

Final Report Number: NCAP-TRC-22-002

**New Car Assessment Program (NCAP)
Frontal Barrier Impact Test**

**General Motors DE Mexico, S. DE R.L. DE C.V.
2022 Chevrolet Silverado 1500
NHTSA Number: M20220106**

**PREPARED BY:
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Report Date: May 15, 2023

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**

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Prepared By: ILO Project Operations Group

Approved By: John Shultz

Approval Date: May 15, 2023

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 _____

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16. Abstract A 56.0 km/h NCAP Frontal Impact Test was conducted on a 2022 Chevrolet Silverado 1500, 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 May 9, 2022. The impact velocity was 56.64 km/h, and the ambient temperature at the barrier face at the time of impact was 21.4° C. The target vehicle post-test maximum crush was 611 millimeters at vehicle centerline. The test vehicle's performance is as follows: <table border="1"> <thead> <tr> <th></th> <th colspan="3">Driver ATD</th> <th colspan="3">Passenger ATD</th> </tr> <tr> <th>Measurement Description</th> <th>Units</th> <th>Threshold</th> <th>Result</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>NA</td> <td>700</td> <td>150</td> <td>NA</td> <td>700</td> <td>410</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-24.7</td> <td>mm</td> <td>52</td> <td>-14.1</td> </tr> <tr> <td>3ms Chest Clip</td> <td>Gs</td> <td>60</td> <td>35.6</td> <td>Gs</td> <td>60</td> <td>43.7</td> </tr> <tr> <td>Nij</td> <td>NA</td> <td>1</td> <td>0.27</td> <td>NA</td> <td>1</td> <td>0.38</td> </tr> <tr> <td>Neck Tension</td> <td>Newtons</td> <td>4170</td> <td>1505.8</td> <td>Newtons</td> <td>2620</td> <td>891.0</td> </tr> <tr> <td>Neck Compression</td> <td>Newtons</td> <td>4000</td> <td>-180.6</td> <td>Newtons</td> <td>2520</td> <td>-338.9</td> </tr> <tr> <td>Left Femur Force</td> <td>Newtons</td> <td>10000</td> <td>-532.7</td> <td>Newtons</td> <td>6800</td> <td>-331.2</td> </tr> <tr> <td>Right Femur Force</td> <td>Newtons</td> <td>10000</td> <td>-735.0</td> <td>Newtons</td> <td>6800</td> <td>-243.4</td> </tr> </tbody> </table>								Driver ATD			Passenger ATD			Measurement Description	Units	Threshold	Result	Units	Threshold	Result	Head Injury Criteria (HIC ₁₅)	NA	700	150	NA	700	410	Maximum Chest Compression	mm	63	-24.7	mm	52	-14.1	3ms Chest Clip	Gs	60	35.6	Gs	60	43.7	Nij	NA	1	0.27	NA	1	0.38	Neck Tension	Newtons	4170	1505.8	Newtons	2620	891.0	Neck Compression	Newtons	4000	-180.6	Newtons	2520	-338.9	Left Femur Force	Newtons	10000	-532.7	Newtons	6800	-331.2	Right Femur Force	Newtons	10000	-735.0	Newtons	6800	-243.4
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17. Key Words 56.3 km/h (35 mph) Full Frontal Rigid Barrier Impact Test New Car Assessment Program (NCAP)				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590																																																																								
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SECTION 1: 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 2022 Chevrolet Silverado 1500 at a velocity of 56.64 km/h. The test was performed at Transportation Research Center, Inc. on May 9, 2022. 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. EB7513) 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 611 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 glove box.

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)	150	0.27	1505.8	-180.6	35.6	-24.7	-532.7	-735.0
Passenger (5 th Female)	410	0.38	891.0	-338.9	43.7	-14.1	-331.2	-243.4

TEST COMMENTS:

DRIVER SHOULDER BELT FORCE; Channel Failed
PASSENGER RIGHT FOOT AFT Z; Channel Failed
BARRIER G-03 MZ; Channel Failed
BARRIER G-13 FX; Channel Failed
BARRIER G-13 MY; Questionable Data
BARRIER G-14 FX; Channel Failed
BARRIER B-16 FX; Channel Failed

SECTION 2: DATA SHEETS

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

Test Vehicle: 2022 Chevrolet Silverado 1500
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
 Test Date: 5/9/2022

TEST VEHICLE INFORMATION

NHTSA No.	M20220106
Model Year	2022
Make	Chevrolet
Model	Silverado 1500
Body Style	Truck
VIN	3GCPDBEK4NG518396
Body Color	Summit White
Odometer Reading (km/mi)	5 mi
Engine Displacement (L)	2.7
Type/No. Cylinders	Gas/4
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	8
Overdrive	Yes
Final Drive	4WD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes, Driver Only
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	Yes
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	General Motors DE Mexico, S. DE R.L. DE C.V.	GVWR (kg)	3175 (7000 lbs)
Date of Manufacture		GAWR Front (kg)	1724 (3800 lbs)
		GAWR Rear (kg)	1724 (3800 lbs)

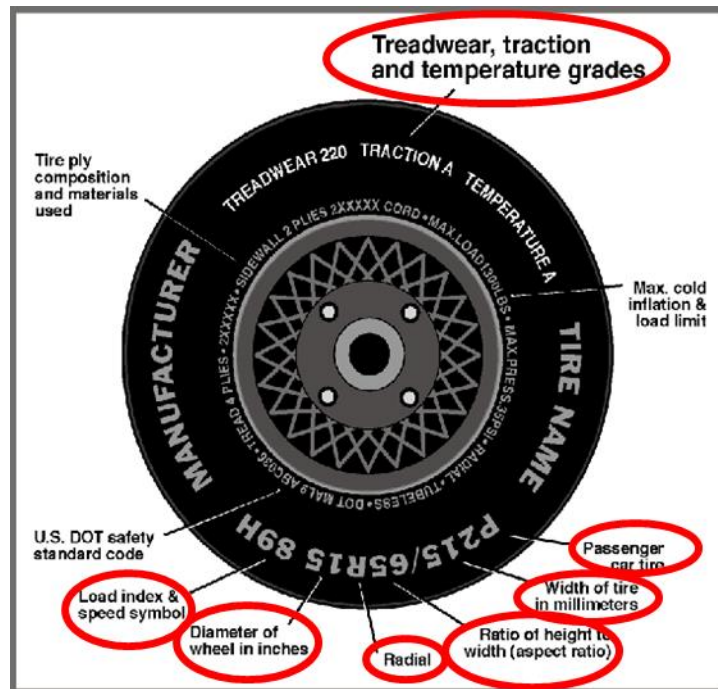
VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	N/A	
Number of Occupants	3	3	N/A	6
Capacity Wt. (VCW) (kg)				866.0
Cargo Wt. (RCLW) (kg)				458.0

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

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	275	275
Cold / Test Pressure (kPa)	240	240
Recommended Tire Size	275/60R20	275/60R20
Tire Size on Vehicle	275/60R20	275/60R20
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Alenza A/S 02	Alenza A/S 02
Treadwear	700	700
Traction Grade	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	115S	115S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Right	1V6 W0AA21 0622	1V6 W0AA21 0622
DOT Safety Code Left	1V6 W0AA21 0622	1V6 W0AA21 0622

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

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	664.0	492.0		678.0	572.8	
Right	kg	656.4	474.8		710.0	594.8	
Ratio	%	57.7	42.3		54.3	45.7	
Totals	kg	1320.4	966.8	2287.2	1388.0	1167.6	2555.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2287.2
Weight of 1 P572E ATD & 1 P572O ATD	kg	139.3
Rated Cargo/Luggage Weight (RCLW)	kg	136
Vehicle Target Weight (TVTW)	kg	2562.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front)
As Delivered	mm	988	989	1025	1025	1585
As Tested	mm	976	979	1004	991	1713
Post Test	mm	985	973	1003	977	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	3750
Total Vehicle Length at Left Side	mm	5683
Total Vehicle Length at Centerline	mm	5913
Total Vehicle Length at Right Side	mm	5674
Weight of Ballast in Cargo Area	kg	75.6
Weight of Vehicle Components Removed	kg	0.0
Amount of Stoddard Solvent in Fuel Tank	liters	84.5

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: None

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

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5913
2	Total Width	2050
3	Bumper Top Height	680
4	Bumper Bottom Height	540
5	Longitudinal Member Top Height	604
6	Distance Between Longitudinal Members	846
7	Longitudinal Member Width	82
8	Engine Top Height	1209
9	Engine Bottom Height	386
10	Engine and Gearbox Width	440
11	Front Bumper-Engine Distance	832
12	Front Shock Absorber Fixing Height	838
13	Bonnet Leading Edge Height	1140
14	Front Shock Absorber Fixing Width	1030
15	Front Bumper – Front Axle Distance	929
16	Front Axle – A-Pillar Distance	620
17	A-Pillar – B-Pillar Distance	1140
18	B-Pillar – Rear Axle Distance	2004
19	B-Pillar – C-Pillar Distance	1005
20	Roof Sill Bottom Height	1779
21	Roof Sill Top Height	1855
22	Floor Sill Bottom Height	496
23	Floor Sill Top Height	592

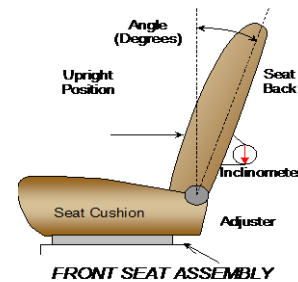
DATA SHEET NO. 2 - SEAT ADJUSTMENT, FUEL SYSTEM AND STEERING WHEEL DATA

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022

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:	-11.4
Passenger Seat back angle:	-11.4

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	316 mm	158 mm
Passenger Seat	260 mm (27 notches)	13

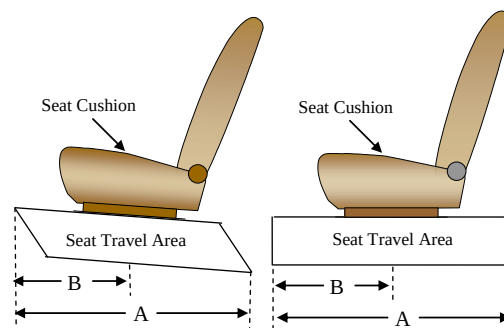
SEAT BELT UPPER ANCHORAGE

Describe the method of positioning seat belt upper anchorages.

Driver: Uppermost, Positioned according to Form 1

Passenger: Uppermost, Positioned according to Form 1

	Total No. of Positions	Placed in Position No.
Driver Seat	4	0 (uppermost)
Passenger Seat	4	0 (uppermost)



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

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

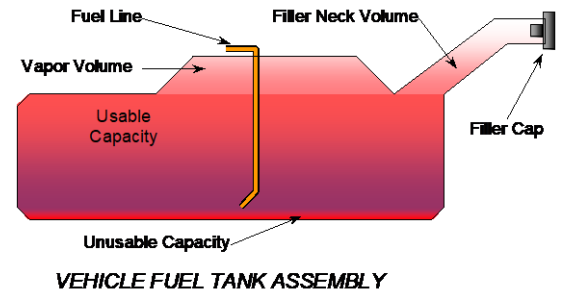
NHTSA No.: M20220106
Test Date: 5/9/2022

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	90.8
Usable Capacity of "Optional Tank"	83.3
92%-94% of Usable Capacity	83.6 - 85.4
Actual Amount of Solvent Used	84.5
1/3 of Usable Capacity	30.3

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

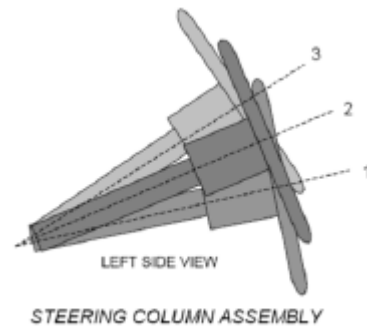
Fuel pump will run for approximately 3 seconds when the key is turned to "On" position, then, it will stop and will not resume operation unless the engine is cranking or running



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 POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost Position No. 1	19.4	N/A
Geometric Center Position No. 2	21.4	N/A
Uppermost Position No. 3	23.4	N/A
Telescoping Steering Wheel Travel		N/A
Test Position	21.4	N/A

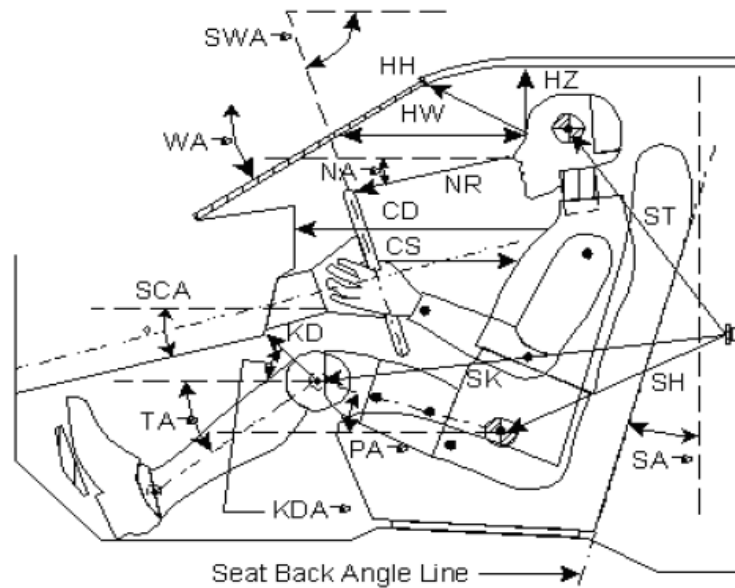
DATA SHEET NO. 3 - DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Chevrolet Silverado 1500

NHTSA No.: M20220106

Test Program: NCAP Frontal Impact

Test Date: 5/9/2022



Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		31.8		
SWA°	Steering Wheel Angle		22.0		
SCA°	Steering Column Angle		23.8		
SA°	Seat Back Angle (on head rest post)		-11.4		-13.0
HZ	Head to Roof (Z)	321		335	
HH	Head to Header	455		376	
HW	Head to Windshield	795		761	
NR	Nose to Rim	430	4.5		
CD	Chest to Dash	611		530	
CS	Chest to Steering Hub	360			
RA	Rim to Abdomen	241			
KDL	Left Knee to Dash	194	10.7	135	24.2
KDR	Right Knee to Dash	176	11.2	130	23.9
PA°	Pelvic Angle		24.6		19.2
TA°	Tibia Angle		56.5		57.4
SK	Striker to Knee	648	10.1	771	2.4
ST	Striker to Head	554	78.0	520	63.0
SH	Striker to H-Point	240	31.1	375	13.0

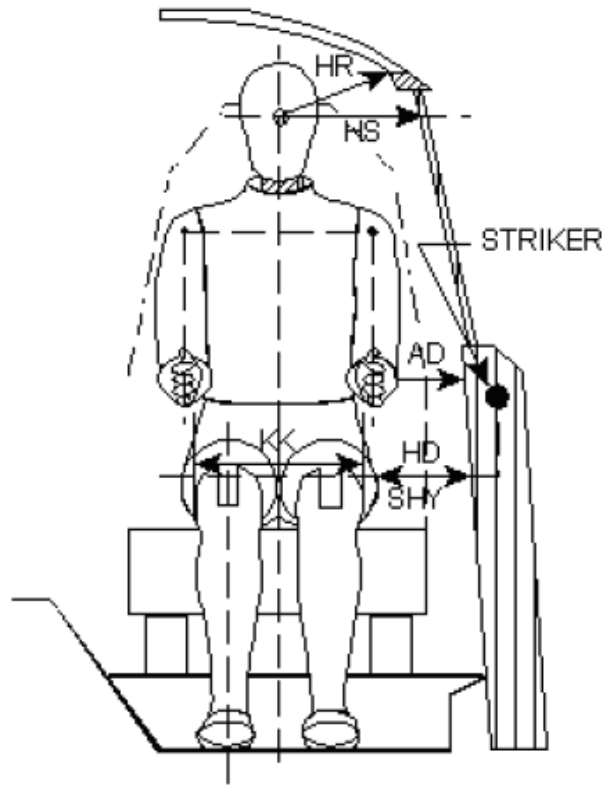
DATA SHEET NO. 4 - DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Chevrolet Silverado 1500

NHTSA No.: M20220106

Test Program: NCAP Frontal Impact

Test Date: 5/9/2022

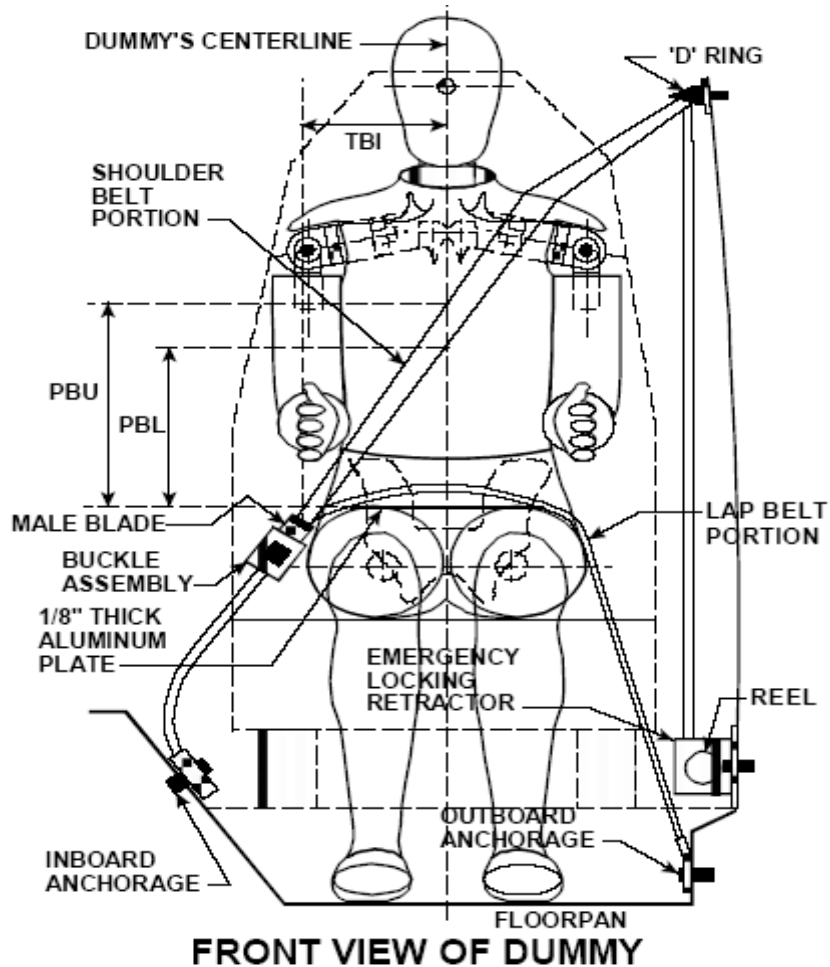


Code	Measurement Description	Driver	Passenger
AD	Arm to Door	155	76
HD	H-Point to Door	145	152
HR	Head to Side Header	281	318
HS	Head to Side Window	391	391
KK	Knee to Knee	279	160
SHY	Striker to H-Point (Y Direction)	265	310
AA	Ankle to Ankle	353	170

DATA SHEET NO. 5 - SEAT BELT POSITIONING DATA

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU – Top surface of reference to belt upper edge	mm	300	311
PBL – Top surface of reference to belt lower edge	mm	220	223

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	860	921
Lap belt length as measured on ATD	mm	650	712
Remainder of belt on reel	mm	1095	997
Total belt length for continuous webbing systems	mm	2605	2630

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

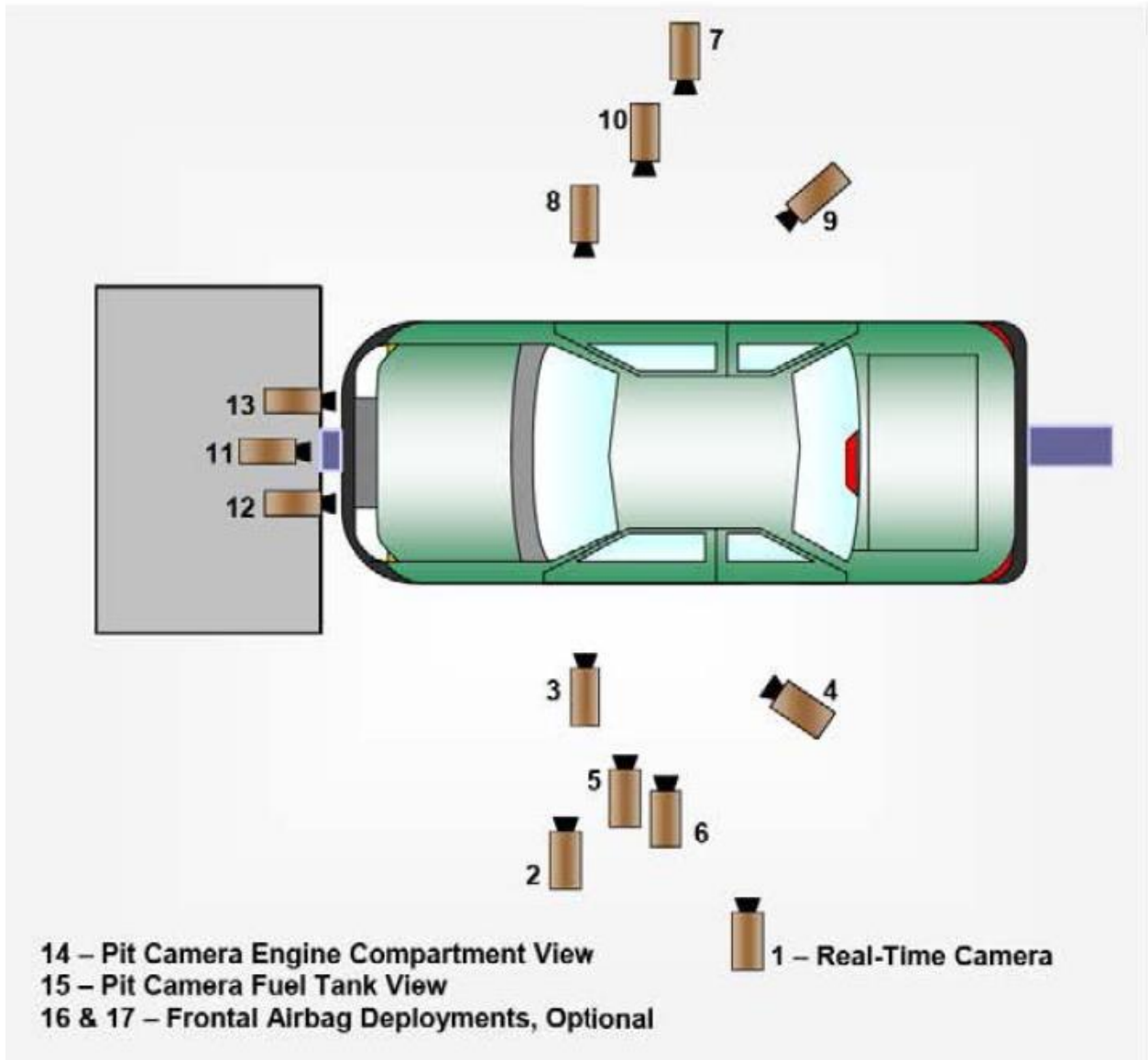
Test Vehicle: 2022 Chevrolet Silverado 1500

NHTSA No.: M20220106

Test Program: NCAP Frontal Impact

Test Date: 5/9/2022

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022

CAMERA LOCATIONS

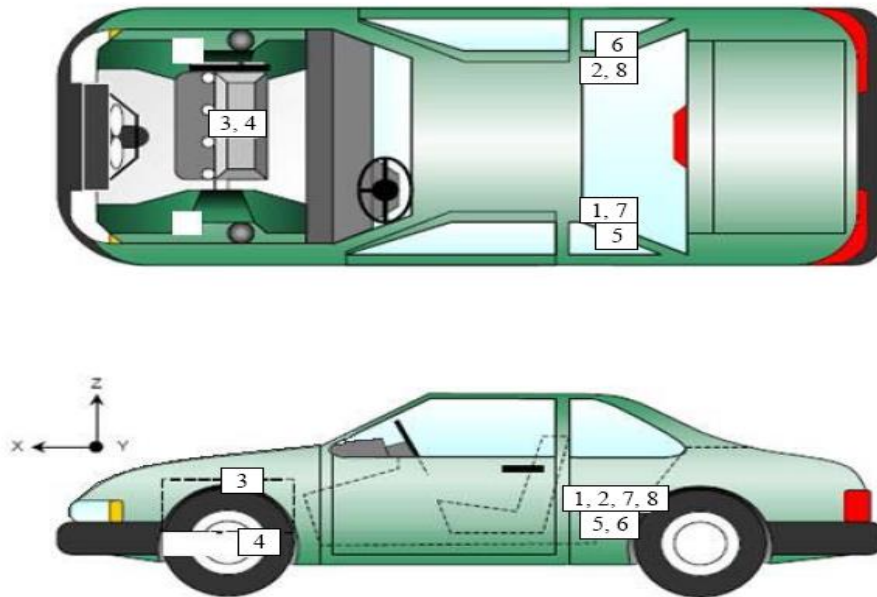
No.	Camera View	Location (mm)			Lens (mm)	Frame Speed (fps)
		X	Y	Z		
1	REAL-TIME LEFT OVERALL	-1266	-5212	-1523	Zoom	30
2	LEFT OVERALL	-2778	-5546	-1501	8.5	1000
3	DRIVER CLOSE-UP	-2164	-5493	-1575	50	1000
4	LEFT FRONT HALF	-657	-4474	-1446	25	1000
5	LEFT ANGLE	-3701	-2224	-1690	20	1000
6	STEERING COLUMN	-2233	-5320	-1665	50	1000
7	RIGHT OVERALL	-2872	5229	-1540	8.5	1000
8	PASSENGER CLOSE-UP	-1934	4080	-1682	50	1000
9	RIGHT FRONT HALF	-850	5256	-147	25	1000
10	RIGHT ANGLE	-3568	2034	-1734	20	1000
11	WINDSHIELD	0	0	-2650	20	1000
12	DRIVER WINDSHIELD	0	-320	-2640	16	1000
13	PASSENGER WINDSHIELD	0	210	-2642	16	1000
14	PIT FRONT	875	0	3020	20	1000
15	PIT REAR	3105	0	3050	20	1000
16	DRIVER ONBOARD				12.5	1000
17	PASSENGER ONBOARD				12.5	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: 2022 Chevrolet Silverado 1500
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
 Test Date: 5/9/2022



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	4215	-480	-831
2	Right Rear Accelerometer – X Direction	4215	490	-816
3	Engine Top X	4858	68	-1095
4	Engine Bottom X	4643	25	-365
5	Left Rear Accelerometer – Z Direction	4215	-480	-836
6	Right Rear Accelerometer – Z Direction	4215	490	-821
7	Left Rear Accelerometer – X Direction Redundant	4175	-48	-831
8	Right Rear Accelerometer- X Direction Redundant	4175	490	-816

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: 2022 Chevrolet Silverado 1500

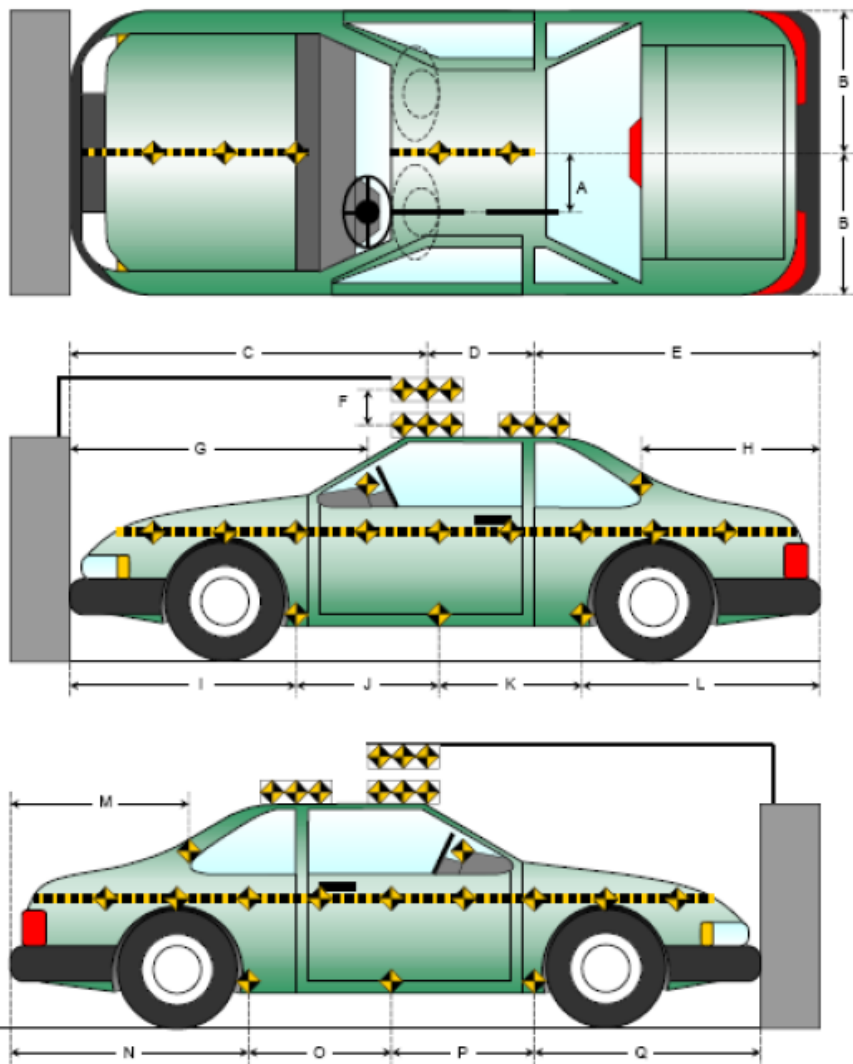
NHTSA No.: M20220106

Test Program: NCAP Frontal Impact

Test Date: 5/9/2022

Item	Value
A	461
B	1025
C	2629
D	555
E	2710
F	199
G	1829
H	2179
I	1316
J	1260
K	909
L	2198
M	2169
N	2204
O	903
P	1264
Q	1303

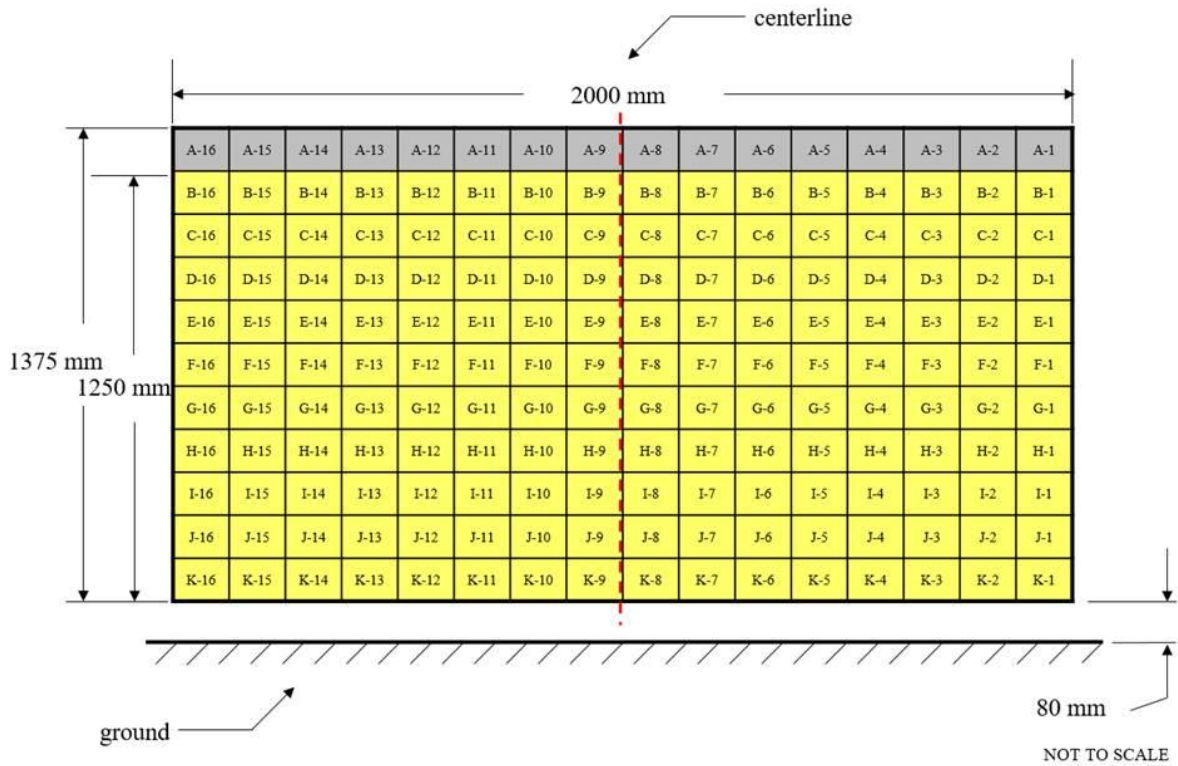
All units in millimeters



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

Test Vehicle: 2022 Chevrolet Silverado 1500
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
 Test Date: 5/9/2022



DATA SHEET NO. 10 - TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2022 Chevrolet Silverado 1500

NHTSA No.: M20220106

Test Program: NCAP Frontal Impact

Test Date: 5/9/2022

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 OBSERVATIONSTest Vehicle: 2022 Chevrolet Silverado 1500NHTSA No.: M20220106Test Program: NCAP Frontal ImpactTest Date: 5/9/2022**TEST DUMMY INFORMATION AND CONTACT LOCATIONS**

Description	Driver	Passenger
Dummy Type / Serial No.	Hybrid III 50th / 037	Hybrid III 5th / EB7513
Head Contact	Frontal Airbag and Head Restraint	Frontal Airbag and Head Restraint
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	Airbag	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) **	No	No	
Seat Back Movement from Initial Position**	No	No	

**NOTE: Indicate "No", "N/A, or "Yes", and if "Yes", describe

POST- OTHER VEHICLE POST-TEST OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	457
Center	mm	400
Right Side	mm	455
Average	mm	437

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	Yes	Yes	Yes
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	Yes	Yes	Yes	Yes
Other	N/A	N/A	N/A	N/A

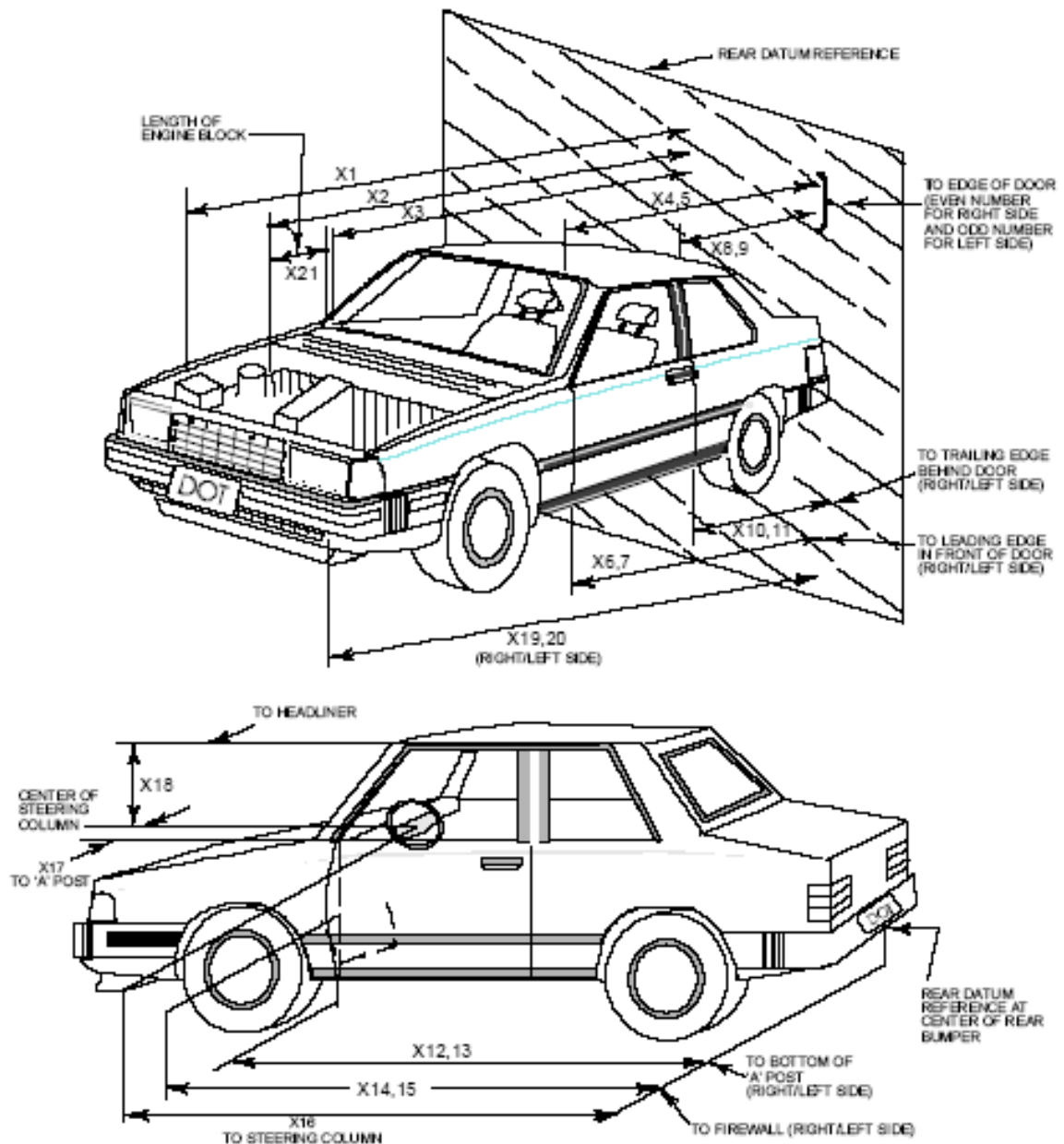
DATA SHEET NO. 12 - VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2022 Chevrolet Silverado 1500

NHTSA No.: M20220106

Test Program: NCAP Frontal Impact

Test Date: 5/9/2022



DATA SHEET NO. 12 - VEHICLE PROFILE MEASUREMENTS (CONT'D)Test Vehicle: 2022 Chevrolet Silverado 1500NHTSA No.: M20220106Test Program: NCAP Frontal ImpactTest Date: 5/9/2022

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5913	5302	611
2	Rear Surface of Vehicle (RSOV) to Front of Engine	5051	5027	24
3	RSOV to Firewall	4801	4801	0
4	RSOV to Upper Leading Edge of Right Door	4383	4390	-7
5	RSOV to Upper Leading Edge of Left Door	4382	4405	-23
6	RSOV to Lower Leading Edge of Right Door	4311	4310	1
7	RSOV to Lower Leading Edge of Left Door	4310	4325	-15
8	RSOV to Upper Trailing Edge of Right Door	3249	3255	-6
9	RSOV to Upper Trailing Edge of Left Door	3251	3274	-23
10	RSOV to Lower Trailing Edge of Right Door	3245	3240	5
11	RSOV to Lower Trailing Edge of Left Door	3240	3255	-15
12	RSOV to Bottom of "A" Post-of Right Side	4350	4350	0
13	RSOV to Bottom of "A" Post-of Left Side	4368	4370	-2
14	RSOV to Firewall, Right Side	4694	4692	2
15	RSOV to Firewall, Left Side	4723	4716	7
16	RSOV to Steering Column	3863	3970	-107
17	Center of Steering Column to "A" Post	293	315	-22
18	Center of Steering Column to Headliner	492	485	7
19	RSOV to Right Side of Front Bumper	5674	5313	361
20	RSOV to Left Side of Front Bumper	5683	5348	335
21	Length of Engine Block	440	440	0
RD	RSOV to Right Side of Dash Panel	4128	4129	-1
CD	RSOV to Center of Dash Panel	4048	4110	-62
LD	RSOV to Left Side of Dash Panel	4130	4150	-20

All Dimensions in mm

DATA SHEET NO. 13 - ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022

VEHICLE INFORMATION

VIN: 3GCPDBEK4NG518396
Vehicle Size Category: TRUCK

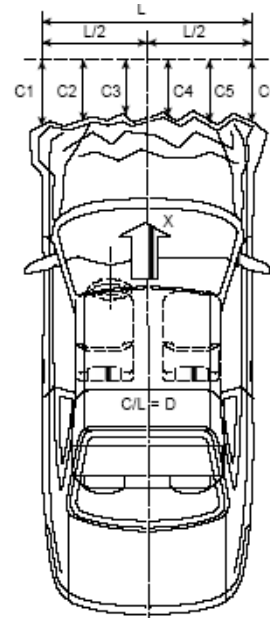
Wheelbase: 3750
Test Weight (kg): 2555.6

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): 56.64
Velocity Change (km/h): 64.67
Time of Separation (ms): 175

CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: Centerline
Damage Region Length (mm): 1779
Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	5683	5348	335
C2	Crush zone 2 at left side	mm	5855	5323	532
C3	Crush zone 3 at left side	mm	5908	5300	608
C4	Crush zone 4 at right side	mm	5908	5300	608
C5	Crush zone 5 at right side	mm	5840	5322	518
C6	Crush zone 6 at right side	mm	5674	5313	361
L	C1 to C6	mm	1779	1752	27

DATA SHEET NO. 14 - VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2022 Chevrolet Silverado 1500
 Test Program: NCAP Frontal Impact

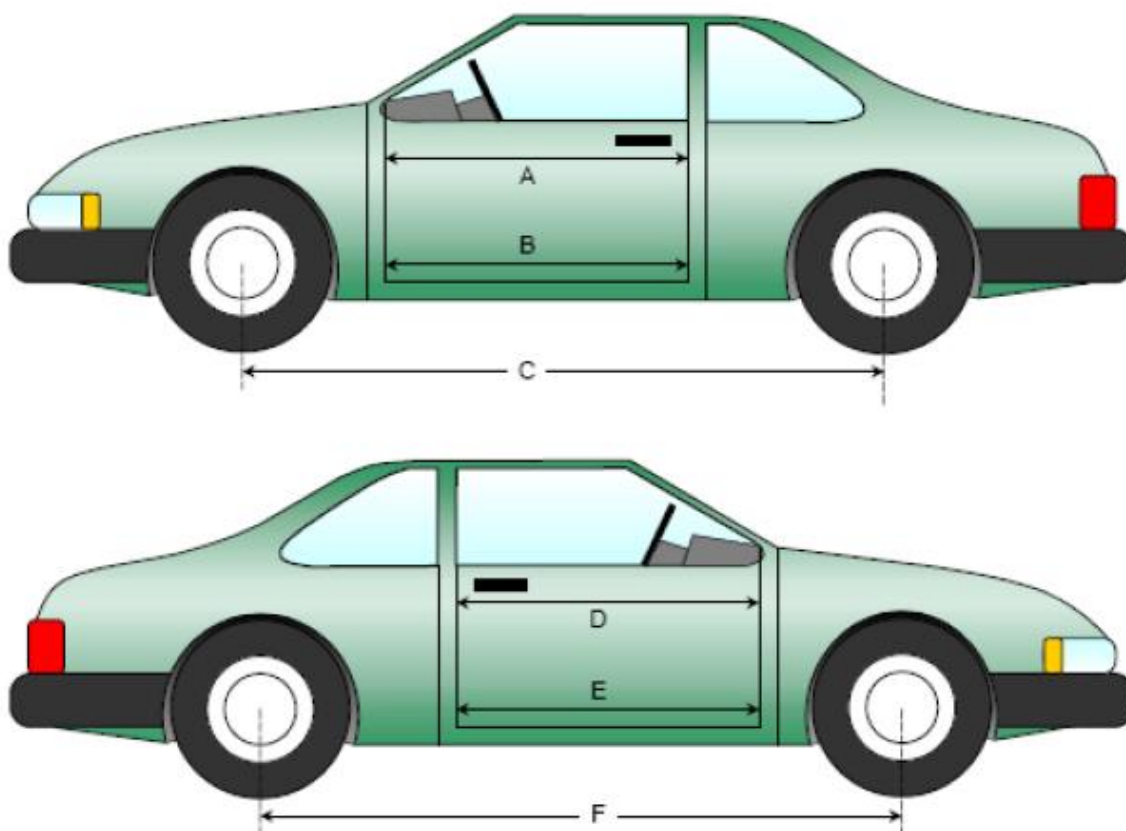
NHTSA No.: M20220106
 Test Date: 5/9/2022

DOOR OPENING WIDTH

No.	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1080	1080	0
B	Left Side Lower	mm	992	992	0
D	Right Side Upper	mm	1082	1082	0
E	Right Side Lower	mm	993	993	0

WHEELBASE MEASUREMENTS

No.	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3750	3715	35
F	Right Side Wheelbase	mm	3750	3715	35



¹ Front suspension damaged and wheels fell off measurements not available

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

Test Vehicle: 2022 Chevrolet Silverado 1500

NHTSA No.: M20220106

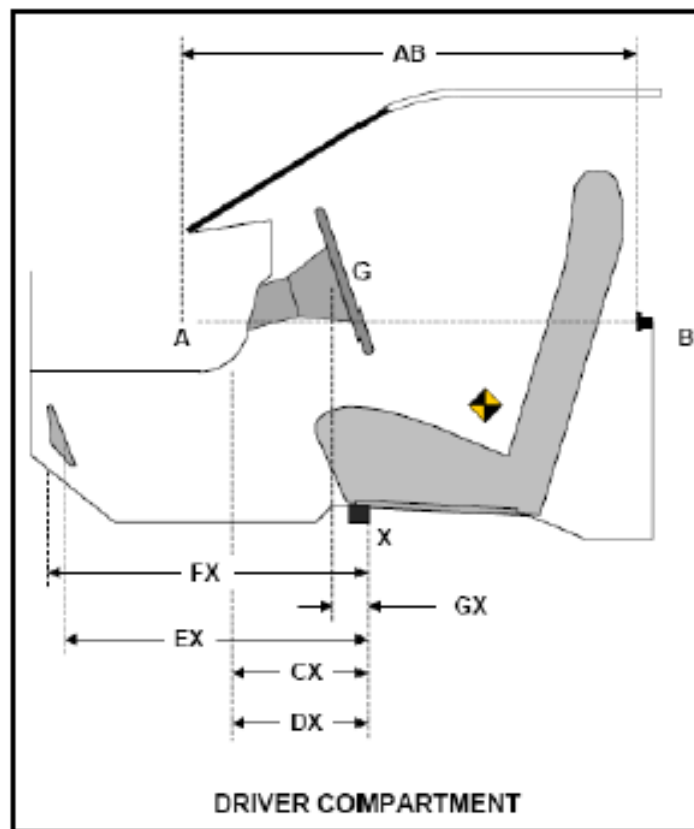
Test Program: NCAP Frontal Impact

Test Date: 5/9/2022

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	1062	1062	0
CX	Left Knee Bolster to X	mm	375	354	21
DX	Right Knee Bolster to X	mm	309	330	-21
EX	Brake Pedal to X	mm	564	591	-27
FX	Foot Rest to X	mm	580	572	8
GX	Center of Steering Column Wheel Hub to X	mm	117	200	-83

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022

Please provide windshield mounting details.

