

REPORT NUMBER TR-P29080-01-NC

**NEW CAR ASSESMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**VOLKSWAGEN AG GERMANY
2009 VOLKSWAGEN TIGUAN SE 4MOTION
5-DOOR MPV**

NHTSA NUMBER: V95802

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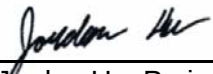
JUNE 16,2009

FINAL REPORT

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact test was conducted on the subject 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV at KARCO Engineering, LLC, in Adelanto, CA, on June 16, 2009. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.28 km/h. The ambient temperature at the barrier at the time of the crash was 27.8 degrees Celsius. The vehicle's maximum post static crush was 289 mm at DPD 4, to the right of 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	462.6	374.8
Max. Chest Accel. (3 msec. Chest Clip)		G's	60	43.7	42.8
Left Femur Force		Newtons	10008	-1773.1	-3980.4
Right Femur Force		Newtons	10008	-5005.3	-812.1
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SECTION 1
PURPOSE AND SUMMARY OF TEST V95802

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 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV at a velocity of 56.28 km/h. The test was performed at KARCO Engineering, LLC on June 16, 2009

Three (3) real-time and fourteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 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.034) and the right-front passenger (position 2) ATD (Serial No. 035) 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 289 mm at DPD 4, to the right of 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 headliner and 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	462.6	43.7	-27.9	-1773.1	-5005.3
Passenger	374.8	42.8	-33.7	-3980.4	-812.1

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

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

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	°F	°C	$=(tf - 32)/1.8$
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: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

NHTSA No.: V95802
 Test Date: 6/16/09

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.28
Test Weight	kg	1944
Impact Angle	degrees	0
Average Rebound	mm	7061
Maximum Static Crush	mm	289

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)	5 mm	2 mm
Seatback Failure	No	No

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type/Serial No.	50% Male Hybrid III No.034	50% Male Hybrid III No. 035
Head Contact	Airbag, Headrest	Airbag, Headliner, Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	None	None
Left Knee Contact	Bolster	Glovebox
Right Knee Contact	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 Accelerometers	8
Rigid Barrier Load Cells	36
Total	132

DATA SHEET NO. 2**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA No.	V95802
Make	Volkswagen
Model	Tiguan SE 4Motion
Body Style	5-Door MPV
VIN No.	WVGVBV75N59W531577
Color	Red
Delivery Date	05/28/09
Odometer (Miles)	77.0
Dealer	Riverside Volkswagen
Transmission	6-Speed Automatic
Final Drive	AWD
Type/No. of Cylinders	Turbo Inline 4
Engine Displ. (L)	2.0
Engine Placement	Transverse
Roof Rack	Yes
Sunroof/T-top	No
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	Yes
Power Steering	Yes
Driver Front Airbag	Yes
Driver Side Torso Airbag	Yes
Driver Side Head Airbag	No
Driver Curtain Airbag	Yes
Pass. Airbag	Yes
Pass. Side 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	N/A

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

Yes

DATA FROM CERTIFICATION TABLE

Manufactured By	VOLKSWAGEN AG GERMANY
Date of Manufacture	Feb-09

GVWR (kg)	2250
GAWR Front (kg)	1140
GAWR Rear (kg)	1170

VEHICLE SEATING CAPACITY AND WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				505
Cargo Weight (RCLW) (kg)				136

DATA SHEET NO. 2...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

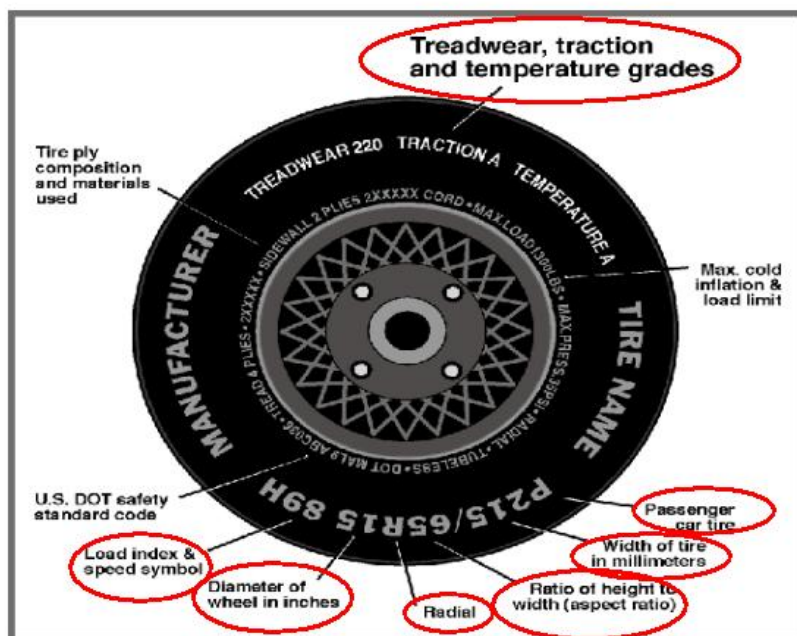
Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

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)	260	260
Recommended Tire Size	P235/55R17	P235/55R17
Tire Size on Vehicle	P235/55R17	P235/55R17
Tire Manufacturer	Continental	Continental
Treadwear	400	400
Traction	AA	AA
Temperature Grades	A	A
Tire Plies - Sidewall	1 Rayon	1 Rayon
Tire Plies - Body	1 Rayon, 2 Steel, 1 Nylon	1 Rayon, 2 Steel, 1 Nylon
Load Index/Speed Symbol	99H	99H
Tire Material	Rayon, Steel, Nylon	Rayon, Steel, Nylon
DOT Safety Code Right	LMT4 PXH6 0209	LMT4 PXH6 0209
DOT Safety Code Left	LMT4 PXH6 0209	LMT4 PXH6 0209

DATA SHEET NO. 2...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV NHTSA No.: V95802
 Test Program: NHTSA 35mph NCAP Test Date: 6/16/09

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	476.5	355.0	831.5	501.5	473.5	975.0
Right	kg	463.5	349.5	813.0	498.5	470.5	969.0
Ratio	%	57.2	42.8	100.0	51.4	48.6	100.0
Totals	kg	940.0	704.5	1644.5	1000.0	944.0	1944.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1644.5
Weight of 2 P572 ATD's	kg	170.0
Rated Cargo/Luggage Weight (RCLW)	kg	136.0
Calculated Target Vehicle Test Weight (TVTW)	kg	1950.5

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	798	807	815	814	1117
As Tested	mm	786	788	771	774	1268

Vehicle Wheel Base (mm) 2610
 Weight of Ballast Secured in Cargo Area (kg) 0
 Weight of Items Removed (kg) 28
 Vehicle Components Removed: Spare Tire, Jack, Tools, Rear Cargo Liner, Muffler, and Heat Shield

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

FUEL SYSTEM DATA

Fuel System Capacity from Owner's Manual (L) 64.35
 Actual Test Volume with Entire Fuel System Filled (L) 59.84
 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 runs for 2 seconds after ignition is switched on. If the engine does not run, the fuel pump stops running. If there is a crash signal, it will also stop running.

DATA SHEET NO. 3
POST-TEST IMPACT DATA

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

NHTSA No.: V95802
 Test Date: 6/16/09

SPEED TRAP DATA

Measured Paramater	Units	Requirement	Value
Trap No. 1 Velocity	km/h	55.1 to 57.12	56.28
Trap No. 2 Velocity	km/h	55.1 to 57.12	

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	3795	3700	95
Center	mm	4426	4231	195
Right Side	mm	3790	3757	33

VEHICLE REBOUND FROM BARRIER

Measured Paramater	Units	Value
Left Side	mm	7150
Center	mm	6920
Right Side	mm	7112
Average	mm	7061

DATA SHEET NO. 4

TEST VEHICLE INFORMATION

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

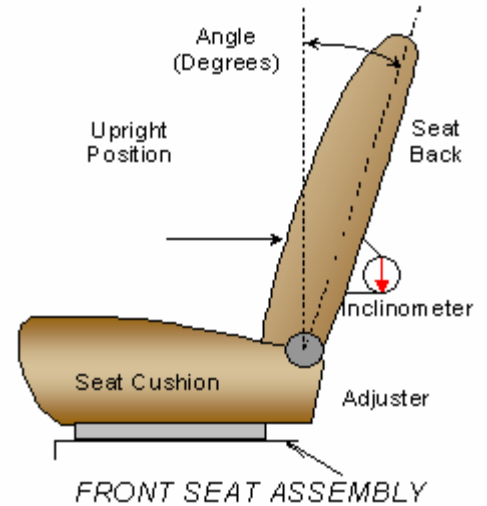
NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

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 seat back, using a digital inclinometer.



SEAT BACK ANGLES

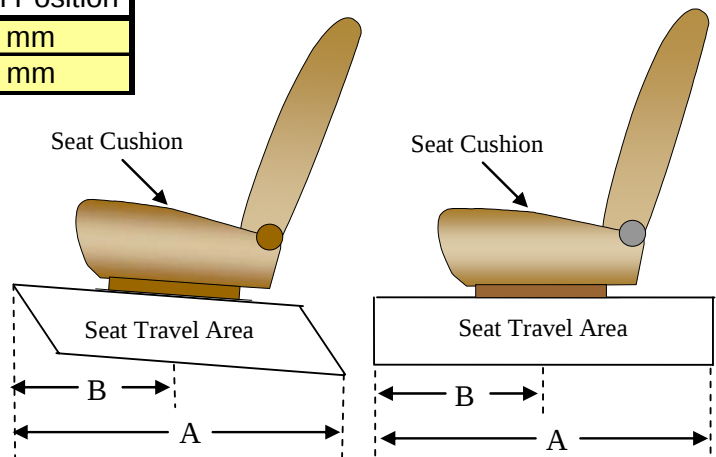
Position	Degrees
Driver w/ Seated Dummy	18.4
Passenger w/ Seated Dummy	18.0

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	294 mm	147 mm
Passenger Seat	297 mm	149 mm



SEAT BELT ANCHORAGE

Position number one (1) is the uppermost position.

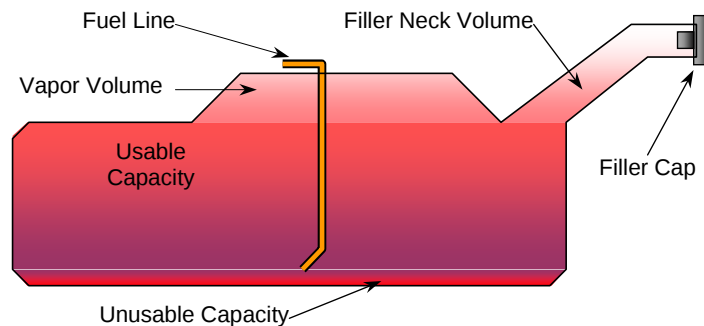
SEAT BELT ANCHORAGE POSITIONING

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

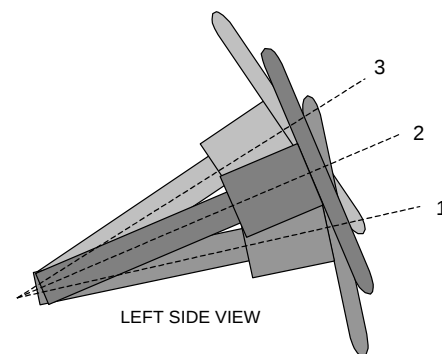
DATA SHEET NO. 4...(CONTINUED)**TEST VEHICLE INFORMATION**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**FUEL TANK CAPACITY**

	Liters
Usable Capacity of Standard Tank	64.35
Usable Capacity of Optional Tank	
Usable Capacity Used for FMVSS 301	59.20 to 60.48
Actual Amount of Solvent Used	59.84

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 left rear passenger floor..

**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 (mm)
Lowermost - Position No. 1	27.0	75
Geometric Center - Position No. 2	29.2	98
Uppermost - Position No. 3	31.4	120

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windsheild angle		28.8		
SWA	Steering wheel angle		29.7		
SCA	Steering column angle		60.3		
SA	Seat Back angle		18.4		18.0
HZ	Head to roof (Z)	271	90.0	259	90.0
HH	Head to header	458		440	
HW	Head to windshield	754		736	
HR	Head to side header (Y)	292		292	
NR	Nose to rim	456	4.6		
CD	Chest to dash	582		520	
CS	Chest to steering hub	355			
RA	Rim to abdomen	238			
KDL	Left knee to dash	198	36.2	143	
KDR	Right knee to dash	150		197	27.2
PA	Pelvic angle		23.8		20.3
TA	Tibia Angle		49.9		44.2
KK	Knee to knee	330		261	
SK	Striker to outboard knee	602	8.2	614	11.1
ST	Striker to head	473	85.5	480	84.8
SH	Striker to H-Point	189	0.0	202	0.0
SHY	Striker to H-Point (Y)	235		243	
HS	Head to side window	362		369	
HD	H-Point to door	139		153	
AD	Arm to door	155		70	

DATA SHEET NO. 5...(CONTINUED)

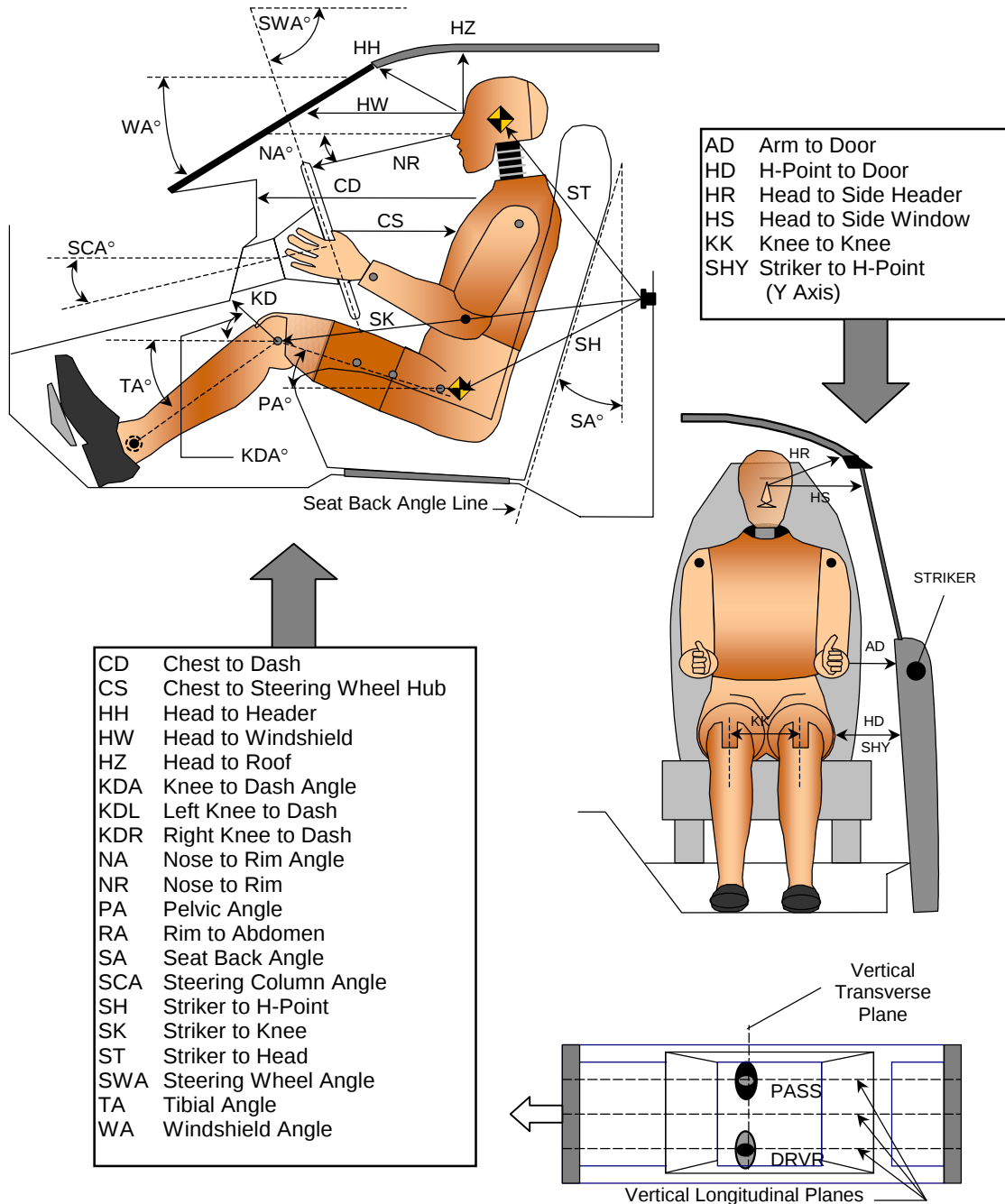
DUMMY POSITIONING IN VEHICLE

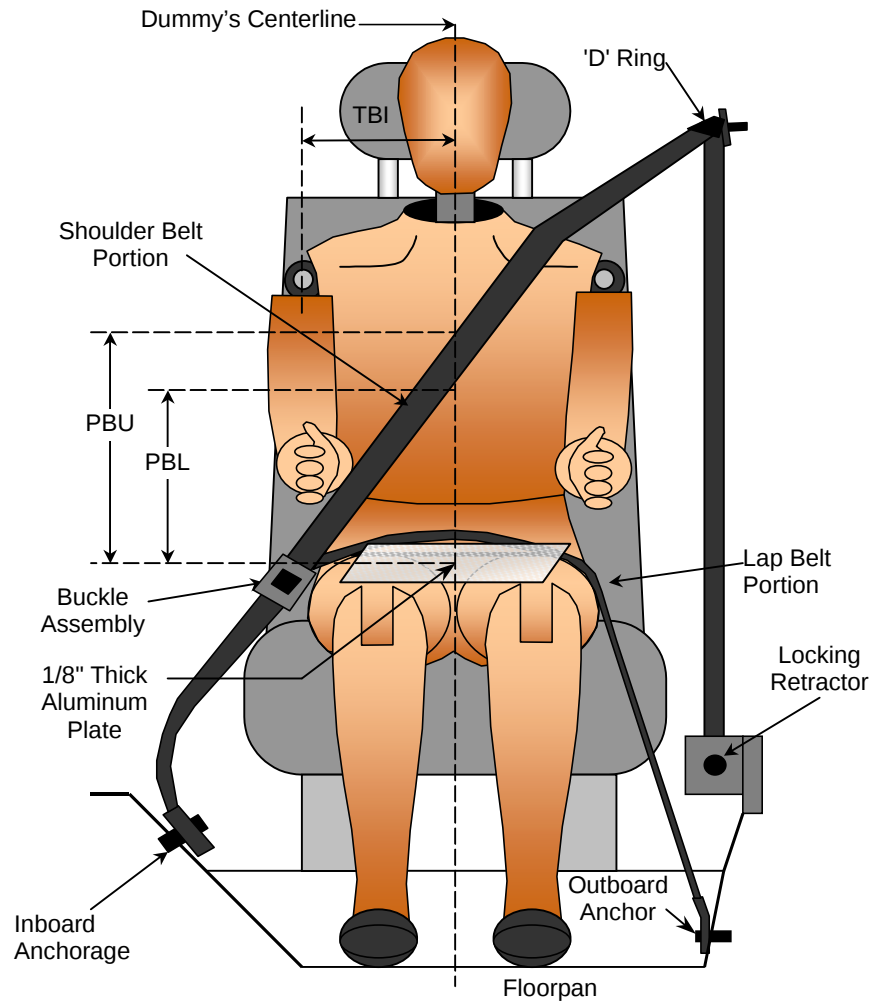
Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09



DATA SHEET NO. 6**SEAT BELT POSITIONING DATA**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**SEAT BELT POSITIONING MEASUREMENTS**

Measured Parameter	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	200	147
PBU - Top Surface of Reference to Belt Upper Edge	mm	375	325
PBL - Top Surface of Reference to Belt Lower Edge	mm	297	235
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

DATA SHEET NO. 7**VEHICLE ACCELEROMETER LOCATIONS**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**VEHICLE ACCELEROMETER PRE-TEST LOCATIONS**

No.	Accelerometer Location	Measurement (mm)		
		X	Y	Z
1	Left Rear X-Member	-1510	-640	450
2	Right Rear X-Member	-1510	640	450
3	Engine Top	-3900	60	840
4	Engine Bottom	-3660	100	170
5	Left Brake Caliper	-3600	-740	280
6	Right Brake Caliper	-3600	740	280
7	Instrument Panel			

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

1.) Instrument Panel no longer used by NHTSA.

