

FINAL REPORT NUMBER: SINCAP-TRC-14-006

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

**Chrysler Group LLC
2014 Jeep Cherokee 5-Door SUV
NHTSA NUMBER: M20140304**

**PREPARED BY:
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P. O. Box B-67
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Report Date: March 6, 2014

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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Approval Date: March 6, 2014

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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16. Abstract This 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2014 Jeep Cherokee 5-Door SUV 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 28, 2014. The impact velocity of the Moving Deformable Barrier (MDB) was 61.58 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21° C. The target vehicle post-test maximum crush was 146 mm at Level 3. The test vehicle's performance was as follows: Driver ATD (ES-2re) <table border="1"> <thead> <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>N/A</td><td>1000</td><td>70</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>44</td><td>15.6</td></tr> <tr> <td>Total Abdominal Force</td><td>N</td><td>2500</td><td>781.6</td></tr> <tr> <td>Pubic Symphysis Force</td><td>N</td><td>6000</td><td>-1046.1</td></tr> </tbody> </table> Passenger ATD (SID-IIs) <table border="1"> <thead> <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>N/A</td><td>1000</td><td>255</td></tr> <tr> <td>Lower Spine Resultant Acceleration</td><td>g's</td><td>82</td><td>36.6</td></tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td><td>N</td><td>5525</td><td>2004.3</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>38*</td><td>12.7</td></tr> <tr> <td>Maximum Abdominal Rib Deflection</td><td>mm</td><td>45*</td><td>19.7</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.				Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	70	Maximum Thoracic Rib Deflection	mm	44	15.6	Total Abdominal Force	N	2500	781.6	Pubic Symphysis Force	N	6000	-1046.1	Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	255	Lower Spine Resultant Acceleration	g's	82	36.6	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2004.3	Maximum Thoracic Rib Deflection	mm	38*	12.7	Maximum Abdominal Rib Deflection	mm	45*	19.7
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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 2014 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 2014 Jeep Cherokee 5-Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2013.

SECTION 2

SUMMARY OF TEST RESULTS

A 2014 Jeep Cherokee 5-Door SUV 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 61.58 km/h (38.26 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, Ohio, on January 28, 2014. 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 2013. The side impact event was documented by 11 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	70
Maximum Thoracic Rib Deflection	mm	44	15.6
Combined Abdominal Force	N	2500	781.6
Pubic Symphysis Force	N	6000	-1046.1

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	255
Lower Spine (T12) Resultant Acceleration	G	82	36.6
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2004.3
Maximum Thoracic Rib Deflection	mm	38*	12.7
Maximum Abdominal Rib Deflection	mm	45*	19.7

* 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/Pelvis Airbag	Yes	Yes	No	N/A
Side Pelvis Airbag	No	N/A	Yes	Yes
Knee Airbag	Yes	No	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt Load Limiter	Yes	No	No	N/A
Other	N/A	N/A	N/A	N/A

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. The vehicle had secondary impact with the cart on the left front bumper and fender.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20140304
Model Year	2014
Make	Jeep
Model	Cherokee
Body Style	SUV
VIN	1C4PJLCB4EW144147
Body Color	Silver
Odometer Reading (km/mi)	134 mi.
Engine Displacement (L)	2.4
Type/No. Cylinders	4
Engine Placement	Front/Transverse
Transmission Type	Automatic
Transmission Speeds	9
Overdrive	Yes
Final Drive	FWD
Roof Rack	Yes
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	N/A
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Passenger Pelvis Airbag	Yes
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Passenger Load Limiter	No
Other Safety Restraint	N/A

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group LLC
Date of Manufacture	10/13
Vehicle Type	MPV

GVWR (kg)	2291
GAWR Front (kg)	1273
GAWR Rear (kg)	1273

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	N/A	5
Capacity Weight (VCW) (kg)				453
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				112.8

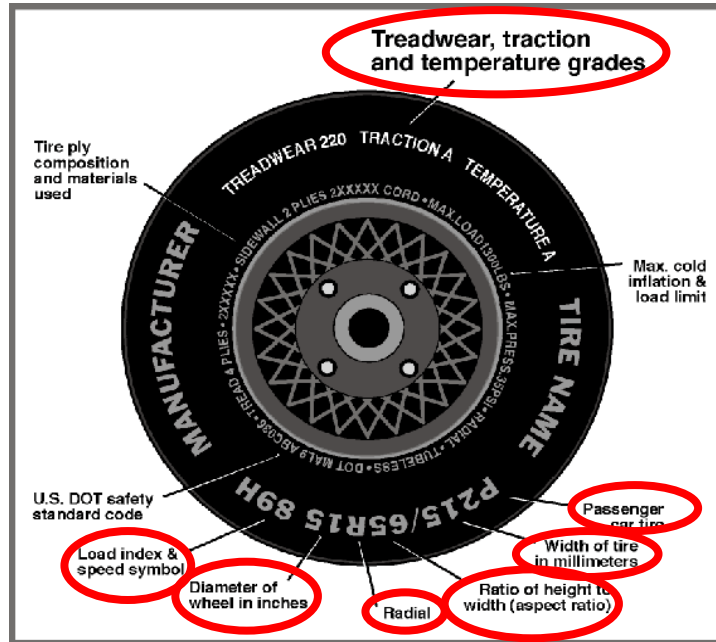
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	Yes	N/A	N/A		N/A	Yes	N/A
Rear or Second Row Seat	N/A	N/A	Yes	N/A	N/A	Yes	N/A
Third Row Seat	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	230	230
Recommended Tire Size	225/60R17	225/60R17
Tire Size on Vehicle	225/60R17	225/60R17
Tire Manufacturer	Firestone	Firestone
Tire Model	Destination LE ²	Destination LE ²
Treadwear	520	520
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	99T	99T
Tire Material	Polyester, Steel & Nylon	Polyester, Steel & Nylon
DOT Safety Code Left	W241 DE1 3613	W241 DE1 3613
DOT Safety Code Right	W241 DE1 3613	W241 DE1 3613

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

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	262	262	262	262
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	N/A	N/A	N/A	N/A
As Tested	kPa	230	230	230	230

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	207	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	499.2	346.8		532.6	431.0		532.2	454.8	
Right	kg	491.0	333.0		510.6	425.0		499.4	414.4	
Ratio	%	59.3	40.7		54.9	45.1		54.3	45.7	
Totals	kg	990.2	679.8	1670.0	1043.2	856.0	1899.2	1031.6	869.2	1900.8

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1670.0	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	125.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	112.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1907.8	(A+B+C)

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

TEST VEHICLE ATTITUDES AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement
LF	mm	763	759	Yes
RF	mm	766	758	Yes
RR	mm	778	776	Yes
LR	mm	770	770	Yes
Vehicle CG (Aft of Front Axle)	mm	1235	1217	
Vehicle CG (Left(+)/Right(-) from Longitudinal Centerline)	mm	+30	+12	

***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".

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast: 103 lbs on spare tire well floor; 7 lbs on rear rack. 110 lbs total	49.9
Removed: None	0.0

DATA SHEET NO. 2

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

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV

NHTSA No.: M20140304

Test Program: NCAP Side Impact

Test Date: 1/28/14

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	16.8	11.8	14.3
Front Passenger Seat	12.9	7.7	10.3
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	N/A	12.4
Non-Struck Side Rear Seat	Fixed	N/A	12.4
Rear Center Seat*	Fixed	N/A	12.0

* 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	14.3	221	Max	N/A	N/A	N/A
			Mid	219	221	224
			Min	N/A	N/A	N/A
Front Passenger Seat	10.3	225	Max	N/A	N/A	N/A
			Mid	222	225	228
			Min	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	12.4	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	12.4	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	12.0	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A

* If applicable.

DATA SHEET NO. 2 (CONTINUED)

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

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV

NHTSA No.: M20140304

Test Program: NCAP Side Impact

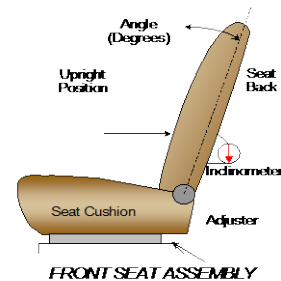
Test Date: 1/28/14

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents	mm	Detent
Driver Seat	210	22	110	11
Front Passenger Seat	190	20	100	10
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	150	16	150	15
Non-Struck Side Rear Seat	150	16	150	15
Rear Center Seat*	150	16	150	15

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	68.0	35	0.0	6
Front Passenger Seat	67.1	35	0.2 rwd	6
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat w/ Seated Dummy	6.5	4	29.3	0
Non-Struck Side Rear Seat	6.5	4	29.3	0
Rear Center Seat*	6.5	4	29.3	0

SEAT BELT ANCHORAGE ADJUSTMENT

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

	Total # of Positions	Placed in Position #
Driver Seat	4, Numbered from 0 to 3	0, Uppermost
Rear Seat	1	1, Fixed

HEAD RESTRAINT ADJUSTMENT

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

	Total # of Positions	Placed in Position #
Driver Seat	3, Numbered from 0 to 2	0, Uppermost
Rear Seat	1	1, Fixed

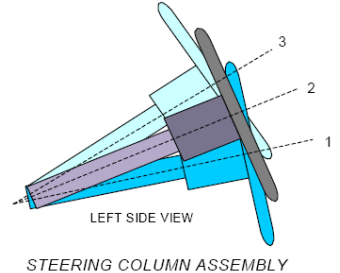
DATA SHEET NO. 2 (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA**

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

STEERING COLUMN ADJUSTMENT

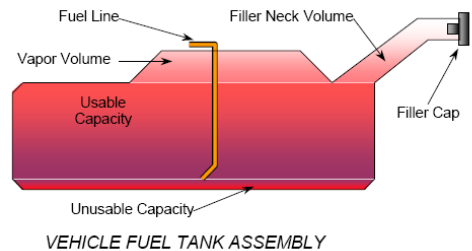
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.



	Degrees	Fore/Aft Position (mm)
Lowermost, Position No. 1	28.1	100
Geometric Center, Position No. 2	30.4	100
Uppermost, Position No. 3	32.6	100
Telescoping Steering Wheel Travel		40
Test Position	30.4	120

FUEL PUMP

Pump operates a few seconds after ignition switch is turned ON. After that, pump operates only while engine is running.

**FUEL TANK CAPACITY**

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	59.8
Usable Capacity of "Optional Tank" (see Form No. 1)	59.8
Usable Capacity of Standard Tank (see Owner's Manual)	59.8
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	55.6
Actual Amount of Solvent Used in Test	55.6
1/3 of Usable Capacity	19.9

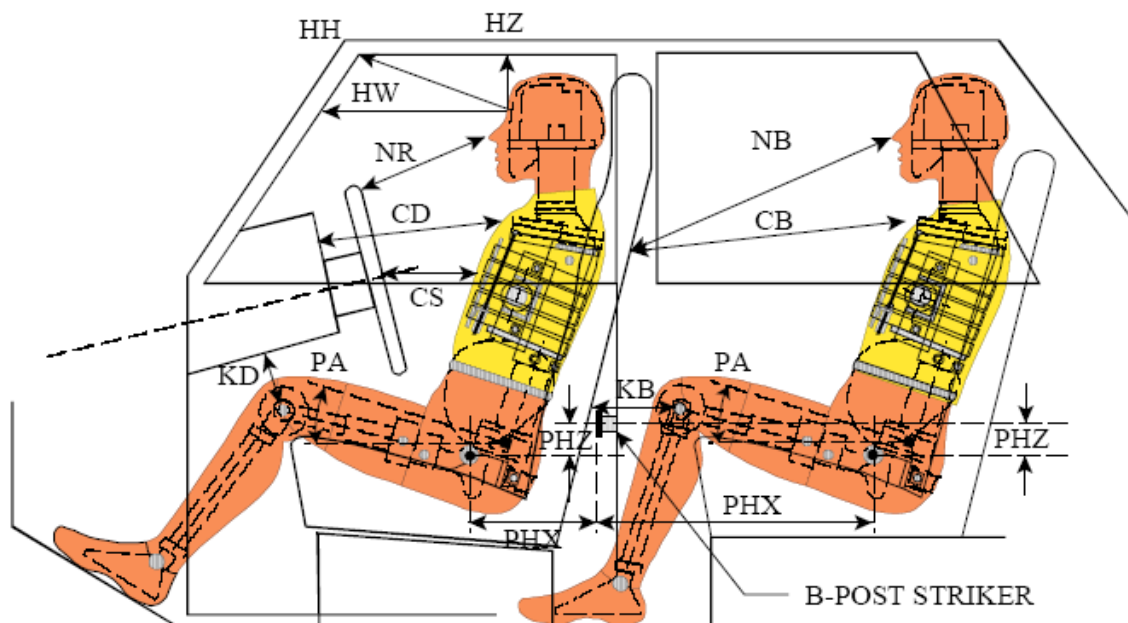
Is the Actual Amount of Solvent Used in the test equal to 93% $\pm$ 1% of the Usable Capacity stated in on Form No. 1? ☒ YES ☐ NO

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
Test Program: NCAP Side Impact

NHTSA No.: M20140304
Test Date: 1/28/14



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

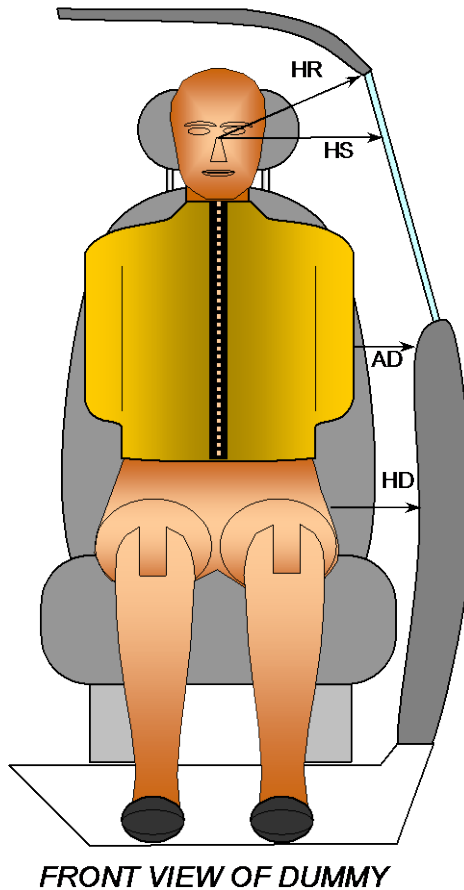
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	421			
HW		Header to Windshield	643			
HZ	HZ	Head to Roof Liner	183		282	
NR	NB	Nose to Rim/Seat Back	486		596	
CD	CB	Chest to Dash/Seat Back	593		553	
CS		Chest to Steering Wheel	341			
KD(L)/KDA(L) ⁰	KB(L)/KBA(L) ⁰	Left Knee to Dash/Seat Back	177	29.0	280	10.0
KD(R)/KDA(R) ⁰	KB(R)/KBA(R) ⁰	Right Knee to Dash/Seat Back	157	25.0	280	10.0
PAX ⁰	PAX ⁰	Pelvic Tilt Angle X		0.0		21.4
	PAY ⁰	Pelvic Tilt Angle Y				0.8
PHX	PHX	Hip Point to Striker (X-Axis)	145		221	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	63		193	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

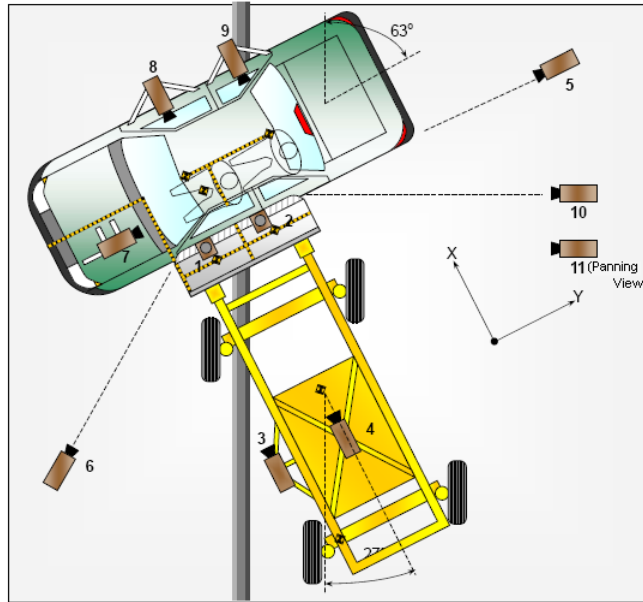


Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	215	249
HS	Head to Side Window	mm	349	377
AD	Arm to Door	mm	95	137
HD	H-Point to Door	mm	161	151

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	0	385	-5724	8.5	1000
2	Overhead Close-up	0	840	-5724	25	1000
3	Left Impact Point (MDB)	-1782	-850	-821	25	1000
4	Side Overall (MDB)	-2150	0	-1438	8.5	1000
5	Rear	-275	7985	-1309	Zoom	1000
6	Left Front	-3165	-4070	-1352	Zoom	1000
7	Driver Front (OB)				12.5	1000
8	Driver Side (OB)				8.5	1000
9	Passenger Side (OB)				8.5	1000
10	Real-time Left Rear				Zoom	30
11	Real-time Inrun				Zoom	30

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

*All measurements accurate to ± 6 mm.

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

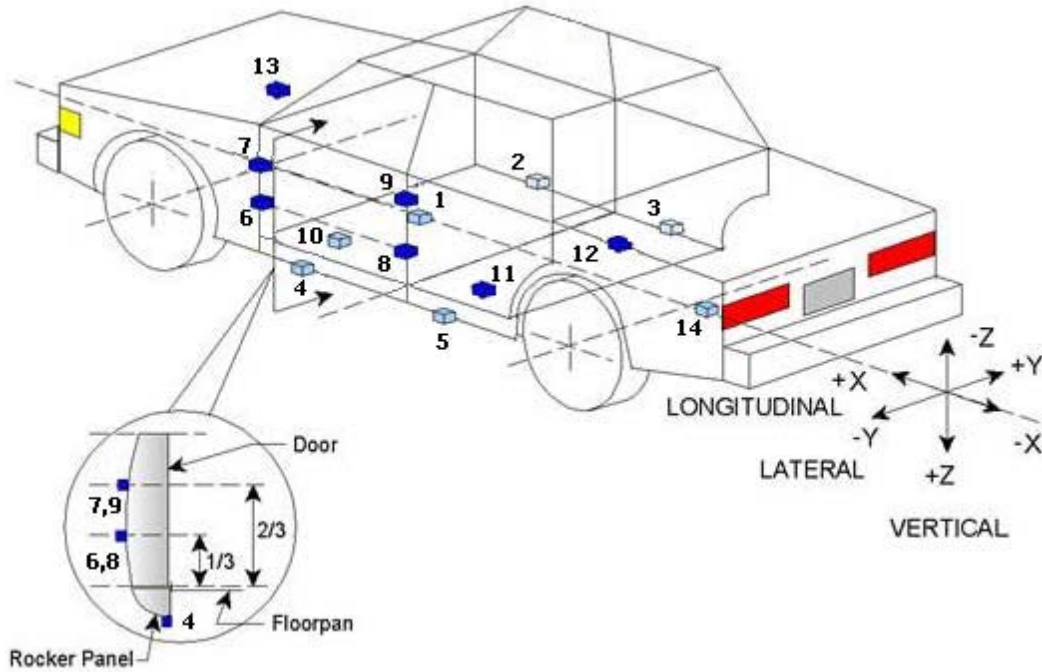
INSTRUMENTATION

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

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14



TEST VEHICLE ACCELEROMETER LOCATIONS

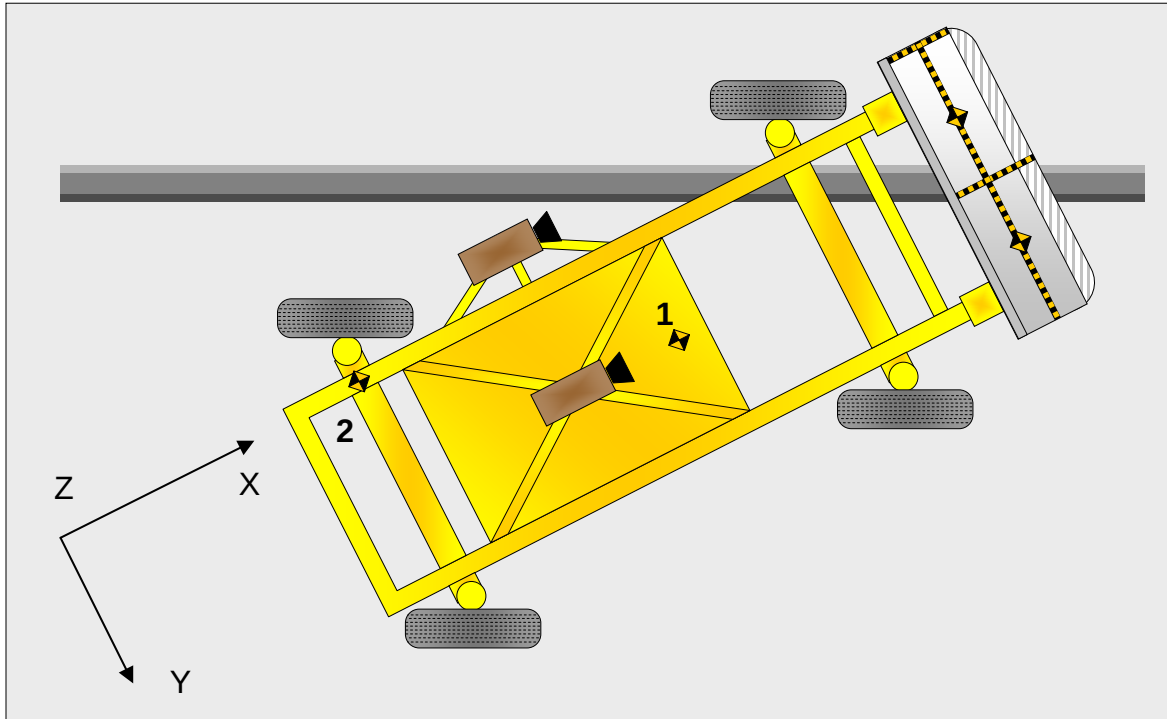
Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2737	55	-373
2	Right Sill at Front Seat	2712	691	-351
3	Right Sill at Rear Seat	1892	630	-361
4	Left Sill at Front Door	2733	-692	-345
5	Left Sill at Rear Door	1895	-630	-358
6	A-Post Lower	3145	-857	-536
7	A-Post Middle	3155	-845	-897
8	B-Post Lower	2110	-830	-589
9	B-Post Middle	2070	-832	-932
10	Front Seat Track	2410	-597	-402
11	Rear Seat Structure	1647	-395	-447
12	Right Rear Occ. Compartment	1647	415	-466
13	Engine Block	3854	5	-891
14	Rear Above Axle	1120	-5	-555

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: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14



MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	MDB CG	-2179	0	-505
2	MDB Rear	-3648	-650	-618

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

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
Test Program: NCAP Side Impact

NHTSA No.: M20140304
Test Date: 1/28/14

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES2-re)	Rear Seat Dummy (SID-IIs)
Face	SCAB	SCAB
Top of Head	SCAB, Headliner	SCAB
Left Side of Head	SCAB	SCAB
Back of Head	SCAB, Headliner	SCAB
Left Shoulder	Torso/Pelvis Bag	Door Panel
Upper Torso	Seat Side Bolster	Door Panel
Lower Torso	Seat Side Bolster	Pelvis Bag
Left Hip	Torso/Pelvis Bag	Pelvis Bag
Left Knee	None	Door Panel

POST TEST DOOR PERFORMANCE

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

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

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Major Deformation
Sill Separation	None Visible
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	N/A

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2700
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		411
Actual Impact Point (Aft of Front Axle)	mm		415
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact point	-4
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact point	-2

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
Test Program: NCAP Side Impact

NHTSA No.: M20140304
Test Date: 1/28/14

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel Base of Framework Carriage	2591
C.G. Location aft of Front Axle	1111

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	389.0	293.2	682.2
Right	kg	392.4	293.2	685.6
Ratio	%	57.1	42.9	100.0
Totals	kg	781.4	586.4	1367.8

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.58
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.59
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27.0

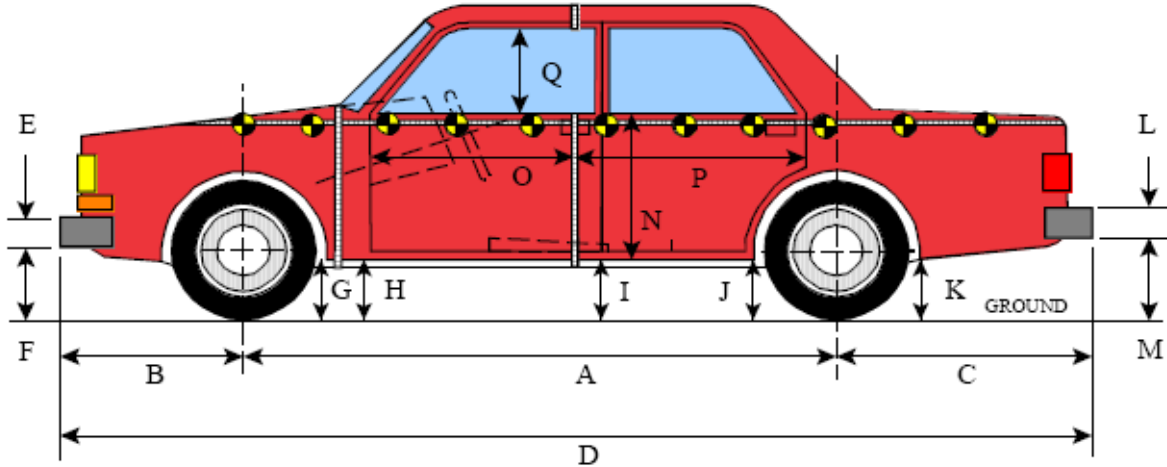
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	238
B	Top of Bumper	533	800	Right	169
C	Mid-Level	686	800	Left	150
D	Top of Stack	813	800	Left	169

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

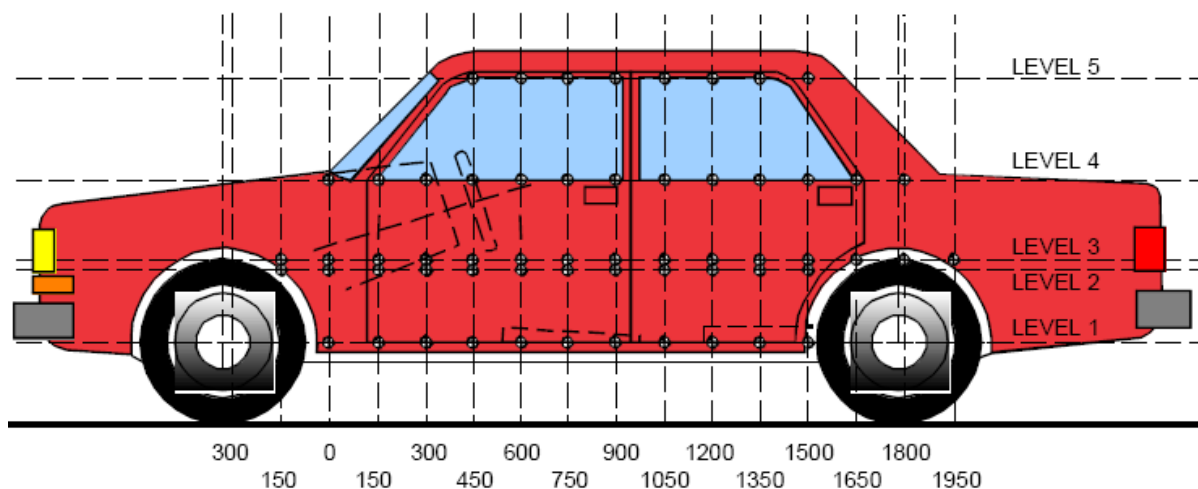


LEFT SIDE VIEW

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	2700	2697	3
B	Front Axle to Front Surface of Vehicle	1020	965	55
C	Rear Axle to Rear Surface of Vehicle	925	923	2
D	Total Length at Centerline	4645	4690	-45
E	Front Bumper Thickness	112	112	0
F	Front Bumper Bottom to Ground	505	473	32
G	Sill Height at Front Wheel Well	410	425	-15
H	Sill Height at Front Door Leading Edge	425	429	-4
I	Sill Height at B-Pillar	478	507	-29
J1	Sill Height at Rear Wheel Well	465	522	-57
J2	Pinch Weld Height at Rear Wheel Well	253	280	-27
K	Sill Height Aft of Rear Wheel Well	524	562	-38
L	Rear Bumper Thickness	127	127	0
M	Rear Bumper Bottom to Ground	412	445	-33
N	Sill Height to Window Bottom Sill	810	750	60
O	Front Door Leading Edge to Impact CL	793	765	28
P	Rear Door Trailing Edge to Impact CL	1313	1283	30
Q	Front Window Opening	443	440	3
R	Right Side Length	4510	4525	-15
S	Left Side Length	4510	4585	-75
T	Vehicle Width at B Pillar	1830	1785	45

DATA SHEET NO. 11**TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**Test Vehicle: 2014 Jeep Cherokee 5-Door SUVNHTSA No.: M20140304Test Program: NCAP Side ImpactTest Date: 1/28/14**LEFT SIDE VIEW****MAXIMUM EXTERIOR CRUSH MEASUREMENTS**

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance From Impact
1	Sill Top	396	116	1200
2	Driver Hip Point	652	139	1800
3	Mid-Door	680	146	1650
4	Window Sill	1047	43	1350
5	Window Top	1554	6	2100

NOTE: The above measurements were 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: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

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	771	0	0	0	0	772	0	0	0	0	-1	0
-300	0	0	0	804	0	0	0	0	801	0	0	0	0	3	0
-150	0	0	0	825	0	0	0	0	820	0	0	0	0	5	0
0	896	919	920	836	0	---	1	918	919	836	0	---	1	1	0
150	893	906	906	841	0	840	833	831	839	0	53	73	75	2	0
300	898	904	904	844	0	808	807	815	842	0	90	97	89	2	0
450	901	905	906	845	0	797	799	798	841	0	104	106	108	4	0
600	900	906	907	847	0	792	788	778	840	0	108	118	129	7	0
750	898	907	908	853	0	791	771	763	843	0	107	136	145	10	0
900	895	908	909	861	623	790	771	764	847	623	105	137	145	14	0
1050	892	909	910	868	628	786	792	795	847	628	106	117	115	21	0
1200	886	907	908	872	631	770	790	792	832	630	116	117	116	40	1
1350	880	906	907	877	631	772	790	793	834	628	108	116	114	43	3
1500	874	904	906	880	630	774	787	774	843	627	100	117	132	37	3
1650	873	904	905	881	628	791	768	759	841	626	82	136	146	40	2
1800	874	913	915	881	626	---	1	774	770	842	624	---	1	139	145
1950	0	917	919	905	622	0	---	1	---	1	881	619	0	---	1
2100	0	0	0	876	616	0	0	0	852	610	0	0	0	24	6
2250	0	0	0	871	607	0	0	0	865	606	0	0	0	6	1
2400	0	0	0	865	591	0	0	0	861	590	0	0	0	4	1
2550	0	0	0	855	0	0	0	0	852	0	0	0	0	3	0
2700	0	0	0	833	0	0	0	0	833	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.

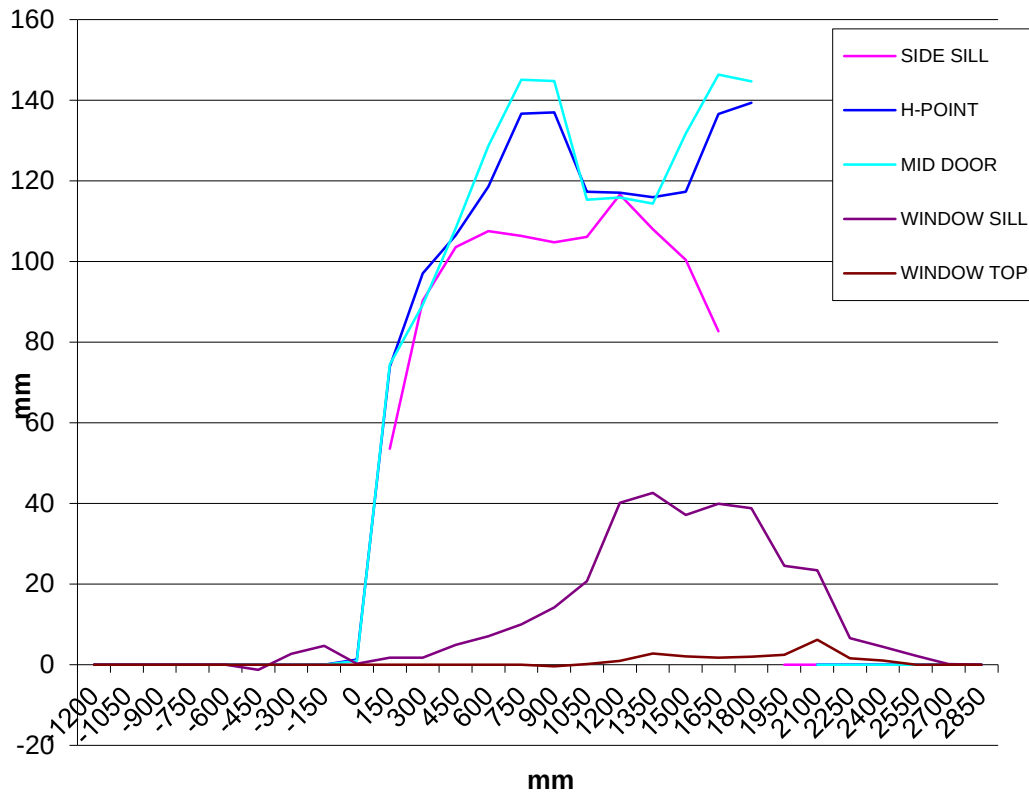
Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point.

¹ Measurement point missing post-test.

