Final Report Number: NCAP-TRC-24-003

New Car Assessment Program (NCAP)

Frontal Barrier Impact Test

KIA CORPORATION

2024 Kia Seltos SUV

NHTSA Number: M20244210

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

Report Date: December 2, 2024

FINAL REPORT

Prepared For:
U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
1200 New Jersey Ave, SE
Washington, DC 20590

Notice

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Prepared By: ILO Project Operations Group

Approved By: John Shultz

Approval Date: December 2, 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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Final Report of NEW CAR ASSESSMENT PROGRAM Frontal Impact Testing of a 2024 Kia Seltos SUV NHTSA No. M20244210	December 2, 2024
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16. Abstract

A 56.0 km/h NCAP Frontal Impact Test was conducted on a 2024 Kia Seltos SUV, in accordance with the specifications of the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. The test was conducted at the Transportation Research Center Inc. in East Liberty, Ohio on June 11, 2024.

The impact velocity was 56.55 km/h, and the ambient temperature at the barrier face at the time of impact was 20.7° C. The target vehicle post-test maximum crush was 414 millimeters at vehicle C3. The test vehicle's performance is as follows:

	Driver ATD			Passenger ATD		
Measurement Description	Units	Threshold	Result	Units	Threshold	Result
Head Injury Criteria (HIC_{15})	NA	700	112.300	NA	700	307.620
Maximum Chest Compression	mm	63	-24.370	mm	52	-13.570
3ms Chest Clip	Gs	60	46.740	Gs	60	50.920
Nij	NA	1	0.222	NA	1	0.384
Neck Tension	Newtons	4170	1074.330	Newtons	2620	1064.420
Neck Compression	Newtons	4000	-232.070	Newtons	2520	-599.940
Left Femur Force	Newtons	10008	-1651.580	Newtons	6805	-1721.990
Right Femur Force	Newtons	10008	-1883.600	Newtons	6805	-206.790

17. Key Words	18. Distribution Statement
56.3 km/h (35 mph) Full Frontal Rigid Barrier Impact Test New Car Assessment Program (NCAP)	Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. Number of Pages	22. Price
Unclassified	Unclassified	177	

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SECTION 1: PURPOSE AND SUMMARY OF THE TEST

PURPOSE

This 56 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. 693JJ919D000007. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

This 56 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Test Procedure or NCAP Full Frontal Rigid Barrier Impact Testing dated May 2018.

SUMMARY

A load cell barrier consisting of 288 load cells was impacted by a 2024 Kia Seltos SUV at a velocity of 56.55 km/h. The test was performed at Transportation Research Center, Inc. on June 11, 2024. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

One Part 572E 50th percentile male anthropomorphic test device (ATD) was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger position according to dummy placement instructions specified in the Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck transducers, femur load cells, and lower leg instrumentation.

The driver (position 1) ATD (Serial No. 037), and the right-front passenger (position 2) ATD (Serial No. DH1659) were qualified prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 102 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

There was 100.0 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage (or electrolyte spillage) after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 414 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: front airbag, headrest, and knee bolster. The passenger's visible contact points were as follows: front airbag, headrest, and knee bolster.

The occupant data is summarized below:

ATD Position	HIC_{15}	Nij	Neck Tension (N)	Neck Compression (N)	3 ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50^{th} Male)	112.300	0.222	1074.330	-232.070	46.740	-24.370	-1651.580	-1883.600
Passenger (5^{th} Female)	307.620	0.384	1064.420	-599.940	50.920	-13.570	-1721.990	-206.790

TEST COMMENTS:

Top of Engine X: CF at 31.0 ms
Bottom of Engine X: QD throughout

SECTION 2: DATA SHEETS

DATA SHEET NO. 1 - GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

TEST VEHICLE INFORMATION

NHTSA No.	M20244210
Model Year	2024
Make	Kia
Model	Seltos
Body Style	MPV
VIN	KNDEPCAA0R7614044
Body Color	Steel Gray
Odometer Reading (km/mi)	24 mi
Engine Displacement (L)	2.0
Type/No. Cylinders	Transverse/4
Engine Placement	Front
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	Yes
Final Drive	AWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	Yes

TEST VEHICLE OPTIONS

Traction Control System (TCS)	Yes
Power Steering	Yes
Power Window Auto-Reverse	No
Driver Frontal Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Front Pass. Frontal Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	No
Front Pass. Torso/Pelvis Airbag	Yes
Front Pass. Pelvis Airbag	No
Front Pass. Knee Airbag	No
Driver Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other:	No

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

DATA FROM CERTIFICATION LABEL

Manufactured by	KIA CORPORATION
Date of Manufacture	01/24

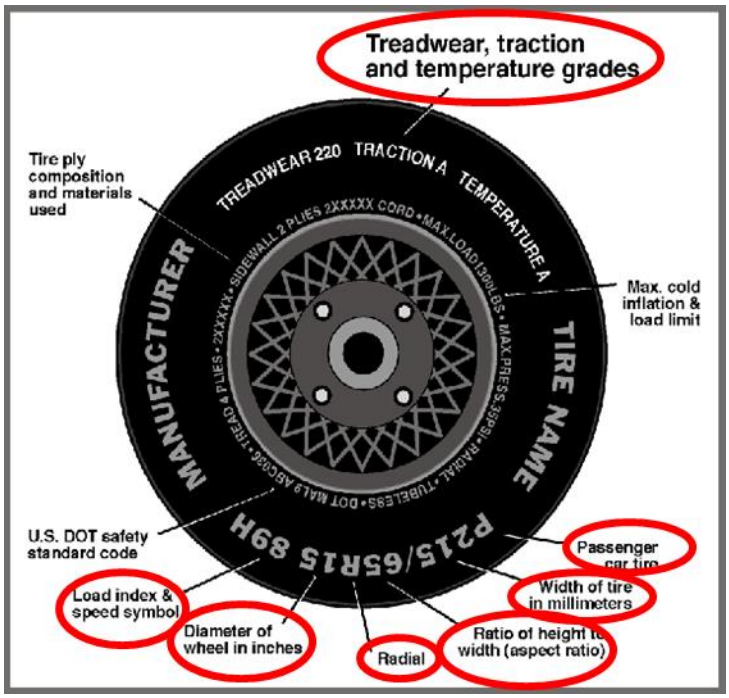
GVWR (lbs)	4212
GAWR Front (lbs)	2293
GAWR Rear (lbs)	2117

VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	N/A	
Number of Occupants	2	3	N/A	5
Capacity Wt. (VCW) (kg)				390.0
Cargo Wt. (RCLW) (kg)				50.0

DATA SHEET NO. 1 - GENERAL TEST AND VEHICLE PARAMETER DATA (CONT'D)

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold / Test 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 Grade	A	A
Temperature Grade	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 Right	DOT 1Y0 99YAY1 0124	DOT 1Y0 99YAY1 0124
DOT Safety Code Left	DOT 1Y0 99YAY1 0124	DOT 1Y0 99YAY1 0124

DATA SHEET NO. 1 - GENERAL TEST AND VEHICLE PARAMETER DATA (CONT'D)

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	418.0	298.2		447	366	
Right	kg	400.0	291.6		414.4	363	
Ratio	%	58.1	41.9		54.2	45.8	
Totals	kg	818.0	589.8	1407.8	861.4	729	1590.4

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1407.8
Weight of 1 P572E ATD & 1 P572O ATD	kg	139.3
Rated Cargo/Luggage Weight (RCLW)	kg	50.0
Vehicle Target Weight (TVTW)	kg	1597.1

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front)
As Delivered	mm	758	763	765	771	1102
As Tested	mm	744	755	744	740	1206
Post Test	mm	757	782	730	739	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheelbase	mm	2630
Total Vehicle Length at Left Side	mm	4185
Total Vehicle Length at Centerline	mm	4377
Total Vehicle Length at Right Side	mm	4189
Weight of Ballast in Cargo Area	kg	5.0
Weight of Vehicle Components Removed	kg	0.0
Amount of Stoddard Solvent in Fuel Tank	liters	46.2

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: None

DATA SHEET NO. 1 - GENERAL TEST AND VEHICLE PARAMETER DATA (CONT'D)

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

TARGET VEHICLE STRUCTURAL MEASUREMENT

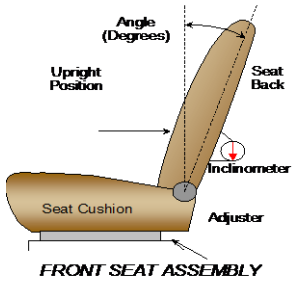
	Elements	Pre-Test (mm)
1	Total Length	4377
2	Total Width	1802
3	Bumper Top Height	630
4	Bumper Bottom Height	522
5	Longitudinal Member Top Height	570
6	Distance Between Longitudinal Members	977
7	Longitudinal Member Width	72
8	Engine Top Height	898
9	Engine Bottom Height	248
10	Engine and Gearbox Width	830
11	Front Bumper-Engine Distance	430
12	Front Shock Absorber Fixing Height	905
13	Bonnet Leading Edge Height	985
14	Front Shock Absorber Fixing Width	1173
15	Front Bumper – Front Axle Distance	852
16	Front Axle – A-Pillar Distance	500
17	A-Pillar – B-Pillar Distance	948
18	B-Pillar – Rear Axle Distance	1033
19	B-Pillar – C-Pillar Distance	990
20	Roof Sill Bottom Height	1407
21	Roof Sill Top Height	1597
22	Floor Sill Bottom Height	418
23	Floor Sill Top Height	460

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

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

NORMAL DESIGN RIDING POSITION

For adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable



	Degree
Driver Seat back angle:	0.8
Passenger Seat back angle:	N/A

SEAT FORE/AFT POSITIONS

Describe the method of determining seat fore/aft positions.

Driver: Mid position, Positioned according to Form 1

Passenger: Full forward, Positioned according to Form 1

	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	290	23
Passenger Seat	224	0

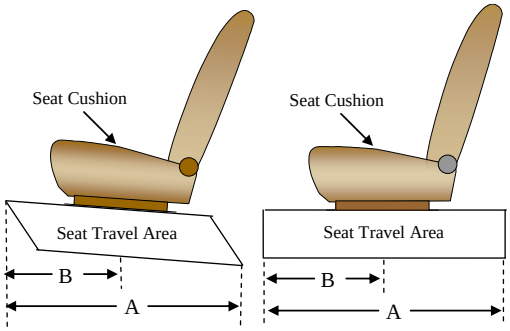
SEAT BELT UPPER ANCHORAGE

Describe the method of positioning seat belt upper anchorages.

Driver: One below uppermost, Positioned according to Form 1

Passenger: One below uppermost, Positioned according to Form 1

	Total No. of Positions	Placed in Position No.
Driver Seat	3	0
Passenger Seat	3	0



DATA SHEET NO. 2 - SEAT ADJUSTMENT, FUEL SYSTEM AND STEERING WHEEL DATA (CONT'D)

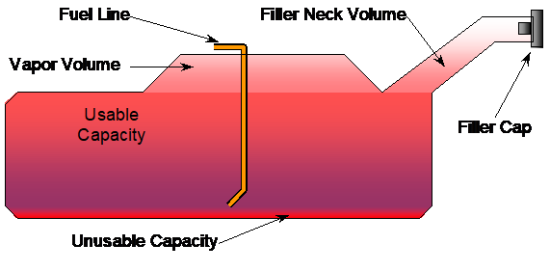
Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	50.0
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	46.5
Actual Amount of Solvent Used	46.5
1/3 of Usable Capacity	16.7

Describe the fuel system - what type of fuel pump, details about how it operates, etc.

Fuel pump will operate when engine system is normally operating.

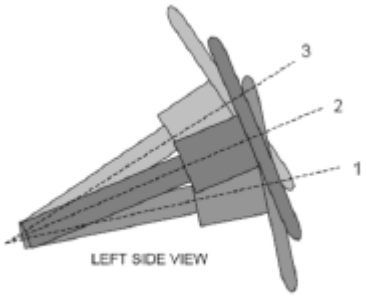


VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. Describe how this measurement was taken.

Steel square was placed across the rim of the steering wheel, an inclinometer was placed on plate and the angle was measured. Telescope travel was measured full in and full out and set at the midpoint.



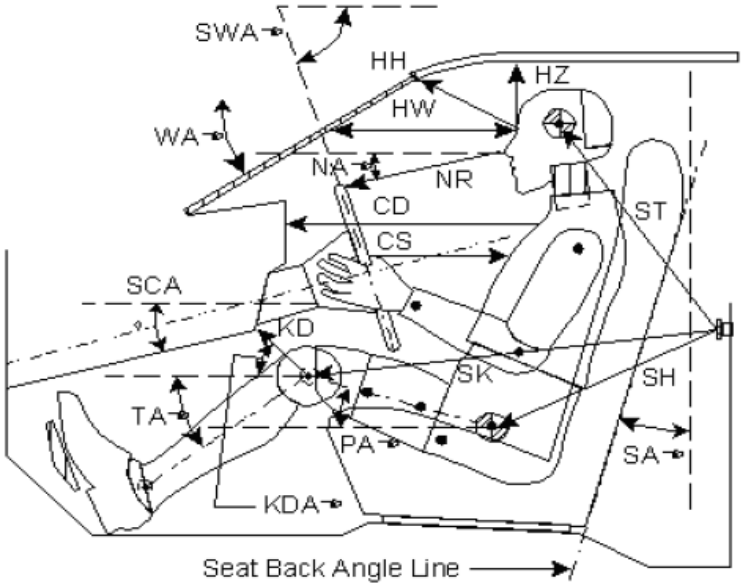
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost Position No. 1	25.5	
Geometric Center Position No. 2	28.4	
Uppermost Position No. 3	31.3	
Telescoping Steering Wheel Travel		48.0
Test Position	28.4	24.0

DATA SHEET NO. 3 - DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

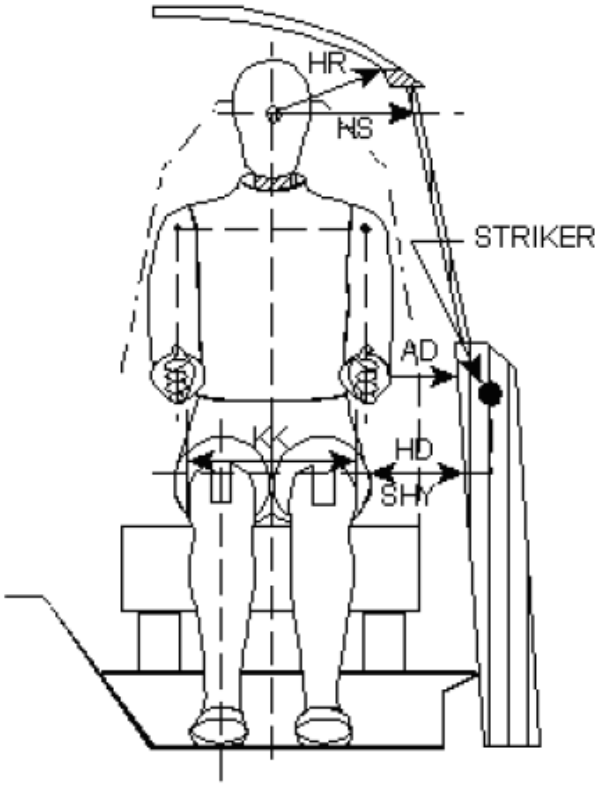
Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024



Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WAº	Windshield Angle		30.0		
SWAº	Steering Wheel Angle		28.4		
SCAº	Steering Column Angle		31.2		
SAº	Seat Back Angle (on head rest post)		0.75		4.2
HZ	Head to Roof (Z)	190		261	
HH	Head to Header	311		337	
HW	Head to Windshield	585		736	
NR	Nose to Rim	395	12.0		
CD	Chest to Dash	572		458	
CS	Chest to Steering Hub	312			
RA	Rim to Abdomen	186			
KDL	Left Knee to Dash	164	6.1	149	8.0
KDR	Right Knee to Dash	132	5.9	143	12.3
PAº	Pelvic Angle		23.3		20.2
TAº	Tibia Angle		47.0		55.0
SK	Striker to Knee	652	9.0	684	11.6
ST	Striker to Head	530	50.0	491	43.6
SH	Striker to H-Point	390	42.1	453	31.8

DATA SHEET NO. 4 - DUMMY LATERAL CLEARANCE DIMENSIONS

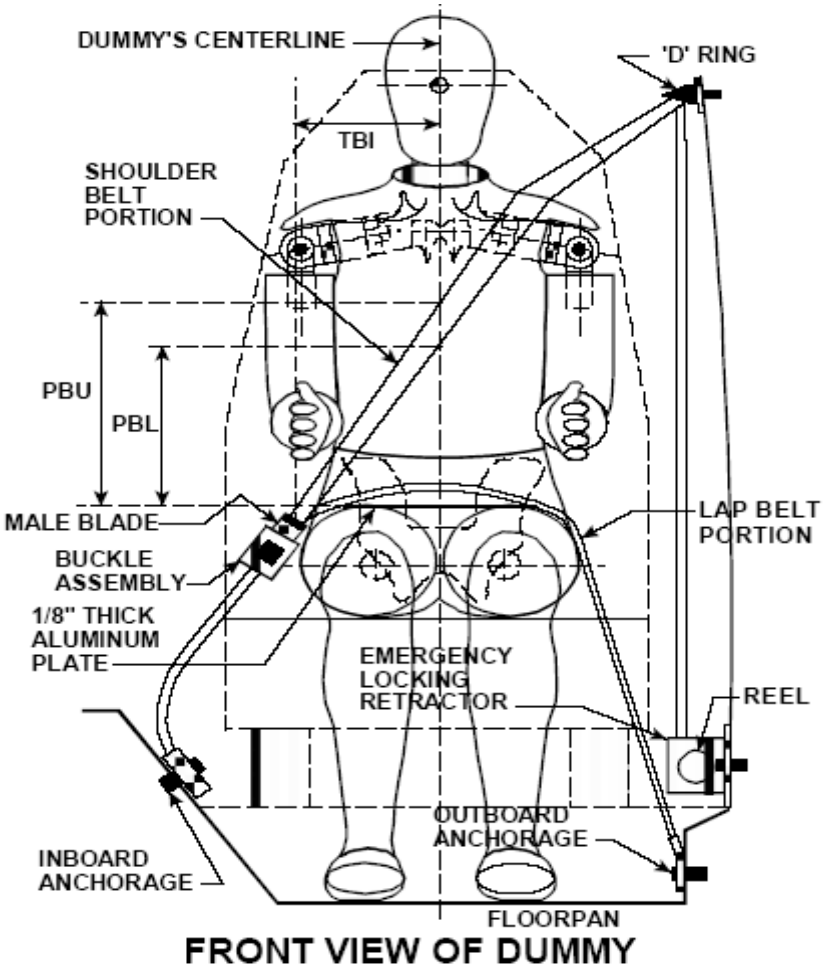
Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024



Code	Measurement Description	Driver	Passenger
AD	Arm to Door	149	92
HD	H-Point to Door	147	180
HR	Head to Side Header	221	304
HS	Head to Side Window	332	368
KK	Knee to Knee	285	165
SHY	Striker to H-Point (Y Direction)	240	280
AA	Ankle to Ankle	295	185

DATA SHEET NO. 5 - SEAT BELT POSITIONING DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU – Top surface of reference to belt upper edge	mm	320	301
PBL – Top surface of reference to belt lower edge	mm	240	205

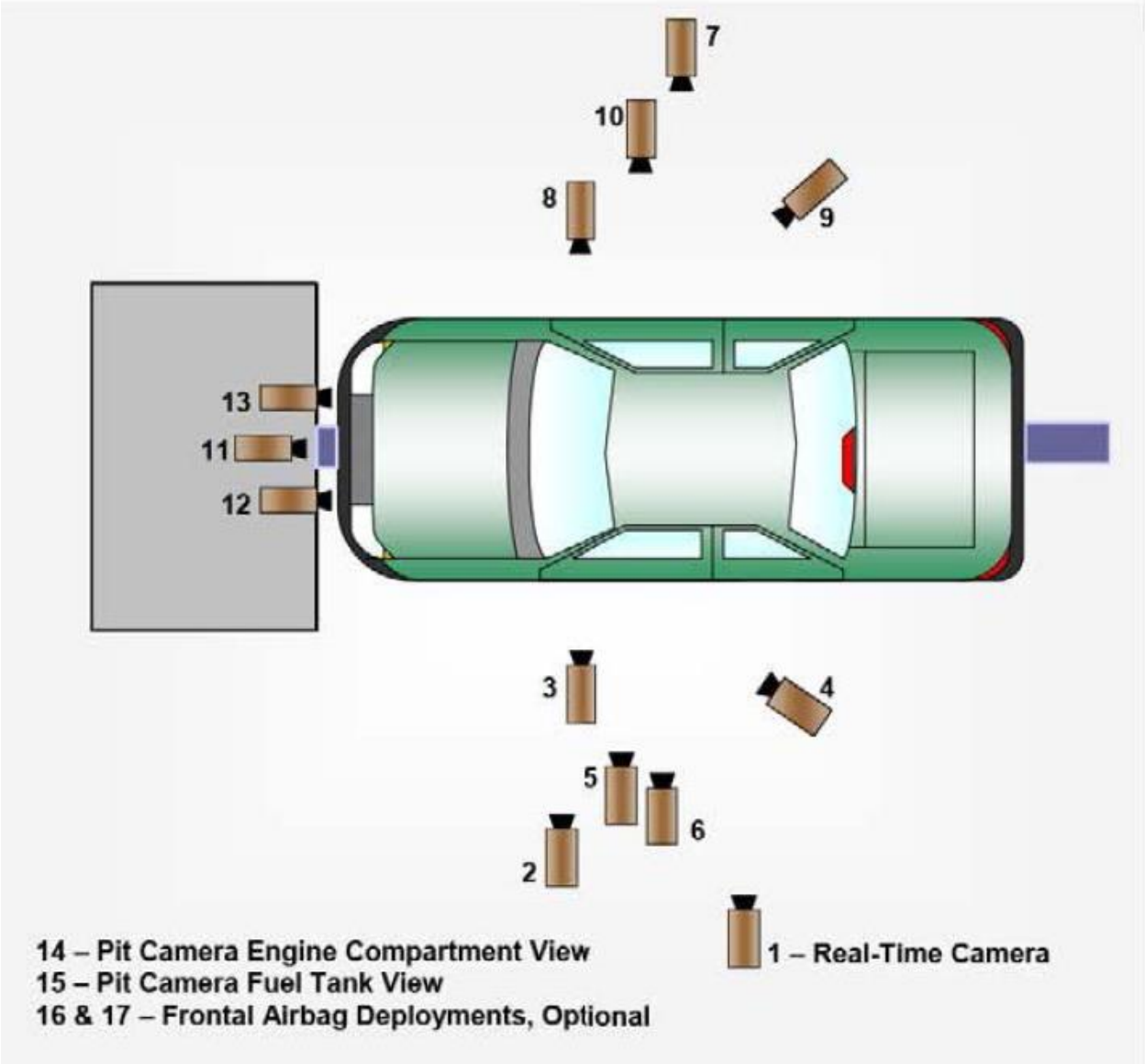
BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	851	886
Lap belt length as measured on ATD	mm	610	575
Remainder of belt on reel	mm	1047	1025
Total belt length for continuous webbing systems	mm	2508	2486

DATA SHEET NO. 6 - HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 - HIGH SPEED CAMERA LOCATIONS AND DATA (CONT'D)

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

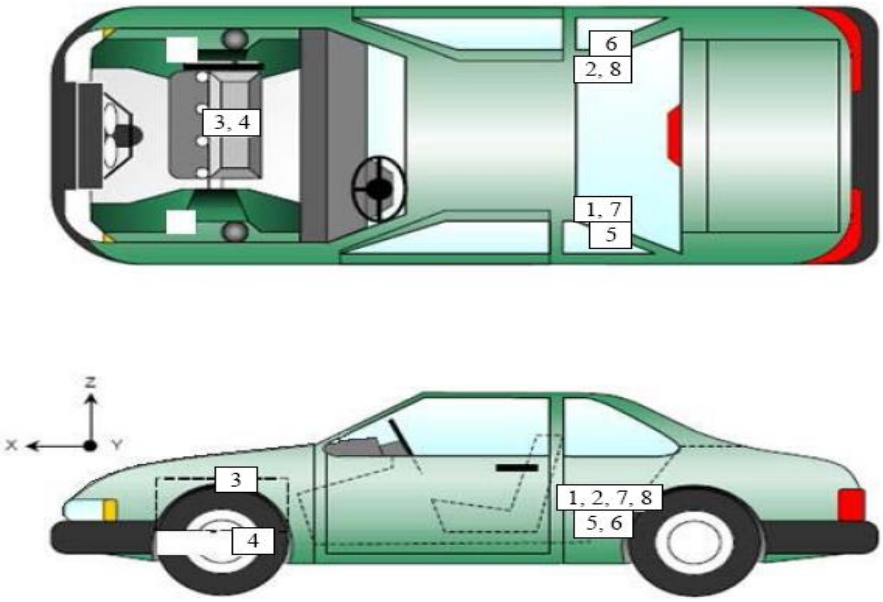
CAMERA LOCATIONS

No.	Camera View	Location (mm)			Lens (mm)	Frame Speed (fps)
		X	Y	Z		
1	REAL-TIME LEFT OVERALL	-990	-5990	-1420	Zoom	30
2	LEFT OVERALL	-2398	-4337	-1278	8.5	1000
3	DRIVER CLOSE-UP	-2169	-5687	-1493	50	1000
4	LEFT FRONT HALF	-705	-5887	-1174	25	1000
5	LEFT ANGLE	-4547	-3353	-1630	25	1000
6	STEERING COLUMN	-1737	-5734	-1593	50	1000
7	RIGHT OVERALL	-2570	4306	-1255	8.5	1000
8	PASSENGER CLOSE-UP	-1790	4855	-1493	50	1000
9	RIGHT FRONT HALF	-720	5600	-1143	25	1000
10	RIGHT ANGLE	-4381	3533	-1661	25	1000
11	WINDSHIELD	0	0	-2615	20	1000
12	DRIVER WINDSHIELD	0	-340	-2650	25	1000
13	PASSENGER WINDSHIELD	0	335	3044	25	1000
14	PIT FRONT	-978	0	-334	20	1000
15	PIT REAR	-3235	0	-653	20	1000
16	DRIVER ONBOARD				8.5	1000
17	PASSENGER ONBOARD				8.5	1000

Reference Points: +X – forward of impact plane
+Y – right of monorail center
+Z – into ground

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	1660	-262	-603
2	Right Rear Accelerometer – X Direction	1652	193	-610
3	Engine Top X	3685	125	-877
4	Engine Bottom X	3671	215	-245
5	Left Rear Accelerometer – Z Direction	1650	-262	-595
6	Right Rear Accelerometer – Z Direction	1640	193	-615
7	Left Rear Accelerometer – X Direction Redundant	1660	-177	-603
8	Right Rear Accelerometer- X Direction Redundant	1650	243	-610

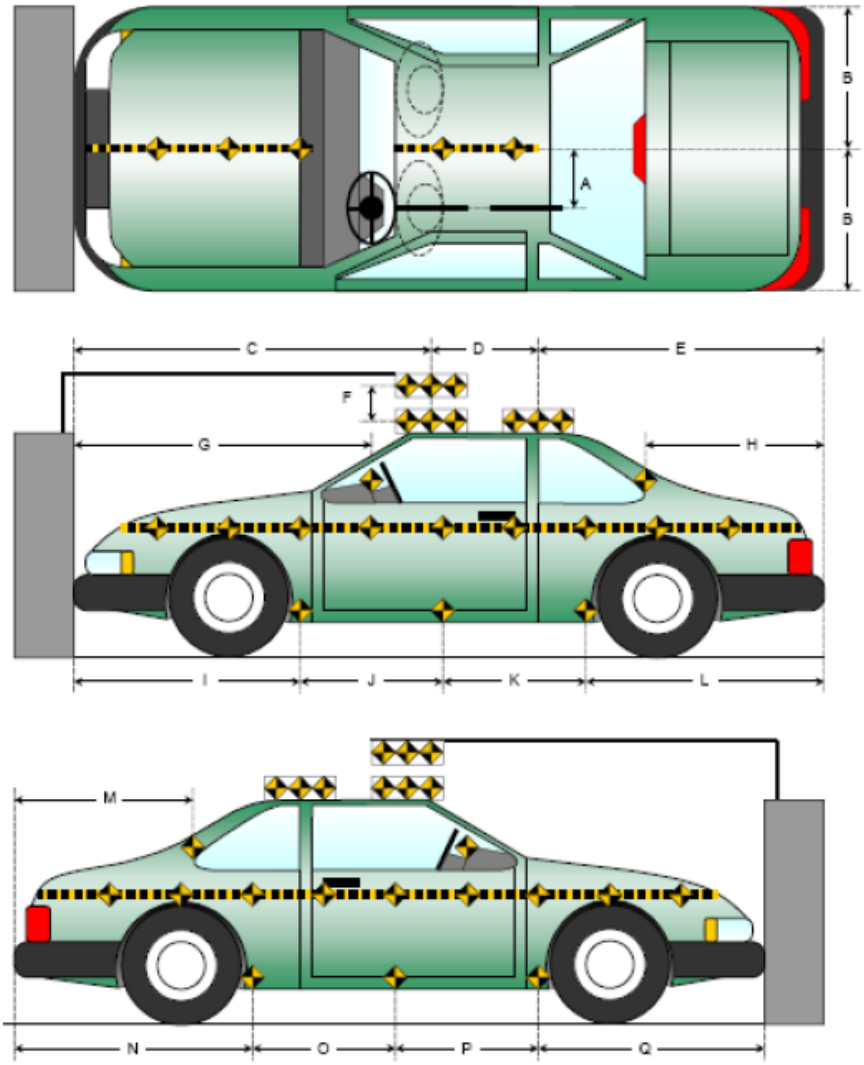
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8 - PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

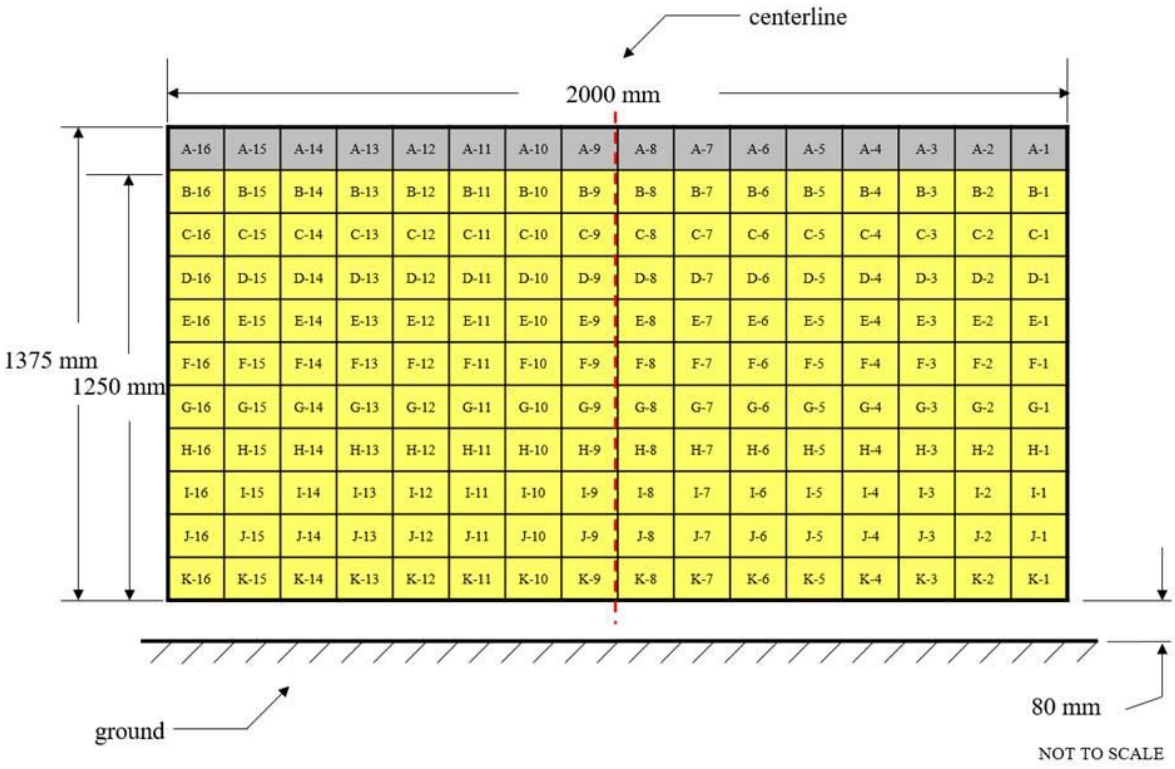
Item	Value
A	360
B	901
C	2325
D	600
E	1450
F	200
G	1615
H	718
I	1313
J	863
K	866
L	1335
M	718
N	1335
O	871
P	867
Q	1304

All units in millimeters



DATA SHEET NO. 9 - LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024



DATA SHEET NO. 10 - TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Accelerometers	47
Passenger Dummy Accelerometers	47
Vehicle Structure Accelerometers	8
Total	102

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	2
High-Speed Offboard	14
Real-Time Panning	2
Total	18

DATA SHEET NO. 11 - POST-TEST OBSERVATIONS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	Hybrid III 50th / 037	Hybrid III 5th / DH1659
Head Contact	Frontal Airbag, Head Rest	Frontal Airbag, Head Rest
Upper Torso Contact	Frontal Airbag	Frontal Airbag
Lower Torso Contact	Frontal Airbag	Frontal Airbag
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

DOOR OPENING, TRUNK OPENING, AND SEAT TRACK INFORMATION

Description	Driver	Passenger	Other
Locked/Unlocked Doors	Unlocked	Unlocked	
Front Door Opening	No	No	
Rear Door Opening	No	No	
Trunk/Hatch/Tailgate Opening			No
Seat Track Shift (mm)	None	None	
Seat Back Movement from Initial Position	None	None	

POST- OTHER VEHICLE POST-TEST OBSERVATIONS

Critical Areas of Performance	Observations
Windshield Damage	Cracked
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

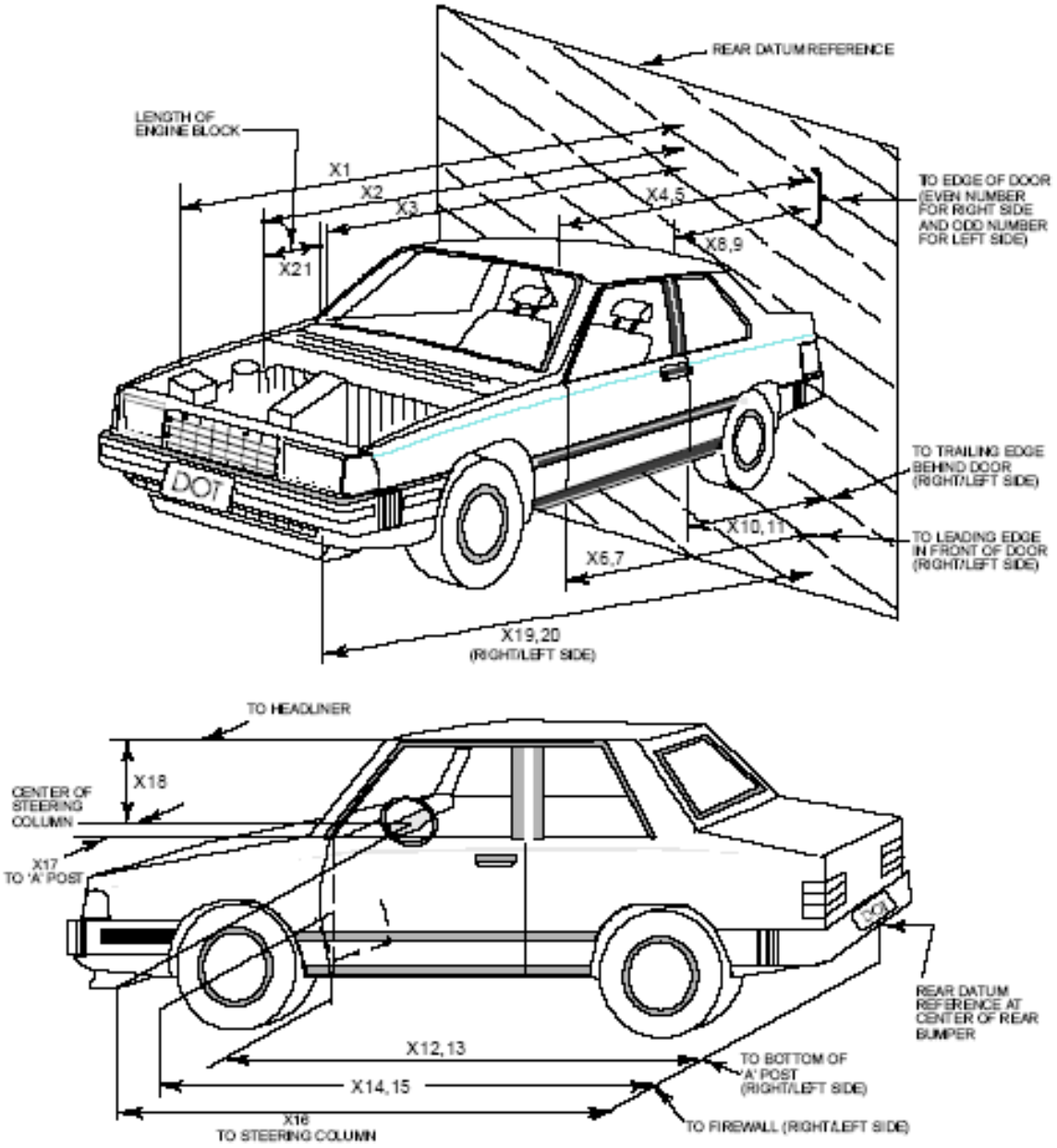
Measured Parameter	Units	Value
Left Side	mm	1985
Center	mm	1892
Right Side	mm	1987
Average	mm	1954

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes	Yes	Yes
Torso/Pelvis Side Airbag	Yes	No	Yes	No
Curtain Side Airbag	Yes	No	Yes	No
Knee Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Seat Belt Buckle Pretensioner	No	N/A	No	N/A
Other:	No	N/A	No	N/A

DATA SHEET NO. 12 - VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024



DATA SHEET NO. 12 - VEHICLE PROFILE MEASUREMENTS (CONT'D)

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

No.	Measurement Description	Pre-Test	Post-Test	Change
1	Total Length of Vehicle at Centerline	4377	3963	-414
2	Rear Surface of Vehicle (RSOV) to Front of Engine	3927	3757	-170
3	RSOV to Firewall	3456	3455	-1
4	RSOV to Upper Leading Edge of Right Door	2986	2980	-6
5	RSOV to Upper Leading Edge of Left Door	2987	2982	-5
6	RSOV to Lower Leading Edge of Right Door	2987	2982	-5
7	RSOV to Lower Leading Edge of Left Door	2981	2980	-1
8	RSOV to Upper Trailing Edge of Right Door	2004	1997	-7
9	RSOV to Upper Trailing Edge of Left Door	2004	1997	-7
10	RSOV to Lower Trailing Edge of Right Door	2007	2001	-6
11	RSOV to Lower Trailing Edge of Left Door	2006	2005	-1
12	RSOV to Bottom of "A" Post-of Right Side	3008	3002	-6
13	RSOV to Bottom of "A" Post-of Left Side	3006	3003	-3
14	RSOV to Firewall, Right Side	3264	3260	-4
15	RSOV to Firewall, Left Side	3260	3242	-18
16	RSOV to Steering Column	2602	2557	-45
17	Center of Steering Column to "A" Post	333	370	37
18	Center of Steering Column to Headliner	455	458	3
19	RSOV to Right Side of Front Bumper	4189	3807	-382
20	RSOV to Left Side of Front Bumper	4185	3832	-353
21	Length of Engine Block	510	510	0
RD	RSOV to Right Side of Dash Panel	2876	2869	-7
CD	RSOV to Center of Dash Panel	2835	2817	-18
LD	RSOV to Left Side of Dash Panel	2875	2873	-2

All Dimensions in mm

DATA SHEET NO. 13 - ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

VEHICLE INFORMATION

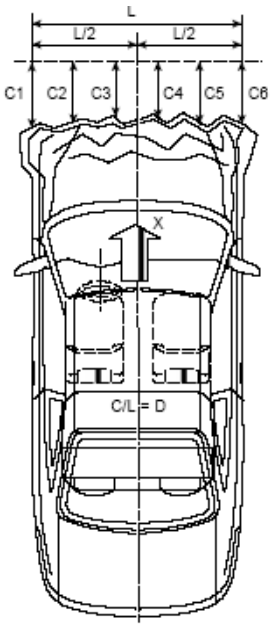
VIN: KNDEPCAA0R7614044 Wheelbase: 2630
Vehicle Size Category: MPV Test Weight (kg): 1590.4

ACCELEROMETER DATA

Accelerometer Locations: As listed on Page 15 of this report.
Cal. Procedure/Interval: TRC procedure / 6 month interval
Integration Algorithm: Trapezoidal
Linearity: > 99%
Impact Velocity (km/h): 56.55
Velocity Change (km/h): 64.53
Time of Separation (ms): 126

CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: Centerline
Damage Region Length (mm): 1220
Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Crush
C1	Crush zone 1 at left side	mm	189	542	353
C2	Crush zone 2 at left side	mm	53	452	399
C3	Crush zone 3 at left side	mm	0	414	414
C4	Crush zone 4 at right side	mm	5	411	406
C5	Crush zone 5 at right side	mm	56	453	397
C6	Crush zone 6 at right side	mm	185	567	382
L	C1 to C6	mm	1220	1217	-3

DATA SHEET NO. 14 - VEHICLE INTRUSION MEASUREMENTS

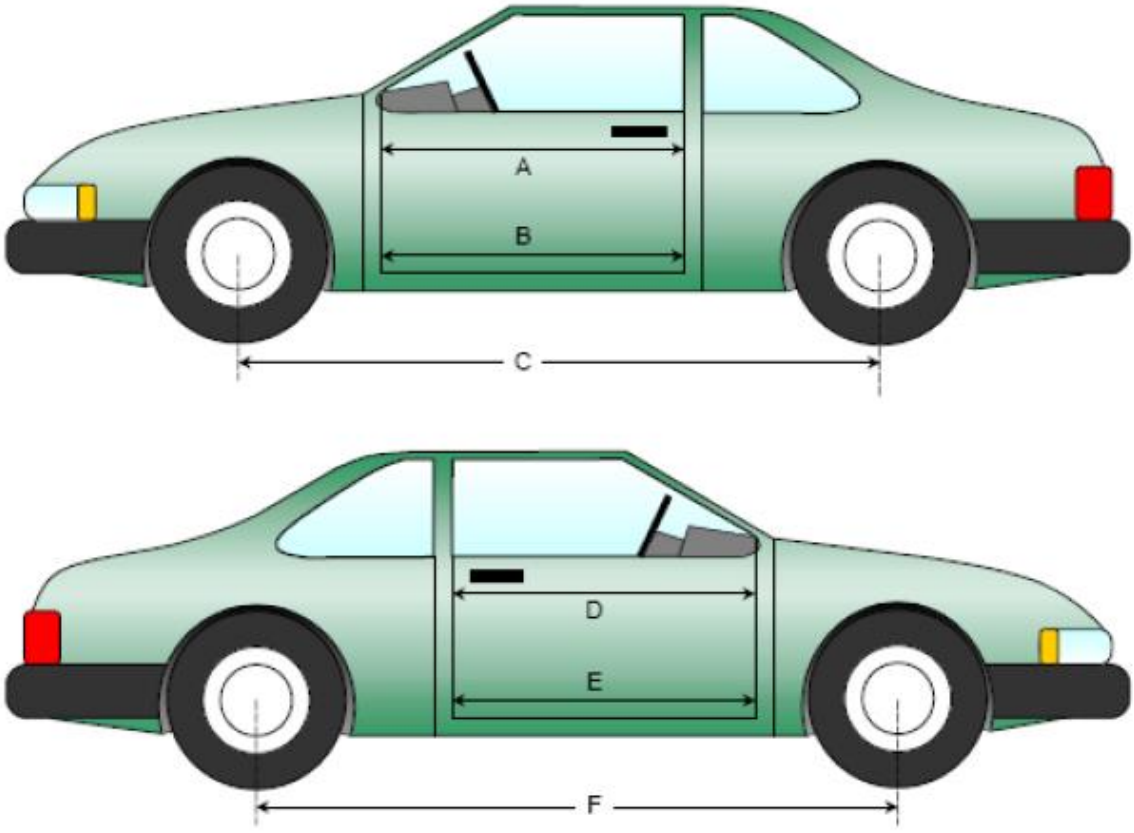
Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

DOOR OPENING WIDTH

No.	Description	Units	Pre-Test	Post-Test	Change
A	Left Side Upper	mm	976	962	-14
B	Left Side Lower	mm	865	860	-5
D	Right Side Upper	mm	966	960	-6
E	Right Side Lower	mm	872	871	-1

WHEELBASE MEASUREMENTS

No.	Description	Units	Pre-Test	Post-Test	Change
C	Left Side Wheelbase	mm	2630	2576	-54
F	Right Side Wheelbase	mm	2630	2558	-72



[1] Front suspension damaged and wheels fell off measurements not available

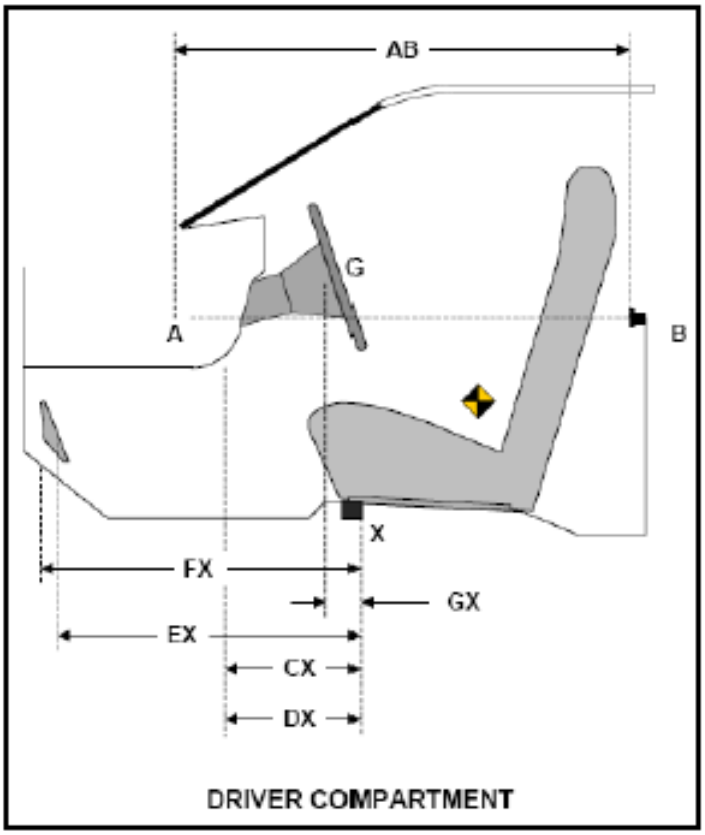
DATA SHEET NO. 14 - VEHICLE INTRUSION MEASUREMENTS (CONT'D)

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Change
AB	Door Opening (Inside Window Jam)	mm	941	942	1
CX	Left Knee Bolster to X	mm	224	252	28
DX	Right Knee Bolster to X	mm	233	218	-15
EX	Brake Pedal to X	mm	498	485	-13
FX	Foot Rest to X	mm	529	510	-19
GX	Center of Steering Column Wheel Hub to X	mm	300	348	48

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15 - SUMMARY OF INDICANT FMVSS 212 AND FMVSS 219 (PARTIAL) DATA

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

Please provide windshield mounting details.

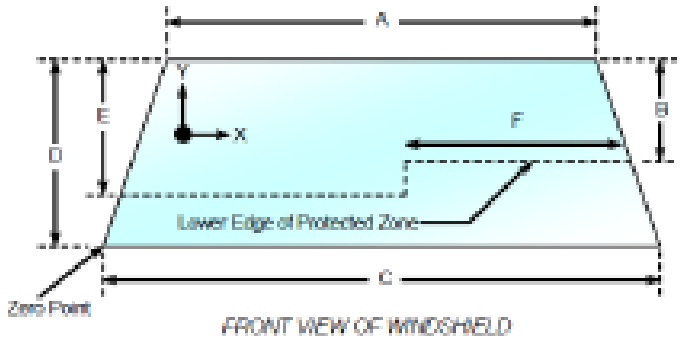
The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicle not equipped with occupant passive restraint and 50% for each side of the windshield for vehicle which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 20.7°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2199	2199	100.0
Right Side	2199	2199	100.0
Total	4398	4398	100.0

Item	Units	Value
A	mm	1223
B	mm	560
C	mm	1465
D	mm	855
E	mm	561
F	mm	150



FRONT VIEW OF WINDSHIELD

AREAS OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than .25 inches by a vehicle component other than one that is normally in contact with the windshield.

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

B. The inner surface of the windshield was penetrated by the hood support beneath the protected zone.

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

DATA SHEET NO. 16 - FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

FMVSS 301 FUEL SYSTEM INTEGRTY POST IMPACT DATA

Temperature at Time of Impact: 20.7°C Test Time: 17:45

Stoddard Solvent Spillage Measurements

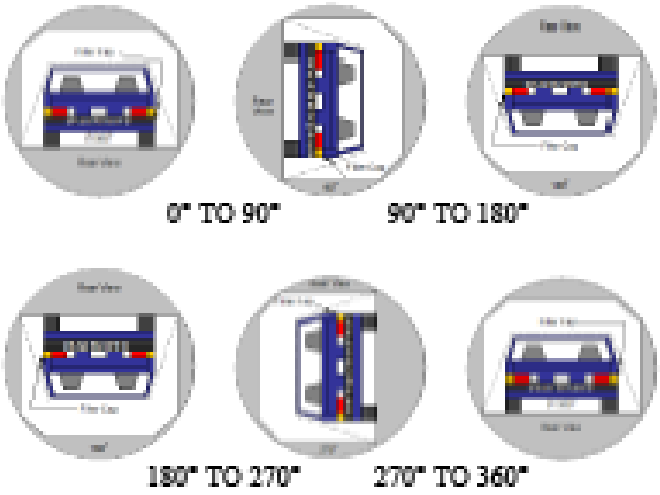
A	From impact until vehicle motion ceases: (maximum allowable – 1 oz.)	0 oz.
B	For the 5-minute period after motion ceases: (maximum allowable – 5 oz.)	0 oz.
C	For the following 25 minutes: (maximum allowable – 1 oz./minutes)	0 oz.
D	Spillage: None	

DATA SHEET NO. 16 - FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS (CONT'D)

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

1. The specified fixture rollover rate for each 90º of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage:

None



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0º to 90º	90	330	420
90º to 180º	90	330	840
180º to 270º	90	330	1260
270º to 360º	90	330	1480

FMVSS 301 SPILLAGE TABLE

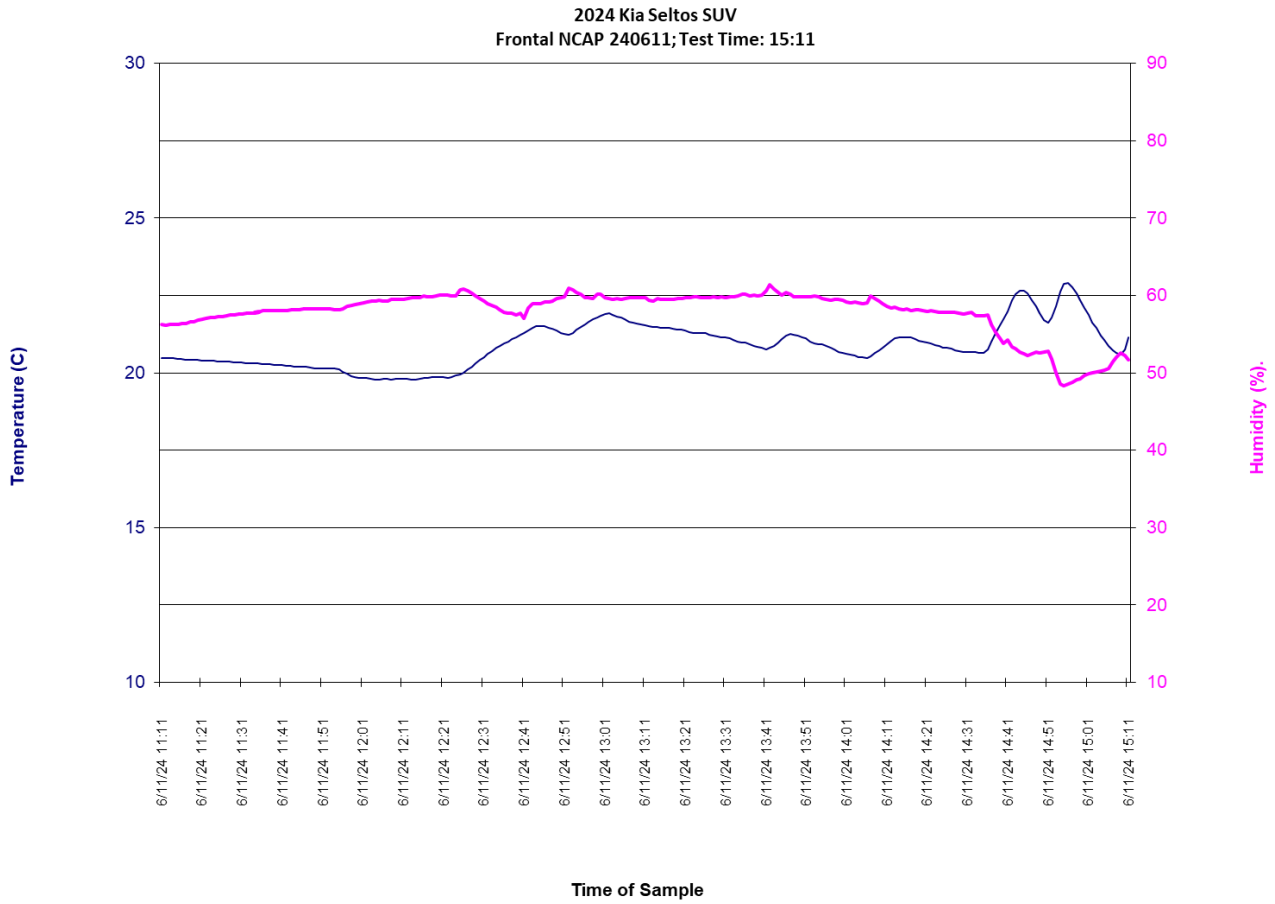
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0º to 90º	0	0	0	N/A
90º to 180º	0	0	0	N/A
180º to 270º	0	0	0	N/A
270º to 360º	0	0	0	N/A

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17 - DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2024 Kia Seltos SUV NHTSA No.: M20244210
Test Program: NCAP Frontal Impact Test Date: 6/11/2024

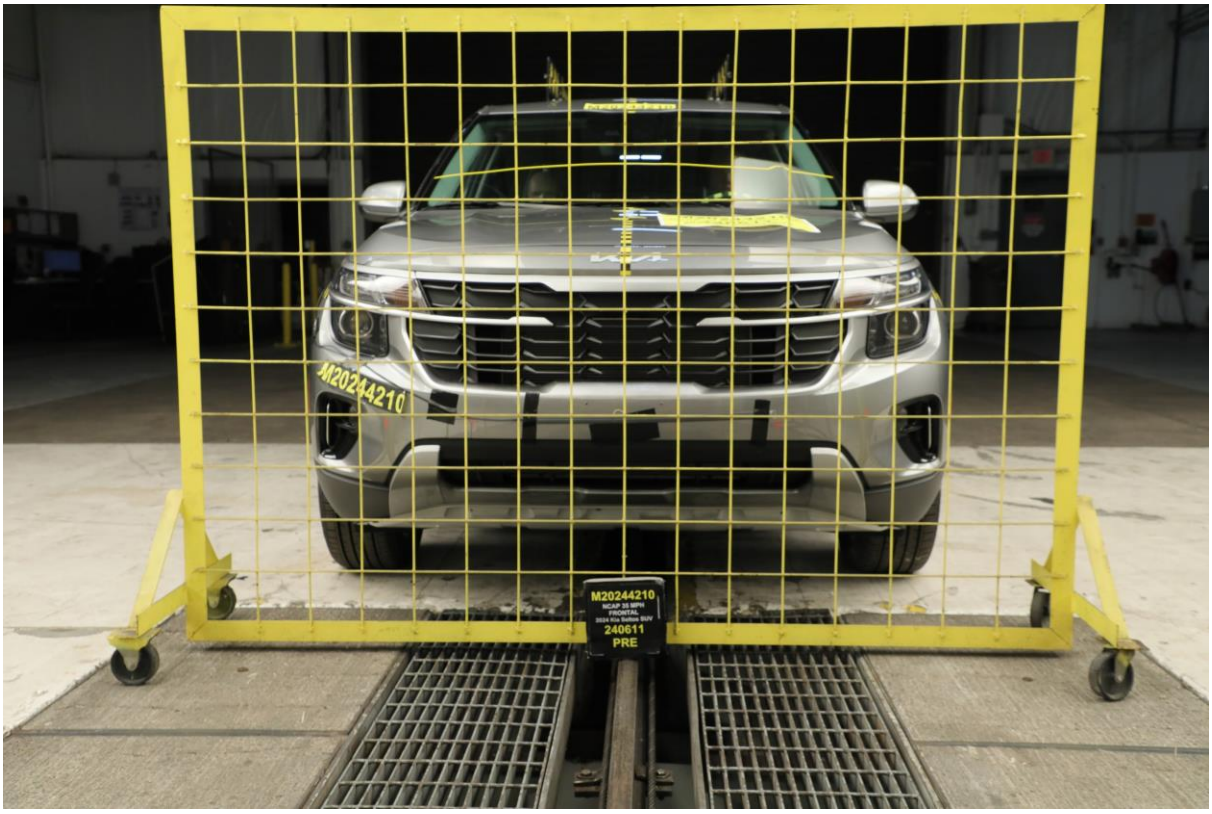


APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

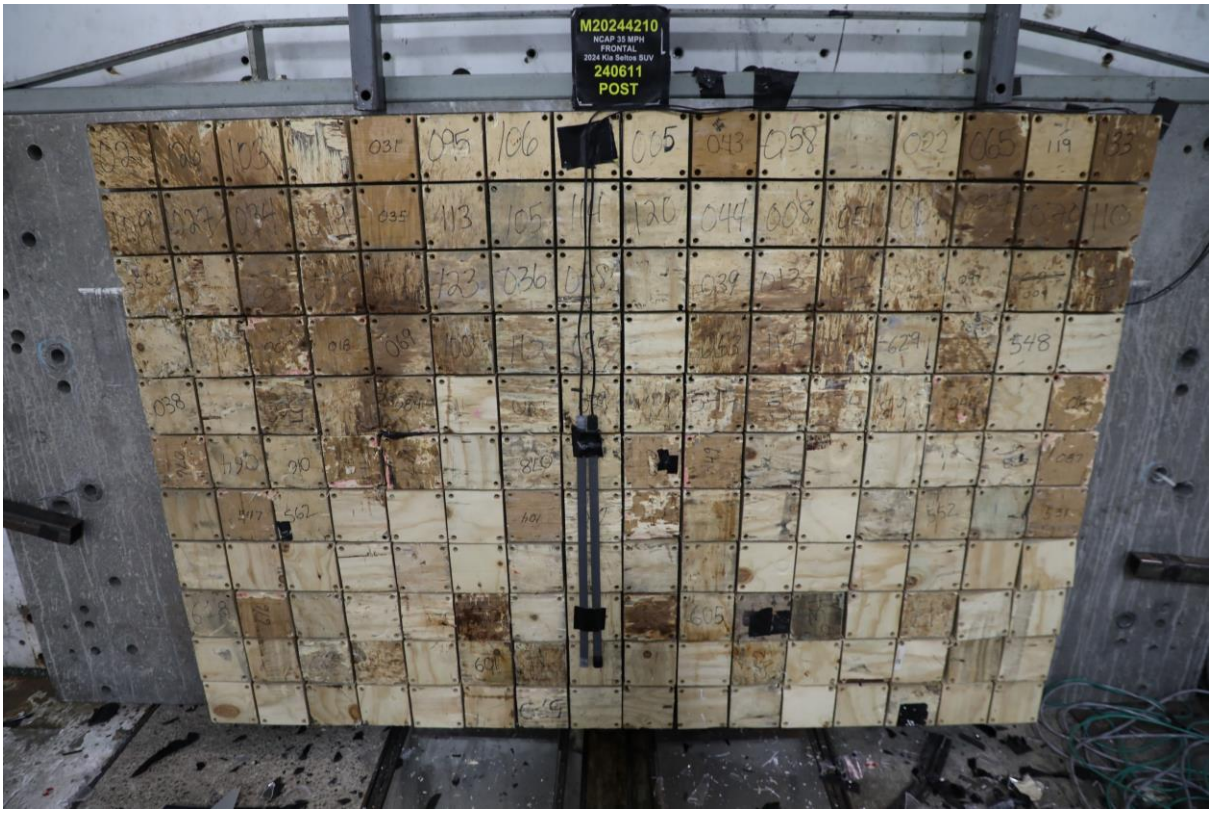
TABLE OF PHOTOGRAPHS (CONTINUED)

TABLE OF PHOTOGRAPHS (CONTINUED)



001 Load Cell Location

002 Pre-Test Load Cell Wall



003 Post-Test Load Cell Wall

004 Manufacturer's Label

005 Tire Placard

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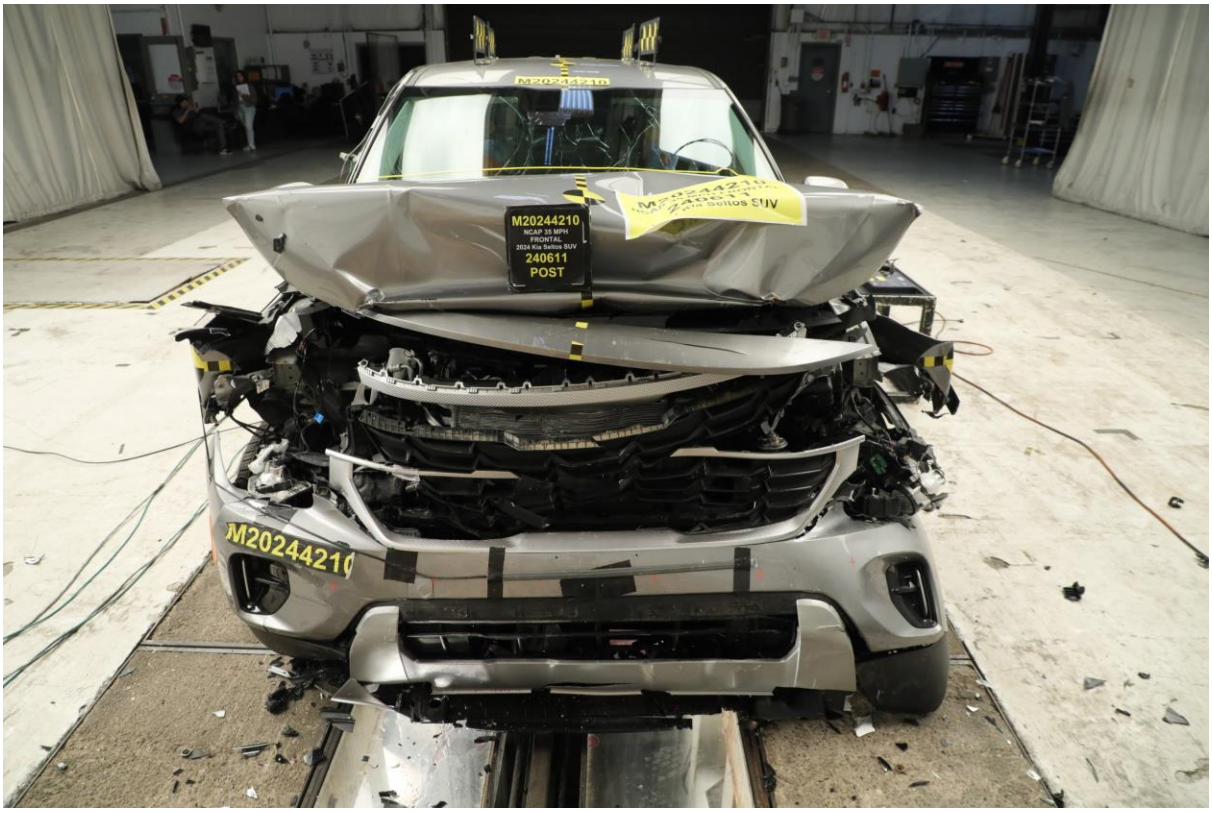
006 2024 Kia Seltos SUV Frontal As Delivered