2.) Not installed

DATA SHEET NO. 8**SEAT BELT ASSESSMENT TEST DATA**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**SEAT BELT POSITIONING MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
Retractor Reel to D-Ring	mm	760	760
Shoulder Belt Length as Measured on ATD	mm	863	831
Lap Belt Length as Measured on ATD	mm	805	730
Remainder of Belt on Reel	mm	741	840
Total Belt Length for Continuous Webbing Systems	mm	3169	3161

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	326	336
As determined electronically	mm	346.9	584

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

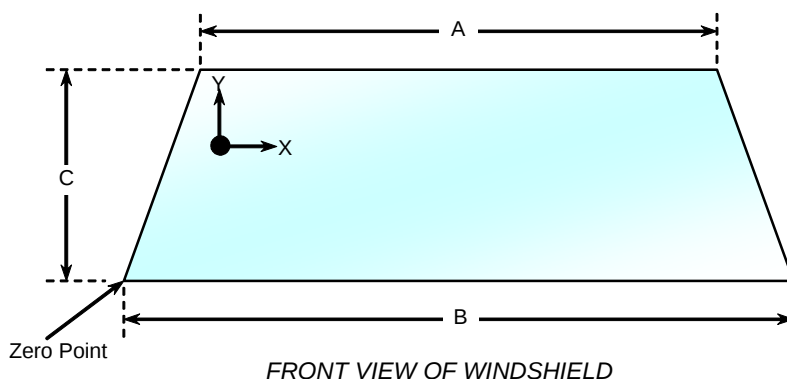
DATA SHEET NO. 9**SUMMARY OF FMVSS 212 DATA**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09

Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber cement type adhesive. Rubber 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: 27.8 °C**WINDSHIELD PERIPHERY MEASUREMENTS**

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2106	2106	100.0
Right Side	2106	2106	100.0
Total	4212	4212	100.0

**WINDSHIELD DIMENSIONS**

Item	Units	Segment Length	Molding Width
A	mm	1225	0
B	mm	1480	72
C-Left	mm	753	18
C-Right	mm	753	18

DATA SHEET NO. 10

WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

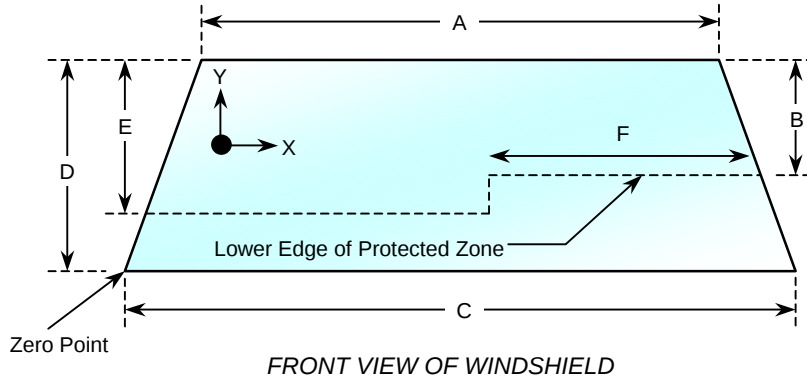
Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

WINDSHIELD AND PROTECTED ZONE



Item	Units	Value
A	mm	1225
B	mm	303
C	mm	1480
D	mm	753
E	mm	415
F	mm	605

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: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

Test Time: 12:20 PM

Temperature: 27.8

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

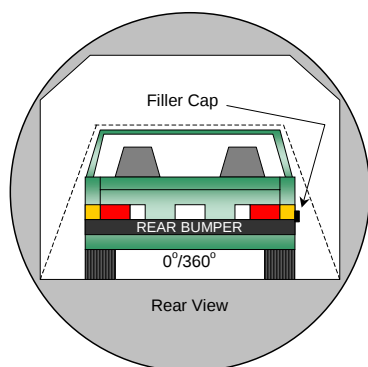
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

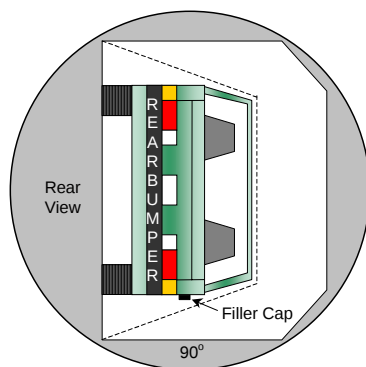
NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

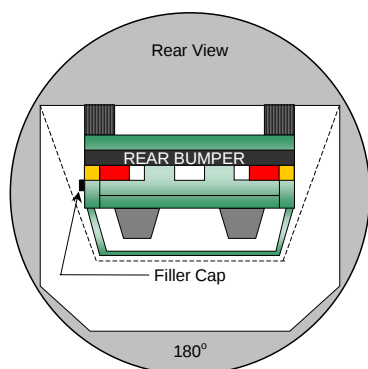
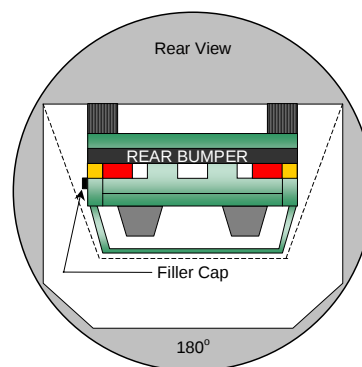
Test Date: 6/16/09



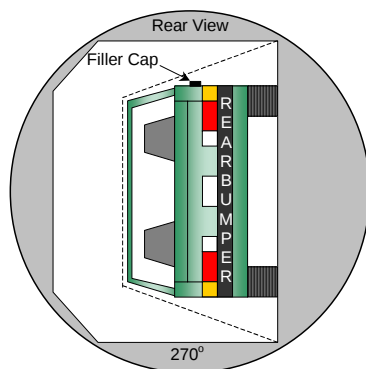
0° to 90°



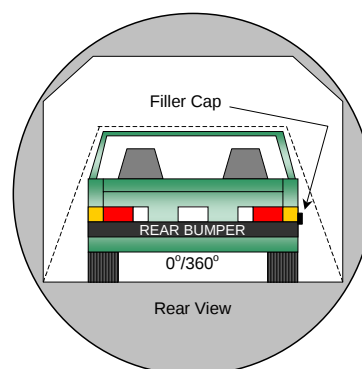
90° to 180°



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: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	83	310	393
90° to 180°	82	311	393
180° to 270°	77	306	383
270° to 360°	83	300	383

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: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**VEHICLE MEASUREMENT TABLE**

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Length of test vehicle at centerline	mm	4426	4231	-195
2	RSOV to front of engine	mm	3886	3636	-250
3	RSOV to firewall centerline	mm	3464	3451	-13
4	RSOV to upper leading edge of right door	mm	3007	3008	1
5	RSOV to upper leading edge of left door	mm	3013	3016	3
6	RSOV to lower leading edge of right door	mm	3009	3002	-7
7	RSOV to lower leading edge of left door	mm	3010	3007	-3
8	RSOV to upper trailing edge of right door	mm	1949	1951	2
9	RSOV to upper trailing edge of left door	mm	1954	1960	6
10	RSOV to lower trailing edge of right door	mm	1969	1965	-4
11	RSOV to lower trailing edge of left door	mm	1971	1969	-2
12	RSOV to bottom of right A-pillar	mm	2974	2973	-1
13	RSOV to bottom of left A-pillar	mm	2973	2973	0
14	RSOV to firewall on right side	mm	3506	3486	-20
15	RSOV to firewall on left side	mm	3516	3481	-35
16	RSOV to steering column hub	mm	2580	2700	120
17	Center of steering column to left A-pillar, Y	mm	440	455	15
18	Center of steering column to headlining, Z	mm	405	390	-15
19	RSOV to right side of front bumper	mm	3790	3757	-33
20	RSOV to left side of front bumper	mm	3795	3700	-95
21	Length of engine block	mm	560	560	0
RD	RSOV to right side of dash panel	mm	2765	2772	7
CD	RSOV to center of dash panel	mm	2720	2690	-30
LD	RSOV to left side of dash panel	mm	2775	2760	-15

DATA SHEET NO. 13**VEHICLE MEASUREMENTS**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**VEHICLE MEASUREMENT TABLE**

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
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8	RSOV to upper trailing edge of right door	mm	1949	1951	2
9	RSOV to upper trailing edge of left door	mm	1954	1960	6
10	RSOV to lower trailing edge of right door	mm	1969	1965	-4
11	RSOV to lower trailing edge of left door	mm	1971	1969	-2
12	RSOV to bottom of right A-pillar	mm	2974	2973	-1
13	RSOV to bottom of left A-pillar	mm	2973	2973	0
14	RSOV to firewall on right side	mm	3506	3486	-20
15	RSOV to firewall on left side	mm	3516	3481	-35
16	RSOV to steering column hub	mm	2580	2700	120
17	Center of steering column to left A-pillar, Y	mm	440	455	15
18	Center of steering column to headlining, Z	mm	405	390	-15
19	RSOV to right side of front bumper	mm	3790	3757	-33
20	RSOV to left side of front bumper	mm	3795	3700	-95
21	Length of engine block	mm	560	560	0
RD	RSOV to right side of dash panel	mm	2765	2772	7
CD	RSOV to center of dash panel	mm	2720	2690	-30
LD	RSOV to left side of dash panel	mm	2775	2760	-15

DATA SHEET NO. 13...(CONTINUED)**VEHICLE STRUCTURAL MEASUREMENTS**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**VEHICLE STRUCTURAL MEASUREMENT TABLE**

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length	mm	4426	4231	-195
2	Total width	mm	1782	1791	9
3	Front bumper top height	mm	645	850	205
4	Front bumper bottom height	mm	274	438	164
5	Longitudinal member top height	mm	570	740	170
6	Longitudinal member bottom height	mm	455	550	95
7	Distance between longitudinal members	mm	820	895	75
8	Longitudinal member width	mm	110	90	-20
9	Engine top height	mm	790	915	125
10	Engine bottom height	mm	203	305	102
11	Engine and gearbox width	mm	540	540	0
12	Front bumper-engine distance	mm	540	575	35
13	Front shock absorber height	mm	908	935	27
14	Front hood leading edge height	mm	848	985	137
15	Distance between front shock absorbers	mm	1170	1120	-50
16	Front bumper-front axle distance	mm	925	687	-238
17	Front axle to A-pillar distance	mm	527	490	-37
18	A Pillar to B Pillar distance	mm	954	943	-11
19	B Pillar to rear axle distance	mm	1093	1066	-27
20	B Pillar to C Pillar distance	mm	848	843	-5
21	Roof sill bottom height	mm	1453	1495	42
22	Roof sill top height	mm	1578	1615	37
23	Floor sill bottom height	mm	178	322	144
24	Floor sill top height	mm	400	440	40

DATA SHEET NO. 13...(CONTINUED)

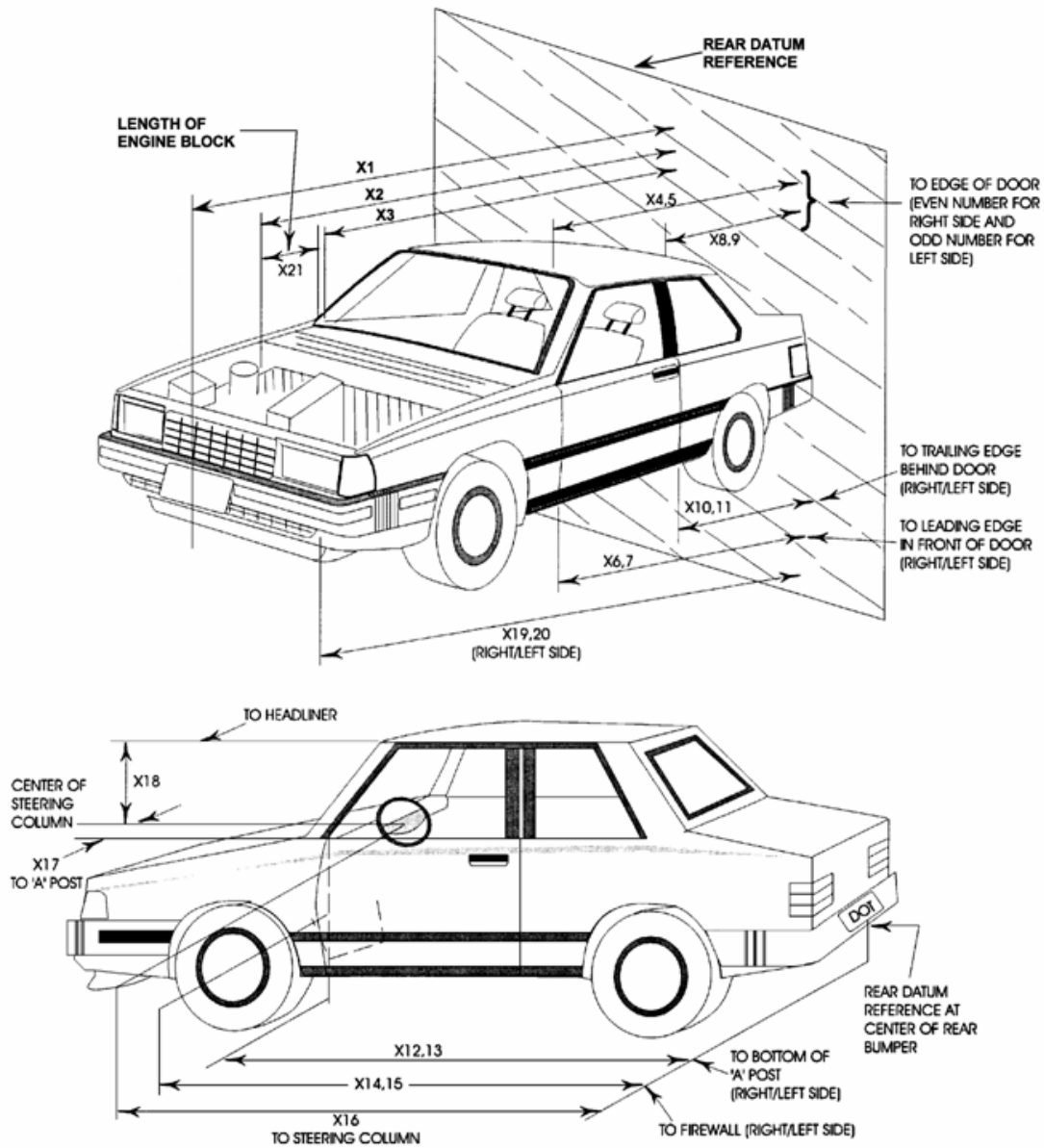
VEHICLE MEASUREMENTS

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09



DATA SHEET NO. 14**CAMERA LOCATIONS**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**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	-2134	-8001	-1188	0	8105	20	1000
3	Closeup Left Side	-1701	-8051	-1448	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	-2032	7976	-1105	0	7409	20	1000
8	Closeup Right Side	-1727	-8051	-1397	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	-3505	216	-1600	-5	1016	12	1000
17	Passenger Side Dummy On-Board	-3531	-229	-1600	-5	1016	12	1000

All measurements are made relative to the point of impact.

DATA SHEET NO. 15

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

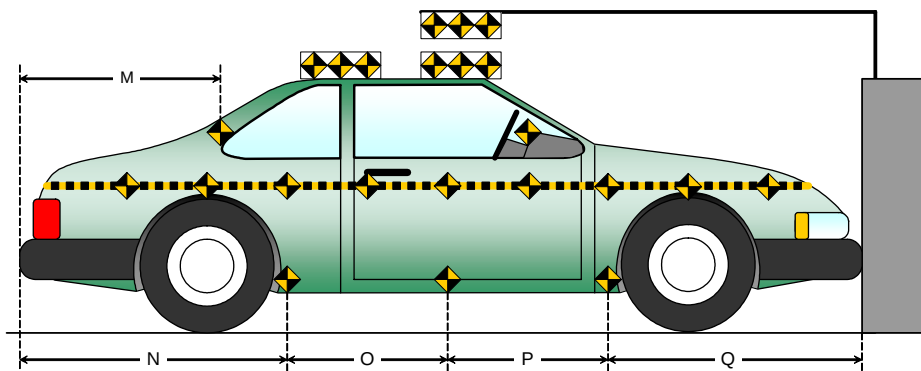
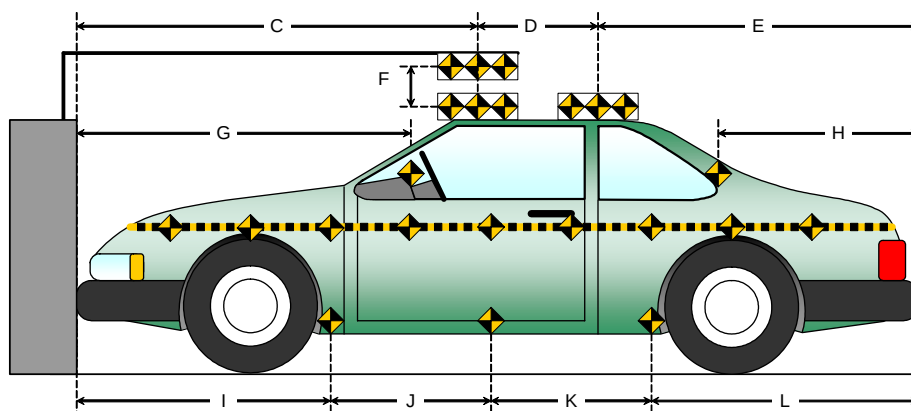
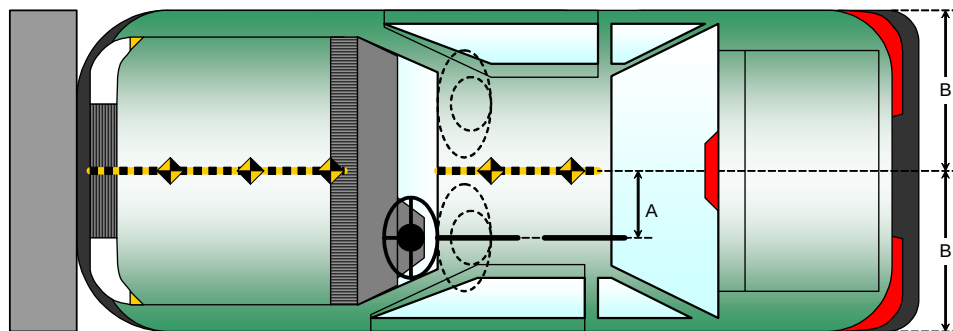
Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

All Dimensions in Millimeters (mm)	
Item	Value
A	390
B	891
C	2105
D	610
E	1705
F	
G	1690
H	659
I	1380
J	828
K	828
L	1374
M	649
N	1374
O	829
P	829
Q	1387

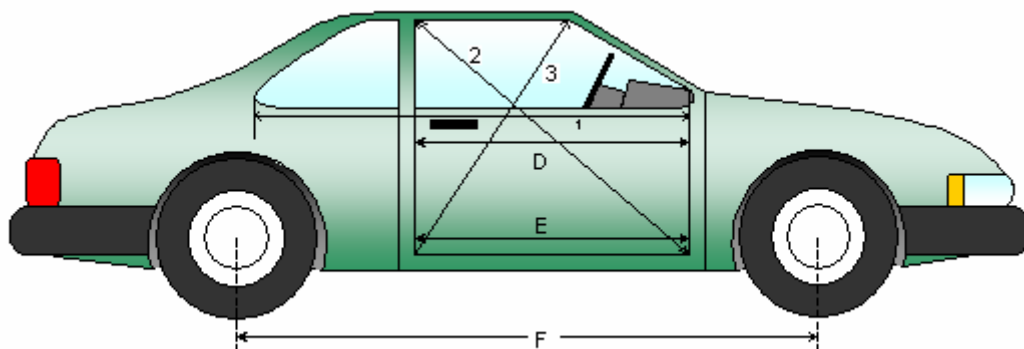
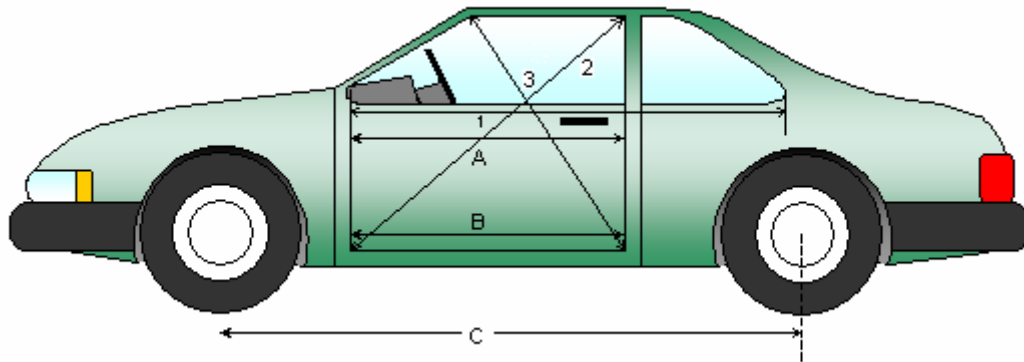


DATA SHEET NO. 16**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**DOOR OPENING WIDTH TABLE**

Item	Description	Units	Pre-Test	Post-Test	Difference
1L	Left Side	mm	951	949	2
2L	Left Side (Diagonally)	mm	1433	1428	5
3L	Left Side (Diagonally)	mm	1018	1027	-9
1R	Right Side	mm	954	953	1
2R	Right Side (Diagonally)	mm	1428	1433	-5
3R	Right Side (Diagonally)	mm	1023	1023	0

WHEELBASE MEASUREMENT TABLE

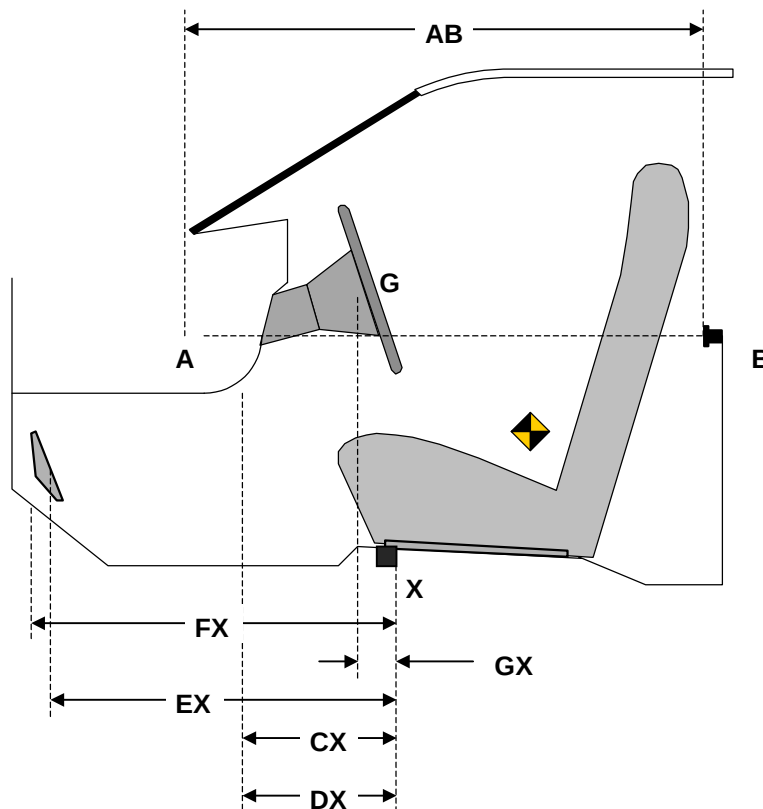
Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2610	2583	27
F	Right Side Wheelbase	mm	2610	2613	-3



