

FINAL REPORT NUMBER: SINCAP-TRC-13-001

**NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**General Motors LLC
2013 Chevrolet Silverado 2500 2WD WT EXT
NHTSA NUMBER: MD0116**

**PREPARED BY:
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Report Date: October 12, 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: ILO Project Operations Team

Approved By: Margaret Susan

Approval Date: October 12, 2012

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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16. Abstract This 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on September 26, 2012. The impact velocity of the Moving Deformable Barrier (MDB) was 61.8 km/h, and the ambient temperature at the struck side of the target vehicle at the time of impact was 21° C. The target vehicle post-test maximum crush was 272 mm at Level 1. The test vehicle's performance was as follows: <table border="1"> <thead> <tr> <th colspan="4">Driver ATD (ES-2re)</th> </tr> <tr> <th>Measurement Description</th><th>Units</th><th>IARV</th><th>Result</th></tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td><td>NA</td><td>1000</td><td>115</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>44</td><td>4.7</td></tr> <tr> <td>Total Abdominal Force</td><td>N</td><td>2500</td><td>268.4</td></tr> <tr> <td>Pubic Symphysis Force</td><td>N</td><td>6000</td><td>1339.3</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Measurement Description</th><th>Units</th><th>IARV</th><th>Result</th></tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td><td>NA</td><td>1000</td><td>20</td></tr> <tr> <td>Lower Spine Resultant Acceleration</td><td>g's</td><td>82</td><td>21.6</td></tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td><td>N</td><td>5525</td><td>457.6</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>38*</td><td>11.2</td></tr> <tr> <td>Maximum Abdominal Rib Deflection</td><td>mm</td><td>45*</td><td>8.6</td></tr> </tbody> </table> * Proposed IARV The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				Driver ATD (ES-2re)				Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	NA	1000	115	Maximum Thoracic Rib Deflection	mm	44	4.7	Total Abdominal Force	N	2500	268.4	Pubic Symphysis Force	N	6000	1339.3	Passenger ATD (SID-IIs)				Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	NA	1000	20	Lower Spine Resultant Acceleration	g's	82	21.6	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	457.6	Maximum Thoracic Rib Deflection	mm	38*	11.2	Maximum Abdominal Rib Deflection	mm	45*	8.6
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SECTION 1
TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test was conducted as part of the MY 2013 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 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated August 2011.

SECTION 2

SUMMARY OF TEST RESULTS

A 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.8 km/h (38.41 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Transportation Research Center Inc. in East Liberty, OH, on September 26, 2012. Pre-test and post-test photographs of the test vehicle and the MDB and the dummies (ES-2-re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated August 2011. The side impact event was documented by 10 cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (T12) tri-axial accelerometers

Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)

Primary and redundant head CG triaxial accelerometers

Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (T12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

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

Dummy injury readings were recorded as follows:

Measurement Description	Driver ATD (ES-2-re)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	NA	1000	115
Maximum Thoracic Rib Deflection	mm	44	4.7
Combined Abdominal Force	N	2500	268.4
Pubic Symphysis Force	N	6000	1339.3

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	NA	1000	20
Lower Spine (T12) Resultant Acceleration	G	82	21.6
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	457.6
Maximum Thoracic Rib Deflection	mm	38*	11.2
Maximum Abdominal Rib Deflection	mm	45*	8.6

* 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	Stg Wheel	No		
Knee Airbag	NA	NA		
Side Airbag 1 (Indicate Type)	NA	NA	NA	NA
Side Airbag 2 (Indicate Type)	NA	NA	NA	NA
Side Airbag 3 (Indicate Type)	NA	NA	NA	NA
Seat Belt Pretensioner	NA	NA	NA	NA
Seat Belt Load Limiter	NA	NA	NA	NA
Other	NA	NA	NA	NA

GENERAL COMMENTS

All doors remained closed throughout the test. No fuel spillage occurred during the impact or the static rollover test which followed. Injury values for both ATDs were within the established performance thresholds. The dummy head and spine acceleration data channels were calibrated on September 28, 2012

DRIVER HEAD AX, 0.51% CHANGE

DRIVER HEAD AY, 0.72% CHANGE

DRIVER HEAD AZ, 0.43% CHANGE

DRIVER HEAD AXR, 0.45% CHANGE

DRIVER HEAD AYR, 0.41% CHANGE

DRIVER HEAD AZR, 0.32% CHANGE

DRIVER LOWER SPINE AX, 0.04% CHANGE

DRIVER LOWER SPINE AY, 0.03% CHANGE

DRIVER LOWER SPINE AZ, 0.44% CHANGE

PASSENGER HEAD AX, -0.2% CHANGE

PASSENGER HEAD AY, -0.1% CHANGE

PASSENGER HEAD AZ, -0.09% CHANGE

PASSENGER HEAD AXR, -0.3% CHANGE

PASSENGER HEAD AYR, -0.1% CHANGE

PASSENGER HEAD AZR, -0.005% CHANGE

PASSENGER LOWER SPINE AX, 0.44% CHANGE

PASSENGER LOWER SPINE AY, 0.45% CHANGE

PASSENGER LOWER SPINE AZ, 0.59% CHANGE

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup NHTSA No.: MD0116
 Test Program: NCAP Side Impact Test Date: 09/26/12

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MD0116	Traction Control System (TCS)	Yes
Model Year	2013	Auto-Leveling System	ND
Make	Chevrolet	Automatic Door Locks (ADL)	Yes
Model	Silverado 2500 2WD WT EXT	Power Window Auto-Reverse	Yes
Body Style	Pickup	Other Optional Feature	NA
VIN	1GC2CVCG0DZ132991	Driver Frontal Airbag	Yes
Body Color	Gray Metallic	Driver Curtain Airbag	No
Odometer Reading (miles)	8	Driver Head/Torso Airbag	No
Engine Displacement (L)	6	Driver Torso Airbag	No
Number of Cylinders	8	Driver Torso/Pelvis Airbag	No
Engine Placement	longitudinally-placed	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	6	Rear Passenger Curtain Airbag	No
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	Rear	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	No
Power Seats	No	Driver Load Limiter	No
Anti-Lock Brakes (ABS)	Yes	Rear Passenger Load Limiter	No
All-Wheel Drive (AWD)	No	Other Safety Restraint	NA

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors LLC	GVWR (kg)	4309
Date of Manufacture	8/12	GAWR Front (kg)	1996
Vehicle Type	Truck	GAWR Rear (kg)	2812

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	3	3	NA	6	
Capacity Weight (VCW) (kg)				1508	(A)
DSC x 68.08 (kg)				408.36	(B)
Cargo Weight (RCLW) (kg)				1099.64	(A-B)

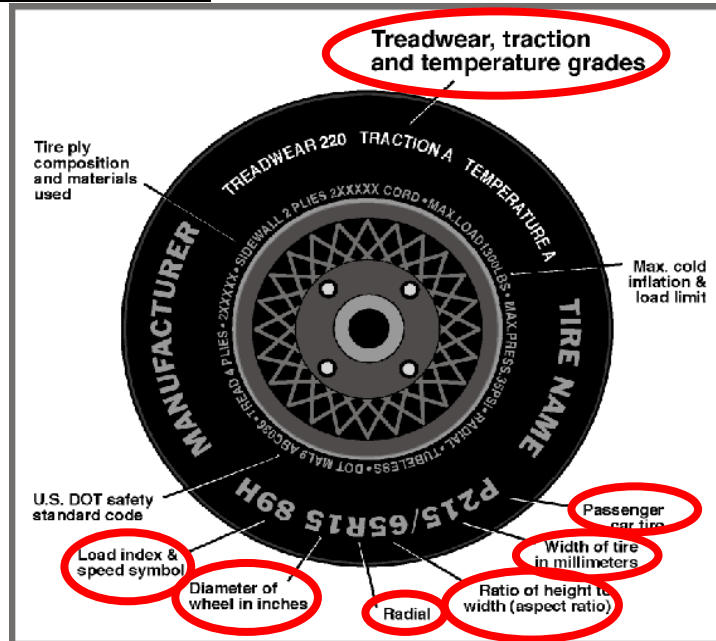
VEHICLE SEAT TYPE

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

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

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
 Test Program: NCAP Side Impact

NHTSA No.: MD0116
 Test Date: 09/26/12



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	420	550
Recommended Tire Size	LT 245/75R17E R	LT 245/75R17E R

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	550	550
Tire Size on Vehicle	LT245/75R17	LT245/75R17
Tire Manufacturer	Firestone	Firestone
Tire Name	Transforce HT	Transforce HT
Tire Type	All-Season	All-Season
Tire Width	245	245
Aspect Ratio	75	75
Radial	Yes	Yes
Wheel Diameter	17"	17"
Load Index/ Speed Symbol	121/118R	121/118R
Treadwear	NA	NA
Traction Grade	NA	NA
Temperature Grade	NA	NA
Tire Material	Rubber	Rubber

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	414	414	552	552
Tire Placard	kPa	420	420	550	550
Owner's Manual	kPa	420	420	550	550
As Tested	kPa	414	414	552	552

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 +/- 21	193	193	193	193

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	794.8	621.2		826.2	709.6		859.4	735.2	
Right	kg	729.6	613.4		751.6	726.8		749.2	705.6	
Ratio	%	55.3	44.7		52.3	47.7		52.8	47.2	
Totals	kg	1524.4	1234.6	2759.0	1577.8	1436.4	3014.2	1608.6	1440.8	3049.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total As Delivered Weight (UVW)	kg	2759.0
Actual Weight of 2 P572 ATDs Used	kg	125.0
Rated Cargo/Luggage Weight (RCLW)	kg	136.0
Calculated Vehicle Target Weight (TVTW)	kg	3020.0

(A)
(B)
(C)
(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)? ☒ YES ☐ NO

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast; steel plate mounted in truck bed	82.6

DATA SHEET NO. 1 (CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT PickupNHTSA No.: MD0116Test Program: NCAP Side ImpactTest Date: 09/26/12**TEST VEHICLE ATTITUDE AND CG**

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	991	992	Yes
RF	mm	1002	1004	Yes
RR	mm	1083	1085	Yes
LR	mm	1068	1072	Yes
Vehicle CG (Aft of Front Axle)	mm	1587	1744	
Vehicle CG (Left+)/Right (-) from Longitudinal centerline	mm	-37	-16	

***The "As Tested" vehicle attitude measurements must be equal to or within ± 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirement".

DATA SHEET NO. 2

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

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12

SEAT POSITIONING

The driver seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, 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	NA	NA	11.1
Front Passenger Seat	NA	NA	12.9
Front Center Seat*	NA Fixed	NA Fixed	10.1
Struck Side Rear Seat	NA Fixed	NA Fixed	NA Fixed
Non-Struck Side Rear Seat	NA Fixed	NA Fixed	NA Fixed
Rear Center Seat*	NA Fixed	NA Fixed	NA Fixed

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rearmost	Mid- Fore/Aft	Forward- Most
Driver Seat	11.1	318	Max.	ND	ND	ND
			Mid	321	318	311
			Min.	ND	ND	ND
Front Passenger Seat	11.1	318	Max.	ND	ND	ND
			Mid	316	318	320
			Min.	ND	ND	ND
Front Center Seat*	NA Fixed	NA Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Struck Side Rear Seat	NA Fixed	NA Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Non-Struck Side Rear Seat	NA Fixed	NA Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Rear Center Seat*	NA Fixed	NA Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA

* If applicable.

DATA SHEET NO. 2 (CONTINUED)

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

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12

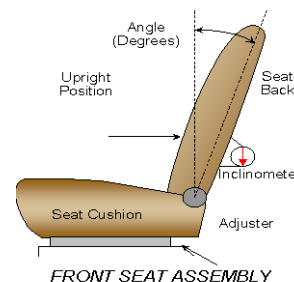
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	120	13
Front Passenger Seat	210	22	110	12
Front Center Seat*	NA Fixed	NA Fixed	NA Fixed	NA Fixed
Struck Side Rear Seat	NA Fixed	NA Fixed	NA Fixed	NA Fixed
Non-Struck Side Rear Seat	NA Fixed	NA Fixed	NA Fixed	NA Fixed
Rear Center Seat*	NA Fixed	NA Fixed	NA Fixed	NA Fixed

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated seat back angle. 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 seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as 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	50	25	7.4	9
Front Passenger Seat	50	26	7.4	9
Front Center Seat*	NA Fixed	NA Fixed	NA Fixed	NA Fixed
Struck Side Rear Seat w/ Seated Dummy	17.2	NA Fixed	17.2	NA Fixed
Non-Struck Side Rear Seat	NA Fixed	NA Fixed	NA Fixed	NA Fixed
Rear Center Seat*	NA Fixed	NA Fixed	NA Fixed	NA Fixed

* If applicable.

DATA SHEET NO. 2 (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT PickupNHTSA No.: MD0116Test Program: NCAP Side ImpactTest Date: 09/26/12**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	3	2
Rear Seat	1	Fixed

HEAD RESTRAINT ADJUSTMENT

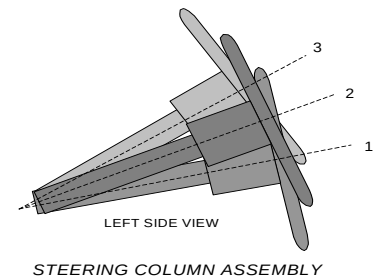
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	4	Uppermost
Rear Seat	1	Fixed

STEERING COLUMN ADJUSTMENT

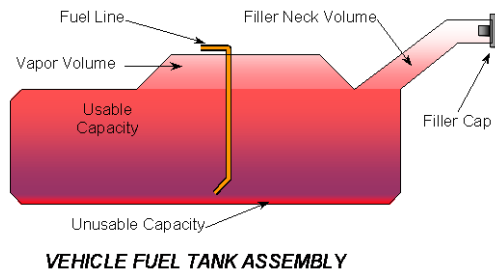
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric locus it describes when it moves through its full range of motion.

	Degrees	Fore/Aft Position, mm
Lowermost, Position 1	10.8	NA
Geometric Center, Position 2	20.8	NA
Uppermost, Position 3	30.8	NA
Telescoping Steering Wheel Travel		No feature
Test Position	20.8	NA

**FUEL PUMP**

Describe the fuel pump type, details about how it operates and the location of the fuel filler neck:

The fuel tank is located in front of the rear axle between the left frame rail and the prop shaft. The fuel filler neck enters the left front top of the fuel tank. The fuel filler cap is located on the left side of the bed. The fuel lines run along the inside of the left frame rail.



DATA SHEET NO. 2 (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT PickupNHTSA No.: MD0116Test Program: NCAP Side ImpactTest Date: 09/26/12**FUEL TANK CAPACITY**

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	136.7
Usable Capacity of "Optional" Tank (see Form No. 1)	NA
Usable Capacity of Standard Tank (see Owner's Manual)	136.3
Usable Capacity of Optional Tank (see Owner's Manual)	NA
93% of Usable Capacity	127.2
Actual Amount of Solvent Used in Test	127.2
1/3 of Usable Capacity	45.6

Is the Actual Amount of Solvent Used in the test equal to 93% $\pm$ 1% of the Usable Capacity stated on Form No. 1? ☒ YES ☐ NO

DATA SHEET NO. 3

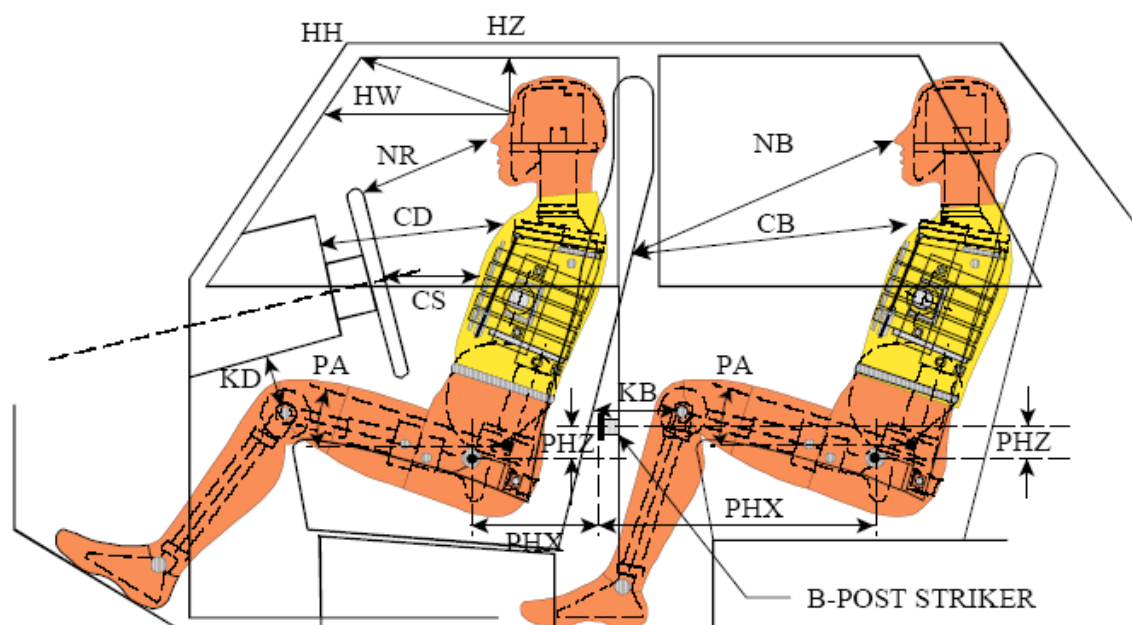
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

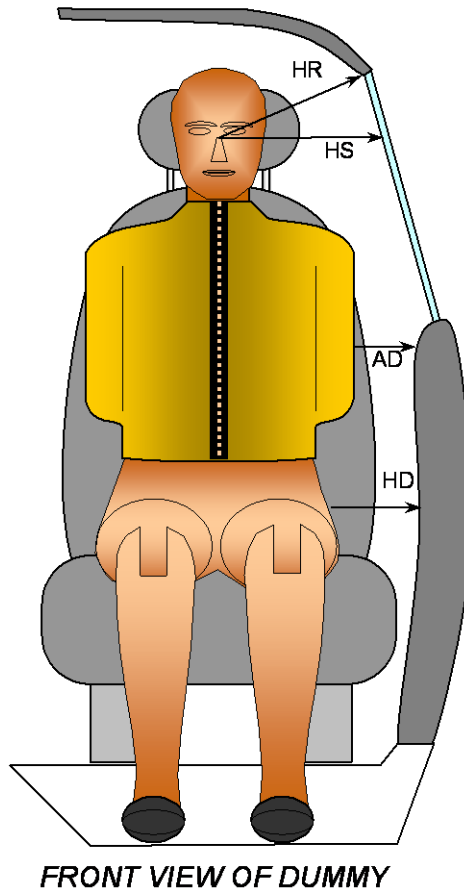
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle	Length (mm)	Angle
HH		Head to Header	484			
HW		Head to Windshield	697			
HZ	HZ	Head to Roof Liner	238		298	
NR	NB	Nose to Rim/Seat Back	418		447	
CD	CB	Chest to Dash/Seat Back	535		480	
CS		Chest to Steering Wheel	307			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	148	25.5	172	14.6
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	145	19.9	178	12.3
PAX°	PAX°	Pelvic Tilt Angle X		NA		18.6
	PHY°	Pelvic Tilt Angle Y				NA
PHX	PHX	Hip Point to Striker (X-Axis)	300		-501	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	13		-49	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
 Test Program: NCAP Side Impact

NHTSA No.: MD0116
 Test Date: 09/26/12

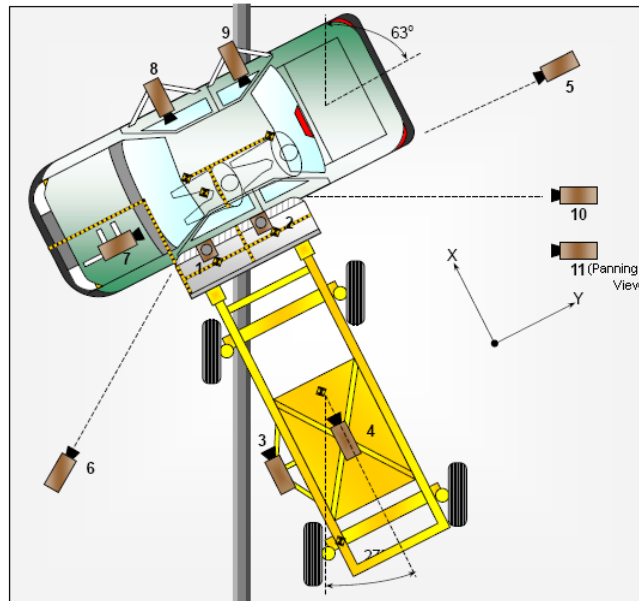


Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	204	268
HS	Head to Side Window	mm	352	375
AD	Arm to Door	mm	107	182
HD	H-Point to Door	mm	148	196

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
 Test Program: NCAP Side Impact

NHTSA No.: MD0116
 Test Date: 09/26/12



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	-914	0	1691	6	30
2	Overhead Close-up	-914	-305	1691	16	1000
3	Left Impact Point (MDB)	1680	0	820	12.5	1000
4	Side Overall (MDB)	2320	900	1470	8.5	1000
5	Rear	0	9509	1190	12.5	1000
6	Left Front	-1753	3175	1120	12.5	1000
7	Driver Front (OB)				12.5	1000
8	Driver Side (OB)				8.5	1000
9	Passenger Side (OB)				8.5	1000
10	Real-time Left Rear				zoom	30
11	Real-time Inrun				zoom	30

Reference: Impact Point projected to Ground; +X = To Front of MDB +Y = To Right of MDB; +Z = Down

*All measurements accurate to ± 6 mm.

If applicable, explain why camera(s) did not operate as intended:

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MBD Accelerometers	7
TOTAL	62

DATA SHEET NO. 6

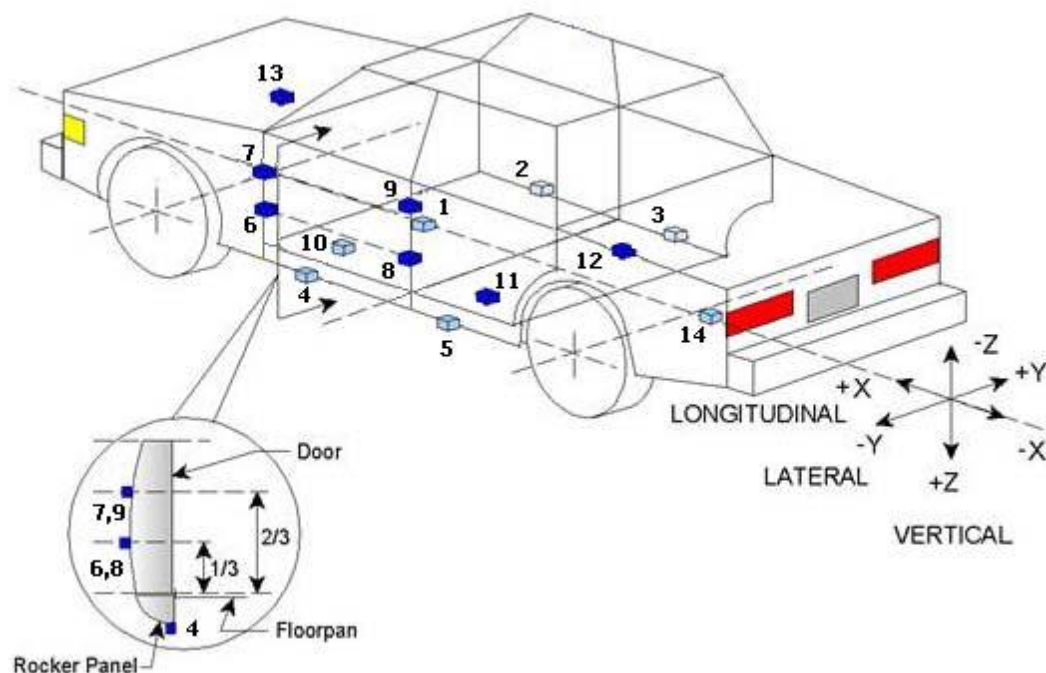
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12



TEST VEHICLE ACCELEROMETER LOCATIONS

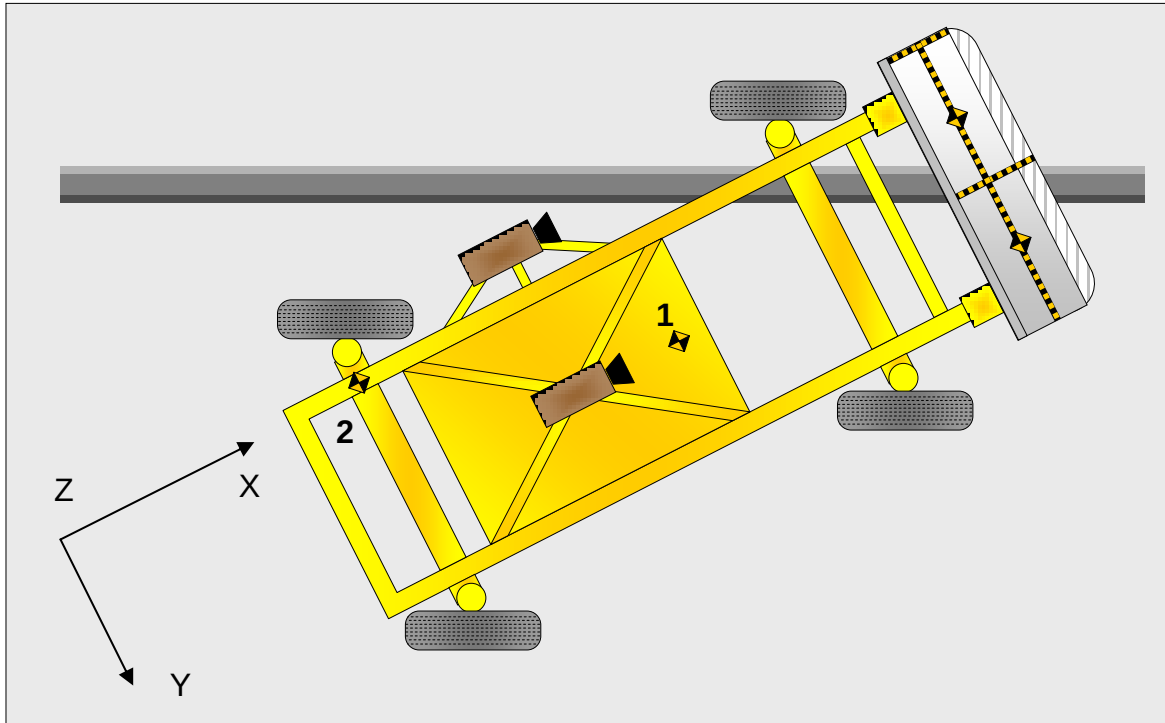
Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	4101	0	-798
2	Right Sill at Front Seat	4184	700	-651
3	Right Sill at Rear Seat	3301	795	-668
4	Left Sill at Front Door	4191	-699	-649
5	Left Sill at Rear Door	3305	-697	-658
6	A-Post Lower	4611	-899	-825
7	A-Post Middle	4616	-897	-1190
8	B-Post Lower	3510	-879	-805
9	B-Post Middle	3515	-879	-1132
10	Front Seat Track	3717	-675	-720
11	Rear Seat Structure	2985	-688	-668
12	Right Rear Occ. Compartment	3246	660	-696
13	Engine Block	5059	35	-1157
14	Rear Above Axle	1580	0	-935

Reference: X - Rear surface of vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
 Test Program: NCAP Side Impact

NHTSA No.: MD0116
 Test Date: 09/26/12



MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	MDB CG	-2260	0	-520
2	MDB Rear	-3703	-677	-625

Reference : X - Face of MDB (+ forward)
 Y - MDB Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
Test Program: NCAP Side Impact

NHTSA No.: MD0116
Test Date: 09/26/12

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES2-re)	Rear Seat Dummy (SID-IIs)
Face	NA	NA
Top of Head	Door glass	Door trim & glass
Left Side of Head	Door glass	Door panel trim, B-pillar
Back of Head	NA	NA
Left Shoulder	NA	NA
Upper Torso	Door panel	Door panel
Lower Torso	Door panel	Door panel
Left Hip	NA	NA
Left Knee	Door panel	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	NA
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	NA
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	NA
Disengaged from Latched Position	No	No	No	No	NA
Latch Separated from Striker	No	No	No	No	NA
Jammed Shut	Yes	Yes	No	No	NA
If Door Opened at Striker, Record Width of Opening at Striker (mm)	NA	NA	NA	NA	NA

* Indicate "Yes", "No", or "NA".

POST TEST SEAT PERFORMANCE

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

* Indicate "Yes", "No", or "NA".

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Intact
Sill Separation	No
Windshield Damage	None
Side Window Damage	No
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
 Test Program: NCAP Side Impact

NHTSA No.: MD0116
 Test Date: 09/26/12

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	NA	NA		
Side Airbag 1 (Indicate Type)	NA	NA	NA	NA
Side Airbag 2 (Indicate Type, if App.)	NA	NA	NA	NA
Side Airbag 1 (Indicate Type, if App.)	NA	NA	NA	NA
Seat Belt Pretensioner	Yes	No	NA	NA
Seat Belt Load Limiter	NA	NA	NA	NA
Other	NA	NA	NA	NA

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		3660
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		508
Actual Impact Point (Aft of Front Axle)	mm		503
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact point	5
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact point	-3

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup NHTSA No.: MD0116
Test Program: NCAP Side Impact Test Date: 09/26/12

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel Base of Framework Carriage	2591
C.G. Location aft of Front Axle	1106

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	424.8	258.6	
Right	kg	357.8	326.4	
Ratio	%	57.2	42.8	
Totals	kg	782.6	585.0	1367.6

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.8
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.8
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27

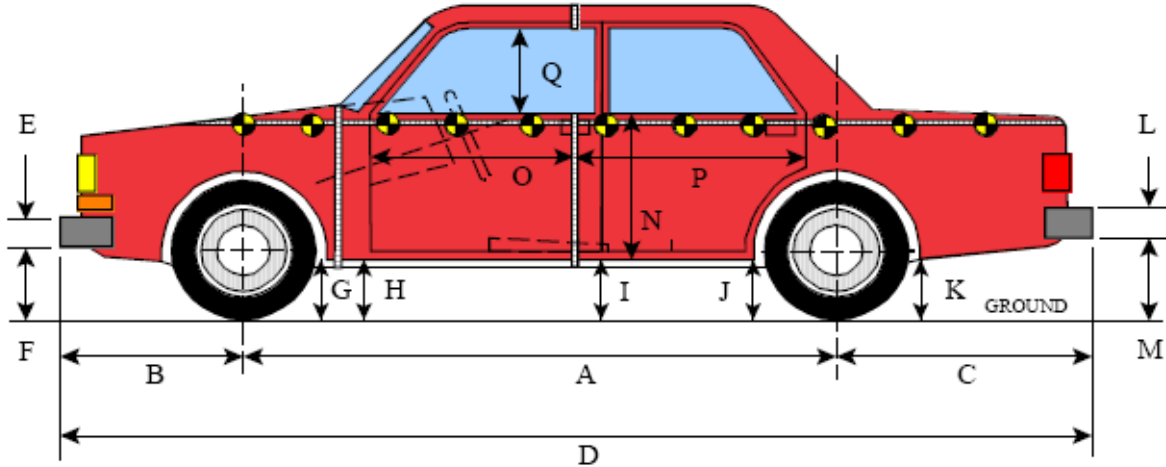
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	256
B	Top of Bumper	533	800	Left	105
C	Mid-Level	686	800	Left	177
D	Top of Stack	813	600	Right	83

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
 Test Program: NCAP Side Impact

NHTSA No.: MD0116
 Test Date: 09/26/12

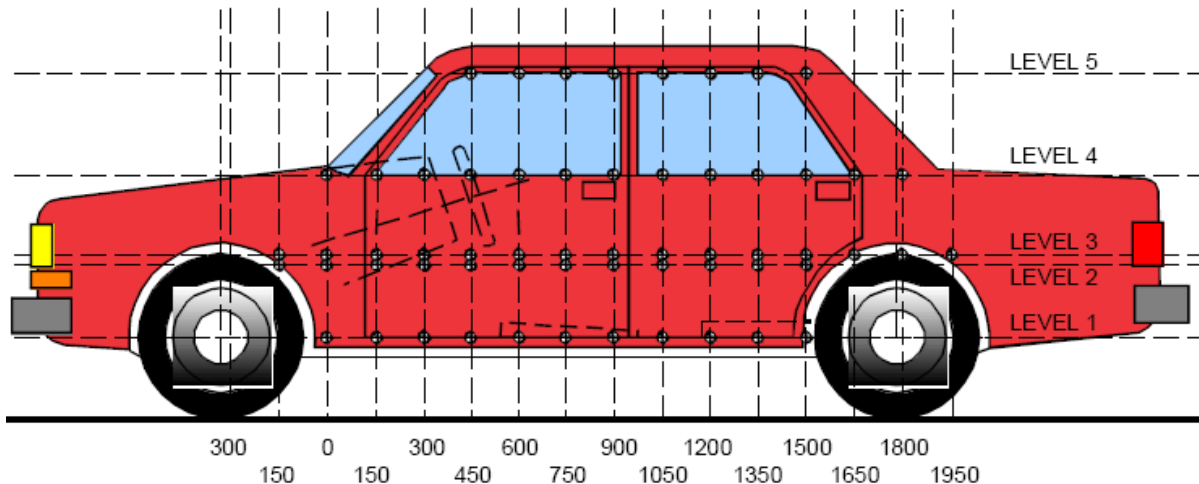


LEFT SIDE VIEW

All MEASUREMENTS IN (mm) WITH TOLERANCE OF $\pm 3\text{mm}$

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3660	3660	0
B	Front Axle to Front Surface of Vehicle	975	975	0
C	Rear Axle to Rear Surface of Vehicle	1195	1195	0
D	Total Length at Centerline	5830	5830	0
E	Front Bumper Thickness	200	200	0
F	Front Bumper Bottom to Ground	540	538	2
G	Sill Height at Front Wheel Well	527	521	6
H	Sill Height at Front Door Leading Edge	532	536	-4
I	Sill Height at B-Pillar	557	610	-53
J1	Sill Height at Rear Wheel Well	566	601	-35
J2	Pinch Weld Height at Rear Wheel Well	479	518	-39
K	Sill Height Aft of Rear Wheel Well	600	606	-6
L	Rear Bumper Thickness	175	175	0
M	Rear Bumper Bottom to Ground	612	618	-6
N	Sill Height to Window Bottom Sill	878	858	20
O	Front Door Leading Edge to Impact CL	795	795	0
P	Rear Door Trailing Edge to Impact CL	1111	1078	33
Q	Front Window Opening	503	503	0
R	Right Side Length	5710	5710	0
S	Left Side Length	5710	5710	0
T	Vehicle Width at B Pillar	1600	1537	63

DATA SHEET NO. 11**TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT PickupNHTSA No.: MD0116Test Program: NCAP Side ImpactTest Date: 09/26/12**LEFT SIDE VIEW****MAXIMUM EXTERIOR CRUSH MEASUREMENTS**

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance From Impact
1	Sill Top	600	272	1500
2	Driver Hip Point	975	192	1500
3	Mid-Door	925	215	1500
4	Window Sill	1260	82	1200
5	Window Top	1860	40	1950

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. 11 (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-150	0	1046	0	975	0	0	1022	0	965	0	0	24	0	10	0
0	999	1016	1025	966	0	935	985	989	954	0	64	31	36	12	0
150	985	1010	1013	968	0	862	966	941	972	0	123	44	72	-4	0
300	984	1011	1013	970	0	804	934	924	964	0	180	77	89	6	0
450	982	1012	1014	972	0	781	925	901	955	0	201	87	113	17	0
600	980	1012	1014	973	0	762	908	887	944	0	218	104	127	29	0
750	978	1012	1014	974	729	756	893	871	933	840	222	119	143	41	-111
900	975	1012	1014	976	743	756	878	855	921	847	219	134	159	55	-104
1050	972	1012	1013	976	747	756	862	837	908	843	216	150	176	68	-96
1200	970	1011	1012	976	747	762	852	830	894	837	208	159	182	82	-90
1350	967	1008	1009	976	747	751	834	827	886	766	216	174	182	90	-19
1500	964	1007	1007	974	747	692	815	792	905	779	272	192	215	69	-32
1650	960	1005	1006	972	747	749	837	819	927	792	211	168	187	45	-45
1800	957	1003	1003	971	747	791	888	879	947	805	166	115	124	24	-58
1950	952	1000	1001	969	738	823	935	931	930	698	129	65	70	39	40
2100	0	984	985	955	0	0	973	974	943	0	0	11	11	12	0
2250	0	986	986	957	0	0	978	978	946	0	0	8	8	11	0
2400	0	987	988	959	0	0	985	982	940	0	0	2	6	19	0
2550	0	1006	1006	972	0	0	1003	1000	942	0	0	3	6	30	0
2700	0	1010	1009	982	0	0	1007	1004	952	0	0	3	5	30	0
2850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

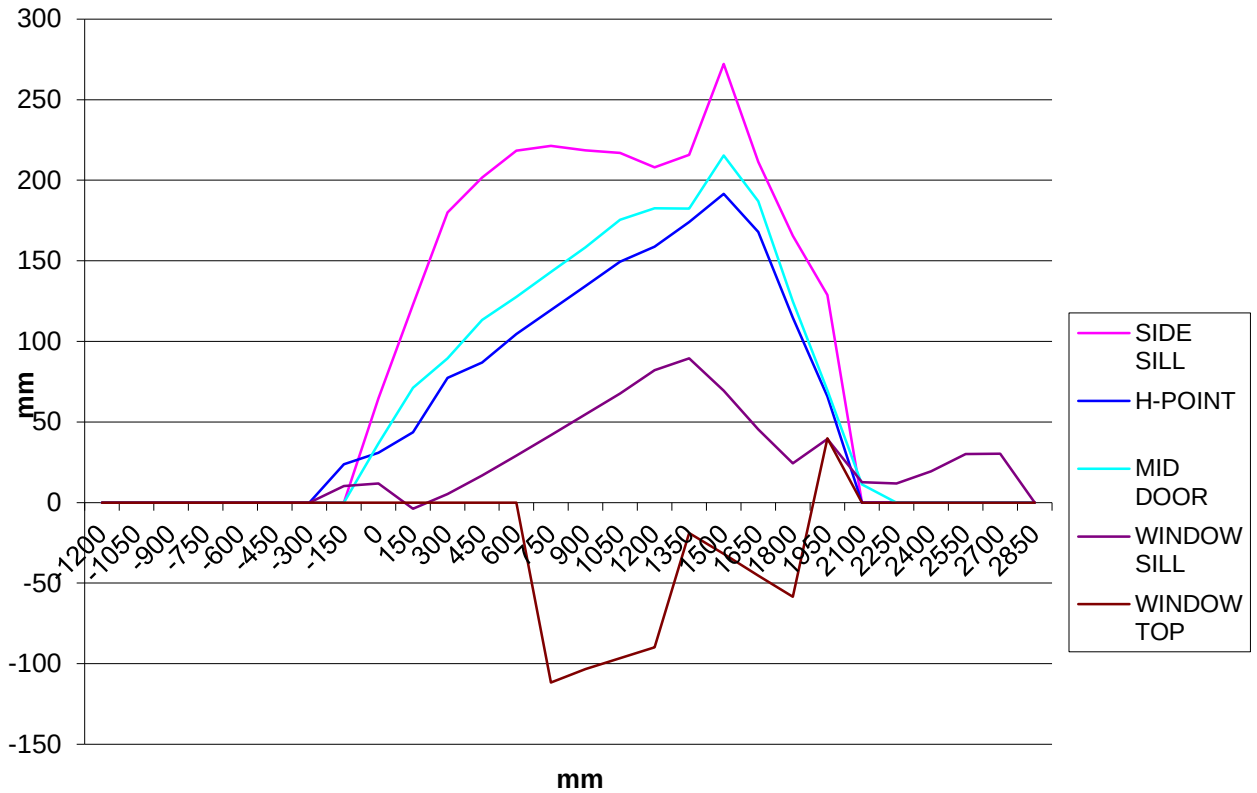
NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition.

