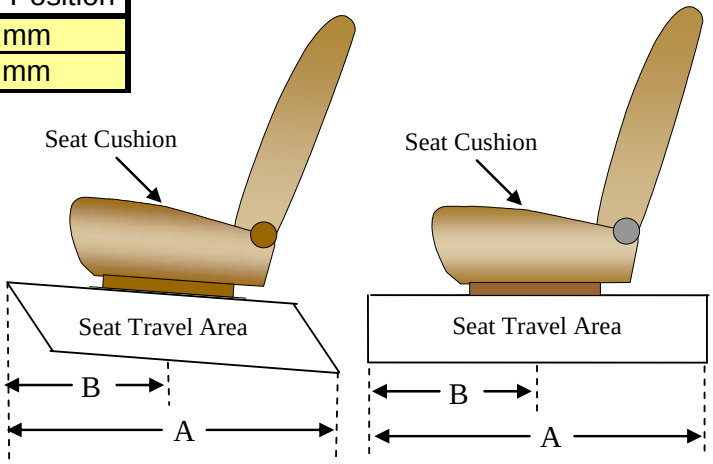
The total seat travel was measured from forward most position to rearmost position. The seat was set at the longitudinal mid position. There were vertical adjustments on the driver seat that was equipped with the vehicle. There were no adjustments on the passenger seat. The driver seat was placed in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

SEAT FORE/AFT POSITIONING

Position	Total Fore/Aft Travel	Placed in Position
Driver Seat	285 mm	143 mm
Passenger Seat	287 mm	144 mm

SEAT BELT ANCHORAGE

Position number one (1) is the uppermost position.



SEAT BELT ANCHORAGE POSITIONING

	Total Number of Positions	Placed in Position
Driver Seat	4	1
Passenger Seat	4	1

TEST VEHICLE INFORMATION

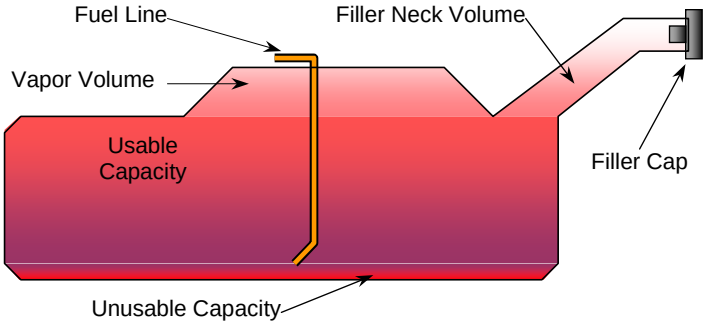
Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

FUEL TANK CAPACITY

	Liters
Usable Capacity of Standard Tank	78.73
Usable Capacity of Optional Tank	
Usable Capacity Used for FMVSS 301	72.43 to 74.00
Actual Amount of Solvent Used	73.06

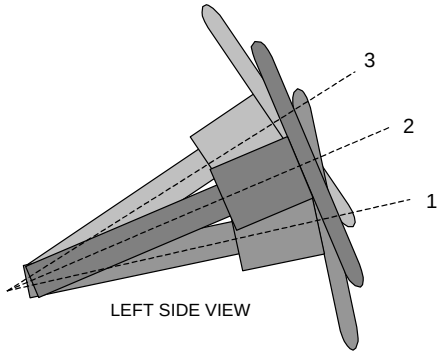
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for approximately two (2) seconds with the ignition in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the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



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. 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	17.9	100 mm
Geometric Center - Position No. 2	20.5	115 mm
Uppermost - Position No. 3	23	130 mm

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

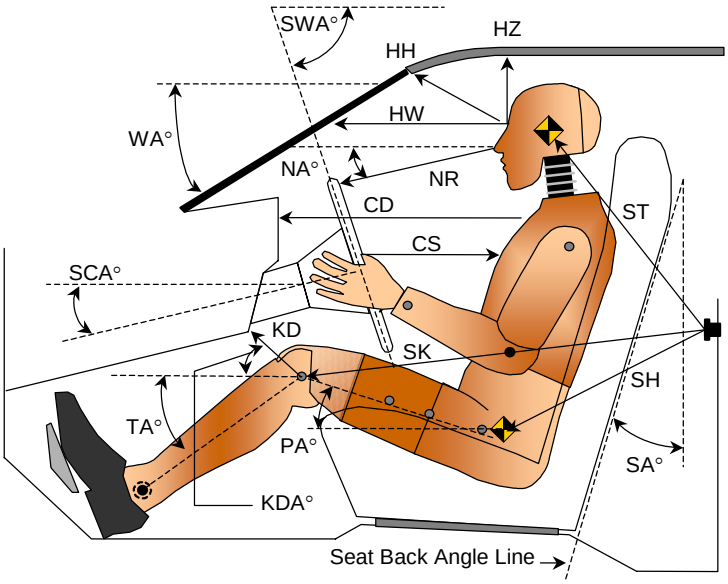
Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

TEST DUMMY POSITION MEASUREMENTS

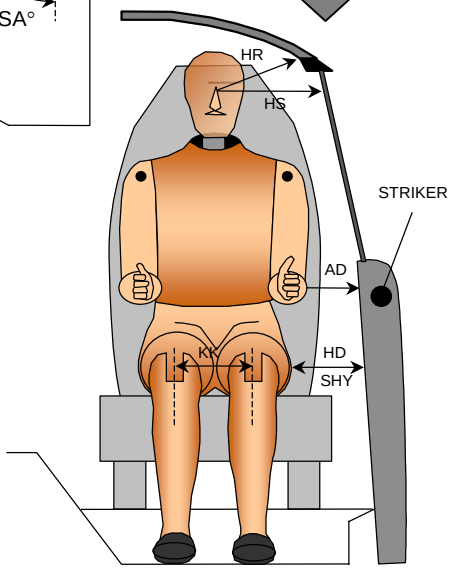
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield angle		23.0		
SWA	Steering wheel angle		69.0		
SCA	Steering column angle		21.0		
SA	Seat Back angle		9.2		9.4
HZ	Head to roof (Z)	208	90.0	199	90.0
HH	Head to header	350	22.8	359	25.2
HW	Head to windshield	620	0.0	685	0.0
HR	Head to side header (Y)	299		272	
NR	Nose to rim	359	7.1		
CD	Chest to dash	512	13.7	534	20.0
CS	Chest to steering hub	308	1.9		
RA	Rim to abdomen	198			
KDL	Left knee to dash	155	29.6	133	
KDR	Right knee to dash	147		139	35.3
PA	Pelvic angle		21.9		21.9
TA	Tibia Angle		43.3		39.1
KK	Knee to knee	328		266	
SK	Striker to outboard knee	631	0.5	655	3.0
ST	Striker to head	545	76.2	540	83.0
SH	Striker to H-Point	325	25.1	341	22.7
SHY	Striker to H-Point (Y)	258		265	
HS	Head to side window	371		374	
HD	H-Point to door	151		163	
AD	Arm to door	117		38	

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

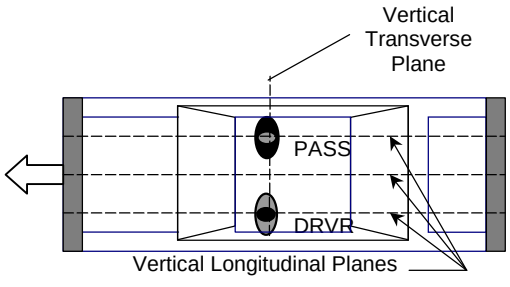
Test Program: NHTSA 35mph NCAP Test Date: 01/20/10



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

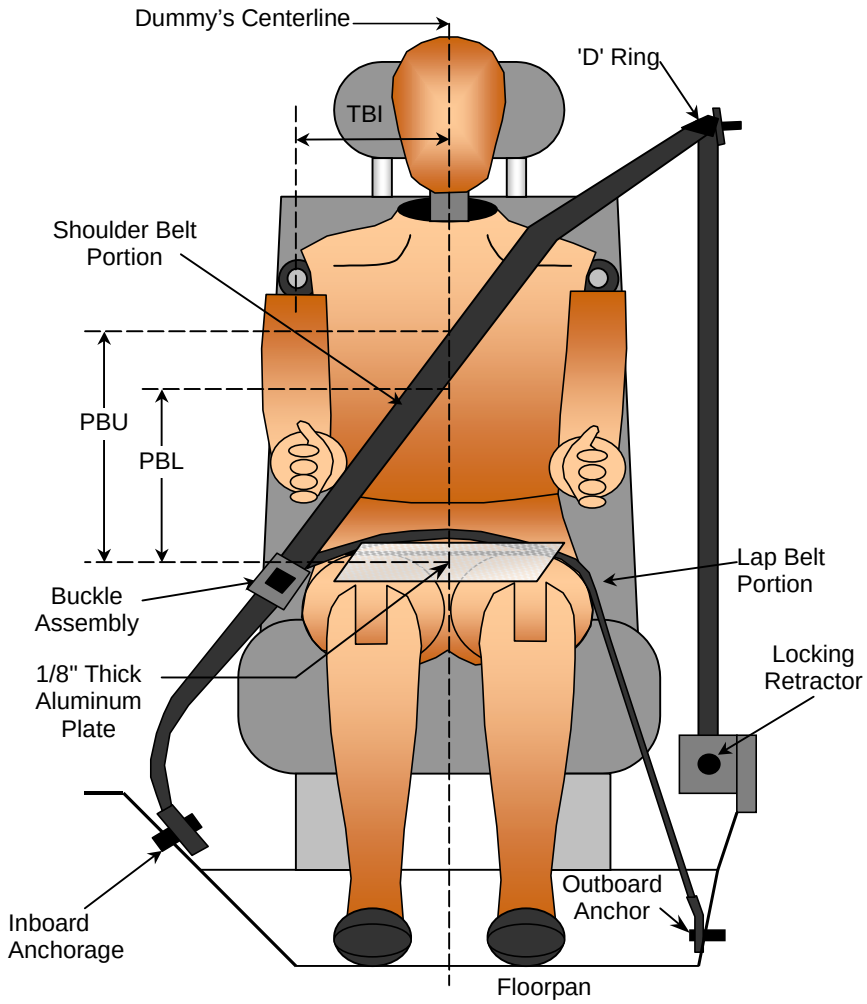


DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10



SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	199	196
PBU - Top Surface of Reference to Belt Upper Edge	mm	314	375
PBL - Top Surface of Reference to Belt Lower Edge	mm	235	286
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurement (mm)		
		X	Y	Z
1	Left Rear X-Member	1630	700	490
2	Right Rear X-Member	1630	-700	490
3	Engine Top	3800	0	950
4	Engine Bottom	3910	-190	220
5	Left Brake Caliper	3680	750	330
6	Right Brake Caliper	3680	-750	330
7	Instrument Panel			[1]
8	Left Rear X-Member (Z-Axis)	1630	700	490
9	Right Rear X-Member (Z-Axis)	1630	-700	490

Reference Planes: X=From Front Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane

1.) Instrument Panel no longer used by NHTSA.

2.) Instrumentation not installed

DATA SHEET NO. 8

SEAT BELT ASSESSMENT TEST DATA

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
Retractor Reel to D-Ring	mm	270	270
Shoulder Belt Length as Measured on ATD	mm	938	924
Lap Belt Length as Measured on ATD	mm	513	502
Remainder of Belt on Reel	mm	1082	1142
Total Belt Length for Continuous Webbing Systems	mm	2803	2838

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	109	333
As determined electronically	mm	107.2	303.3

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: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

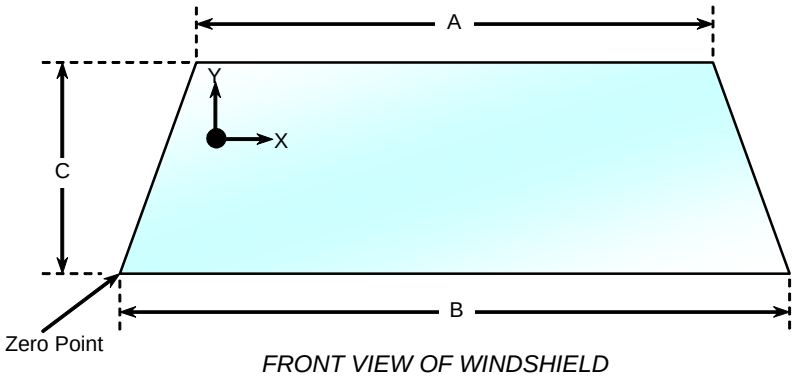
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber cement type adhesive. Plastic and rubber molding molding covers the windshield periphery.

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: 7.8 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2259	2259	100.0
Right Side	2259	2259	100.0
Total	4518	4518	100.0



FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

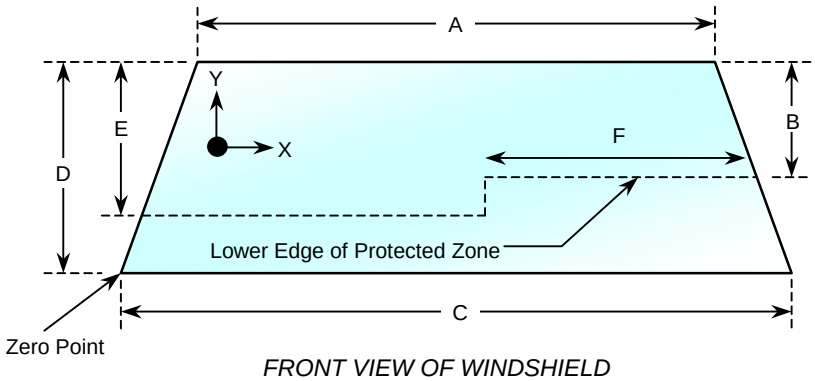
Item	Units	Segment Length	Molding Width
A	mm	1310	17
B	mm	1573	125
C-Left	mm	817	23
C-Right	mm	817	23

DATA SHEET NO. 10

WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10



FRONT VIEW OF WINDSHIELD

WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1310
B	mm	477
C	mm	1573
D	mm	817
E	mm	519
F	mm	494

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: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

Test Time: 12:15 PM Temperature: 7.8 ° C

STODDARD SOLVENT SPILLAGE MEASUREMENTS

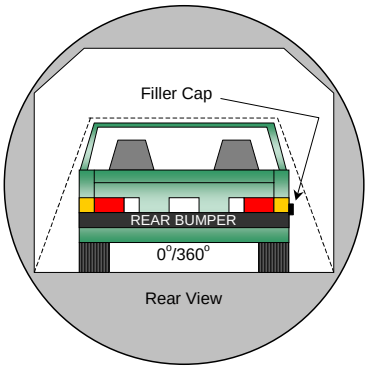
A.	From impact until vehicle motion ceases:	0
	(Maximum allowable = 1 ounce)	
B.	For the 5 minute period after motion ceases:	0
	(Maximum allowable = 5 ounces)	
C.	For the following 25 minutes:	0
	(Maximum allowable = 1 oz/minute)	
D.	Spillage Details:	No leakage occurred.

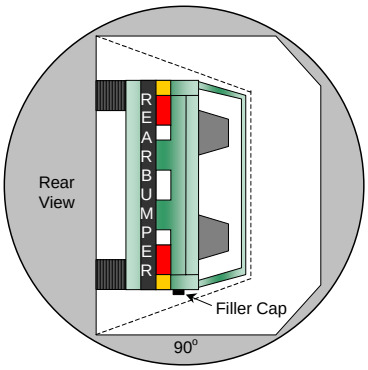
DATA SHEET NO. 12

FMVSS 301 STATIC ROLLOVER DATA

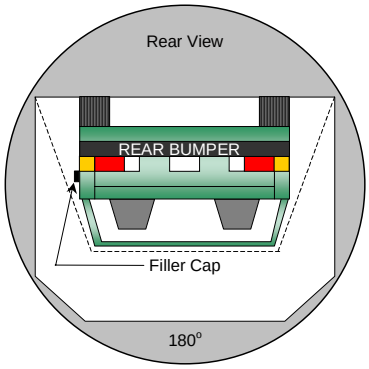
Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

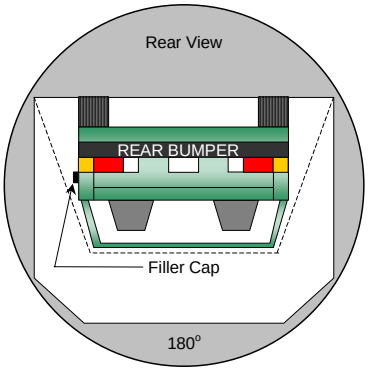




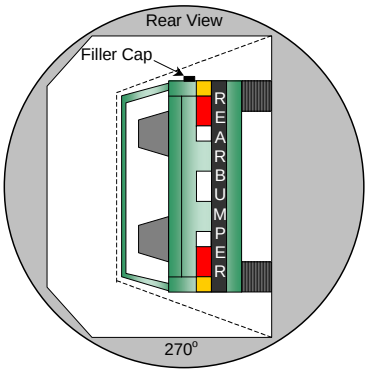
0° to 90°

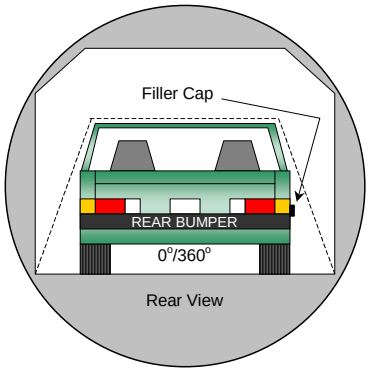


90° to 180°



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: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	81	300	381
90° to 180°	87	300	387
180° to 270°	79	300	379
270° to 360°	79	300	379

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			
90° to 180°	0			
180° to 270°	0			
270° to 360°	0			

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 13

VEHICLE MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Length of test vehicle at centerline	mm	4890	4329	-561
2	RSOV to front of engine	mm	4335	4485	150
3	RSOV to firewall centerline	mm	3795	3755	-40
4	RSOV to upper leading edge of right door	mm	3298	3303	5
5	RSOV to upper leading edge of left door	mm	3298	3305	7
6	RSOV to lower leading edge of right door	mm	3288	3283	-5
7	RSOV to lower leading edge of left door	mm	3288	3292	4
8	RSOV to upper trailing edge of right door	mm	2113	2115	2
9	RSOV to upper trailing edge of left door	mm	2107	2118	11
10	RSOV to lower trailing edge of right door	mm	2145	2136	-9
11	RSOV to lower trailing edge of left door	mm	2143	2141	-2
12	RSOV to bottom of right A-pillar	mm	3227	3229	2
13	RSOV to bottom of left A-pillar	mm	3227	3237	10
14	RSOV to firewall on right side	mm	3800	3766	-34
15	RSOV to firewall on left side	mm	3800	3743	-57
16	RSOV to steering column hub	mm	2850	2860	10
17	Center of steering column to left A-pillar, Y	mm	430	450	20
18	Center of steering column to headlining, Z	mm	355	485	130
19	RSOV to right side of front bumper	mm	4173	3916	-257
20	RSOV to left side of front bumper	mm	4173	4007	-166
21	Length of engine block	mm	550	550	0
RD	RSOV to right side of dash panel	mm	2975	2963	-12
CD	RSOV to center of dash panel	mm	2975	2985	10
LD	RSOV to left side of dash panel	mm	2995	2920	-75

DATA SHEET NO. 13…(CONTINUED)

VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

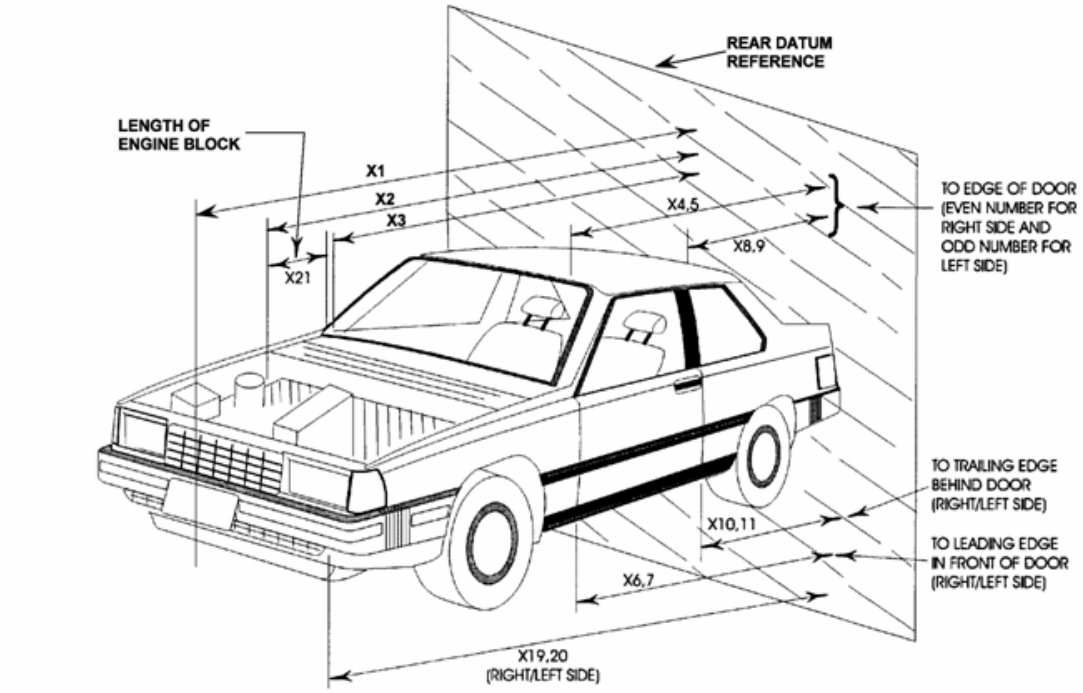
VEHICLE STRUCTURAL MEASUREMENT TABLE

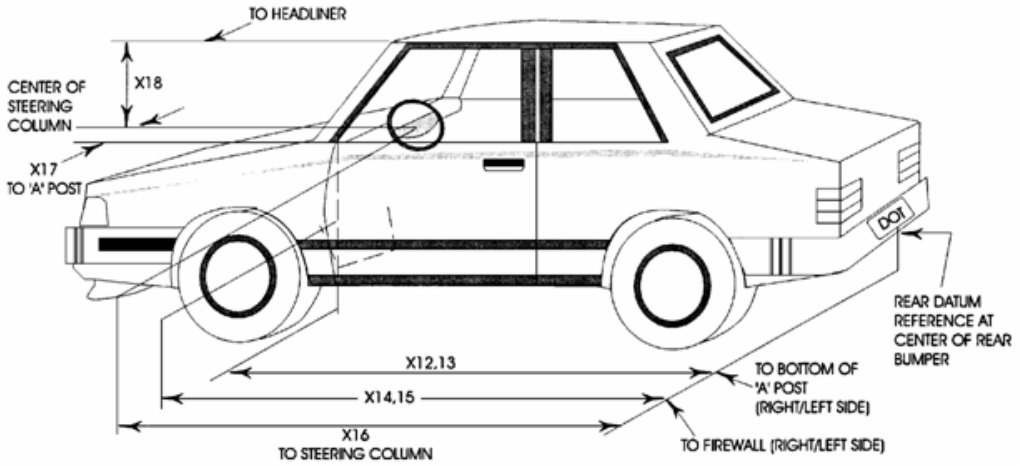
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length	mm	4890	4329	-561
2	Total width	mm	1970	1960	-10
3	Front bumper top height	mm	663	695	32
4	Front bumper bottom height	mm	315	325	10
5	Longitudinal member top height	mm	600	583	-17
6	Longtidunal member bottom height	mm	490	410	-80
7	Distance between longitudinal members	mm	950	1305	355
8	Longitudinal member width	mm	105	107	2
9	Engine top height	mm	942	920	-22
10	Engine bottom height	mm	253	288	35
11	Engine and gearbox width	mm	650	650	0
12	Front bumper-engine distance	mm	555	405	-150
13	Front shock absorber height	mm	1010	1115	105
14	Front hood leading edge height	mm	930	992	62
15	Distance between front shock absorbers	mm	1245	1253	8
16	Front bumper-front axle distance	mm	1090	570	-520
17	Front axle to A-pillar distance	mm	545	470	-75
18	A Pillar to B Pillar distance	mm	1020	1020	0
19	B Pillar to rear axle distance	mm	1105	1100	-5
20	B Pillar to C Pillar distance	mm	751	751	0
21	Roof sill bottom height	mm	1437	1480	43
22	Roof sill top height	mm	1555	1587	32
23	Floor sill bottom height	mm	254	301	47
24	Floor sill top height	mm	455	500	45

VEHICLE MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10





DATA SHEET NO. 14

CAMERA LOCATIONS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

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	-2590	-7950	-1371	0	8105	20	1000
3	Closeup Left Side	-1701	-6197	-1701	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	-2336	7569	-1168	0	7409	20	1000
8	Closeup Right Side	-1600	6121	-1651	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	3235	-305	1468	-5	0	12	1000
17	Passenger Side Dummy On-Board	3235	305	1468	-5	0	12	1000
18	Real Time Driver	-1926	-8089	-1704	-1	8488	-1	30
19	Real Time Passenger	-1433	8047	-1704	-1	8349	-1	30

All measurements are made relative to the point of impact.

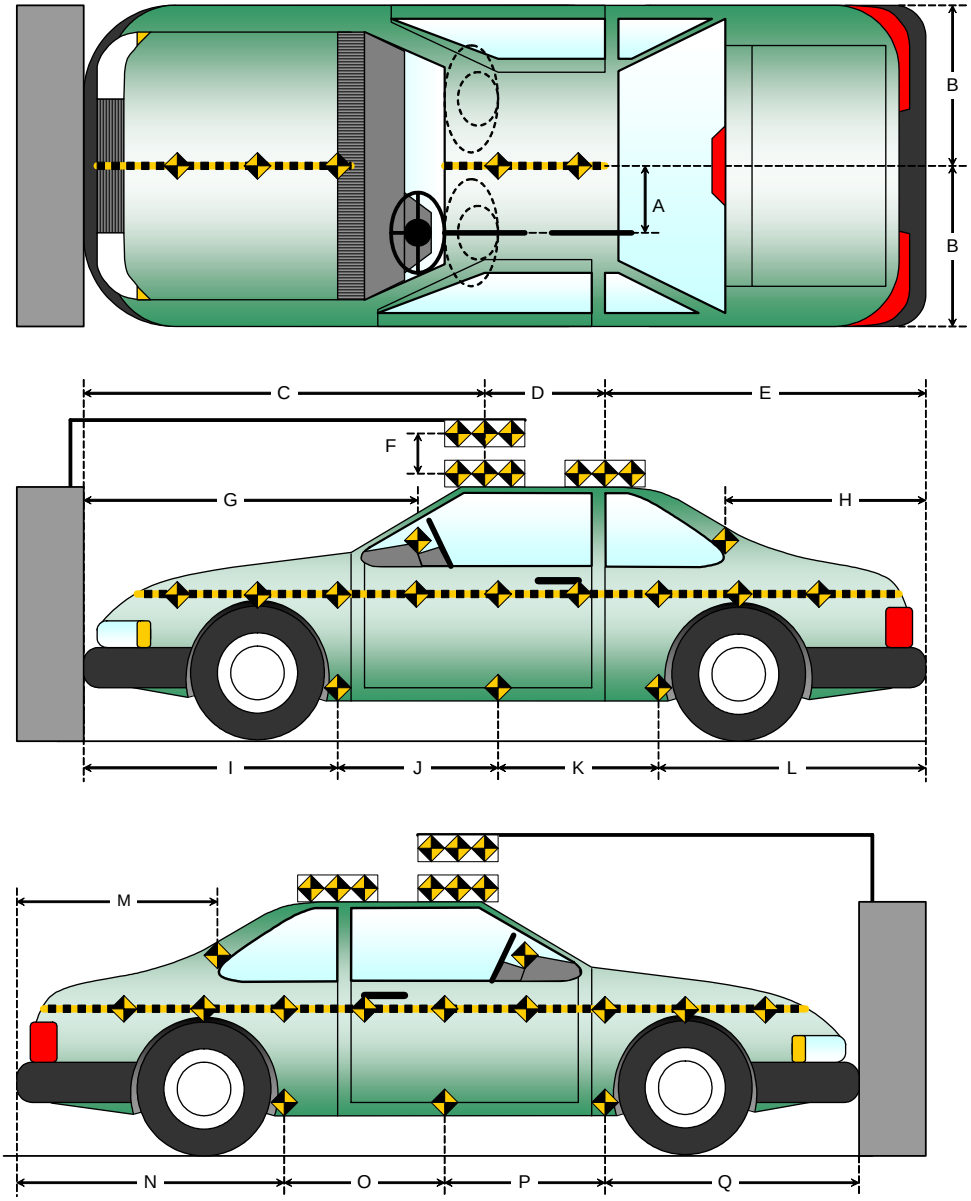
DATA SHEET NO. 15

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

All Dimensions in Millimeters (mm)	
Item	Value
A	
B	985
C	
D	
E	
F	
G	2080
H	952
I	1590
J	878
K	878
L	1545
M	952
N	1545
O	872
P	872
Q	1595



DATA SHEET NO. 16

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

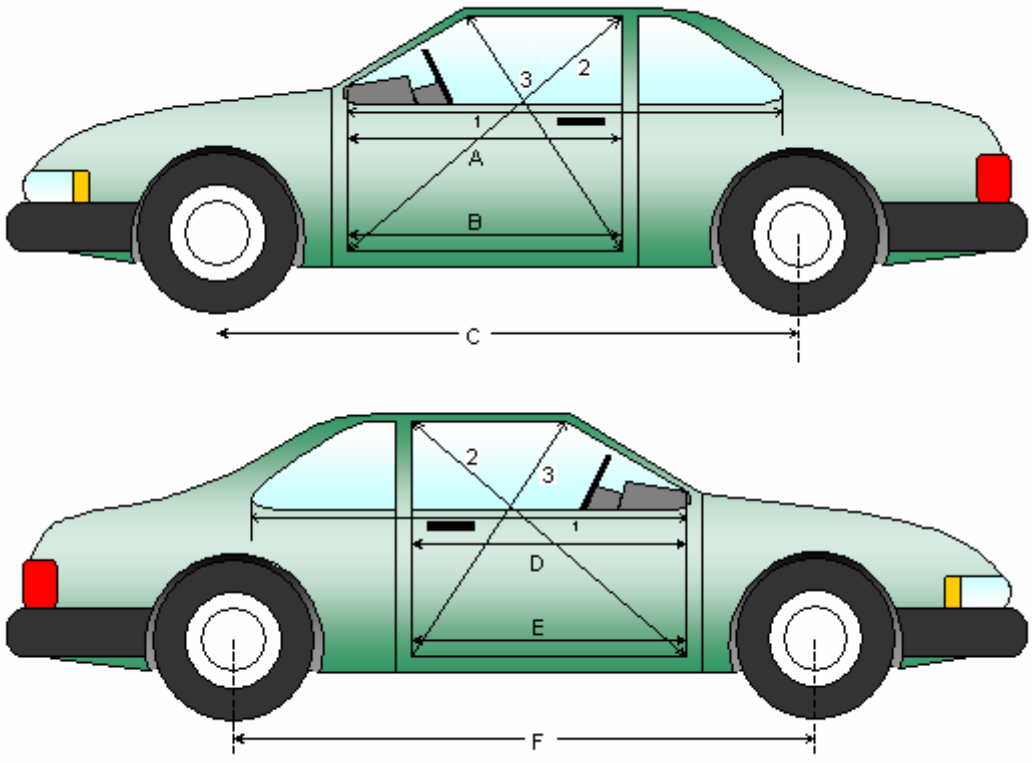
Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Difference
1L	Left Side	mm	1020	1021	-1
2L	Left Side (Diagonally)	mm	1446	1453	-7
3L	Left Side (Diagonally)	mm	1011	1011	0
1R	Right Side	mm	1023	1025	-2
2R	Right Side (Diagonally)	mm	1443	1445	-2
3R	Right Side (Diagonally)	mm	1008	1008	0

WHEELBASE MEASURMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2763	2673	90
F	Right Side Wheelbase	mm	2763	2654	109



DATA SHEET NO. 16…(CONTINUED)

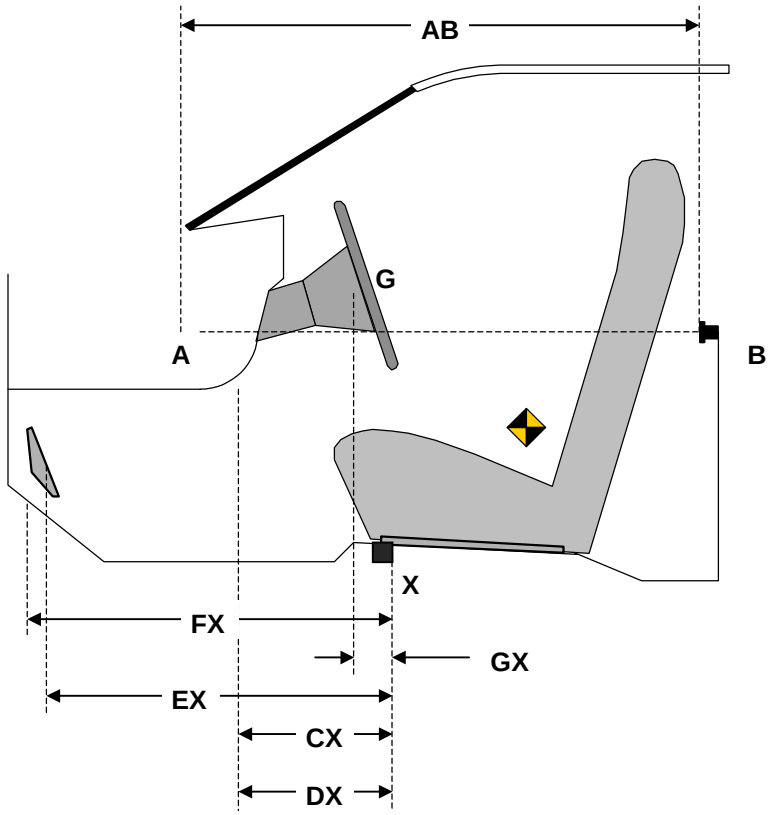
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

DRIVER COMPARTMENT INTRUSION TABLE

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Windown Jam)	mm	1020	1020	0
CX	Left Knee Bolster to X	mm	235	220	15
DX	Right Knee Bolster to X	mm	240	215	25
EX	Brake Pedal to X	mm	555	530	25
FX	Foot Rest to X	mm	565	590	-25
GX	Center of Steering Wheel Hub to X	mm	60	40	20

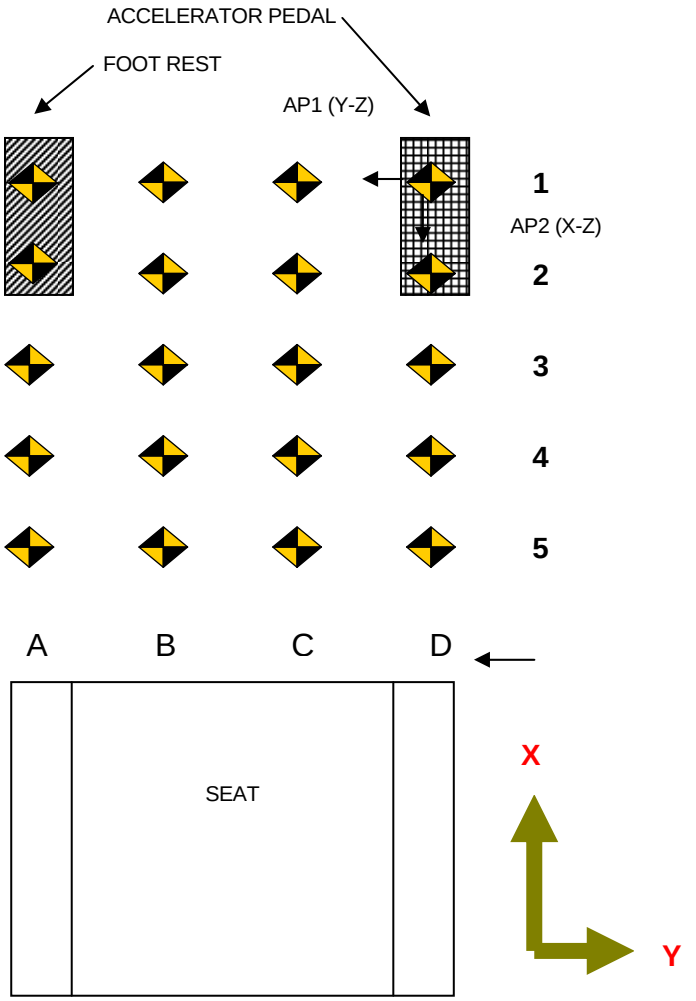


DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10



AP1: Y-Z Plane passing through D1

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

DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

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	-652	-698	-702	-669	-630	-680	-686	-635	-22	-18	-16	-34
2	-623	-629	-627	-630	-611	-615	-614	-611	-12	-14	-13	-19
3	-558	-555	-556	-550	-557	-545	-549	-538	-1	-10	-7	-12
4	-428	-431	-427	-426	-428	-429	-424	-424	0	-2	-3	-2
5	-300	-301	-301	-304	-299	-301	-300	-304	-1	0	-1	0

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	54	172	280	391	57	179	290	390	-3	-7	-10	1
2	53	172	280	390	57	176	288	396	-4	-4	-8	-6
3	59	170	279	390	63	174	282	392	-4	-4	-3	-2
4	58	169	279	385	61	171	281	388	-3	-2	-2	-3
5	58	167	283	385	59	167	284	384	-1	0	-1	1

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-91	-50	-45	-71	-115	-73	-67	-92	24	23	22	21
2	-14	-9	-12	-12	-36	-26	-25	-25	22	17	13	13
3	41	28	29	34	19	17	27	32	22	11	2	2
4	42	41	42	43	29	33	40	53	13	8	2	-10
5	41	35	48	44	38	39	60	72	3	-4	-12	-28

DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

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	687	684	680	660	641	657	651	623	46	27	29	37
2	617	615	615	625	594	593	591	592	23	22	24	33
3	527	532	547	546	516	515	538	541	11	17	9	5
4	412	411	419	420	403	407	415	416	9	4	4	4
5	287	291	293	299	283	288	289	296	4	3	4	3

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	372	263	158	47	365	265	161	52	7	-2	-3	-5
2	374	261	159	42	372	267	163	47	2	-6	-4	-5
3	381	264	158	46	382	265	162	48	-1	-1	-4	-2
4	382	263	157	48	381	265	156	49	1	-2	1	-1
5	386	267	161	50	385	267	162	49	1	0	-1	1

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	59	57	54	79	92	71	68	100	-33	-14	-14	-21
2	16	16	15	7	23	22	22	26	-7	-6	-7	-19
3	-17	-15	-13	-25	-21	-20	-4	-6	4	5	-9	-19
4	-22	-24	-24	-25	-36	-25	-25	-19	14	1	1	-6
5	-37	-26	-18	-26	-60	-38	-19	-26	23	12	1	0

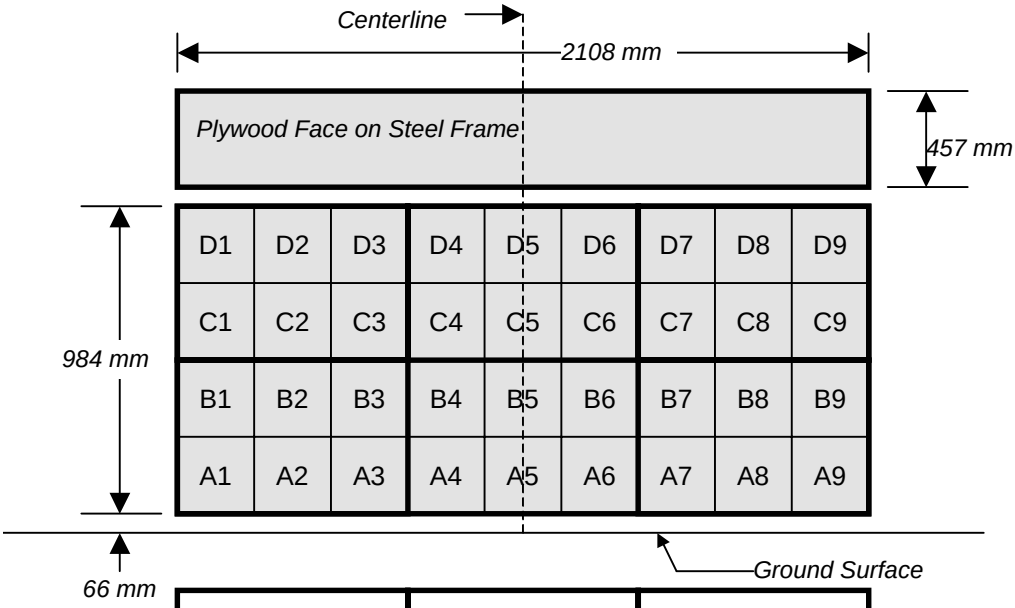
DATA SHEET NO. 17

FIXED BARRIER LOAD CELL LOCATIONS

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

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: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10