VEHICLE INTRUSION MEASUREMENTS

Test Date: 6/16/09

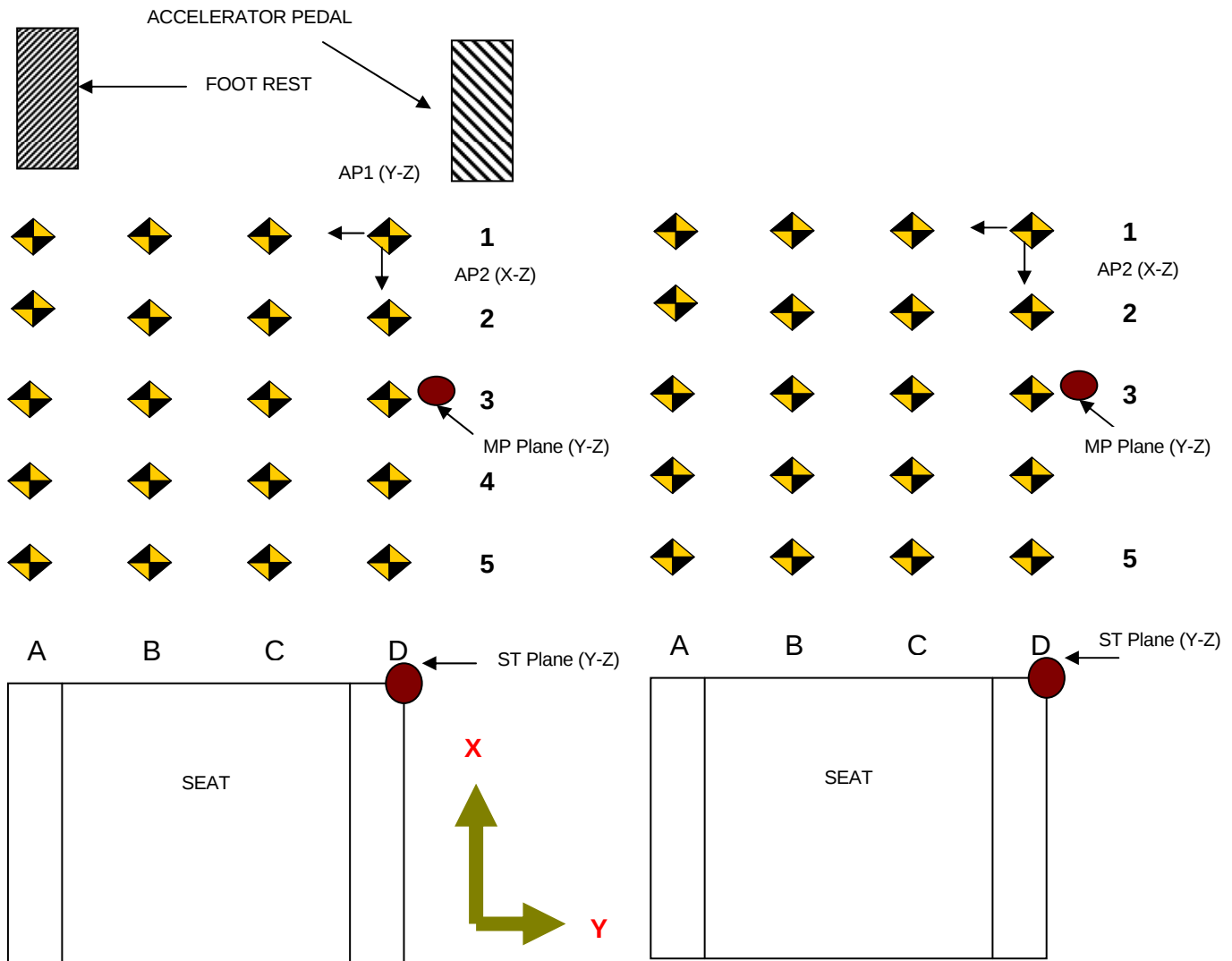
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	954	953	1
CX	Left Knee Bolster to X	mm	250	330	-80
DX	Right Knee Bolster to X	mm	300	300	0
EX	Brake Pedal to X	mm	520	490	30
FX	Foot Rest to X	mm	530	500	30
GX	Center of Steering Wheel Hub to X	mm	60	75	-15



DATA SHEET NO. 16...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

NHTSA No.: V95802
 Test Date: 6/16/09



- 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: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

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	-550	-624	-655	-551	-551	-622	-655	-560	1	-2	0	9
2	-505	-559	-571	-510	-504	-558	-572	-512	-1	-1	1	2
3	-458	-486	-481	-481	-456	-487	-484	-485	-2	1	3	4
4	-430	-421	-412	-408	-427	-420	-414	-410	-3	-1	2	2
5	-357	-352	-347	-343	-355	-351	-349	-348	-2	-1	2	5

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	36	182	319	453	27	172	307	449	9	10	12	4
2	-36	179	311	444	-27	168	300	436	-9	11	11	8
3	37	176	311	446	28	167	301	436	9	9	10	10
4	36	175	310	446	27	165	301	436	9	10	9	10
5	33	174	311	445	24	166	303	436	9	8	8	9

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-77	-11	6	-62	-78	-11	9	-65	1	0	-3	3
2	14	50	64	5	15	52	68	-2	-1	-2	-4	7
3	48	94	93	97	46	97	97	104	2	-3	-4	-7
4	101	99	92	102	96	102	97	109	5	-3	-5	-7
5	105	104	102	106	105	107	107	112	0	-3	-5	-6

DATA SHEET NO. 16...(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

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	658	661	651	619	652	655	644	615	6	6	7	4
2	578	575	565	471	571	569	560	533	7	6	5	5
3	389	464	470	405	455	460	465	466	6	4	5	5
4	316	391	396	331	385	385	392	400	4	6	4	5
5	316	319	325	331	311	314	320	328	5	5	5	3

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	433	318	179	51	434	321	181	55	-1	-3	-2	-4
2	427	309	173	45	428	308	174	46	-1	1	-1	-1
3	422	307	168	30	421	306	168	28	1	1	0	2
4	415	306	167	25	414	305	165	24	1	1	2	1
5	412	304	164	22	410	302	163	20	2	2	1	2

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	18	17	29	66	3	7	24	61	15	10	5	5
2	-57	-56	-42	-2	-71	-67	-48	-7	14	11	6	5
3	-95	-90	-90	-80	-108	-100	-96	-85	13	10	6	5
4	-100	-96	-97	-99	-112	-105	-103	-97	12	9	6	-2
5	-106	-100	-102	-107	-117	-110	-109	-111	11	10	7	4

DATA SHEET NO. 17

FIXED BARRIER LOAD CELL LOCATIONS

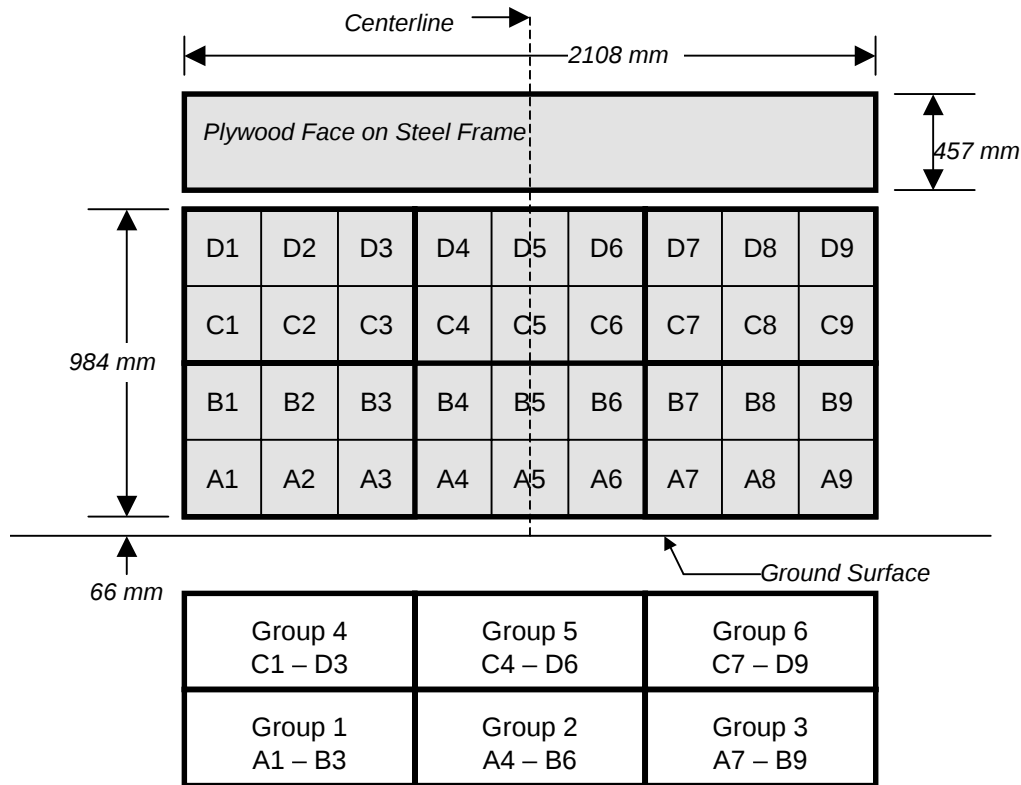
Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

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



6 Groups of 6 Load Cells Each

DATA SHEET NO. 17

FIXED BARRIER LOAD CELL LOCATIONS

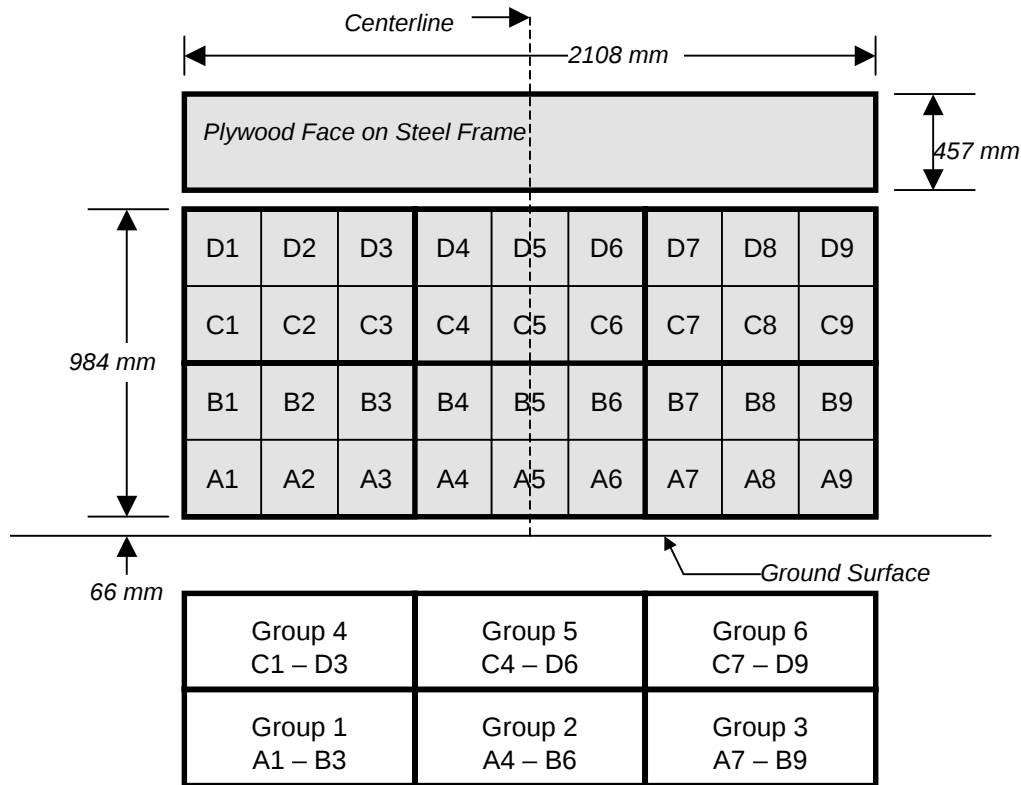
Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09

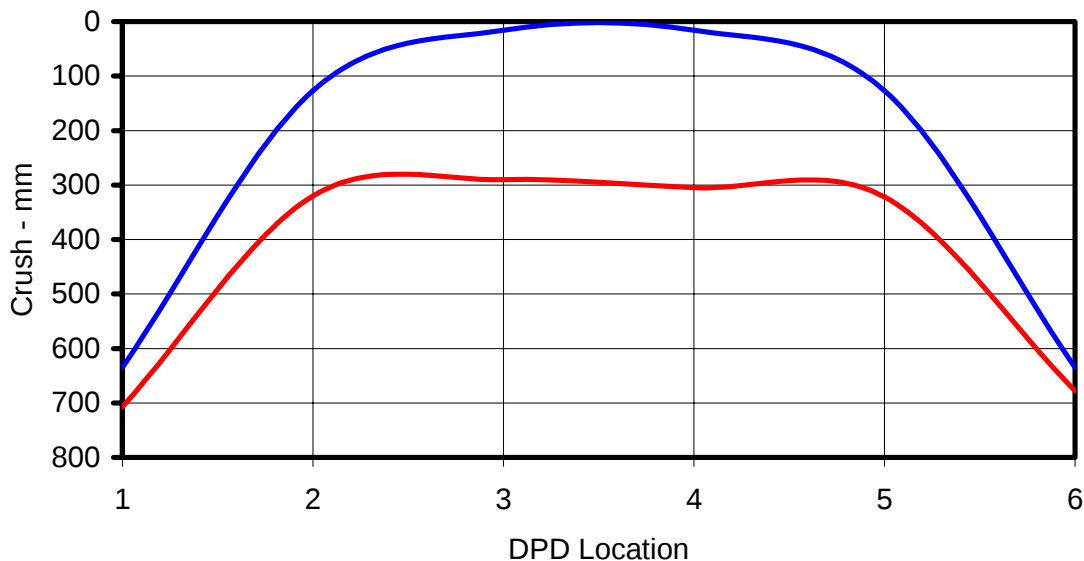
36 Load Cell Rigid Barrier (NHTSA Standard) Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

DATA SHEET NO. 18**ACCIDENT INVESTIGATION DIVISION DATA**Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPVNHTSA No.: V95802Test Program: NHTSA 35mph NCAPTest Date: 6/16/09**VEHICLE INFORMATION**VIN: WVGVBV75N59W531577Wheelbase (mm): 2610Vehicle Size Category: 5-Door MPVTest Weight (kg): 1944**ACCELEROMETER DATA**Accelerometer Location: Left rear cross memberCal. Procedure/Interval: 6 months/drop testIntegration Algorithm: NHTSA StandardLinearity: GoodImpact Velocity (km/h): 56.28Velocity Change (km/h): 66.4Time of Separation (msec): 57.7**CRUSH PROFILE**Collision Deformation Classification: 12FDEW6Midpoint of Damage: Vehicle CenterlineDamage Region Length: 1780Impact Mode: Full frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side of vehicle	mm	635	707	-72
C2	Crush zone 2 on left side of vehicle	mm	127	320	-193
C3	Crush zone 3 on left side of vehicle	mm	16	290	-274
C4	Crush zone 4 on right side of vehicle	mm	16	305	-289
C5	Crush zone 5 on right side of vehicle	mm	127	322	-195
C6	Crush zone 6 at right side of vehicle	mm	635	678	-43



DATA SHEET NO. 19

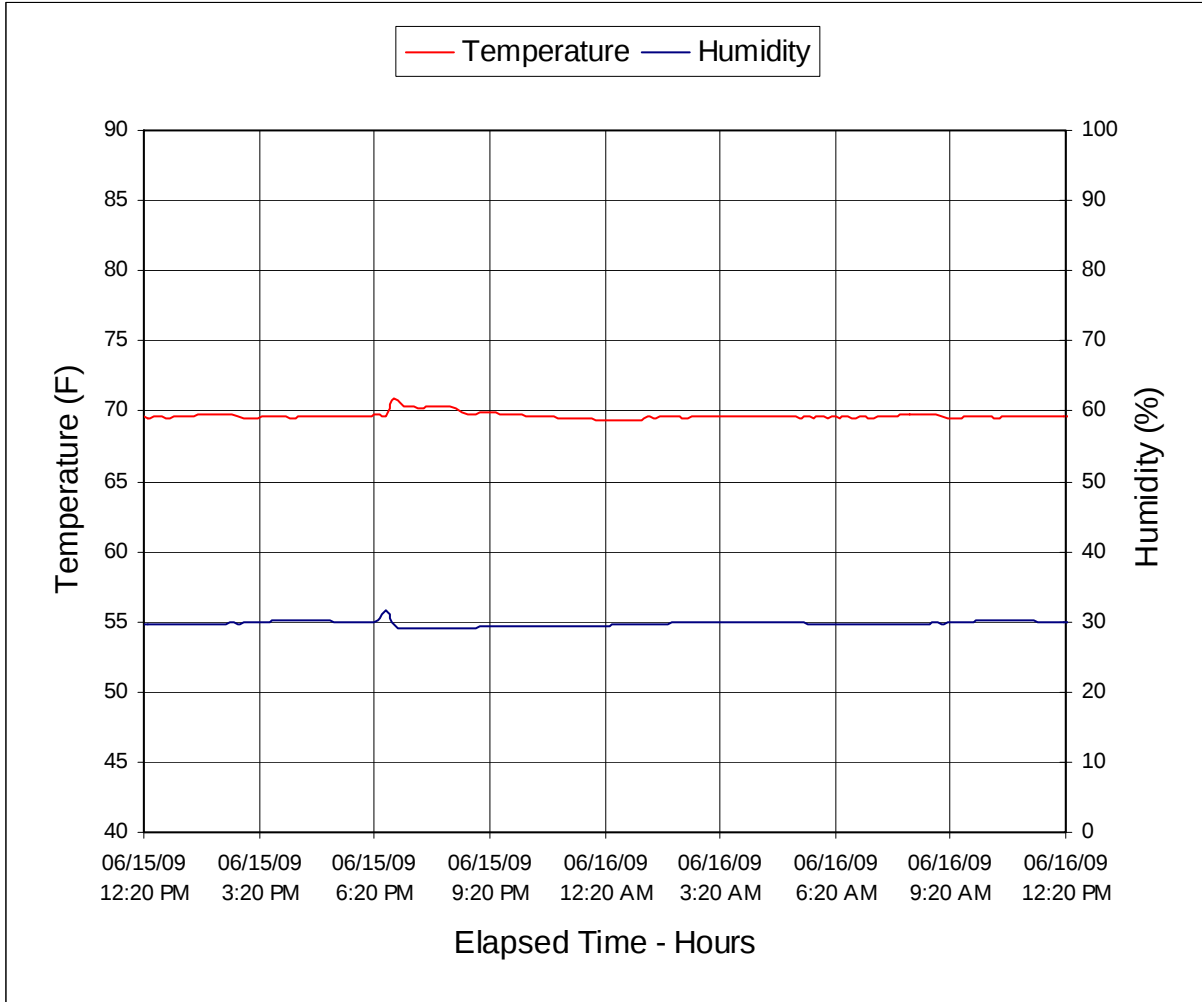
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2009 Volkswagen Tiguan SE 4Motion 5-Door MPV

NHTSA No.: V95802

Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09



APPENDIX A
PHOTOGRAPHS

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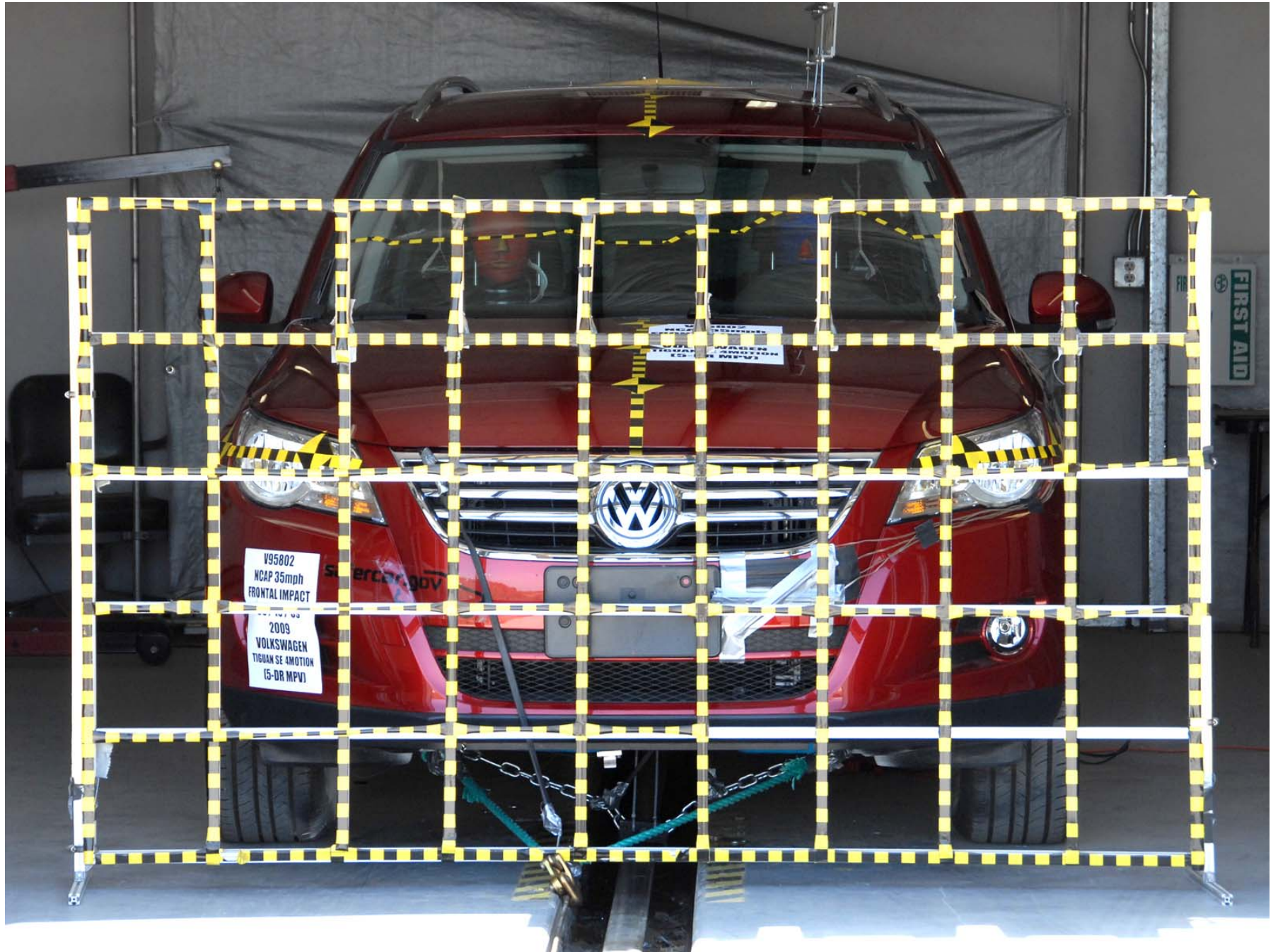


Figure A-1: Load Cell Location

MFD BY VOLKSWAGEN AG GERMANY

02/09

GVWR LBS 4961 KG 2250

GAWR FRONT LBS 2514, KG 1140

WITH 235/55R17 TIRES,

7JX17 RIMS, AT 260 KPA, 38 PSI COLD

GAWR REAR LBS 2580, KG 1170

WITH 235/55R17 TIRES,

7JX17 RIMS, AT 260 KPA, 38 PSI COLD

6065103 3017 1

THIS VEHICLE CONFORMS TO ALL APPLICABLE
U.S. FEDERAL MOTOR VEHICLE SAFETY AND
THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