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

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
Test Program: NCAP Side Impact

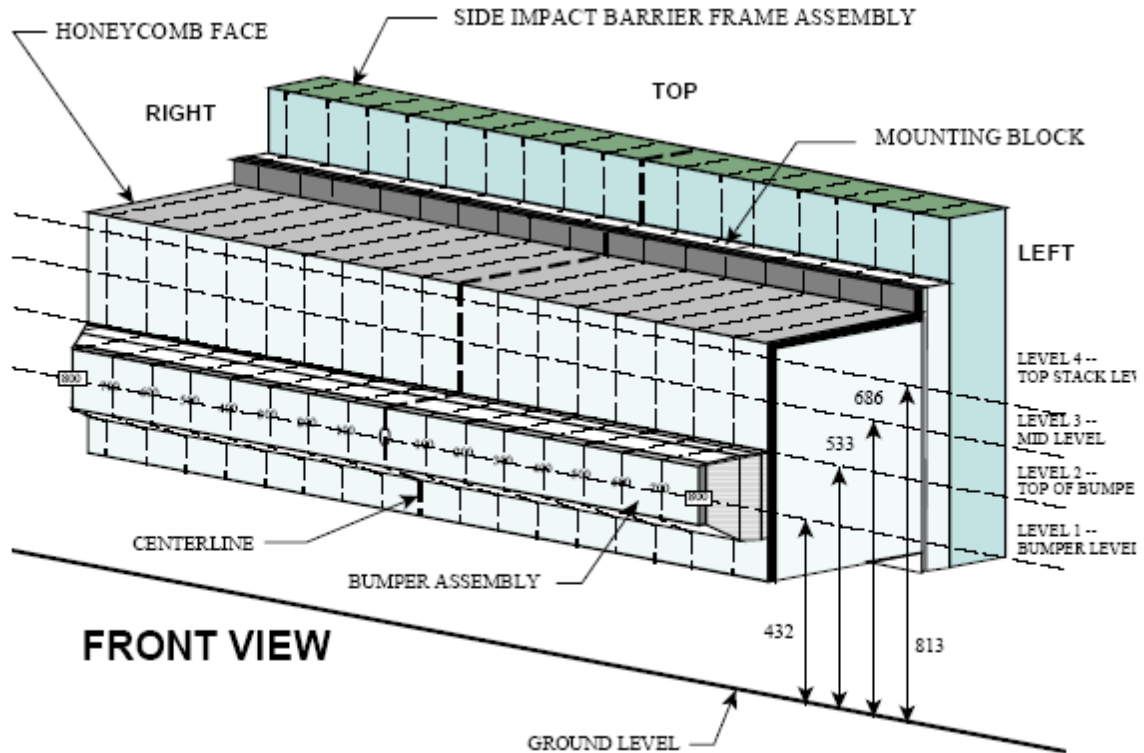
NHTSA No.: M20140304
Test Date: 1/28/14



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14



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	108	97	102	92	100	113	134	140	102	96	98	100	108	117	122	131	169
2	127	107	101	109	118	114	120	131	107	82	73	73	76	85	99	120	150
3	169	158	146	140	136	133	132	---	---	128	128	127	126	125	126	135	151
4	238	226	212	202	200	199	198	197	196	195	195	194	194	193	195	210	233

¹ Measurement point missing post-test

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

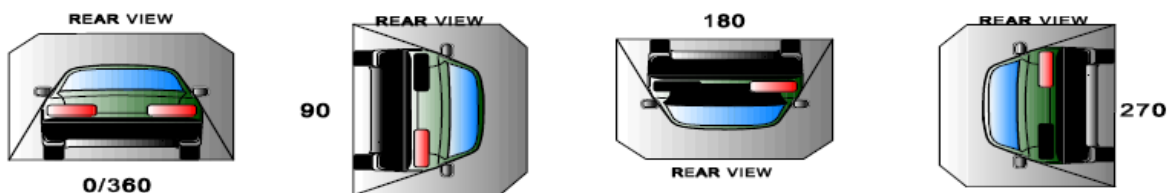
Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14

Test Time: 15:04 **Temperature:** 20.6°C

- 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	90	330	420
90 to 180	90	330	840
180 to 270	90	330	1260
270 to 360	90	330	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

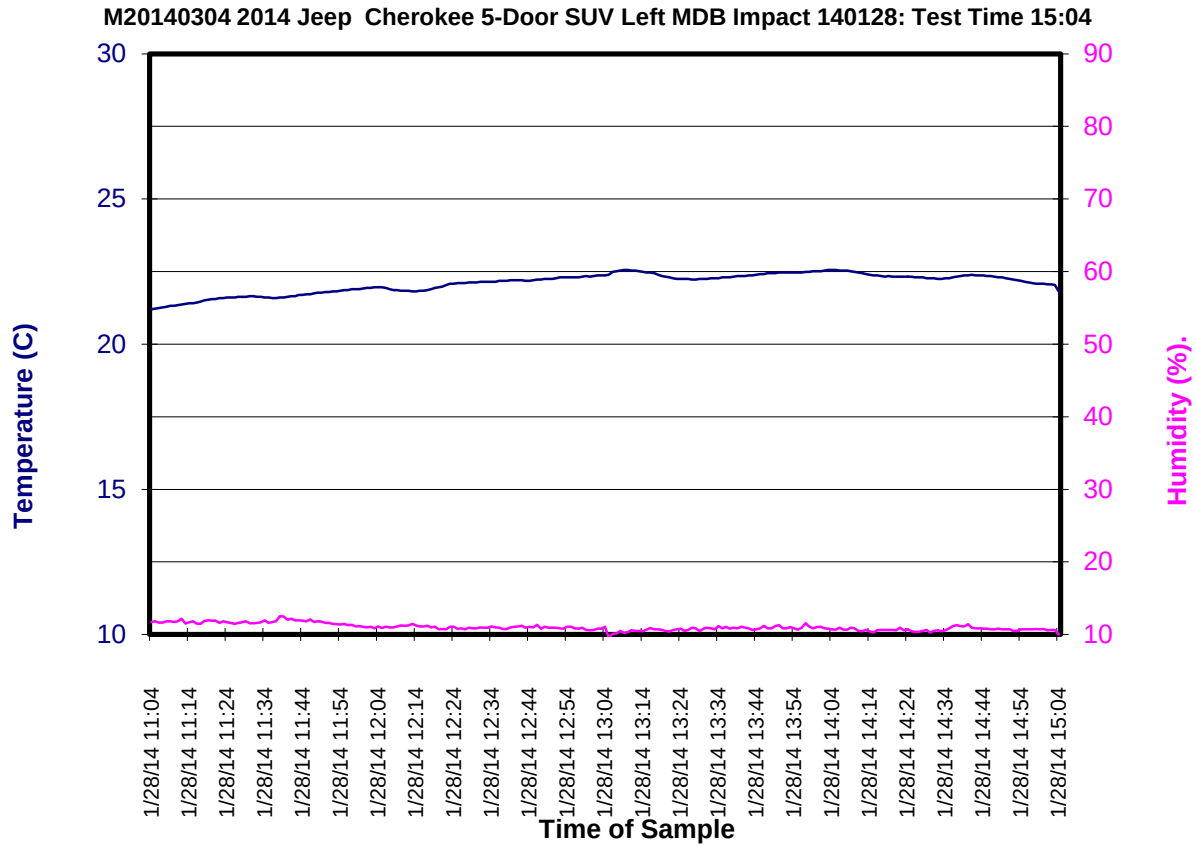
Test Phase	Spillage Location
0 to 90	None
90 to 180	None
180 to 270	None
270 to 360	None

DATA SHEET NO. 14

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2014 Jeep Cherokee 5-Door SUV
 Test Program: NCAP Side Impact

NHTSA No.: M20140304
 Test Date: 1/28/14



APPENDIX A
PHOTOGRAPHS

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083	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-47
084	Pre-Test Front View of MDB Impactor Face	A-47
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086	Pre-Test Top View of MDB Impactor Face	A-48
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097	FMVSS No. 301 Static Rollover 90 Degrees	A-54
098	FMVSS No. 301 Static Rollover 180 Degrees	A-54
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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



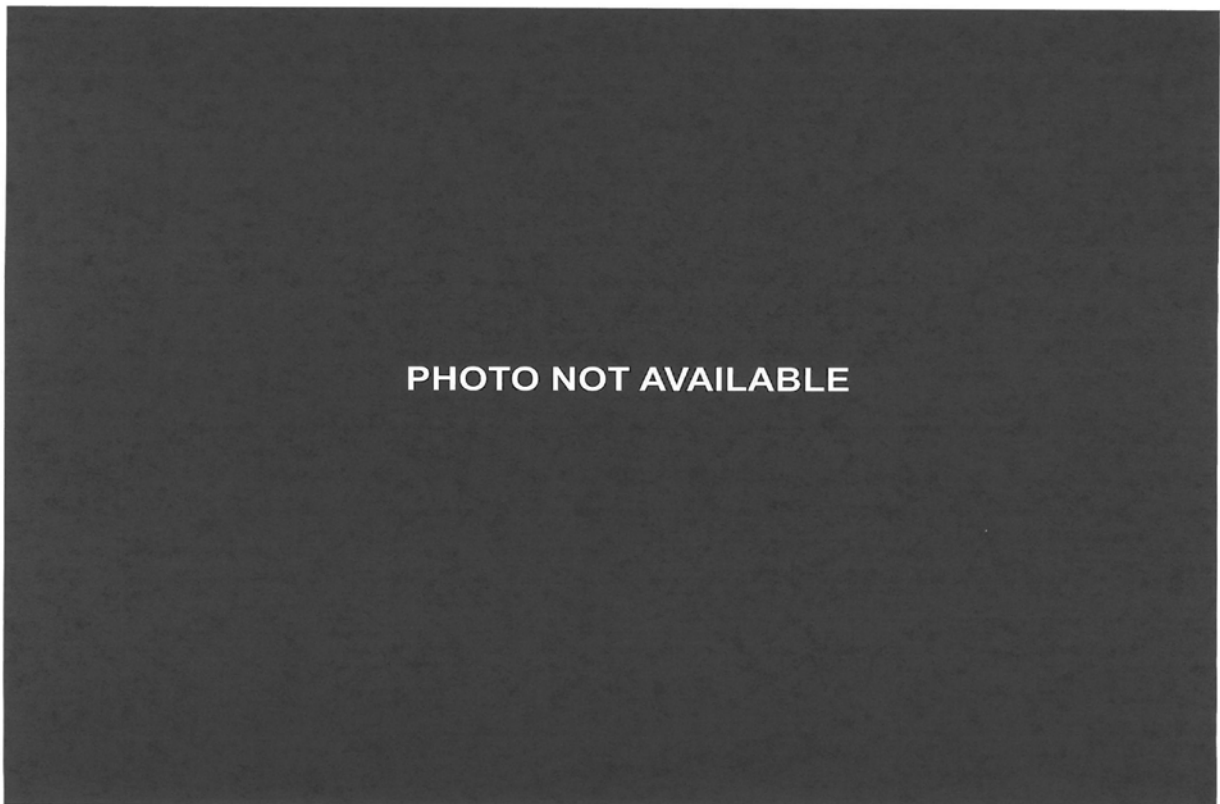
003 Pre-Test Front View of Test Vehicle



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



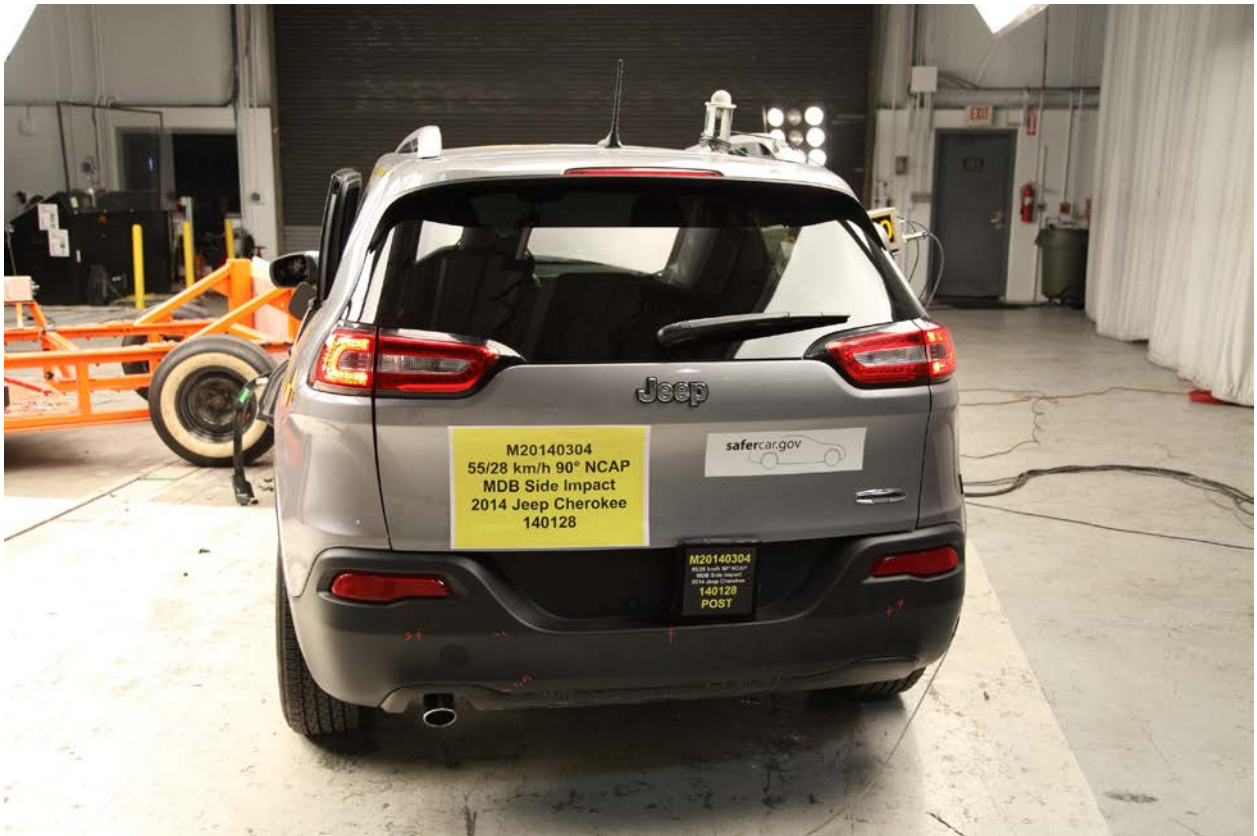
009 Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



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 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



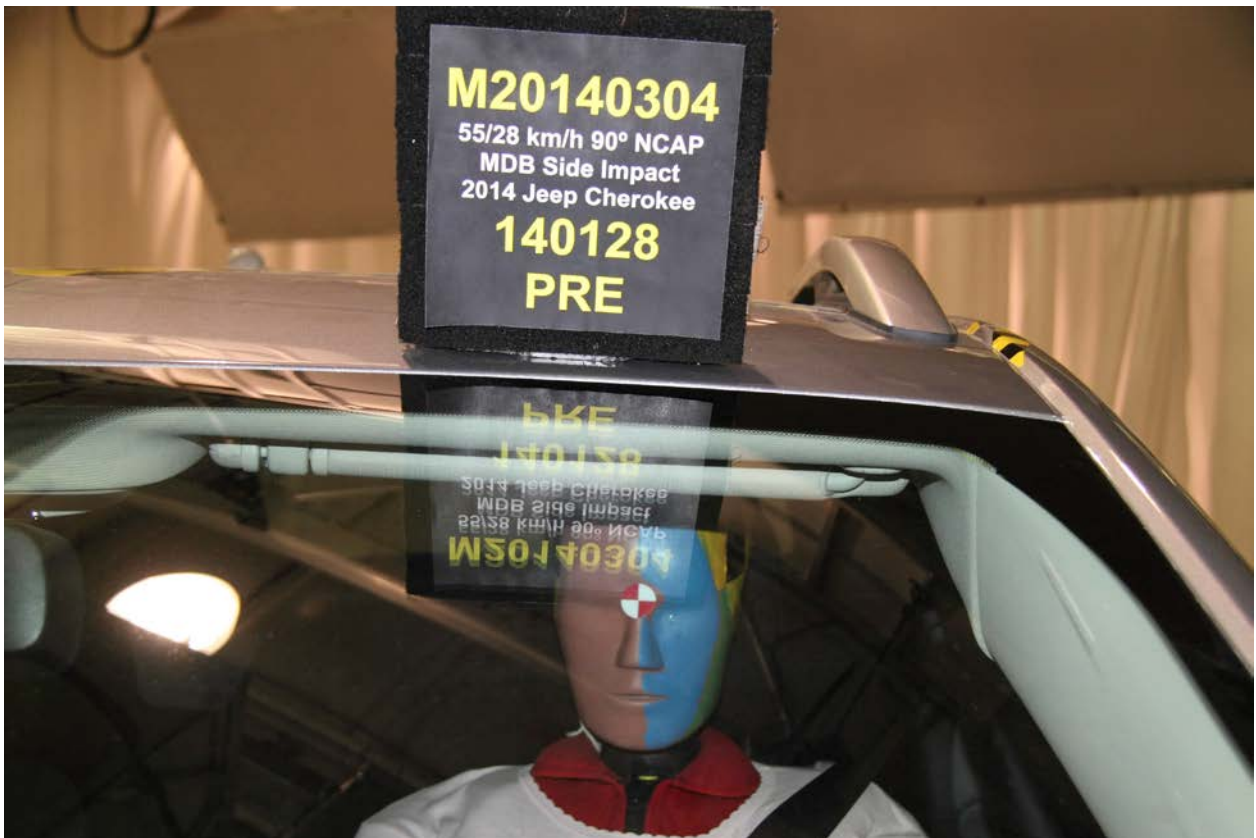
028 Pre-Test Left Side View of Driver Dummy Shoulder and Door Top



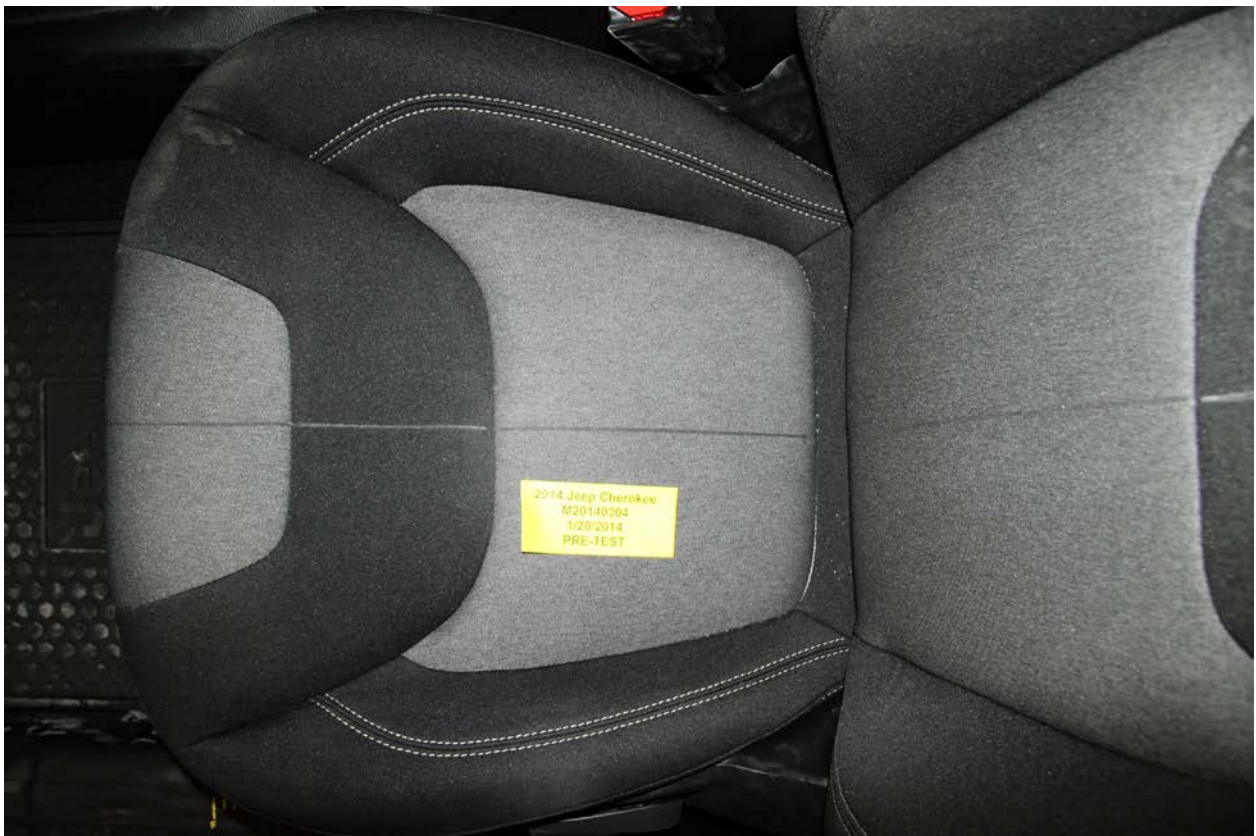
029 Post-Test Left Side View of Driver Dummy Shoulder and Door Top



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



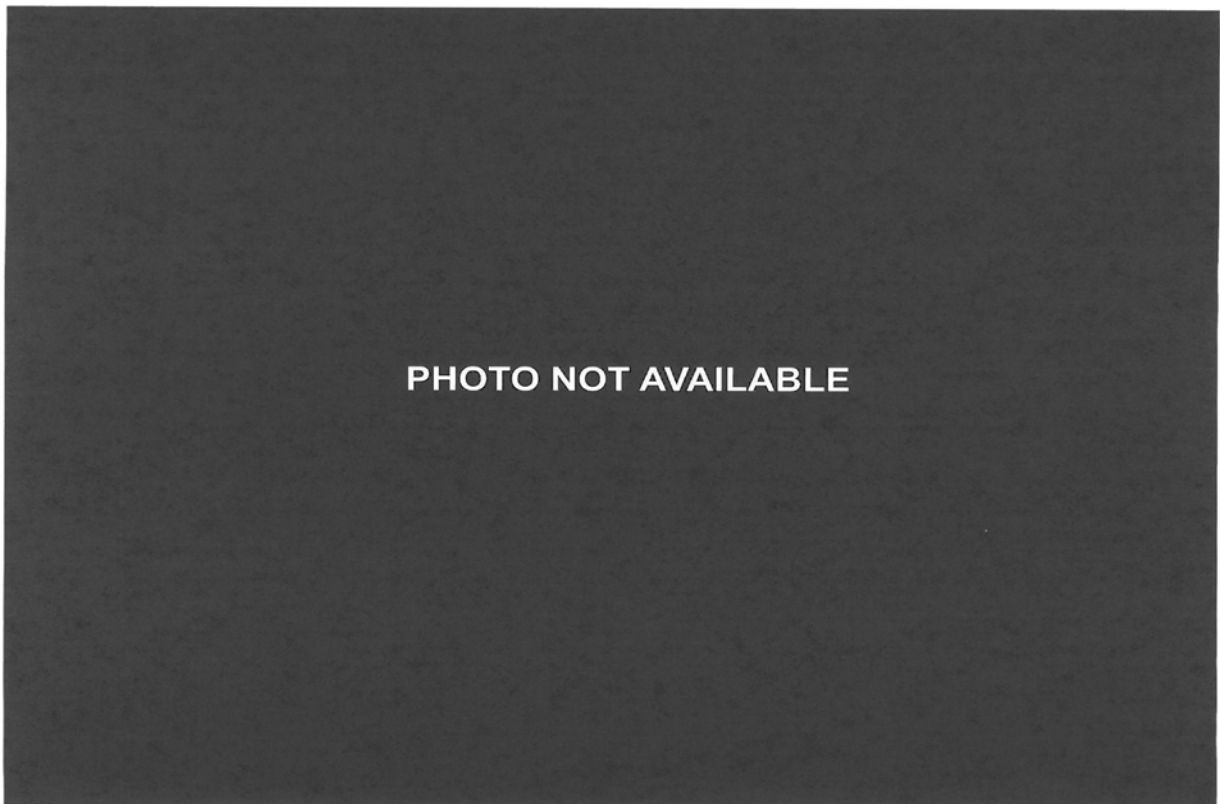
037 View of Disengaged Parking Brake



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



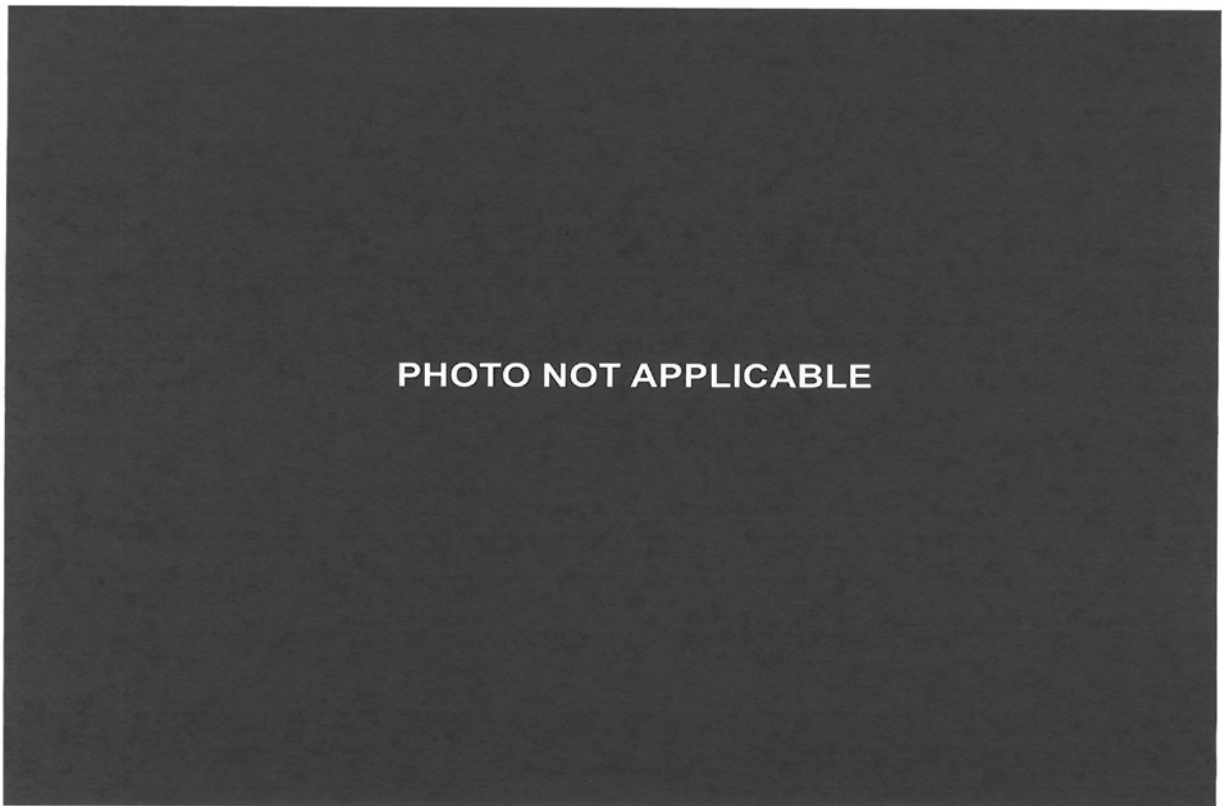
049 Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



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



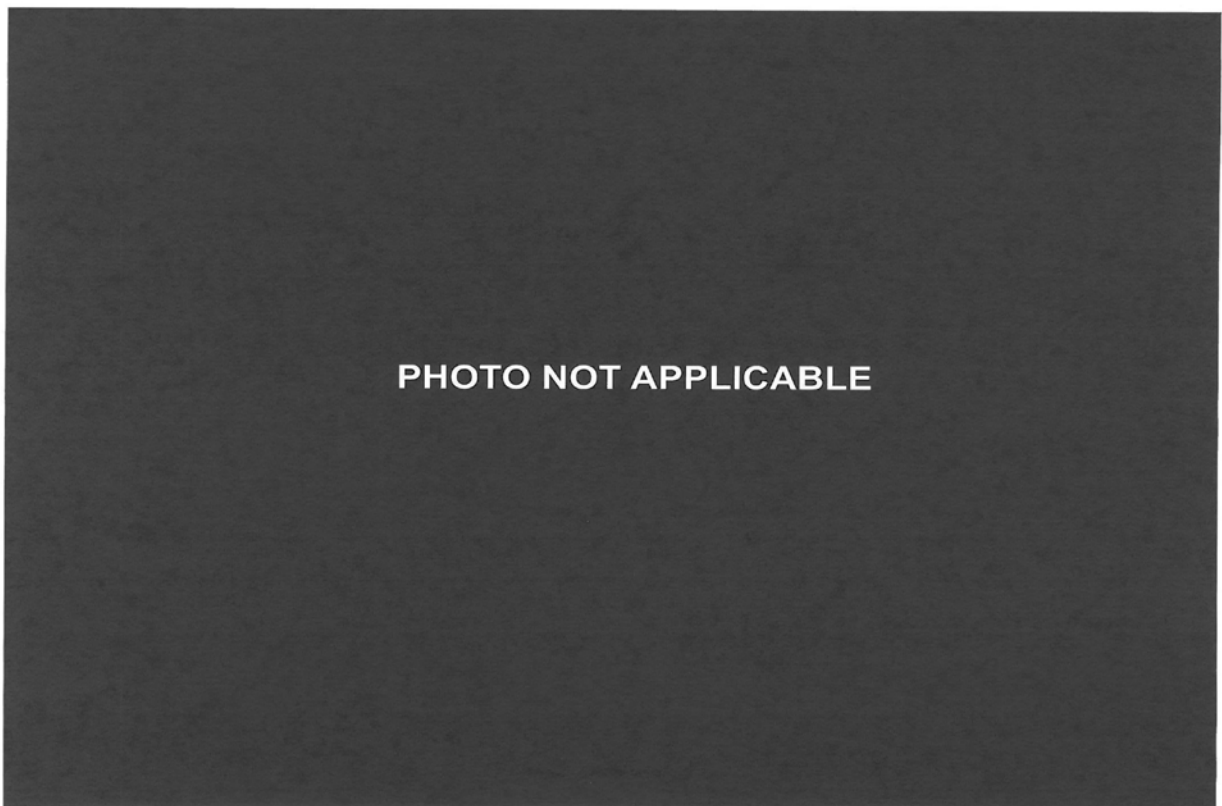
051 Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View



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's Head Showing Dummy's 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

PHOTO NOT AVAILABLE

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



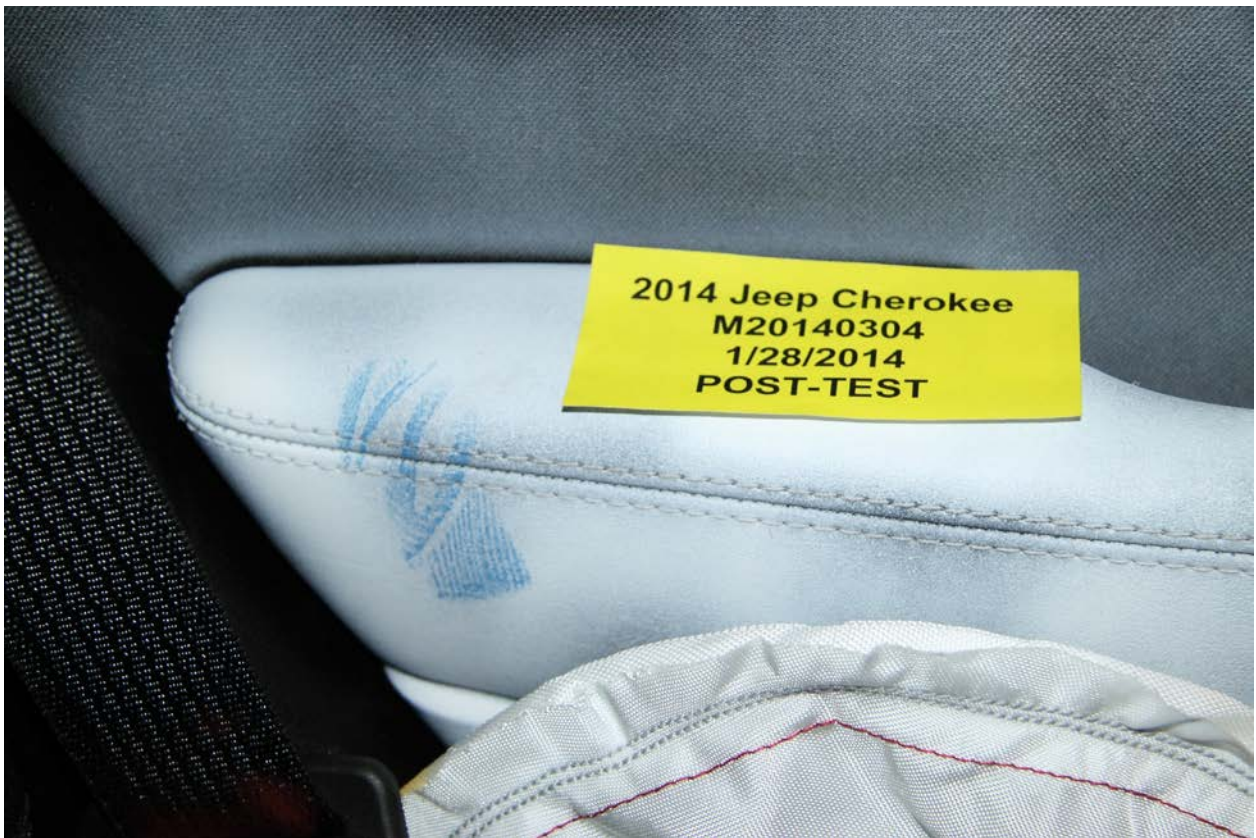
074 Post-Test Passenger Inner Door Panel View

PHOTO NOT APPLICABLE

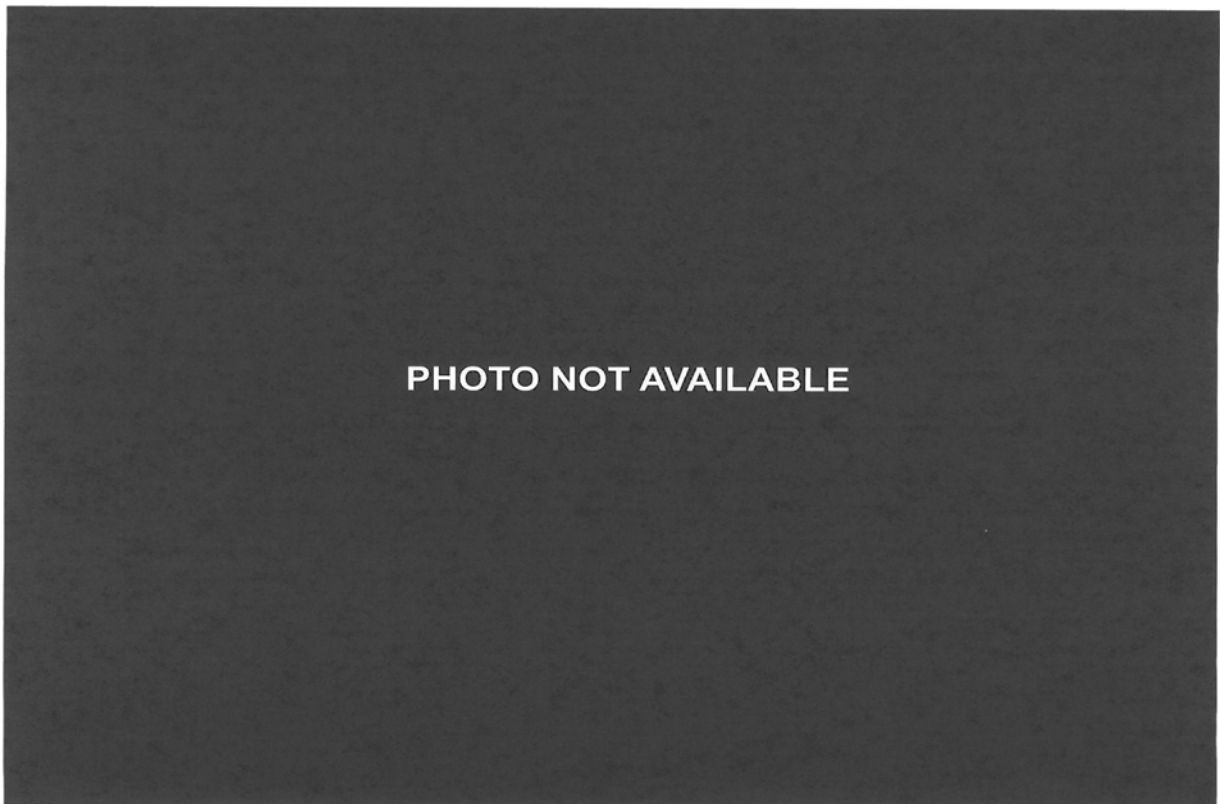
075 Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View



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



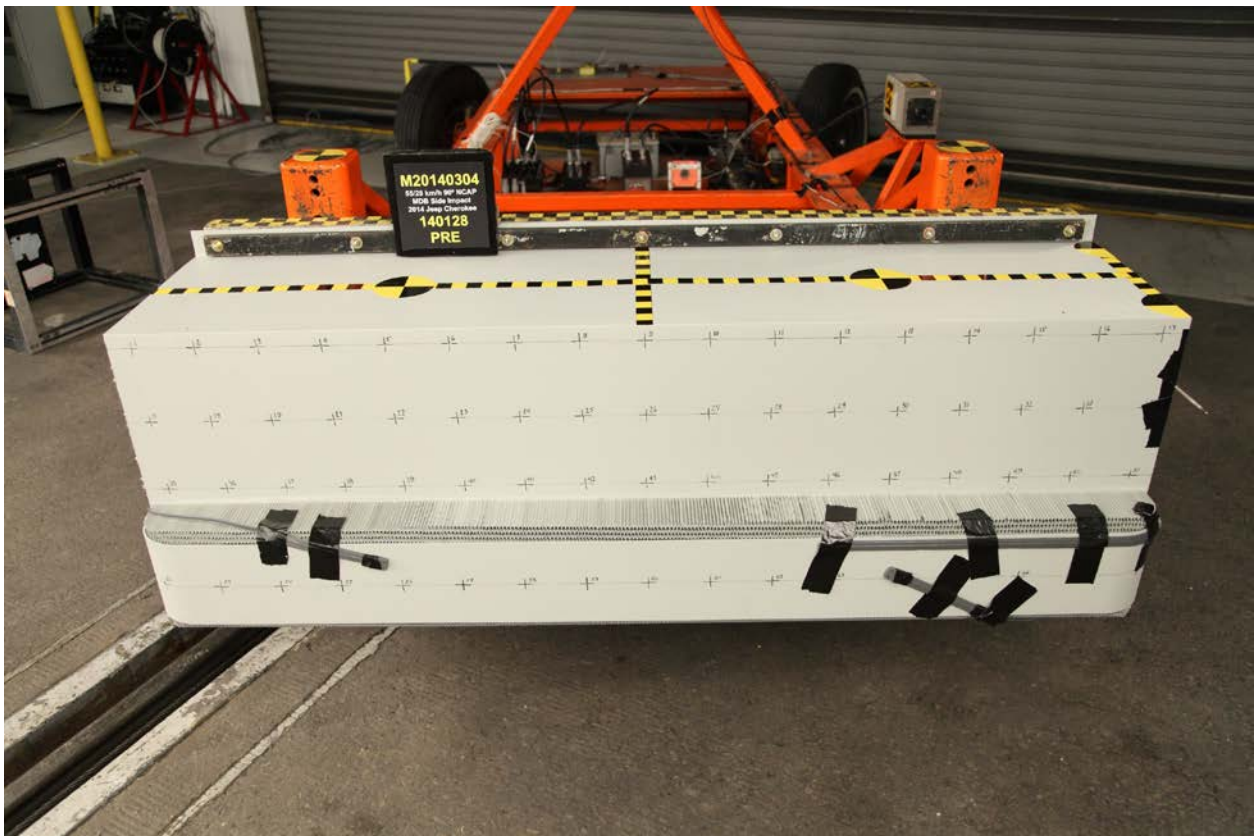
081 Post-Test Rear Passenger Dummy Close-Up Knee Contact View



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



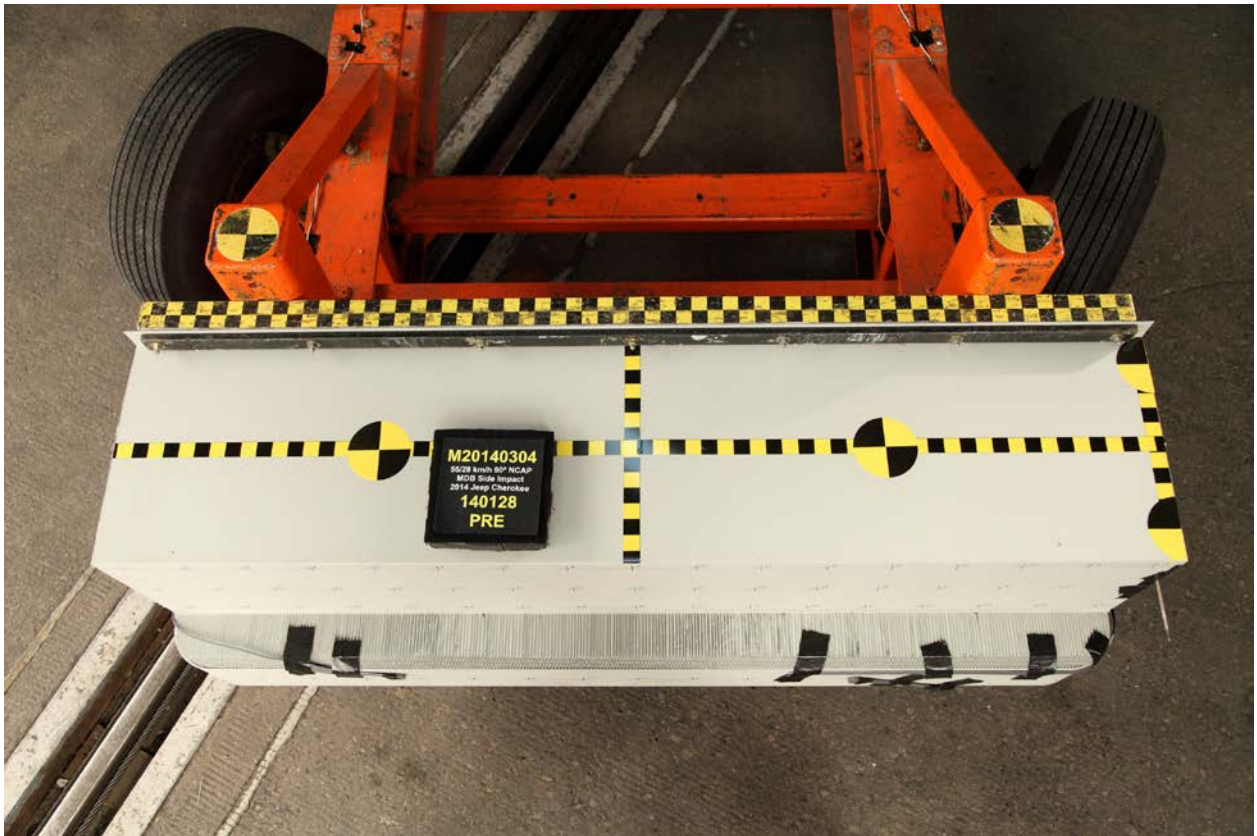
083 Post-Test View of Fuel Filler Cap or Fuel Filler Neck