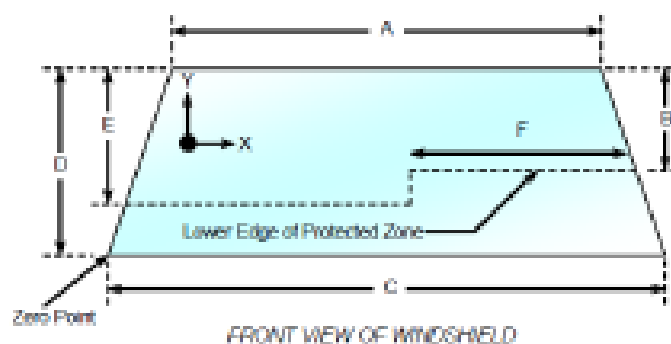
The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicle not equipped with occupant passive restraint and 50% for each side of the windshield for vehicle which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.4°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2327.5	2327.5	100.0
Right Side	2327.5	2327.5	100.0
Total	4655	4655	100.0

Item	Units	Value
A	mm	1410
B	mm	433
C	mm	1605
D	mm	820
E	mm	468
F	mm	512



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
NA	NA
NA	NA
NA	NA
NA	NA

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

X	Y
NA	NA
NA	NA
NA	NA
NA	NA

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

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.4°C

Test Time: 15:00

Stoddard Solvent Spillage Measurements

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

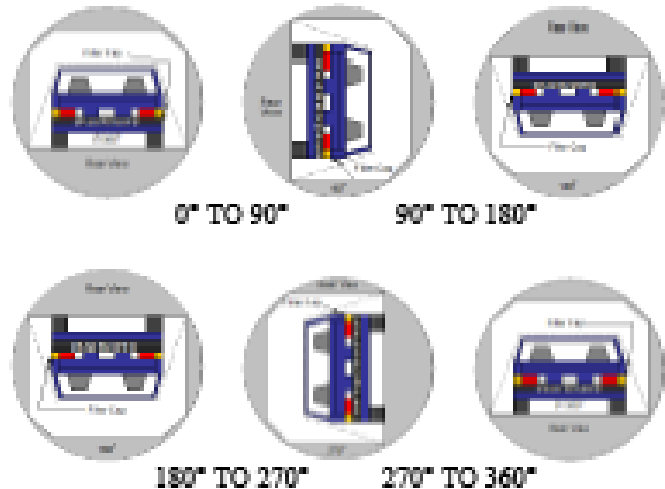
DATA SHEET NO. 16 - FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS (CONT'D)

Test Vehicle: 2022 Chevrolet Silverado 1500
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
 Test Date: 5/9/2022

1. The specified fixture rollover rate for each 90° 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
0° to 90°	90	330	420
90° to 180°	90	330	840
180° to 270°	90	330	1260
270° to 360°	90	330	1480

FMVSS 301 SPILLAGE TABLE

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

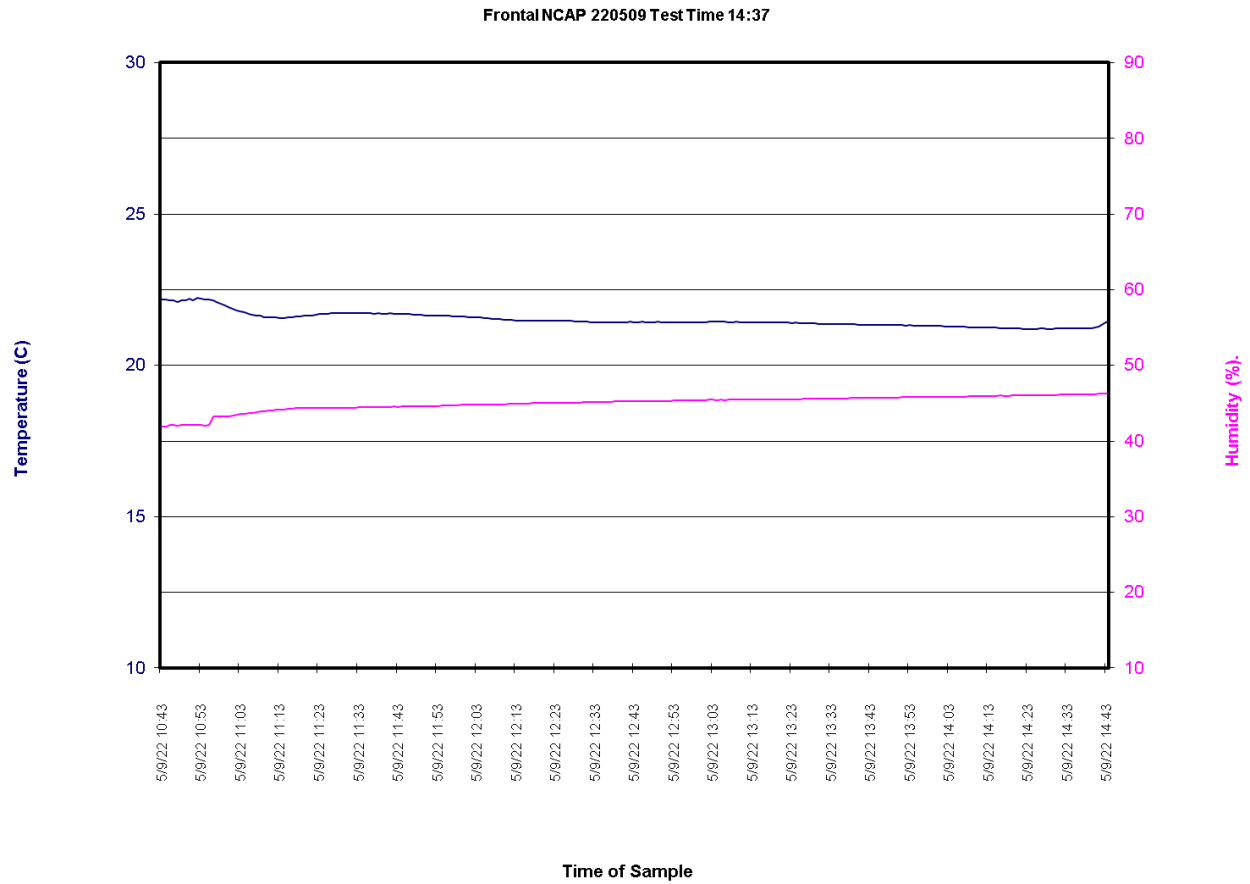
SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17 - DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2022 Chevrolet Silverado 1500
Test Program: NCAP Frontal Impact

NHTSA No.: M20220106
Test Date: 5/9/2022



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

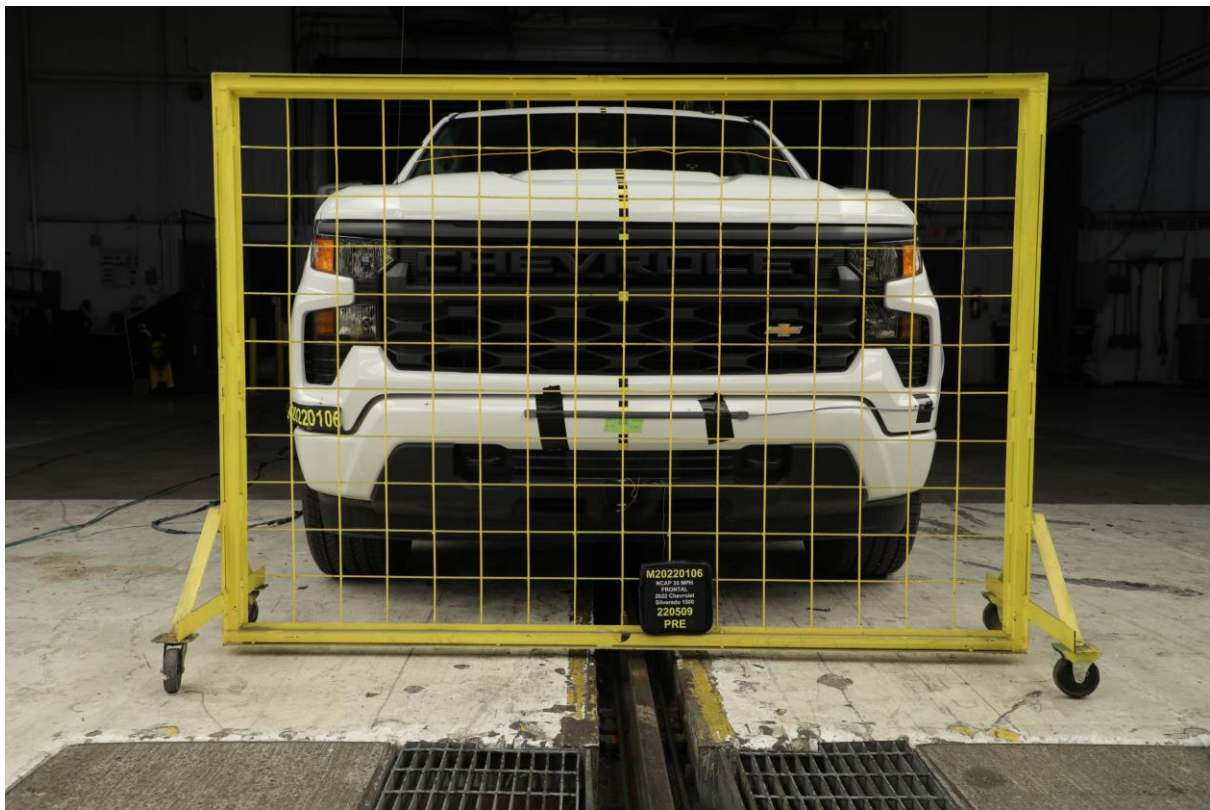
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3	Post-Test Load Cell Wall	A-6
4	Manufacturer's Label	A-6
5	Tire Placard	A-7
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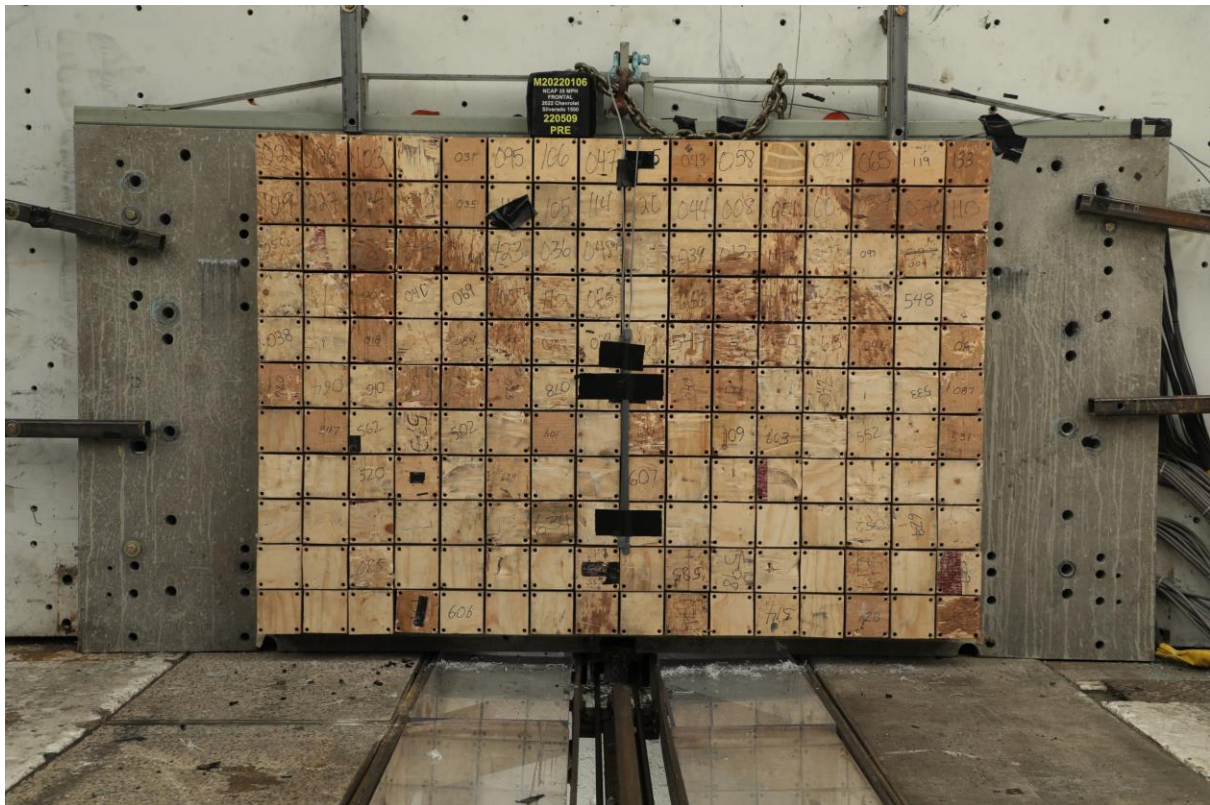
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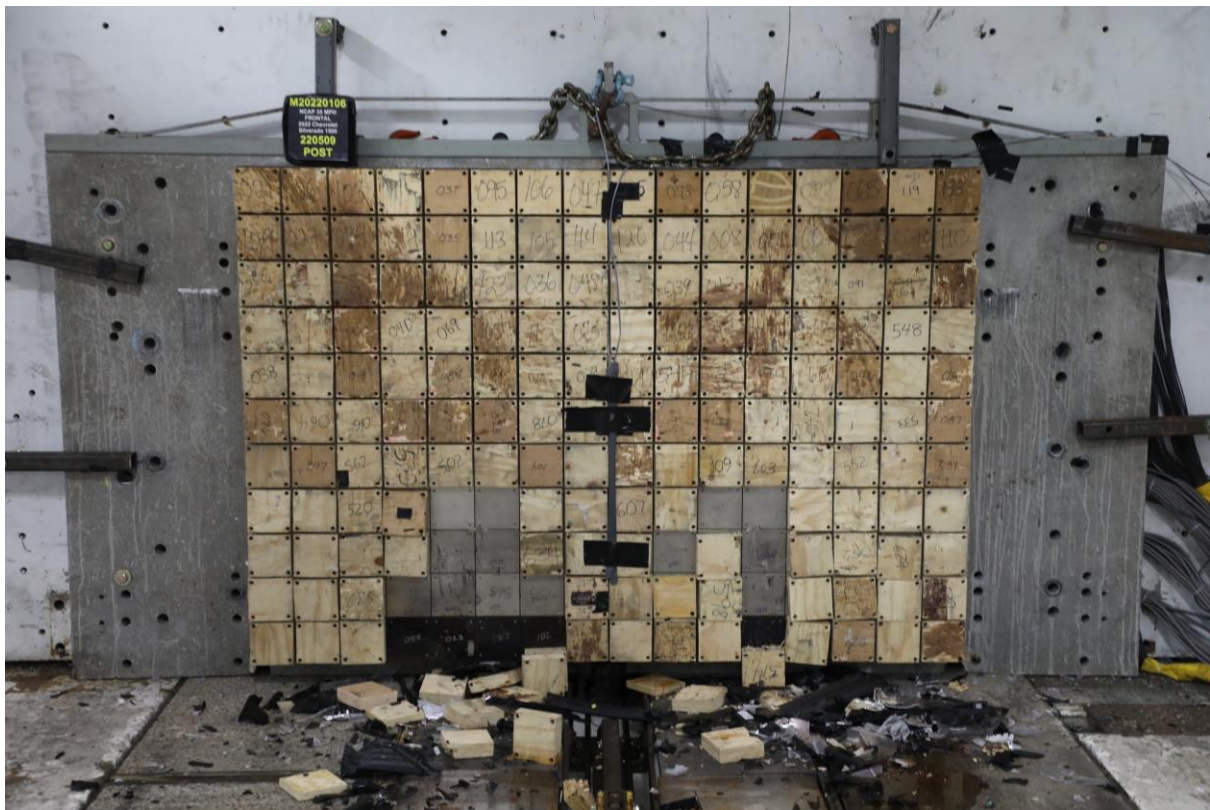
No.	Description	Page
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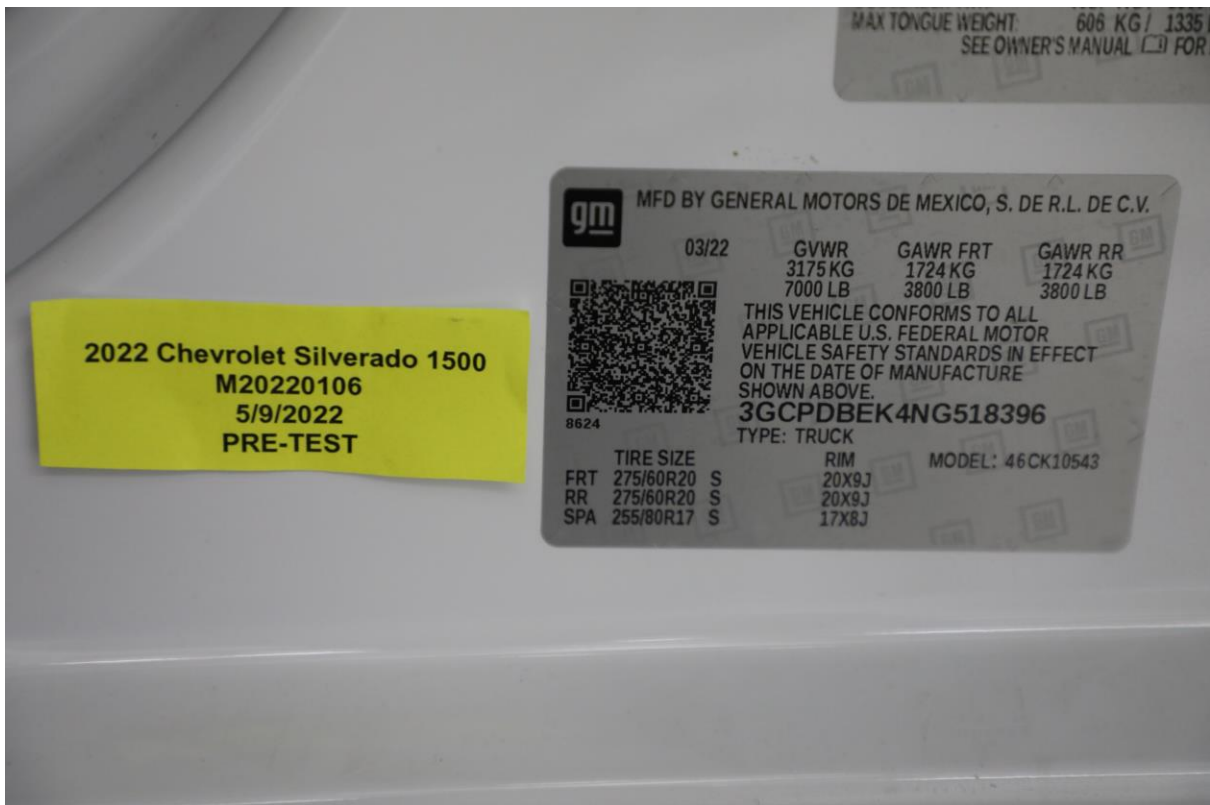
001 Load Cell Location



002 Pre-Test Load Cell Wall



003 Post-Test Load Cell Wall



004 Manufacturer's Label



005 Tire Placard

Intentionally Left Blank



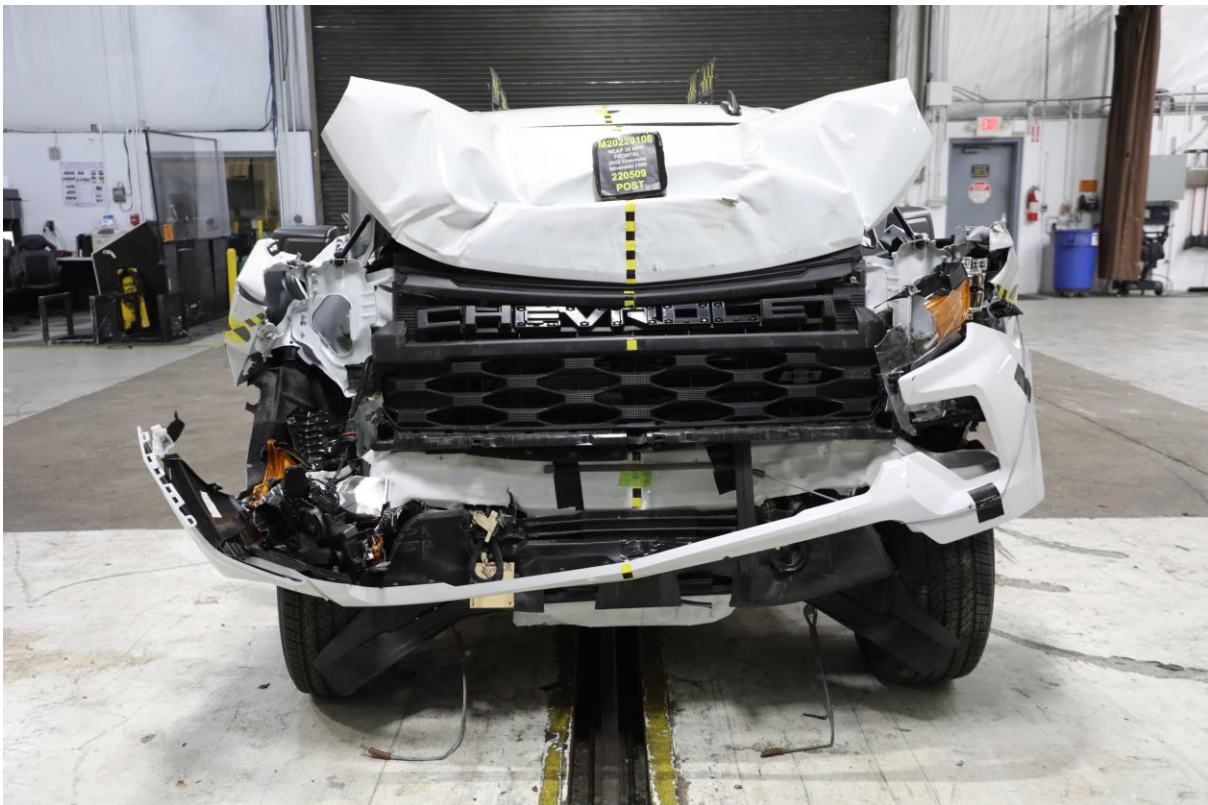
006 2022 Chevrolet Silverado 1500 Frontal As Delivered