WVG BV75N59W531577

TYPE: MPV



Figure A-2: Manufacturer's Label



TIRE AND LOADING INFORMATION INFORMATION SUR LES PNEUS ET LA CHARGE

(SEATING CAPACITY/NOMBRE DE PLACES | TOTAL 5 | FRONT/AV 2 | REAR/AR 3)

THE COMBINED WEIGHT OF OCCUPANTS AND CARGO SHOULD NEVER EXCEED 505 KG OR 1110 LBS
LE POIDS COMBINE DES OCCUPANTS ET DE LA CHARGE NE DOIT JAMAIS DEPASSER

TIRE PNEU	SIZE DIMENSIONS	COLD TIRE PRESSURE PRESSION GONFLAGE PNEUS FROIDS
FRONT/AVANT	235/55 R17	260 KPA, 38 PSI
REAR/ARRIERE	235/55 R17	260 KPA, 38 PSI
SPARE/SECOURS	T145/80 R18	415 KPA, 61 PSI

**SEE OWNER'S MANUAL
FOR ADDITIONAL
INFORMATION
VOIR MANUEL DU
PROPRIETAIRE POUR
LES DETAILS**



5N0 010 468 C

Figure A-3: Tire Placard



Figure A-4: Right Front $\frac{3}{4}$ View, As Received



Figure A-5: Left Rear $\frac{3}{4}$ 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 3/4 View (Vehicle Moved)



Figure A-14: Pre-Test Left Rear $\frac{3}{4}$ View



Figure A-15: Post-Test Left Rear $\frac{3}{4}$ View



Figure A-16: Post-Test Left Side $\frac{3}{4}$ View of Doors After Impact



Figure A-17: Post-Test Right Side $\frac{3}{4}$ View of Doors After Impact

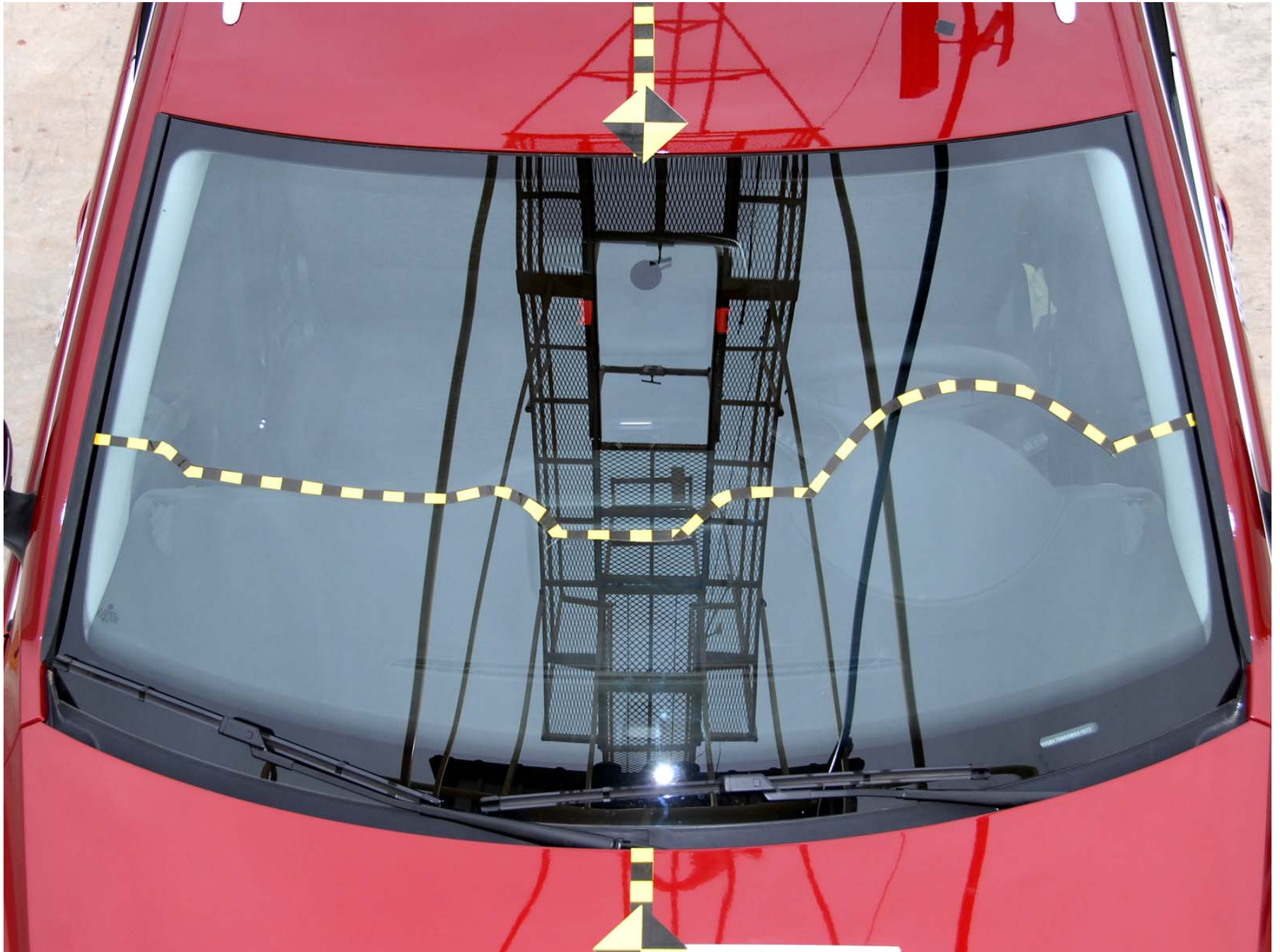


Figure A-18: Pre-Test Windshield



Figure A-19: Post-Test Windshield



Figure A-20: Pre-Test Engine Compartment



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

V95802
2009 VOLKSWAGEN
TIGUAN SE 4MOTION
06 / 16 / 09
STODDARD
SOLVENT ADDED
59.84 LITERS
[15.81 GALLONS]



Figure A-22: Pre-Test Fuel Cap

V95802
2009 VOLKSWAGEN
TIGUAN SE 4MOTION
06 / 16 / 09
STODDARD
SOLVENT ADDED
59.84 LITERS
(15.81 GALLONS)