VEHICLE INFORMATION

VIN: 2HNYB1H67AH500174 Wheelbase (mm): 2763

Vehicle Size Category: 5-Door MPV Test Weight (kg): 2210

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): 56.30

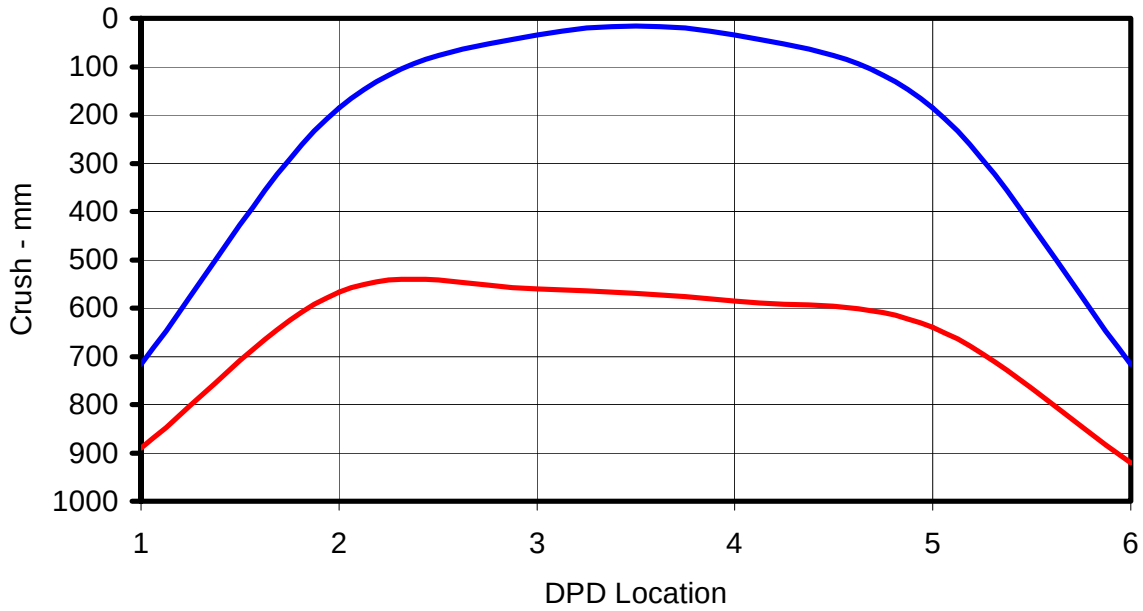
Velocity Change (km/h): 66.2 Time of Separation (msec): 76.4

CRUSH PROFILE

Collision Deformation Classification: 12FCEW2 Midpoint of Damage: Vehicle Centerline

Damage Region Length: 1965 Impact Mode: Full frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side of vehicle	mm	717	890	-173
C2	Crush zone 2 on left side of vehicle	mm	185	567	-382
C3	Crush zone 3 on left side of vehicle	mm	35	560	-525
C4	Crush zone 4 on right side of vehicle	mm	35	585	-550
C5	Crush zone 5 on right side of vehicle	mm	185	640	-455
C6	Crush zone 6 at right side of vehicle	mm	717	920	-203