007 Left Rear 3-4 View, as Received

008 Pre-Test Front View of Test Vehicle

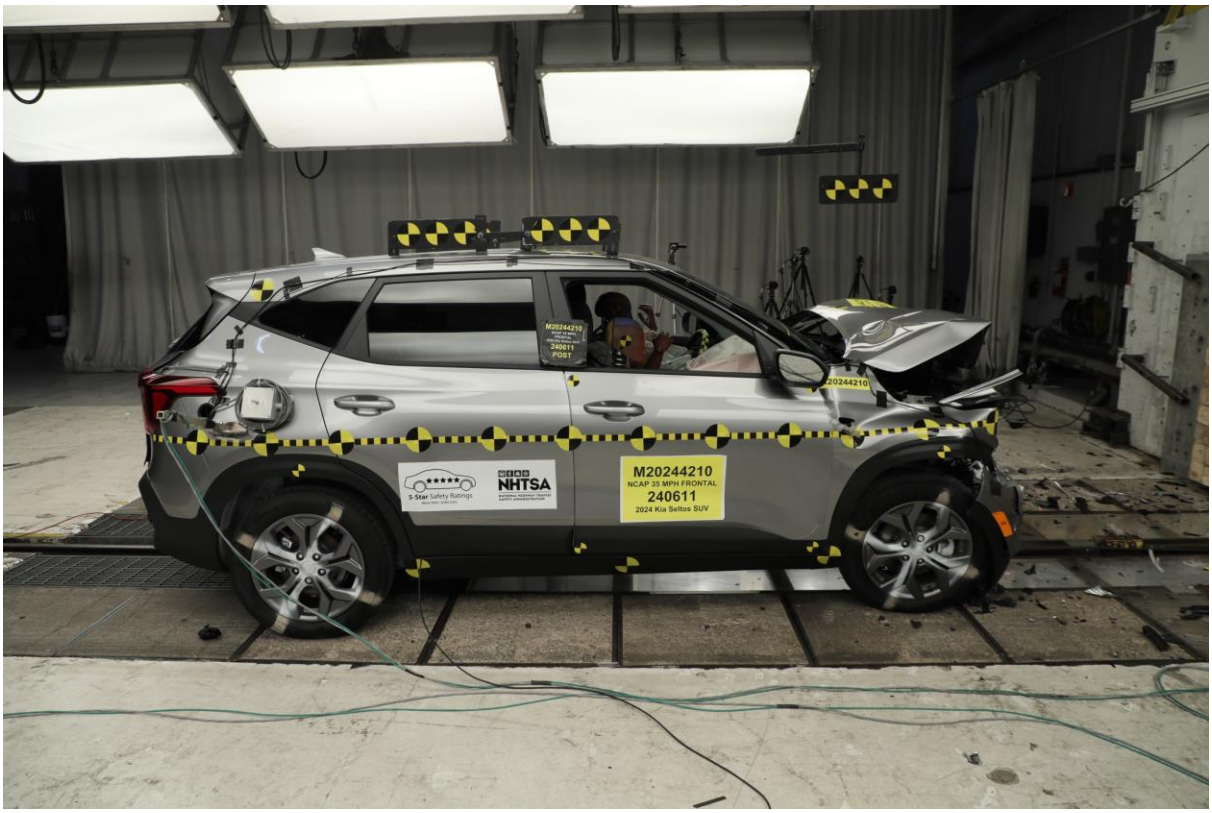


009 Post-Test Front View of Test Vehicle

010 Pre-Test Left View of Test Vehicle

011 Post-Test Left View of Test Vehicle

012 Pre-Test Right View of Test Vehicle

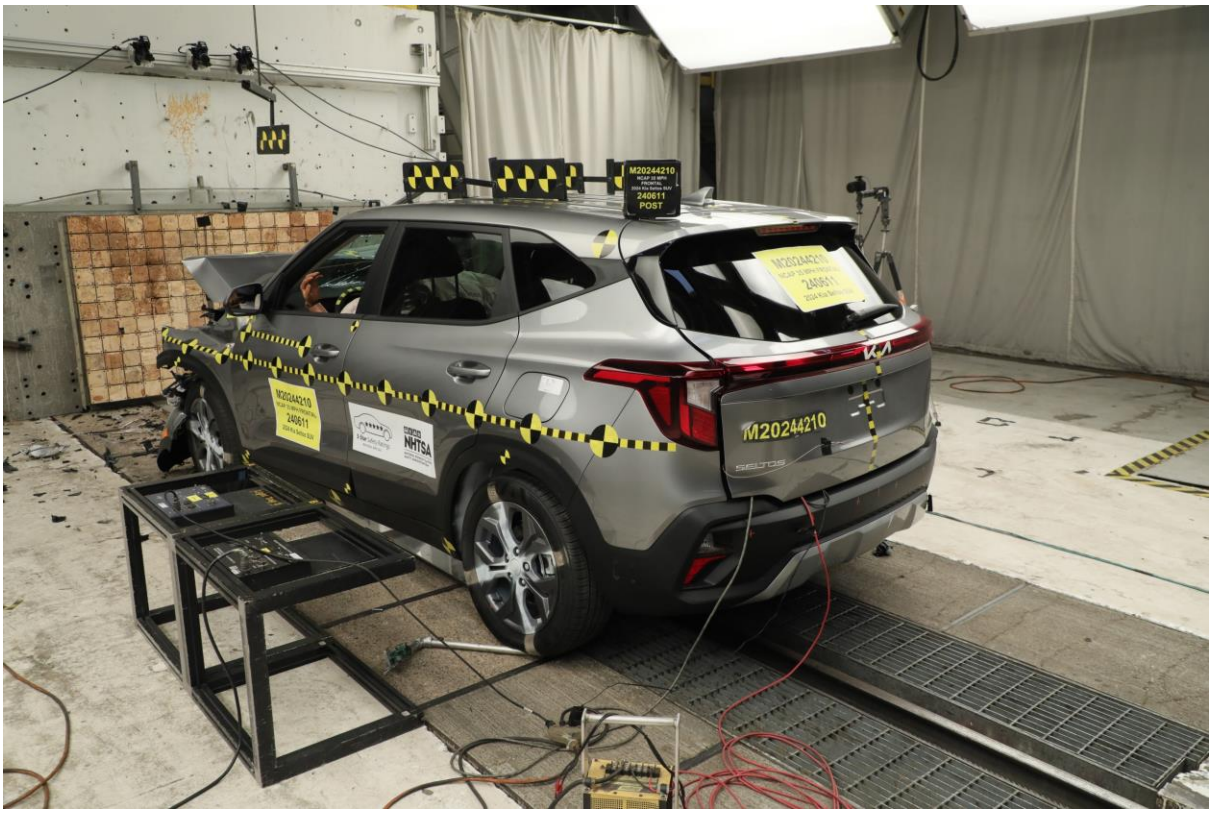


013 Post-Test Right View of Test Vehicle

014 Pre-Test Right Front 3-4 View

015 Post-Test Right Front 3-4 View

016 Pre-Test Left Rear 3-4 View

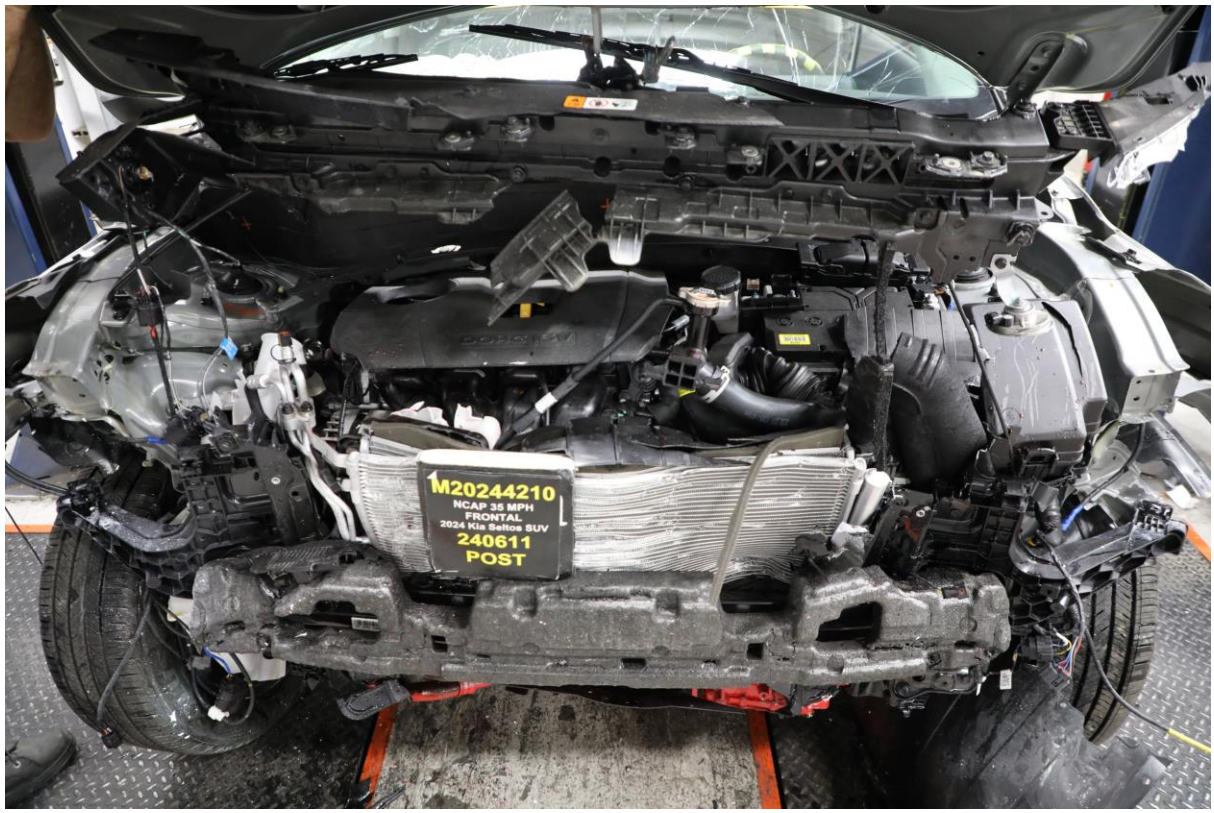


017 Post-Test Left Rear 3-4 View

018 Pre-Test Windshield View

019 Post-Test Windshield View

020 Pre-Test Engine Compartment View

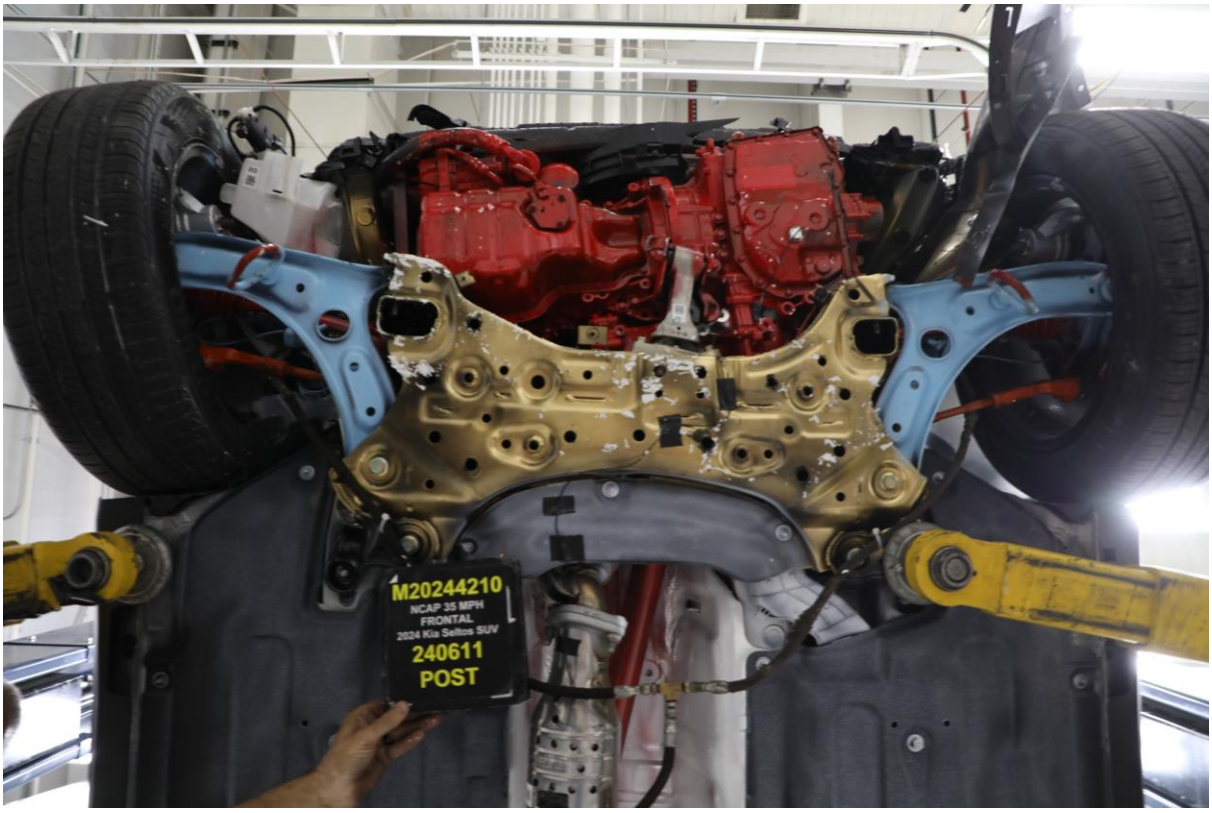


021 Post-Test Engine Compartment View

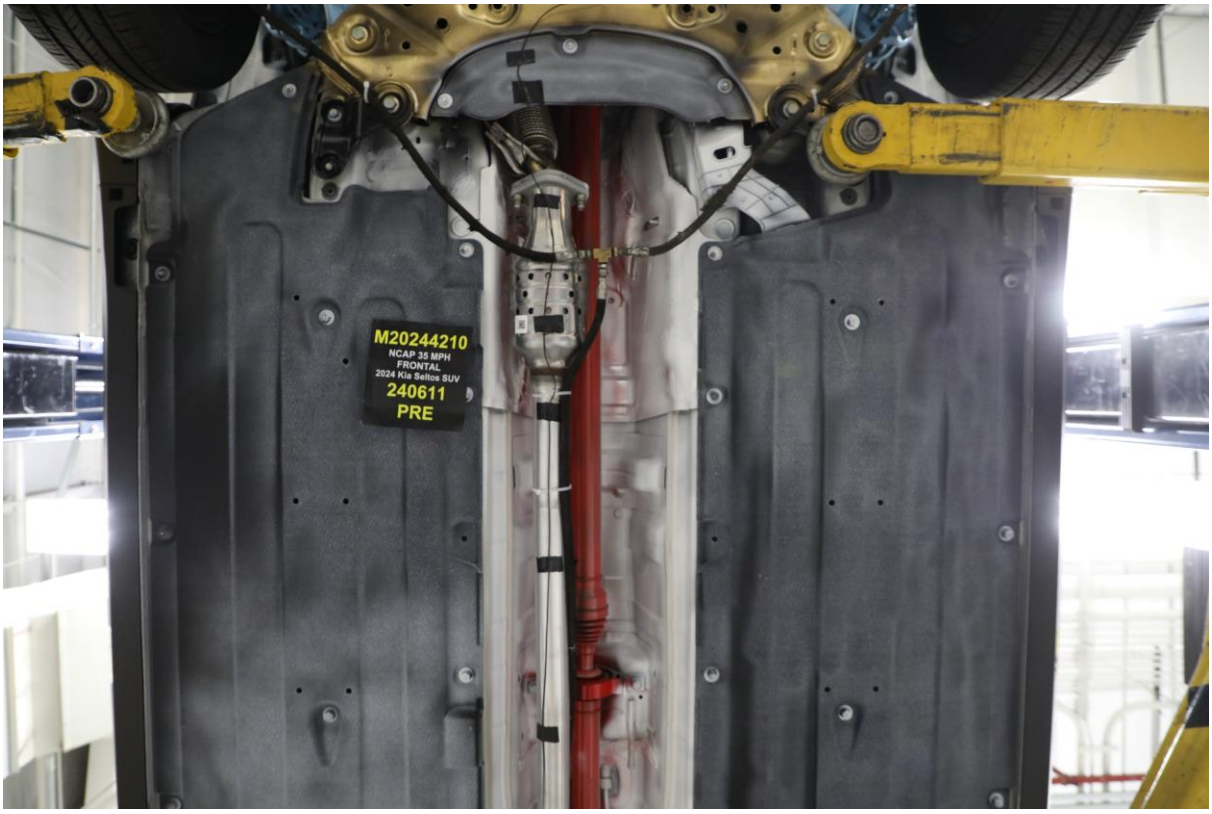
022 Pre-Test Fuel Filler Cap View

023 Post-Test Fuel Filler Cap View

024 Pre-Test Front Underbody View

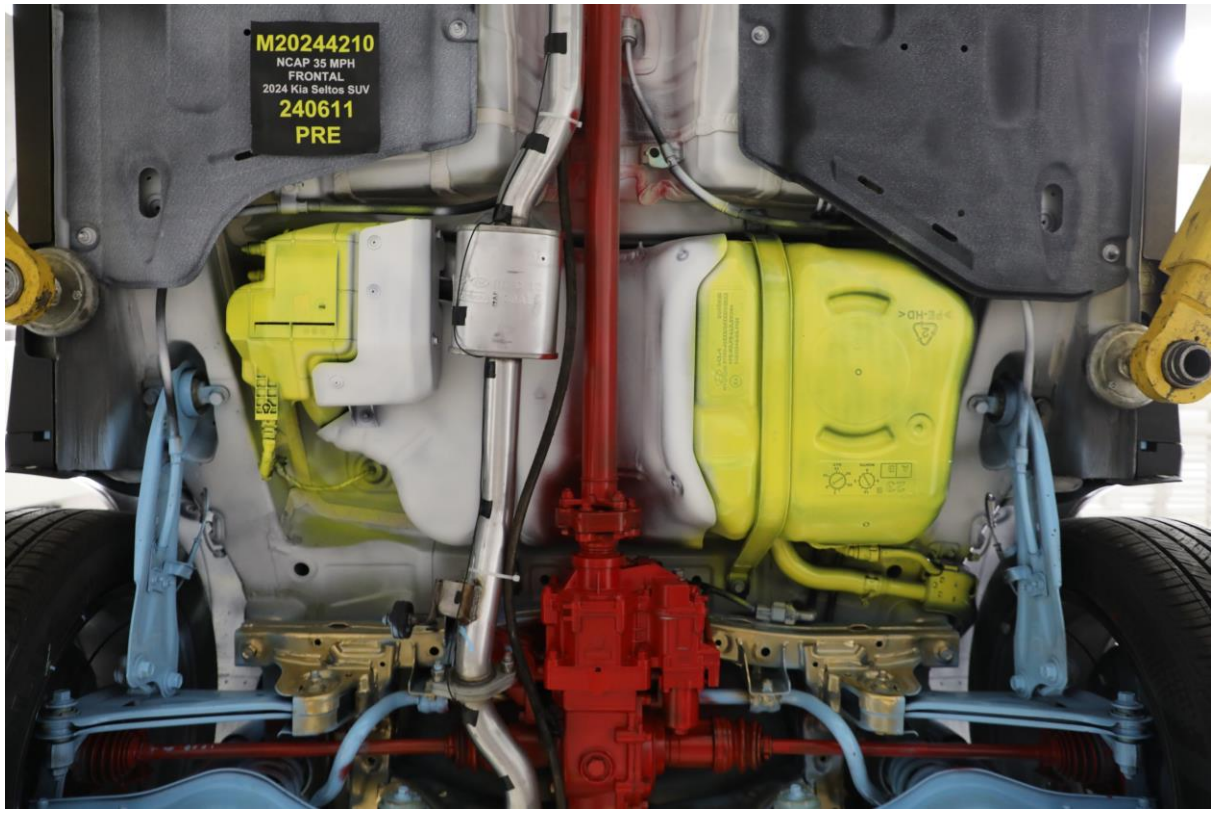


025 Post-Test Front Underbody View

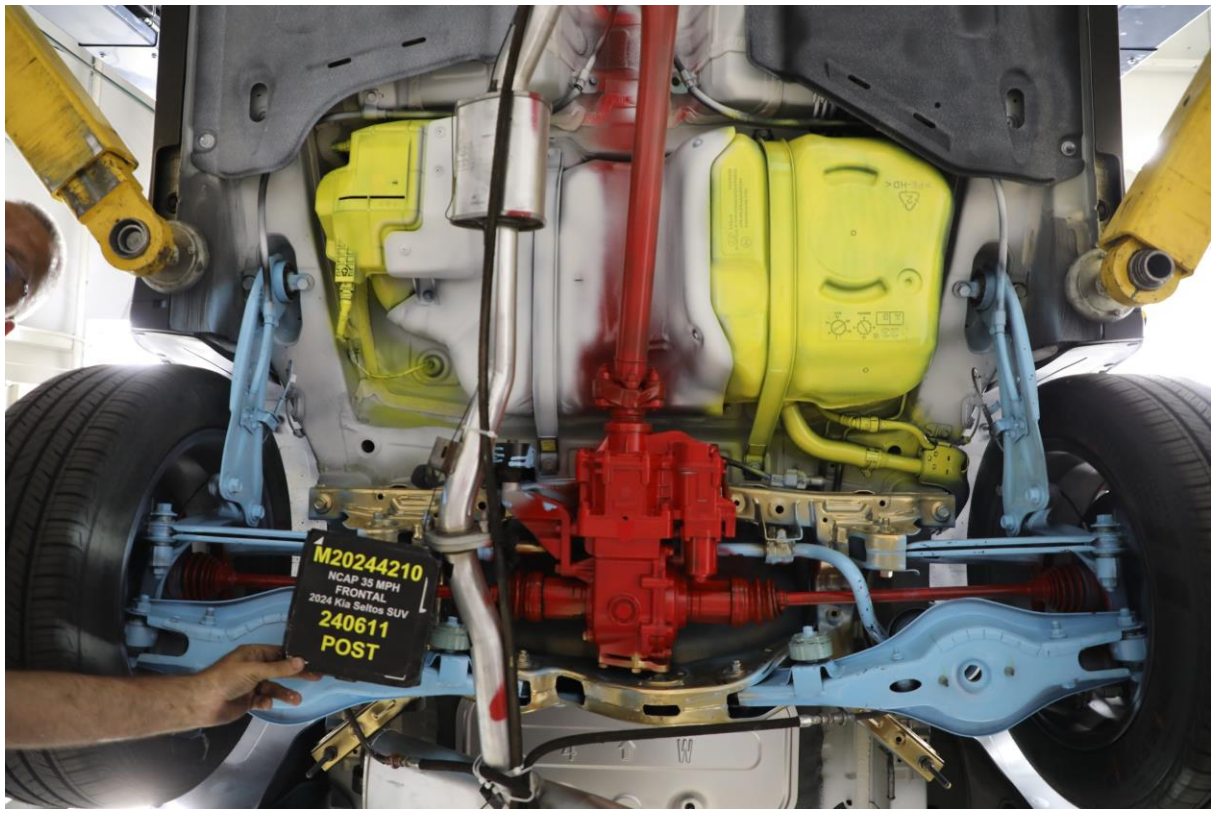


025a Pre-Test Mid Front Underbody View

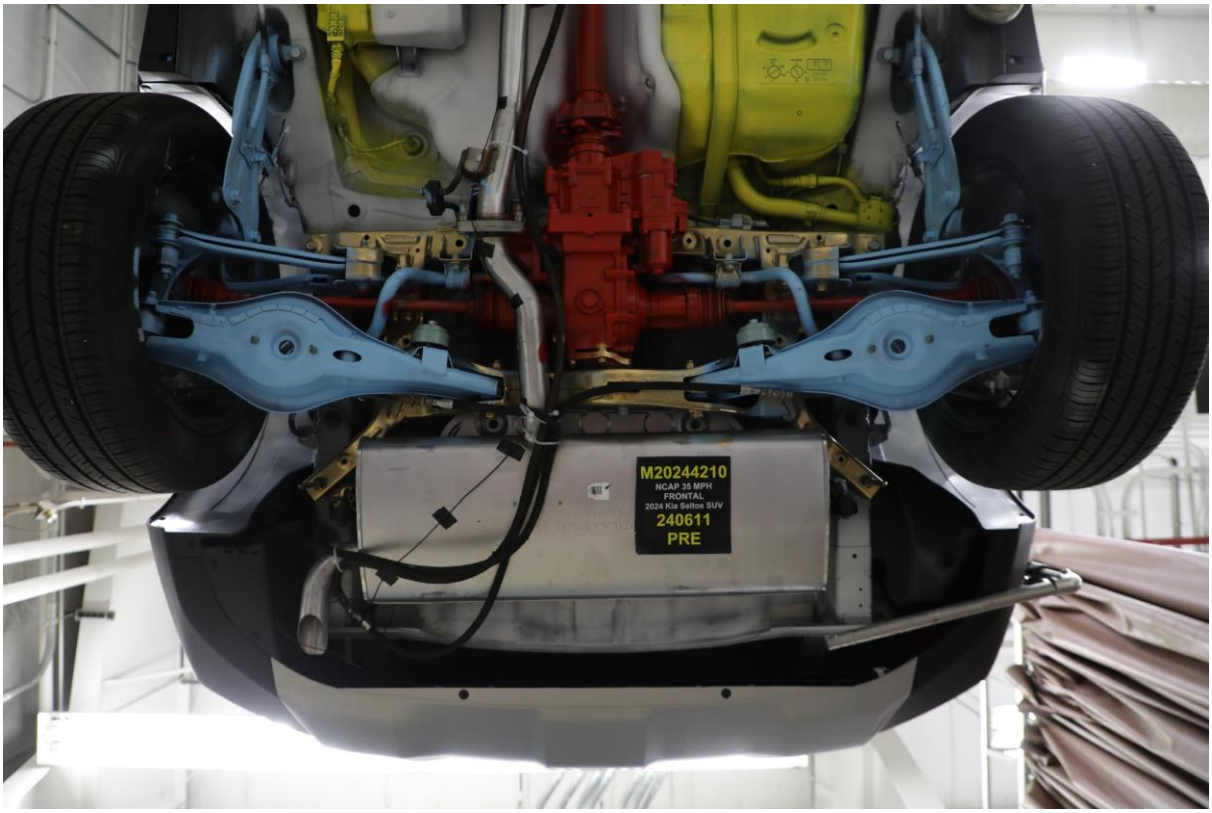
025b Post-Test Mid Front Underbody View



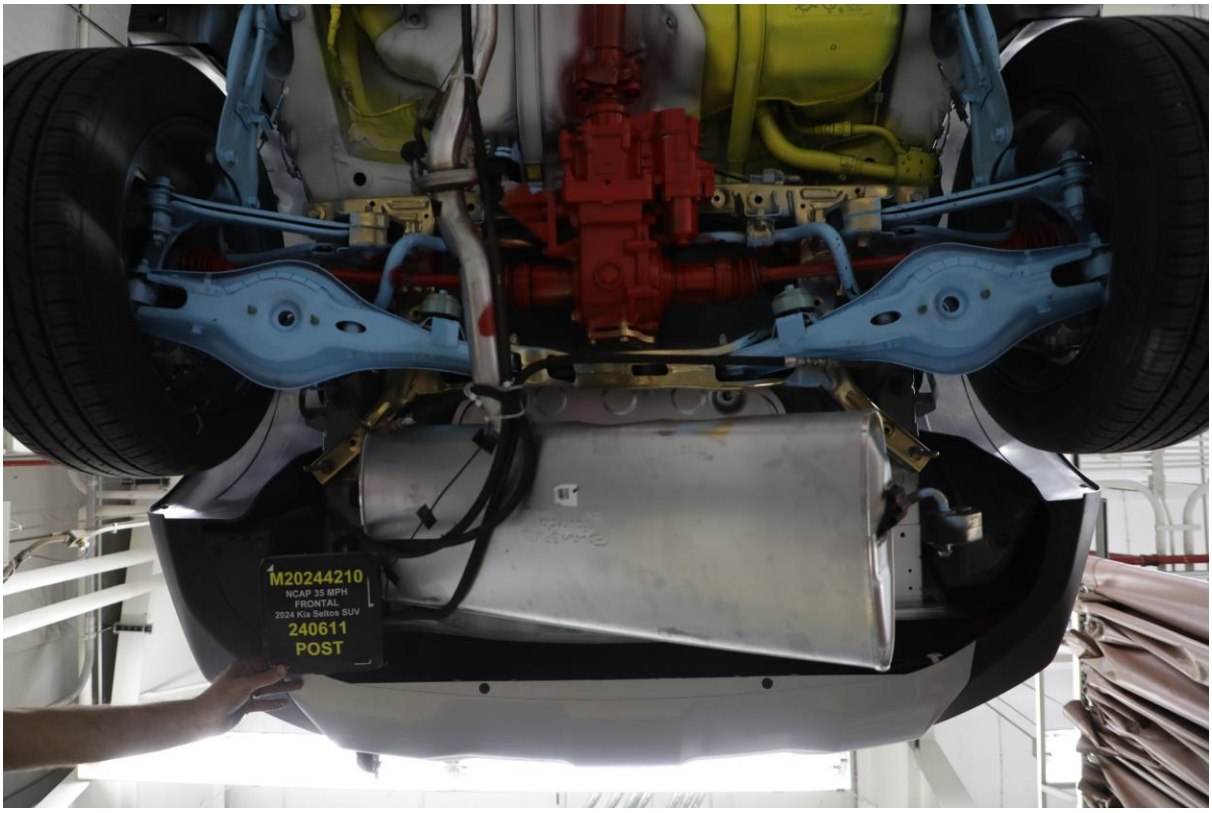
025c Pre-Test Mid Rear Underbody View



025d Post-Test Mid Rear Underbody View

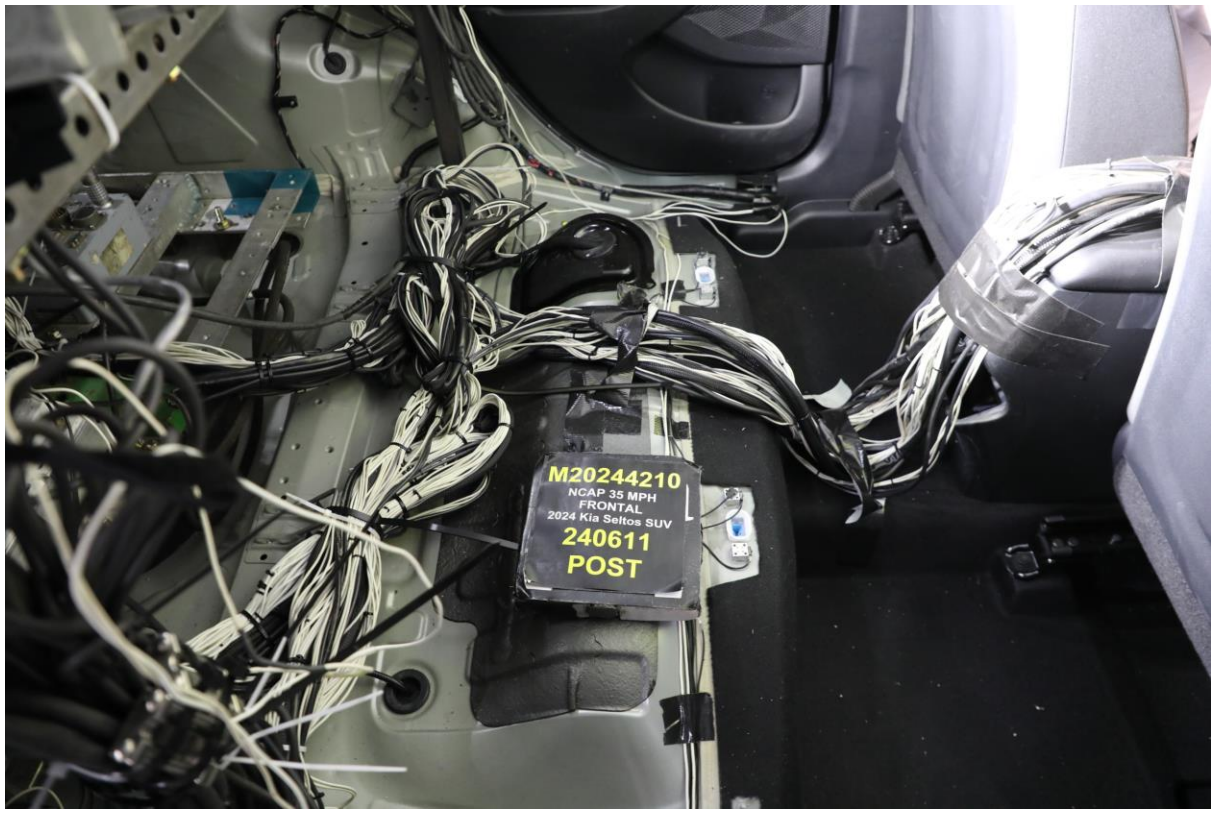


026 Pre-Test Rear Underbody View



027 Post-Test Rear Underbody View

028 Pre-Test Dummy Cable Routing



029 Post-Test Dummy Cable Routing

030 Pre-Test Driver Dummy Front View

031 Post-Test Driver Dummy Front View

032 Pre-Test Driver Dummy Window View

033 Post-Test Driver Dummy Window View

034 Pre-Test Driver Dummy and Vehicle Interior View

035 Post-Test Driver Dummy and Vehicle Interior View

036 Pre-Test Driver's Seat Fore-Aft Markings

037 Post-Test Driver's Seat Fore-Aft Markings

038 Pre-Test View of Belt Anchorage for Driver Dummy

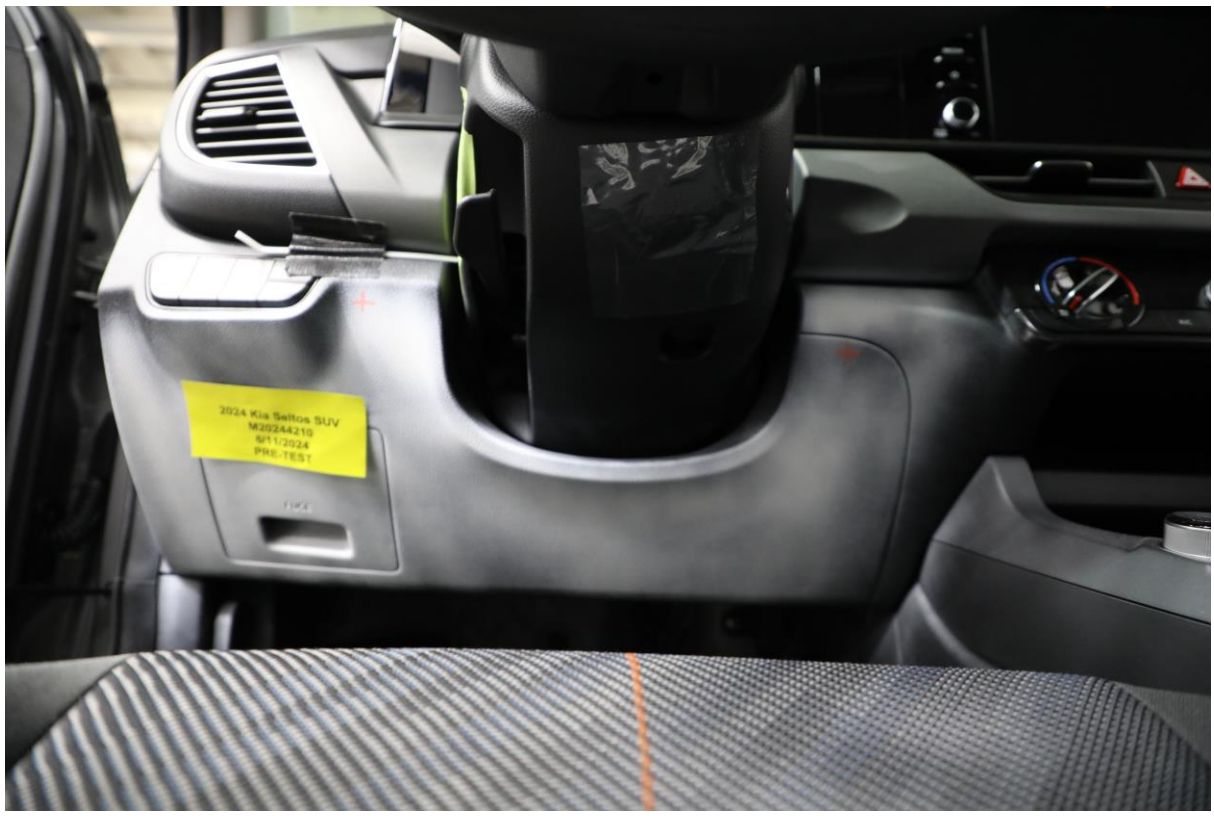
039 Post-Test View of Belt Anchorage for Driver Dummy

040 Pre-Test View of Belt Buckle and Latch Plate for Driver Dummy

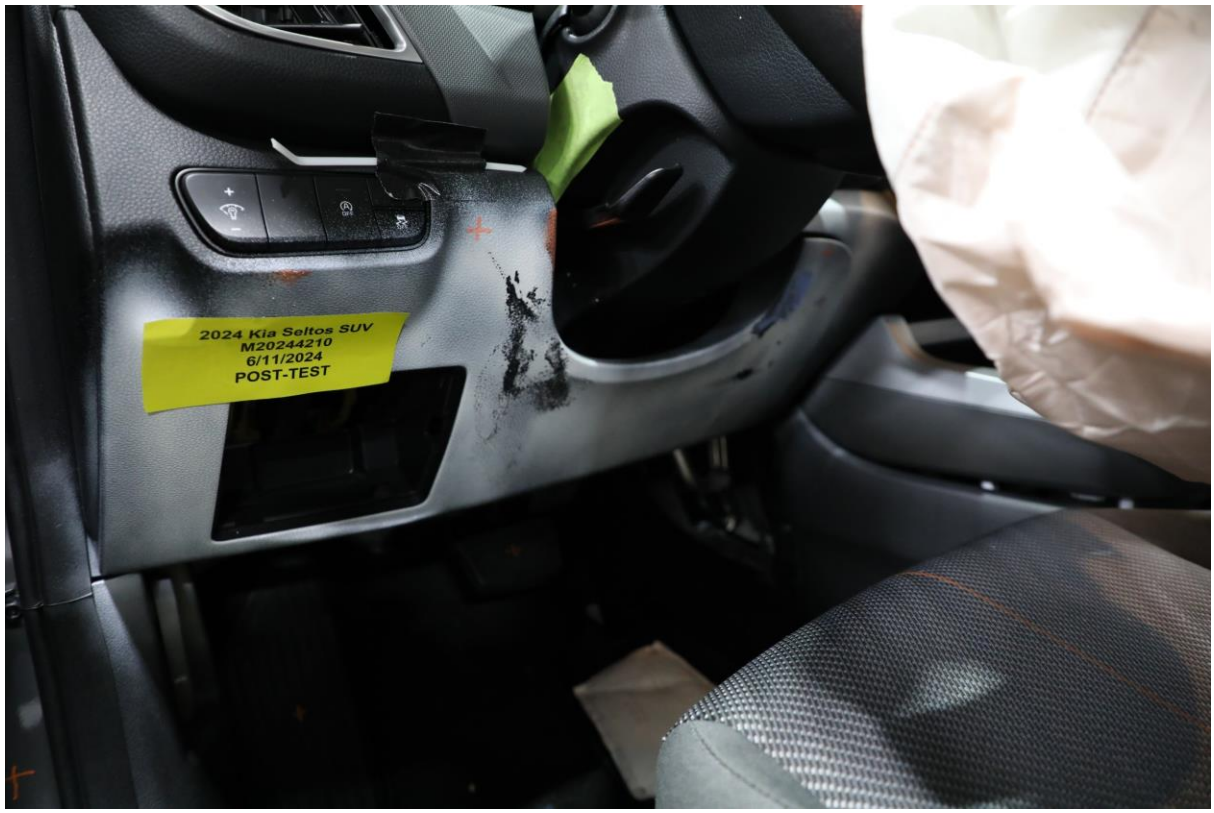
041 Post-Test View of Belt Buckle and Latch Plate for Driver Dummy

042 Pre-Test Driver Dummy Feet

043 Post-Test Driver Dummy Feet



044 Pre-Test Driver's Side Knee Bolster

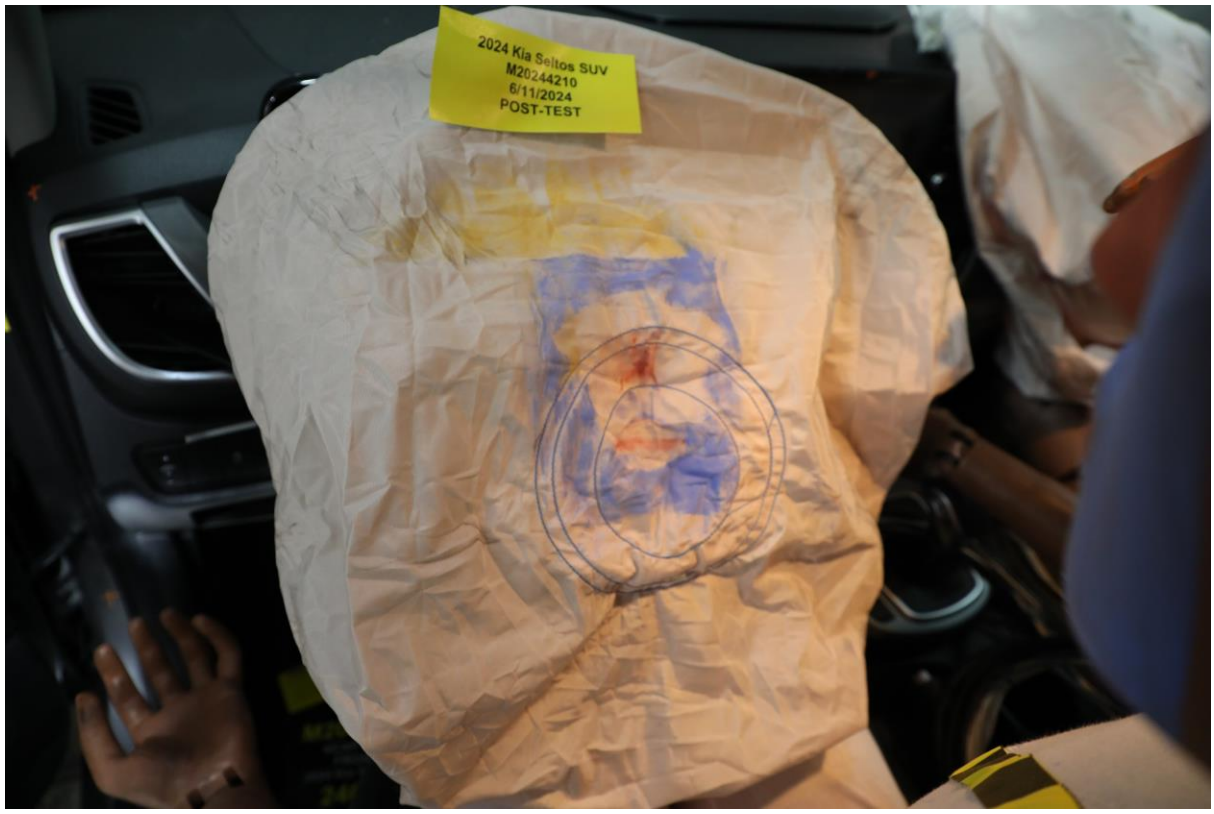


045 Post-Test Driver's Side Knee Bolster

046 Pre-Test Driver's Side Floorpan

047 Post-Test Driver's Side Floorpan

048 Post-Test Driver Dummy Face



049 Post-Test Driver Dummy Contact with Airbag

050 Post-Test Driver Dummy Contact with Headrest

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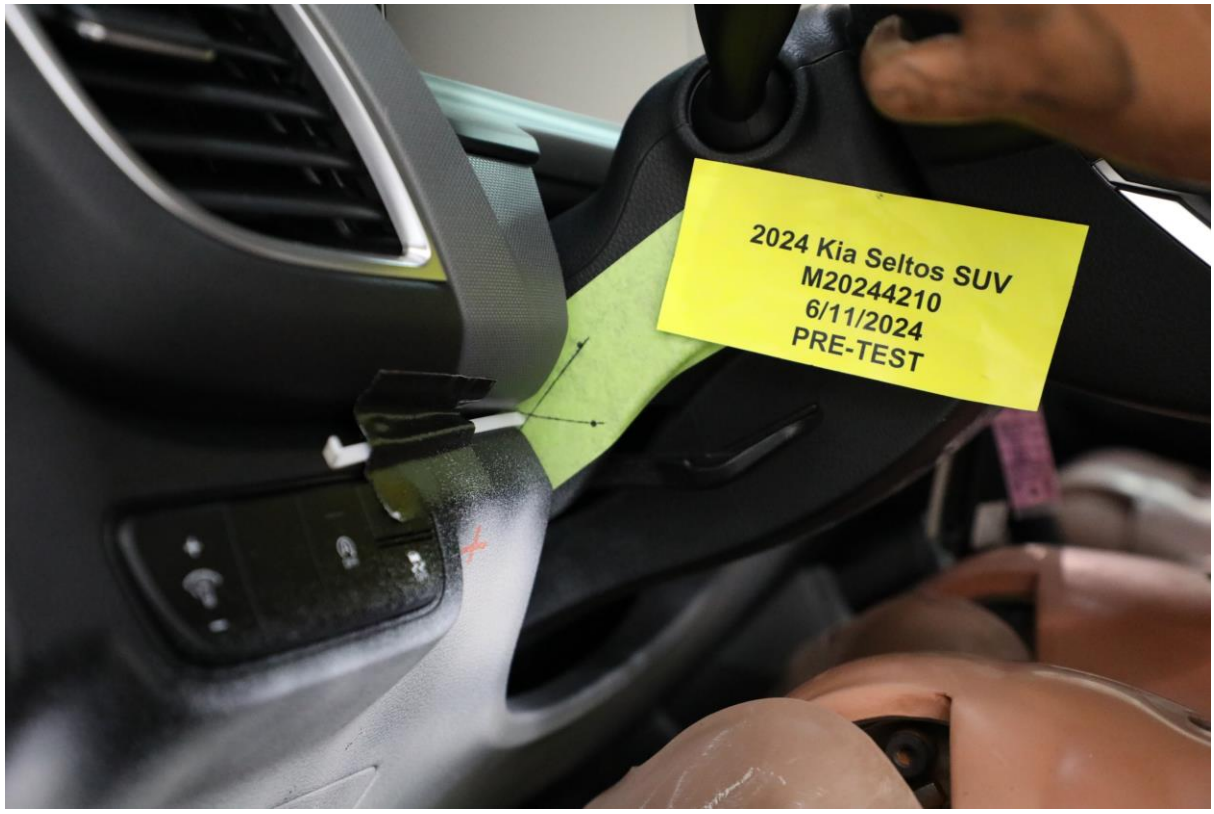


051 Pre-Test View of the Steering Wheel

052 Post-Test View of the Steering Wheel

53 Pre-Test Passenger Dummy Front View

054 Post-Test Passenger Dummy Front View

055 Pre-Test Passenger Dummy Window View

056 Post-Test Passenger Dummy Window View

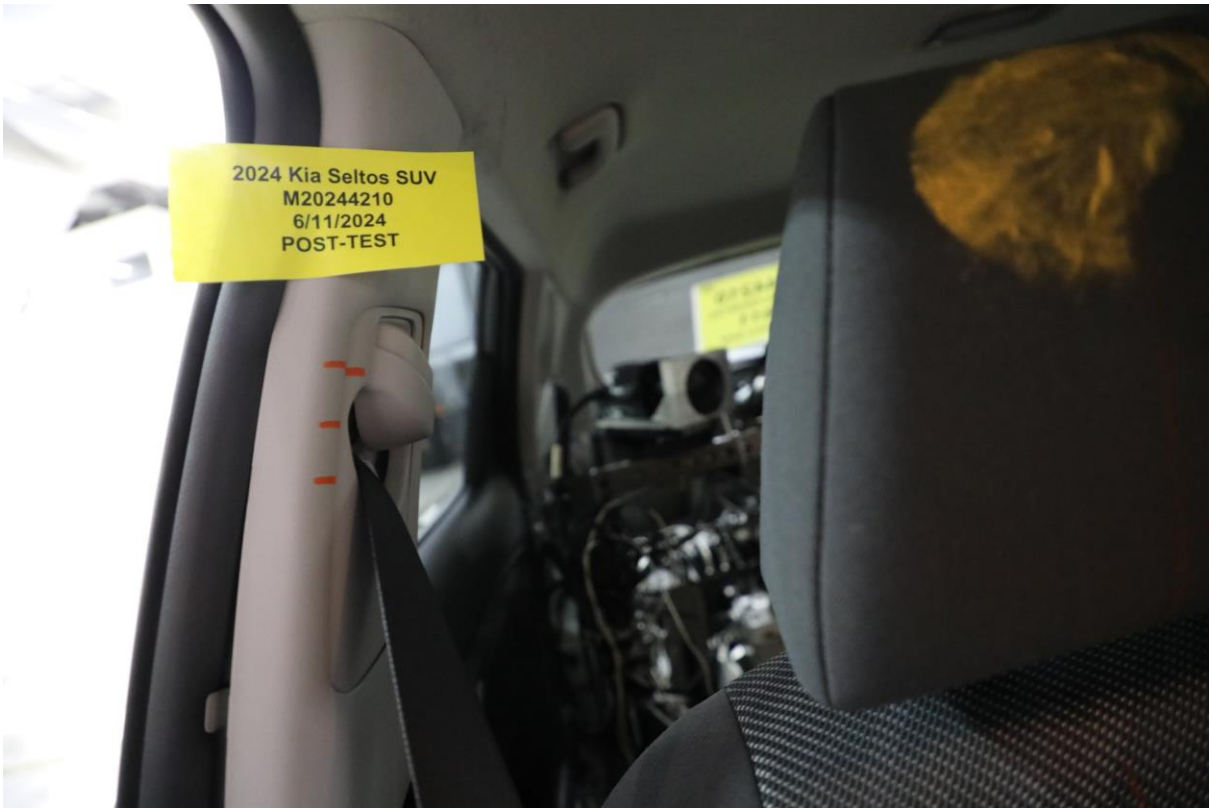
057 Pre-Test Passenger Dummy and Vehicle Interior View