Figure A-23: Post-Test Fuel Cap

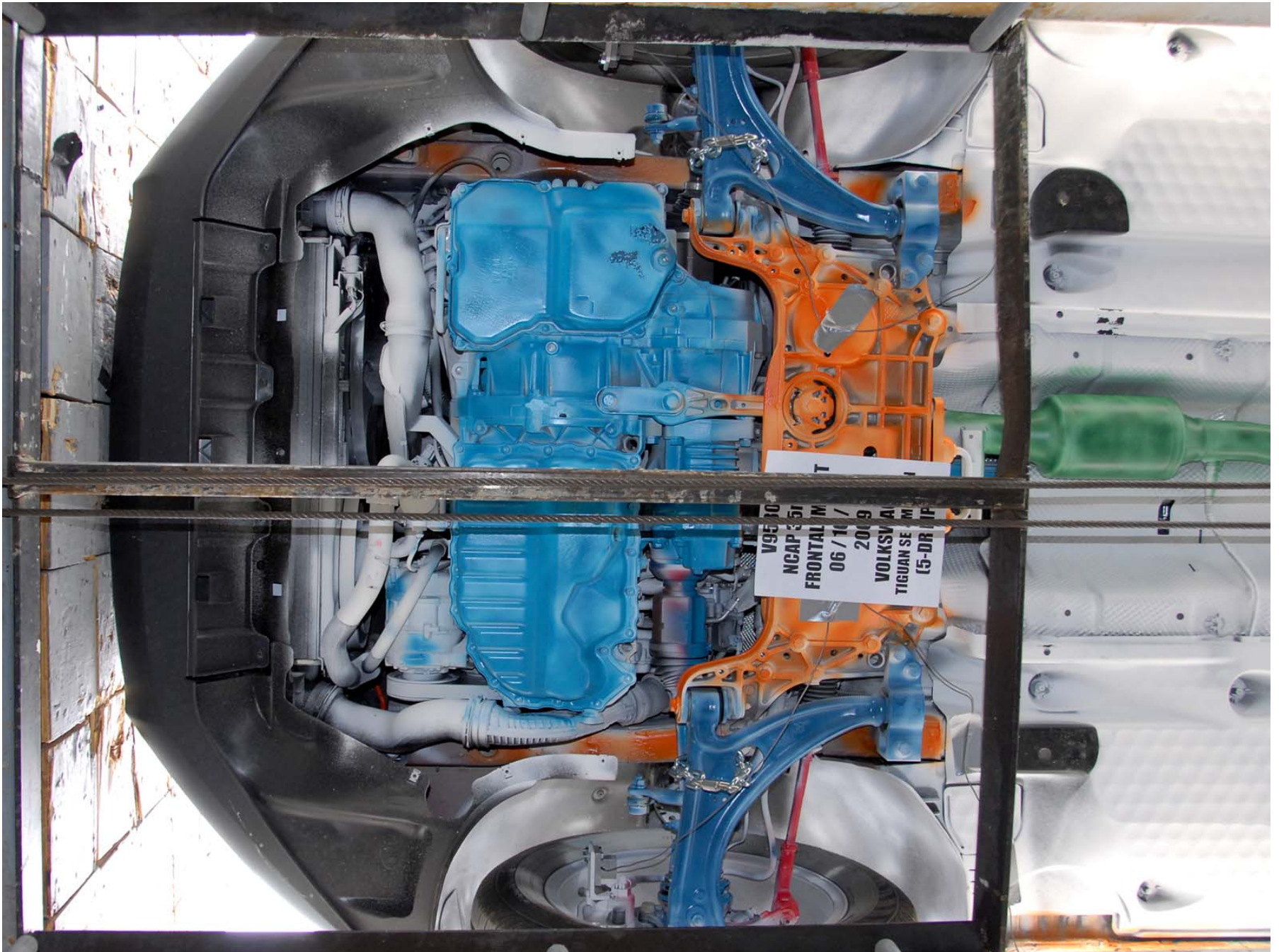


Figure A-24: Pre-Test Front Underbody

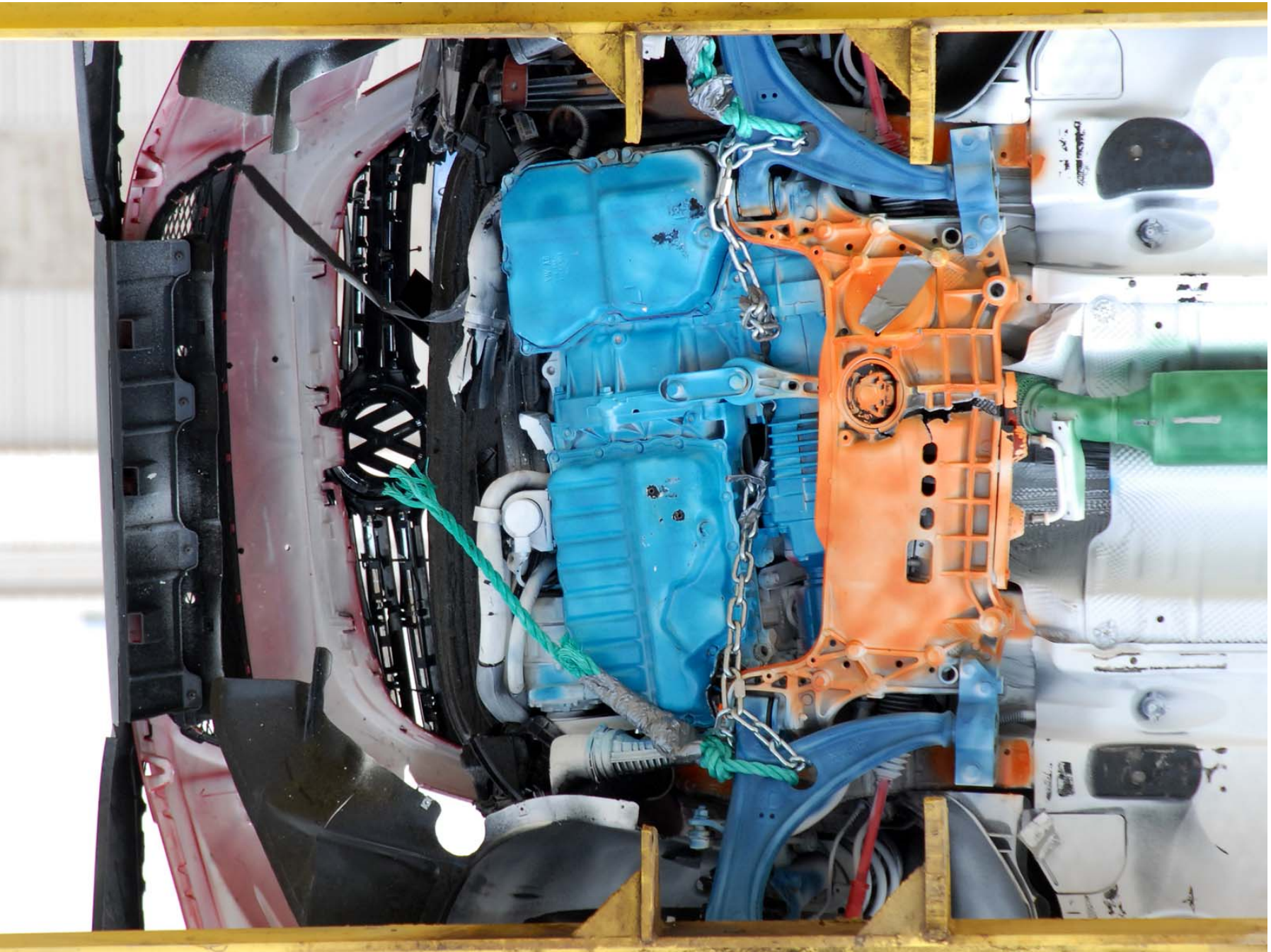


Figure A-25: Post-Test Front Underbody

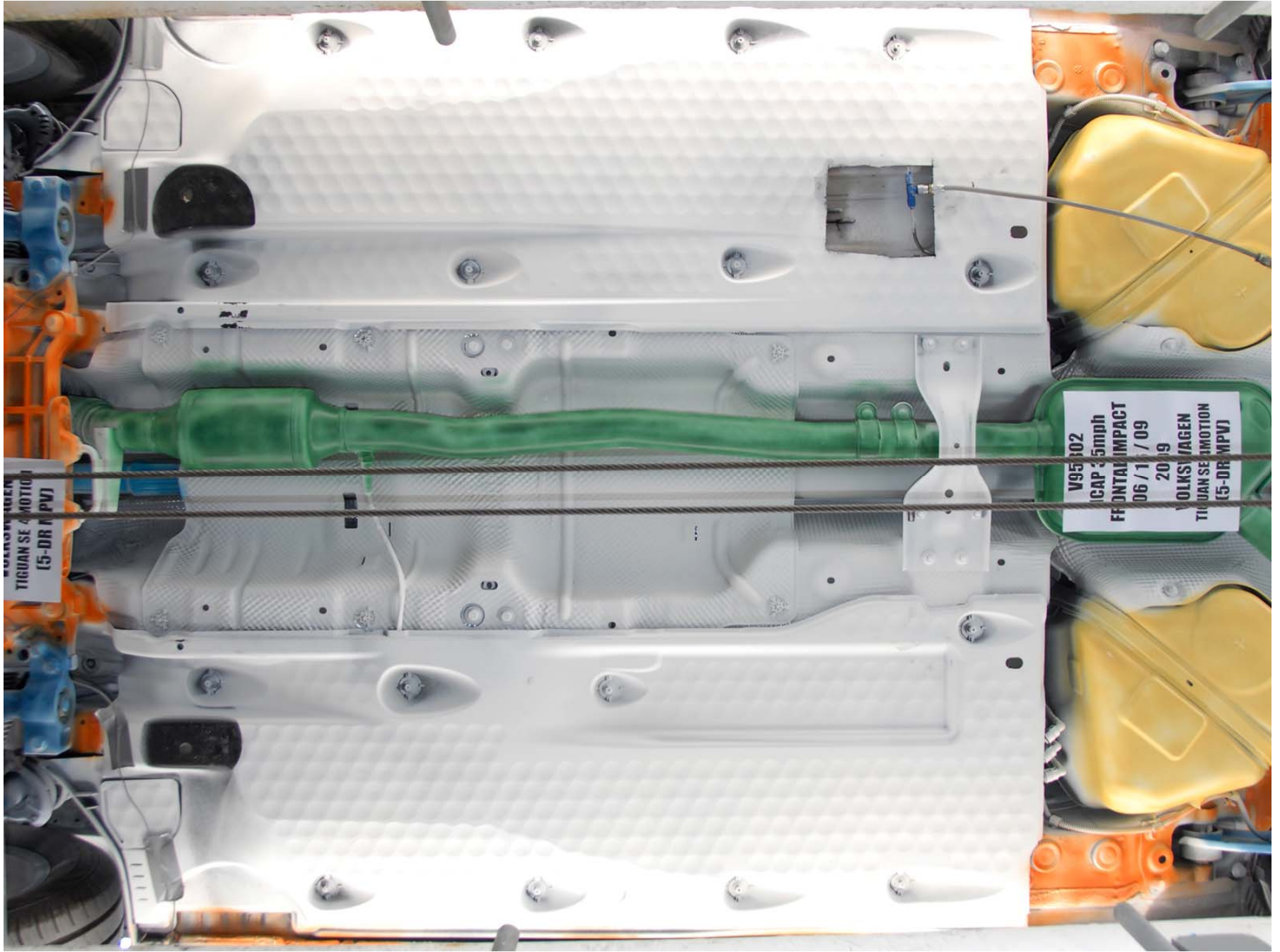


Figure A-26: Pre-Test Mid Underbody

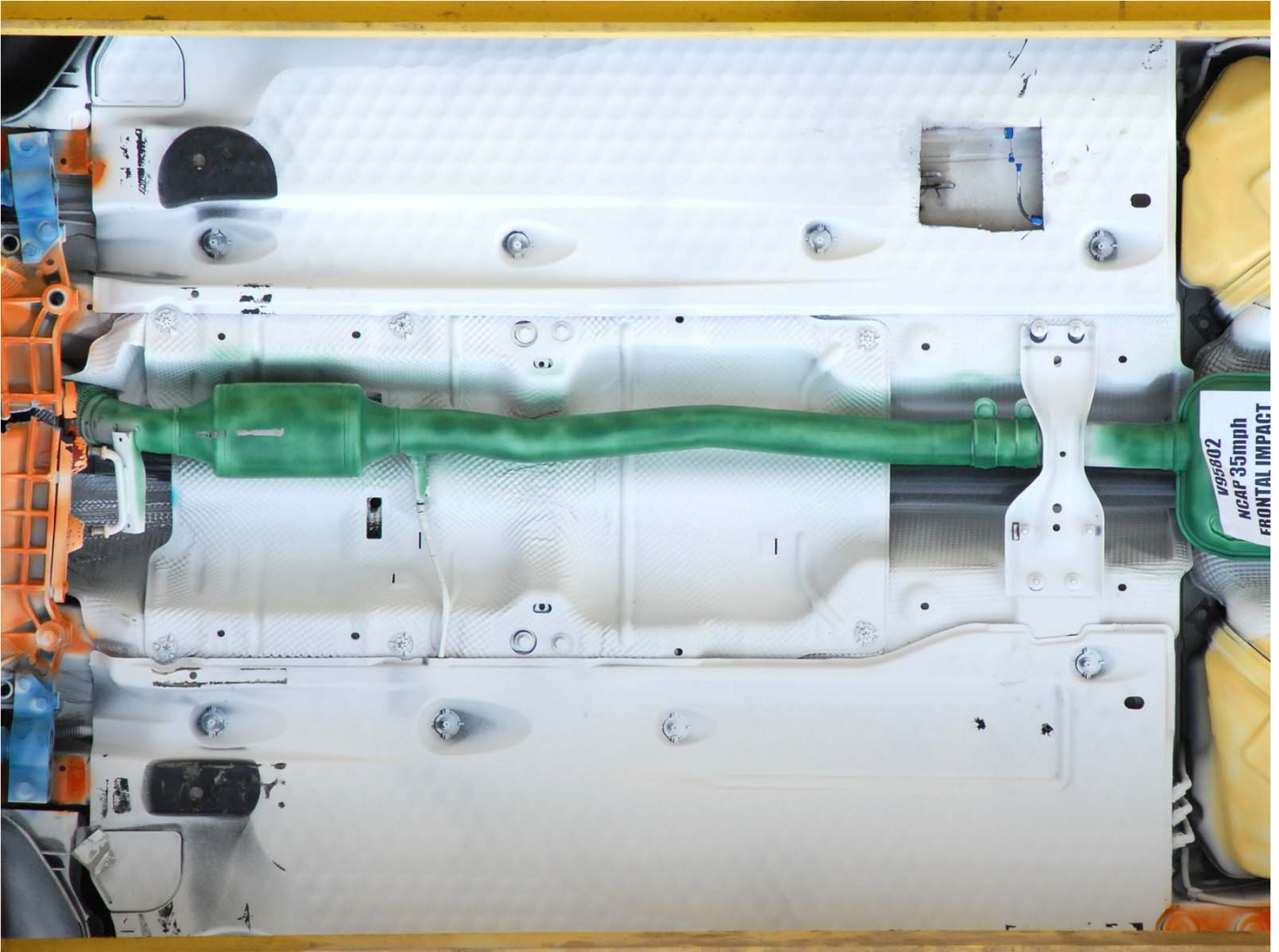


Figure A-27: Post-Test Mid Underbody

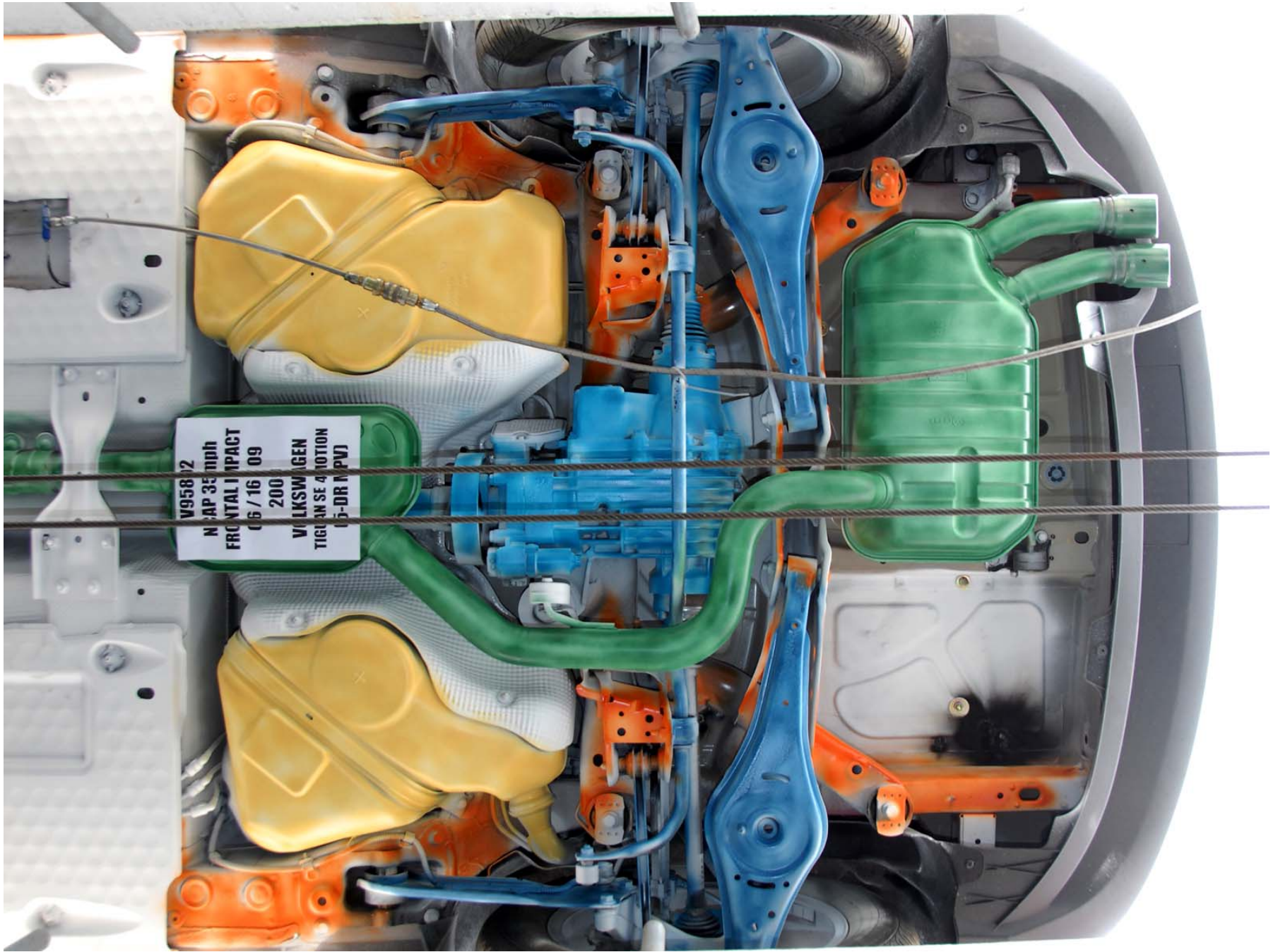


Figure A-28: Pre-Test Rear Underbody

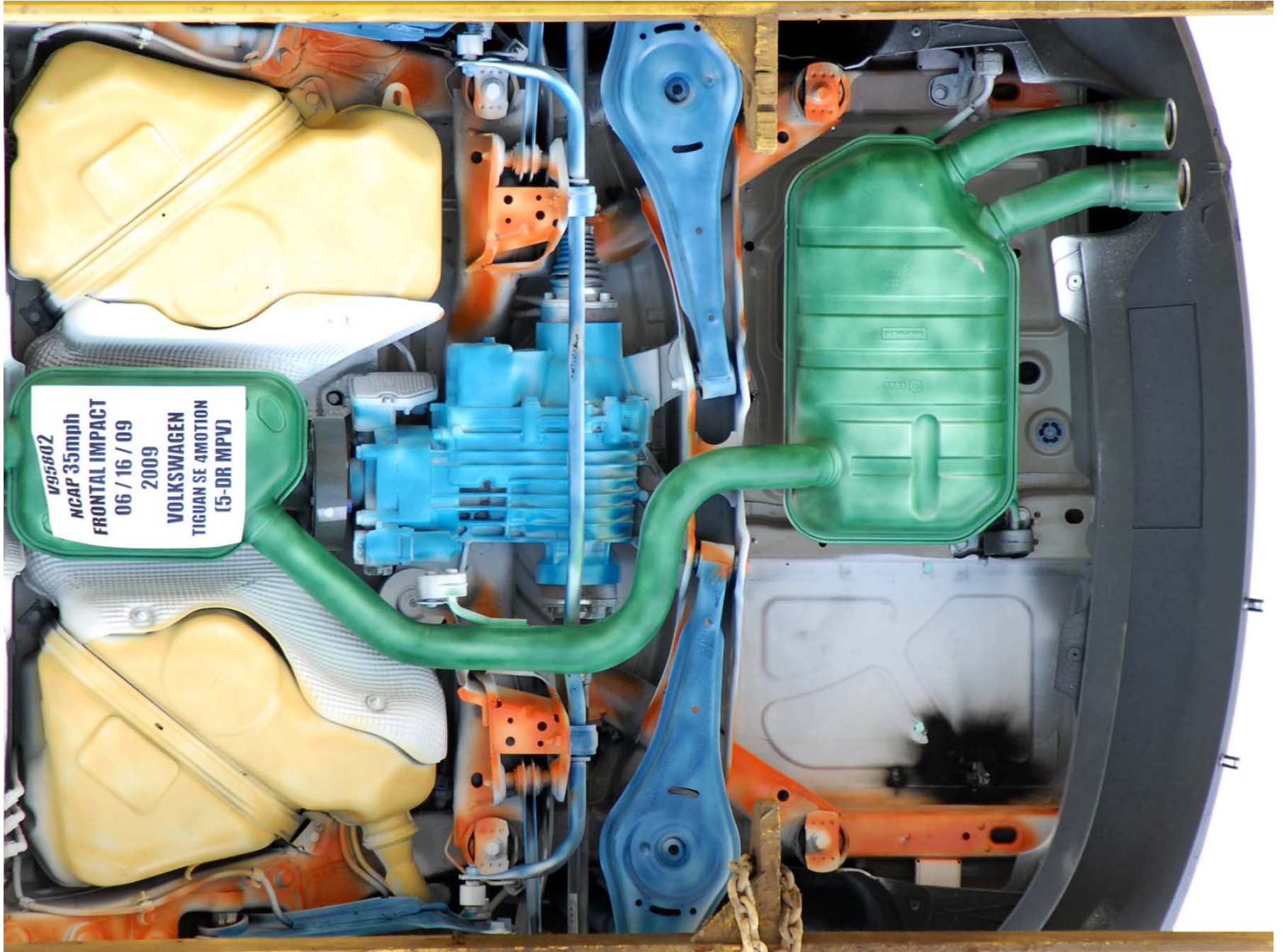


Figure A-29: Post-Test Rear Underbody



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)

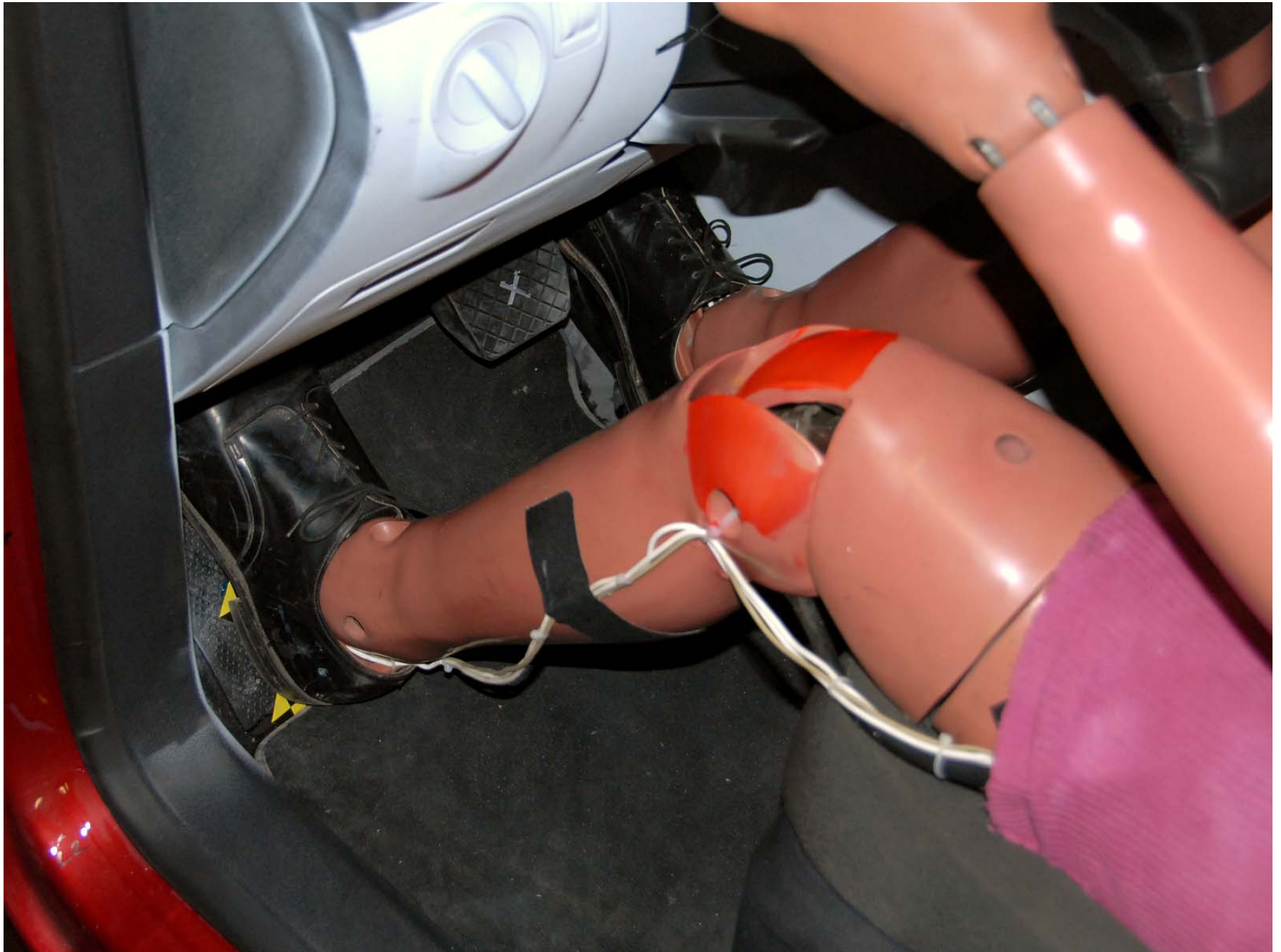


Figure A-36: Pre-Test Driver Dummy Feet



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

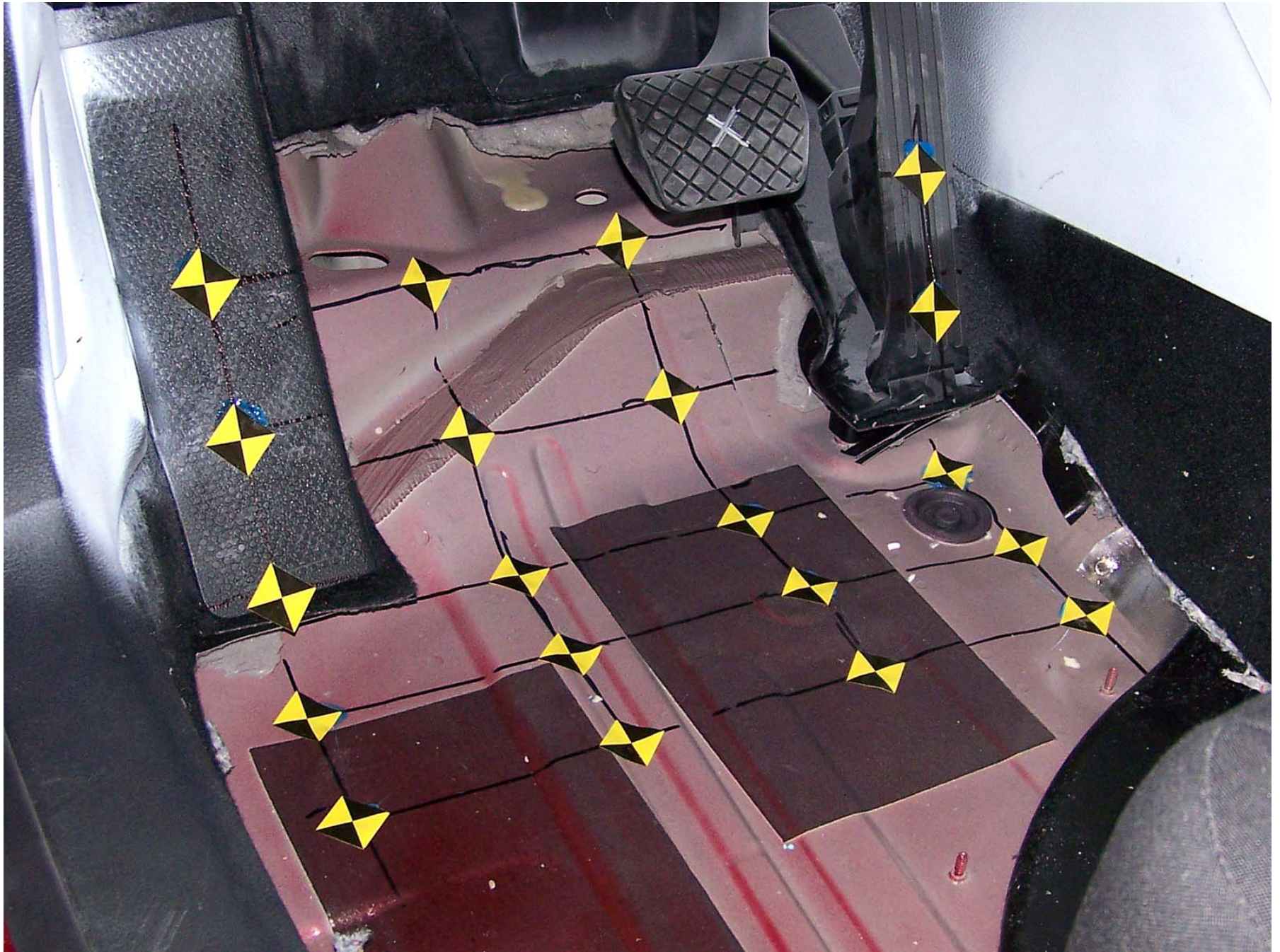


Figure A-40: Pre-Test Driver Side Floor Pan

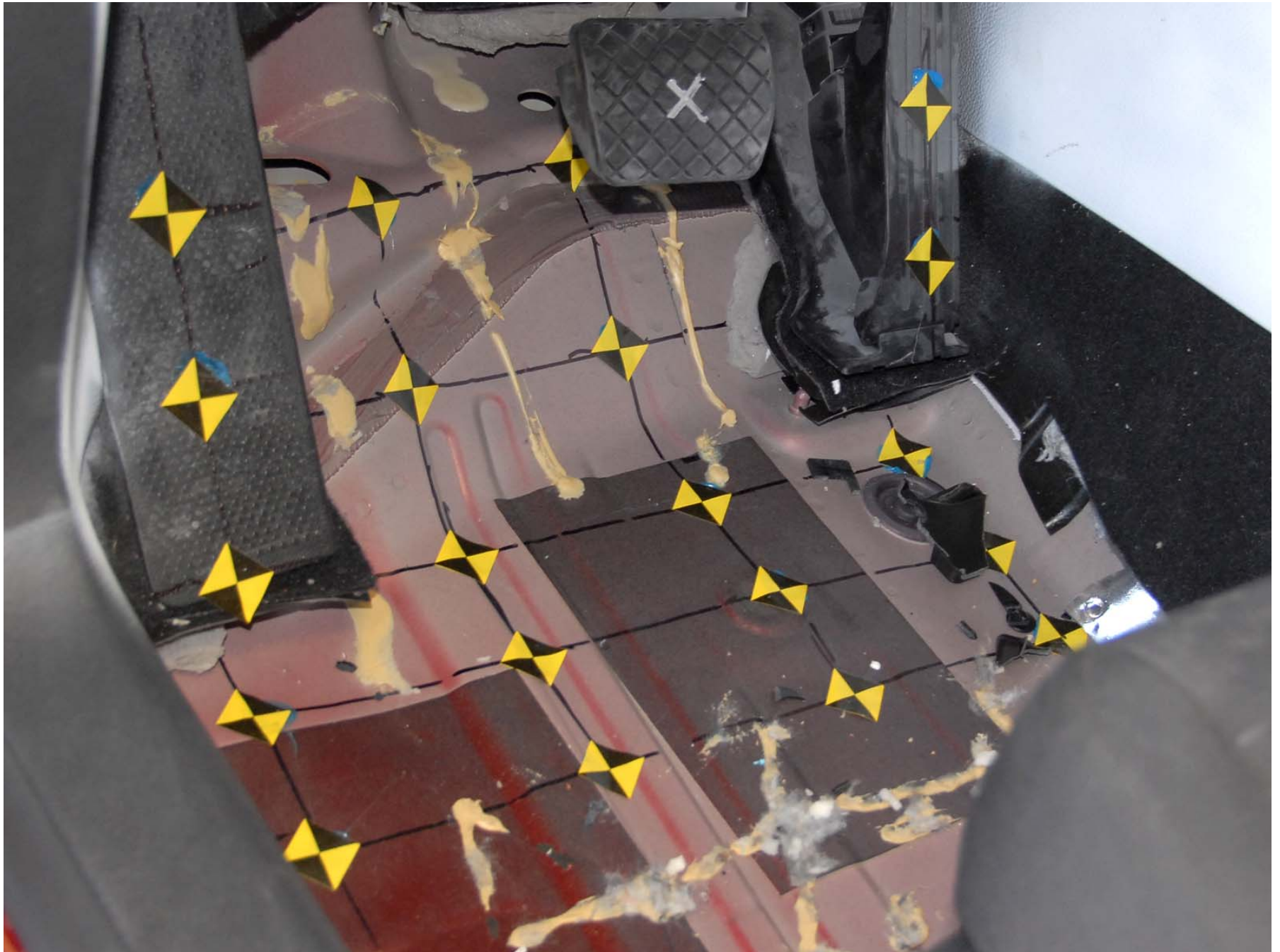


Figure A-41: Post-Test Driver Side Floor Pan



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)