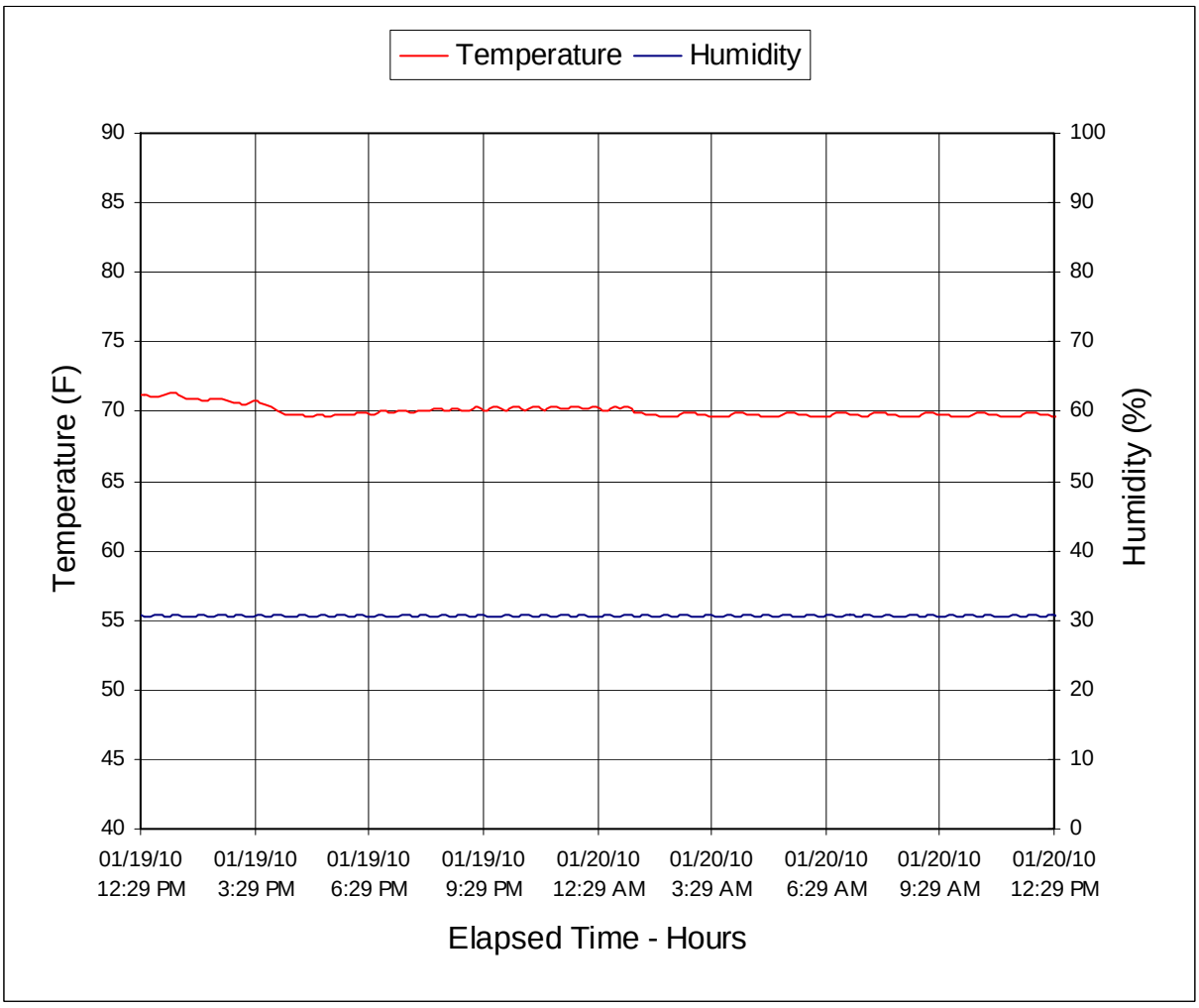


DATA SHEET NO. 19

DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV NHTSA No.: HA5300

Test Program: NHTSA 35mph NCAP Test Date: 01/20/10



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

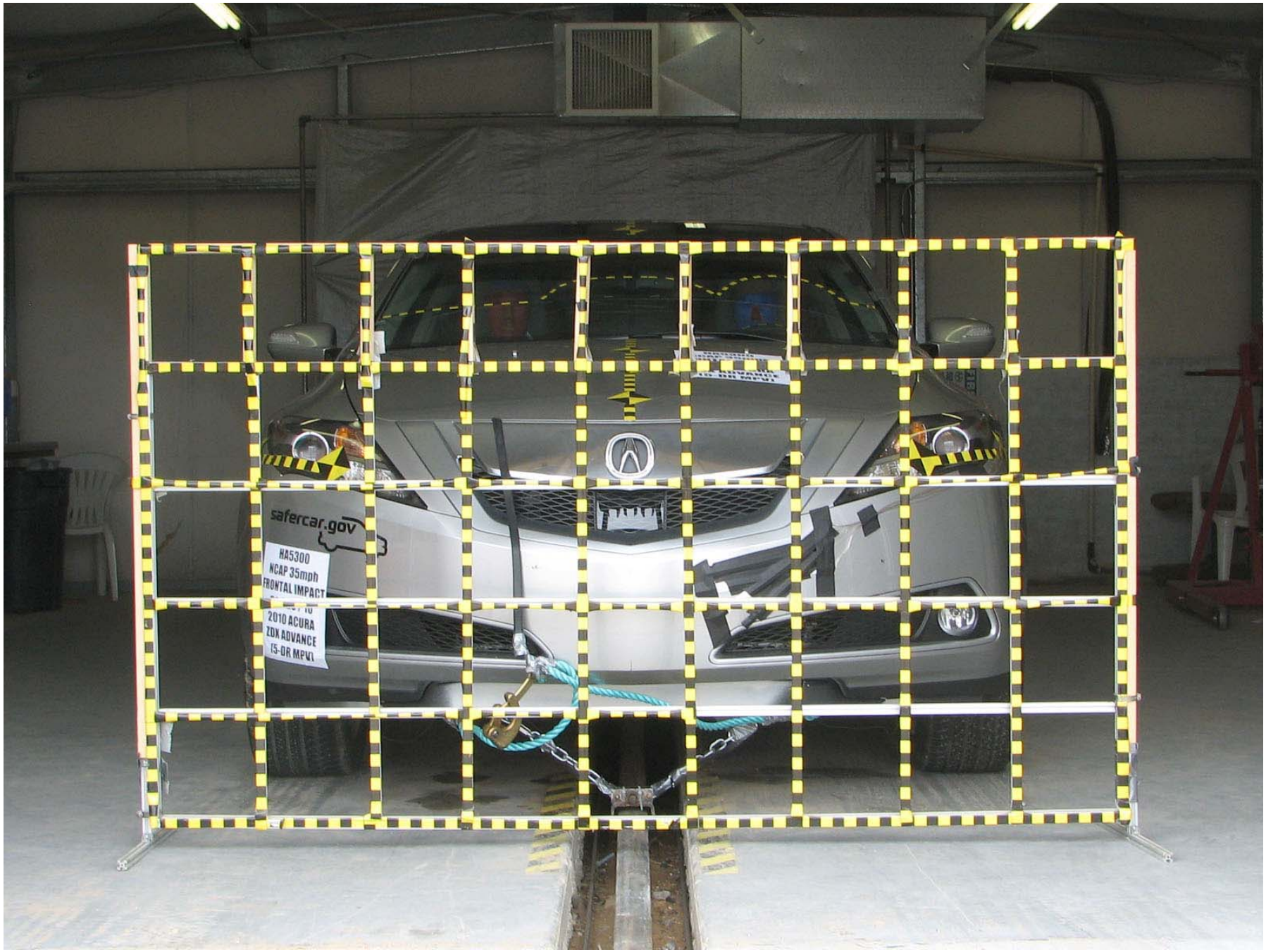


Figure A-1: Load Cell Location

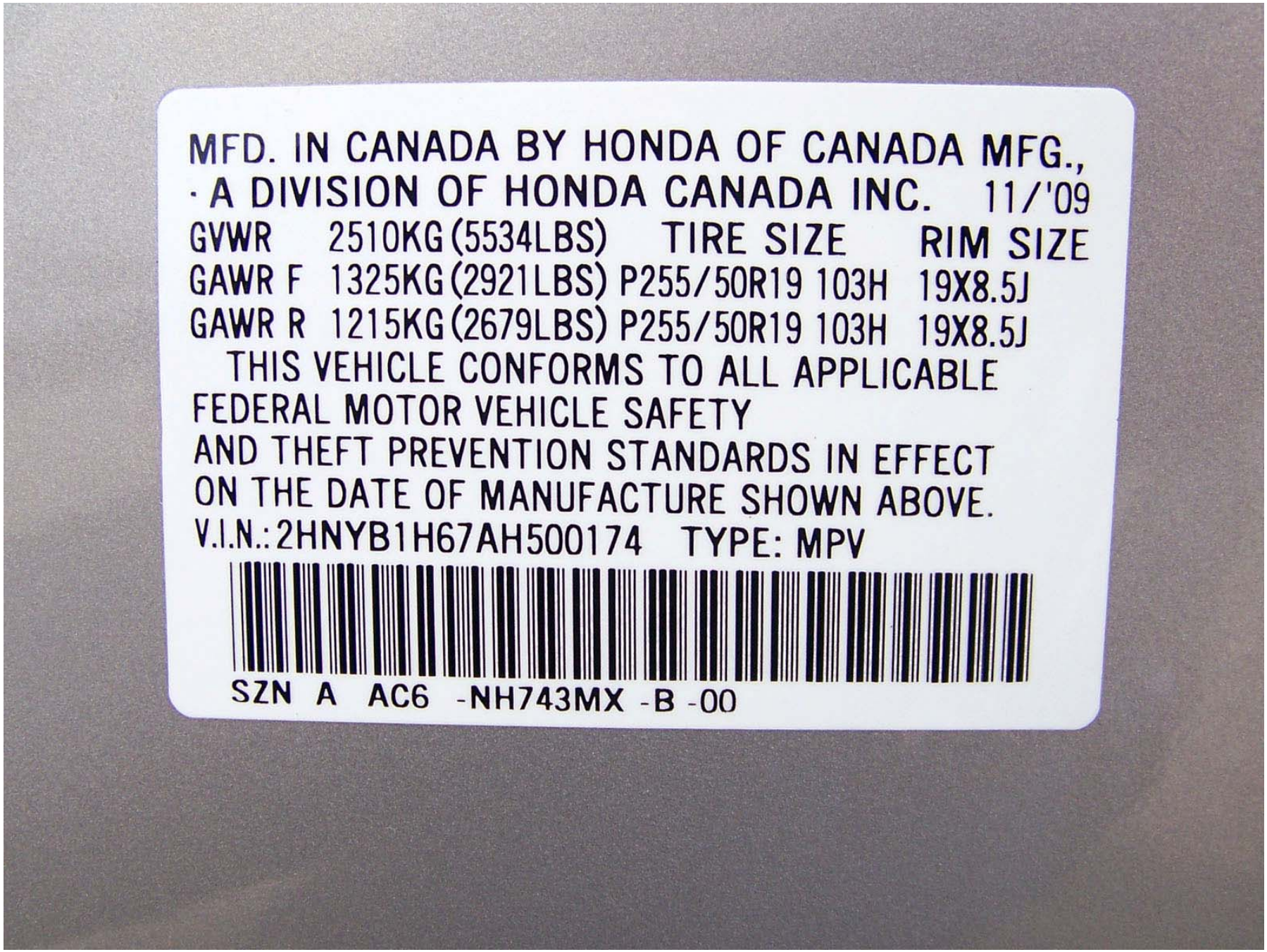


Figure A-2: Manufacturer's Label

Figure A-3: Tire Placard

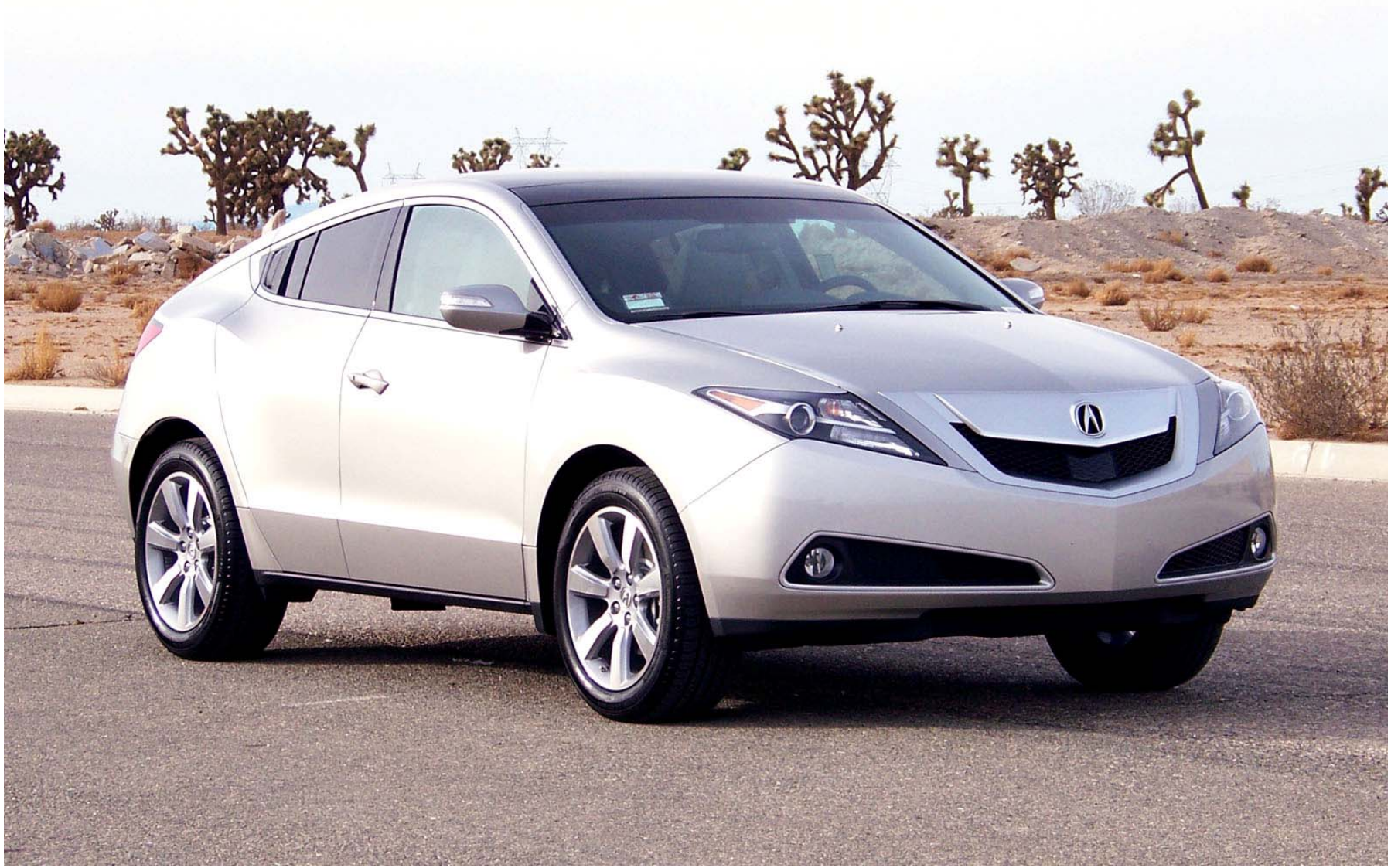


Figure A-4: Right Front ¾ View, As Received

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

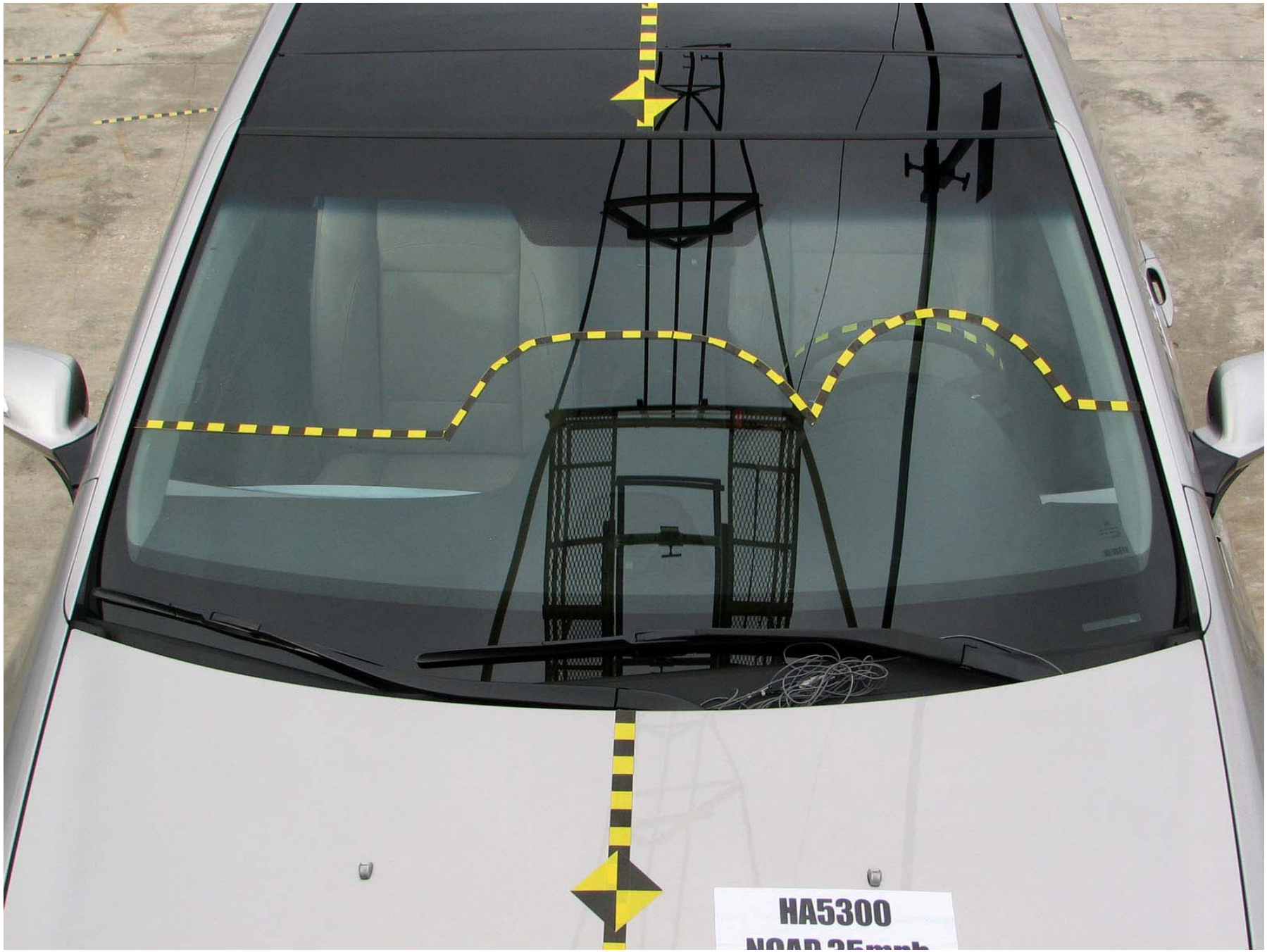


Figure A-18: Pre-Test Windshield

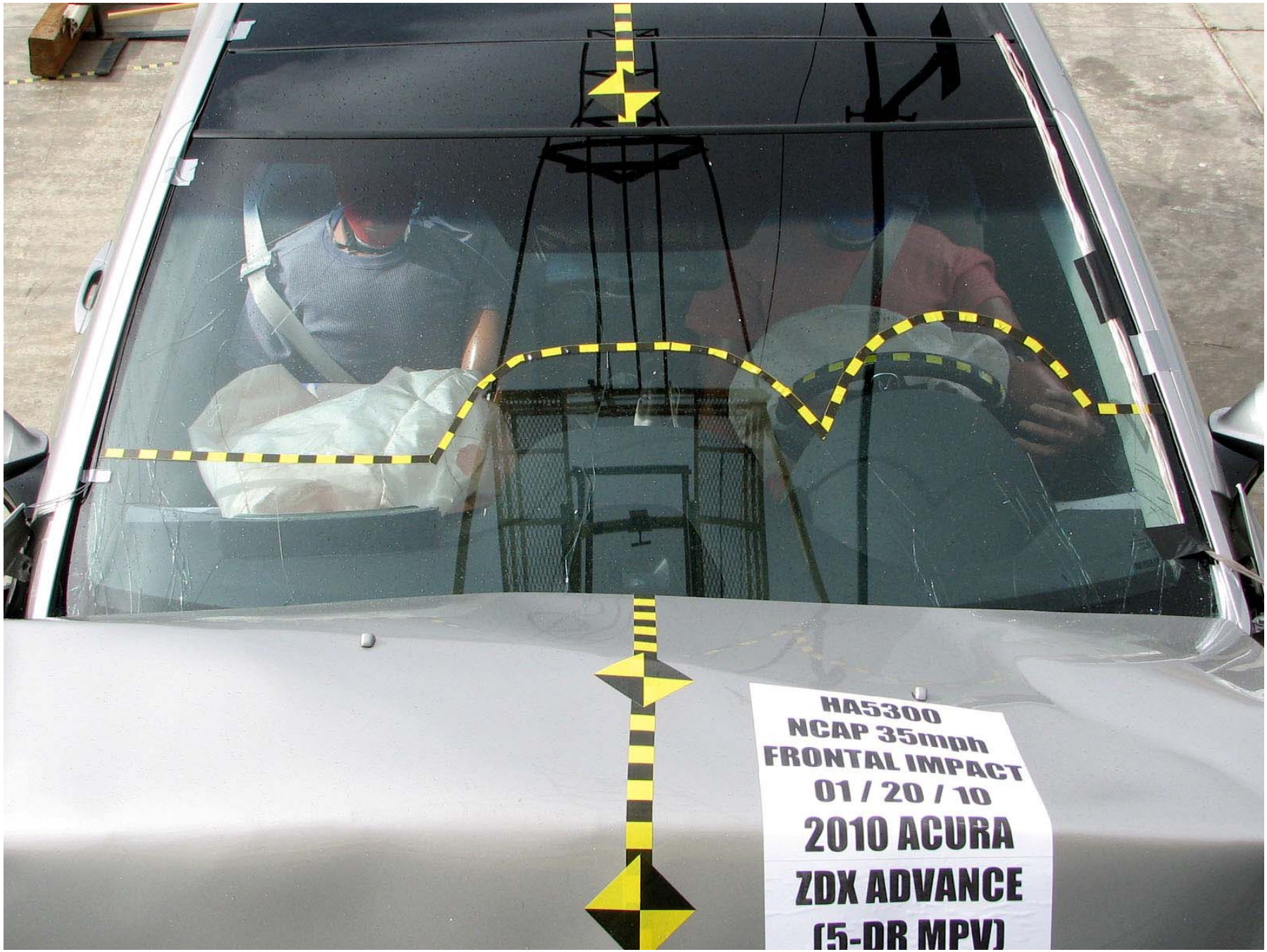


