

FINAL REPORT NUMBER: SINCAP-TRC-14-009

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

**Toyota Motor Manufacturing, Texas, Inc.
2014 Toyota Tundra CrewMax
NHTSA NUMBER: M20145117**

**PREPARED BY:
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Report Date: April 10, 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: April 10, 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 Toyota Tundra CrewMax 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 February 27, 2014. The impact velocity of the Moving Deformable Barrier (MDB) was 62.51 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 162 mm at Level 1. 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>15</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>44</td><td>15.4</td></tr> <tr> <td>Total Abdominal Force</td><td>N</td><td>2500</td><td>451.1</td></tr> <tr> <td>Pubic Symphysis Force</td><td>N</td><td>6000</td><td>-533.5</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>36</td></tr> <tr> <td>Lower Spine Resultant Acceleration</td><td>g's</td><td>82</td><td>18.8</td></tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td><td>N</td><td>5525</td><td>1218.7</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>38*</td><td>3.236</td></tr> <tr> <td>Maximum Abdominal Rib Deflection</td><td>mm</td><td>45*</td><td>8.3</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	15	Maximum Thoracic Rib Deflection	mm	44	15.4	Total Abdominal Force	N	2500	451.1	Pubic Symphysis Force	N	6000	-533.5	Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	36	Lower Spine Resultant Acceleration	g's	82	18.8	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1218.7	Maximum Thoracic Rib Deflection	mm	38*	3.236	Maximum Abdominal Rib Deflection	mm	45*	8.3
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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 Toyota Tundra CrewMax. 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 Toyota Tundra CrewMax 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 62.51 km/h (38.22 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 February 27, 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	15
Maximum Thoracic Rib Deflection	mm	44	15.4
Combined Abdominal Force	N	2500	451.1
Pubic Symphysis Force	N	6000	-533.5

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	36
Lower Spine (T12) Resultant Acceleration	G	82	18.8
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1218.7
Maximum Thoracic Rib Deflection	mm	38*	3.236
Maximum Abdominal Rib Deflection	mm	45*	8.3

* 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	Yes		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	N/A
Side Pelvis Airbag	No	N/A	No	N/A
Knee Airbag	Yes	Yes	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. Right rear tire dismounted from rim during the impact.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20145117
Model Year	2014
Make	Toyota
Model	Tundra
Body Style	Pick Up CrewMax
VIN	5TFEM5F15EX072236
Body Color	Silver
Odometer Reading (km/mi)	52 mi
Engine Displacement (L)	4.6
Type/No. Cylinders	Gas/8
Engine Placement	Front/Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	RWD
Roof Rack	No
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	No
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	Toyota Motor Manufacturing, Texas, Inc.
Date of Manufacture	11/13
Vehicle Type	Truck

GVWR (kg)	3080
GAWR Front (kg)	1765
GAWR Rear (kg)	1835

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	3	3	N/A	6
Capacity Weight (VCW) (kg)				585.0
DSC x 68.04 (kg)				408.2
Cargo Weight (RCLW) (kg)				176.8 ¹

VEHICLE SEAT TYPE

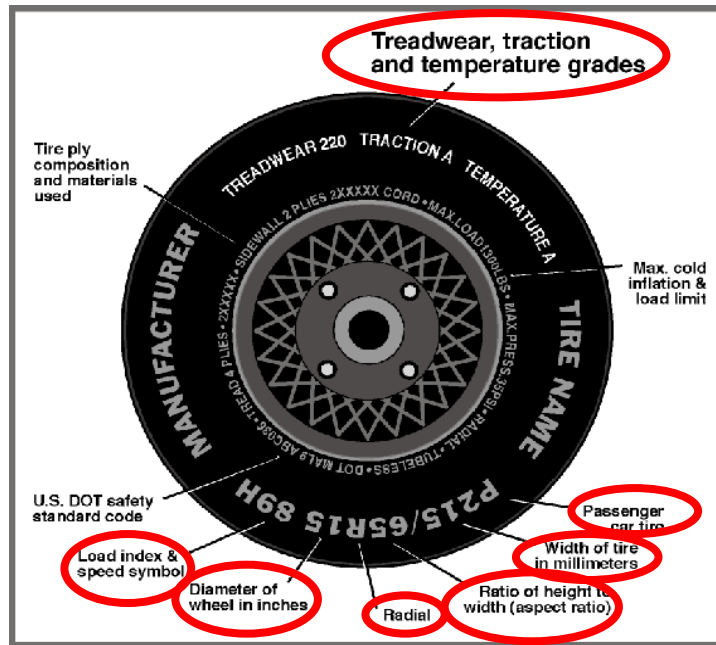
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	N/A	N/A	Yes		N/A	Yes	N/A
Rear or Second Row Seat	N/A	N/A	Yes	N/A	Yes	N/A	N/A
Third Row Seat	N/A	N/A	N/A	N/A	N/A	N/A	N/A

¹ Rated cargo and luggage weight is limited to 136.0 kg or 300 lbs.

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

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	210	230
Recommended Tire Size	P255/70R18	P255/70R18
Tire Size on Vehicle	P255/70R18	P255/70R18
Tire Manufacturer	Michelin	Michelin
Tire Model	LTX M/S ²	LTX M/S ²
Treadwear	720	720
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	112T	112T
Tire Material	Polyester, Polyamide & Steel	Polyester, Polyamide & Steel
DOT Safety Code Left	APYU 003X 4313	APYU 003X 4313
DOT Safety Code Right	APYU 003X 4313	APYU 003X 4313

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Toyota Tundra CrewMax
Test Program: NCAP Side Impact

NHTSA No.: M20145117
Test Date: 2/27/14

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	234	234	234	248
Tire Placard	kPa	210	210	230	230
Owner's Manual	kPa	N/A	N/A	N/A	N/A
As Tested	kPa	210	210	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	676.4	568.2		735.0	651.2		736.8	687.0	
Right	kg	656.0	522.2		674.2	615.2		652.6	619.0	
Ratio	%	55.0	45.0		52.7	47.3		51.5	48.5	
Totals	kg	1332.4	1090.4	2422.8	1409.2	1266.4	2675.6	1389.4	1306.0	2695.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	2422.8	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	125.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	136.0 ¹	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2683.8	(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	924	922	Yes
RF	mm	928	924	Yes
RR	mm	970	971	Yes
LR	mm	971	965	Yes
Vehicle CG (Aft of Front Axle)	mm	1793	1751	
Vehicle CG (Left(+)/Right(-) from Longitudinal Centerline)	mm	+49	+31	

***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: 126 lbs steel plate in bed	57.2
Removed: None	0.0

¹ Rated cargo and luggage weight is limited to 136.0 kg or 300 lbs.

DATA SHEET NO. 2

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

Test Vehicle: 2014 Toyota Tundra CrewMax

NHTSA No.: M20145117

Test Program: NCAP Side Impact

Test Date: 2/27/14

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	N/A	N/A	14.5
Front Passenger Seat	N/A	N/A	14.8
Front Center Seat*	N/A	N/A	11.9
Struck Side Rear Seat	N/A	N/A	14.2
Non-Struck Side Rear Seat	N/A	N/A	14.2
Rear Center Seat*	N/A	N/A	12.7

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	14.5	325	Max	N/A	N/A	N/A
			Mid	326	325	324
			Min	N/A	N/A	N/A
Front Passenger Seat	14.8	330	Max	N/A	N/A	N/A
			Mid	331	330	329
			Min	N/A	N/A	N/A
Front Center Seat*	11.9	Fixed	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	14.2	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	14.2	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*	12.7	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A

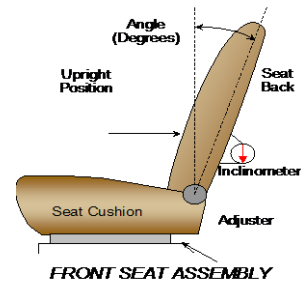
* If applicable.

DATA SHEET NO. 2 (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**Test Vehicle: 2014 Toyota Tundra CrewMaxNHTSA No.: M20145117Test Program: NCAP Side ImpactTest Date: 2/27/14**SEAT FORE/AFT POSITION**

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

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	56.7	29	3.8	6
Front Passenger Seat	56.4	29	3.0	7
Front Center Seat*	14.0	8	0	0
Struck Side Rear Seat w/ Seated Dummy	Fixed	N/A	Fixed	N/A
Non-Struck Side Rear Seat	Fixed	N/A	Fixed	N/A
Rear Center Seat*	Fixed	N/A	Fixed	N/A

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	4, Numbered from 0 to 3	0, Uppermost

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)

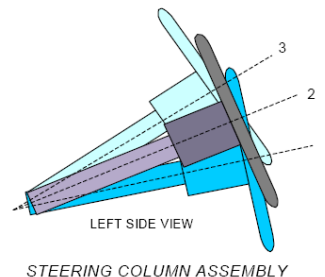
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14

STEERING COLUMN ADJUSTMENT

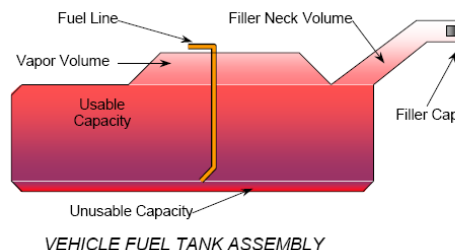
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.



	Degrees	Fore/Aft Position (mm)
Lowermost, Position No. 1	30.4	No feature
Geometric Center, Position No. 2	27.3	No feature
Uppermost, Position No. 3	24.2	No feature
Telescoping Steering Wheel Travel		No feature
Test Position	27.3	No feature

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)	99.9
Usable Capacity of "Optional Tank" (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	100.0
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	92.9
Actual Amount of Solvent Used in Test	92.9
1/3 of Usable Capacity	33.3

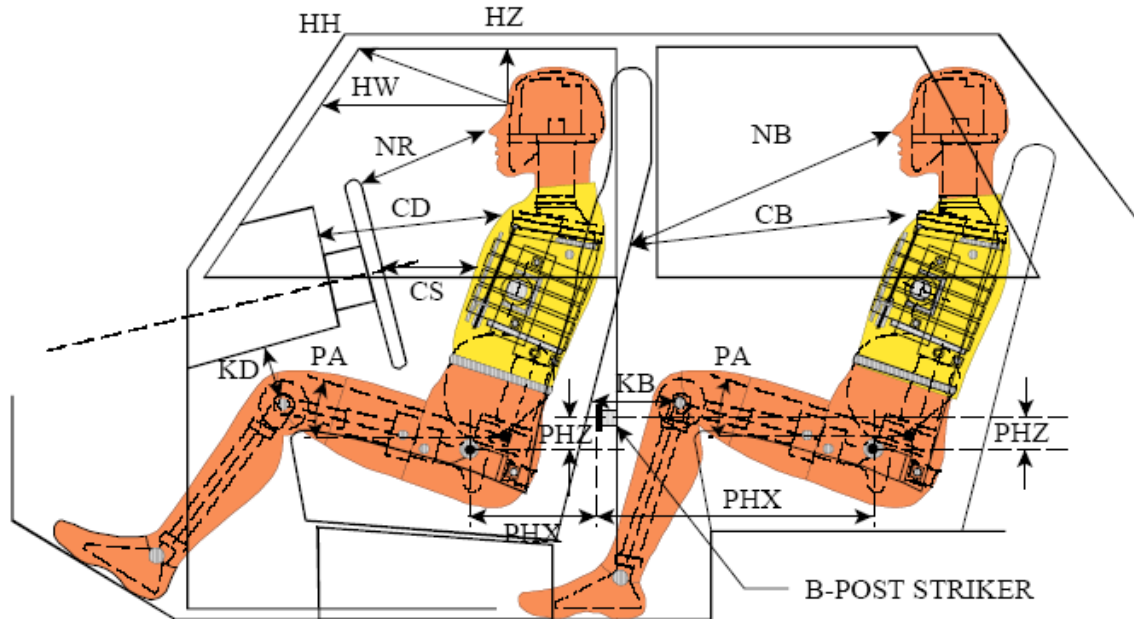
Is the Actual Amount of Solvent Used in the test equal to 93% $\pm$ 1% of the Usable Capacity stated in on Form No. 1? ☒ YES ☐ NO

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14



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

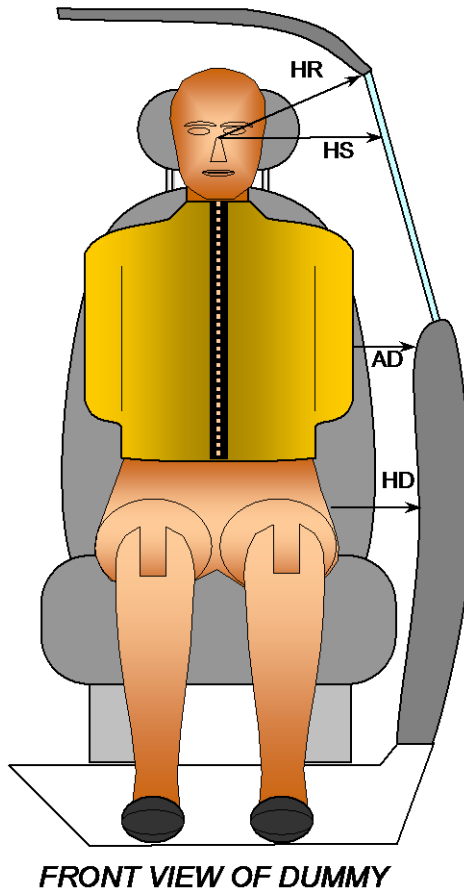
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	500			
HW		Header to Windshield	698			
HZ	HZ	Head to Roof Liner	182		283	
NR	NB	Nose to Rim/Seat Back	511		775	
CD	CB	Chest to Dash/Seat Back	613		738	
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	440	24.0
KD(R)/KDA(R) ⁰	KB(R)/KBA(R) ⁰	Right Knee to Dash/Seat Back	186	26.0	446	25.0
PAX ⁰	PAX ⁰	Pelvic Tilt Angle X		0.3		21.6
	PAY ⁰	Pelvic Tilt Angle Y				0.4
PHX	PHX	Hip Point to Striker (X-Axis)	233		308	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	128		132	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Toyota Tundra CrewMax
Test Program: NCAP Side Impact

NHTSA No.: M20145117
Test Date: 2/27/14

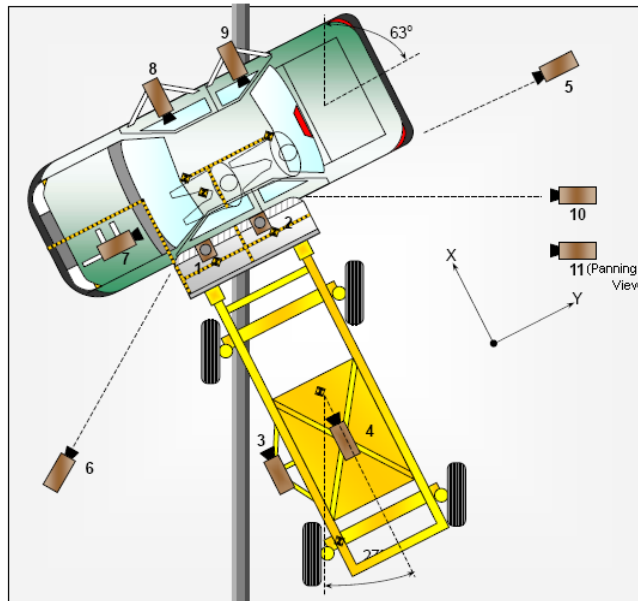


Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	247	264
HS	Head to Side Window	mm	336	391
AD	Arm to Door	mm	127	170
HD	H-Point to Door	mm	175	176

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	305	1347	-5639	8.5	1000
2	Overhead Close-up	305	992	-5639	16	1000
3	Left Impact Point (MDB)	-1766	-855	-824	25	1000
4	Side Overall (MDB)	-2429	0	-1445	8.5	1000
5	Rear	-440	7473	-1322	Zoom	1000
6	Left Front	-3159	-4706	-1343	Zoom	1000
7	Driver Front (OB)				12.5	1000
8	Driver Side (OB)				8.5	1000
9	Passenger Side (OB)				6	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

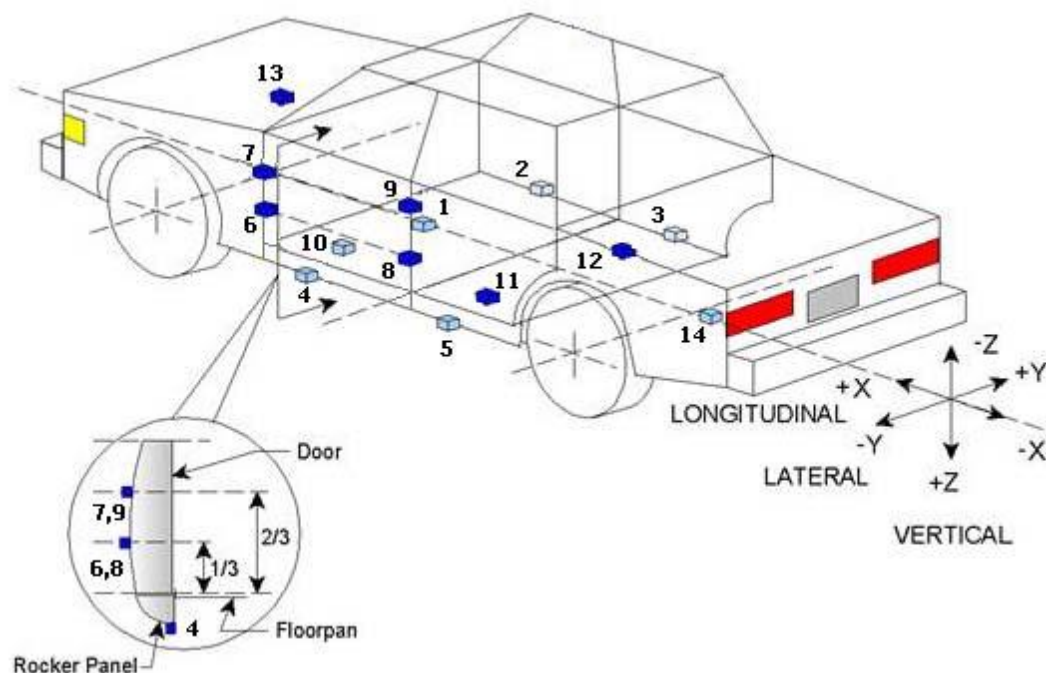
Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MBD Accelerometers	7
TOTAL	62

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14



TEST VEHICLE ACCELEROMETER LOCATIONS

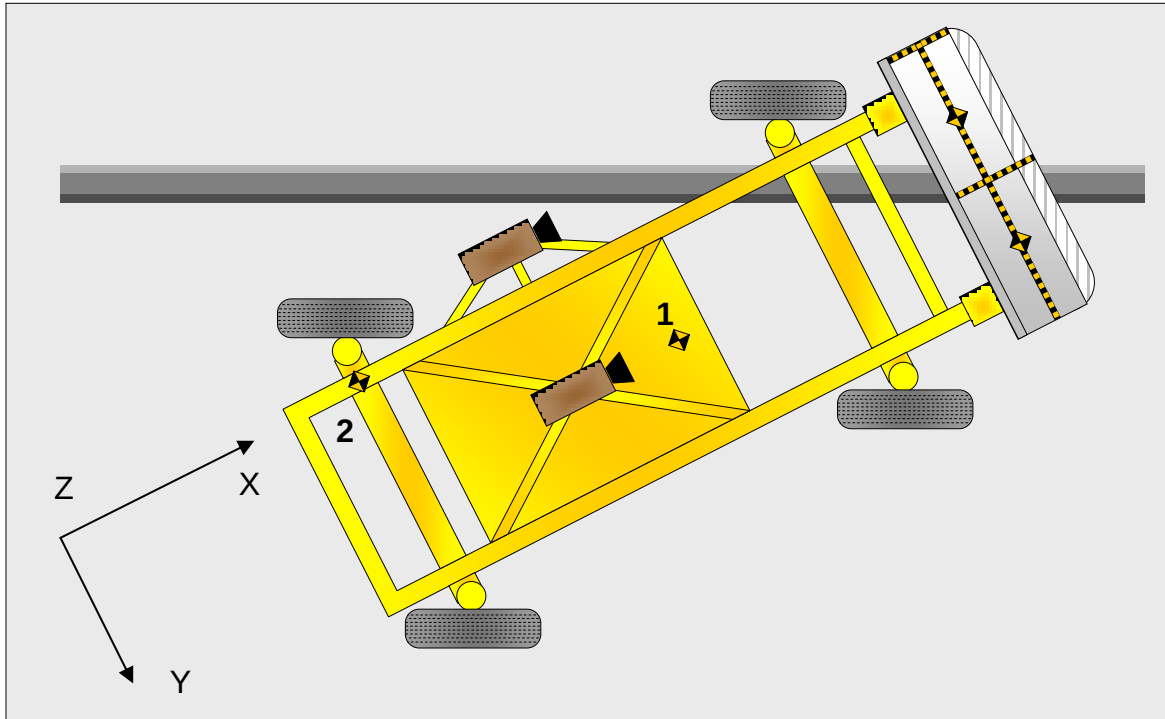
Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3985	15	-730
2	Right Sill at Front Seat	3940	810	-515
3	Right Sill at Rear Seat	2905	795	-529
4	Left Sill at Front Door	3945	-810	-509
5	Left Sill at Rear Door	2895	-810	-518
6	A-Post Lower	4360	-927	-706
7	A-Post Middle	4365	-913	-1166
8	B-Post Lower	3230	-906	-545
9	B-Post Middle	3197	-915	-1240
10	Front Seat Track	3485	-645	-680
11	Rear Seat Structure	2635	-640	-718
12	Right Rear Occ. Compartment	2800	635	-735
13	Engine Block	5035	-35	-1090
14	Rear Above Axle	1022	0	-793

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 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14



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 Toyota Tundra CrewMax
Test Program: NCAP Side Impact

NHTSA No.: M20145117
Test Date: 2/27/14

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES2-re)	Rear Seat Dummy (SID-IIs)
Face	None	SCAB
Top of Head	Headliner	SCAB
Left Side of Head	SCAB	SCAB
Back of Head	None	None
Left Shoulder	SCAB	SCAB; Door Panel
Upper Torso	Torso/Pelvis SAB	None
Lower Torso	Torso/Pelvis SAB	Door Panel
Left Hip	None	Seat Cushion; Door Panel
Left Knee	Door Panel	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	Right rear tire became dismounted from rim

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes		
Knee Airbag	Yes	Yes		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	N/A
Side Pelvis Airbag	No	N/A	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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		3700
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		508
Actual Impact Point (Aft of Front Axle)	mm		498
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact point	+10
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact point	-5

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2014 Toyota Tundra CrewMax
Test Program: NCAP Side Impact

NHTSA No.: M20145117
Test Date: 2/27/14

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	1108

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	423.8	260.8	684.6
Right	kg	359.4	324.0	683.4
Ratio	%	57.3	42.7	100.0
Totals	kg	783.2	584.8	1368.0

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.51
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.53
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27

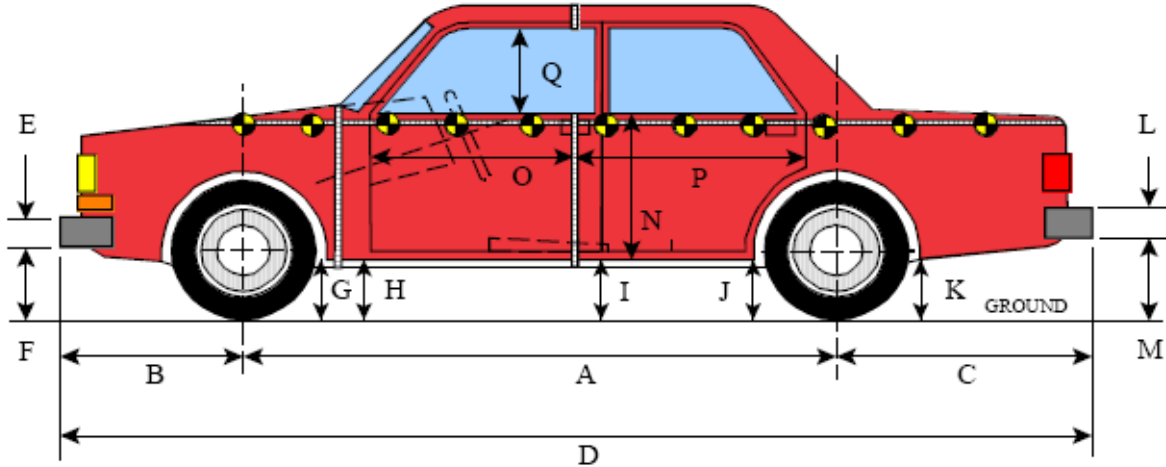
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	152
B	Top of Bumper	533	800	Right	145
C	Mid-Level	686	800	Right	138
D	Top of Stack	813	800	Right	187

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14

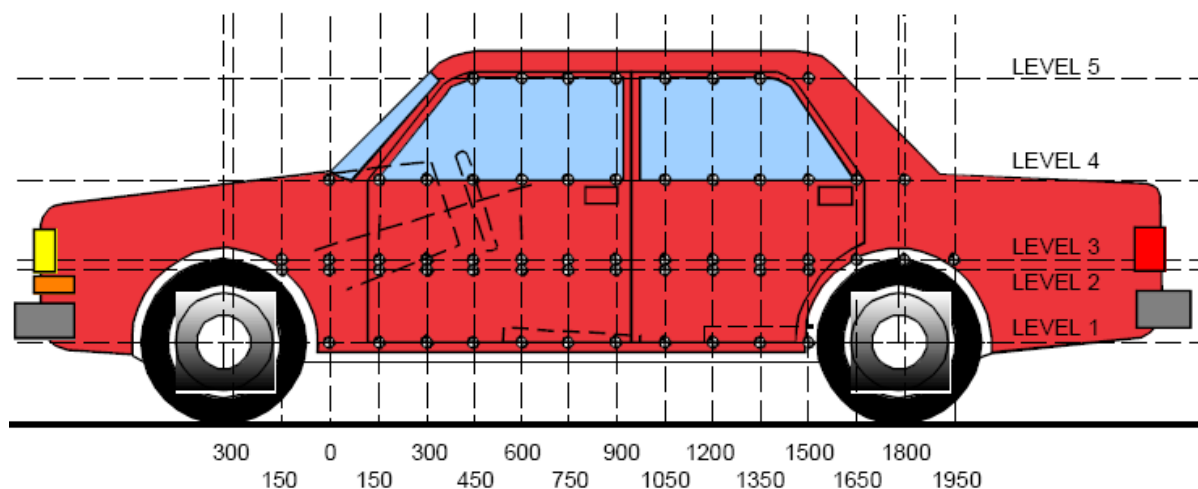


LEFT SIDE VIEW

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	3700	3700	0
B	Front Axle to Front Surface of Vehicle	900	894	6
C	Rear Axle to Rear Surface of Vehicle	1235	1195	40
D	Total Length at Centerline	5810	5800	10
E	Front Bumper Thickness	253	253	0
F	Front Bumper Bottom to Ground	419	409	10
G	Sill Height at Front Wheel Well	445	441	4
H	Sill Height at Front Door Leading Edge	448	474	-26
I	Sill Height at B-Pillar	456	491	-35
J1	Sill Height at Rear Wheel Well	449	477	-28
J2	Pinch Weld Height at Rear Wheel Well	381	415	-34
K	Sill Height Aft of Rear Wheel Well	470	515	-45
L	Rear Bumper Thickness	213	213	0
M	Rear Bumper Bottom to Ground	473	524	-51
N	Sill Height to Window Bottom Sill	915	885	30
O	Front Door Leading Edge to Impact CL	806	788	18
P	Rear Door Trailing Edge to Impact CL	1542	1524	18
Q	Front Window Opening	490	493	-3
R	Right Side Length	5735	5720	15
S	Left Side Length	5735	5720	15
T	Vehicle Width at B Pillar	2035	2035	0

DATA SHEET NO. 11**TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**Test Vehicle: 2014 Toyota Tundra CrewMaxNHTSA No.: M20145117Test Program: NCAP Side ImpactTest Date: 2/27/14**LEFT SIDE VIEW****MAXIMUM EXTERIOR CRUSH MEASUREMENTS**

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance From Impact
1	Sill Top	526	162	1350
2	Driver Hip Point	936	126	1650
3	Mid-Door	870	134	1650
4	Window Sill	1277	23	1200
5	Window Top	1857	0	750

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 Toyota Tundra CrewMax

NHTSA No.: M20145117

Test Program: NCAP Side Impact

Test Date: 2/27/14

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

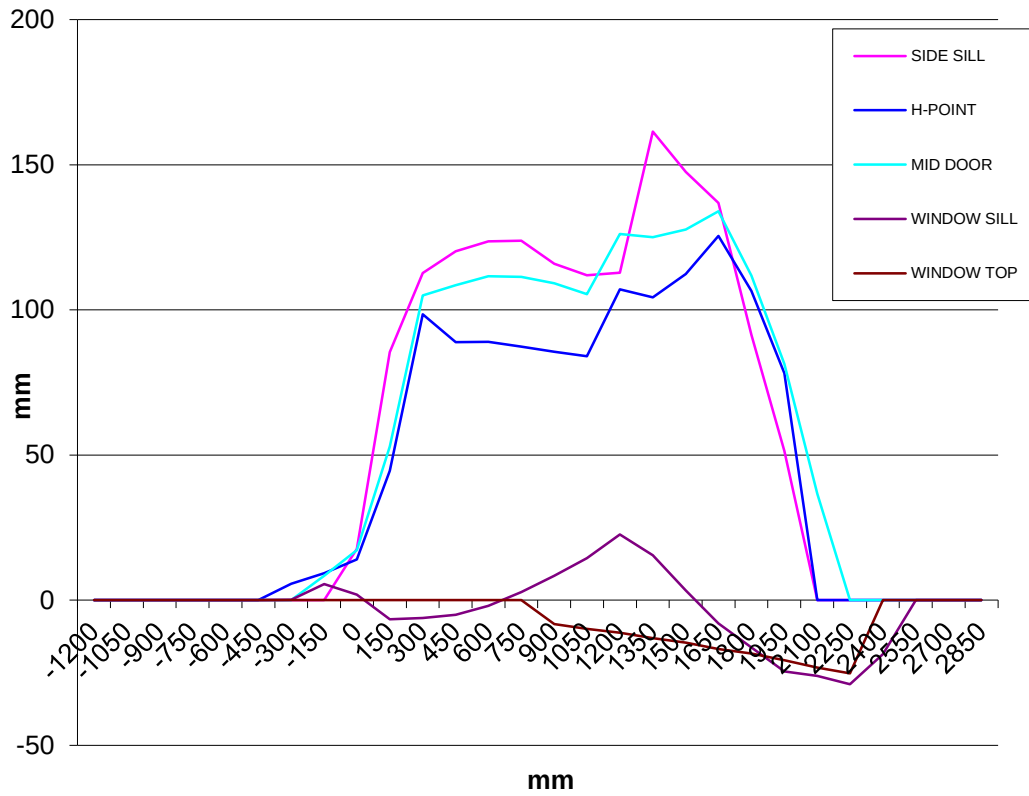
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-300	0	1016	0	881	0	0	1010	0	881	0	0	6	0	0	0
-150	0	1017	1016	898	0	0	1008	1008	892	0	0	9	8	6	0
0	994	1014	1018	911	0	976	1000	1000	909	0	18	14	18	2	0
150	981	1009	1009	921	0	896	964	956	927	0	85	45	53	-6	0
300	969	1008	1002	928	0	857	910	897	934	0	112	98	105	-6	0
450	971	1010	1003	935	0	851	921	894	940	0	120	89	109	-5	0
600	972	1011	1004	941	0	848	922	892	943	0	124	89	112	-2	0
750	973	1012	1004	946	0	849	924	893	943	0	124	88	111	3	0
900	973	1013	1005	951	675	857	927	896	942	683	116	86	109	9	-8
1050	973	1013	1006	955	690	861	929	900	941	699	112	84	106	14	-9
1200	973	1014	1007	959	698	860	907	881	936	709	113	107	126	23	-11
1350	973	1013	1006	962	700	811	909	881	947	713	162	104	125	15	-13
1500	972	1013	1005	965	702	824	900	877	962	717	148	113	128	3	-15
1650	971	1012	1004	967	702	834	886	870	975	719	137	126	134	-8	-17
1800	969	1011	1003	969	703	878	904	891	985	721	91	107	112	-16	-18
1950	968	1010	1001	970	702	917	931	920	995	723	51	79	81	-25	-21
2100	966	1008	1000	971	700	967	971	963	997	723	-1	37	37	-26	-23
2250	964	1007	999	971	694	995	1004	994	1000	719	-31	3	5	-29	-25
2400	956	1005	997	971	0	961	1012	1003	989	0	-5	-7	-6	-18	0
2550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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

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

Test Vehicle: 2014 Toyota Tundra CrewMax
Test Program: NCAP Side Impact

NHTSA No.: M20145117
Test Date: 2/27/14

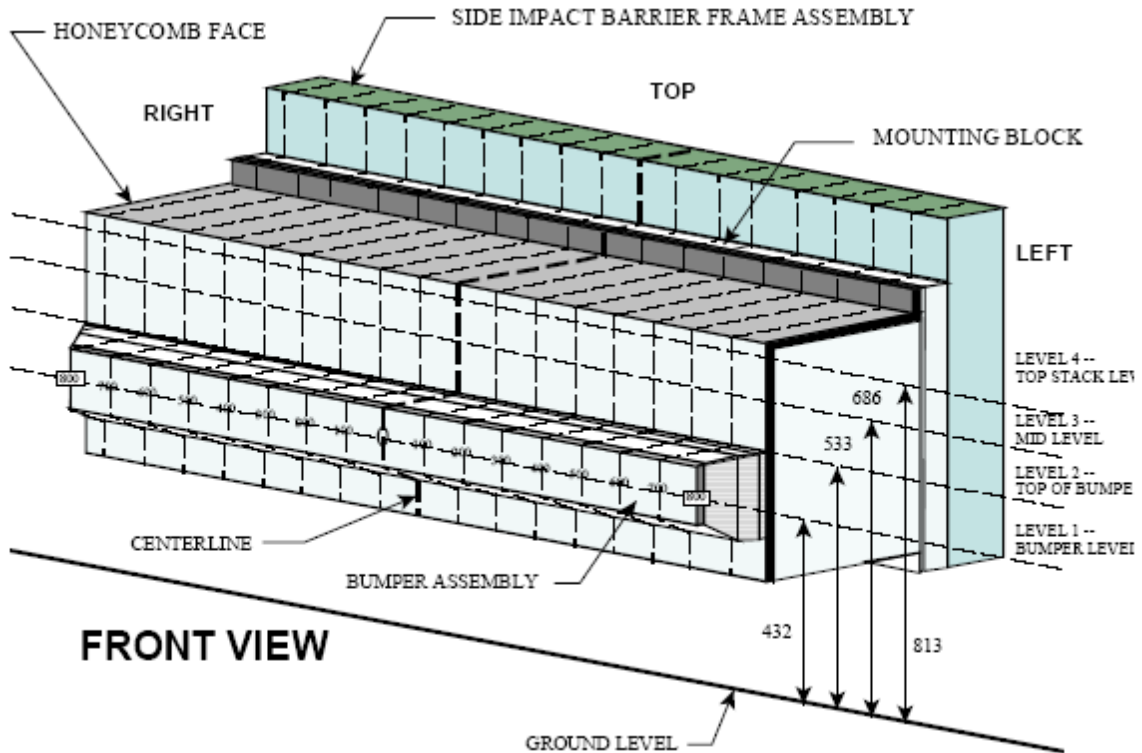


DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14



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	800
1	187	159	136	121	110	103	115	140	136	130	122	118	121	125	130	135	144	
2	138	101	89	81	93	106	138	137	123	111	88	76	74	73	76	85	104	
3	145	141	142	140	139	136	138	134	135	133	131	132	132	134	133	132	129	
4	152	150	144	144	144	143	142	142	141	140	140	139	139	139	139	140	142	

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

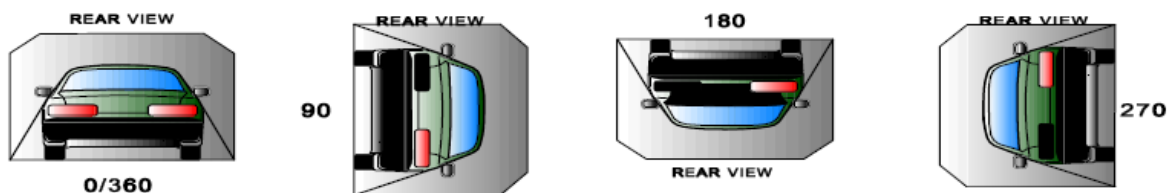
Test Vehicle: 2014 Toyota Tundra CrewMax
 Test Program: NCAP Side Impact

NHTSA No.: M20145117
 Test Date: 2/27/14

Test Time: 14:41 Temperature: 21.3°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

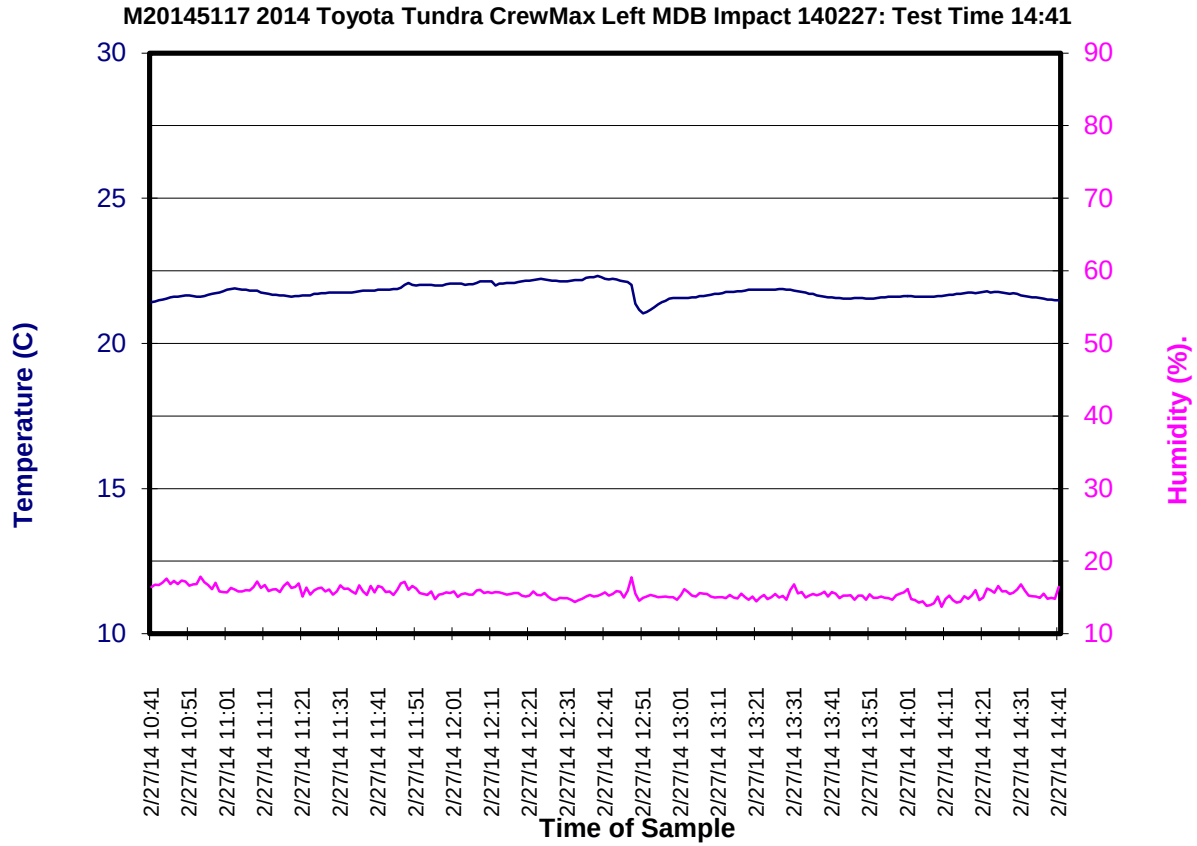
Test Phase	Spillage Location
0 to 90	None
90 to 180	None
180 to 270	None
270 to 360	None

DATA SHEET NO. 14

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2014 Toyota Tundra CrewMax
Test Program: NCAP Side Impact

NHTSA No.: M20145117
Test Date: 2/27/14



APPENDIX A
PHOTOGRAPHS

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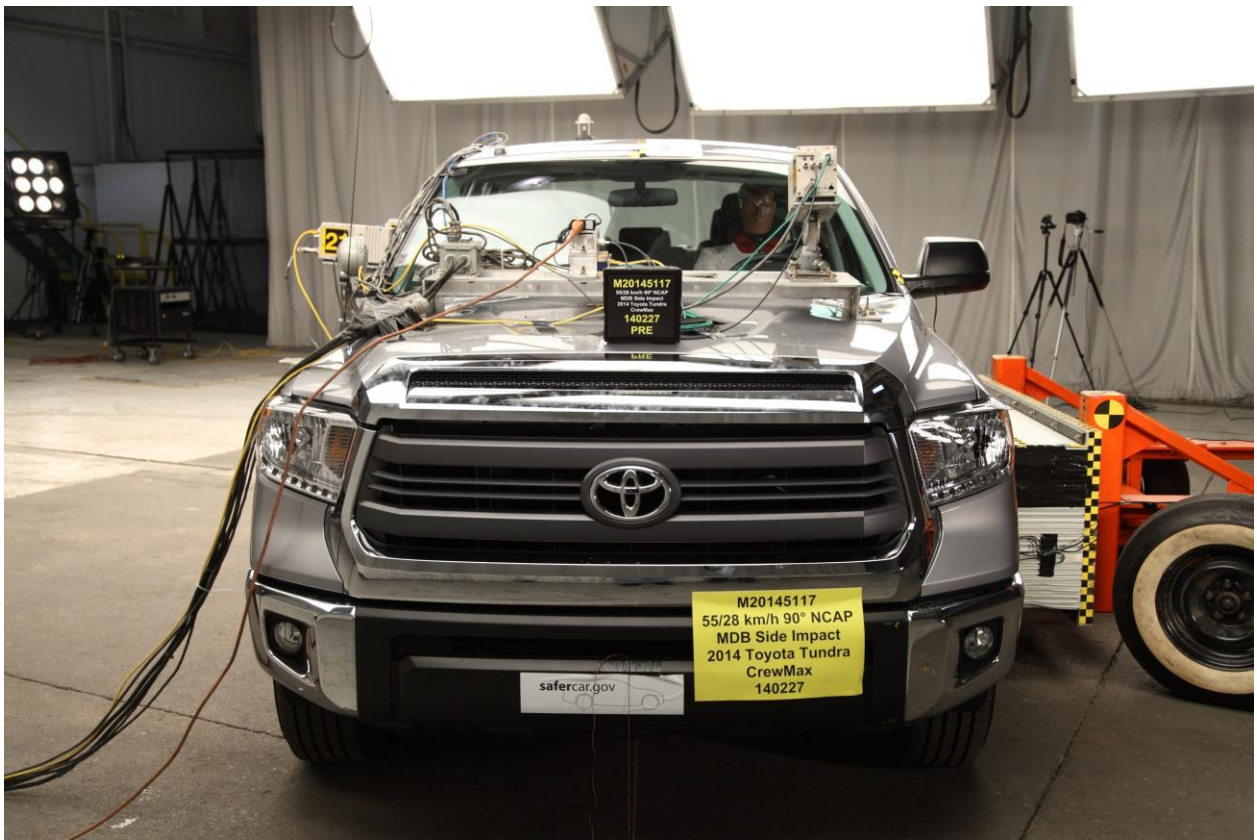
No.	Description	Page
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097	FMVSS No. 301 Static Rollover 90 Degrees	A-54
098	FMVSS No. 301 Static Rollover 180 Degrees	A-55
099	FMVSS No. 301 Static Rollover 270 Degrees	A-55
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001 As-Delivered Right 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



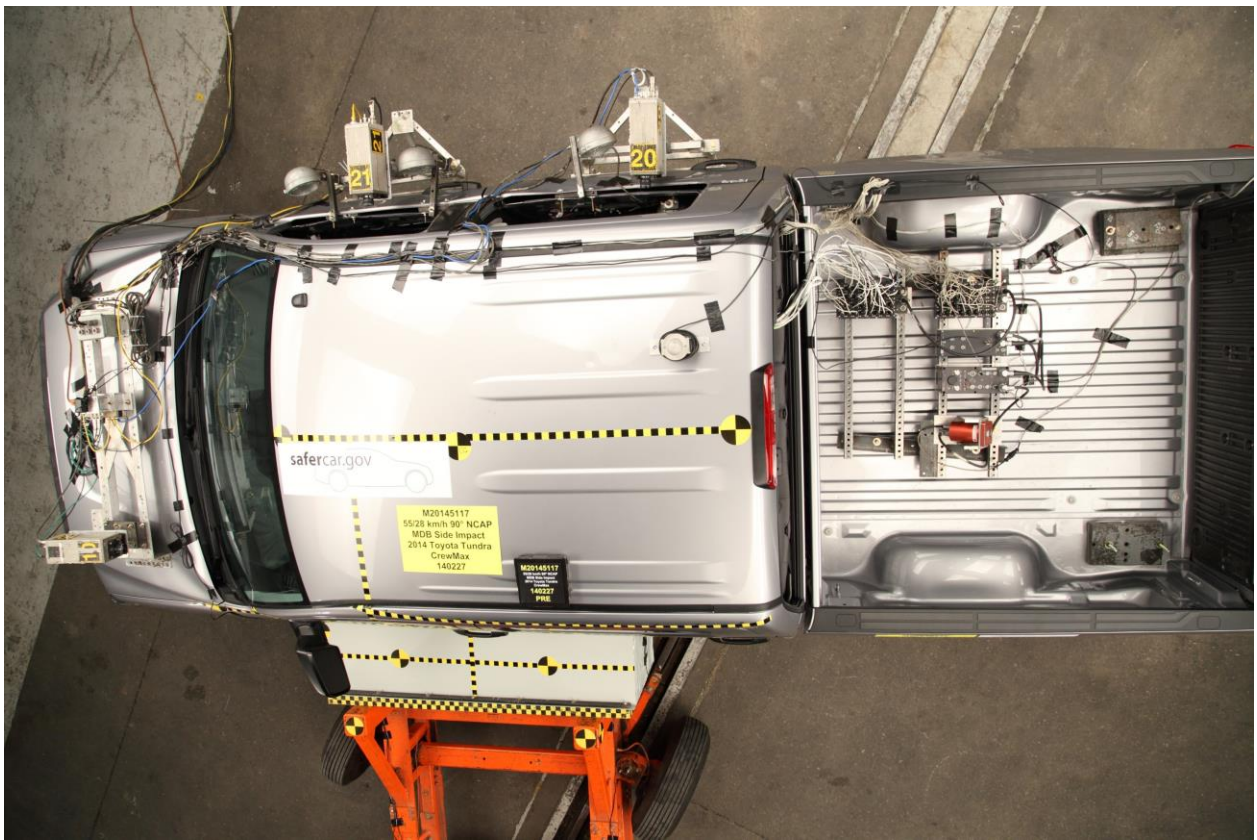
012 Post-Test Rear View of Test Vehicle



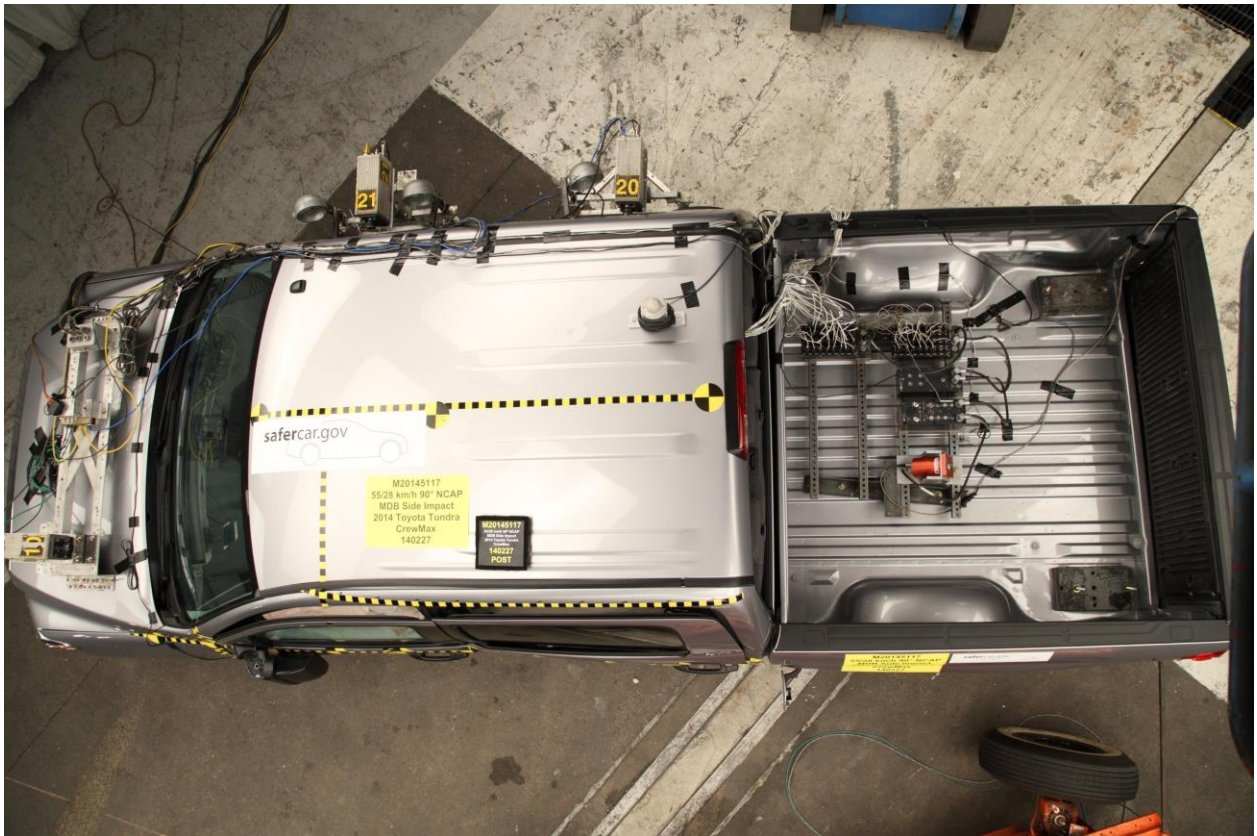
013 Pre-Test Right Side View of Test Vehicle



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

PHOTO NOT AVAILABLE

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



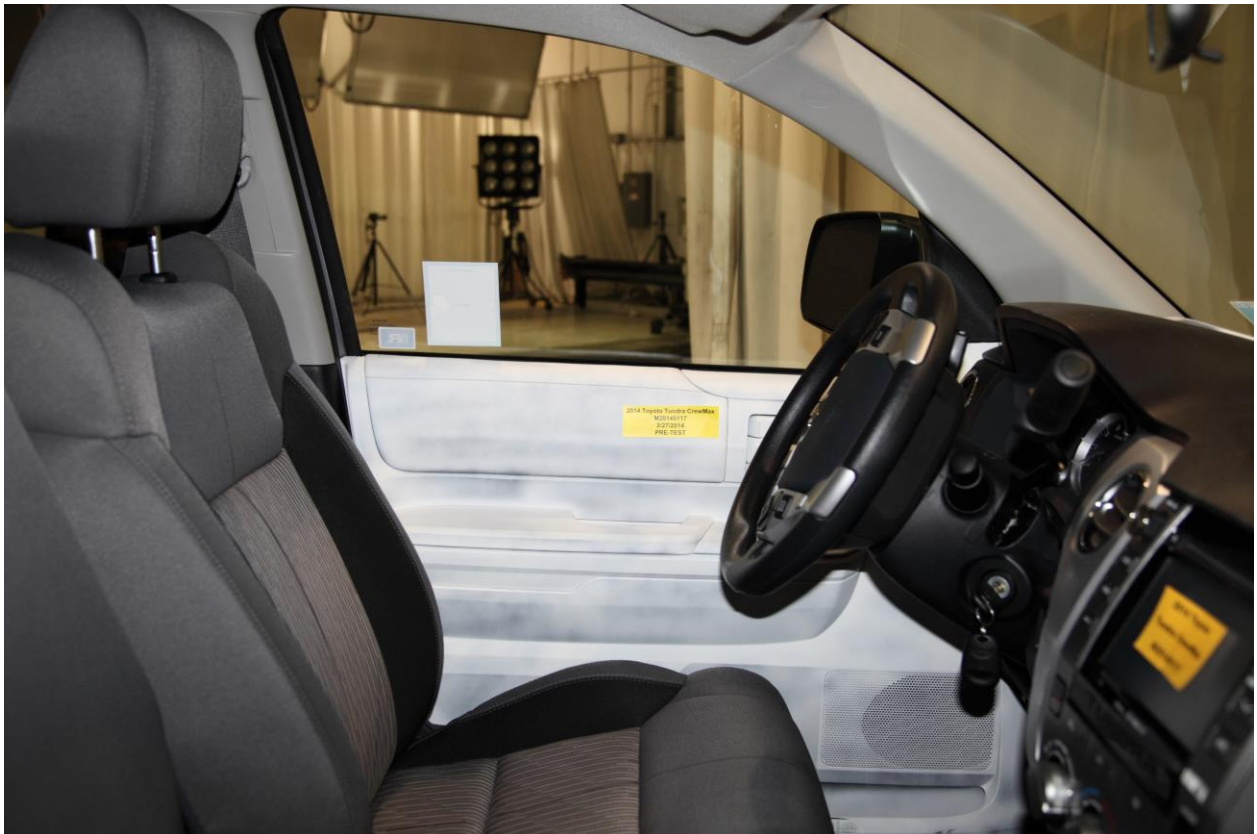
043 Post-Test Driver Dummy and Door Clearance View



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

PHOTO NOT APPLICABLE

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

PHOTO NOT AVAILABLE

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



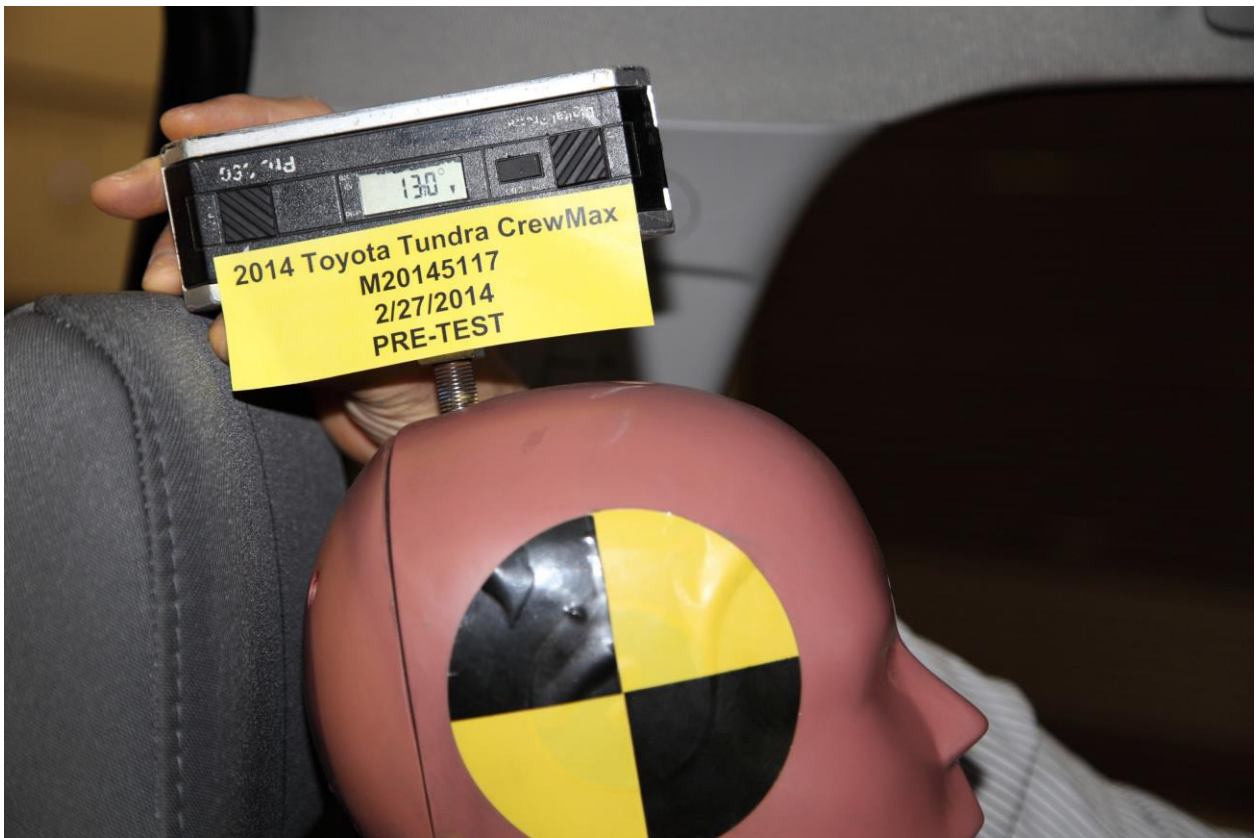
060 Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



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



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



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



064 Pre-Test Placement of Rear Passenger Dummy Feet



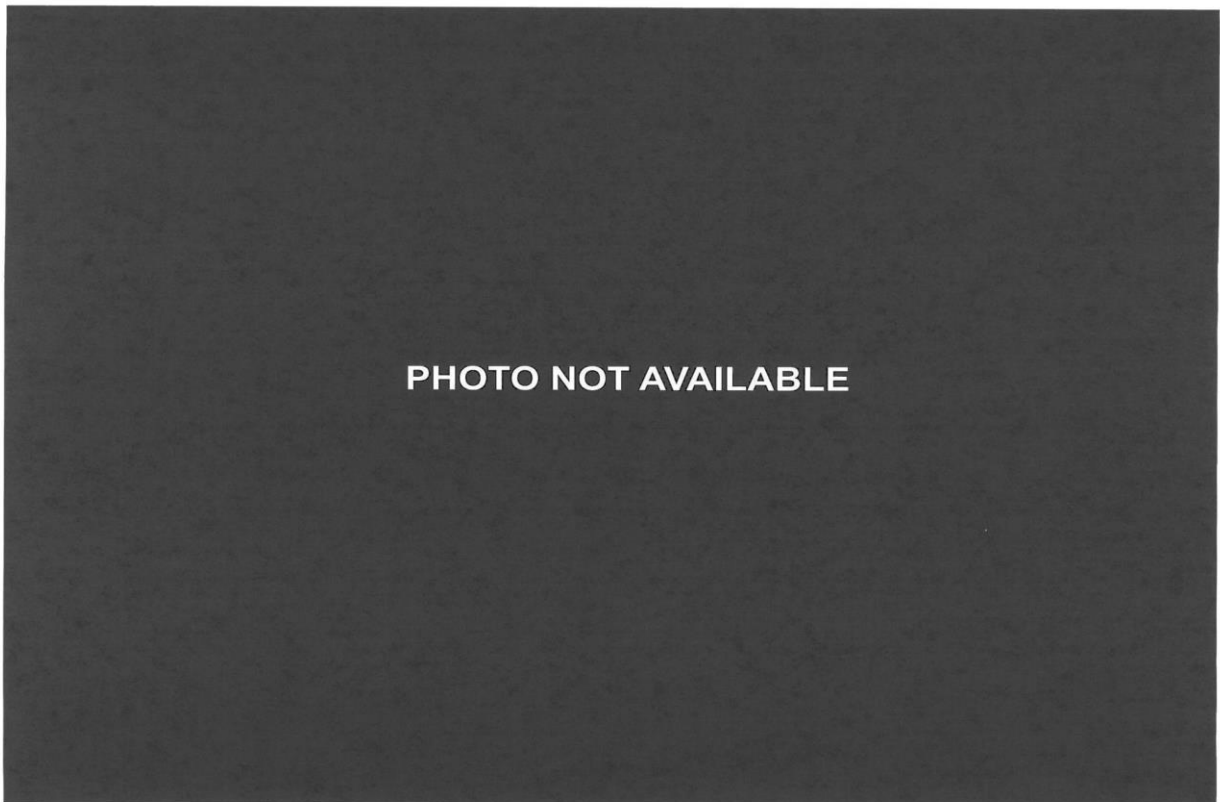
065 Pre-Test View of Belt Anchorage for Rear Passenger Dummy



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



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



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



069 Pre-Test Passenger Dummy and Door Clearance View



070 Post-Test Passenger Dummy and Door Clearance View



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



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



073 Pre-Test Passenger Inner Door Panel View



074 Post-Test Passenger Inner Door Panel View

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



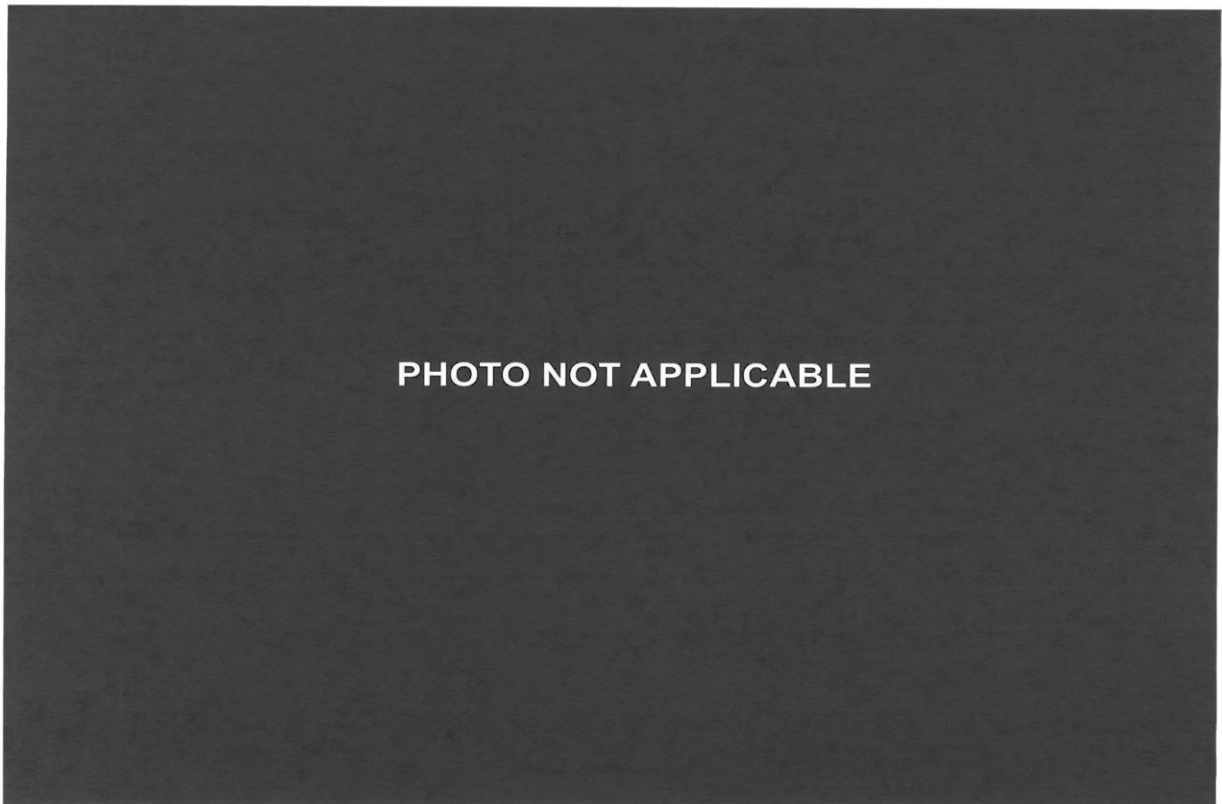
077 Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View



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

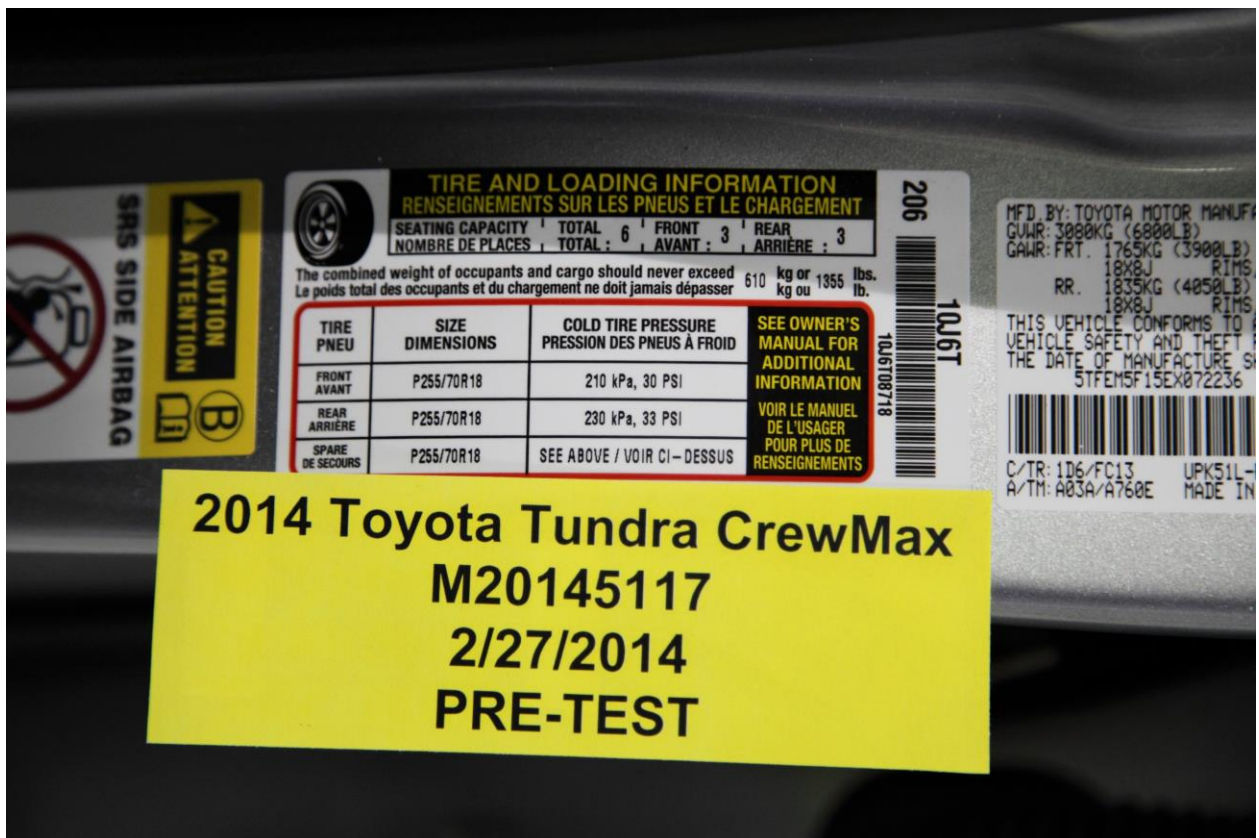


089 Post-Test Left Side View of MDB Impactor Face

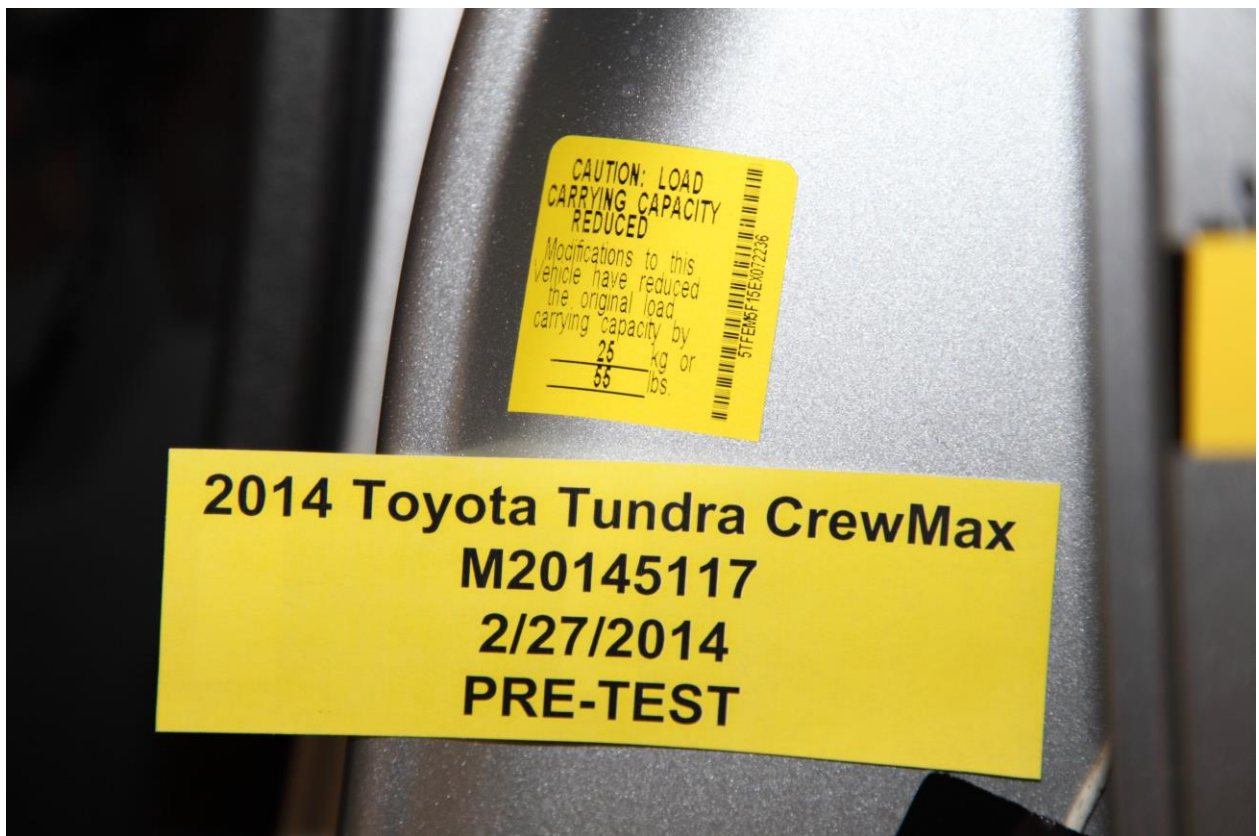


090 Pre-Test Right Side View of MDB Impactor Face





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



093a Close-Up View of Vehicle Reduced Load Carrying Capacity Label



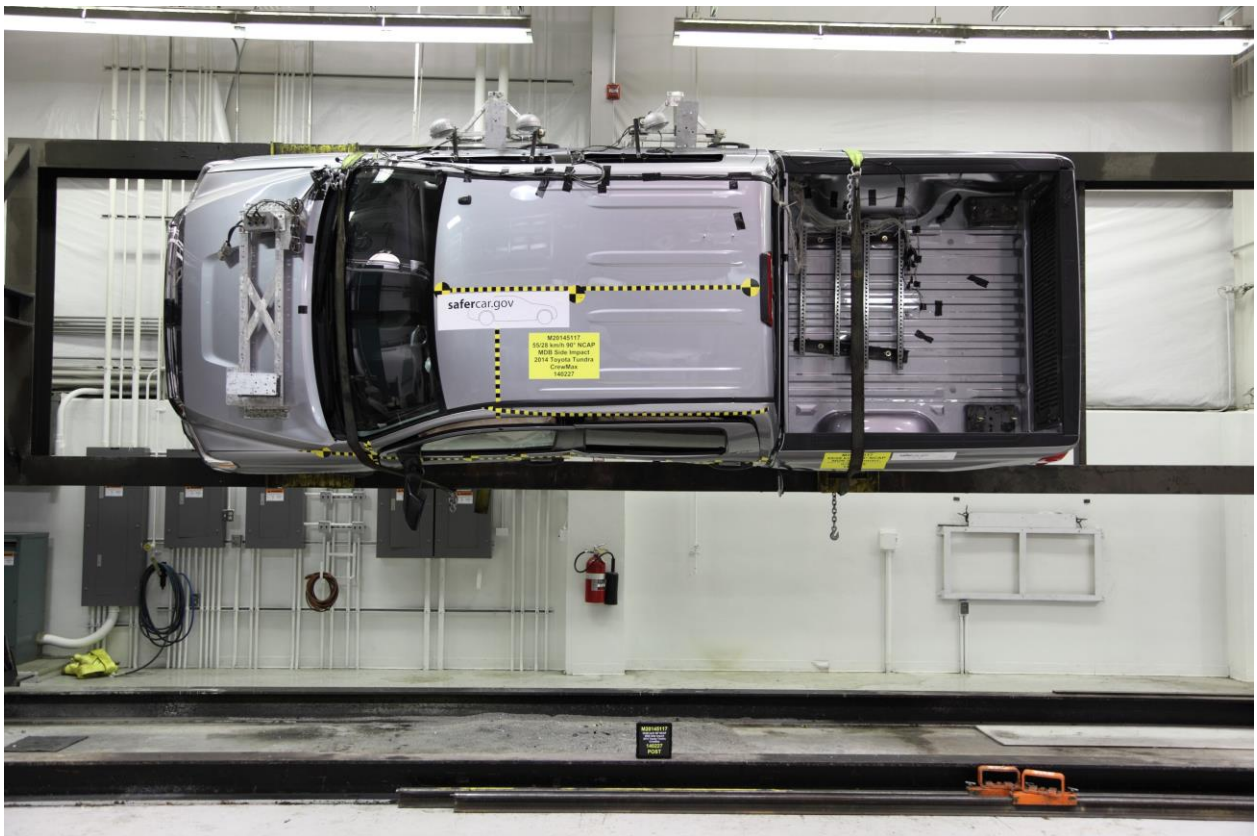
094 Pre-Test Ballast View



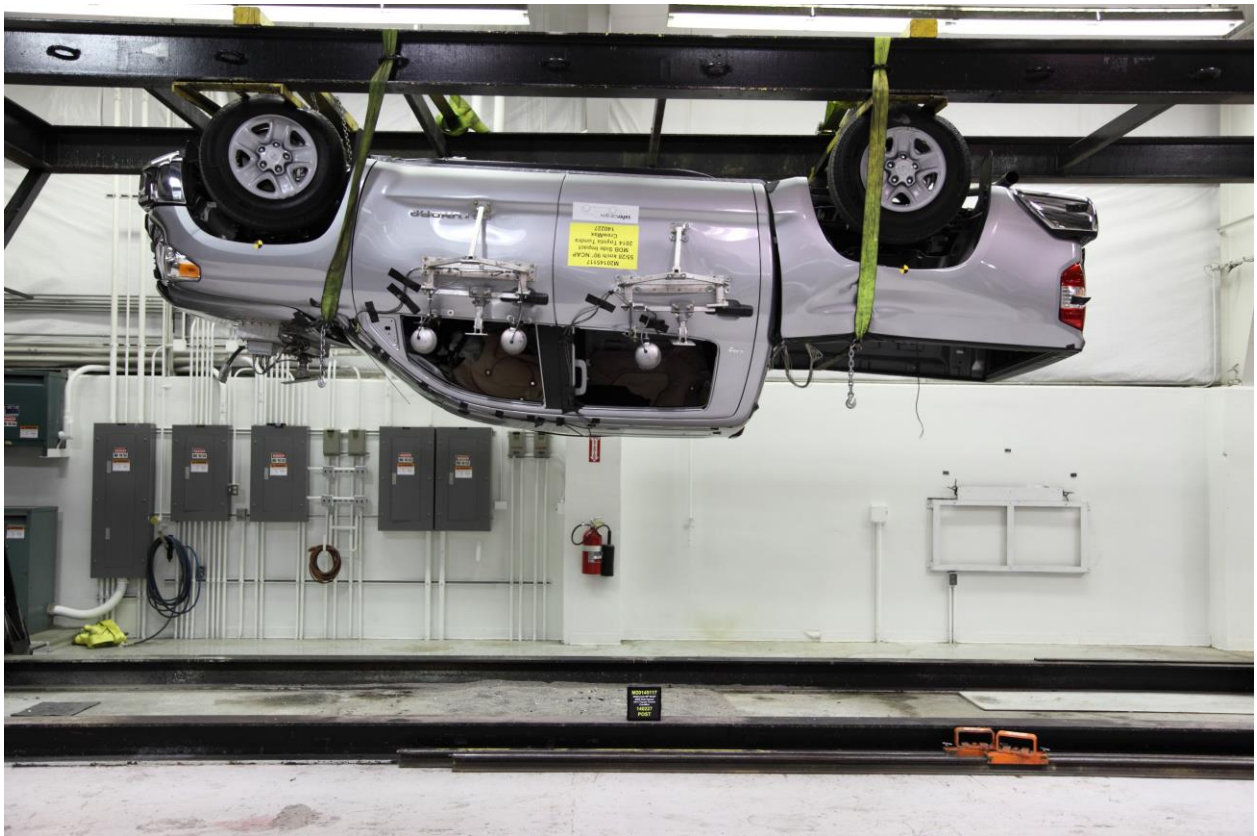
095 Post-Test Primary Speed Trap Read-Out



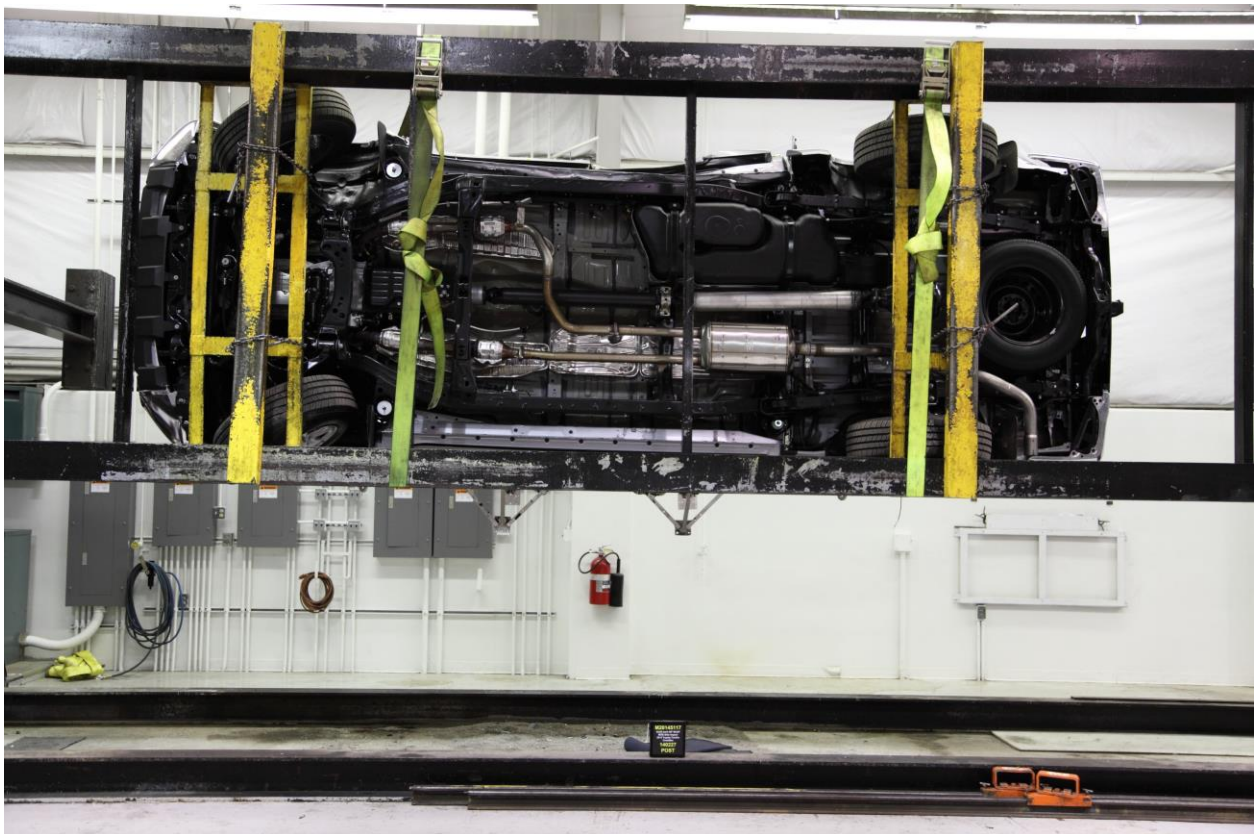
096 FMVSS No. 301 Static Rollover 0 Degrees



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

TOYOTA
Let's Go Places

DESC: **TUNDRA 4X2** SR5 CREWMAX 4.6L V8
VIN: **5TFEM5F15EX072236**
YR/MDL: 2014/0259A
CLR: SILVER SKY METALLIC/C13 (01D6/13)
PORT/PLANT: San Antonio, TX/TMXTX RAILHEAD:

GOVERNMENT 5-STAR SAFETY RATINGS

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

STANDARD EQUIPMENT

MECHANICAL & PERFORMANCE

- 4.6L i-FORCE V8 DOHC 32V with Dual Independent VVT-i 310 / 327 / 32.5
- 5-Spd Automatic Trans w/Sequential Shift
- Tridion™ Frame
- 3.909 Rear Differential w/9.5" Ring Gear
- Automatic Limited-Slip Differential
- Ind Coil-Spring High-Mounted Double Wishbone Front Susp w/ Stabilizer Bar
- Trapezoidal Multi-Leaf Rear Suspension w/ Staggered Outboard Mounted Shocks
- Power-Assisted 4 Wheel Disc Brakes
- 18" Steel 5R1 Wheels w/ P255/70R18 Tires

SAFETY & CONVENIENCE

- Star Safety System: Vehicle Stability Ctrl, Traction Ctrl, ABS w/ Electronic Brake Force Distribution, Brake Assist & Smart Stop Technology
- Rear Backup Camera
- Manual Headlamp Level Control
- Trailer-Sway Control
- Dr & Fr Pass Advanced Airbag System
- Dr & Fr Pass Seat Side & Knee Airbags
- Roll-Overing Curtain Airbags (ROCA)
- 3-Point Seatbelts for All Positions with Driver Lck & ALNLSR for All Passengers
- Tire Pressure Monitor System (TPMS)

EXTERIOR

- 5.5" Double-Walled Bed w/ Rail Caps
- Daytime Running Lights (DRL)
- Per Vertical Rear Window w/Privacy Glass
- Easy Lower and Lift Tailgate

INTERIOR

- 40/20/40 Split Fold-Down & W4y Driver & 4-Way Passenger Adj Front Bench Seat
- 60/40 Split Fold-Up Rear Seats
- Single Zone Air Conditioning
- Entune Audio Plus (w/ App Suite/Data)
- 7" Hi Res Touch Screen/Bluetooth/USB
- HORROR TrailWeather/AUX/CD/SD-Sub Req
- Power Windows/Door Locks/Heated Mirrors
- Remote Keyless Entry System
- Cruise Control, Engine Immobilizer
- ***Full Tank of Gas***

MANUFACTURER'S SUGGESTED RETAIL PRICE \$31,825.00

OPTIONAL EQUIPMENT

FE	10 State Emissions	430.00
TT	Low Hitch	195.00
CF	Carpet Floor Mats w/Door Sill Protector	195.00
LU	Ledliner w/out Deck Rail System	345.00

EPA DOT Fuel Economy and Environment

Gasoline Vehicle

Fuel Economy

16 MPG Std Pickup range from 12 to 31 MPG. The best vehicle in its class.

15 19
combined city/hwy city highway

6.2 gallons per 100 miles

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

Annual fuel cost \$3,300

Fuel Economy & Greenhouse Gas Rating (tailpipe only)

3 Best

Smog Rating (tailpipe only)

5 Best

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 21 MPG and costs \$11,600 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 gasoline equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
Calculate personalized estimates and compare vehicles

DELIVER PROCESSING AND HANDLING FEE 995.00**

TOTAL \$33,790.00

The New Vehicle Limited Warranty provides 3-year/50,000-mile basic coverage. 5-year/100,000-mile powertrain coverage, plus 3-year/unlimited-mile corrosion warranty coverage. See Warranty and Maintenance Guide for details. An extended service contract may be available for the vehicle. Full dealer price. Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. Destination, license and title fees, applicable federal, state and local taxes and dealer and distributor selected options and accessories are not included in the manufacturer's suggested retail price.

Toyota Care, which covers normal factory scheduled maintenance for two years or 25,000 miles, whichever occurs first, is included as part of the base price of the vehicle for qualifying buyers. See dealer website for details.

Dealer Name / Address: 04025 SANTA LUCASARITA TOYOTA
Ship to: 2722 AV/INIDA EMPRESA RANCHO SANTA MARG CA92668

102 Monroney Label

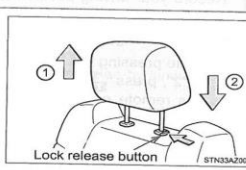
122 3-3. Adjusting the seats

Head restraints

Head restraints are provided for all seats.

Front seats

- Up
Pull the head restraints up.
- Down
Push the head restraint down while pressing the lock release button.

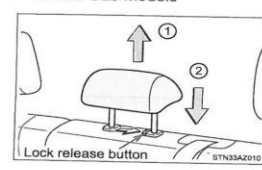


Rear seats

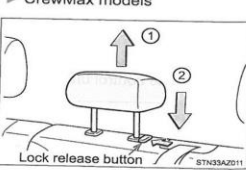
Center seat

- Up
Pull the head restraints up.
- Down
Push the head restraint down while pressing the lock release button.

Double Cab models



CrewMax models



3-3. Adjusting the seats 123

Outer seat

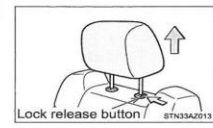
- To use
Lift up the head restraint back to the neutral position and then push the head restraint down.
- To fold
Lift up the head restraint while pressing the right lock release button, and fold it forward.



Removing the head restraints

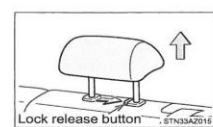
Front seats and center rear seat (CrewMax models)

Pull the head restraint up while pressing the lock release button.



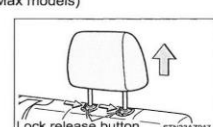
Center rear seat (Double Cab models)

Pull the head restraint up while pressing the lock release button.



Outer rear seat (Double Cab and CrewMax models)

Pull the head restraint up while pressing both lock release buttons.



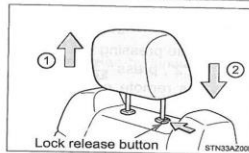
103 Driver Head Restraint Use and Adjustment Information from Vehicle Owner Manual

Head restraints

Head restraints are provided for all seats.

Front seats

- ① Up
Pull the head restraints up.
- ② Down
Push the head restraint down while pressing the lock release button.

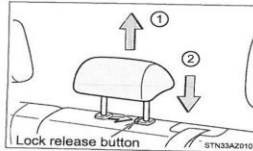


Rear seats

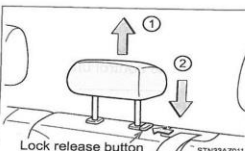
Center seat

- ① Up
Pull the head restraints up.
- ② Down
Push the head restraint down while pressing the lock release button.

Double Cab models



CrewMax models



Outer seat

- ① To use
Lift up the head restraint back to the neutral position and then push the head restraint down.
- ② To fold
Lift up the head restraint while pressing the right lock release button, and fold it forward.



Removing the head restraints

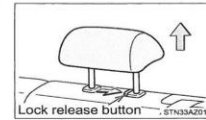
Front seats and center rear seat (CrewMax models)

Pull the head restraint up while pressing the lock release button.



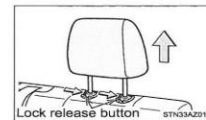
Center rear seat (Double Cab models)

Pull the head restraint up while pressing the lock release button.



Outer rear seat (Double Cab and CrewMax models)

Pull the head restraint up while pressing both lock release buttons.



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

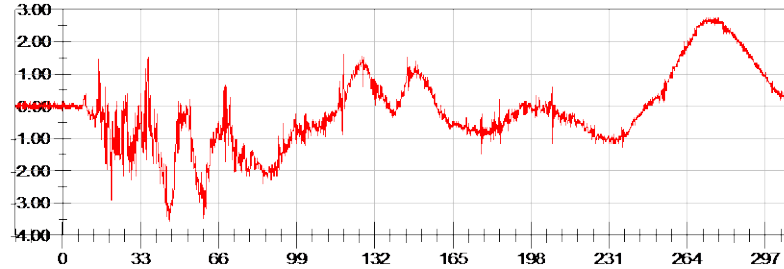
Test Number: 140227 (M20145117)

Test Date: 02/27/2014

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>

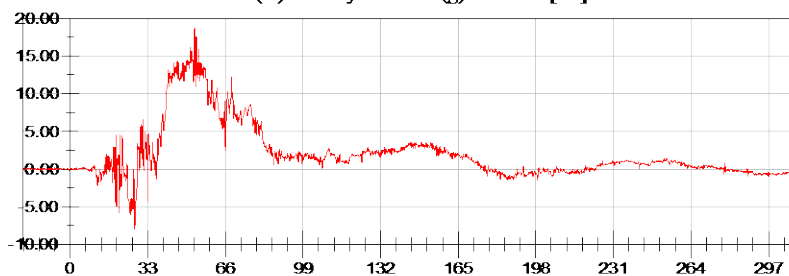
2.75 g at 272.08 ms

<Min>

-3.55 g at 45.20 ms

CFC_1000

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



<Max>

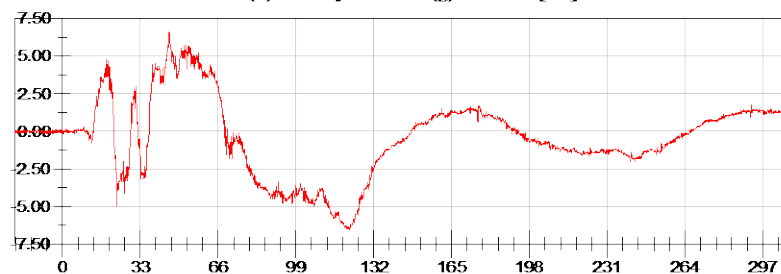
18.83 g at 52.88 ms

<Min>

-8.04 g at 27.36 ms

CFC_1000

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



<Max>

6.62 g at 45.28 ms

<Min>

-6.54 g at 121.68 ms

CFC_1000

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



<Max>

19.35 g at 52.96 ms

<Min>

0.02 g at -19.60 ms

CFC_1000



NHTSA

Test Lab: CTF

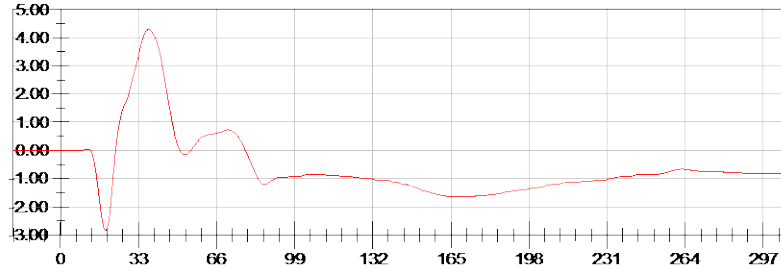
Test Number: 140227 (M20145117)

Test Date: 02/27/2014

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>

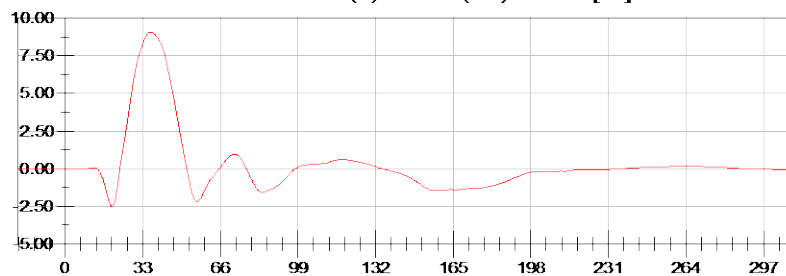
4.29 mm at 37.44 ms

<Min>

-2.82 mm at 19.04 ms

CFC_180

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



<Max>

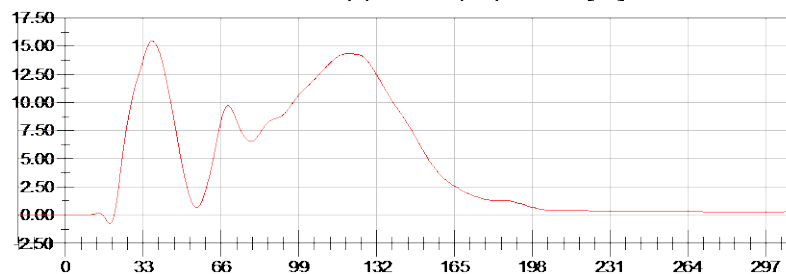
9.06 mm at 36.32 ms

<Min>

-2.51 mm at 19.92 ms

CFC_180

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



<Max>

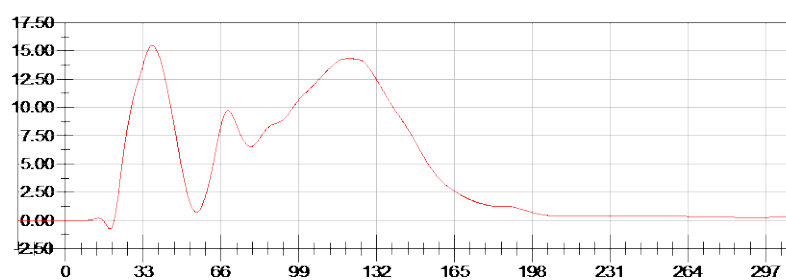
15.44 mm at 36.72 ms

<Min>

-0.75 mm at 18.88 ms

CFC_180

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



<Max>

15.44 mm at 36.72 ms

<Min>

-0.75 mm at 18.88 ms

CFC_180



NHTSA

Test Lab: CTF

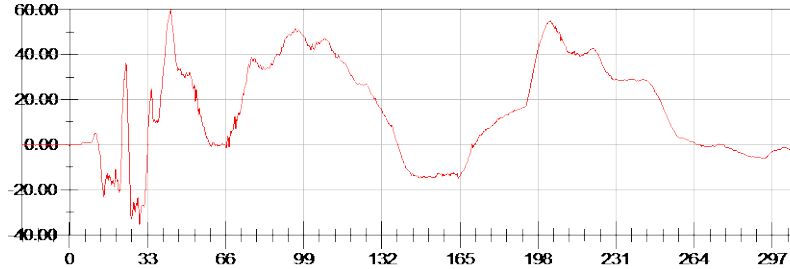
Test Number: 140227 (M20145117)

Test Date: 02/27/2014

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>

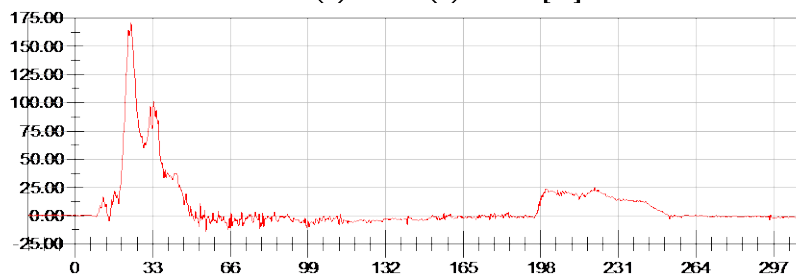
59.57 N at 42.80 ms

<Min>

-35.20 N at 29.68 ms

CFC_600

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



<Max>

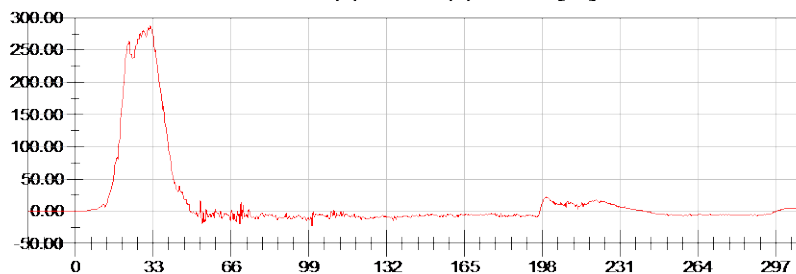
170.85 N at 23.84 ms

<Min>

-14.43 N at 55.68 ms

CFC_600

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



<Max>

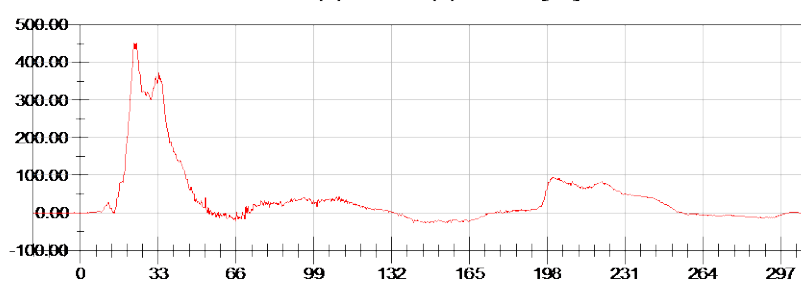
288.14 N at 31.76 ms

<Min>

-23.37 N at 100.32 ms

CFC_600

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



<Max>

451.12 N at 23.84 ms

<Min>

-27.40 N at 148.08 ms

CFC_600



NHTSA

Test Lab: CTF

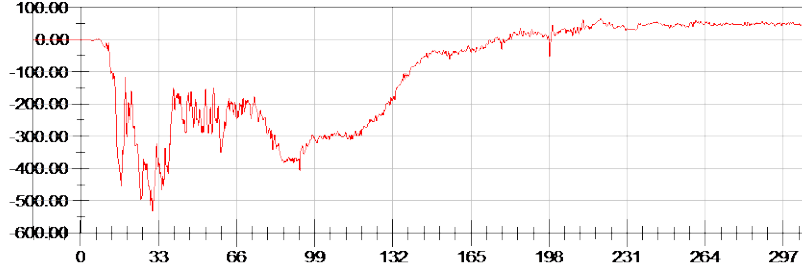
Test Number: 140227 (M20145117)

Test Date: 02/27/2014

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

Position #4 SID IIs Dummy (305)

Driver Pubic Symphysis Force (Y) vs. Time (N) vs. Time [ms]



<Max>

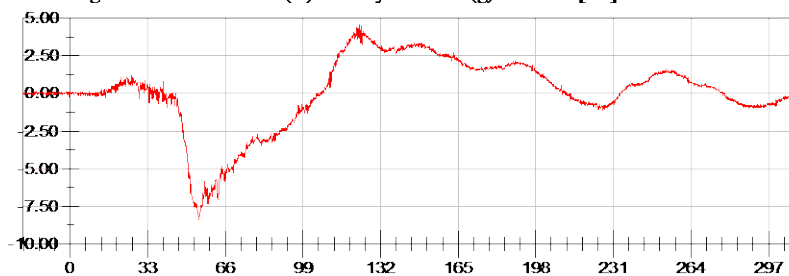
66.40 N at 219.76 ms

<Min>

-533.48 N at 30.48 ms

CFC_600

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



<Max>

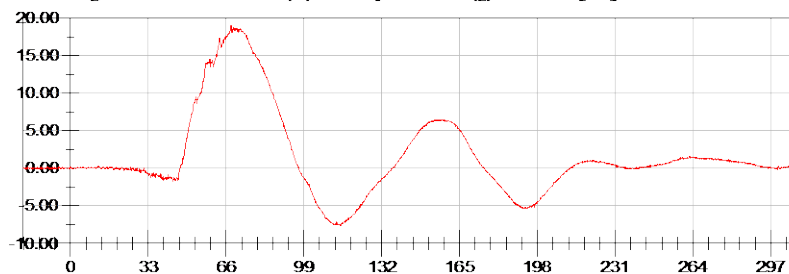
4.58 g at 123.04 ms

<Min>

-8.39 g at 54.72 ms

CFC_1000

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



<Max>

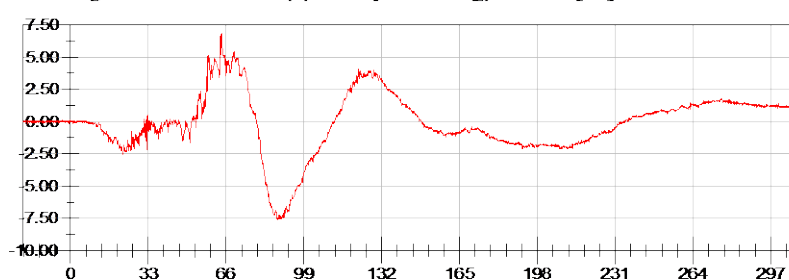
18.99 g at 68.16 ms

<Min>

-7.69 g at 114.64 ms

CFC_1000

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



<Max>

6.85 g at 64.16 ms

<Min>

-7.65 g at 88.00 ms

CFC_1000



NHTSA

Test Lab: CTF

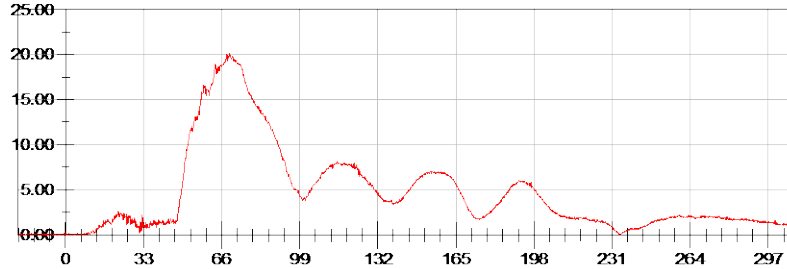
Test Number: 140227 (M20145117)

Test Date: 02/27/2014

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>

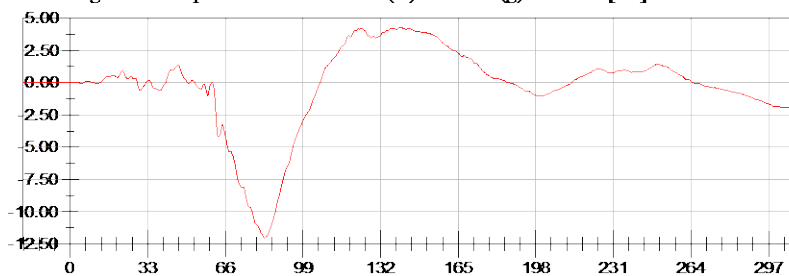
20.18 g at 69.36 ms

<Min>

0.04 g at -19.28 ms

CFC_1000

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



<Max>

4.25 g at 140.16 ms

<Min>

-12.05 g at 82.56 ms

CFC_180

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



<Max>

14.11 g at 75.60 ms

<Min>

-1.49 g at 238.56 ms

CFC_180

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



<Max>

10.40 g at 85.44 ms

<Min>

-4.67 g at 52.80 ms

CFC_180



NHTSA

Test Lab: CTF

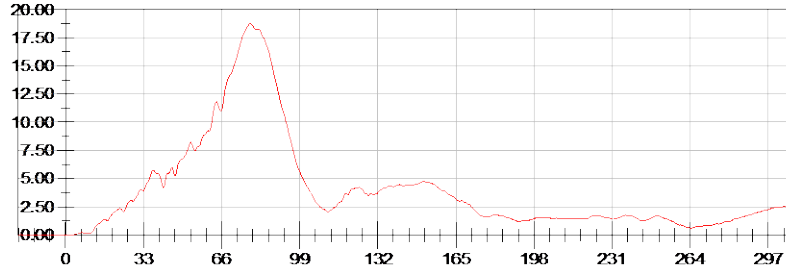
Test Number: 140227 (M20145117)

Test Date: 02/27/2014

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>

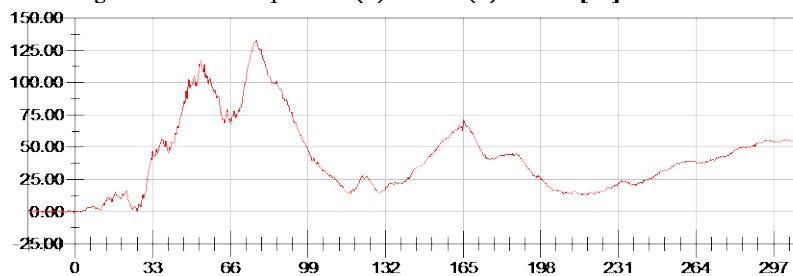
18.77 g at 78.08 ms

<Min>

0.00 g at -17.84 ms

CFC_180

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



<Max>

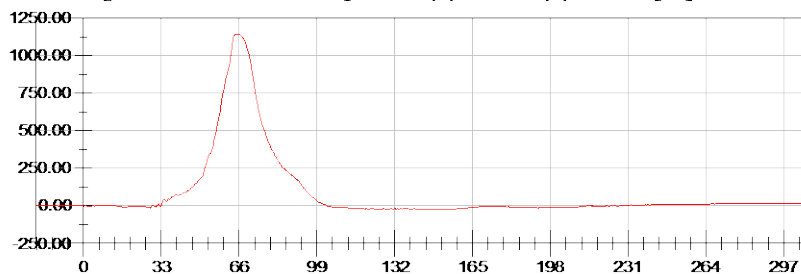
132.95 N at 77.12 ms

<Min>

-0.85 N at -4.00 ms

CFC_600

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



<Max>

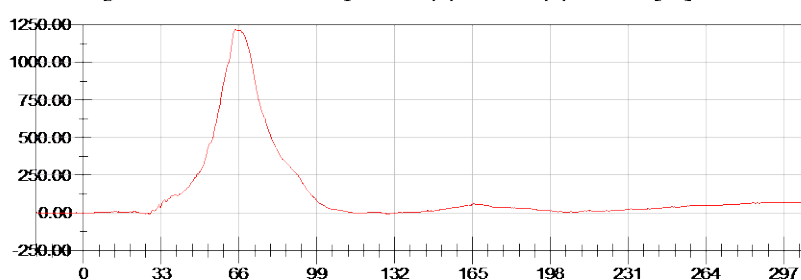
1,142.97 N at 66.00 ms

<Min>

-23.64 N at 148.24 ms

CFC_600

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



<Max>

1,218.69 N at 64.64 ms

<Min>

-6.98 N at 28.08 ms

CFC_600



APPENDIX C
DUMMY PERFORMANCE CALIBRATION TEST DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

ES-2re (Driver) Dummy

Description

Table 1. External Measurements

Table 2. Head Drop Test

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

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

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

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

Table 3 Neck Pendulum Test

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

Flexion Angle (°) vs. Time (ms)

Potentiometer A (°) vs. Time (ms)

Potentiometer B (°) vs. Time (ms)

Potentiometer C (°) vs. Time (ms)

Table 4. Shoulder Impact Test

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

Table 5. Thorax – Upper Rib Drop Test

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

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

Table 6. Thorax – Middle Rib Drop Test

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

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

Table 7. Thorax – Lower Rib Drop Test

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

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

Table 8. Thorax – Full Body Impact Test

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

Impactor Force (kN) vs. Time (ms)

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

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

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

Table 9. Abdomen Impact Test

Impactor Force (kN) vs. Time (ms)

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

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

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

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

Table 10. Lumbar Spine Flexion Test

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

Spine Flexion Angle (°) vs. Time (ms)

Potentiometer A (°) vs. Time (ms)

Potentiometer B (°) vs. Time (ms)

Potentiometer C (°) vs. Time (ms)

Table 11. Pelvis Impact Test

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

Impactor Force (kN) vs. Time (ms)

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

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

SID-IIs (Rear Passenger) Dummy

Description

Table 1. External Measurements

Table 2. Head Drop Test

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

Table 3. Lateral Neck Pendulum Test

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

Table 4. Shoulder Impact Test

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

Table 5. Thorax (With Arm) Impact Test

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

Table 6. Thorax (Without Arm) Impact Test

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

Table 7. Abdomen Impact Test

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

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

Table 9. Pelvis Acetabulum Impact Test

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

Table 10. Pelvis Iliac Impact Test

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

Pre-Test Calibration Sheets
Driver S/N F030

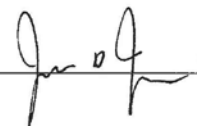
Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 24
02/21/14

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	444	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	366	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	158	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. 24-1

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Peak Resultant Acceleration	125 - 155 g	130.4 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	8.7 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	Yes	Yes	Yes

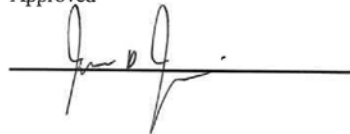
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:13:42 358

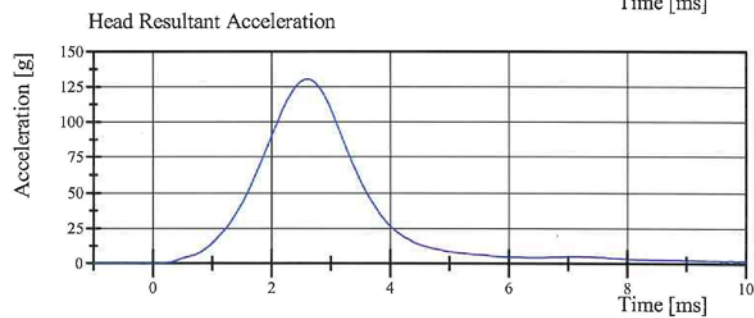
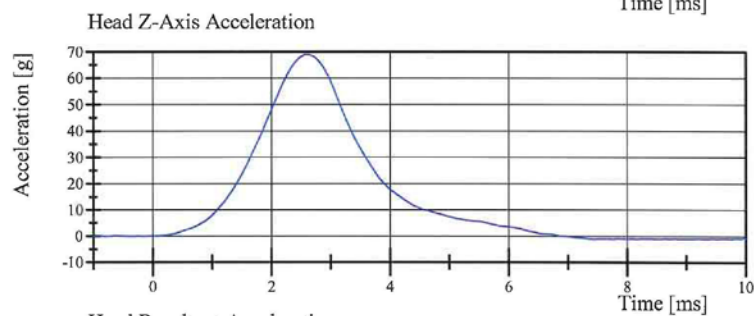
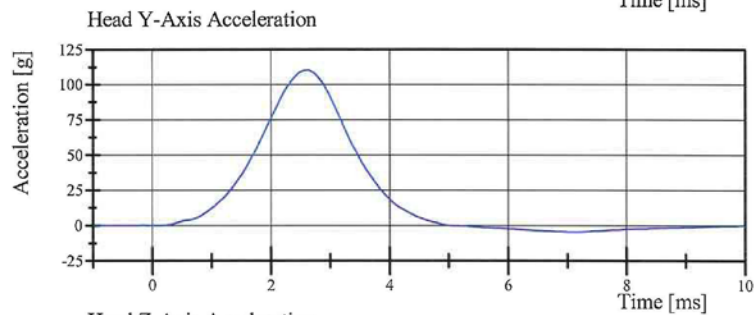
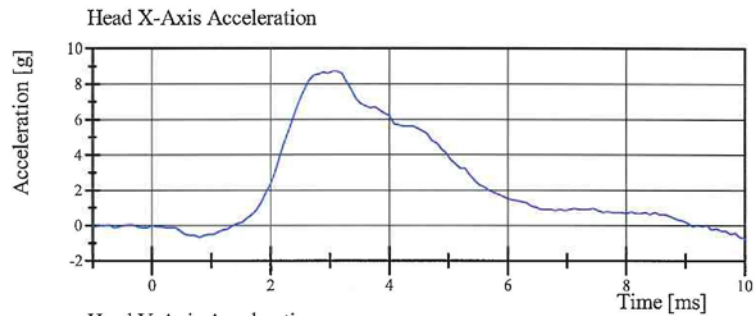


Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 24-1

Test Date: 2/21/2014



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:13:52 358



Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 24-1

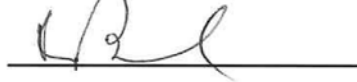
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.37 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-52.8 deg	Yes
Time of Peak	54 - 66 ms	58.0 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	65.1 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:43:49 1309

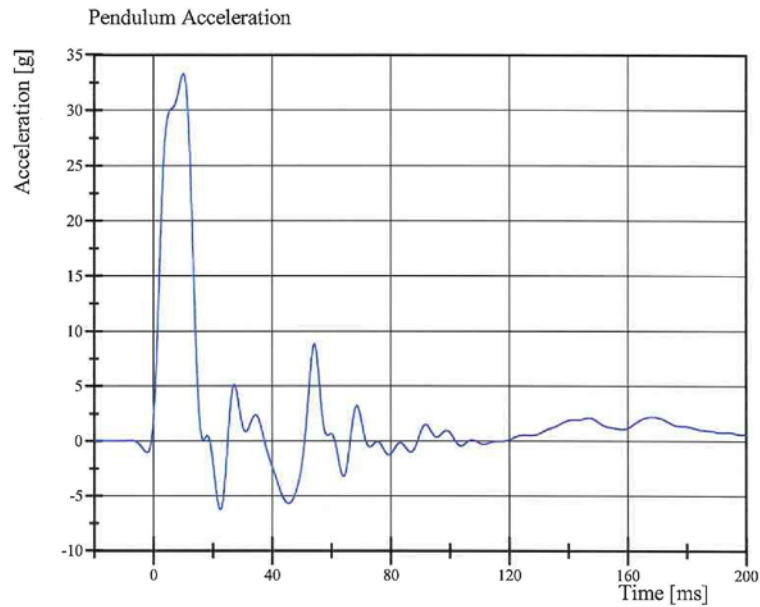


Transportation Research Center Inc.