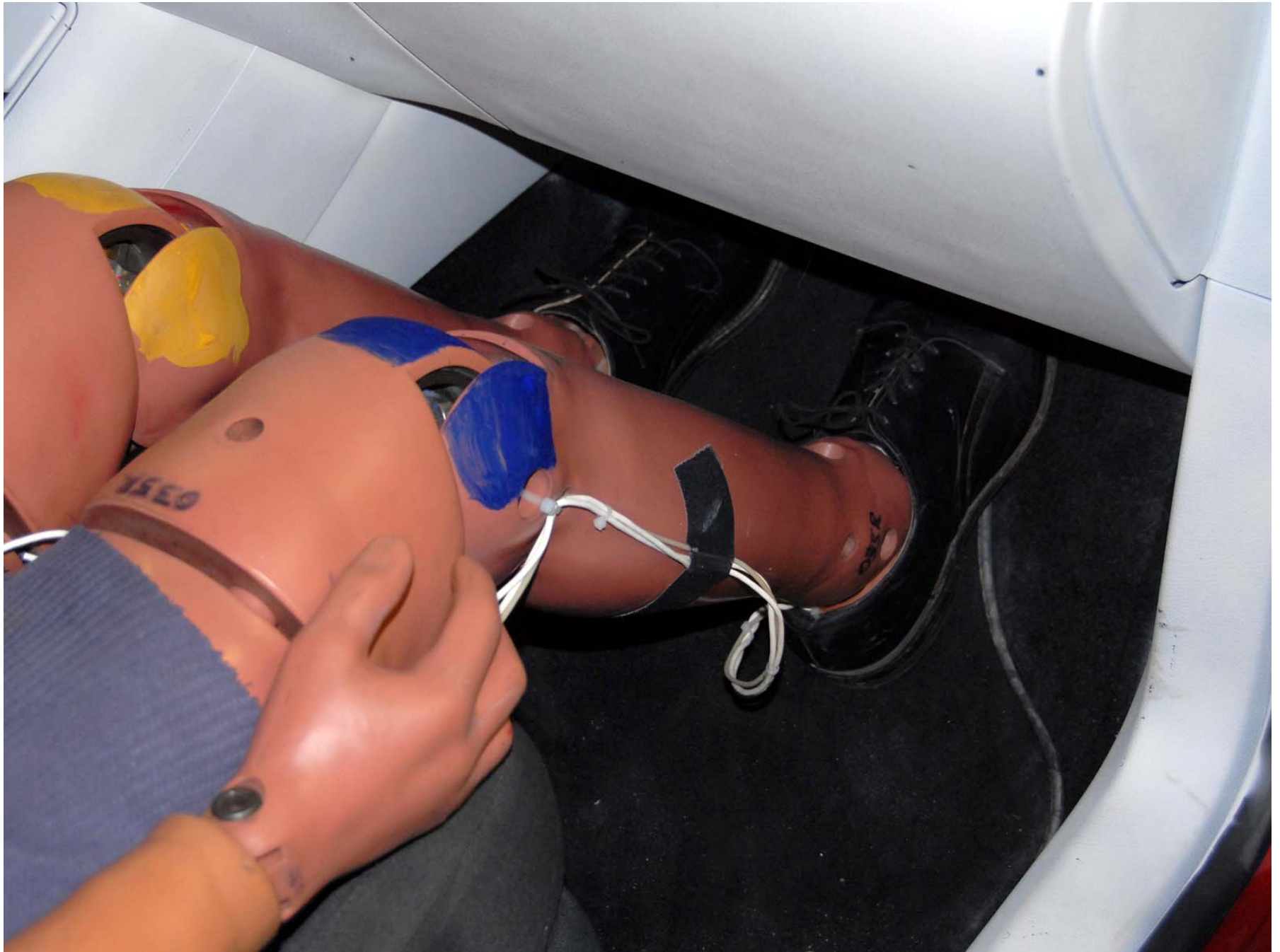


Figure A-50: Pre-Test Passenger Dummy Feet

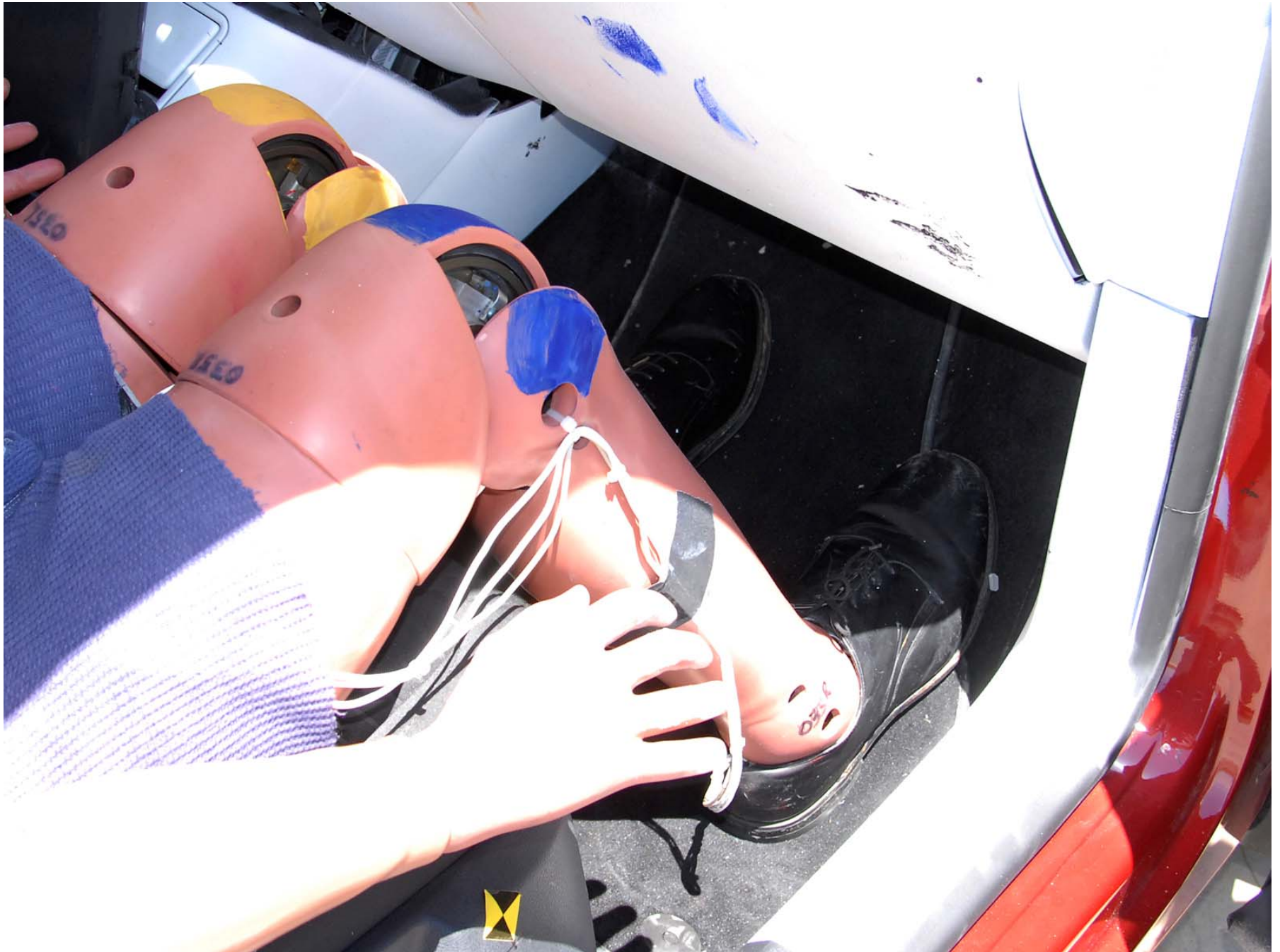


Figure A-51: Post-Test Passenger Dummy Feet



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



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

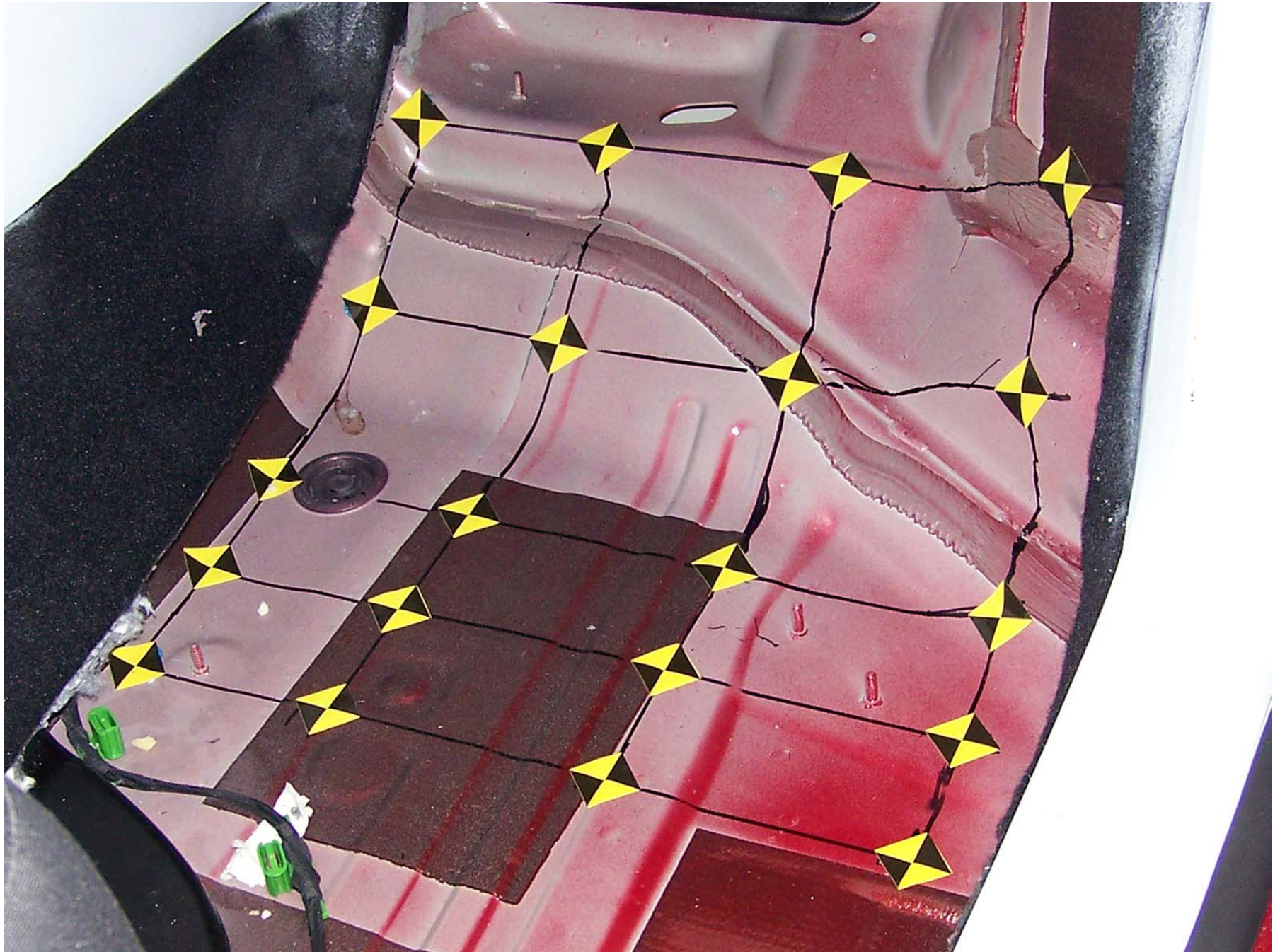


Figure A-54: Pre-Test Passenger Side Floor Pan

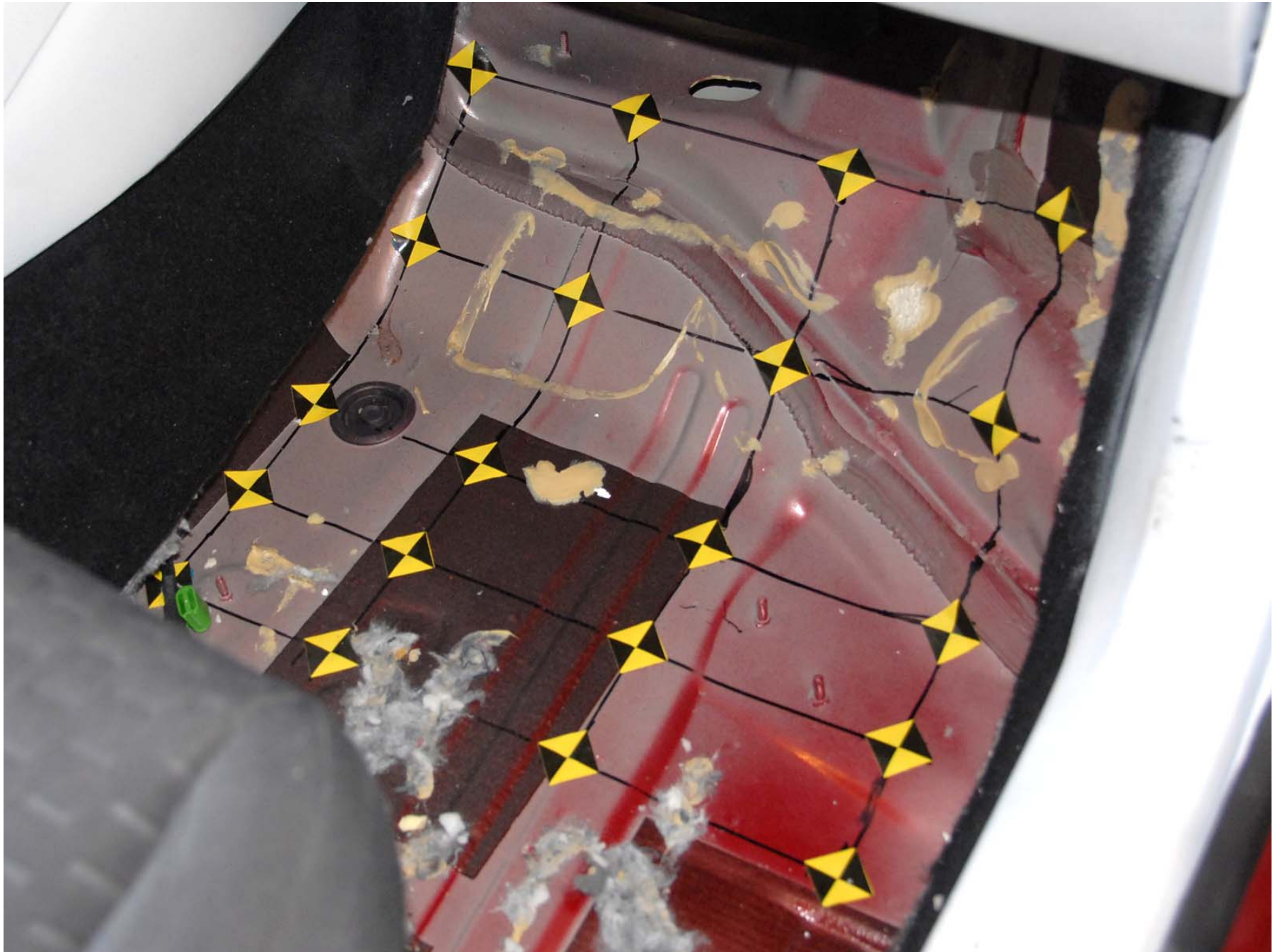


Figure A-55: Post-Test Passenger Side Floor Pan



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°)

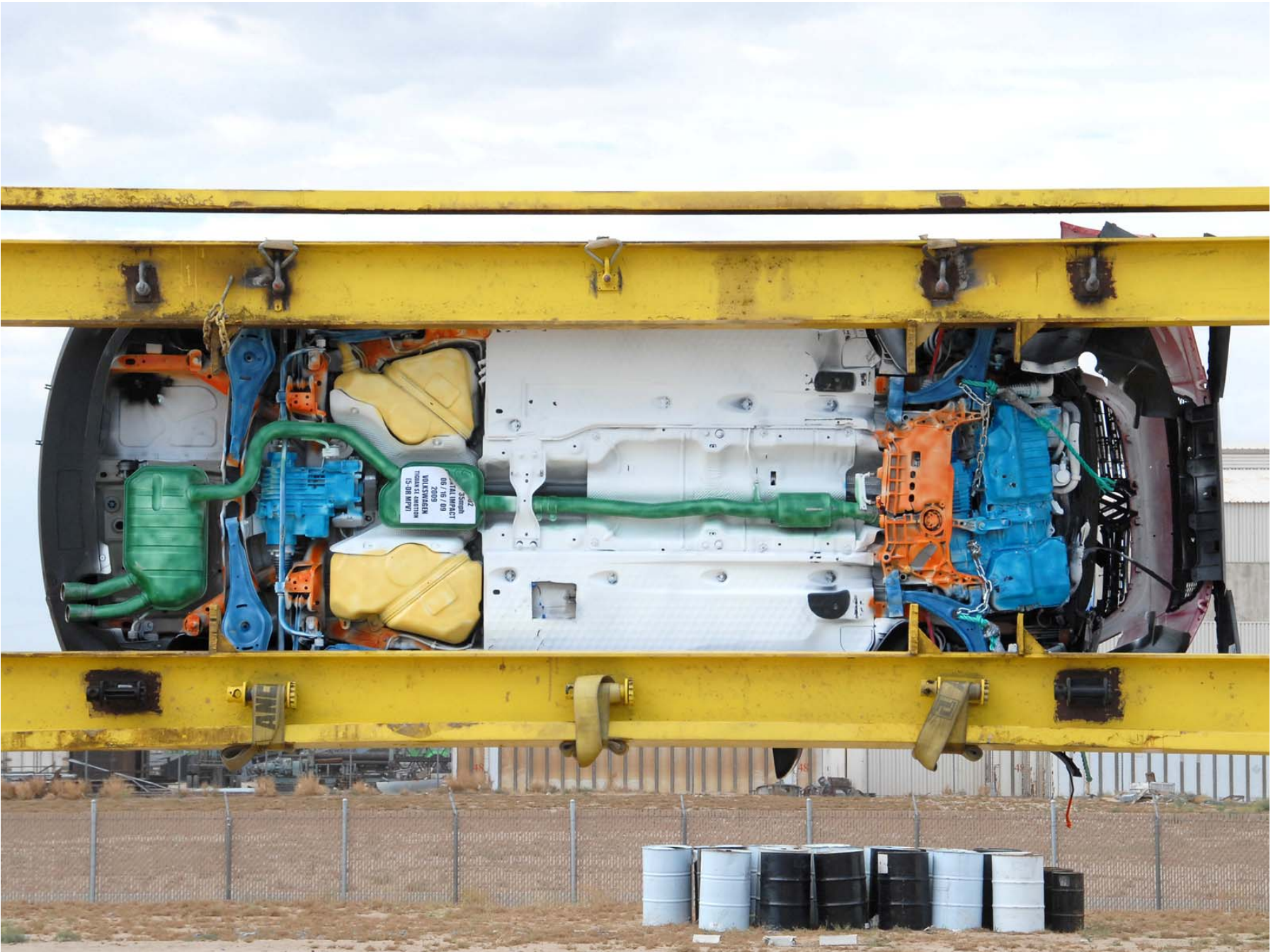


Figure A-61: Vehicle on Rollover Device (270°)



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



Figure A-63: Timer



Figure A-64: Vehicle Impact

APPENDIX B
DATA PLOTS

LIST OF DATA PLOTS

Data Plot		Page
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	Driver Chest Primary Z	B-2
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	Driver Right Femur Force Z	B-3
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	Passenger Head Primary Z	B-4
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	Passenger Chest Primary Y	B-5
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B-6	Passenger Left Femur Force Z	B-6
	Passenger Right Femur Force Z	B-6

LIST OF DATA PLOTS...(CONTINUED)

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

LIST OF DATA PLOTS...(CONTINUED)

Driver Right Upper Tibia Moment Y
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Left Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Driver Right Foot Fore Z
Driver Lap Belt Force
Driver Shoulder Belt Force
Driver Shoulder Belt Pullout
Driver Shoulder Belt Elongation
Passenger Head Primary X Velocity
Passenger Head Primary X Displacement
Passenger Head Redundant X
Passenger Head Redundant Y
Passenger Head Redundant Z
Passenger Head Resultant Redundant
Passenger Head Redundant X Velocity
Passenger Head Redundant X Displacement
Passenger Upper Neck Force X
Passenger Upper Neck Force Y
Passenger Upper Neck Force Z
Passenger Upper Neck Force Resultant
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Y
Passenger Upper Neck Moment Z
Passenger Upper Neck Moment Resultant
Passenger Chest Primary X Velocity
Passenger Chest Primary X Displacement
Passenger Chest Redundant X

LIST OF DATA PLOTS...(CONTINUED)

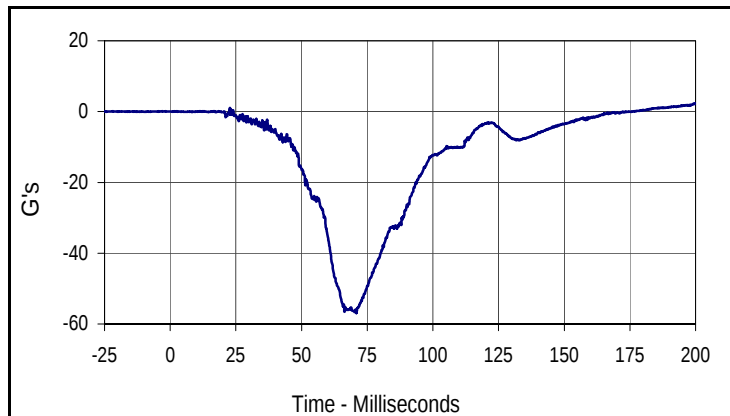
Passenger Chest Redundant Y
Passenger Chest Redundant Z
Passenger Chest Resultant Redundant
Passenger Chest Redundant X Velocity
Passenger Chest Redundant X Displacement
Passenger Chest Displacement
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Pelvis Resultant
Passenger Pelvis X 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

LIST OF DATA PLOTS...(CONTINUED)

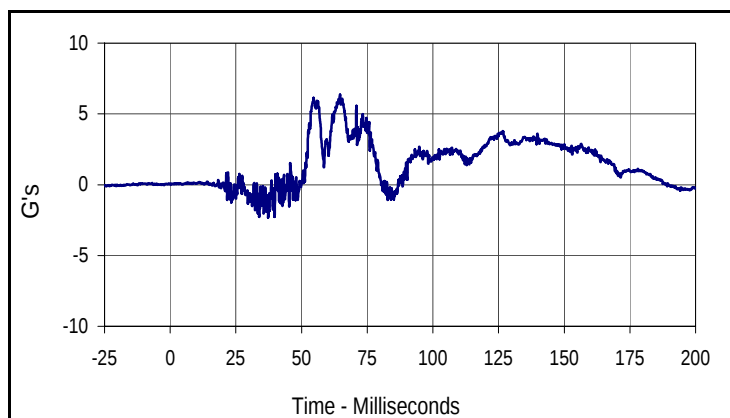
Vehicle Left Rear X Displacement
Vehicle Right Rear X
Vehicle Right Rear X Velocity
Vehicle Right Rear X Displacement
Vehicle Engine Top
Vehicle Engine Top Velocity
Vehicle Engine Top Displacement
Vehicle Engine Bottom
Vehicle Engine Bottom Velocity
Vehicle Engine Bottom Displacement
Vehicle Left Brake Caliper
Vehicle Left Brake Caliper Velocity
Vehicle Left Brake Caliper Displacement
Vehicle Right Brake Caliper
Vehicle Right Brake Caliper Velocity
Vehicle Right Brake Caliper Displacement
Vehicle Instrument Panel
Vehicle Instrument Panel Velocity
Vehicle Instrument Panel Displacement
Vehicle Left Rear Z
Vehicle Left Rear Z Velocity
Vehicle Left Rear Z Displacement
Vehicle Right Rear Z
Vehicle Right Rear Z Velocity
Vehicle Right Rear Z Displacement

Test Vehicle: 2009 Volkswagen Tiguan 2.0T SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

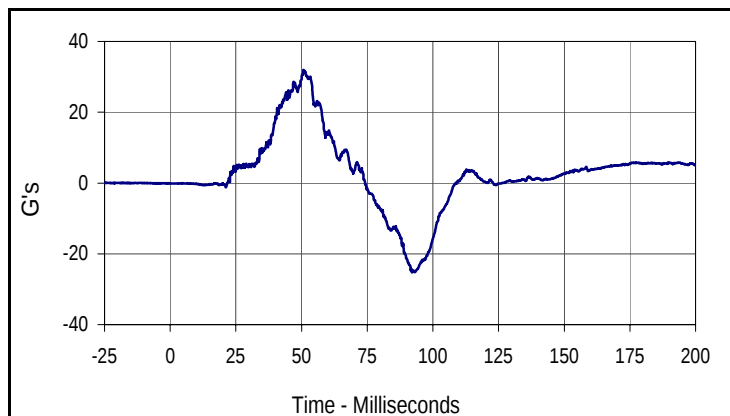
Test Date: 6/16/09
 NHTSA No.: V95802



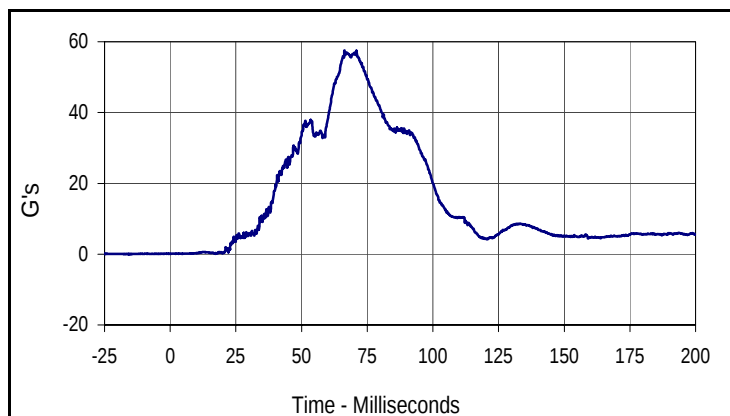
Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
2.3	200.0	-57.0	70.9