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



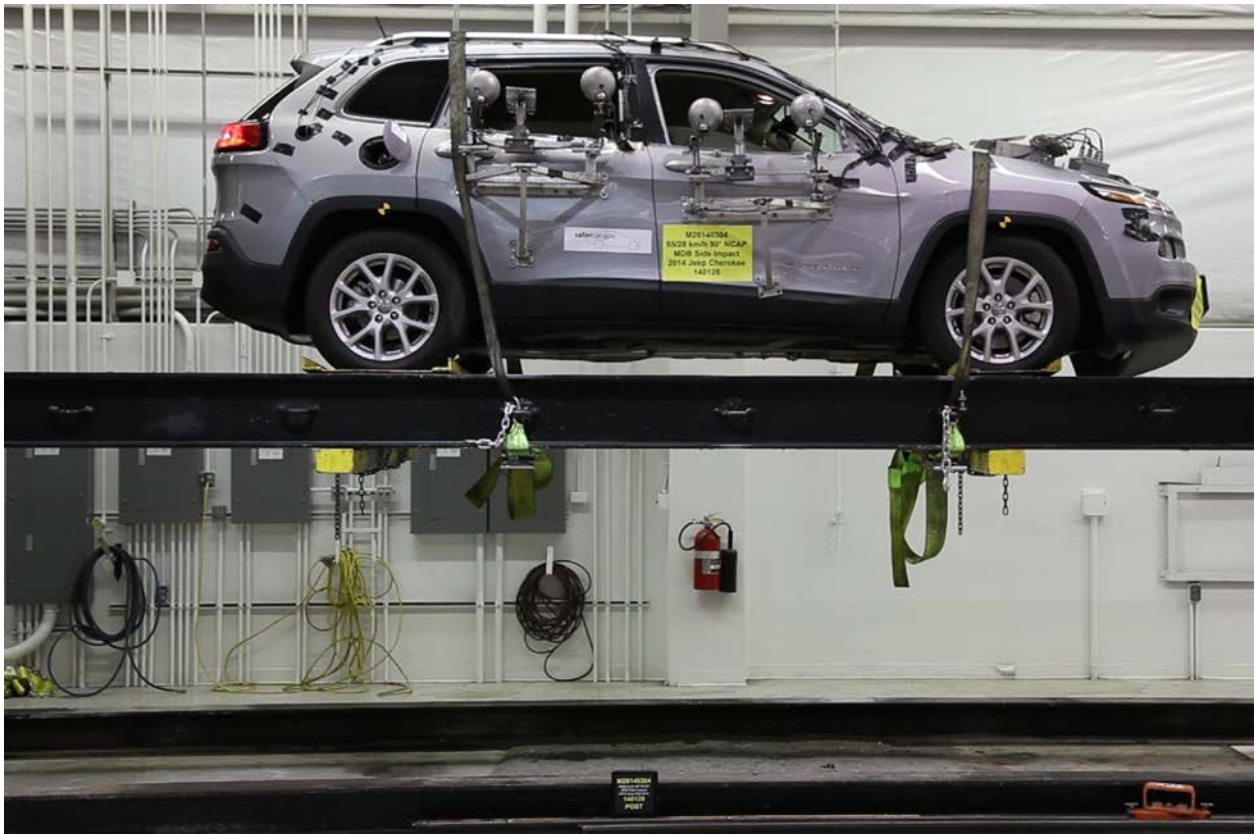
091 Post-Test Right Side View of MDB Impactor Face



092 Close-Up View of Vehicle Certification Label



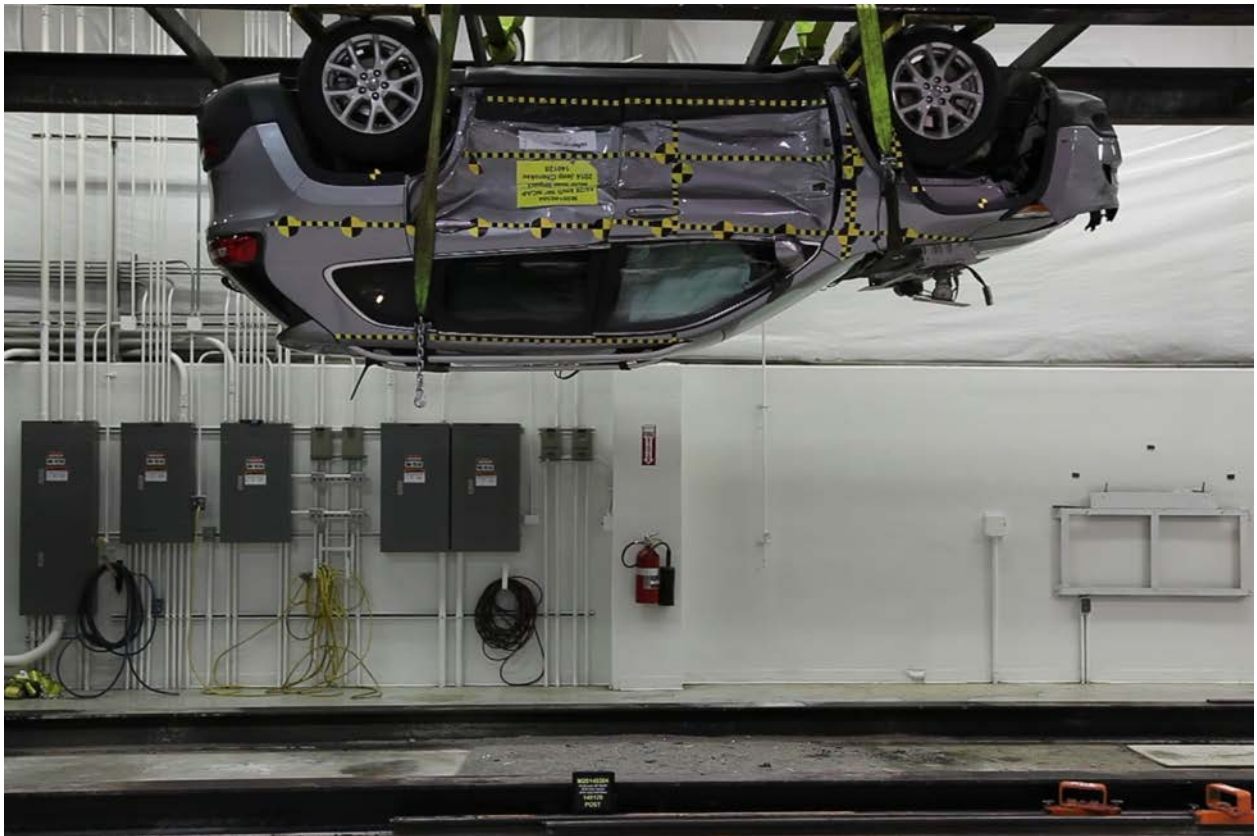
095 Post-Test Primary and Redundant Speed Trap Read-Out



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

**2014 MODEL YEAR
CHEROKEE LATITUDE FWD**

THIS VEHICLE IS MANUFACTURED TO MEET SPECIFIC UNITED STATES REQUIREMENTS. THIS VEHICLE IS NOT MANUFACTURED FOR SALE OR REGISTRATION OUTSIDE OF THE UNITED STATES.

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL INCLUDING DEALER PREPARATION

Base Price: **\$24,495**

JEEP CHEROKEE LATITUDE FWD
 Exterior Color: Billet Silver Metallic Clear Coat Exterior Paint
 Interior Color: Moroccan - Black Interior Color
 Interior: Cloth Low-Back Bucket Seats
 Engine: 2.4-Liter 14 Multiair® Engine
 Transmission: 9-Speed Automatic Transmission

STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)
FUNCTIONAL/SAFETY FEATURES
 Advanced Multistage Front Airbags
 Supplemental Side-Curtain Front and Rear Airbags
 Supplemental Front Seat-Mounted Side Airbags
 Supplemental Rear Seat Side Airbags
 Passenger Inflatable Knee-Bolster Airbag
 Driver Inflatable Knee-Bolster Airbag
 Keyless Entry with Panic Alarm
 Anti-Lock 4-Wheel Disc Brakes
 Electronic Roll Mitigation
 7th Speed Trac-Lock Control
 Brake Stability Control
 Hill Start Assist
 Trailer Sway Damping
 Cruise Control
 Tire Pressure Monitoring Display

INTERIOR FEATURES
 Uconnect® 5.0 AM/FM/2
 5.0-inch Touch Screen Display
 Integrated Voice Command with Bluetooth®
 USB Charging Port in Console Bin
 Audio Jack Input for Mobile Devices
 115-volt Auxiliary Power Outlet
 12-volt Auxiliary Power Outlet in Instrument Panel
 Rearview Mirror with Microphone
 Ambient LED Interior Lighting
 Front Passenger Fold-Flat-Forward Seat
 Rear 60 / 40 Folding Split Recline Seat
 Leather-Wrapped Steering Wheel
 Steering Wheel Mounted Audio Controls
 Tilt / Telescope Steering Column
 Cluster 3.5-inch TFT Black and White Display
 Electronic Vehicle Information Center

OPTIONAL EQUIPMENT
Customer Preferred Package 24J \$795
 Cold Weather Group
 Remote Start System
 Heated Front Seats
 Heated Steering Wheel
 All-Season Floor Mats
 Windshield Wiper De-Icer
 Power Heated Mirrors

DESTINATION CHARGE \$915

TOTAL PRICE: * \$26,285

WARRANTY COVERAGE
 5-year or 100,000-mile Powertrain Limited Warranty.
 3-year or 50,000-mile Basic Limited Warranty.
 24-hour towing assistance; certain restrictions apply.
 Ask Dealer for a copy of the limited warranties or see your owner's manual for details.

**5 YEAR / 100,000 MILE
POWERTRAIN WARRANTY**

Assembly Plant/Port of Entry: TOLEDO, OHIO, U.S.A.
 VIN: TC4PJLB4EHW144147
 LE VIN: 3185

SALES
 NAME: CHRYSLER JEEP DODGE
 ADDRESS: 14500 2553
 CITY: WARREN, MI 48090-2553

SALES
 NAME: CHRYSLER JEEP DODGE
 ADDRESS: 14500 2553
 CITY: WARREN, MI 48090-2553

For more information visit: www.jeep.com
or call 1-877-IAM-JEEP

Chrysler Group LLC

EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy
25 MPG
 combined city/hwy 22 city 31 highway
 4.0 gallons per 100 miles

You save \$1,000
 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$2,100

Fuel Economy & Greenhouse Gas Rating (tailpipe only) Smog Rating (tailpipe only)

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. This average new vehicle gets 23 MPG and cost \$11,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.50 per gallon. MPGe is miles per gallon (tailpipe only). Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
 Calculate personalized estimates and compare vehicles

GOVERNMENT 5-STAR SAFETY RATINGS
 This vehicle has not been rated by the government for frontal crash, side crash or rollover risk.

Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

PARTS CONTENT INFORMATION
 FOR VEHICLES IN THIS CARLINE:
 U.S./CANADIAN PARTS CONTENT: 70 %
 NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
 FINAL ASSEMBLY POINT:
 TOLEDO, OHIO, U.S.A.
 COUNTRY OF ORIGIN:
 ENGINE: UNITED STATES
 TRANSMISSION: UNITED STATES

102 Monroney Label

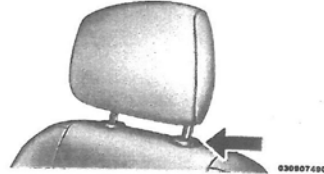
156 UNDERSTANDING THE FEATURES OF YOUR VEHICLE

Active Head Restraints — Front Seats

The front driver and passenger seats are equipped with Active Head Restraints (AHR). In the event of a rear impact the AHRs will automatically extend forward minimizing the gap between the back of the occupants head and the AHR.

The AHRs will automatically return to their normal position following a rear impact. If the AHRs do not return to their normal position see your authorized dealer immediately.

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, press the push button, located at the base of the head restraint, and push downward on the head restraint.



Push Button

NOTE: The head restraints should only be removed by qualified technicians, for service purposes only. If either of the head restraints require removal, see your authorized dealer.

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

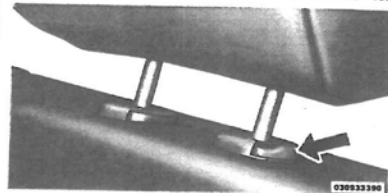
WARNING!
Do not place items over the top of the Active Head Restraint, such as coats, seat covers or portable DVD players. These items may interfere with the operation of the Active Head Restraint in the event of a collision and could result in serious injury or death.

Rear Head Restraints

The rear head restraints have two positions UP and DOWN. When the center seat is being occupied the head restraint should be in the raised position. When there are no occupants in the center seat the head restraint can be lowered for maximum visibility for the driver.

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, press the push button, located at the base of the head restraint, and push downward on the head restraint.

UNDERSTANDING THE FEATURES OF YOUR VEHICLE 157



Push Button

60/40 Split Folding Rear Seat With Fold-Flat Feature

To provide additional storage area, each rear seat can be folded flat. This allows for extended cargo space and still maintains some rear seating room.

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) Primary vs. Time	B-8
15	Passenger Head Acceleration (Y) Primary vs. Time	B-8
16	Passenger Head Acceleration (Z) Primary vs. Time	B-8
17	Passenger Head Resultant Acceleration Primary vs. Time	B-9
18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-9
19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-9
20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-9
21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-10
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-10
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-10
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-10

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

Additional Driver & Passenger Dummy Instrumentation Data

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

Vehicle Instrumentation Data

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

MDB Instrumentation Data

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

NHTSA

Test Lab: CTF

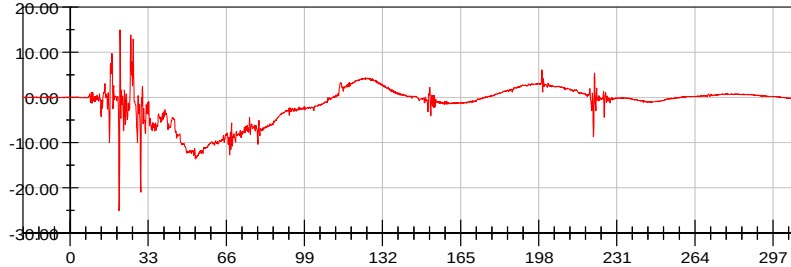
Test Number: 140128 (M20140304)

Test Date: 01/28/2014

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>

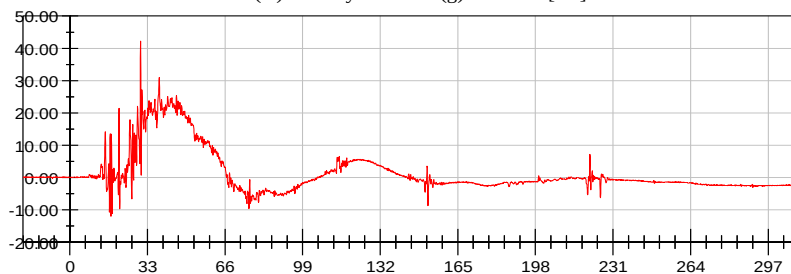
14.94 g at 21.12 ms

<Min>

-25.06 g at 20.72 ms

CFC_1000

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



<Max>

42.25 g at 30.08 ms

<Min>

-12.05 g at 17.44 ms

CFC_1000

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



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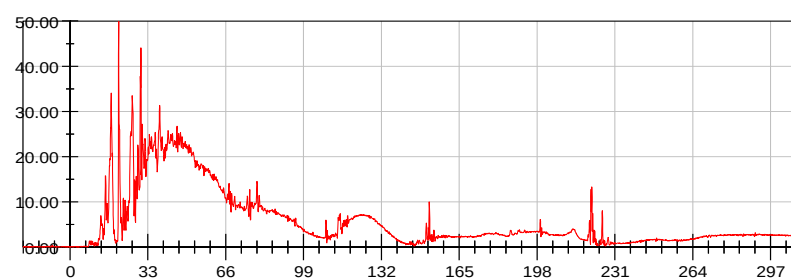
32.83 g at 26.40 ms

<Min>

-43.99 g at 20.64 ms

CFC_1000

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



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49.90 g at 20.64 ms

<Min>

0.03 g at -17.92 ms

CFC_1000



NHTSA

Test Lab: CTF

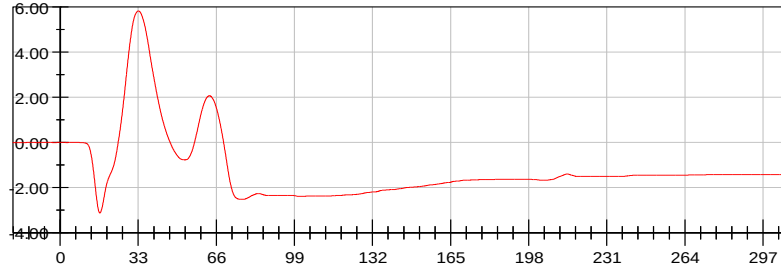
Test Number: 140128 (M20140304)

Test Date: 01/28/2014

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>

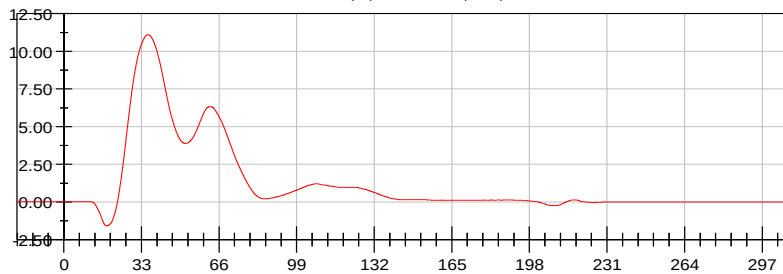
5.83 mm at 33.12 ms

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-3.12 mm at 16.80 ms

CFC_180

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



<Max>

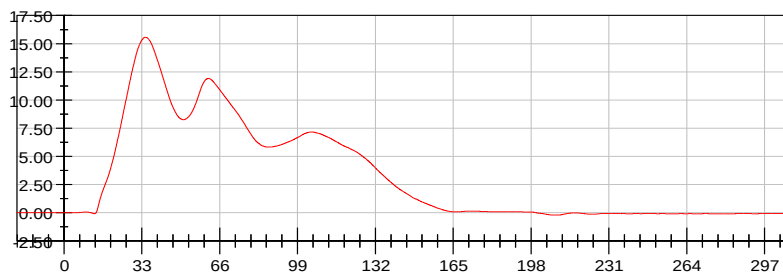
11.11 mm at 35.76 ms

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-1.60 mm at 18.24 ms

CFC_180

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



<Max>

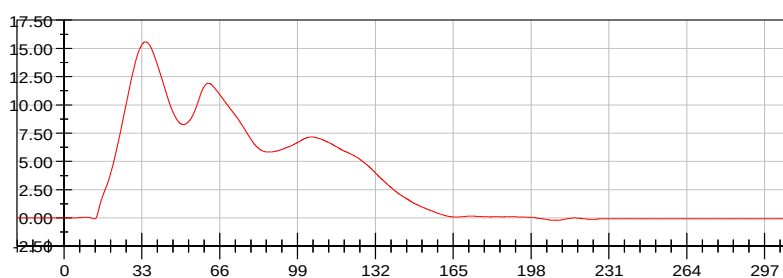
15.57 mm at 34.56 ms

<Min>

-0.21 mm at 206.96 ms

CFC_180

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



<Max>

15.57 mm at 34.56 ms

<Min>

-0.21 mm at 206.96 ms

CFC_180



NHTSA

Test Lab: CTF

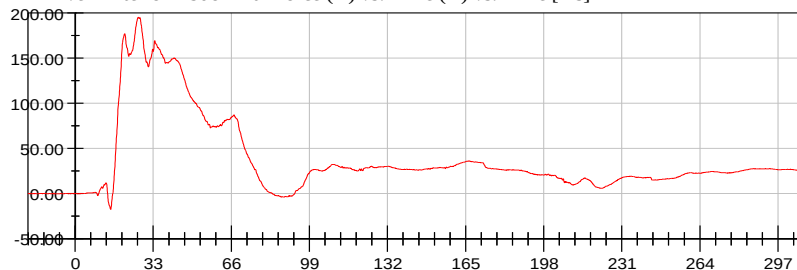
Test Number: 140128 (M20140304)

Test Date: 01/28/2014

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>

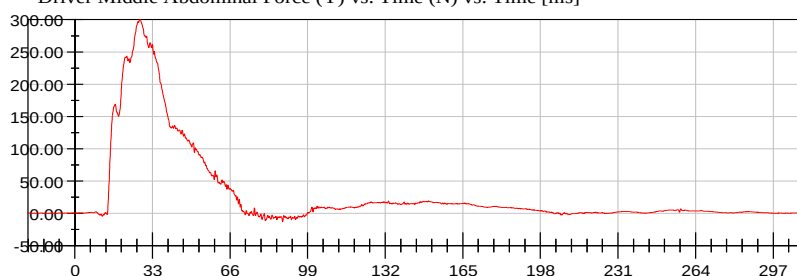
195.33 N at 26.64 ms

<Min>

-17.33 N at 15.04 ms

CFC_600

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



<Max>

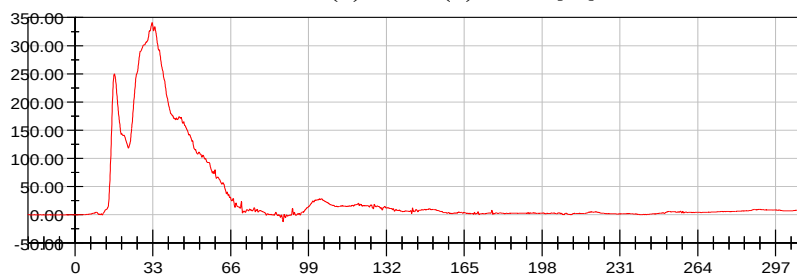
299.90 N at 27.68 ms

<Min>

-13.25 N at 88.40 ms

CFC_600

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



<Max>

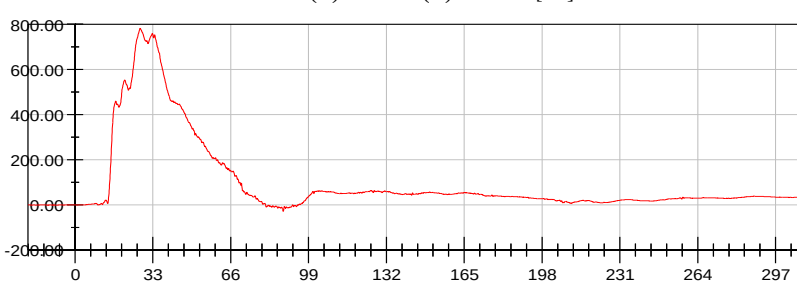
340.80 N at 32.72 ms

<Min>

-12.37 N at 88.24 ms

CFC_600

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



<Max>

781.64 N at 27.60 ms

<Min>

-27.66 N at 88.32 ms

CFC_600



NHTSA

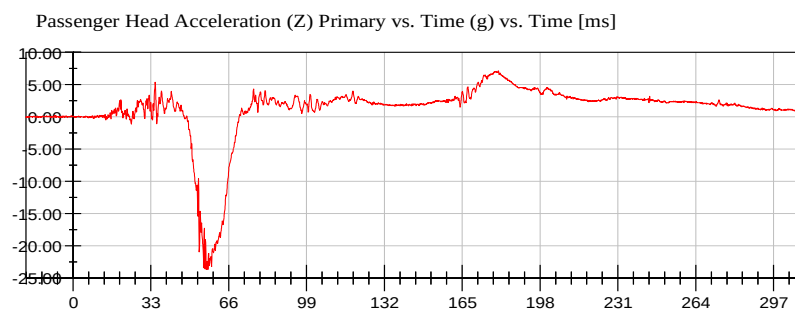
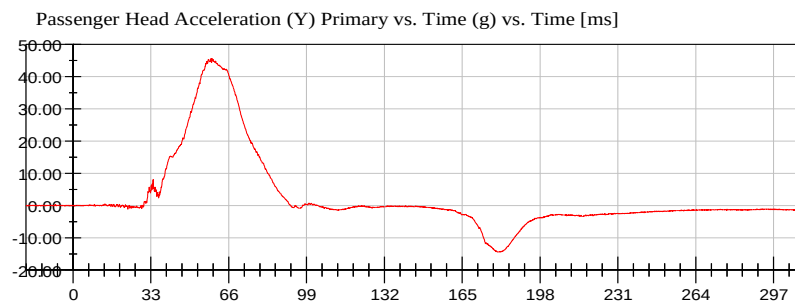
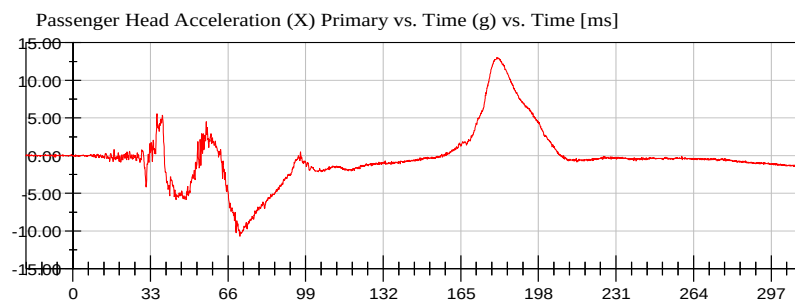
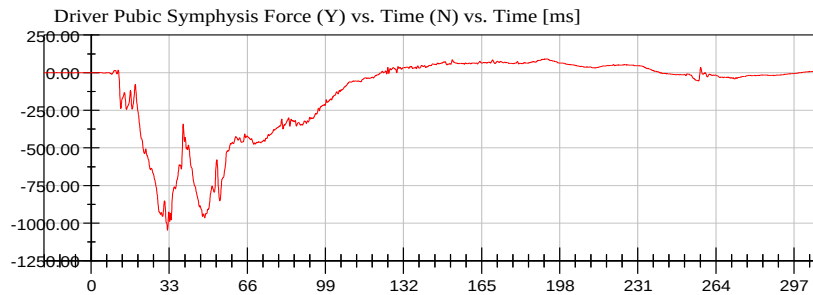
Test Lab: CTF

Test Number: 140128 (M20140304)

Test Date: 01/28/2014

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

Position #4 SID IIs Dummy (305)



NHTSA

Test Lab: CTF

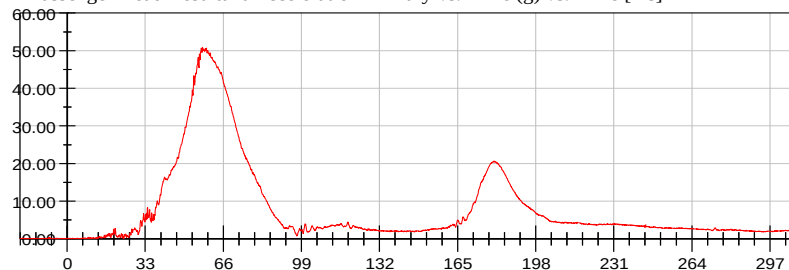
Test Number: 140128 (M20140304)

Test Date: 01/28/2014

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>

50.81 g at 57.20 ms

<Min>

0.04 g at -18.00 ms

CFC_1000

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



<Max>

3.76 g at 159.68 ms

<Min>

-9.96 g at 51.28 ms

CFC_180

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



<Max>

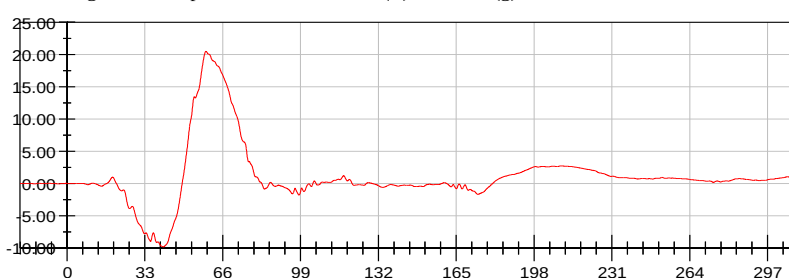
33.46 g at 55.20 ms

<Min>

-4.85 g at 167.52 ms

CFC_180

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



<Max>

20.47 g at 58.88 ms

<Min>

-9.80 g at 40.88 ms

CFC_180



NHTSA

Test Lab: CTF

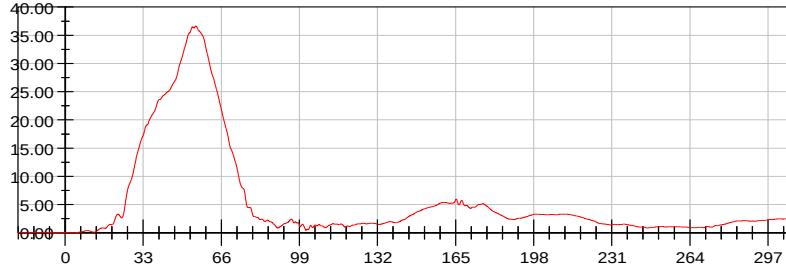
Test Number: 140128 (M20140304)

Test Date: 01/28/2014

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>

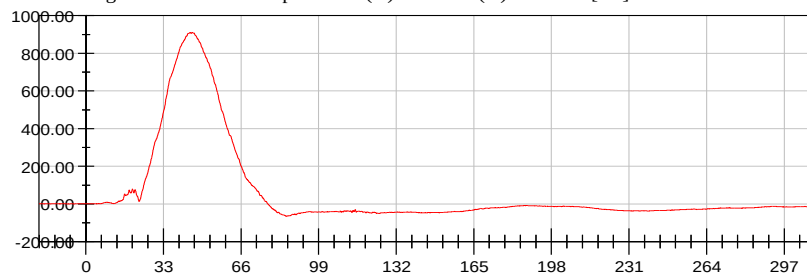
36.64 g at 55.28 ms

<Min>

0.01 g at 1.36 ms

CFC_180

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



<Max>

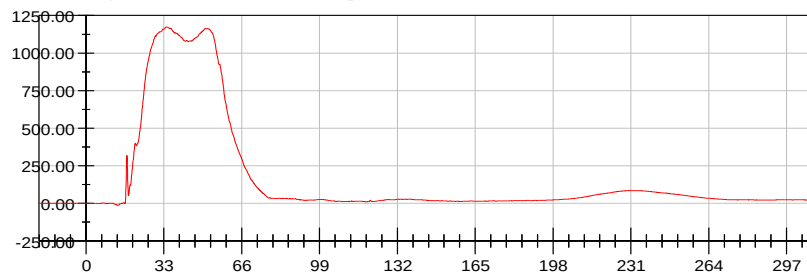
911.04 N at 45.20 ms

<Min>

-66.13 N at 85.20 ms

CFC_600

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



<Max>

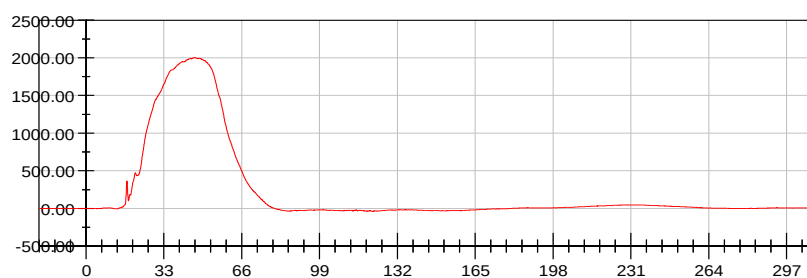
1,172.79 N at 33.92 ms

<Min>

-13.94 N at 13.60 ms

CFC_600

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



<Max>

2,004.25 N at 46.00 ms

<Min>

-37.85 N at 121.60 ms

CFC_600



APPENDIX C
DUMMY PERFORMANCE CALIBRATION TEST DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

ES-2re (Driver) Dummy

Description

Table 1. External Measurements

Table 2. Head Drop Test

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

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

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

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

Table 3 Neck Pendulum Test

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

Flexion Angle (°) vs. Time (ms)

Potentiometer A (°) vs. Time (ms)

Potentiometer B (°) vs. Time (ms)

Potentiometer C (°) vs. Time (ms)

Table 4. Shoulder Impact Test

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

Table 5. Thorax – Upper Rib Drop Test

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

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

Table 6. Thorax – Middle Rib Drop Test

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

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

Table 7. Thorax – Lower Rib Drop Test

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

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

Table 8. Thorax – Full Body Impact Test

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

Impactor Force (kN) vs. Time (ms)

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

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

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

Table 9. Abdomen Impact Test

Impactor Force (kN) vs. Time (ms)

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

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

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

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

Table 10. Lumbar Spine Flexion Test

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

Spine Flexion Angle (°) vs. Time (ms)

Potentiometer A (°) vs. Time (ms)

Potentiometer B (°) vs. Time (ms)

Potentiometer C (°) vs. Time (ms)

Table 11. Pelvis Impact Test

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

Impactor Force (kN) vs. Time (ms)

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

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

SID-IIs (Rear Passenger) Dummy

Description

Table 1. External Measurements

Table 2. Head Drop Test

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

Table 3. Lateral Neck Pendulum Test

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

Table 4. Shoulder Impact Test

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

Table 5. Thorax (With Arm) Impact Test

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

Table 6. Thorax (Without Arm) Impact Test

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

Table 7. Abdomen Impact Test

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

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

Table 9. Pelvis Acetabulum Impact Test

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

Table 10. Pelvis Iliac Impact Test

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

Pre-Test Calibration Sheets
Driver S/N F030

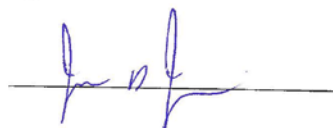
Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 21
01/23/14

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	447	Yes
6	Head Width	152.0 - 158.0	155	Yes
7	Shoulder/Arm Width	461.0 - 479.0	471	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	267	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	606	Yes

Technician



Approved



Baseline 10/07/05



Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 21-1

Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Peak Resultant Acceleration	125 - 155 g	132.7 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

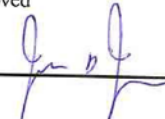
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 09:18:08 359

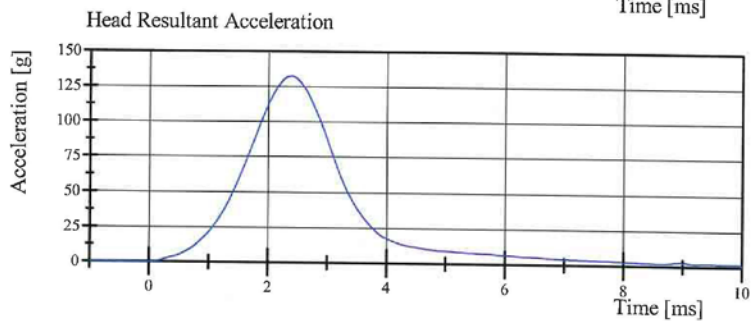
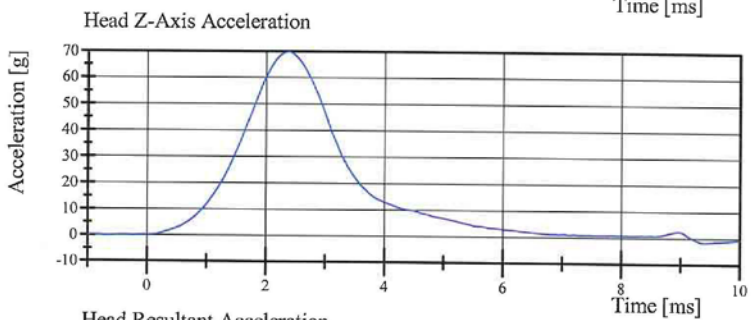
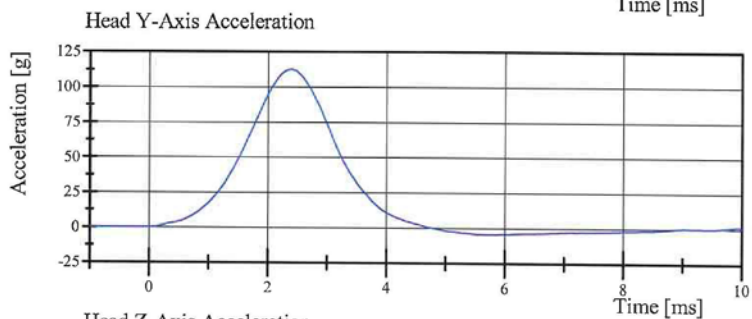
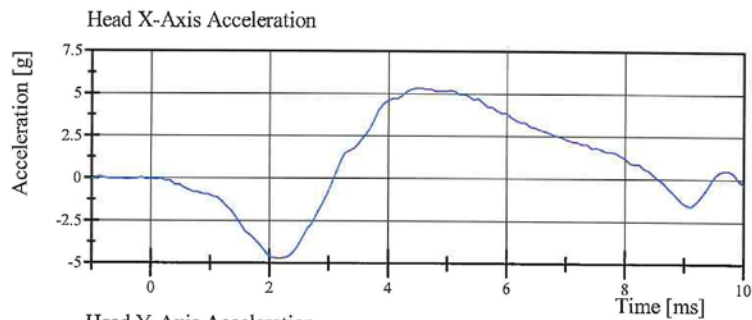


Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 21-1

Test Date: 1/23/2014



Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 09:18:15 359



Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 21-1

Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	41 %	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	-52.5 deg	Yes
Time of Peak	54 - 66 ms	59.8 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	62.4 ms	Yes

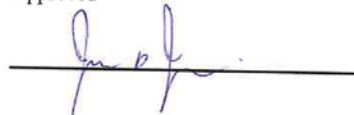
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 08:44:27 1310

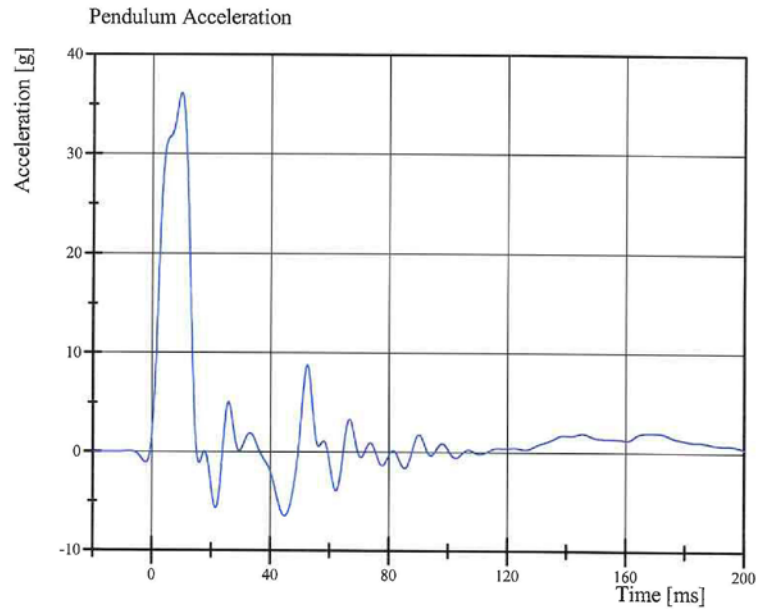


Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 21-1

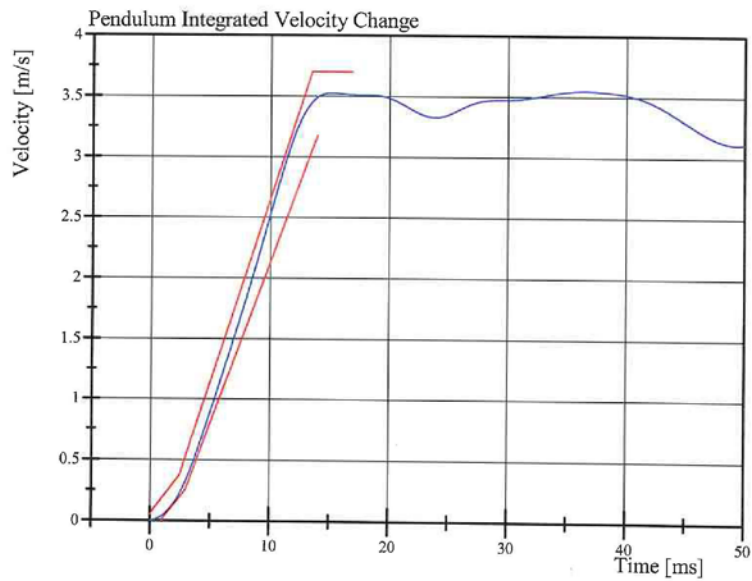
Test Date: 1/23/2014



Filter Class: CFC_60

Max: 36.1 g at 9.8 ms

Min: -6.5 g at 44.8 ms



Filter Class: CFC_60

Max: 3.5 m/s at 36.4 ms

Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 08:44:34 1310

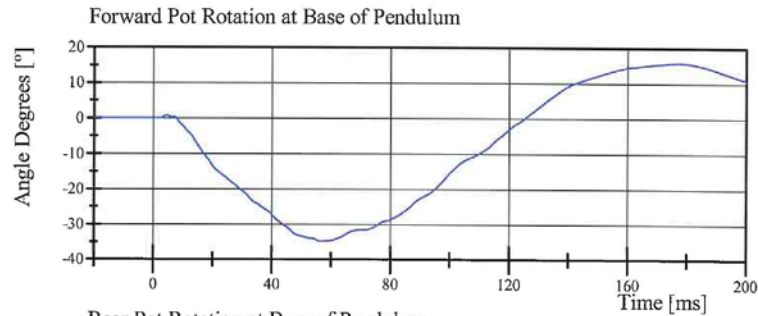


Transportation Research Center Inc.