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.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup
Test Program: NCAP Side Impact

NHTSA No.: MD0116
Test Date: 09/26/12



DATA SHEET NO. 12

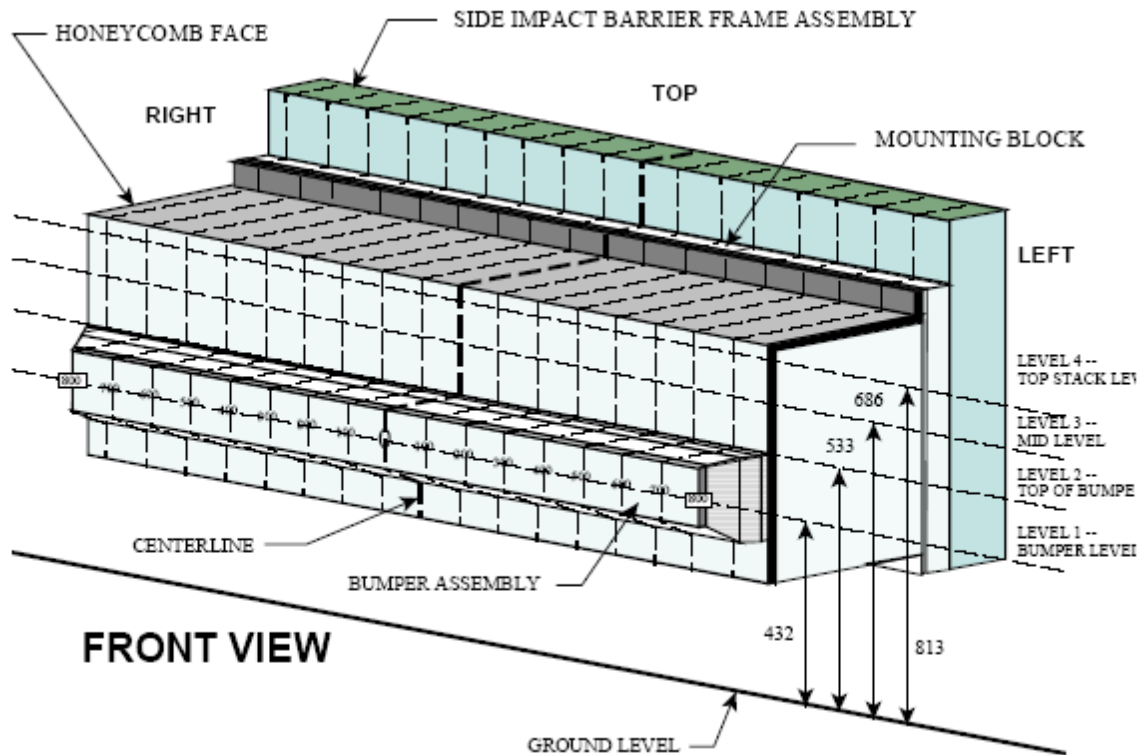
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	-256	-215	-179	-146	-109	-161	-173	-150	-150	-138	-136	-129	-130	-137	-153	-176	-208
2	-175	-128	-88	-64	-96	-100	-114	-122	-122	-111	-104	-108	-114	-120	-131	-153	-177
3	-96	-81	-80	-74	-72	-70	-72	-67	-62	-61	-65	-65	-65	-68	-73	-81	-105
4	-80	-83	-83	-81	-78	-77	-79	-79	-74	-64	-64	-65	-65	-66	-66	-70	-75

DATA SHEET NO. 13
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12

Test Time: 15:06 **Temperature:** 21

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	NA
90 to 180	0	0	0	NA
180 to 270	0	0	0	NA
270 to 360	0	0	0	NA

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. 14

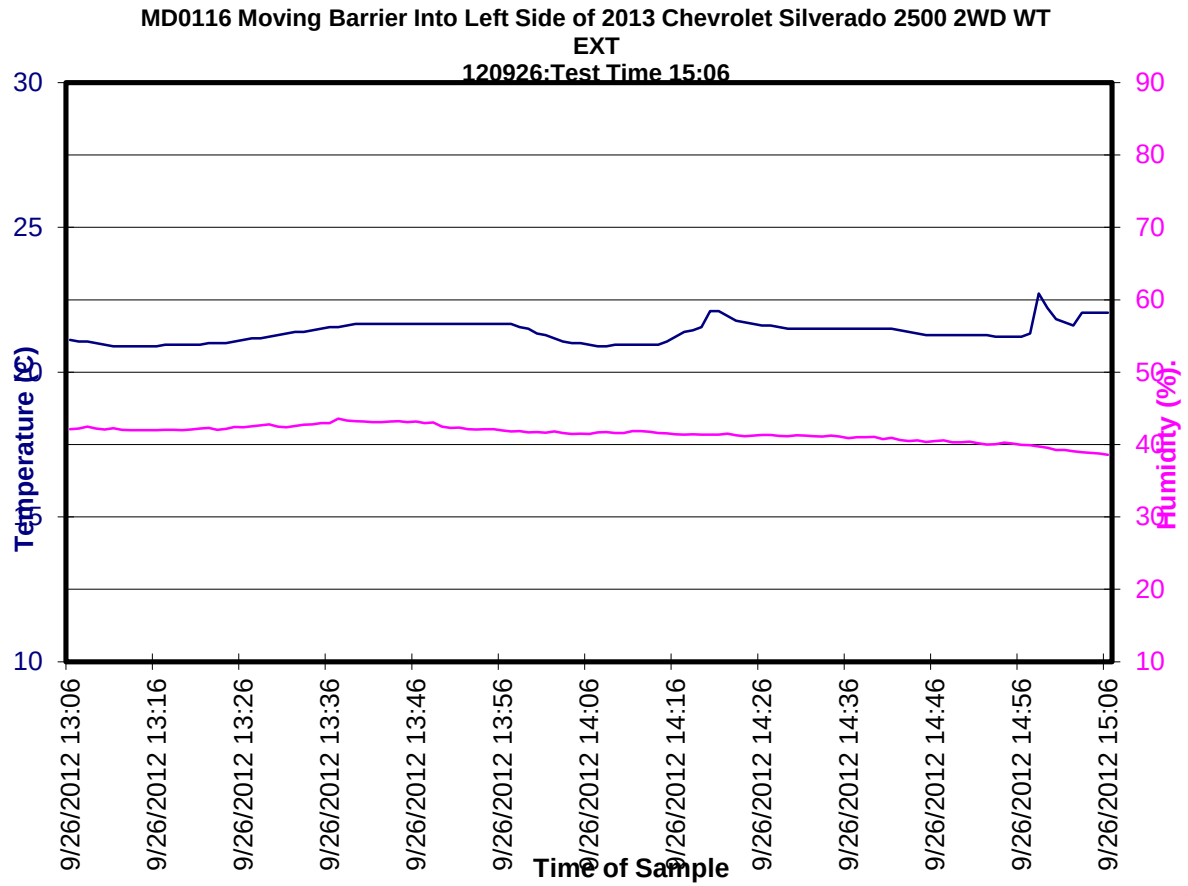
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2013 Chevrolet Silverado 2500 2WD WT EXT Pickup

NHTSA No.: MD0116

Test Program: NCAP Side Impact

Test Date: 09/26/12



APPENDIX A
PHOTOGRAPHS

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002 As-Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



003 Pre-Test Front View of Test Vehicle



004 Post-Test Front View of Test Vehicle



005 Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



006 Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



007 Pre-Test Left Side View of Test Vehicle



008 Post-Test Left Side View of Test Vehicle



009 Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



010 Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



011 Pre-Test Rear View of Test Vehicle



012 Post-Test Rear View of Test Vehicle



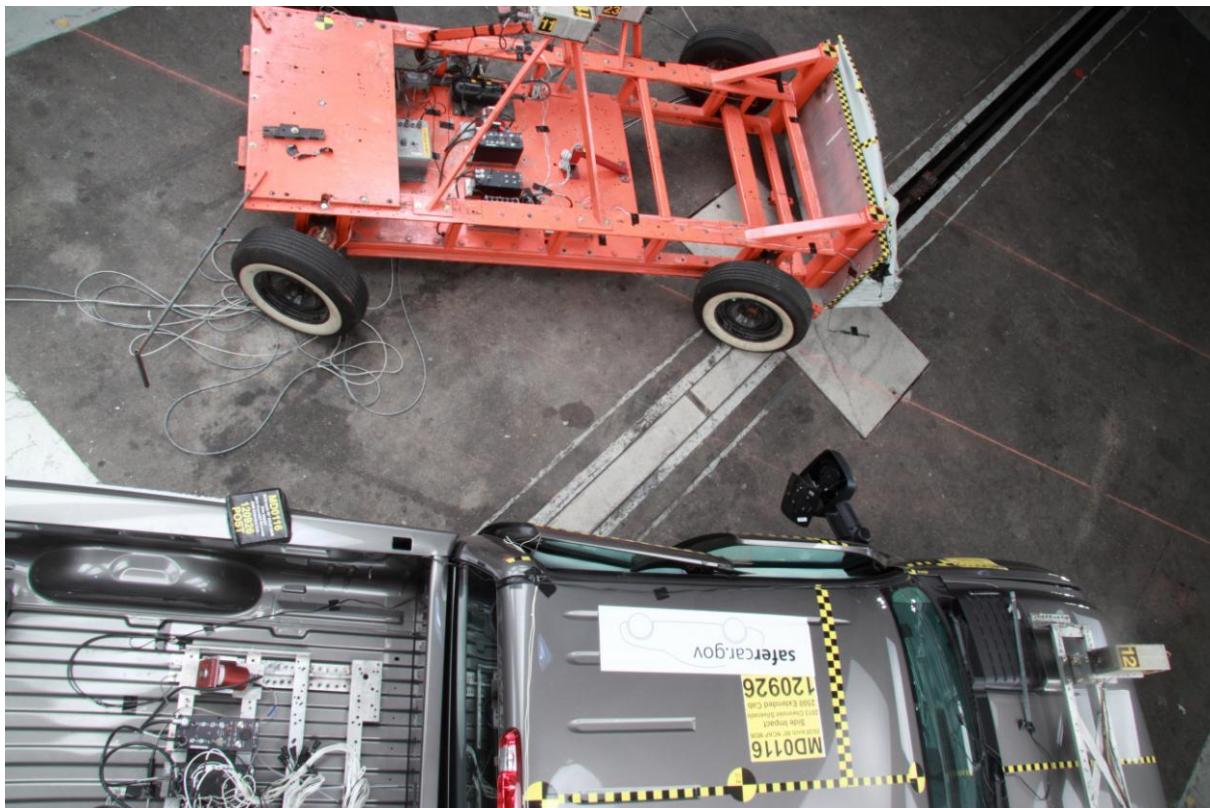
013 Pre-Test Right Side View of Test Vehicle



014 Post-Test Right Side View of Test Vehicle



015 Pre-Test Overhead View of Test Area



016 Post-Test Overhead View of Test Area



017 Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle



018 Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle



019 Pre-Test Close-up View of Impact Point Target



020 Post-Test Close-up View of Impact Point Target



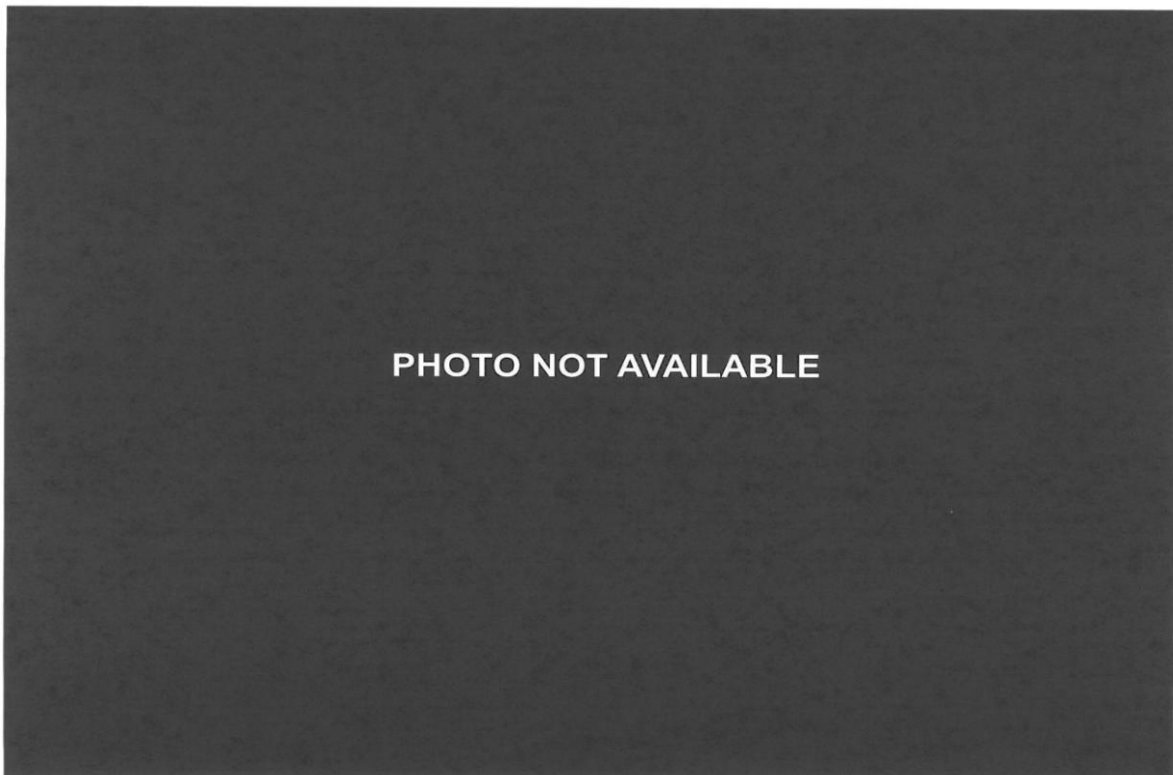
021 Pre-Test Left Front Door Latch Close-up



022 Post-Test Left Front Door Latch Close-up



023 Pre-Test Right Front Door Latch Close-up



024 Post-Test Right Front Door Latch Close-up



025 Pre-Test Front Close-up View of Driver Dummy



026 Post-Test Front Close-up View of Driver Dummy



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



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



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



030 Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



031 Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



032 Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



033 Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



034 Pre-Test Placement of Driver Dummy Feet



035 Pre-Test View of Belt Anchorage for Driver Dummy



036 Pre-Test Left Side View of Steering Wheel

PHOTO NOT APPLICABLE

037 View of Disengaged Parking Brake

PHOTO NOT APPLICABLE

038 Pre-Test View of Parking Brake



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



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



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



042 Pre-Test Driver Dummy and Door Clearance View



043 Post-Test Driver Dummy and Door Clearance View



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



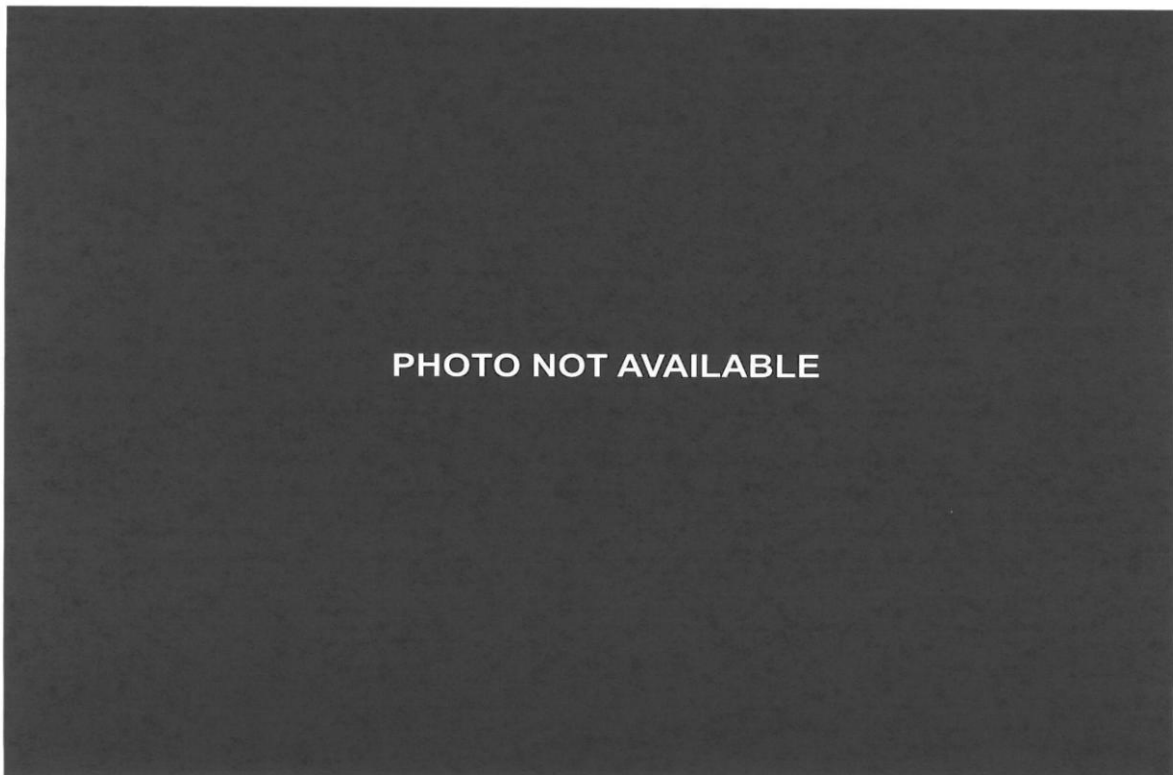
045 Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



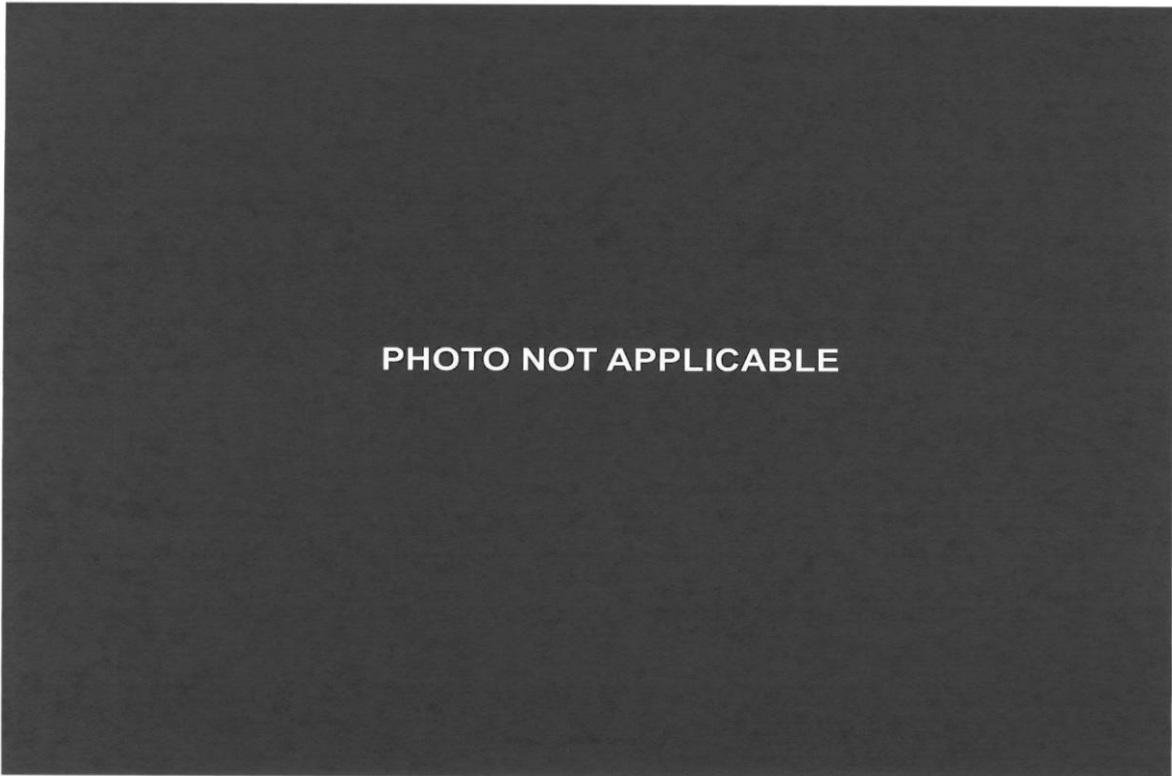
046 Pre-Test Driver Inner Door Panel View



047 Post-Test Driver Inner Door Panel View



048 Post-Test Driver Dummy Close-Up Head Contact with Vehicle View



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



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

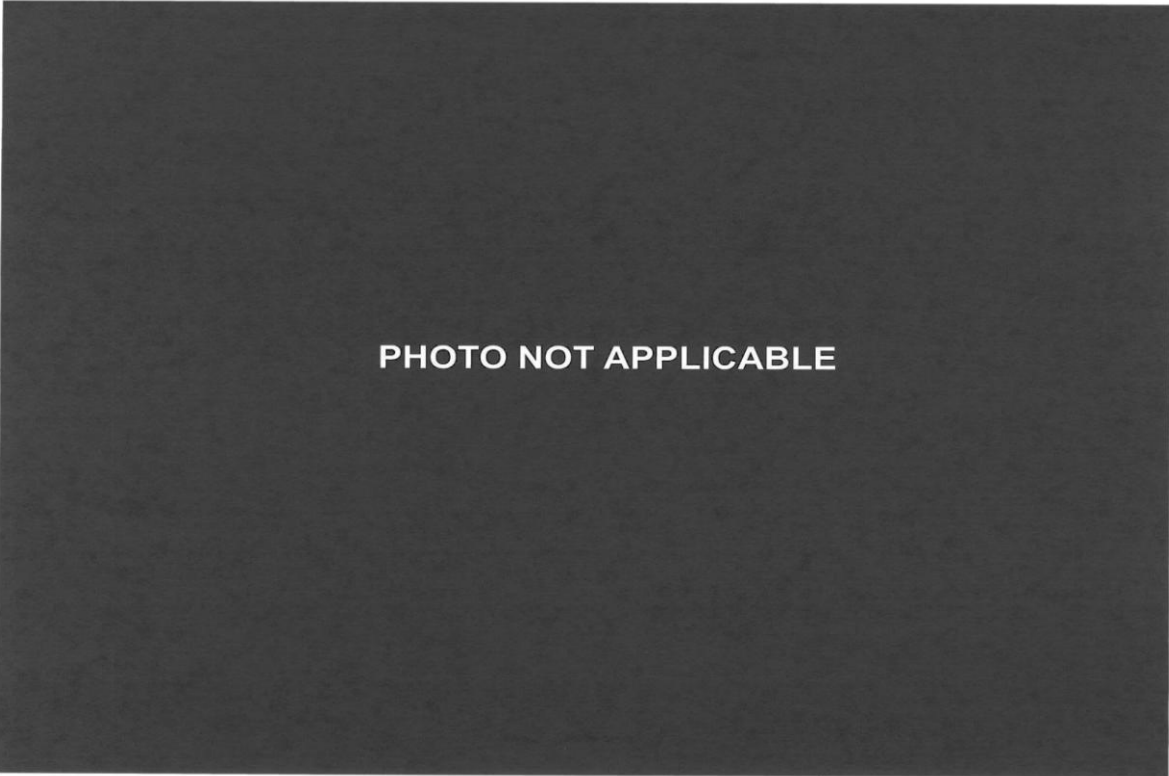


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051 Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View

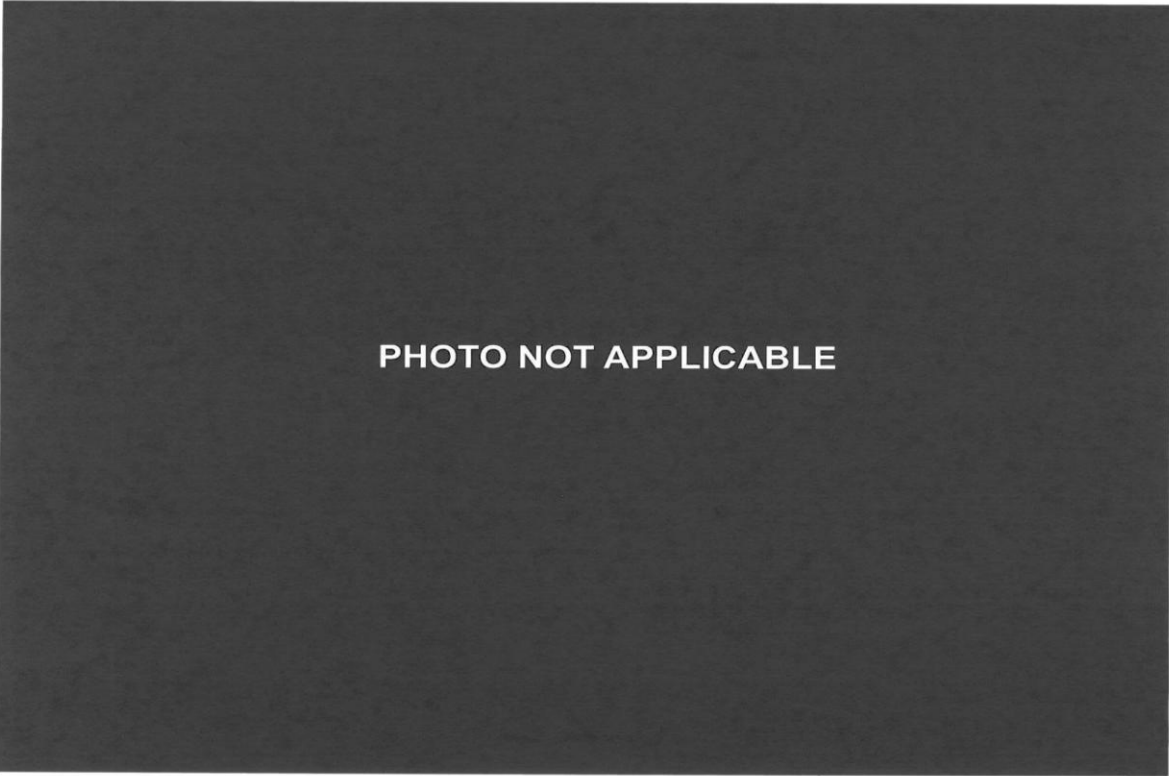


PHOTO NOT APPLICABLE

052 Post-Test Driver Dummy Close-Up Pelvis Contact View

PHOTO NOT APPLICABLE

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

PHOTO NOT AVAILABLE

054 Post-Test Driver Dummy Close-Up Knee Contact View



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



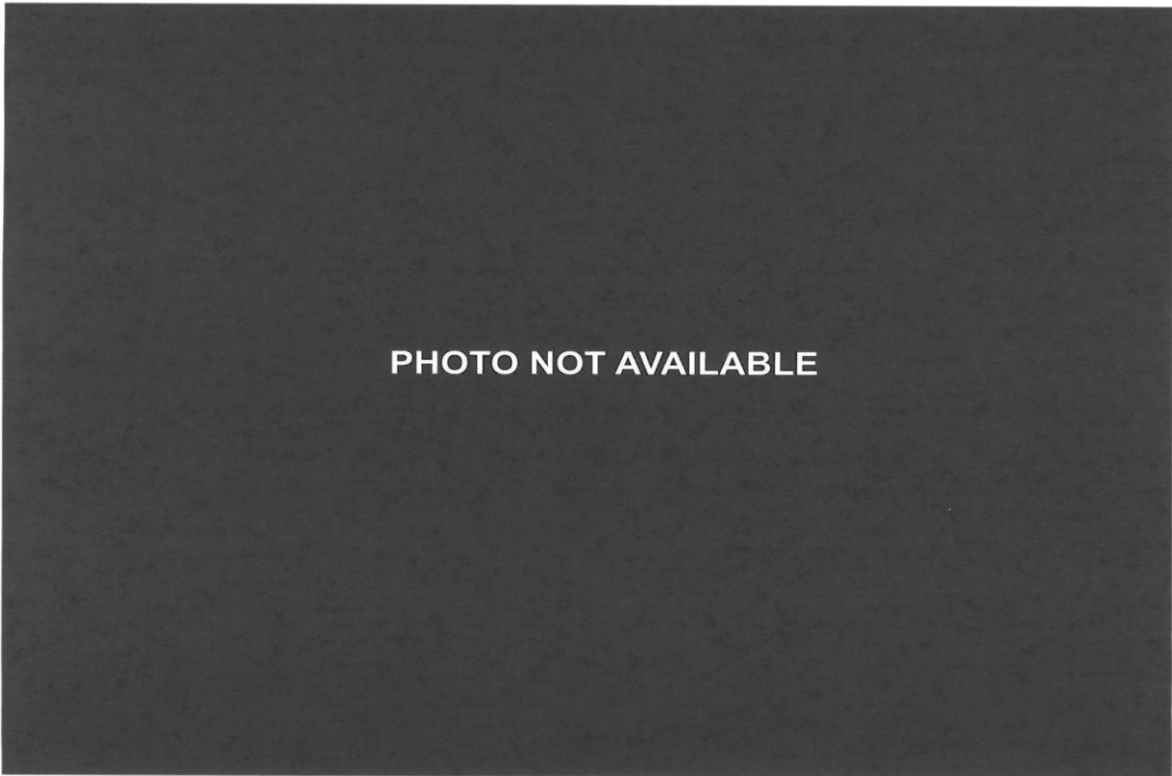
056 Pre-Test Left Side View of Passenger Dummy Shoulder and Door Top View



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



058 Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



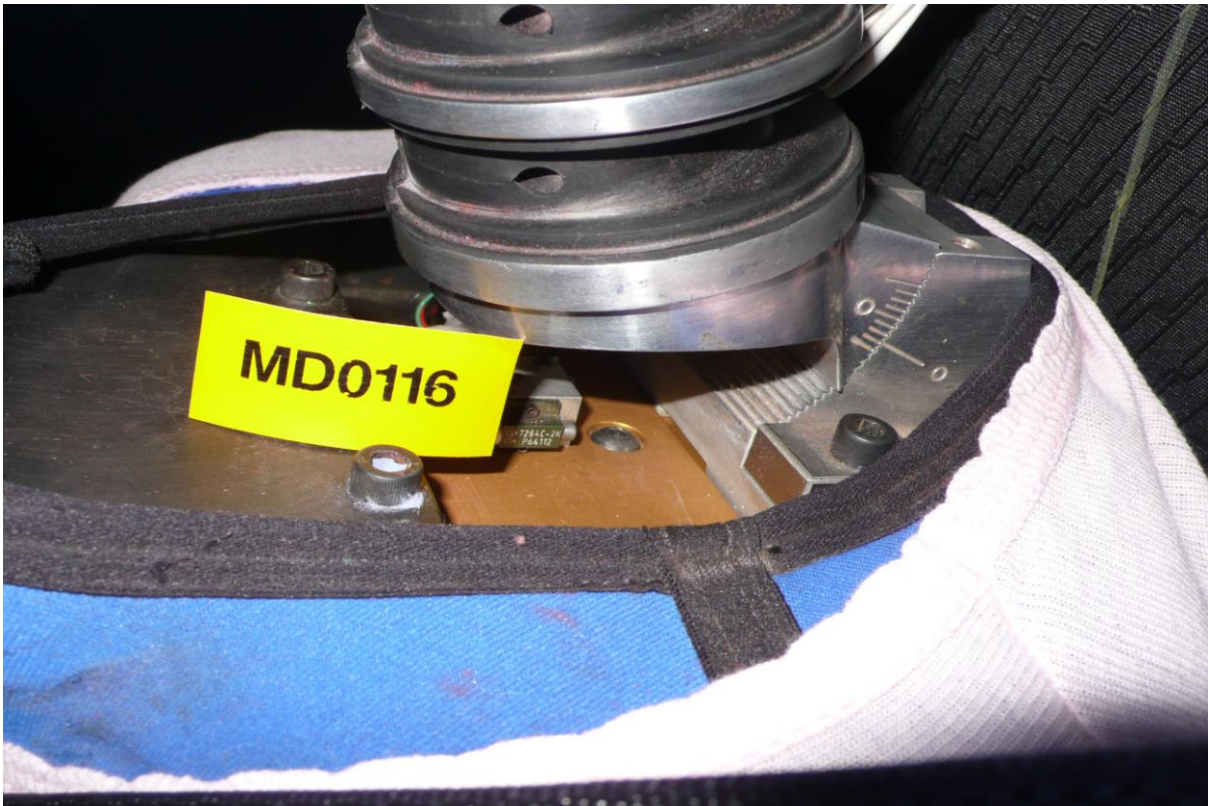
059 Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



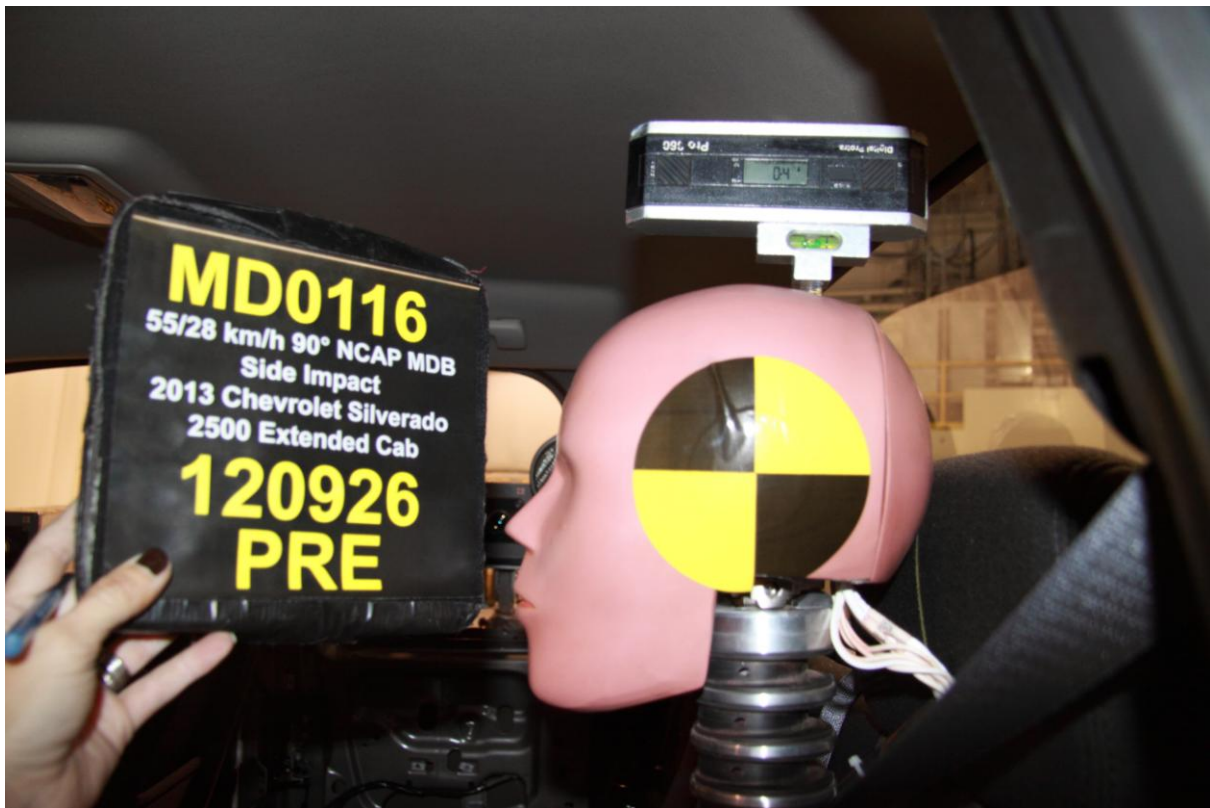
060 Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



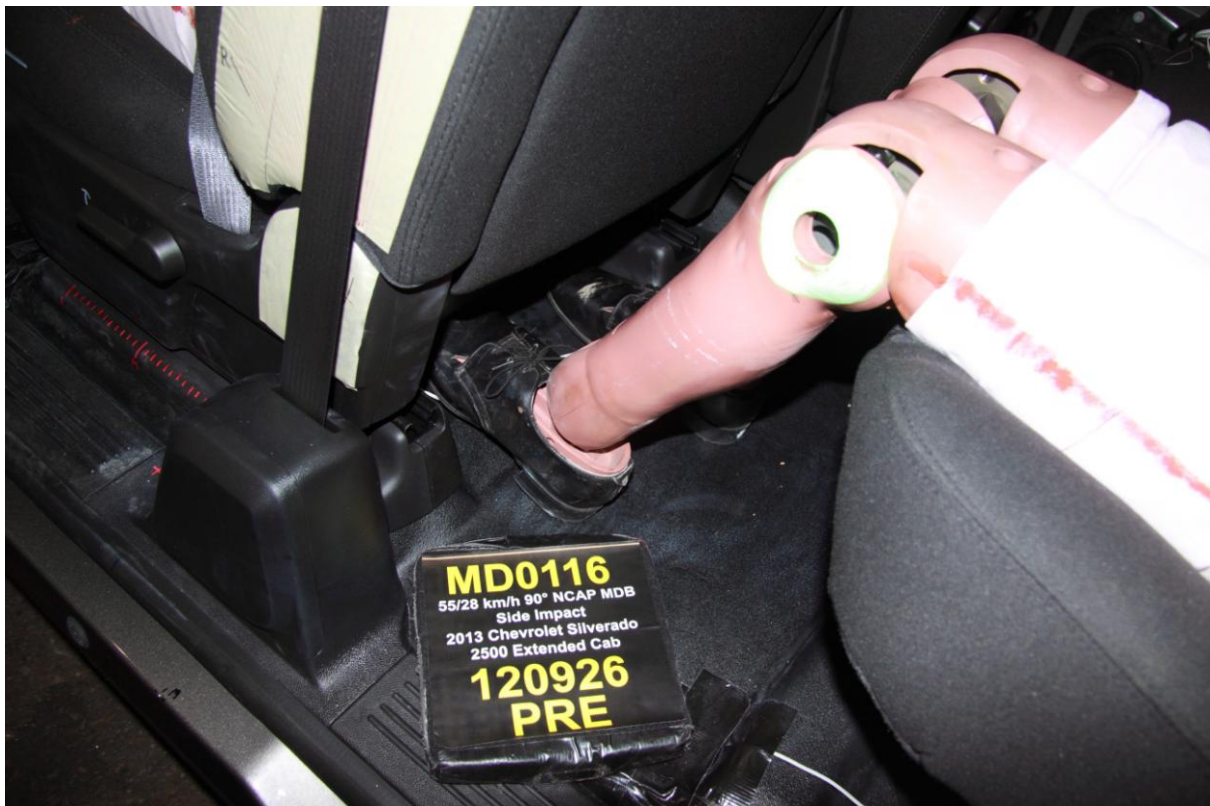
061 Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



062 Pre-Test View of Rear Passenger Dummy Neck Showing Position of Adjustable Neck Bracket



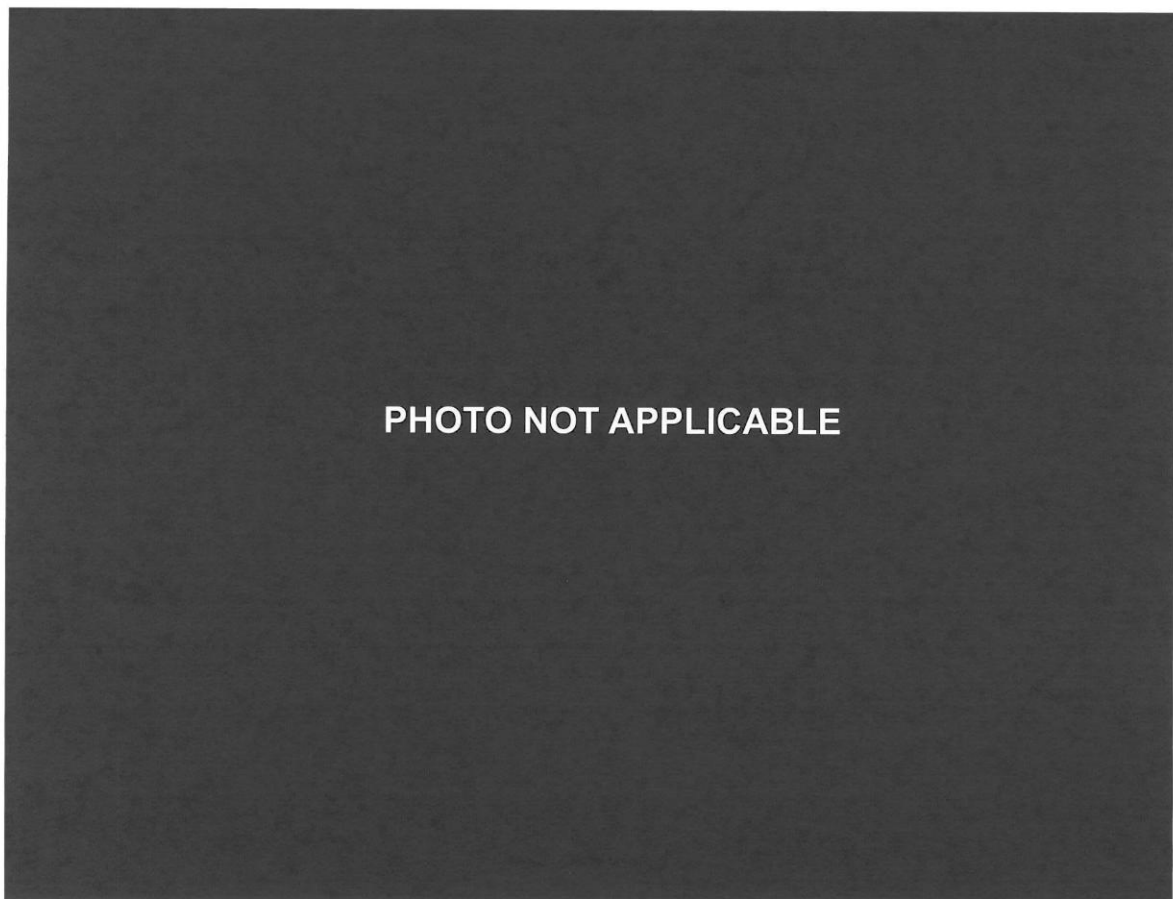
063 Pre-Test View of Rear Passenger Dummy Head Showing Dummy Head is Level



