

FINAL REPORT NUMBER: SINCAP-TRC-13-005

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

**Mazda Motor Corp.
2013 Mazda CX-9 Sport
NHTSA NUMBER: MD5405**

**PREPARED BY:
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Report Date: January 28, 2013

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: 3/22/13

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: _____

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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 Mazda CX-9 Sport MPV, 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 January 14, 2013. The impact velocity of the Moving Deformable Barrier (MDB) was 61.62 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 22° C. The target vehicle post-test maximum crush was 273 mm at Level 2. 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>103</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>44</td><td>26.3</td></tr> <tr> <td>Total Abdominal Force</td><td>N</td><td>2500</td><td>737.5</td></tr> <tr> <td>Pubic Symphysis Force</td><td>N</td><td>6000</td><td>1765.0</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>271</td></tr> <tr> <td>Lower Spine Resultant Acceleration</td><td>g's</td><td>82</td><td>43.6</td></tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td><td>N</td><td>5525</td><td>3286.2</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>38*</td><td>21.7</td></tr> <tr> <td>Maximum Abdominal Rib Deflection</td><td>mm</td><td>45*</td><td>23.6</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	103	Maximum Thoracic Rib Deflection	mm	44	26.3	Total Abdominal Force	N	2500	737.5	Pubic Symphysis Force	N	6000	1765.0	Passenger ATD (SID-IIs)				Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	NA	1000	271	Lower Spine Resultant Acceleration	g's	82	43.6	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3286.2	Maximum Thoracic Rib Deflection	mm	38*	21.7	Maximum Abdominal Rib Deflection	mm	45*	23.6
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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 Mazda CX-9 Sport MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2012.

SECTION 2

SUMMARY OF TEST RESULTS

A 2013 Mazda CX-9 Sport MPV 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 61.62 km/h (38.29 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 January 14, 2013. 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 September 2012. 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)	N/A	1000	103
Maximum Thoracic Rib Deflection	mm	44	26.3
Combined Abdominal Force	N	2500	737.5
Pubic Symphysis Force	N	6000	1765.0

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	271
Lower Spine (T12) Resultant Acceleration	G	82	43.6
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3286.2
Maximum Thoracic Rib Deflection	mm	38*	21.7
Maximum Abdominal Rib Deflection	mm	45*	23.6

* 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	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso Airbag	Yes	Yes	No	NA
Knee Airbag	No	NA	No	NA
Seat Belt Pretensioner	Yes	Yes	No	NA
Seat Belt Load Limiter	Yes	Yes	No	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 restraint system performed as expected.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MD5405	Traction Control System (TCS)	Yes
Model Year	2013	Auto-Leveling System	No
Make	Mazda	Automatic Door Locks (ADL)	Yes
Model	CX9	Power Window Auto-Reverse	No
Body Style	MPV	Other Optional Feature	None
VIN	JM3TB2BA6D0404202	Driver Front Airbag	Yes
Body Color	Silver	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	18	Driver Head/Torso Airbag	No
Engine Displacement (L)	3.7	Driver Torso Airbag	Yes
Type/No. Cylinders	V/6	Driver Torso/Pelvis Airbag	No
Engine Placement	Transverse	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	6	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	FWD	Rear Pass. 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	Rear Pass. Seat Belt Pretensioner	No
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Passenger Load Limiter	No
		Other Safety Restraint	No

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Corporation	GVWR (kg)	2645
Date of Manufacturer	Nov 12	GAWR Front (kg)	1276
Vehicle Type	MPV	GAWR Rear (kg)	1400

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	2	7
Vehicle Capacity Weight (VCW) (kg)				539.0
DSC X 68.04 kg				476.3
Rated Cargo and Luggage Weight (RCLW) (kg)				62.7

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	Yes	No	No		No	Yes	No
Rear or Second Row Seat	No	No	Yes	Yes	No	Yes	No
Third row seat	No	Yes	No	Yes	Yes	No	No

DATA SHEET NO. 1 (CONTINUED)

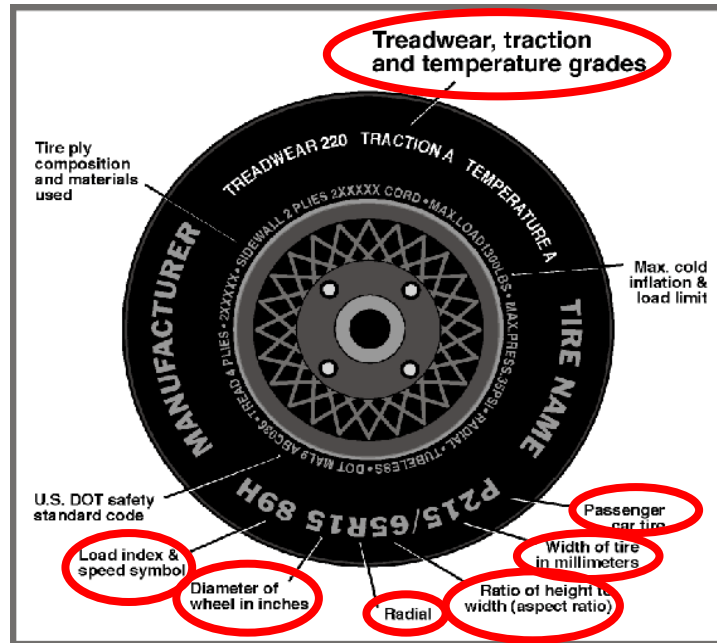
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Mazda CX-9 Sport MPV

NHTSA No.: MD5405

Test Program: NCAP Side Impact

Test Date: 01/14/13



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	250	250
Recommended Tire Size	P245/60R18	P245/60R18
Tire Size on Vehicle	P245/60R18	P245/60R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Dueler H/L	Dueler H/L
Treadwear	300	300
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	104H	104H
Tire Material	Polyester/Steel/Nylon	Polyester/Steel/Nylon
DOT Safety Code Left	H4L2 DEC4512	H4L2 DEC4512
DOT Safety Code Right	H4L2 DEC4512	H4L2 DEC4512

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	250	250	250	250
Tire Placard	kPa	250	250	250	250
Owner's Manual	kPa	250	250	250	250
As Tested	kPa	250	250	250	250

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	207	207	207	207

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	554.2	415.4		603.6	475.2		601.8	511.4	
Right	kg	540.0	402.8		554.6	461.2		542.2	474.6	
Ratio	%	57.2	42.8		55.3	44.7		53.7	46.3	
Totals	kg	1094.2	818.2	1912.4	1158.2	936.4	2094.6	1144.0	986.0	2130.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total As Delivered Weight (UVW)	kg	1912.4
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	125.0
Rated Cargo/Luggage Weight (RCLW)	kg	62.7
Calculated Vehicle Target Weight (TVTW)	kg	2100.1

(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)
Steel plate mounted in rear cargo area.	22.8

DATA SHEET NO. 1 (CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2013 Mazda CX-9 Sport MPVNHTSA No.: MD5405Test Program: NCAP Side ImpactTest Date: 01/14/13**TEST VEHICLE ATTITUDE AND CG**

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	817	811	Yes
RF	mm	832	823	Yes
RR	mm	832	830	Yes
LR	mm	816	817	Yes
Vehicle CG (Aft of Front Axle)	mm	1331	1285	
Vehicle CG (Left+)/Right (-) from Longitudinal centerline	mm	+37	+25	

***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 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

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	14.8	9.5	12.2
Front Passenger Seat	11.0	11.0	11.0
Front Center Seat*	NA	NA	NA
Struck Side Rear Seat	11.4	11.4	11.4
Non-Struck Side Rear Seat	11.3	11.3	11.3
Rear Center Seat*	13.1	13.1	13.1

* 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	12.1	266	Max.	NA	NA	NA
			Mid	266	266	266
			Min.	NA	NA	NA
Front Passenger Seat	11.0	Fixed	Max.	NA	NA	NA
			Mid	305	305	305
			Min.	NA	NA	NA
Front Center Seat*	NA	NA	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Struck Side Rear Seat	11.4	Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Non-Struck Side Rear Seat	11.3	Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Rear Center Seat*	13.1	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 Mazda CX-9 Sport MPV

NHTSA No.: MD5405

Test Program: NCAP Side Impact

Test Date: 01/14/13

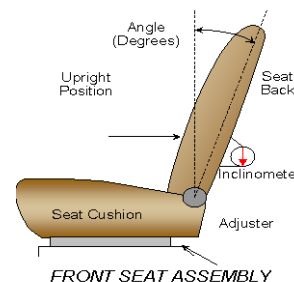
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260	26	130	13
Front Passenger Seat	260	26	130	13
Front Center Seat*	NA	NA	NA	NA
Struck Side Rear Seat	120	2	120	2
Non-Struck Side Rear Seat	120	2	120	2
Rear Center Seat*	120	2	120	2

* 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	69	46	16.1	16
Front Passenger Seat	61.5	33	17.2	12
Front Center Seat*	NA	NA	NA	NA
Struck Side Rear Seat w/ Seated Dummy	9.5	5	8.5	0
Non-Struck Side Rear Seat	9.5	5	8.5	0
Rear Center Seat*	9.5	5	8.5	0

* If applicable.

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

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

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	4	0
Rear Seat	1	0

HEAD RESTRAINT ADJUSTMENT

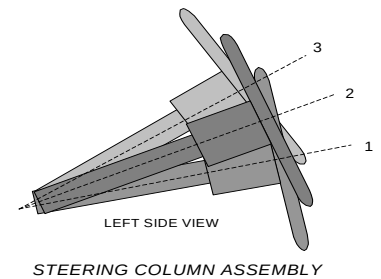
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	4	0
Rear Seat	4	3

STEERING COLUMN ADJUSTMENT

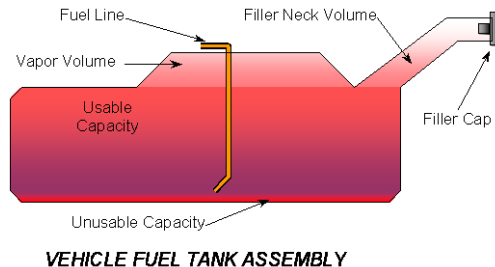
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric locus it describes when it moves through its full range of motion.

	Degrees	Fore/Aft Position, mm
Lowermost, Position 1	32.3	50
Geometric Center, Position 2	29.7	50
Uppermost, Position 3	27.0	50
Telescoping Steering Wheel Travel		50
Test Position	29.7	25

**FUEL PUMP**

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

Fuel tank is located in front of the rear axle. Filler neck enters at top left rear corner of tank. Cap is on left rear quarter panel. Fuel lines run along the inside inner frame rail.



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

Test Vehicle: 2013 Mazda CX-9 Sport MPV

NHTSA No.: MD5405

Test Program: NCAP Side ImpactTest Date: 01/14/13**FUEL TANK CAPACITY**

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	76.0
Usable Capacity of "Optional" Tank (see Form No. 1)	NA
Usable Capacity of Standard Tank (see Owner's Manual)	76.0
Usable Capacity of Optional Tank (see Owner's Manual)	NA
93% of Usable Capacity	70.7
Actual Amount of Solvent Used in Test	70.8
1/3 of Usable Capacity	25.3

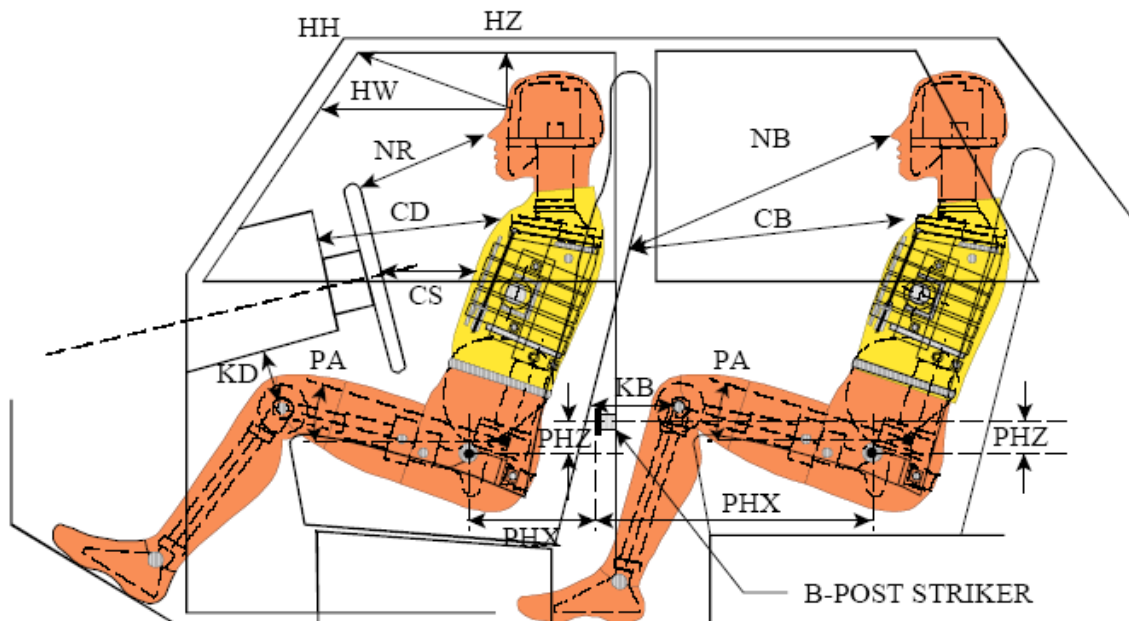
Is the Actual Amount of Solvent Used in the test equal to 93% $\pm$ 1% of the Usable Capacity stated on Form No. 1? ☒ YES ☐ NO

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13



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

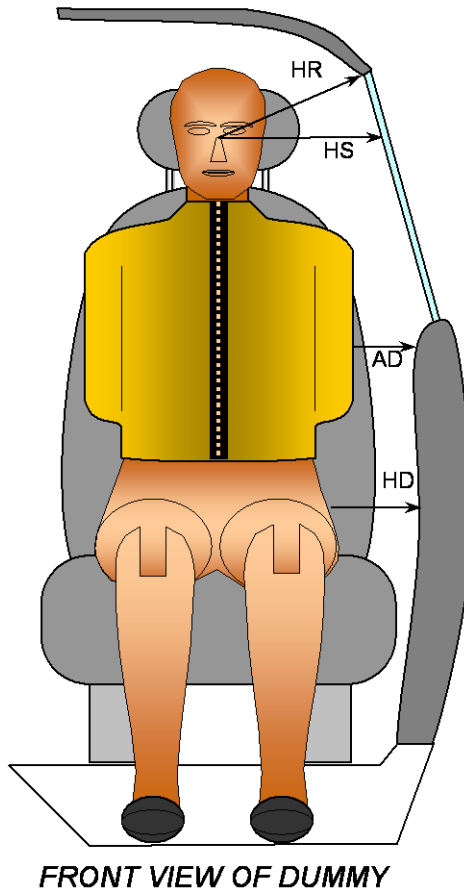
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle	Length (mm)	Angle
HH		Head to Header	384			
HW		Head to Windshield	630			
HZ	HZ	Head to Roof Liner	166		297	
NR	NB	Nose to Rim/Seat Back	465		612	
CD	CB	Chest to Dash/Seat Back	576		580	
CS		Chest to Steering Wheel	296			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	151	22.5	327	20
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	137	27	329	20
PAX°	PAX°	Pelvic Tilt Angle X		0.2		21
	PHY°	Pelvic Tilt Angle Y				0.6
PHX	PHX	Hip Point to Striker (X-Axis)	273		397	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	113		212	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

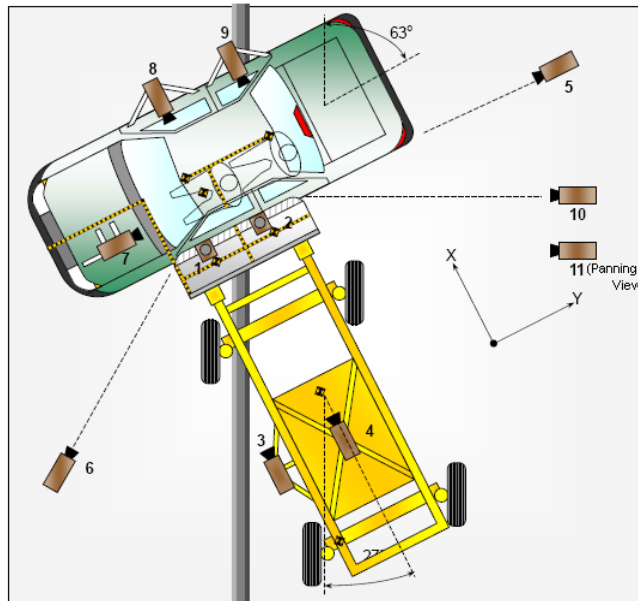


Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	202	272
HS	Head to Side Window	mm	345	387
AD	Arm to Door	mm	125	158
HD	H-Point to Door	mm	195	188

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	0	1255	-5699	6	1000
2	Overhead Close-up	0	920	-5719	16	1000
3	Left Impact Point (MDB)	1777	-851	-828	8.5	1000
4	Side Overall (MDB)	2450	0	-1446	12.5	1000
5	Rear	286	7350	-1106	25	1000
6	Left Front	2322	-4609	-1094	12.5	1000
7	Driver Front (OB)				8.5	1000
8	Driver Side (OB)				12.5	1000
9	Passenger Side (OB)				8.5	1000
10	Real-time Left Rear				zoom	30
11	Real-time Documentary				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

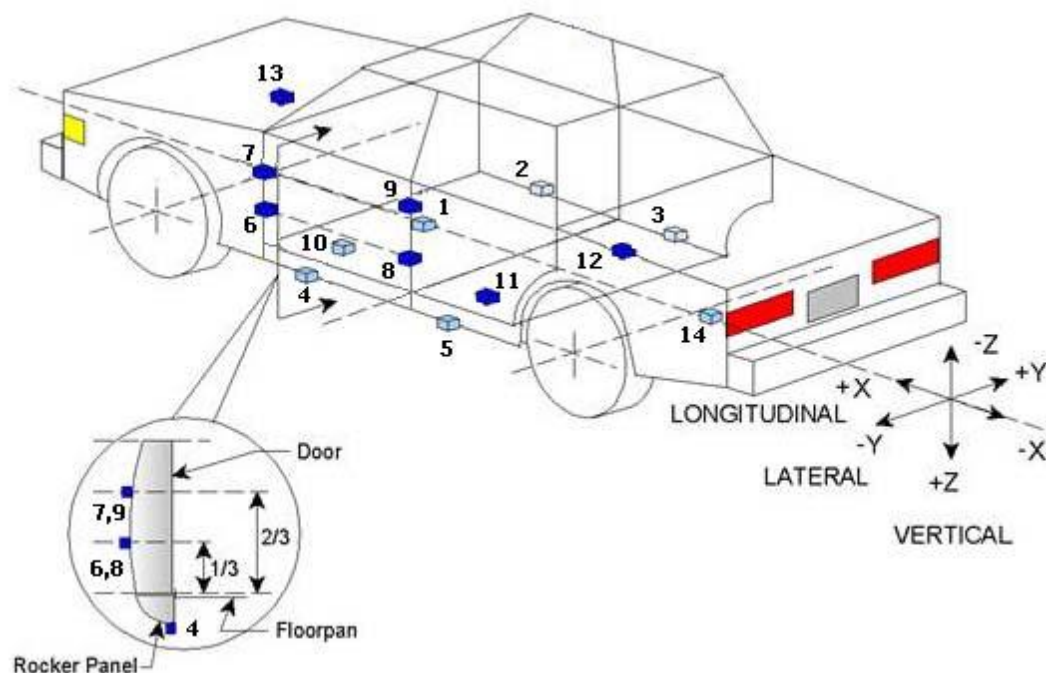
Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MBD Accelerometers	7
TOTAL	62

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13



TEST VEHICLE ACCELEROMETER LOCATIONS

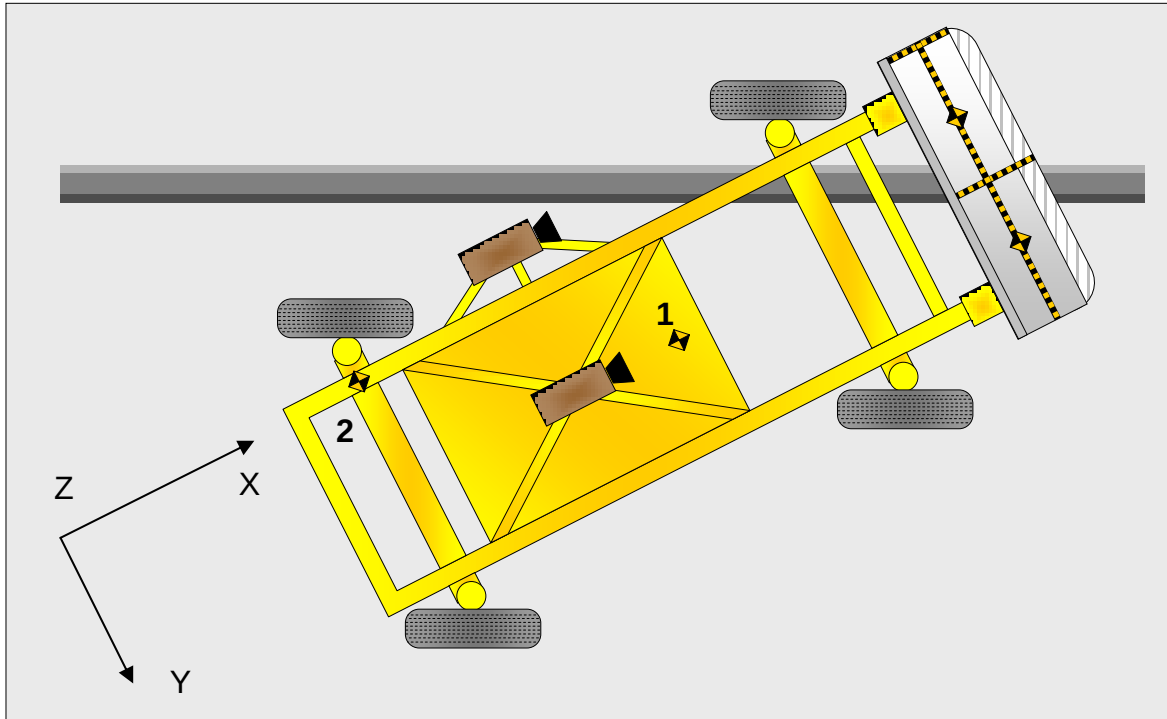
Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3665	0	-510
2	Right Sill at Front Seat	3600	722	-392
3	Right Sill at Rear Seat	2675	710	-437
4	Left Sill at Front Door	3600	-720	-390
5	Left Sill at Rear Door	2675	-710	-388
6	A-Post Lower	2905	-850	-545
7	A-Post Middle	3990	-860	-960
8	B-Post Lower	2905	-880	-665
9	B-Post Middle	2872	-865	-1025
10	Front Seat Track	3142	-585	-527
11	Rear Seat Structure	2380	-630	-448
12	Right Rear Occ. Compartment	2395	695	-440
13	Engine Block	4960	-80	-914
14	Rear Above Axle	1630	30	-567

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 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13



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 Mazda CX-9 Sport MPV
Test Program: NCAP Side Impact

NHTSA No.: MD5405
Test Date: 01/14/13

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	Curtain Bag/Header	NA
Left Side of Head	Curtain Bag	Curtain Bag
Back of Head	Head Restraint	NA
Left Shoulder	Curtain	Door Panel
Upper Torso	Torso Bag	Door Panel
Lower Torso	Torso Bag	Door Panel
Left Hip	Door Panel	Door Panel
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	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	NA	NA	NA	NA	NA

* Indicate "Yes", "No", or "N/A".

POST TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	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 "N/A".

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Good
Sill Separation	None
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	No	NA		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	NA
Seat Belt Load Limiter	Yes	Yes	No	NA
Side Torso Airbag	Yes	Yes	No	NA

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2875
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		496
Actual Impact Point (Aft of Front Axle)	mm		493
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact point	3
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact point	-1

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
Test Program: NCAP Side Impact

NHTSA No.: MD5405
Test Date: 01/14/13

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel Base of Framework Carriage	2590
C.G. Location aft of Front Axle	1109

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	425.8	259.4	
Right	kg	356.0	326.4	
Ratio	%	42.8	57.2	
Totals	kg	781.8	585.8	1367.6

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.62
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.62
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	91
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	26

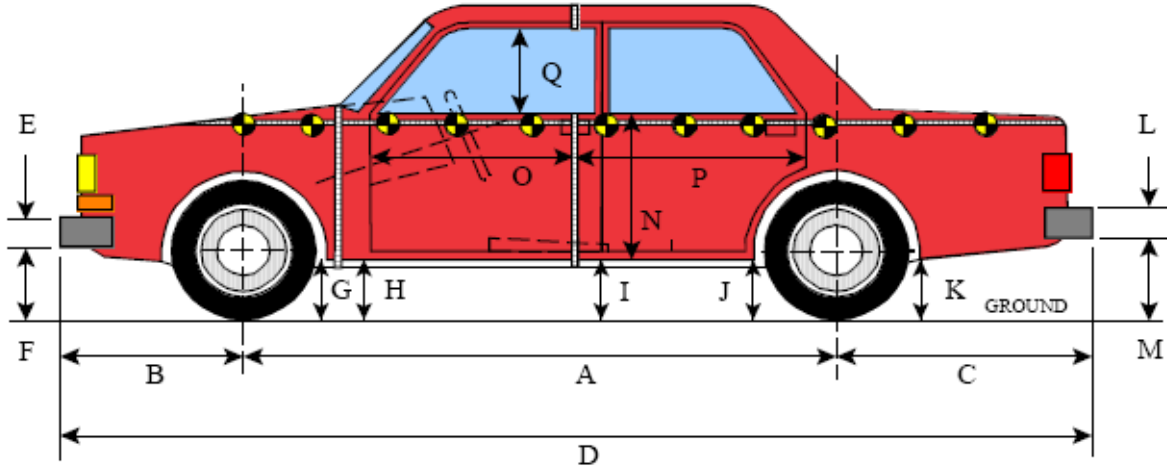
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	269
B	Top of Bumper	560	800	Right	141
C	Mid-Level	686	800	Right	115
D	Top of Stack	813	800	Right	120

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13



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	2875	2875	0
B	Front Axle to Front Surface of Vehicle	1135	1135	0
C	Rear Axle to Rear Surface of Vehicle	1090	1090	0
D	Total Length at Centerline	5095	5095	0
E	Front Bumper Thickness	147	147	0
F	Front Bumper Bottom to Ground	593	524	69
G	Sill Height at Front Wheel Well	410	380	30
H	Sill Height at Front Door Leading Edge	422	385	37
I	Sill Height at B-Pillar	445	340	105
J1	Sill Height at Rear Wheel Well	246	245	1
J2	Pinch Weld Height at Rear Wheel Well	460	365	95
K	Sill Height Aft of Rear Wheel Well	520	520	0
L	Rear Bumper Thickness	135	135	0
M	Rear Bumper Bottom to Ground	478	501	-23
N	Sill Height to Window Bottom Sill	970	830	140
O	Front Door Leading Edge to Impact CL	835	810	25
P	Rear Door Trailing Edge to Impact CL	1460	1393	67
Q	Front Window Opening	440	445	-5
R	Right Side Length	4880	4878	2
S	Left Side Length	4880	4883	-3
T	Vehicle Width at B Pillar	1298	1252	46

DATA SHEET NO. 11

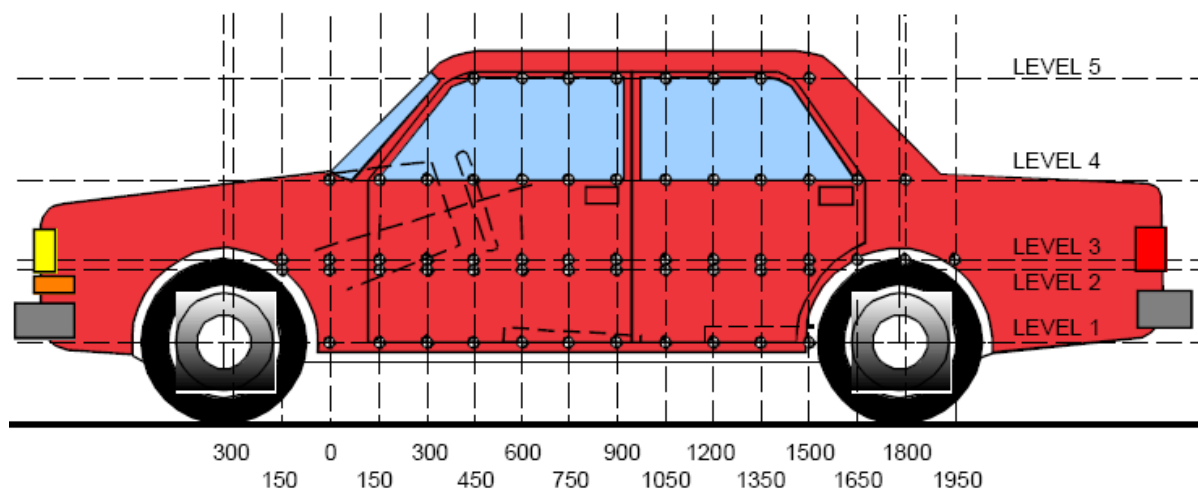
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Mazda CX-9 Sport MPV

NHTSA No.: MD5405

Test Program: NCAP Side Impact

Test Date: 01/14/13



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance From Impact
1	Sill Top	405	161	1200
2	Driver Hip Point	660	273	1500
3	Mid-Door	720	265	1500
4	Window Sill	1063	109	1200
5	Window Top	1567	10	1500

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 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

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	810	0	0	0	0	811	0	0	0	0	-1	0
-150	0	972	971	834	0	0	926	911	832	0	0	46	60	2	0
0	943	965	964	860	0	931	936	933	857	0	12	29	31	3	0
150	945	961	960	882	0	833	816	816	897	0	112	145	144	-15	0
300	946	963	961	893	0	808	760	762	884	0	138	203	199	9	0
450	946	965	962	902	0	802	739	742	875	0	144	226	220	27	0
600	946	965	963	909	0	801	724	733	870	0	145	241	230	39	0
750	946	965	963	915	0	802	721	732	863	0	144	244	231	52	0
900	946	965	963	921	633	801	707	719	857	635	145	258	244	64	-2
1050	946	964	962	925	647	804	717	732	849	645	142	247	230	76	2
1200	946	963	961	929	655	785	713	732	820	646	161	250	229	109	9
1350	944	962	960	931	659	788	694	698	833	649	156	268	262	98	10
1500	944	961	959	935	662	791	688	694	842	652	153	273	265	93	10
1650	942	961	959	937	663	793	698	697	843	653	149	263	262	94	10
1800	940	960	959	939	663	819	746	747	834	654	121	214	212	105	9
1950	0	969	968	939	659	0	862	872	892	652	0	107	96	47	7
2100	0	0	0	957	653	0	0	0	936	649	0	0	0	21	4
2250	0	0	0	937	647	0	0	0	939	644	0	0	0	-2	3
2400	0	0	0	935	637	0	0	0	921	636	0	0	0	14	1
2550	0	0	0	930	622	0	0	0	920	622	0	0	0	10	0
2700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

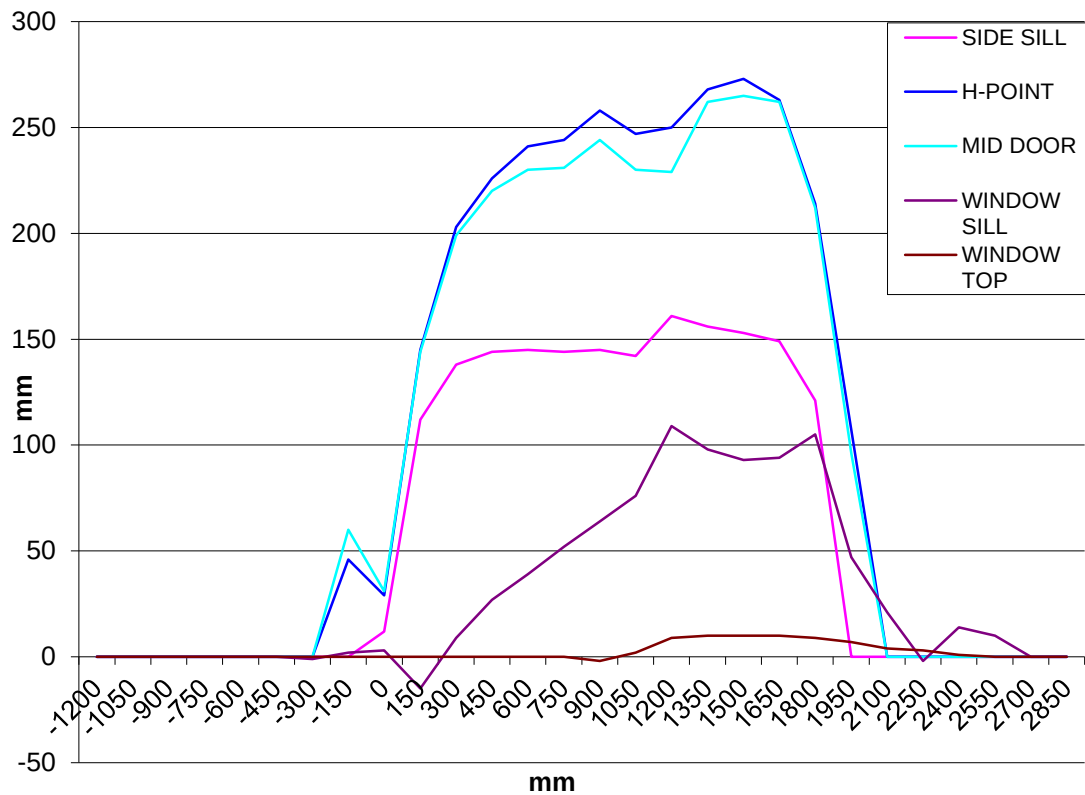
NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point.

DATA SHEET NO. 11 (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
Test Program: NCAP Side Impact

NHTSA No.: MD5405
Test Date: 01/14/13

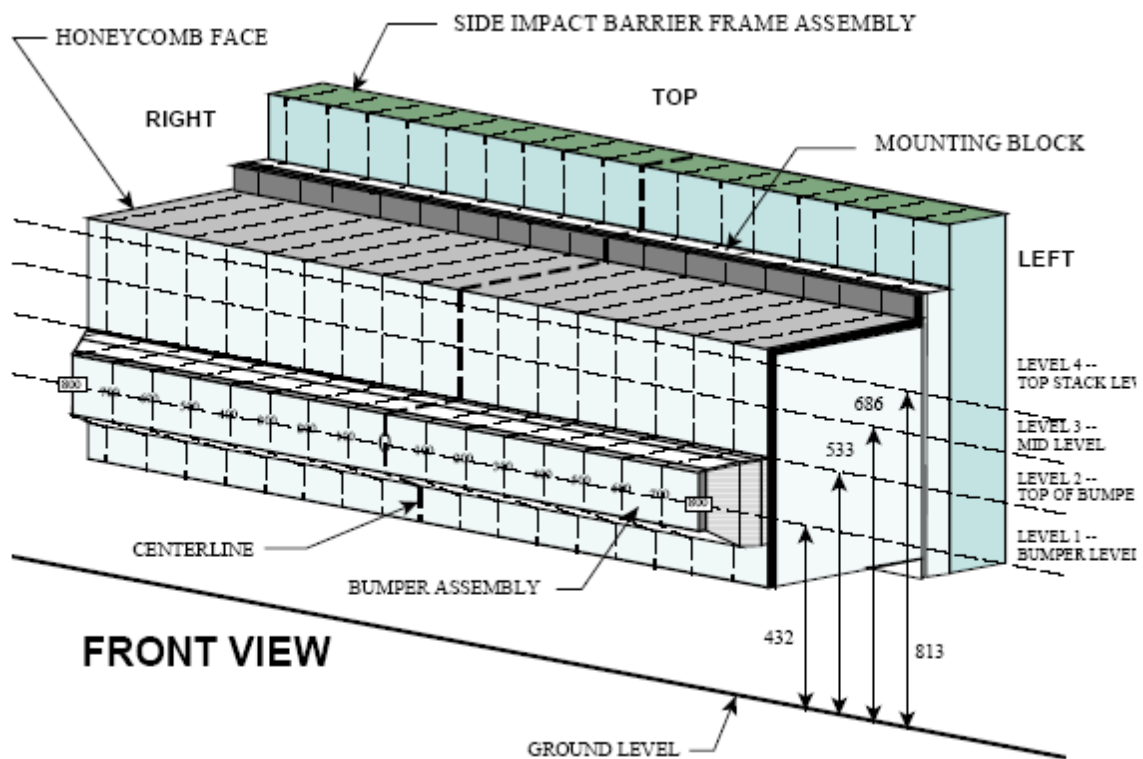


DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2013 Mazda CX-9 Sport MPV
Test Program: NCAP Side Impact

NHTSA No.: MD5405
Test Date: 01/14/13



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
1	-120	-85	-59	-43	-43	-57	-72	-65	-57	-55	-58	-66	-68	-64	-77	-93	-113
2	-115	-68	-63	-69	-69	-62	-85	-75	-60	-46	-40	-37	-35	-39	-49	-65	-98
3	-141	-138	-134	---	---	---	---	---	---	---	-98	-92	-88	-83	-80	-77	-103
4	-269	-261	-254	-250	-246	-242	-238	-234	-231	-227	-223	-218	-214	-210	-206	-202	-200

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

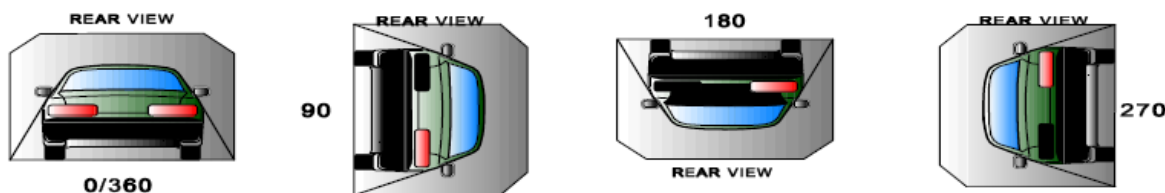
Test Vehicle: 2013 Mazda CX-9 Sport MPV
 Test Program: NCAP Side Impact

NHTSA No.: MD5405
 Test Date: 01/14/13

Test Time: 17:00 Temperature: 22

- A. From impact until vehicle motion ceases: 0 oz.
 (Maximum allowable is 1 ounce)
- B. For the 5 minute period after motion ceases: 0 oz.
 (Maximum allowable is 5 ounces)
- C. For the following 25 minutes: 0 oz.
 (Maximum allowable is 1 ounce/minute)
- D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

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

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0	0	N/A
90 to 180	0	0	0	N/A
180 to 270	0	0	0	N/A
270 to 360	0	0	0	N/A

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

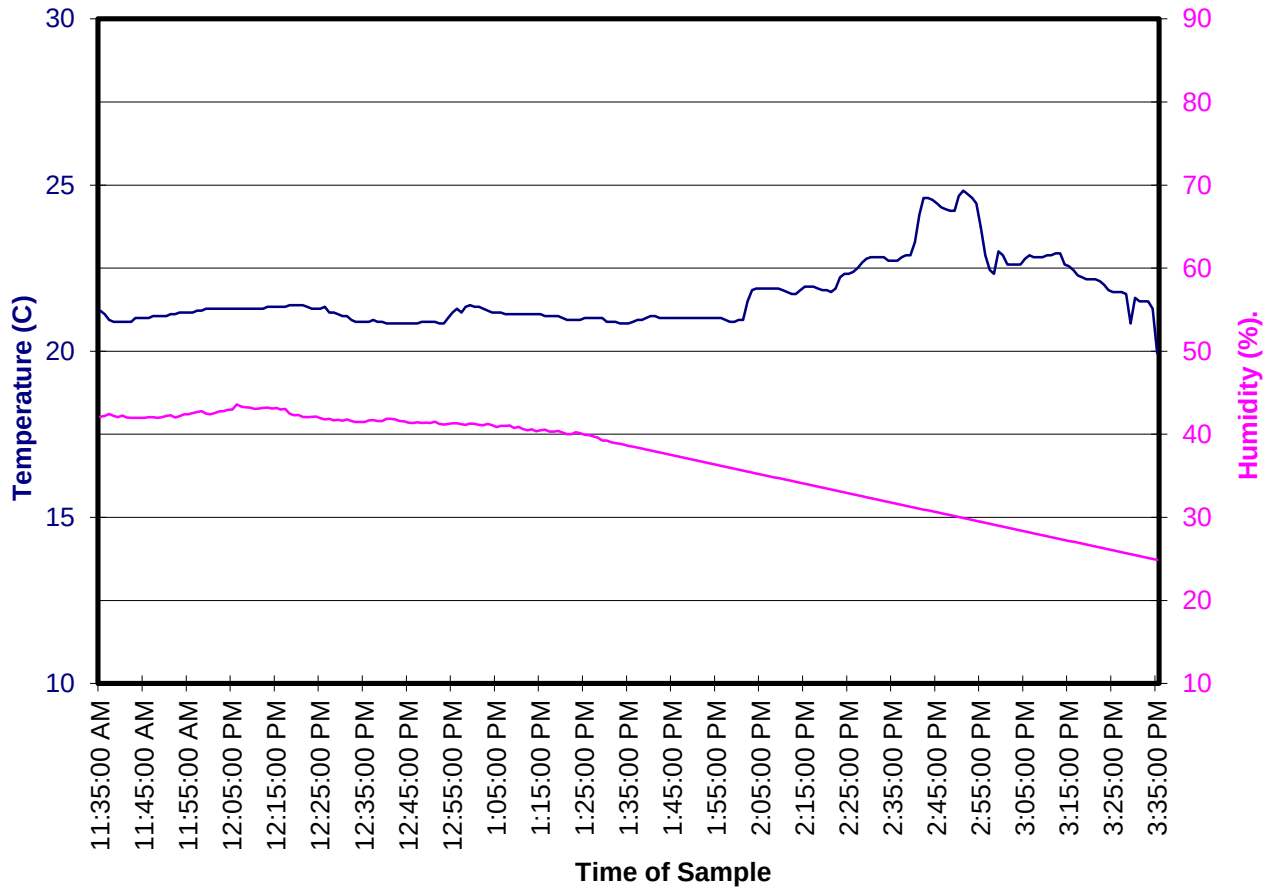
DATA SHEET NO. 14

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2013 Mazda CX-9 Sport MPV
Test Program: NCAP Side Impact

NHTSA No.: MD5405
Test Date: 01/14/13

**MD5405 Moving Deformable Barrier into 2013 Mazda CX-9 Sport MPV
130114; Test Time 15:35**



APPENDIX A
PHOTOGRAPHS

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092	Close-Up View of Vehicle's Certification Label	A-51
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097	FMVSS No. 301 Static Rollover 90 Degrees	A-54
098	FMVSS No. 301 Static Rollover 180 Degrees	A-54
099	FMVSS No. 301 Static Rollover 270 Degrees	A-55
100	FMVSS No. 301 Static Rollover 360 Degrees	A-55
101	Impact Event	A-56
102	Monroney Label	A-56
103	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-57
104	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-57



001 As-Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



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



003 Pre-Test Front View of Test Vehicle



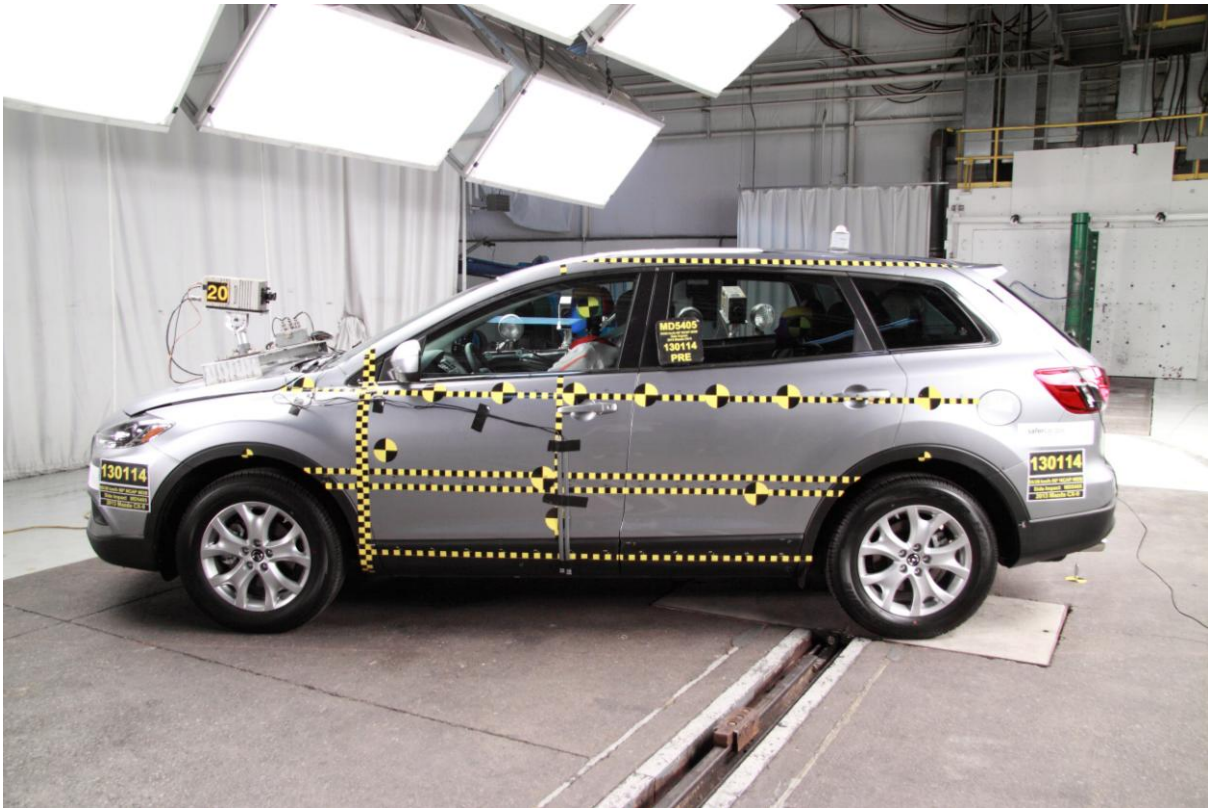
004 Post-Test Front View of Test Vehicle



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



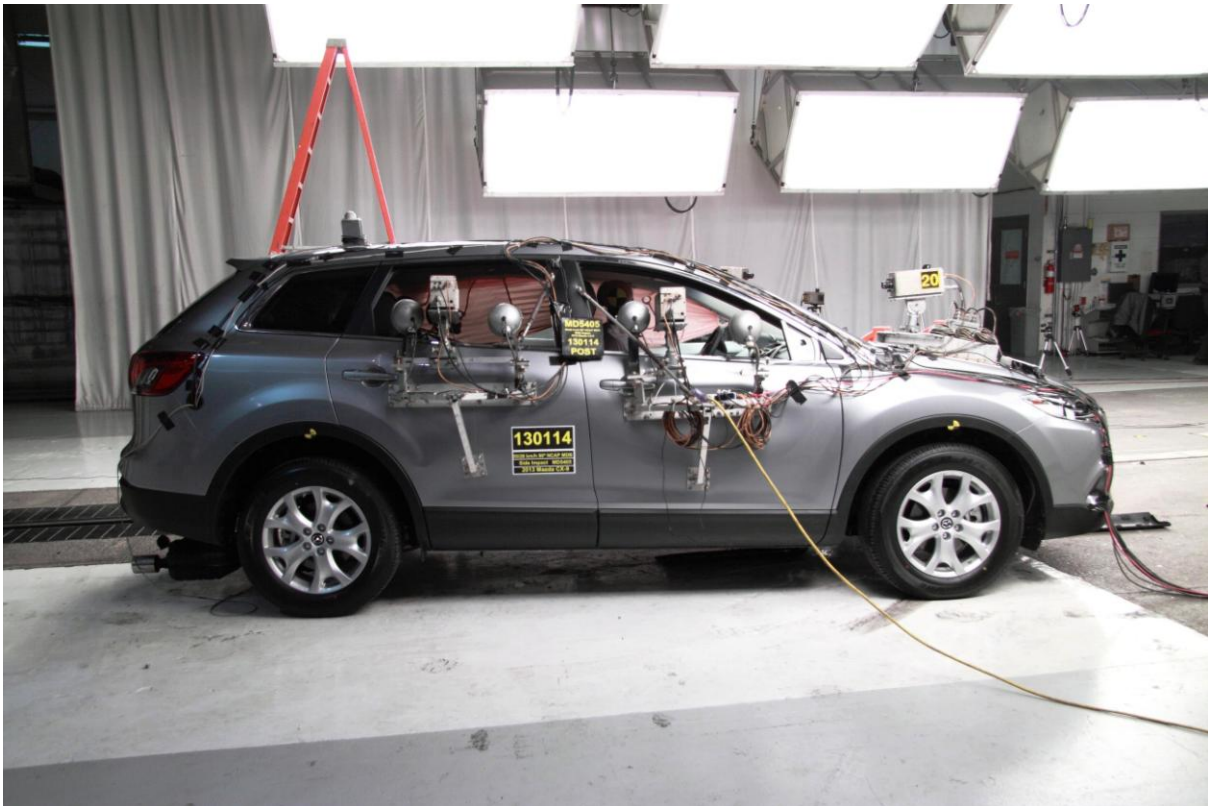
011 Pre-Test Rear View of Test Vehicle



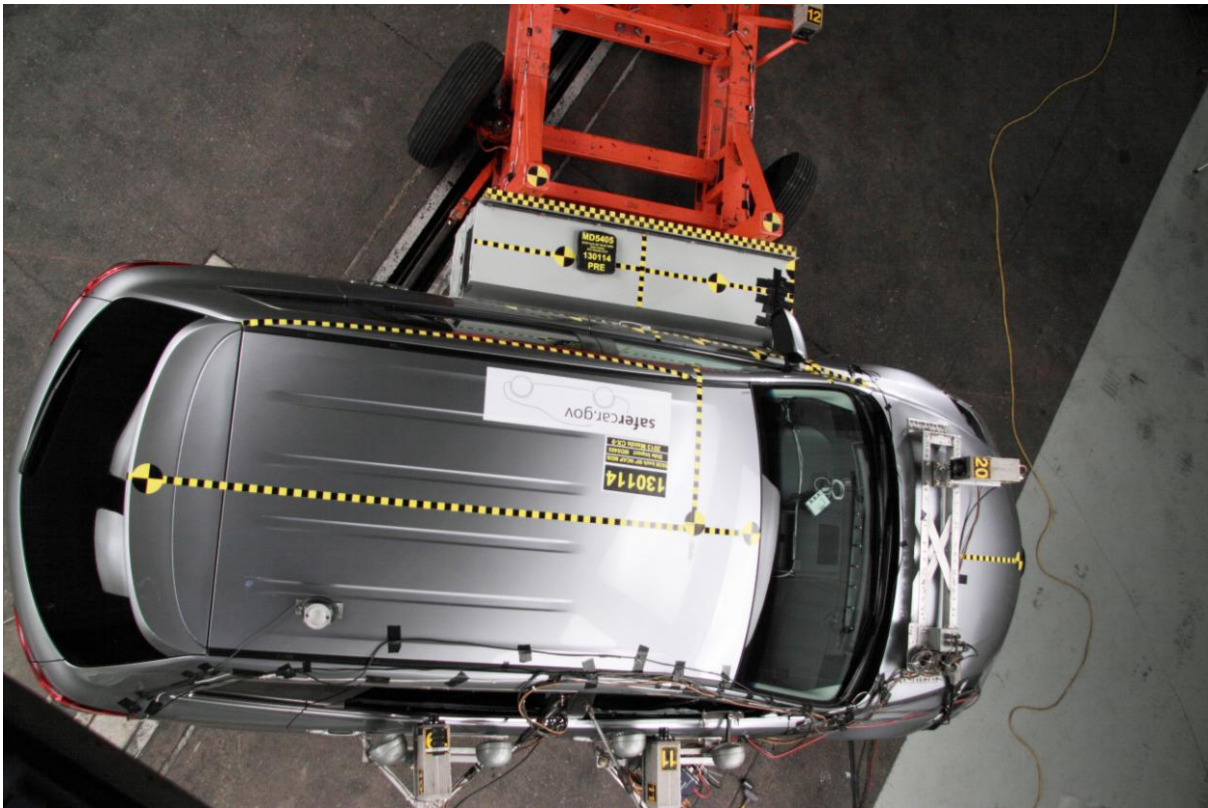
012 Post-Test Rear View of Test Vehicle



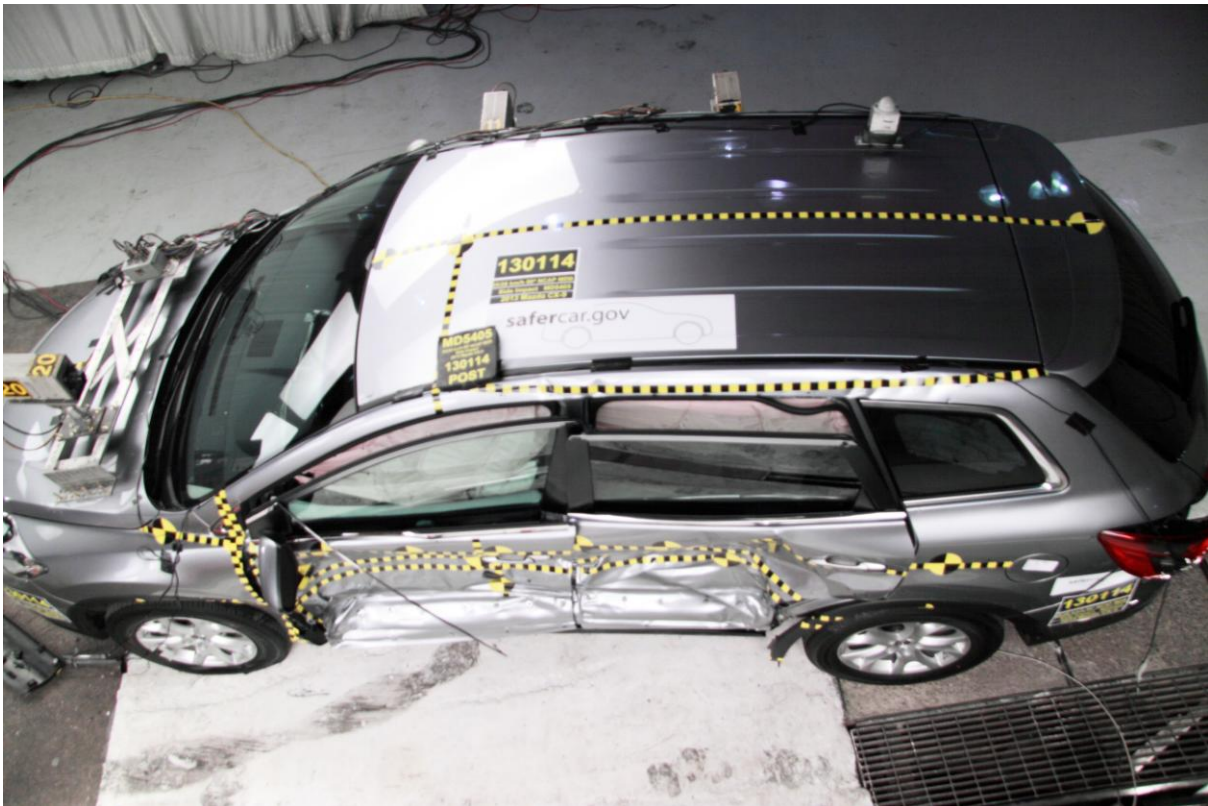
013 Pre-Test Right Side View of Test Vehicle



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 Left Rear Door Latch Close-up



024 Post-Test Left Rear 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



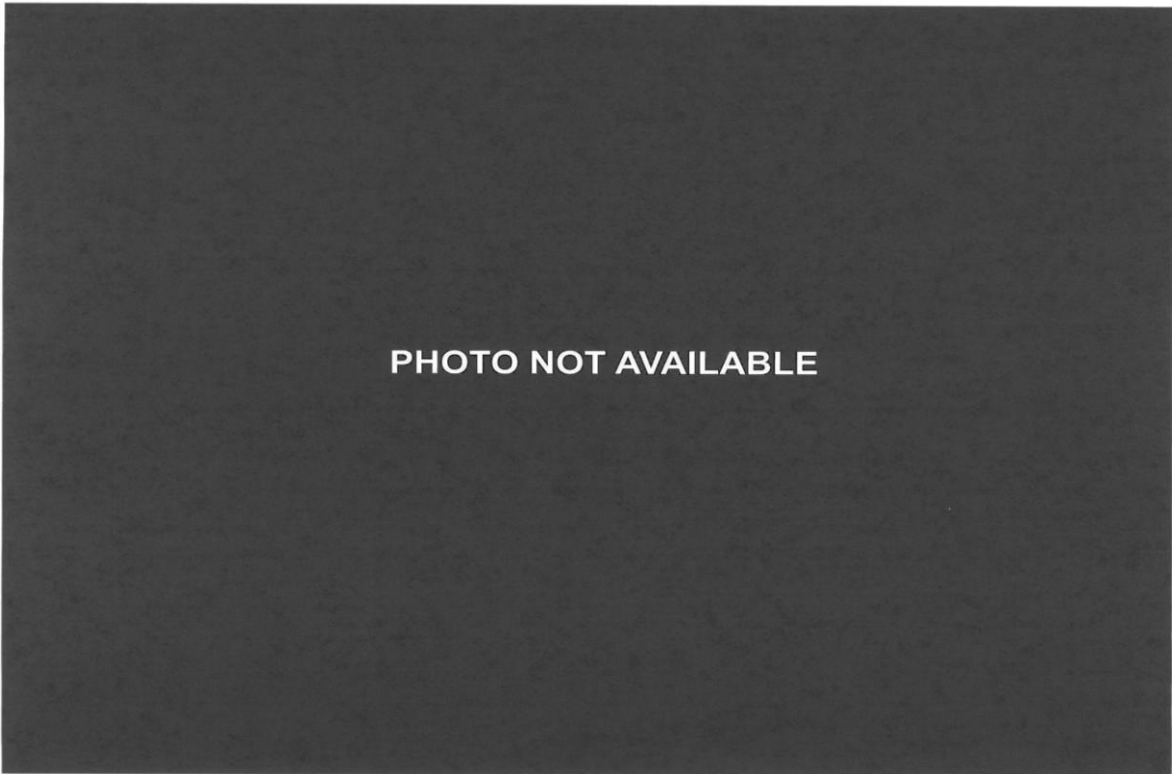
033 Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



034 Pre-Test Placement of Driver Dummy Feet



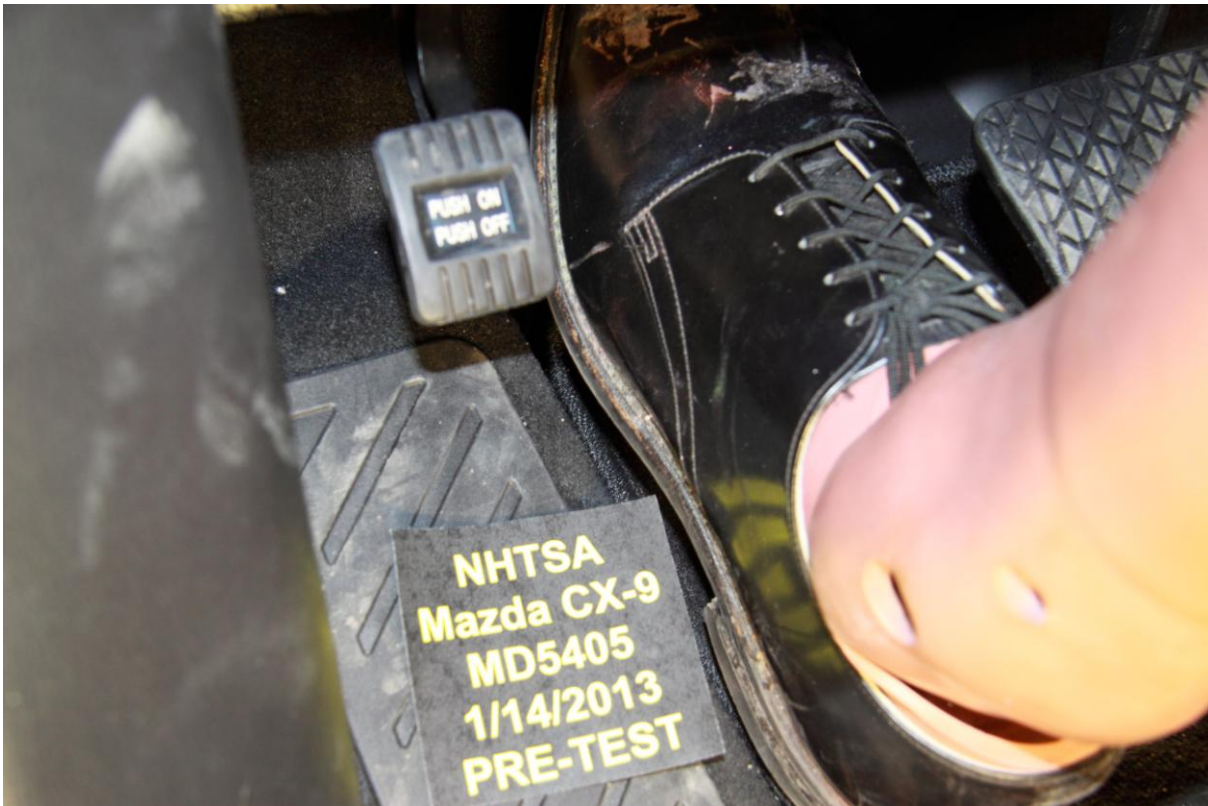
035 Pre-Test View of Belt Anchorage for Driver Dummy



036 Pre-Test Left Side View of Steering Wheel



037 View of Disengaged Parking Brake



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



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



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



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



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



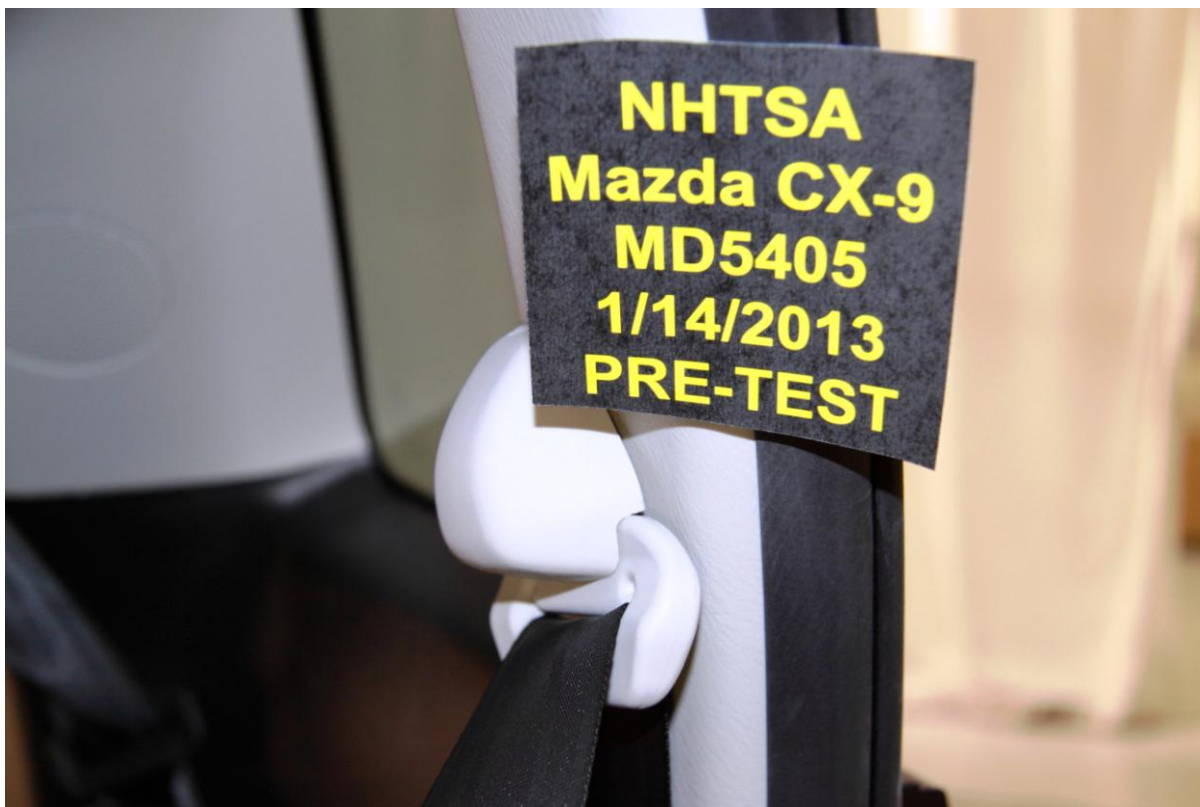
062 Pre-Test View of Rear Passenger Dummy Neck Showing Position of Adjustable Neck Bracket



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



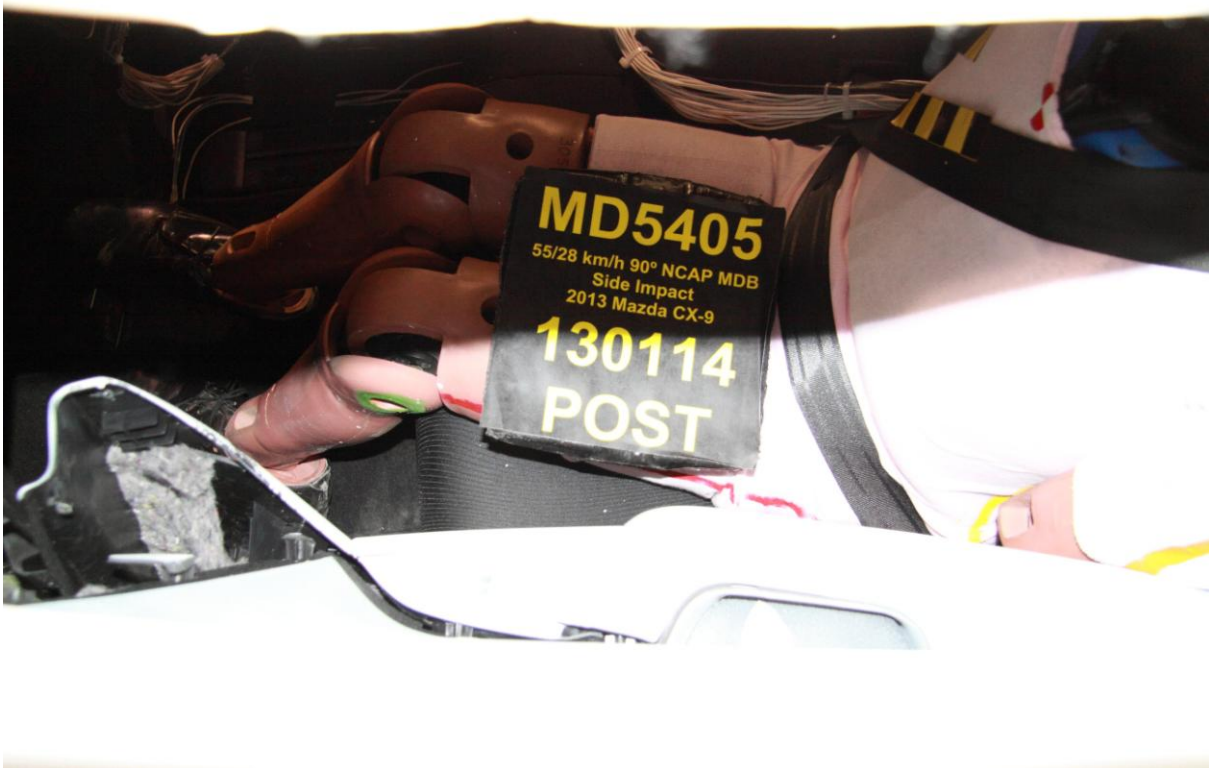
067 Pre-test Close-Up Left Side View of Rear Passenger Seat Back



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



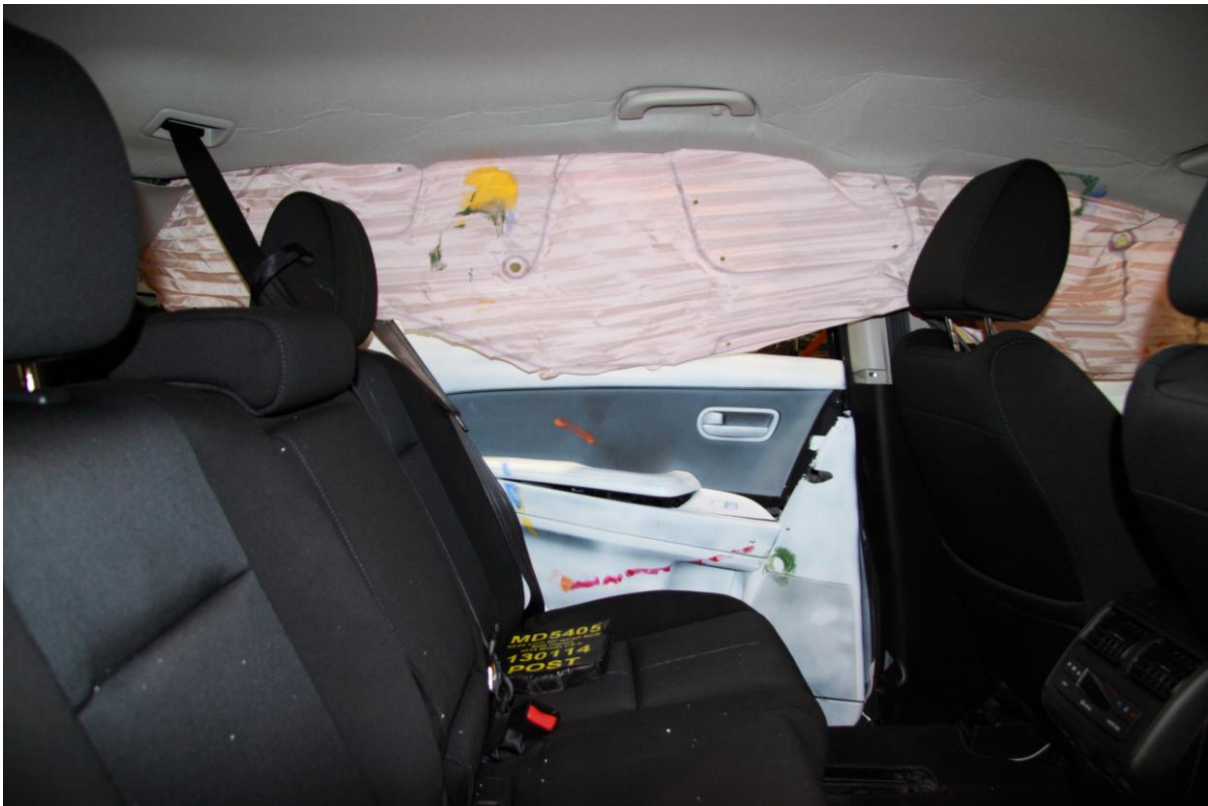
071 Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



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



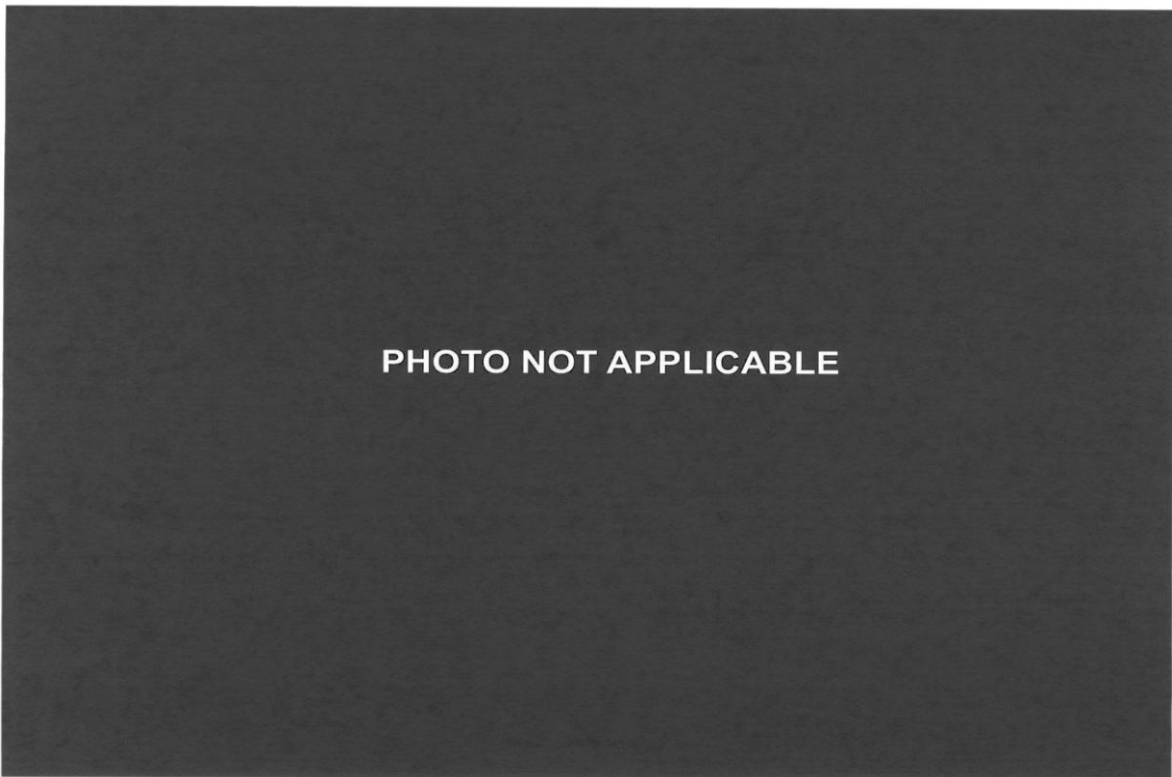
075 Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View



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



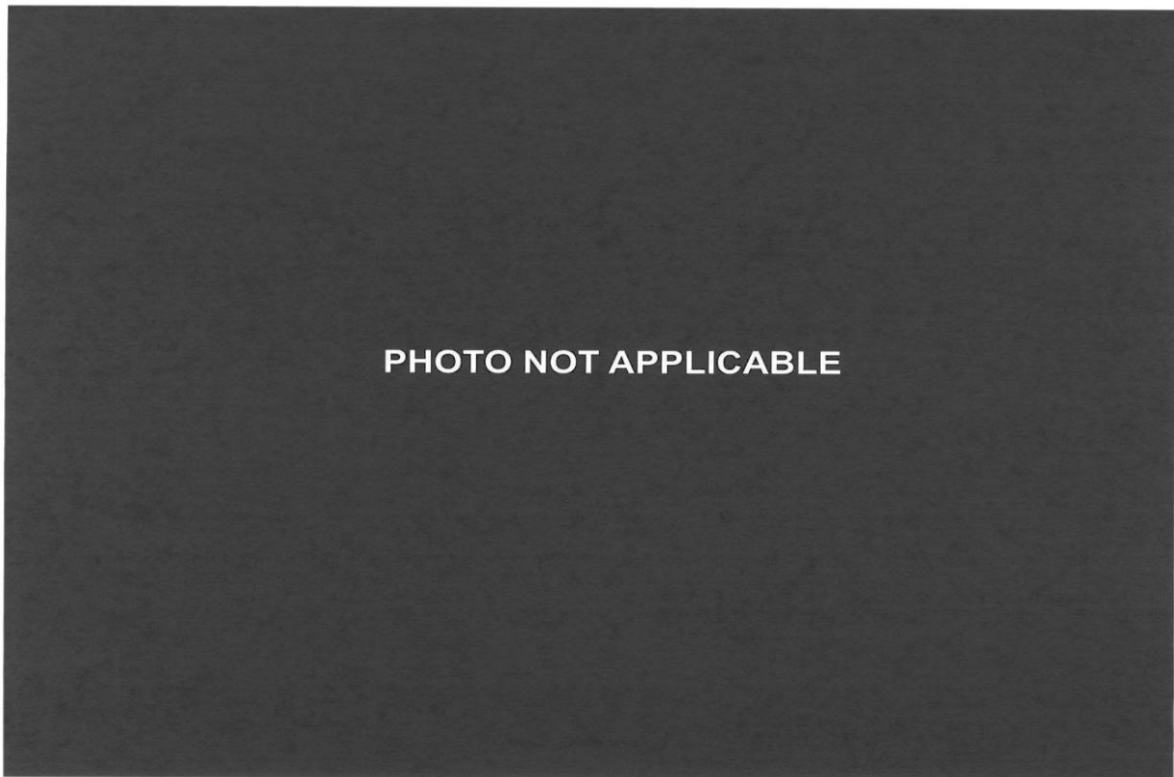
077 Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View



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



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



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



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



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



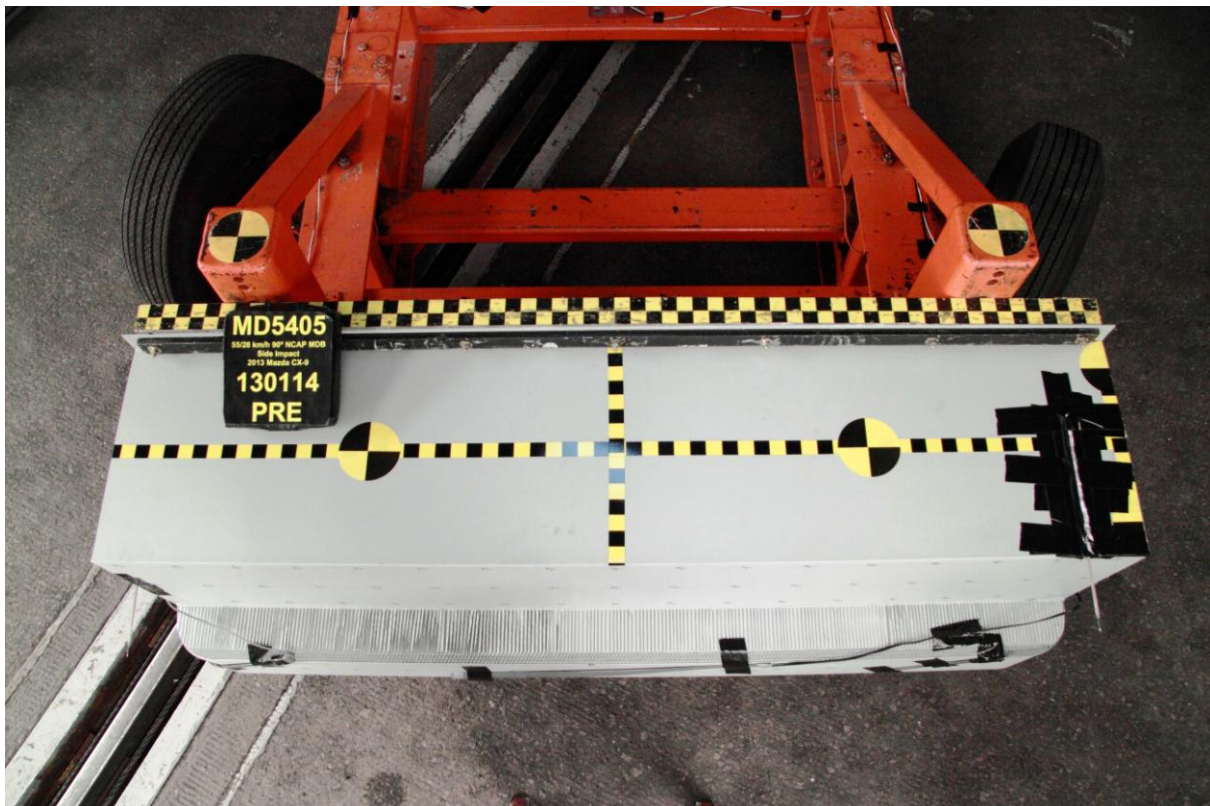
083 Post-Test View of Fuel Filler Cap or Fuel Filler Neck



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



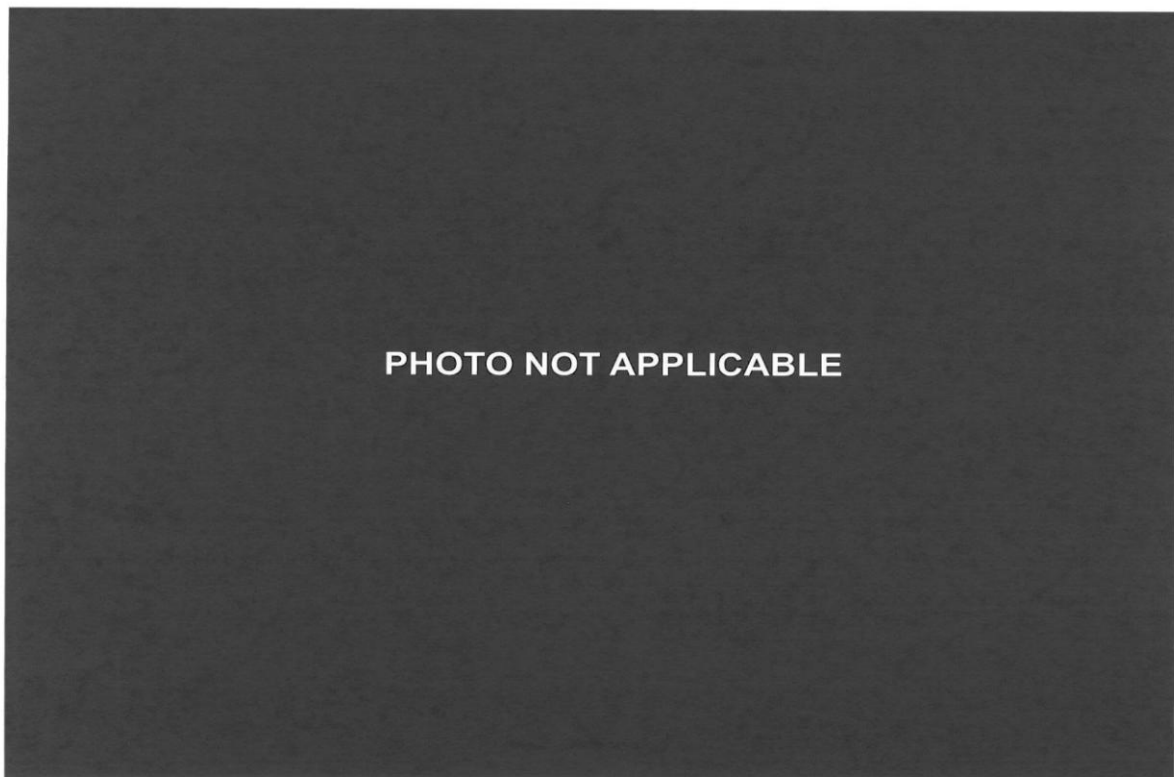
091 Post-Test Right Side View of MDB Impactor Face



092 Close-Up View of Vehicle Certification Label



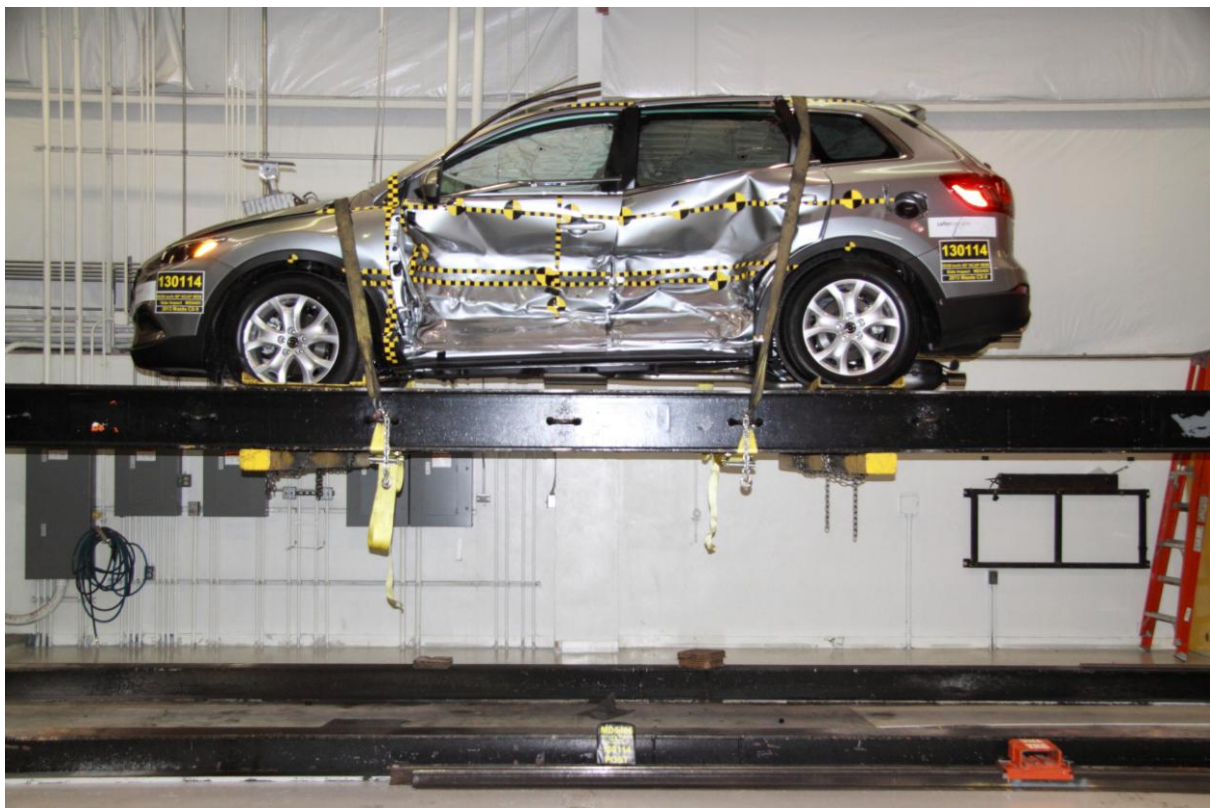
093 Close-Up View of Vehicle Tire Information Placard or Label



094 Pre-Test Ballast View



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



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

2013 CX-9
Model: 2013 CX-9 SPORT FRONT WHEEL DRIVE
Exterior Color: LIQUID SILVER METALLIC
Interior Color: BLACK

Fuel Economy and Environment

19 MPG
combined city/hwy
5.3 gallons per 100 miles

17 city
24 highway

Annual fuel cost \$2,800

Fuel Economy & Greenhouse Gas Rating
This vehicle emits 457 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fuelconomy.gov.

Smog Rating
This vehicle is a Tier 2 vehicle. The best is a Tier 1 vehicle.

SAFARI
Scan for Vehicle Info and offers

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 10%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN 85%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: MIKOSIMA, JAPAN
COUNTRY OF ORIGIN: JAPAN
ENGINE: JAPAN
TRANSMISSION: JAPAN

This label is affixed pursuant to the Federal Automobile Disclosure Act. Gasoline, License and Title Fees, State and Local Taxes, and Dealer-installed options are not included.

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES

- 3.7L V6 DOHC 24-VALVE ENGINE
- 273 HP, 270 LB-FT TORQUE
- 6-SPEED SPORT AT

EXTERIOR FEATURES

- 18-INCH ALUMINUM ALLOY WHEELS
- P245/60R18 TIRES
- POWER MIRRORS
- REAR BUMPER GUARD

INTERIOR FEATURES

- 7-PASSENGER SEATING
- 3-SPOKE TILT/TELESCOPIC STEERING
- WHEEL AUDIO AND CRUISE CONTROLS
- SPEED SENSING AUTO DOOR LOCKS
- POWER FR WINDOWS W/ AUTO UP/DOWN WITH REMOTE OPEN
- LEATHER WRAPPED SHIFT KNOB AND STEERING WHEEL
- CLOTH TRIMMED UPHOLSTERY

SAFETY AND SECURITY FEATURES

- 36 MONTH / 50,000 MILE "BUMPER-TO-BUMPER" WARRANTY
- 60 MONTH / 60,000 MILE POWERTRAIN WARRANTY
- 24 HOUR ROADSIDE ASSISTANCE
- ABS WITH EBD AND BRAKE-ASSIST
- TIRE PRESSURE MONITORING SYSTEM
- 3-ROW SIDE AIR CURTAINS
- WIND-UP PROTECTION
- ROLL STABILITY CONTROL

OTHER FEATURES

- VENTILATED 4-WHEEL DISC BRAKES
- INDEPENDENT FRONT MACPHERSON STRUT/REAR MULTI-LINK SUSPENSION
- HALOGEN HEADLIGHTS
- ROOF SPOILER
- REAR SIDE WINDOW AND LIFT GATE PRIVACY GLASS
- 60/40 SPLIT FOLD DOWN 2ND ROW
- 50/50 SPLIT FOLD DOWN 3RD ROW
- USB AUDIO INPUT
- BLUETOOTH HANDS FREE PHONE/AUDIO
- AM/FM/CD AUDIO W/6 SPEAKERS
- 3-ZONE AUTOMATIC CLIMATE CONTROL
- AIR CONDITIONING
- REMOTE KEYLESS ENTRY
- TRIP COMPUTER
- DYNAMIC STABILITY CONTROL AND TRACTION CONTROL SYSTEM
- ADVANCED DUAL FRONT AND SIDE IMPACT AIR BAGS
- "TRIPLE-H" BODY CONSTRUCTION
- ANTI-THEFT ENGINE IMMOBILIZER
- SIDE IMPACT DOOR BEAMS
- FRONT & REAR CRUMPLE ZONES
- LATCH REAR CHILD SAFETY SEAT ANCHORS AND TETHERS

MSRP \$29,785

Total Vehicle and Options \$29,785
Delivery, Processing and Handling Fee \$795
Total MSRP \$30,580

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.

Crash	Driver Passenger	Not Rated
Frontal	Not Rated	Not Rated
Side	Front seat Not Rated Rear seat Not Rated	Not Rated
Rollover	★★★★★	

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

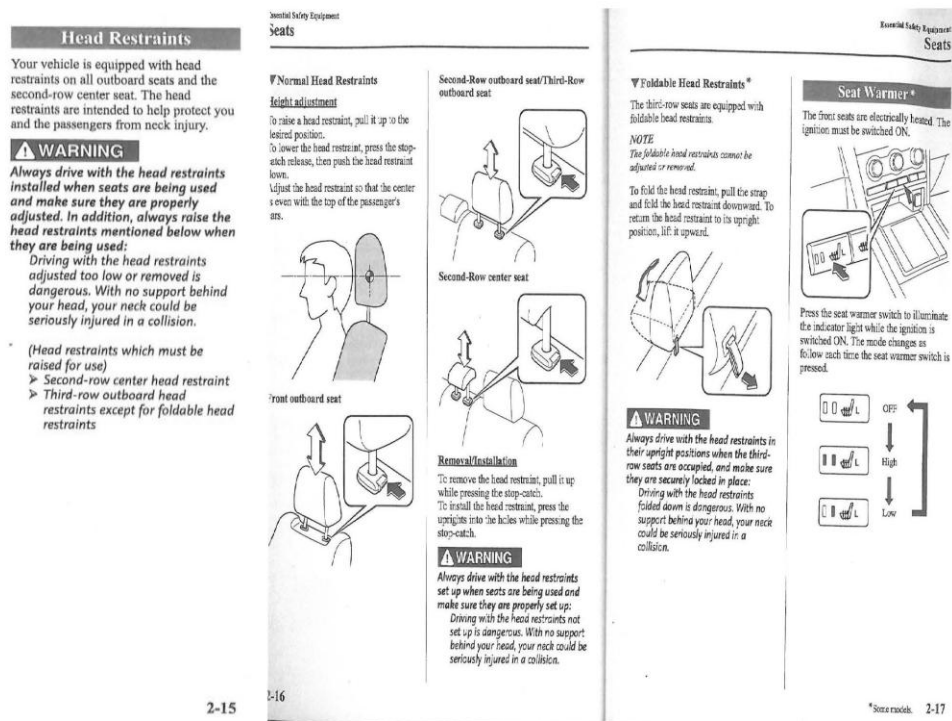
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TOM BUSH MAZDA
8650 ATLANTIC BLVD
JACKSONVILLE, FL 32225

SHIP TO: 23658
TOM BUSH MAZDA
8650 ATLANTIC BLVD
JACKSONVILLE, FL 32225

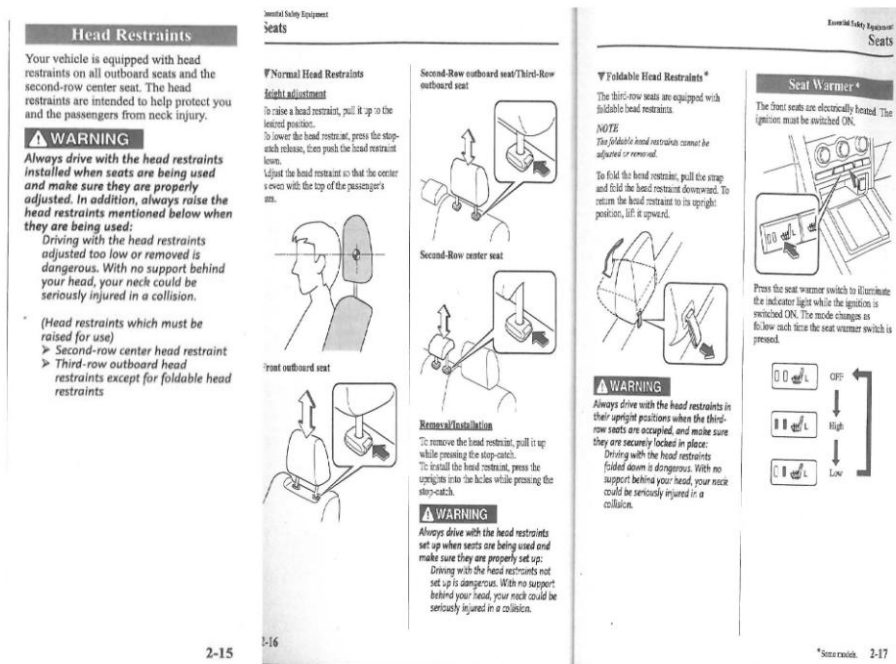
JM3TB2BA6D0404202

MAZDAUSA.COM

102 Monroney Label



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



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

No.	Description	Page
1	Driver Head Acceleration (X) Primary vs. Time	B-5
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

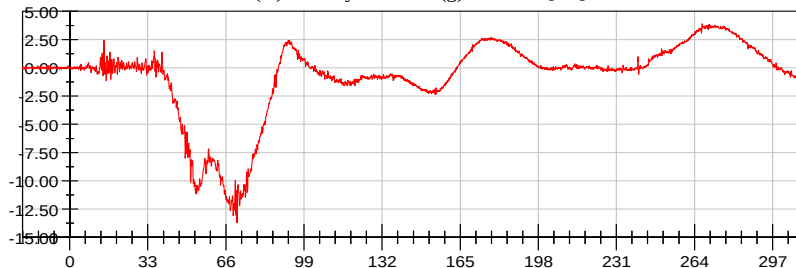
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Test Date: 01/14/2013

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>

3.89 g at 267.28 ms

<Min>

-13.72 g at 70.64 ms

CFC_1000

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



<Max>

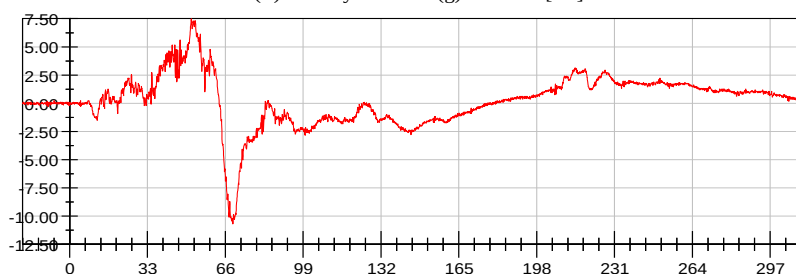
34.92 g at 61.36 ms

<Min>

-7.72 g at 97.52 ms

CFC_1000

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



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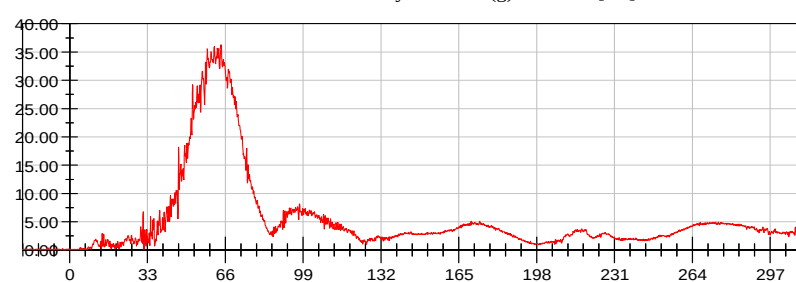
7.49 g at 51.60 ms

<Min>

-10.68 g at 69.20 ms

CFC_1000

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



<Max>

36.28 g at 64.24 ms

<Min>

0.03 g at -17.60 ms

CFC_1000



NHTSA

Test Lab: CTF

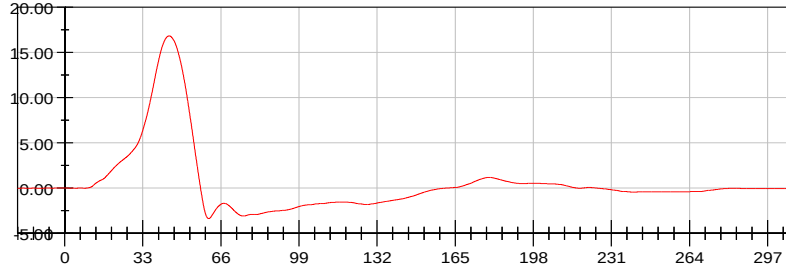
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Test Date: 01/14/2013

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>

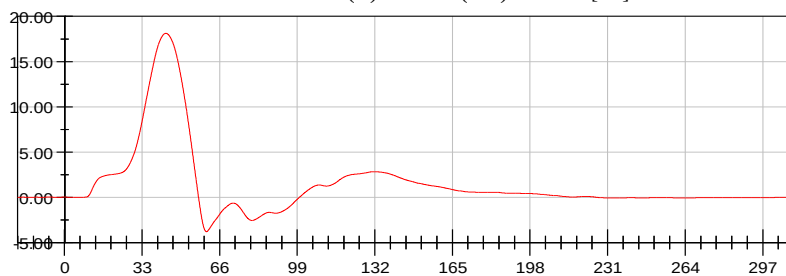
16.84 mm at 44.16 ms

<Min>

-3.37 mm at 60.80 ms

CFC_180

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



<Max>

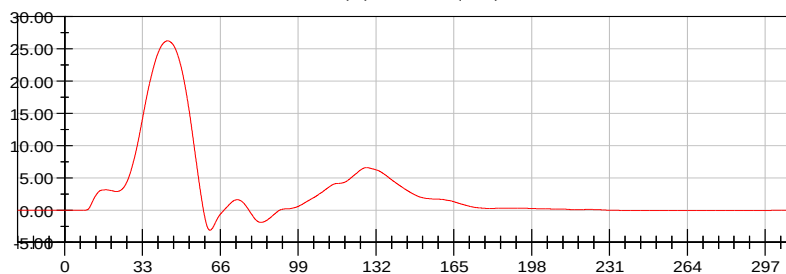
18.12 mm at 43.12 ms

<Min>

-3.81 mm at 60.40 ms

CFC_180

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



<Max>

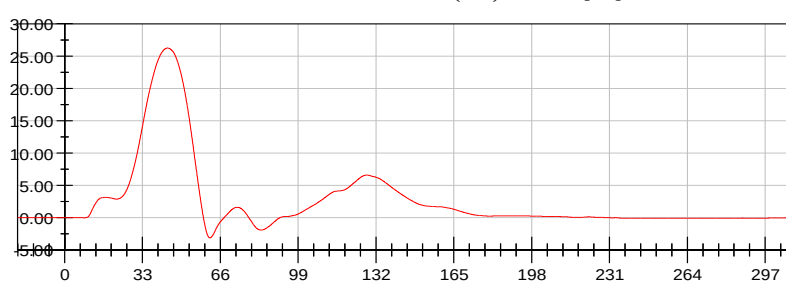
26.25 mm at 43.68 ms

<Min>

-3.11 mm at 61.60 ms

CFC_180

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



<Max>

26.25 mm at 43.68 ms

<Min>

-3.11 mm at 61.60 ms

CFC_180



NHTSA

Test Lab: CTF

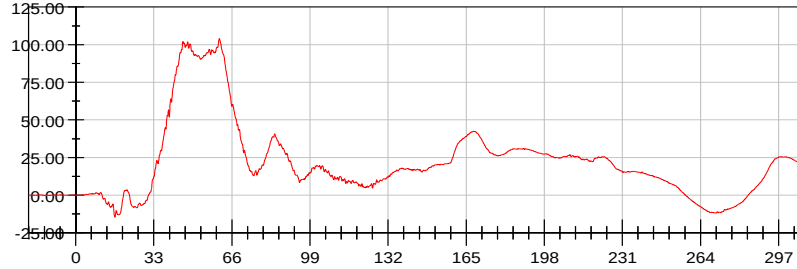
Test Number: 130114 (MD5405)

Test Date: 01/14/2013

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

Position #4 SID IIs Dummy (305)

Driver Anterior Abdominal Force (Y) vs. Time (N) vs. Time [ms]



<Max>

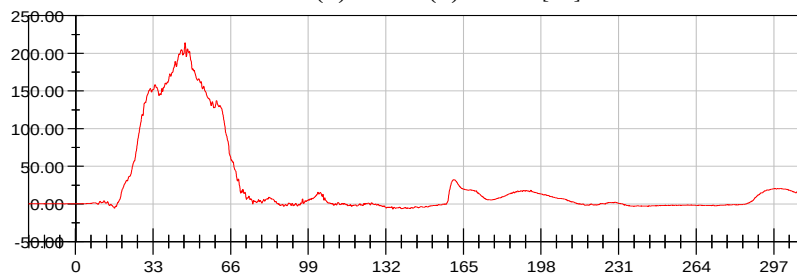
103.97 N at 60.64 ms

<Min>

-14.61 N at 16.56 ms

CFC_600

Driver Middle Abdominal Force (Y) vs. Time (N) vs. Time [ms]



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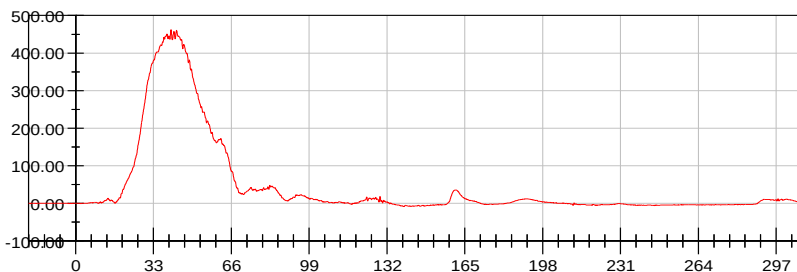
214.13 N at 46.64 ms

<Min>

-6.93 N at 134.96 ms

CFC_600

Driver Posterior Abdominal Force (Y) vs. Time (N) vs. Time [ms]



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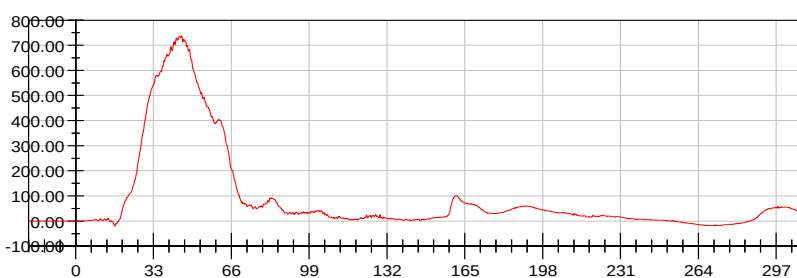
461.88 N at 40.48 ms

<Min>

-8.65 N at 139.20 ms

CFC_600

Driver Total Abdominal Force (Y) vs. Time (N) vs. Time [ms]



<Max>

737.48 N at 44.96 ms

<Min>

-20.07 N at 16.64 ms

CFC_600



NHTSA

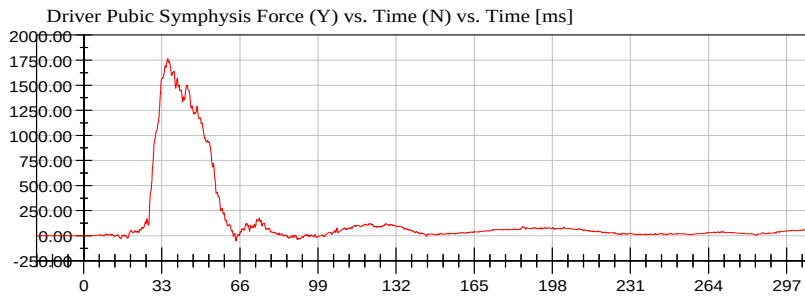
Test Lab: CTF

Test Number: 130114 (MD5405)

Test Date: 01/14/2013

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

Position #4 SID IIs Dummy (305)



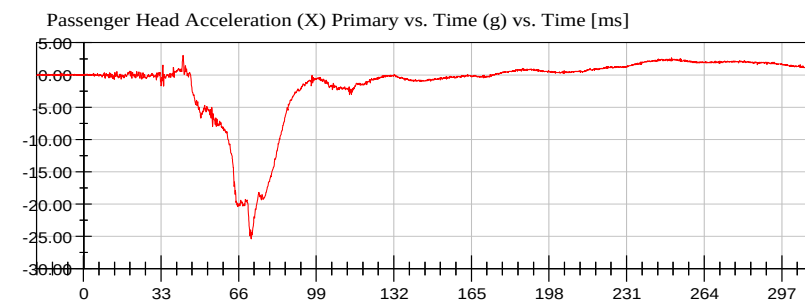
<Max>

1,764.98 N at 35.52 ms

<Min>

-51.95 N at 64.32 ms

CFC_600



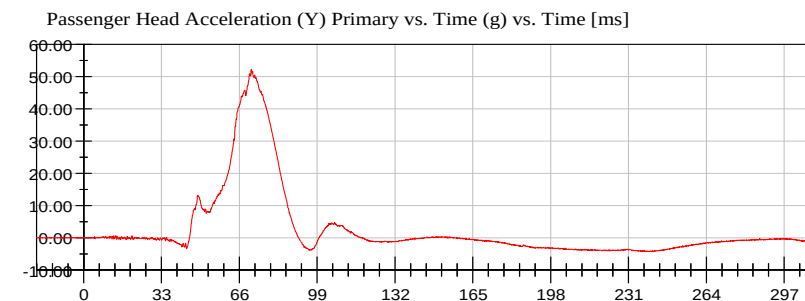
<Max>

3.00 g at 42.32 ms

<Min>

-25.44 g at 71.36 ms

CFC_1000



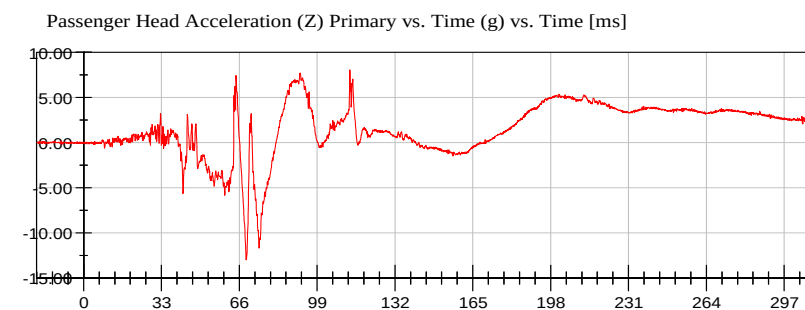
<Max>

52.24 g at 71.12 ms

<Min>

-4.34 g at 237.28 ms

CFC_1000



<Max>

8.05 g at 112.88 ms

<Min>

-12.99 g at 68.96 ms

CFC_1000



NHTSA

Test Lab: CTF

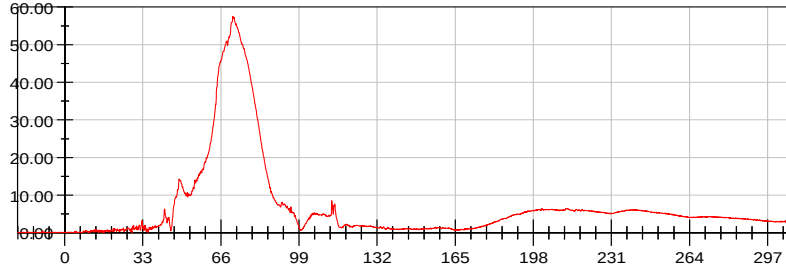
Test Number: 130114 (MD5405)

Test Date: 01/14/2013

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>

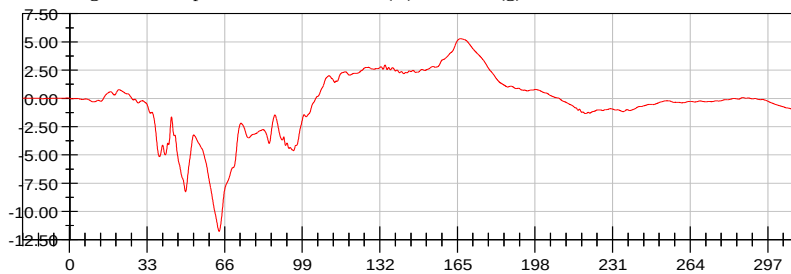
57.55 g at 71.12 ms

<Min>

0.01 g at -20.00 ms

CFC_1000

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



<Max>

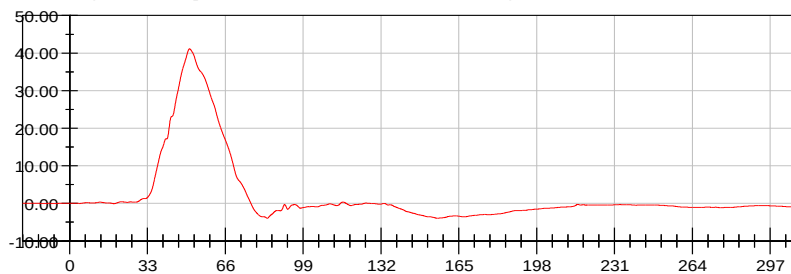
5.28 g at 166.16 ms

<Min>

-11.77 g at 63.68 ms

CFC_180

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



<Max>

41.12 g at 50.88 ms

<Min>

-3.97 g at 155.92 ms

CFC_180

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



<Max>

11.02 g at 90.88 ms

<Min>

-15.15 g at 45.92 ms

CFC_180



NHTSA

Test Lab: CTF

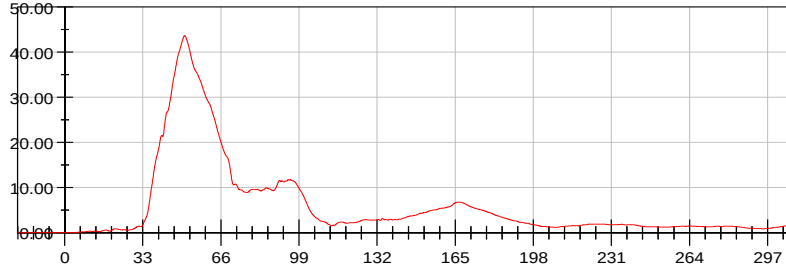
Test Number: 130114 (MD5405)

Test Date: 01/14/2013

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>

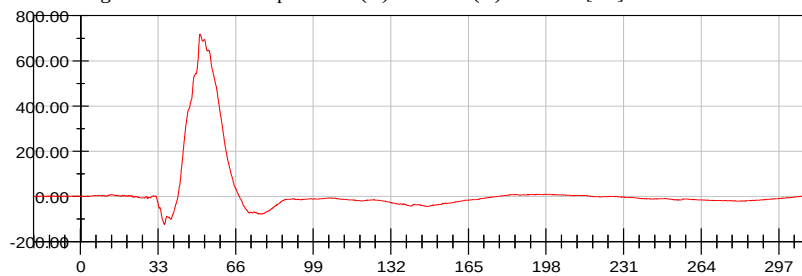
43.65 g at 50.72 ms

<Min>

0.01 g at -2.24 ms

CFC_180

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



<Max>

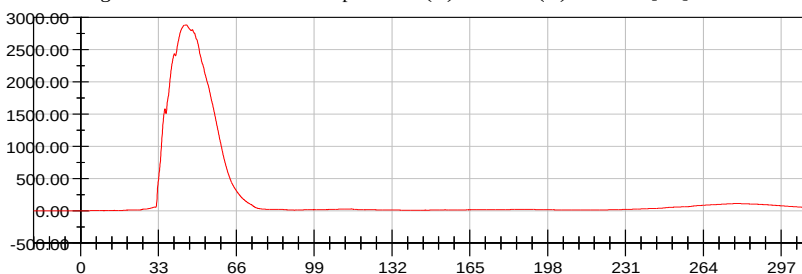
717.20 N at 50.80 ms

<Min>

-125.07 N at 35.76 ms

CFC_600

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



<Max>

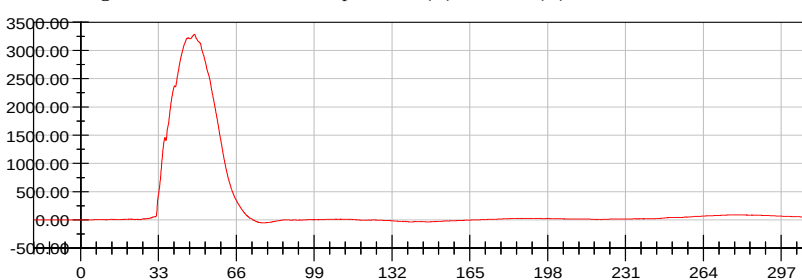
2,885.85 N at 44.80 ms

<Min>

-0.40 N at -16.16 ms

CFC_600

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



<Max>

3,286.23 N at 48.32 ms

<Min>

-52.51 N at 77.20 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.

Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 11-2
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	20 %	Yes
Peak Resultant Acceleration	125 - 155 g	148.9 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	6.6 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	Yes	Yes	Yes

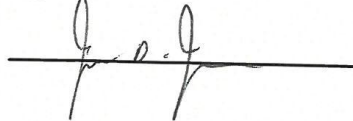
Test meets specifications.

Comments:

Technician



Approved



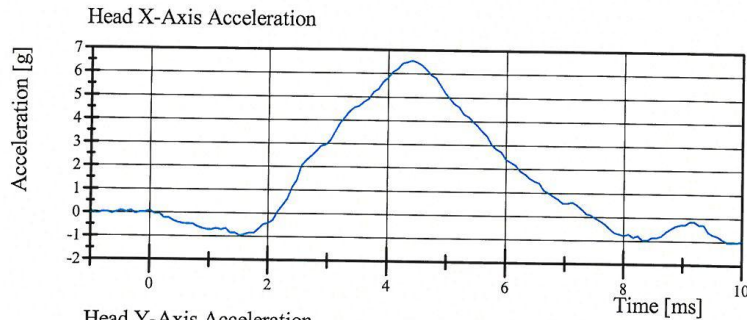
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 17:12:18 359

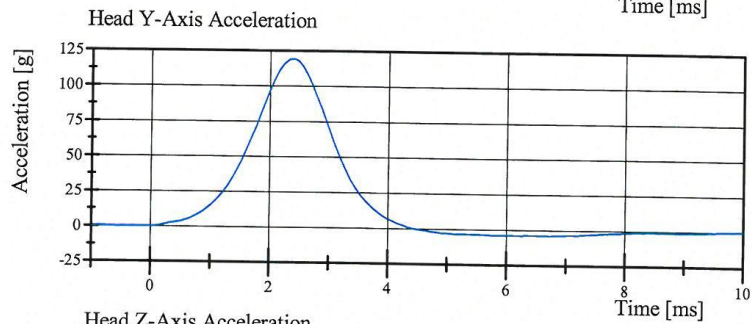


Transportation Research Center Inc.

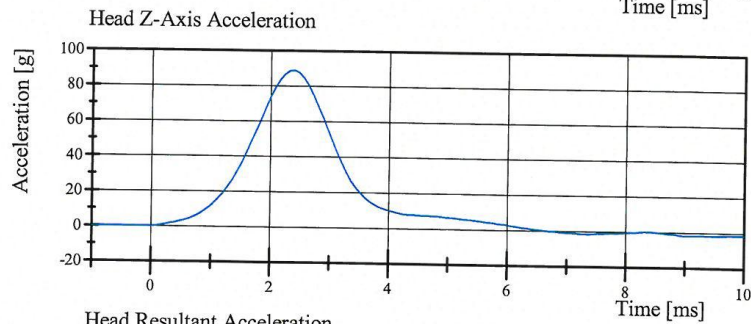
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 11-2
Test Date: 11/26/2012



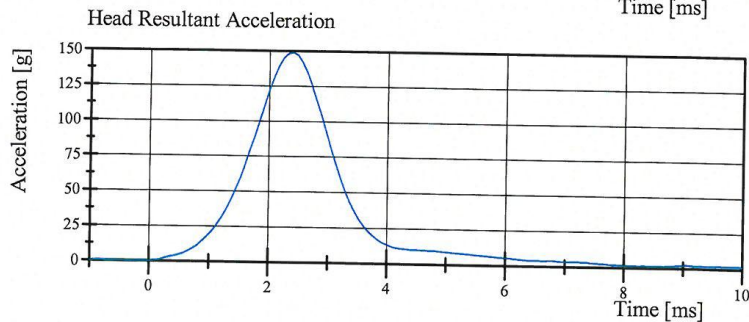
Filter Class: CFC_1000
Max: 6.6 gn at 4.4 ms
Min: -1.0 gn at 9.8 ms



Filter Class: CFC_1000
Max: 119.4 gn at 2.4 ms
Min: -4.0 gn at 6.0 ms



Filter Class: CFC_1000
Max: 88.9 gn at 2.4 ms
Min: -2.0 gn at 9.0 ms



Filter Class: CFC_1000
Max: 148.9 gn at 2.4 ms
Min: 0.0 gn at -0.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 17:12:25 359



Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 11-1

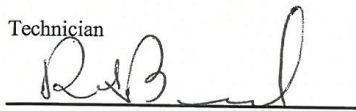
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.37 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-54.4 deg	Yes
Time of Peak	54 - 66 ms	59.0 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	65.6 ms	Yes

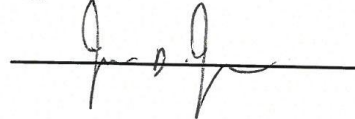
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 14:25:58 1303

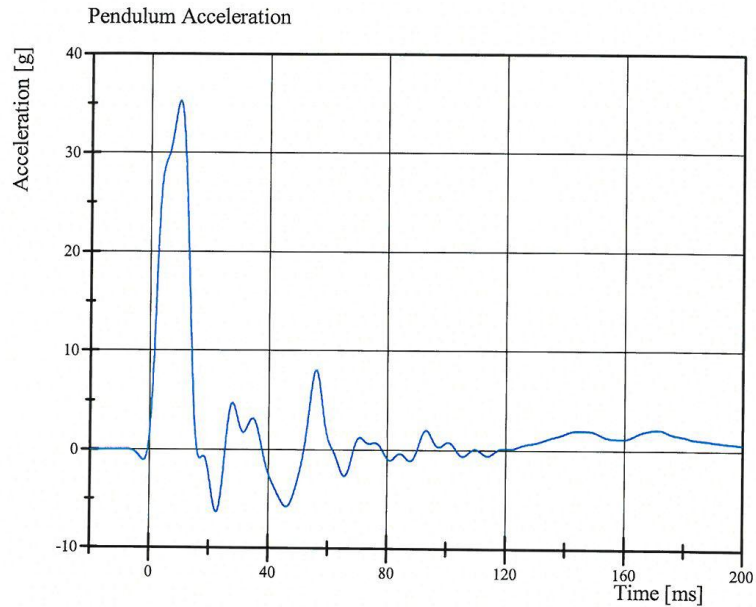


Transportation Research Center Inc.

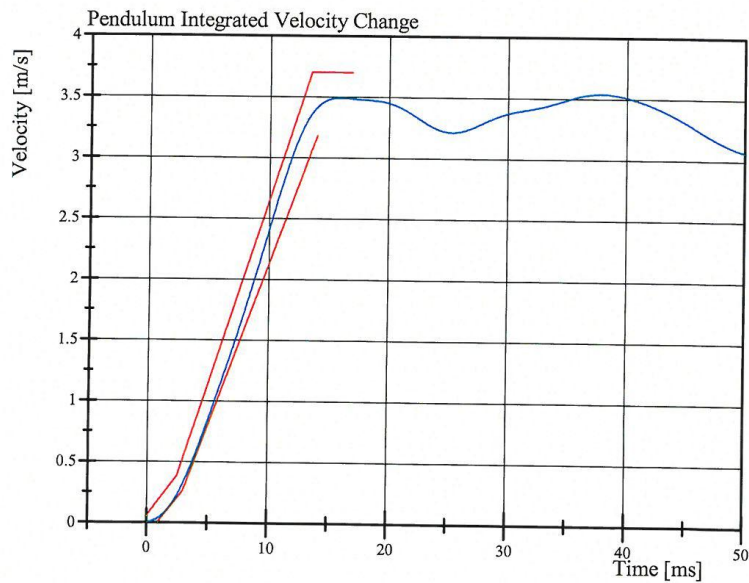
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012



Filter Class: CFC_60
Max: 35.2 gn at 9.8 ms
Min: -6.4 gn at 22.5 ms



Filter Class: CFC_60
Max: 3.5 m/s at 37.8 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 14:26:05 1303

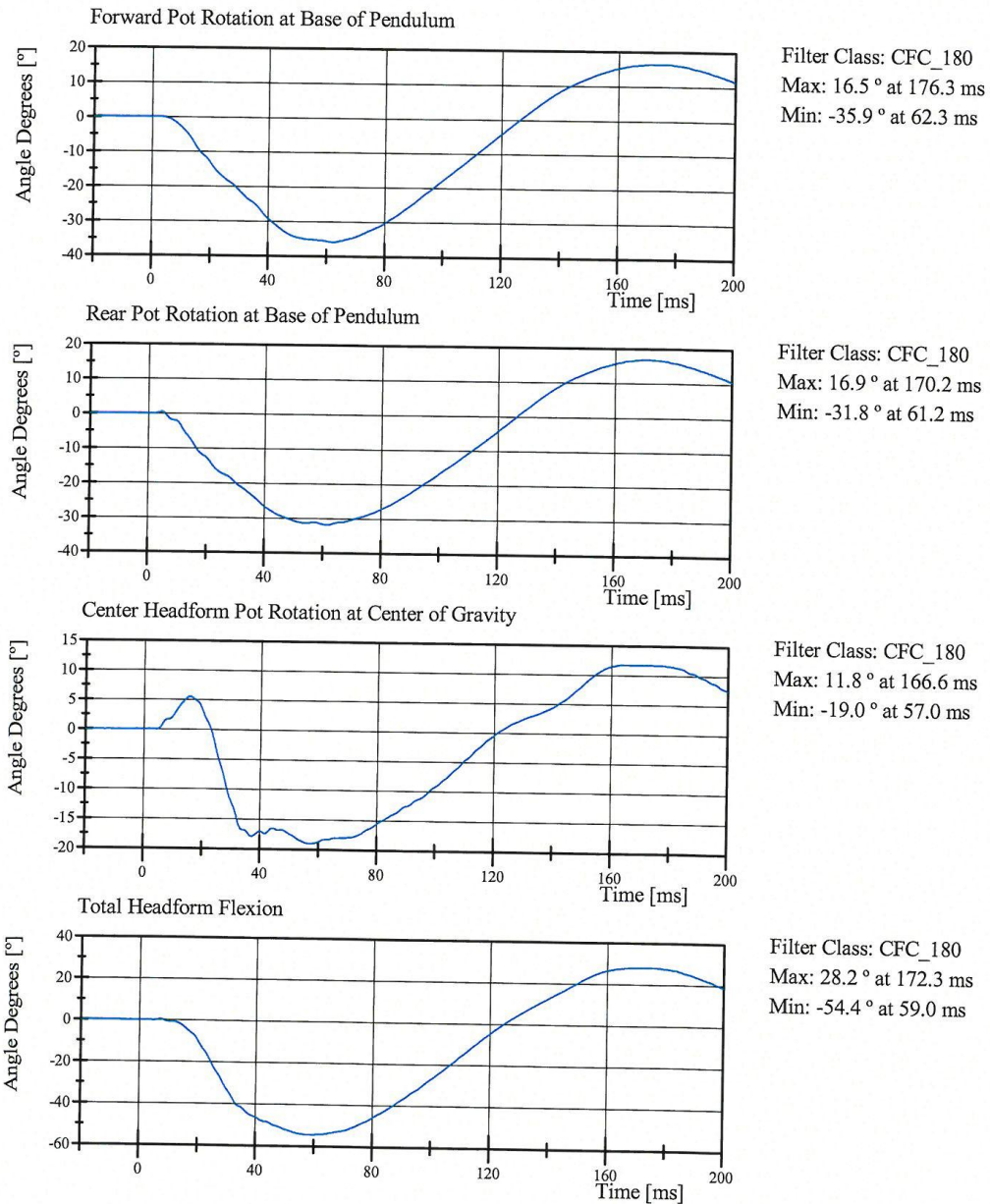


Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012



Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 14:26:06 1303



Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 11-1

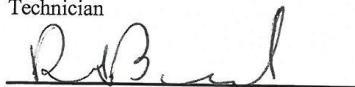
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	21 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-10.37 g	Yes

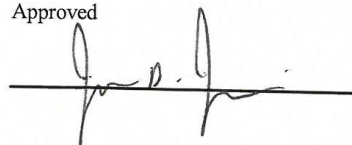
Test meets specifications.

Comments:

Technician



Approved



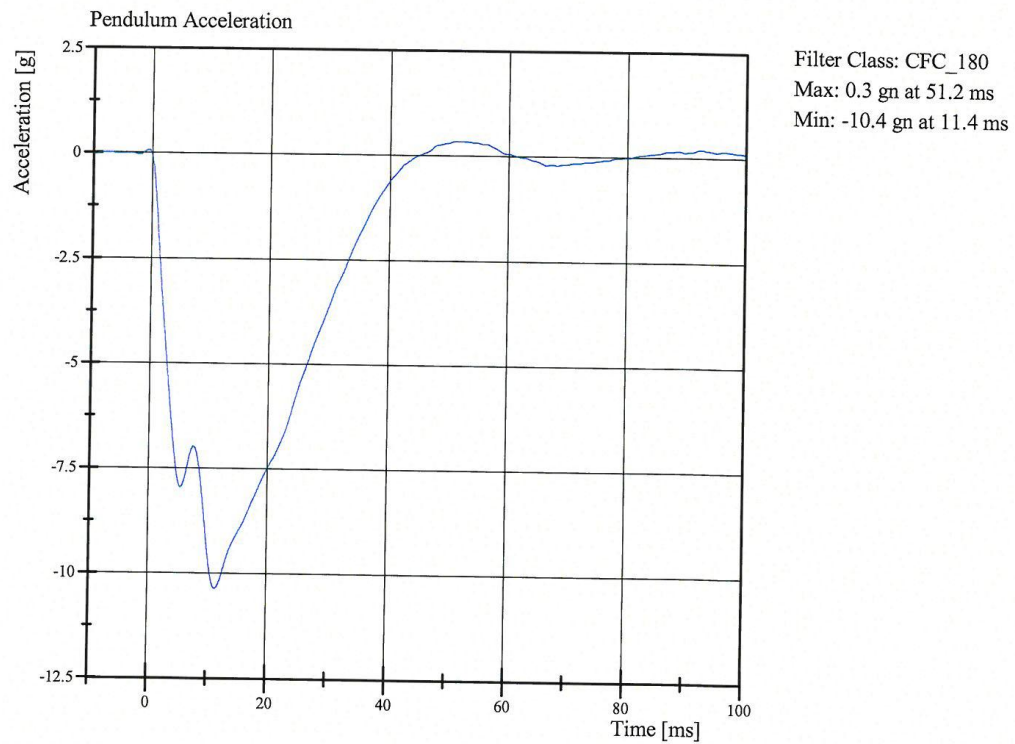
Specification Source: NHTSA final rule 8/15/2008

11.26.2012 15:17:39 507



Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012



Specification Source: NHTSA final rule 8/15/2008

11.26.2012 15:17:45 507



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.4 mm	Yes

Test meets specifications.

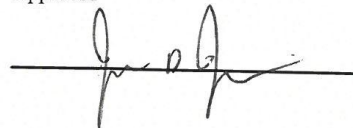
Comments:

Drop Height: 816

Technician



Approved



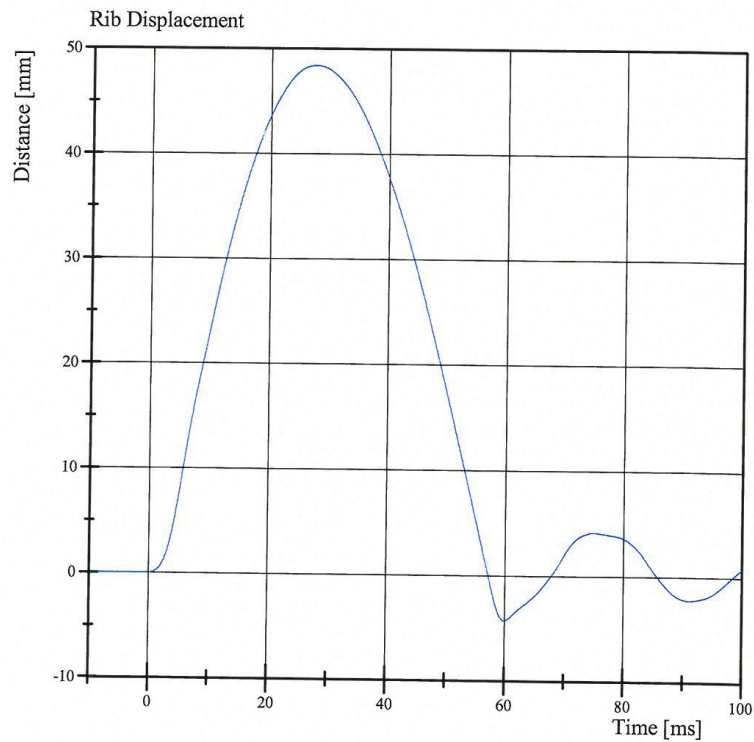
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:31:45 753



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 48.4 mm at 27.6 ms
Min: -4.3 mm at 59.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:32:00 753



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.9 mm	Yes

Test meets specifications.

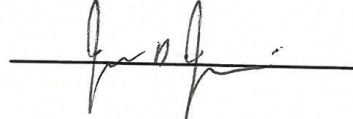
Comments:

Drop Height: 462

Technician



Approved



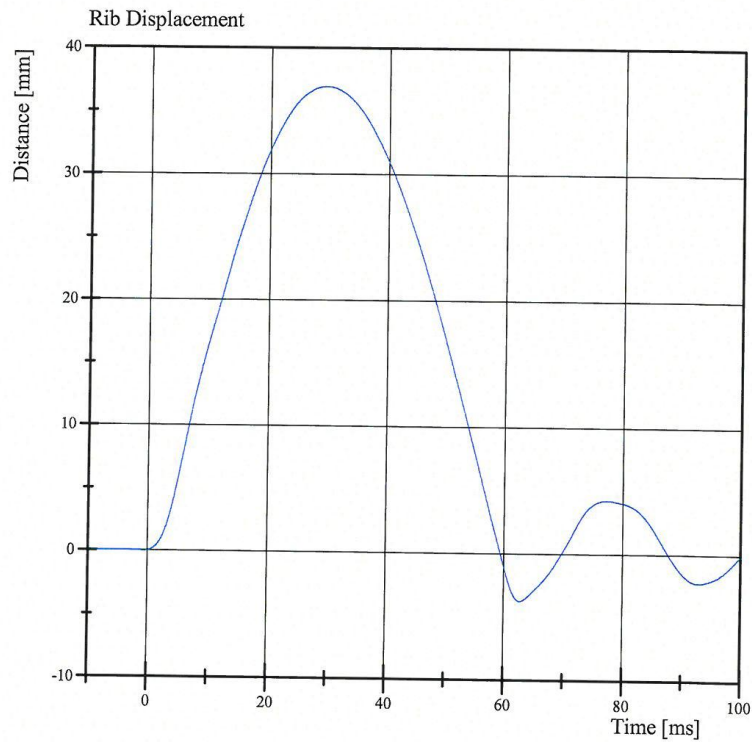
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:37:35 968



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 36.9 mm at 29.4 ms
Min: -3.7 mm at 62.7 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:37:44 968



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012

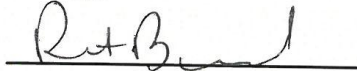
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	23 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.6 mm	Yes

Test meets specifications.

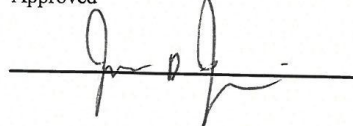
Comments:

Drop Height: 816

Technician



Approved



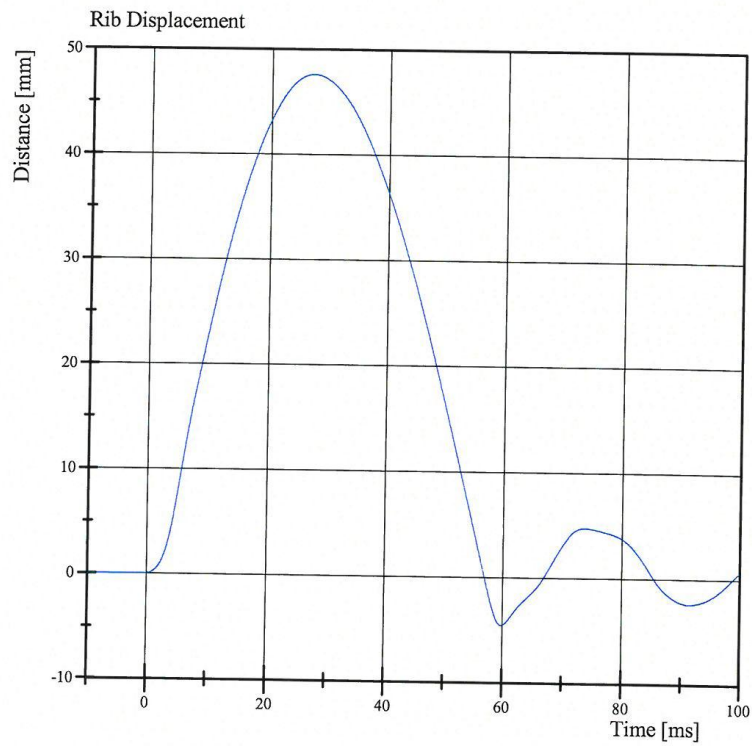
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:41:00 755



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 47.6 mm at 27.0 ms
Min: -4.5 mm at 59.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:41:08 755



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.5 mm	Yes

Test meets specifications.

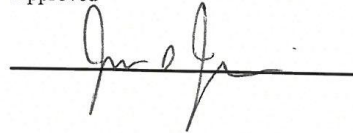
Comments:

Drop Height: 462

Technician



Approved



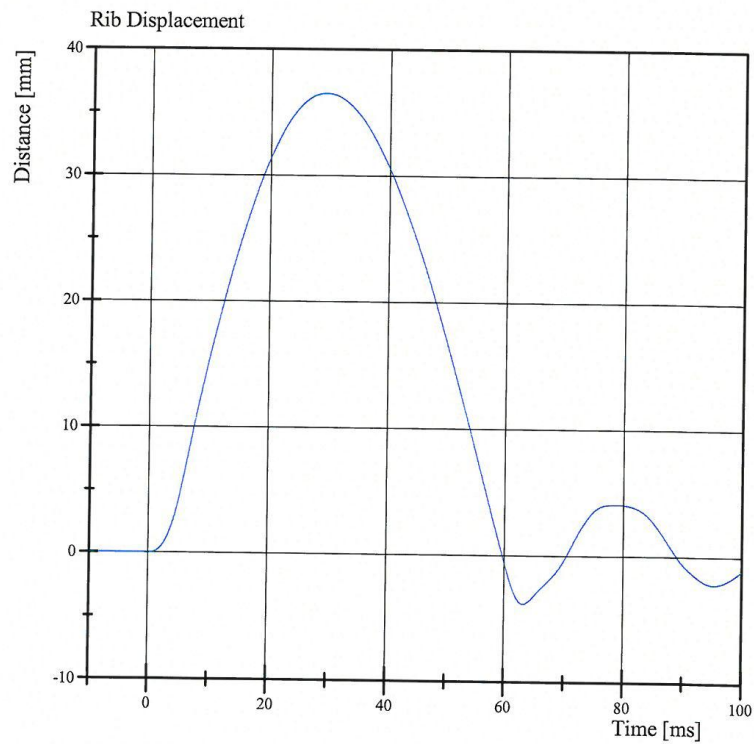
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:47:55 968



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 36.5 mm at 29.2 ms
Min: -3.8 mm at 63.2 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:48:04 968



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	22 %	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



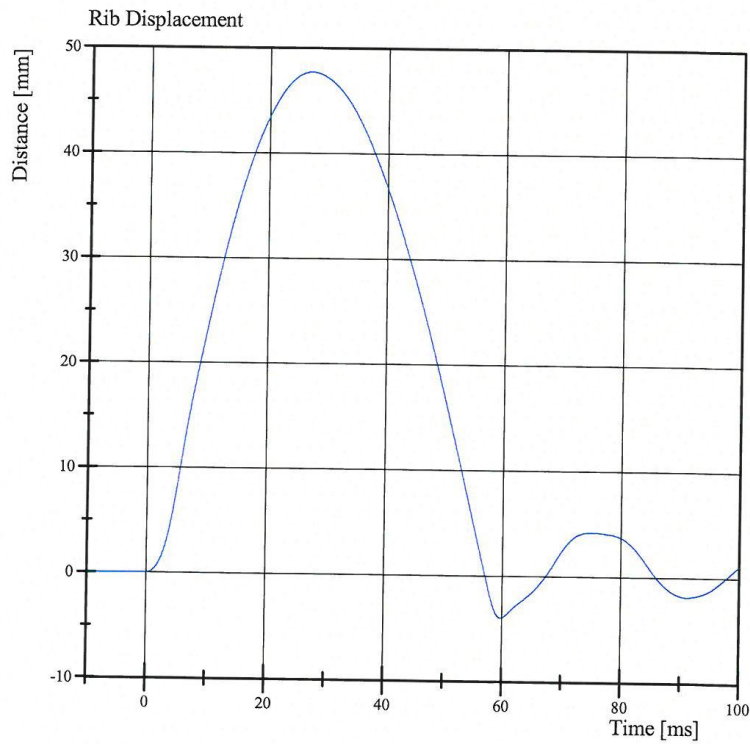
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:51:05 756



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 47.7 mm at 27.0 ms
Min: -4.0 mm at 59.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:51:13 756



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.5 mm	Yes

Test meets specifications.

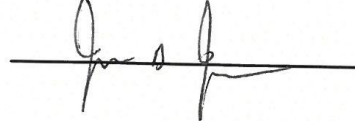
Comments:

Drop Height: 462

Technician



Approved



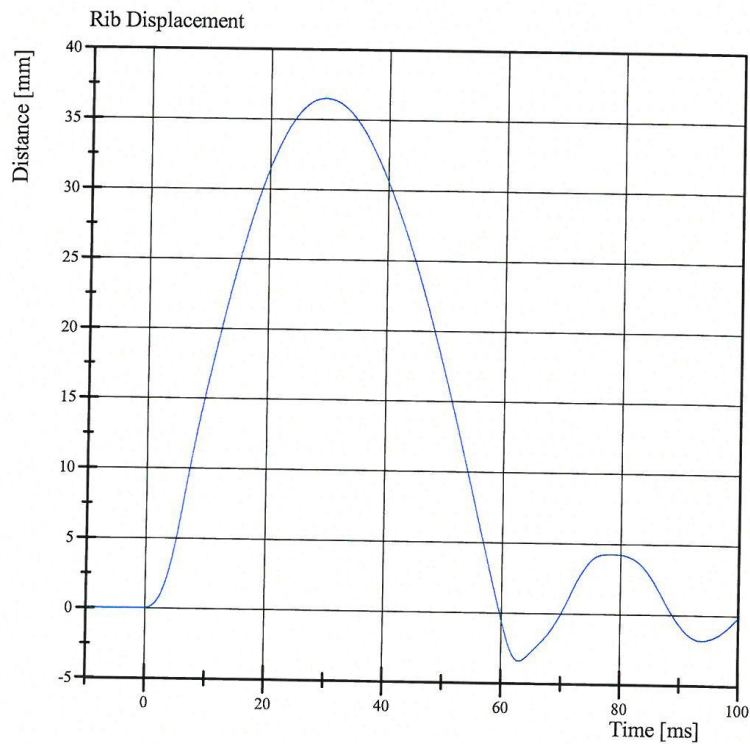
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:57:04 958



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 11-1
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 36.5 mm at 29.2 ms
Min: -3.4 mm at 63.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 13:57:27 958



Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.475 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,495.0 N	Yes
Upper Rib Displacement	34 - 41 mm	37.2 mm	Yes
Center Rib Displacement	37 - 45 mm	40.8 mm	Yes
Lower Rib Displacement	37 - 44 mm	42.2 mm	Yes

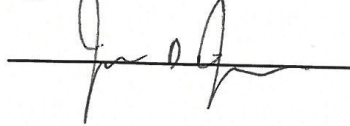
Test meets specifications.

Comments:

Technician



Approved



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

11.26.2012 15:25:23 435

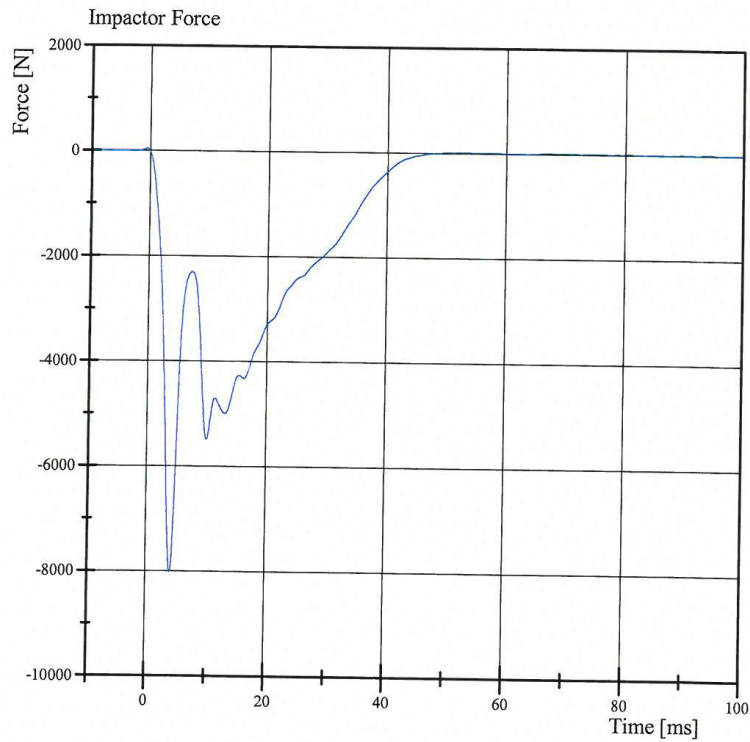


Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012



Filter Class: CFC_180
Max: 33.8 N at -0.6 ms
Min: -8,032.3 N at 4.1 ms

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

11.26.2012 15:25:30 435



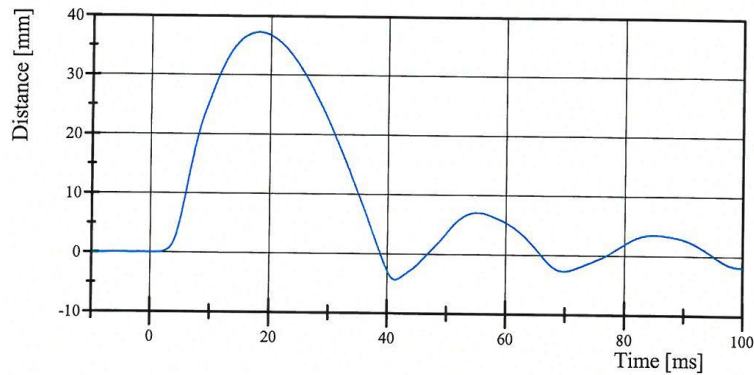
Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 11-1

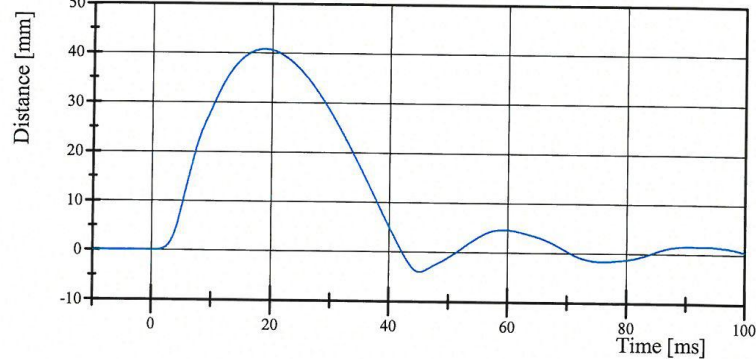
Test Date: 11/26/2012

Upper Rib Displacement



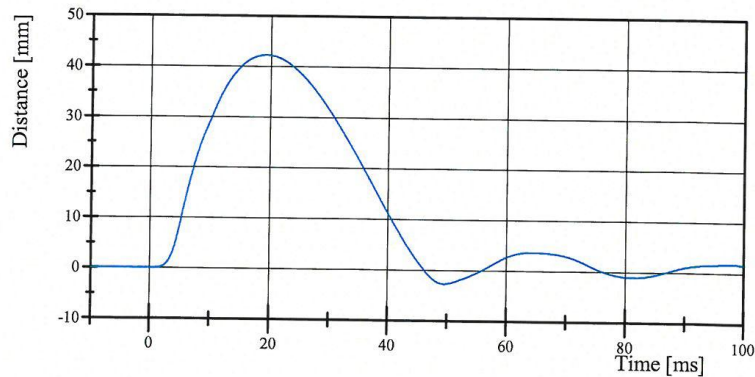
Filter Class: CFC_180
Max: 37.2 mm at 18.1 ms
Min: -4.3 mm at 41.4 ms

Center Rib Displacement



Filter Class: CFC_180
Max: 40.8 mm at 18.7 ms
Min: -4.0 mm at 45.2 ms

Lower Rib Displacement



Filter Class: CFC_180
Max: 42.2 mm at 19.2 ms
Min: -2.7 mm at 49.5 ms

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

11.26.2012 15:25:31 435



Transportation Research Center Inc.

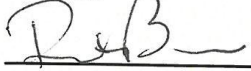
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 11-2
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.94 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,173.0 N	Yes
Time of Peak	10.6 - 13.0 ms	10.88 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,661.1 N	Yes
Time of Peak	10.0 - 12.3 ms	10.24 ms	Yes

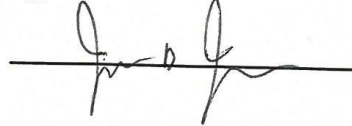
Test meets specifications.

Comments:

Technician



Approved



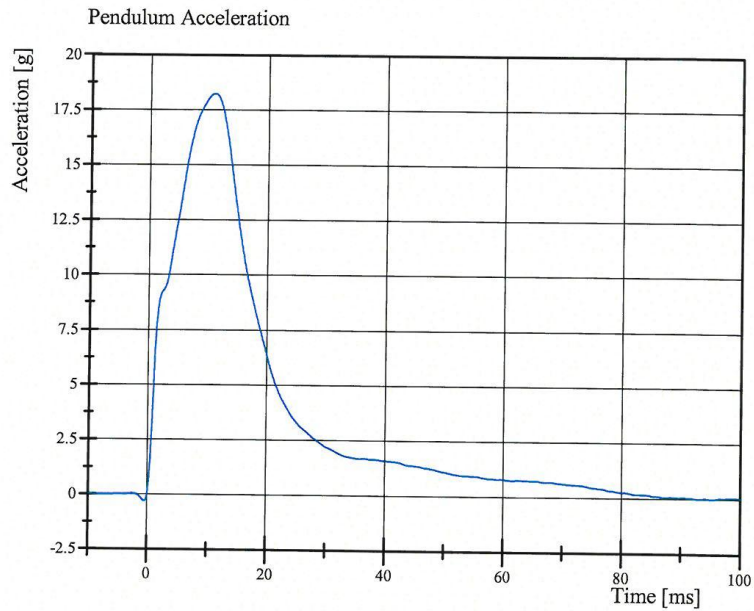
Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 16:24:18 602

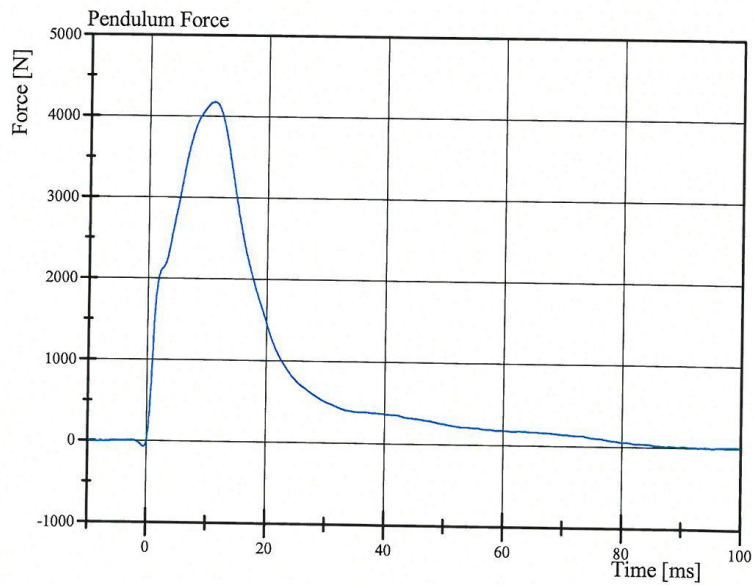


Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 11-2
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 18.2 gn at 10.9 ms
Min: -0.3 gn at -0.5 ms



Filter Class: CFC_180
Max: 4,173.0 N at 10.9 ms
Min: -70.6 N at -0.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 16:24:25 602

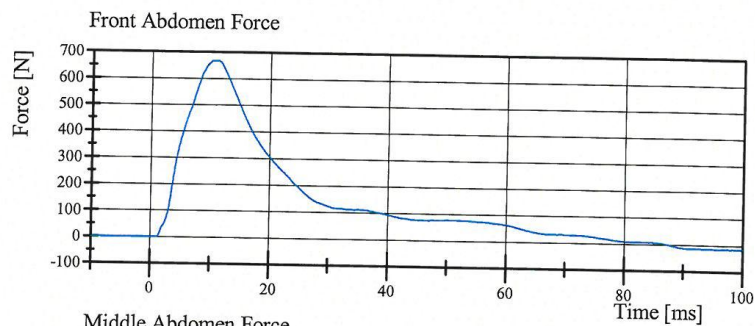


Transportation Research Center Inc.

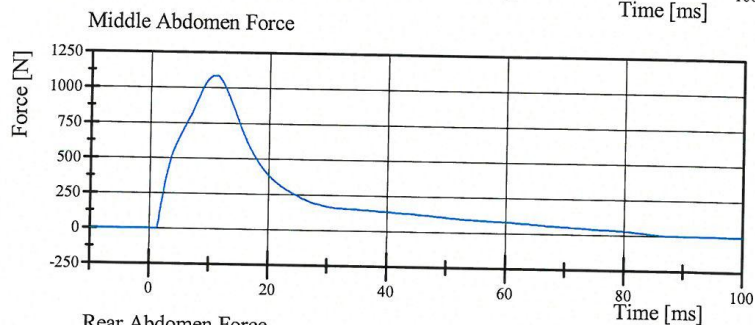
Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 11-2

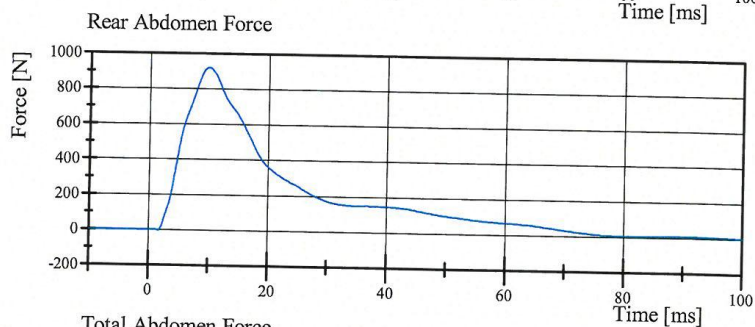
Test Date: 11/26/2012



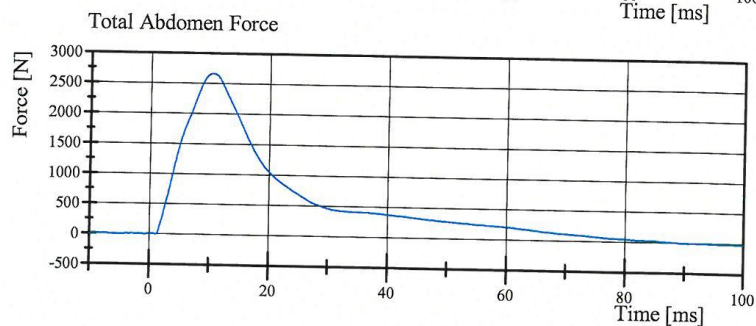
Filter Class: CFC_600
Max: 667.8 N at 11.0 ms
Min: -14.5 N at 96.2 ms



Filter Class: CFC_600
Max: 1,086.8 N at 11.0 ms
Min: -2.7 N at 1.0 ms



Filter Class: CFC_600
Max: 921.1 N at 9.9 ms
Min: -4.7 N at 1.6 ms



Filter Class: CFC_600
Max: 2,661.1 N at 10.2 ms
Min: -15.2 N at 99.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 16:24:25 602



Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.025 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-49.2 deg	Yes
Time of Peak	39 - 53 ms	45.8 ms	Yes
Headform Flexion Decay			
- Peak to Zero	37 - 57 ms	39.0 ms	Yes

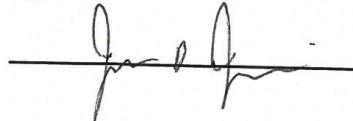
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 14:06:30 576

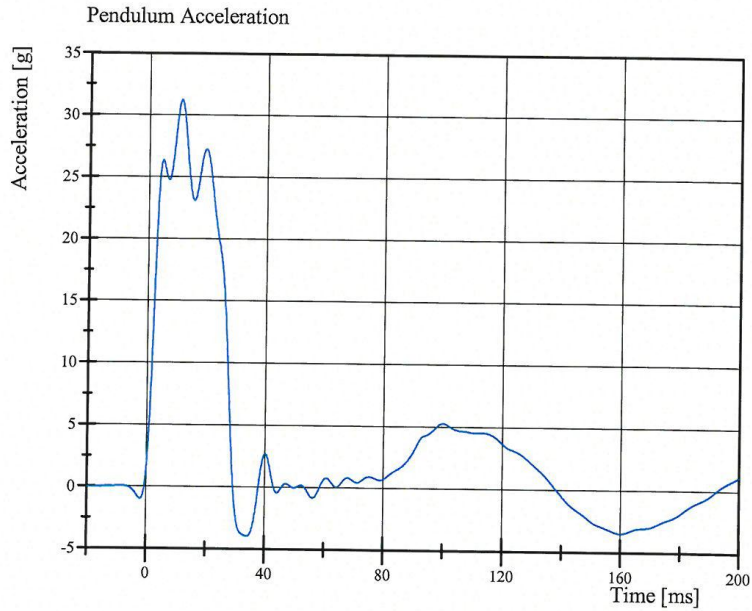


Transportation Research Center Inc.

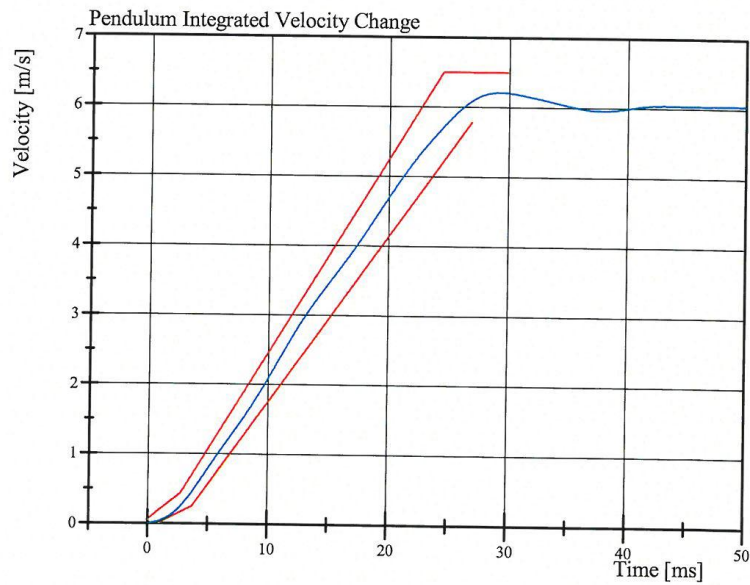
Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012



Filter Class: CFC_60
Max: 31.2 gn at 10.8 ms
Min: -4.0 gn at 34.1 ms



Filter Class: CFC_60
Max: 6.2 m/s at 29.2 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 14:06:38 576

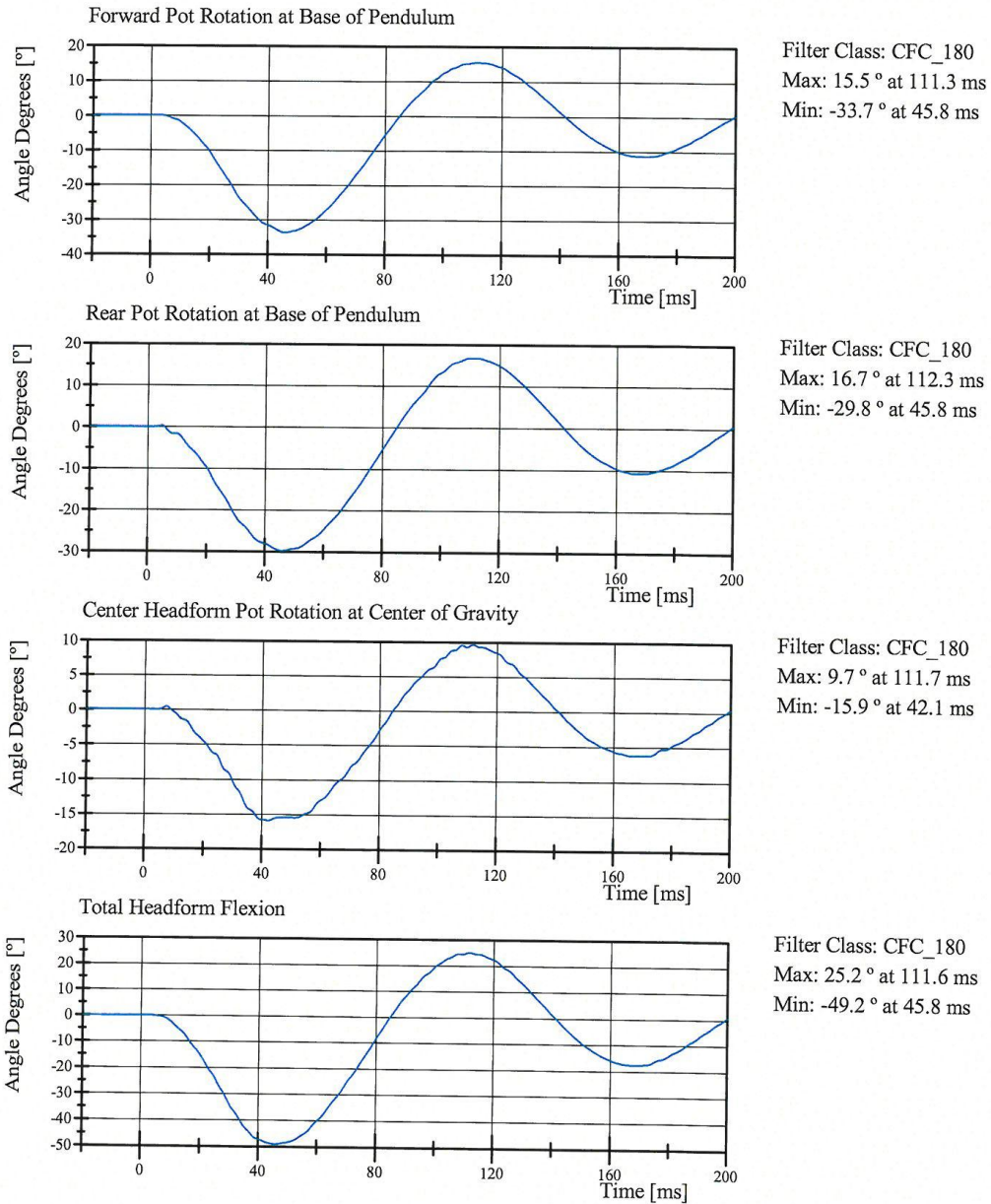


Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 11-1

Test Date: 11/26/2012



Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 14:06:38 576



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 11-2

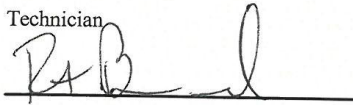
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	21 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,034.2 N	Yes
Time of Peak	11.8 - 16.1 ms	13.04 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,250.0 N	Yes
Time of Peak	12.2 - 17.0 ms	13.84 ms	Yes

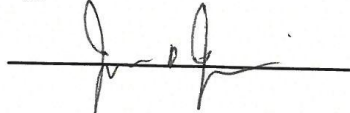
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

11.26.2012 16:33:22 561

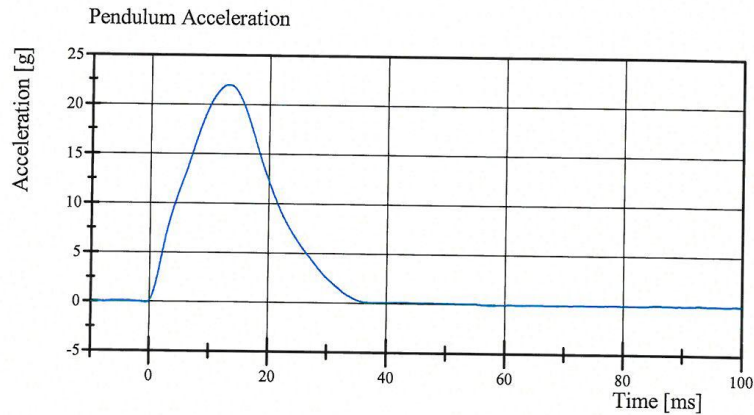


Transportation Research Center Inc.

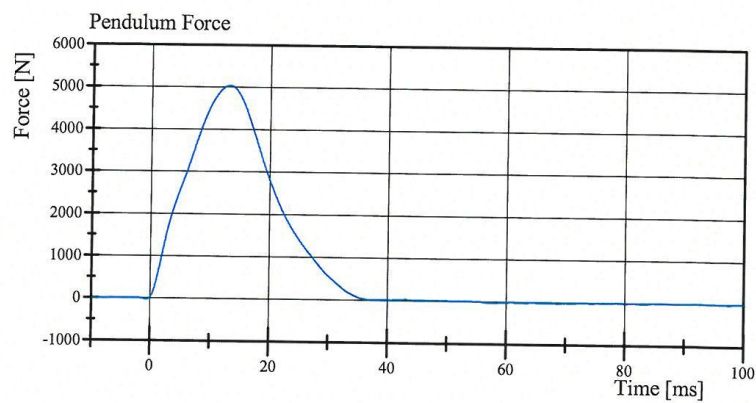
Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 11-2

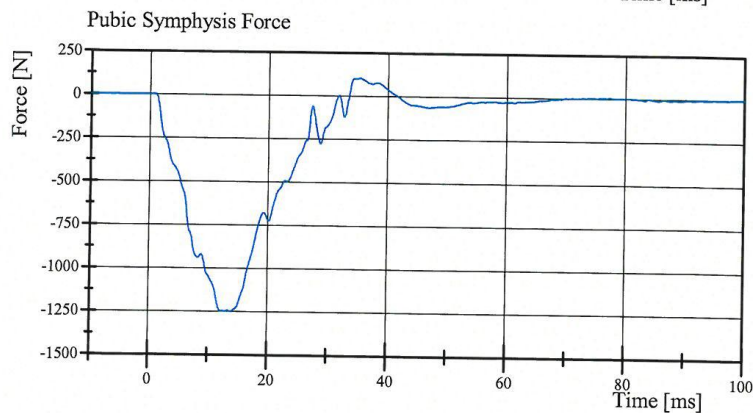
Test Date: 11/26/2012



Filter Class: CFC_180
Max: 22.0 gn at 13.0 ms
Min: -0.1 gn at -0.6 ms



Filter Class: CFC_180
Max: 5,034.2 N at 13.0 ms
Min: -19.9 N at -0.6 ms



Filter Class: CFC_600
Max: 102.3 N at 35.3 ms
Min: -1,250.0 N at 13.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

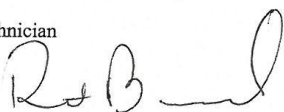
11.26.2012 16:33:28 561



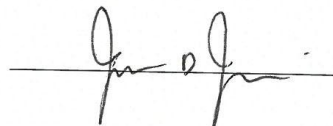
Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 10
Date: 10/23/12

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	447	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



Driver S/N F030

Post-Test Calibration Sheets

Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	27 %	Yes
Peak Resultant Acceleration	125 - 155 g	126.4 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	5.3 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	Yes	Yes	Yes

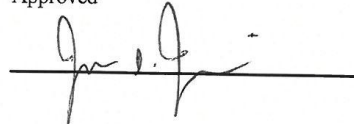
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 14:49:02 323

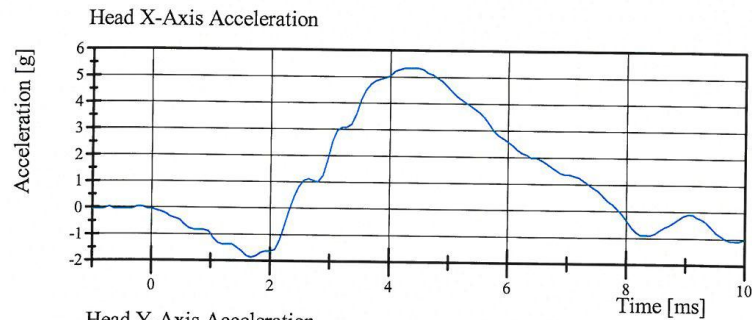


Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 12-1

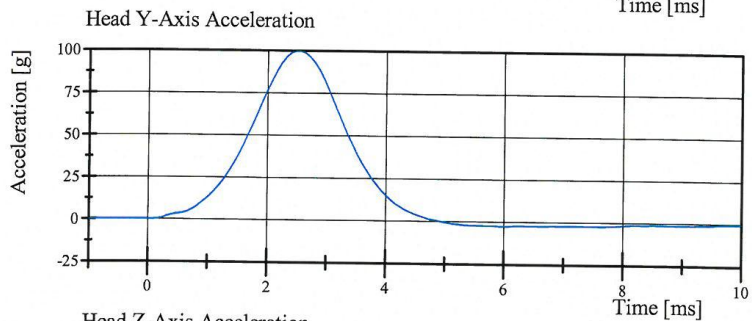
Test Date: 1/15/2013



Filter Class: CFC_1000

Max: 5.3 gn at 4.2 ms

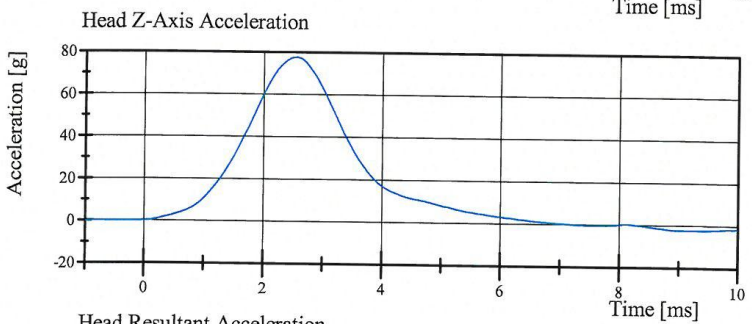
Min: -1.9 gn at 1.7 ms



Filter Class: CFC_1000

Max: 99.8 gn at 2.5 ms

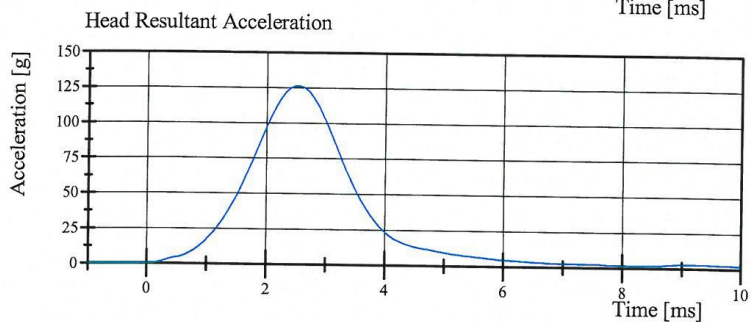
Min: -2.4 gn at 6.0 ms



Filter Class: CFC_1000

Max: 77.6 gn at 2.6 ms

Min: -2.4 gn at 9.0 ms



Filter Class: CFC_1000

Max: 126.4 gn at 2.6 ms

Min: 0.0 gn at -0.7 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 14:49:29 323



Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °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	-3.36 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-53.4 deg	Yes
Time of Peak	54 - 66 ms	59.5 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	64.1 ms	Yes

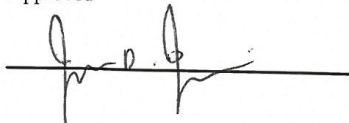
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 10:38:43 1276

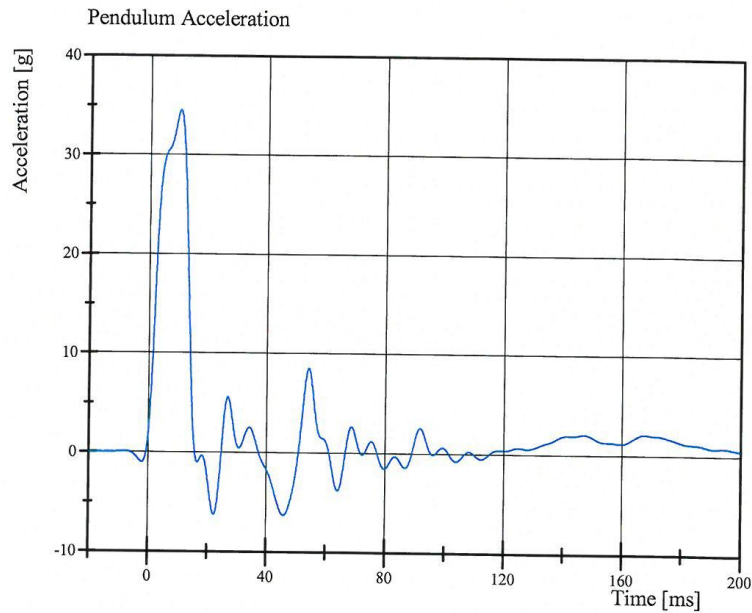


Transportation Research Center Inc.

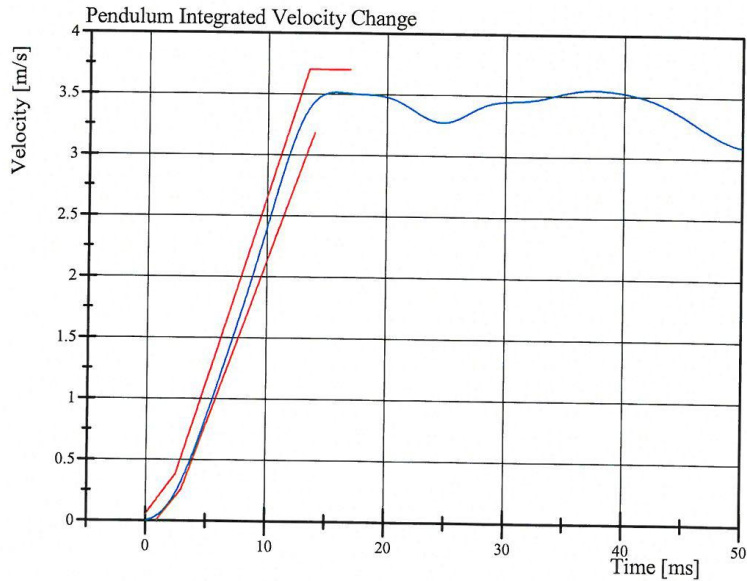
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013



Filter Class: CFC_60
Max: 34.4 gn at 10.2 ms
Min: -6.3 gn at 45.9 ms



Filter Class: CFC_60
Max: 3.5 m/s at 37.4 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 10:38:50 1276

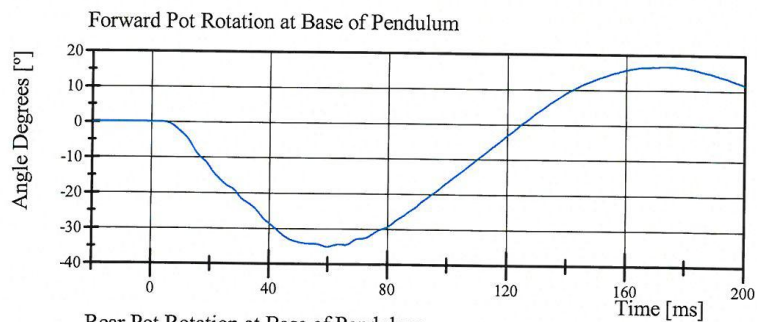


Transportation Research Center Inc.

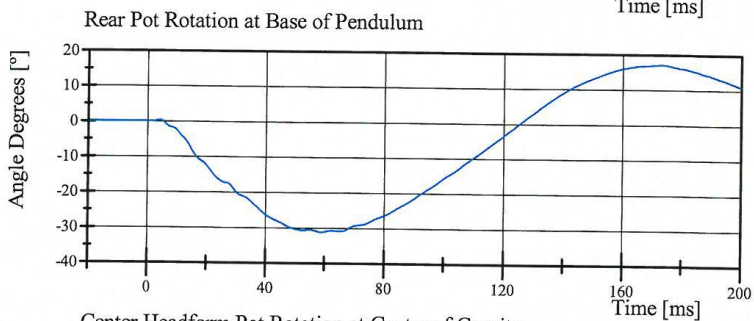
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 12-1

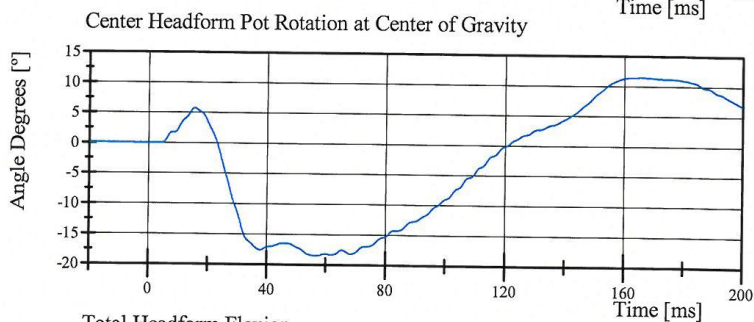
Test Date: 1/15/2013



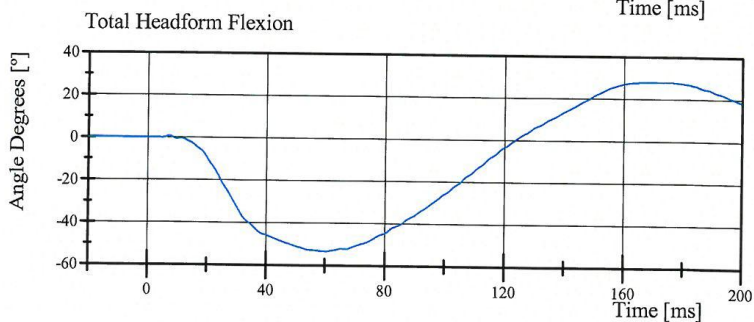
Filter Class: CFC_180
Max: 16.7 ° at 175.5 ms
Min: -35.1 ° at 59.8 ms



Filter Class: CFC_180
Max: 17.1 ° at 173.0 ms
Min: -31.2 ° at 58.8 ms



Filter Class: CFC_180
Max: 11.5 ° at 165.4 ms
Min: -18.5 ° at 56.6 ms



Filter Class: CFC_180
Max: 28.0 ° at 168.6 ms
Min: -53.4 ° at 59.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 10:38:51 1276



Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-9.48 g	Yes

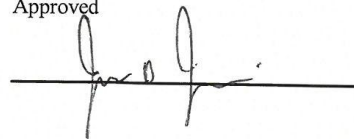
Test meets specifications.

Comments:

Technician



Approved



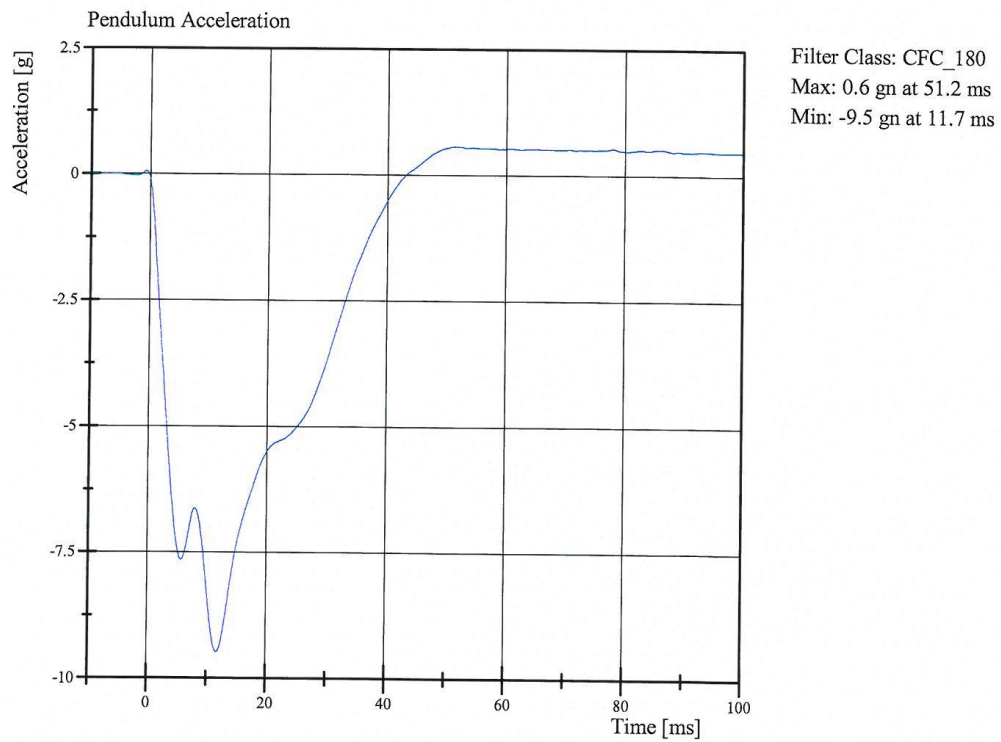
Specification Source: NHTSA final rule 8/15/2008

01.15.2013 12:36:24 572



Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Specification Source: NHTSA final rule 8/15/2008

01.15.2013 12:36:30 572



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013

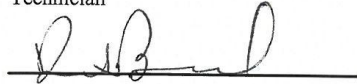
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.3 mm	Yes

Test meets specifications.

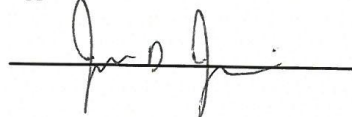
Comments:

Drop Height: 816

Technician



Approved



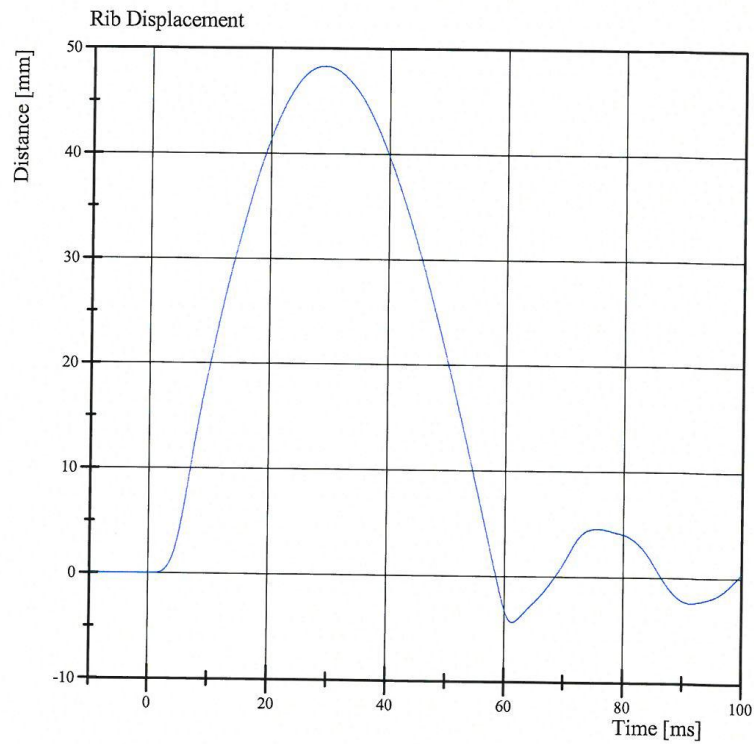
Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:12:00 695



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 48.3 mm at 29.0 ms
Min: -4.4 mm at 61.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:12:08 695



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.2 mm	Yes

Test meets specifications.

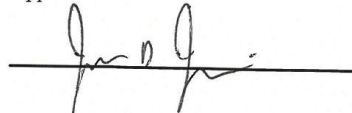
Comments:

Drop Height: 462

Technician



Approved



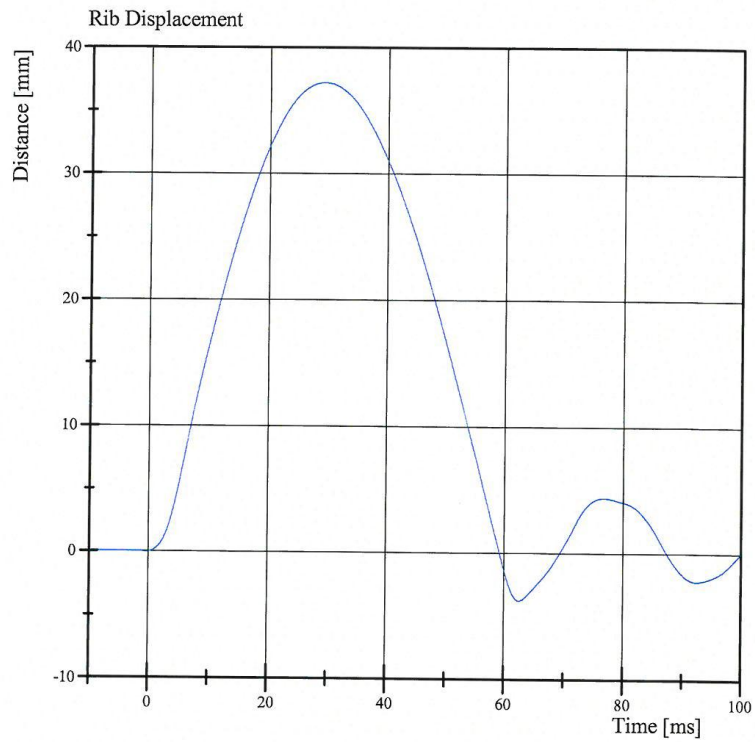
Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:16:57 916



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 37.2 mm at 29.4 ms
Min: -3.8 mm at 62.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:17:08 916



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.8 mm	Yes

Test meets specifications.

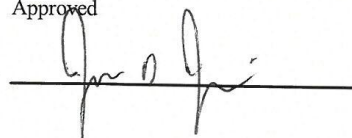
Comments:

Drop Height: 816

Technician



Approved



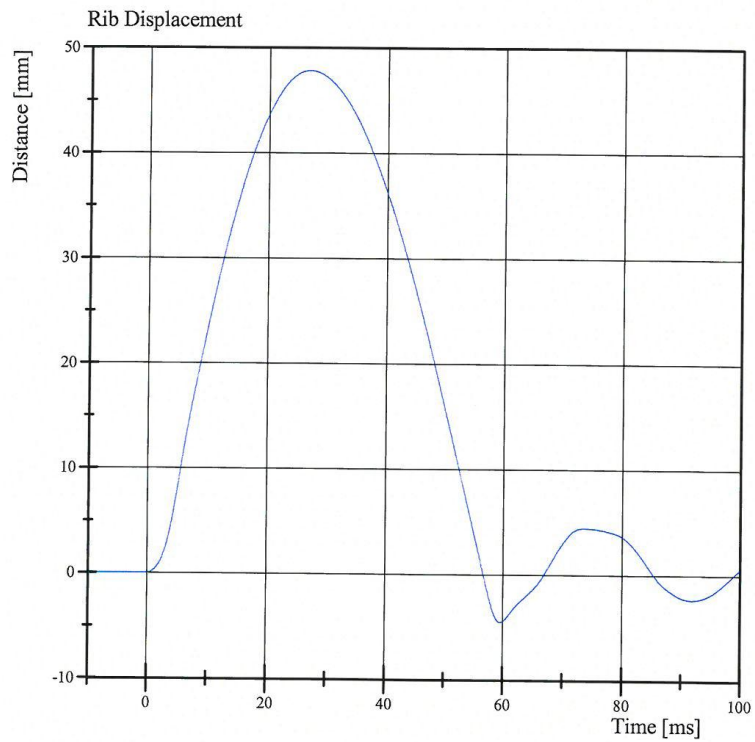
Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:43:51 704



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 47.8 mm at 26.9 ms
Min: -4.5 mm at 59.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:43:59 704



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.8 mm	Yes

Test meets specifications.

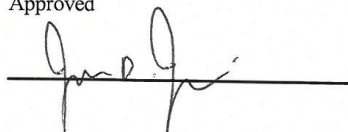
Comments:

Drop Height: 462

Technician



Approved



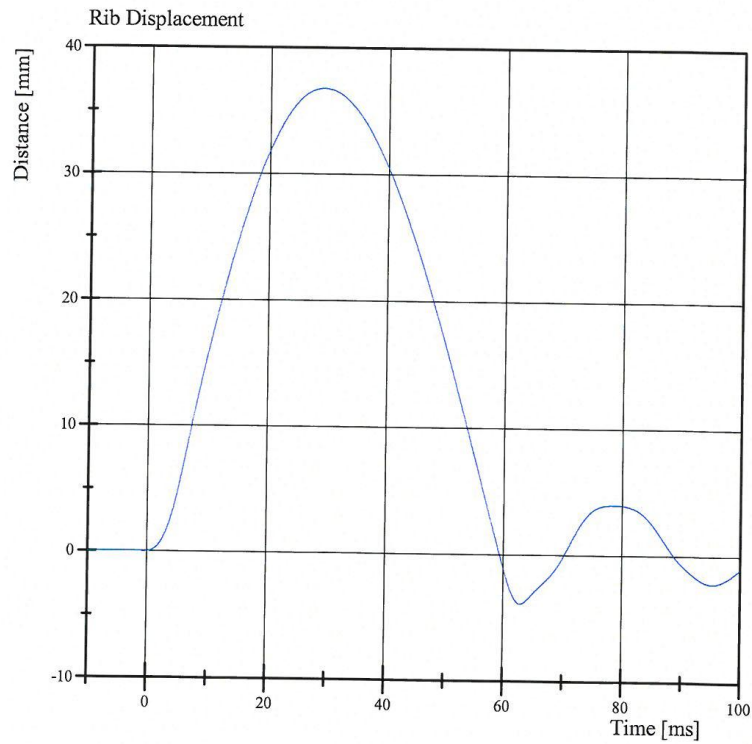
Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:49:08 899



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 36.8 mm at 29.0 ms
Min: -3.9 mm at 62.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:49:19 899



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.3 mm	Yes

Test meets specifications.

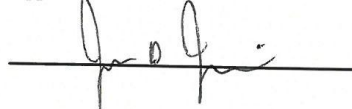
Comments:

Drop Height: 816

Technician



Approved



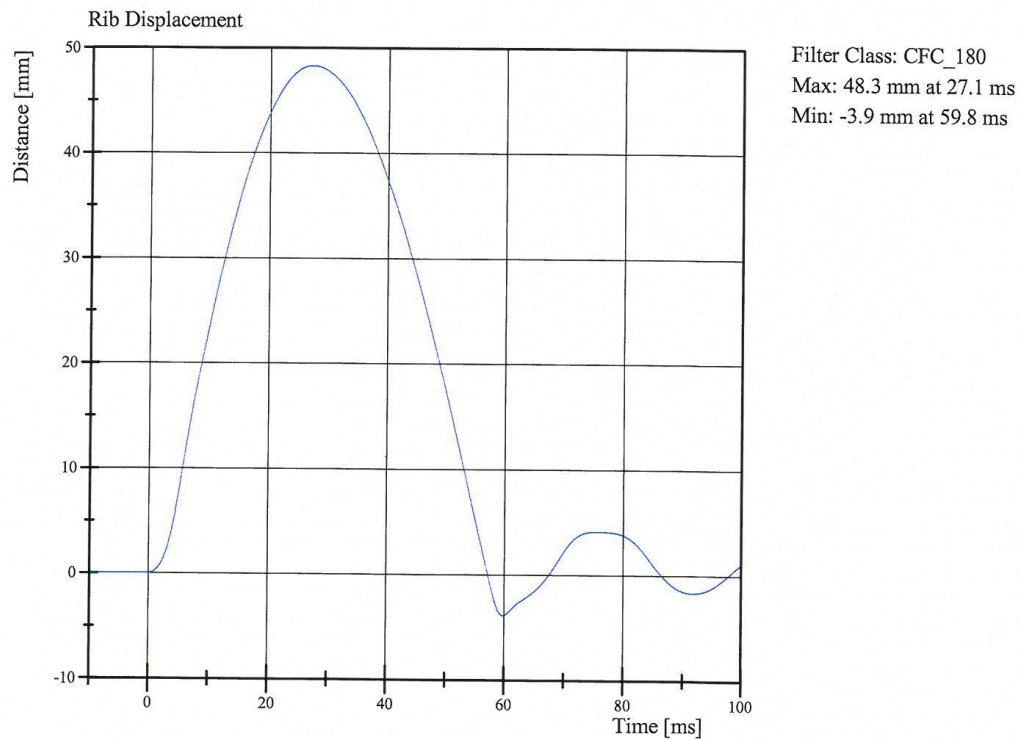
Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:55:41 700



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 08:55:50 700



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.0 mm	Yes

Test meets specifications.

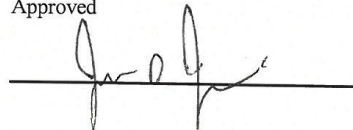
Comments:

Drop Height: 462

Technician



Approved



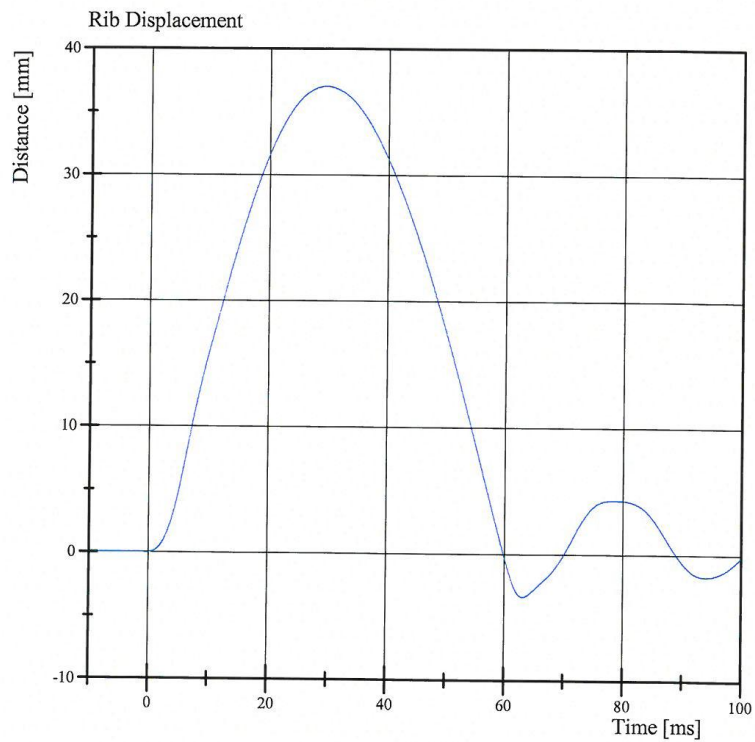
Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 09:00:25 887



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 37.0 mm at 29.4 ms
Min: -3.4 mm at 63.1 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 09:00:34 887



Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.024 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-51.2 deg	Yes
Time of Peak	39 - 53 ms	45.4 ms	Yes
Headform Flexion Decay			
- Peak to Zero	37 - 57 ms	39.0 ms	Yes

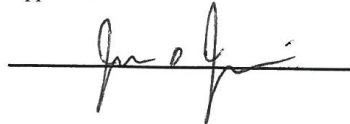
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 09:33:18 543

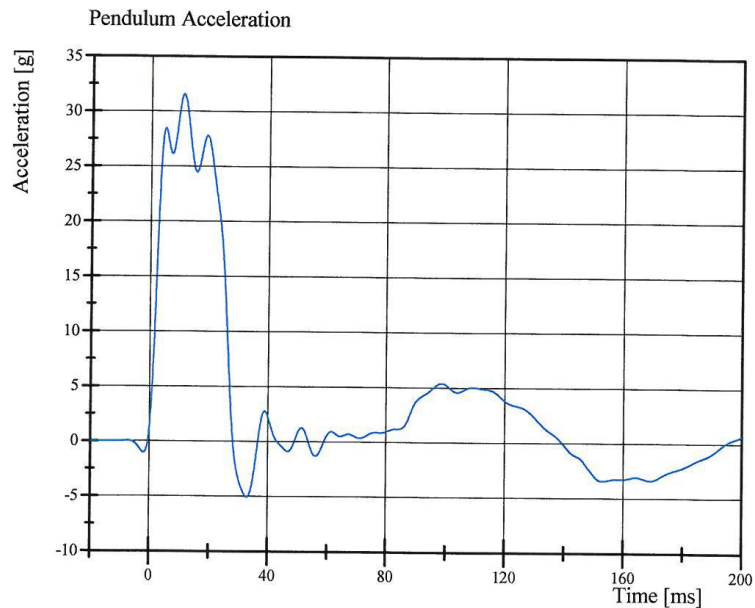


Transportation Research Center Inc.

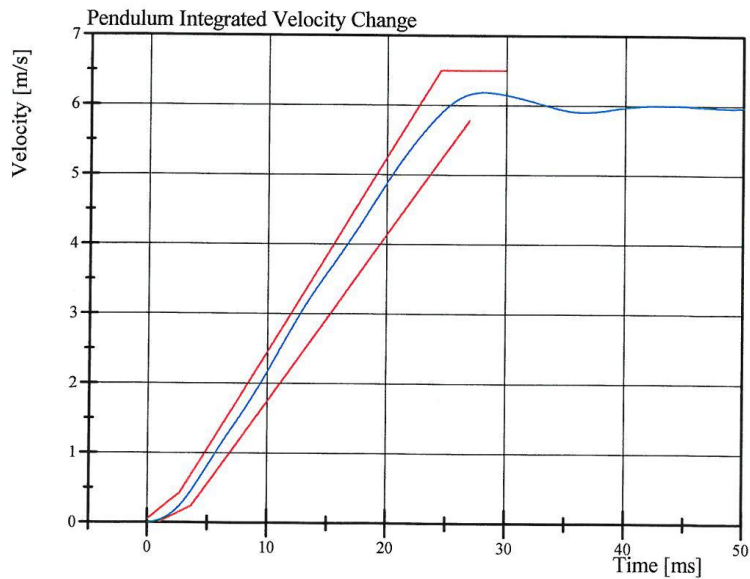
Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013



Filter Class: CFC_60
Max: 31.6 gn at 11.0 ms
Min: -5.0 gn at 33.0 ms



Filter Class: CFC_60
Max: 6.2 m/s at 28.1 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 09:33:29 543

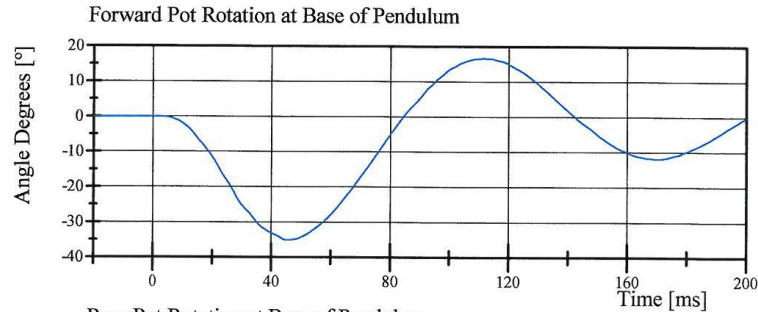


Transportation Research Center Inc.

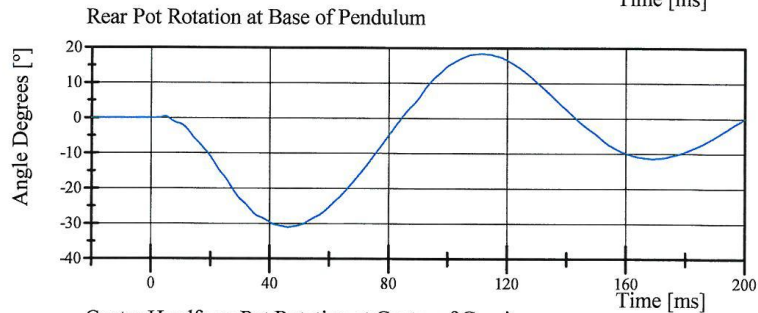
Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 12-1

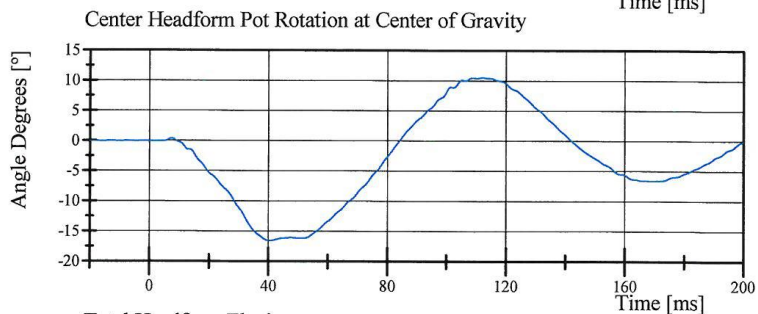
Test Date: 1/15/2013



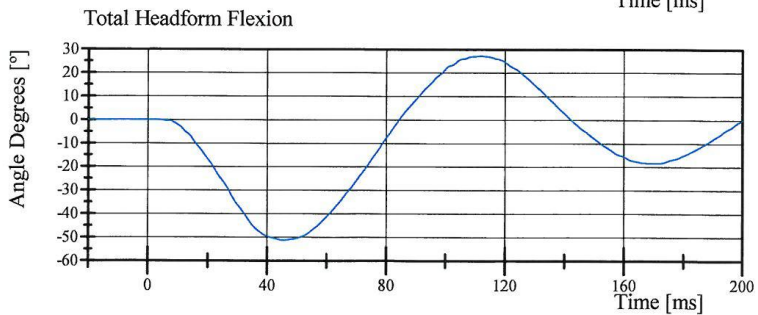
Filter Class: CFC_180
Max: 16.7 ° at 111.6 ms
Min: -35.1 ° at 45.4 ms



Filter Class: CFC_180
Max: 18.4 ° at 111.5 ms
Min: -30.9 ° at 46.2 ms



Filter Class: CFC_180
Max: 10.6 ° at 112.1 ms
Min: -16.5 ° at 40.5 ms



Filter Class: CFC_180
Max: 27.2 ° at 111.9 ms
Min: -51.2 ° at 45.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 09:33:30 543



Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 12-1

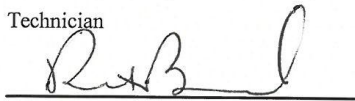
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.463 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,505.3 N	Yes
Upper Rib Displacement	34 - 41 mm	38.2 mm	Yes
Center Rib Displacement	37 - 45 mm	41.3 mm	Yes
Lower Rib Displacement	37 - 44 mm	42.5 mm	Yes

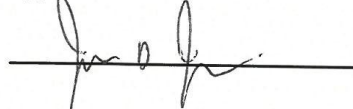
Test meets specifications.

Comments:

Technician



Approved



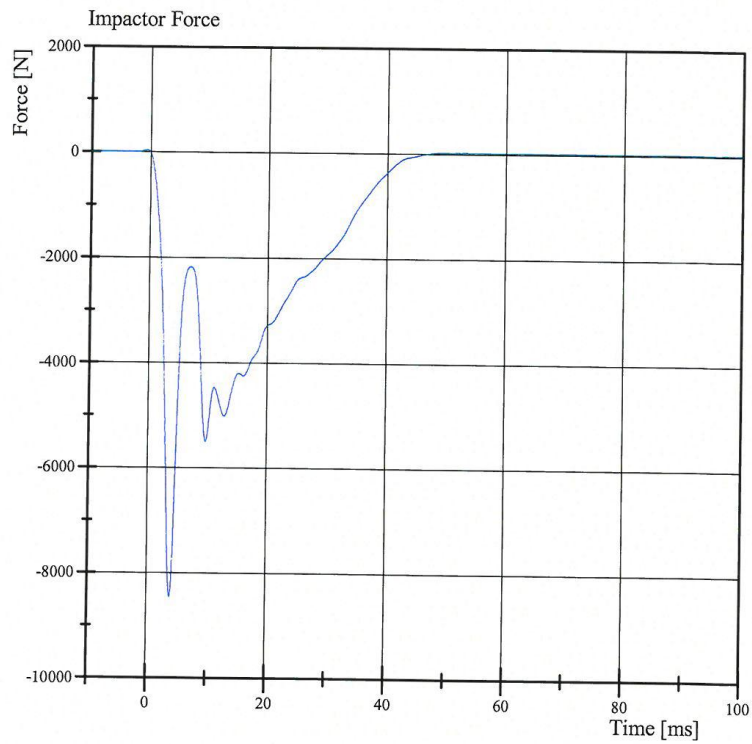
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

01.15.2013 12:59:27 465



Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 12-1
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 29.0 N at -0.6 ms
Min: -8,458.5 N at 3.9 ms

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

01.15.2013 12:59:35 465

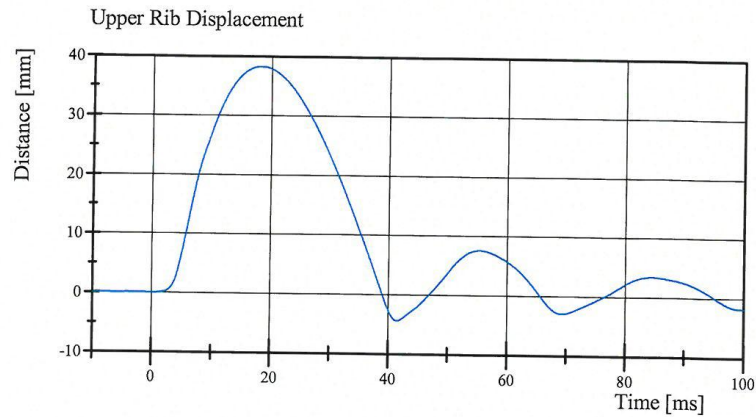


Transportation Research Center Inc.

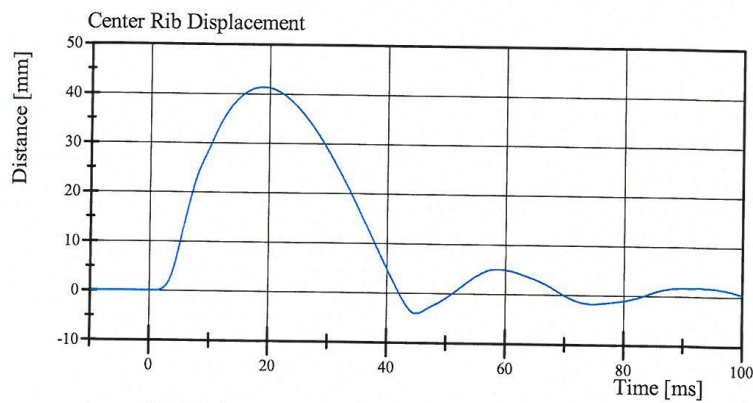
Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 12-1

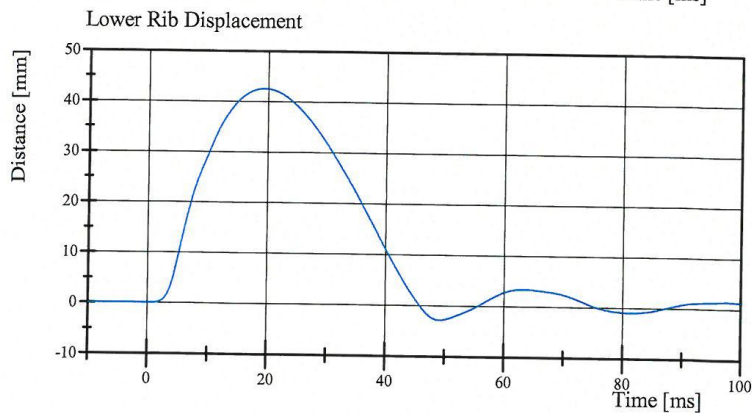
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 38.2 mm at 18.2 ms
Min: -4.4 mm at 41.4 ms



Filter Class: CFC_180
Max: 41.3 mm at 19.0 ms
Min: -4.1 mm at 45.0 ms



Filter Class: CFC_180
Max: 42.5 mm at 19.4 ms
Min: -2.8 mm at 49.2 ms

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

01.15.2013 12:59:36 465



Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.93 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,156.6 N	Yes
Time of Peak	10.6 - 13.0 ms	10.64 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,571.2 N	Yes
Time of Peak	10.0 - 12.3 ms	10.08 ms	Yes

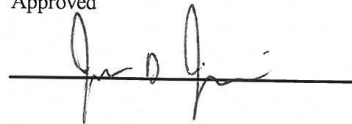
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 13:23:50 549

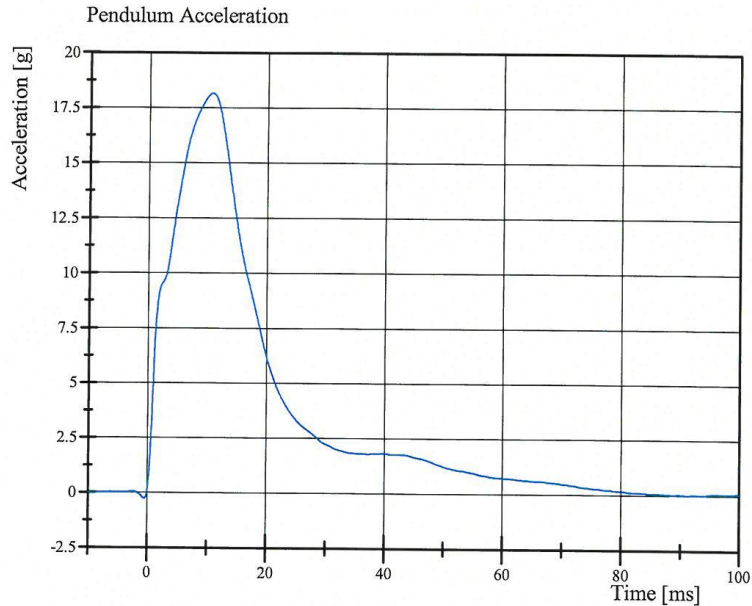


Transportation Research Center Inc.

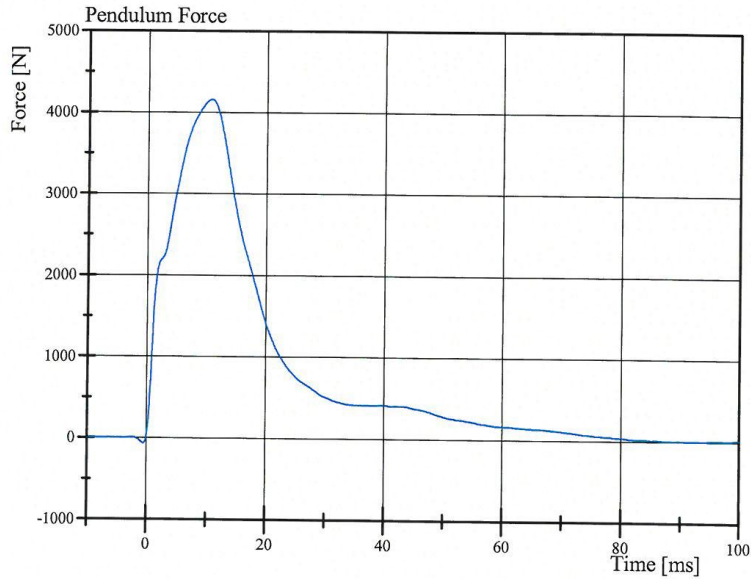
Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013



Filter Class: CFC_180
Max: 18.1 gn at 10.6 ms
Min: -0.3 gn at -0.6 ms



Filter Class: CFC_180
Max: 4,156.6 N at 10.6 ms
Min: -65.4 N at -0.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 13:23:57 549

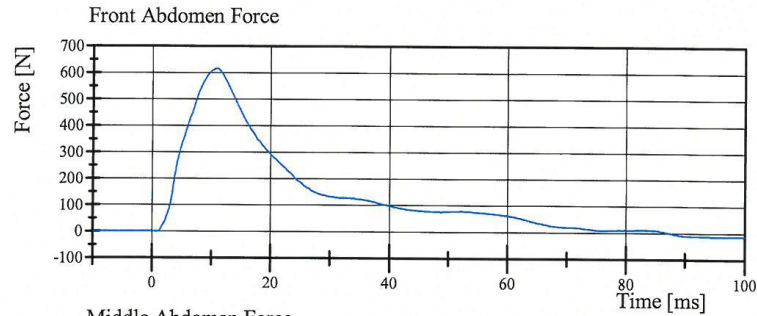


Transportation Research Center Inc.

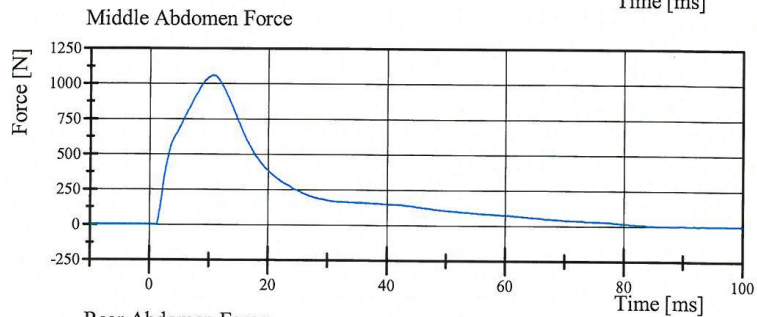
Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 12-1

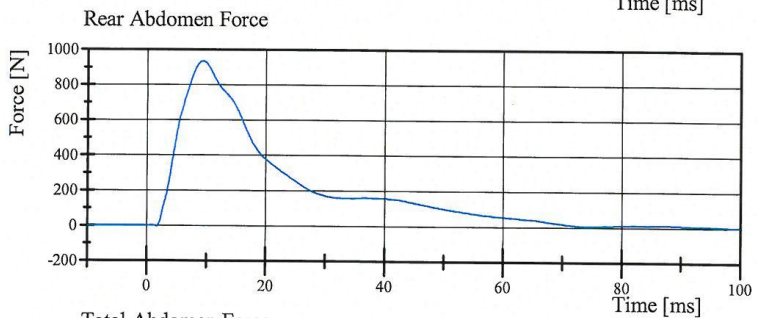
Test Date: 1/15/2013



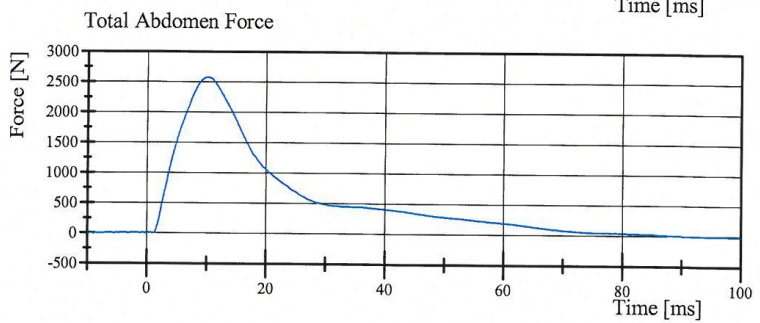
Filter Class: CFC_600
Max: 614.5 N at 10.9 ms
Min: -13.0 N at 99.4 ms



Filter Class: CFC_600
Max: 1,057.7 N at 10.8 ms
Min: -2.5 N at 1.1 ms



Filter Class: CFC_600
Max: 932.6 N at 9.3 ms
Min: -5.7 N at 1.7 ms



Filter Class: CFC_600
Max: 2,571.2 N at 10.1 ms
Min: -12.6 N at 99.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 13:23:58 549



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 12-1

Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,037.7 N	Yes
Time of Peak	11.8 - 16.1 ms	12.80 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,341.0 N	Yes
Time of Peak	12.2 - 17.0 ms	12.56 ms	Yes

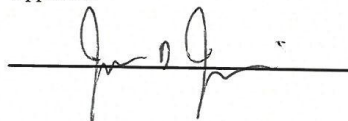
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 13:36:35 S34

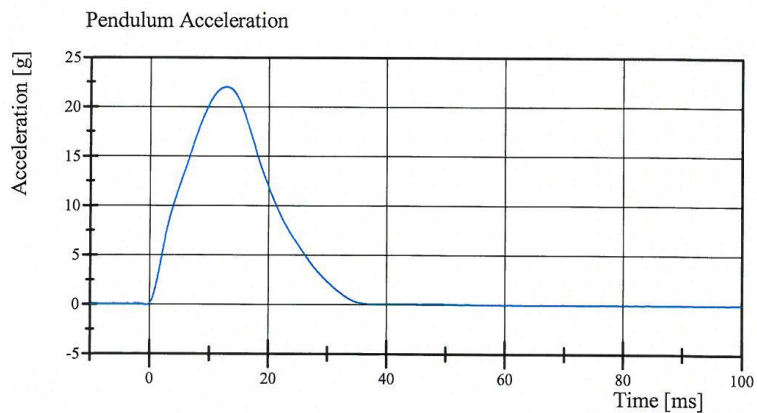


Transportation Research Center Inc.

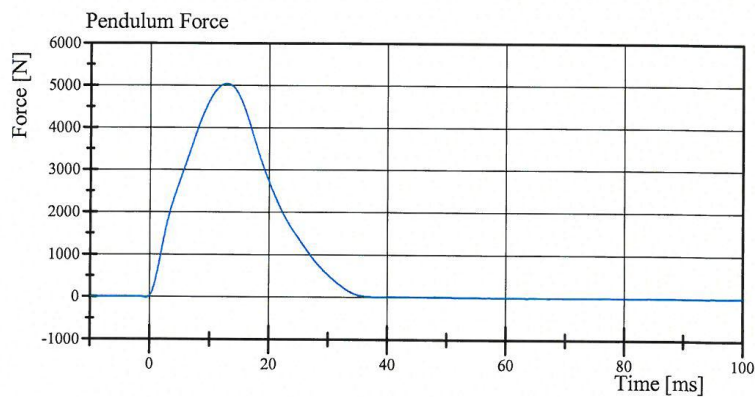
Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 12-1

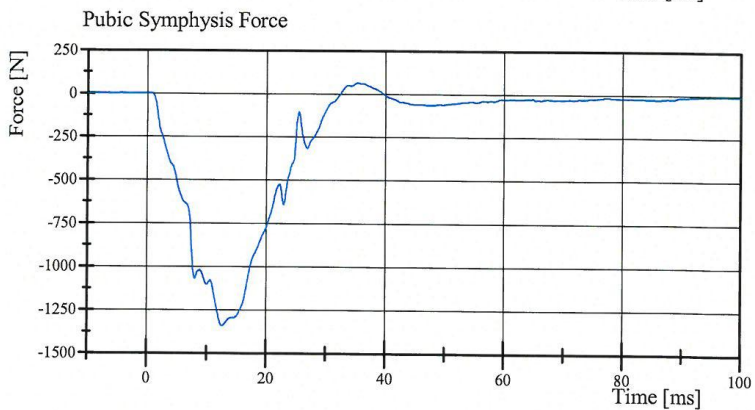
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 22.0 gn at 12.8 ms
Min: -0.1 gn at -0.6 ms



Filter Class: CFC_180
Max: 5,037.7 N at 12.8 ms
Min: -12.1 N at -0.6 ms



Filter Class: CFC_600
Max: 63.5 N at 35.4 ms
Min: -1,341.0 N at 12.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.15.2013 13:36:42 534



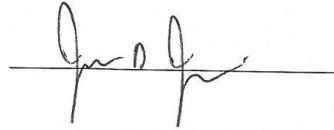
Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 12
Date: 01/15/13

Symbol	Description	Specification	Results	Pass
		mm	mm	
1	Sitting Height	900.0 - 918.0	911	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	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	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



Pre-Test Calibration Sheets
Passenger S/N 305

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 16-1

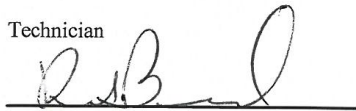
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	20 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	134.5 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.4 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

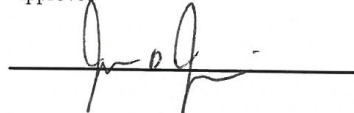
Test meets specifications.

Comments:

Technician



Approved



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

11.26.2012 17:36:10 235

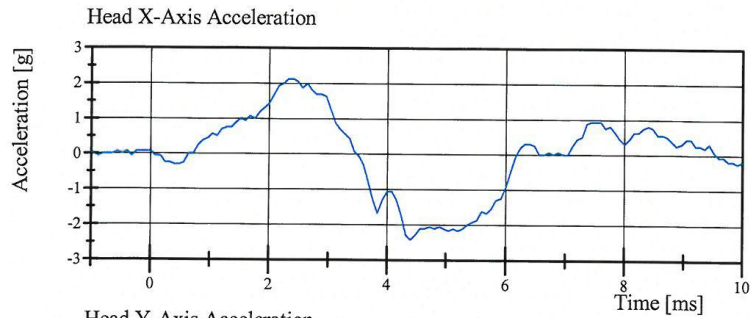


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 16-1

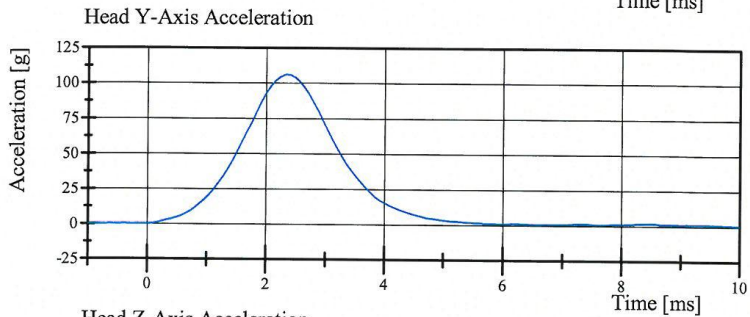
Test Date: 11/26/2012



Filter Class: CFC_1000

Max: 2.1 gn at 2.3 ms

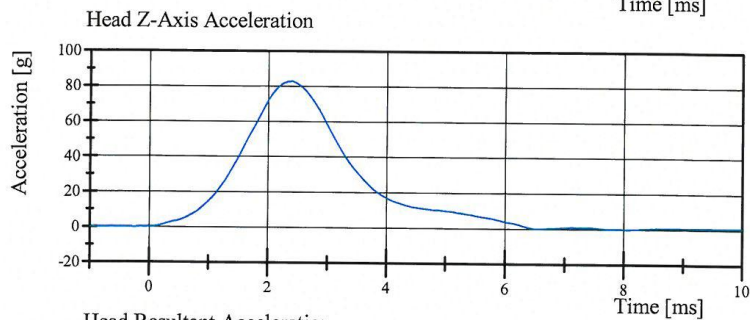
Min: -2.4 gn at 4.4 ms



Filter Class: CFC_1000

Max: 106.2 gn at 2.3 ms

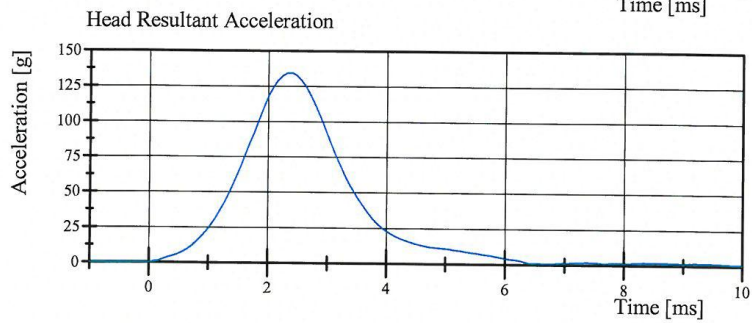
Min: -0.1 gn at -0.7 ms



Filter Class: CFC_1000

Max: 82.8 gn at 2.4 ms

Min: -0.1 gn at -0.2 ms



Filter Class: CFC_1000

Max: 134.5 gn at 2.4 ms

Min: 0.0 gn at -0.8 ms

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

11.26.2012 17:36:17 235



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 16-1

Test Date: 11/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	21 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.612 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.485 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.636 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.830 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.742 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.753 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-77.9 deg	Yes
Time of Peak	50 - 70 ms	65.4 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	39.5 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	121.5 ms	Yes

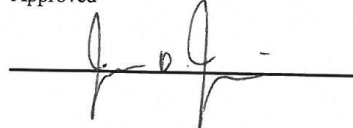
Test meets specifications.

Comments:

Technician



Approved



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

11.27.2012 08:38:17 637

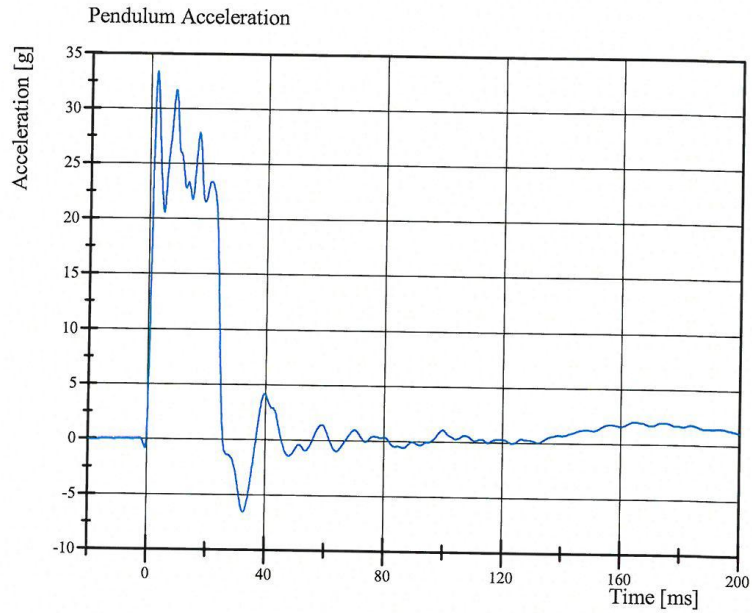


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 16-1

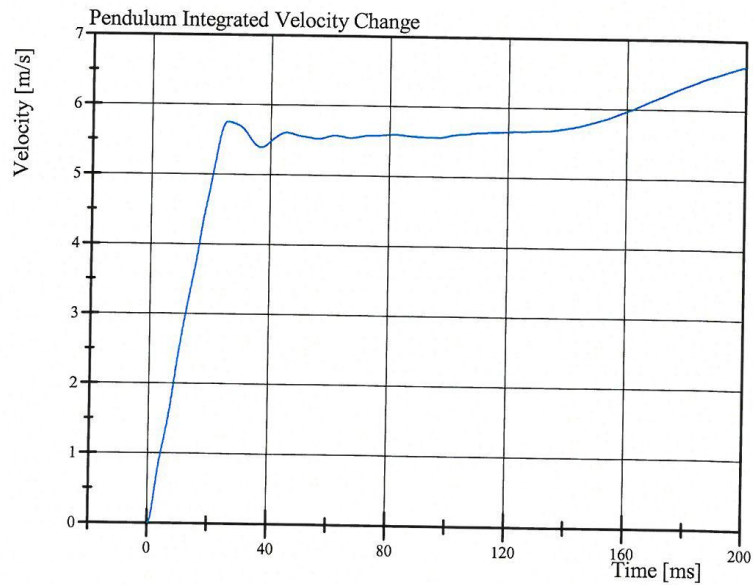
Test Date: 11/27/2012



Filter Class: CFC_180

Max: 33.3 gn at 2.2 ms

Min: -6.6 gn at 32.7 ms



Filter Class: CFC_180

Max: 6.6 m/s at 200.0 ms

Min: 0.0 m/s at 0.0 ms

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

11.27.2012 08:38:24 637

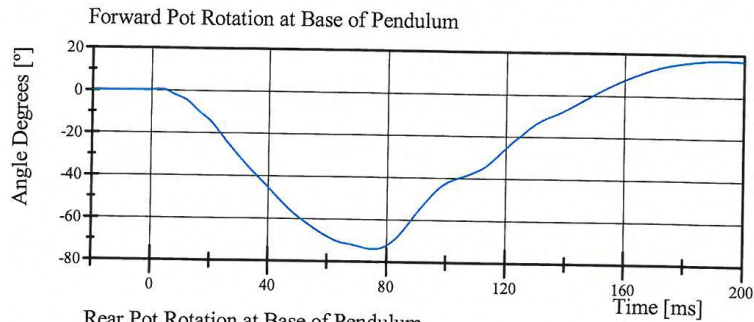


Transportation Research Center Inc.

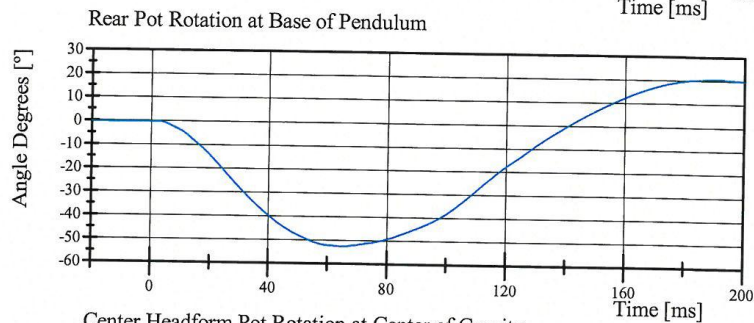
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 16-1

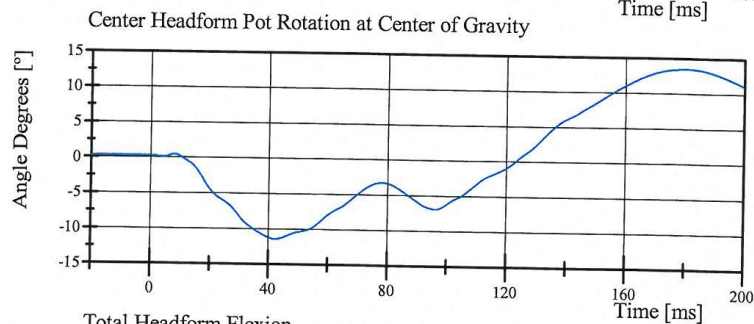
Test Date: 11/27/2012



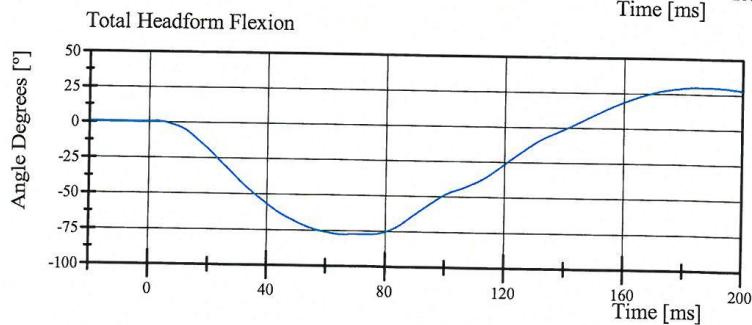
Filter Class: CFC_60
Max: 17.2 ° at 192.9 ms
Min: -74.0 ° at 75.3 ms



Filter Class: CFC_60
Max: 20.6 ° at 189.4 ms
Min: -52.6 ° at 64.9 ms



Filter Class: CFC_60
Max: 13.4 ° at 180.6 ms
Min: -11.5 ° at 42.2 ms



Filter Class: CFC_60
Max: 30.1 ° at 187.0 ms
Min: -77.9 ° at 65.4 ms

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

11.27.2012 08:38:25 637

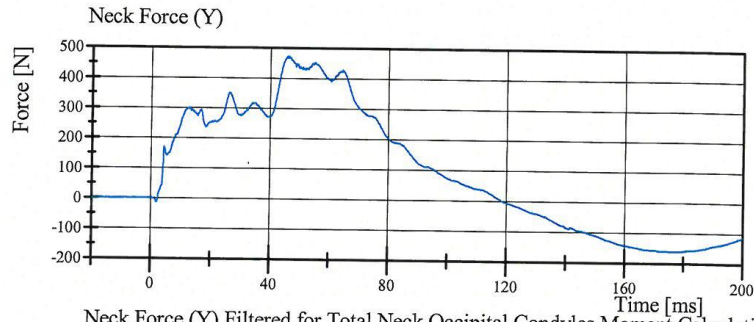


Transportation Research Center Inc.

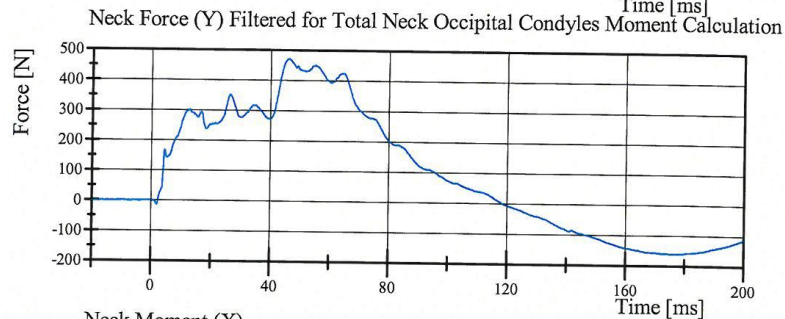
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 16-1

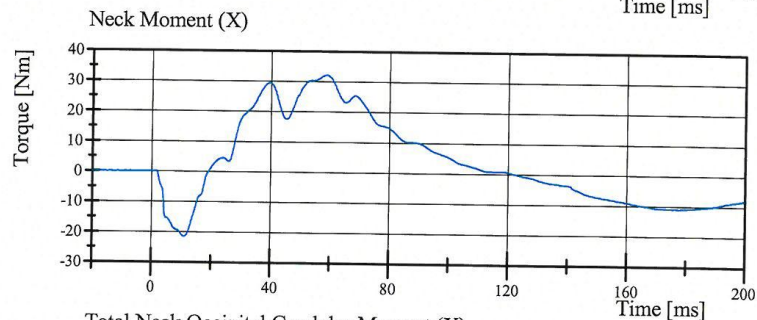
Test Date: 11/27/2012



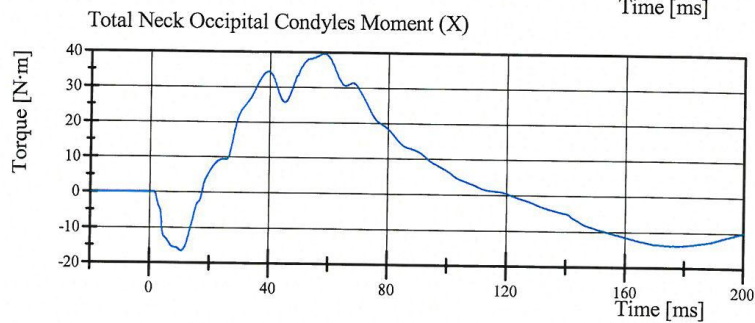
Filter Class: CFC_1000
Max: 473.9 N at 46.1 ms
Min: -161.1 N at 177.0 ms



Filter Class: CFC_600
Max: 471.5 N at 46.1 ms
Min: -160.7 N at 177.0 ms



Filter Class: CFC_600
Max: 32.2 Nm at 58.9 ms
Min: -21.5 Nm at 10.9 ms



Filter Class: Without_(Consta
Max: 39.5 N·m at 58.2 ms
Min: -16.6 N·m at 10.7 ms

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

11.27.2012 08:38:25 637



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 16-1

Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.8 g	Yes
Shoulder Displacement	28 - 37 mm	30.7 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.9 g	Yes

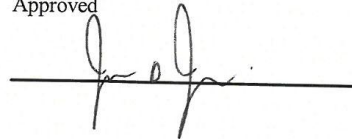
Test meets specifications.

Comments:

Technician



Approved



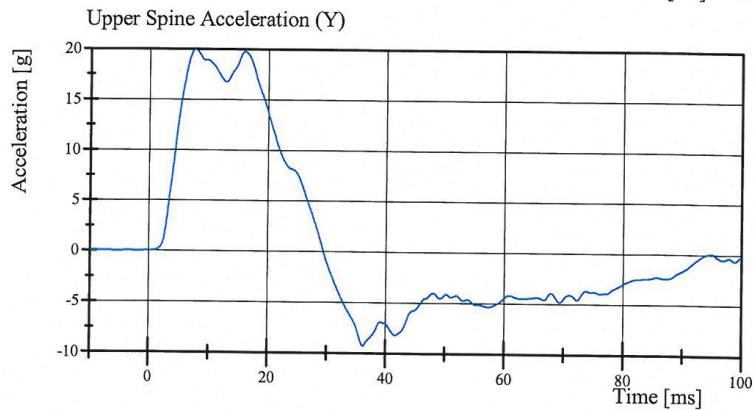
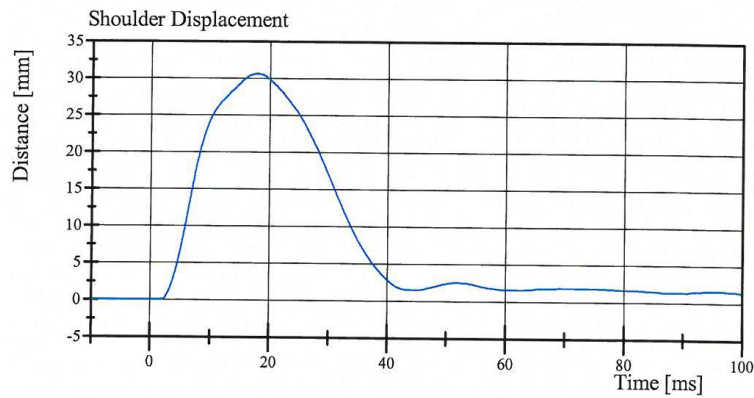
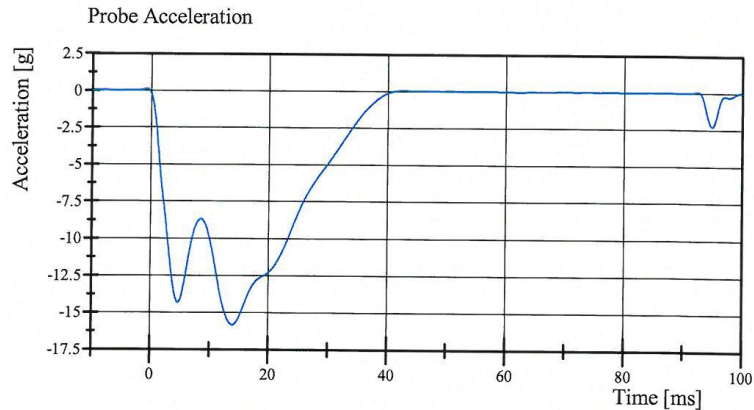
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.26.2012 18:03:48 818



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 16-1
Test Date: 11/26/2012



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

11.26.2012 18:03:55 818



Transportation Research Center Inc.

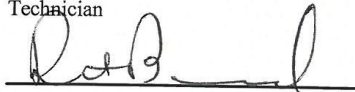
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 16-2
Test Date: 11/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	21 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.772 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.0 g	Yes
Shoulder Displacement	31 - 40 mm	34.0 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.7 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.2 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.5 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.6 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	33.0 g	Yes

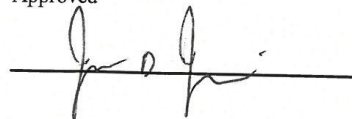
Test meets specifications.

Comments:

Technician



Approved



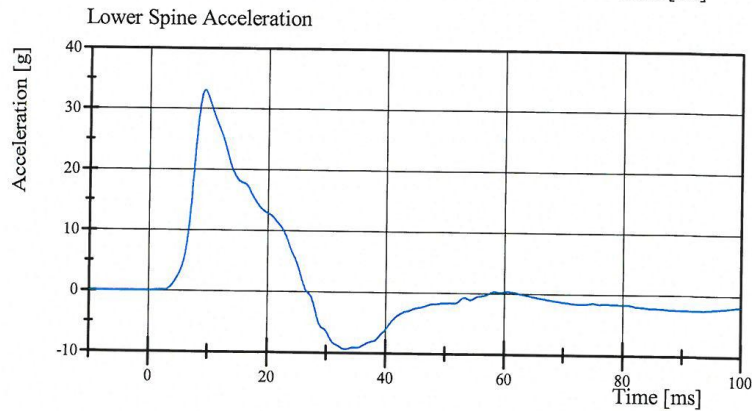
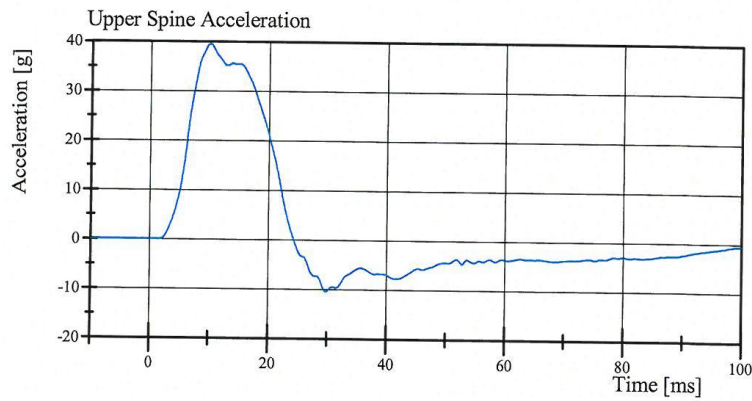
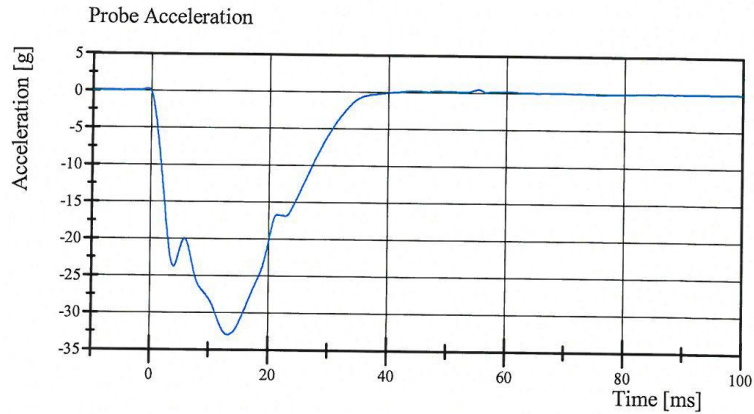
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.27.2012 08:29:44 642



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 16-2
Test Date: 11/27/2012



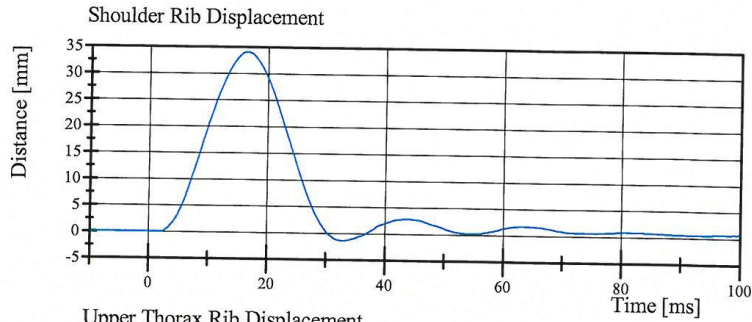
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.27.2012 08:29:59 642

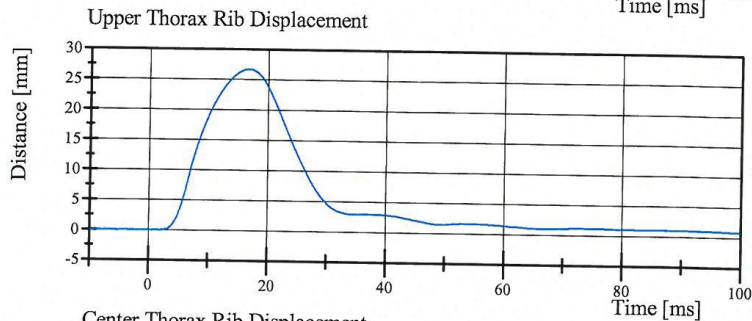


Transportation Research Center Inc.

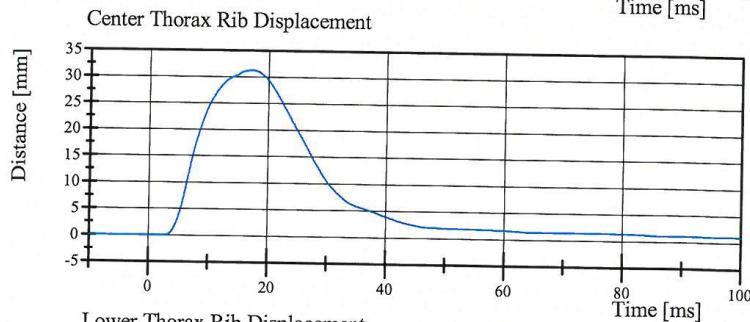
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 16-2
Test Date: 11/27/2012



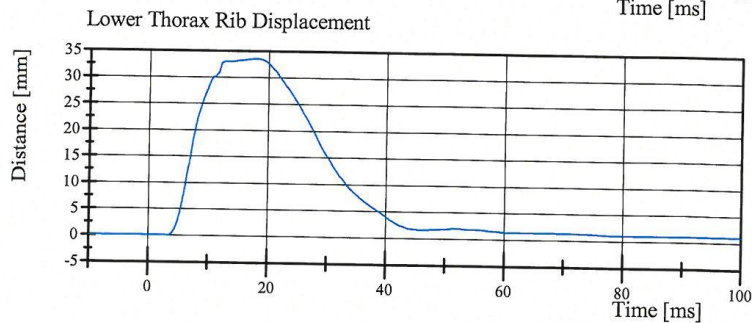
Filter Class: CFC_600
Max: 34.0 mm at 16.5 ms
Min: -1.4 mm at 33.0 ms



Filter Class: CFC_600
Max: 26.7 mm at 16.6 ms
Min: -0.0 mm at 0.4 ms



Filter Class: CFC_600
Max: 31.2 mm at 16.9 ms
Min: -0.0 mm at 0.4 ms



Filter Class: CFC_600
Max: 33.5 mm at 18.0 ms
Min: -0.0 mm at -5.4 ms

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

11.27.2012 08:30:00 642



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 16-1
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	20 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.378 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.2 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	33.2 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.3 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.7 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.9 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.7 g	Yes

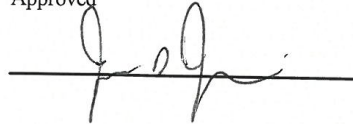
Test meets specifications.

Comments:

Technician



Approved



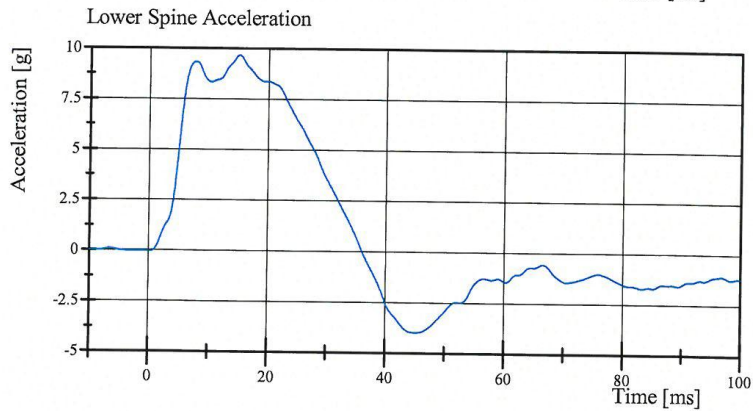
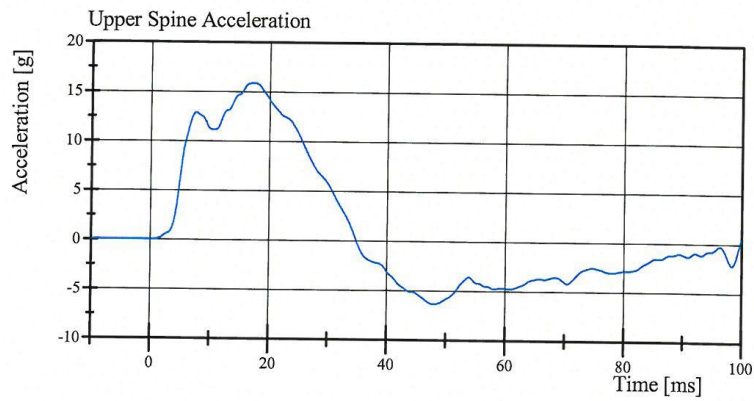
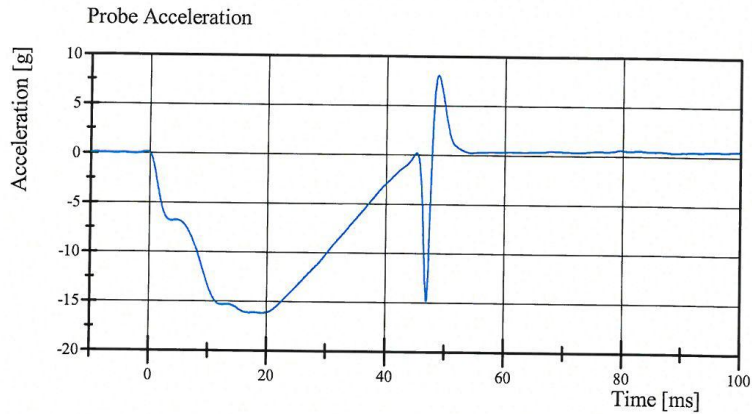
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.26.2012 18:30:44 808



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 16-1
Test Date: 11/26/2012



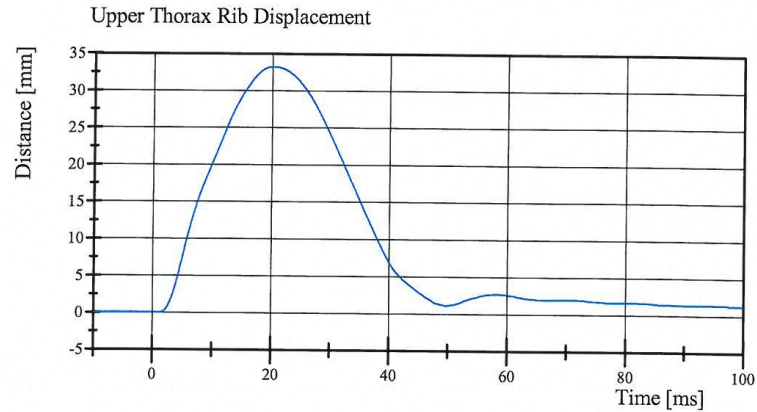
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.26.2012 18:30:52 808

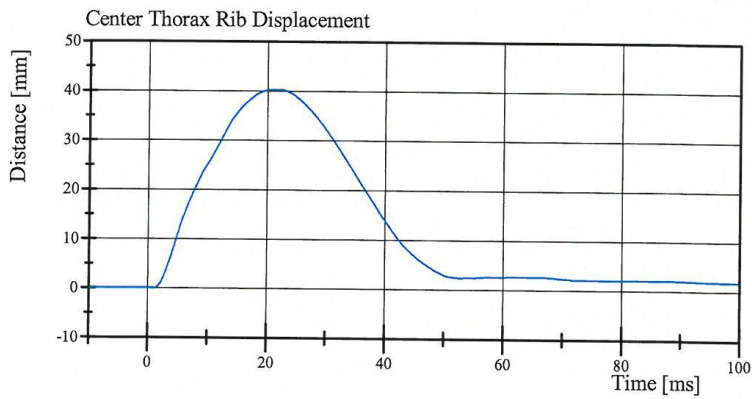


Transportation Research Center Inc.

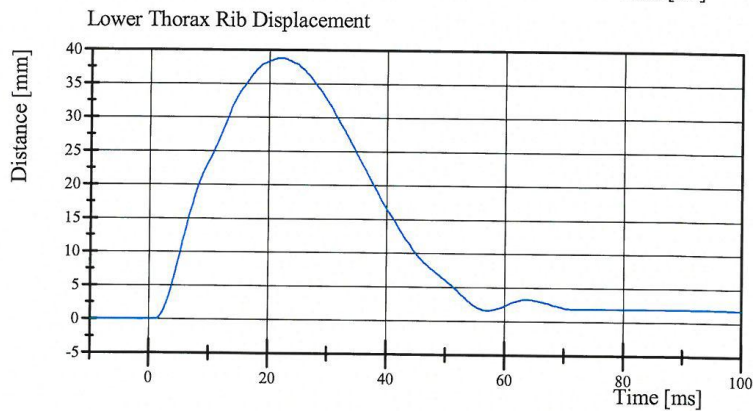
Left Lateral Thorax without Arm
SID II_s Serial No. 305 Certification No. 16-1
Test Date: 11/26/2012



Filter Class: CFC_600
Max: 33.2 mm at 20.2 ms
Min: -0.0 mm at 1.1 ms



Filter Class: CFC_600
Max: 40.3 mm at 21.4 ms
Min: -0.0 mm at 1.0 ms



Filter Class: CFC_600
Max: 38.7 mm at 22.1 ms
Min: -0.0 mm at 1.0 ms

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

11.26.2012 18:30:53 808



Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 16-1
Test Date: 11/26/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	20 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-15.0 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	39.8 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	36.3 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.87 g	Yes

Test meets specifications.

Comments:

Technician



Approved



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

11.26.2012 18:12:48 647

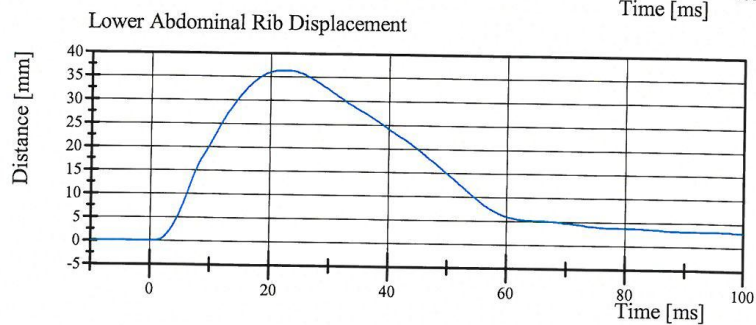
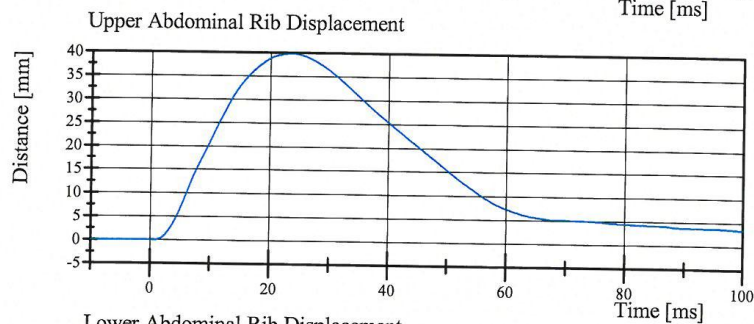
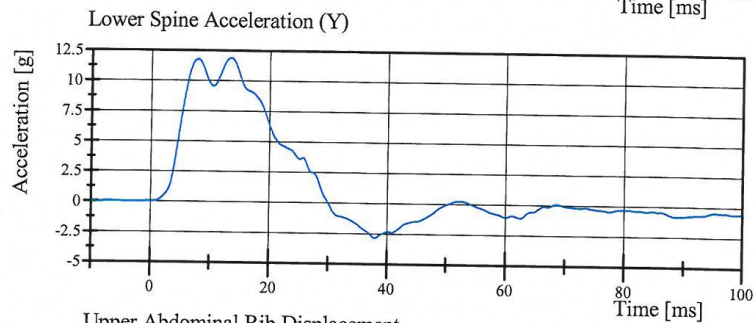
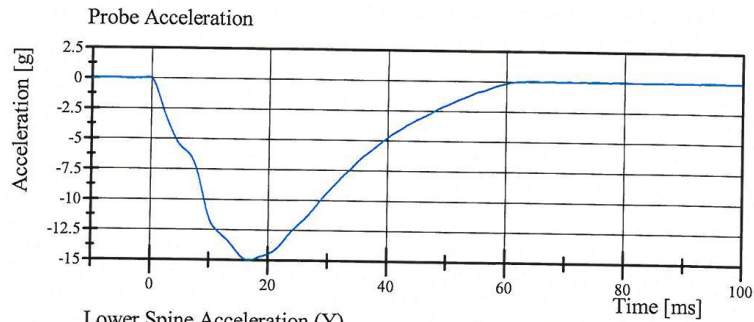


Transportation Research Center Inc.

Left Lateral Abdomen

SID II_s Serial No. 305 Certification No. 16-1

Test Date: 11/26/2012



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

11.26.2012 18:12:55 647



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 16-2

Test Date: 11/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	22 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.67 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-42.32 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	37.2 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,033.7 N	Yes

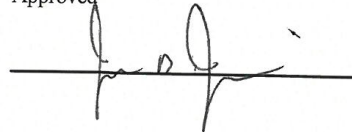
Test meets specifications.

Comments:

Technician



Approved



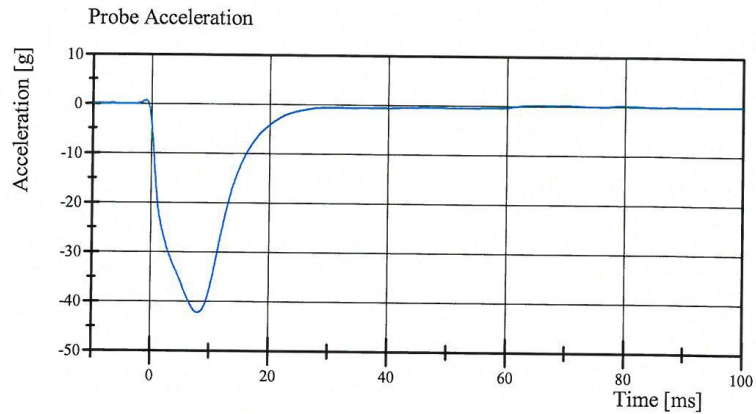
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.27.2012 09:06:57 462

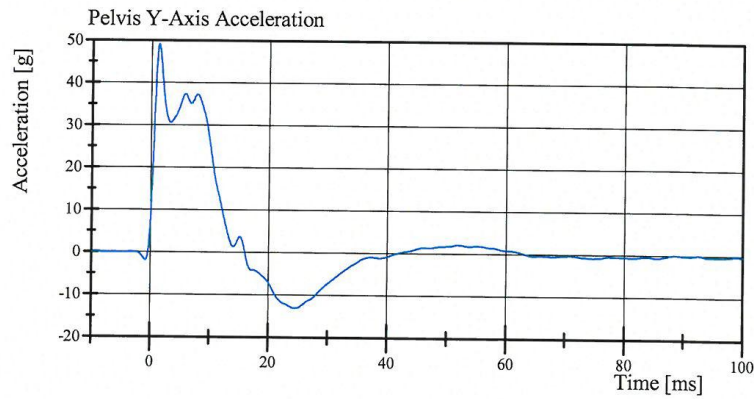


Transportation Research Center Inc.

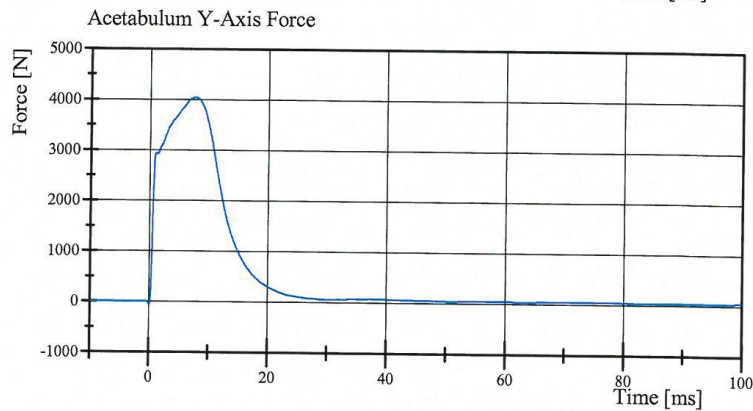
Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 16-2
Test Date: 11/27/2012



Filter Class: CFC_180
Max: 0.6 gn at -1.0 ms
Min: -42.3 gn at 8.0 ms



Filter Class: CFC_180
Max: 49.0 gn at 1.3 ms
Min: -13.1 gn at 24.5 ms



Filter Class: CFC_600
Max: 4,033.7 N at 7.7 ms
Min: -61.7 N at 0.0 ms

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

11.27.2012 09:07:04 462



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 16-2

Test Date: 11/27/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	20 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.26 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	34.0 g	Yes
Iliac Force	4,100 - 5,100 N	5,085.4 N	Yes

Test meets specifications.

Comments:

Technician

Approved

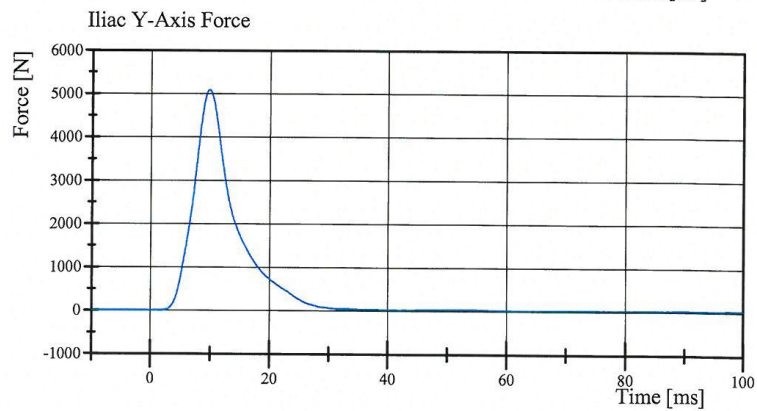
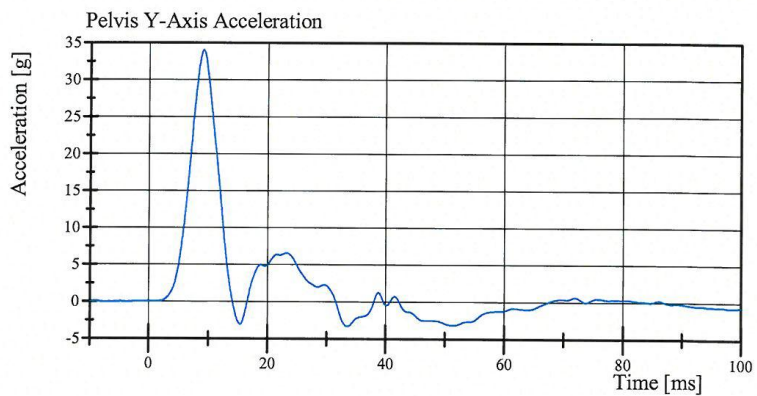
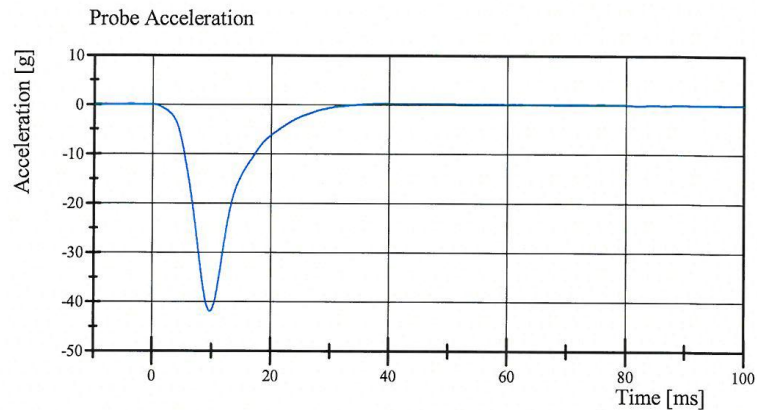
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.27.2012 06:55:55 670



Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 16-2
Test Date: 11/27/2012



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

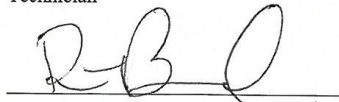
11.27.2012 06:56:03 670



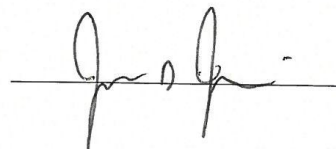
Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.016

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	102	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	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	530	Yes
L	Popliteal Height	343.0 - 369.0	355	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	402	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	203	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	314	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	867	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved



Revised 9/29/2005



Post-Test Calibration Sheets
Passenger S/N 305

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	118.6 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-3.2 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

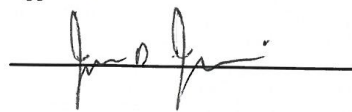
Test meets specifications.

Comments:

Technician



Approved



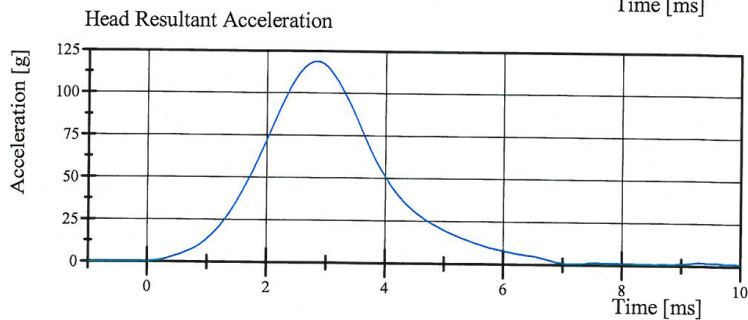
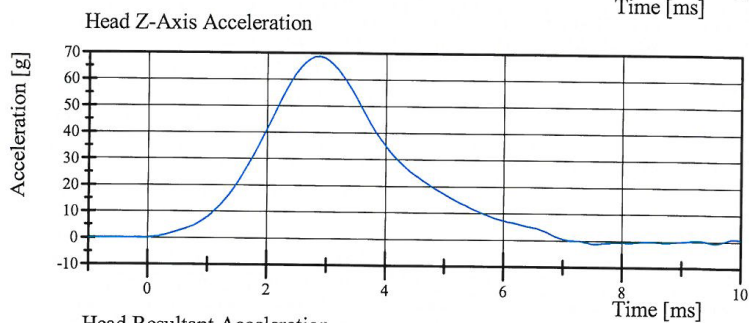
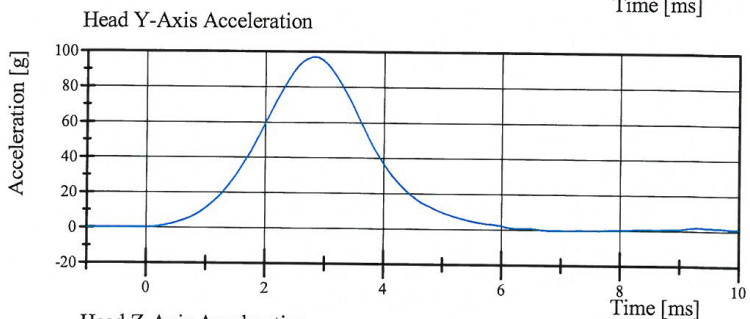
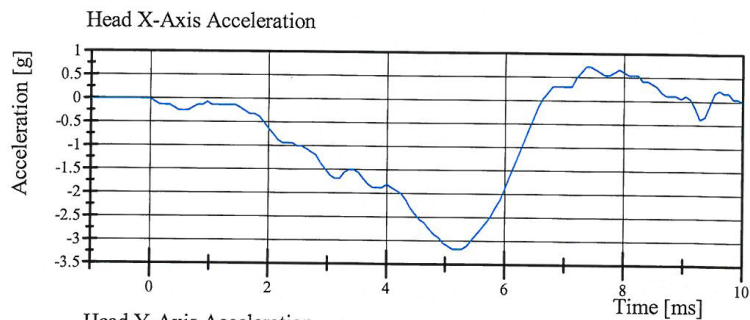
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 15:37:43 197



Transportation Research Center Inc.

Left Lateral Head Drop
SID IIa Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



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

01.15.2013 15:37:53 197



Transportation Research Center Inc.

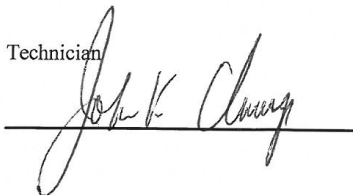
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.601 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.704 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.885 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.150 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.826 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.826 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-77.4 deg	Yes
Time of Peak	50 - 70 ms	69.9 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	41.2 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	120.6 ms	Yes

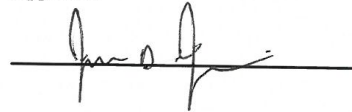
Test meets specifications.

Comments:

Technician



Approved



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

01.15.2013 15:13:09 608

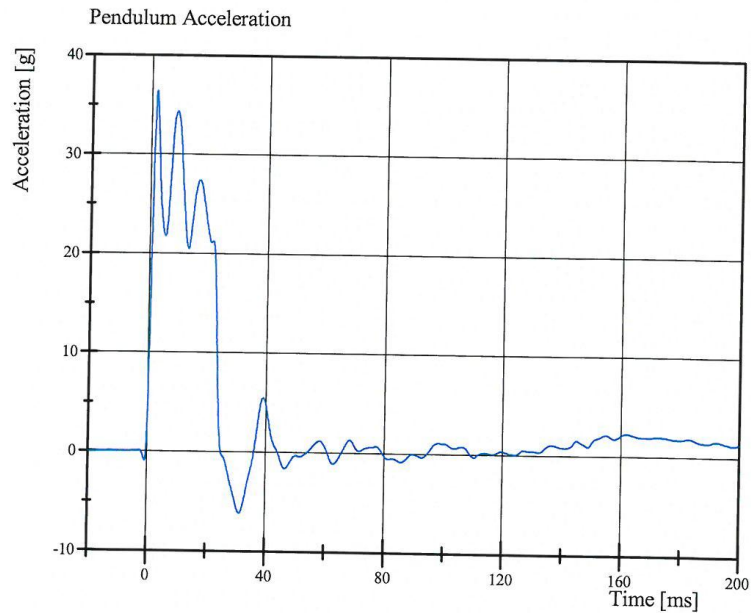


Transportation Research Center Inc.

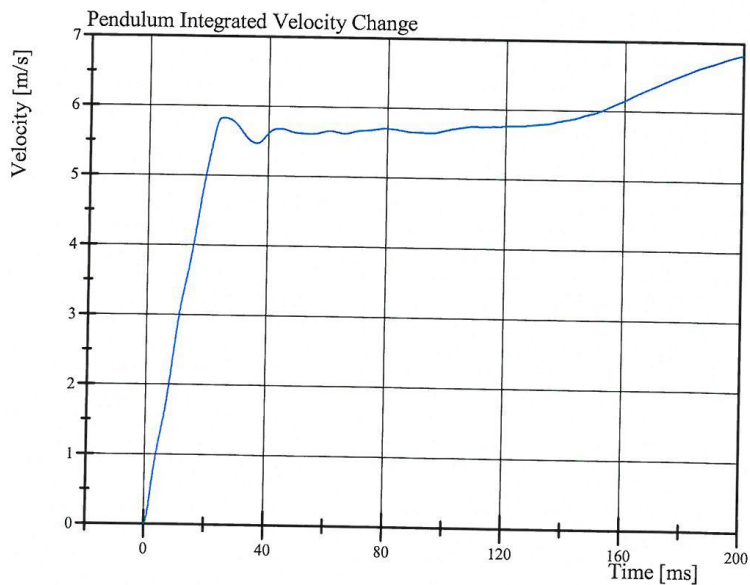
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 17-1

Test Date: 1/15/2013



Filter Class: CFC_180
Max: 36.3 gn at 1.8 ms
Min: -6.2 gn at 31.4 ms



Filter Class: CFC_180
Max: 6.8 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.

01.15.2013 15:13:18 608

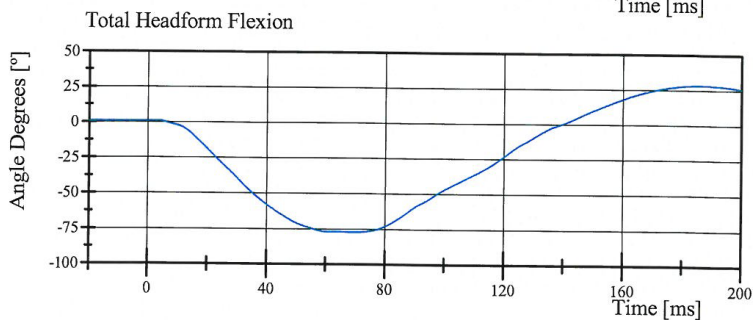
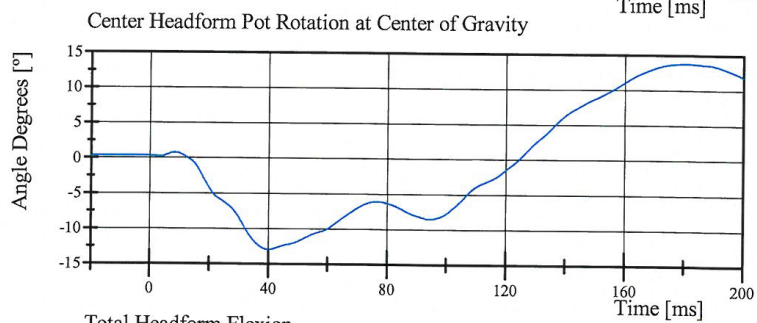
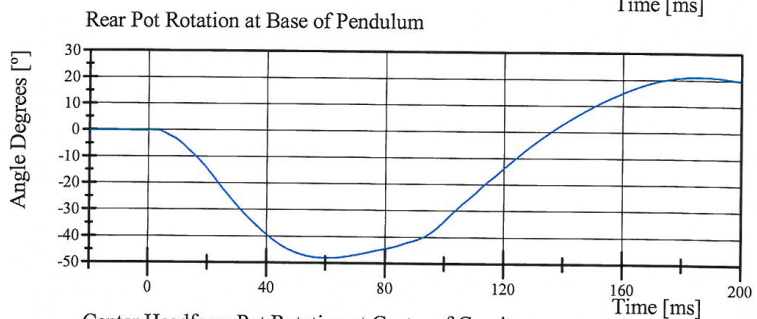
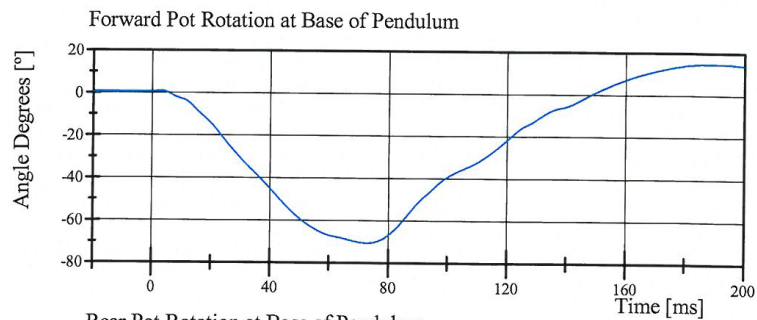


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 17-1

Test Date: 1/15/2013



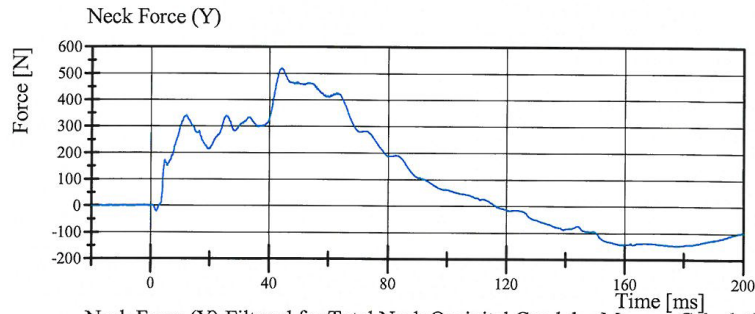
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 15:13:19 608

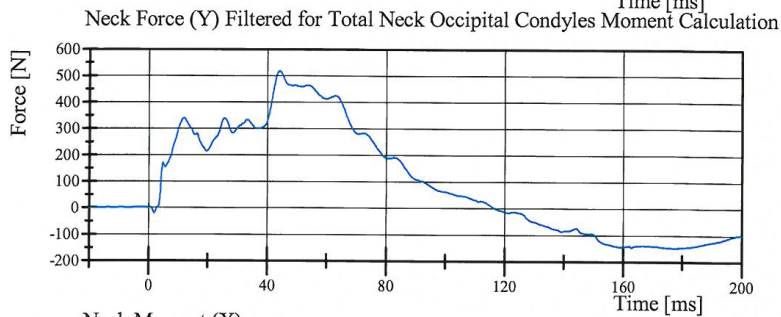


Transportation Research Center Inc.

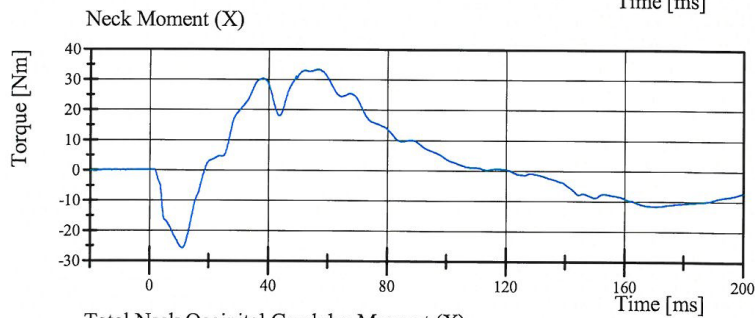
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



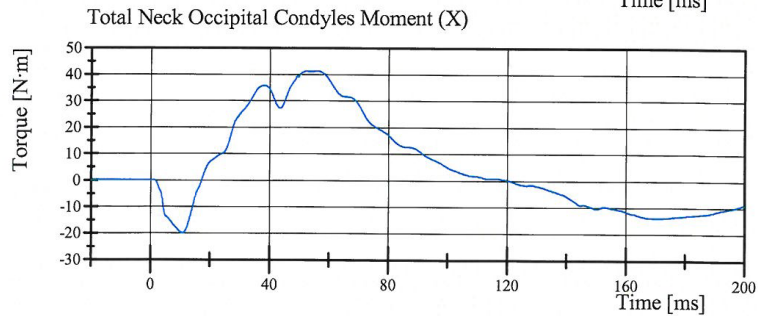
Filter Class: CFC_1000
Max: 516.6 N at 44.0 ms
Min: -148.6 N at 177.8 ms



Filter Class: CFC_600
Max: 516.7 N at 44.1 ms
Min: -148.3 N at 177.8 ms



Filter Class: CFC_600
Max: 33.4 Nm at 56.8 ms
Min: -25.9 Nm at 11.1 ms



Filter Class: Without_(Consta
Max: 41.2 N·m at 52.5 ms
Min: -20.1 N·m at 11.0 ms

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

01.15.2013 15:13:20 608



Transportation Research Center Inc.

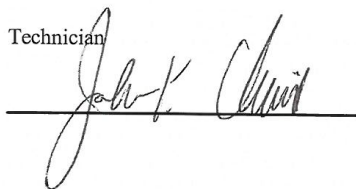
Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.6 g	Yes
Shoulder Displacement	28 - 37 mm	31.7 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.6 g	Yes

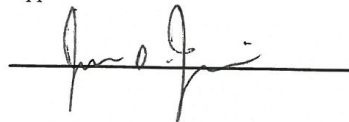
Test meets specifications.

Comments:

Technician



Approved



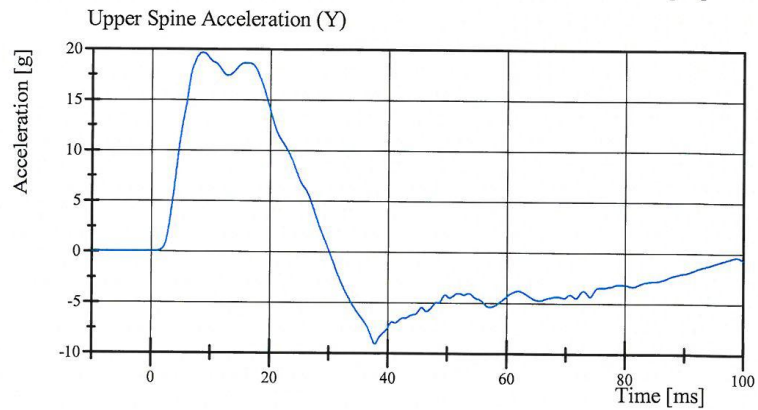
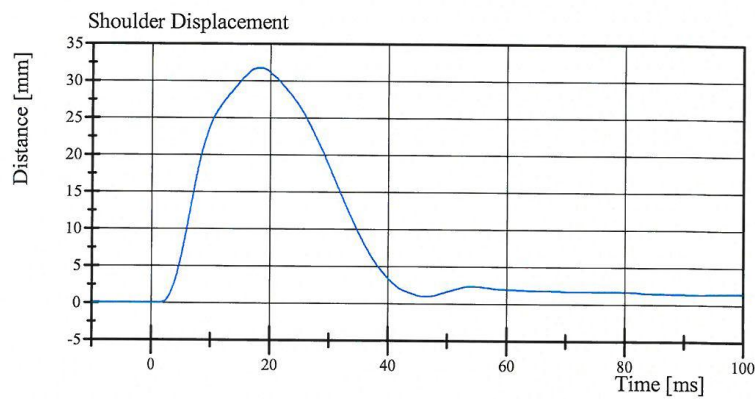
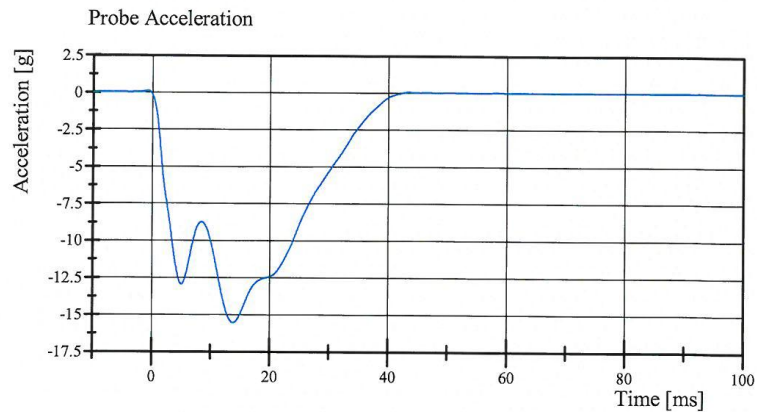
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 09:09:58 793



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



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

01.15.2013 09:10:08 793



Transportation Research Center Inc.

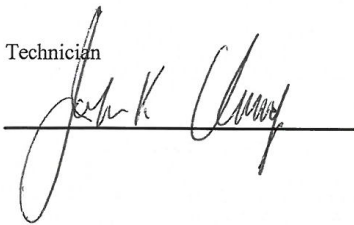
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 17-6
Test Date: 1/16/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.738 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.7 g	Yes
Shoulder Displacement	31 - 40 mm	32.7 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	25.9 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.4 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	35.1 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.5 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	32.2 g	Yes

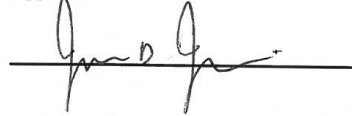
Test meets specifications.

Comments:

Technician



Approved



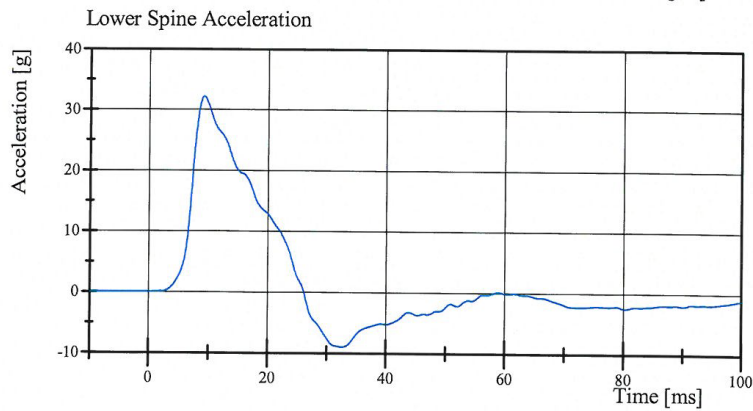
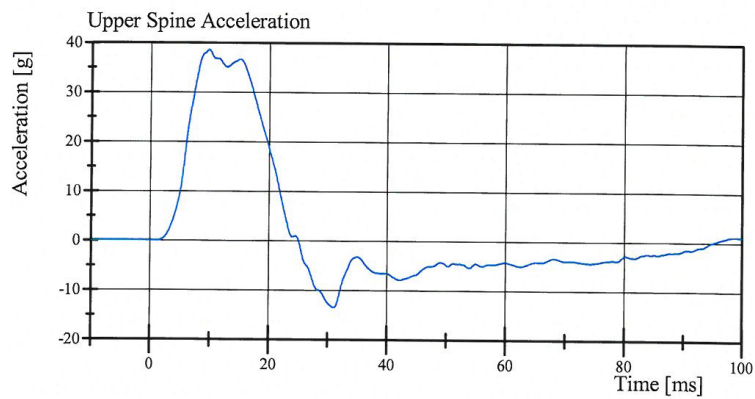
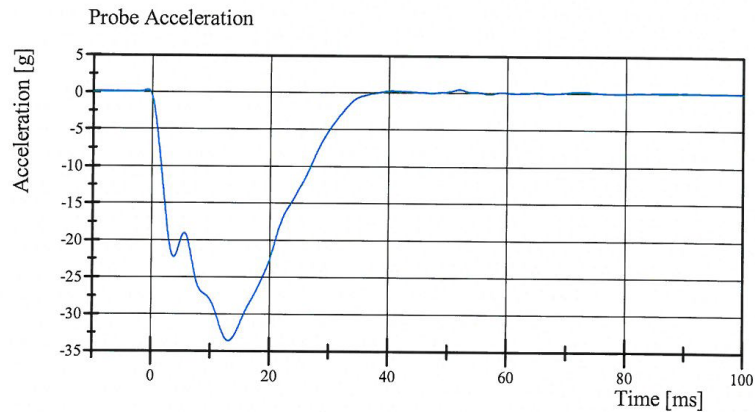
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.16.2013 07:10:30 581



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 17-6
Test Date: 1/16/2013



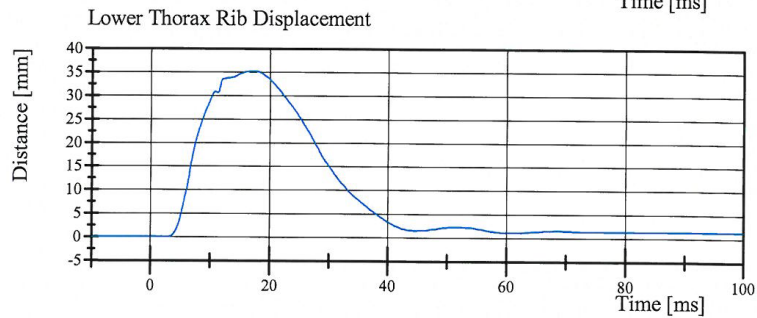
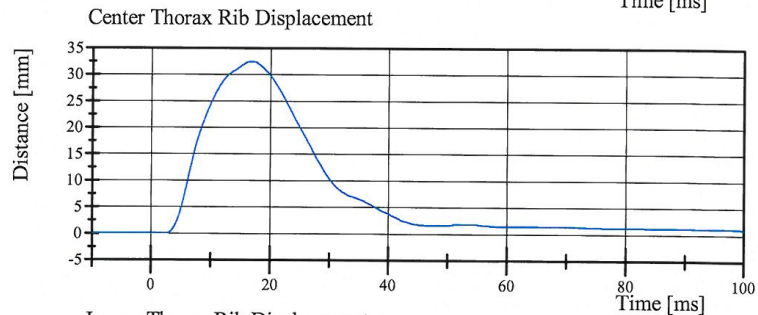
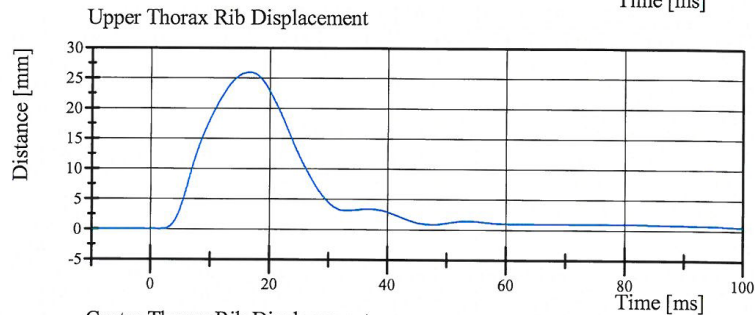
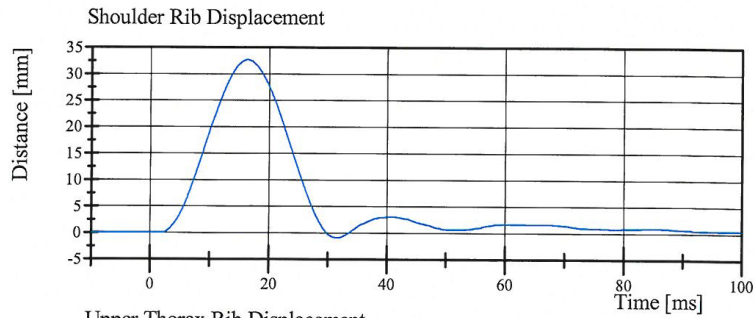
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.16.2013 07:10:39 581



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 17-6
Test Date: 1/16/2013



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

01.16.2013 07:10:40 581



Transportation Research Center Inc.

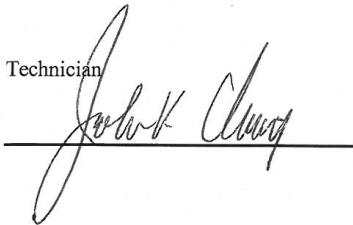
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.365 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.2 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.1 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.7 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	36.4 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	16.3 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.8 g	Yes

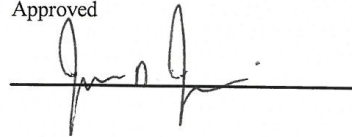
Test meets specifications.

Comments:

Technician



Approved



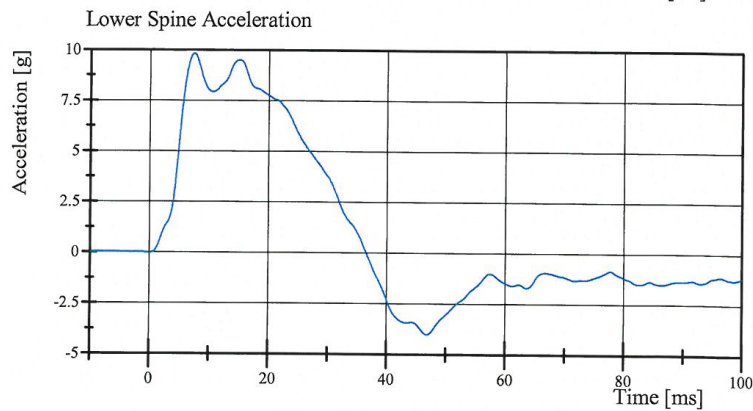
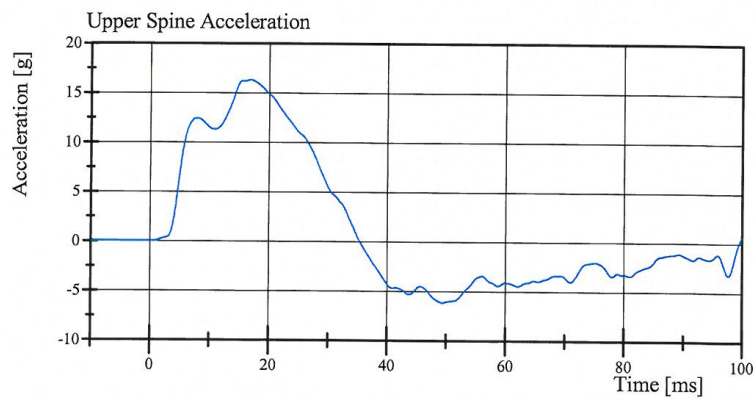
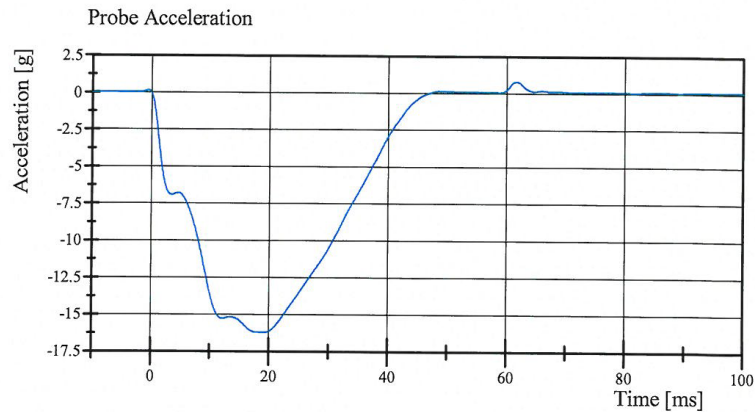
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 11:11:00 790



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



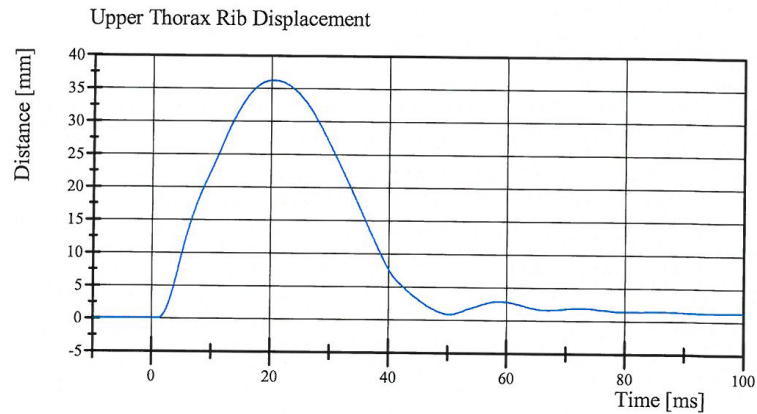
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 11:11:12 790

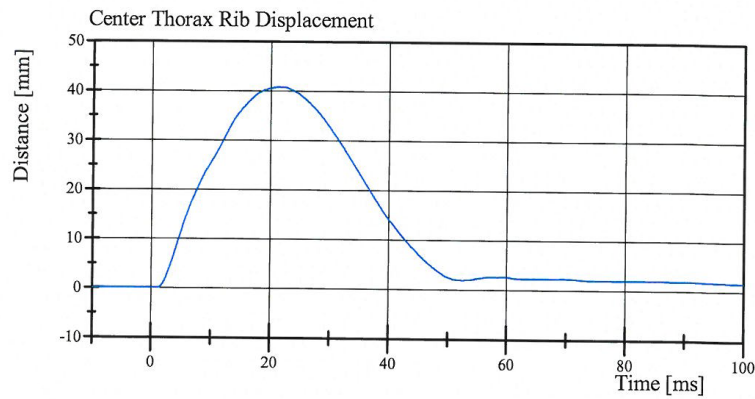


Transportation Research Center Inc.

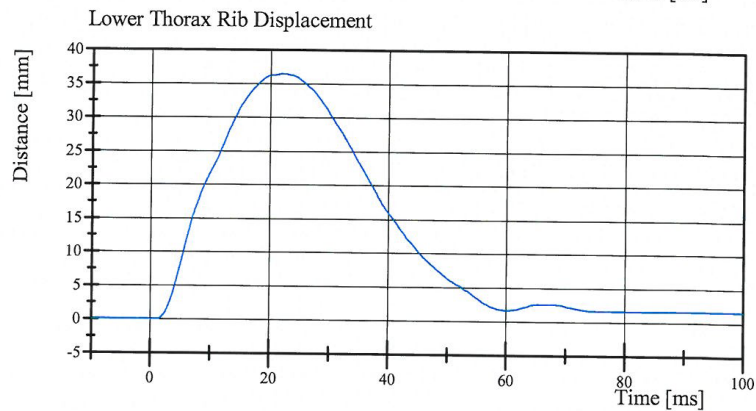
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



Filter Class: CFC_600
Max: 36.1 mm at 20.4 ms
Min: -0.0 mm at 1.0 ms



Filter Class: CFC_600
Max: 40.7 mm at 22.2 ms
Min: -0.0 mm at 1.0 ms



Filter Class: CFC_600
Max: 36.4 mm at 22.2 ms
Min: -0.0 mm at 1.1 ms

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

01.15.2013 11:11:12 790



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 305 Certification No. 17-1

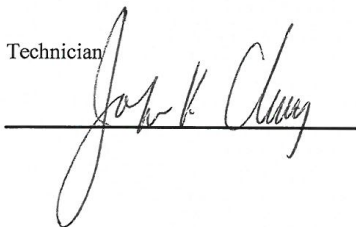
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.9 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.7 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	35.5 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	12.53 g	Yes

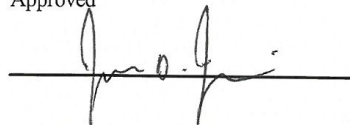
Test meets specifications.

Comments:

Technician



Approved



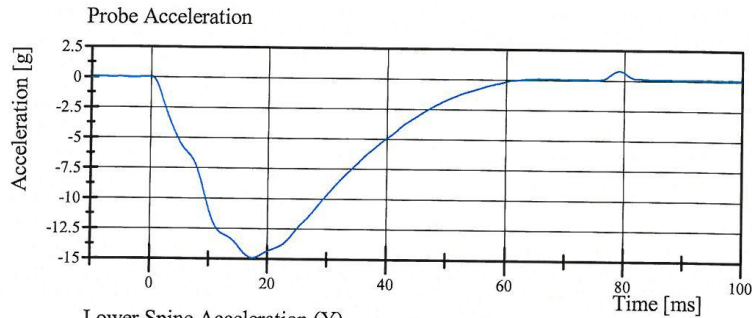
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 13:17:36 620

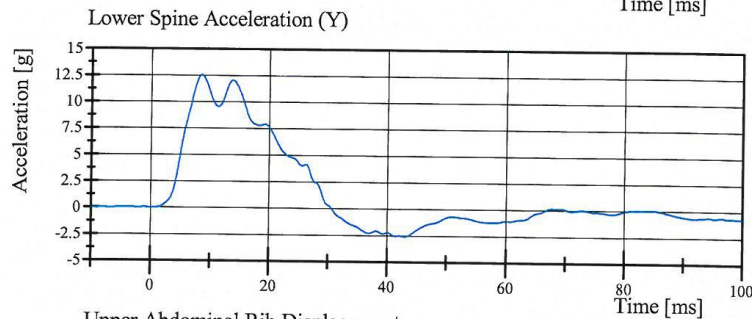


Transportation Research Center Inc.

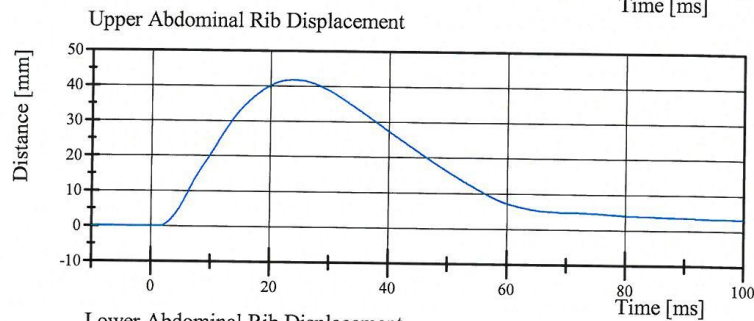
Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



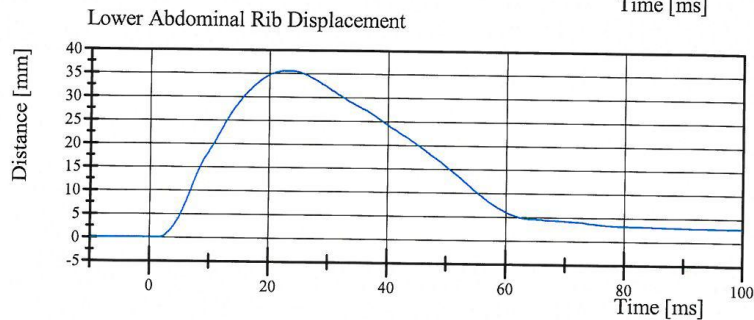
Filter Class: CFC_180
Max: 0.8 gn at 79.2 ms
Min: -14.9 gn at 17.4 ms



Filter Class: CFC_180
Max: 12.5 gn at 8.5 ms
Min: -2.6 gn at 43.0 ms



Filter Class: CFC_600
Max: 41.7 mm at 24.1 ms
Min: -0.0 mm at -7.4 ms



Filter Class: CFC_600
Max: 35.5 mm at 23.1 ms
Min: -0.0 mm at 1.6 ms

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

01.15.2013 13:17:46 620



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 17-1

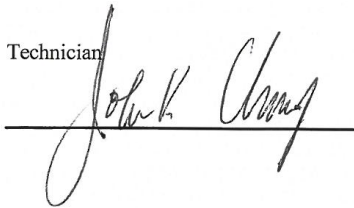
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-40.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	33.2 g	Yes
Iliac Force	4,100 - 5,100 N	4,992.1 N	Yes

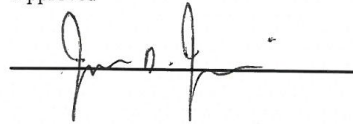
Test meets specifications.

Comments:

Technician



Approved



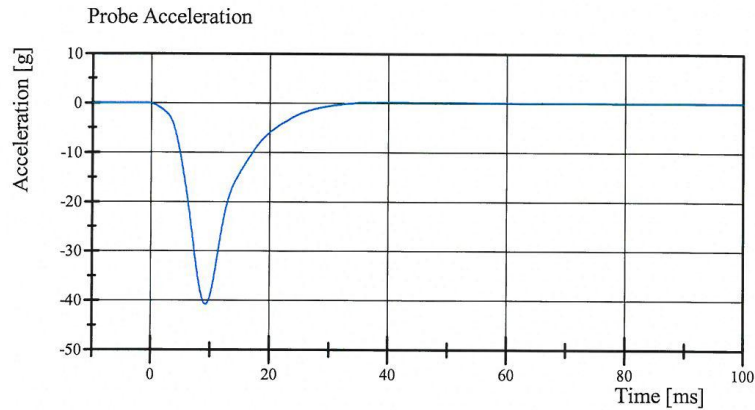
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 13:58:20 627

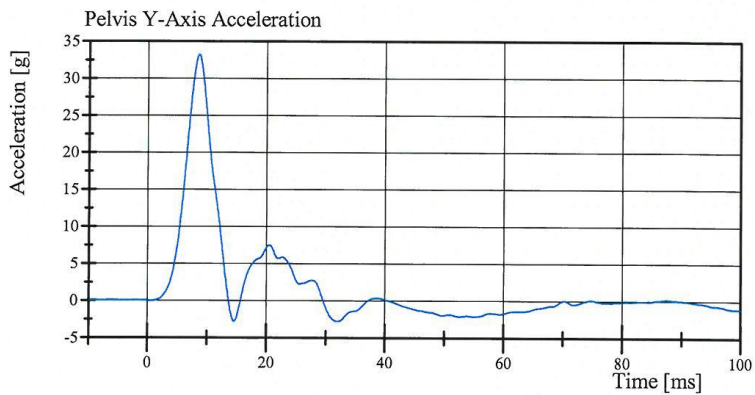


Transportation Research Center Inc.

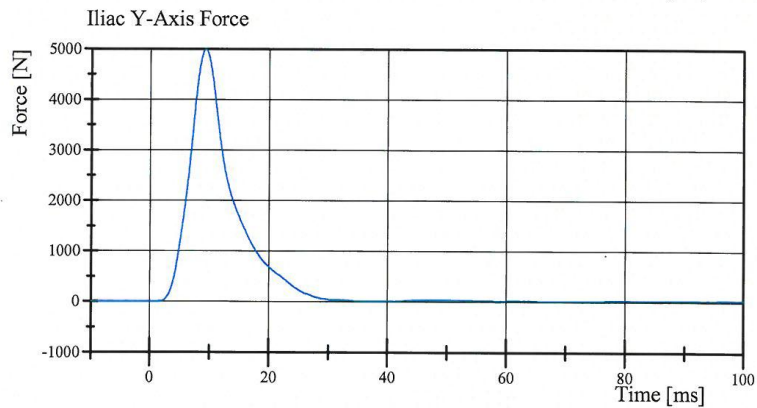
Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



Filter Class: CFC_180
Max: 0.2 gn at 41.8 ms
Min: -40.9 gn at 9.3 ms



Filter Class: CFC_180
Max: 33.2 gn at 8.6 ms
Min: -2.8 gn at 14.6 ms



Filter Class: CFC_600
Max: 4,992.1 N at 9.3 ms
Min: -0.7 N at -3.8 ms

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

01.15.2013 13:58:31 627



Transportation Research Center Inc.

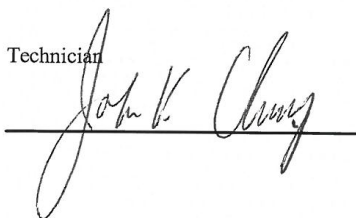
Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.67 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-43.07 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.9 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,168.9 N	Yes

Test meets specifications.

Comments:

Technician



Approved



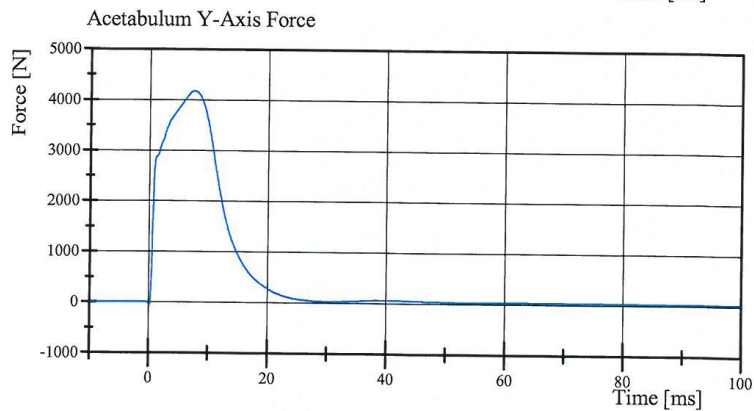
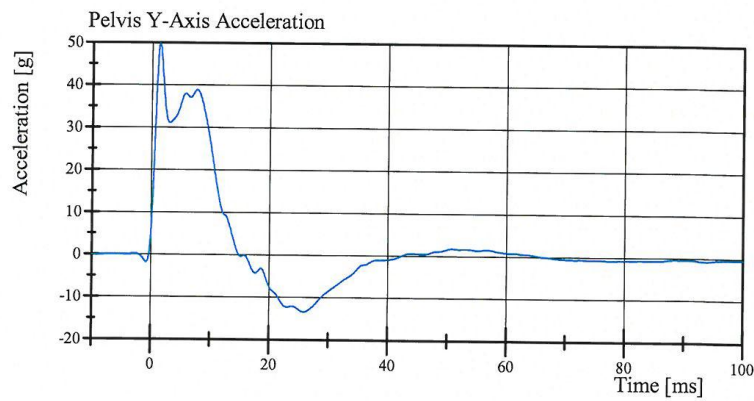
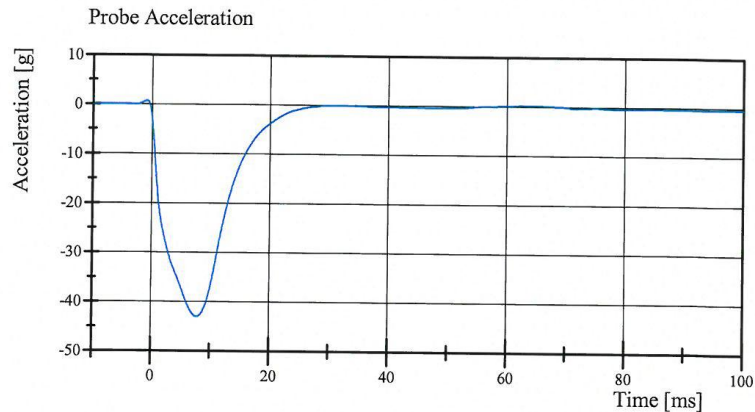
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.15.2013 08:37:00 390



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 17-1
Test Date: 1/15/2013



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

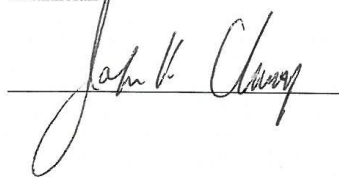
01.15.2013 08:37:12 390



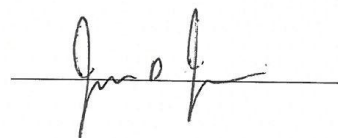
Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.017

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	777	Yes
B	Shoulder Pivot Height	437.0 - 453.0	441	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	144	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	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	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	530	Yes
L	Popliteal Height	343.0 - 369.0	356	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	402	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	203	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	314	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	482	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	349	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	866	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved



Revised 9/29/2005



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	28-Sep-12
		Y	P51702	Endevco	28-Sep-12
		Z	P52083	Endevco	28-Sep-12
Thoracic Rib Displacement Potentiometers	Upper	Y	175	FTSS	27-Sep-12
	Middle	Y	174	FTSS	27-Sep-12
	Lower	Y	173	FTSS	27-Sep-12
Abdomen Load Cells	Upper	Y	1441	Denton	28-Sep-12
	Middle	Y	1436	Denton	28-Sep-12
	Lower	Y	1437	Denton	28-Sep-12
Lower Spine Accelerometers (T12)		X	P68599	Endevco	19-Dec-12
		Y	P59002	Endevco	19-Dec-12
		Z	P59005	Endevco	28-Sep-12
Acetabulum Load Cell		Y	NA	NA	NA
Pubic Symphysis Load Cell		Y	457-FY	Denton	28-Sep-12

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 305			
				Serial Number	Manufacturer	Calibration Date	
Head Accelerometers				X	P51719	Endevco	27-Sep-12
				Y	P51272	Endevco	27-Sep-12
				Z	P58862	Endevco	27-Sep-12
Displacement Potentiometers	Shoulder			Y	NA	NA	NA
	Thoracic Rib	Upper	Y	007	Servo	27-Sep-12	
		Middle	Y	1161	Servo	27-Sep-12	
		Lower	Y	1279	Servo	27-Sep-12	
	Abdominal Rib	Upper	Y	1295	Servo	27-Sep-12	
		Lower	Y	1136	Servo	27-Sep-12	
Lower Spine Accelerometers (T12)				X	P50068	Endevco	28-Sep-12
				Y	P52051	Endevco	28-Sep-12
				Z	P51710	Endevco	28-Sep-12
Acetabulum Load Cell				Y	287-FY	FTSS	27-Sep-12
Iliac Wing Load Cell				Y	103-FY	FTSS	27-Sep-12
Pelvis Plug (struck side)					36407	FTSS	
Pelvis Plug (non-struck side)					NA	NA	

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P75099	Endevco	09/04/12
	Vehicle Center of Gravity	Y	P76393	Endevco	09/19/12
	Vehicle Center of Gravity	Z	P78140	Endevco	10/09/12
2	Right Sill at Front Seat	X	P76411	Endevco	11/05/12
	Right Sill at Front Seat	Y	P75254	Endevco	11/05/12
	Right Sill at Front Seat	Z	P78114	Endevco	12/18/12
3	Right Sill at Rear Seat	X	P76398	Endevco	10/10/12
	Right Sill at Rear Seat	Y	P74438	Endevco	07/27/12
	Right Sill at Rear Seat	Z	P74796	Endevco	12/12/12
4	Left Sill at Front Door	Y	P75776	Endevco	09/10/12
5	Left Sill at Rear Door	Y	P74091	Endevco	11/08/12
6	Left A-Post Lower	Y	P74811	Endevco	07/27/12
7	Left A-Post Middle	Y	P74521	Endevco	08/17/12
8	Left B-Post Lower	Y	P76449	Endevco	09/26/12
9	B-Post Middle	Y	P76342	Endevco	09/26/12
10	Front Seat Track	Y	P78141	Endevco	10/10/12
11	Rear Seat Track or Structure	Y	P78122	Endevco	07/12/12
12	Right Rear Occupant Compartment	Y	P75567	Endevco	09/13/12
13	Engine Block	X	P76069	Endevco	10/10/12
	Engine Block	Y	P75771	Endevco	09/05/12
14	Rear Floorpan Above Axle	X	P74496	Endevco	09/05/12
	Rear Floorpan Above Axle	Y	P78112	Endevco	10/17/12
	Rear Floorpan Above Axle	Z	P66710	Endevco	11/08/12

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P76044	Endevco	10/18/12
MDB Center of Gravity	Y	P76251	Endevco	07/12/12
MDB Center of Gravity	Z	P75726	Endevco	07/20/12
Left Frame Rail at Rear Axle Centerline	X	P75111	Endevco	11/19/12
Left Frame Rail at Rear Axle Centerline	Y	P75774	Endevco	08/20/12