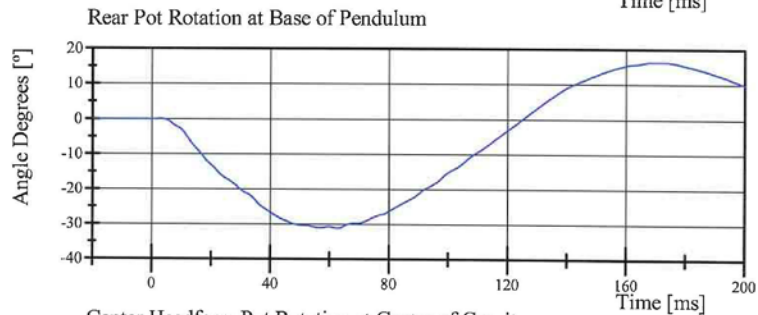
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 21-1

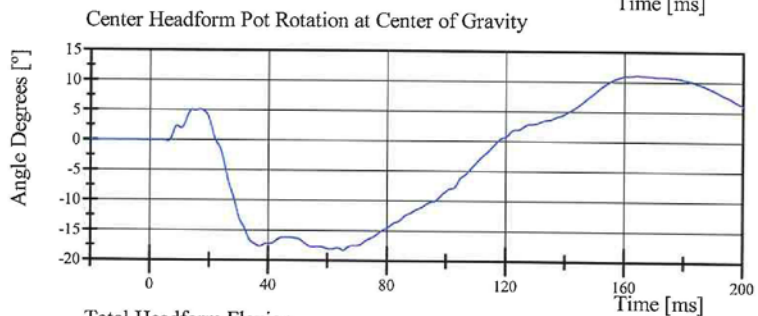
Test Date: 1/23/2014



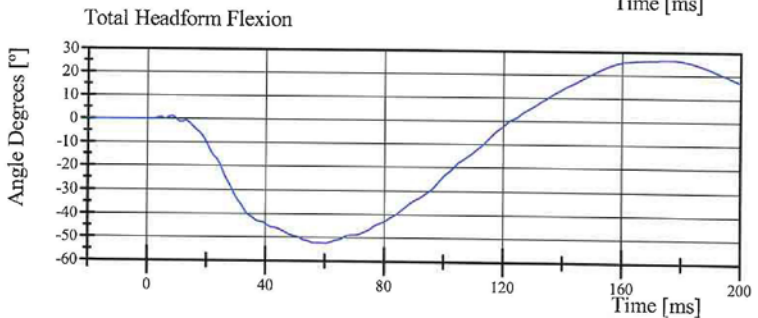
Filter Class: CFC_180
Max: 15.7 ° at 177.1 ms
Min: -34.7 ° at 57.3 ms



Filter Class: CFC_180
Max: 16.3 ° at 169.5 ms
Min: -31.2 ° at 62.8 ms



Filter Class: CFC_180
Max: 11.0 ° at 164.5 ms
Min: -18.2 ° at 65.4 ms



Filter Class: CFC_180
Max: 26.4 ° at 174.4 ms
Min: -52.5 ° at 59.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 08:44:35 1310



Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 21-1

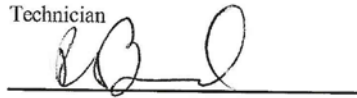
Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-10.17 g	Yes

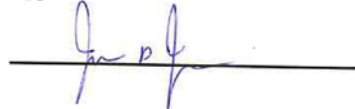
Test meets specifications.

Comments:

Technician



Approved



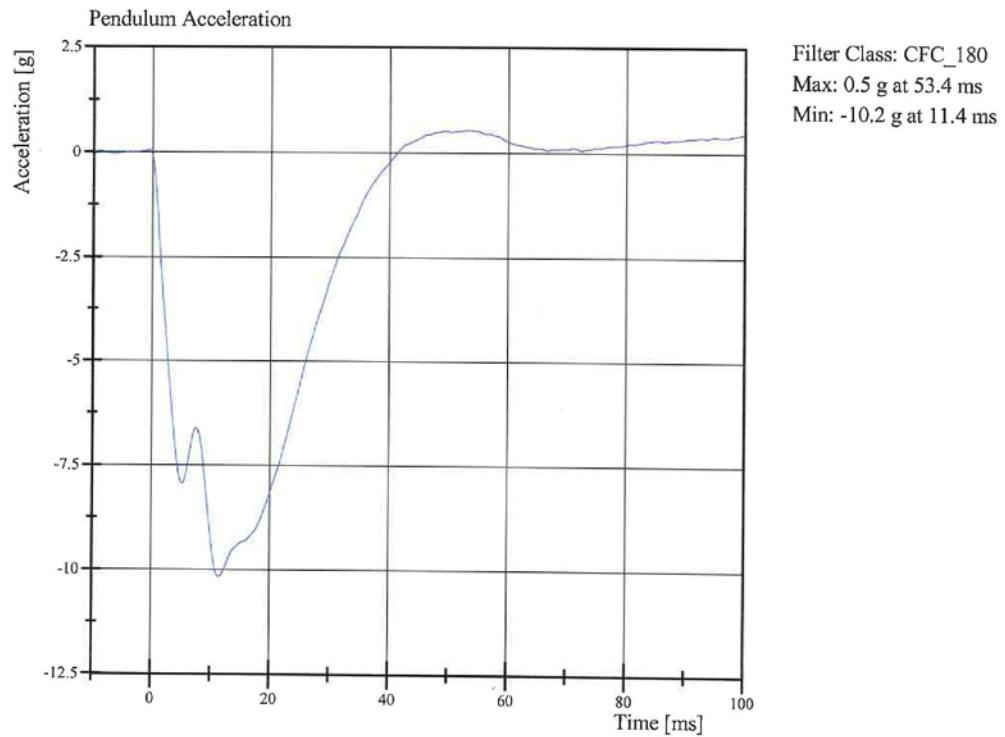
Specification Source: NHTSA final rule 8/15/2008

01.23.2014 13:51:01 533



Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014



Specification Source: NHTSA final rule 8/15/2008

01.23.2014 13:51:07 533



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 21-7
Test Date: 1/27/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.8 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician



Approved



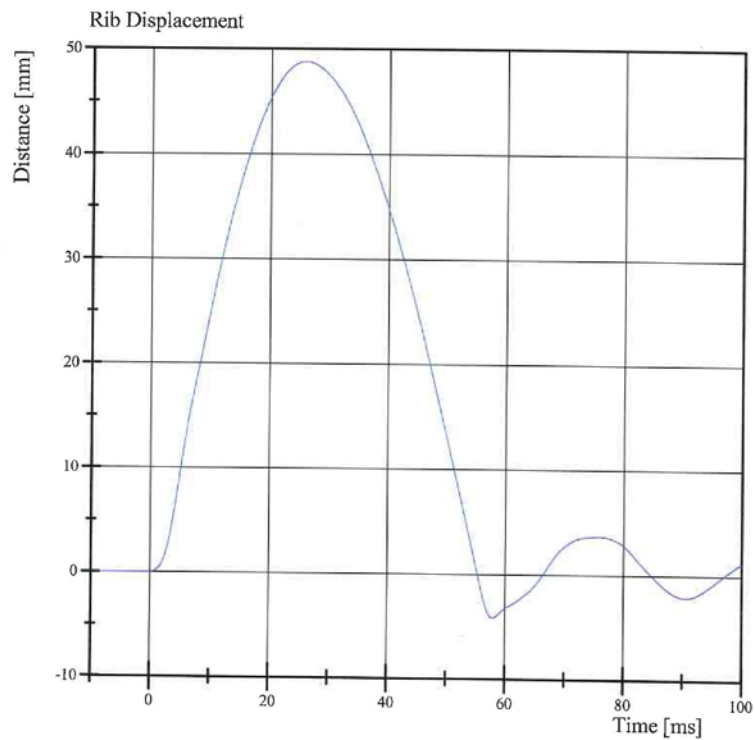
Specification Source: NHTSA Final Rule 8/15/2008

01.27.2014 15:51:19 733



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 21-7
Test Date: 1/27/2014



Filter Class: CFC_180
Max: 48.8 mm at 25.8 ms
Min: -4.1 mm at 57.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.27.2014 15:51:28 733



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 21-2
Test Date: 1/27/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.9 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician



Approved



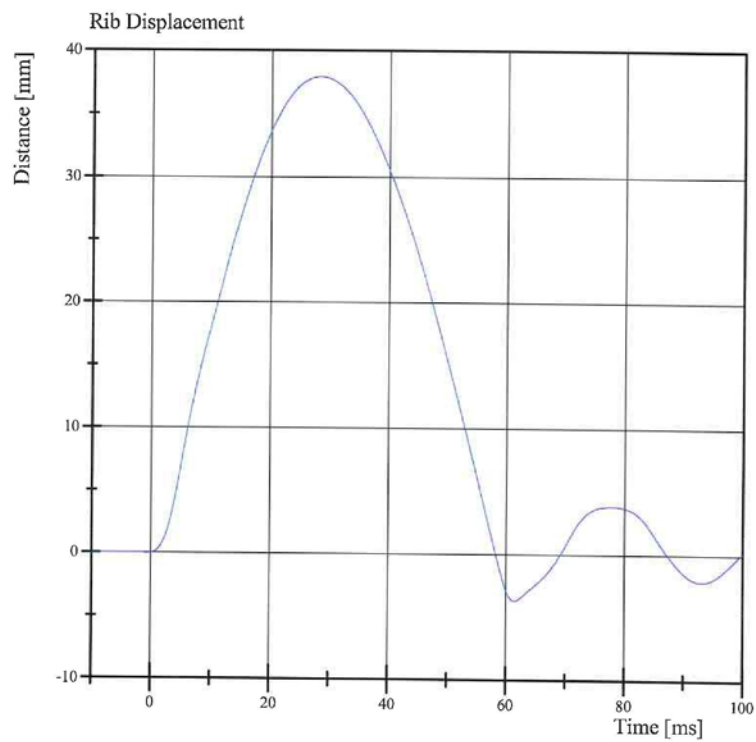
Specification Source: NHTSA Final Rule 8/15/2008

01.27.2014 16:01:25 919



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 21-2
Test Date: 1/27/2014



Filter Class: CFC_180
Max: 37.9 mm at 28.2 ms
Min: -3.7 mm at 61.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.27.2014 16:01:35 919



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.0 mm	Yes

Test meets specifications.

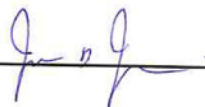
Comments:

Drop Height: 816

Technician



Approved



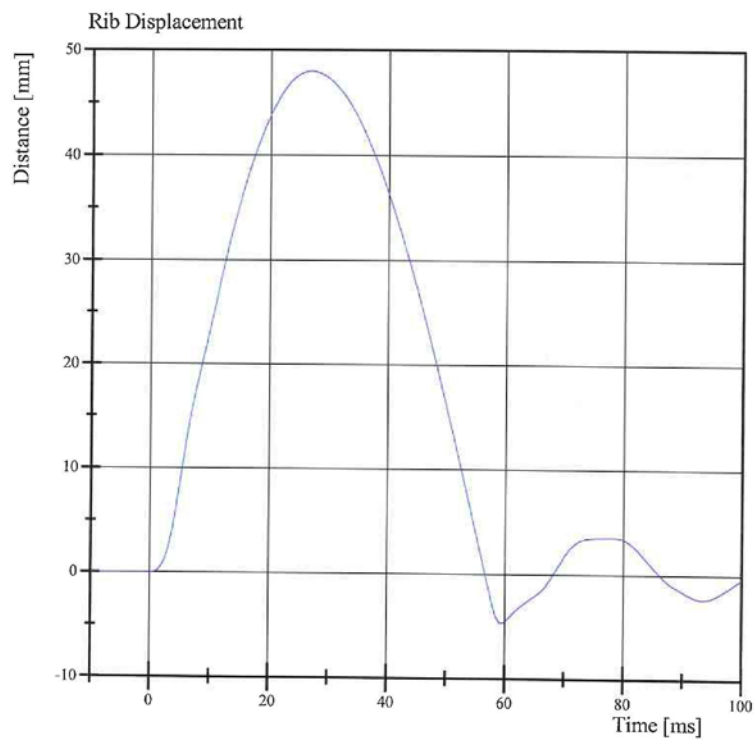
Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 12:51:18 738



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014



Filter Class: CFC_180
Max: 48.0 mm at 26.8 ms
Min: -4.7 mm at 59.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 12:51:25 738



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.0 mm	Yes

Test meets specifications.

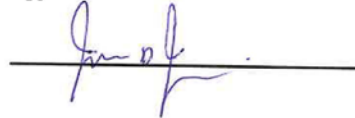
Comments:

Drop Height: 462

Technician



Approved



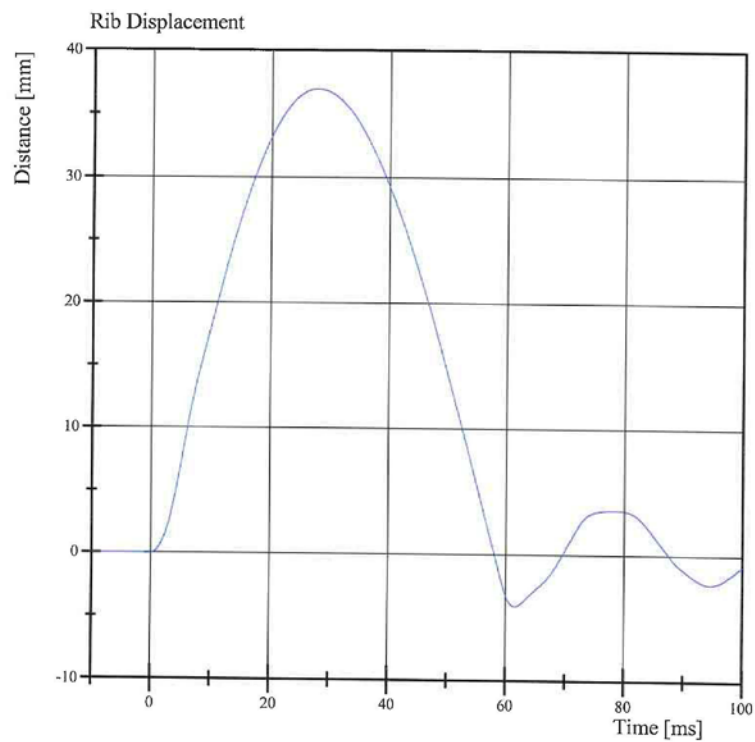
Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 12:57:05 953



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014



Filter Class: CFC_180
Max: 37.0 mm at 27.7 ms
Min: -4.1 mm at 61.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 12:57:12 953



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 21-1

Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.7 mm	Yes

Test meets specifications.

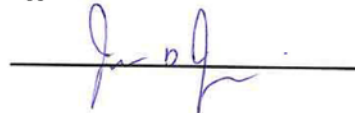
Comments:

Drop Height: 816

Technician



Approved



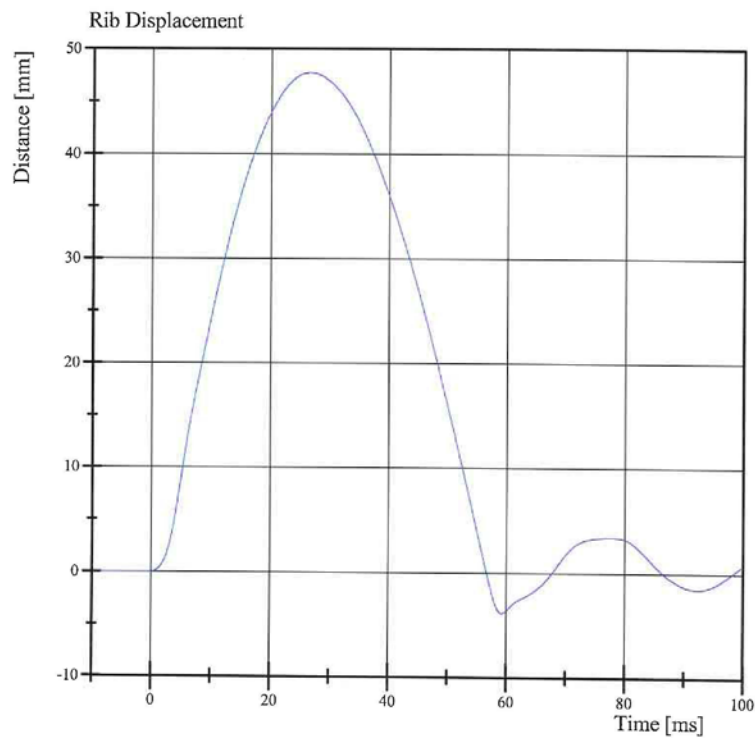
Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 13:04:57 746



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014



Filter Class: CFC_180
Max: 47.7 mm at 26.6 ms
Min: -3.9 mm at 59.3 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 13:05:05 746



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014

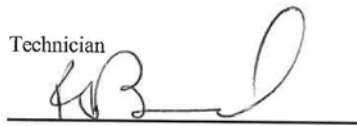
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.7 mm	Yes

Test meets specifications.

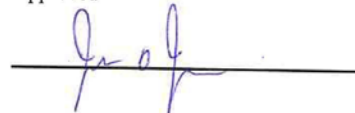
Comments:

Drop Height: 462

Technician



Approved



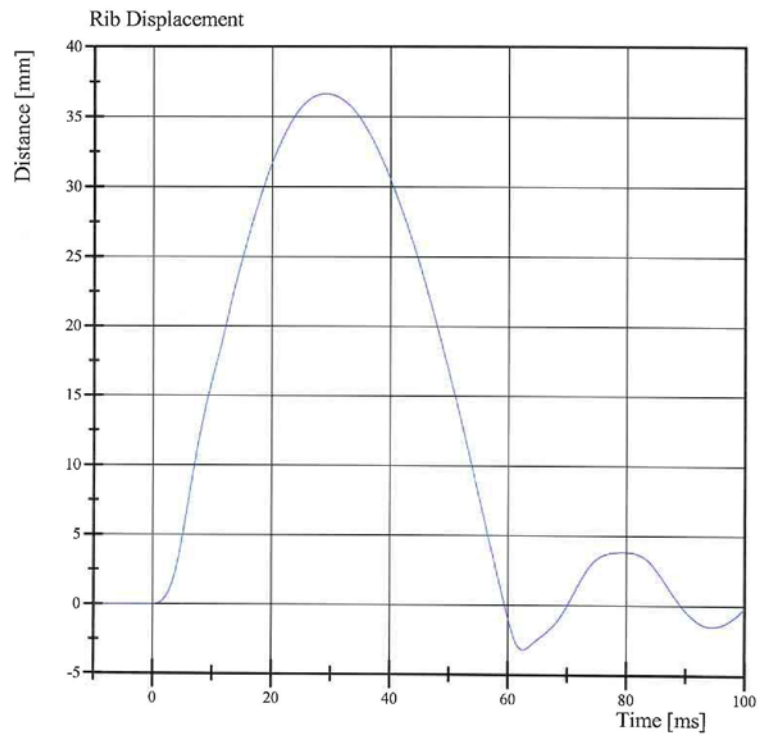
Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 13:11:17 938



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014



Filter Class: CFC_180
Max: 36.7 mm at 29.0 ms
Min: -3.2 mm at 62.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 13:11:24 938



Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 21-1

Test Date: 1/27/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.473 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,439.5 N	Yes
Upper Rib Displacement	34 - 41 mm	37.3 mm	Yes
Center Rib Displacement	37 - 45 mm	40.8 mm	Yes
Lower Rib Displacement	37 - 44 mm	41.6 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.

01.27.2014 16:35:03 453

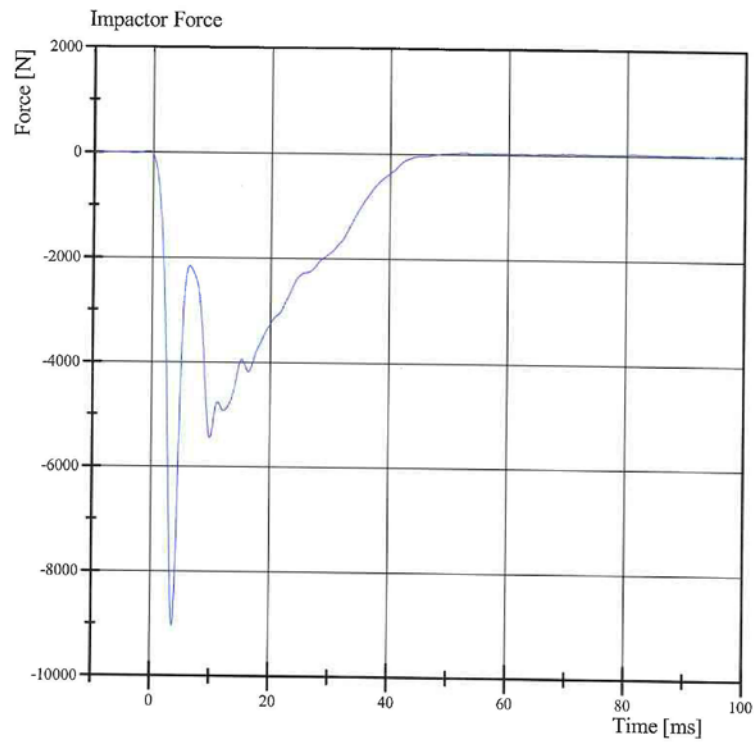


Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 21-1

Test Date: 1/27/2014



Filter Class: CFC_180

Max: 37.7 N at 52.4 ms

Min: -9,037.7 N at 3.7 ms

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

01.27.2014 16:35:09 453

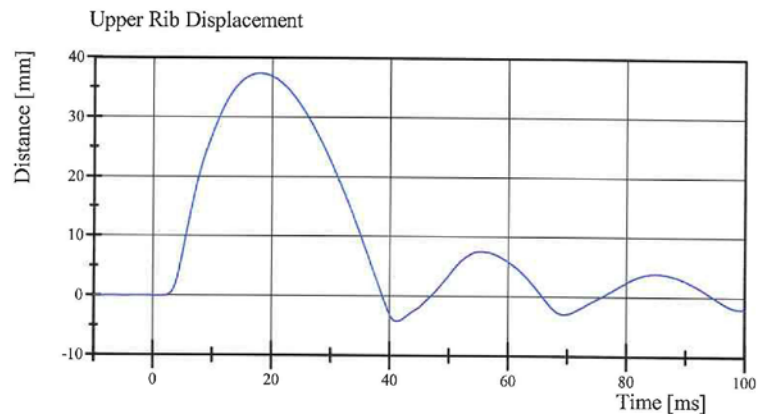


Transportation Research Center Inc.

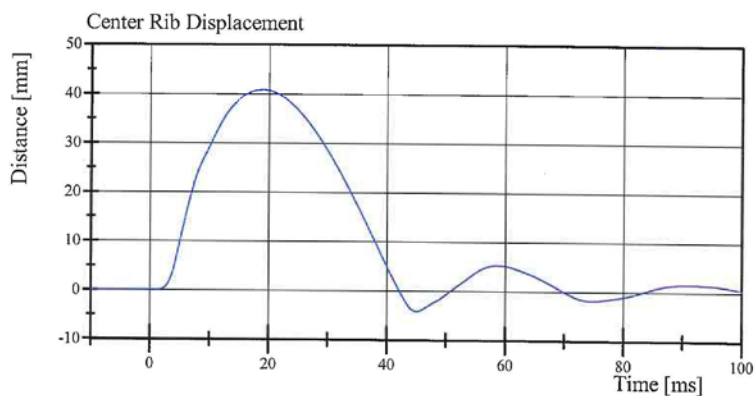
Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 21-1

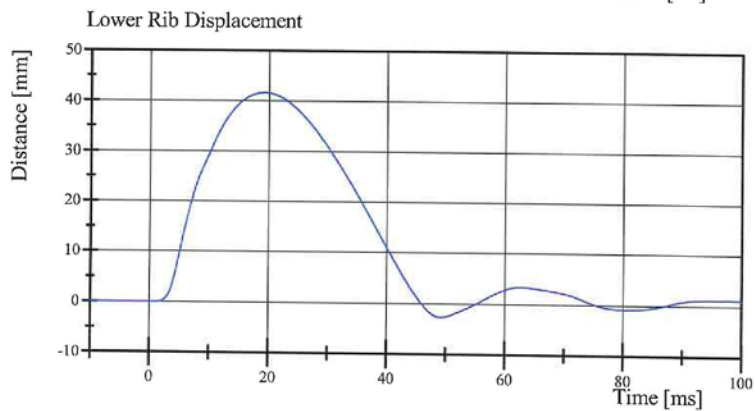
Test Date: 1/27/2014



Filter Class: CFC_180
Max: 37.3 mm at 18.0 ms
Min: -4.2 mm at 41.2 ms



Filter Class: CFC_180
Max: 40.8 mm at 18.9 ms
Min: -4.2 mm at 45.0 ms



Filter Class: CFC_180
Max: 41.6 mm at 19.2 ms
Min: -2.7 mm at 49.2 ms

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

01.27.2014 16:35:10 453



Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 21-2
Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.94 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,004.3 N	Yes
Time of Peak	10.6 - 13.0 ms	11.84 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,687.7 N	Yes
Time of Peak	10.0 - 12.3 ms	11.20 ms	Yes

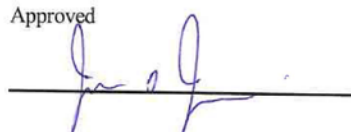
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 15:47:54 580

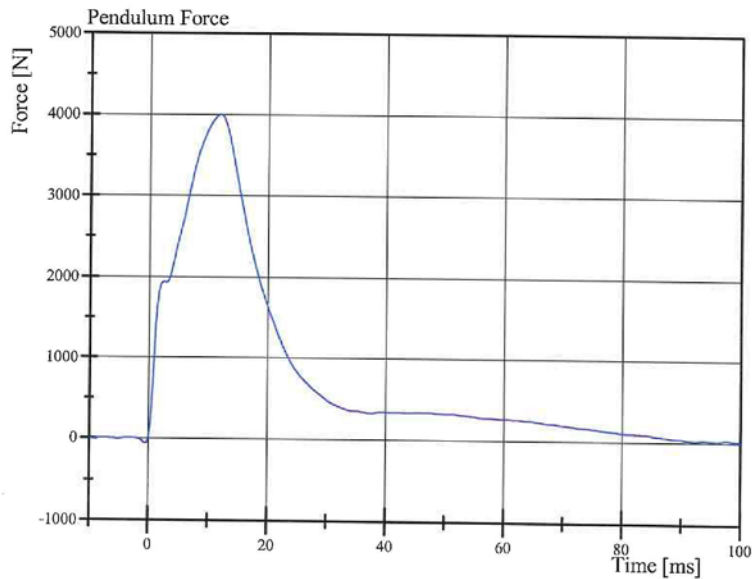
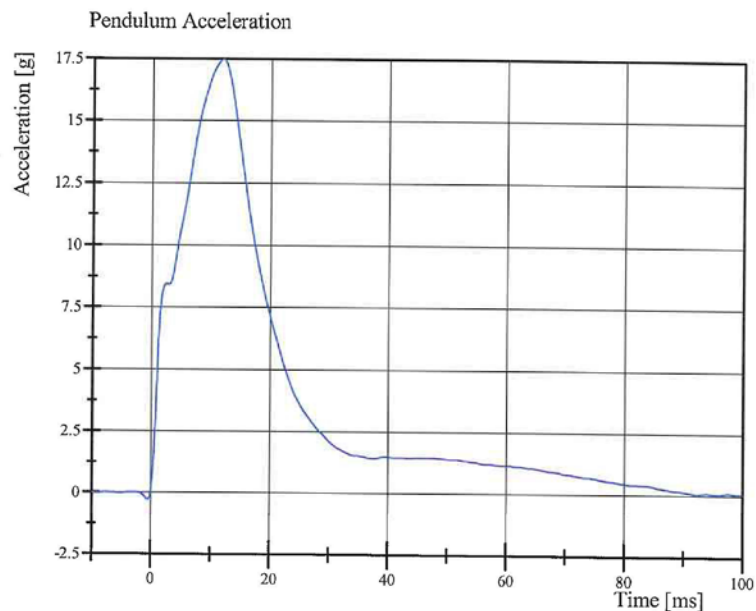


Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 21-2

Test Date: 1/23/2014



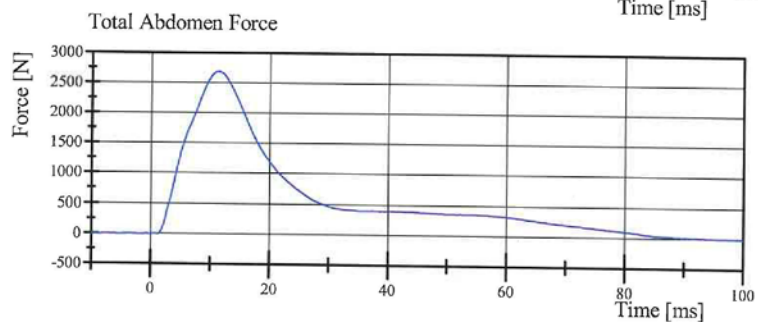
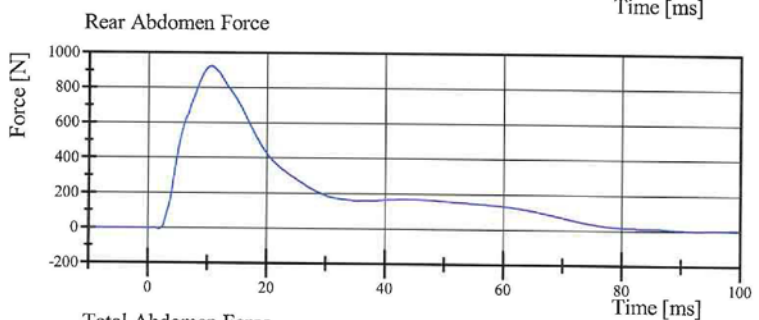
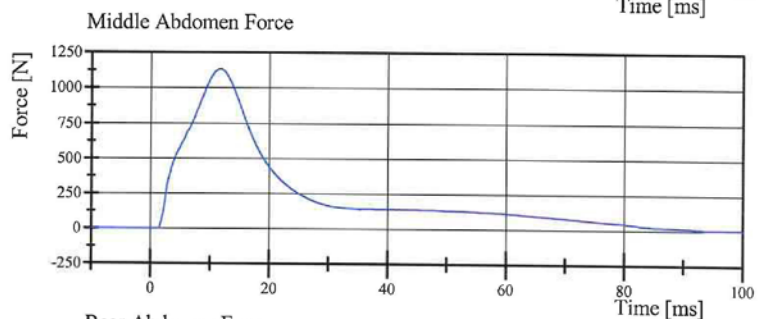
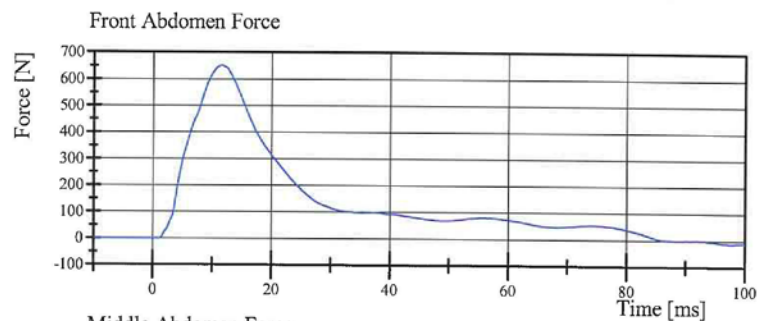
Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 15:48:00 580



Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 21-2
Test Date: 1/23/2014



Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 15:48:01 580



Transportation Research Center Inc.

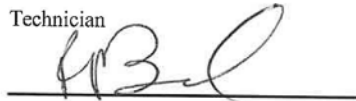
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.017 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-47.0 deg	Yes
Time of Peak	39 - 53 ms	46.1 ms	Yes
Headform Flexion Decay			
- Peak to Zero	37 - 57 ms	37.5 ms	Yes

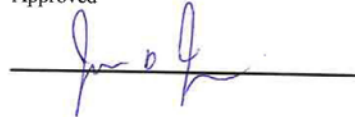
Test meets specifications.