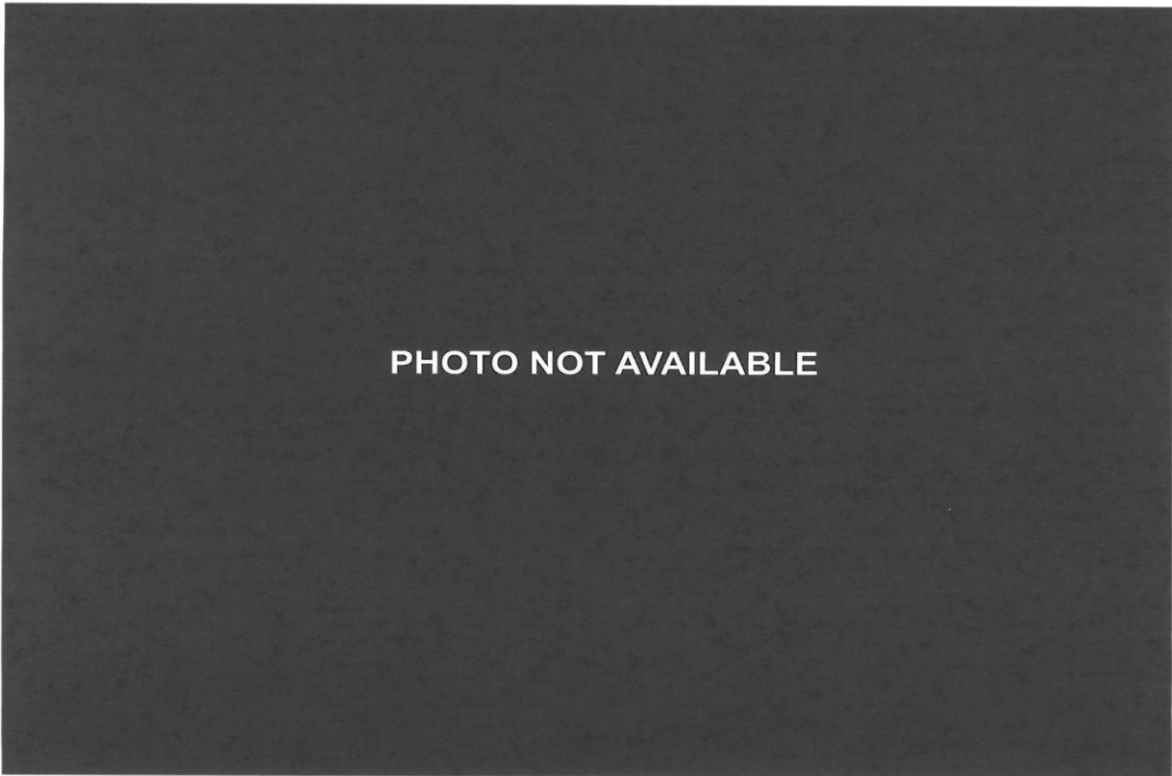
064 Pre-Test Placement of Rear Passenger Dummy Feet



065 Pre-Test View of Belt Anchorage for Rear Passenger Dummy



066 Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



067 Pre-test Close-Up Left Side View of Rear Passenger Seat Back



068 Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



069 Pre-Test Passenger Dummy and Door Clearance View



070 Post-Test Passenger Dummy and Door Clearance View



071 Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



072 Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



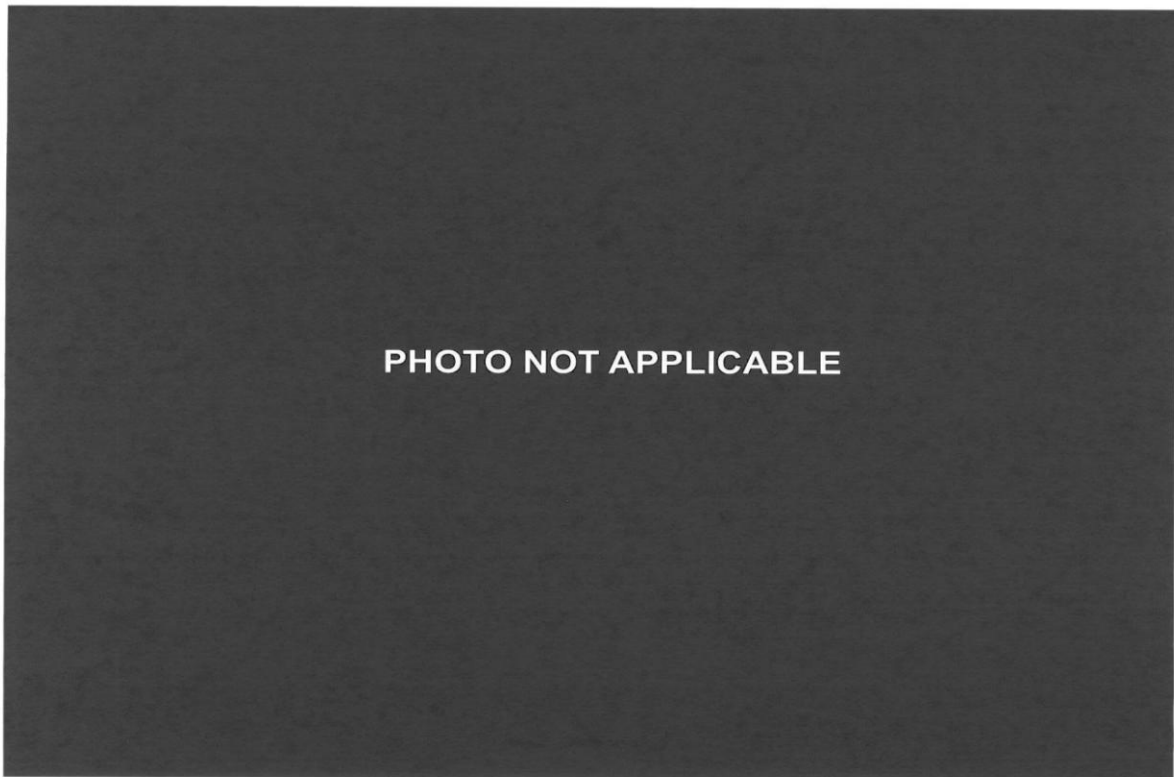
073 Pre-Test Passenger Inner Door Panel View



074 Post-Test Passenger Inner Door Panel View



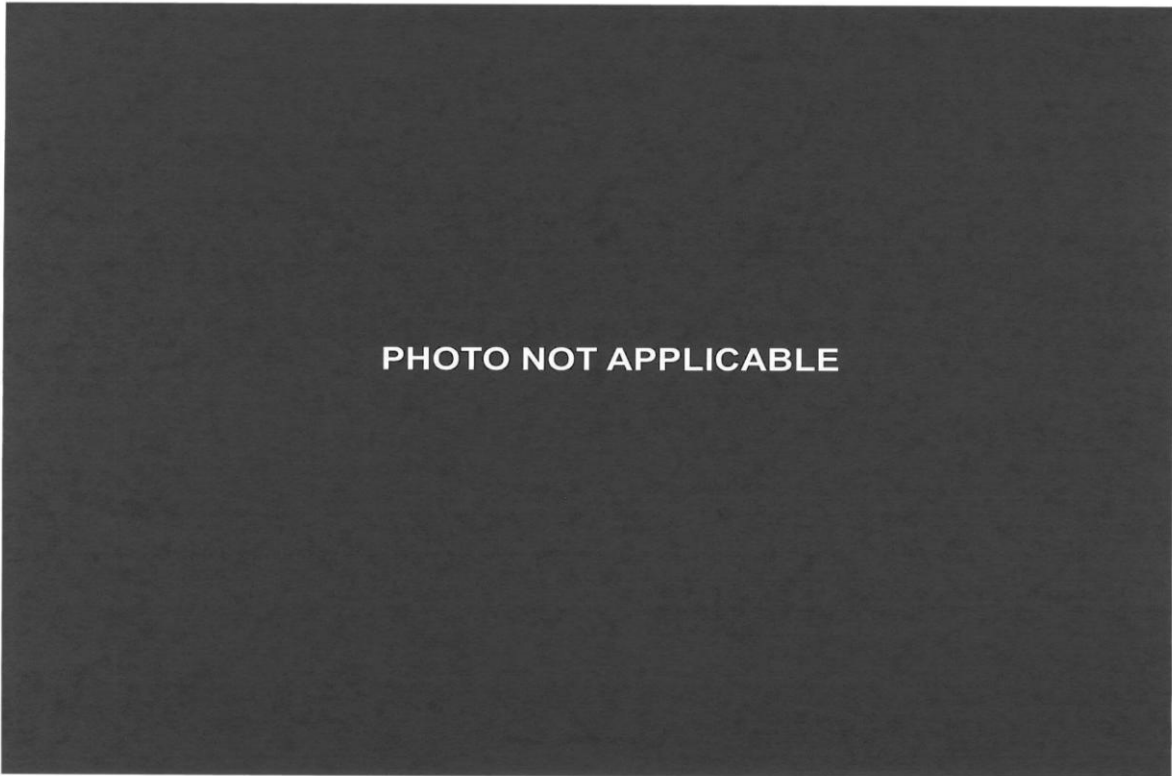
075 Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View



076 Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View



077 Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View



078 Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View

PHOTO NOT APPLICABLE

079 Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View

PHOTO NOT APPLICABLE

080 Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View

PHOTO NOT AVAILABLE

081 Post-Test Rear Passenger Dummy Close-Up Knee Contact View



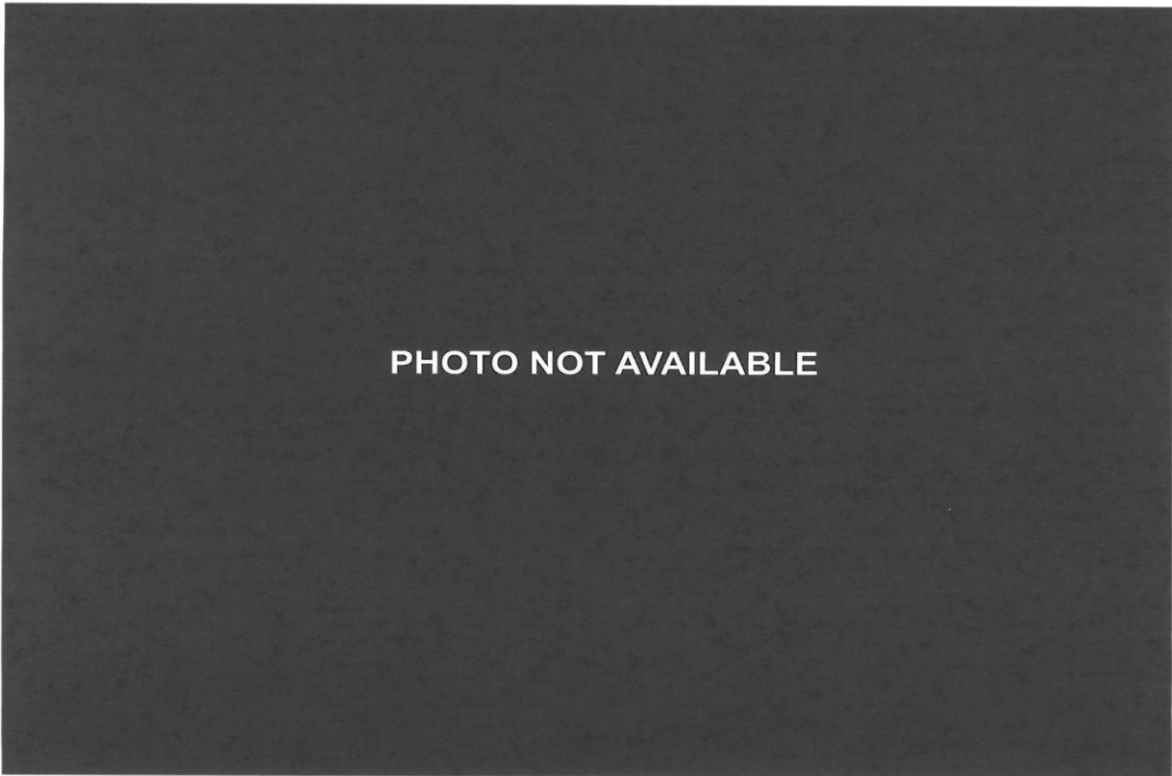
082 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



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



084 Pre-Test Front View of MDB Impactor Face



085 Post-Test Front View of MDB Impactor Face



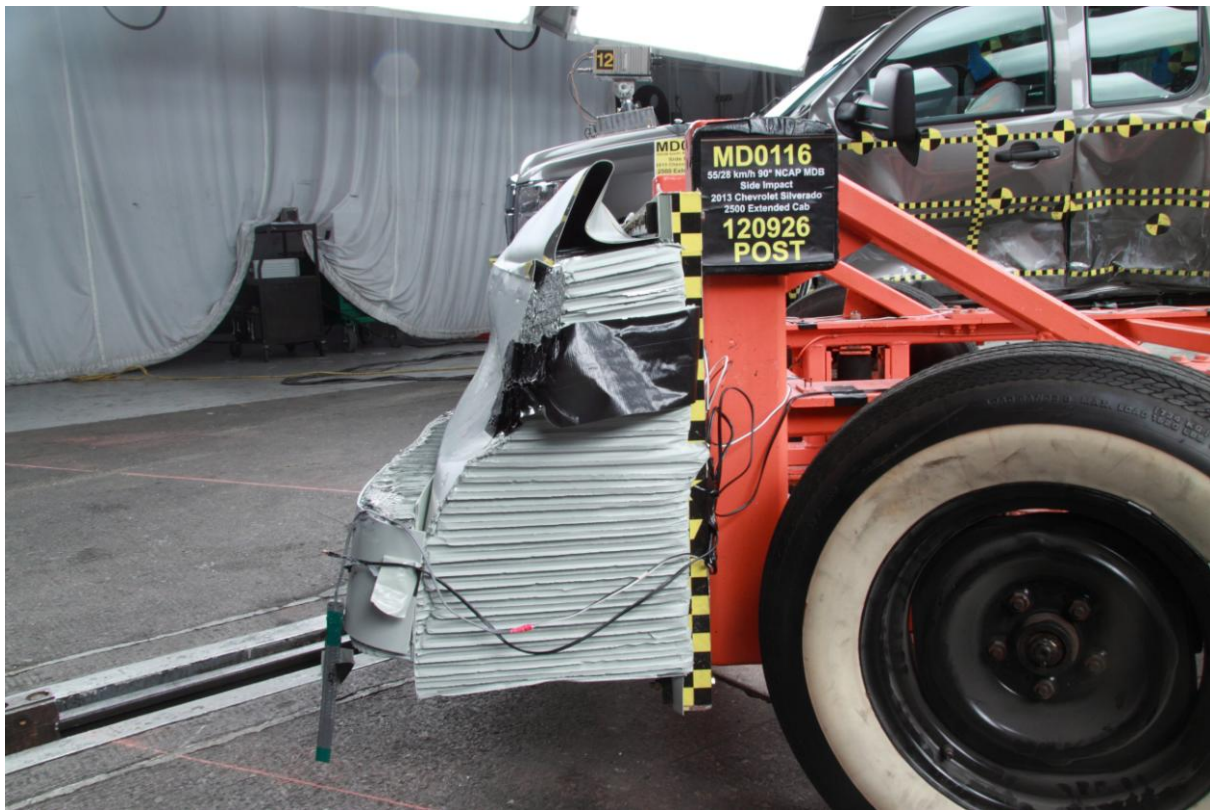
086 Pre-Test Top View of MDB Impactor Face



087 Post-Test Top View of MDB Impactor Face



088 Pre-Test Left Side View of MDB Impactor Face



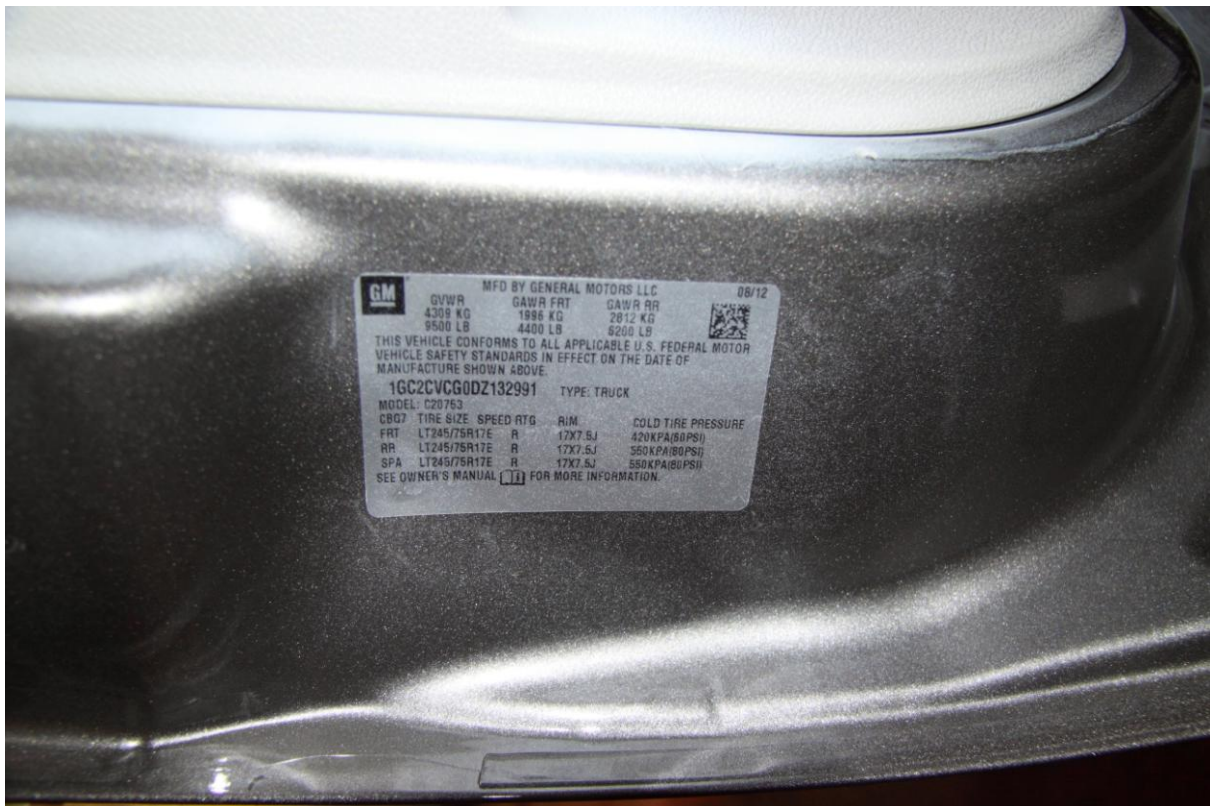
089 Post-Test Left Side View of MDB Impactor Face



090 Pre-Test Right Side View of MDB Impactor Face



091 Post-Test Right Side View of MDB Impactor Face



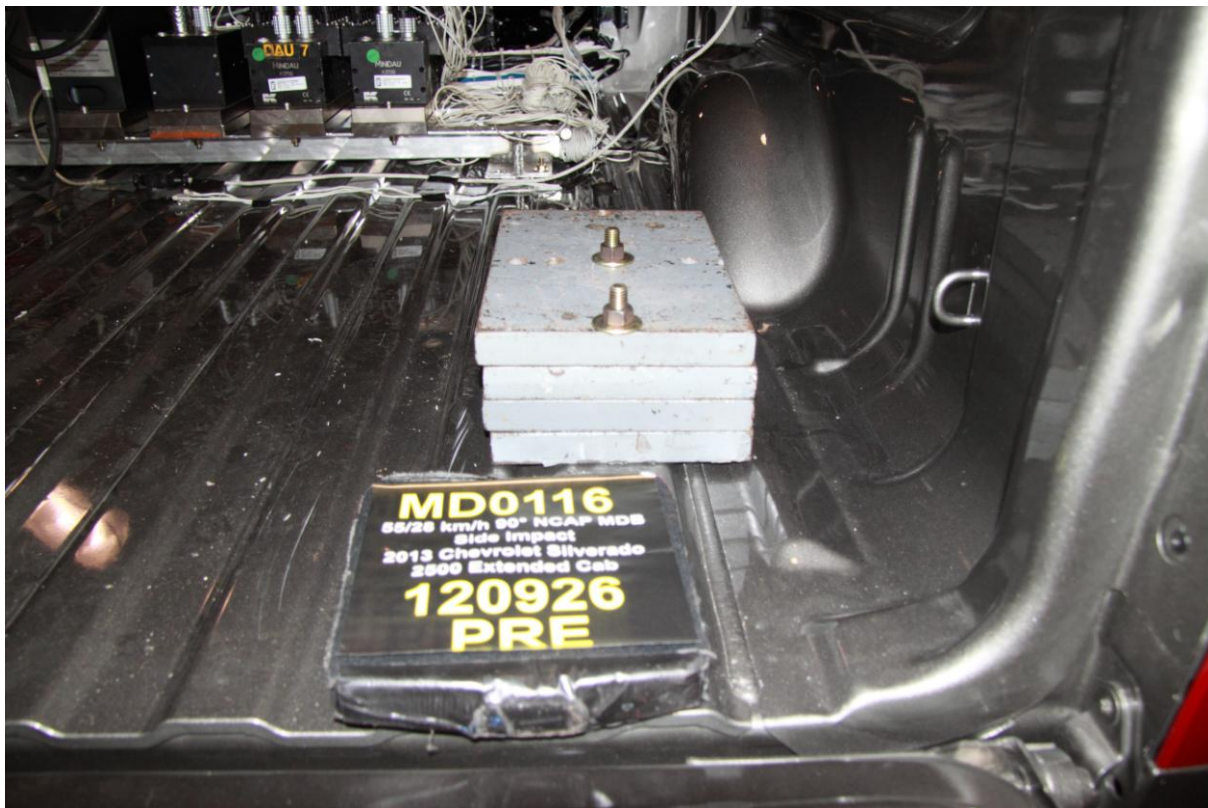
092 Close-Up View of Vehicle Certification Label



093 Close-Up View of Vehicle Tire Information Placard or Label



094 Pre-Test Ballast View



094A Pre-Test Ballast View



Primary Impact Point Target Accuracy



Redundant Impact Point Target Accuracy

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

PHOTO NOT AVAILABLE

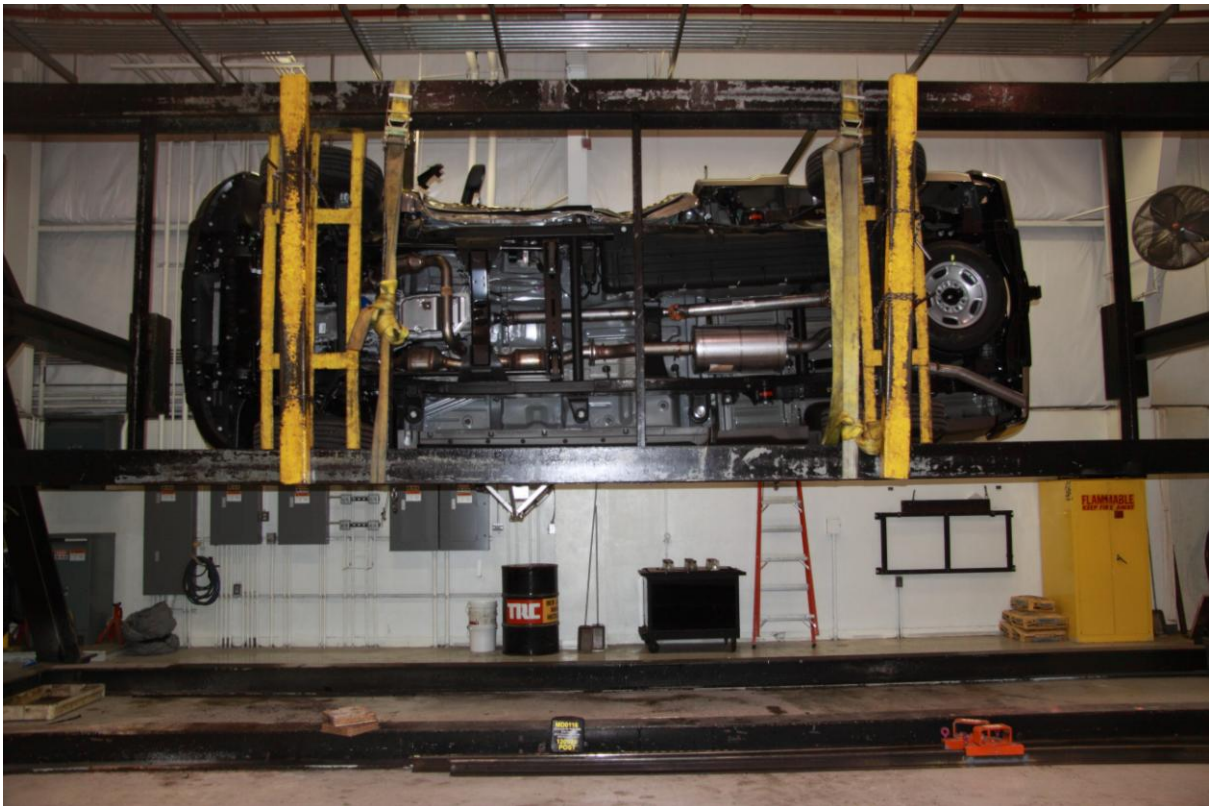
096 FMVSS No. 301 Static Rollover 0 Degrees



097 FMVSS No. 301 Static Rollover 90 Degrees



098 FMVSS No. 301 Static Rollover 180 Degrees



099 FMVSS No. 301 Static Rollover 270 Degrees



100 FMVSS No. 301 Static Rollover 360 Degrees



101 Impact Event



CHEVROLET

2013 SILVERADO 2500 2WD WT EXT CAB

**EXTERIOR: GRAYSTONE METALLIC
INTERIOR: DARK TITANIUM**

**VORTEC 6.0L V8 SFI GAS ENGINE
6-SPEED AUTOMATIC TRANSMISSION**

Visit us at www.chevy.com

STANDARD EQUIPMENT ITEMS LISTED BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE. EXCEPT AS NOTED. POWERTRAIN LIMITED WARRANTY SEE DEALER FOR DETAILS MECHANICAL - VORTEC 6.0L V8 ENGINE 6-SPEED H.D. AUTO TRANSMISSION - TORSION BAR FRONT SUSPENSION - MULTI-LEAF REAR SPRING SUSP. 285 HANDLING TRAILERING SUSP. - FULLY BOXED FRAME DESIGN 125 AMP ALTERNATOR - HE-ORCULATING BALL STEERING SAFETY & SECURITY 4-WHEEL ABS BRAKES - DRIVER AND RIGHT FRNT PASS AIR BAGS - DAYTIME RUNNING LAMPS - STABILITRAK STABILITY CONTROL WITH TRAILER SWAY CONTROL	AND HILL START ASSIST - AUTO HEADLAMPS W/FLASH-TO-PASS - SPARE TIRE LOCK - TIRE PRESSURE MONITOR SYSTEM (DOES NOT APPLY TO SPARE TIRE) EXTERIOR - CHROME REAR BUMPER 170 DEGREE WIDE OPENING REAR DOORS 17" STEEL WHEELS 17" ALL-SEASON TIRES - FRONT RECOVERY HOOKS - FOLDING OUTSIDE MIRRORS - CHROME SURROUND GRILLE - CARGO BOX ILLUMINATION - SOLAR-RAY TINTED GLASS INTERIOR - AIR CONDITIONING 40/20/40 SPLIT BENCH FRNT SEAT - DUAL GLOVE BOX STORAGE - AUX/AM STEREO - DRIVER INFO CENTER DISPLAY	INTERMITTENT WIPERS 6-GAUGE CLUSTER W/TACHOMETER 12-VOLT AUX PWR OUTLET - TILT STEERING WHEEL - CRUISE CONTROL - RUBBERIZED VINYL FLR COVERING OTHER - BATTERY RUN DOWN PROTECTION - OIL LIFE MONITOR SYSTEM 24-HOUR ROADSIDE ASSISTANCE OPTIONS & PRICING MANUFACTURER'S SUGGESTED RETAIL PRICE <table border="1"> <tr> <td>STANDARD VEHICLE PRICE</td> <td>\$31,330.00</td> </tr> <tr> <td colspan="2">OPTIONAL EQUIPMENT INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)</td> </tr> <tr> <td>HD TRAILERING EQUIPMENT PKG:</td> <td>880.00</td> </tr> <tr> <td>LOCKING REAR DIFFERENTIAL</td> <td></td> </tr> <tr> <td>INTEGRATED TRAILER BRAKE CONTROLLER</td> <td></td> </tr> </table>	STANDARD VEHICLE PRICE	\$31,330.00	OPTIONAL EQUIPMENT INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)		HD TRAILERING EQUIPMENT PKG:	880.00	LOCKING REAR DIFFERENTIAL		INTEGRATED TRAILER BRAKE CONTROLLER		SEAT-PWR WINDOWS, LOCKS, MIRRORS 999.00 17" CHROME-CLAD STEEL WHEELS 310.00 SEAT - OSRV POWER CAMPER MIRROR 243.00 AMFM STEREO, CD PLAYER, RDS 170.00 CAMPER/5TH WHEEL TRAILER WIRING 35.00 PROVISIONS GWR RATING - 9,500 LBS INC. REAR AXLE - 3.73 RATIO INC. VORTEC 6.0L V8 SFI GAS ENGINE INC. TOTAL OPTIONS \$2,637.00 TOTAL VEHICLE & OPTIONS \$33,967.00 DESTINATION CHARGE 995.00 TOTAL VEHICLE PRICE* \$34,962.00	GOVERNMENT 5-STAR SAFETY RATINGS Overall Vehicle Score Not Rated Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight. <table border="1"> <tr> <th>Crash</th> <th>Driver</th> <th>Passenger</th> <th>Not Rated</th> </tr> <tr> <td>Frontal</td> <td>Driver</td> <td>Passenger</td> <td>Not Rated</td> </tr> </table> Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight. <table border="1"> <tr> <th>Crash</th> <th>Front seat</th> <th>Rear seat</th> <th>Not Rated</th> </tr> <tr> <td>Side</td> <td>Front seat</td> <td>Rear seat</td> <td>Not Rated</td> </tr> </table> Based on the risk of injury in a side impact. Rollover ★ ★ ★ Based on the risk of rollover in a single-vehicle crash. Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4236 ORDER NO. OUTDOOR SALES CODE C00033 SALES MODEL CODE C00033 FINANCIAL ASSEMBLY WARRICK, IN - U.S.A. VIN 1G2CVCVC00Z132991 DEALER TO WHOM DELIVERED COUNTRYSIDE MOTORS, L.L.C. P.O. BOX 340 WELLINGTON, KS 67152-0340 RO 1FA164040	Crash	Driver	Passenger	Not Rated	Frontal	Driver	Passenger	Not Rated	Crash	Front seat	Rear seat	Not Rated	Side	Front seat	Rear seat	Not Rated
STANDARD VEHICLE PRICE	\$31,330.00																													
OPTIONAL EQUIPMENT INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)																														
HD TRAILERING EQUIPMENT PKG:	880.00																													
LOCKING REAR DIFFERENTIAL																														
INTEGRATED TRAILER BRAKE CONTROLLER																														
Crash	Driver	Passenger	Not Rated																											
Frontal	Driver	Passenger	Not Rated																											
Crash	Front seat	Rear seat	Not Rated																											
Side	Front seat	Rear seat	Not Rated																											

102 Monroney Label

3-2 Seats and Restraints

Head Restraints

Front Seats

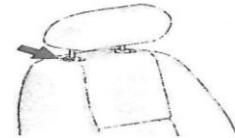
The front seats have adjustable head restraints in the outboard seating positions.

WARNING

With head restraints that are not installed and adjusted properly, there is a greater chance that occupants will suffer a neck/spinal injury in a crash. Do not drive until the head restraints for all occupants are installed and adjusted properly.



Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.



The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.

To lower the head restraint, press the button, located on the top of the seatback, and push the restraint down. Try to move the head restraint after the button is released to make sure that it is locked in place.

The front seat outboard head restraints are not designed to be removed.

Rear Seats

The rear seat has adjustable headrests in the outboard seating positions.

The height of the headrest can be adjusted. Pull the headrest up to raise it. To lower the headrest, push down on the headrest.

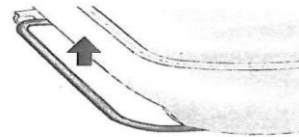
Rear outboard headrests are not designed to be removed.

Front Seats

Seat Adjustment

WARNING

You can lose control of the vehicle if you try to adjust a driver seat while the vehicle is moving. Adjust the driver seat only when the vehicle is not moving.



Split Bench or Bucket Seat

To adjust the seat:

1. Lift the bar to unlock the seat.
2. Slide the seat to the desired position and release the bar.
3. Try to move the seat back and forth to be sure the seat is locked in place.

Some vehicles have a folding front bench seat.

103 Driver Head Restraint Use and Adjustment Information from Vehicle Owner Manual

Head Restraints**Front Seats**

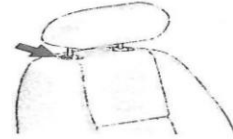
The front seats have adjustable head restraints in the outboard seating positions.

WARNING

With head restraints that are not installed and adjusted properly, there is a greater chance that occupants will suffer a neck/spinal injury in a crash. Do not drive until the head restraints for all occupants are installed and adjusted properly.



Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.



The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.

To lower the head restraint, press the button, located on the top of the seatback, and push the restraint down. Try to move the head restraint after the button is released to make sure that it is locked in place.

The front seat outboard head restraints are not designed to be removed.

Rear Seats

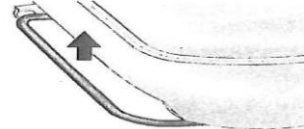
The rear seat has adjustable headrests in the outboard seating positions.

The height of the headrest can be adjusted. Pull the headrest up to raise it. To lower the headrest, push down on the headrest.

Rear outboard headrests are not designed to be removed.

Front Seats**Seat Adjustment****WARNING**

You can lose control of the vehicle if you try to adjust a driver seat while the vehicle is moving. Adjust the driver seat only when the vehicle is not moving.

**Split Bench or Bucket Seat**

To adjust the seat:

1. Lift the bar to unlock the seat.
2. Slide the seat to the desired position and release the bar.
3. Try to move the seat back and forth to be sure the seat is locked in place.

Some vehicles have a folding front bench seat.

104 Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner Manual

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

Driver & Passenger Dummy Instrumentation Plots

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2	Driver Head Acceleration (Y) Primary vs. Time	B-5
3	Driver Head Acceleration (Z) Primary vs. Time	B-5
4	Driver Head Resultant Acceleration Primary vs. Time	B-5
5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-6
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-6
7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-6
8	Driver Thorax Rib Deflection Maximum vs. Time	B-6
9	Driver Anterior Abdominal Force (Y) vs. Time	B-7
10	Driver Middle Abdominal Force (Y) vs. Time	B-7
11	Driver Posterior Abdominal Force (Y) vs. Time	B-7
12	Driver Total Abdominal Force (Y) vs. Time	B-7
13	Driver Pubic Symphysis Force (Y) vs. Time	B-8
14	Passenger Head Acceleration (X) vs. Time Primary	B-8
15	Passenger Head Acceleration (Y) vs. Time Primary	B-8
16	Passenger Head Acceleration (Z) vs. Time Primary	B-8
17	Passenger Head Resultant Acceleration Primary vs. Time	B-9
18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-9
19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-9
20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-9
21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-10
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-10
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-10
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-10

The following additional data can be obtained from the Research and Development section of the NHTSA website (<http://www.nhtsa.dot.gov>)

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

NHTSA

Test Lab: CTF

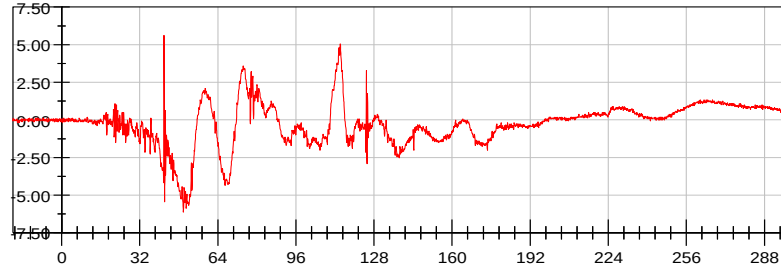
Test Number: 120926 (MD0116)

Test Date: 09/26/2012

Position #1 ES-2 Dummy with Rib Extension (F030)

Position #4 SID IIs Dummy (305)

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



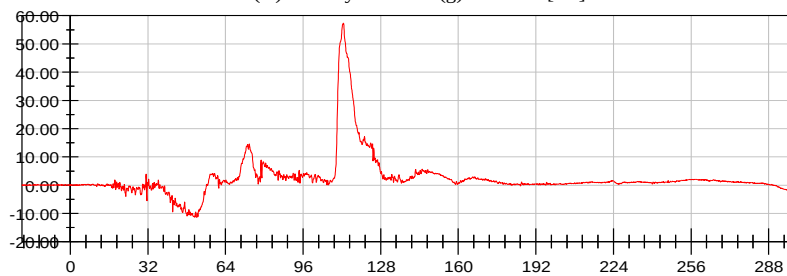
<Max>

5.63 g at 42.00 ms

<Min>

-6.13 g at 49.92 ms

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



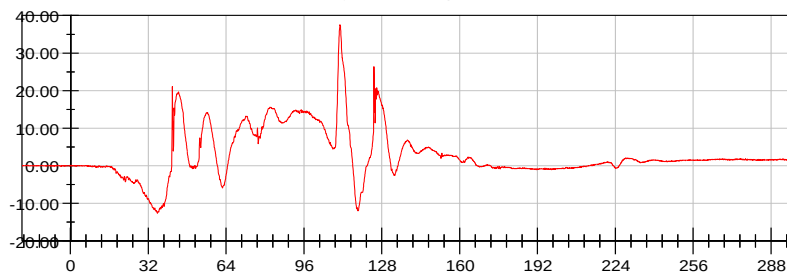
<Max>

57.32 g at 112.56 ms

<Min>

-11.50 g at 52.00 ms

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



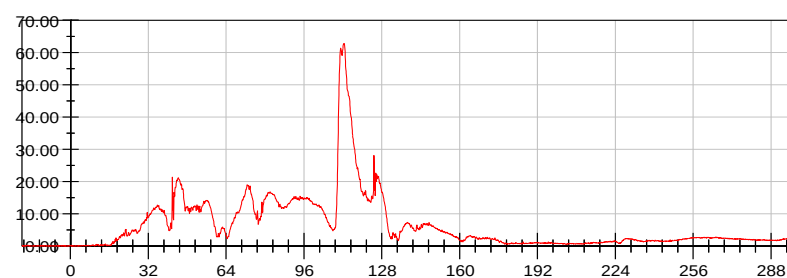
<Max>

37.57 g at 110.80 ms

<Min>

-12.66 g at 35.76 ms

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



<Max>

62.73 g at 112.32 ms

<Min>

0.02 g at -19.60 ms



NHTSA

Test Lab: CTF

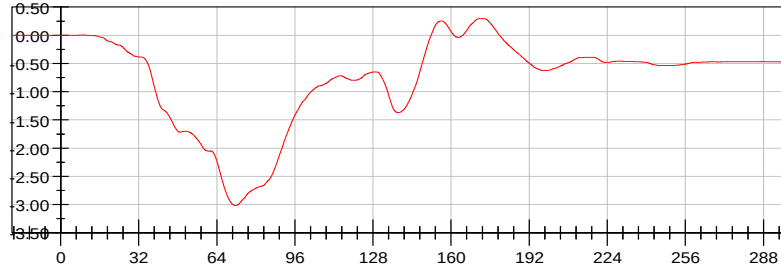
Test Number: 120926 (MD0116)

Test Date: 09/26/2012

Position #1 ES-2 Dummy with Rib Extension (F030)

Position #4 SID IIs Dummy (305)

Driver Upper Thorax Rib Deflection (Y) vs. Time (mm) vs. Time [ms]



<Max>

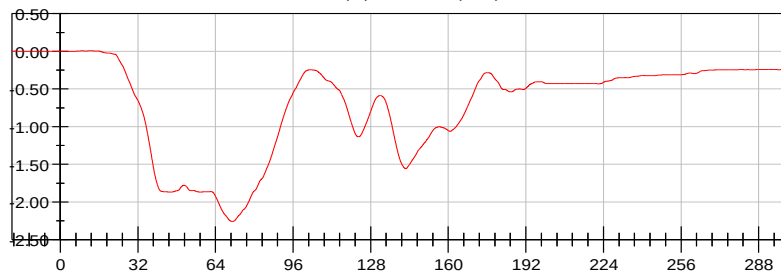
0.30 mm at 173.04 ms

<Min>

-3.01 mm at 71.76 ms

CFC_180

Driver Middle Thorax Rib Deflection (Y) vs. Time (mm) vs. Time [ms]