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.4	64.6	-2.3	37.3



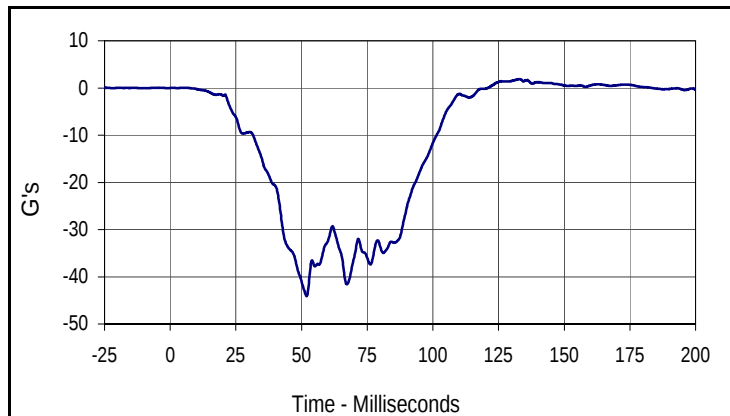
Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
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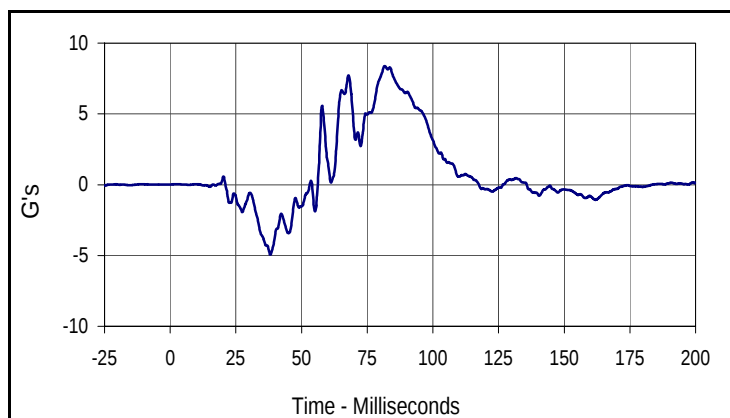
Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
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Test Vehicle: 2009 Volkswagen Tiguan 2.0T SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

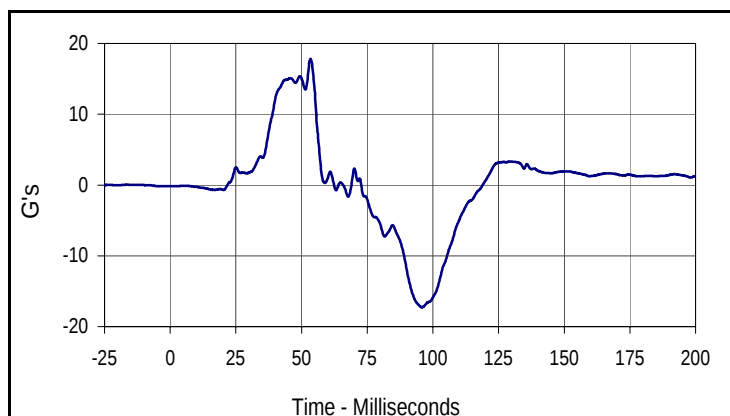
Test Date: 6/16/09
 NHTSA No.: V95802



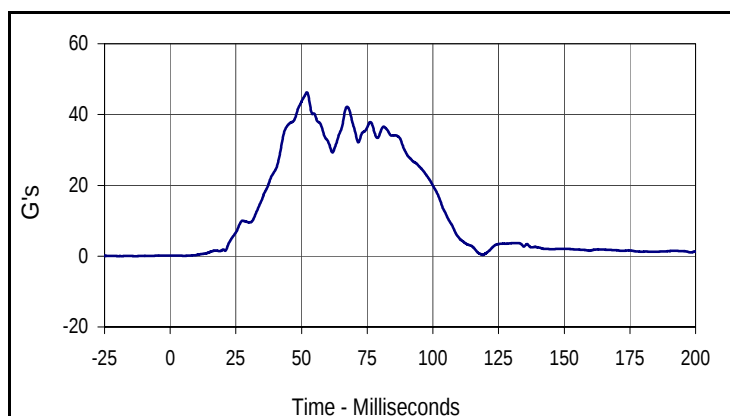
Curve Description			
Driver Chest Primary X			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
1.9	133.0	-44.1	51.9



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
8.4	81.7	-4.9	38.1



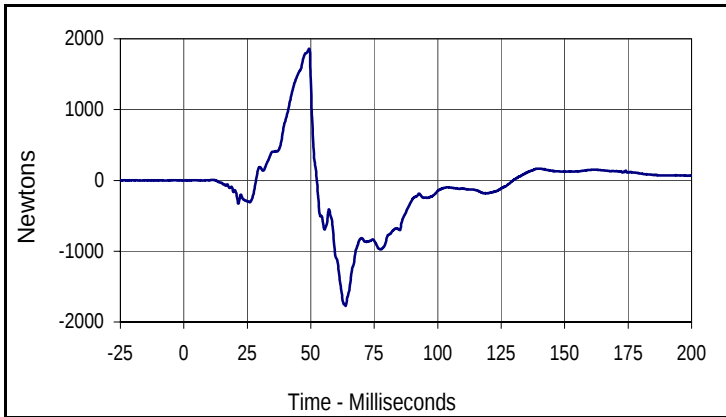
Curve Description			
Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.8	53.4	-17.3	95.8



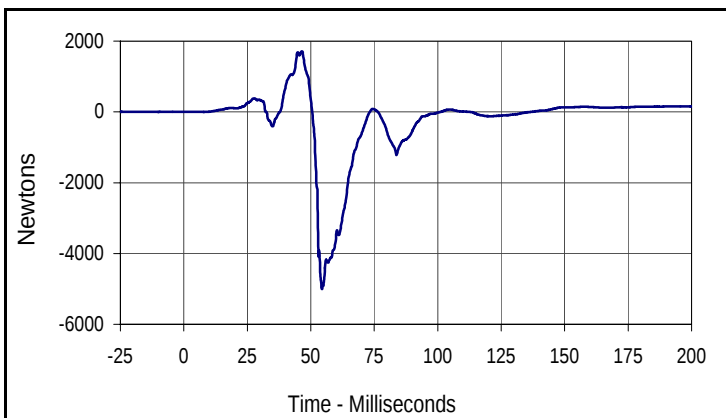
Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
004	RES	180	G's
Max	Time	Min	Time
46.3	52.0	0.1	5.2

Test Vehicle: 2009 Volkswagen Tiguan 2.0T SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09
 NHTSA No.: V95802



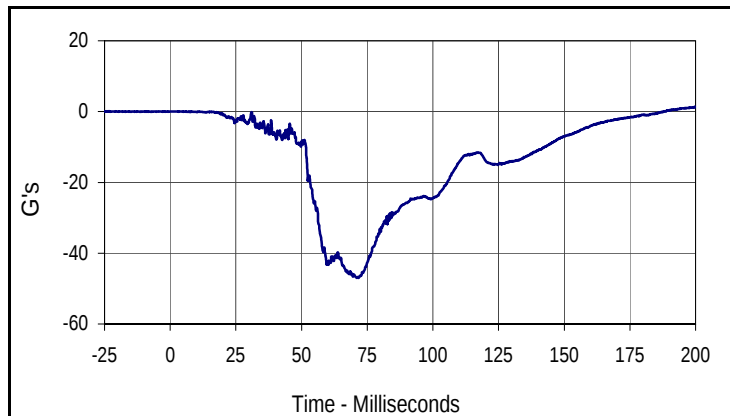
Curve Description			
Driver Left Femur Force Z			
CURNO	Type	SAE Class	Units
007	FIL	600	Newtons
Max	Time	Min	Time
1861.1	49.4	-1773.1	63.7



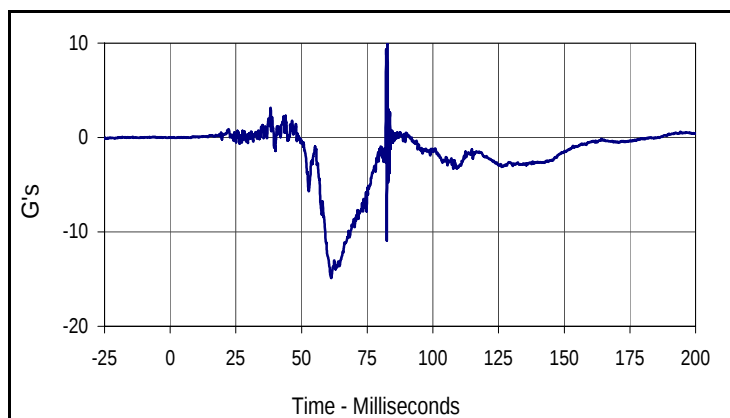
Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
1713.3	46.5	-5005.3	54.4

Test Vehicle: 2009 Volkswagen Tiguan 2.0T SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

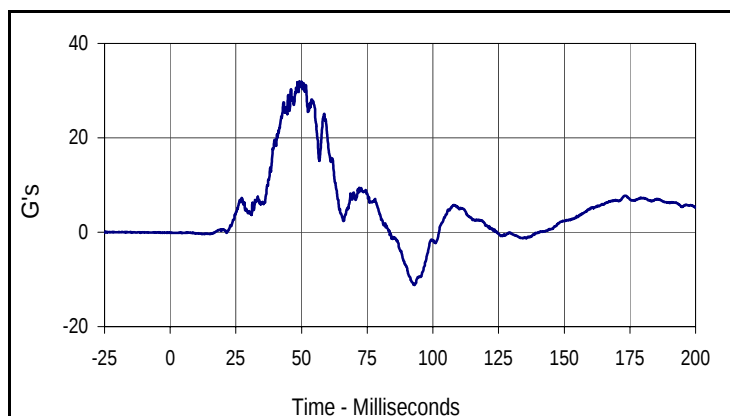
Test Date: 6/16/09
 NHTSA No.: V95802



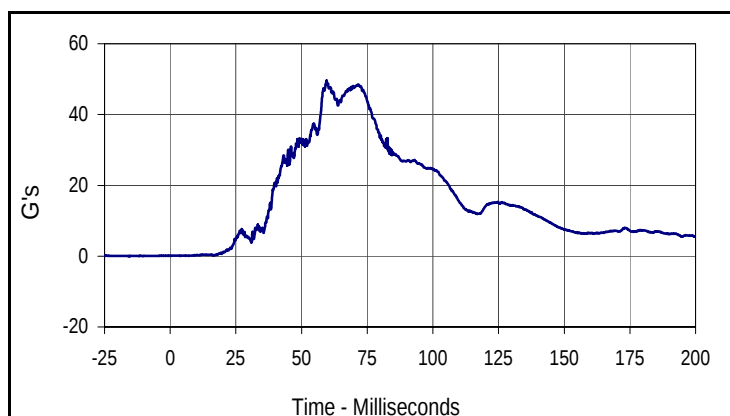
Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
009	FIL	1000	G's
Max	Time	Min	Time
1.3	199.7	-47.0	71.1



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
010	FIL	1000	G's
Max	Time	Min	Time
9.9	82.7	-14.9	61.3



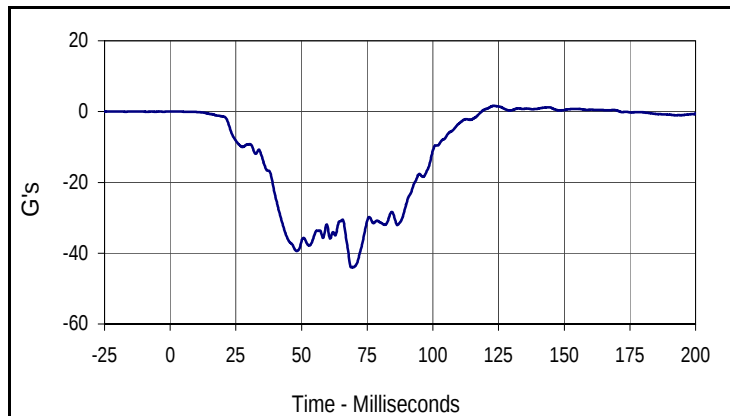
Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
011	FIL	1000	G's
Max	Time	Min	Time
32.0	49.2	-11.2	93.0



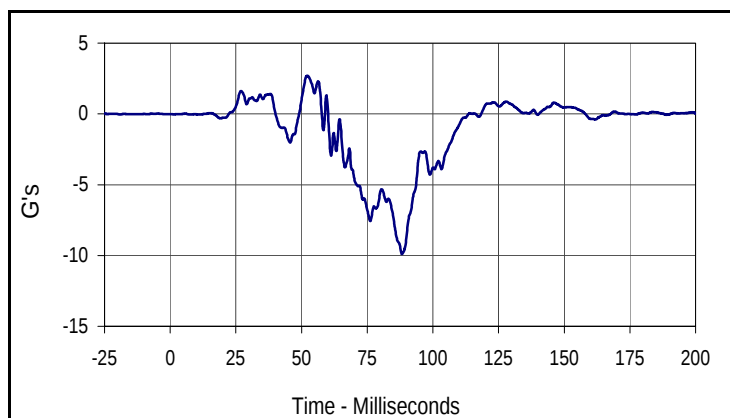
Curve Description			
Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
009	RES	1000	G's
Max	Time	Min	Time
49.6	59.6	0.1	7.0

Test Vehicle: 2009 Volkswagen Tiguan 2.0T SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

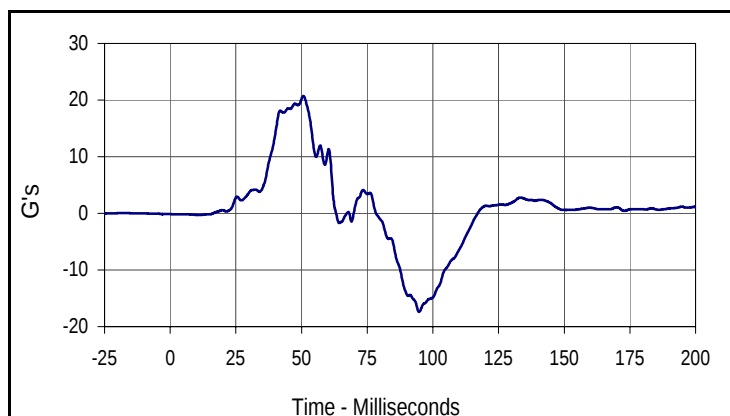
Test Date: 6/16/09
 NHTSA No.: V95802



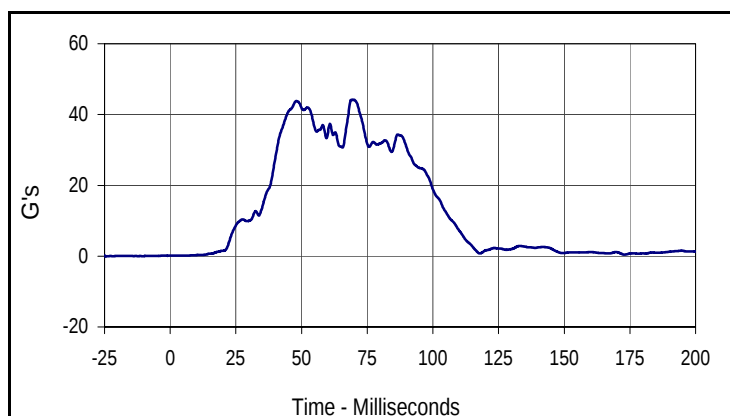
Curve Description			
Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
1.6	123.2	-44.0	69.0



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.7	52.3	-9.9	88.2



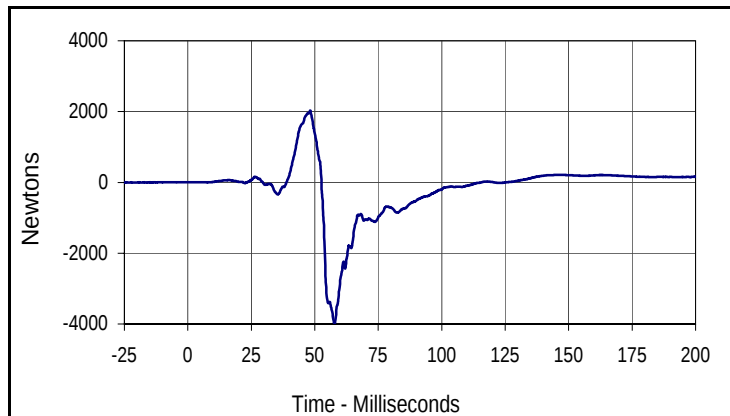
Curve Description			
Passenger Chest Primary Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
20.7	50.7	-17.4	94.7



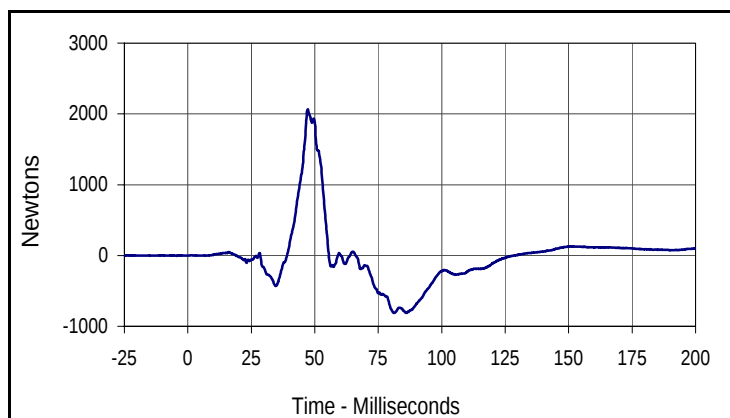
Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
44.2	69.0	0.1	0.0

Test Vehicle: 2009 Volkswagen Tiguan 2.0T SE 4Motion 5-Door MPV
 Test Program: NHTSA 35mph NCAP

Test Date: 6/16/09
 NHTSA No.: V95802



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
2026.2	48.2	-3980.4	57.8



Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
2064.0	47.2	-812.1	86.0

APPENDIX C
DUMMY CALIBRATION DATA

Test Program: Hybrid III 50th Percentile Male Head Drop Test

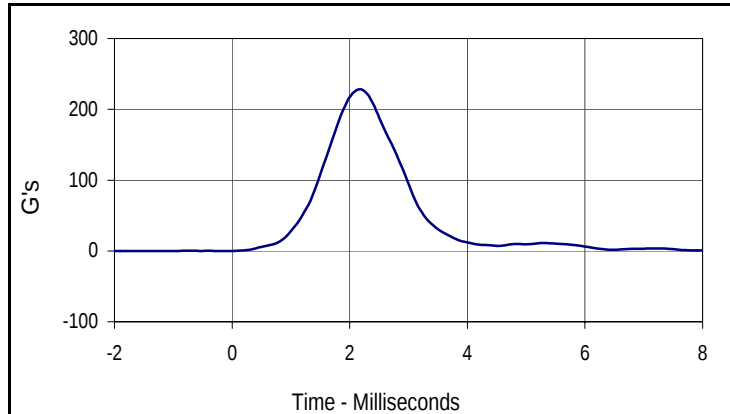
Test Date: 6/15/09

ATD Serial No.: 034

Test I.D.: HD034A



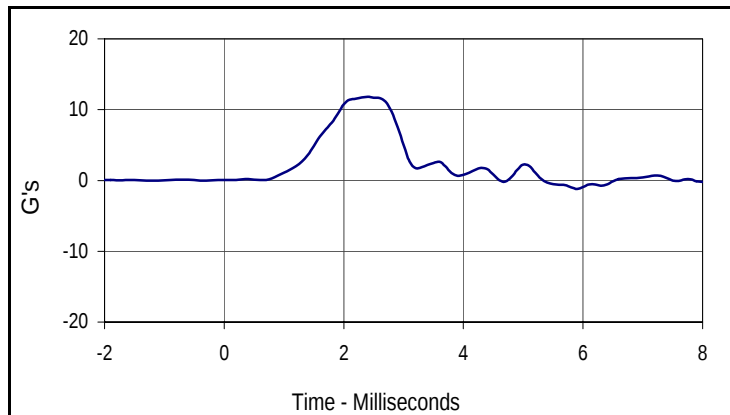
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	228.3	Pass
Peak Lateral Acceleration	G's	≤15.0	11.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
228.3	2.2	0.0	-1.1



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
11.8	2.4	-1.2	5.9

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

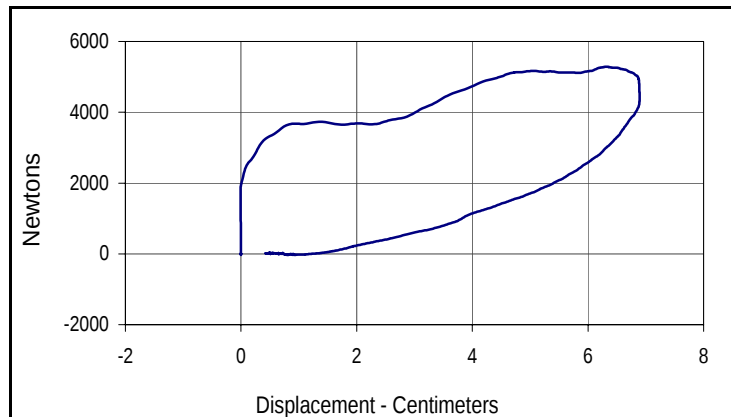
Test Date: 6/15/09

ATD Serial No.: 034

Test I.D.: CH34C



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	6.71	Pass
Peak Probe Force	Newtons	5159 to 5893	5286	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.89	Pass
Internal Hysteresis	%	69 to 85	74.0	Pass
Overall Test Results				Pass



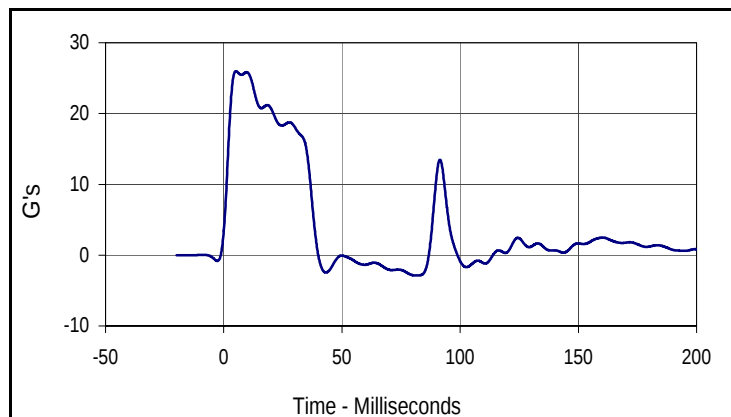
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	74.0
Peak Probe Force		Peak Chest Deflection	
5286		6.89	