Comments:

Technician



Approved



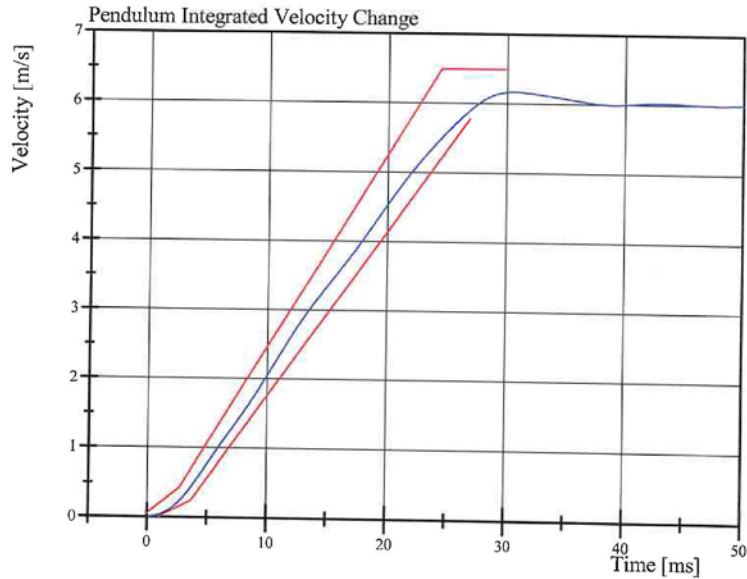
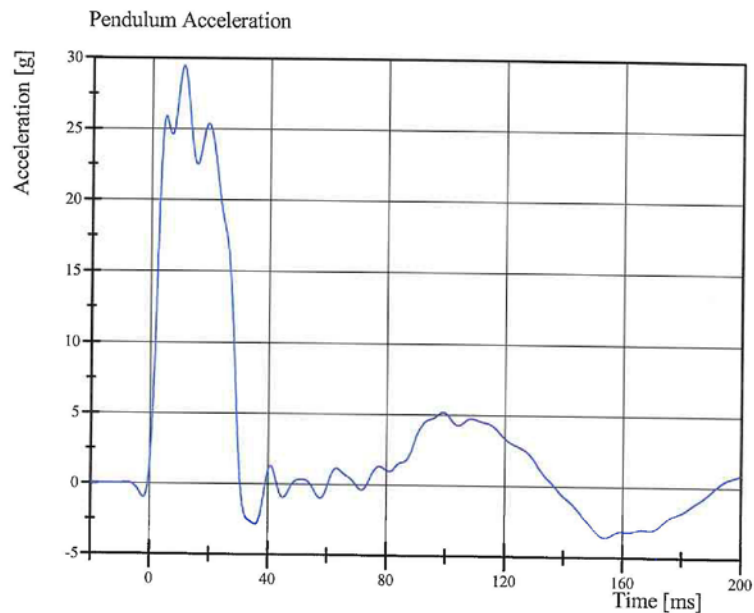
Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 08:27:33 580



Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014



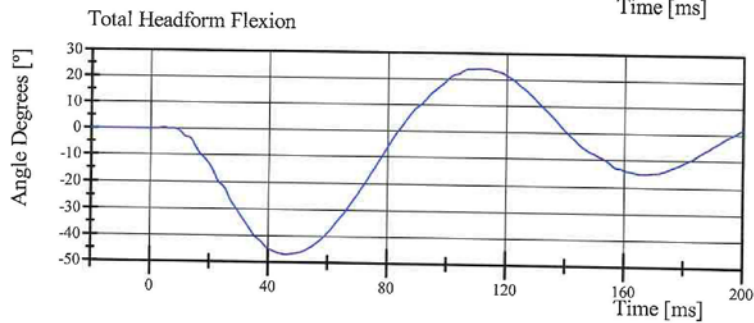
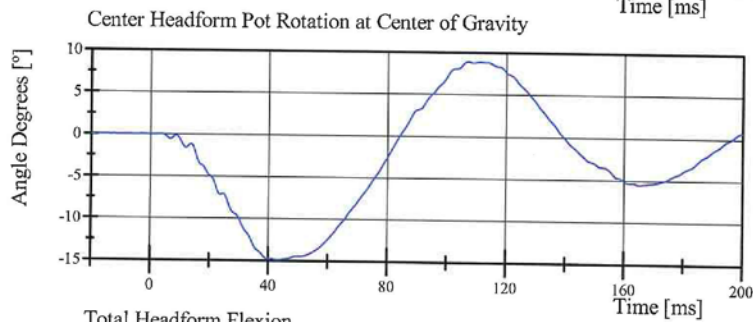
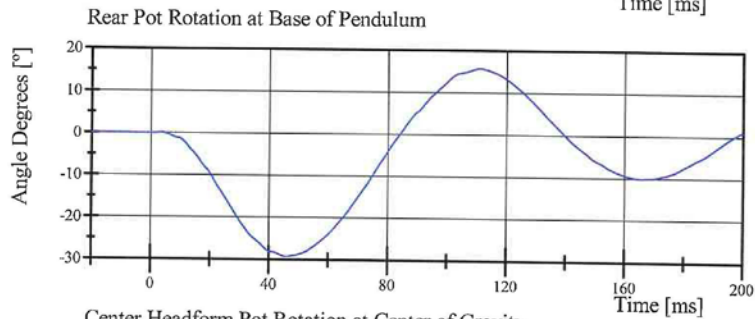
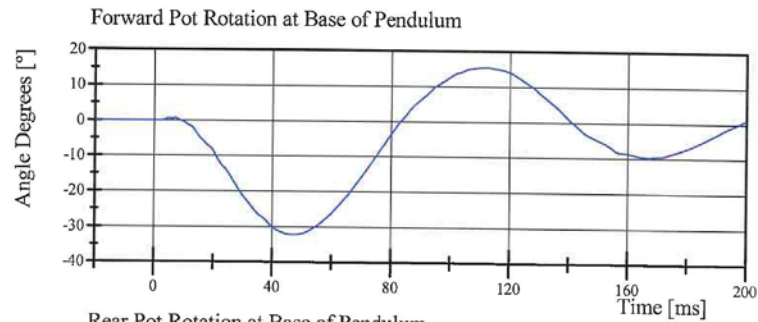
Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 08:27:40 580



Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 21-1
Test Date: 1/23/2014



Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 08:27:41 580



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 21-1

Test Date: 1/23/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,087.5 N	Yes
Time of Peak	11.8 - 16.1 ms	12.64 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,280.1 N	Yes
Time of Peak	12.2 - 17.0 ms	12.80 ms	Yes

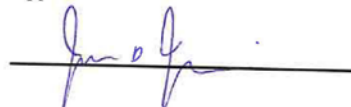
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 15:14:28 567

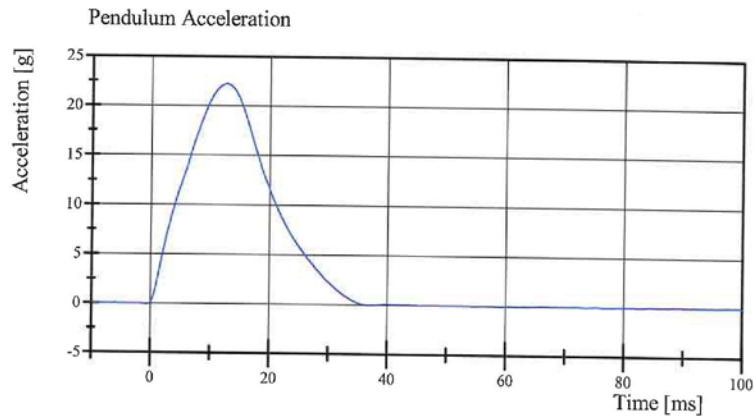


Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 21-1

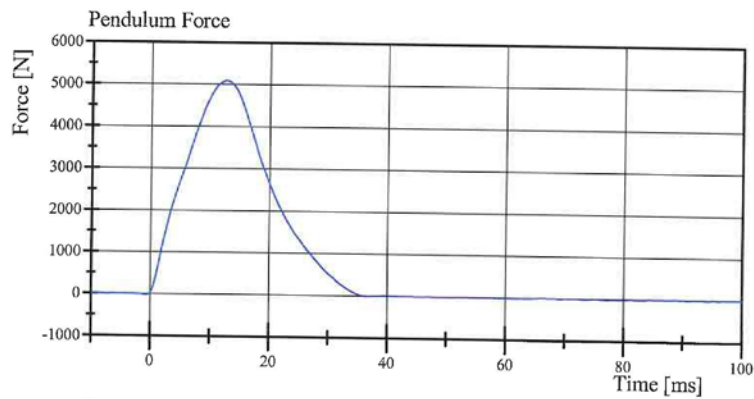
Test Date: 1/23/2014



Filter Class: CFC_180

Max: 22.2 g at 12.6 ms

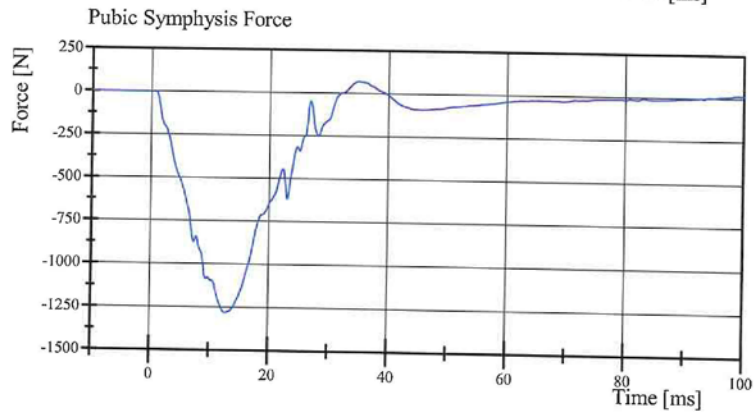
Min: -0.1 g at -0.6 ms



Filter Class: CFC_180

Max: 5,087.5 N at 12.6 ms

Min: -20.6 N at -0.6 ms



Filter Class: CFC_600

Max: 69.8 N at 34.9 ms

Min: -1,280.1 N at 12.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.23.2014 15:14:35 567



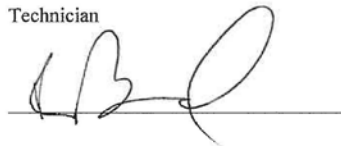
Driver S/N F030

Post-Test Calibration Sheets

Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 22
01/29/14

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	471	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	267	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	606	Yes

Technician



Approved



Baseline 10/07/05



Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 22-1

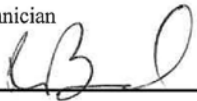
Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Peak Resultant Acceleration	125 - 155 g	133.9 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	6.0 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

01.29.2014 13:12:51 359

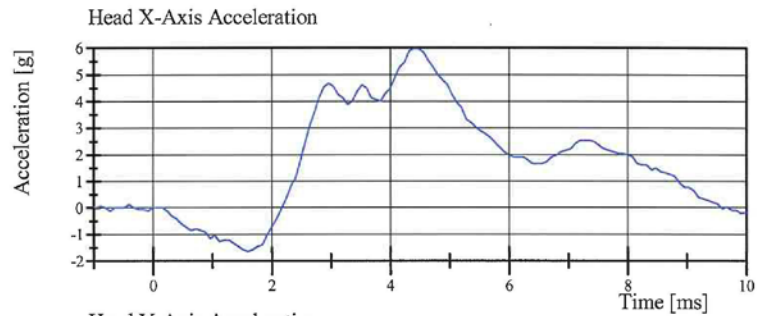


Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 22-1

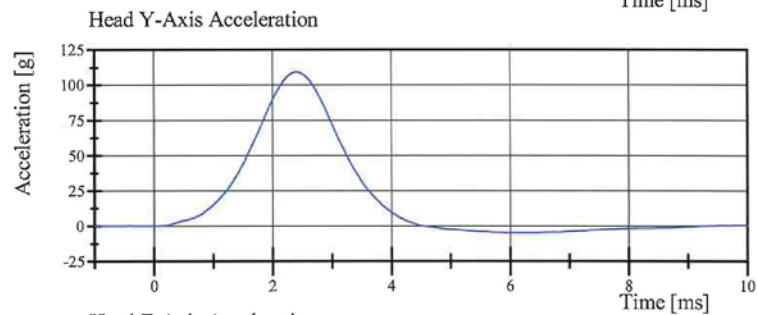
Test Date: 1/29/2014



Filter Class: CFC_1000

Max: 6.0 g at 4.4 ms

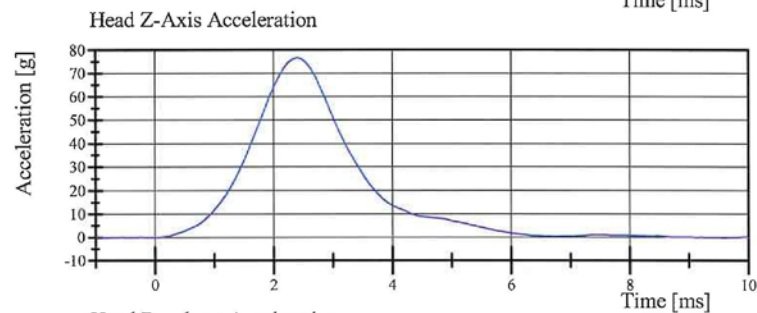
Min: -1.6 g at 1.6 ms



Filter Class: CFC_1000

Max: 109.7 g at 2.4 ms

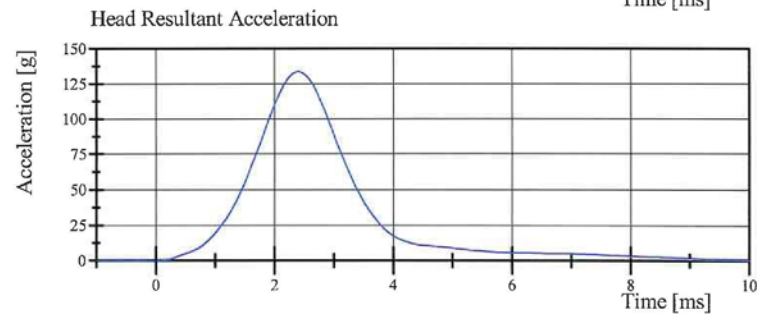
Min: -4.9 g at 6.2 ms



Filter Class: CFC_1000

Max: 76.7 g at 2.4 ms

Min: -0.4 g at 9.6 ms



Filter Class: CFC_1000

Max: 133.9 g at 2.4 ms

Min: 0.0 g at -1.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 13:12:58 359



Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 22-1

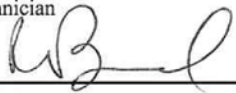
Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	35 %	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	-52.4 deg	Yes
Time of Peak	54 - 66 ms	56.6 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	65.9 ms	Yes

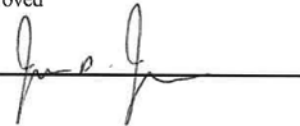
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 11:30:53 1310

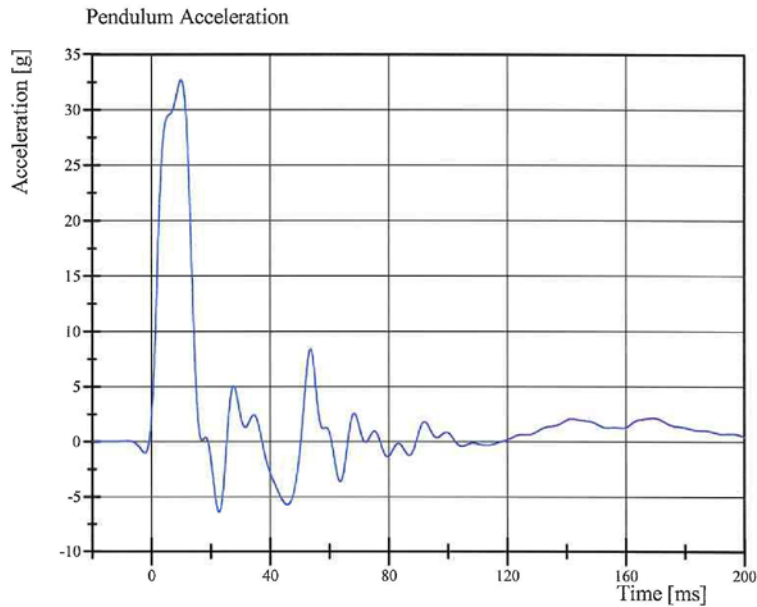


Transportation Research Center Inc.

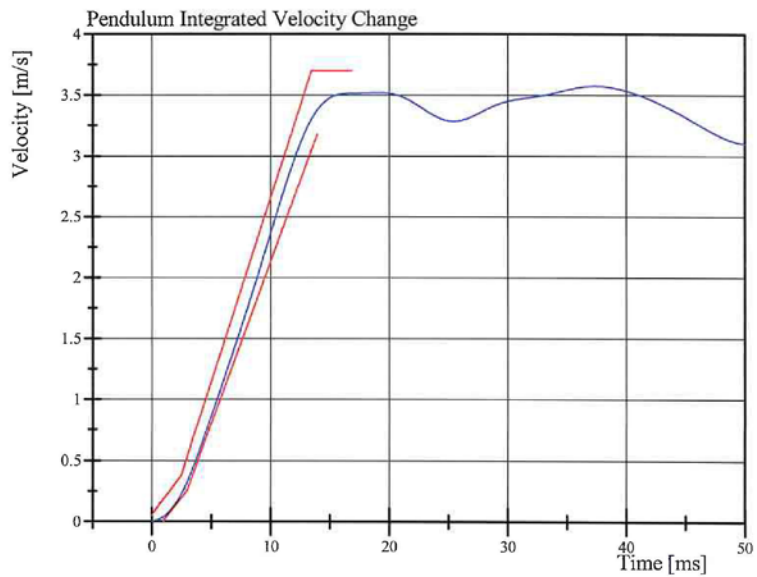
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 22-1

Test Date: 1/29/2014



Filter Class: CFC_60
Max: 32.7 g at 10.0 ms
Min: -6.4 g at 22.8 ms



Filter Class: CFC_60
Max: 3.6 m/s at 37.4 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 11:31:00 1310

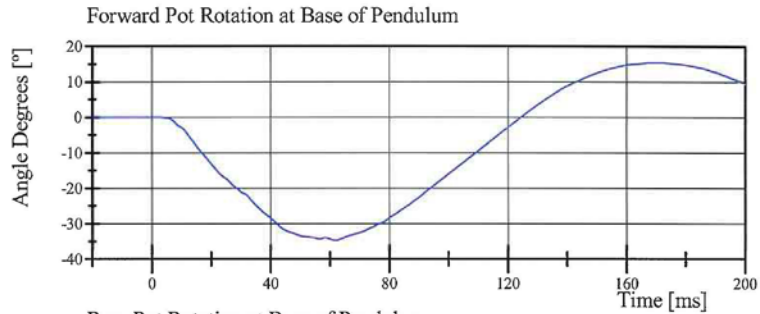


Transportation Research Center Inc.

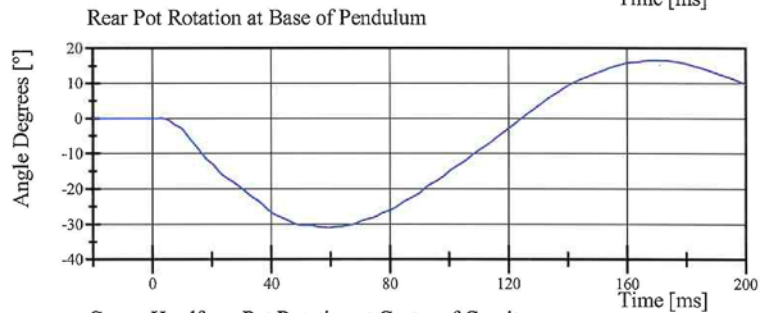
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 22-1

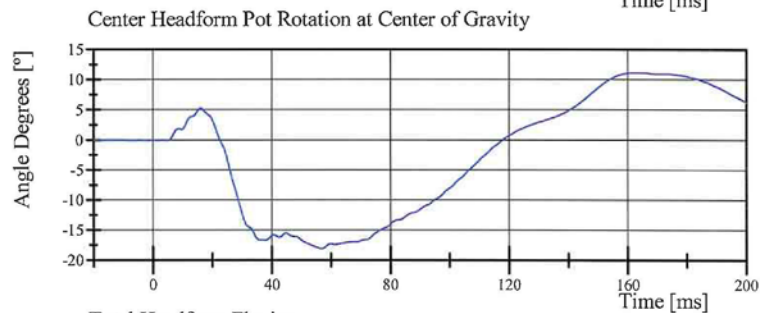
Test Date: 1/29/2014



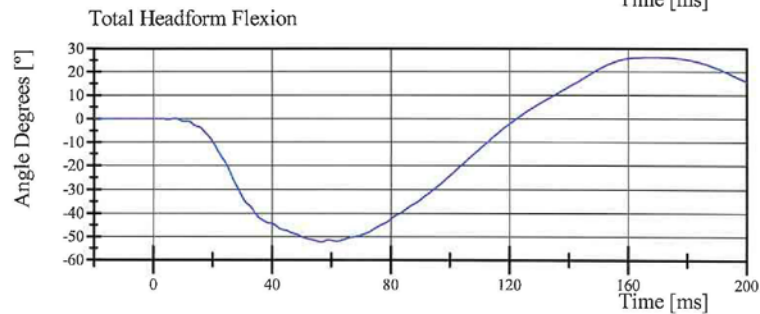
Filter Class: CFC_180
Max: 15.3 ° at 169.4 ms
Min: -34.7 ° at 62.0 ms



Filter Class: CFC_180
Max: 16.4 ° at 168.3 ms
Min: -31.0 ° at 59.6 ms



Filter Class: CFC_180
Max: 11.1 ° at 163.8 ms
Min: -18.1 ° at 56.9 ms



Filter Class: CFC_180
Max: 26.2 ° at 166.6 ms
Min: -52.4 ° at 56.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 11:31:01 1310



Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 22-1

Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-9.52 g	Yes

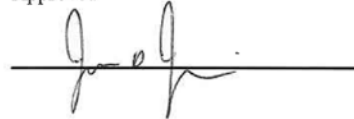
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA final rule 8/15/2008

01.29.2014 13:24:47 582

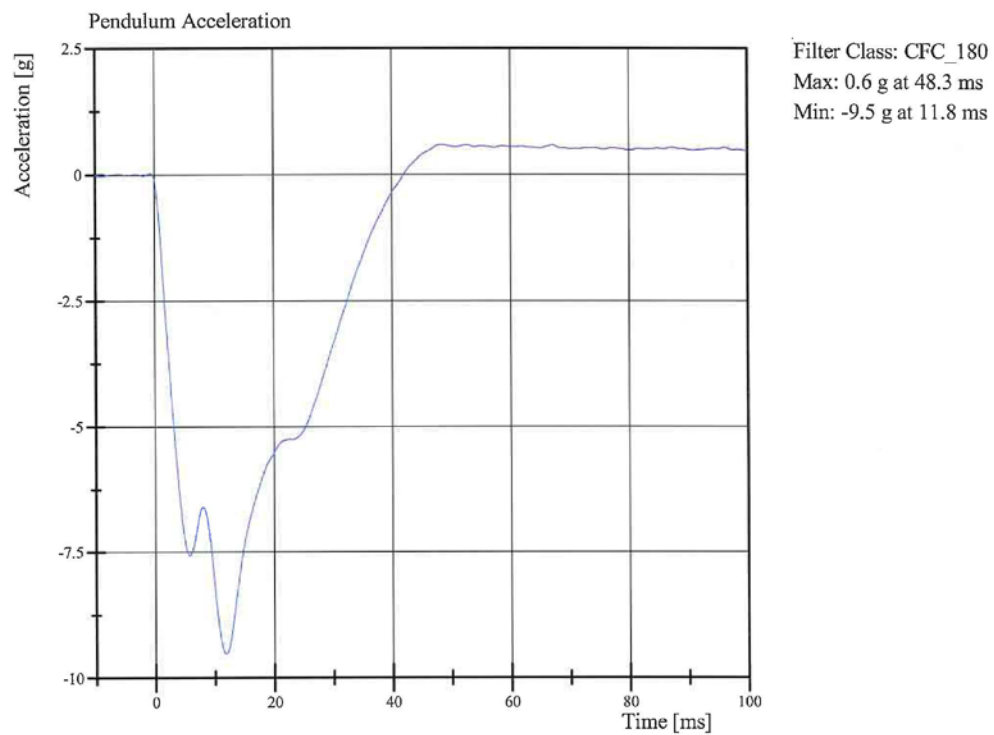


Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 22-1

Test Date: 1/29/2014



Specification Source: NHTSA final rule 8/15/2008

01.29.2014 13:25:12 582



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.7 mm	Yes

Test meets specifications.

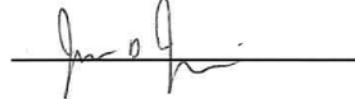
Comments:

Drop Height: 816

Technician



Approved



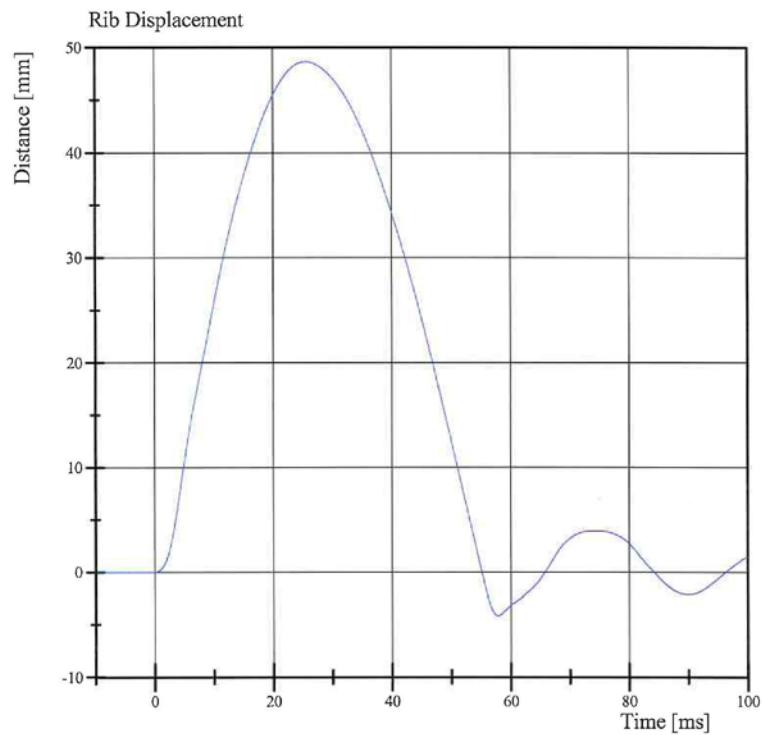
Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:37:05 732



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 48.7 mm at 25.6 ms
Min: -4.2 mm at 57.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:37:41 732



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.0 mm	Yes

Test meets specifications.

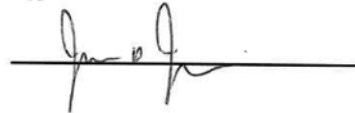
Comments:

Drop Height: 462

Technician



Approved



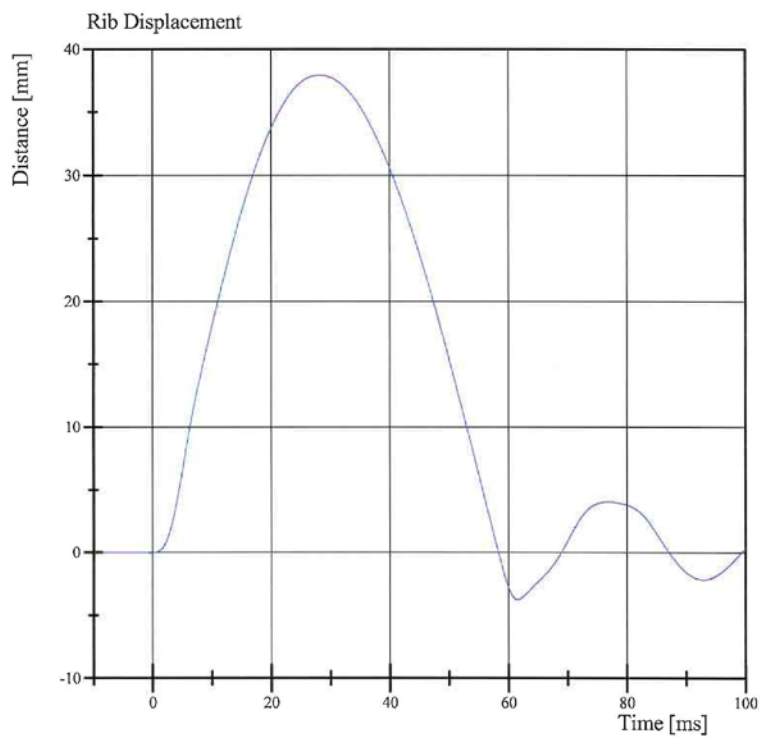
Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:43:29 922



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 38.0 mm at 28.2 ms
Min: -3.7 mm at 61.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:43:39 922



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.2 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician



Approved



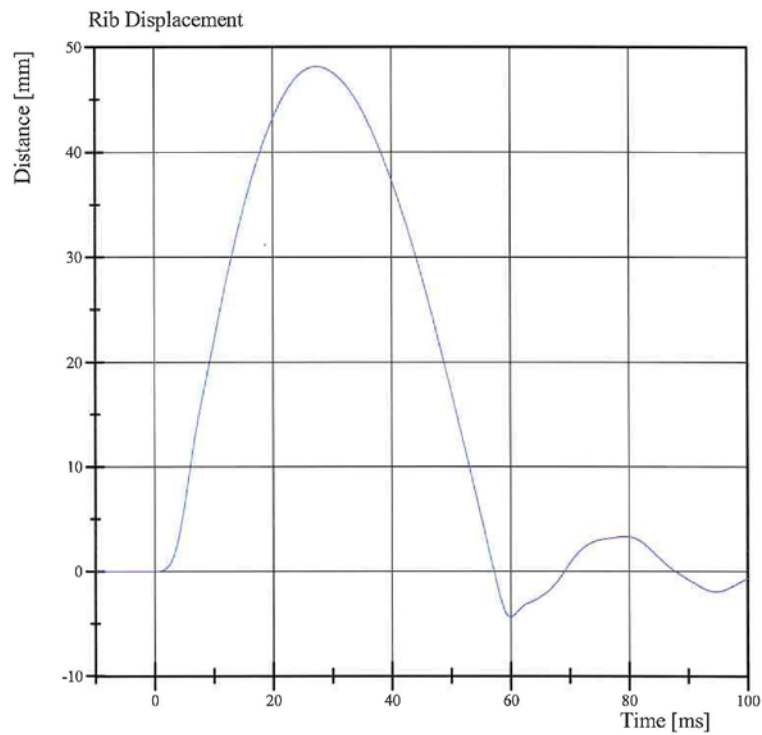
Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:51:43 732



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 48.2 mm at 27.4 ms
Min: -4.4 mm at 60.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:51:51 732



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014

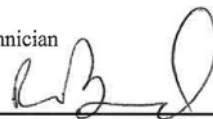
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.1 mm	Yes

Test meets specifications.

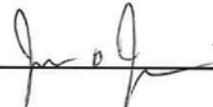
Comments:

Drop Height: 462

Technician



Approved



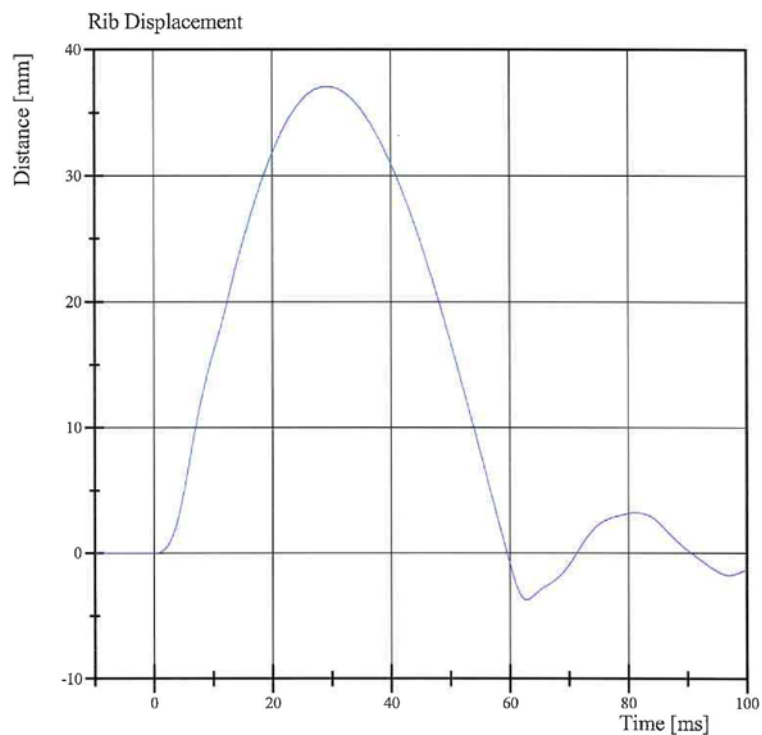
Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:58:21 906



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 37.1 mm at 29.2 ms
Min: -3.7 mm at 62.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 08:58:29 906



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 22-1

Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	31 %	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



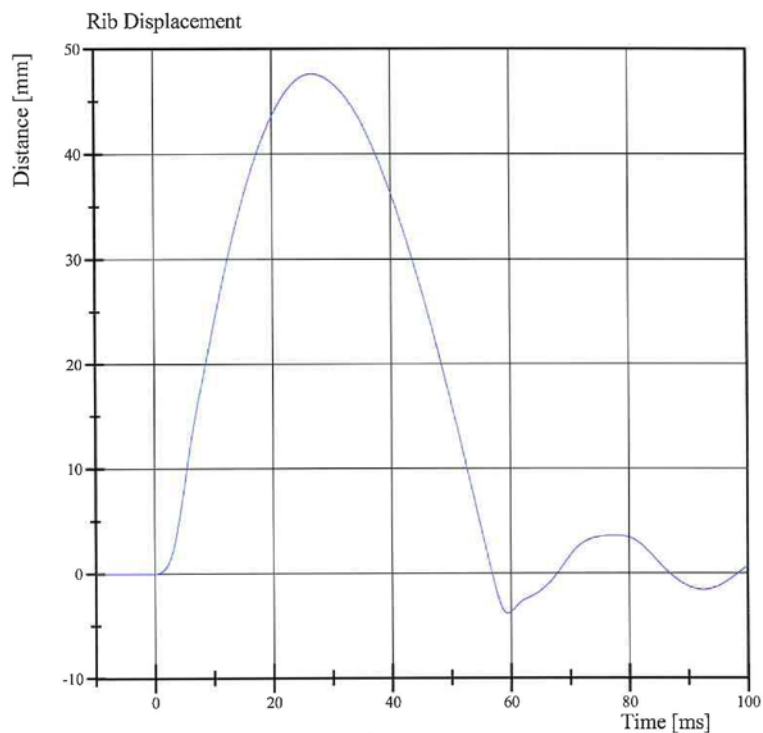
Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 09:02:31 729



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 47.6 mm at 26.8 ms
Min: -3.8 mm at 59.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 09:02:42 729



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °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.

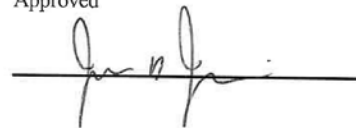
Comments:

Drop Height: 462

Technician



Approved



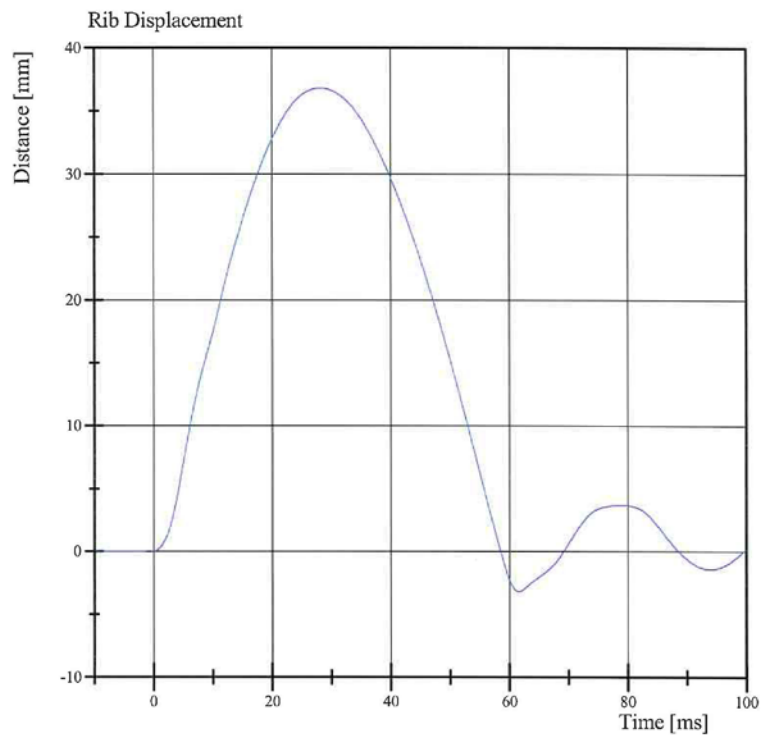
Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 09:07:41 916



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 36.8 mm at 28.2 ms
Min: -3.2 mm at 61.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 09:07:49 916



Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 22-1

Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.469 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,432.0 N	Yes
Upper Rib Displacement	34 - 41 mm	38.2 mm	Yes
Center Rib Displacement	37 - 45 mm	41.0 mm	Yes
Lower Rib Displacement	37 - 44 mm	41.0 mm	Yes

Test meets specifications.

Comments:

Technician



Approved



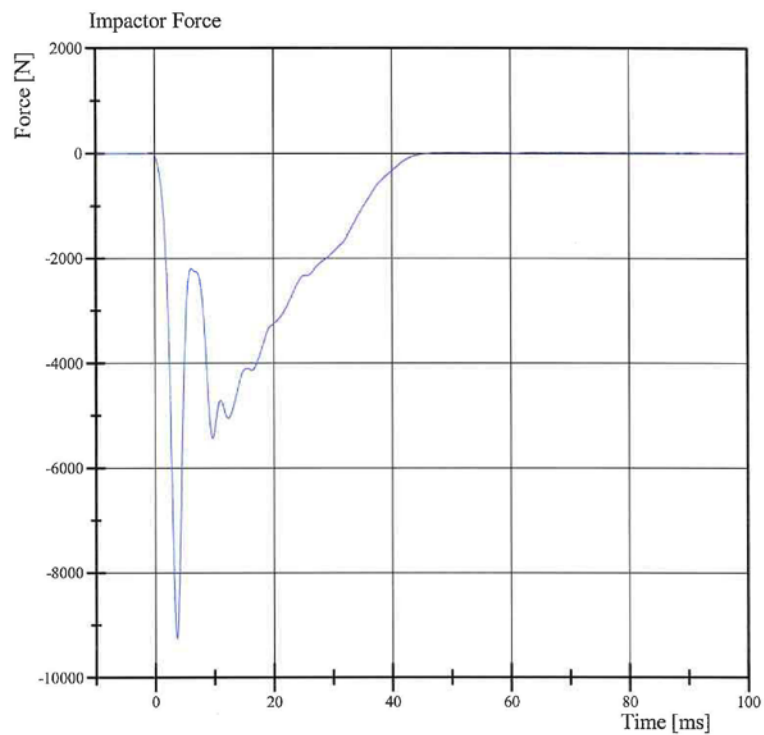
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

01.29.2014 13:35:53 489



Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 24.8 N at 52.0 ms
Min: -9,262.1 N at 3.7 ms

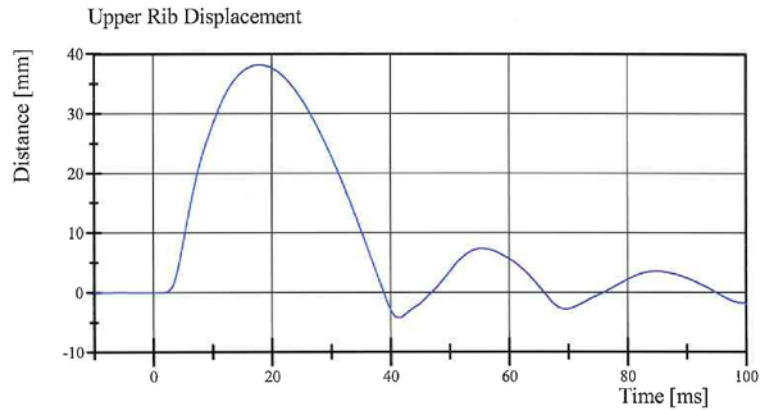
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

01.29.2014 13:36:00 489

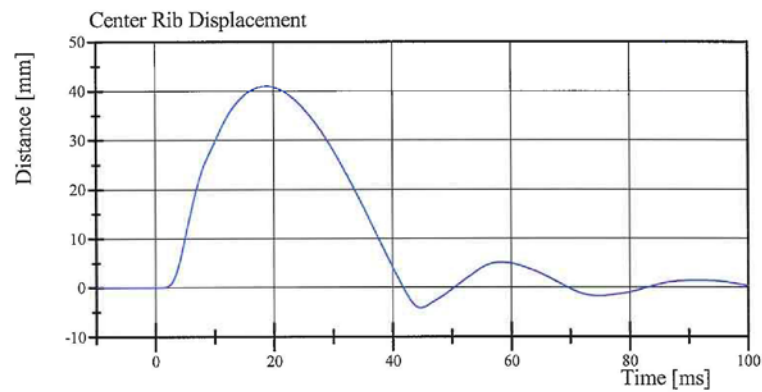


Transportation Research Center Inc.