<Max>

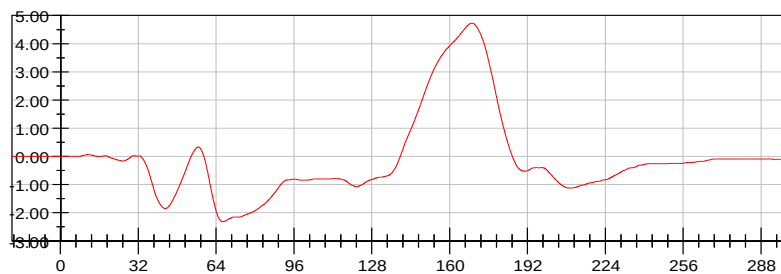
0.01 mm at 12.40 ms

<Min>

-2.26 mm at 70.96 ms

CFC_180

Driver Lower Thorax Rib Deflection (Y) vs. Time (mm) vs. Time [ms]



<Max>

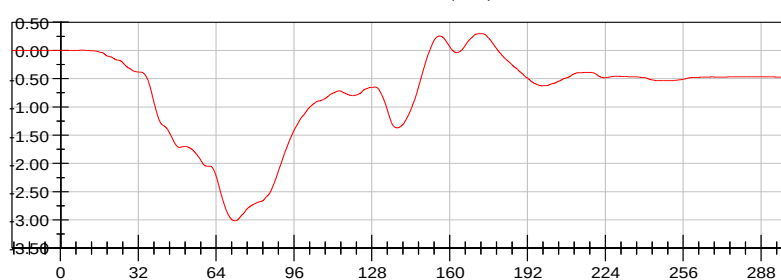
4.73 mm at 169.20 ms

<Min>

-2.31 mm at 66.80 ms

CFC_180

Driver Thorax Rib Deflection Maximum vs. Time (mm) vs. Time [ms]



<Max>

0.30 mm at 173.04 ms

<Min>

-3.01 mm at 71.76 ms

CFC_180



NHTSA

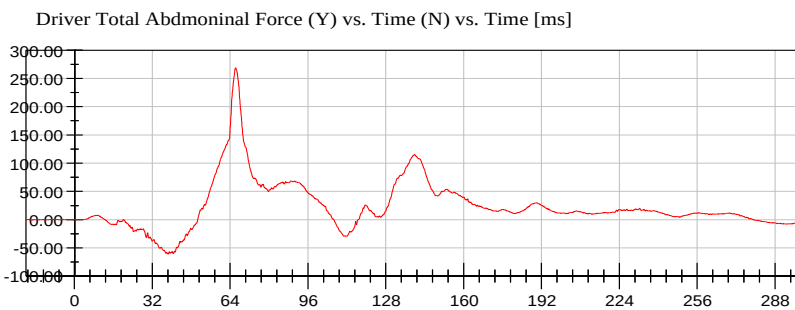
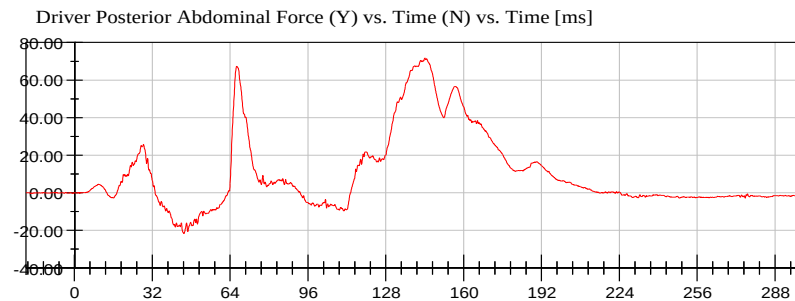
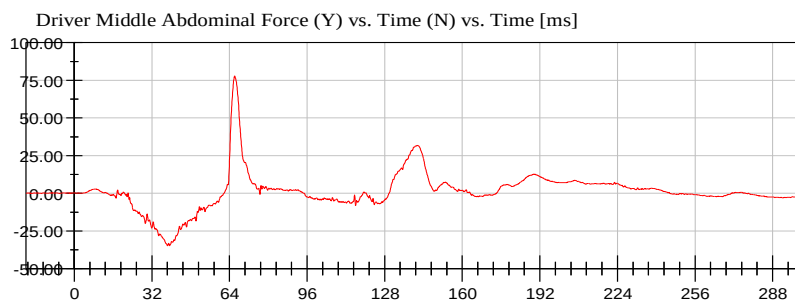
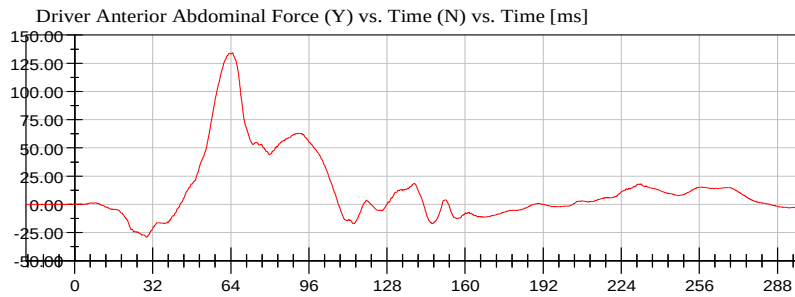
Test Lab: CTF

Test Number: 120926 (MD0116)

Test Date: 09/26/2012

Position #1 ES-2 Dummy with Rib Extension (F030)

Position #4 SID IIs Dummy (305)



NHTSA

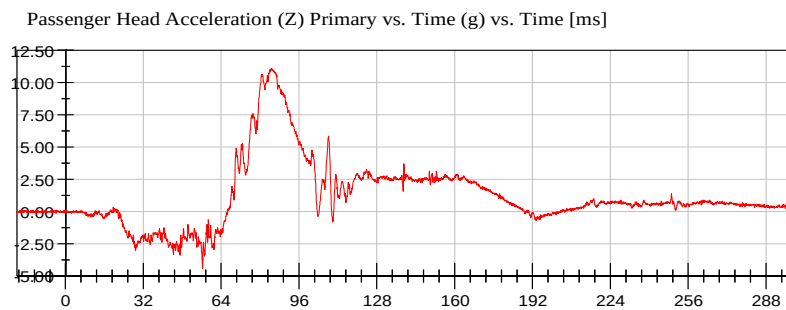
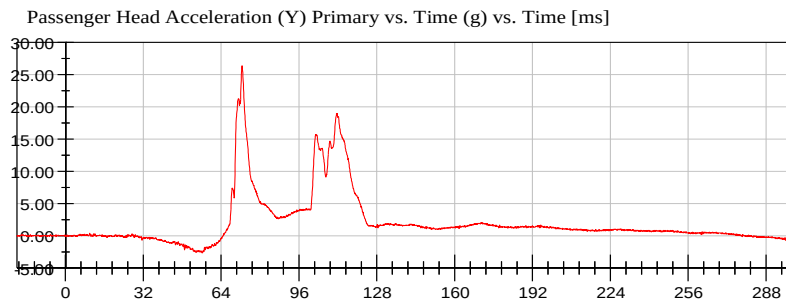
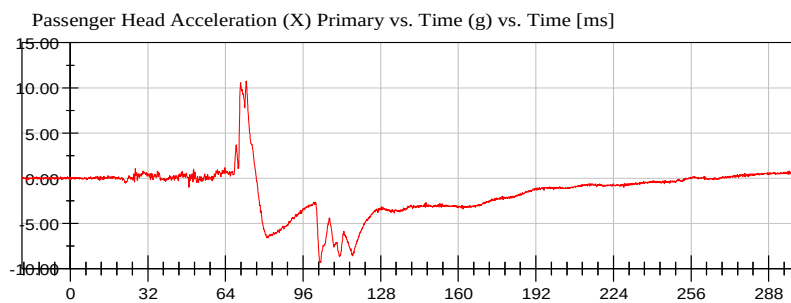
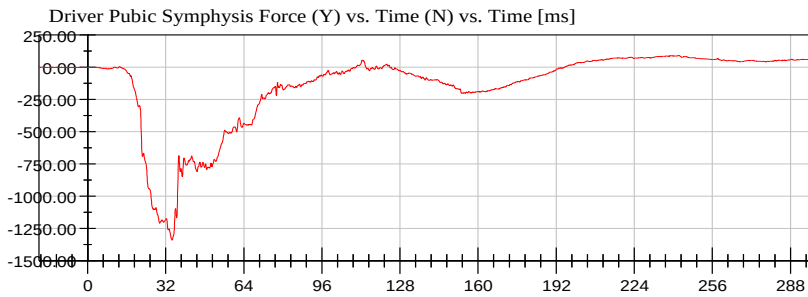
Test Lab: CTF

Test Number: 120926 (MD0116)

Test Date: 09/26/2012

Position #1 ES-2 Dummy with Rib Extension (F030)

Position #4 SID IIs Dummy (305)



NHTSA

Test Lab: CTF

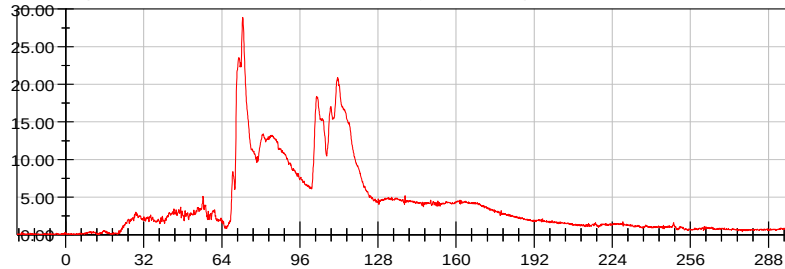
Test Number: 120926 (MD0116)

Test Date: 09/26/2012

Position #1 ES-2 Dummy with Rib Extension (F030)

Position #4 SID IIs Dummy (305)

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



<Max>

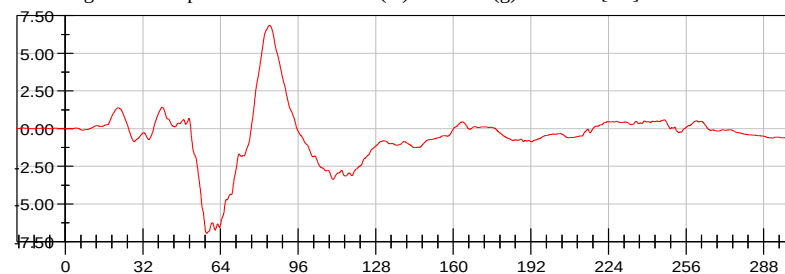
28.90 g at 72.56 ms

<Min>

0.04 g at -19.12 ms

CFC_1000

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



<Max>

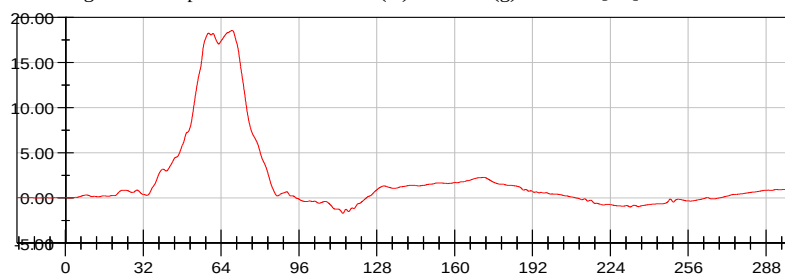
6.85 g at 84.24 ms

<Min>

-6.97 g at 58.32 ms

CFC_180

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



<Max>

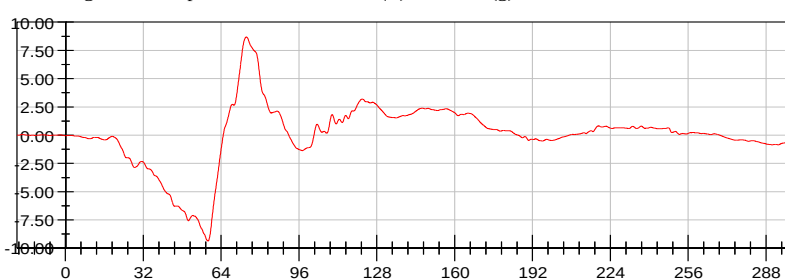
18.56 g at 68.48 ms

<Min>

-1.71 g at 114.00 ms

CFC_180

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



<Max>

8.69 g at 74.40 ms

<Min>

-9.36 g at 58.64 ms

CFC_180



NHTSA

Test Lab: CTF

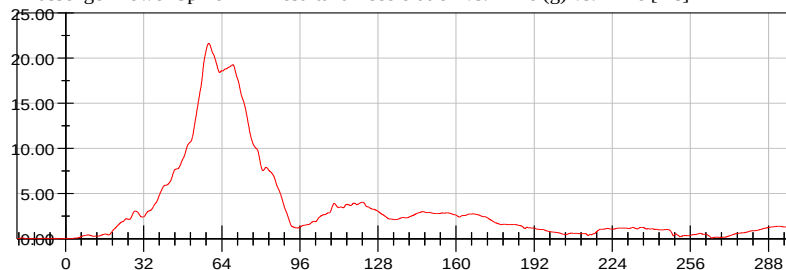
Test Number: 120926 (MD0116)

Test Date: 09/26/2012

Position #1 ES-2 Dummy with Rib Extension (F030)

Position #4 SID IIs Dummy (305)

Passenger Lower Spine T12 Resultant Acceleration vs. Time (g) vs. Time [ms]



<Max>

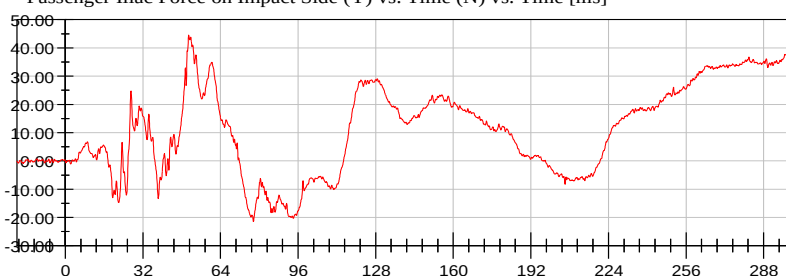
21.63 g at 58.72 ms

<Min>

0.01 g at -5.12 ms

CFC_180

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



<Max>

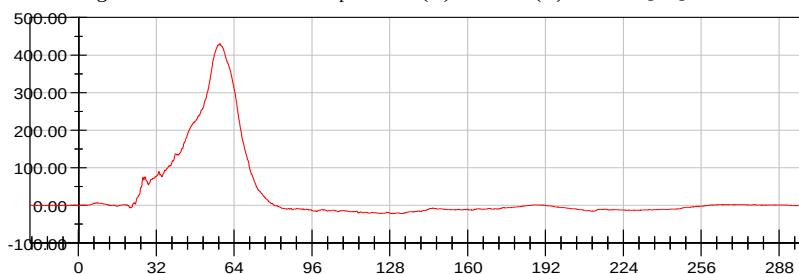
44.50 N at 50.88 ms

<Min>

-21.51 N at 77.60 ms

CFC_600

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



<Max>

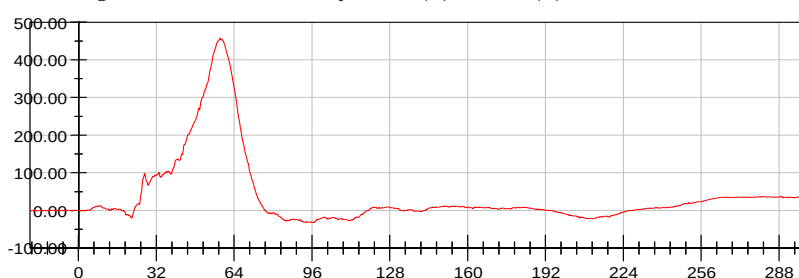
430.28 N at 58.16 ms

<Min>

-21.96 N at 132.88 ms

CFC_600

Passenger Total Pelvic Force on Impact Side (Y) vs. Time (N) vs. Time [ms]



<Max>

457.61 N at 58.24 ms

<Min>

-31.76 N at 96.08 ms

CFC_600



APPENDIX C
DUMMY PERFORMANCE CALIBRATION TEST DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

ES-2re (Driver) Dummy

Description

Table 1. External Measurements

Table 2. Head Drop Test

Resultant Head Acceleration (G's) vs. Time (ms)

Head (X) Acceleration (G's) vs. Time (ms)

Head (Y) Acceleration (G's) vs. Time (ms)

Head (Z) Acceleration (G's) vs. Time (ms)

Table 3 Neck Pendulum Test

Pendulum Velocity (m/s) vs. Time (ms)

Flexion Angle (°) vs. Time (ms)

Potentiometer A (°) vs. Time (ms)

Potentiometer B (°) vs. Time (ms)

Potentiometer C (°) vs. Time (ms)

Table 4. Shoulder Impact Test

Impactor Acceleration (G's) vs. Time (ms)

Table 5. Thorax – Upper Rib Drop Test

Upper Rib Displacement @ 459 mm Drop Height (mm) vs. Time (ms)

Upper Rib Displacement @ 815 mm Drop Height (mm) vs. Time (ms)

Table 6. Thorax – Middle Rib Drop Test

Middle Rib Displacement @ 459 mm Drop Height (mm) vs. Time (ms)

Middle Rib Displacement @ 815 mm Drop Height (mm) vs. Time (ms)

Table 7. Thorax – Lower Rib Drop Test

Lower Rib Displacement @ 459 mm Drop Height (mm) vs. Time (ms)

Lower Rib Displacement @ 815 mm Drop Height (mm) vs. Time (ms)

Table 8. Thorax – Full Body Impact Test

Pendulum Acceleration (G's) vs. Time (ms)

Impactor Force (kN) vs. Time (ms)

Upper Rib Displacement (mm) vs. Time (ms)

Middle Rib Displacement (mm) vs. Time (ms)

Lower Rib Displacement (mm) vs. Time (ms)

Table 9. Abdomen Impact Test

Impactor Force (kN) vs. Time (ms)

Total Abdomen Force (kN) vs. Time (ms)

Front Abdomen Force (kN) vs. Time (ms)

Middle Abdomen Force (kN) vs. Time (ms)

Rear Abdomen Force (kN) vs. Time (ms)

Table 10. Lumbar Spine Flexion Test

Pendulum Velocity (m/s) vs. Time (ms)

Spine Flexion Angle (°) vs. Time (ms)

Potentiometer A (°) vs. Time (ms)

Potentiometer B (°) vs. Time (ms)

Potentiometer C (°) vs. Time (ms)

Table 11. Pelvis Impact Test

Pendulum Acceleration (G's) vs. Time (ms)

Impactor Force (kN) vs. Time (ms)

Pubic Symphysis (Y) Force (kN) vs. Time (ms)

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

SID-IIs (Rear Passenger) Dummy

Description

Table 1. External Measurements

Table 2. Head Drop Test

Resultant Head Acceleration (G's) vs. Time (ms)
Head (X) Acceleration (G's) vs. Time (ms)
Head (Y) Acceleration (G's) vs. Time (ms)
Head (Z) Acceleration (G's) vs. Time (ms)

Table 3. Lateral Neck Pendulum Test

Pendulum Velocity (m/s) vs. Time (ms)
Flexion Angle (°) vs. Time (ms)
Moment About Occipital Condyle (Nm) vs. Time (ms)

Table 4. Shoulder Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Shoulder Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)

Table 5. Thorax (With Arm) Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Shoulder Displacement (mm) vs. Time (ms)
Upper Rib Displacement (mm) vs. Time (ms)
Middle Rib Displacement (mm) vs. Time (ms)
Lower Rib Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 6. Thorax (Without Arm) Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Upper Rib Displacement (mm) vs. Time (ms)
Middle Rib Displacement (mm) vs. Time (ms)
Lower Rib Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 7. Abdomen Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Upper Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 8. Pelvis Plug Quasi-Static Test (Optional*)

Table 9. Pelvis Acetabulum Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Pelvis (Y) Acceleration (G's) vs. Time (ms)
Acetabulum Force (N) vs. Time (ms)

Table 10. Pelvis Iliac Impact Test

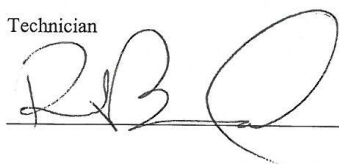
Impactor Acceleration (G's) vs. Time (ms)
Pelvis (Y) Acceleration (G's) vs. Time (ms)
Iliac Force (N) vs. Time (ms)

Pre-Test Calibration Sheets
Driver S/N F030

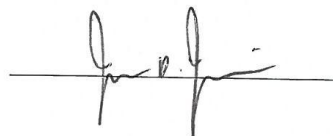
Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 06
Date: 09/21/12

Symbol	Description	Specification	Results	Pass
		mm	mm	
1	Sitting Height	900.0 - 918.0	910	Yes
2	Seat to Shoulder Joint	558.0 - 572.0	560	Yes
3	Seat to Lower Face of Thoracic Spine Box	346.0 - 356.0	350	Yes
4	Seat to Hip Joint (center of bolt)	97.0 - 103.0	99	Yes
5	Sole to Seat, Sitting	433.0 - 451.0	446	Yes
6	Head Width	152.0 - 158.0	155	Yes
7	Shoulder/Arm Width	461.0 - 479.0	472	Yes
8	Thorax Width	322.0 - 332.0	325	Yes
9	Abdomen Width	273.0 - 287.0	281	Yes
10	Pelvis Lap Width	359.0 - 373.0	367	Yes
11	Head Depth	196.0 - 206.0	200	Yes
12	Thorax Depth	262.0 - 272.0	268	Yes
13	Abdomen Depth	194.0 - 204.0	200	Yes
14	Pelvis Depth	235.0 - 245.0	240	Yes
15	Back of Buttocks to Hip Joint (center of bolt)	150.0 - 160.0	159	Yes
16	Back of Buttocks to Front of Knee	597.0 - 615.0	604	Yes

Technician



Approved



Baseline 10/07/05



Transportation Research Center Inc.

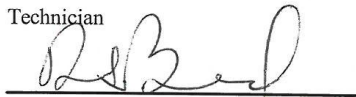
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Peak Resultant Acceleration	125 - 155 g	145.8 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	-8.5 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	Yes	Yes	Yes

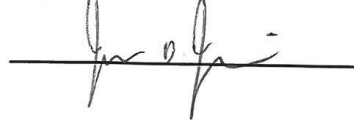
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 10:23:09 354

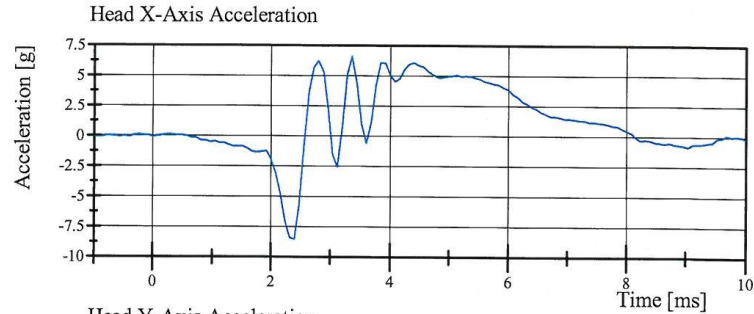


Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 6-1

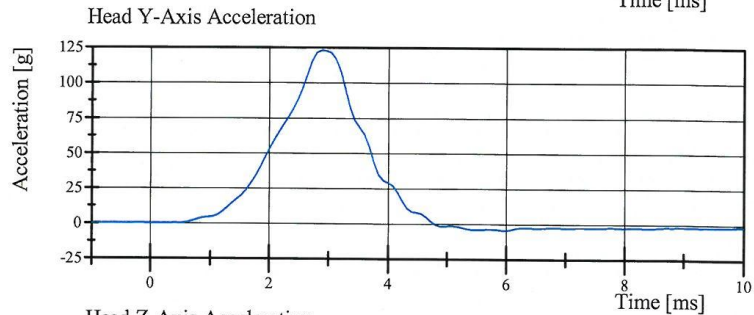
Test Date: 9/19/2012



Filter Class: CFC_1000

Max: 6.6 gn at 3.4 ms

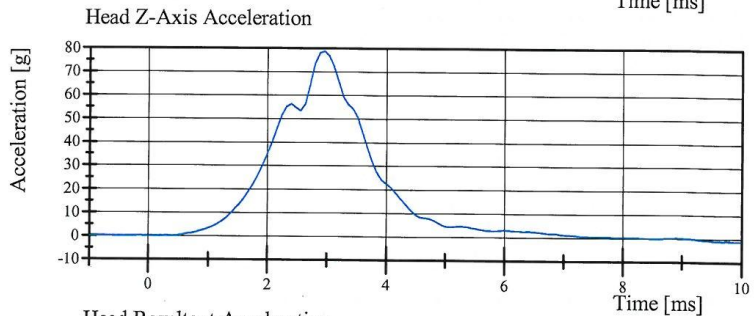
Min: -8.5 gn at 2.4 ms



Filter Class: CFC_1000

Max: 122.9 gn at 2.9 ms

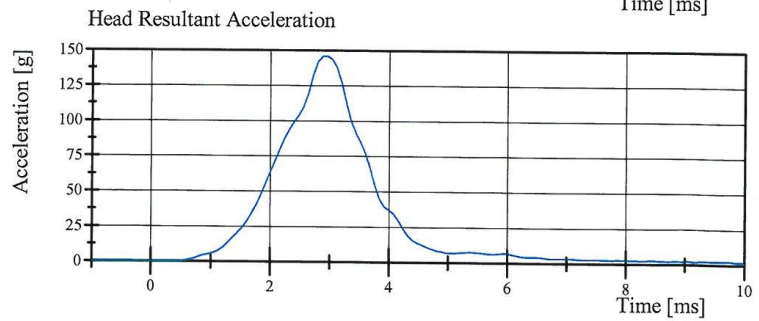
Min: -4.5 gn at 6.0 ms



Filter Class: CFC_1000

Max: 78.8 gn at 3.0 ms

Min: -1.0 gn at 9.7 ms



Filter Class: CFC_1000

Max: 145.8 gn at 2.9 ms

Min: 0.0 gn at -0.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 10:29:10 354



Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 6-8

Test Date: 9/20/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.35 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-52.4 deg	Yes
Time of Peak	54 - 66 ms	57.9 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	86.8 ms	Yes

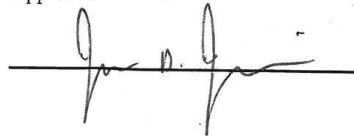
Test meets specifications.

Comments:

Technician



Approved



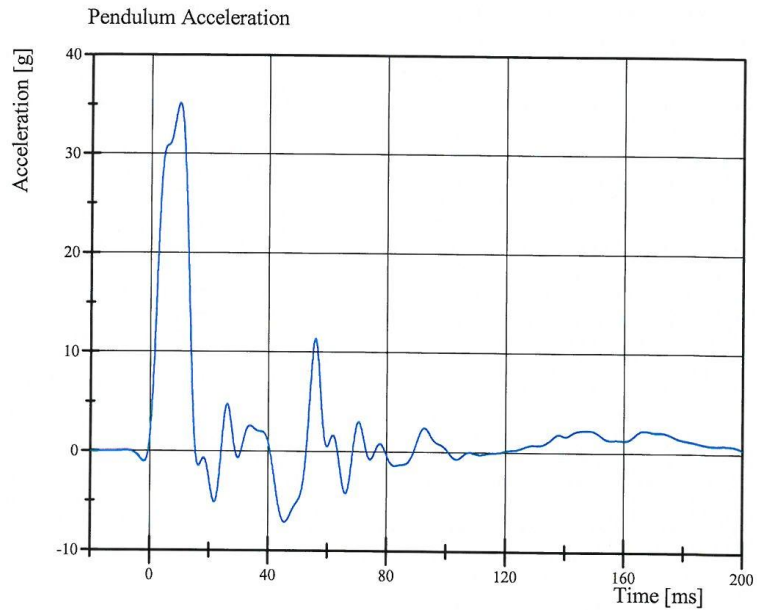
Specification Source: NHTSA Final Rule 8/15/2008

09.20.2012 08:57:38 1315

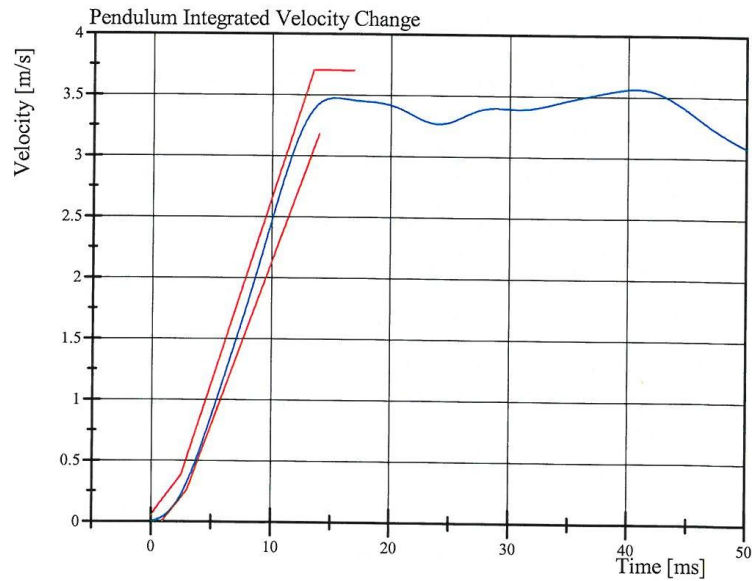


Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 6-8
Test Date: 9/20/2012



Filter Class: CFC_60
Max: 35.1 gn at 9.7 ms
Min: -7.2 gn at 45.5 ms



Filter Class: CFC_60
Max: 3.6 m/s at 40.6 ms
Min: 0.0 m/s at 0.0 ms

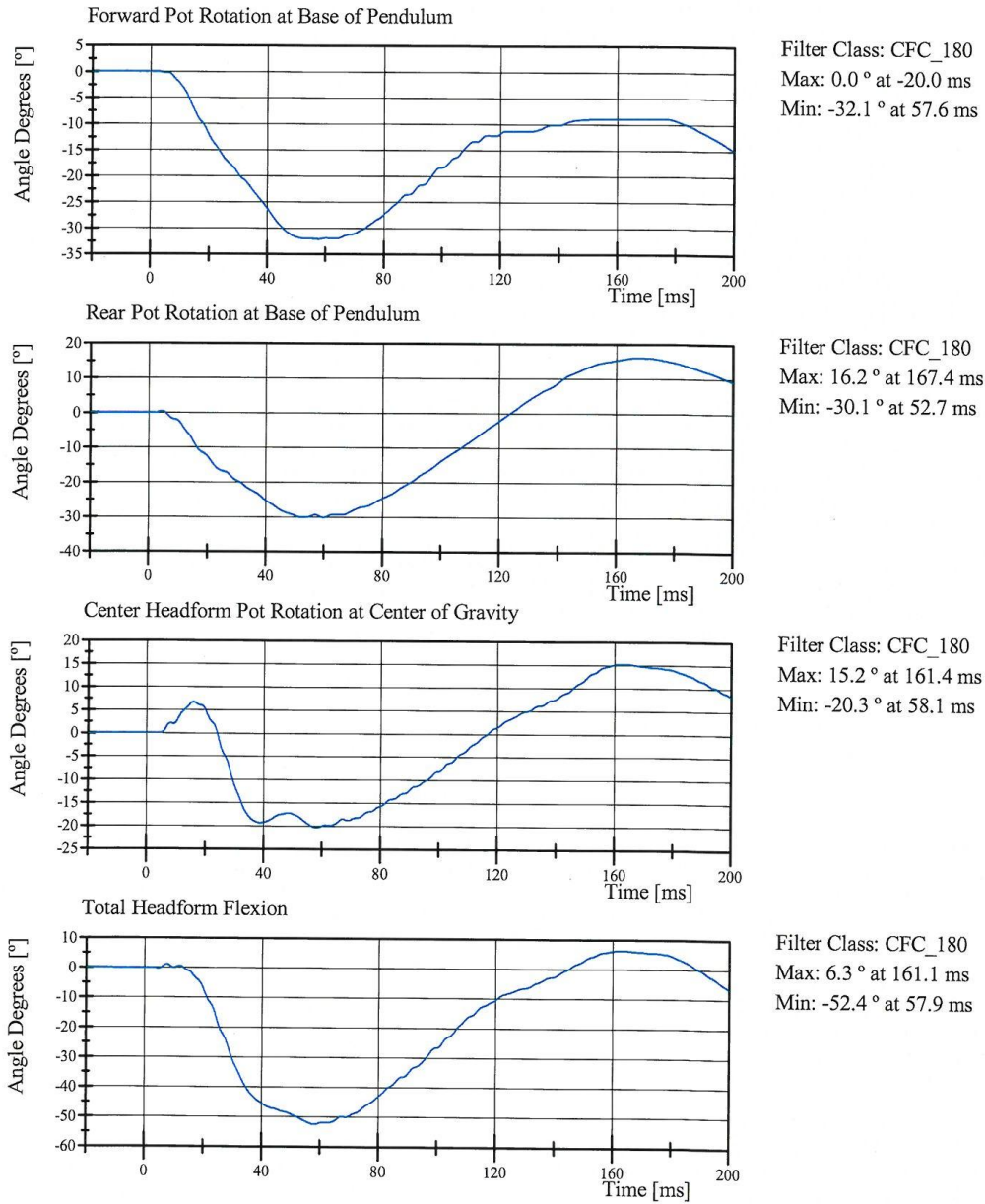
Specification Source: NHTSA Final Rule 8/15/2008

09.20.2012 08:57:45 1315



Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 6-8
Test Date: 9/20/2012



Specification Source: NHTSA Final Rule 8/15/2008

09.20.2012 08:57:46 1315



Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 6-1

Test Date: 9/21/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-9.75 g	Yes

Test meets specifications.

Comments:

Technician



Approved



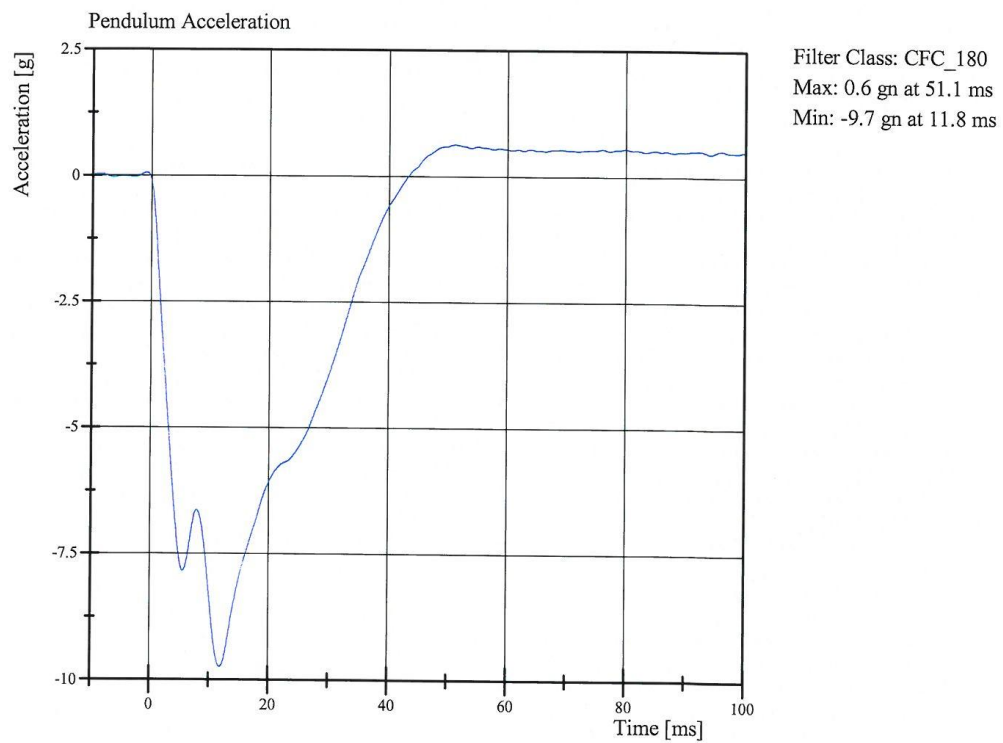
Specification Source: NHTSA final rule 8/15/2008

09.21.2012 07:55:33 553



Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/21/2012



Specification Source: NHTSA final rule 8/15/2008

09.21.2012 07:55:44 553



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.4 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician



Approved



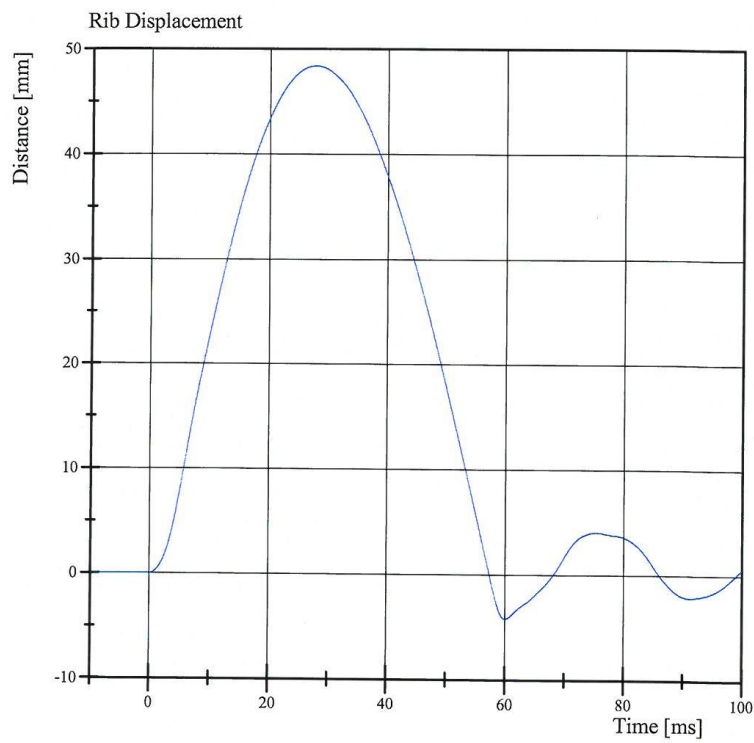
Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 12:45:47 740



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012



Filter Class: CFC_180
Max: 48.4 mm at 27.8 ms
Min: -4.2 mm at 60.0 ms

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012

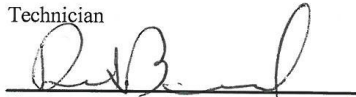
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.8 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician



Approved



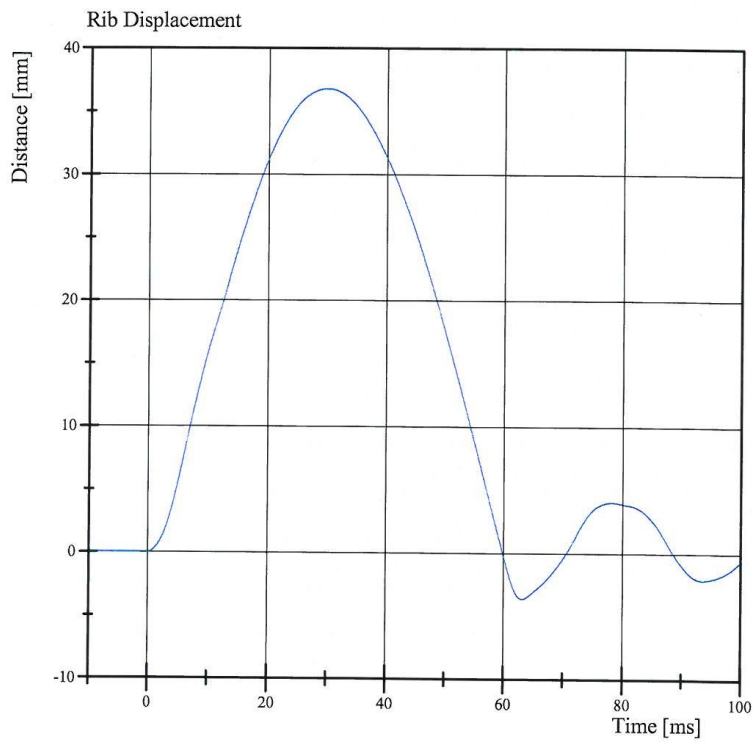
Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 12:52:24 948



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012



Filter Class: CFC_180
Max: 36.8 mm at 29.9 ms
Min: -3.6 mm at 63.1 ms

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.7 mm	Yes

Test meets specifications.