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



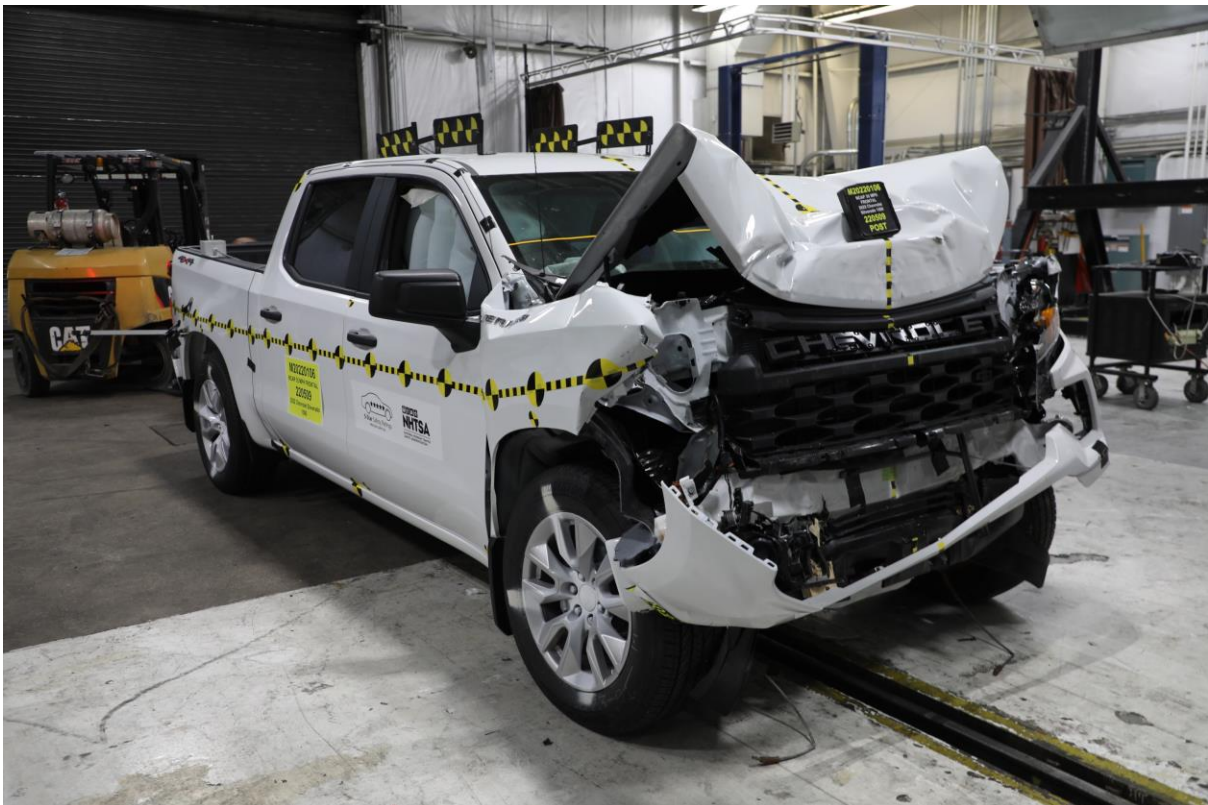
012 Pre-Test Right View of Test Vehicle



013 Post-Test Right View of Test Vehicle



014 Pre-Test Right Front 3-4 View



015 Post-Test Right Front 3-4 View



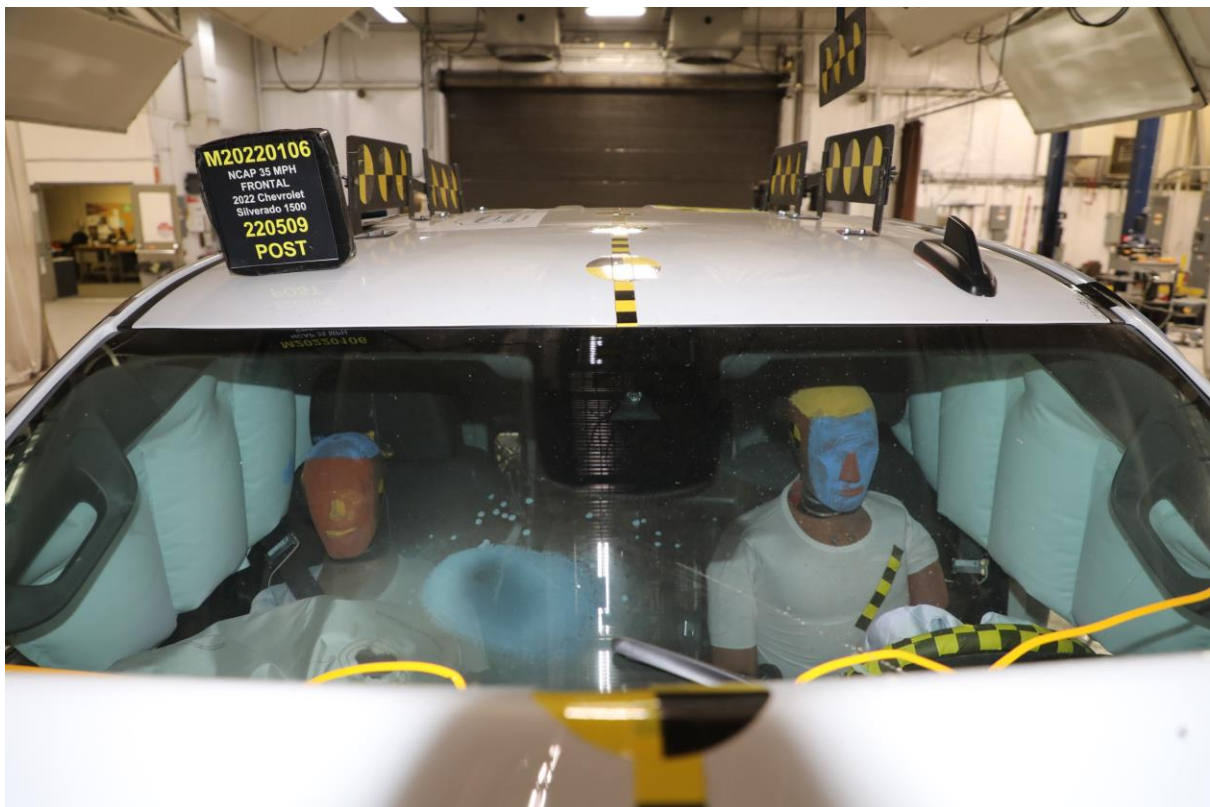
016 Pre-Test Left Rear 3-4 View



017 Post-Test Left Rear 3-4 View



018 Pre-Test Windshield View



019 Post-Test Windshield View



020 Pre-Test Engine Compartment View



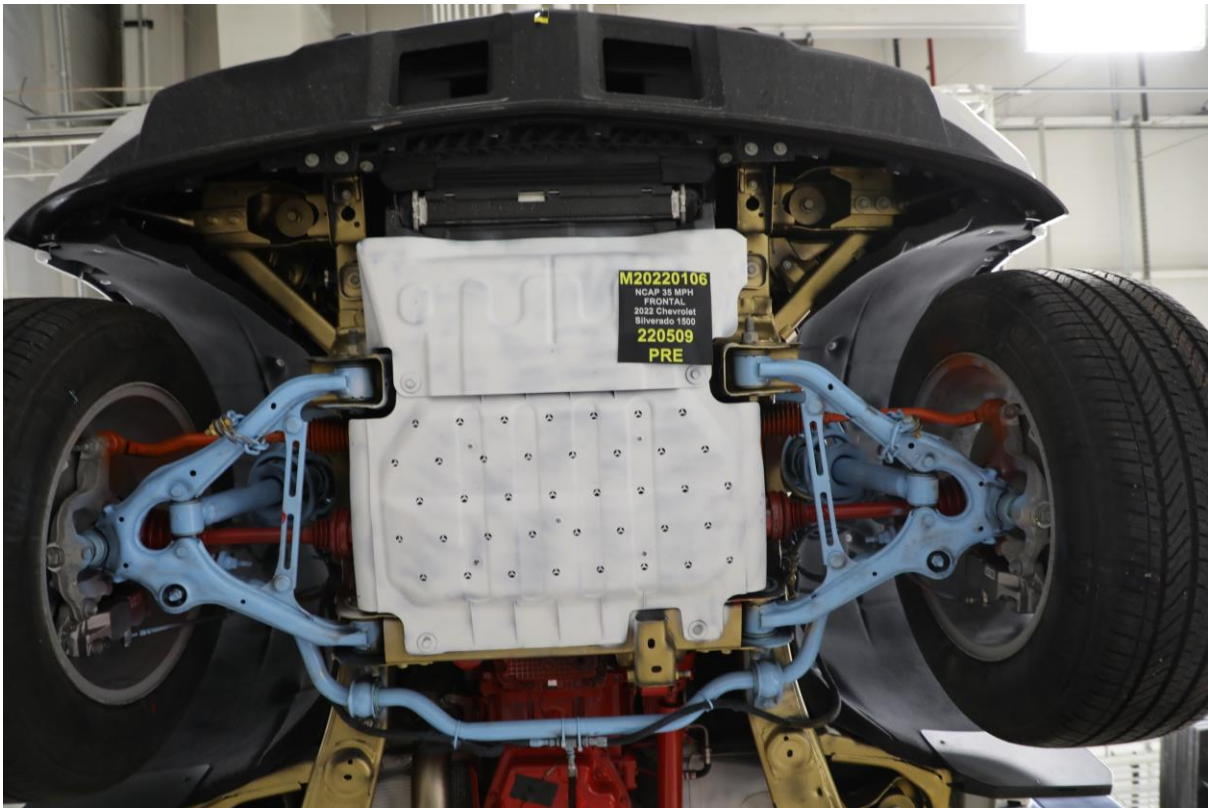
021 Post-Test Engine Compartment View



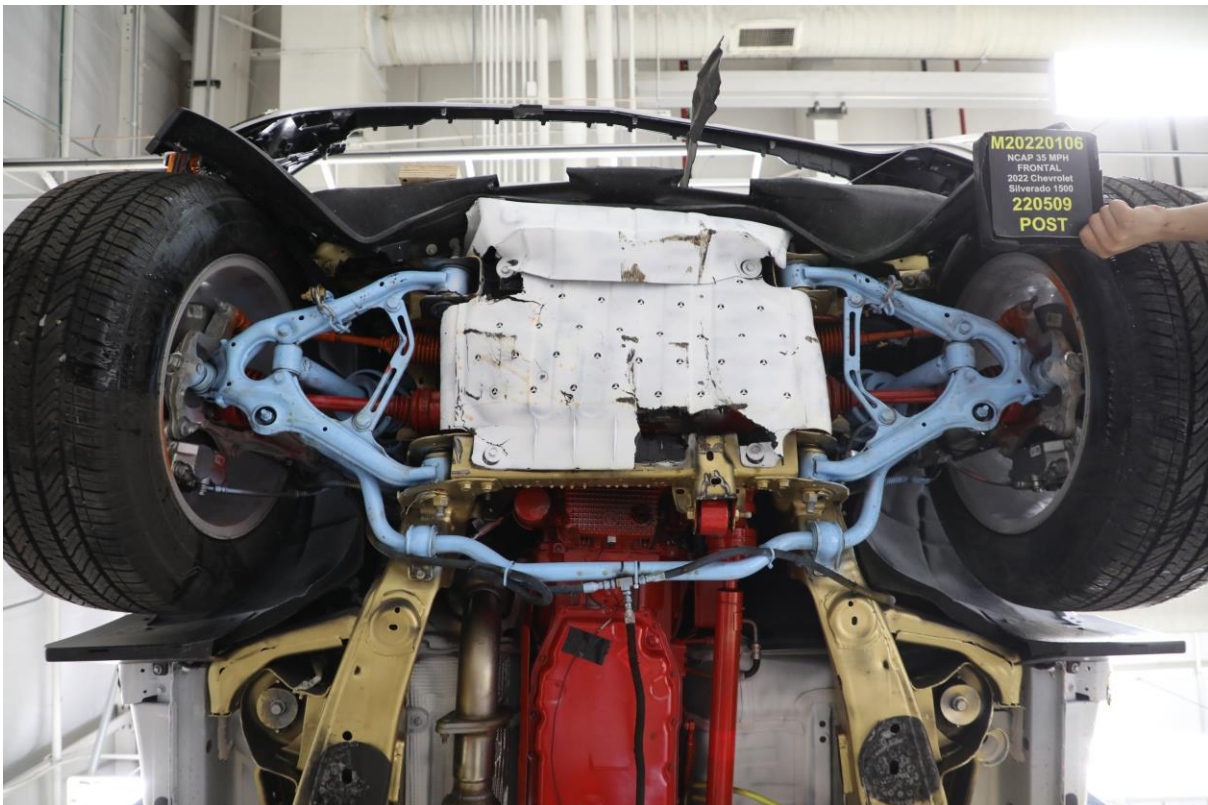
022 Pre-Test Fuel Filler Cap View



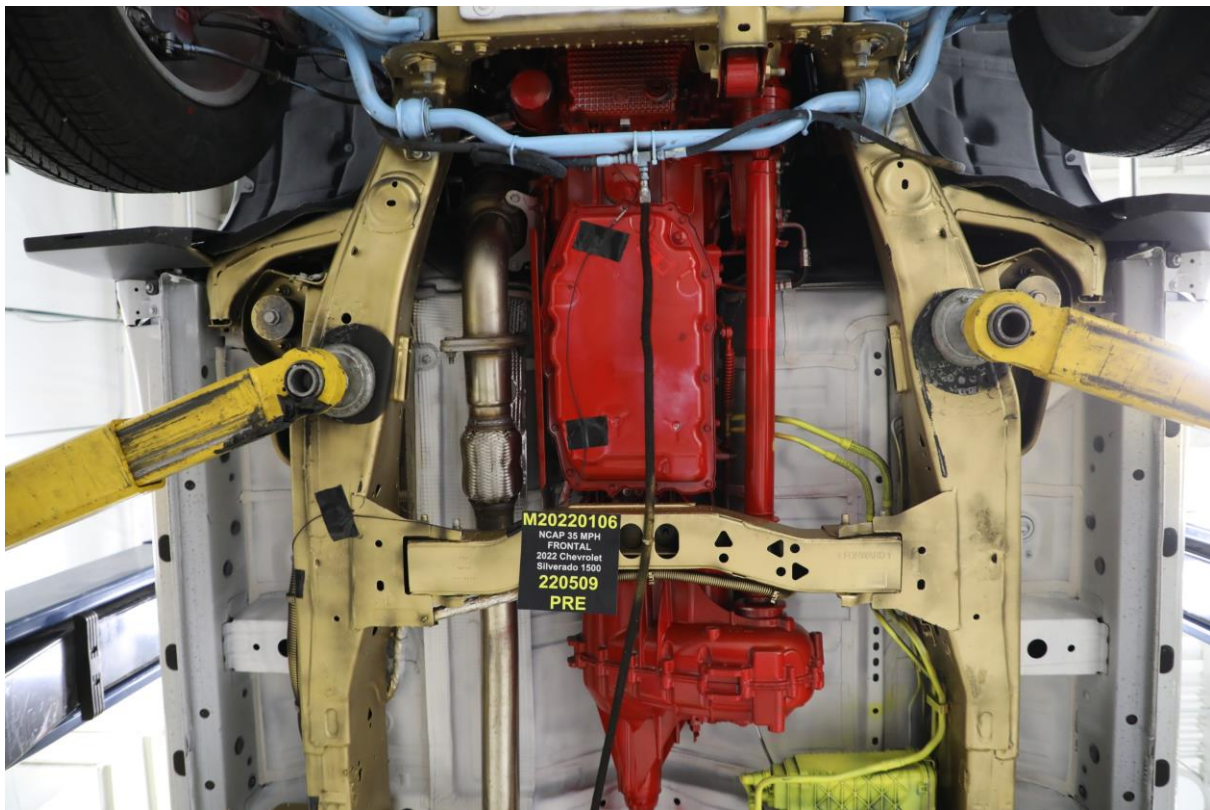
023 Post-Test Fuel Filler Cap View



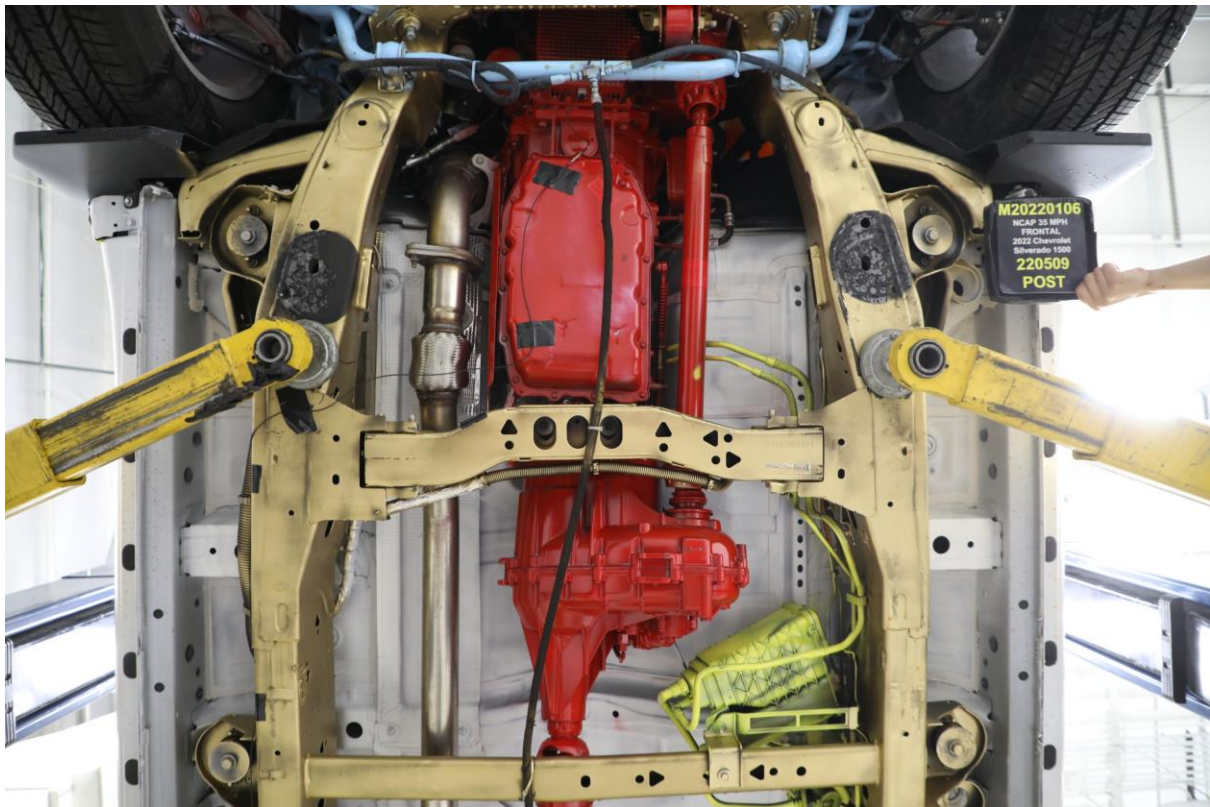
024 Pre-Test Front Underbody View



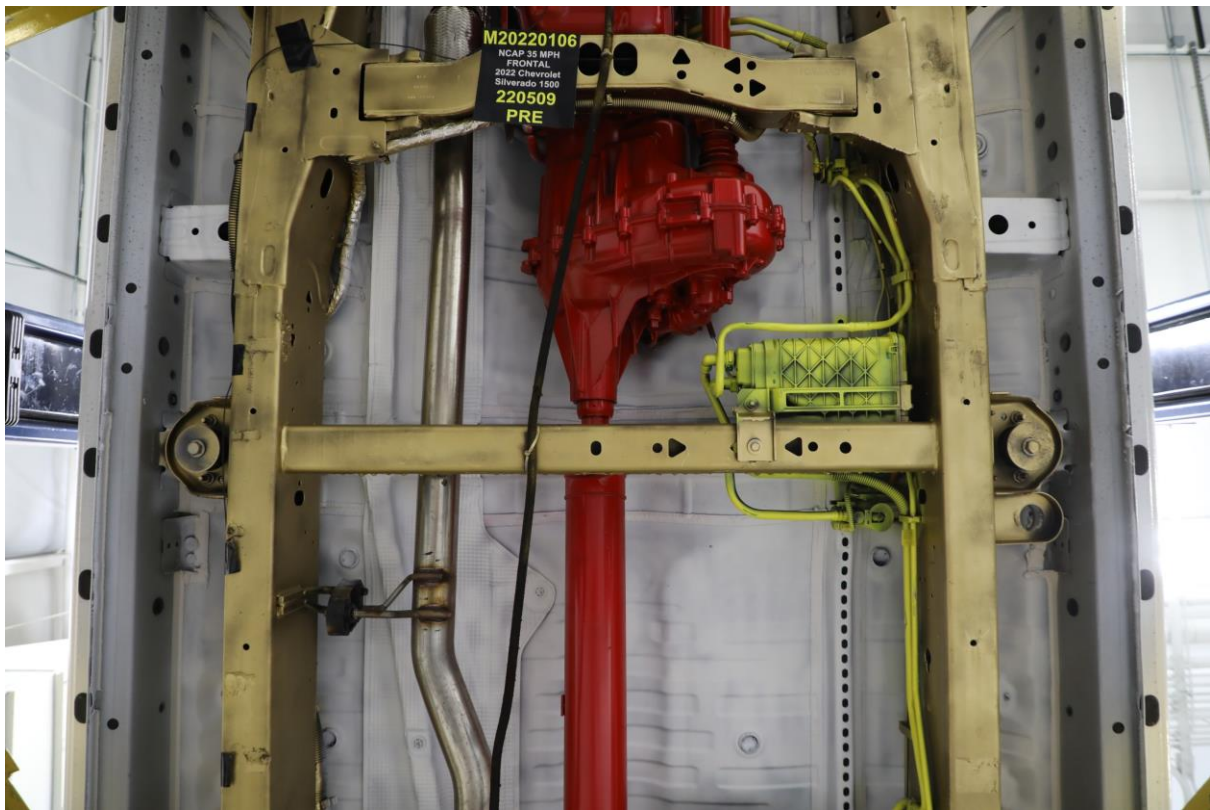
025 Post-Test Front Underbody View



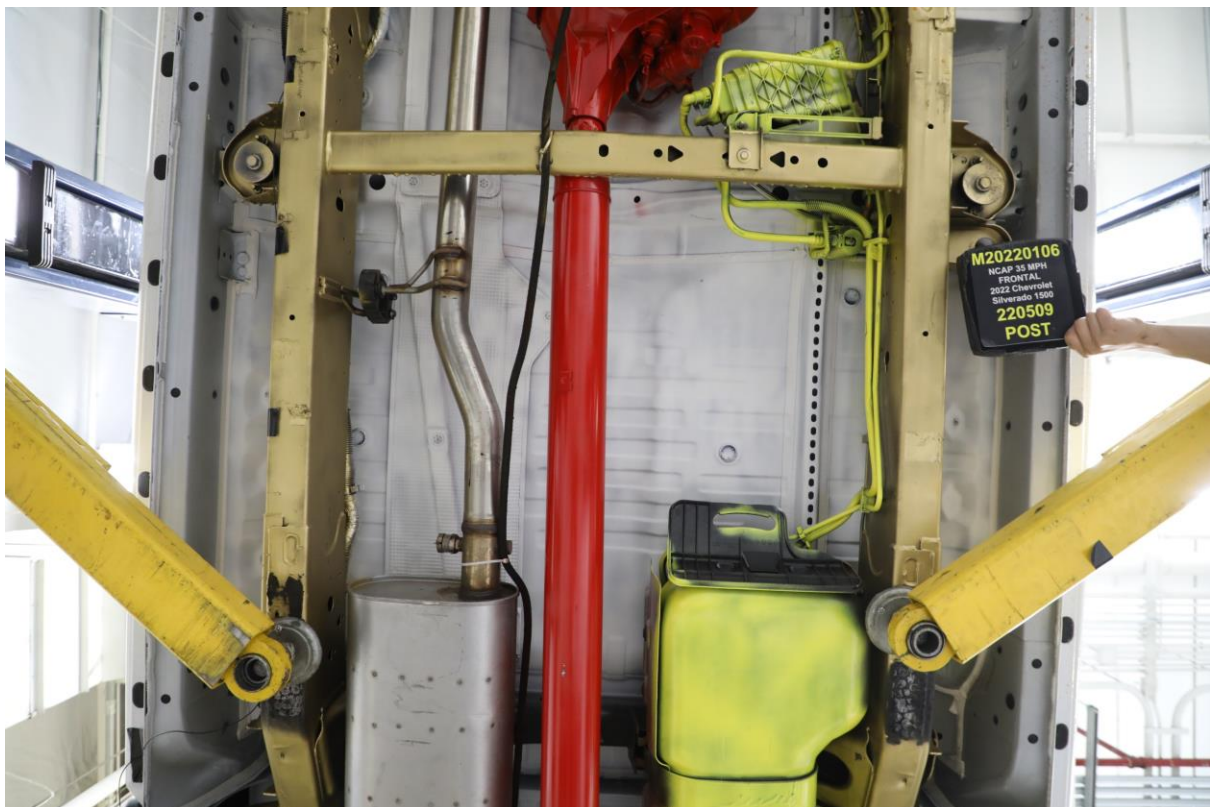
025a Pre-Test Mid Front Underbody View



025b Post-Test Mid Front Underbody View



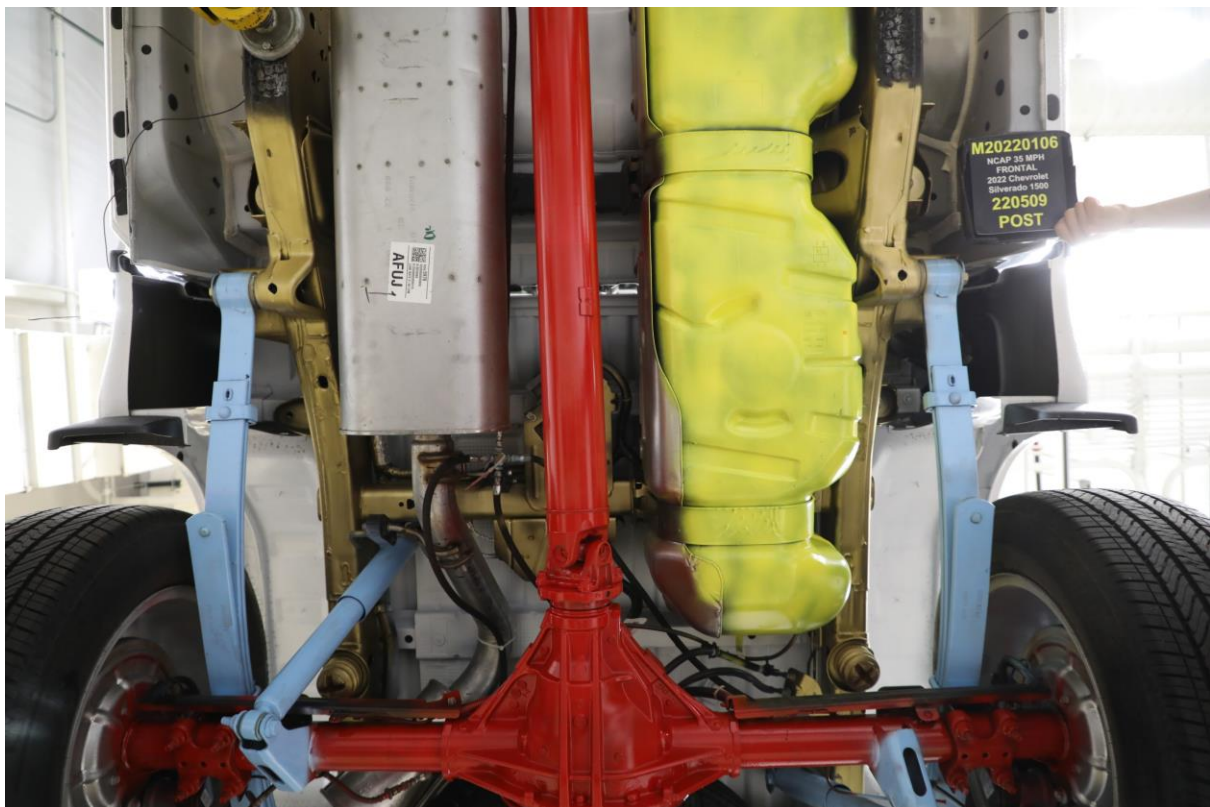
25c Pre-Test Mid Underbody View



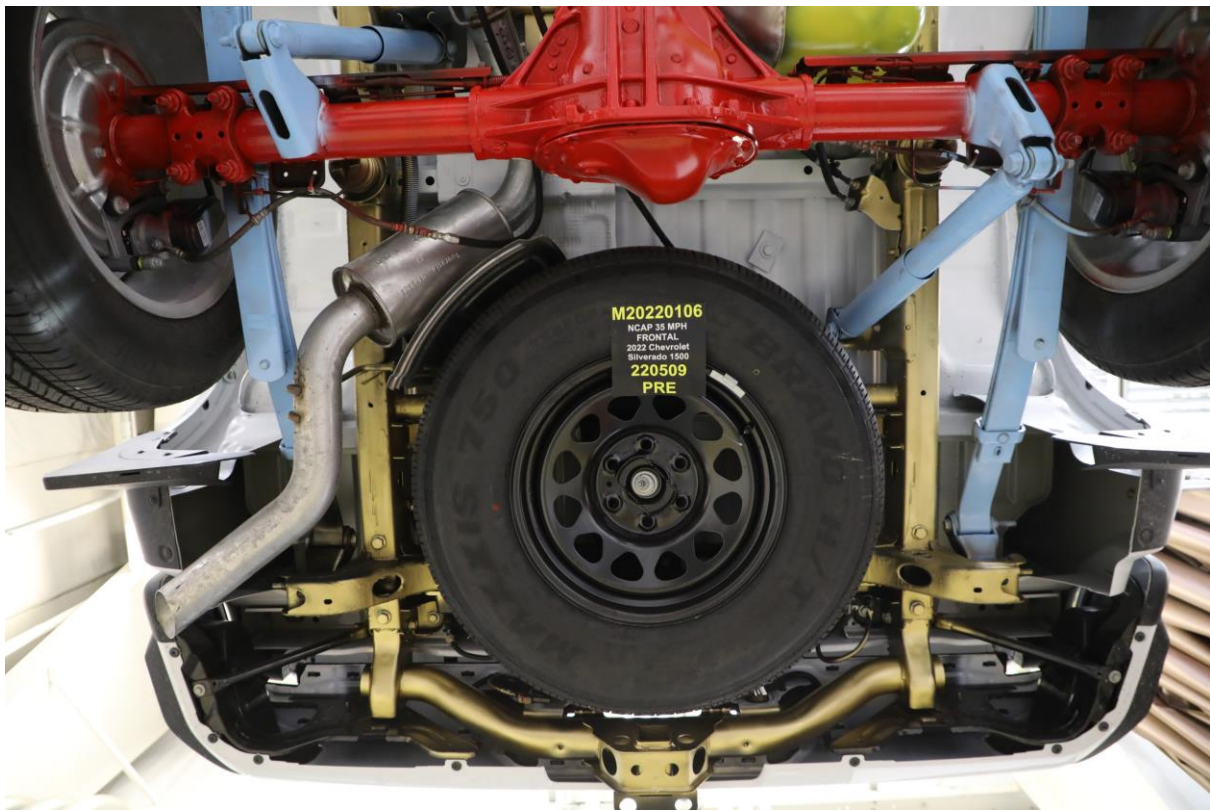
025d Post-Test Mid Underbody View



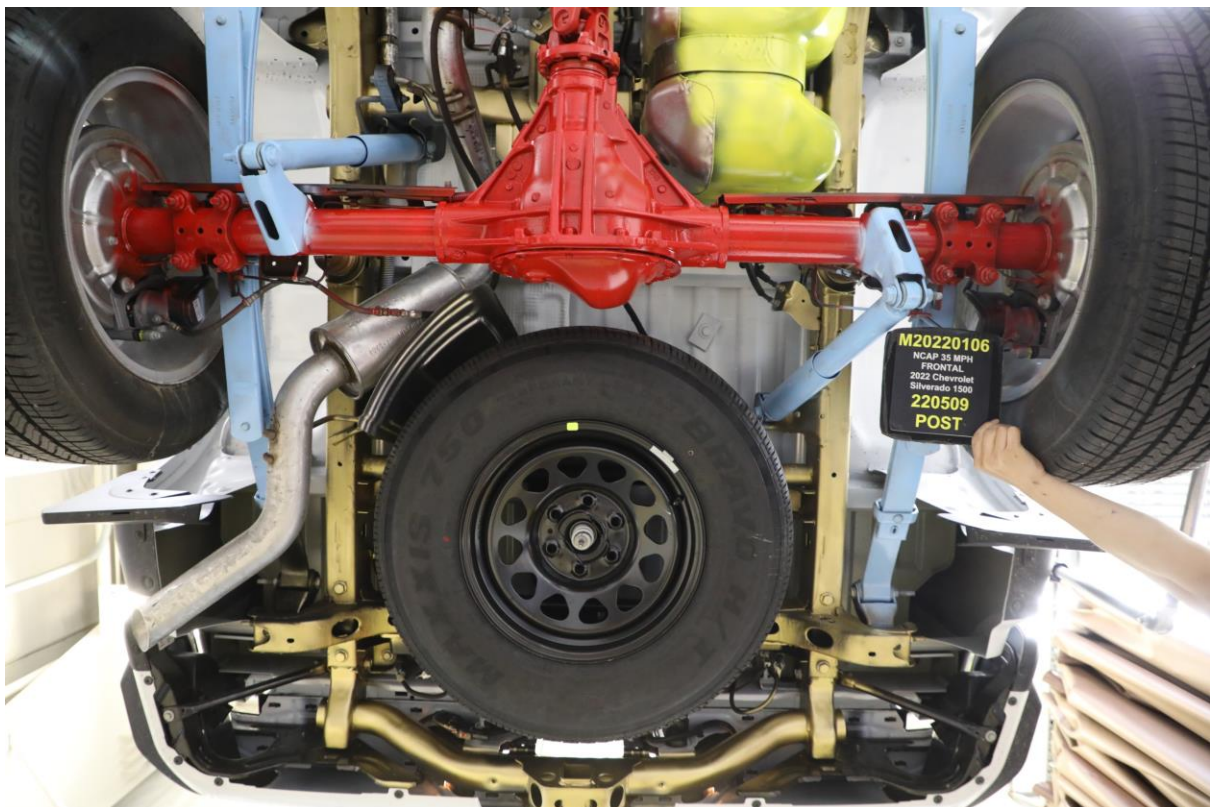
025e Pre-Test Mid Rear Underbody View



025f 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



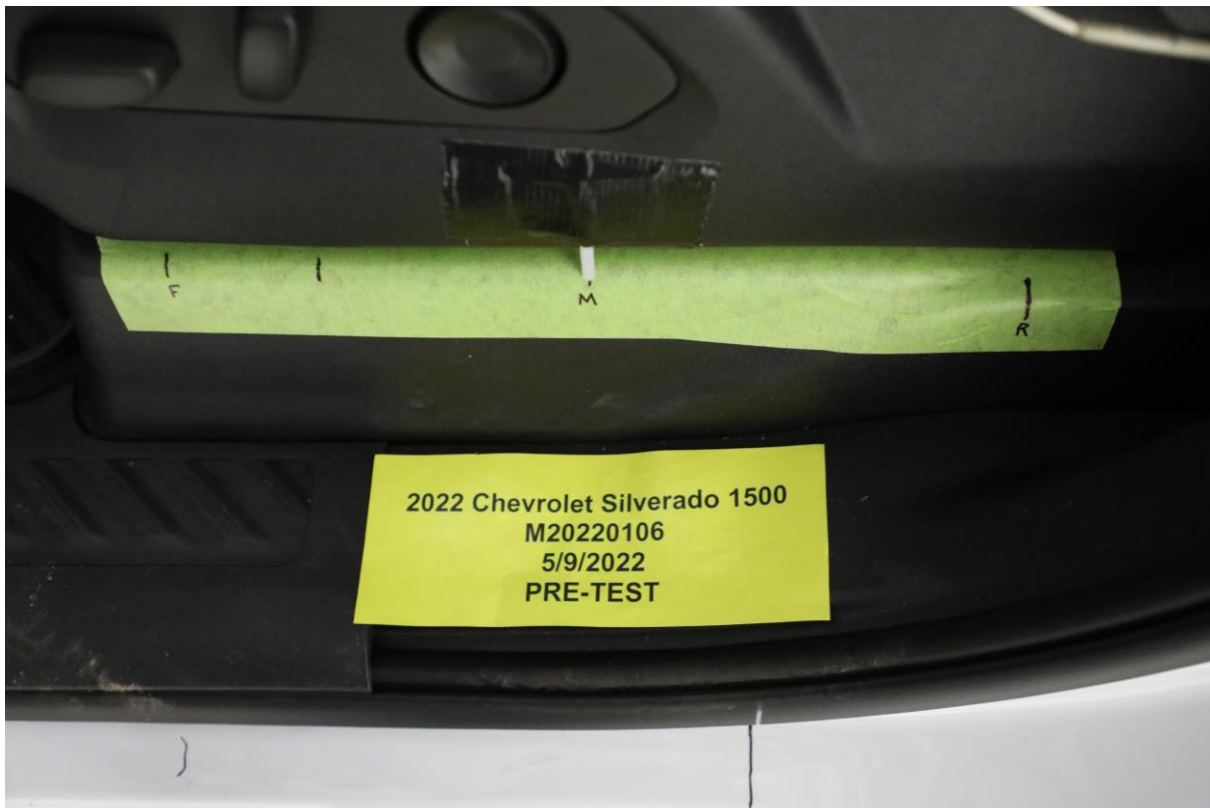
033 Post-Test Driver Dummy Window View



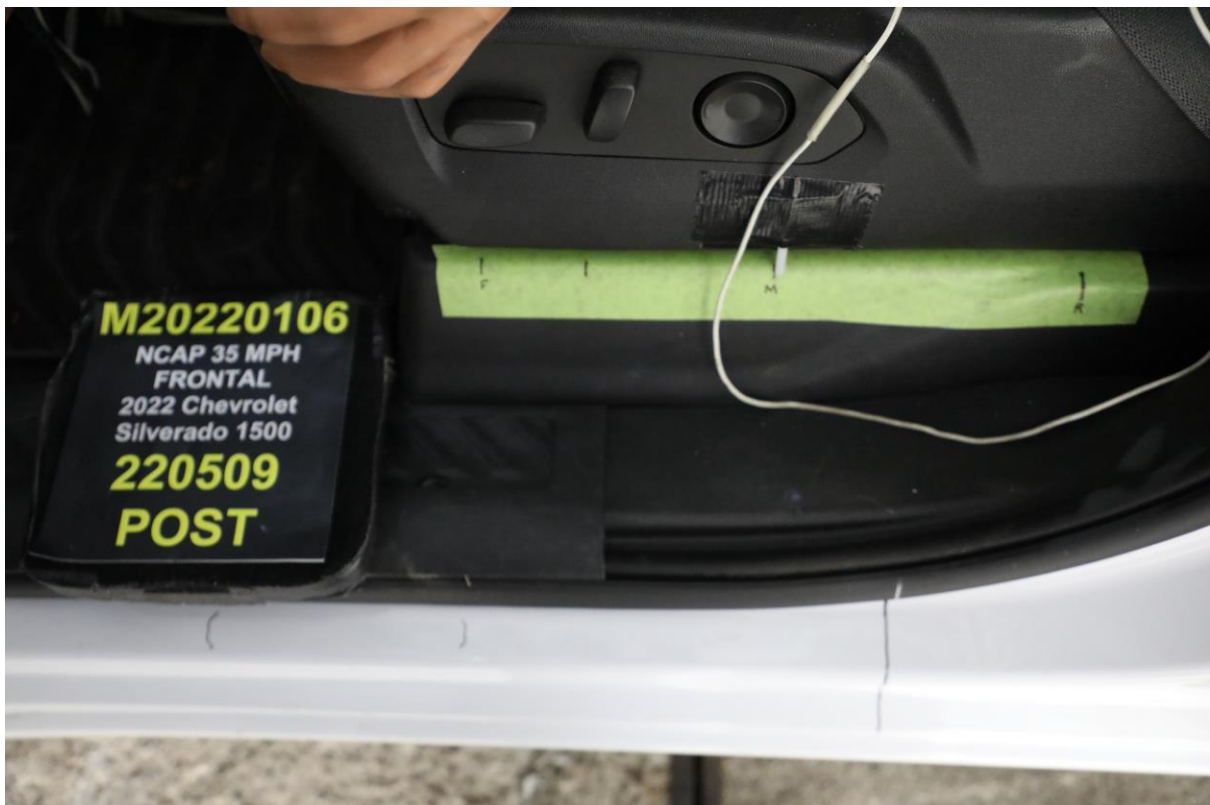
034 Pre-Test Driver Dummy and Vehicle Interior View



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



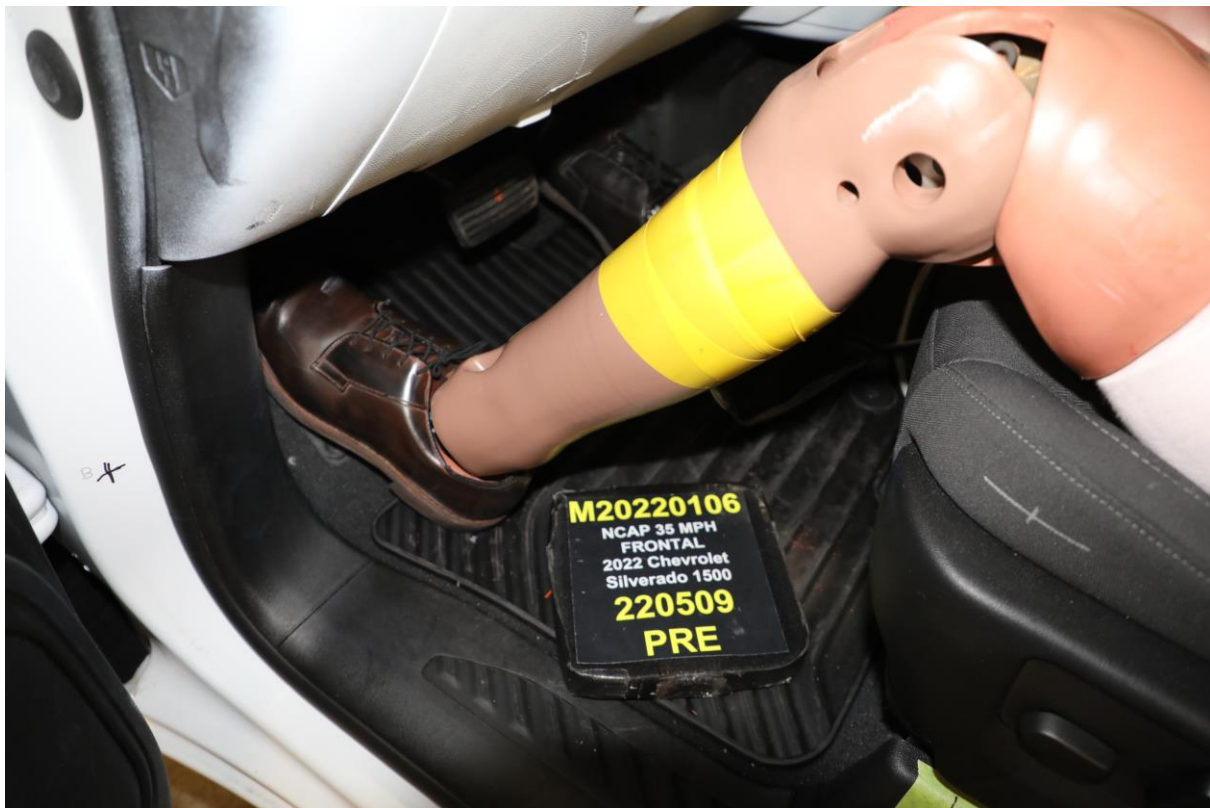
039 Post-Test View of Belt Anchorage for Driver Dummy



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



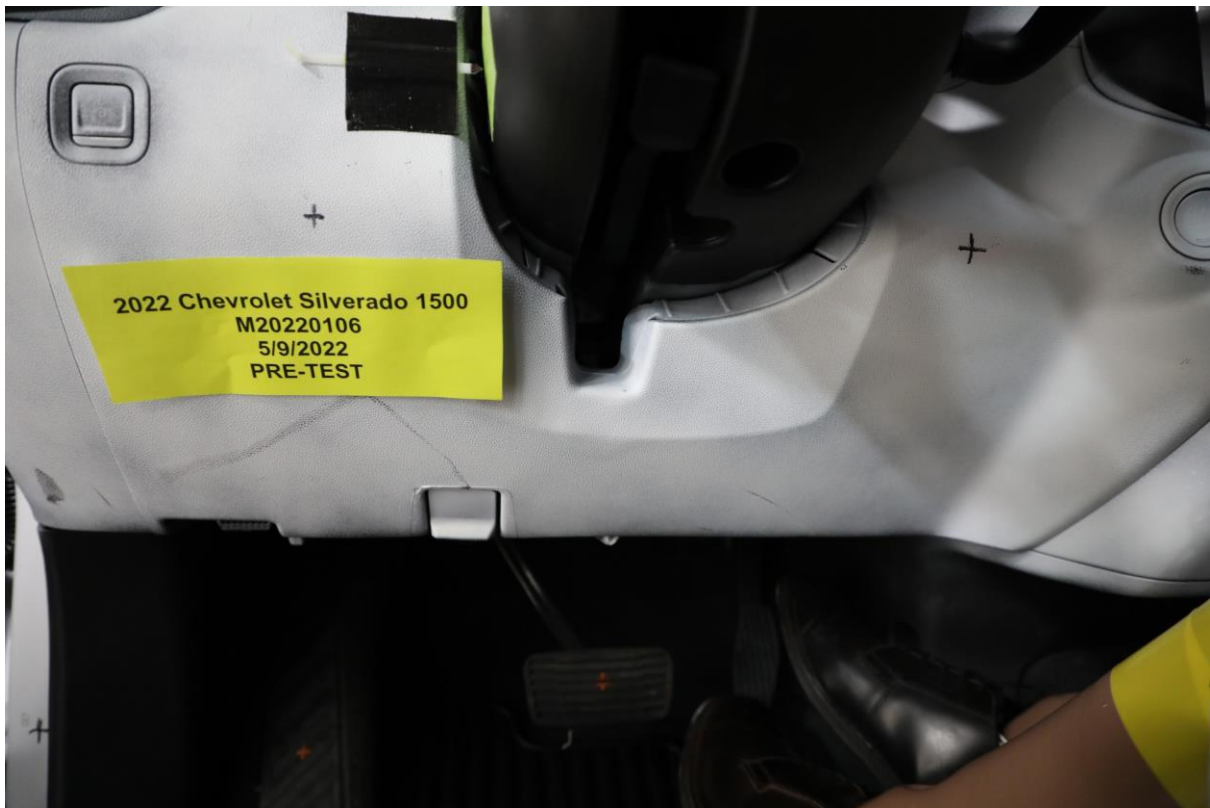
041 Post-Test View of Belt Buckle and Latch Plate for Driver Dummy



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

Intentionally Left Blank



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



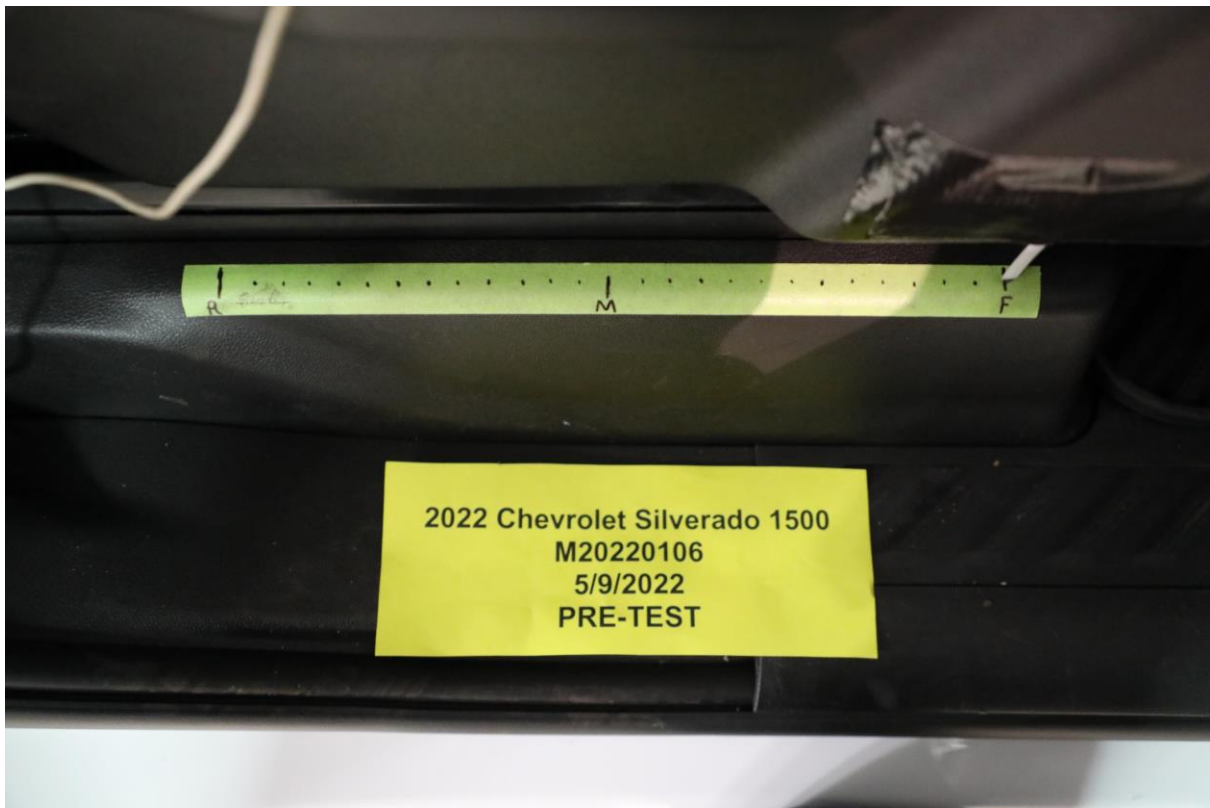
056 Post-Test Passenger Dummy Window View



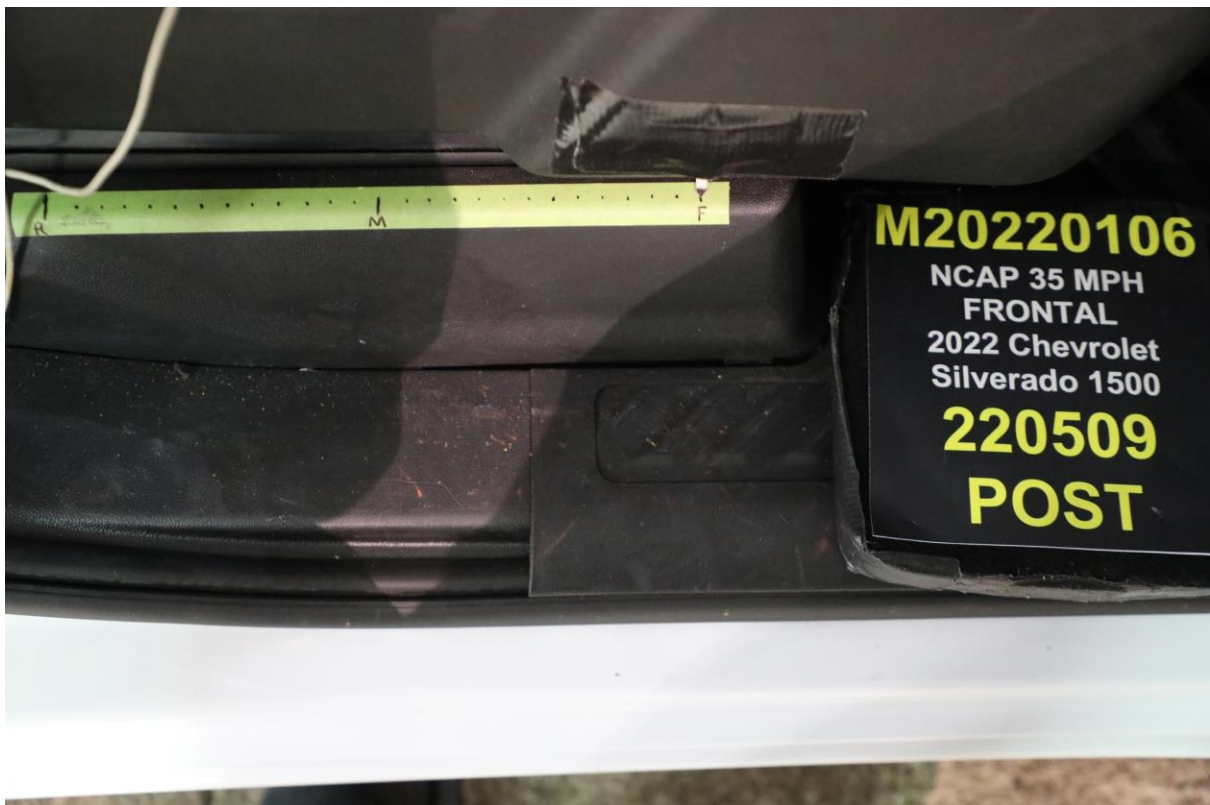
057 Pre-Test Passenger Dummy and Vehicle Interior View



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



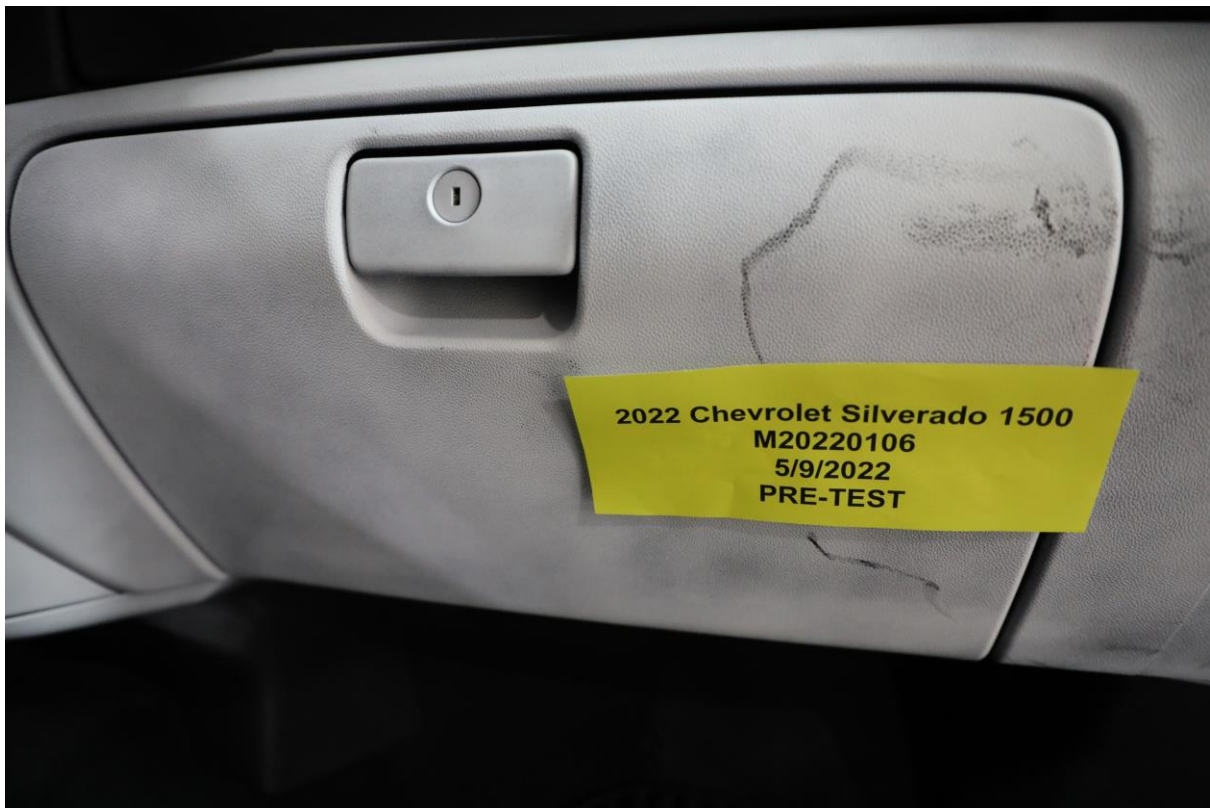
064 Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy



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



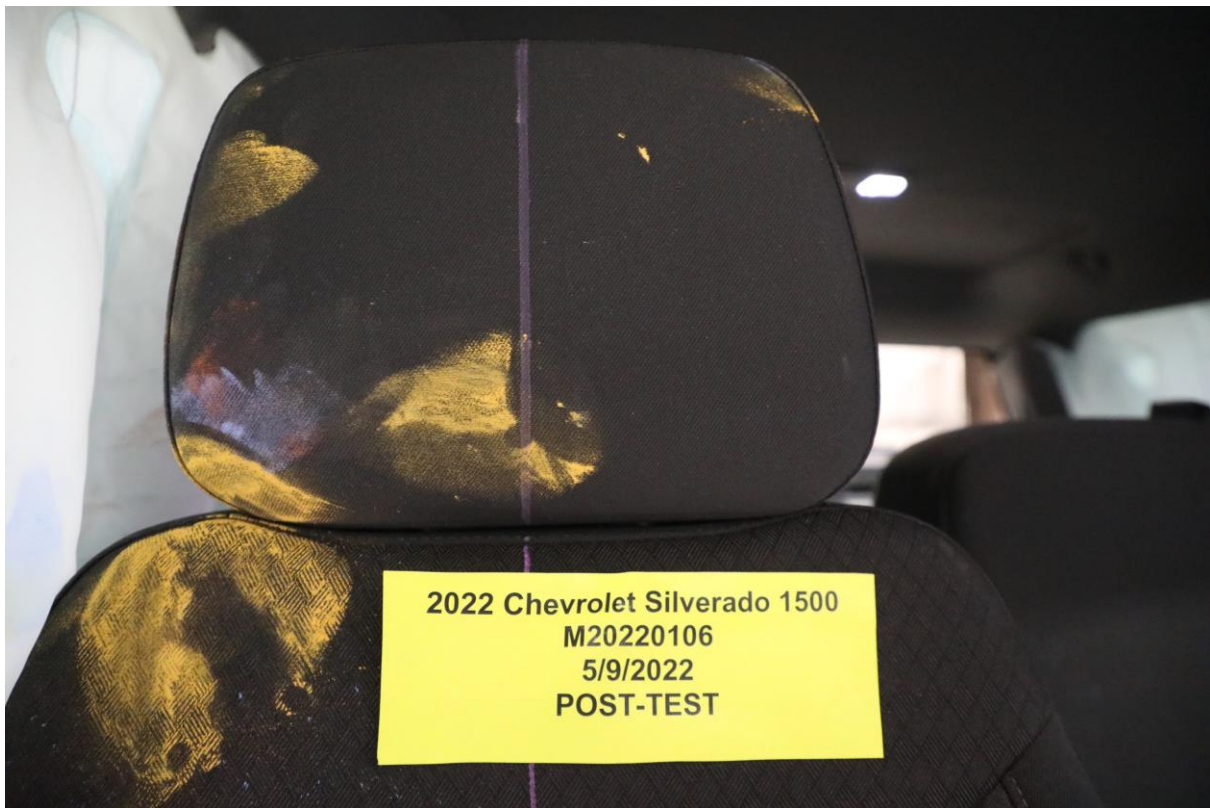
070 Post-Test Passenger's Side Floorpan



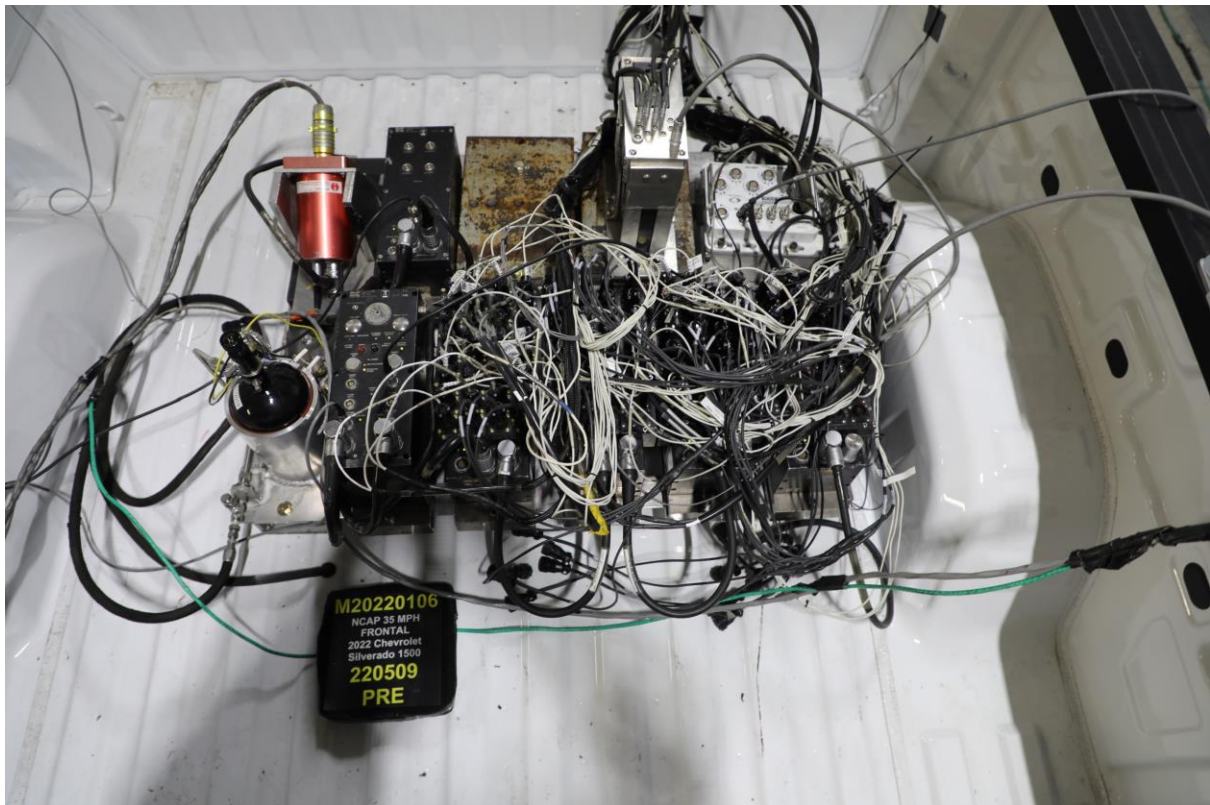
071 Post-Test Passenger Dummy Face



072 Post-Test Passenger Dummy Contact with Airbag



073 Post-Test Passenger Dummy Contact with Headrest



074 Photograph of Ballast Installed in Vehicle

PHOTO NOT APPLICABLE

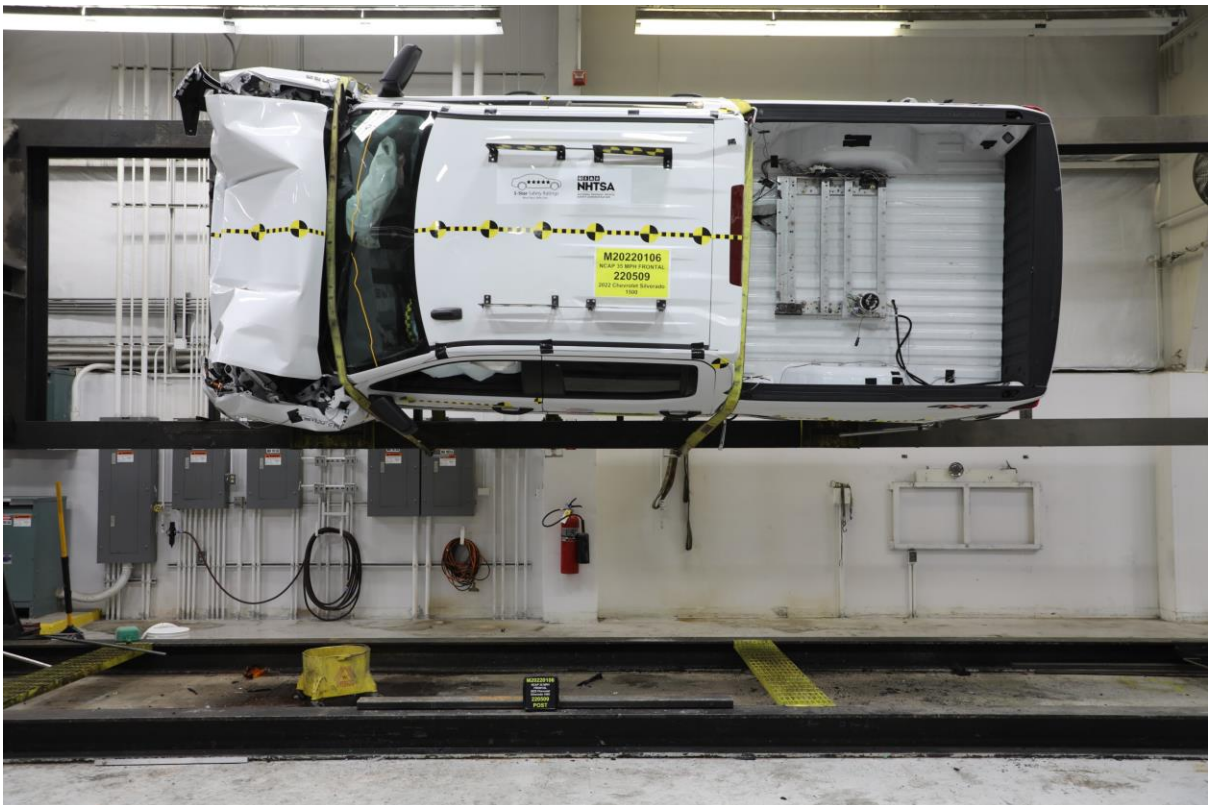
075 Post-Test Stoddard Spillage Location View



076 Post-Test Speed Trap Read out



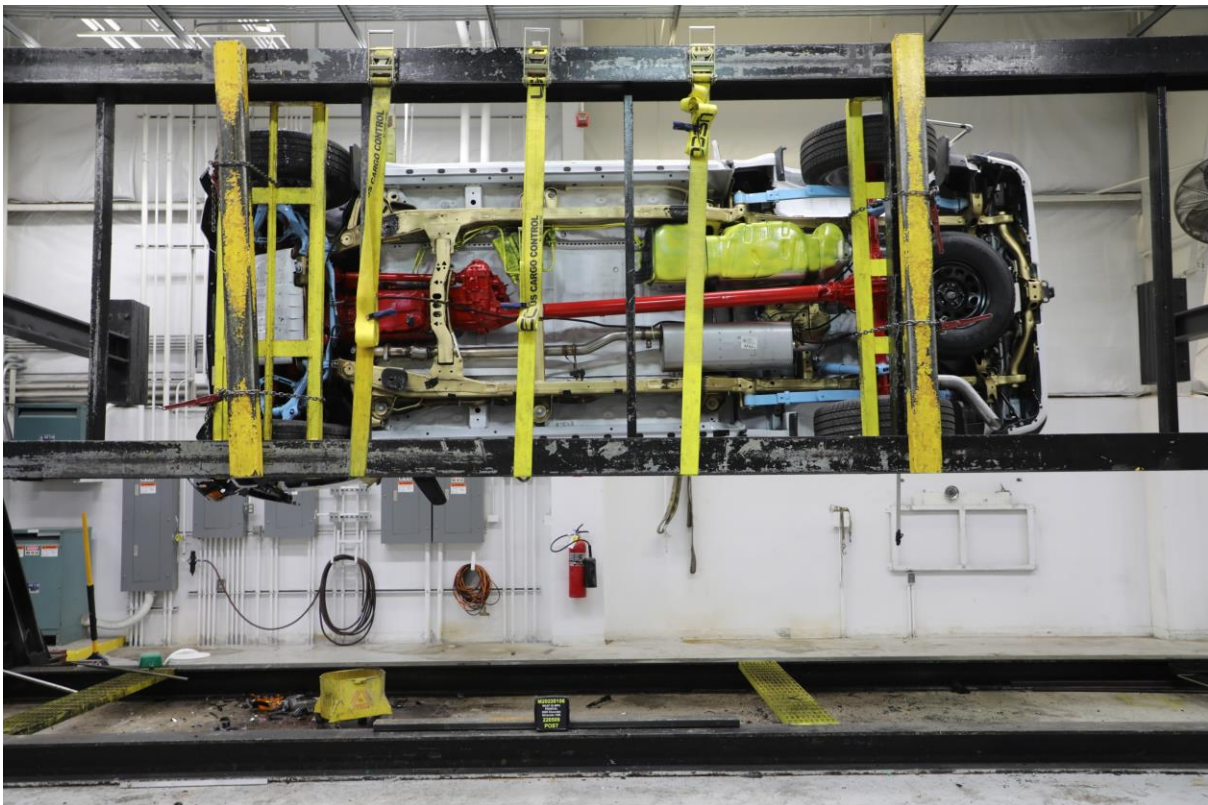
077 Vehicle at 0° on Static Rollover Device



078 Vehicle at 90° on Static Rollover Device



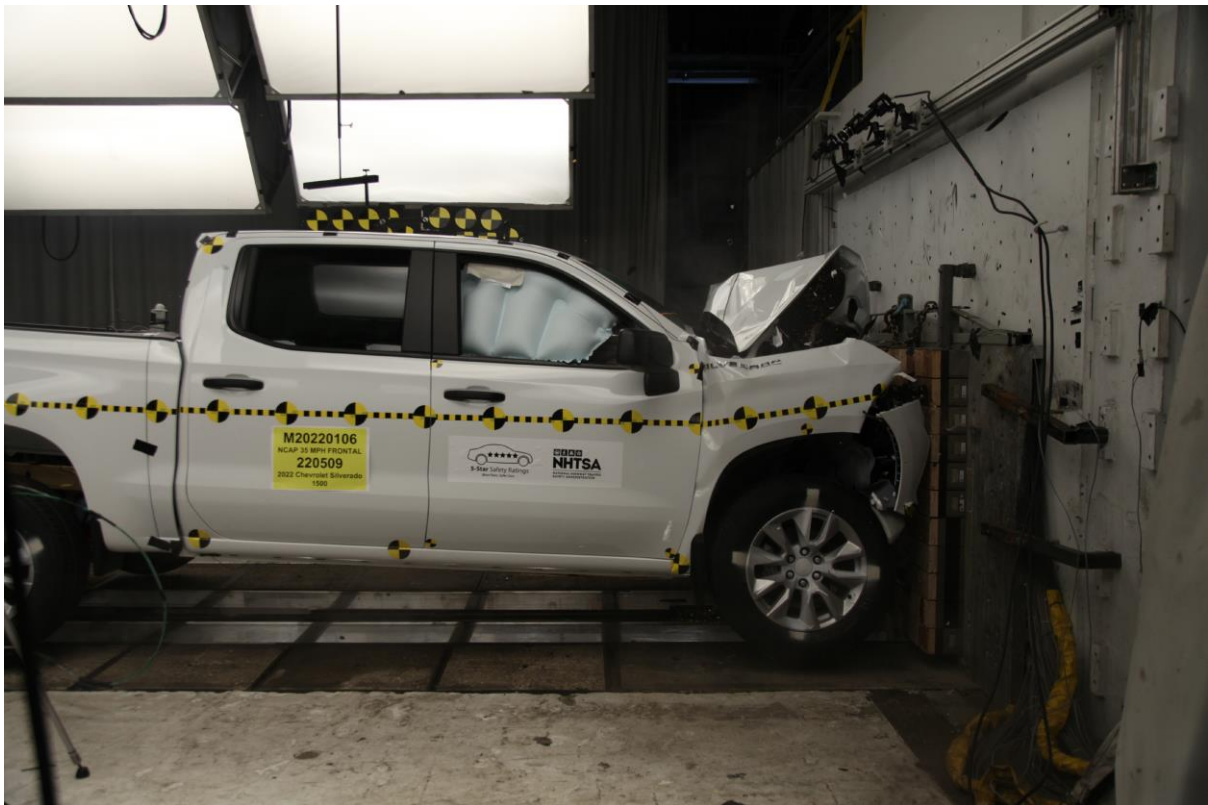
079 Vehicle at 180° on Static Rollover Device



080 Vehicle at 270° on Static Rollover Device



081 Vehicle at 360° on Static Rollover Device



082 2022 Chevrolet Silverado 1500 Frontal Impact Event



CHEVROLET

2022 SILVERADO 1500 CREW CUSTOM 4WD

EXTERIOR: SUMMIT WHITE
INTERIOR: JET BLACK

ENGINE: 2.7L TURBO HIGH-OUTPUT
TRANSMISSION: 8-SPEED AUTO

Visit us at www.chevy.com

STANDARD EQUIPMENT		DEPARTURE WARNING		BLUE TOOTH AUDIO STREAMING		EXTERIOR		MANUFACTURER'S SUGGESTED RETAIL PRICE													
CREW CAB SHORT BED 4WD OWNER BENEFITS • 3 YEAR / 36,000 MILE* • BUMPER-TO-BUMPER LIMITED WARRANTY • 5 YEAR / 60,000 MILE* • POWERTRAIN LIMITED WARRANTY • ROADSIDE ASSISTANCE & COURTESY TRANSPORTATION • FIRST MAINTENANCE VISIT • WHOEVER COMES FIRST *SEE CHEVROLET.COM OR DEALER FOR TERMS, DETAILS & LIMITS SAFETY & SECURITY • CHEVY SAFETY ASSIST • AUTOMATIC EMERGENCY BRAKING • FORWARD COLLISION ALERT • FRONT PEDESTRIAN BRAKING • LANE KEEP ASSIST W/LANE		• FOLLOWING DISTANCE INDICATOR • INTELLIBEAM-AUTO HIGH BEAM • REAR VISION CAMERA • TEEN DRIVER MODE • TIRE PRESSURE MONITORING WITH TIRE FILL ALERT PERFORMANCE & MECHANICAL • AUTOTRAC TRANSFER CASE • ELECTRONIC CRUISE CONTROL • 170 AMP ALTERNATOR • STABILITRAK W/ TRAILER SWAY CONTROL & HILL START ASSIST • ALL-SEASON TIRES • TRAILERING PACKAGE WITH HITCH GUIDANCE • BRAKE PAD WEAR INDICATOR CONNECTIVITY & TECHNOLOGY • CHEVROLET INFOTAINMENT 3 • 7" DIAG COLOR TOUCHSCREEN • ADDITIONAL FEATURES FOR COMPATIBLE PHONES INCLUDE:		• VOICE COMMAND PASS/THROUGH TO PHONE • WIRED ANDROID AUTO & WIRED APPLE CARPLAY CAPABLE • ONSTAR (R) SERVICES & Wi-Fi (R) HOTSPOT CAPABLE: SEE ONSTAR.COM FOR TERMS • SIRIUSXM RADIO CAPABLE, TRIAL INCLUDED WITH SUBSCRIPTION SOLD SEPARATELY • 120W POWER OUTLET IN CARGO BED & INSTRUMENT PANEL • USB PORTS • DRIVER INFORMATION CENTER • REMOTE KEYLESS ENTRY • PUSH BUTTON START • REMOTE START • CONTENT THEFT ALARM • REAR SEAT REMINDER INTERIOR • AIR CONDITIONING • POWER WINDOWS		• FRONT 40/20/40 BENCH SEATS W/ ARMREST & UNDERSEAT STORAGE • REAR 60/40 FOLDING BENCH SEAT • 10-WAY POWER DRIVER SEAT • CARPETED FLOOR • RUBBERIZED VINYL FLOOR MATS EXTERIOR • BODY COLOR STYLING THEME • CORNERSTEP REAR BUMPER • 12 TIE DOWNS IN CARGO BED • LED CARGO AREA LIGHTING • EZ LIFT, POWER LOCK, & RELEASE TAILGATE • POWER ADJUSTABLE HEATED MIRRORS • HALOGEN REFLECTOR HEADLAMPS • INCANDESCENT TAILLAMPS • DEEP-TINTED WINDOWS • REAR WINDOW DEFOGGER • FRONT RECOVERY HOOKS		STANDARD VEHICLE PRICE \$45,200.00 OPTIONS & PRICING OPTIONS INSTALLED BY THE MANUFACTURER MAY REPLACE STANDARD EQUIPMENT (NONE) <table border="1"> <tr> <td>BLACK MOLDED SPLASH GUARDS (DEALER INSTALLED)</td> <td>205.00</td> </tr> <tr> <td>GVWR: 7,000 LBS. (3,175 KG)</td> <td>INC.</td> </tr> <tr> <td>REAR AXLE: 3.42 RATIO</td> <td>INC.</td> </tr> <tr> <td>20" GLOSS BLACK WHEELS</td> <td>INC.</td> </tr> <tr> <td>CUSTOM CONVENIENCE PACKAGE</td> <td>INC.</td> </tr> <tr> <td>CUSTOM VALUE PACKAGE</td> <td>INC.</td> </tr> </table> TOTAL OPTIONS \$205.00 TOTAL VEHICLE & OPTIONS \$45,405.00 DESTINATION CHARGE \$695.00 TOTAL BEFORE SALES TAX \$47,100.00 2.7L TURBO HIGH-OUTPUT ENGINE -1,500.00 CREDIT		BLACK MOLDED SPLASH GUARDS (DEALER INSTALLED)	205.00	GVWR: 7,000 LBS. (3,175 KG)	INC.	REAR AXLE: 3.42 RATIO	INC.	20" GLOSS BLACK WHEELS	INC.	CUSTOM CONVENIENCE PACKAGE	INC.	CUSTOM VALUE PACKAGE	INC.
BLACK MOLDED SPLASH GUARDS (DEALER INSTALLED)	205.00																				
GVWR: 7,000 LBS. (3,175 KG)	INC.																				
REAR AXLE: 3.42 RATIO	INC.																				
20" GLOSS BLACK WHEELS	INC.																				
CUSTOM CONVENIENCE PACKAGE	INC.																				
CUSTOM VALUE PACKAGE	INC.																				

EPA DOT Fuel Economy and Environment		Gasoline Vehicle		GOVERNMENT 5-STAR SAFETY RATINGS		PARTS CONTENT INFORMATION													
Fuel Economy 18 MPG combined city/hwy 17 city 20 highway 5.6 gallons per 100 miles Annual fuel cost \$1,950		You spend \$3,250 more in fuel costs over 5 years compared to the average new vehicle.		Overall Vehicle Score Not Rated Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight. <table border="1"> <tr> <th>Crash Type</th> <th>Driver Passenger</th> <th>Side</th> <th>Rollover</th> </tr> <tr> <td>Frontal</td> <td>Not Rated</td> <td>Not Rated</td> <td>Not Rated</td> </tr> <tr> <td>Side</td> <td>Not Rated</td> <td>Not Rated</td> <td>Not Rated</td> </tr> </table>		Crash Type	Driver Passenger	Side	Rollover	Frontal	Not Rated	Not Rated	Not Rated	Side	Not Rated	Not Rated	Not Rated	FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 42% MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 44% NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS. FOR THIS VEHICLE: FINAL ASSEMBLY POINT: SILAO, GJ MEXICO COUNTRY OF ORIGIN: ENGINE: UNITED STATES TRANSMISSION: UNITED STATES	
Crash Type	Driver Passenger	Side	Rollover																
Frontal	Not Rated	Not Rated	Not Rated																
Side	Not Rated	Not Rated	Not Rated																

083 Monroney Label Photograph

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

No.	List of Data Plots Provided in the Test Report	Page
1	Driver Head X Acceleration vs. Time Primary	B-6
2	Driver Head Y Acceleration vs. Time Primary	B-6
3	Driver Head Z Acceleration vs. Time Primary	B-6
4	Driver Head Resultant Acceleration vs. Time Primary	B-6
5	Driver Chest X Deflection vs. Time	B-7
6	Driver Chest X Acceleration vs. Time Primary	B-8
7	Driver Chest Y Acceleration vs. Time Primary	B-8
8	Driver Chest Z Acceleration vs. Time Primary	B-8
9	Driver Chest Resultant Acceleration vs. Time Primary	B-8
10	Driver Upper Neck Force X vs. Time	B-9
11	Driver Upper Neck Force Z vs. Time	B-9
12	Driver Upper Neck Moment Y vs. Time	B-9
13	Driver Nij vs. Time	B-10
14	Driver Left Femur Force vs. Time	B-11
15	Driver Right Femur Force vs. Time	B-11
16	Passenger Head X Acceleration vs. Time Primary	B-12
17	Passenger Head Y Acceleration vs. Time Primary	B-12
18	Passenger Head Z Acceleration vs. Time Primary	B-12
19	Passenger Head Resultant Acceleration vs. Time Primary	B-12
20	Passenger Chest X Deflection vs. Time	B-13
21	Passenger Chest X Acceleration vs. Time Primary	B-14
22	Passenger Chest Y Acceleration vs. Time Primary	B-14
23	Passenger Chest Z Acceleration vs. Time Primary	B-14
24	Passenger Chest Resultant Acceleration vs. Time Primary	B-14
25	Passenger Upper Neck Force X vs. Time	B-15
26	Passenger Upper Neck Force Z vs. Time	B-15
27	Passenger Upper Neck Moment Y vs. Time	B-15
28	Passenger Nij vs. Time	B-16
29	Passenger Left Femur Force vs. Time	B-17
30	Passenger Right Femur Force vs. Time	B-17

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 and Moments

NHTSA

Test Lab: CTF

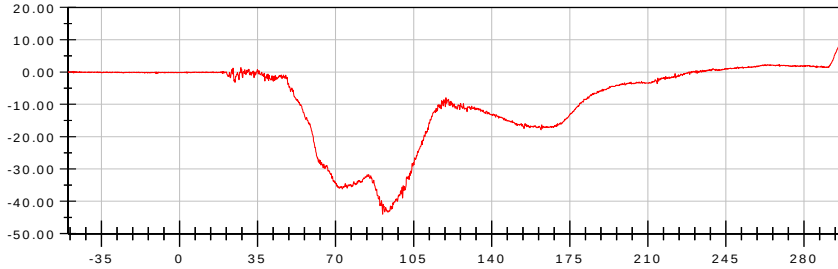
Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)

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



<Max>

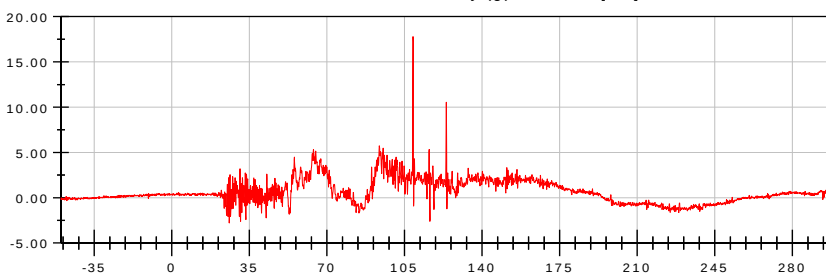
12.94 g at 296.72 ms

<Min>

-43.98 g at 91.04 ms

CFC_1000

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



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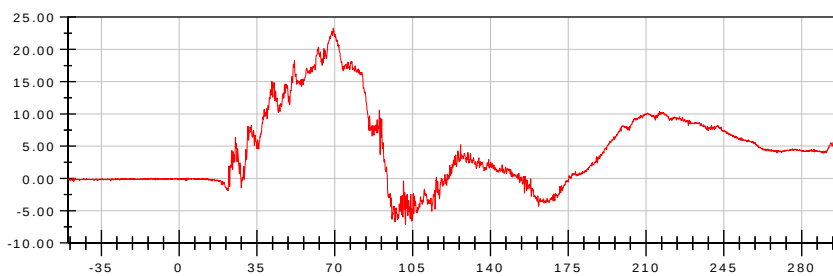
17.79 g at 108.80 ms

<Min>

-2.80 g at 25.92 ms

CFC_1000

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



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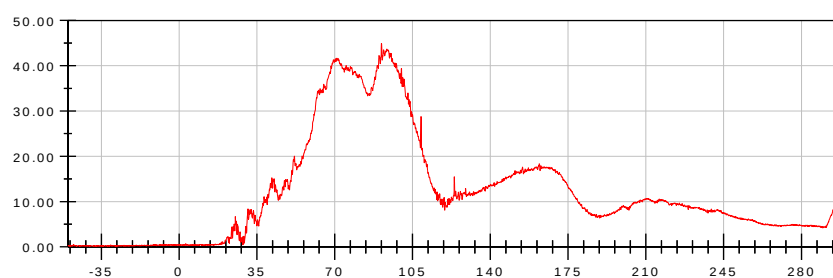
23.30 g at 69.36 ms

<Min>

-7.12 g at 101.76 ms

CFC_1000

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



<Max>

44.89 g at 91.04 ms

<Min>

0.07 g at -32.16 ms

CFC_1000



NHTSA

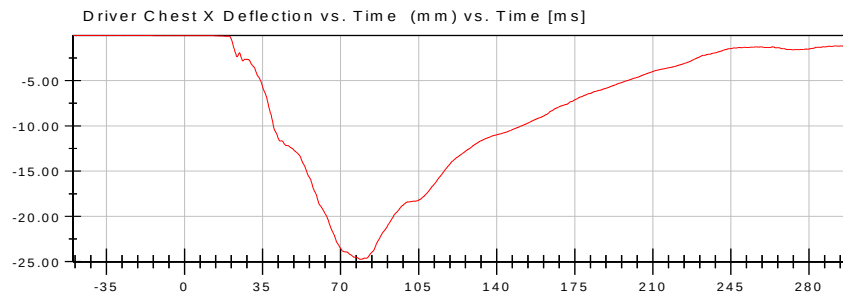
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



<Max>

0.00 mm at -45.36 ms

<Min>

-24.74 mm at 79.04 ms

CFC_600



NHTSA

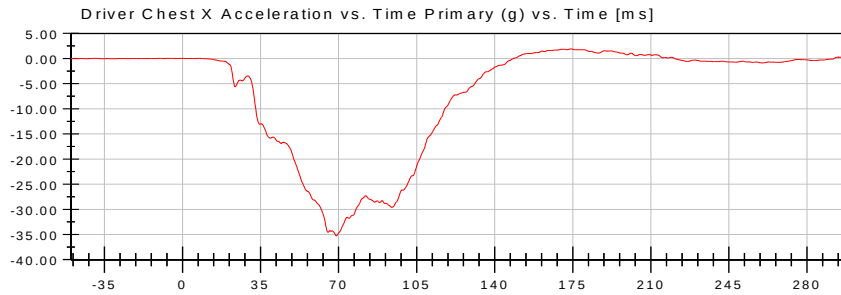
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



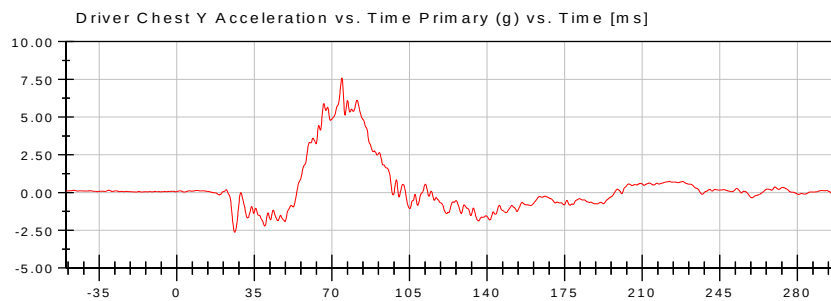
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1.91 g at 174.16 ms

<Min>

-35.27 g at 69.04 ms

CFC_180



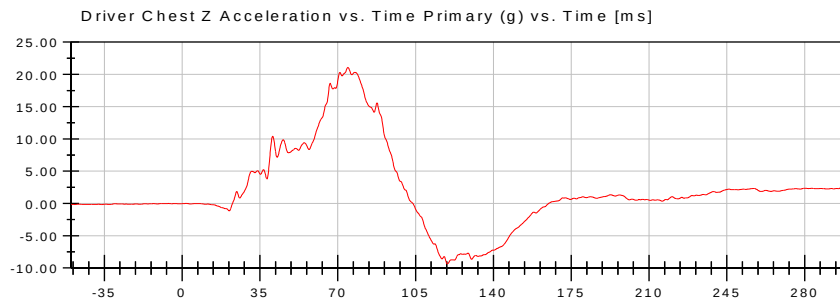
<Max>

7.58 g at 74.48 ms

<Min>

-2.62 g at 26.08 ms

CFC_180



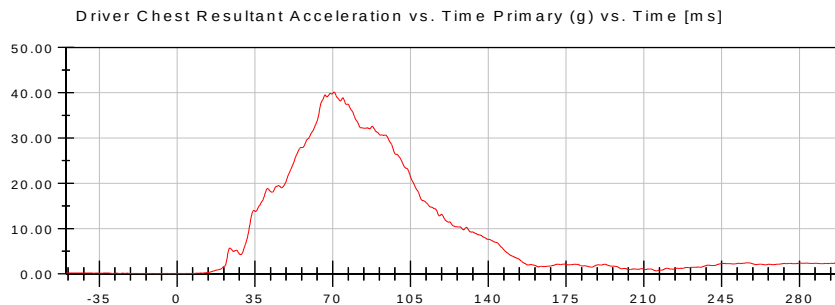
<Max>

21.06 g at 74.56 ms

<Min>

-9.36 g at 119.28 ms

CFC_180



<Max>

40.15 g at 70.64 ms

<Min>

0.06 g at 2.72 ms

CFC_180



NHTSA

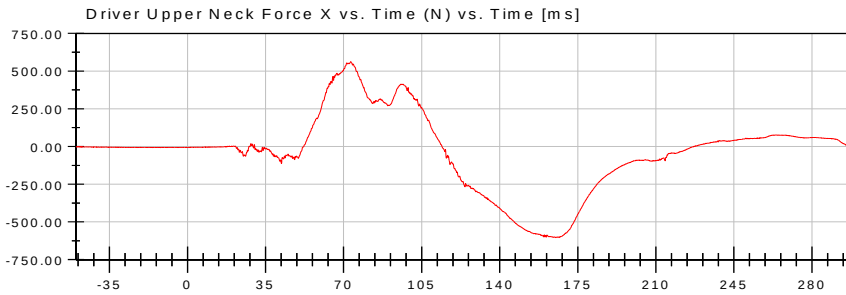
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



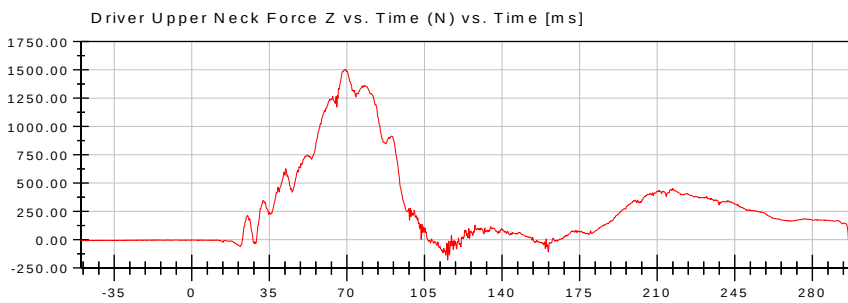
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562.50 N at 73.20 ms

<Min>

-603.81 N at 165.20 ms

CFC_1000



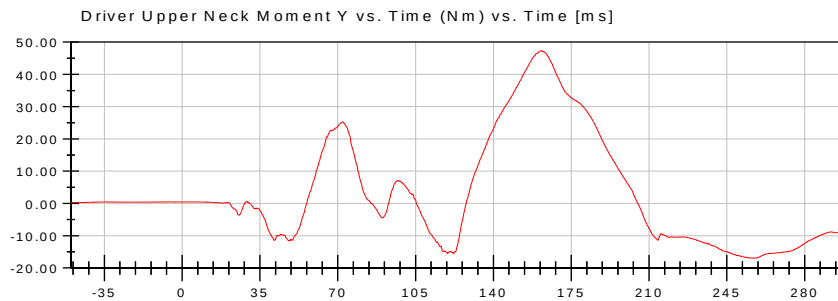
<Max>

1,505.75 N at 69.36 ms

<Min>

-180.57 N at 115.44 ms

CFC_1000



<Max>

47.33 Nm at 161.52 ms

<Min>

-16.94 Nm at 257.12 ms

CFC_600





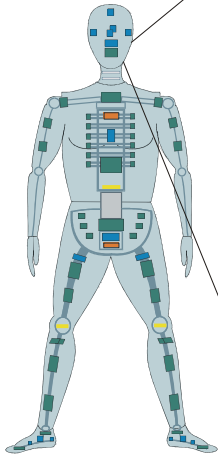
2022 Chevrolet Silverado 1500 NCAP 35 mph Frontal Impact Neck Injury Predictor (NIJ)

Date: 05/09/2022
Time: 14:37

Customer: NHTSA

Test Number: M20220106

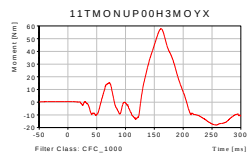
Test Orientation = Frontal
Fzc(Tension) = 6806
Fzc(Compression) = 6160
Myc(Extension) = 135
Myc(Flexion) = 310



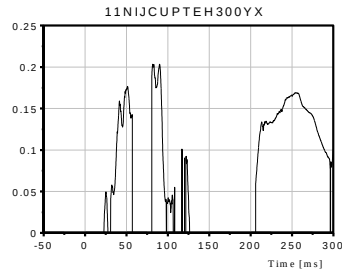
Dummy: HIII 50th Male
Seating Position:

Driver

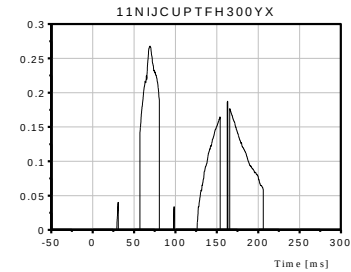
NIJ Source Code: (Fz/Fzc)+(Myc/Myc)



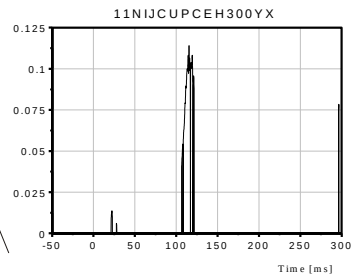
TRC Inc. Test Lab: CTF
Test Number: 220509



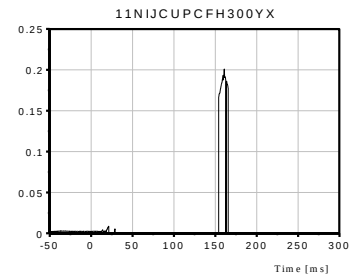
Max [NTE] 0.2034 at 81.84 ms



Max [NTF] 0.2678 at 69.28 ms



Max [NCE] 0.1142 at 115.44 ms



Max [NCF] 0.2011 at 160.88 ms

NHTSA

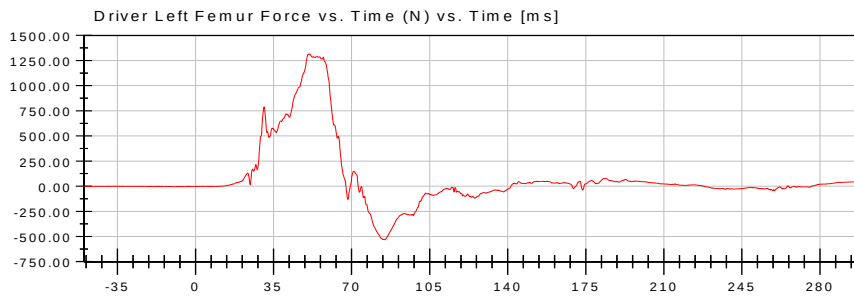
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



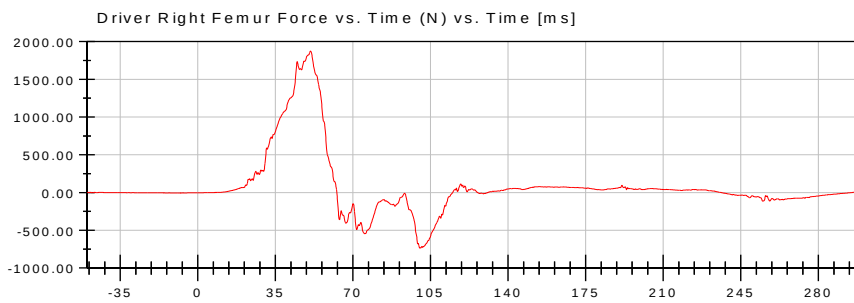
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1,313.82 N at 51.20 ms

<Min>

-532.67 N at 84.96 ms

CFC_600



<Max>

1,873.94 N at 50.88 ms

<Min>

-735.02 N at 100.08 ms

CFC_600



NHTSA

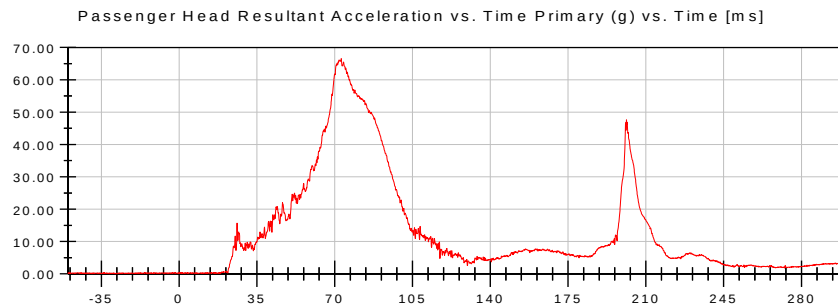
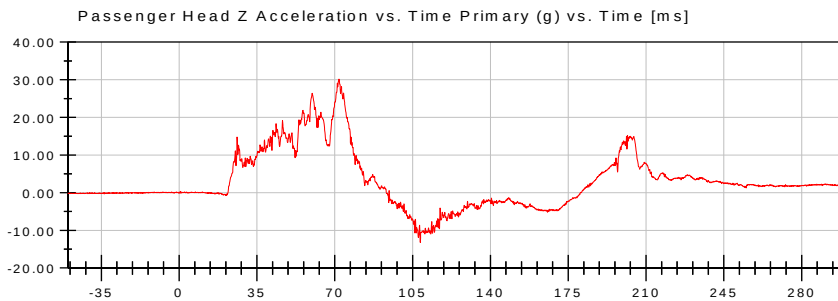
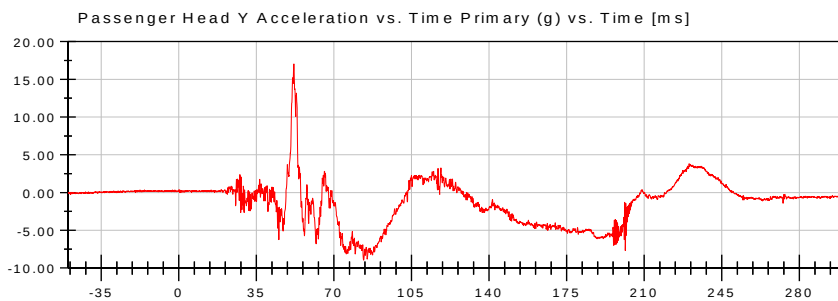
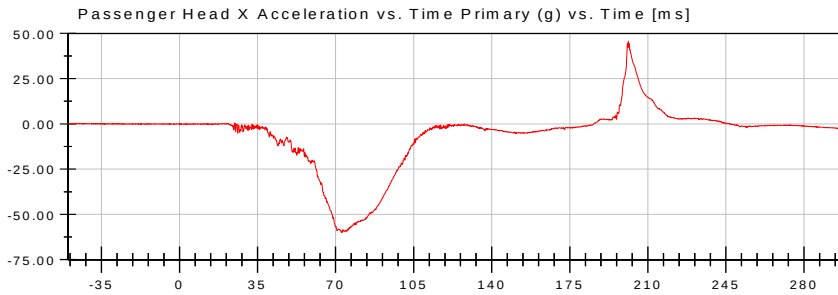
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



NHTSA

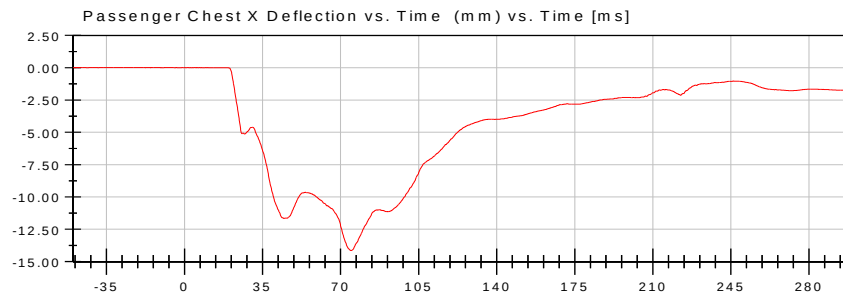
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