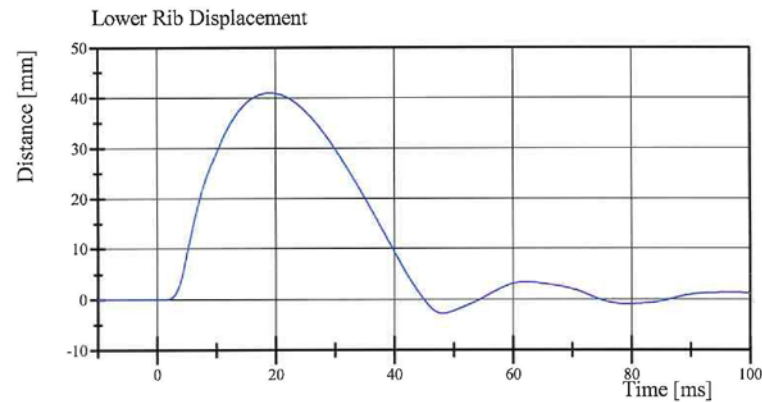
Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 22-1
Test Date: 1/29/2014



Filter Class: CFC_180
Max: 38.2 mm at 17.9 ms
Min: -4.2 mm at 41.4 ms



Filter Class: CFC_180
Max: 41.0 mm at 18.8 ms
Min: -4.2 mm at 44.7 ms



Filter Class: CFC_180
Max: 41.0 mm at 19.1 ms
Min: -2.8 mm at 48.2 ms

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

01.29.2014 13:36:00 489



Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 22-2

Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.93 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,138.8 N	Yes
Time of Peak	10.6 - 13.0 ms	11.36 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,664.4 N	Yes
Time of Peak	10.0 - 12.3 ms	10.40 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 14:48:30 610

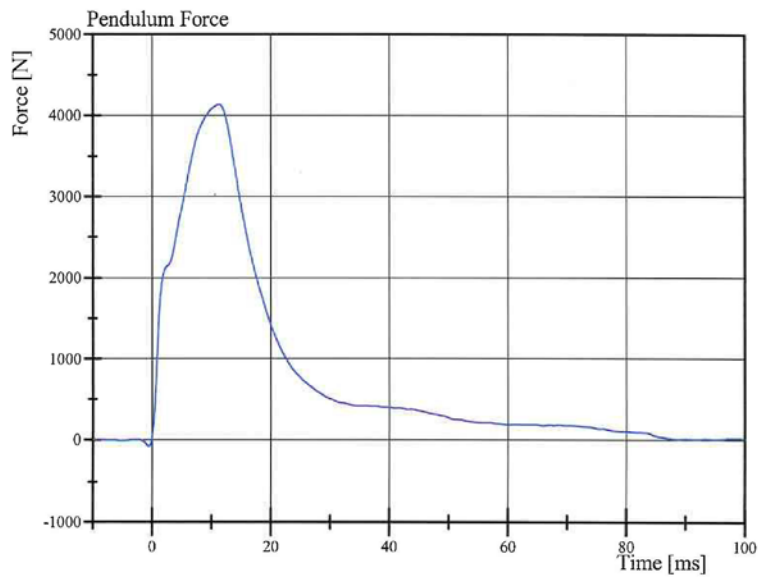
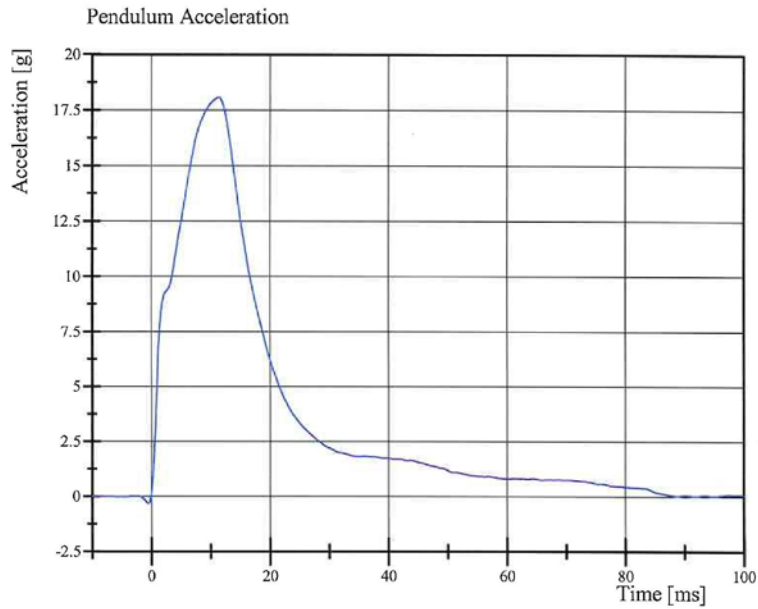


Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 22-2

Test Date: 1/29/2014



Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 14:48:36 610

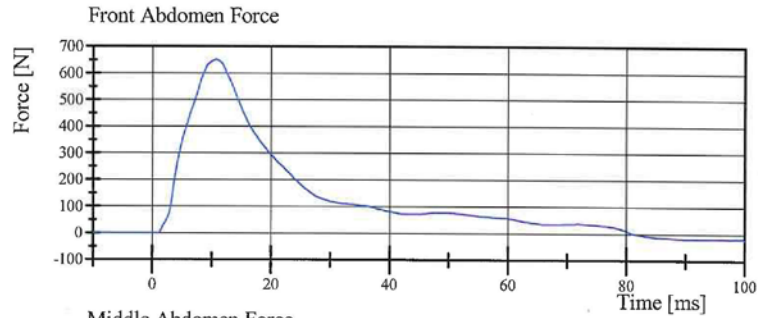


Transportation Research Center Inc.

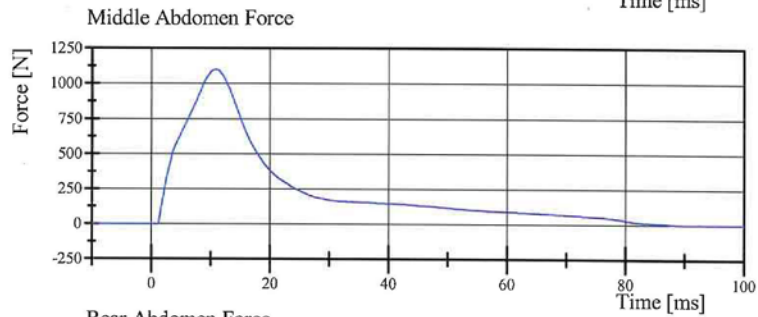
Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 22-2

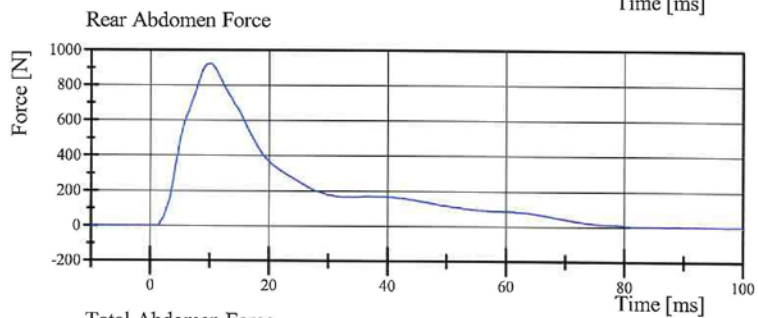
Test Date: 1/29/2014



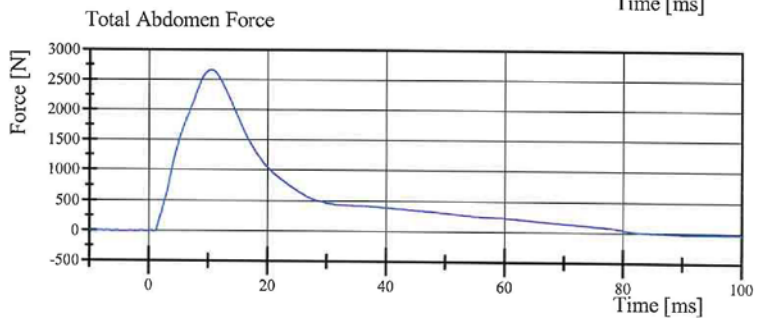
Filter Class: CFC_600
Max: 651.4 N at 10.7 ms
Min: -20.4 N at 100.0 ms



Filter Class: CFC_600
Max: 1,099.8 N at 10.9 ms
Min: -3.1 N at 100.0 ms



Filter Class: CFC_600
Max: 923.2 N at 10.2 ms
Min: -3.2 N at 97.4 ms



Filter Class: CFC_600
Max: 2,664.4 N at 10.4 ms
Min: -26.5 N at 97.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 14:48:37 610



Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 22-3

Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.012 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-49.5 deg	Yes
Time of Peak	39 - 53 ms	45.0 ms	Yes
Headform Flexion Decay			
- Peak to Zero	37 - 57 ms	38.6 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 11:02:51 580

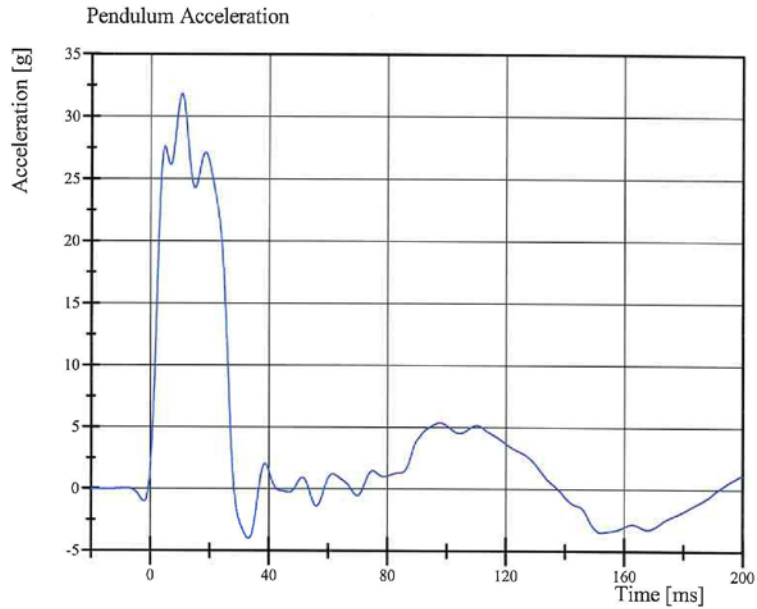


Transportation Research Center Inc.

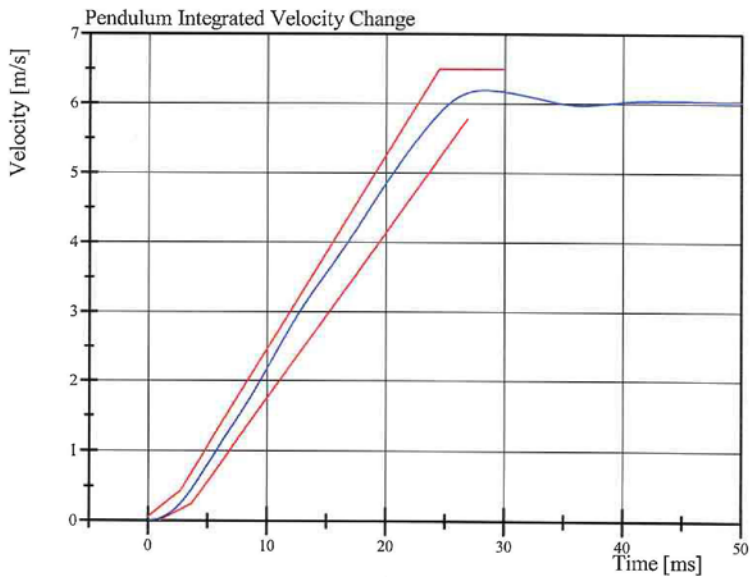
Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 22-3

Test Date: 1/29/2014



Filter Class: CFC_60
Max: 31.8 g at 10.6 ms
Min: -4.0 g at 33.2 ms



Filter Class: CFC_60
Max: 6.2 m/s at 28.3 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 11:02:58 580

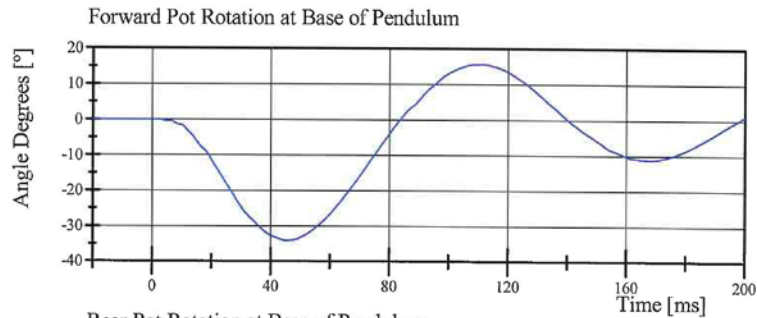


Transportation Research Center Inc.

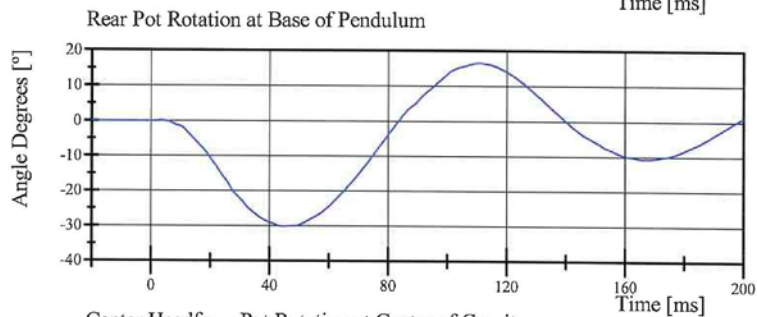
Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 22-3

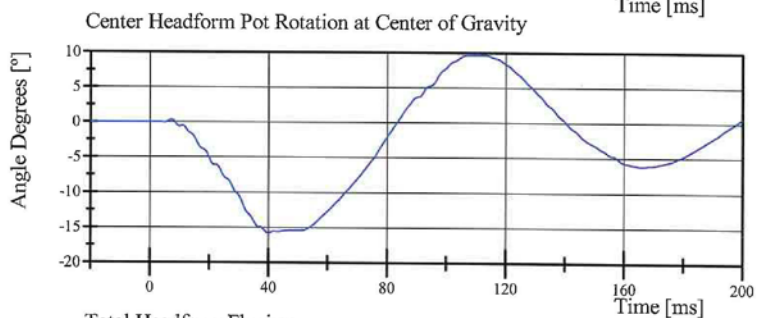
Test Date: 1/29/2014



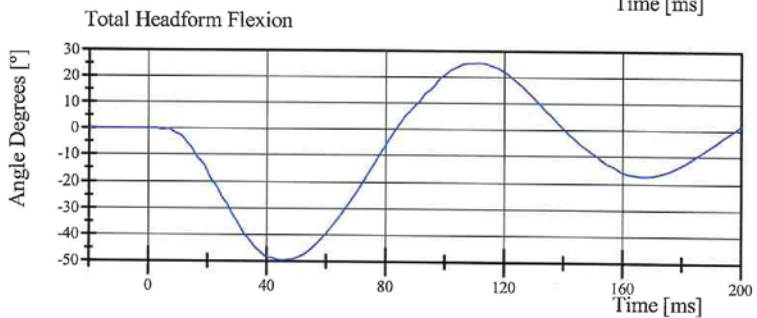
Filter Class: CFC_180
Max: 15.6 ° at 111.2 ms
Min: -34.0 ° at 45.3 ms



Filter Class: CFC_180
Max: 16.5 ° at 110.6 ms
Min: -30.2 ° at 44.6 ms



Filter Class: CFC_180
Max: 9.7 ° at 112.7 ms
Min: -15.8 ° at 40.0 ms



Filter Class: CFC_180
Max: 25.3 ° at 111.5 ms
Min: -49.5 ° at 45.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 11:02:58 580



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 22-1

Test Date: 1/29/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.31 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,239.4 N	Yes
Time of Peak	11.8 - 16.1 ms	12.88 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,334.4 N	Yes
Time of Peak	12.2 - 17.0 ms	12.96 ms	Yes

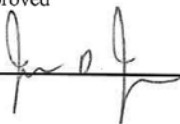
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 13:58:39.552

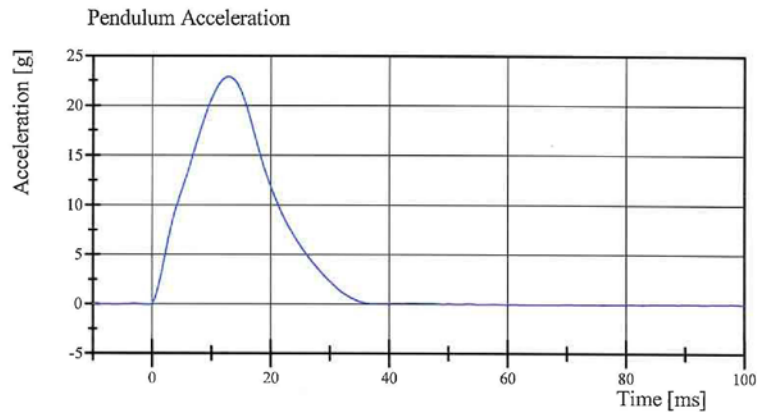


Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 22-1

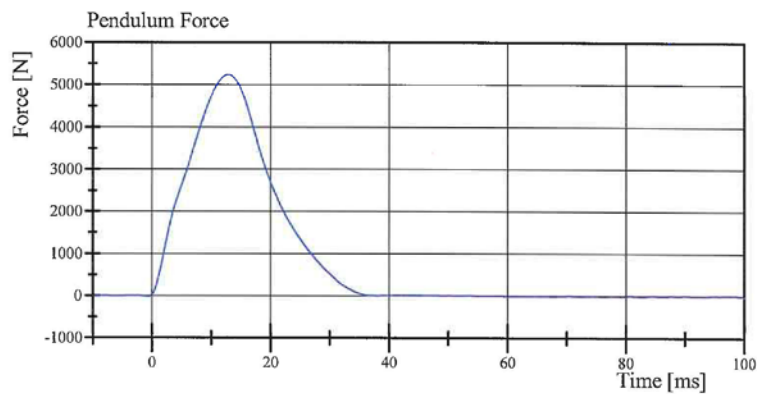
Test Date: 1/29/2014



Filter Class: CFC_180

Max: 22.9 g at 12.9 ms

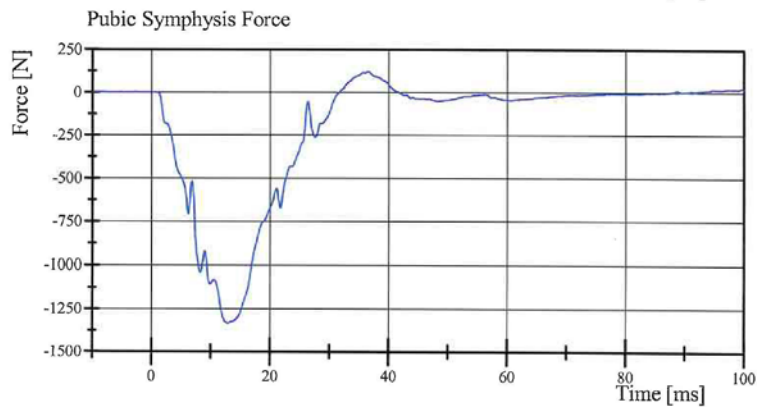
Min: -0.1 g at 76.2 ms



Filter Class: CFC_180

Max: 5,239.4 N at 12.9 ms

Min: -18.1 N at 76.2 ms



Filter Class: CFC_600

Max: 122.2 N at 36.6 ms

Min: -1,334.4 N at 13.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

01.29.2014 13:58:46 552

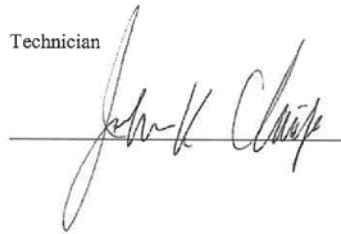


Pre-Test Calibration Sheets
Passenger S/N 305

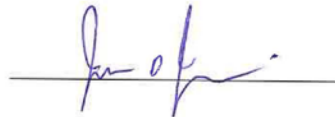
Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.026

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	444	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	127	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	526	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	428	Yes
O	Chest Depth without Jacket	195.0 - 211.0	201	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	318	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	484	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	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	777	Yes

Technician



Approved



Revised 9/29/2005



Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 26-1

Test Date: 1/24/2014

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	121.8 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.2 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

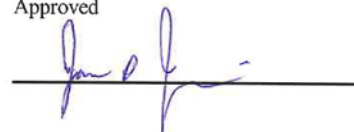
Test meets specifications.

Comments:

Technician



Approved



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

01.24.2014 13:39:58 232

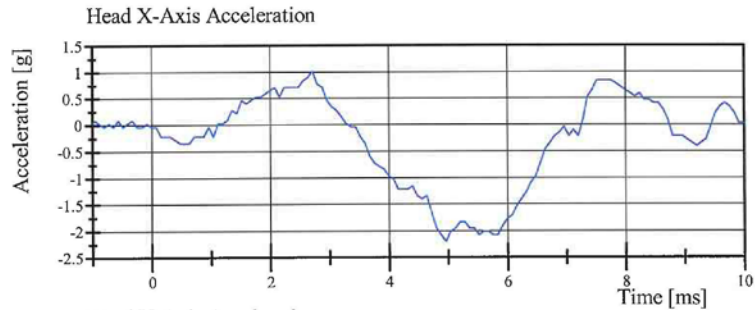


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 26-1

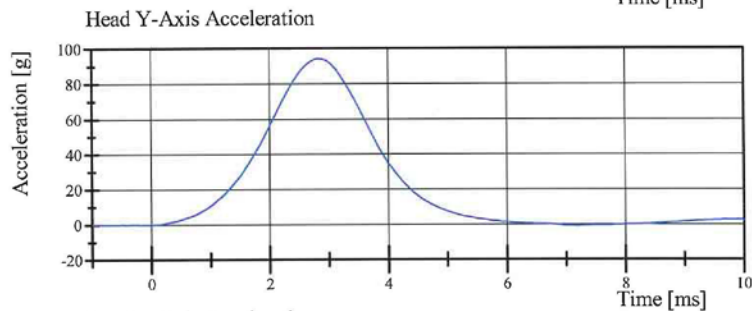
Test Date: 1/24/2014



Filter Class: CFC_1000

Max: 1.0 g at 2.7 ms

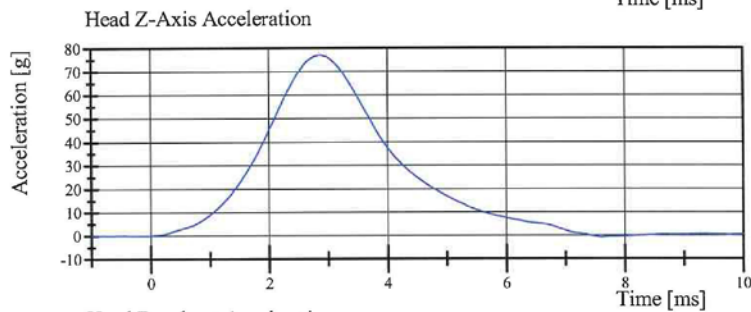
Min: -2.2 g at 5.0 ms



Filter Class: CFC_1000

Max: 94.3 g at 2.8 ms

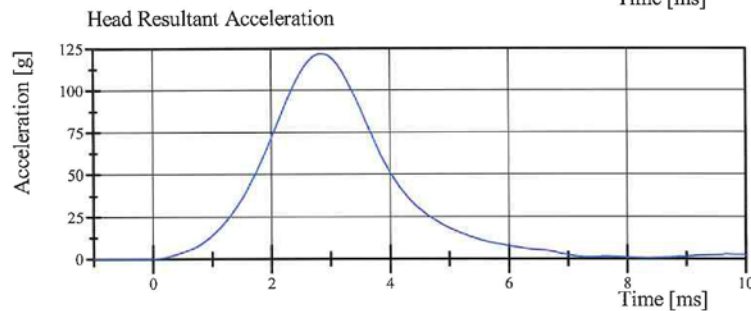
Min: -1.0 g at 7.2 ms



Filter Class: CFC_1000

Max: 77.1 g at 2.9 ms

Min: -0.9 g at 7.6 ms



Filter Class: CFC_1000

Max: 121.8 g at 2.9 ms

Min: 0.0 g at -0.2 ms

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

01.24.2014 13:40:08 232



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 26-1

Test Date: 1/24/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.608 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.788 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	4.025 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.351 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.834 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.834 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-79.9 deg	Yes
Time of Peak	50 - 70 ms	69.9 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	42.1 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	120.9 ms	Yes

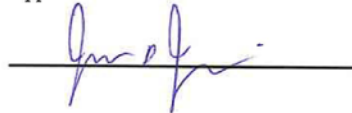
Test meets specifications.

Comments:

Technician



Approved



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

01.24.2014 15:29:18 640

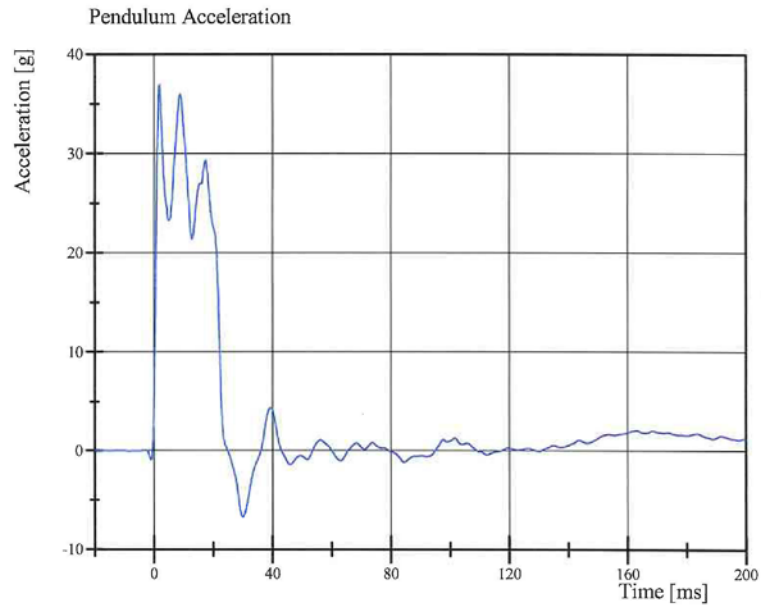


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 26-1

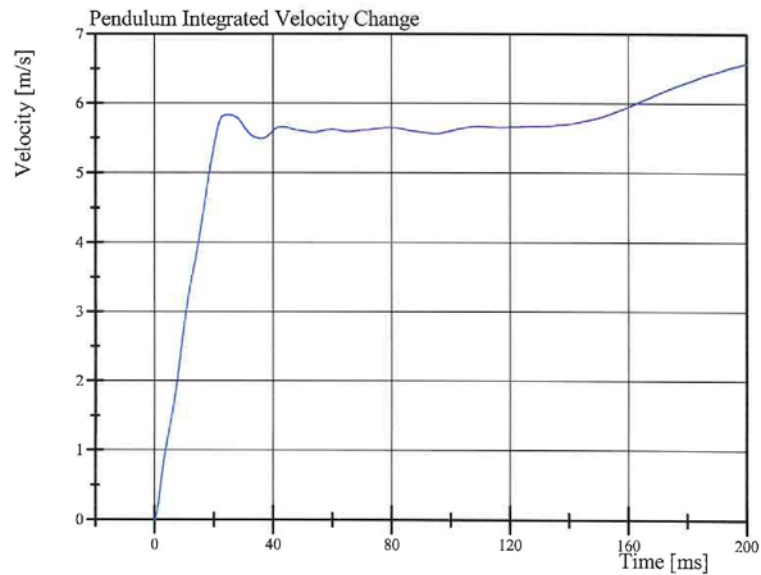
Test Date: 1/24/2014



Filter Class: CFC_180

Max: 36.9 g at 1.9 ms

Min: -6.7 g at 30.0 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.

01.24.2014 15:29:27 640

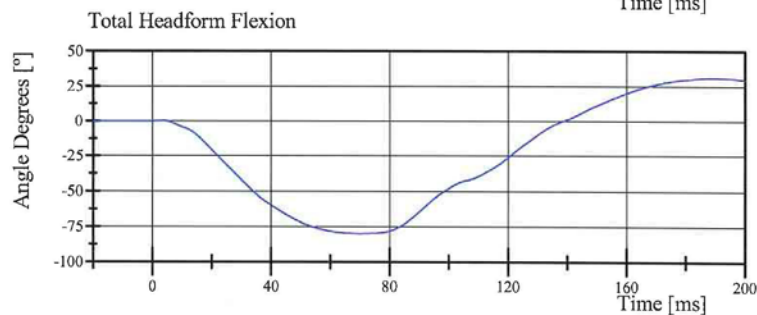
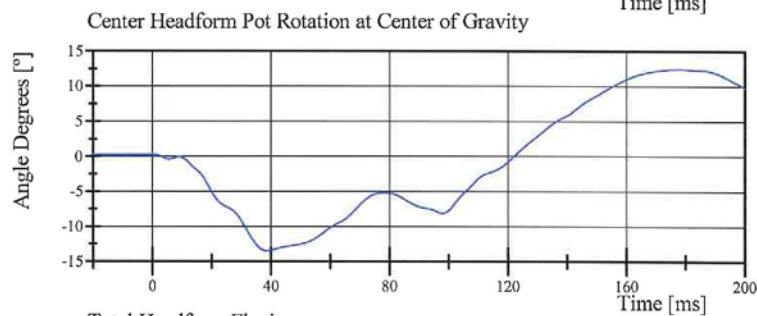
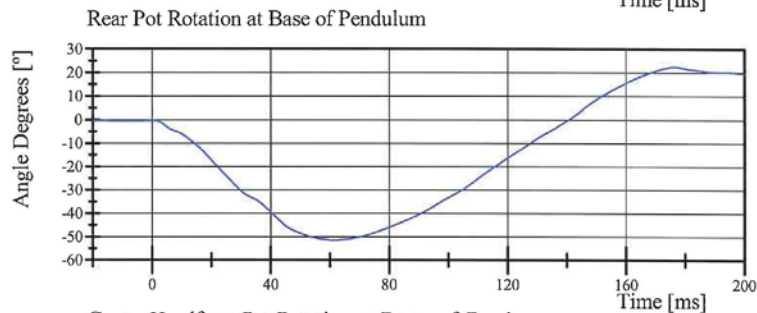
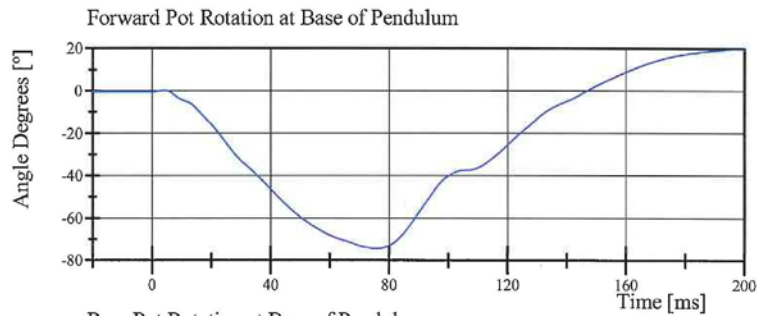


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 26-1

Test Date: 1/24/2014



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

01.24.2014 15:29:28 640

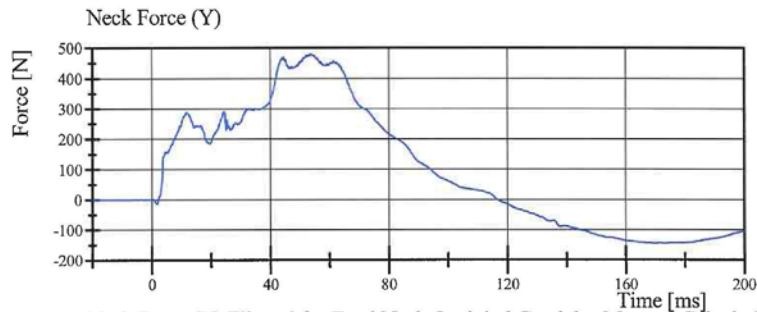


Transportation Research Center Inc.

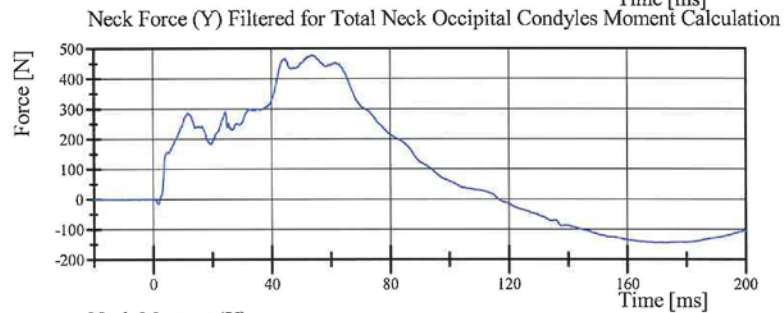
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 26-1

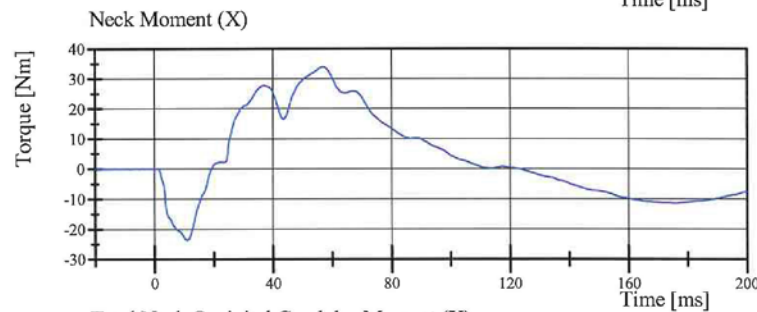
Test Date: 1/24/2014



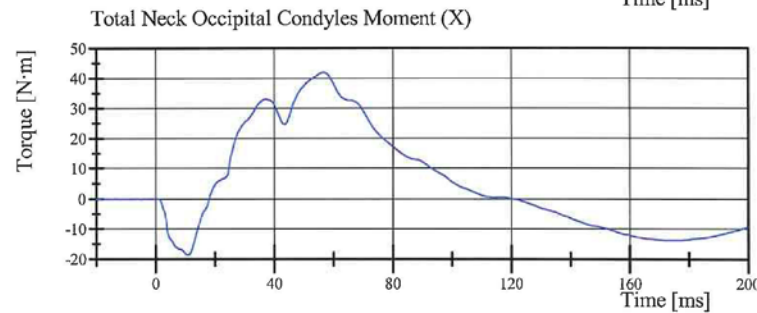
Filter Class: CFC_1000
Max: 480.3 N at 53.8 ms
Min: -146.3 N at 170.0 ms



Filter Class: CFC_600
Max: 479.6 N at 53.8 ms
Min: -145.9 N at 170.0 ms



Filter Class: CFC_600
Max: 34.0 Nm at 56.6 ms
Min: -23.5 Nm at 11.0 ms



Filter Class: Without (Constai
Max: 42.1 N·m at 56.6 ms
Min: -18.6 N·m at 10.9 ms

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

01.24.2014 15:29:29 640



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 26-1

Test Date: 1/24/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.9 g	Yes
Shoulder Displacement	28 - 37 mm	30.5 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	20.5 g	Yes

Test meets specifications.

Comments:

Technician



Approved



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

01.24.2014 09:29:17 853

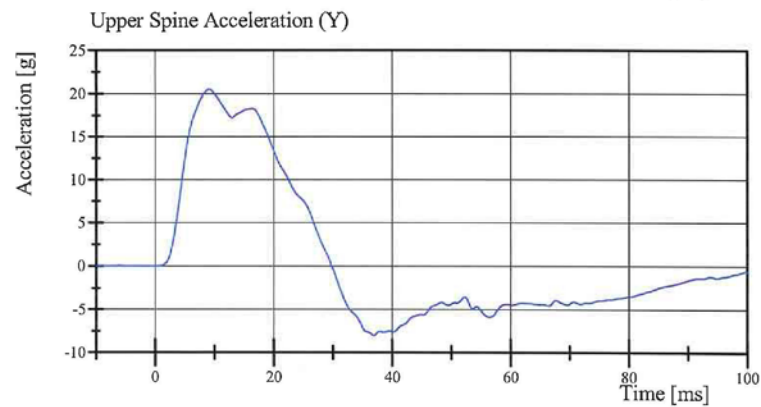
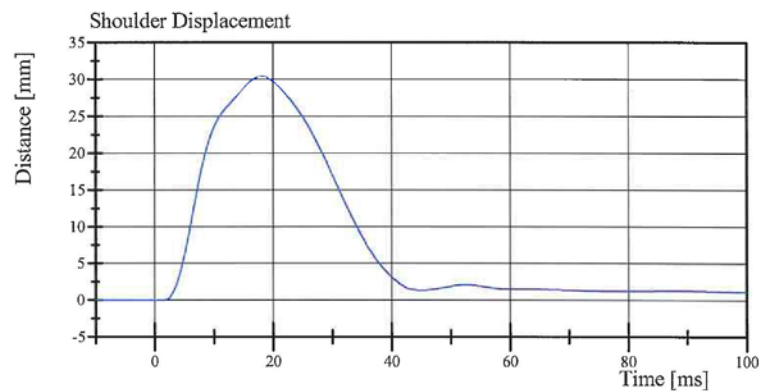
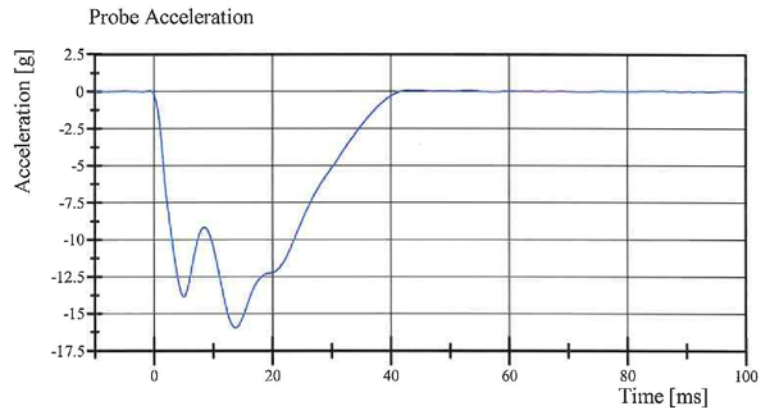


Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 26-1

Test Date: 1/24/2014



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

01.24.2014 09:29:27 853



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 26-1
Test Date: 1/24/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.706 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-32.9 g	Yes
Shoulder Displacement	31 - 40 mm	32.8 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.7 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.0 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.6 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.8 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	33.5 g	Yes

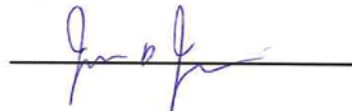
Test meets specifications.