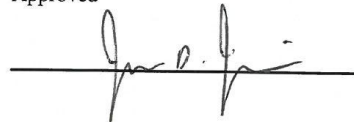
Comments:

Drop Height: 816

Technician



Approved



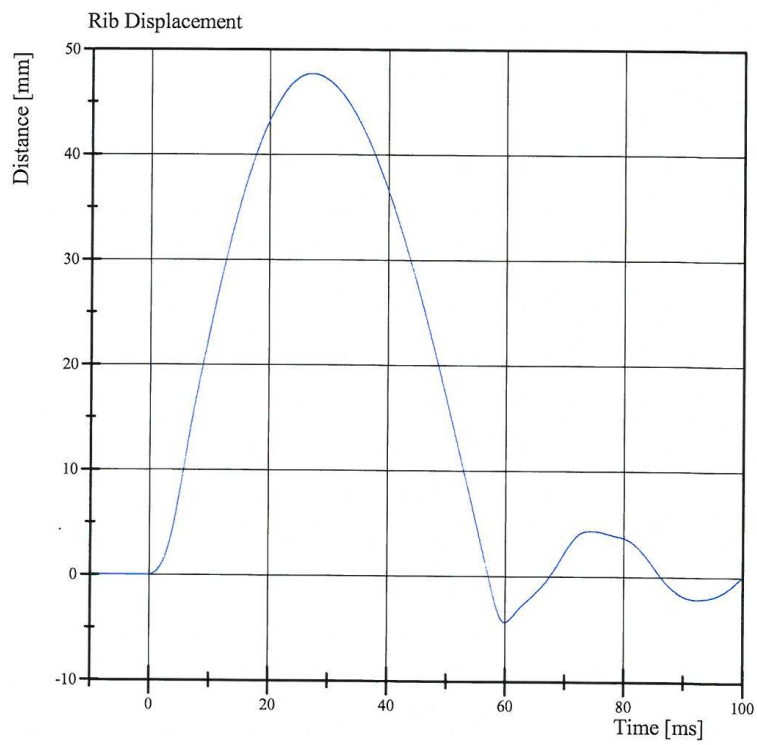
Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 12:57:11 748



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012



Filter Class: CFC_180
Max: 47.7 mm at 27.1 ms
Min: -4.4 mm at 59.9 ms

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.9 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician



Approved



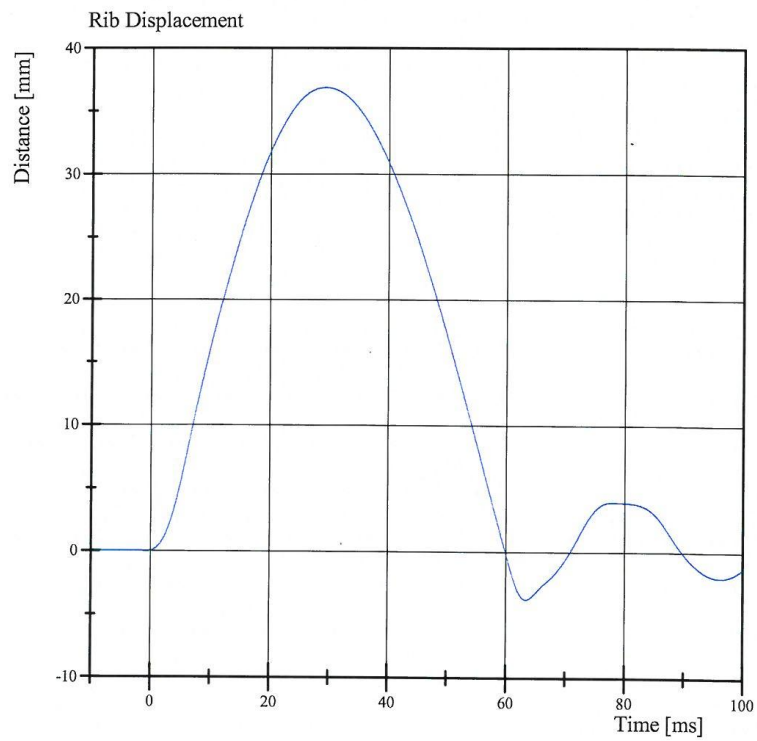
Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 13:02:57 952



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012



Filter Class: CFC_180
Max: 36.9 mm at 29.3 ms
Min: -3.7 mm at 63.4 ms

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 6-1

Test Date: 9/19/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.6 mm	Yes

Test meets specifications.

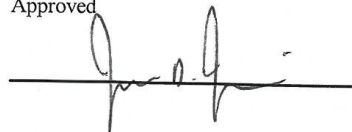
Comments:

Drop Height: 816

Technician



Approved



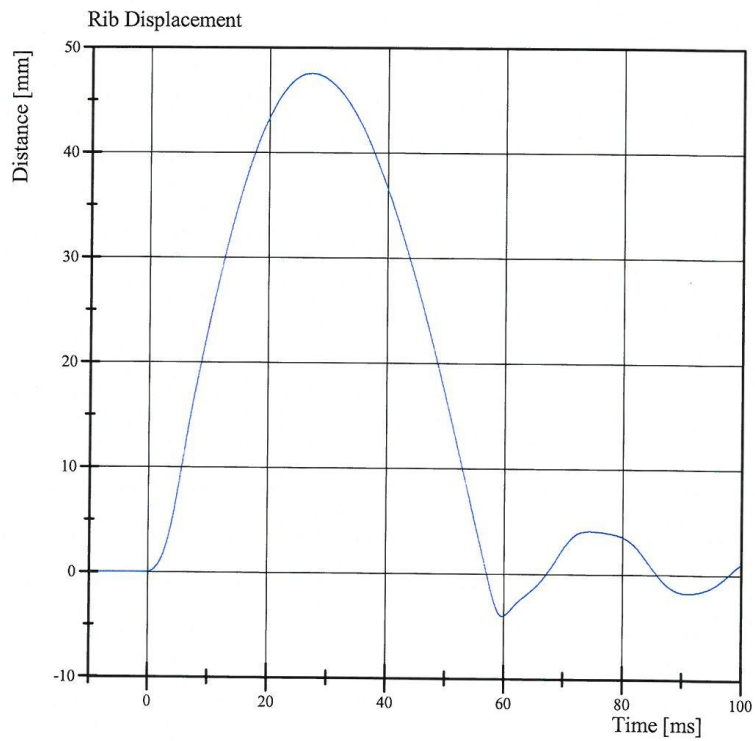
Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 13:08:36 742



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012



Filter Class: CFC_180
Max: 47.6 mm at 27.0 ms
Min: -4.0 mm at 59.7 ms

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 6-1

Test Date: 9/19/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.5 mm	Yes

Test meets specifications.

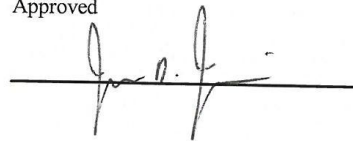
Comments:

Drop Height: 462

Technician



Approved



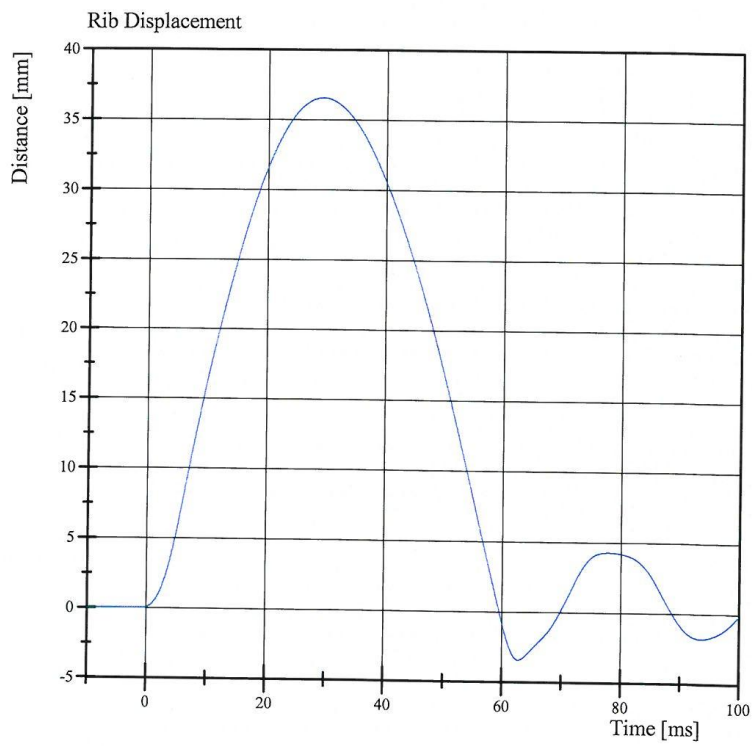
Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 13:14:35 942



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/19/2012



Filter Class: CFC_180
Max: 36.5 mm at 29.3 ms
Min: -3.4 mm at 62.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

09.19.2012 13:14:50 942



Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 6-1

Test Date: 9/21/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.474 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,404.3 N	Yes
Upper Rib Displacement	34 - 41 mm	37.3 mm	Yes
Center Rib Displacement	37 - 45 mm	40.6 mm	Yes
Lower Rib Displacement	37 - 44 mm	40.8 mm	Yes

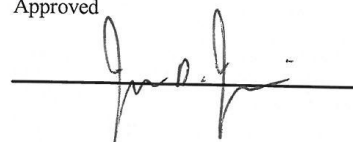
Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

09.21.2012 08:06:09 449

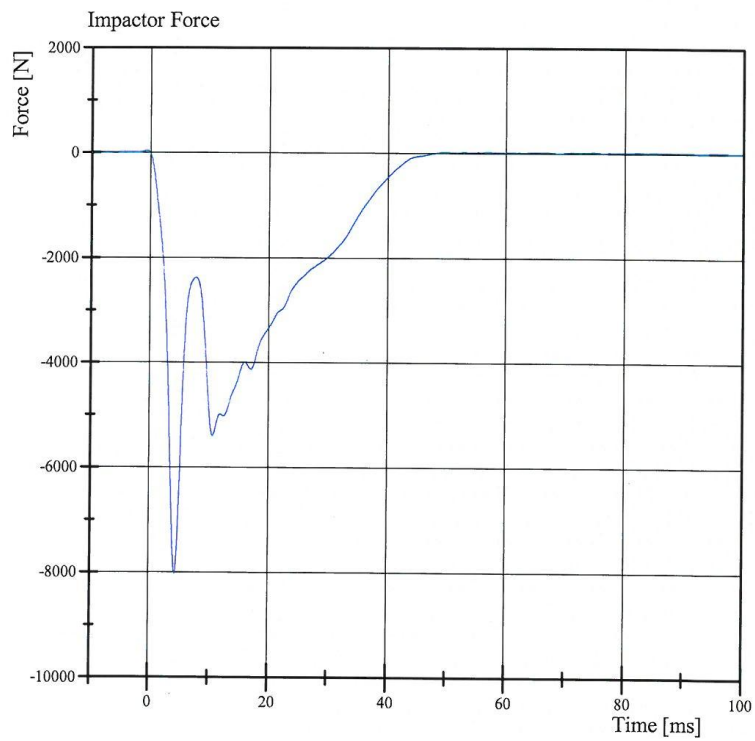


Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 6-1

Test Date: 9/21/2012



Filter Class: CFC_180
Max: 30.8 N at -0.6 ms
Min: -8,028.7 N at 4.4 ms

Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

09.21.2012 08:06:17 449



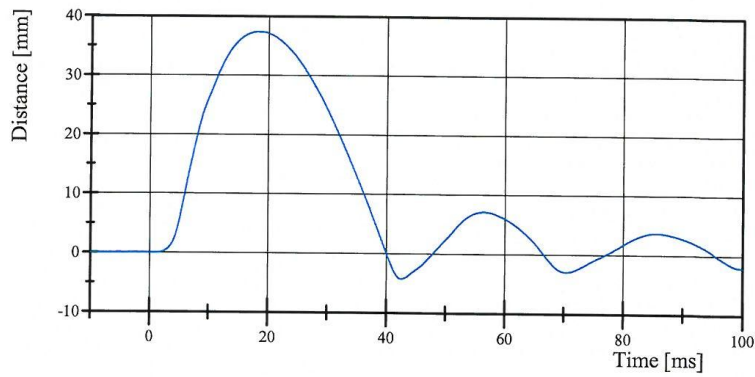
Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 6-1

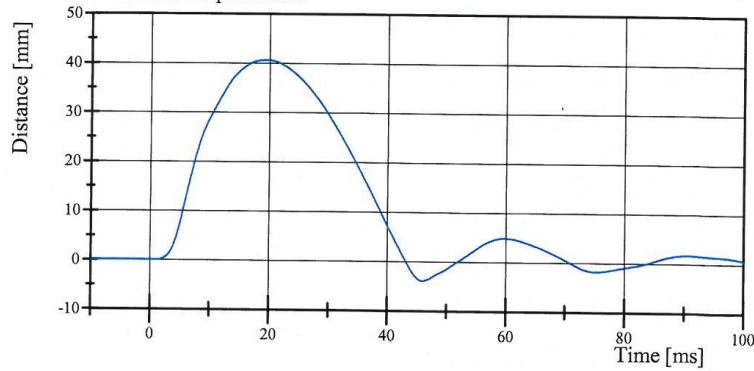
Test Date: 9/21/2012

Upper Rib Displacement



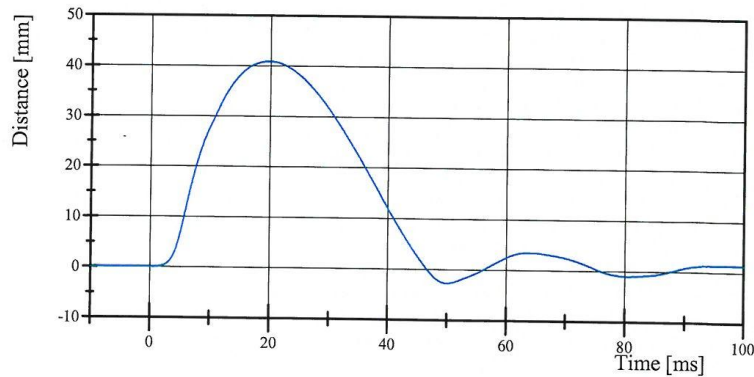
Filter Class: CFC_180
Max: 37.3 mm at 18.4 ms
Min: -4.2 mm at 42.5 ms

Center Rib Displacement



Filter Class: CFC_180
Max: 40.6 mm at 19.3 ms
Min: -3.9 mm at 45.9 ms

Lower Rib Displacement



Filter Class: CFC_180
Max: 40.8 mm at 19.7 ms
Min: -2.7 mm at 49.9 ms

Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

09.21.2012 08:06:17 449



Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 6-2

Test Date: 9/21/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.92 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,088.5 N	Yes
Time of Peak	10.6 - 13.0 ms	12.00 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,538.7 N	Yes
Time of Peak	10.0 - 12.3 ms	10.80 ms	Yes

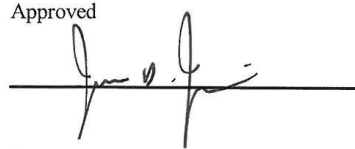
Test meets specifications.

Comments:

Technician



Approved



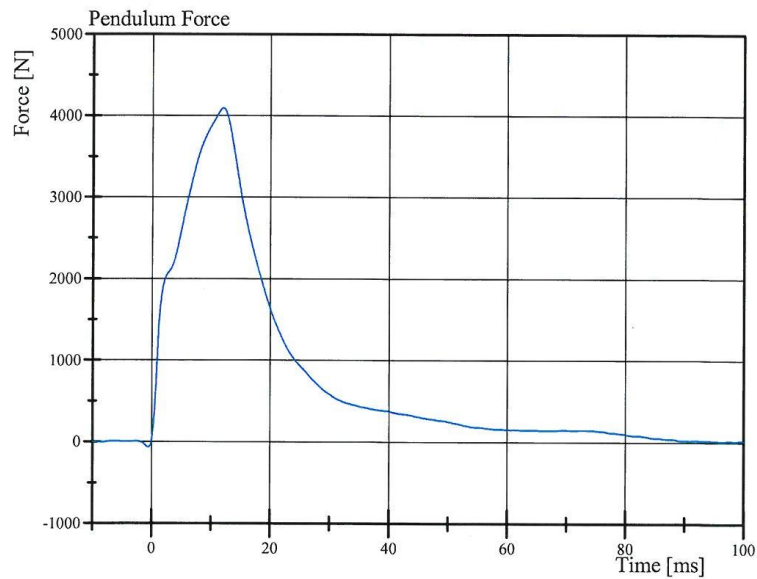
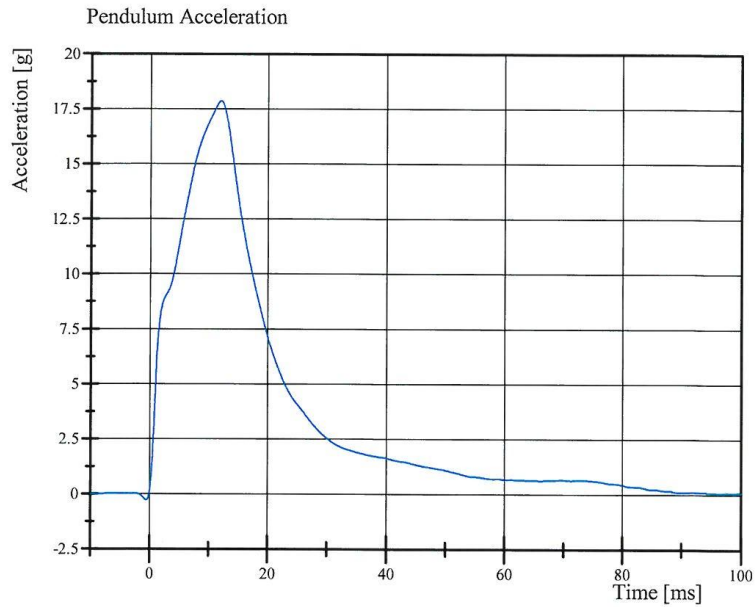
Specification Source: NHTSA Final Rule 8/15/2008

09.21.2012 09:04:56 598



Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 6-2
Test Date: 9/21/2012



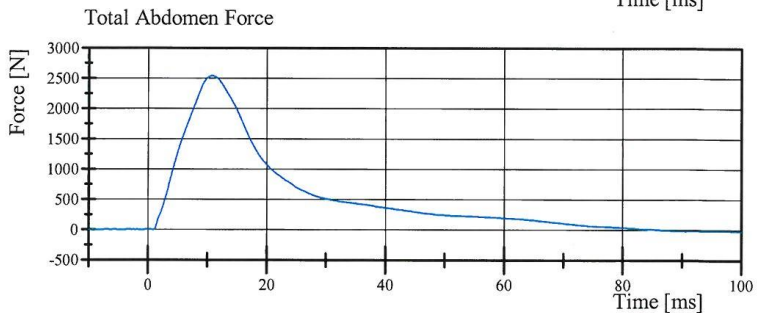
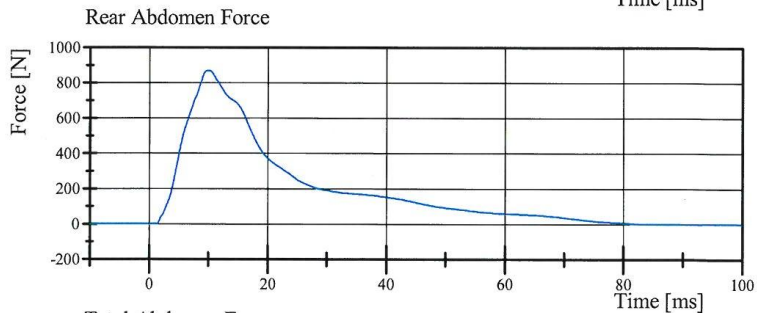
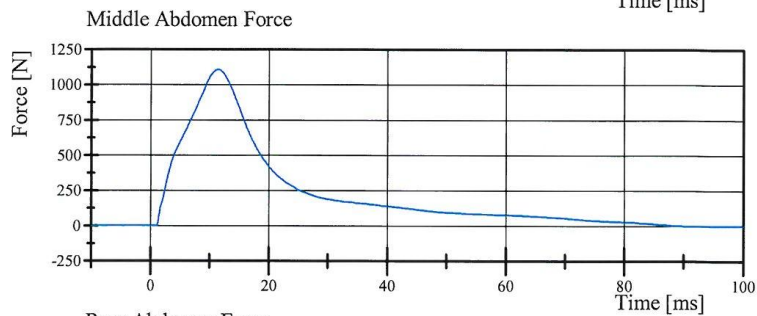
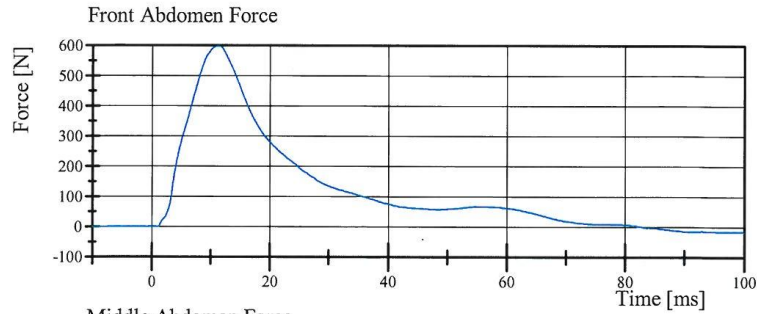
Specification Source: NHTSA Final Rule 8/15/2008

09.21.2012 09:05:04 598



Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 6-2
Test Date: 9/21/2012



Specification Source: NHTSA Final Rule 8/15/2008

09.21.2012 09:05:04 598



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 6-1

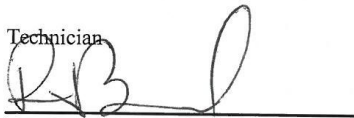
Test Date: 9/21/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.22 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	4,990.7 N	Yes
Time of Peak	11.8 - 16.1 ms	13.12 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,248.8 N	Yes
Time of Peak	12.2 - 17.0 ms	13.68 ms	Yes

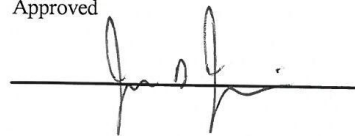
Test meets specifications.

Comments:

Technician



Approved



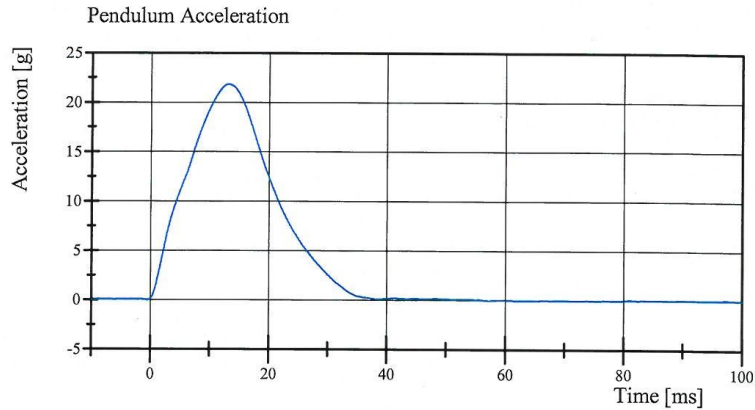
Specification Source: NHTSA Final Rule 8/15/2008

09.21.2012 08:30:02 559

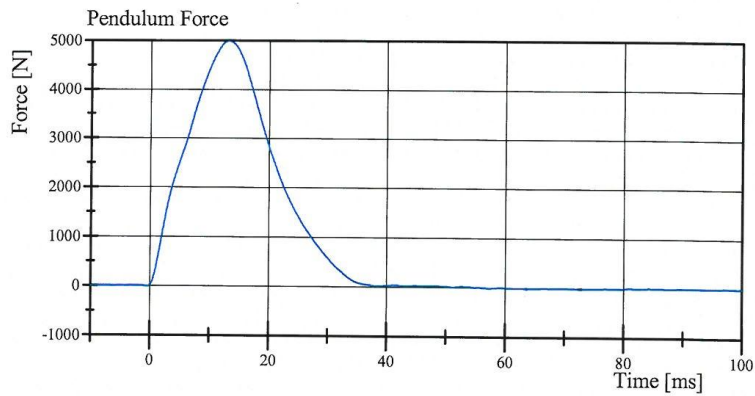


Transportation Research Center Inc.

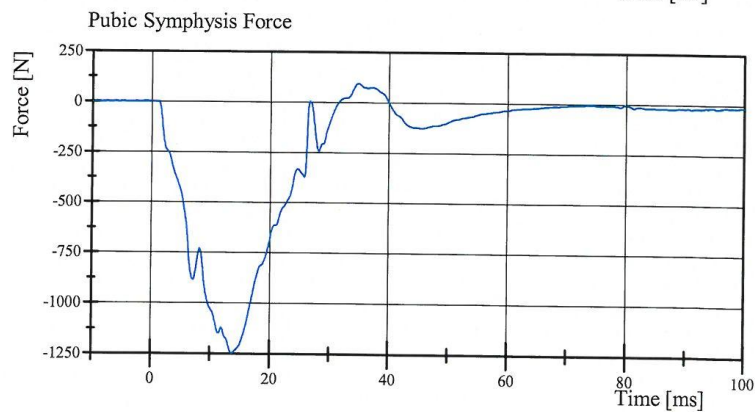
Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 6-1
Test Date: 9/21/2012



Filter Class: CFC_180
Max: 21.8 gn at 13.1 ms
Min: -0.1 gn at 72.6 ms



Filter Class: CFC_180
Max: 4,990.7 N at 13.1 ms
Min: -15.6 N at 72.6 ms



Filter Class: CFC_600
Max: 93.0 N at 34.8 ms
Min: -1,248.8 N at 13.7 ms

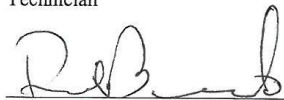
Driver S/N F030

Post-Test Calibration Sheets

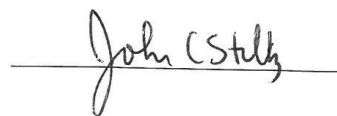
Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 07
Date: 10/02/12

Symbol	Description	Specification	Results	Pass
		mm	mm	
1	Sitting Height	900.0 - 918.0	910	Yes
2	Seat to Shoulder Joint	558.0 - 572.0	560	Yes
3	Seat to Lower Face of Thoracic Spine Box	346.0 - 356.0	350	Yes
4	Seat to Hip Joint (center of bolt)	97.0 - 103.0	98	Yes
5	Sole to Seat, Sitting	433.0 - 451.0	448	Yes
6	Head Width	152.0 - 158.0	155	Yes
7	Shoulder/Arm Width	461.0 - 479.0	472	Yes
8	Thorax Width	322.0 - 332.0	325	Yes
9	Abdomen Width	273.0 - 287.0	282	Yes
10	Pelvis Lap Width	359.0 - 373.0	367	Yes
11	Head Depth	196.0 - 206.0	200	Yes
12	Thorax Depth	262.0 - 272.0	268	Yes
13	Abdomen Depth	194.0 - 204.0	200	Yes
14	Pelvis Depth	235.0 - 245.0	240	Yes
15	Back of Buttocks to Hip Joint (center of bolt)	150.0 - 160.0	159	Yes
16	Back of Buttocks to Front of Knee	597.0 - 615.0	604	Yes

Technician



Approved



Baseline 10/07/05



Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 7-1

Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Peak Resultant Acceleration	125 - 155 g	138.4 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	-11.3 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	Yes	Yes	Yes

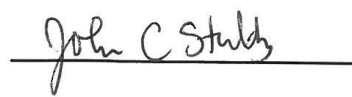
Test meets specifications.

Comments:

Technician



Approved



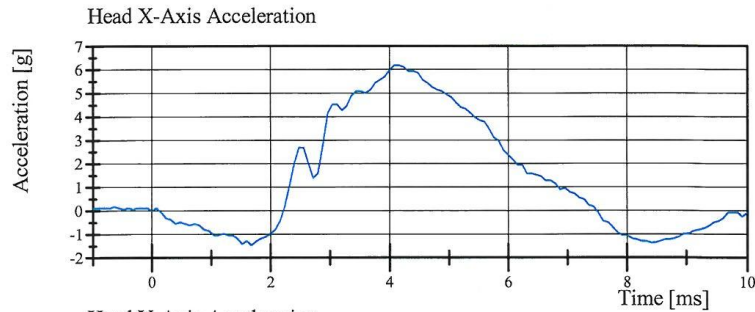
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 10:24:53 360

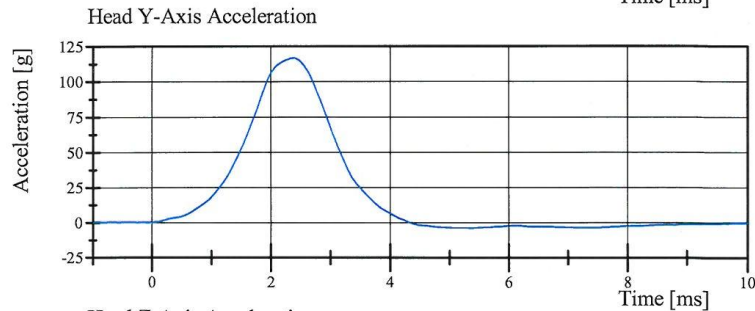


Transportation Research Center Inc.

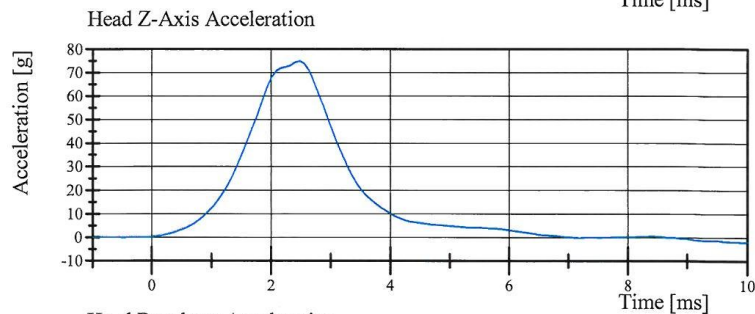
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



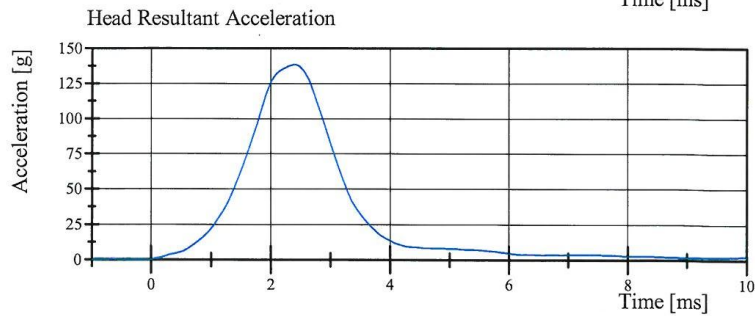
Filter Class: CFC_1000
Max: 6.2 gn at 4.1 ms
Min: -1.5 gn at 1.7 ms



Filter Class: CFC_1000
Max: 116.8 gn at 2.4 ms
Min: -4.0 gn at 5.4 ms



Filter Class: CFC_1000
Max: 74.9 gn at 2.5 ms
Min: -2.1 gn at 9.9 ms



Filter Class: CFC_1000
Max: 138.4 gn at 2.4 ms
Min: 0.1 gn at -0.3 ms

Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 7-3
Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	44 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.36 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-53.9 deg	Yes
Time of Peak	54 - 66 ms	58.7 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	66.7 ms	Yes

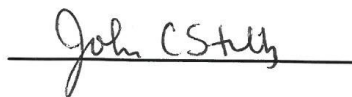
Test meets specifications.

Comments:

Technician



Approved



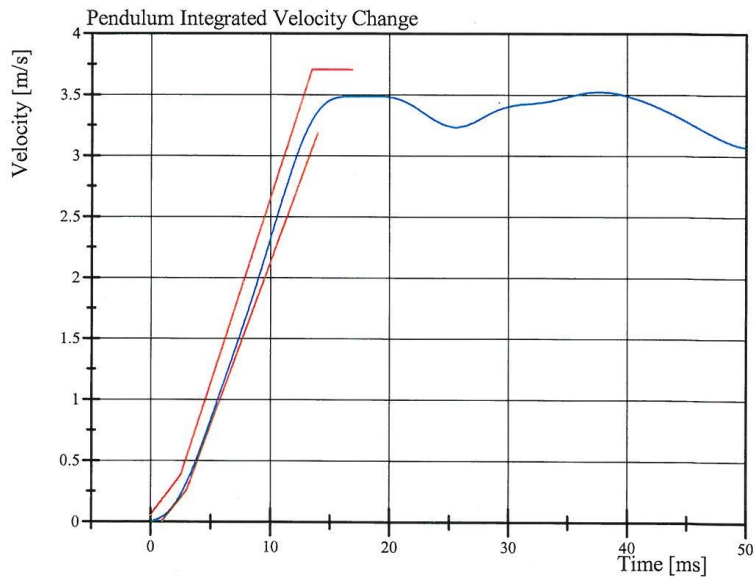
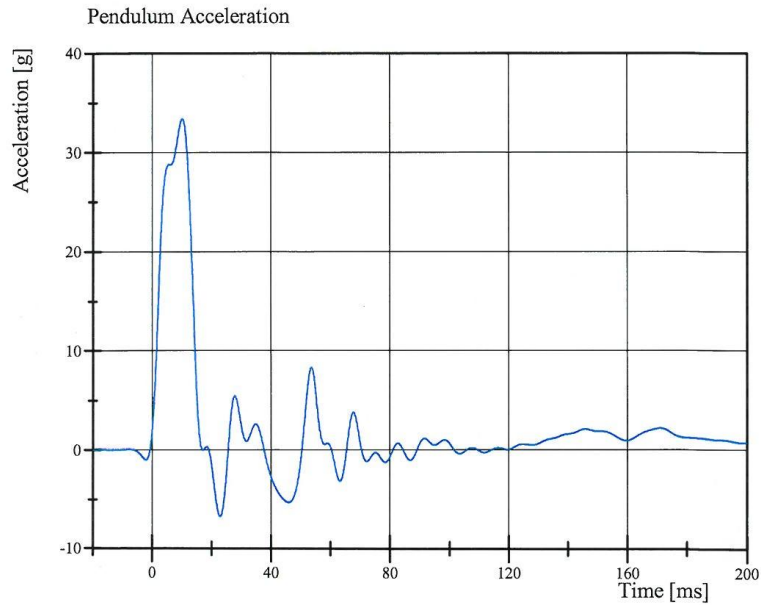
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 12:12:35 1311



Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 7-3
Test Date: 10/1/2012



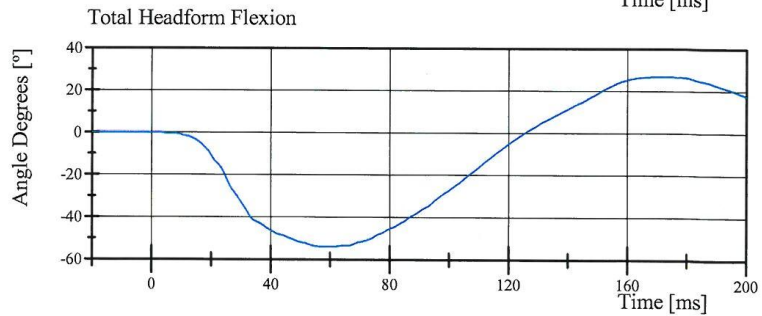
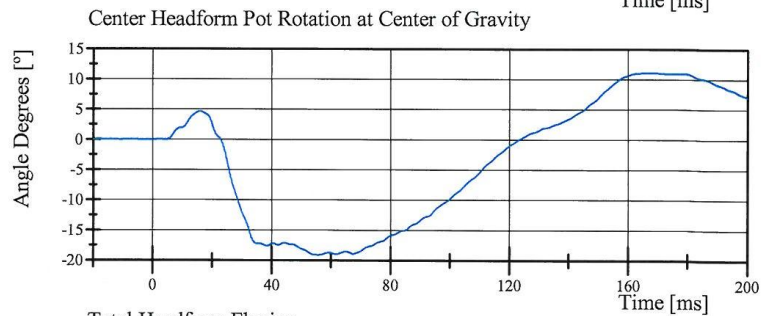
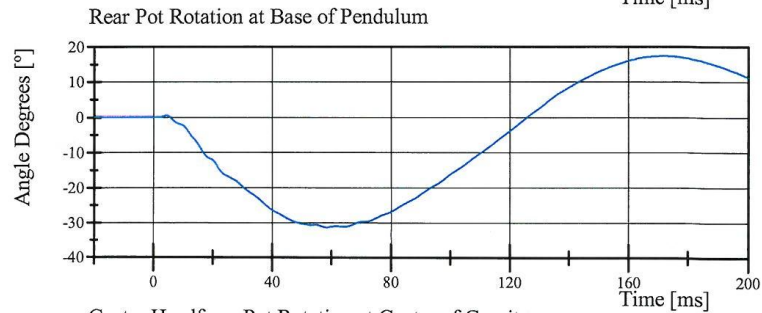
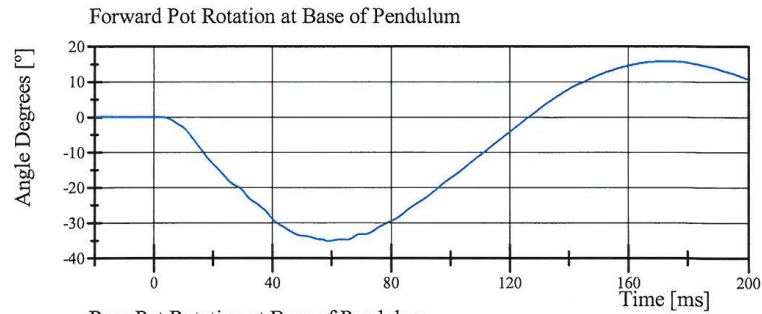
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 12:12:43 1311



Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 7-3
Test Date: 10/1/2012



Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 12:12:43 1311



Transportation Research Center Inc.

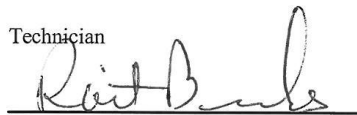
Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-9.72 g	Yes

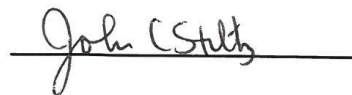
Test meets specifications.

Comments:

Technician



Approved



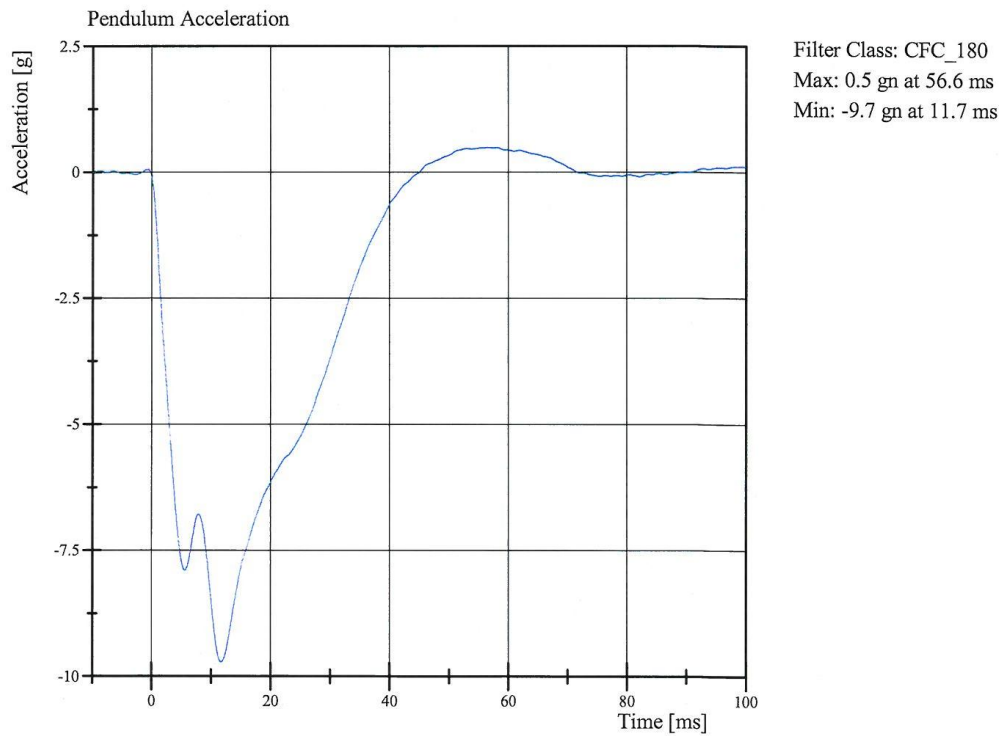
Specification Source: NHTSA final rule 8/15/2008

10.01.2012 14:07:50 564



Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



Specification Source: NHTSA final rule 8/15/2008

10.01.2012 14:08:02 564



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.0 mm	Yes

Test meets specifications.