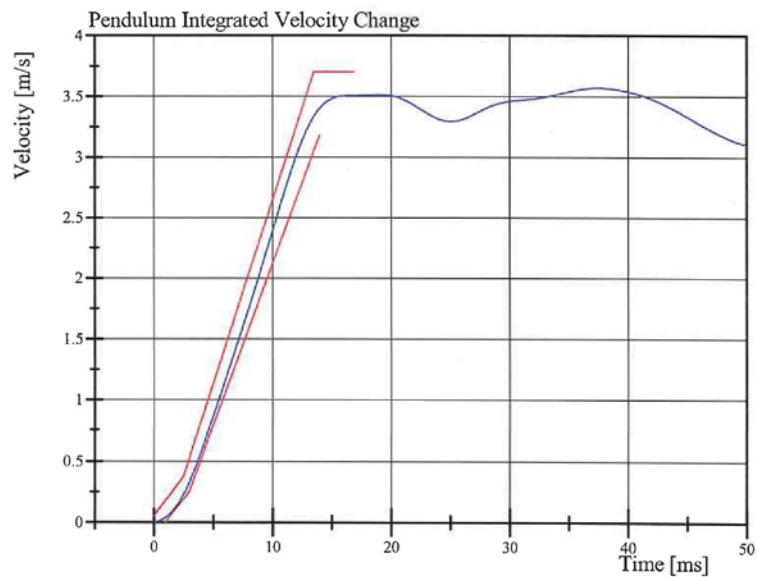
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 24-1

Test Date: 2/21/2014



Filter Class: CFC_60
Max: 33.2 g at 10.0 ms
Min: -6.2 g at 22.5 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

02.21.2014 09:44:01 1309

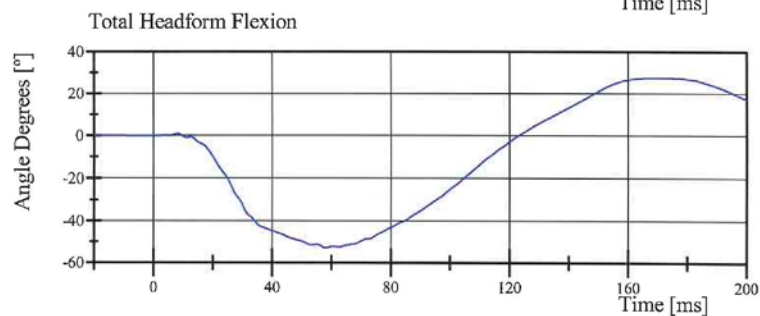
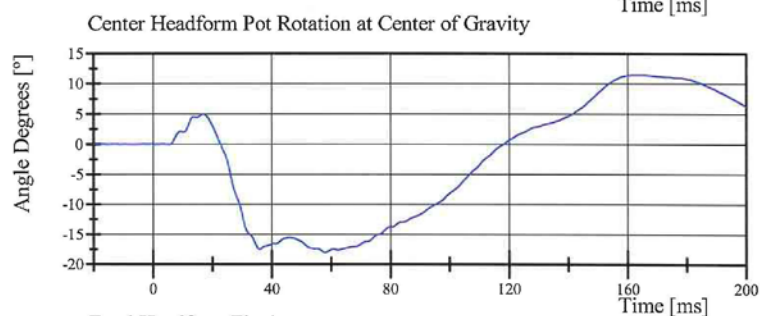
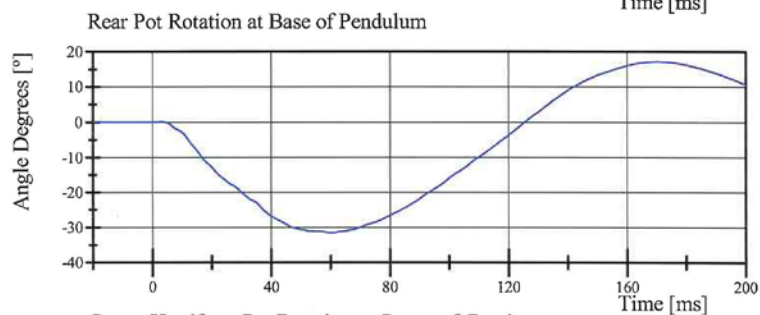
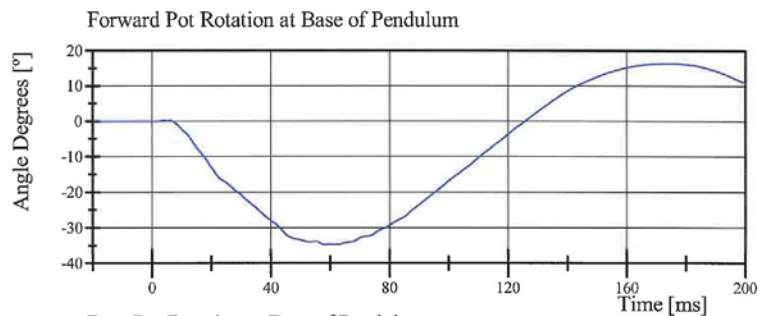


Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 24-1

Test Date: 2/21/2014



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:44:01 1309



Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 24-1

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.1 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-9.10 g	Yes

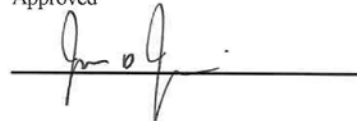
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA final rule 8/15/2008

02.21.2014 10:55:20 527

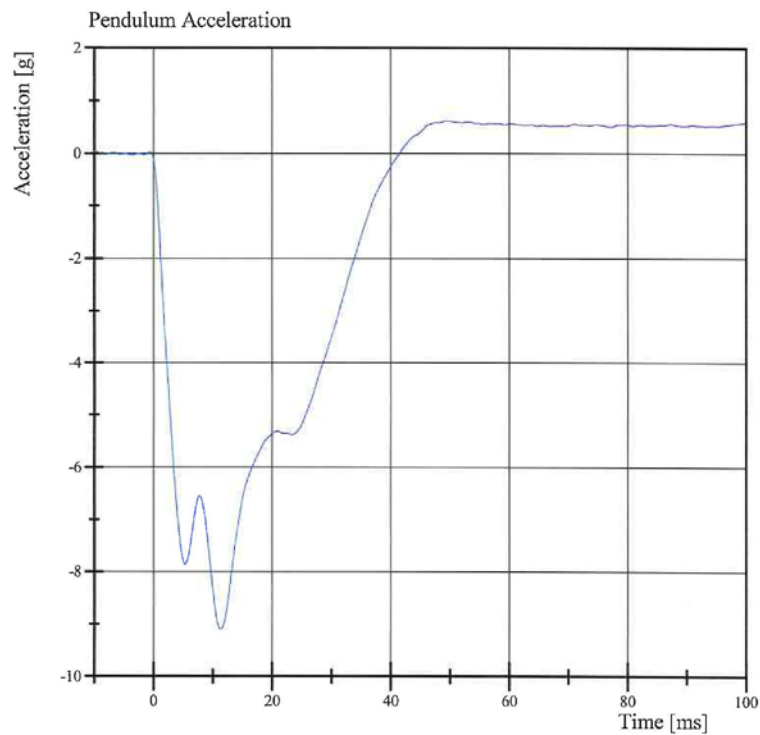


Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 24-1

Test Date: 2/21/2014



Filter Class: CFC_180

Max: 0.6 g at 49.5 ms

Min: -9.1 g at 11.3 ms

Specification Source: NHTSA final rule 8/15/2008

02.21.2014 10:55:28 527



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.9 mm	Yes

Test meets specifications.

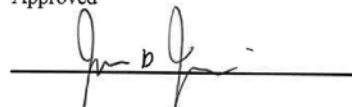
Comments:

Drop Height: 816

Technician



Approved



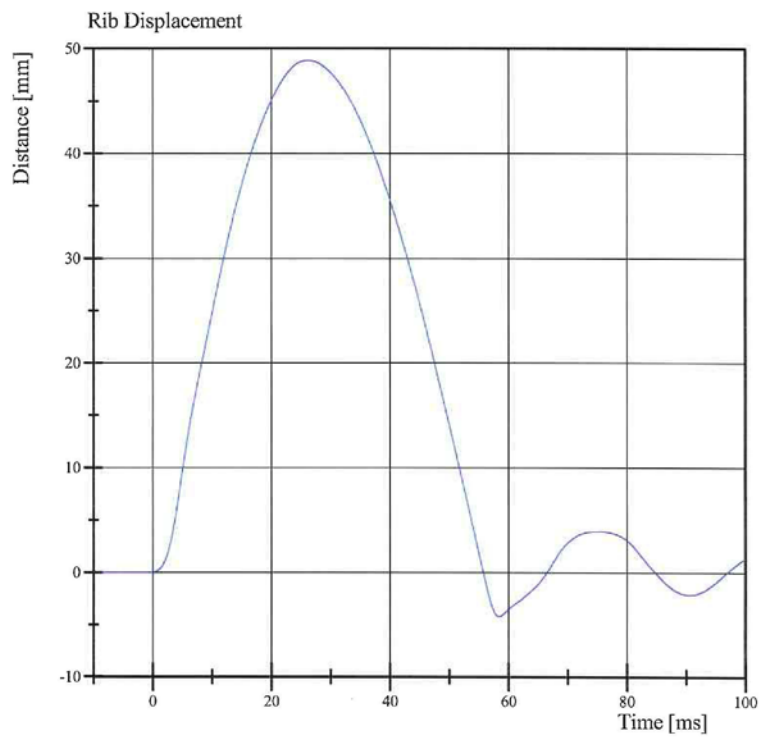
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:40:46 727



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 48.9 mm at 26.2 ms
Min: -4.2 mm at 58.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:40:53 727



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.1 mm	Yes

Test meets specifications.

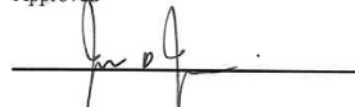
Comments:

Drop Height: 462

Technician



Approved



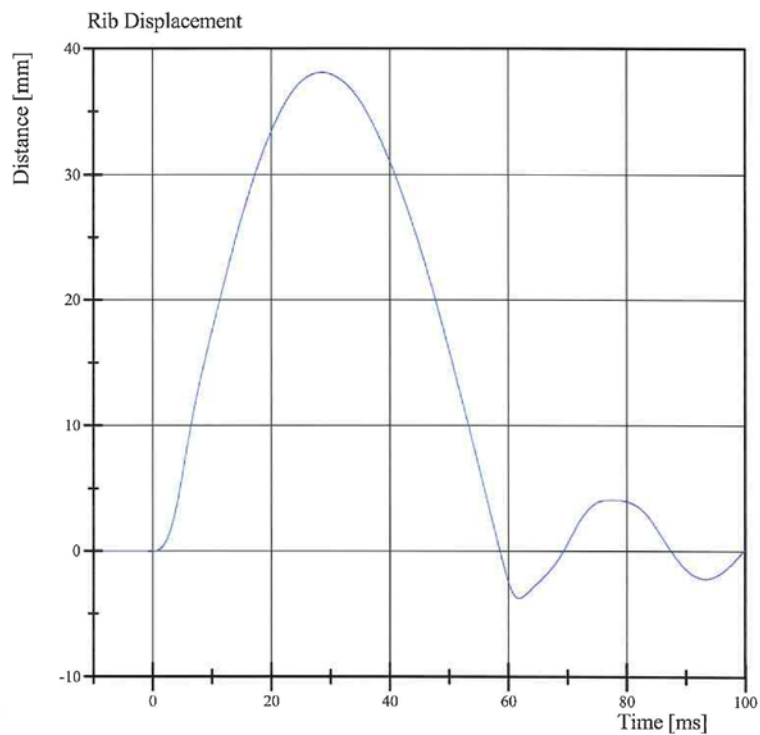
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:46:01 904



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 38.1 mm at 28.6 ms
Min: -3.8 mm at 61.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:46:09 904



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.1 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician



Approved



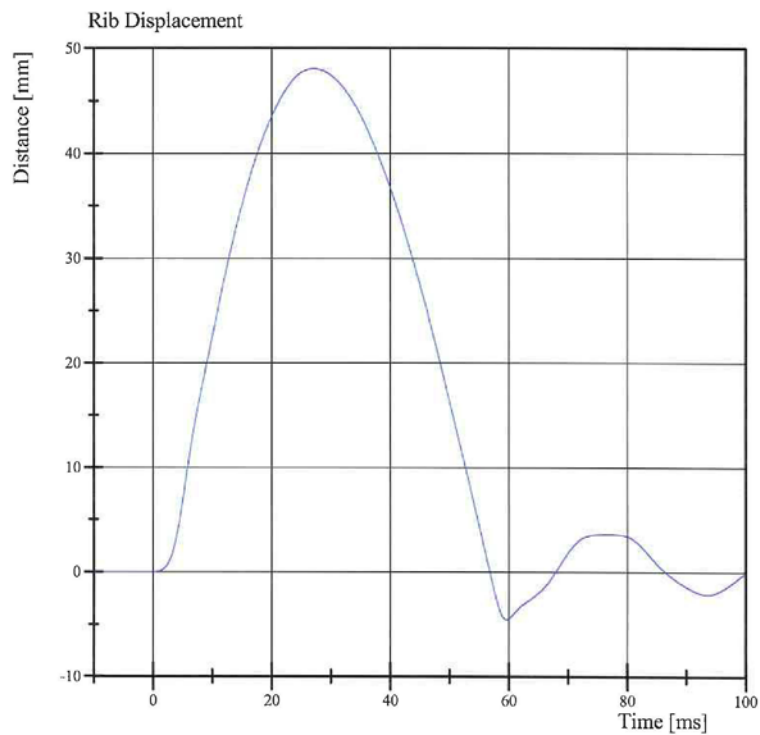
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:53:00 717



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 48.1 mm at 27.1 ms
Min: -4.5 mm at 59.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:53:08 717



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.3 mm	Yes

Test meets specifications.

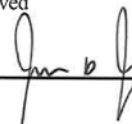
Comments:

Drop Height: 462

Technician



Approved



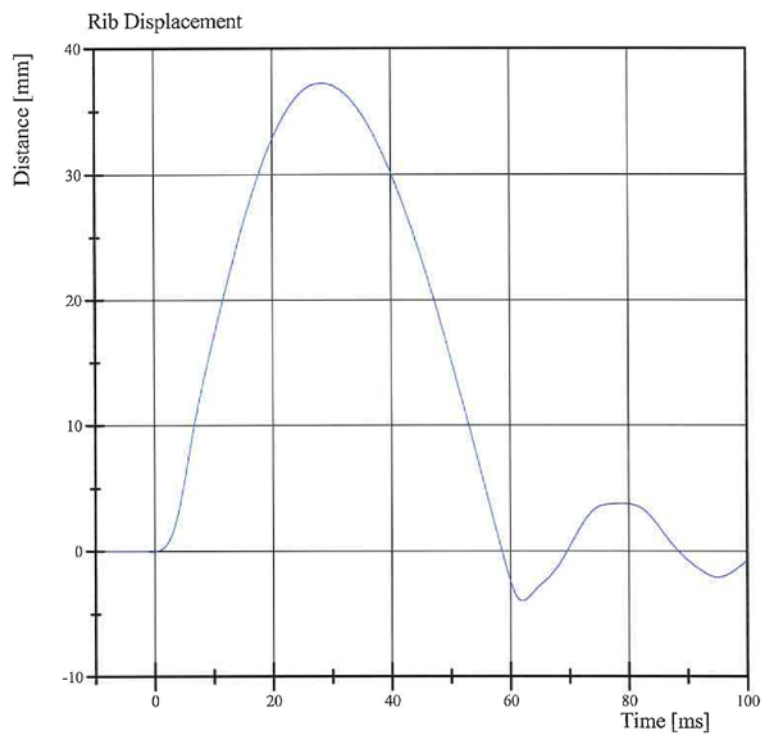
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:59:35 904



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 37.3 mm at 28.3 ms
Min: -4.0 mm at 62.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 08:59:43 904



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.8 mm	Yes

Test meets specifications.

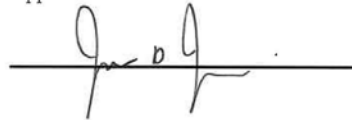
Comments:

Drop Height: 816

Technician



Approved



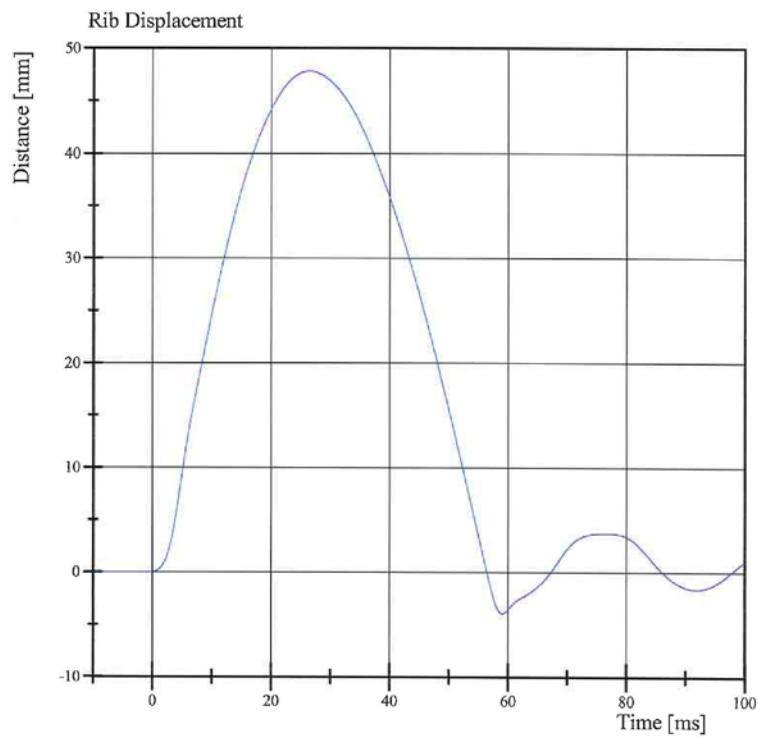
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:03:57 732



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 47.8 mm at 26.4 ms
Min: -4.0 mm at 59.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:04:09 732



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.0 mm	Yes

Test meets specifications.

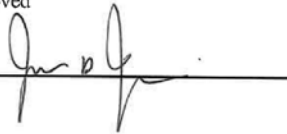
Comments:

Drop Height: 462

Technician



Approved



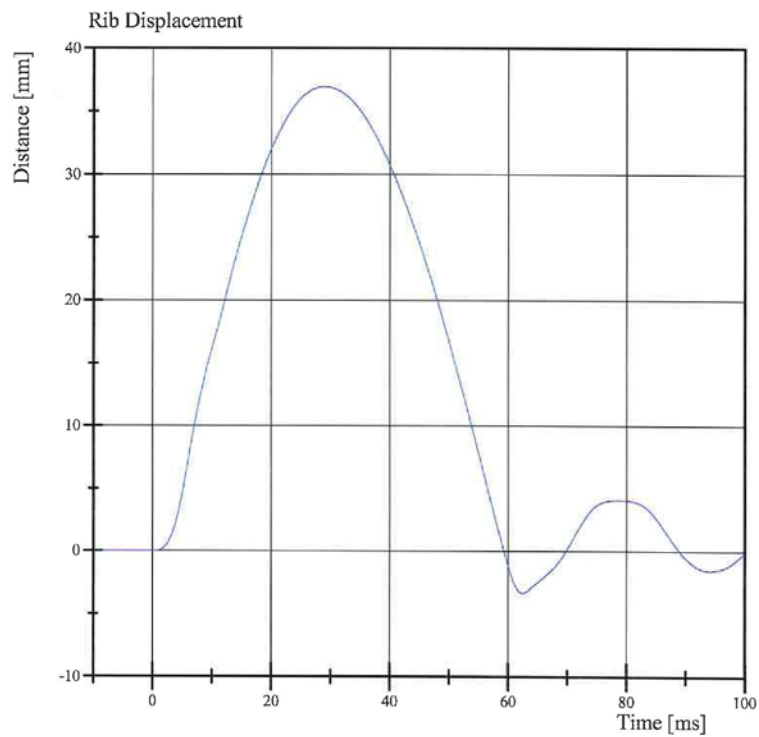
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:09:58 913



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 37.0 mm at 29.0 ms
Min: -3.3 mm at 62.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:10:07 913



Transportation Research Center Inc.

Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 24-1

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.466 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,423.7 N	Yes
Upper Rib Displacement	34 - 41 mm	38.1 mm	Yes
Center Rib Displacement	37 - 45 mm	40.9 mm	Yes
Lower Rib Displacement	37 - 44 mm	41.2 mm	Yes

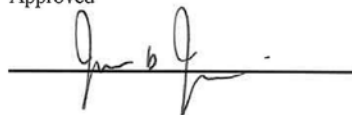
Test meets specifications.

Comments:

Technician



Approved



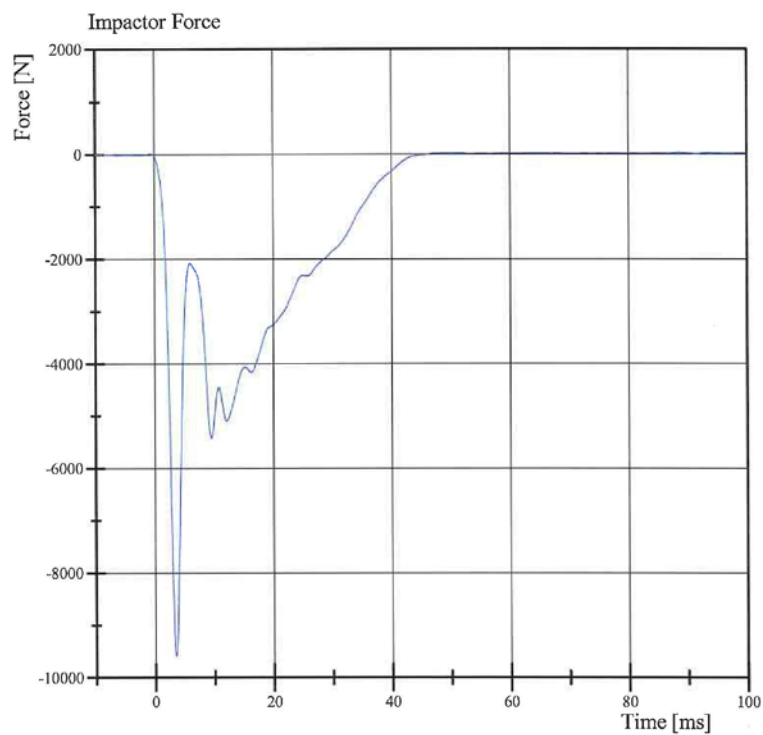
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

02.21.2014 10:58:56 465



Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 31.0 N at 49.4 ms
Min: -9,597.1 N at 3.4 ms

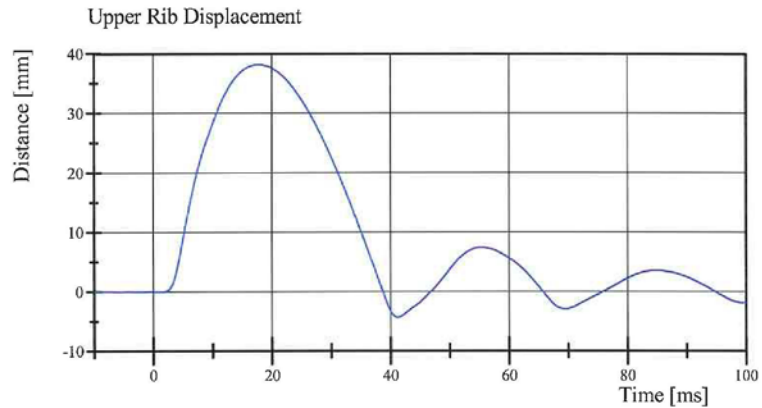
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

02.21.2014 10:59:10 465

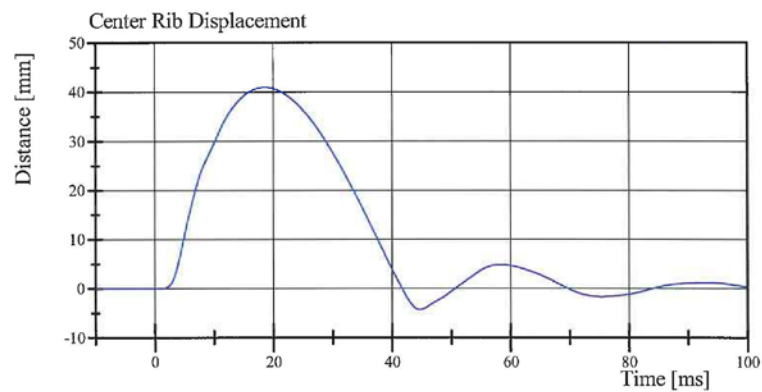


Transportation Research Center Inc.

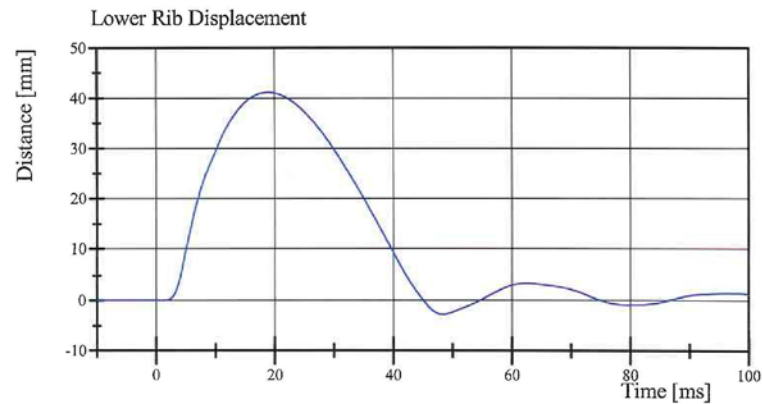
Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 38.1 mm at 17.8 ms
Min: -4.3 mm at 41.2 ms



Filter Class: CFC_180
Max: 40.9 mm at 18.6 ms
Min: -4.3 mm at 44.6 ms



Filter Class: CFC_180
Max: 41.2 mm at 18.9 ms
Min: -2.8 mm at 48.3 ms

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

02.21.2014 10:59:10 465



Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 24-2

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.94 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,135.1 N	Yes
Time of Peak	10.6 - 13.0 ms	10.88 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,671.2 N	Yes
Time of Peak	10.0 - 12.3 ms	10.32 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 11:36:51 582

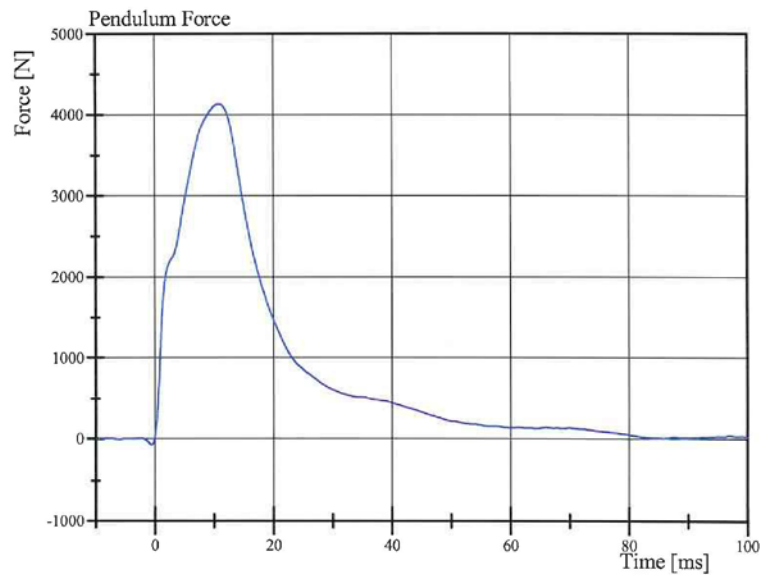
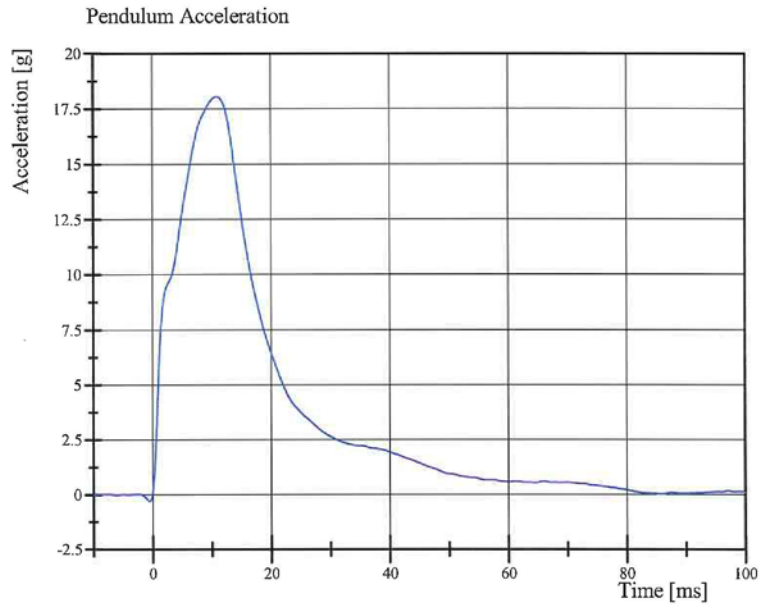


Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 24-2

Test Date: 2/21/2014



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 11:37:01 582

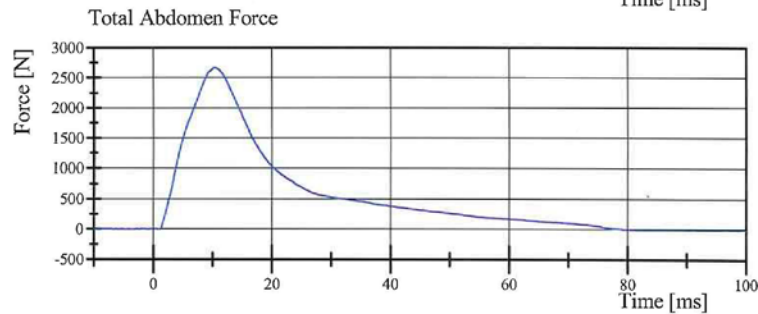
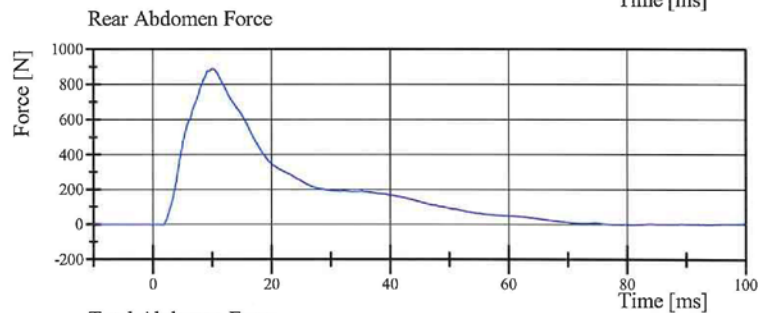
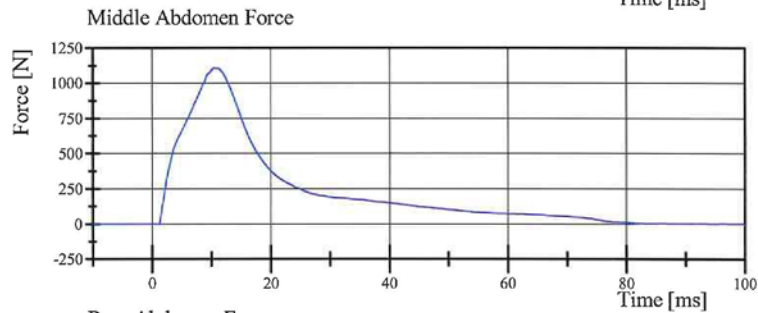
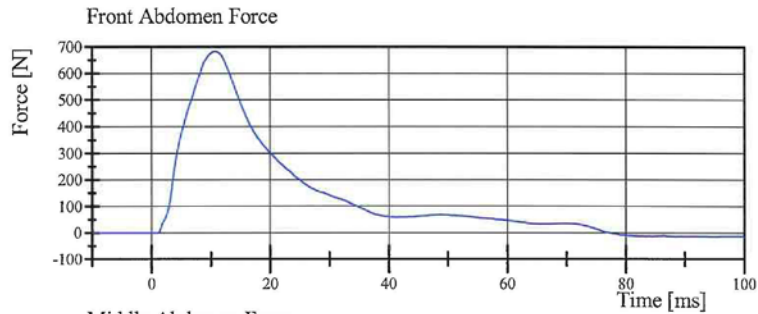


Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 24-2

Test Date: 2/21/2014



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 11:37:01 582



Transportation Research Center Inc.

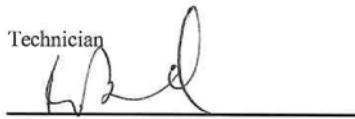
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.057 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-47.8 deg	Yes
Time of Peak	39 - 53 ms	43.8 ms	Yes
Headform Flexion Decay			
- Peak to Zero	37 - 57 ms	38.2 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



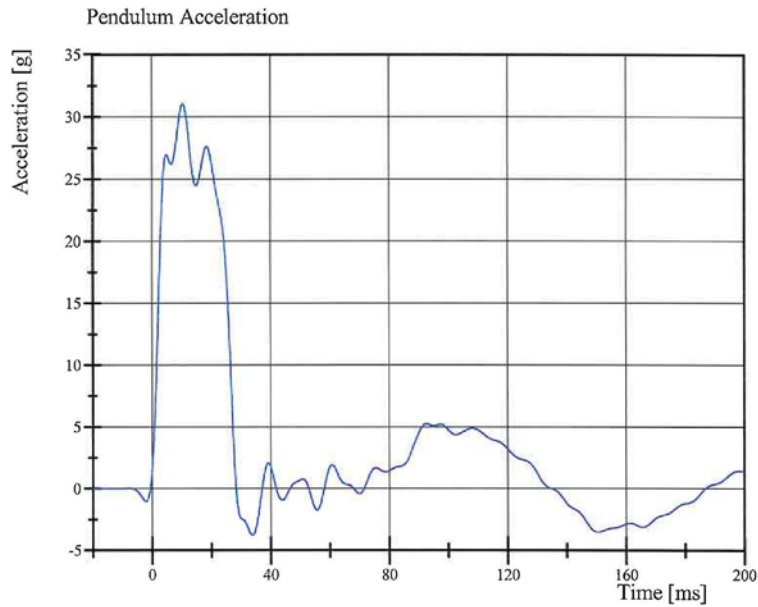
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:22:24 573

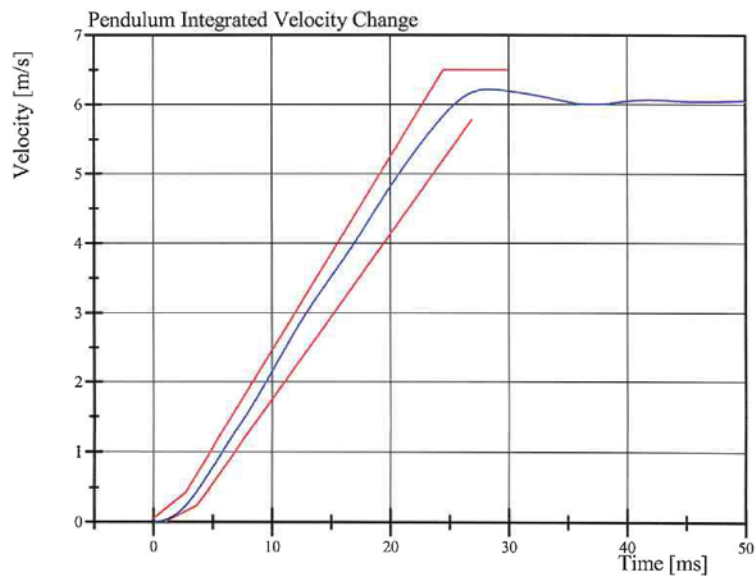


Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Filter Class: CFC_60
Max: 31.0 g at 10.4 ms
Min: -3.7 g at 33.8 ms



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

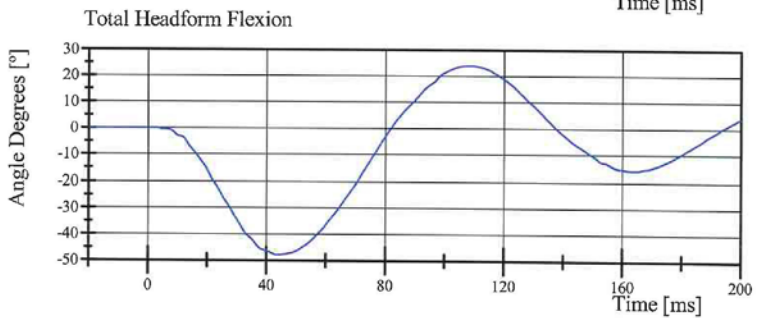
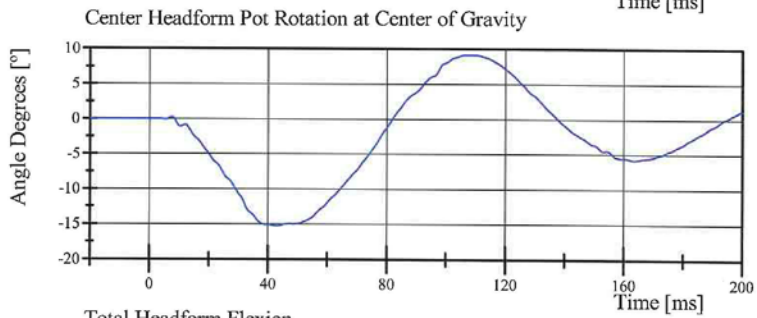
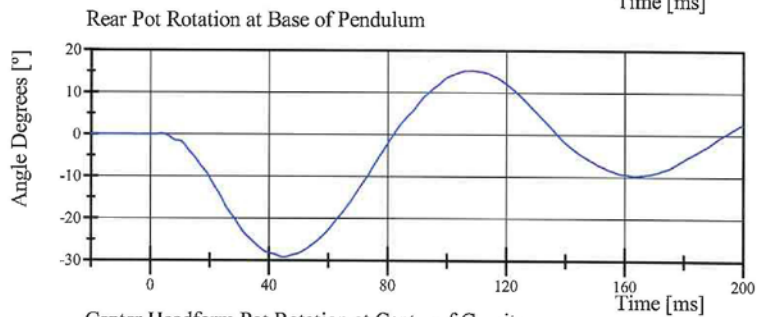
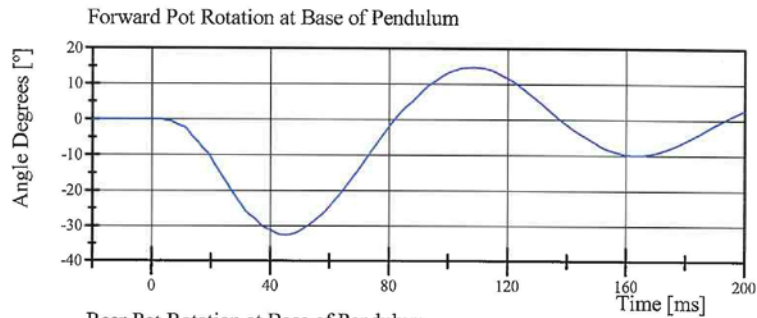
Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:22:31 573



Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 24-1
Test Date: 2/21/2014



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 09:22:31 573



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 24-2

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.29 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,188.8 N	Yes
Time of Peak	11.8 - 16.1 ms	12.88 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,271.6 N	Yes
Time of Peak	12.2 - 17.0 ms	12.64 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 11:41:28 543

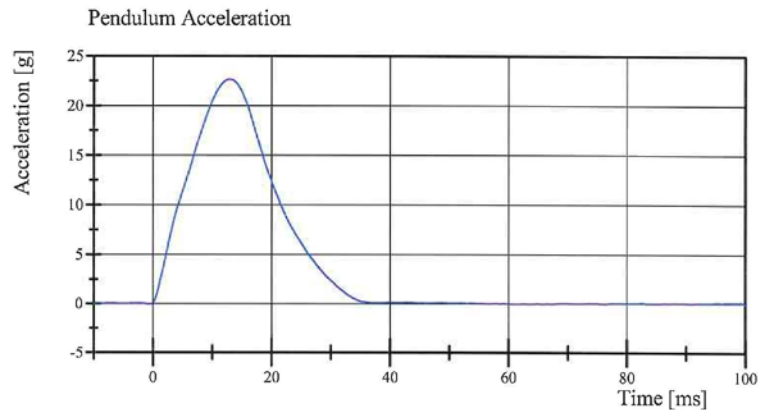


Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 24-2

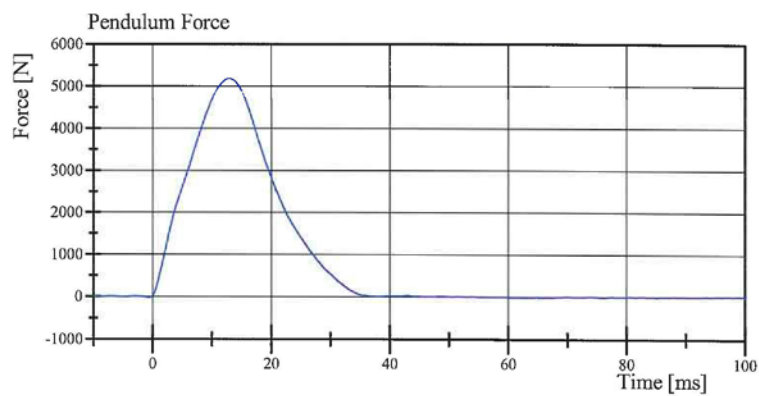
Test Date: 2/21/2014



Filter Class: CFC_180

Max: 22.6 g at 12.9 ms

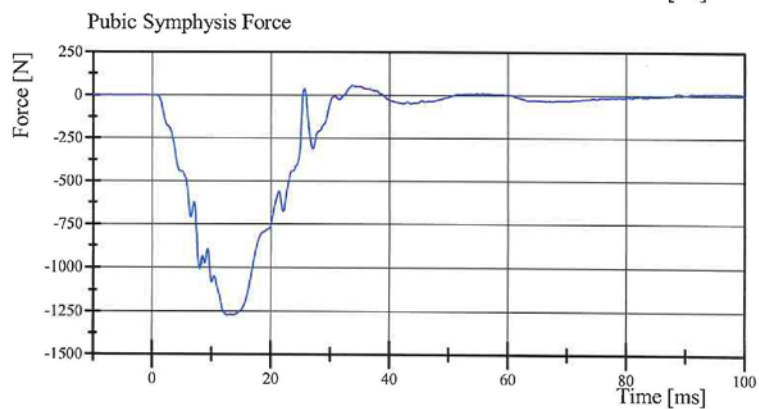
Min: -0.1 g at -0.6 ms



Filter Class: CFC_180

Max: 5,188.8 N at 12.9 ms

Min: -16.8 N at -0.6 ms



Filter Class: CFC_600

Max: 57.7 N at 33.8 ms

Min: -1,271.6 N at 12.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

02.21.2014 11:41:38 543



Post-Test Calibration Sheets
Driver S/N F030

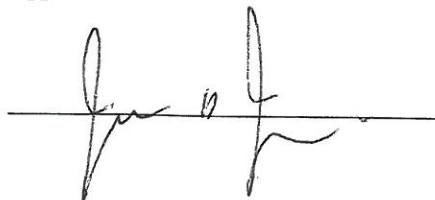
Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 25
03/3/14

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	444	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	281	Yes
10	Pelvis Lap Width	359.0 - 373.0	366	Yes
11	Head Depth	196.0 - 206.0	200	Yes
12	Thorax Depth	262.0 - 272.0	266	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	158	Yes
16	Back of Buttocks to Front of Knee	597.0 - 615.0	606	Yes

Technician



Approved



Baseline 10/07/05



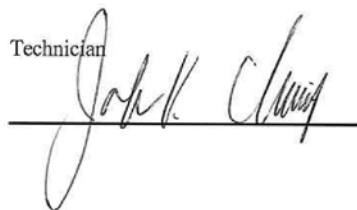
Transportation Research Center Inc.

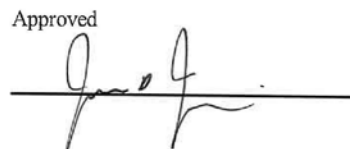
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 25-2
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Peak Resultant Acceleration	125 - 155 g	144.1 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	7.1 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

03.03.2014 08:01:30 359

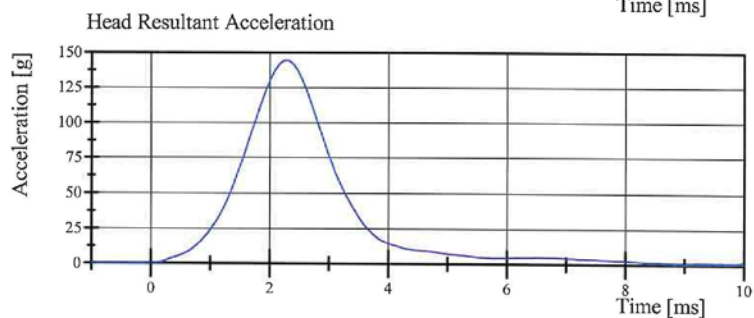
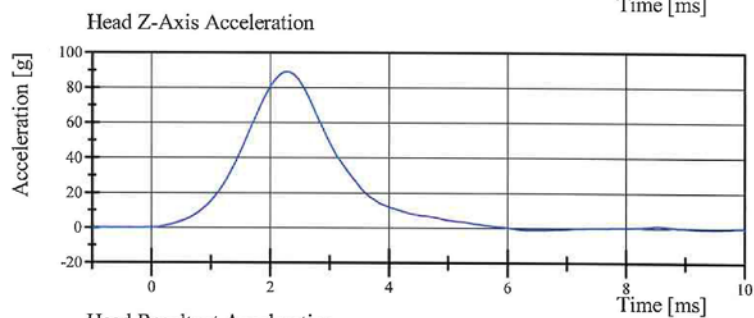
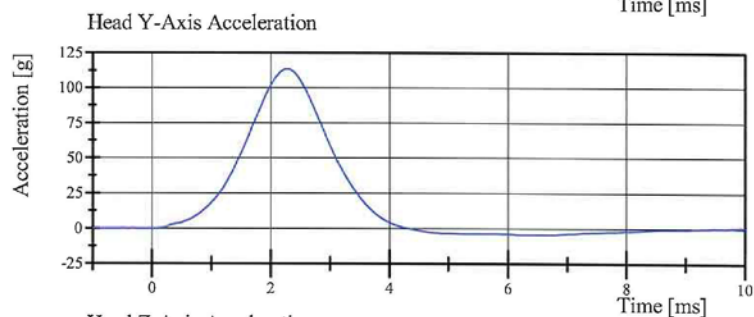
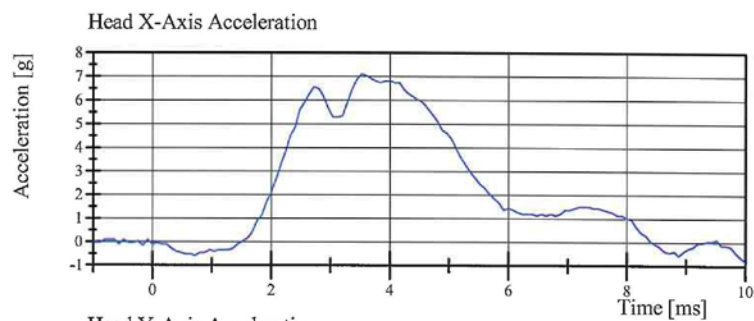


Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. F030 Certification No. 25-2

Test Date: 3/3/2014



Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 08:01:39 359



Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. F030 Certification No. 25-1

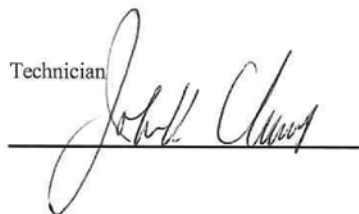
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	40 %	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	-52.6 deg	Yes
Time of Peak	54 - 66 ms	57.7 ms	Yes
Headform Flexion Decay			
- Peak to Zero	53 - 88 ms	65.0 ms	Yes

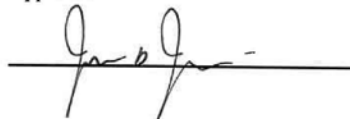
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 10:45:28 1310

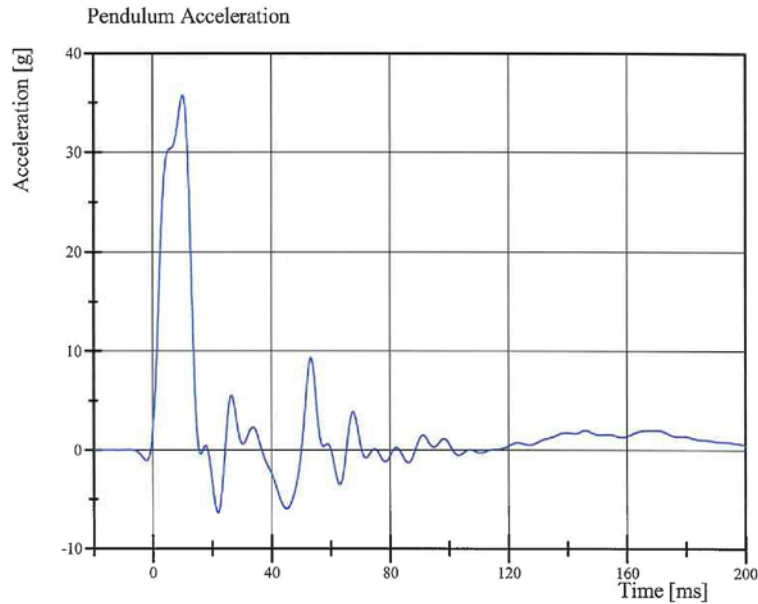


Transportation Research Center Inc.

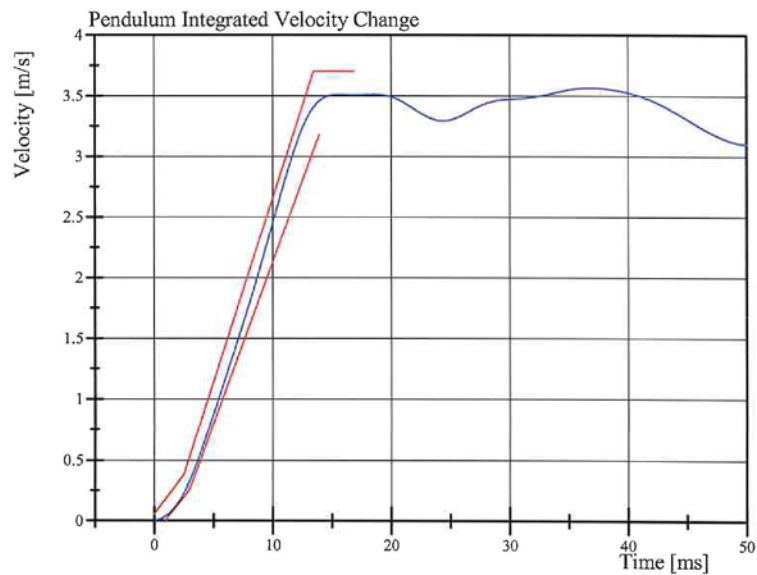
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 25-1

Test Date: 3/3/2014



Filter Class: CFC_60
Max: 35.7 g at 10.1 ms
Min: -6.4 g at 21.9 ms



Filter Class: CFC_60
Max: 3.6 m/s at 36.7 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 10:45:35 1310

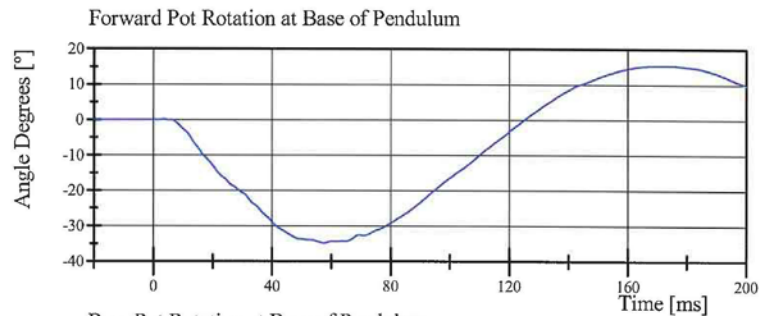


Transportation Research Center Inc.

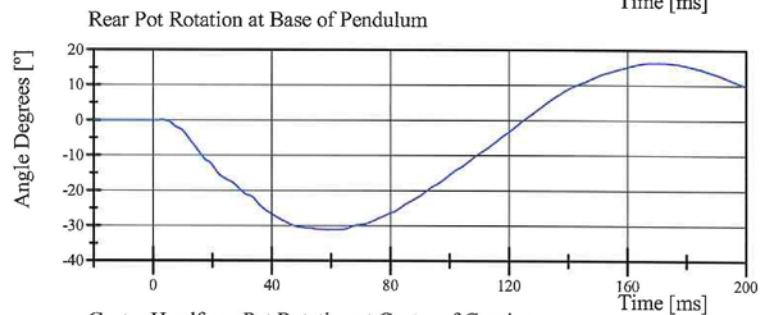
Left Lateral Neck

ES-2re Serial No. F030 Certification No. 25-1

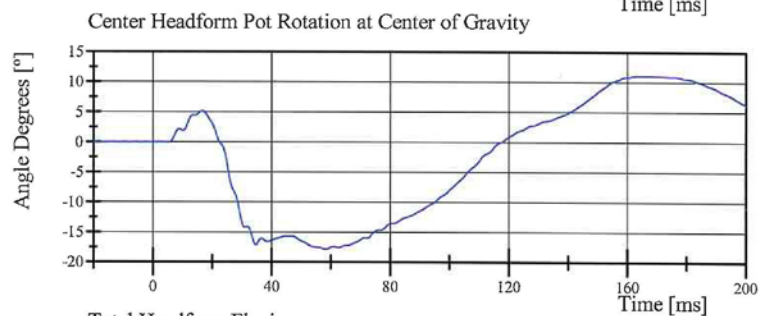
Test Date: 3/3/2014



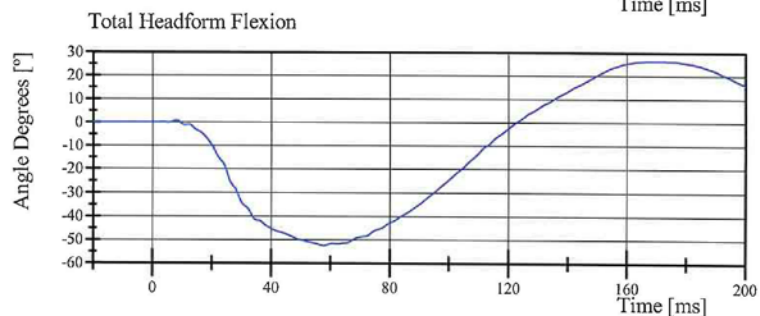
Filter Class: CFC_180
Max: 15.3 ° at 170.2 ms
Min: -34.8 ° at 57.4 ms



Filter Class: CFC_180
Max: 16.4 ° at 170.4 ms
Min: -31.2 ° at 59.0 ms



Filter Class: CFC_180
Max: 11.0 ° at 163.6 ms
Min: -17.9 ° at 58.2 ms



Filter Class: CFC_180
Max: 26.2 ° at 169.5 ms
Min: -52.6 ° at 57.7 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 10:45:36 1310



Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 25-1

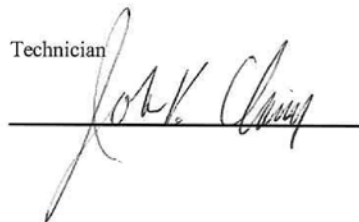
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-10.11 g	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA final rule 8/15/2008

03.03.2014 14:15:09 557

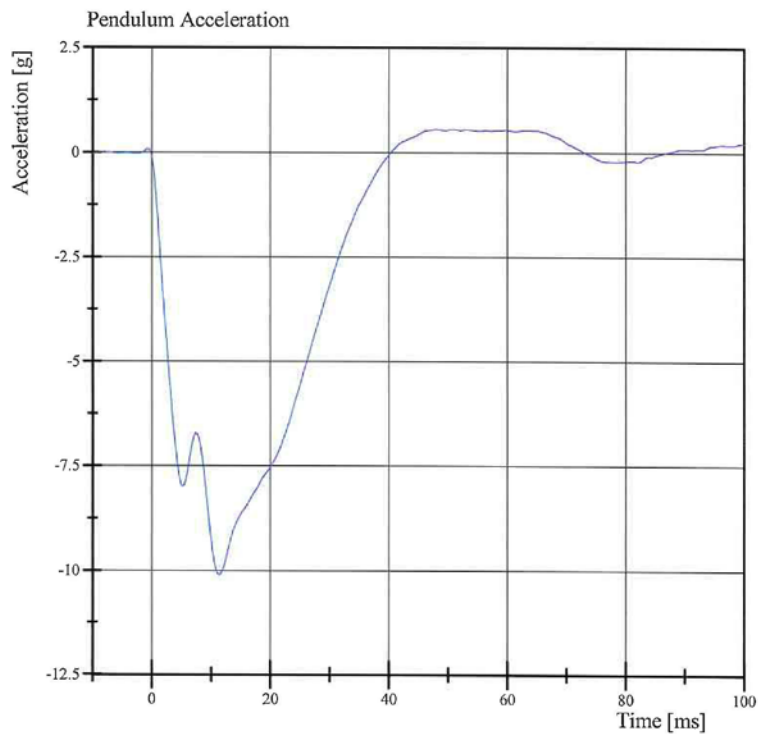


Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. F030 Certification No. 25-1

Test Date: 3/3/2014



Filter Class: CFC_180
Max: 0.6 g at 50.9 ms
Min: -10.1 g at 11.4 ms

Specification Source: NHTSA final rule 8/15/2008

03.03.2014 14:15:18 557



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014

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	49.0 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician



Specification Source: NHTSA Final Rule 8/15/2008

Approved

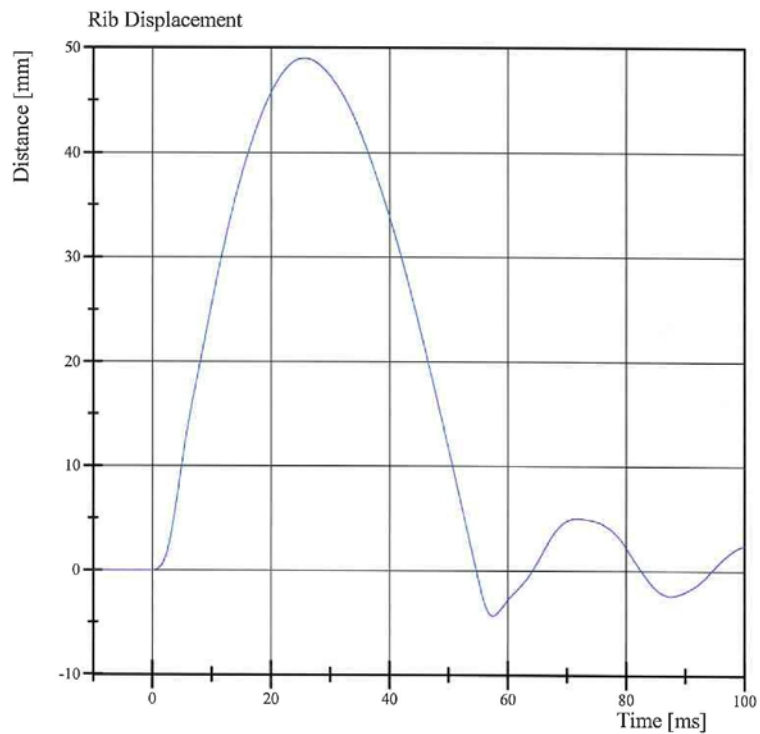


03.03.2014 11:12:15 721



Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 49.0 mm at 25.6 ms
Min: -4.4 mm at 57.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:12:29 721



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.2 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician



Approved



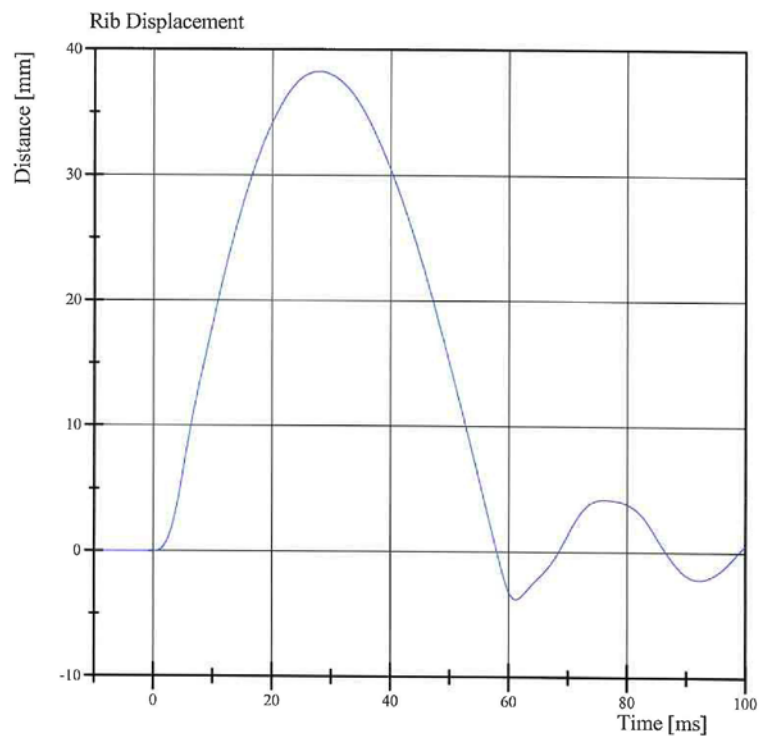
Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:19:44 908



Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 38.2 mm at 27.9 ms
Min: -3.8 mm at 61.2 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:20:10 908



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014

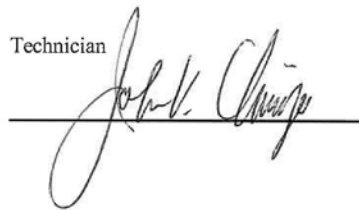
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.2 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician



Approved



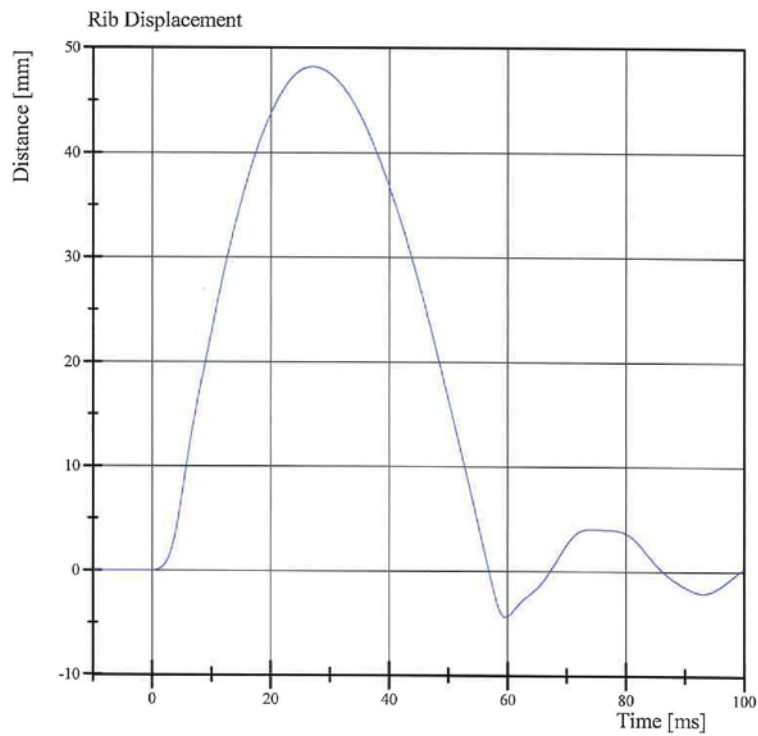
Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:28:02 711



Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 48.2 mm at 27.0 ms
Min: -4.4 mm at 59.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:28:14 711



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	31 %	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



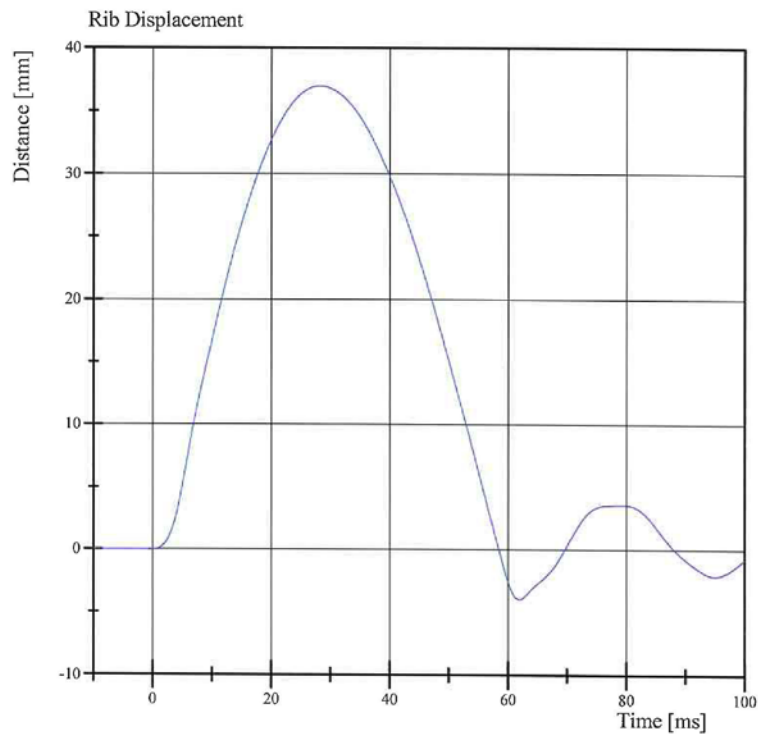
Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:33:20 906



Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 37.0 mm at 28.2 ms
Min: -4.0 mm at 61.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:33:33 906



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. F030 Certification No. 25-1

Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.9 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician



Approved



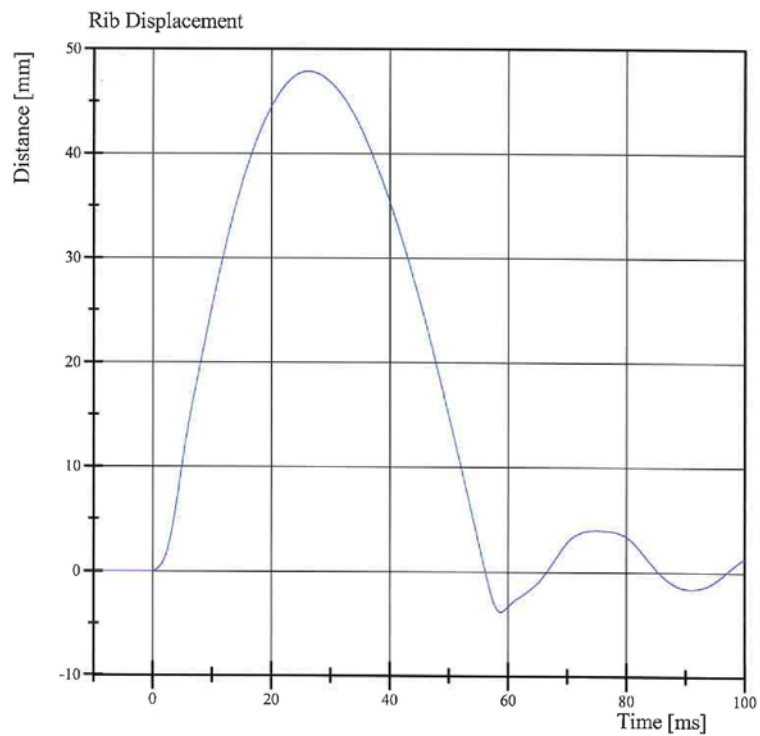
Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:40:57 726



Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 47.9 mm at 26.2 ms
Min: -3.9 mm at 58.7 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:41:10 726



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014

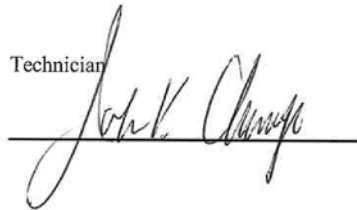
Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	36.8 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician



Approved



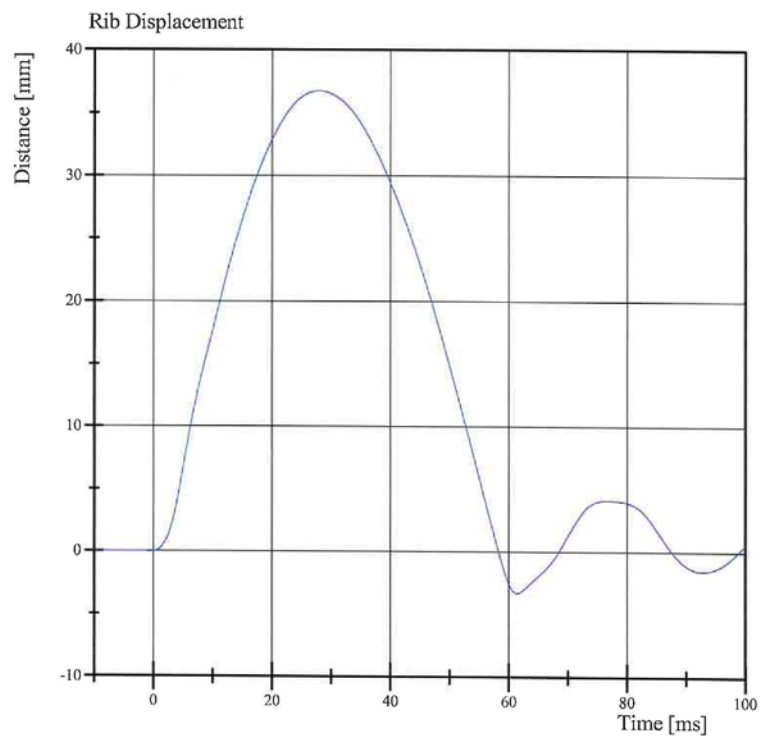
Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:47:23 913



Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 36.8 mm at 27.9 ms
Min: -3.3 mm at 61.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 11:47:36 913



Transportation Research Center Inc.

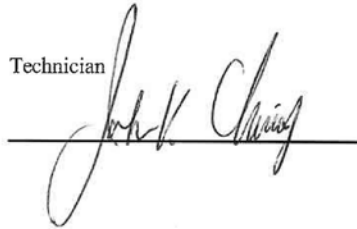
Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.510 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,437.2 N	Yes
Upper Rib Displacement	34 - 41 mm	38.1 mm	Yes
Center Rib Displacement	37 - 45 mm	41.2 mm	Yes
Lower Rib Displacement	37 - 44 mm	41.5 mm	Yes

Test meets specifications.

Comments:

Technician



Approved



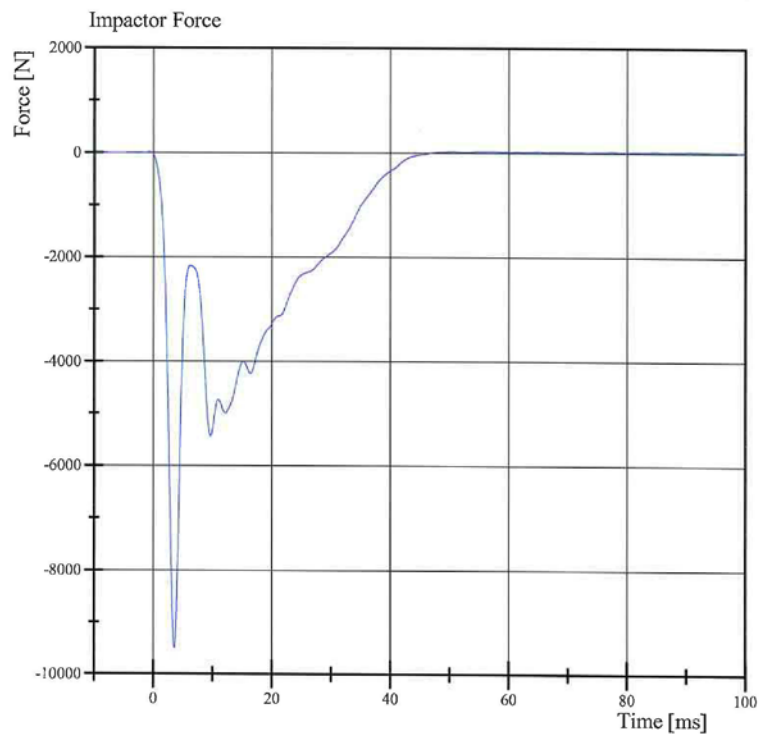
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

03.03.2014 15:00:51 447



Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 25-1
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 29.6 N at 50.5 ms
Min: -9,501.5 N at 3.6 ms

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

03.03.2014 15:01:04 447

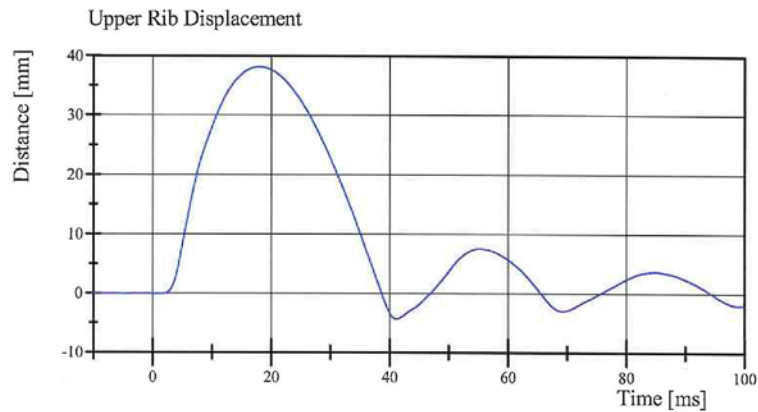


Transportation Research Center Inc.

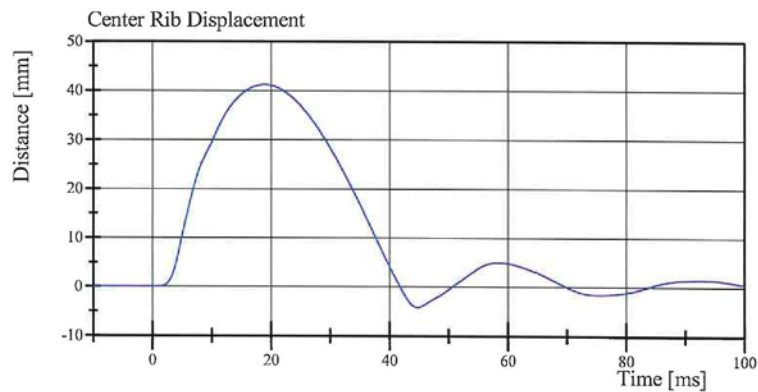
Left Lateral Thorax

ES-2re Serial No. F030 Certification No. 25-1

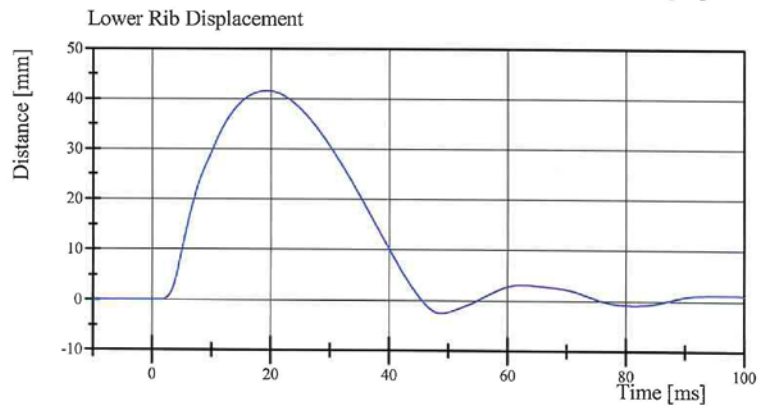
Test Date: 3/3/2014



Filter Class: CFC_180
Max: 38.1 mm at 18.0 ms
Min: -4.3 mm at 41.1 ms



Filter Class: CFC_180
Max: 41.2 mm at 19.0 ms
Min: -4.2 mm at 44.7 ms



Filter Class: CFC_180
Max: 41.5 mm at 19.3 ms
Min: -2.6 mm at 48.8 ms

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

03.03.2014 15:01:05 447



Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 25-1

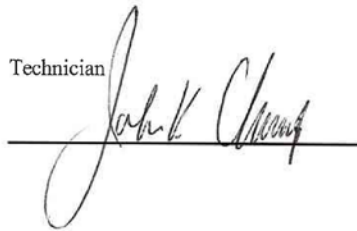
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.063 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-45.8 deg	Yes
Time of Peak	39 - 53 ms	42.5 ms	Yes
Headform Flexion Decay			
- Peak to Zero	37 - 57 ms	37.9 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 10:19:52 576

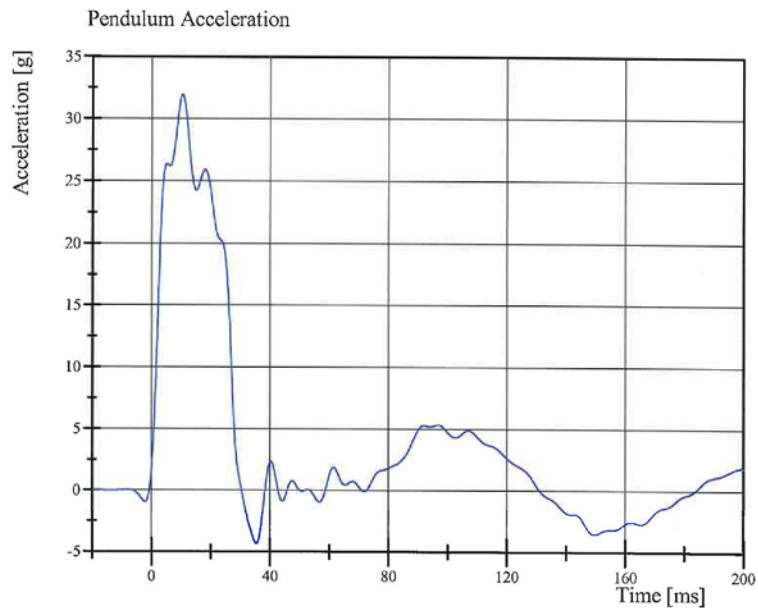


Transportation Research Center Inc.

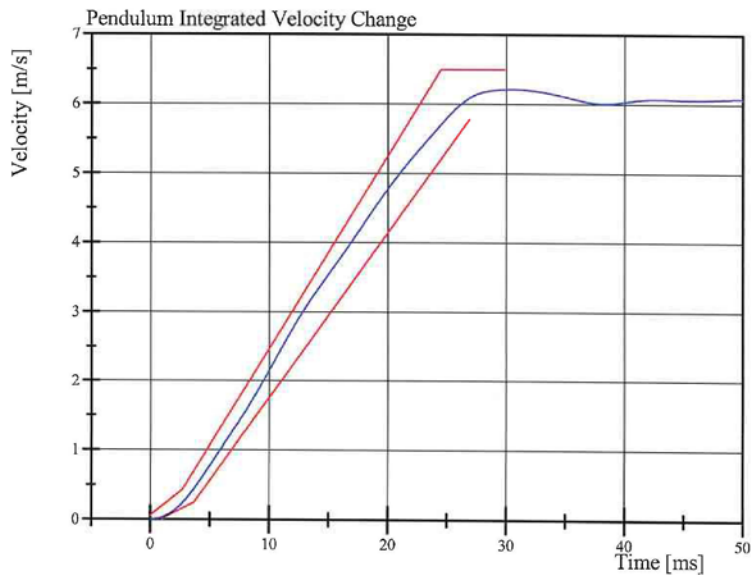
Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 25-1

Test Date: 3/3/2014



Filter Class: CFC_60
Max: 31.9 g at 10.4 ms
Min: -4.3 g at 35.4 ms



Filter Class: CFC_60
Max: 6.2 m/s at 30.4 ms
Min: 0.0 m/s at 0.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 10:20:02 576

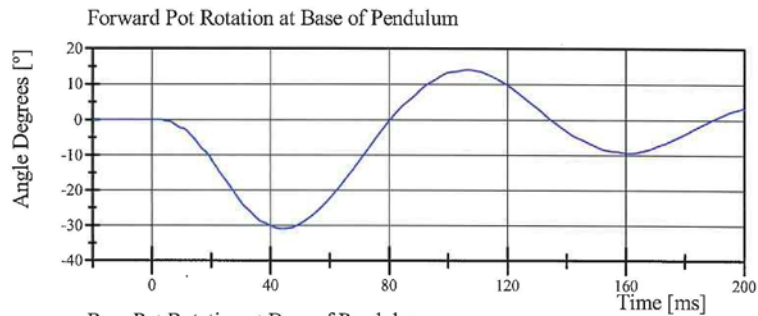


Transportation Research Center Inc.

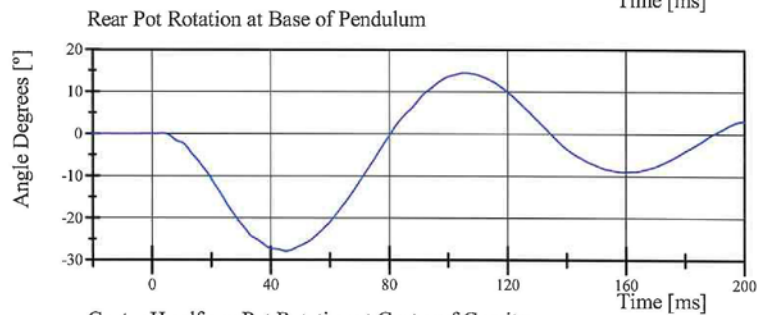
Left Lateral Lumbar

ES-2re Serial No. F030 Certification No. 25-1

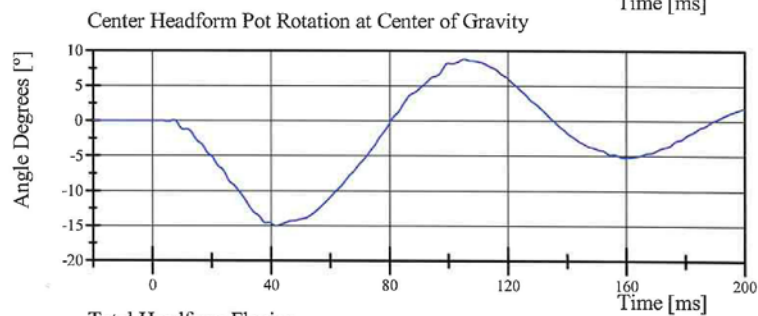
Test Date: 3/3/2014



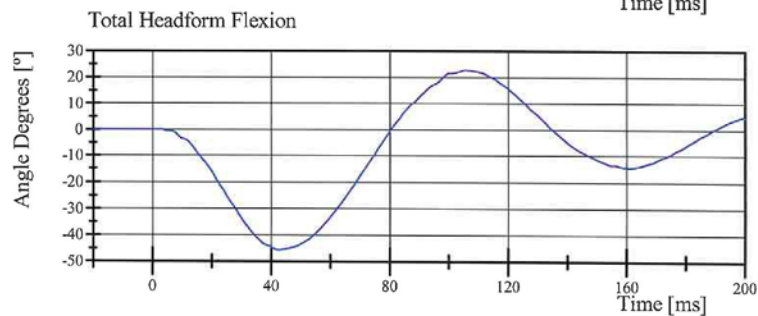
Filter Class: CFC_180
Max: 14.0 ° at 106.5 ms
Min: -30.9 ° at 43.0 ms



Filter Class: CFC_180
Max: 14.5 ° at 105.4 ms
Min: -27.9 ° at 45.0 ms



Filter Class: CFC_180
Max: 8.8 ° at 105.1 ms
Min: -15.0 ° at 41.7 ms



Filter Class: CFC_180
Max: 22.7 ° at 105.6 ms
Min: -45.8 ° at 42.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 10:20:03 576



Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 25-1

Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.94 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,097.7 N	Yes
Time of Peak	10.6 - 13.0 ms	11.52 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,609.9 N	Yes
Time of Peak	10.0 - 12.3 ms	10.64 ms	Yes

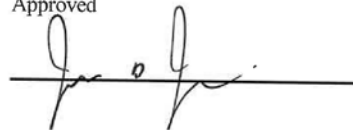
Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 15:28:37 612

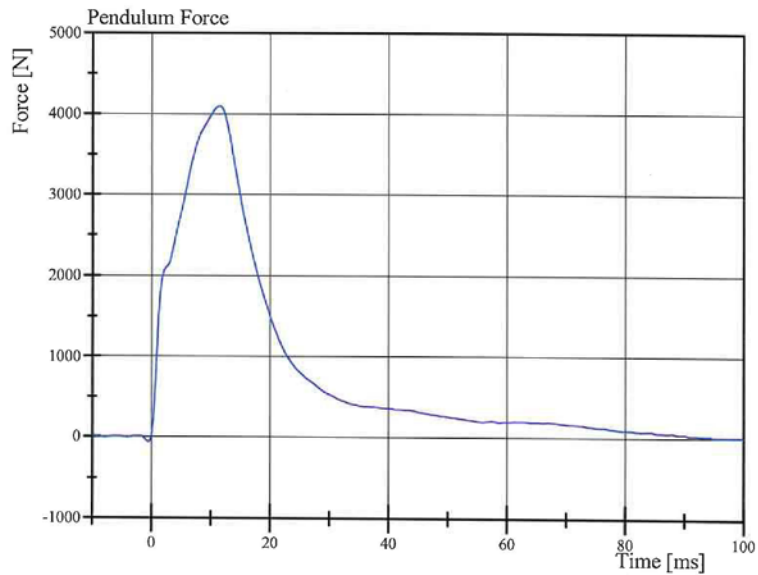
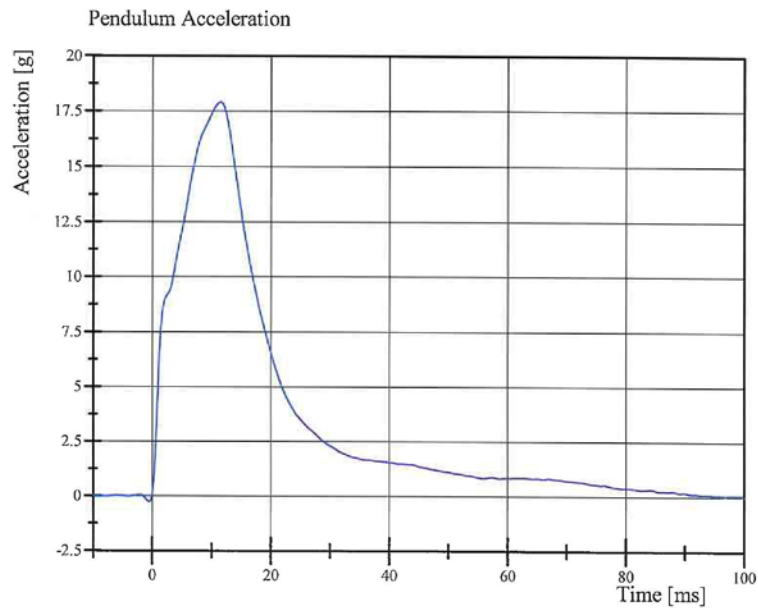


Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 25-1

Test Date: 3/3/2014



Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 15:28:49 612

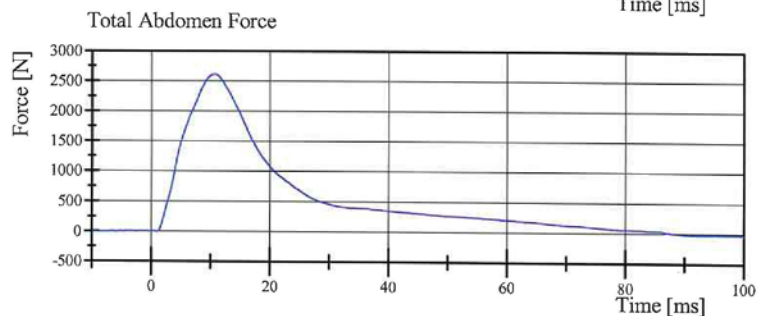
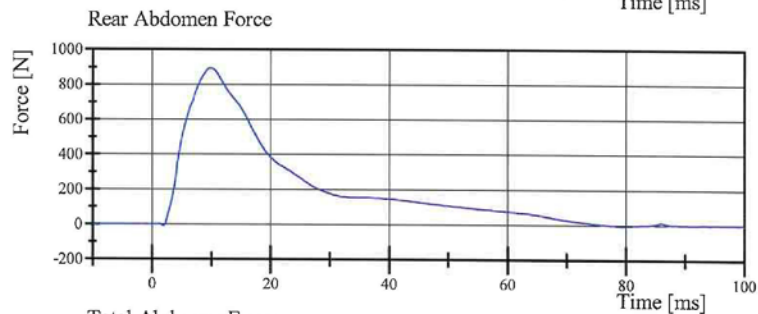
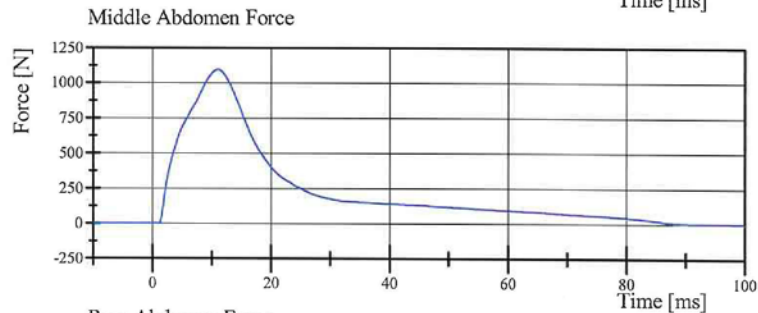
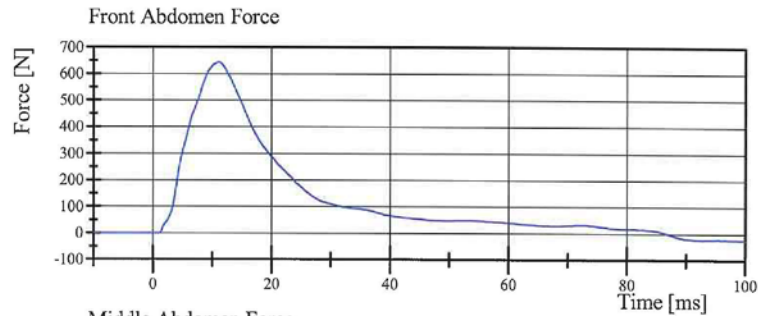


Transportation Research Center Inc.

Left Lateral Abdomen

ES-2re Serial No. F030 Certification No. 25-1

Test Date: 3/3/2014



Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 15:28:49 612



Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 25-1

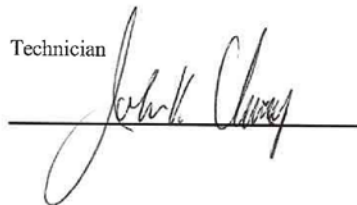
Test Date: 3/3/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.29 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,171.5 N	Yes
Time of Peak	11.8 - 16.1 ms	12.96 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,280.8 N	Yes
Time of Peak	12.2 - 17.0 ms	14.08 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 15:42:29 544

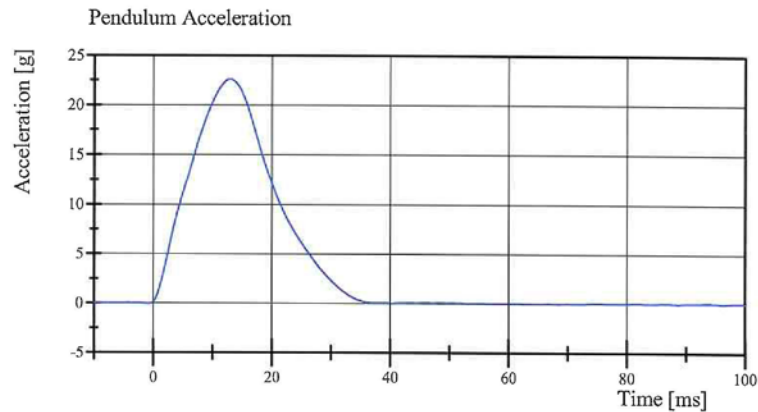


Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. F030 Certification No. 25-1

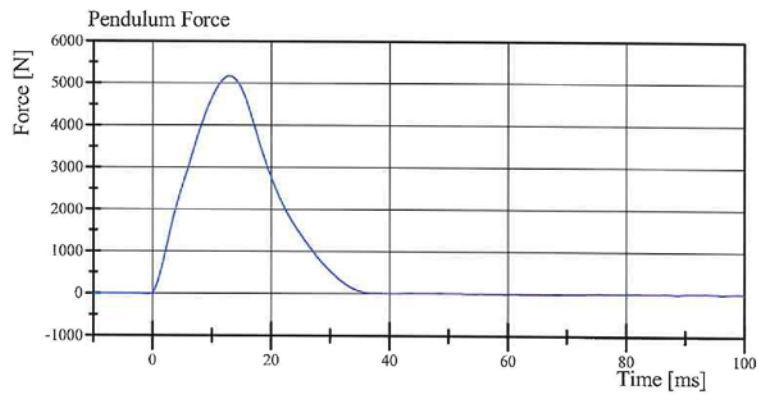
Test Date: 3/3/2014



Filter Class: CFC_180

Max: 22.6 g at 13.0 ms

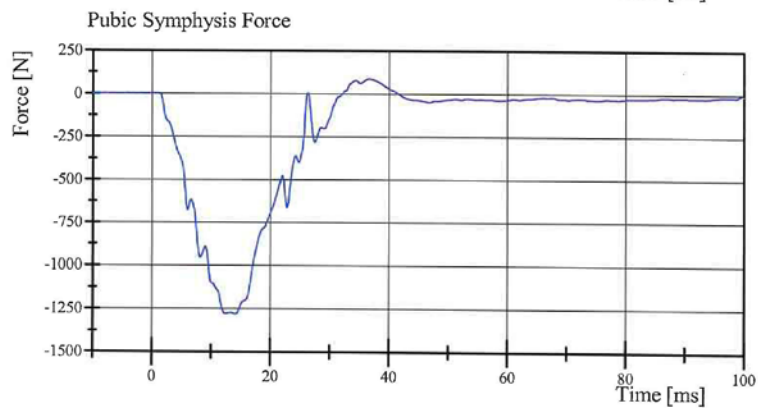
Min: -0.1 g at 68.5 ms



Filter Class: CFC_180

Max: 5,171.5 N at 13.0 ms

Min: -16.8 N at 68.5 ms



Filter Class: CFC_600

Max: 84.5 N at 36.7 ms

Min: -1,280.8 N at 14.1 ms

Specification Source: NHTSA Final Rule 8/15/2008

03.03.2014 15:42:39 544



Pre-Test Calibration Sheets
Passenger S/N 305

Transportation Research Center Inc.
SIDI's Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.029

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	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	865	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. 29-1

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	122.8 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.1 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.

02.21.2014 08:29:01 232

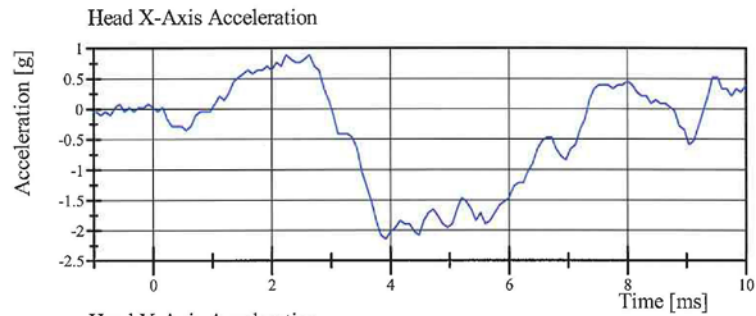


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 29-1

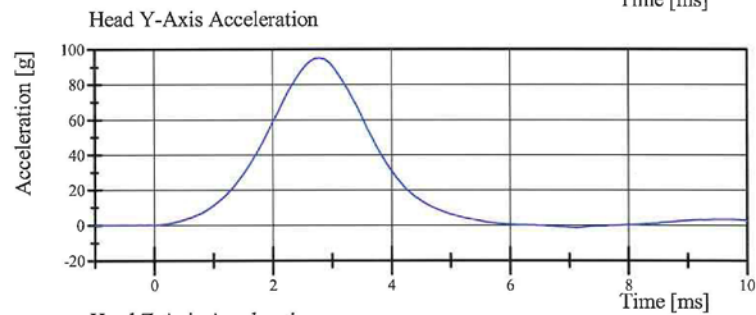
Test Date: 2/21/2014



Filter Class: CFC_1000

Max: 0.9 g at 2.2 ms

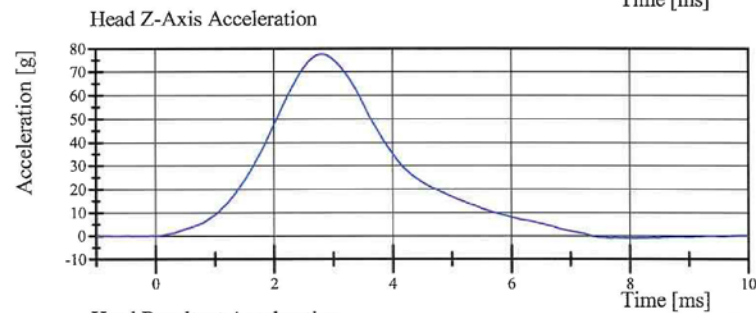
Min: -2.1 g at 3.9 ms



Filter Class: CFC_1000

Max: 95.2 g at 2.8 ms

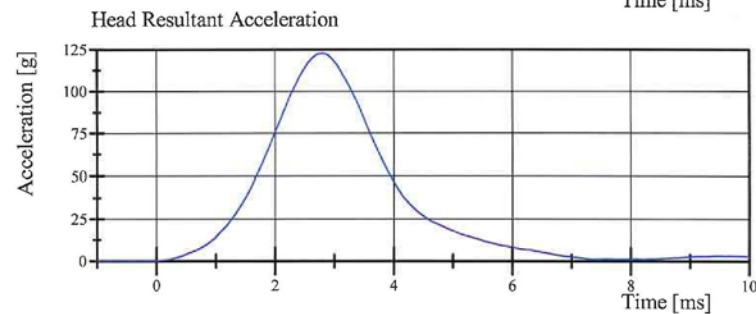
Min: -1.5 g at 7.1 ms



Filter Class: CFC_1000

Max: 77.6 g at 2.8 ms

Min: -1.1 g at 8.1 ms



Filter Class: CFC_1000

Max: 122.8 g at 2.8 ms

Min: 0.0 g at -0.6 ms

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

02.21.2014 08:29:11 232



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 29-1

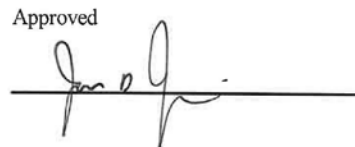
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °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	2.616 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.752 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.018 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.799 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.801 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-76.6 deg	Yes
Time of Peak	50 - 70 ms	70.0 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	118.4 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.

02.21.2014 08:50:17 640

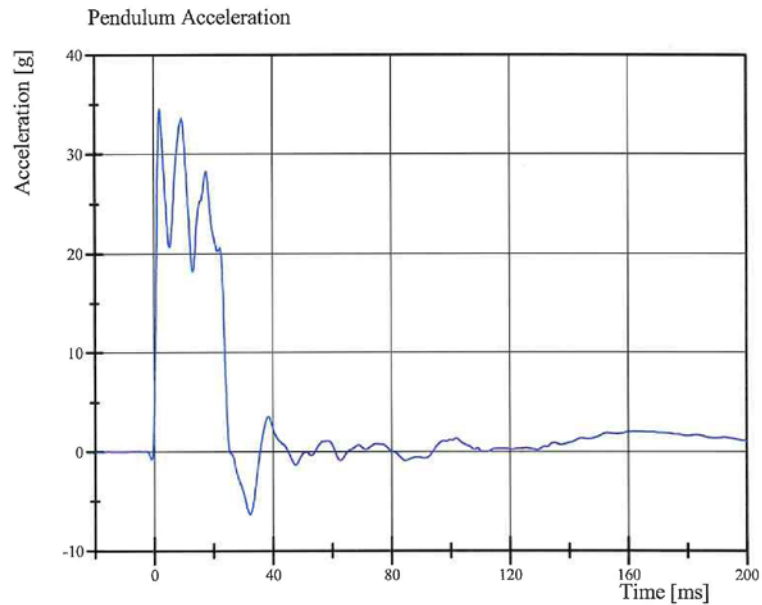


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 29-1

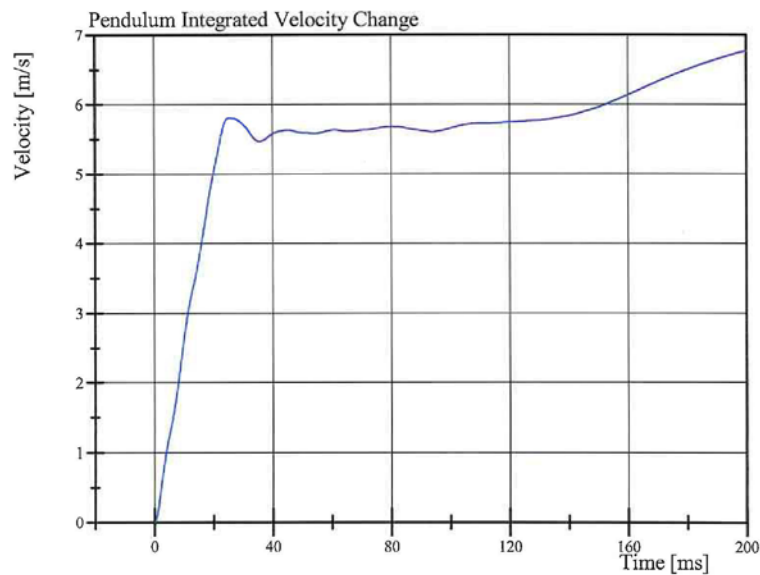
Test Date: 2/21/2014



Filter Class: CFC_180

Max: 34.5 g at 2.0 ms

Min: -6.4 g at 32.2 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.

02.21.2014 08:50:24 640

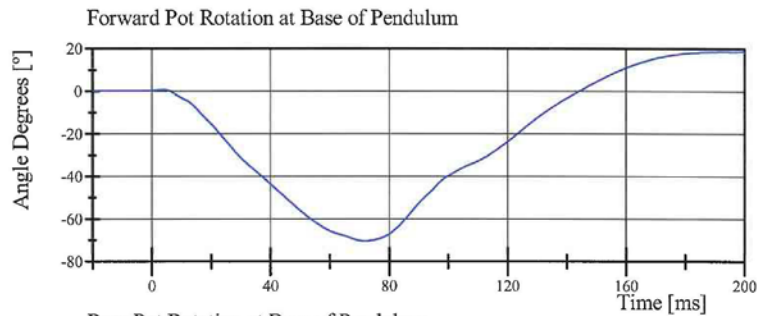


Transportation Research Center Inc.

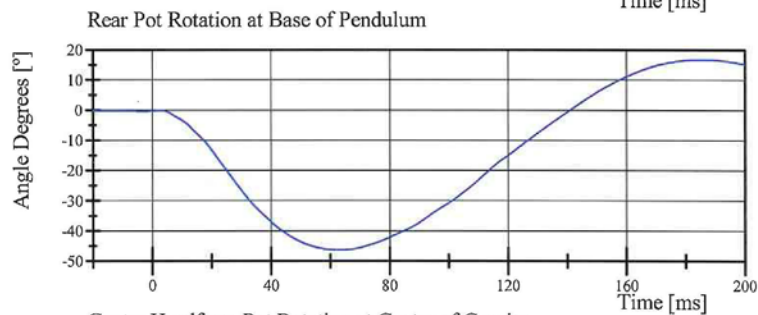
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 29-1

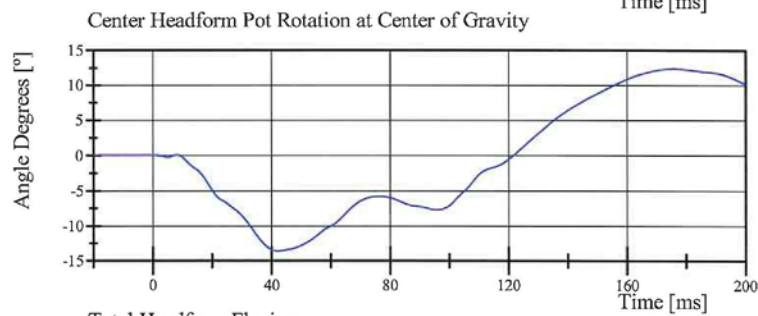
Test Date: 2/21/2014



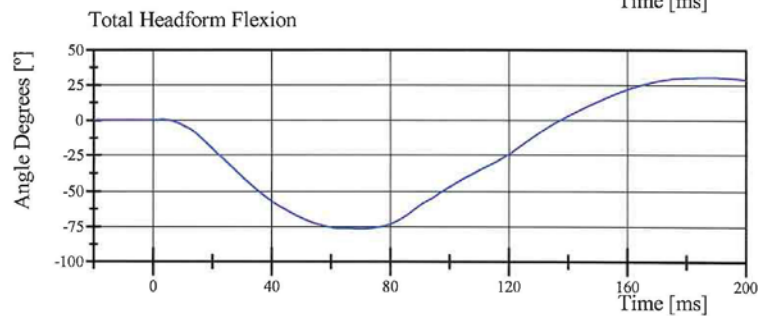
Filter Class: CFC_60
Max: 18.5 ° at 199.5 ms
Min: -70.4 ° at 71.8 ms



Filter Class: CFC_60
Max: 16.7 ° at 185.2 ms
Min: -46.3 ° at 63.0 ms



Filter Class: CFC_60
Max: 12.3 ° at 175.6 ms
Min: -13.6 ° at 42.0 ms



Filter Class: CFC_60
Max: 30.1 ° at 189.0 ms
Min: -76.6 ° at 70.0 ms

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

02.21.2014 08:50:25 640

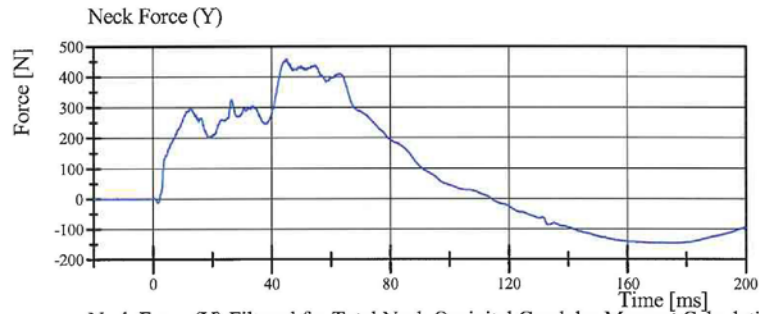


Transportation Research Center Inc.

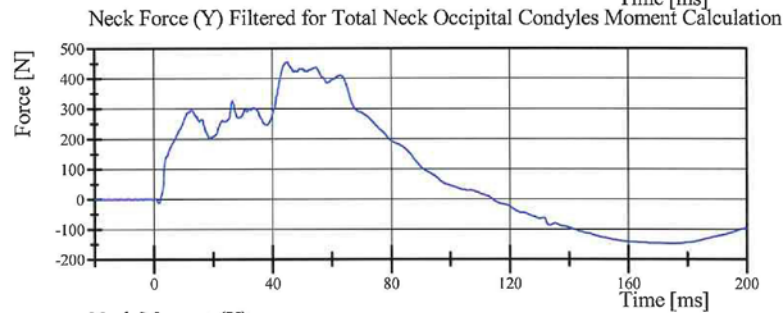
Left Lateral Neck

SID IIa Serial No. 305 Certification No. 29-1

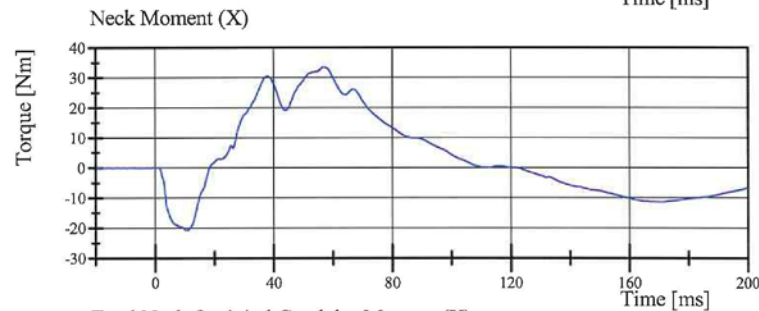
Test Date: 2/21/2014



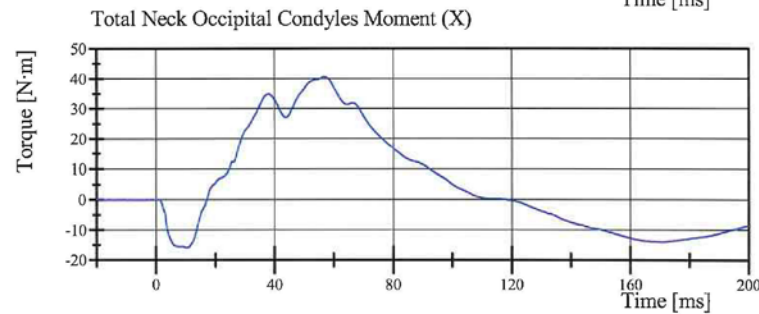
Filter Class: CFC_1000
Max: 458.1 N at 45.2 ms
Min: -148.7 N at 173.9 ms



Filter Class: CFC_600
Max: 454.4 N at 45.2 ms
Min: -148.3 N at 175.4 ms



Filter Class: CFC_600
Max: 33.5 Nm at 57.3 ms
Min: -20.8 Nm at 11.0 ms



Filter Class: Without_(Consta
Max: 40.6 N·m at 56.6 ms
Min: -16.0 N·m at 10.2 ms

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

02.21.2014 08:50:26 640



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 29-1

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.0 g	Yes
Shoulder Displacement	28 - 37 mm	31.1 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.1 g	Yes

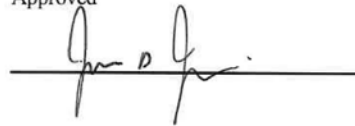
Test meets specifications.

Comments:

Technician



Approved



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

02.21.2014 07:57:18 820

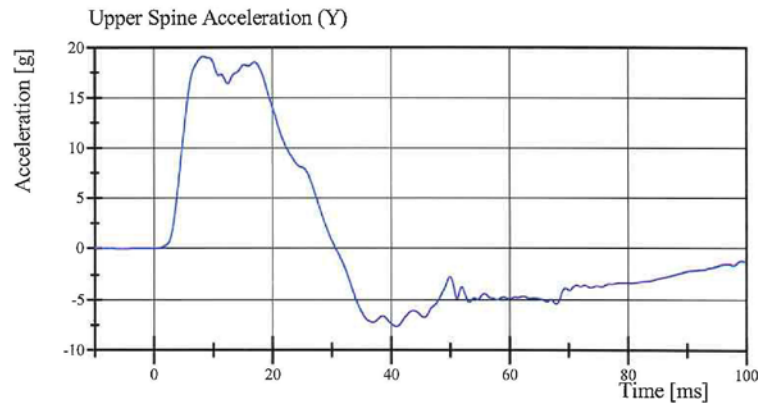
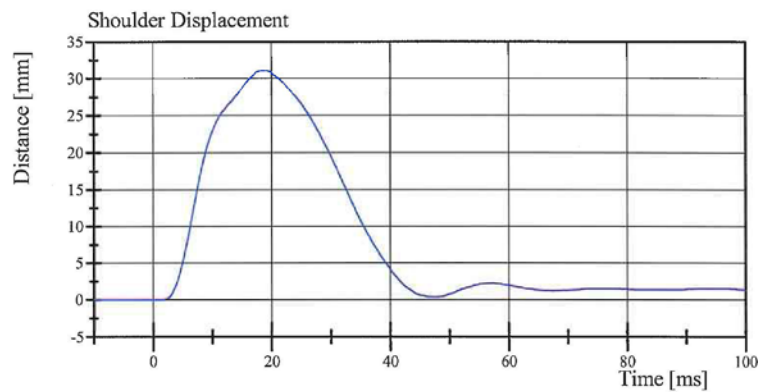
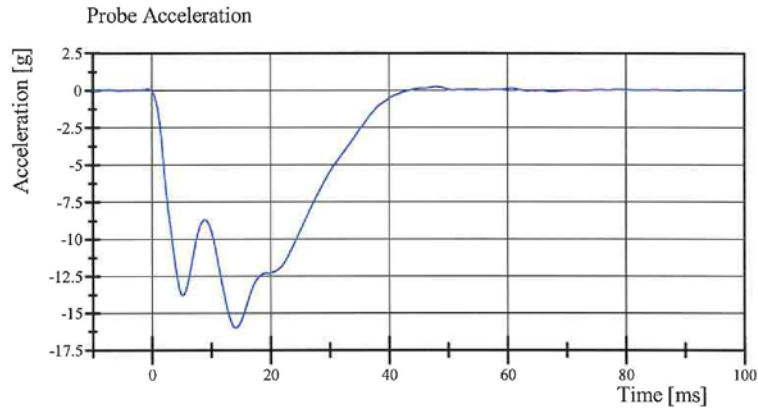


Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 29-1

Test Date: 2/21/2014



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

02.21.2014 07:57:24 820



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 29-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.705 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.0 g	Yes
Shoulder Displacement	31 - 40 mm	32.7 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.7 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.3 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.1 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	32.9 g	Yes

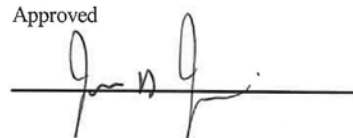
Test meets specifications.

Comments:

Technician



Approved



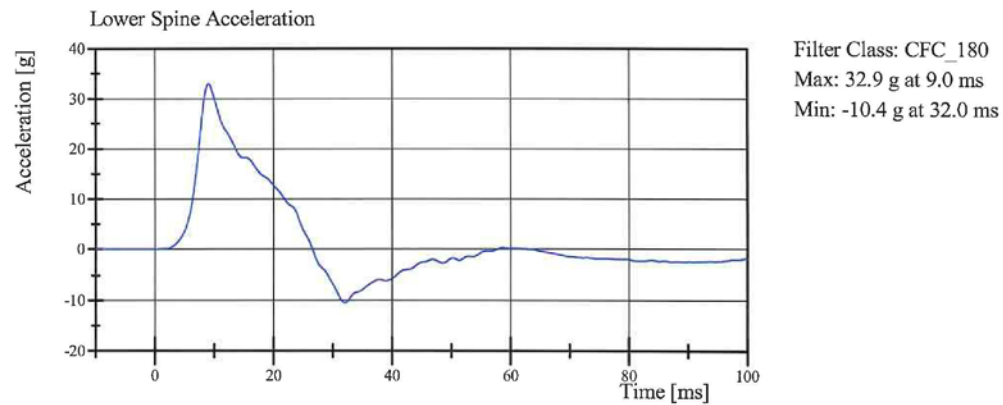
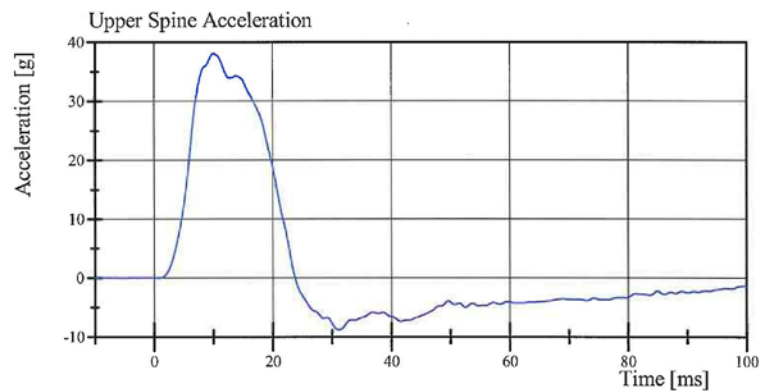
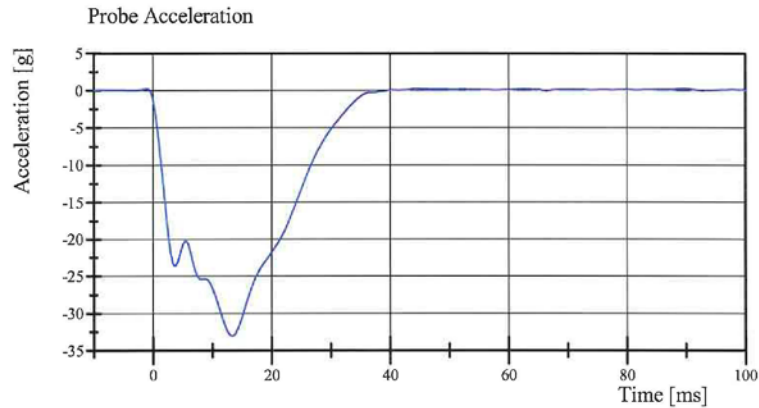
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

02.21.2014 09:12:11 636



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 29-1
Test Date: 2/21/2014



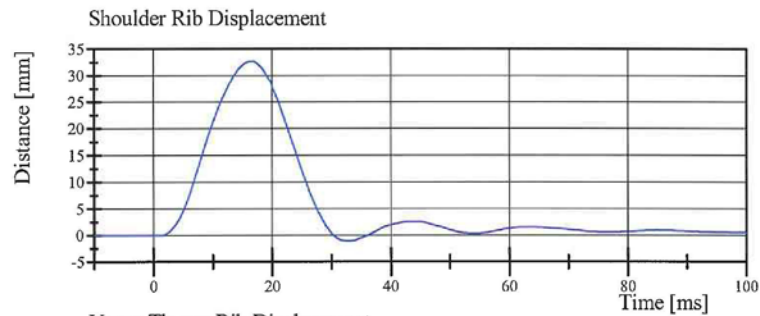
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

02.21.2014 09:12:22 636

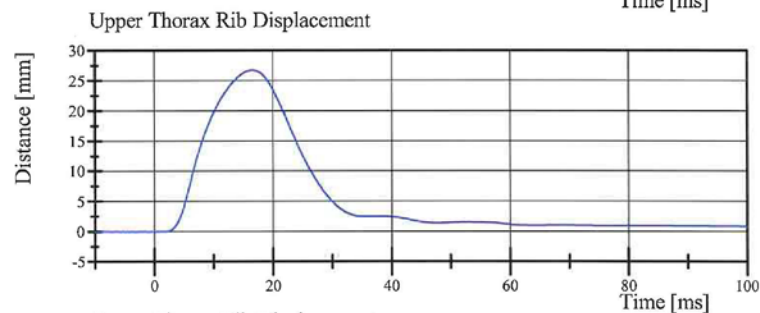


Transportation Research Center Inc.

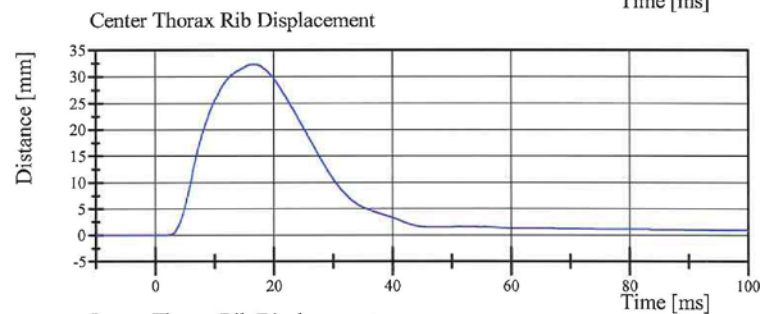
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 29-1
Test Date: 2/21/2014



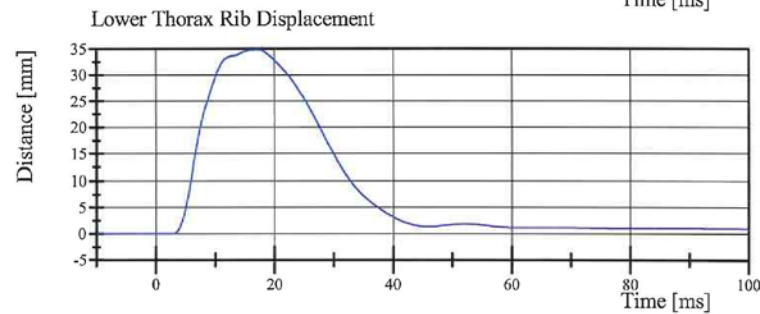
Filter Class: CFC_600
Max: 32.7 mm at 16.6 ms
Min: -1.1 mm at 32.7 ms



Filter Class: CFC_600
Max: 26.7 mm at 16.6 ms
Min: -0.0 mm at -4.2 ms



Filter Class: CFC_600
Max: 32.3 mm at 16.6 ms
Min: -0.0 mm at -4.2 ms



Filter Class: CFC_600
Max: 34.8 mm at 17.0 ms
Min: -0.0 mm at -8.3 ms

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

02.21.2014 09:12:23 636



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 29-1
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.6 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.385 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.3 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	34.7 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.6 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.6 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.3 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.9 g	Yes

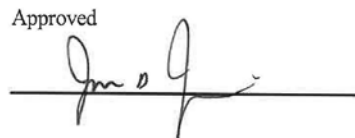
Test meets specifications.

Comments:

Technician



Approved



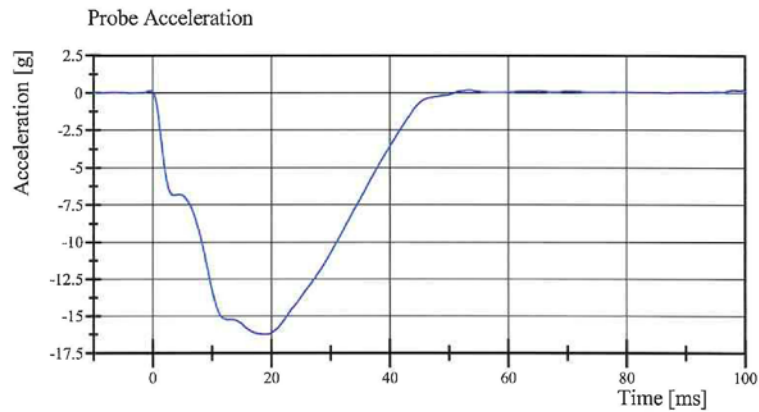
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

02.21.2014 08:33:36 830

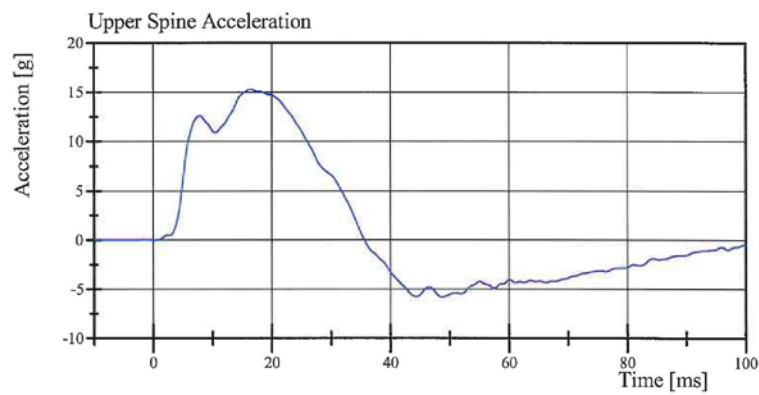


Transportation Research Center Inc.

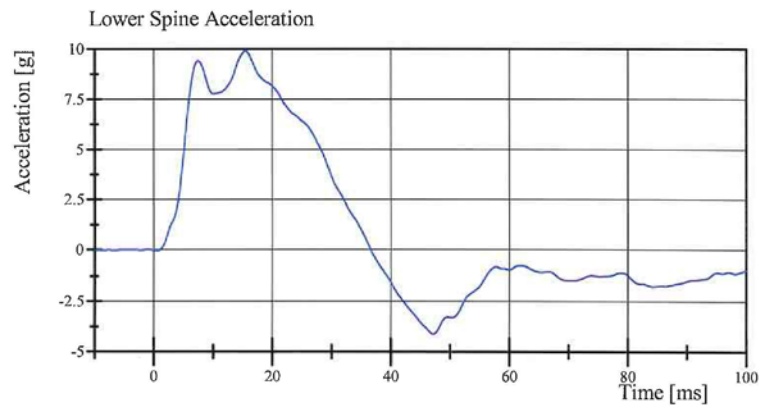
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 29-1
Test Date: 2/21/2014



Filter Class: CFC_180
Max: 0.2 g at 53.3 ms
Min: -16.3 g at 19.0 ms



Filter Class: CFC_180
Max: 15.3 g at 16.4 ms
Min: -5.8 g at 48.7 ms



Filter Class: CFC_180
Max: 9.9 g at 15.4 ms
Min: -4.1 g at 47.1 ms

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

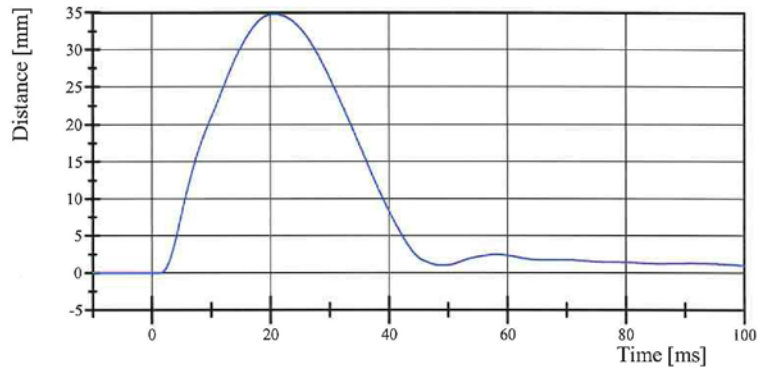
02.21.2014 08:33:44 830



Transportation Research Center Inc.

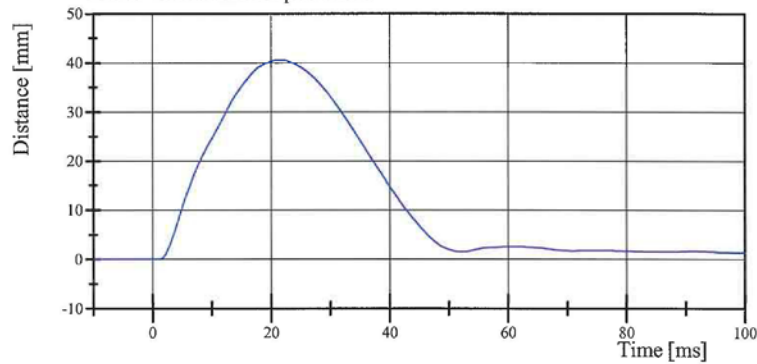
Left Lateral Thorax without Arm
SID II_s Serial No. 305 Certification No. 29-1
Test Date: 2/21/2014

Upper Thorax Rib Displacement



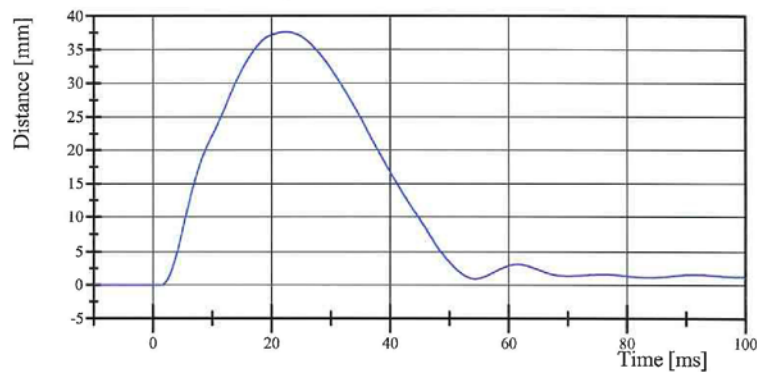
Filter Class: CFC_600
Max: 34.7 mm at 20.6 ms
Min: -0.0 mm at 1.1 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 40.6 mm at 21.7 ms
Min: -0.0 mm at -3.4 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.6 mm at 22.4 ms
Min: -0.0 mm at -10.0 ms

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

02.21.2014 08:33:44 830



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 305 Certification No. 29-1

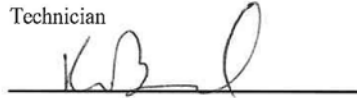
Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.7 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.0 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	44.7 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	37.0 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.50 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.

02.21.2014 08:09:58 687

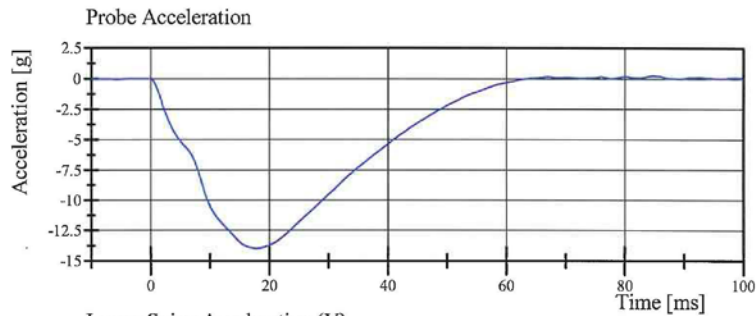


Transportation Research Center Inc.

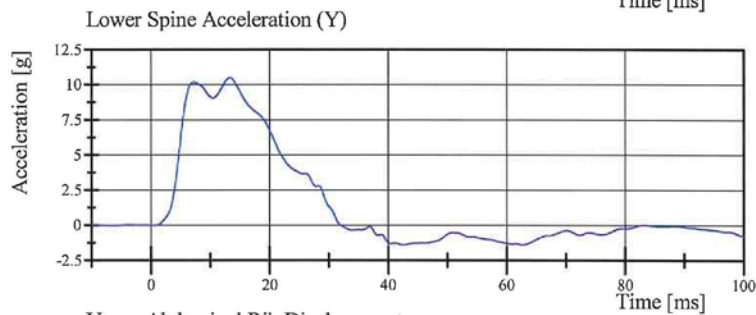
Left Lateral Abdomen

SID II's Serial No. 305 Certification No. 29-1

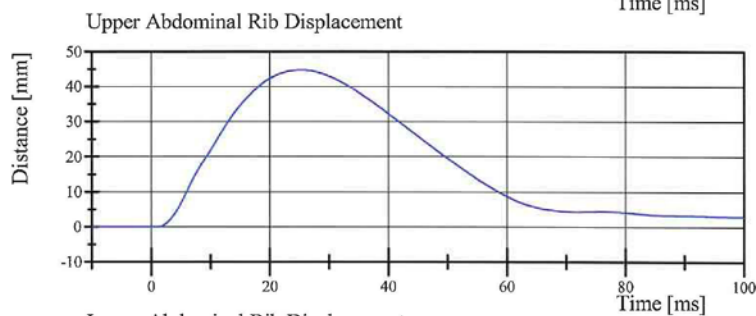
Test Date: 2/21/2014



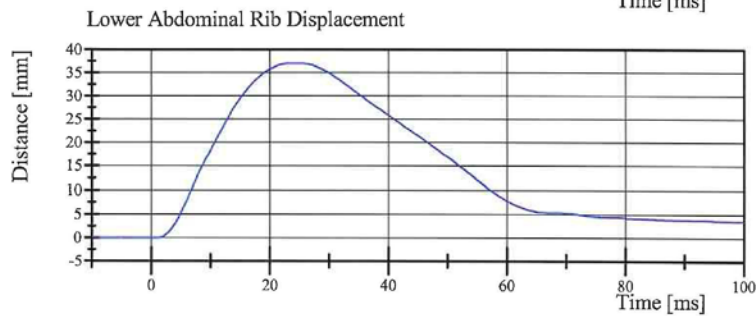
Filter Class: CFC_180
Max: 0.2 g at 84.8 ms
Min: -14.0 g at 17.8 ms



Filter Class: CFC_180
Max: 10.5 g at 13.3 ms
Min: -1.4 g at 42.6 ms



Filter Class: CFC_600
Max: 44.7 mm at 25.2 ms
Min: -0.0 mm at 1.0 ms



Filter Class: CFC_600
Max: 37.0 mm at 24.2 ms
Min: -0.0 mm at 1.2 ms

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

02.21.2014 08:10:11 687



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 29-1

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.3 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	33.9 g	Yes
Iliac Force	4,100 - 5,100 N	5,020.0 N	Yes

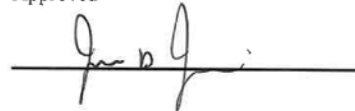
Test meets specifications.

Comments:

Technician



Approved



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

02.21.2014 07:40:58 657

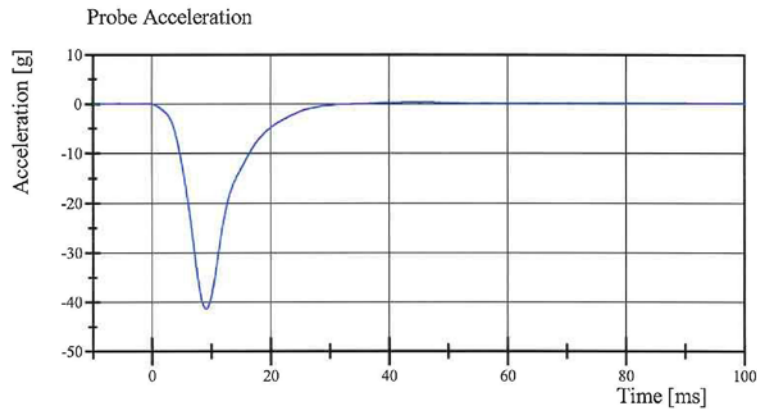


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 29-1

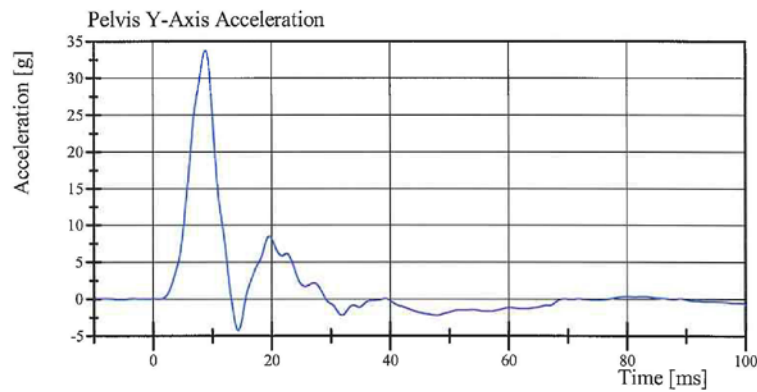
Test Date: 2/21/2014



Filter Class: CFC_180

Max: 0.3 g at 46.4 ms

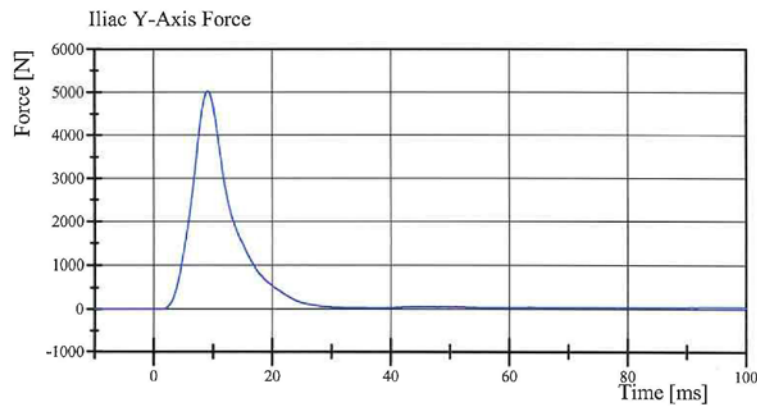
Min: -41.3 g at 9.1 ms



Filter Class: CFC_180

Max: 33.9 g at 8.9 ms

Min: -4.3 g at 14.3 ms



Filter Class: CFC_600

Max: 5,020.0 N at 9.1 ms

Min: -0.7 N at -8.5 ms

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

02.21.2014 07:41:06 657



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 29-2

Test Date: 2/21/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.63 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.80 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.0 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,263.2 N	Yes

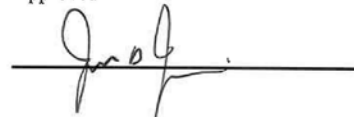
Test meets specifications.

Comments:

Technician



Approved



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

02.21.2014 12:59:32 450

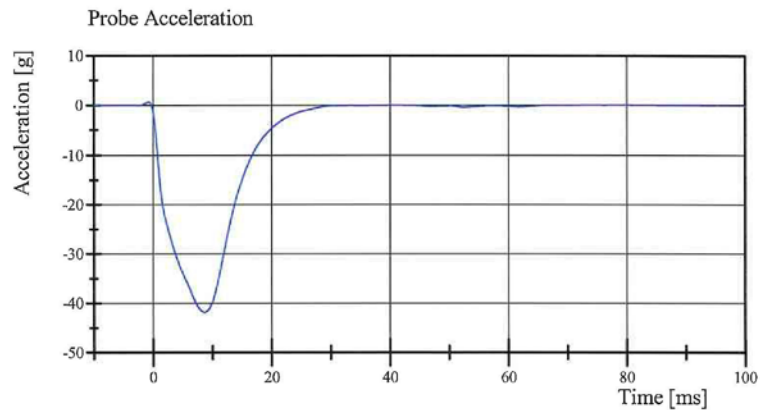


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 29-2

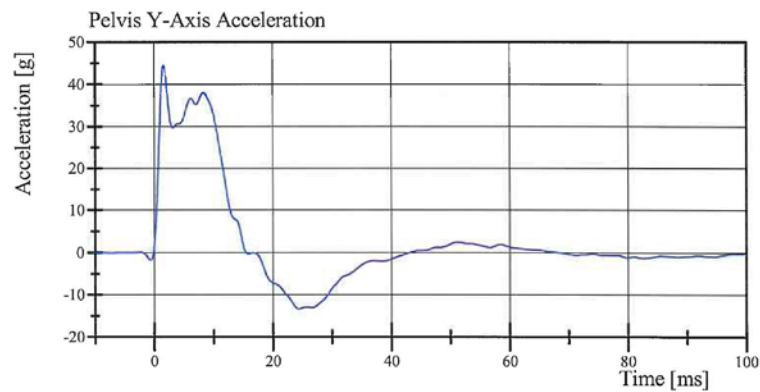
Test Date: 2/21/2014



Filter Class: CFC_180

Max: 0.6 g at -0.7 ms

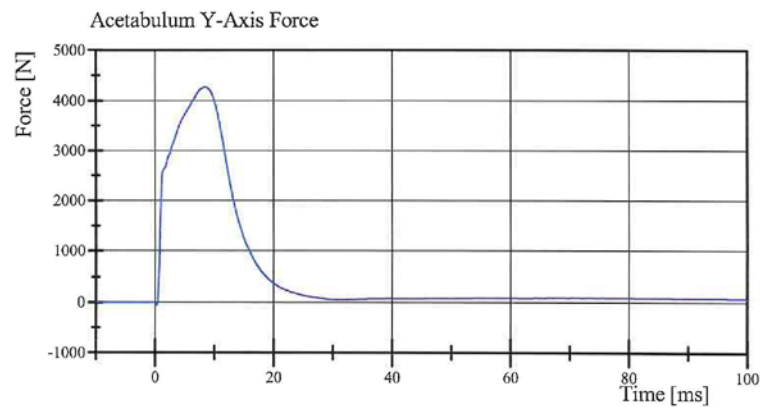
Min: -41.8 g at 8.6 ms



Filter Class: CFC_180

Max: 44.8 g at 1.6 ms

Min: -13.3 g at 24.4 ms



Filter Class: CFC_600

Max: 4,263.2 N at 8.4 ms

Min: -48.9 N at 0.3 ms

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

02.21.2014 12:59:47 450



Post-Test Calibration Sheets
Passenger S/N 305

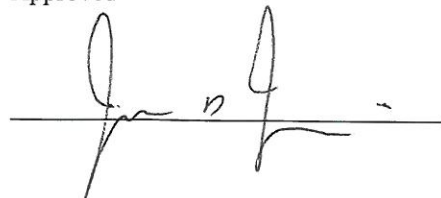
Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.030

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	525	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	864	Yes
Z	Waist Circumference	761.0 - 791.0	777	Yes

Technician



Approved



Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 30-1

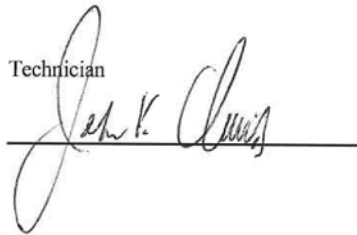
Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	121.8 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-1.6 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.

02.28.2014 13:45:50.230

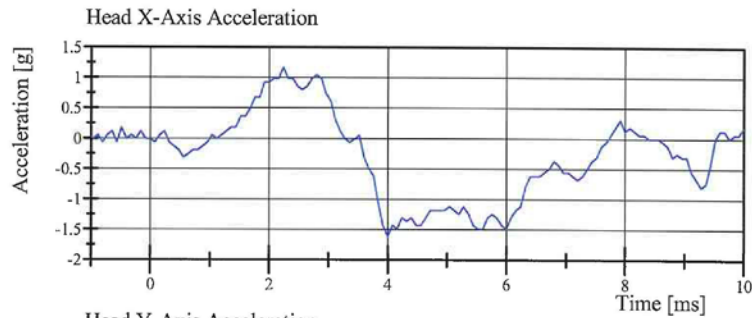


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 305 Certification No. 30-1

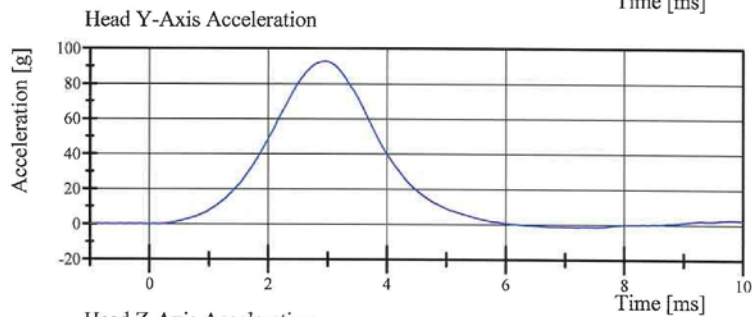
Test Date: 2/28/2014



Filter Class: CFC_1000

Max: 1.2 g at 2.2 ms

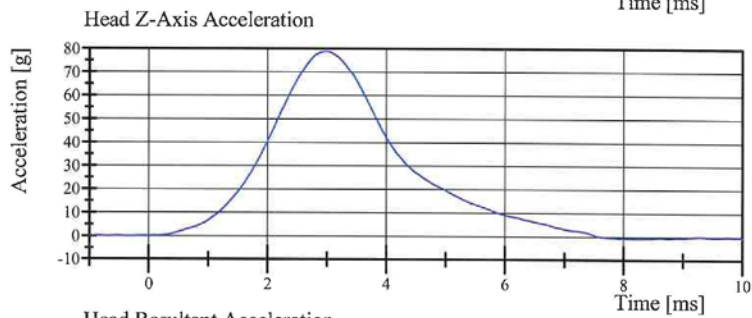
Min: -1.6 g at 4.0 ms



Filter Class: CFC_1000

Max: 92.8 g at 3.0 ms

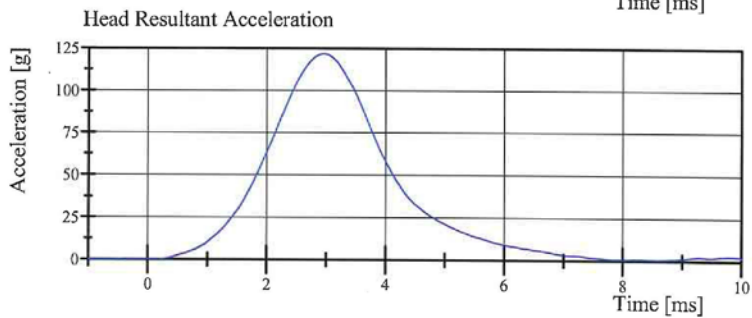
Min: -1.5 g at 7.2 ms



Filter Class: CFC_1000

Max: 79.0 g at 3.0 ms

Min: -1.0 g at 8.2 ms



Filter Class: CFC_1000

Max: 121.8 g at 3.0 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.

02.28.2014 13:46:00 230



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 30-1

Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.606 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.553 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.798 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.139 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.821 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.821 m/s	Yes
Maximum Headform Flexion			
occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-75.6 deg	Yes
Time of Peak	50 - 70 ms	67.5 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	40.7 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	118.5 ms	Yes

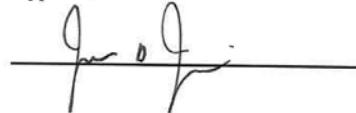
Test meets specifications.

Comments:

Technician



Approved



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

02.28.2014 14:10:30 634

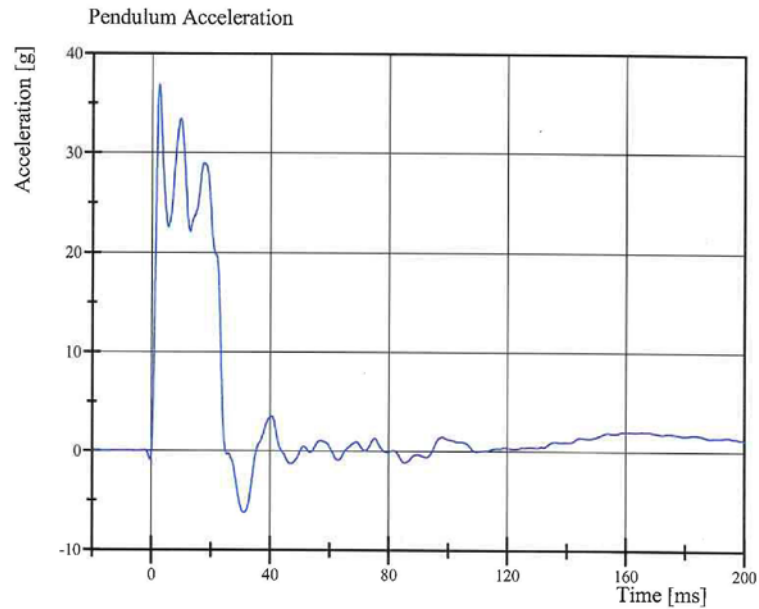


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 30-1

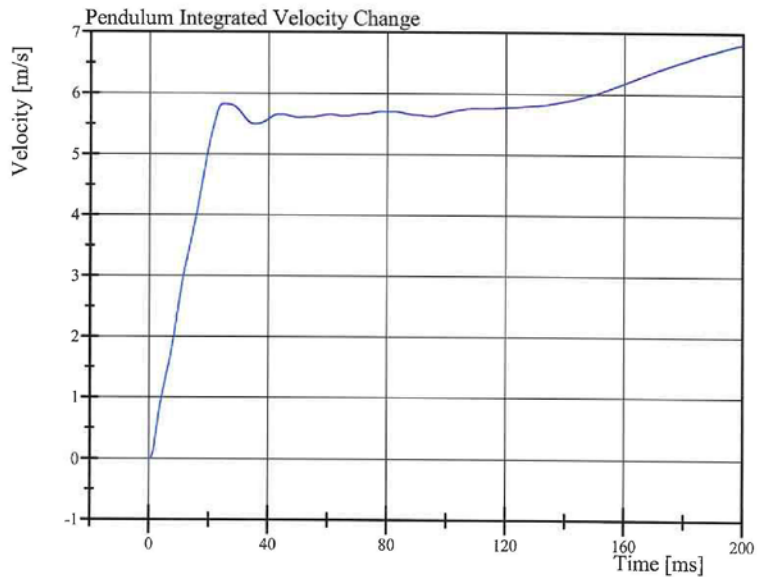
Test Date: 2/28/2014



Filter Class: CFC_180

Max: 36.8 g at 2.5 ms

Min: -6.2 g at 31.3 ms



Filter Class: CFC_180

Max: 6.8 m/s at 200.0 ms

Min: -0.0 m/s at 0.1 ms

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

02.28.2014 14:10:39 634

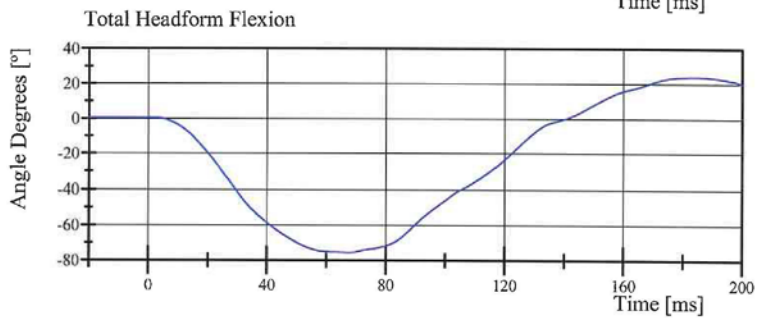
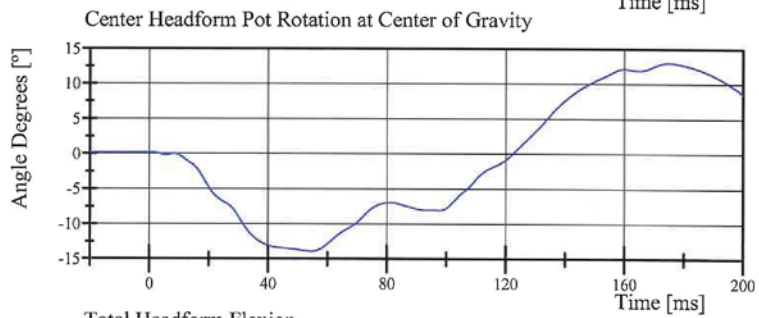
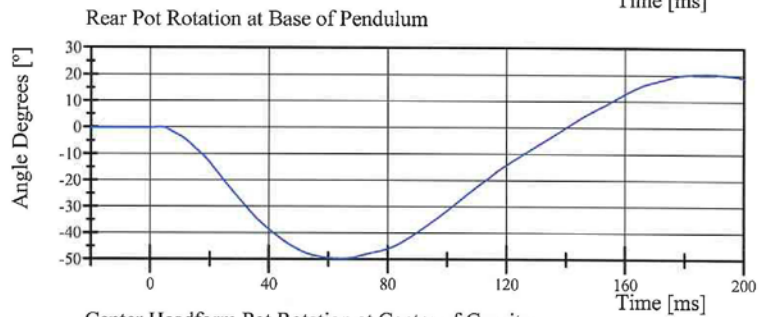
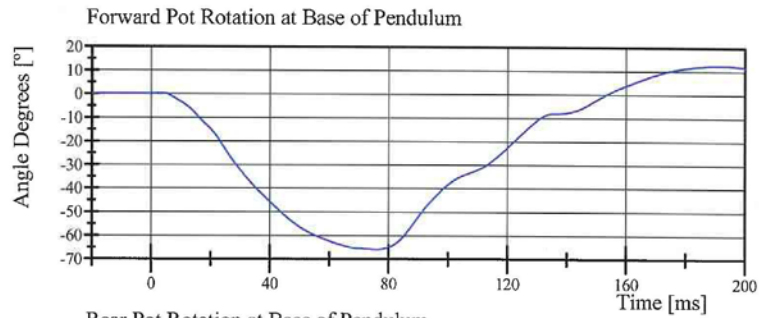


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 305 Certification No. 30-1

Test Date: 2/28/2014



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

02.28.2014 14:10:40 634

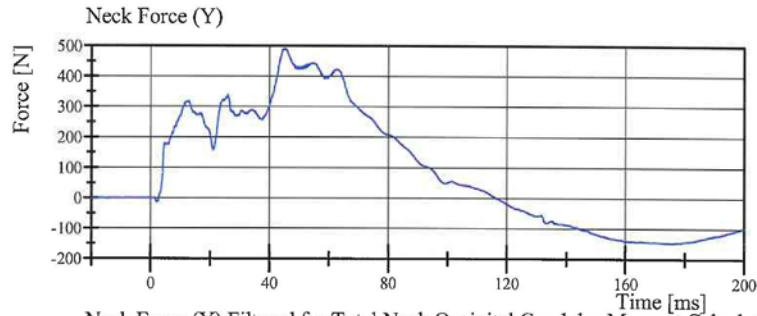


Transportation Research Center Inc.

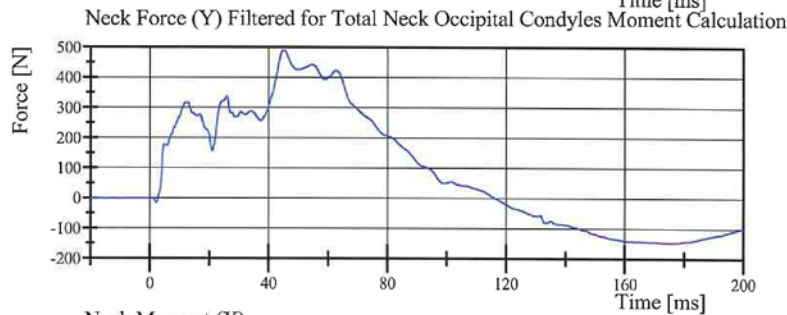
Left Lateral Neck

SID IIs Serial No. 305 Certification No. 30-1

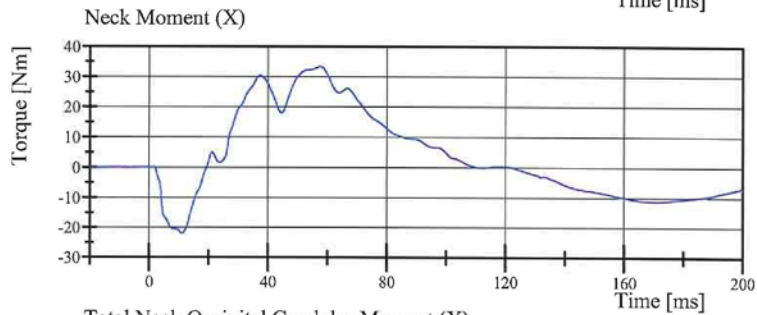
Test Date: 2/28/2014



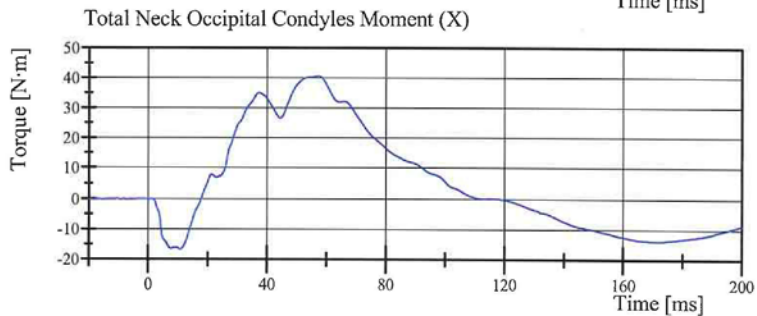
Filter Class: CFC_1000
Max: 490.5 N at 44.9 ms
Min: -148.7 N at 175.9 ms



Filter Class: CFC_600
Max: 489.8 N at 44.9 ms
Min: -148.2 N at 175.9 ms



Filter Class: CFC_600
Max: 33.4 Nm at 57.4 ms
Min: -22.0 Nm at 11.0 ms



Filter Class: Without_(Consta
Max: 40.7 N·m at 57.3 ms
Min: -16.7 N·m at 10.8 ms

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

02.28.2014 14:10:41 634



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 305 Certification No. 30-1

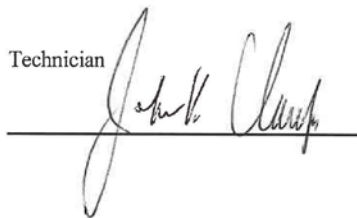
Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.1 g	Yes
Shoulder Displacement	28 - 37 mm	30.2 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	20.2 g	Yes

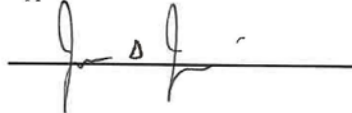
Test meets specifications.

Comments:

Technician



Approved



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

02.28.2014 11:14:34 822

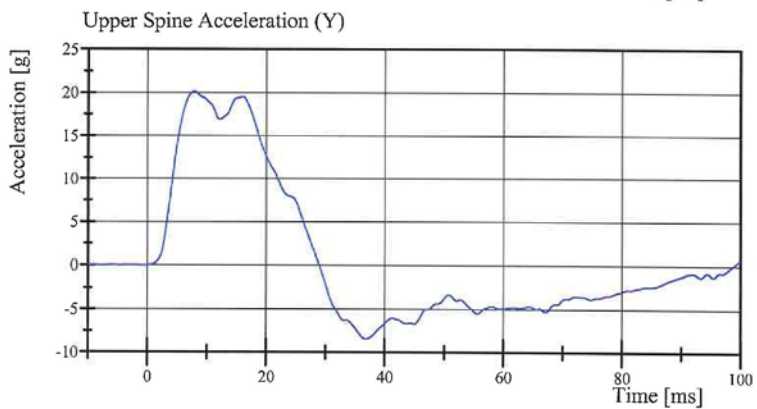
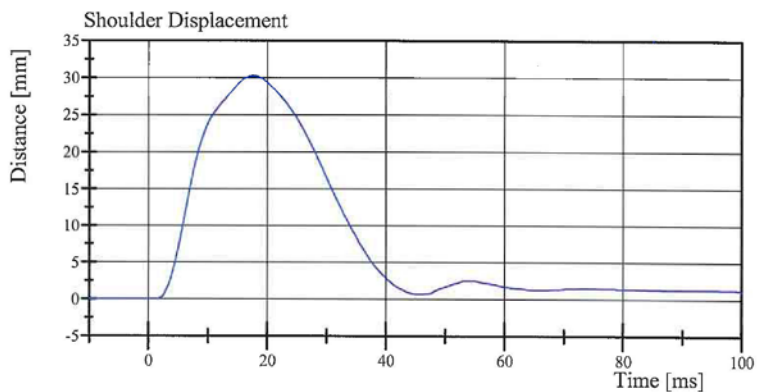
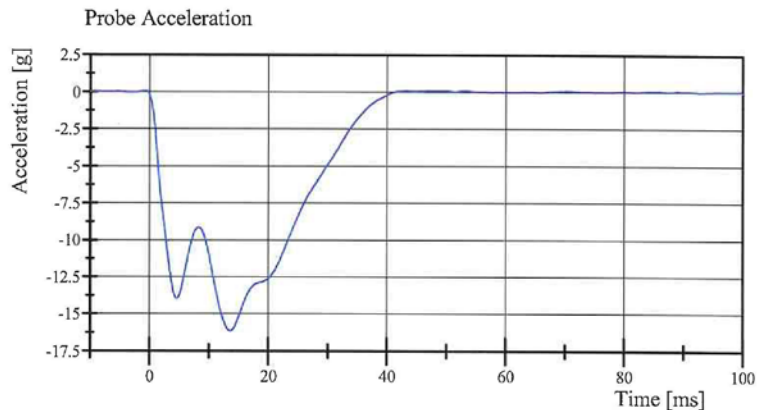


Transportation Research Center Inc.

Left Lateral Shoulder

SID II_s Serial No. 305 Certification No. 30-1

Test Date: 2/28/2014



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

02.28.2014 11:14:44 822



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 30-1
Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.704 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.6 g	Yes
Shoulder Displacement	31 - 40 mm	35.5 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.2 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.0 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	32.4 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.6 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.2 g	Yes

Test meets specifications.

Comments:

Technician



Approved



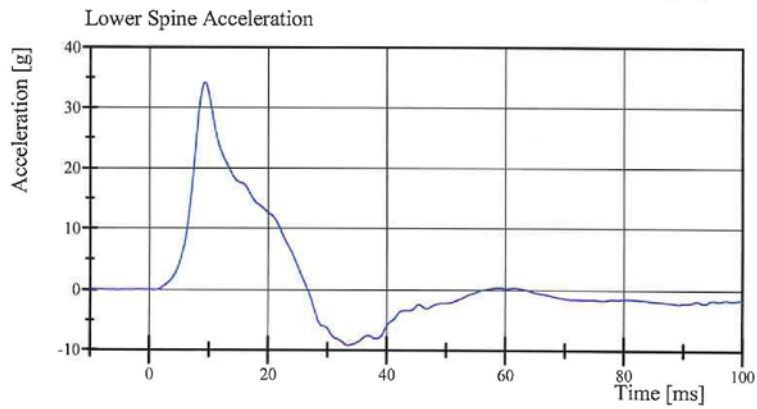
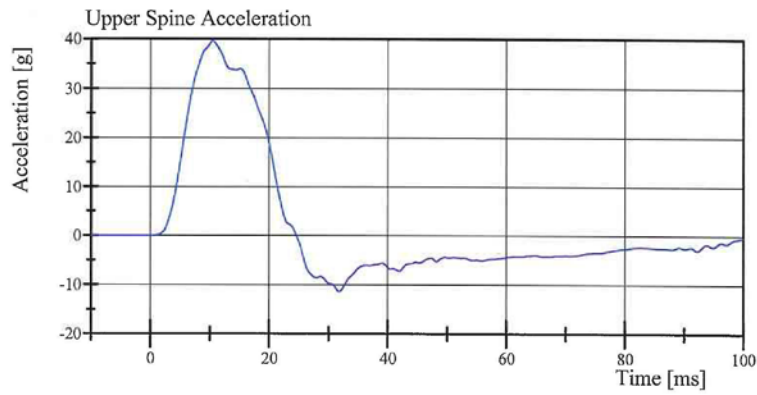
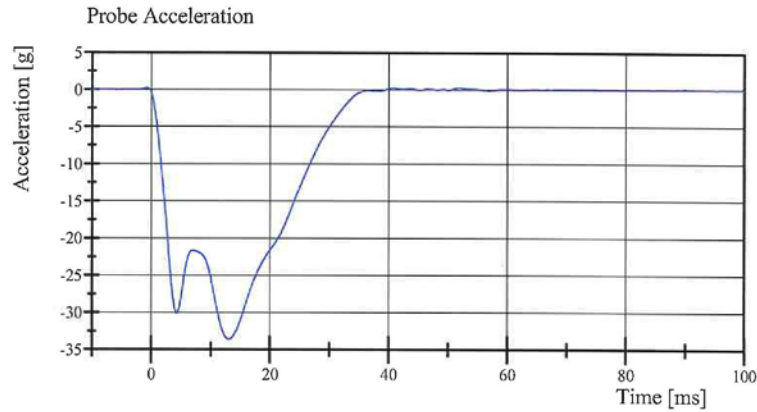
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

02.28.2014 12:33:09 610



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 30-1
Test Date: 2/28/2014



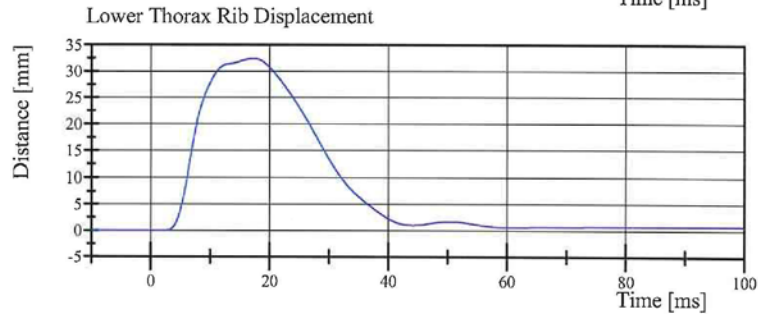
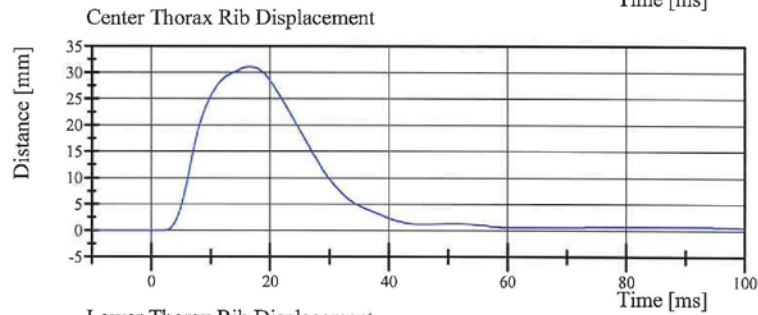
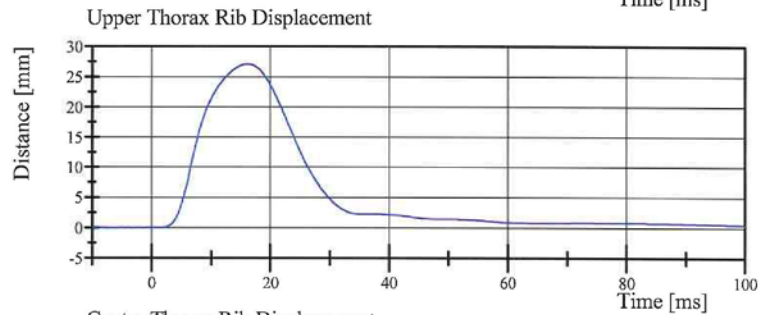
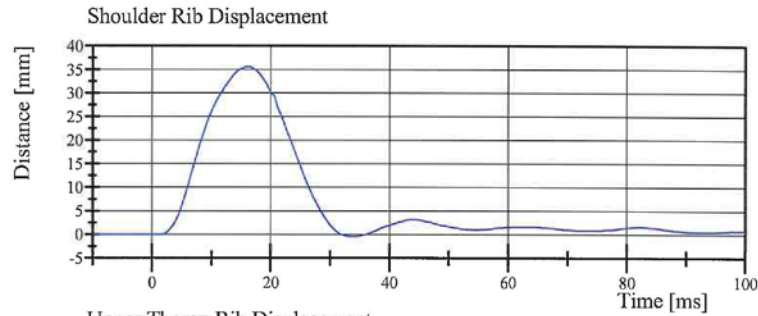
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

02.28.2014 12:33:23 610



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIa Serial No. 305 Certification No. 30-1
Test Date: 2/28/2014



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

02.28.2014 12:33:23 610



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 30-1
Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.388 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.1 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.2 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.6 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	16.0 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.1 g	Yes

Test meets specifications.

Comments:

Technician



Approved



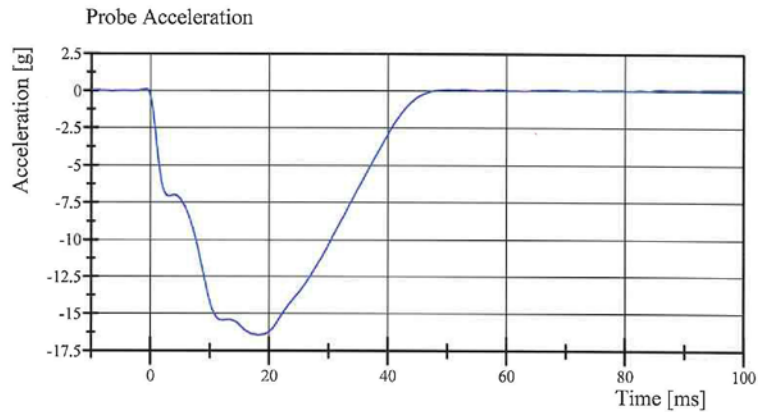
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

02.28.2014 11:47:39 808

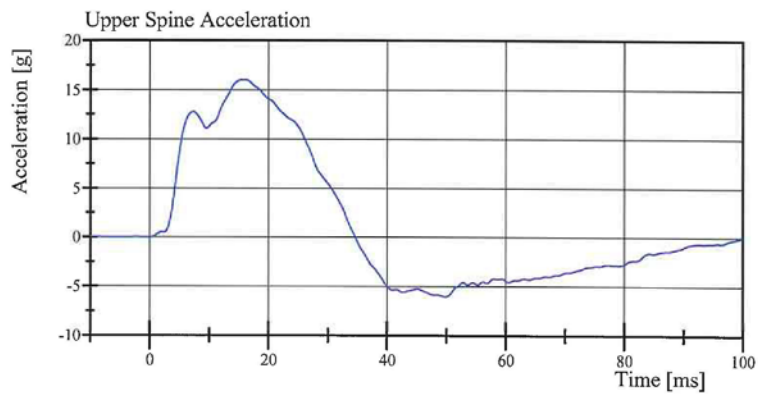


Transportation Research Center Inc.

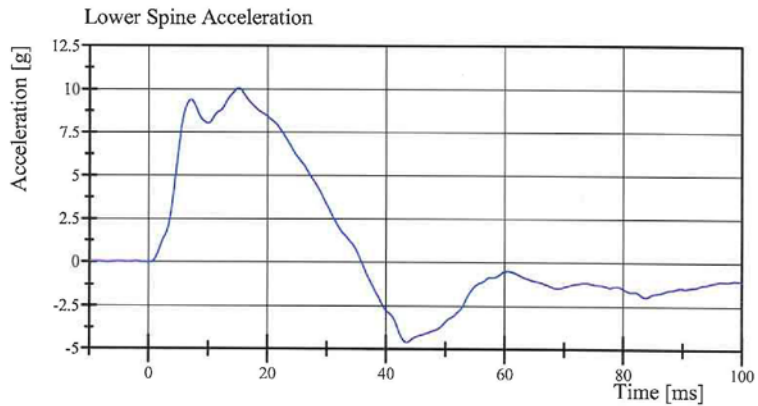
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 30-1
Test Date: 2/28/2014



Filter Class: CFC_180
Max: 0.1 g at -0.8 ms
Min: -16.4 g at 18.3 ms



Filter Class: CFC_180
Max: 16.0 g at 16.0 ms
Min: -6.0 g at 49.8 ms



Filter Class: CFC_180
Max: 10.1 g at 15.1 ms
Min: -4.6 g at 43.4 ms

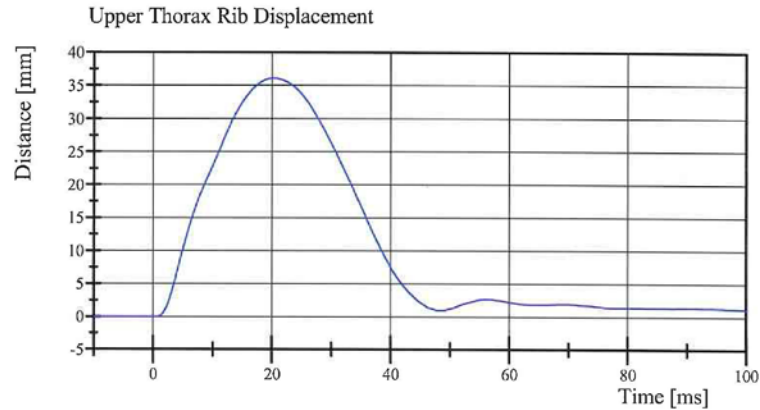
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

02.28.2014 11:47:51 808

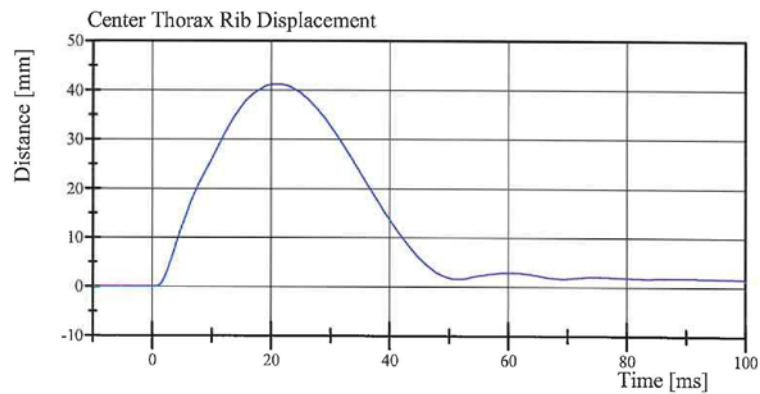


Transportation Research Center Inc.

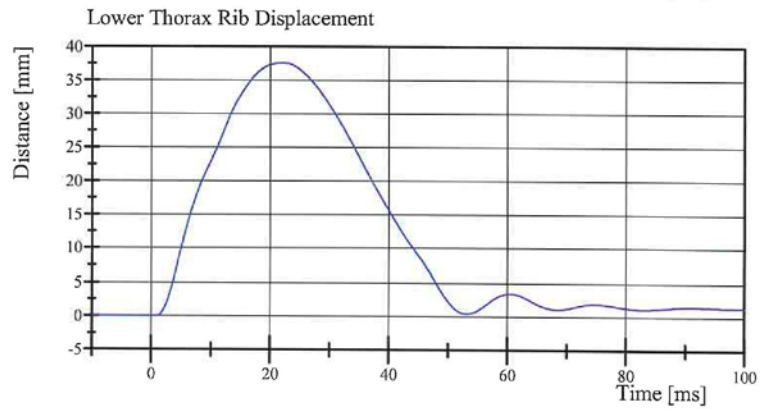
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 30-1
Test Date: 2/28/2014



Filter Class: CFC_600
Max: 36.1 mm at 20.2 ms
Min: -0.0 mm at 0.6 ms



Filter Class: CFC_600
Max: 41.2 mm at 20.7 ms
Min: -0.0 mm at -0.9 ms



Filter Class: CFC_600
Max: 37.6 mm at 21.9 ms
Min: -0.0 mm at 0.6 ms

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

02.28.2014 11:47:52 808



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 305 Certification No. 30-1

Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.6 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	44.5 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	37.3 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.61 g	Yes

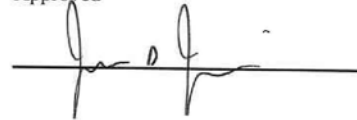
Test meets specifications.

Comments:

Technician



Approved



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

02.28.2014 11:27:50 660

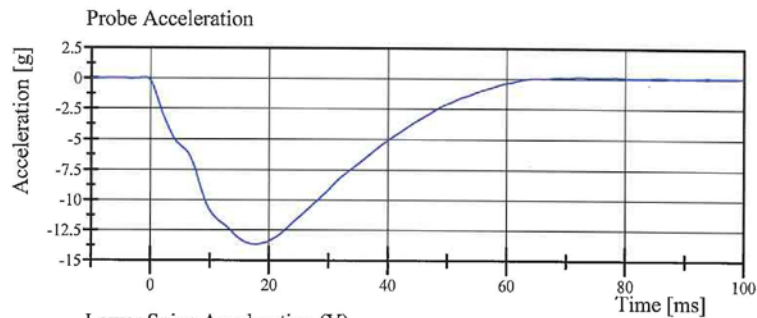


Transportation Research Center Inc.

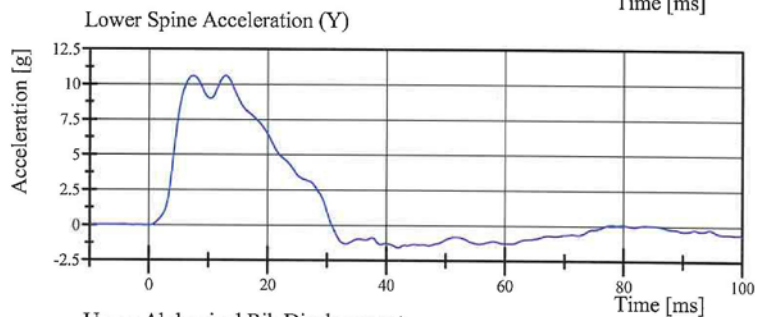
Left Lateral Abdomen

SID IIIs Serial No. 305 Certification No. 30-1

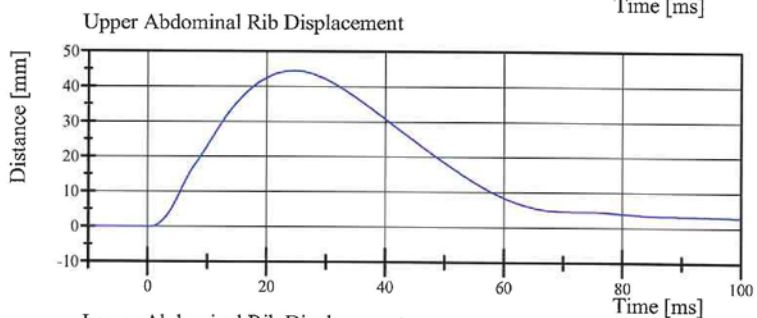
Test Date: 2/28/2014



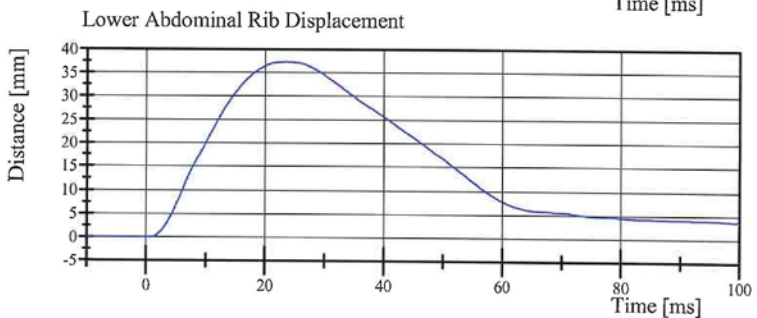
Filter Class: CFC_180
Max: 0.2 g at 72.2 ms
Min: -13.6 g at 17.6 ms



Filter Class: CFC_180
Max: 10.6 g at 12.9 ms
Min: -1.6 g at 41.9 ms



Filter Class: CFC_600
Max: 44.5 mm at 24.6 ms
Min: -0.0 mm at -2.3 ms



Filter Class: CFC_600
Max: 37.3 mm at 23.5 ms
Min: -0.0 mm at -1.9 ms

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

02.28.2014 11:28:00 660



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 30-1

Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.63 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.47 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	36.9 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,230.2 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.

02.28.2014 13:24:47 435

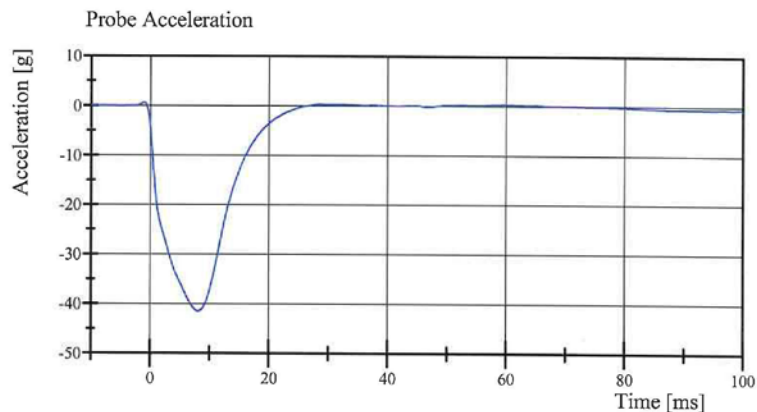


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 305 Certification No. 30-1

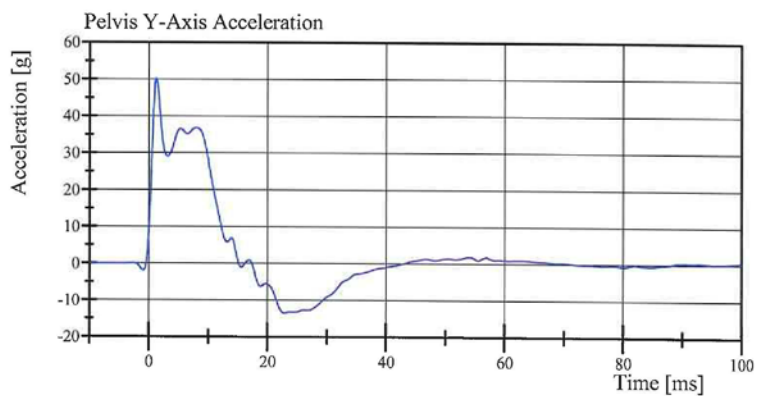
Test Date: 2/28/2014



Filter Class: CFC_180

Max: 0.6 g at -1.0 ms

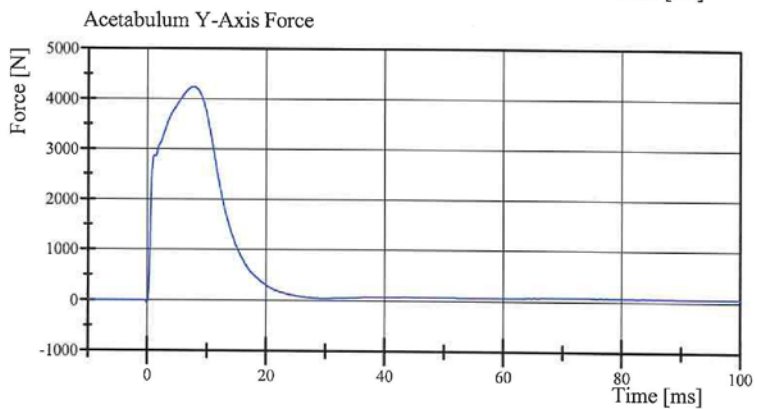
Min: -41.5 g at 8.1 ms



Filter Class: CFC_180

Max: 50.2 g at 1.3 ms

Min: -13.5 g at 22.8 ms



Filter Class: CFC_600

Max: 4,230.2 N at 7.8 ms

Min: -53.5 N at 0.0 ms

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

02.28.2014 13:24:57 435



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 30-1

Test Date: 2/28/2014

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-40.4 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	31.2 g	Yes
Iliac Force	4,100 - 5,100 N	4,959.1 N	Yes

Test meets specifications.

Comments:

Technician



Approved



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

02.28.2014 10:53:52 670

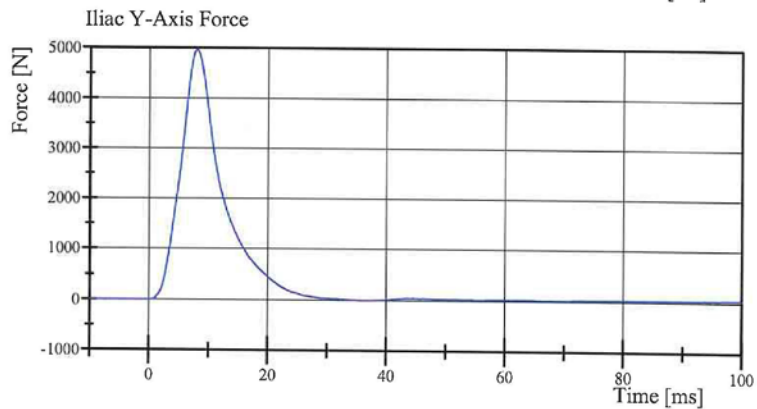
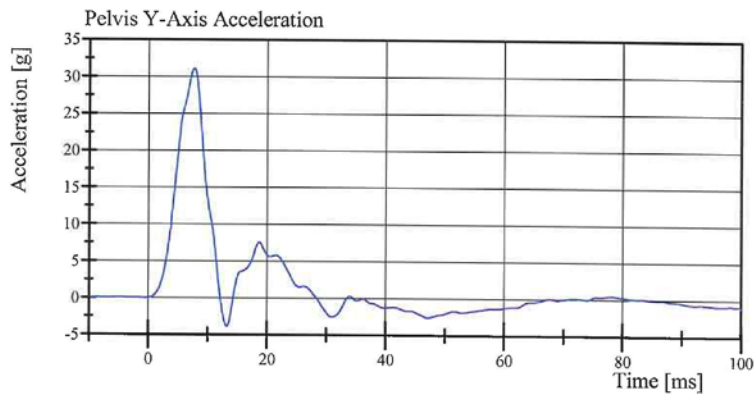
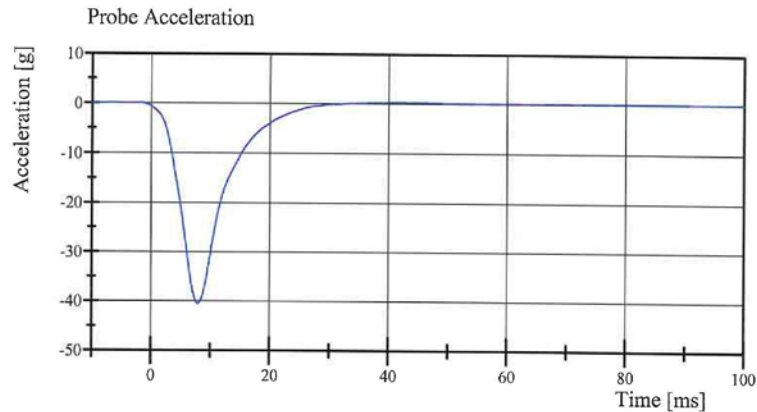


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 305 Certification No. 30-1

Test Date: 2/28/2014



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

02.28.2014 10:54:03 670



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-2013
		Y	P51702	Endevco	9-Dec-2013
		Z	P52083	Endevco	9-Dec-2013
Thoracic Rib Displacement Potentiometers	Upper	Y	111	FTSS	27-Jan-2014
	Middle	Y	174	FTSS	10-Dec-2013
	Lower	Y	173	FTSS	10-Dec-2013
Abdomen Load Cells	Front	Y	1441	Denton	21-Oct-2013
	Middle	Y	1436	Denton	21-Oct-2013
	Rear	Y	1437	Denton	21-Oct-2013
Lower Spine Accelerometers (T12)		X	P15954	Endevco	9-Dec-2013
		Y	P68599	Endevco	9-Dec-2013
		Z	P59005	Endevco	9-Dec-2013
Acetabulum Load Cell		Y	N/A	N/A	N/A
Pubic Symphysis Load Cell		Y	457-FY	Denton	21-Oct-2013

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 305			
				Serial Number	Manufacturer	Calibration Date	
Head Accelerometers				X	P51719	Endevco	11-Dec-2013
				Y	P51272	Endevco	11-Dec-2013
				Z	P58862	Endevco	11-Dec-2013
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A	
	Thoracic Rib	Upper	Y	007	Servo	12-Dec-2013	
		Middle	Y	1161	Servo	12-Dec-2013	
		Lower	Y	037	Servo	21-Jan-2014	
	Abdominal Rib	Upper	Y	1295	Servo	12-Dec-2013	
		Lower	Y	1136	Servo	12-Dec-2013	
Lower Spine Accelerometers (T12)				X	P50068	Endevco	12-Dec-2013
				Y	P52051	Endevco	12-Dec-2013
				Z	P51710	Endevco	12-Dec-2013
Acetabulum Load Cell				Y	D14283-FY	FTSS	13-Jan-2014
Iliac Wing Load Cell				Y	287-FY	FTSS	28-Oct-2013
Pelvis Plug (struck side)					63073	FTSS	19-Jan-2013
Pelvis Plug (non-struck side)					36473	FTSS	23-Sep-2010

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P82062	Endevco	4-Nov-2013
	Vehicle Center of Gravity	Y	P75240	Endevco	15-Nov-2013
	Vehicle Center of Gravity	Z	P81994	Endevco	5-Nov-2013
2	Right Sill at Front Seat	X	P80601	Endevco	14-Nov-2013
	Right Sill at Front Seat	Y	P81025	Endevco	24-Feb-2014
	Right Sill at Front Seat	Z	P80602	Endevco	24-Feb-2014
3	Right Sill at Rear Seat	X	P80700	Endevco	24-Feb-2014
	Right Sill at Rear Seat	Y	P78102	Endevco	24-Feb-2014
	Right Sill at Rear Seat	Z	P80708	Endevco	24-Feb-2014
4	Left Sill at Front Door	Y	P80466	Endevco	9-Dec-2013
5	Left Sill at Rear Door	Y	P81608	Endevco	14-Nov-2013
6	Left A-Post Lower	Y	P80765	Endevco	24-Feb-2014
7	Left A-Post Middle	Y	P78221	Endevco	12-Feb-2014
8	Left B-Post Lower	Y	P81023	Endevco	24-Feb-2014
9	B-Post Middle	Y	P81535	Endevco	5-Feb-2013
10	Front Seat Track	Y	P81637	Endevco	14-Nov-2013
11	Rear Seat Track or Structure	Y	P81052	Endevco	24-Feb-2014
12	Right Rear Occupant Compartment	Y	P82031	Endevco	5-Nov-2013
13	Engine Block	X	P77741	Endevco	15-Jan-2014
	Engine Block	Y	P79368	Endevco	17-Dec-2013
14	Rear Floorpan Above Axle	X	P81533	Endevco	5-Nov-2013
	Rear Floorpan Above Axle	Y	P80543	Endevco	19-Feb-2014
	Rear Floorpan Above Axle	Z	P80691	Endevco	24-Feb-2014

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P81635	Endevco	14-Nov-2013
MDB Center of Gravity	Y	P81091	Endevco	5-Nov-2013
MDB Center of Gravity	Z	P80616	Endevco	14-Nov-2013
Left Frame Rail at Rear Axle Centerline	X	P78093	Endevco	15-Jan-2014
Left Frame Rail at Rear Axle Centerline	Y	P77746	Endevco	15-Jan-2014