Figure A-19: Post-Test Windshield

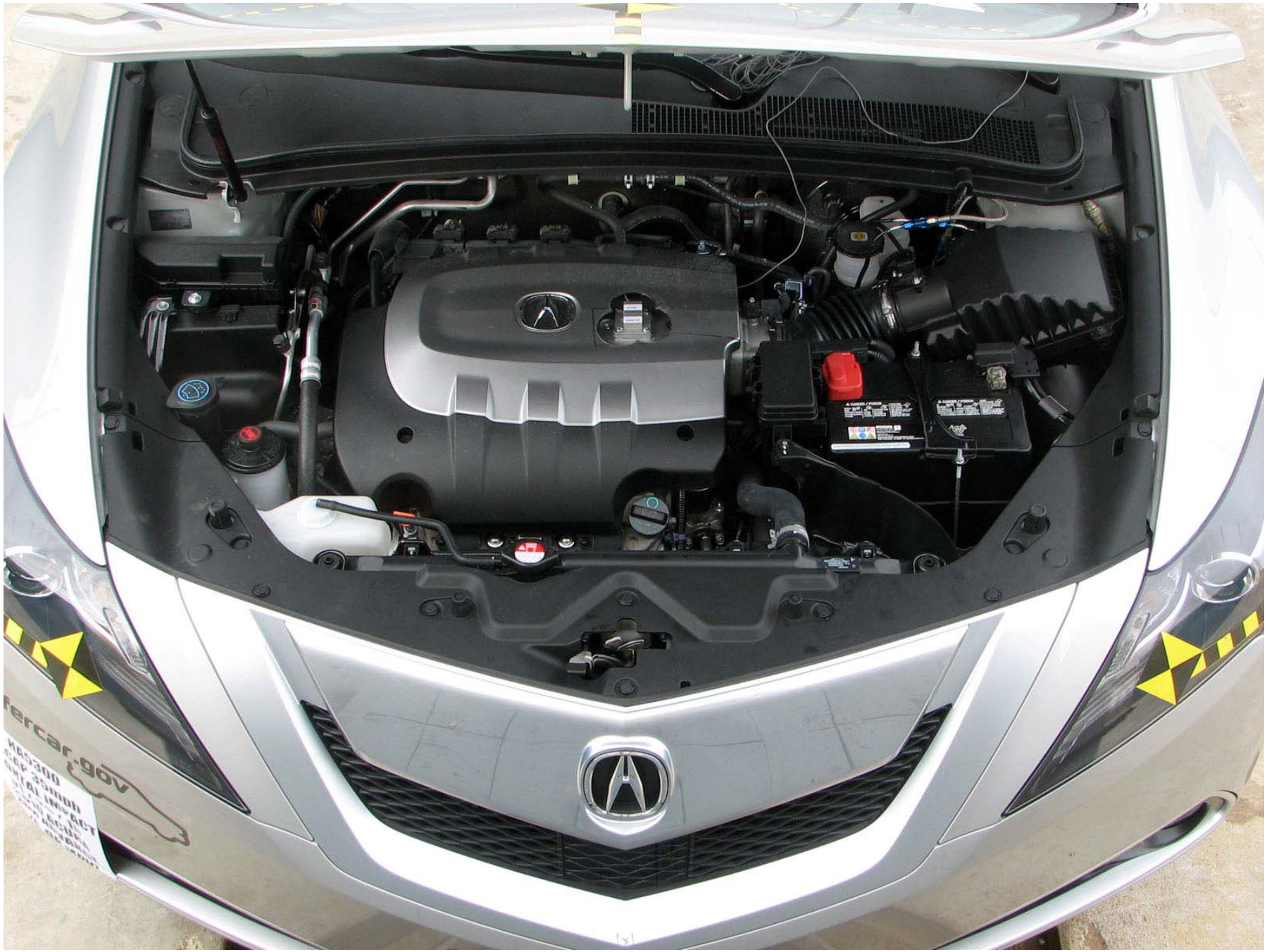


Figure A-20: Pre-Test Engine Compartment

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

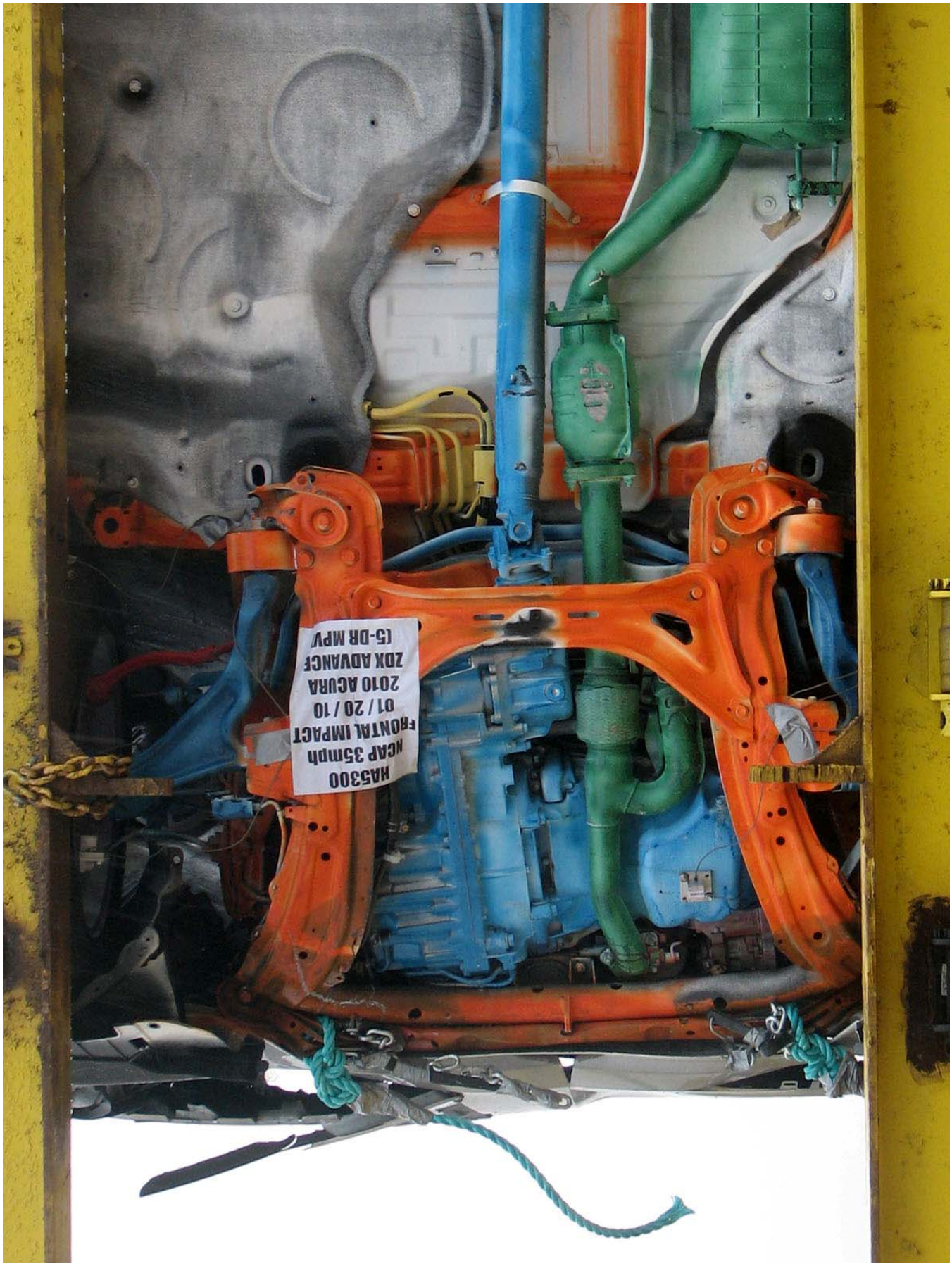


Figure A-25: Post-Test Front Underbody

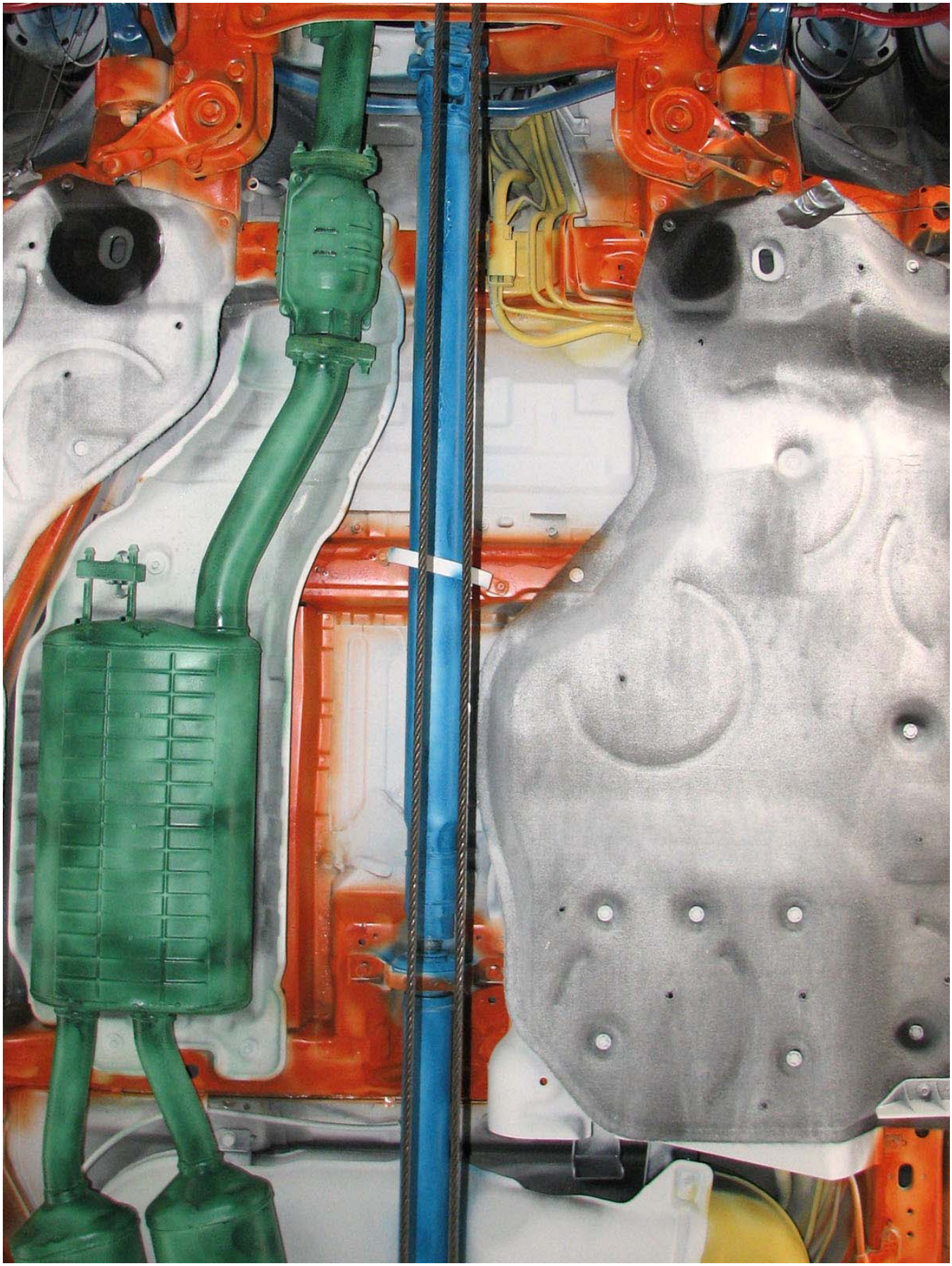


Figure A-26: Pre-Test Mid Underbody

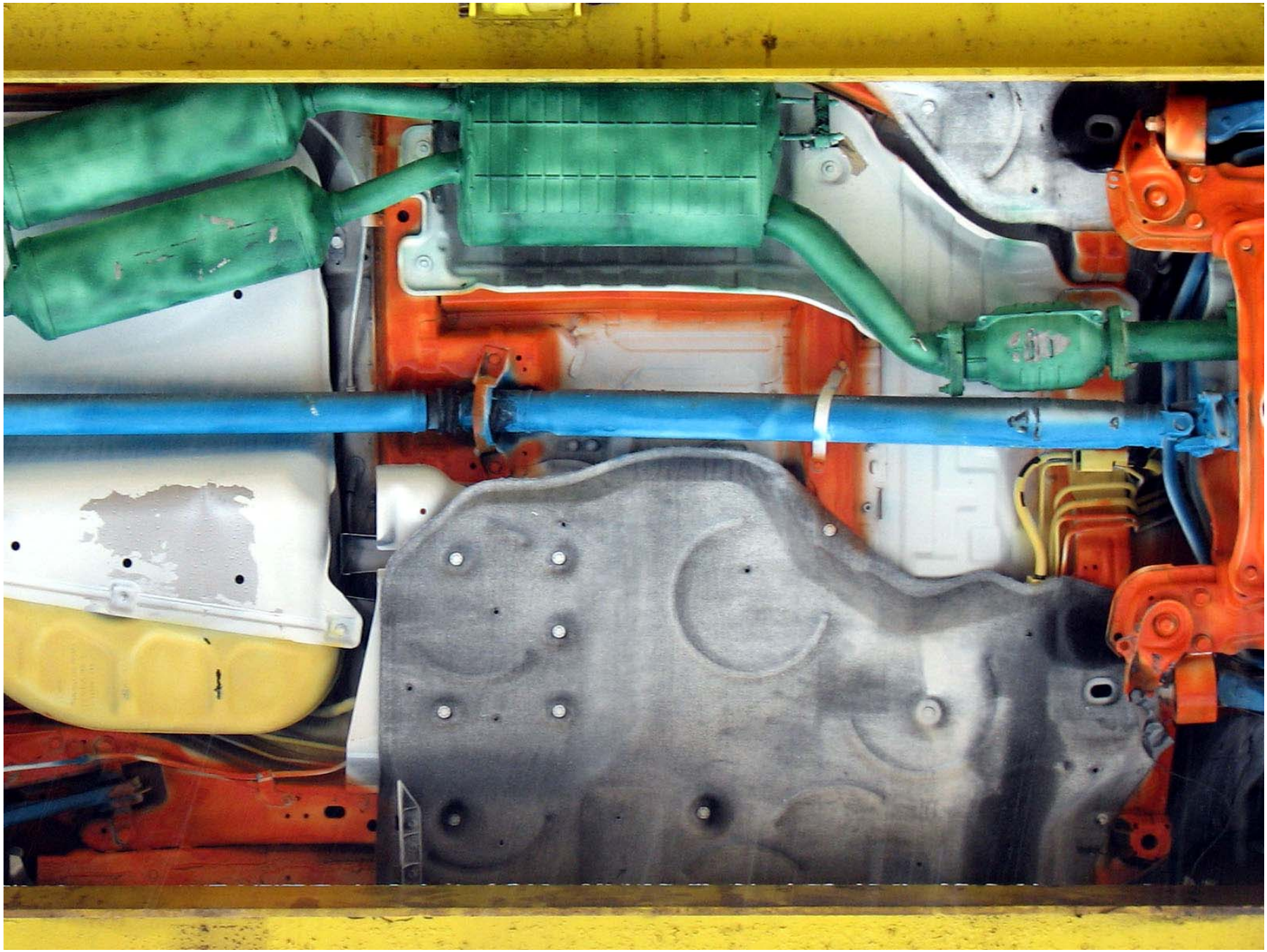


Figure A-27: Post-Test Mid Underbody

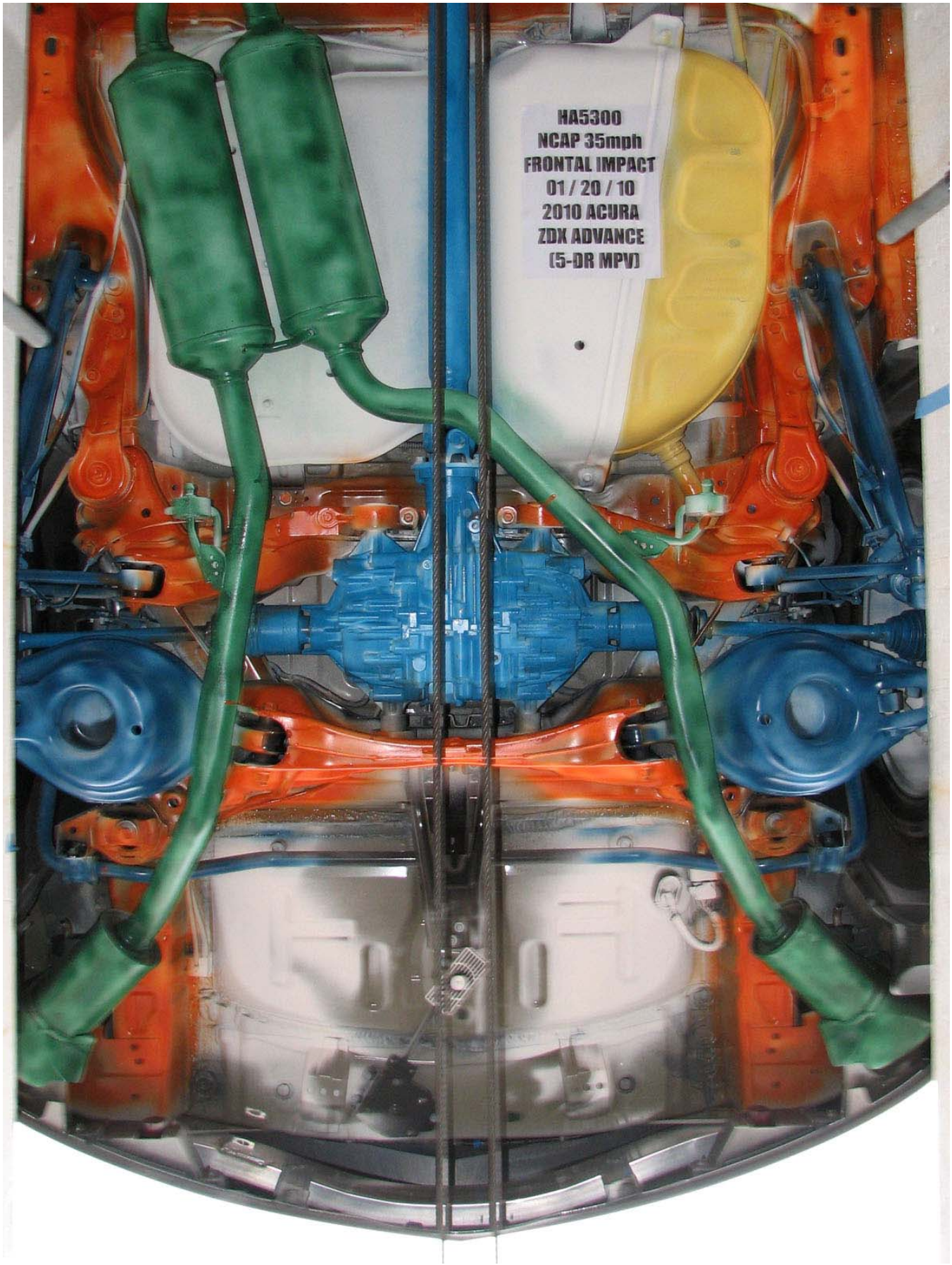


Figure A-28: Pre-Test Rear Underbody

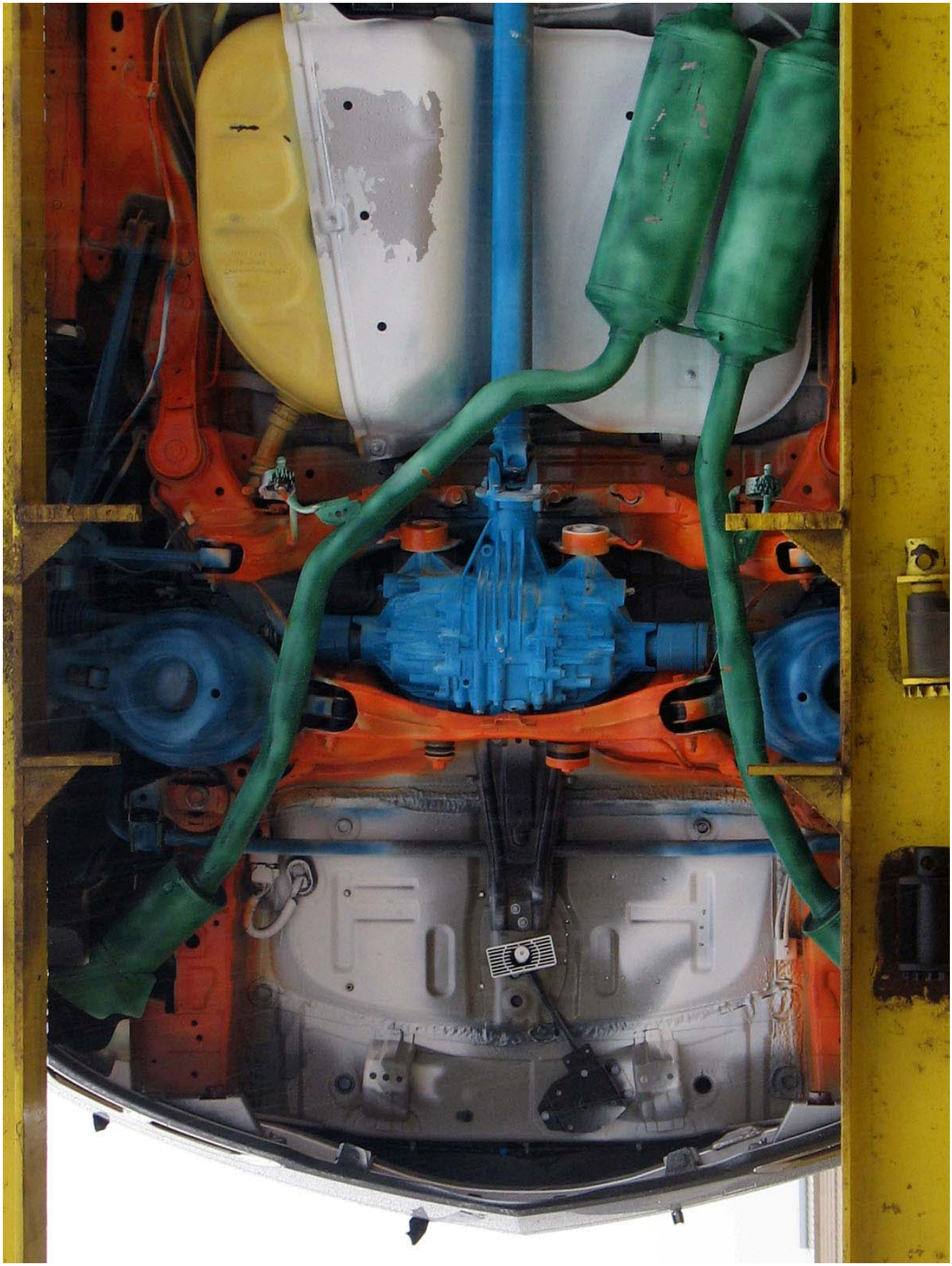


Figure A-29: Post-Test Rear Underbody

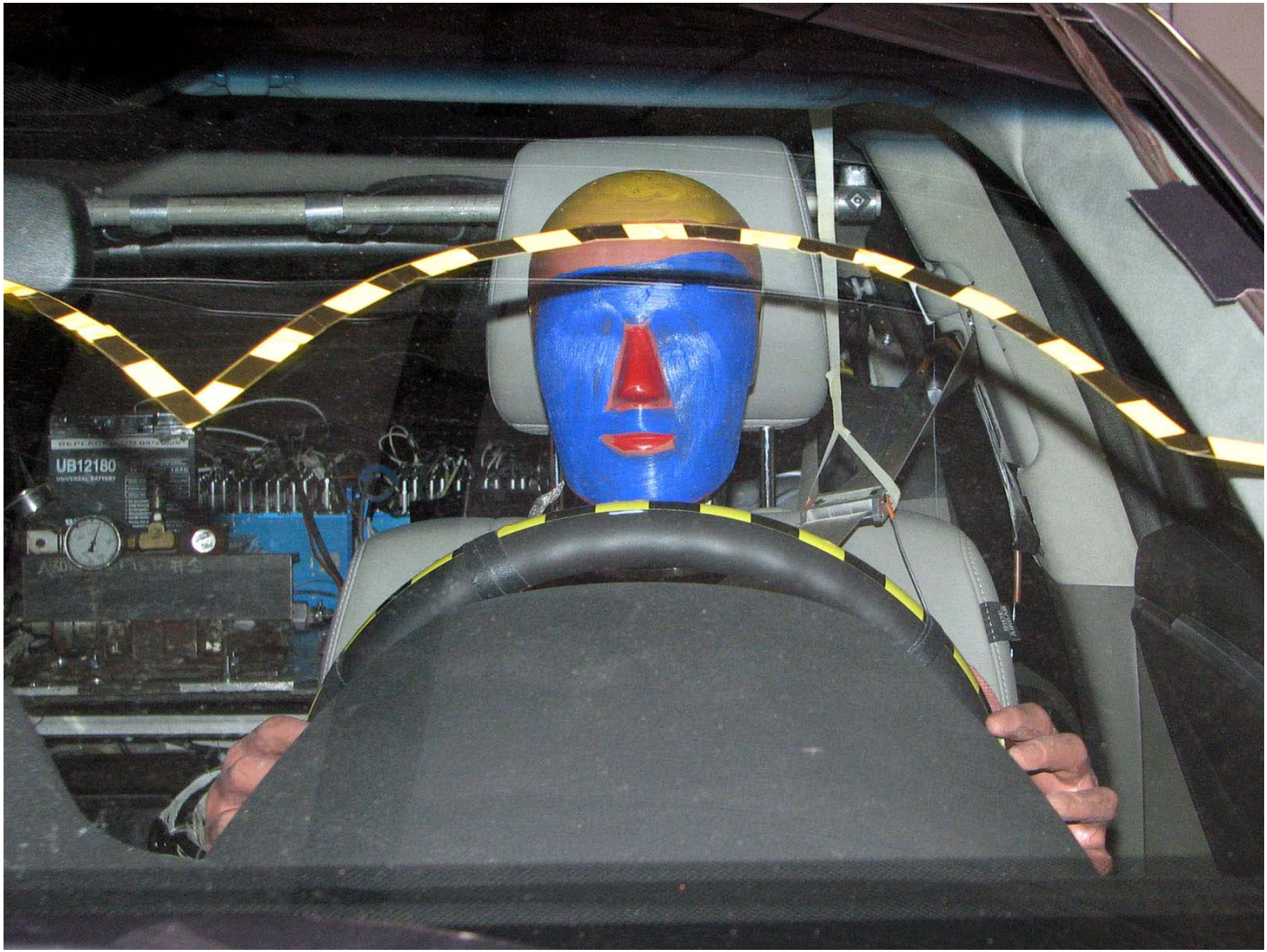


Figure A-30: Pre-Test Driver Dummy Front View (Head Position)