058 Post-Test Passenger Dummy and Vehicle Interior View

059 Pre-Test Passenger's Seat Fore-Aft Markings

060 Post-Test Passenger's Seat Fore-Aft Markings

061 Pre-Test View of Belt Anchorage for Passenger Dummy



062 Post-Test View of Belt Anchorage for Passenger Dummy

063 Pre-Test View of Belt Buckle and Latch Plate for Passenger Dummy

064 Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy

065 Pre-Test Passenger Dummy Feet

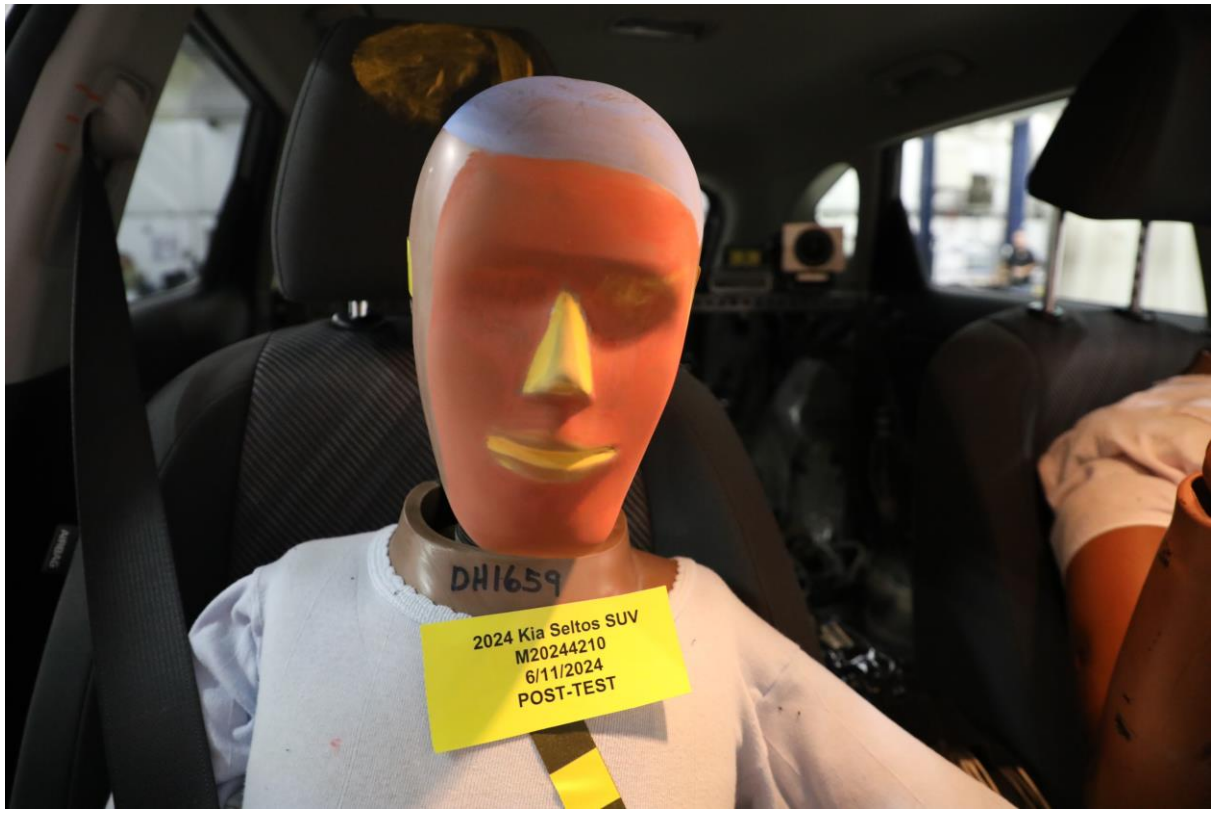
066 Post-Test Passenger Dummy Feet

067 Pre-Test Passenger's Side Knee Bolster

068 Post-Test Passenger's Side Knee Bolster

069 Pre-Test Passenger's Side Floorpan

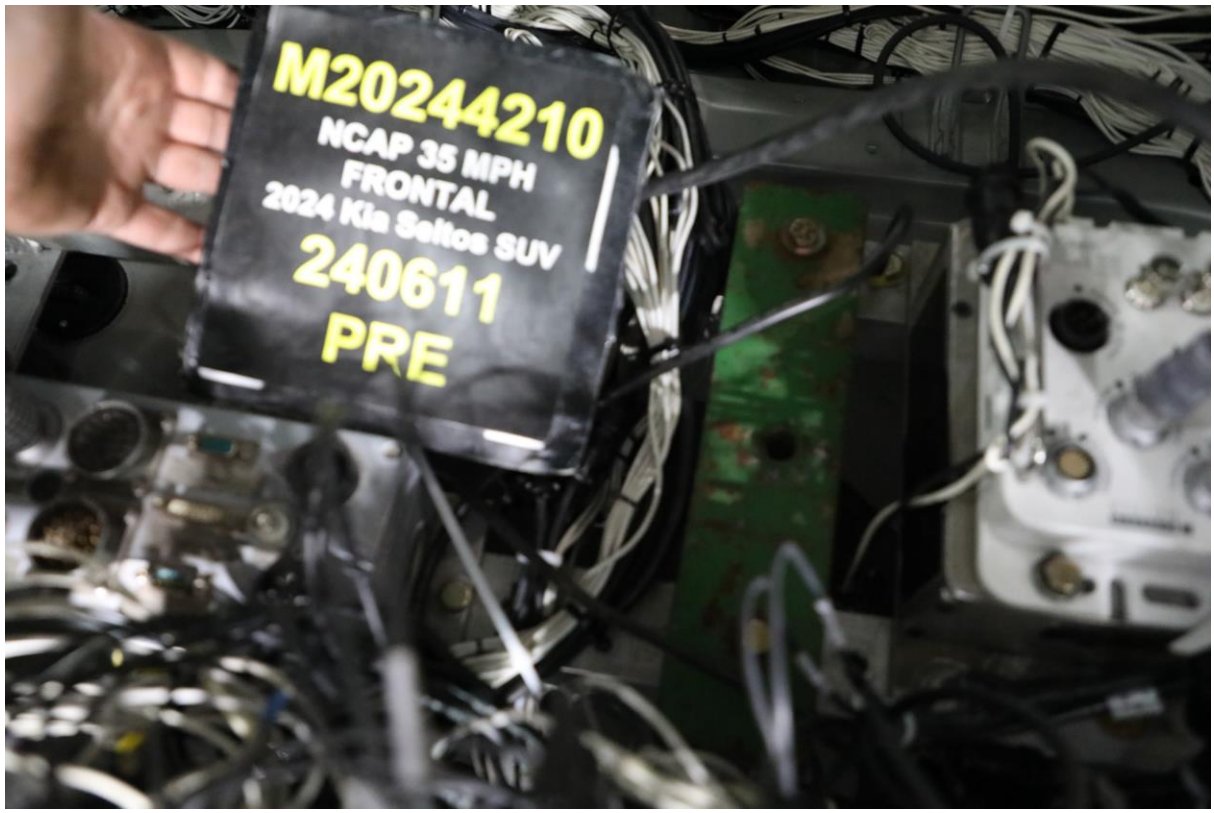
070 Post-Test Passenger's Side Floorpan



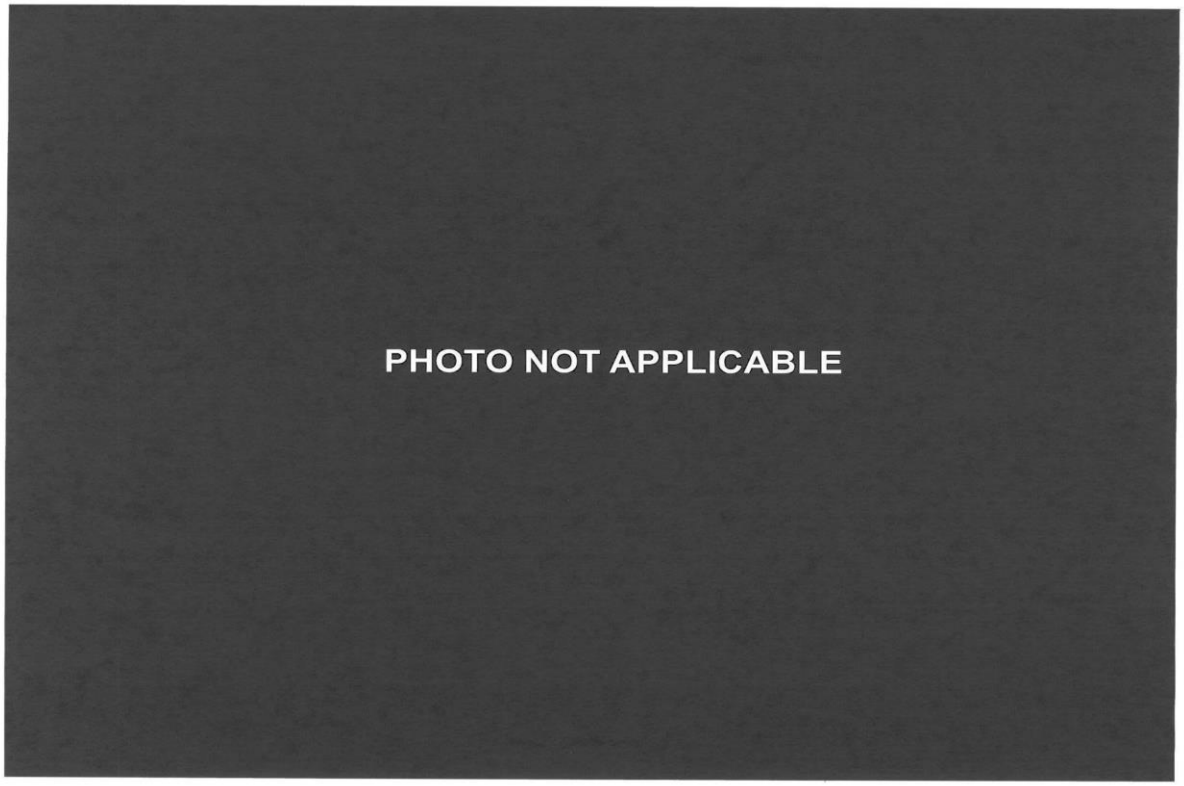
071 Post-Test Passenger Dummy Face

072 Post-Test Passenger Dummy Contact with Airbag

073 Post-Test Passenger Dummy Contact with Headrest

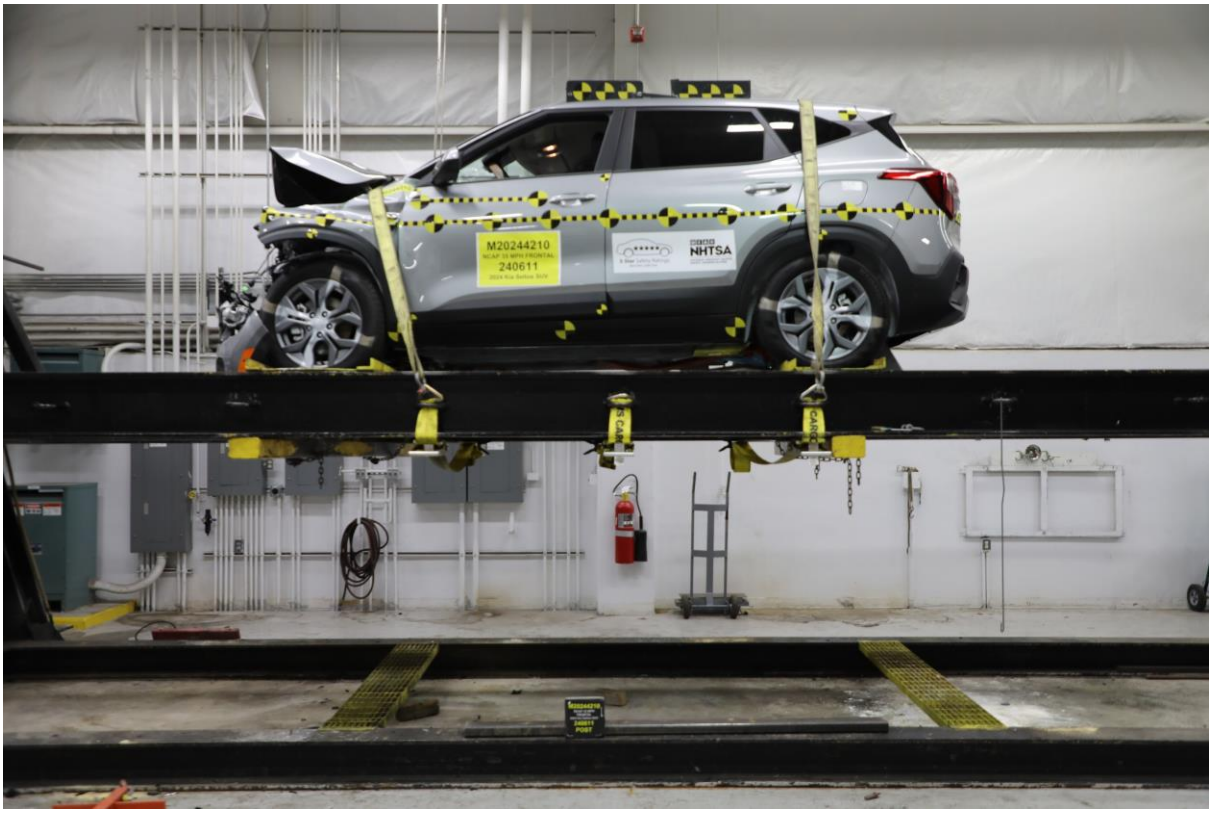


074 Photograph of Ballast Installed in Vehicle



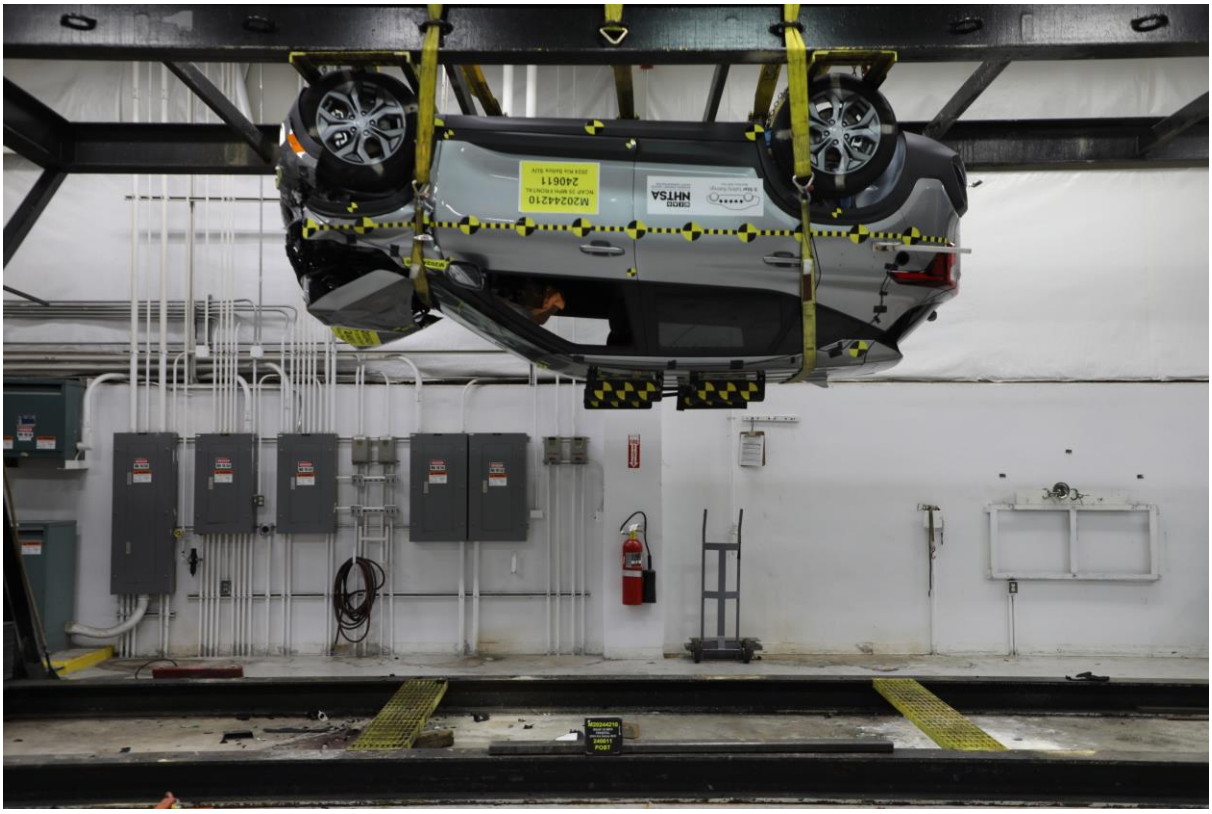
075 Post-Test Stoddard Spillage Location View

076 Post-Test Speed Trap Read out

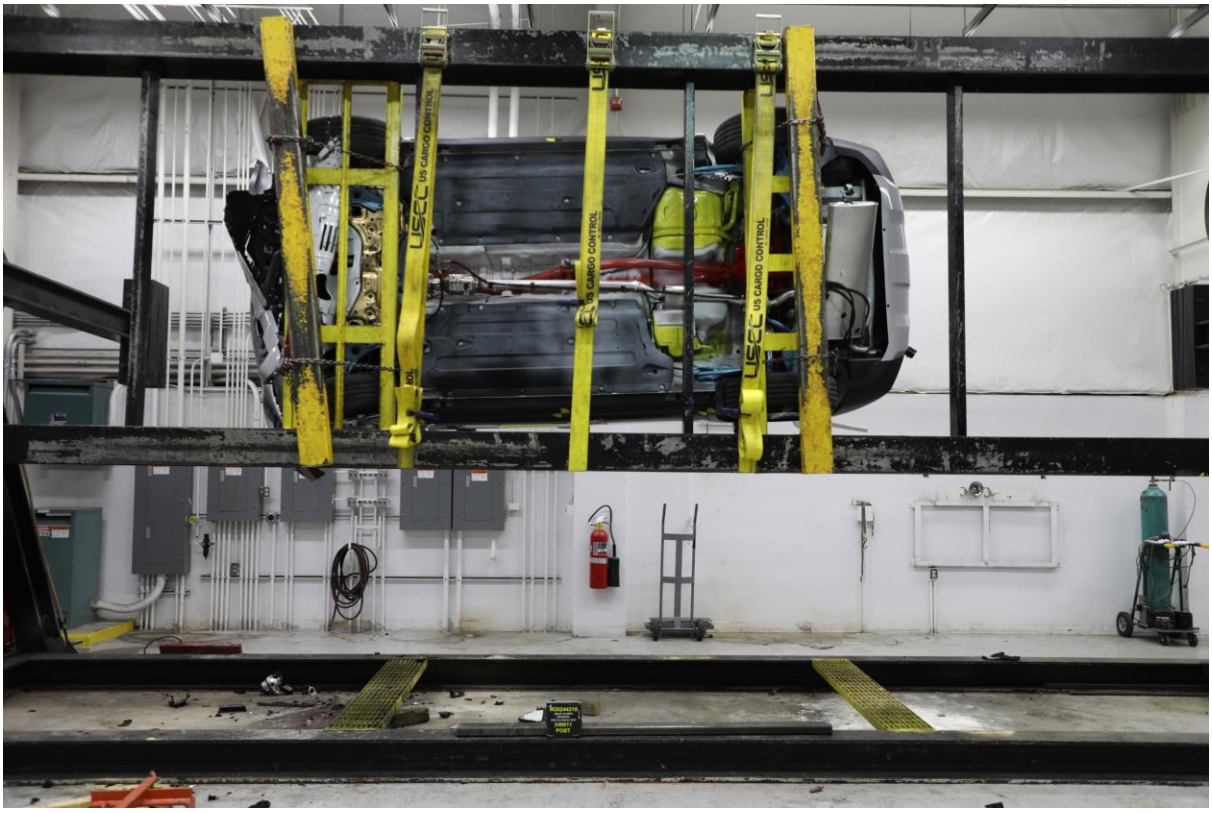


077 Vehicle at 0º on Static Rollover Device

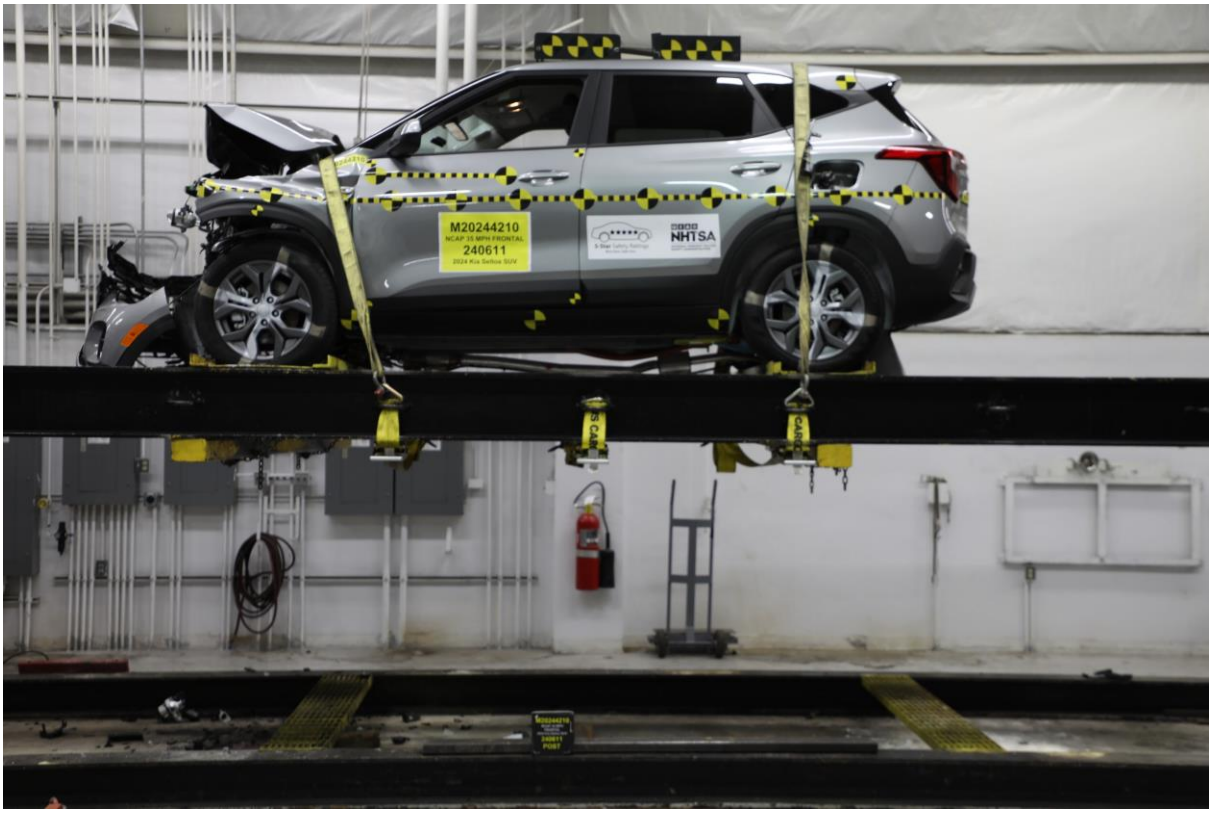
078 Vehicle at 90º on Static Rollover Device



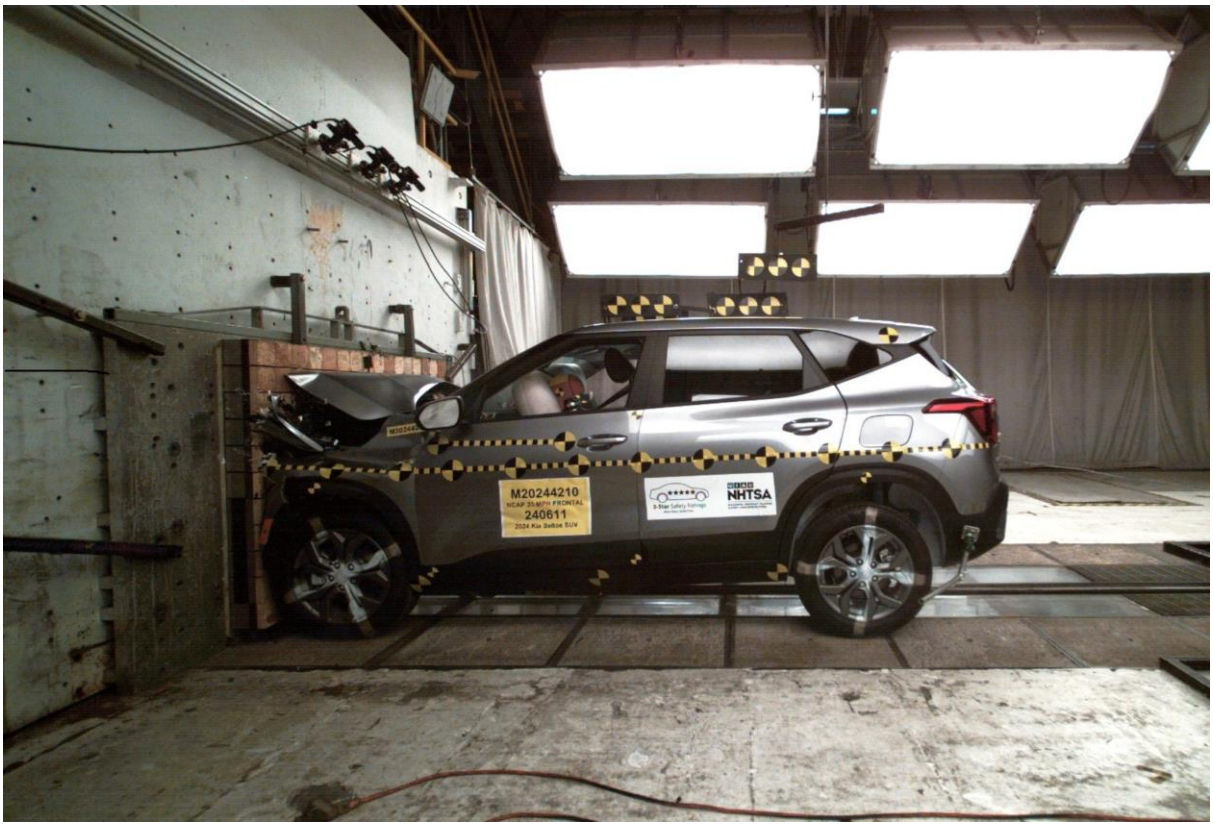
079 Vehicle at 180º on Static Rollover Device



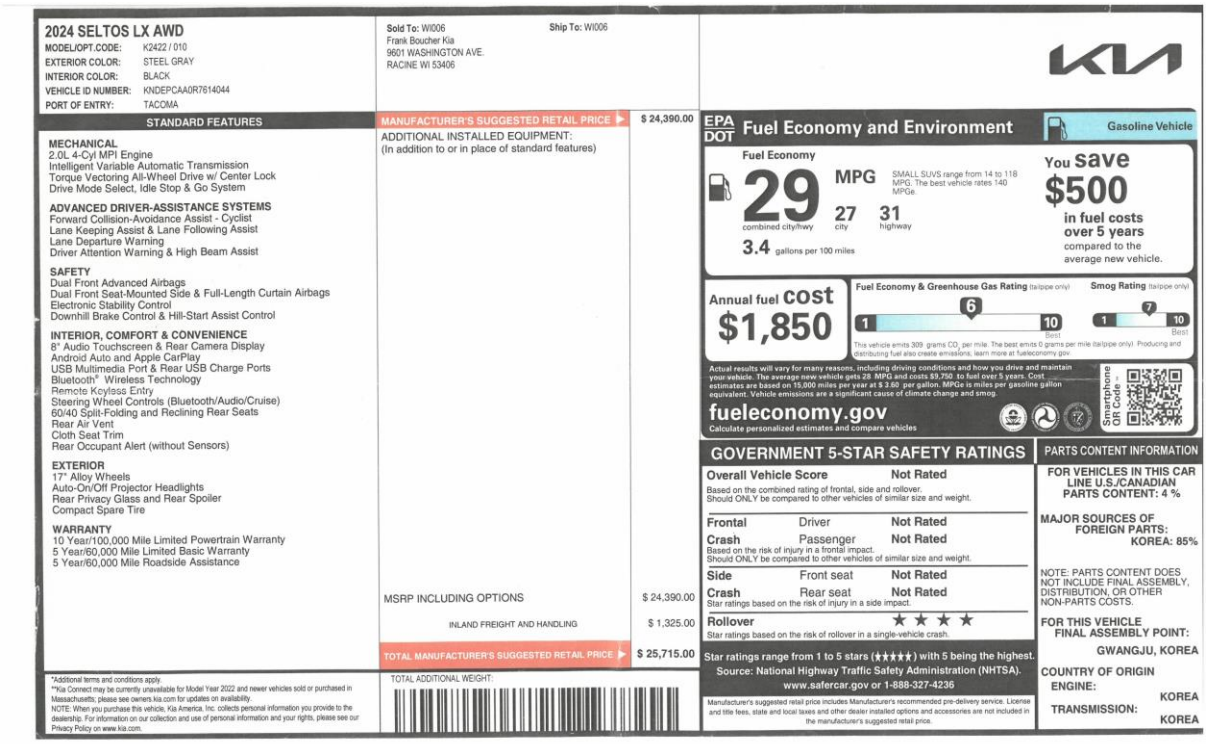
080 Vehicle at 270º on Static Rollover Device



081 Vehicle at 360º on Static Rollover Device



082 2024 Kia Seltos SUV Frontal Impact Event



2024 SELTOS LX AWD
MODEL/OPT.CODE: K2422 / 010
EXTERIOR COLOR: STEEL GRAY
INTERIOR COLOR: BLACK
VEHICLE ID NUMBER: KNDEPCAA0R7614044
PORT OF ENTRY: TACOMA

Sold To: WI006
Frank Boucher Kia
9601 WASHINGTON AVE.
RACINE WI 53406

Ship To: WI006

STANDARD FEATURES

MECHANICAL
2.0L 4-Cyl MPI Engine
Intelligent Variable Automatic Transmission
Torque Vectoring All-Wheel Drive w/ Center Lock
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
Driver Attention Warning & High Beam 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
8" Audio Touchscreen & Rear Camera Display
Android Auto and Apple CarPlay
USB Multimedia Port & Rear USB Charge Ports
Bluetooth® Wireless Technology
Remote Keyless Entry
Steering Wheel Controls (Bluetooth/Audio/Cruise)
60/40 Split-Folding and Reclining Rear Seats
Rear Air Vent
Cloth Seat Trim
Rear Occupant Alert (without Sensors)

EXTERIOR
17" Alloy Wheels
Auto-On/Off Projector Headlights
Rear Privacy Glass and Rear Spoiler
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 $ 24,390.00

ADDITIONAL INSTALLED EQUIPMENT:
(In addition to or in place of standard features)

MSRP INCLUDING OPTIONS $ 24,390.00

INLAND FREIGHT AND HANDLING $ 1,325.00

TOTAL MANUFACTURER'S SUGGESTED RETAIL PRICE $ 25,715.00

TOTAL ADDITIONAL WEIGHT:

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy
29 MPG combined city/hwy
27 city
31 highway
3.4 gallons per 100 miles

SMALL SUVS range from 14 to 118 MPG. The best vehicle rates 140 MPGe.

You save $500 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost $1,850

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

This vehicle emits 309 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 $ 2.60 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

083 Monroney Label Photograph

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

The following additional dummy and vehicle response data can be found in the R & D section of the NHTSA website at: www.nhtsa.gov.

Driver Head Acceleration X Redundant
Driver Head Acceleration Y Redundant
Driver Head Acceleration Z Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Left Femur Redundant
Driver Right Femur Redundant
Driver Left Upper Tibia Moment X
Driver Left Upper Tibia Moment Y
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z

Driver Head Angular Velocity X
Driver Head Angular Velocity Y
Driver Head Angular Velocity Z
Driver Shoulder Belt
Driver Lap Belt
Passenger Head Acceleration X Redundant
Passenger Head Acceleration Y Redundant
Passenger Head Acceleration Z Redundant
Passenger Upper Neck Force Y
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Z
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z

Passenger Head Angular Velocity X
Passenger Head Angular Velocity Y
Passenger Head Angular Velocity Z
Left Rear Seat Crossmember X
Left Rear Seat Crossmember Z
Passenger Shoulder Belt
Passenger Lap Belt
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Left Rear Seat Crossmember X Redundant
Right Rear Seat Crossmember X Redundant
Vehicle Engine Top X
Vehicle Engine Bottom X
Load Cell Barrier Forces

NHTSA

Test Date: 06/11/2024

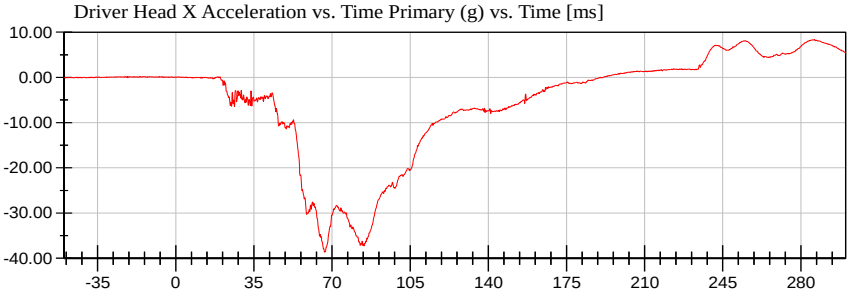
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

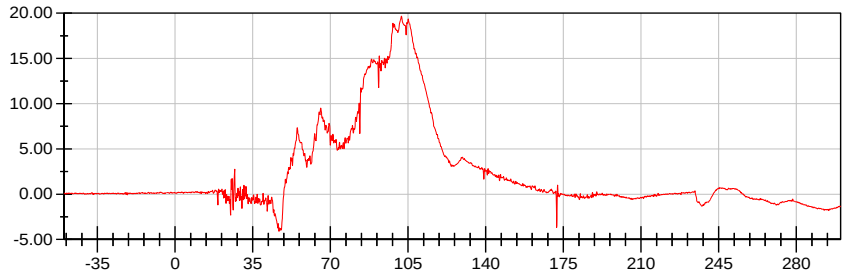
8.35 g at 286.08 ms

<Min>

-38.65 g at 66.64 ms

CFC_1000

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



<Max>

19.68 g at 102.00 ms

<Min>

-4.11 g at 46.88 ms

CFC_1000

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

<Max>

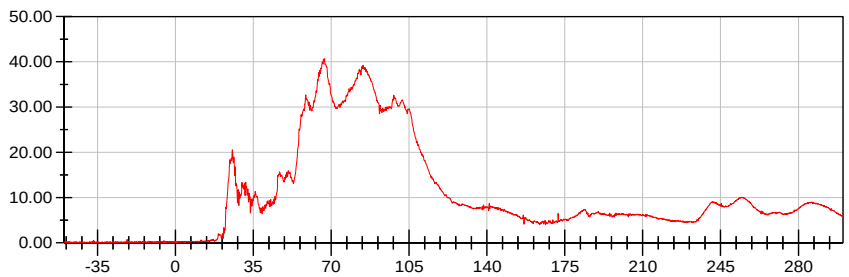
19.34 g at 25.60 ms

<Min>

-6.94 g at 89.92 ms

CFC_1000

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



<Max>

40.70 g at 67.04 ms

<Min>

0.03 g at -49.68 ms

Prefiltered_> CFC 1000

NHTSA

Test Date: 06/11/2024

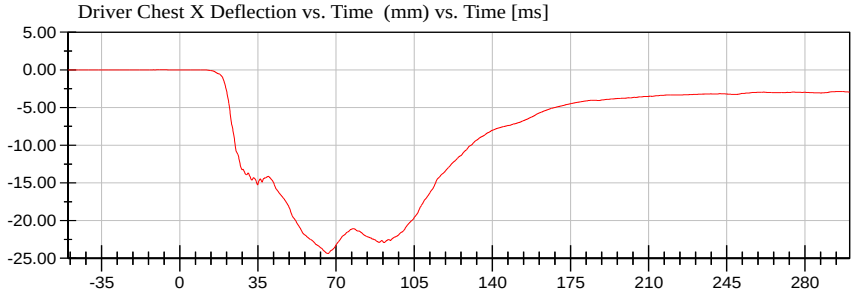
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

Driver Chest X Deflection vs. Time (mm) vs. Time [ms]



<Max>

0.01 mm at -8.16 ms

<Min>

-24.37 mm at 66.40 ms

CFC_600

NHTSA

Test Date: 06/11/2024

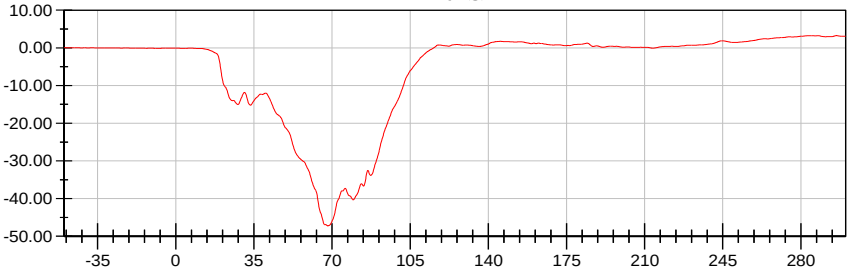
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

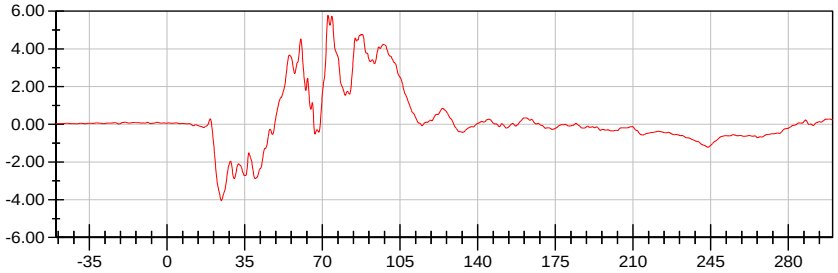
3.26 g at 295.92 ms

<Min>

-47.22 g at 68.16 ms

CFC_180

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



<Max>

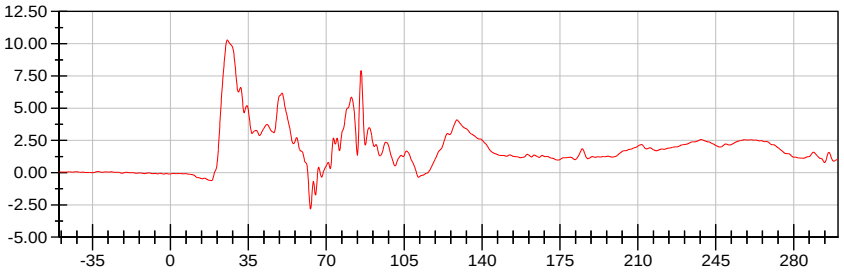
5.78 g at 72.56 ms

<Min>

-4.05 g at 24.48 ms

CFC_180

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



<Max>

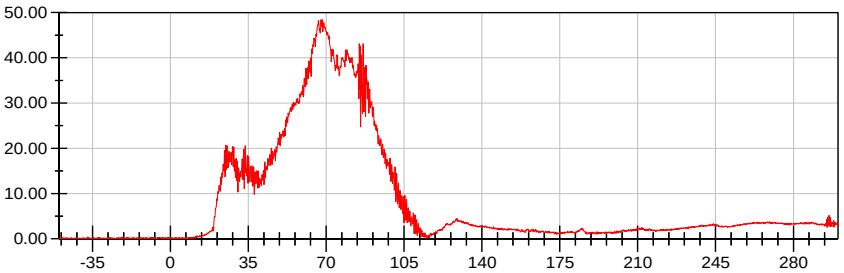
10.29 g at 25.52 ms

<Min>

-2.81 g at 62.96 ms

CFC_180

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



<Max>

48.42 g at 67.68 ms

<Min>

0.03 g at -48.96 ms

Prefiltered_> CFC 1000

NHTSA

Test Date: 06/11/2024

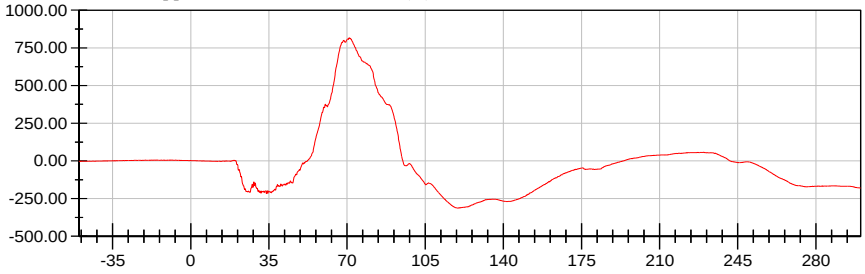
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

Driver Upper Neck Force X vs. Time (N) vs. Time [ms]



<Max>

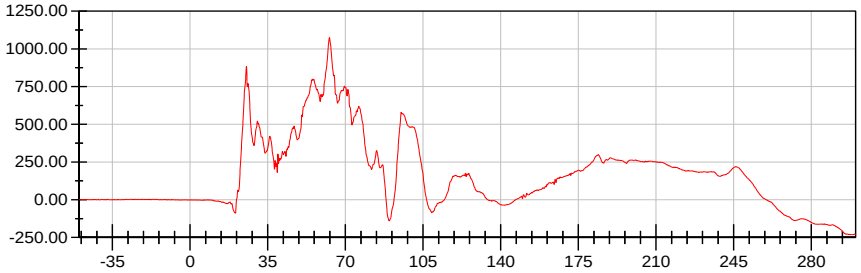
816.48 N at 70.96 ms

<Min>

-313.00 N at 120.16 ms

CFC_1000

Driver Upper Neck Force Z vs. Time (N) vs. Time [ms]



<Max>

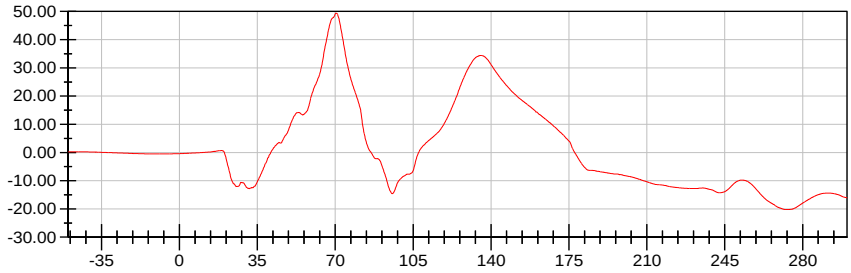
1,074.33 N at 62.80 ms

<Min>

-232.07 N at 298.64 ms

CFC_1000

Driver Upper Neck Moment Y vs. Time (Nm) vs. Time [ms]



<Max>

49.37 Nm at 70.40 ms

<Min>

-20.20 Nm at 273.36 ms

CFC_600

2024 Kia Seltos SUV NCAP 35 mph Frontal Impact

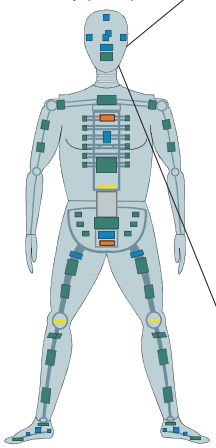
Neck Injury Predictor (NIJ)

Date: 06/11/2024
Time: 15:11

Customer: NHTSA
Test Number: M20244210

TRC Inc. Test Lab: CTF
Test Number: 240611

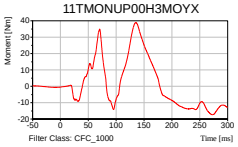
Test Orientation = Frontal
Fzc(Tension) = 6806
Fzc(Compression) = 6160
Myc(Extension) = 135
Myc(Flexion) = 310



Dummy:HIII 50th Male
Seating Position:
Driver

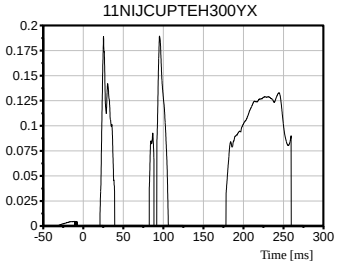
NIJ Source Code: (Fz/Fzc)+(My/Myc)

11TMONUP00H3MOYX



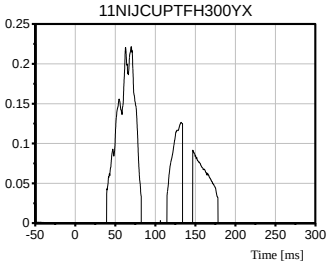
11NECKUP00H3FOZA

11NIJCUPTEH300YX



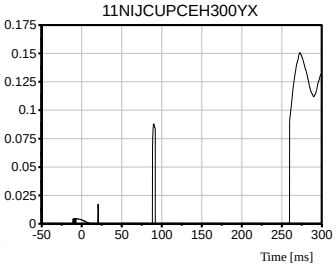
Max [NTE] 0.1894 at 95.28 ms

11NIJCUPTFH300YX



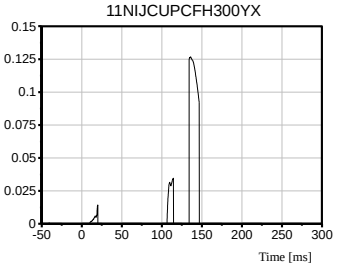
Max [NTF] 0.2216 at 70.08 ms

11NIJCUPCEH300YX



Max [NCE] 0.1503 at 272.56 ms

11NIJCUPCFH300YX



Max [NCF] 0.1268 at 135.92 ms

NHTSA

Test Date: 06/11/2024

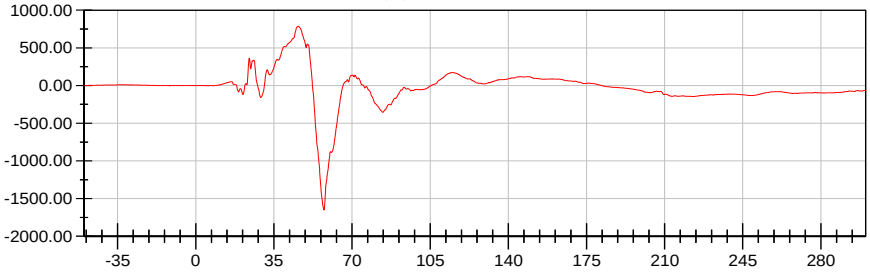
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

Driver Left Femur Force vs. Time (N) vs. Time [ms]



<Max>

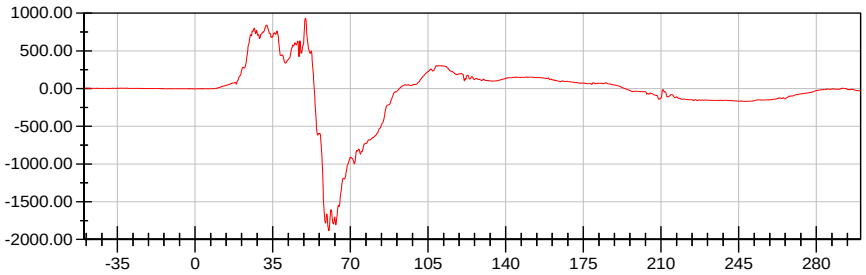
786.46 N at 45.92 ms

<Min>

-1,651.58 N at 57.44 ms

CFC_600

Driver Right Femur Force vs. Time (N) vs. Time [ms]



<Max>

931.43 N at 49.76 ms

<Min>

-1,883.60 N at 60.32 ms

CFC_600

NHTSA

Test Date: 06/11/2024

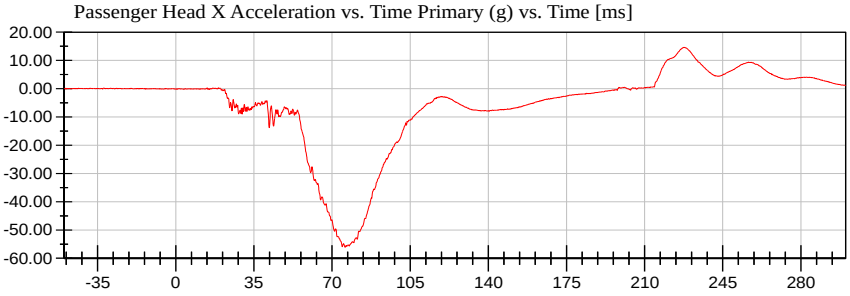
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