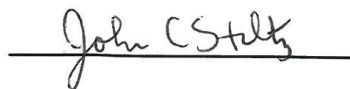
Comments:

Drop Height: 816

Technician



Approved



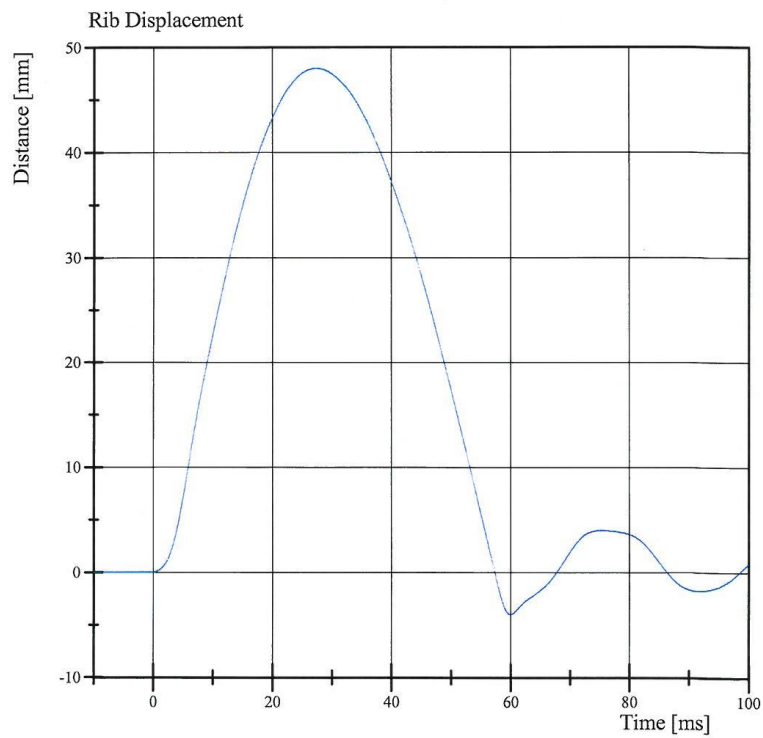
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 10:32:19 744



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



Filter Class: CFC_180
Max: 48.0 mm at 27.4 ms
Min: -4.0 mm at 59.9 ms

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012

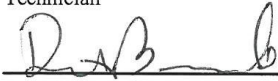
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.6 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.7 mm	Yes

Test meets specifications.

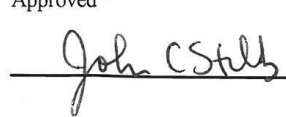
Comments:

Drop Height: 462

Technician



Approved



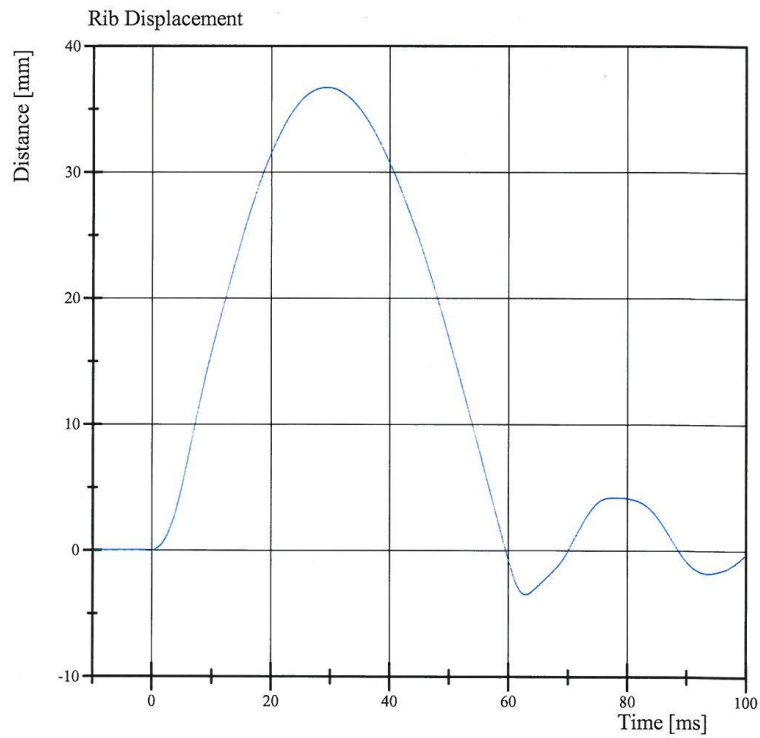
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 10:40:44 951



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



Filter Class: CFC_180
Max: 36.7 mm at 29.4 ms
Min: -3.5 mm at 62.8 ms

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.2 mm	Yes

Test meets specifications.

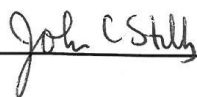
Comments:

Drop Height: 816

Technician



Approved



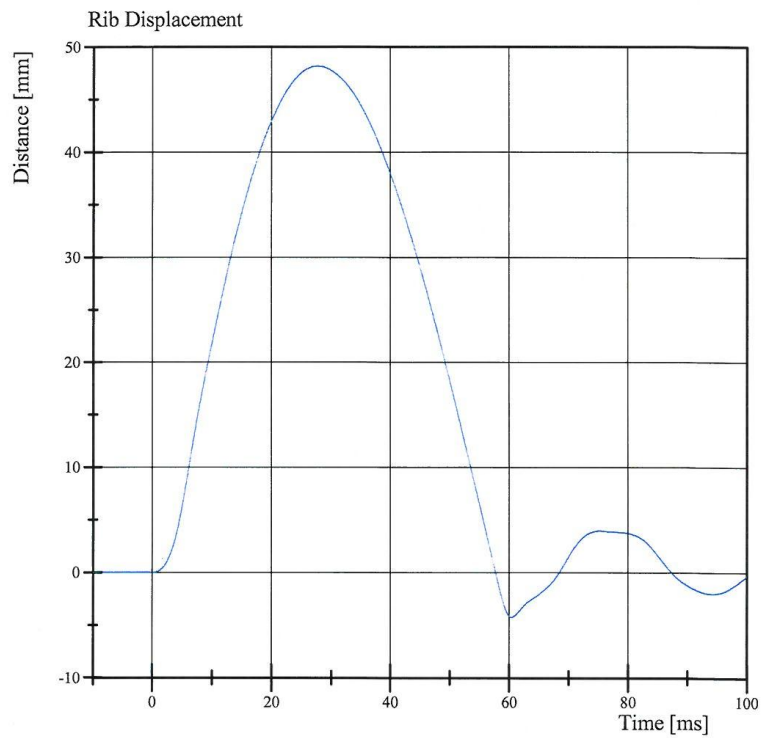
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 10:46:18 725



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



Filter Class: CFC_180
Max: 48.2 mm at 27.7 ms
Min: -4.3 mm at 60.4 ms

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.8 mm	Yes

Test meets specifications.

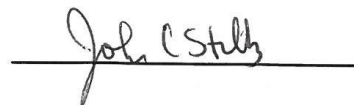
Comments:

Drop Height: 462

Technician



Approved



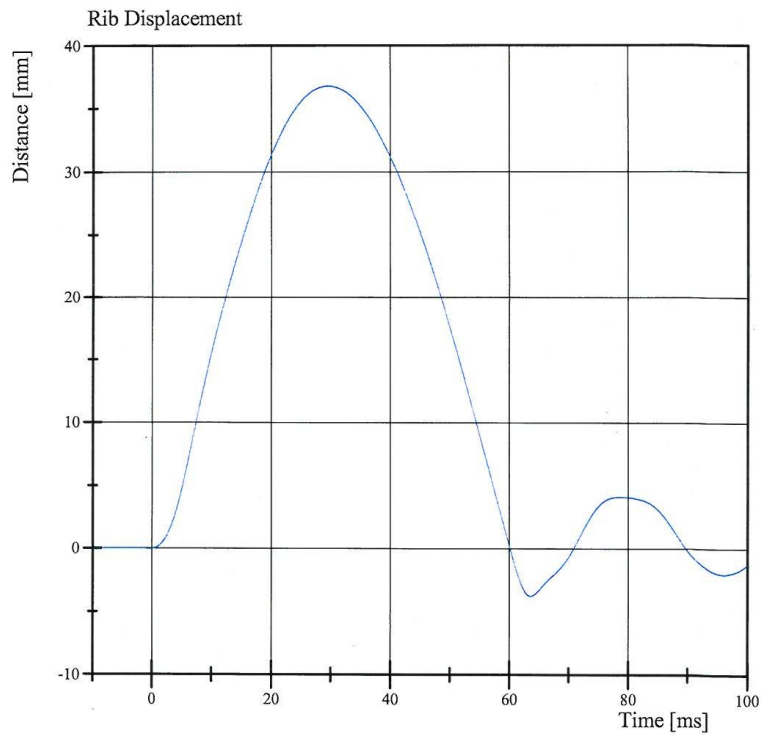
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 10:54:08 933



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



Filter Class: CFC_180
Max: 36.8 mm at 29.6 ms
Min: -3.7 mm at 63.5 ms

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 7-1

Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.7 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.9 mm	Yes

Test meets specifications.

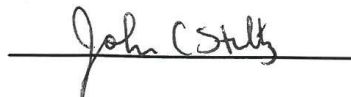
Comments:

Drop Height: 816

Technician



Approved



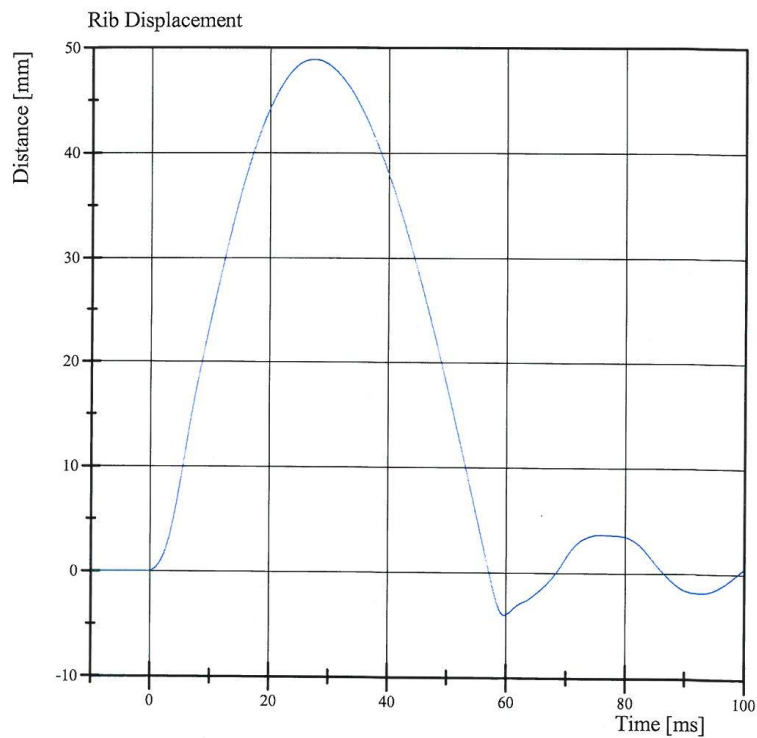
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 11:00:48 748



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



Filter Class: CFC_180
Max: 48.9 mm at 27.4 ms
Min: -4.0 mm at 59.7 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 11:01:00 748



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 7-1

Test Date: 10/1/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.1 mm	Yes

Test meets specifications.

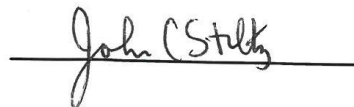
Comments:

Drop Height: 462

Technician



Approved



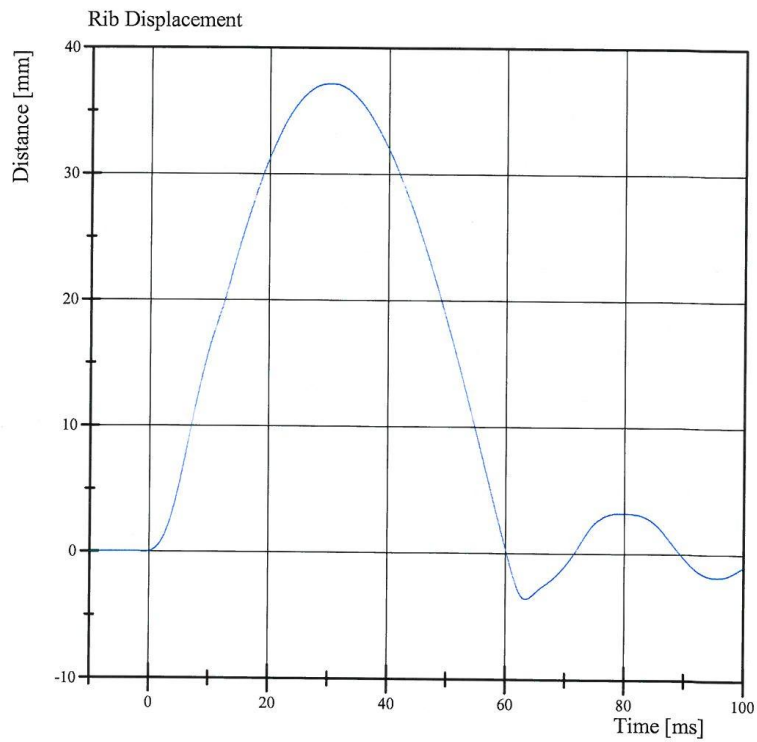
Specification Source: NHTSA Final Rule 8/15/2008

10.01.2012 11:06:57 933



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/1/2012



Filter Class: CFC_180
Max: 37.1 mm at 30.4 ms
Min: -3.6 mm at 63.4 ms

Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 7-1

Test Date: 10/2/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.469 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,473.0 N	Yes
Upper Rib Displacement	34 - 41 mm	36.7 mm	Yes
Center Rib Displacement	37 - 45 mm	40.1 mm	Yes
Lower Rib Displacement	37 - 44 mm	41.0 mm	Yes

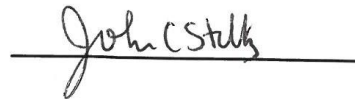
Test meets specifications.

Comments:

Technician



Approved



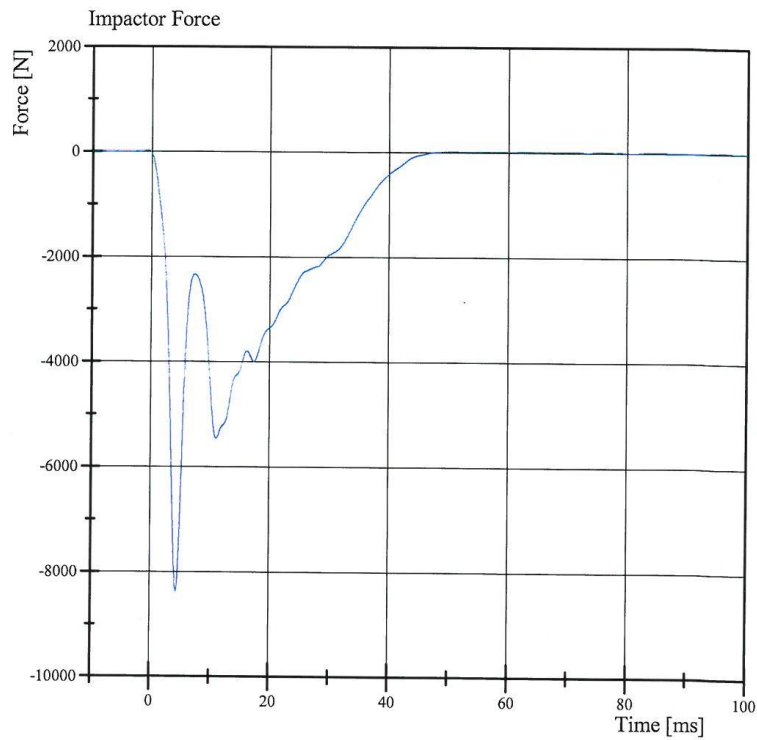
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

10.02.2012 09:12:03 435



Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/2/2012



Filter Class: CFC_180
Max: 23.8 N at -0.6 ms
Min: -8,382.5 N at 4.4 ms

Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

10.02.2012 09:12:11 435

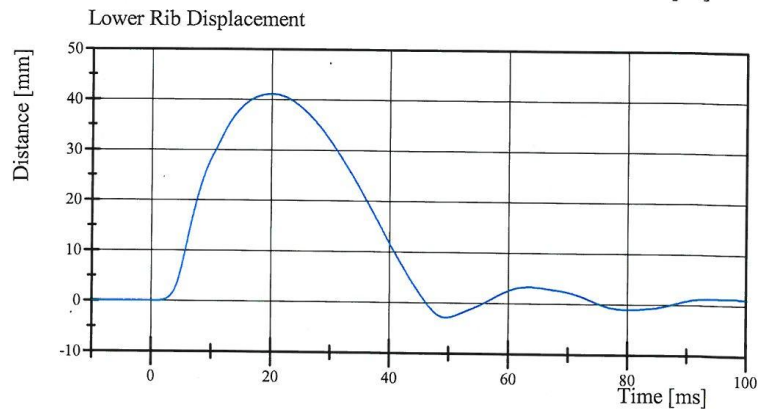
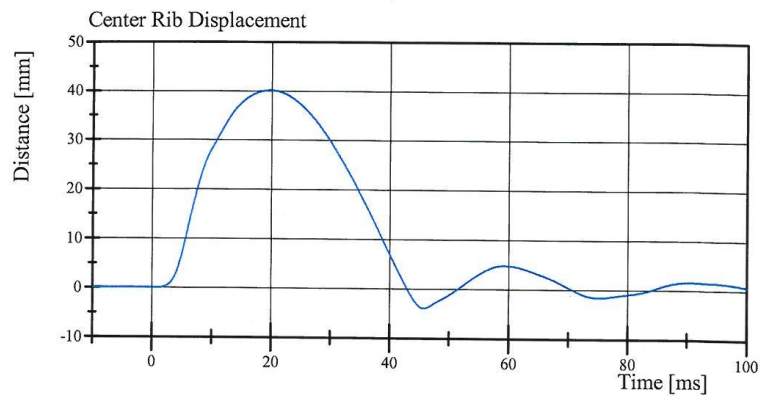
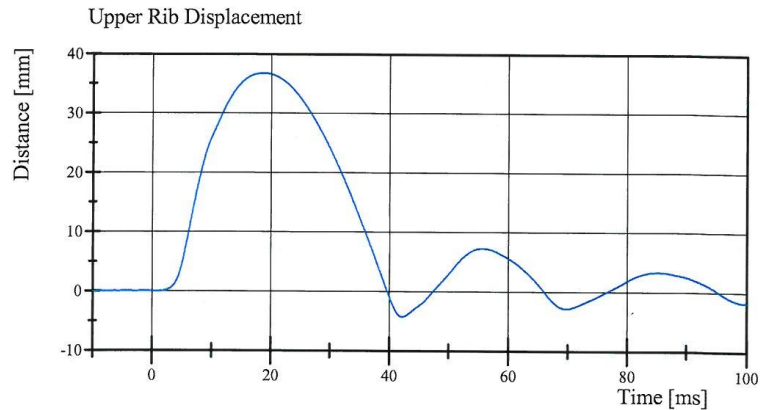


Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 7-1

Test Date: 10/2/2012



Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

10.02.2012 09:12:11 435



Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 7-1

Test Date: 10/2/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.93 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,045.9 N	Yes
Time of Peak	10.6 - 13.0 ms	11.52 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,480.7 N	Yes
Time of Peak	10.0 - 12.3 ms	10.88 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



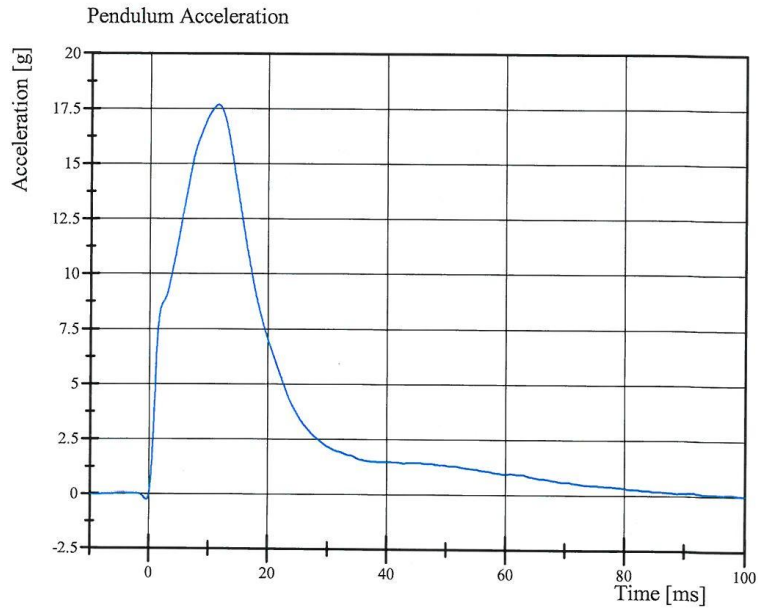
Specification Source: NHTSA Final Rule 8/15/2008

10.02.2012 09:38:59 587

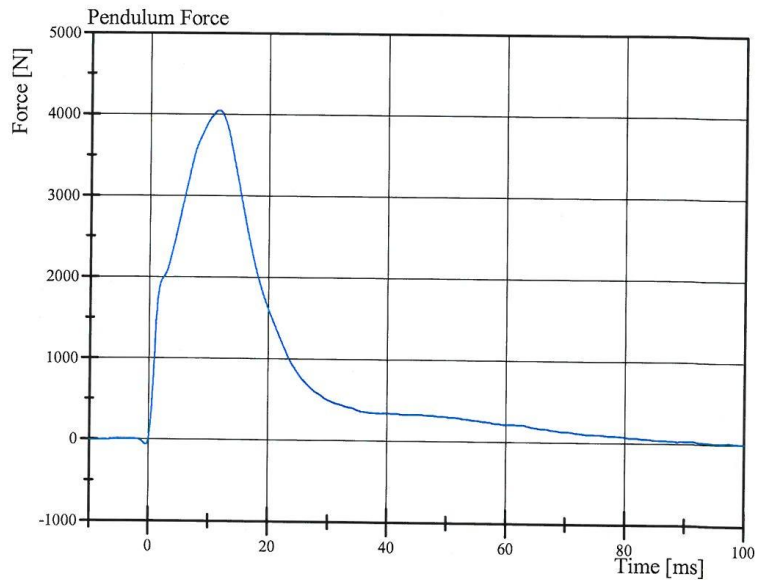


Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/2/2012



Filter Class: CFC_180
Max: 17.7 gn at 11.5 ms
Min: -0.3 gn at -0.5 ms



Filter Class: CFC_180
Max: 4,045.9 N at 11.5 ms
Min: -62.8 N at -0.5 ms

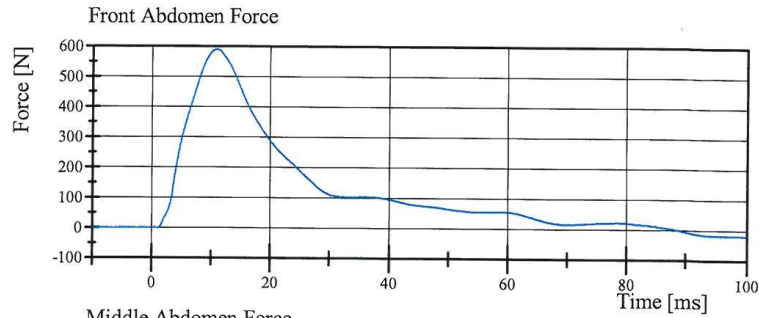
Specification Source: NHTSA Final Rule 8/15/2008

10.02.2012 09:39:06 587

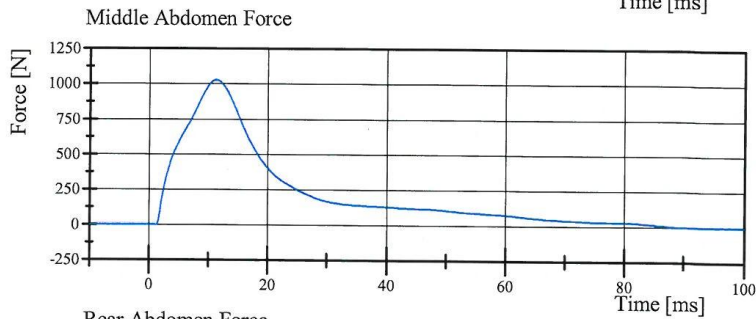


Transportation Research Center Inc.

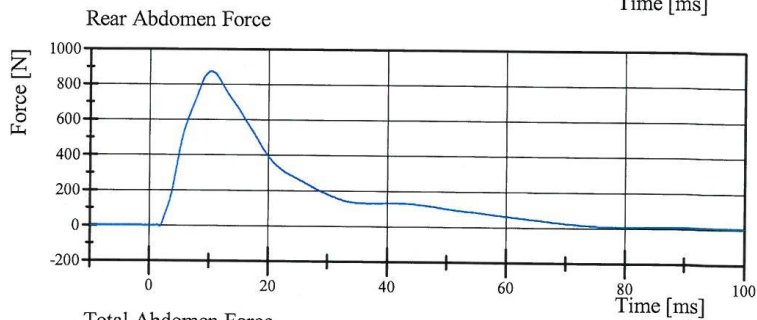
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 7-1
Test Date: 10/2/2012



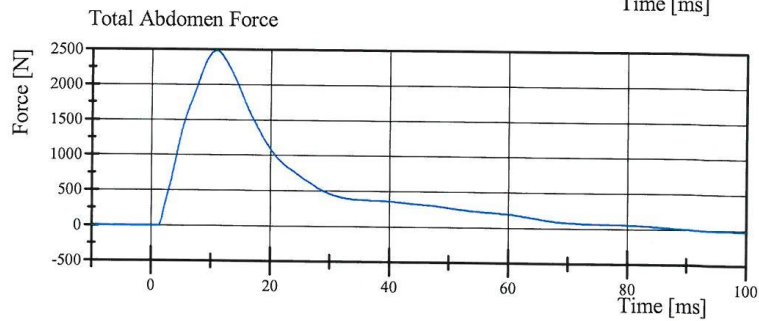
Filter Class: CFC_600
Max: 590.0 N at 10.8 ms
Min: -19.0 N at 99.1 ms



Filter Class: CFC_600
Max: 1,027.8 N at 11.2 ms
Min: -3.0 N at 98.4 ms



Filter Class: CFC_600
Max: 874.0 N at 10.2 ms
Min: -6.5 N at 1.8 ms



Filter Class: CFC_600
Max: 2,480.7 N at 10.9 ms
Min: -19.1 N at 98.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.02.2012 09:39:06 587



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 7-1

Test Date: 10/2/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.23 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	4,976.9 N	Yes
Time of Peak	11.8 - 16.1 ms	13.76 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,305.4 N	Yes
Time of Peak	12.2 - 17.0 ms	14.00 ms	Yes

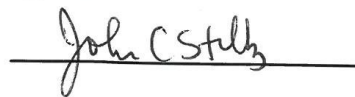
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

10.02.2012 10:49:34 545

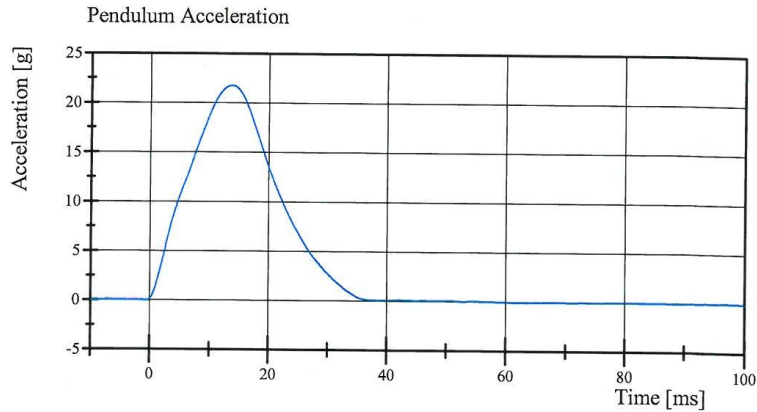


Transportation Research Center Inc.

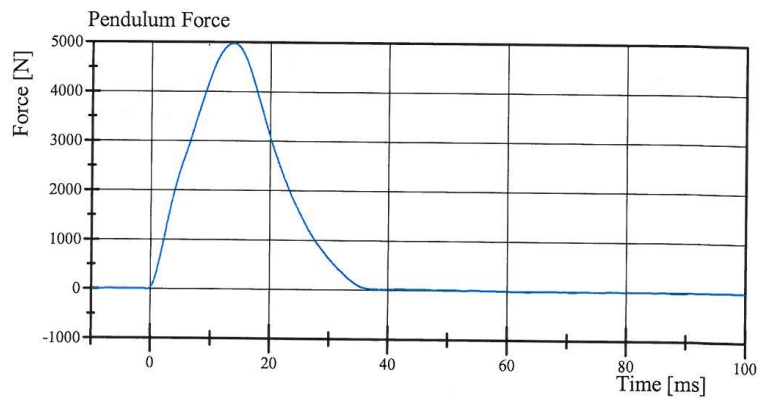
Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 7-1

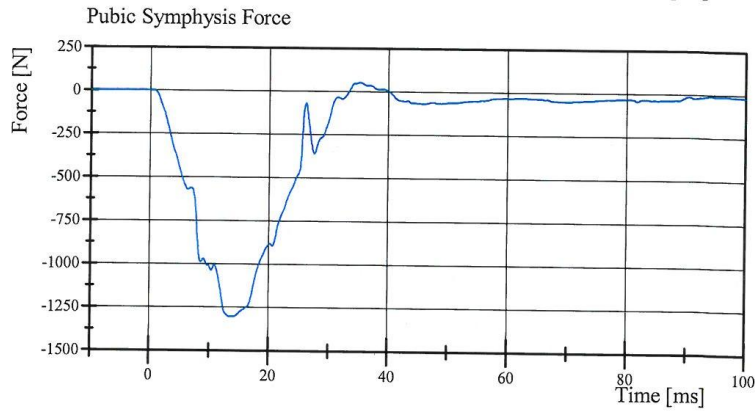
Test Date: 10/2/2012



Filter Class: CFC_180
Max: 21.7 gn at 13.8 ms
Min: -0.1 gn at 89.4 ms



Filter Class: CFC_180
Max: 4,976.9 N at 13.8 ms
Min: -20.5 N at 89.4 ms



Filter Class: CFC_600
Max: 52.1 N at 35.1 ms
Min: -1,305.4 N at 14.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.02.2012 10:49:41 545

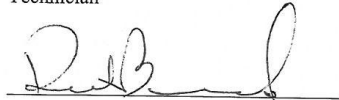


Pre-Test Calibration Sheets
Passenger S/N 305

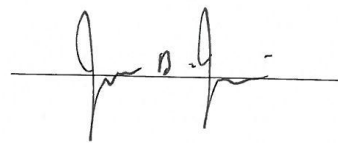
Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.011

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	777	Yes
B	Shoulder Pivot Height	437.0 - 453.0	440	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	101	Yes
F	Thigh Clearance	119.0 - 135.0	135	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	535	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	481	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	868	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. 11-1
Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	118.1 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-8.4 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

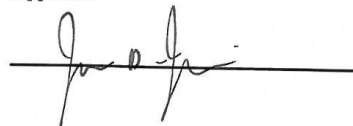
Test meets specifications.

Comments:

Technician



Approved



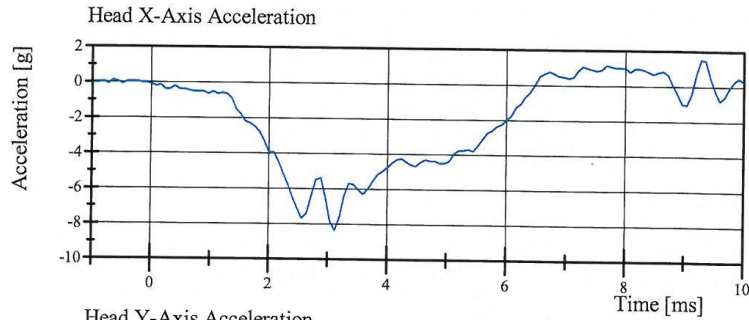
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 07:52:54 234

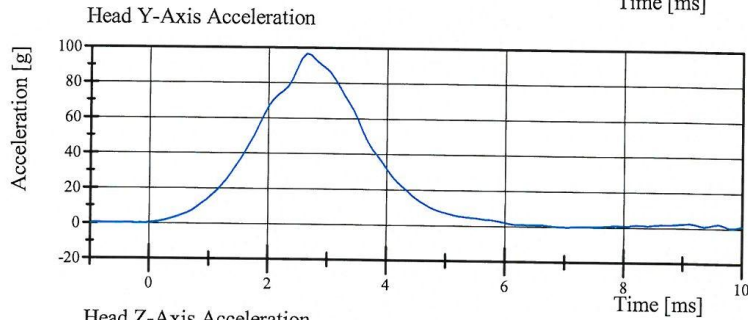


Transportation Research Center Inc.

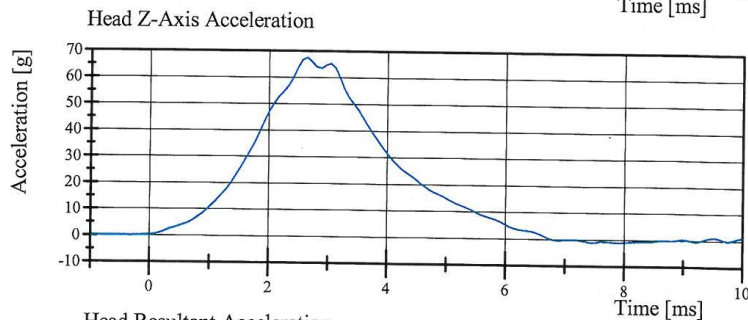
Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



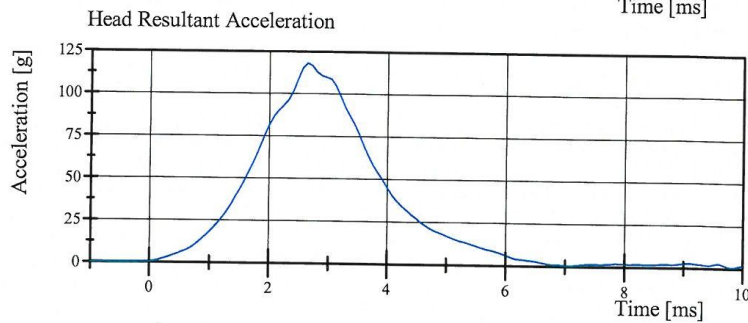
Filter Class: CFC_1000
Max: 1.5 gn at 9.3 ms
Min: -8.4 gn at 3.1 ms



Filter Class: CFC_1000
Max: 96.6 gn at 2.6 ms
Min: -0.1 gn at -0.2 ms



Filter Class: CFC_1000
Max: 67.5 gn at 2.6 ms
Min: -1.2 gn at 7.4 ms



Filter Class: CFC_1000
Max: 118.1 gn at 2.6 ms
Min: 0.0 gn at -0.2 ms

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

09.24.2012 07:53:00 234



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 11-1

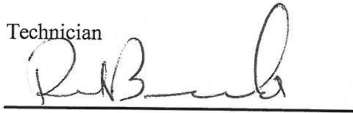
Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	29 %	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	2.523 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.806 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.127 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.810 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.811 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-77.6 deg	Yes
Time of Peak	50 - 70 ms	67.8 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	41.1 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	119.7 ms	Yes

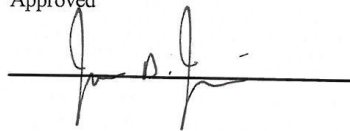
Test meets specifications.

Comments:

Technician



Approved



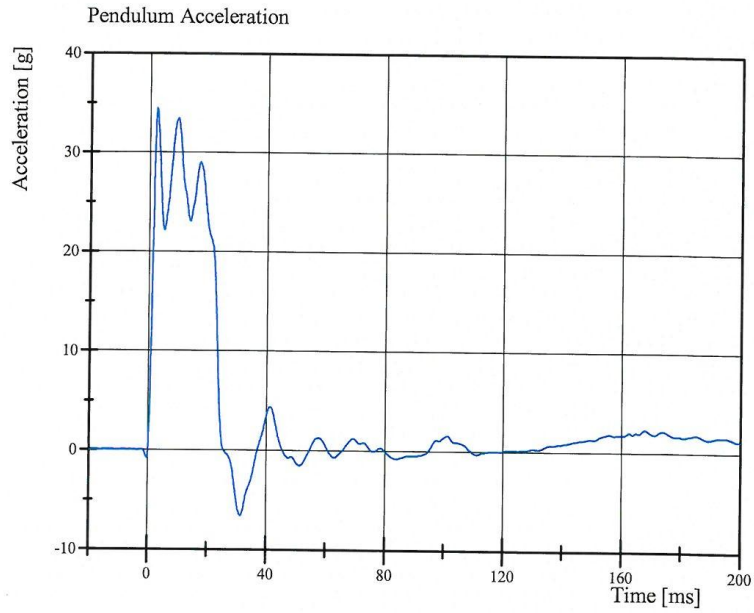
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 08:25:51 634

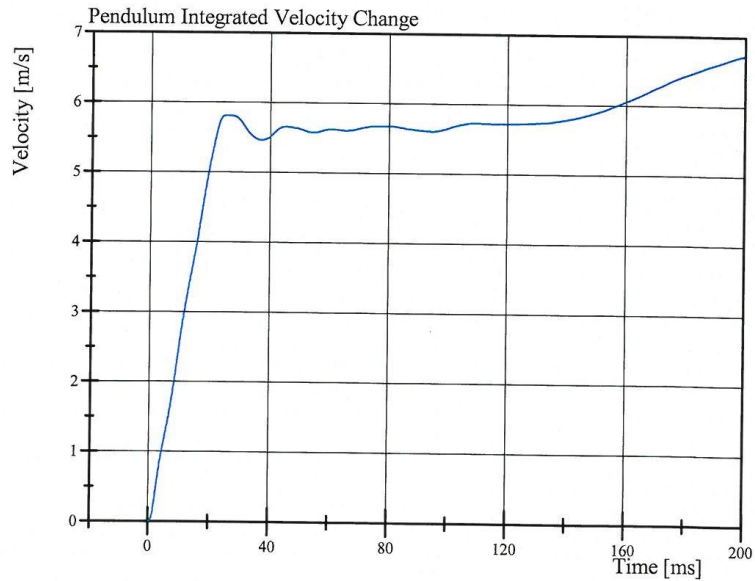


Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



Filter Class: CFC_180
Max: 34.4 gn at 2.4 ms
Min: -6.6 gn at 31.3 ms



Filter Class: CFC_180
Max: 6.7 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.

09.24.2012 08:25:59 634

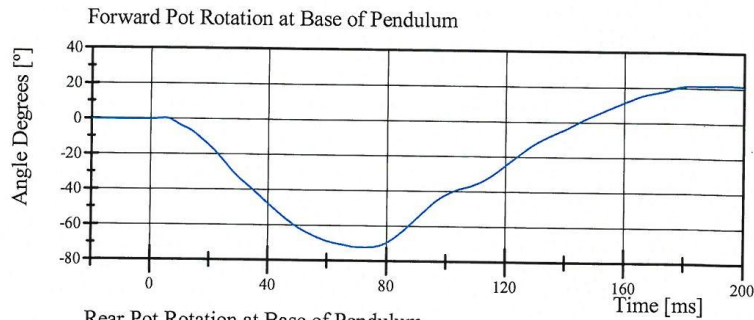


Transportation Research Center Inc.

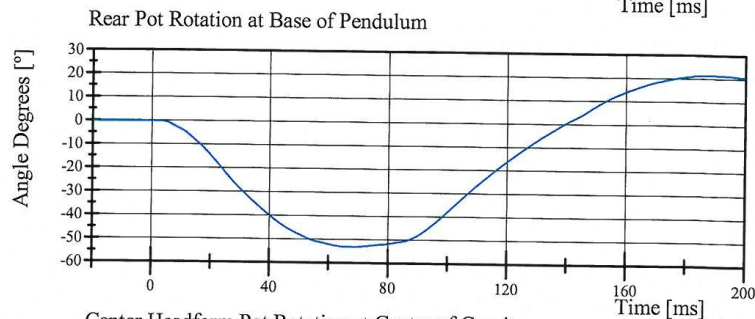
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 11-1

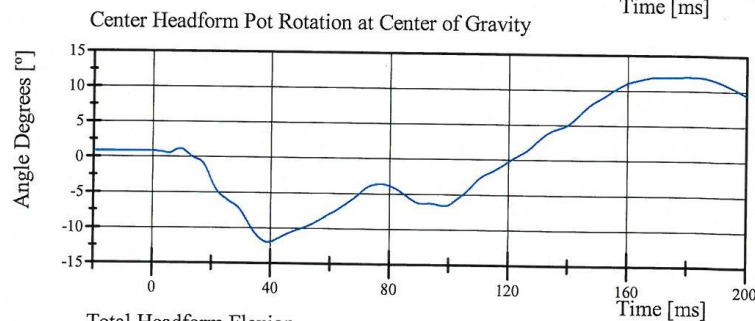
Test Date: 9/24/2012



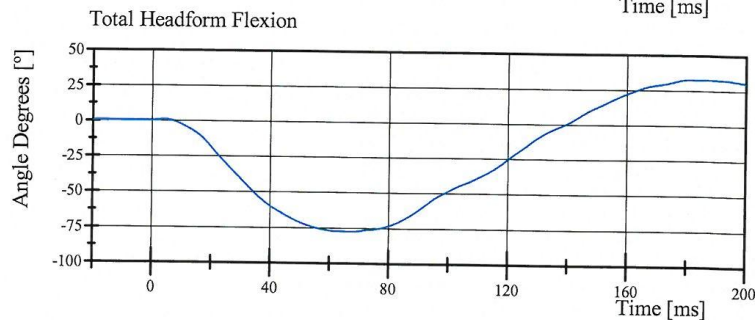
Filter Class: CFC_60
Max: 21.4 ° at 193.4 ms
Min: -72.3 ° at 70.7 ms



Filter Class: CFC_60
Max: 21.4 ° at 188.7 ms
Min: -53.3 ° at 67.9 ms



Filter Class: CFC_60
Max: 12.0 ° at 179.9 ms
Min: -12.1 ° at 39.1 ms



Filter Class: CFC_60
Max: 32.9 ° at 184.6 ms
Min: -77.6 ° at 67.8 ms

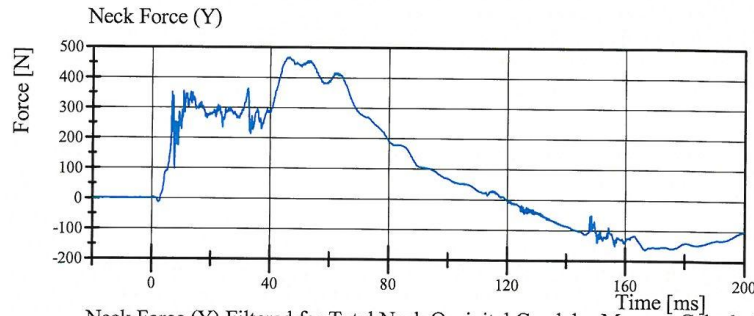
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 08:26:00 634

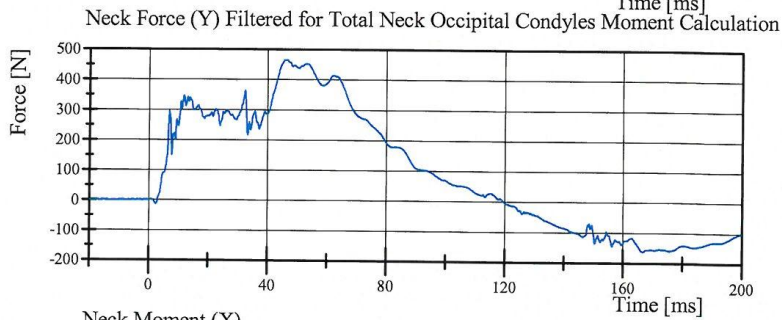


Transportation Research Center Inc.