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

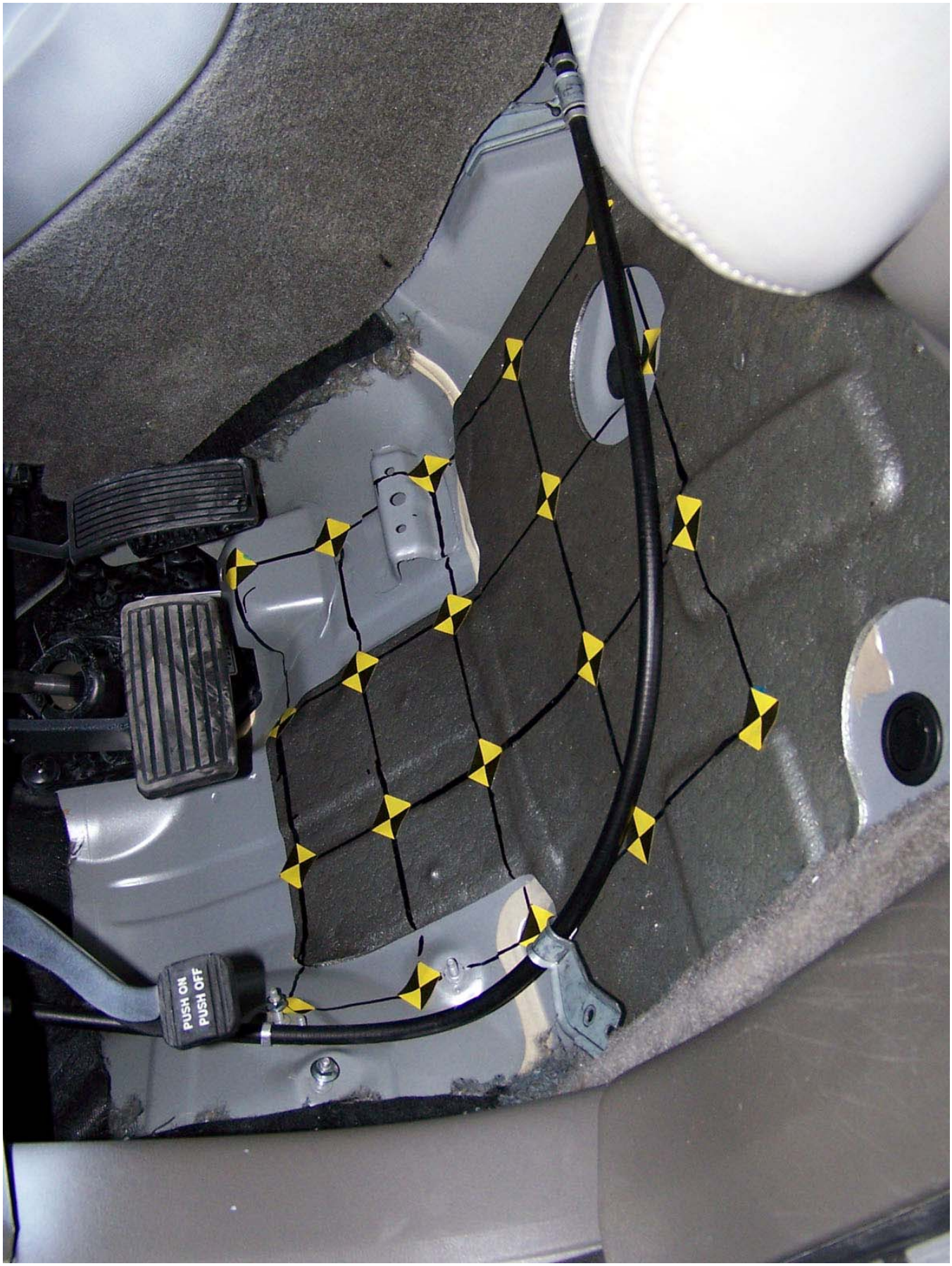


Figure A-40: Pre-Test Driver Side Floor Pan

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

Figure A-42: Post-Test Driver Dummy Head

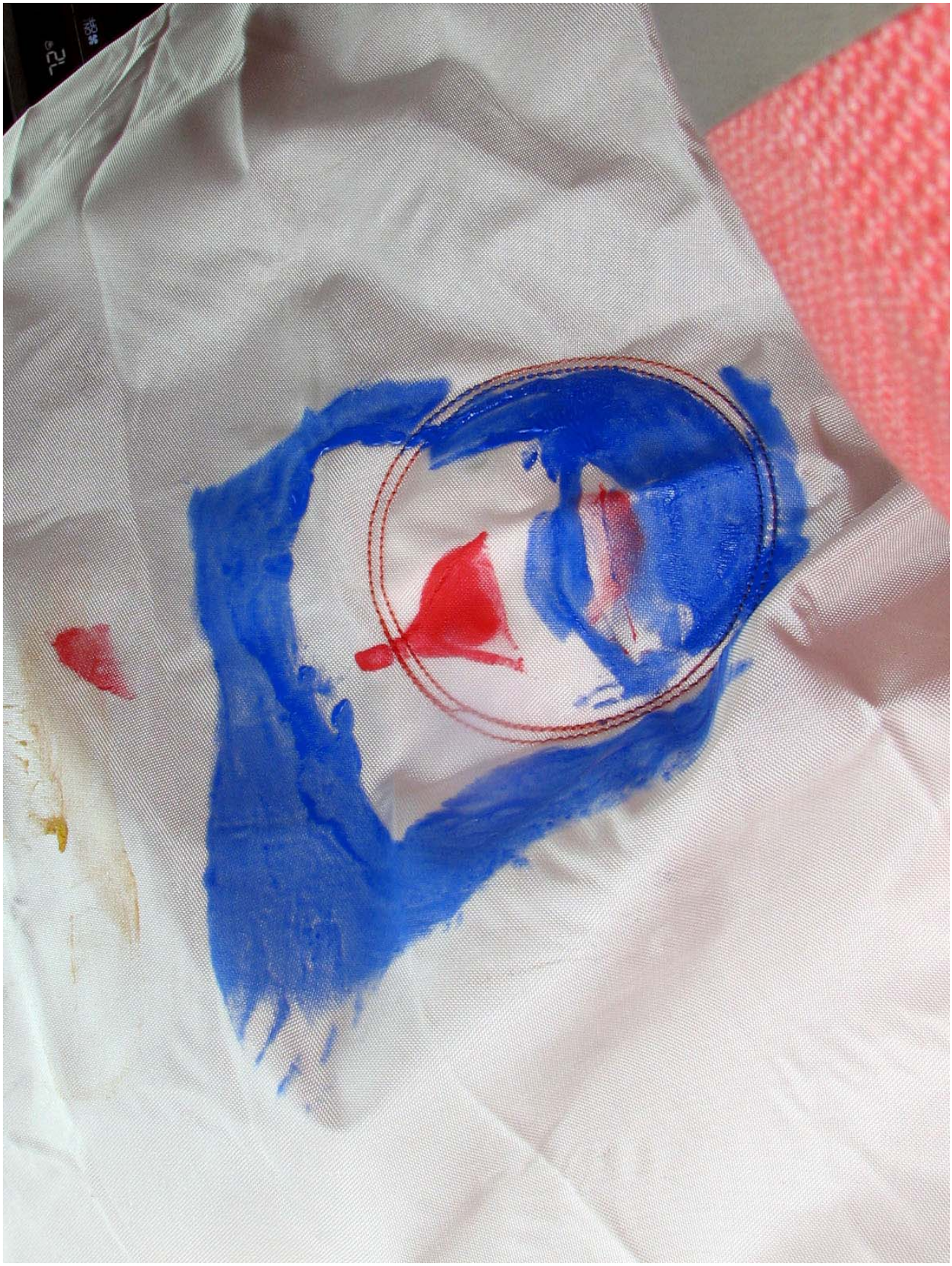


Figure A-43: Post-Test Driver Dummy Airbag Contact

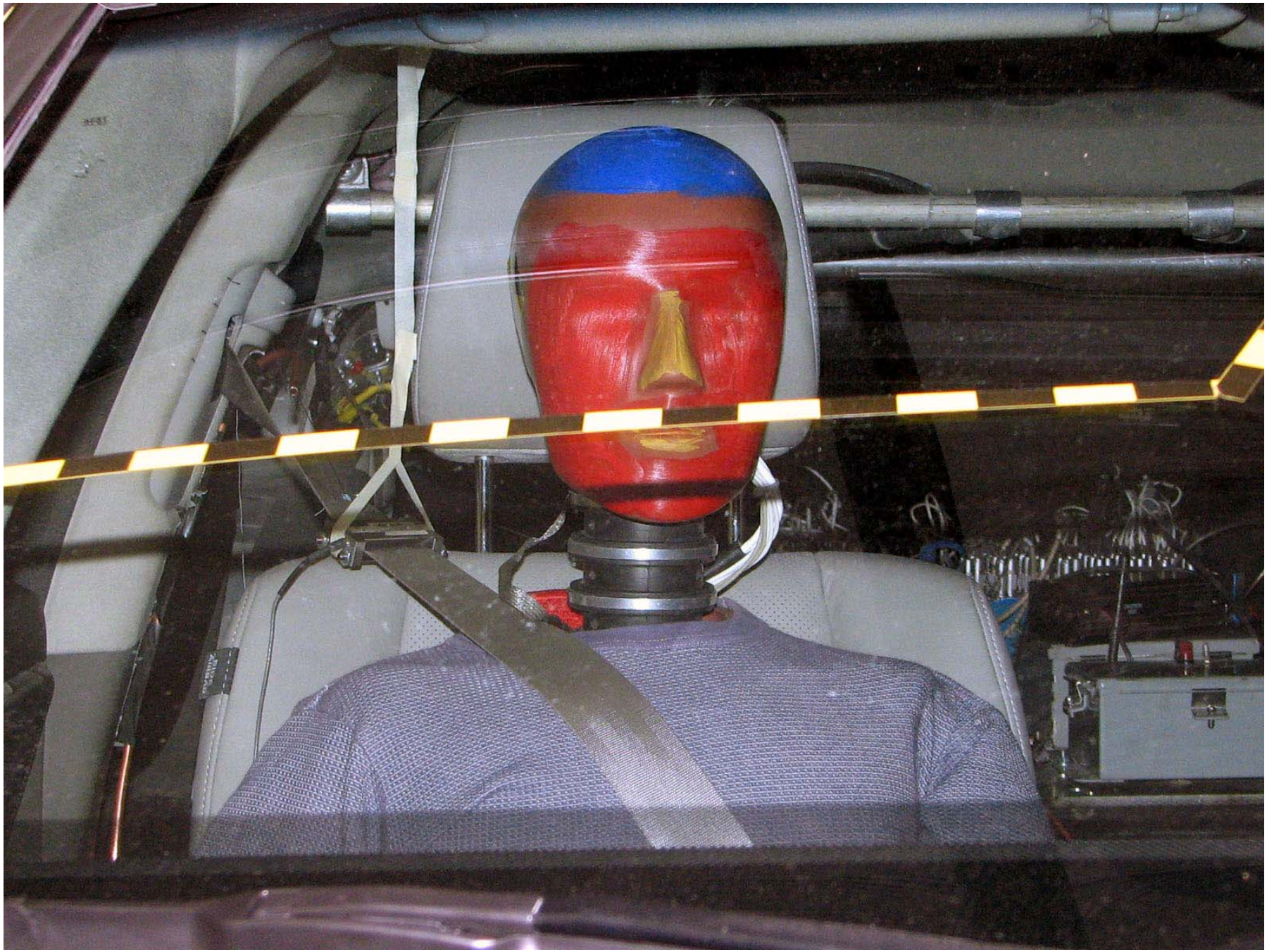


Figure A-44: Pre-Test Passenger Dummy Front View (Head Position)

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

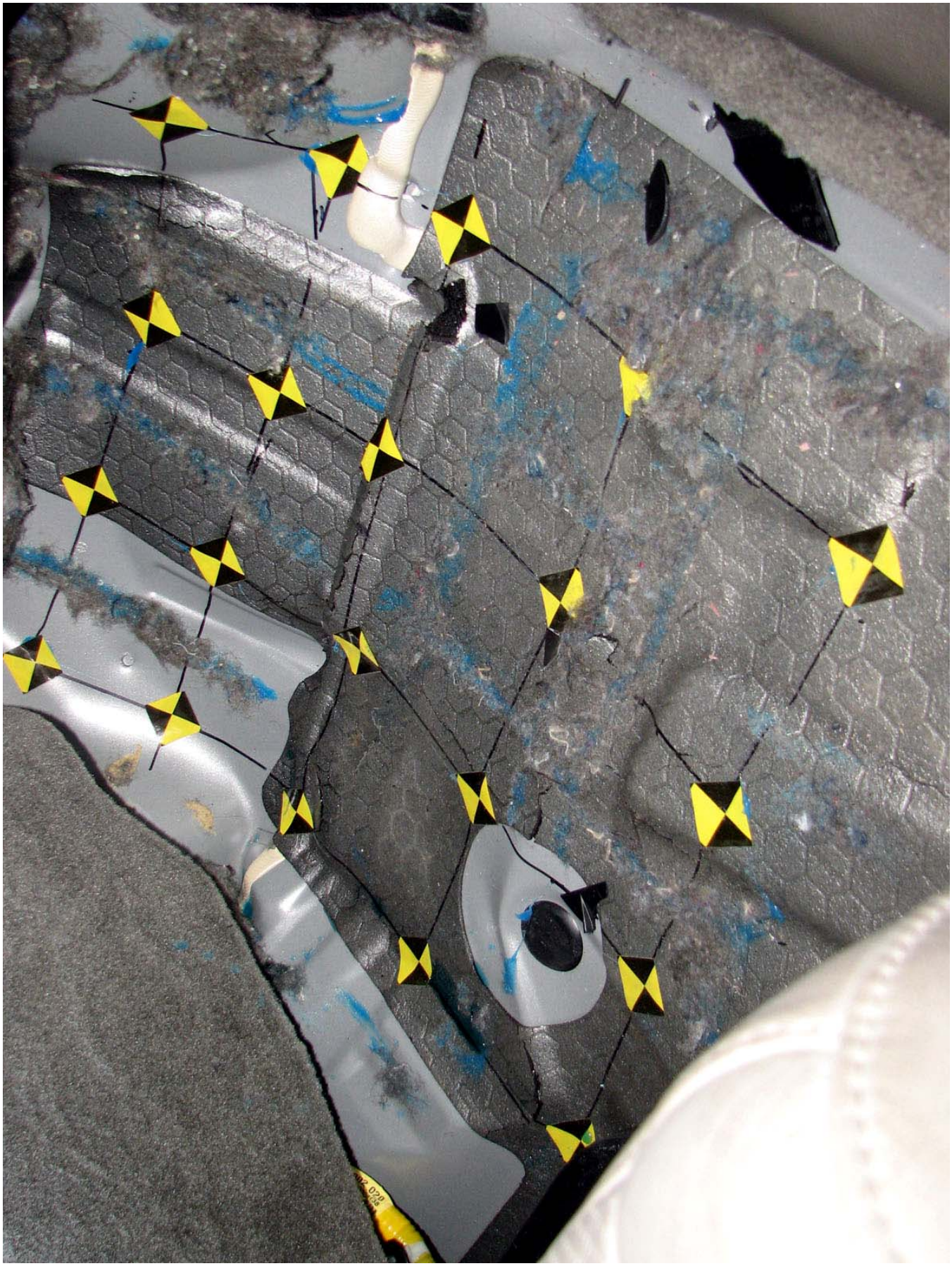


Figure A-55: Post-Test Passenger Side Floor Pan

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°)

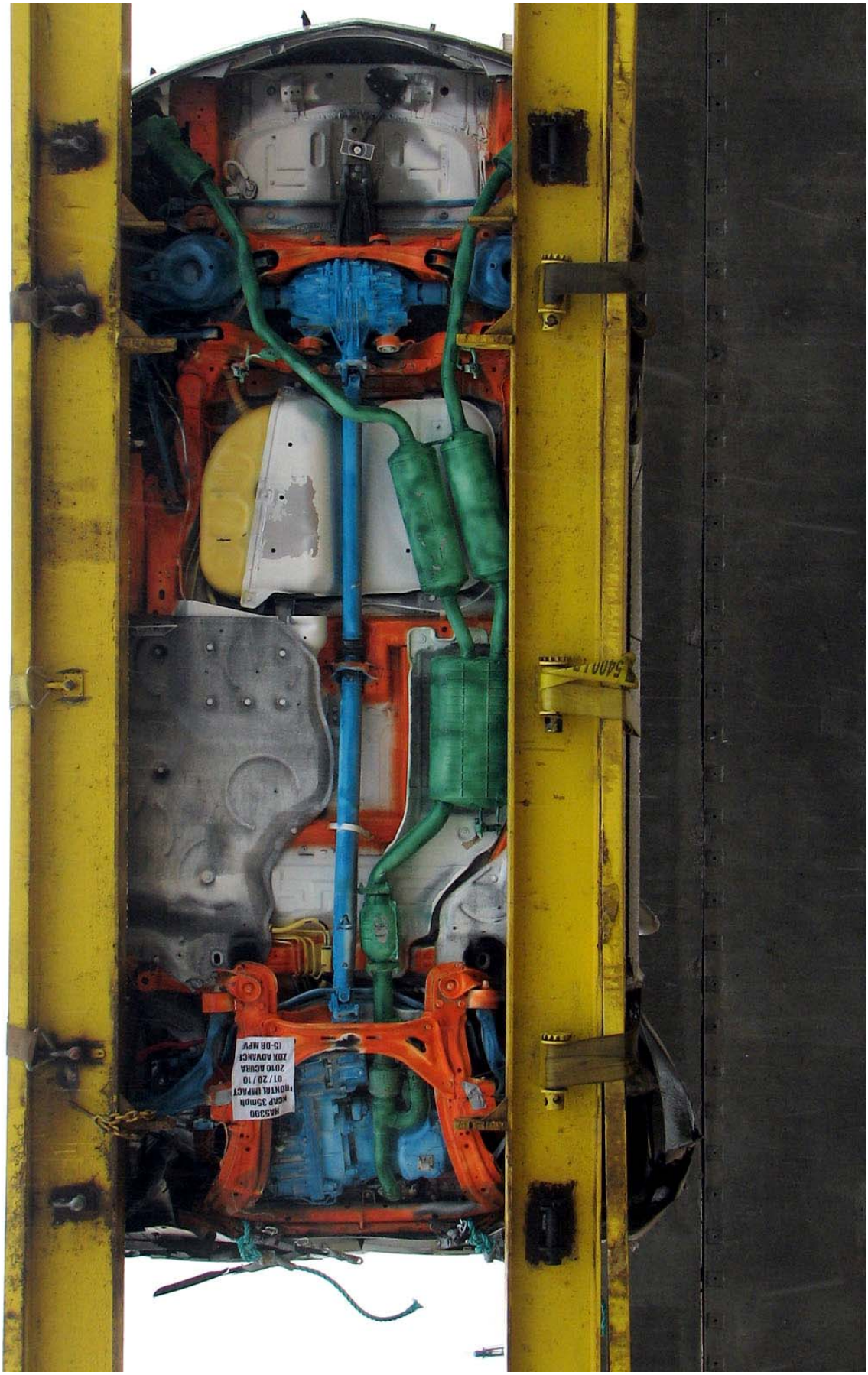


Figure A-61: Vehicle on Rollover Device (270°)

Figure A-62: Vehicle on Rollover Device (360°)

Figure A-63: Timers

Figure A-64: Vehicle Impact

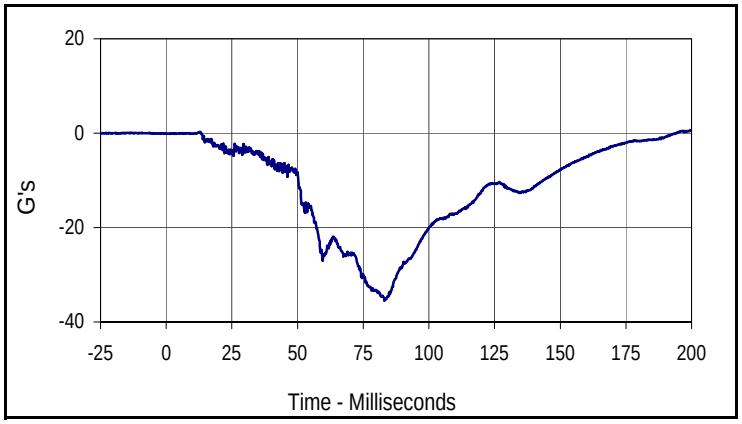
APPENDIX B
DATA PLOTS

LIST OF DATA PLOTS

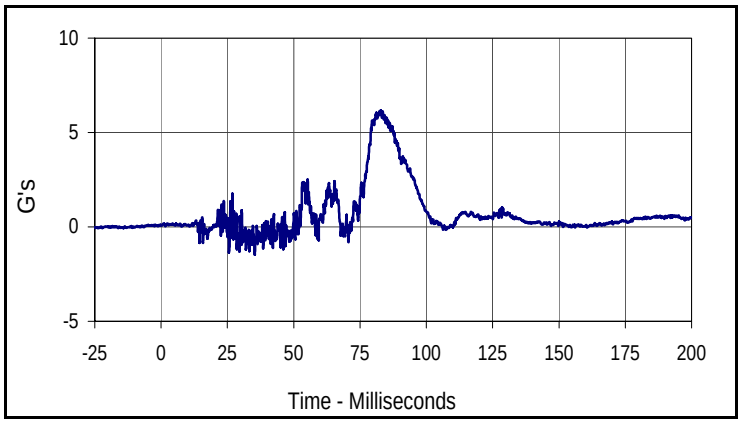
The following additional data plots for this test can be obtained from the research and development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

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

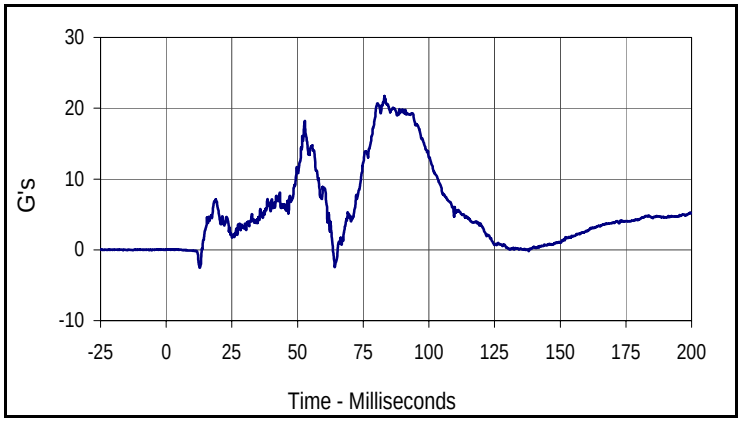
Test Vehicle:	2010 Acura ZDX Advance 5-Door MPV	Test Date:	1/20/10
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	HA5300



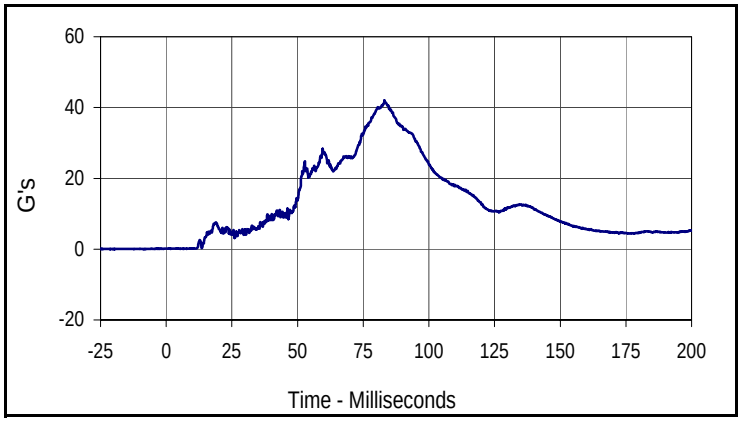
Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
0.7	200.0	-35.5	83.1



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.2	82.9	-1.5	35.3

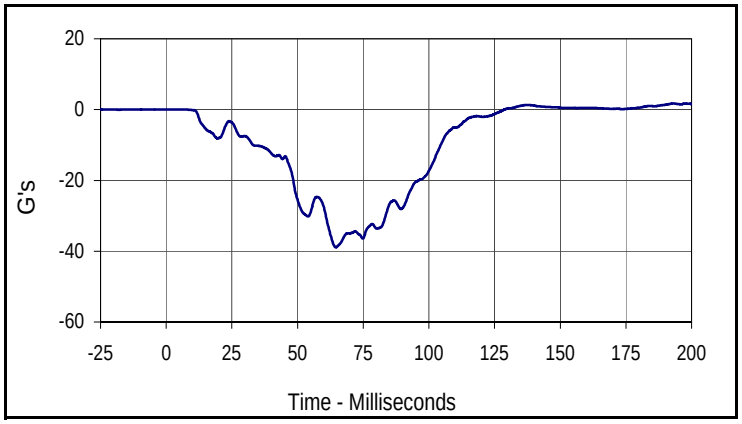


Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
21.7	83.0	-2.5	12.8

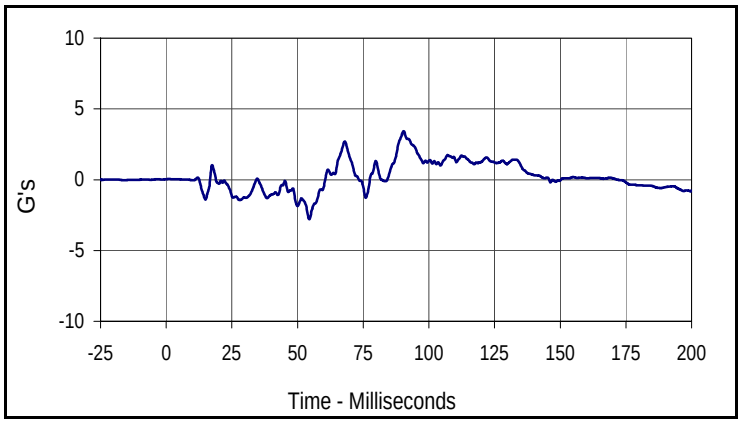


Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
42.0	83.1	0.0	7.7

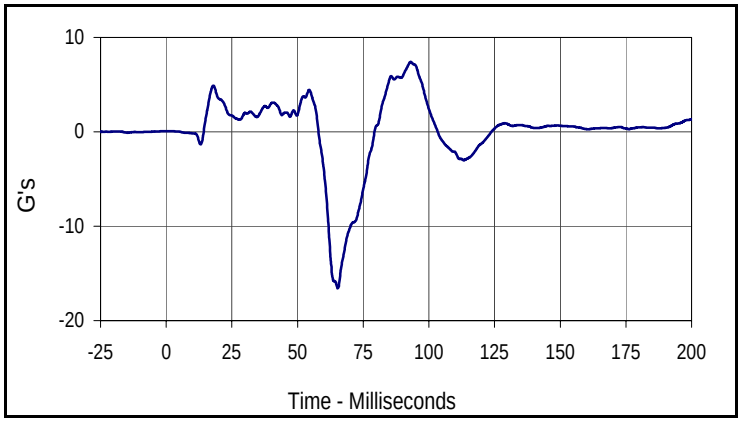
Test Vehicle:	2010 Acura ZDX Advance 5-Door MPV	Test Date:	1/20/10
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	HA5300



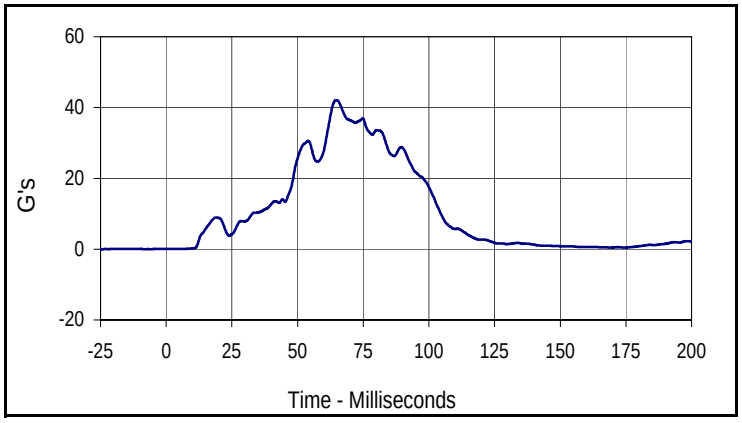
Curve Description			
Driver Chest Primary X			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
1.7	193.0	-38.9	64.6



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
3.4	90.4	-2.8	54.5

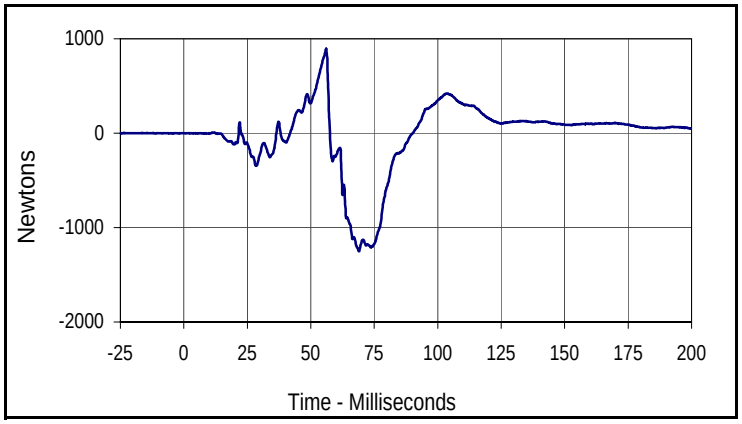


Curve Description			
Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
7.4	93.1	-16.6	65.3

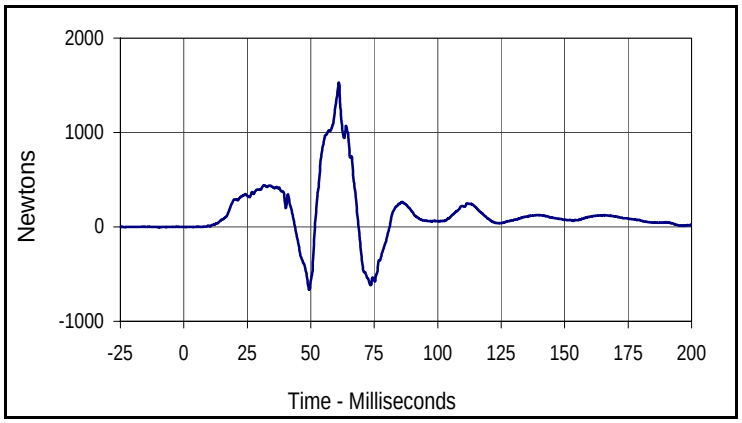


Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
004	RES	180	G's
Max	Time	Min	Time
42.1	64.8	0.0	5.4

Test Vehicle:	2010 Acura ZDX Advance 5-Door MPV	Test Date:	1/20/10
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	HA5300

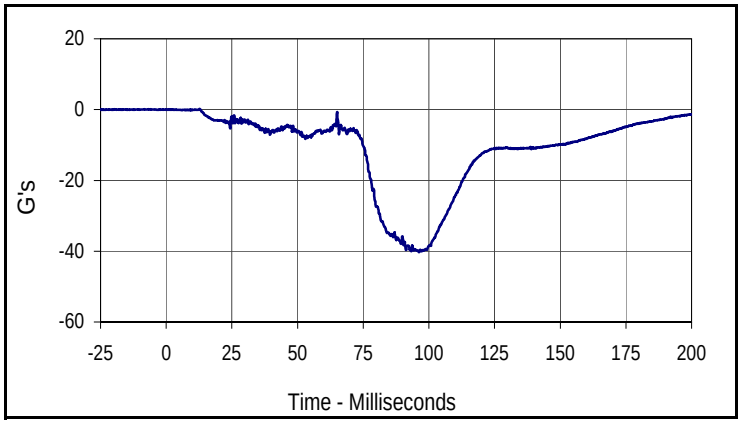


Curve Description			
Driver Left Femur Force Z			
CURNO	Type	SAE Class	Units
007	FIL	600	Newtons
Max	Time	Min	Time
896.5	56.0	-1251.5	69.0

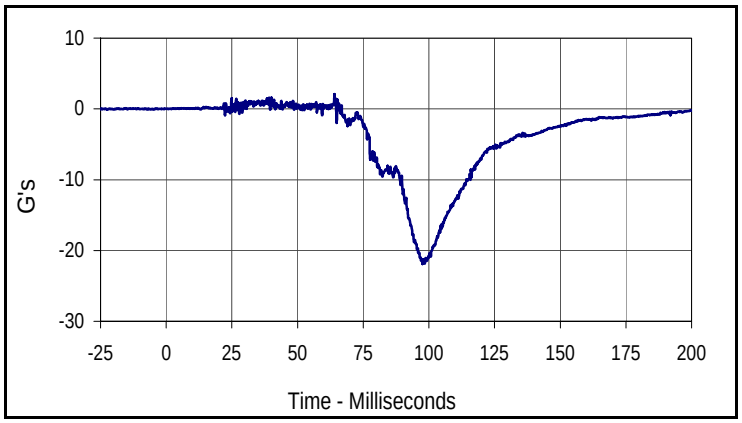


Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
1528.3	61.1	-663.8	49.4

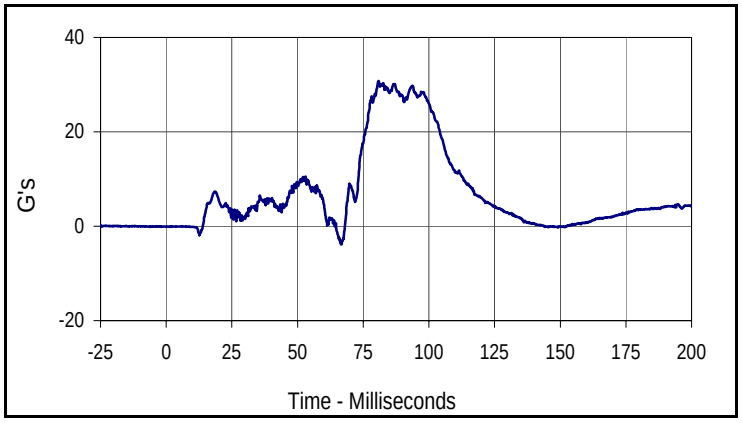
Test Vehicle:	2010 Acura ZDX Advance 5-Door MPV	Test Date:	1/20/10
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	HA5300



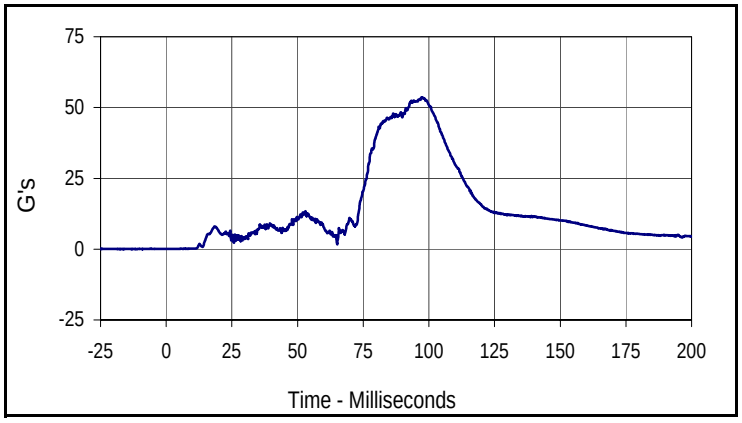
Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
009	FIL	1000	G's
Max	Time	Min	Time
0.2	12.7	-40.3	96.2



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
010	FIL	1000	G's
Max	Time	Min	Time
2.1	64.1	-21.9	97.5

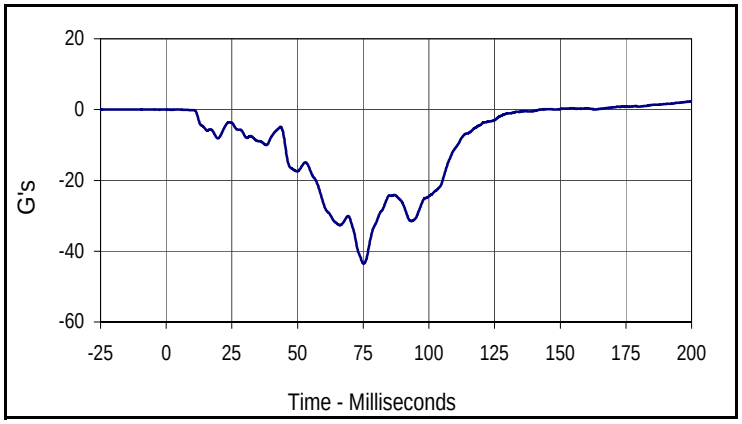


Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
011	FIL	1000	G's
Max	Time	Min	Time
30.8	80.9	-3.9	66.6

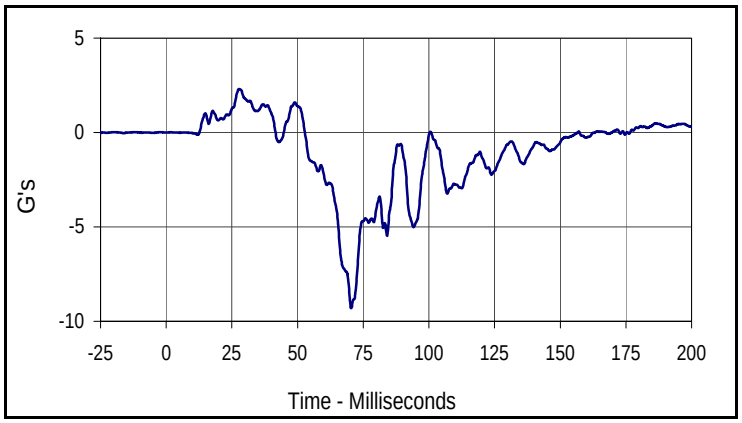


Curve Description			
Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
009	RES	1000	G's
Max	Time	Min	Time
53.6	97.5	0.0	3.7

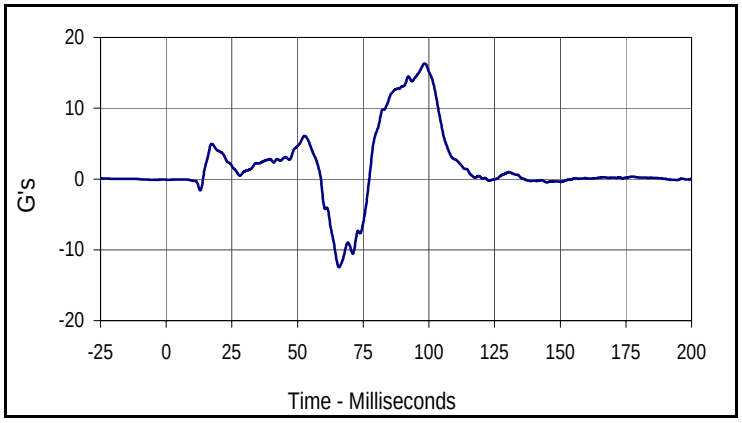
Test Vehicle:	2010 Acura ZDX Advance 5-Door MPV	Test Date:	1/20/10
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	HA5300



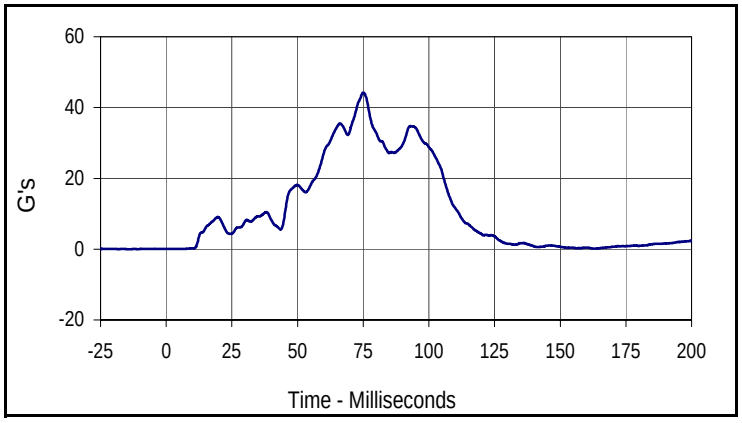
Curve Description			
Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
2.3	200.0	-43.6	75.1



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.3	27.7	-9.3	70.4

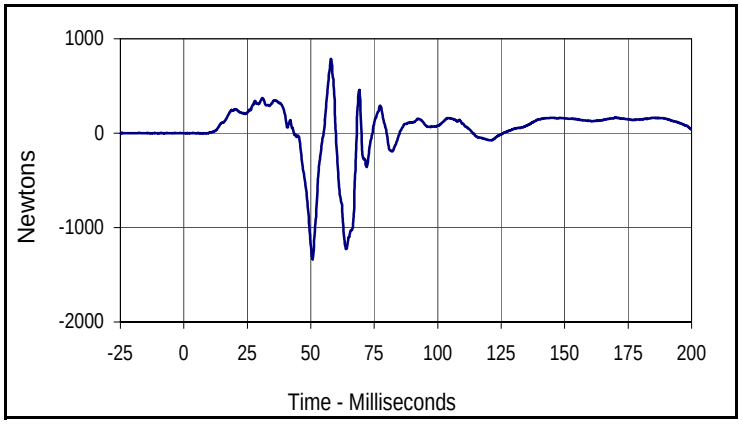


Curve Description			
Passenger Chest Primary Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
16.3	98.4	-12.5	65.8

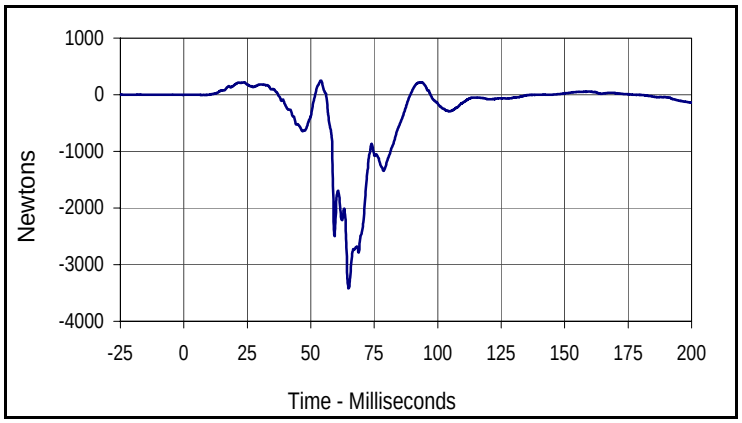


Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
44.2	75.0	0.1	4.2

Test Vehicle:	2010 Acura ZDX Advance 5-Door MPV	Test Date:	1/20/10
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	HA5300



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
786.1	58.0	-1335.1	50.7



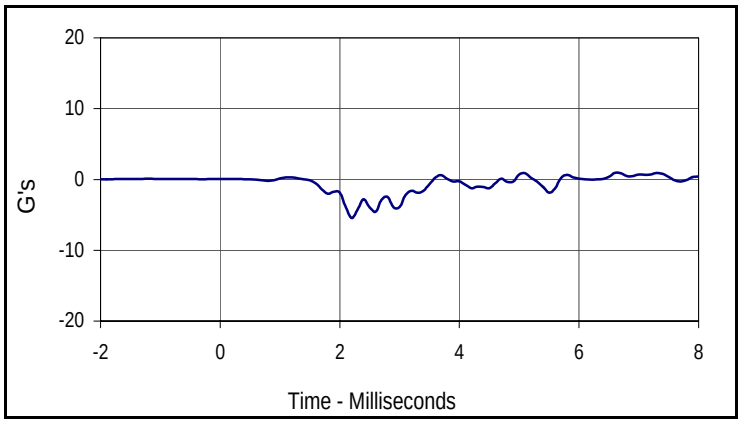
Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
250.8	54.0	-3417.4	64.9

APPENDIX C
DUMMY CALIBRATION DATA

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	1/7/10
ATD Serial No.:	034	Test I.D.:	HD01B

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	236.8	Pass
Peak Lateral Acceleration	G's	≤15.0	5.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

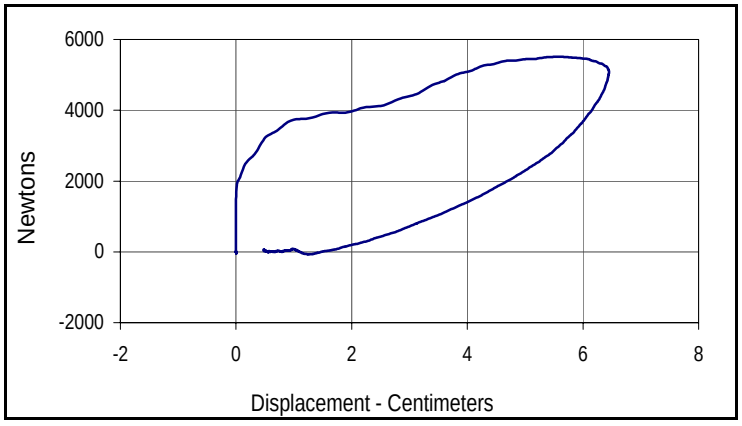
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
236.8	2.4	0.1	0.4



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.9	5.1	-5.5	2.2

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	1/7/10
ATD Serial No.:	034	Test I.D.:	CH01D

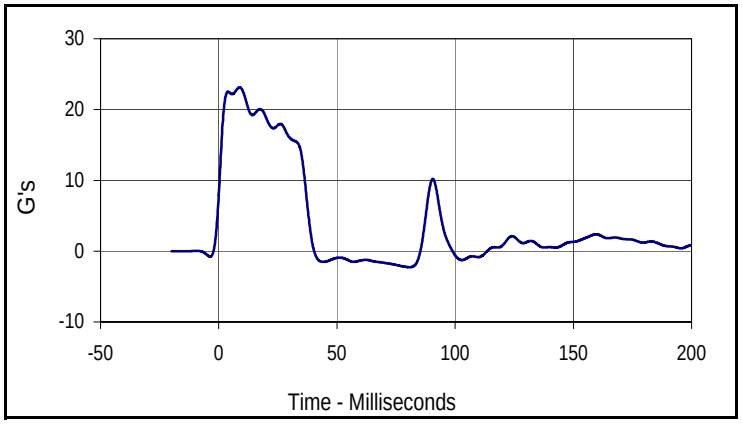
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5514	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.45	Pass
Internal Hysterysis	%	69 to 85	71.8	Pass
		Overall Test Results		Pass



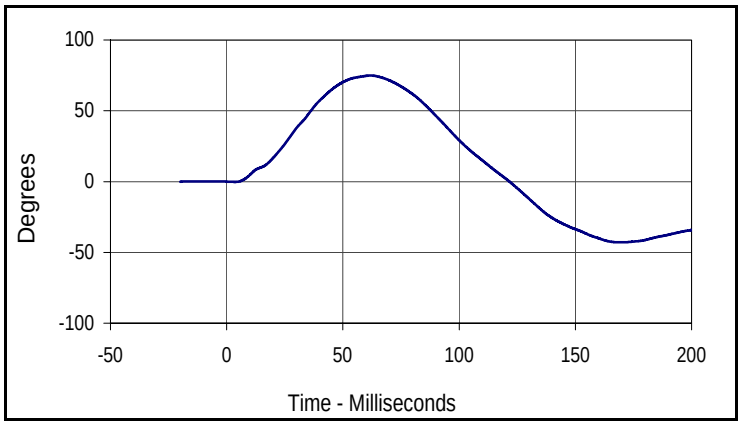
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	71.8
Peak Probe Force		Peak Chest Deflection	
5514		6.45	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	1/7/10
ATD Serial No.:	034	Test I.D.:	NF01B

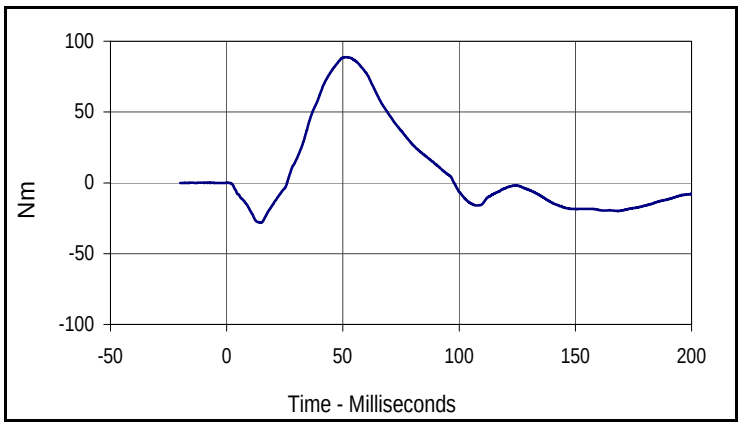
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.04	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.7	Pass
	20 Msec.	G's	17.6 to 22.6	18.9	Pass
	30 Msec.	G's	12.5 to 18.5	16.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	74.9	Pass
	Time	Msec.	57.0 to 64.0	62.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.7	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	88.8	Pass
	Time	Msec.	47.0 to 58.0	51.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.1	8.8	-2.3	80.8