Comments:

Technician



Approved



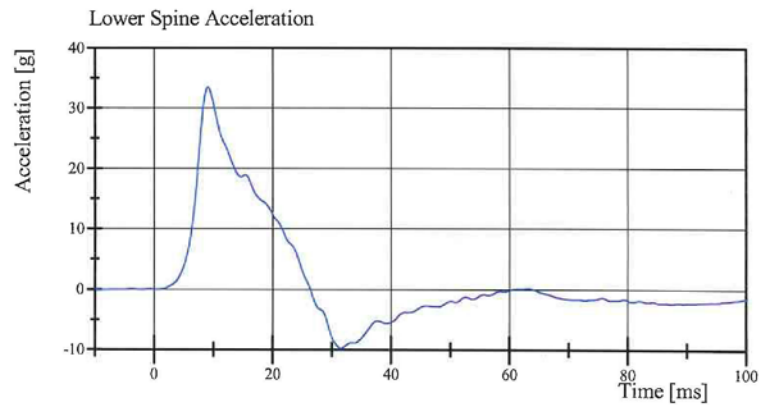
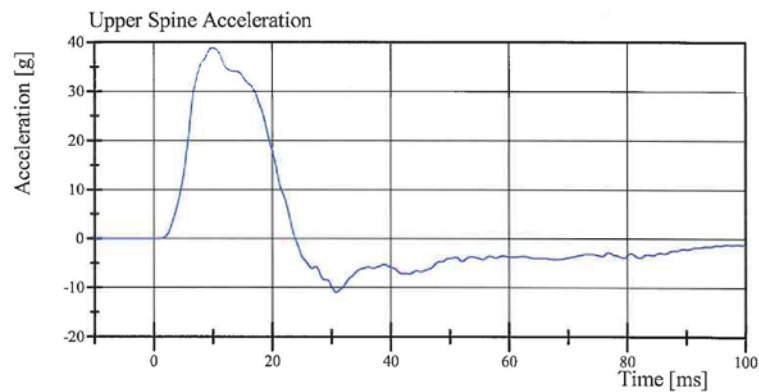
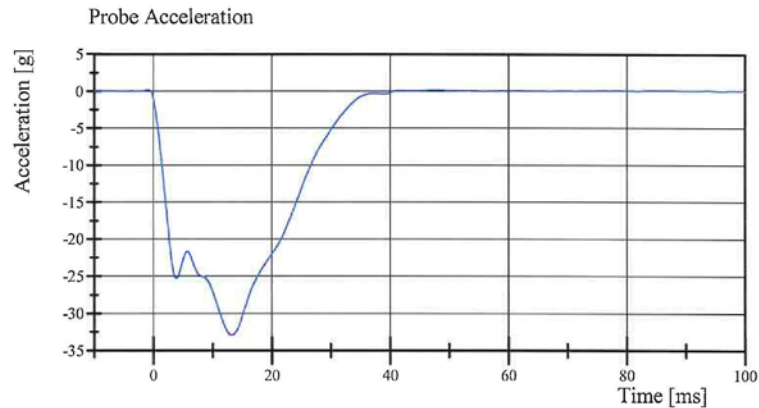
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.24.2014 10:52:22 614



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 26-1
Test Date: 1/24/2014



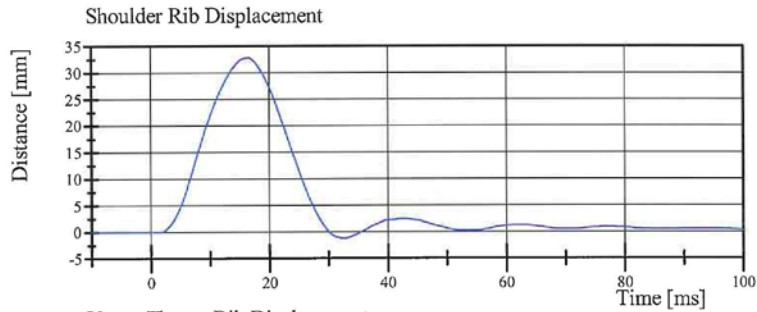
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.24.2014 10:52:35 614

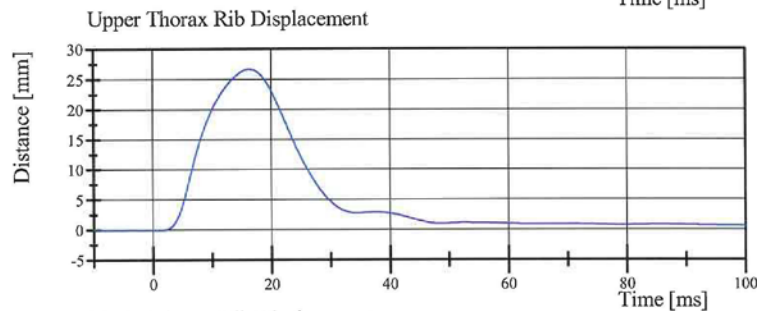


Transportation Research Center Inc.

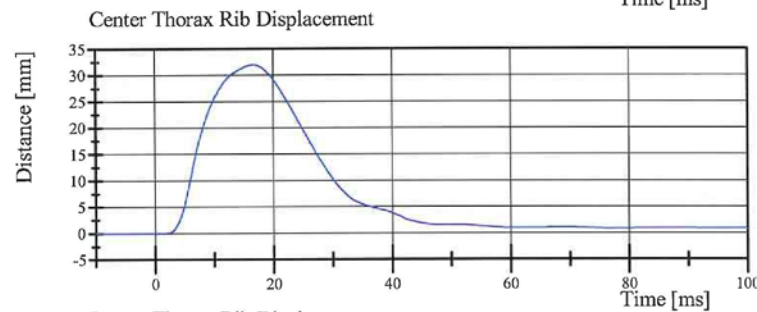
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 26-1
Test Date: 1/24/2014



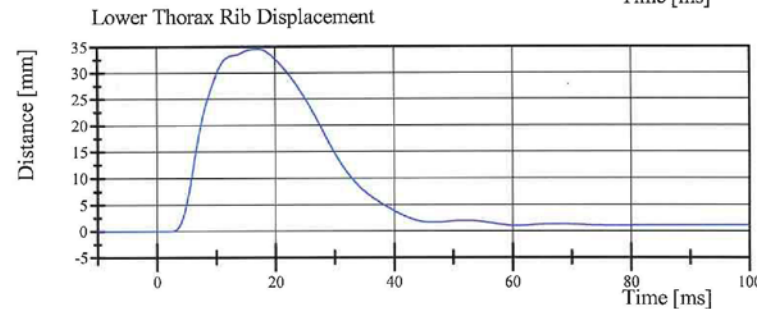
Filter Class: CFC_600
Max: 32.8 mm at 16.6 ms
Min: -1.2 mm at 32.4 ms



Filter Class: CFC_600
Max: 26.7 mm at 16.3 ms
Min: -0.0 mm at -7.1 ms



Filter Class: CFC_600
Max: 32.0 mm at 16.6 ms
Min: -0.0 mm at -9.0 ms



Filter Class: CFC_600
Max: 34.6 mm at 17.0 ms
Min: -0.0 mm at -9.0 ms

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

01.24.2014 10:52:35 614



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 26-1
Test Date: 1/24/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.382 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.3 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.8 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.0 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.5 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.8 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.2 g	Yes

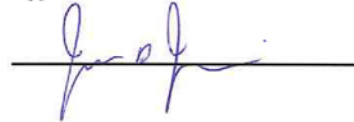
Test meets specifications.

Comments:

Technician



Approved



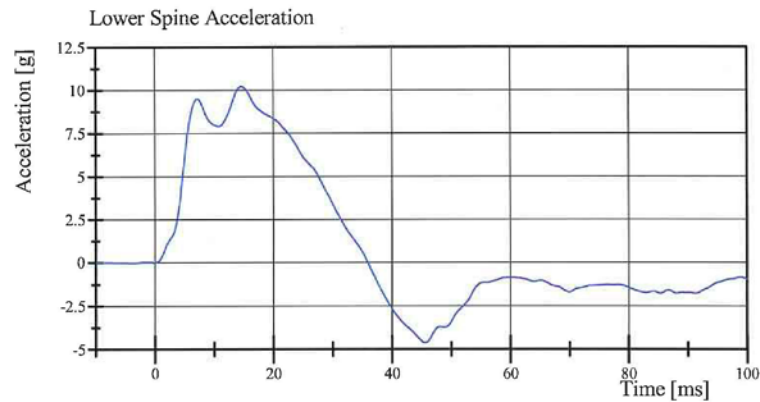
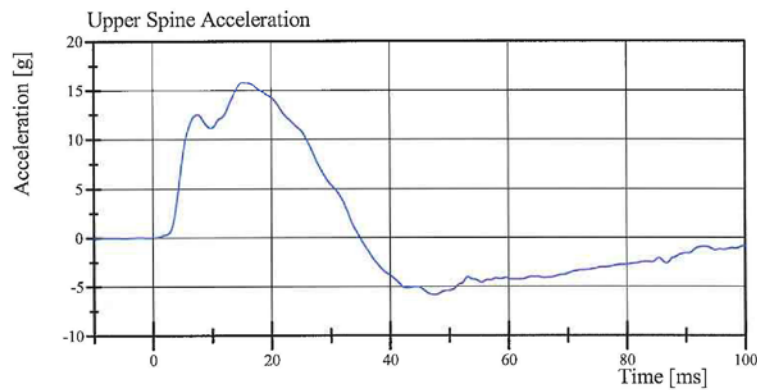
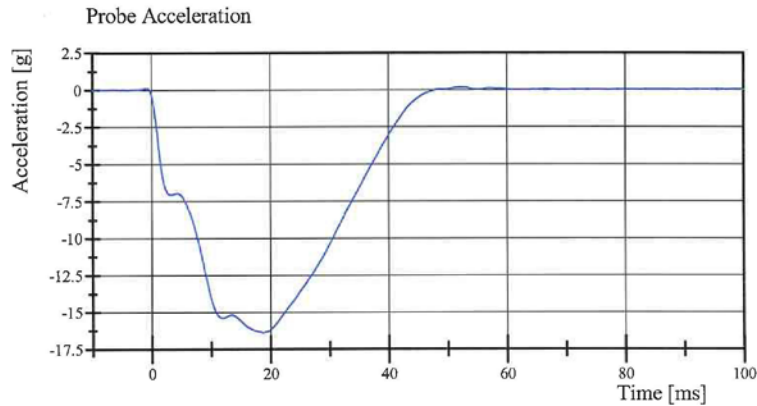
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.24.2014 11:32:35 823



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 26-1
Test Date: 1/24/2014



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

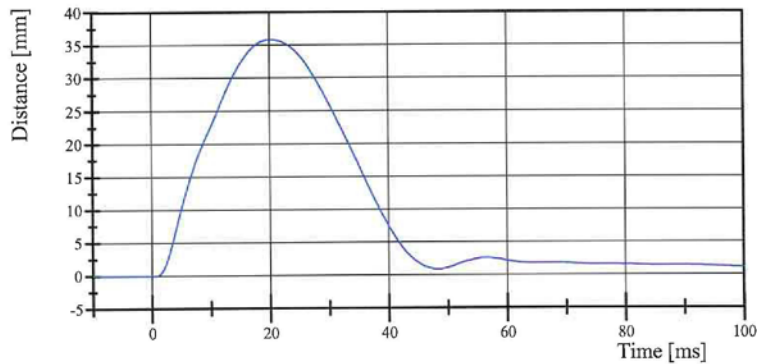
01.24.2014 11:32:45 823



Transportation Research Center Inc.

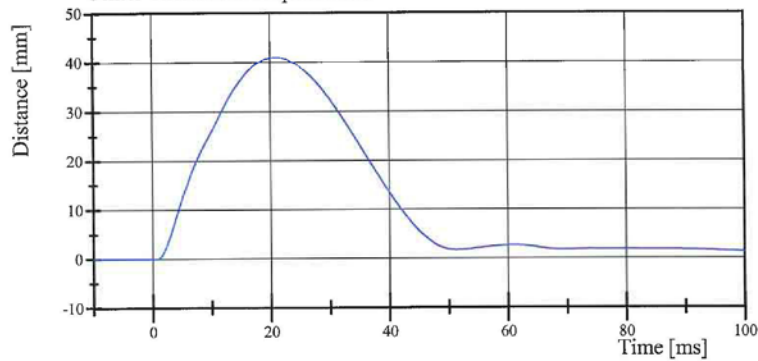
Left Lateral Thorax without Arm
SID II_s Serial No. 305 Certification No. 26-1
Test Date: 1/24/2014

Upper Thorax Rib Displacement



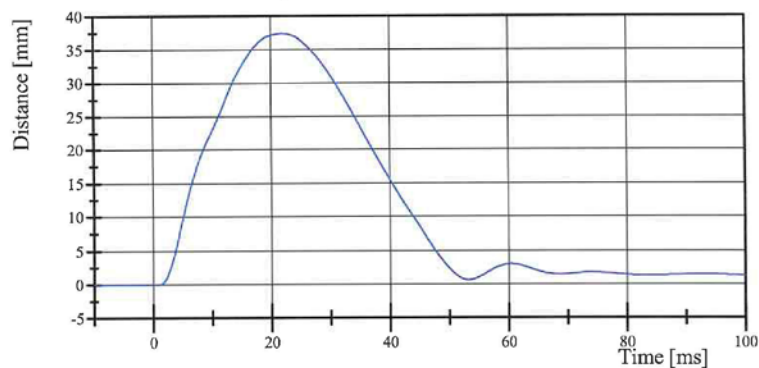
Filter Class: CFC_600
Max: 35.8 mm at 20.2 ms
Min: -0.0 mm at 0.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.0 mm at 21.0 ms
Min: -0.0 mm at -8.8 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.5 mm at 21.9 ms
Min: -0.0 mm at -8.9 ms

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

01.24.2014 11:32:46 823



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 305 Certification No. 26-1

Test Date: 1/24/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.5 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	43.3 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	38.4 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.66 g	Yes

Test meets specifications.

Comments:

Technician



Approved



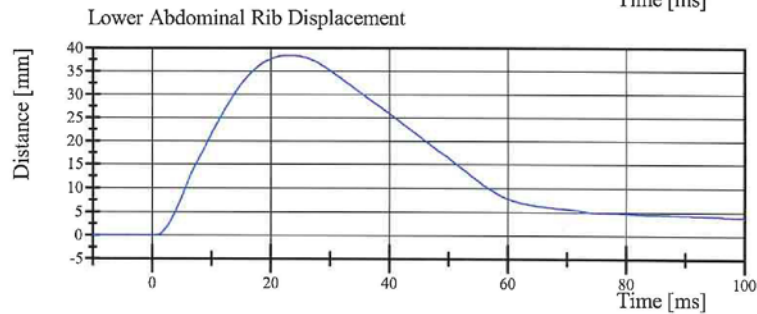
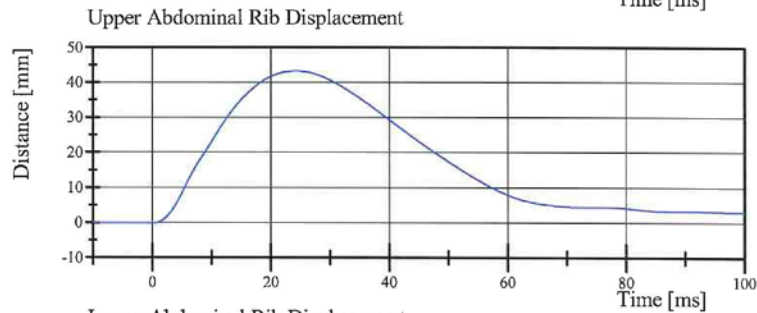
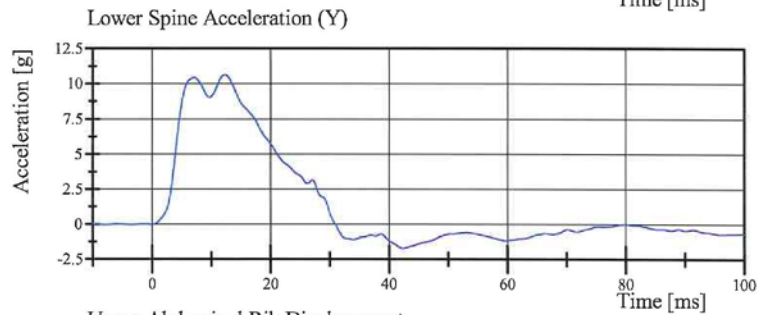
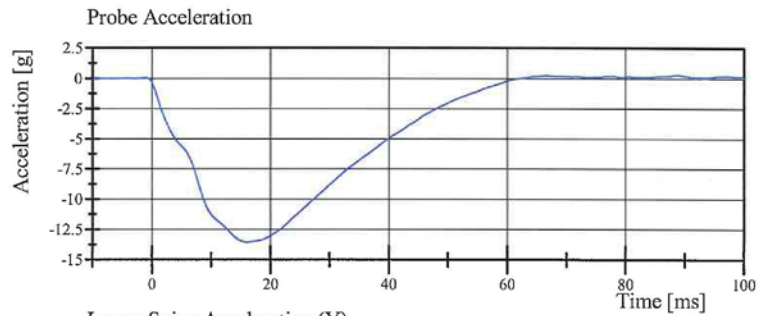
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.24.2014 10:25:40 683



Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 26-1
Test Date: 1/24/2014



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

01.24.2014 10:25:50 683



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 26-3

Test Date: 1/27/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.63 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.76 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.1 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,979.3 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.

01.27.2014 08:12:34 440

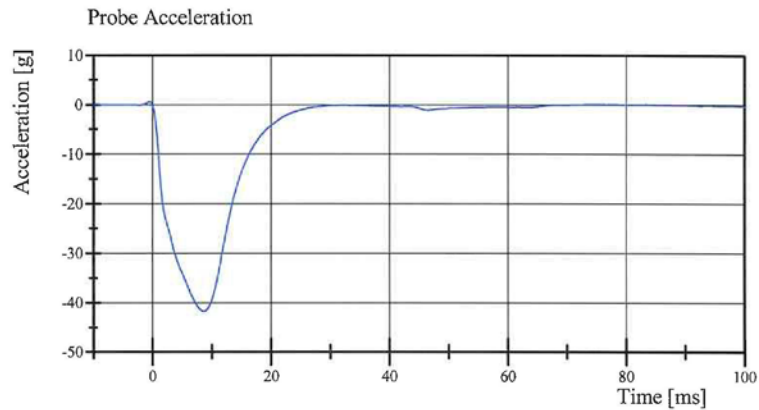


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIa Serial No. 305 Certification No. 26-3

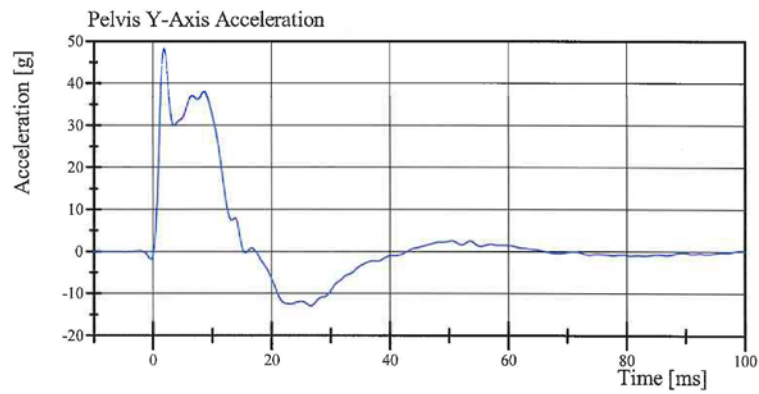
Test Date: 1/27/2014



Filter Class: CFC_180

Max: 0.6 g at -0.5 ms

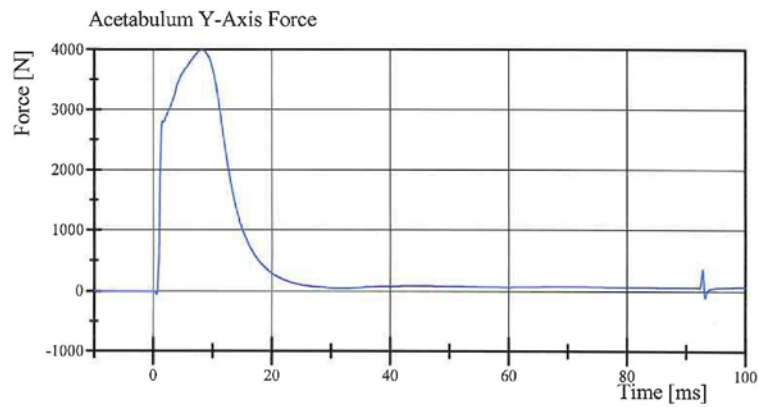
Min: -41.8 g at 8.6 ms



Filter Class: CFC_180

Max: 48.5 g at 1.9 ms

Min: -12.9 g at 26.6 ms



Filter Class: CFC_600

Max: 3,979.3 N at 8.2 ms

Min: -109.7 N at 93.3 ms

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

01.27.2014 08:13:47 440



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 26-1

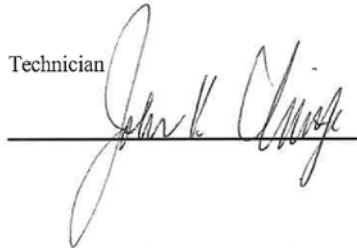
Test Date: 1/24/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-39.5 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	30.4 g	Yes
Iliac Force	4,100 - 5,100 N	4,699.3 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.

01.24.2014 09:00:13 656

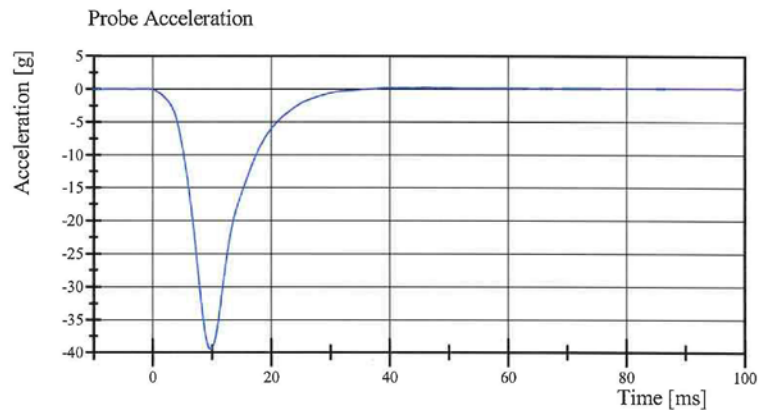


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 26-1

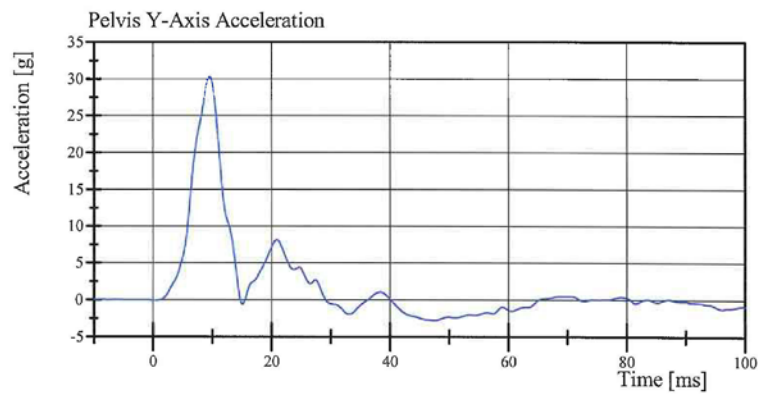
Test Date: 1/24/2014



Filter Class: CFC_180

Max: 0.2 g at 46.2 ms

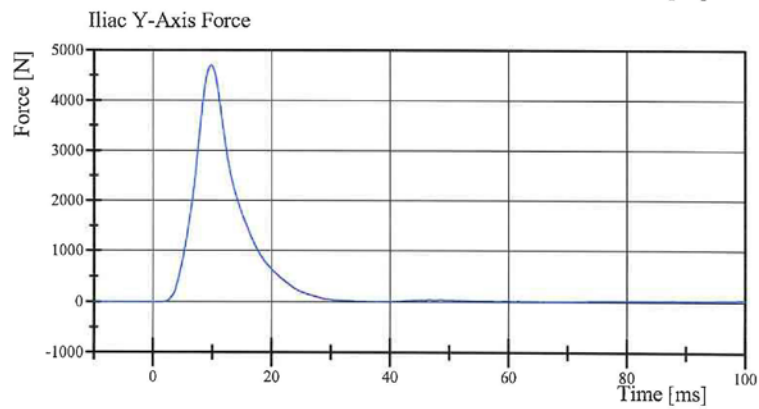
Min: -39.5 g at 9.8 ms



Filter Class: CFC_180

Max: 30.4 g at 9.6 ms

Min: -2.8 g at 47.4 ms



Filter Class: CFC_600

Max: 4,699.3 N at 9.8 ms

Min: -0.5 N at -9.2 ms

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

01.24.2014 09:00:20 656

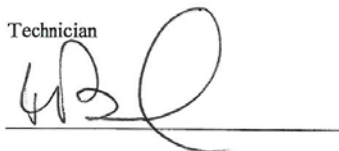


Post-Test Calibration Sheets
Passenger S/N 305

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.027

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	444	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	126	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	526	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	427	Yes
O	Chest Depth without Jacket	195.0 - 211.0	201	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	318	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	484	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	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	776	Yes

Technician



Approved



Revised 9/29/2005



Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 27-1

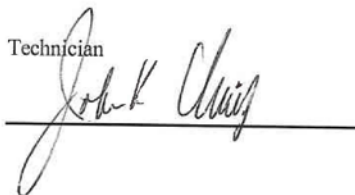
Test Date: 1/30/2014

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	122.2 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.5 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician



Approved



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

01.30.2014 13:22:39 232

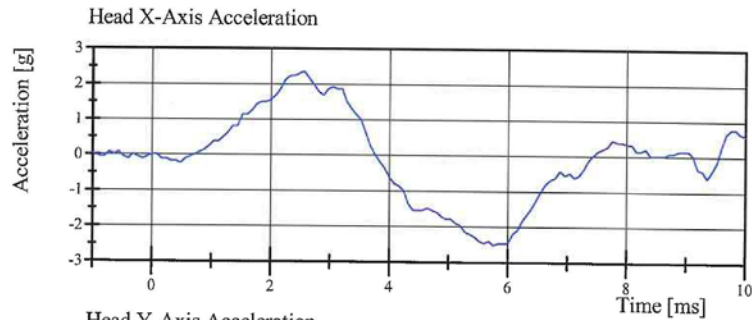


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 27-1

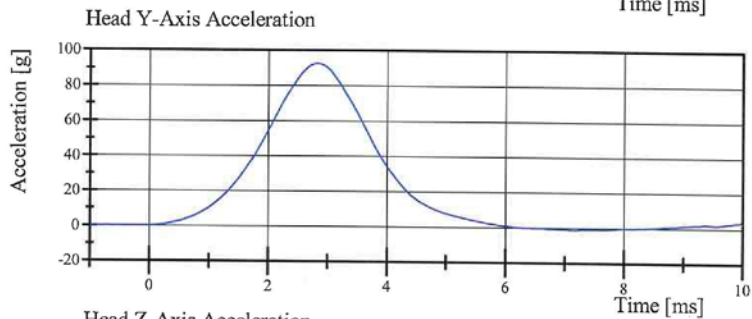
Test Date: 1/30/2014



Filter Class: CFC_1000

Max: 2.4 g at 2.6 ms

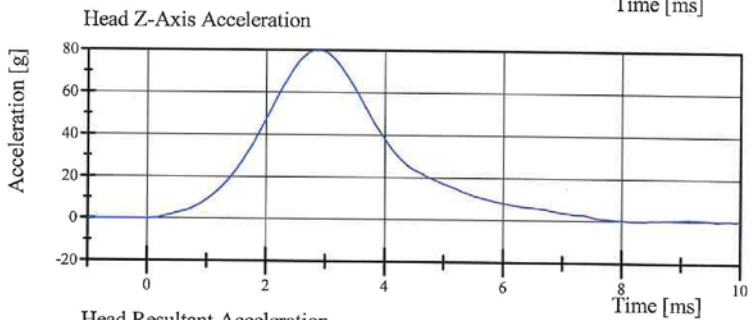
Min: -2.5 g at 5.8 ms



Filter Class: CFC_1000

Max: 92.5 g at 2.8 ms

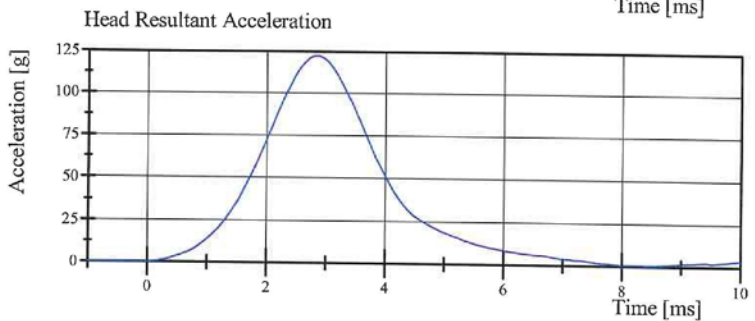
Min: -1.3 g at 7.2 ms



Filter Class: CFC_1000

Max: 80.0 g at 2.9 ms

Min: -0.3 g at 9.6 ms



Filter Class: CFC_1000

Max: 122.2 g at 2.9 ms

Min: 0.0 g at 0.0 ms

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

01.30.2014 13:22:48 232



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 27-1

Test Date: 1/30/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.598 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.585 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.755 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.066 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.811 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.816 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-77.0 deg	Yes
Time of Peak	50 - 70 ms	65.0 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	40.6 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	119.8 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.

01.30.2014 13:55:25 638

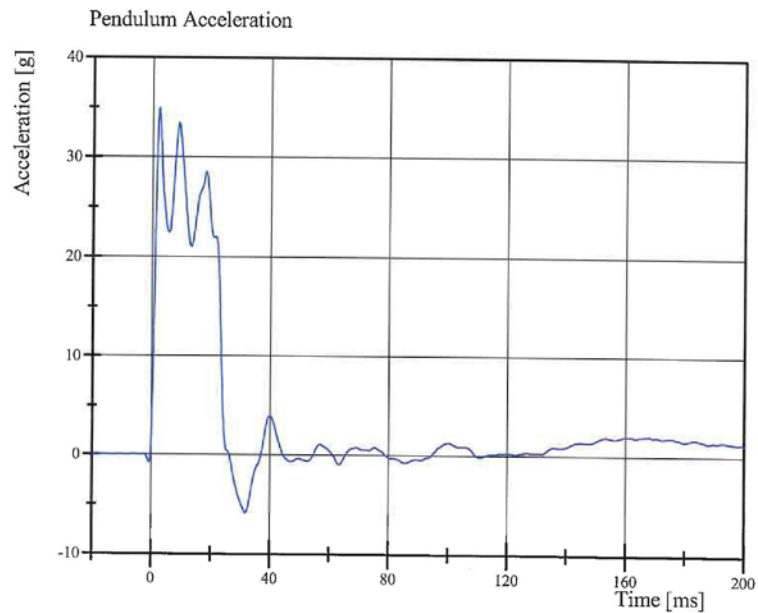


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 27-1

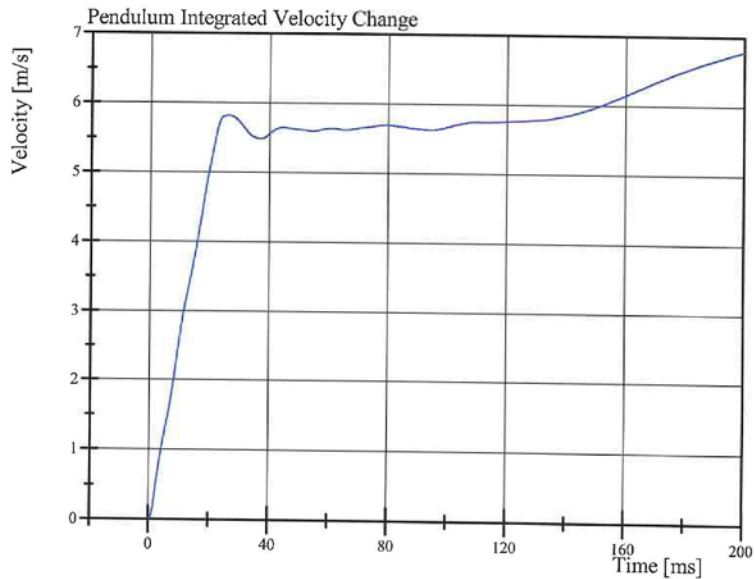
Test Date: 1/30/2014



Filter Class: CFC_180

Max: 34.9 g at 2.2 ms

Min: -5.8 g at 31.8 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.

01.30.2014 13:55:35 638

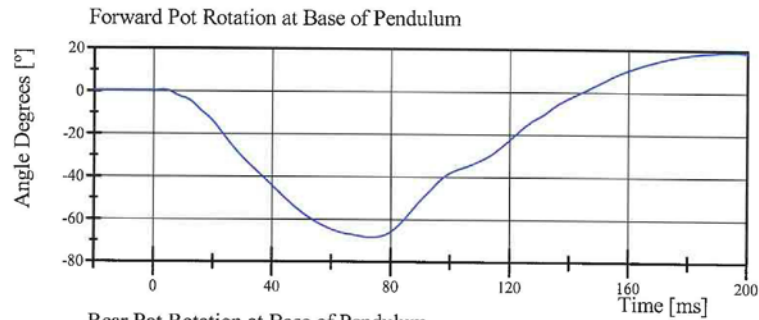


Transportation Research Center Inc.

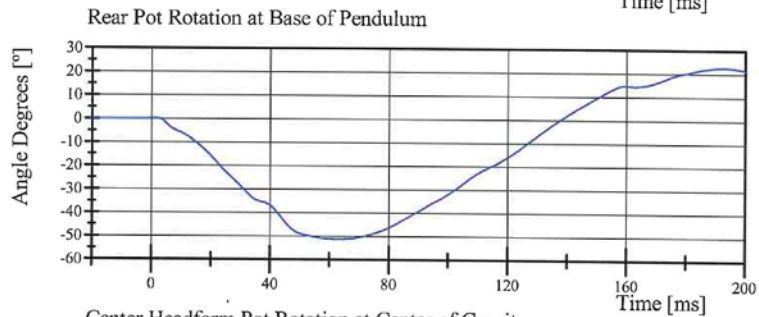
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 27-1

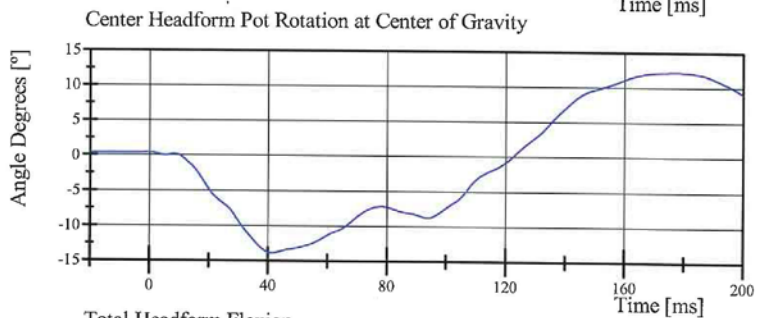
Test Date: 1/30/2014



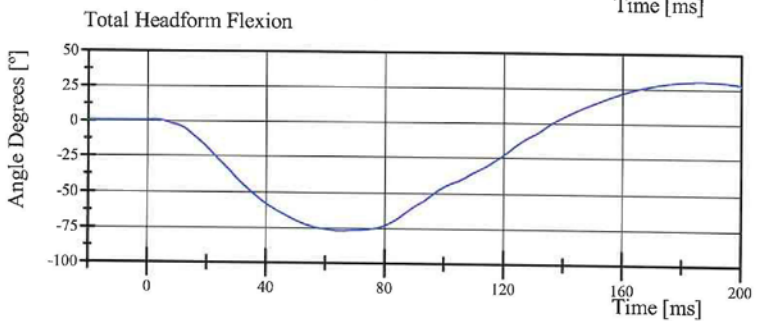
Filter Class: CFC_60
Max: 19.0 ° at 194.1 ms
Min: -68.4 ° at 73.5 ms



Filter Class: CFC_60
Max: 22.5 ° at 192.6 ms
Min: -51.4 ° at 63.0 ms



Filter Class: CFC_60
Max: 12.2 ° at 177.0 ms
Min: -13.9 ° at 41.3 ms



Filter Class: CFC_60
Max: 30.2 ° at 186.1 ms
Min: -77.0 ° at 65.0 ms

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

01.30.2014 13:55:36 638

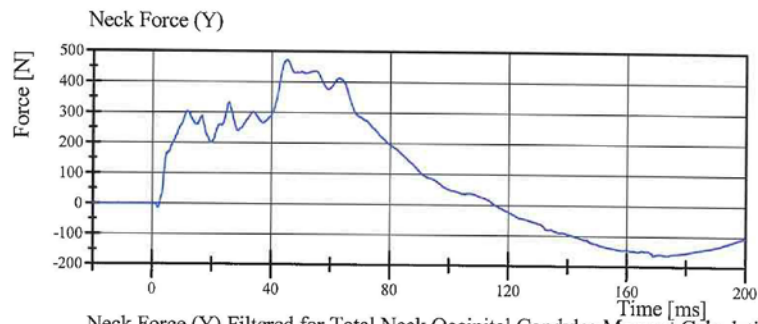


Transportation Research Center Inc.

