FINAL REPORT NUMBER: SPNCAP-TRC-12-001

NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST

Chrysler Group LLC
2012 Dodge Durango SUV
NHTSA NUMBER: MC0324

PREPARED BY:
Transportation Research Center Inc.
10820 State Route 347
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Report Date: January 19, 2012

FINAL REPORT

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

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Prepared By : IL Project Operations Team

Approved By: Margaret Susan

Approval Date: January 19, 2012

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

FINAL REPORT ACCEPTANCE BY OCWS:

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

Technical Report Documentation Page

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15. Supplemental Notes		

16. Abstract

A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2012 Dodge Durango SUV, in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on November 16, 2011.

The impact velocity was 32.2 km/h, and the ambient temperature at the struck (driver's side) side of the target vehicle at the time of impact was 22° C. The test vehicle's post-test maximum crush was 358 mm at Level 3.

The test or target vehicle's performance is given below:

	Unit	Threshold	Front SID-IIs
Head Injury Criteria (HIC_{36}):	N/A	1000	129
Resultant Lower Spine Acceleration:	g's	82	38.8
Total Pelvic Force: (sum of acetabular and iliac forces)	N	5525	2961.0
Maximum Thoracic Rib Deflection	mm	38	19.5
Maximum Abdomen Rib Deflection	mm	45	20.9

The door struck by the pole did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs	18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE, Room E12-100 Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833

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TABLE OF CONTENTS

SECTION 1
TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY12 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00125. The purpose of this test is to generate comparative side impact performance in a 2012 Dodge Durango SUV manufactured by Chrysler Group LLC. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated August 30, 2011.

SECTION 2
SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a model year 2012 Dodge Durango SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.2 km/h. The test was conducted by Transportation Research Center Inc. in East Liberty, OH, on November 16, 2011. Pre-test and post-test photographs of the test vehicle and the side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated August 30, 2011. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

Head CG Triaxial Accelerometers
Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
Abdomen Upper and Lower Rib Displacement Potentiometers
Lower Spine (T12) Triaxial Accelerometers
Iliac Load Cell
Acetabulum Load Cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC_{36})	N/A	1000	129
Lower Spine Acceleration	G	82	38.8
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2960.99
Maximum Thoracic Rib Deflection	Mm	38*	19.5
Maximum Abdominal Rib Deflection	mm	45*	20.9

* Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear Passenger Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	No	No		
Side Airbag 1 (Side Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	No
Side Airbag 3	No	No	No	No
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other	No	No	No	No

GENERAL COMMENTS

The driver door did not become unlatched or open during impact. No fuel spillage occurred during or following impact and the rollover test.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MC0324	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	Yes
Make	Dodge	Automatic Door Locks (ADL)	Yes
Model	Durango	Power Window Auto-Reverse	N/A
Body Style	SUV	Other Optional Feature	N/A
VIN	1C4RDHAG3CC130153	Driver Frontal Airbag	Yes
Body Color	Gold	Driver Curtain Airbag	Yes
Odometer Reading (miles)	7	Driver Head/Torso Airbag	No
Engine Displacement (L)	3.6	Driver Torso Airbag	No
Number of Cylinders	6	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Longitudinally-placed	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	5	Rear Passenger Curtain Airbag	Yes
Overdrive	No	Rear Pass. Head/Torso Airbag	No
Final Drive	RWD	Rear Passenger Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof / T-Top	No	Rear Passenger Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rr. Pass. Seat Belt Pretensioner	Yes
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Passenger Load Limiter	Yes
All-Wheel Drive (AWD)	No	Other Safety Restraint	No

Does owner's manual provide instructions to turn off automatic door locks? Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group LLC	GVWR (kg)	2949
Date of Manufacture	8-11	GAWR Front (kg)	1452
Vehicle Type	SUV	GAWR Rear (kg)	1770

VEHICLE SEATING AND WEIGHT CAPACITY DATA

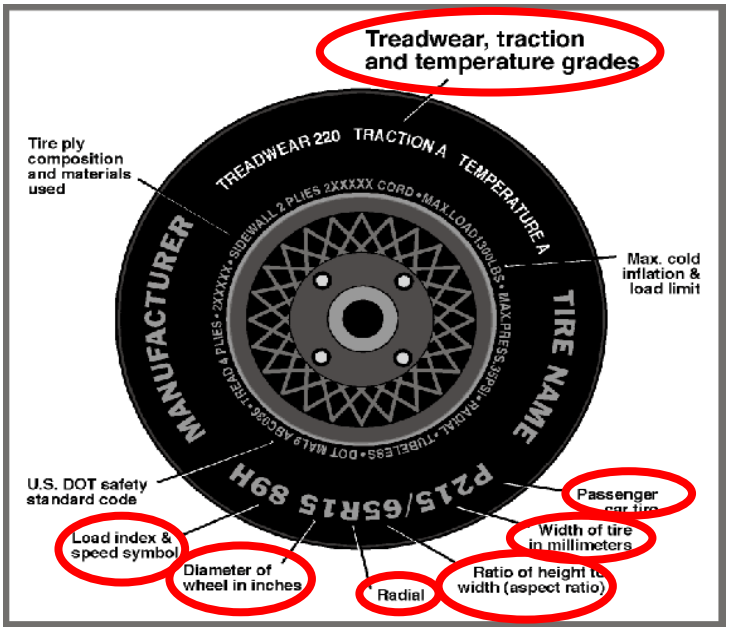
	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	2	3	7	
Vehicle Capacity Weight (VCW) (kg)				544	(A)
DSC x 68.04 kg				7	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				68.0	(A-B)

VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/Lever	Adjustable w/Knob
Front Seat	Yes	No	No		No	Yes	No
Rear or Second Row Seat	No	No	Yes	No	No	Yes	No
Third Row Seat	No	No	Yes	No	Yes	No	No

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

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	228	228
Recommended Tire Size	P265/60R18	P265/60R18

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Tire Size on Vehicle	P265/60R18	P265/60R18
Tire Manufacturer	Michelin	Michelin
Tire Name	Latitude Tour	Latitude Tour
Tire Type	All Season	All Season
Tire Width	265	265
Aspect Ratio	60	60
Radial	Yes	Yes
Wheel Diameter	30.5	30.5
Load Index/ Speed Symbol	109T	109T
Treadwear	720	720
Traction Grade	A	A
Temperature Grade	B	B
Tire Material	Rubber	Rubber

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

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	KPa	N/A	N/A	N/A	N/A
Tire Placard	kPa	228	228	228	228
Owner's Manual	kPa	N/A	N/A	N/A	N/A
As Tested	kPa	228	228	228	228

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	521.2	567.8		569.2	564.6		540.8	623.2	
Right	kg	544.6	555.0		577.2	586.2		539.6	605.4	
Ratio	%	48.7	51.3		49.9	50.1		46.8	53.2	
Totals	kg	1065.8	1122.8	2188.6	1146.4	1150.8	2297.2	1080.4	1228.6	2309.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	2188.6	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	42.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	68.0	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2298.8	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? **X YES** □ NO

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Steel plate mounted in the cargo area.	9.7

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	0.2	0.5	0.1	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	0.1	0.5	0.0	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	0.8	0.0	0.8	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	0.0	0.1	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1562	1525	1620	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	-3.9	-10.5	6.7	

*ND=Nose Down (-), NU=Nose Up (+) **LD=Left Down (-), LU=Left Up (+)
*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements. Indicate "Yes" or "No" for "Meets Requirements".

DATA SHEET NO. 2

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324

Test Program: SPNCAP Side Impact Test Date: 11/16/11

SEAT POSITIONING

The driver seat, front center seat (if applicable), and right front passenger's seat should be set to the forward-most, mid-height, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	N/A	N/A	N/A
Front Passenger Seat	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	N/A	N/A	N/A
Non-Struck Side Rear Seat	N/A	N/A	N/A
Rear Center Seat*	N/A	N/A	N/A

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	Mid[1]	Mid[1]	Max.	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min.	N/A	N/A	N/A
Front Passenger Seat	Mid[1]	Mid[1]	Max.	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min.	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	Max.	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min.	N/A	N/A	N/A
Struck Side Rear Seat	N/A	N/A	Max.	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min.	N/A	N/A	N/A
Non-Struck Side Rear Seat	N/A	N/A	Max.	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min.	N/A	N/A	N/A
Rear Center Seat*	N/A	N/A	Max.	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min.	N/A	N/A	N/A

* If applicable.

[1] Measurements were not recorded.

DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

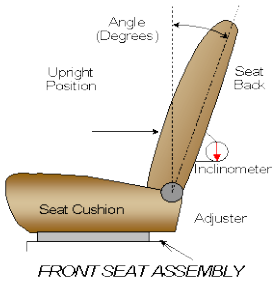
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel.		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	278	42	0	1
Front Passenger Seat	278	42	0	1
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	N/A	N/A	N/A	N/A
Non-Struck Side Rear Seat	N/A	N/A	N/A	N/A
Rear Center Seat*	N/A	N/A	N/A	N/A

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1. for the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	N/A	N/A	1.7	N/A
Front Passenger Seat	N/A	N/A	1.7	N/A
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	N/A	N/A	N/A	N/A
Non-Struck Side Rear Seat	N/A	N/A	N/A	N/A
Rear Center Seat*	N/A	N/A	N/A	N/A

* If applicable.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted with the information provided by the manufacturer on Form No. 1

	Total # of Positions	Placed in Position #
Driver Seat	5	1 of 5

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	5	1 of 5

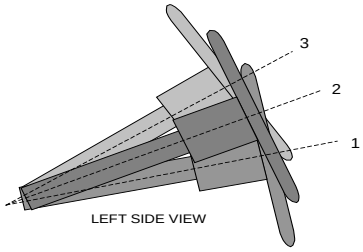
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	21.9	0
Geometric Center, Position No. 2	23.8	27.5
Uppermost, Position No. 3	25.7	55
Telescoping Steering Wheel Travel		27.5
Test Position	23.8	27.5

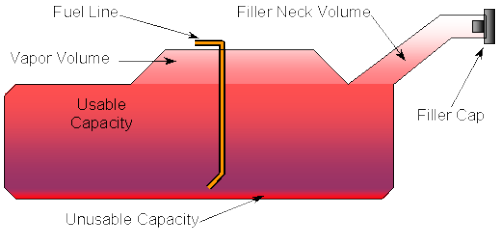


STEERING COLUMN ASSEMBLY

FUEL PUMP

The vehicle is equipped with an electric fuel pump which operates when the vehicle's electrical system is activated. The fuel pump starts pumping fuel when the key is “ON” position.

The fuel tank is in front of the rear axle between the left and right side frame rails. The fuel filler enters at left rear corner of tank. The fuel filler cap is on the left rear quarter panel. The fuel lines run along the inside of left frame rail.



VEHICLE FUEL TANK ASSEMBLY

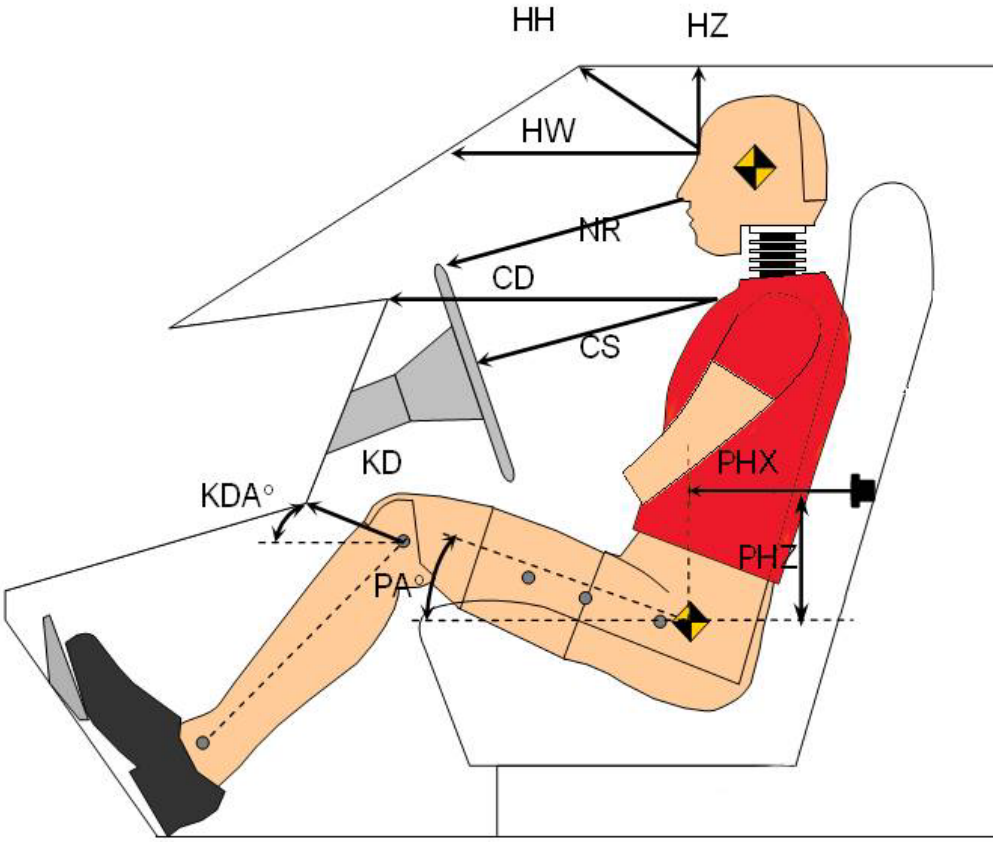
FUEL TANK CAPACITY

	Liters
Usable Capacity of “Standard Tank” (see Form No. 1)	93.1
Usable Capacity of “Optional” Tank (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner’s Manual)	93.1
Usable Capacity of Optional Tank (see Owner’s Manual)	N/A
93% of Usable Capacity	86.6
Actual Amount of Solvent Used in Test	87.1
1/3 of Usable Capacity	28.9

Is the Actual Amount of Solvent Used in the test equal to 93% +/- 1% of the Usable Capacity stated on Form No. 1? **X YES** □ NO

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

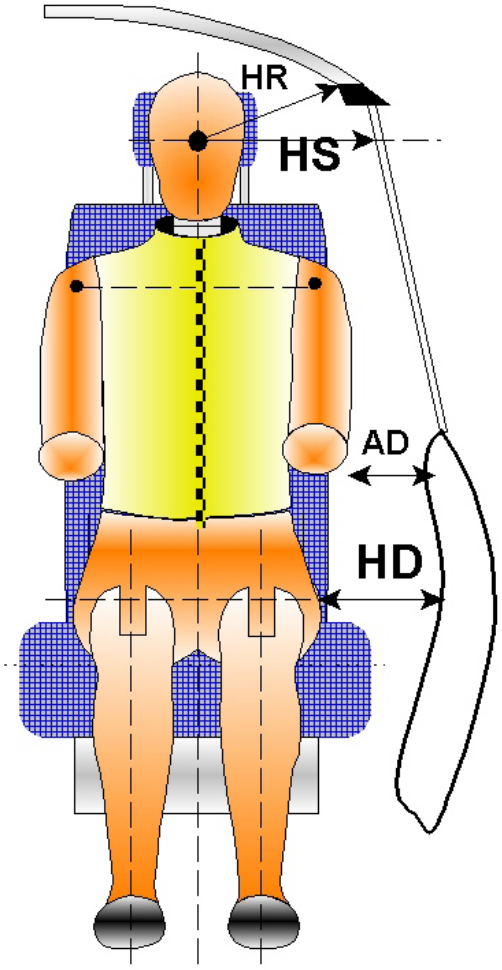
Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	297	
HW	Head to Windshield	570	
HZ	Head to Roof Liner	192	
NR	Nose to Rim	221	
CD	Chest to Dashboard	405	
CS	Chest to Steering Wheel	148	
KDL/KDLA°	Left Knee to Dash	99	33
KDR/KDRA°	Right Knee to Dash	89	33
PAX°	Pelvic Tilt Angle (X-axis)		19.2
PAY°	Pelvic Tilt Angle (Y-axis)		0
PHX	Hip Point to Striker (X-Axis)	355	
PHZ	Hip Point to Striker (Z-Axis)	72	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

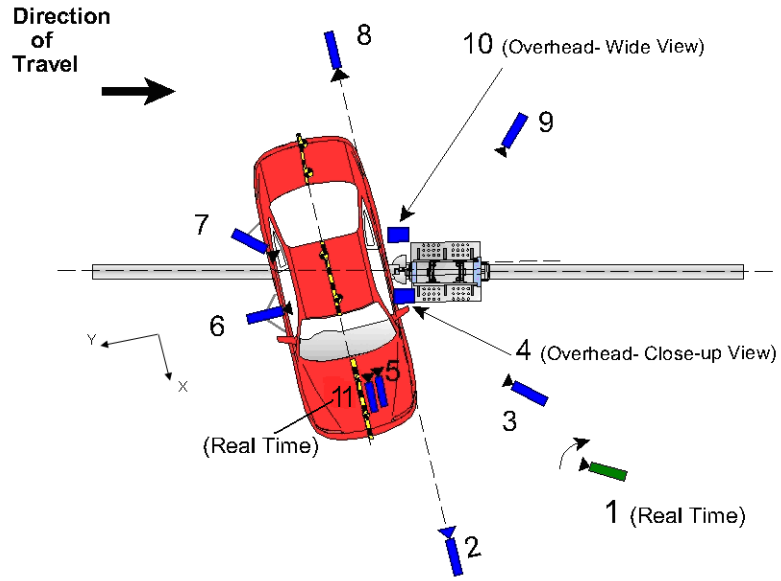
Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



Code	Measurement Description	Length (mm)
HR	Head to Side Header	260
HS	Head to Side Window	375
AD	Arm to Door	192
HD	Hip Point to Door	188

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



REFERENCE: (from point of impact for X and Y; from ground for Z)
+ X = Forward of vehicle, + Y = Right of vehicle, + Z = Down

Camera No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real time (24-30 fps) pan view of impact				Zoom	30
2	Front ground level – impact view	1168	5232	1335	16	1000
3	Impact side 45° – forward pole view	2007	3607	1335	12.5	1000
4	Overhead Close-up view of impact	305	0	5650	25	1000
5	Onboard – dummy front view				12.5	1000
6	Onboard – dummy side view				8.5	1000
7	Onboard – dummy rear oblique view				6	1000
8	Rear ground level – impact view	1524	-5664	1350	8.5	1000
9	Impact side 45° – rearward pole view	-1321	-3810	1285	16	1000
10	Overhead wide view of impact	0	0	5650	6	1000
11	Real time (24-30 fps) dummy front view				6	30

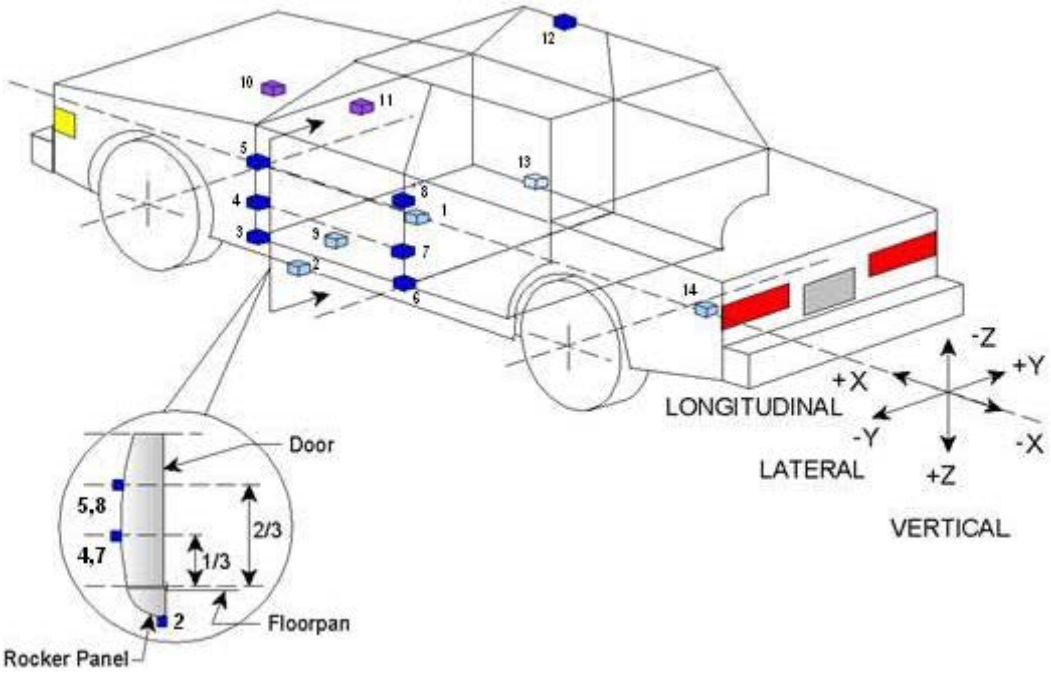
All measurements accurate to +/- 6 mm.
NOTE: Vehicle was at a 75° angle to the rigid pole.
If applicable, explain why camera(s) did not operate as intended:

INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
TOTAL	42

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



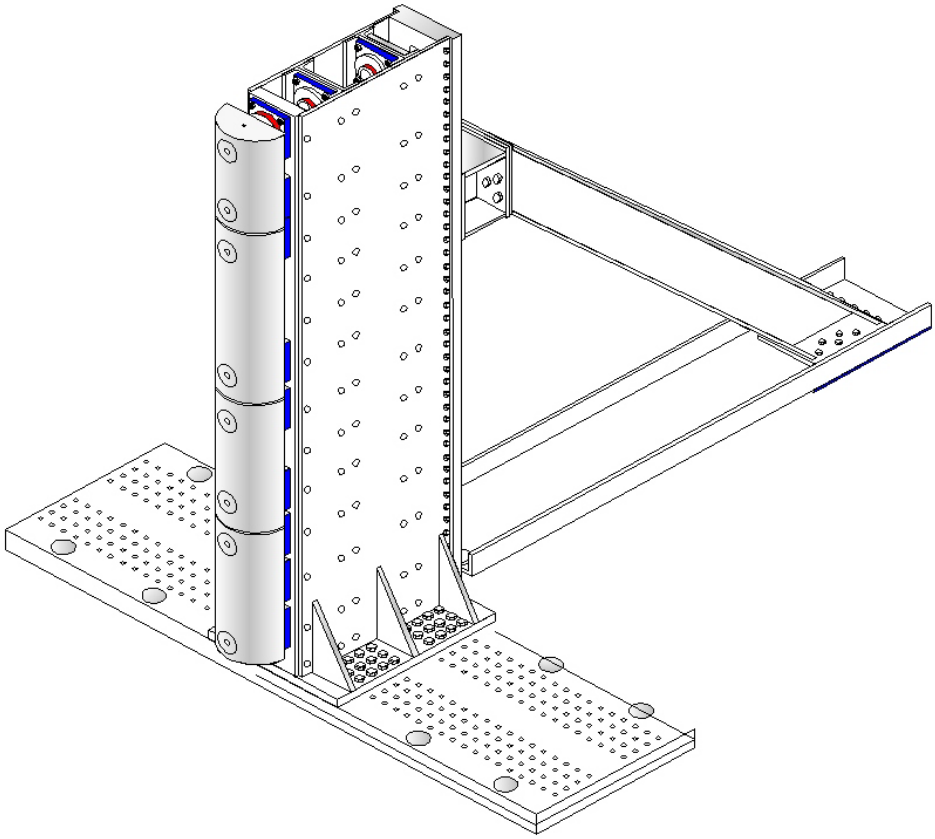
	Accelerometer/Sensor Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3290	50	734
2	Left Floor Sill	3400	-745	504
3	A-Pillar Sill	3660	-762	521
4	A-Pillar Low	3740	-860	737
5	A-Pillar Mid	3740	-865	1100
6	B-Pillar Sill	2590	-760	523
7	B-Pillar Low	2670	-855	734
8	B-Pillar Mid	2640	-855	1131
9	Driver Seat Track	2810	-555	590
10	Engine Top	4385	-115	1117
11	Firewall	4180	-38	1117
12	Right Roof	2920	630	1608
13	Right Floor Sill	3150	745	485
14	Rear Floorpan	1380	0	675

Reference: *X - Test Vehicle Rear Bumper (+ forward)*
Y - Test Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

FOIL 300K RIGID POLE



Load Cell Locations	
ID	**Height From Ground (mm)**
1	87
2	468
3	648
4	978
5	1168
6	1651
7	1816
8	2057

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	N/A
Top of Head	N/A
Left Side of Head	Side curtain airbag
Back of Head	Headrest
Left Shoulder	Side curtain airbag
Upper Torso	Torso Airbag
Lower Torso	Torso/Pelvis Airbag
Left Hip	Left Door Panel
Left Knee	Left Door Panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

* Indicate “Yes”, “No”, or “N/A”.

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	N/A	No	No	No
Seat Disengagement from Floor pan	N/A	No	No	No
Seat Back Movement from Initial Position	Yes	No	No	No
Seat Back Collapse	No	No	No	No

* Indicate “Yes”, “No”, or “N/A”.

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Deformation occurred
Sill Separation	No
Windshield Damage	Broken
Side Window Damage	Broken
Other Notable Effects	Left sun visor detached

DATA SHEET NO. 8 (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

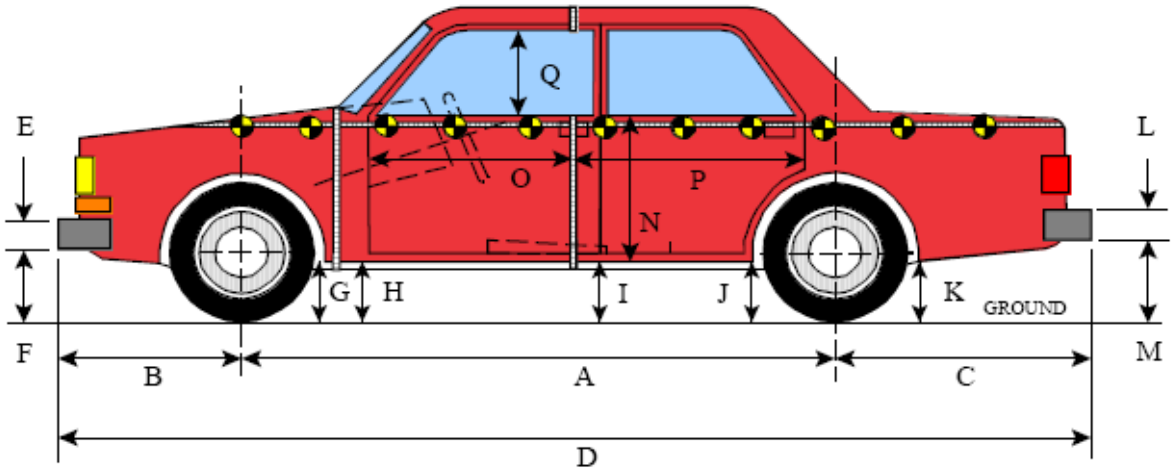
Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	No	No		
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	No
Side Airbag 1	N/A	N/A	N/A	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other	N/A	N/A	N/A	N/A

VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1270
Actual Impact Point (Aft of Front Axle)	mm		1269
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	1
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	degrees	75 +/- 3	73.0
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.2
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.2

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



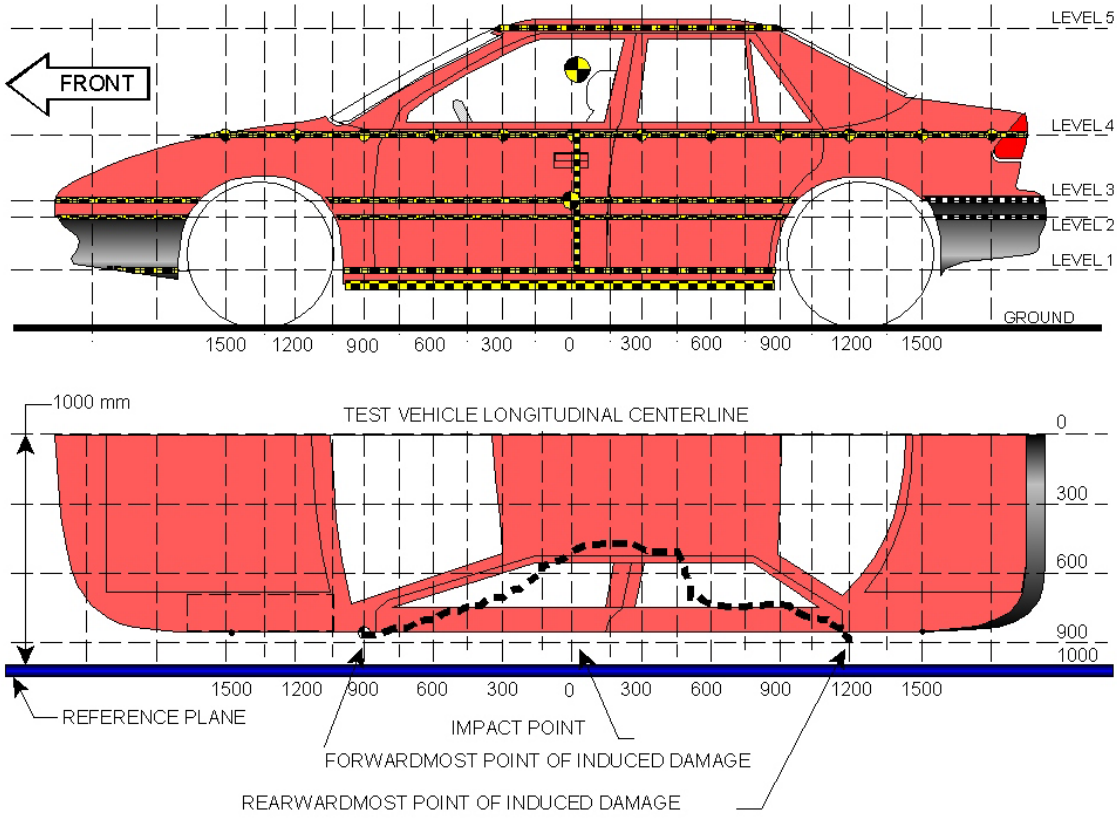
LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3045	3045	0
B	Front Axle to Front Surface of Vehicle	870	870	0
C	Rear Axle to Rear Surface of Vehicle	1155	115	1040
D	Total Length at Centerline	5070	5070	0
E	Front Bumper Thickness	180	180	0
F	Front Bumper Bottom to Ground	493	521	-28
G	Sill Height at Front Wheel Well	360	371	-11
H	Sill Height at Front Door Leading Edge	346	351	-5
I	Sill Height at B-Pillar	360	384	-24
J1	Sill Height at Rear Wheel Well	352	392	-40
J2	Pinch Weld Height at Rear Wheel Well	254	283	-29
K	Sill Height Aft of Rear Wheel Well	400	428	-28
L	Rear Bumper Thickness	120	120	0
M	Rear Bumper Bottom to Ground	605	607	-2
N	Sill Height to Bottom of Front Window Sill	860	860	0
O	Front Door Leading Edge to Impact CL	N/A	646	N/A
P	Rear Door Trailing Edge to Impact CL	N/A	1642	N/A
Q	Front Window Opening	437	430	7
R	Right Side Length	4830	4830	0
S	Left Side Length	4830	4830	0
T	Vehicle Width at B-Pillars	1396	1296	100

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



NOTE: All measurements are in millimeters (mm)

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	469	330	0
2	Occupant Hip Point	804	357	0
3	Mid-Door	775	358	0
4	Window Sill	1161	315	0
5	Window Top	1636	149	150

NOTE: The above measurements should be taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

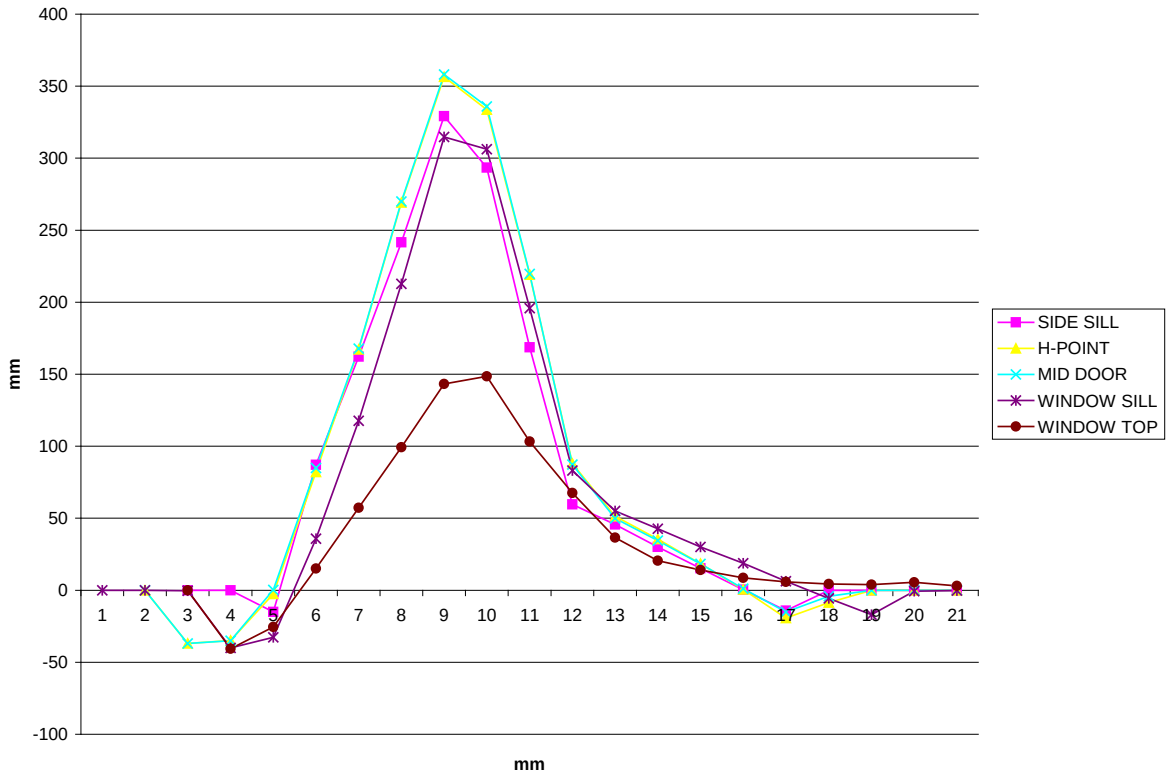
Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		958	957	846			995	993			0	-37	-37	846	0
-750		953	952	857	846		988	987	897	887	0	-35	-35	-40	-41
-600	906	944	943	863	807	921	947	942	896	832	-15	-3	0	-33	-26
-450	907	939	938	868	775	819	857	853	832	760	87	82	85	36	15
-300	909	936	935	875	743	747	768	767	758	685	162	167	168	118	57
-150	911	933	933	881	708	669	664	663	668	609	242	269	270	213	99
0	912	932	933	886	680	582	575	575	571	536	329	357	358	315	143
150	911	931	933	889	665	618	597	597	583	516	293	334	336	306	148
300	911	932	934	893	658	743	713	714	697	555	169	219	220	196	103
450	910	933	936	896	653	851	845	849	813	585	60	88	87	83	68
600	908	933	935	899	650	862	881	885	844	613	46	51	50	55	37
750	905	934	937	902	649	875	898	902	859	629	30	36	34	43	20
900	902	936	938	906	647	887	918	920	876	633	15	18	18	30	14
1050	898	940	941	911	645	898	940	940	893	636	0	1	1	19	9
1200	904	946	946	916	643	918	965	961	910	637	-14	-19	-15	6	6
1350		955	956	919	643		964	960	925	639	0	-9	-4	-6	4
1500				920	642				937	638	0	0	0	-17	4
1650				919	640				920	635	0	0	0	-1	5

NOTE: Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy’s head.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11



DATA SHEET NO. 11
FMVSS N0. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

Test Time: 15:54 **Temperature:** 22

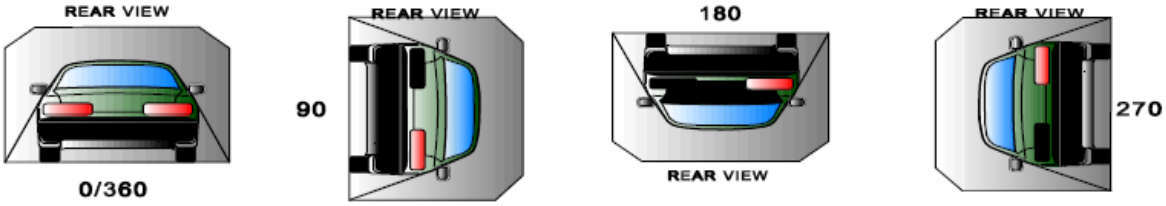
A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 ounce)

B. For the 5-minute period after motion ceases: 0 oz.
(Maximum allowable is 5 ounces)

C. For the following 25 minutes: 0 oz.
(Maximum allowable is 1 ounce/minute)

D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0 to 90	120	300	420
90 to 180	120	300	840
180 to 270	120	300	1260
270 to 360	120	300	1680

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

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

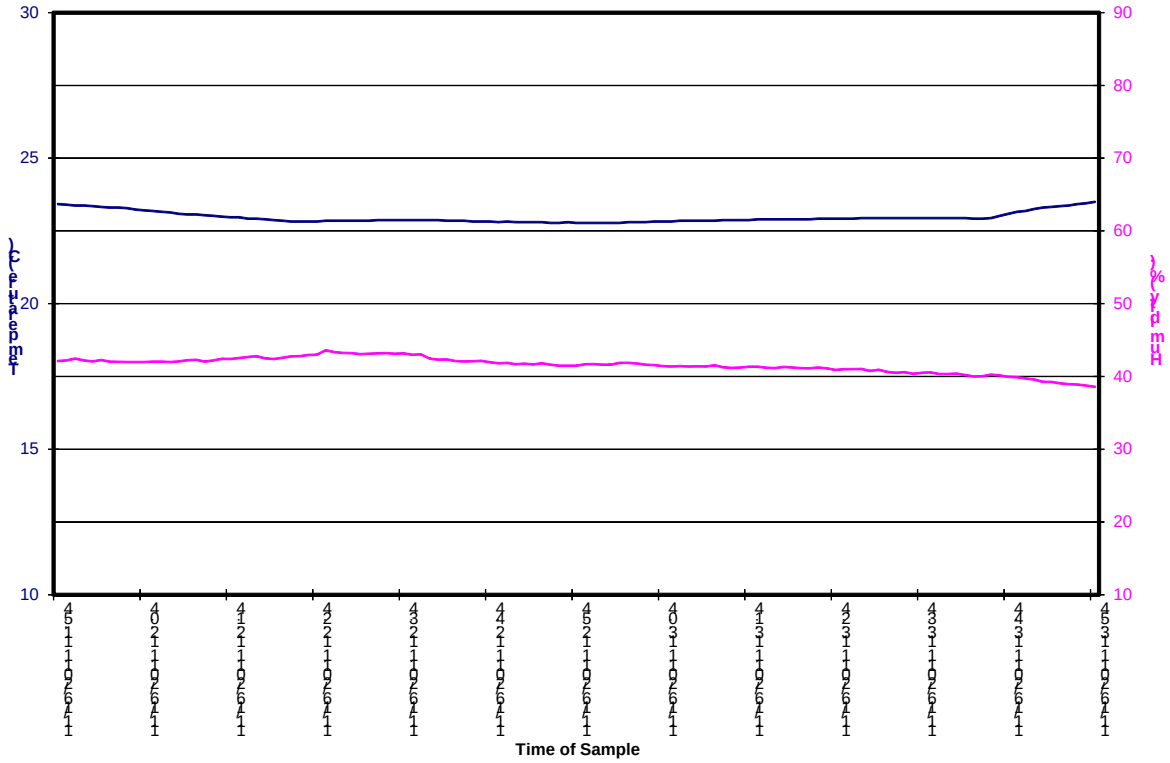
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 12
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2012 Dodge Durango NHTSA No.: MC0324
Test Program: SPNCAP Side Impact Test Date: 11/16/11

MC0324 75 Degree Oblique Rigid Pole Impact 111116; Test Time 15:54



APPENDIX A
PHOTOGRAPHS

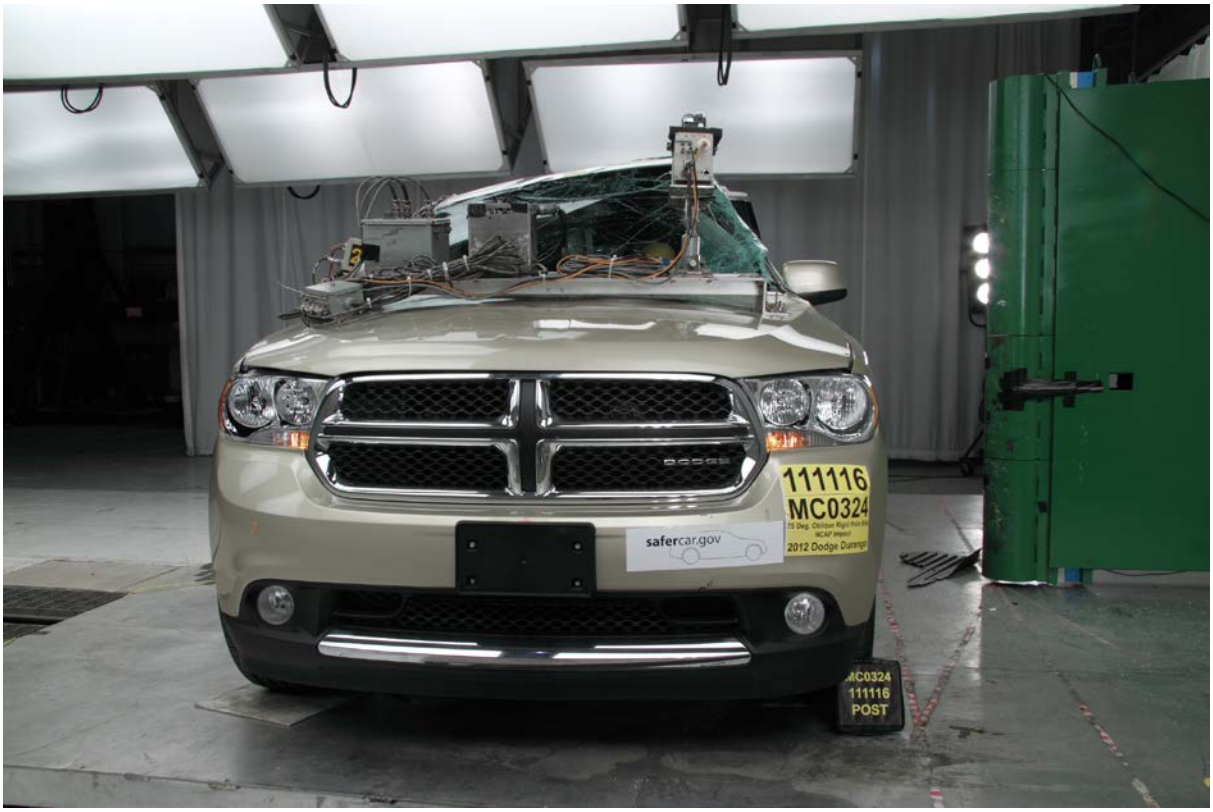
TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

1 As Delivered Right Front 3/4 View of Test Vehicle

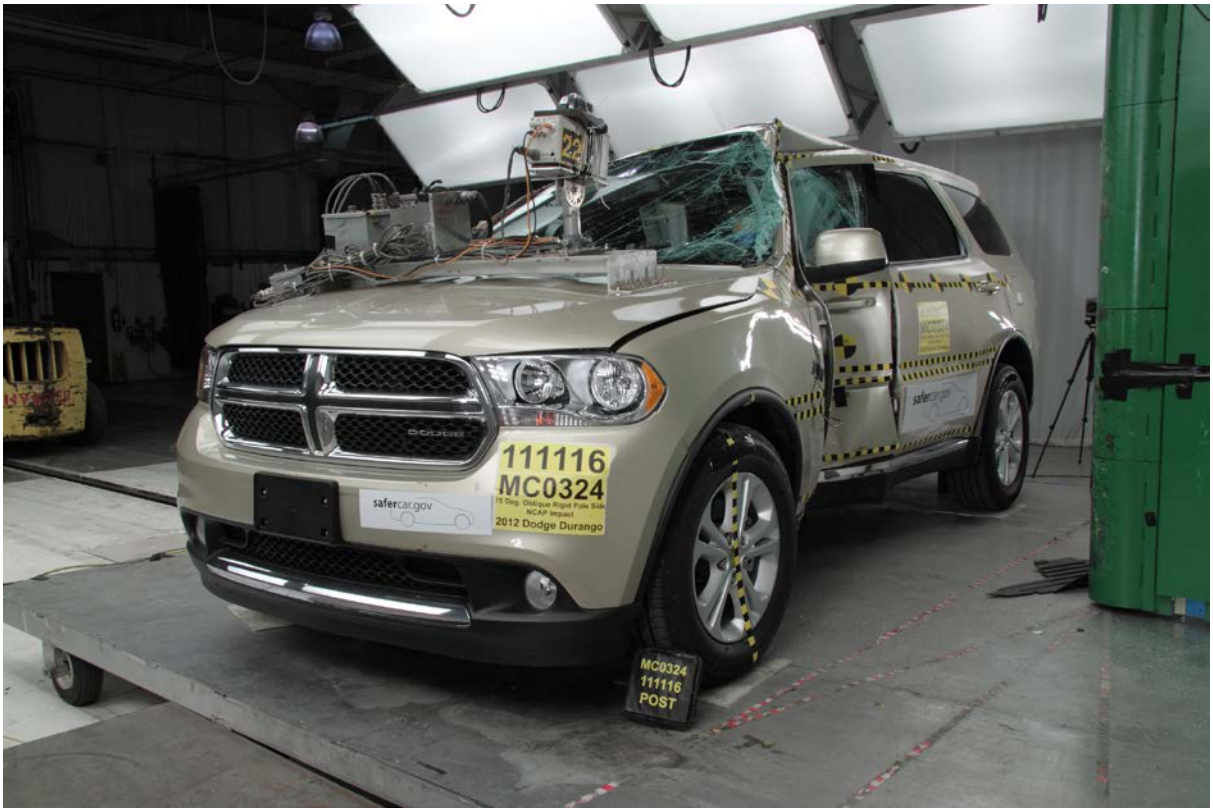
2 As Delivered Left Rear 3/4 View of Test Vehicle

3 Pre-Test Frontal View of Test Vehicle



4 Post-Test Frontal View of Test Vehicle

5 Pre-Test Left Front 3/4 View of Test Vehicle



6 Post-Test Left Front 3/4 View of Test Vehicle

7 Pre-Test Left Side View of Test Vehicle

8 Post-Test Left Side View of Test Vehicle

9 Pre-Test Left Rear 3/4 View of Test Vehicle

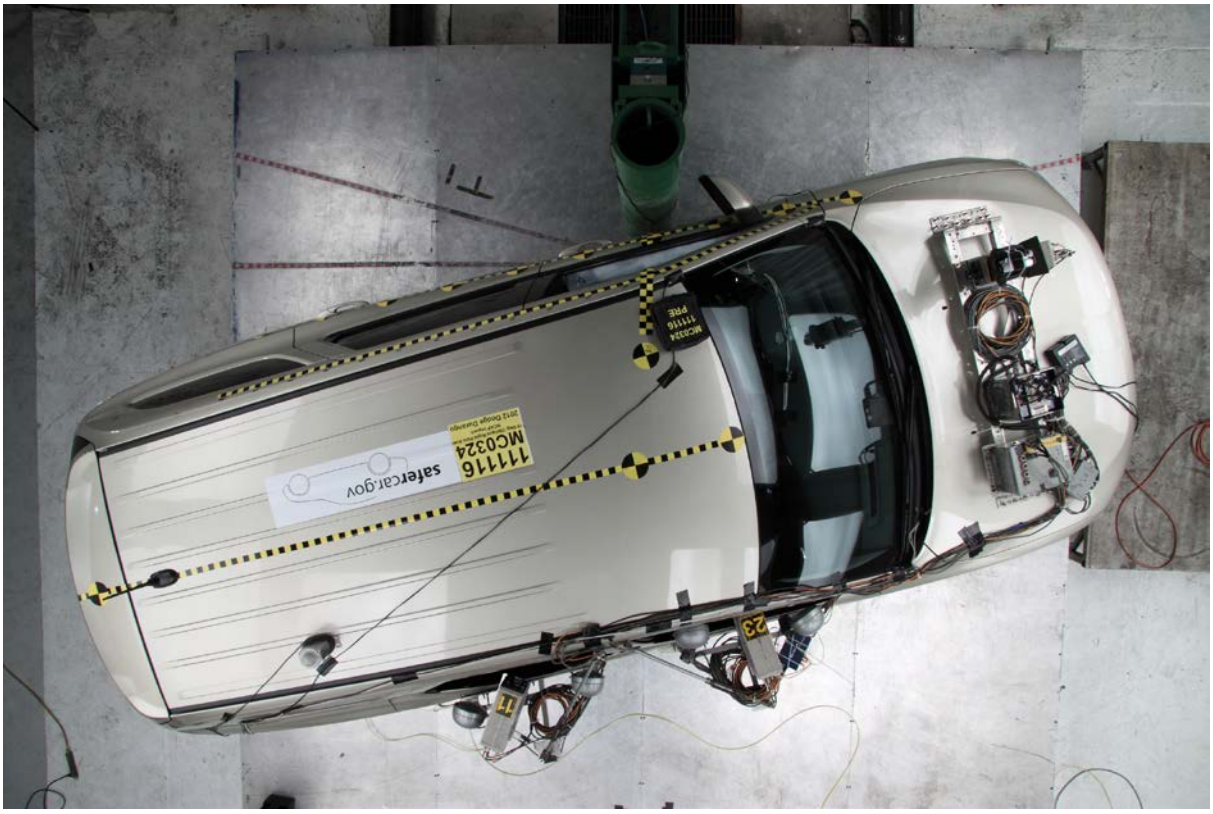
10 Post-Test Left Rear 3/4 View of Test Vehicle

11 Pre-Test Rear View of Test Vehicle

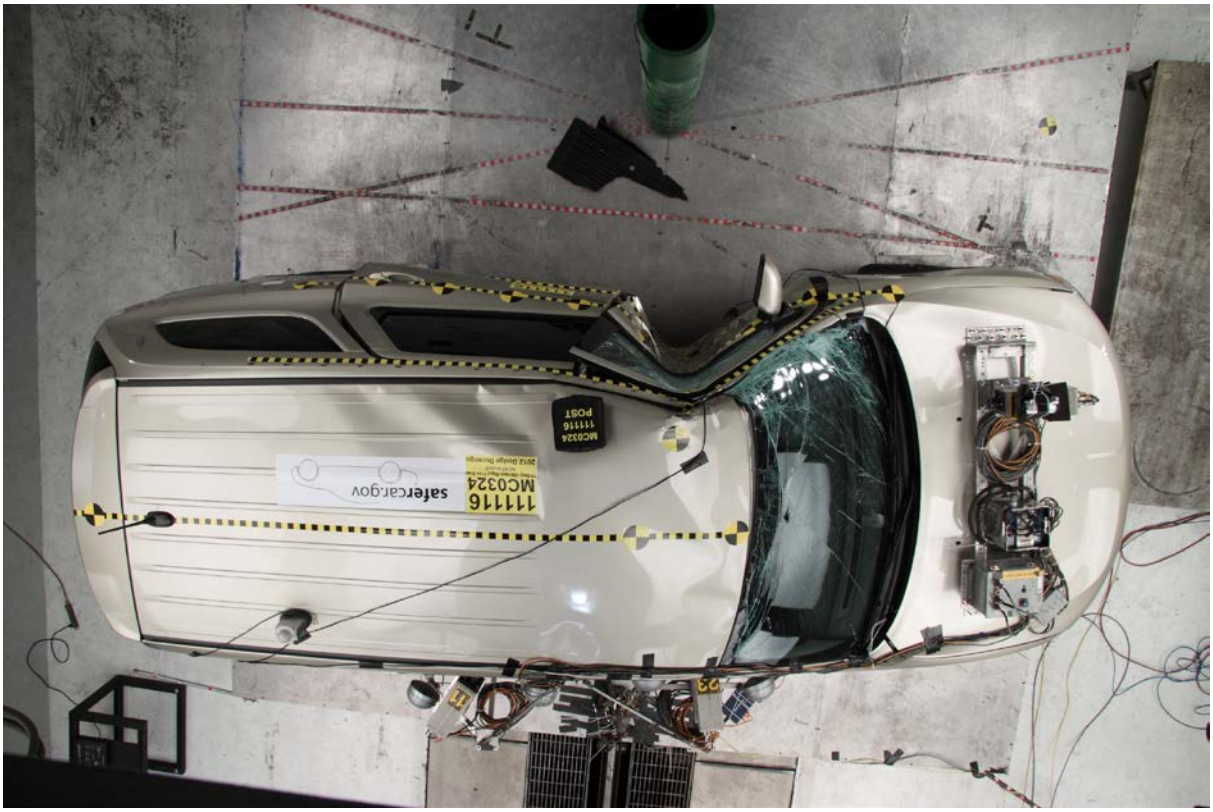
12 Post-Test Rear View of Test Vehicle

13 Pre-Test Right Side View of Test Vehicle

14 Post-Test Right Side View of Test Vehicle



15 Pre-Test Overhead View of Test Area



16 Post-Test Overhead View of Test Area

17 Pre-Test Left Side View of Pole Positioned Against Side of Vehicle

18 Pre-Test Right Side View of Pole Positioned Against Side of Vehicle

19 Pre-Test Close-Up View of Impact Point Target

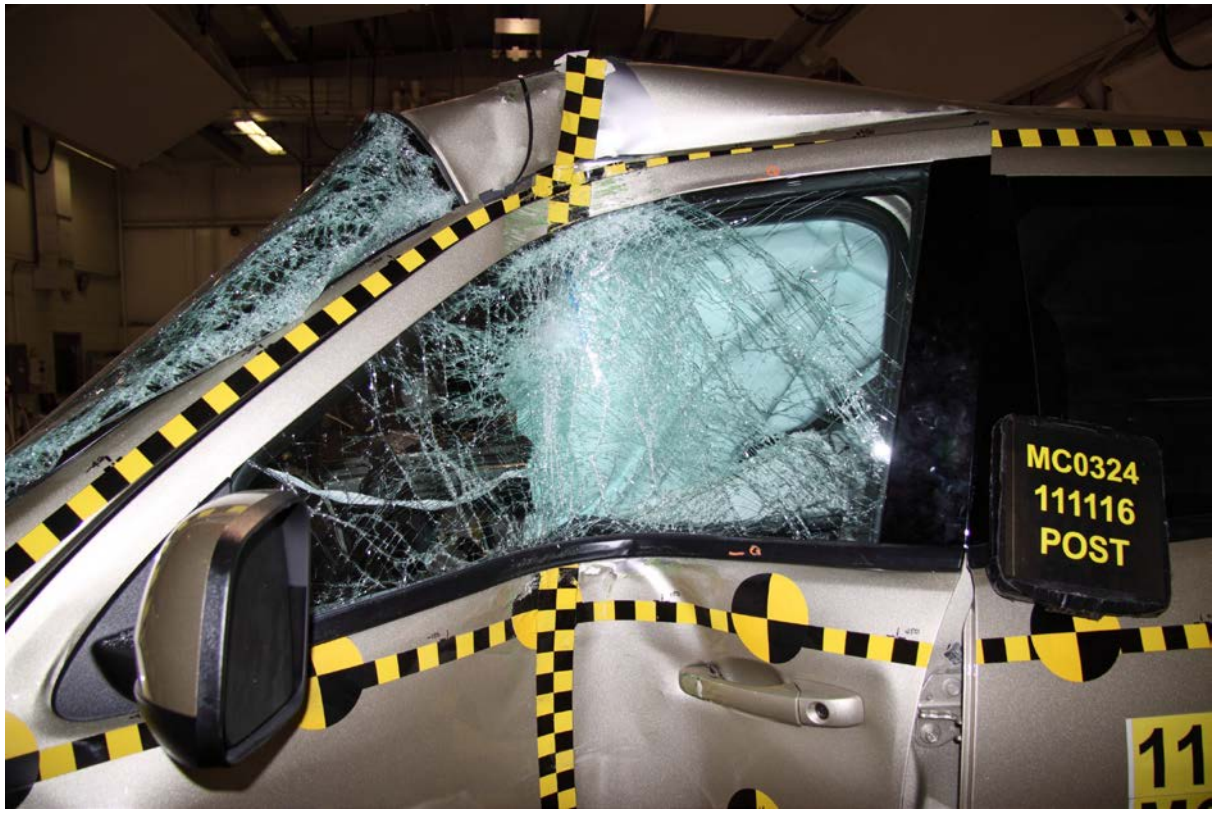
20 Post-Test Close-Up View of Impact Point Target Showing Impact Location

21 Pre-Test Front Close-Up View of Dummy Head and Chest

22 Post-Test Front Close-Up View of Dummy

23 Pre-Test Left Side View of Dummy Showing Belt and Chalking

24 Pre-Test Left Side View of Dummy Shoulder and Door Top View



25 Post-Test Left Side View of Dummy Shoulder and Door Top View

26 Pre-Test Front View of Seat Back Prior to Dummy Positioning

27 Pre-Test Front View of Dummy Head and Shoulders in Relation to Head Restraint

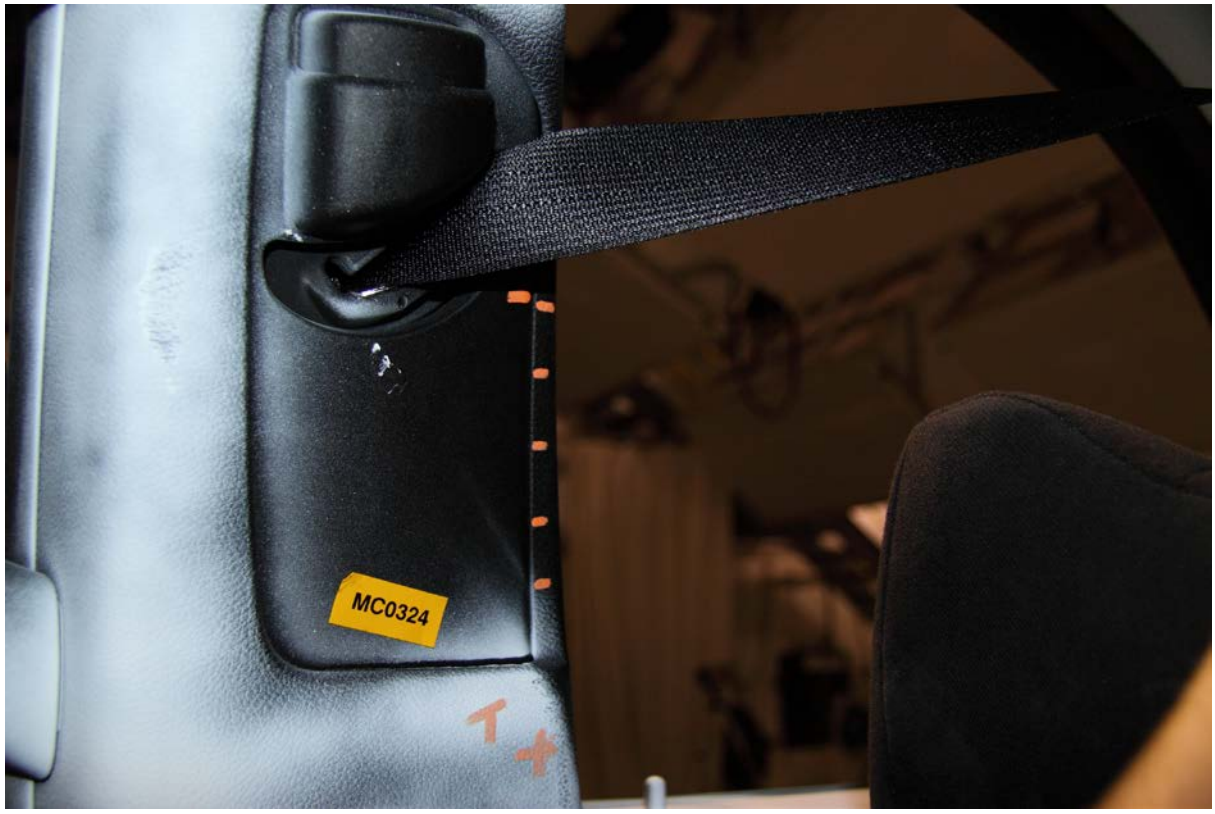
28 Pre-Test Front View of Seat Pan Prior to Dummy Positioning

29 Pre-Test Overhead View of Dummy Thighs on Seat Pan

30 Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket

31 Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level

32 Pre-Test Placement of Dummy's Feet



33 Pre-Test View of Belt Anchorage for Dummy

34 Pre-Test Left Side View of Steering Wheel

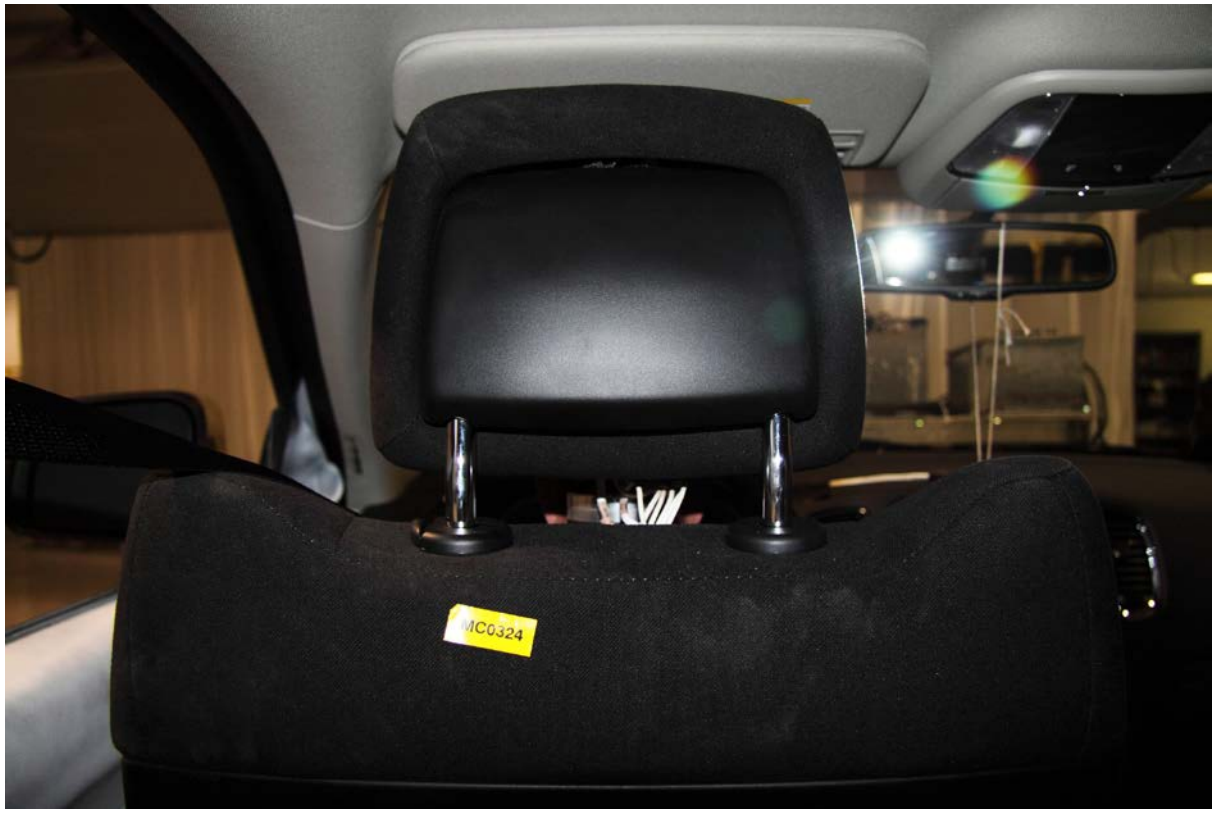
Photograph Not Taken

35 Pre-Test View of Disengaged Parking Brake

36 Pre-Test View of Parking Brake

37 Pre-Test Close-Up Left Side View of Driver Seat Track

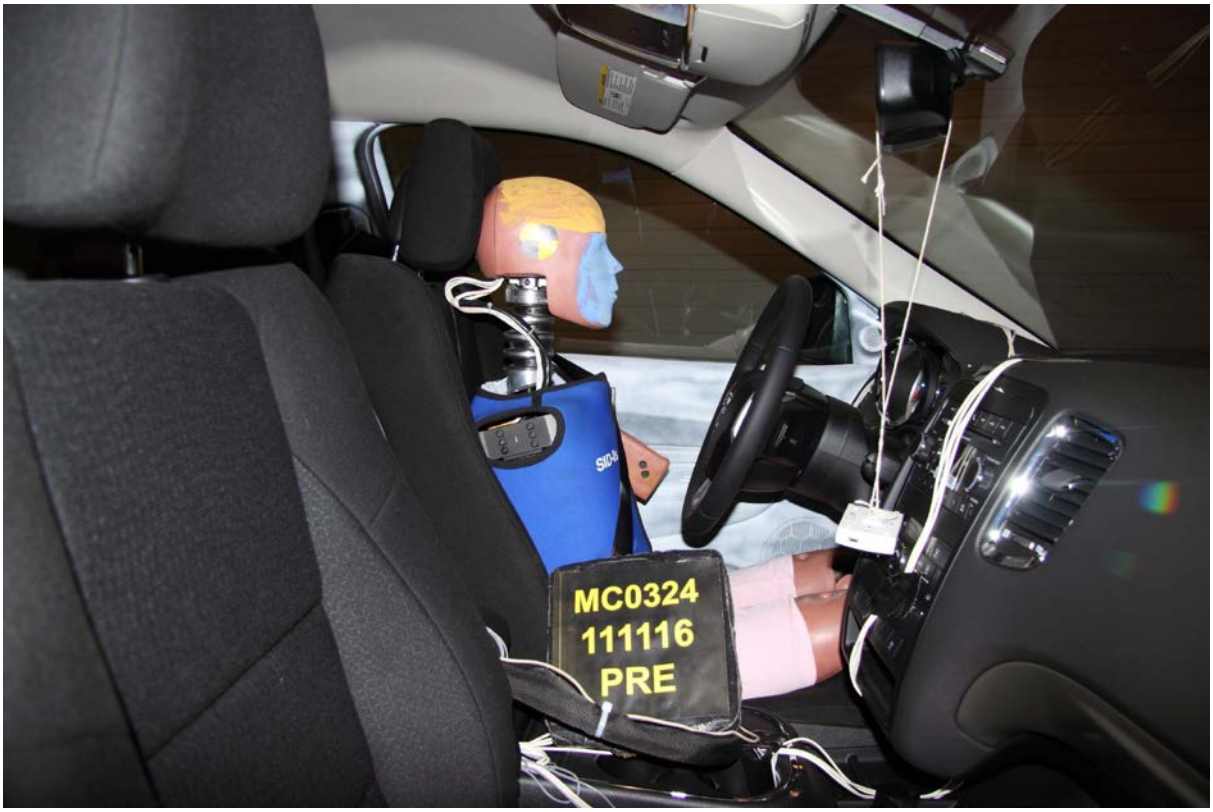
38 Pre-Test Close-Up Left Side View of Driver Seat Back



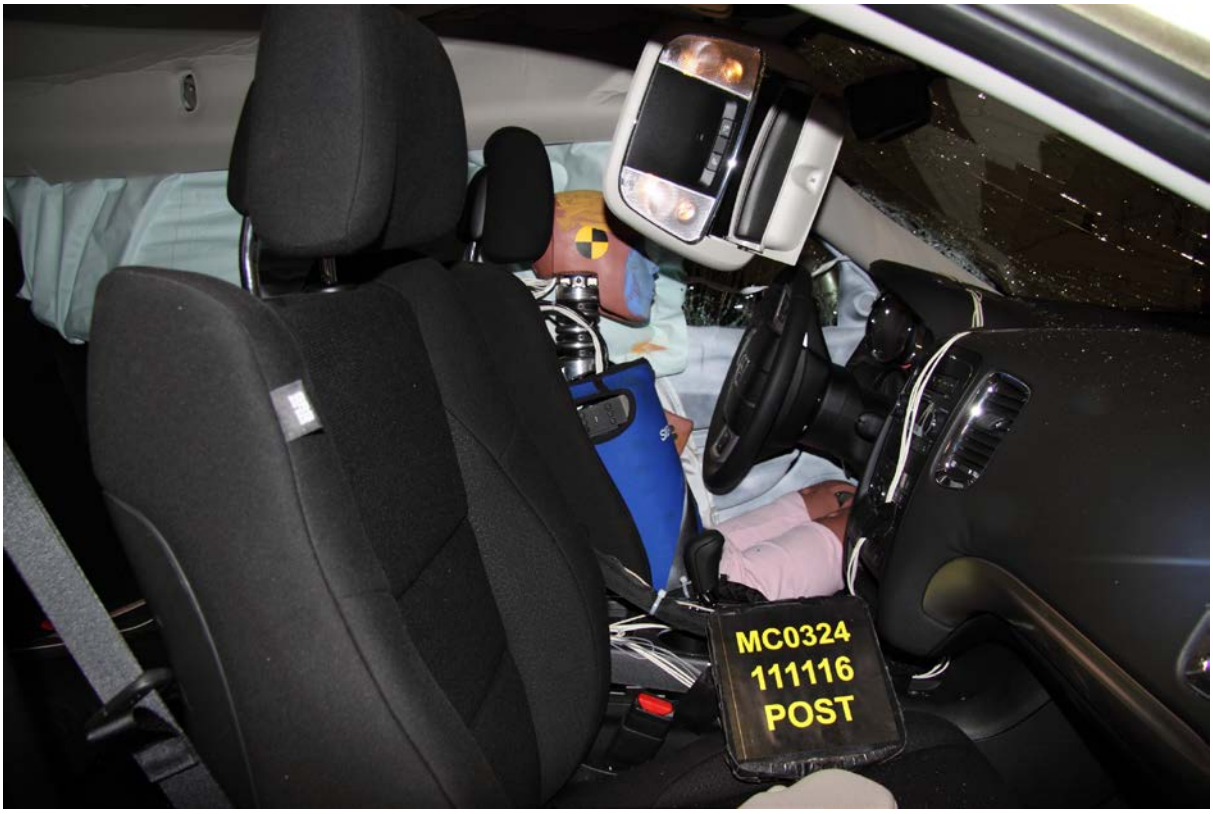
39 Pre-Test Close-Up View of Driver Seat Back or Head Restraint

40 Pre-Test Dummy and Door Clearance View

41 Post-Test Dummy and Door Clearance View



42 Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



43 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment

44 Pre-Test Inner Driver Door Panel View

45 Post-Test Inner Driver Door Panel View Showing Dummy Contact Location

Photograph Not Available

46 Post-Test Dummy Close-Up Head Contact with Vehicle View

47 Post-Test Dummy Close-Up Head Contact with Side Airbag View

48 Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View

49 Post-Test Dummy Close-Up Torso Contact with Side Airbag View

Photograph Not Available

50 Post-Test Dummy Close-Up Pelvis Contact View

Photograph Not Available

51 Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View

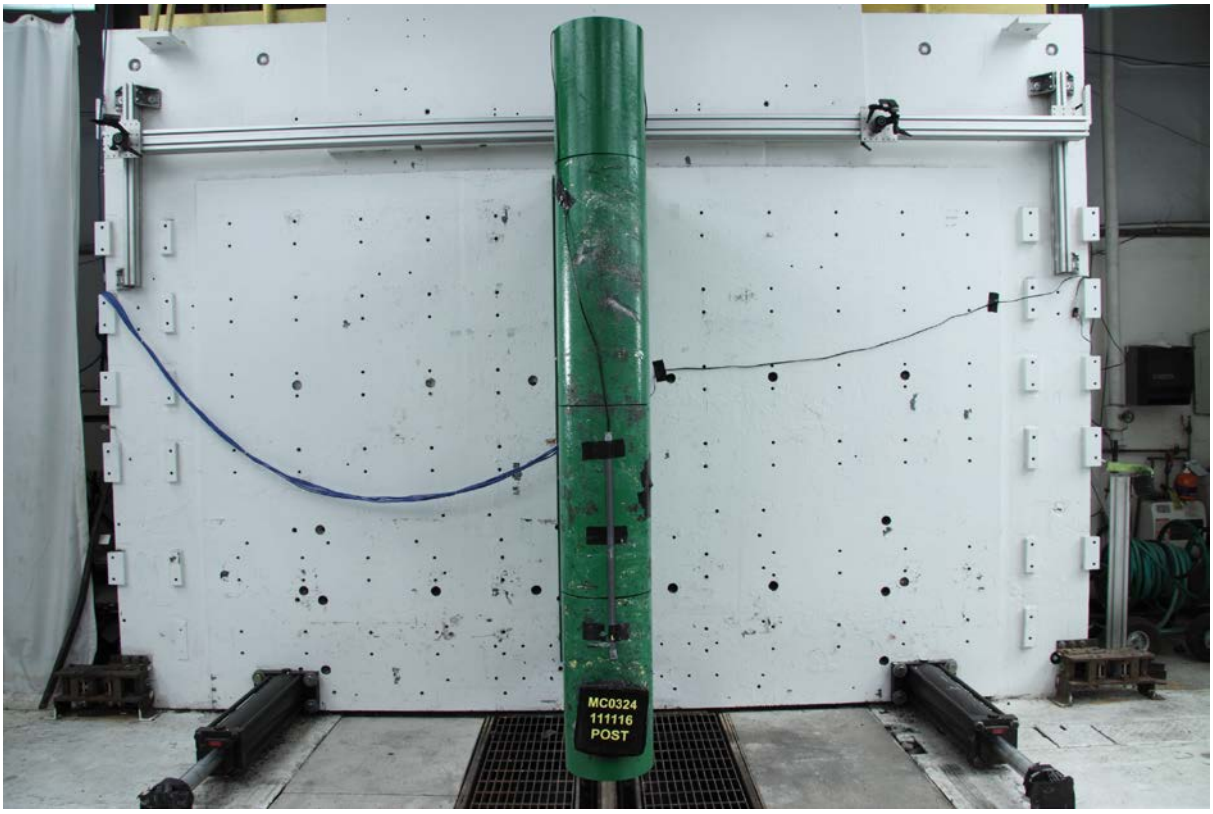
52 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

53 Post-Test View of Fuel Filler Cap or Fuel Filler Neck

54 Close-Up View of Vehicle's Certification Label

55 Close-Up View of Vehicle's Tire Information Placard or Label

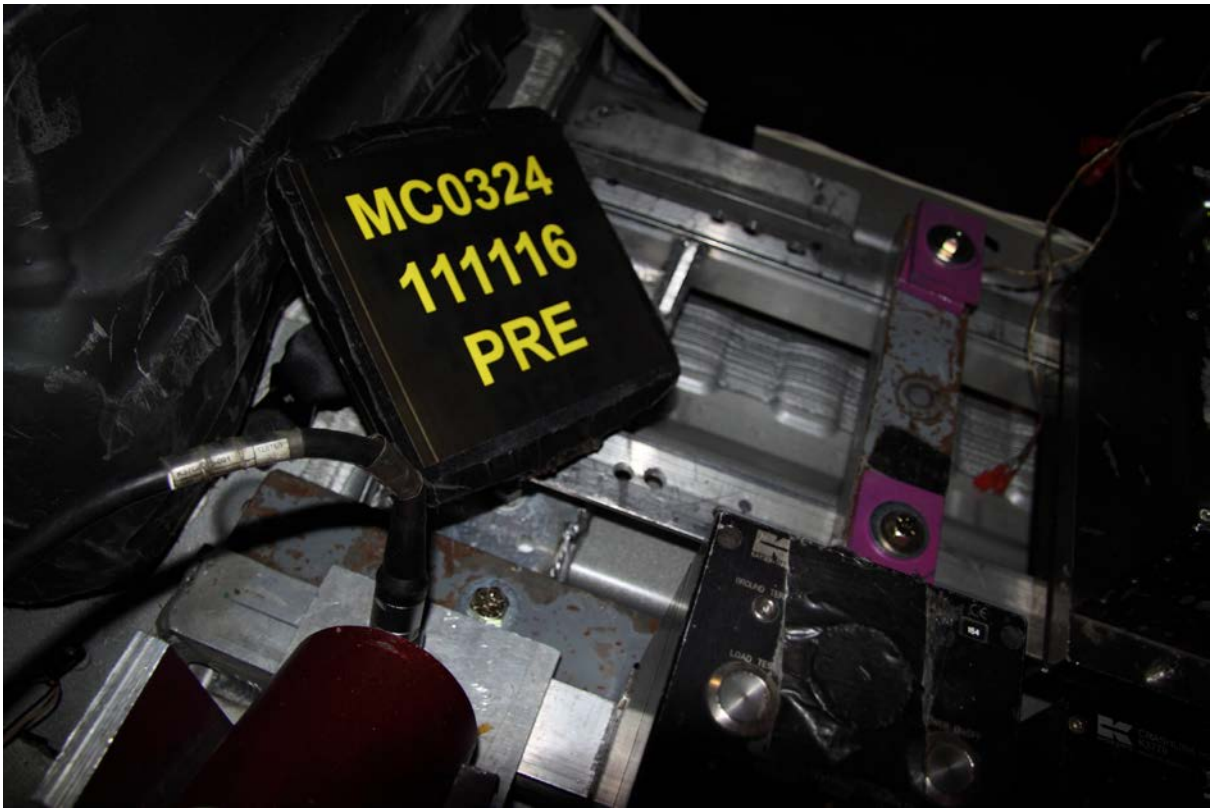
56 Pre-Test Pole Barrier Front View



57 Post-Test Pole Barrier Front View

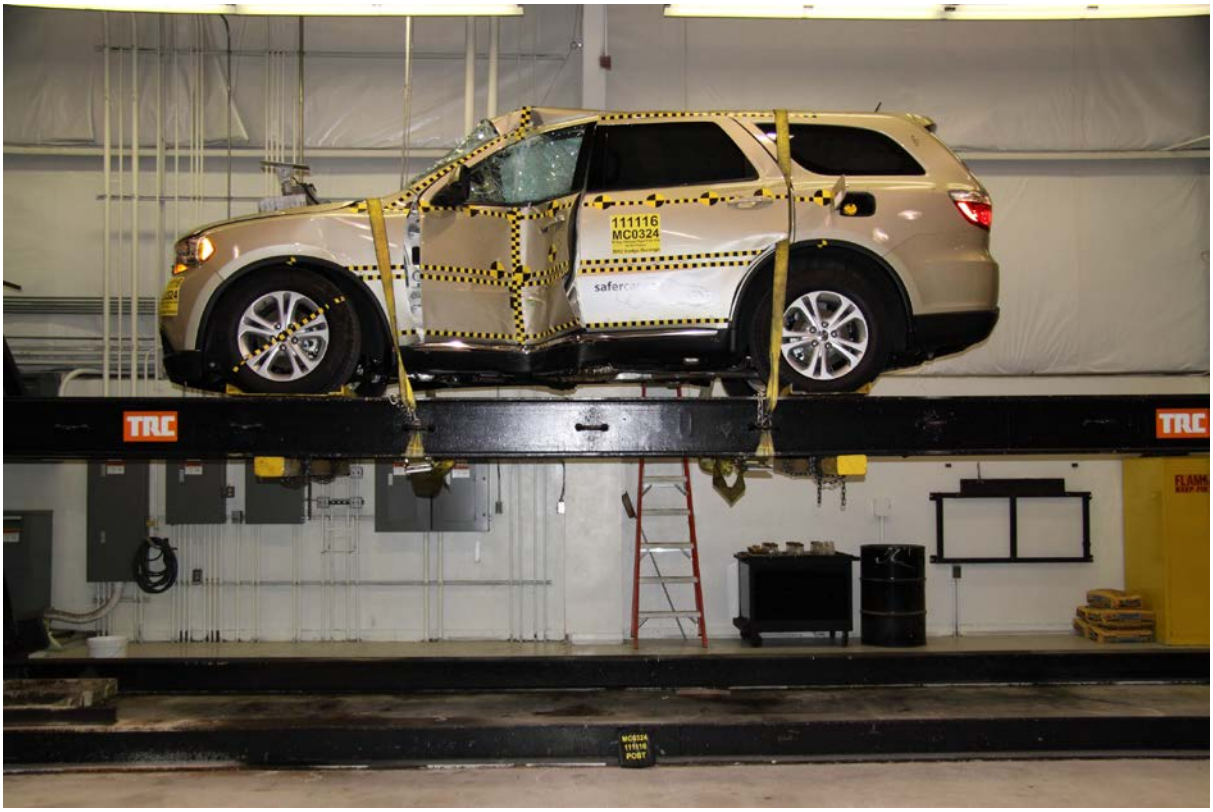
58 Pre-Test Pole Barrier Side View

59 Post-Test Pole Barrier Side View



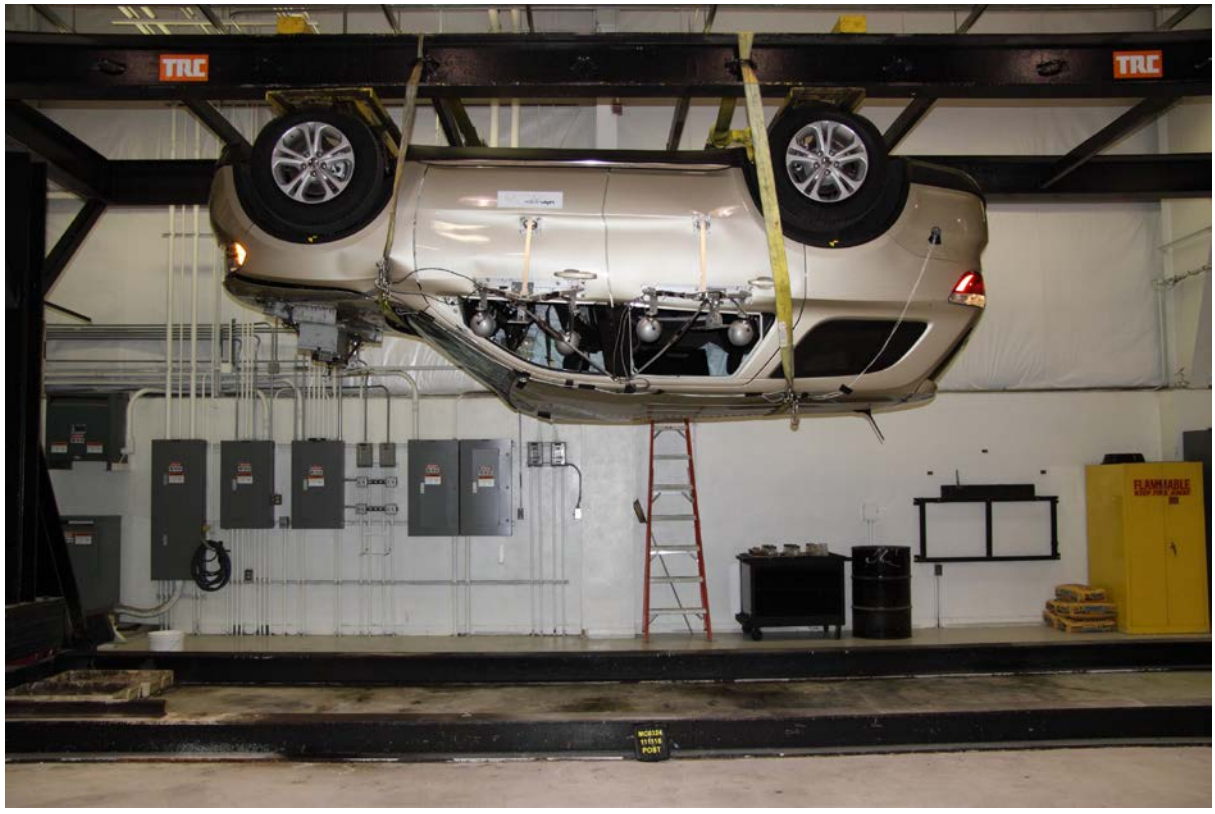
60 Pre-Test Ballast View

61 Post-Test Primary and Redundant Speed Trap Read-Out

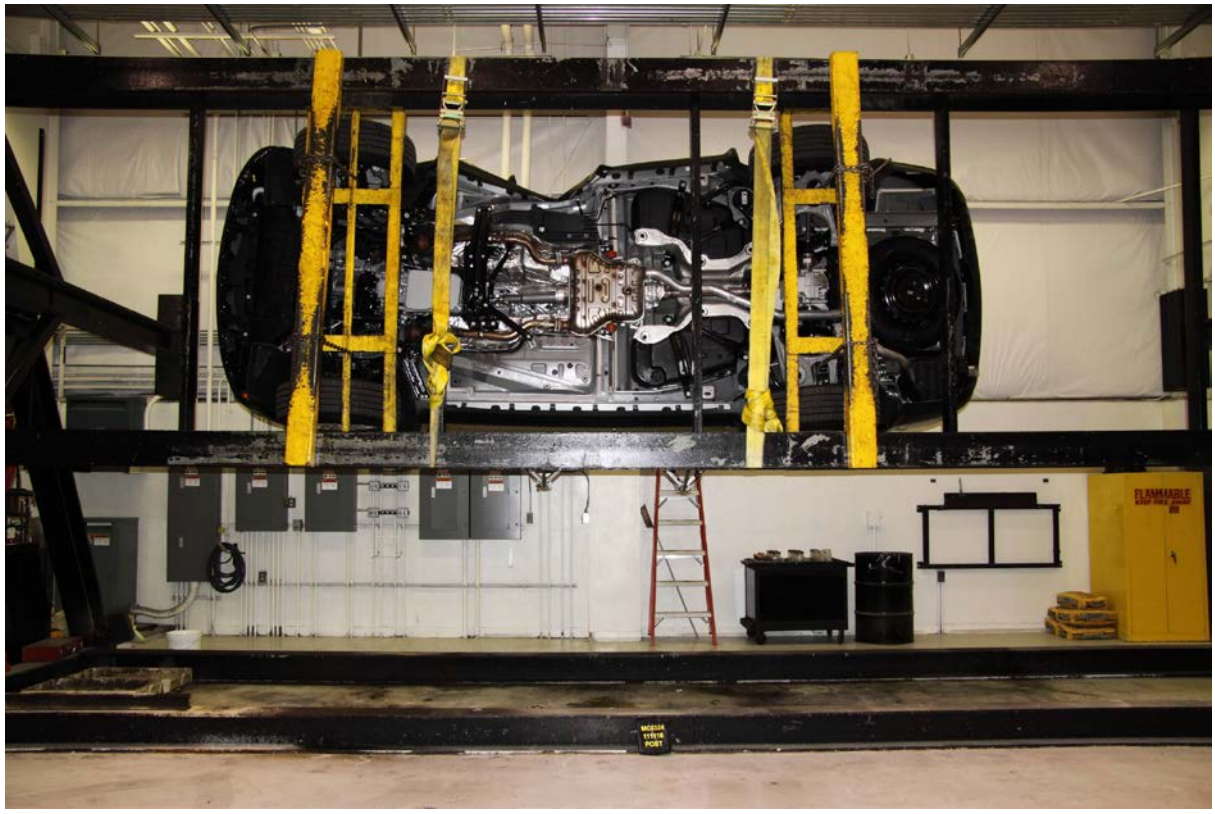


62 FMVSS No. 301 Static Rollover 0 Degrees

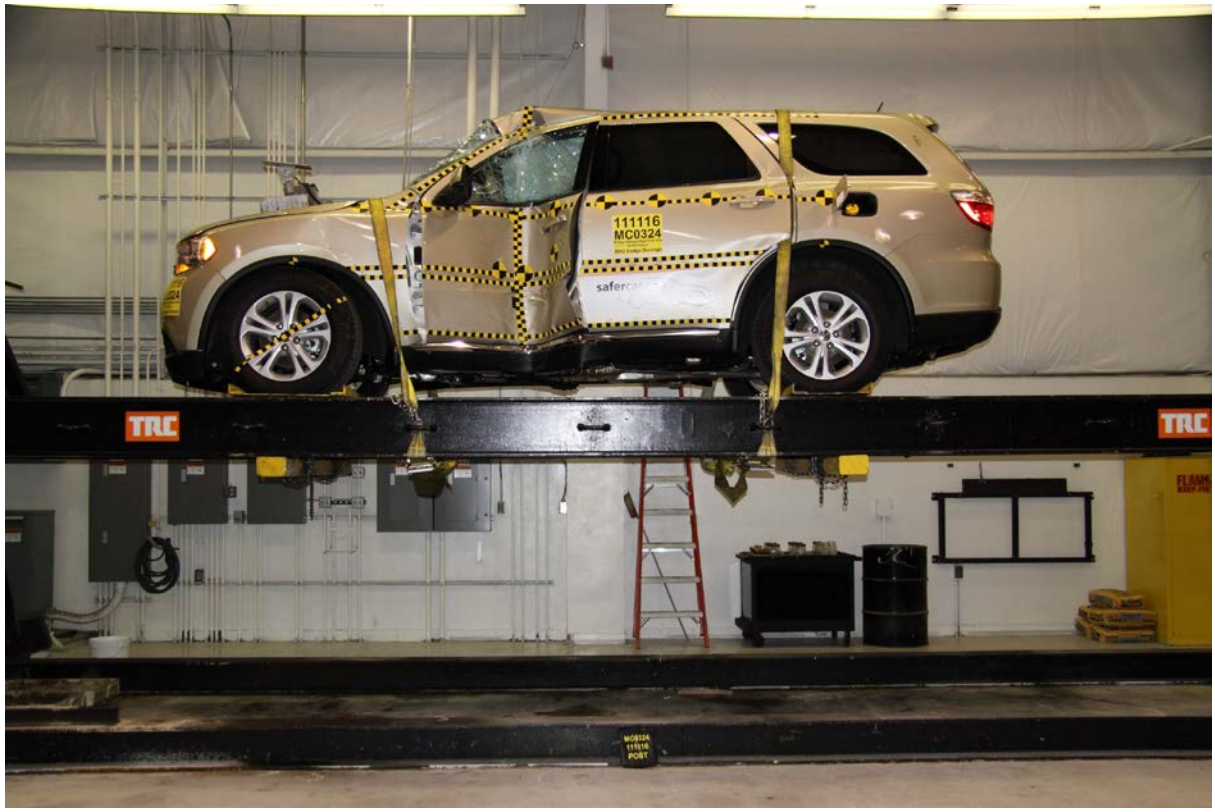
63 FMVSS No. 301 Static Rollover 90 Degrees



64 FMVSS No. 301 Static Rollover 180 Degrees

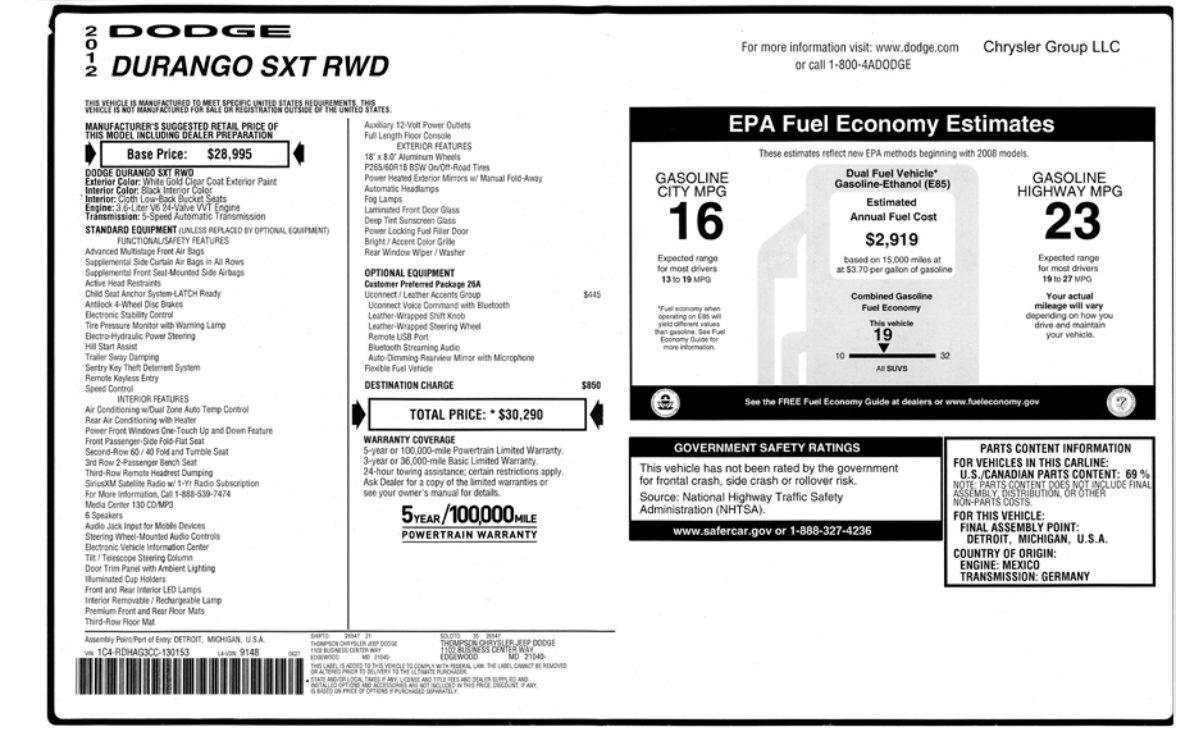


65 FMVSS No. 301 Static Rollover 270 Degrees



66 FMVSS No. 301 Static Rollover 360 Degrees

67 Impact Event



68 Monroney Label

Supplemental Active Head Restraints (AHR)

These head restraints are passive, deployable components, and vehicles with this equipment cannot be readily identified by any markings, only through visual inspection of the head restraint. The head restraint is located within the front seats, with the front half being soft foam and trim, the back half being decorative plastic.

How The Active Head Restraints (AHR) Work

The Occupant Classification System (OCS) determines whether the severity, or type of rear impact will require the Active Head Restraints (AHR) to deploy. If a rear impact requires deployment, both the driver and front passenger seat AHRs will be deployed.

When AHRs deploy during a rear impact, the front half of the head restraint extends forward to help restrain the head and reduce the amount of injuries to the driver and front passenger's cervical spine in rear impacts.

Note: The Active Head Restraints (AHR) may or may not deploy in the event of a front or side impact. However if during a front impact, a secondary rear impact occurs, the AHR may deploy based on the severity and type of the impact.

Active Head Restraint (AHR) Components

1 — Head Restraint Front Half (Soft Foam and Trim)
2 — Seatback
3 — Head Restraint Back Half (Decorative Plastic Rear Cover)
4 — Head Restraint Guide Tubes

1 — Downward Movement
2 — Rearward Movement

3 — Final Downward Movement To Engage Locking Mechanism

6.
7. The AHR front soft foam and trim half should lock into the back decorative plastic half.

Resetting Active Head Restraints (AHR)

If the Active Head Restraints are triggered in an accident, you must reset the head restraint on the driver's and front passenger seat. You can recognize when the Active Head Restraint has been triggered by the fact that they have moved forward (as shown in step three of the resetting procedure).

1. Grasp the deployed AHR from the rear seat.
2.
3. Position the hands on the top of the deployed AHR at a comfortable position.
4. Pull down then rearward towards the rear of the vehicle then down to engage the locking mechanism.

Hand Positioning Points On AHR

AHR In Reset Position

8.

Note:

- If you have difficulties or problems resetting the Active Head Restraints, see an authorized dealer.
- For safety reasons, have the Active Head Restraints checked by a qualified specialist at an authorized dealer.

69 Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

70 Post-Test Dummy Overall

71 Pre-Test Ballast View 2

72 Pre-Test AB Light

73 Post-Test Left Front Three-Quarter Tight View of Test Vehicle

74 Post-Test Left Rear Three-Quarter Tight View of Test Vehicle

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

The following additional data 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.

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration (X) Redundant
Driver Head Acceleration (Y) Redundant
Driver Head Acceleration (Z) Redundant
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

NHTSA

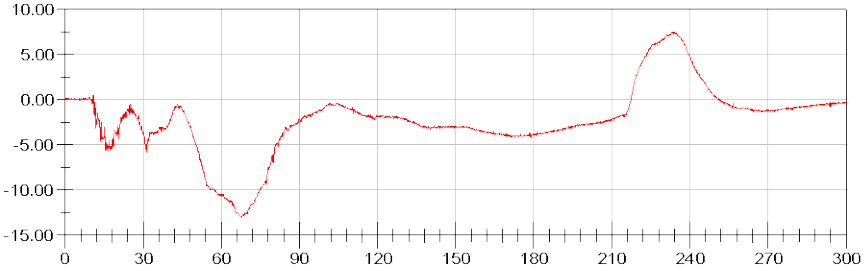
Test Date: 11/16/2011

Position #1 SID IIs Dummy (305)

Test Lab: CTF

Test Number: 111116 (MC0324)

Driver Head Acceleration (X) Primary (g) vs. Time [ms]



<Max>

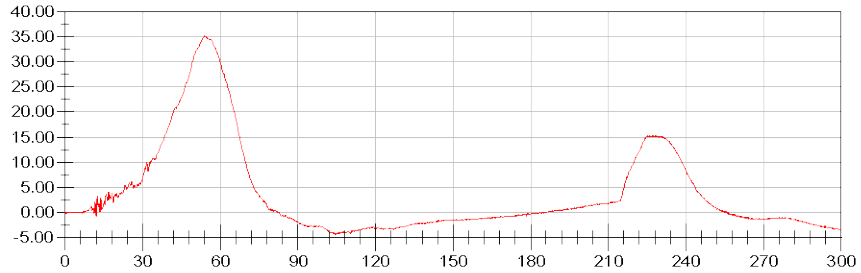
7.47 g at 233.04 ms

<Min>

-12.98 g at 67.68 ms

CFC_1000

Driver Head Acceleration (Y) Primary (g) vs. Time [ms]



<Max>

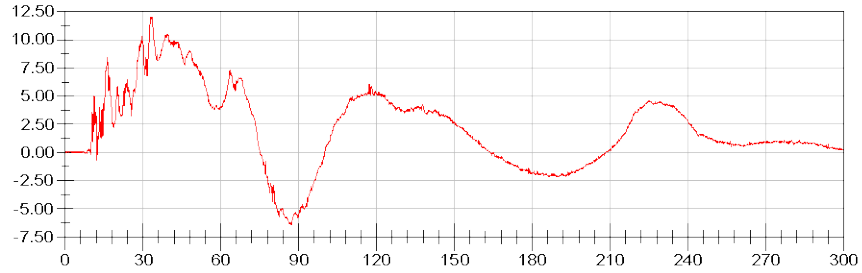
35.15 g at 53.84 ms

<Min>

-4.37 g at 104.32 ms

CFC_1000

Driver Head Acceleration (Z) Primary (g) vs. Time [ms]



<Max>

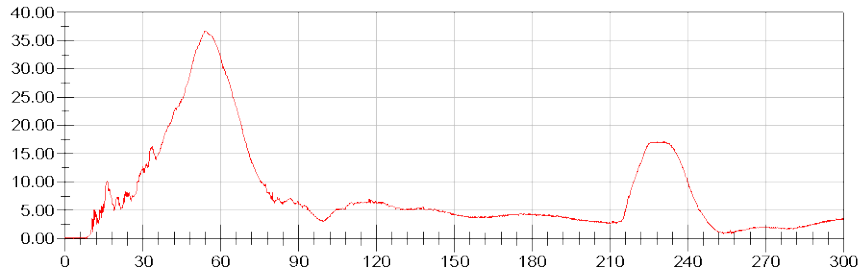
12.04 g at 32.96 ms

<Min>

-6.47 g at 87.12 ms

CFC_1000

Driver Head Acceleration Resultant Primary (g) vs. Time [ms]



<Max>

36.79 g at 54.48 ms

<Min>

0.03 g at 3.28 ms

CFC_1000

NHTSA

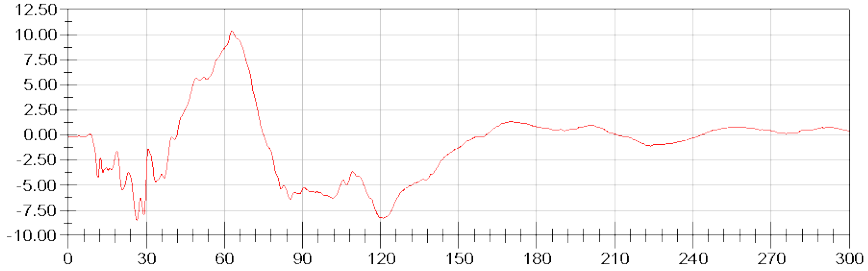
Test Date: 11/16/2011

Position #1 SID IIs Dummy (305)

Test Lab: CTF

Test Number: 111116 (MC0324)

Driver Lower Spine T12 Acceleration (X) Primary (g) vs. Time [ms]



<Max>

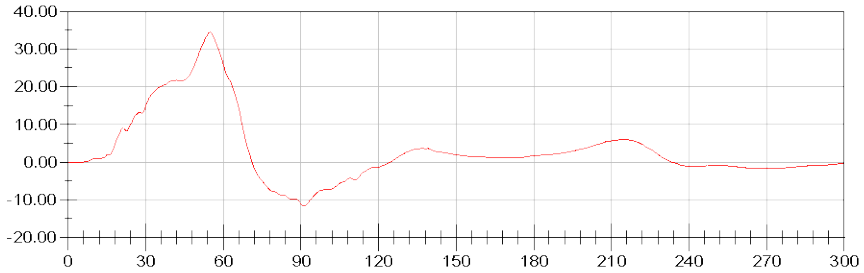
10.35 g at 62.96 ms

<Min>

-8.49 g at 26.48 ms

CFC_180

Driver Lower Spine T12 Acceleration (Y) Primary (g) vs. Time [ms]



<Max>

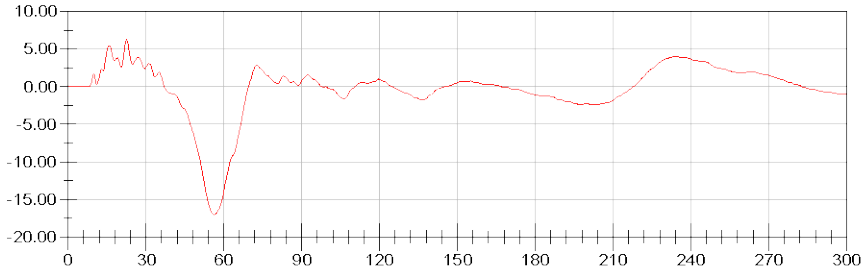
34.51 g at 54.96 ms

<Min>

-11.63 g at 91.12 ms

CFC_180

Driver Lower Spine T12 Acceleration (Z) Primary (g) vs. Time [ms]



<Max>

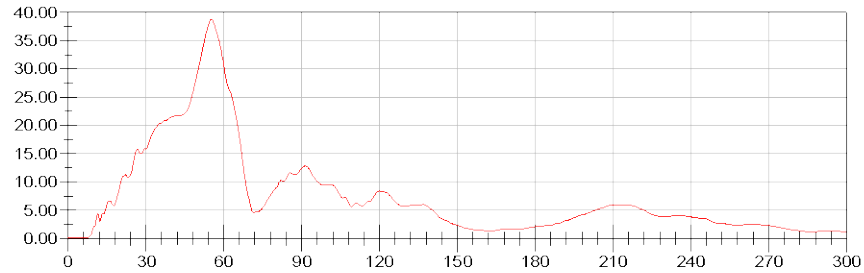
6.26 g at 22.56 ms

<Min>

-17.00 g at 56.24 ms

CFC_180

Driver Lower Spine T12 Resultant Primary (g) vs. Time [ms]



<Max>

38.78 g at 55.20 ms

<Min>

0.13 g at 4.72 ms

CFC_180

NHTSA

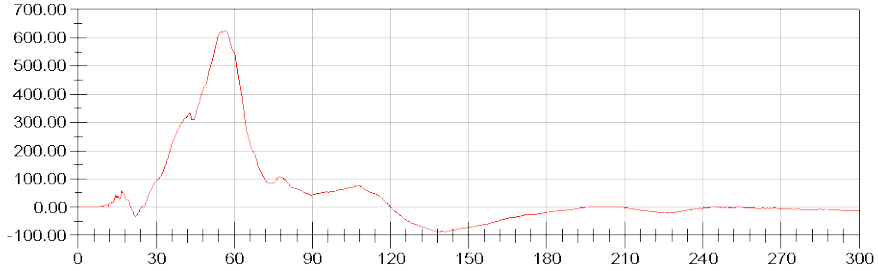
Test Date: 11/16/2011

Position #1 SID IIs Dummy (305)

Test Lab: CTF

Test Number: 111116 (MC0324)

Driver Iliac Wing Force on Impact Side (Y) (N) vs. Time [ms]



<Max>

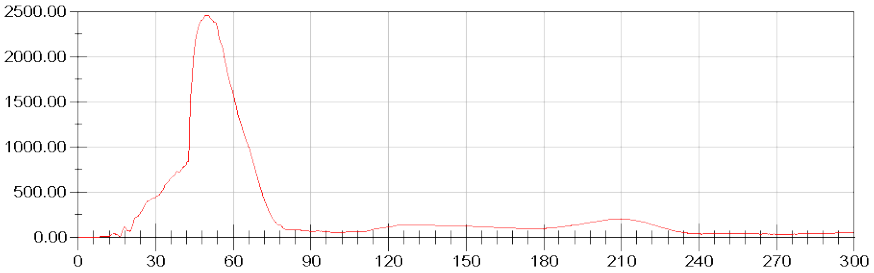
626.44 N at 56.96 ms

<Min>

-87.29 N at 137.92 ms

CFC_600

Driver Acetabulum Force on Impact Side (Y) (N) vs. Time [ms]



<Max>

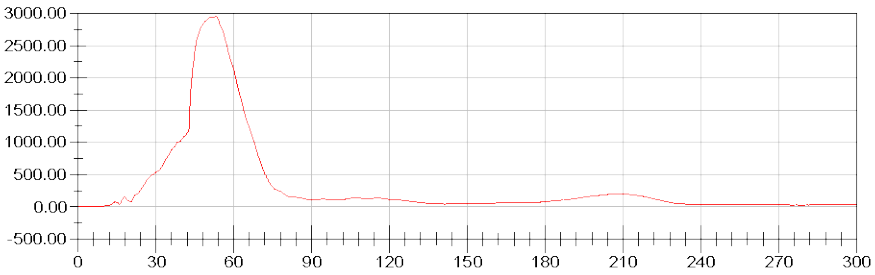
2,454.36 N at 49.20 ms

<Min>

0.01 N at 6.80 ms

CFC_600

Driver Total Pelvis Force on Impact Side (Y) (N) vs. Time [ms]



<Max>

2,960.99 N at 53.12 ms

<Min>

-0.20 N at 2.56 ms

CFC_600

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS
SID-IIs (Driver) Dummy
Description

Pre-Test Calibration Sheets

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.06
Date: 11/03/11

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	776	Yes
B	Shoulder Pivot Height	437.0 - 453.0	441	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	144	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	105	Yes
F	Thigh Clearance	119.0 - 135.0	132	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	543	Yes
K	Buttock to Knee Length	514.0 - 540.0	533	Yes
L	Popliteal Height	343.0 - 369.0	354	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	402	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	203	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	313	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	482	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	350	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	864	Yes
Z	Waist Circumference	761.0 - 791.0	779	Yes

Technician

Approved

Revised 9/29/2005

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-1
Test Date: 11/3/2011

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	115.4 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	3.3 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Approved

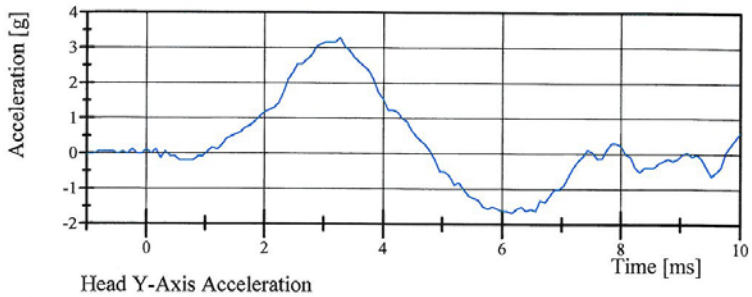
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.03.2011 14:50:36 229

Transportation Research Center Inc.

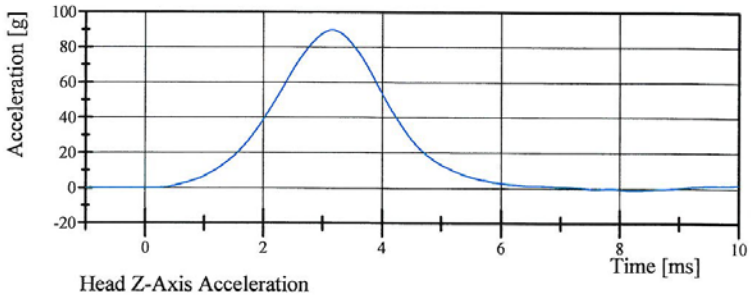
Left Lateral Head Drop
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-1
Test Date: 11/3/2011

Head X-Axis Acceleration



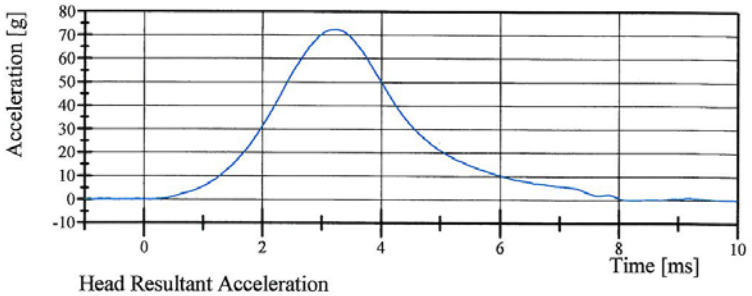
Filter Class: CFC_1000
Max: 3.3 gn at 3.3 ms
Min: -1.7 gn at 6.2 ms

Head Y-Axis Acceleration



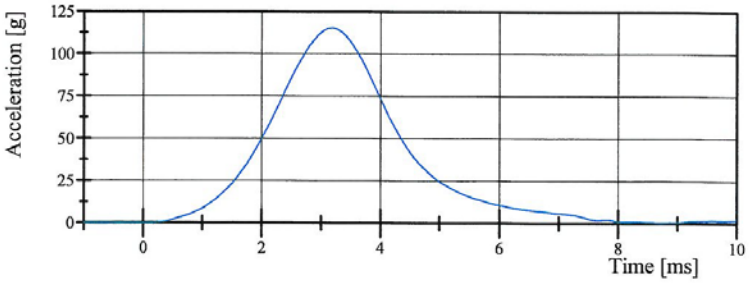
Filter Class: CFC_1000
Max: 89.7 gn at 3.1 ms
Min: -1.1 gn at 8.2 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 72.4 gn at 3.2 ms
Min: -0.1 gn at -1.0 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 115.4 gn at 3.2 ms
Min: 0.0 gn at 0.1 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.03.2011 14:50:58 229

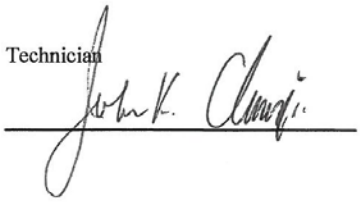
Transportation Research Center Inc.

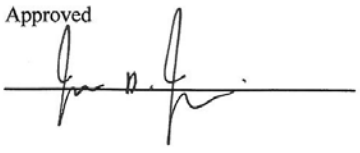
Left Lateral Neck
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-2
Test Date: 11/3/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.604 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.333 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.440 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.611 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.562 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.925 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-71.1 deg	Yes
Time of Peak	50 - 70 ms	60.6 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	41.0 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	110.5 ms	Yes

Test meets specifications.

Comments:

Technician 

Approved 

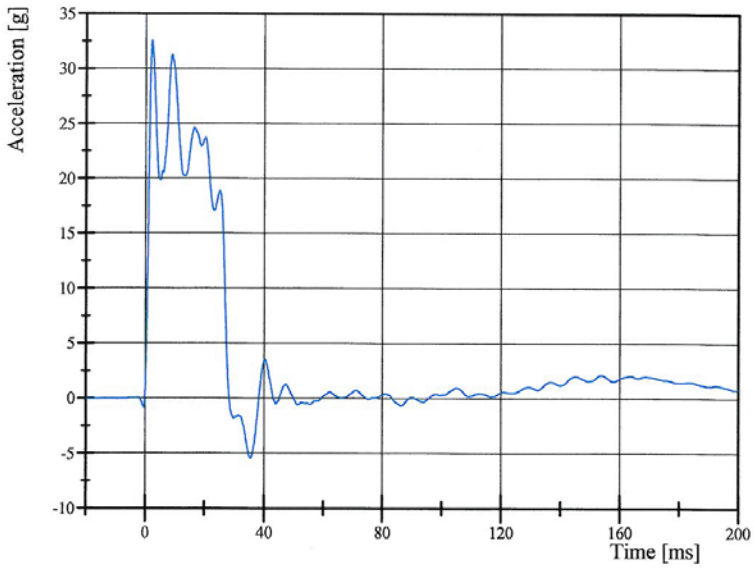
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.03.2011 17:05:49 650

Transportation Research Center Inc.

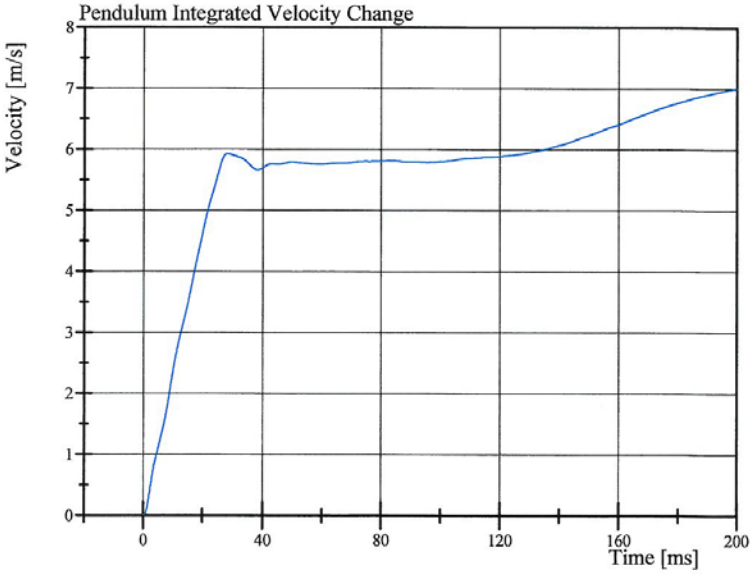
Left Lateral Neck
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-2
Test Date: 11/3/2011

Pendulum Acceleration



Filter Class: CFC_180
Max: 32.5 gn at 2.2 ms
Min: -5.4 gn at 35.6 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 7.0 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

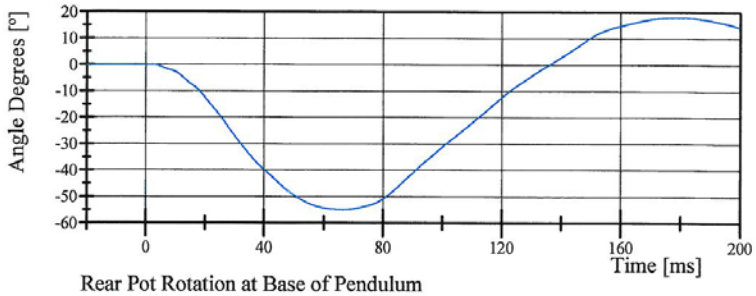
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.03.2011 17:06:01 650

Transportation Research Center Inc.

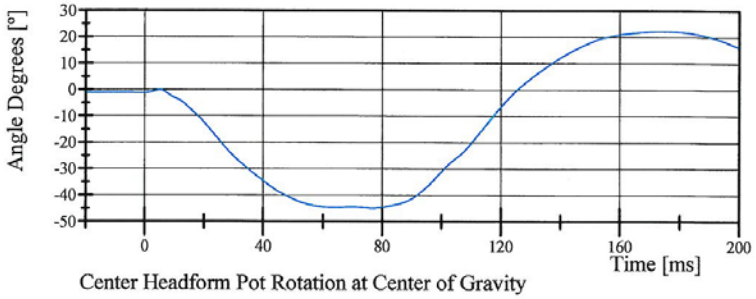
Left Lateral Neck
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-2
Test Date: 11/3/2011

Forward Pot Rotation at Base of Pendulum



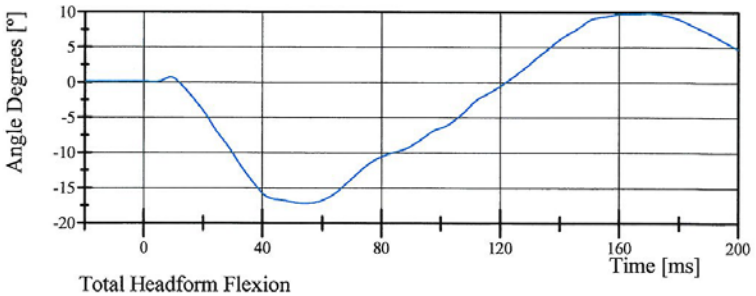
Filter Class: CFC_60
Max: 18.2 ° at 178.9 ms
Min: -55.0 ° at 66.4 ms

Rear Pot Rotation at Base of Pendulum



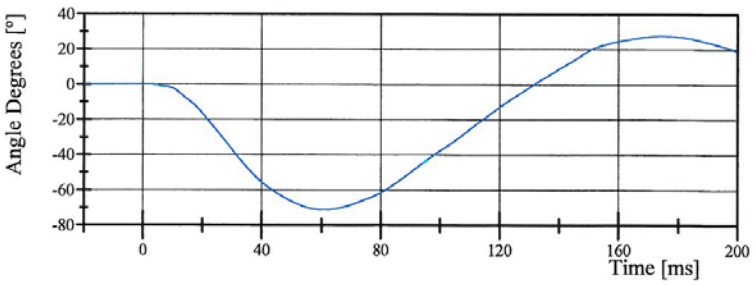
Filter Class: CFC_60
Max: 22.3 ° at 173.9 ms
Min: -44.8 ° at 77.0 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 9.9 ° at 169.8 ms
Min: -17.2 ° at 54.2 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 27.7 ° at 174.2 ms
Min: -71.1 ° at 60.6 ms

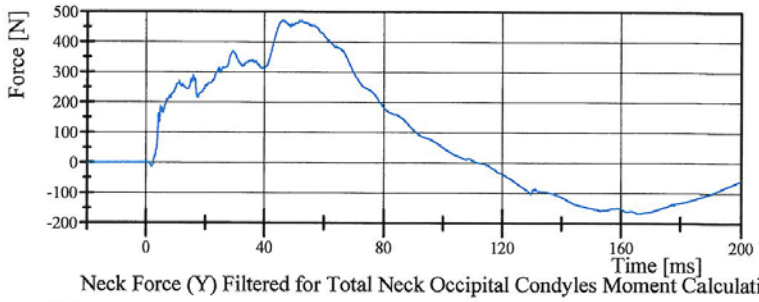
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.03.2011 17:06:01 650

Transportation Research Center Inc.

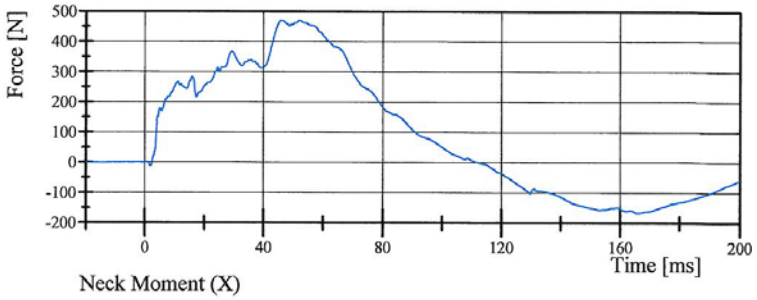
Left Lateral Neck
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-2
Test Date: 11/3/2011

Neck Force (Y)



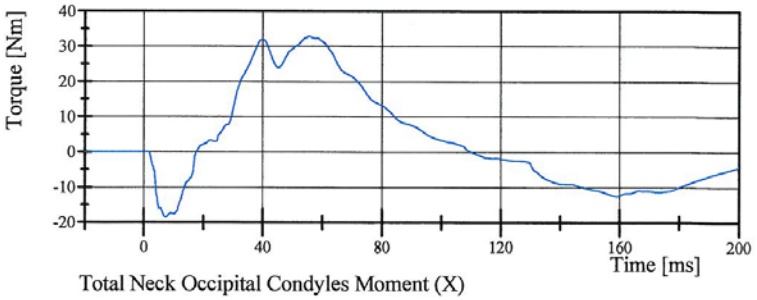
Filter Class: CFC_1000
Max: 471.8 N at 51.8 ms
Min: -167.3 N at 166.6 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



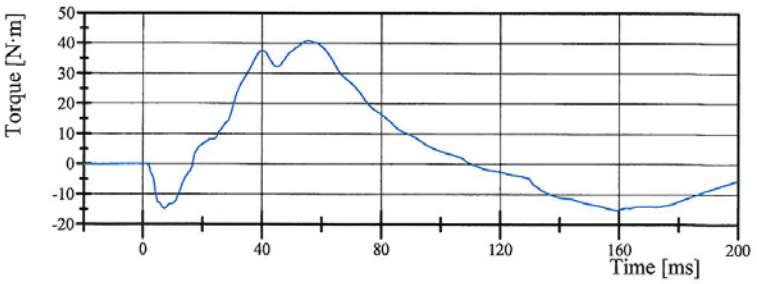
Filter Class: CFC_600
Max: 470.8 N at 51.8 ms
Min: -166.9 N at 165.8 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 32.9 Nm at 55.5 ms
Min: -18.5 Nm at 7.5 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Consta
Max: 41.0 N·m at 55.5 ms
Min: -15.1 N·m at 159.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.03.2011 17:06:02 650

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-1
Test Date: 11/14/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.1 g	Yes
Shoulder Displacement	28 - 37 mm	32.4 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.0 g	Yes

Test meets specifications.

Comments:

Technician

Approved

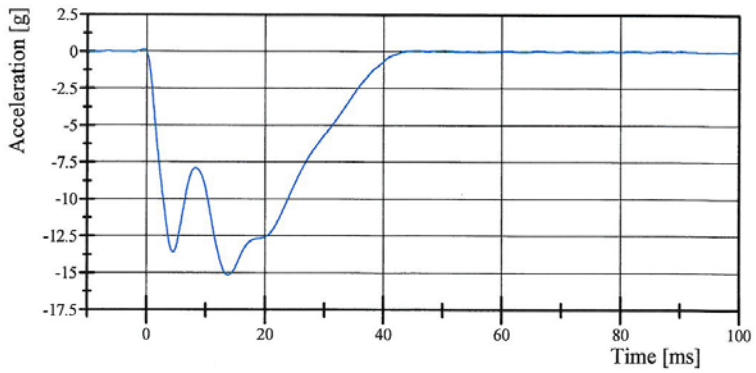
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.14.2011 17:29:04 831

Transportation Research Center Inc.

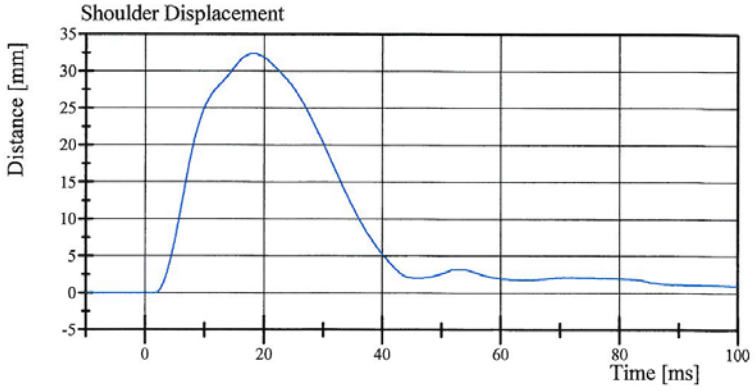
Left Lateral Shoulder
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 6-1
Test Date: 11/14/2011

Probe Acceleration



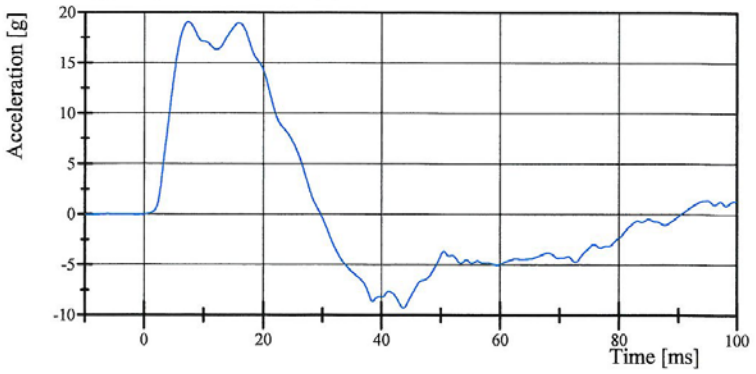
Filter Class: CFC_180
Max: 0.1 gn at -0.5 ms
Min: -15.1 gn at 13.8 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 32.4 mm at 18.2 ms
Min: -0.0 mm at -8.3 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 19.0 gn at 7.4 ms
Min: -9.3 gn at 43.7 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.14.2011 17:29:17 831

Transportation Research Center Inc.

Left Lateral Pelvis
Copy of SID IIs Serial No. 305 Certification No. 6-1
Test Date: 11/15/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.60 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-40.88 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	35.9 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,091.4 N	Yes

Test meets specifications.

Comments:

Technician

Approved

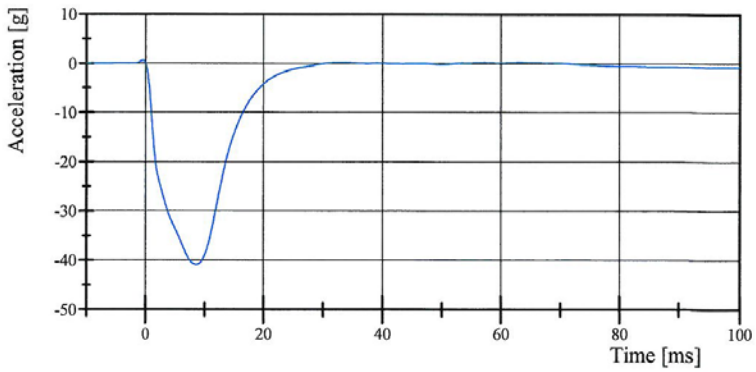
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 15:58:05 455

Transportation Research Center Inc.

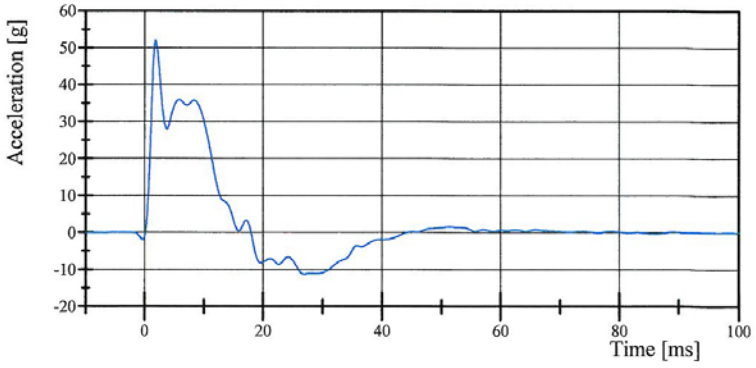
Left Lateral Pelvis
Copy of SID IIs Serial No. 305 Certification No. 6-1
Test Date: 11/15/2011

Probe Acceleration



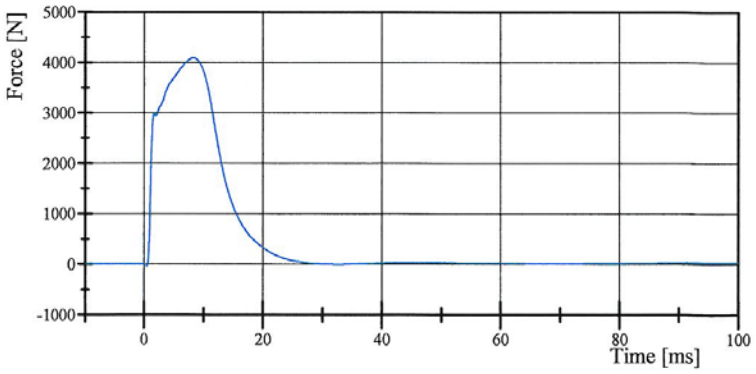
Filter Class: CFC_180
Max: 0.6 gn at -0.4 ms
Min: -40.9 gn at 8.6 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 52.0 gn at 1.8 ms
Min: -11.3 gn at 27.0 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 4,091.4 N at 8.2 ms
Min: -40.9 N at 0.6 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 15:58:17 455

Transportation Research Center Inc.

Left Lateral Thorax without Arm
Copy of SID IIs Serial No. 305 Certification No. 6-2
Test Date: 11/15/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.372 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	37.6 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.6 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.0 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	16.1 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.9 g	Yes

Test meets specifications.

Comments:

Technician

Approved

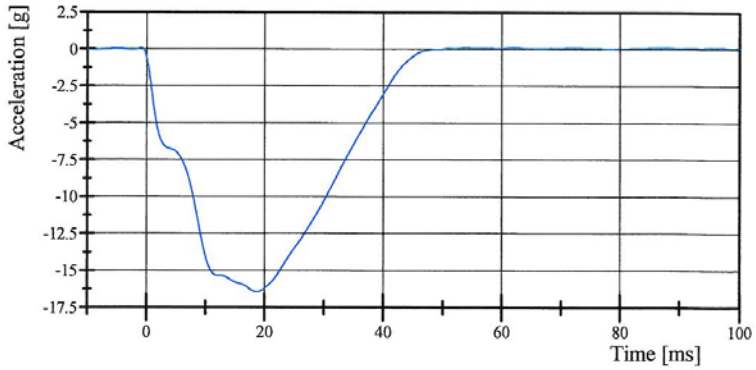
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 16:39:17 828

Transportation Research Center Inc.

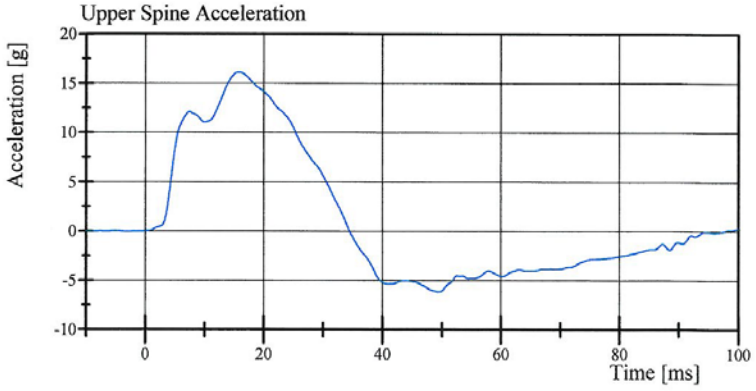
Left Lateral Thorax without Arm
Copy of SID IIs Serial No. 305 Certification No. 6-2
Test Date: 11/15/2011

Probe Acceleration



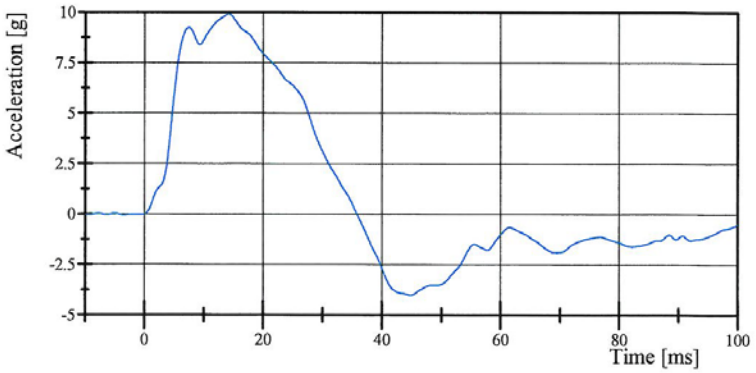
Filter Class: CFC_180
Max: 0.1 gn at 87.8 ms
Min: -16.4 gn at 18.7 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 16.1 gn at 15.8 ms
Min: -6.2 gn at 49.5 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 9.9 gn at 14.2 ms
Min: -4.0 gn at 44.8 ms

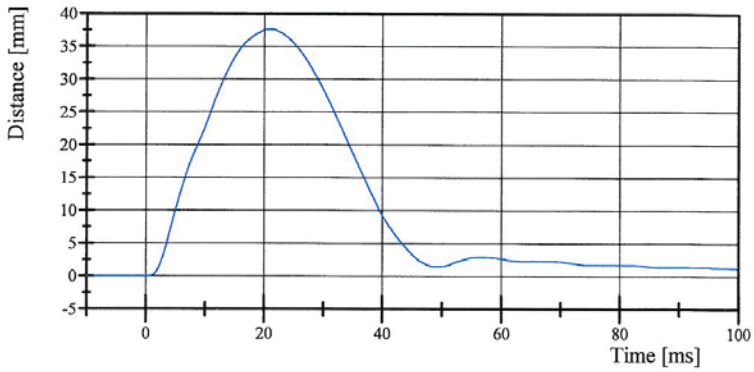
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 16:39:28 828

Transportation Research Center Inc.

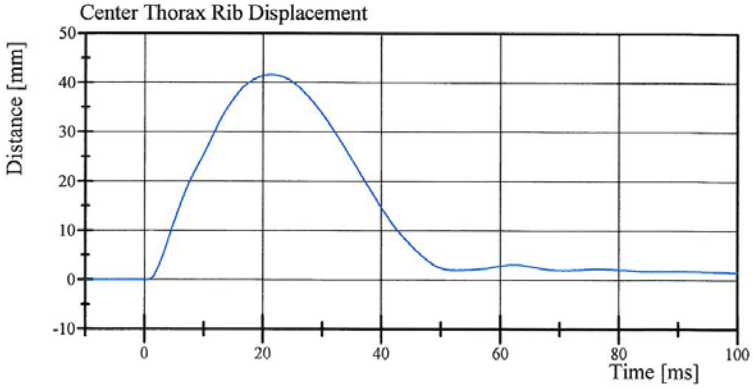
Left Lateral Thorax without Arm
Copy of SID IIs Serial No. 305 Certification No. 6-2
Test Date: 11/15/2011

Upper Thorax Rib Displacement



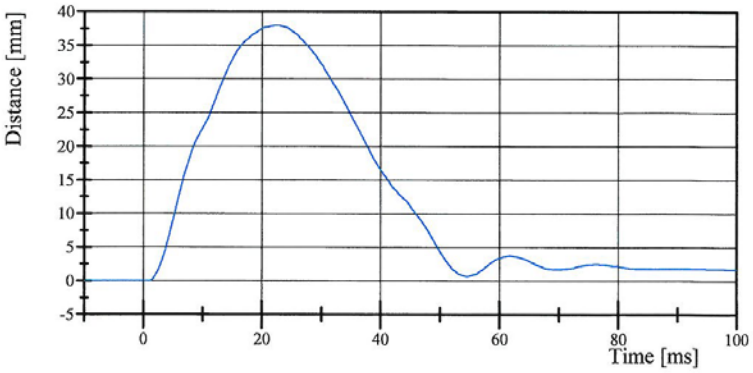
Filter Class: CFC_600
Max: 37.6 mm at 20.9 ms
Min: -0.0 mm at 0.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.6 mm at 21.4 ms
Min: -0.0 mm at -4.2 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 38.0 mm at 22.6 ms
Min: -0.0 mm at -6.6 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 16:39:28 828

Transportation Research Center Inc.

Left Lateral Abdomen
Copy of SID IIs Serial No. 305 Certification No. 6-2
Test Date: 11/15/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.6 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.2 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	37.6 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.58 g	Yes

Test meets specifications.

Comments:

Technician

Approved

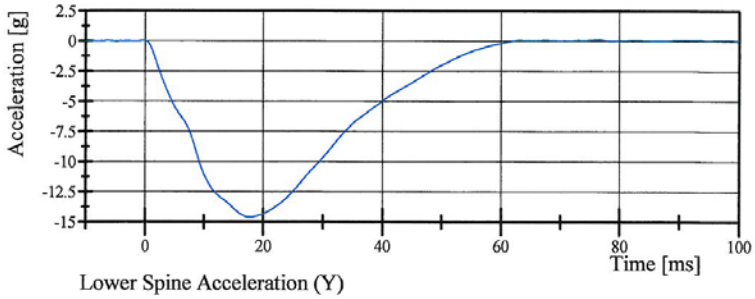
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 18:29:04 664

Transportation Research Center Inc.

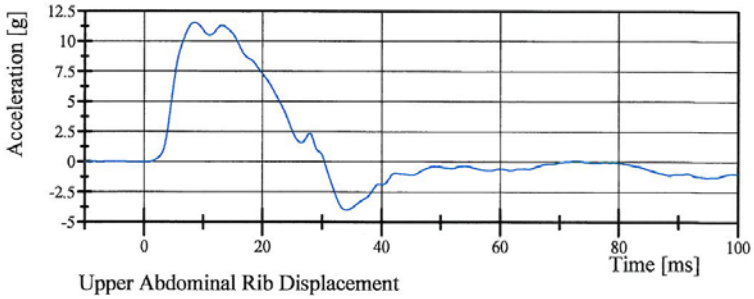
Left Lateral Abdomen
Copy of SID IIs Serial No. 305 Certification No. 6-2
Test Date: 11/15/2011

Probe Acceleration



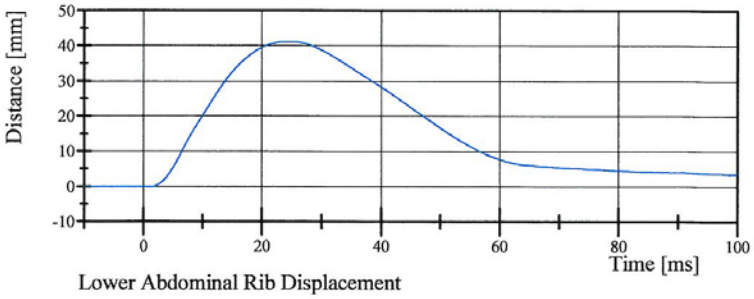
Filter Class: CFC_180
Max: 0.2 gn at 76.3 ms
Min: -14.6 gn at 17.8 ms

Lower Spine Acceleration (Y)



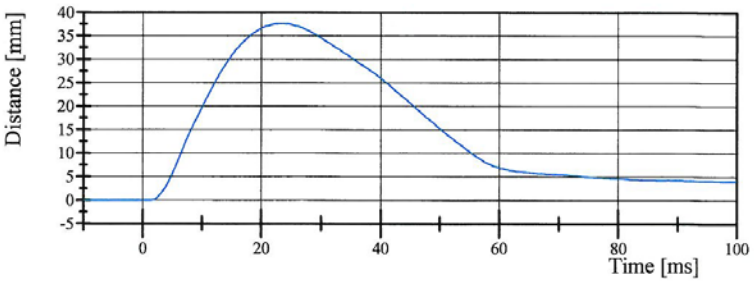
Filter Class: CFC_180
Max: 11.6 gn at 8.5 ms
Min: -4.0 gn at 34.2 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 41.2 mm at 24.6 ms
Min: -0.0 mm at -2.1 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 37.6 mm at 23.3 ms
Min: -0.0 mm at -9.4 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 18:29:14 664

Transportation Research Center Inc.

Left Lateral Thorax with Arm
Copy of SID IIs Serial No. 305 Certification No. 6-4
Test Date: 11/15/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.667 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.8 g	Yes
Shoulder Displacement	31 - 40 mm	34.1 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.6 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.4 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	32.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.2 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.5 g	Yes

Test meets specifications.

Comments:

Technician

Approved

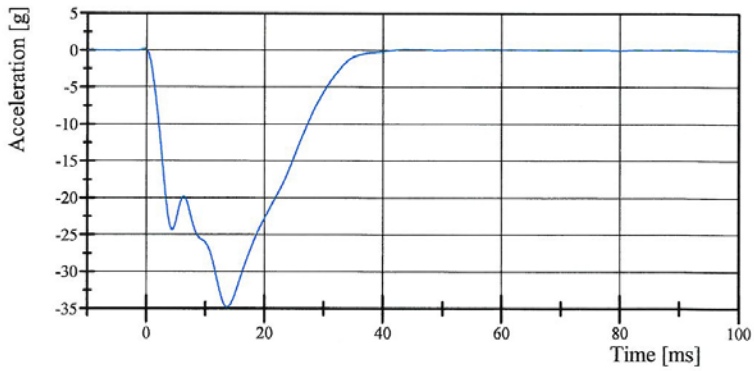
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 17:52:17 628

Transportation Research Center Inc.

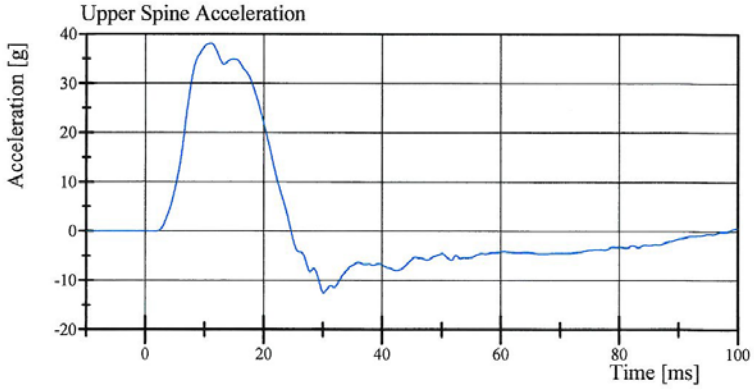
Left Lateral Thorax with Arm
Copy of SID IIs Serial No. 305 Certification No. 6-4
Test Date: 11/15/2011

Probe Acceleration



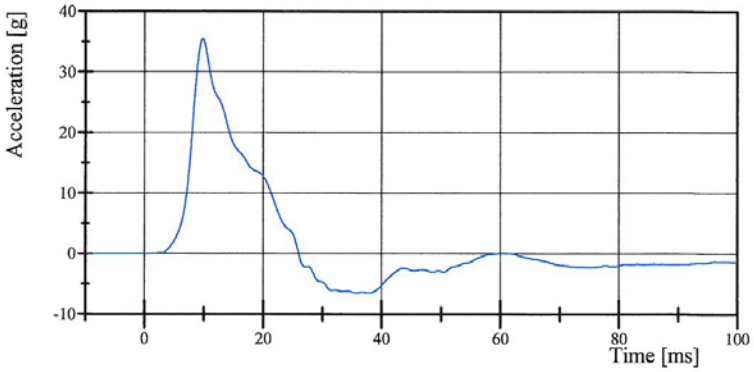
Filter Class: CFC_180
Max: 0.2 gn at -0.3 ms
Min: -34.8 gn at 13.7 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 38.2 gn at 11.1 ms
Min: -12.5 gn at 30.2 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 35.5 gn at 9.8 ms
Min: -6.6 gn at 35.8 ms

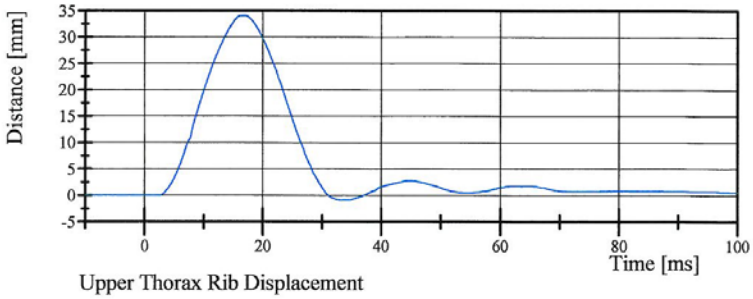
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 17:52:30 628

Transportation Research Center Inc.

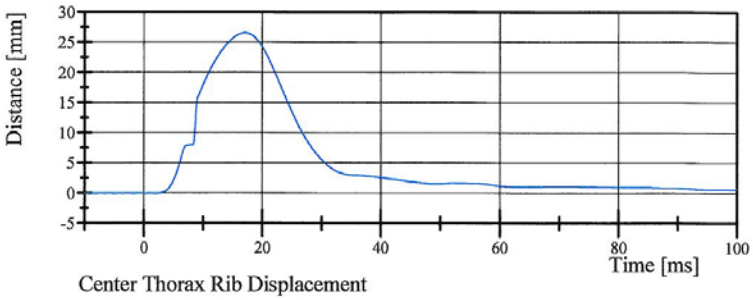
Left Lateral Thorax with Arm
Copy of SID IIs Serial No. 305 Certification No. 6-4
Test Date: 11/15/2011

Shoulder Rib Displacement



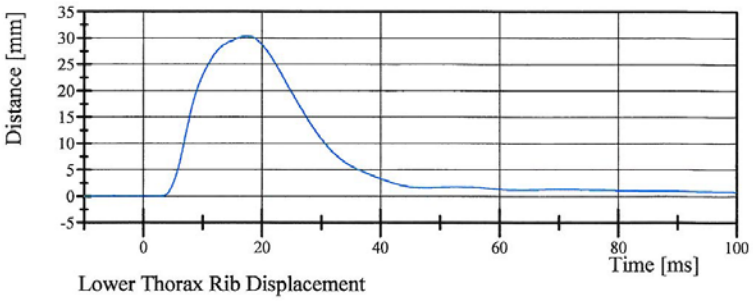
Filter Class: CFC_600
Max: 34.1 mm at 16.5 ms
Min: -0.9 mm at 34.3 ms

Upper Thorax Rib Displacement



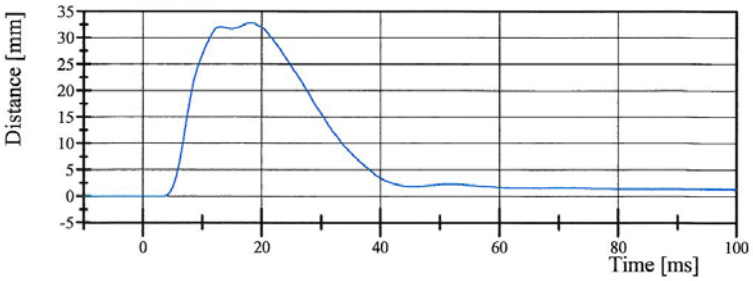
Filter Class: CFC_600
Max: 26.6 mm at 17.0 ms
Min: -0.0 mm at 2.2 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 30.4 mm at 17.4 ms
Min: -0.0 mm at -6.6 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 32.8 mm at 18.3 ms
Min: -0.0 mm at 2.2 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 17:52:31 628

Transportation Research Center Inc.

Left Lateral Iliac
Copy of SID IIs Serial No. 305 Certification No. 6-1
Test Date: 11/15/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.23 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-38.5 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	32.1 g	Yes
Iliac Force	4,100 - 5,100 N	4,693.8 N	Yes

Test meets specifications.

Comments:

Technician

Approved

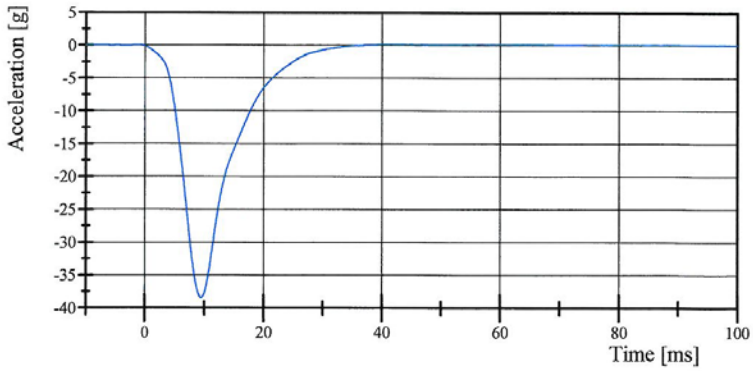
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 21:41:25 688

Transportation Research Center Inc.

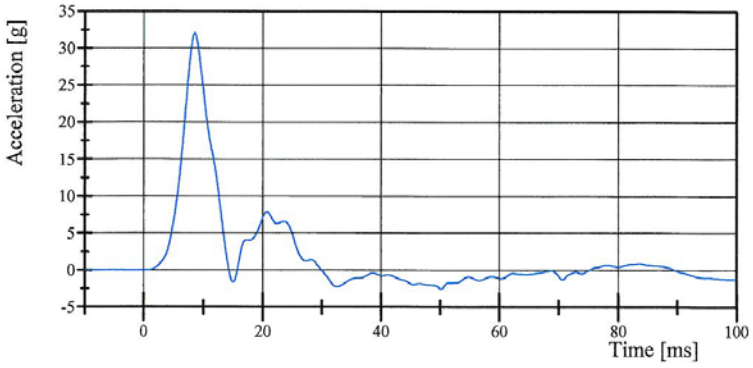
Left Lateral Iliac
Copy of SID IIs Serial No. 305 Certification No. 6-1
Test Date: 11/15/2011

Probe Acceleration



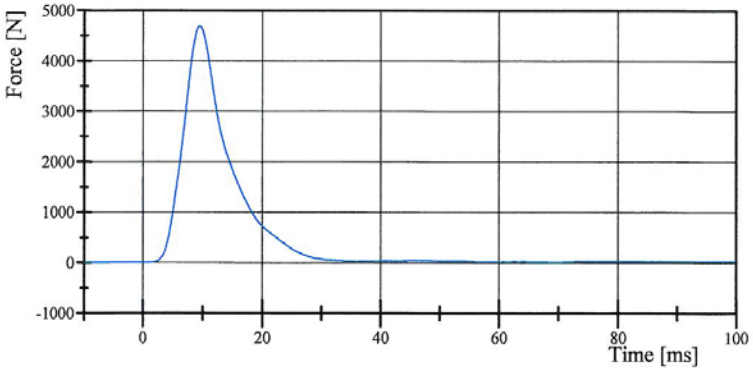
Filter Class: CFC_180
Max: 0.1 gn at 60.2 ms
Min: -38.5 gn at 9.5 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 32.1 gn at 8.6 ms
Min: -2.6 gn at 50.2 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,693.8 N at 9.5 ms
Min: -0.8 N at -9.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.15.2011 21:41:53 688

Post-Test Calibration Sheets

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.06
Date: 11/28/11

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	777	Yes
B	Shoulder Pivot Height	437.0 - 453.0	441	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	144	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	134	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	543	Yes
K	Buttock to Knee Length	514.0 - 540.0	533	Yes
L	Popliteal Height	343.0 - 369.0	354	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	401	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	205	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	313	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	482	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	350	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	864	Yes
Z	Waist Circumference	761.0 - 791.0	779	Yes

Technician

Approved

Revised 9/29/2005

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/23/2011

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	116.1 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.5 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Approved

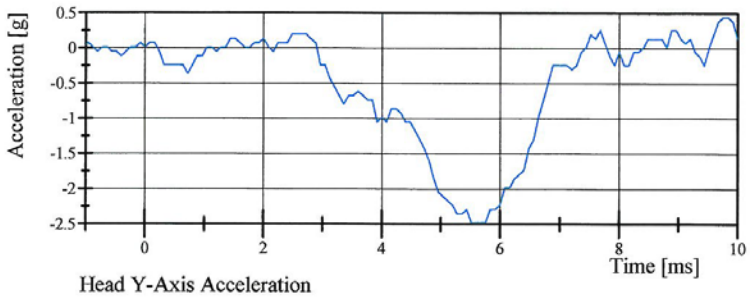
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.23.2011 17:30:59 231

Transportation Research Center Inc.

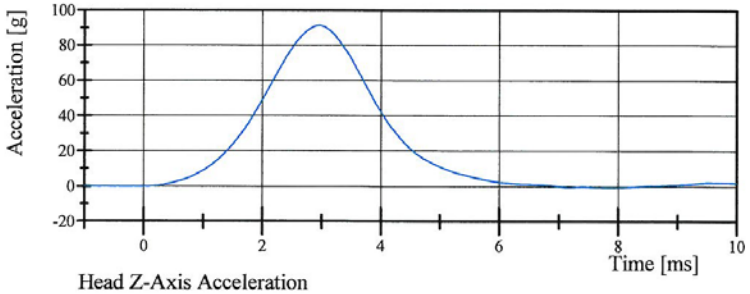
Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/23/2011

Head X-Axis Acceleration



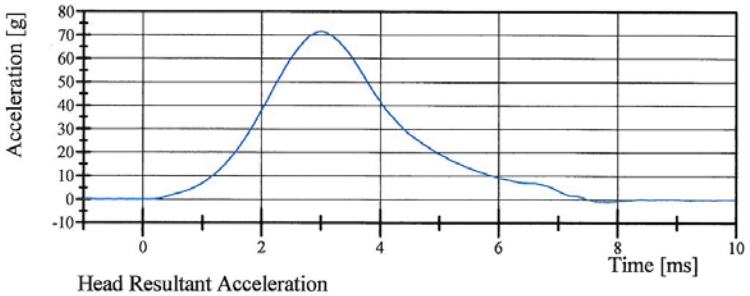
Filter Class: CFC_1000
Max: 0.4 gn at 9.8 ms
Min: -2.5 gn at 5.5 ms

Head Y-Axis Acceleration



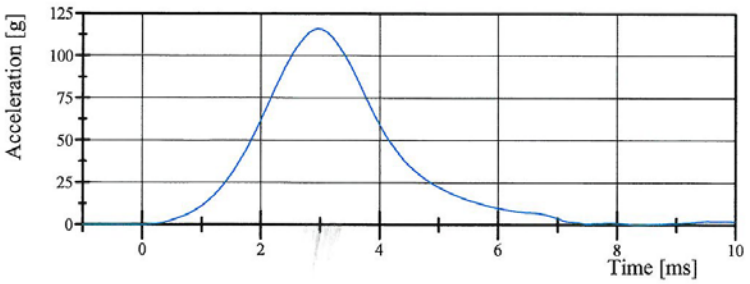
Filter Class: CFC_1000
Max: 91.5 gn at 3.0 ms
Min: -0.7 gn at 7.8 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 71.5 gn at 3.0 ms
Min: -1.0 gn at 7.8 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 116.1 gn at 3.0 ms
Min: 0.0 gn at -1.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.23.2011 17:31:08 231

Transportation Research Center Inc.

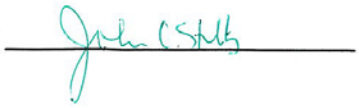
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/25/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.611 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.277 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.389 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.585 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.603 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.900 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-72.0 deg	Yes
Time of Peak	50 - 70 ms	62.4 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	40.5 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	115.6 ms	Yes

Test meets specifications.

Comments:

Technician 

Approved 

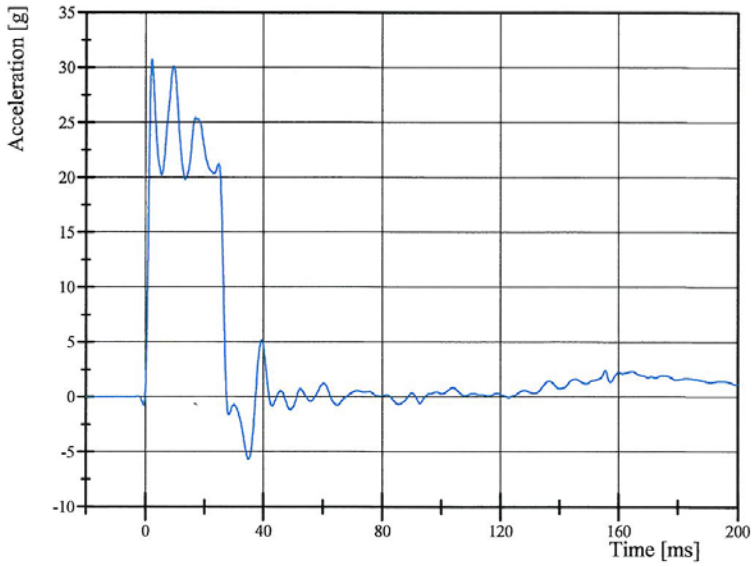
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.25.2011 07:38:52 634

Transportation Research Center Inc.

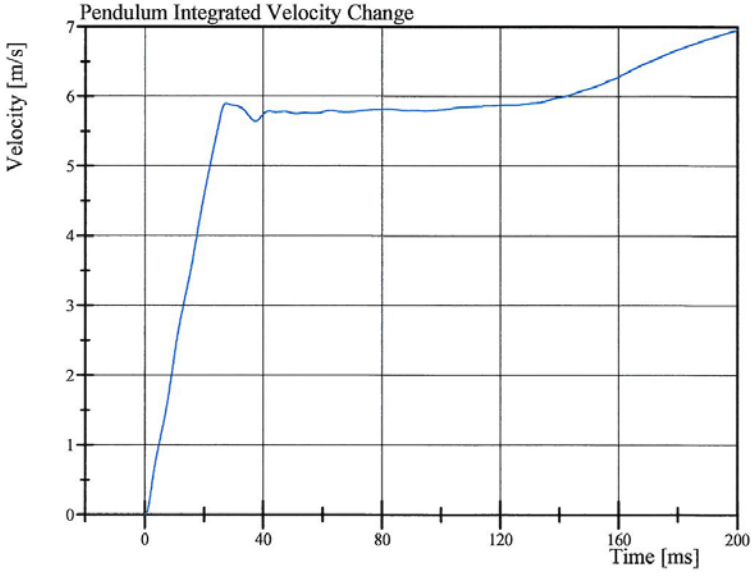
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/25/2011

Pendulum Acceleration



Filter Class: CFC_180
Max: 30.7 gn at 2.2 ms
Min: -5.7 gn at 34.9 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 7.0 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

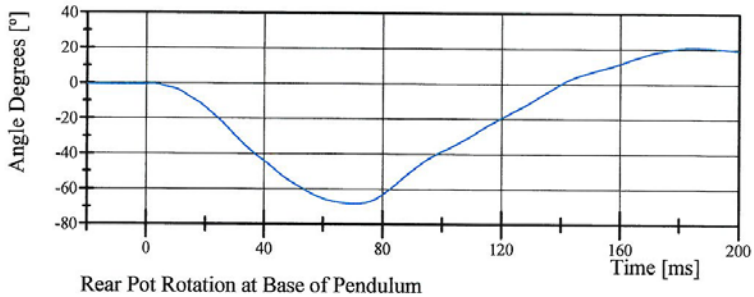
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.25.2011 07:39:00 634

Transportation Research Center Inc.

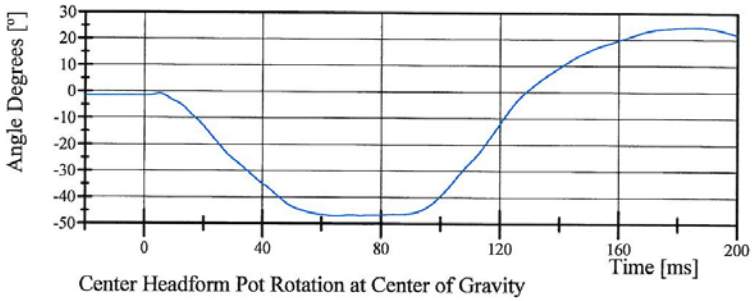
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/25/2011

Forward Pot Rotation at Base of Pendulum



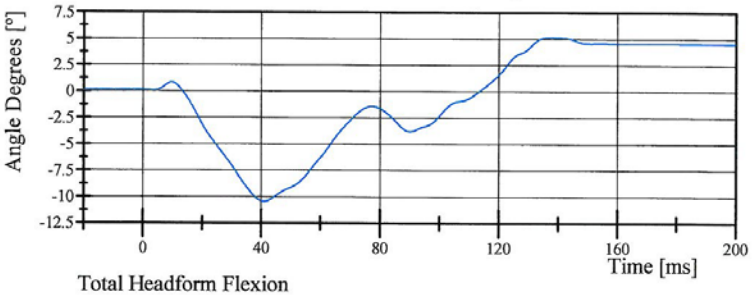
Filter Class: CFC_60
Max: 21.0 ° at 185.4 ms
Min: -68.2 ° at 70.3 ms

Rear Pot Rotation at Base of Pendulum



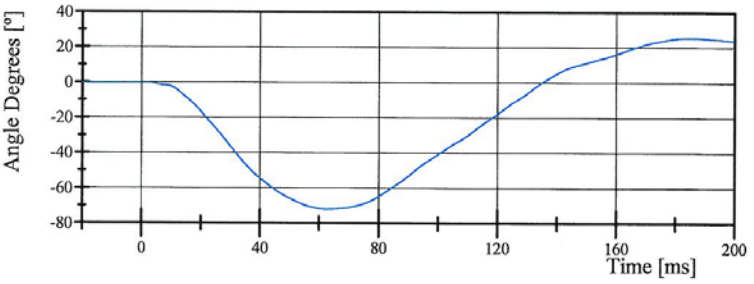
Filter Class: CFC_60
Max: 24.8 ° at 186.5 ms
Min: -47.0 ° at 64.8 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 5.2 ° at 137.8 ms
Min: -10.5 ° at 41.0 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 25.5 ° at 185.4 ms
Min: -72.0 ° at 62.4 ms

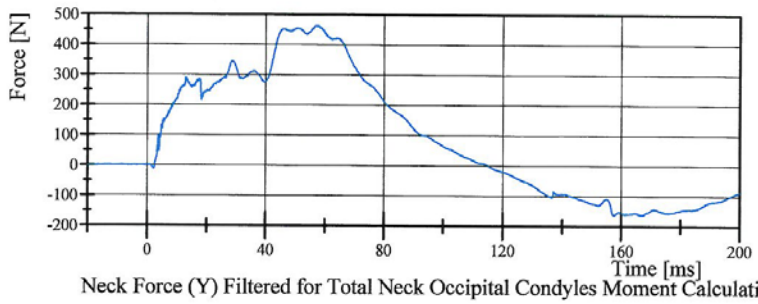
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.25.2011 07:39:01 634

Transportation Research Center Inc.

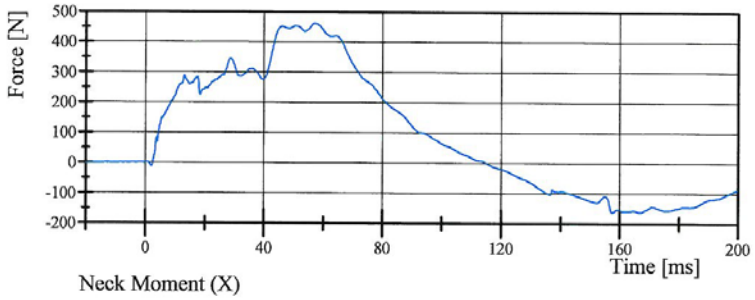
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/25/2011

Neck Force (Y)



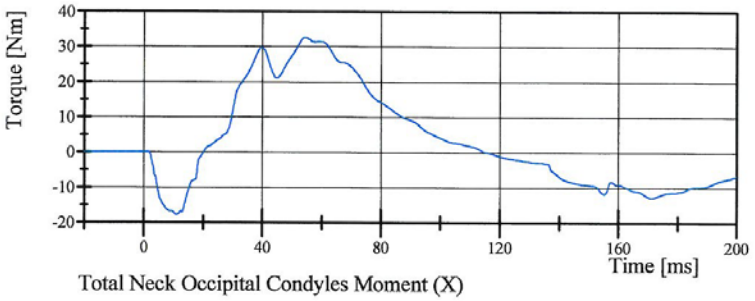
Filter Class: CFC_1000
Max: 463.3 N at 56.8 ms
Min: -162.0 N at 157.5 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



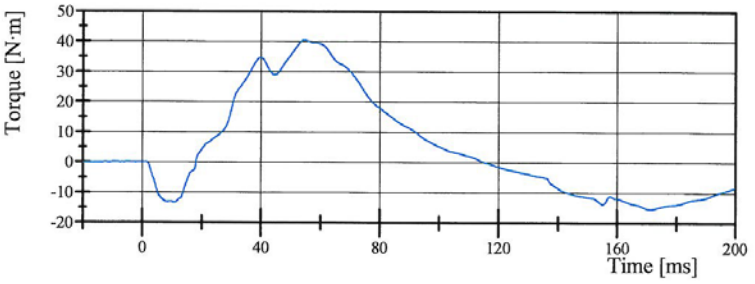
Filter Class: CFC_600
Max: 462.4 N at 56.7 ms
Min: -161.8 N at 157.6 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 32.7 Nm at 54.0 ms
Min: -17.8 Nm at 11.1 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Consta
Max: 40.5 N·m at 54.8 ms
Min: -15.4 N·m at 171.1 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.25.2011 07:39:01 634

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.1 g	Yes
Shoulder Displacement	28 - 37 mm	30.3 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	20.3 g	Yes

Test meets specifications.

Comments:

Technician

Approved

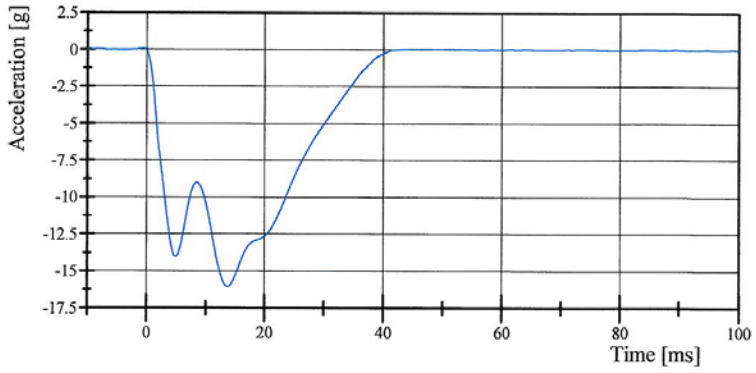
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 08:58:58 833

Transportation Research Center Inc.

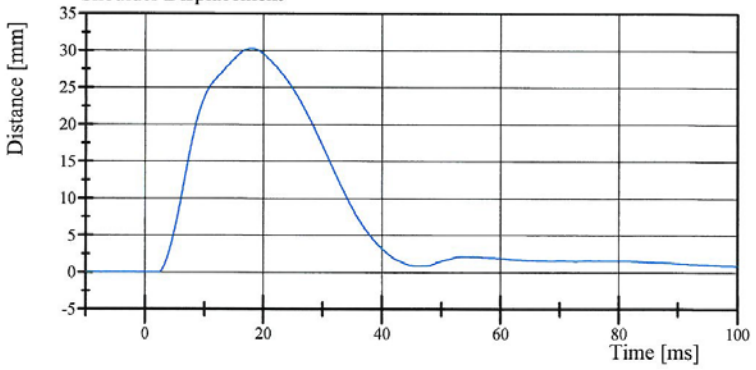
Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Probe Acceleration



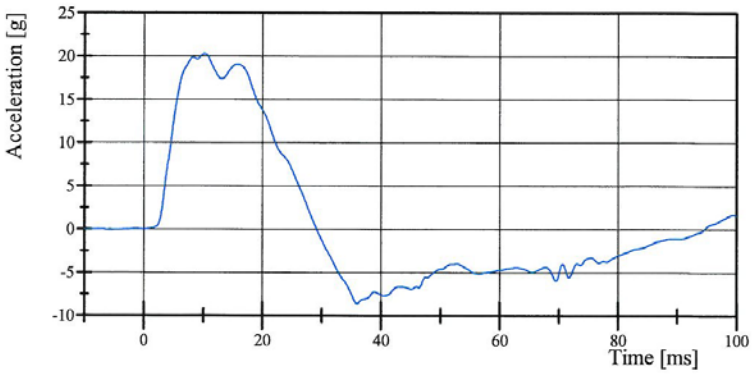
Filter Class: CFC_180
Max: 0.1 gn at -0.6 ms
Min: -16.1 gn at 13.7 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 30.3 mm at 18.1 ms
Min: -0.0 mm at 2.3 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 20.3 gn at 10.2 ms
Min: -8.6 gn at 35.9 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 08:59:06 833

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 7-2
Test Date: 11/28/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.707 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.7 g	Yes
Shoulder Displacement	31 - 40 mm	31.3 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.2 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.1 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.7 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	33.2 g	Yes

Test meets specifications.

Comments:

Technician

Approved

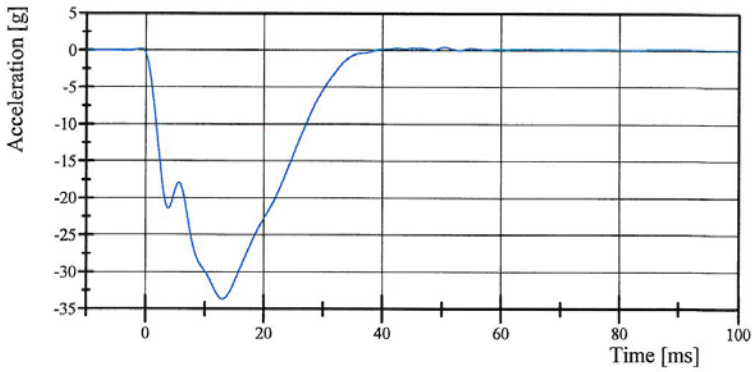
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 10:18:54 620

Transportation Research Center Inc.

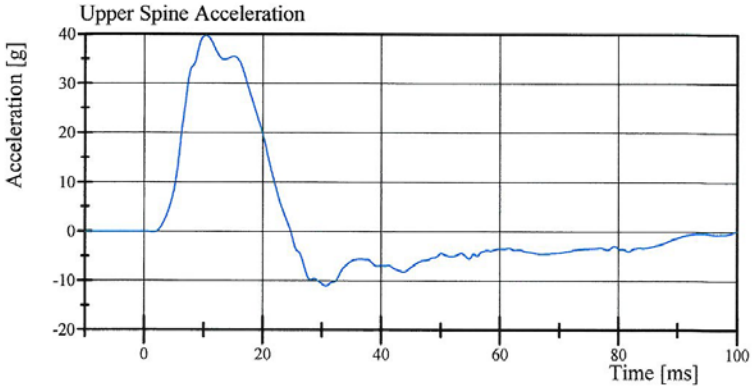
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 7-2
Test Date: 11/28/2011

Probe Acceleration



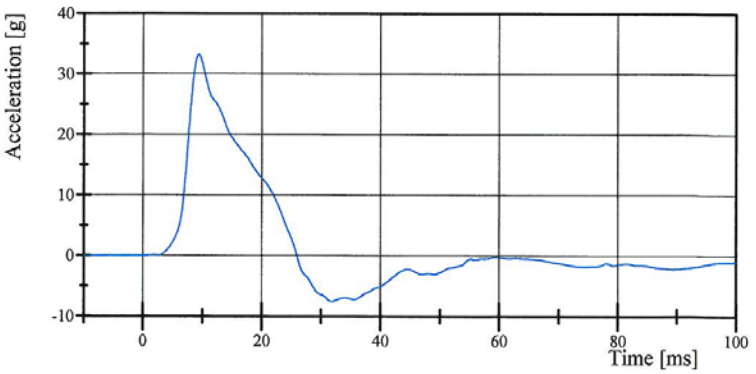
Filter Class: CFC_180
Max: 0.4 gn at 50.4 ms
Min: -33.7 gn at 13.0 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 39.7 gn at 10.4 ms
Min: -11.0 gn at 30.6 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 33.2 gn at 9.4 ms
Min: -7.5 gn at 31.8 ms

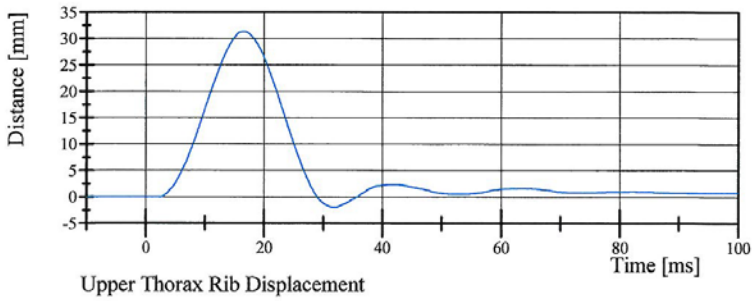
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 10:19:02 620

Transportation Research Center Inc.

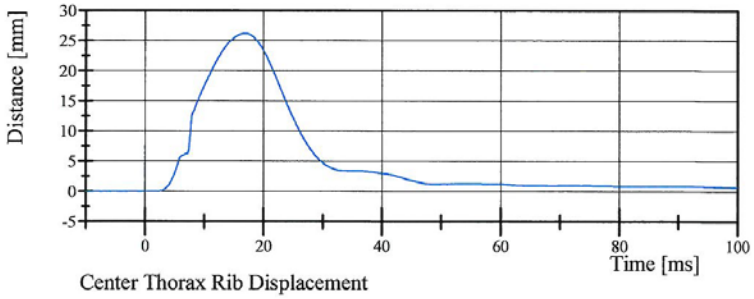
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 7-2
Test Date: 11/28/2011

Shoulder Rib Displacement



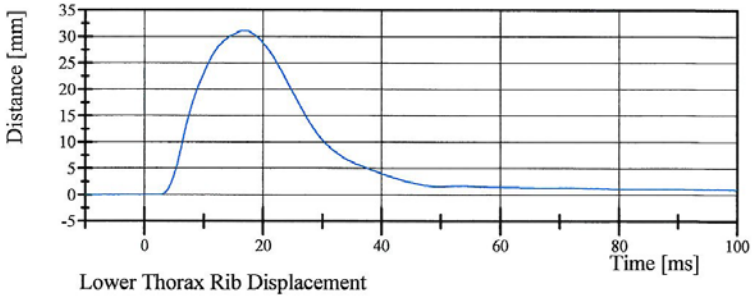
Filter Class: CFC_600
Max: 31.3 mm at 16.6 ms
Min: -1.9 mm at 31.8 ms

Upper Thorax Rib Displacement



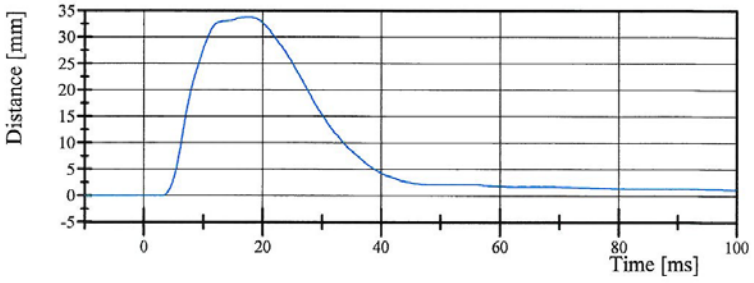
Filter Class: CFC_600
Max: 26.2 mm at 17.0 ms
Min: -0.0 mm at -9.2 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 31.1 mm at 16.9 ms
Min: -0.0 mm at -4.6 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 33.8 mm at 17.7 ms
Min: -0.0 mm at -6.6 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 10:19:03 620

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.369 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.6 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.2 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.9 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.9 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	16.0 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.5 g	Yes

Test meets specifications.

Comments:

Technician

Approved

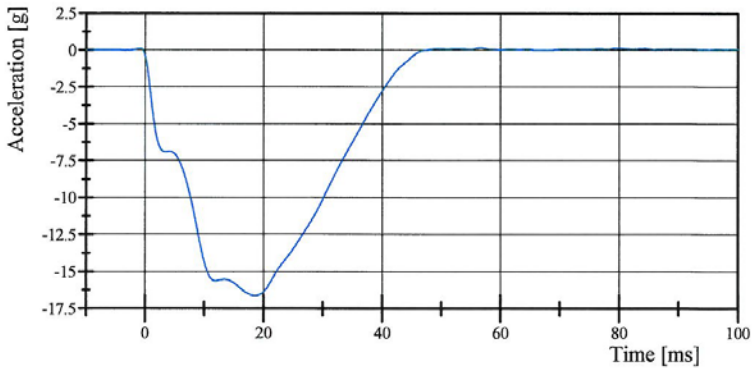
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 10:52:25 811

Transportation Research Center Inc.

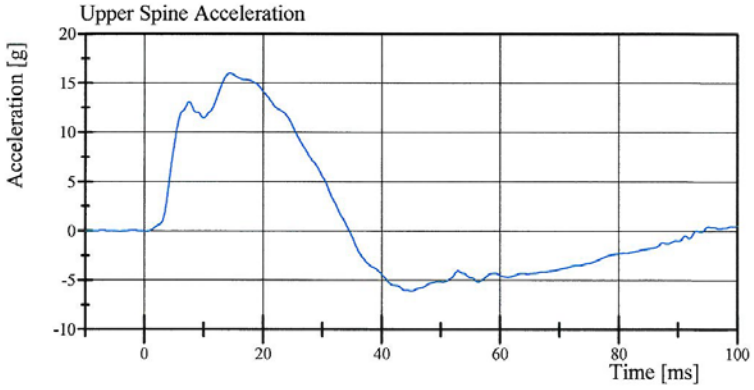
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Probe Acceleration



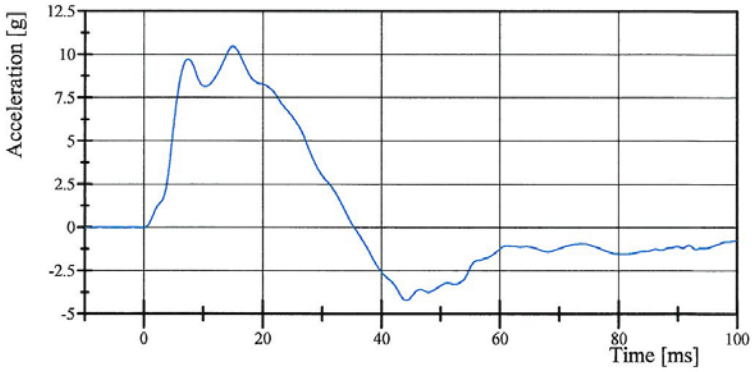
Filter Class: CFC_180
Max: 0.1 gn at 56.6 ms
Min: -16.6 gn at 18.6 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 16.0 gn at 14.4 ms
Min: -6.1 gn at 45.0 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 10.5 gn at 15.0 ms
Min: -4.2 gn at 44.2 ms

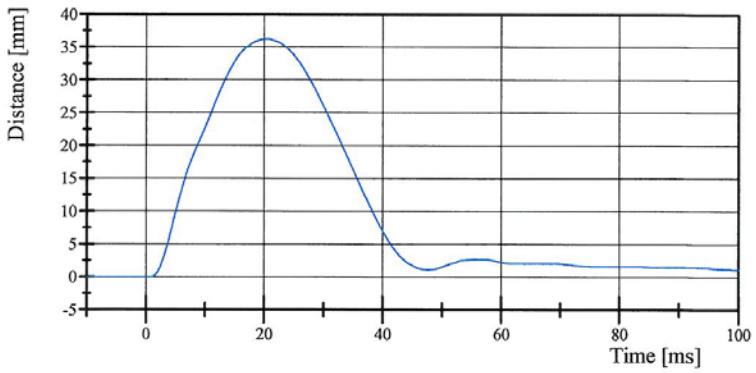
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 10:52:37 811

Transportation Research Center Inc.

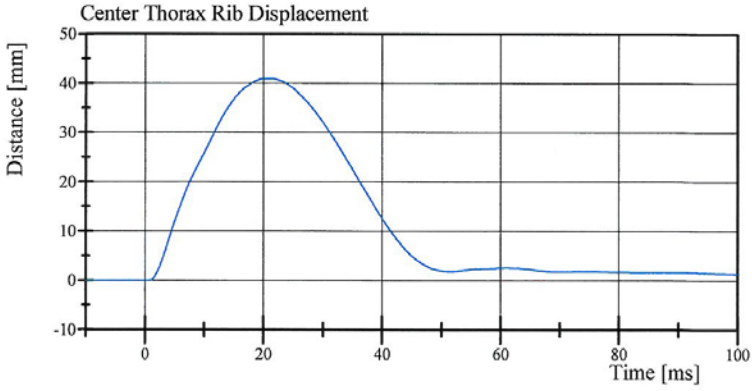
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Upper Thorax Rib Displacement



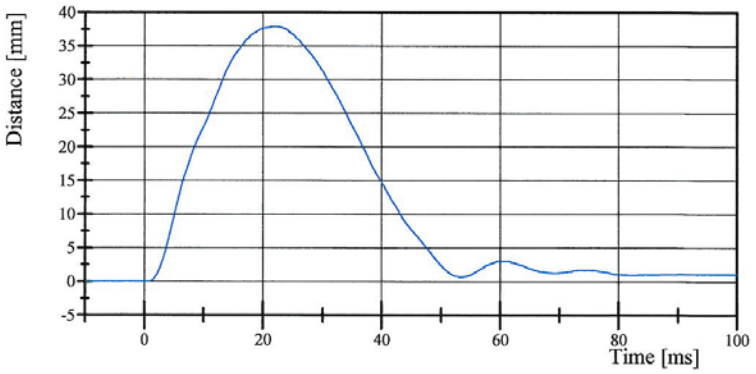
Filter Class: CFC_600
Max: 36.2 mm at 20.5 ms
Min: -0.0 mm at -1.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 40.9 mm at 20.6 ms
Min: -0.0 mm at -9.9 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.9 mm at 22.0 ms
Min: -0.0 mm at 0.6 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 10:52:37 811

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-15.1 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	39.8 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	35.3 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	12.10 g	Yes

Test meets specifications.

Comments:

Technician

Approved

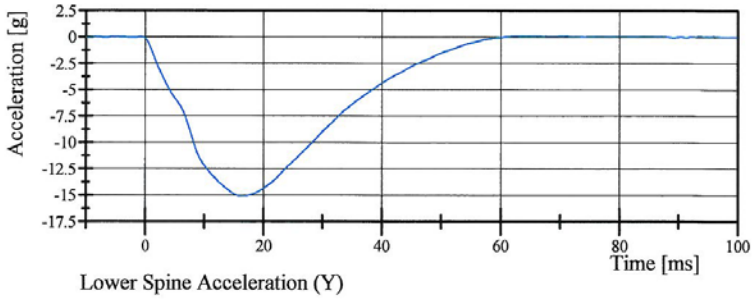
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 11:04:35 642

Transportation Research Center Inc.

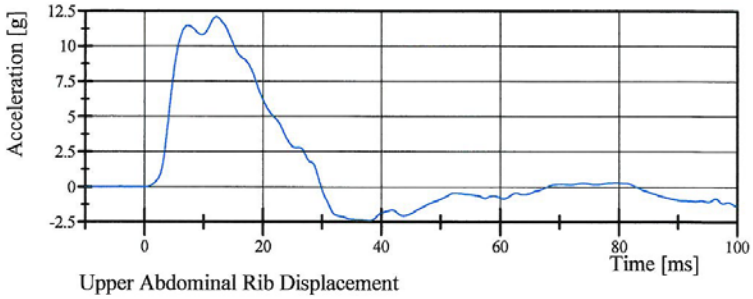
Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Probe Acceleration



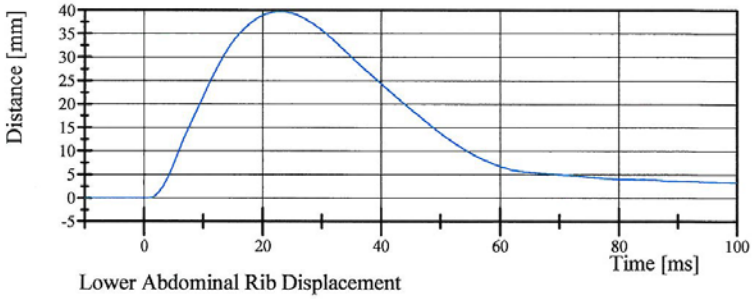
Filter Class: CFC_180
Max: 0.1 gn at 62.3 ms
Min: -15.1 gn at 16.5 ms

Lower Spine Acceleration (Y)



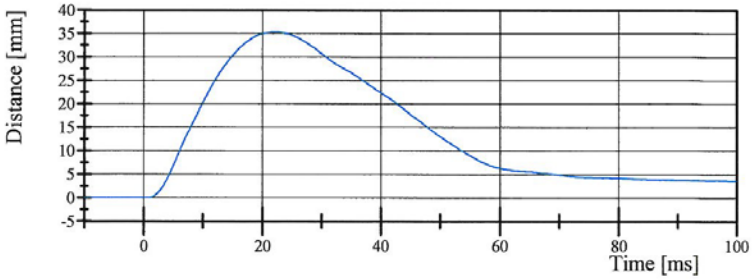
Filter Class: CFC_180
Max: 12.1 gn at 12.2 ms
Min: -2.4 gn at 38.1 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 39.8 mm at 22.9 ms
Min: -0.0 mm at 0.6 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 35.3 mm at 21.9 ms
Min: -0.0 mm at 0.8 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 11:04:43 642

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.61 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.34 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	36.8 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,975.6 N	Yes

Test meets specifications.

Comments:

Technician

Approved

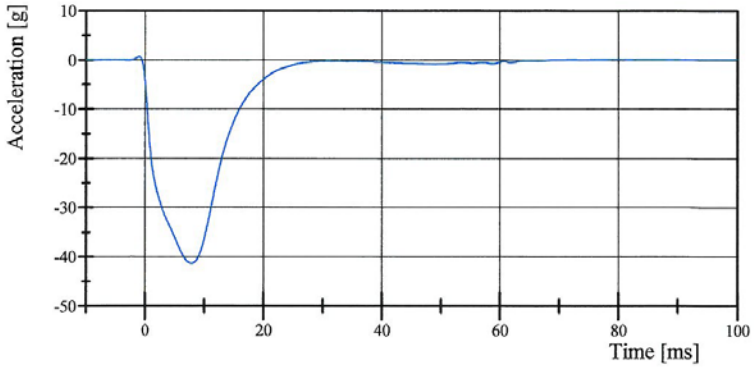
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 12:41:46 451

Transportation Research Center Inc.

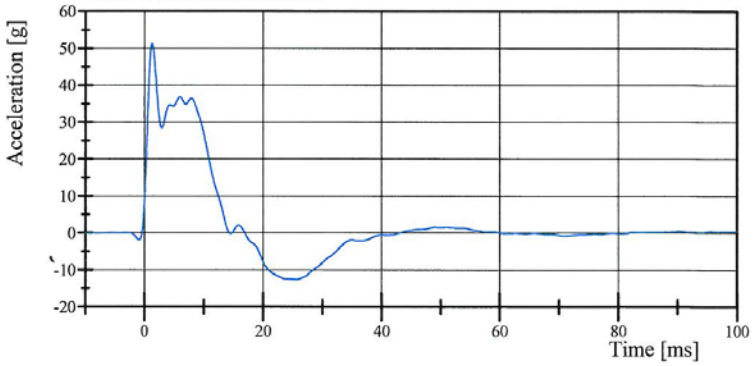
Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Probe Acceleration



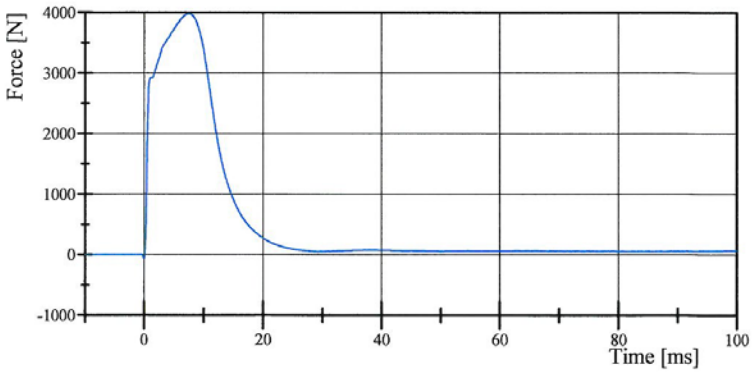
Filter Class: CFC_180
Max: 0.6 gn at -1.0 ms
Min: -41.3 gn at 7.8 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 51.2 gn at 1.3 ms
Min: -12.6 gn at 25.7 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 3,975.6 N at 7.5 ms
Min: -67.5 N at 0.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 12:41:54 451

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.25 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.8 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	33.5 g	Yes
Iliac Force	4,100 - 5,100 N	5,065.1 N	Yes

Test meets specifications.

Comments:

Technician

Approved

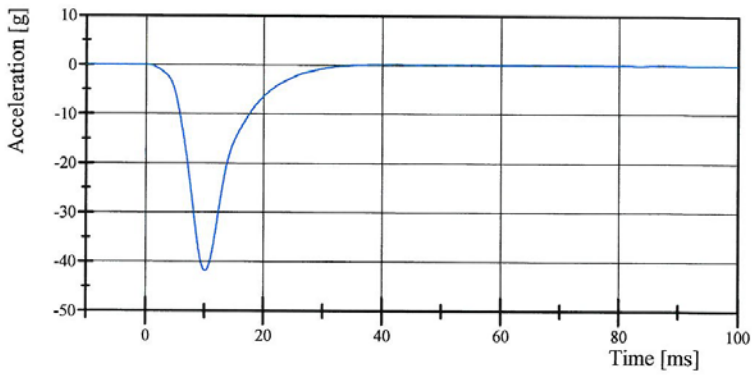
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 14:52:12 634

Transportation Research Center Inc.

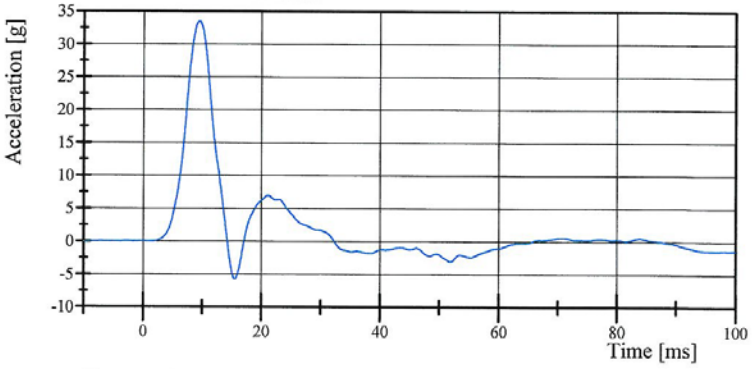
Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 7-1
Test Date: 11/28/2011

Probe Acceleration



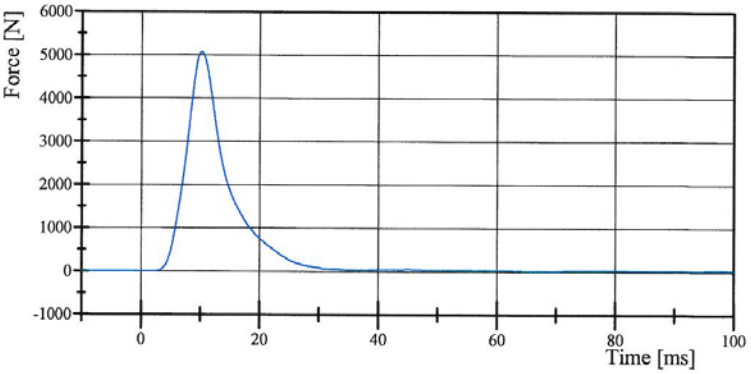
Filter Class: CFC_180
Max: 0.2 gn at 42.6 ms
Min: -41.8 gn at 10.2 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 33.5 gn at 9.4 ms
Min: -5.7 gn at 15.5 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 5,065.1 N at 10.2 ms
Min: -0.8 N at -6.2 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.28.2011 14:52:19 634

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 305		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers			X	P51719	Endevco	9-Nov-11
			Y	P51272	Endevco	9-Nov-11
			Z	P58862	Endevco	9-Nov-11
Displacement Potentiometers	Shoulder		Y			
	Thoracic Rib	Upper	Y	1153	FTSS	9-Nov-11
		Middle	Y	1161	FTSS	9-Nov-11
		Lower	Y	1279	FTSS	9-Nov-11
	Abdominal Rib	Upper	Y	1295	FTSS	9-Nov-11
		Lower	Y	1136	FTSS	9-Nov-11
Lower Spine Accelerometers (T12)			X	P50068	Endevco	9-Nov-11
			Y	P52051	Endevco	9-Nov-11
			Z	P51710	Endevco	9-Nov-11
Acetabulum Load Cell			Y	103-FY	FTSS	10-Nov-11
Iliac Wing Load Cell			Y	287-FY	Denton	10-Nov-11
Pelvis Plug (struck side)						
Pelvis Plug (non-struck side)						

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P57179	Endevco	6-Jun-11
Vehicle Center of Gravity	Y	P68770	Endevco	2-Jun-11
Vehicle Center of Gravity	Z	P68541	Endevco	1-Jun-11
Left Floor Sill	Y	P73624	Endevco	16-Aug-11
A-Pillar Sill	Y	P73593	Endevco	18-Aug-11
A-Pillar Low	Y	P63135	Endevco	17-Aug-11
A-Pillar Mid	Y	P61720	Endevco	17-Aug-11
B-Pillar Sill	Y	P68749	Endevco	1-Jun-11
B-Pillar Low	Y	P73616	Endevco	18-Aug-11
B-Pillar Mid	Y	P68752	Endevco	3-Jun-11
Driver Seat	Y	P68771	Endevco	1-Jun-11
Engine Top	X	P66894	Endevco	10-Nov-11
Engine Top	Y	P57186	Endevco	10-Nov-11
Firewall	Y	P93617	Endevco	18-Aug-11
Right Roof	Y	P57155	Endevco	6-Jun-11
Right Floor Sill	Y	P57127	Endevco	6-Jun-11
Rear Floor Pan	X	P73565	Endevco	11-Aug-11
Rear Floor Pan	Y	P69085	Endevco	28-Jun-11

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	86-FX	Denton	26-Nov-10
Load Cell 2	91-FX	Denton	26-Nov-10
Load Cell 3	89-FX	Denton	26-Nov-10
Load Cell 4	77-FX	Denton	26-Nov-10
Load Cell 5	90-FX	Denton	26-Nov-10
Load Cell 6	88-FX	Denton	26-Nov-10
Load Cell 7	92-FX	Denton	26-Nov-10
Load Cell 8	78-FX	Denton	9-Jun-11