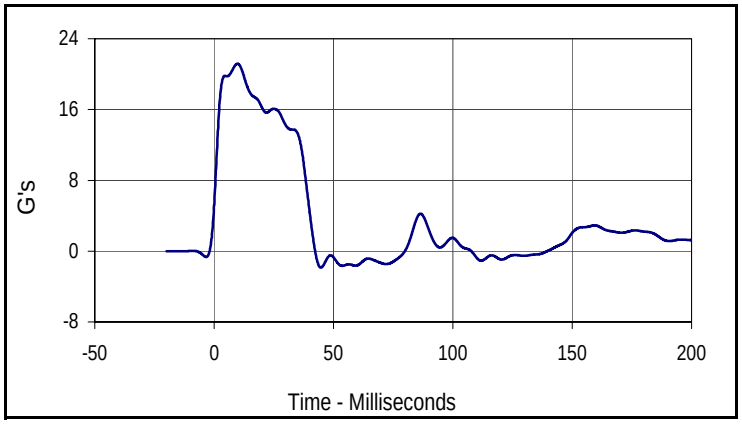
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
74.9	62.0	-42.9	169.4



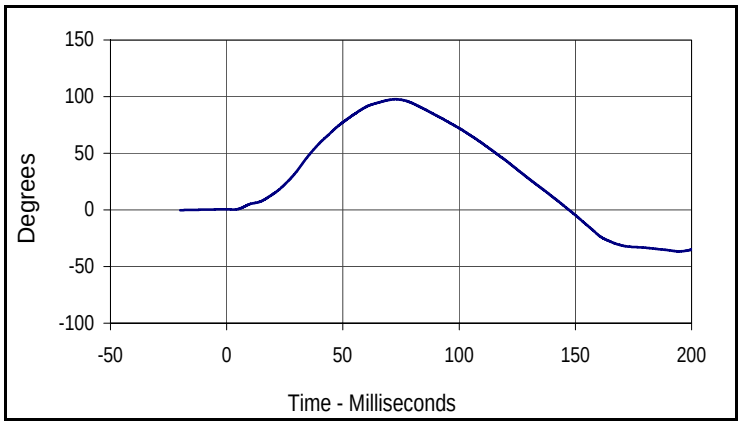
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
88.8	51.5	-28.2	14.4

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	1/7/10
ATD Serial No.:	034	Test I.D.:	NE01A

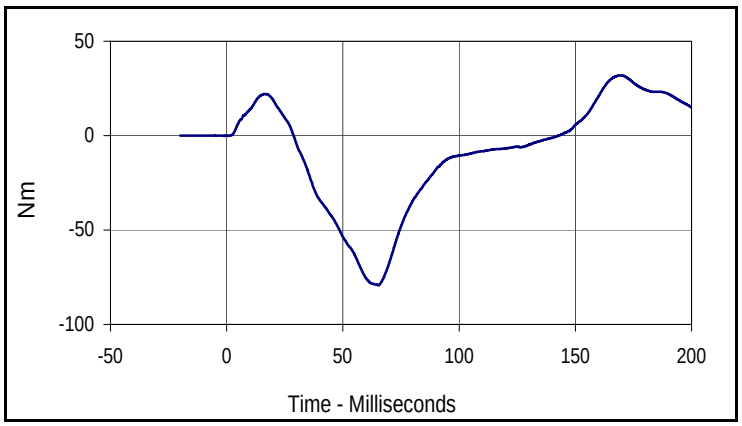
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.19	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	21.2	Pass
	20 Msec.	G's	14.0 to 19.0	16.2	Pass
	30 Msec.	G's	11.0 to 16.0	14.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.8	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	97.6	Pass
	Time	Msec.	72.0 to 82.0	72.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	147.3	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-79.4	Pass
	Time	Msec.	65.0 to 79.0	65.3	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	142.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
21.2	9.8	-1.9	44.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
97.6	72.6	-36.7	194.5



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
31.9	169.7	-79.4	65.3

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	1/7/10
ATD Serial No.:	034	Test I.D.:	KN01C , KN01D

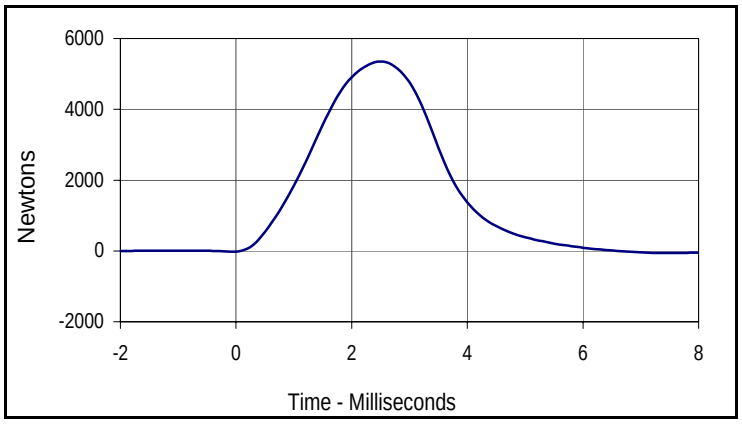
Left Knee

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	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5352	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	5352	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5351.7	2.5	-57.1	7.4



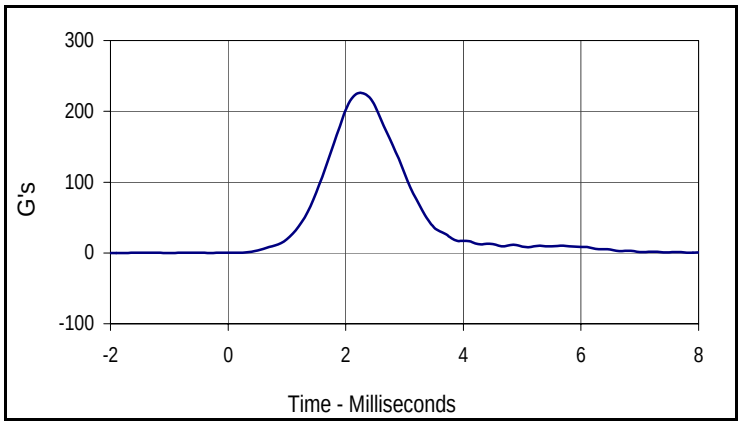
Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5351.7	2.5	-57.1	7.4

Test Program:	Hybrid III 50th Percentile Male External Measurements	Test Date:	1/7/10
ATD Serial No.:	034	Test I.D.:	N/A

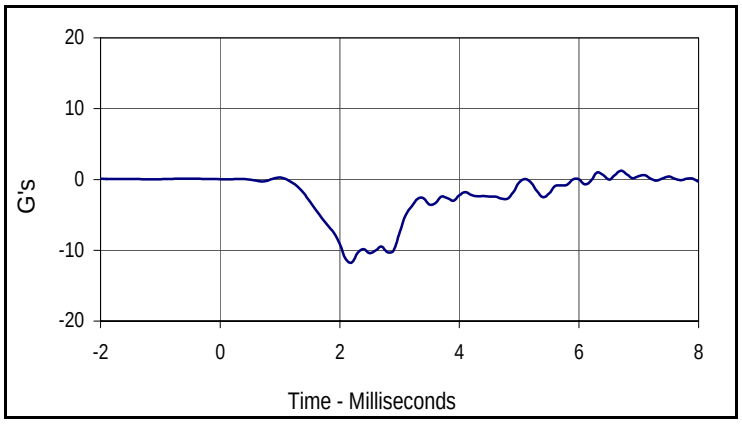
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	886	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - "H" point height	mm	84 to 89	88	Pass
D - "H" point 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	300	Pass
H - Skull cap to back line	mm	41 to 46	42	Pass
I - Shoulder to elbow length	mm	330 to 345	333	Pass
J - Elbow rest height	mm	190 to 211	208	Pass
K - Buttock to knee length	mm	579 to 604	591	Pass
L - Poplipteal length	mm	429 to 455	446	Pass
M - Knee pivot height	mm	485 to 500	489	Pass
N - Buttock poplipteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	216	Pass
P - Foot length	mm	251 to 267	257	Pass
V - Shoulder breadth	mm	422 to 437	425	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	991	Pass
Z - Waist circumference	mm	836 to 866	856	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:	1/8/10
ATD Serial No.:	035	Test I.D.:	HD01A

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	225.5	Pass
Peak Lateral Acceleration	G's	≤15.0	11.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass



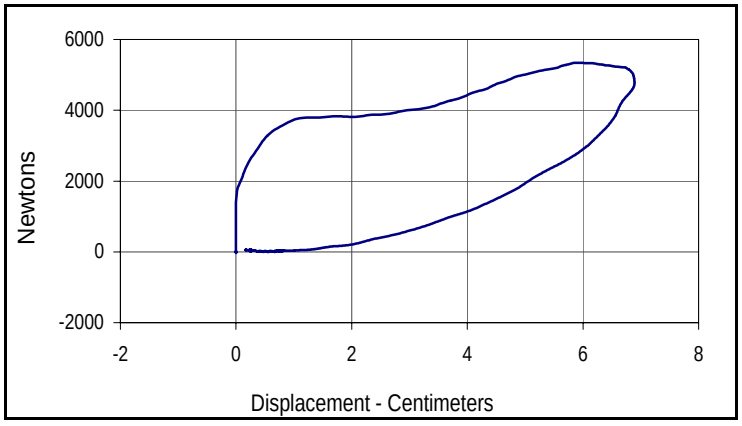
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
225.5	2.3	0.1	-1.0



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.3	1.0	-11.7	2.2

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	1/8/10
ATD Serial No.:	035	Test I.D.:	CH01C

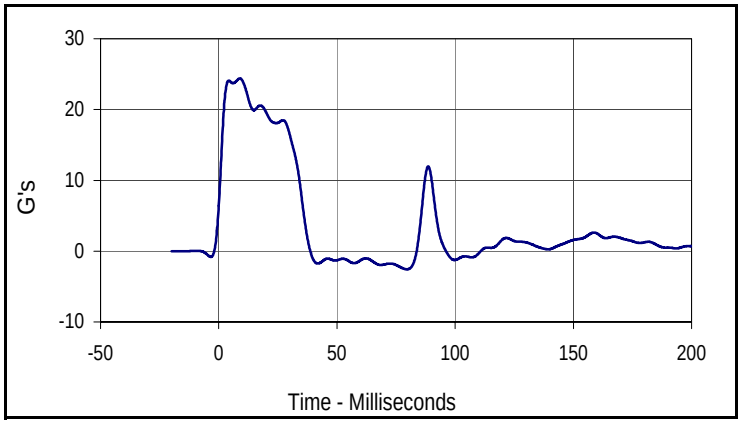
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5343	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.89	Pass
Internal Hysterysis	%	69 to 85	70.8	Pass
		Overall Test Results		Pass



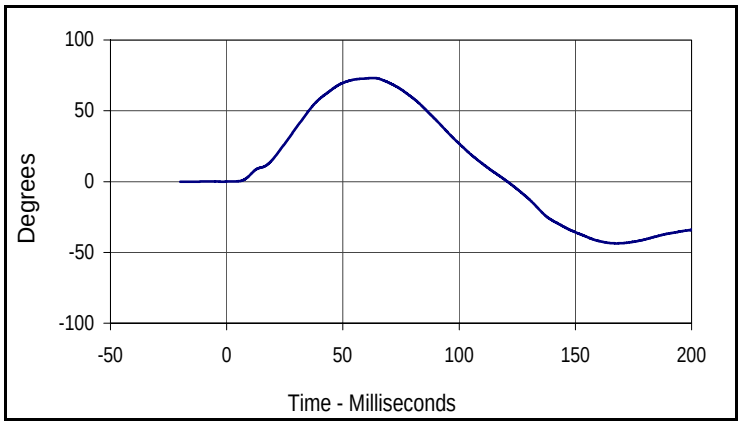
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	70.8
Peak Probe Force		Peak Chest Deflection	
5343		6.89	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	1/8/10
ATD Serial No.:	035	Test I.D.:	NF01A

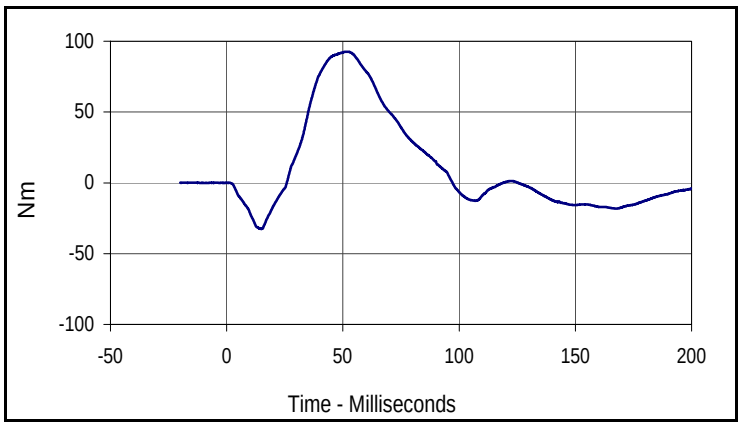
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.92	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.1	Pass
	20 Msec.	G's	17.6 to 22.6	19.6	Pass
	30 Msec.	G's	12.5 to 18.5	16.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	73.2	Pass
	Time	Msec.	57.0 to 64.0	63.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	120.8	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	92.6	Pass
	Time	Msec.	47.0 to 58.0	52.3	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.4	8.9	-2.6	79.6



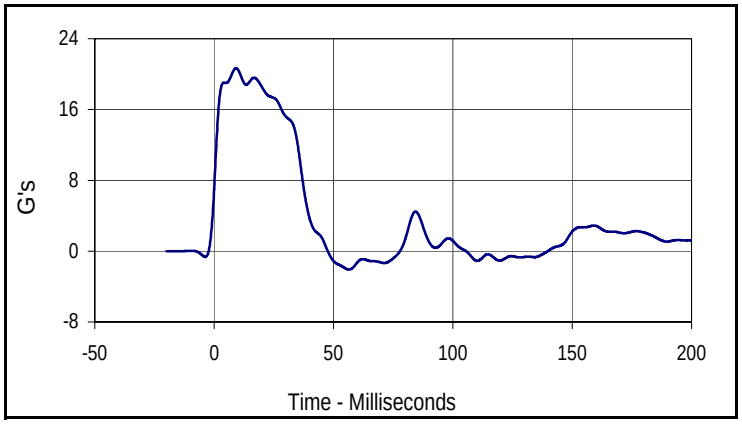
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
73.2	63.1	-43.6	167.7



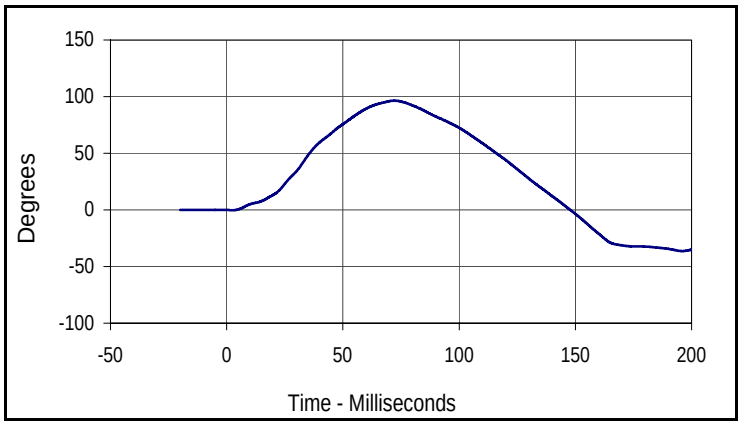
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
92.6	52.3	-32.5	15.0

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	1/8/10
ATD Serial No.:	035	Test I.D.:	NE01B

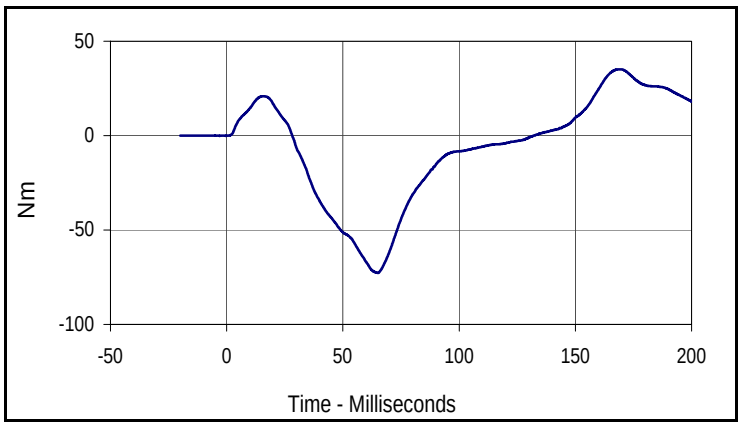
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.5	Pass
	20 Msec.	G's	14.0 to 19.0	18.6	Pass
	30 Msec.	G's	11.0 to 16.0	15.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	38.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	96.5	Pass
	Time	Msec.	72.0 to 82.0	72.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	147.8	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-72.7	Pass
	Time	Msec.	65.0 to 79.0	65.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	132.0	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	9.2	-2.1	56.5



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
96.5	72.1	-36.3	195.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
35.1	168.6	-72.7	65.1

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	1/8/10
ATD Serial No.:	035	Test I.D.:	KN01E , KN01F

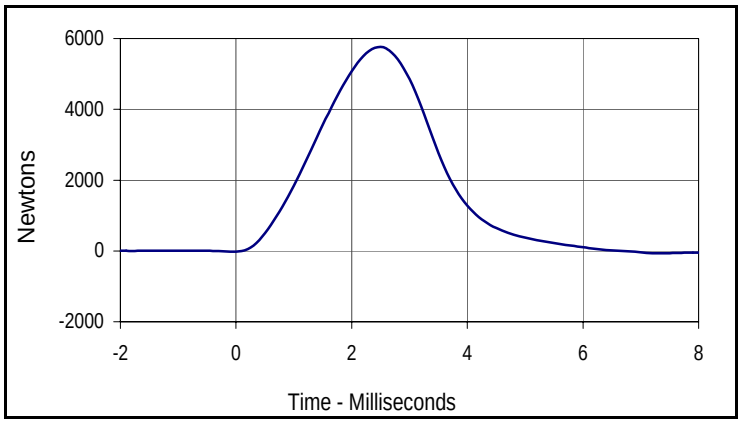
Left Knee

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	2.13	Pass
Peak Probe Force	Newtons	4715 to 5782	5493	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	5762	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5493.2	2.9	-50.5	8.3



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5762.0	2.5	-68.4	7.3

Test Program:	Hybrid III 50th Percentile Male External Measurements	Test Date:	1/8/10
ATD Serial No.:	035	Test I.D.:	N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	887	Pass
B - Shoulder pivot height	mm	505 to 521	508	Pass
C - "H" point height	mm	84 to 89	86	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	148	Pass
G - Elbow back to wrist pivot	mm	290 to 305	300	Pass
H - Skull cap to back line	mm	41 to 46	42	Pass
I - Shoulder to elbow length	mm	330 to 345	331	Pass
J - Elbow rest height	mm	190 to 211	208	Pass
K - Buttock to knee length	mm	579 to 604	591	Pass
L - Poplipteal length	mm	429 to 455	444	Pass
M - Knee pivot height	mm	485 to 500	491	Pass
N - Buttock poplipteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	216	Pass
P - Foot length	mm	251 to 267	257	Pass
V - Shoulder breadth	mm	422 to 437	427	Pass
W - Foot breadth	mm	91 to 107	102	Pass
Y - Chest circumference	mm	970 to 1001	989	Pass
Z - Waist circumference	mm	836 to 866	856	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	227	Pass
		Overall Test Results		Pass

Test Program:	Dummy Damage Checklist	Test Date:	1/7/10
ATD Serial No.:	034	Test I.D.:	N/A

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

Comments on repair or replacement parts:

Test Program:	Dummy Damage Checklist	Test Date:	1/8/10
ATD Serial No.:	035	Test I.D.:	N/A

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

Comments on repair or replacement parts: