DRAFT REPORT NUMBER: SINCAP-TRC-16-003

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

FCA US LLC
2016 Chrysler 300 4-Door Sedan
NHTSA NUMBER: M20160302

PREPARED BY:
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East Liberty, OH 43319

Report Date: January 12, 2016

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NRM-110
1200 New Jersey Ave, SE, Room W43-410
Washington, D.C. 20590

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Report Approved By: Melinda Lackey

Melinda Lackey, Project Manager

Approval Date: January 12, 2016

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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9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319		10. Work Unit No. 11. Contract or Grant No. DTNH22-14-D-00354
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-110) 1200 New Jersey Ave, SE, Room W43-410 Washington, DC 20590		13. Type of Report and Period Covered Final Test Report November 25, 2015 – January 12, 2016 14. Sponsoring Agency Code NRM-110

15. Supplemental Notes

16. Abstract

This 55 / 28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2016 Chrysler 300 4-Door Sedan, 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 November 25, 2015.

The impact velocity of the Moving Deformable Barrier (MDB) was 61.90 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 22° C. The target vehicle post-test maximum crush was 260 mm at Level 2. The test vehicle's performance was as follows:

Driver ATD (ES-2re)

Measurement Description	Units	IARV	Result
Head Injury Criteria (HIC_{36})	N/A	1000	173
Maximum Thoracic Rib Deflection	mm	44	34.6
Total Abdominal Force	N	2500	1190.1
Pubic Symphysis Force	N	6000	-1703.5

Passenger ATD (SID-IIs)

Measurement Description	Units	IARV	Result
Head Injury Criteria (HIC_{36})	N/A	1000	184
Lower Spine Resultant Acceleration	g's	82	45.3
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1349.7
Maximum Thoracic Rib Deflection	mm	38*	25.1
Maximum Abdominal Rib Deflection	mm	45*	24.0

* 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.

17. Key Words New Car Assessment Program (NCAP) Side Impact MDB ES-2re SID-IIs	18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833

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Unclassified	Unclassified	212	

TABLE OF CONTENTS

SECTION 1
TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test was conducted as part of the MY 2016 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-14-D-00354. The purpose of this test is to generate comparative side impact performance in a 2016 Chrysler 300 4-Door Sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated October 2015.

SECTION 2

SUMMARY OF TEST RESULTS

A 2016 Chrysler 300 4-Door Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.90 km/h (38.46 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 November 25, 2015. 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 October 2015. 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	173
Maximum Thoracic Rib Deflection	mm	44	34.6
Combined Abdominal Force	N	2500	1190.1
Pubic Symphysis Force	N	6000	-1703.5

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})	N/A	1000	184
Lower Spine (T12) Resultant Acceleration	G	82	45.3
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1349.7
Maximum Thoracic Rib Deflection	mm	38*	25.1
Maximum Abdominal Rib Deflection	mm	45*	24.0

* Proposed IARV

Supplemental Restraint Information is given below:

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

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20160302
Model Year	2016
Make	Chrysler
Model	300
Body Style	Sedan
VIN	2C3CCAAG4GH134994
Body Color	Silver
Odometer Reading (km/mi)	92.0 mi
Engine Displacement (L)	3.6
Type/No. Cylinders	Gas/6
Engine Placement	Front/Longitudinal
Transmission Type	Automatic
Transmission Speeds	8 Speed
Overdrive	Yes
Final Drive	RWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
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	No

Does owner's manual provide instructions to turn off automatic door locks? No

DATA FROM CERTIFICATION LABEL

Manufactured By	FCA US LLC
Date of Manufacture	10/15
Vehicle Type	Passenger Car

GVWR (kg)	2314
GAWR Front (kg)	1275
GAWR Rear (kg)	1275

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

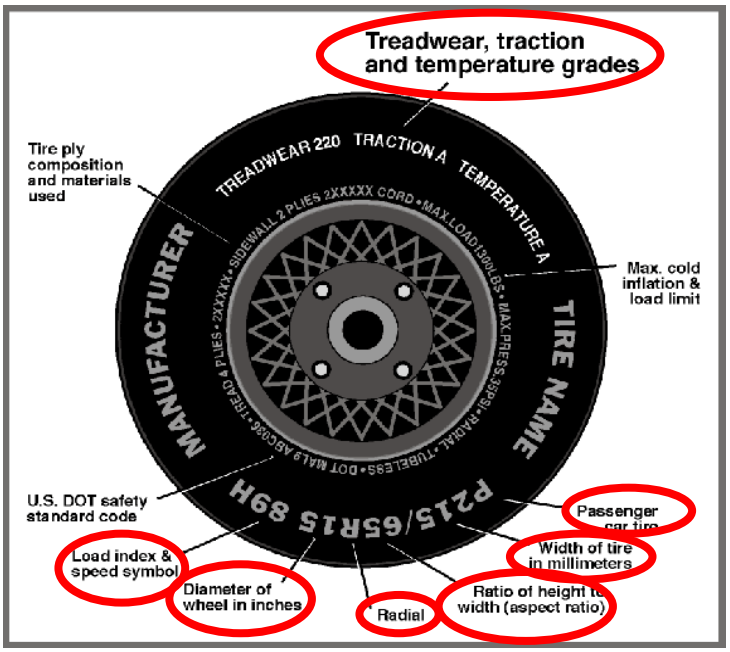
Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity DSC)	2	3	N/A	5
Capacity Weight (VCW) (kg)				392.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				51.8

VEHICLE SEAT TYPE

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

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

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P215/65R17	P215/65R17
Tire Size on Vehicle	P215/65R17	P215/65R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Energy Saver A/S	Energy Saver A/S
Treadwear	480	480
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	98T	98T
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Left	M322 00BX 3915	M322 00BX 3915
DOT Safety Code Right	M322 00BX 3915	M322 00BX 3915

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

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	228	200	221	228
Tire Placard	kPa	220	220	220	220
Owner's Manual	kPa	N/A	N/A	N/A	N/A
As Tested	kPa	220	220	220	220

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	468.0	435.2		518.2	495.2		523.8	515.8	
Right	kg	476.4	432.8		480.6	486.8		472.0	478.6	
Ratio	%	52.1	47.9		50.4	49.6		50.0	50.0	
Totals	kg	944.4	868.0	1812.4	998.8	982.0	1980.8	955.8	994.4	1990.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1812.4	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	125.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	51.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1989.2	(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	756	753	Yes
RF	mm	761	758	Yes
RR	mm	759	759	Yes
LR	mm	749	754	Yes
Vehicle CG (Aft of Front Axle)	mm	1463	1515	
Vehicle CG (Left(+)/Right(-) from Longitudinal Centerline)	mm	+3	+19	

***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: Placed on left rear rack	16.6
Removed: None.	0.0

DATA SHEET NO. 2

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

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302

Test Program: NCAP Side Impact Test Date: 11/25/15

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	16.5	8.9	12.7
Front Passenger Seat	15.0	8.0	11.5
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	N/A	N/A
Non-Struck Side Rear Seat	Fixed	N/A	N/A
Rear Center Seat*	Fixed	N/A	N/A

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	12.7	195	Max	237	245	253
			Mid	211	220	227
			Min	186	195	204
Front Passenger Seat	11.5	192	Max	240	247	254
			Mid	213	219	226
			Min	185	192	198
Front Center Seat*	N/A	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	11.7	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	12.4	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	8.5	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

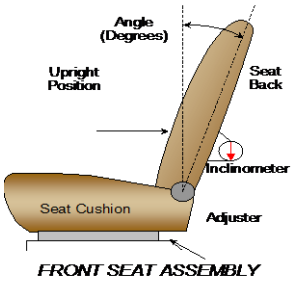
Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents	mm	Detent
Driver Seat	258	N/A	129	N/A
Front Passenger Seat	220	N/A	110	N/A
Front Center Seat*	N/A	N/A	N/A	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	70.8	N/A	N/A	N/A
Front Passenger Seat	70.6	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat w/ Seated Dummy	Fixed	N/A	23.4	N/A
Non-Struck Side Rear Seat	Fixed	N/A	20.6	N/A
Rear Center Seat*	Fixed	N/A	23.5	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	1, Fixed	1

HEAD RESTRAINT ADJUSTMENT

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

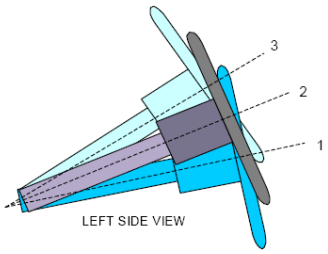
	Total # of Positions	Placed in Position #
Driver Seat	4, Numbered from 0 to 3	0, Uppermost
Rear Seat	1, Fixed	1

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

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

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.

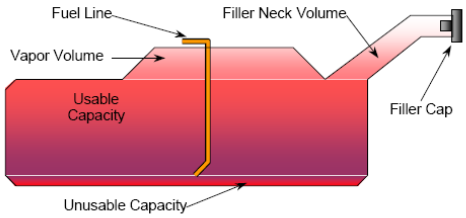


STEERING COLUMN ASSEMBLY

	Degrees	Fore/Aft Position (mm)
Lowermost, Position No. 1	68.8	400
Geometric Center, Position No. 2	66.6	400
Uppermost, Position No. 3	64.4	400
Telescoping Steering Wheel Travel		55
Test Position	66.6	427.5

FUEL PUMP

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



VEHICLE FUEL TANK ASSEMBLY

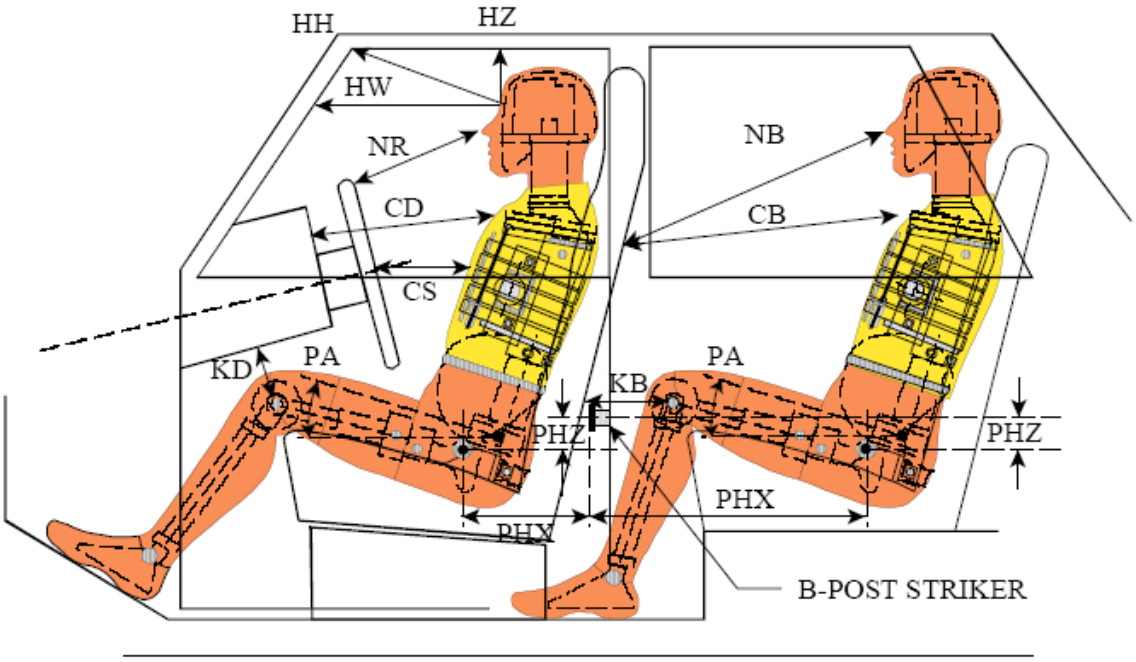
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	70.0
Usable Capacity of "Optional Tank" (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	69.9
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	65.1
Actual Amount of Solvent Used in Test	65.1
1/3 of Usable Capacity	23.3

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

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



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

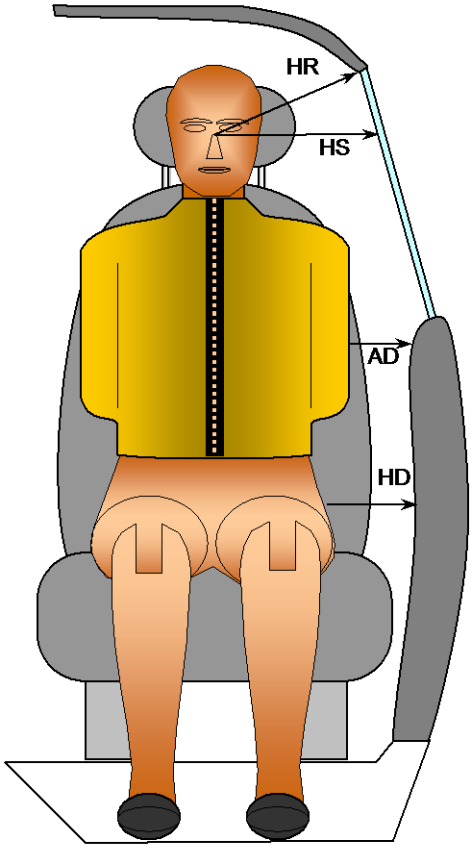
LEFT SIDE VIEW

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	532			
HW		Header to Windshield	754			
HZ	HZ	Head to Roof Liner	184		256	
NR	NB	Nose to Rim/Seat Back	483		617	
CD	CB	Chest to Dash/Seat Back	593		562	
CS		Chest to Steering Wheel	380			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	173	36.5	255	7.5
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	167	32.5	254	7.5
PAX°	PAX°	Pelvic Tilt Angle X		0.7		0.4
	PAY°	Pelvic Tilt Angle Y				26.7
PHX	PHX	Hip Point to Striker (X-Axis)	164		221	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	153		280	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

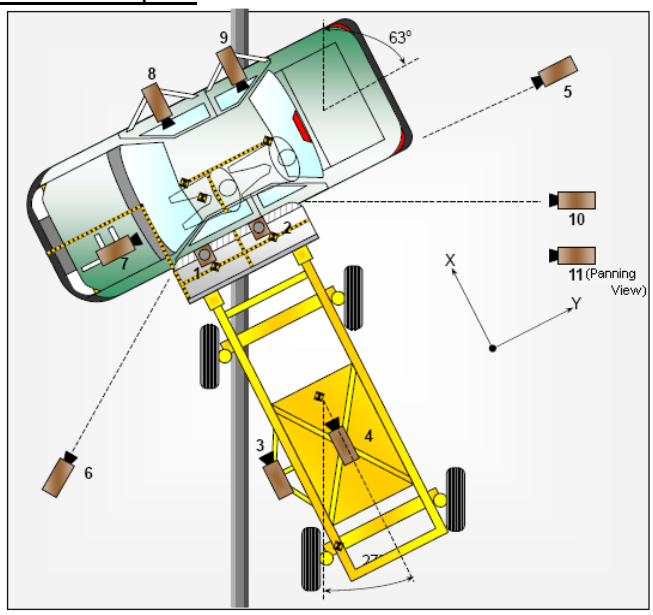


FRONT VIEW OF DUMMY

Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	155	232
HS	Head to Side Window	mm	332	390
AD	Arm to Door	mm	116	150
HD	H-Point to Door	mm	162	183

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	95	840	-5740	6.5	1000
2	Overhead Close-up	175	-460	-5740	25	1000
3	Left Impact Point (MDB)	-1780	-863	-825	20	1000
4	Side Overall (MDB)	-2404	0	-1440	8.5	1000
5	Rear	465	7689	-1237	20	1000
6	Left Front	-2109	-3832	-1218	20	1000
7	Driver Front (OB)				25	1000
8	Driver Side (OB)				12.5	1000
9	Passenger Side (OB)				12.5	1000
10	Real-time Left Rear				Zoom	30
11	Real-time Inrun				Zoom	30

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

*All measurements accurate to ± 6 mm.

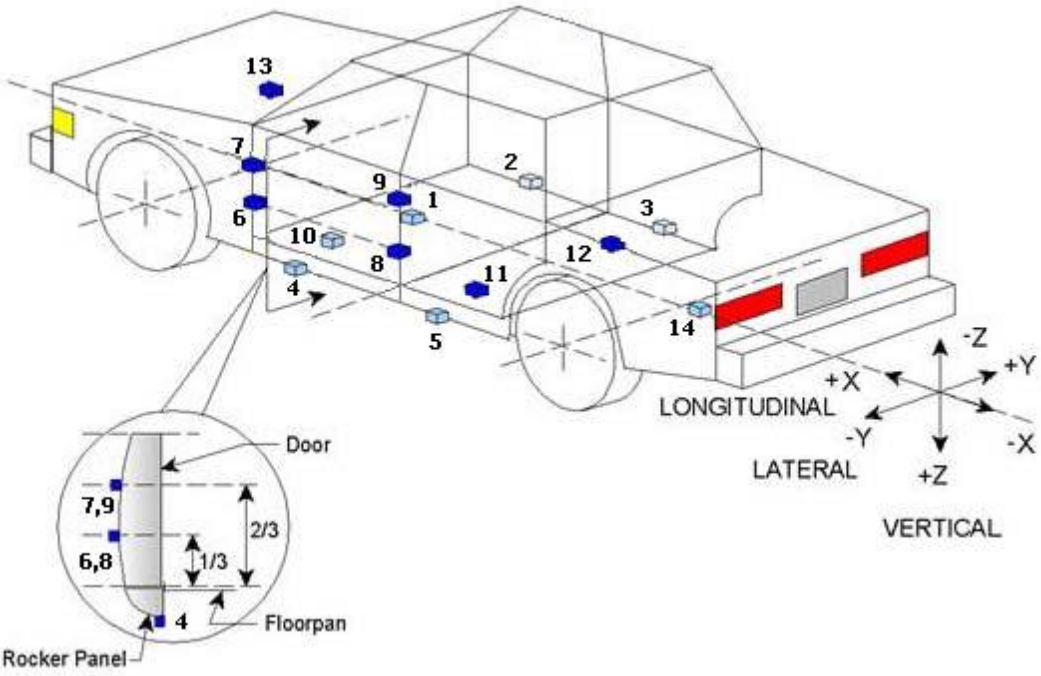
If applicable, explain why camera(s) did not operate as intended:

INSTRUMENTATION

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

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



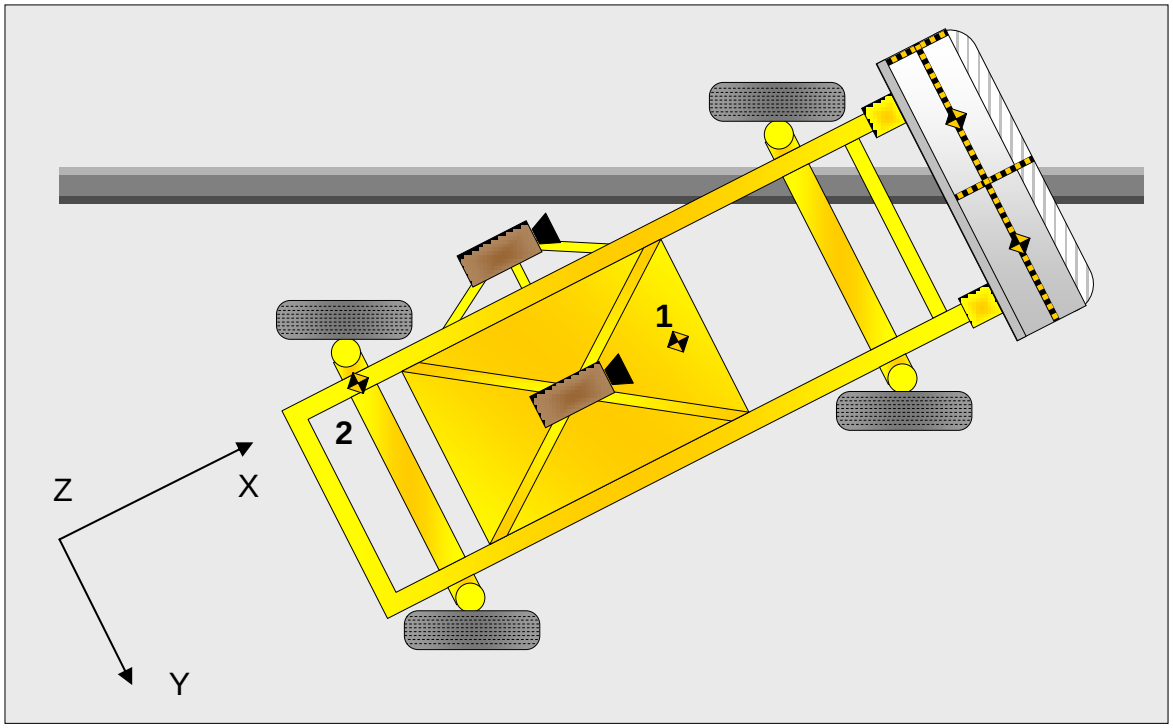
TEST VEHICLE ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2905	107	-374
2	Right Sill at Front Seat	3030	735	-280
3	Right Sill at Rear Seat	2190	713	-325
4	Left Sill at Front Door	3051	-735	-277
5	Left Sill at Rear Door	2100	-713	-285
6	A-Post Lower	2432	-880	-827
7	A-Post Middle	3435	-880	-480
8	B-Post Lower	2350	-882	-520
9	B-Post Middle	2330	-888	-888
10	Front Seat Track	2650	-570	-273
11	Rear Seat Structure	1815	-603	-323
12	Right Rear Occ. Compartment	1940	555	-378
13	Engine Block	4145	-52	-917
14	Rear Above Axle	823	0	-500

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: 2016 Chrysler 300 4-Door Sedan
Test Program: NCAP Side Impact
NHTSA No.: M20160302
Test Date: 11/25/15



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: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

TEST DUMMY INFORMATION AND CONTACT POINTS

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

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	Slight	No	No	No
Seat Back Collapse	No	No	No	No

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Minor Deformation
Sill Separation	None Visible
Windshield Damage	Broken
Side Window Damage	Front- Broken; Rear- Shattered
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	N/A
Side Pelvis Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	N/A	No	N/A
Seat Belt Load Limiter	Yes	N/A	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		3055
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		508
Actual Impact Point (Aft of Front Axle)	mm		496
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact point	+12
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact point	+3

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

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	1107

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	407.6	275.8	683.4
Right	kg	375.6	308.8	684.4
Ratio	%	57.3	42.7	100.0
Totals	kg	783.2	584.6	1367.8

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.90
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.94
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27

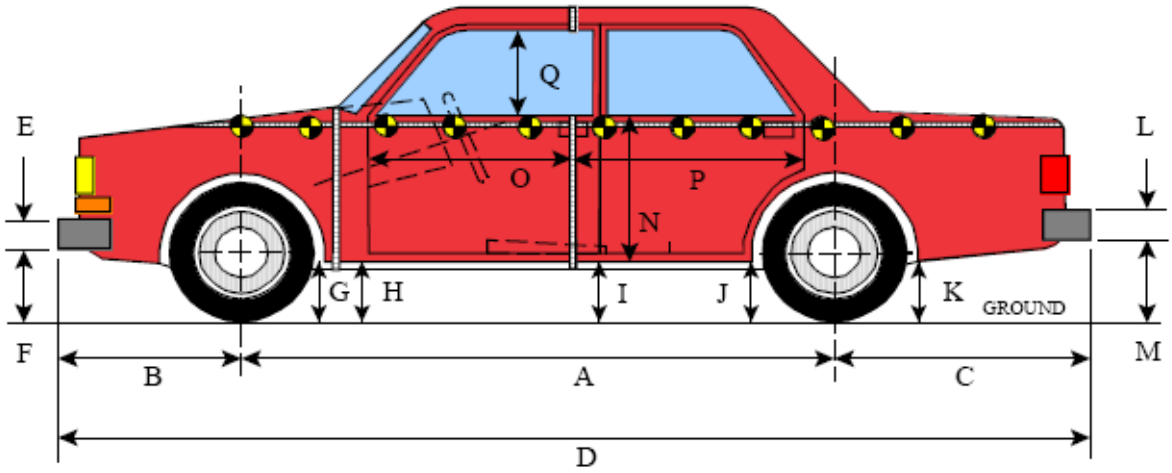
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	700	Left	233
B[1]	Top of Bumper	533	600	Right	373
C	Mid-Level	686	800	Left	169
D	Top of Stack	813	800	Left	195

[1] At Row B, Top of Bumper, a maximum crush of 373 mm was achieved at 200, 300, 400, 500 and 600 mm right of center.

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



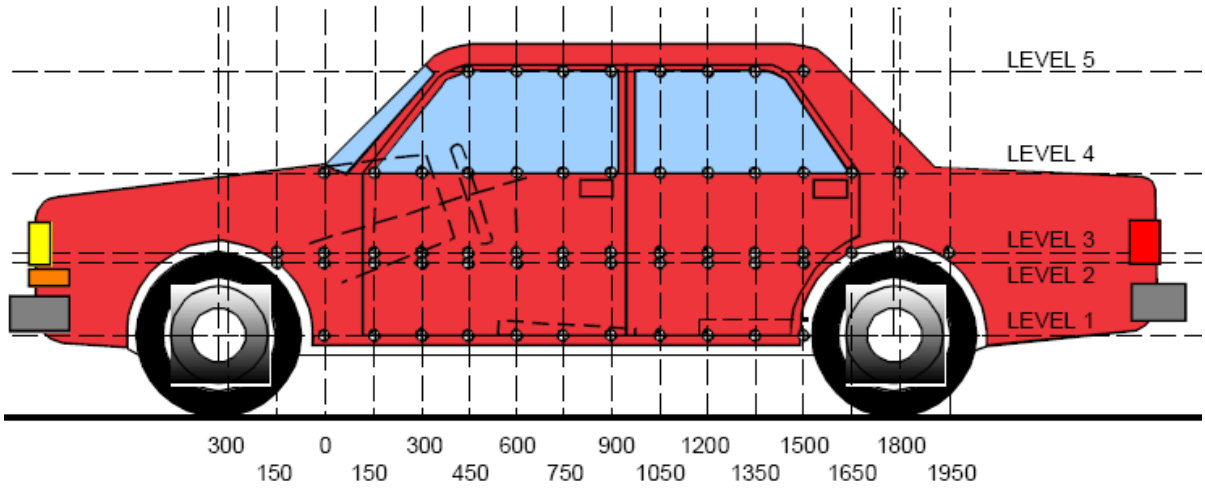
LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3055	3060	-5
B	Front Axle to Front Surface of Vehicle	915	915	0
C	Rear Axle to Rear Surface of Vehicle	1095	1095	0
D	Total Length at Centerline	5065	5075	-10
E	Front Bumper Thickness	210	210	0
F	Front Bumper Bottom to Ground	362	364	-2
G	Sill Height at Front Wheel Well	243	246	-3
H	Sill Height at Front Door Leading Edge	252	275	-23
I	Sill Height at B-Pillar	256	314	-58
J1	Sill Height at Rear Wheel Well	256	299	-43
J2	Pinch Weld Height at Rear Wheel Well	148	185	-37
K	Sill Height Aft of Rear Wheel Well	283	326	-43
L	Rear Bumper Thickness	250	250	0
M	Rear Bumper Bottom to Ground	430	430	0
N	Sill Height to Window Bottom Sill	774	701	73
O	Front Door Leading Edge to Impact CL	713	711	2
P	Rear Door Trailing Edge to Impact CL	1319	1222	97
Q	Front Window Opening	393	390	3
R	Right Side Length	4750	4759	-9
S	Left Side Length	4730	4741	-11
T	Vehicle Width	1895	1941	-46

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance From Impact
1[1]	Sill Top	344	158	1500
2	Driver Hip Point	550	260	1650
3	Mid-Door	644	255	1500
4	Window Sill	949	201	1500
5	Window Top	1416	22	1650

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

[1] Level 1, Sill Top, maximum exterior static crush of 158 mm was achieved at 1350 and 1500 mm.

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

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

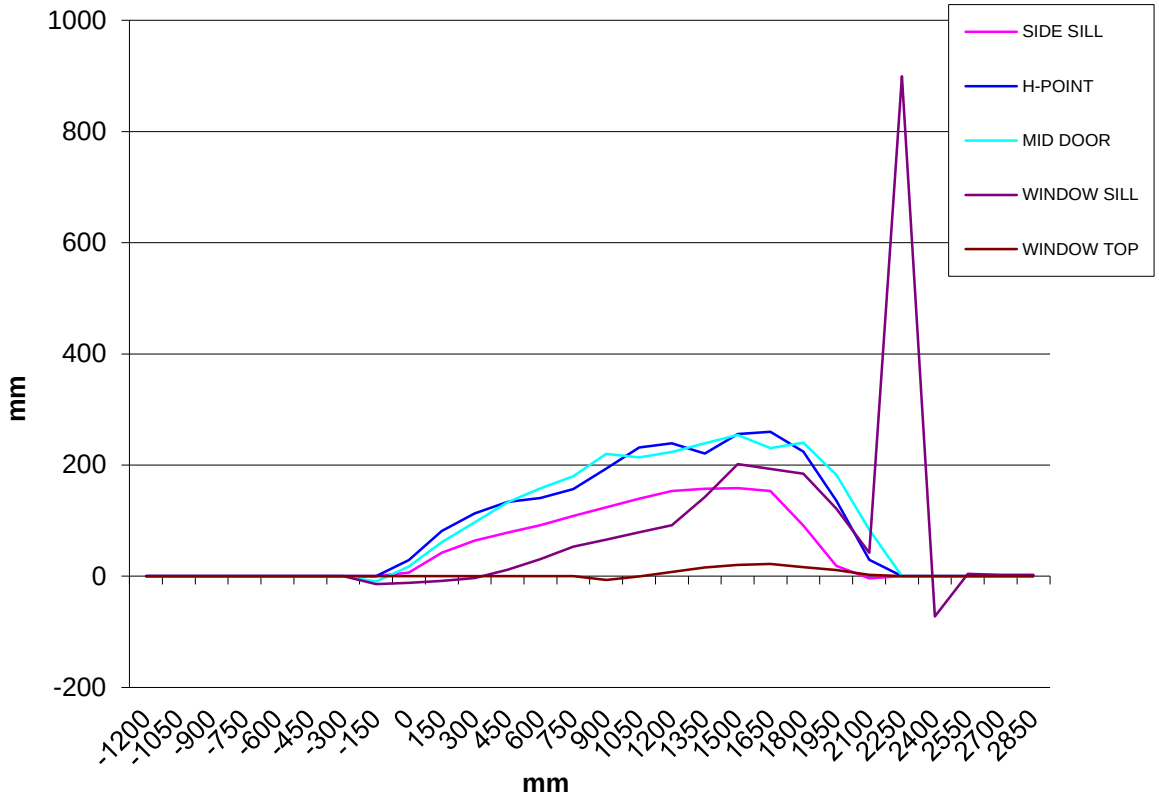
EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-750	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-450	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-150	0	0	935	827	0	0	0	944	841	0	0	0	-9	-14	0
0	902	926	928	838	0	896	897	911	850	0	6	29	17	-12	0
150	897	925	931	847	0	854	844	870	856	0	43	81	61	-9	0
300	894	928	934	855	0	830	815	837	858	0	64	113	97	-3	0
450	893	929	936	862	0	815	795	803	851	0	78	134	133	11	0
600	893	929	937	868	0	801	788	779	838	0	92	141	158	30	0
750	894	929	938	874	0	785	772	758	821	0	109	157	180	53	0
900	895	929	938	881	594	771	736	718	815	601	124	193	220	66	-7
1050	895	929	937	888	601	756	697	723	809	601	139	232	214	79	0
1200	896	928	936	894	609	743	689	713	803	601	153	239	223	91	8
1350	894	925	934	898	613	736	704	695	756	597	158	221	239	142	16
1500	892	922	932	899	615	734	667	677	698	594	158	255	255	201	21
1650	890	919	929	899	616	736	659	698	706	594	154	260	231	193	22
1800	887	914	925	898	618	796	690	685	714	601	91	224	240	184	17
1950	885	911	921	896	615	866	775	738	774	604	19	136	183	122	11
2100	897	927	929	926	608	901	897	845	884	605	-4	30	84	42	3
2250	0	0	0	900	0	0	0	0	0	0	0	0	0	0	0
2400	0	0	0	884	0	0	0	0	956	0	0	0	0	-72	0
2550	0	0	0	879	0	0	0	0	874	0	0	0	0	5	0
2700	0	0	0	871	0	0	0	0	869	0	0	0	0	2	0
2850	0	0	0	863	0	0	0	0	860	0	0	0	0	3	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.

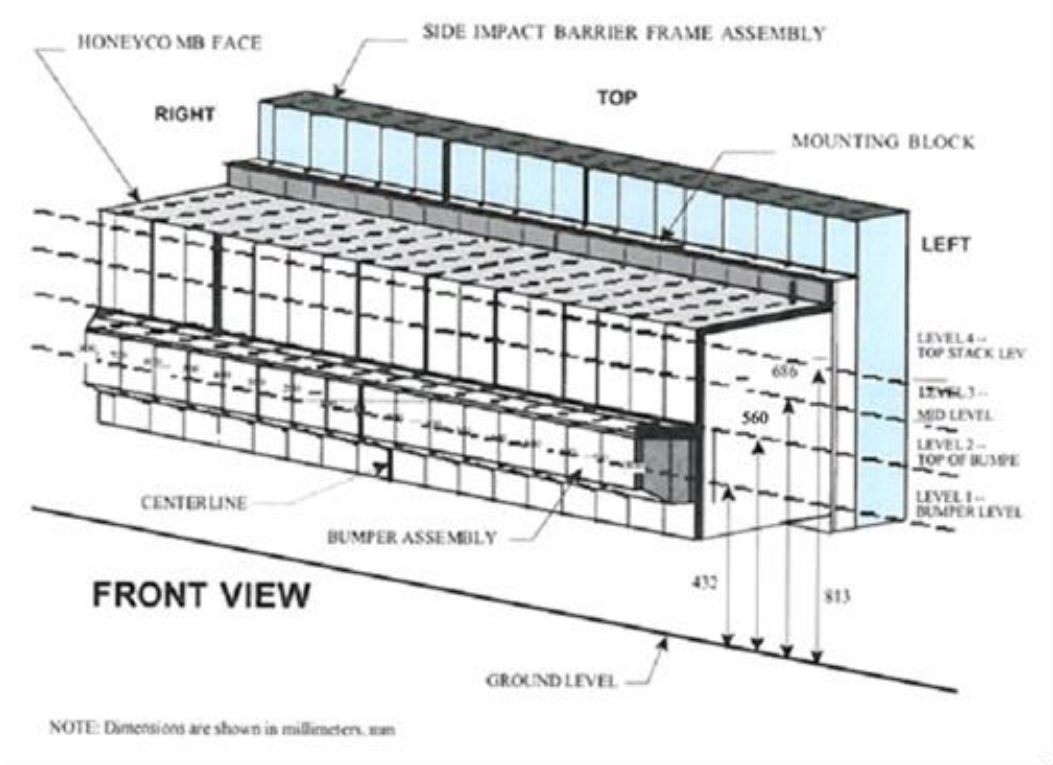
DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15



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	59	41	48	86	112	80	70	69	55	62	73	82	94	113	141	182	195
2[1]	55	60	70	61	73	69	41	34	32	36	42	54	70	91	124	166	169
3	372	83	373	373	373	373	373	372	102	108	115	120	127	133	142	157	165
4	145	141	142	150	146	152	154	155	160	165	170	175	180	187	202	233	216

[1] Level 2, Top of Bumper, measurements were collected at 560 mm to eliminate post-test measurement obstruction by the bumper element.

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

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302
Test Program: NCAP Side Impact Test Date: 11/25/15

Test Time: 13:18 **Temperature:** 22.0°C

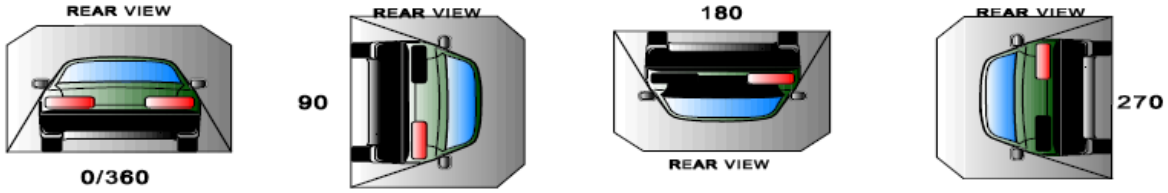
A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 ounce)

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

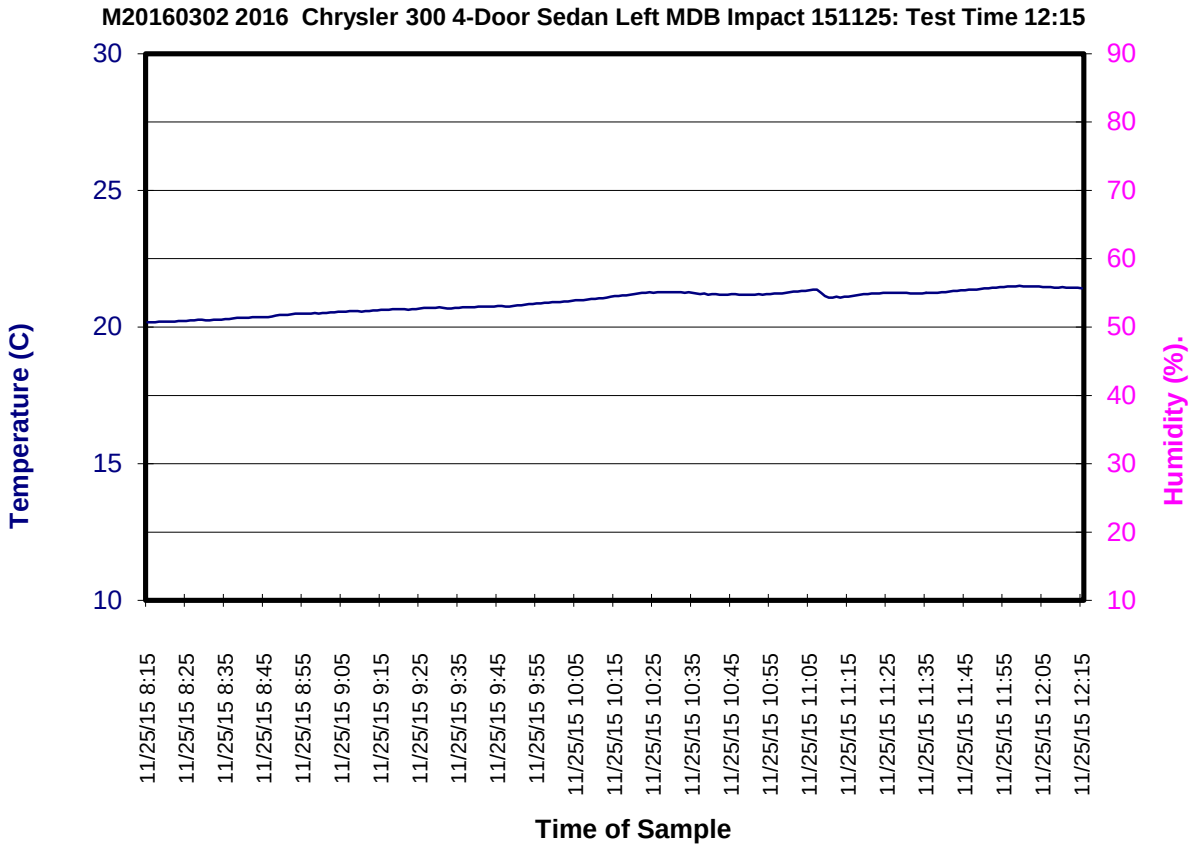
Test Phase	Spillage Location
0 to 90	None
90 to 180	None
180 to 270	None
270 to 360	None

DATA SHEET NO. 14[1]

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2016 Chrysler 300 4-Door Sedan NHTSA No.: M20160302

Test Program: NCAP Side Impact Test Date: 11/25/15



[1] The humidity was not recorded for this test.

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

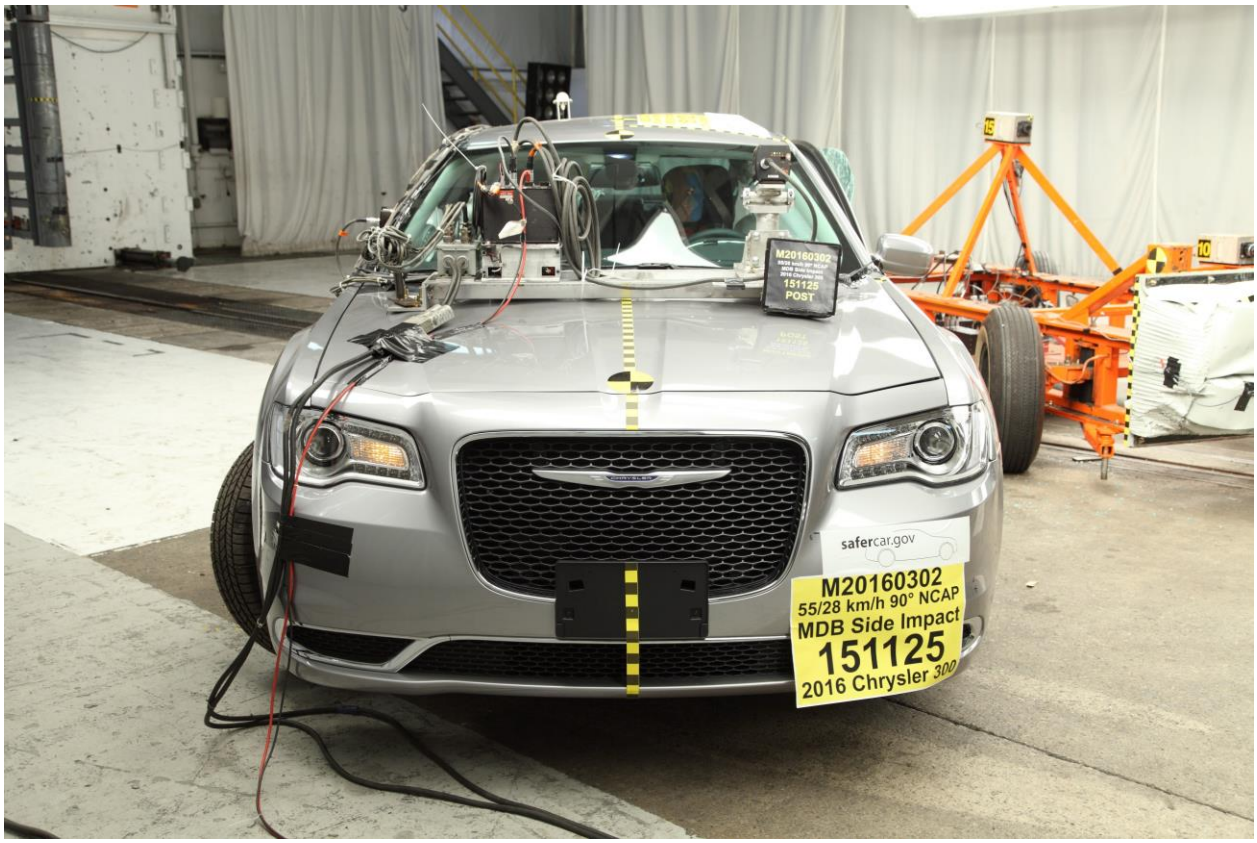
TABLE OF PHOTOGRAPHS (CONTINUED)

TABLE OF PHOTOGRAPHS (CONTINUED)

001 As-Delivered Right Front ¾ View of Test Vehicle

002 As-Delivered Left Rear ¾ 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 ¾ View of Test Vehicle

006 Post-Test Left Front ¾ 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 ¾ View of Test Vehicle

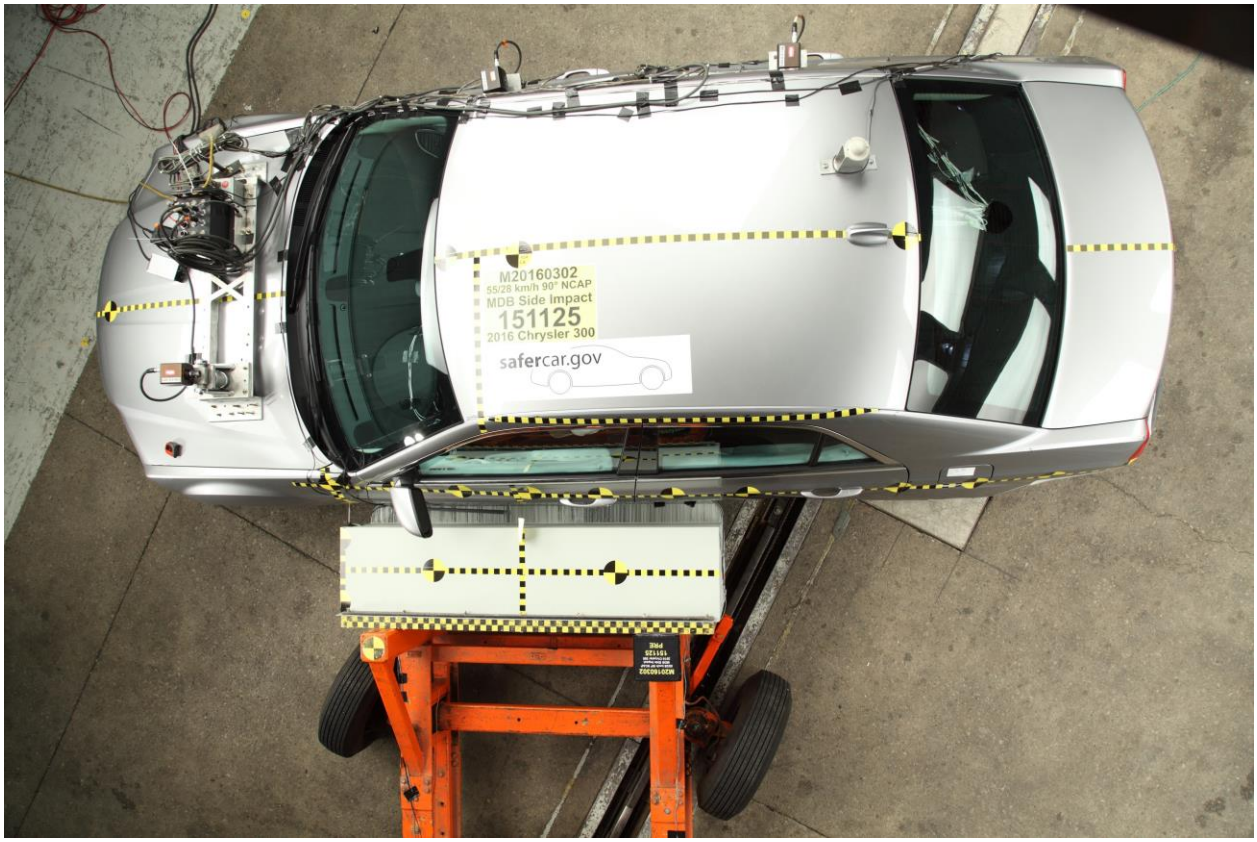
010 Post-Test Left Rear ¾ View of Test Vehicle

011 Pre-Test Rear View of Test Vehicle

012 Post-Test Rear View of Test Vehicle

013 Pre-Test Right Side View of Test Vehicle

014 Post-Test Right Side View of Test Vehicle



015 Pre-Test Overhead View of Test Area

016 Post-Test Overhead View of Test Area

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

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

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

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

021 Pre-Test Left Front Door Latch Close-up

022 Post-Test Left Front Door Latch Close-up

023 Pre-Test Left Rear Door Latch Close-up

024 Post-Test Left Rear Door Latch Close-up

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

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

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

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

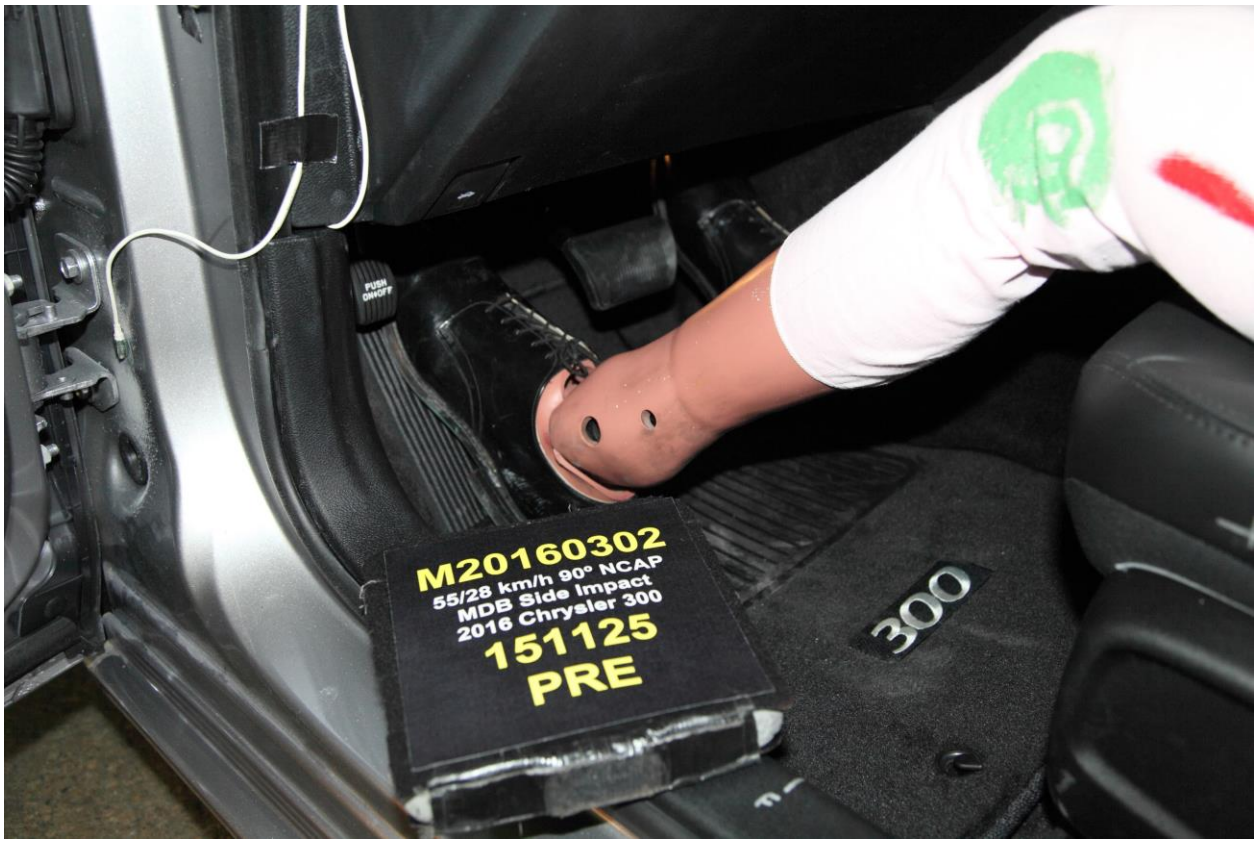
029 Post-Test Left Side View of Driver Dummy Shoulder and Door Top

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

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

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

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



034 Pre-Test Placement of Driver Dummy Feet

035 Pre-Test View of Belt Anchorage for Driver Dummy

036 Pre-Test Left Side View of Steering Wheel

037 View of Disengaged Parking Brake

038 Pre-Test View of Parking Brake

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

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

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

042 Pre-Test Driver Dummy and Door Clearance View

043 Post-Test Driver Dummy and Door Clearance View

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

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

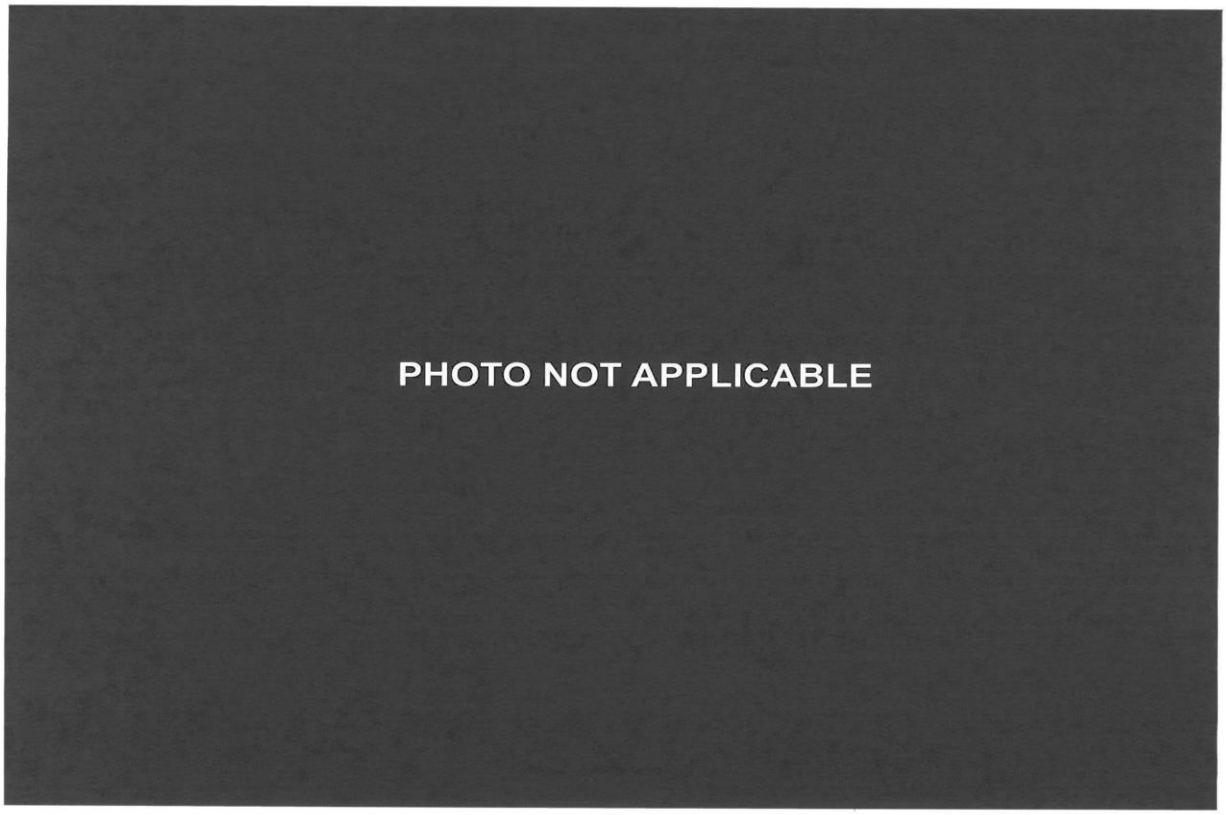
046 Pre-Test Driver Inner Door Panel View

047 Post-Test Driver Inner Door Panel View

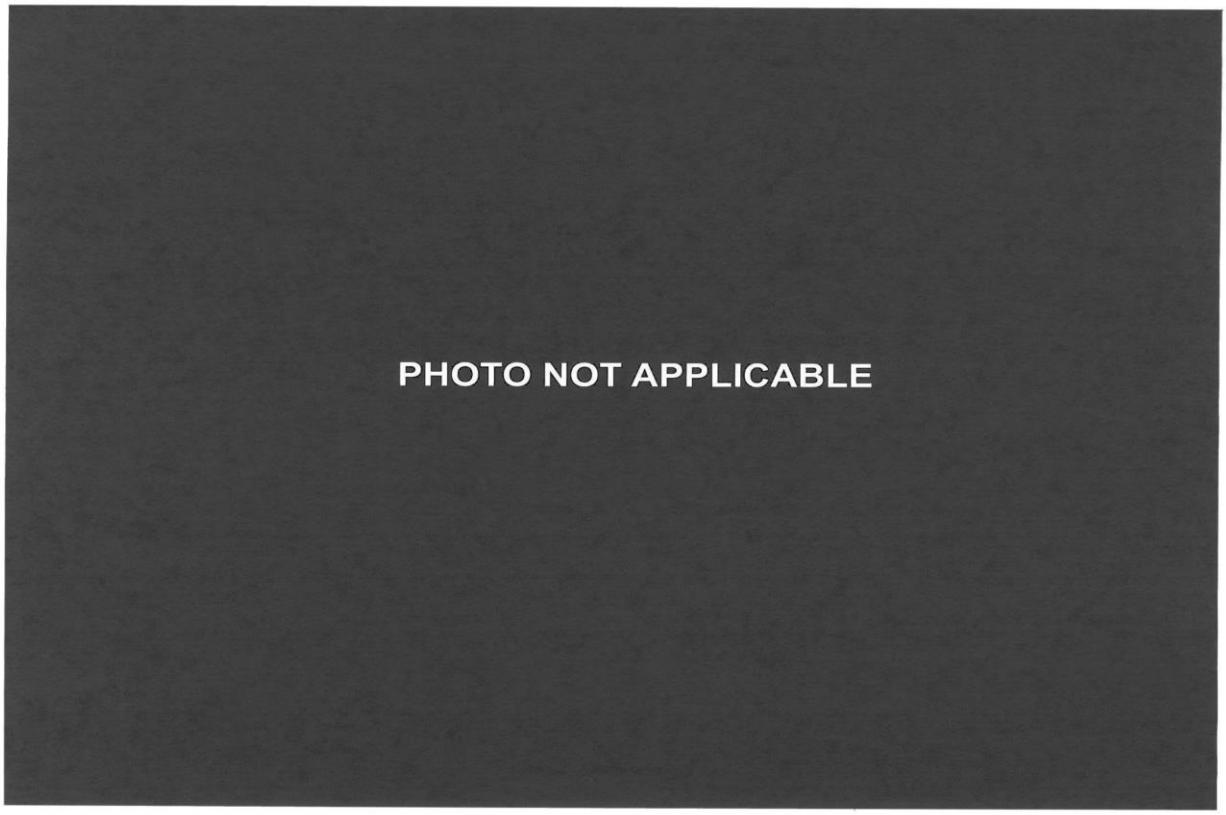
048 Post-Test Driver Dummy Close-Up Head Contact with Vehicle View

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

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



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



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

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

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

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

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

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

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

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

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

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

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

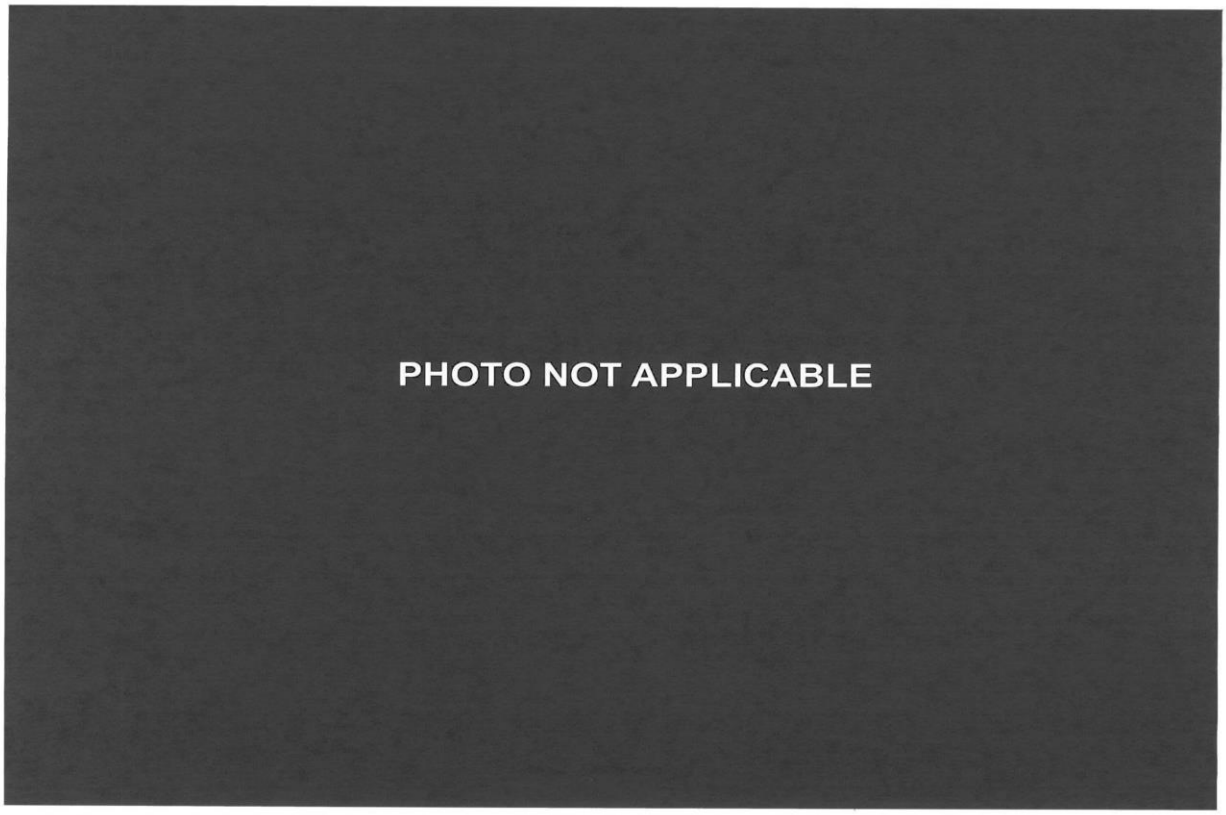
063 Pre-Test View of Rear Passenger Dummy Head Showing Dummy Head is Level

064 Pre-Test Placement of Rear Passenger Dummy Feet

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

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

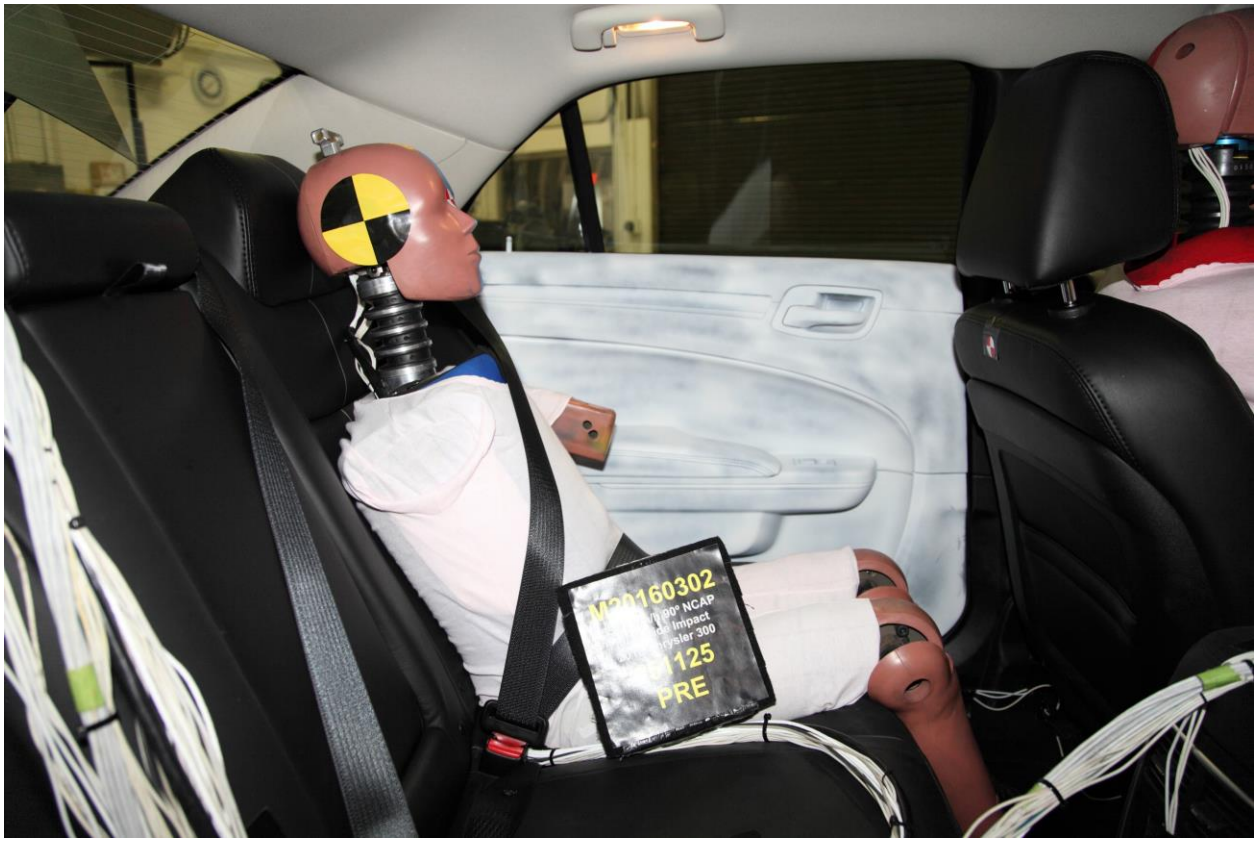
067 Pre-test Close-Up Left Side View of Rear Passenger Seat Back



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

069 Pre-Test Passenger Dummy and Door Clearance View

070 Post-Test Passenger Dummy and Door Clearance View



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

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

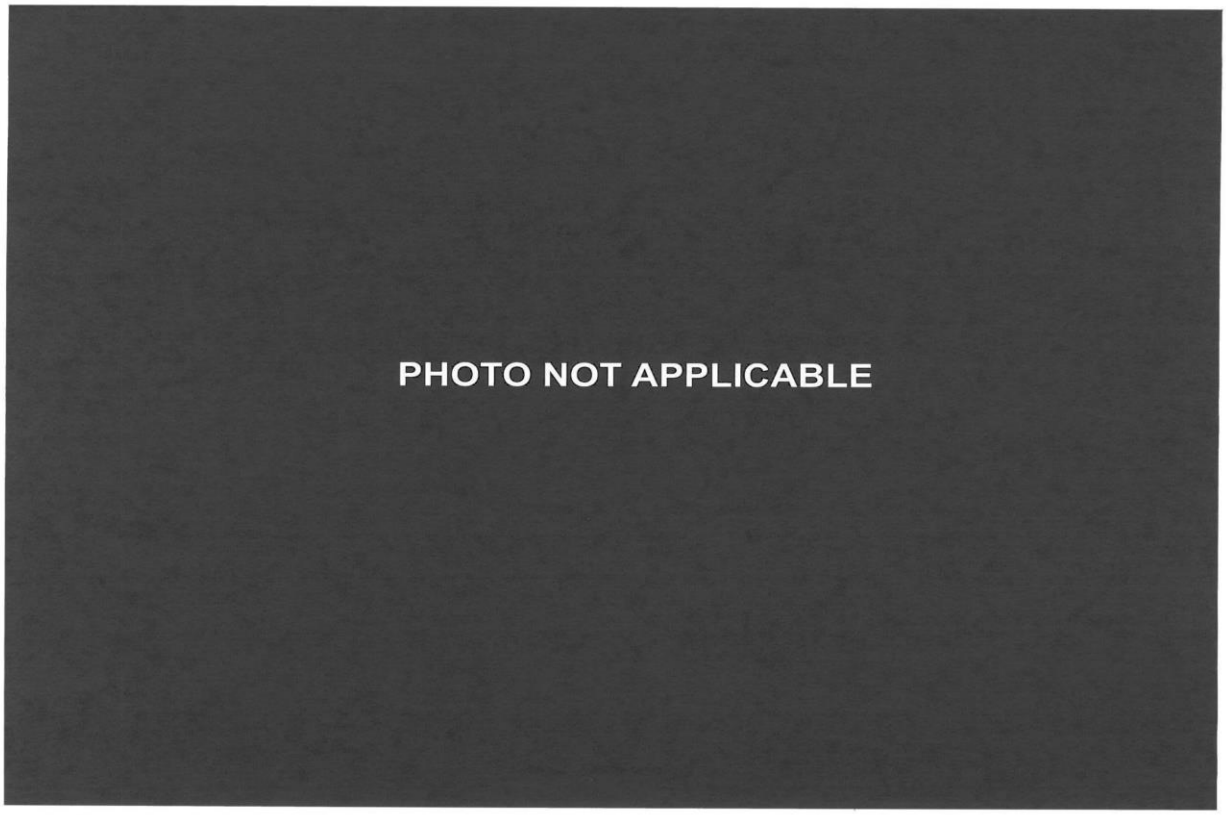
073 Pre-Test Passenger Inner Door Panel View

074 Post-Test Passenger Inner Door Panel View

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

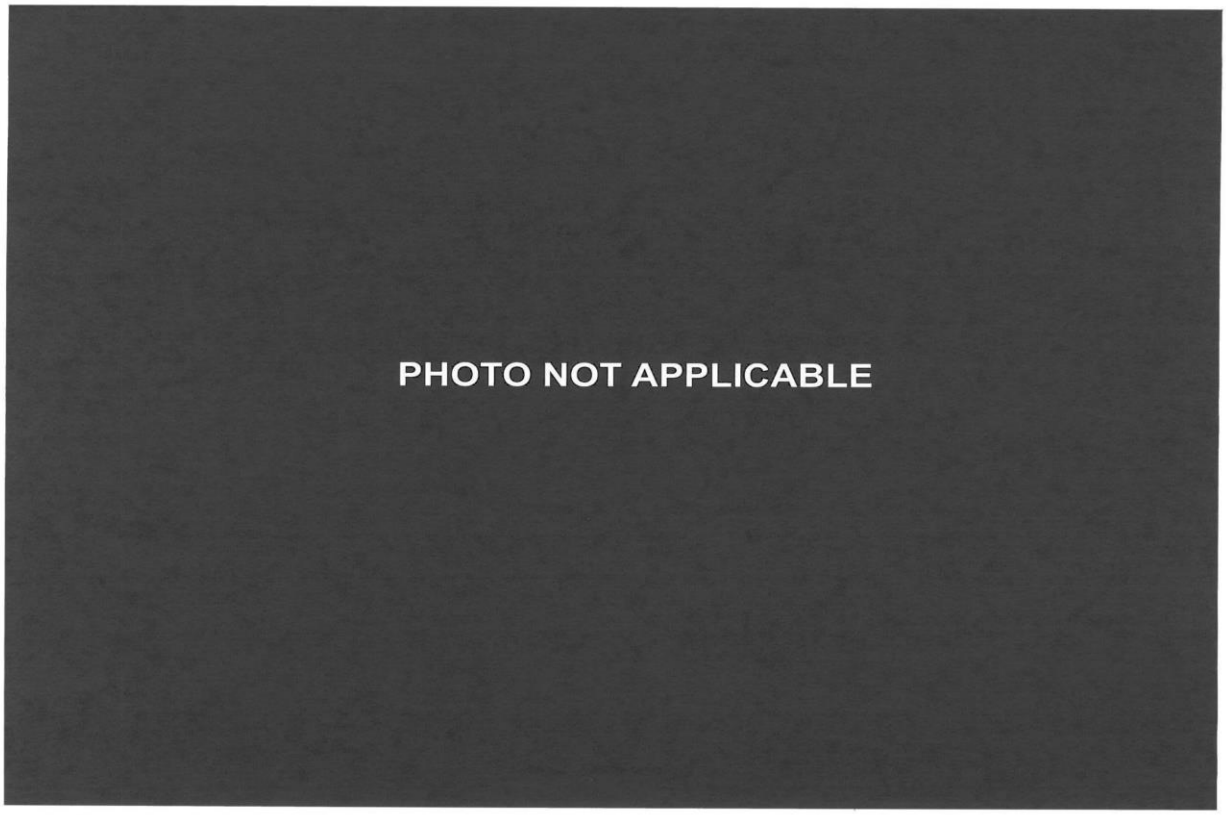
076 Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View

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

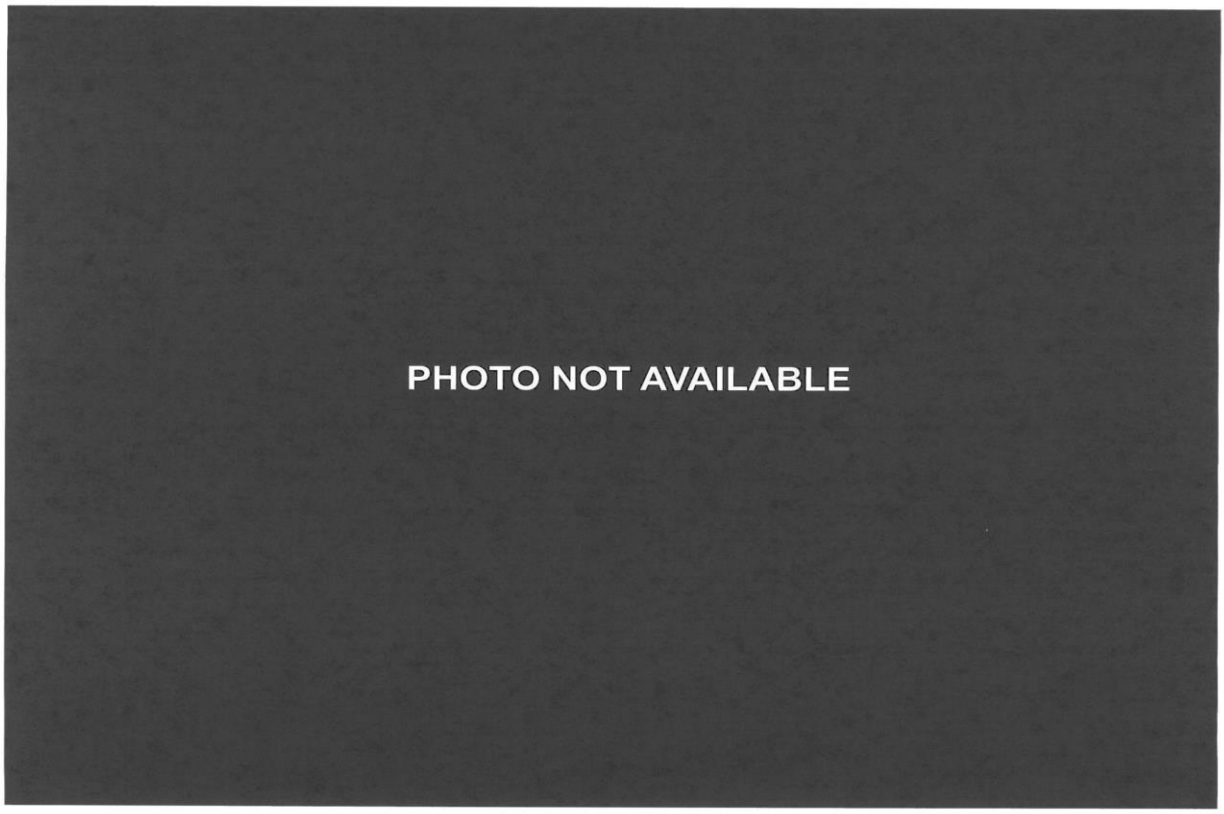


078 Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View

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



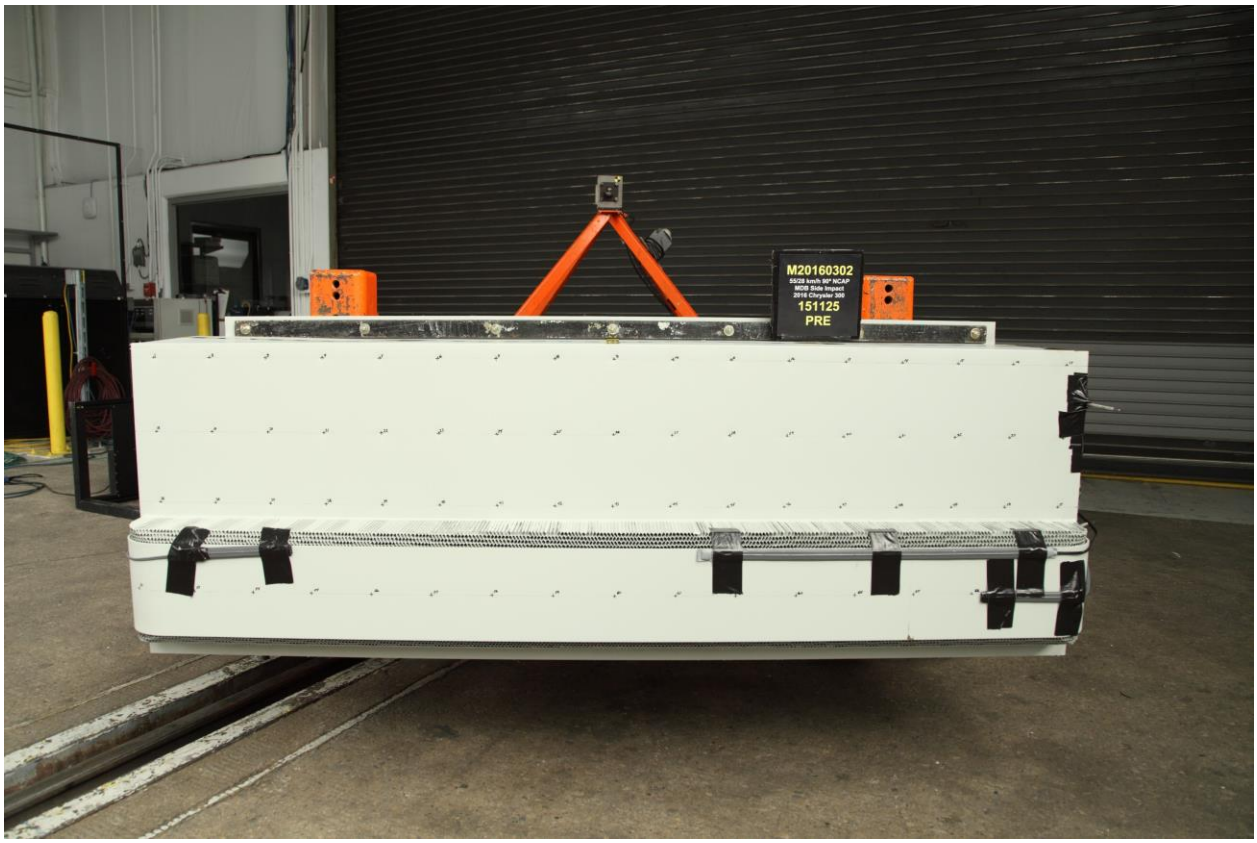
080 Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View



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

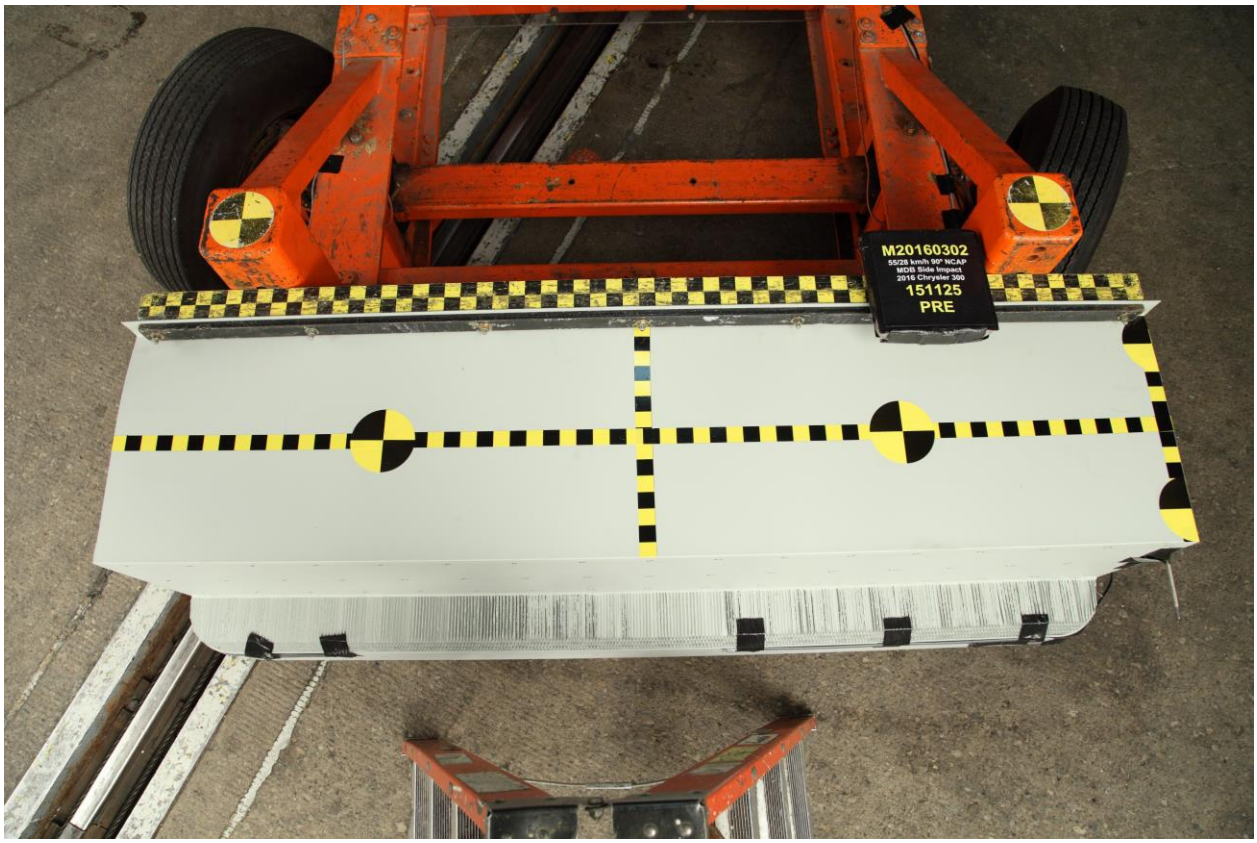
082 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

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



084 Pre-Test Front View of MDB Impactor Face

085 Post-Test Front View of MDB Impactor Face



086 Pre-Test Top View of MDB Impactor Face

087 Post-Test Top View of MDB Impactor Face

088 Pre-Test Left Side View of MDB Impactor Face

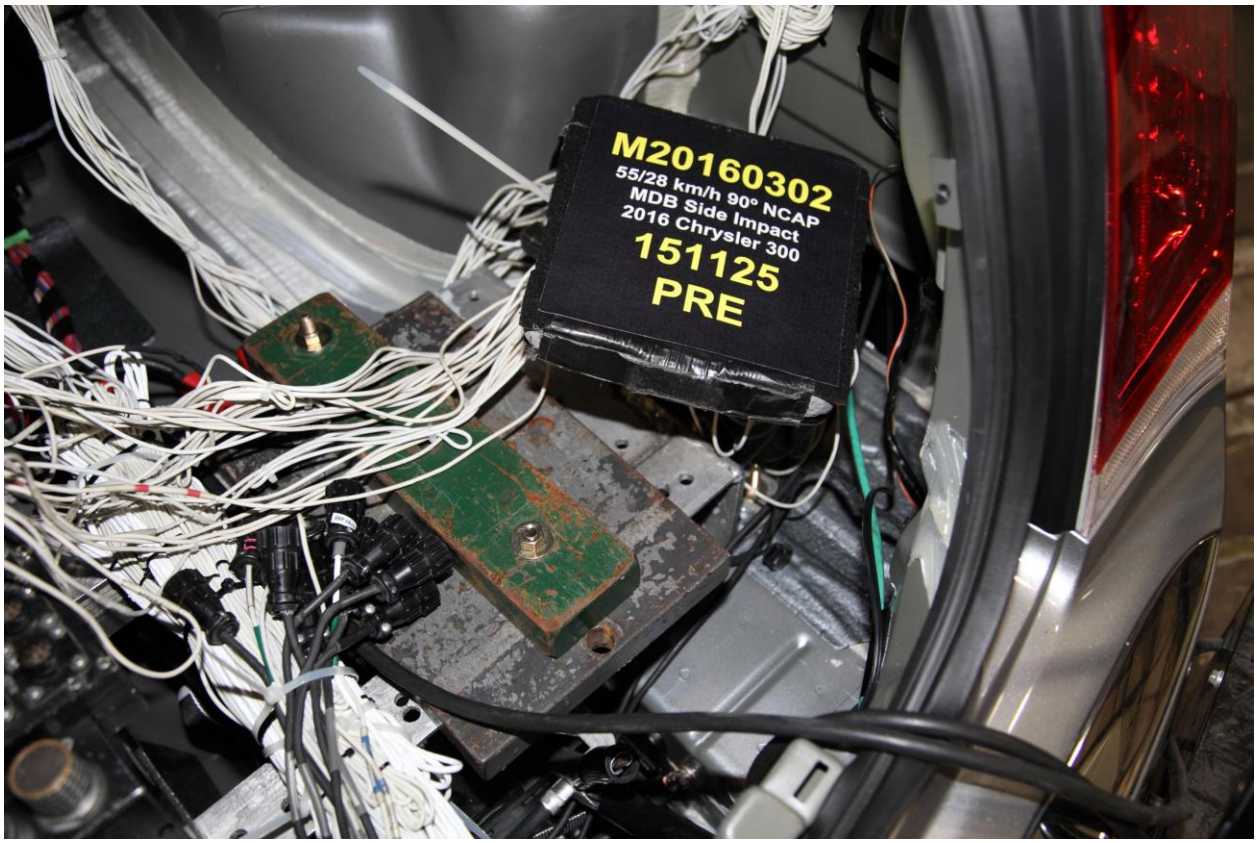
089 Post-Test Left Side View of MDB Impactor Face

090 Pre-Test Right Side View of MDB Impactor Face

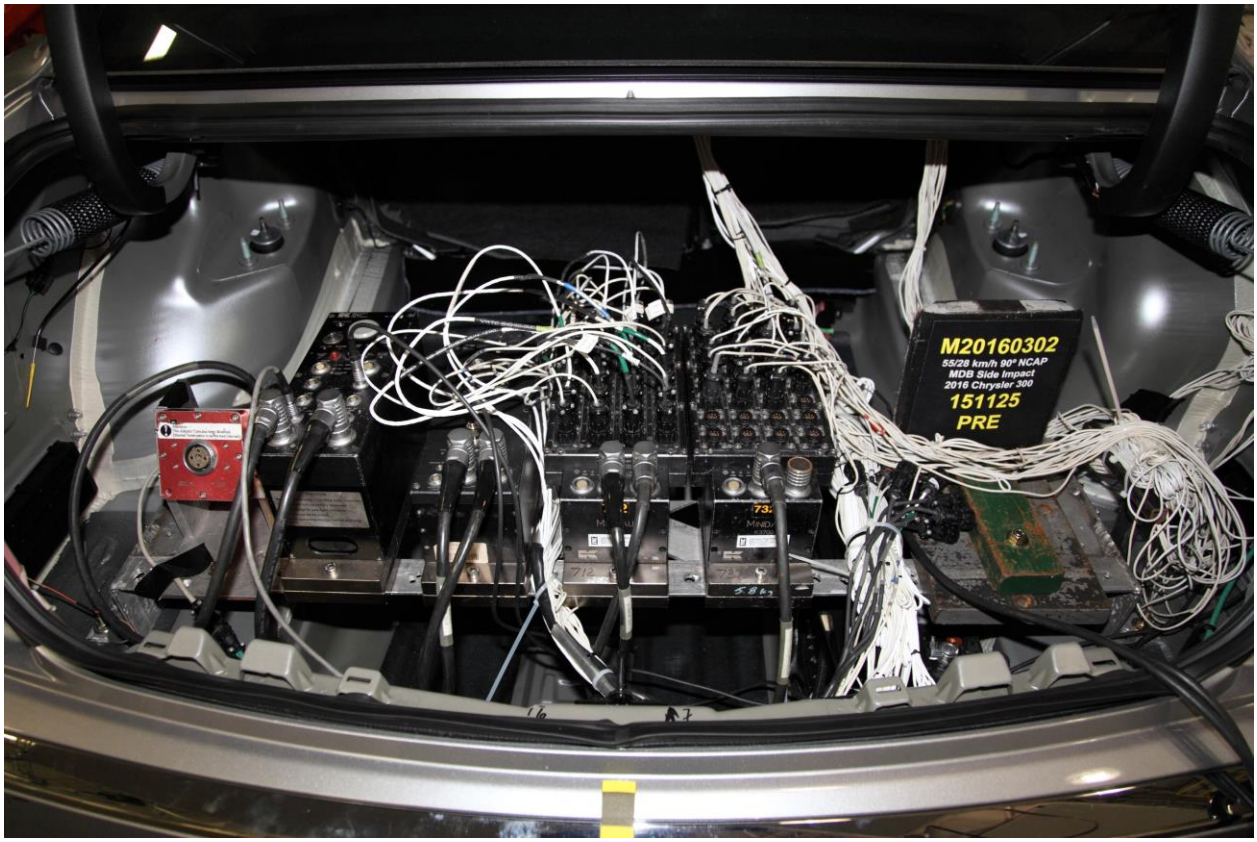
091 Post-Test Right Side View of MDB Impactor Face

092 Close-Up View of Vehicle Certification Label

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



094 Pre-Test Ballast View

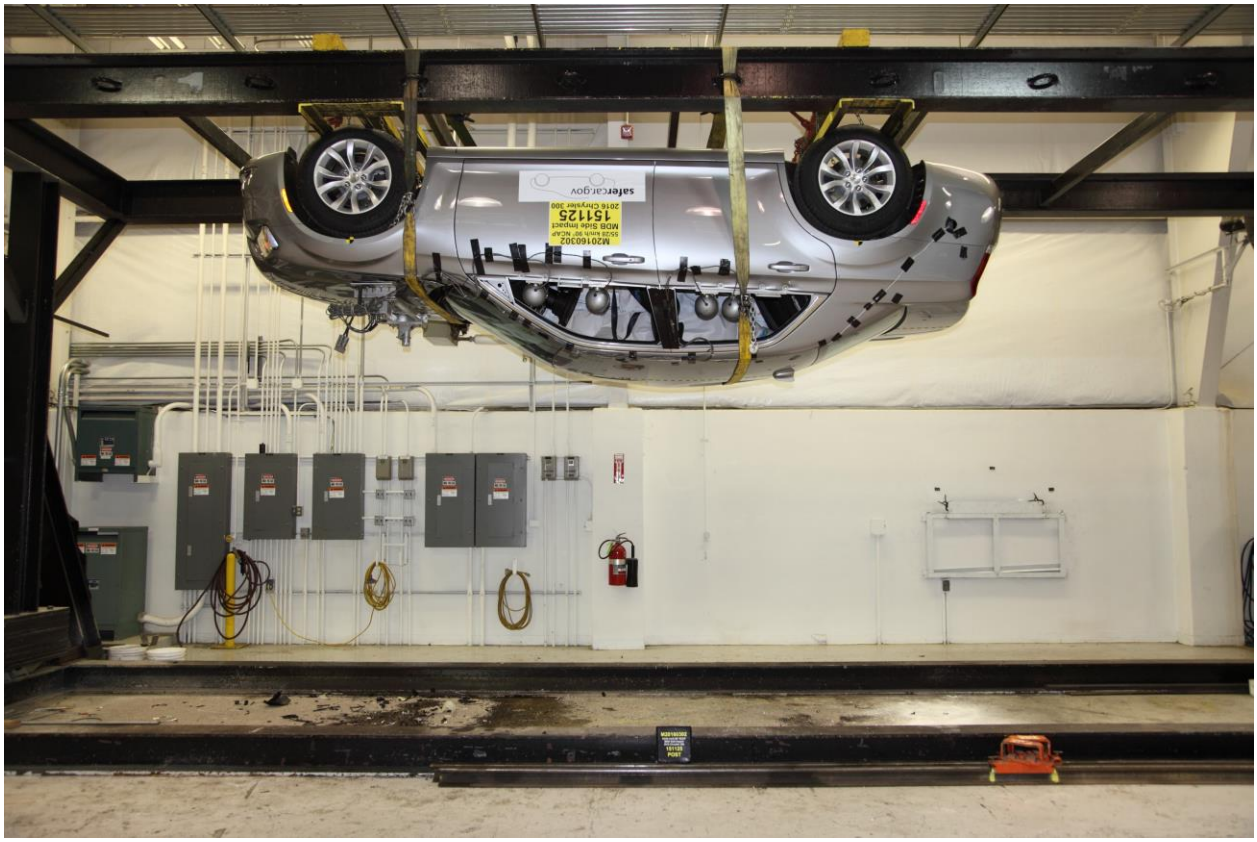


094a Pre-Test Ballast View

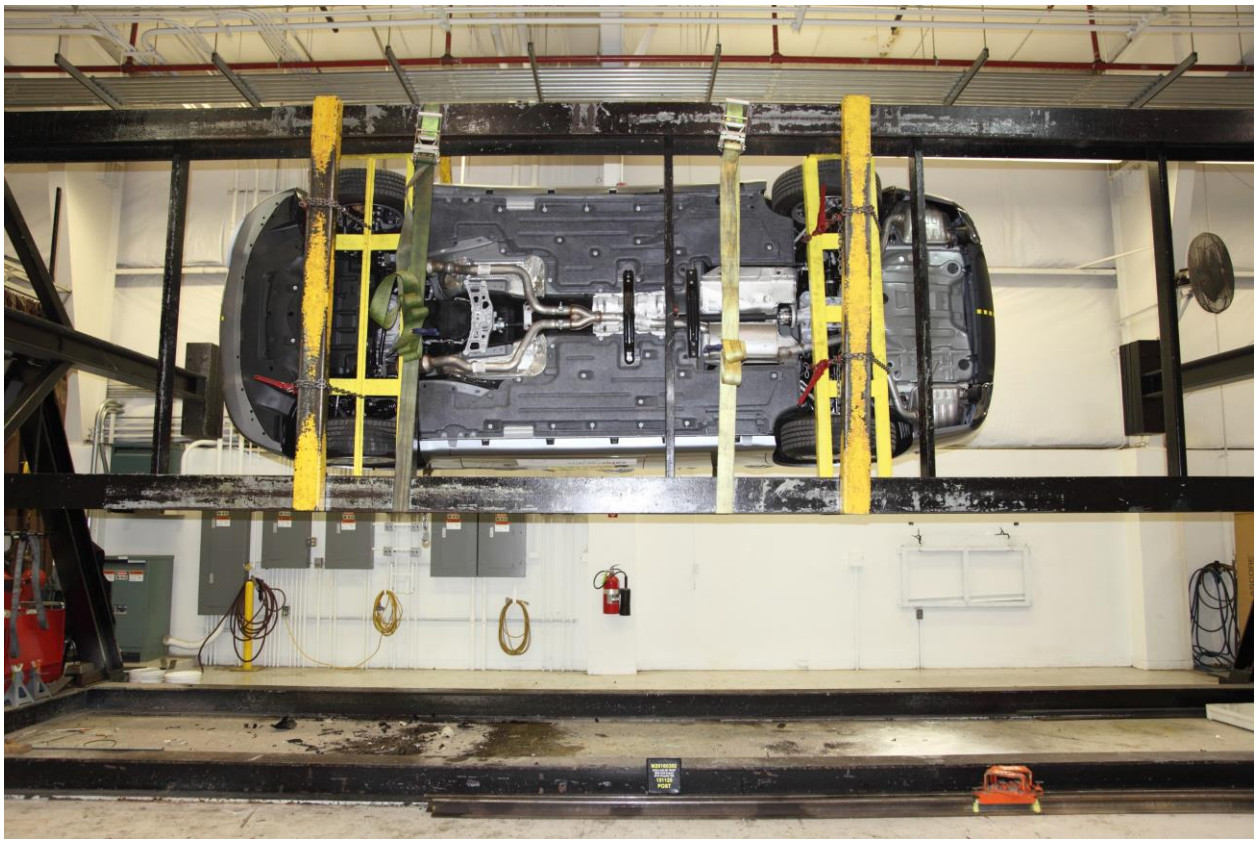
095 Post-Test Primary Speed Trap Read-Out

096 FMVSS No. 301 Static Rollover 0 Degrees

097 FMVSS No. 301 Static Rollover 90 Degrees



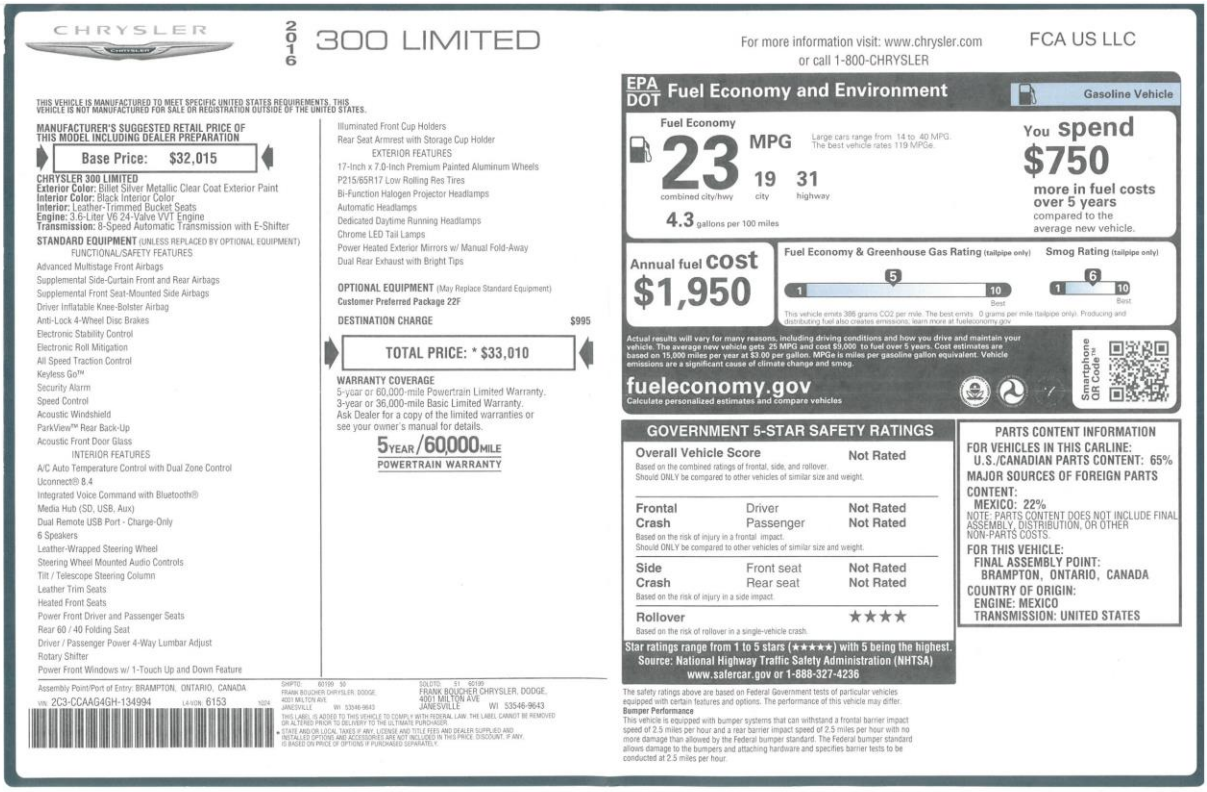
098 FMVSS No. 301 Static Rollover 180 Degrees



099 FMVSS No. 301 Static Rollover 270 Degrees

100 FMVSS No. 301 Static Rollover 360 Degrees

101 Impact Event



CHRYSLER

2016 300 LIMITED

For more information visit: www.chrysler.com
or call 1-800-CHRYSLER

FCA US LLC

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

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

Base Price: $32,015

CHRYSLER 300 LIMITED
Exterior Color: Billet Silver Metallic Clear Coat Exterior Paint
Interior Color: Black Interior Color
Interior: Leather-Trimmed Bucket Seats
Engine: 3.6-Liter V6 24-Valve VVT Engine
Transmission: 8-Speed Automatic Transmission with E-Shifter

STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)

FUNCTIONAL/SAFETY FEATURES
Advanced Multistage Front Airbags
Supplemental Side-Curtain Front and Rear Airbags
Supplemental Front Seat-Mounted Side Airbags
Driver Inflatable Knee-Bolster Airbag
Anti-Lock 4-Wheel Disc Brakes
Electronic Stability Control
Electronic Roll Mitigation
All Speed Traction Control
Keyless Go™
Security Alarm
Speed Control
Acoustic Windshield
ParkView™ Rear Back-Up
Acoustic Front Door Glass

INTERIOR FEATURES
A/C Auto Temperature Control with Dual Zone Control
Uconnect® 8.4
Integrated Voice Command with Bluetooth®
Media Hub (SD, USB, Aux)
Dual Remote USB Port - Charge-Only
6 Speakers
Leather-Wrapped Steering Wheel
Steering Wheel Mounted Audio Controls
Tilt / Telescope Steering Column
Leather Trim Seats
Heated Front Seats
Power Front Driver and Passenger Seats
Rear 60 / 40 Folding Seat
Driver / Passenger Power 4-Way Lumbar Adjust
Rotary Shifter
Power Front Windows w/ 1-Touch Up and Down Feature
Illuminated Front Cup Holders
Rear Seat Armrest with Storage Cup Holder

EXTERIOR FEATURES
17-Inch x 7.0-Inch Premium Painted Aluminum Wheels
P215/65R17 Low Rolling Res Tires
Bi-Function Halogen Projector Headlamps
Automatic Headlamps
Dedicated Daytime Running Headlamps
Chrome LED Tail Lamps
Power Heated Exterior Mirrors w/ Manual Fold-Away
Dual Rear Exhaust with Bright Tips

OPTIONAL EQUIPMENT (May Replace Standard Equipment)
Customer Preferred Package 22F

DESTINATION CHARGE $995

TOTAL PRICE: * $33,010

WARRANTY COVERAGE
5-year or 60,000-mile Powertrain Limited Warranty.
3-year or 36,000-mile Basic Limited Warranty.
Ask Dealer for a copy of the limited warranties or see your owner's manual for details.

5 YEAR / 60,000 MILE POWERTRAIN WARRANTY

Assembly Point/Port of Entry: BRAMPTON, ONTARIO, CANADA
VIN: 2C3-CCAAG4GH-134994 LA-VIN: 6153

SHIPTO: 60199 - 50
FRANK BOUCHER CHRYSLER, DODGE
4001 MILTON AVE
JANESVILLE WI 53546-9643

SOLDTO: 51 - 60199
FRANK BOUCHER CHRYSLER, DODGE,
4001 MILTON AVE
JANESVILLE WI 53546-9643

THIS LABEL IS ADDED TO THIS VEHICLE TO COMPLY WITH FEDERAL LAW. THE LABEL CANNOT BE REMOVED OR ALTERED PRIOR TO DELIVERY TO THE ULTIMATE PURCHASER.
• STATE AND/OR LOCAL TAXES IF ANY, LICENSE AND TITLE FEES AND DEALER SUPPLIED AND INSTALLED OPTIONS AND ACCESSORIES ARE NOT INCLUDED IN THIS PRICE. DISCOUNT, IF ANY, IS BASED ON PRICE OF OPTIONS IF PURCHASED SEPARATELY.

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy
23 MPG
combined city/hwy
19 city
31 highway
4.3 gallons per 100 miles

Large cars range from 14 to 40 MPG. The best vehicle rates 119 MPGe.

You spend $750 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel COST $1,950

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 5 (1 – 10, Best)
Smog Rating (tailpipe only): 6 (1 – 10, Best)

This vehicle emits 386 grams CO2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions; learn more at fueleconomy.gov

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 25 MPG and cost $9,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $3.00 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code™

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score: Not Rated
Based on the combined ratings of frontal, side, and rollover.
Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash — Driver: Not Rated; Passenger: Not Rated
Based on the risk of injury in a frontal impact.
Should ONLY be compared to other vehicles of similar size and weight.

Side Crash — Front seat: Not Rated; Rear seat: Not Rated
Based on the risk of injury in a side impact.

Rollover: ★★★★
Based on the risk of rollover in a single-vehicle crash.

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

The safety ratings above are based on Federal Government tests of particular vehicles equipped with certain features and options. The performance of this vehicle may differ.

Bumper Performance
This vehicle is equipped with bumper systems that can withstand a frontal barrier impact speed of 2.5 miles per hour and a rear barrier impact speed of 2.5 miles per hour with no more damage than allowed by the Federal bumper standard. The Federal bumper standard allows damage to the bumpers and attaching hardware and specifies barrier tests to be conducted at 2.5 miles per hour.

PARTS CONTENT INFORMATION
FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 65%
MAJOR SOURCES OF FOREIGN PARTS CONTENT:
MEXICO: 22%
NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.
FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
BRAMPTON, ONTARIO, CANADA
COUNTRY OF ORIGIN:
ENGINE: MEXICO
TRANSMISSION: UNITED STATES

102 Monroney Label

WARNING!

- In a collision, an unrestrained child, even a tiny baby, can become a projectile inside the vehicle. The force required to hold even an infant on your lap could become so great that you could not hold the child, no matter how strong you are. The child and others could be severely injured or killed. Any child riding in your vehicle should be in a proper restraint for the child's size.
- Never place a rear-facing child restraint in front of an air bag. A deploying Passenger Advanced Front Air Bag can cause death or serious injury to a child 12 years or younger, including a child in a rear-facing child restraint.
- Only use a rear-facing child restraint in a vehicle with a rear seat.
- Improper installation of a child restraint to the LATCH anchorages can lead to failure of an infant or child restraint. The child could be severely injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.
- An incorrectly anchored tether strap could lead to increased head motion and possible injury to the child. Use only the anchor positions directly behind the child seat to secure a child restraint top tether strap.
- If your vehicle is equipped with a split rear seat, make sure the tether strap does not slip into the opening between the seatbacks as you remove slack in the strap.

HEAD RESTRAINTS

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

WARNING!

The head restraints for all occupants must be properly adjusted prior to operating the vehicle or occupying a seat. Head restraints should never be adjusted while the vehicle is in motion. Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

NOTE:
Do not reverse the head restraints (making the rear of the head restraint face forward) in an attempt to gain additional clearance to the back of your head.

Reactive Head Restraints — Front Seats

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

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

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

NOTE:
To remove the head restraint, raise it as far as it can go then push the release button and the adjustment button at the base of each post while pulling the head restraint up. To reinstall the head restraint, put the head restraint posts into the holes and push downward. Then adjust the head restraint to the appropriate height.

WARNING!

- A loose head restraint thrown forward in a collision or hard stop could cause serious injury or death to occupants of the vehicle. Always securely stow removed head restraints in a location outside the occupant compartment.
- ALL the head restraints MUST be reinstalled in the vehicle to properly protect the occupants. Follow the re-installation instructions above prior to operating the vehicle or occupying a seat.
- Do not place items over the top of the Reactive Head Restraint, such as coats, seat covers or portable DVD players. These items may interfere with the operation of the Reactive Head Restraint in the event of a collision and could result in serious injury or death.

Rear Head Restraints

The center head restraint has two adjustable positions, up or down. When the center seat is being occupied the head restraint should be in the raised position. When there are no occupants in the center seat the head restraint can be lowered for maximum visibility for the driver.

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

NOTE:

- The head restraint should only be removed by qualified technicians, for service purposes only. If the center rear head restraints requires removal, see your authorized dealer.
- The outboard head restraints are not adjustable.

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

WARNING!

- In a collision, an unrestrained child, even a tiny baby, can become a projectile inside the vehicle. The force required to hold even an infant on your lap could become so great that you could not hold the child, no matter how strong you are. The child and others could be severely injured or killed. Any child riding in your vehicle should be in a proper restraint for the child's size.
- Never place a rear-facing child restraint in front of an air bag. A deploying Passenger Advanced Front Air Bag can cause death or serious injury to a child 12 years or younger, including a child in a rear-facing child restraint.
- Only use a rear-facing child restraint in a vehicle with a rear seat.
- Improper installation of a child restraint to the LATCH anchorages can lead to failure of an infant or child restraint. The child could be severely injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.
- An incorrectly anchored tether strap could lead to increased head motion and possible injury to the child. Use only the anchor positions directly behind the child seat to secure a child restraint top tether strap.
- If your vehicle is equipped with a split rear seat, make sure the tether strap does not slip into the opening between the seatbacks as you remove slack in the strap.

HEAD RESTRAINTS

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

WARNING!

The head restraints for all occupants must be properly adjusted prior to operating the vehicle or occupying a seat. Head restraints should never be adjusted while the vehicle is in motion. Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

NOTE:
Do not reverse the head restraints (making the rear of the head restraint face forward) in an attempt to gain additional clearance to the back of your head.

Reactive Head Restraints — Front Seats

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

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

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

NOTE:
To remove the head restraint, raise it as far as it can go then push the release button and the adjustment button at the base of each post while pulling the head restraint up. To reinstall the head restraint, put the head restraint posts into the holes and push downward. Then adjust the head restraint to the appropriate height.

WARNING!

- A loose head restraint thrown forward in a collision or hard stop could cause serious injury or death to occupants of the vehicle. Always securely stow removed head restraints in a location outside the occupant compartment.
- ALL the head restraints MUST be reinstalled in the vehicle to properly protect the occupants. Follow the re-installation instructions above prior to operating the vehicle or occupying a seat.
- Do not place items over the top of the Reactive Head Restraint, such as coats, seat covers or portable DVD players. These items may interfere with the operation of the Reactive Head Restraint in the event of a collision and could result in serious injury or death.

Rear Head Restraints

The center head restraint has two adjustable positions, up or down. When the center seat is being occupied the head restraint should be in the raised position. When there are no occupants in the center seat the head restraint can be lowered for maximum visibility for the driver.

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

NOTE:

- The head restraint should only be removed by qualified technicians, for service purposes only. If the center rear head restraints requires removal, see your authorized dealer.
- The outboard head restraints are not adjustable.

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

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 Date: 11/25/2015

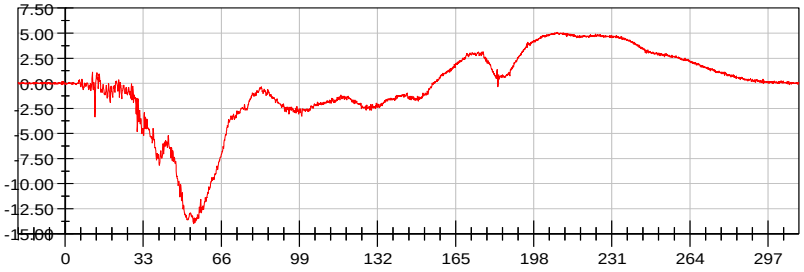
Test Lab: CTF

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

Test Number: 151125 (M20160301)

Position #4 SID IIs Dummy (305)

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



<Max>

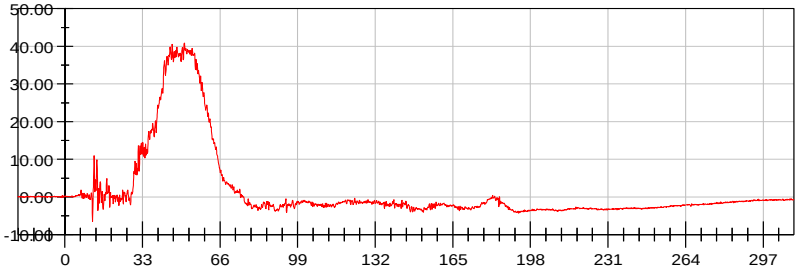
5.10 g at 207.92 ms

<Min>

-13.98 g at 54.24 ms

CFC_1000

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



<Max>

40.88 g at 50.80 ms

<Min>

-6.54 g at 11.76 ms

CFC_1000

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

<Max>

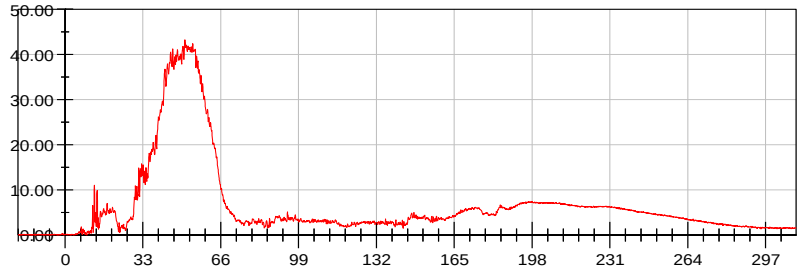
6.20 g at 184.40 ms

<Min>

-10.17 g at 62.00 ms

CFC_1000

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



<Max>

43.21 g at 50.80 ms

<Min>

0.03 g at -16.96 ms

CFC_1000

NHTSA

Test Date: 11/25/2015

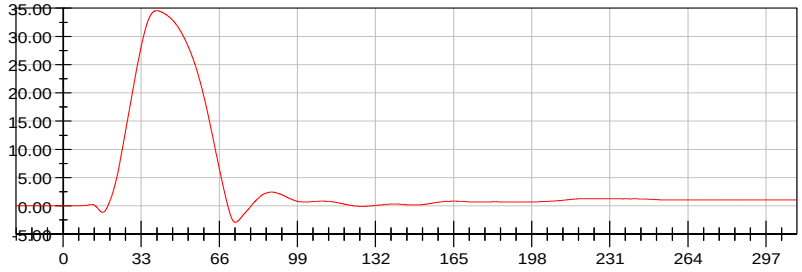
Test Lab: CTF

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

Test Number: 151125 (M20160301)

Position #4 SID IIs Dummy (305)

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



<Max>

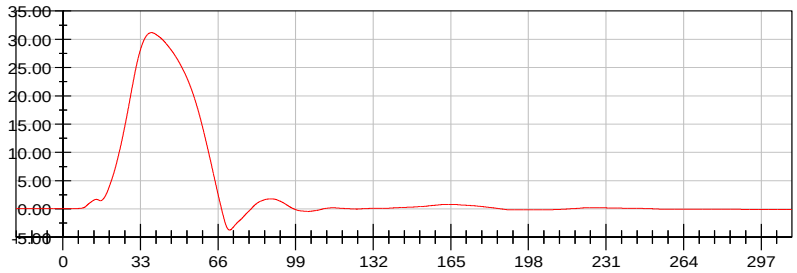
34.57 mm at 39.52 ms

<Min>

-2.92 mm at 72.80 ms

CFC_180

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



<Max>

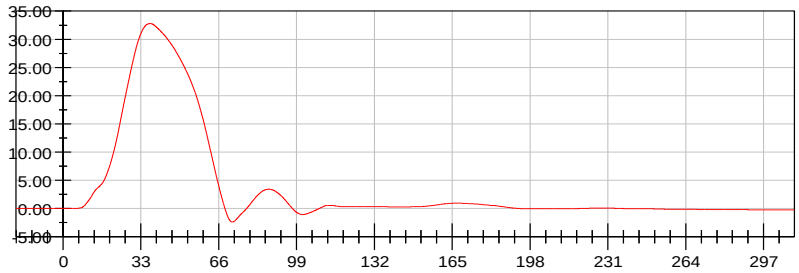
31.17 mm at 37.68 ms

<Min>

-3.78 mm at 70.88 ms

CFC_180

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



<Max>

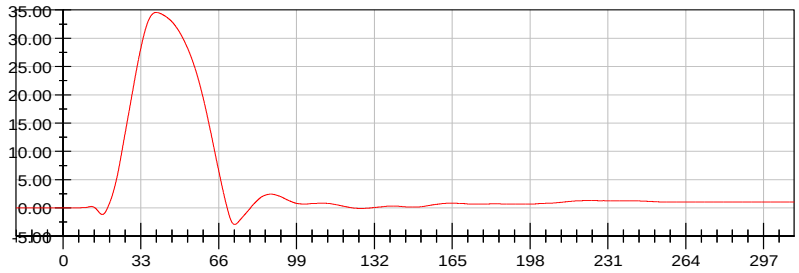
32.77 mm at 36.96 ms

<Min>

-2.39 mm at 71.76 ms

CFC_180

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



<Max>

34.57 mm at 39.52 ms

<Min>

-2.92 mm at 72.80 ms

CFC_180

NHTSA

Test Date: 11/25/2015

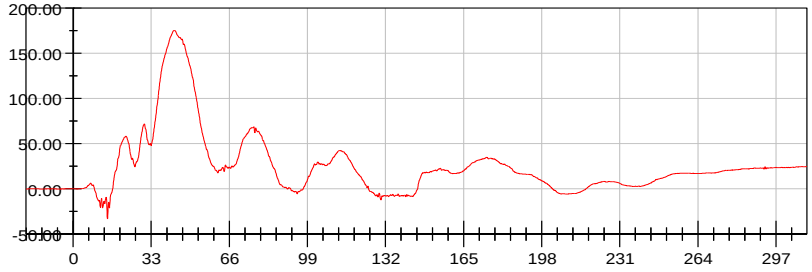
Test Lab: CTF

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

Test Number: 151125 (M20160301)

Position #4 SID IIs Dummy (305)

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



<Max>

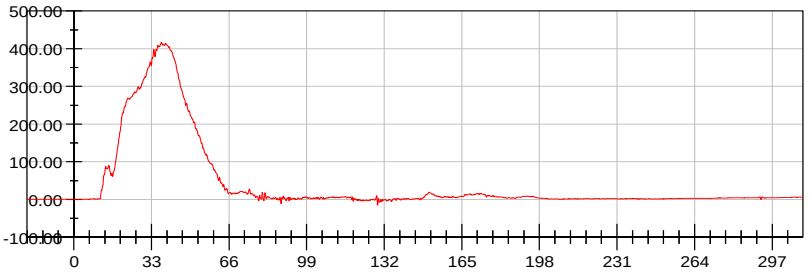
175.31 N at 42.88 ms

<Min>

-32.98 N at 14.48 ms

CFC_600

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



<Max>

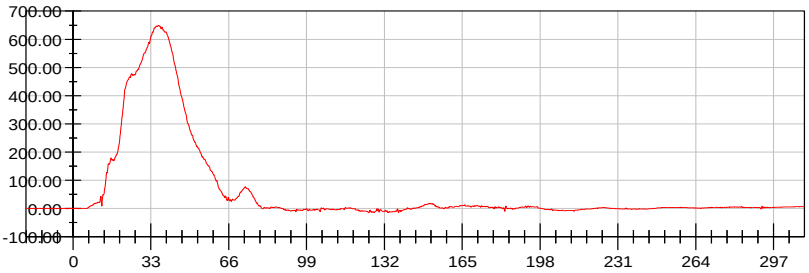
416.18 N at 37.28 ms

<Min>

-15.18 N at 129.20 ms

CFC_600

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



<Max>

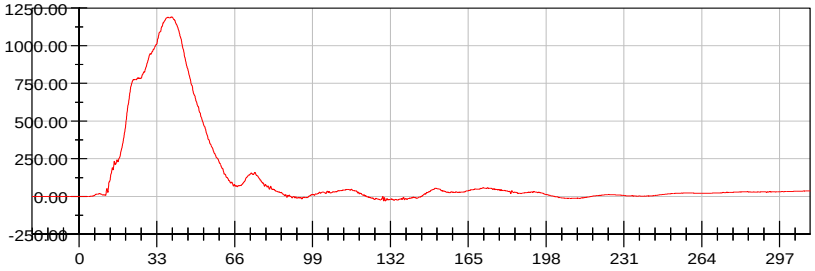
649.27 N at 36.32 ms

<Min>

-14.91 N at 125.36 ms

CFC_600

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



<Max>

1,190.13 N at 39.36 ms

<Min>

-29.02 N at 129.92 ms

CFC_600

NHTSA

Test Date: 11/25/2015

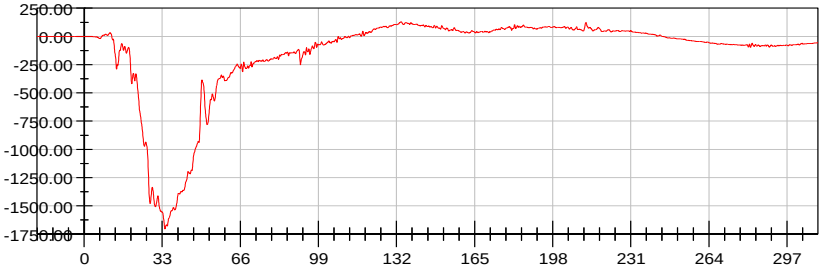
Test Lab: CTF

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

Test Number: 151125 (M20160301)

Position #4 SID IIs Dummy (305)

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



<Max>

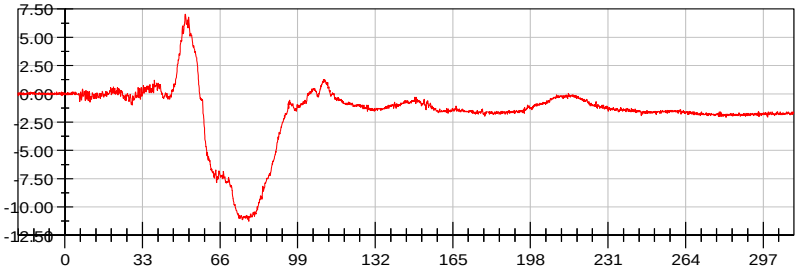
129.98 N at 133.92 ms

<Min>

-1,703.45 N at 34.16 ms

CFC_600

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



<Max>

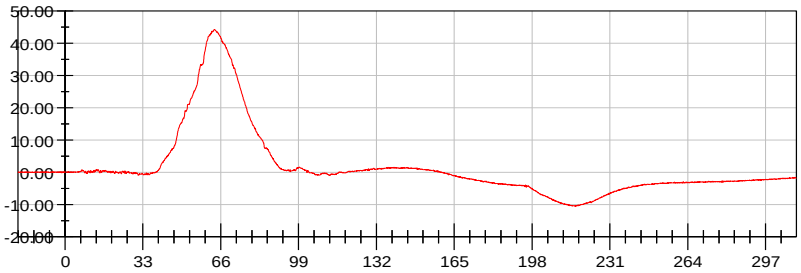
7.05 g at 51.20 ms

<Min>

-11.30 g at 78.24 ms

CFC_1000

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



<Max>

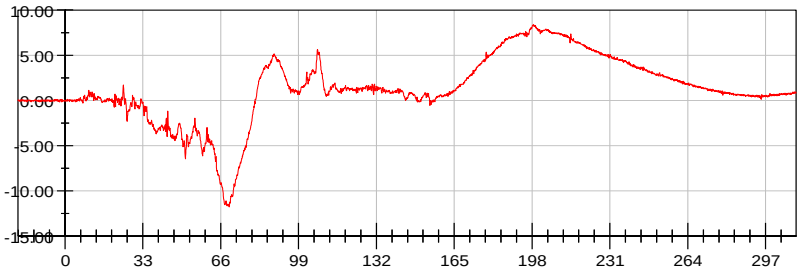
44.34 g at 63.44 ms

<Min>

-10.56 g at 216.32 ms

CFC_1000

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



<Max>

8.35 g at 198.40 ms

<Min>

-11.78 g at 69.60 ms

CFC_1000

NHTSA

Test Date: 11/25/2015

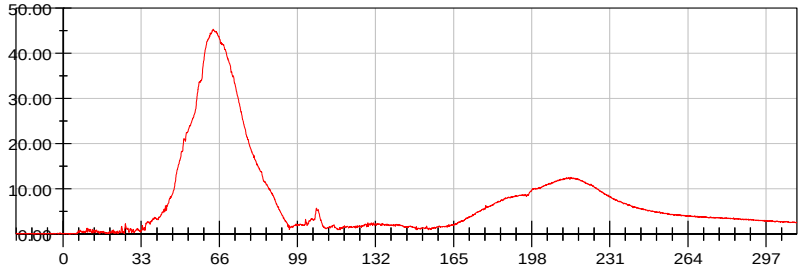
Test Lab: CTF

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

Test Number: 151125 (M20160301)

Position #4 SID IIs Dummy (305)

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



<Max>

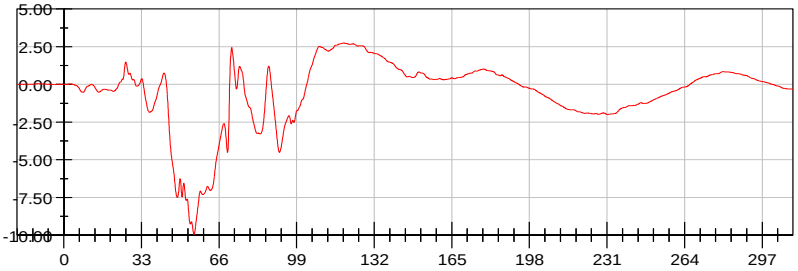
45.34 g at 63.44 ms

<Min>

0.04 g at -19.68 ms

CFC_1000

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



<Max>

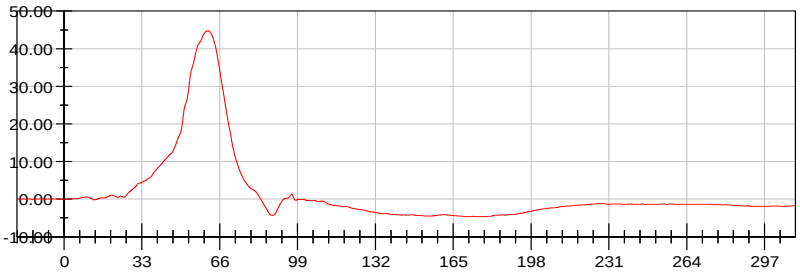
2.75 g at 119.04 ms

<Min>

-9.96 g at 55.36 ms

CFC_180

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



<Max>

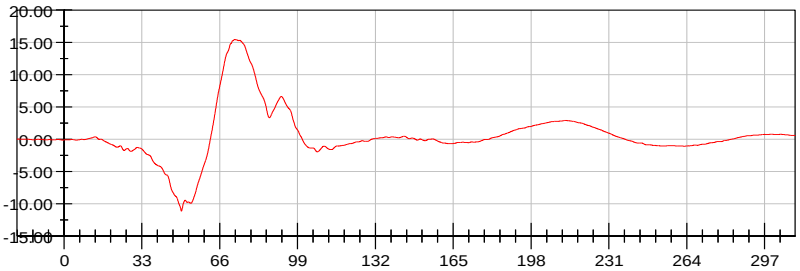
44.76 g at 61.04 ms

<Min>

-4.69 g at 176.96 ms

CFC_180

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



<Max>

15.45 g at 72.32 ms

<Min>

-11.10 g at 49.76 ms

CFC_180

NHTSA

Test Date: 11/25/2015

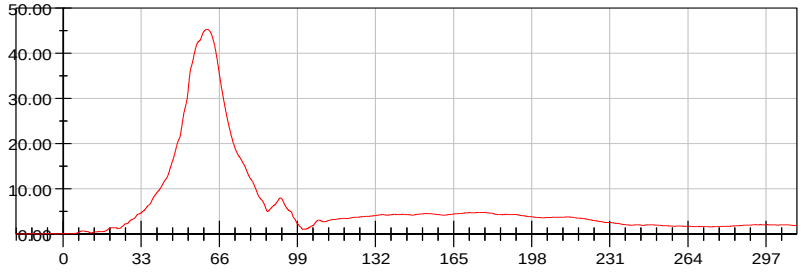
Test Lab: CTF

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

Test Number: 151125 (M20160301)

Position #4 SID IIs Dummy (305)

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



<Max>

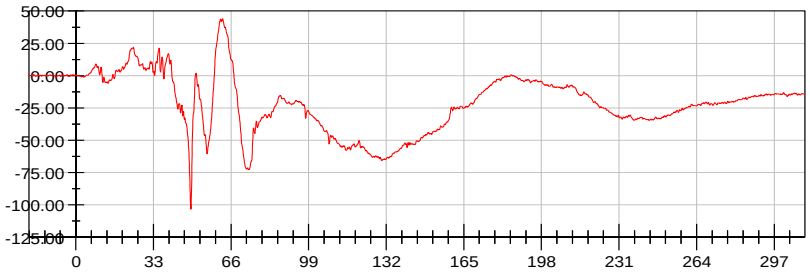
45.32 g at 60.80 ms

<Min>

0.01 g at -18.40 ms

CFC_180

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



<Max>

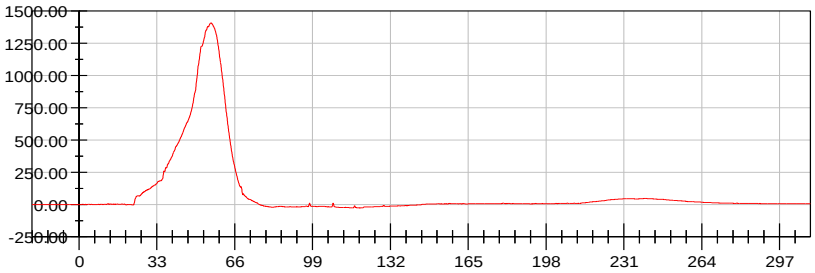
43.99 N at 62.40 ms

<Min>

-103.48 N at 48.96 ms

CFC_600

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



<Max>

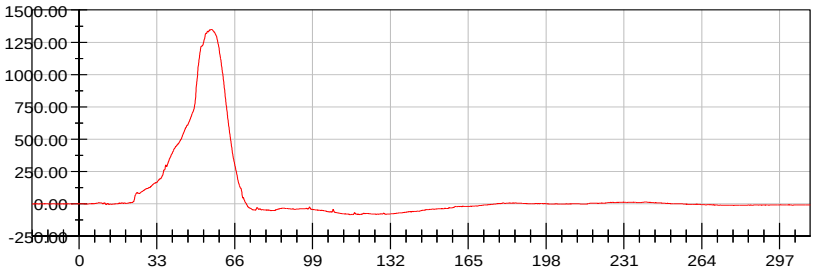
1,407.99 N at 55.92 ms

<Min>

-27.07 N at 118.96 ms

CFC_600

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



<Max>

1,349.70 N at 56.24 ms

<Min>

-83.41 N at 115.12 ms

CFC_600

APPENDIX C
DUMMY PERFORMANCE CALIBRATION TEST DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

ES-2re (Driver) Dummy

Description

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

SID-IIs (Rear Passenger) Dummy

Description

Table 1. External Measurements
Table 2. Head Drop Test
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)
- Resultant Head 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. 29
10/27/15

Symbol	Description	Specification	Results	Pass
		mm	mm	
1	Sitting Height	900.0 - 918.0	911	Yes
2	Seat to Shoulder Joint	558.0 - 572.0	560	Yes
3	Seat to Lower Face of Thoracic Spine Box	346.0 - 356.0	350	Yes
4	Seat to Hip Joint (center of bolt)	97.0 - 103.0	98	Yes
5	Sole to Seat, Sitting	433.0 - 451.0	443	Yes
6	Head Width	152.0 - 158.0	155	Yes
7	Shoulder/Arm Width	461.0 - 479.0	474	Yes
8	Thorax Width	322.0 - 332.0	325	Yes
9	Abdomen Width	273.0 - 287.0	279	Yes
10	Pelvis Lap Width	359.0 - 373.0	366	Yes
11	Head Depth	196.0 - 206.0	205	Yes
12	Thorax Depth	262.0 - 272.0	262	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. 29-1
Test Date: 10/26/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Peak Resultant Acceleration	125 - 155 g	139.6 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	6.7 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Approved

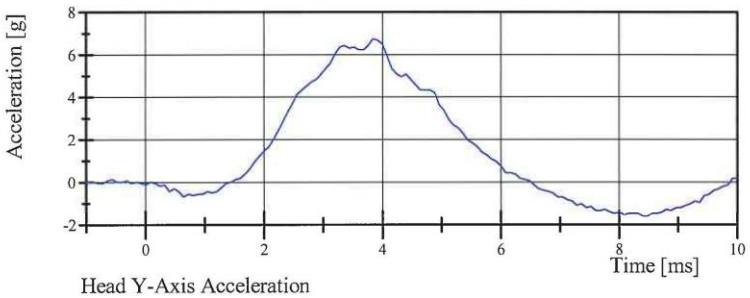
Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:21:00 360

Transportation Research Center Inc.

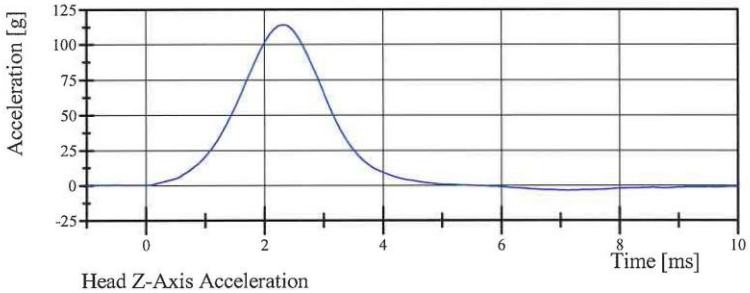
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/26/2015

Head X-Axis Acceleration



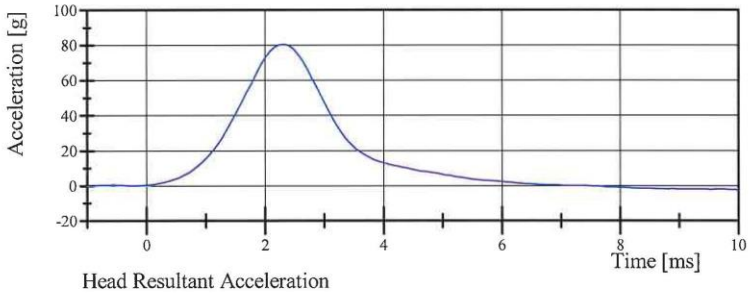
Filter Class: CFC_1000
Max: 6.7 g at 3.8 ms
Min: -1.6 g at 8.4 ms

Head Y-Axis Acceleration



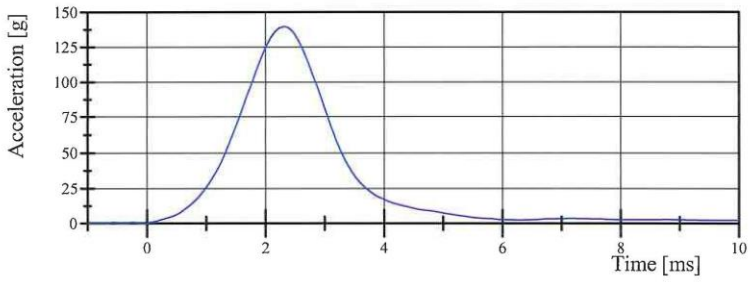
Filter Class: CFC_1000
Max: 114.0 g at 2.3 ms
Min: -3.4 g at 7.1 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 80.4 g at 2.3 ms
Min: -2.0 g at 9.5 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 139.6 g at 2.3 ms
Min: 0.0 g at -1.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:21:06 360

Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/26/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.36 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-53.1 deg	Yes
Time of Peak	54 - 66 ms	62.1 ms	Yes
Headform Flexion Decay - Peak to Zero	53 - 88 ms	61.8 ms	Yes

Test meets specifications.

Comments:

Technician

Approved

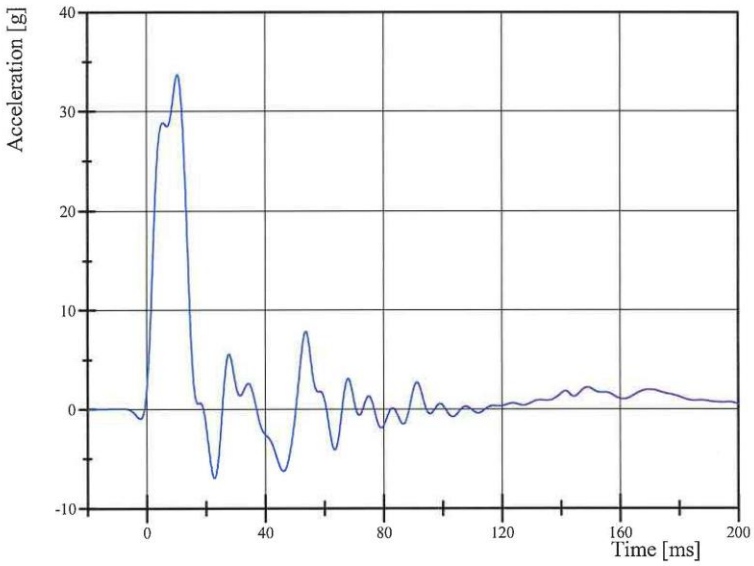
Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:42:08 1314

Transportation Research Center Inc.

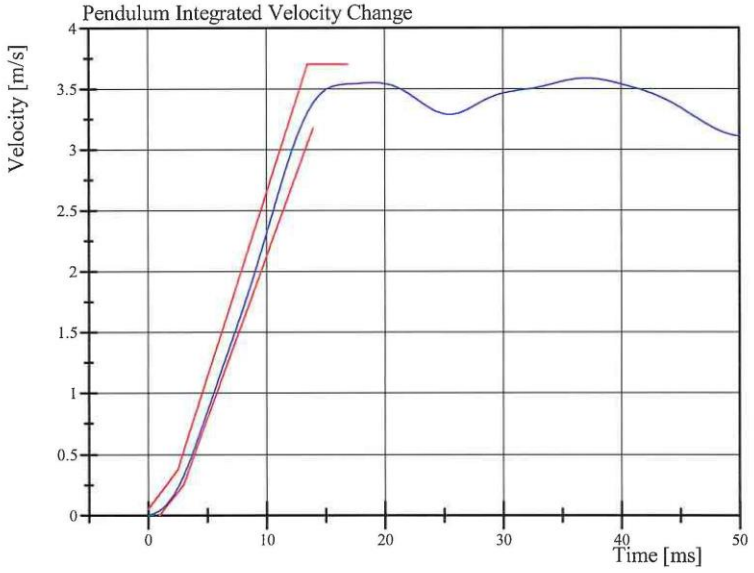
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/26/2015

Pendulum Acceleration



Filter Class: CFC_60
Max: 33.6 g at 10.4 ms
Min: -7.0 g at 22.8 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 3.6 m/s at 37.0 ms
Min: 0.0 m/s at 0.0 ms

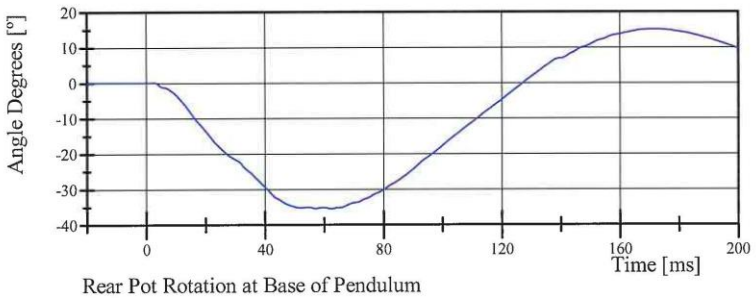
Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:42:15 1314

Transportation Research Center Inc.

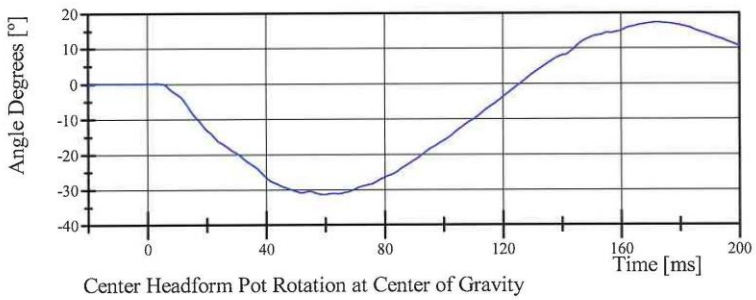
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/26/2015

Forward Pot Rotation at Base of Pendulum



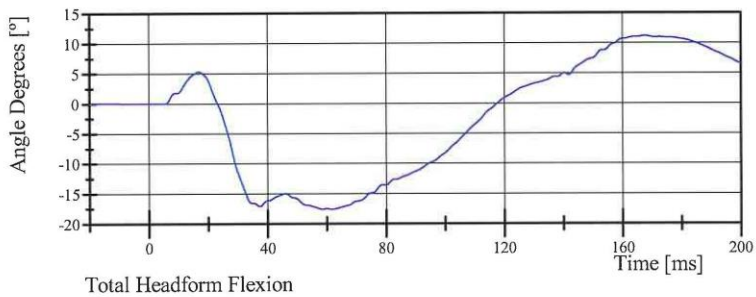
Filter Class: CFC_180
Max: 15.2 ° at 171.6 ms
Min: -35.5 ° at 62.2 ms

Rear Pot Rotation at Base of Pendulum



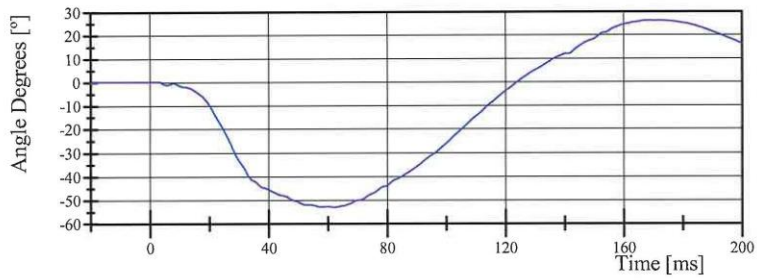
Filter Class: CFC_180
Max: 17.4 ° at 171.9 ms
Min: -31.4 ° at 59.4 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 11.2 ° at 167.4 ms
Min: -17.6 ° at 61.7 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 26.3 ° at 167.7 ms
Min: -53.1 ° at 62.1 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:42:16 1314

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-10.42 g	Yes

Test meets specifications.

Comments:

Technician

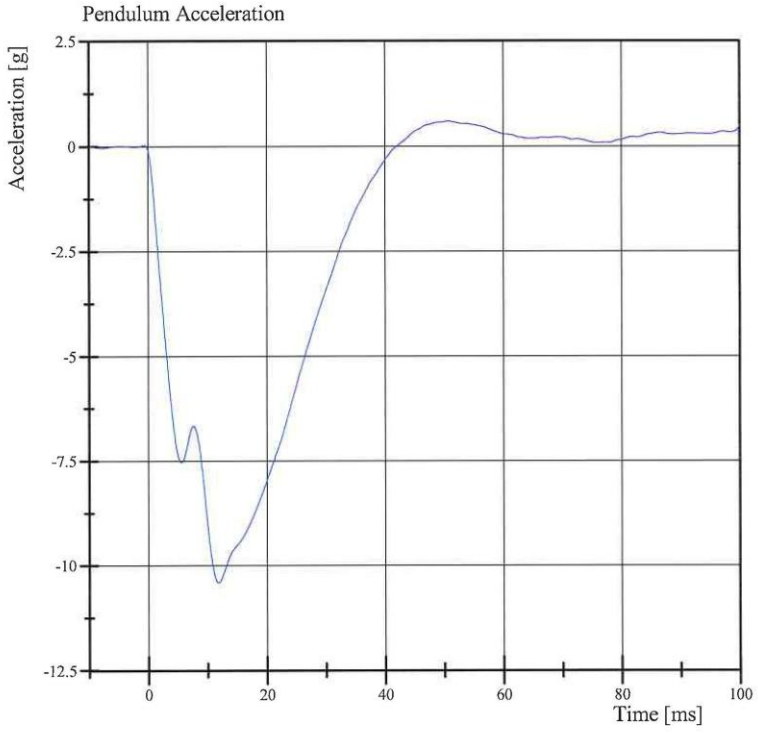
Approved

Specification Source: NHTSA final rule 8/15/2008

10.27.2015 10:28:00 580

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 0.6 g at 50.6 ms
Min: -10.4 g at 11.8 ms

Specification Source: NHTSA final rule 8/15/2008

10.27.2015 10:28:07 580

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.4 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician

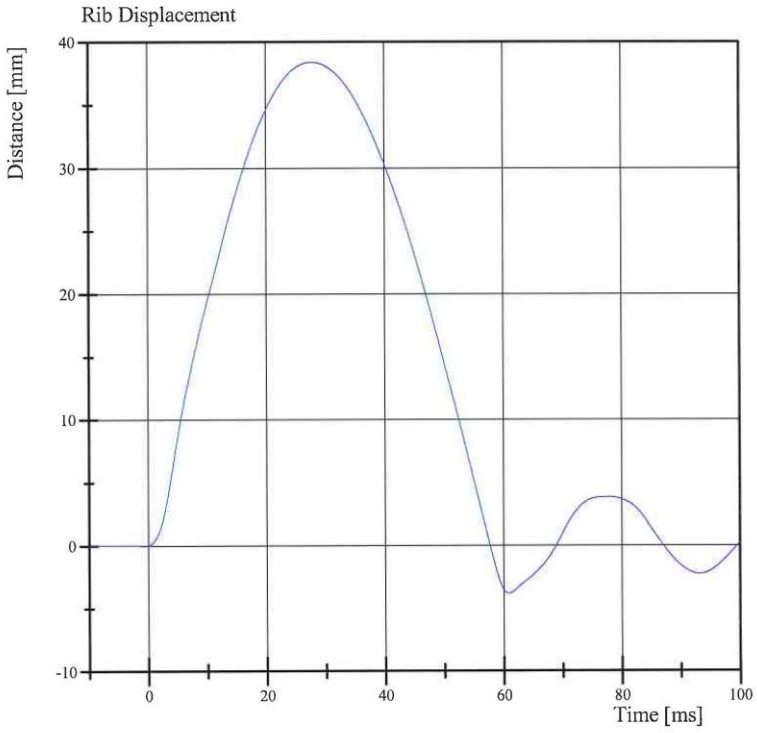
Approved

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:45:42 933

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 38.4 mm at 27.8 ms
Min: -3.8 mm at 60.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:45:55 933

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 29-2
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.9 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician

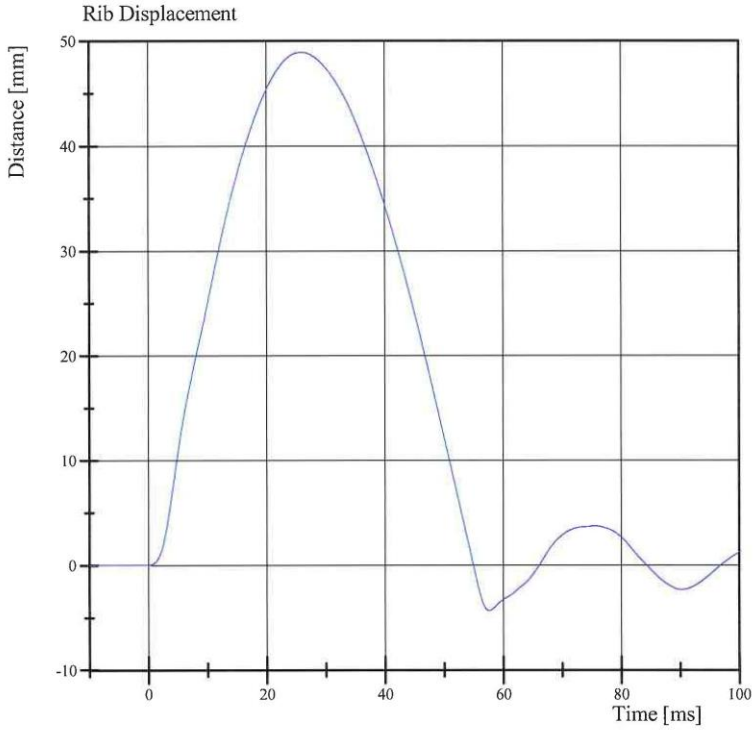
Approved

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:40:59 733

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 29-2
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 48.9 mm at 25.8 ms
Min: -4.3 mm at 57.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:41:06 733

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.6 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician

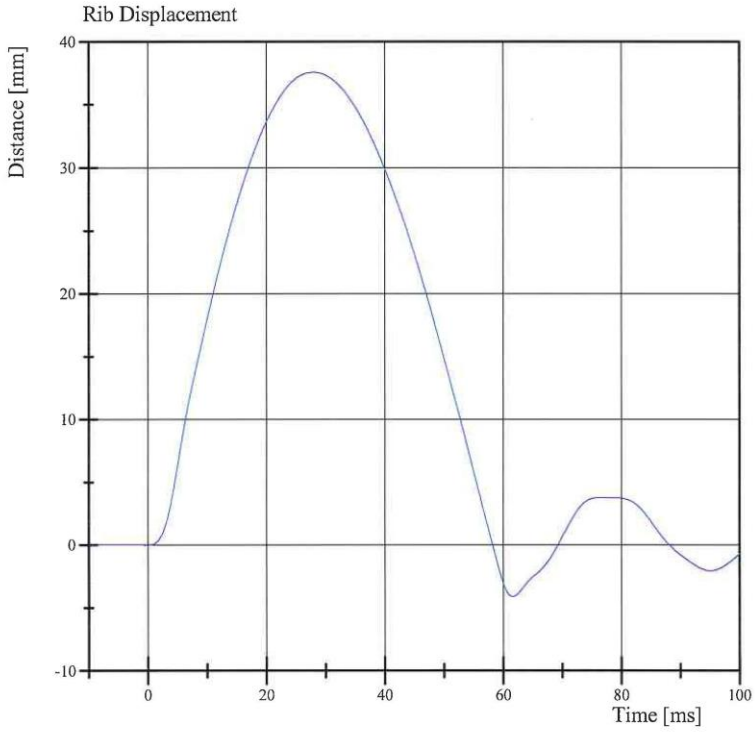
Approved

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:57:02 944

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 37.6 mm at 27.9 ms
Min: -4.1 mm at 61.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:57:14 944

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.7 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician

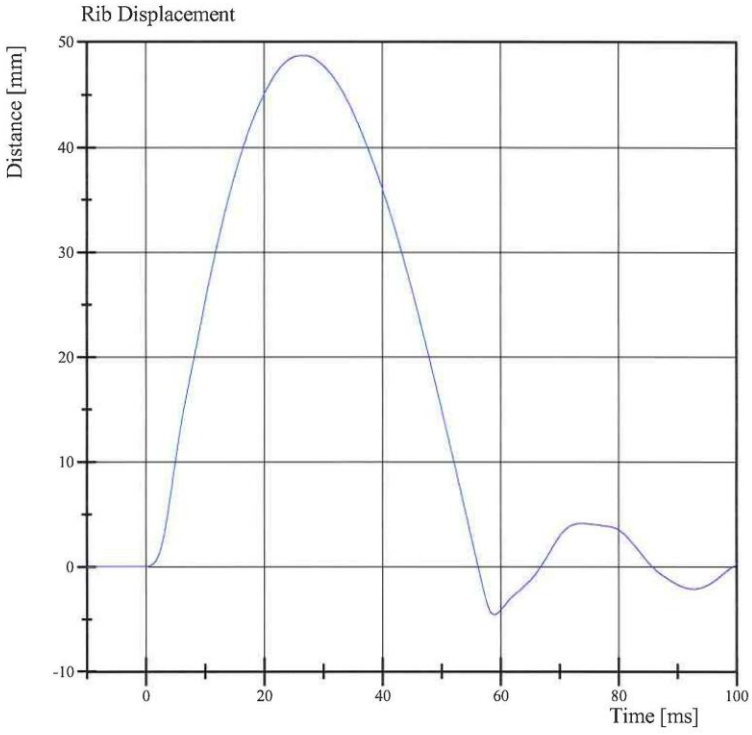
Approved

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:50:56 741

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 48.7 mm at 26.6 ms
Min: -4.6 mm at 58.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 07:51:04 741

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.4 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician

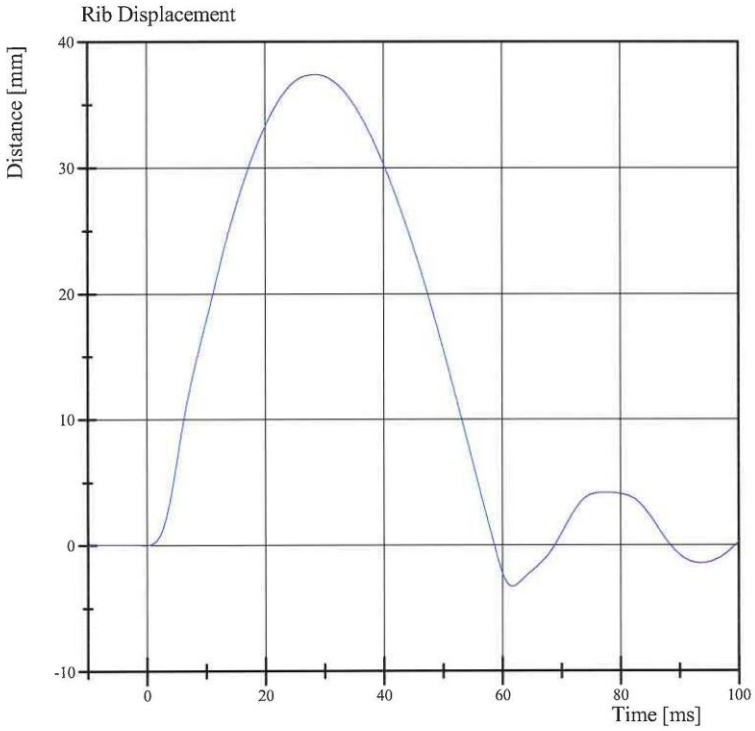
Approved

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 08:08:16 937

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 37.4 mm at 28.4 ms
Min: -3.3 mm at 61.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 08:08:29 937

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.3 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician

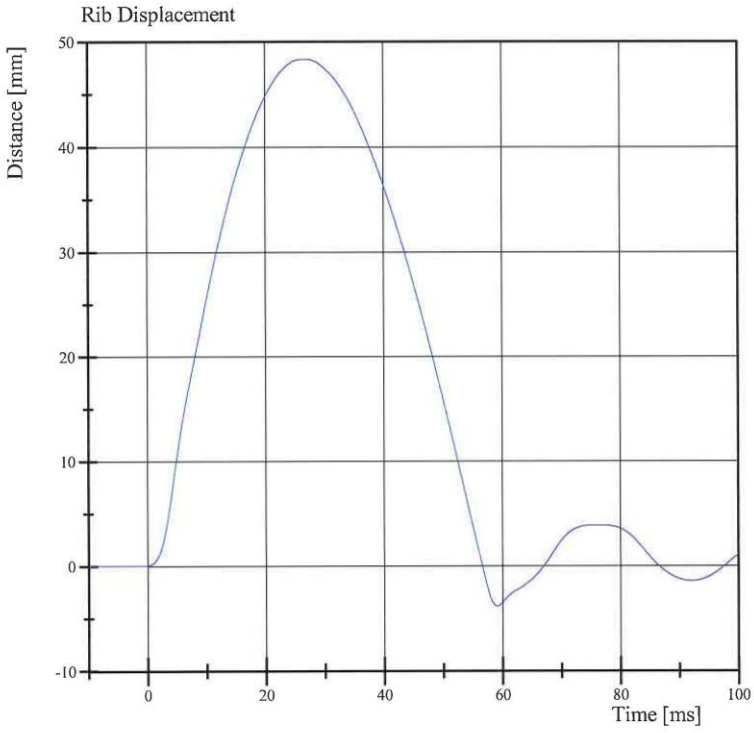
Approved

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 08:00:39 734

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 48.3 mm at 26.7 ms
Min: -3.8 mm at 59.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 08:00:51 734

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.560 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,566.2 N	Yes
Upper Rib Displacement	34 - 41 mm	37.9 mm	Yes
Center Rib Displacement	37 - 45 mm	40.8 mm	Yes
Lower Rib Displacement	37 - 44 mm	40.9 mm	Yes

Test meets specifications.

Comments:

Technician

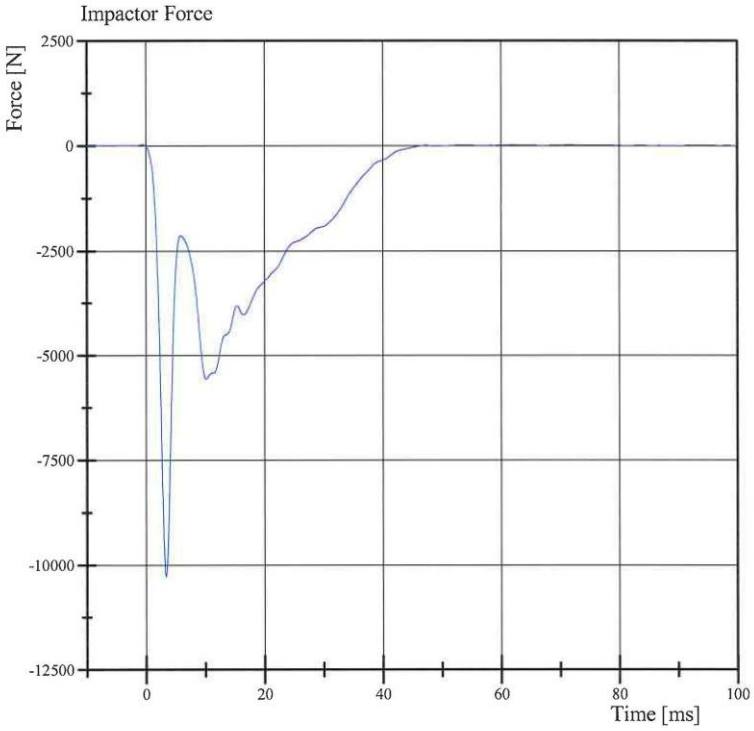
Approved

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

10.27.2015 10:44:16 443

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015



Filter Class: CFC_180
Max: 21.7 N at -0.6 ms
Min: -10,297.7 N at 3.4 ms

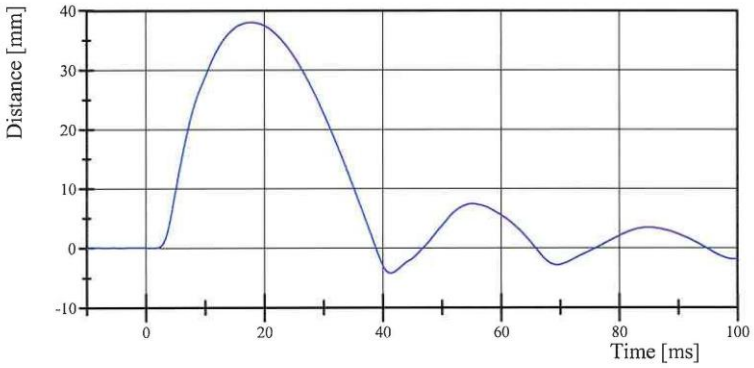
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

10.27.2015 10:44:24 443

Transportation Research Center Inc.

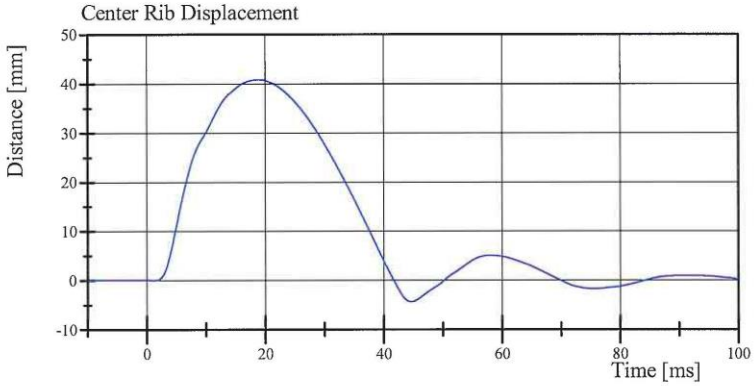
Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Upper Rib Displacement



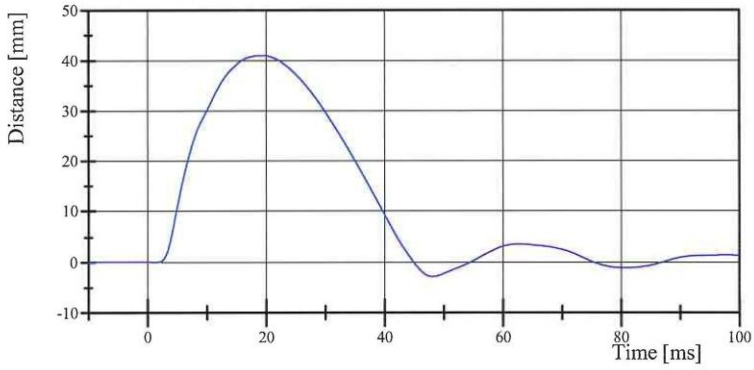
Filter Class: CFC_180
Max: 37.9 mm at 17.7 ms
Min: -4.2 mm at 41.3 ms

Center Rib Displacement



Filter Class: CFC_180
Max: 40.8 mm at 18.7 ms
Min: -4.3 mm at 44.6 ms

Lower Rib Displacement



Filter Class: CFC_180
Max: 40.9 mm at 19.1 ms
Min: -2.8 mm at 48.1 ms

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

10.27.2015 10:44:25 443

Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 29-3
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	4.08 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,252.8 N	Yes
Time of Peak	10.6 - 13.0 ms	11.12 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,699.3 N	Yes
Time of Peak	10.0 - 12.3 ms	11.12 ms	Yes

Test meets specifications.

Comments:

Technician

Approved

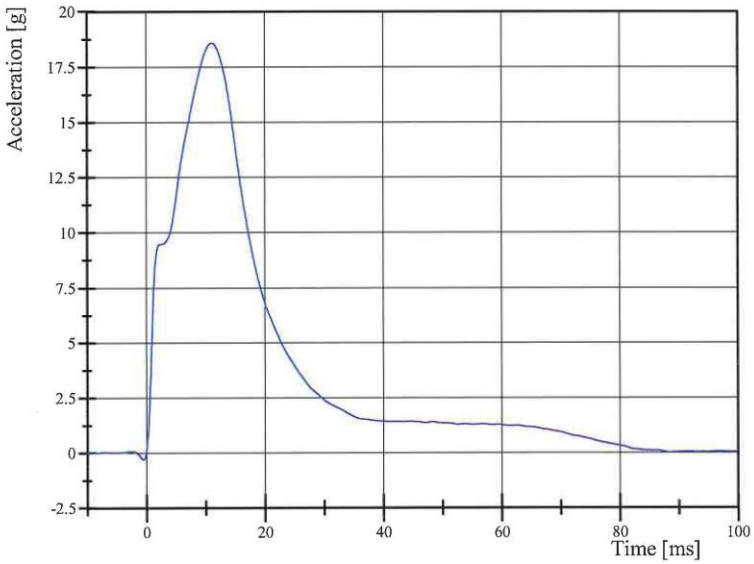
Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 12:43:09 581

Transportation Research Center Inc.

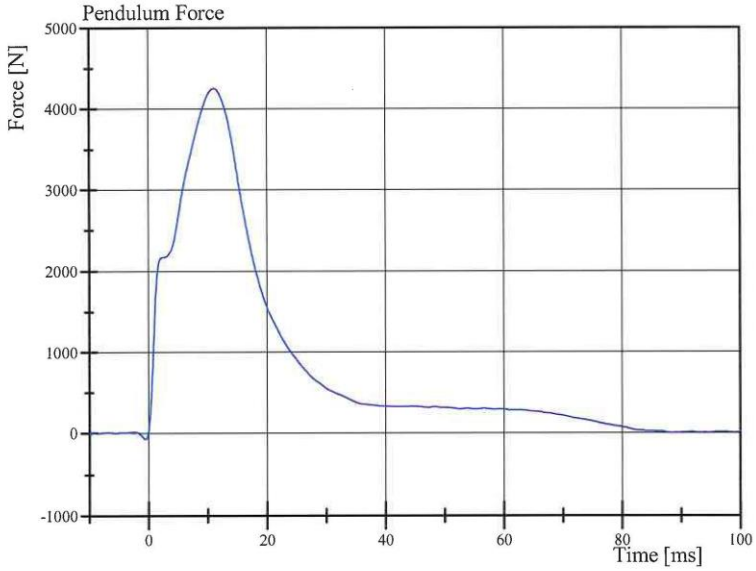
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 29-3
Test Date: 10/27/2015

Pendulum Acceleration



Filter Class: CFC_180
Max: 18.6 g at 11.1 ms
Min: -0.3 g at -0.6 ms

Pendulum Force



Filter Class: CFC_180
Max: 4,252.8 N at 11.1 ms
Min: -74.5 N at -0.6 ms

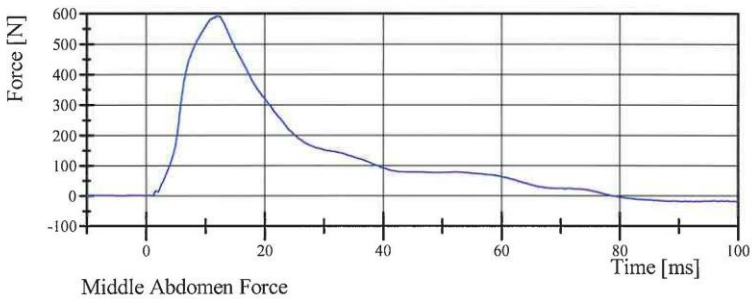
Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 12:43:16 581

Transportation Research Center Inc.

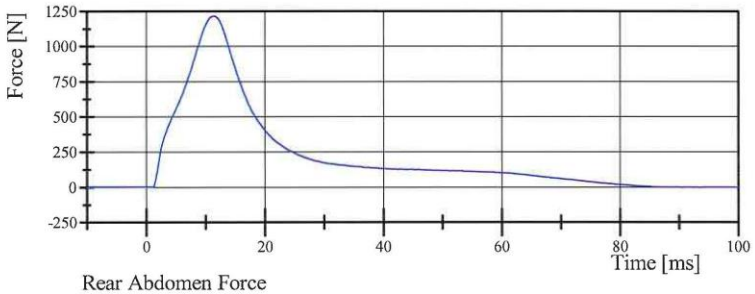
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 29-3
Test Date: 10/27/2015

Front Abdomen Force



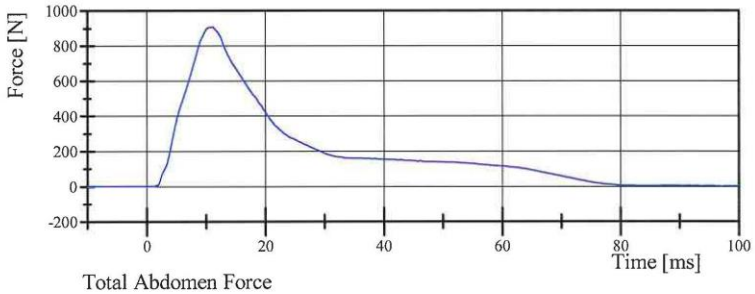
Filter Class: CFC_600
Max: 590.7 N at 11.9 ms
Min: -18.7 N at 90.6 ms

Middle Abdomen Force



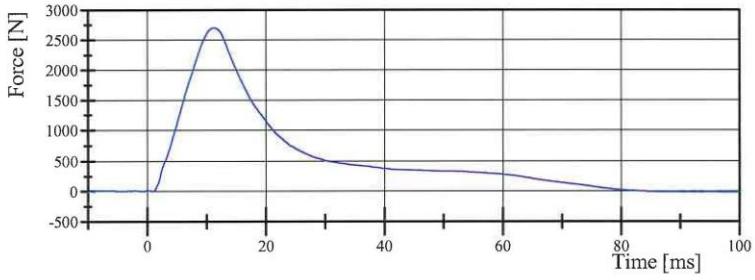
Filter Class: CFC_600
Max: 1,212.5 N at 11.4 ms
Min: -1.7 N at 1.0 ms

Rear Abdomen Force



Filter Class: CFC_600
Max: 906.5 N at 11.0 ms
Min: -0.2 N at -0.6 ms

Total Abdomen Force



Filter Class: CFC_600
Max: 2,699.3 N at 11.1 ms
Min: -14.1 N at 93.5 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 12:43:17 581

Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/26/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.064 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-46.2 deg	Yes
Time of Peak	39 - 53 ms	42.6 ms	Yes
Headform Flexion Decay - Peak to Zero	37 - 57 ms	39.7 ms	Yes

Test meets specifications.

Comments:

Technician

Approved

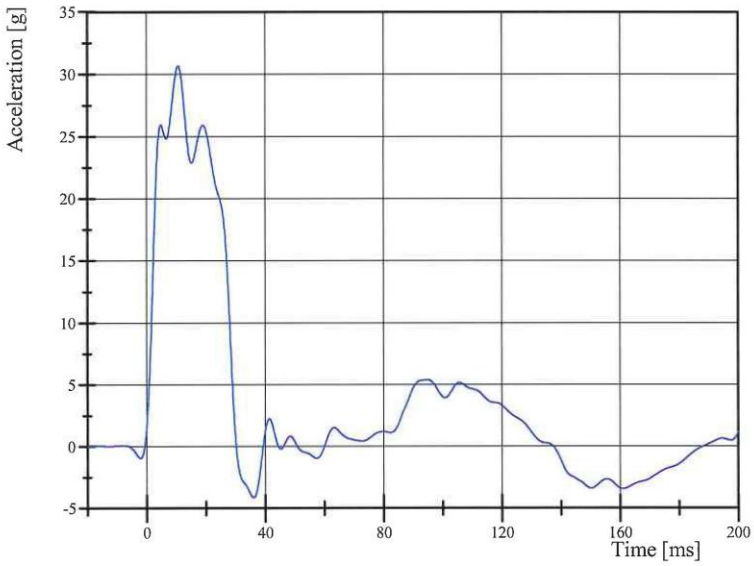
Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:18:22 575

Transportation Research Center Inc.

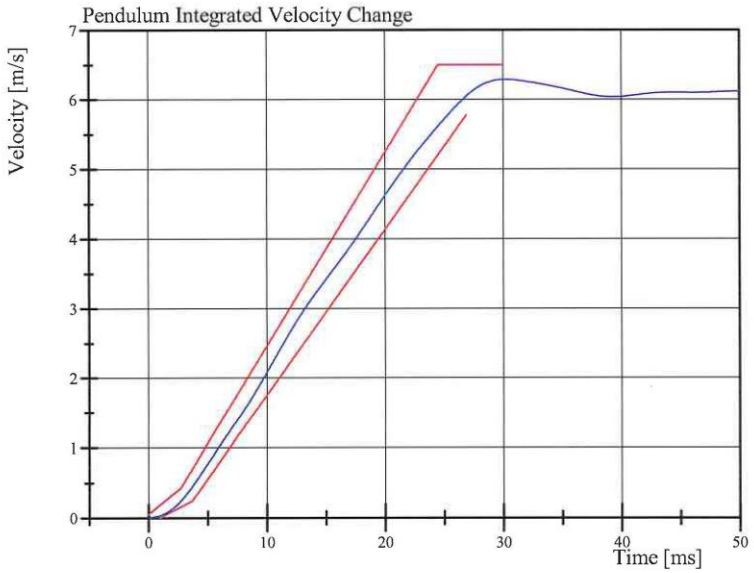
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/26/2015

Pendulum Acceleration



Filter Class: CFC_60
Max: 30.7 g at 10.6 ms
Min: -4.2 g at 36.0 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 6.3 m/s at 30.2 ms
Min: 0.0 m/s at 0.0 ms

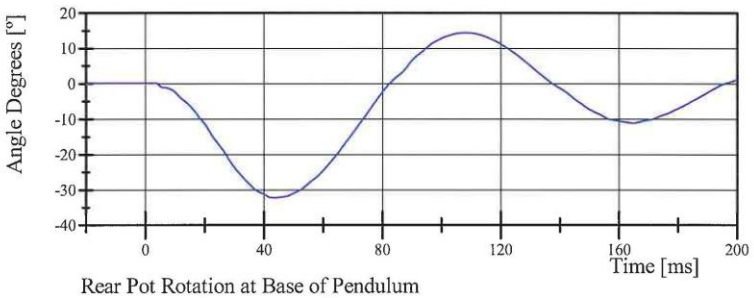
Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:18:29 575

Transportation Research Center Inc.

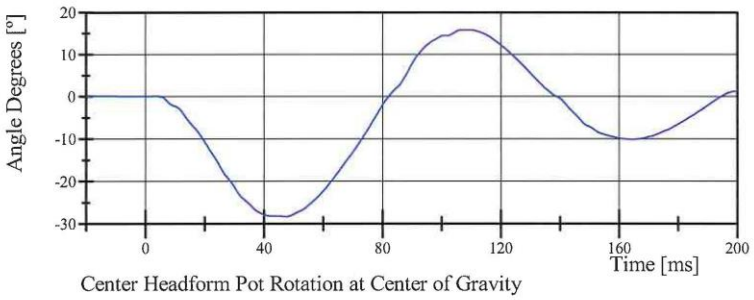
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/26/2015

Forward Pot Rotation at Base of Pendulum



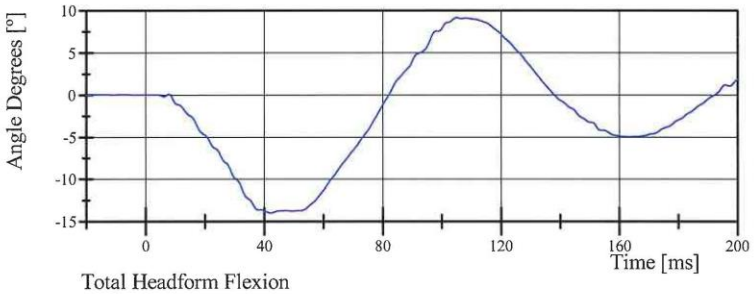
Filter Class: CFC_180
Max: 14.4 ° at 108.2 ms
Min: -32.2 ° at 43.4 ms

Rear Pot Rotation at Base of Pendulum



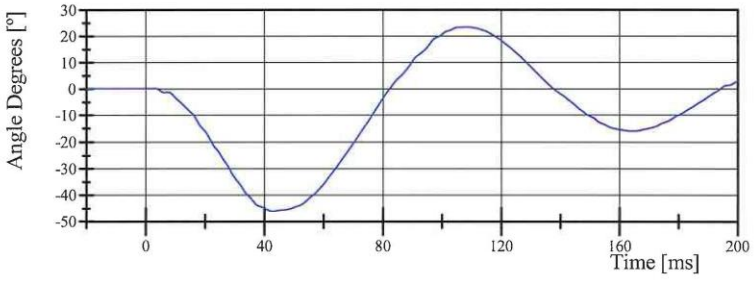
Filter Class: CFC_180
Max: 15.9 ° at 108.1 ms
Min: -28.3 ° at 47.4 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 9.1 ° at 105.0 ms
Min: -14.0 ° at 42.0 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 23.5 ° at 108.2 ms
Min: -46.2 ° at 42.6 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.26.2015 13:18:30 575

Transportation Research Center Inc.

Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.24 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,061.7 N	Yes
Time of Peak	11.8 - 16.1 ms	12.96 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,244.3 N	Yes
Time of Peak	12.2 - 17.0 ms	14.00 ms	Yes

Test meets specifications.

Comments:

Technician

Approved

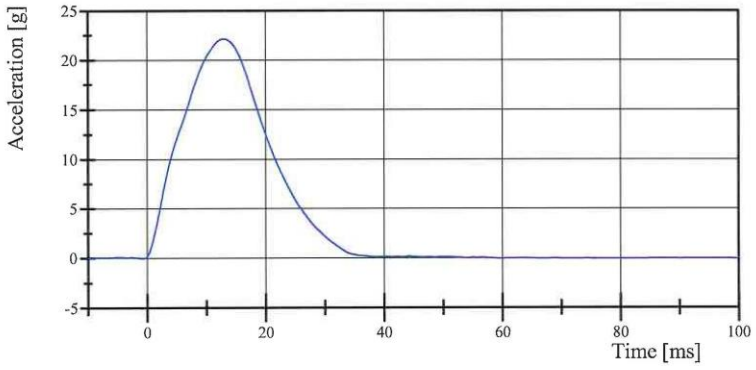
Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 11:15:10 587

Transportation Research Center Inc.

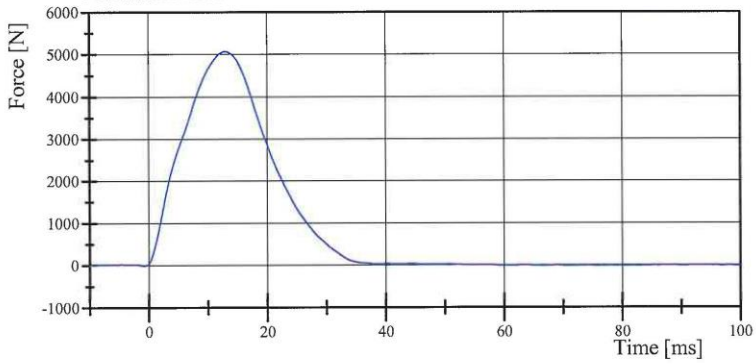
Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 29-1
Test Date: 10/27/2015

Pendulum Acceleration



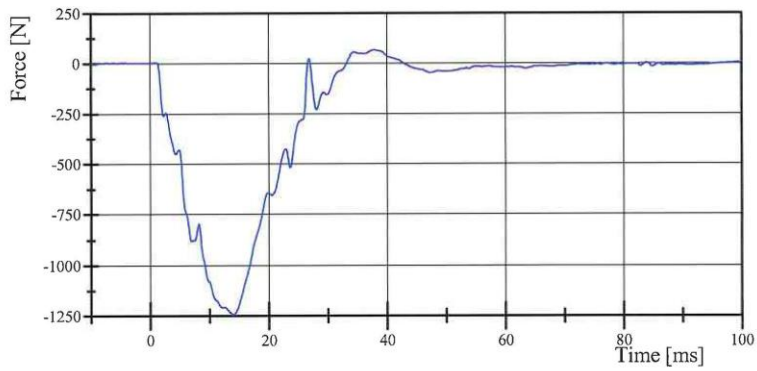
Filter Class: CFC_180
Max: 22.1 g at 13.0 ms
Min: -0.1 g at -0.7 ms

Pendulum Force



Filter Class: CFC_180
Max: 5,061.7 N at 13.0 ms
Min: -20.7 N at -0.7 ms

Pubic Symphysis Force



Filter Class: CFC_600
Max: 65.5 N at 37.8 ms
Min: -1,244.3 N at 14.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

10.27.2015 11:15:17 587

Post-Test Calibration Sheets
Driver S/N F030

Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 30
12/03/15

Symbol	Description	Specification	Results	Pass
		mm	mm	
1	Sitting Height	900.0 - 918.0	911	Yes
2	Seat to Shoulder Joint	558.0 - 572.0	560	Yes
3	Seat to Lower Face of Thoracic Spine Box	346.0 - 356.0	350	Yes
4	Seat to Hip Joint (center of bolt)	97.0 - 103.0	98	Yes
5	Sole to Seat, Sitting	433.0 - 451.0	443	Yes
6	Head Width	152.0 - 158.0	155	Yes
7	Shoulder/Arm Width	461.0 - 479.0	474	Yes
8	Thorax Width	322.0 - 332.0	325	Yes
9	Abdomen Width	273.0 - 287.0	279	Yes
10	Pelvis Lap Width	359.0 - 373.0	366	Yes
11	Head Depth	196.0 - 206.0	205	Yes
12	Thorax Depth	262.0 - 272.0	262	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

Melissa Schinker

Approved

Baseline 10/07/05

Transportation Research Center Inc.

Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Peak Resultant Acceleration	125 - 155 g	129.0 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	6.6 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

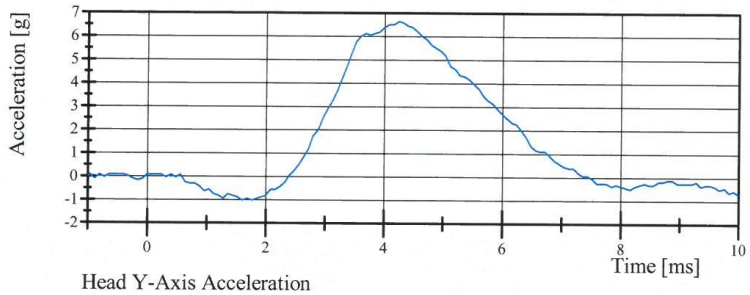
Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 10:33:42 355

Transportation Research Center Inc.

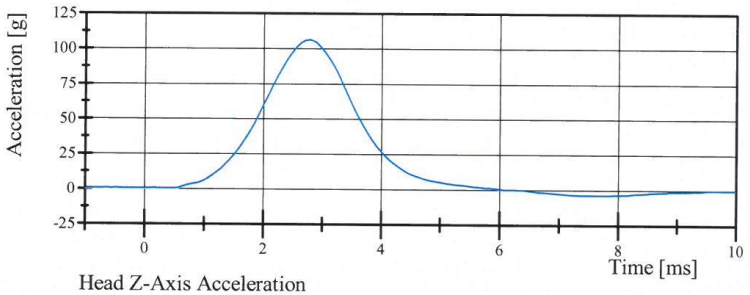
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Head X-Axis Acceleration



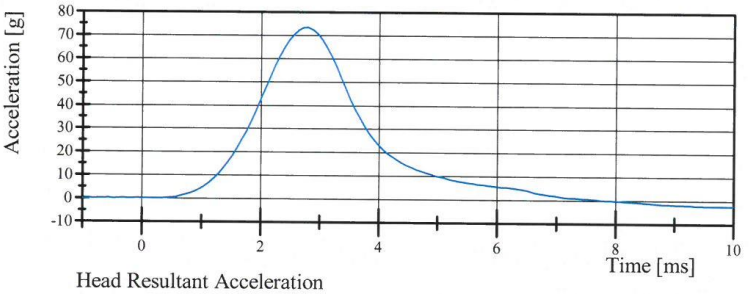
Filter Class: CFC_1000
Max: 6.6 g at 4.2 ms
Min: -1.0 g at 1.6 ms

Head Y-Axis Acceleration



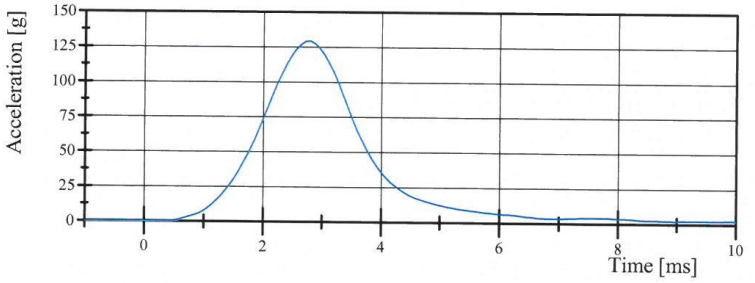
Filter Class: CFC_1000
Max: 106.2 g at 2.8 ms
Min: -4.0 g at 7.6 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 73.2 g at 2.8 ms
Min: -2.3 g at 9.8 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 129.0 g at 2.8 ms
Min: 0.1 g at -0.7 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 10:33:49 355

Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.37 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-53.4 deg	Yes
Time of Peak	54 - 66 ms	57.3 ms	Yes
Headform Flexion Decay - Peak to Zero	53 - 88 ms	66.7 ms	Yes

Test meets specifications.

Comments:

Technician Melissa Schinker

Approved

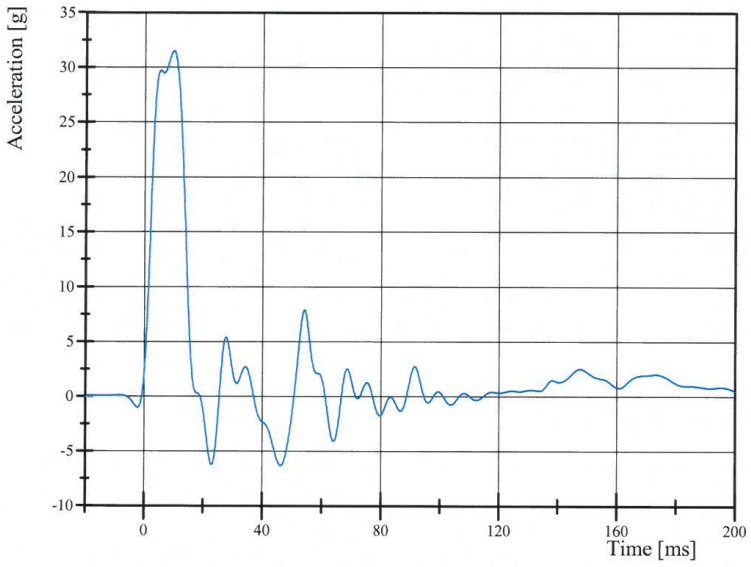
Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 08:38:31 1312

Transportation Research Center Inc.

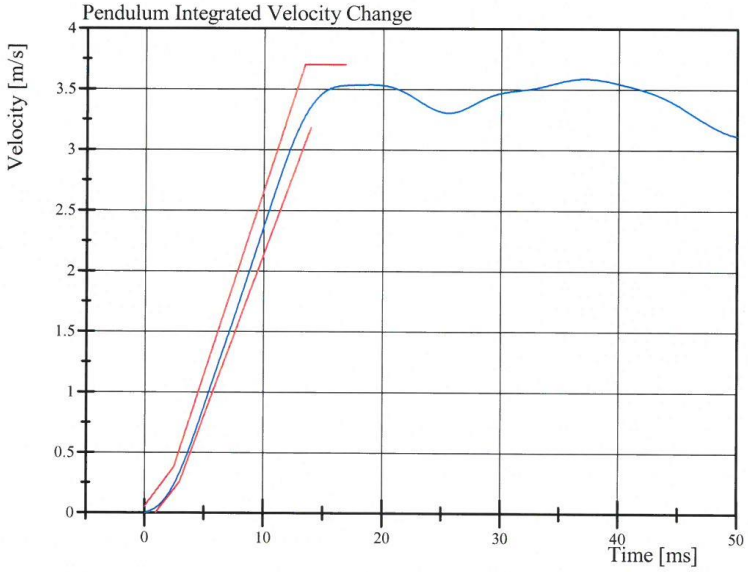
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 12/1/2015

Pendulum Acceleration



Filter Class: CFC_60
Max: 31.5 g at 9.8 ms
Min: -6.3 g at 46.3 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 3.6 m/s at 37.1 ms
Min: 0.0 m/s at 0.0 ms

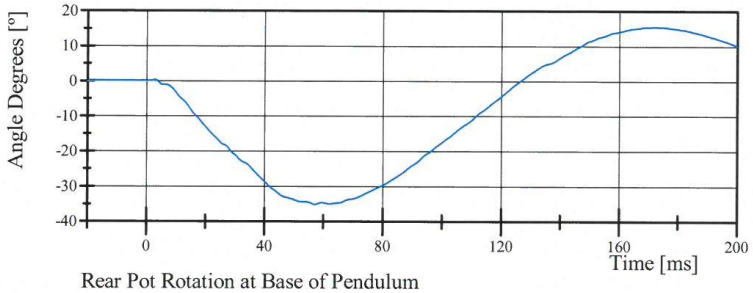
Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 08:38:39 1312

Transportation Research Center Inc.

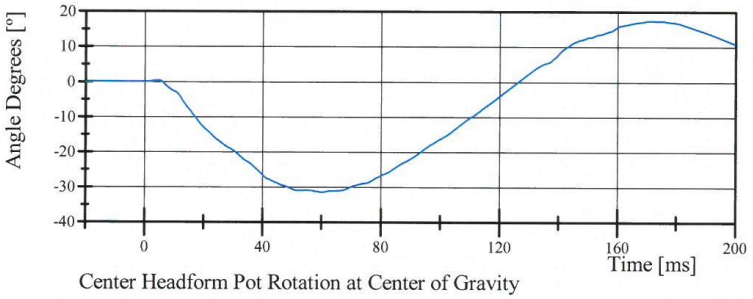
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 12/1/2015

Forward Pot Rotation at Base of Pendulum



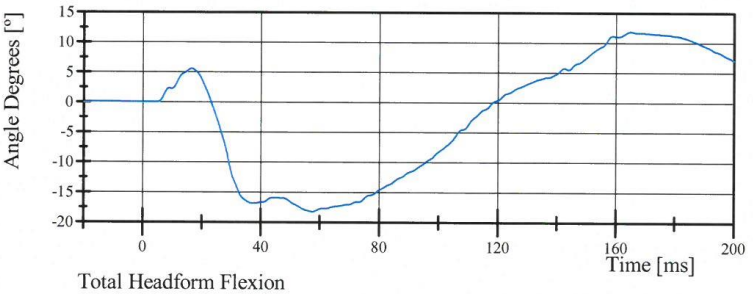
Filter Class: CFC_180
Max: 15.4 ° at 171.9 ms
Min: -35.2 ° at 57.1 ms

Rear Pot Rotation at Base of Pendulum



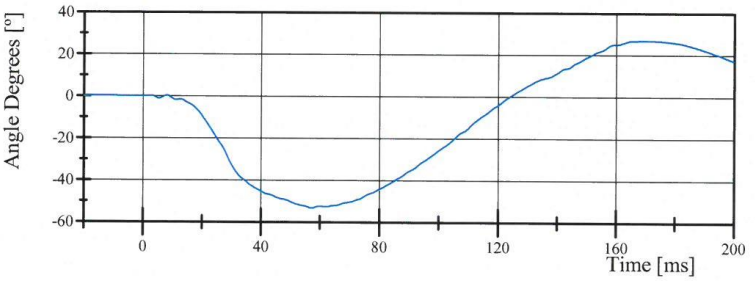
Filter Class: CFC_180
Max: 17.5 ° at 171.2 ms
Min: -31.6 ° at 60.1 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 11.9 ° at 165.0 ms
Min: -18.2 ° at 57.5 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 27.0 ° at 169.2 ms
Min: -53.4 ° at 57.3 ms

Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 08:38:40 1312

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-9.93 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinkel

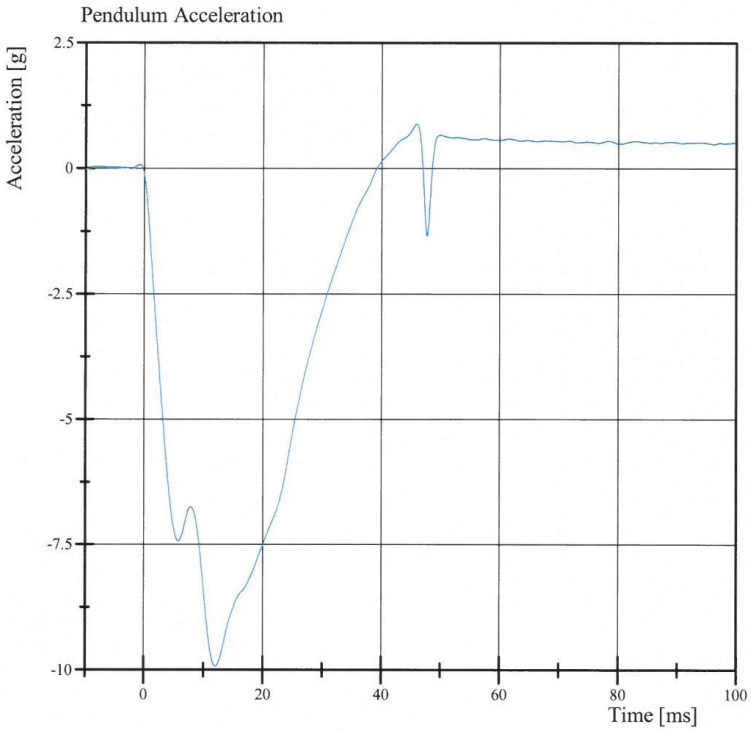
Approved

Specification Source: NHTSA final rule 8/15/2008

12.01.2015 13:12:21 552

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 12/1/2015



Filter Class: CFC_180
Max: 0.9 g at 46.0 ms
Min: -9.9 g at 12.1 ms

Specification Source: NHTSA final rule 8/15/2008

12.01.2015 13:12:28 552

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	39 %	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

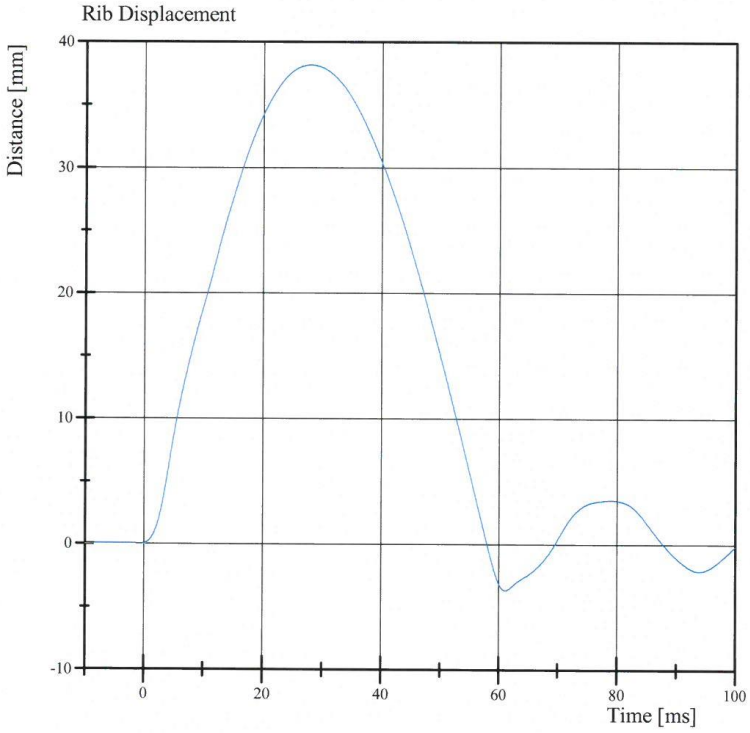
Approved

Specification Source: NHTSA Final Rule 8/15/2008

12.02.2015 15:09:35 946

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015



Filter Class: CFC_180
Max: 38.1 mm at 27.9 ms
Min: -3.7 mm at 61.1 ms

Specification Source: NHTSA Final Rule 8/15/2008

12.02.2015 15:09:48 946

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.7 mm	Yes

Test meets specifications.

Comments:

Drop Height: 816

Technician

Melissa Schenker

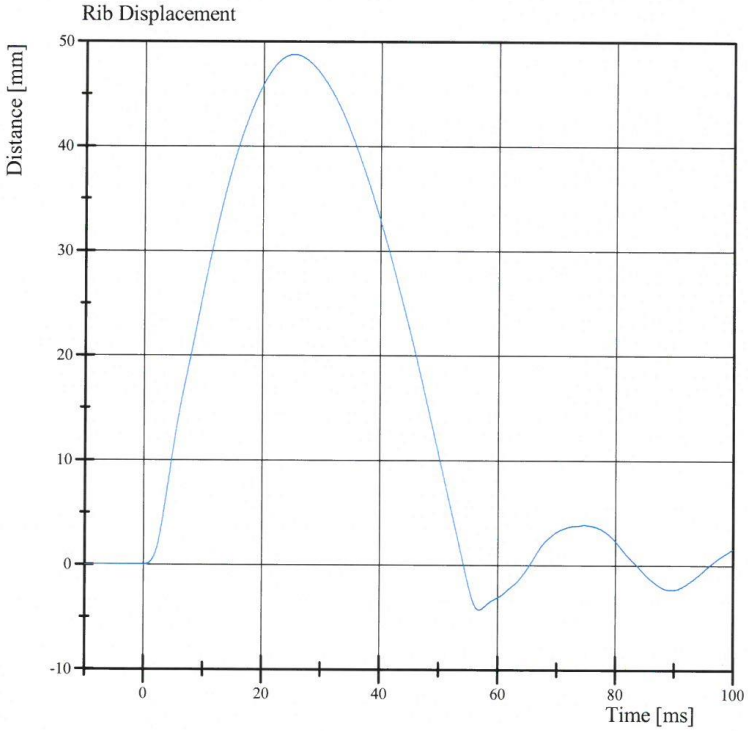
Approved

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 10:41:53 742

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015



Filter Class: CFC_180
Max: 48.7 mm at 25.3 ms
Min: -4.3 mm at 56.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 10:42:00 742

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.6 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician

Melissa Schenk

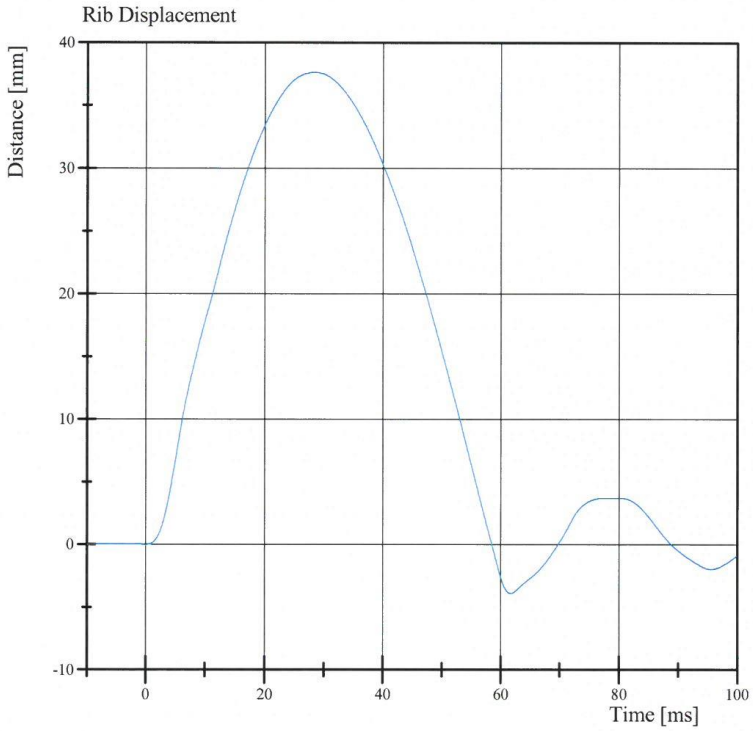
Approved

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:26:02 929

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015



Filter Class: CFC_180
Max: 37.6 mm at 28.3 ms
Min: -3.9 mm at 61.8 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:26:12 929

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °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 Melissa Schinker

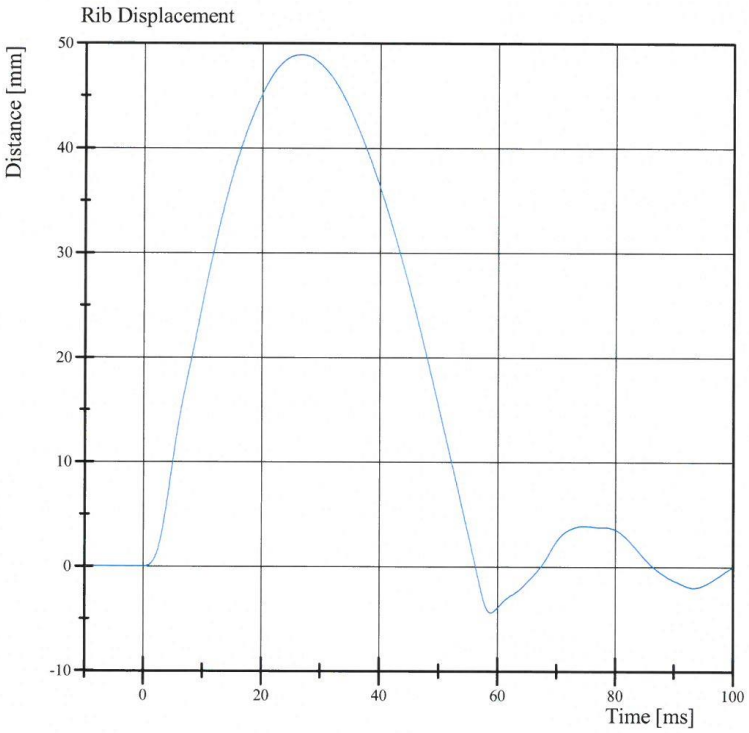
Approved

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:11:21 740

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015



Filter Class: CFC_180
Max: 48.9 mm at 26.6 ms
Min: -4.4 mm at 58.9 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:11:30 740

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.1 mm	Yes

Test meets specifications.

Comments:

Drop Height: 462

Technician Melissa Schenker

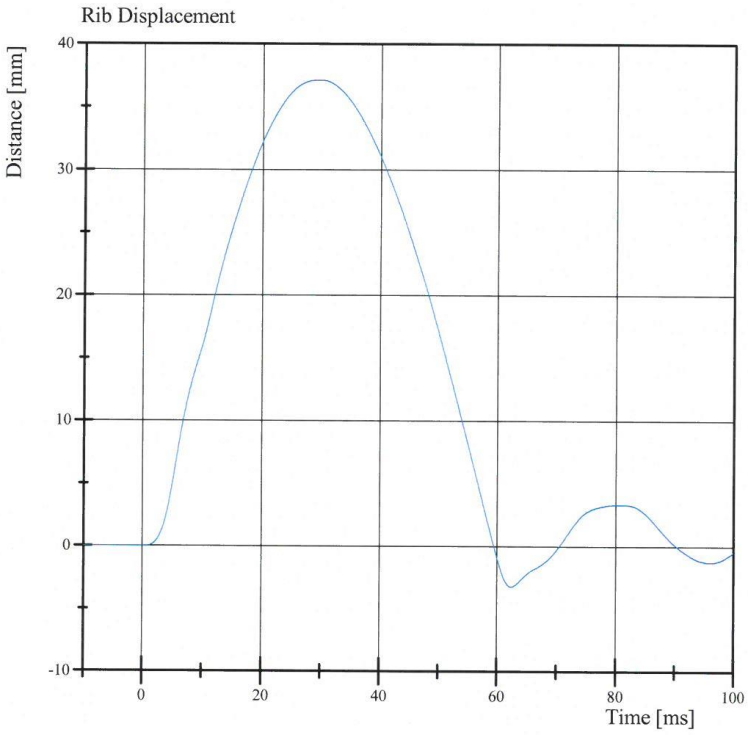
Approved

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:37:25 925

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015



Filter Class: CFC_180
Max: 37.1 mm at 29.6 ms
Min: -3.2 mm at 62.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:37:37 925

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	38 %	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

Melissa Schinker

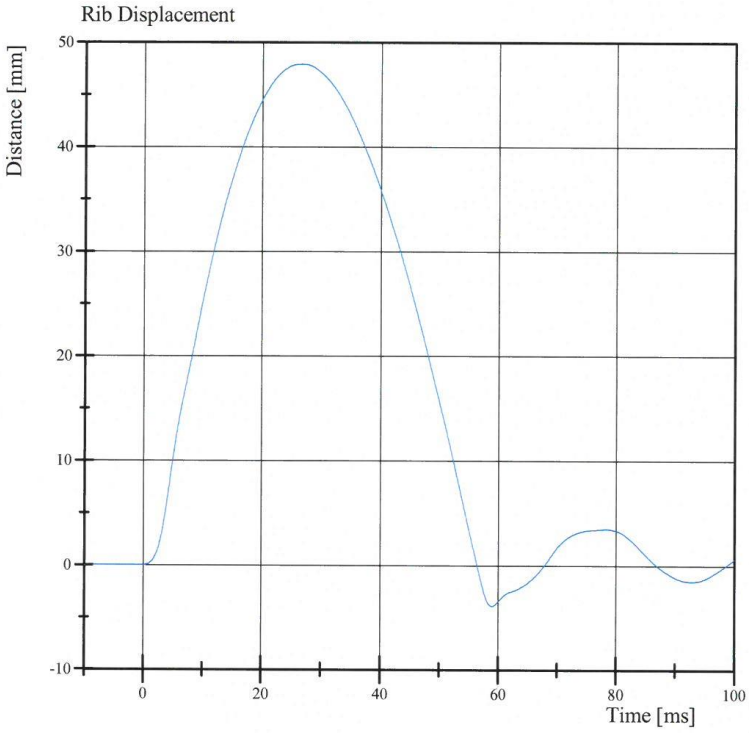
Approved

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:29:06 744

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 11/30/2015



Filter Class: CFC_180
Max: 47.9 mm at 26.7 ms
Min: -3.9 mm at 59.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

11.30.2015 11:29:16 744

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 30-2
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.580 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-6,051.9 N	Yes
Upper Rib Displacement	34 - 41 mm	38.3 mm	Yes
Center Rib Displacement	37 - 45 mm	41.3 mm	Yes
Lower Rib Displacement	37 - 44 mm	40.9 mm	Yes

Test meets specifications.

Comments:

Technician

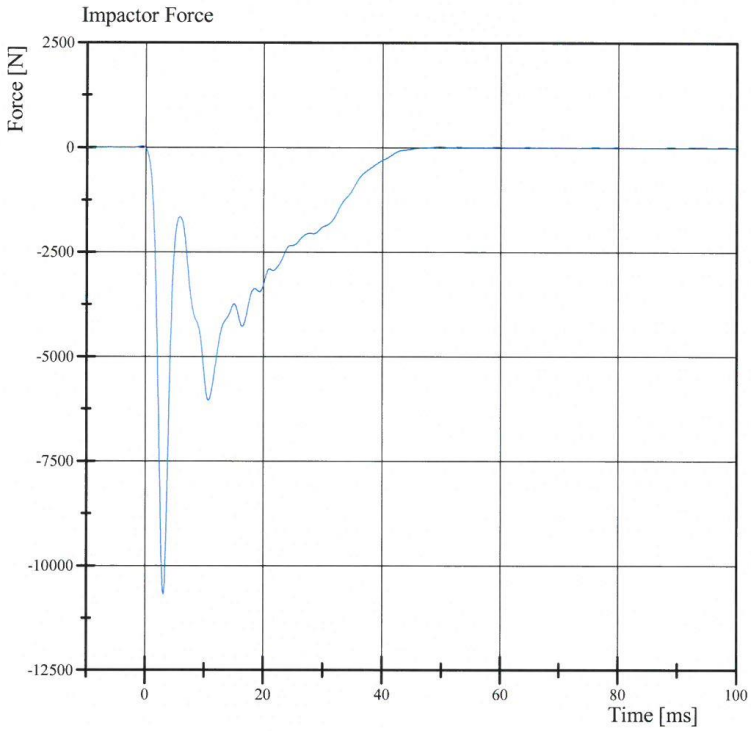
Approved

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

12.01.2015 13:50:35 368

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 30-2
Test Date: 12/1/2015



Filter Class: CFC_180
Max: 22.6 N at -0.6 ms
Min: -10,689.5 N at 3.1 ms

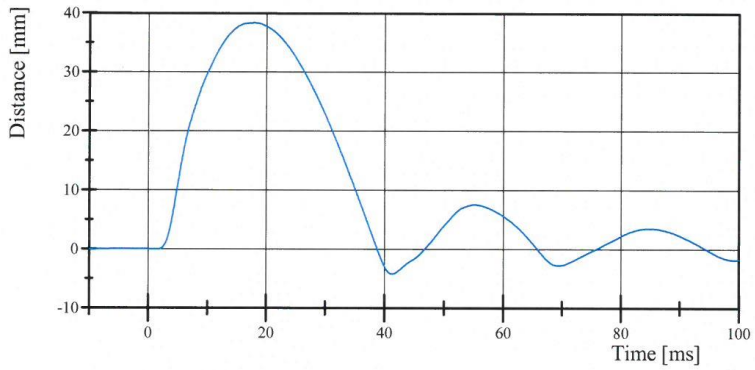
Specification Source: Procedures based on Final Rule dated 8/15/2008.
Polarity in accordance with SAE J211.

12.01.2015 13:50:45 368

Transportation Research Center Inc.

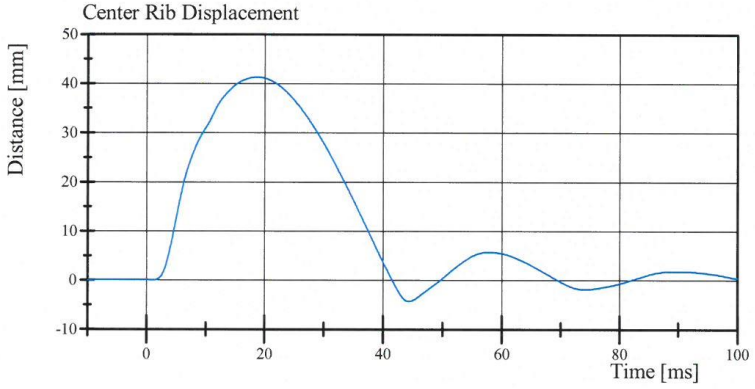
Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 30-2
Test Date: 12/1/2015

Upper Rib Displacement



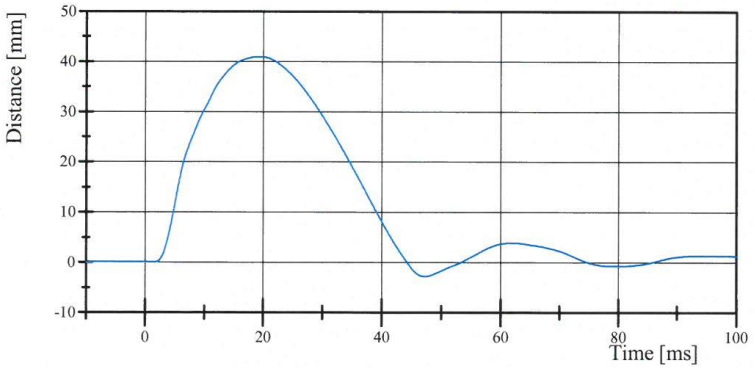
Filter Class: CFC_180
Max: 38.3 mm at 17.8 ms
Min: -4.2 mm at 41.3 ms

Center Rib Displacement



Filter Class: CFC_180
Max: 41.3 mm at 18.6 ms
Min: -4.3 mm at 44.3 ms

Lower Rib Displacement



Filter Class: CFC_180
Max: 40.9 mm at 19.3 ms
Min: -2.8 mm at 47.2 ms

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

12.01.2015 13:50:46 368

Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 30-3
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	4.06 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,206.3 N	Yes
Time of Peak	10.6 - 13.0 ms	11.20 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,614.0 N	Yes
Time of Peak	10.0 - 12.3 ms	11.36 ms	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

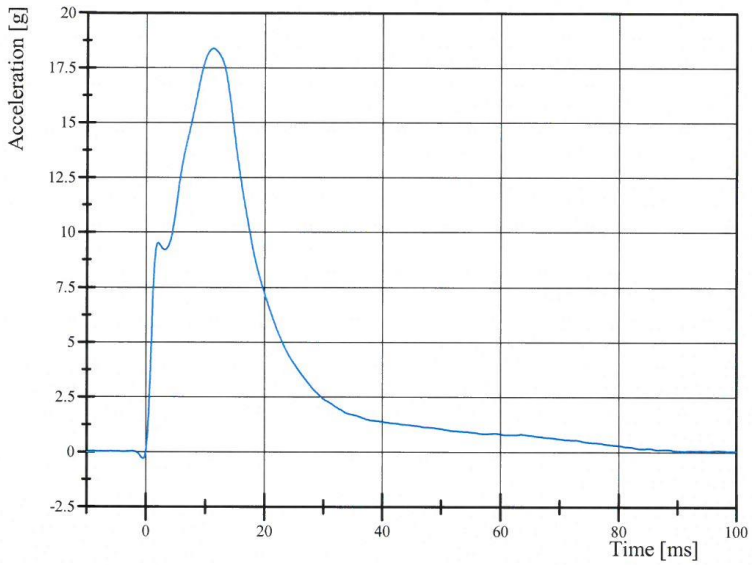
Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 15:42:55 571

Transportation Research Center Inc.

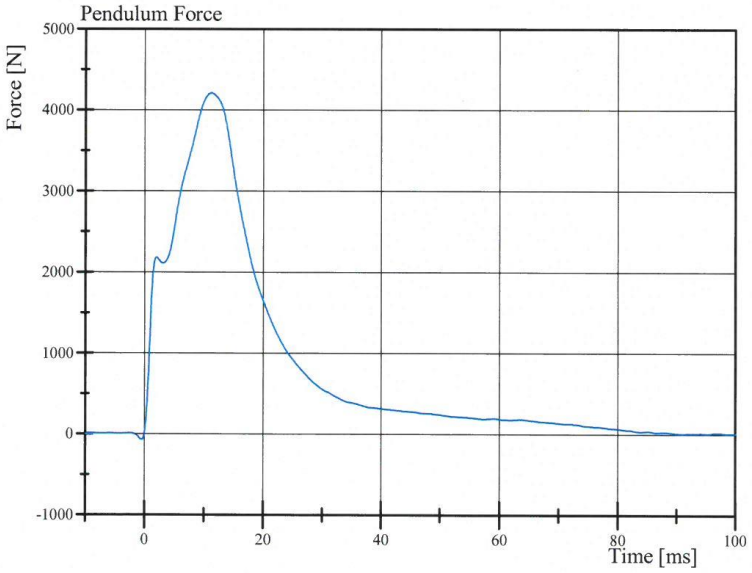
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 30-3
Test Date: 12/1/2015

Pendulum Acceleration



Filter Class: CFC_180
Max: 18.4 g at 11.2 ms
Min: -0.3 g at -0.5 ms

Pendulum Force



Filter Class: CFC_180
Max: 4,206.3 N at 11.2 ms
Min: -75.5 N at -0.5 ms

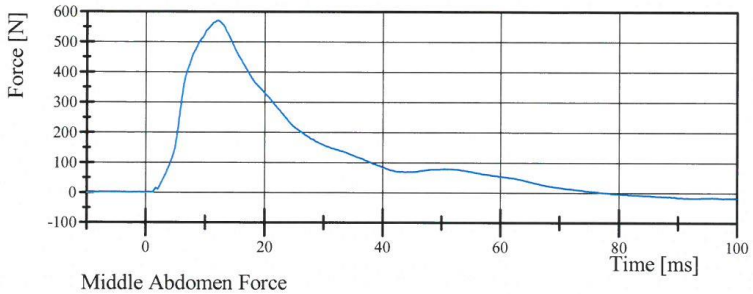
Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 15:43:03 571

Transportation Research Center Inc.

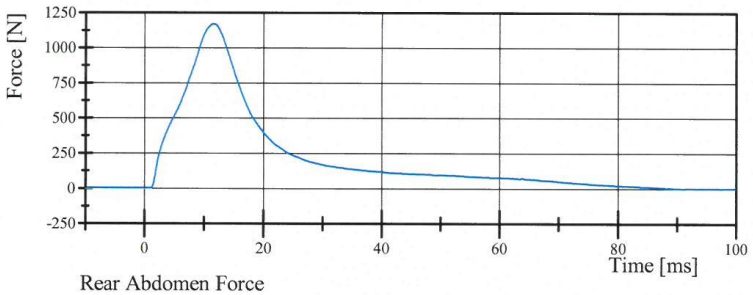
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 30-3
Test Date: 12/1/2015

Front Abdomen Force



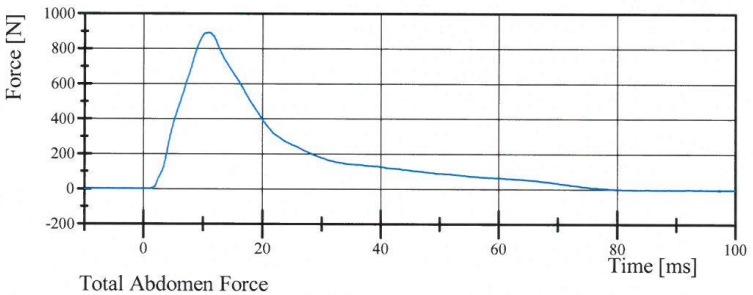
Filter Class: CFC_600
Max: 568.5 N at 12.1 ms
Min: -18.2 N at 97.6 ms

Middle Abdomen Force



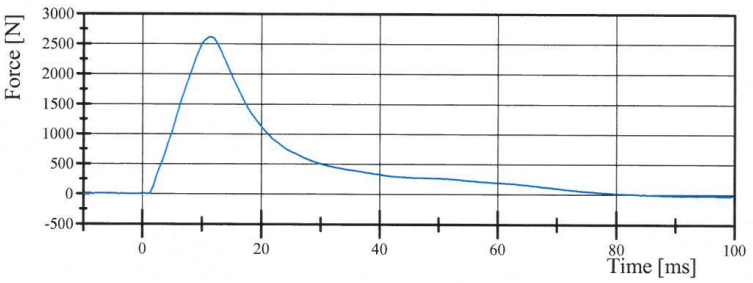
Filter Class: CFC_600
Max: 1,168.4 N at 11.5 ms
Min: -1.3 N at 1.0 ms

Rear Abdomen Force



Filter Class: CFC_600
Max: 889.8 N at 11.0 ms
Min: -5.2 N at 97.3 ms

Total Abdomen Force



Filter Class: CFC_600
Max: 2,614.0 N at 11.4 ms
Min: -22.5 N at 97.4 ms

Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 15:43:04 571

Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 30-16
Test Date: 12/2/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.081 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-48.2 deg	Yes
Time of Peak	39 - 53 ms	42.2 ms	Yes
Headform Flexion Decay - Peak to Zero	37 - 57 ms	37.9 ms	Yes

Test meets specifications.

Comments:

Technician

Melissa Schenker

Approved

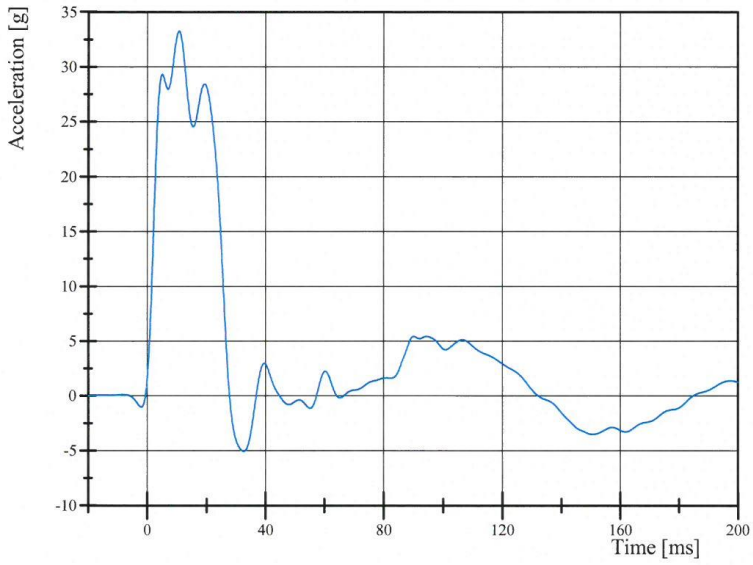
Specification Source: NHTSA Final Rule 8/15/2008

12.02.2015 14:02:39 573

Transportation Research Center Inc.

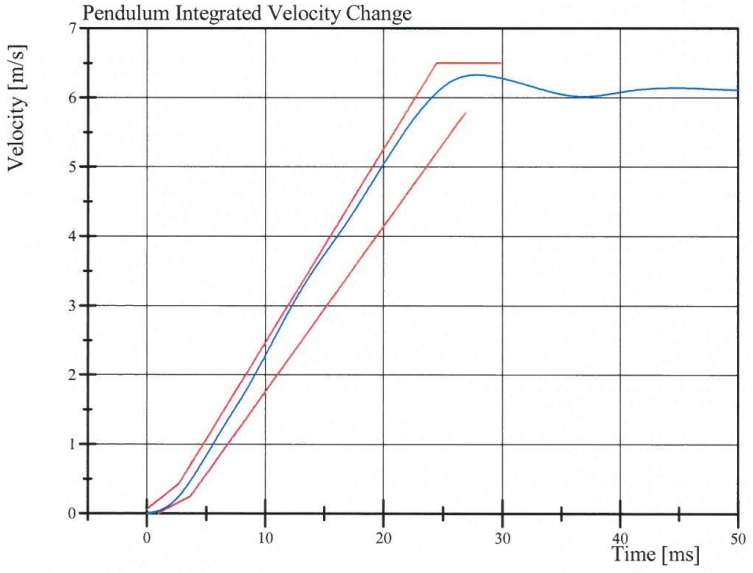
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 30-16
Test Date: 12/2/2015

Pendulum Acceleration



Filter Class: CFC_60
Max: 33.2 g at 10.7 ms
Min: -5.1 g at 32.6 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 6.3 m/s at 27.8 ms
Min: 0.0 m/s at 0.0 ms

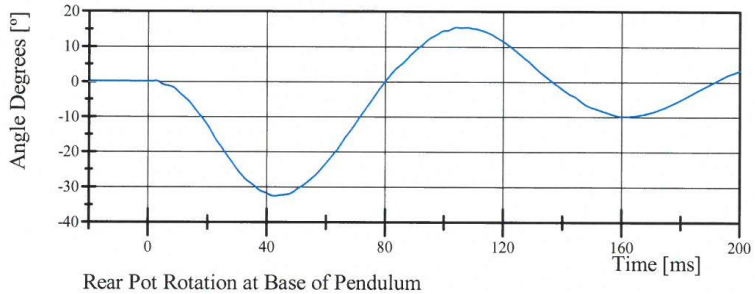
Specification Source: NHTSA Final Rule 8/15/2008

12.02.2015 14:02:47 573

Transportation Research Center Inc.

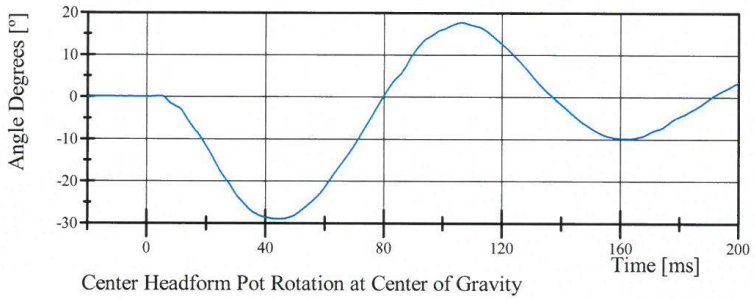
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 30-16
Test Date: 12/2/2015

Forward Pot Rotation at Base of Pendulum



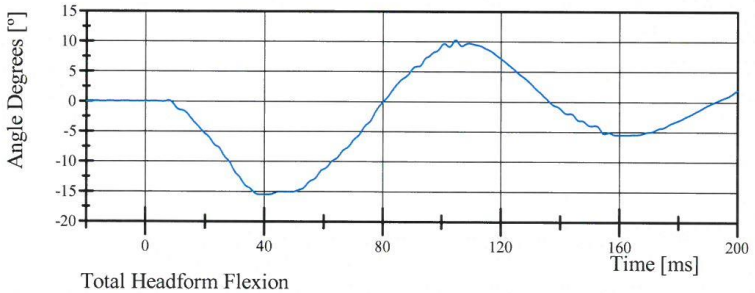
Filter Class: CFC_180
Max: 15.5 ° at 104.2 ms
Min: -32.7 ° at 42.6 ms

Rear Pot Rotation at Base of Pendulum



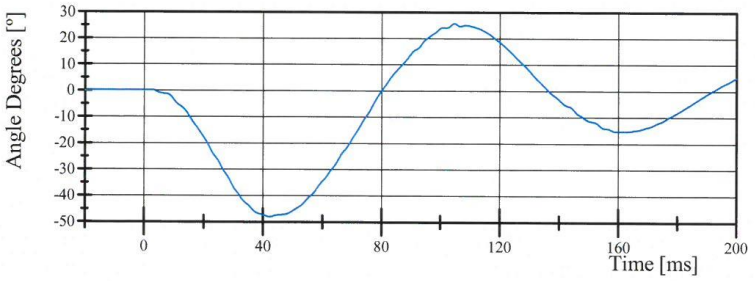
Filter Class: CFC_180
Max: 17.7 ° at 106.4 ms
Min: -29.0 ° at 44.2 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 10.3 ° at 104.7 ms
Min: -15.6 ° at 38.5 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 25.7 ° at 104.6 ms
Min: -48.2 ° at 42.2 ms

Specification Source: NHTSA Final Rule 8/15/2008

12.02.2015 14:02:48 573

Transportation Research Center Inc.

Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.23 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,079.4 N	Yes
Time of Peak	11.8 - 16.1 ms	13.52 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,289.5 N	Yes
Time of Peak	12.2 - 17.0 ms	14.96 ms	Yes

Test meets specifications.

Comments:

Technician

Approved

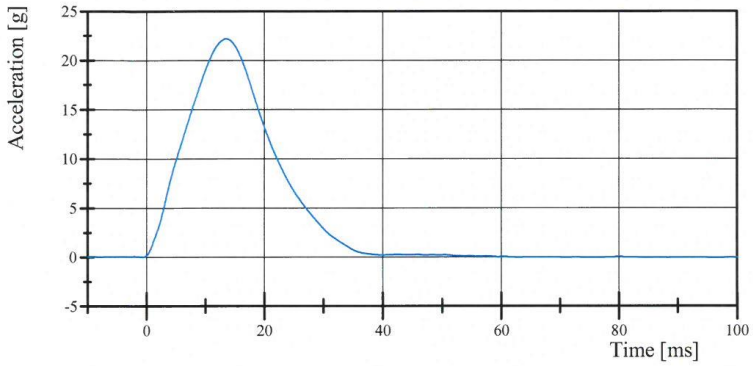
Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 13:41:32 470

Transportation Research Center Inc.

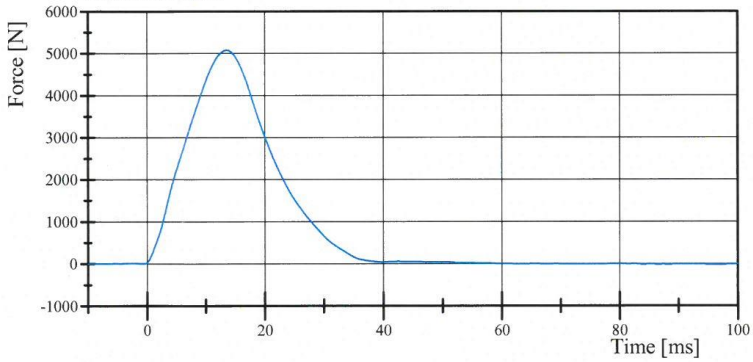
Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 30-1
Test Date: 12/1/2015

Pendulum Acceleration



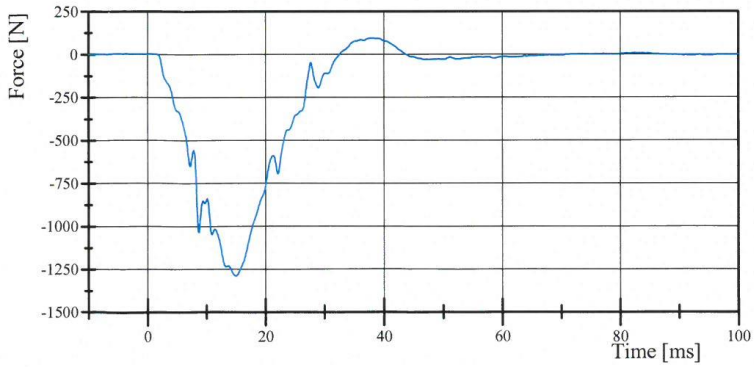
Filter Class: CFC_180
Max: 22.2 g at 13.5 ms
Min: -0.1 g at 97.0 ms

Pendulum Force



Filter Class: CFC_180
Max: 5,079.4 N at 13.5 ms
Min: -14.4 N at 97.0 ms

Pubic Symphysis Force



Filter Class: CFC_600
Max: 93.7 N at 37.8 ms
Min: -1,289.5 N at 15.0 ms

Specification Source: NHTSA Final Rule 8/15/2008

12.01.2015 13:41:48 470

Pre-Test Calibration Sheets
Passenger S/N 305

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.034

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	445	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	127	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	545	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	401	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	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician

Melissa Schinker

Approved

Revised 9/29/2005

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/26/2015

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	123.7 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	2.6 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Melissa Schimpel

Approved

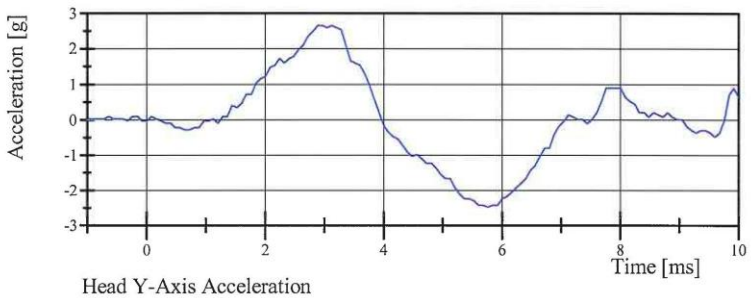
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.26.2015 14:08:00 230

Transportation Research Center Inc.

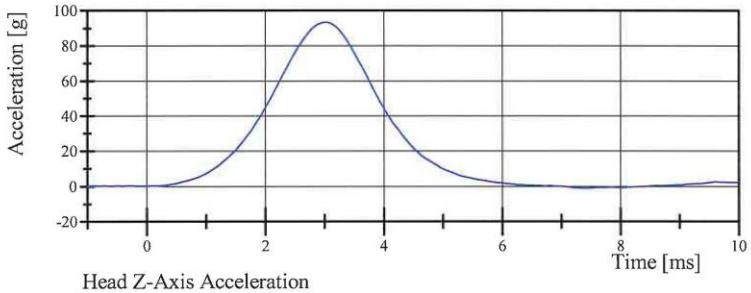
Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/26/2015

Head X-Axis Acceleration



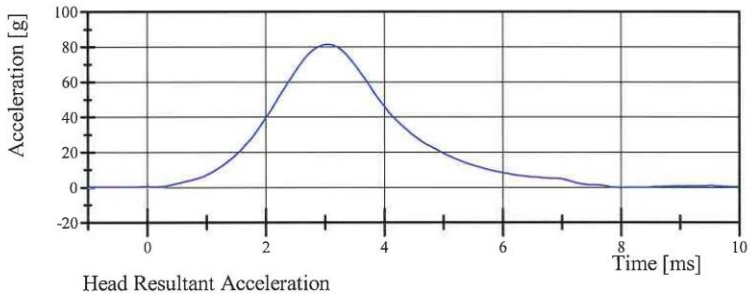
Filter Class: CFC_1000
Max: 2.6 g at 2.9 ms
Min: -2.5 g at 5.8 ms

Head Y-Axis Acceleration



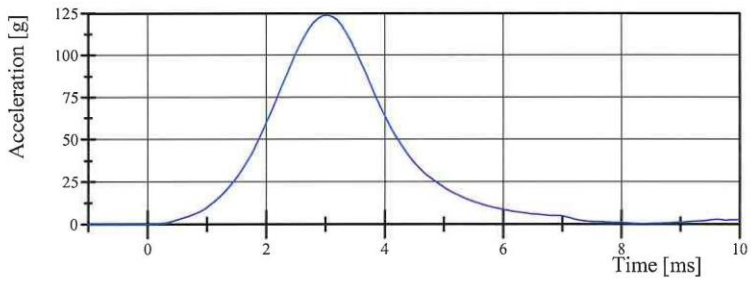
Filter Class: CFC_1000
Max: 93.2 g at 3.0 ms
Min: -1.1 g at 7.4 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 81.3 g at 3.0 ms
Min: -0.2 g at 8.0 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 123.7 g at 3.0 ms
Min: 0.0 g at -0.8 ms

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

10.26.2015 14:08:06 230

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/26/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.596 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.363 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.465 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.679 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.659 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.817 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-73.3 deg	Yes
Time of Peak	50 - 70 ms	67.8 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	39.1 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	118.0 ms	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinnerer

Approved

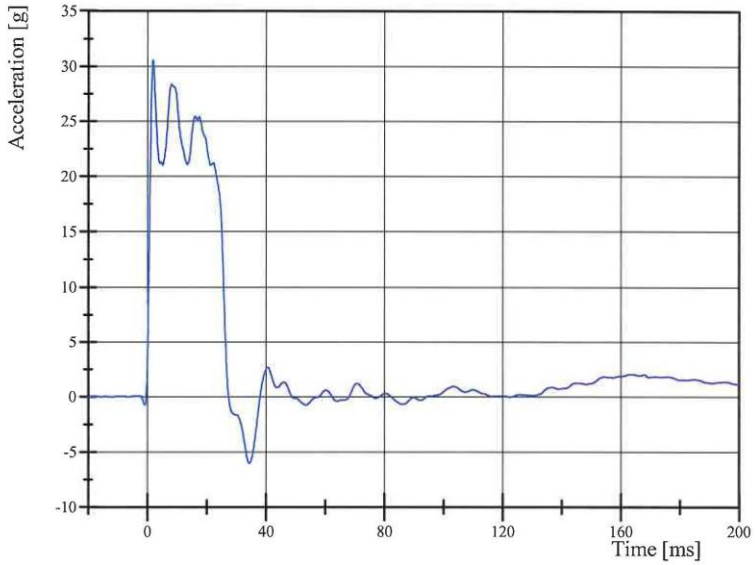
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.26.2015 14:58:09 643

Transportation Research Center Inc.

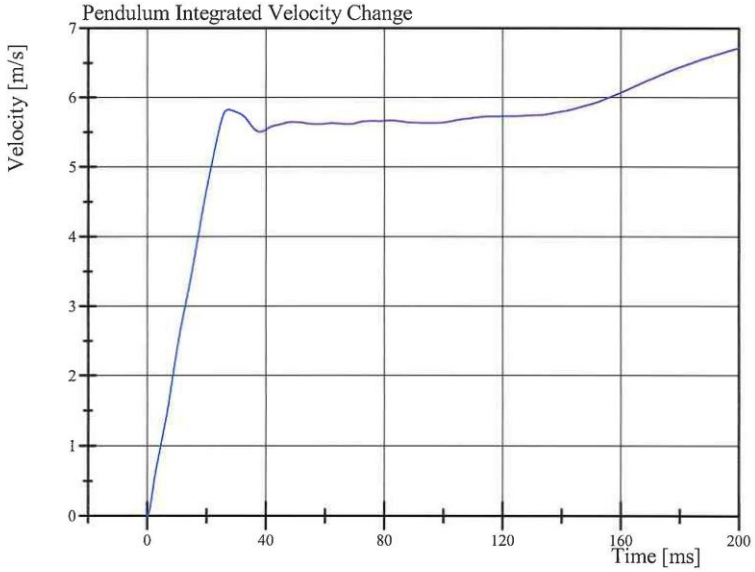
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/26/2015

Pendulum Acceleration



Filter Class: CFC_180
Max: 30.5 g at 1.8 ms
Min: -6.0 g at 34.3 ms

Pendulum Integrated Velocity Change



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

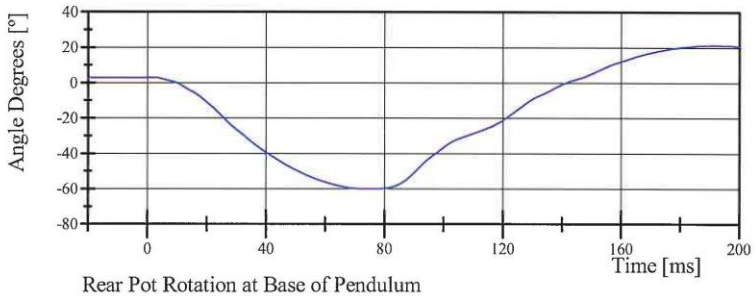
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.26.2015 14:58:15 643

Transportation Research Center Inc.

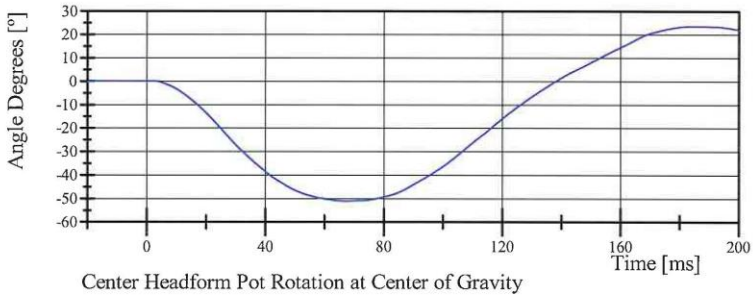
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/26/2015

Forward Pot Rotation at Base of Pendulum



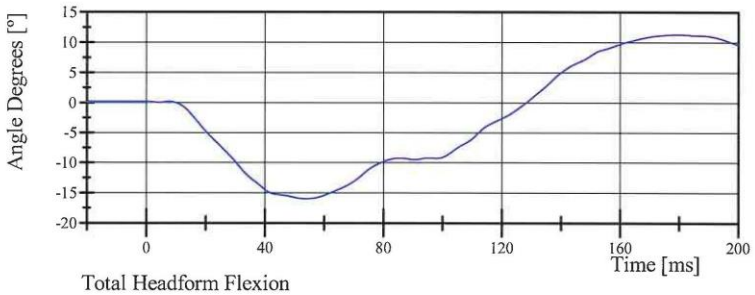
Filter Class: CFC_60
Max: 21.3 ° at 191.7 ms
Min: -60.2 ° at 72.7 ms

Rear Pot Rotation at Base of Pendulum



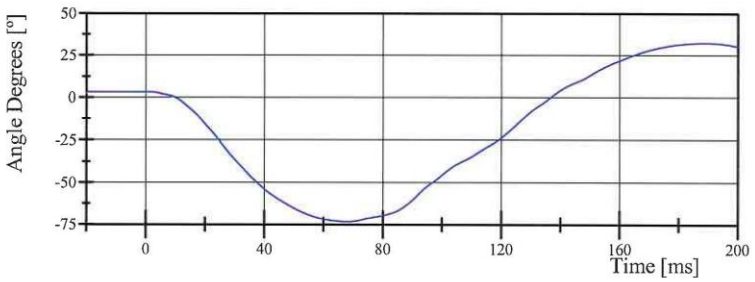
Filter Class: CFC_60
Max: 23.5 ° at 183.4 ms
Min: -51.2 ° at 67.2 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 11.3 ° at 179.7 ms
Min: -16.0 ° at 53.8 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 32.4 ° at 188.5 ms
Min: -73.3 ° at 67.8 ms

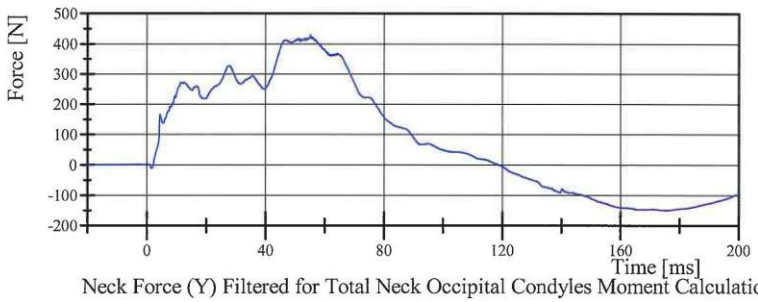
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.26.2015 14:58:16 643

Transportation Research Center Inc.

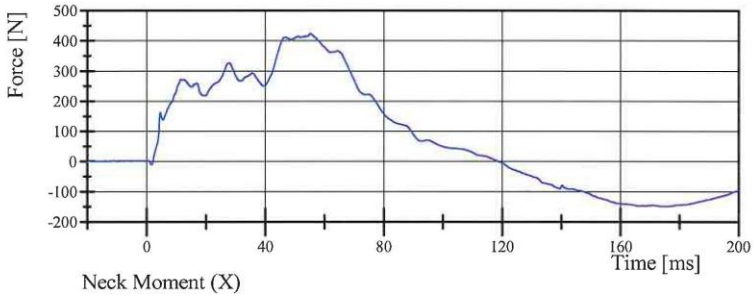
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/26/2015

Neck Force (Y)



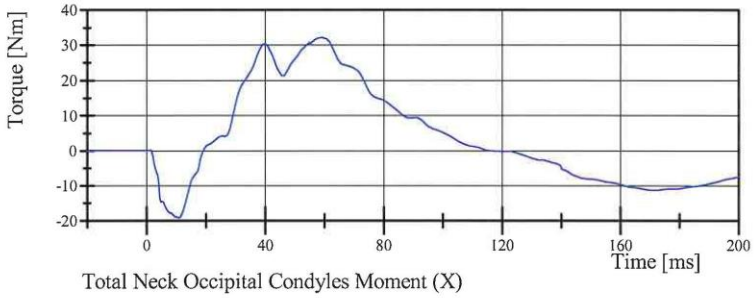
Filter Class: CFC_1000
Max: 428.5 N at 55.0 ms
Min: -149.4 N at 175.4 ms

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



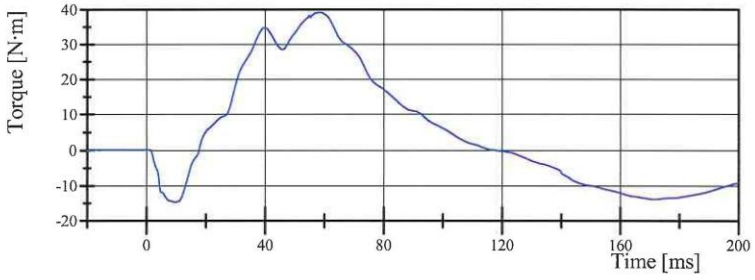
Filter Class: CFC_600
Max: 424.4 N at 55.0 ms
Min: -149.1 N at 175.1 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 32.1 Nm at 59.1 ms
Min: -19.2 Nm at 10.8 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constai
Max: 39.1 N·m at 57.8 ms
Min: -14.9 N·m at 9.6 ms

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

10.26.2015 14:58:17 643

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 34-2
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.30 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.8 g	Yes
Shoulder Displacement	28 - 37 mm	29.3 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	21.2 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinkel

Approved

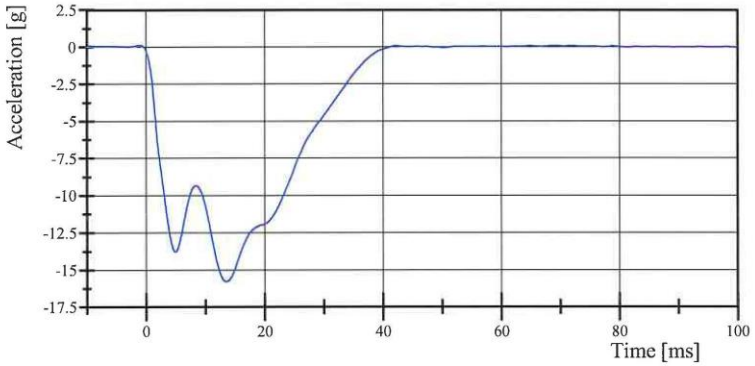
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 10:21:25 853

Transportation Research Center Inc.

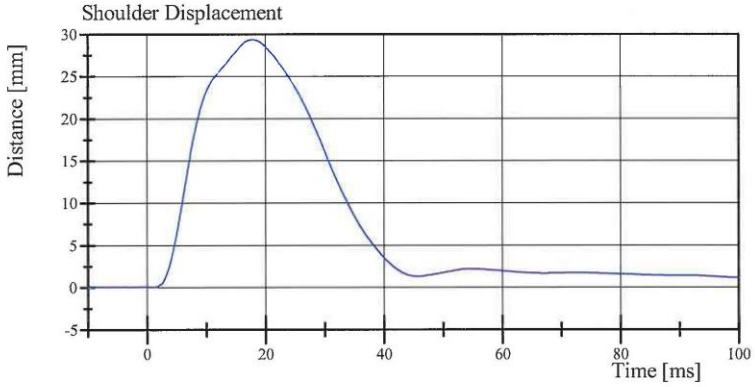
Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 34-2
Test Date: 10/27/2015

Probe Acceleration



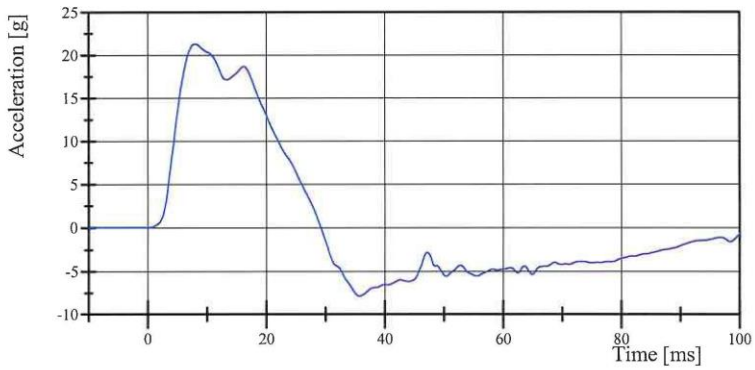
Filter Class: CFC_180
Max: 0.1 g at 69.0 ms
Min: -15.8 g at 13.5 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 29.3 mm at 17.8 ms
Min: -0.0 mm at 1.0 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 21.2 g at 8.0 ms
Min: -7.9 g at 35.6 ms

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

10.27.2015 10:21:33 853

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.781 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.5 g	Yes
Shoulder Displacement	31 - 40 mm	33.0 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	25.1 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.9 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.6 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	41.5 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	33.4 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

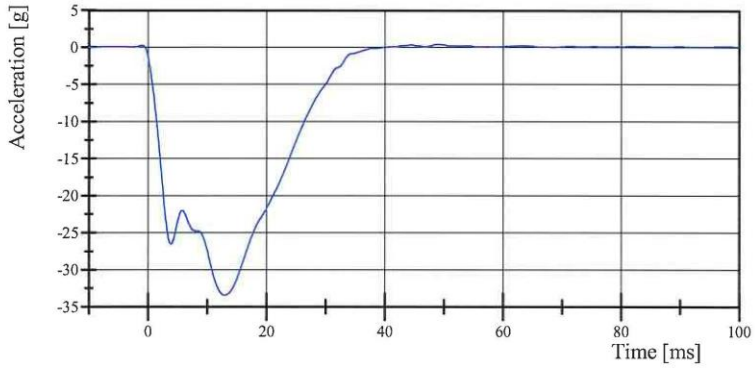
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 11:39:53 576

Transportation Research Center Inc.

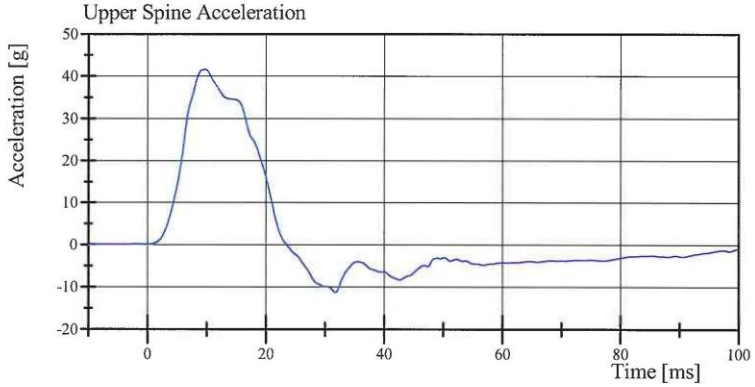
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Probe Acceleration



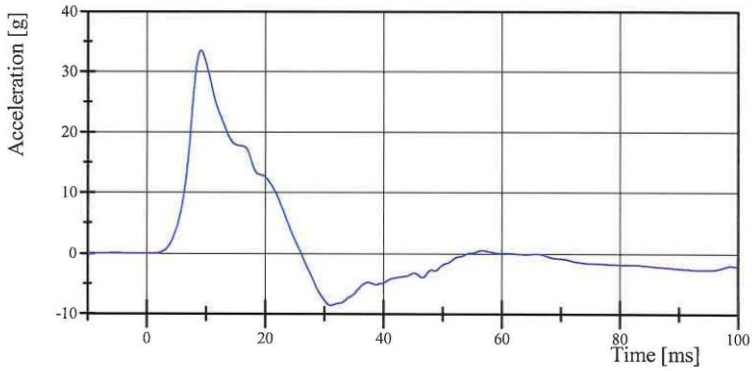
Filter Class: CFC_180
Max: 0.4 g at 48.9 ms
Min: -33.5 g at 13.0 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 41.5 g at 9.8 ms
Min: -11.4 g at 31.8 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 33.4 g at 9.1 ms
Min: -8.6 g at 31.0 ms

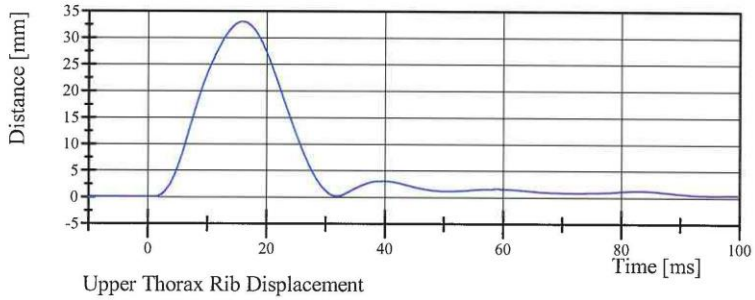
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 11:40:03 576

Transportation Research Center Inc.

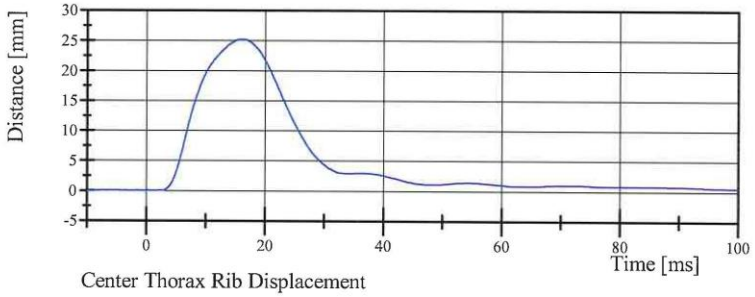
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Shoulder Rib Displacement



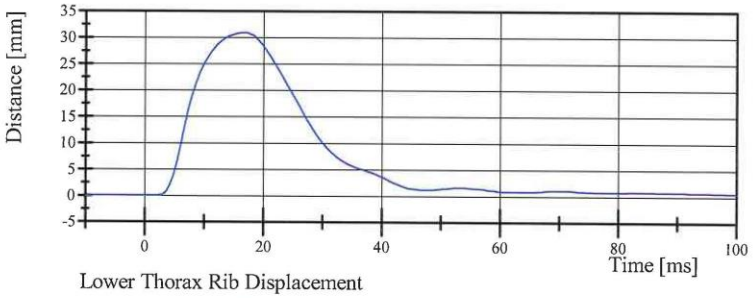
Filter Class: CFC_600
Max: 33.0 mm at 15.8 ms
Min: -0.0 mm at 1.0 ms

Upper Thorax Rib Displacement



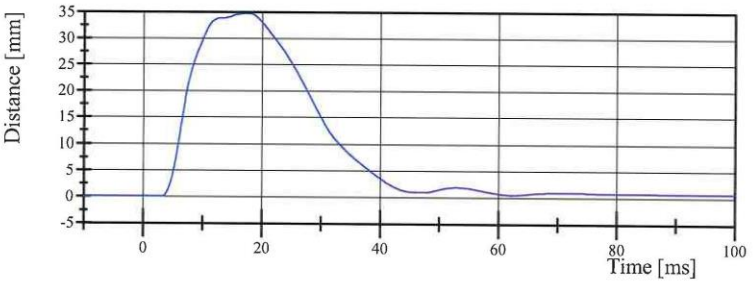
Filter Class: CFC_600
Max: 25.1 mm at 16.1 ms
Min: -0.0 mm at -8.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 30.9 mm at 16.6 ms
Min: -0.0 mm at -9.4 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 34.6 mm at 17.0 ms
Min: -0.0 mm at 3.2 ms

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

10.27.2015 11:40:04 576

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

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	4.343 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.1 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.3 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.8 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.3 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.4 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.8 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

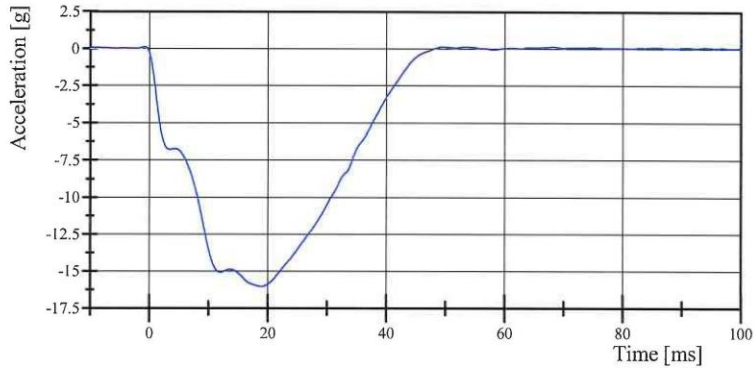
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 09:41:43 845

Transportation Research Center Inc.

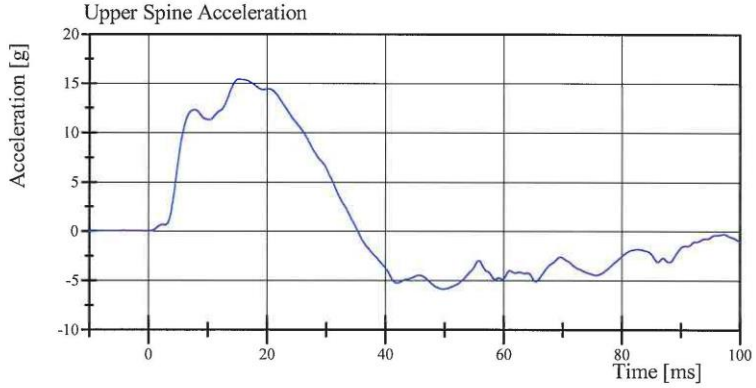
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Probe Acceleration



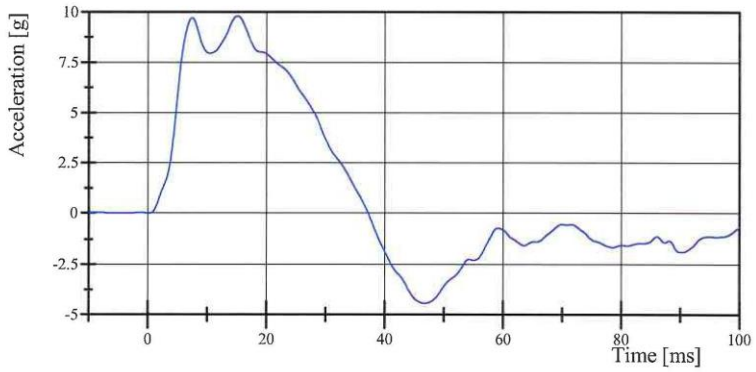
Filter Class: CFC_180
Max: 0.1 g at 68.1 ms
Min: -16.1 g at 18.9 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 15.4 g at 15.3 ms
Min: -5.9 g at 49.8 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 9.8 g at 15.1 ms
Min: -4.4 g at 46.7 ms

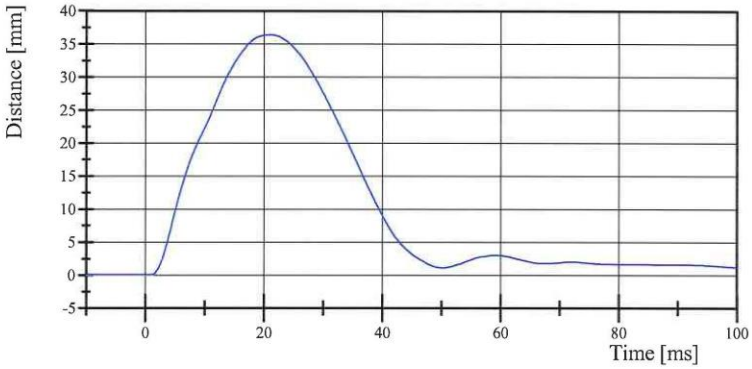
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 09:41:54 845

Transportation Research Center Inc.

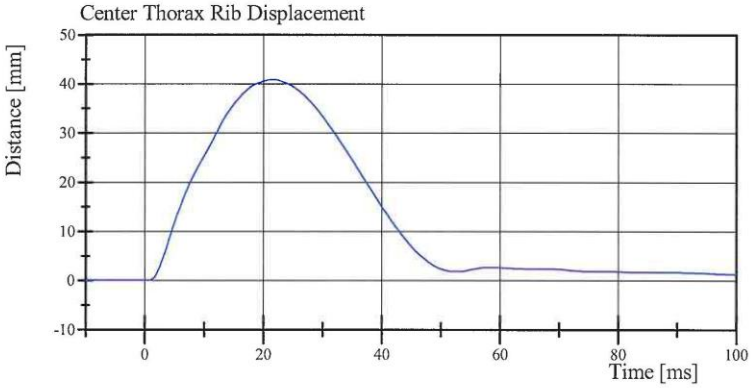
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Upper Thorax Rib Displacement



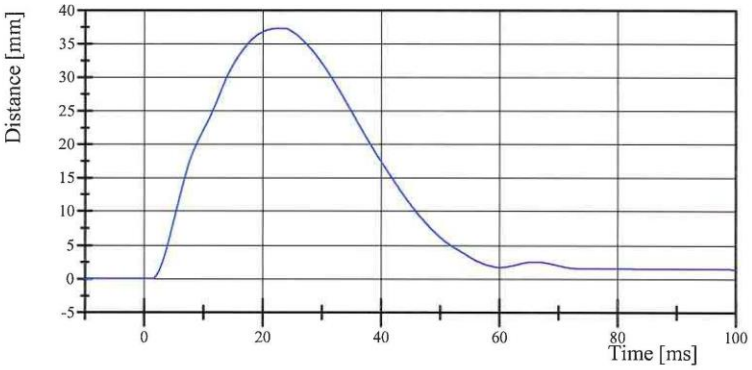
Filter Class: CFC_600
Max: 36.3 mm at 21.1 ms
Min: -0.0 mm at 0.9 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 40.8 mm at 21.6 ms
Min: -0.0 mm at -3.4 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.3 mm at 22.6 ms
Min: -0.0 mm at -3.2 ms

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

10.27.2015 09:41:54 845

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.5 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	43.8 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	40.6 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.20 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinkel

Approved

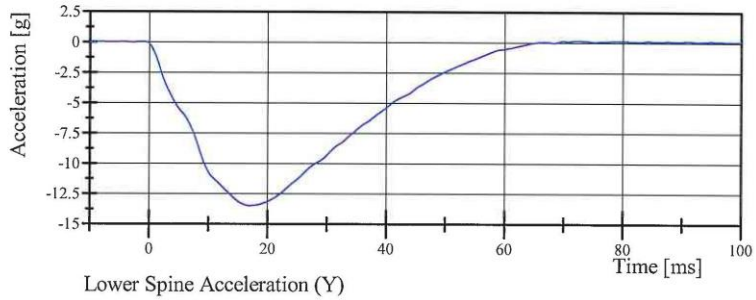
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 09:18:39 692

Transportation Research Center Inc.

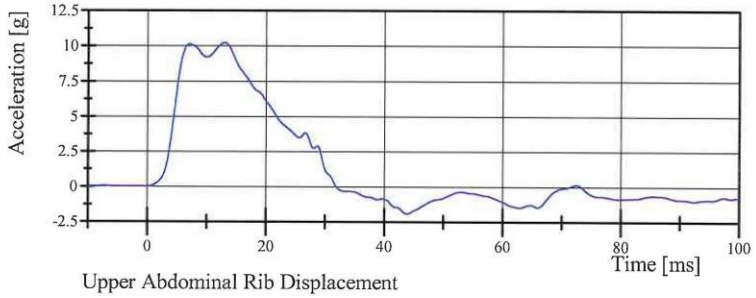
Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Probe Acceleration



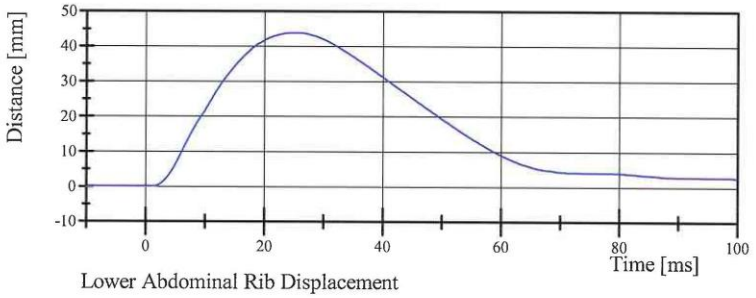
Filter Class: CFC_180
Max: 0.2 g at 72.2 ms
Min: -13.5 g at 17.0 ms

Lower Spine Acceleration (Y)



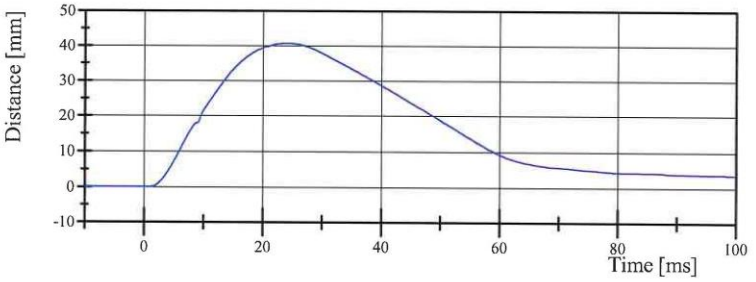
Filter Class: CFC_180
Max: 10.2 g at 13.0 ms
Min: -1.9 g at 43.9 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 43.8 mm at 24.9 ms
Min: -0.0 mm at 1.5 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 40.6 mm at 23.9 ms
Min: -0.0 mm at 0.9 ms

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

10.27.2015 09:18:47 692

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.65 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-42.50 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	39.8 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,139.6 N	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

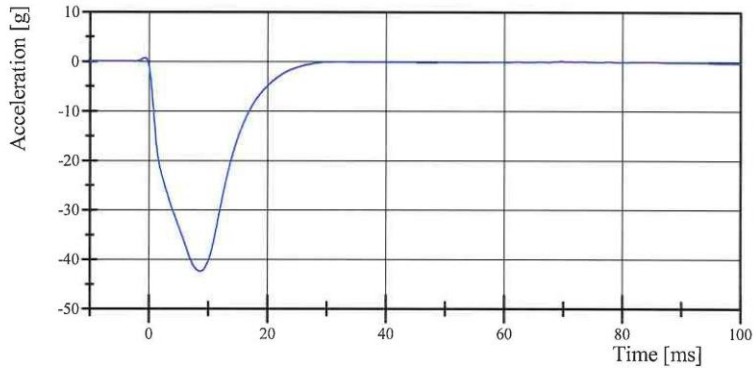
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 12:58:46 466

Transportation Research Center Inc.

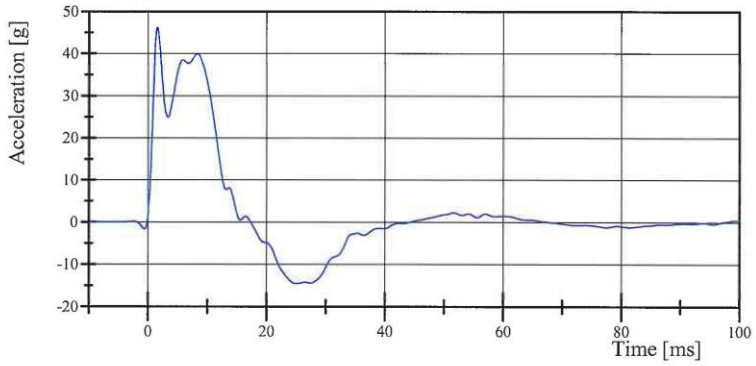
Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Probe Acceleration



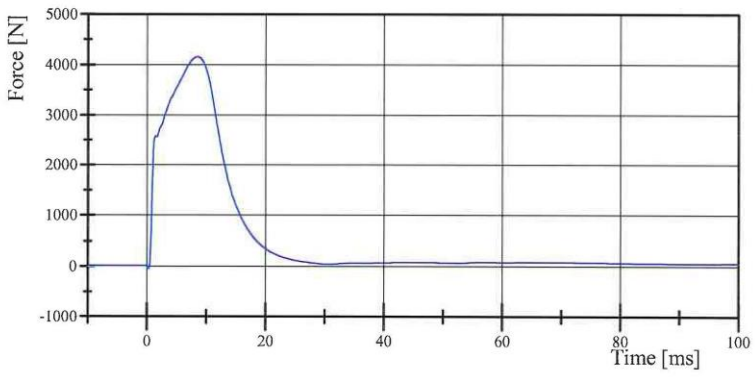
Filter Class: CFC_180
Max: 0.6 g at -0.7 ms
Min: -42.5 g at 8.6 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 46.1 g at 1.5 ms
Min: -14.6 g at 25.0 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 4,139.6 N at 8.5 ms
Min: -55.9 N at 0.3 ms

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

10.27.2015 12:58:55 466

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.29 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.2 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	35.2 g	Yes
Iliac Force	4,100 - 5,100 N	4,974.7 N	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

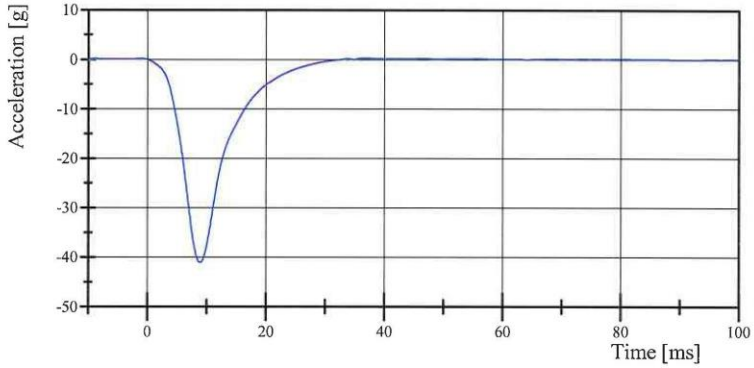
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.27.2015 08:53:18 696

Transportation Research Center Inc.

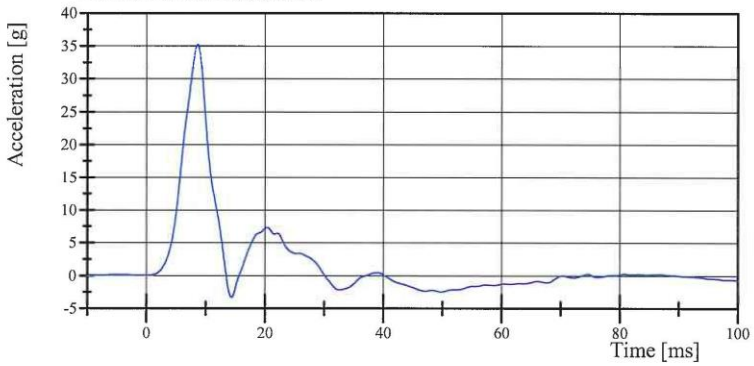
Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 34-1
Test Date: 10/27/2015

Probe Acceleration



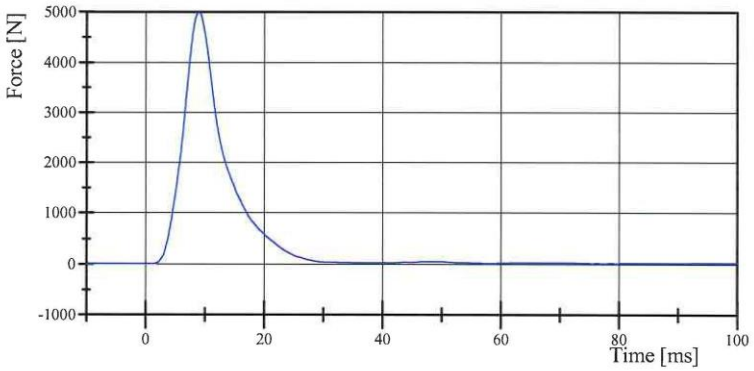
Filter Class: CFC_180
Max: 0.3 g at 36.5 ms
Min: -41.2 g at 8.9 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 35.2 g at 8.6 ms
Min: -3.4 g at 14.4 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,974.7 N at 9.0 ms
Min: -0.7 N at -0.5 ms

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

10.27.2015 08:53:28 696

Post-Test Calibration Sheets
Passenger S/N 305

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.35

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	445	Yes
C	H-Point Height	79.0 - 89.0	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	127	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	545	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	401	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	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician

Melissa Schinker

Approved

Revised 9/29/2005

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	122.6 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.7 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

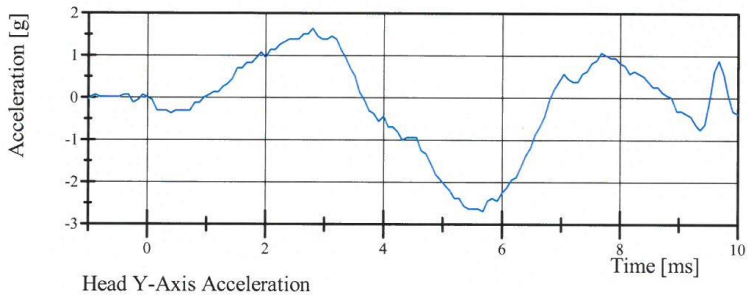
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.30.2015 13:54:41 232

Transportation Research Center Inc.

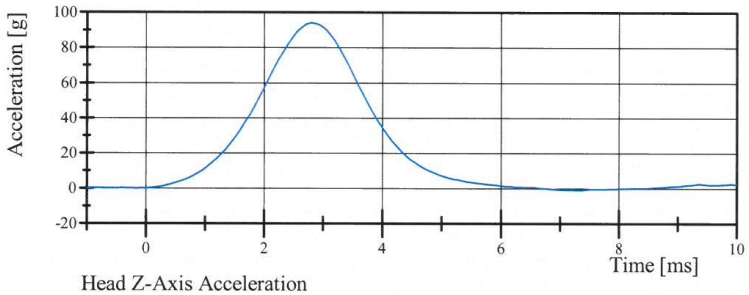
Left Lateral Head Drop
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 11/30/2015

Head X-Axis Acceleration



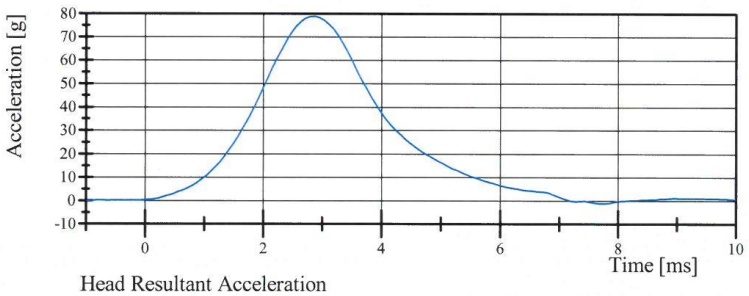
Filter Class: CFC_1000
Max: 1.6 g at 2.8 ms
Min: -2.7 g at 5.7 ms

Head Y-Axis Acceleration



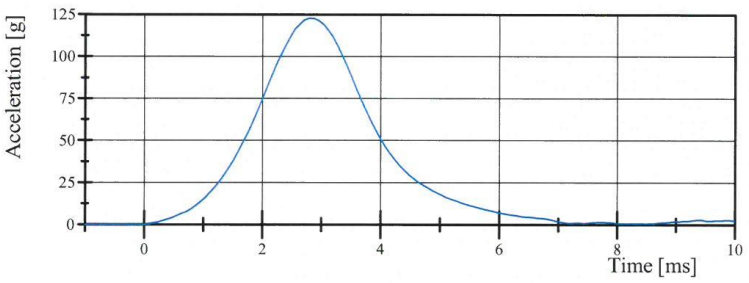
Filter Class: CFC_1000
Max: 94.1 g at 2.8 ms
Min: -0.8 g at 7.3 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 78.7 g at 2.9 ms
Min: -1.1 g at 7.7 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 122.6 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.

11.30.2015 13:54:48 232

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 305 Certification No. 35-2
Test Date: 11/30/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.607 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.686 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.965 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.374 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.853 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.856 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-76.9 deg	Yes
Time of Peak	50 - 70 ms	69.0 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	42.5 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	114.2 ms	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

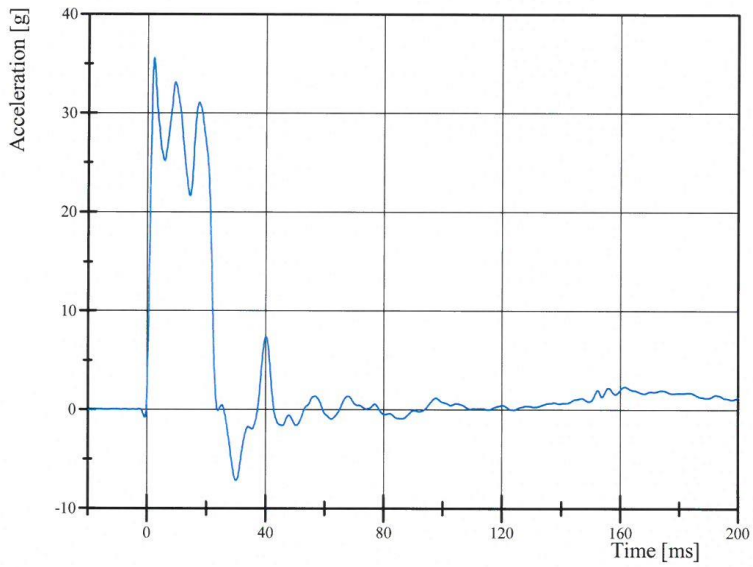
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.30.2015 14:24:25 638

Transportation Research Center Inc.

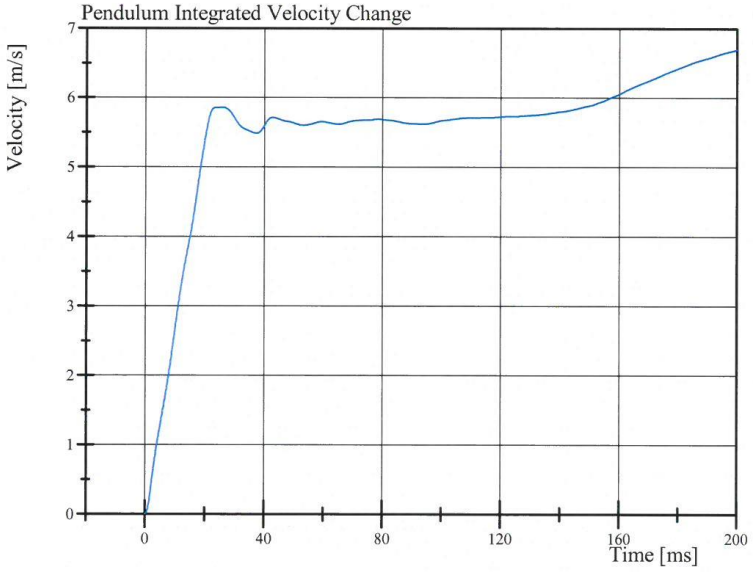
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 35-2
Test Date: 11/30/2015

Pendulum Acceleration



Filter Class: CFC_180
Max: 35.5 g at 2.2 ms
Min: -7.2 g at 30.0 ms

Pendulum Integrated Velocity Change



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

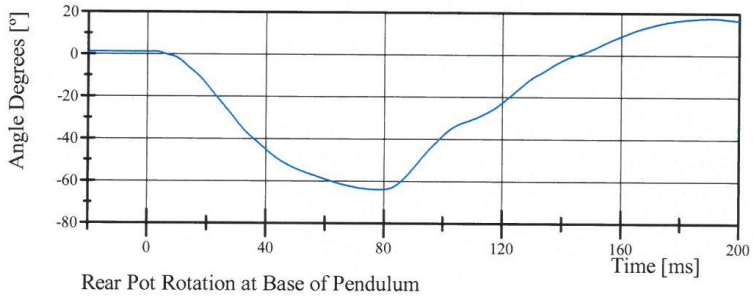
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.30.2015 14:24:33 638

Transportation Research Center Inc.

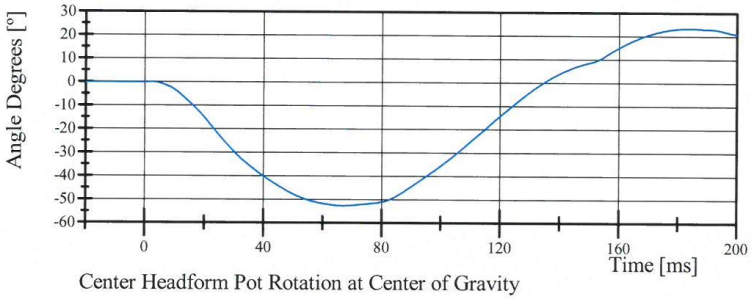
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 35-2
Test Date: 11/30/2015

Forward Pot Rotation at Base of Pendulum



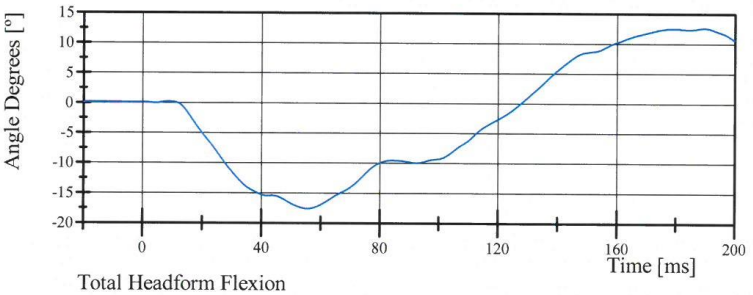
Filter Class: CFC_60
Max: 17.6 ° at 191.0 ms
Min: -64.0 ° at 78.6 ms

Rear Pot Rotation at Base of Pendulum



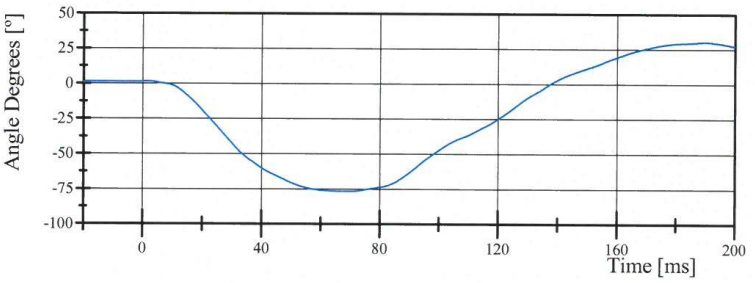
Filter Class: CFC_60
Max: 23.4 ° at 183.8 ms
Min: -52.8 ° at 67.0 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 12.7 ° at 189.7 ms
Min: -17.6 ° at 55.6 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 30.3 ° at 189.9 ms
Min: -76.9 ° at 69.0 ms

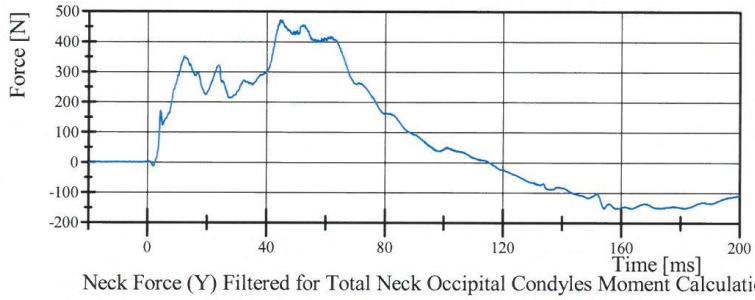
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

11.30.2015 14:24:34 638

Transportation Research Center Inc.

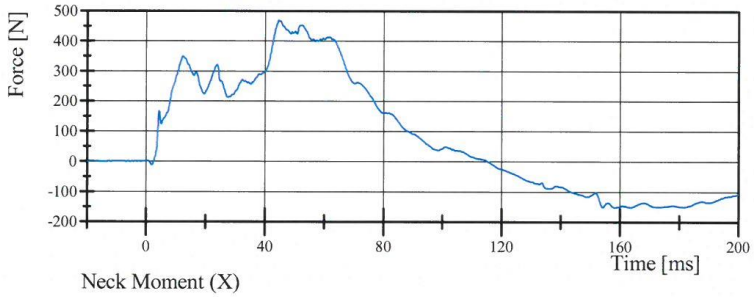
Left Lateral Neck
SID IIs Serial No. 305 Certification No. 35-2
Test Date: 11/30/2015

Neck Force (Y)



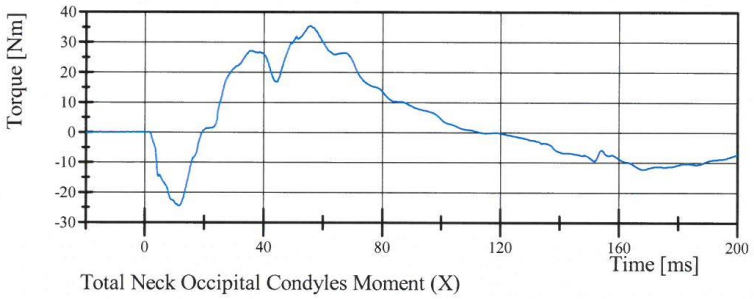
Filter Class: CFC_1000
Max: 471.8 N at 44.5 ms
Min: -151.6 N at 158.2 ms

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



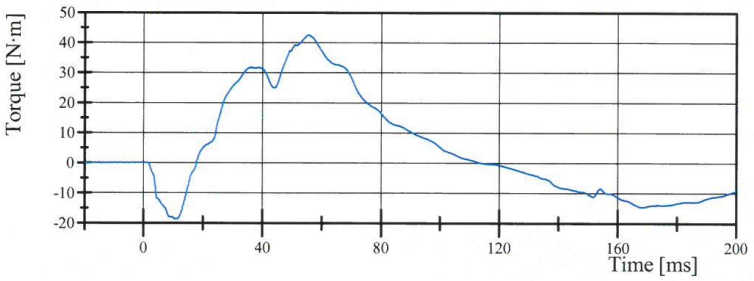
Filter Class: CFC_600
Max: 469.7 N at 44.5 ms
Min: -150.9 N at 158.2 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 35.3 Nm at 55.7 ms
Min: -24.5 Nm at 11.6 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 42.5 N·m at 55.6 ms
Min: -18.7 N·m at 10.6 ms

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

11.30.2015 14:24:35 638

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-17.1 g	Yes
Shoulder Displacement	28 - 37 mm	30.9 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	20.9 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

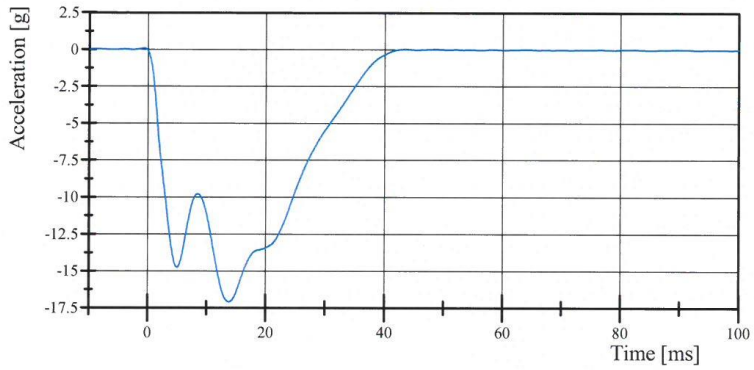
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 08:31:51 865

Transportation Research Center Inc.

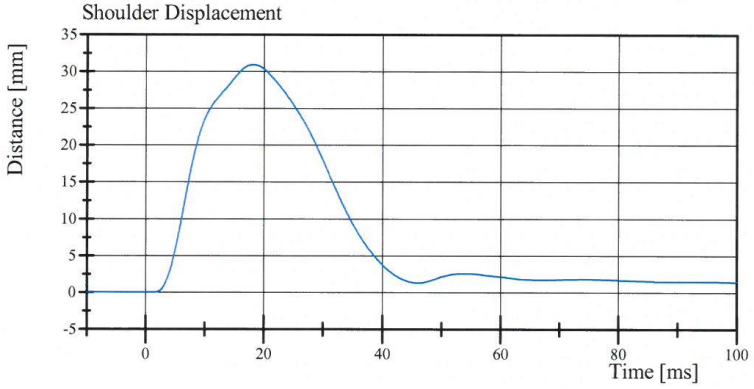
Left Lateral Shoulder
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Probe Acceleration



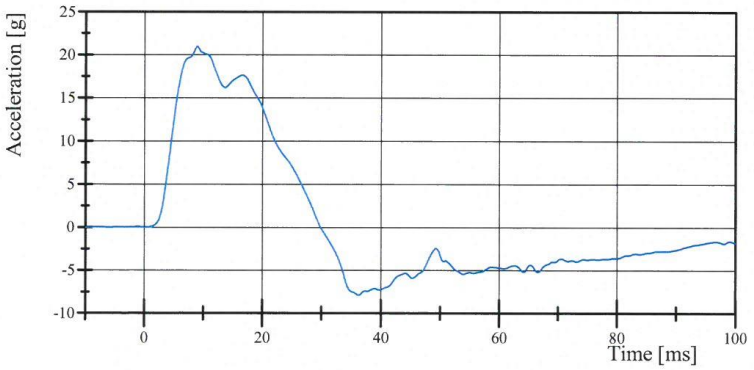
Filter Class: CFC_180
Max: 0.1 g at -0.6 ms
Min: -17.1 g at 13.8 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 30.9 mm at 18.2 ms
Min: -0.0 mm at -5.8 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 20.9 g at 9.0 ms
Min: -7.9 g at 36.2 ms

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

12.01.2015 08:31:59 865

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.767 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-35.5 g	Yes
Shoulder Displacement	31 - 40 mm	33.0 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	25.4 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.1 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.7 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	40.6 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	32.6 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schenker

Approved

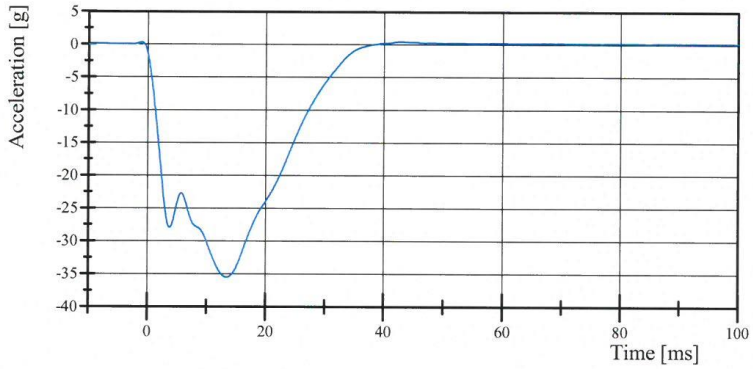
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 10:25:36 627

Transportation Research Center Inc.

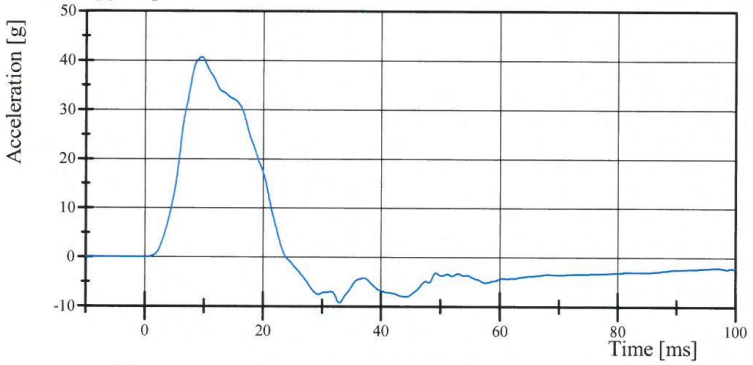
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Probe Acceleration



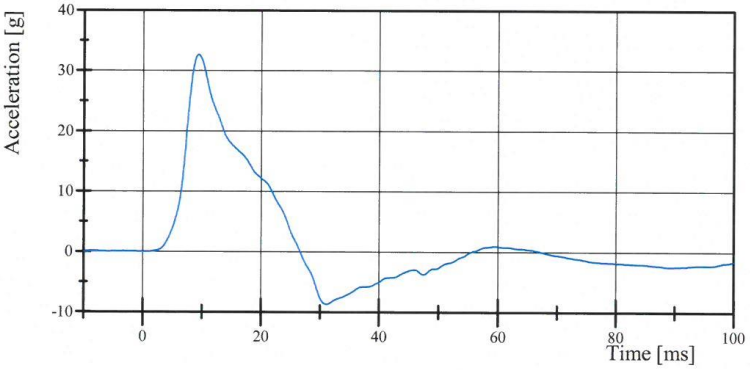
Filter Class: CFC_180
Max: 0.4 g at 42.8 ms
Min: -35.5 g at 13.4 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 40.6 g at 9.5 ms
Min: -9.3 g at 33.0 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 32.6 g at 9.4 ms
Min: -8.7 g at 31.1 ms

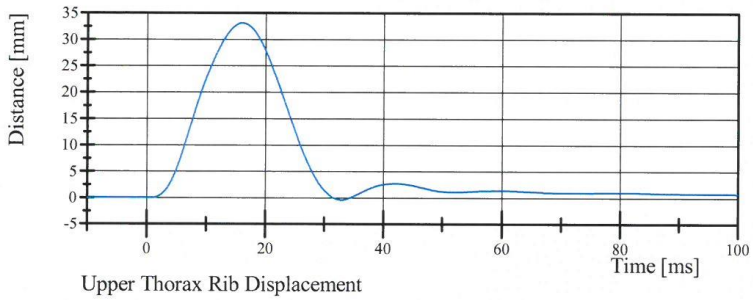
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 10:25:47 627

Transportation Research Center Inc.

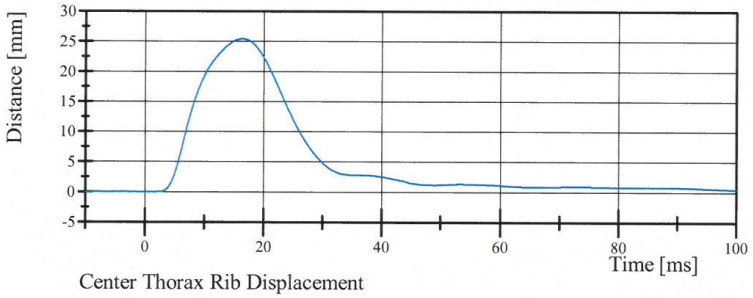
Left Lateral Thorax with Arm
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Shoulder Rib Displacement



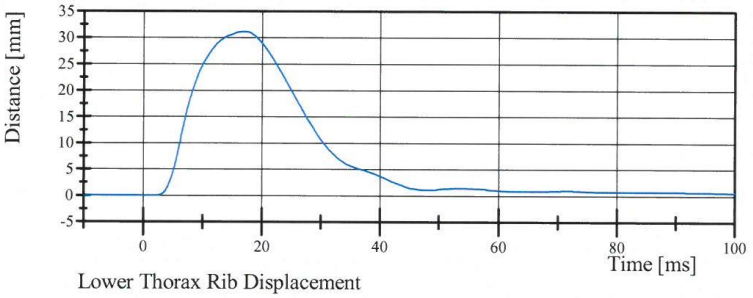
Filter Class: CFC_600
Max: 33.0 mm at 16.0 ms
Min: -0.4 mm at 33.0 ms

Upper Thorax Rib Displacement



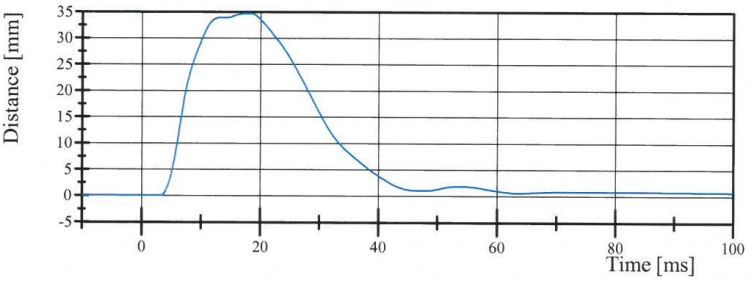
Filter Class: CFC_600
Max: 25.4 mm at 16.4 ms
Min: -0.0 mm at 1.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 31.1 mm at 17.0 ms
Min: -0.0 mm at -0.8 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 34.7 mm at 18.4 ms
Min: -0.0 mm at 3.2 ms

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

12.01.2015 10:25:48 627

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.310 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.6 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.8 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	39.4 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	35.3 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.1 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	8.9 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinkel

Approved

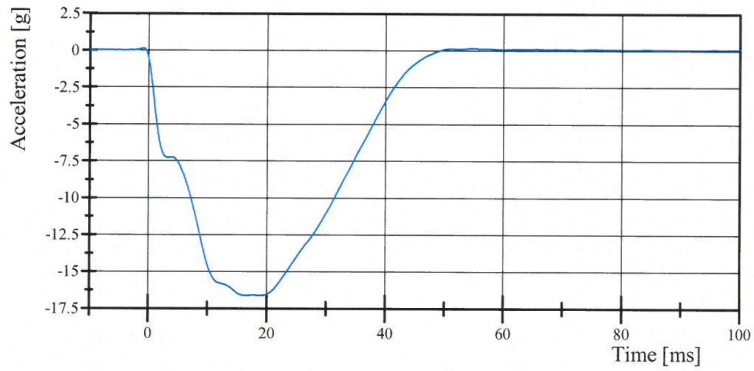
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 09:30:41 834

Transportation Research Center Inc.

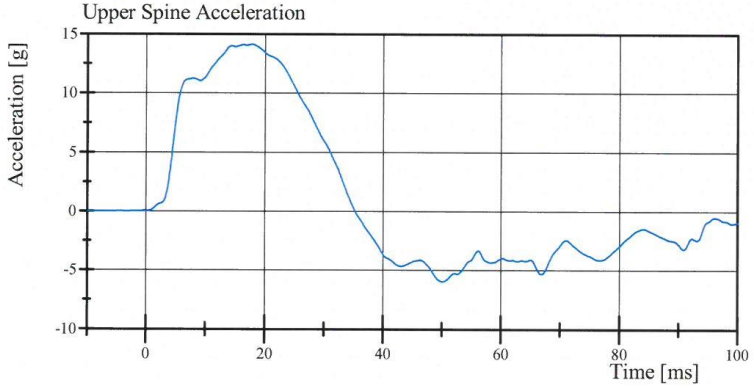
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Probe Acceleration



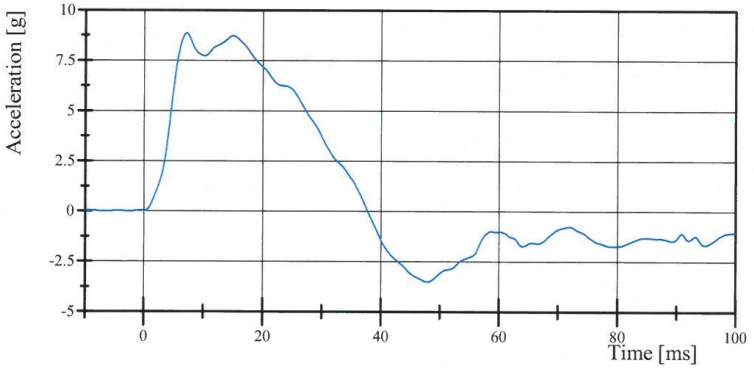
Filter Class: CFC_180
Max: 0.2 g at 54.8 ms
Min: -16.6 g at 19.0 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 14.1 g at 17.8 ms
Min: -5.9 g at 50.1 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 8.9 g at 7.1 ms
Min: -3.5 g at 47.9 ms

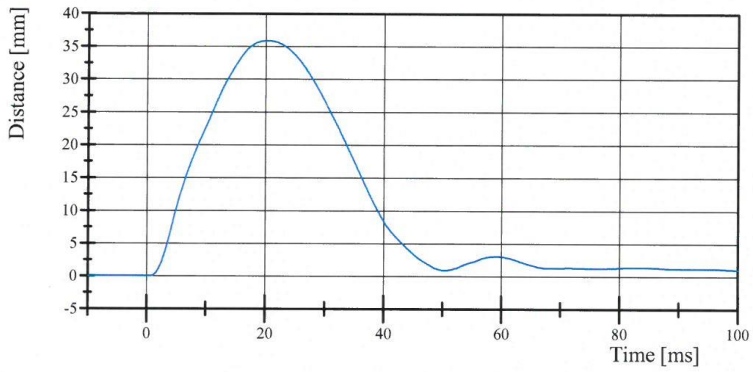
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 09:30:51 834

Transportation Research Center Inc.

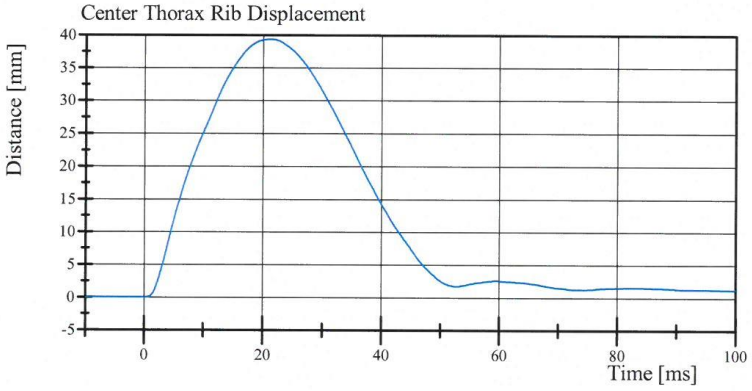
Left Lateral Thorax without Arm
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Upper Thorax Rib Displacement



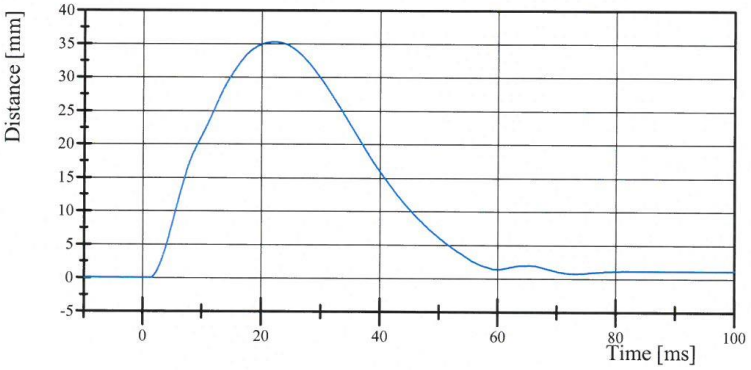
Filter Class: CFC_600
Max: 35.8 mm at 20.2 ms
Min: -0.0 mm at 0.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 39.4 mm at 21.0 ms
Min: -0.0 mm at -5.7 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 35.3 mm at 22.2 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.

12.01.2015 09:30:52 834

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.3 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	45.5 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	41.4 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.22 g	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

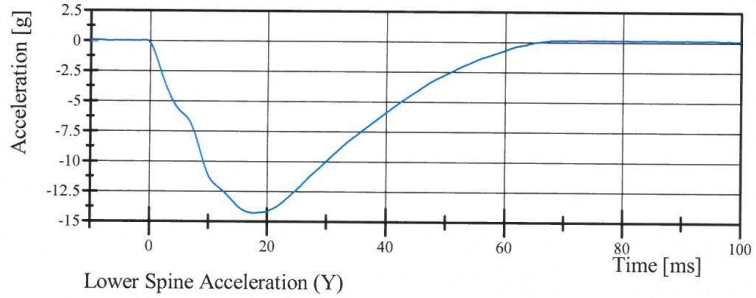
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 09:47:57 681

Transportation Research Center Inc.

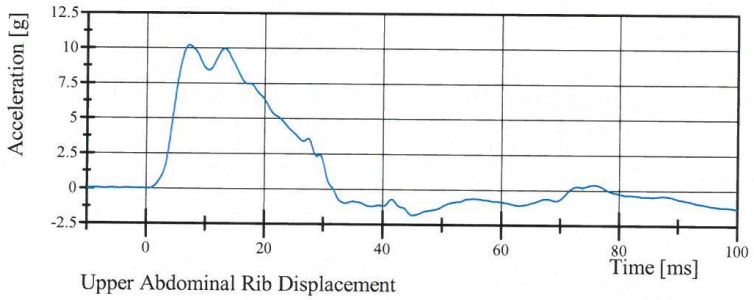
Left Lateral Abdomen
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Probe Acceleration



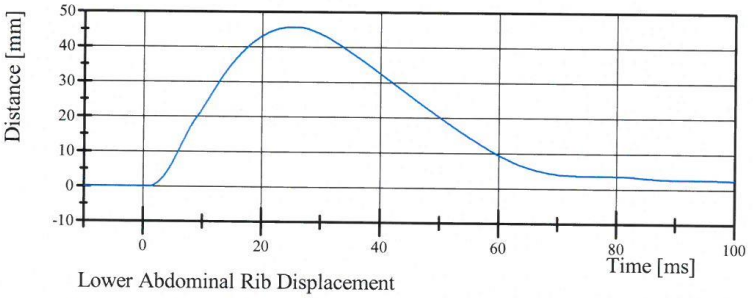
Filter Class: CFC_180
Max: 0.2 g at 79.8 ms
Min: -14.3 g at 17.8 ms

Lower Spine Acceleration (Y)



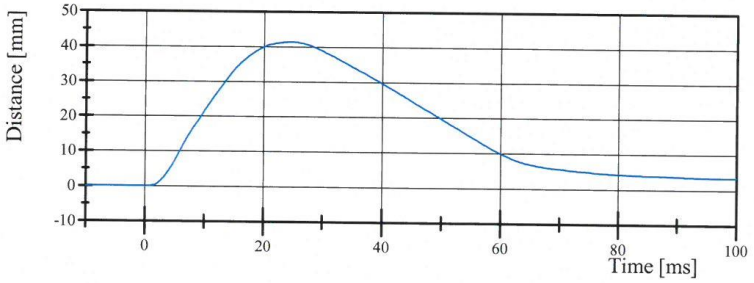
Filter Class: CFC_180
Max: 10.2 g at 7.1 ms
Min: -1.8 g at 45.0 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 45.5 mm at 25.0 ms
Min: -0.0 mm at 1.0 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 41.4 mm at 24.5 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.

12.01.2015 09:48:05 681

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.64 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-46.32 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	37.6 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,289.7 N	Yes

Test meets specifications.

Comments:

Technician

Melissa Schinker

Approved

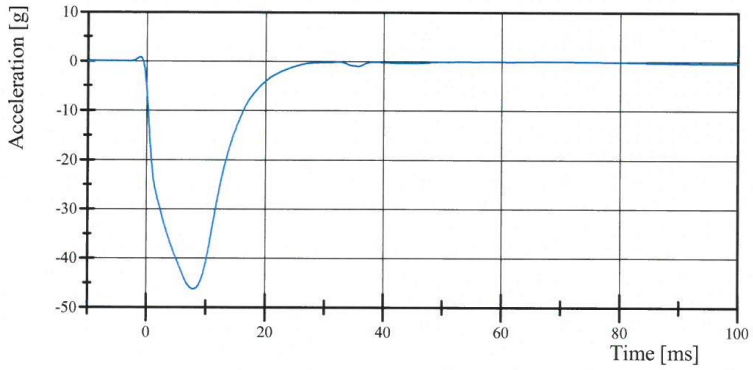
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 08:17:43 456

Transportation Research Center Inc.

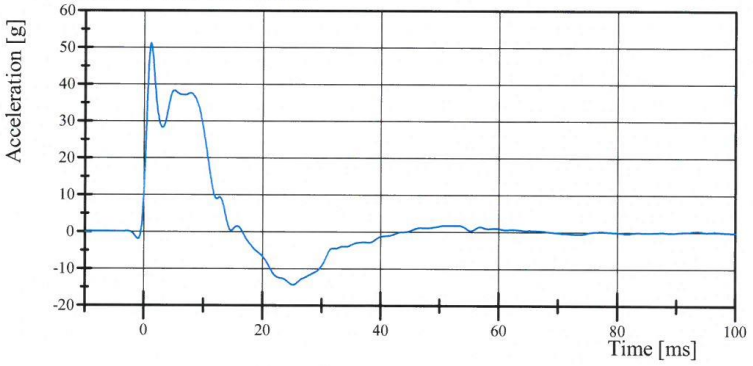
Left Lateral Pelvis
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Probe Acceleration



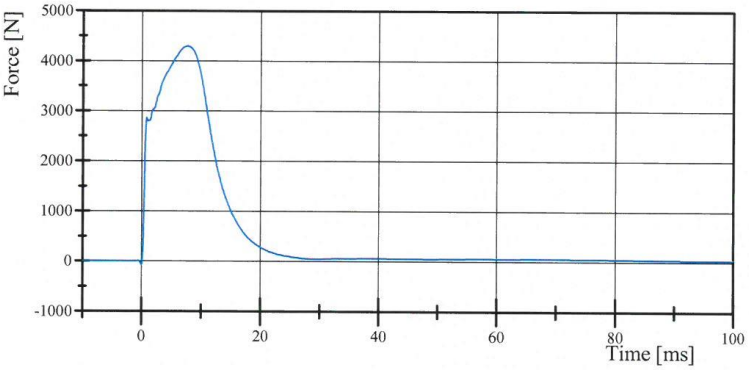
Filter Class: CFC_180
Max: 0.7 g at -1.0 ms
Min: -46.3 g at 7.9 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 51.2 g at 1.2 ms
Min: -14.4 g at 25.2 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 4,289.7 N at 7.6 ms
Min: -69.4 N at 0.0 ms

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

12.01.2015 08:17:51 456

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.29 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-40.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	30.6 g	Yes
Iliac Force	4,100 - 5,100 N	4,481.5 N	Yes

Test meets specifications.

Comments:

Technician

Melissa Schenker

Approved

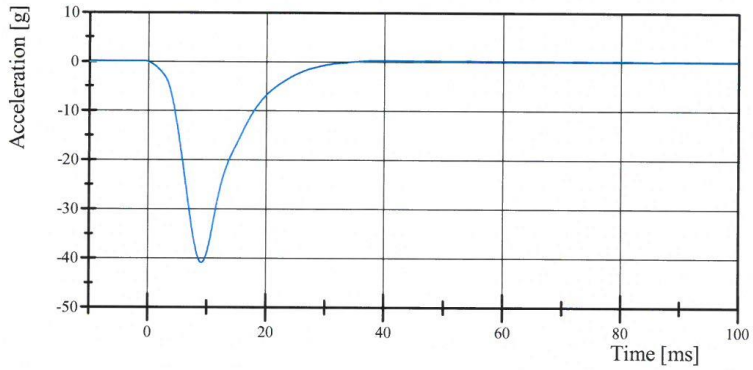
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.01.2015 10:55:43 648

Transportation Research Center Inc.

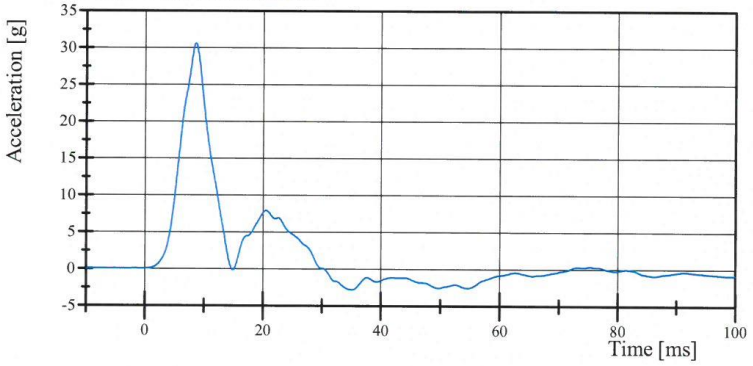
Left Lateral Iliac
SID IIs Serial No. 305 Certification No. 35-1
Test Date: 12/1/2015

Probe Acceleration



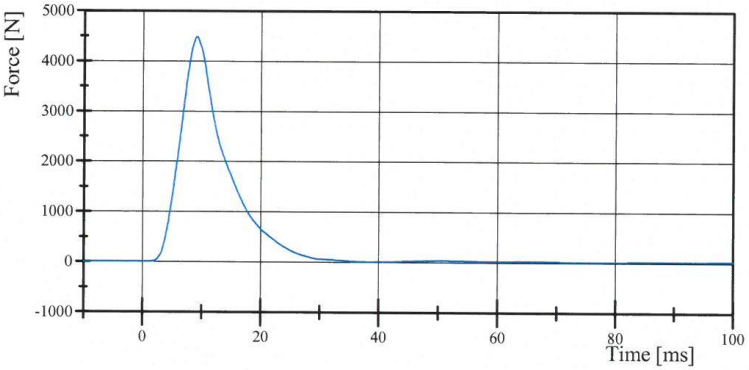
Filter Class: CFC_180
Max: 0.2 g at 43.3 ms
Min: -40.9 g at 9.1 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 30.6 g at 8.6 ms
Min: -2.8 g at 35.0 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,481.5 N at 9.1 ms
Min: -1.1 N at -8.8 ms

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

12.01.2015 10:55:52 648

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	29-Sep-15
		Y	P51702	Endevco	29-Sep-15
		Z	P52083	Endevco	29-Sep-15
Redundant Head Accelerometers		X	P49190	Endevco	29-Sep-15
		Y	P52044	Endevco	29-Sep-15
		Z	P51717	Endevco	29-Sep-15
Thoracic Rib Displacement Potentiometers	Upper	Y	111	FTSS	29-Sep-15
	Middle	Y	174	FTSS	29-Sep-15
	Lower	Y	173	FTSS	29-Sep-15
Abdomen Load Cells	Front	Y	1441	Denton	7-Apr-15
	Middle	Y	1436	Denton	7-Apr-15
	Rear	Y	1437	Denton	7-Apr-15
Lower Spine Accelerometers (T12)		X	P51295	Endevco	29-Sep-15
		Y	P68599	Endevco	29-Sep-15
		Z	P59005	Endevco	29-Sep-15
Acetabulum Load Cell		Y	N/A	N/A	N/A
Pubic Symphysis Load Cell		Y	457-FY	Denton	7-Apr-15

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 305		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers			X	P51719	Endevco	1-Oct-15
			Y	P51272	Endevco	1-Oct-15
			Z	P58862	Endevco	1-Oct-15
Redundant Head Accelerometers			X	P80926	Endevco	1-Oct-15
			Y	P50073	Endevco	1-Oct-15
			Z	P52098	Endevco	1-Oct-15
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A
	Thoracic Rib	Upper	Y	007	Servo	1-Oct-15
		Middle	Y	1161	Servo	1-Oct-15
		Lower	Y	037	Servo	1-Oct-15
	Abdominal Rib	Upper	Y	1295	Servo	1-Oct-15
		Lower	Y	1136	Servo	1-Oct-15
Lower Spine Accelerometers (T12)			X	P50068	Endevco	1-Oct-15
			Y	P52051	Endevco	1-Oct-15
			Z	P51710	Endevco	1-Oct-15
Acetabulum Load Cell			Y	D14283-FY	FTSS	1-Oct-15
Iliac Wing Load Cell			Y	287-FY	FTSS	1-Oct-15
Pelvis Plug (struck side)				62945	FTSS	15-Jan-13
Pelvis Plug (non-struck side)				36473	FTSS	23-Sep-10

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	P41252	Endevco	21-Oct-15
	Vehicle Center of Gravity	Y	P49313	Endevco	21-Oct-15
	Vehicle Center of Gravity	Z	P47512	Endevco	21-Oct-15
2	Right Sill at Front Seat	X	P81659	Endevco	20-Jul-15
	Right Sill at Front Seat	Y	P85580	Endevco	03-Sep-15
	Right Sill at Front Seat	Z	P87162	Endevco	18-Jun-15
3	Right Sill at Rear Seat	X	P88034	Endevco	13-Jul-15
	Right Sill at Rear Seat	Y	P88563	Endevco	17-Jul-15
	Right Sill at Rear Seat	Z	P87459	Endevco	17-Jul-15
4	Left Sill at Front Door	Y	P63151	Endevco	28-Jul-15
5	Left Sill at Rear Door	Y	P29868	Endevco	02-Sep-15
6	Left A-Post Lower	Y	P61943	Endevco	20-Oct-15
7	Left A-Post Middle	Y	P90868	Endevco	12-Oct-15
8	Left B-Post Lower	Y	P91086	Endevco	12-Oct-15
9	B-Post Middle	Y	P91089	Endevco	12-Oct-15
10	Front Seat Track	Y	P66749	Endevco	03-Sep-15
11	Rear Seat Track or Structure	Y	P89124	Endevco	07-Aug-15
12	Right Rear Occupant Compartment	Y	P25061	Endevco	05-May-15
13	Engine Block	X	P82005	Endevco	20-Jul-15
	Engine Block	Y	P90281	Endevco	12-Oct-15
14	Rear Floorpan Above Axle	X	P34103	Endevco	25-Aug-15
	Rear Floorpan Above Axle	Y	P81542	Endevco	05-May-15
	Rear Floorpan Above Axle	Z	P81534	Endevco	03-Jun-15

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	P88568	Endevco	17-Jul-15
MDB Center of Gravity	Y	P88423	Endevco	17-Jul-15
MDB Center of Gravity	Z	P84582	Endevco	23-Jul-15
Left Frame Rail at Rear Axle Centerline	X	P87153	Endevco	26-Jun-15
Left Frame Rail at Rear Axle Centerline	Y	P90862	Endevco	12-Oct-15