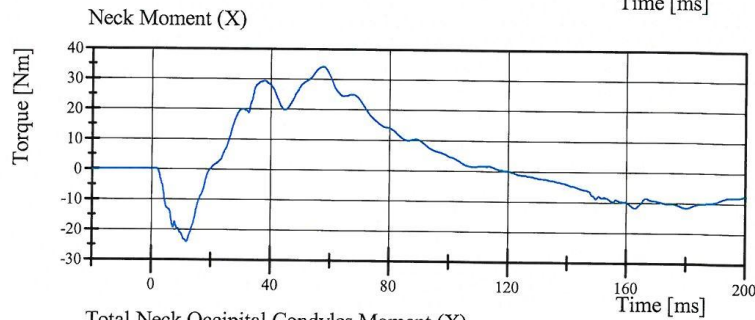
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



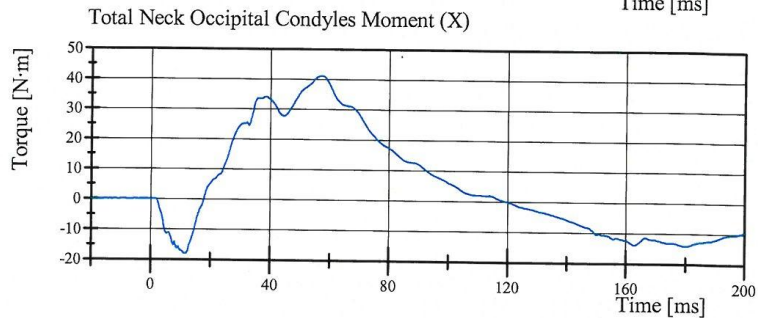
Filter Class: CFC_1000
Max: 466.3 N at 46.5 ms
Min: -163.6 N at 166.6 ms



Filter Class: CFC_600
Max: 465.1 N at 46.5 ms
Min: -162.6 N at 166.6 ms



Filter Class: CFC_600
Max: 34.2 Nm at 57.3 ms
Min: -24.1 Nm at 11.7 ms



Filter Class: Without_(Consta
Max: 41.1 N·m at 57.0 ms
Min: -18.0 N·m at 11.1 ms

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

09.24.2012 08:26:01 634



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 11-1

Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.8 g	Yes
Shoulder Displacement	28 - 37 mm	30.5 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.7 g	Yes

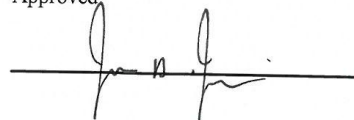
Test meets specifications.

Comments:

Technician



Approved



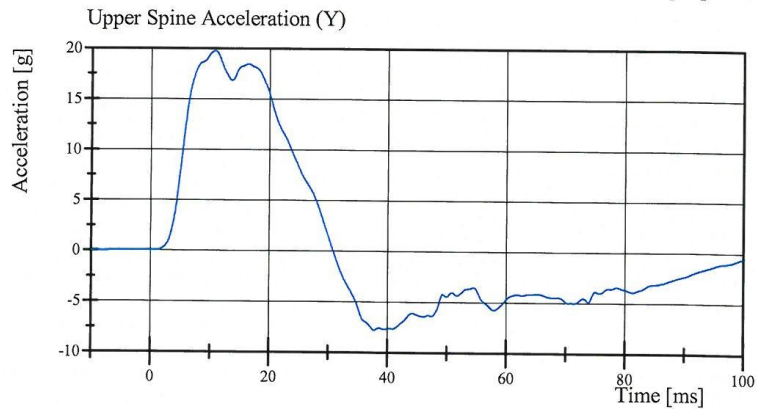
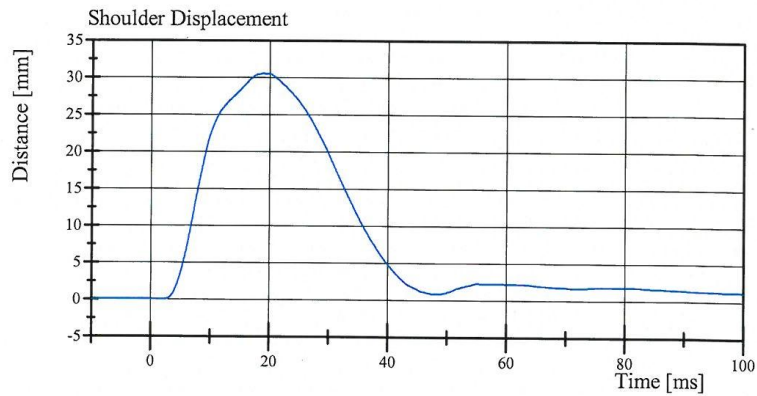
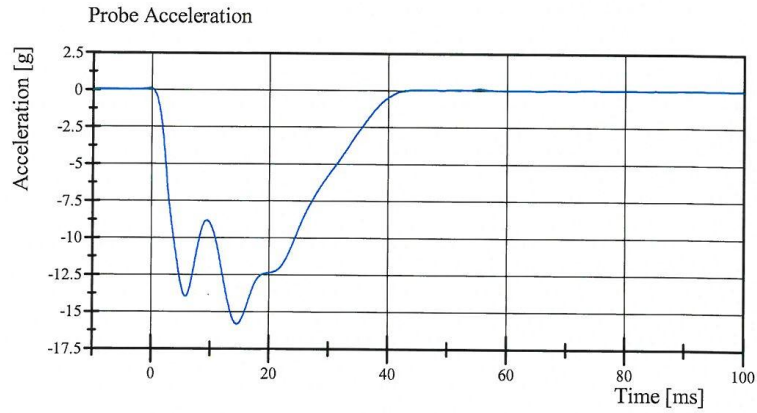
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 09:15:59 826



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



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

09.24.2012 09:16:06 826



Transportation Research Center Inc.

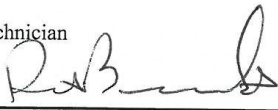
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.792 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.8 g	Yes
Shoulder Displacement	31 - 40 mm	35.1 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.9 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.0 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.1 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.3 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.7 g	Yes

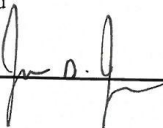
Test meets specifications.

Comments:

Technician



Approved



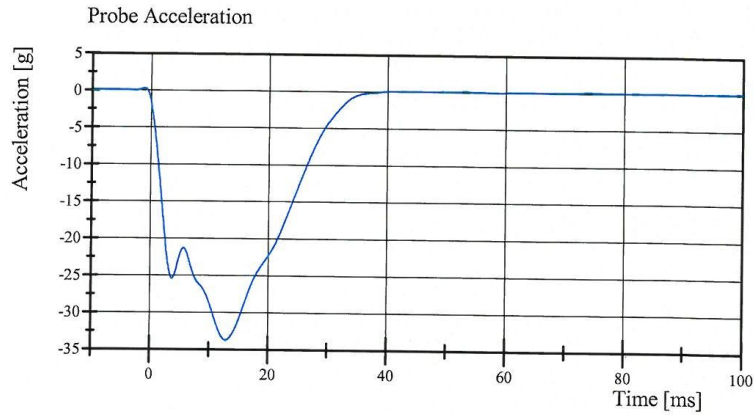
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 09:50:18 618

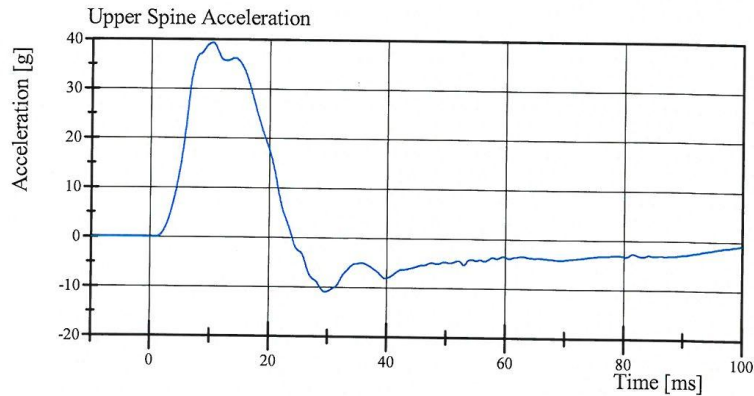


Transportation Research Center Inc.

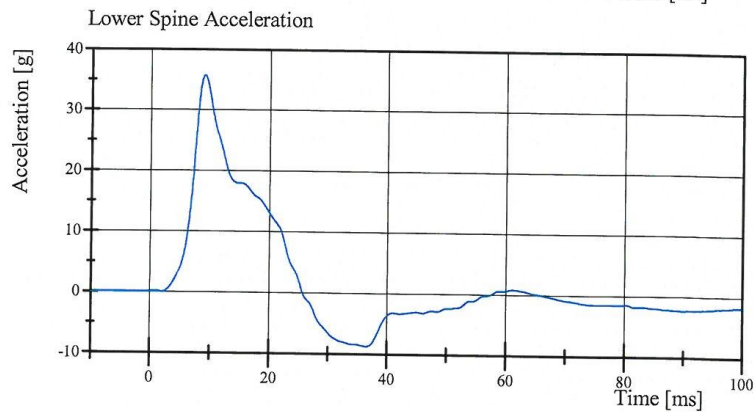
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



Filter Class: CFC_180
Max: 0.2 gn at -1.1 ms
Min: -33.8 gn at 12.8 ms



Filter Class: CFC_180
Max: 39.3 gn at 10.2 ms
Min: -11.0 gn at 29.6 ms



Filter Class: CFC_180
Max: 35.7 gn at 9.0 ms
Min: -8.8 gn at 36.4 ms

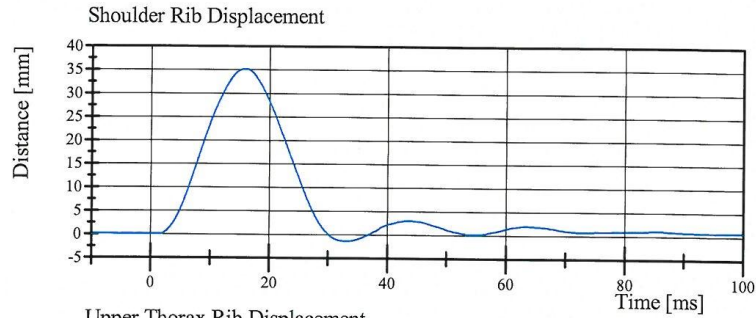
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 09:50:27 618

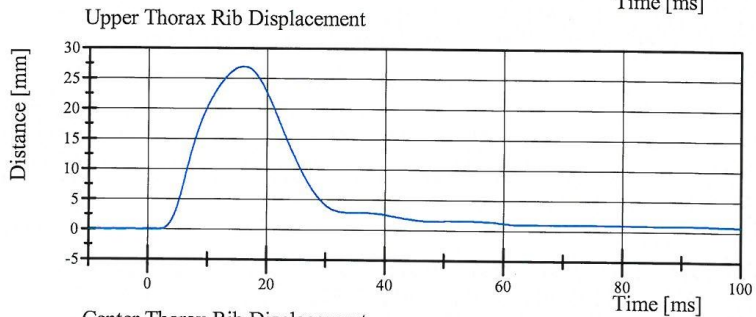


Transportation Research Center Inc.

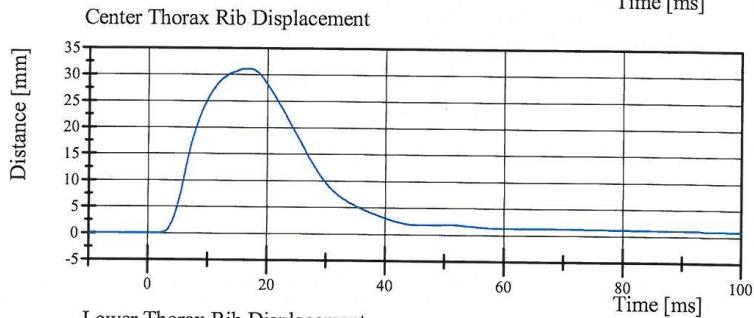
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



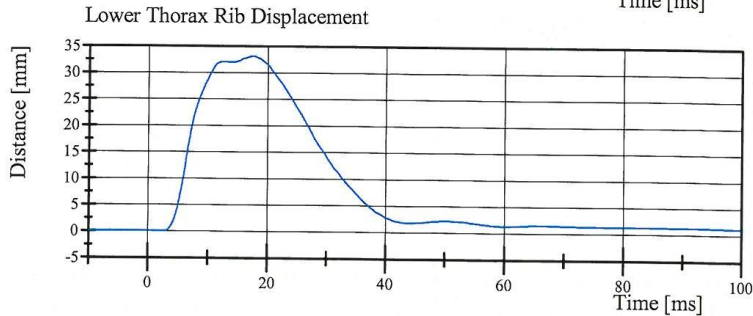
Filter Class: CFC_600
Max: 35.1 mm at 15.9 ms
Min: -1.5 mm at 33.1 ms



Filter Class: CFC_600
Max: 26.9 mm at 15.9 ms
Min: -0.0 mm at 1.8 ms



Filter Class: CFC_600
Max: 31.0 mm at 16.5 ms
Min: -0.0 mm at -3.9 ms



Filter Class: CFC_600
Max: 33.1 mm at 17.5 ms
Min: -0.0 mm at 2.7 ms

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

09.24.2012 09:50:28 618



Transportation Research Center Inc.

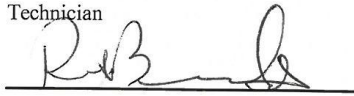
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.392 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	37.1 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.3 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	36.8 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.9 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.8 g	Yes

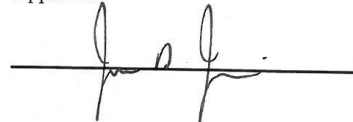
Test meets specifications.

Comments:

Technician



Approved



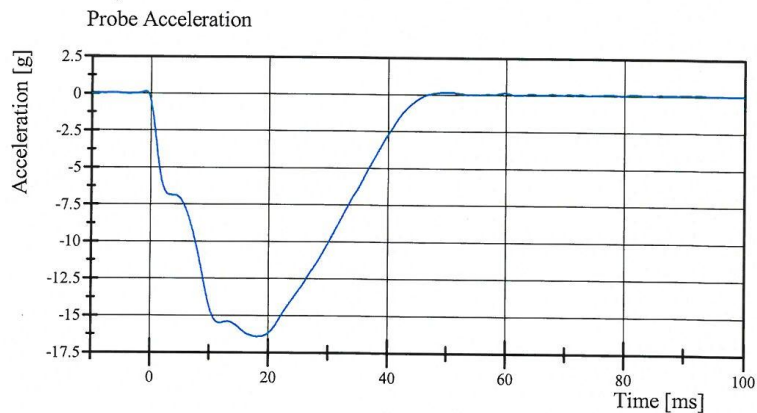
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 10:20:45 826

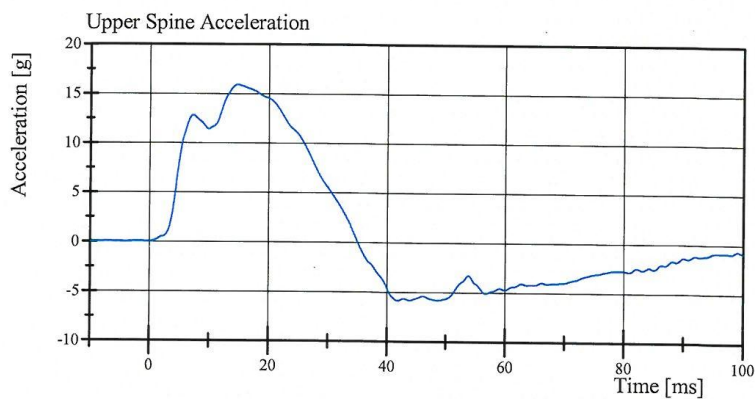


Transportation Research Center Inc.

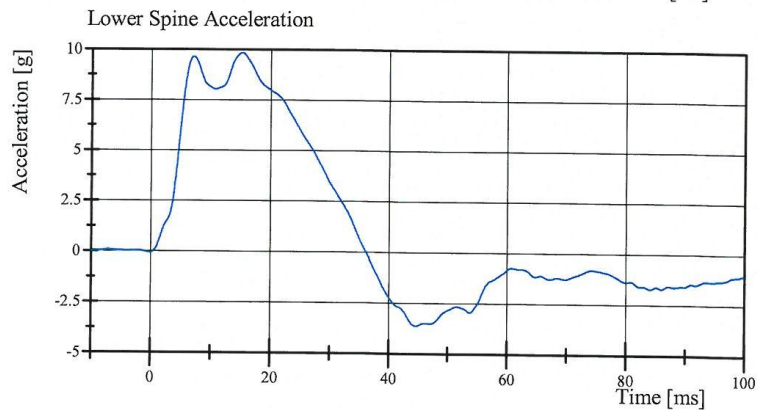
Left Lateral Thorax without Arm
SID II_s Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



Filter Class: CFC_180
Max: 0.1 gn at 50.3 ms
Min: -16.4 gn at 18.1 ms



Filter Class: CFC_180
Max: 15.9 gn at 14.7 ms
Min: -5.9 gn at 41.8 ms



Filter Class: CFC_180
Max: 9.8 gn at 15.2 ms
Min: -3.6 gn at 44.6 ms

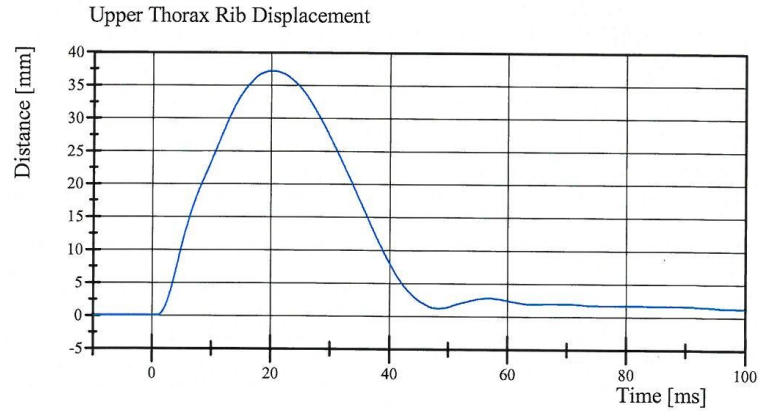
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.24.2012 10:20:54 826

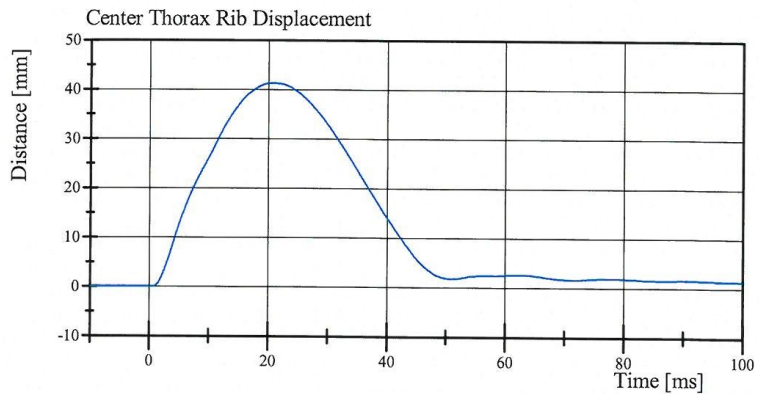


Transportation Research Center Inc.

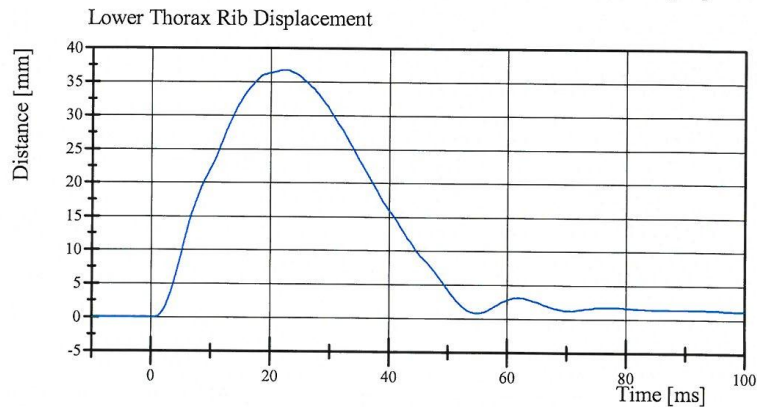
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 11-1
Test Date: 9/24/2012



Filter Class: CFC_600
Max: 37.1 mm at 20.6 ms
Min: -0.0 mm at 0.8 ms



Filter Class: CFC_600
Max: 41.3 mm at 20.8 ms
Min: -0.0 mm at -2.1 ms



Filter Class: CFC_600
Max: 36.8 mm at 22.2 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.

09.24.2012 10:20:55 826



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 305 Certification No. 11-1

Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.9 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.8 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	36.9 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	12.38 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.

09.24.2012 10:31:38 661

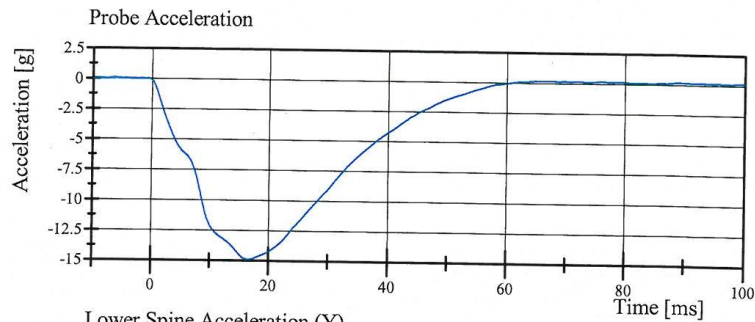


Transportation Research Center Inc.

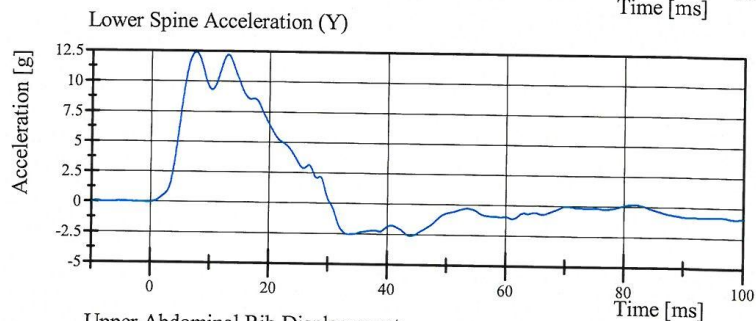
Left Lateral Abdomen

SID IIa Serial No. 305 Certification No. 11-1

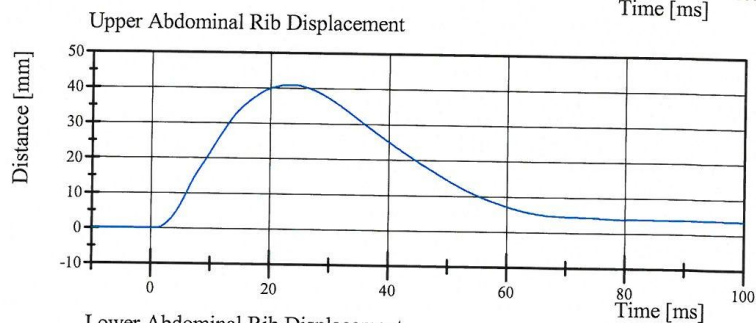
Test Date: 9/24/2012



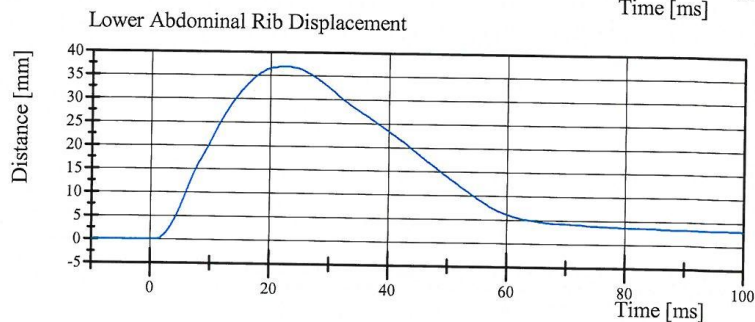
Filter Class: CFC_180
Max: 0.2 gn at 76.0 ms
Min: -14.9 gn at 16.6 ms



Filter Class: CFC_180
Max: 12.4 gn at 7.4 ms
Min: -2.6 gn at 43.9 ms



Filter Class: CFC_600
Max: 40.8 mm at 23.3 ms
Min: -0.0 mm at 0.7 ms



Filter Class: CFC_600
Max: 36.9 mm at 22.2 ms
Min: -0.0 mm at -3.8 ms

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

09.24.2012 10:31:45 661



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 11-1

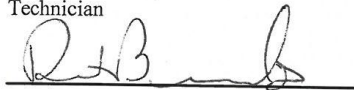
Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.69 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-42.31 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.2 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,983.7 N	Yes

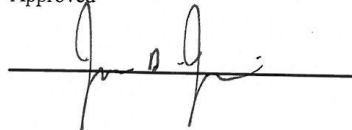
Test meets specifications.

Comments:

Technician



Approved



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

09.24.2012 10:59:17 436

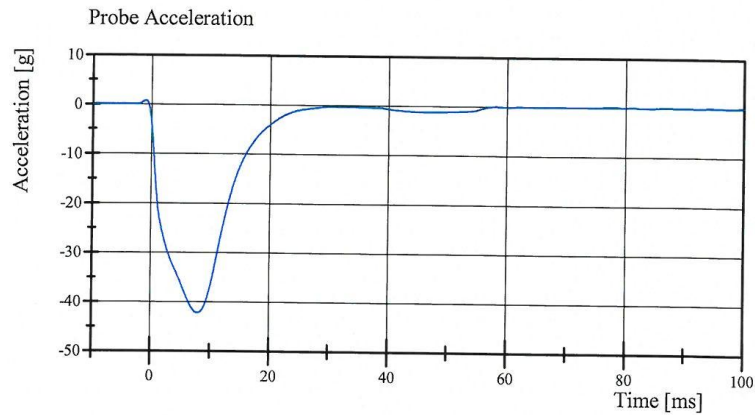


Transportation Research Center Inc.

Left Lateral Pelvis

SID II_s Serial No. 305 Certification No. 11-1

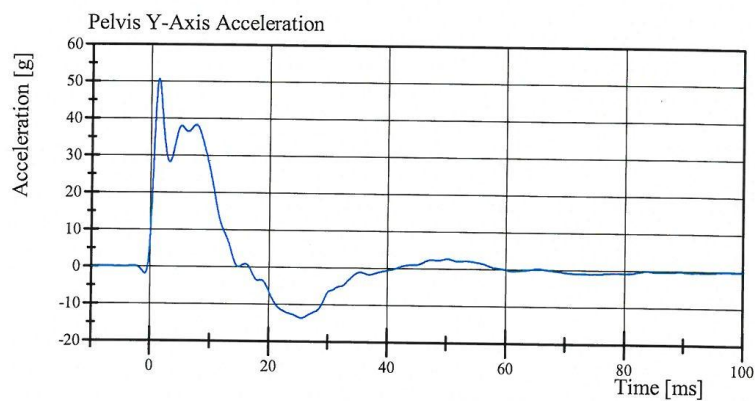
Test Date: 9/24/2012



Filter Class: CFC_180

Max: 0.6 gn at -1.0 ms

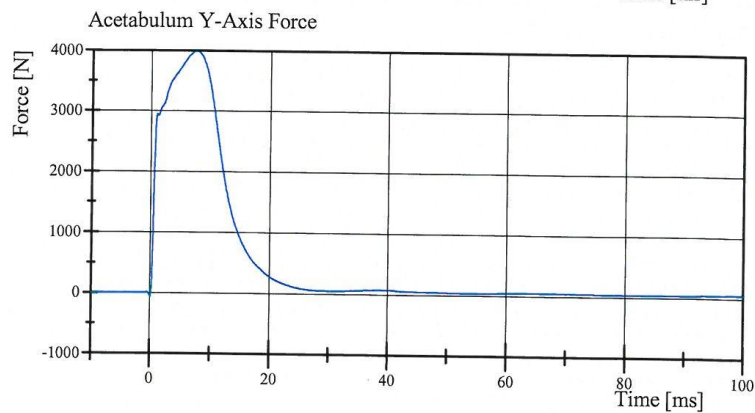
Min: -42.3 gn at 7.9 ms



Filter Class: CFC_180

Max: 50.5 gn at 1.3 ms

Min: -13.7 gn at 25.5 ms



Filter Class: CFC_600

Max: 3,983.7 N at 7.5 ms

Min: -65.0 N at 0.1 ms

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

09.24.2012 10:59:24 436



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 11-1

Test Date: 9/24/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.25 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-37.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	28.5 g	Yes
Iliac Force	4,100 - 5,100 N	4,484.5 N	Yes

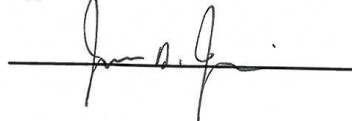
Test meets specifications.

Comments:

Technician



Approved



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

09.24.2012 13:03:11 641

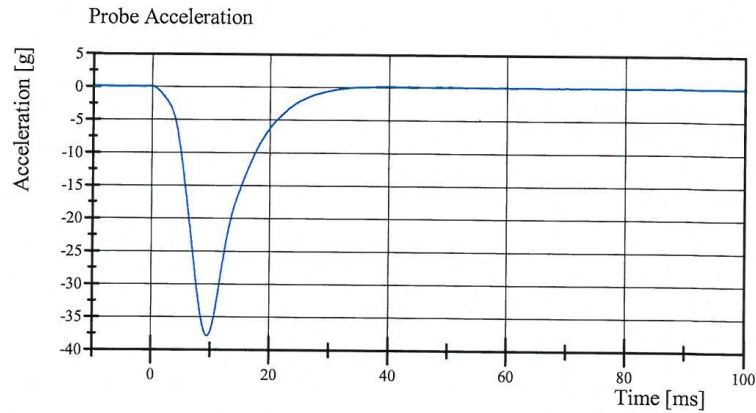


Transportation Research Center Inc.

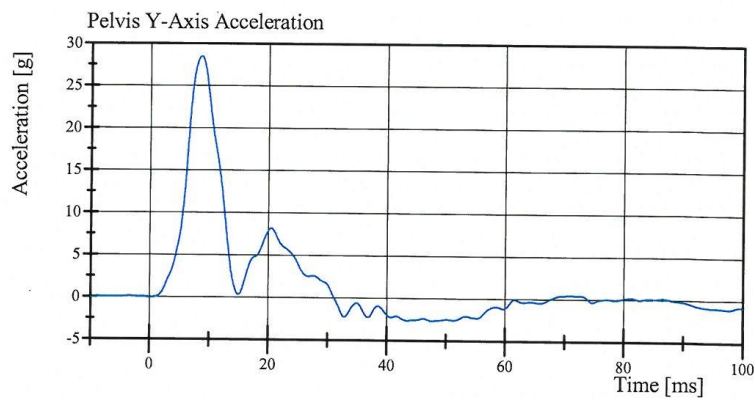
Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 11-1

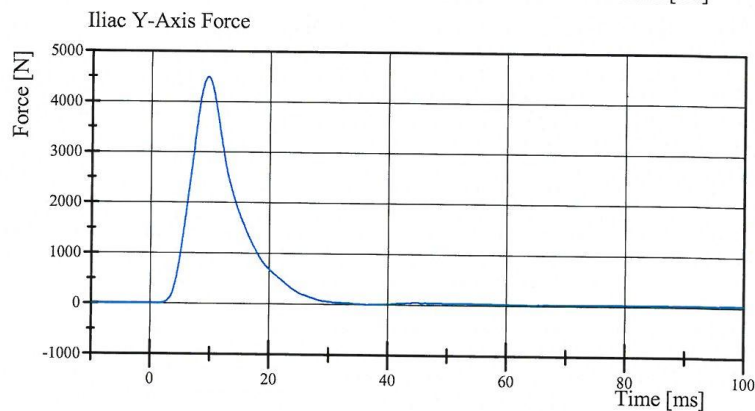
Test Date: 9/24/2012



Filter Class: CFC_180
Max: 0.1 gn at 40.0 ms
Min: -37.9 gn at 9.4 ms



Filter Class: CFC_180
Max: 28.5 gn at 8.6 ms
Min: -2.7 gn at 47.7 ms



Filter Class: CFC_600
Max: 4,484.5 N at 9.5 ms
Min: -0.8 N at -8.9 ms

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

09.24.2012 13:03:18 641

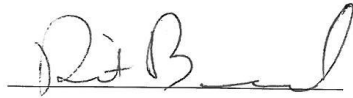


Post-Test Calibration Sheets
Passenger S/N 305

Transportation Research Center Inc.
SIDI's Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.012

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	777	Yes
B	Shoulder Pivot Height	437.0 - 453.0	440	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	103	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	535	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	481	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	865	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. 12-1
Test Date: 9/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.7 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	121.6 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	4.3 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

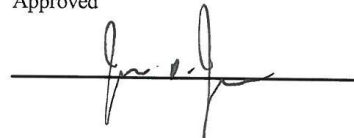
Test meets specifications.

Comments:

Technician



Approved



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

09.27.2012 10:28:35 228

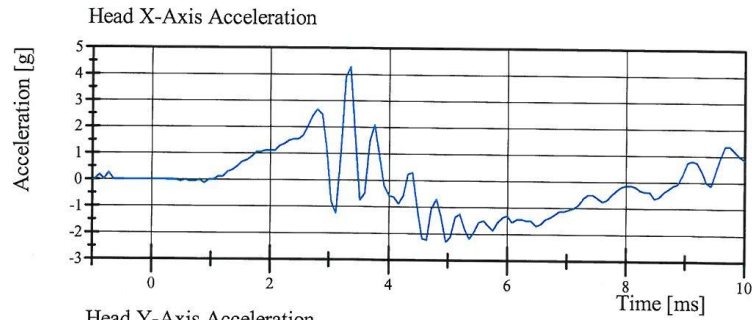


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 12-1

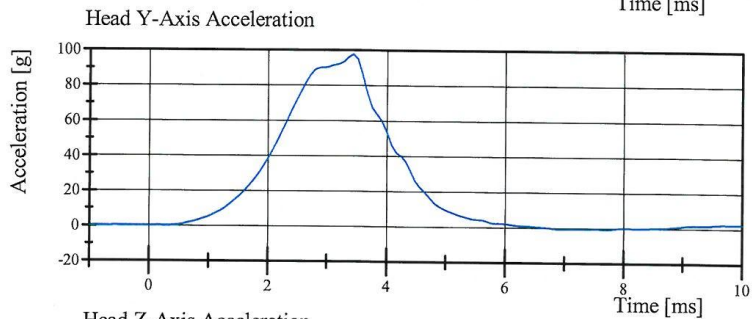
Test Date: 9/27/2012



Filter Class: CFC_1000

Max: 4.3 gn at 3.4 ms

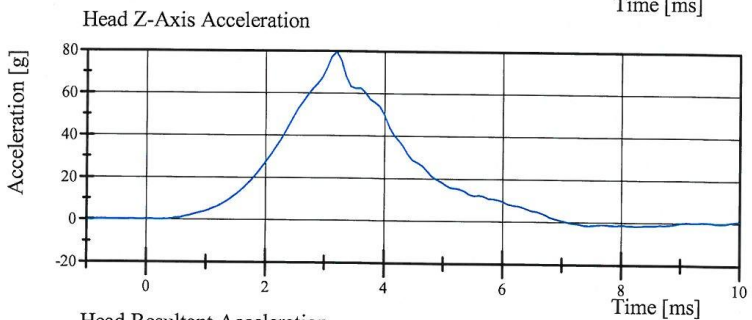
Min: -2.3 gn at 5.0 ms



Filter Class: CFC_1000

Max: 97.7 gn at 3.4 ms

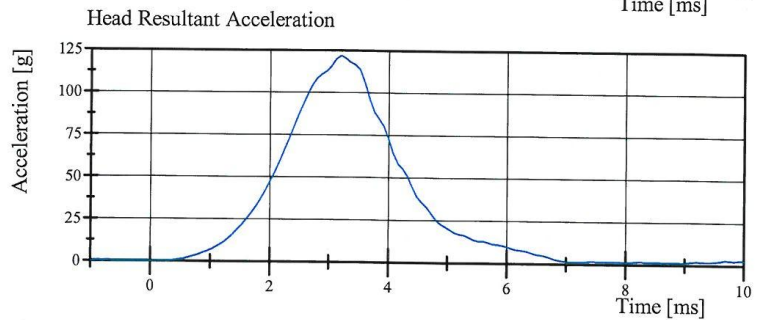
Min: -0.8 gn at 7.7 ms



Filter Class: CFC_1000

Max: 79.5 gn at 3.2 ms

Min: -1.6 gn at 8.2 ms



Filter Class: CFC_1000

Max: 121.6 gn at 3.2 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.

09.27.2012 10:28:42 228



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 12-1

Test Date: 9/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.606 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.494 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.684 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.944 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.801 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.821 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-77.3 deg	Yes
Time of Peak	50 - 70 ms	64.2 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	40.9 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	120.2 ms	Yes

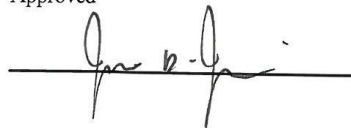
Test meets specifications.

Comments:

Technician



Approved



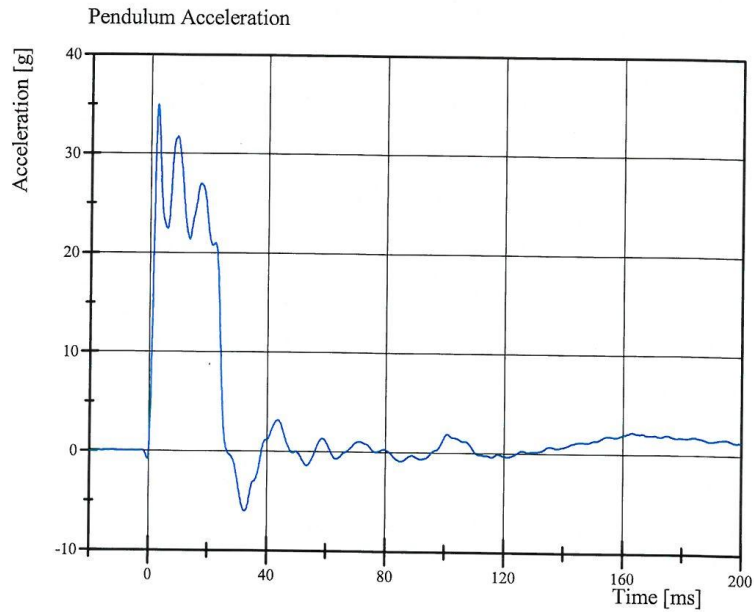
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 13:09:30 635

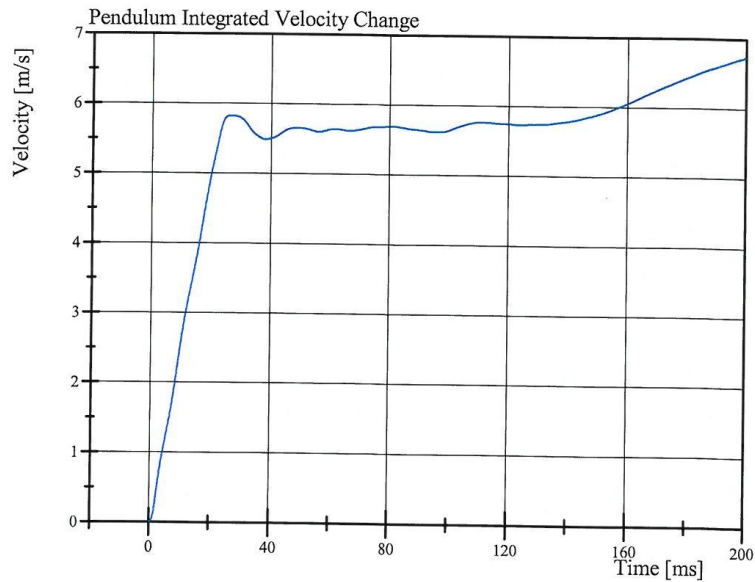


Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



Filter Class: CFC_180
Max: 34.9 gn at 2.4 ms
Min: -6.0 gn at 32.6 ms



Filter Class: CFC_180
Max: 6.7 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

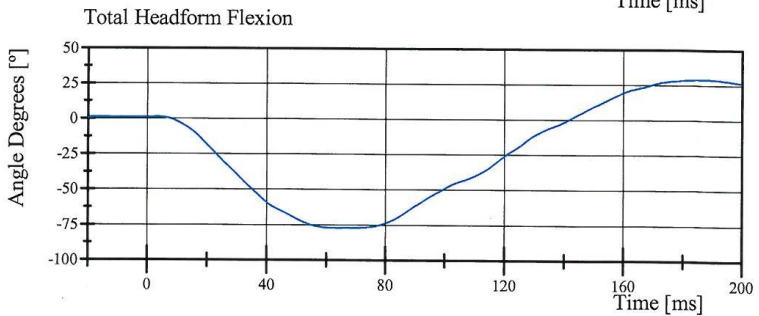
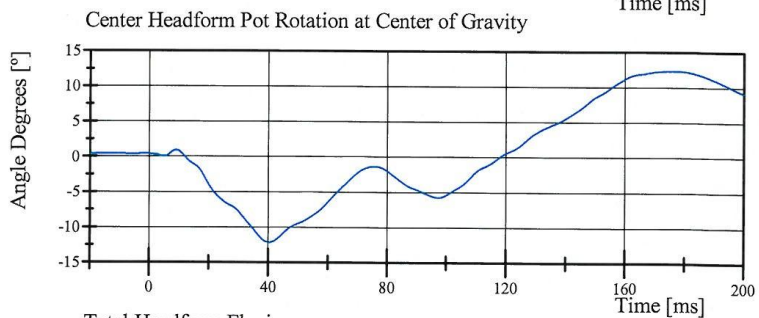
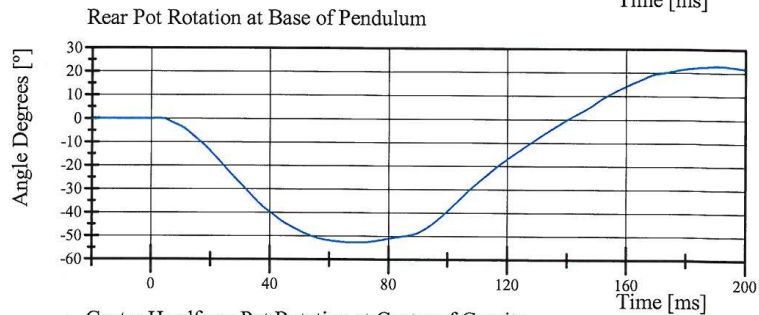
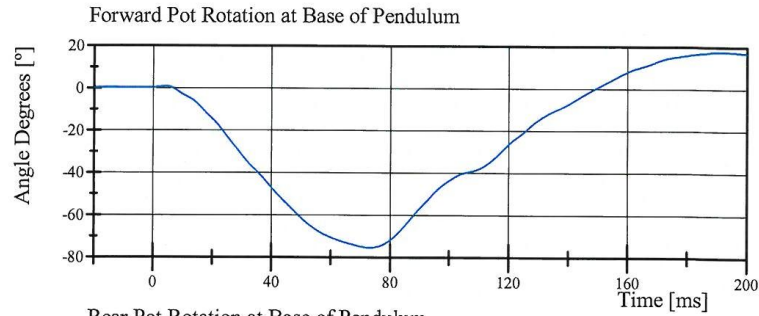
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 13:09:37 635



Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



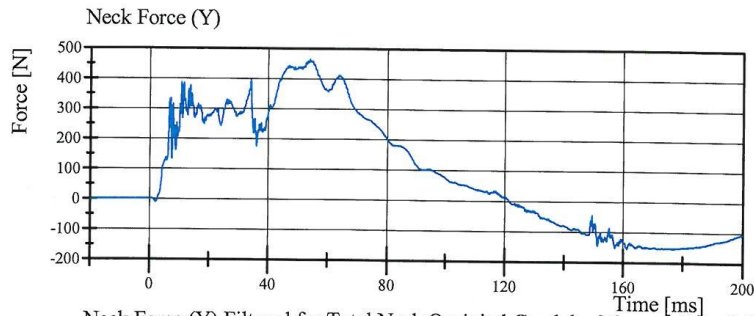
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 13:09:38 635

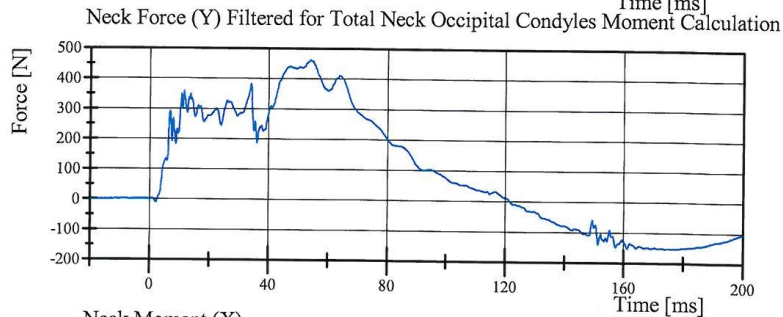


Transportation Research Center Inc.

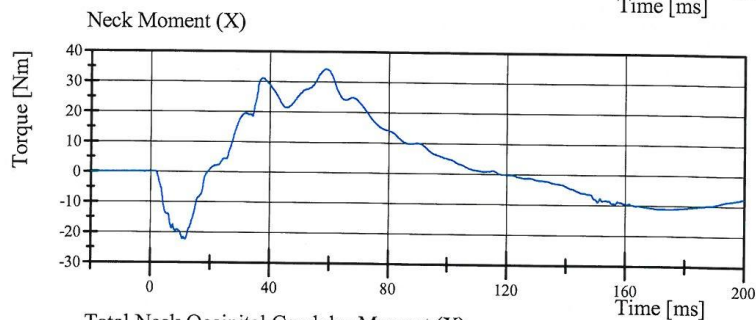
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



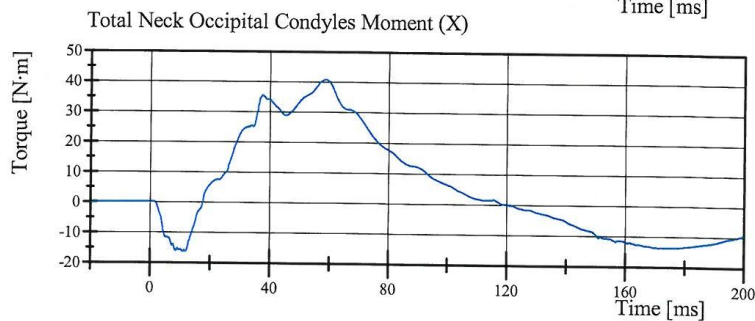
Filter Class: CFC_1000
Max: 464.2 N at 54.1 ms
Min: -154.8 N at 161.4 ms



Filter Class: CFC_600
Max: 462.0 N at 54.1 ms
Min: -154.1 N at 173.7 ms



Filter Class: CFC_600
Max: 34.3 Nm at 58.8 ms
Min: -22.5 Nm at 11.5 ms



Filter Class: Without_(Consta
Max: 40.9 N·m at 58.7 ms
Min: -16.5 N·m at 11.0 ms

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

09.27.2012 13:09:39 635



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 12-1

Test Date: 9/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.0 g	Yes
Shoulder Displacement	28 - 37 mm	31.0 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.8 g	Yes

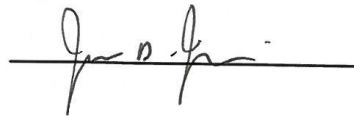
Test meets specifications.

Comments:

Technician



Approved



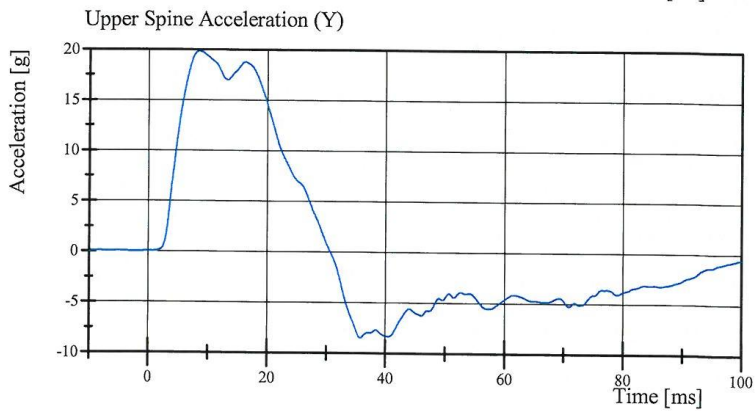
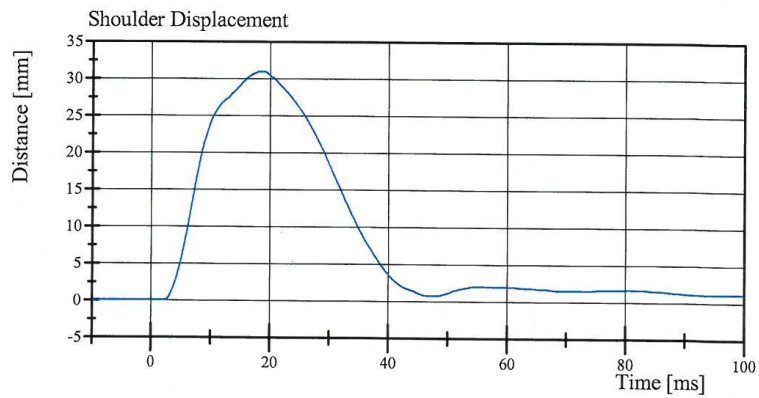
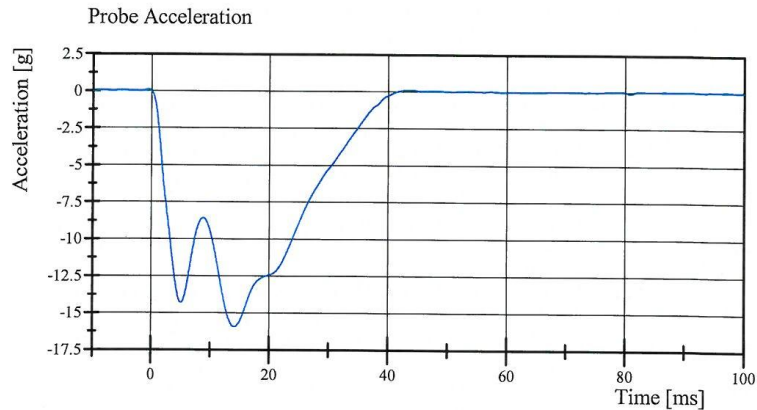
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 11:01:42 826



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



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

09.27.2012 11:01:49 826



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.4 °C	No
Relative Humidity	10 - 70 %	66 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.796 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.4 g	Yes
Shoulder Displacement	31 - 40 mm	34.7 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.9 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.5 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.4 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.6 g	Yes

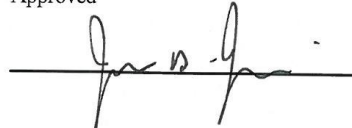
Test does not meet specifications.

Comments:

Technician



Approved



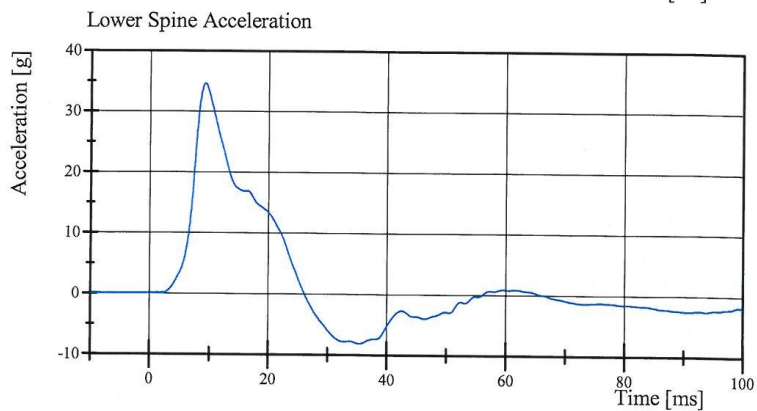
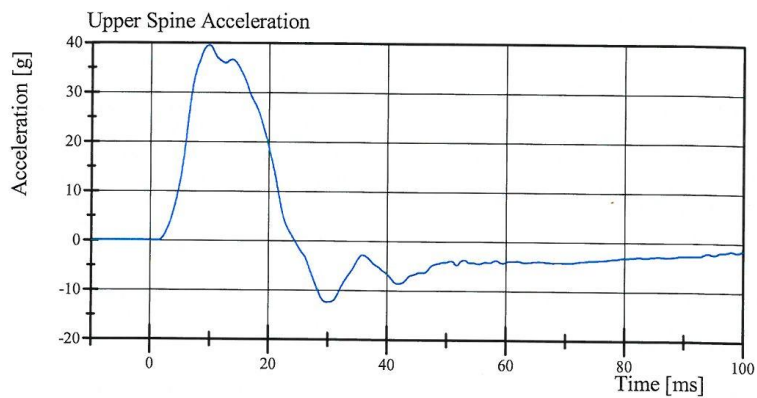
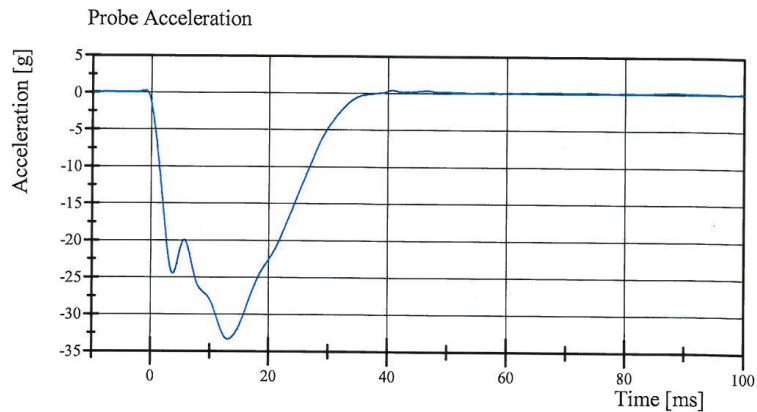
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 11:37:08 613



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



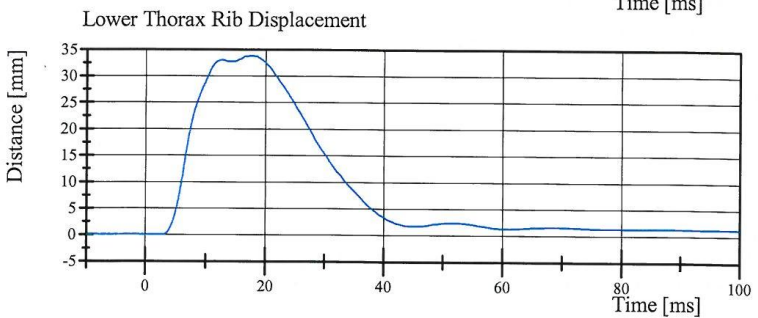
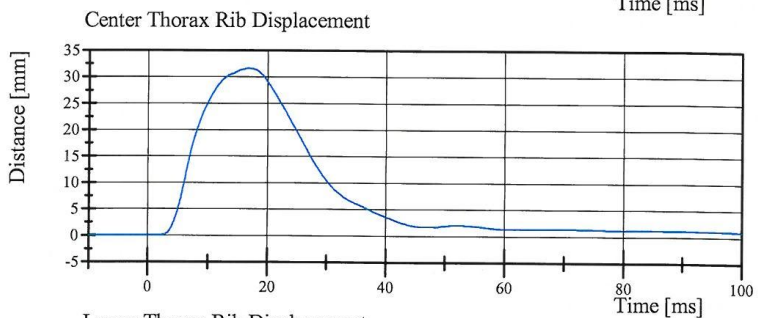
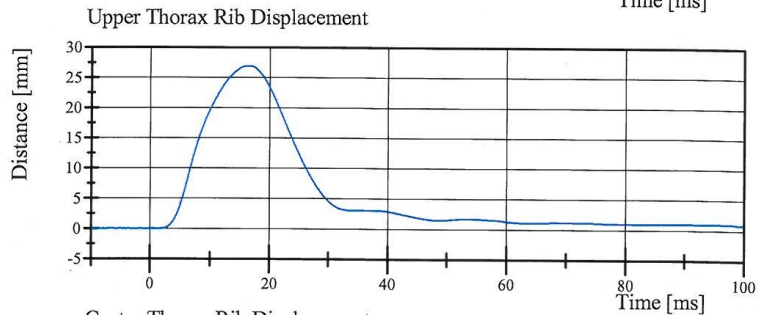
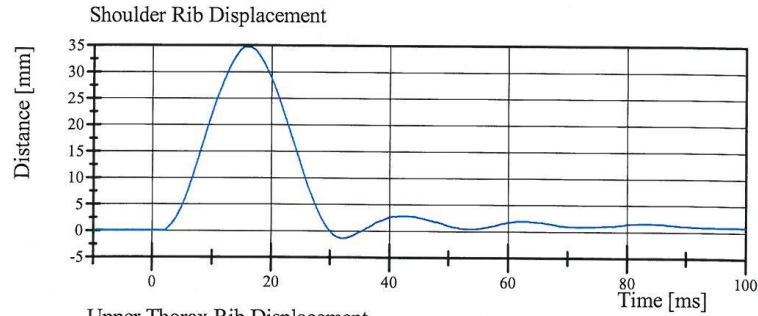
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 11:37:18 613



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID II_s Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



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

09.27.2012 11:37:19 613



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.384 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.7 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.2 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.2 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.3 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.1 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.4 g	Yes

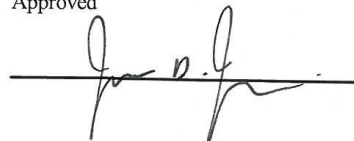
Test meets specifications.

Comments:

Technician



Approved



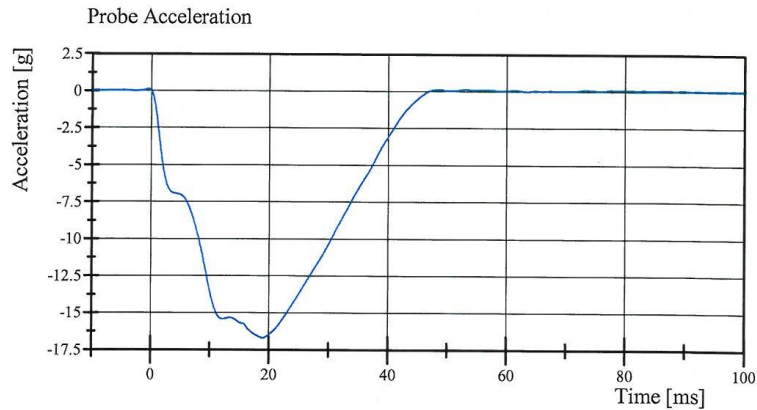
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 12:22:02 810

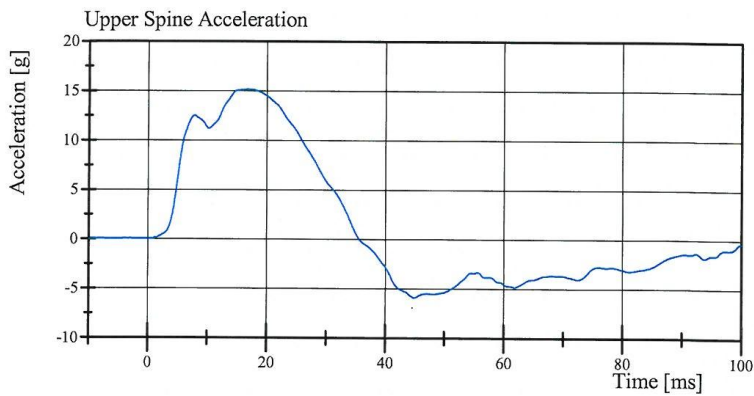


Transportation Research Center Inc.

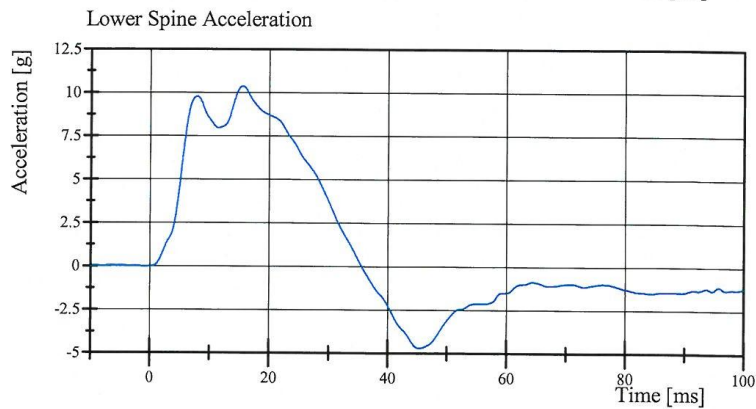
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



Filter Class: CFC_180
Max: 0.1 gn at 53.0 ms
Min: -16.7 gn at 19.0 ms



Filter Class: CFC_180
Max: 15.1 gn at 16.9 ms
Min: -5.9 gn at 44.9 ms



Filter Class: CFC_180
Max: 10.4 gn at 15.5 ms
Min: -4.7 gn at 45.3 ms

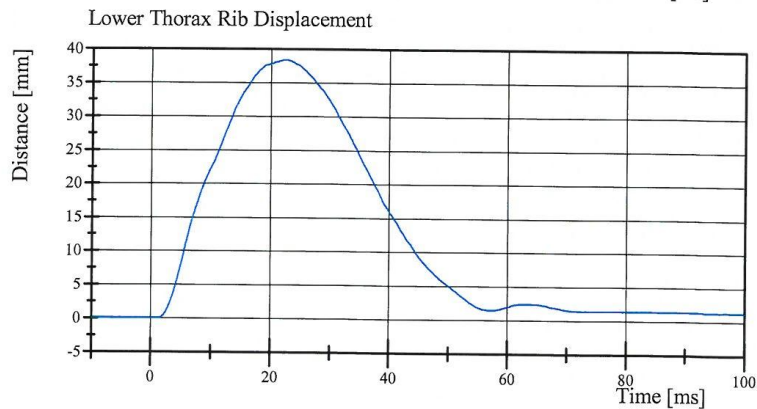
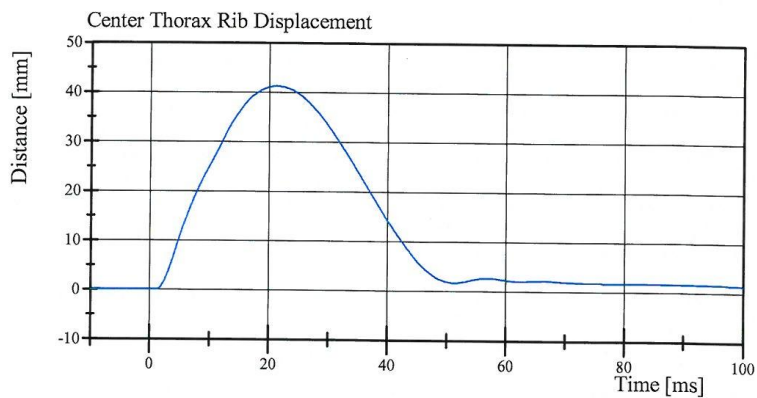
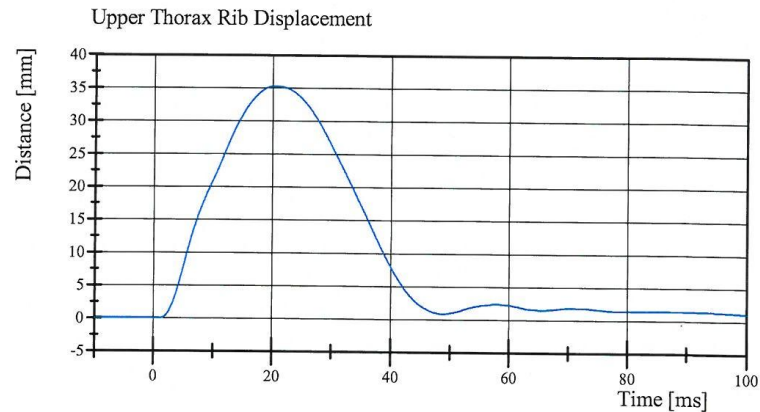
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

09.27.2012 12:22:10 810



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



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

09.27.2012 12:22:11 810



Transportation Research Center Inc.

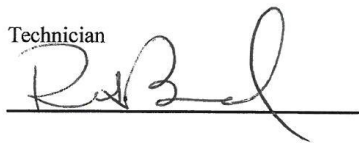
Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-15.0 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.6 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	34.7 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	12.32 g	Yes

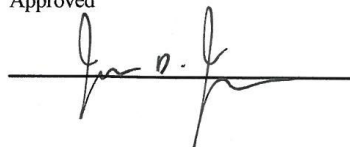
Test meets specifications.

Comments:

Technician



Approved



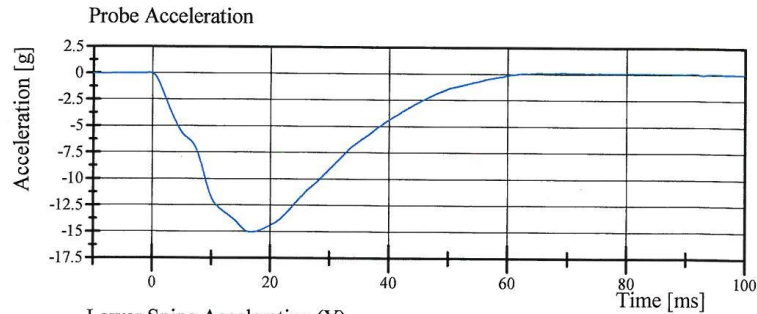
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.01.2012 08:22:26 650

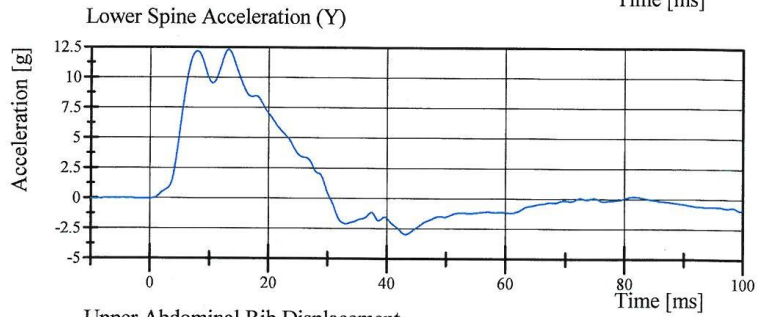


Transportation Research Center Inc.

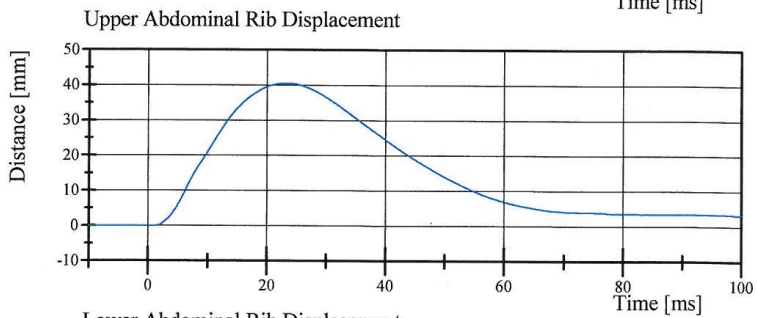
Left Lateral Abdomen
SID II_s Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012



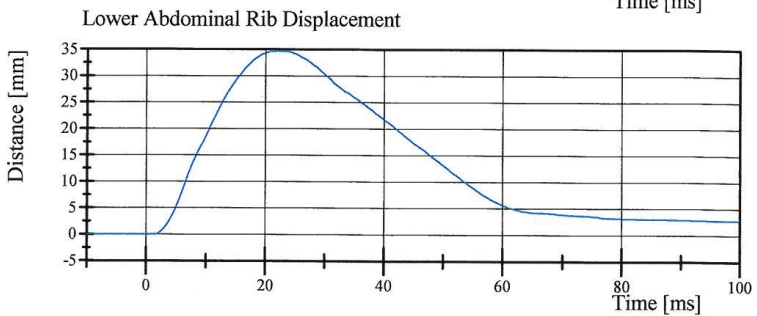
Filter Class: CFC_180
Max: 0.2 gn at 69.4 ms
Min: -15.0 gn at 16.7 ms



Filter Class: CFC_180
Max: 12.3 gn at 13.2 ms
Min: -3.0 gn at 43.1 ms



Filter Class: CFC_600
Max: 40.6 mm at 23.2 ms
Min: -0.0 mm at -8.5 ms



Filter Class: CFC_600
Max: 34.7 mm at 22.4 ms
Min: -0.0 mm at 1.3 ms

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

10.01.2012 08:22:35 650



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 12-1
Test Date: 9/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.69 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.85 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.0 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,021.0 N	Yes

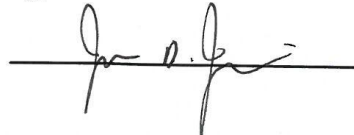
Test meets specifications.

Comments:

Technician



Approved



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

09.27.2012 12:35:26 429

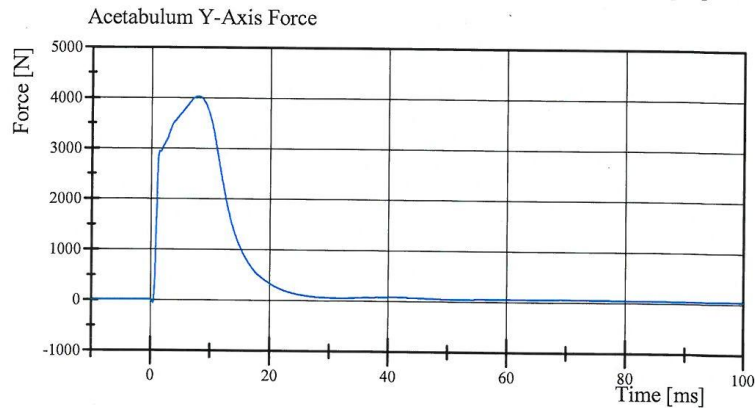
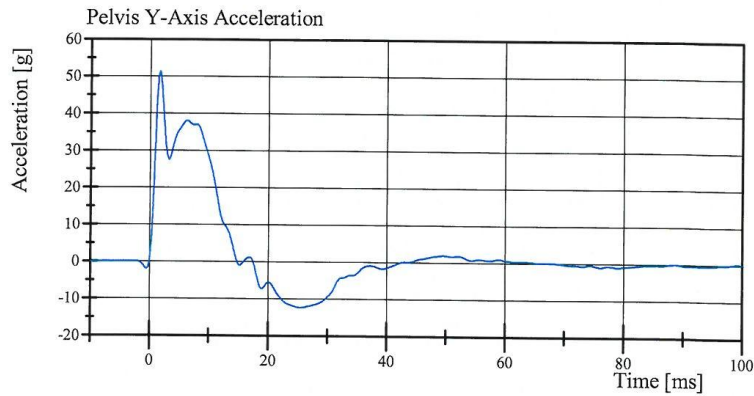
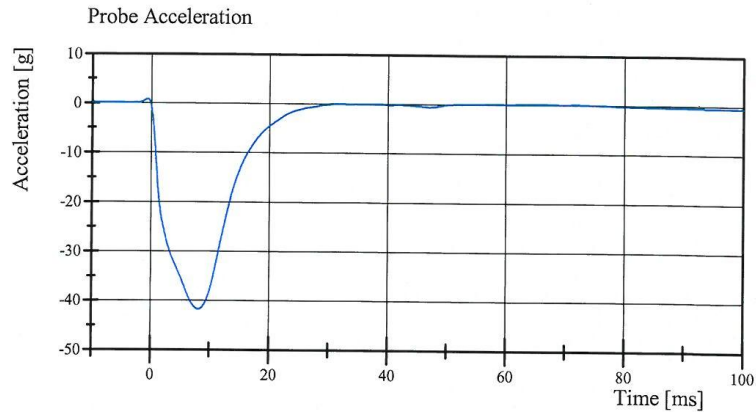


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 12-1

Test Date: 9/27/2012



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

09.27.2012 12:35:34 429



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 12-1

Test Date: 9/28/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.24 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-38.6 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	29.4 g	Yes
Iliac Force	4,100 - 5,100 N	4,585.1 N	Yes

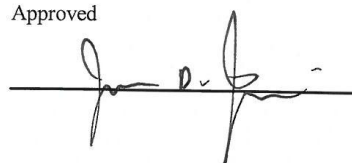
Test meets specifications.

Comments:

Technician



Approved



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

09.28.2012 11:08:38 640

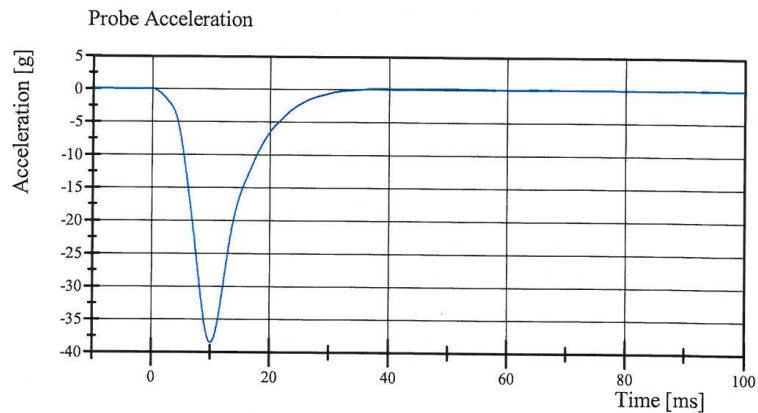


Transportation Research Center Inc.

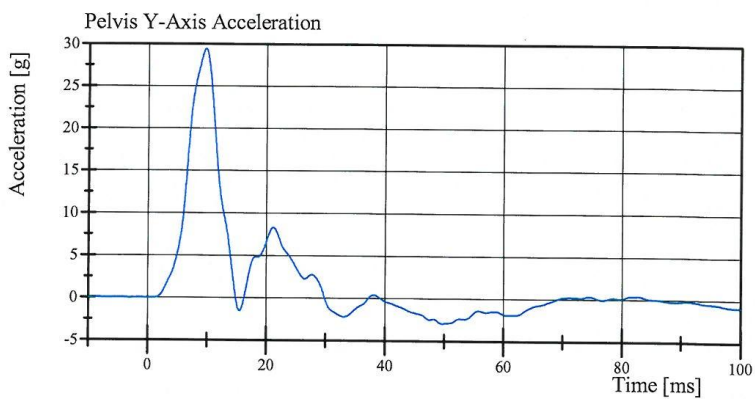
Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 12-1

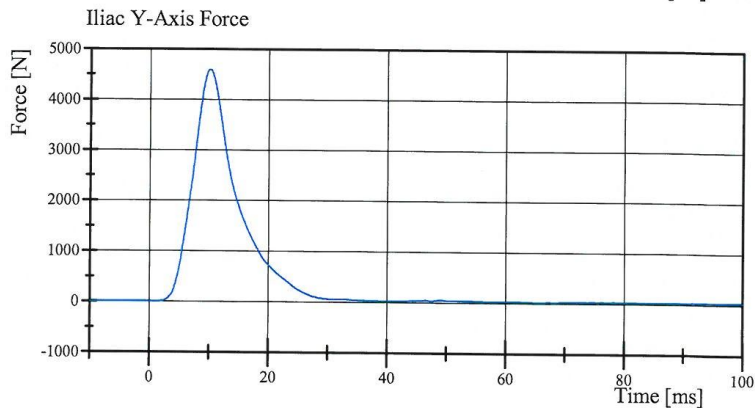
Test Date: 9/28/2012



Filter Class: CFC_180
Max: 0.2 gn at 49.4 ms
Min: -38.6 gn at 10.0 ms



Filter Class: CFC_180
Max: 29.4 gn at 9.7 ms
Min: -2.9 gn at 49.7 ms



Filter Class: CFC_600
Max: 4,585.1 N at 10.1 ms
Min: -0.8 N at -3.3 ms

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

09.28.2012 11:08:45 640



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F030		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers		X	P58890	Endevco	16-Nov-11
		Y	P51702	Endevco	16-Nov-11
		Z	P52083	Endevco	16-Nov-11
Thoracic Rib Displacement Potentiometers	Upper	Y	175	FTSS	16-Nov-11
	Middle	Y	174	FTSS	16-Nov-11
	Lower	Y	173	FTSS	16-Nov-11
Abdomen Load Cells	Upper	Y	1441	Denton	16-Nov-11
	Middle	Y	1436	Denton	16-Nov-11
	Lower	Y	1437	Denton	16-Nov-11
Lower Spine Accelerometers (T12)		X	P73381	Endevco	7-Mar-12
		Y	P73580	Endevco	7-Mar-12
		Z	P59005	Endevco	16-Nov-11
Acetabulum Load Cell		Y	NA	NA	NA
Pubic Symphysis Load Cell		Y	457-FY	Denton	16-Nov-11

TABLE 2 – 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	NA	NA	NA
	Thoracic Rib	Upper	Y	007	Servo	9-Dec-11	
		Middle	Y	1161	Servo	9-Nov-11	
		Lower	Y	1279	Servo	9-Nov-11	
	Abdominal Rib	Upper	Y	1295	Servo	9-Nov-11	
		Lower	Y	1136	Servo	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	FTSS	10-Nov-11
Pelvis Plug (struck side)					36606	FTSS	24-Sep-12
Pelvis Plug (non-struck side)					NA	NA	NA

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P75775	Endevco	10-Sep-12
	Vehicle Center of Gravity	Y	P75777	Endevco	10-Sep-12
	Vehicle Center of Gravity	Z	P74098	Endevco	19-Jul-12
2	Right Sill at Front Seat	X	P74449	Endevco	16-May-12
	Right Sill at Front Seat	Y	P74446	Endevco	13-Sep-12
	Right Sill at Front Seat	Z	P74438	Endevco	27-Jul-12
3	Right Sill at Rear Seat	X	P75717	Endevco	14-Sep-12
	Right Sill at Rear Seat	Y	P76386	Endevco	14-Sep-12
	Right Sill at Rear Seat	Z	P75754	Endevco	10-Sep-12
4	Left Sill at Front Door	Y	P75770	Endevco	17-Aug-12
5	Left Sill at Rear Door	Y	P74477	Endevco	24-Jul-12
6	Left A-Post Lower	Y	P74452	Endevco	26-Jul-12
7	Left A-Post Middle	Y	P74176	Endevco	10-May-12
8	Left B-Post Lower	Y	P75519	Endevco	17-Jul-12
9	B-Post Middle	Y	P75992	Endevco	24-Jul-12
10	Front Seat Track	Y	P76335	Endevco	18-Sep-12
11	Rear Seat Track or Structure	Y	P74233	Endevco	17-Aug-12
12	Right Rear Occupant Compartment	Y	P74248	Endevco	16-Jul-12
13	Engine Block	X	P74466	Endevco	20-Sep-12
	Engine Block	Y	P75993	Endevco	25-Jul-12
14	Rear Floorpan Above Axle	X	P74091	Endevco	18-Apr-12
	Rear Floorpan Above Axle	Y	P74479	Endevco	24-Jul-12
	Rear Floorpan Above Axle	Z	P74478	Endevco	24-Jul-12

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P74527	Endevco	24-Jul-12
MDB Center of Gravity	Y	P74442	Endevco	20-Aug-12
MDB Center of Gravity	Z	P49016	Endevco	7-Aug-12
Left Frame Rail at Rear Axle Centerline	X	P76063	Endevco	7-Sep-12
Left Frame Rail at Rear Axle Centerline	Y	P74816	Endevco	27-Jul-12