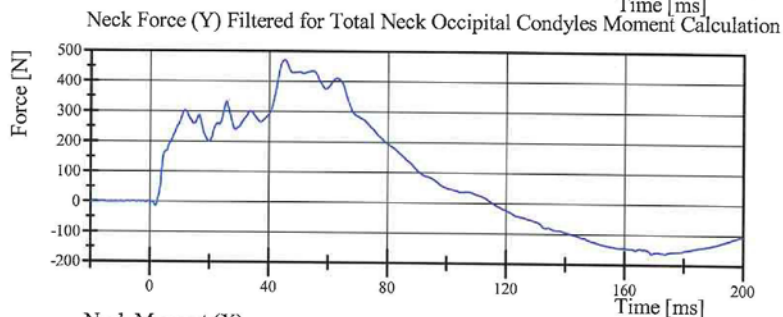
Left Lateral Neck

SID IIIs Serial No. 305 Certification No. 27-1

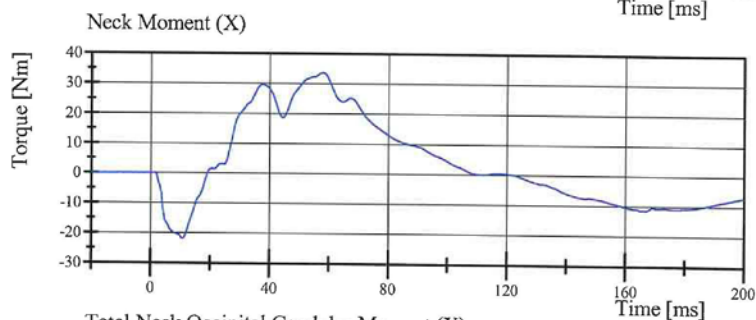
Test Date: 1/30/2014



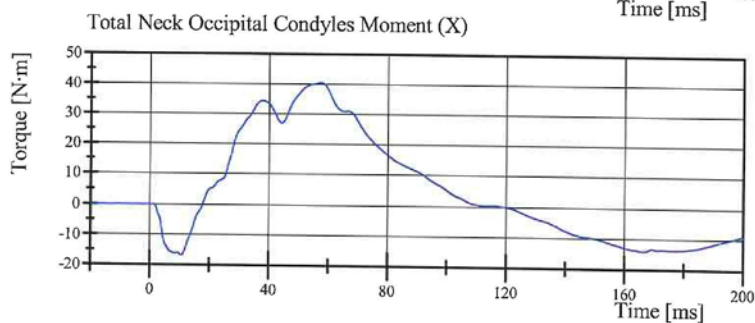
Filter Class: CFC_1000
Max: 471.5 N at 45.3 ms
Min: -165.0 N at 169.2 ms



Filter Class: CFC_600
Max: 471.1 N at 45.1 ms
Min: -164.4 N at 169.0 ms



Filter Class: CFC_600
Max: 33.6 Nm at 57.8 ms
Min: -21.9 Nm at 10.8 ms



Filter Class: Without_(Consta
Max: 40.6 N·m at 57.3 ms
Min: -16.8 N·m at 10.6 ms

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

01.30.2014 13:55:37 638



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 27-1

Test Date: 1/30/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.1 g	Yes
Shoulder Displacement	28 - 37 mm	30.4 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	20.4 g	Yes

Test meets specifications.

Comments:

Technician



Approved



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

01.30.2014 15:58:10 850

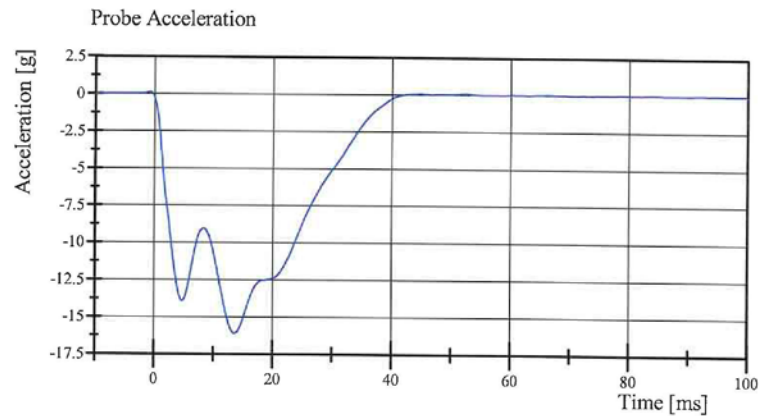


Transportation Research Center Inc.

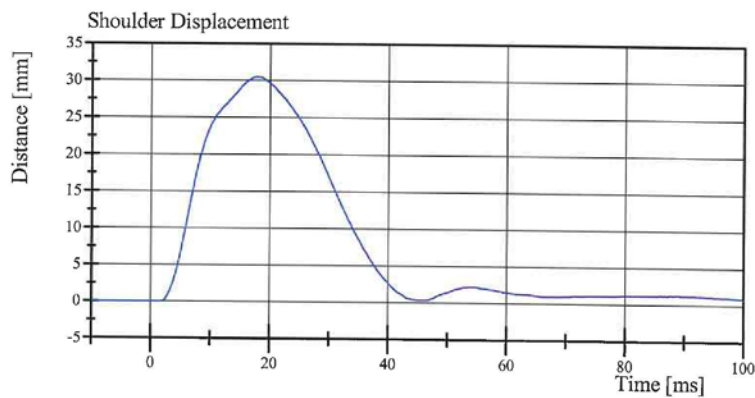
Left Lateral Shoulder

SID II_s Serial No. 305 Certification No. 27-1

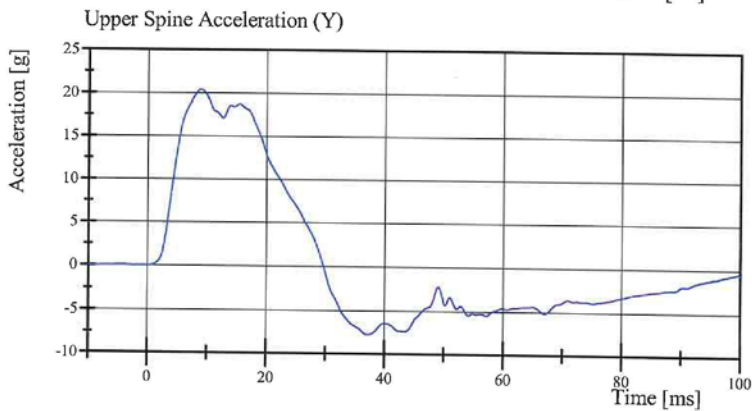
Test Date: 1/30/2014



Filter Class: CFC_180
Max: 0.1 g at -0.8 ms
Min: -16.1 g at 13.6 ms



Filter Class: CFC_600
Max: 30.4 mm at 17.7 ms
Min: -0.0 mm at 1.3 ms



Filter Class: CFC_180
Max: 20.4 g at 8.9 ms
Min: -7.7 g at 37.3 ms

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

01.30.2014 15:59:00 850



Transportation Research Center Inc.

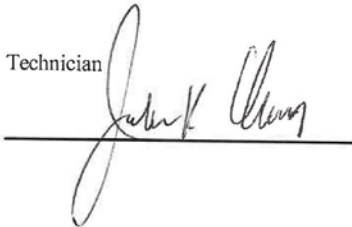
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 27-1
Test Date: 1/30/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.707 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.3 g	Yes
Shoulder Displacement	31 - 40 mm	34.8 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.2 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.5 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.4 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.0 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.0 g	Yes

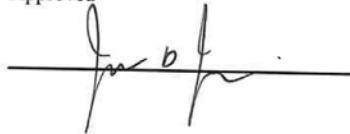
Test meets specifications.

Comments:

Technician



Approved



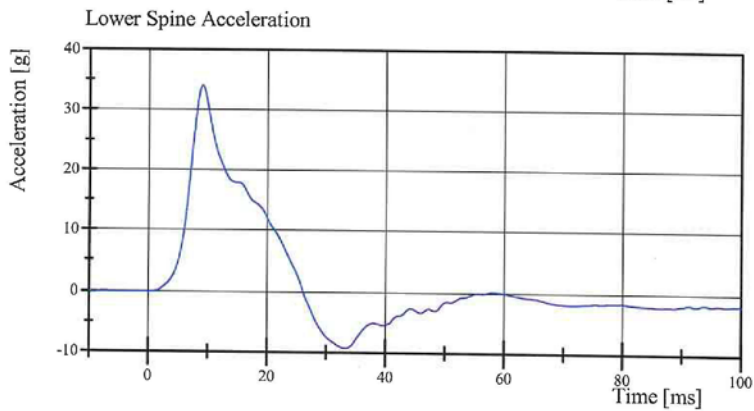
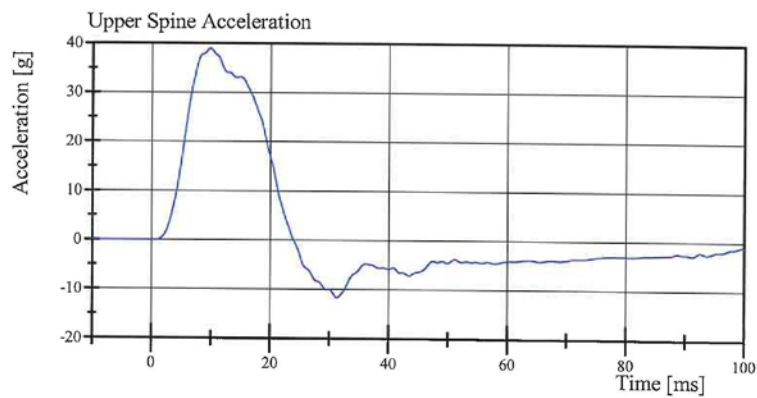
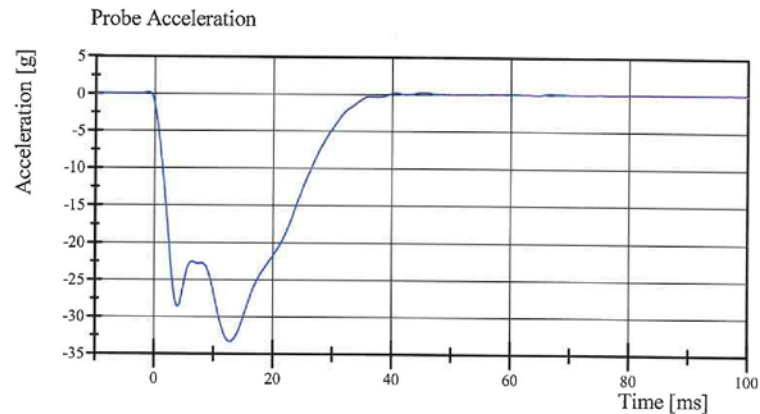
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.30.2014 16:29:14 602



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 27-1
Test Date: 1/30/2014



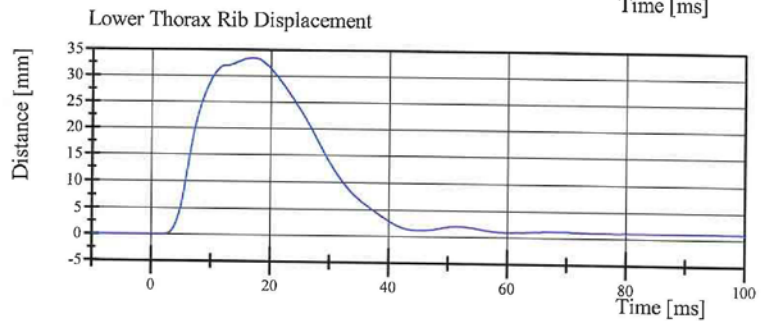
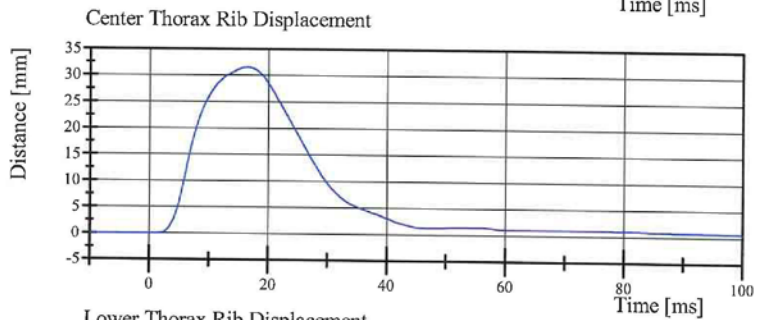
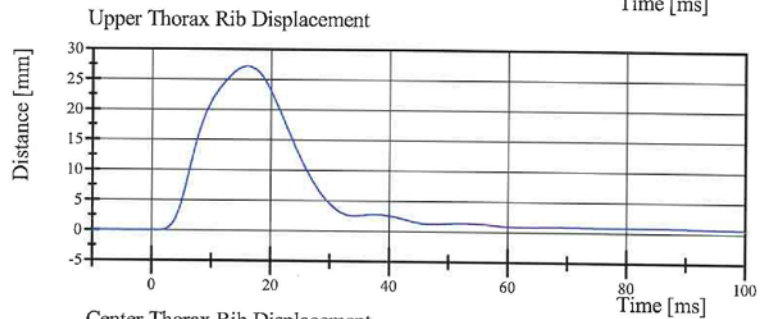
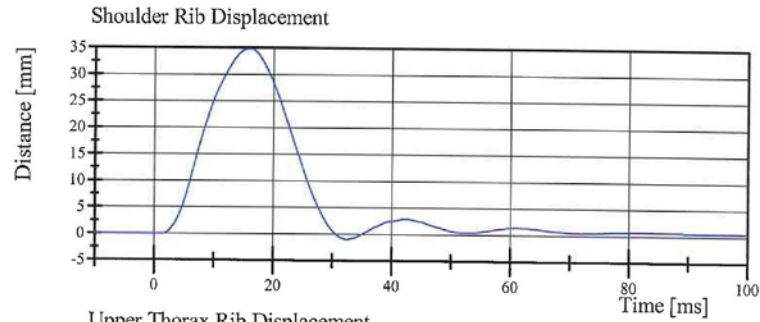
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.30.2014 16:29:25 602



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 27-1
Test Date: 1/30/2014



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

01.30.2014 16:29:26 602



Transportation Research Center Inc.

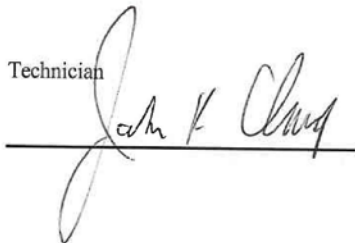
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 27-1
Test Date: 1/31/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.383 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.1 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.8 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.8 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.8 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.3 g	Yes

Test meets specifications.

Comments:

Technician



Approved



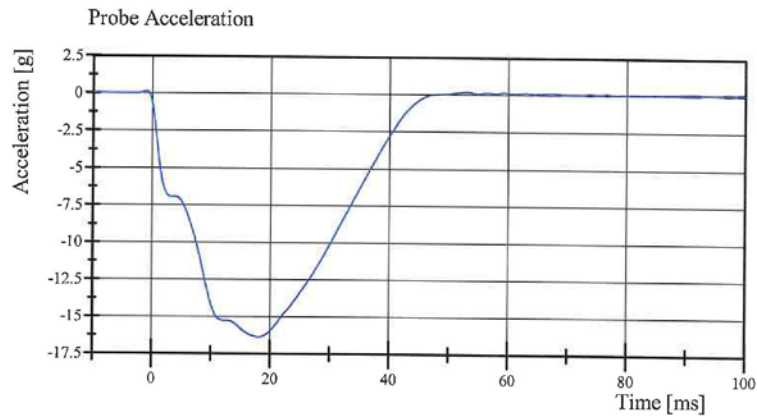
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.31.2014 07:38:25 842

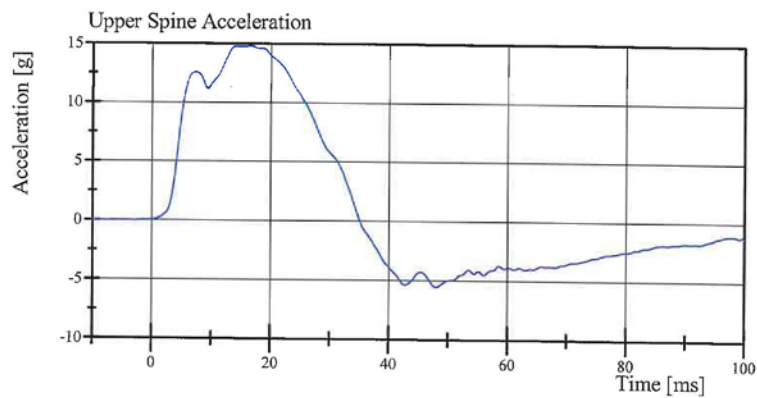


Transportation Research Center Inc.

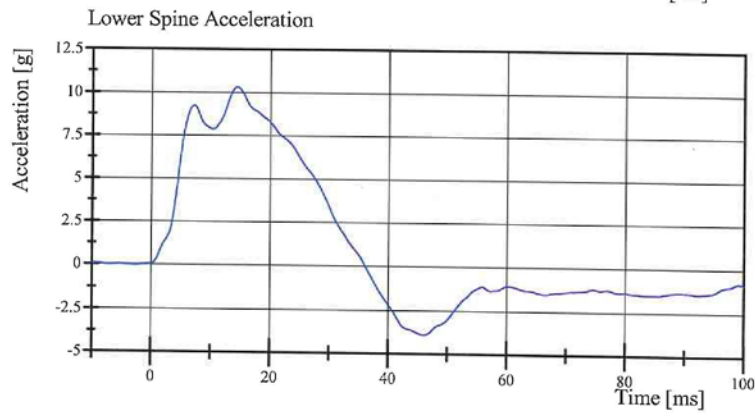
Left Lateral Thorax without Arm
SID IIa Serial No. 305 Certification No. 27-1
Test Date: 1/31/2014



Filter Class: CFC_180
Max: 0.2 g at 52.9 ms
Min: -16.4 g at 18.1 ms



Filter Class: CFC_180
Max: 14.8 g at 16.5 ms
Min: -5.5 g at 48.0 ms



Filter Class: CFC_180
Max: 10.3 g at 14.4 ms
Min: -3.9 g at 46.1 ms

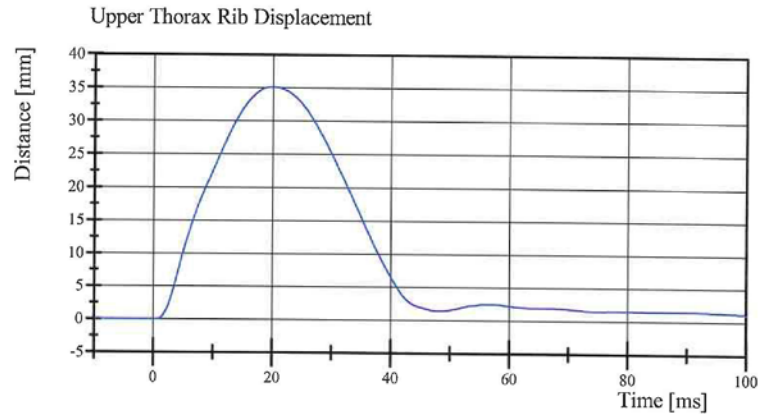
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.31.2014 07:38:34 842

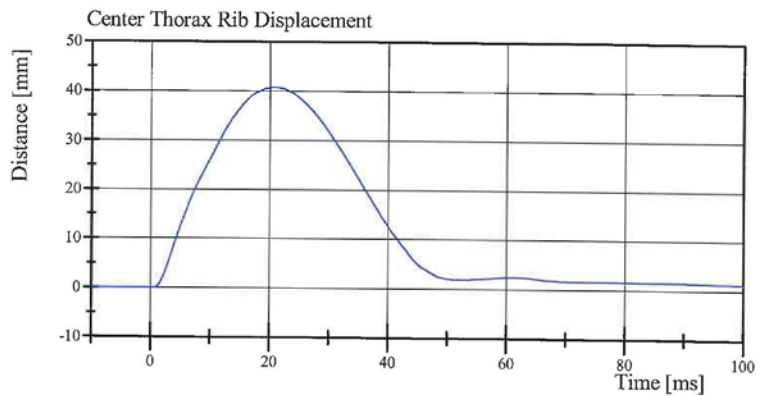


Transportation Research Center Inc.

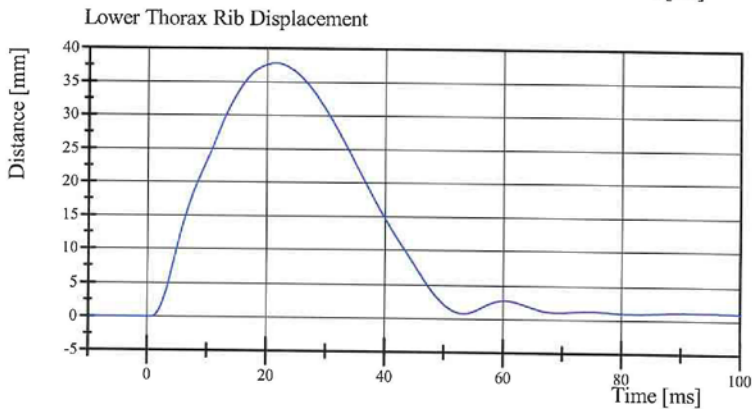
Left Lateral Thorax without Arm
SID II_s Serial No. 305 Certification No. 27-1
Test Date: 1/31/2014



Filter Class: CFC_600
Max: 35.1 mm at 19.8 ms
Min: -0.0 mm at -7.6 ms



Filter Class: CFC_600
Max: 40.8 mm at 20.7 ms
Min: -0.0 mm at -7.5 ms



Filter Class: CFC_600
Max: 37.8 mm at 21.4 ms
Min: -0.0 mm at -3.0 ms

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

01.31.2014 07:38:34 842



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 305 Certification No. 27-1

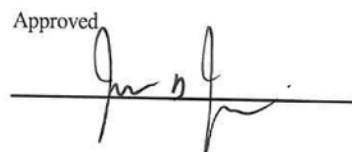
Test Date: 1/30/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.5 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	44.1 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	35.9 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.38 g	Yes

Test meets specifications.

Comments:

Technician


Approved


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

01.30.2014 16:41:45 664

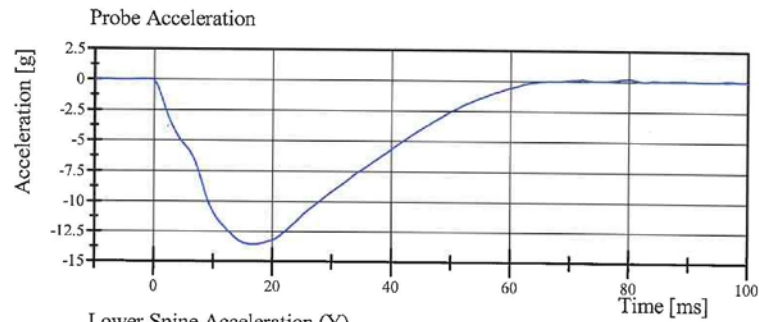


Transportation Research Center Inc.

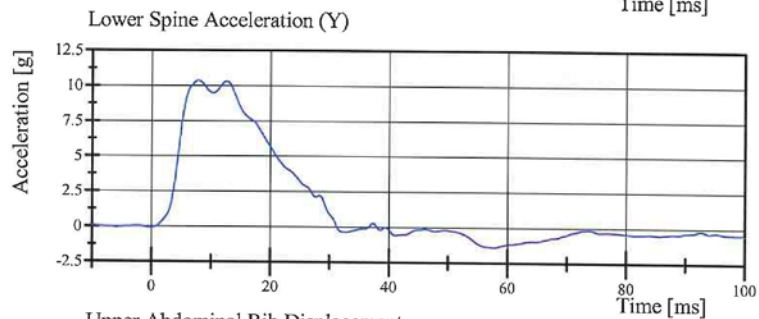
Left Lateral Abdomen

SID II_s Serial No. 305 Certification No. 27-1

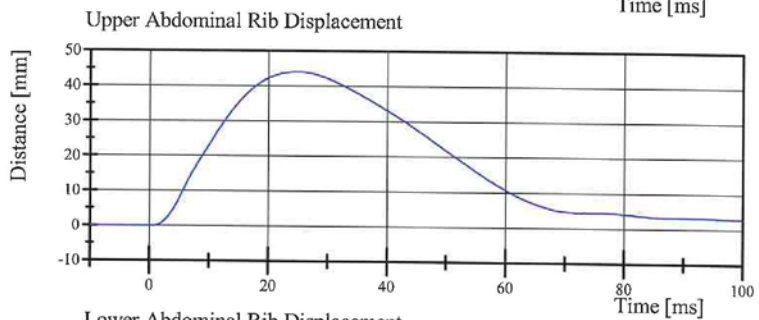
Test Date: 1/30/2014



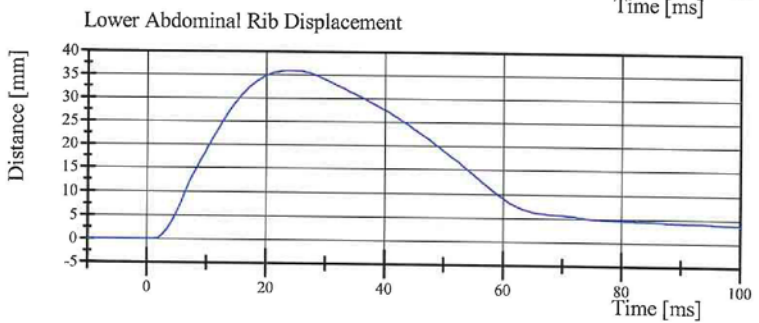
Filter Class: CFC_180
Max: 0.2 g at 79.8 ms
Min: -13.5 g at 16.9 ms



Filter Class: CFC_180
Max: 10.4 g at 7.8 ms
Min: -1.4 g at 57.6 ms



Filter Class: CFC_600
Max: 44.1 mm at 24.6 ms
Min: -0.0 mm at 0.6 ms



Filter Class: CFC_600
Max: 35.9 mm at 23.9 ms
Min: -0.0 mm at -6.8 ms

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

01.30.2014 16:41:52.664



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 27-2

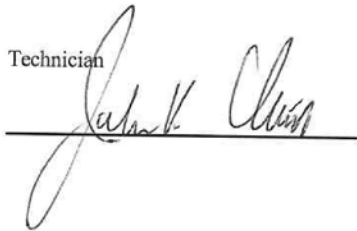
Test Date: 1/31/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.64 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-42.53 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.8 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,177.6 N	Yes

Test meets specifications.

Comments:

Technician



Approved



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

01.31.2014 10:52:18 455

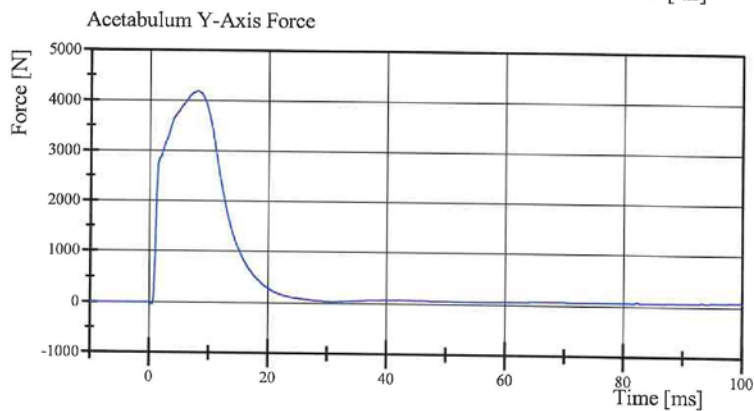
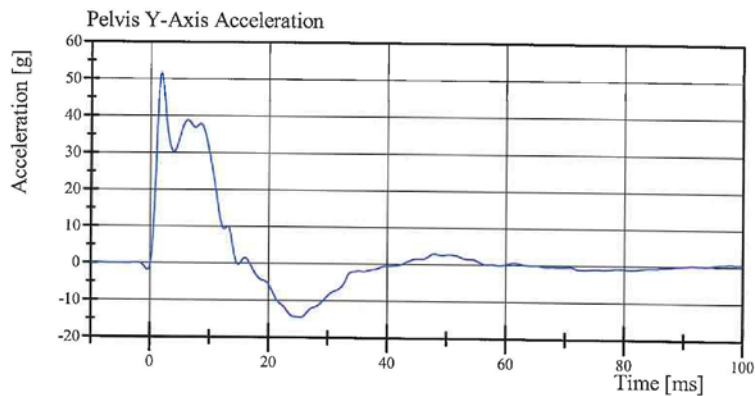
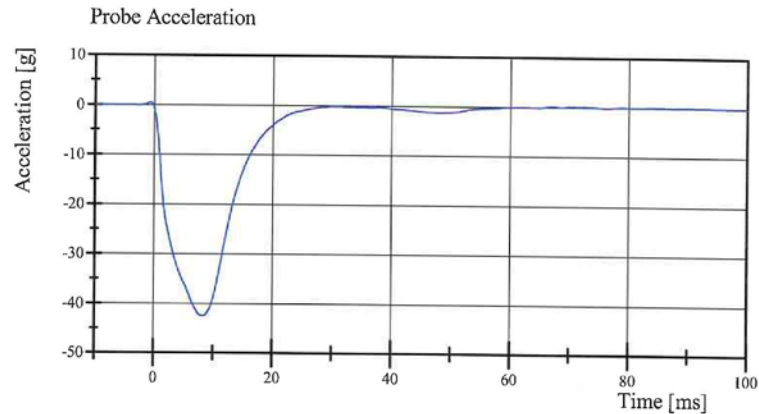


Transportation Research Center Inc.

Left Lateral Pelvis

SID II_s Serial No. 305 Certification No. 27-2

Test Date: 1/31/2014



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

01.31.2014 10:52:29 455



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 27-1

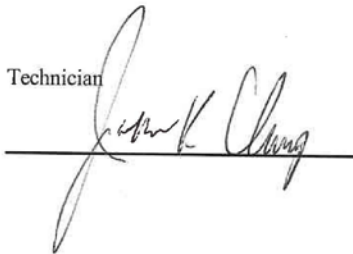
Test Date: 1/31/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.5 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	32.8 g	Yes
Iliac Force	4,100 - 5,100 N	5,050.4 N	Yes

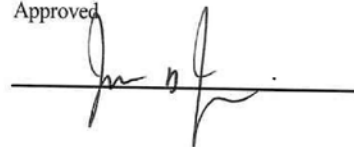
Test meets specifications.

Comments:

Technician



Approved



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

01.31.2014 07:22:22 680

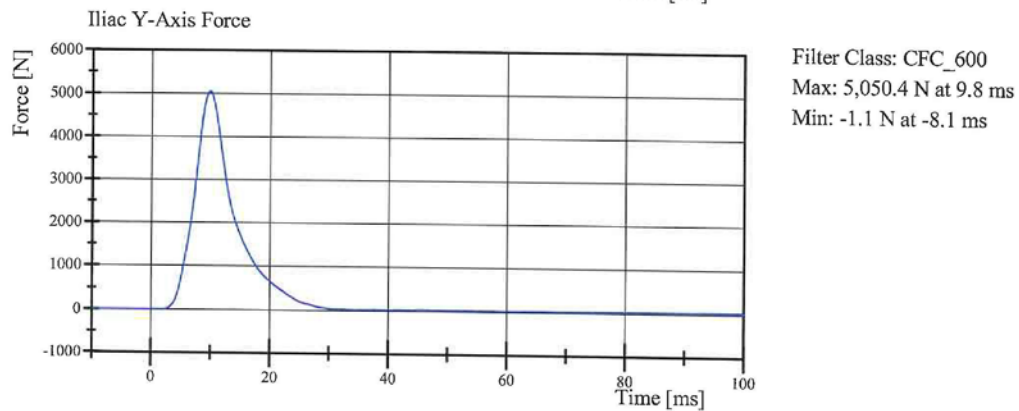
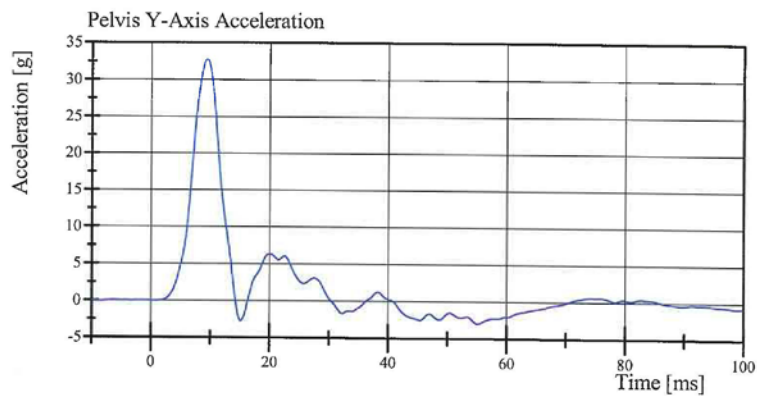
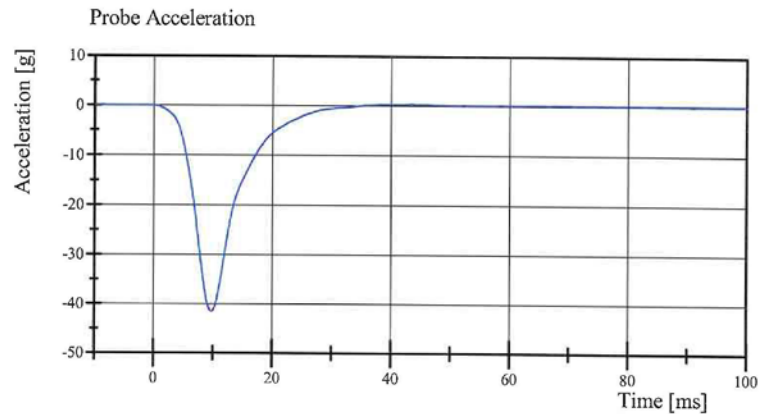


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 27-1

Test Date: 1/31/2014



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

01.31.2014 07:22:29 680



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	9-Dec-13
		Y	P51702	Endevco	9-Dec-13
		Z	P52083	Endevco	9-Dec-13
Thoracic Rib Displacement Potentiometers	Upper	Y	111	FTSS	27-Jan-14
	Middle	Y	174	FTSS	10-Dec-13
	Lower	Y	173	FTSS	10-Dec-13
Abdomen Load Cells	Upper	Y	1441	Denton	21-Oct-13
	Middle	Y	1436	Denton	21-Oct-13
	Lower	Y	1437	Denton	21-Oct-13
Lower Spine Accelerometers (T12)		X	P15954	Endevco	9-Dec-13
		Y	P68599	Endevco	9-Dec-13
		Z	P59005	Endevco	9-Dec-13
Acetabulum Load Cell		Y	N/A	N/A	N/A
Pubic Symphysis Load Cell		Y	457-FY	Denton	21-Oct-13

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 305			
				Serial Number	Manufacturer	Calibration Date	
Head Accelerometers				X	P51719	Endevco	11-Dec-13
				Y	P51272	Endevco	11-Dec-13
				Z	P58862	Endevco	11-Dec-13
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A	
	Thoracic Rib	Upper	Y	007	Servo	12-Dec-13	
		Middle	Y	1161	Servo	12-Dec-13	
		Lower	Y	037	Servo	21-Jan-14	
	Abdominal Rib	Upper	Y	1279	Servo	12-Dec-13	
		Lower	Y	1136	Servo	12-Dec-13	
Lower Spine Accelerometers (T12)				X	P50068	Endevco	12-Dec-13
				Y	P52051	Endevco	12-Dec-13
				Z	P51710	Endevco	12-Dec-13
Acetabulum Load Cell				Y	DI4283-FY	FTSS	13-Jan-14
Iliac Wing Load Cell				Y	287-FY	FTSS	28-Oct-13
Pelvis Plug (struck side)					63007	FTSS	18-Jan-13
Pelvis Plug (non-struck side)					36473	FTSS	23-Sep-10

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	MS23142	Measurement Specialties	16-Jan-14
	Vehicle Center of Gravity	Y	MS23108	Measurement Specialties	16-Jan-14
	Vehicle Center of Gravity	Z	MS23089	Measurement Specialties	16-Jan-14
2	Right Sill at Front Seat	X	MS23106	Measurement Specialties	16-Jan-14
	Right Sill at Front Seat	Y	MS23135	Measurement Specialties	16-Jan-14
	Right Sill at Front Seat	Z	MS23134	Measurement Specialties	16-Jan-14
3	Right Sill at Rear Seat	X	P81534	Endevco	5-Nov-13
	Right Sill at Rear Seat	Y	P81021	Endevco	17-Sep-13
	Right Sill at Rear Seat	Z	P82051	Endevco	5-Nov-13
4	Left Sill at Front Door	Y	P78116	Endevco	9-Jan-14
5	Left Sill at Rear Door	Y	P80709	Endevco	17-Sep-13
6	Left A-Post Lower	Y	P81080	Endevco	5-Nov-13
7	Left A-Post Middle	Y	P82006	Endevco	14-Nov-13
8	Left B-Post Lower	Y	P81537	Endevco	5-Nov-13
9	B-Post Middle	Y	P81096	Endevco	5-Nov-13
10	Front Seat Track	Y	MS23033	Measurement Specialties	24-Jan-14
11	Rear Seat Track or Structure	Y	P79310	Endevco	12-Aug-13
12	Right Rear Occupant Compartment	Y	P81500	Endevco	5-Nov-13
13	Engine Block	X	P76403	Endevco	25-Sep-13
	Engine Block	Y	P81602	Endevco	13-Nov-13
14	Rear Floorpan Above Axle	X	P80454	Endevco	22-Sep-13
	Rear Floorpan Above Axle	Y	P81029	Endevco	5-Nov-13
	Rear Floorpan Above Axle	Z	MS23111	Measurement Specialties	16-Jan-14

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P78119	Endevco	1-Aug-2013
MDB Center of Gravity	Y	P81546	Endevco	15-Nov-2013
MDB Center of Gravity	Z	P80130	Endevco	22-Nov-2013
Left Frame Rail at Rear Axle Centerline	X	P81992	Endevco	14-Nov-2013
Left Frame Rail at Rear Axle Centerline	Y	P81493	Endevco	14-Nov-2013