FINAL REPORT NUMBER: SINCAP-TRC-24-002

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

KIA CORPORATION
2024 Kia Seltos SUV
NHTSA NUMBER: M20244212

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

Report Date: December 9, 2024

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
Washington, D.C. 20590

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Report Prepared By: ILO Project Operations Group

Report Approved By: 

John Shultz

Approval Date: December 9, 2024

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date:

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

Date:

Technical Report Documentation Page

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15. Supplemental Notes		

16. Abstract

This 55 / 28 km/h 90° Moving Deformable Barrier SINCAP Side Impact Test was conducted on the subject 2024 Kia Seltos SUV, in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on June 13, 2024.

The impact velocity of the Moving Deformable Barrier (MDB) was 61.99 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21.7° C. The target vehicle post-test maximum crush was 205 mm at Level 2. The test vehicle's performance was as follows:

Driver ATD (ES-2re)

Measurement Description	**Units**	**IARV**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	78.910
Maximum Thoracic Rib Deflection	mm	44	24.360
Total Abdominal Force	N	2500	741.860
Pubic Symphysis Force	N	6000	-1541.140
Lower Spine Acceleration	G	82*	32.720

Passenger ATD (SID-IIs)

Measurement Description	**Units**	**IARV**	**Result**
Head Injury Criteria (HIC_{36})	N/A	1000	176.700
Lower Spine Resultant Acceleration	g's	82	63.070
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1987.450
Maximum Thoracic Rib Deflection	mm	38*	17.350
Maximum Abdominal Rib Deflection	mm	45*	22.200

* Proposed IARV

The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

17. Key Words New Car Assessment Program (NCAP) Side Impact MDB ES-2re SID-IIs	18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590

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SECTION 1
TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test was conducted as part of the MY 2024 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. 693JJ920D000018. The purpose of this test is to generate comparative side impact performance in a 2024 Kia Seltos SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated March 2020.

SECTION 2

SUMMARY OF TEST RESULTS

A 2024 Kia Seltos SUV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.99 km/h (38.52 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Transportation Research Center Inc. in East Liberty, Ohio, on June 13, 2024. Pre-test and post-test photographs of the test vehicle and the MDB and the dummies (ES-2-re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated March 2020. The side impact event was documented by 11 cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)
Primary and redundant head CG tri-axial accelerometers
Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers
Abdomen forward, middle, and rear y-axis load cells
Lower spine (T12) tri-axial accelerometers
Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)
Primary and redundant head CG triaxial accelerometers
Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers
Abdomen upper rib and lower rib y-axis displacement potentiometers
Lower spine (T12) tri-axial accelerometers
Acetabulum and iliac wing y-axis load cells

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

Dummy injury readings were recorded as follows:

Measurement Description	Driver ATD (ES-2-re)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})	N/A	1000	78.910
Maximum Thoracic Rib Deflection	mm	44	24.360
Combined Abdominal Force	N	2500	741.860
Pubic Symphysis Force	N	6000	-1541.140
Lower Spine (T12) Resultant Acceleration	G	82*	32.720

* Proposed IARV

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})	N/A	1000	176.700
Lower Spine (T12) Resultant Acceleration	G	82	63.070
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1987.450
Maximum Thoracic Rib Deflection	mm	38*	17.350
Maximum Abdominal Rib Deflection	mm	45*	22.200

* Proposed IARV

Supplemental Restraint Information is given below:

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

GENERAL COMMENTS

All doors remained closed throughout the test. No fuel spillage occurred during the impact or the static rollover test which followed. Injury values for both ATDs were within the established performance thresholds.

LEFT LOWER A-PILLAR AY CF @ 23.0 ms

LEFT MIDDLE A-PILLAR AY CF @ 23.0 ms

LEFT MIDDLE B-PILLAR AY CF @ 3.0 ms

LEFT REAR SEAT STRUCTURE AY CF @ 5.0 ms

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20244212
Model Year	2024
Make	Kia
Model	Seltos
Body Style	MPV
VIN	KNDEU2AA8R7583807
Body Color	Valais Green
Odometer Reading (km/mi)	130 mi
Engine Displacement (L)	2.0
Type/No. Cylinders	Transverse/4
Engine Placement	Front
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	Yes
Final Drive	FWD
Roof Rack	Yes
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

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

DATA FROM CERTIFICATION LABEL

Manufactured By	KIA CORPORATION
Date of Manufacture	11/23
Vehicle Type	MPV

GVWR (LB)	3925
GAWR Front (LB)	2293
GAWR Rear (LB)	2062

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

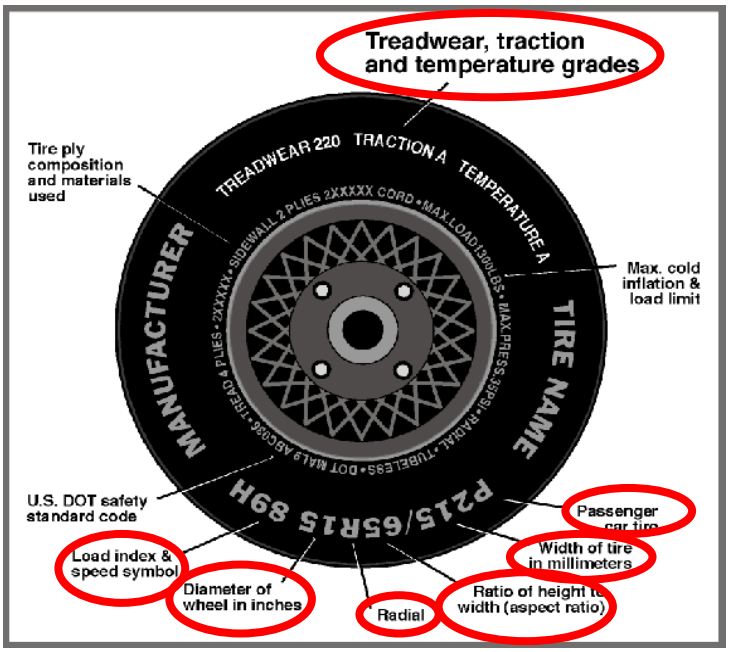
Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity DSC)	2	3	N/A	5
Capacity Weight (VCW) (kg)				290.0
DSC x 68 (kg)				340.0
Cargo Weight (RCLW) (kg)				50.0

VEHICLE SEAT TYPE

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

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

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SINCAP Side Impact
NHTSA No.: M20244212
Test Date: 6/13/2024



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	230
Recommended Tire Size	215/55R17	215/55R17
Tire Size on Vehicle	215/55R17	215/55R17
Tire Manufacturer	Kumho	Kumho
Tire Model	Solus TA31	Solus TA31
Treadwear	500	500
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	94V	94V
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	DOT 1YO 99YAY1	DOT 1YO 99YAY1
DOT Safety Code Right	DOT 1YO 99YAY1	DOT 1YO 99YAY1

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

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	262	262	262	262
Tire Placard	kPa	240	240	230	230
Owner's Manual	kPa	240	240	230	230
As Tested	kPa	240	240	230	230

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21 kPa	207	207	207	207

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	408.2	275.4		450.4	349.6		455.4	361.0	
Right	kg	398.6	263.4		393.2	320.2		392.8	311.4	
Ratio	%	60.0	40.0		55.7	44.3		55.8	44.2	
Totals	kg	806.8	538.8	1345.6	843.6	669.8	1513.4	848.2	672.4	1520.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1345.6	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	125.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	50.0	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1520.6	(A+B+C)

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

TEST VEHICLE ATTITUDES AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement
LF	mm	734	733	Yes
RF	mm	744	744	Yes
RR	mm	737	740	Yes
LR	mm	718	715	Yes
Vehicle CG (Aft of Front Axle)	mm	1163	1164	
Vehicle CG (Left(+)/Right(-) from Longitudinal Centerline)	mm	+58	+45	

***The "As Tested" vehicle attitude measurements must be equal to or within ± 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirement".

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

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

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast: Steel plate	32.0
Removed: None	0.0

TEST SURFACE MARKINGS

	Distance from 63° Impact Angle Line (mm)
Fore 25 mm target	900
Aft 25 mm target	906
Pre-Impact Angle Line	335

Parallel Track Target	X Location (mm)	Y Location (mm)
A	0	0
B	1620	3420
C	3985	3420
D	3985	0

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	18.1	14.7	16.4
Front Passenger Seat	16.9	16.9	16.9
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	13.1	13.1	13.1
Non-Struck Side Rear Seat	13.9	13.9	13.9
Rear Center Seat*	11.2	11.2	11.2

* 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	16.4	212	Max	N/A	N/A	N/A
			Mid	206	212	220
			Min	N/A	N/A	N/A
Front Passenger Seat	16.9	209	Max	N/A	N/A	N/A
			Mid	207	209	212
			Min	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	13.1	246	Max	N/A	N/A	N/A
			Mid	N/A	246	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	13.9	233	Max	N/A	N/A	N/A
			Mid	N/A	233	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	11.2	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A

* If applicable.

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

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

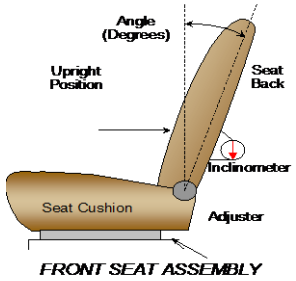
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents	mm	Detent
Driver Seat	244	38	122	20
Front Passenger Seat	224	35	112	18
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat*	Fixed	N/A	N/A	N/A

* If applicable

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated seat back angle. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents	Degrees	Detent
Driver Seat w/ Seated Dummy	60	31	+1.5	6
Front Passenger Seat	60.2	31	+1.5	6
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat w/ Seated Dummy	5.9	2	N/A	1
Non-Struck Side Rear Seat	5.8	2	N/A	1
Rear Center Seat*	5.9	2	N/A	1

* If applicable

SEAT BELT ANCHORAGE ADJUSTMENT

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

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

HEAD RESTRAINT ADJUSTMENT

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

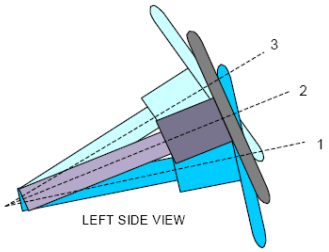
	Total # of Positions	Placed in Position #
Driver Seat	6	Full Up
Rear Seat	2	Ful Down

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

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

STEERING COLUMN ADJUSTMENT

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



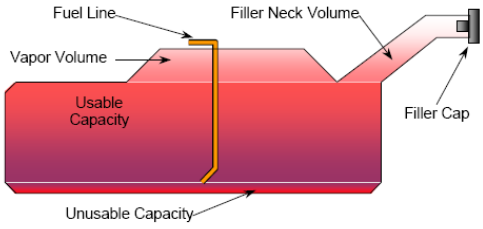
STEERING COLUMN ASSEMBLY

	Degrees	Fore/Aft Position (mm)
Lowermost, Position No. 1	24.8	
Geometric Center, Position No. 2	27.5	
Uppermost, Position No. 3	30.2	
Telescoping Steering Wheel Travel		46
Test Position	27.5	23

FUEL PUMP

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

Fuel pump will operate when engine system is normally operating.



VEHICLE FUEL TANK ASSEMBLY

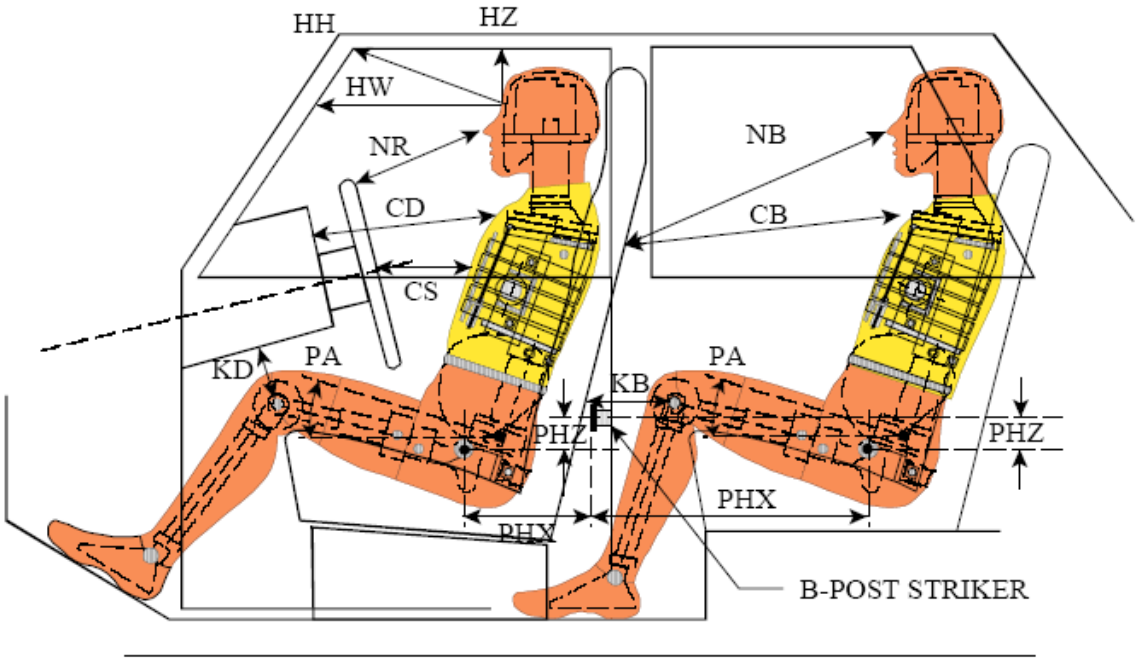
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	50.0
Usable Capacity of "Optional Tank" (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	50.0
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	46.5
Actual Amount of Solvent Used in Test	46.5
1/3 of Usable Capacity	16.7

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: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



NOTE: 2-DOOR VEHICLE SHOWN. REAR DUMMY PHX & PHZ MEASUREMENTS FOR A 4-DOOR VEHICLE WOULD USE THE C-POST STRIKER AS A REFERENCE POINT

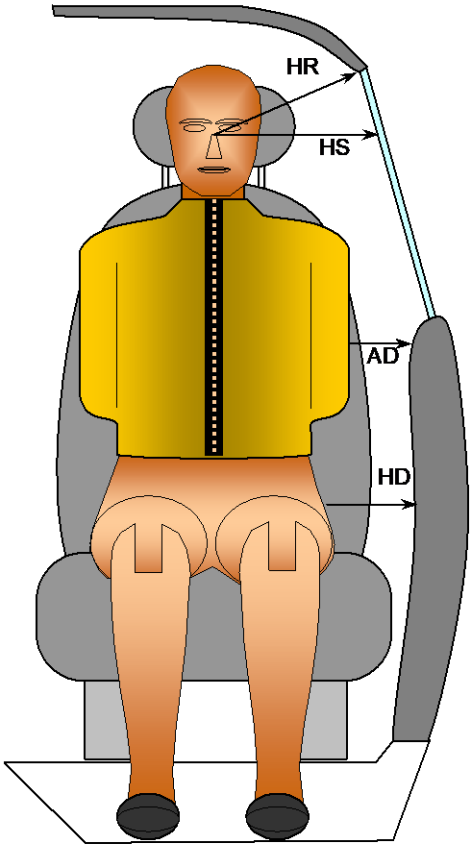
LEFT SIDE VIEW

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header	330			
HW		Header to Windshield	599			
HZ	HZ	Head to Roof Liner	161		288	
NR	NB	Nose to Rim/Seat Back	454		594	
CD	CB	Chest to Dash/Seat Back	615		565	
CS		Chest to Steering Wheel	368			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	176	-8.6	296	1.8
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	158	-9.3	292	2.1
PAX°	PAX°	Pelvic Tilt Angle X		-1.25		0.15
	PAY°	Pelvic Tilt Angle Y				21.7
PHX	PHX	Hip Point to Striker (X-Axis)	175		216	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	232		298	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

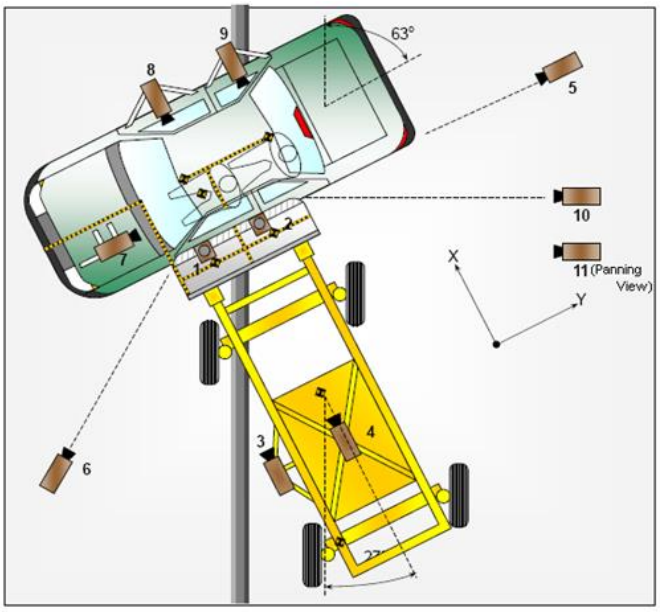


FRONT VIEW OF DUMMY

Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	212	270
HS	Head to Side Window	mm	330	341
AD	Arm to Door	mm	79	138
HD	H-Point to Door	mm	132	156

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	1601	0	-5622	20	1000
2	Overhead Close-up	1452	0	-5891	28	1000
3	Left Impact Point (MDB)	1632	-920	-934	25	1000
4	Side Overall (MDB)	2310	0	-1389	8.5	1000
5	Rear	0	7517	-1656	20	1000
6	Left Front	0	-7412	-1578	20	1000
7	Driver Front (OB)				8.5	1000
8	Driver Side (OB)				8.5	1000
9	Passenger Side (OB)				25	1000
10	Real-time Left Rear				Zoom	30
11	Real-time Inrun				Zoom	30

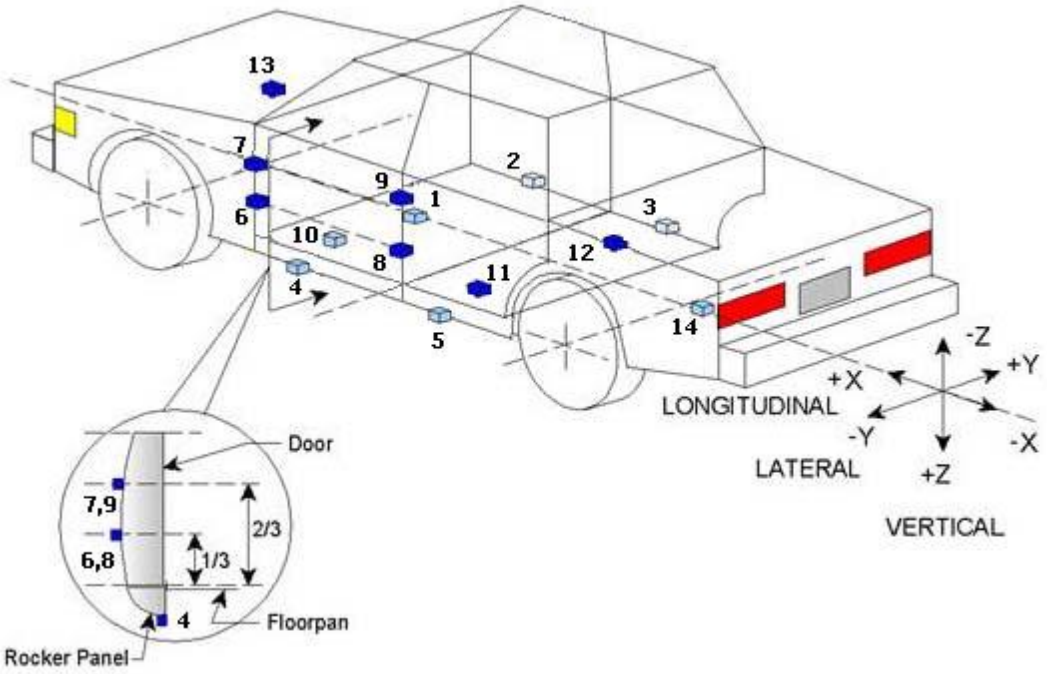
Reference: Impact Point projected to Ground; +X = To Front of MDB +Y = To Right of MDB; +Z = Down
*All measurements accurate to ± 6 mm.
If applicable, explain why camera(s) did not operate as intended: N/A

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MBD Accelerometers	5
TOTAL	60

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



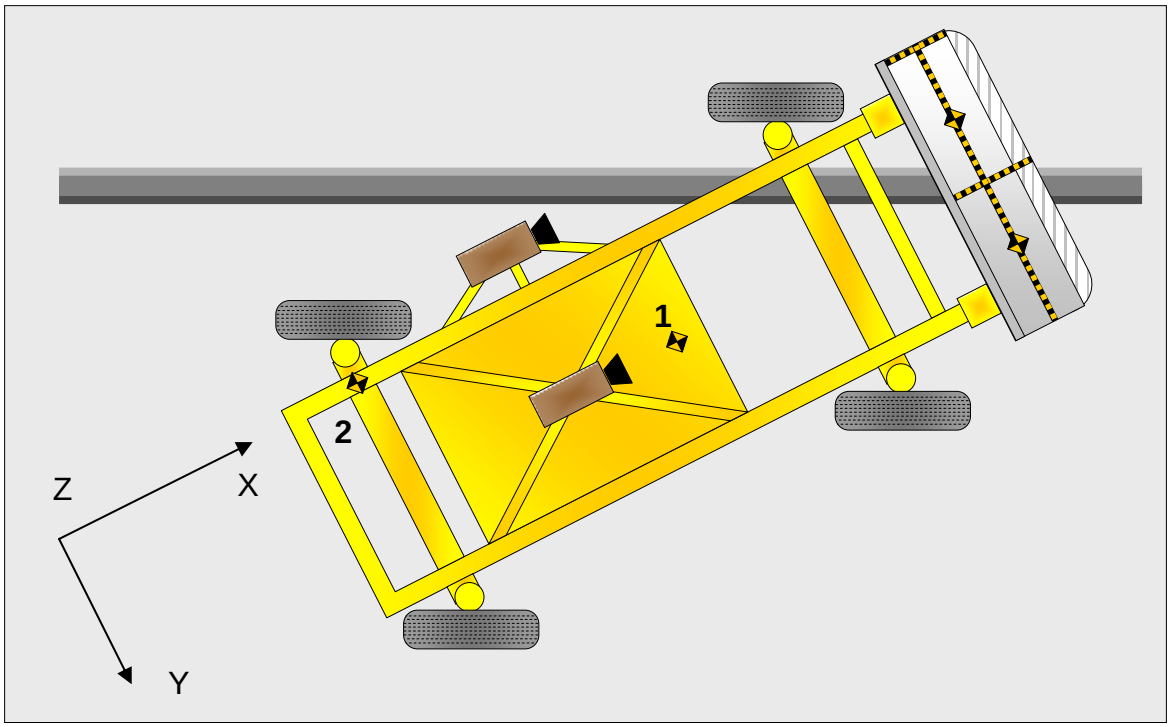
TEST VEHICLE ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2596	114	-386
2	Right Sill at Front Seat	2671	717	-359
3	Right Sill at Rear Seat	1757	718	-365
4	Left Sill at Front Door	2674	-710	-347
5	Left Sill at Rear Door	1736	-700	-353
6	A-Post Lower	3020	-814	-489
7	A-Post Middle	3019	-792	-884
8	B-Post Lower	1985	-808	-526
9	B-Post Middle	1958	-778	-1007
10	Front Seat Track	2240	-557	-385
11	Rear Seat Structure	1692	-342	-436
12	Right Rear Occ. Compartment	1693	351	-830
13	Engine Block	3698	142	-437
14	Rear Above Axle	262	-3	-462

Reference: X - Rear surface of vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SINCAP Side Impact
NHTSA No.: M20244212
Test Date: 6/13/2024



MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	MDB CG	-2196	0	-500
2	MDB Rear	-3585	-645	-620

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

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES2-re)	Rear Seat Dummy (SID-IIs)
Face	SCAB	SCAB
Top of Head	SCAB	SCAB
Left Side of Head	SCAB; Headliner	SCAB
Back of Head	SCAB	SCAB
Left Shoulder	SAB	Door Panel
Upper Torso	SAB, Bolster	Door Panel
Lower Torso	SAB, Bolster	Door Panel
Left Hip	SAB, Door Panel, Bolster	Door Panel, Bolster
Left Knee	Door Panel	Door Panel

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	None	None	None	None
Seat Disengagement from Floor pan	None	None	None	None
Seat Back Movement from Initial Position	None	None	None	None
Seat Back Collapse	None	None	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Pillars still intact
Sill Separation	None
Windshield Damage	Intact no cracks
Side Window Damage	Rear passenger window broken
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SINCAP Side Impact
NHTSA No.: M20244212
Test Date: 6/13/2024

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2630
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		380
Actual Impact Point (Aft of Front Axle)	mm		365
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact point	+15
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact point	0

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1252
Overall Length Including Honeycomb Face	4115
Wheel Base of Framework Carriage	2591
C.G. Location aft of Front Axle	1125

MDB WEIGHTS

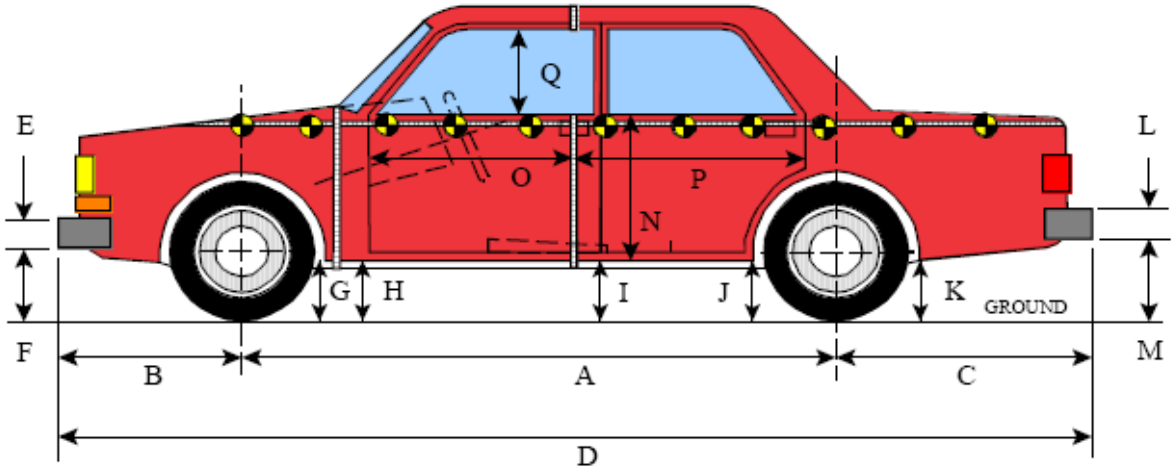
	Units	Front Axle	Rear Axle	Total
Left	kg	409.4	275.4	684.8
Right	kg	364.2	318.4	682.6
Ratio	%	56.6	43.4	100.0
Totals	kg	773.6	593.8	1367.4

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.99
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.99
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26 to 28	27.0

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



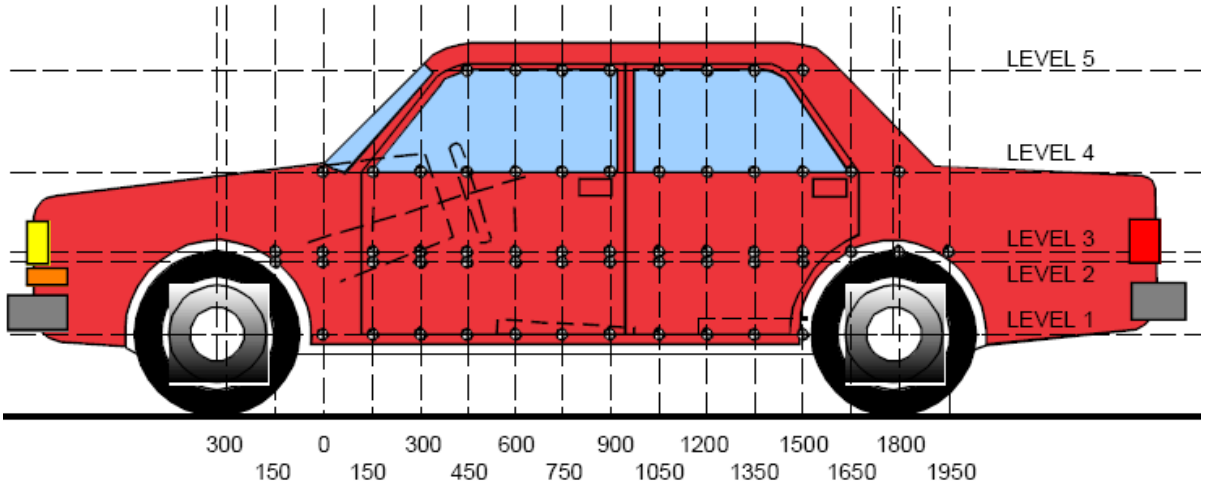
LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Change
A	Wheelbase	2630	2629	-1
B	Front Axle to Front Surface of Vehicle	858	843	-15
C	Rear Axle to Rear Surface of Vehicle	896	918	22
D	Total Length at Centerline	4384	4390	6
E	Front Bumper Thickness	108	108	0
F	Front Bumper Bottom to Ground	506	514	8
G	Sill Height at Front Wheel Well	305	333	28
H	Sill Height at Front Door Leading Edge	308	340	32
I	Sill Height at B-Pillar	270	314	44
J1	Sill Height at Rear Wheel Well	230	276	46
J2	Pinch Weld Height at Rear Wheel Well	95	237	142
K	Sill Height Aft of Rear Wheel Well	443	489	46
L	Rear Bumper Thickness	89	89	0
M	Rear Bumper Bottom to Ground	518	559	41
N	Sill Height to Window Bottom Sill	803	741	-62
O	Front Door Leading Edge to Impact CL	728	712	-16
P	Rear Door Trailing Edge to Impact CL	1323	1302	-21
Q	Front Window Opening	407	404	-3
R	Right Side Length	4188	4193	5
S	Left Side Length	4183	4185	2
T	Vehicle Width	1805	1810	5
U	Front Wheel Track Width	1559	1540	-19
V	Rear Wheel Track Width	1566	1565	-1

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV
Test Program: SINCAP Side Impact
NHTSA No.: M20244212
Test Date: 6/13/2024



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance From Impact
1	Sill Top	1516	102	1320
2	Driver Hip Point	1048	205	1350
3	Mid Door	722	203	1650
4	Window Sill	650	87	1500
5	Window Top	387	11	1350

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

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

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

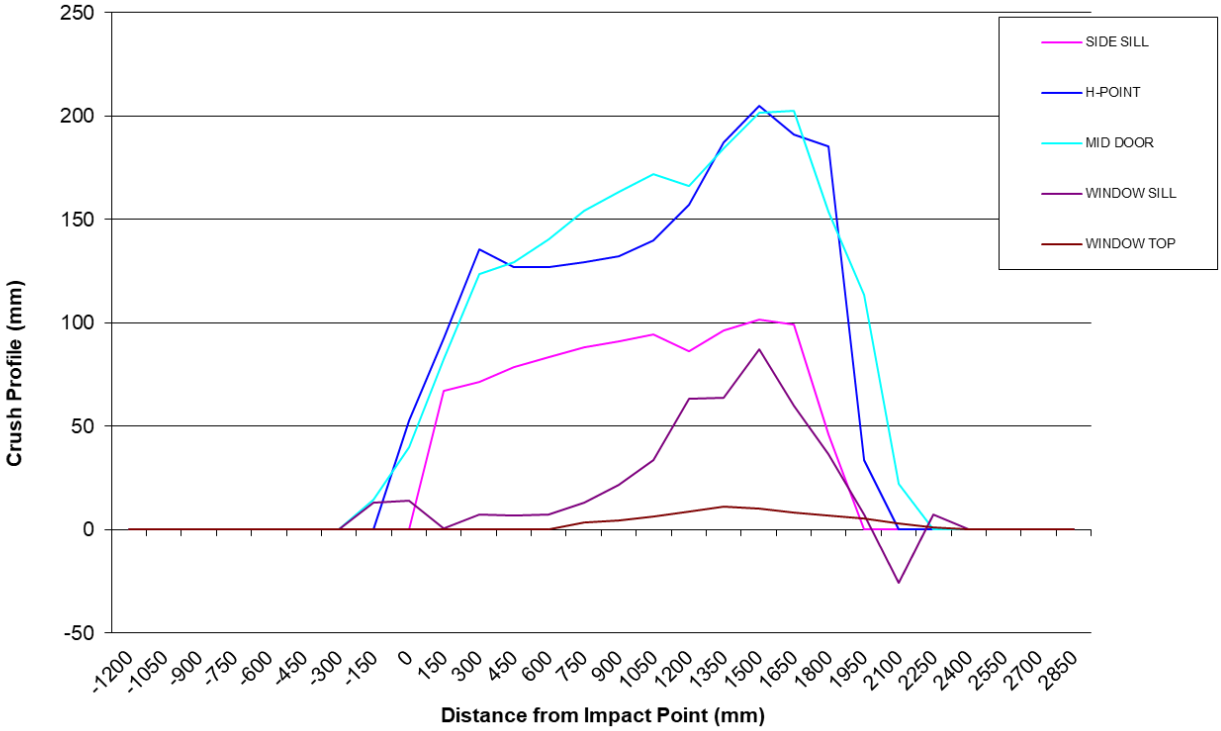
EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test					Post-Test					Crush				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-300	0	0	0	751	0	0	0	0	751	0	0	0	0	0	0
-150	0	0	902	768	0	0	0	887	755	0	0	0	15	13	0
0	0	898	900	782	0	0	845	860	768	0	0	53	40	14	0
150	881	890	890	791	0	814	798	808	790	0	67	92	82	1	0
300	881	878	884	797	0	809	743	761	790	0	72	135	123	7	0
450	881	873	882	803	0	802	746	753	796	0	79	127	129	7	0
600	882	871	881	808	0	798	744	741	801	0	84	127	140	7	0
750	883	870	880	813	604	795	740	725	800	601	88	130	155	13	3
900	882	870	878	817	624	791	737	715	795	620	91	133	163	22	4
1050	882	870	877	820	625	787	730	705	786	619	95	140	172	34	6
1200	880	871	875	822	625	794	714	709	759	616	86	157	166	63	9
1350	878	872	873	821	623	781	685	688	757	612	97	187	185	64	11
1500	874	874	872	822	621	772	669	671	735	611	102	205	201	87	10
1650	866	879	874	828	616	767	688	671	767	608	99	191	203	61	8
1800	873	896	891	831	610	827	711	737	794	603	46	185	154	37	7
1950	0	899	895	832	602	0	865	781	824	597	0	34	114	8	5
2100	0	0	902	831	593	0	0	880	857	590	0	0	22	-26	3
2250	0	0	0	828	577	0	0	0	821	576	0	0	0	7	1

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

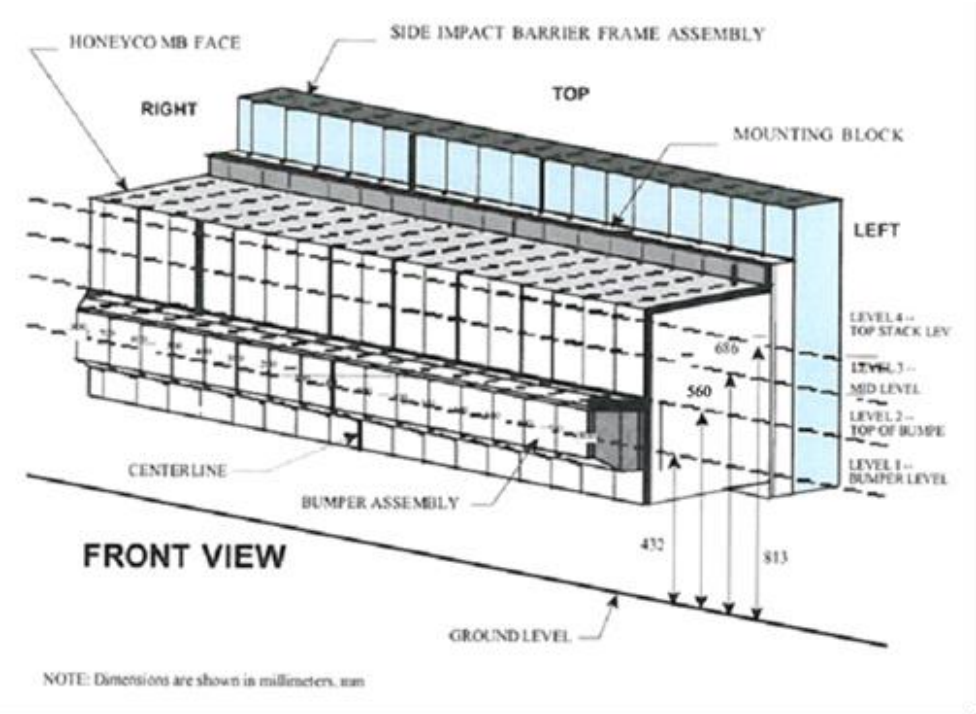
DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

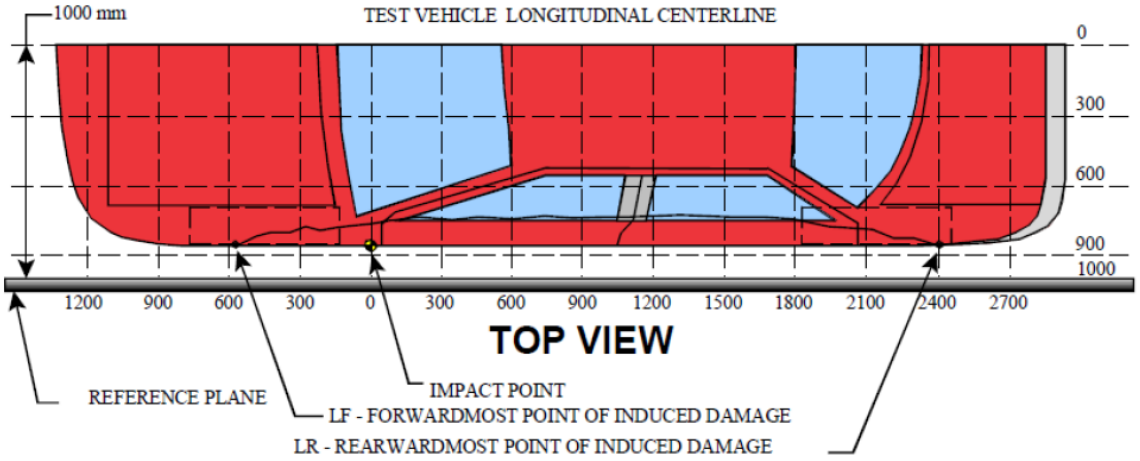
Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	700	Left	202
B	Top of Bumper	560	800	Left	102
C	Mid-Level	686	800	Left	146
D	Top of Stack	813	800	Left	186

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	194	194	194	193	193	193	191	190	188	186	186	186	186	186	187	202	195
2	79	77	77	77	77	78	80	77	74	73	72	73	73	74	76	82	102
3	71	38	28	33	42	59	64	45	41	38	35	37	41	48	61	89	146
4	65	36	30	35	45	69	88	71	75	78	75	62	66	75	86	114	186

DATA SHEET NO. 13
VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



MEASUREMENT CONVENTIONS:
Forward of the impact point (towards front of vehicle) is considered negative (—).
Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	2250	4	821	828	7
2	1800	2	711	896	185
3	1350	2	684	872	187
4	750	3	725	880	155
5	300	2	743	878	135
6[1]	-150	3	887	902	0

[1]

MDB DAMAGE PROFILE DISTANCES

DPD	Distance From Center of MDB	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	800	1	273	468	195
2	500	1	298	485	186
3	200	1	298	484	186
4	200	1	294	485	191
5	500	1	292	485	193
6	800	1	276	470	194

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

DATA SHEET NO. 14
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024

Test Time: 18:20 **Temperature:** 21.7C

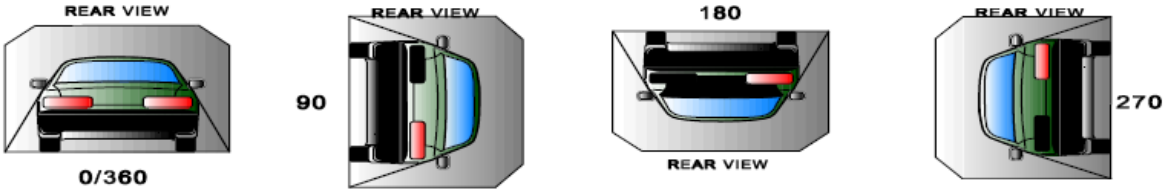
A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 ounce)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable is 5 ounces)

C. For the following 25 minutes: 0 oz.
(Maximum allowable is 1 ounce/minute)

D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0 to 90	90	330	420
90 to 180	90	330	840
180 to 270	90	330	1260
270 to 360	90	330	1680

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

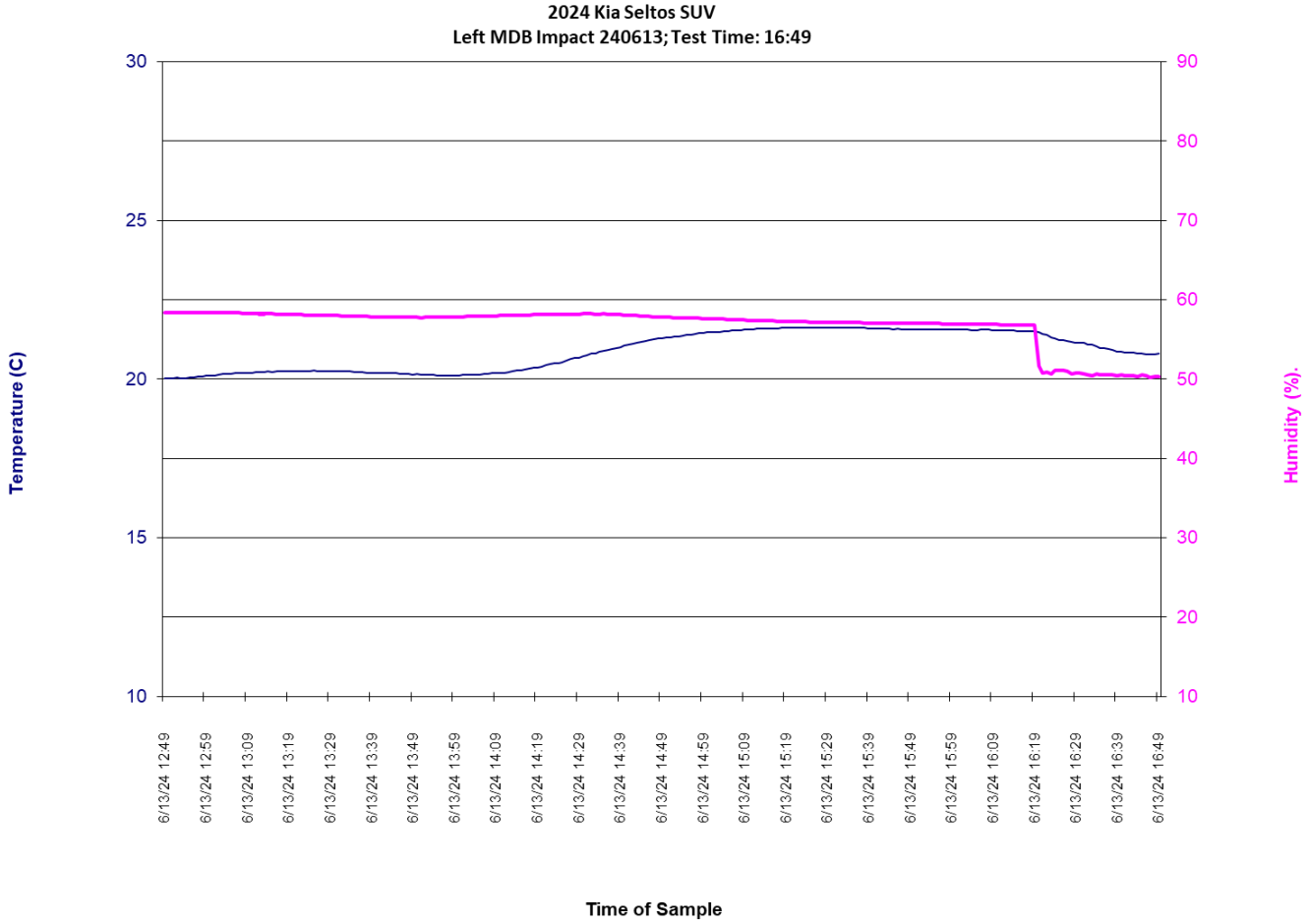
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0	0	N/A
90 to 180	0	0	0	N/A
180 to 270	0	0	0	N/A
270 to 360	0	0	0	N/A

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 15
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244212
Test Program: SINCAP Side Impact Test Date: 6/13/2024



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

TABLE OF PHOTOGRAPHS (CONTINUED)

TABLE OF PHOTOGRAPHS (CONTINUED)

001 As-Delivered Right Front ¾ View of Test Vehicle

002 As-Delivered Left Rear ¾ View of Test Vehicle

003 Pre-Test Frontal View of Test Vehicle

004 Post-Test Frontal View of Test Vehicle

005 Pre-Test Left Front ¾ View of Test Vehicle

006 Post-Test Left Front ¾ View of Test Vehicle

007 Pre-Test Left Side View of Test Vehicle

008 Post-Test Left Side View of Test Vehicle

009 Pre-Test Left Rear ¾ View of Test Vehicle

010 Post-Test Left Rear ¾ View of Test Vehicle

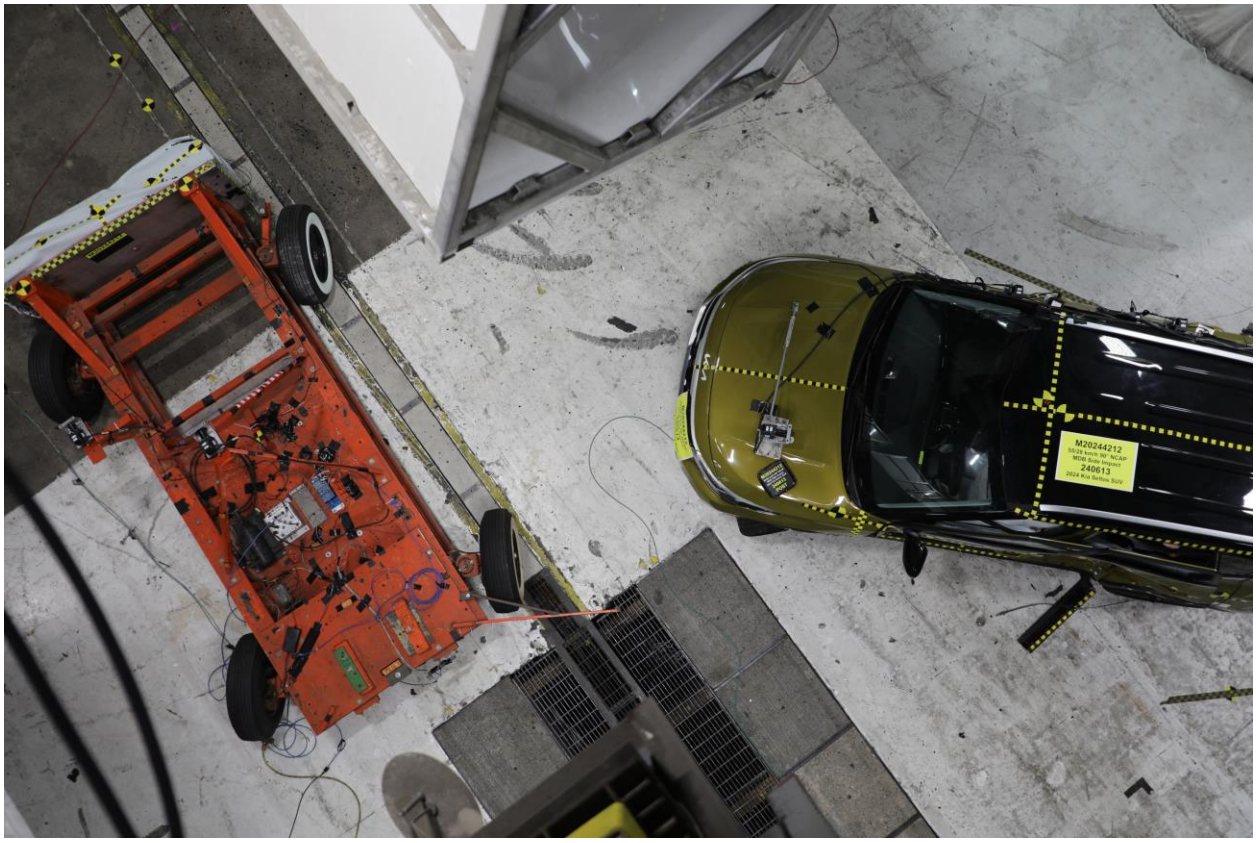
011 Pre-Test Rear View of Test Vehicle

012 Post-Test Rear View of Test Vehicle

013 Pre-Test Right Side View of Test Vehicle

014 Post-Test Right Side View of Test Vehicle

015 Pre-Test Overhead View of Test Area



016 Post-Test Overhead View of Test Area

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

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

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

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

021 Pre-Test Left Front Door Latch Close-Up

022 Post-Test Left Front Door Latch Close-Up

023 Pre-Test Left Rear Door Latch Close-Up

024 Post-Test Left Rear Door Latch Close-Up

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

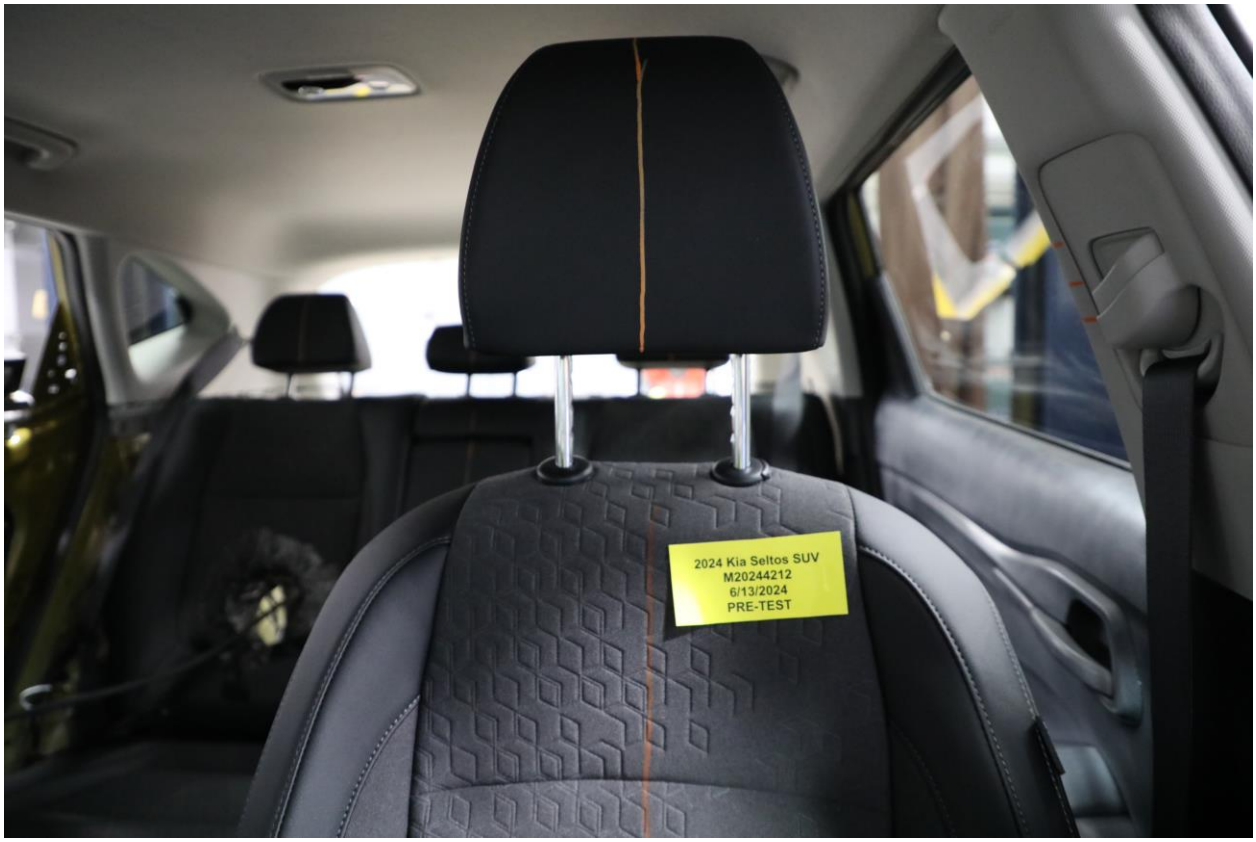
026 Post-Test Front Close-Up View of Driver Dummy

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

Intentionally Left Blank

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

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



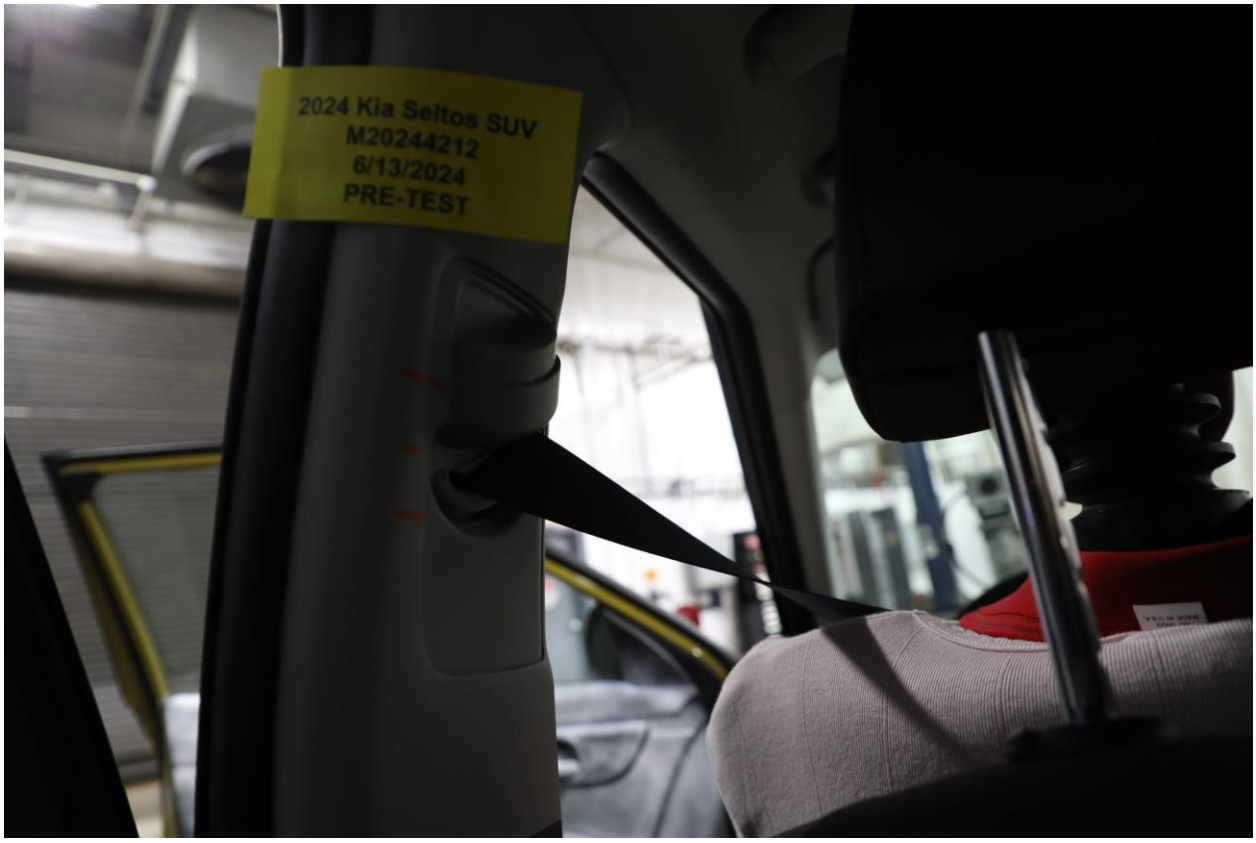
030 Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning

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

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

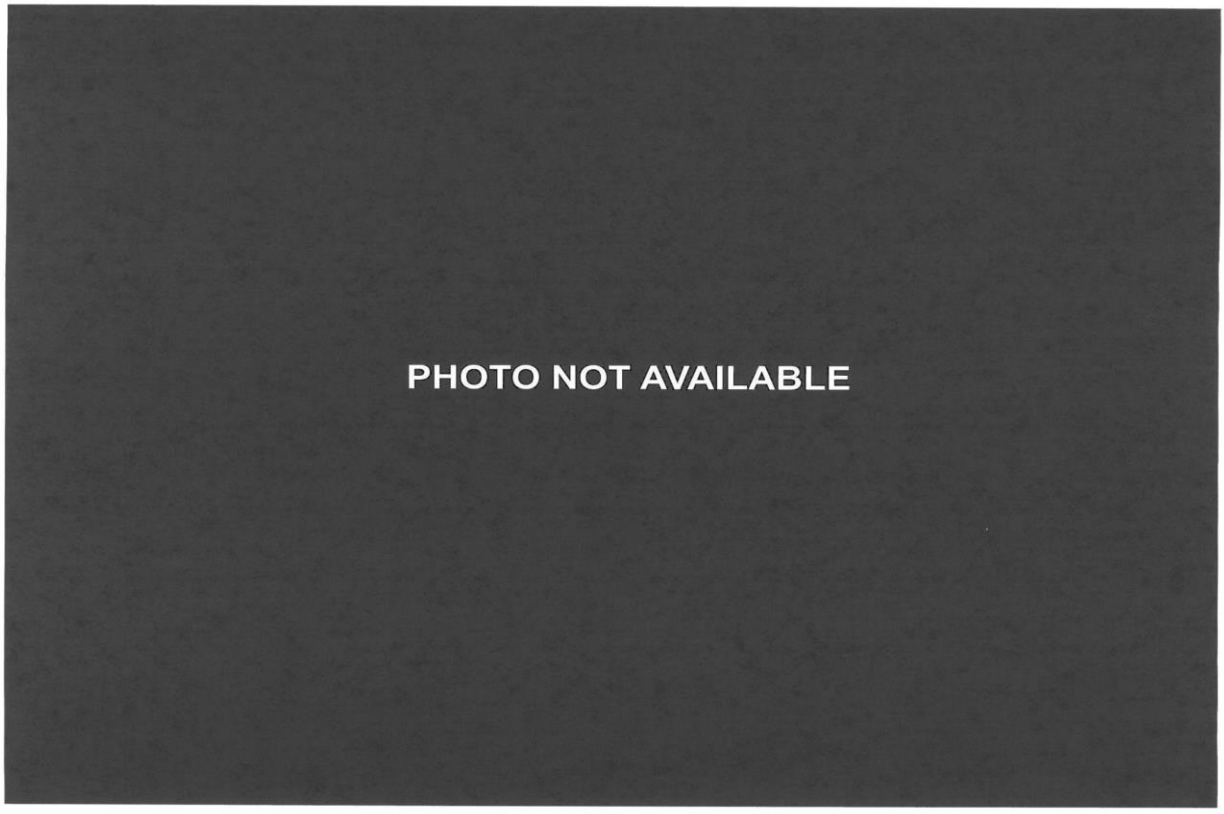
033 Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan

034 Pre-Test Placement of Driver's Dummy Feet



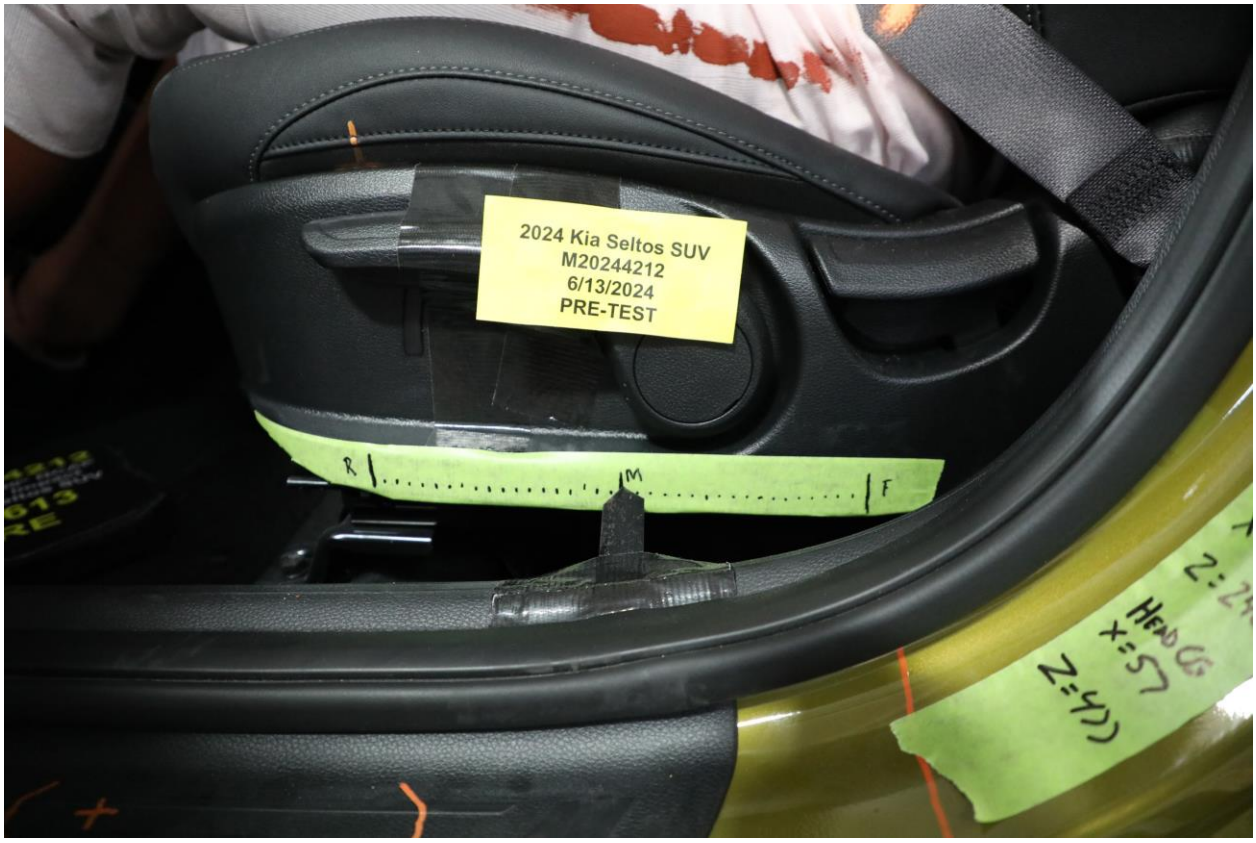
035 Pre-Test View of Belt Anchorage for Driver Dummy

036 Pre-Test Left Side View of Steering Wheel



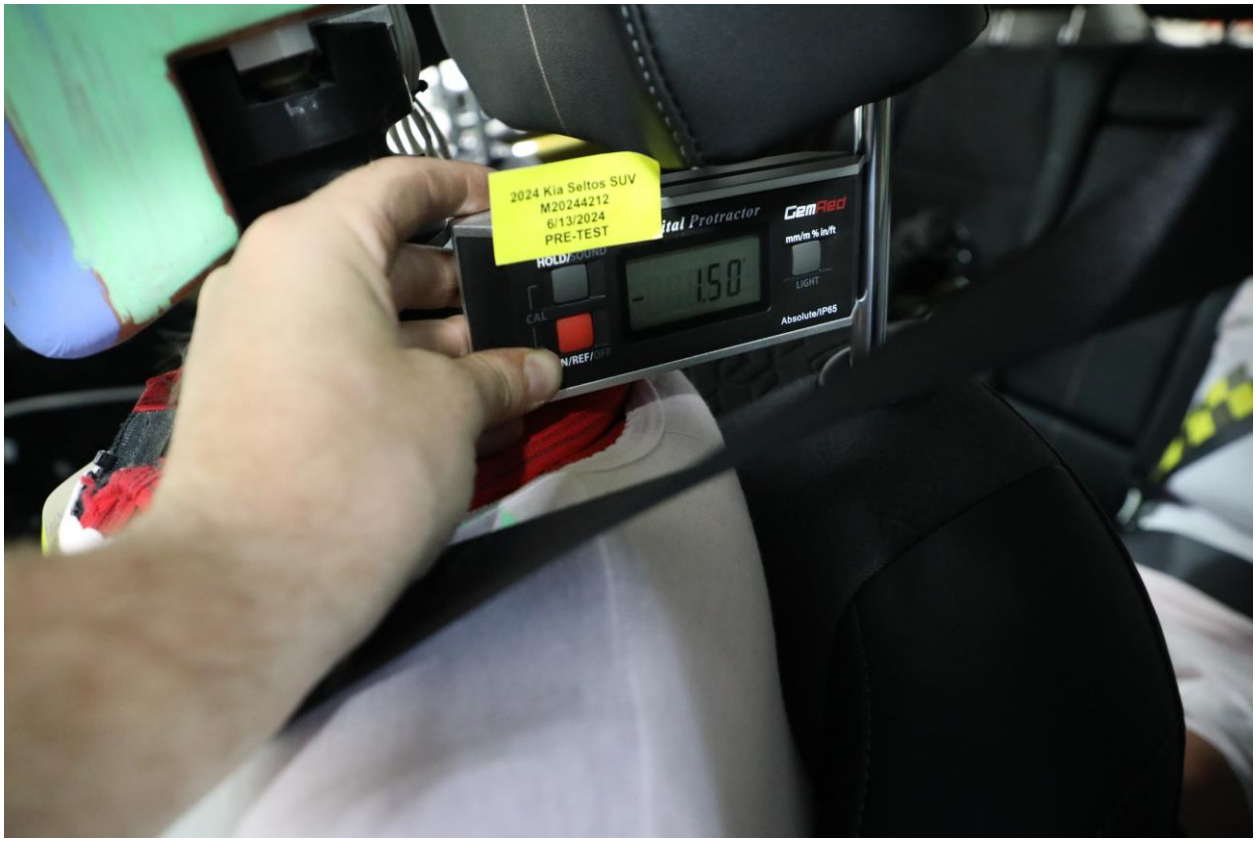
037 View of Disengaged Parking Brake

038 Pre-Test View of Parking Brake



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

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



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

042 Pre-Test Driver Dummy and Door Clearance View

043 Post-Test Driver Dummy and Door Clearance View

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

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

046 Pre-Test Driver Inner Door Panel View

047 Post-Test Driver Inner Door Panel View Showing Driver Dummy Contact Locations

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

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

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

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

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

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

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

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

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

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

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

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

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

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

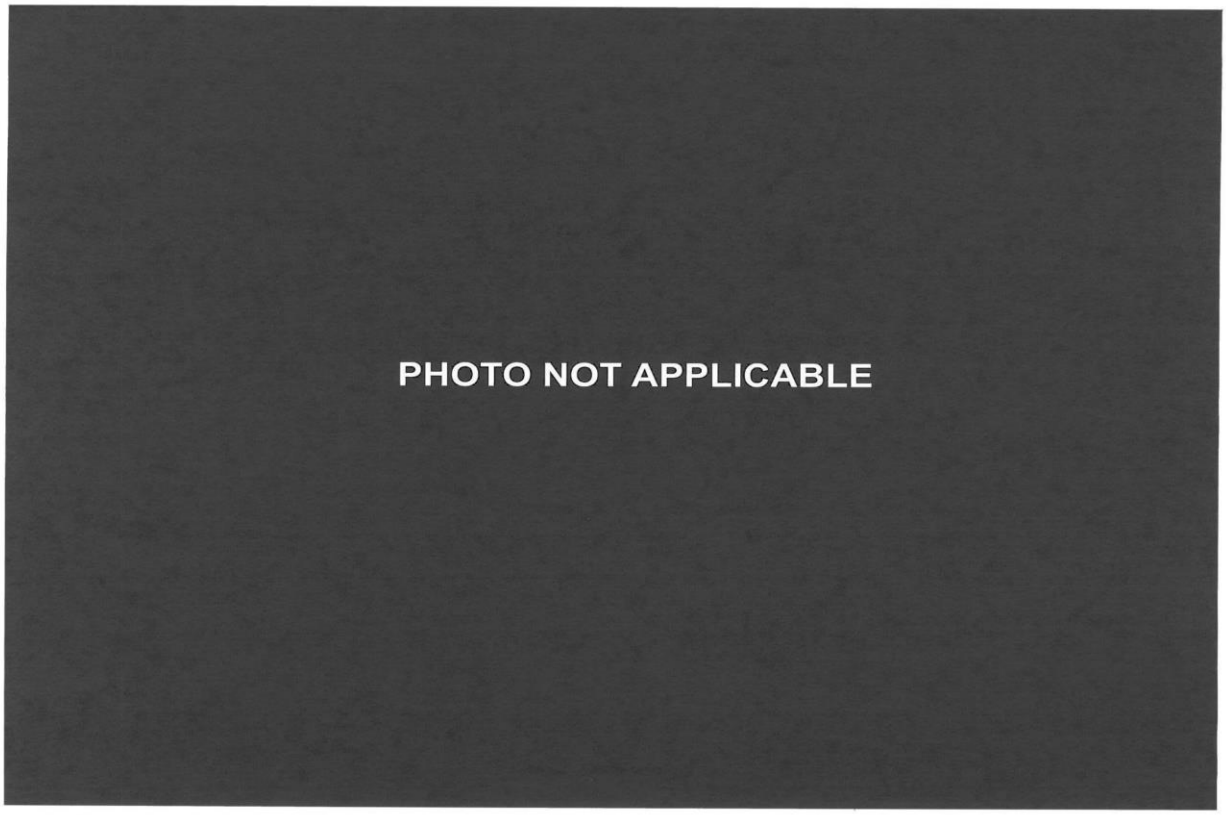
062 Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket

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

064 Pre-Test Placement of Rear Passenger Dummy's Feet

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

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



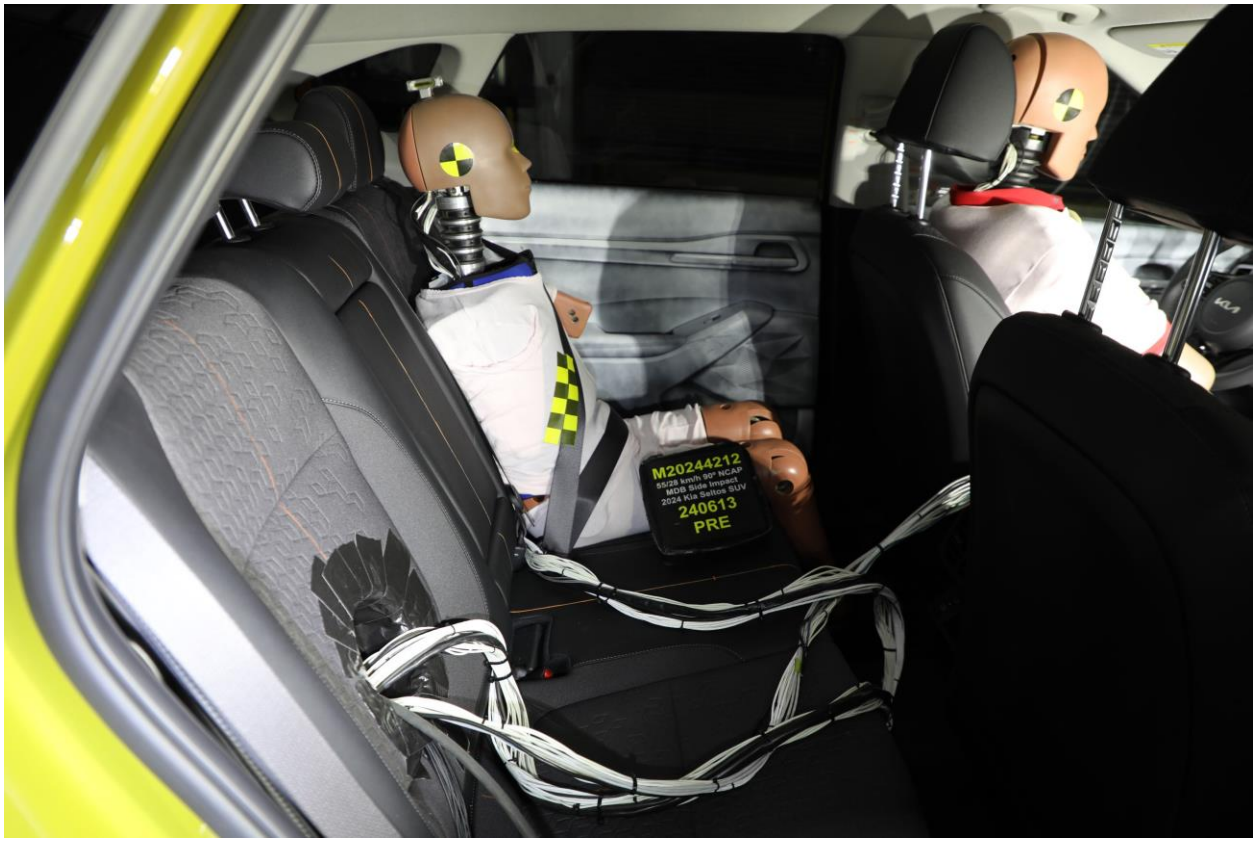
067 Pre-test Close-Up Left Side View of Rear Passenger Seat Back

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

Intentionally Left Blank

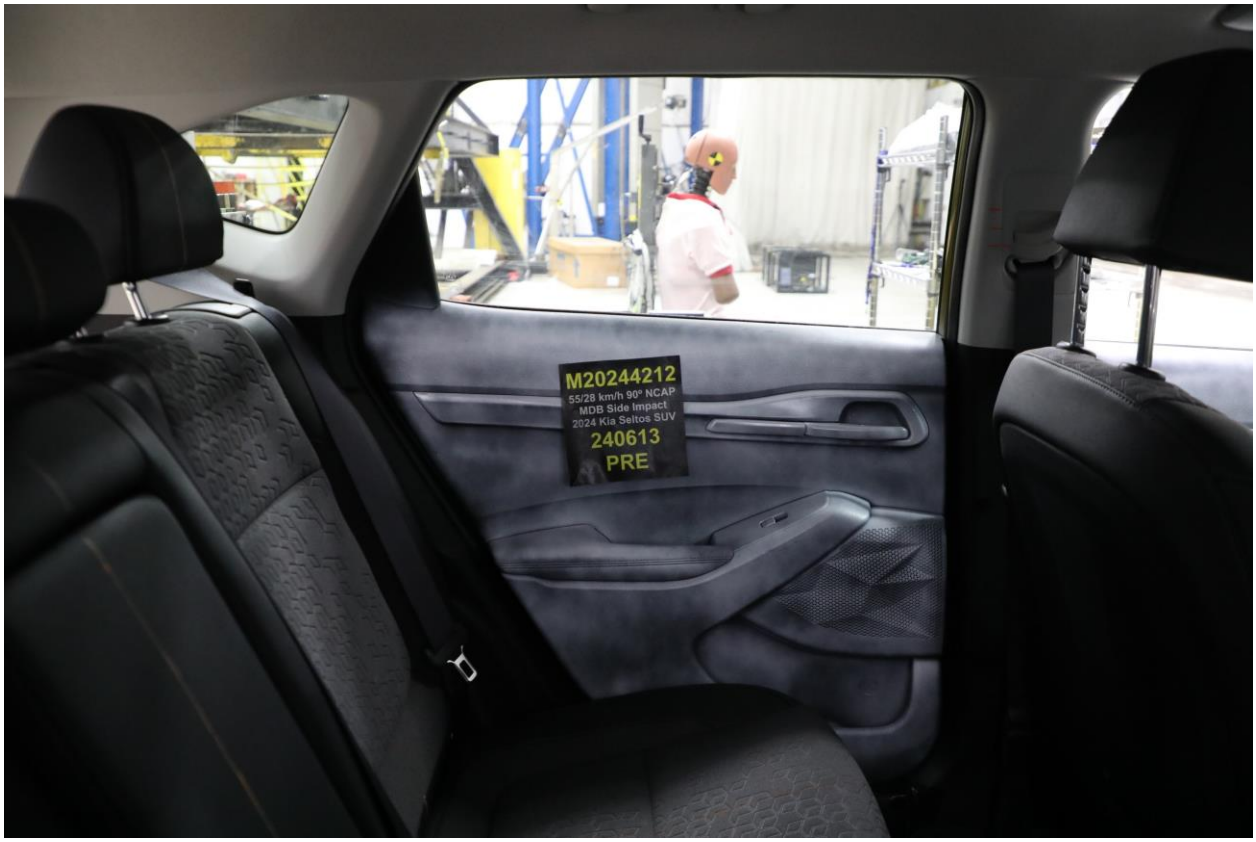
069 Pre-Test Rear Passenger Dummy and Door Clearance View

070 Post-Test Rear Passenger Dummy and Door Clearance View



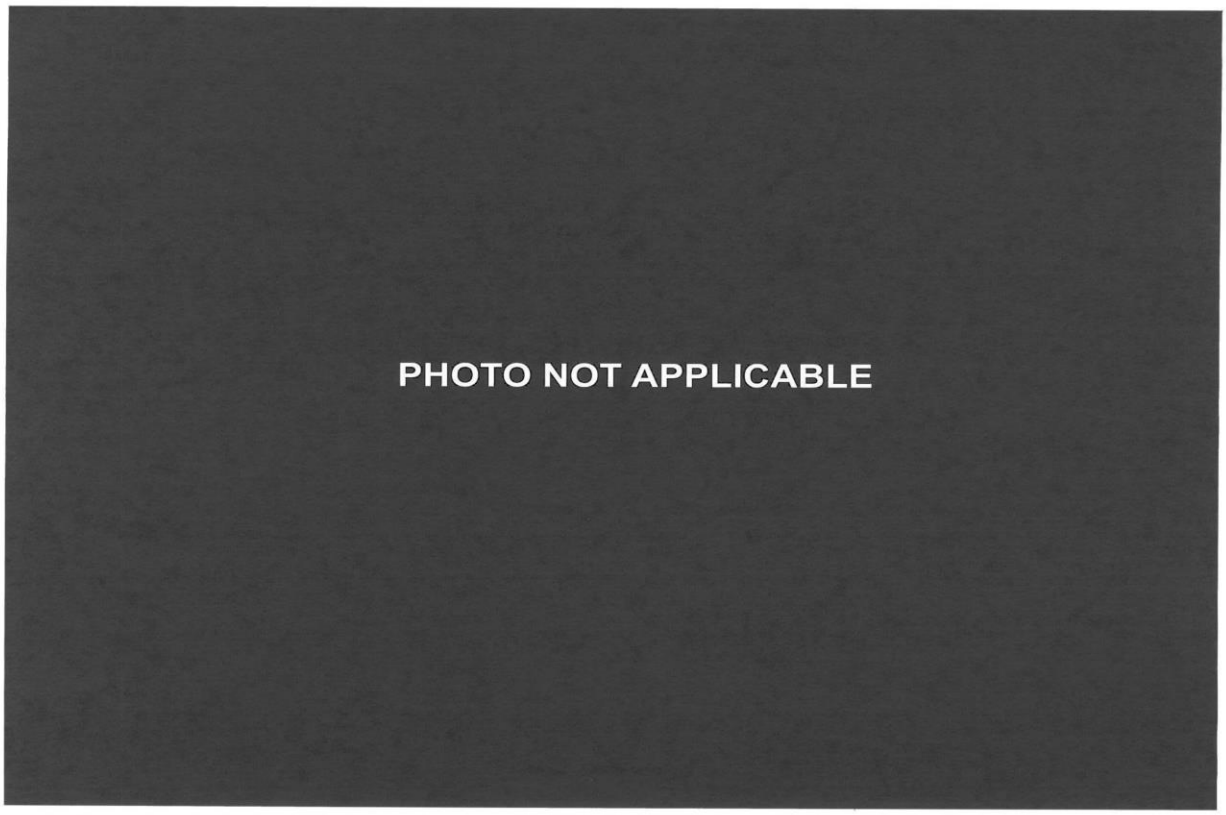
071 Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment

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



073 Pre-Test Rear Passenger Inner Door Panel View

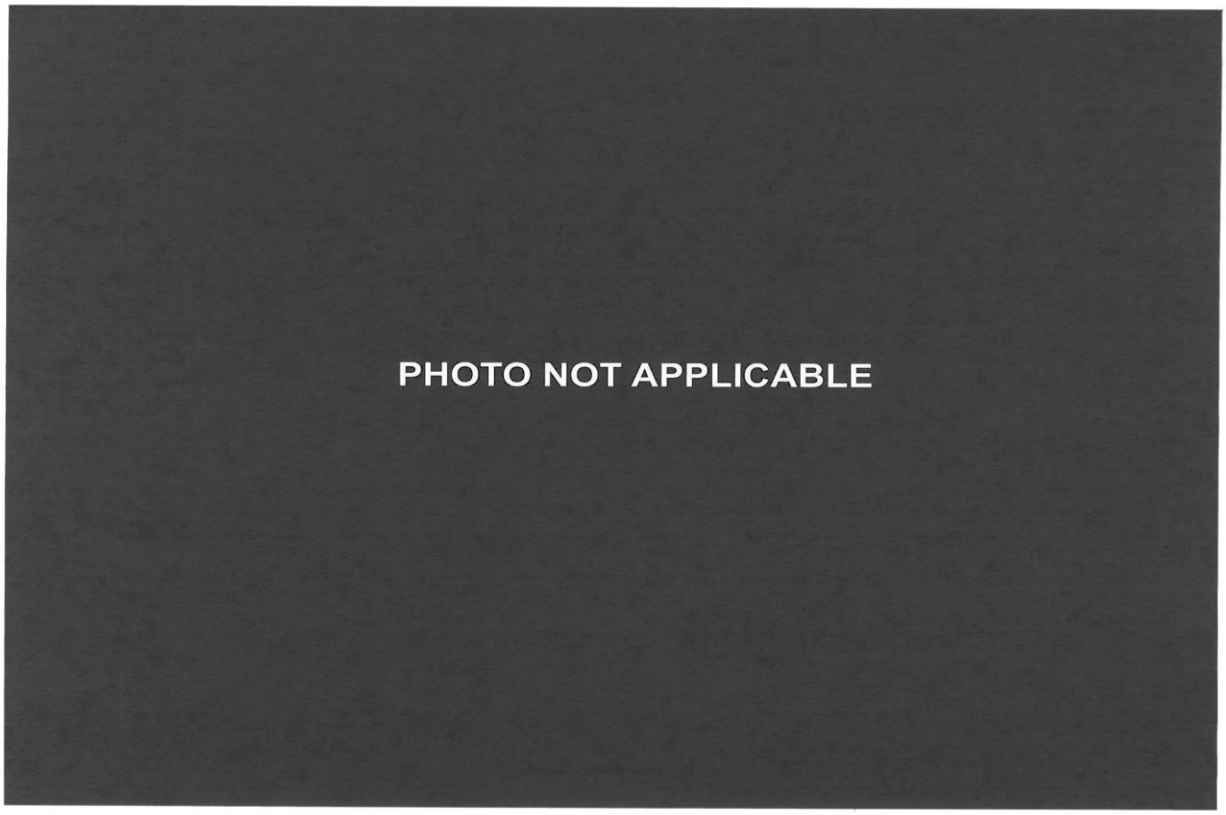
074 Post-Test Rear Passenger Inner Door Panel View



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

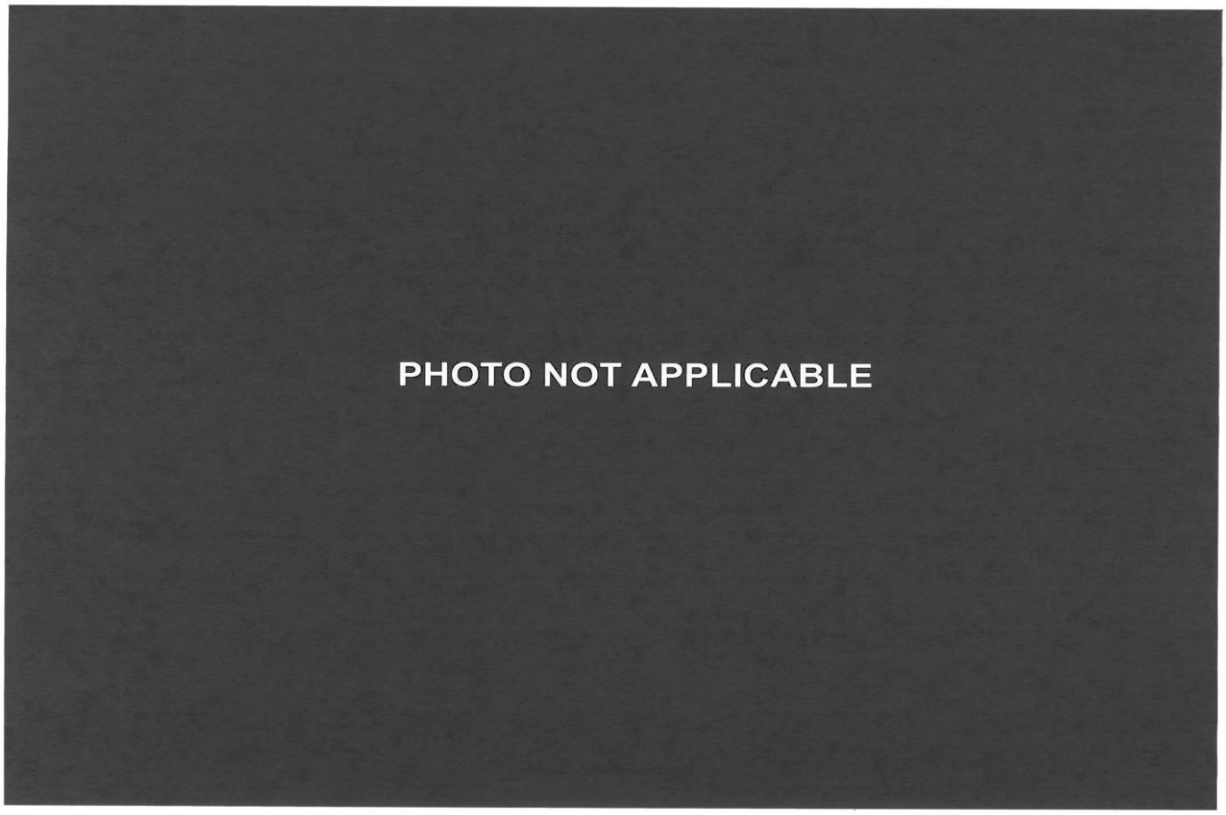
076 Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View

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



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

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



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

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

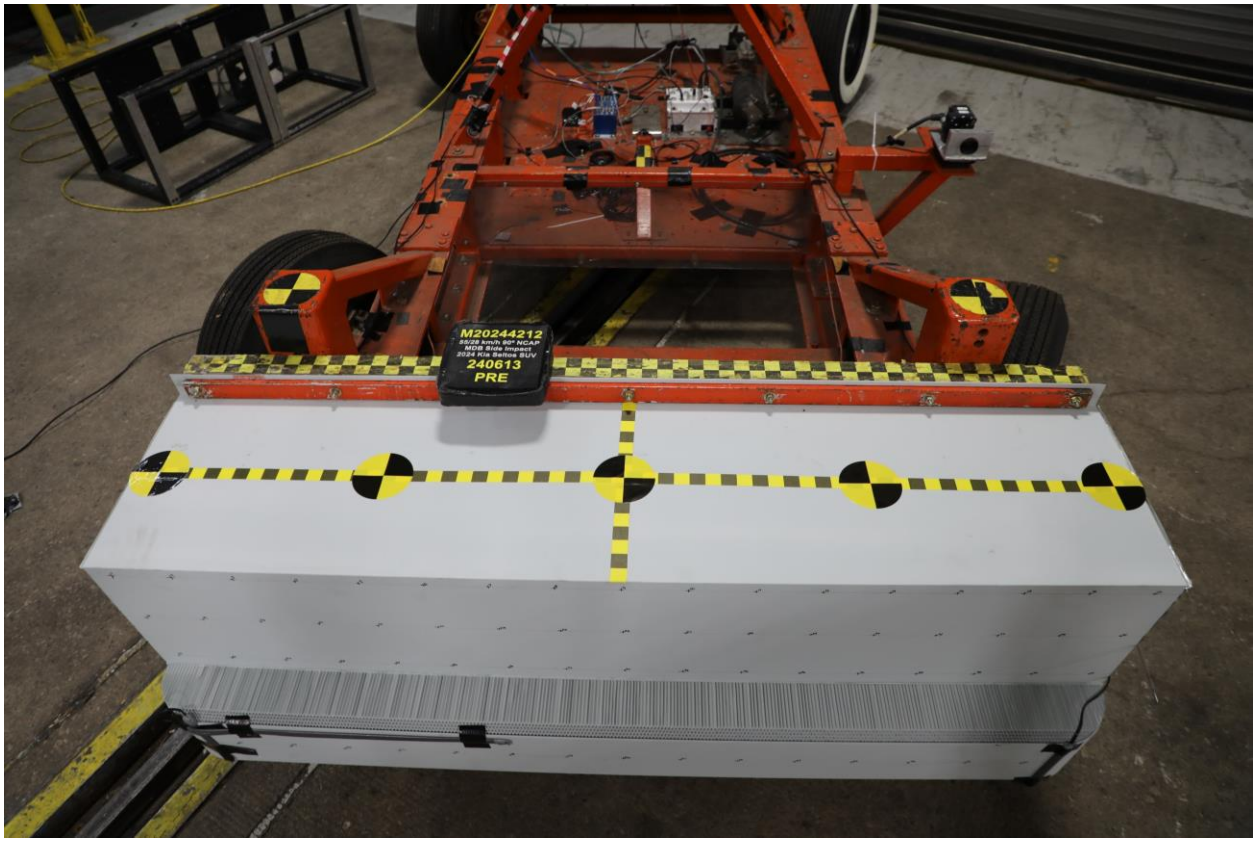
Intentionally Left Blank

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

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

084 Pre-Test Front View of MDB Impactor Face

085 Post-Test Front View of MDB Impactor Face



086 Pre-Test Top View of MDB Impactor Face

087 Post-Test Top View of MDB Impactor Face

088 Pre-Test Left Side View of MDB Impactor Face

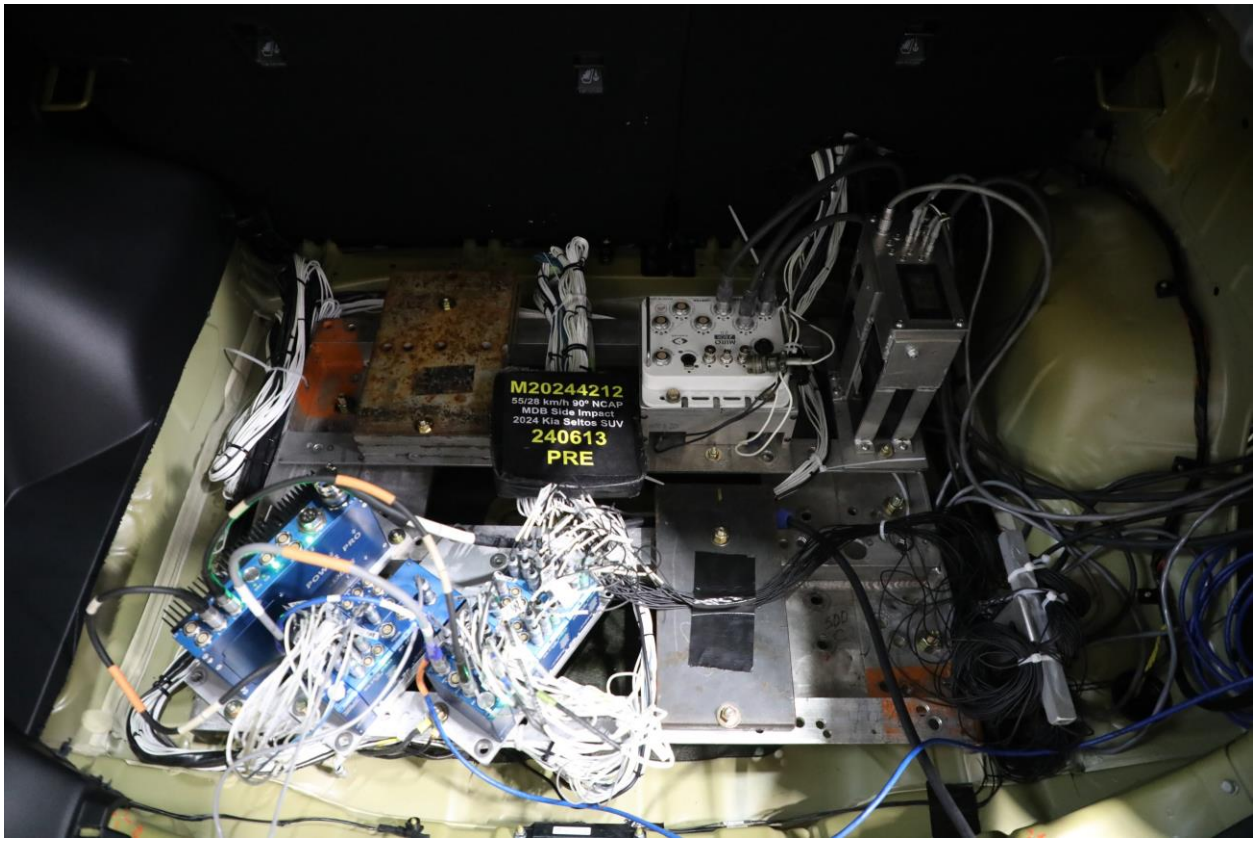
089 Post-Test Left Side View of MDB Impactor Face

090 Pre-Test Right Side View of MDB Impactor Face

091 Post-Test Right Side View of MDB Impactor Face

092 Close-Up View of Vehicle's Certification Label

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

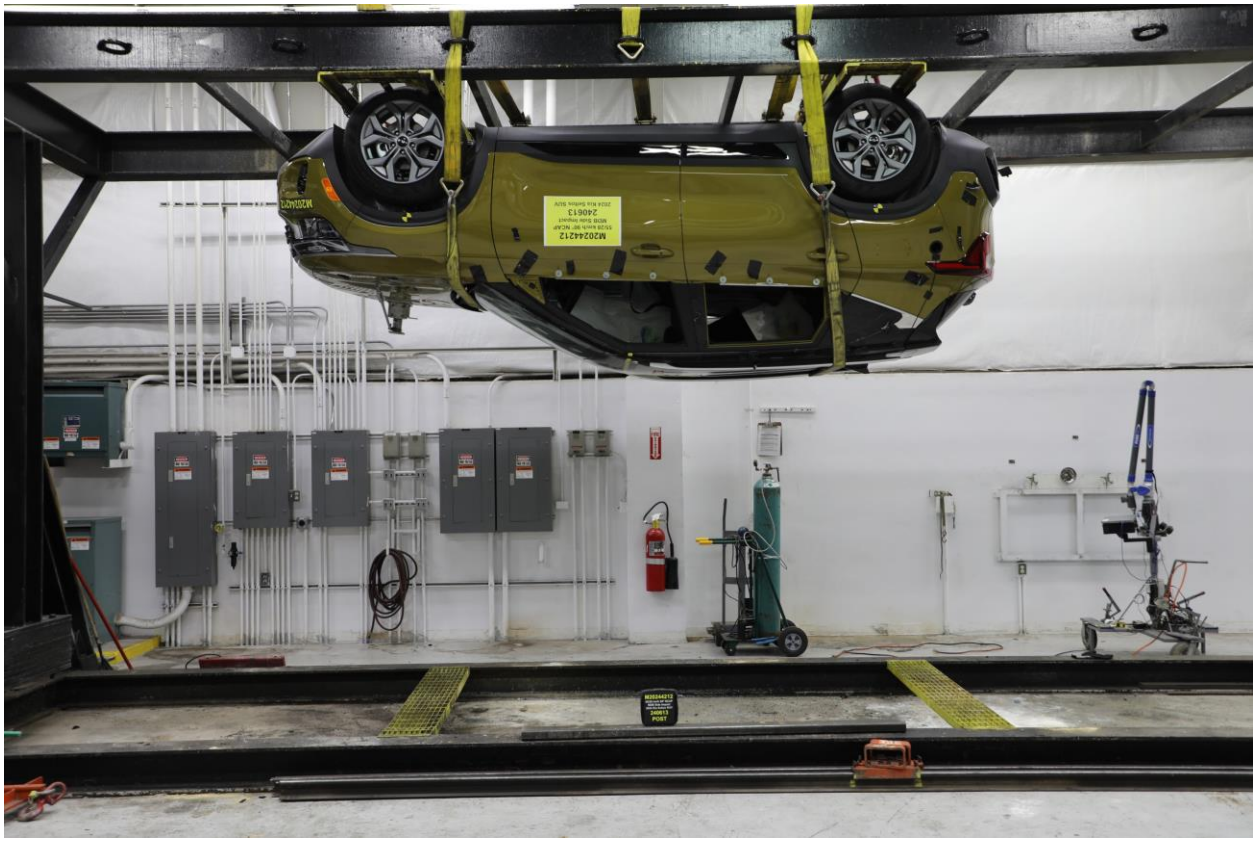


094 Pre-Test Ballast View

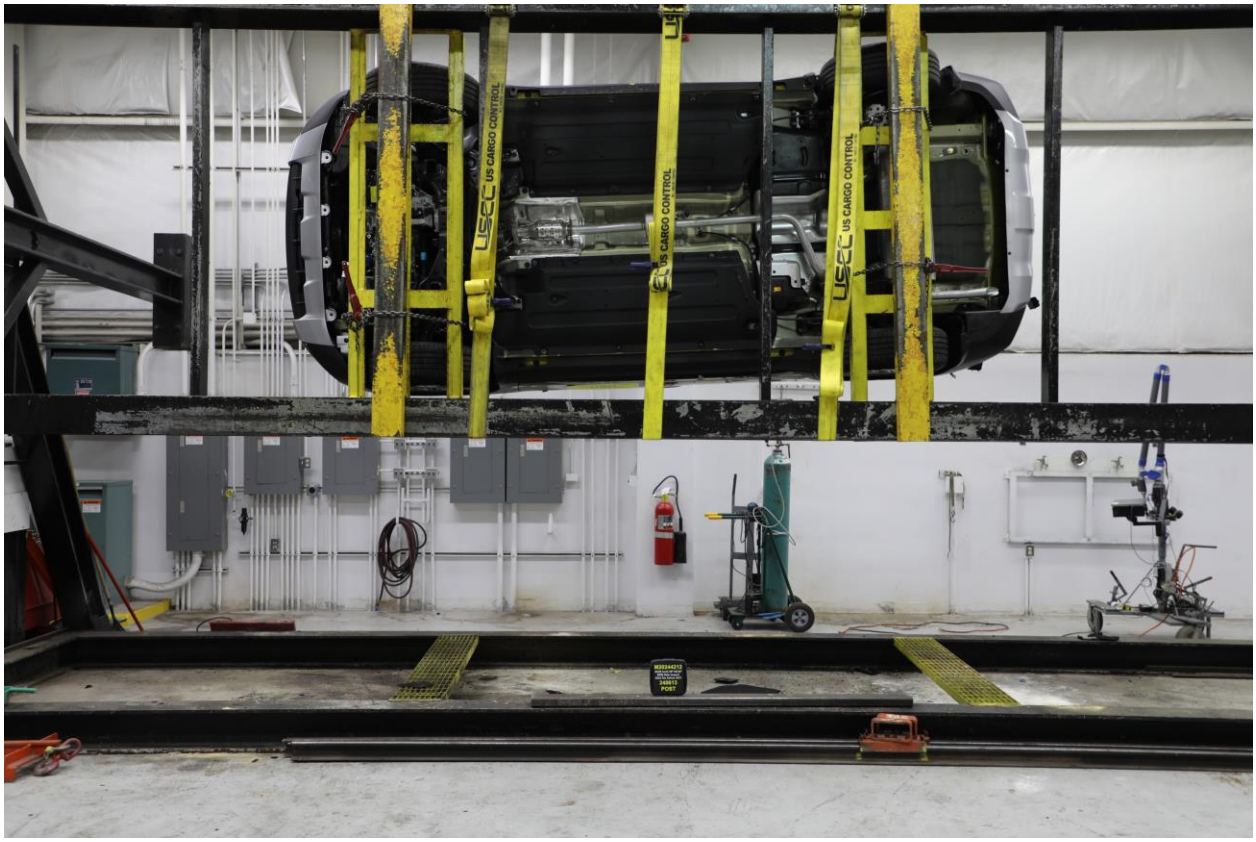
095 No. Post-Test Primary and Redundant Speed Trap Read-Out

096 FMVSS No. 301 Static Rollover 0 Degrees

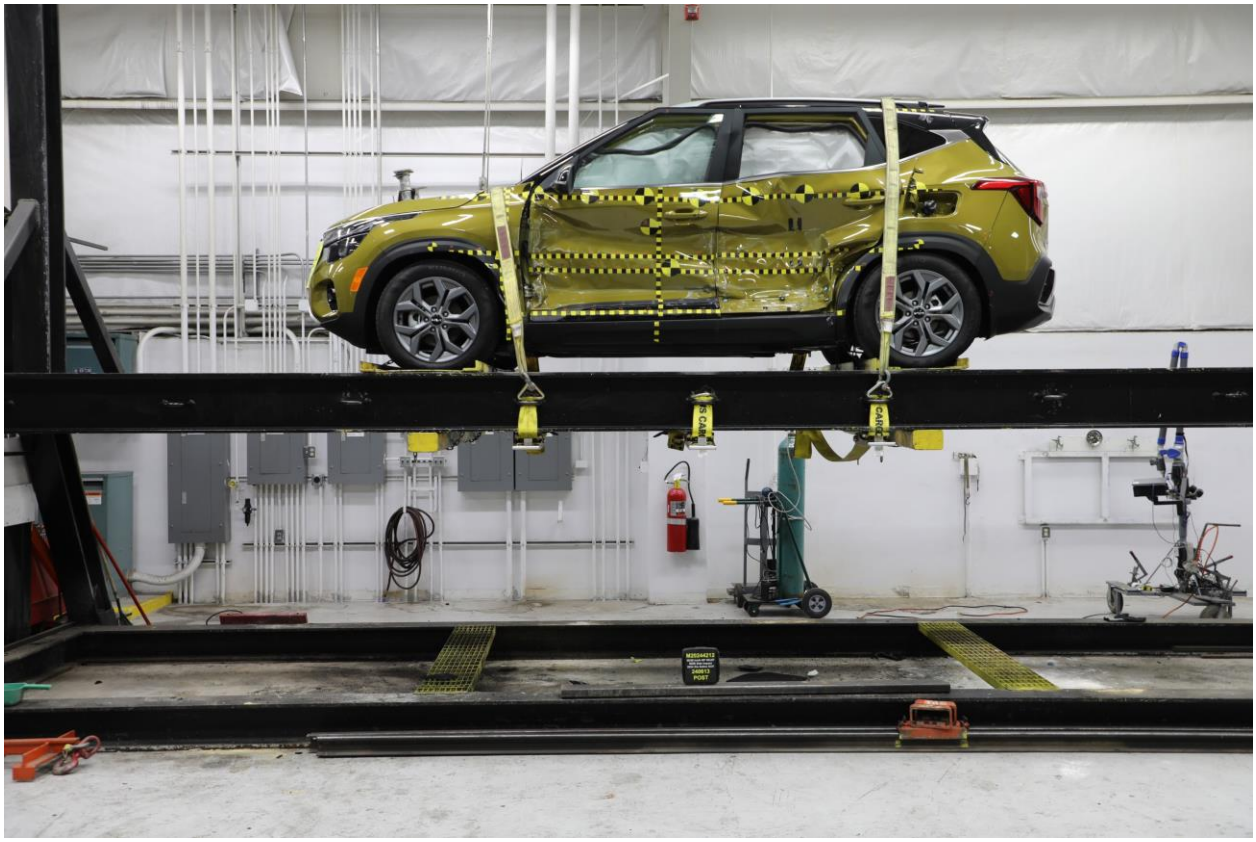
097 FMVSS No. 301 Static Rollover 90 Degrees



098 FMVSS No. 301 Static Rollover 180 Degrees

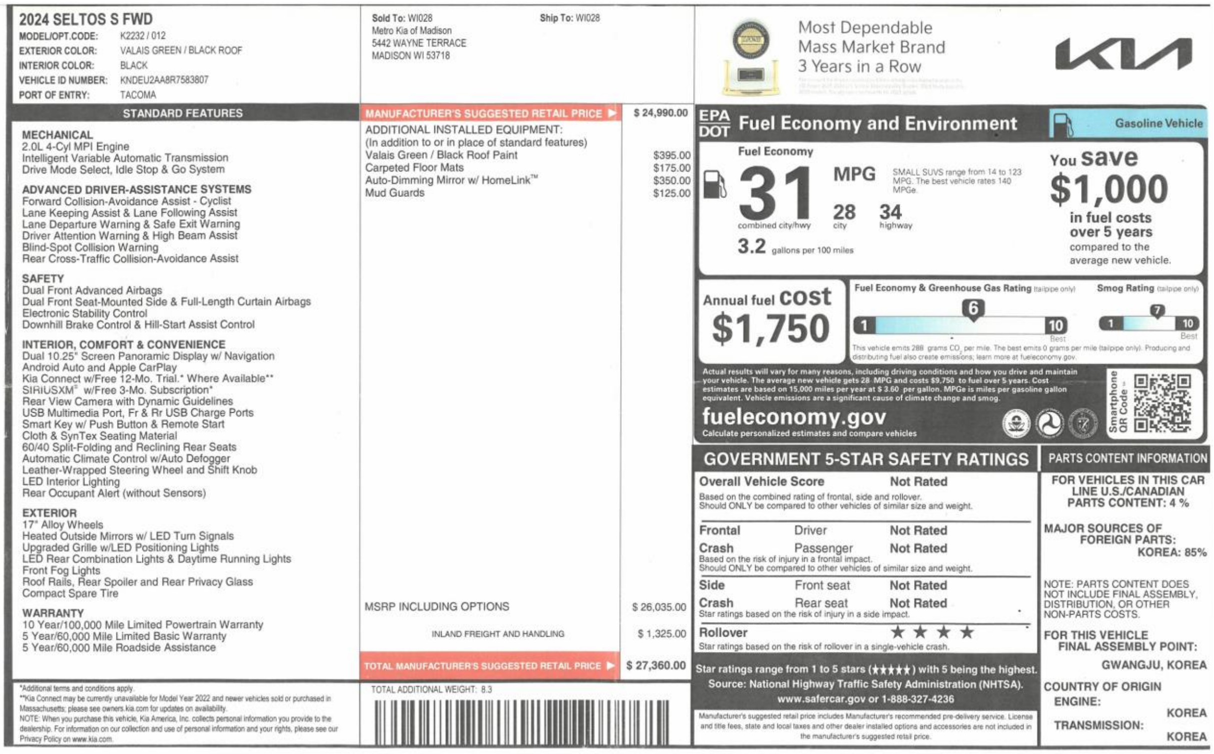


099 FMVSS No. 301 Static Rollover 270 Degrees



100 FMVSS No. 301 Static Rollover 360 Degrees

101 Impact Event



2024 SELTOS S FWD

MODEL/OPT.CODE: K2232 / 012
EXTERIOR COLOR: VALAIS GREEN / BLACK ROOF
INTERIOR COLOR: BLACK
VEHICLE ID NUMBER: KNDEU2AA8R7583807
PORT OF ENTRY: TACOMA

Sold To: WI028 **Ship To:** WI028
Metro Kia of Madison
5442 WAYNE TERRACE
MADISON WI 53718

Most Dependable
Mass Market Brand
3 Years in a Row

STANDARD FEATURES

MECHANICAL
2.0L 4-Cyl MPI Engine
Intelligent Variable Automatic Transmission
Drive Mode Select, Idle Stop & Go System

ADVANCED DRIVER-ASSISTANCE SYSTEMS
Forward Collision-Avoidance Assist - Cyclist
Lane Keeping Assist & Lane Following Assist
Lane Departure Warning & Safe Exit Warning
Driver Attention Warning & High Beam Assist
Blind-Spot Collision Warning
Rear Cross-Traffic Collision-Avoidance Assist

SAFETY
Dual Front Advanced Airbags
Dual Front Seat-Mounted Side & Full-Length Curtain Airbags
Electronic Stability Control
Downhill Brake Control & Hill-Start Assist Control

INTERIOR, COMFORT & CONVENIENCE
Dual 10.25" Screen Panoramic Display w/ Navigation
Android Auto and Apple CarPlay
Kia Connect w/Free 12-Mo. Trial.* Where Available**
SIRIUSXM® w/Free 3-Mo. Subscription*
Rear View Camera with Dynamic Guidelines
USB Multimedia Port, Fr & Rr USB Charge Ports
Smart Key w/ Push Button & Remote Start
Cloth & SynTex Seating Material
60/40 Split-Folding and Reclining Rear Seats
Automatic Climate Control w/Auto Defogger
Leather-Wrapped Steering Wheel and Shift Knob
LED Interior Lighting
Rear Occupant Alert (without Sensors)

EXTERIOR
17" Alloy Wheels
Heated Outside Mirrors w/ LED Turn Signals
Upgraded Grille w/LED Positioning Lights
LED Rear Combination Lights & Daytime Running Lights
Front Fog Lights
Roof Rails, Rear Spoiler and Rear Privacy Glass
Compact Spare Tire

WARRANTY
10 Year/100,000 Mile Limited Powertrain Warranty
5 Year/60,000 Mile Limited Basic Warranty
5 Year/60,000 Mile Roadside Assistance

*Additional terms and conditions apply.
**Kia Connect may be currently unavailable for Model Year 2022 and newer vehicles sold or purchased in Massachusetts; please see owners.kia.com for updates on availability.
NOTE: When you purchase this vehicle, Kia America, Inc. collects personal information you provide to the dealership. For information on our collection and use of personal information and your rights, please see our Privacy Policy on www.kia.com.

MANUFACTURER'S SUGGESTED RETAIL PRICE	$ 24,990.00
ADDITIONAL INSTALLED EQUIPMENT: (In addition to or in place of standard features)	
Valais Green / Black Roof Paint	$395.00
Carpeted Floor Mats	$175.00
Auto-Dimming Mirror w/ HomeLink™	$350.00
Mud Guards	$125.00
MSRP INCLUDING OPTIONS	$ 26,035.00
INLAND FREIGHT AND HANDLING	$ 1,325.00
TOTAL MANUFACTURER'S SUGGESTED RETAIL PRICE	$ 27,360.00

TOTAL ADDITIONAL WEIGHT: 8.3

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy
31 MPG combined city/hwy
28 city 34 highway
3.2 gallons per 100 miles
SMALL SUVS range from 14 to 123 MPG. The best vehicle rates 140 MPGe.

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

Annual fuel cost $1,750

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 6 (1–10 Best)
Smog Rating (tailpipe only): 7 (1–10 Best)

This vehicle emits 288 grams CO_2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and costs $9,750 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $ 3.60 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score		Not Rated
Based on the combined rating of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.		
Frontal Crash	Driver	Not Rated
	Passenger	Not Rated
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.		
Side Crash	Front seat	Not Rated
	Rear seat	Not Rated
Star ratings based on the risk of injury in a side impact.		
Rollover		★★★★
Star ratings based on the risk of rollover in a single-vehicle crash.		

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

Manufacturer's suggested retail price includes Manufacturer's recommended pre-delivery service. License and title fees, state and local taxes and other dealer installed options and accessories are not included in the manufacturer's suggested retail price.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CAR LINE U.S./CANADIAN PARTS CONTENT: 4 %

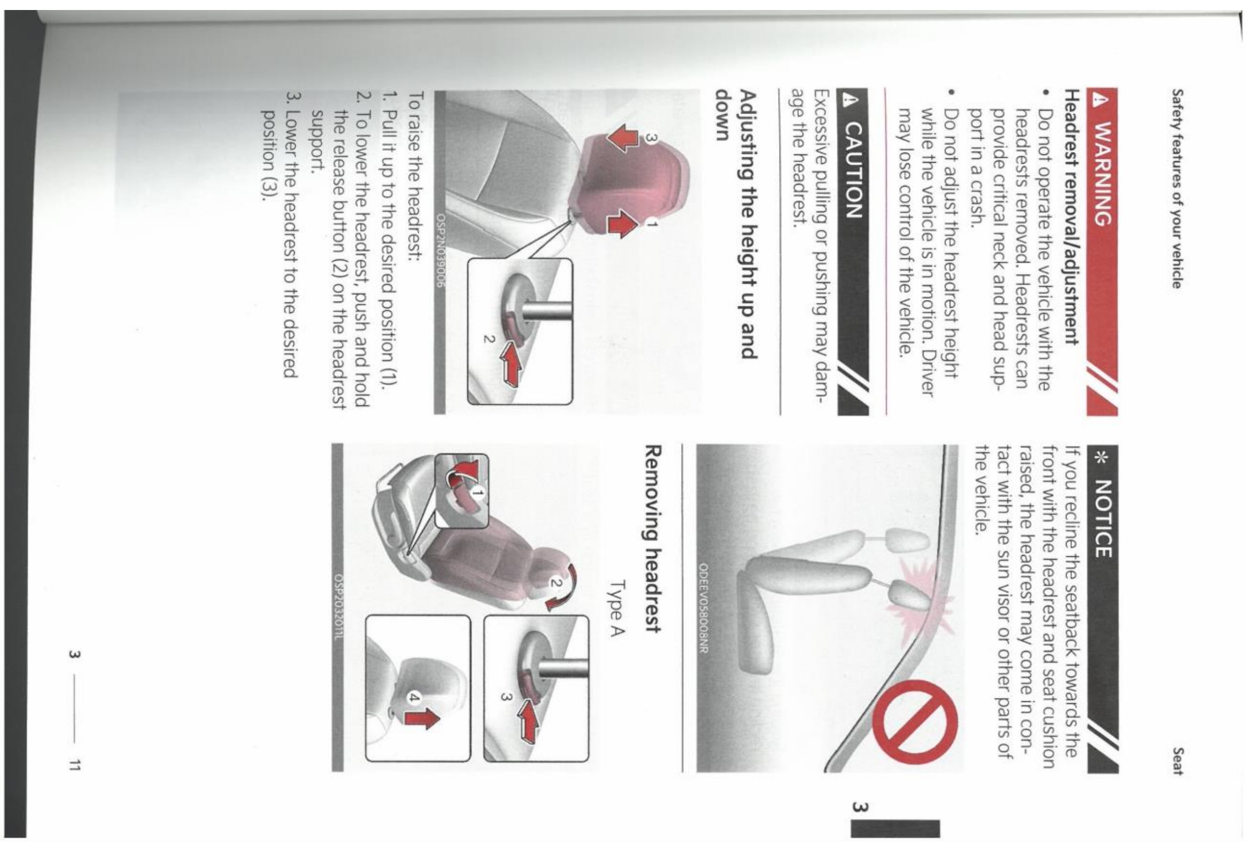
MAJOR SOURCES OF FOREIGN PARTS: KOREA: 85%

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

FOR THIS VEHICLE FINAL ASSEMBLY POINT: GWANGJU, KOREA

COUNTRY OF ORIGIN
ENGINE: KOREA
TRANSMISSION: KOREA

102 Monroney Label



Safety features of your vehicle

WARNING

Headrest removal/adjustment

- Do not operate the vehicle with the headrests removed. Headrests can provide critical neck and head support in a crash.
- Do not adjust the headrest height while the vehicle is in motion. Driver may lose control of the vehicle.

CAUTION

Excessive pulling or pushing may damage the headrest.

Adjusting the height up and down

OSP2H039006

To raise the headrest:

1. Pull it up to the desired position (1).
2. To lower the headrest, push and hold the release button (2) on the headrest support.
3. Lower the headrest to the desired position (3).

NOTICE

If you recline the seatback towards the front with the headrest and seat cushion raised, the headrest may come in contact with the sun visor or other parts of the vehicle.

ODEV058008NR

Removing headrest

Type A

OSP2032011L

Seat

3 — 11

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

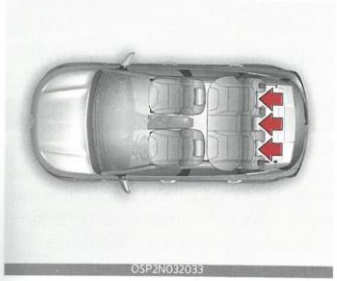
⚠ WARNING

Seatback pockets

Do not put heavy or sharp objects in the seatback pockets. In an accident they could come loose from the pocket and injure vehicle occupants.

Headrest for rear seat

The rear seat is equipped with headrests in all the seating positions for the occupant's safety and comfort.

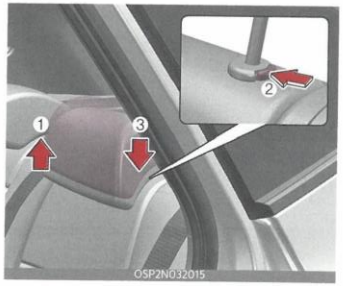


The headrest not only provides comfort for passengers, but also helps protect the head and neck in the event of a collision.

To maximize the effectiveness in case of accidents, the headrest should be adjusted so the middle of the headrest is as high as the center of gravity of an occupant's head. Generally, the center of gravity of most people's heads is similar with the height as the top of their eyes.

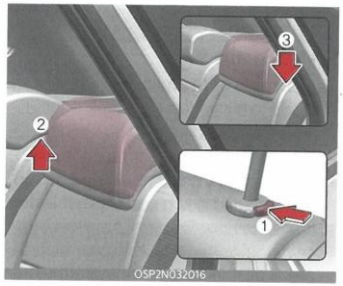
Also, adjust the headrest as close to your head as possible. For this reason, the use of a cushion that holds the body away from the seatback is not recommended.

Adjusting the height up and down (if equipped)



- To raise the headrest, pull it up to the desired position (1).
- To lower the headrest, push and hold the release button (2) on the headrest support and lower the headrest to the desired position (3).

Removal and reinstallation (if equipped)



- To remove the headrest, raise it as far as it can go then press the release button (1) While pulling the headrest upward (2).
- To reinstall the headrest, put the headrest poles (3) into the holes while pressing the release button (1).

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

Driver & Passenger Dummy Instrumentation Plots

The following additional data can be obtained from the Research and Development section of the NHTSA website (www.nhtsa.gov)

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)
Passenger Head Angular Velocity (X)
Passenger Head Angular Velocity (Y)
Passenger 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)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

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

NHTSA

Test Date: 06/13/2024

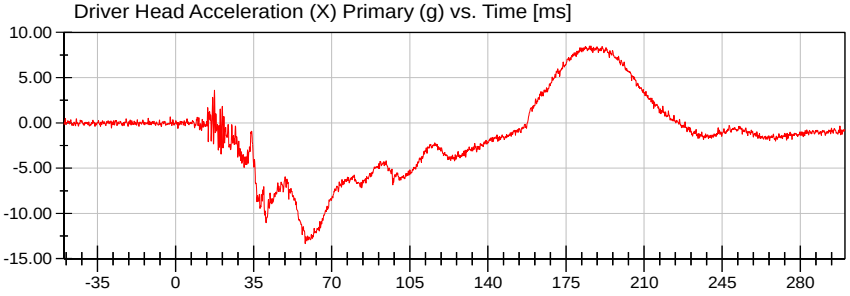
Test Lab: CTF

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

Test Number: 240613 (M20244212)

Position #4 SID IIs Dummy (DQ0570)

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



<Max>

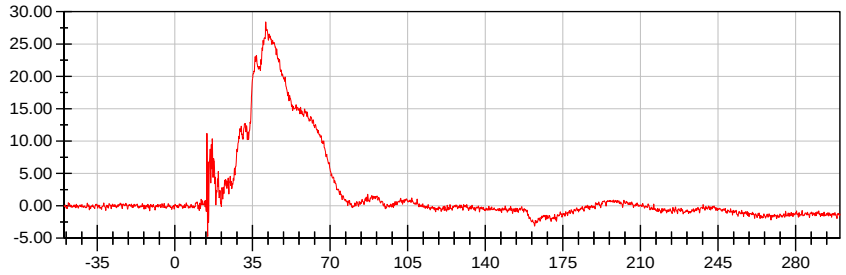
8.50 g at 186.16 ms

<Min>

-13.35 g at 58.08 ms

CFC_1000

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



<Max>

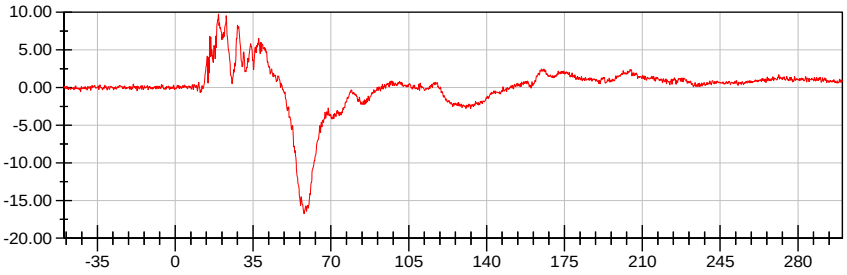
28.41 g at 40.96 ms

<Min>

-4.71 g at 14.80 ms

CFC_1000

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



<Max>

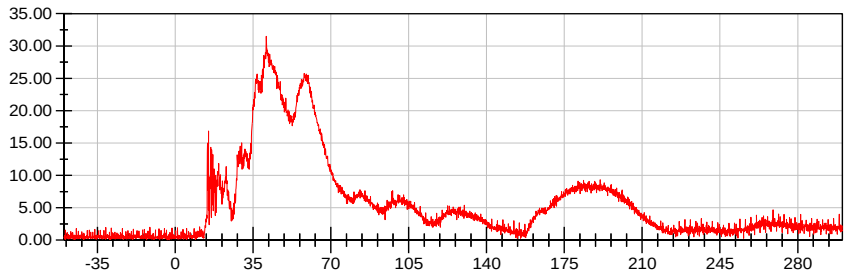
9.75 g at 19.44 ms

<Min>

-16.77 g at 57.92 ms

CFC_1000

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



<Max>

31.50 g at 40.96 ms

<Min>

0.05 g at -12.88 ms

Prefiltered_> CFC 1000

NHTSA

Test Date: 06/13/2024

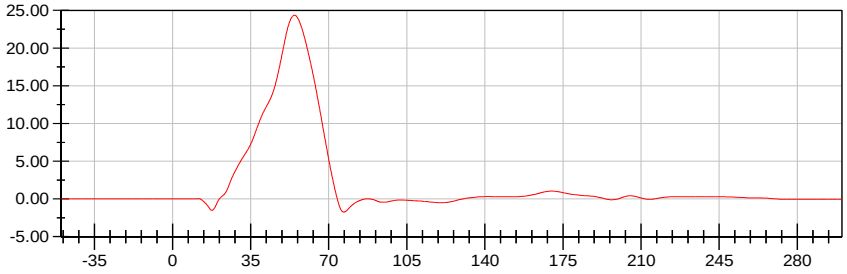
Test Lab: CTF

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

Test Number: 240613 (M20244212)

Position #4 SID IIs Dummy (DQ0570)

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



<Max>

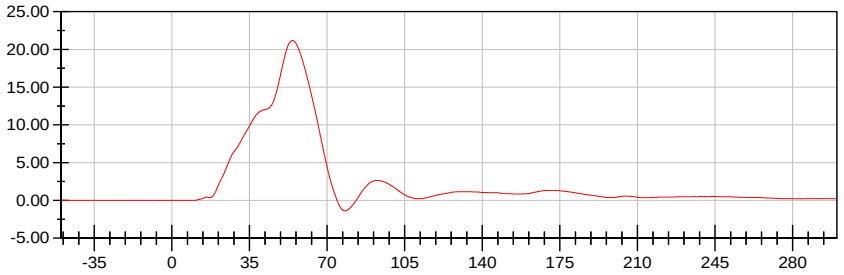
24.36 mm at 54.64 ms

<Min>

-1.74 mm at 76.72 ms

CFC_180

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



<Max>

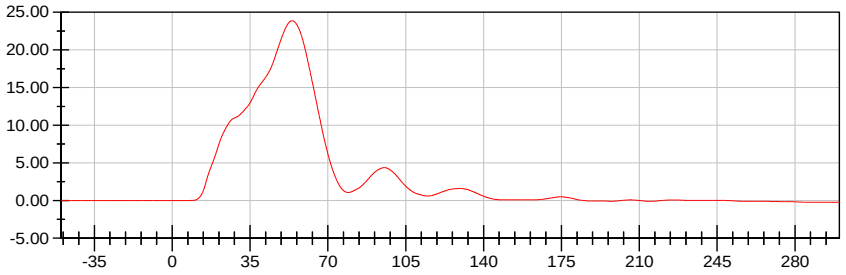
21.18 mm at 54.40 ms

<Min>

-1.38 mm at 78.00 ms

CFC_180

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



<Max>

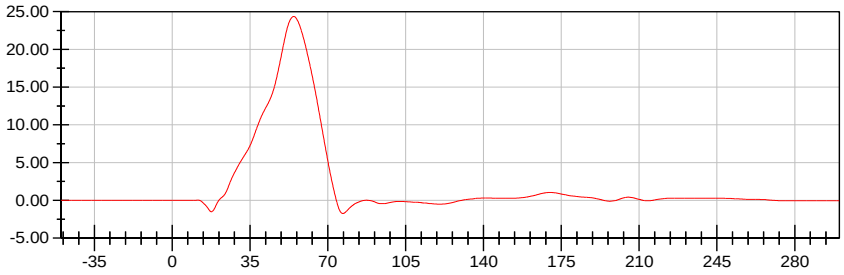
23.87 mm at 53.92 ms

<Min>

-0.24 mm at 292.08 ms

CFC_180

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



<Max>

24.36 mm at 54.64 ms

<Min>

-1.74 mm at 76.72 ms

CFC_180

NHTSA

Test Date: 06/13/2024

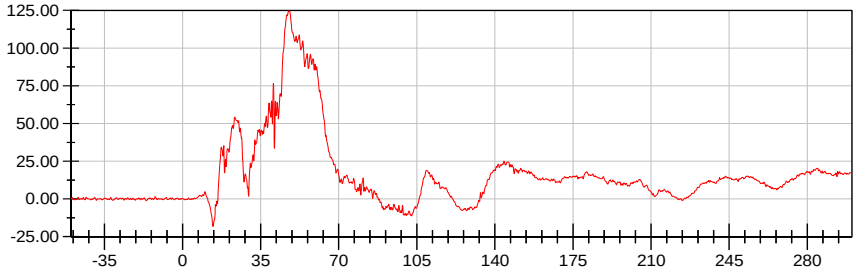
Test Lab: CTF

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

Test Number: 240613 (M20244212)

Position #4 SID IIs Dummy (DQ0570)

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



<Max>

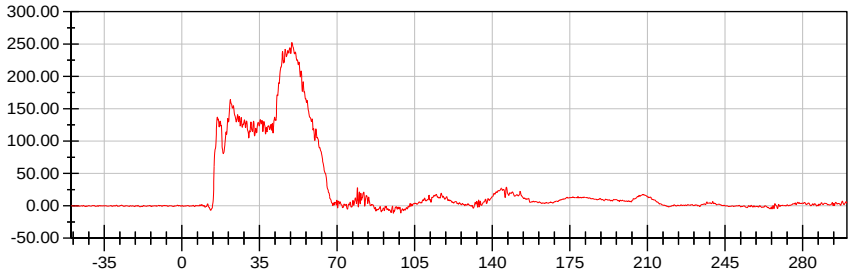
124.73 N at 47.60 ms

<Min>

-18.23 N at 13.68 ms

CFC_600

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



<Max>

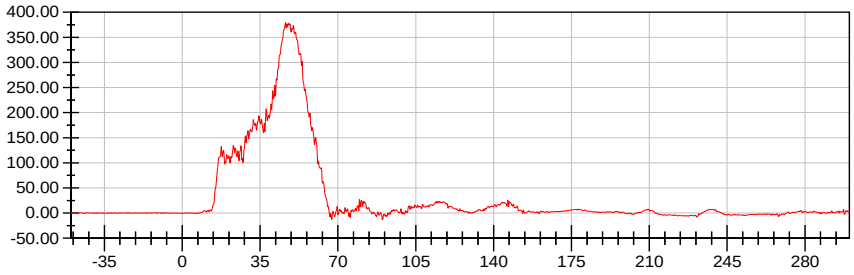
252.14 N at 49.60 ms

<Min>

-11.49 N at 95.44 ms

CFC_600

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



<Max>

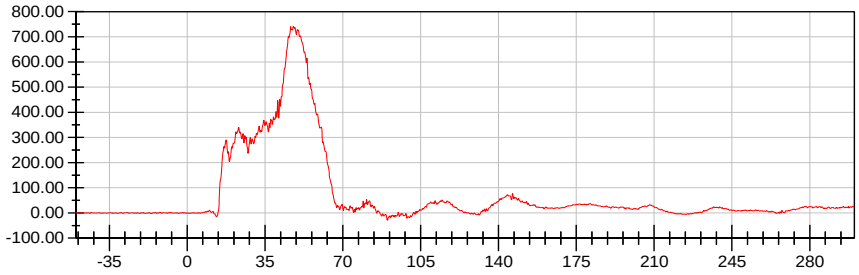
379.40 N at 46.48 ms

<Min>

-13.08 N at 90.00 ms

CFC_600

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



<Max>

741.86 N at 47.76 ms

<Min>

-29.00 N at 90.00 ms

CFC_600

NHTSA

Test Date: 06/13/2024

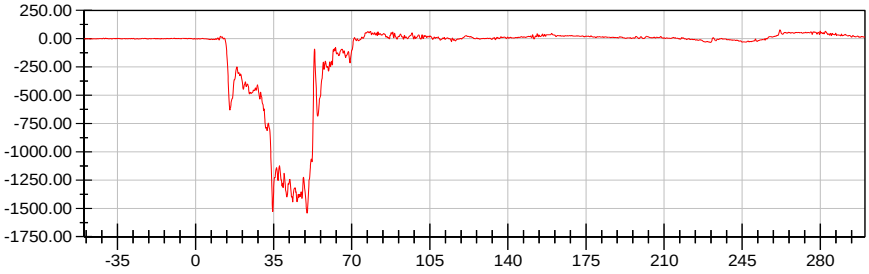
Test Lab: CTF

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

Test Number: 240613 (M20244212)

Position #4 SID IIs Dummy (DQ0570)

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



<Max>

77.43 N at 262.00 ms

<Min>

-1,541.14 N at 49.92 ms

CFC_600

NHTSA

Test Date: 06/13/2024

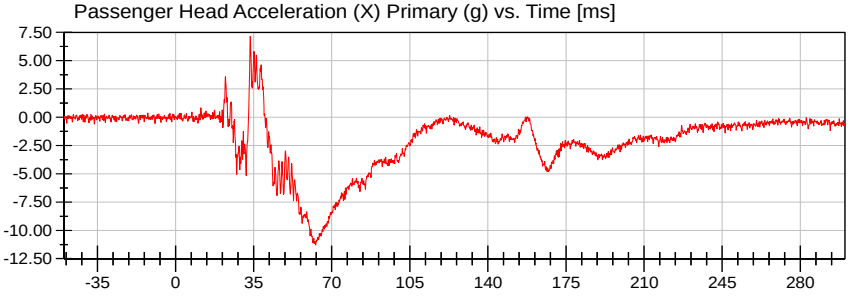
Test Lab: CTF

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

Test Number: 240613 (M20244212)

Position #4 SID IIs Dummy (DQ0570)

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



<Max>

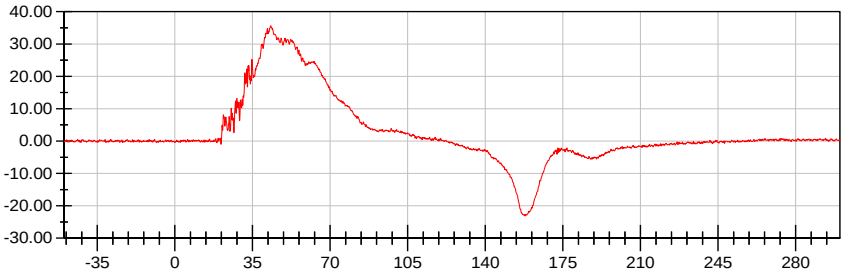
7.14 g at 33.44 ms

<Min>

-11.30 g at 62.80 ms

CFC_1000

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



<Max>

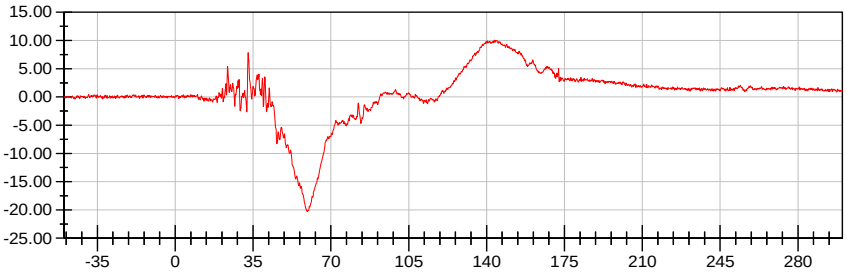
35.64 g at 43.20 ms

<Min>

-23.20 g at 158.00 ms

CFC_1000

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



<Max>

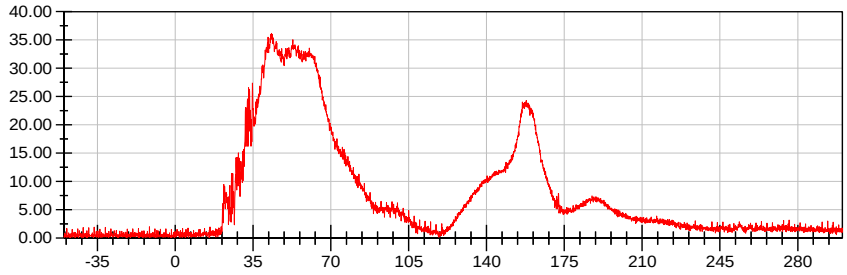
10.06 g at 143.52 ms

<Min>

-20.27 g at 59.44 ms

CFC_1000

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



<Max>

36.18 g at 43.28 ms

<Min>

0.07 g at -39.84 ms

Prefiltered_> CFC 1000

NHTSA

Test Date: 06/13/2024

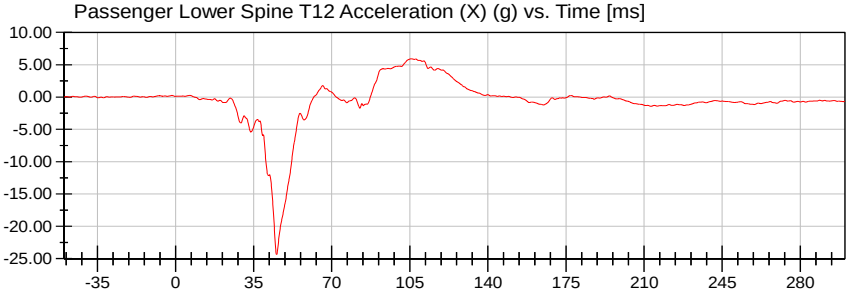
Test Lab: CTF

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

Test Number: 240613 (M20244212)

Position #4 SID IIs Dummy (DQ0570)

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



<Max>

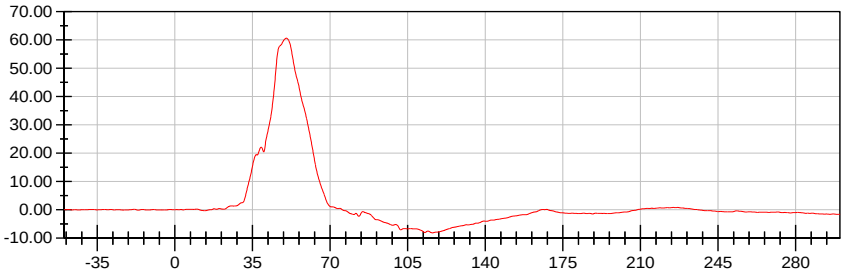
5.89 g at 105.68 ms

<Min>

-24.36 g at 45.28 ms

CFC_180

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



<Max>

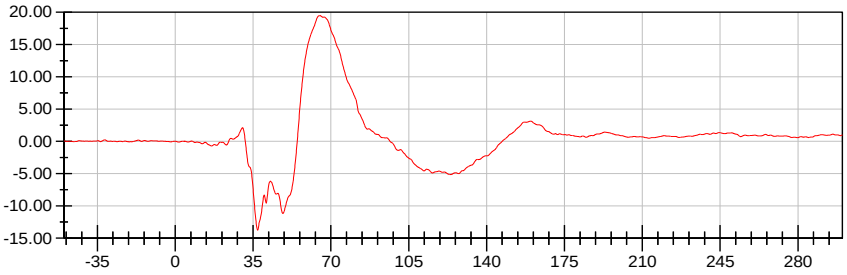
60.63 g at 50.24 ms

<Min>

-8.12 g at 116.24 ms

CFC_180

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



<Max>

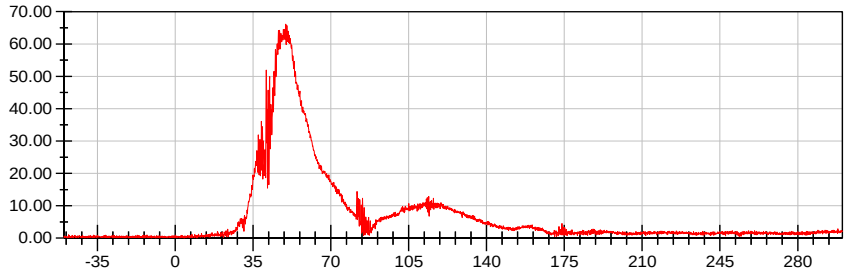
19.47 g at 65.04 ms

<Min>

-13.77 g at 37.04 ms

CFC_180

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



<Max>

66.15 g at 49.68 ms

<Min>

0.04 g at -10.80 ms

Prefiltered_> CFC 1000

NHTSA

Test Date: 06/13/2024

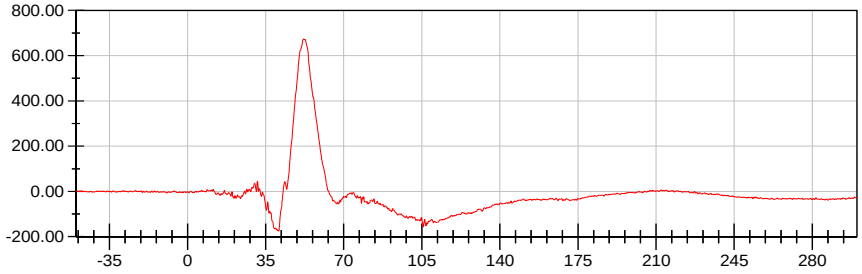
Test Lab: CTF

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

Test Number: 240613 (M20244212)

Position #4 SID IIs Dummy (DQ0570)

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



<Max>

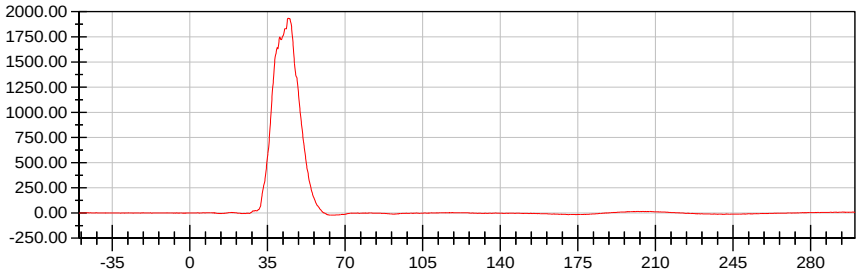
673.54 N at 52.08 ms

<Min>

-175.17 N at 40.80 ms

CFC_600

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



<Max>

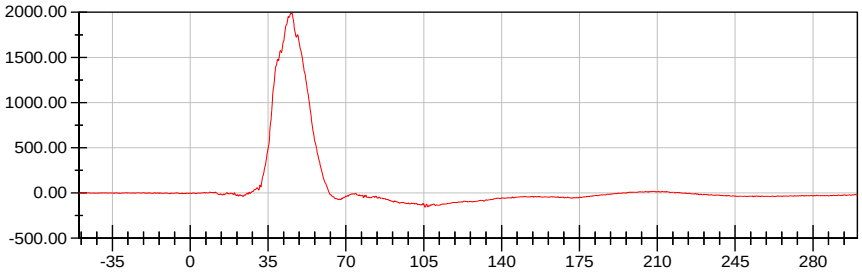
1,935.29 N at 44.40 ms

<Min>

-21.74 N at 63.20 ms

CFC_600

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



<Max>

1,987.45 N at 45.76 ms

<Min>

-157.95 N at 105.60 ms

CFC_600

APPENDIX C
DUMMY PERFORMANCE CALIBRATION TEST DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

ES-2re (Driver) Dummy

Description

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS

SID-IIs (Rear Passenger) Dummy

Description

Pre-Test Calibration Sheets
Driver S/N F030

Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 92

Symbol	Description	Specification	Results	Pass
		mm	mm	
1	Sitting Height	900.0 - 918.0	909	Yes
2	Seat to Shoulder Joint	558.0 - 572.0	560	Yes
3	Seat to Lower Face of Thoracic Spine Box	346.0 - 356.0	347	Yes
4	Seat to Hip Joint (center of bolt)	97.0 - 103.0	98	Yes
5	Sole to Seat, Sitting	433.0 - 451.0	443	Yes
6	Head Width	152.0 - 158.0	154	Yes
7	Shoulder/Arm Width	461.0 - 479.0	475	Yes
8	Thorax Width	322.0 - 332.0	328	Yes
9	Abdomen Width	273.0 - 287.0	279	Yes
10	Pelvis Lap Width	359.0 - 373.0	366	Yes
11	Head Depth	196.0 - 206.0	201	Yes
12	Thorax Depth	262.0 - 272.0	262	Yes
13	Abdomen Depth	194.0 - 204.0	199	Yes
14	Pelvis Depth	235.0 - 245.0	242	Yes
15	Back of Buttocks to Hip Joint (center of bolt)	150.0 - 160.0	156	Yes
16	Back of Buttocks to Front of Knee	597.0 - 615.0	605	Yes

Baseline 10/07/05

Transportation Research Center Inc.

Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
Peak Resultant Acceleration	125 - 155 g	130.9 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	10.0 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	< 15 %	3.91 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: DP6812

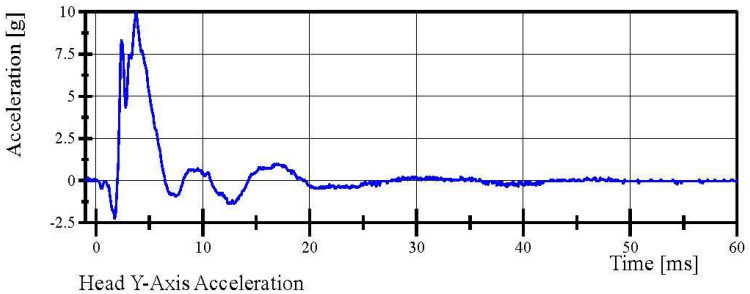
Specification Source: CFR49 Part 572 Subpart U with Polarity in accordance with J211

05.14.2024 10:51:37 361

Transportation Research Center Inc.

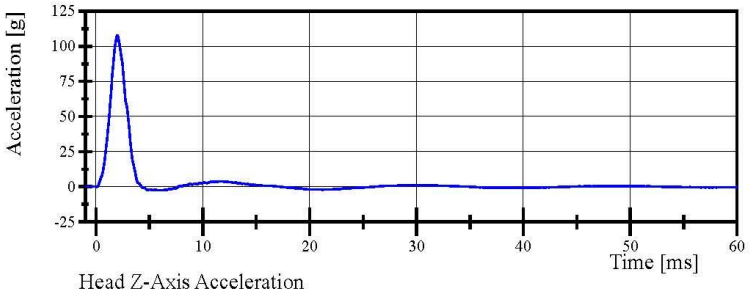
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Head X-Axis Acceleration



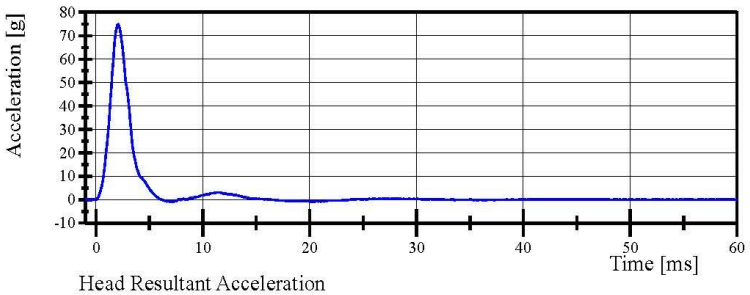
Filter Class: CFC_1000
Max: 10.0 g at 3.8 ms
Min: -2.3 g at 1.8 ms

Head Y-Axis Acceleration



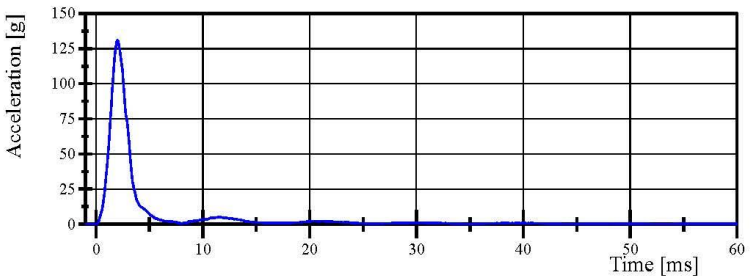
Filter Class: CFC_1000
Max: 107.8 g at 2.0 ms
Min: -2.6 g at 6.2 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 74.9 g at 2.1 ms
Min: -0.9 g at 20.3 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 130.9 g at 2.0 ms
Min: 0.0 g at -1.0 ms

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

05.14.2024 10:53:02 361

Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.36 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-51.3 deg	Yes
Time of Peak	54 - 66 ms	55.1 ms	Yes
Headform Flexion Decay - Peak to Zero	53 - 88 ms	56.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 05053

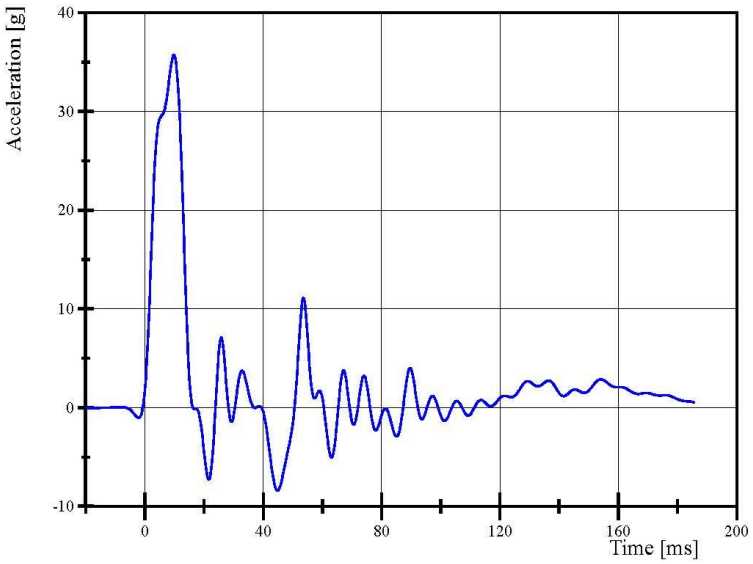
Specification Source: CFR49 Part 572 Subpart U with Polarity in accordance with J211

05.14.2024 11:36:41 1504

Transportation Research Center Inc.

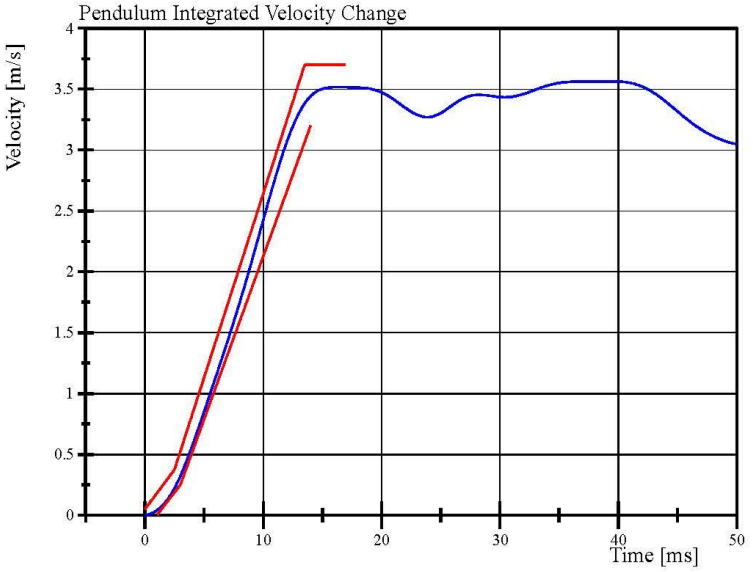
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Pendulum Acceleration



Filter Class: CFC_60
Max: 35.7 g at 9.8 ms
Min: -8.4 g at 44.8 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 3.6 m/s at 39.4 ms
Min: 0.0 m/s at 0.0 ms

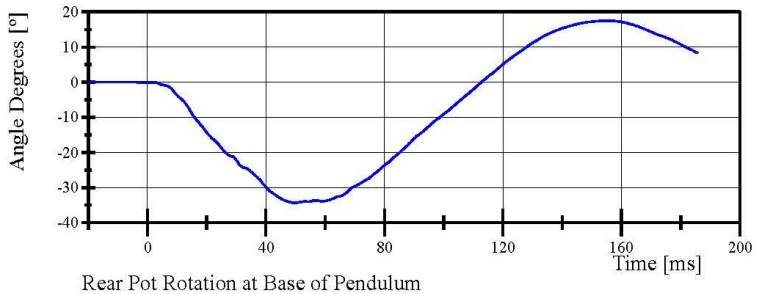
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

05.14.2024 11:37:12 1504

Transportation Research Center Inc.

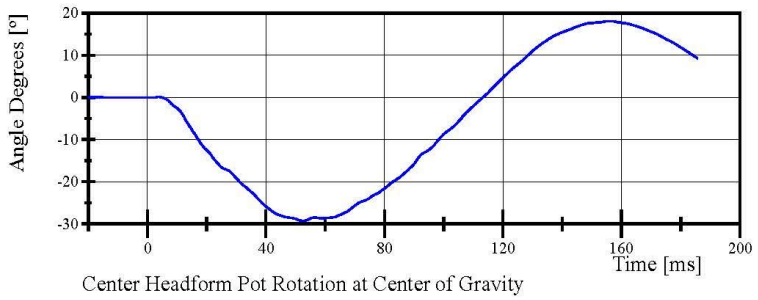
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Forward Pot Rotation at Base of Pendulum



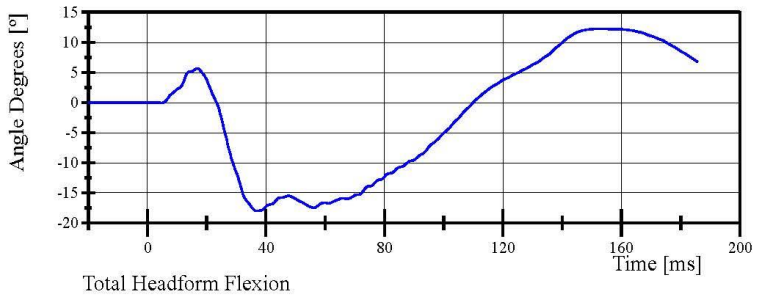
Filter Class: CFC_180
Max: 17.5 ° at 154.4 ms
Min: -34.3 ° at 49.7 ms

Rear Pot Rotation at Base of Pendulum



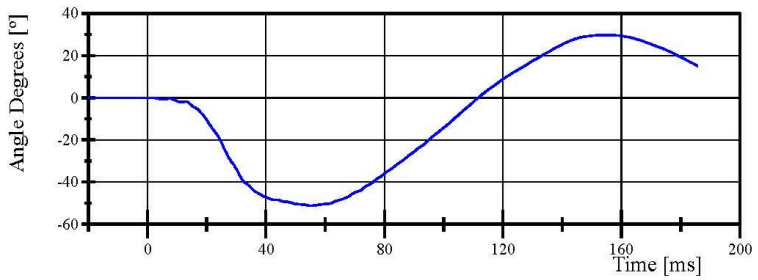
Filter Class: CFC_180
Max: 18.1 ° at 156.2 ms
Min: -29.3 ° at 52.6 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 12.2 ° at 152.6 ms
Min: -18.0 ° at 36.9 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 29.7 ° at 154.3 ms
Min: -51.3 ° at 55.1 ms

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

05.14.2024 11:37:13 1504

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.21 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-10.31 g	Yes

Test meets specifications.

Condition: Used

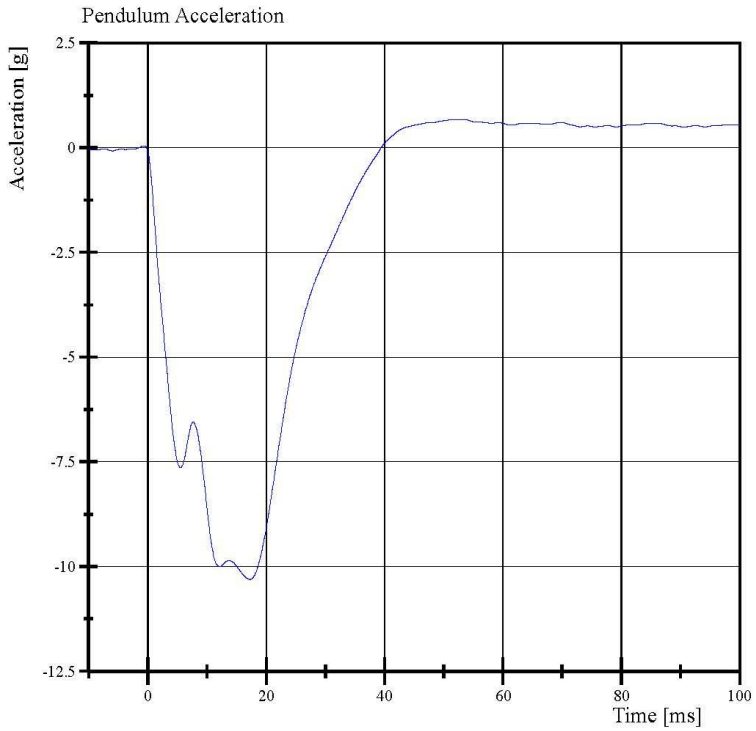
Comments:
Arm S/N: 175-3501-07014

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

05.15.2024 14:34:11 612

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024



Filter Class: CFC_180
Max: 0.7 g at 53.3 ms
Min: -10.3 g at 17.2 ms

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

05.15.2024 14:35:21 612

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.9 mm	Yes

Test meets specifications.

Condition: Used

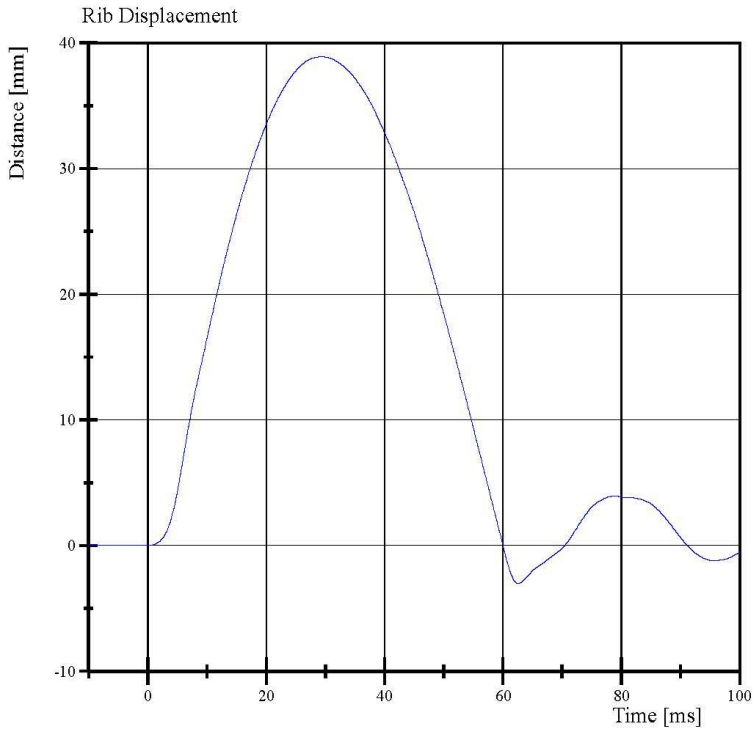
Comments:
Drop Height: 462 mm
Rib Foam S/N: EK6973

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

05.15.2024 14:53:30 623

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024



Filter Class: CFC_180
Max: 38.9 mm at 29.4 ms
Min: -3.0 mm at 62.6 ms

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

05.15.2024 14:54:06 623

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	48.2 mm	Yes

Test meets specifications.

Condition: Used

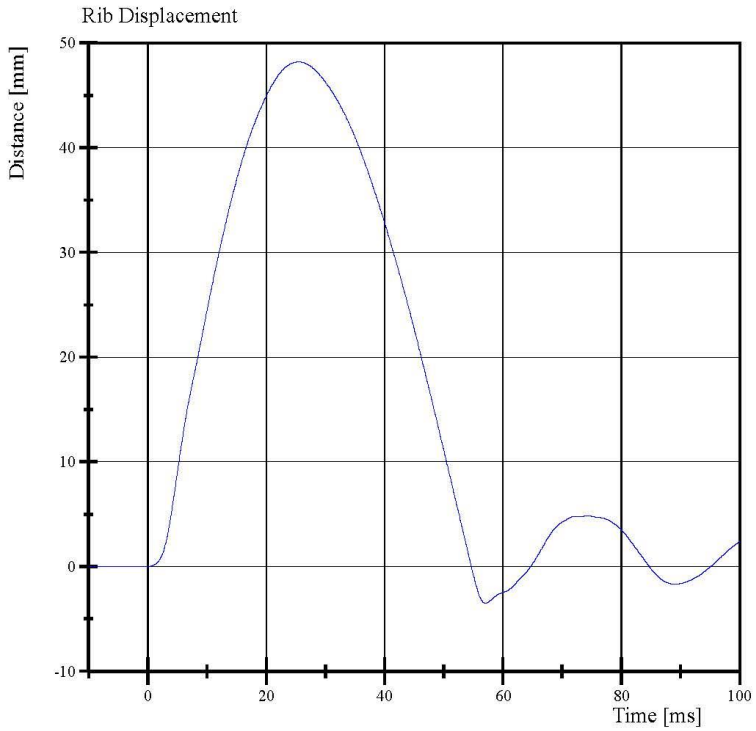
Comments:
Drop Height: 816 mm
Rib Foam S/N: EK6973

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

05.14.2024 10:10:02 526

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024



Filter Class: CFC_180
Max: 48.2 mm at 25.4 ms
Min: -3.5 mm at 57.0 ms

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

05.14.2024 10:10:54 526

Transportation Research Center Inc.

3.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.5 mm	Yes

Test meets specifications.

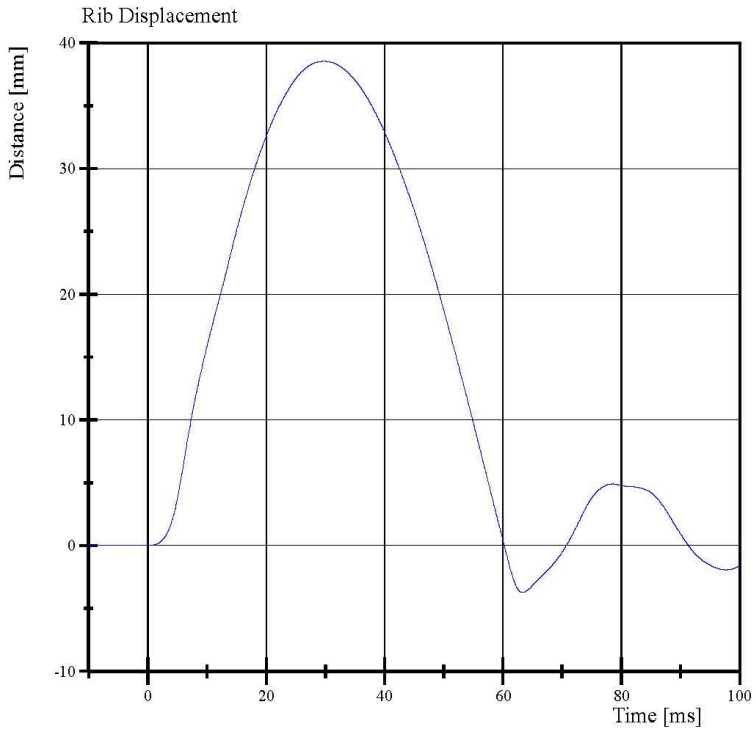
Condition: Used
Comments:
Drop Height: 462 mm
Rib Foam S/N: EK6970

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

05.14.2024 10:27:35 582

Transportation Research Center Inc.

3.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024



Filter Class: CFC_180
Max: 38.5 mm at 29.8 ms
Min: -3.7 mm at 63.4 ms

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

05.14.2024 10:28:19 582

Transportation Research Center Inc.

4.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	50.0 mm	Yes

Test meets specifications.

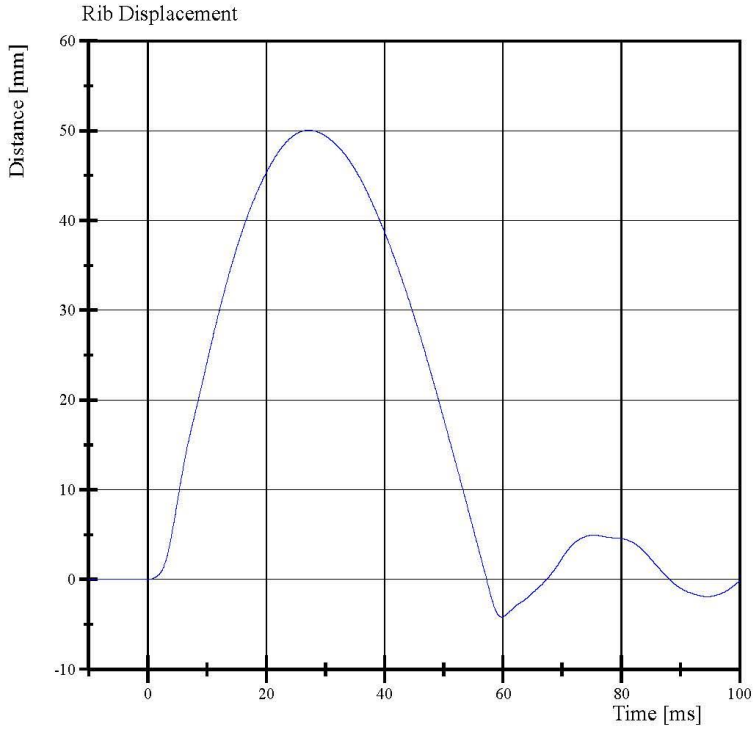
Condition: Used
Comments:
Drop Height: 816 mm
Rib Foam S/N: EK6970

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

05.14.2024 10:22:43 509

Transportation Research Center Inc.

4.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024



Filter Class: CFC_180
Max: 50.0 mm at 27.2 ms
Min: -4.2 mm at 59.8 ms

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

05.14.2024 10:23:03 509

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	37.9 mm	Yes

Test meets specifications.

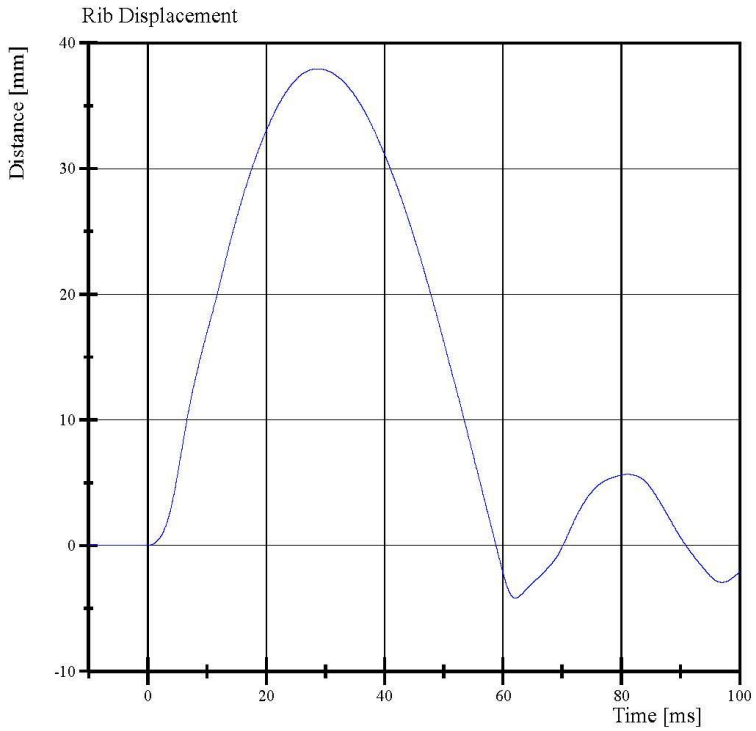
Condition: Used
Comments:
Drop 462 mm
Rib Foam S/N: EK6971

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

05.14.2024 10:36:15 599

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024



Filter Class: CFC_180
Max: 37.9 mm at 28.7 ms
Min: -4.2 mm at 62.1 ms

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

05.14.2024 10:36:39 599

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	46.9 mm	Yes

Test meets specifications.

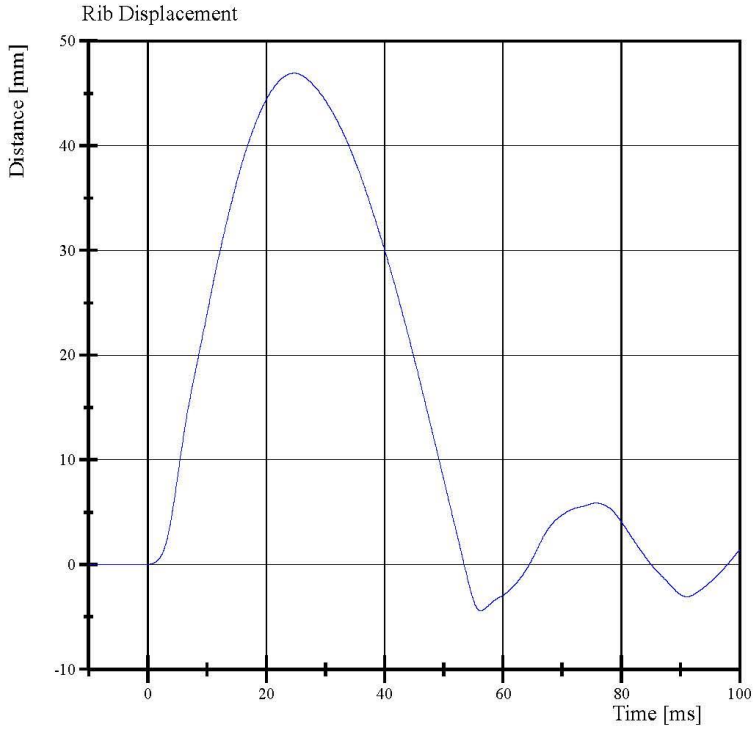
Condition: Used
Comments:
Drop Height: 816 mm
Rib Foam S/N: EK6971

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

05.14.2024 10:32:16 514

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/14/2024



Filter Class: CFC_180
Max: 46.9 mm at 24.7 ms
Min: -4.4 mm at 56.2 ms

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

05.14.2024 10:32:34 514

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.455 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,382.6 N	Yes
Upper Rib Displacement	34 - 41 mm	37.7 mm	Yes
Center Rib Displacement	37 - 45 mm	40.7 mm	Yes
Lower Rib Displacement	37 - 44 mm	40.4 mm	Yes

Test meets specifications.

Condition: Used

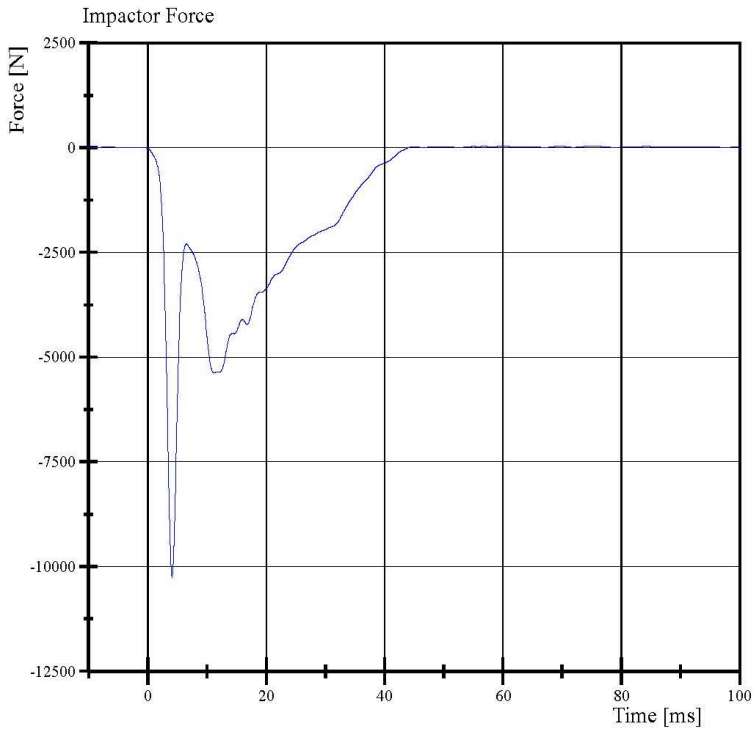
Comments:
Upper Rib Module S/N: 175-4008-A
Upper Rib Foam S/N: 175-4003-EK6973
Middle Rib Module S/N: 175-4008-A
Middle Rib Foam S/N: 175-4003-EK6970
Lower Rib Module S/N: 175-4008-A-06-017
Lower Rib Foam S/N: 175-4008-EK6971

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

05.15.2024 13:59:40 471

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024



Filter Class: CFC_180
Max: 44.3 N at 75.6 ms
Min: -10,253.6 N at 4.1 ms

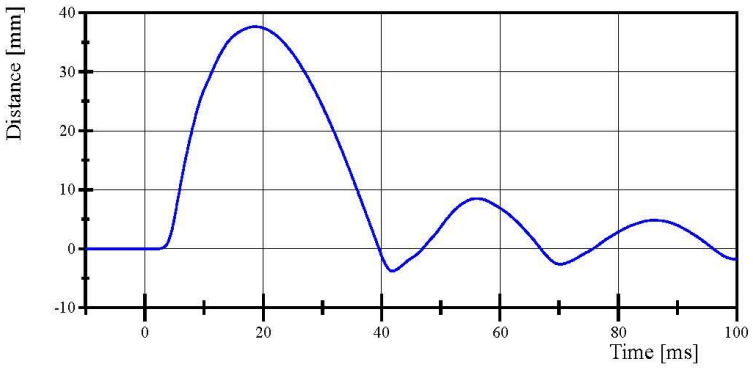
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

05.15.2024 14:00:42 471

Transportation Research Center Inc.

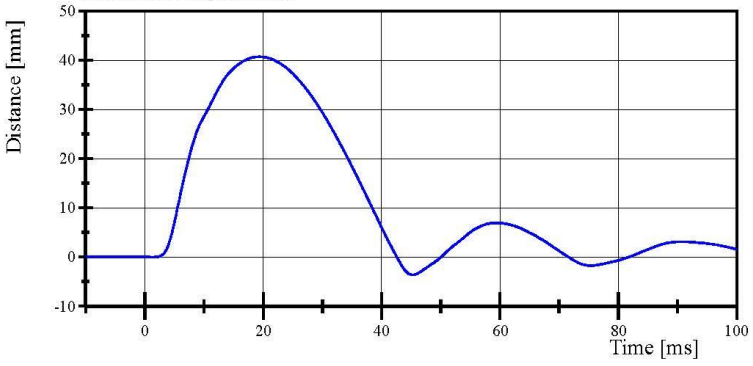
Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Upper Rib Displacement



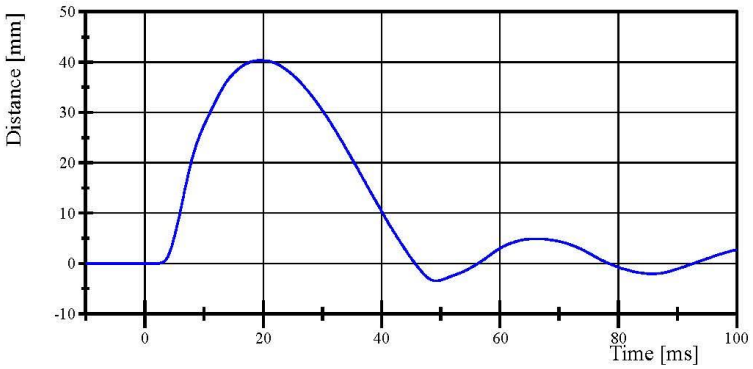
Filter Class: CFC_180
Max: 37.7 mm at 18.6 ms
Min: -3.8 mm at 41.8 ms

Center Rib Displacement



Filter Class: CFC_180
Max: 40.7 mm at 19.4 ms
Min: -3.6 mm at 45.2 ms

Lower Rib Displacement



Filter Class: CFC_180
Max: 40.4 mm at 19.6 ms
Min: -3.5 mm at 49.2 ms

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

05.15.2024 14:00:42 471

Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 92-8
Test Date: 5/15/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.144 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-45.9 deg	Yes
Time of Peak	39 - 53 ms	43.6 ms	Yes
Headform Flexion Decay - Peak to Zero	37 - 57 ms	37.2 ms	Yes

Test meets specifications.

Condition: New

Comments:
Lumbar S/N: DJ7964

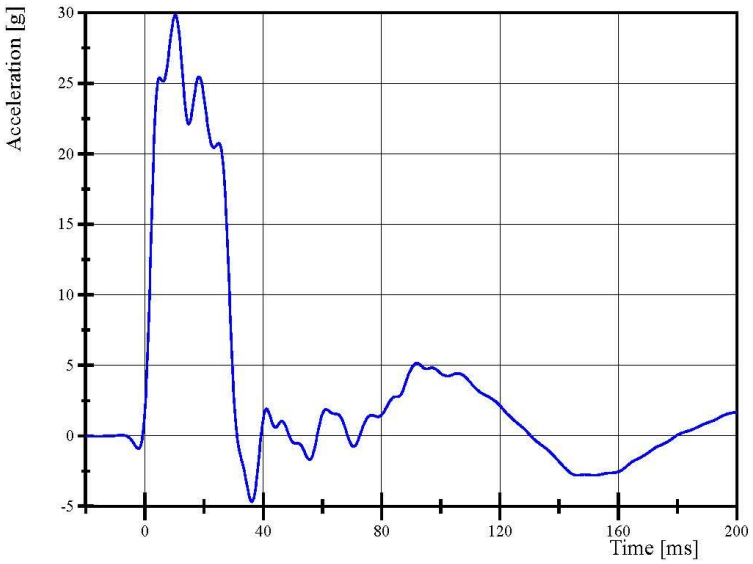
Specification Source: CFR49 Part 572 Subpart U with Polarity in accordance with J211

05.15.2024 12:42:43 671

Transportation Research Center Inc.

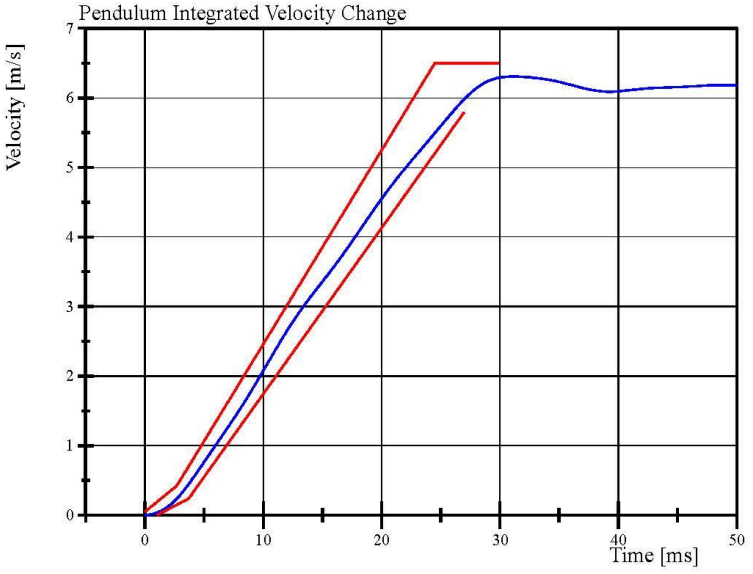
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 92-8
Test Date: 5/15/2024

Pendulum Acceleration



Filter Class: CFC_60
Max: 29.8 g at 10.3 ms
Min: -4.7 g at 36.2 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 6.3 m/s at 31.1 ms
Min: 0.0 m/s at 0.0 ms

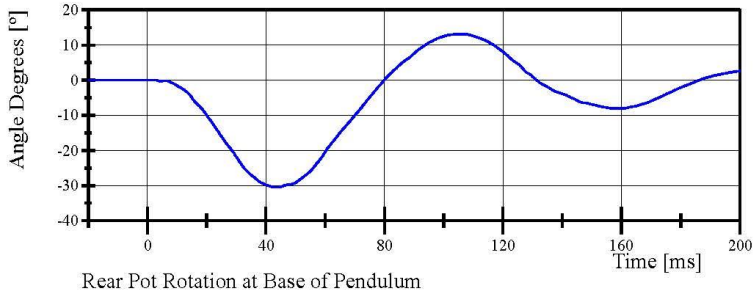
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

05.15.2024 12:43:21 671

Transportation Research Center Inc.

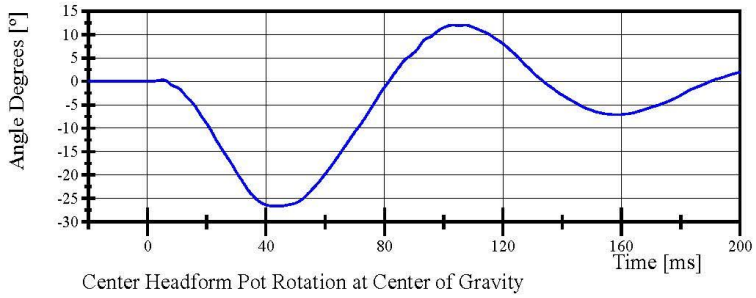
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 92-8
Test Date: 5/15/2024

Forward Pot Rotation at Base of Pendulum



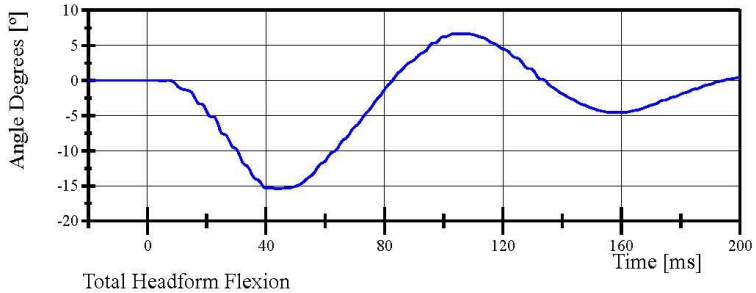
Filter Class: CFC_180
Max: 13.1 ° at 105.2 ms
Min: -30.5 ° at 43.6 ms

Rear Pot Rotation at Base of Pendulum



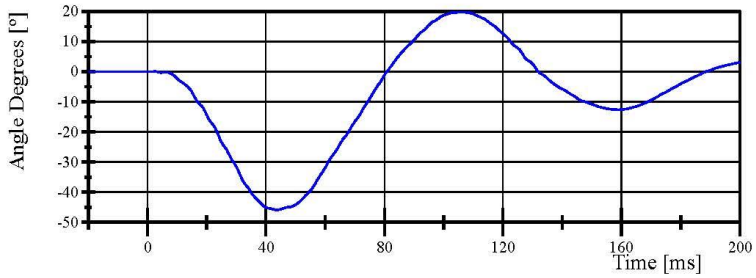
Filter Class: CFC_180
Max: 12.0 ° at 107.3 ms
Min: -26.6 ° at 44.6 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 6.6 ° at 106.5 ms
Min: -15.4 ° at 43.6 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 19.8 ° at 105.7 ms
Min: -45.9 ° at 43.6 ms

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

05.15.2024 12:43:22 671

Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	4.10 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,229.4 N	Yes
Time of Peak	10.6 - 13.0 ms	12.72 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,589.5 N	Yes
Time of Peak	10.0 - 12.3 ms	12.00 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Abdomen S/N: 1066

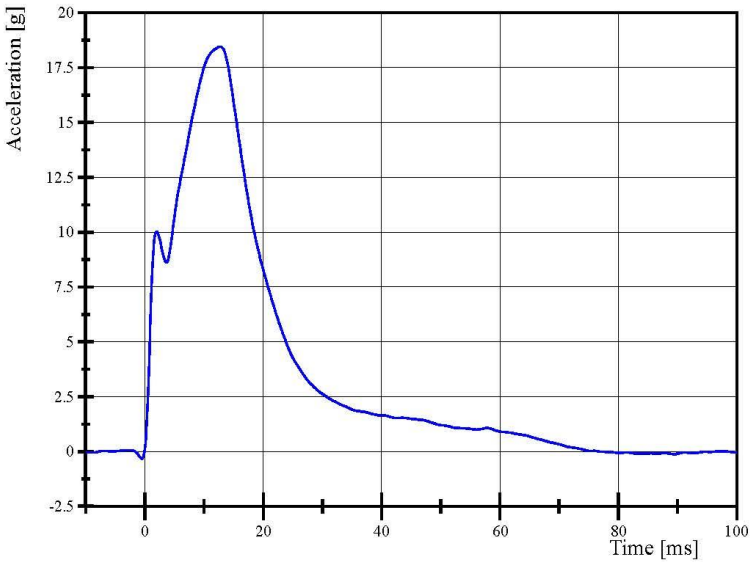
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

05.15.2024 14:08:37 571

Transportation Research Center Inc.

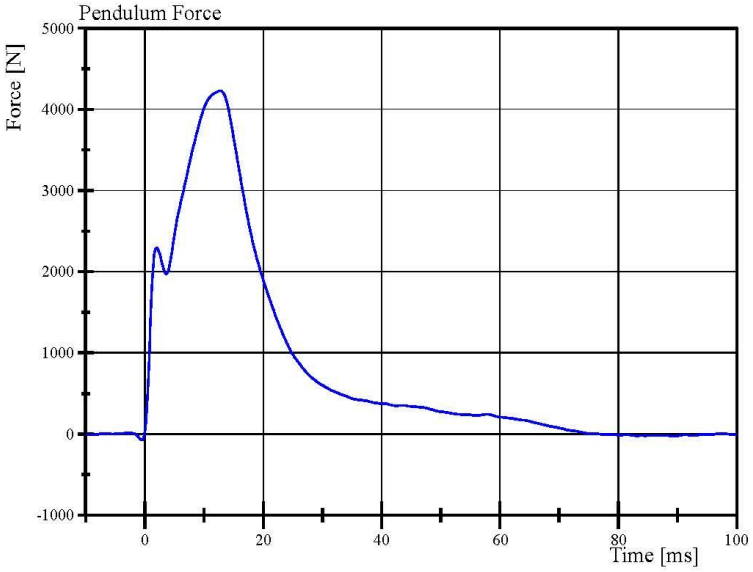
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 18.5 g at 12.7 ms
Min: -0.3 g at -0.6 ms

Pendulum Force



Filter Class: CFC_180
Max: 4,229.4 N at 12.7 ms
Min: -74.3 N at -0.6 ms

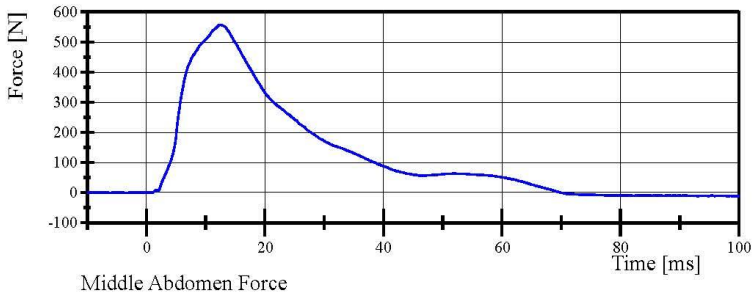
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

05.15.2024 14:10:33 571

Transportation Research Center Inc.

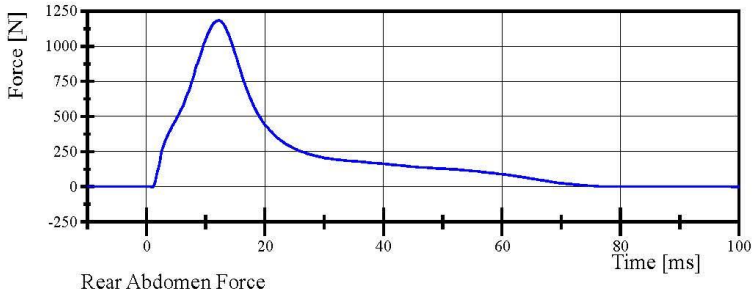
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Front Abdomen Force



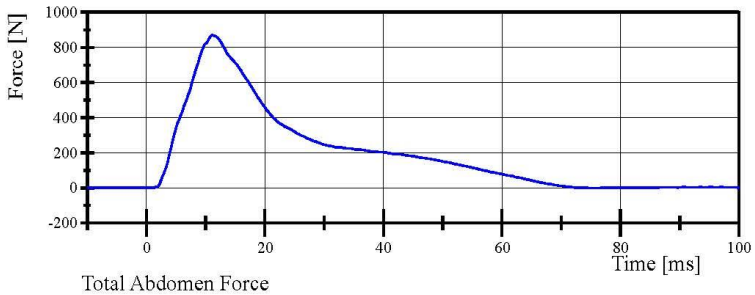
Filter Class: CFC_600
Max: 556.9 N at 12.5 ms
Min: -12.3 N at 99.0 ms

Middle Abdomen Force



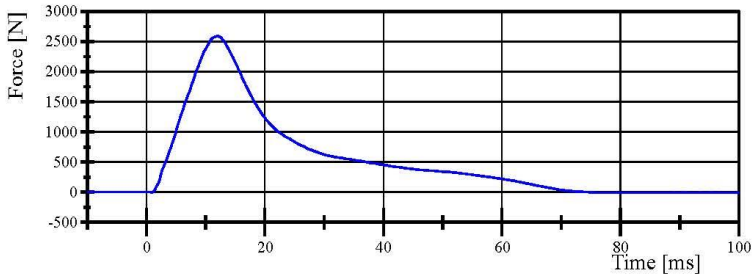
Filter Class: CFC_600
Max: 1,183.3 N at 12.2 ms
Min: -1.8 N at 1.0 ms

Rear Abdomen Force



Filter Class: CFC_600
Max: 869.8 N at 11.1 ms
Min: -1.3 N at 75.9 ms

Total Abdomen Force



Filter Class: CFC_600
Max: 2,589.5 N at 12.0 ms
Min: -10.6 N at 100.0 ms

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

05.15.2024 14:10:33 571

Transportation Research Center Inc.

Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,329.4 N	Yes
Time of Peak	11.8 - 16.1 ms	13.36 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,302.5 N	Yes
Time of Peak	12.2 - 17.0 ms	12.48 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis S/N: NA

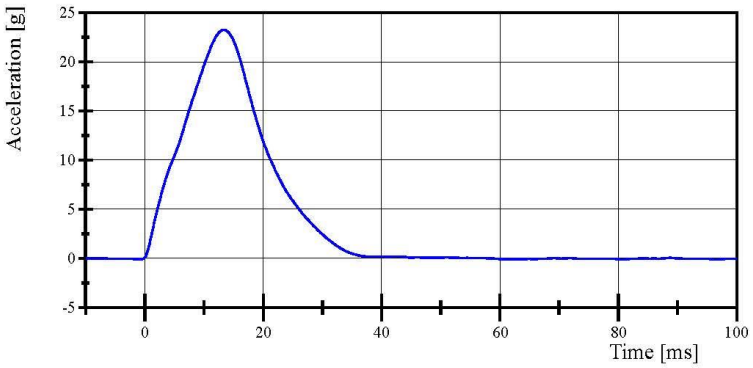
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

05.15.2024 14:16:17 585

Transportation Research Center Inc.

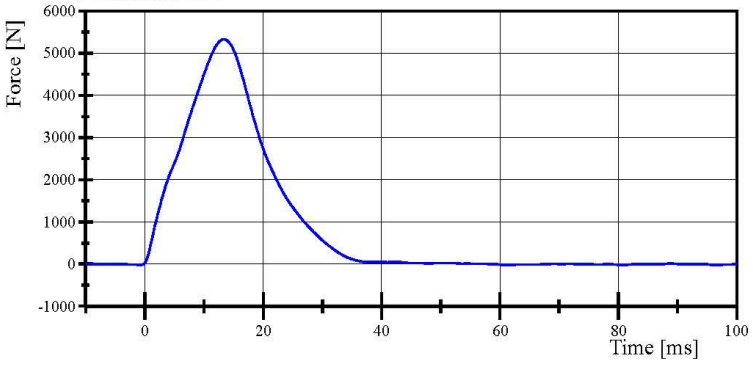
Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 92-1
Test Date: 5/15/2024

Pendulum Acceleration



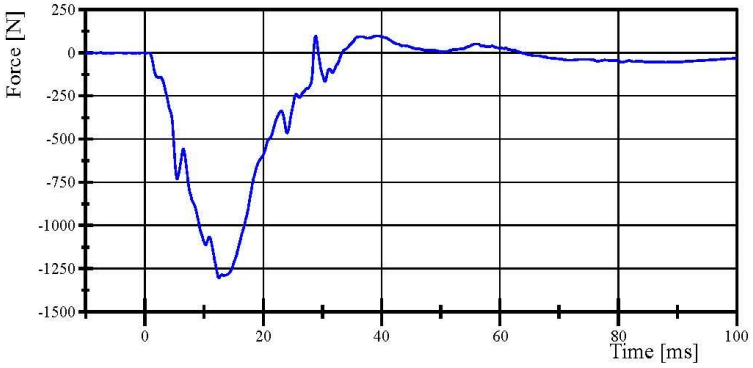
Filter Class: CFC_180
Max: 23.3 g at 13.4 ms
Min: -0.1 g at 96.4 ms

Pendulum Force



Filter Class: CFC_180
Max: 5,329.4 N at 13.4 ms
Min: -20.9 N at 96.4 ms

Pubic Symphysis Force



Filter Class: CFC_600
Max: 99.4 N at 39.3 ms
Min: -1,302.5 N at 12.5 ms

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

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Post-Test Calibration Sheets
Driver S/N F030

Transportation Research Center Inc.
572U ES-2re Dummy
External Dimensions
Serial No. F030 Calibration No. 93

Symbol	Description	Specification	Results	Pass
		mm	mm	
1	Sitting Height	900.0 - 918.0	909	Yes
2	Seat to Shoulder Joint	558.0 - 572.0	560	Yes
3	Seat to Lower Face of Thoracic Spine Box	346.0 - 356.0	347	Yes
4	Seat to Hip Joint (center of bolt)	97.0 - 103.0	98	Yes
5	Sole to Seat, Sitting	433.0 - 451.0	443	Yes
6	Head Width	152.0 - 158.0	154	Yes
7	Shoulder/Arm Width	461.0 - 479.0	475	Yes
8	Thorax Width	322.0 - 332.0	328	Yes
9	Abdomen Width	273.0 - 287.0	279	Yes
10	Pelvis Lap Width	359.0 - 373.0	366	Yes
11	Head Depth	196.0 - 206.0	201	Yes
12	Thorax Depth	262.0 - 272.0	262	Yes
13	Abdomen Depth	194.0 - 204.0	199	Yes
14	Pelvis Depth	235.0 - 245.0	242	Yes
15	Back of Buttocks to Hip Joint (center of bolt)	150.0 - 160.0	156	Yes
16	Back of Buttocks to Front of Knee	597.0 - 615.0	605	Yes

Baseline 10/07/05

Transportation Research Center Inc.

Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	69 %	Yes
Peak Resultant Acceleration	125 - 155 g	131.5 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	8.0 g	Yes
Is Resultant Acceleration Curve Unimodal within 15% of Main Pulse?	< 15 %	3.94 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: DP6812

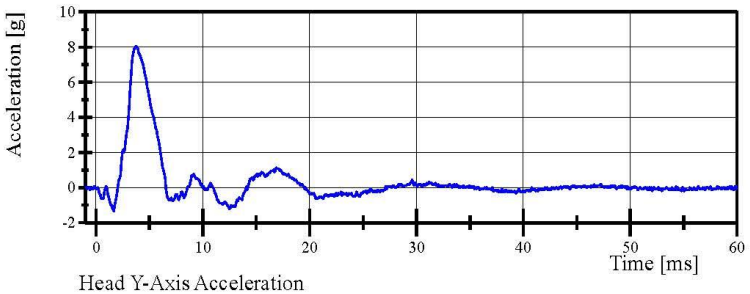
Specification Source: CFR49 Part 572 Subpart U with Polarity in accordance with J211

06.14.2024 14:11:26 361

Transportation Research Center Inc.

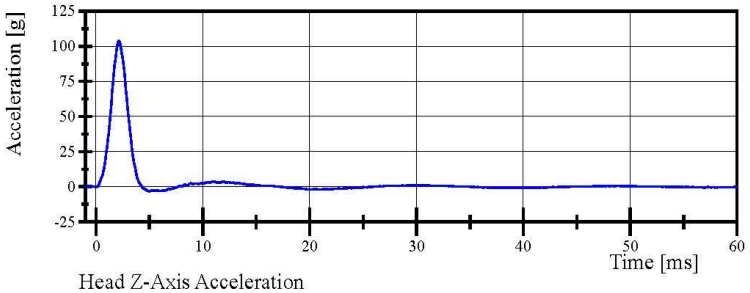
Left Lateral Head Drop
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/14/2024

Head X-Axis Acceleration



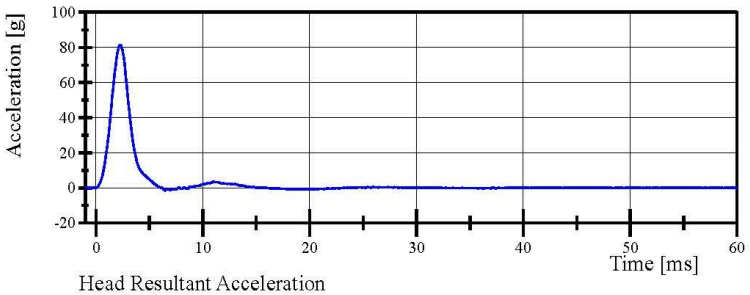
Filter Class: CFC_1000
Max: 8.0 g at 3.8 ms
Min: -1.3 g at 1.7 ms

Head Y-Axis Acceleration



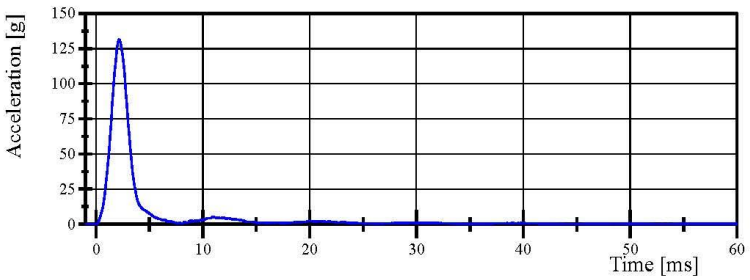
Filter Class: CFC_1000
Max: 103.9 g at 2.2 ms
Min: -3.1 g at 5.0 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 81.4 g at 2.2 ms
Min: -1.4 g at 6.5 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 131.5 g at 2.2 ms
Min: 0.0 g at -0.1 ms

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

06.14.2024 14:12:05 361

Transportation Research Center Inc.

Left Lateral Neck
ES-2re Serial No. F030 Certification No. 93-2
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-3.3) - (-3.5) m/s	-3.38 m/s	Yes
Maximum Headform Flexion			
Peak	(-49) - (-59) deg	-51.7 deg	Yes
Time of Peak	54 - 66 ms	56.1 ms	Yes
Headform Flexion Decay - Peak to Zero	53 - 88 ms	56.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 05053

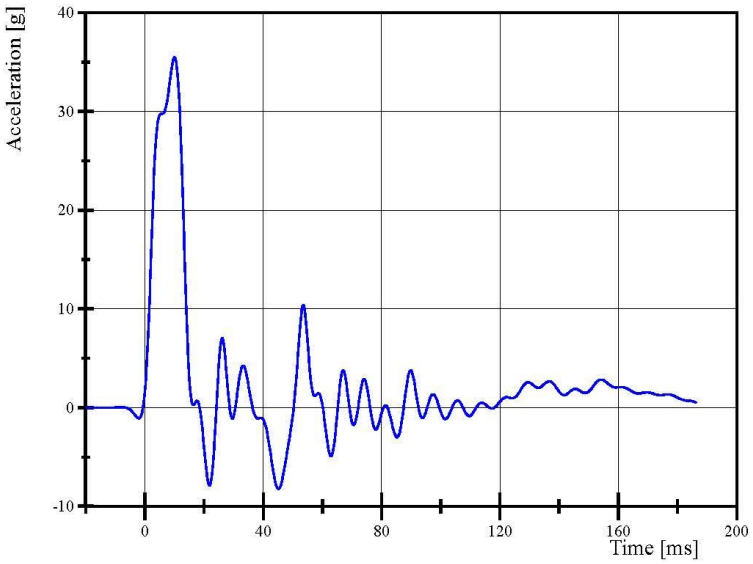
Specification Source: CFR49 Part 572 Subpart U with Polarity in accordance with J211

06.14.2024 15:14:39 1495

Transportation Research Center Inc.

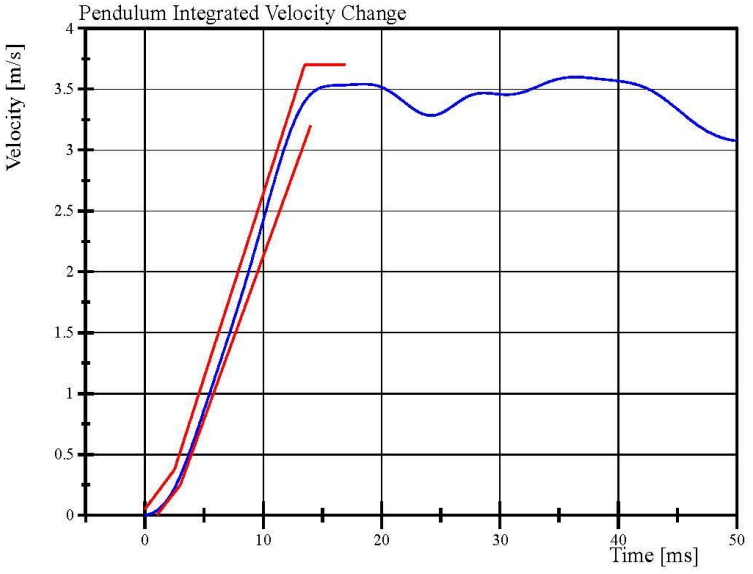
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 93-2
Test Date: 6/14/2024

Pendulum Acceleration



Filter Class: CFC_60
Max: 35.5 g at 10.0 ms
Min: -8.2 g at 45.1 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 3.6 m/s at 36.4 ms
Min: 0.0 m/s at 0.0 ms

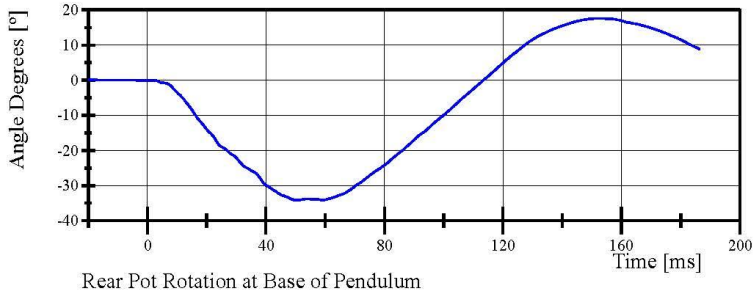
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

06.14.2024 15:15:51 1495

Transportation Research Center Inc.

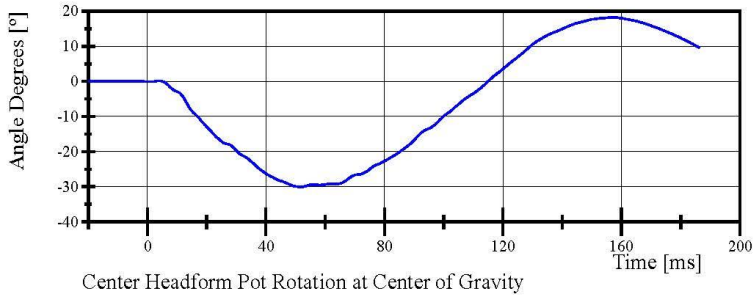
Left Lateral Neck
ES-2re Serial No. F030 Certification No. 93-2
Test Date: 6/14/2024

Forward Pot Rotation at Base of Pendulum



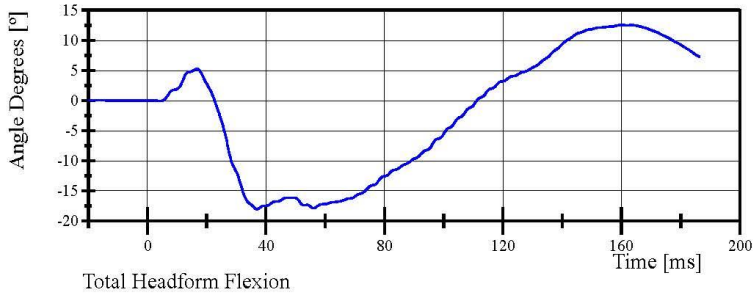
Filter Class: CFC_180
Max: 17.6 ° at 153.5 ms
Min: -34.2 ° at 50.3 ms

Rear Pot Rotation at Base of Pendulum



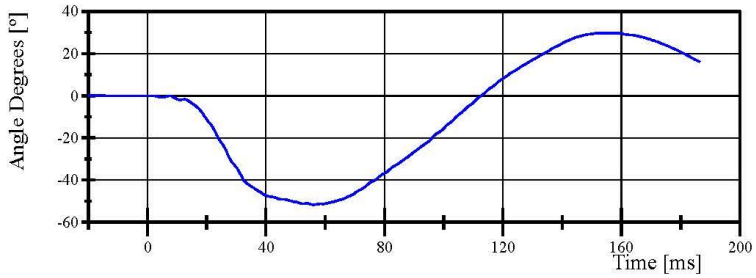
Filter Class: CFC_180
Max: 18.2 ° at 157.0 ms
Min: -30.1 ° at 51.7 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 12.6 ° at 160.0 ms
Min: -18.0 ° at 37.0 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 29.8 ° at 154.1 ms
Min: -51.7 ° at 56.1 ms

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

06.14.2024 15:15:51 1495

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.21 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-9.97 g	Yes

Test meets specifications.

Condition: Used

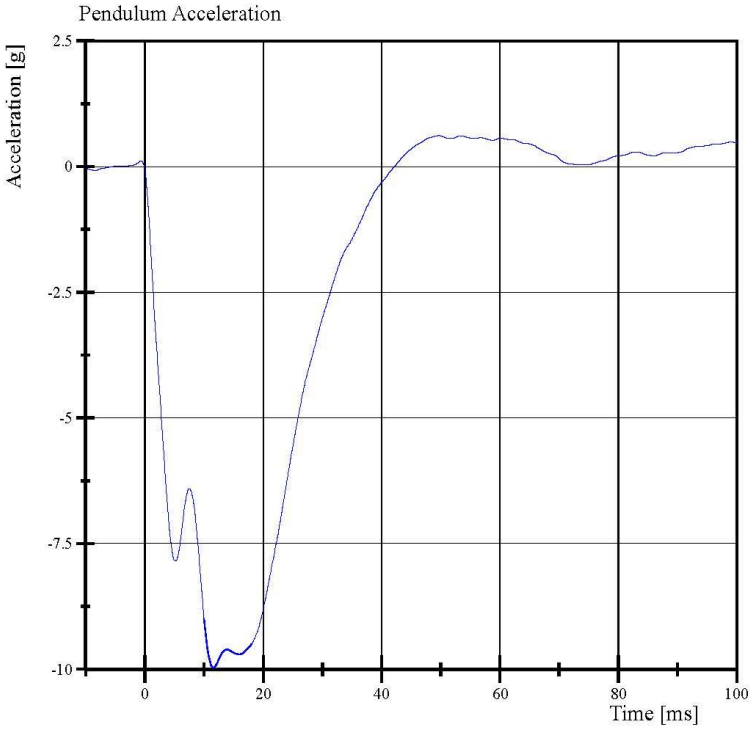
Comments:
Arm S/N: 175-3501-07014

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

06.18.2024 10:56:54 546

Transportation Research Center Inc.

Left Lateral Shoulder
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 0.6 g at 49.7 ms
Min: -10.0 g at 11.6 ms

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

06.18.2024 10:57:34 546

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	39.0 mm	Yes

Test meets specifications.

Condition: Used

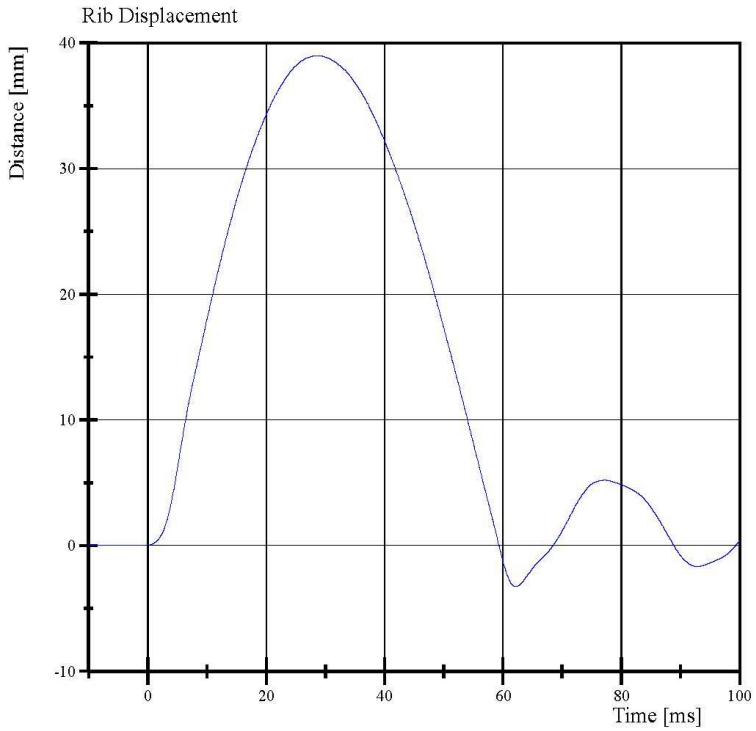
Comments:
Drop Height: 462 mm
Rib Foam S/N: EK6973

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

06.18.2024 08:39:21 636

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 39.0 mm at 28.6 ms
Min: -3.3 mm at 62.2 ms

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

06.18.2024 08:40:10 636

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	49.0 mm	Yes

Test meets specifications.

Condition: Used

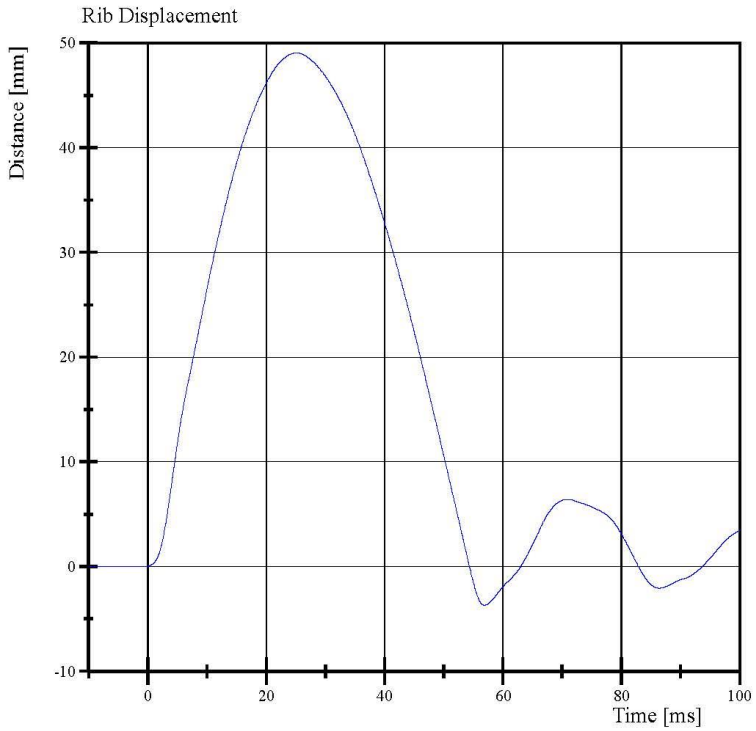
Comments:
Drop Height: 816 mm
Rib Foam S/N: EK6973

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

06.18.2024 08:33:22 525

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 49.0 mm at 25.1 ms
Min: -3.7 mm at 56.9 ms

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

06.18.2024 08:34:43 525

Transportation Research Center Inc.

3.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	69 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.7 mm	Yes

Test meets specifications.

Condition: Used

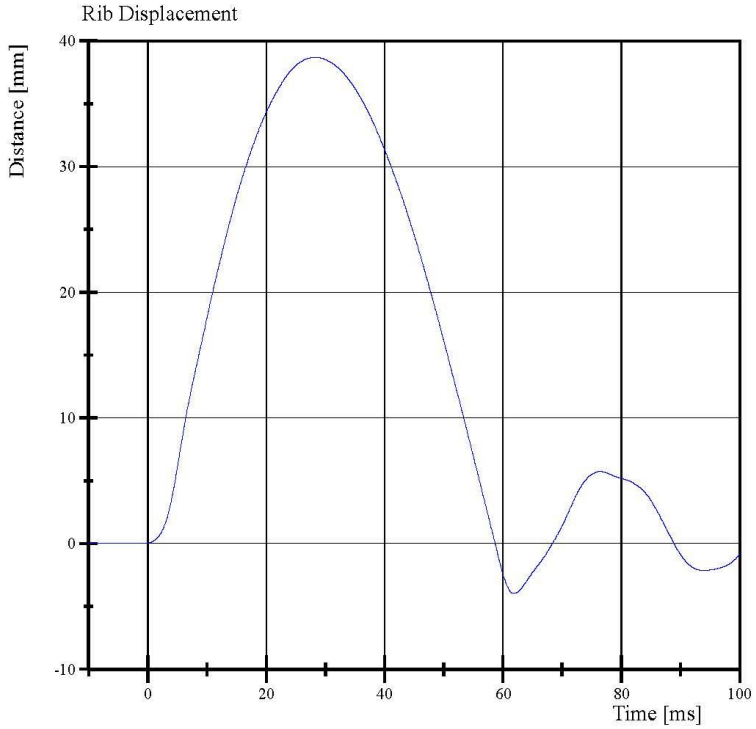
Comments:
Drop Height: 462 mm
Rib Foam S/N: EK6970

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

06.18.2024 08:53:15 609

Transportation Research Center Inc.

3.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 38.7 mm at 28.3 ms
Min: -4.0 mm at 61.8 ms

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

06.18.2024 08:54:00 609

Transportation Research Center Inc.

4.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	49.9 mm	Yes

Test meets specifications.

Condition: Used

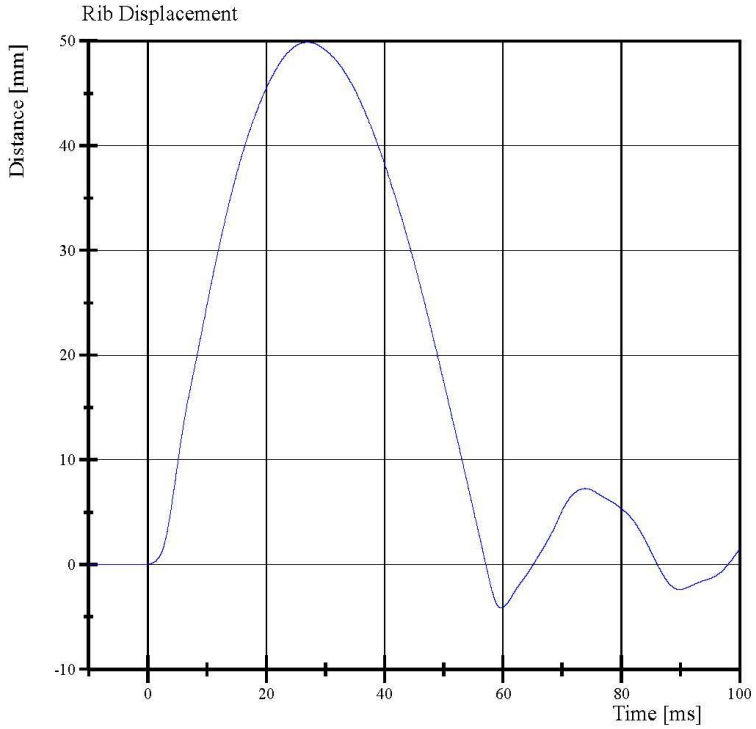
Comments:
Drop Height: 816 mm
Rib Foam S/N: EK6970

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

06.18.2024 08:47:31 505

Transportation Research Center Inc.

4.0 m/s Middle Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 49.9 mm at 27.0 ms
Min: -4.1 mm at 59.7 ms

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

06.18.2024 08:48:22 505

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
3.0 m/s Test Rib Displacement (454 mm to 464 mm)	36 - 40 mm	38.0 mm	Yes

Test meets specifications.

Condition: Used

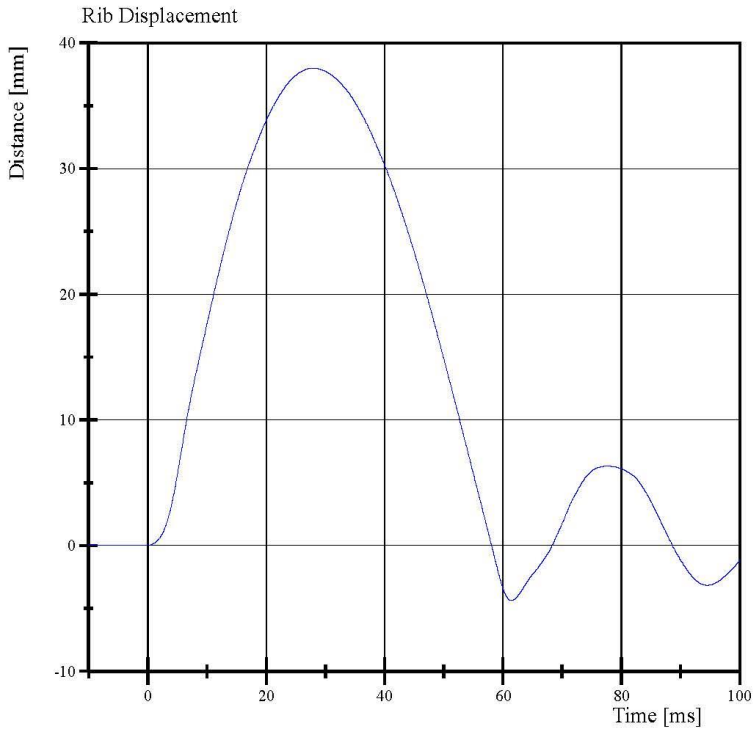
Comments:
Drop Height: 462 mm
Rib Foam S/N: EK6971

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

06.18.2024 09:32:23 625

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 38.0 mm at 28.0 ms
Min: -4.4 mm at 61.4 ms

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

06.18.2024 09:33:15 625

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
4.0 m/s Test Rib Displacement (807 mm to 823 mm)	46 - 51 mm	47.1 mm	Yes

Test meets specifications.

Condition: Used

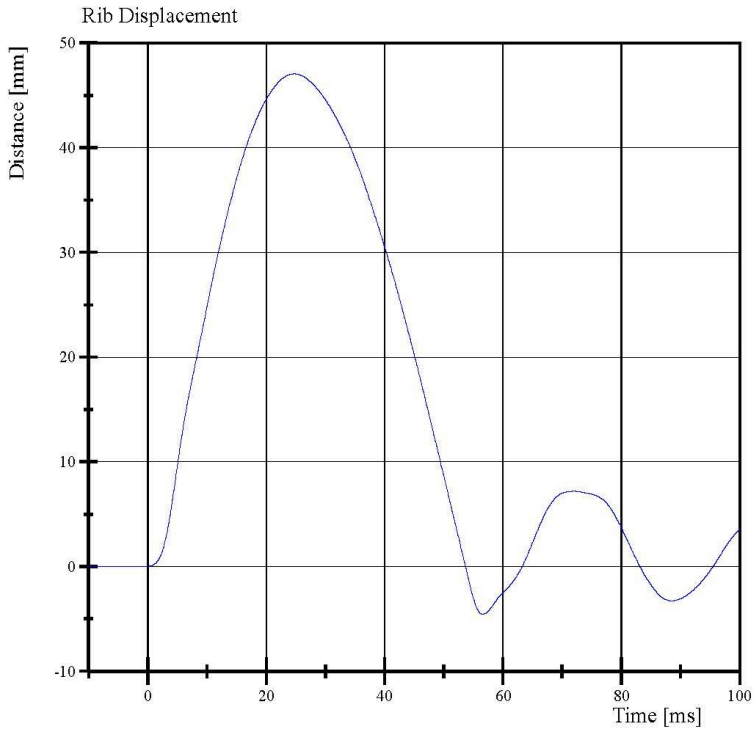
Comments:
Drop Height: 816 mm
Rib Foam S/N: EK6971

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

06.18.2024 09:03:38 503

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 47.1 mm at 24.7 ms
Min: -4.6 mm at 56.6 ms

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

06.18.2024 09:04:25 503

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Impactor Velocity	5.4 - 5.60 m/s	5.442 m/s	Yes
Peak Impactor Force after 6 ms	(-5,100) - (-6,200) N	-5,776.1 N	Yes
Upper Rib Displacement	34 - 41 mm	39.1 mm	Yes
Center Rib Displacement	37 - 45 mm	40.7 mm	Yes
Lower Rib Displacement	37 - 44 mm	39.6 mm	Yes

Test meets specifications.

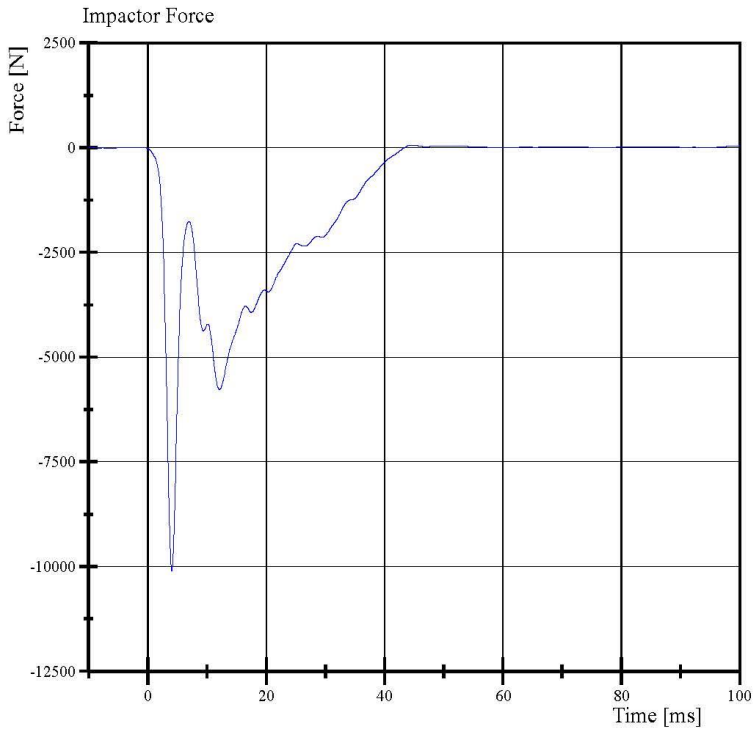
Condition: Used
Comments:
Upper Rib Module S/N: 175-4008-A
Upper Rib Foam S/N: 175-4003-EK6973
Middle Rib Module S/N: 175-4008-A
Middle Rib Foam S/N: 175-4003-EK6970
Lower Rib Module S/N: 175-4008-A-06-017
Lower Rib Foam S/N: 175-4008-EK6971

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

06.18.2024 11:18:16 435

Transportation Research Center Inc.

Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024



Filter Class: CFC_180
Max: 63.5 N at 44.6 ms
Min: -10,108.0 N at 4.1 ms

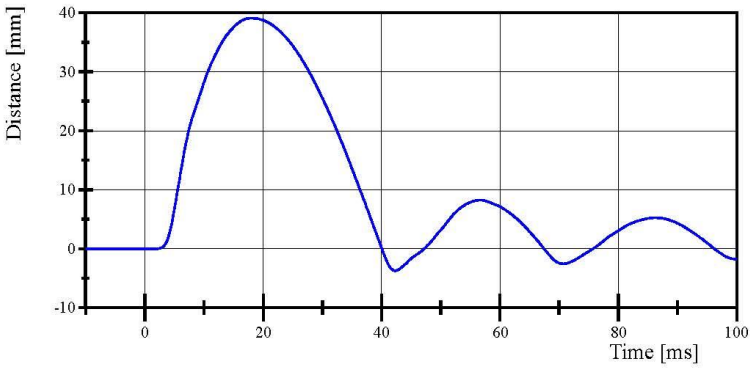
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

06.18.2024 11:19:21 435

Transportation Research Center Inc.

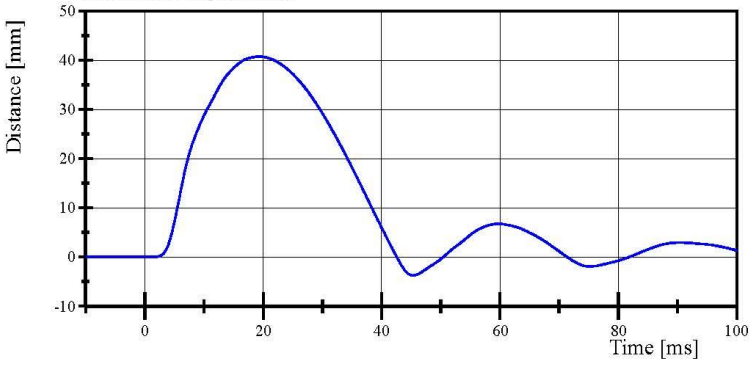
Left Lateral Thorax
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Upper Rib Displacement



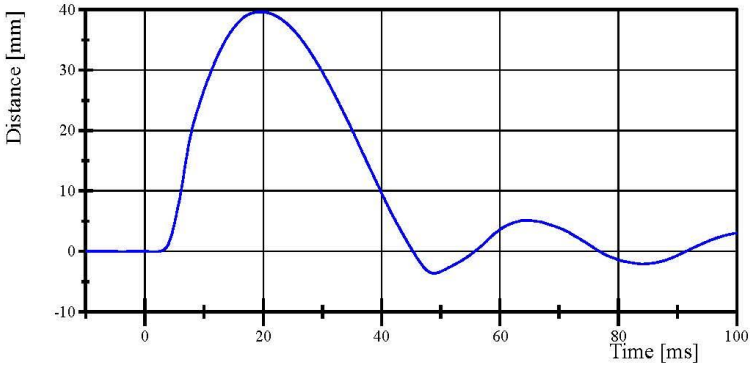
Filter Class: CFC_180
Max: 39.1 mm at 17.9 ms
Min: -3.7 mm at 42.2 ms

Center Rib Displacement



Filter Class: CFC_180
Max: 40.7 mm at 19.4 ms
Min: -3.7 mm at 45.3 ms

Lower Rib Displacement



Filter Class: CFC_180
Max: 39.6 mm at 19.7 ms
Min: -3.6 mm at 48.9 ms

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

06.18.2024 11:19:21 435

Transportation Research Center Inc.

Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 93-2
Test Date: 6/17/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.7 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Pendulum Integrated Velocity Change within Corridor	Yes	Yes	Yes
Pendulum Velocity	(-5.95) - (-6.15) m/s	-6.135 m/s	Yes
Maximum Headform Flexion			
Peak	(-45) - (-55) deg	-40.1 deg	No
Time of Peak	39 - 53 ms	40.8 ms	Yes
Headform Flexion Decay - Peak to Zero	37 - 57 ms	36.2 ms	No

Test does not meet specifications.

Condition: Used
Comments:
Lumbar S/N: DJ7964

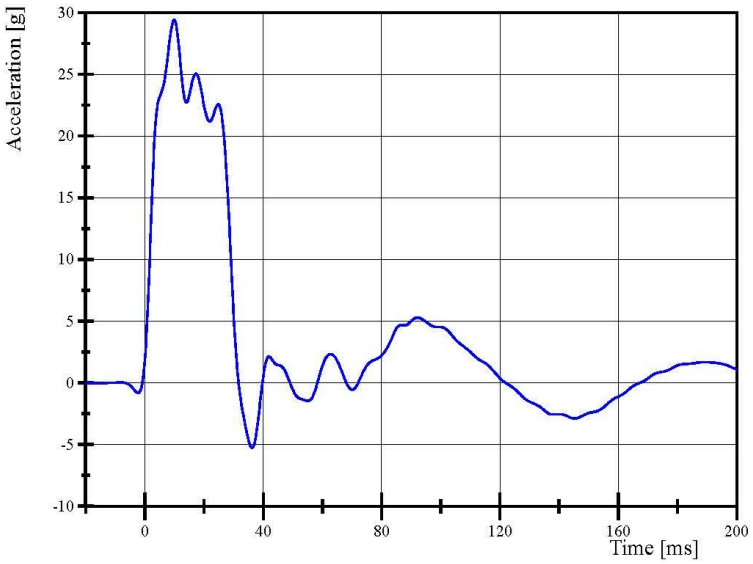
Specification Source: CFR49 Part 572 Subpart U with Polarity in accordance with J211

06.17.2024 11:27:23 672

Transportation Research Center Inc.

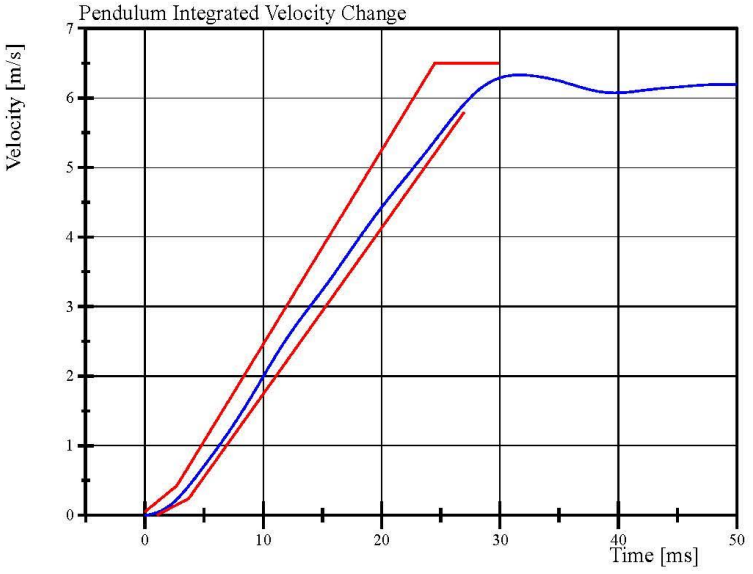
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 93-2
Test Date: 6/17/2024

Pendulum Acceleration



Filter Class: CFC_60
Max: 29.4 g at 9.9 ms
Min: -5.3 g at 36.2 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_60
Max: 6.3 m/s at 31.7 ms
Min: 0.0 m/s at 0.0 ms

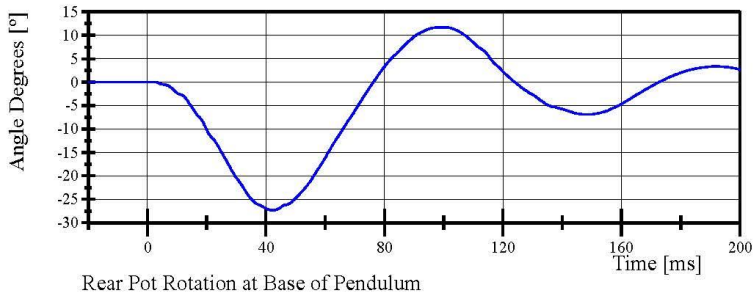
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

06.17.2024 11:28:47 672

Transportation Research Center Inc.

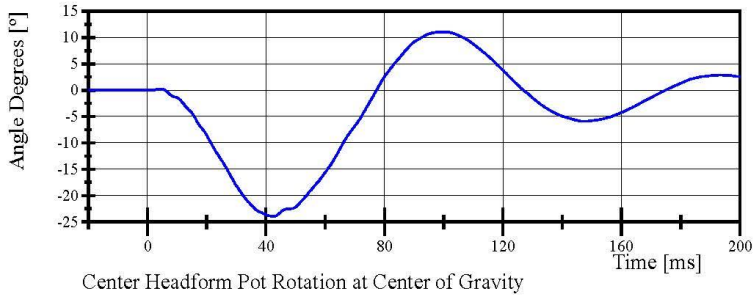
Left Lateral Lumbar
ES-2re Serial No. F030 Certification No. 93-2
Test Date: 6/17/2024

Forward Pot Rotation at Base of Pendulum



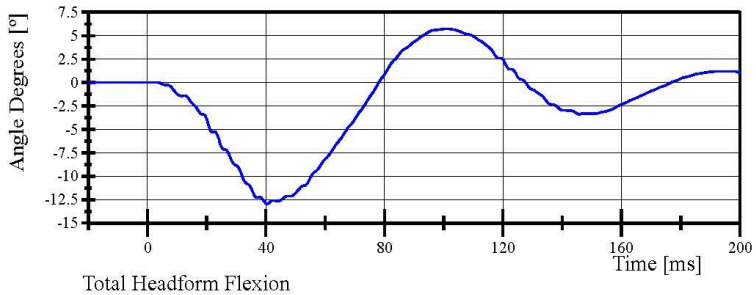
Filter Class: CFC_180
Max: 11.8 ° at 99.4 ms
Min: -27.3 ° at 42.4 ms

Rear Pot Rotation at Base of Pendulum



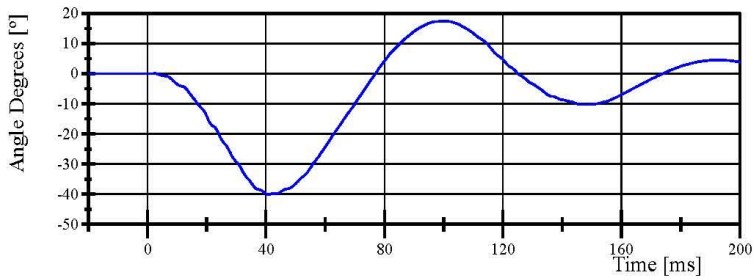
Filter Class: CFC_180
Max: 11.1 ° at 100.2 ms
Min: -24.0 ° at 42.5 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_180
Max: 5.7 ° at 101.3 ms
Min: -13.0 ° at 40.4 ms

Total Headform Flexion



Filter Class: CFC_180
Max: 17.5 ° at 99.9 ms
Min: -40.1 ° at 40.8 ms

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

06.17.2024 11:28:48 672

Transportation Research Center Inc.

Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	4.09 m/s	Yes
Test Probe Force			
Peak	4,000 - 4,800 N	4,403.6 N	Yes
Time of Peak	10.6 - 13.0 ms	12.16 ms	Yes
Total Abdominal Force			
Peak	2,200 - 2,700 N	2,611.7 N	Yes
Time of Peak	10.0 - 12.3 ms	11.84 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Abdomen S/N: 1066

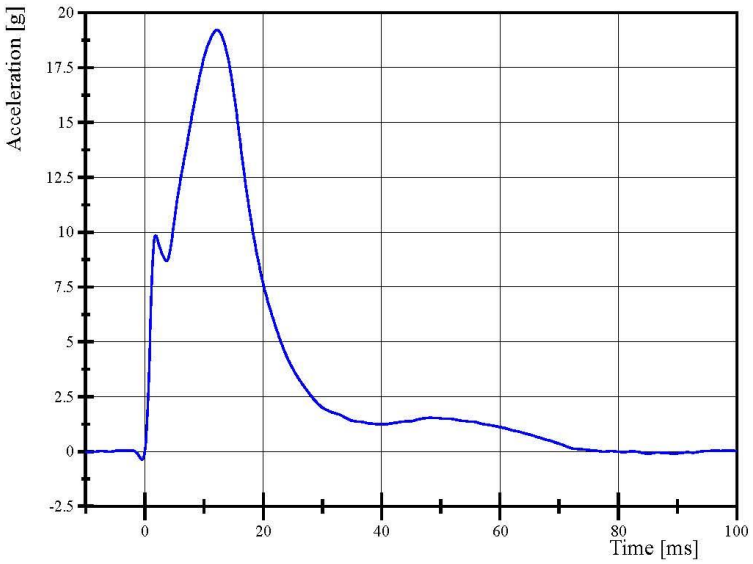
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

06.18.2024 11:46:21 581

Transportation Research Center Inc.

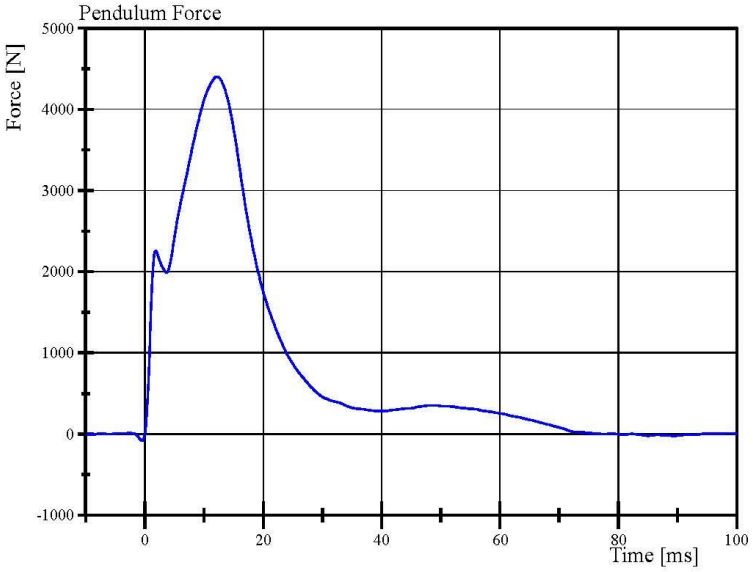
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 19.2 g at 12.2 ms
Min: -0.4 g at -0.5 ms

Pendulum Force



Filter Class: CFC_180
Max: 4,403.6 N at 12.2 ms
Min: -83.0 N at -0.5 ms

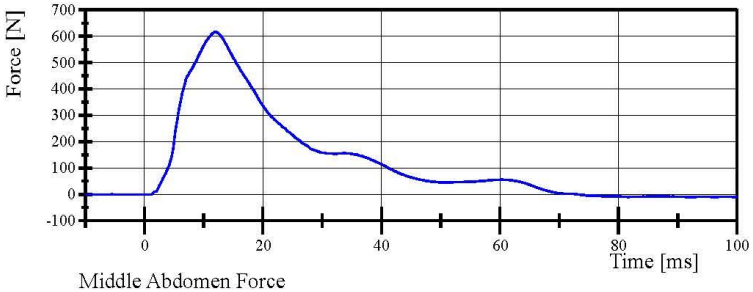
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

06.18.2024 11:47:08 581

Transportation Research Center Inc.

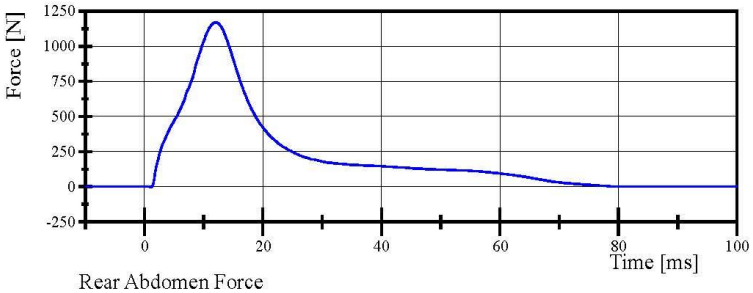
Left Lateral Abdomen
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Front Abdomen Force



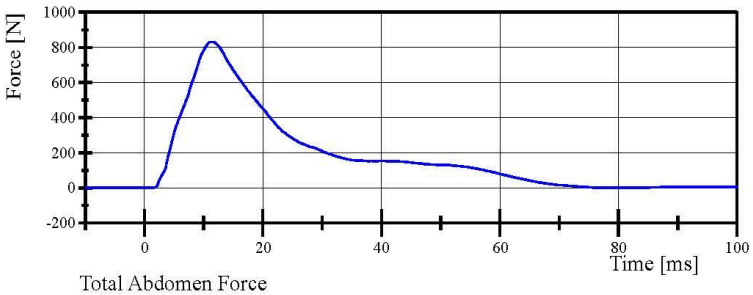
Filter Class: CFC_600
Max: 616.4 N at 12.0 ms
Min: -10.1 N at 92.8 ms

Middle Abdomen Force



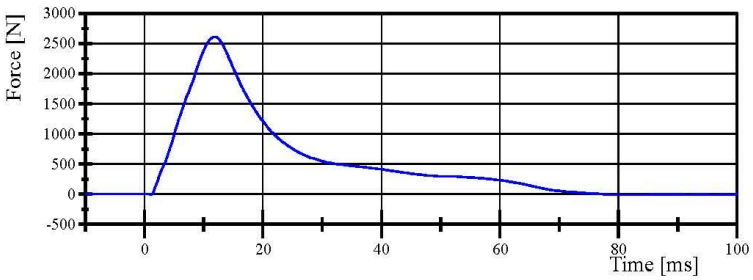
Filter Class: CFC_600
Max: 1,170.4 N at 12.1 ms
Min: -2.3 N at 1.1 ms

Rear Abdomen Force



Filter Class: CFC_600
Max: 831.3 N at 11.1 ms
Min: -0.2 N at -1.0 ms

Total Abdomen Force



Filter Class: CFC_600
Max: 2,611.7 N at 11.8 ms
Min: -8.8 N at 80.7 ms

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

06.18.2024 11:47:08 581

Transportation Research Center Inc.

Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Test Probe Force			
Peak	4,700 - 5,400 N	5,153.4 N	Yes
Time of Peak	11.8 - 16.1 ms	13.36 ms	Yes
Pubic Symphysis Force			
Peak	(-1,230) - (-1,590) N	-1,428.9 N	Yes
Time of Peak	12.2 - 17.0 ms	14.32 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis S/N: NA

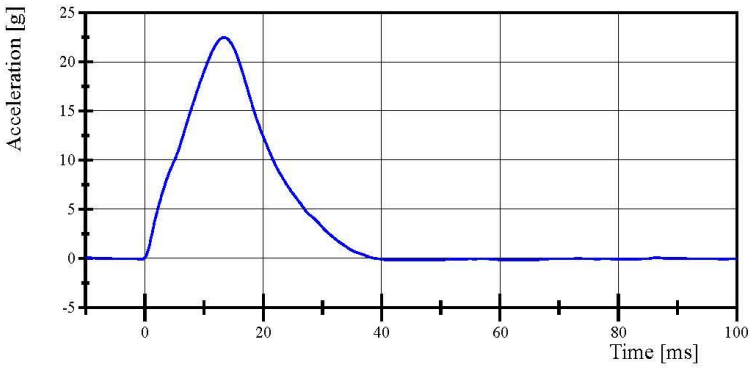
Specification Source: CFR49 Part 572 Subpart U
with Polarity in accordance with J211

06.18.2024 12:41:55 590

Transportation Research Center Inc.

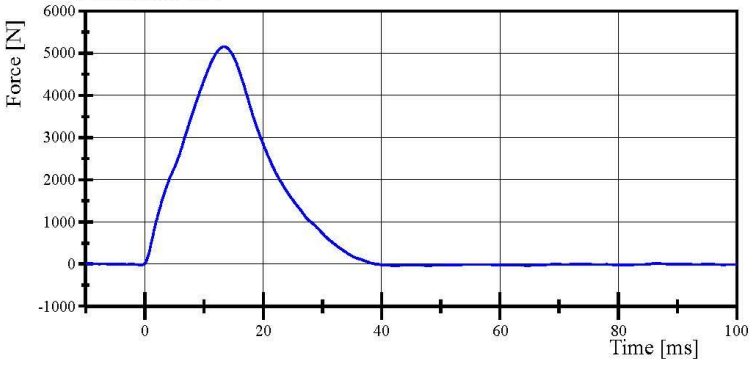
Left Lateral Pelvis
ES-2re Serial No. F030 Certification No. 93-1
Test Date: 6/18/2024

Pendulum Acceleration



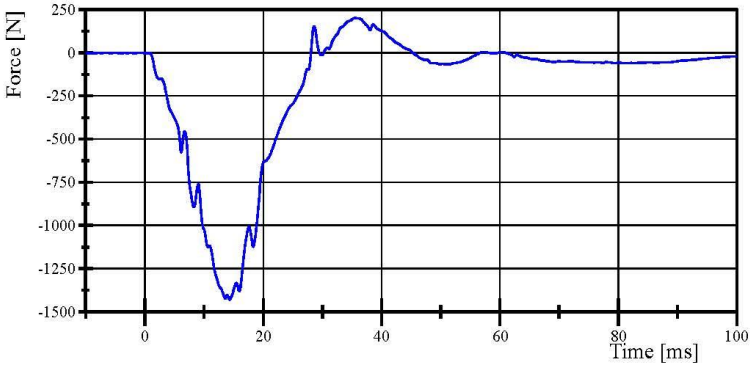
Filter Class: CFC_180
Max: 22.5 g at 13.4 ms
Min: -0.2 g at 42.2 ms

Pendulum Force



Filter Class: CFC_180
Max: 5,153.4 N at 13.4 ms
Min: -35.6 N at 42.2 ms

Pubic Symphysis Force



Filter Class: CFC_600
Max: 201.9 N at 35.5 ms
Min: -1,428.9 N at 14.3 ms

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

06.18.2024 12:42:41 590

Pre-Test Calibration Sheets
Passenger S/N DQ0570

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. DQ0570 Calibration No. 25

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	785	Yes
B	Shoulder Pivot Height	437.0 - 453.0	445	Yes
C	H-Point Height	79.0 - 89.0	83	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	101	Yes
F	Thigh Clearance	119.0 - 135.0	130	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	184	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	533	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	427	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	316	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	486	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	349	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. DQ0570 Certification No. 25-2
Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	126.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-1.4 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	1.07 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: DP8345

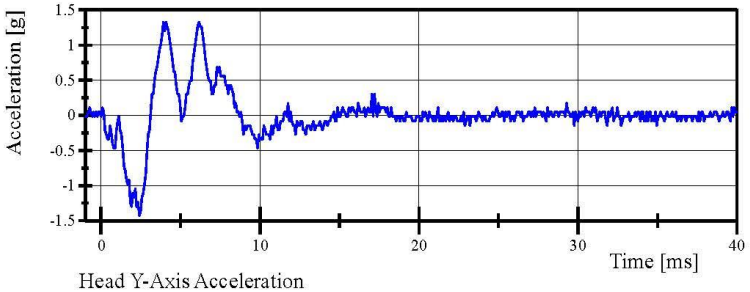
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

05.10.2024 12:33:05 235

Transportation Research Center Inc.

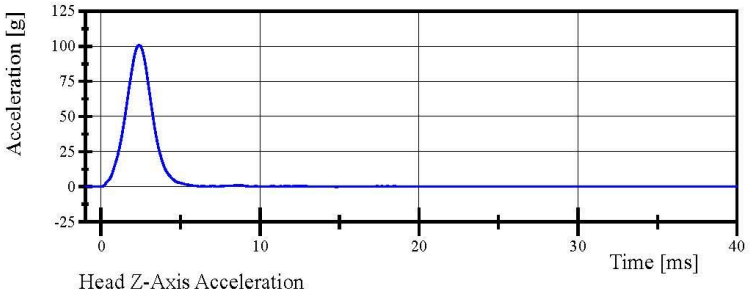
Left Lateral Head Drop
SID IIs Serial No. DQ0570 Certification No. 25-2
Test Date: 5/10/2024

Head X-Axis Acceleration



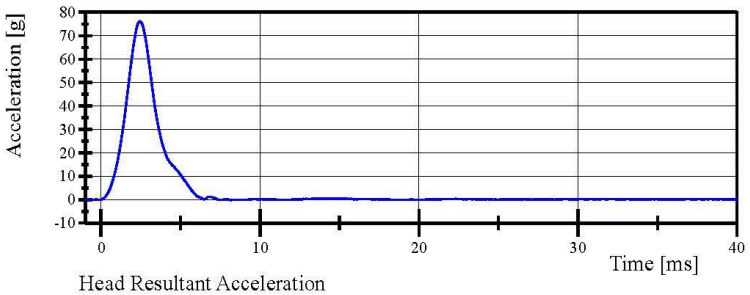
Filter Class: CFC_1000
Max: 1.3 g at 3.9 ms
Min: -1.4 g at 2.4 ms

Head Y-Axis Acceleration



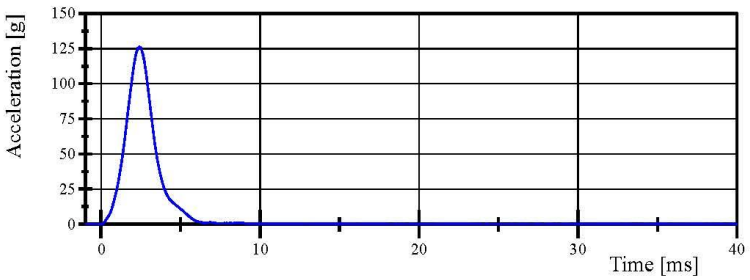
Filter Class: CFC_1000
Max: 100.7 g at 2.4 ms
Min: -0.1 g at 14.8 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 76.1 g at 2.4 ms
Min: -0.2 g at 8.2 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 126.3 g at 2.4 ms
Min: 0.0 g at -1.0 ms

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

05.10.2024 12:33:41 235

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 25-2
Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.618 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.359 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.423 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.666 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.648 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.832 m/s	Yes
Maximum Headform Flexion			
Peak	(-71) - (-81) deg	-72.5 deg	Yes
Time of Peak	50 - 70 ms	62.6 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	40.1 N·m	Yes
Decay to 0 N·m	102 - 126 ms	111.8 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 717

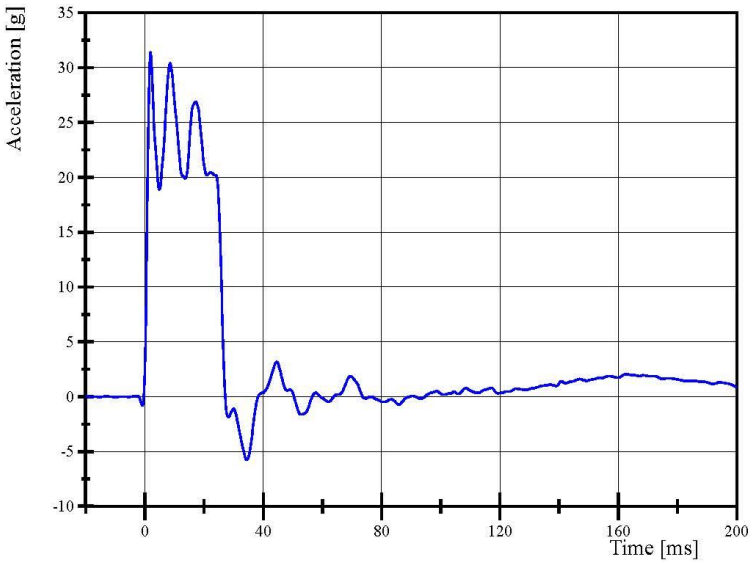
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 11:28:59 750

Transportation Research Center Inc.

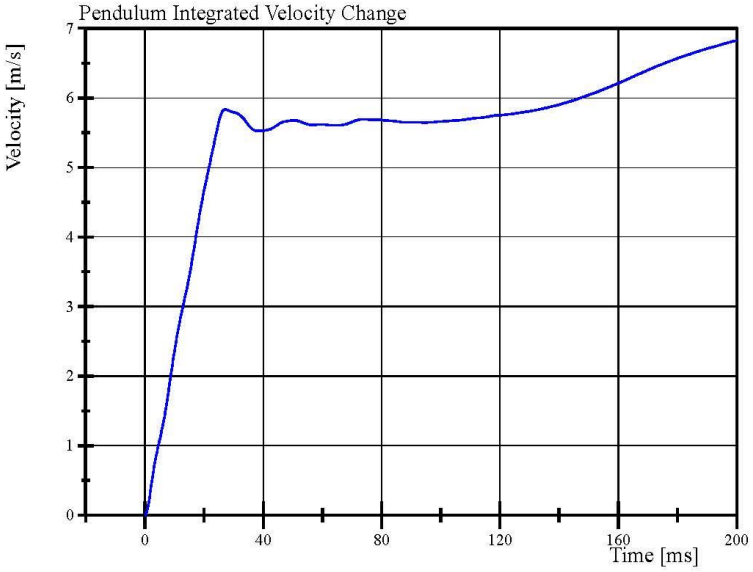
Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 25-2
Test Date: 5/10/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 31.4 g at 1.9 ms
Min: -5.7 g at 34.4 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

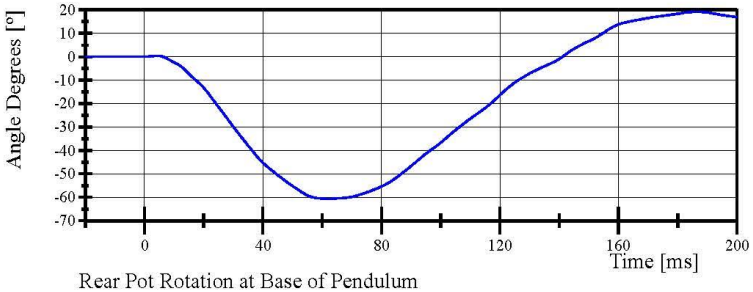
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 11:29:40 750

Transportation Research Center Inc.

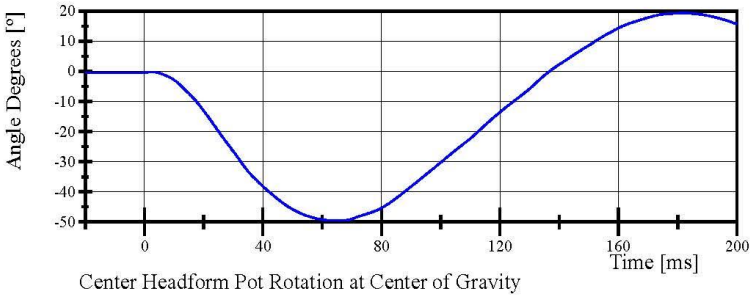
Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 25-2
Test Date: 5/10/2024

Forward Pot Rotation at Base of Pendulum



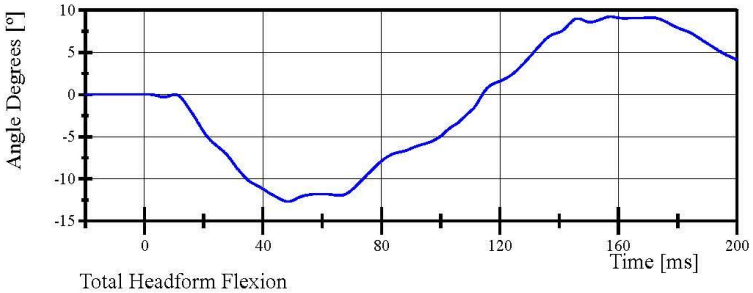
Filter Class: CFC_60
Max: 19.2 ° at 186.5 ms
Min: -60.7 ° at 62.1 ms

Rear Pot Rotation at Base of Pendulum



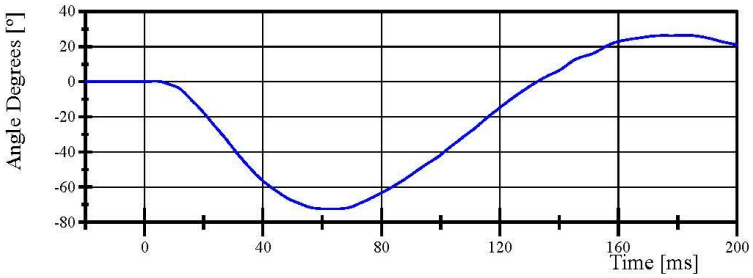
Filter Class: CFC_60
Max: 19.3 ° at 181.7 ms
Min: -49.6 ° at 66.0 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 9.2 ° at 157.4 ms
Min: -12.7 ° at 48.4 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 26.5 ° at 183.1 ms
Min: -72.5 ° at 62.6 ms

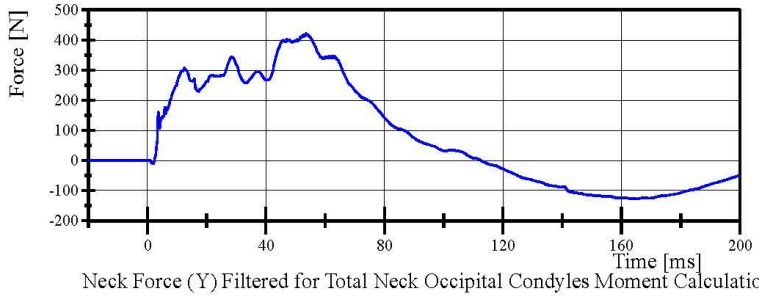
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 11:29:41 750

Transportation Research Center Inc.

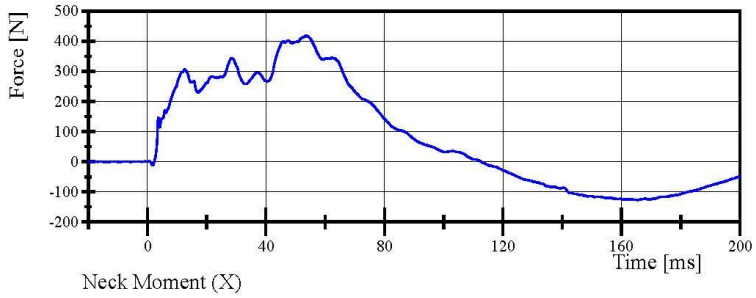
Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 25-2
Test Date: 5/10/2024

Neck Force (Y)



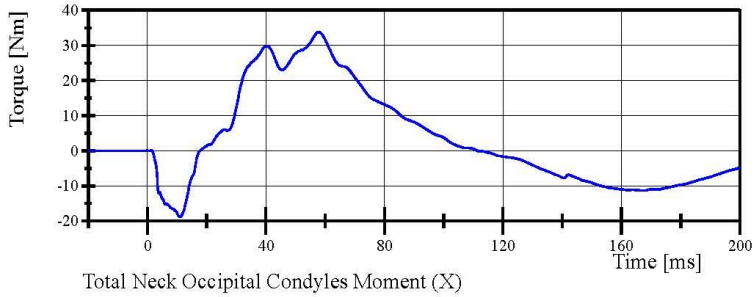
Filter Class: CFC_1000
Max: 421.4 N at 53.5 ms
Min: -127.7 N at 165.4 ms

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



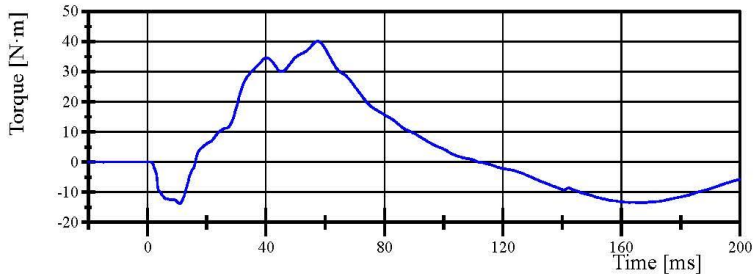
Filter Class: CFC_600
Max: 418.8 N at 53.6 ms
Min: -127.3 N at 165.4 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 33.8 Nm at 57.8 ms
Min: -18.9 Nm at 11.1 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 40.1 N·m at 57.5 ms
Min: -13.8 N·m at 10.9 ms

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

05.10.2024 11:29:41 750

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.1 g	Yes
Shoulder Displacement	28 - 37 mm	31.7 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	18.0 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: DP8451
Shoulder Rib S/N: DO9814

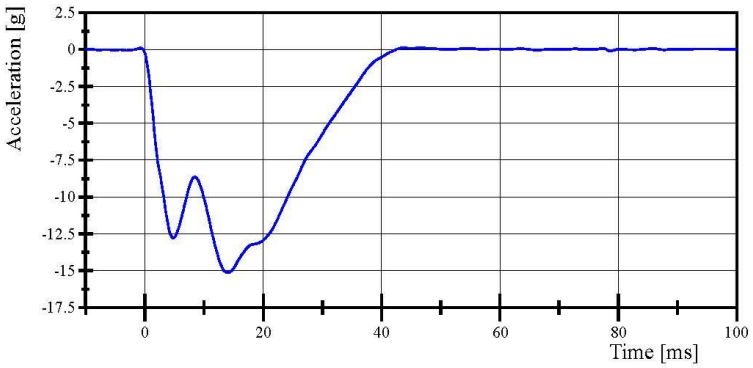
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 11:53:57 887

Transportation Research Center Inc.

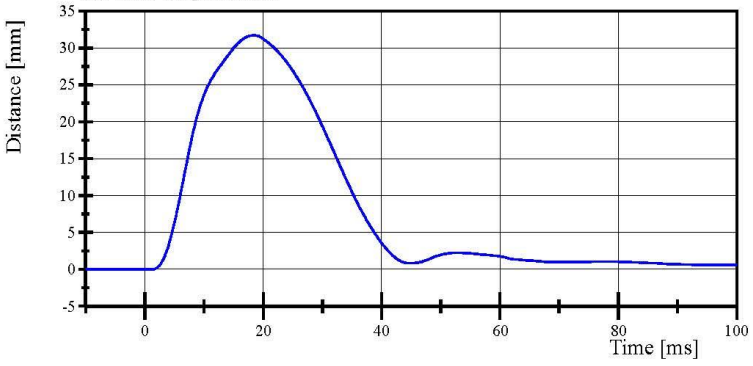
Left Lateral Shoulder
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Probe Acceleration



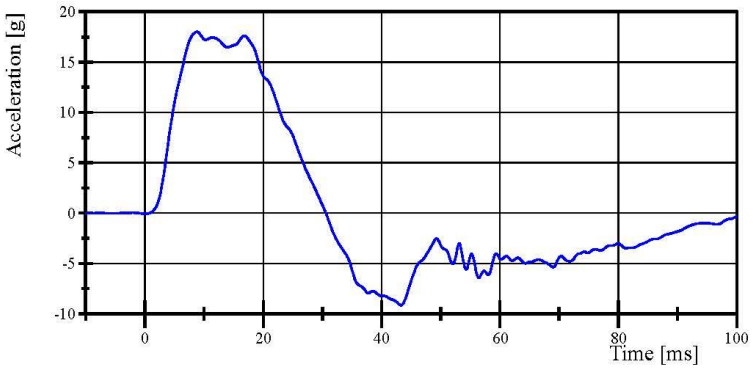
Filter Class: CFC_180
Max: 0.1 g at 46.6 ms
Min: -15.1 g at 14.0 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 31.7 mm at 18.6 ms
Min: -0.0 mm at 1.3 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 18.0 g at 8.8 ms
Min: -9.2 g at 43.3 ms

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

05.10.2024 11:54:30 887

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.693 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-32.6 g	Yes
Shoulder Displacement	31 - 40 mm	35.0 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	28.5 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.1 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.5 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	35.0 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.6 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: DP8451
Shoulder Rib S/N: 180-3355 DO9814
Upper Thorax Rib S/N: 180-3362 DP6492
Middle Thorax Rib S/N: 180-3362 DP6493
Lower Thorax Rib S/N: 180-3362 DP7664

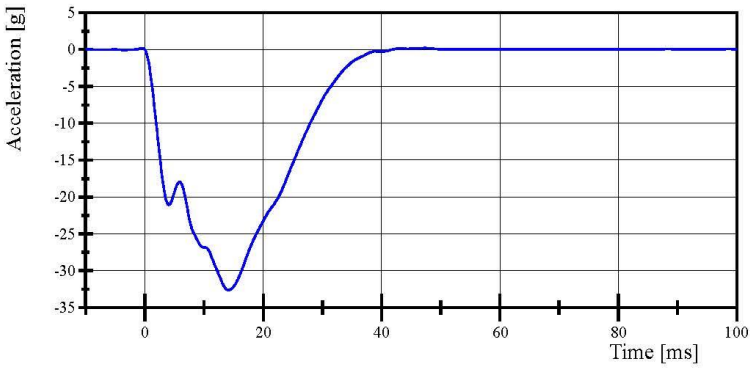
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 12:49:08 661

Transportation Research Center Inc.

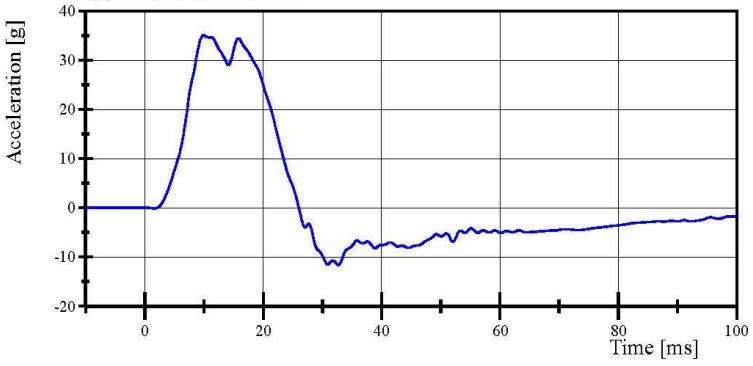
Left Lateral Thorax with Arm
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Probe Acceleration



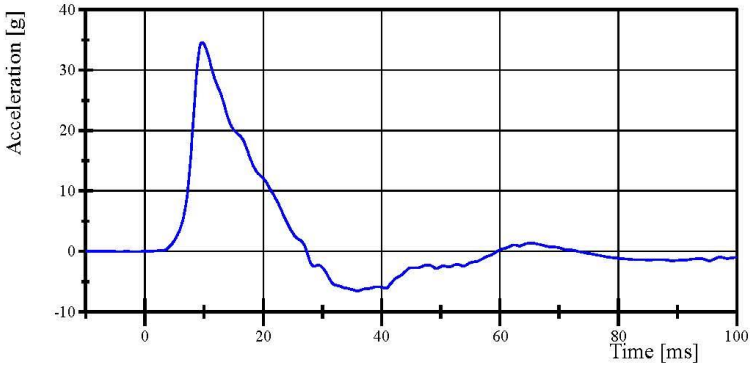
Filter Class: CFC_180
Max: 0.2 g at 47.4 ms
Min: -32.6 g at 14.2 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 35.0 g at 9.9 ms
Min: -11.6 g at 32.7 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 34.6 g at 9.7 ms
Min: -6.5 g at 35.9 ms

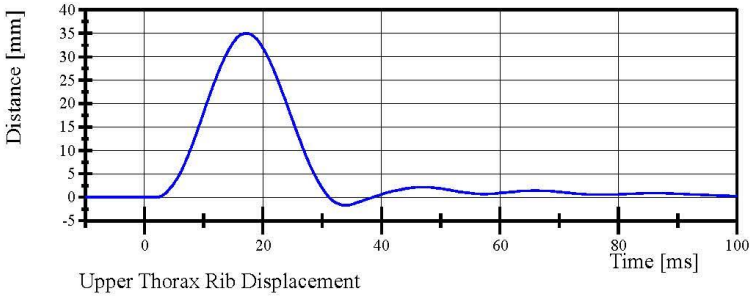
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 12:49:42 661

Transportation Research Center Inc.

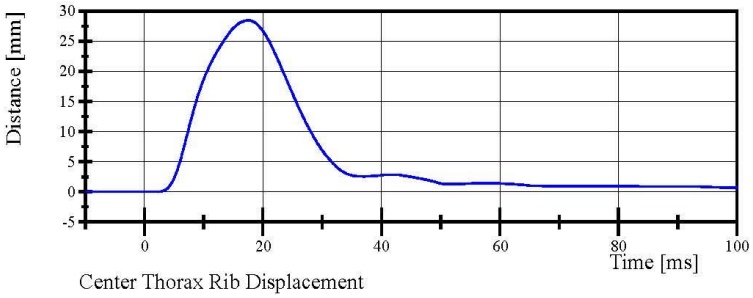
Left Lateral Thorax with Arm
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Shoulder Rib Displacement



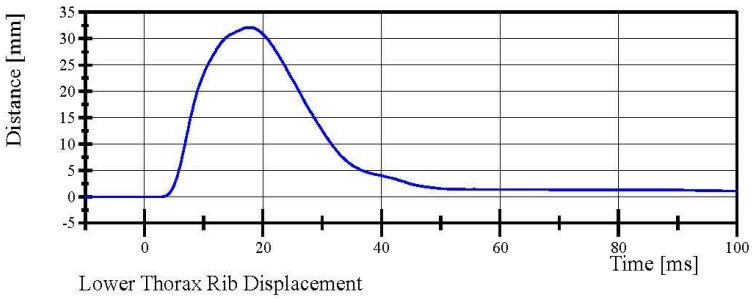
Filter Class: CFC_600
Max: 35.0 mm at 17.2 ms
Min: -1.7 mm at 33.9 ms

Upper Thorax Rib Displacement



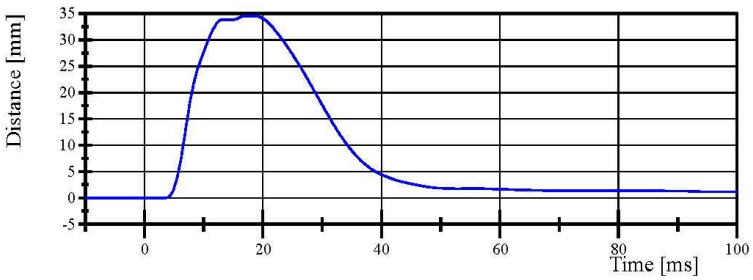
Filter Class: CFC_600
Max: 28.5 mm at 17.4 ms
Min: -0.0 mm at 2.4 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 32.1 mm at 17.7 ms
Min: -0.0 mm at -4.5 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 34.5 mm at 17.8 ms
Min: -0.0 mm at -4.6 ms

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

05.10.2024 12:49:43 661

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.324 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.9 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.5 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.3 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	39.4 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.3 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.8 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Thorax Rib S/N: 180-3362 DP6492
Middle Thorax Rib S/N: 180-3362 DP6493
Lower Thorax Rib S/N: 180-3362 DP7664

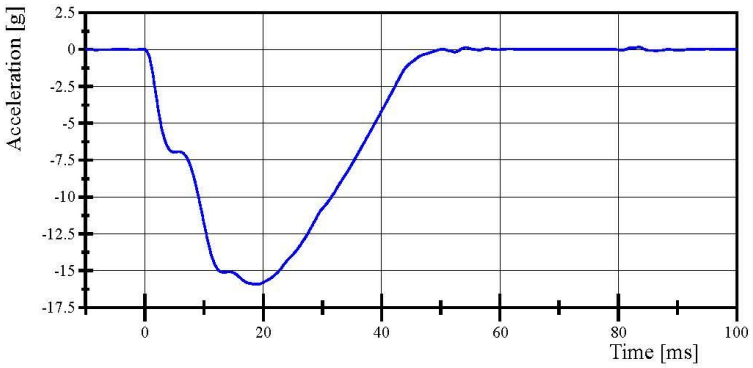
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 12:12:54 883

Transportation Research Center Inc.

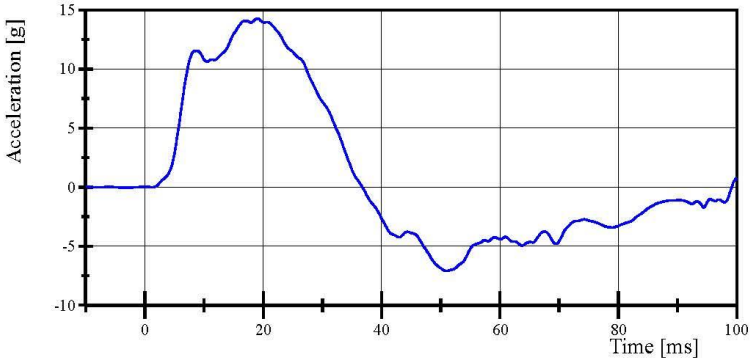
Left Lateral Thorax without Arm
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Probe Acceleration



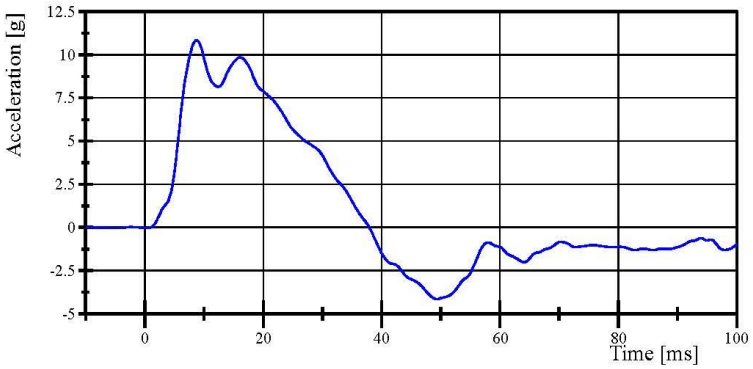
Filter Class: CFC_180
Max: 0.2 g at 83.5 ms
Min: -15.9 g at 18.9 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 14.3 g at 19.0 ms
Min: -7.1 g at 50.9 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 10.8 g at 8.7 ms
Min: -4.1 g at 49.3 ms

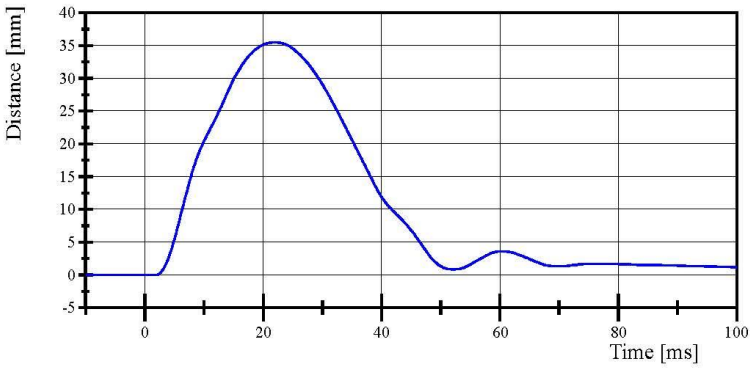
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 12:13:26 883

Transportation Research Center Inc.

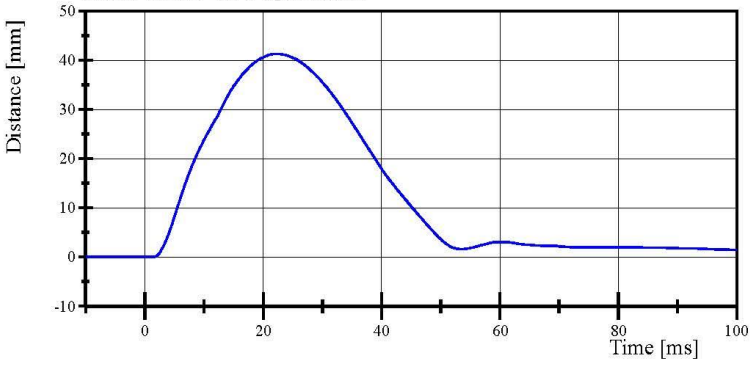
Left Lateral Thorax without Arm
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Upper Thorax Rib Displacement



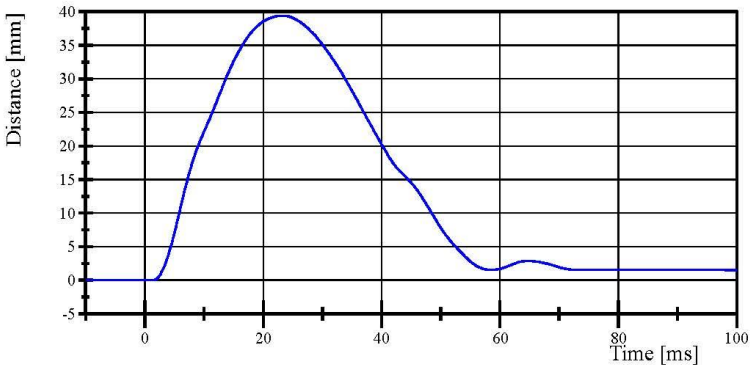
Filter Class: CFC_600
Max: 35.5 mm at 21.9 ms
Min: -0.0 mm at 1.8 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.3 mm at 22.3 ms
Min: -0.0 mm at -3.0 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 39.4 mm at 23.1 ms
Min: -0.0 mm at -2.9 ms

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

05.10.2024 12:13:26 883

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.7 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.5 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	36.9 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.80 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Abdominal Rib S/N: 180-3368 DP5142
Lower Abdominal Rib S/N: 180-3368 DP5143

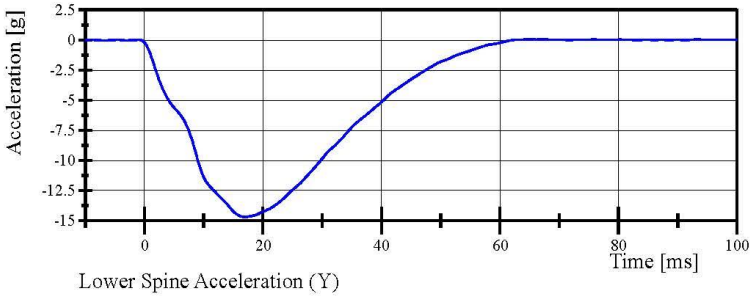
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 12:02:02 709

Transportation Research Center Inc.

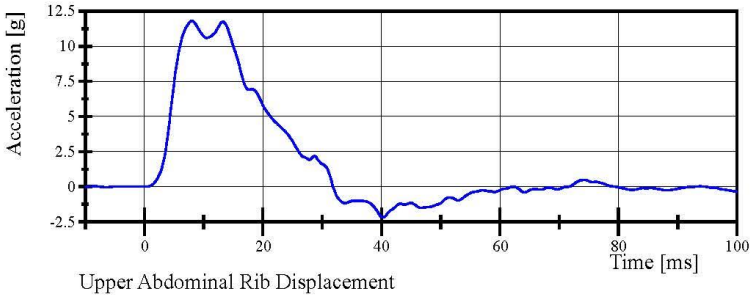
Left Lateral Abdomen
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Probe Acceleration



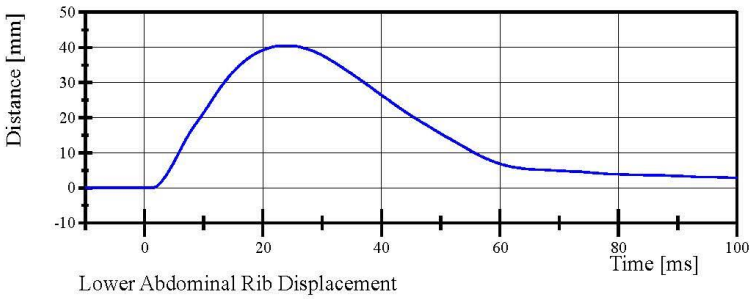
Filter Class: CFC_180
Max: 0.1 g at 67.2 ms
Min: -14.7 g at 17.0 ms

Lower Spine Acceleration (Y)



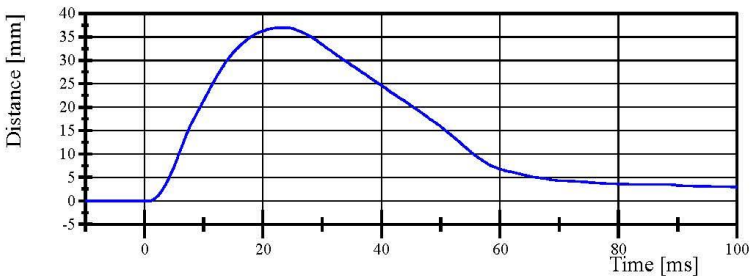
Filter Class: CFC_180
Max: 11.8 g at 8.0 ms
Min: -2.2 g at 40.2 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 40.5 mm at 23.8 ms
Min: -0.0 mm at -4.2 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 36.9 mm at 23.5 ms
Min: -0.0 mm at 0.8 ms

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

05.10.2024 12:02:28 709

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	38.3 g	Yes
Iliac Force	4,100 - 5,100 N	4,949.4 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis Skin S/N: 1173

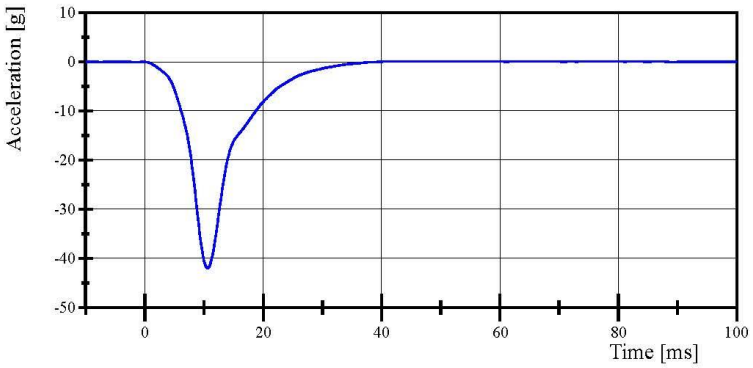
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.10.2024 11:42:00 696

Transportation Research Center Inc.

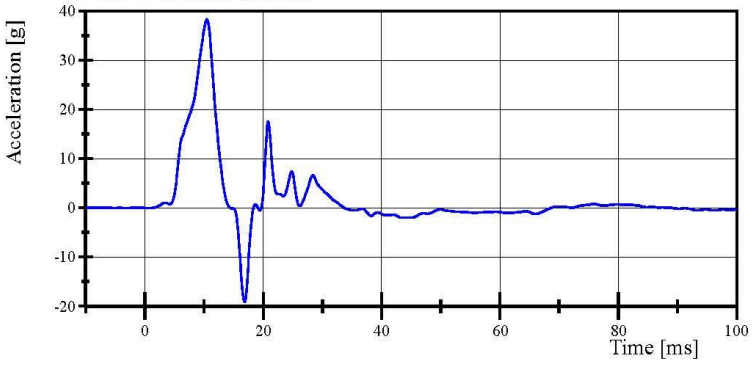
Left Lateral Iliac
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/10/2024

Probe Acceleration



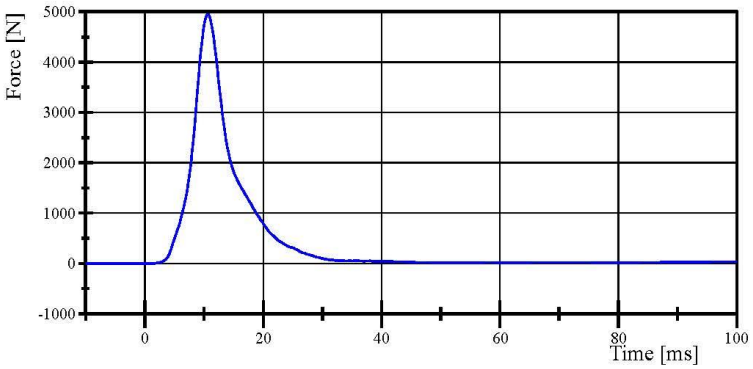
Filter Class: CFC_180
Max: 0.1 g at 43.4 ms
Min: -41.9 g at 10.6 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 38.3 g at 10.5 ms
Min: -19.2 g at 16.9 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,949.4 N at 10.6 ms
Min: -0.9 N at -3.1 ms

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

05.10.2024 11:42:27 696

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.62 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.56 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	35.6 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,754.8 N	Yes

Test meets specifications.

Condition: Used
Comments:
Pelvis Skin S/N: 1173
Pelvis Plug Info:
Manufacturer: SACO
S/N: 14627
Cal Date: 20201221

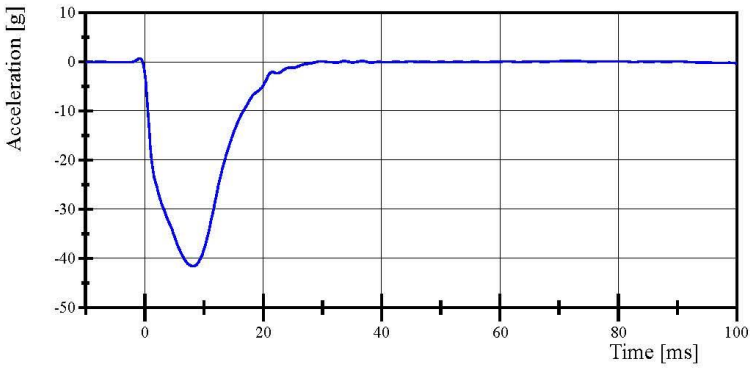
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.14.2024 07:57:58 491

Transportation Research Center Inc.

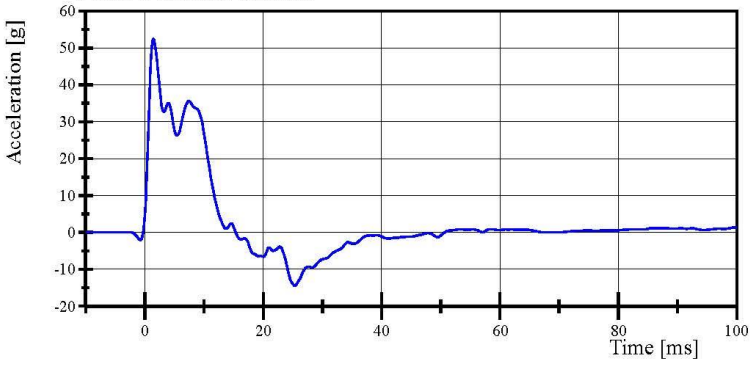
Left Lateral Pelvis
SID IIs Serial No. DQ0570 Certification No. 25-1
Test Date: 5/14/2024

Probe Acceleration



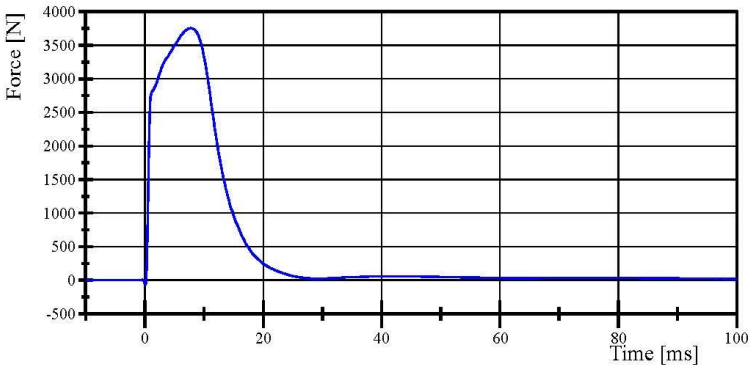
Filter Class: CFC_180
Max: 0.7 g at -0.9 ms
Min: -41.6 g at 8.1 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 52.5 g at 1.4 ms
Min: -14.4 g at 25.3 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 3,754.8 N at 7.8 ms
Min: -64.1 N at 0.1 ms

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

05.14.2024 07:58:43 491

Post-Test Calibration Sheets
Passenger S/N DQ0570

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. DQ0570 Calibration No. 26

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	785	Yes
B	Shoulder Pivot Height	437.0 - 453.0	445	Yes
C	H-Point Height	79.0 - 89.0	83	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	101	Yes
F	Thigh Clearance	119.0 - 135.0	130	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	184	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	533	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	427	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	316	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	486	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	349	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	130.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-7.7 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	80.70 %	No

Test does not meet specifications.

Condition: Used

Comments:
Head Skin S/N: DP8345

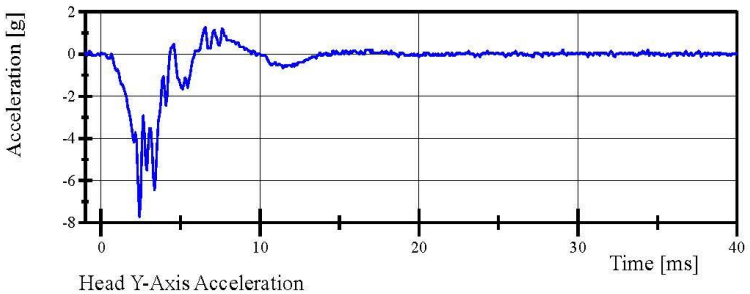
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

06.14.2024 10:07:47 232

Transportation Research Center Inc.

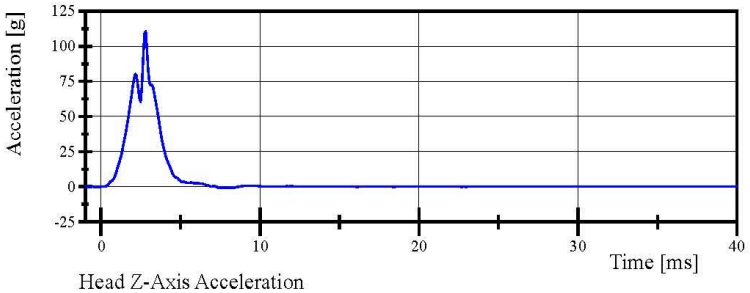
Left Lateral Head Drop
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Head X-Axis Acceleration



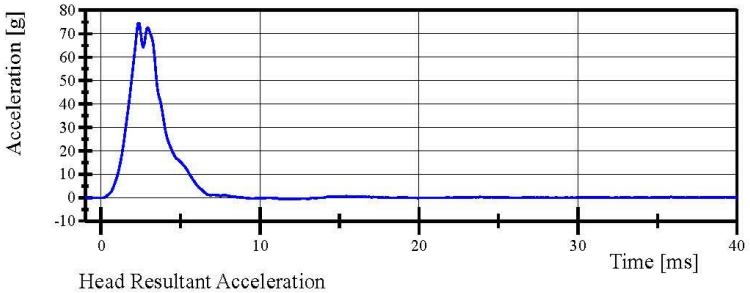
Filter Class: CFC_1000
Max: 1.3 g at 6.6 ms
Min: -7.7 g at 2.4 ms

Head Y-Axis Acceleration



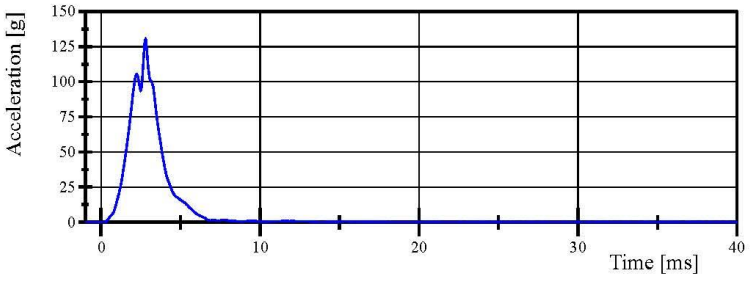
Filter Class: CFC_1000
Max: 110.6 g at 2.8 ms
Min: -0.9 g at 7.8 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 74.5 g at 2.4 ms
Min: -0.6 g at 12.0 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 130.9 g at 2.8 ms
Min: 0.0 g at 0.2 ms

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

06.14.2024 10:08:31 232

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 26-2
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.616 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.347 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.478 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.701 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.660 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.803 m/s	Yes
Maximum Headform Flexion			
Peak	(-71) - (-81) deg	-72.1 deg	Yes
Time of Peak	50 - 70 ms	60.4 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	39.3 N·m	Yes
Decay to 0 N·m	102 - 126 ms	110.2 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 717

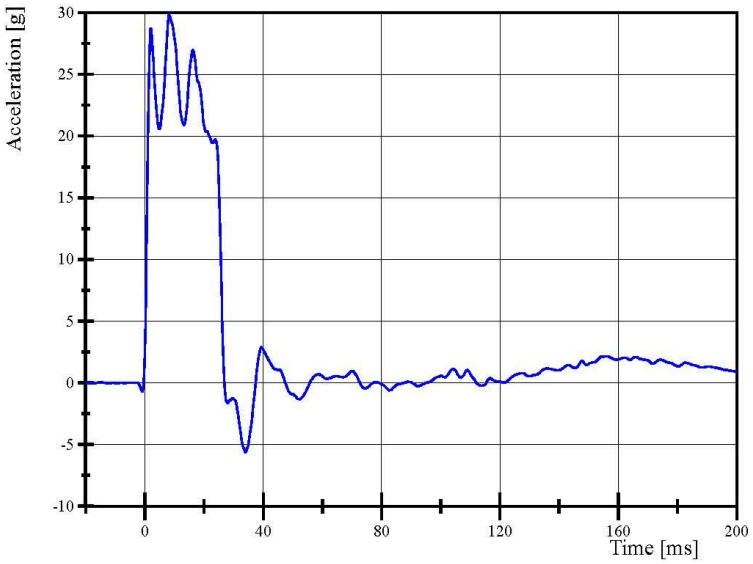
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.14.2024 11:13:26 751

Transportation Research Center Inc.

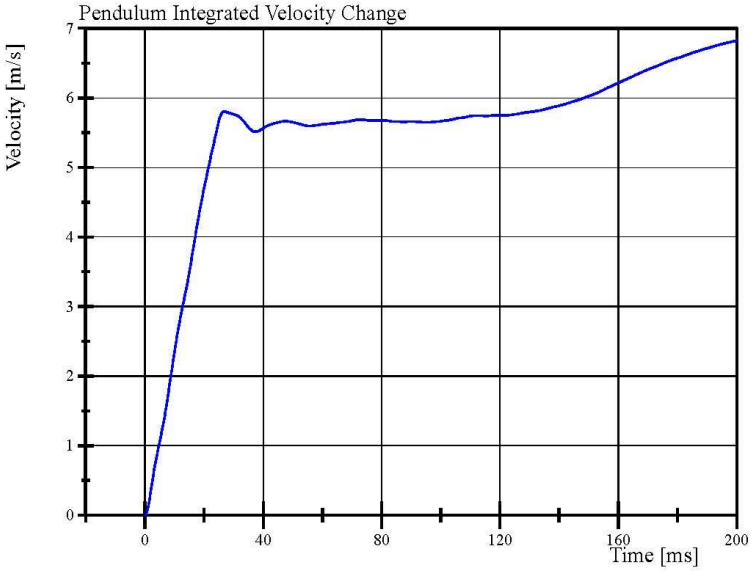
Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 26-2
Test Date: 6/14/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 29.8 g at 8.2 ms
Min: -5.6 g at 34.0 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

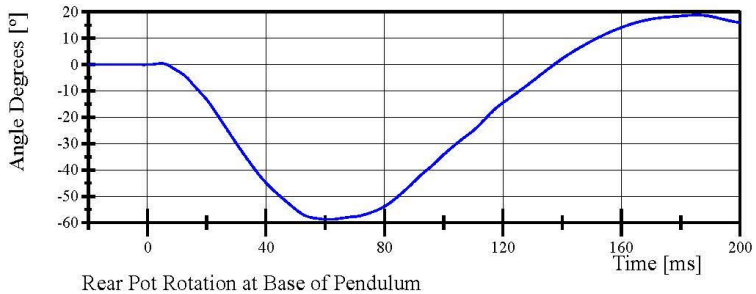
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.14.2024 11:13:49 751

Transportation Research Center Inc.

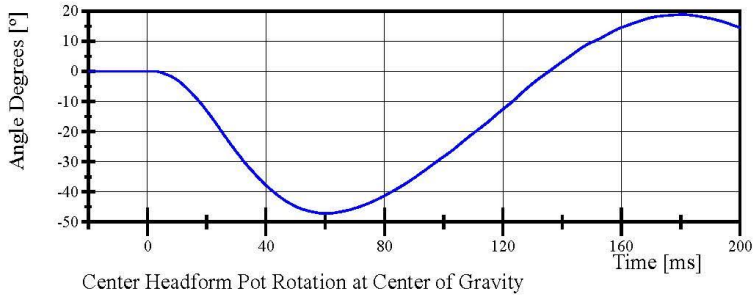
Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 26-2
Test Date: 6/14/2024

Forward Pot Rotation at Base of Pendulum



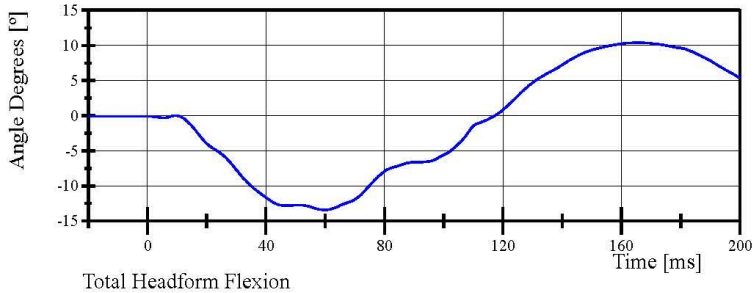
Filter Class: CFC_60
Max: 18.9 ° at 185.4 ms
Min: -58.7 ° at 61.3 ms

Rear Pot Rotation at Base of Pendulum



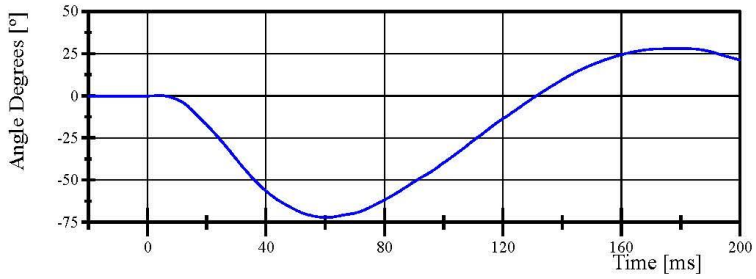
Filter Class: CFC_60
Max: 18.8 ° at 180.7 ms
Min: -47.2 ° at 60.3 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 10.4 ° at 165.8 ms
Min: -13.4 ° at 59.8 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 28.1 ° at 180.9 ms
Min: -72.1 ° at 60.4 ms

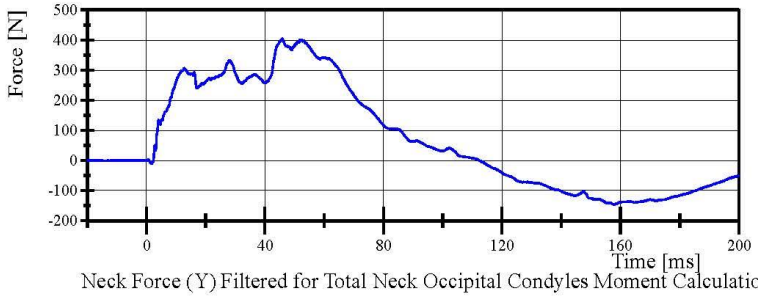
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.14.2024 11:13:50 751

Transportation Research Center Inc.

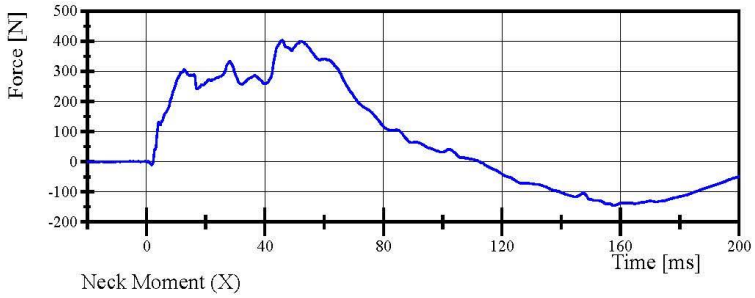
Left Lateral Neck
SID IIs Serial No. DQ0570 Certification No. 26-2
Test Date: 6/14/2024

Neck Force (Y)



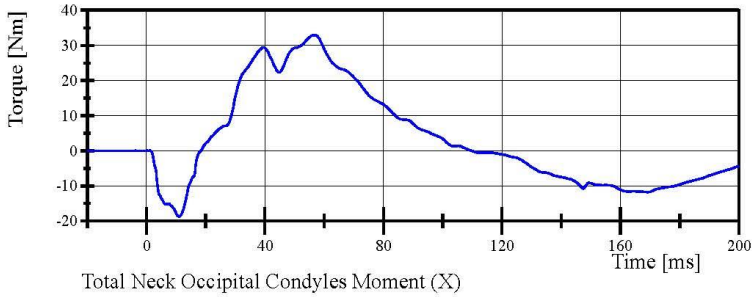
Filter Class: CFC_1000
Max: 405.3 N at 45.8 ms
Min: -145.7 N at 157.5 ms

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



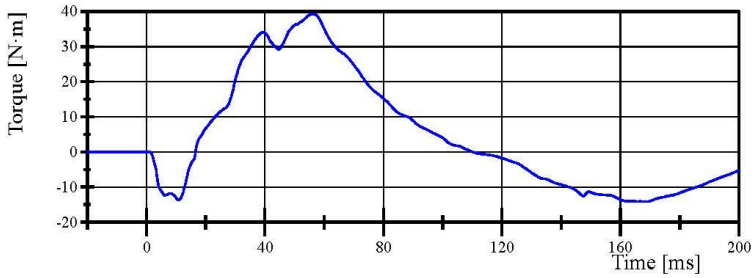
Filter Class: CFC_600
Max: 403.6 N at 45.8 ms
Min: -145.5 N at 157.7 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 33.0 Nm at 56.6 ms
Min: -18.7 Nm at 11.0 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 39.3 N·m at 56.4 ms
Min: -14.1 N·m at 168.6 ms

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

06.14.2024 11:13:50 751

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.5 g	Yes
Shoulder Displacement	28 - 37 mm	32.7 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.0 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: DP8451
Shoulder Rib S/N: DO9814

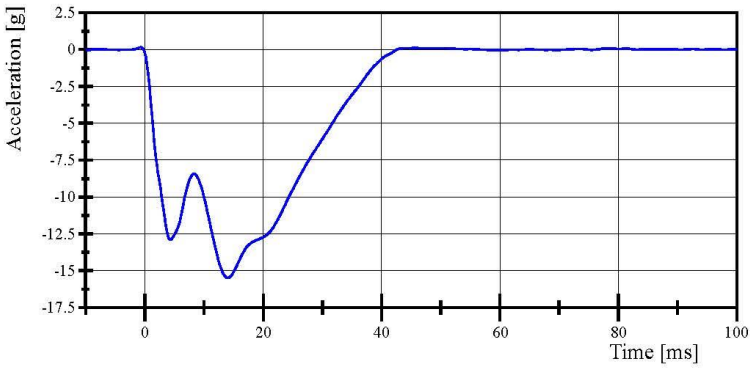
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.14.2024 12:45:25 876

Transportation Research Center Inc.

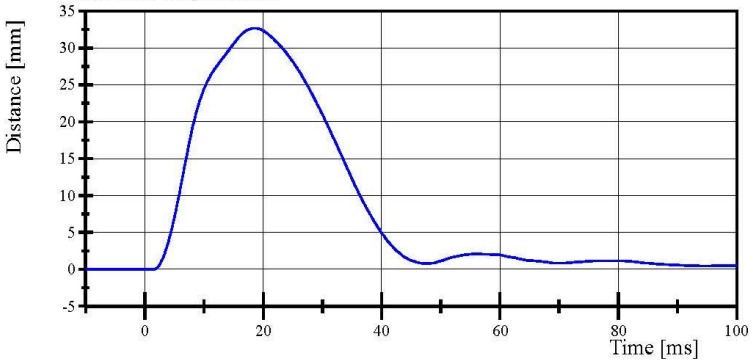
Left Lateral Shoulder
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Probe Acceleration



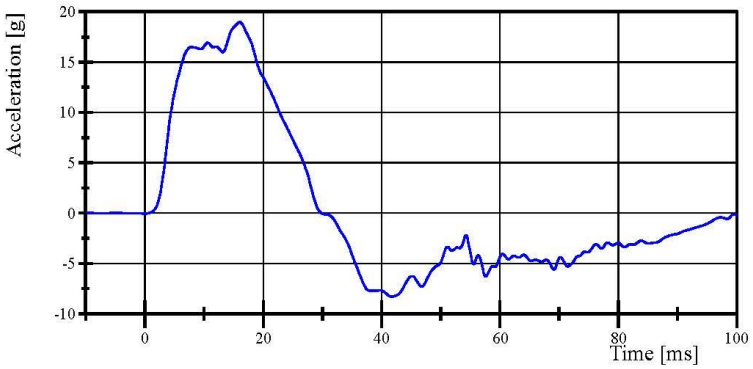
Filter Class: CFC_180
Max: 0.2 g at -0.7 ms
Min: -15.5 g at 14.0 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 32.7 mm at 18.5 ms
Min: -0.0 mm at 1.3 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 19.0 g at 16.0 ms
Min: -8.3 g at 41.8 ms

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

06.14.2024 12:45:54 876

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.688 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.4 g	Yes
Shoulder Displacement	31 - 40 mm	36.2 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	28.9 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.5 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.7 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	34.9 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.8 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: DP8451
Shoulder Rib S/N: 180-3355 DO9814
Upper Thorax Rib S/N: 180-3362 DP6492
Middle Thorax Rib S/N: 180-3362 DP6493
Lower Thorax Rib S/N: 180-3362 DP7664

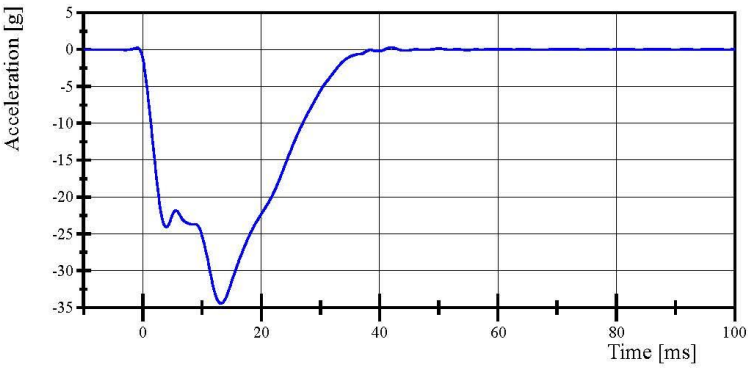
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.17.2024 14:21:50 648

Transportation Research Center Inc.

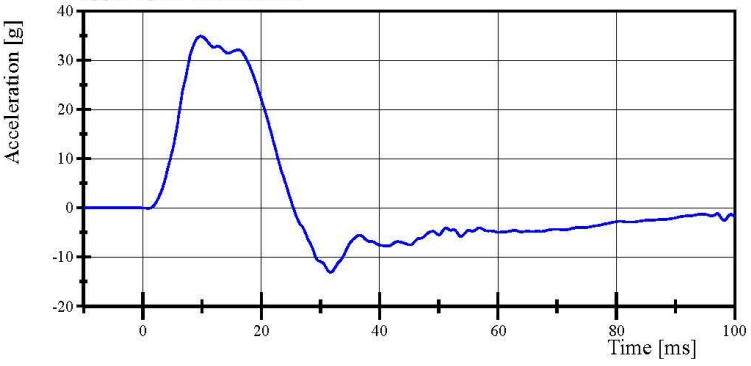
Left Lateral Thorax with Arm
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Probe Acceleration



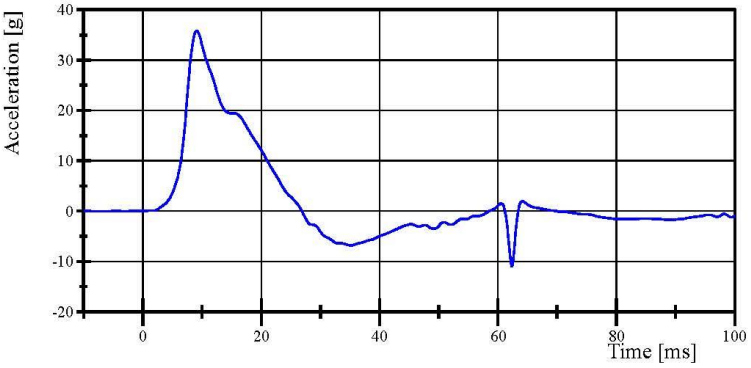
Filter Class: CFC_180
Max: 0.3 g at 41.9 ms
Min: -34.4 g at 13.2 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 34.9 g at 9.8 ms
Min: -13.1 g at 31.7 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 35.8 g at 9.1 ms
Min: -11.0 g at 62.3 ms

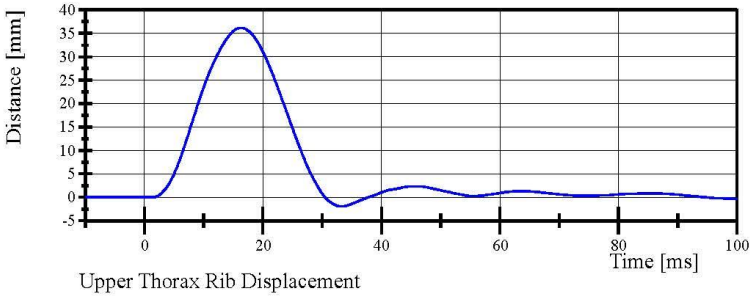
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.17.2024 14:22:25 648

Transportation Research Center Inc.

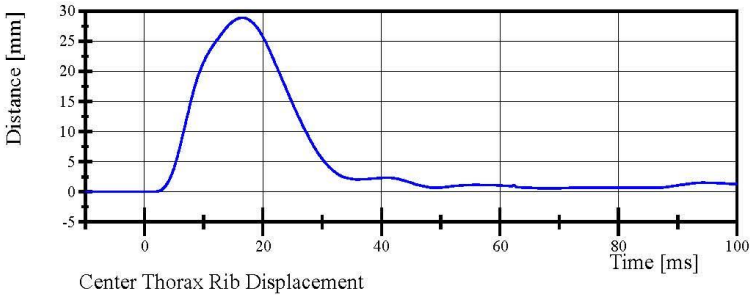
Left Lateral Thorax with Arm
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Shoulder Rib Displacement



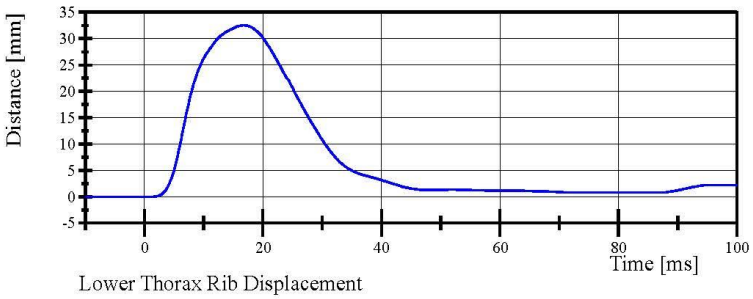
Filter Class: CFC_600
Max: 36.2 mm at 16.3 ms
Min: -1.9 mm at 33.2 ms

Upper Thorax Rib Displacement



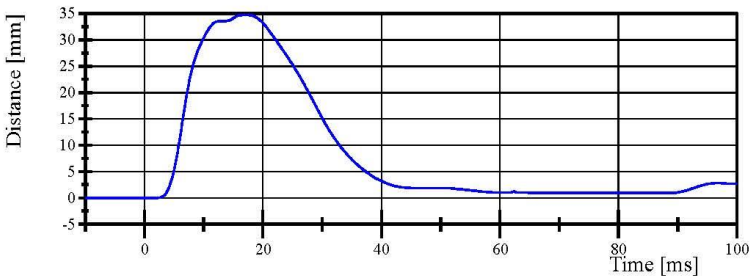
Filter Class: CFC_600
Max: 28.9 mm at 16.6 ms
Min: -0.0 mm at -7.0 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 32.5 mm at 16.7 ms
Min: -0.0 mm at -7.0 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 34.7 mm at 16.9 ms
Min: -0.0 mm at -7.6 ms

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

06.17.2024 14:22:25 648

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.327 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.1 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	38.9 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	42.6 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.4 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.7 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.5 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Thorax Rib S/N: 180-3362 DP6492
Middle Thorax Rib S/N: 180-3362 DP6493
Lower Thorax Rib S/N: 180-3362 DP7664

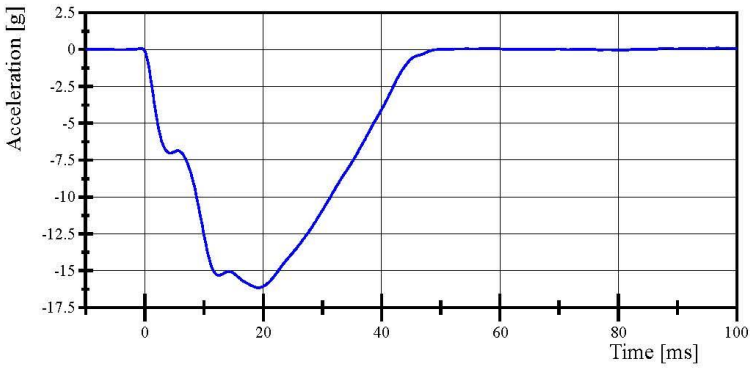
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

06.14.2024 13:08:08 883

Transportation Research Center Inc.

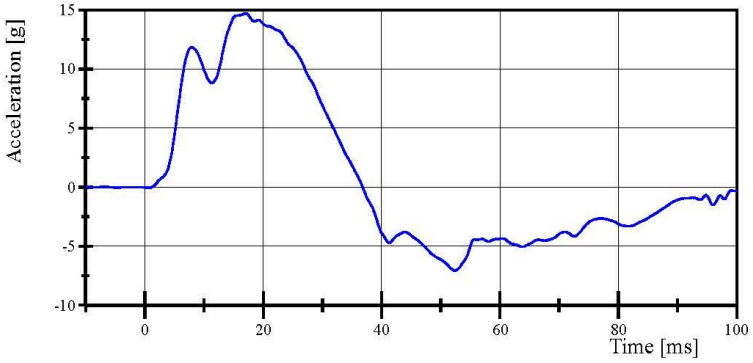
Left Lateral Thorax without Arm
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Probe Acceleration



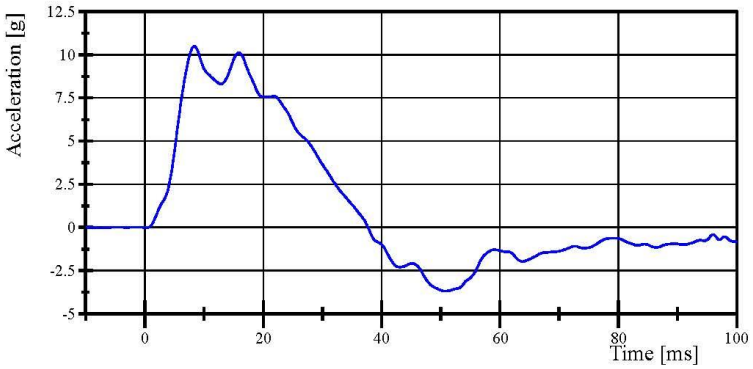
Filter Class: CFC_180
Max: 0.1 g at 96.8 ms
Min: -16.1 g at 19.2 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 14.7 g at 17.0 ms
Min: -7.1 g at 52.4 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 10.5 g at 8.3 ms
Min: -3.7 g at 50.7 ms

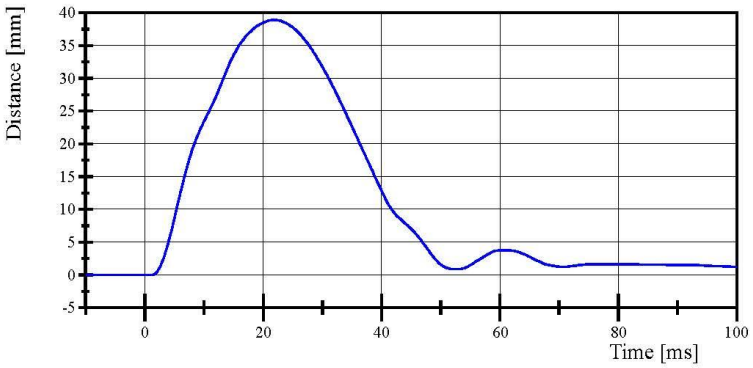
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.14.2024 13:08:39 883

Transportation Research Center Inc.

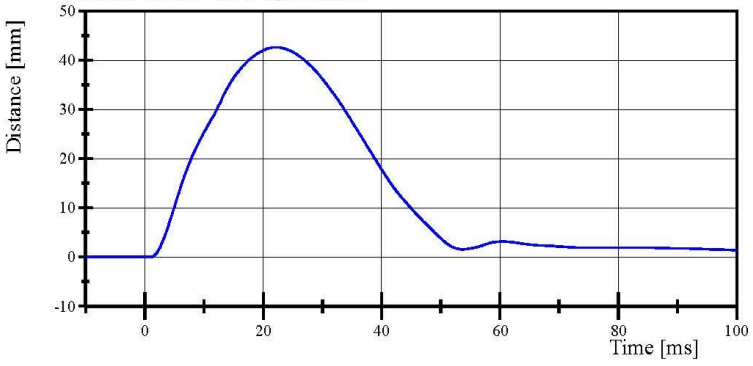
Left Lateral Thorax without Arm
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Upper Thorax Rib Displacement



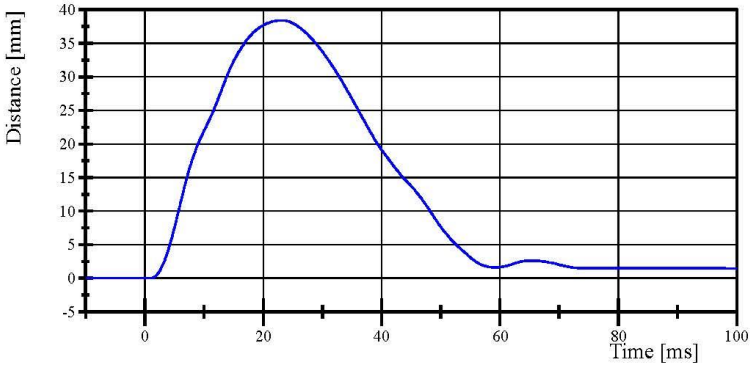
Filter Class: CFC_600
Max: 38.9 mm at 21.8 ms
Min: -0.0 mm at 1.1 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 42.6 mm at 22.1 ms
Min: -0.0 mm at -7.8 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 38.4 mm at 23.1 ms
Min: -0.0 mm at -8.0 ms

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

06.14.2024 13:08:39 883

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	64 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.5 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	39.6 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	36.7 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	12.62 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Abdominal Rib S/N: 180-3368 DP5142
Lower Abdominal Rib S/N: 180-3368 DP5143

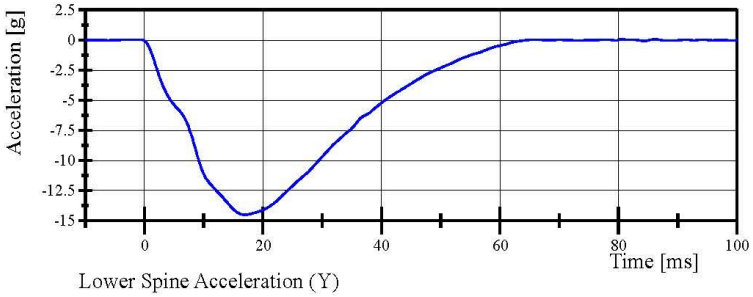
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.14.2024 12:56:10 700

Transportation Research Center Inc.

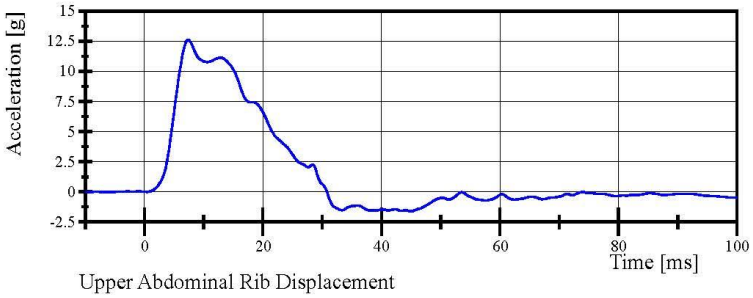
Left Lateral Abdomen
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Probe Acceleration



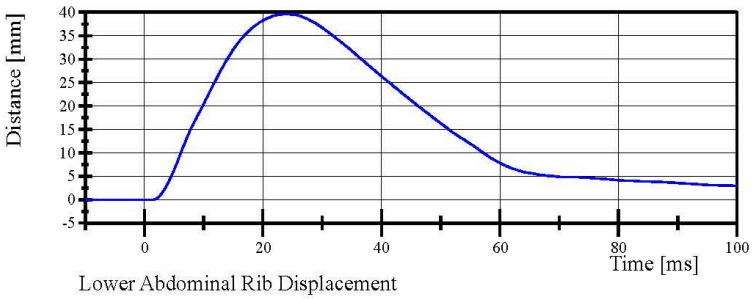
Filter Class: CFC_180
Max: 0.1 g at 80.6 ms
Min: -14.5 g at 17.0 ms

Lower Spine Acceleration (Y)



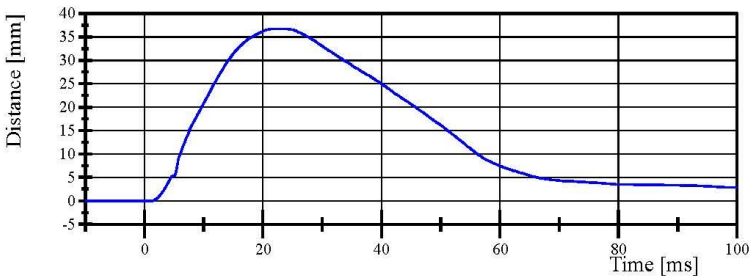
Filter Class: CFC_180
Max: 12.6 g at 7.4 ms
Min: -1.6 g at 45.0 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 39.6 mm at 24.0 ms
Min: -0.0 mm at -8.8 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 36.7 mm at 22.8 ms
Min: -0.0 mm at 1.1 ms

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

06.14.2024 12:56:36 700

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.62 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-42.11 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	34.7 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,579.8 N	No

Test does not meet specifications.

Condition: Used

Comments:
Pelvis Skin S/N: 1173
Pelvis Plug Info:
Manufacturer: SACO
S/N: 14614
Cal Date: 20201221

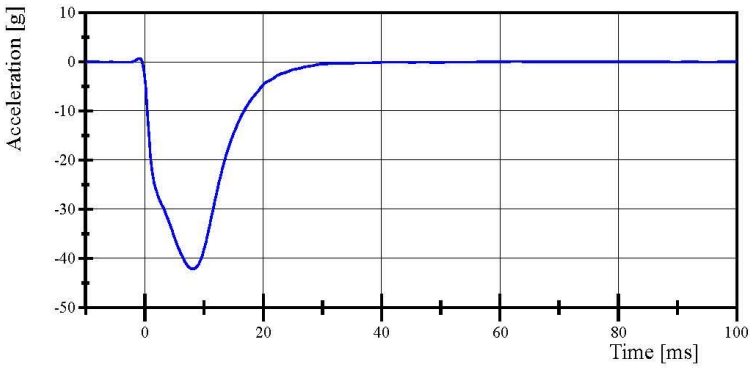
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

06.14.2024 11:49:10 478

Transportation Research Center Inc.

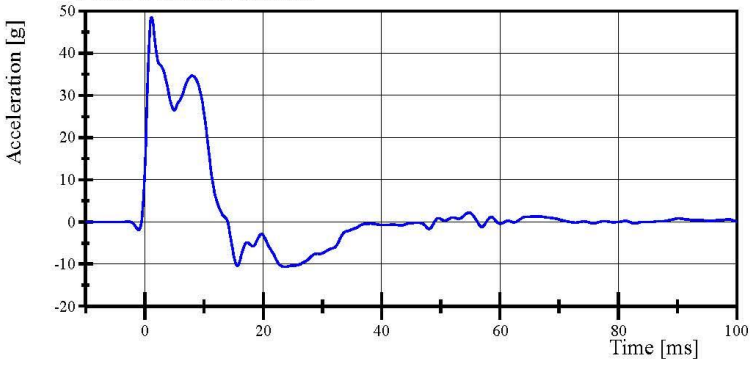
Left Lateral Pelvis
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Probe Acceleration



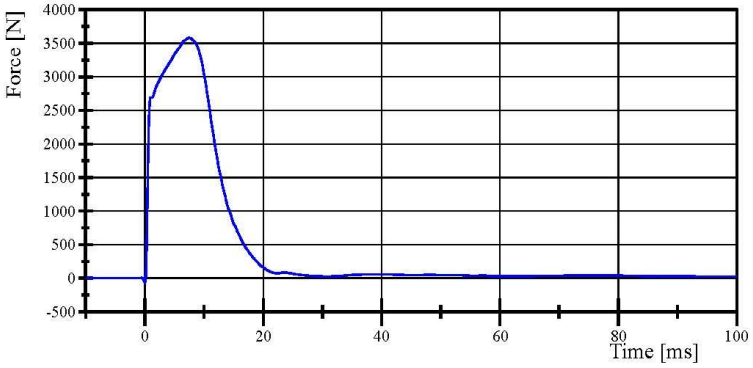
Filter Class: CFC_180
Max: 0.7 g at -1.0 ms
Min: -42.1 g at 8.1 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 48.6 g at 1.1 ms
Min: -10.7 g at 23.7 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 3,579.8 N at 7.5 ms
Min: -68.4 N at 0.0 ms

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

06.14.2024 11:50:07 478

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	64 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.6 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	34.7 g	Yes
Iliac Force	4,100 - 5,100 N	4,794.2 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis Skin S/N: 1173

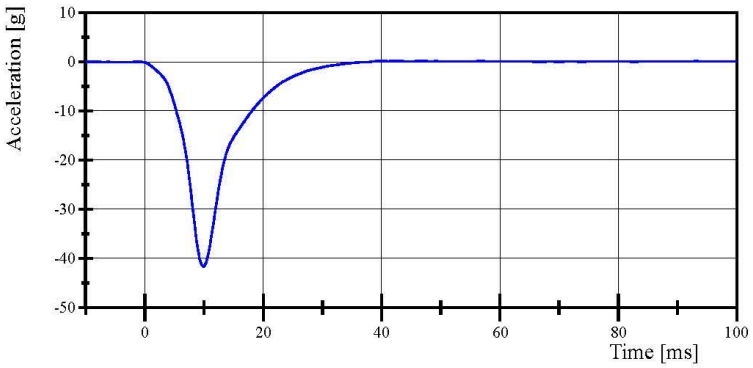
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

06.14.2024 13:52:23 713

Transportation Research Center Inc.

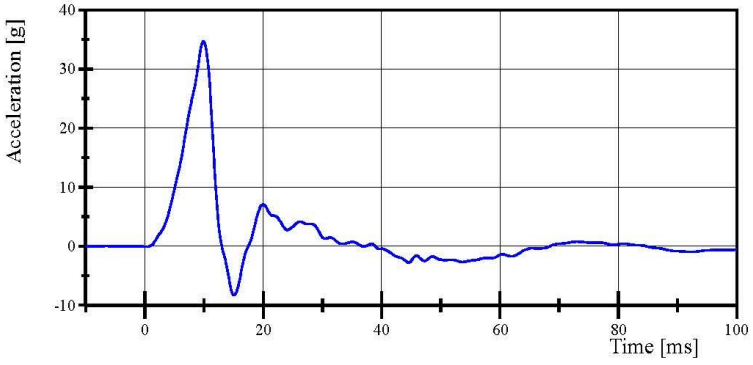
Left Lateral Iliac
SID IIs Serial No. DQ0570 Certification No. 26-1
Test Date: 6/14/2024

Probe Acceleration



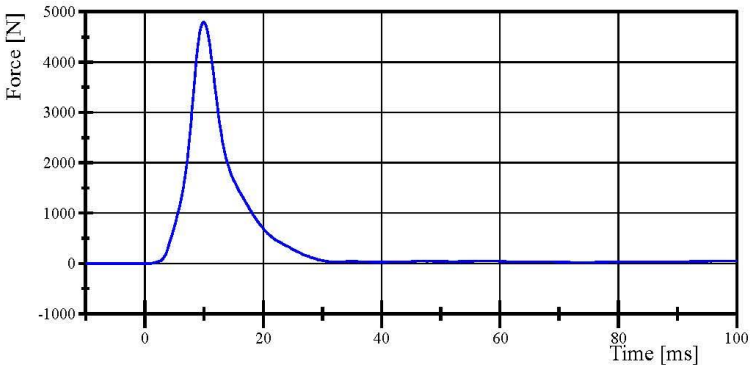
Filter Class: CFC_180
Max: 0.2 g at 42.6 ms
Min: -41.6 g at 9.8 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 34.7 g at 9.9 ms
Min: -8.3 g at 15.0 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,794.2 N at 9.9 ms
Min: -0.7 N at -0.7 ms

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

06.14.2024 13:53:02 713

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F030		
			Serial Number	**Manufacturer**	**Calibration Date**
Head Accelerometers		X	T14583	Endevco	01-May-2024
		Y	T13068	Endevco	01-May-2024
		Z	T14569	Endevco	01-May-2024
Redundant Head Accelerometers		X	T17635	Endevco	01-May-2024
		Y	T14567	Endevco	01-May-2024
		Z	T14586	Endevco	01-May-2024
Thoracic Rib Displacement Potentiometers	Upper	Y	111	Honeywell	01-May-2024
	Middle	Y	174	Honeywell	01-May-2024
	Lower	Y	0913	Honeywell	01-May-2024
Abdomen Load Cells	Front	Y	1441	Denton	01-May-2024
	Middle	Y	1436	Denton	01-May-2024
	Rear	Y	1437	Denton	01-May-2024
Lower Spine Accelerometers (T12)		X	T16354	Endevco	01-May-2024
		Y	T17602	Endevco	01-May-2024
		Z	T17625	Endevco	01-May-2024
Acetabulum Load Cell		Y	N/A	N/A	N/A
Pubic Symphysis Load Cell		Y	465-FY	Denton	01-May-2024

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N DQ0570		
				Serial Number	**Manufacturer**	**Calibration Date**
Head Accelerometers			X	T18335	Endevco	29-Apr-2024
			Y	T24497	Endevco	29-Apr-2024
			Z	T18333	Endevco	29-Apr-2024
Redundant Head Accelerometers			X	T25601	Endevco	29-Apr-2024
			Y	T25566	Endevco	29-Apr-2024
			Z	T20557	Endevco	29-Apr-2024
Displacement Potentiometers	Shoulder		N/A	N/A	N/A	N/A
	Thoracic Rib	Upper	Y	007	Servo	1-May-2024
		Middle	Y	037	Servo	1-May-2024
		Lower	Y	048	Servo	30-Apr-2024
	Abdominal Rib	Upper	Y	1295	Servo	1-May-2024
		Lower	Y	1136	Servo	1-May-2024
Lower Spine Accelerometers (T12)			X	T14559	Endevco	29-Apr-2024
			Y	T13682	Endevco	29-Apr-2024
			Z	T18476	Endevco	29-Apr-2024
Acetabulum Load Cell			Y	DK7483S-FY	FTSS	29-Apr-2024
Iliac Wing Load Cell			Y	287-FY	Denton	30-Apr-2024
Pelvis Plug (struck side)				14615	SACO	21-Dec-2020
Pelvis Plug (non-struck side)				14621	SACO	21-Dec-2020

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A386298	Measurement Specialties	30-Apr-2024
	Vehicle Center of Gravity	Y	A386305	Measurement Specialties	30-Apr-2024
	Vehicle Center of Gravity	Z	A385755	Measurement Specialties	23-May-2024
2	Right Sill at Front Seat	X	A386417	Measurement Specialties	23-May-2024
	Right Sill at Front Seat	Y	A385739	Measurement Specialties	30-Apr-2024
	Right Sill at Front Seat	Z	A386295	Measurement Specialties	30-Apr-2024
3	Right Sill at Rear Seat	X	A385744	Measurement Specialties	30-Apr-2024
	Right Sill at Rear Seat	Y	A385754	Measurement Specialties	30-Apr-2024
	Right Sill at Rear Seat	Z	A400110	Measurement Specialties	6-Jun-2024
4	Left Sill at Front Door	Y	A385756	Measurement Specialties	23-May-2024
5	Left Sill at Rear Door	Y	A378298	Measurement Specialties	23-May-2024
6	Left A-Post Lower	Y	A377508	Measurement Specialties	6-Jun-2024
7	Left A-Post Middle	Y	A400121	Measurement Specialties	6-Jun-2024
8	Left B-Post Lower	Y	A349879	Measurement Specialties	6-Jun-2024
9	B-Post Middle	Y	A385743	Measurement Specialties	30-Apr-2024
10	Front Seat Track	Y	A349788	Measurement Specialties	22-Mar-2024
11	Rear Seat Track or Structure	Y	A385706	Measurement Specialties	23-May-2024
12	Right Rear Occupant Compartment	Y	A400074	Measurement Specialties	6-Jun-2024
13	Engine Block	X	A400084	Measurement Specialties	30-Apr-2024
	Engine Block	Y	A386347	Measurement Specialties	23-May-2024
14	Rear Floorpan Above Axle	X	A386357	Measurement Specialties	6-Jun-2024
	Rear Floorpan Above Axle	Y	A386297	Measurement Specialties	30-Apr-2024
	Rear Floorpan Above Axle	Z	A373384	Measurement Specialties	6-Jun-2024

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A386333	Measurement Specialties	30-Apr-2024
MDB Center of Gravity	Y	A378288	Measurement Specialties	30-Apr-2024
MDB Center of Gravity	Z	A385748	Measurement Specialties	30-Apr-2024
Left Frame Rail at Rear Axle Centerline	X	A385742	Measurement Specialties	30-Apr-2024
Left Frame Rail at Rear Axle Centerline	Y	A386414	Measurement Specialties	30-Apr-2024