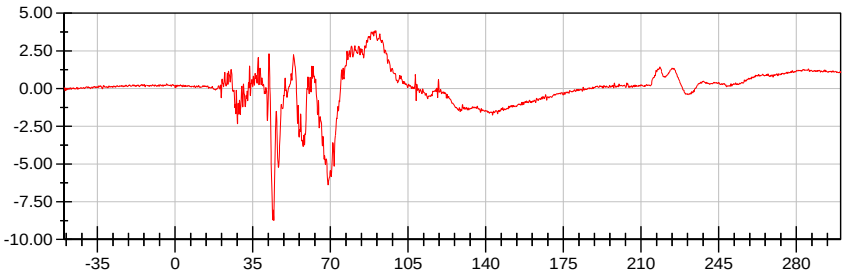
14.61 g at 227.60 ms

<Min>

-56.11 g at 75.84 ms

CFC_1000

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



<Max>

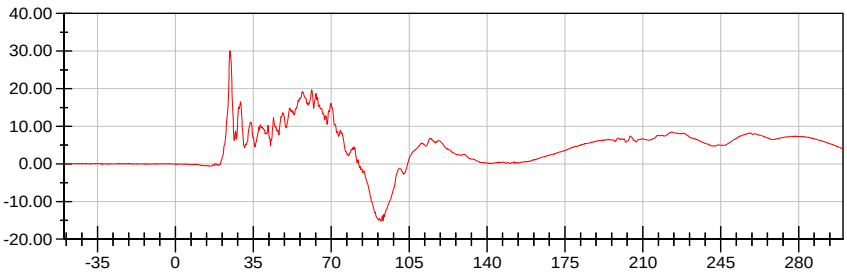
3.84 g at 90.40 ms

<Min>

-8.74 g at 44.48 ms

CFC_1000

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



<Max>

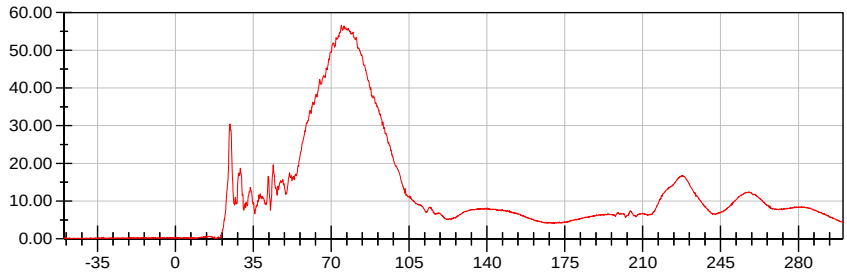
30.07 g at 24.56 ms

<Min>

-15.15 g at 92.24 ms

CFC_1000

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



<Max>

56.60 g at 74.56 ms

<Min>

0.03 g at -47.84 ms

Prefiltered_> CFC 1000

NHTSA

Test Date: 06/11/2024

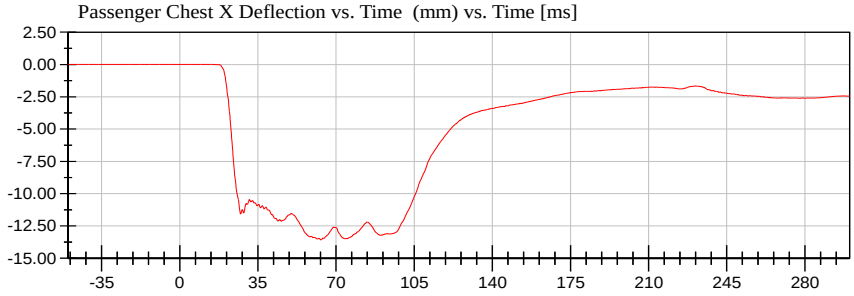
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

Passenger Chest X Deflection vs. Time (mm) vs. Time [ms]



<Max>

0.01 mm at 14.72 ms

<Min>

-13.57 mm at 63.12 ms

CFC_600

NHTSA

Test Date: 06/11/2024

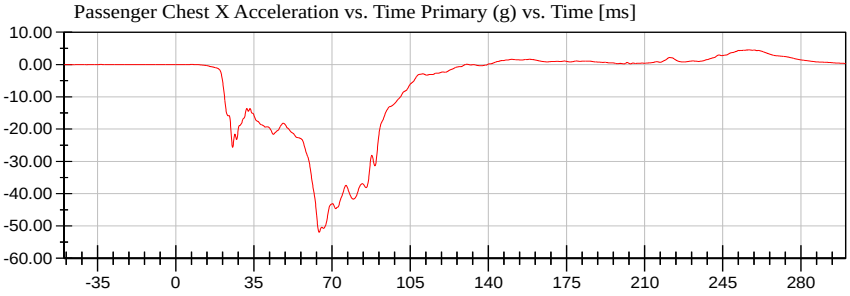
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

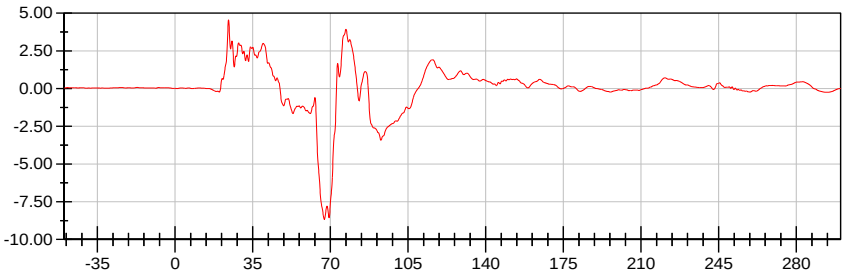
4.53 g at 256.80 ms

<Min>

-51.94 g at 64.16 ms

CFC_180

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



<Max>

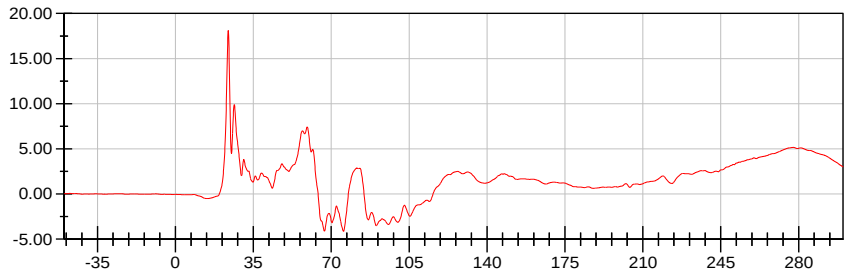
4.55 g at 24.08 ms

<Min>

-8.67 g at 67.28 ms

CFC_180

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



<Max>

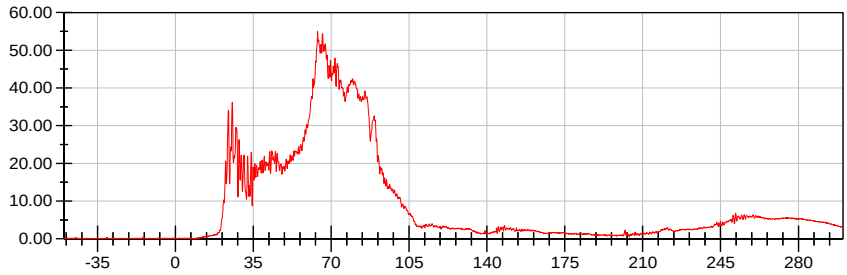
18.11 g at 23.76 ms

<Min>

-4.14 g at 75.52 ms

CFC_180

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



<Max>

54.94 g at 63.92 ms

<Min>

0.03 g at -46.00 ms

Prefiltered_> CFC 1000

NHTSA

Test Date: 06/11/2024

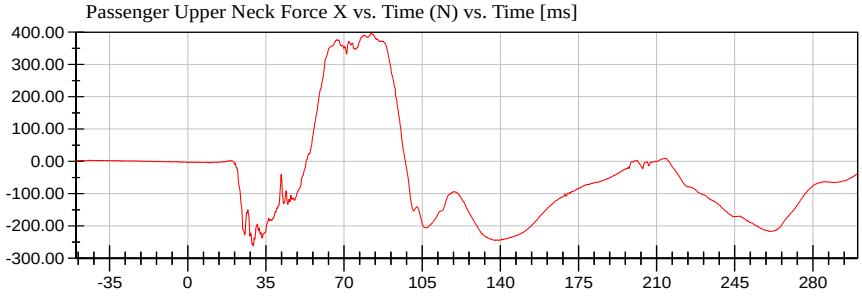
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

Passenger Upper Neck Force X vs. Time (N) vs. Time [ms]



<Max>

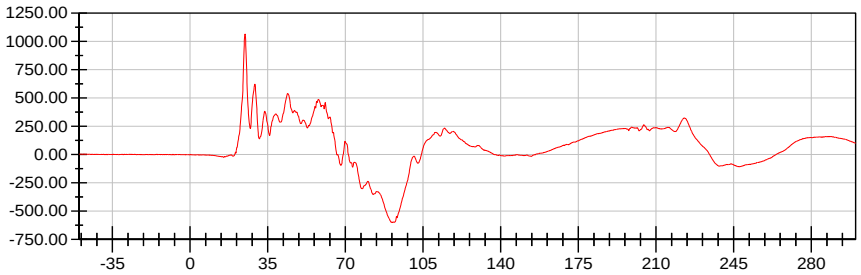
397.88 N at 82.16 ms

<Min>

-261.86 N at 29.36 ms

CFC_1000

Passenger Upper Neck Force Z vs. Time (N) vs. Time [ms]



<Max>

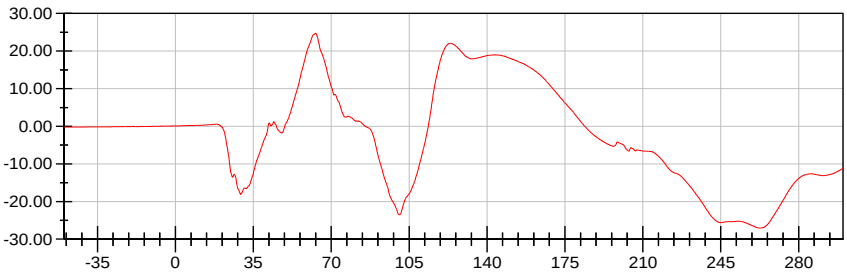
1,064.42 N at 24.80 ms

<Min>

-599.94 N at 91.20 ms

CFC_1000

Passenger Upper Neck Moment Y vs. Time (Nm) vs. Time [ms]



<Max>

24.67 Nm at 63.04 ms

<Min>

-27.05 Nm at 263.04 ms

CFC_600

2024 Kia Seltos SUV NCAP 35 mph Frontal Impact

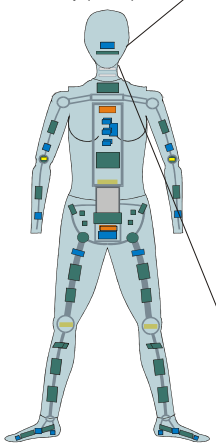
Neck Injury Predictor (NIJ)

Date: 06/11/2024
Time: 15:11

Customer: NHTSA
Test Number: M20244210

TRC Inc. Test Lab: CTF
Test Number: 240611

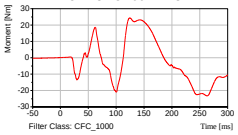
Test Orientation = Frontal
Fzc(Tension) = 4287
Fzc(Compression) = 3880
Myc(Extension) = 67
Myc(Flexion) = 155



Dummy:HIII 5th Female
Seating Position:
Right Front Passenger

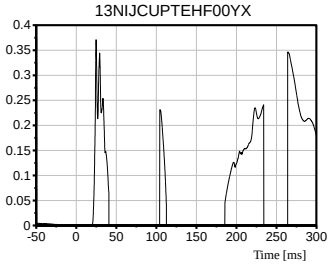
NIJ Source Code: (Fz/Fzc)+(My/Myc)

13TMONUP00HFMOYX



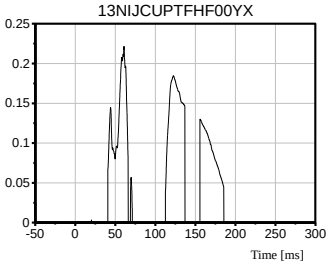
13NECKUP00HFFOZA

13NIJCUPTEHF00YX



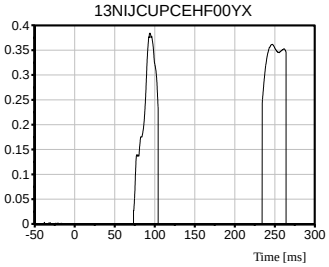
Max [NTE] 0.3709 at 24.88 ms

13NIJCUPTFHF00YX



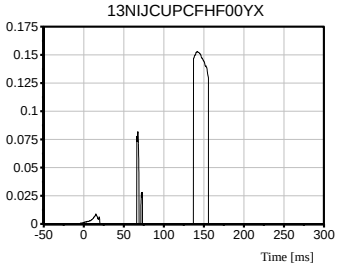
Max [NTF] 0.2216 at 60.96 ms

13NIJCUPCEHF00YX



Max [NCE] 0.3841 at 94.08 ms

13NIJCUPCFHF00YX



Max [NCF] 0.1530 at 141.68 ms

NHTSA

Test Date: 06/11/2024

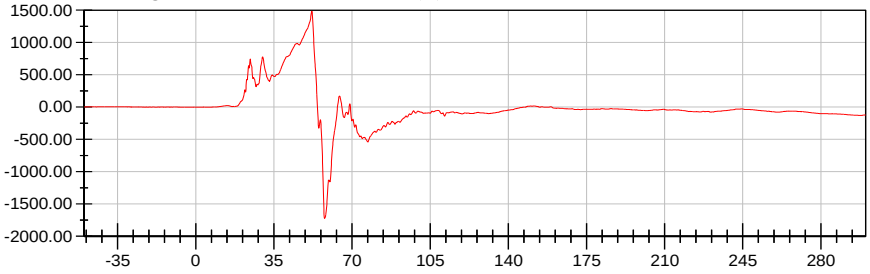
Test Lab: CTF

Position #1 Hybrid III Mid-Sized Adult Male Dummy (037)

Test Number: 240611 (M20244210)

Position #2 Hybrid III Small Adult Female (DH1659)

Passenger Left Femur Force vs. Time (N) vs. Time [ms]



<Max>

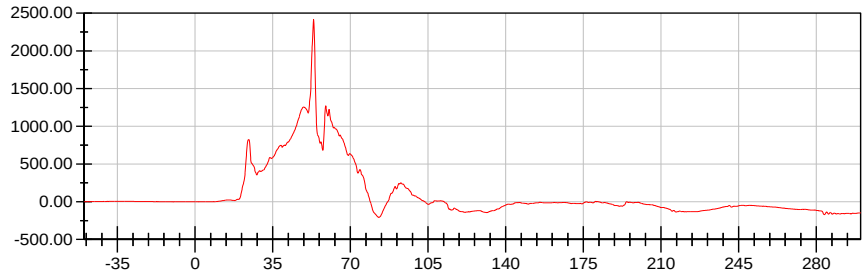
1,484.04 N at 52.00 ms

<Min>

-1,721.99 N at 57.68 ms

CFC_600

Passenger Right Femur Force vs. Time (N) vs. Time [ms]



<Max>

2,417.02 N at 53.44 ms

<Min>

-206.79 N at 82.72 ms

CFC_600

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION

Pre-Test Calibration Sheets

Driver S/N 037

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 037
Calibration No. 90

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	880	Yes
B	Shoulder Pivot Height	505.5 - 520.7	510	Yes
C	H-Point Height	83.8 - 88.9	86	Yes
D	H-Point From Seatback	134.6 - 139.7	137	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	90	Yes
F	Thigh Clearance	139.7 - 154.9	151	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	295	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	337	Yes
J	Elbow Rest Height	190.5 - 210.8	198	Yes
K	Buttock Knee Length	579.1 - 604.5	601	Yes
L	Popliteal Height	429.3 - 454.7	440	Yes
M	Knee Pivot Height	485.1 - 500.4	494	Yes
N	Buttock Popliteal Length	452.1 - 477.5	470	Yes
O	Chest Depth	213.4 - 228.6	223	Yes
P	Foot Length	251.5 - 266.7	264	Yes
V	Shoulder Breadth	421.6 - 436.9	425	Yes
W	Foot Breadth	91.4 - 106.7	96	Yes
Y	Chest Circumference	970.3 - 1000.8	991	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	227.4 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	6.7 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	3.72 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: N/A

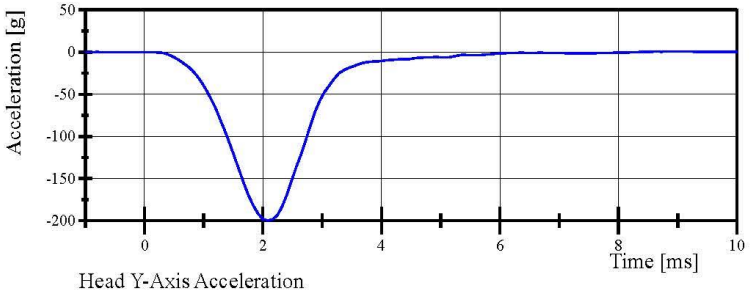
Specification Source: CFR49 Part 572 Subpart E with Polarity in accordance with J211

05.23.2024 13:13:17 612

Transportation Research Center Inc.

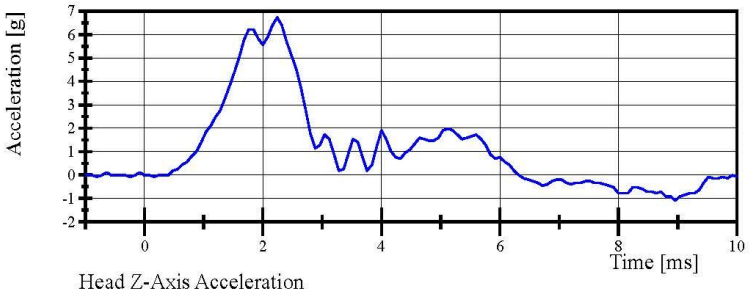
Front Head Drop
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 5/21/2024

Head X-Axis Acceleration



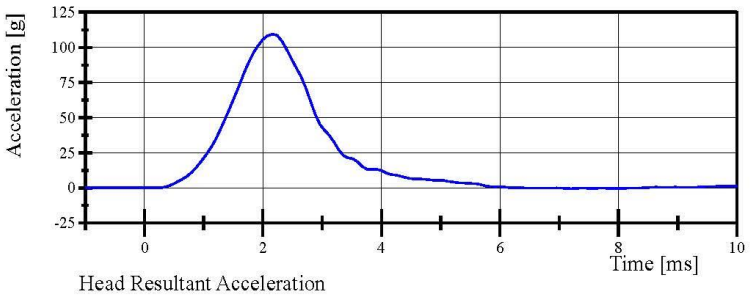
Filter Class: CFC_1000
Max: 1.0 g at 9.0 ms
Min: -199.8 g at 2.1 ms

Head Y-Axis Acceleration



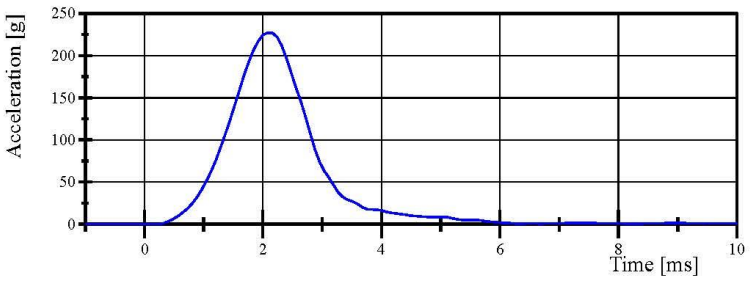
Filter Class: CFC_1000
Max: 6.7 g at 2.2 ms
Min: -1.1 g at 9.0 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 109.4 g at 2.2 ms
Min: -0.5 g at 7.2 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 227.4 g at 2.1 ms
Min: 0.0 g at -0.7 ms

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

05.23.2024 13:13:39 612

Transportation Research Center Inc.

Neck Flexion
HIII 50th Serial No. 037 Certification No. 90-2
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.994 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	36.6 ms	Yes
Pendulum Acceleration			
at 10ms	(-22.5) - (-27.5) g	-23.95 g	Yes
at 20ms	(-17.6) - (-22.6) g	-22.37 g	Yes
at 30ms	(-12.5) - (-18.5) g	-18.13 g	Yes
> 30ms	>= (-29.0) g	-18.13 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-71.8 °	Yes
Time of Peak	57 - 64 ms	60.2 ms	Yes
Decay to 0°	113 - 128 ms	122.5 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	101.20 N·m	Yes
Time of Peak	47 - 58 ms	50.2 ms	Yes
Decay to 0 N·m	97 - 107 ms	98.2 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 4728

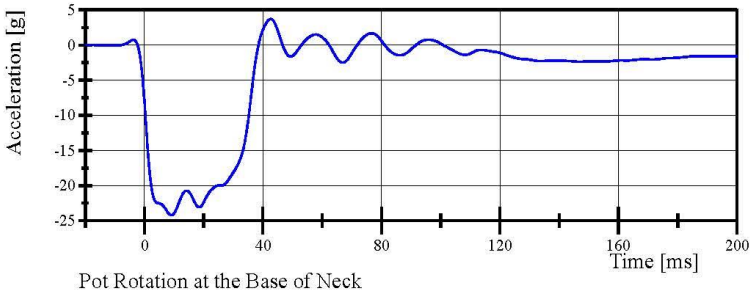
Specification Source: CFR49 Part 572 Subpart E with Polarity in accordance with J211

05.23.2024 13:16:38 1860

Transportation Research Center Inc.

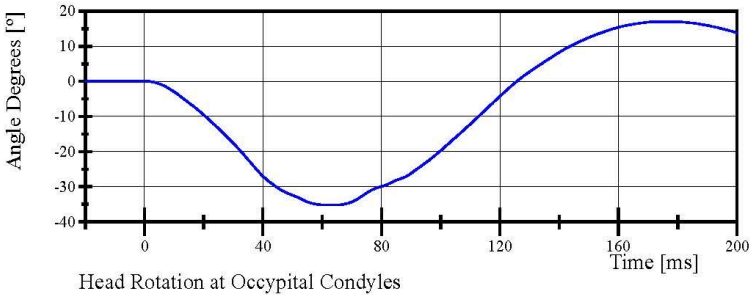
Neck Flexion
HIII 50th Serial No. 037 Certification No. 90-2
Test Date: 5/21/2024

Pendulum Acceleration



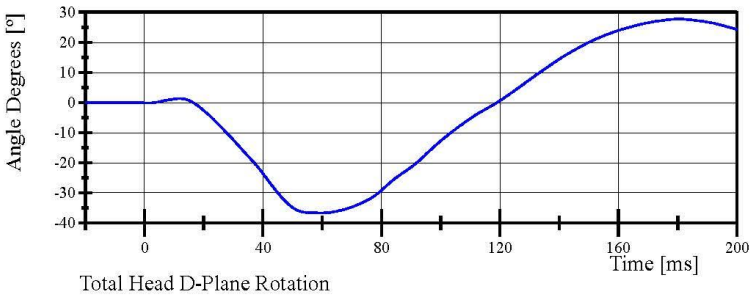
Filter Class: CFC_60
Max: 3.7 g at 42.6 ms
Min: -24.2 g at 9.1 ms

Pot Rotation at the Base of Neck



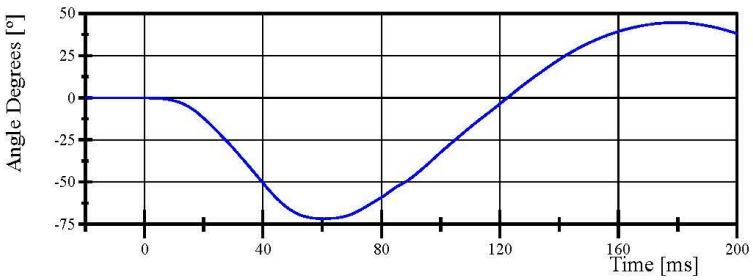
Filter Class: CFC_60
Max: 17.0 ° at 175.6 ms
Min: -35.2 ° at 64.7 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 27.8 ° at 180.3 ms
Min: -36.6 ° at 59.7 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 44.7 ° at 179.5 ms
Min: -71.8 ° at 60.2 ms

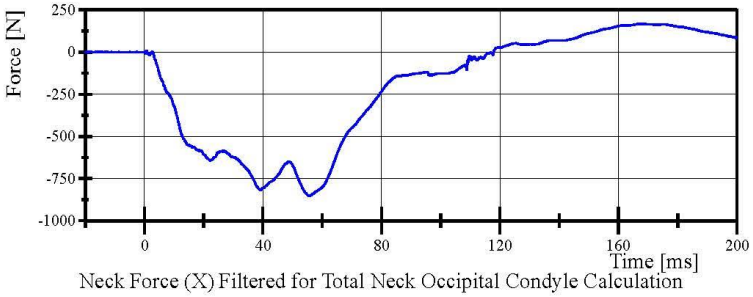
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.23.2024 13:17:06 1860

Transportation Research Center Inc.

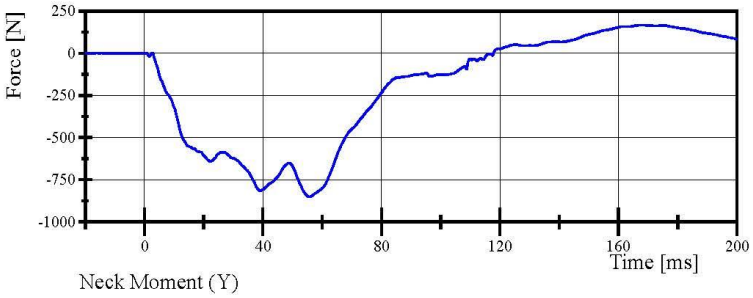
Neck Flexion
HIII 50th Serial No. 037 Certification No. 90-2
Test Date: 5/21/2024

Neck Force (X)



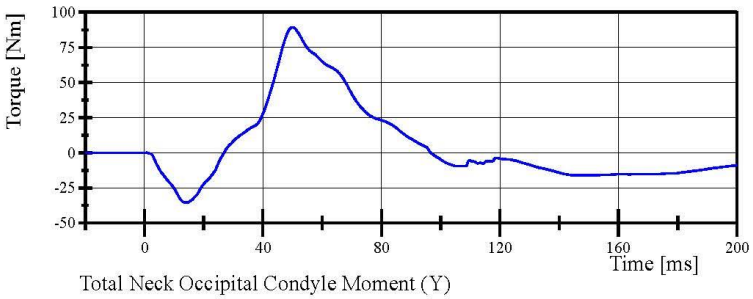
Filter Class: CFC_1000
Max: 167.8 N at 167.1 ms
Min: -852.6 N at 55.5 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



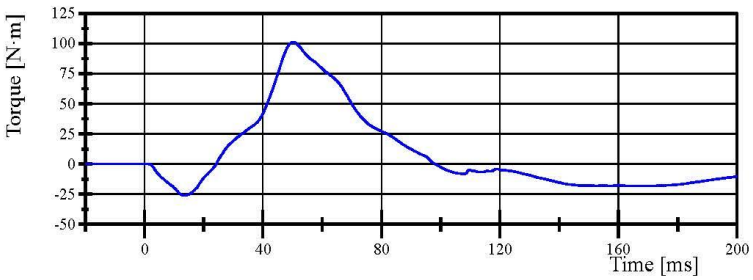
Filter Class: CFC_600
Max: 167.4 N at 167.6 ms
Min: -852.1 N at 55.6 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 89.3 Nm at 49.9 ms
Min: -35.5 Nm at 14.3 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 101.2 N·m at 50.2 ms
Min: -26.1 N·m at 13.6 ms

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

05.23.2024 13:17:06 1860

Transportation Research Center Inc.

Neck Extension
HIII 50th Serial No. 037 Certification No. 90-2
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-6.016 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	39.0 ms	Yes
Pendulum Acceleration			
at 10ms	17.2 - 21.2 g	18.09 g	Yes
at 20ms	14.0 - 19.0 g	17.68 g	Yes
at 30ms	11.0 - 16.0 g	15.53 g	Yes
> 30ms	<= 22.0 g	15.53 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	95.0 °	Yes
Time of Peak	72 - 82 ms	77.4 ms	Yes
Decay to 0°	147 - 174 ms	159.2 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-70.22 N·m	Yes
Time of Peak	65 - 79 ms	70.6 ms	Yes
Decay to 0 N·m	120 - 148 ms	140.4 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 4728

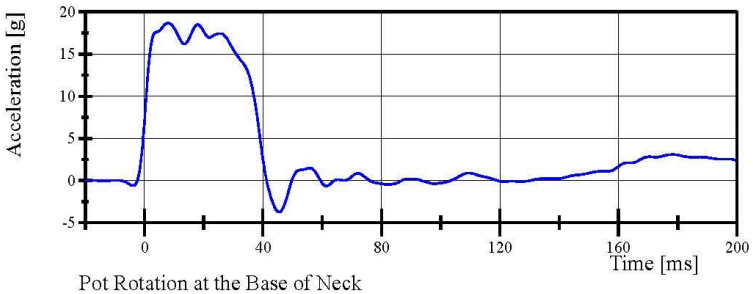
Specification Source: CFR49 Part 572 Subpart E with Polarity in accordance with J211

05.23.2024 13:18:30 2011

Transportation Research Center Inc.

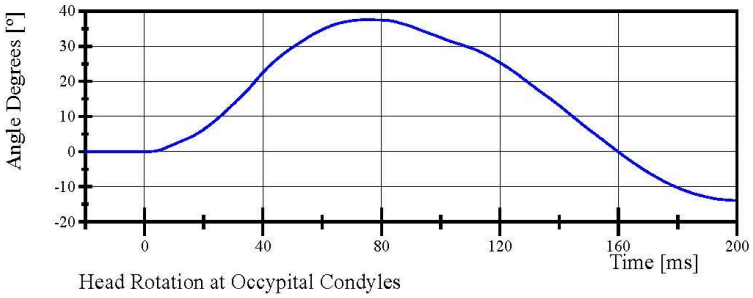
Neck Extension
HIII 50th Serial No. 037 Certification No. 90-2
Test Date: 5/21/2024

Pendulum Acceleration



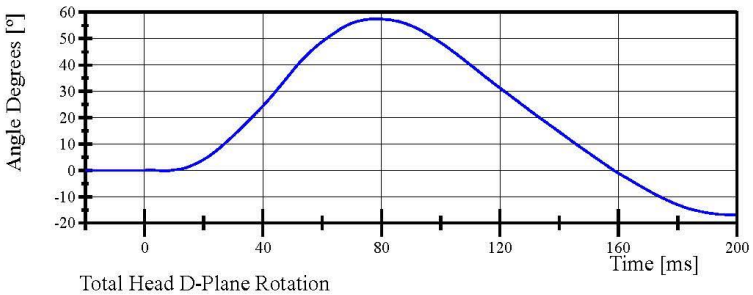
Filter Class: CFC_60
Max: 18.7 g at 8.0 ms
Min: -3.7 g at 45.5 ms

Pot Rotation at the Base of Neck



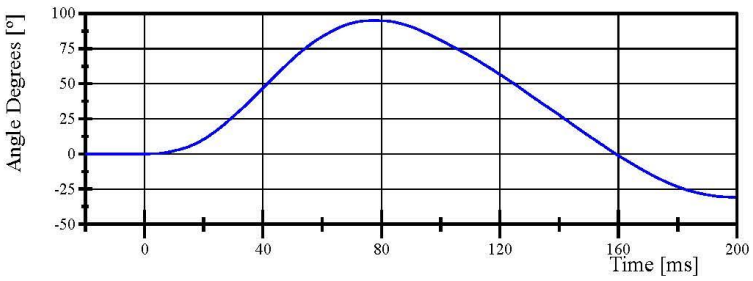
Filter Class: CFC_60
Max: 37.6 ° at 75.0 ms
Min: -13.9 ° at 199.5 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 57.5 ° at 78.1 ms
Min: -16.9 ° at 199.5 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 95.0 ° at 77.4 ms
Min: -30.8 ° at 199.5 ms

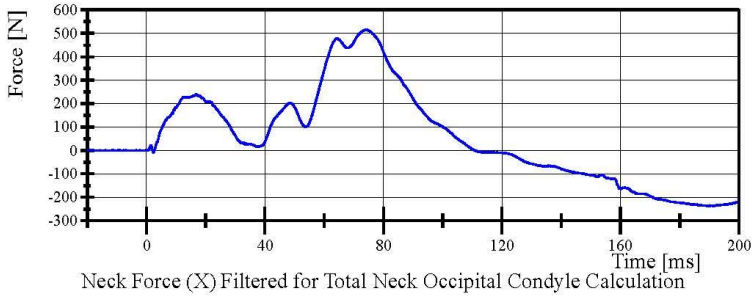
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.23.2024 13:18:40 2011

Transportation Research Center Inc.

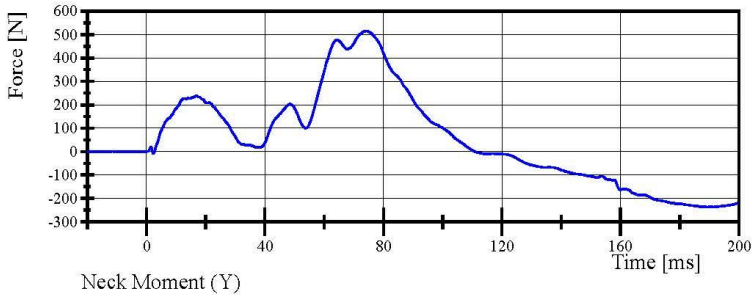
Neck Extension
HIII 50th Serial No. 037 Certification No. 90-2
Test Date: 5/21/2024

Neck Force (X)



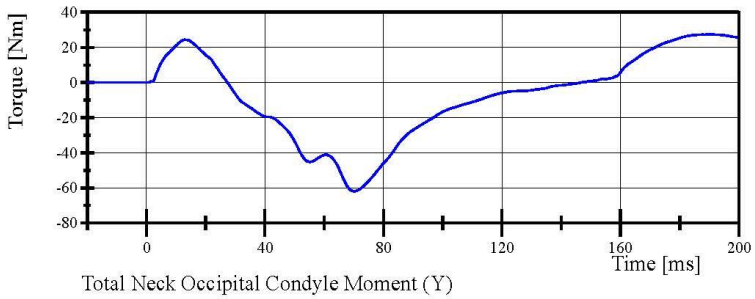
Filter Class: CFC_1000
Max: 515.6 N at 74.4 ms
Min: -237.1 N at 191.4 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



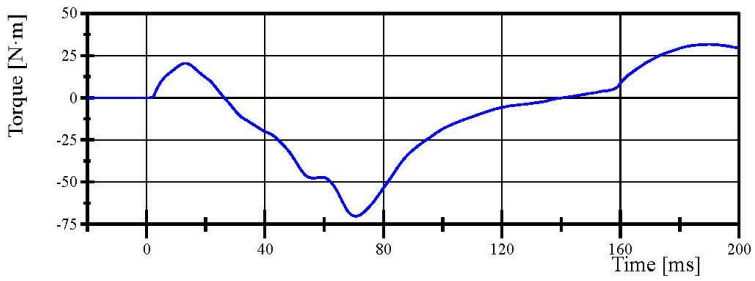
Filter Class: CFC_600
Max: 515.1 N at 74.4 ms
Min: -236.7 N at 191.5 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 27.4 Nm at 190.1 ms
Min: -61.9 Nm at 70.1 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 31.6 N·m at 189.9 ms
Min: -70.2 N·m at 70.6 ms

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

05.23.2024 13:18:41 2011

Transportation Research Center Inc.

Front Thorax
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 6/4/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	69 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.615 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,300.8 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-67.60 mm	Yes
Internal Hysteresis	69 - 85 %	72.7 %	Yes

Test meets specifications.

Condition: Used

Comments:
Jacket S/N: ER6442
Rib Set S/N: 10362

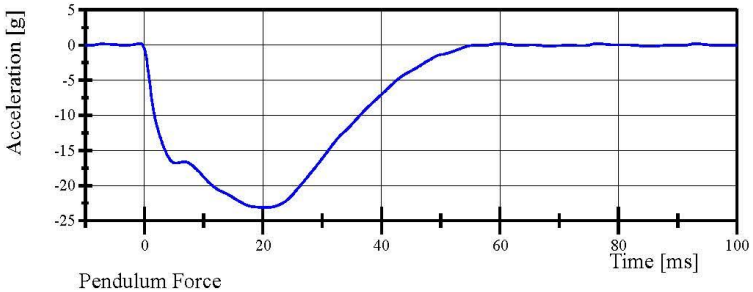
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.06.2024 14:02:21 406

Transportation Research Center Inc.

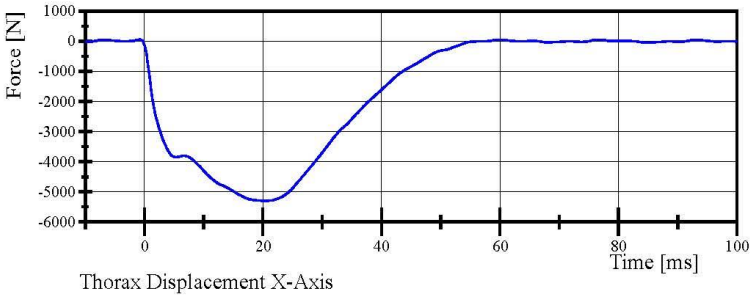
Front Thorax
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 6/4/2024

Pendulum Acceleration



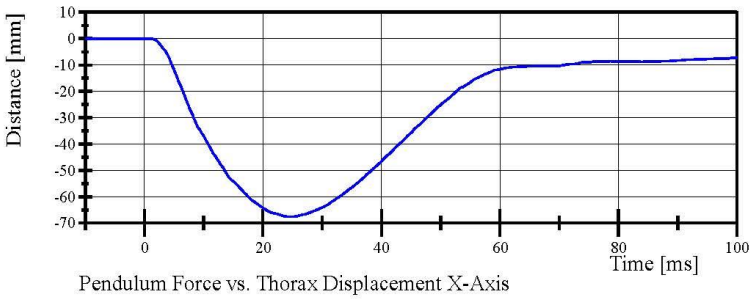
Filter Class: CFC_180
Max: 0.2 g at -0.8 ms
Min: -23.1 g at 20.5 ms

Pendulum Force



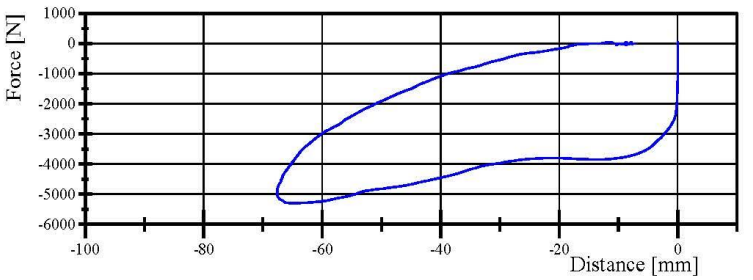
Filter Class: CFC_180
Max: 54.9 N at -0.8 ms
Min: -5,300.8 N at 20.5 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -2.2 ms
Min: -67.6 mm at 24.6 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 54.9 N at -0.0 mm
Min: -5,300.8 N at -64.9 mm

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

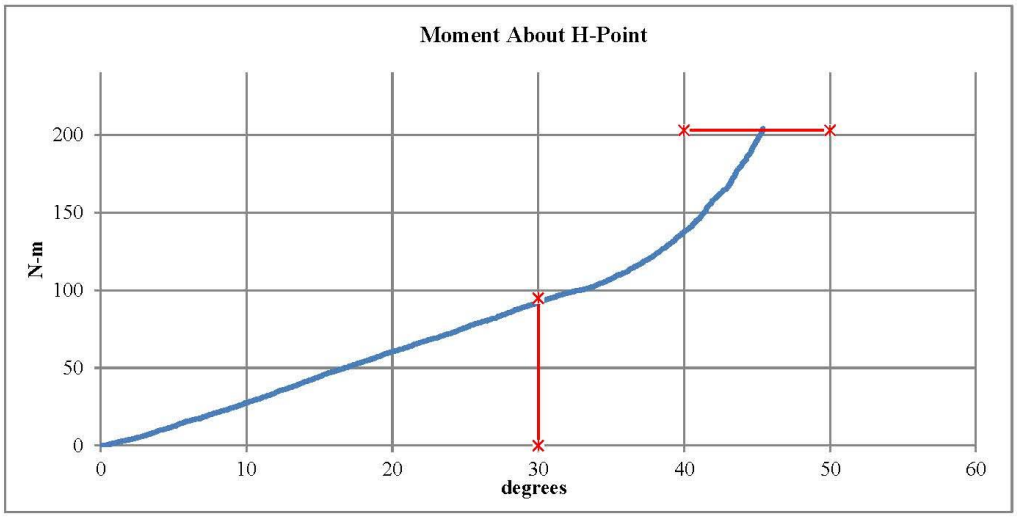
06.06.2024 14:04:44 406

Transportation Research Center Inc.

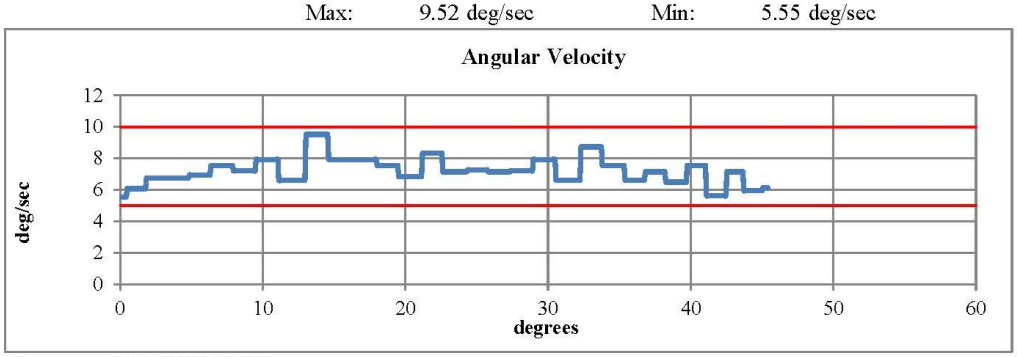
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	21-May-2024
Side Tested:	Left Hip	Time:	11:20
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.1	°C	Pass
Humidity	10	-	70	64	%	Pass
Moment at 30°	0	≤	94.9	91.95	N-m	Pass
Angle at 203 Nm	40	-	50	45.4	deg	Pass
Average Velocity	5	-	10	7.21	deg/sec	Pass



Max: 9.52 deg/sec Min: 5.55 deg/sec



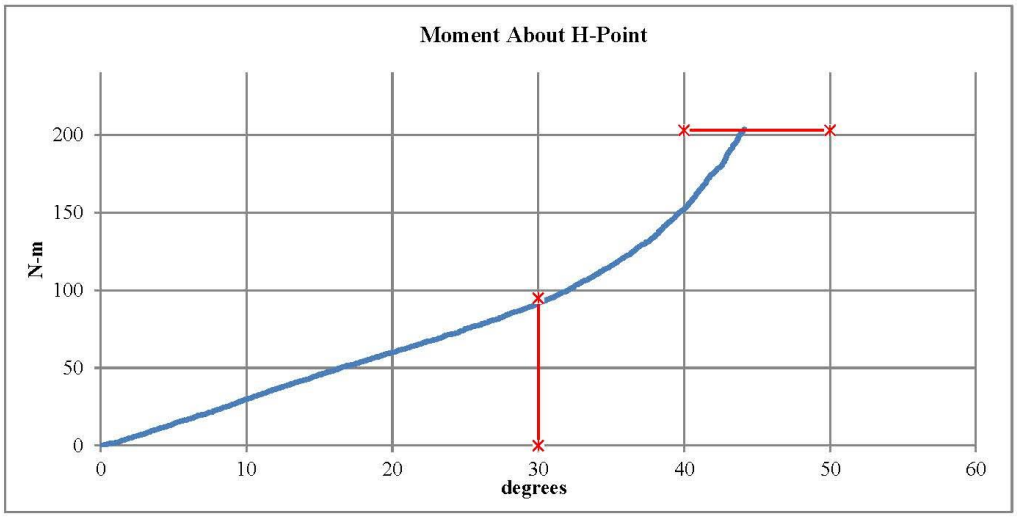
Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.

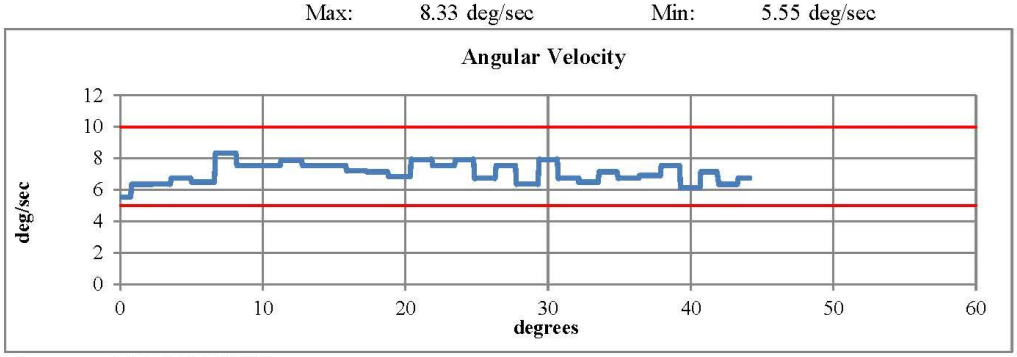
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	21-May-2024
Side Tested:	Right Hip	Time:	11:53
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	20.8	°C	Pass
Humidity	10	-	70	62	%	Pass
Moment at 30°	0	≤	94.9	91.26	N-m	Pass
Angle at 203 Nm	40	-	50	44.13	deg	Pass
Average Velocity	5	-	10	7.08	deg/sec	Pass



Max: 8.33 deg/sec Min: 5.55 deg/sec



Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.112 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,458.69 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 2672

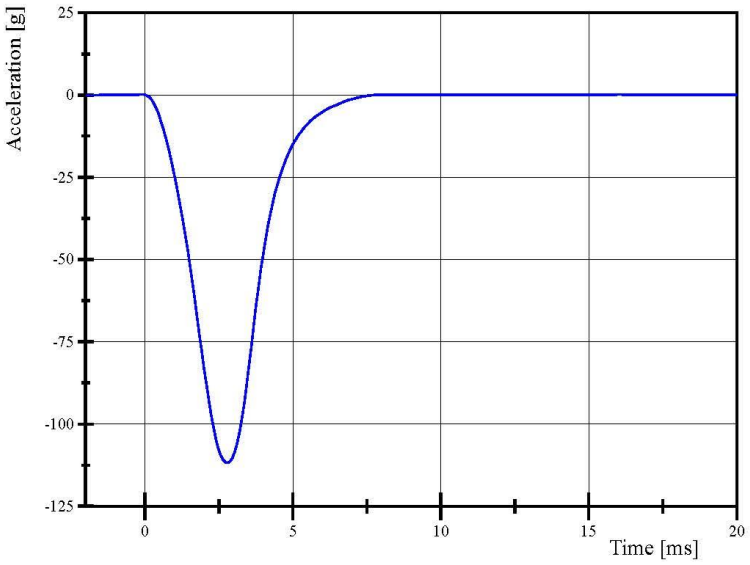
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.23.2024 13:09:03 1754

Transportation Research Center Inc.

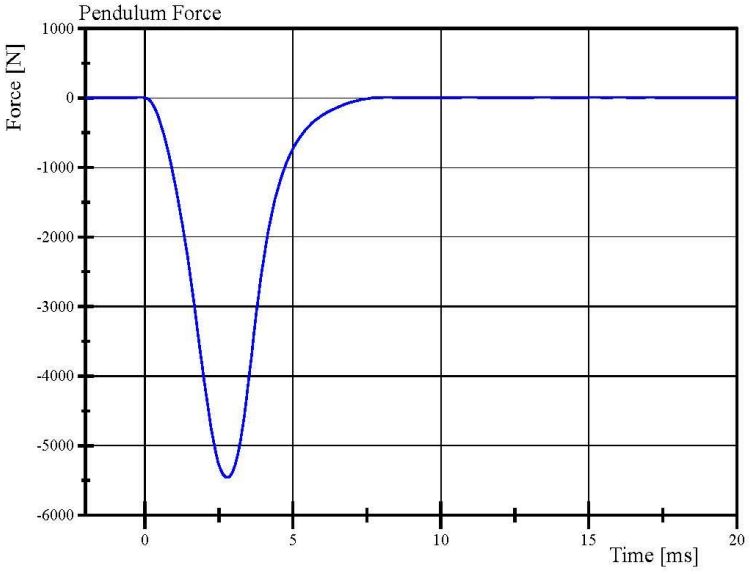
Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 5/21/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at -0.1 ms
Min: -111.8 g at 2.8 ms

Pendulum Force



Filter Class: CFC_600
Max: 7.5 N at -0.1 ms
Min: -5,458.7 N at 2.8 ms

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

05.23.2024 13:09:42 1754

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 5/23/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.110 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,271.00 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 1248

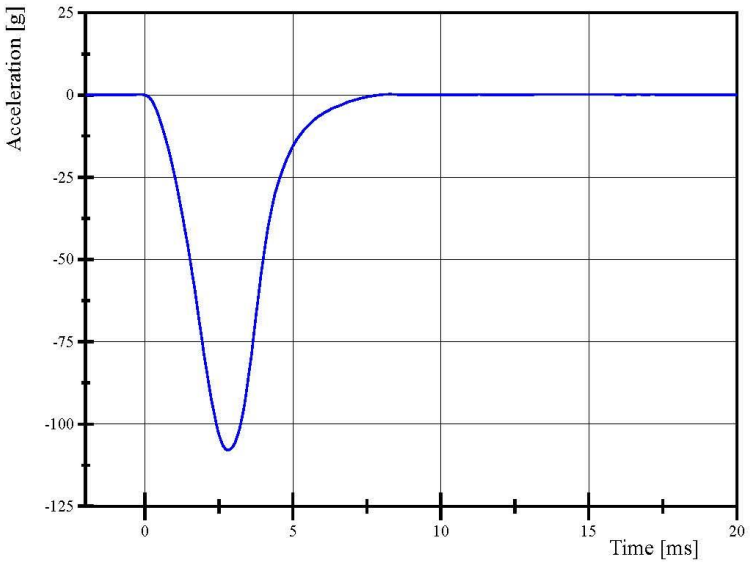
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.23.2024 13:10:58 1751

Transportation Research Center Inc.

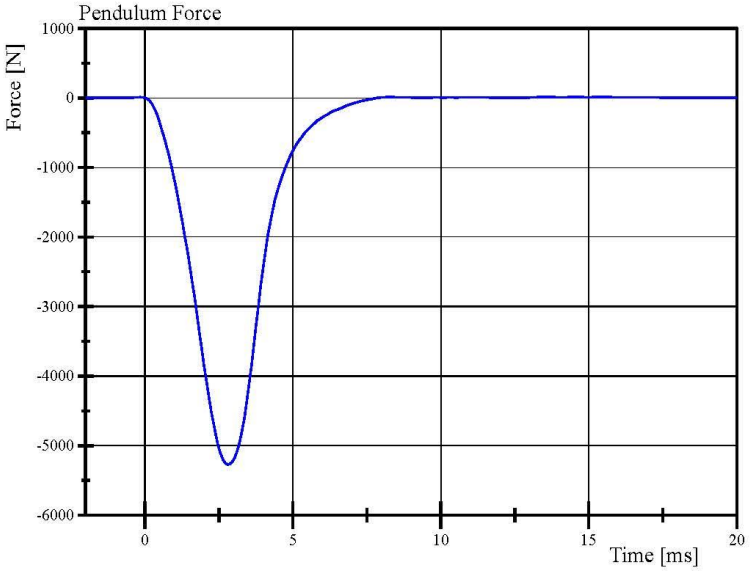
Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 90-1
Test Date: 5/23/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at 8.3 ms
Min: -107.9 g at 2.8 ms

Pendulum Force



Filter Class: CFC_600
Max: 10.8 N at 8.3 ms
Min: -5,271.0 N at 2.8 ms

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

05.23.2024 13:11:20 1751

Post-Test Calibration Sheets

Driver S/N 037

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 037
Calibration No. 91

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	880	Yes
B	Shoulder Pivot Height	505.5 - 520.7	510	Yes
C	H-Point Height	83.8 - 88.9	86	Yes
D	H-Point From Seatback	134.6 - 139.7	137	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	90	Yes
F	Thigh Clearance	139.7 - 154.9	151	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	295	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	337	Yes
J	Elbow Rest Height	190.5 - 210.8	198	Yes
K	Buttock Knee Length	579.1 - 604.5	601	Yes
L	Popliteal Height	429.3 - 454.7	440	Yes
M	Knee Pivot Height	485.1 - 500.4	494	Yes
N	Buttock Popliteal Length	452.1 - 477.5	470	Yes
O	Chest Depth	213.4 - 228.6	223	Yes
P	Foot Length	251.5 - 266.7	264	Yes
V	Shoulder Breadth	421.6 - 436.9	425	Yes
W	Foot Breadth	91.4 - 106.7	96	Yes
Y	Chest Circumference	970.3 - 1000.8	991	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	225.0 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	5.8 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	0.79 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: N/A

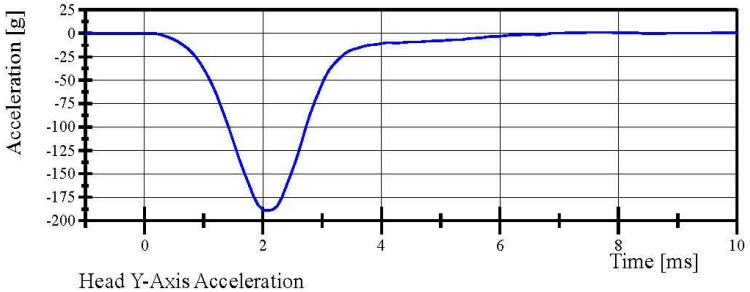
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 08:38:10 612

Transportation Research Center Inc.

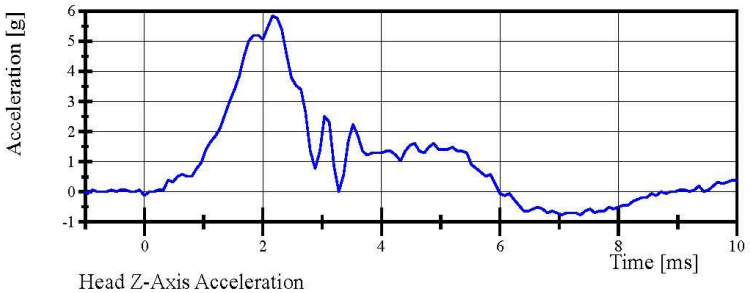
Front Head Drop
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Head X-Axis Acceleration



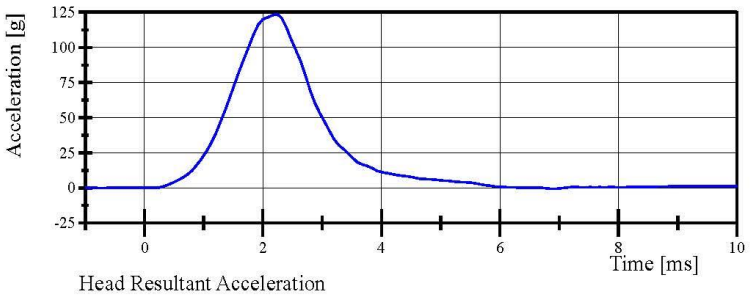
Filter Class: CFC_1000
Max: 1.2 g at 7.6 ms
Min: -189.4 g at 2.1 ms

Head Y-Axis Acceleration



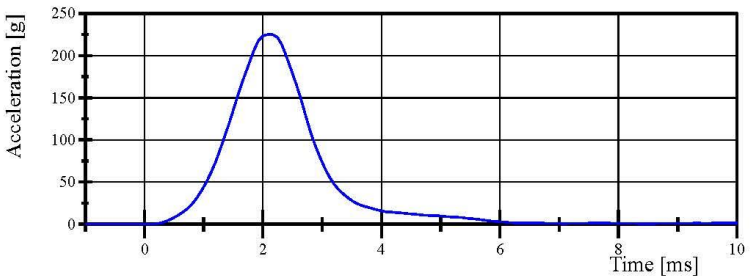
Filter Class: CFC_1000
Max: 5.8 g at 2.2 ms
Min: -0.8 g at 7.0 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 123.5 g at 2.2 ms
Min: -0.8 g at 6.9 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 225.0 g at 2.1 ms
Min: 0.0 g at -0.6 ms

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

06.12.2024 08:38:39 612

Transportation Research Center Inc.

Neck Flexion
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.975 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	39.6 ms	Yes
Pendulum Acceleration			
at 10ms	(-22.5) - (-27.5) g	-23.28 g	Yes
at 20ms	(-17.6) - (-22.6) g	-19.95 g	Yes
at 30ms	(-12.5) - (-18.5) g	-16.05 g	Yes
> 30ms	>= (-29.0) g	-16.05 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-66.6 °	Yes
Time of Peak	57 - 64 ms	60.1 ms	Yes
Decay to 0°	113 - 128 ms	119.7 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	101.89 N·m	Yes
Time of Peak	47 - 58 ms	52.7 ms	Yes
Decay to 0 N·m	97 - 107 ms	99.9 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 4728

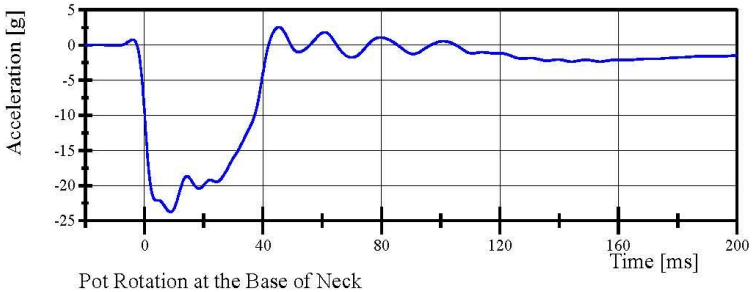
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 08:51:42 1865

Transportation Research Center Inc.

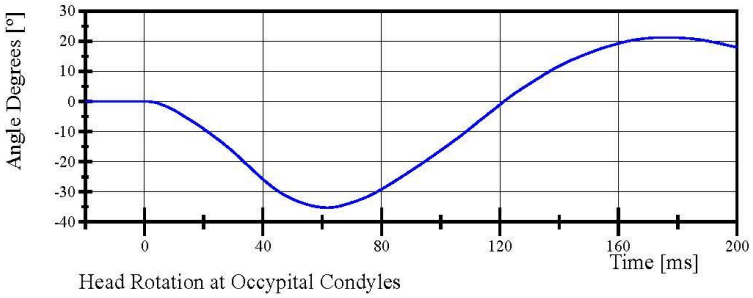
Neck Flexion
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Pendulum Acceleration



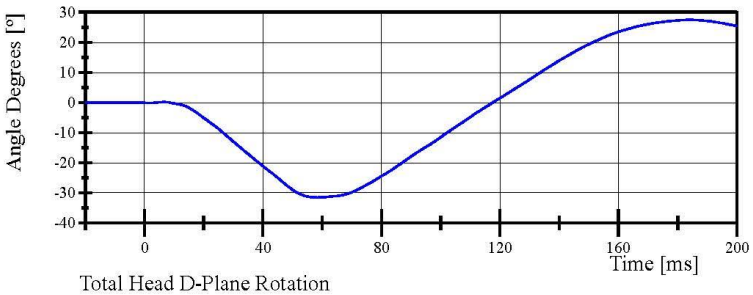
Filter Class: CFC_60
Max: 2.5 g at 45.4 ms
Min: -23.8 g at 8.7 ms

Pot Rotation at the Base of Neck



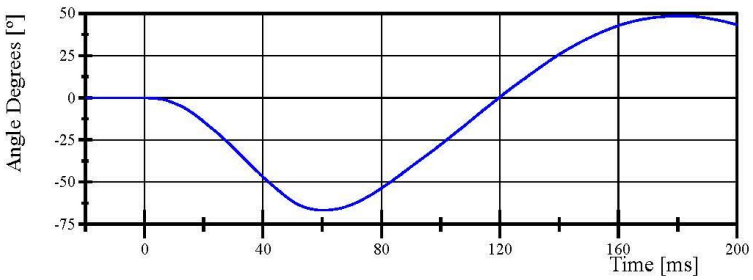
Filter Class: CFC_60
Max: 21.3 ° at 176.1 ms
Min: -35.2 ° at 61.8 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 27.5 ° at 184.1 ms
Min: -31.5 ° at 58.3 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 48.5 ° at 181.2 ms
Min: -66.6 ° at 60.1 ms

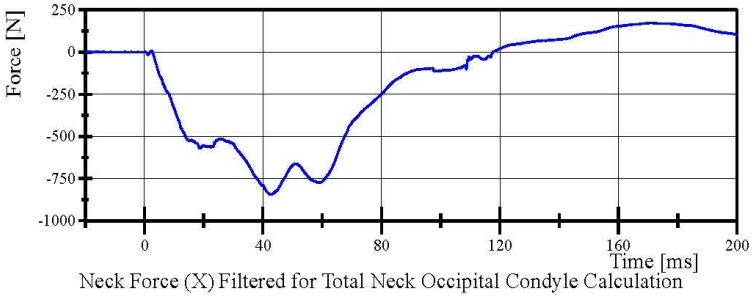
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 08:52:41 1865

Transportation Research Center Inc.

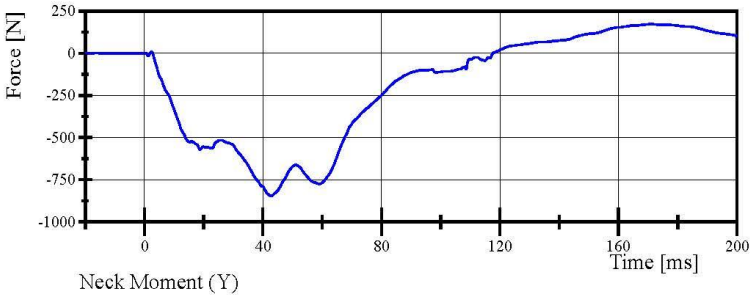
Neck Flexion
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Neck Force (X)



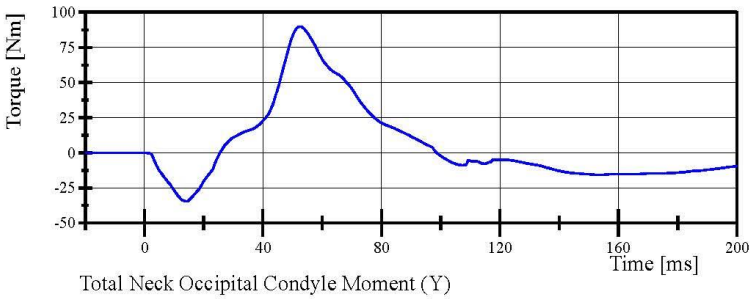
Filter Class: CFC_1000
Max: 173.7 N at 171.0 ms
Min: -845.3 N at 42.8 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



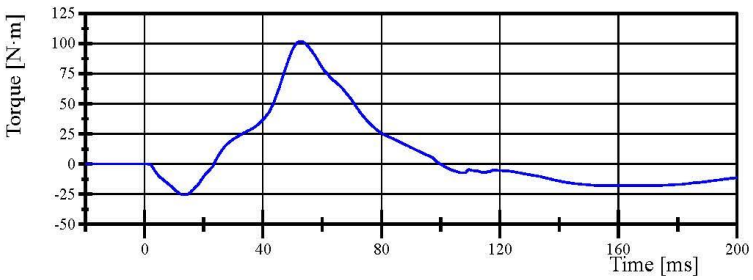
Filter Class: CFC_600
Max: 173.4 N at 171.0 ms
Min: -845.2 N at 42.8 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 89.9 Nm at 52.5 ms
Min: -34.5 Nm at 14.2 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 101.9 N·m at 52.7 ms
Min: -25.6 N·m at 13.4 ms

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

06.12.2024 08:52:42 1865

Transportation Research Center Inc.

Neck Extension
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-6.009 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	40.0 ms	Yes
Pendulum Acceleration			
at 10ms	17.2 - 21.2 g	18.87 g	Yes
at 20ms	14.0 - 19.0 g	16.23 g	Yes
at 30ms	11.0 - 16.0 g	14.57 g	Yes
> 30ms	<= 22.0 g	14.97 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	93.9 °	Yes
Time of Peak	72 - 82 ms	77.6 ms	Yes
Decay to 0°	147 - 174 ms	159.3 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-68.59 N·m	Yes
Time of Peak	65 - 79 ms	71.9 ms	Yes
Decay to 0 N·m	120 - 148 ms	142.5 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 4728

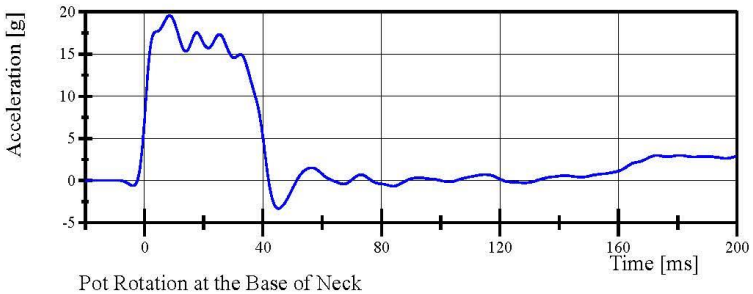
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 09:22:23 2010

Transportation Research Center Inc.

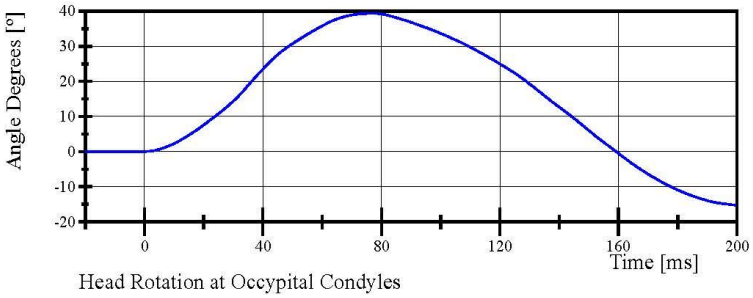
Neck Extension
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Pendulum Acceleration



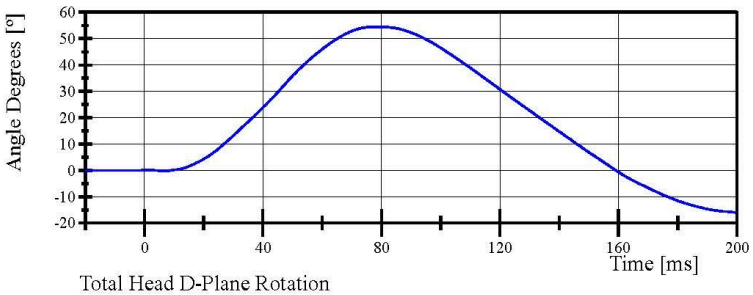
Filter Class: CFC_60
Max: 19.6 g at 8.5 ms
Min: -3.3 g at 45.2 ms

Pot Rotation at the Base of Neck



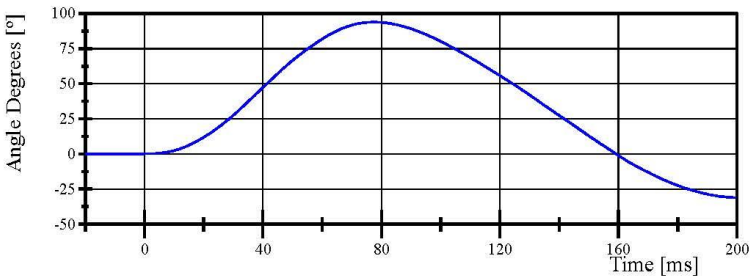
Filter Class: CFC_60
Max: 39.4 ° at 77.1 ms
Min: -15.3 ° at 199.5 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 54.5 ° at 78.2 ms
Min: -15.9 ° at 199.5 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 93.9 ° at 77.6 ms
Min: -31.2 ° at 199.5 ms

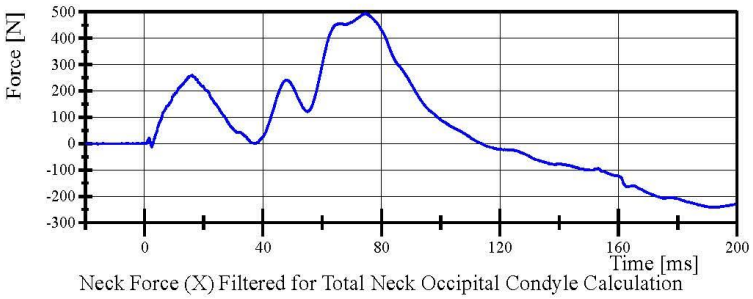
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 09:22:59 2010

Transportation Research Center Inc.

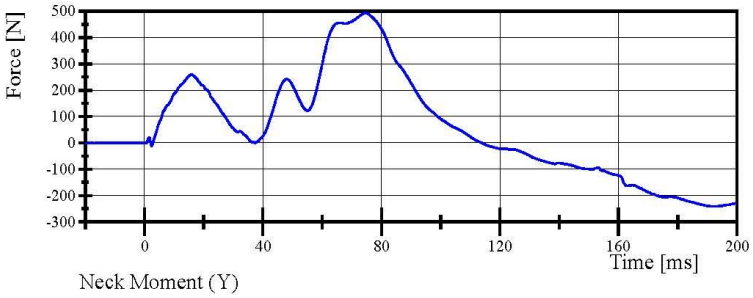
Neck Extension
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Neck Force (X)



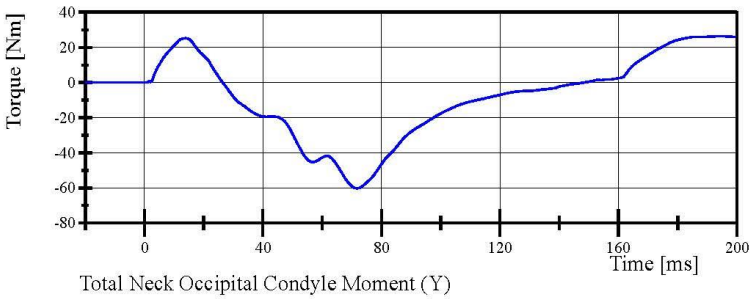
Filter Class: CFC_1000
Max: 493.3 N at 74.3 ms
Min: -241.6 N at 192.7 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



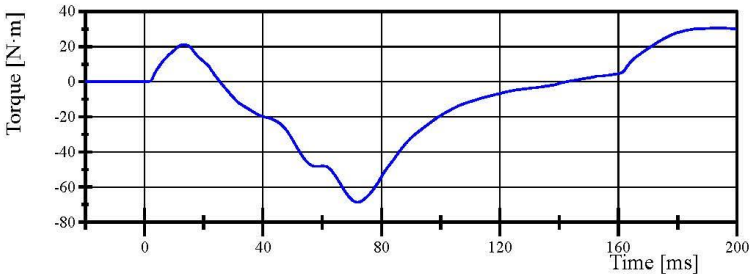
Filter Class: CFC_600
Max: 493.2 N at 74.5 ms
Min: -241.4 N at 192.8 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 26.3 Nm at 194.1 ms
Min: -60.2 Nm at 71.7 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 30.6 N·m at 193.0 ms
Min: -68.6 N·m at 71.9 ms

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

06.12.2024 09:22:59 2010

Transportation Research Center Inc.

Front Thorax
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.612 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,508.9 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-63.70 mm	Yes
Internal Hysteresis	69 - 85 %	73.4 %	Yes

Test meets specifications.

Condition: Used

Comments:
Jacket S/N: EX0700
Rib Set S/N: 10362

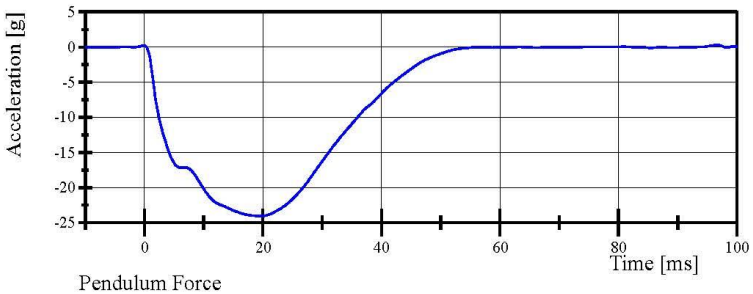
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 13:14:58 391

Transportation Research Center Inc.

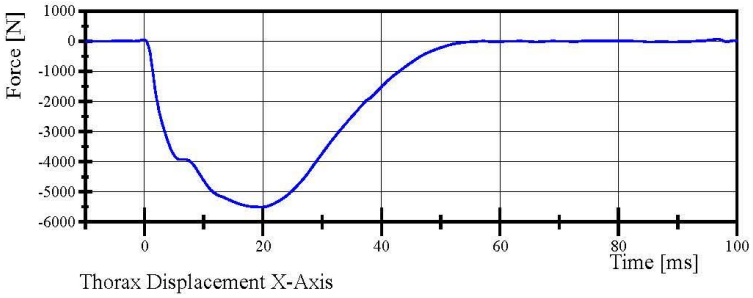
Front Thorax
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Pendulum Acceleration



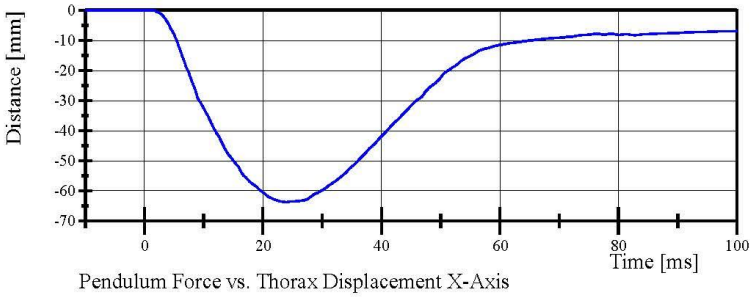
Filter Class: CFC_180
Max: 0.3 g at 96.7 ms
Min: -24.0 g at 19.7 ms

Pendulum Force



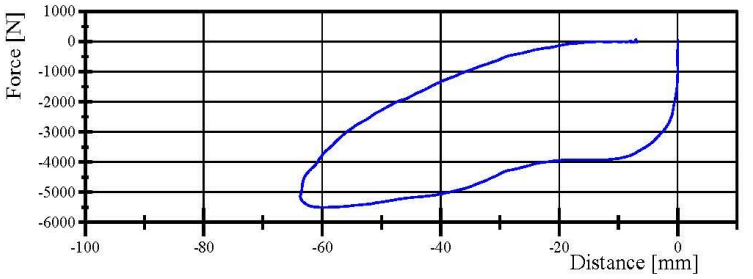
Filter Class: CFC_180
Max: 72.8 N at 96.7 ms
Min: -5,508.9 N at 19.7 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -2.9 ms
Min: -63.7 mm at 23.9 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 72.8 N at -7.0 mm
Min: -5,508.9 N at -60.0 mm

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

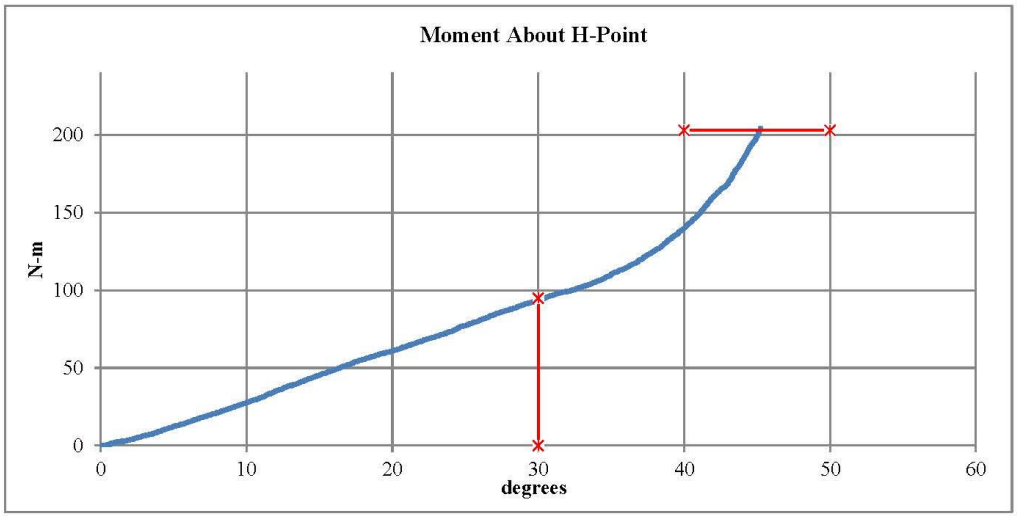
06.12.2024 13:18:31 391

Transportation Research Center Inc.

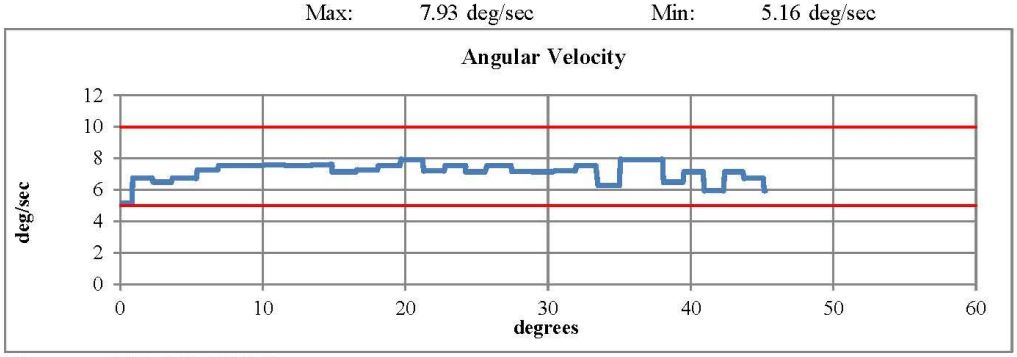
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	12-Jun-2024
Side Tested:	Left Hip	Time:	10:17
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.1	°C	Pass
Humidity	10	-	70	45	%	Pass
Moment at 30°	0	≤	94.9	93.65	N-m	Pass
Angle at 203 Nm	40	-	50	45.24	deg	Pass
Average Velocity	5	-	10	7.16	deg/sec	Pass



Max: 7.93 deg/sec Min: 5.16 deg/sec



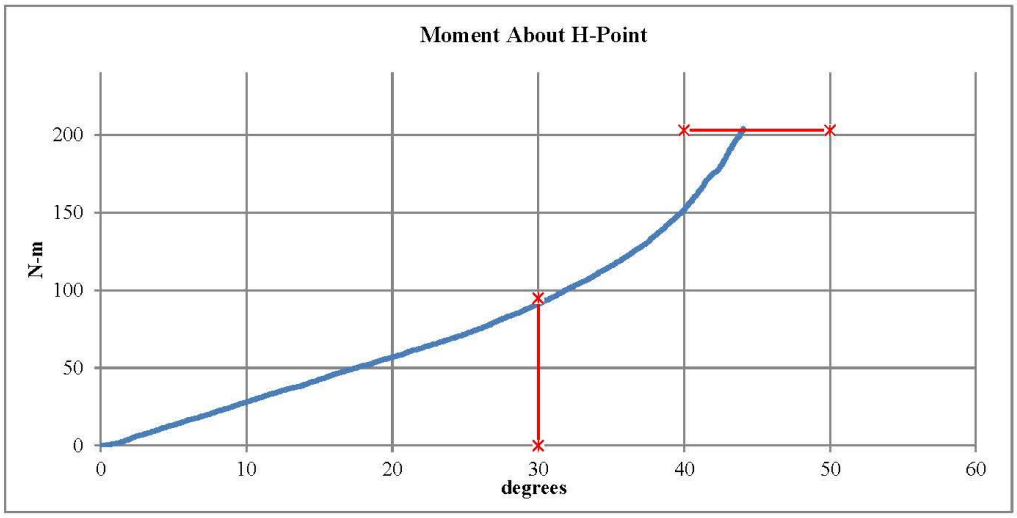
Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.

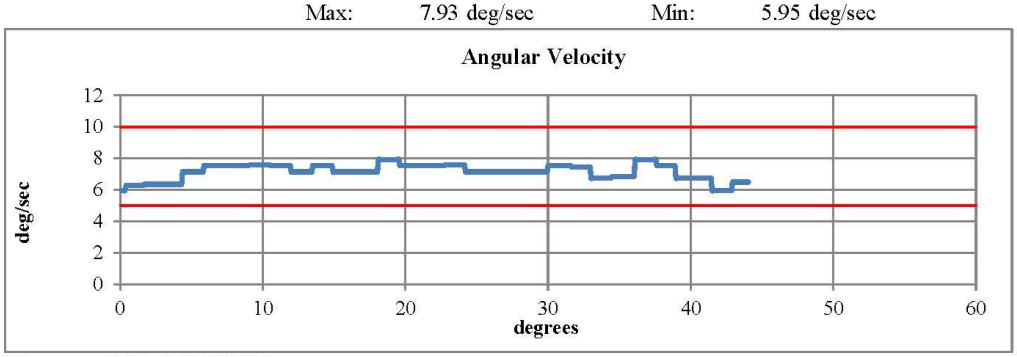
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	12-Jun-2024
Side Tested:	Right Hip	Time:	10:46
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.3	°C	Pass
Humidity	10	-	70	45	%	Pass
Moment at 30°	0	≤	94.9	90.92	N-m	Pass
Angle at 203 Nm	40	-	50	44.05	deg	Pass
Average Velocity	5	-	10	7.14	deg/sec	Pass



Max: 7.93 deg/sec Min: 5.95 deg/sec



Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.122 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,496.38 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 2672

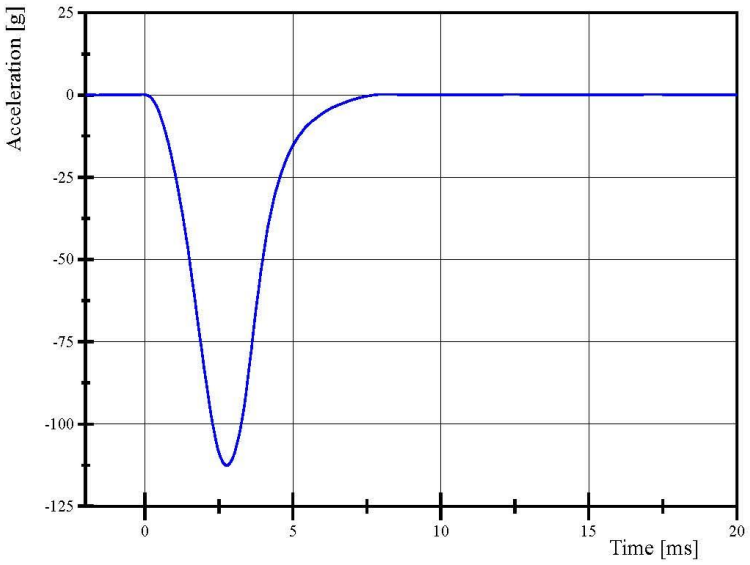
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 09:57:16 1748

Transportation Research Center Inc.

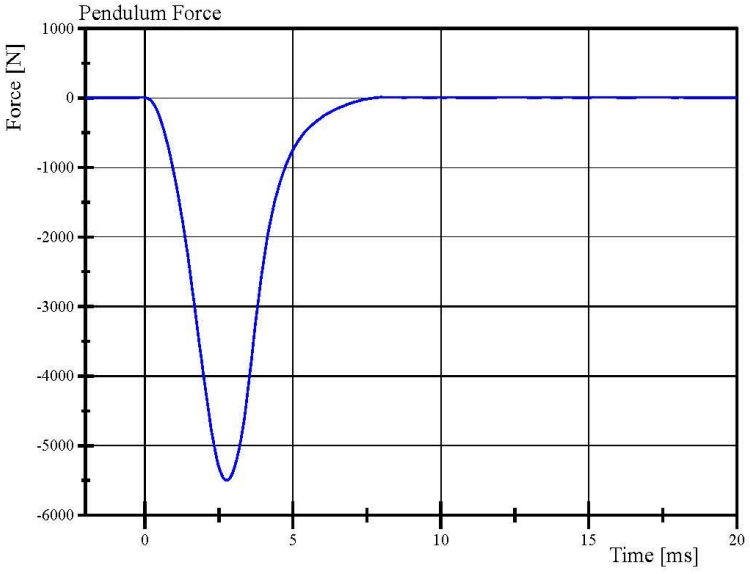
Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at 8.0 ms
Min: -112.5 g at 2.8 ms

Pendulum Force



Filter Class: CFC_600
Max: 8.1 N at 8.0 ms
Min: -5,496.4 N at 2.8 ms

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

06.12.2024 09:58:09 1748

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.122 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,365.52 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 1248

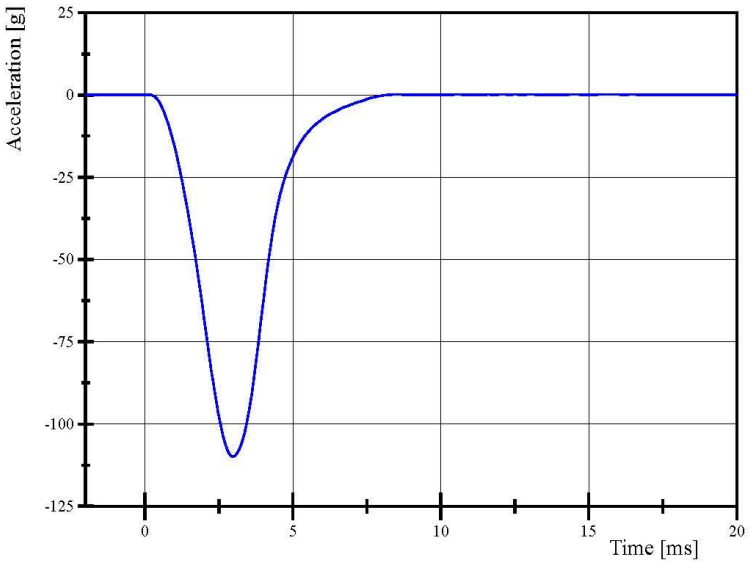
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.12.2024 10:03:01 1743

Transportation Research Center Inc.

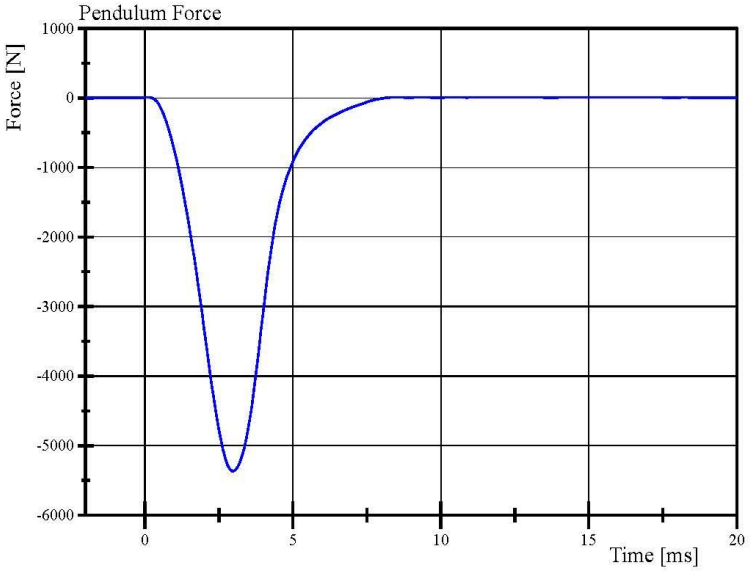
Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 91-1
Test Date: 6/12/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at 15.9 ms
Min: -109.9 g at 3.0 ms

Pendulum Force



Filter Class: CFC_600
Max: 7.9 N at 15.9 ms
Min: -5,365.5 N at 3.0 ms

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

06.12.2024 10:03:26 1743

Pre-Test Calibration Sheets

Passenger S/N DH1659

Transportation Research Center Inc.
572O HIII 5th Dummy
External Dimensions
Serial No. DH1659 Calibration No. 16

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	774.7 - 800.1	781	Yes
B	Shoulder Pivot Height	431.8 - 457.2	445	Yes
C	Hip Pivot Height	81.3 - 86.3	86	Yes
D	Hip Pivot from Backline	144.8 - 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6 - 83.8	80	Yes
F	Thigh Clearance	119.4 - 134.6	131	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	197	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	360	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	185	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	305	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	869	Yes
Z	Waist Circumference	759.5 - 789.9	776	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	262.0 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-10.2 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	8.19 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: 2864

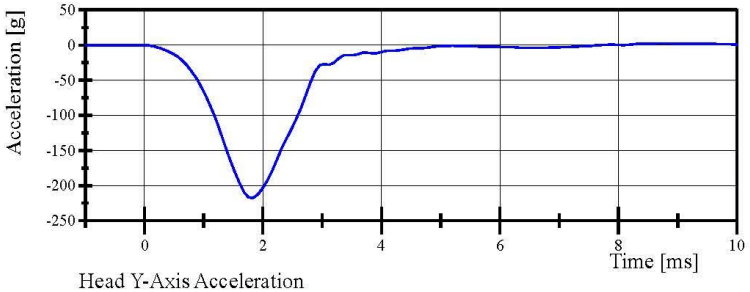
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

05.24.2024 08:32:45 614

Transportation Research Center Inc.

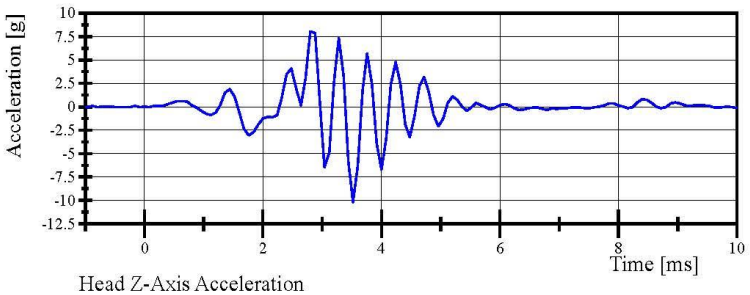
Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Head X-Axis Acceleration



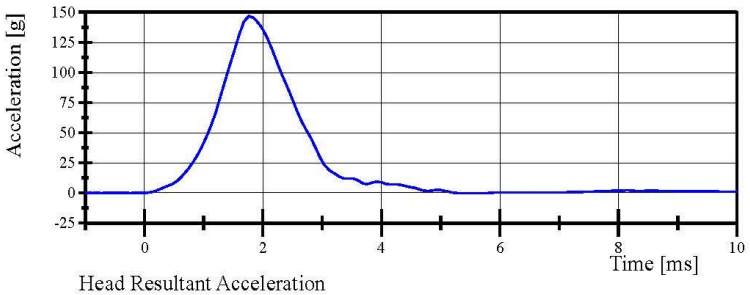
Filter Class: CFC_1000
Max: 2.5 g at 8.8 ms
Min: -217.3 g at 1.8 ms

Head Y-Axis Acceleration



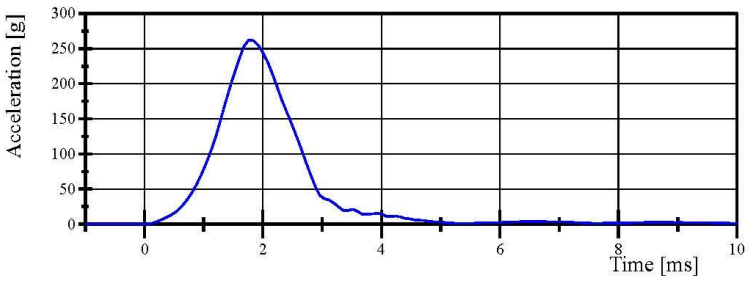
Filter Class: CFC_1000
Max: 8.0 g at 2.8 ms
Min: -10.2 g at 3.5 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 146.8 g at 1.8 ms
Min: -0.3 g at 5.4 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 262.0 g at 1.8 ms
Min: 0.0 g at -0.5 ms

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

05.24.2024 08:33:06 614

Transportation Research Center Inc.

Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.114 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.16 m/s	Yes
Change at 20ms	(-4.0) - (-5.0) m/s	-4.35 m/s	Yes
Change at 30ms	(-5.8) - (-7.0) m/s	-6.33 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-85.3 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	80.3 N·m	Yes
Decay to 10 N·m	80 - 100 ms	88.9 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

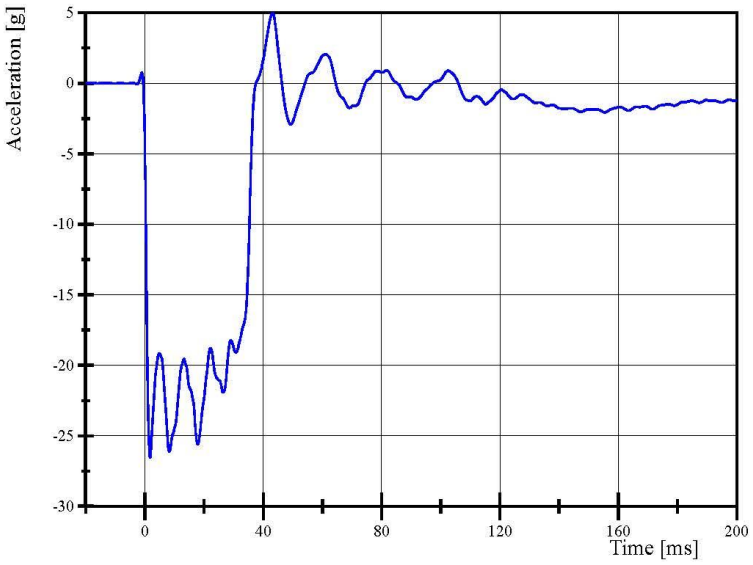
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

05.24.2024 08:34:45 1846

Transportation Research Center Inc.

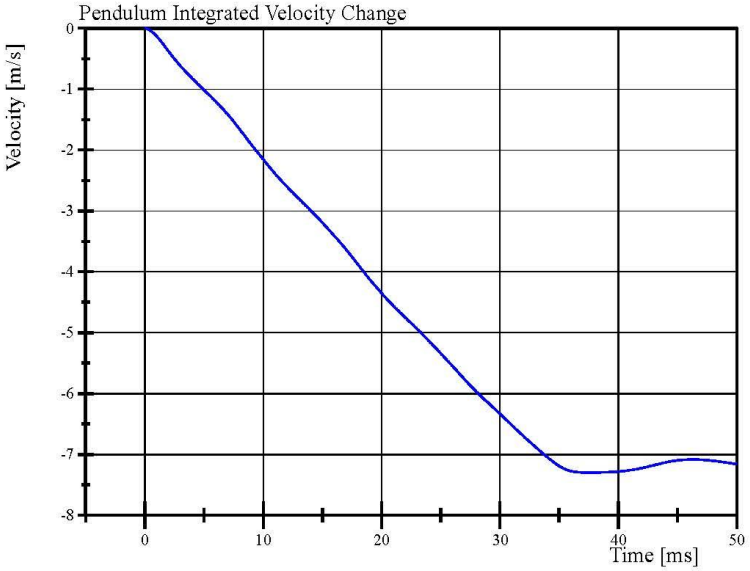
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 5.0 g at 43.2 ms
Min: -26.5 g at 1.8 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -7.3 m/s at 37.6 ms

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

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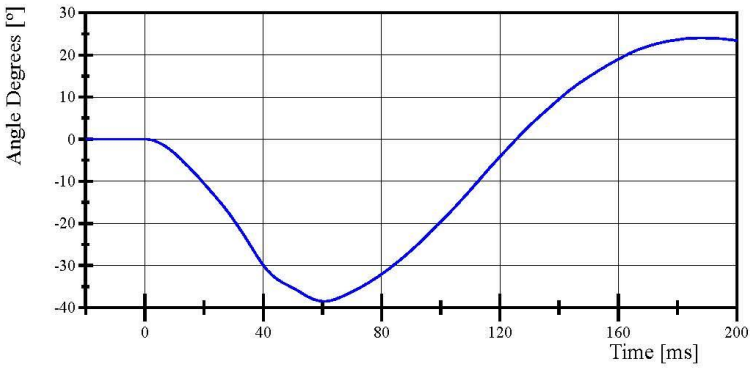
Transportation Research Center Inc.

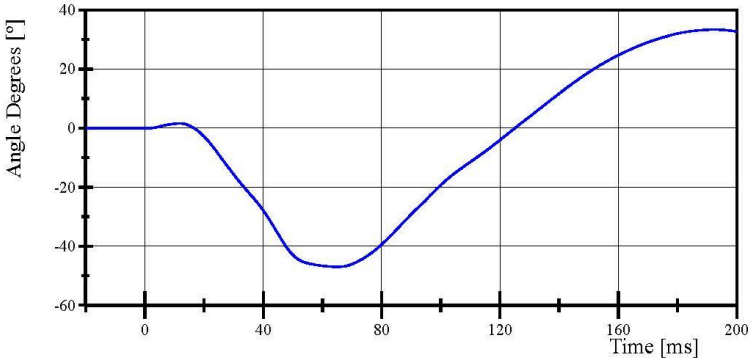
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Pot Rotation at the Base of Neck



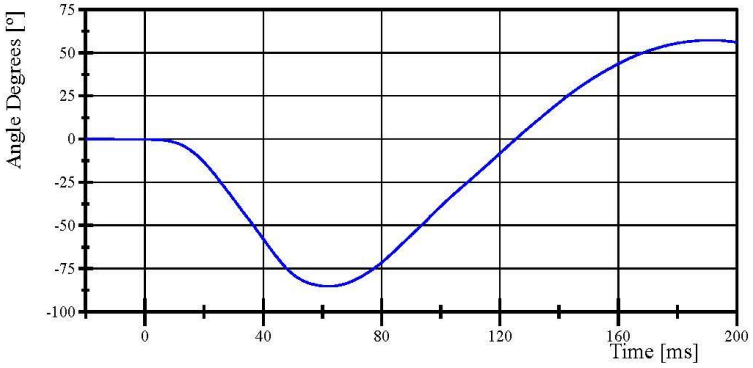
Filter Class: CFC_60
Max: 24.0 ° at 188.0 ms
Min: -38.5 ° at 60.7 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 33.4 ° at 192.4 ms
Min: -47.0 ° at 64.9 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 57.3 ° at 191.2 ms
Min: -85.3 ° at 62.1 ms

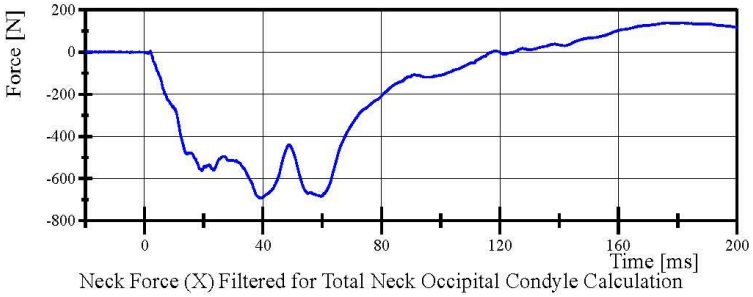
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.24.2024 08:35:09 1846

Transportation Research Center Inc.

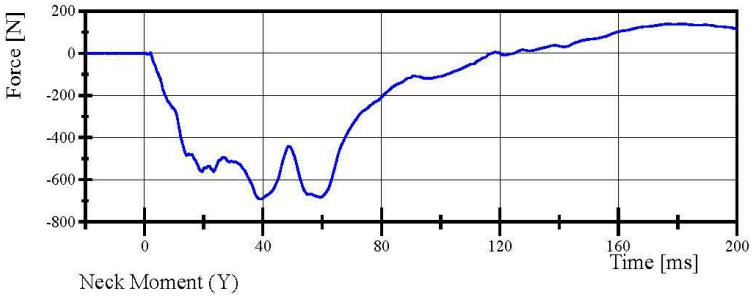
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Neck Force (X)



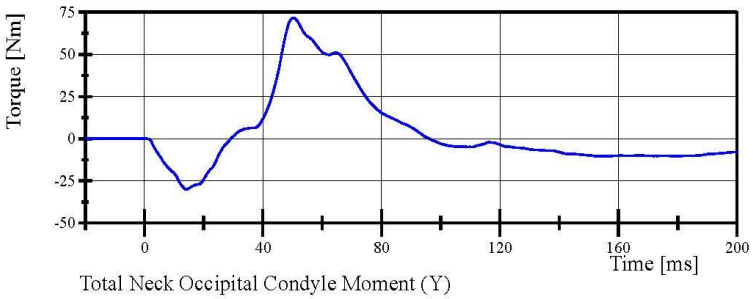
Filter Class: CFC_1000
Max: 139.7 N at 181.5 ms
Min: -692.6 N at 39.1 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



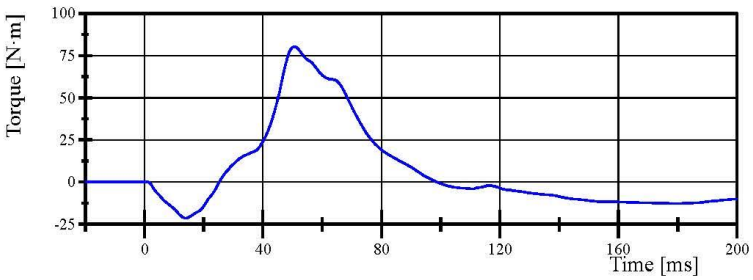
Filter Class: CFC_600
Max: 139.0 N at 181.7 ms
Min: -691.9 N at 39.2 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 71.7 Nm at 50.3 ms
Min: -30.0 Nm at 14.1 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 80.3 N·m at 50.7 ms
Min: -21.5 N·m at 13.9 ms

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

05.24.2024 08:35:10 1846

Transportation Research Center Inc.

Neck Extension
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	64 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.069 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.63 m/s	Yes
Change at 20ms	3.1 - 3.9 m/s	3.35 m/s	Yes
Change at 30ms	4.6 - 5.6 m/s	5.08 m/s	Yes
Total Head D-Plane Rotation	99 - 114 °	109.9 °	Yes
Total Neck Occipital Condyles Moment Between 99° and 114° Rotation	(-53) - (-65) N·m	-60.5 N·m	Yes
Decay to -10 N·m	94 - 114 ms	105.9 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

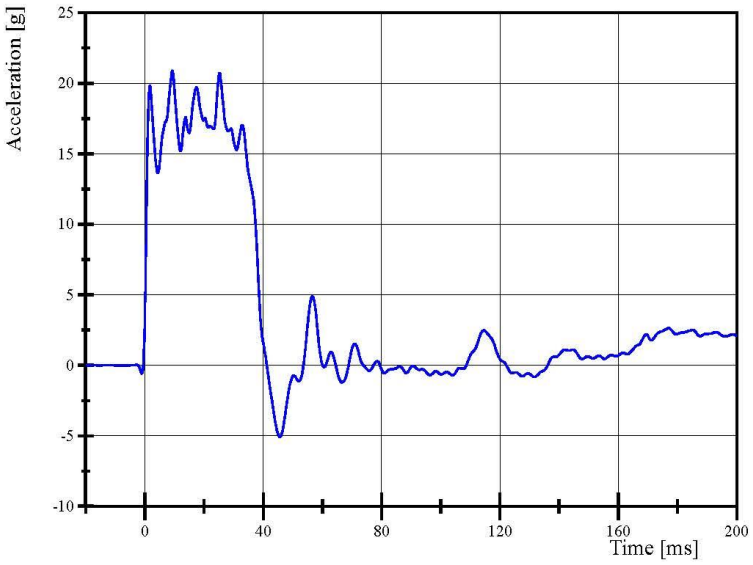
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.24.2024 08:36:36 2002

Transportation Research Center Inc.

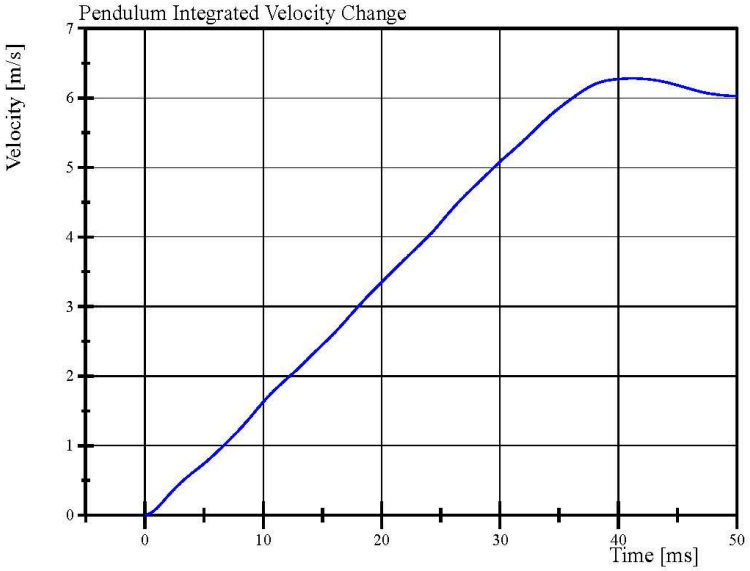
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 20.9 g at 9.3 ms
Min: -5.1 g at 45.6 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 6.3 m/s at 41.2 ms
Min: 0.0 m/s at 0.0 ms

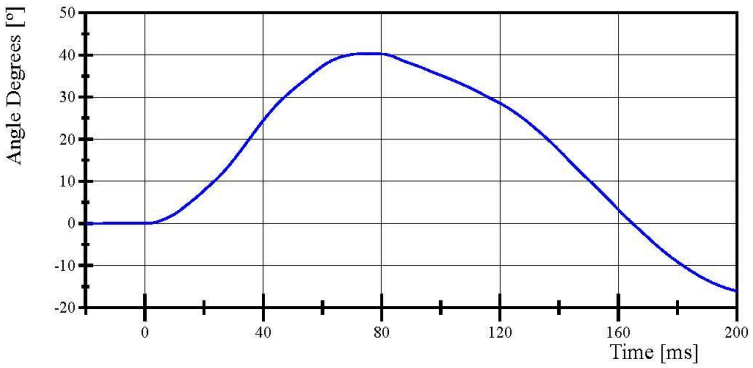
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.24.2024 08:36:48 2002

Transportation Research Center Inc.

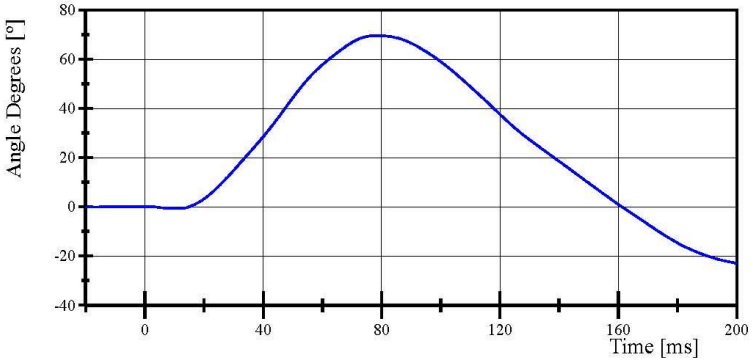
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Pot Rotation at the Base of Neck



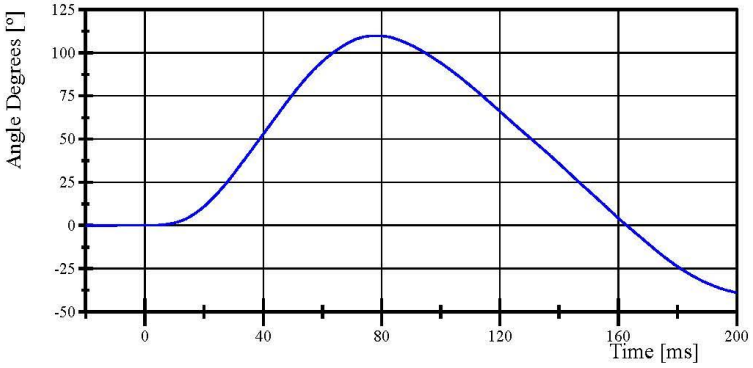
Filter Class: CFC_60
Max: 40.3 ° at 74.8 ms
Min: -16.0 ° at 199.9 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 69.6 ° at 78.4 ms
Min: -23.0 ° at 199.9 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 109.9 ° at 78.1 ms
Min: -39.0 ° at 199.9 ms

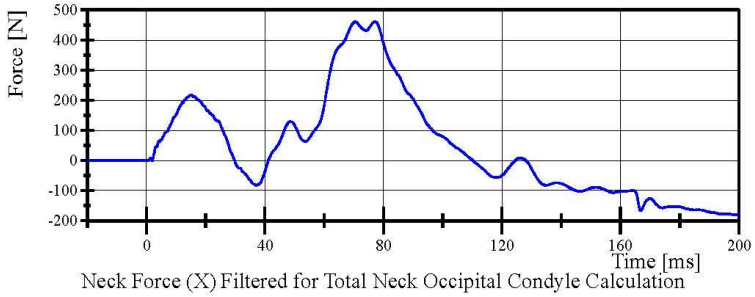
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.24.2024 08:36:48 2002

Transportation Research Center Inc.

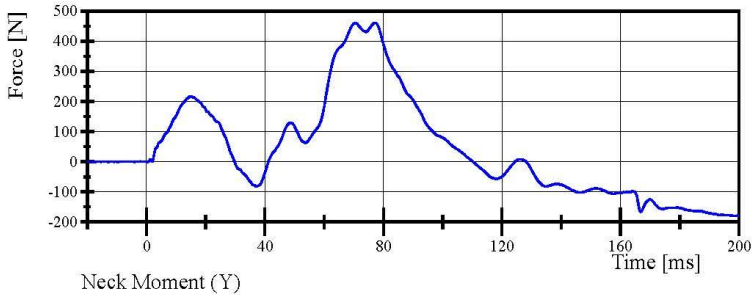
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Neck Force (X)



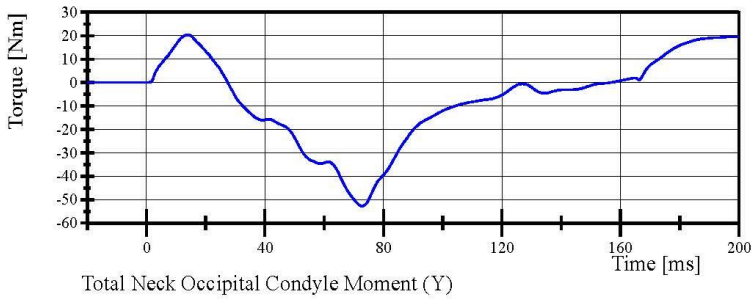
Filter Class: CFC_1000
Max: 461.5 N at 77.2 ms
Min: -180.5 N at 198.7 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



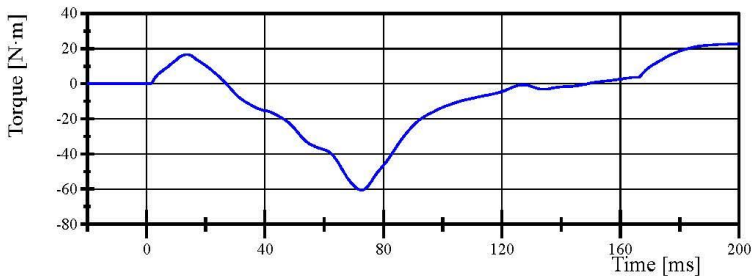
Filter Class: CFC_600
Max: 461.2 N at 77.2 ms
Min: -180.1 N at 198.6 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 20.3 Nm at 13.8 ms
Min: -52.7 Nm at 72.8 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 22.7 N·m at 199.9 ms
Min: -60.5 N·m at 72.6 ms

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

05.24.2024 08:36:49 2002

Transportation Research Center Inc.

Front Thorax
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.811 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,336.2 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,381.4 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-51.2 mm	Yes
Internal Hysteresis	69 - 85 %	76.2 %	Yes

Test meets specifications.

Condition: Used

Comments:
Jacket S/N: EE8365
Rib Set S/N: DI5873

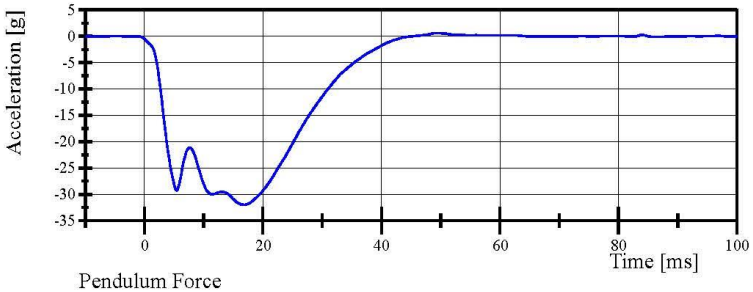
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

06.06.2024 14:09:41 460

Transportation Research Center Inc.

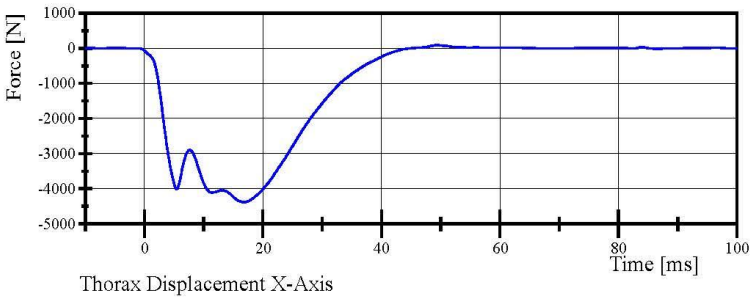
Front Thorax
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Pendulum Acceleration



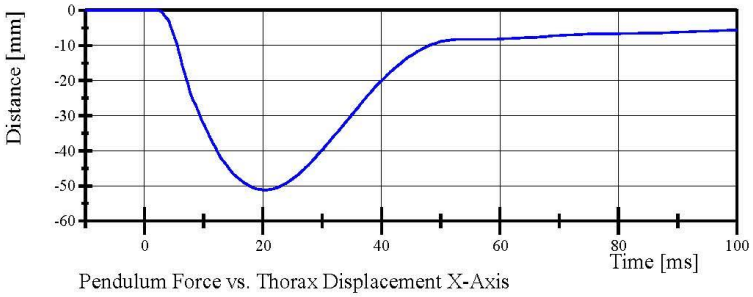
Filter Class: CFC_180
Max: 0.6 g at 49.4 ms
Min: -32.0 g at 16.8 ms

Pendulum Force



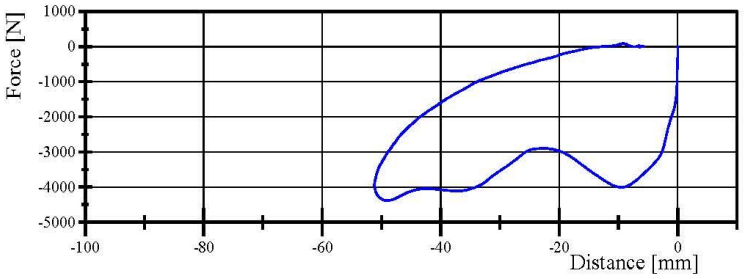
Filter Class: CFC_180
Max: 86.7 N at 49.4 ms
Min: -4,381.4 N at 16.8 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -8.9 ms
Min: -51.2 mm at 20.3 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 86.7 N at -9.2 mm
Min: -4,381.4 N at -49.1 mm

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

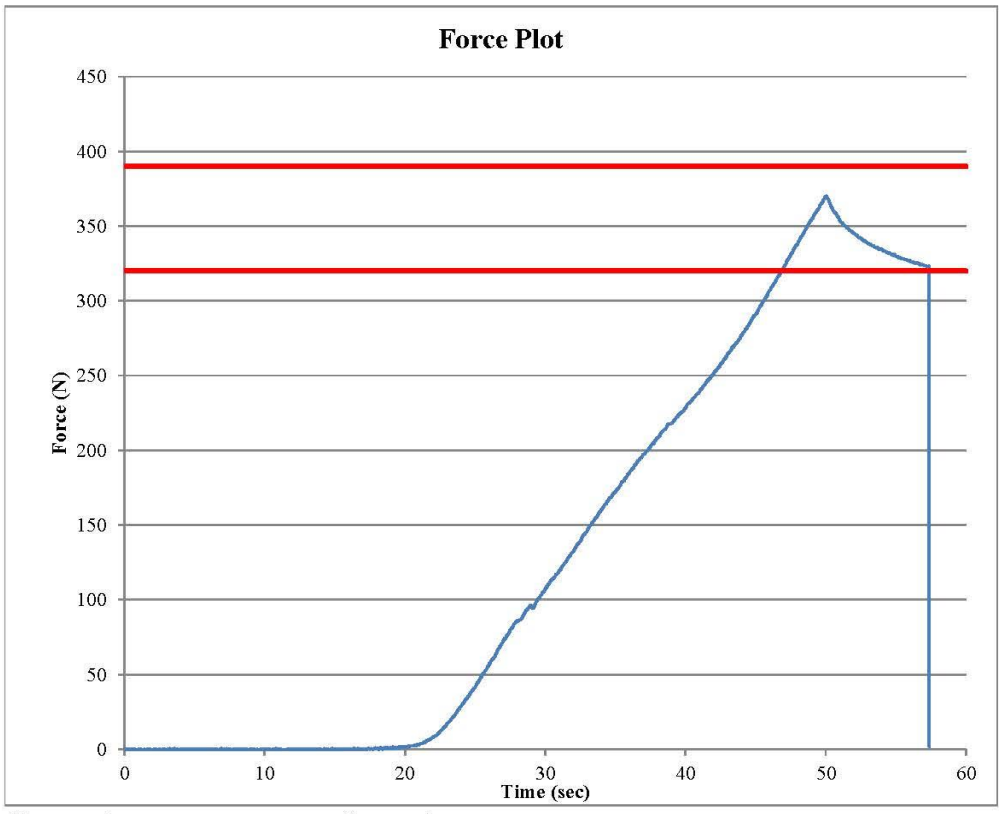
06.06.2024 14:10:22 460

Transportation Research Center Inc.

Hybrid III Small Female Torso Flexion

Customer:	NHTSA		
Serial Number:	DH1659	Date:	5/24/2024
Test Number:	1	Time:	8:04

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	20.8	°C	Pass
Humidity	10	-	70	51	%	Pass
Average Angular Rate	0.5	-	1.5	0.98	deg/sec	Pass
Initial Angle	0	-	20	17.3	deg	Pass
Peak Force at 45.73°	320	-	390	370.23	N	Pass
Final Angle	-8	-	8	3.3	deg	Pass



Components: Comments:

Jacket S/N:	EE8385
Abdomen S/N:	EE8393
Lumbar S/N:	EW9168

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	63 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.088 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,733.6 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: ED6729

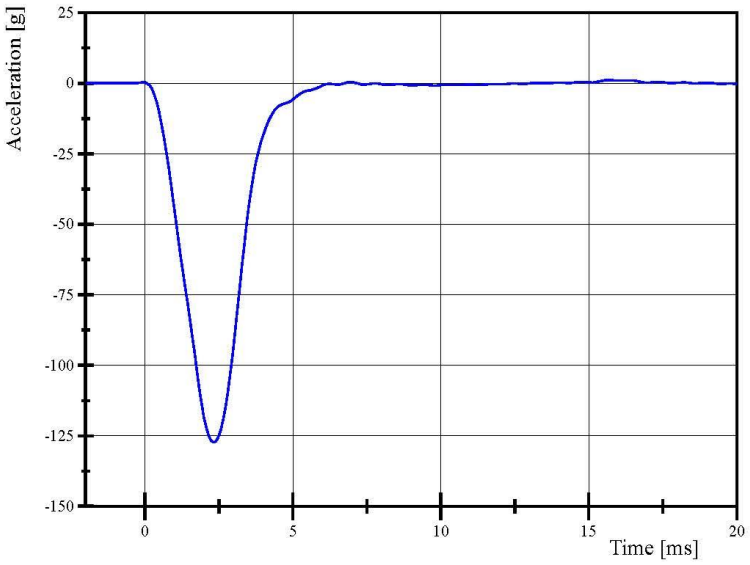
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.24.2024 08:42:06 1916

Transportation Research Center Inc.

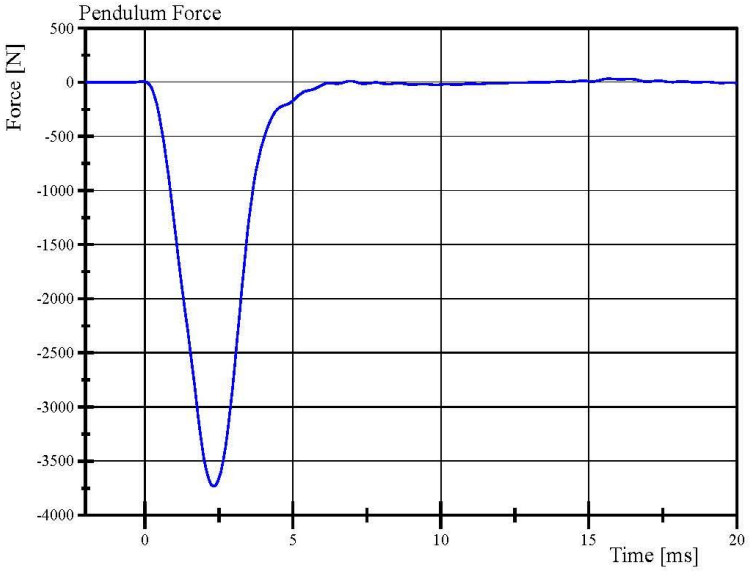
Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.2 g at 15.7 ms
Min: -127.3 g at 2.3 ms

Pendulum Force



Filter Class: CFC_600
Max: 34.5 N at 15.7 ms
Min: -3,733.6 N at 2.3 ms

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

05.24.2024 08:43:44 1916

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	64 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.087 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,878.0 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: EC5852

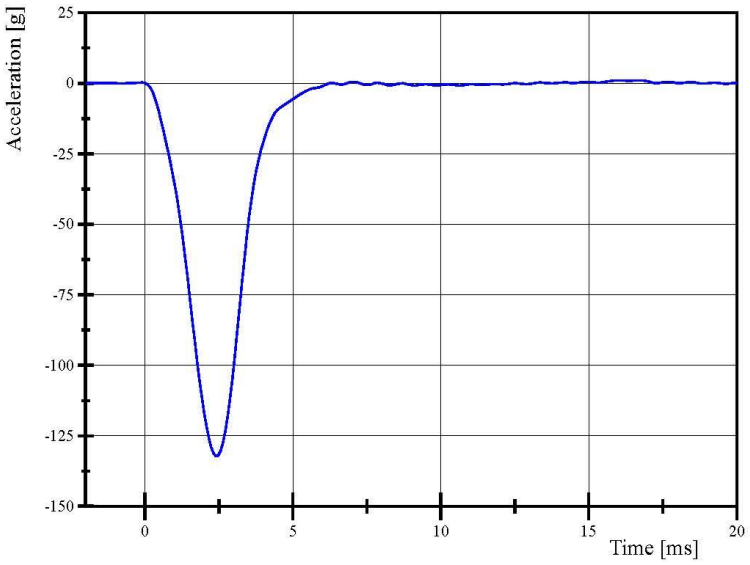
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.24.2024 08:40:10 1917

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 16-1
Test Date: 5/21/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.1 g at 16.7 ms
Min: -132.3 g at 2.4 ms

Pendulum Force

Filter Class: CFC_600
Max: 31.4 N at 16.7 ms
Min: -3,878.0 N at 2.4 ms

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

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Post-Test Calibration Sheets

Passenger S/N DH1659

Transportation Research Center Inc.
572O HIII 5th Dummy
External Dimensions
Serial No. DH1659 Calibration No. 17

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	774.7 - 800.1	781	Yes
B	Shoulder Pivot Height	431.8 - 457.2	445	Yes
C	Hip Pivot Height	81.3 - 86.3	86	Yes
D	Hip Pivot from Backline	144.8 - 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6 - 83.8	80	Yes
F	Thigh Clearance	119.4 - 134.6	131	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	197	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	360	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	185	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	305	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	869	Yes
Z	Waist Circumference	759.5 - 789.9	776	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 17-2
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	260.5 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	12.3 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	10.50 %	No

Test does not meet specifications.

Condition: Used

Comments:

Head Skin S/N: 2864

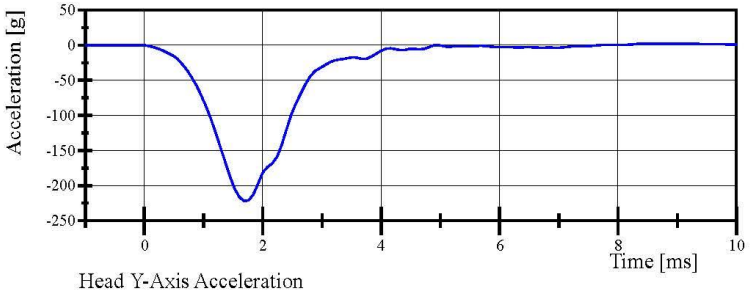
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

06.12.2024 13:00:04 615

Transportation Research Center Inc.

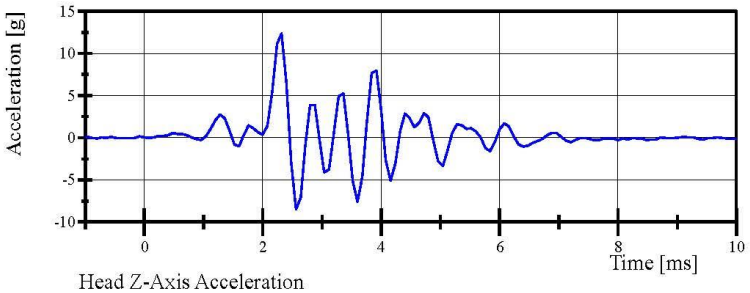
Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 17-2
Test Date: 6/12/2024

Head X-Axis Acceleration



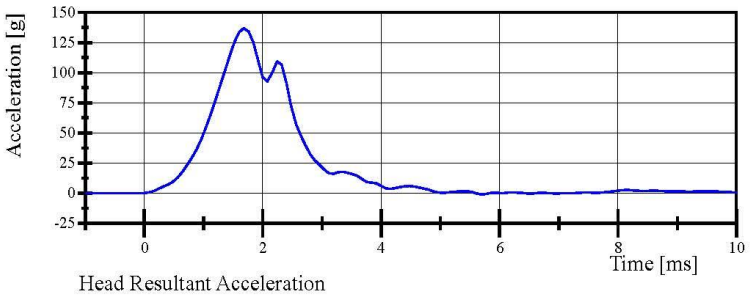
Filter Class: CFC_1000
Max: 2.2 g at 8.7 ms
Min: -221.6 g at 1.7 ms

Head Y-Axis Acceleration



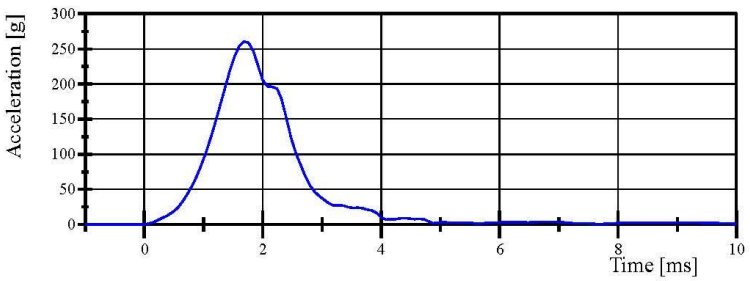
Filter Class: CFC_1000
Max: 12.3 g at 2.3 ms
Min: -8.5 g at 2.6 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 136.9 g at 1.7 ms
Min: -1.0 g at 5.7 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 260.5 g at 1.7 ms
Min: 0.0 g at -0.4 ms

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

06.12.2024 13:00:59 615

Transportation Research Center Inc.

Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.112 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.17 m/s	Yes
Change at 20ms	(-4.0) - (-5.0) m/s	-4.34 m/s	Yes
Change at 30ms	(-5.8) - (-7.0) m/s	-6.29 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-82.1 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	81.3 N·m	Yes
Decay to 10 N·m	80 - 100 ms	88.0 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

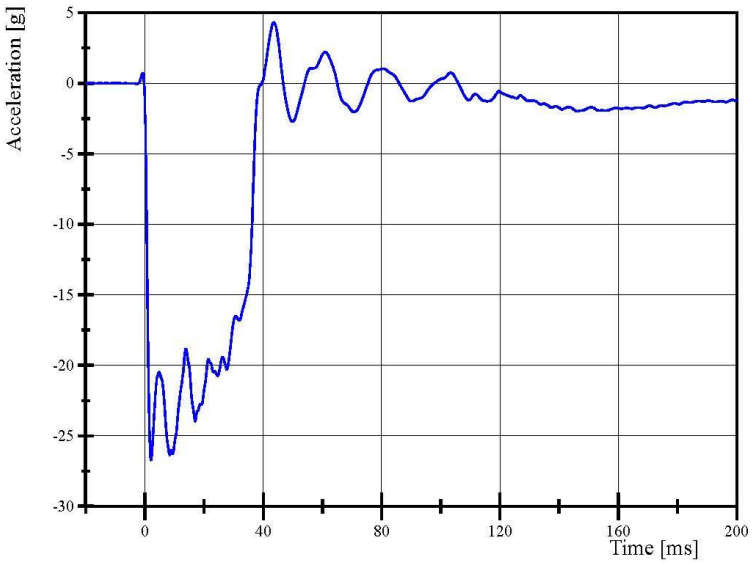
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 13:32:55 1842

Transportation Research Center Inc.

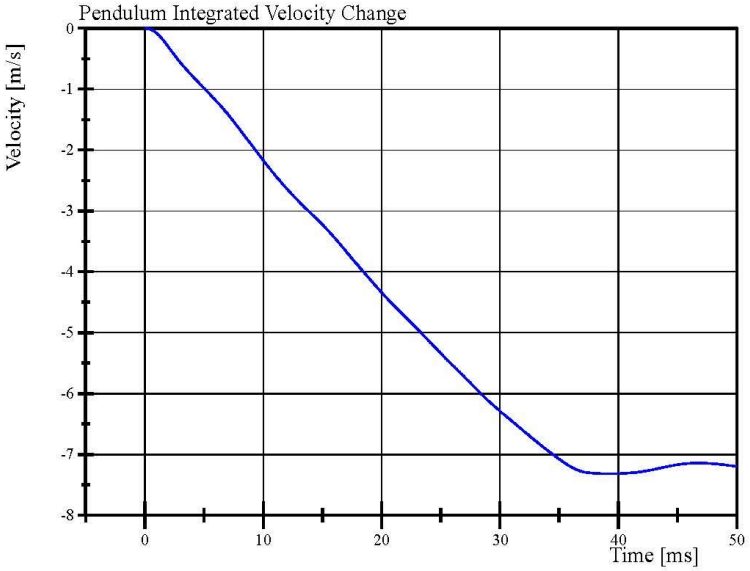
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 4.3 g at 43.6 ms
Min: -26.7 g at 2.1 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -7.3 m/s at 39.5 ms

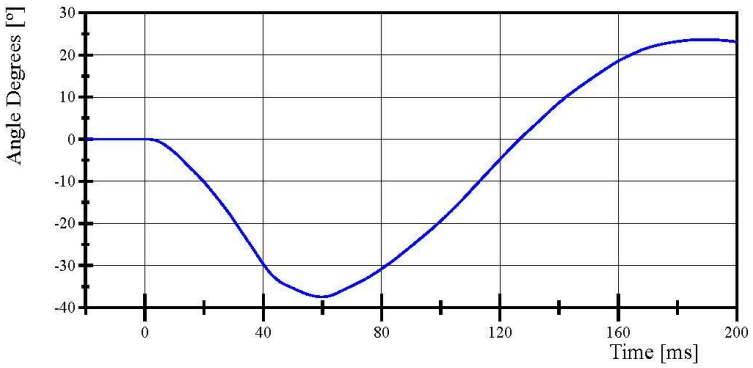
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 13:33:21 1842

Transportation Research Center Inc.

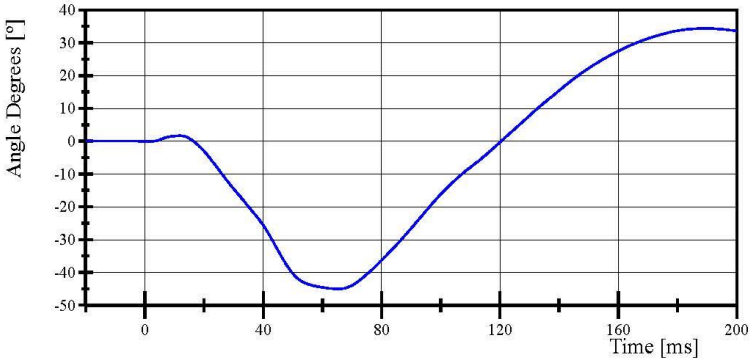
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Pot Rotation at the Base of Neck



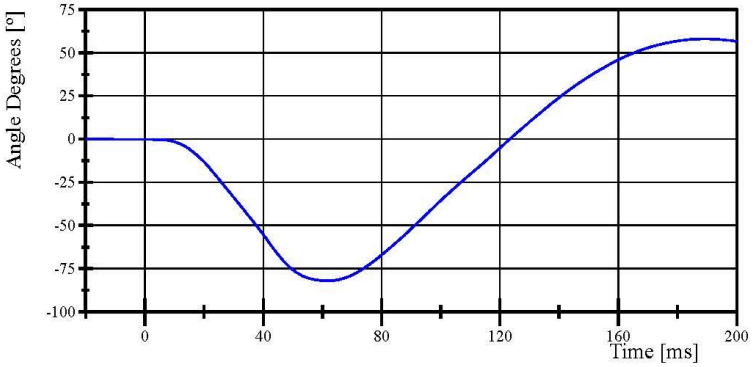
Filter Class: CFC_60
Max: 23.7 ° at 189.0 ms
Min: -37.4 ° at 59.8 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 34.4 ° at 189.7 ms
Min: -45.0 ° at 65.3 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 58.1 ° at 189.5 ms
Min: -82.1 ° at 61.7 ms

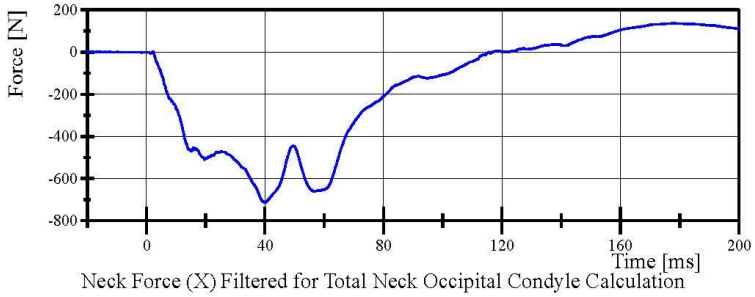
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 13:33:21 1842

Transportation Research Center Inc.

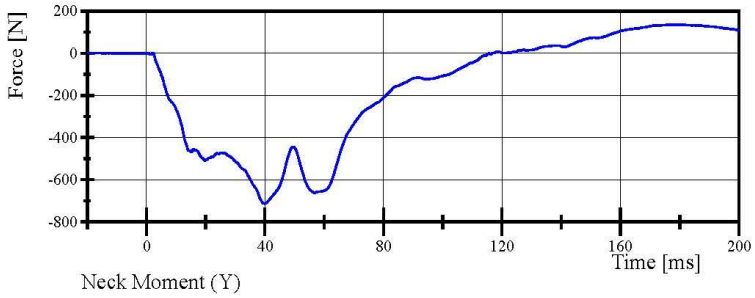
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Neck Force (X)



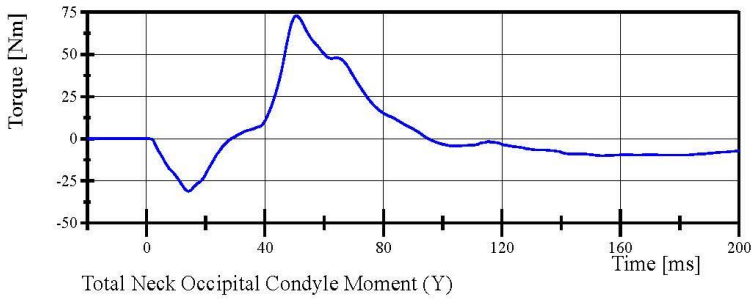
Filter Class: CFC_1000
Max: 137.1 N at 177.7 ms
Min: -713.4 N at 40.0 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



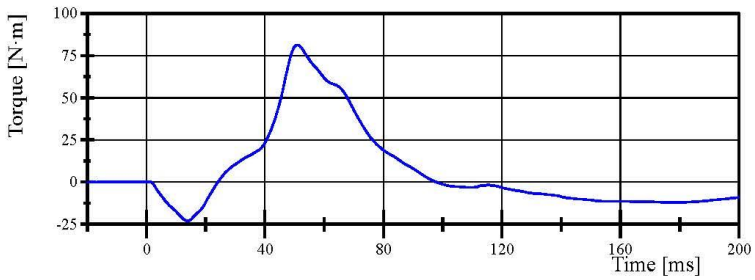
Filter Class: CFC_600
Max: 136.7 N at 177.7 ms
Min: -713.3 N at 40.0 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 73.0 Nm at 50.7 ms
Min: -31.1 Nm at 14.2 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 81.3 N·m at 50.9 ms
Min: -23.0 N·m at 14.0 ms

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

06.12.2024 13:33:21 1842

Transportation Research Center Inc.

Neck Extension
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.076 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.56 m/s	Yes
Change at 20ms	3.1 - 3.9 m/s	3.21 m/s	Yes
Change at 30ms	4.6 - 5.6 m/s	4.84 m/s	Yes
Total Head D-Plane Rotation	99 - 114 °	109.4 °	Yes
Total Neck Occipital Condyles Moment Between 99° and 114° Rotation	(-53) - (-65) N·m	-56.8 N·m	Yes
Decay to -10 N·m	94 - 114 ms	106.2 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

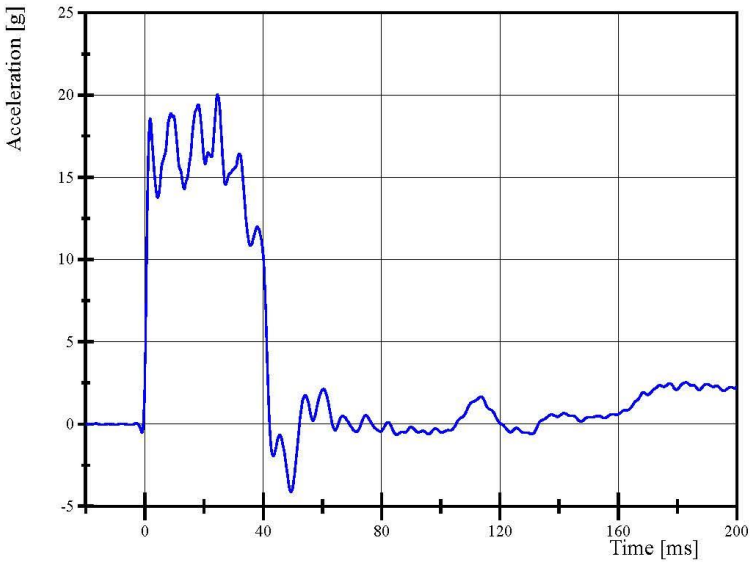
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 14:07:22 2003

Transportation Research Center Inc.

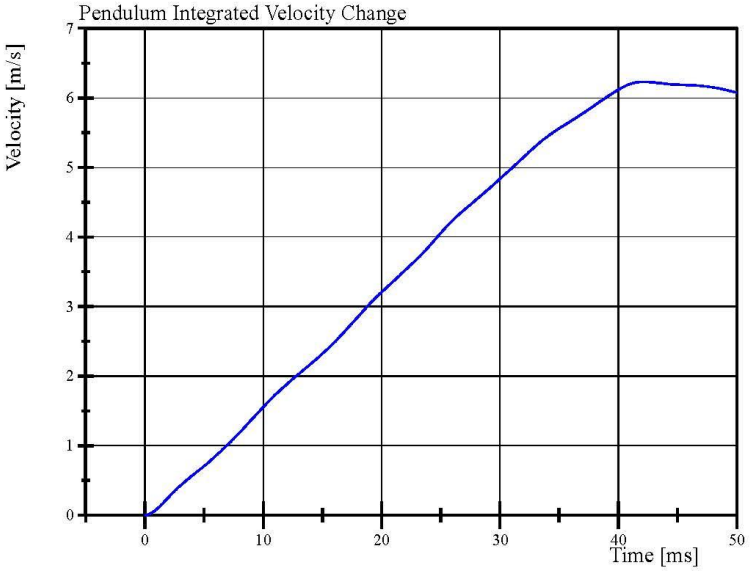
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Pendulum Acceleration



Filter Class: CFC_180
Max: 20.0 g at 24.5 ms
Min: -4.1 g at 49.4 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 6.2 m/s at 42.2 ms
Min: 0.0 m/s at 0.0 ms

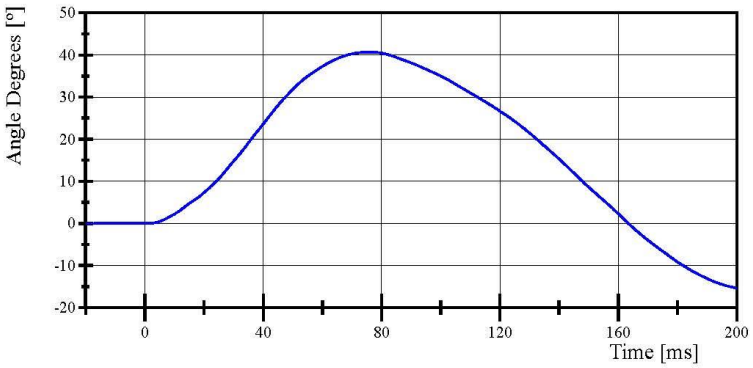
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 14:07:56 2003

Transportation Research Center Inc.

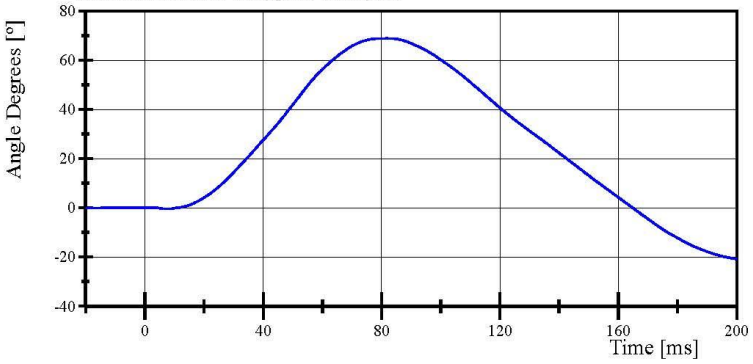
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Pot Rotation at the Base of Neck



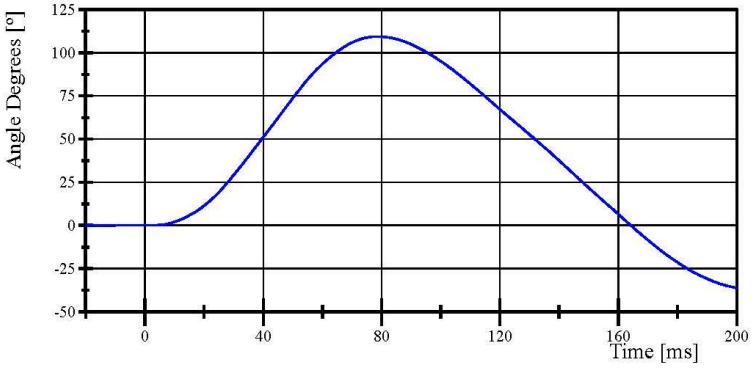
Filter Class: CFC_60
Max: 40.7 ° at 75.8 ms
Min: -15.4 ° at 199.9 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 68.9 ° at 81.7 ms
Min: -20.9 ° at 199.9 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 109.4 ° at 78.6 ms
Min: -36.2 ° at 199.9 ms

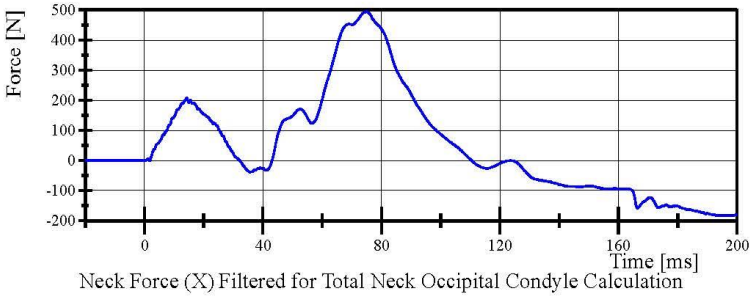
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 14:07:57 2003

Transportation Research Center Inc.

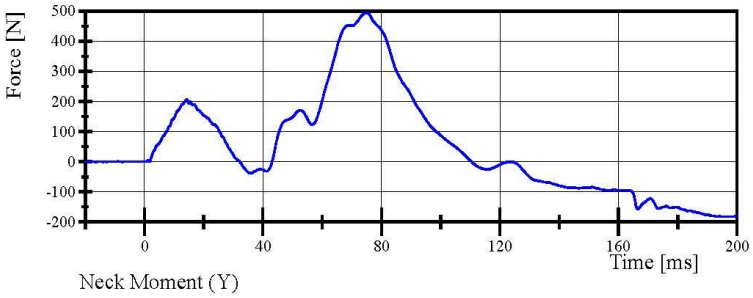
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Neck Force (X)



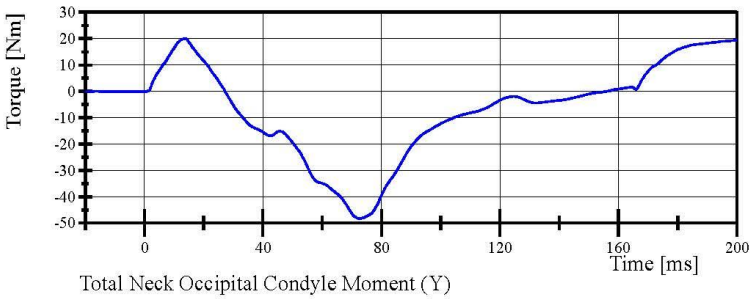
Filter Class: CFC_1000
Max: 494.5 N at 75.0 ms
Min: -183.7 N at 198.2 ms

Neck Force (X) Filtered for Total Neck Occipital Condyle Calculation



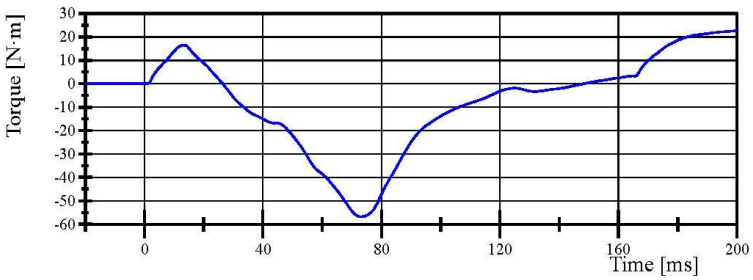
Filter Class: CFC_600
Max: 494.4 N at 75.2 ms
Min: -183.0 N at 198.2 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 20.0 Nm at 13.9 ms
Min: -48.3 Nm at 72.6 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 22.6 N·m at 199.7 ms
Min: -56.8 N·m at 73.1 ms

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

06.12.2024 14:07:57 2003

Transportation Research Center Inc.

Front Thorax
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/13/2024

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.820 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,242.0 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,258.9 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-52.5 mm	Yes
Internal Hysteresis	69 - 85 %	74.3 %	Yes

Test meets specifications.

Condition: Used

Comments:
Jacket S/N: EE8365
Rib Set S/N: DI5873

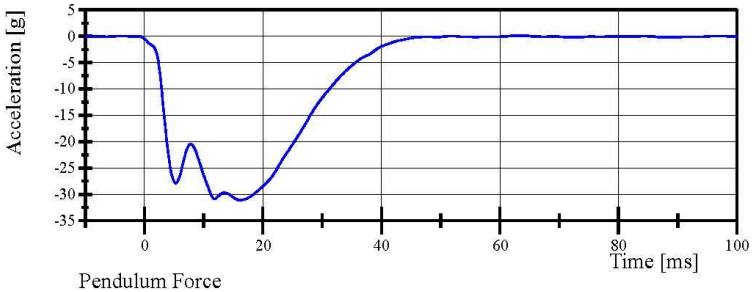
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

06.13.2024 13:06:30 383

Transportation Research Center Inc.

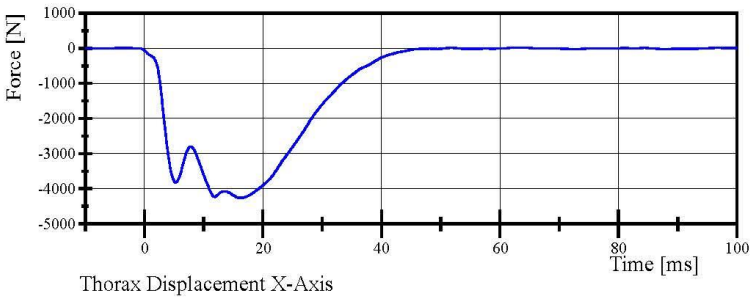
Front Thorax
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/13/2024

Pendulum Acceleration



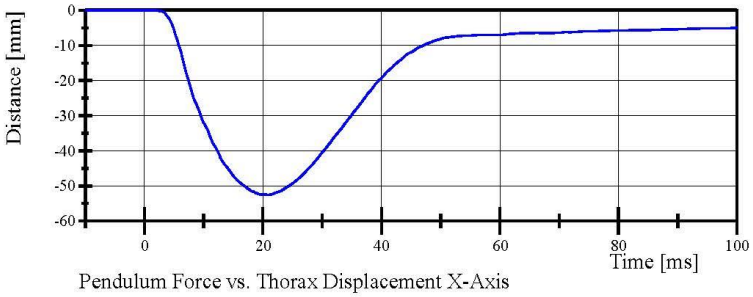
Filter Class: CFC_180
Max: 0.1 g at 64.2 ms
Min: -31.1 g at 16.2 ms

Pendulum Force



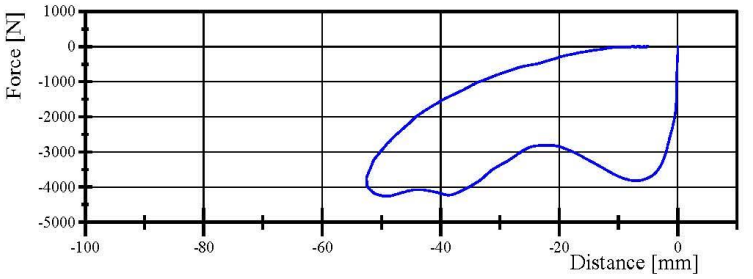
Filter Class: CFC_180
Max: 16.3 N at 64.2 ms
Min: -4,258.9 N at 16.2 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -3.0 ms
Min: -52.5 mm at 20.9 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 16.3 N at -6.4 mm
Min: -4,258.9 N at -49.1 mm

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

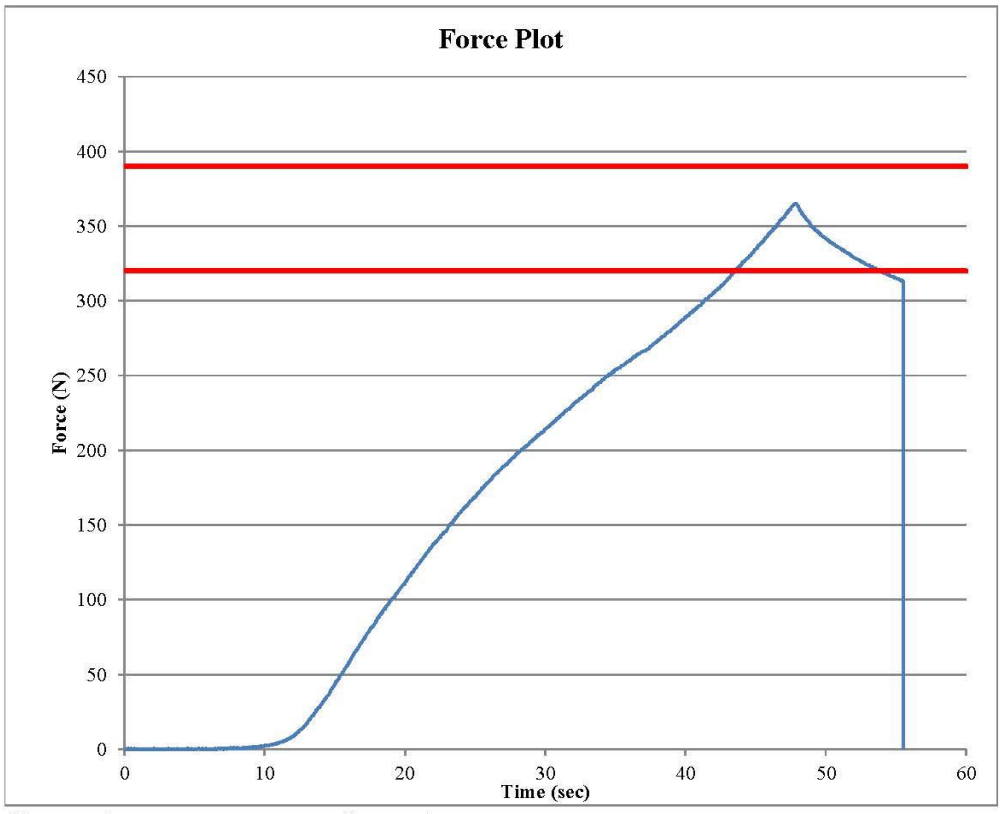
06.13.2024 13:07:39 383

Transportation Research Center Inc.

Hybrid III Small Female Torso Flexion

Customer:	NHTSA		
Serial Number:	DH1659	Date:	6/13/2024
Test Number:	1	Time:	9:18

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.3	°C	Pass
Humidity	10	-	70	51	%	Pass
Average Angular Rate	0.5	-	1.5	0.95	deg/sec	Pass
Initial Angle	0	-	20	10.71	deg	Pass
Peak Force at 45.63°	320	-	390	364.85	N	Pass
Final Angle	-8	-	8	2.27	deg	Pass



Components:		Comments:
Jacket S/N:	EE8385	
Abdomen S/N:	EE8393	
Lumbar S/N:	EW9168	

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.084 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-4,022.2 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: ED6729

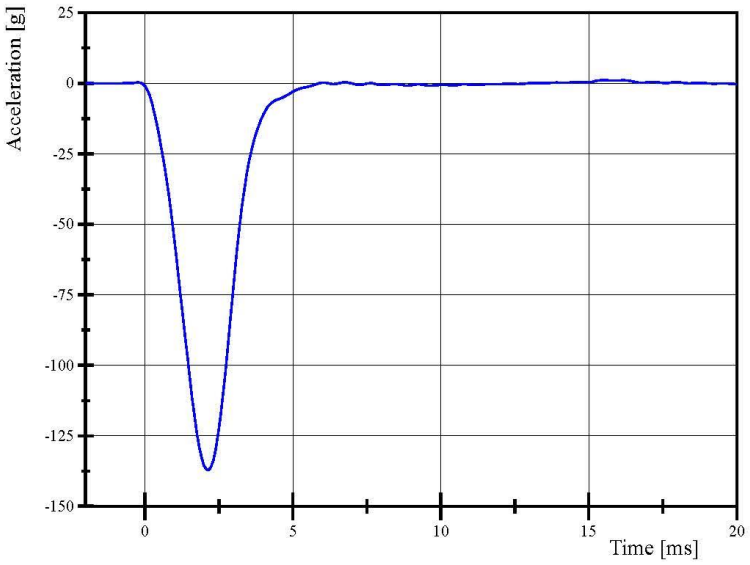
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 14:31:13 2115

Transportation Research Center Inc.

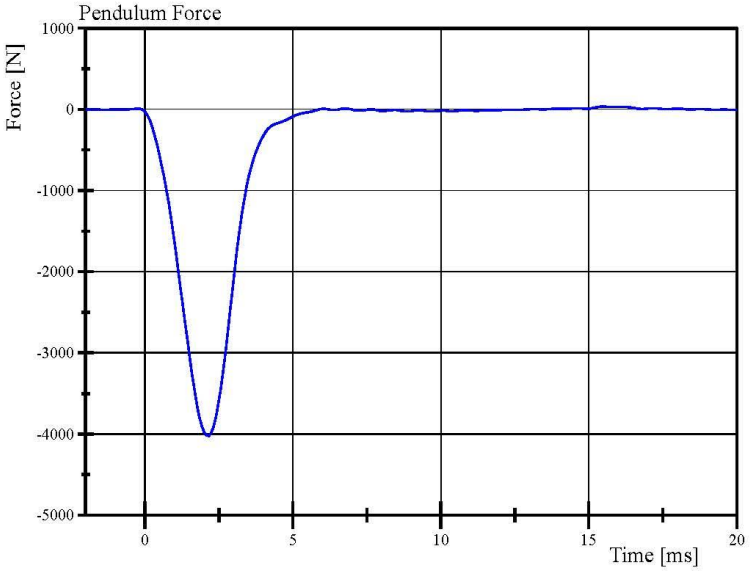
Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.2 g at 15.5 ms
Min: -137.2 g at 2.2 ms

Pendulum Force



Filter Class: CFC_600
Max: 34.2 N at 15.5 ms
Min: -4,022.2 N at 2.2 ms

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

06.12.2024 14:31:55 2115

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	44 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.085 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-4,034.8 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: EC5852

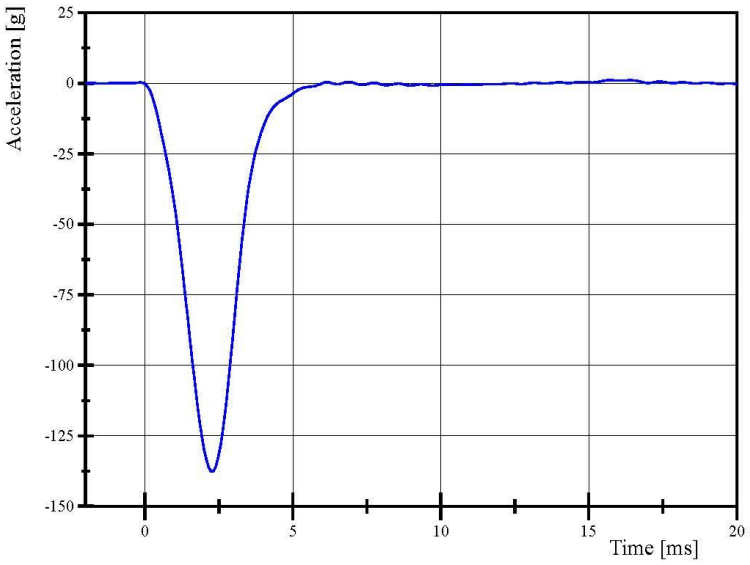
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.12.2024 14:38:29 2113

Transportation Research Center Inc.

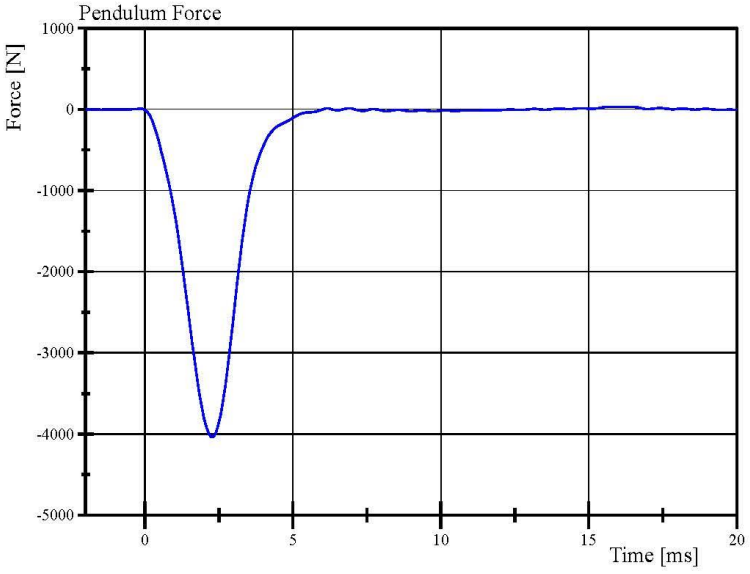
Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 17-1
Test Date: 6/12/2024

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.1 g at 15.7 ms
Min: -137.6 g at 2.2 ms

Pendulum Force



Filter Class: CFC_600
Max: 32.7 N at 15.7 ms
Min: -4,034.8 N at 2.2 ms

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

06.12.2024 14:39:09 2113

APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

TABLE 1 – Driver Dummy Instrumentation

Instrumentation			Axis/Location	Hybrid III 50th S/N 037		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers		Primary	X	T10650	Endevco	19-Apr-2024
			Y	P94650	Endevco	19-Apr-2024
			Z	P94622	Endevco	19-Apr-2024
		Redundant	X	P94431	Endevco	19-Apr-2024
			Y	P94487	Endevco	19-Apr-2024
			Z	P94645	Endevco	19-Apr-2024
Head Angular Rate Sensors			X	ARS14948	DTS	17-Nov-2023
			Y	ARS14952	DTS	17-Nov-2023
			Z	ARS14949	DTS	17-Nov-2023
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	2021	Humanetics	18-Apr-2024
Chest Accelerometers		Primary	X	P97714	Endevco	19-Apr-2024
			Y	P61255	Endevco	19-Apr-2024
			Z	P45008	Endevco	19-Apr-2024
		Redundant	X	P91177	Endevco	19-Apr-2024
			Y	P94570	Endevco	19-Apr-2024
			Z	P91172	Endevco	19-Apr-2024
Chest Potentiometer			X	CST037	Servo	19-Apr-2024
Pelvis Accelerometers			X	T11801	Endevco	19-Apr-2024
			Y	P91876	Endevco	19-Apr-2024
			Z	P93543	Endevco	19-Apr-2024
Femur Load Cells	Left	Primary	Z	DI4215-FZ1	Humanetics	19-Apr-2024
		Redundant	Z	DI4215-FZ2	Humanetics	19-Apr-2024
	Right	Primary	Z	DI4216-FZ1	Humanetics	19-Apr-2024
		Redundant	Z	DI4216-FZ2	Humanetics	19-Apr-2024
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-94	Denton	18-Apr-2024
		Lower	MX, MY, FZ	3644-370	Denton	18-Apr-2024
	Right	Upper	MX, MY, FZ	3643-413	Denton	19-Apr-2024
		Lower	MX, MY, FZ	3644-401	Denton	18-Apr-2024
Foot Accelerometers	Left	Rear	X	P90848	Endevco	19-Apr-2024
			Z	P91498	Endevco	19-Apr-2024
		Front	Z	P90841	Endevco	19-Apr-2024
	Right	Rear	X	P93467	Endevco	19-Apr-2024
			Z	P97619	Endevco	19-Apr-2024
		Front	Z	P94523	Endevco	19-Apr-2024
Seat Belt Load Cells		Lap	N/A	N/A	N/A	N/A
		Shoulder	N/A	N/A	N/A	N/A

TABLE 2 – Front Passenger Dummy Instrumentation

Instrumentation			Axis/Location	Hybrid III 5th S/N DH1659		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers		Primary	X	P44972	Endevco	25-Apr-2024
			Y	T11806	Endevco	25-Apr-2024
			Z	P69062	Endevco	25-Apr-2024
		Redundant	X	T11046	Endevco	25-Apr-2024
			Y	P97525	Endevco	25-Apr-2024
			Z	P73228	Endevco	25-Apr-2024
Head Angular Rate Sensors			X	ARS6120	DTS	17-Nov-2023
			Y	ARS10776	DTS	17-Nov-2023
			Z	ARS4732	DTS	17-Nov-2023
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	1874	Humanetics	24-Apr-2024
Chest Accelerometers		Primary	X	P80855	Endevco	25-Apr-2024
			Y	P93546	Endevco	25-Apr-2024
			Z	P57791	Endevco	25-Apr-2024
		Redundant	X	P73221	Endevco	25-Apr-2024
			Y	T11872	Endevco	25-Apr-2024
			Z	T16784	Endevco	25-Apr-2024
Chest Potentiometer			X	CST3410	Servo	25-Apr-2024
Pelvis Accelerometers			X	P91969	Endevco	25-Apr-2024
			Y	P91958	Endevco	25-Apr-2024
			Z	P80721	Endevco	25-Apr-2024
Femur Load Cells	Left	Primary	Z	DT0997-FZ1	Humanetics	24-Apr-2024
		Redundant	Z	DT0997-FZ2	Humanetics	24-Apr-2024
	Right	Primary	Z	DS4140-FZ1	Humanetics	24-Apr-2024
		Redundant	Z	DS4140-FZ2	Humanetics	24-Apr-2024
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-92	Humanetics	24-Apr-2024
		Lower	MX, MY, FZ	3644-92	Humanetics	24-Apr-2024
	Right	Upper	MX, MY, FZ	3643-484	Humanetics	25-Apr-2024
		Lower	MX, MY, FZ	3644-369	Humanetics	24-Apr-2024
Foot Accelerometers	Left	Rear	X	P90866	Endevco	25-Apr-2024
			Z	P93533	Endevco	25-Apr-2024
		Front	Z	P97890	Endevco	25-Apr-2024
	Right	Rear	X	P97640	Endevco	25-Apr-2024
			Z	P91471	Endevco	25-Apr-2024
		Front	Z	P91907	Endevco	25-Apr-2024
Seat Belt Load Cells		Lap	N/A	N/A	N/A	N/A
		Shoulder	N/A	N/A	N/A	N/A

TABLE 3 – Vehicle Instrumentation

Instrumentation			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember/Rear Seat Accelerometers	Left	Primary	X	A300452	Measurement Specialties	22-Mar-2024
			Z	A377512	Measurement Specialties	25-Mar-2024
		Redundant	X	A377506	Measurement Specialties	25-Mar-2024
	Right	Primary	X	A377538	Measurement Specialties	25-Mar-2024
			Z	A297045	Measurement Specialties	22-Mar-2024
		Redundant	X	A318460	Measurement Specialties	21-Mar-2024
Engine Accelerometers	Top		X	A318453	Measurement Specialties	22-Mar-2024
	Bottom		X	A298542	Measurement Specialties	21-Mar-2024