<Max>

0.01 mm at -31.36 ms

<Min>

-14.14 mm at 74.56 ms

CFC_600



NHTSA

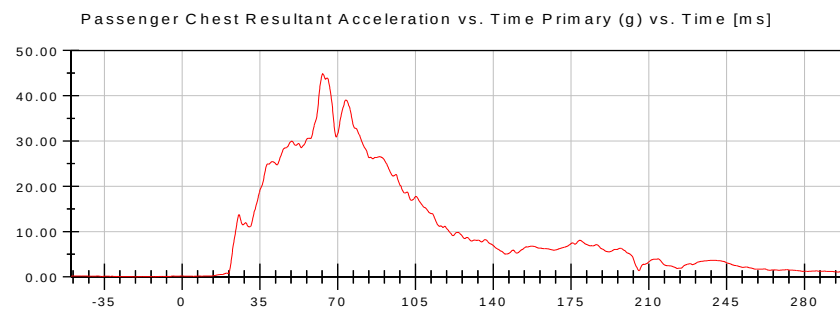
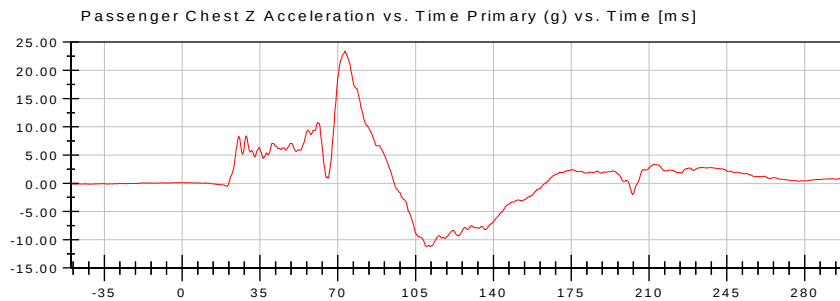
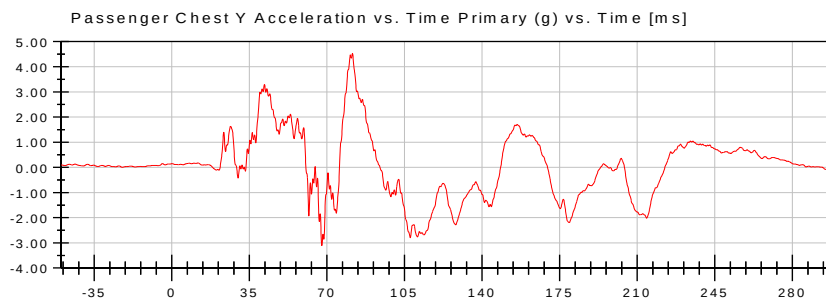
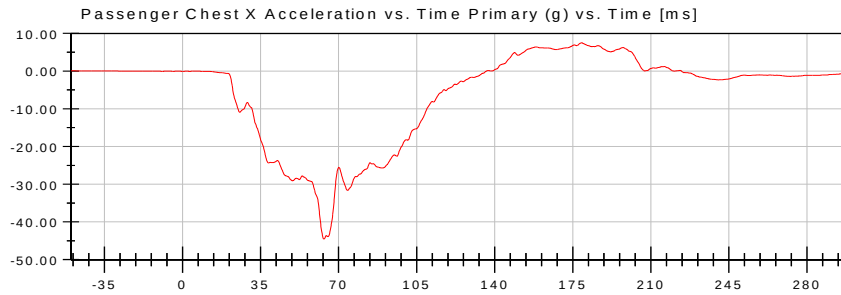
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



NHTSA

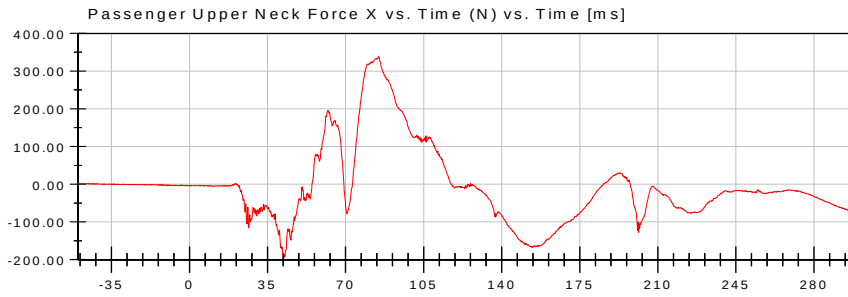
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



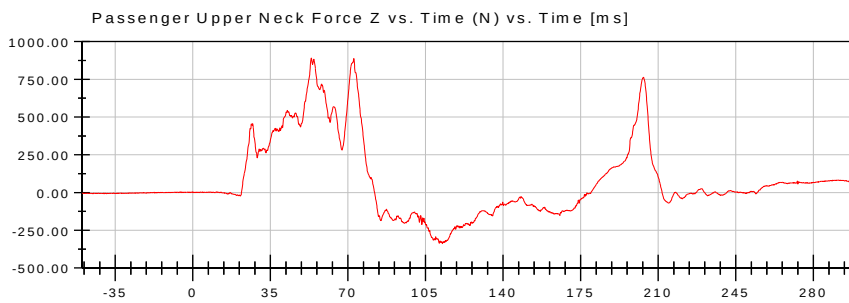
<Max>

338.36 N at 84.72 ms

<Min>

-193.51 N at 42.72 ms

CFC_1000



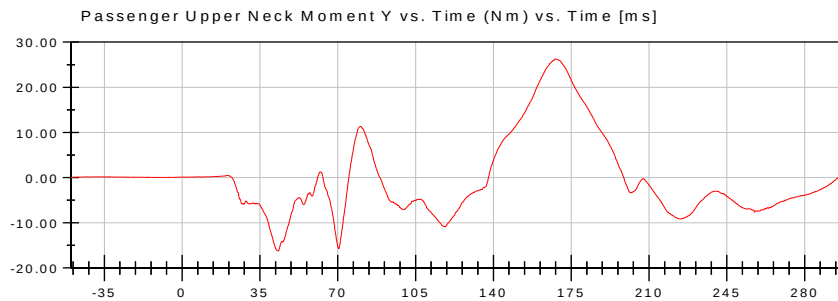
<Max>

890.97 N at 53.52 ms

<Min>

-338.92 N at 112.64 ms

CFC_1000



<Max>

26.27 Nm at 167.76 ms

<Min>

-16.25 Nm at 43.20 ms

CFC_600





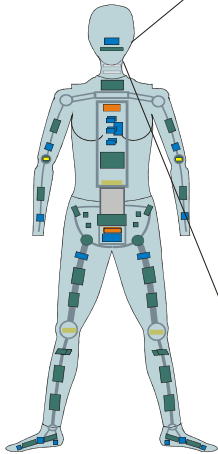
2022 Chevrolet Silverado 1500 NCAP 35 mph Frontal Impact Neck Injury Predictor (NIJ)

Date: 05/09/2022
Time: 14:37

Customer: NHTSA

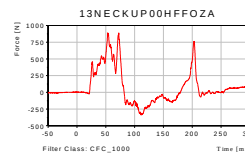
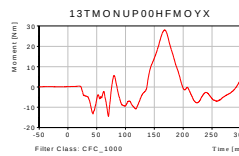
Test Number: M20220106

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

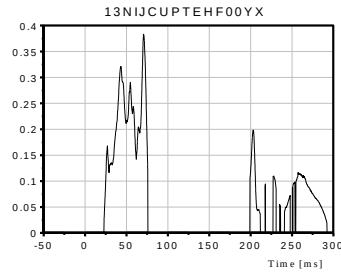


Dummy: HIII 5th Female
Seating Position:
Right Front Passenger

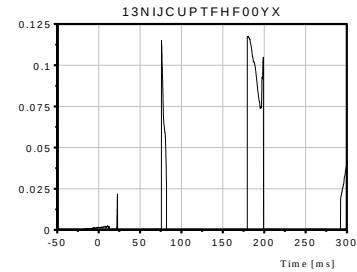
NIJ Source Code: (Fz/Fzc)*(My/Myc)



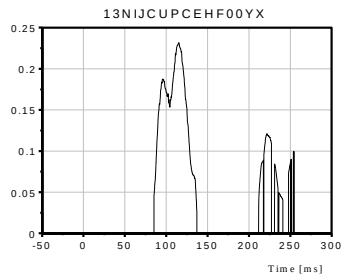
TRC Inc. Test Lab: CTF
Test Number: 220509



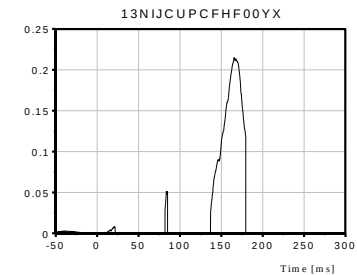
Max [NTE] 0.3834 at 70.80 ms



Max [NTF] 0.1175 at 180.00 ms



Max [NCE] 0.2317 at 115.04 ms



Max [NCF] 0.2151 at 165.52 ms

NHTSA

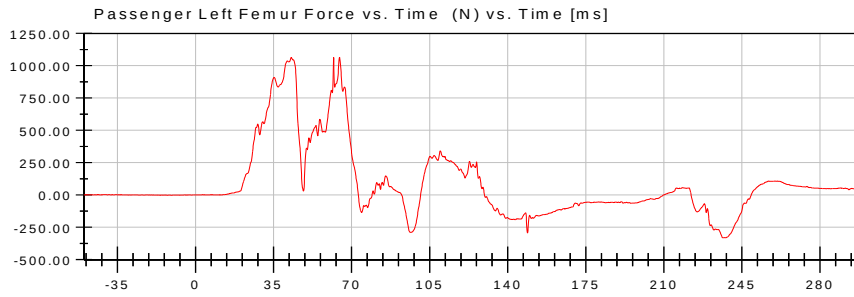
Test Lab: CTF

Test Number: 220509 (M20220106)

Test Date: 05/09/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



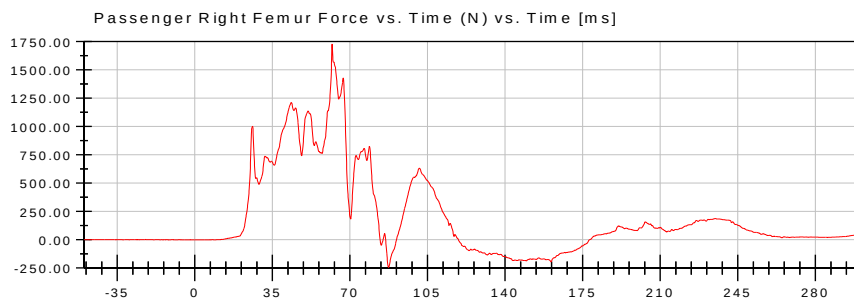
<Max>

1,064.28 N at 64.56 ms

<Min>

-331.17 N at 236.48 ms

CFC_600



<Max>

1,727.44 N at 61.92 ms

<Min>

-243.41 N at 87.44 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. 76

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	146	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	221	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	990	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. 76-1

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	269.2 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-8.9 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	5.08 %	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

Report Number: 037_H3F76

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03.16.2022 13:39:12 609

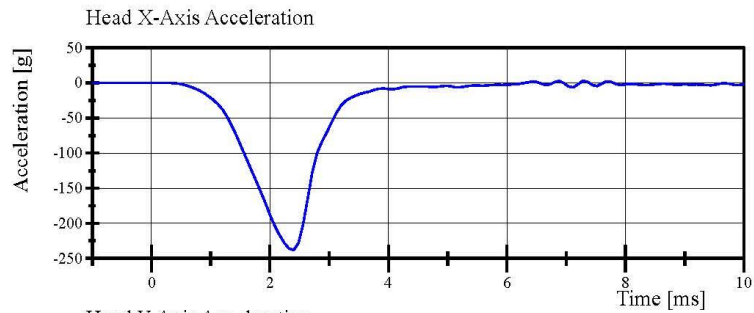


Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 037 Certification No. 76-1

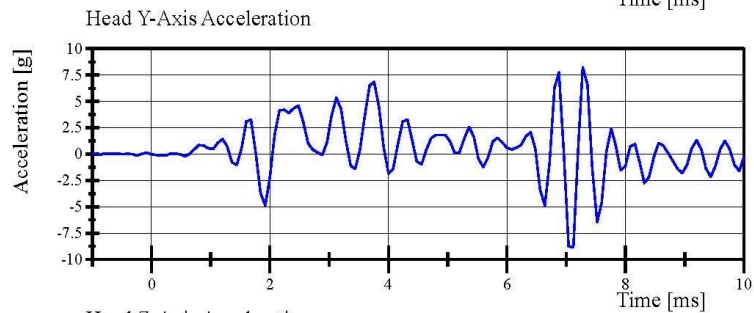
Test Date: 3/16/2022



Filter Class: CFC_1000

Max: 2.9 g at 6.9 ms

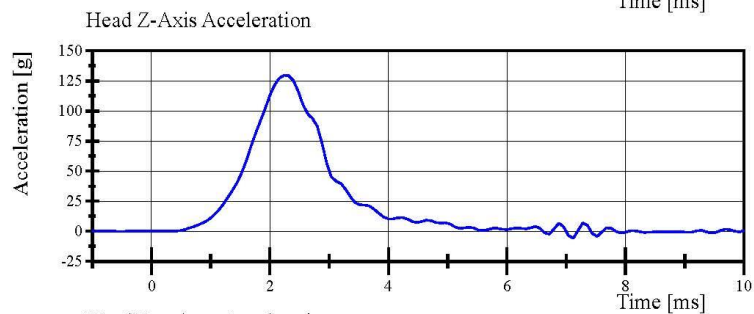
Min: -238.4 g at 2.4 ms



Filter Class: CFC_1000

Max: 8.3 g at 7.3 ms

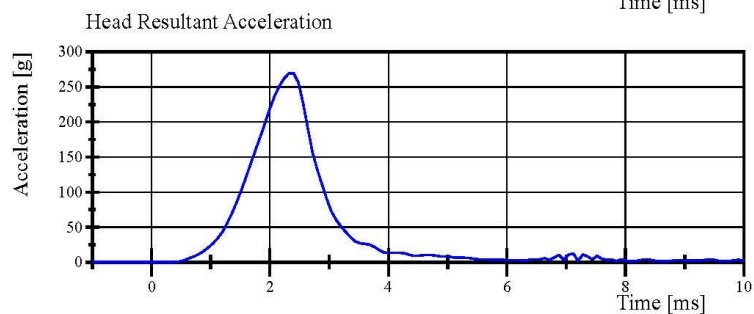
Min: -8.9 g at 7.1 ms



Filter Class: CFC_1000

Max: 129.7 g at 2.2 ms

Min: -5.8 g at 7.1 ms



Filter Class: CFC_1000

Max: 269.2 g at 2.4 ms

Min: 0.0 g at -0.4 ms

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

03.16.2022 13:39:53 609



Report Number: 037_H3F76

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Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 76-3

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.901 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	35.6 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-25.62 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-21.08 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-17.42 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-17.42 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-68.1 °	Yes
Time of Peak	57 - 64 ms	59.6 ms	Yes
Total Head D-Plane Rotation Decay to 0°	113 - 128 ms	119.6 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	96.44 N·m	Yes
Time of Peak	47 - 58 ms	50.4 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	97 - 107 ms	99.0 ms	Yes

Test meets specifications.

Condition: Used

Comments:

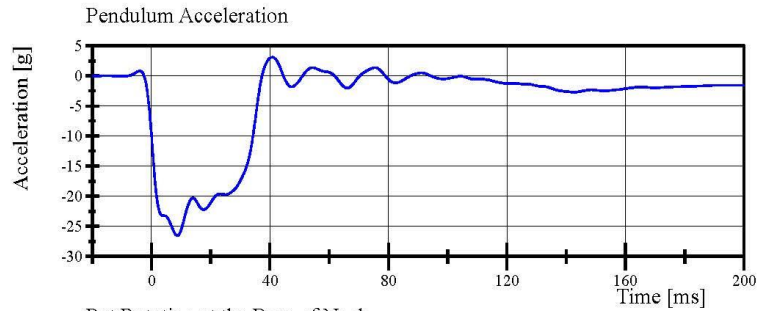
Neck S/N: 4728

Transportation Research Center Inc.

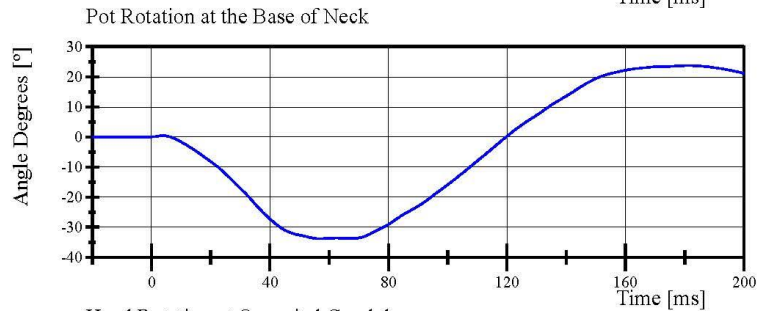
Neck Flexion

HIII 50th Serial No. 037 Certification No. 76-3

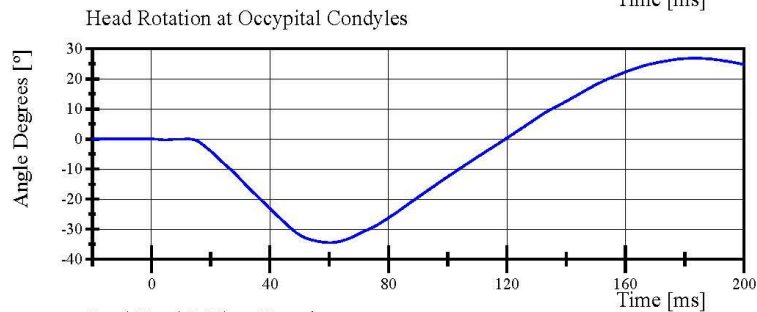
Test Date: 3/16/2022



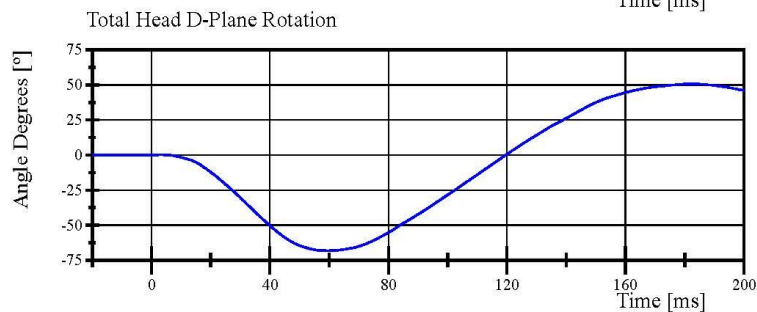
Filter Class: CFC_60
Max: 3.1 g at 40.8 ms
Min: -26.6 g at 8.8 ms



Filter Class: CFC_60
Max: 23.8 ° at 181.4 ms
Min: -33.8 ° at 56.8 ms



Filter Class: CFC_60
Max: 26.8 ° at 183.6 ms
Min: -34.5 ° at 60.2 ms



Filter Class: CFC_60
Max: 50.6 ° at 182.3 ms
Min: -68.1 ° at 59.6 ms

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

03.16.2022 15:05:04 1876



Report Number: 037_H3F76

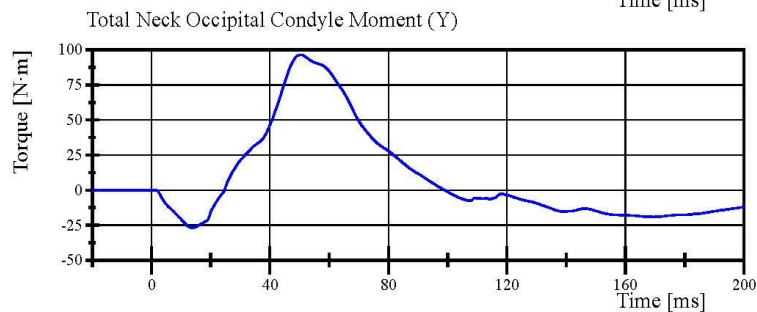
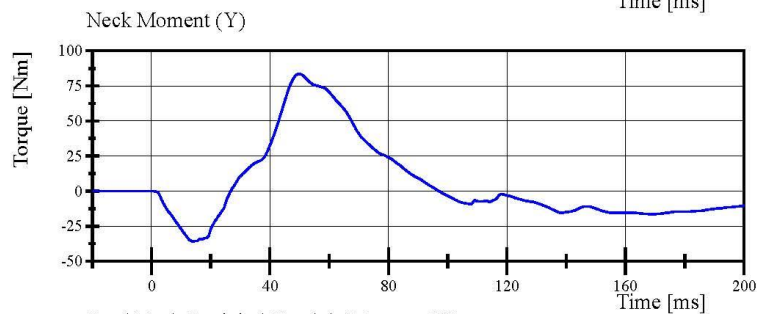
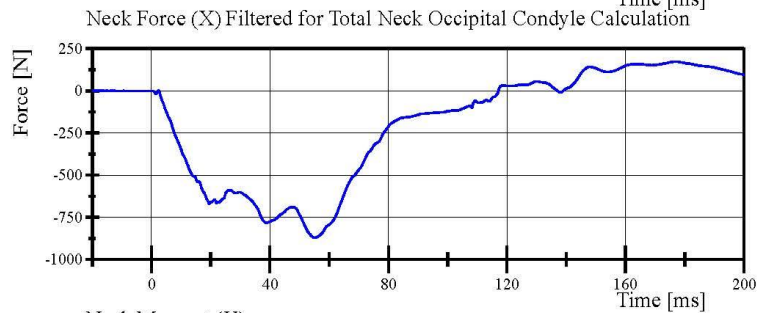
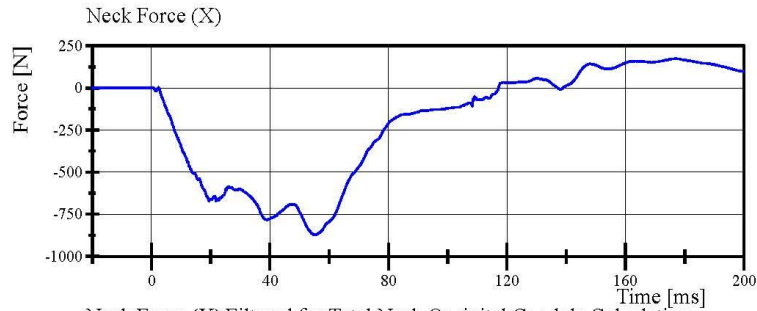
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Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 76-3

Test Date: 3/16/2022



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

03.16.2022 15:05:04 1876



Report Number: 037_H3F76

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Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 037 Certification No. 76-1

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.957 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	39.1 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	19.52 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	17.44 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	14.00 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	14.38 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	95.0 °	Yes
Time of Peak	72 - 82 ms	77.4 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	159.3 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-67.93 N·m	Yes
Time of Peak	65 - 79 ms	71.8 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	142.7 ms	Yes

Test meets specifications.

Condition: Used

Comments:

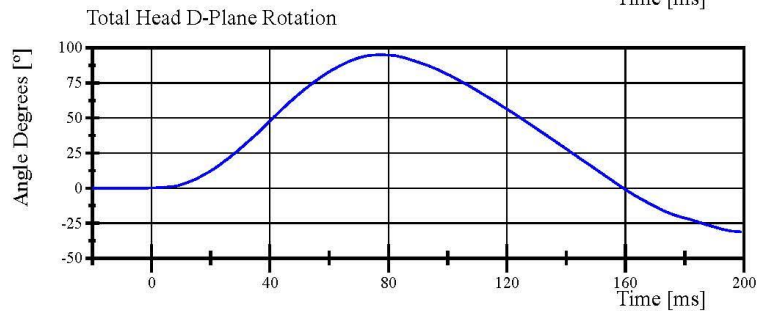
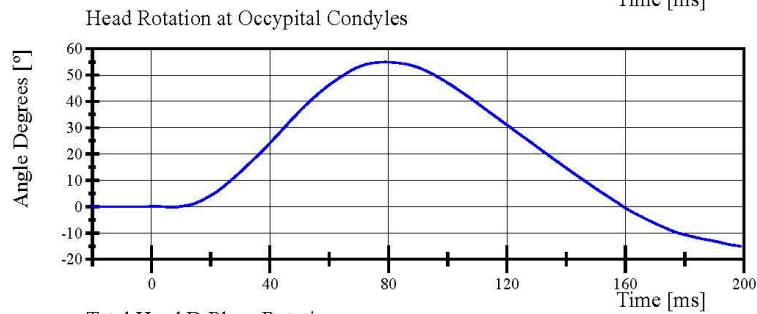
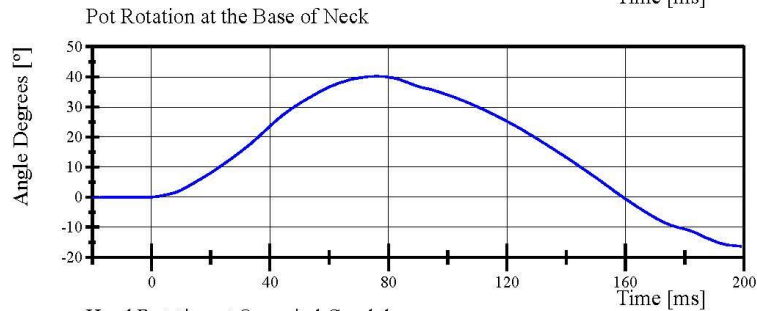
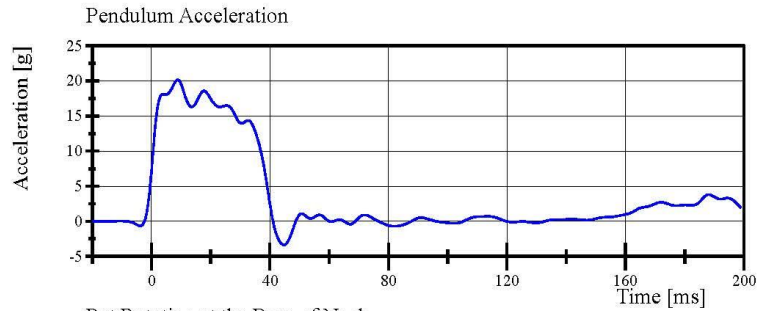
Neck S/N: 4728

Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 037 Certification No. 76-1

Test Date: 3/16/2022



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

03.16.2022 15:36:36 2020



Report Number: 037_H3F76

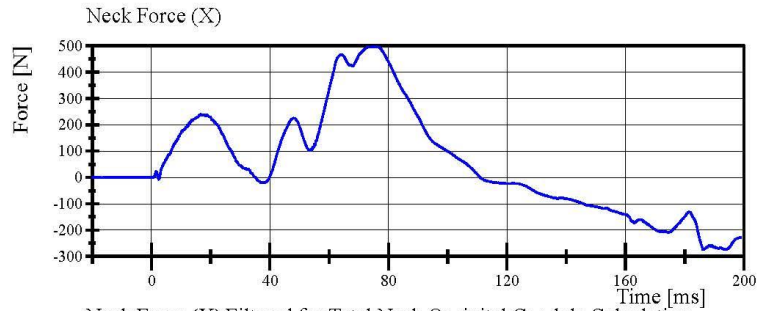
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Transportation Research Center Inc.

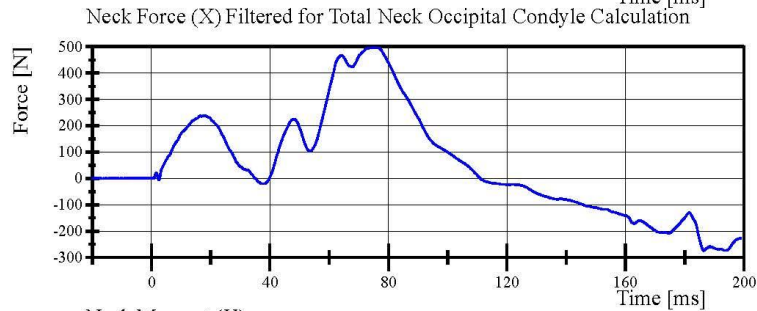
Neck Extension

HIII 50th Serial No. 037 Certification No. 76-1

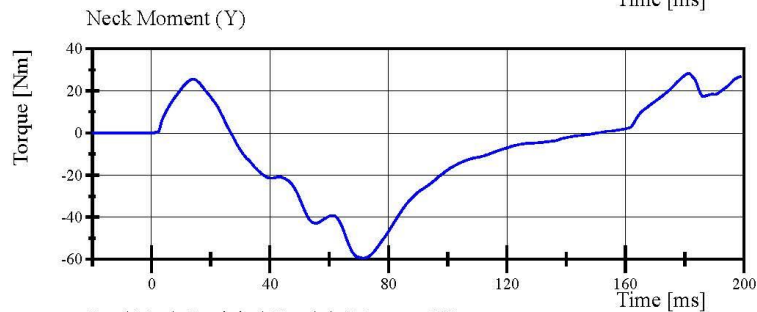
Test Date: 3/16/2022



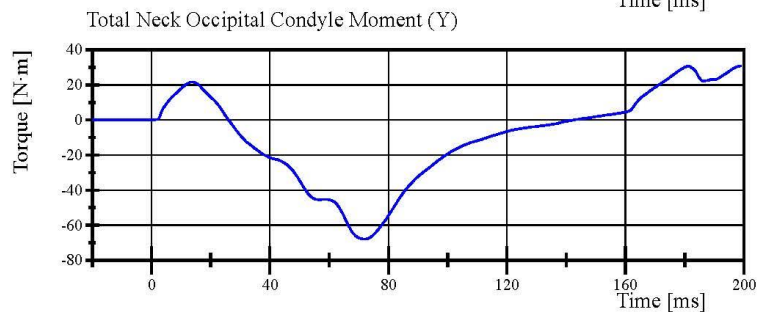
Filter Class: CFC_1000
Max: 496.7 N at 74.8 ms
Min: -275.1 N at 186.2 ms



Filter Class: CFC_600
Max: 496.3 N at 74.8 ms
Min: -274.2 N at 186.3 ms



Filter Class: CFC_600
Max: 28.2 Nm at 181.3 ms
Min: -59.4 Nm at 71.6 ms



Filter Class: Without_(Constar
Max: 30.9 N·m at 199.0 ms
Min: -67.9 N·m at 71.8 ms

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

03.16.2022 15:36:36 2020



Report Number: 037_H3F76

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Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 037 Certification No. 76-1

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.603 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,407.3 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-69.11 mm	Yes
Internal Hysteresis	69 - 85 %	72.3 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: 2565

Rib Set S/N: 02033121A

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

Report Number: 037_H3F76

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03.16.2022 13:00:08 440

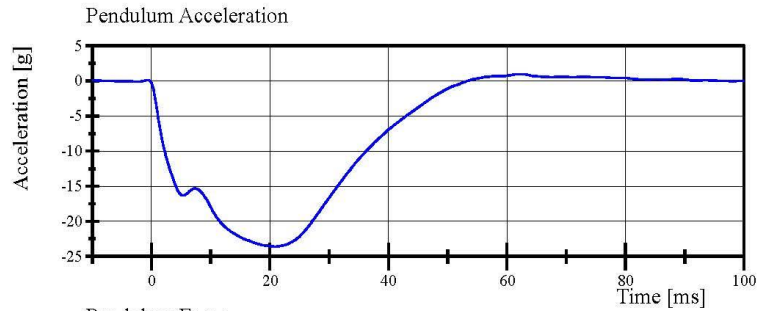


Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 037 Certification No. 76-1

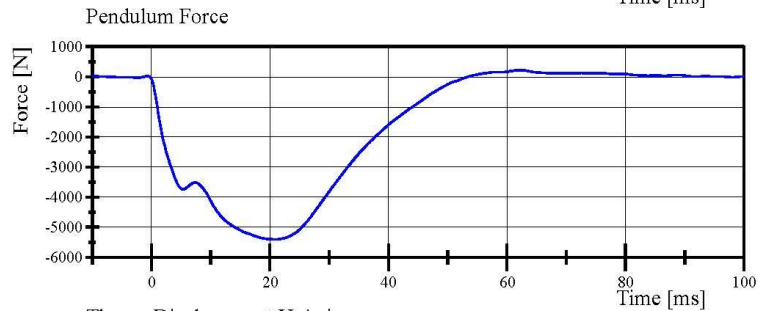
Test Date: 3/16/2022



Filter Class: CFC_180

Max: 0.9 g at 62.5 ms

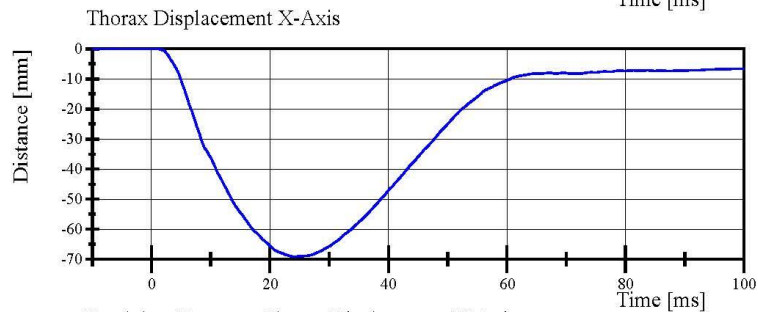
Min: -23.6 g at 20.9 ms



Filter Class: CFC_180

Max: 216.2 N at 62.5 ms

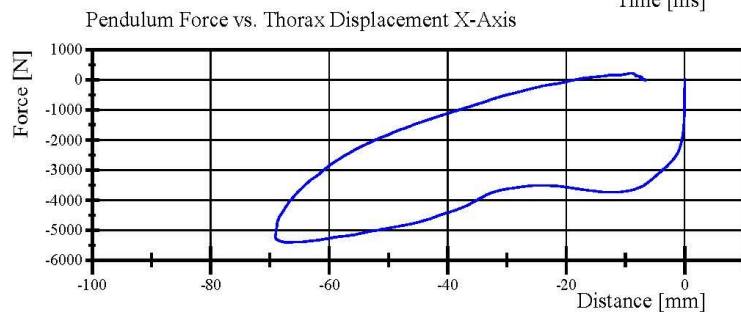
Min: -5,407.3 N at 20.9 ms



Filter Class: CFC_600

Max: 0.0 mm at -6.7 ms

Min: -69.1 mm at 24.2 ms



Filter Class: CFC_180

Max: 216.2 N at -8.9 mm

Min: -5,407.3 N at -67.0 mm

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

03.16.2022 13:00:38 440



Report Number: 037_H3F76

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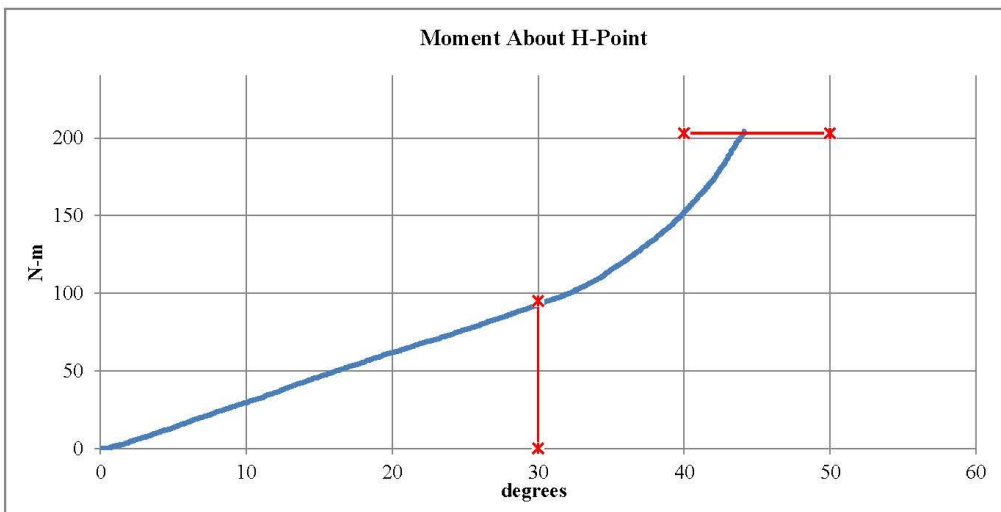
Transportation Research Center Inc.

Hybrid III 50th Male Hip Range of Motion

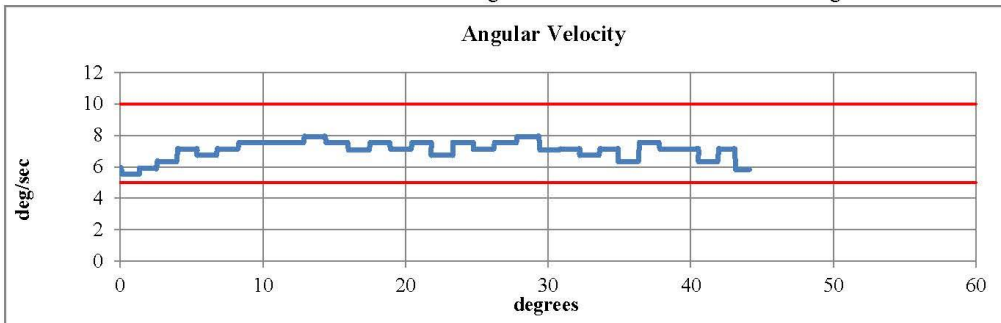


Serial Number: 037 Date: 16-Mar-2022
Side Tested: Left Hip Time: 13:21
Test Number: 1

TEST PARAMETER	SPECIFICATION		TEST RESULTS		
Temperature	18.9	- 25.6	21.7	°C	Pass
Humidity	10	- 70	33	%	Pass
Moment at 30°	0	≤ 94.9	93.23	N-m	Pass
Angle at 203 Nm	40	- 50	44.11	deg	Pass
Average Velocity	5	- 10	7.06	deg/sec	Pass



Max: 7.93 deg/sec Min: 5.55 deg/sec



Comments:

Pelvis S/N: EK3565

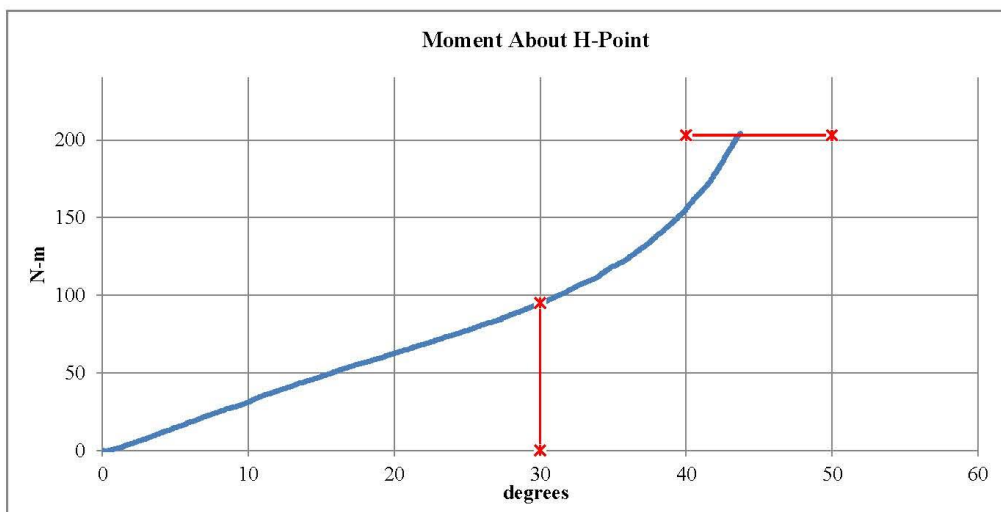
Transportation Research Center Inc.

Hybrid III 50th Male Hip Range of Motion

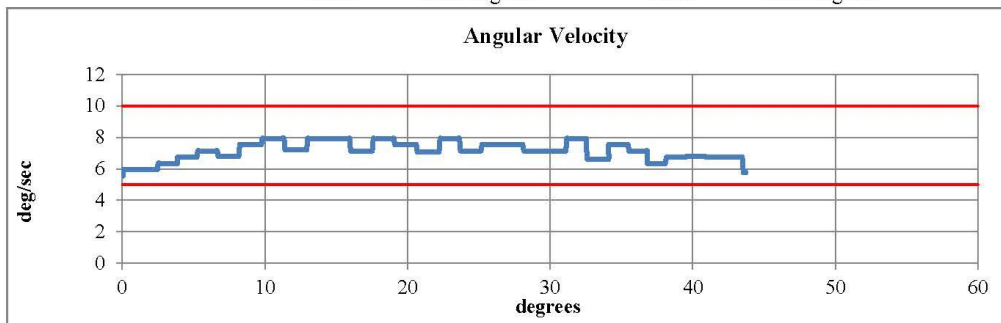


Serial Number: 037 Date: 16-Mar-2022
Side Tested: Right Hip Time: 14:31
Test Number: 1

TEST PARAMETER	SPECIFICATION		TEST RESULTS		
Temperature	18.9	- 25.6	21.6	°C	Pass
Humidity	10	- 70	33	%	Pass
Moment at 30°	0	≤ 94.9	94.76	N-m	Pass
Angle at 203 Nm	40	- 50	43.71	deg	Pass
Average Velocity	5	- 10	7.13	deg/sec	Pass



Max: 7.93 deg/sec Min: 5.55 deg/sec



Comments:

Pelvis S/N: EK3565

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 76-1
Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.109 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,727.79 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
Report Number: 037_H3F76

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03.16.2022 12:41:43 1755

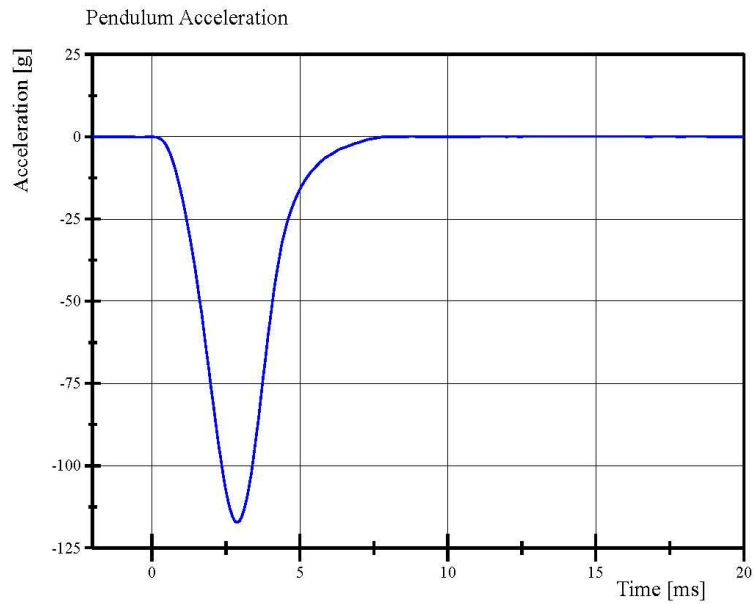


Transportation Research Center Inc.

Left Knee Femur Response Test

HIII 50th Serial No. 037 Certification No. 76-1

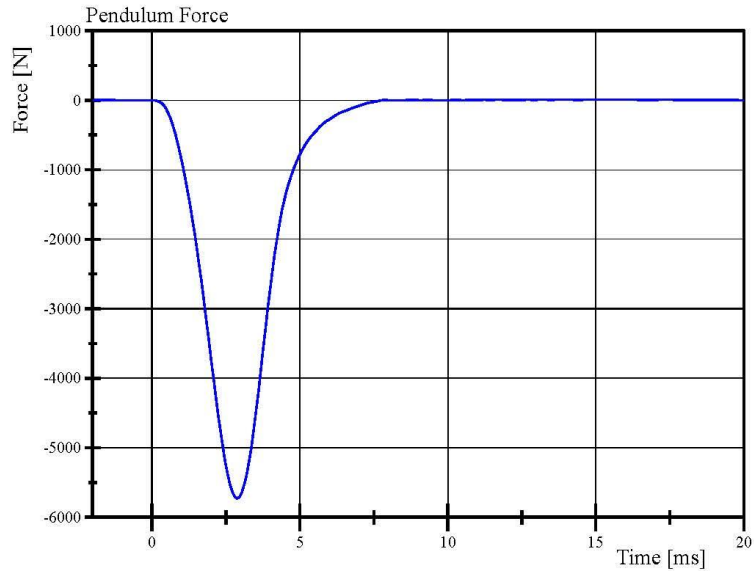
Test Date: 3/16/2022



Filter Class: CFC_600

Max: 0.1 g at 16.2 ms

Min: -117.3 g at 2.9 ms



Filter Class: CFC_600

Max: 7.2 N at 16.2 ms

Min: -5,727.8 N at 2.9 ms

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

03.16.2022 12:42:17 1755



Report Number: 037_H3F76

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Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 76-1
Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.105 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,563.42 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
Report Number: 037_H3F76

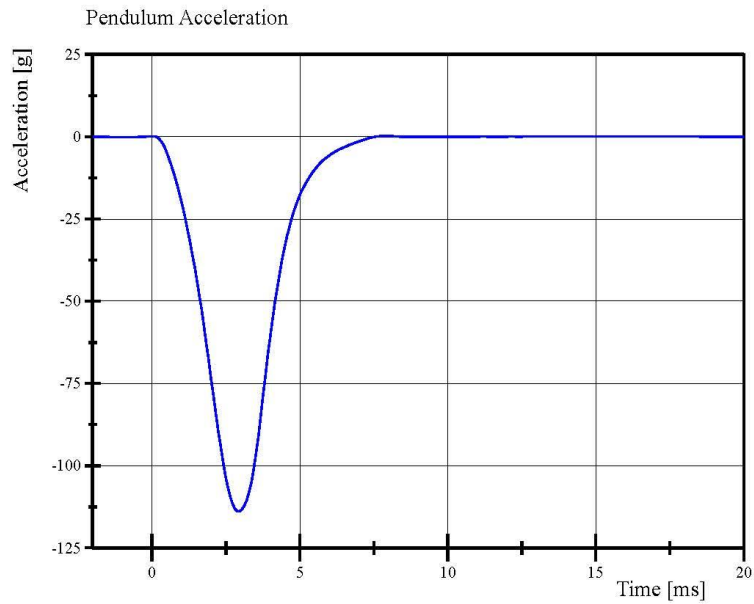
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03.16.2022 12:49:34 1760

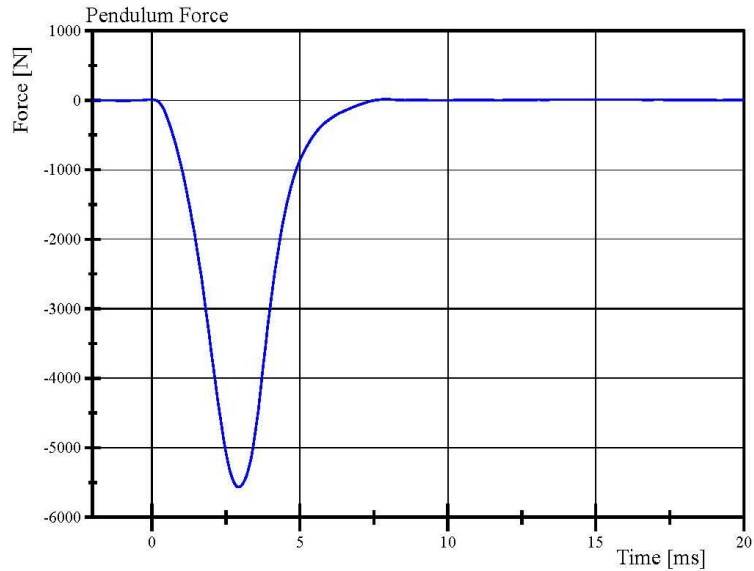


Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 76-1
Test Date: 3/16/2022



Filter Class: CFC_600
Max: 0.3 g at 7.9 ms
Min: -113.9 g at 3.0 ms



Filter Class: CFC_600
Max: 13.8 N at 7.9 ms
Min: -5,563.4 N at 3.0 ms

Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211
Report Number: 037_H3F76

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03.16.2022 12:50:15 1760



Post-Test Calibration Sheets

Driver S/N 037

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 037
Calibration No. 77

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	146	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	221	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	990	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. 77-1

Test Date: 5/10/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	225.5 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	5.9 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	2.64 %	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

Report Number: 037_H3F77

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05.10.2022 11:43:13 602

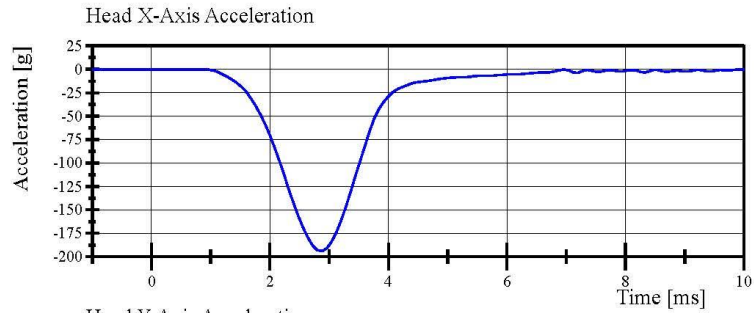


Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 037 Certification No. 77-1

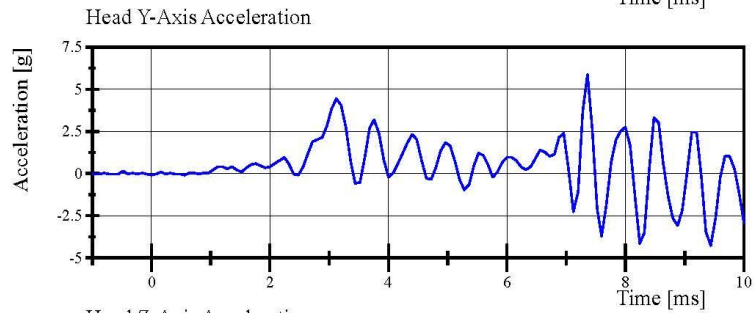
Test Date: 5/10/2022



Filter Class: CFC_1000

Max: 0.1 g at -0.5 ms

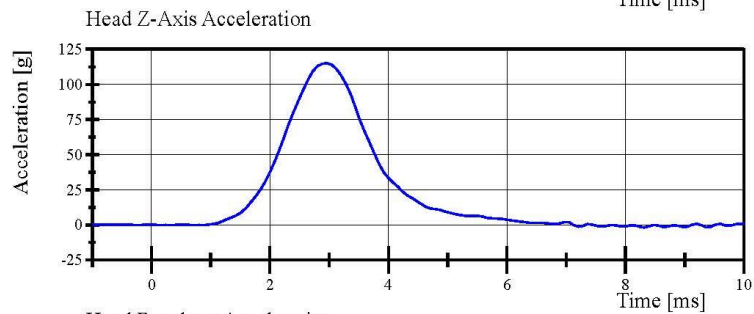
Min: -194.1 g at 2.9 ms



Filter Class: CFC_1000

Max: 5.9 g at 7.4 ms

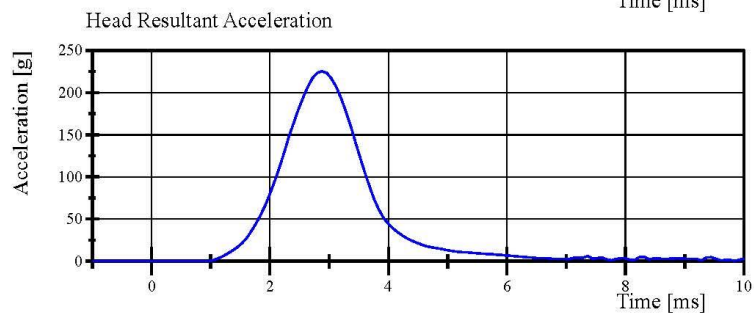
Min: -4.3 g at 9.4 ms



Filter Class: CFC_1000

Max: 115.2 g at 3.0 ms

Min: -1.9 g at 8.3 ms



Filter Class: CFC_1000

Max: 225.5 g at 2.9 ms

Min: 0.0 g at -0.3 ms

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

05.10.2022 11:57:38 602



Report Number: 037_H3F77

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Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 77-1

Test Date: 5/10/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.897 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	34.4 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-26.33 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-21.04 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-16.54 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-16.54 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-76.1 °	Yes
Time of Peak	57 - 64 ms	58.5 ms	Yes
Total Head D-Plane Rotation Decay to 0°	113 - 128 ms	123.5 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	96.49 N·m	Yes
Time of Peak	47 - 58 ms	49.5 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	97 - 107 ms	97.3 ms	Yes

Test meets specifications.

Condition: Used

Comments:

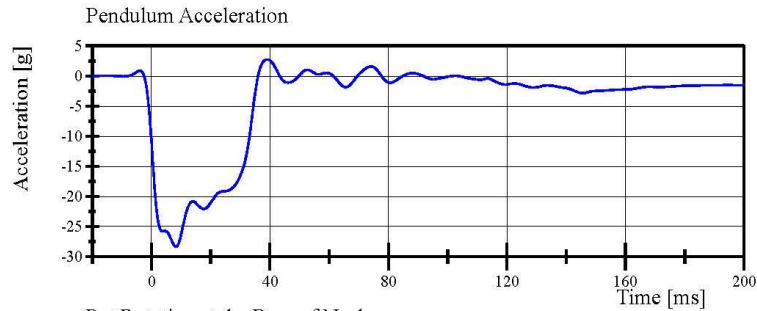
Neck S/N: 4728

Transportation Research Center Inc.

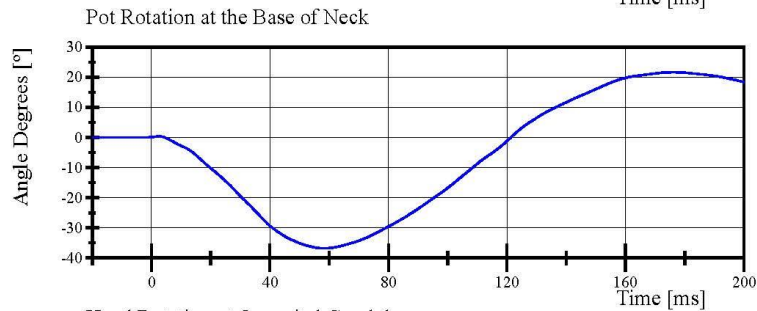
Neck Flexion

HIII 50th Serial No. 037 Certification No. 77-1

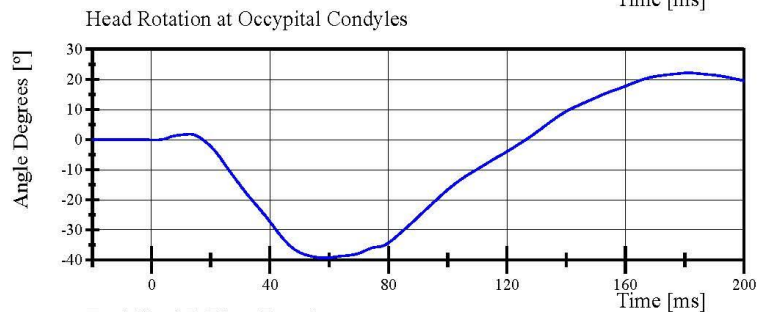
Test Date: 5/10/2022



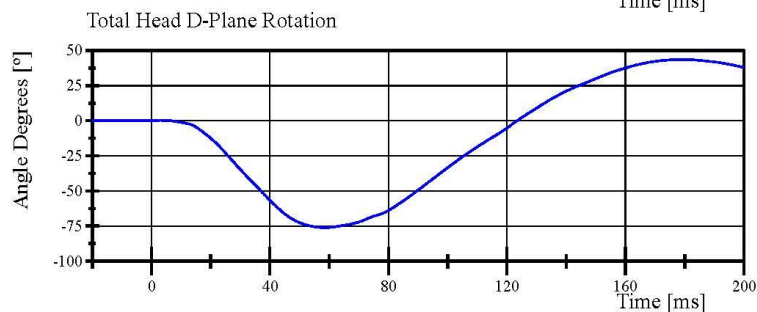
Filter Class: CFC_60
Max: 2.8 g at 39.1 ms
Min: -28.4 g at 8.3 ms



Filter Class: CFC_60
Max: 21.7 ° at 176.2 ms
Min: -36.9 ° at 58.3 ms



Filter Class: CFC_60
Max: 22.1 ° at 181.3 ms
Min: -39.3 ° at 58.7 ms



Filter Class: CFC_60
Max: 43.6 ° at 179.3 ms
Min: -76.1 ° at 58.5 ms

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

05.10.2022 13:56:36 1877



Report Number: 037_H3F77

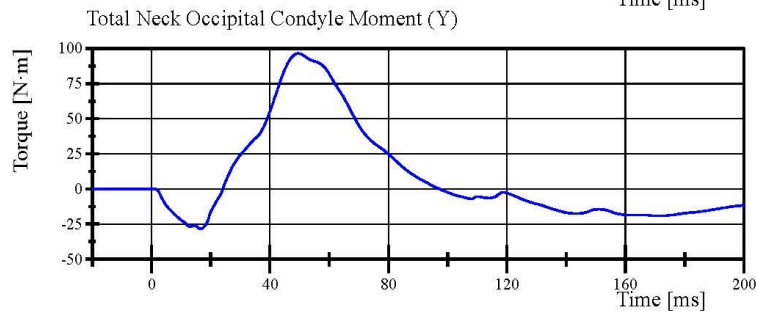
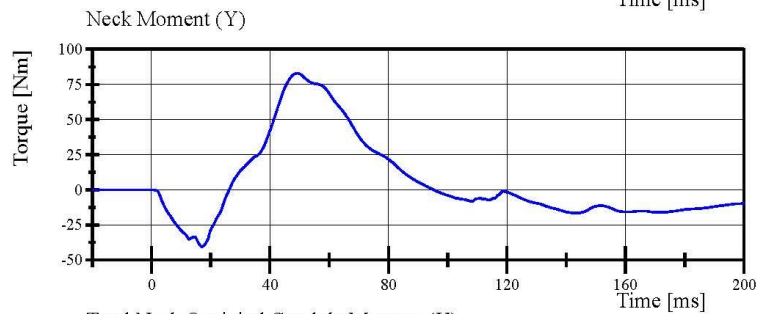
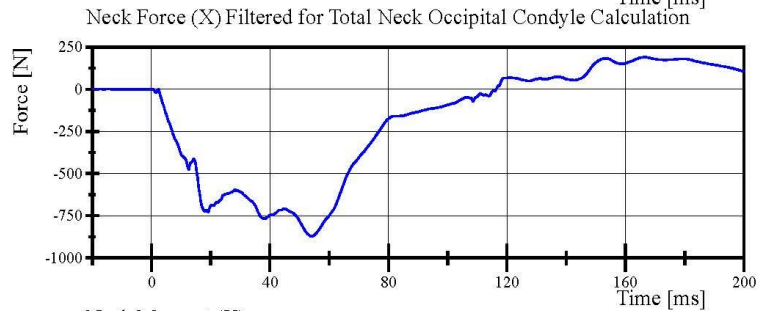
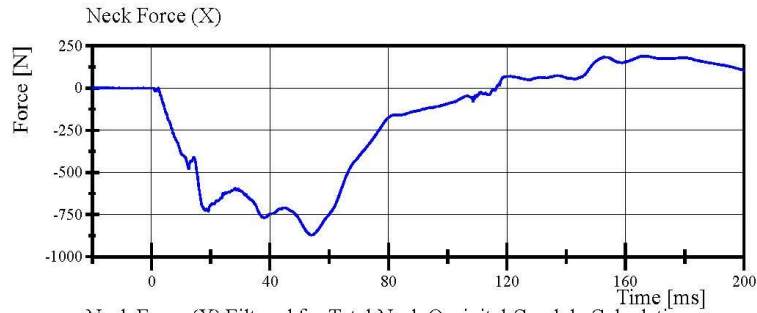
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Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 77-1

Test Date: 5/10/2022



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

Report Number: 037_H3F77

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05.10.2022 13:56:37 1877



Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 037 Certification No. 77-2

Test Date: 5/10/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.963 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	39.0 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	19.63 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	16.04 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	13.21 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	14.76 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	101.6 °	Yes
Time of Peak	72 - 82 ms	77.5 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	159.9 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-70.20 N·m	Yes
Time of Peak	65 - 79 ms	71.9 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	143.1 ms	Yes

Test meets specifications.

Condition: Used

Comments:

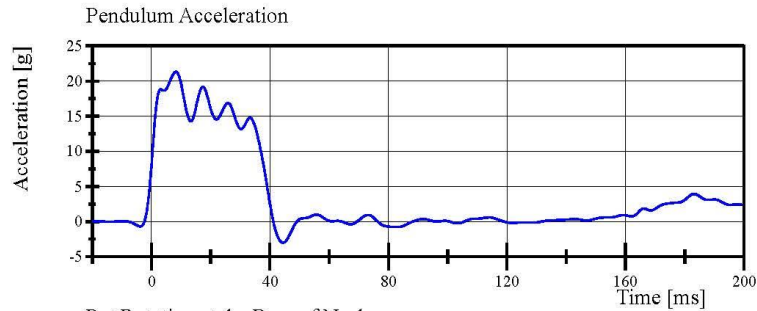
Neck S/N: 4728

Transportation Research Center Inc.

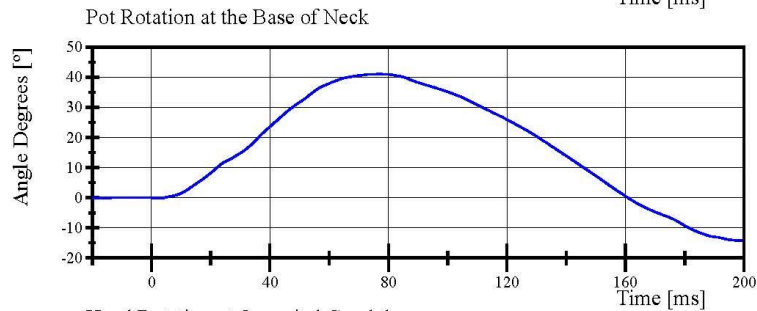
Neck Extension

HIII 50th Serial No. 037 Certification No. 77-2

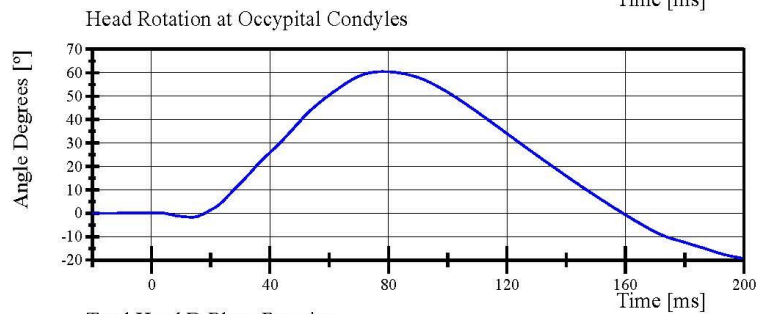
Test Date: 5/10/2022



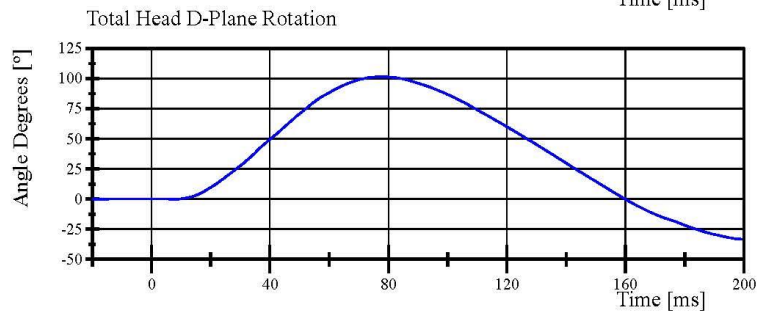
Filter Class: CFC_60
Max: 21.3 g at 8.3 ms
Min: -3.0 g at 44.4 ms



Filter Class: CFC_60
Max: 41.1 ° at 77.1 ms
Min: -14.2 ° at 199.3 ms



Filter Class: CFC_60
Max: 60.5 ° at 77.9 ms
Min: -19.2 ° at 199.3 ms



Filter Class: CFC_60
Max: 101.6 ° at 77.5 ms
Min: -33.4 ° at 199.3 ms

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

05.10.2022 15:10:52 2014



Report Number: 037_H3F77

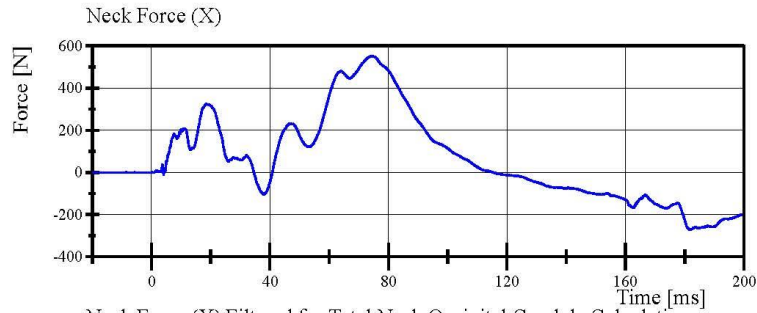
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Transportation Research Center Inc.

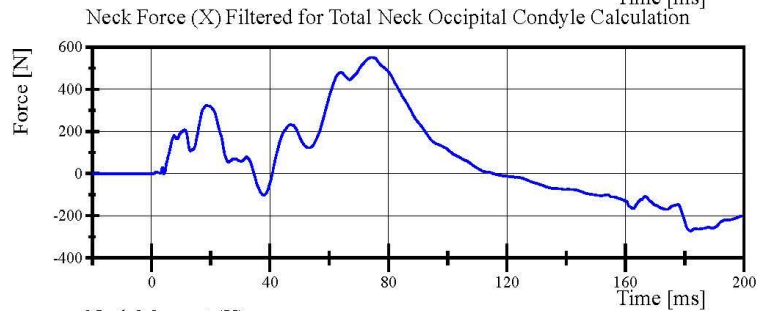
Neck Extension

HIII 50th Serial No. 037 Certification No. 77-2

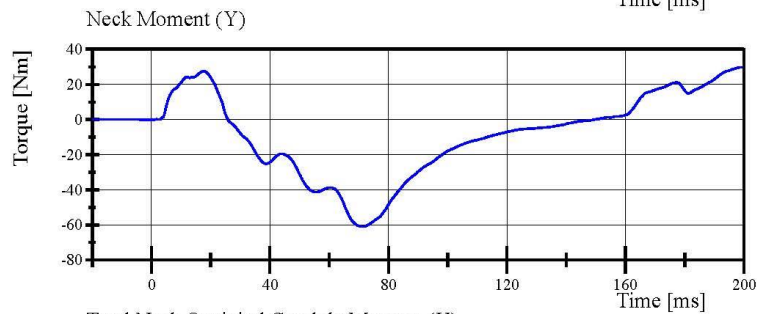
Test Date: 5/10/2022



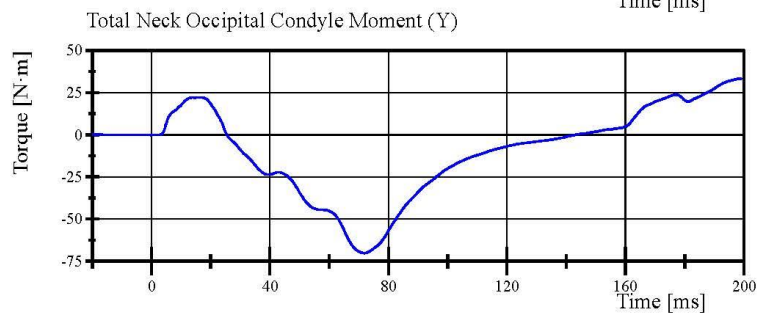
Filter Class: CFC_1000
Max: 551.6 N at 74.3 ms
Min: -273.0 N at 181.8 ms



Filter Class: CFC_600
Max: 551.0 N at 74.4 ms
Min: -272.2 N at 181.9 ms



Filter Class: CFC_600
Max: 29.9 Nm at 199.3 ms
Min: -60.9 Nm at 71.6 ms



Filter Class: Without_(Constar
Max: 33.4 N·m at 199.3 ms
Min: -70.2 N·m at 71.9 ms

Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211
Report Number: 037_H3F77

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05.10.2022 15:10:52 2014



Transportation Research Center Inc.

Front Thorax

IIII 50th Serial No. 037 Certification No. 77-1

Test Date: 5/10/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.610 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,429.1 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-67.75 mm	Yes
Internal Hysteresis	69 - 85 %	71.8 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: 2565

Rib Set S/N: 02033121A

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

Report Number: 037_H3F77

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05.10.2022 10:58:58.443

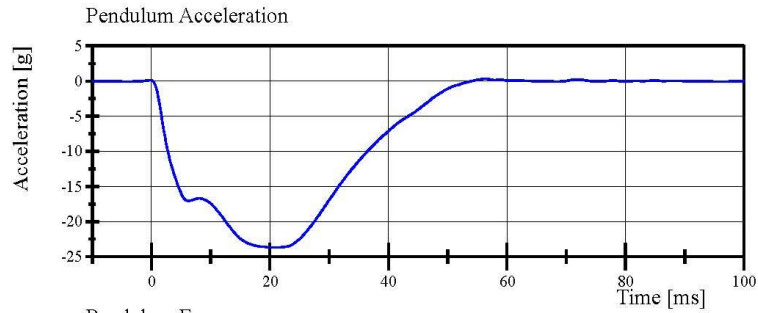


Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 037 Certification No. 77-1

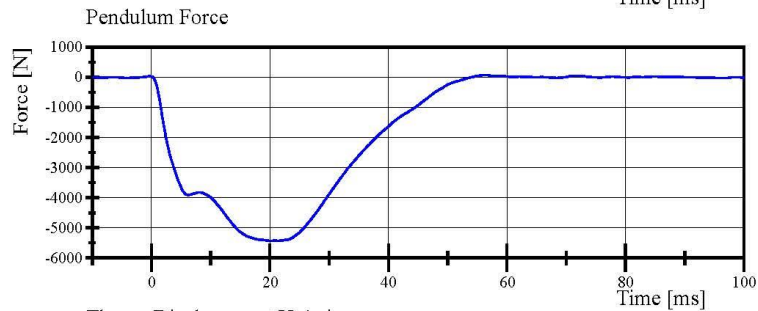
Test Date: 5/10/2022



Filter Class: CFC_180

Max: 0.3 g at 56.3 ms

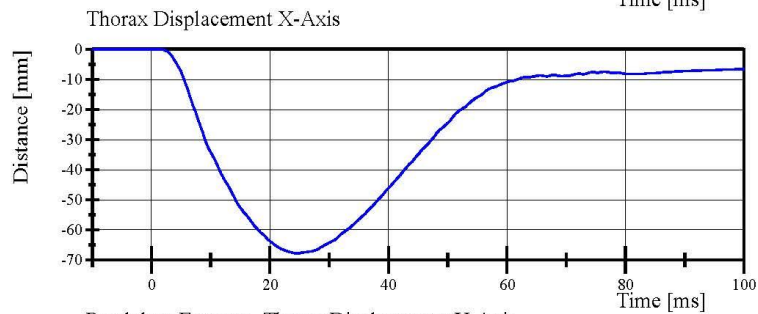
Min: -23.7 g at 20.1 ms



Filter Class: CFC_180

Max: 77.7 N at 56.3 ms

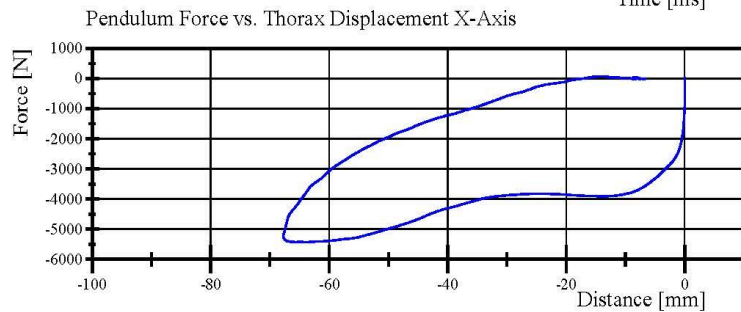
Min: -5,429.1 N at 20.1 ms



Filter Class: CFC_600

Max: 0.0 mm at -7.0 ms

Min: -67.8 mm at 24.6 ms



Filter Class: CFC_180

Max: 77.7 N at -14.0 mm

Min: -5,429.1 N at -63.8 mm

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

05.10.2022 10:59:50.443

Report Number: 037_H3F77

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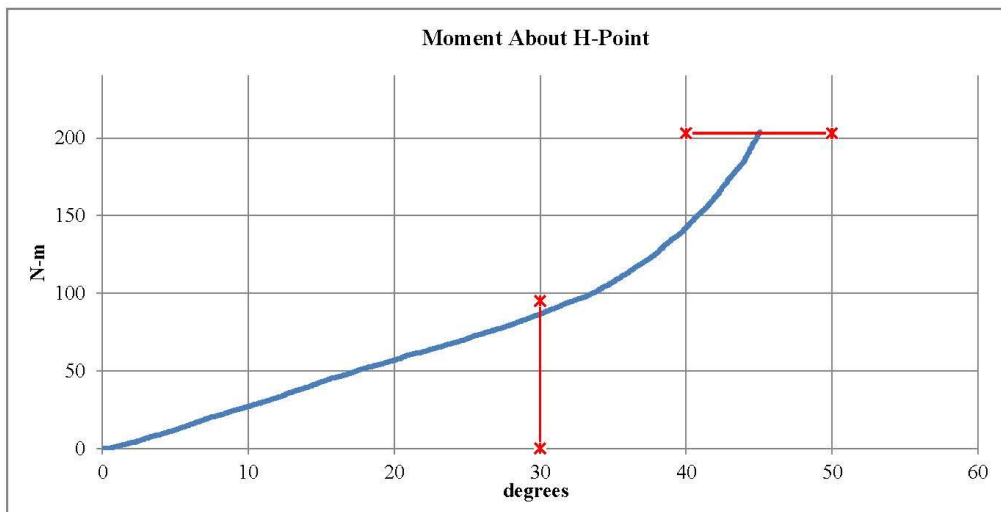
Transportation Research Center Inc.

Hybrid III 50th Male Hip Range of Motion

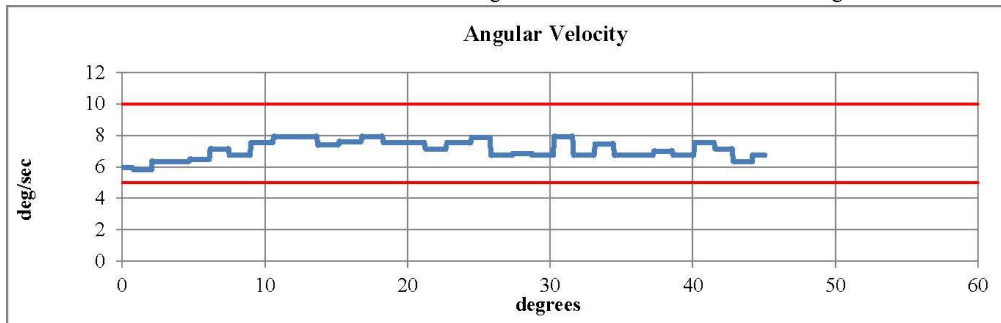


Serial Number: 037 Date: 10-May-2022
Side Tested: Left Hip Time: 13:25
Test Number: 1

TEST PARAMETER	SPECIFICATION		TEST RESULTS		
Temperature	18.9	- 25.6	20.8	°C	Pass
Humidity	10	- 70	42	%	Pass
Moment at 30°	0	≤ 94.9	86.81	N-m	Pass
Angle at 203 Nm	40	- 50	45.06	deg	Pass
Average Velocity	5	- 10	7.09	deg/sec	Pass



Max: 7.93 deg/sec Min: 5.82 deg/sec



Comments:
Pelvis S/N: EK3565

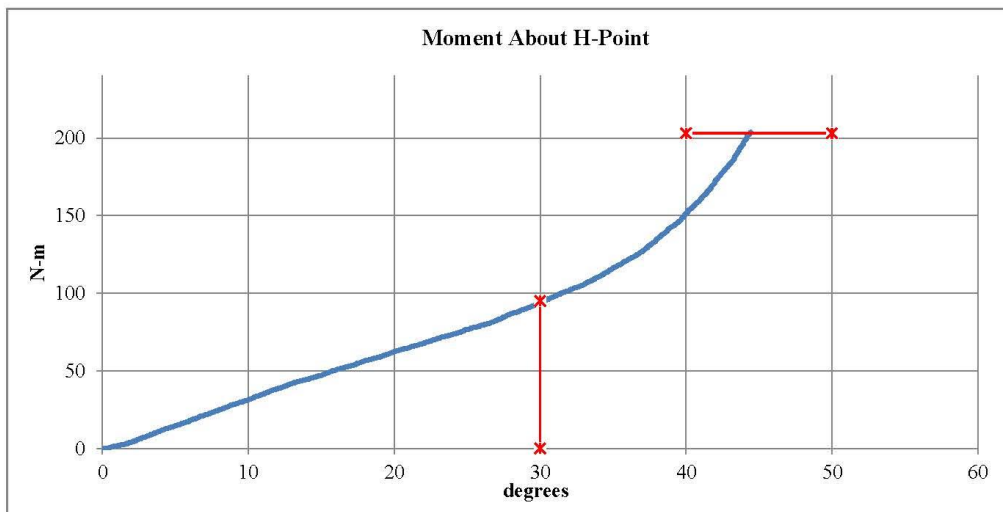
Transportation Research Center Inc.

Hybrid III 50th Male Hip Range of Motion

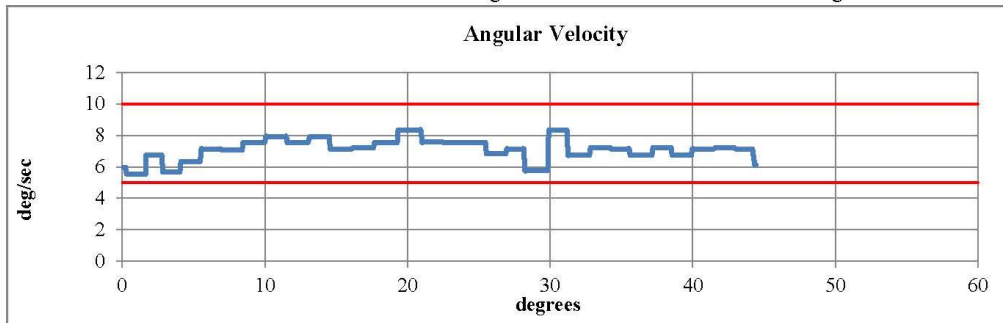


Serial Number: 037 Date: 10-May-2022
Side Tested: Right Hip Time: 14:12
Test Number: 1

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21	°C	Pass
Humidity	10	-	70	48	%	Pass
Moment at 30°	0	≤	94.9	94.27	N-m	Pass
Angle at 203 Nm	40	-	50	44.43	deg	Pass
Average Velocity	5	-	10	7.11	deg/sec	Pass



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



Comments:

Pelvis S/N: EK3565

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 77-1
Test Date: 5/10/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.121 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,764.77 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
Report Number: 037_H3F77

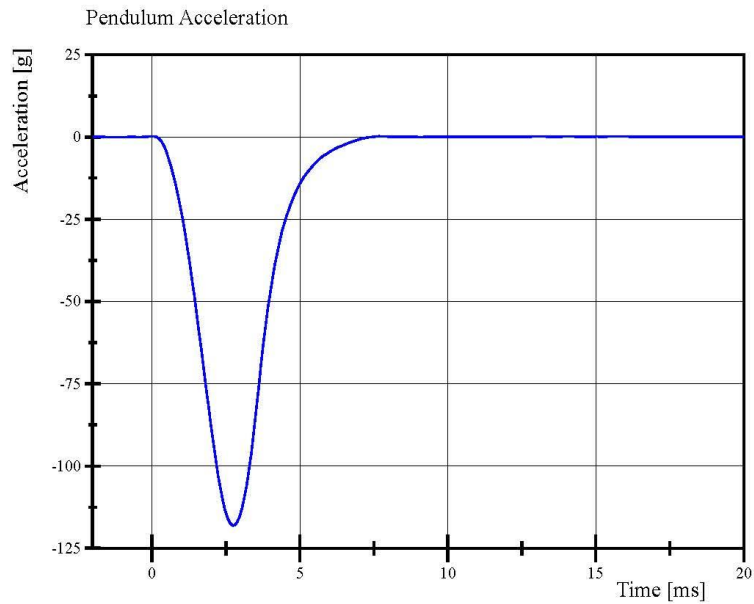
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05.10.2022 11:13:39 1681

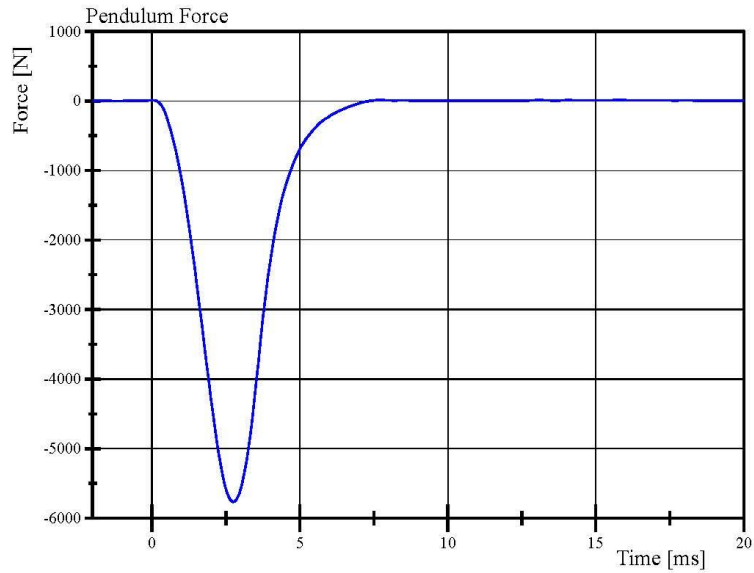


Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 77-1
Test Date: 5/10/2022



Filter Class: CFC_600
Max: 0.2 g at 7.7 ms
Min: -118.0 g at 2.7 ms



Filter Class: CFC_600
Max: 10.6 N at 7.7 ms
Min: -5,764.8 N at 2.7 ms

Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211
Report Number: 037_H3F77

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05.10.2022 11:14:20 1681



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 77-1
Test Date: 5/10/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.121 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,519.10 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
Report Number: 037_H3F77

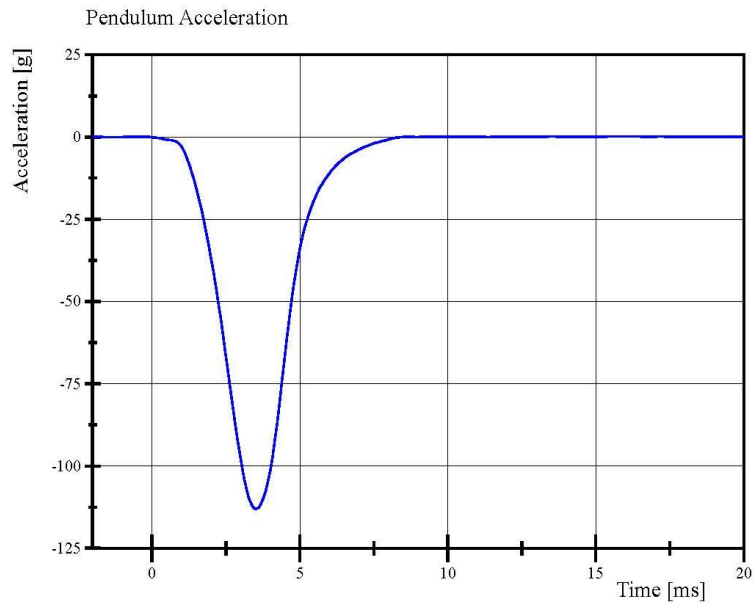
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05.10.2022 11:18:22 1669

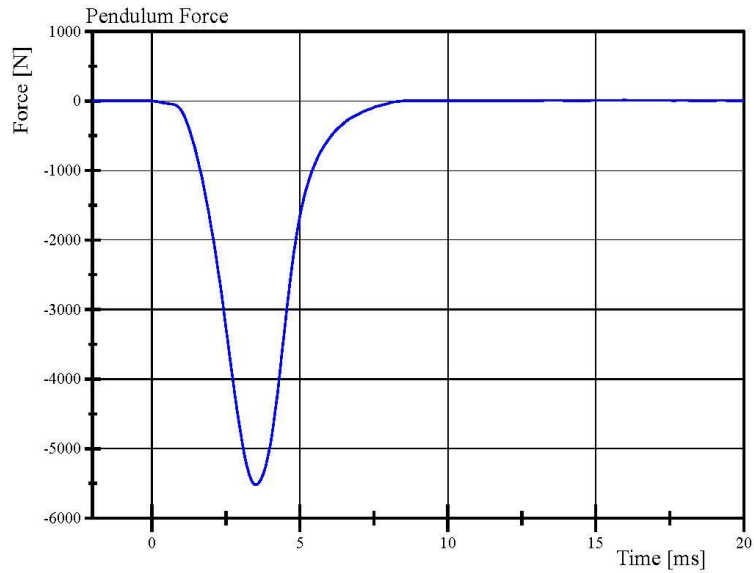


Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 77-1
Test Date: 5/10/2022



Filter Class: CFC_600
Max: 0.2 g at 16.0 ms
Min: -113.0 g at 3.5 ms



Filter Class: CFC_600
Max: 8.5 N at 16.0 ms
Min: -5,519.1 N at 3.5 ms

Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211
Report Number: 037_H3F77

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Pre-Test Calibration Sheets

Driver S/N EB7513

Transportation Research Center Inc.
5720 HIII 5th Dummy
External Dimensions
Serial No. EB7513 Calibration No. 19

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	85	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	130	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	198	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	359	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	183	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	306	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	867	Yes
Z	Waist Circumference	759.5 - 789.9	775	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

Revised 8/10/12



Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Front Head Drop

HIII 5th Serial No. EB7513 Certification No. 19-1

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	262.1 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	6.0 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	5.24 %	Yes

Test meets specifications.

Condition: Used

Comments:

Head Skin S/N: EA8751

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

Report Number: EB7513_HFH19

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03.16.2022 09:27:47 613

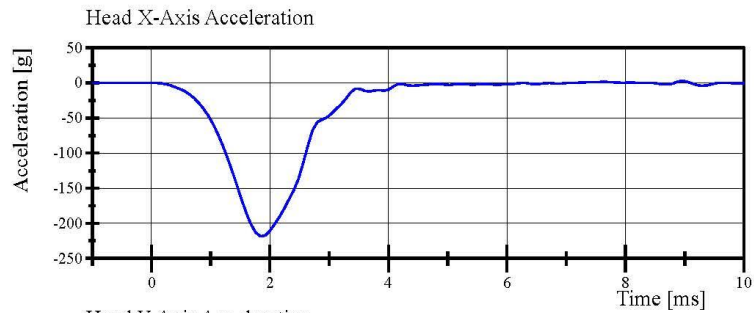


Transportation Research Center Inc.

Front Head Drop

HIII 5th Serial No. EB7513 Certification No. 19-1

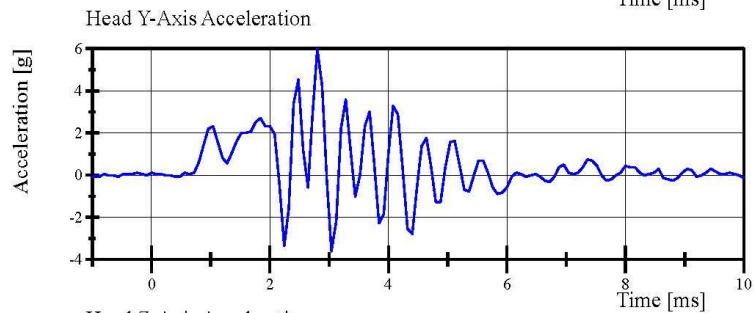
Test Date: 3/16/2022



Filter Class: CFC_1000

Max: 2.9 g at 9.0 ms

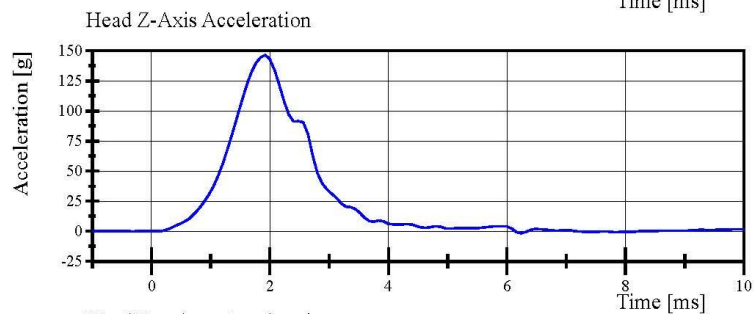
Min: -218.6 g at 1.8 ms



Filter Class: CFC_1000

Max: 6.0 g at 2.8 ms

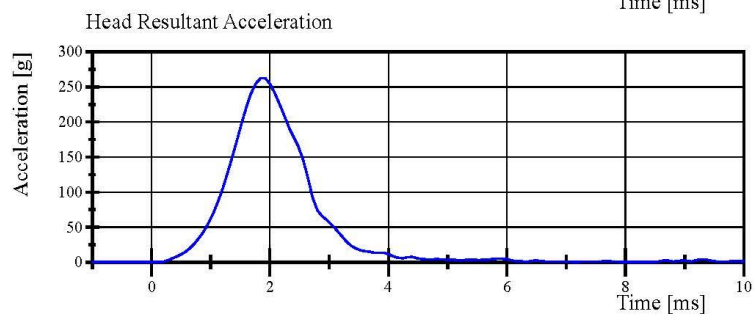
Min: -3.6 g at 3.0 ms



Filter Class: CFC_1000

Max: 146.3 g at 1.9 ms

Min: -1.7 g at 6.2 ms



Filter Class: CFC_1000

Max: 262.1 g at 1.9 ms

Min: 0.0 g at -0.6 ms

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

03.16.2022 09:28:19 613



Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 19-1

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.057 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.49 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	(-4.0) - (-5.0) m/s	-4.92 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	(-5.8) - (-7.0) m/s	-6.99 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-88.5 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	72.4 N·m	Yes
Total Neck Occipital Condyles Moment Decay to 10 N·m	80 - 100 ms	88.5 ms	Yes

Test meets specifications.

Condition: Used

Comments:

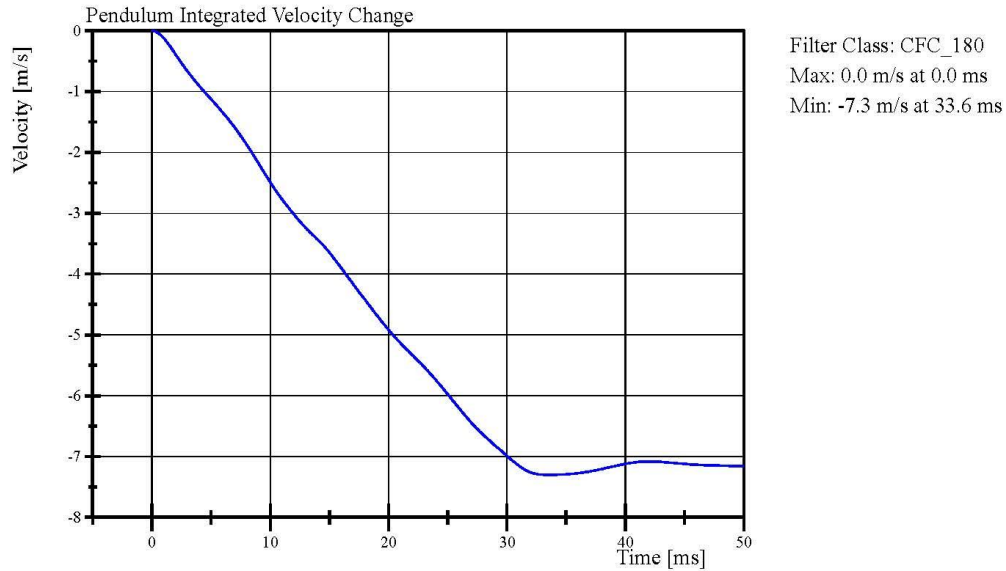
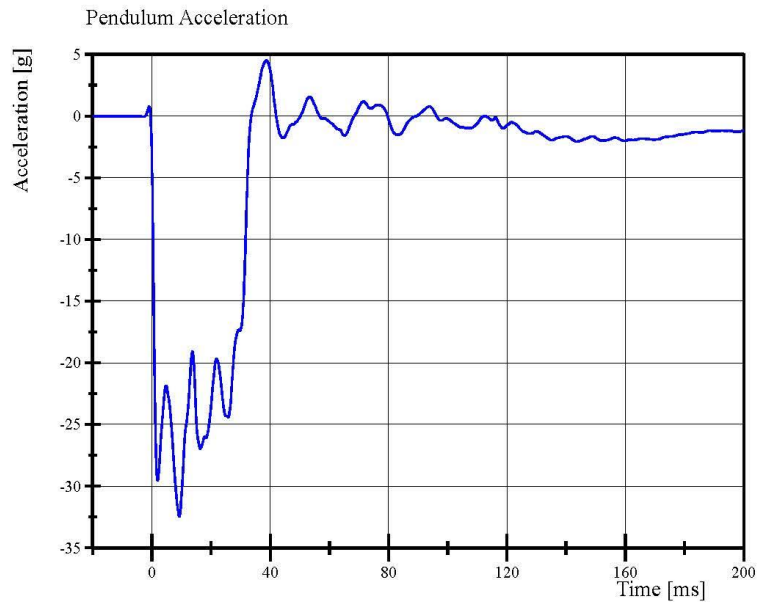
Neck S/N: EB6930

Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 19-1

Test Date: 3/16/2022



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

03.16.2022 09:45:46 1850



Report Number: EB7513_HFH19

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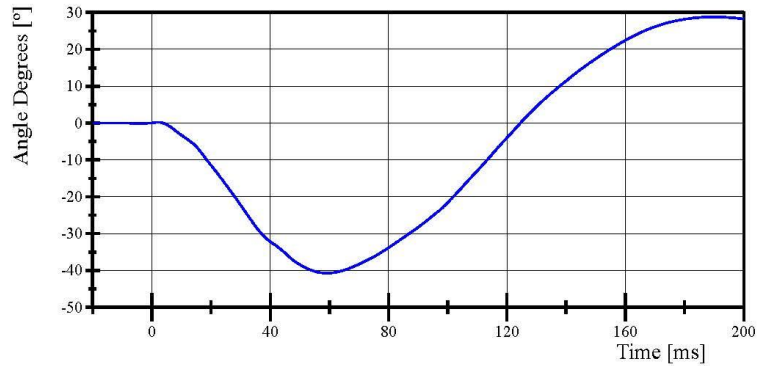
Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 19-1

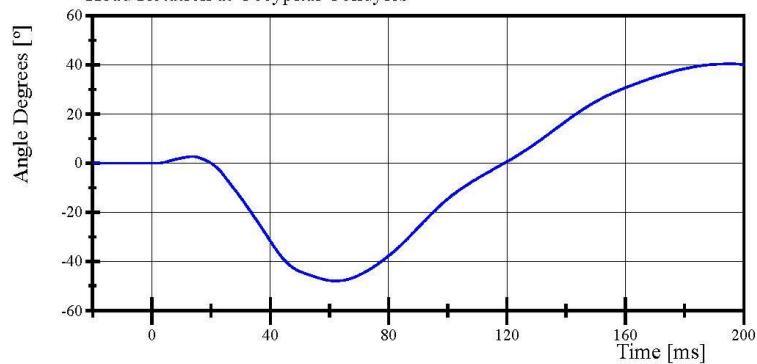
Test Date: 3/16/2022

Pot Rotation at the Base of Neck



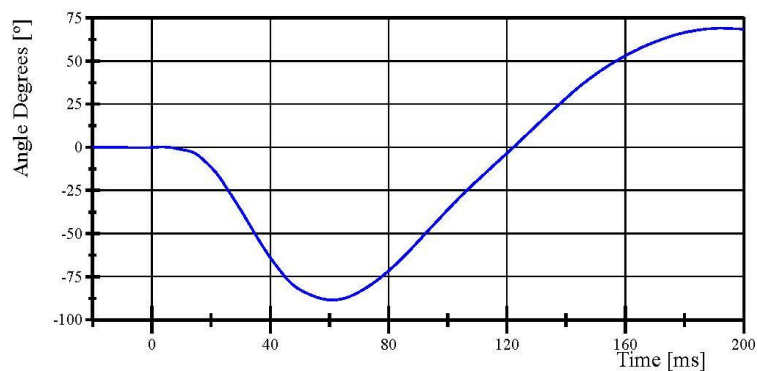
Filter Class: CFC_60
Max: 28.9 ° at 190.2 ms
Min: -40.7 ° at 59.2 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 40.4 ° at 195.3 ms
Min: -47.9 ° at 62.1 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 69.1 ° at 192.1 ms
Min: -88.5 ° at 60.9 ms

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

03.16.2022 09:45:46 1850



Report Number: EB7513_HFH19

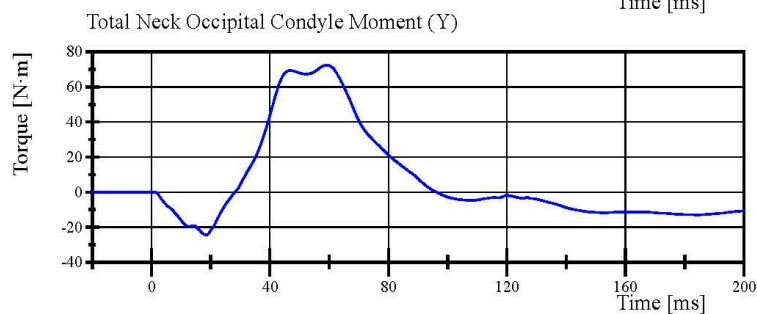
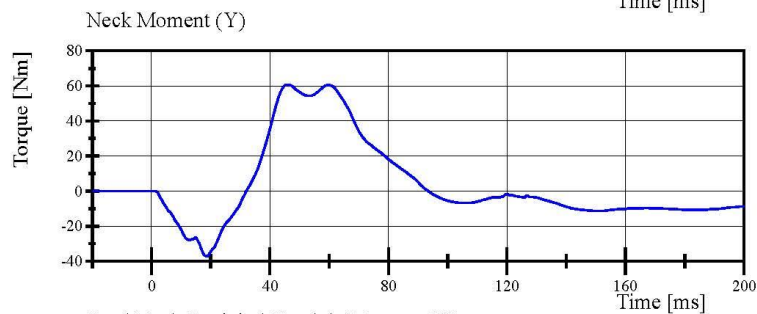
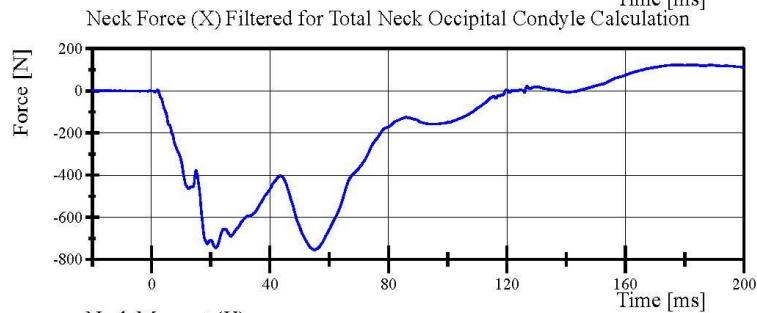
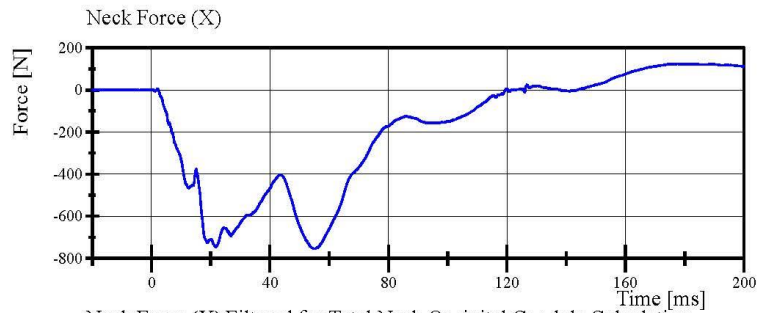
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Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 19-1

Test Date: 3/16/2022



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

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Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 19-2

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.042 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.82 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	3.1 - 3.9 m/s	3.66 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	4.6 - 5.6 m/s	5.37 m/s	Yes
Total Head D-Plane Rotation	99 - 114 °	113.3 °	Yes
Total Neck Occipital Condyles Moment Between 99° and 114° Rotation	(-53) - (-65) N·m	-60.5 N·m	Yes
Total Neck Occipital Condyles Moment Decay to -10 N·m	94 - 114 ms	105.3 ms	Yes

Test meets specifications.

Condition: Used

Comments:

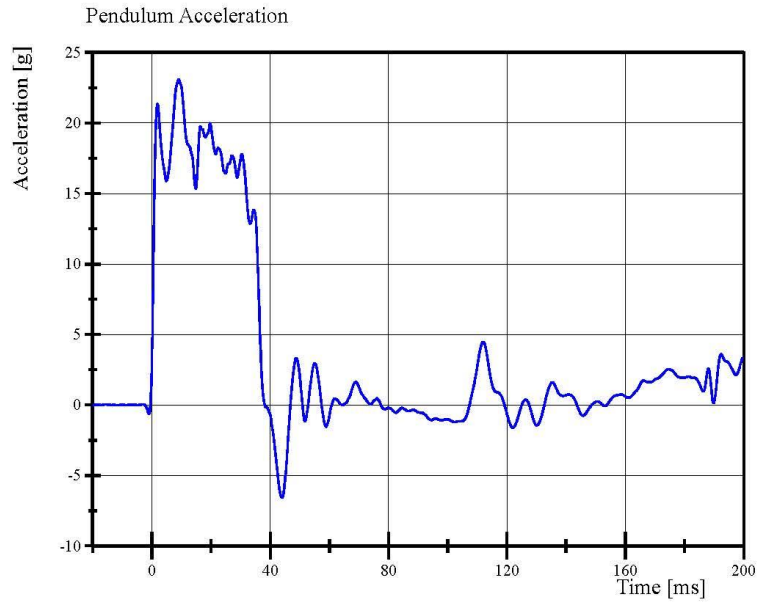
Neck S/N: EB6930

Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 19-2

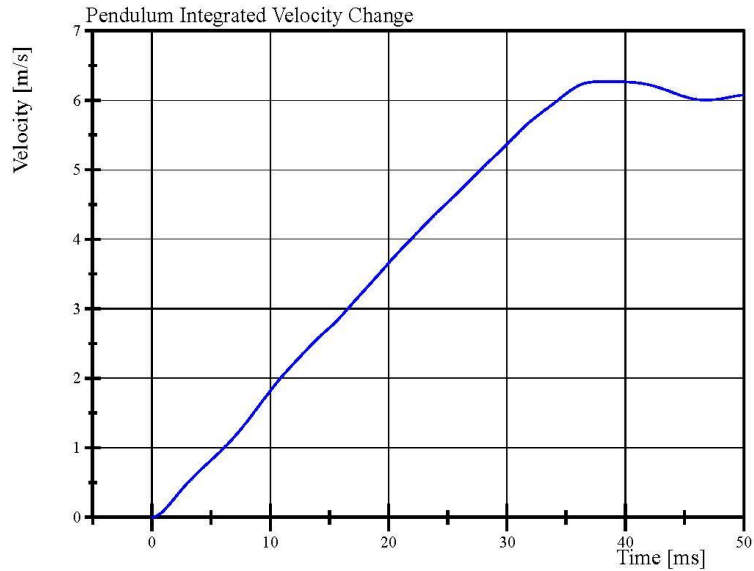
Test Date: 3/16/2022



Filter Class: CFC_180

Max: 23.1 g at 9.1 ms

Min: -6.6 g at 44.0 ms



Filter Class: CFC_180

Max: 6.3 m/s at 38.1 ms

Min: 0.0 m/s at 0.0 ms

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

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Report Number: EB7513_HFH19

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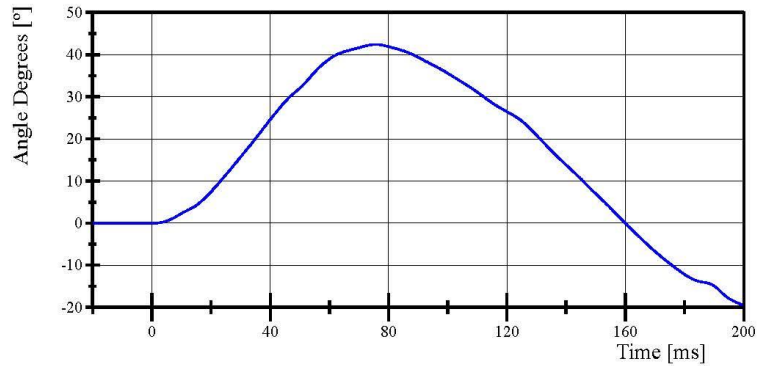
Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 19-2

Test Date: 3/16/2022

Pot Rotation at the Base of Neck

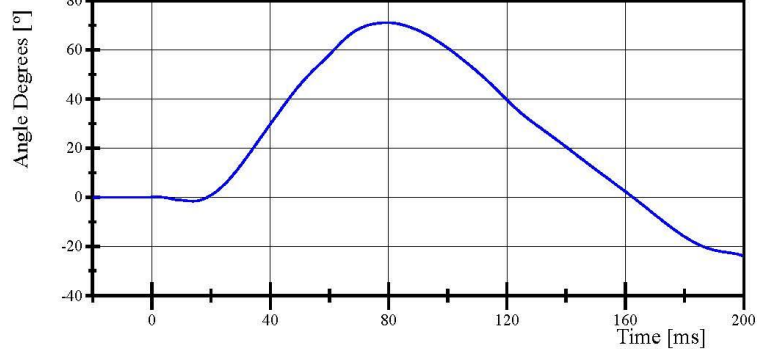


Filter Class: CFC_60

Max: 42.4 ° at 75.8 ms

Min: -19.5 ° at 199.7 ms

Head Rotation at Occypital Condyles

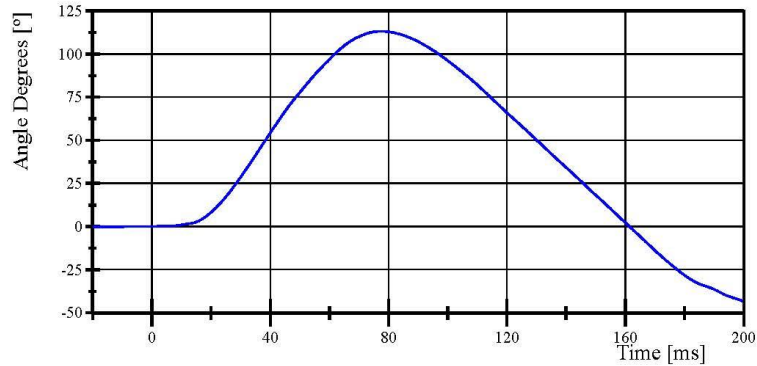


Filter Class: CFC_60

Max: 71.1 ° at 79.5 ms

Min: -23.7 ° at 199.7 ms

Total Head D-Plane Rotation



Filter Class: CFC_60

Max: 113.3 ° at 77.5 ms

Min: -43.3 ° at 199.7 ms

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

03.16.2022 11:15:22 2007



Report Number: EB7513_HFH19

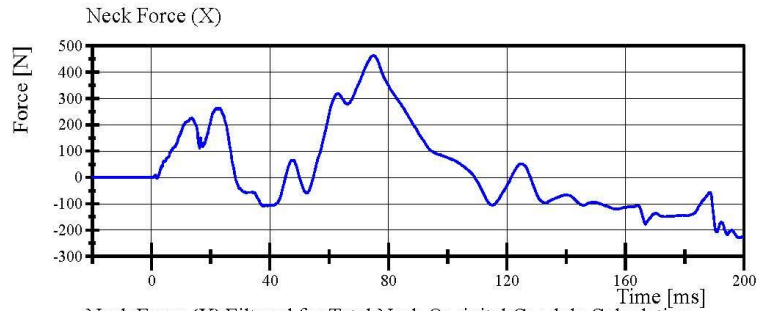
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Transportation Research Center Inc.

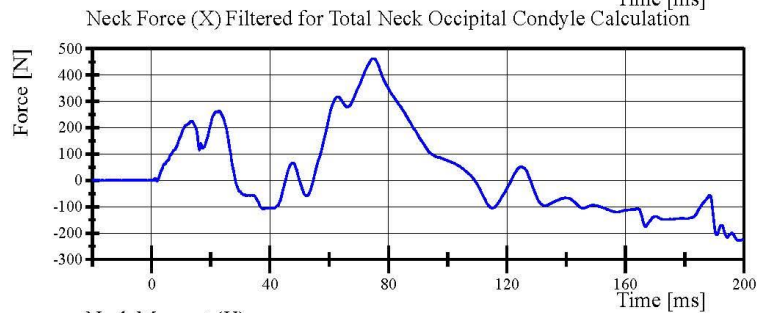
Neck Extension

HIII 5th Serial No. EB7513 Certification No. 19-2

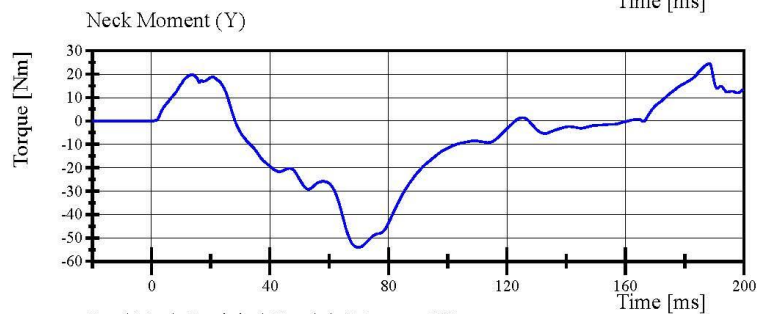
Test Date: 3/16/2022



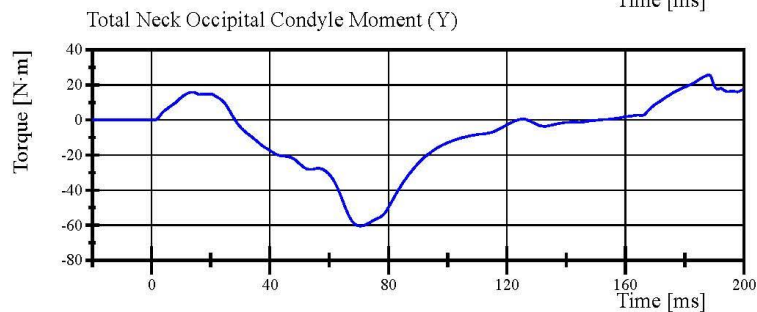
Filter Class: CFC_1000
Max: 463.5 N at 75.0 ms
Min: -229.7 N at 198.3 ms



Filter Class: CFC_600
Max: 463.2 N at 75.0 ms
Min: -228.9 N at 198.3 ms



Filter Class: CFC_600
Max: 24.6 Nm at 188.2 ms
Min: -54.1 Nm at 69.9 ms



Filter Class: Without_(Constar
Max: 25.6 N·m at 188.1 ms
Min: -60.5 N·m at 70.6 ms

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

03.16.2022 11:15:23 2007



Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Front Thorax

HIII 5th Serial No. EB7513 Certification No. 19-1

Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.796 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,226.3 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,341.3 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-51.4 mm	Yes
Internal Hysteresis	69 - 85 %	75.8 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: DZ8735

Rib Set S/N: EB7630

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

Report Number: EB7513_HFH19

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03.16.2022 08:12:23 454

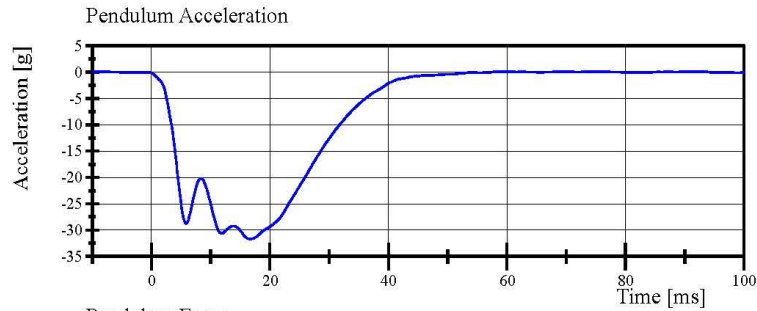


Transportation Research Center Inc.

Front Thorax

HIII 5th Serial No. EB7513 Certification No. 19-1

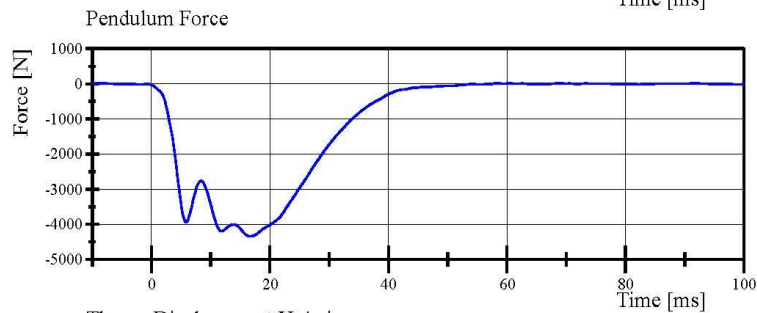
Test Date: 3/16/2022



Filter Class: CFC_180

Max: 0.1 g at 91.7 ms

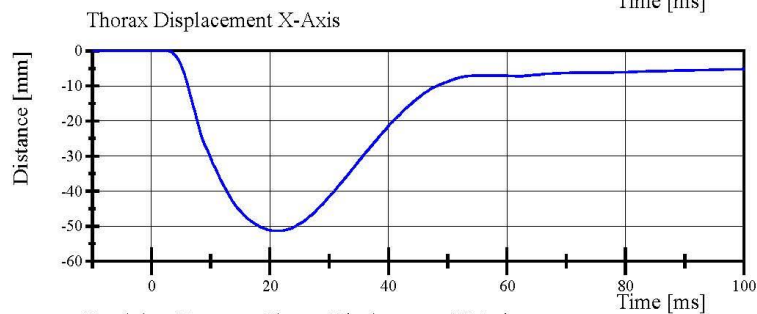
Min: -31.7 g at 16.7 ms



Filter Class: CFC_180

Max: 16.6 N at 91.7 ms

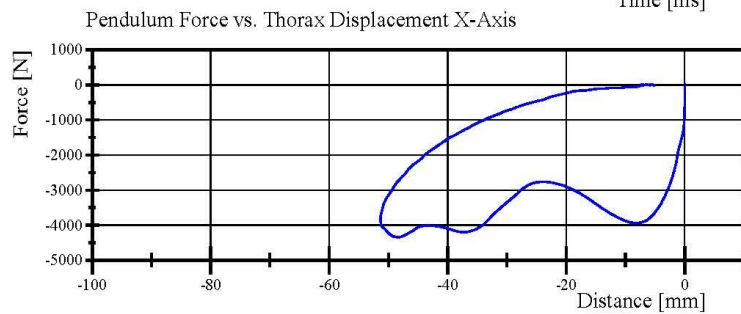
Min: -4,341.3 N at 16.7 ms



Filter Class: CFC_600

Max: 0.0 mm at -8.6 ms

Min: -51.4 mm at 21.7 ms



Filter Class: CFC_180

Max: 16.6 N at -5.5 mm

Min: -4,341.3 N at -48.4 mm

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

03.16.2022 08:13:07 454

Report Number: EB7513_HFH19

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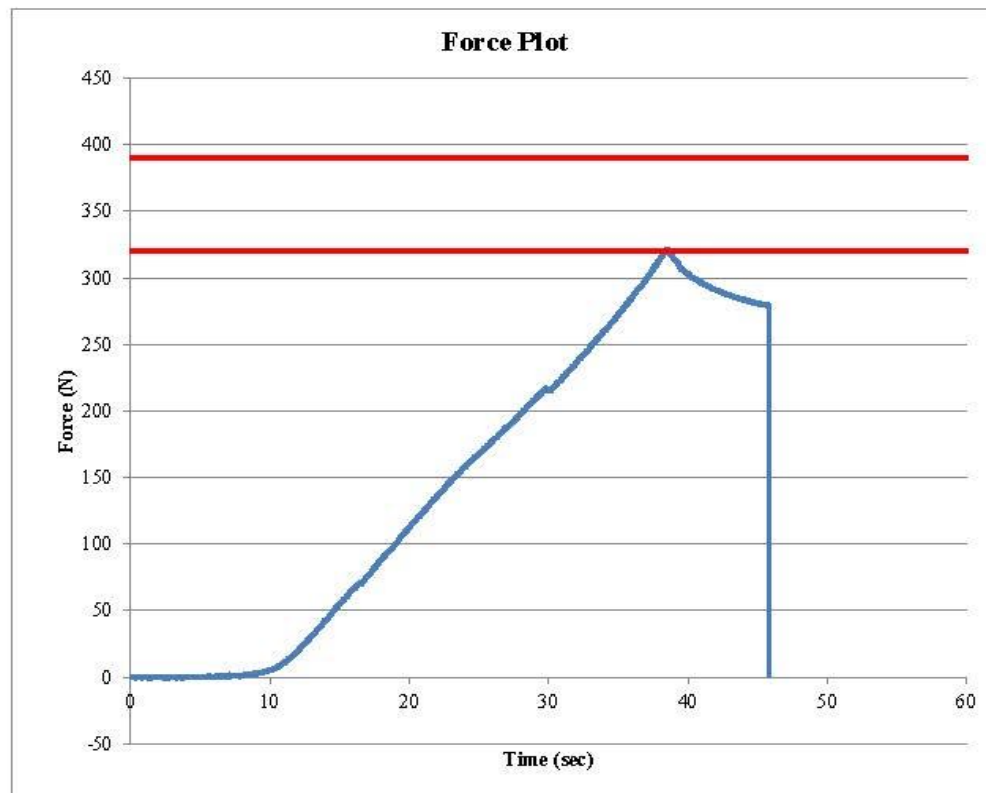
Transportation Research Center Inc.

Hybrid III Small Female Torso Flexion



Customer: NHTSA
 Serial Number: EB7513 Date: 3/16/2022
 Test Number: 1 Time: 8:33

TEST PARAMETER	SPECIFICATION		TEST RESULTS		
Temperature	18.9	- 25.6	21.6	°C	Pass
Humidity	10	- 70	30	%	Pass
Average Angular Velocity	0.5	- 1.5	1.01	deg/sec	Pass
Initial Angle	0	- 20	15.39	deg	Pass
Peak Force at 45.03°	320	- 390	321.17	N	Pass
Final Angle	-8	- 8	3.83	deg	Pass



Comments:
 Jacket S/N: DZ8735
 Abdomen S/N: EB8206
 Pelvis S/N: EB7866
 Lumbar S/N: DM6157

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 19-1
Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.090 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,839.4 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EB7773

Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH19

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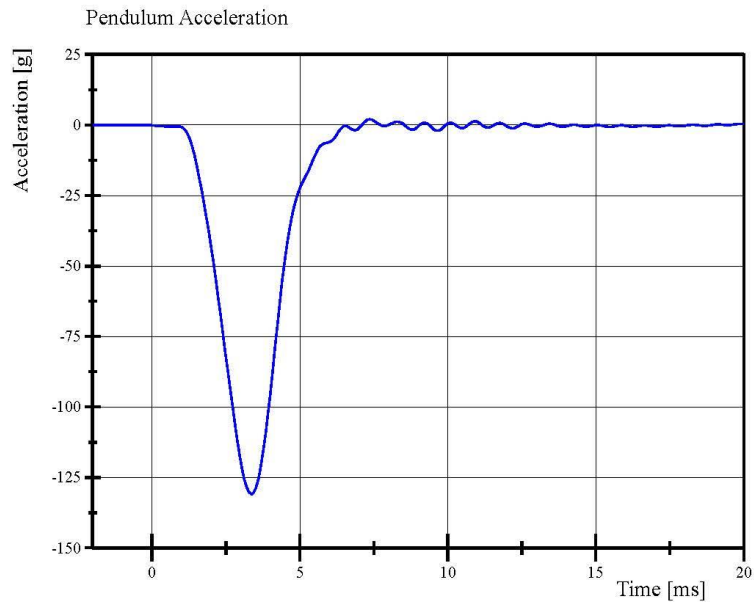


Transportation Research Center Inc.

Left Knee Femur Response Test

HIII 5th Serial No. EB7513 Certification No. 19-1

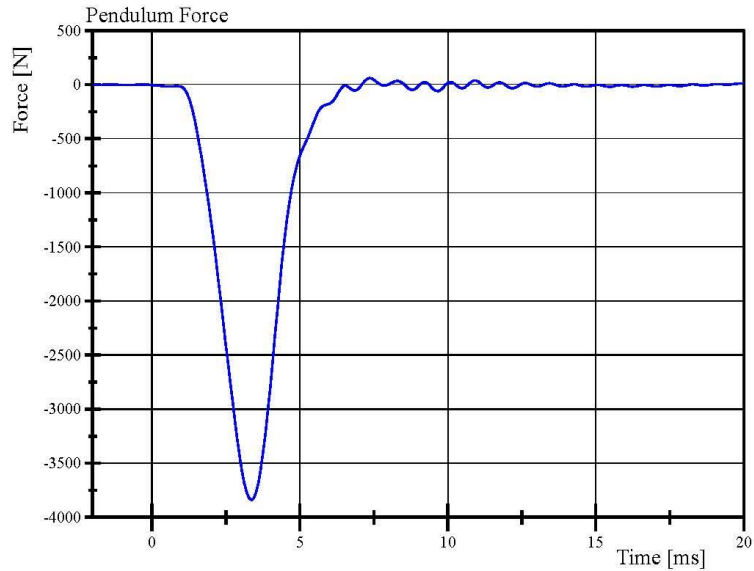
Test Date: 3/16/2022



Filter Class: CFC_600

Max: 2.1 g at 7.4 ms

Min: -130.9 g at 3.4 ms



Filter Class: CFC_600

Max: 61.5 N at 7.4 ms

Min: -3,839.4 N at 3.4 ms

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

Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 19-1
Test Date: 3/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.090 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-4,052.2 N	Yes

Test meets specifications.

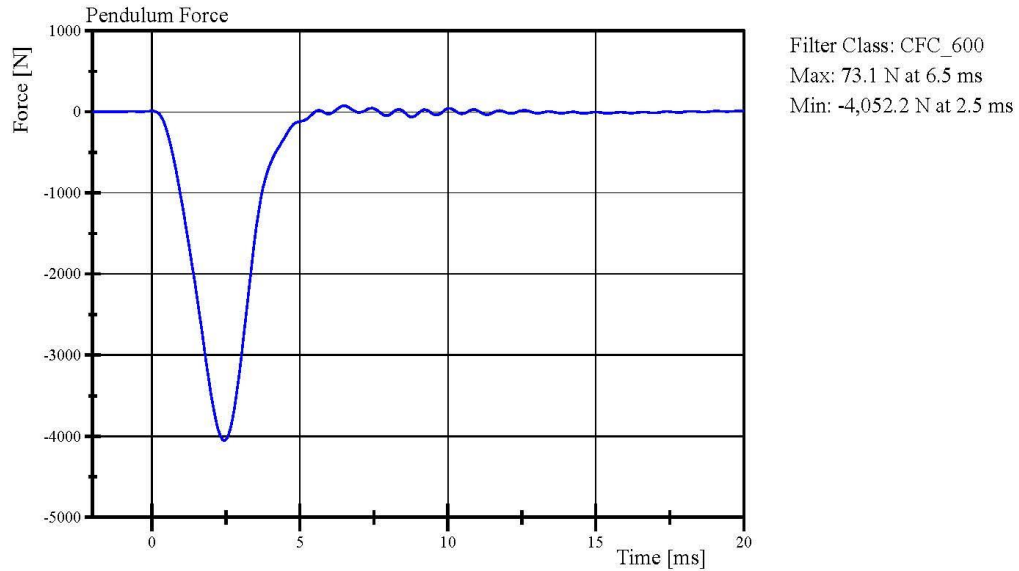
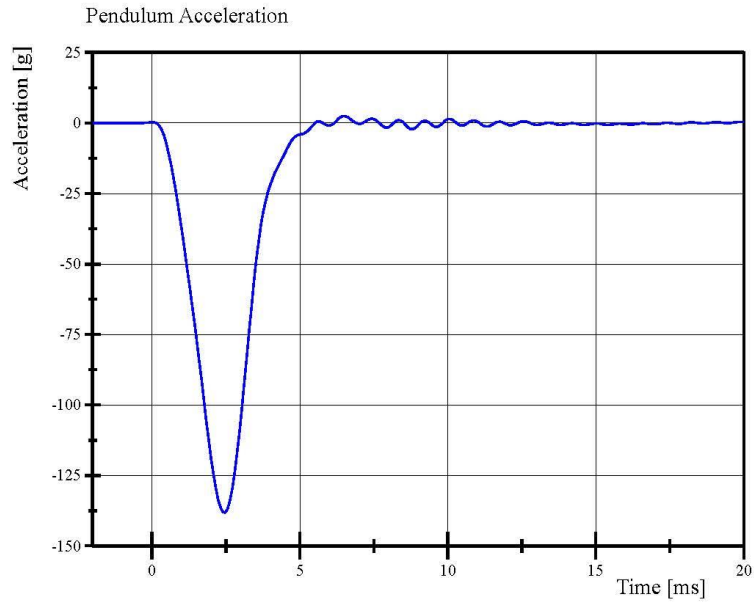
Condition: Used

Comments:

Knee Skin S/N: EB7550

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 19-1
Test Date: 3/16/2022



Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH19

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Post-Test Calibration Sheets

Driver S/N EB7513

Transportation Research Center Inc.
5720 HIII 5th Dummy
External Dimensions
Serial No. EB7513 Calibration No. 20

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	774.7 - 800.1	780	Yes
B	Shoulder Pivot Height	431.8 - 457.2	445	Yes
C	Hip Pivot Height	81.3 - 86.3	85	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	130	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	199	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	359	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	183	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	306	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	867	Yes
Z	Waist Circumference	759.5 - 789.9	775	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

Revised 8/10/12



Report Number: EB7513_HFH20

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Transportation Research Center Inc.

Front Head Drop

HIII 5th Serial No. EB7513 Certification No. 20-1

Test Date: 5/11/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	255.8 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	12.3 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	1.36 %	Yes

Test meets specifications.

Condition: Used

Comments:

Head Skin S/N: EA8751

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

Report Number: EB7513_HFH20

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05.11.2022 11:39:14 610

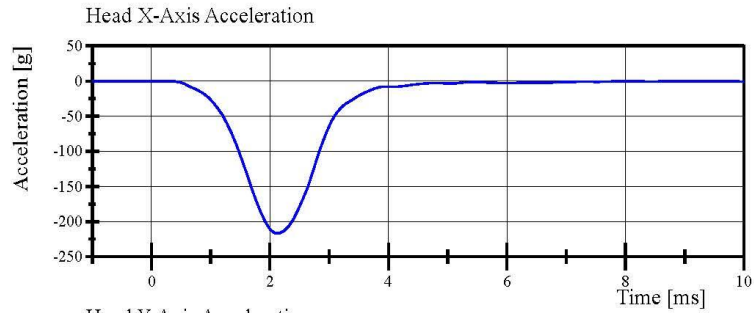


Transportation Research Center Inc.

Front Head Drop

HIII 5th Serial No. EB7513 Certification No. 20-1

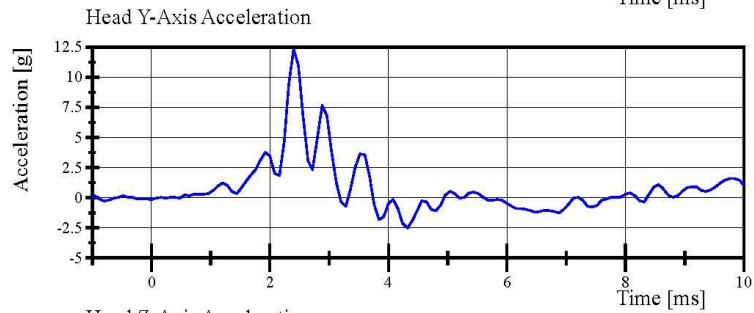
Test Date: 5/11/2022



Filter Class: CFC_1000

Max: 0.1 g at -1.0 ms

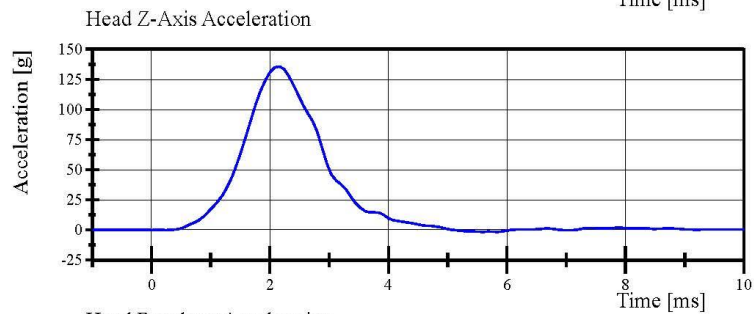
Min: -216.8 g at 2.2 ms



Filter Class: CFC_1000

Max: 12.3 g at 2.4 ms

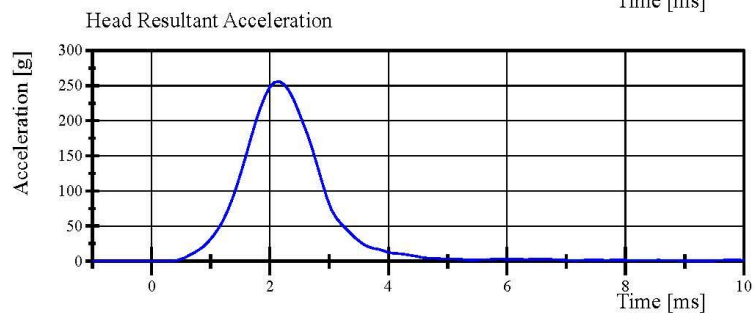
Min: -2.5 g at 4.3 ms



Filter Class: CFC_1000

Max: 135.8 g at 2.2 ms

Min: -1.7 g at 5.8 ms



Filter Class: CFC_1000

Max: 255.8 g at 2.2 ms

Min: 0.0 g at -0.6 ms

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

05.11.2022 11:39:48 610

Report Number: EB7513_HFH20

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Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 20-1

Test Date: 5/11/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.063 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.45 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	(-4.0) - (-5.0) m/s	-4.78 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	(-5.8) - (-7.0) m/s	-6.72 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-87.0 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	71.1 N·m	Yes
Total Neck Occipital Condyles Moment Decay to 10 N·m	80 - 100 ms	89.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:

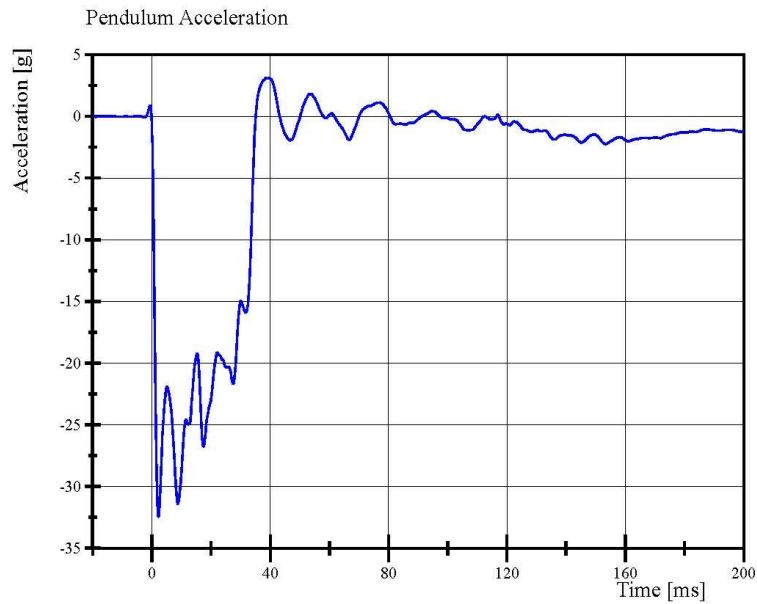
Neck S/N: EB6930

Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 20-1

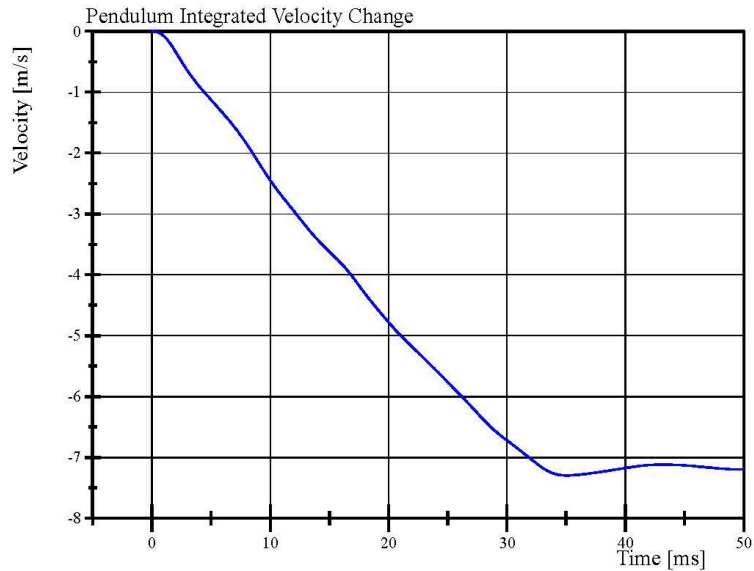
Test Date: 5/11/2022



Filter Class: CFC_180

Max: 3.1 g at 39.7 ms

Min: -32.4 g at 2.2 ms



Filter Class: CFC_180

Max: 0.0 m/s at 0.0 ms

Min: -7.3 m/s at 35.1 ms

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

Report Number: EB7513_HFH20

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05.11.2022 11:58:15 1844



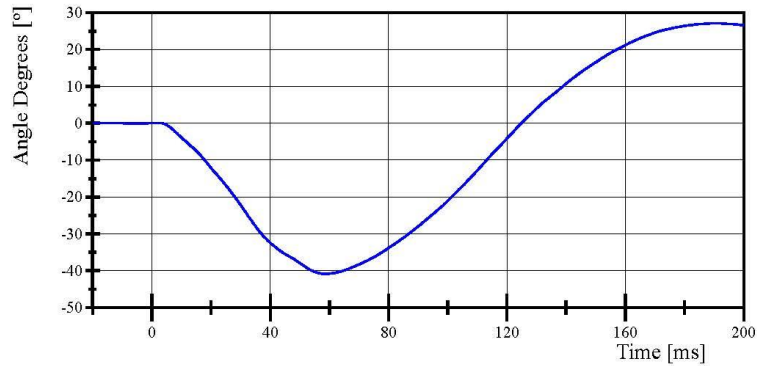
Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 20-1

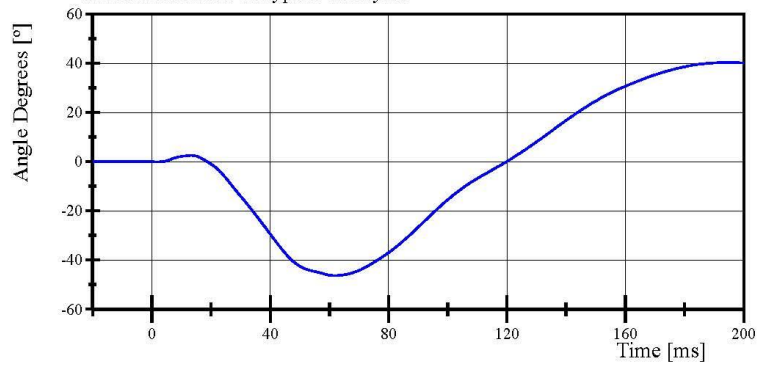
Test Date: 5/11/2022

Pot Rotation at the Base of Neck



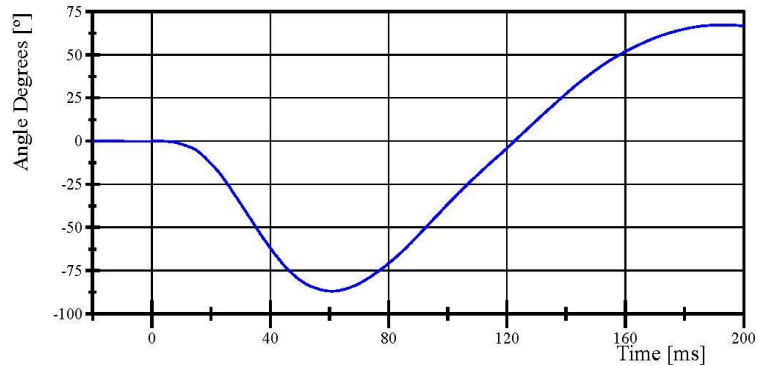
Filter Class: CFC_60
Max: 27.1 ° at 190.7 ms
Min: -40.8 ° at 58.5 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 40.3 ° at 194.9 ms
Min: -46.3 ° at 61.9 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 67.4 ° at 192.5 ms
Min: -87.0 ° at 60.9 ms

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

05.11.2022 11:58:15 1844



Report Number: EB7513_HFH20

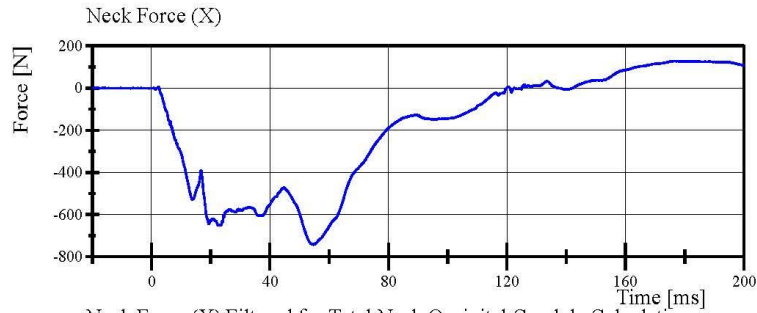
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Transportation Research Center Inc.

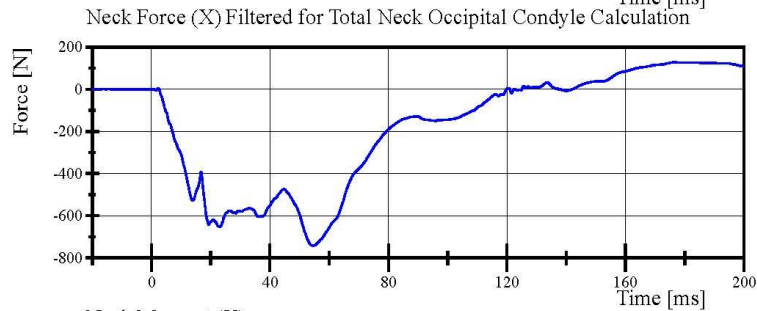
Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 20-1

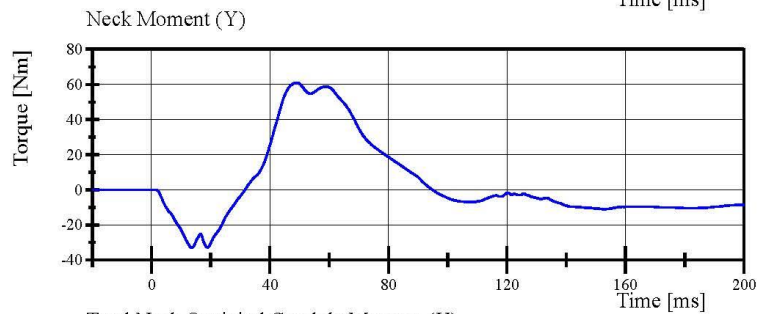
Test Date: 5/11/2022



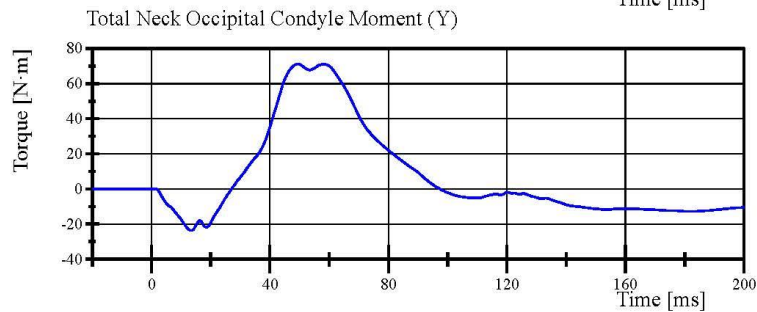
Filter Class: CFC_1000
Max: 129.3 N at 176.4 ms
Min: -743.1 N at 54.6 ms



Filter Class: CFC_600
Max: 128.7 N at 176.4 ms
Min: -742.5 N at 54.6 ms



Filter Class: CFC_600
Max: 61.1 Nm at 48.9 ms
Min: -33.0 Nm at 13.7 ms



Filter Class: Without_(Constar
Max: 71.1 N·m at 49.5 ms
Min: -23.7 N·m at 13.5 ms

Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 20-1

Test Date: 5/11/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.042 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.81 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	3.1 - 3.9 m/s	3.61 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	4.6 - 5.6 m/s	5.22 m/s	Yes
Total Head D-Plane Rotation	99 - 114 °	112.0 °	Yes
Total Neck Occipital Condyles Moment Between 99° and 114° Rotation	(-53) - (-65) N·m	-58.5 N·m	Yes
Total Neck Occipital Condyles Moment Decay to -10 N·m	94 - 114 ms	105.1 ms	Yes

Test meets specifications.

Condition: Used

Comments:

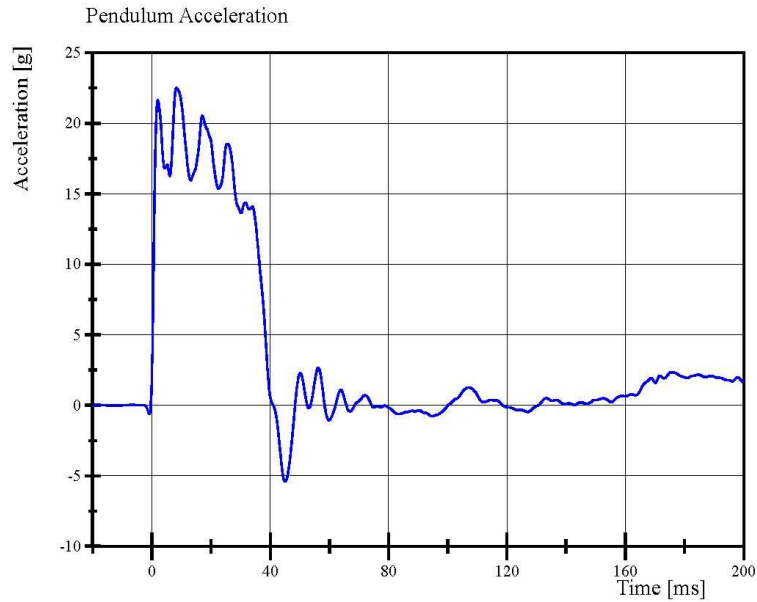
Neck S/N: EB6930

Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 20-1

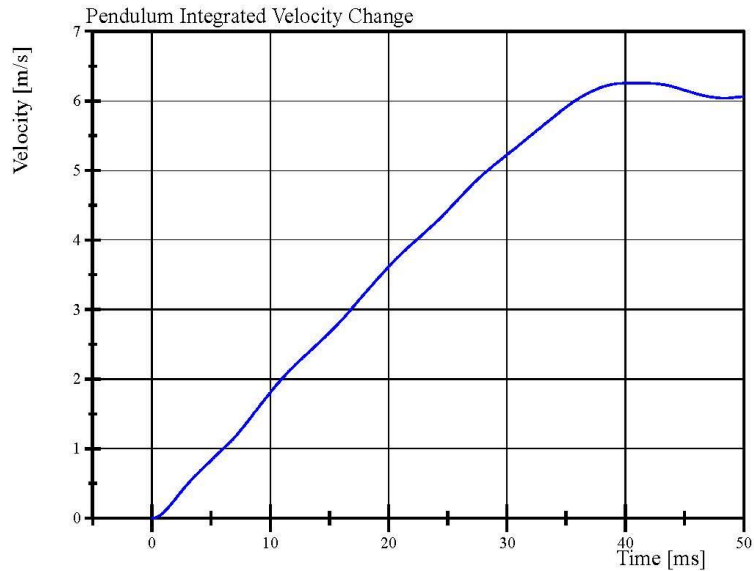
Test Date: 5/11/2022



Filter Class: CFC_180

Max: 22.5 g at 8.3 ms

Min: -5.4 g at 45.0 ms



Filter Class: CFC_180

Max: 6.3 m/s at 41.0 ms

Min: 0.0 m/s at 0.0 ms

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

Report Number: EB7513_HFH20

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05.11.2022 13:10:10 2004



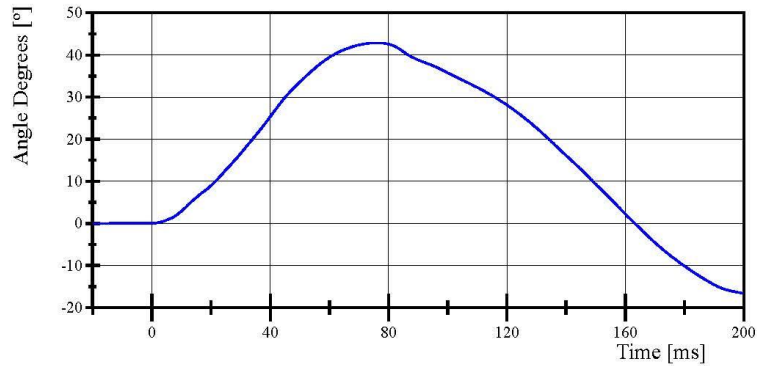
Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 20-1

Test Date: 5/11/2022

Pot Rotation at the Base of Neck

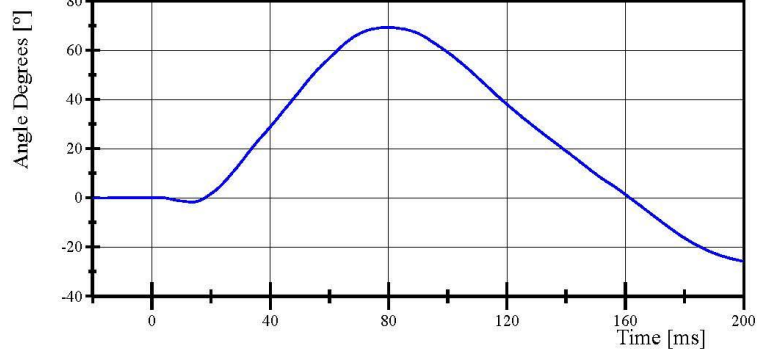


Filter Class: CFC_60

Max: 42.8 ° at 76.1 ms

Min: -16.6 ° at 199.8 ms

Head Rotation at Occypital Condyles

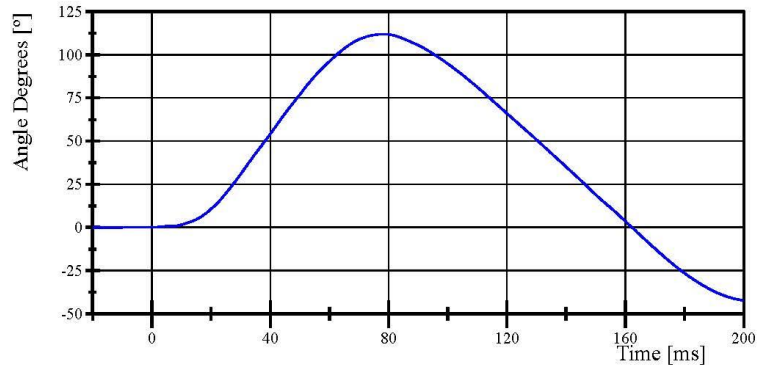


Filter Class: CFC_60

Max: 69.3 ° at 79.7 ms

Min: -25.8 ° at 199.8 ms

Total Head D-Plane Rotation



Filter Class: CFC_60

Max: 112.0 ° at 78.1 ms

Min: -42.4 ° at 199.8 ms

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

05.11.2022 13:10:10 2004



Report Number: EB7513_HFH20

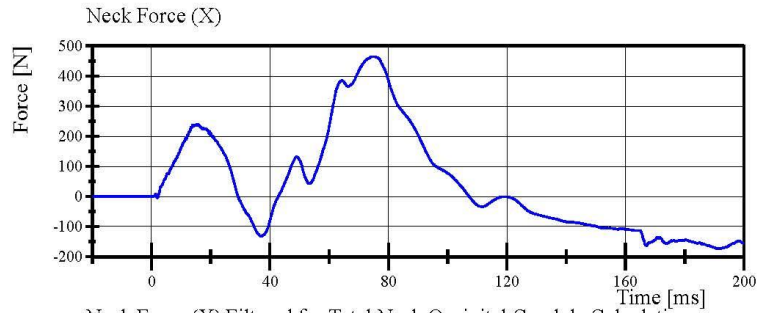
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Transportation Research Center Inc.

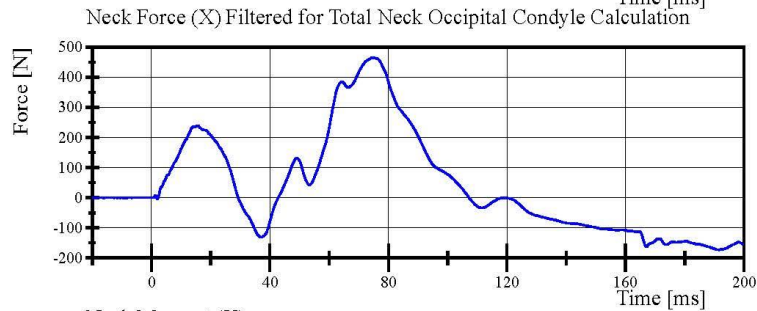
Neck Extension

HIII 5th Serial No. EB7513 Certification No. 20-1

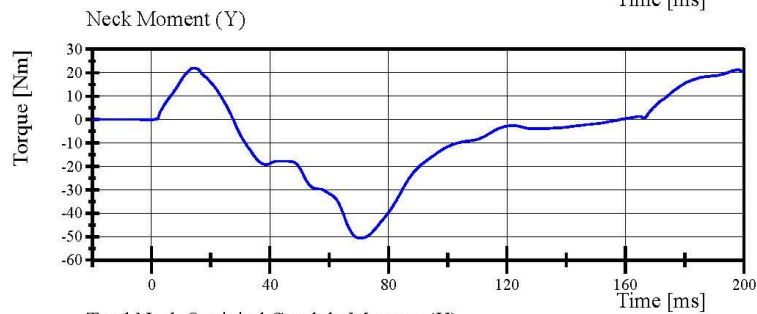
Test Date: 5/11/2022



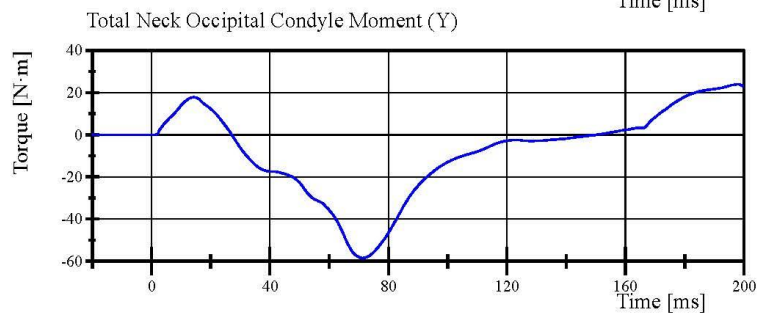
Filter Class: CFC_1000
Max: 465.0 N at 74.5 ms
Min: -173.5 N at 191.6 ms



Filter Class: CFC_600
Max: 464.8 N at 74.6 ms
Min: -173.2 N at 191.6 ms



Filter Class: CFC_600
Max: 22.0 Nm at 14.4 ms
Min: -50.7 Nm at 70.7 ms



Filter Class: Without_(Constar
Max: 23.9 N·m at 198.1 ms
Min: -58.5 N·m at 71.4 ms

Transportation Research Center Inc.

Front Thorax

HIII 5th Serial No. EB7513 Certification No. 20-1

Test Date: 5/11/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.800 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,347.3 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,443.5 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-51.5 mm	Yes
Internal Hysteresis	69 - 85 %	76.0 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: DZ8735

Rib Set S/N: EB7630

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

Report Number: EB7513_HFH20

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05.11.2022 09:54:21 396

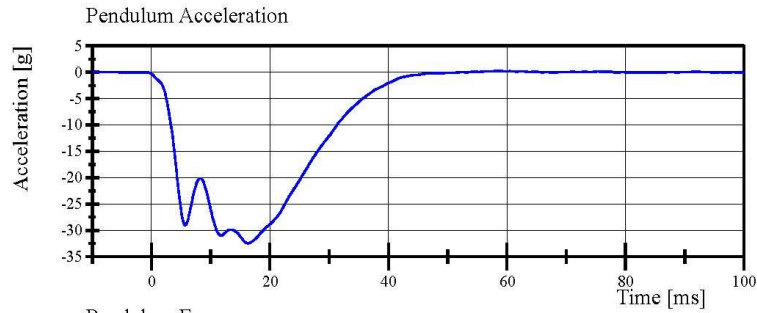


Transportation Research Center Inc.

Front Thorax

HIII 5th Serial No. EB7513 Certification No. 20-1

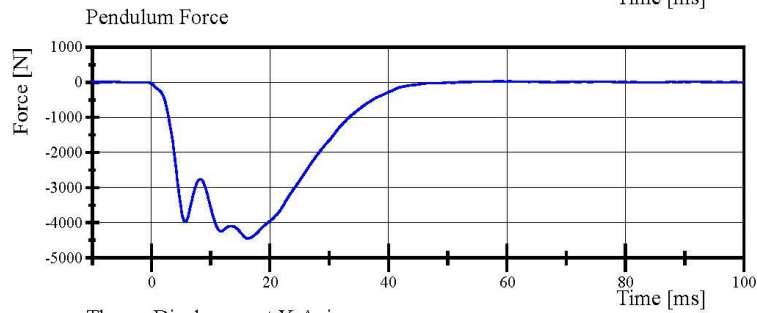
Test Date: 5/11/2022



Filter Class: CFC_180

Max: 0.2 g at 58.6 ms

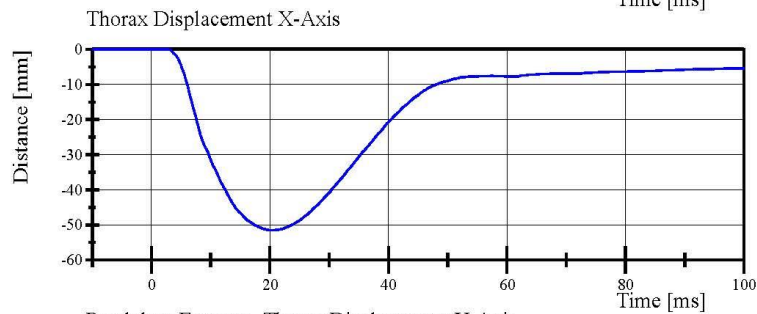
Min: -32.4 g at 16.3 ms



Filter Class: CFC_180

Max: 33.3 N at 58.6 ms

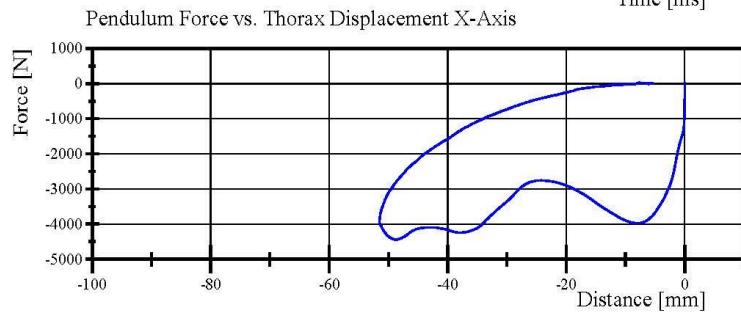
Min: -4,443.5 N at 16.3 ms



Filter Class: CFC_600

Max: 0.0 mm at -3.9 ms

Min: -51.5 mm at 20.2 ms



Filter Class: CFC_180

Max: 33.3 N at -7.6 mm

Min: -4,443.5 N at -48.8 mm

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

05.11.2022 09:55:01 396

Report Number: EB7513_HFH20

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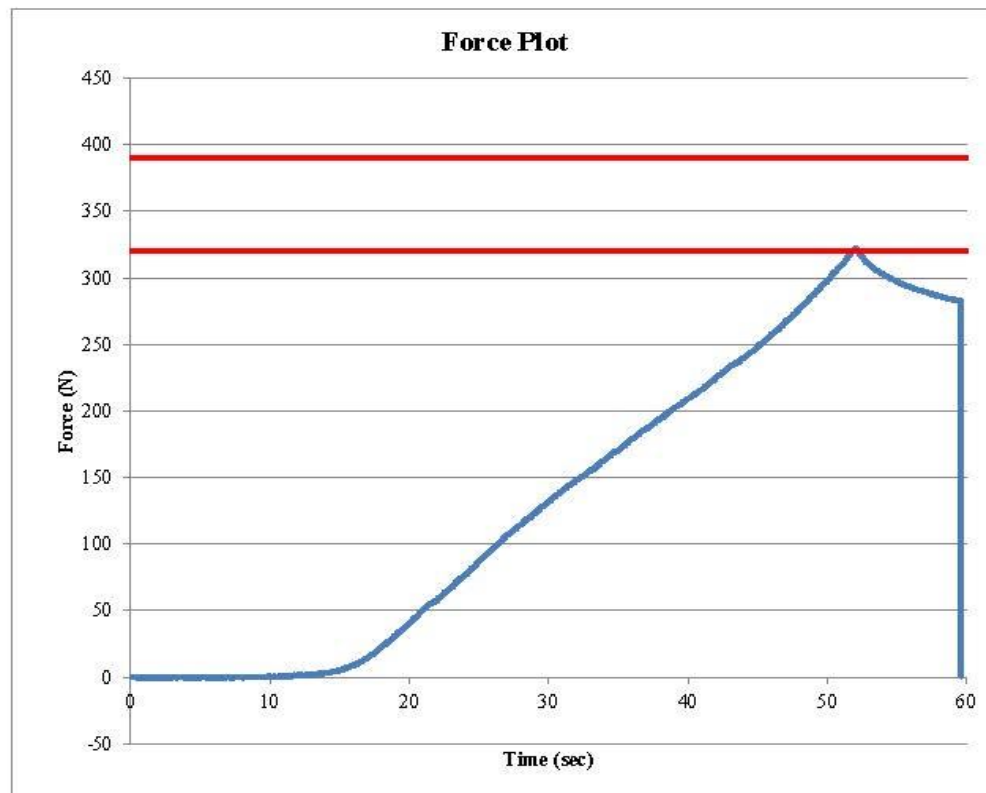
Transportation Research Center Inc.

Hybrid III Small Female Torso Flexion



Customer: NHTSA
 Serial Number: EB7513 Date: 5/11/2022
 Test Number: 1 Time: 13:34

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.3 °C Pass
Humidity	10 - 70	40 % Pass
Average Angular Velocity	0.5 - 1.5	0.81 deg/sec Pass
Initial Angle	0 - 20	15.18 deg Pass
Peak Force at 45.13°	320 - 390	321.71 N Pass
Final Angle	-8 - 8	4.04 deg Pass



Comments:
 Jacket S/N: DZ8735
 Abdomen S/N: EB8206
 Pelvis S/N: EB7866
 Lumbar S/N: DM6157

Report Number: EB7513_HFH20

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Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 20-1
Test Date: 5/11/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.091 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,776.8 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EB7773

Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH20

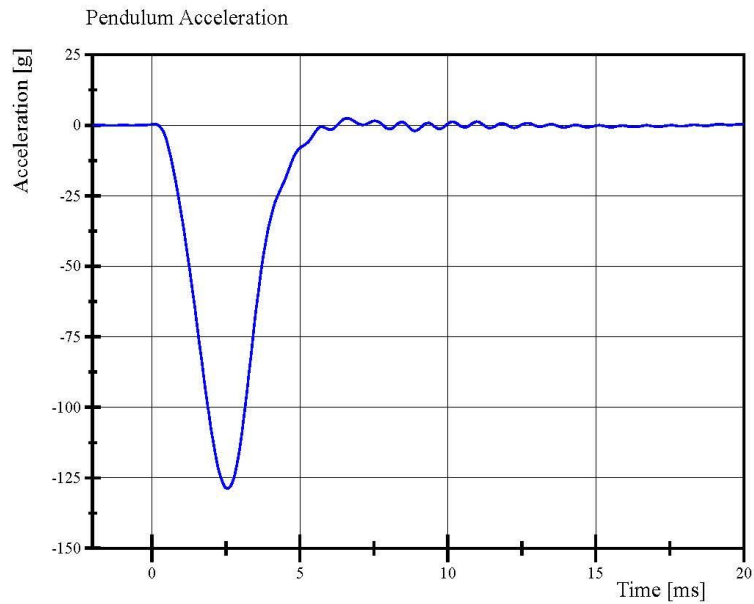
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05.11.2022 10:46:04 2037

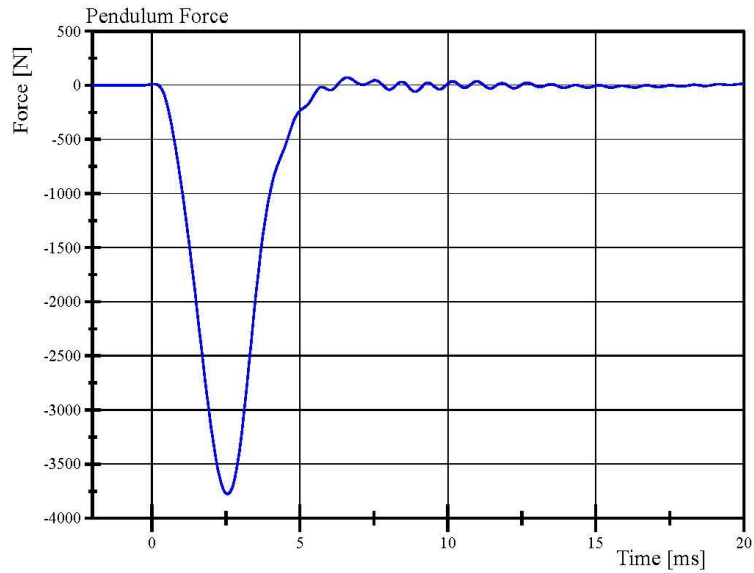


Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 20-1
Test Date: 5/11/2022



Filter Class: CFC_600
Max: 2.4 g at 6.6 ms
Min: -128.8 g at 2.6 ms



Filter Class: CFC_600
Max: 71.1 N at 6.6 ms
Min: -3,776.8 N at 2.6 ms

Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH20

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05.11.2022 10:47:08 2037



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 20-1
Test Date: 5/11/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.088 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,700.6 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EB7550

Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH20

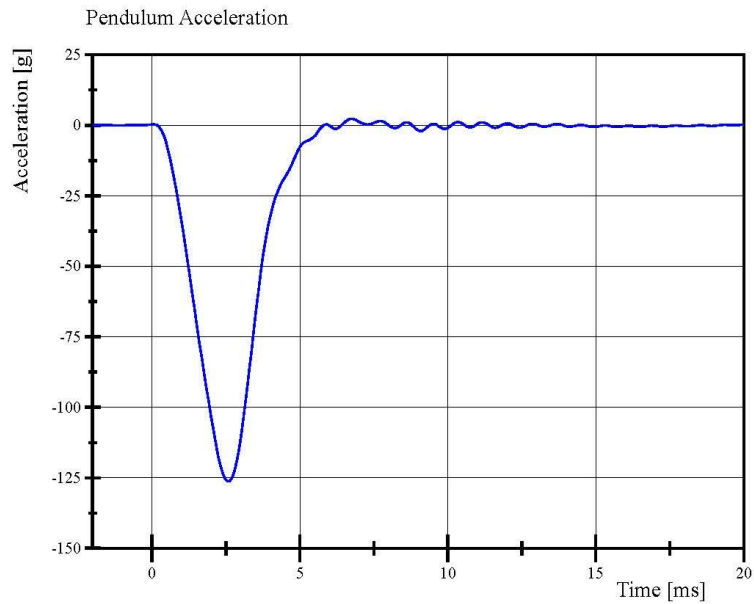
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05.11.2022 10:53:11 2036

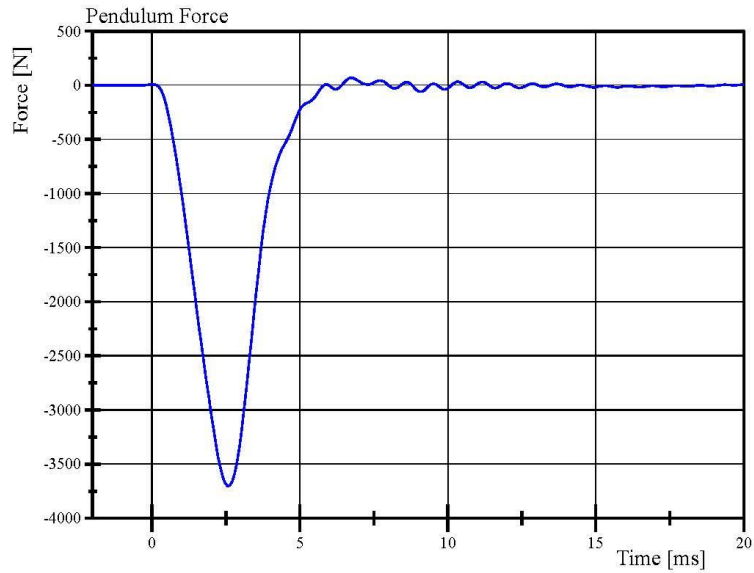


Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 20-1
Test Date: 5/11/2022



Filter Class: CFC_600
Max: 2.3 g at 6.7 ms
Min: -126.2 g at 2.6 ms



Filter Class: CFC_600
Max: 67.7 N at 6.7 ms
Min: -3,700.6 N at 2.6 ms

Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH20

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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	21-Feb-2022	
			Y	P94650	Endevco	21-Feb-2022	
			Z	P94622	Endevco	21-Feb-2022	
	Redundant		X	P94431	Endevco	21-Feb-2022	
			Y	P94487	Endevco	21-Feb-2022	
			Z	P94645	Endevco	21-Feb-2022	
Head Angular Rate Sensors			X	ARS4733	DTS	09-Aug-2021	
			Y	ARS15227	DTS	11-Aug-2021	
			Z	ARS15685	DTS	09-Aug-2021	
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	2021	Humanetics	21-Feb-2022	
Chest Accelerometers	Primary		X	P87834	Endevco	4-Feb-2021	
			Y	P61255	Endevco	21-Feb-2022	
			Z	P45008	Endevco	21-Feb-2022	
	Redundant		X	P91177	Endevco	21-Feb-2022	
			Y	P94570	Endevco	21-Feb-2022	
			Z	P91172	Endevco	21-Feb-2022	
Chest Potentiometer			X	CST037	Servo	23-Feb-2022	
Pelvis Accelerometers			X	T11801	Endevco	21-Feb-2022	
			Y	P91876	Endevco	21-Feb-2022	
			Z	T11390	Endevco	21-Feb-2022	
Femur Load Cells	Left	Primary	Z	DI4215-FZ1	Denton	22-Feb-2022	
		Redundant	Z	DI4215-FZ2	Denton	22-Feb-2022	
	Right	Primary	Z	DI4216-FZ1	Denton	22-Feb-2022	
		Redundant	Z	DI4216-FZ2	Denton	22-Feb-2022	
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-94	Denton	22-Feb-2022	
		Lower	MX, MY, FZ	3644-370	Denton	21-Feb-2022	
	Right	Upper	MX, MY, FZ	3643-413	Denton	22-Feb-2022	
		Lower	MX, MY, FZ	3644-401	Denton	22-Feb-2022	
Foot Accelerometers	Left	Rear	X	P90848	Endevco	21-Feb-2022	
			Z	P91498	Endevco	21-Feb-2022	
		Front	Z	P90841	Endevco	21-Feb-2022	
	Right	Rear	X	P93467	Endevco	21-Feb-2022	
			Z	P97619	Endevco	21-Feb-2022	
		Front	Z	P94523	Endevco	21-Feb-2022	
Seat Belt Load Cells			Lap	N/A	X08012	Measurement Specialties	21-Apr-2022
			Shoulder	N/A	R141C8	Measurement Specialties	19-Jul-2021

TABLE 2 – Front Passenger Dummy Instrumentation

Instrumentation			Axis/Location	Hybrid III 5th S/N EB7513		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary		X	P44972	Endevco	17-Feb-2022
			Y	T11806	Endevco	17-Feb-2022
			Z	P69062	Endevco	17-Feb-2022
	Redundant		X	T11046	Endevco	17-Feb-2022
			Y	P97525	Endevco	17-Feb-2022
			Z	P73228	Endevco	17-Feb-2022
Head Angular Rate Sensors			X	ARS4732	DTS	9-Aug-2021
			Y	ARS6120	DTS	9-Aug-2021
			Z	ARS10776	DTS	11-Aug-2021
Upper Neck Load Cell		FX, FY, FZ, MX, MY, MZ	1874	Denton	17-Feb-2022	
Chest Accelerometers	Primary		X	P80855	Endevco	17-Feb-2022
			Y	P97544	Endevco	17-Feb-2022
			Z	P57791	Endevco	17-Feb-2022
	Redundant		X	P73221	Endevco	17-Feb-2022
			Y	T11872	Endevco	17-Feb-2022
			Z	T16784	Endevco	17-Feb-2022
Chest Potentiometer		X	4223	Servo	17-Feb-2022	
Pelvis Accelerometers			X	P91969	Endevco	17-Feb-2022
			Y	P91958	Endevco	17-Feb-2022
			Z	P80721	Endevco	17-Feb-2022
Femur Load Cells	Left	Primary	Z	DT0997-FZ1	Denton	17-Feb-2022
		Redundant	Z	DT0997-FZ2	Denton	17-Feb-2022
	Right	Primary	Z	DS4140-FZ1	Denton	17-Feb-2022
		Redundant	Z	DS4140-FZ2	Denton	17-Feb-2022
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-92	Denton	18-Feb-2022
		Lower	MX, MY, FZ	3644-92	Denton	18-Feb-2022
	Right	Upper	MX, MY, FZ	3643-484	Denton	18-Feb-2022
		Lower	MX, MY, FZ	3644-369	Denton	21-Feb-2022
Foot Accelerometers	Left	Rear	X	P90866	Endevco	21-Feb-2022
			Z	T11816	Endevco	21-Feb-2022
		Front	Z	P97890	Endevco	21-Feb-2022
	Right	Rear	X	P97640	Endevco	21-Feb-2022
			Z	P91471	Endevco	21-Feb-2022
		Front	Z	P91907	Endevco	21-Feb-2022
Seat Belt Load Cells		Lap	N/A	T1210D	Measurement Specialties	3-Mar-2022
		Shoulder	N/A	T1210A	Measurement Specialties	19-Aug-2021

TABLE 3 – Vehicle Instrumentation

Instrumentation			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember/Rear Seat Accelerometers	Left	Primary	X	A222964	Measurement Specialties	23-Mar-2022
			Z	A254922	Measurement Specialties	23-Mar-2022
		Redundant	X	A251664	Measurement Specialties	23-Mar-2022
	Right	Primary	X	A298534	Measurement Specialties	23-Mar-2022
			Z	A298329	Measurement Specialties	23-Mar-2022
		Redundant	X	A298548	Measurement Specialties	23-Mar-2022
Engine Accelerometers	Top		X	A298531	Measurement Specialties	8-Mar-2022
	Bottom		X	A241141	Measurement Specialties	8-Mar-2022