FINAL REPORT NUMBER: SPNCAP-TRC-20-006

NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST

FCA US LLC
2020 Ram 2500 Crew Cab
NHTSA NUMBER: M20200314

PREPARED BY:
Transportation Research Center Inc.
10820 State Route 347
P. O. Box B-67
East Liberty, OH 43319

Report Date: November 20, 2020

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 Prepared By: ILO Project Operations Group

Report Approved By: 

John Shultz

Approval Date: November 20, 2020

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

Technical Report Documentation Page

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15. Supplemental Notes		

16. Abstract

A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2020 Ram 2500 Crew Cab, in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on September 30, 2020.

The impact velocity was 32.27 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21.6° C. The test vehicle's post-test maximum crush was 547 mm at Level 3.

The test or target vehicle's performance is given below:

	Unit	Threshold	Front SID-IIs
Head Injury Criteria (HIC_{36}):	NA	1000	269
Resultant Lower Spine Acceleration:	g's	82	40.9
Total Pelvic Force: (sum of acetabular and iliac forces)	N	5525	4079.0
Maximum Thoracic Rib Deflection	mm	38*	21.7
Maximum Abdomen Rib Deflection	mm	45*	24.2

* Proposed IARV

The doors on the struck side 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 Pole Part 572V SID-IIs	18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave Washington, DC 20590

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TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY20 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 2020 Ram 2500 Crew Cab manufactured by FCA US LLC. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated October 2015.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a model year 2020 Ram 2500 Crew Cab. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.27 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on September 30, 2020. Pre-test and post-test photographs of the test vehicle and the side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated October 2015. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

Primary and Redundant Head CG Triaxial Accelerometers
Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
Abdomen Upper and Lower Rib Displacement Potentiometers
Lower Spine (T12) Triaxial Accelerometers
Iliac Load Cell
Acetabulum Load Cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D contains the test equipment and instrumentation calibration data.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC_{36})	NA	1000	269
Lower Spine Acceleration Resultant	G	82	40.9
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4079.0
Maximum Thoracic Rib Deflection	mm	38*	21.7
Maximum Abdominal Rib Deflection	mm	45*	24.2

* Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

Left Floor Sill Acceleration (Y) – Channel failed after 30.0 ms

Left A-Pillar Sill Acceleration (Y) – Channel failed after 75.0 ms

Driver Seat Track at Dummy Hip Point Acceleration (Y) – Channel failed after 45.0 ms

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20200314
Model Year	2020
Make	Ram
Model	2500 Crew Cab
Body Style	Truck
VIN	3C6UR4CJ4LG199919
Body Color	Bright White
Odometer Reading (km/mi)	13 mi.
Engine Displacement (L)	6.4
Type/No. Cylinders	Gas/8
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	8
Overdrive	Yes
Final Drive	RWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	No
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	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. 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 Manufacturer	7-20
Vehicle Type	Truck

GVWR (kg)	4536
GAWR Front (kg)	2495
GAWR Rear (kg)	2899

VEHICLE SEATING AND WEIGHT CAPACITY DATA

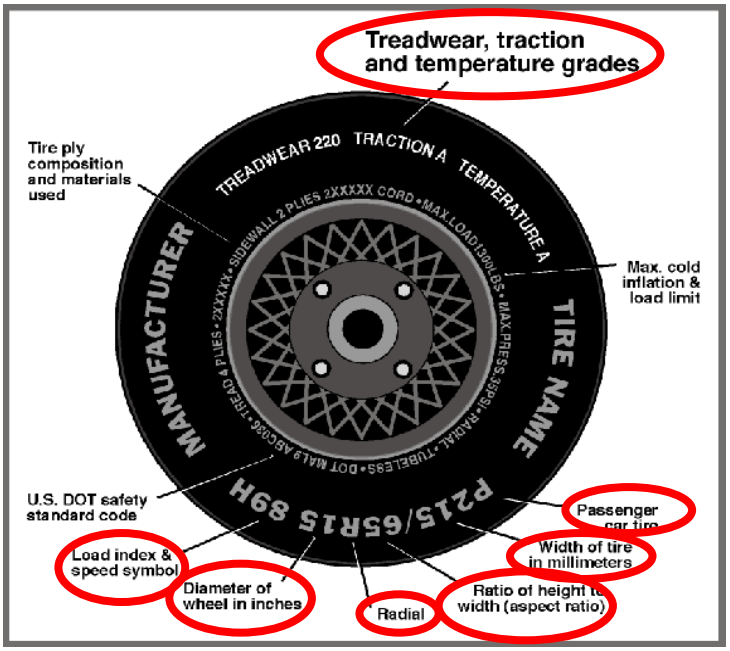
	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	3	3	N/A	6
Vehicle Capacity Weight (VCW) (kg)				1606.0
DSC X 68.04 kg				408.2
Rated Cargo and Luggage Weight (RCLW) (kg)				1197.8

VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	N/A	N/A	Yes		N/A	Yes	N/A
Rear or Second Row Seat	N/A	Yes	N/A	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: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	550	550
Cold Pressure (kPa)	415	450
Recommended Tire Size	LT275/70R18E	LT275/70R18E
Tire Size on Vehicle	LT275/70R18E	LT275/70R18E
Tire Manufacturer	Firestone	Firestone
Tire Model	Transforce HT	Transforce HT
Treadwear	N/A	N/A
Traction	N/A	N/A
Temperature Grades	N/A	N/A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	125/122S	125/122S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	VN15 TH7 0720	VN15 TH7 0720
DOT Safety Code Right	VN15 TH7 0720	VN15 TH7 0720

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

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	565	575	565	560
Tire Placard	kPa	415	415	450	450
Owner's Manual	kPa	415	415	450	450
As Tested	kPa	415	415	450	450

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	816.0	670.6		858.0	731.6		845.6	754.6	
Right	kg	809.0	630.8		809.6	705.8		813.6	697.6	
Ratio	%	55.5	44.5		53.7	46.3		53.3	46.7	
Totals	kg	1625.0	1301.4	2926.4	1667.6	1437.4	3105.0	1659.2	1452.2	3111.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	2926.4	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	49.0	(B)
Rated Cargo/Luggage Weight (RCLW)[1]	kg	136.0	(C)
Calculated Vehicle Target Weight (TVTW)	kg	3111.4	(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

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	- 0.5	-0.5	-0.8	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	-1.0	-0.9	-0.8	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	-0.3	-0.3	-0.5	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.5	-0.6	-0.7	Yes
Vehicle CG (Aft of Front Axle)	mm	1683	1752	1767	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	+14	+20	+24	

*ND=Nose Down (-), NU=Nose Up (+) **LD=Left Down (-), LU=Left Up (+)
*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements. Indicate "Yes" or "No" for "Meets Requirements".

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast: Steel plate in truck bed	64.8
Components Removed: None	0.0

Test height adjustable suspension setting, if applicable: N/A

[1]Rated cargo and luggage weight limited to 136.0 kg or 300.0 lbs.

DATA SHEET NO. 2

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

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	N/A	N/A	13.1
Front Passenger Seat	N/A	N/A	14.1
Front Center Seat*	N/A	N/A	5.4
Struck Side Rear Seat	N/A	N/A	8.1
Non-Struck Side Rear Seat	N/A	N/A	8.1
Rear Center Seat*	N/A	N/A	11.0

* 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	13.1	309	Max	N/A	N/A	N/A
			Mid	289	298	309
			Min	N/A	N/A	N/A
Front Passenger Seat	14.1	309	Max	N/A	N/A	N/A
			Mid	290	300	309
			Min	N/A	N/A	N/A
Front Center Seat*	5.4	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	204	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	8.1	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	360	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	8.1	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	352	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	11.0	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	225	N/A
			Min	N/A	N/A	N/A

* If applicable.

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

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

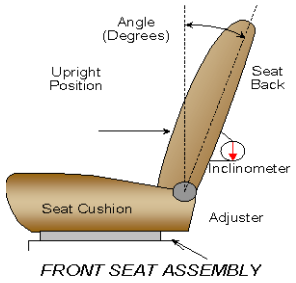
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forward most Position	
	mm	Detents*	mm	Detent*
Driver Seat	230	24	10	2
Front Passenger Seat	232	24	10	2
Front Center Seat*	0	Fixed	N/A	N/A
Struck Side Rear Seat	0	Fixed	N/A	N/A
Non-Struck Side Rear Seat	0	Fixed	N/A	N/A
Rear Center Seat*	0	Fixed	N/A	N/A

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. 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 passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1. For the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	56.7	29	1.9	7
Front Passenger Seat	56.4	29	1.9	7
Front Center Seat*	N/A	Fixed	N/A	N/A
Struck Side Rear Seat	N/A	Fixed	N/A	N/A
Non-Struck Side Rear Seat	N/A	Fixed	N/A	N/A
Rear Center Seat*	N/A	Fixed	N/A	N/A

* If applicable.

SEAT BELT ANCHORAGE ADJUSTMENT

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

	Total # of Positions	Placed in Position #
Driver Seat	5	1, Uppermost

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	3 up 7 forward	Full down, full forward

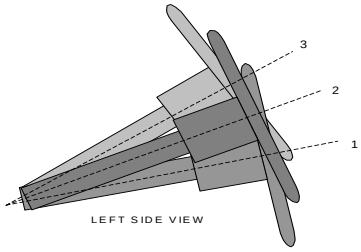
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

STEERING COLUMN ADJUSTMENT

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

	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	Detent 1	N/A
Geometric Center, Position No. 2	Detent 5	N/A
Uppermost, Position No. 3	Detent 9	N/A
Telescoping Steering Wheel Travel		N/A
Test Position	Detent 5	N/A

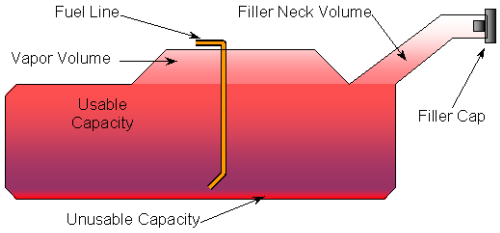


STEERING COLUMN ASSEMBLY

FUEL PUMP

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

Ignition key in and turned to the run position



VEHICLE FUEL TANK ASSEMBLY

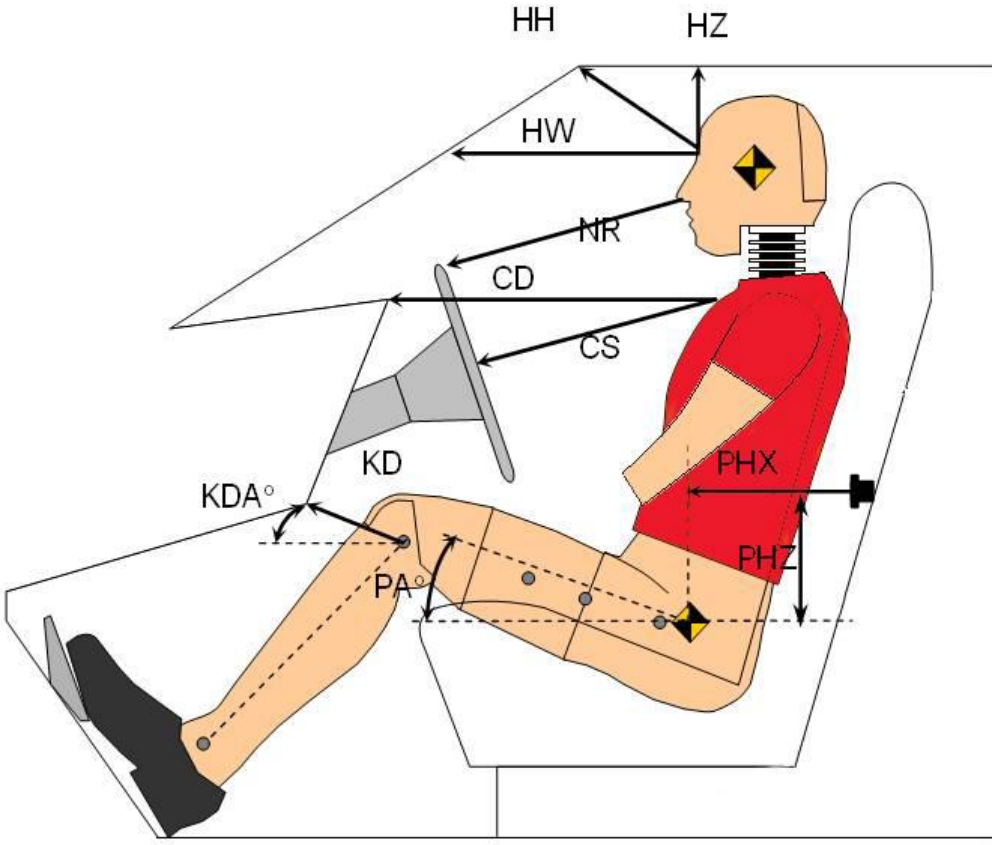
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	117
Usable Capacity of "Optional" Tank (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	117
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	109
Actual Amount of Solvent Used in Test	109
1/3 of Usable Capacity	39

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

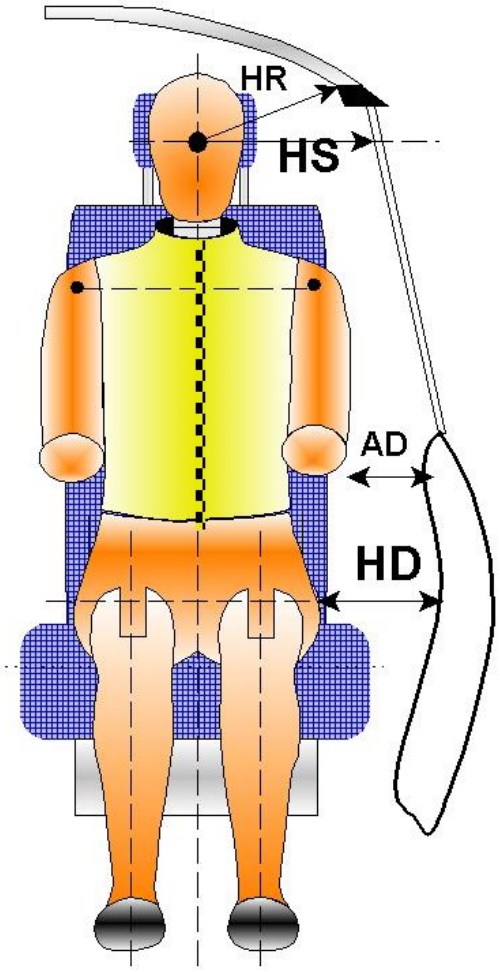
Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	402	
HW	Head to Windshield	708	
HZ	Head to Visor	277	
NR	Nose to Rim	285	
CD	Chest to Dashboard	471	
CS	Chest to Steering Wheel	223	
KDL/KDLA°	Left Knee to Dash	85	19.1
KDR/KDRA°	Right Knee to Dash	78	15.6
PAX°	Pelvic Tilt Angle (X-axis)		0.3
PAY°	Pelvic Tilt Angle (Y-axis)		20.1
PHX	Hip Point to Striker (X-Axis)	333	
PHZ	Hip Point to Striker (Z-Axis)	17	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

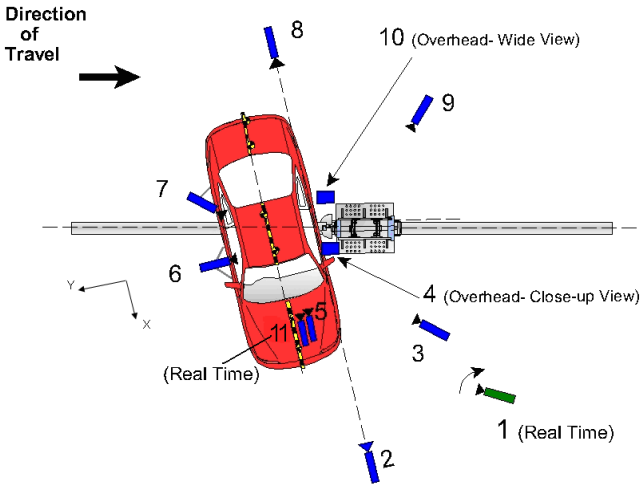
Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



Code	Measurement Description	Length (mm)
HR	Head to Side Header	78
HS	Head to Side Window	378
AD	Arm to Door	180
HD	Hip Point to Door	181

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



REFERENCE: (from point of impact for X and Y; from ground for Z)
+ X = Forward of vehicle, + Y = Right of vehicle, + Z = Down

Camera No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real time (24-30 fps) pan view of impact				Zoom	30
2	Front ground level – impact view	5406	0	-1739	20	1000
3	Impact side 45° – forward pole view	3912	-847	-1642	20	1000
4	Overhead Close-up view of impact	0	0	-5260	28	1000
5	Onboard – dummy front view				12.5	1000
6	Onboard – dummy side view				12.5	1000
7	Onboard – dummy rear oblique view				12.5	1000
8	Rear ground level – impact view	-7360	0	-1626	20	1000
9	Impact side 45° – rearward pole view	-3004	2286	-1765	20	1000
10	Overhead wide view of impact	384	250	-5259	18.5	1000
11	Real time dummy front view				Zoom	30

All measurements accurate to +/- 6 mm.

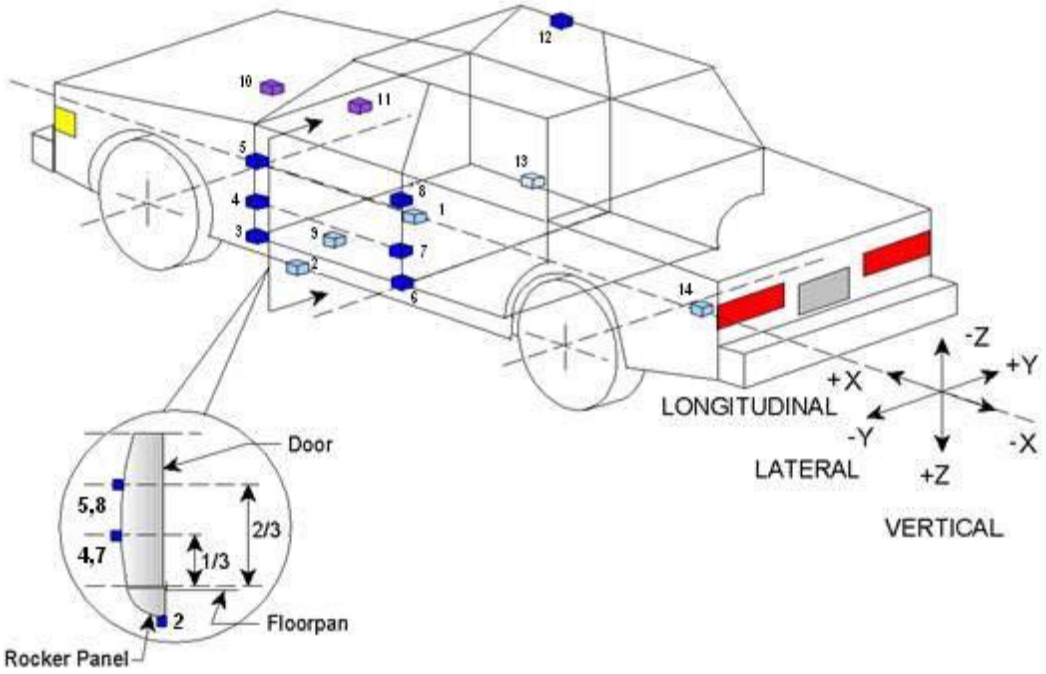
NOTE: Vehicle was at a 75° angle to the rigid pole.
If applicable, explain why camera(s) did not run: N/A

INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
TOTAL	42

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



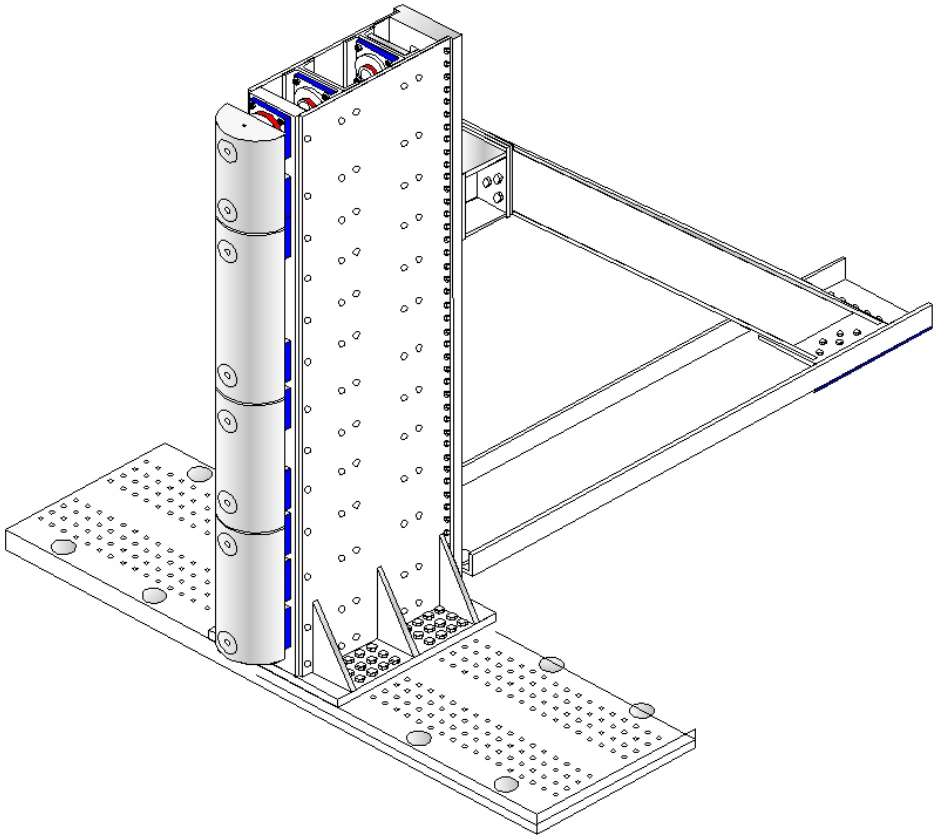
	Accelerometer/Sensor Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3250	0	-787
2	Left Floor Sill	4010	-835	-611
3	A-Pillar Sill	4385	-810	-721
4	A-Pillar Low	4440	-900	-912
5	A-Pillar Mid	4437	-890	-1266
6	B-Pillar Sill	3300	-720	-661
7	B-Pillar Low	3325	-810	-893
8	B-Pillar Mid	3340	-800	-1275
9	Driver Seat Track	3675	-555	-809
10	Engine Top	4910	25	-1295
11	Firewall	4895	20	-1380
12	Right Roof	3433	685	-1944
13	Right Floor Sill	4003	835	-598
14	Rear Floorpan	1030	0	-905

Reference: *X - Test Vehicle Rear Bumper (+ forward)*
Y - Test Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

FOIL 300K RIGID POLE



Load Cell Locations	
ID	**Height From Top of Carrier (mm)**
1	87
2	468
3	648
4	978
5	1168
6	1651
7	1816
8	2057

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	SCAB, DAB
Top of Head	SCAB
Left Side of Head	SCAB
Back of Head	None
Left Shoulder	SAB
Upper Torso	Seatback bolster
Lower Torso	Seatback bolster, SAB
Left Hip	SAB, Door panel
Left Knee	Door panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	No	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	Yes	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

POST-TEST SEAT PERFORMANCE

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Good
Sill Separation	None
Windshield Damage	A-Pillar and across roof line
Side Window Damage	Driver window broken out
Other Notable Effects	Driver and passenger front airbags deployed. Passenger seat pushed hard into passenger door. Lots of floor board deformation

DATA SHEET NO. 8 (CONTINUED)
POST-TEST OBSERVATIONS

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

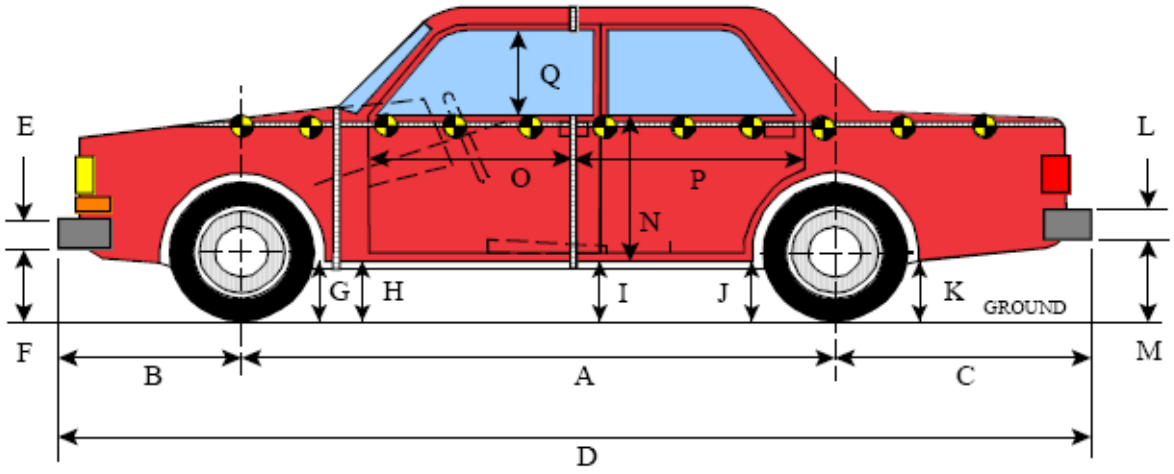
Restraint Type	Struck Side (Driver)		Struck Side (Rear Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	Yes		
Knee Airbag	No	N/A		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	N/A
Side Torso Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt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

VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1247
Actual Impact Point (Aft of Front Axle)	mm		1252
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	-5
Angle Between Vehicle's Longitudinal Centerline and Line of Motion	degrees	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.27
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.29

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



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

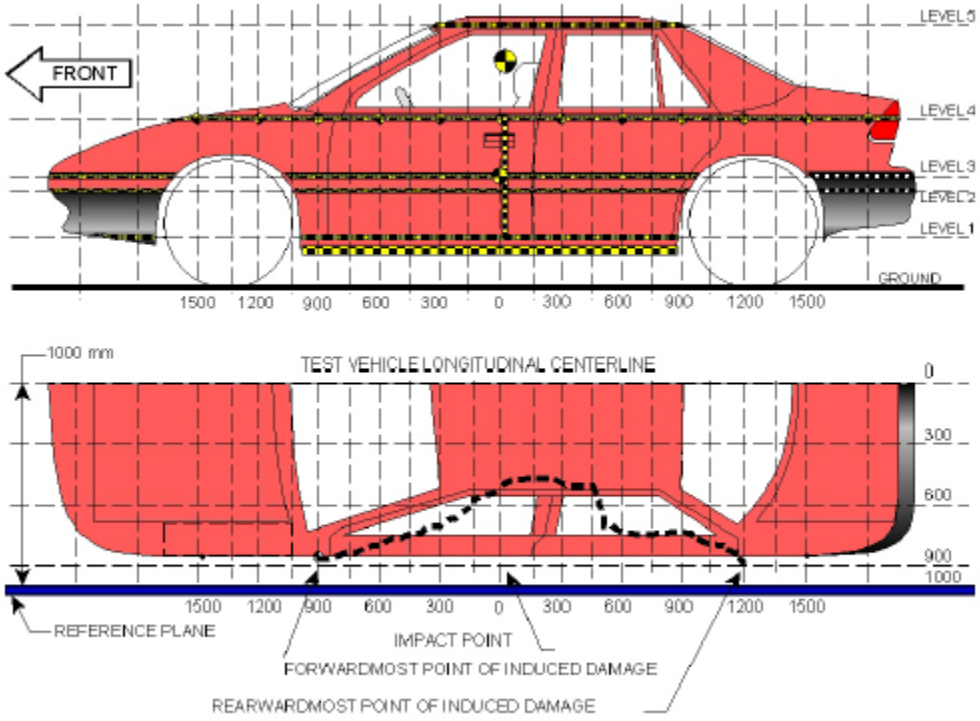
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3785	3720	65
B	Front Axle to Front Surface of Vehicle	1030	1030	0
C	Rear Axle to Rear Surface of Vehicle	1230	1230	0
D	Total Length at Centerline	6045	5990	55
E	Front Bumper Thickness	265	265	0
F	Front Bumper Bottom to Ground	460	505	-45
G	Sill Height at Front Wheel Well	493	462	31
H	Sill Height at Front Door Leading Edge	500	477	23
I	Sill Height at B-Pillar	525	517	8
J1	Sill Height at Rear Wheel Well	537	560	-23
J2	Pinch Weld Height at Rear Wheel Well	438	459	-21
K	Sill Height Aft of Rear Wheel Well	570	518	52
L	Rear Bumper Thickness	185	185	0
M	Rear Bumper Bottom to Ground	804	655	149
N	Sill Height to Bottom of Front Window Sill	887	890	-3
O	Front Door Leading Edge to Impact CL	711	550	161
P	Rear Door Trailing Edge to Impact CL	1441	1255	186
Q	Front Window Opening	490	455	35
R	Right Side Length	5965	5940	25
S	Left Side Length	5965	5845	120
T[1]	Vehicle Width at B-Pillars	1190	1800	-610

[1] Max width = 2010

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



NOTE: All measurements are in millimeters (mm)

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	714	504	-150
2	Occupant H-Point	1064	544	-150
3	Mid-Door	983	547	-150
4	Window Sill	1338	485	-150
5	Window Top	1911	303	-150

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

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

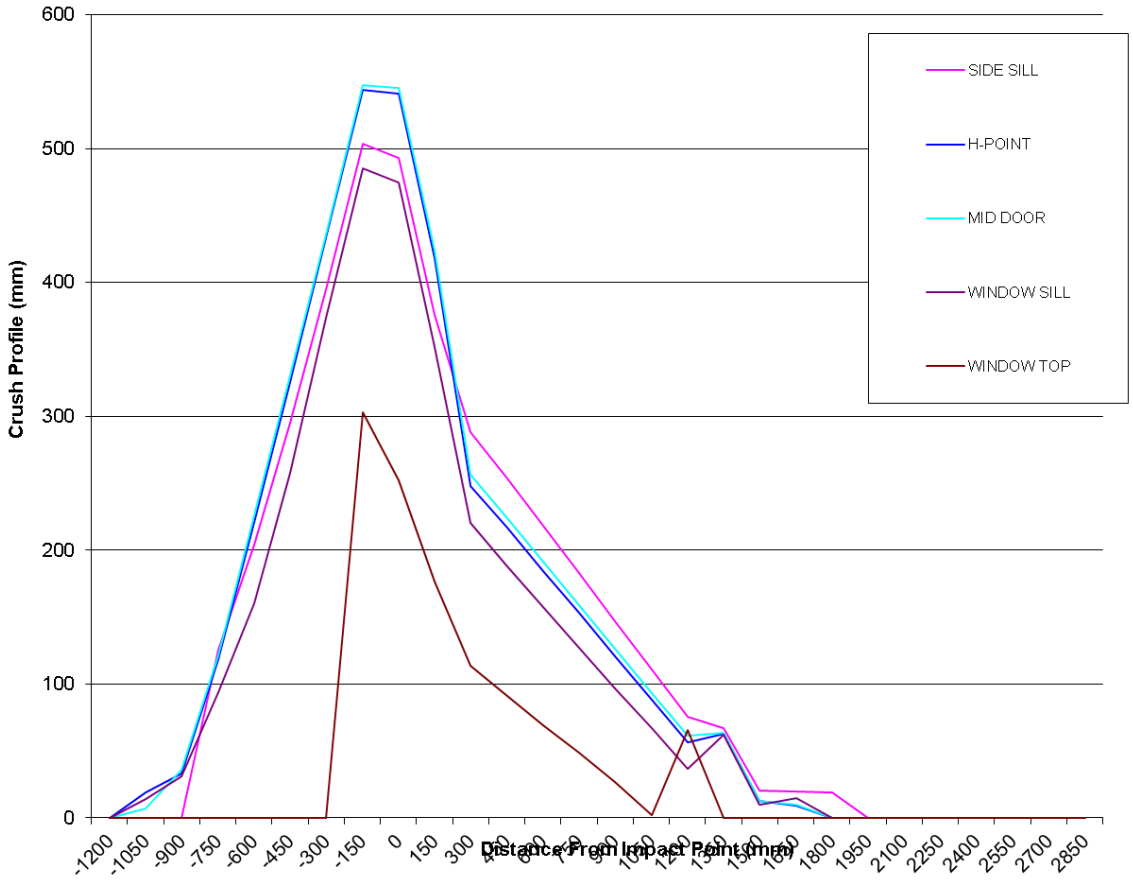
Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1050	0	988	991	874	0	0	969	984	859	0	0	19	7	15	0
-900	949	989	991	888	0	917	956	955	857	0	32	33	36	31	0
-750	942	988	989	898	0	816	869	868	804	0	126	119	121	94	0
-600	939	987	988	906	0	735	766	763	746	0	204	221	225	160	0
-450	933	986	988	915	0	638	661	658	657	0	295	325	330	258	0
-300	930	986	989	922	0	535	553	553	549	0	395	433	436	373	0
-150	932	987	989	928	697	428	443	442	443	394	504	544	547	485	303
0	935	989	992	934	707	442	448	446	460	455	493	541	546	474	252
150	939	992	995	940	712	563	574	571	588	535	376	418	424	352	177
300	941	994	996	945	719	652	746	740	725	606	289	248	256	220	113
450	943	997	999	949	723	689	781	775	762	632	254	216	224	187	91
600	945	1000	1002	953	728	728	815	810	796	658	217	185	192	157	70
750	948	1002	1003	957	732	766	849	844	829	684	182	153	159	128	48
900	951	1003	1004	960	734	804	883	878	863	708	147	120	126	97	26
1050	953	1004	1004	963	735	842	915	911	896	733	111	89	93	67	2
1200	955	1004	1004	965	731	880	947	943	929	665	75	57	61	36	66
1350	925	1001	1000	956	0	858	939	937	894	0	67	62	63	62	0
1500	941	991	990	952	0	921	978	977	942	0	20	13	13	10	0
1650	939	997	995	959	0	920	987	985	944	0	19	10	10	15	0
1800	936	0	0	0	0	917	0	0	0	0	19	0	0	0	0

NOTE: Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy’s head.

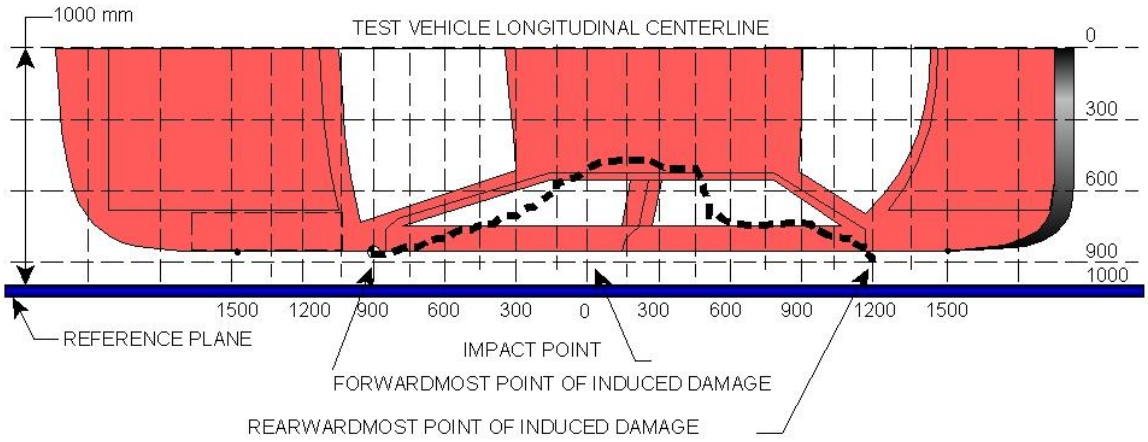
DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	1800	1	917	936	19
2	1200	1	880	955	75
3	600	1	728	945	217
4	0	3	446	992	546
5	-450	3	658	988	330
6[1]	-1050	2	969	998	0

[1] DPD 6 is defined as zero crush since the crush does not extend to the end of the vehicle.

DATA SHEET NO. 12

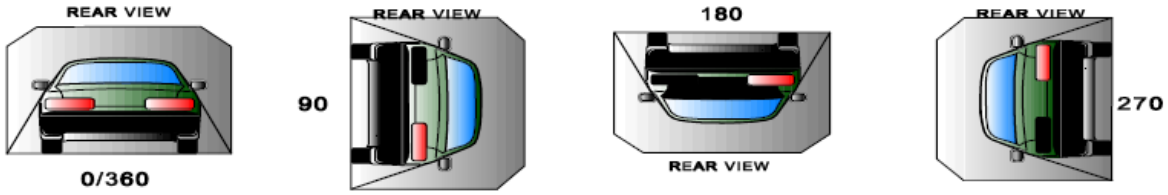
FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020

Test Time: 14:50 **Temperature:** 21.6ºC

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

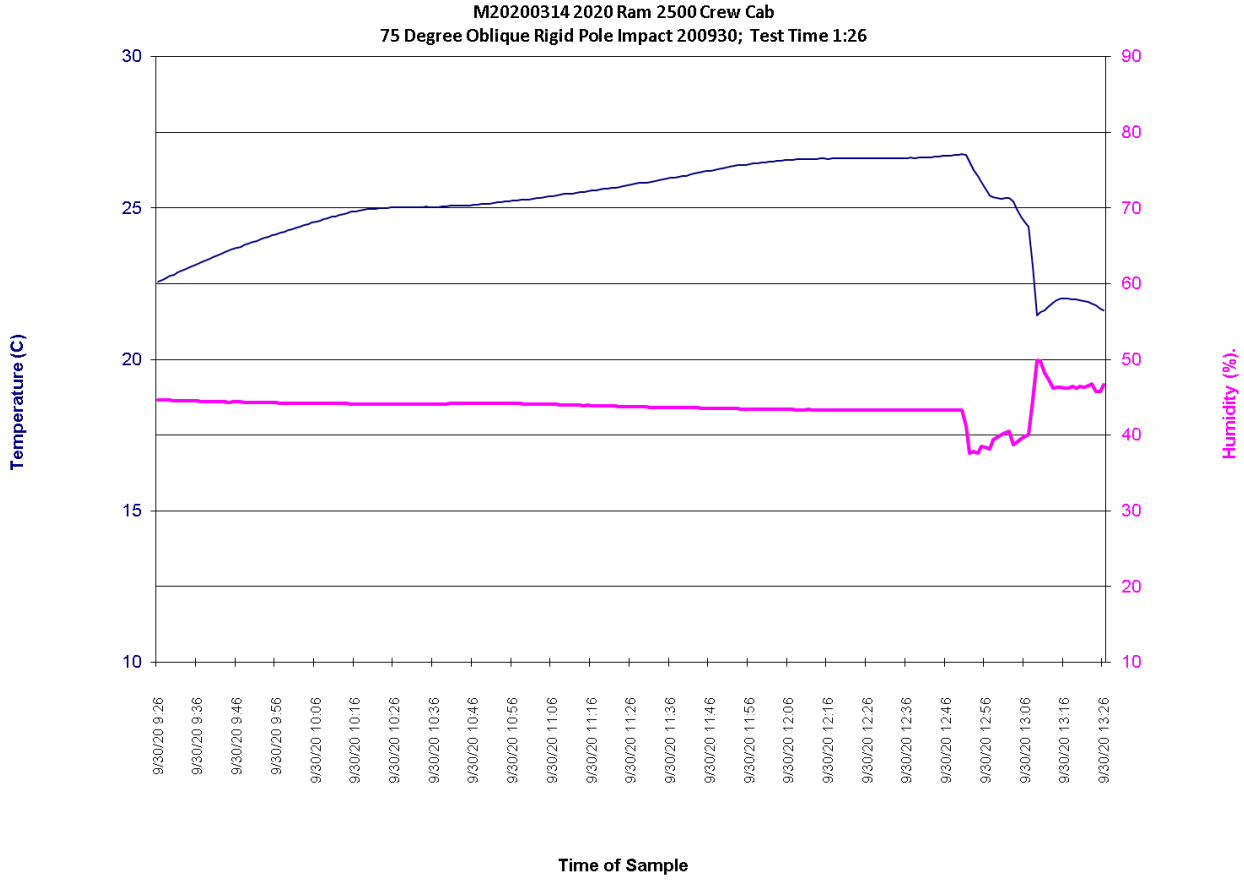
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0	0	0
90 to 180	0	0	0	0
180 to 270	0	0	0	0
270 to 360	0	0	0	0

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. 13
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2020 Ram 2500 Crew Cab NHTSA No.: M20200314
Test Program: SPNCAP Side Impact Test Date: 9/30/2020



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

No. 001 As Delivered Right Front ¾ View of Test Vehicle

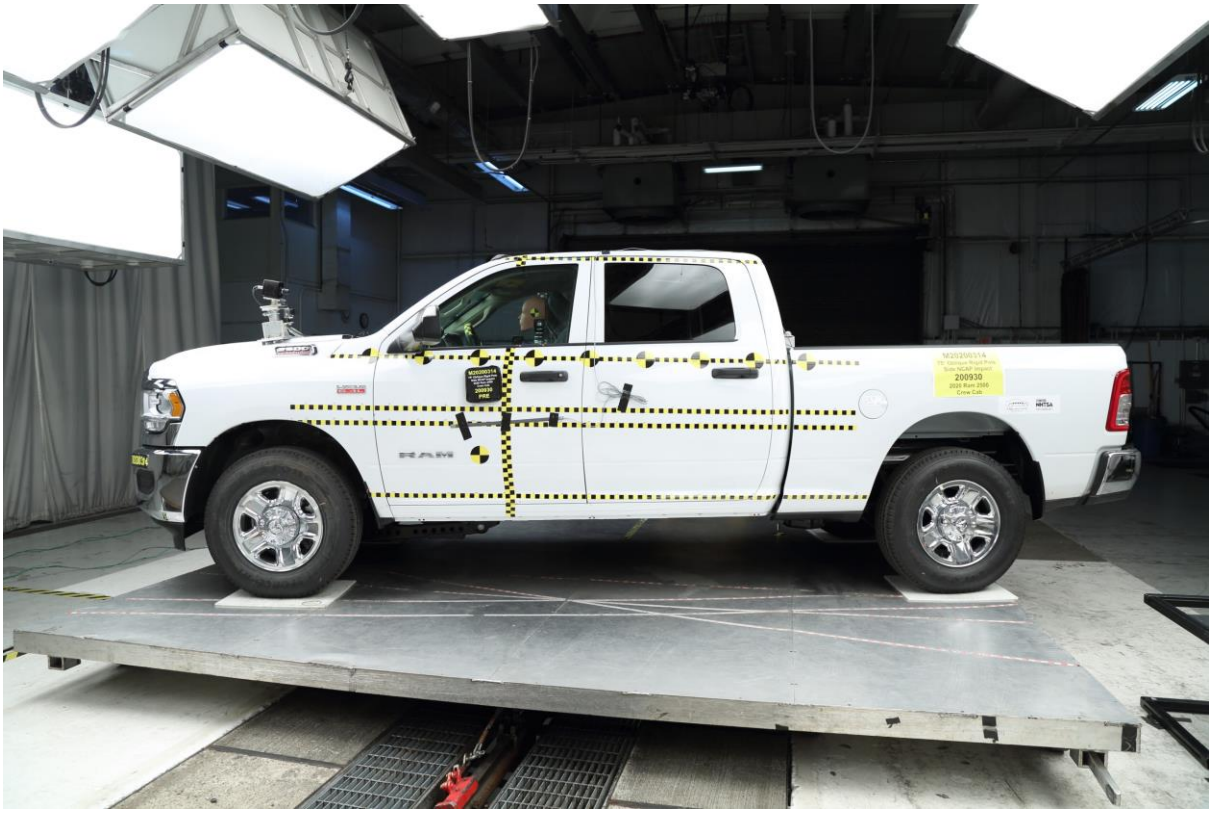
No. 002 As Delivered Left Rear ¾ View of Test Vehicle

No. 003 Pre-Test Frontal View of Test Vehicle

No. 004 Post-Test Frontal View of Test Vehicle

No. 005 Pre-Test Left Front ¾ View of Test Vehicle

No. 006 Post-Test Left Front ¾ View of Test Vehicle



No. 007 Pre-Test Left Side View of Test Vehicle

No. 008 Post-Test Left Side View of Test Vehicle

No. 009 Pre-Test Left Rear ¾ View of Test Vehicle

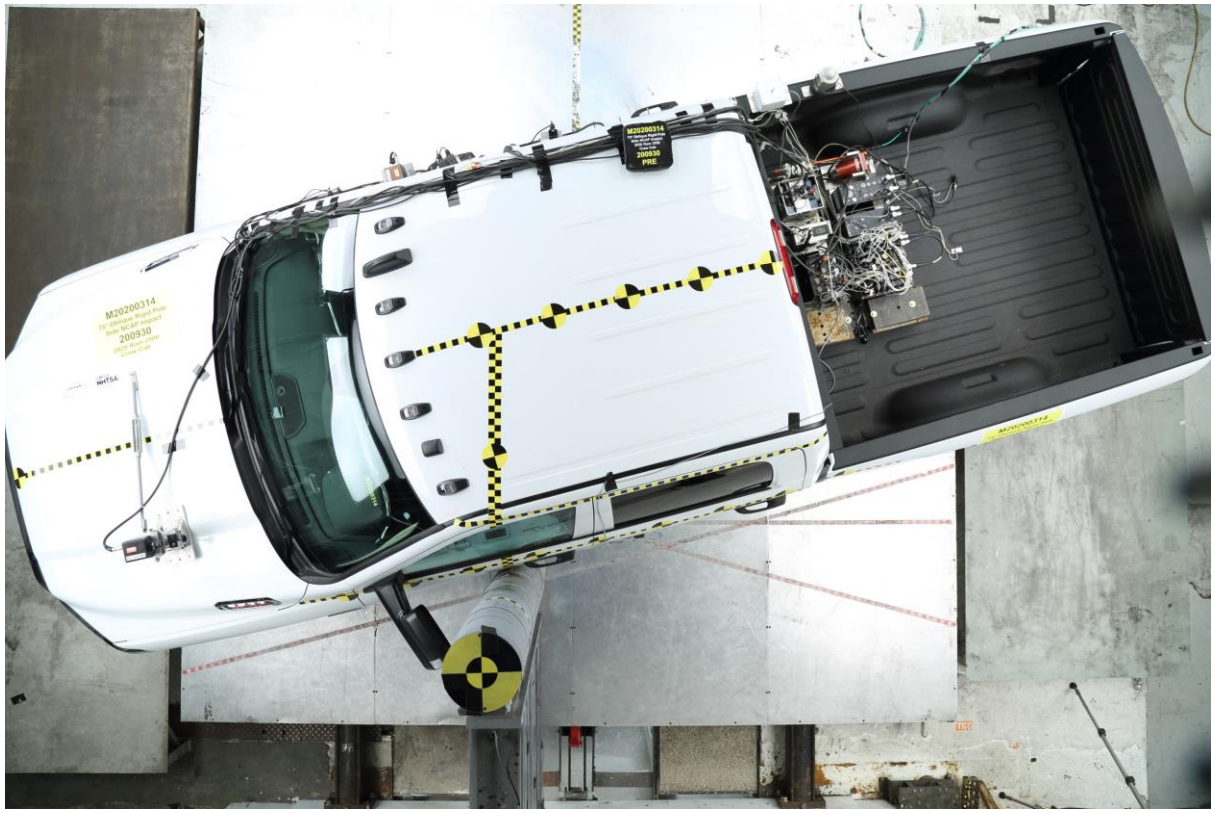
No. 010 Post-Test Left Rear ¾ View of Test Vehicle

No. 011 Pre-Test Rear View of Test Vehicle

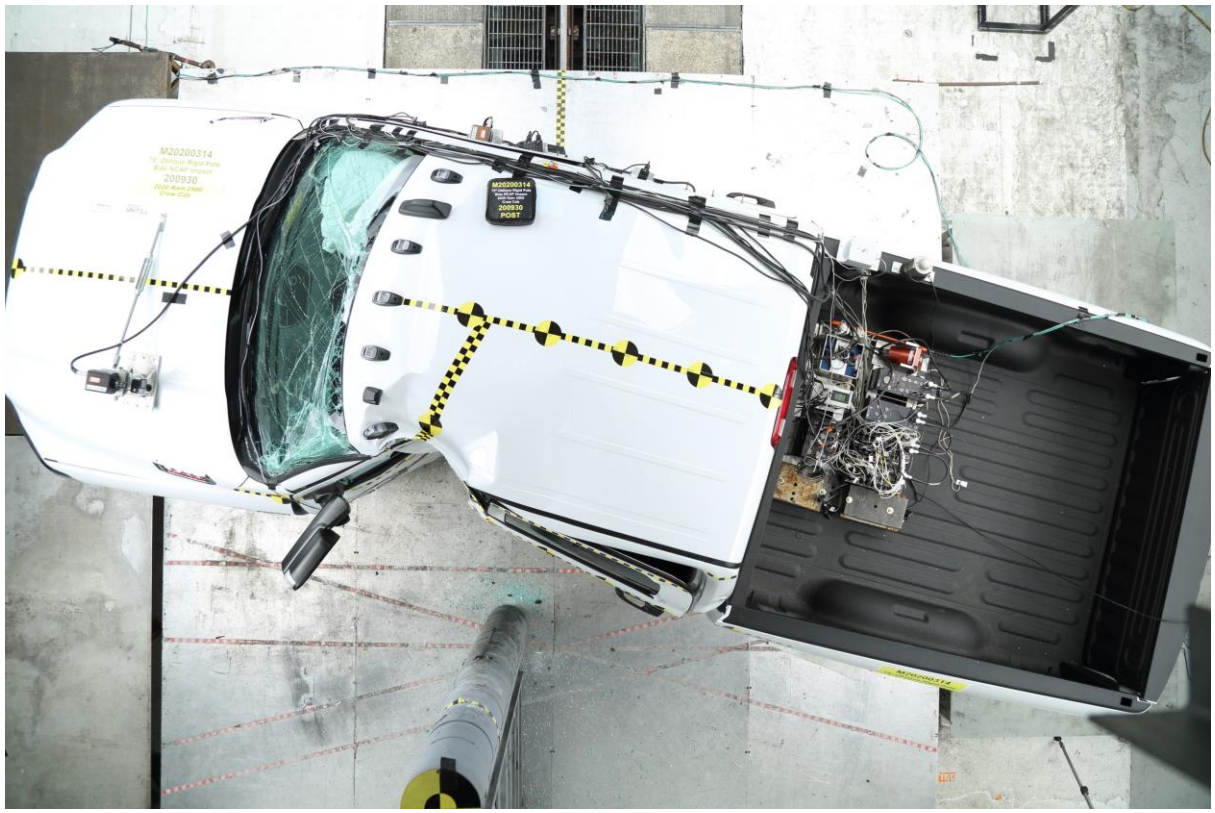
No. 012 Post-Test Rear View of Test Vehicle

No. 013 Pre-Test Right Side View of Test Vehicle

No. 014 Post-Test Right Side View of Test Vehicle



No. 015 Pre-Test Overhead View of Test Area



No. 016 Post-Test Overhead View of Test Area

No. 017 Pre-Test Left Side View of Pole Positioned Against Side of Vehicle

No. 018 Pre-Test Right Side View of Pole Positioned Against Side of Vehicle

No. 019 Pre-Test Close-Up View of Impact Point Target

No. 020 Post-Test Close-Up View of Impact Point Target Showing Impact Location

No. 021 Pre-Test Front Close-Up View of Dummy Head and Chest

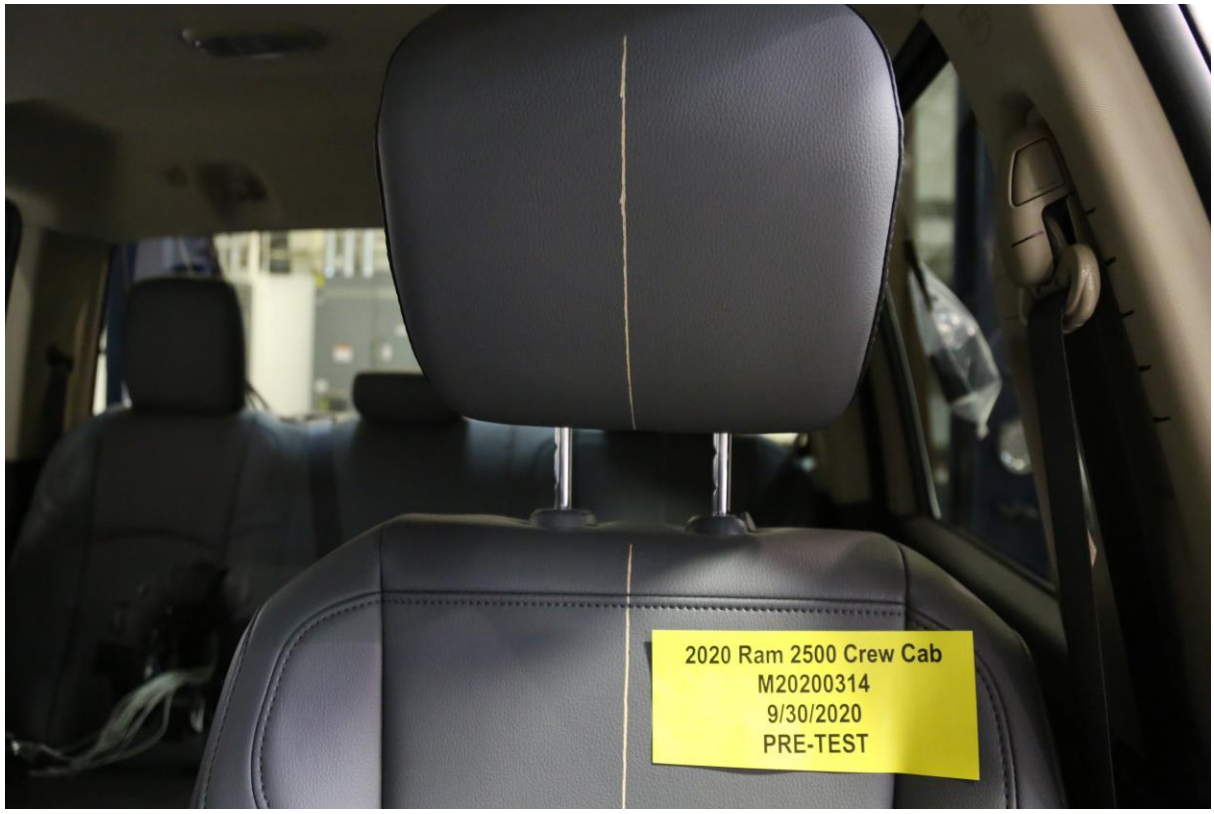
No. 022 Post-Test Front Close-Up View of Dummy

No. 023 Pre-Test Left Side View of Dummy Showing Belt and Chalking

Intentionally Left Blank

No. 024 Pre-Test Left Side View of Dummy Shoulder and Door Top View

No. 025 Post-Test Left Side View of Dummy Shoulder and Door Top View



No. 026 Pre-Test Front View of Seat Back Prior to Dummy Positioning

No. 027 Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint

No. 028 Pre-Test Front View of Seat Pan Prior to Dummy Positioning

No. 029 Pre-Test Overhead View of Dummy Thighs on Seat Pan

No. 030 Pre-Test Left Side View of Dummy Neck Showing Position of Adjustable Neck Bracket

No. 031 Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level

No. 032 Pre-Test Placement of Dummy Feet

No. 033 Pre-Test View of Belt Anchorage for Dummy

No. 034 Pre-Test Left Side View of Steering Wheel

No. 035 Pre-Test View of Disengaged Parking Brake

No. 036 Pre-Test View of Parking Brake

No. 037 Pre-Test Close-Up Left Side View of Driver Seat Track

No. 038 Pre-Test Close-Up Left Side View of Driver Seat Back

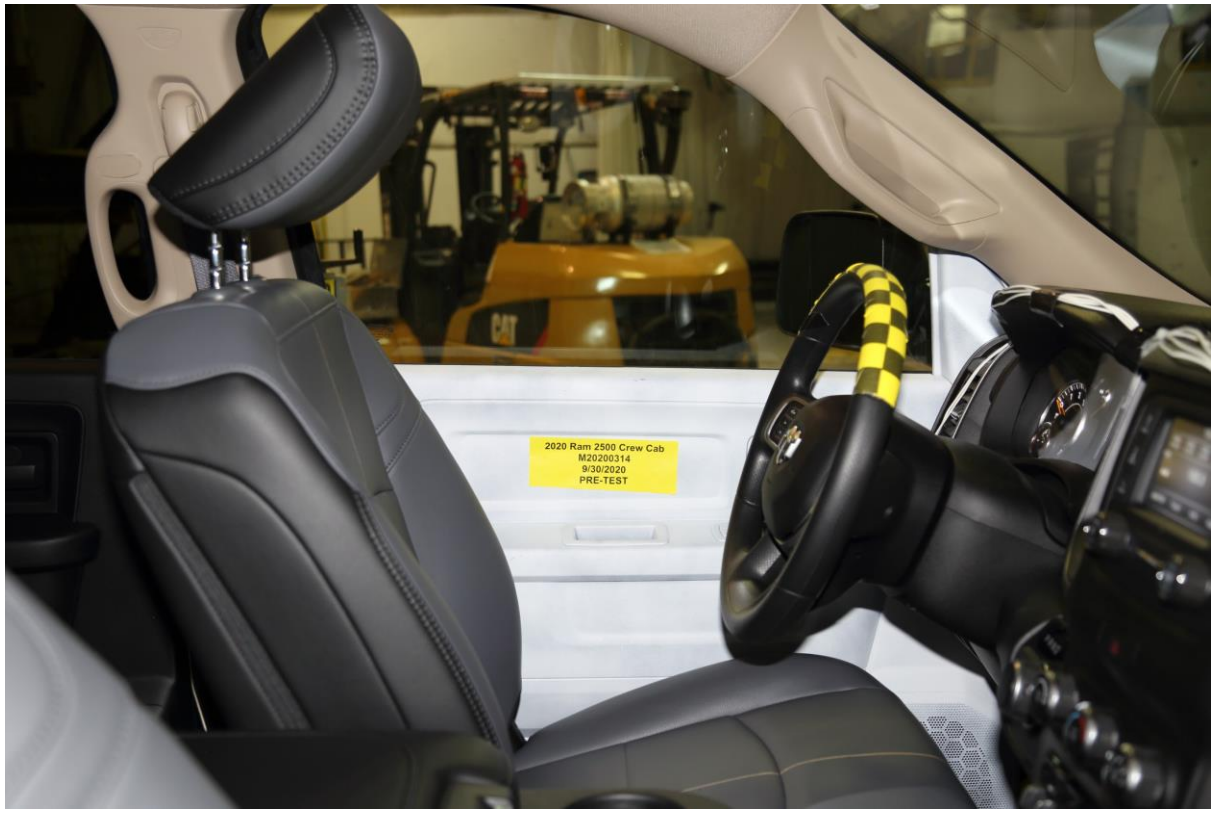
No. 039 Pre-Test Close-Up View of Driver Seat Back or Head Restraint

No. 040 Pre-Test Dummy and Door Clearance View

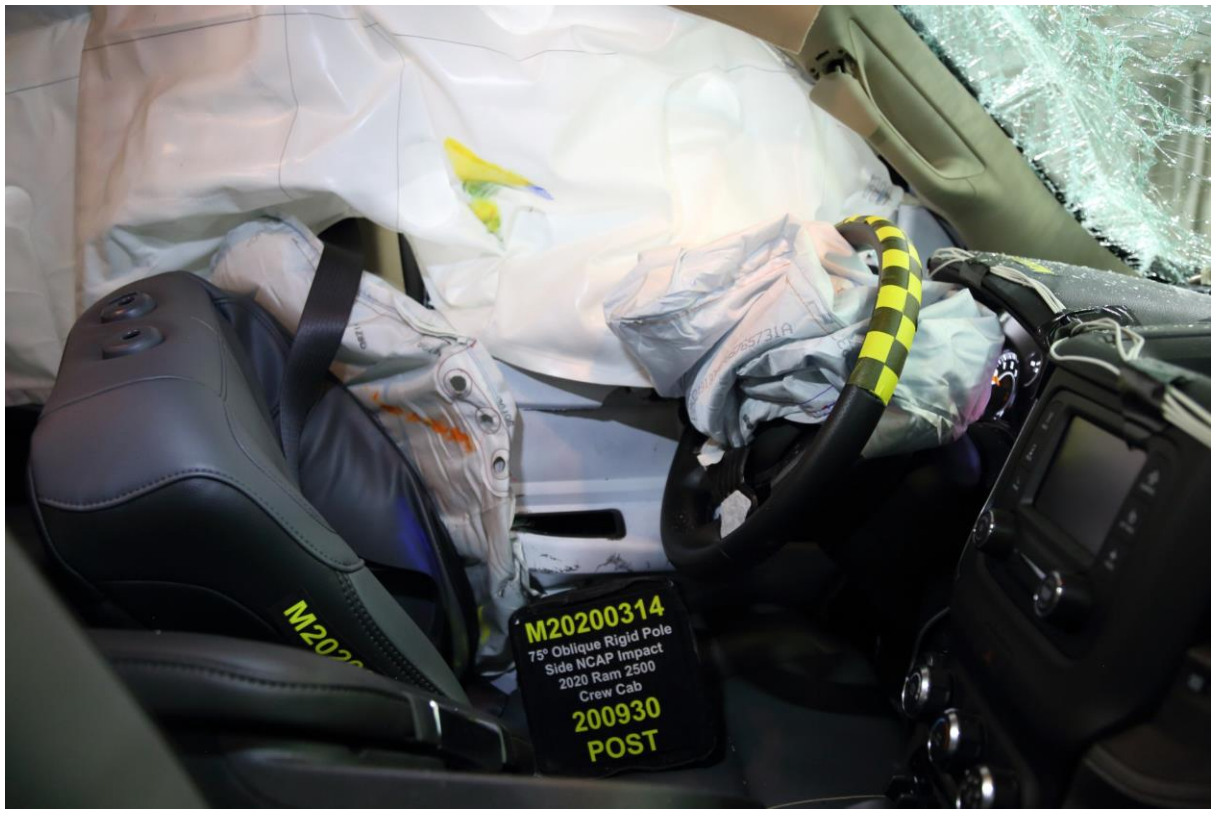
No. 041 Post-Test Dummy and Door Clearance View

No. 042 Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment

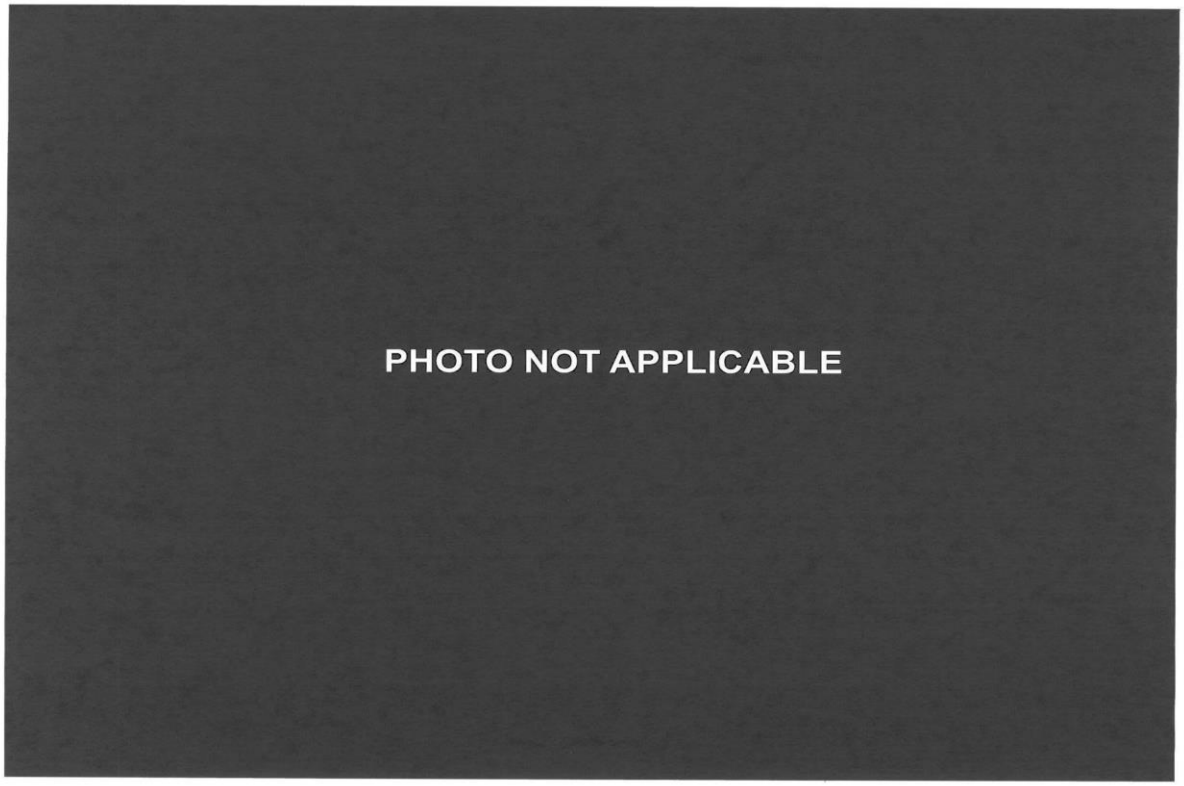
No. 043 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



No. 044 Pre-Test Inner Door Panel View



No. 045 Post-Test Inner Door Panel View Showing Dummy Contact Location



No. 046 Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

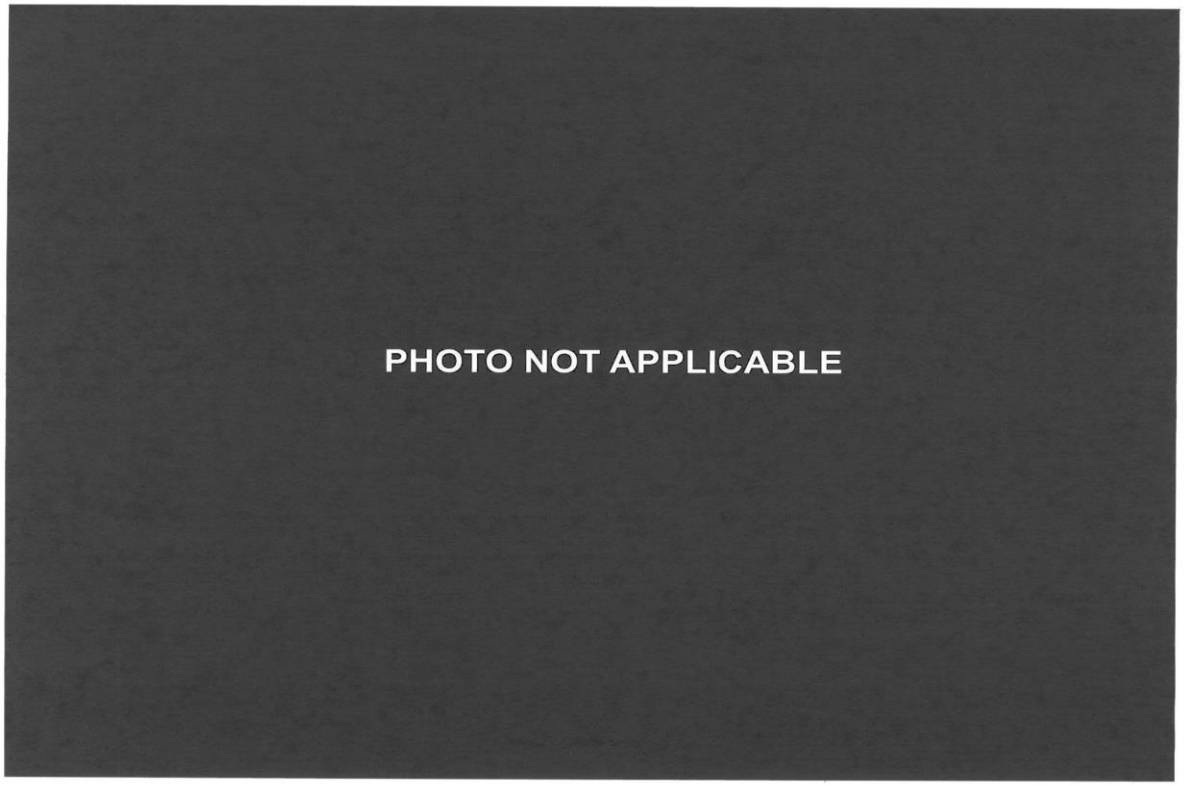
Intentionally Left Blank

No. 047 Post-Test Dummy Close-Up Head Contact with Side Airbag View

No. 048 Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View

No. 049 Post-Test Dummy Close-Up Torso Contact with Side Airbag View

No. 050 Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



No. 051 Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View

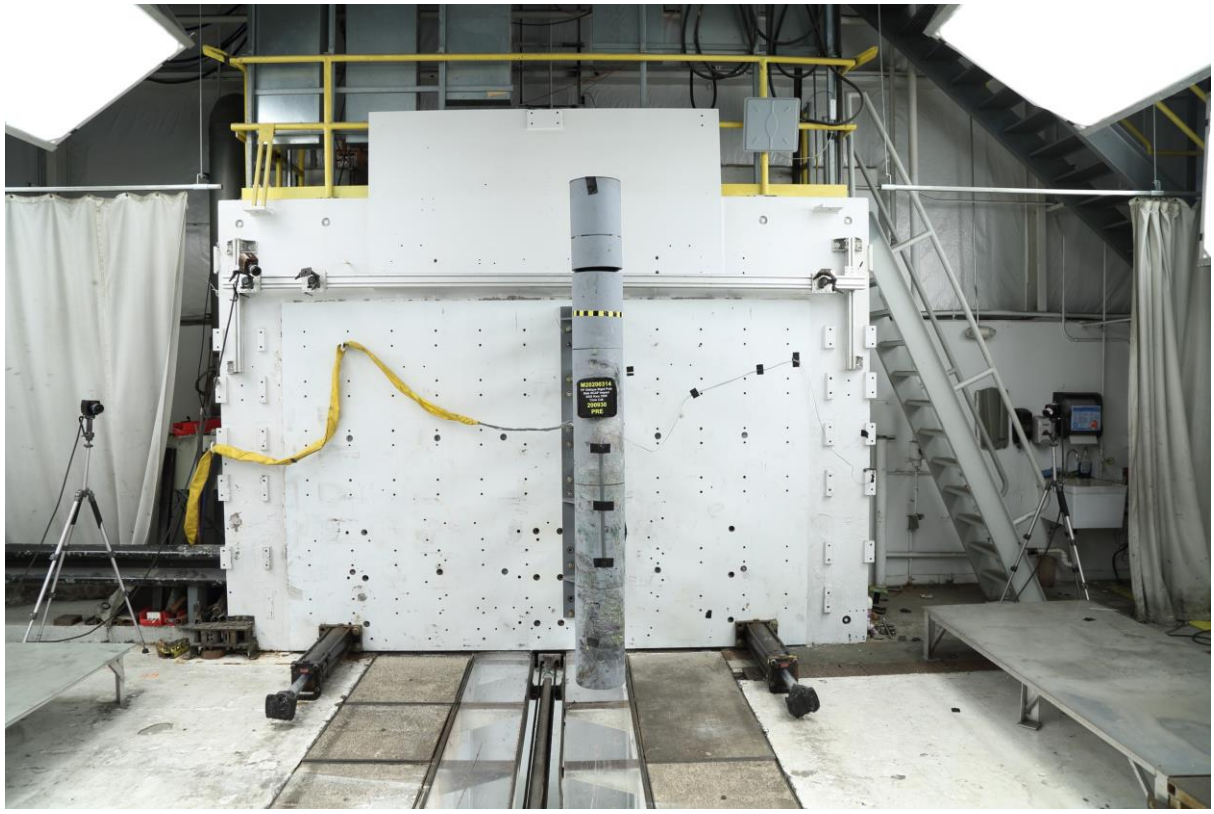
No. 052 Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

No. 053 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

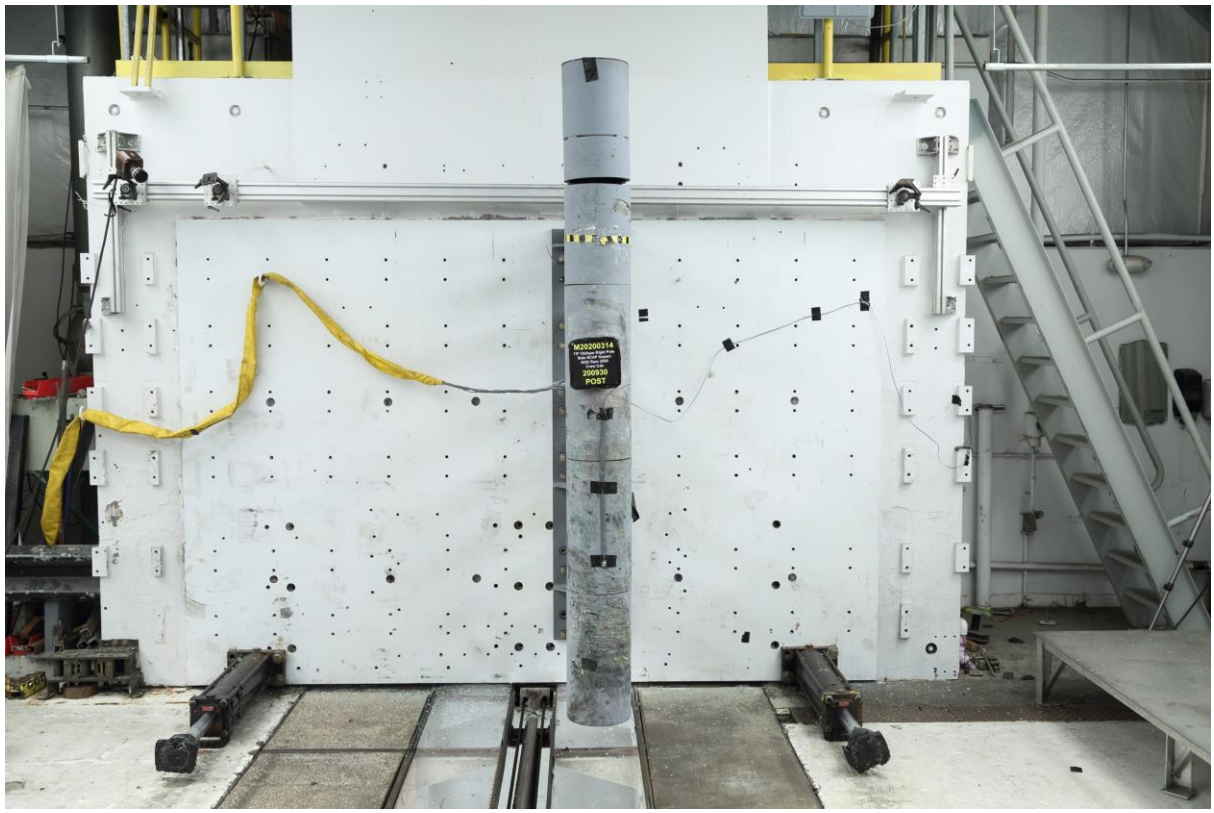
No. 054 Post-Test View of Fuel Filler Cap or Fuel Filler Neck

No. 055 Close-Up View of Vehicle Certification Label

No. 056 Close-Up View of Vehicle Tire Information Placard or Label



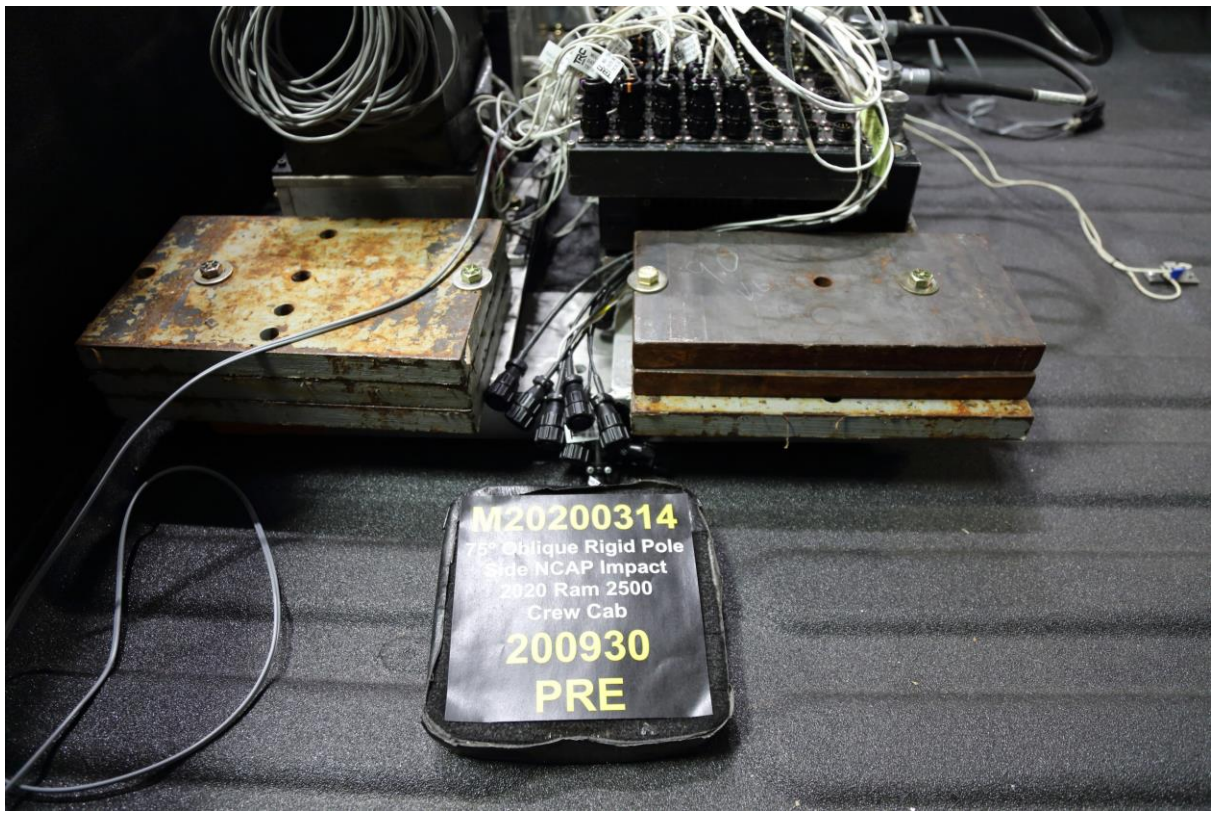
No. 057 Pre-Test Pole Barrier Front View



No. 058 Post-Test Pole Barrier Front View

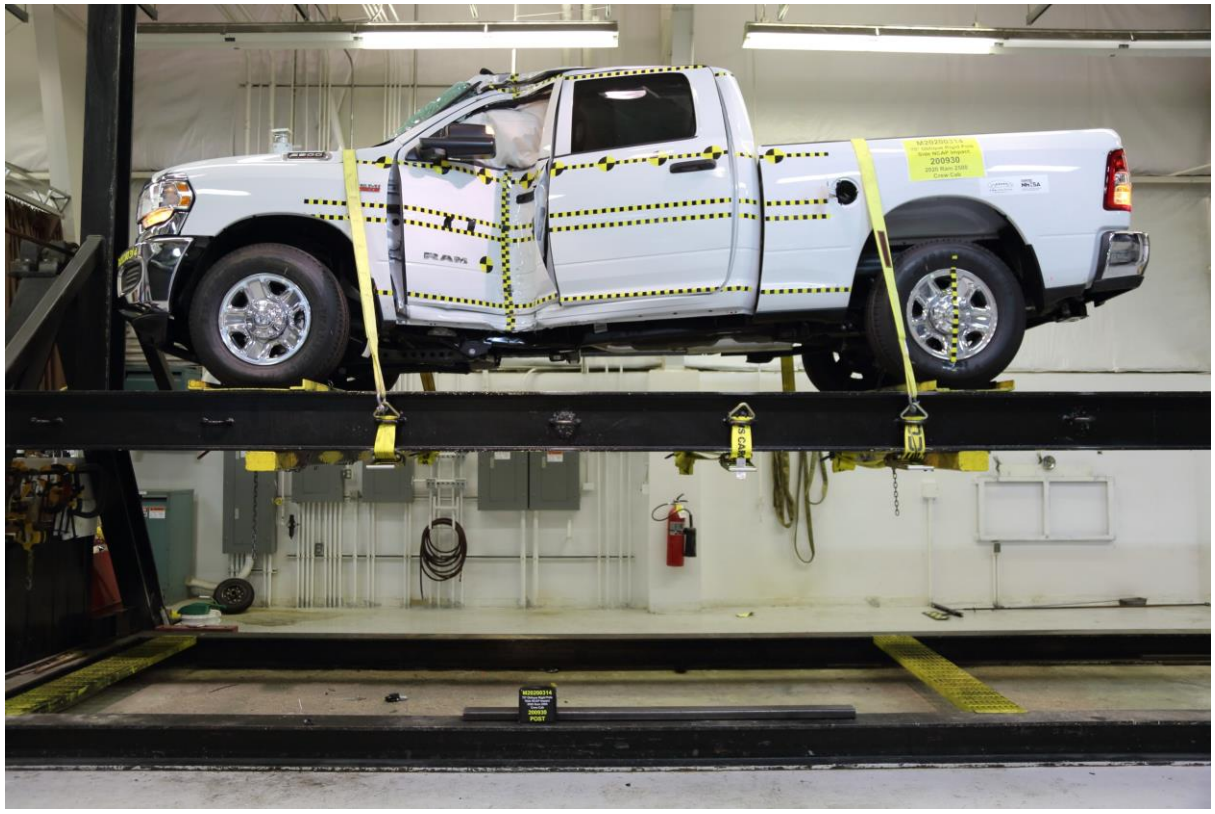
No. 059 Pre-Test Pole Barrier Side View

No. 060 Post-Test Pole Barrier Side View

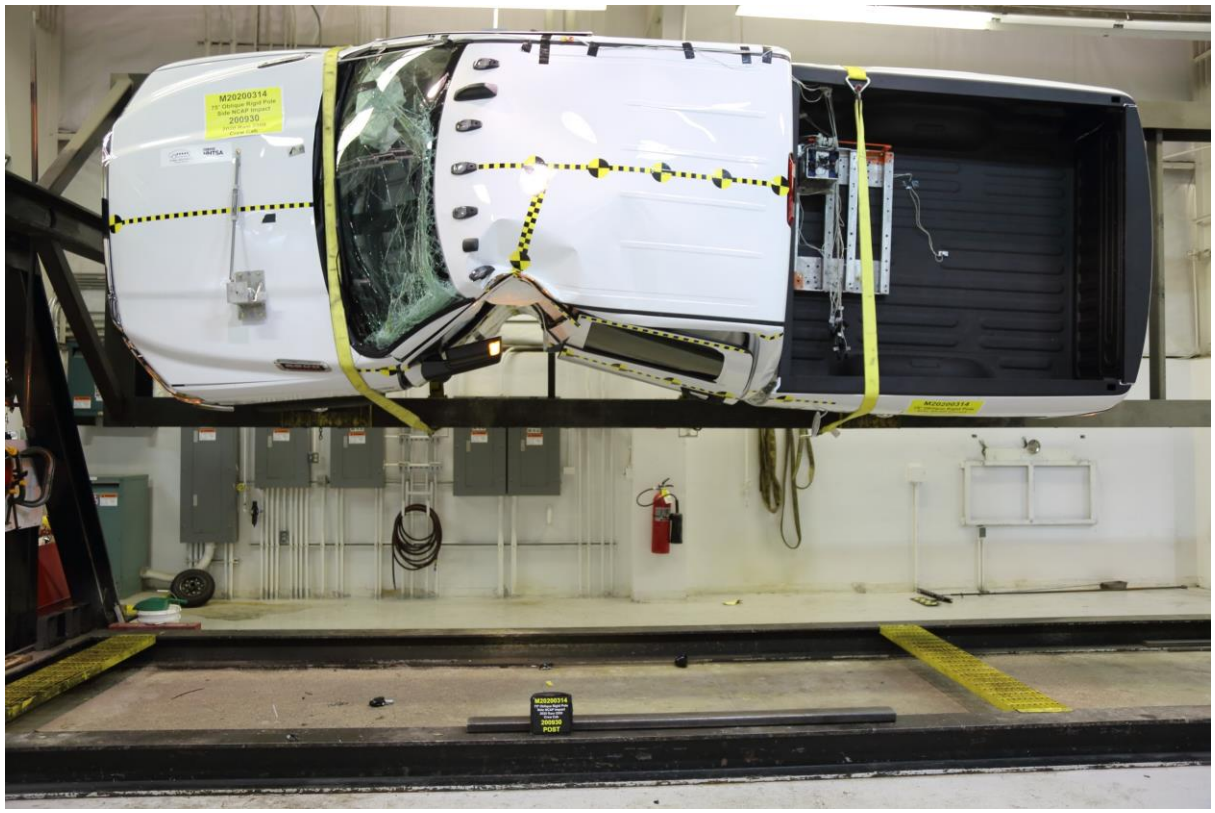


No. 061 Pre-Test Ballast View

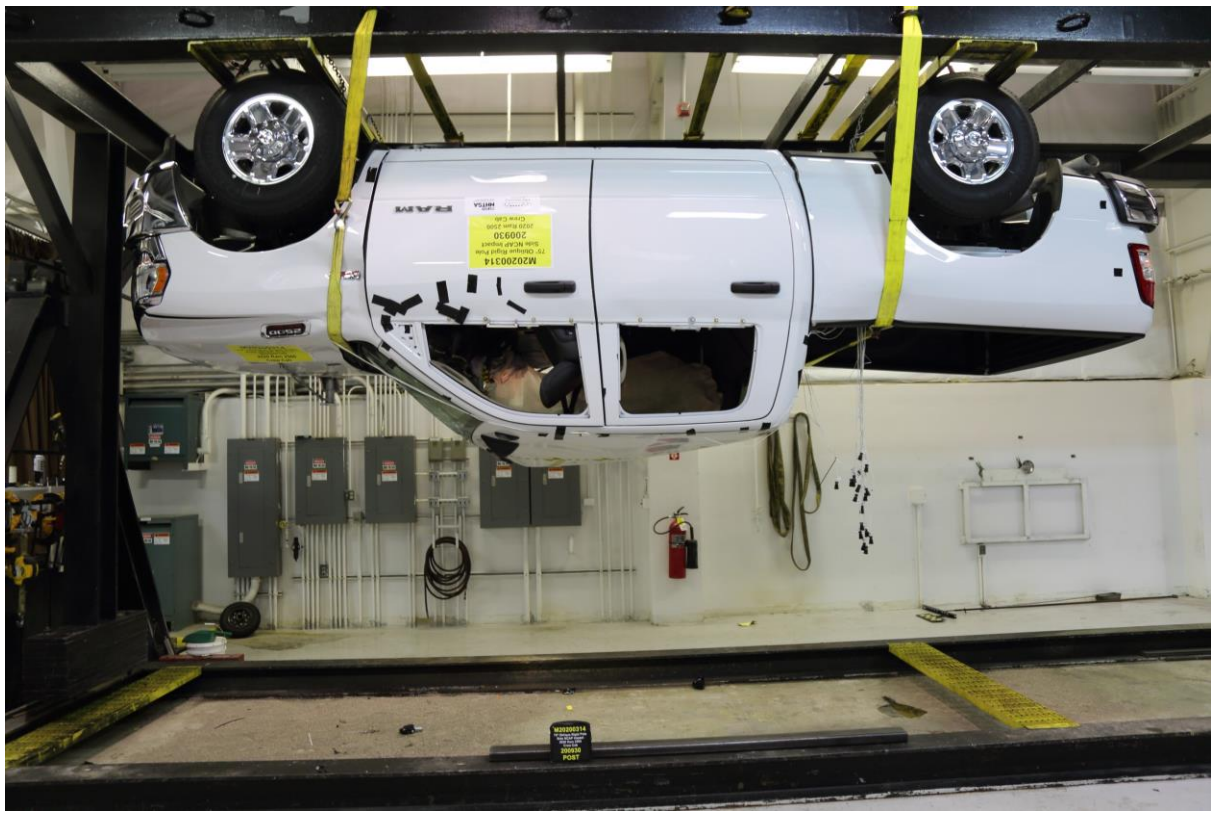
No. 062 Post-Test Primary and Redundant Speed Trap Read Out



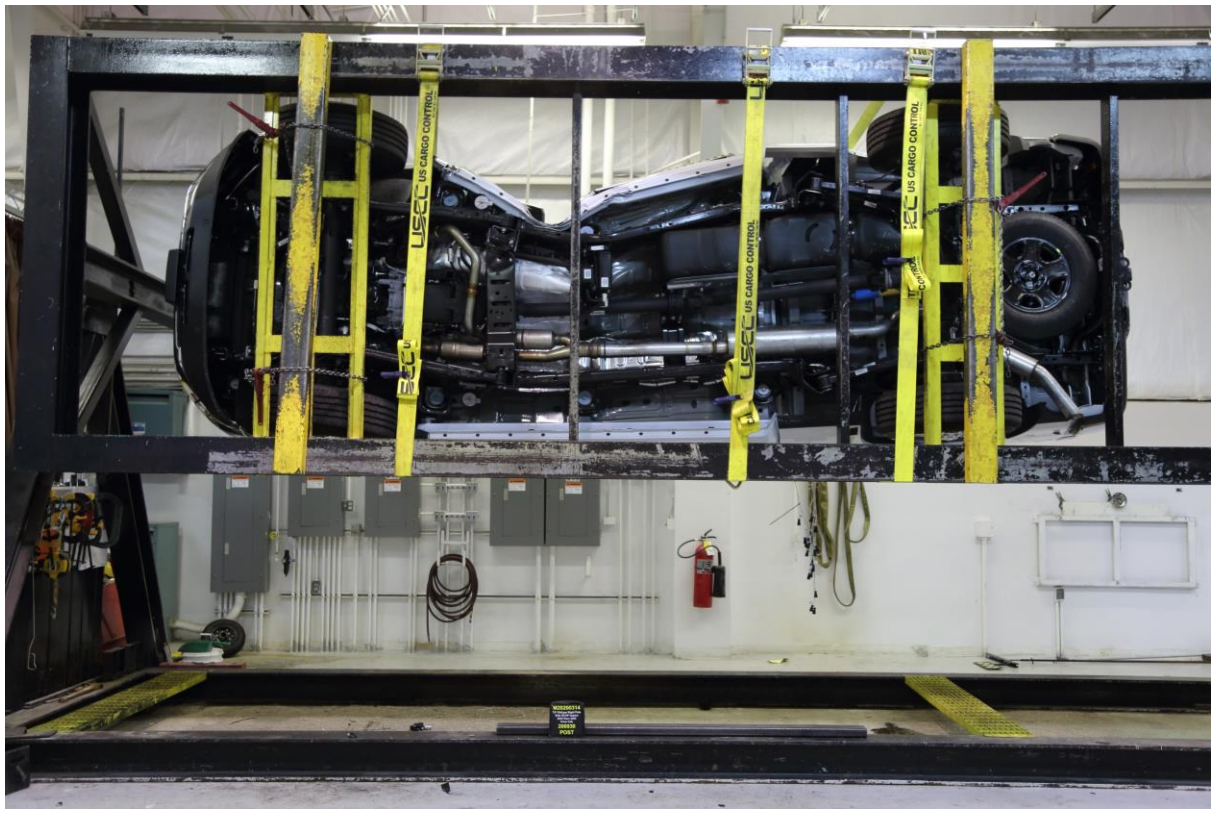
No. 063 FMVSS No. 301 Static Rollover 0 Degrees



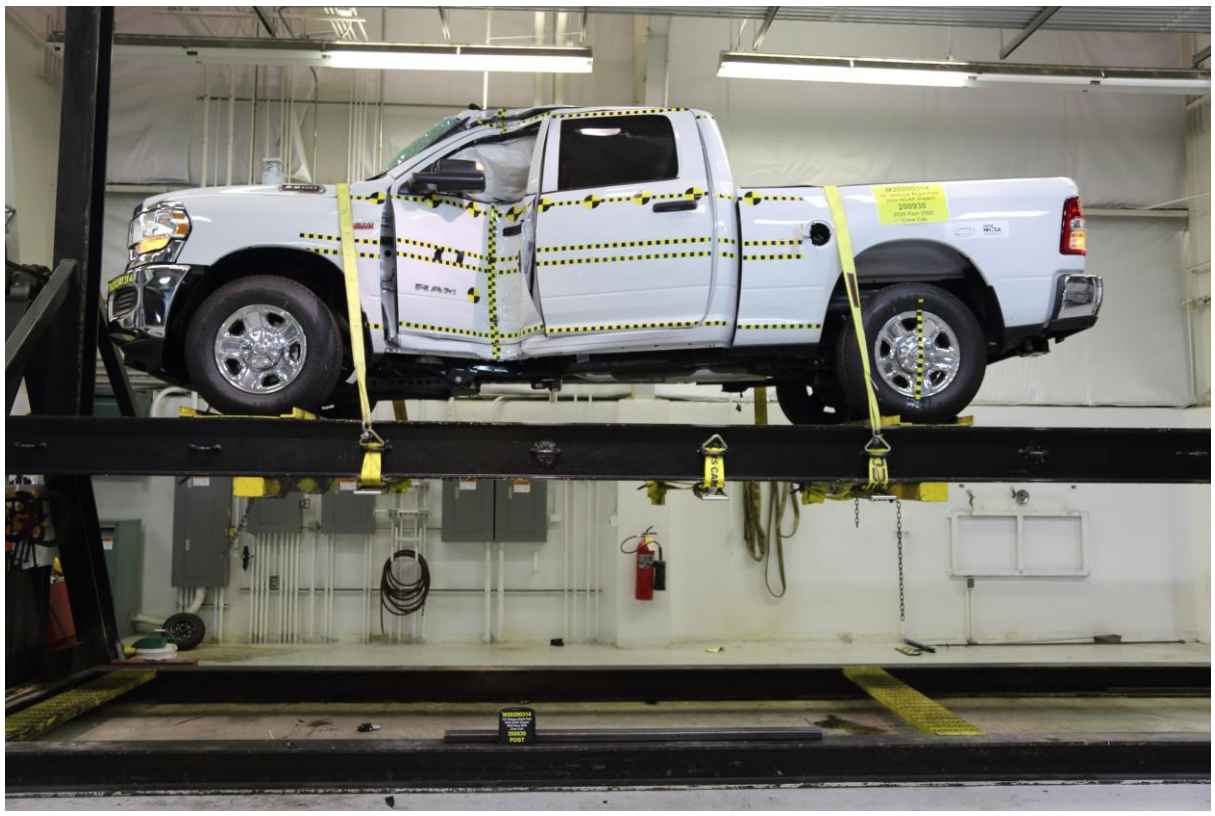
No. 064 FMVSS No. 301 Static Rollover 90 Degrees



No. 065 FMVSS No. 301 Static Rollover 180 Degrees

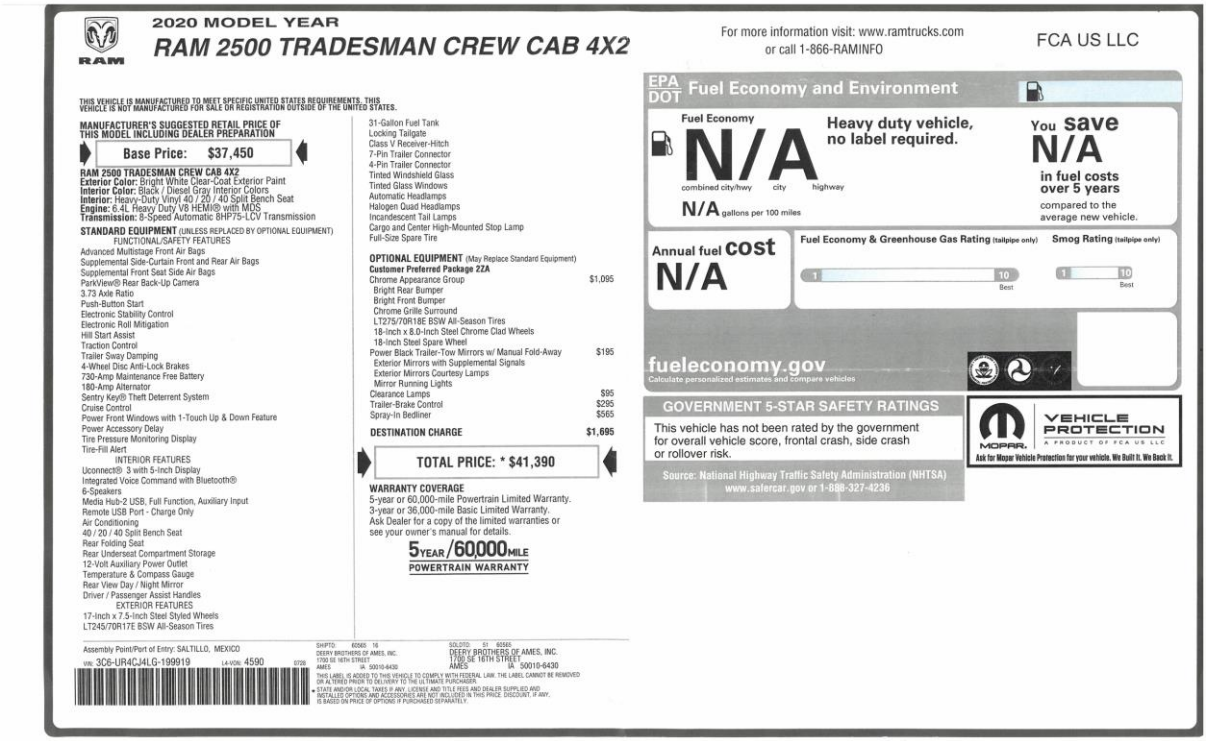


No. 066 FMVSS No. 301 Static Rollover 270 Degrees



No. 067 FMVSS No. 301 Static Rollover 360 Degrees

No. 068 Impact Event



2020 MODEL YEAR

RAM 2500 TRADESMAN CREW CAB 4X2

For more information visit: www.ramtrucks.com or call 1-866-RAMINFO

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: $37,450

RAM 2500 TRADESMAN CREW CAB 4X2
Exterior Color: Bright White Clear-Coat Exterior Paint
Interior Color: Black / Diesel Gray Interior Colors
Interior: Heavy-Duty Vinyl 40 / 20 / 40 Split Bench Seat
Engine: 6.4L Heavy Duty V8 HEMI® with MDS
Transmission: 8-Speed Automatic 8HP75-LCV Transmission

STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)

FUNCTIONAL/SAFETY FEATURES
Advanced Multistage Front Air Bags
Supplemental Side-Curtain Front and Rear Air Bags
Supplemental Front Seat Side Air Bags
ParkView® Rear Back-Up Camera
3.73 Axle Ratio
Push-Button Start
Electronic Stability Control
Electronic Roll Mitigation
Hill Start Assist
Traction Control
Trailer Sway Damping
4-Wheel Disc Anti-Lock Brakes
730-Amp Maintenance Free Battery
180-Amp Alternator
Sentry Key® Theft Deterrent System
Cruise Control
Power Front Windows with 1-Touch Up & Down Feature
Power Accessory Delay
Tire Pressure Monitoring Display
Tire-Fill Alert

INTERIOR FEATURES
Uconnect® 3 with 5-inch Display
Integrated Voice Command with Bluetooth®
6-Speakers
Media Hub-2 USB, Full Function, Auxiliary Input
Remote USB Port - Charge Only
Air Conditioning
40 / 20 / 40 Split Bench Seat
Rear Folding Seat
Rear Underseat Compartment Storage
12-Volt Auxiliary Power Outlet
Temperature & Compass Gauge
Rear View Day / Night Mirror
Driver / Passenger Assist Handles

EXTERIOR FEATURES
17-Inch x 7.5-Inch Steel Styled Wheels
LT245/70R17E BSW All-Season Tires
31-Gallon Fuel Tank
Locking Tailgate
Class V Receiver-Hitch
7-Pin Trailer Connector
4-Pin Trailer Connector
Tinted Windshield Glass
Tinted Glass Windows
Automatic Headlamps
Halogen Quad Headlamps
Incandescent Tail Lamps
Cargo and Center High-Mounted Stop Lamp
Full-Size Spare Tire

OPTIONAL EQUIPMENT (May Replace Standard Equipment)
Customer Preferred Package 2ZA $1,095
Chrome Appearance Group
Bright Rear Bumper
Bright Front Bumper
Chrome Grille Surround
LT275/70R18E BSW All-Season Tires
18-Inch x 8.0-Inch Steel Chrome Clad Wheels
18-Inch Steel Spare Wheel
Power Black Trailer-Tow Mirrors w/ Manual Fold-Away $195
Exterior Mirrors with Supplemental Signals
Exterior Mirrors Courtesy Lamps
Mirror Running Lights
Clearance Lamps $95
Trailer-Brake Control $295
Spray-In Bedliner $565

DESTINATION CHARGE $1,695

TOTAL PRICE: * $41,390

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: SALTILLO, MEXICO

VIN: 3C6-UR4CJ4LG-199919 L4-VOK: 4590 0720

SHPTO: 60565 16
DERRY BROTHERS OF AMES, INC.
1700 SE 16TH STREET
AMES IA 50010-6430

SOLDTO: 21 60565
DERRY BROTHERS OF AMES, INC.
1700 SE 16TH STREET
AMES IA 50010-6430

THIS LABEL IS AFFIXED 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

Fuel Economy
N/A
combined city/hwy city highway
N/A gallons per 100 miles

Heavy duty vehicle, no label required.

You save N/A in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost N/A

Fuel Economy & Greenhouse Gas Rating (tailpipe only) 1 10 Best

Smog Rating (tailpipe only) 1 10 Best

fueleconomy.gov
Calculate personalized estimates and compare vehicles

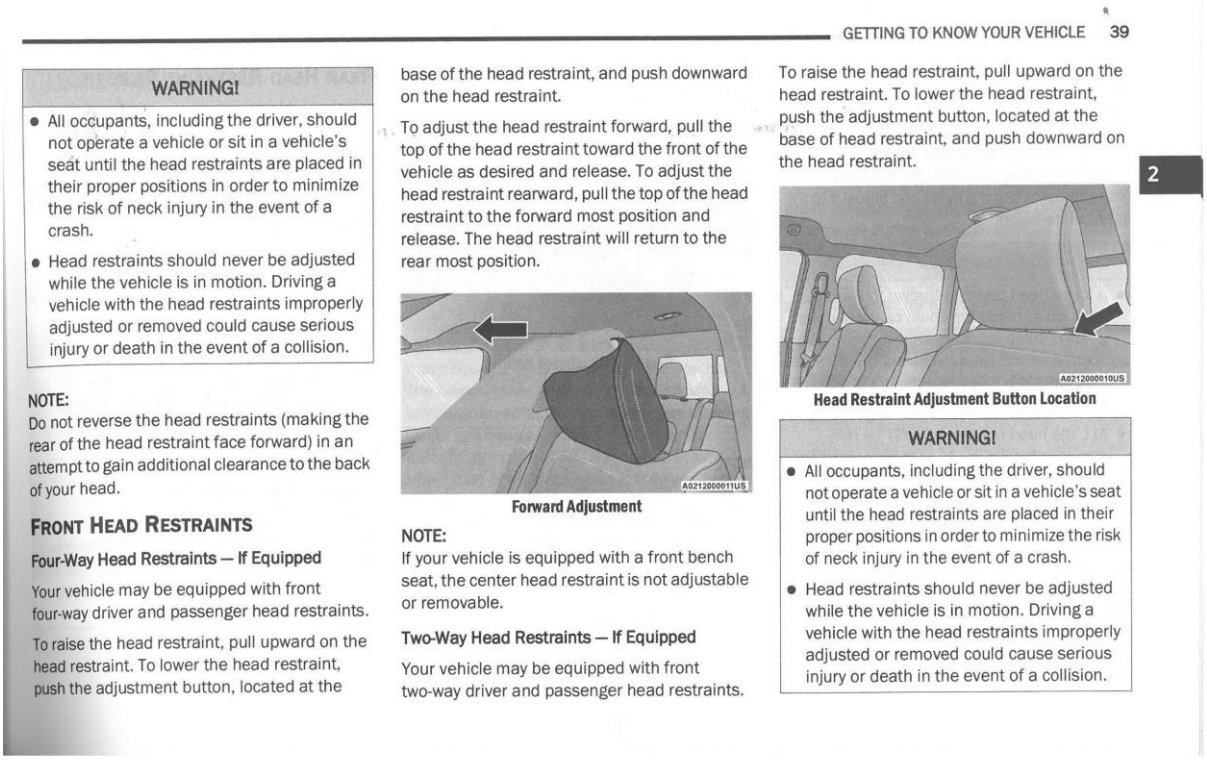
GOVERNMENT 5-STAR SAFETY RATINGS

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

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

MOPAR VEHICLE PROTECTION
A PRODUCT OF FCA US LLC
Ask for Mopar Vehicle Protection for your vehicle. We Built It. We Back It.

No. 069 Monroney Label



WARNING!

- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a crash.
- 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.

FRONT HEAD RESTRAINTS

Four-Way Head Restraints — If Equipped

Your vehicle may be equipped with front four-way driver and passenger head restraints.

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.

To adjust the head restraint forward, pull the top of the head restraint toward the front of the vehicle as desired and release. To adjust the head restraint rearward, pull the top of the head restraint to the forward most position and release. The head restraint will return to the rear most position.

Forward Adjustment

NOTE:
If your vehicle is equipped with a front bench seat, the center head restraint is not adjustable or removable.

Two-Way Head Restraints — If Equipped

Your vehicle may be equipped with front two-way driver and passenger head restraints.

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 head restraint, and push downward on the head restraint.

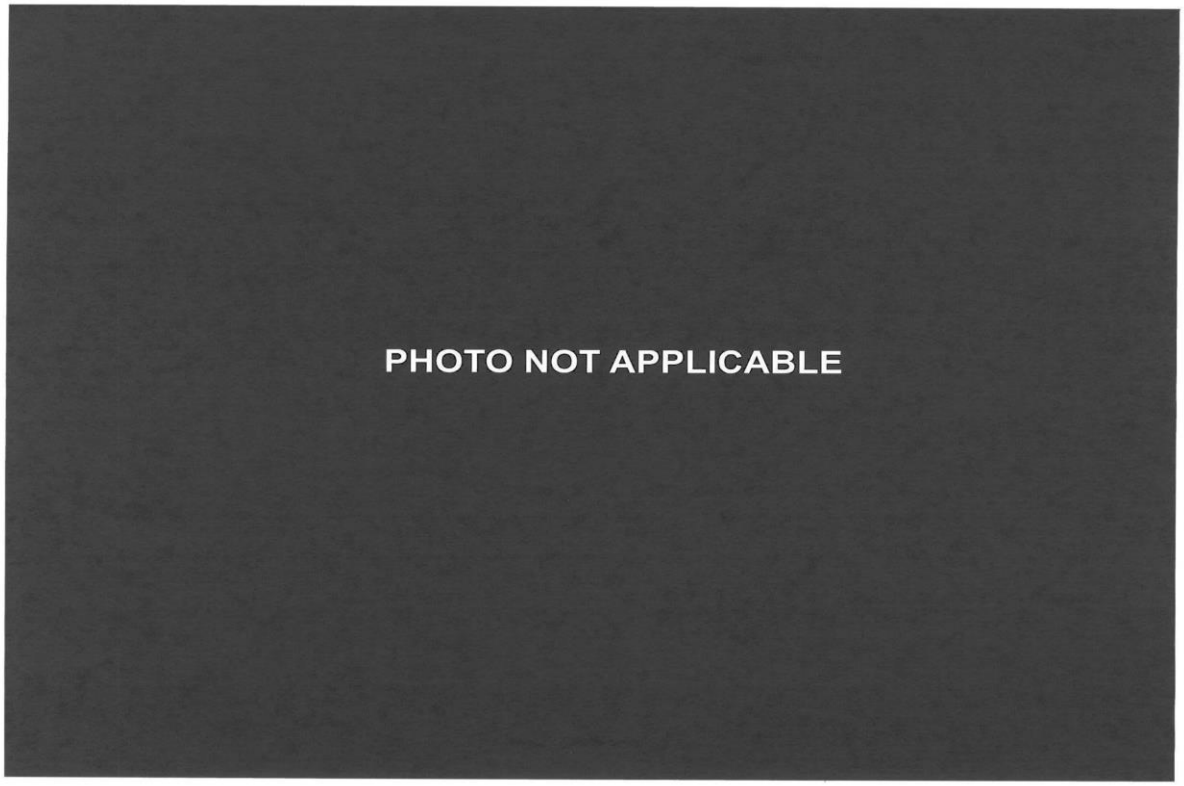
2

Head Restraint Adjustment Button Location

WARNING!

- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a crash.
- 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.

No. 070 Head Restraint Use and Adjustment Information from Vehicle Owner Manual



No. 071 Post-Test View of Shattered Vehicle Inner Door Panel

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at: www.nhtsa.gov.

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration (X) Redundant
Driver Head Acceleration (Y) Redundant
Driver Head Acceleration (Z) Redundant
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)
Driver Head Angular Velocity (X)
Driver Head Angular Velocity (Y)
Driver Head Angular Velocity (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (X)
Load Cell Pole Barrier #2 Force (X)
Load Cell Pole Barrier #3 Force (X)
Load Cell Pole Barrier #4 Force (X)
Load Cell Pole Barrier #5 Force (X)
Load Cell Pole Barrier #6 Force (X)
Load Cell Pole Barrier #7 Force (X)
Load Cell Pole Barrier #8 Force (X)

NHTSA

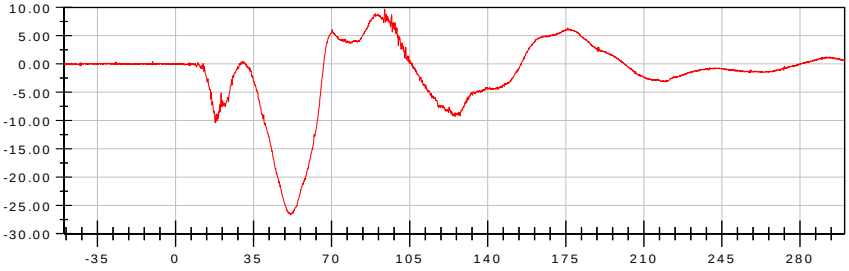
Test Date: 09/30/2020

Position #1 SID IIs Dummy (297)

Test Lab: CTF

Test Number: 200930 (M20200314)

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



<Max>

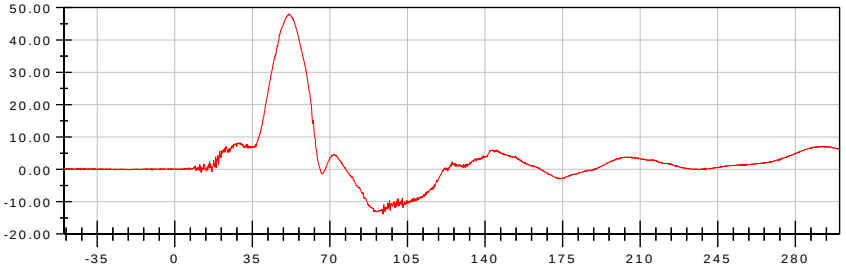
9.70 g at 93.76 ms

<Min>

-26.72 g at 51.68 ms

CFC_1000

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



<Max>

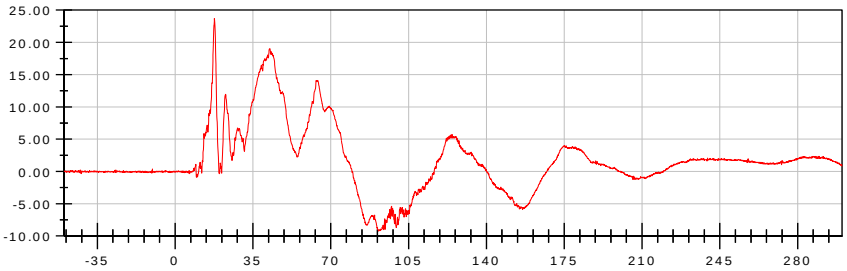
48.06 g at 51.68 ms

<Min>

-13.89 g at 94.00 ms

CFC_1000

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



<Max>

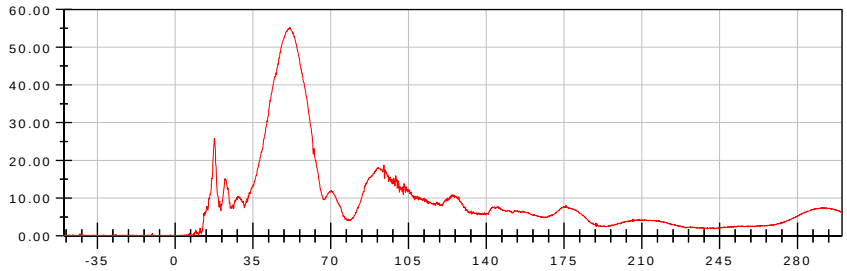
23.67 g at 17.68 ms

<Min>

-9.24 g at 91.44 ms

CFC_1000

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



<Max>

55.25 g at 51.68 ms

<Min>

0.03 g at -48.16 ms

CFC_1000

NHTSA

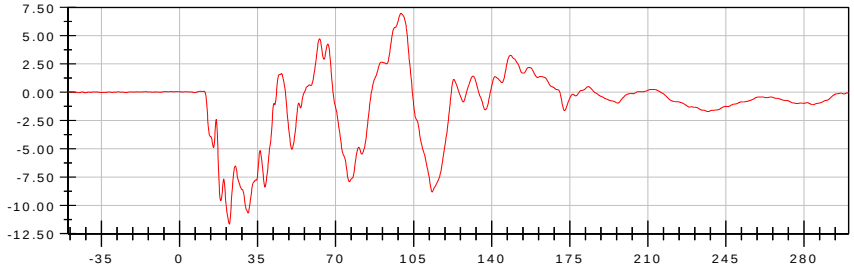
Test Date: 09/30/2020

Position #1 SID IIs Dummy (297)

Test Lab: CTF

Test Number: 200930 (M20200314)

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



<Max>

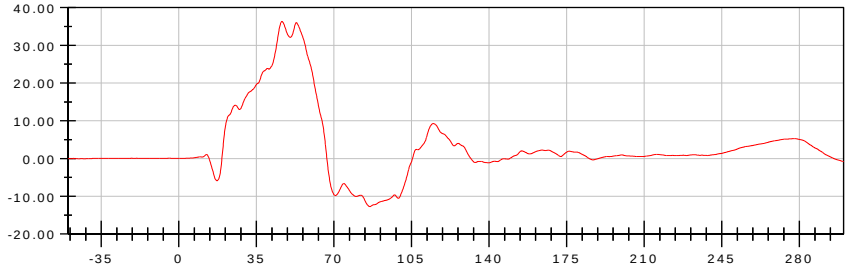
6.97 g at 99.36 ms

<Min>

-11.65 g at 22.40 ms

CFC_180

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



<Max>

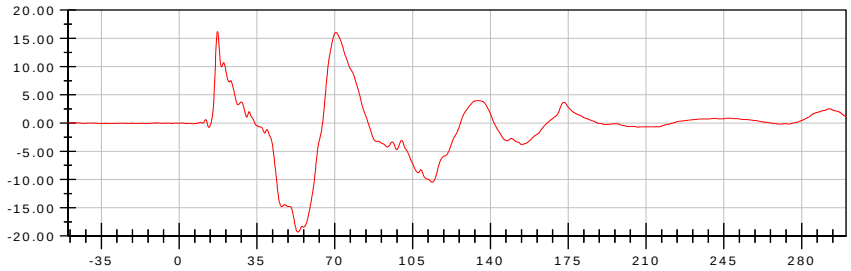
36.30 g at 46.56 ms

<Min>

-12.73 g at 86.24 ms

CFC_180

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



<Max>

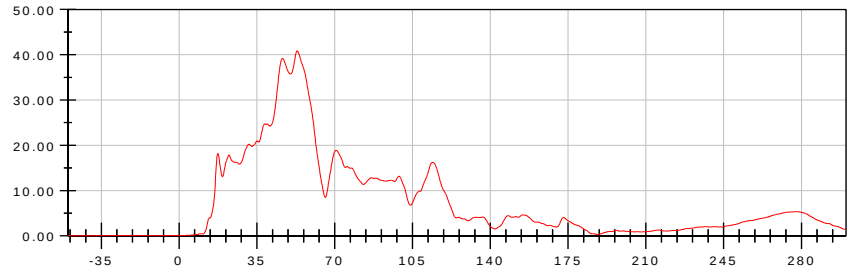
16.21 g at 17.28 ms

<Min>

-19.30 g at 53.44 ms

CFC_180

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



<Max>

40.86 g at 53.04 ms

<Min>

0.00 g at -40.24 ms

CFC_180

NHTSA

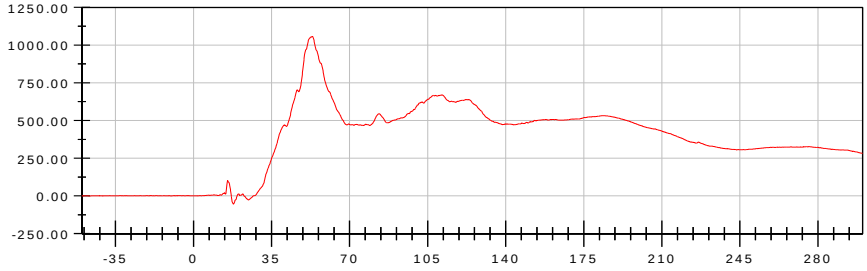
Test Date: 09/30/2020

Position #1 SID IIs Dummy (297)

Test Lab: CTF

Test Number: 200930 (M20200314)

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



<Max>

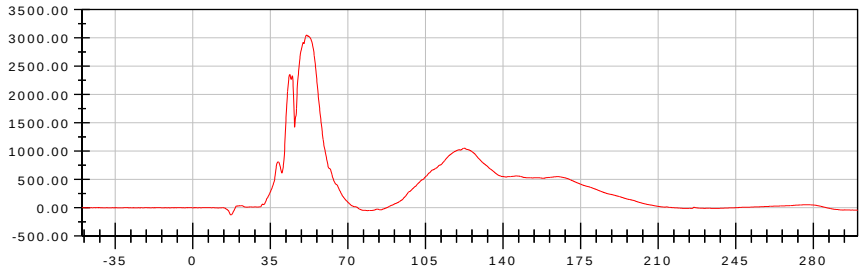
1,057.15 N at 53.28 ms

<Min>

-54.38 N at 17.92 ms

CFC_600

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



<Max>

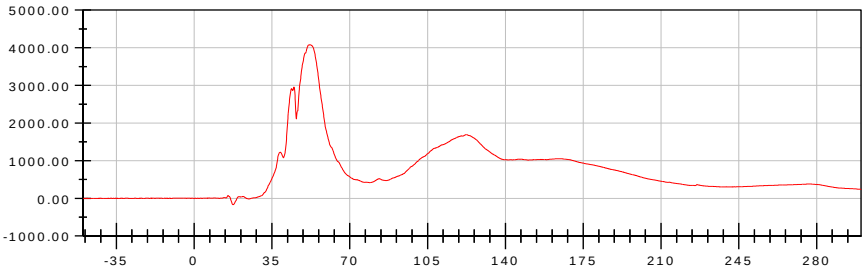
3,049.35 N at 51.36 ms

<Min>

-128.29 N at 17.36 ms

CFC_600

Driver Total Pelvis Force on Impact Side (Y) vs. Time (N) vs. Time [ms]



<Max>

4,078.98 N at 52.16 ms

<Min>

-169.68 N at 17.52 ms

CFC_600

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS
SID-IIs (Driver) Dummy
Description

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

Table 3. 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 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 47

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	131	Yes
G	Head Breadth	140.0 - 148.0	147	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	400	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
P	Foot Length (left)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	320	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	485	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	879	Yes
Z	Waist Circumference	761.0 - 791.0	782	Yes

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/13/2020

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	123.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-4.8 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	1.12 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head S/N: 1330

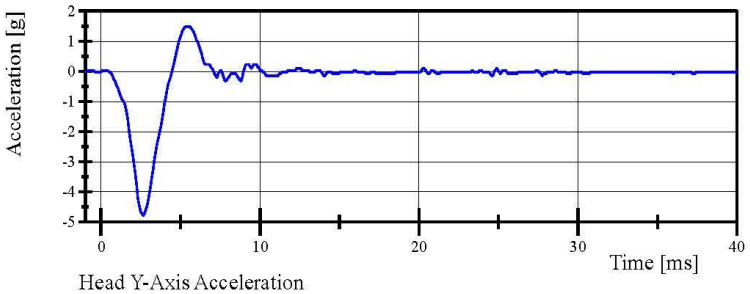
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

08.13.2020 14:00:35 198

Transportation Research Center Inc.

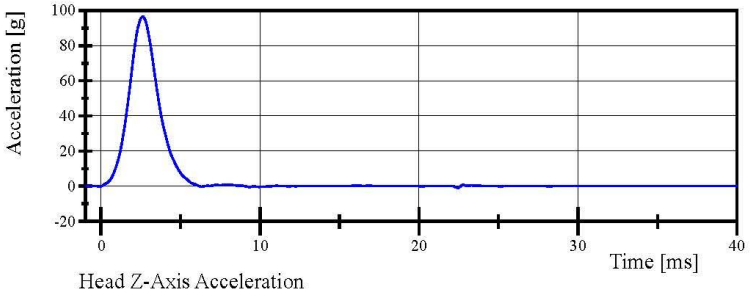
Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/13/2020

Head X-Axis Acceleration



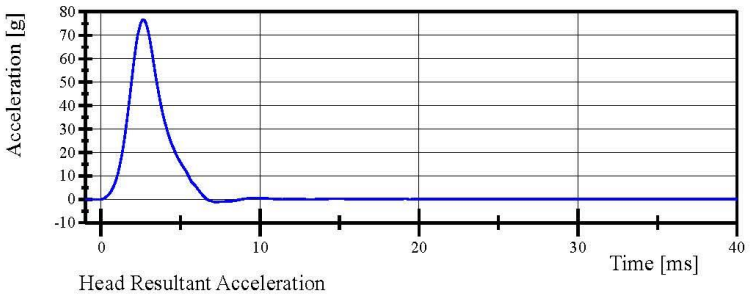
Filter Class: CFC_1000
Max: 1.5 g at 5.3 ms
Min: -4.8 g at 2.6 ms

Head Y-Axis Acceleration



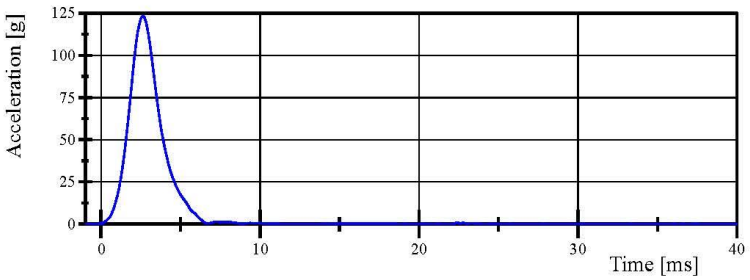
Filter Class: CFC_1000
Max: 96.5 g at 2.6 ms
Min: -0.9 g at 22.4 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 76.7 g at 2.6 ms
Min: -1.1 g at 7.2 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 123.3 g at 2.6 ms
Min: 0.0 g at -1.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.13.2020 14:01:15 198

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 297 Certification No. 47-3
Test Date: 8/21/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.604 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.529 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.699 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.950 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.860 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.880 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-77.8 deg	Yes
Time of Peak	50 - 70 ms	69.0 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	40.8 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	124.8 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 779

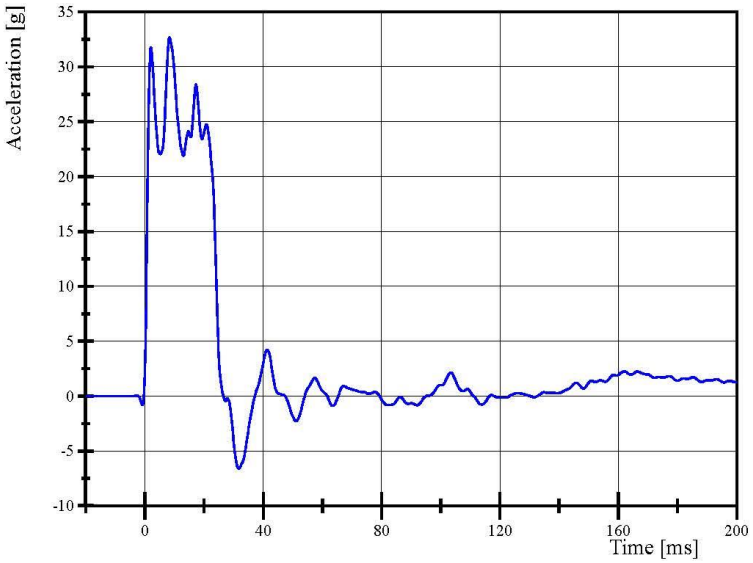
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

08.21.2020 12:51:39 718

Transportation Research Center Inc.

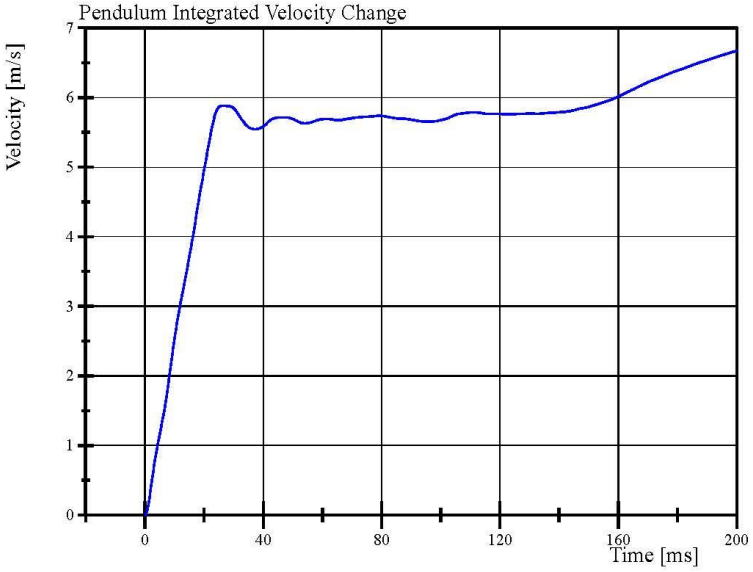
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 47-3
Test Date: 8/21/2020

Pendulum Acceleration



Filter Class: CFC_180
Max: 32.7 g at 8.3 ms
Min: -6.6 g at 31.8 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

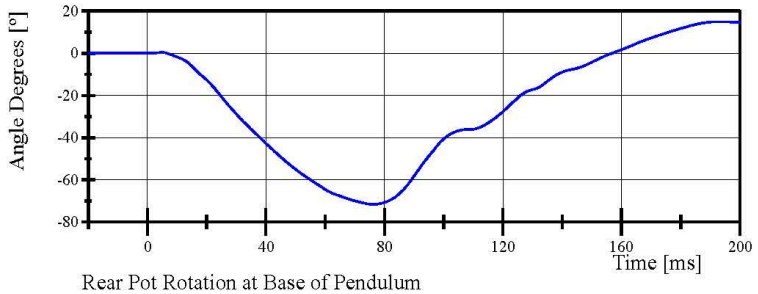
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 12:52:07 718

Transportation Research Center Inc.

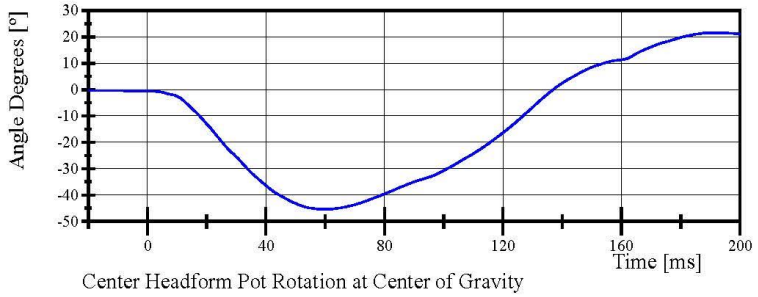
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 47-3
Test Date: 8/21/2020

Forward Pot Rotation at Base of Pendulum



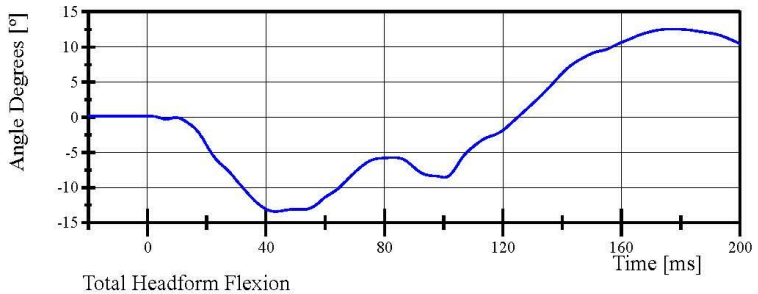
Filter Class: CFC_60
Max: 14.8 ° at 191.9 ms
Min: -71.6 ° at 76.2 ms

Rear Pot Rotation at Base of Pendulum



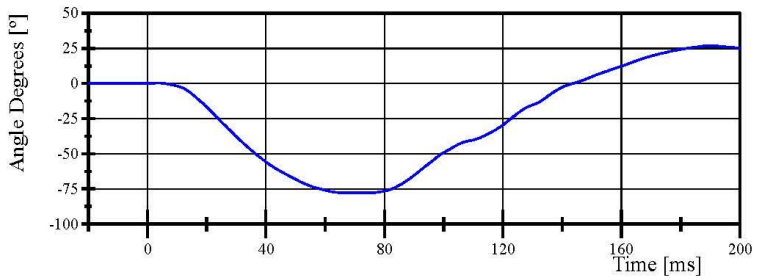
Filter Class: CFC_60
Max: 21.5 ° at 190.0 ms
Min: -45.4 ° at 59.9 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 12.6 ° at 177.1 ms
Min: -13.4 ° at 43.2 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 26.8 ° at 190.0 ms
Min: -77.8 ° at 69.0 ms

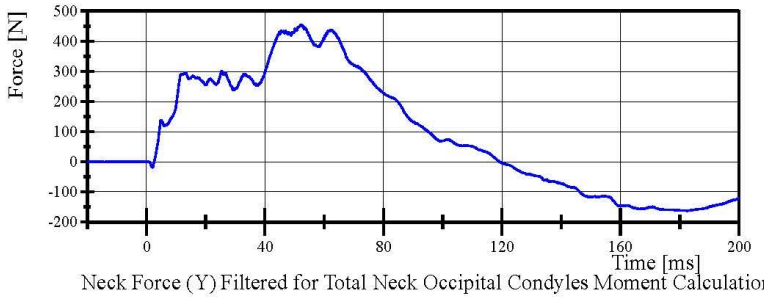
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 12:52:07 718

Transportation Research Center Inc.

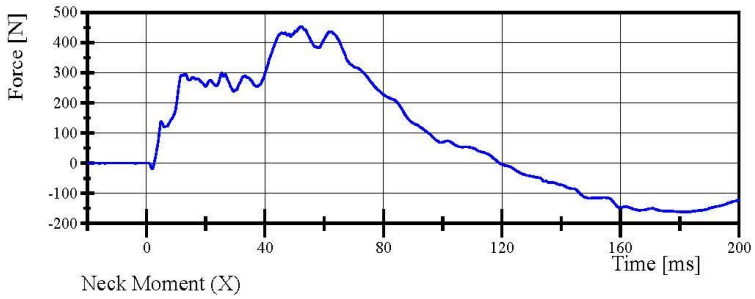
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 47-3
Test Date: 8/21/2020

Neck Force (Y)



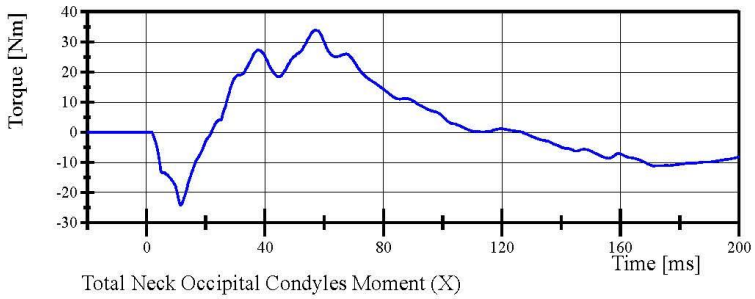
Filter Class: CFC_1000
Max: 454.3 N at 52.0 ms
Min: -162.8 N at 182.4 ms

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



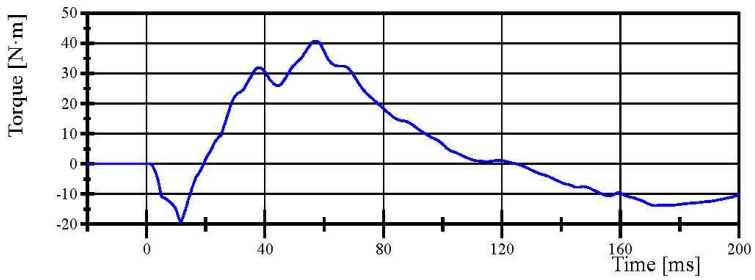
Filter Class: CFC_600
Max: 453.3 N at 52.2 ms
Min: -162.6 N at 182.5 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 33.9 Nm at 56.8 ms
Min: -24.2 Nm at 11.6 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 40.8 N·m at 56.8 ms
Min: -19.1 N·m at 11.5 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 12:52:07 718

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.1 g	Yes
Shoulder Displacement	28 - 37 mm	30.3 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	18.2 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: 940L
Shoulder Rib S/N: 180-3355 259

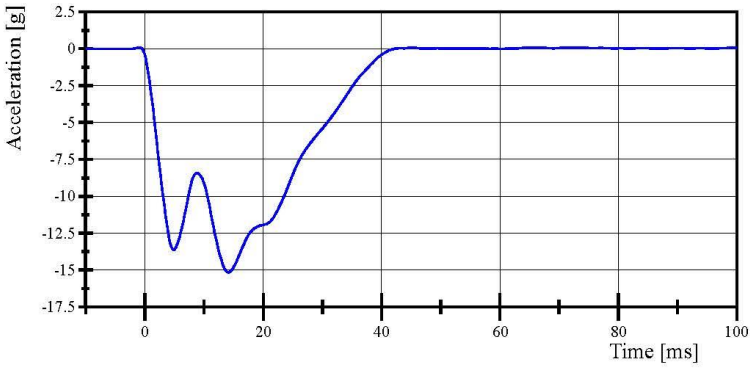
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:10:47 822

Transportation Research Center Inc.

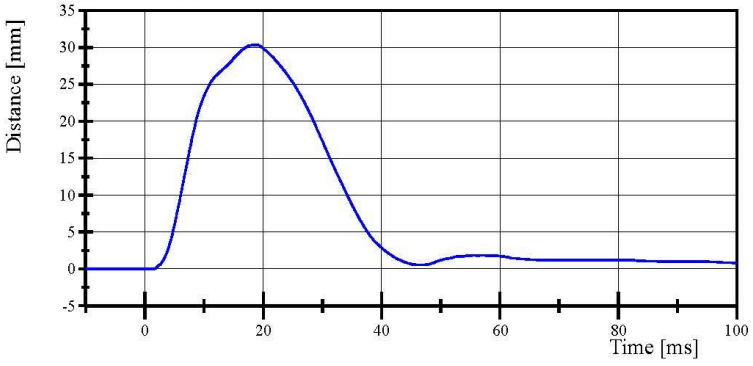
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Probe Acceleration



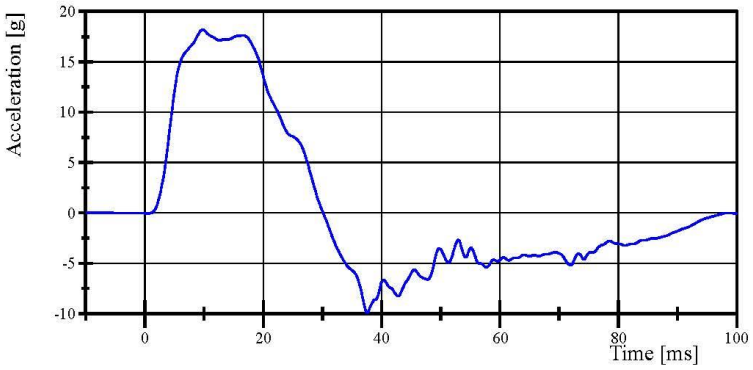
Filter Class: CFC_180
Max: 0.1 g at -0.9 ms
Min: -15.1 g at 14.1 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 30.3 mm at 18.5 ms
Min: -0.0 mm at 1.4 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 18.2 g at 9.8 ms
Min: -9.9 g at 37.5 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:11:20 822

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.745 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.3 g	Yes
Shoulder Displacement	31 - 40 mm	35.1 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.3 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.4 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	35.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.4 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.7 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: 940L
Shoulder Rib S/N: 180-3355 259
Upper Thorax Rib #1 S/N: DM5020
Middle Thorax Rib #2 S/N: DM5021
Lower Thorax Rib #3 S/N: DM5022

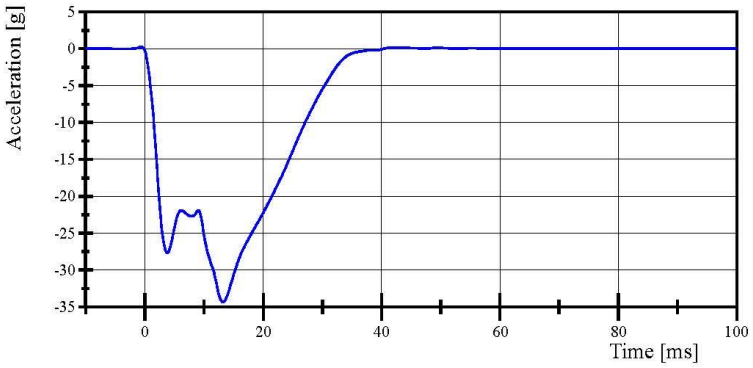
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 11:23:20 594

Transportation Research Center Inc.

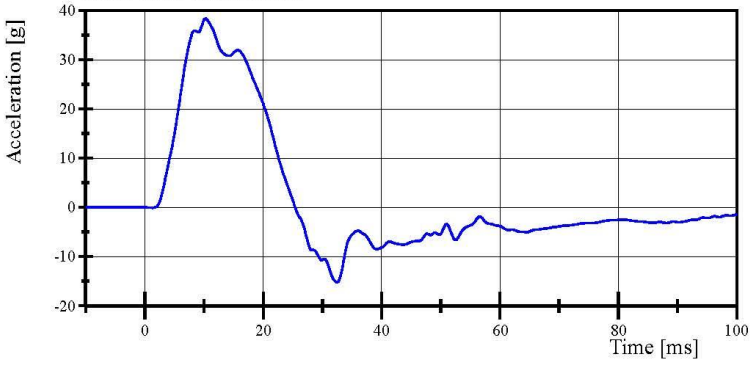
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Probe Acceleration



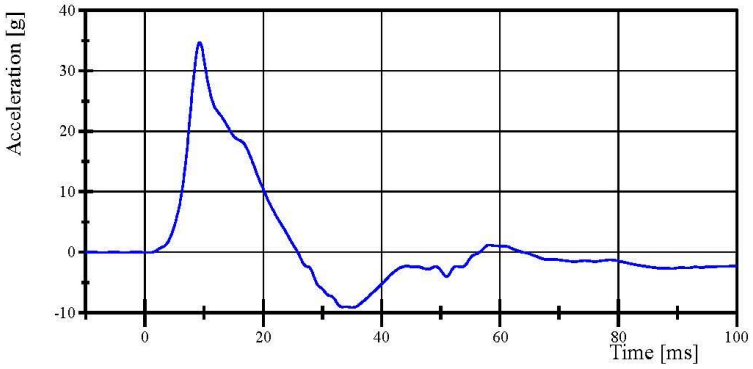
Filter Class: CFC_180
Max: 0.2 g at -0.6 ms
Min: -34.3 g at 13.2 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 38.4 g at 10.2 ms
Min: -15.2 g at 32.5 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 34.7 g at 9.3 ms
Min: -9.2 g at 35.0 ms

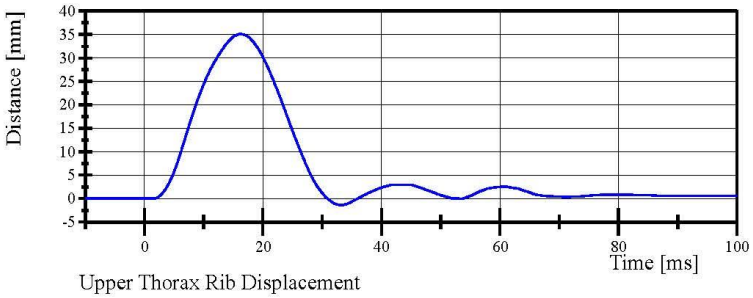
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 11:24:06 594

Transportation Research Center Inc.

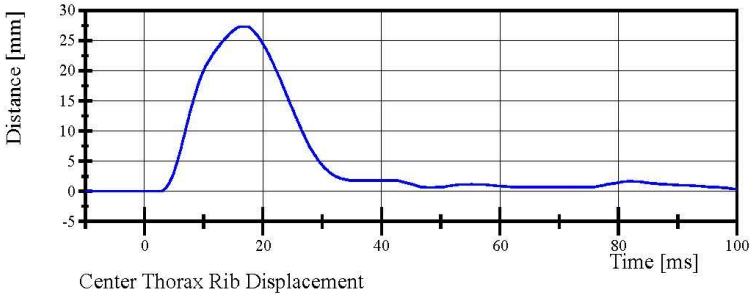
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Shoulder Rib Displacement



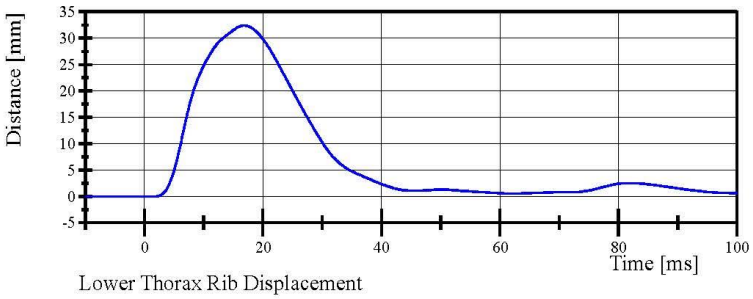
Filter Class: CFC_600
Max: 35.1 mm at 16.2 ms
Min: -1.3 mm at 33.4 ms

Upper Thorax Rib Displacement



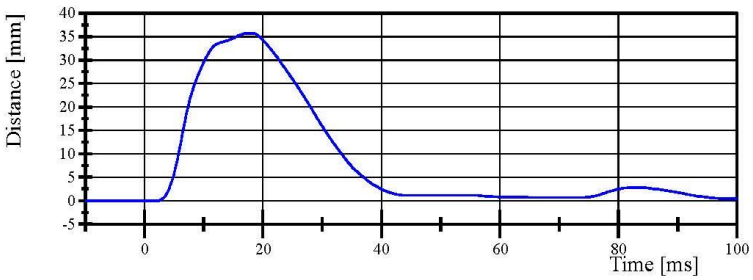
Filter Class: CFC_600
Max: 27.3 mm at 16.7 ms
Min: -0.0 mm at 2.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 32.4 mm at 16.8 ms
Min: -0.0 mm at -3.3 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 35.8 mm at 17.4 ms
Min: -0.0 mm at 2.2 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 11:24:07 594

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.337 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.4 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	42.3 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	41.0 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.8 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	8.8 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Thorax Rib #1 S/N: DM5020
Middle Thorax Rib #2 S/N: DM5021
Lower Thorax Rib #3 S/N: DM5022

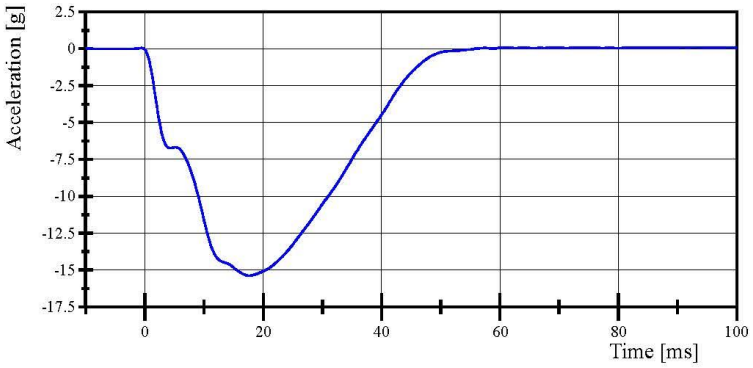
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:28:44 827

Transportation Research Center Inc.

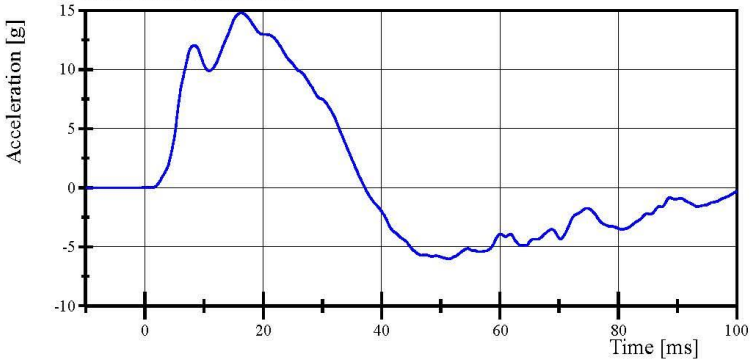
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Probe Acceleration



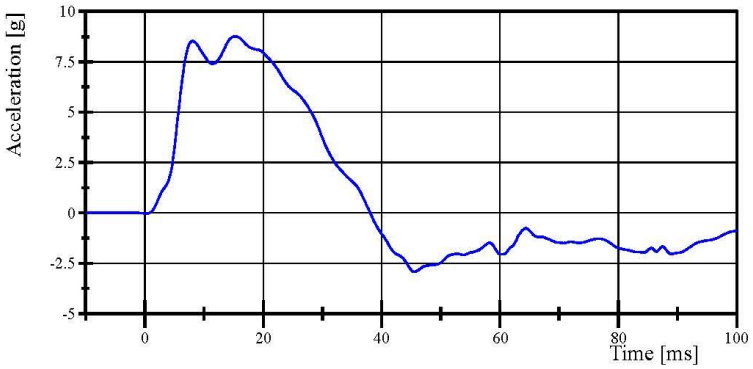
Filter Class: CFC_180
Max: 0.1 g at 98.9 ms
Min: -15.4 g at 17.6 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 14.8 g at 16.3 ms
Min: -6.0 g at 51.4 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 8.8 g at 15.2 ms
Min: -2.9 g at 45.6 ms

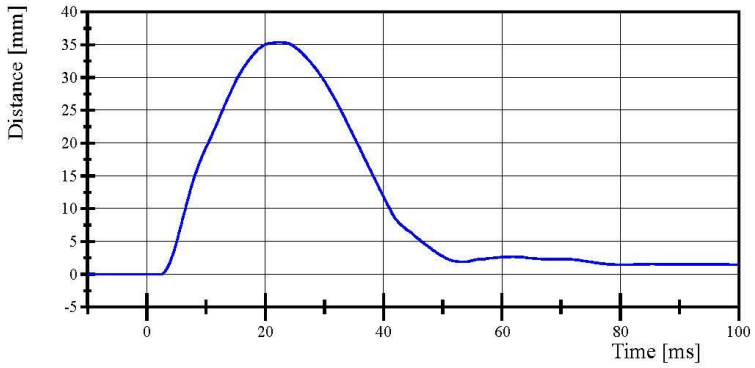
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:29:25 827

Transportation Research Center Inc.

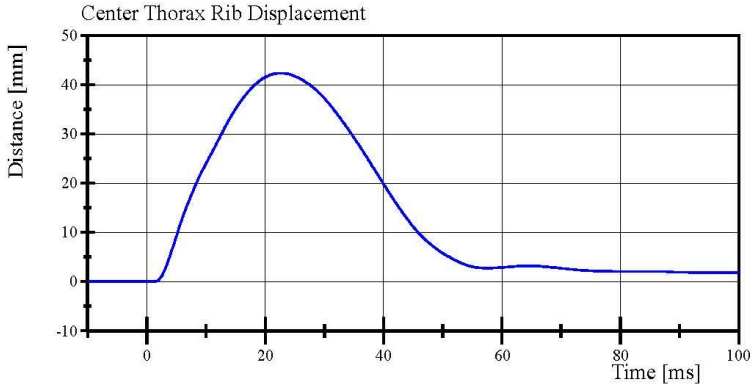
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Upper Thorax Rib Displacement



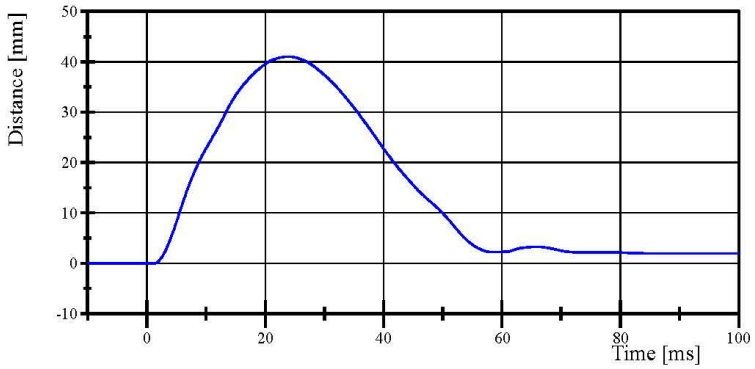
Filter Class: CFC_600
Max: 35.4 mm at 22.3 ms
Min: -0.0 mm at 2.3 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 42.3 mm at 22.6 ms
Min: -0.0 mm at 1.2 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.0 mm at 24.1 ms
Min: -0.0 mm at 1.3 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:29:25 827

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.29 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.3 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.4 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	41.8 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	9.97 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Abdominal Rib S/N: DM7281
Lower Abdominal Rib S/N: DM7275

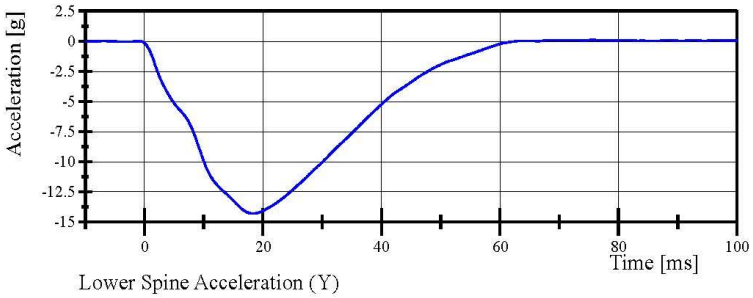
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:20:31 634

Transportation Research Center Inc.

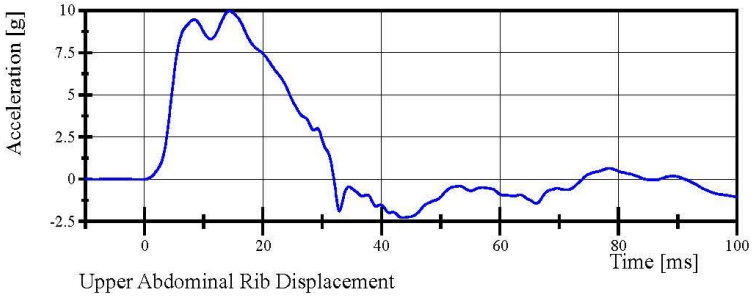
Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Probe Acceleration



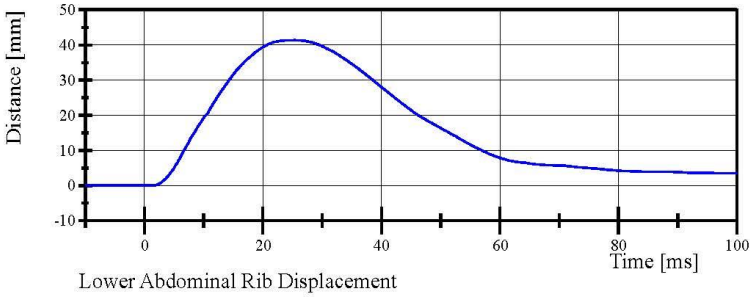
Filter Class: CFC_180
Max: 0.1 g at 75.6 ms
Min: -14.3 g at 18.3 ms

Lower Spine Acceleration (Y)



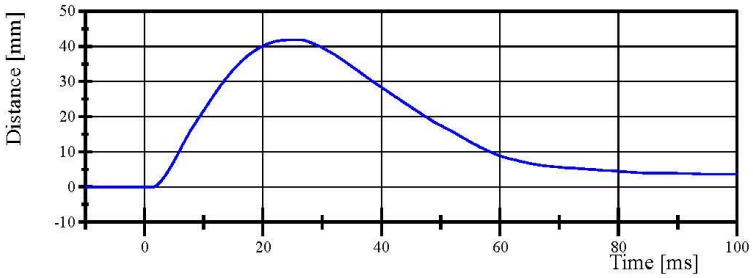
Filter Class: CFC_180
Max: 10.0 g at 14.3 ms
Min: -2.3 g at 43.5 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 41.4 mm at 25.4 ms
Min: -0.0 mm at 1.3 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 41.8 mm at 24.3 ms
Min: -0.0 mm at 1.4 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:21:01 634

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.64 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-43.36 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.1 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,949.8 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis Skin S/N: EN1590
Pelvis Plug Info:
Manufacturer: Saco
S/N: 13241
Cal Date: 20190812

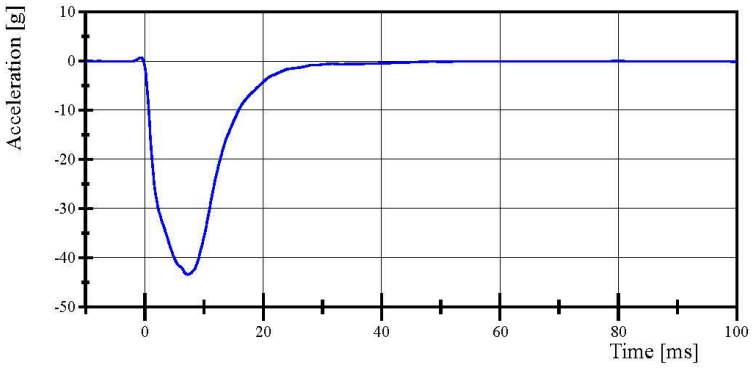
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 12:01:36 428

Transportation Research Center Inc.

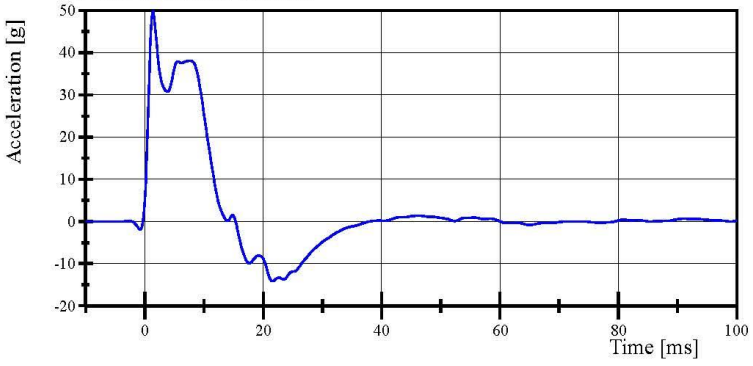
Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Probe Acceleration



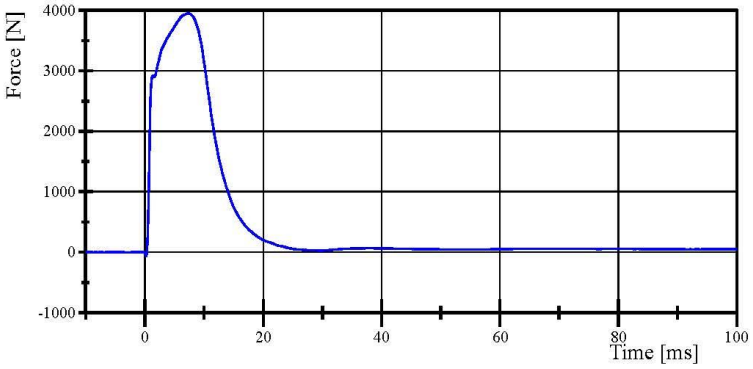
Filter Class: CFC_180
Max: 0.7 g at -0.7 ms
Min: -43.4 g at 7.3 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 49.8 g at 1.4 ms
Min: -14.2 g at 21.5 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 3,949.8 N at 7.4 ms
Min: -63.2 N at 0.2 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 12:03:58 428

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-40.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	32.3 g	Yes
Iliac Force	4,100 - 5,100 N	4,680.6 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis S/N: EN1590

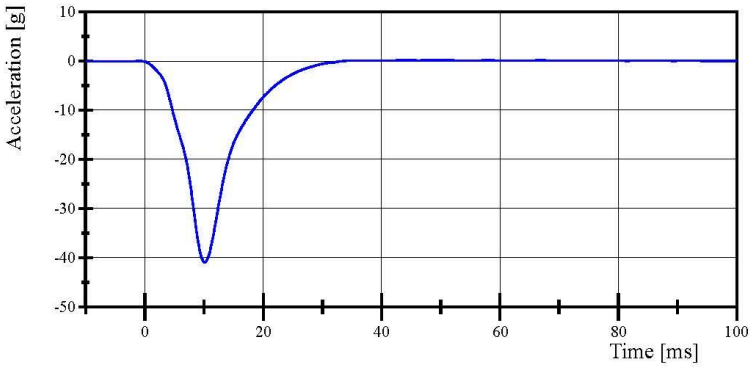
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:00:15 616

Transportation Research Center Inc.

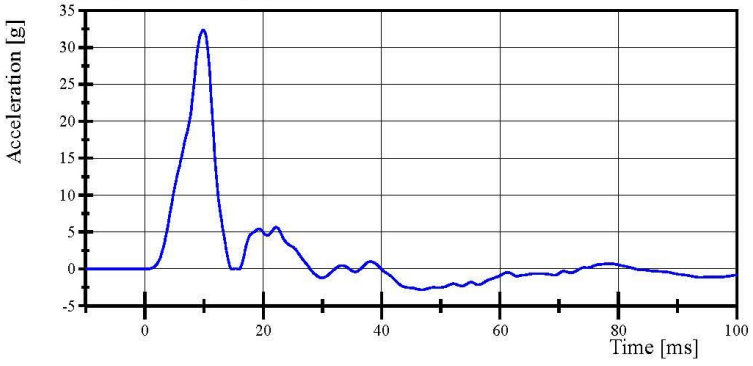
Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 47-1
Test Date: 8/21/2020

Probe Acceleration



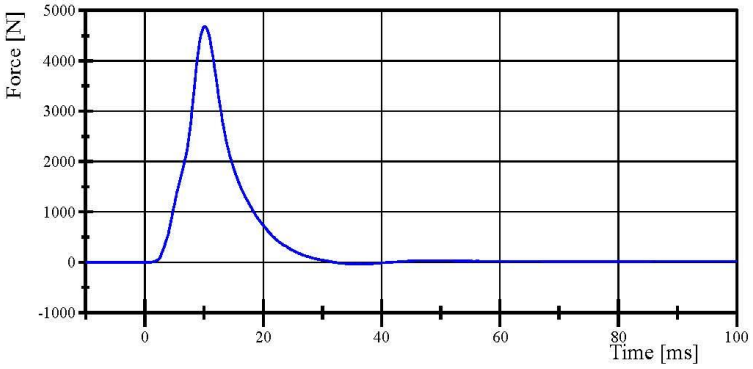
Filter Class: CFC_180
Max: 0.2 g at 66.7 ms
Min: -40.9 g at 10.1 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 32.3 g at 9.8 ms
Min: -2.8 g at 46.8 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,680.6 N at 10.2 ms
Min: -34.7 N at 37.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

08.21.2020 10:00:40 616

Post-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 48

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	130	Yes
G	Head Breadth	140.0 - 148.0	147	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	400	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
P	Foot Length (left)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	320	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	485	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	879	Yes
Z	Waist Circumference	761.0 - 791.0	782	Yes

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	120.7 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	4.2 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	0.72 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head S/N: 1330

Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

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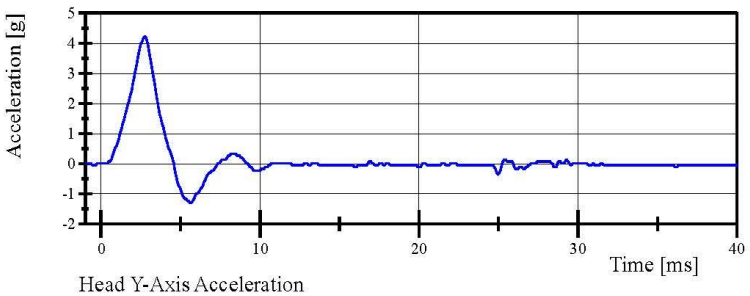
Transportation Research Center Inc.

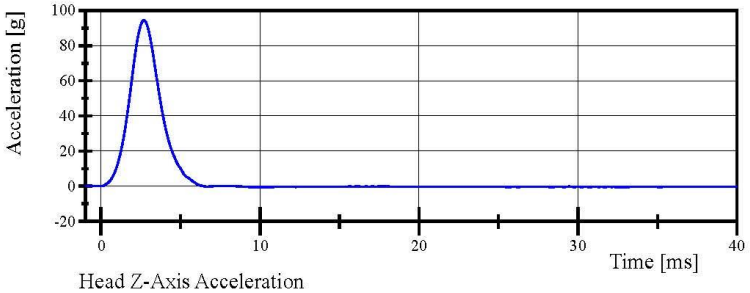
Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Head X-Axis Acceleration



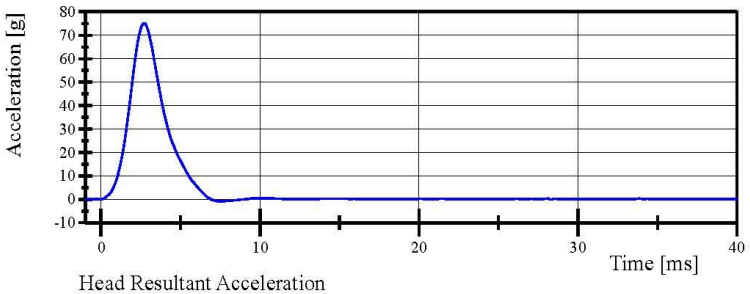
Filter Class: CFC_1000
Max: 4.2 g at 2.7 ms
Min: -1.3 g at 5.6 ms

Head Y-Axis Acceleration



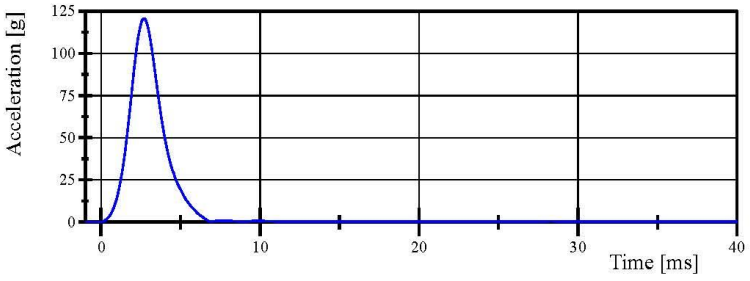
Filter Class: CFC_1000
Max: 94.4 g at 2.7 ms
Min: -0.6 g at 9.5 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 75.1 g at 2.7 ms
Min: -0.8 g at 7.4 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 120.7 g at 2.7 ms
Min: 0.0 g at -1.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 08:05:09 197

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.599 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.456 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.636 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.955 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.851 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.883 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-78.0 deg	Yes
Time of Peak	50 - 70 ms	64.2 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	42.6 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	119.0 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 779

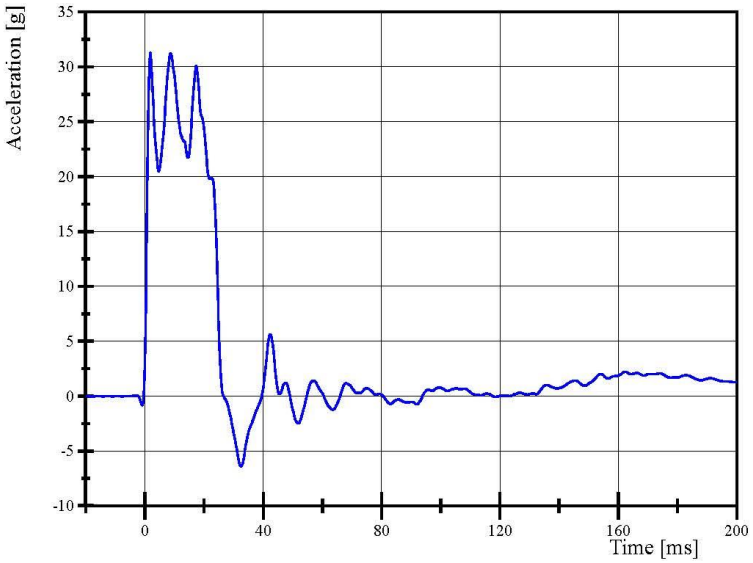
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

10.01.2020 08:34:14 718

Transportation Research Center Inc.

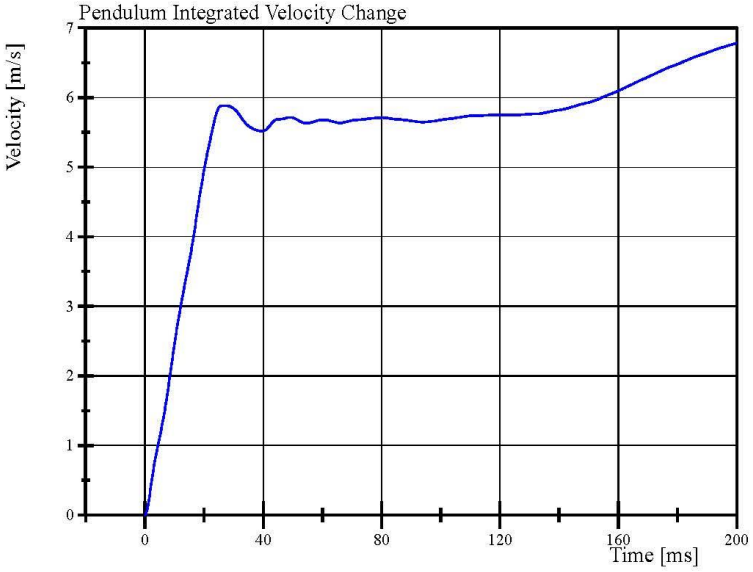
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Pendulum Acceleration



Filter Class: CFC_180
Max: 31.3 g at 1.8 ms
Min: -6.4 g at 32.5 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 6.8 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

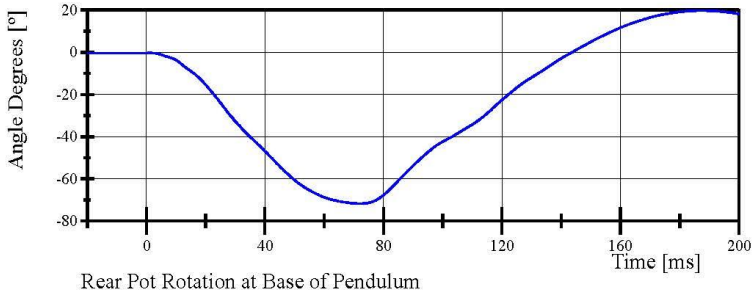
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 08:34:48 718

Transportation Research Center Inc.

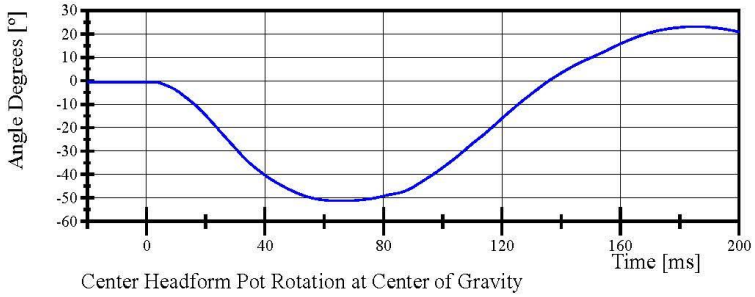
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Forward Pot Rotation at Base of Pendulum



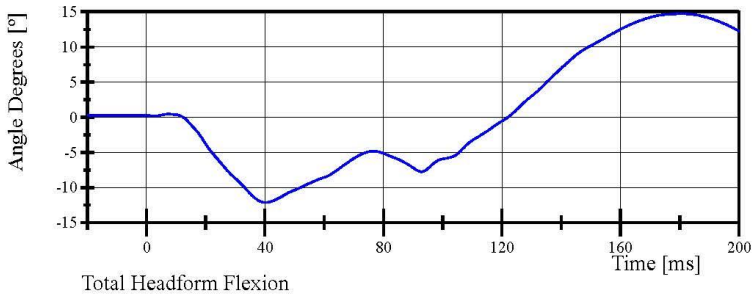
Filter Class: CFC_60
Max: 19.8 ° at 187.3 ms
Min: -71.7 ° at 72.1 ms

Rear Pot Rotation at Base of Pendulum



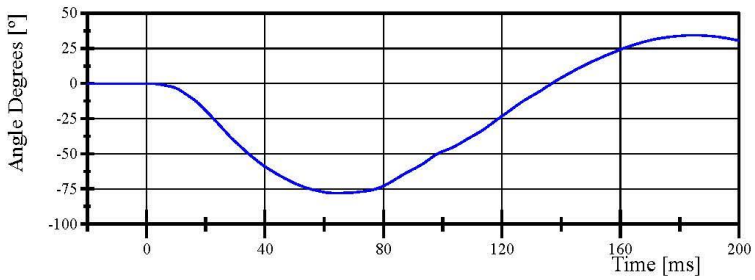
Filter Class: CFC_60
Max: 23.1 ° at 185.2 ms
Min: -51.3 ° at 65.1 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 14.7 ° at 180.6 ms
Min: -12.1 ° at 40.2 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 34.3 ° at 185.0 ms
Min: -78.0 ° at 64.2 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

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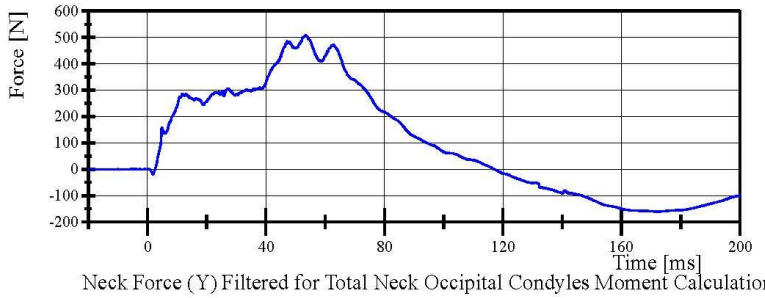
Transportation Research Center Inc.

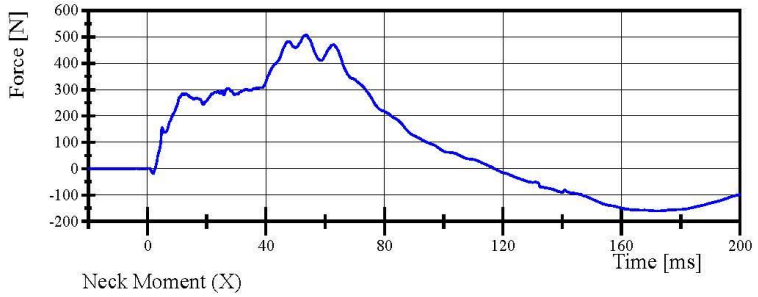
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Neck Force (Y)



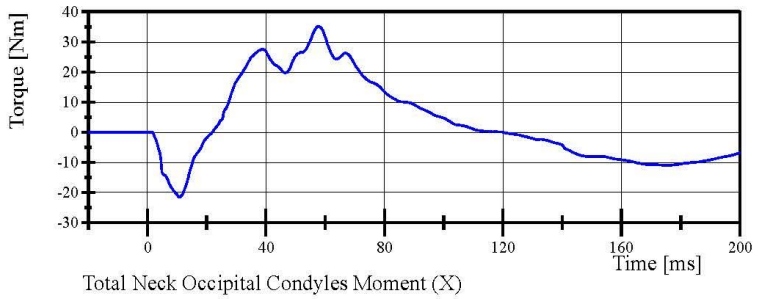
Filter Class: CFC_1000
Max: 509.3 N at 53.4 ms
Min: -161.9 N at 172.2 ms

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



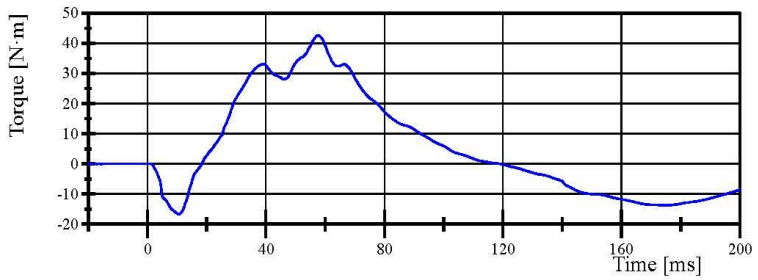
Filter Class: CFC_600
Max: 508.1 N at 53.4 ms
Min: -161.3 N at 172.2 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 35.2 Nm at 57.6 ms
Min: -21.6 Nm at 10.8 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 42.6 N·m at 57.6 ms
Min: -16.8 N·m at 10.7 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 08:34:48 718

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.0 g	Yes
Shoulder Displacement	28 - 37 mm	30.9 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.2 g	Yes

Test meets specifications.

Condition: Used
Comments:
Left Arm S/N: 940L
Shoulder Rib S/N: 180-3355 259

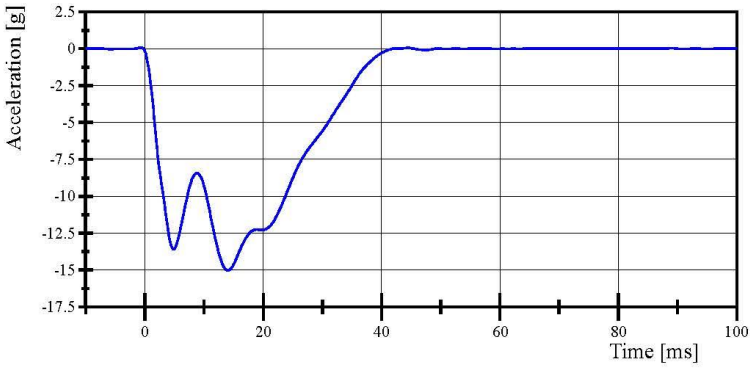
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 09:33:01 838

Transportation Research Center Inc.

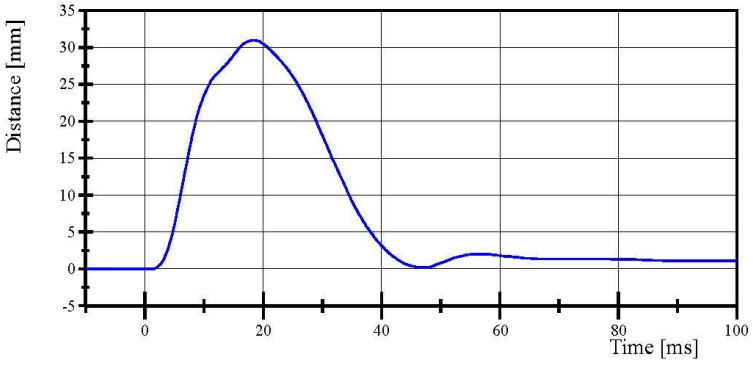
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Probe Acceleration



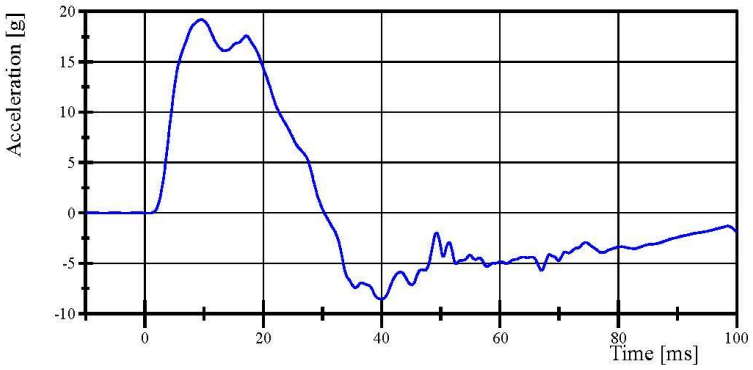
Filter Class: CFC_180
Max: 0.1 g at -0.6 ms
Min: -15.0 g at 14.0 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 30.9 mm at 18.4 ms
Min: -0.0 mm at -4.5 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 19.2 g at 9.5 ms
Min: -8.5 g at 40.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 09:33:31 838

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.747 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.2 g	Yes
Shoulder Displacement	31 - 40 mm	36.8 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.4 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.5 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	37.0 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.9 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: 940L
Shoulder Rib S/N: 180-3355 259
Upper Thorax Rib #1 S/N: DM5020
Middle Thorax Rib #2 S/N: DM5021
Lower Thorax Rib #3 S/N: DM5022

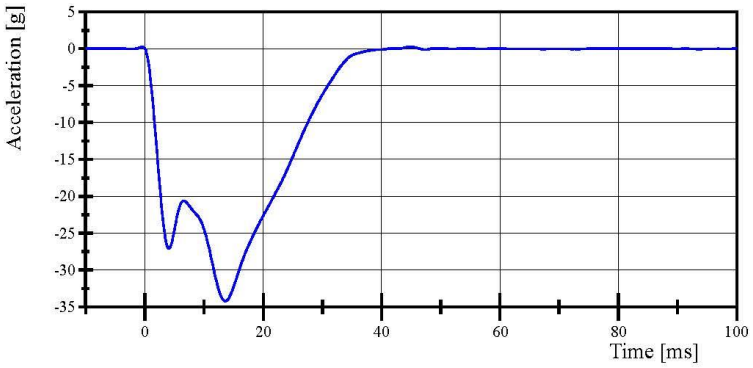
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 10:39:34 597

Transportation Research Center Inc.

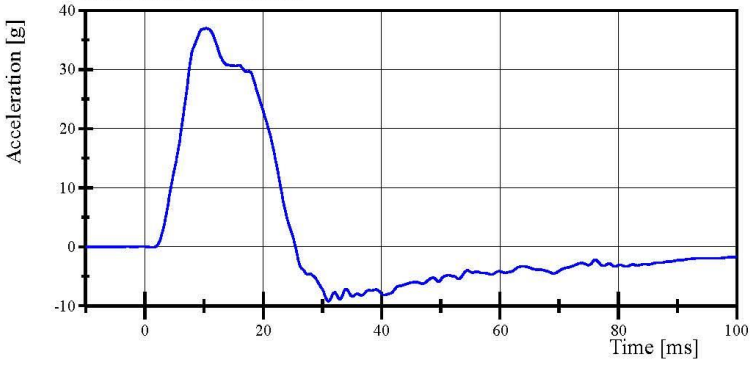
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Probe Acceleration



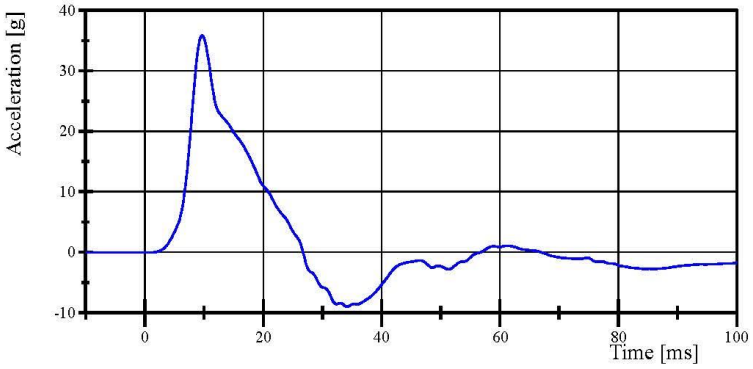
Filter Class: CFC_180
Max: 0.3 g at 44.9 ms
Min: -34.2 g at 13.6 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 37.0 g at 10.3 ms
Min: -9.2 g at 31.0 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 35.9 g at 9.7 ms
Min: -9.0 g at 34.2 ms

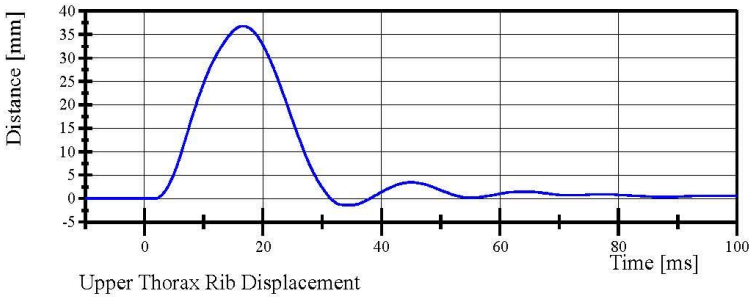
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 10:40:24 597

Transportation Research Center Inc.

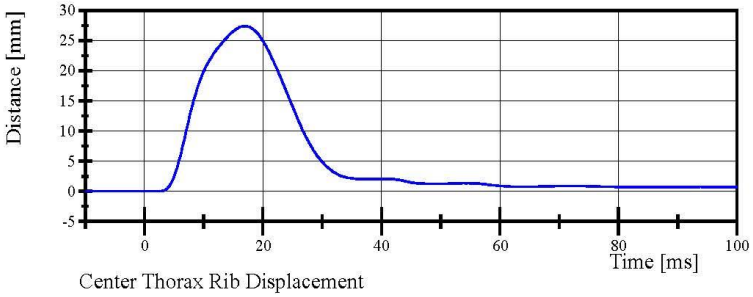
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Shoulder Rib Displacement



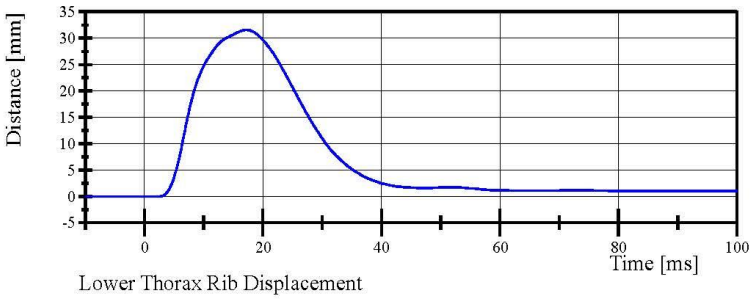
Filter Class: CFC_600
Max: 36.8 mm at 16.5 ms
Min: -1.3 mm at 34.6 ms

Upper Thorax Rib Displacement



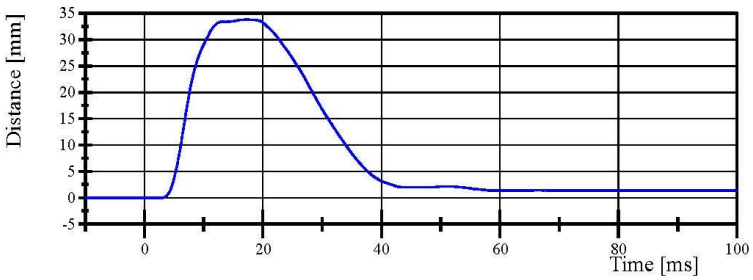
Filter Class: CFC_600
Max: 27.4 mm at 16.9 ms
Min: -0.0 mm at -0.2 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 31.5 mm at 17.2 ms
Min: -0.0 mm at 2.5 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 33.8 mm at 17.3 ms
Min: -0.0 mm at 2.9 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 10:40:24 597

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.1 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.333 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.1 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	37.5 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.7 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.1 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.1 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.0 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Thorax Rib #1 S/N: DM5020
Middle Thorax Rib #2 S/N: DM5021
Lower Thorax Rib #3 S/N: DM5022

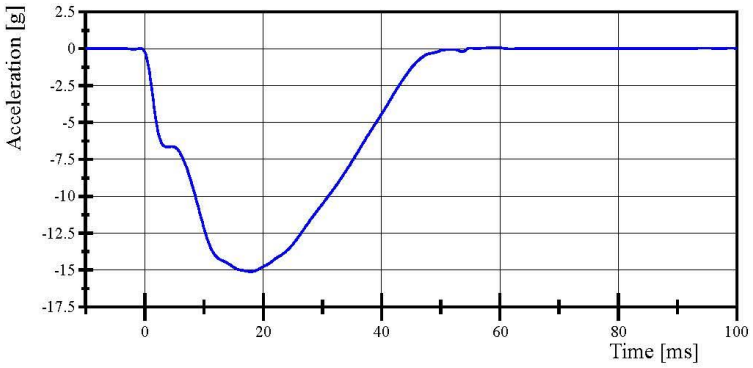
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 10:08:10 827

Transportation Research Center Inc.

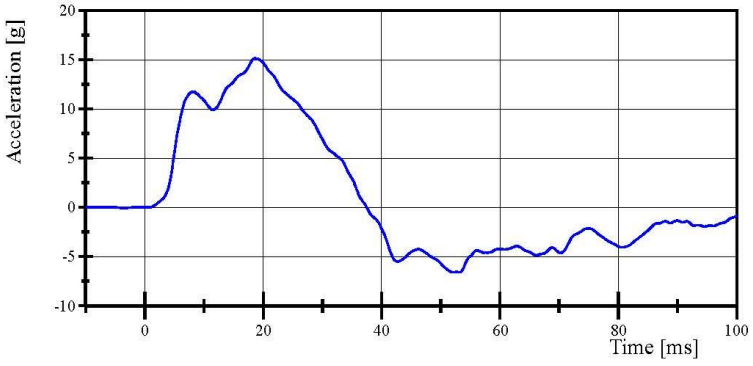
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Probe Acceleration



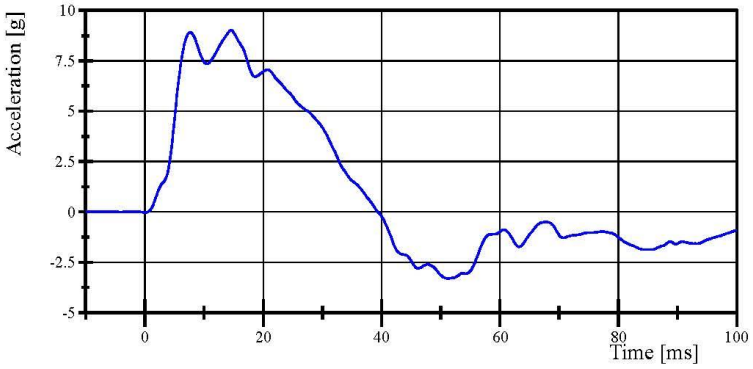
Filter Class: CFC_180
Max: 0.1 g at 58.6 ms
Min: -15.1 g at 17.8 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 15.1 g at 18.6 ms
Min: -6.6 g at 53.1 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 9.0 g at 14.6 ms
Min: -3.3 g at 51.3 ms

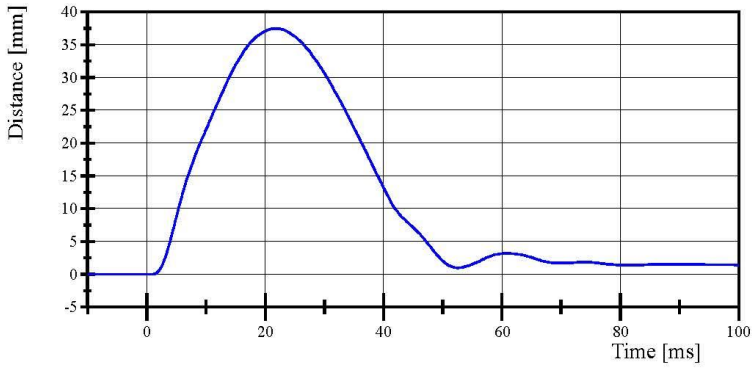
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 10:08:48 827

Transportation Research Center Inc.

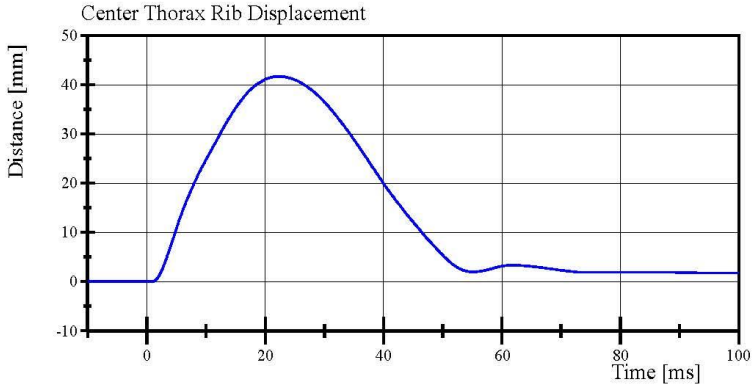
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Upper Thorax Rib Displacement



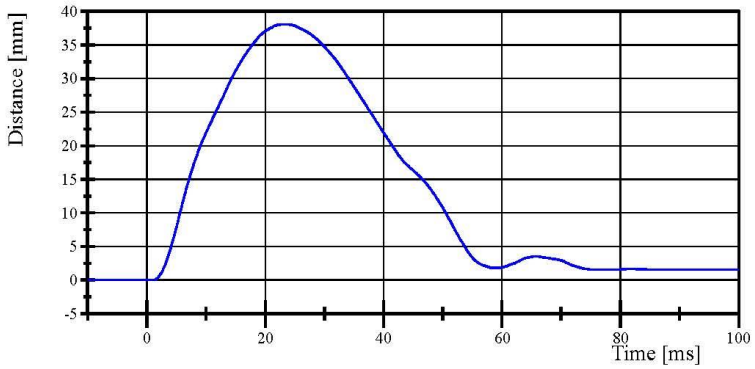
Filter Class: CFC_600
Max: 37.5 mm at 21.8 ms
Min: -0.0 mm at 0.3 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.7 mm at 22.3 ms
Min: -0.0 mm at 0.8 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 38.1 mm at 23.1 ms
Min: -0.0 mm at 1.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 10:08:48 827

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/5/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.2 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	42.8 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	40.5 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.01 g	Yes

Test meets specifications.

Condition: Used
Comments:
Upper Abdominal Rib S/N: DM7281
Lower Abdominal Rib S/N: DM7275

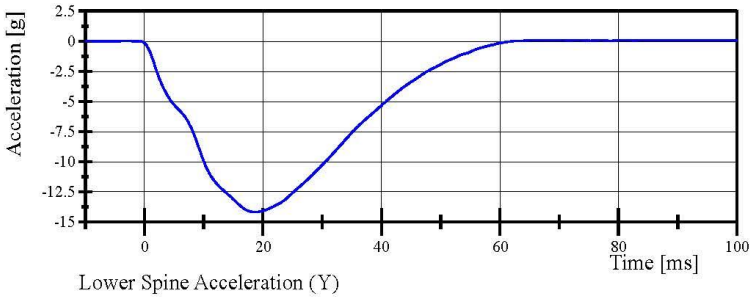
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.05.2020 11:32:36 662

Transportation Research Center Inc.

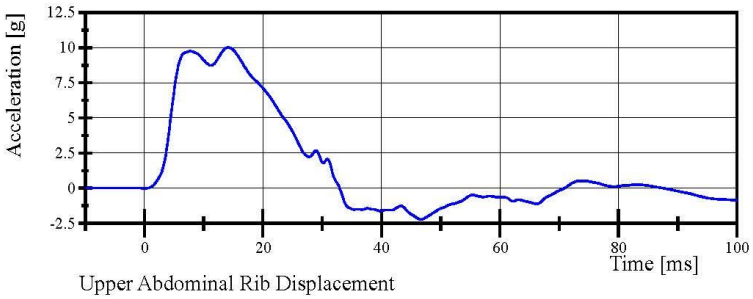
Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/5/2020

Probe Acceleration



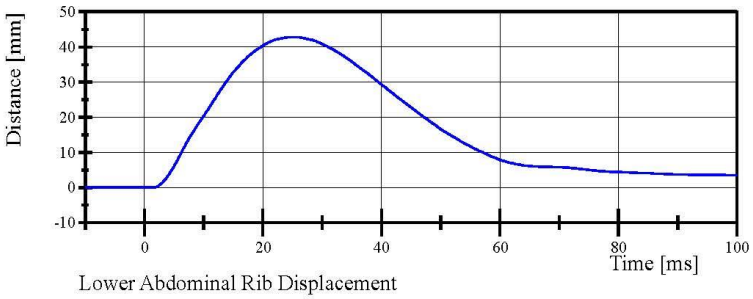
Filter Class: CFC_180
Max: 0.1 g at 66.2 ms
Min: -14.2 g at 18.6 ms

Lower Spine Acceleration (Y)



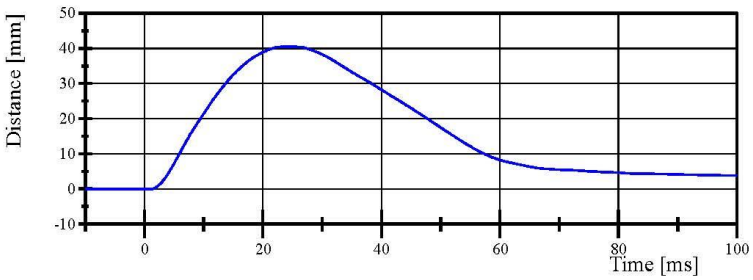
Filter Class: CFC_180
Max: 10.0 g at 14.2 ms
Min: -2.2 g at 46.6 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 42.8 mm at 25.1 ms
Min: -0.0 mm at 1.1 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 40.5 mm at 23.8 ms
Min: -0.0 mm at 1.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.05.2020 11:33:30 662

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.64 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-43.99 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	40.0 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,880.1 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis Skin S/N: EN1590
Pelvis Plug Info:
Manufacturer: Saco
S/N: 13188
Cal Date: 20190808

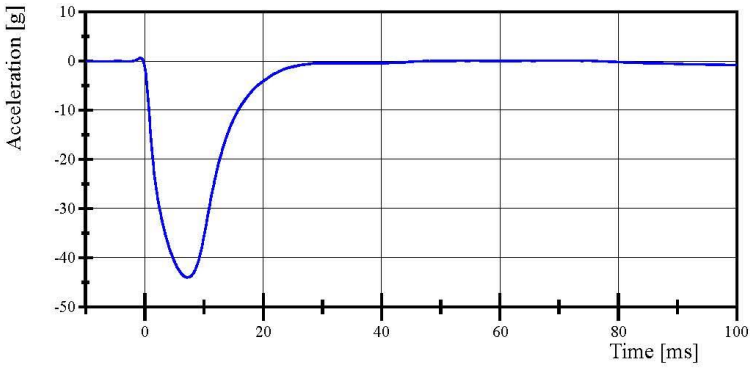
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

10.01.2020 11:35:04 435

Transportation Research Center Inc.

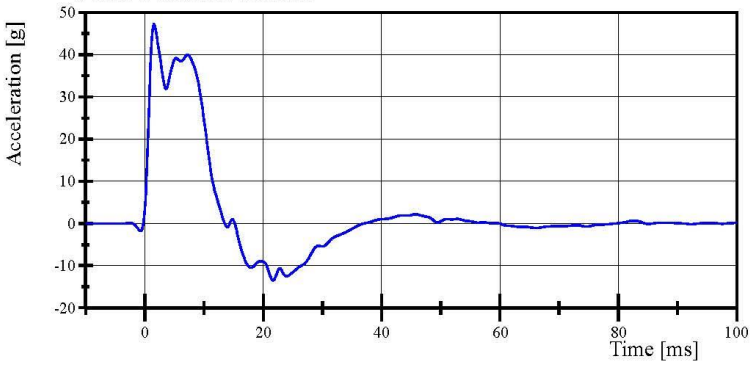
Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Probe Acceleration



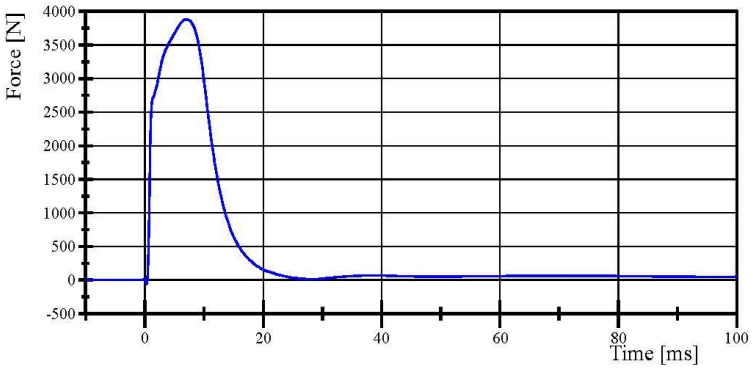
Filter Class: CFC_180
Max: 0.6 g at -0.7 ms
Min: -44.0 g at 7.2 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 47.2 g at 1.5 ms
Min: -13.5 g at 21.7 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 3,880.1 N at 7.0 ms
Min: -60.2 N at 0.3 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 11:36:25 435

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-39.5 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	31.4 g	Yes
Iliac Force	4,100 - 5,100 N	4,487.4 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis S/N: EN1590

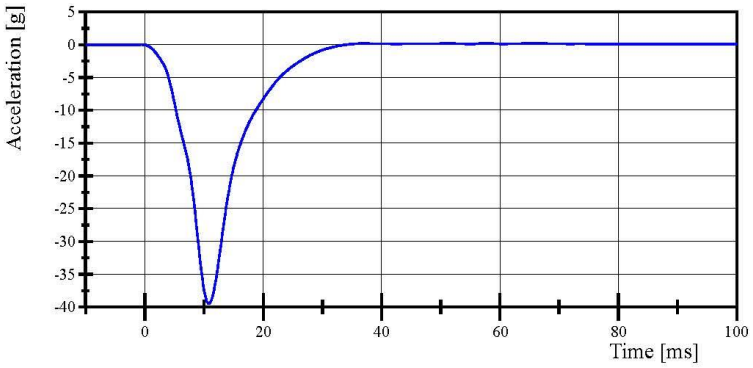
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 09:24:13 669

Transportation Research Center Inc.

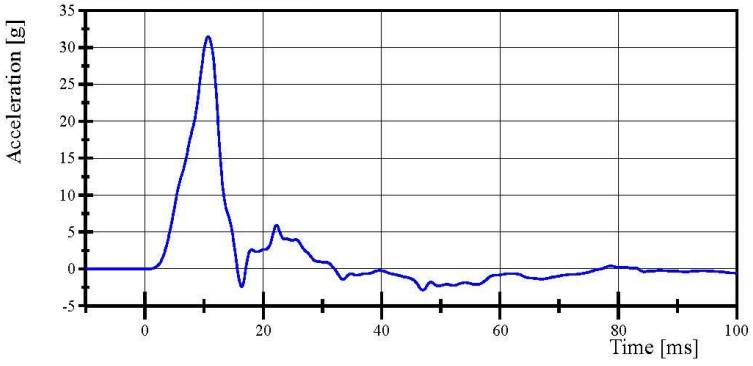
Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 48-1
Test Date: 10/1/2020

Probe Acceleration



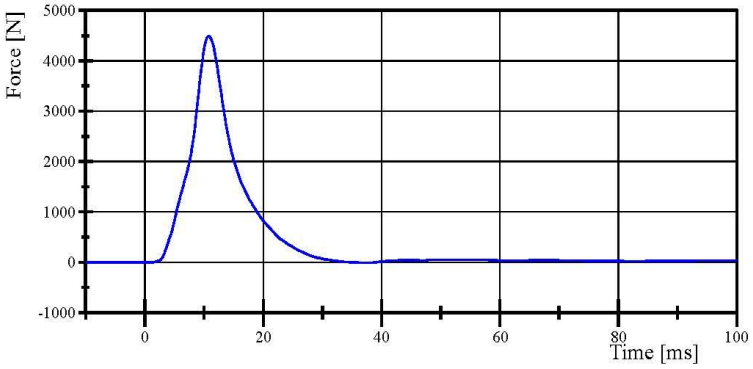
Filter Class: CFC_180
Max: 0.2 g at 66.7 ms
Min: -39.5 g at 10.8 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 31.4 g at 10.6 ms
Min: -2.9 g at 47.0 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,487.4 N at 10.8 ms
Min: -11.7 N at 36.7 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.01.2020 09:24:44 669

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 297		
				Serial Number	**Manufacturer**	**Calibration Date**
Head Accelerometers			X	P93539	Endevco	19-Aug-2020
			Y	P93549	Endevco	19-Aug-2020
			Z	P93776	Endevco	19-Aug-2020
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A
	Thoracic Rib	Upper	Y	023	Servo	20-Aug-2020
		Middle	Y	063	Servo	20-Aug-2020
		Lower	Y	043	Servo	20-Aug-2020
	Abdominal Rib	Upper	Y	01811	Servo	20-Aug-2020
		Lower	Y	051	Servo	20-Aug-2020
Lower Spine Accelerometers (T12)			X	P94425	Endevco	19-Aug-2020
			Y	P91522	Endevco	19-Aug-2020
			Z	P91511	Endevco	19-Aug-2020
Acetabulum Load Cell			Y	235-FY	FTSS	20-Aug-2020
Iliac Wing Load Cell			Y	320-FY	FTSS	20-Aug-2020
Pelvis Plug (struck side)				13154	SACO	08-Aug-2020
Pelvis Plug (non-struck side)				13183	SACO	08-Aug-2020

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	T11808	Endevco	27-Aug-2020
Vehicle Center of Gravity	Y	T16764	Endevco	27-Aug-2020
Vehicle Center of Gravity	Z	T11812	Endevco	27-Aug-2020
Left Floor Sill	Y	T11811	Endevco	27-Aug-2020
A-Pillar Sill	Y	T16724	Endevco	27-Aug-2020
A-Pillar Low	Y	T16769	Endevco	27-Aug-2020
A-Pillar Mid	Y	T16762	Endevco	27-Aug-2020
B-Pillar Sill	Y	T16773	Endevco	27-Aug-2020
B-Pillar Low	Y	P50313	Endevco	23-Jun-2020
B-Pillar Mid	Y	P50491	Endevco	23-Jun-2020
Driver Seat	Y	T16720	Endevco	27-Aug-2020
Engine Top	X	T16772	Endevco	27-Aug-2020
Engine Top	Y	T16763	Endevco	27-Aug-2020
Firewall	Y	T16779	Endevco	27-Aug-2020
Right Roof	Y	P57192	Endevco	27-Aug-2020
Right Floor Sill	Y	T16723	Endevco	27-Aug-2020
Rear Floor Pan	X	P61501	Endevco	23-Jun-2020
Rear Floor Pan	Y	T11835	Endevco	23-Jun-2020

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DK7091S	Humanetics	13-Nov-2019
Load Cell 2	DK7120S	Humanetics	13-Nov-2019
Load Cell 3	DK7118S	Humanetics	13-Nov-2019
Load Cell 4	DK7124S	Humanetics	13-Nov-2019
Load Cell 5	DK7111S	Humanetics	13-Nov-2019
Load Cell 6	DK7126S	Humanetics	13-Nov-2019
Load Cell 7	DK7112S	Humanetics	13-Nov-2019
Load Cell 8	DK7074S	Humanetics	13-Nov-2019