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

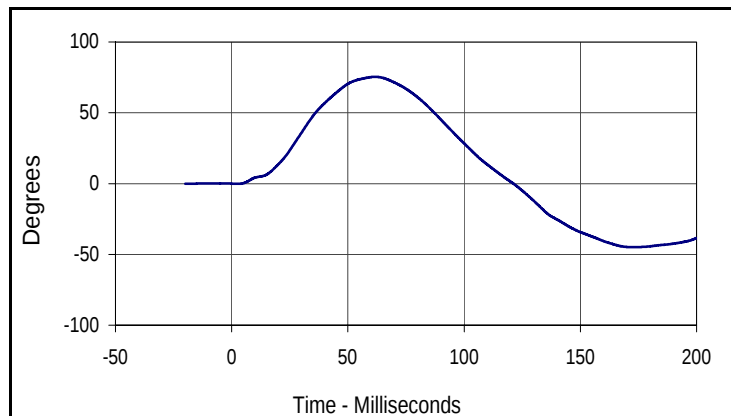
Test Date: 6/15/09
 Test I.D.: NF034A



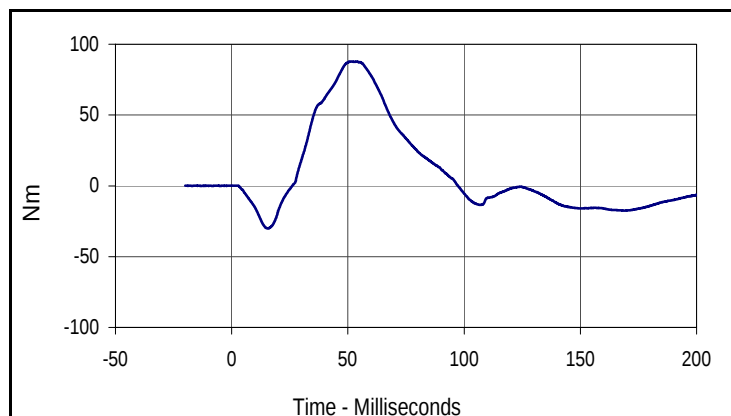
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	25.8	Pass
	20 Msec.	G's	17.6 to 22.6	20.7	Pass
	30 Msec.	G's	12.5 to 18.5	18.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	75.4	Pass
	Time	Msec.	57.0 to 64.0	61.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.2	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	87.9	Pass
	Time	Msec.	47.0 to 58.0	51.7	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.4	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
26.0	5.2	-2.9	81.6



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.4	61.6	-44.9	172.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
87.9	51.7	-30.1	15.7

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

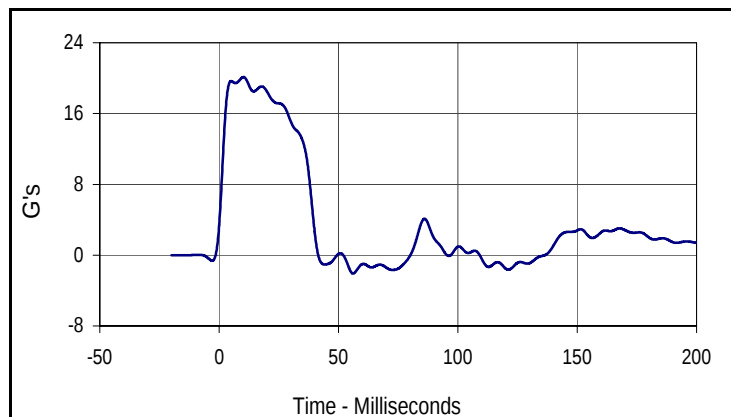
Test Date: 6/15/09

ATD Serial No.: 034

Test I.D.: NE034A



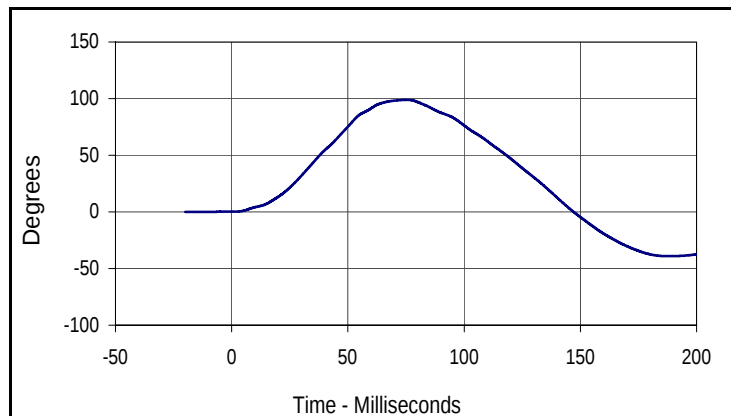
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.1	Pass
	20 Msec.	G's	14.0 to 19.0	18.5	Pass
	30 Msec.	G's	11.0 to 16.0	15.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.2	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	99.0	Pass
	Time	Msec.	72.0 to 82.0	75.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	147.1	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-79.0	Pass
	Time	Msec.	65.0 to 79.0	66.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.1	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

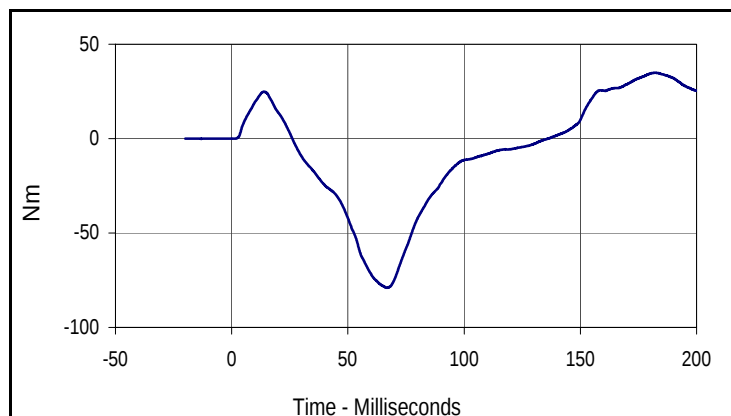
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.1	10.2	-2.1	56.1



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
99.0	75.3	-39.1	187.8



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
34.9	182.3	-79.0	66.9

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

Test Date: 6/15/09

ATD Serial No.: 034

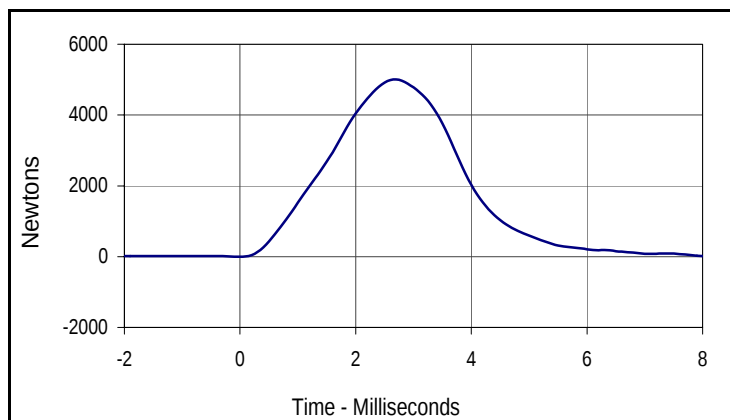
Test I.D.: LK34B , RK34B

**Left Knee**

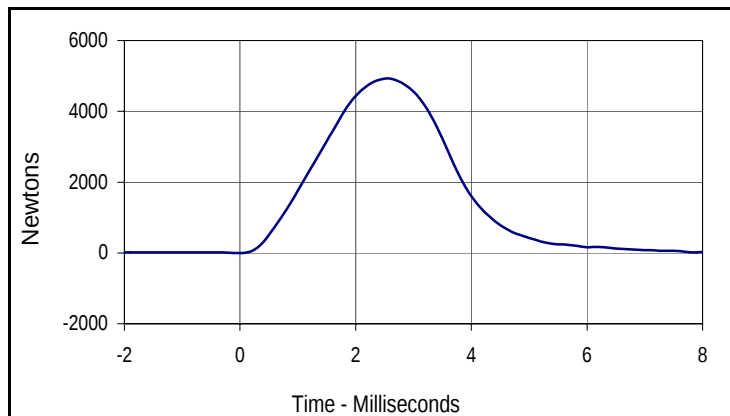
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5004	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	4926	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5004.1	2.7	-46.3	9.0

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
4926.3	2.5	-46.6	9.8

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 6/15/09

ATD Serial No.: 034

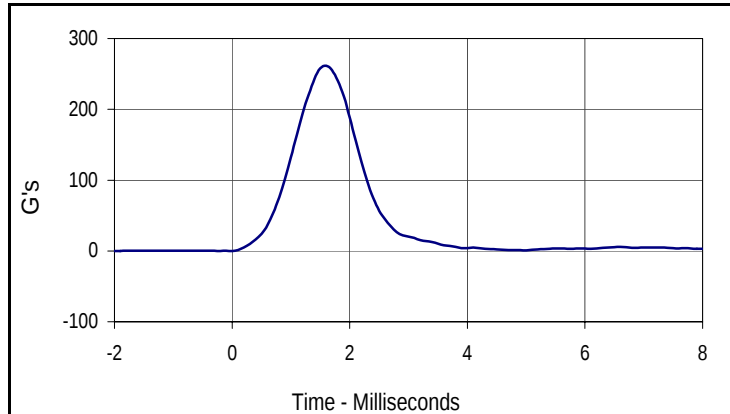
Test I.D.: N/A



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	86	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	88	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	45	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 - Popliteal length	mm	429 to 455	445	Pass
M - Knee pivot height	mm	485 to 500	492	Pass
N - Buttock popliteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	265	Pass
V - Shoulder breadth	mm	422 to 437	425	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	990	Pass
Z - Waist circumference	mm	836 to 866	855	Pass
AA - Location for chest circumference	mm	429 to 434	429	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

Test Program: Hybrid III 50th Percentile Male Head Drop TestTest Date: 6/15/09ATD Serial No.: 035Test I.D.: HD35A

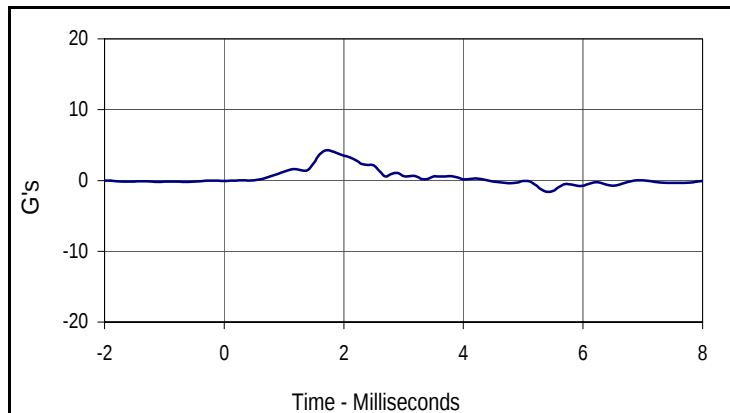
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	261.8	Pass
Peak Lateral Acceleration	G's	≤15.0	4.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
261.8	1.6	0.0	-2.0



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.3	1.7	-1.6	5.4

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

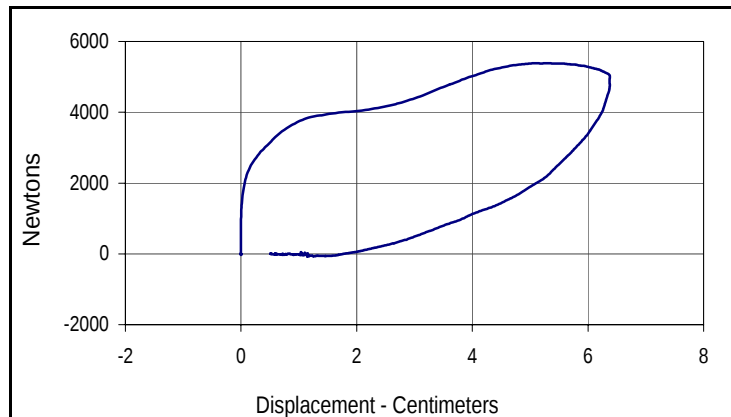
Test Date: 6/15/09

ATD Serial No.: 035

Test I.D.: CH035C



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	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5384	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.38	Pass
Internal Hysteresis	%	69 to 85	76.9	Pass
Overall Test Results			Pass	



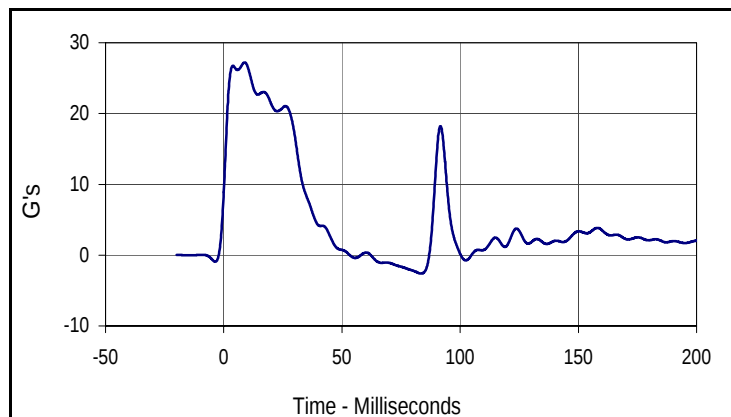
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	76.9
Peak Probe Force		Peak Chest Deflection	
5384		6.38	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

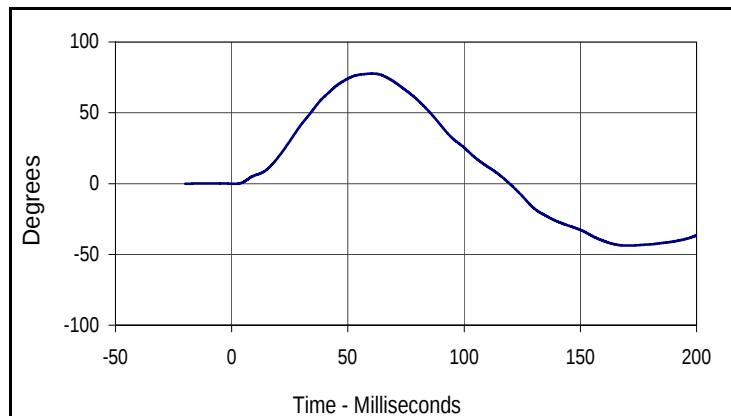
Test Date: 6/15/09
 Test I.D.: NF035B



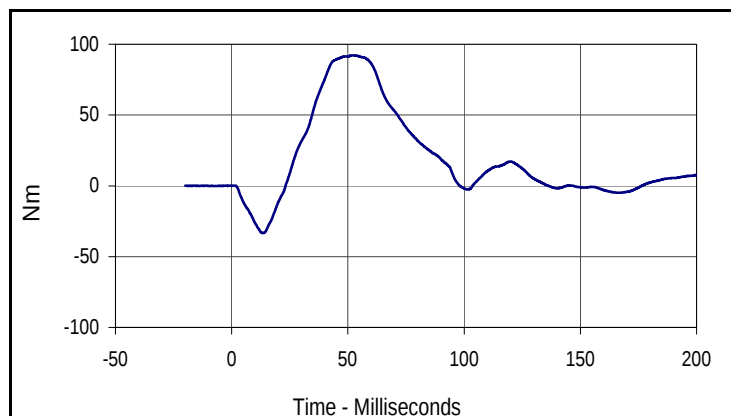
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	26.7	Pass
	20 Msec.	G's	17.6 to 22.6	21.4	Pass
	30 Msec.	G's	12.5 to 18.5	17.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.7	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	77.7	Pass
	Time	Msec.	57.0 to 64.0	60.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	119.6	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	92.2	Pass
	Time	Msec.	47.0 to 58.0	51.6	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
27.2	8.8	-2.6	83.5



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
77.7	60.5	-43.8	170.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
92.2	51.6	-33.4	13.4

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

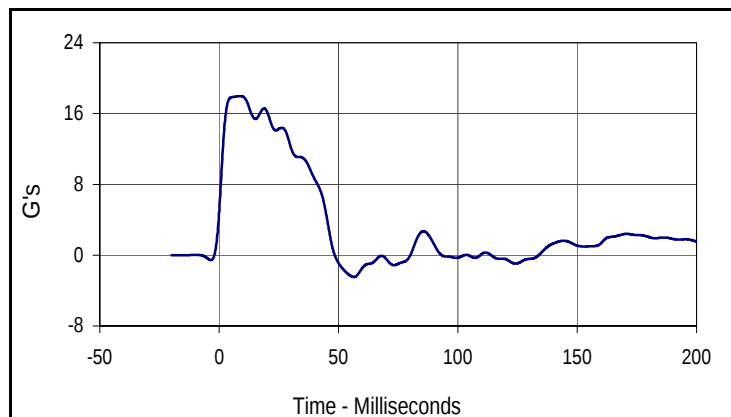
Test Date: 6/15/09

ATD Serial No.: 035

Test I.D.: NE035D



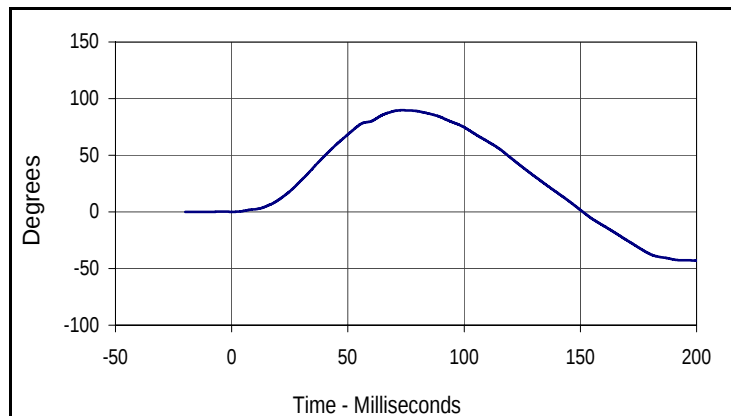
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.9	Pass
	20 Msec.	G's	14.0 to 19.0	16.2	Pass
	30 Msec.	G's	11.0 to 16.0	12.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	12.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.6	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	89.7	Pass
	Time	Msec.	72.0 to 82.0	73.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	151.1	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-70.4	Pass
	Time	Msec.	65.0 to 79.0	65.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	139.8	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

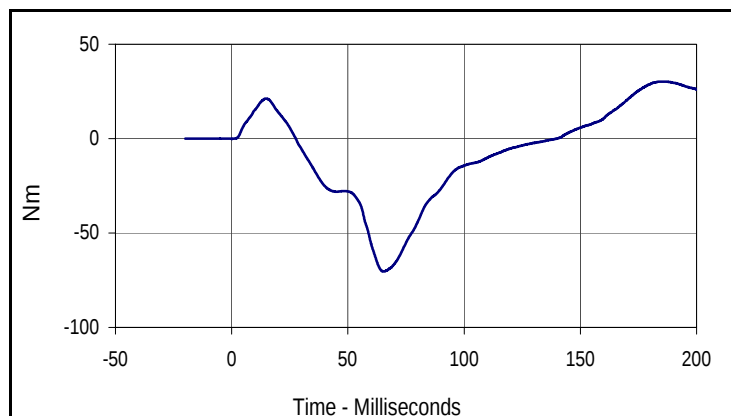
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
18.0	8.8	-2.5	56.5



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
89.7	73.4	-42.8	200.0



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
30.2	185.3	-70.4	65.5

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

Test Date: 6/15/09

ATD Serial No.: 035

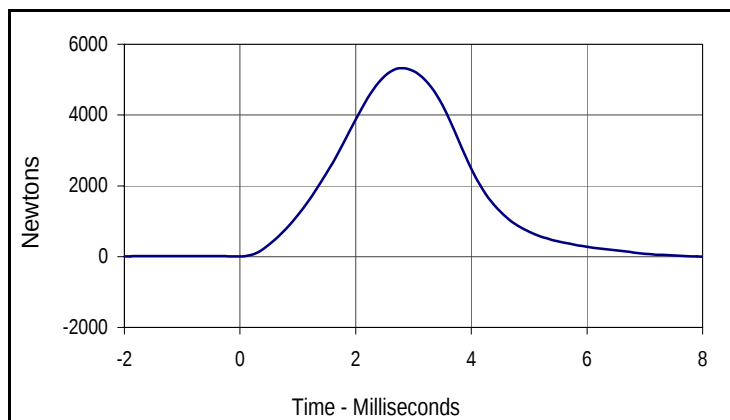
Test I.D.: LK35C , RK35D

**Left Knee**

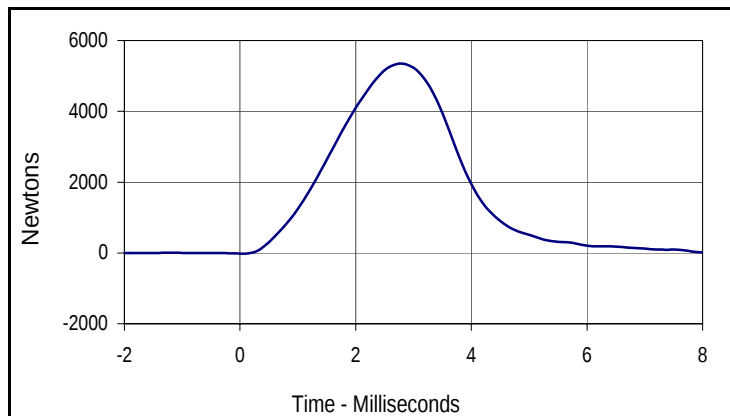
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5326	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5348	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5326.2	2.8	-13.9	8.7

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5347.6	2.8	-60.1	10.0

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 6/15/09

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	885	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	136	Pass
E - Shoulder pivot from back	mm	84 to 94	86	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	302	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	338	Pass
J - Elbow rest height	mm	190 to 211	209	Pass
K - Buttock to knee length	mm	579 to 604	593	Pass
L - Popliteal length	mm	429 to 455	443	Pass
M - Knee pivot height	mm	485 to 500	488	Pass
N - Buttock popliteal length	mm	452 to 477	467	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	259	Pass
V - Shoulder breadth	mm	422 to 437	431	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	990	Pass
Z - Waist circumference	mm	836 to 866	853	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	227	Pass
Overall Test Results				Pass

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

Test Date: 6/15/09
 Test I.D.: N/A



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

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 035

Test Date: 6/15/09
 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:
