

Final Report Number: NCAP-TRC-22-004

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

**GENERAL MOTORS LLC
2022 Chevrolet Traverse
NHTSA Number: M20220107**

**PREPARED BY:
Transportation Research Center Inc.
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Report Date: July 24, 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: July 24, 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 Traverse, 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 August 24, 2022. The impact velocity was 56.63 km/h, and the ambient temperature at the barrier face at the time of impact was 23.0° C. The target vehicle post-test maximum crush was 658 millimeters at vehicle center line. The test vehicle's performance is as follows:																																																																										
<table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD</th> <th colspan="3">Passenger ATD</th> </tr> <tr> <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>170</td> <td>NA</td> <td>700</td> <td>307</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-19.9</td> <td>mm</td> <td>52</td> <td>-19.6¹</td> </tr> <tr> <td>3ms Chest Clip</td> <td>Gs</td> <td>60</td> <td>39.1</td> <td>Gs</td> <td>60</td> <td>36.5</td> </tr> <tr> <td>Nij</td> <td>NA</td> <td>1</td> <td>0.20</td> <td>NA</td> <td>1</td> <td>0.35</td> </tr> <tr> <td>Neck Tension</td> <td>Newtons</td> <td>4170</td> <td>963.2</td> <td>Newtons</td> <td>2620</td> <td>427.3</td> </tr> <tr> <td>Neck Compression</td> <td>Newtons</td> <td>4000</td> <td>-370.7</td> <td>Newtons</td> <td>2520</td> <td>-494.4</td> </tr> <tr> <td>Left Femur Force</td> <td>Newtons</td> <td>10000</td> <td>-308.5</td> <td>Newtons</td> <td>6800</td> <td>-1232.2</td> </tr> <tr> <td>Right Femur Force</td> <td>Newtons</td> <td>10000</td> <td>-213.2</td> <td>Newtons</td> <td>6800</td> <td>-1038.5</td> </tr> </tbody> </table>						Measurement Description	Driver ATD			Passenger ATD			Units	Threshold	Result	Units	Threshold	Result	Head Injury Criteria (HIC ₁₅)	NA	700	170	NA	700	307	Maximum Chest Compression	mm	63	-19.9	mm	52	-19.6 ¹	3ms Chest Clip	Gs	60	39.1	Gs	60	36.5	Nij	NA	1	0.20	NA	1	0.35	Neck Tension	Newtons	4170	963.2	Newtons	2620	427.3	Neck Compression	Newtons	4000	-370.7	Newtons	2520	-494.4	Left Femur Force	Newtons	10000	-308.5	Newtons	6800	-1232.2	Right Femur Force	Newtons	10000	-213.2	Newtons	6800	-1038.5
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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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¹ Passenger chest deflection has a spike during max deflection, actual peak is 15.58 @ 91.84 ms

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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 Traverse at a velocity of 56.63 km/h. The test was performed at Transportation Research Center, Inc. on August 24, 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. DH1659) were qualified prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

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

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

The maximum static crush of the vehicle was 658 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)	170	0.20	963.2	-370.7	39.1	-19.9	-308.5	-213.2
Passenger (5 th Female)	307	0.35	427.3	-494.4	36.5	-19.6 ¹	-1232.2	-1038.5

¹ Passenger chest deflection has a spike during max deflection, actual peak is 15.58 @ 91.84 ms

TEST COMMENTS:

Passenger Chest Y Acceleration Redundant: Channel failed at 65.0 ms

Passenger Chest X Deflection: Spike at 24.0 ms

Vehicle Engine Top X: Channel failed at 55.0 ms

Vehicle Engine Bottom X: Channel failed at 23.0 ms

2.2 REPORT AREA 2: DATA SHEETS

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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

TEST VEHICLE INFORMATION

NHTSA No.	M20220107
Model Year	2022
Make	Chevrolet
Model	Traverse
Body Style	MPV
VIN	1GNEVFKW1NJ190413
Body Color	Mosaic Black Metallic
Odometer Reading (km/mi)	5 mi
Engine Displacement (L)	3.6
Type/No. Cylinders	Gas/6
Engine Placement	Front Transverse
Transmission Type	Automatic
Transmission Speeds	9
Overdrive	Yes
Final Drive	AWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	Yes

TEST VEHICLE OPTIONS

Traction Control System (TCS)	Yes
Power Steering	Yes
Power Window Auto-Reverse	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: Front Center Airbag	Yes

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

DATA FROM CERTIFICATION LABEL

Manufactured by	GENERAL MOTORS LLC	GVWR (kg)	2800 (6173 lbs)
Date of Manufacture		06/22	GAWR Front (kg)
		GAWR Rear (kg)	1600 (3527 lbs)

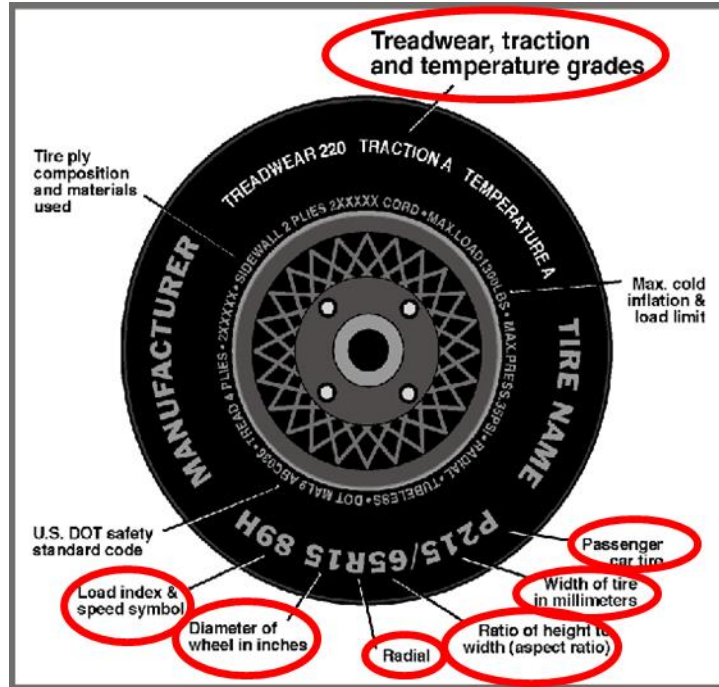
VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	Split Bench	
Number of Occupants	2	3	3	8
Capacity Wt. (VCW) (kg)				737.0
Cargo Wt. (RCLW) (kg)				136.0

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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	240	240
Recommended Tire Size	255/65R18	255/65R18
Tire Size on Vehicle	255/65R18	255/65R18
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	111T	111T
Tire Material	Polyester , Steel , Nylon	Polyester , Steel , Nylon
DOT Safety Code Right	17X AXAA02 2122	17X AXAA02 2122
DOT Safety Code Left	17X AXAA02 2122	17X AXAA02 2122

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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	596.0	443.6		621.8	568.8	
Right	kg	578.4	425.4		566.8	555.4	
Ratio	%	57.5	42.5		51.4	48.6	
Totals	kg	1174.4	869.0	2043.4	1188.6	1124.2	2312.8

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2043.4
Weight of 1 P572E ATD & 1 P572O ATD	kg	139.3
Rated Cargo/Luggage Weight (RCLW) ¹	kg	136.0
Vehicle Target Weight (TVTW)	kg	2318.7

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front)
As Delivered	mm	879	880	922	926	1306
As Tested	mm	871	877	896	890	1493
Post Test	mm	N/A	N/A	892	883	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	3071
Total Vehicle Length at Left Side	mm	4990
Total Vehicle Length at Centerline	mm	5218
Total Vehicle Length at Right Side	mm	4993
Weight of Ballast in Cargo Area	kg	336.9
Weight of Vehicle Components Removed	kg	0.0
Amount of Stoddard Solvent in Fuel Tank	liters	76.4

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: None

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

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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5218
2	Total Width	1992
3	Bumper Top Height	575
4	Bumper Bottom Height	437
5	Longitudinal Member Top Height	605
6	Distance Between Longitudinal Members	930
7	Longitudinal Member Width	90
8	Engine Top Height	1043
9	Engine Bottom Height	212
10	Engine and Gearbox Width	970
11	Front Bumper-Engine Distance	600
12	Front Shock Absorber Fixing Height	1023
13	Bonnet Leading Edge Height	920
14	Front Shock Absorber Fixing Width	1290
15	Front Bumper – Front Axle Distance	1050
16	Front Axle – A-Pillar Distance	565
17	A-Pillar – B-Pillar Distance	1043
18	B-Pillar – Rear Axle Distance	1490
19	B-Pillar – C-Pillar Distance	1080
20	Roof Sill Bottom Height	1605
21	Roof Sill Top Height	1682
22	Floor Sill Bottom Height	448
23	Floor Sill Top Height	483

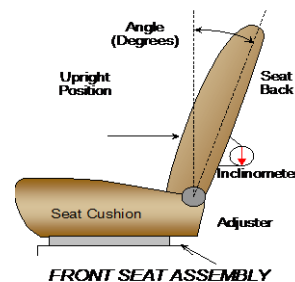
DATA SHEET NO. 2 - SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

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:	21.2
Passenger Seat back angle:	20.7

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	295 mm; 25 notches	147 mm; mid
Passenger Seat	140 mm 25 notches	0 mm, 0 full forward

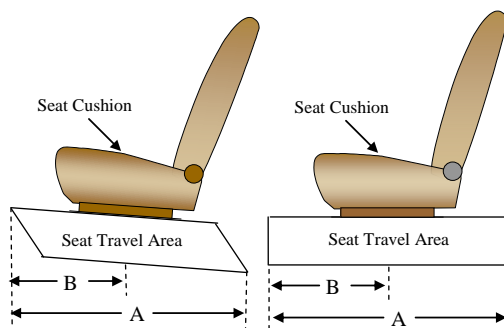
SEAT BELT UPPER ANCHORAGE

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 Traverse
 Test Program: NCAP Frontal Impact

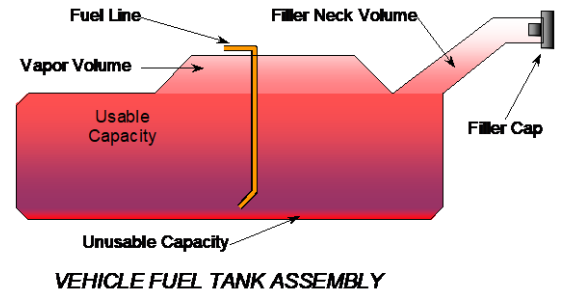
NHTSA No.: M20220107
 Test Date: 8/24/2022

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	82.1
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	76.4
Actual Amount of Solvent Used	76.4
1/3 of Usable Capacity	27.4

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

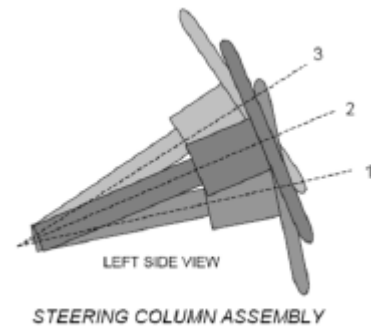
Pump will run for ~ 3 seconds when the key is turned on and then will not run unless the engine is cranking or running. ECM supplies voltage to the fuel pump control module when ECM detects that the ignition is ON.



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.



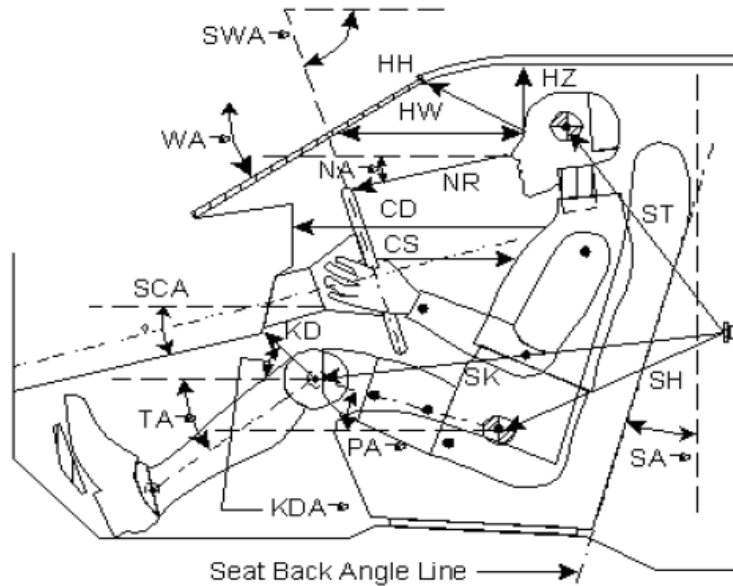
STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost Position No. 1	19.8	0
Geometric Center Position No. 2	22.1	30
Uppermost Position No. 3	24.3	60
Telescoping Steering Wheel Travel		60
Test Position	22.1	30

DATA SHEET NO. 3 - DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

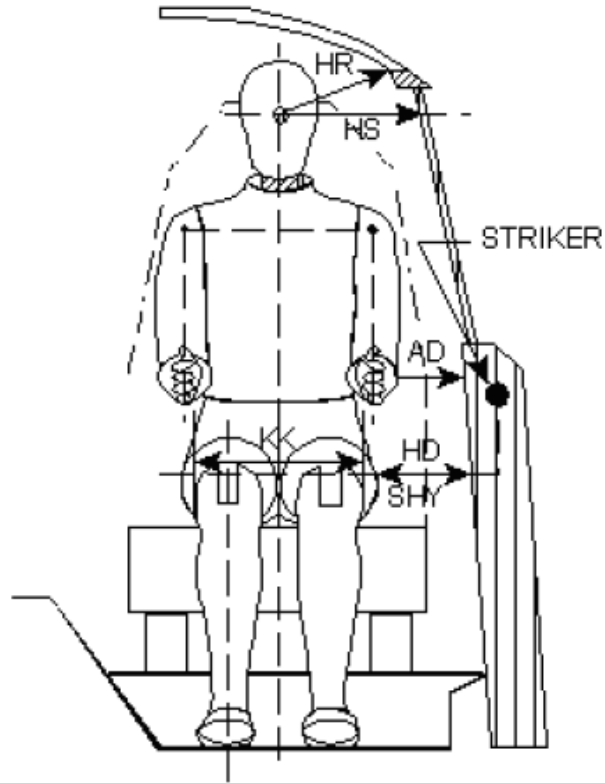


Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA [°]	Windshield Angle		32.0		
SWA [°]	Steering Wheel Angle		23.3		
SCA [°]	Steering Column Angle		22.4		
SA [°]	Seat Back Angle (on head rest post)		21.2		20.7
HZ	Head to Roof (Z)	260		299	
HH	Head to Header	391		375	
HW	Head to Windshield	754		760	
NR	Nose to Rim	89	9.5		
CD	Chest to Dash	529		422	
CS	Chest to Steering Hub	317			
RA	Rim to Abdomen	214			
KDL	Left Knee to Dash	187	30.1	102	34.1
KDR	Right Knee to Dash	164	29.3	104	39.7
PA [°]	Pelvic Angle		23.0		20.4
TA [°]	Tibia Angle		50.7		59.1
SK	Striker to Knee	623	4.0	750	1.0
ST	Striker to Head	704	66.6	666	50.3
SH	Striker to H-Point	343	13.7	469	2.1

DATA SHEET NO. 4 - DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

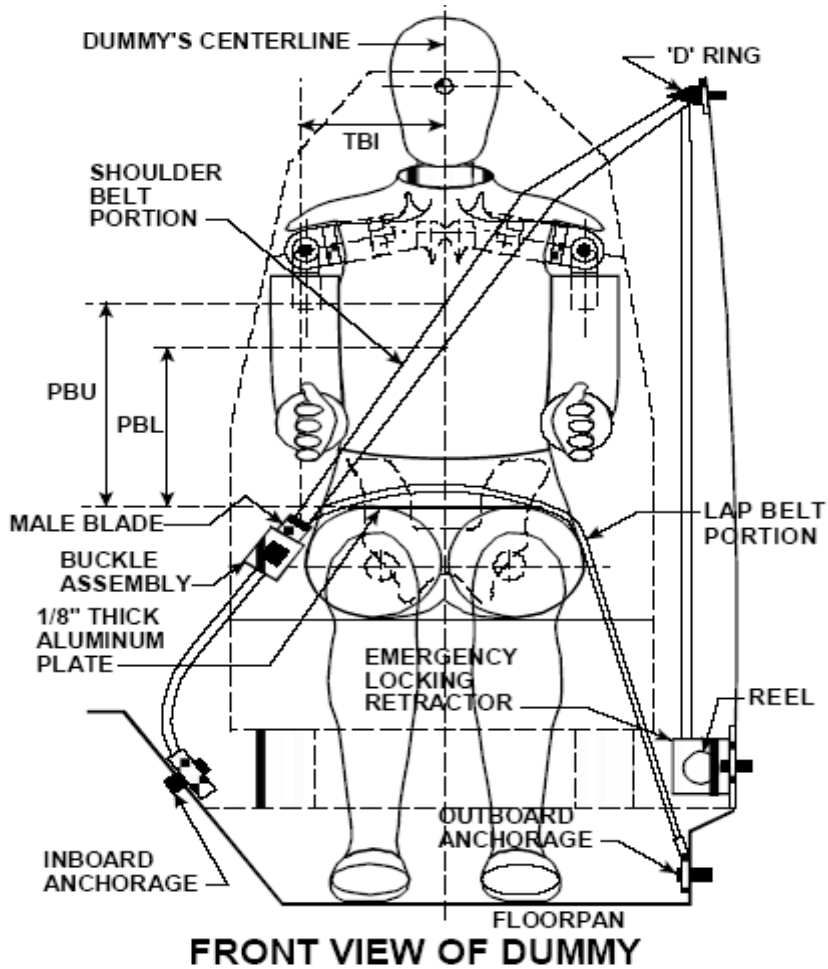


Code	Measurement Description	Driver	Passenger
AD	Arm to Door	67	93
HD	H-Point to Door	151	175
HR	Head to Side Header	283	337
HS	Head to Side Window	433	460
KK	Knee to Knee	320	167
SHY	Striker to H-Point (Y Direction)	293	296
AA	Ankle to Ankle	390	166

DATA SHEET NO. 5 - SEAT BELT POSITIONING DATA

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU – Top surface of reference to belt upper edge	mm	316	275
PBL – Top surface of reference to belt lower edge	mm	239	190

BELT LENGTH DATA

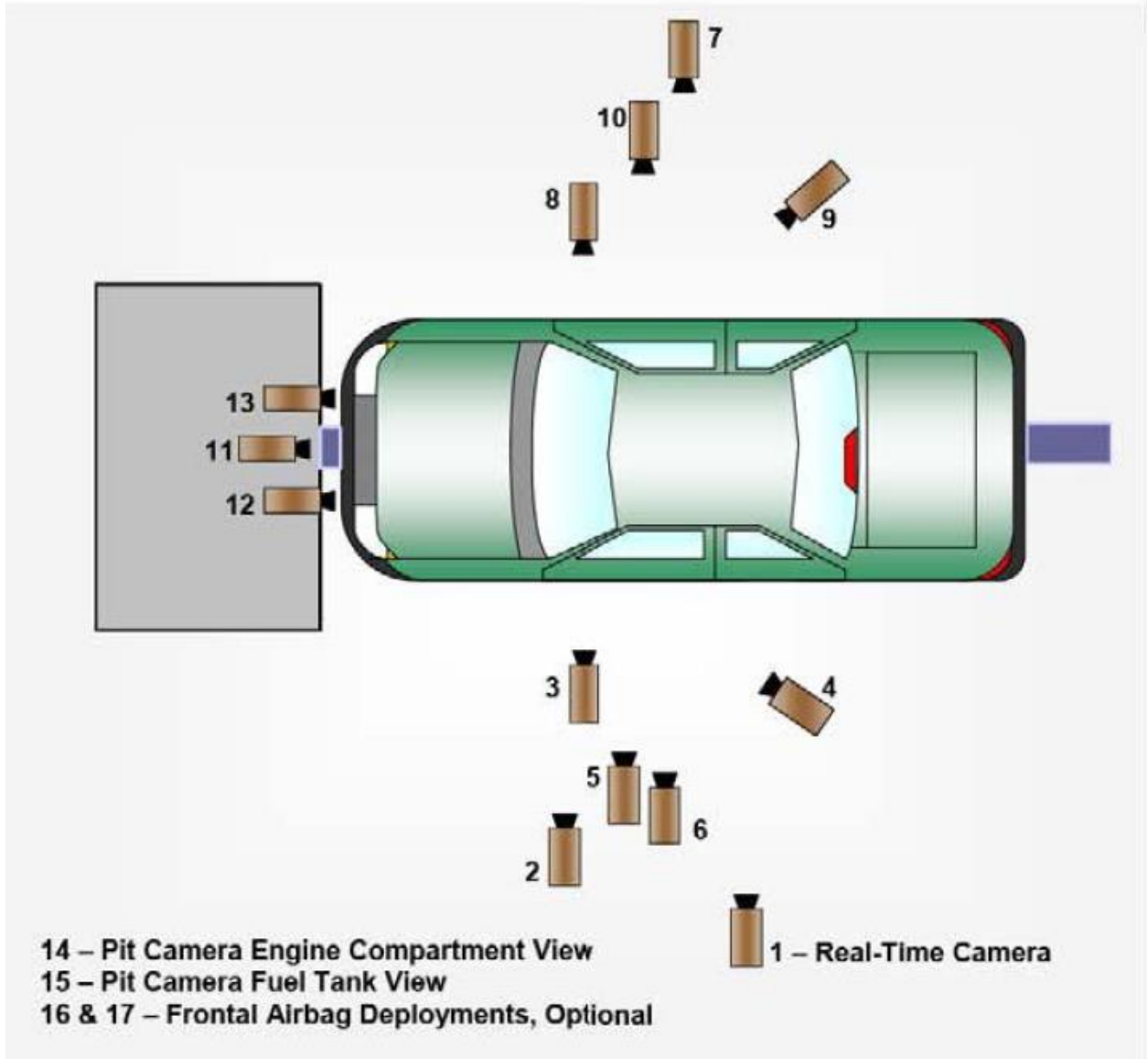
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	834	991
Lap belt length as measured on ATD	mm	465	508
Remainder of belt on reel	mm	936	933
Total belt length for continuous webbing systems	mm	2235	2432

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

Test Vehicle: 2022 Chevrolet Traverse
Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
Test Date: 8/24/2022

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

CAMERA LOCATIONS

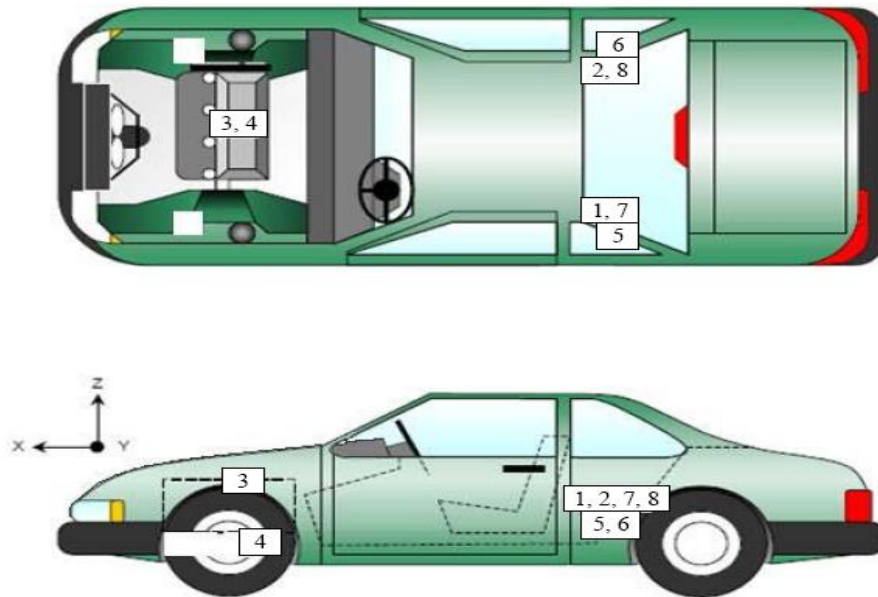
No.	Camera View	Location (mm)			Lens (mm)	Frame Speed (fps)
		X	Y	Z		
1	REAL-TIME LEFT OVERALL	-1500	-4654	-1432	Zoom	30
2	LEFT OVERALL	-1455	-4444	-1432	8.5	1000
3	DRIVER CLOSE-UP	-2060	-4460	-1493	50	1000
4	LEFT FRONT HALF	-851	-4512	-1383	25	1000
5	LEFT ANGLE	-3220	-2281	-1645	20	1000
6	STEERING COLUMN	-3132	-3694	-1508	50	1000
7	RIGHT OVERALL	-1730	-4393	-1529	8.5	1000
8	PASSENGER CLOSE-UP	-2134	4330	-1501	50	1000
9	RIGHT FRONT HALF	-900	4377	-1462	25	1000
10	RIGHT ANGLE	-3160	3697	-1619	20	1000
11	WINDSHIELD	-382	0	-2610	20	1000
12	DRIVER WINDSHIELD	-381	-652	-2602	25	1000
13	PASSENGER WINDSHIELD	-383	481	-2595	25	1000
14	PIT FRONT	-876	0	3021	20	1000
15	PIT REAR	-3107	0	3051	20	1000
16	DRIVER ONBOARD				8.5	1000
17	PASSENGER ONBOARD				8.5	1000

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

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	2180	-470	-465
2	Right Rear Accelerometer – X Direction	2180	470	-464
3	Engine Top X	4423	175	-912
4	Engine Bottom X	4408	143	-207
5	Left Rear Accelerometer – Z Direction	2180	-470	-475
6	Right Rear Accelerometer – Z Direction	2180	470	-474
7	Left Rear Accelerometer – X Direction Redundant	2180	-432	-465
8	Right Rear Accelerometer- X Direction Redundant	2180	433	-464

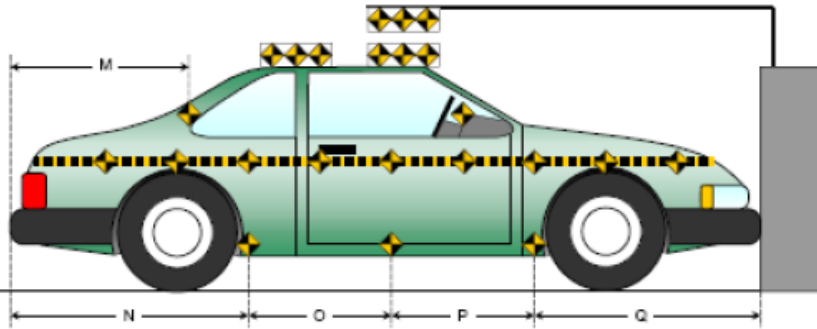
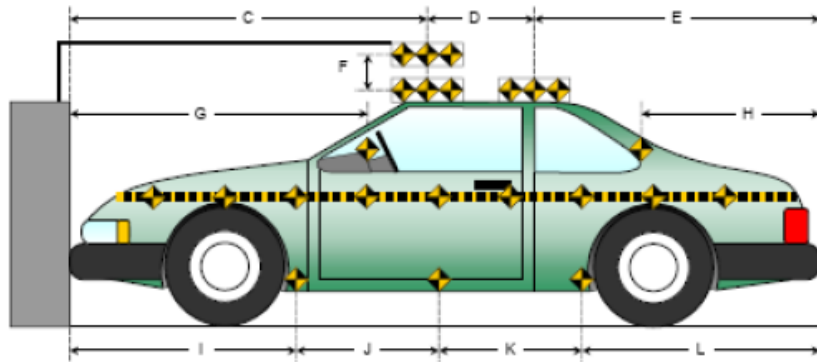
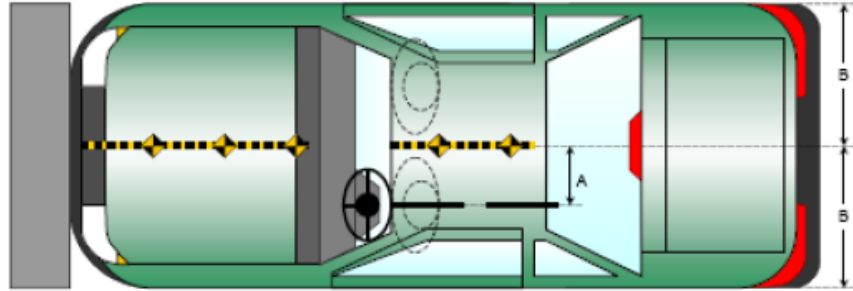
Reference Points: X – Rear Surface of Vehicle (+ forward)
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

DATA SHEET NO. 8 - PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

Item	Value
A	432
B	996
C	2495
D	600
E	2160
F	210
G	1866
H	1615
I	1563
J	1024
K	1028
L	1603
M	1629
N	1605
O	1041
P	1012
Q	1560

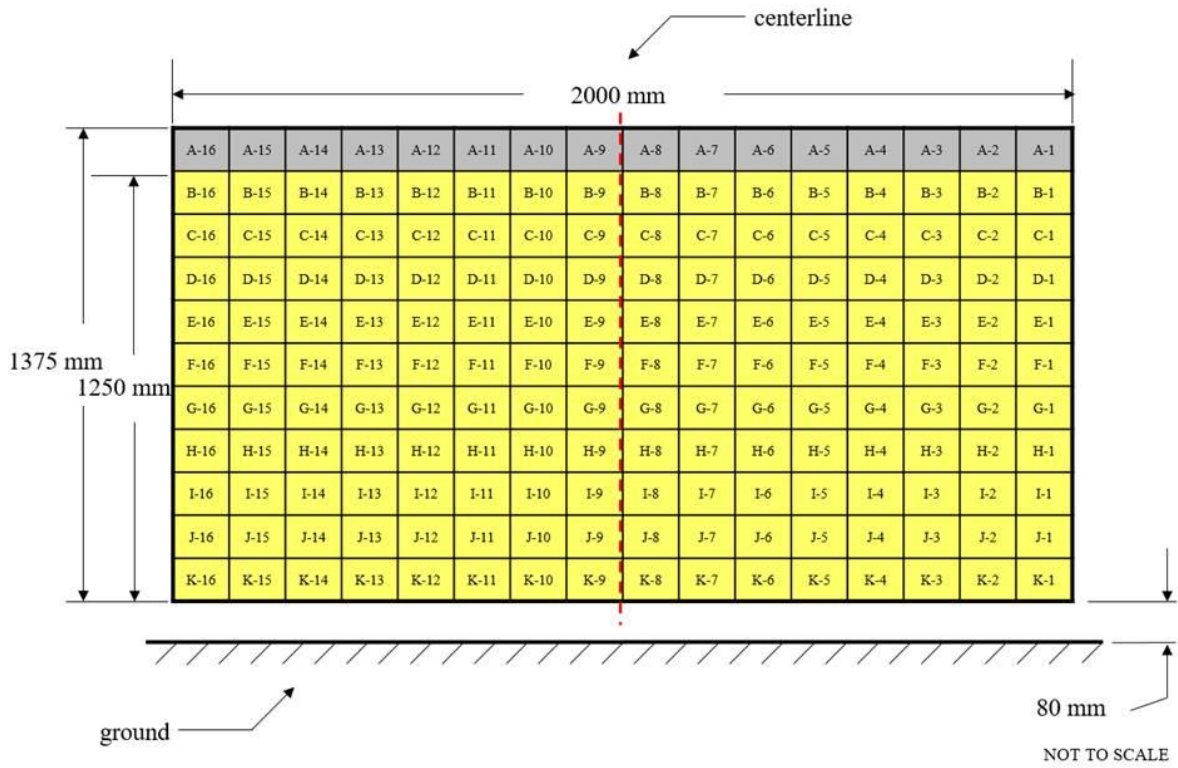


All units in millimeters

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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022



DATA SHEET NO. 10 - TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2022 Chevrolet Traverse
Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
Test Date: 8/24/2022

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 OBSERVATIONS

Test Vehicle: 2022 Chevrolet Traverse

NHTSA No.: M20220107

Test Program: NCAP Frontal Impact

Test Date: 8/24/2022

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	Hybrid III 50th / 037	Hybrid III 5th / DH1659
Head Contact	Frontal Airbag 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**	Locked	Locked	
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	

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	955
Center	mm	880
Right Side	mm	1037
Average	mm	957

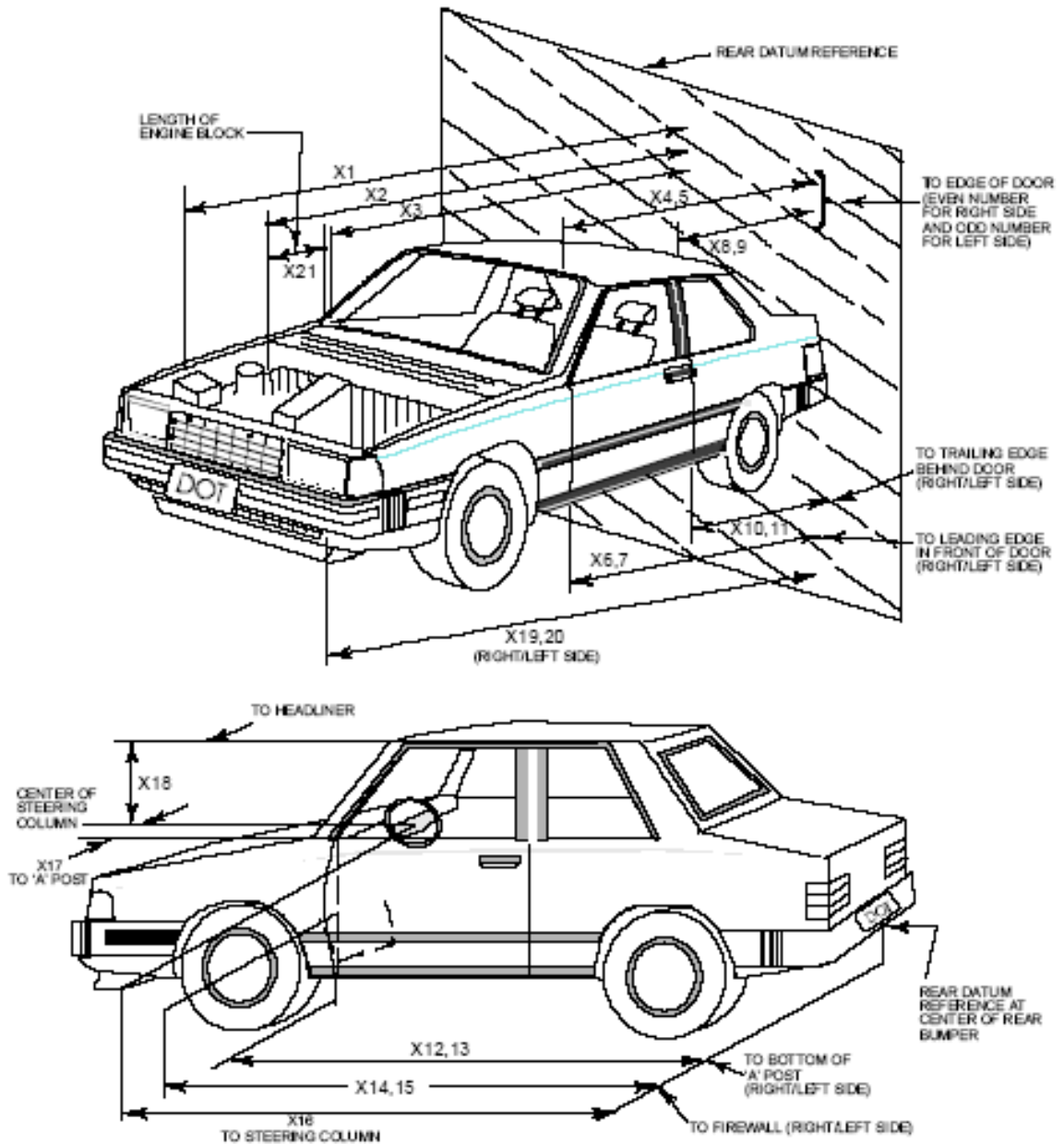
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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	No	No	No
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Seat Belt Buckle Pretensioner	No	No	No	No
Other: Front Center Seat Airbag	Yes	No	N/A	N/A

DATA SHEET NO. 12 - VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022



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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5218	4560	-658
2	Rear Surface of Vehicle (RSOV) to Front of Engine	4624	4405	-219
3	RSOV to Firewall	4205	4195	-10
4	RSOV to Upper Leading Edge of Right Door	3630	3616	-14
5	RSOV to Upper Leading Edge of Left Door	3634	3620	-14
6	RSOV to Lower Leading Edge of Right Door	3613	3618	5
7	RSOV to Lower Leading Edge of Left Door	3606	3620	14
8	RSOV to Upper Trailing Edge of Right Door	2576	2562	-14
9	RSOV to Upper Trailing Edge of Left Door	2600	2568	-32
10	RSOV to Lower Trailing Edge of Right Door	2603	2610	7
11	RSOV to Lower Trailing Edge of Left Door	2584	2608	24
12	RSOV to Bottom of "A" Post-of Right Side	3602	3587	-15
13	RSOV to Bottom of "A" Post-of Left Side	3603	3590	-13
14	RSOV to Firewall, Right Side	4211	4190	-21
15	RSOV to Firewall, Left Side	4202	4179	-23
16	RSOV to Steering Column	3175	3231	56
17	Center of Steering Column to "A" Post	335	345	10
18	Center of Steering Column to Headliner	452	480	28
19	RSOV to Right Side of Front Bumper	4993	4580	-413
20	RSOV to Left Side of Front Bumper	4990	4564	-426
21	Length of Engine Block	600	600	0
RD	RSOV to Right Side of Dash Panel	3413	3400	-13
CD	RSOV to Center of Dash Panel	3359	3342	-17
LD	RSOV to Left Side of Dash Panel	3416	3400	-16

All Dimensions in mm

DATA SHEET NO. 13 - ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

VEHICLE INFORMATION

VIN: 1GNEVFKW1NJ190413
 Vehicle Size Category: MPV

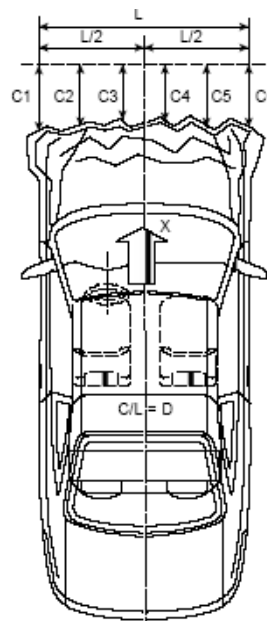
Wheelbase: 3071
 Test Weight (kg): 2312.8

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): 56.63
 Velocity Change (km/h): 69.40
 Time of Separation (ms): 124

CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Centerline
 Damage Region Length (mm): 1524
 Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4990	4564	-426
C2	Crush zone 2 at left side	mm	5118	4557	-561
C3	Crush zone 3 at left side	mm	5210	4568	-642
C4	Crush zone 4 at right side	mm	5218	4568	-650
C5	Crush zone 5 at right side	mm	5119	4590	-529
C6	Crush zone 6 at right side	mm	4993	4580	-413
L	C1 to C6	mm	1524	1390	-134

DATA SHEET NO. 14 - VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

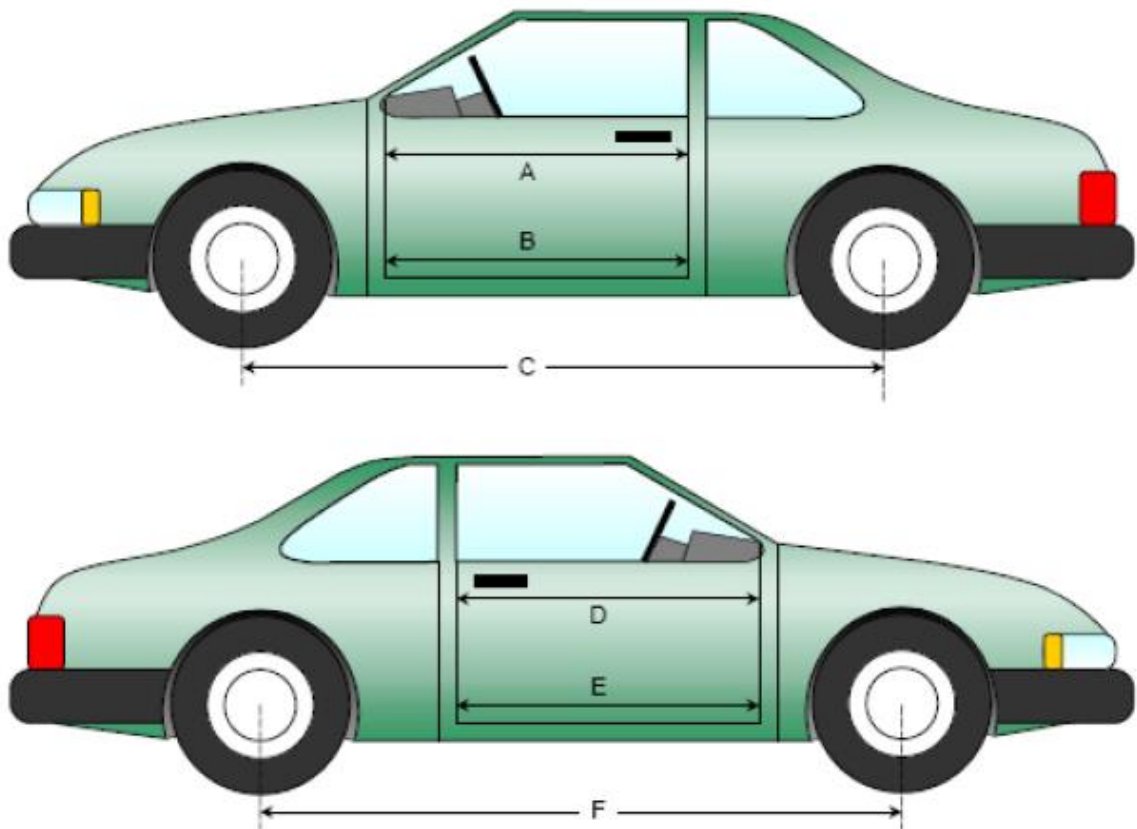
NHTSA No.: M20220107
 Test Date: 8/24/2022

DOOR OPENING WIDTH

No.	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	973	973	0
B	Left Side Lower	mm	863	863	0
D	Right Side Upper	mm	975	975	0
E	Right Side Lower	mm	870	870	0

WHEELBASE MEASUREMENTS

No.	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3075	3000	-75
F	Right Side Wheelbase	mm	3075	3025	-50



¹ Front suspension damaged and wheels fell off measurements not available

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

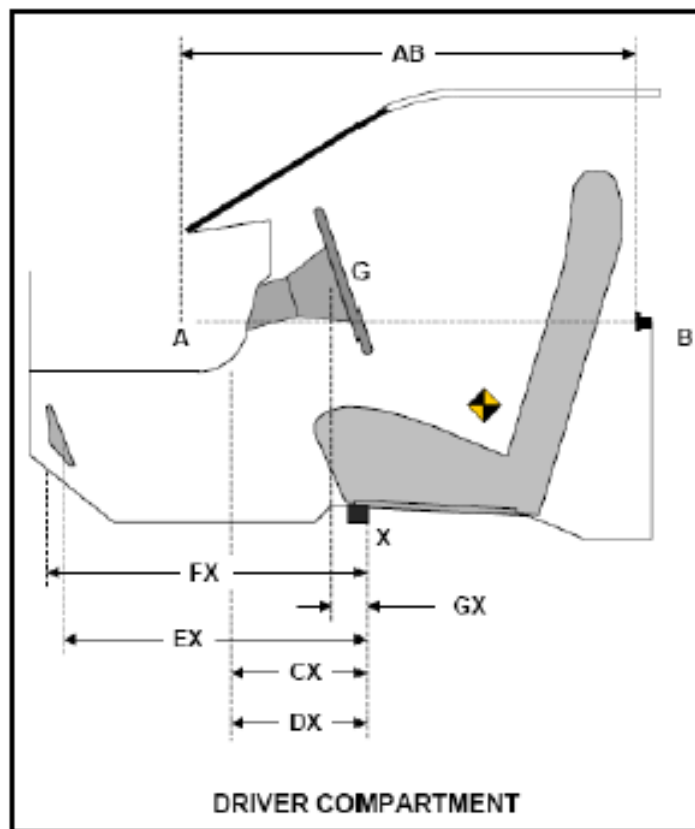
Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	975	975	0
CX	Left Knee Bolster to X	mm	288	270	-18
DX	Right Knee Bolster to X	mm	286	273	-13
EX	Brake Pedal to X	mm	553	495	-58
FX	Foot Rest to X	mm	547	536	-11
GX	Center of Steering Column Wheel Hub to X	mm	96	150	54

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

Please provide windshield mounting details.

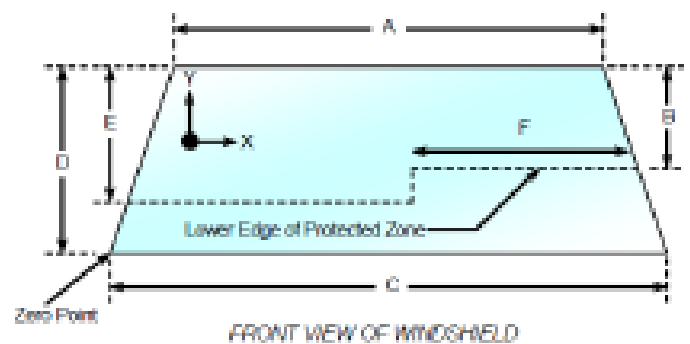
The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicle not equipped with occupant passive restraint and 50% for each side of the windshield for vehicle which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 23.0°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2356	2356	100.0
Right Side	2356	2356	100.0
Total	4711	4711	100.0

Item	Units	Value
A	mm	1361
B	mm	511
C	mm	1590
D	mm	880
E	mm	515
F	mm	540



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 Traverse
Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
Test Date: 8/24/2022

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.8°C

Test Time: 13:00

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

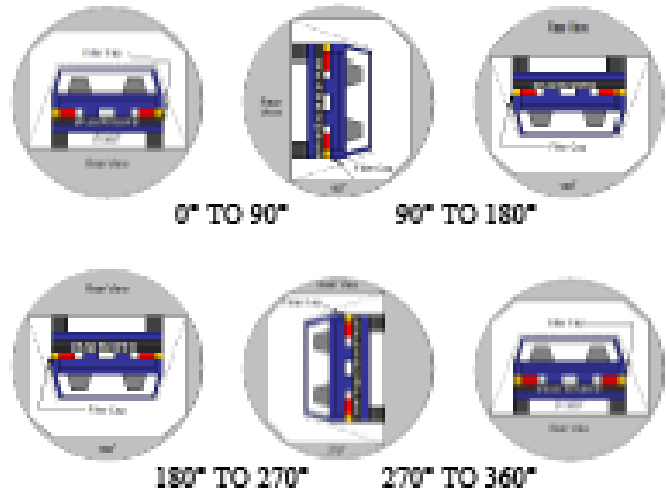
DATA SHEET NO. 16 - FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS (CONT'D)

Test Vehicle: 2022 Chevrolet Traverse
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
 Test Date: 8/24/2022

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

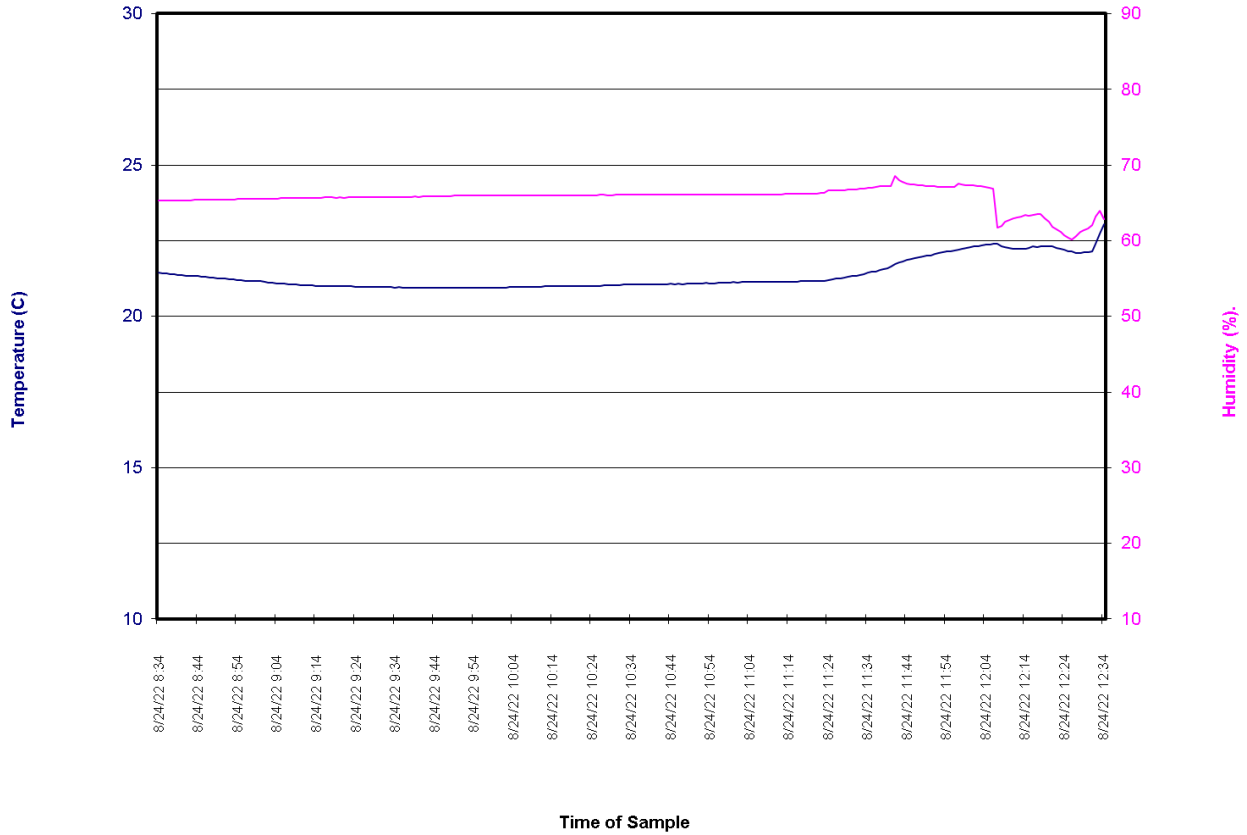
Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 17 - DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2022 Chevrolet Traverse
Test Program: NCAP Frontal Impact

NHTSA No.: M20220107
Test Date: 8/24/2022

Frontal NCAP 220824 Test Time 12:34



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

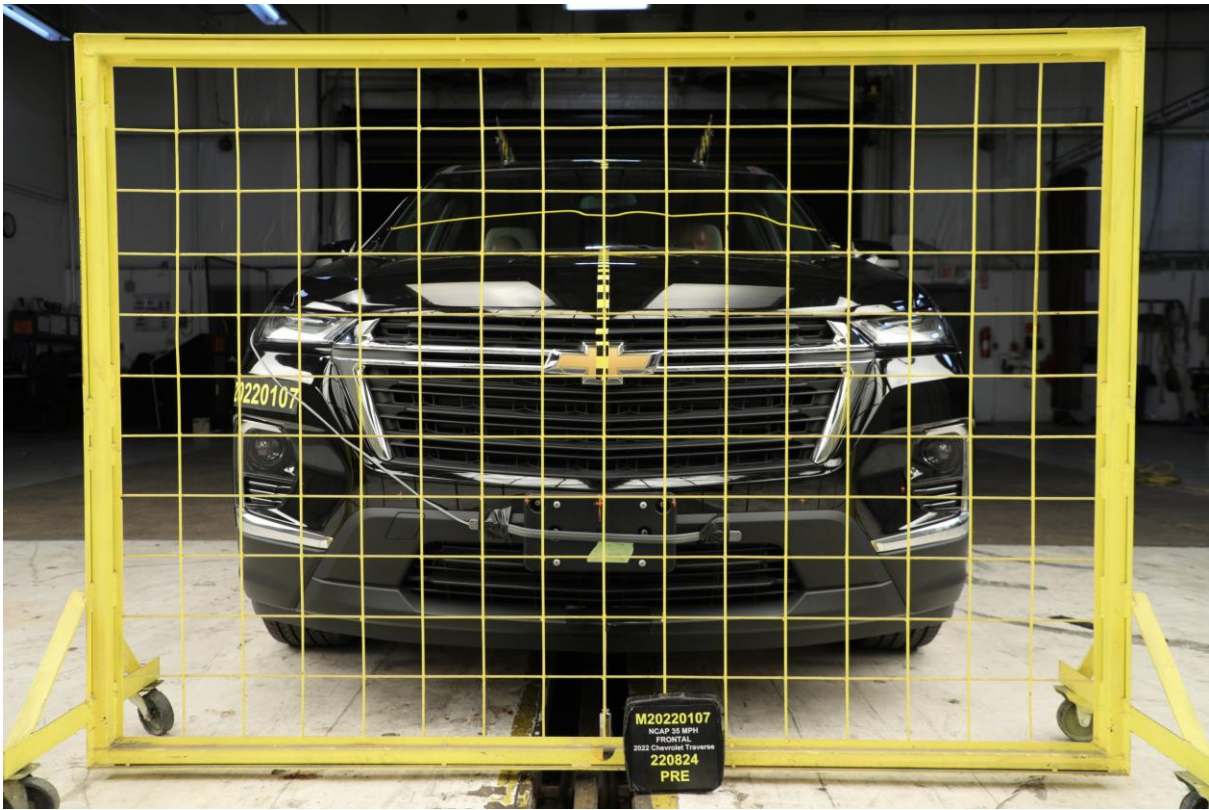
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3	Post-Test Load Cell Wall	A-6
4	Manufacturer's Label	A-6
5	Tire Placard	A-7
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10	Pre-Test Left View of Test Vehicle	A-10
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12	Pre-Test Right View of Test Vehicle	A-11
13	Post-Test Right View of Test Vehicle	A-11
14	Pre-Test Right Front 3-4 View	A-12
15	Post-Test Right Front 3-4 View	A-12
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17	Post-Test Left Rear 3-4 View	A-13
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42	Pre-Test Driver Dummy Feet	A-28
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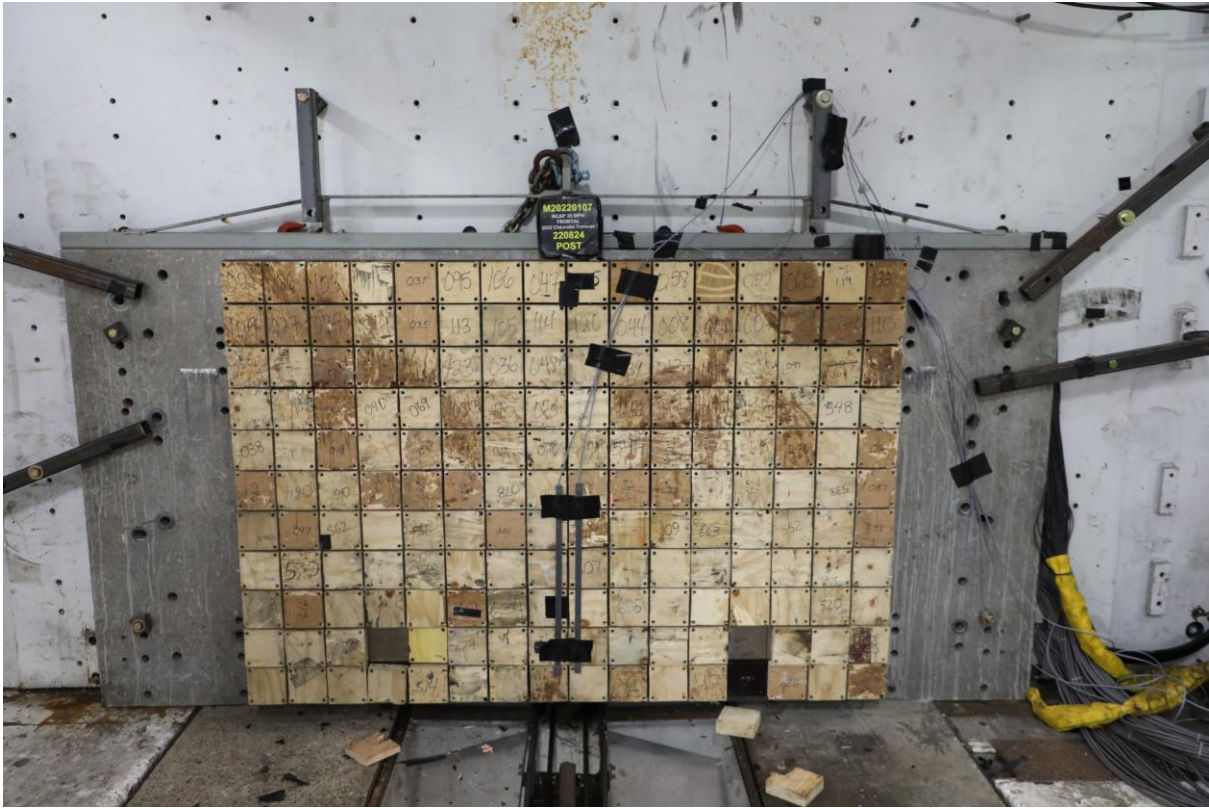
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001 Load Cell Location



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 Traverse Frontal As Delivered



007 Left Rear 3-4 View, as Received



008 Pre-Test Front View of Test Vehicle



009 Post-Test Front View of Test Vehicle



010 Pre-Test Left View of Test Vehicle



011 Post-Test Left View of Test Vehicle



012 Pre-Test Right View of Test Vehicle



013 Post-Test Right View of Test Vehicle



014 Pre-Test Right Front 3-4 View



015 Post-Test Right Front 3-4 View



016 Pre-Test Left Rear 3-4 View



017 Post-Test Left Rear 3-4 View



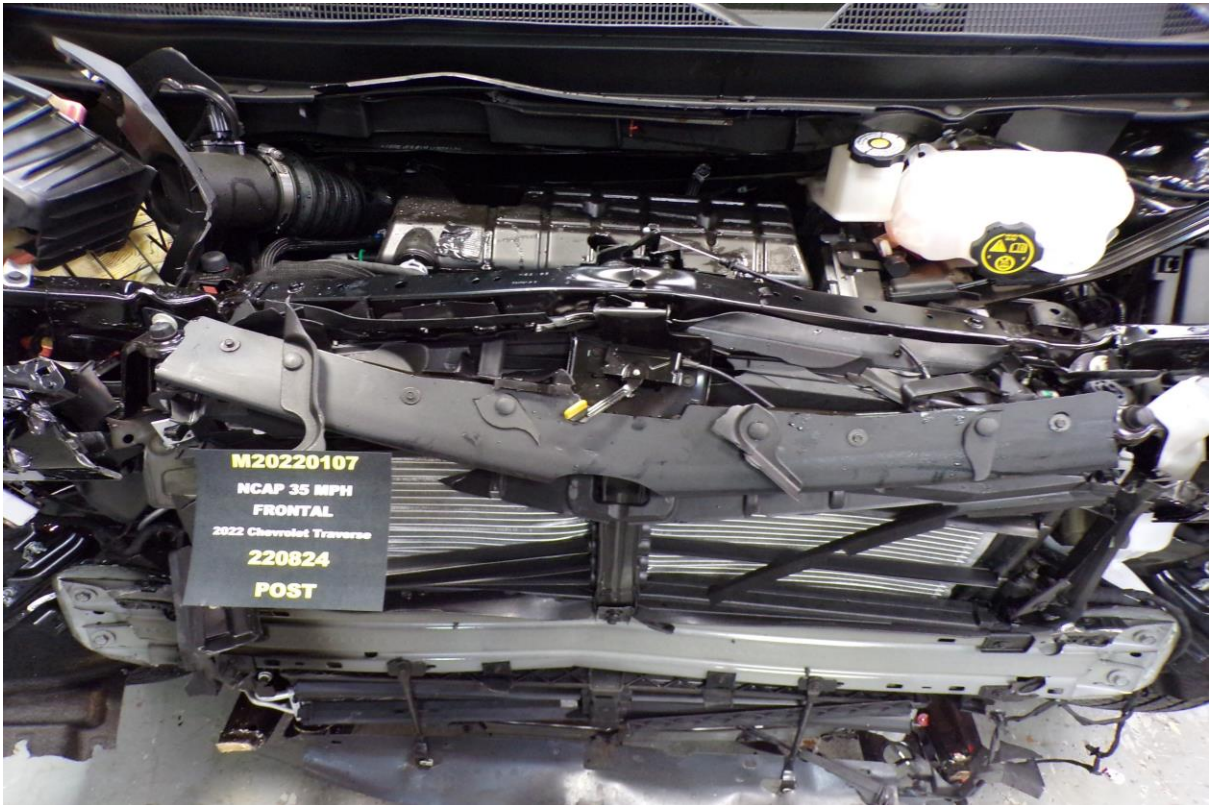
018 Pre-Test Windshield View



019 Post-Test Windshield View



020 Pre-Test Engine Compartment View



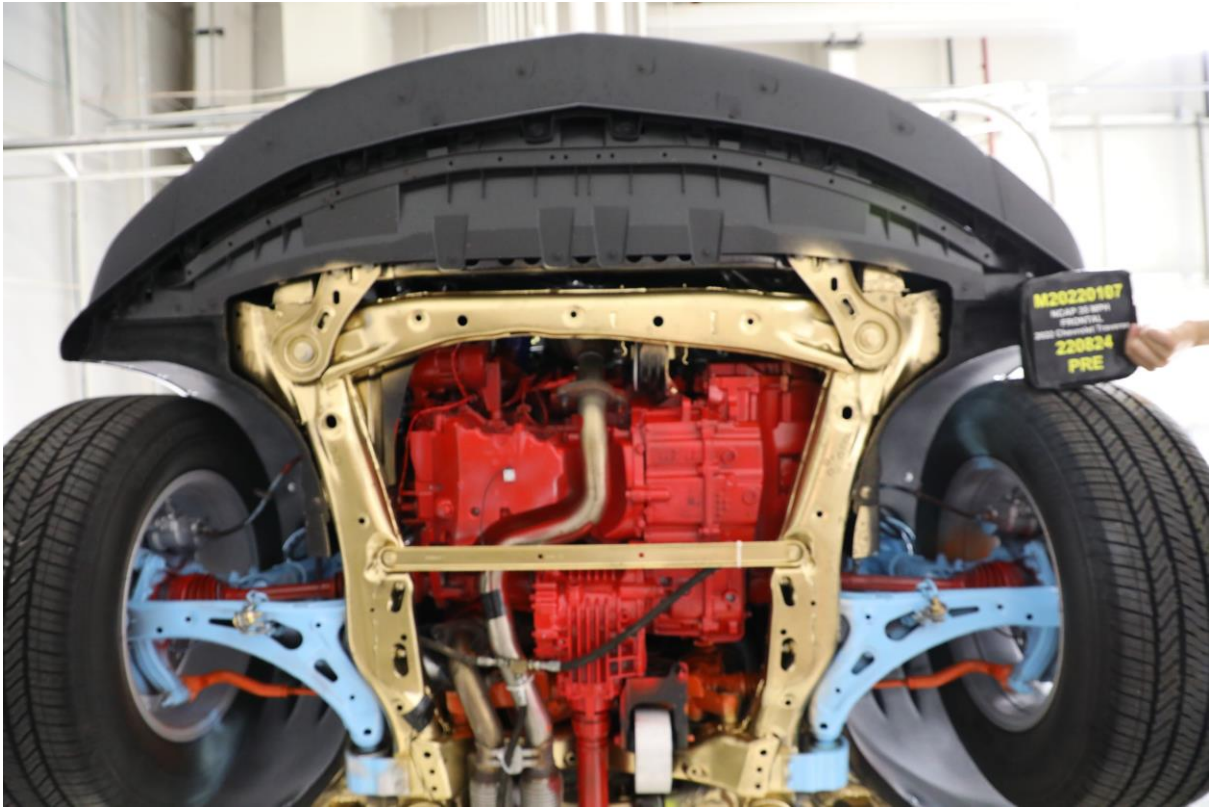
021 Post-Test Engine Compartment View



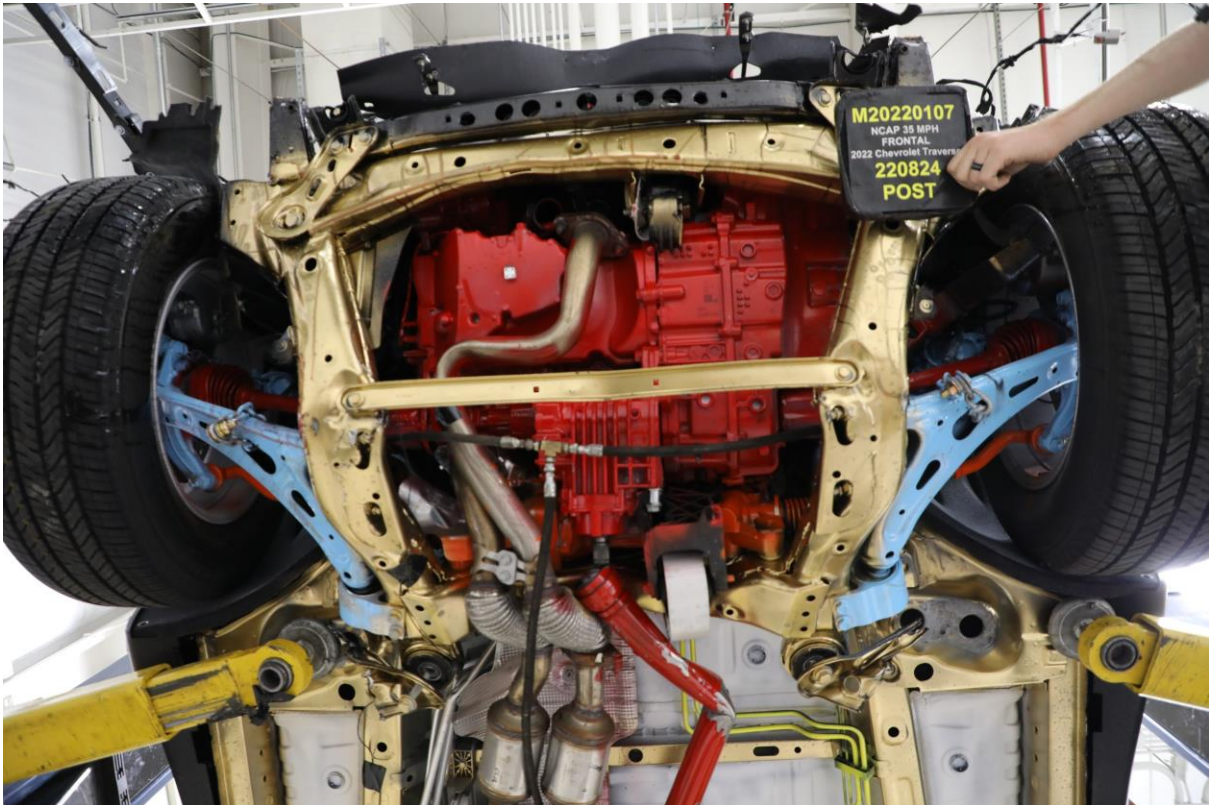
022 Pre-Test Fuel Filler Cap View



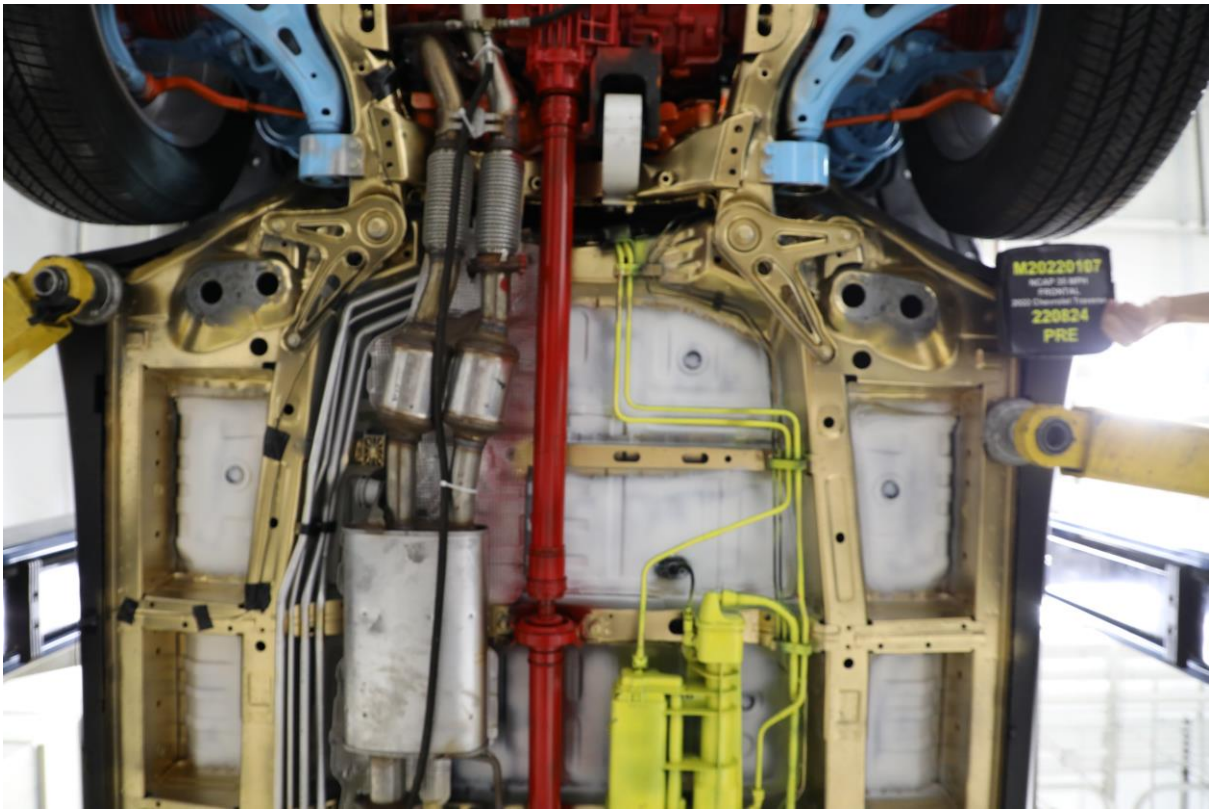
023 Post-Test Fuel Filler Cap View



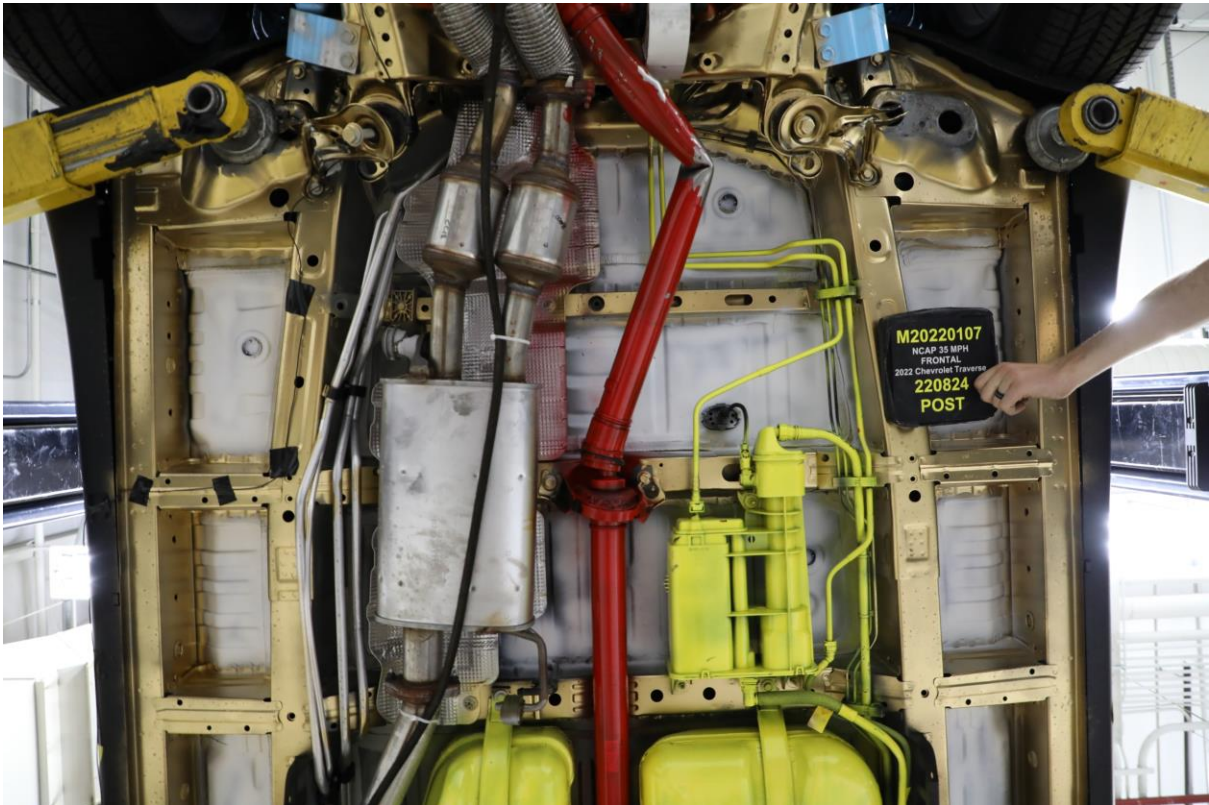
024 Pre-Test Front Underbody View



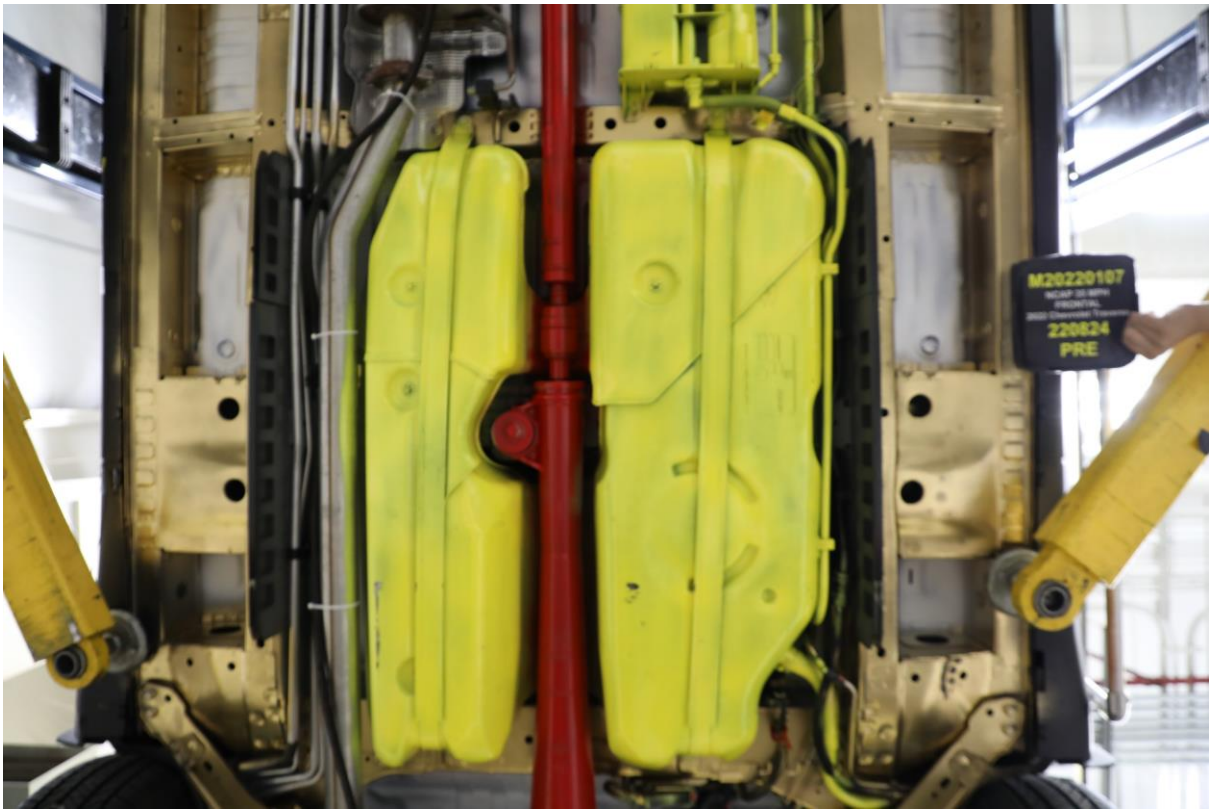
025 Post-Test Front Underbody View



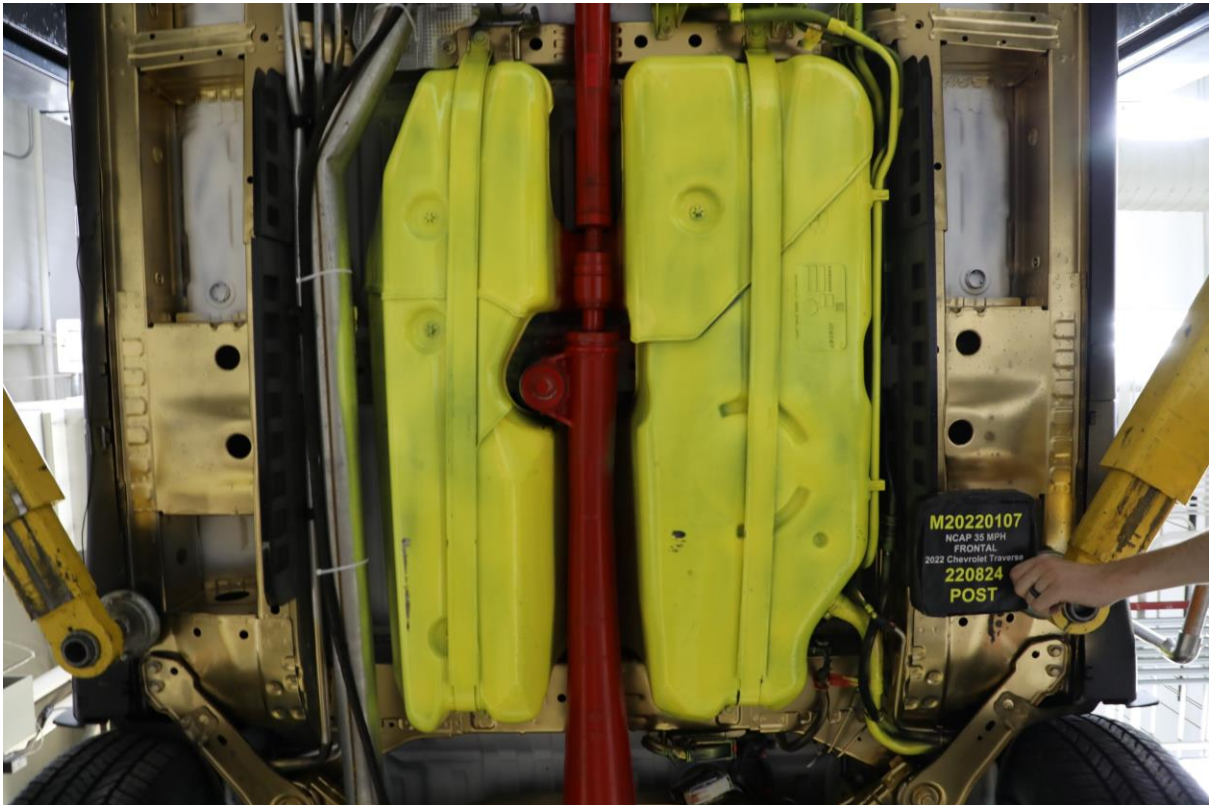
025a Pre-Test Mid Front Underbody View



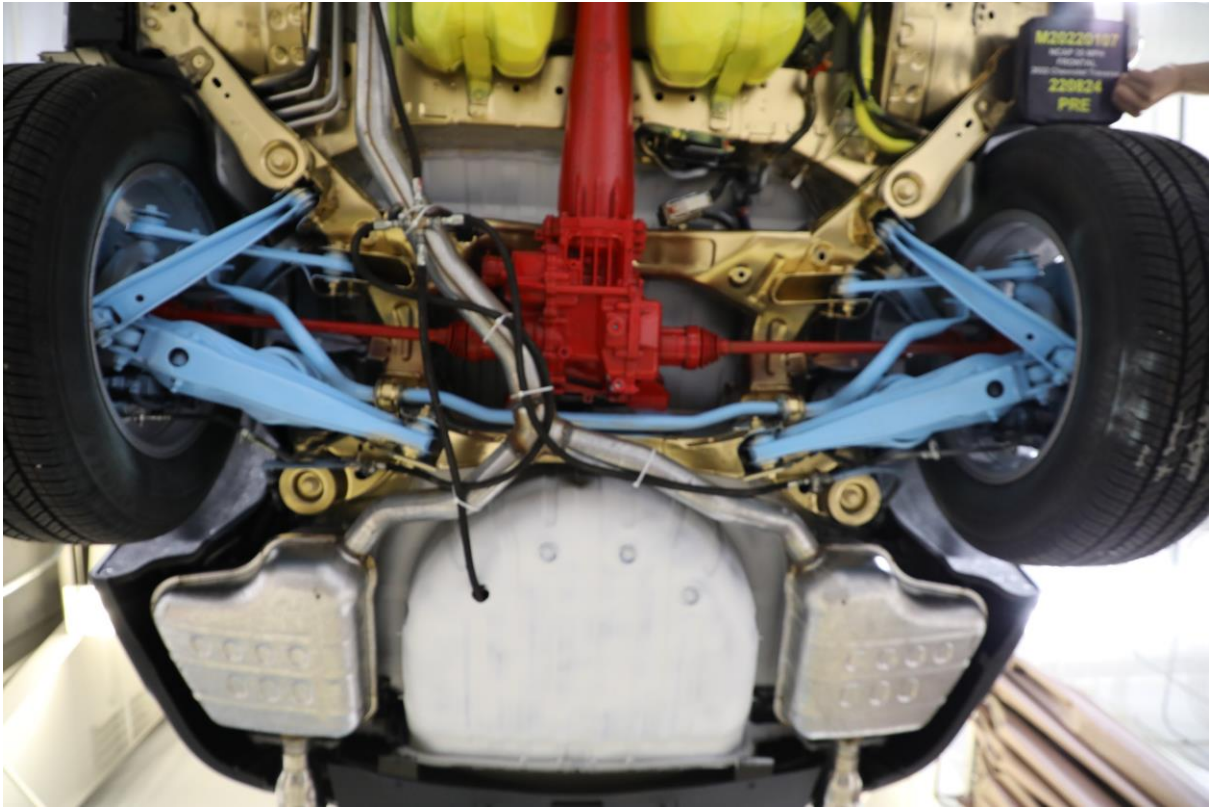
025b Post-Test Mid Front Underbody View



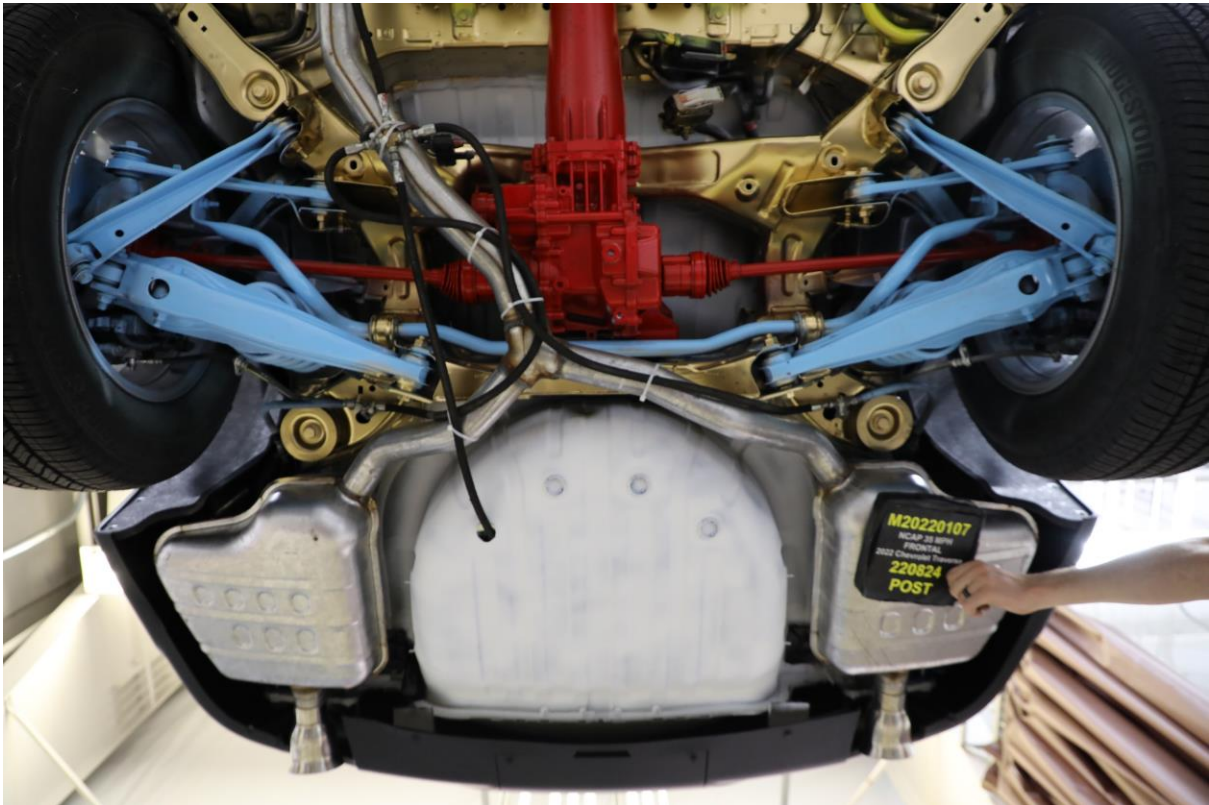
025c Pre-Test Mid Rear Underbody View



025d Post-Test Mid Rear Underbody View



026 Pre-Test Rear Underbody View



027 Post-Test Rear Underbody View



028 Pre-Test Dummy Cable Routing



029 Post-Test Dummy Cable Routing



030 Pre-Test Driver Dummy Front View



031 Post-Test Driver Dummy Front View



032 Pre-Test Driver Dummy Window View



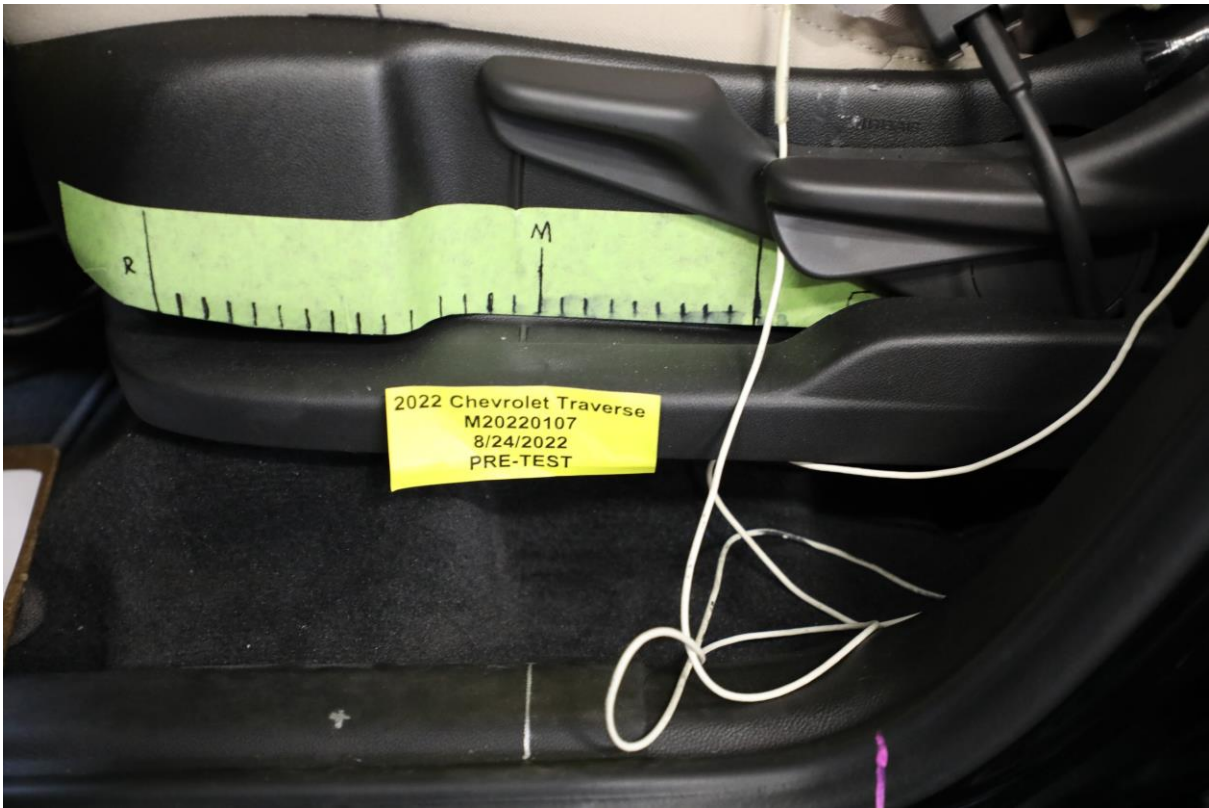
033 Post-Test Driver Dummy Window View



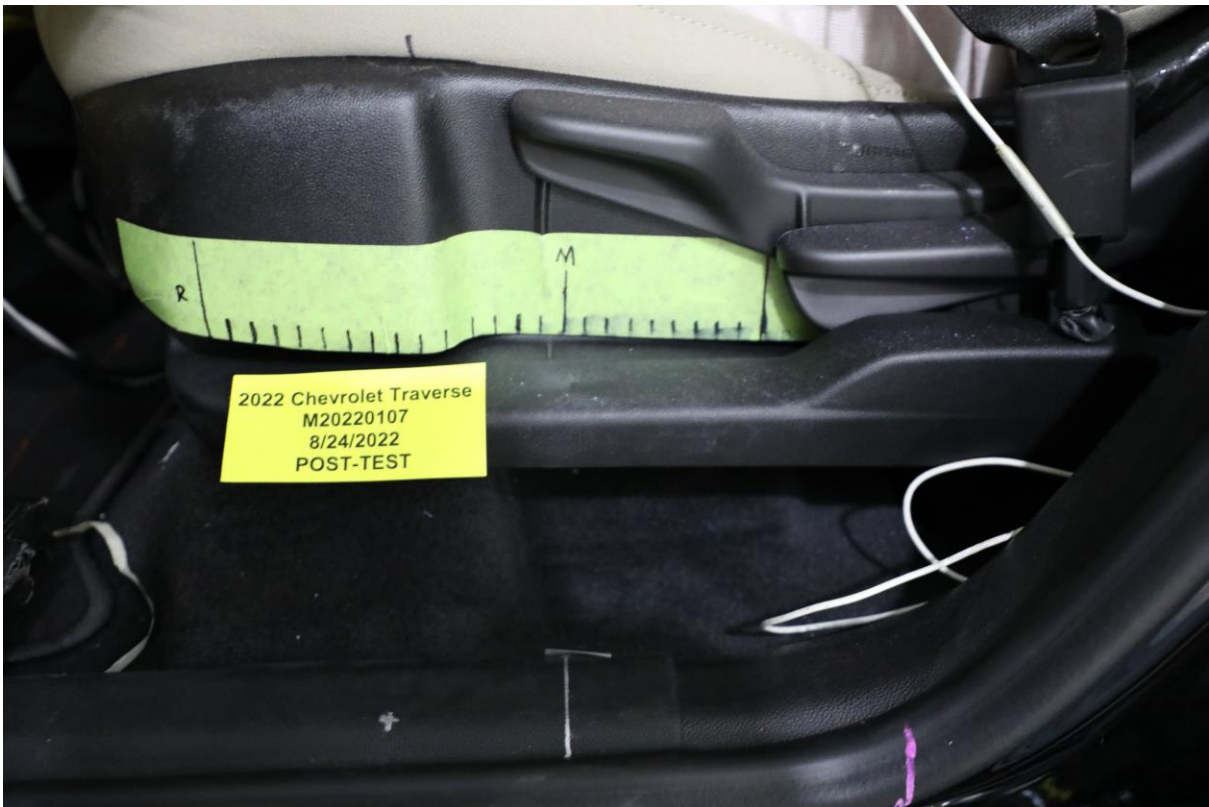
034 Pre-Test Driver Dummy and Vehicle Interior View



035 Post-Test Driver Dummy and Vehicle Interior View



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



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



038 Pre-Test View of Belt Anchorage for Driver Dummy



039 Post-Test View of Belt Anchorage for Driver Dummy



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



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



042 Pre-Test Driver Dummy Feet



043 Post-Test Driver Dummy Feet



044 Pre-Test Driver's Side Knee Bolster



045 Post-Test Driver's Side Knee Bolster



046 Pre-Test Driver's Side Floorpan



047 Post-Test Driver's Side Floorpan



048 Post-Test Driver Dummy Face



049 Post-Test Driver Dummy Contact with Airbag



050 Post-Test Driver Dummy Contact with Headrest

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



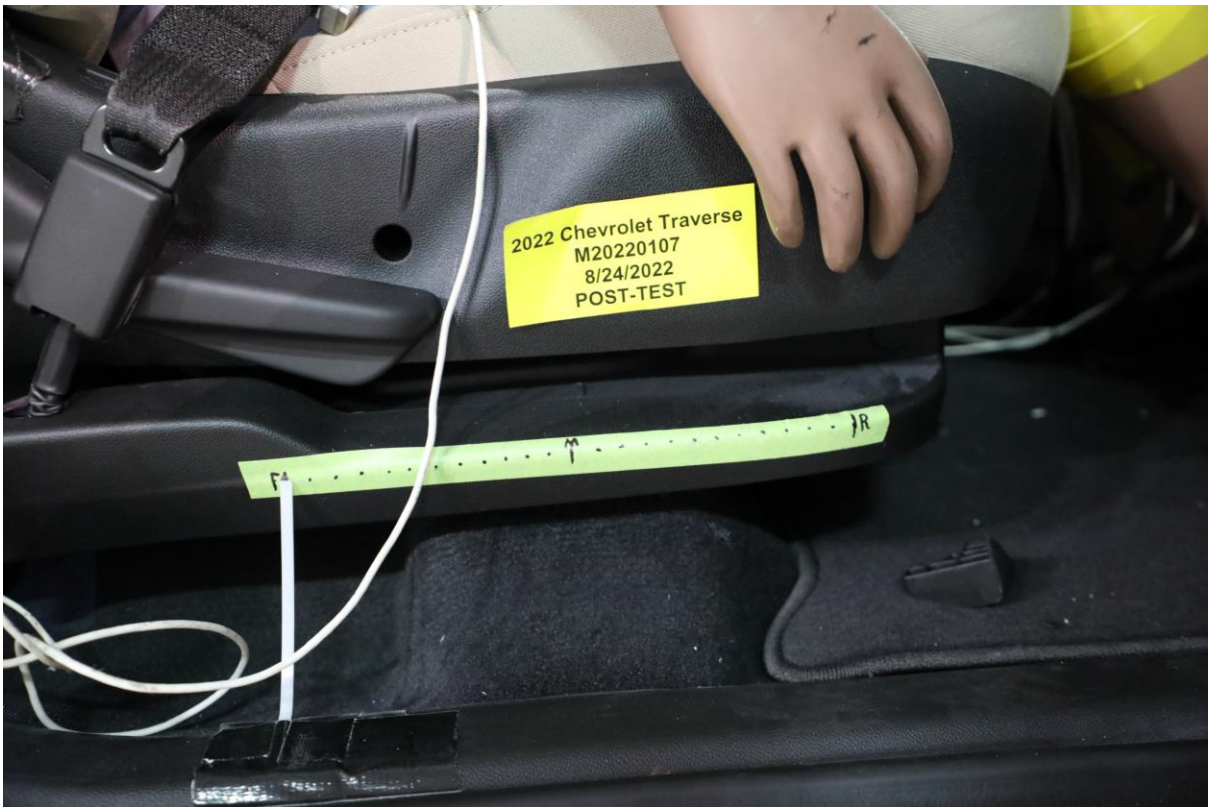
057 Pre-Test Passenger Dummy and Vehicle Interior View



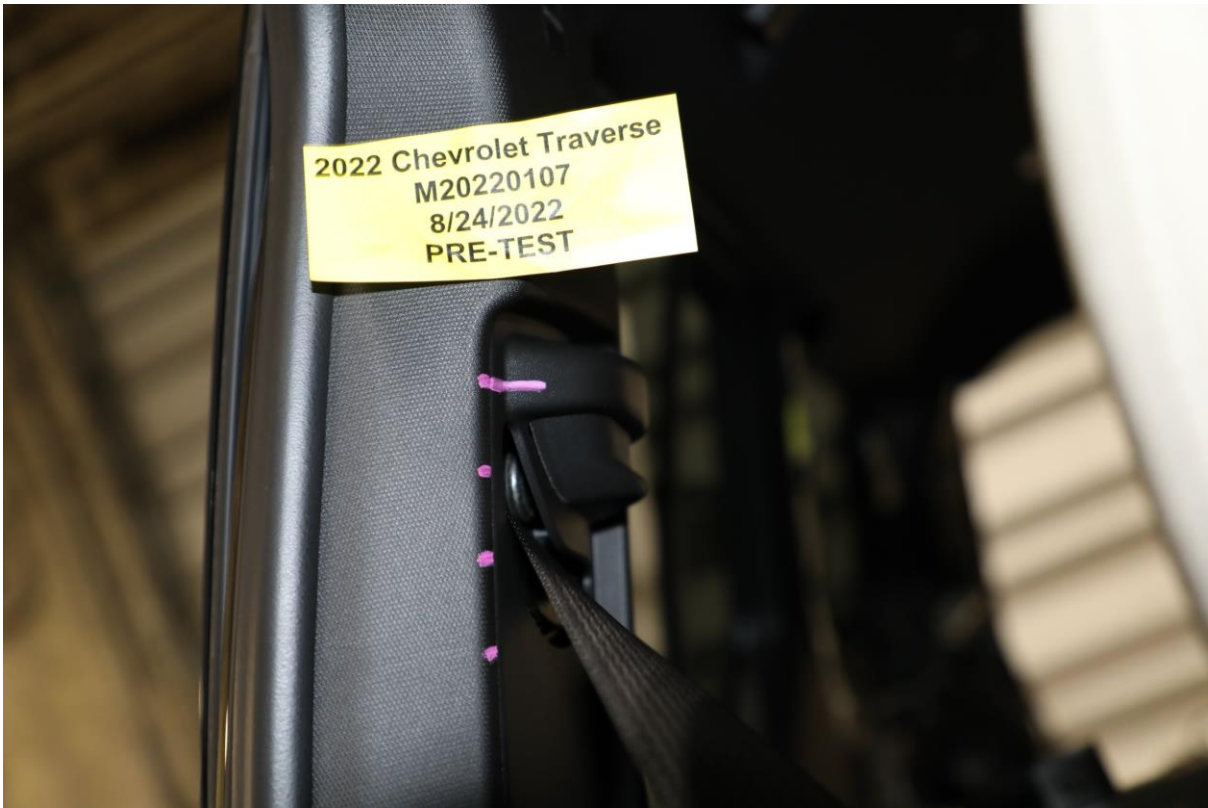
058 Post-Test Passenger Dummy and Vehicle Interior View



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



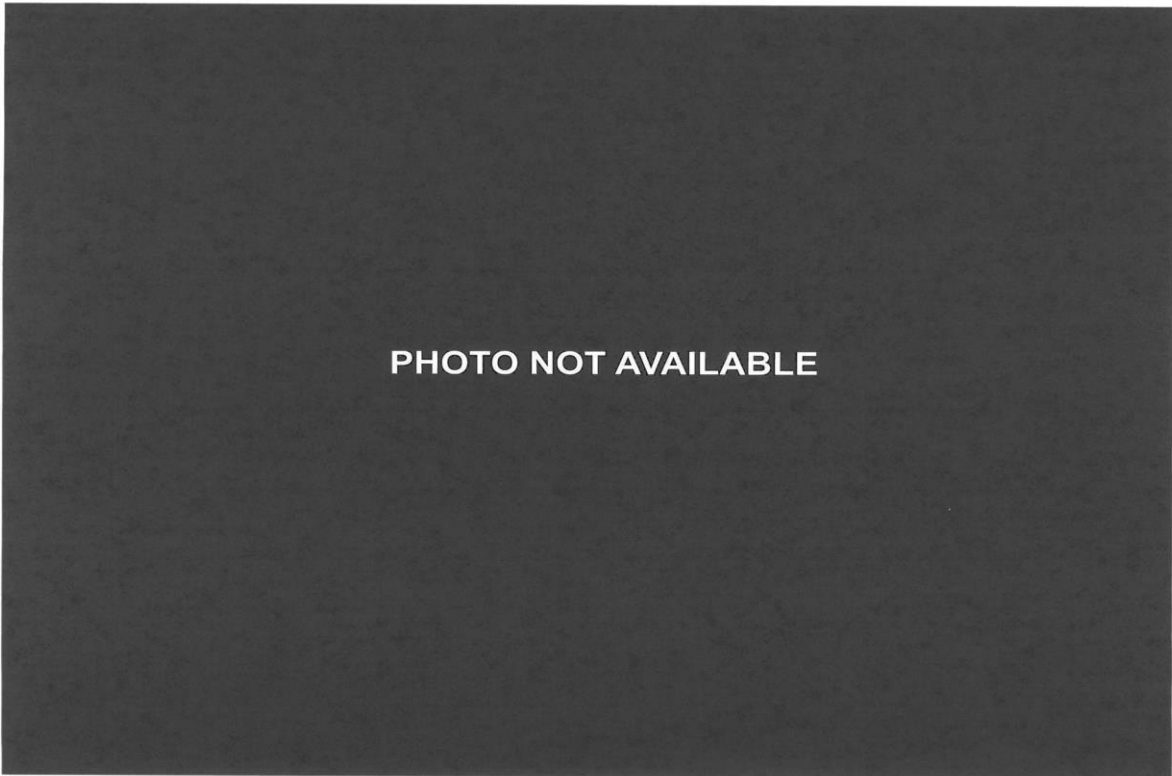
060 Post-Test Passenger's Seat Fore-Aft Markings



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



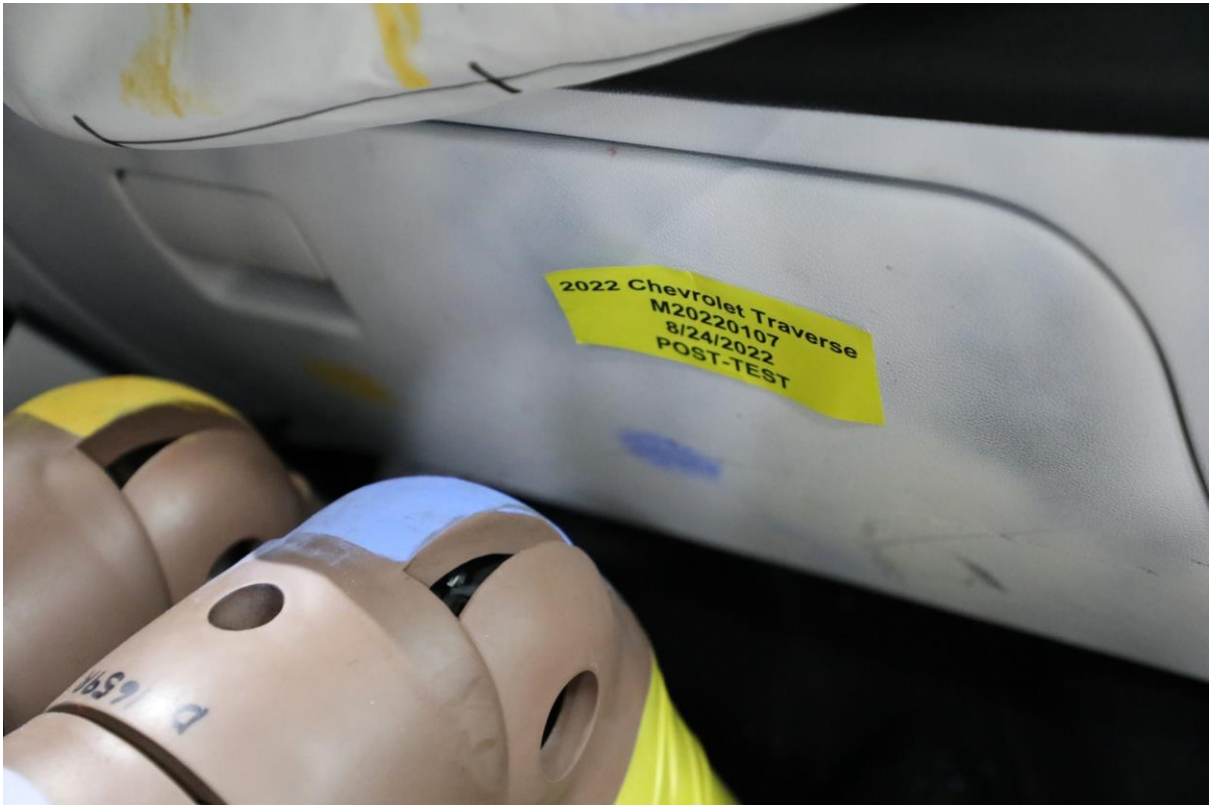
065 Pre-Test Passenger Dummy Feet



066 Post-Test Passenger Dummy Feet



067 Pre-Test Passenger's Side Knee Bolster



068 Post-Test Passenger's Side Knee Bolster



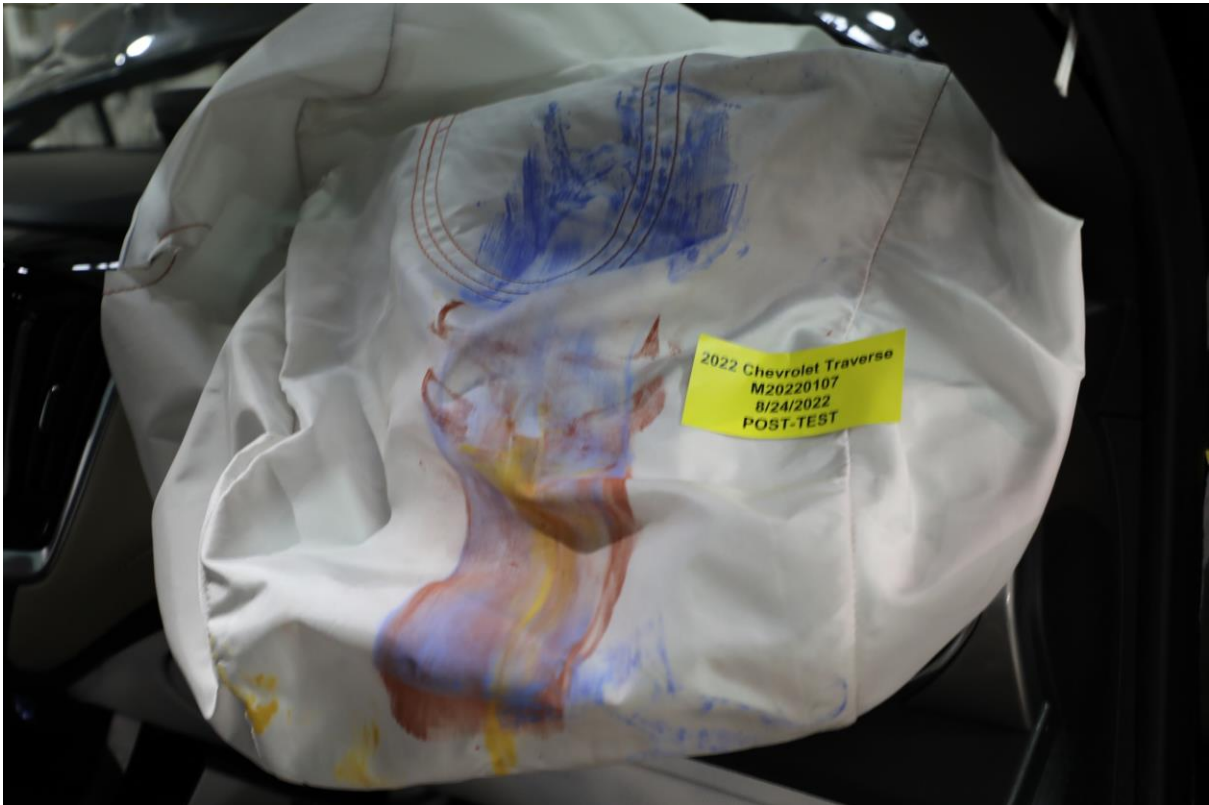
069 Pre-Test Passenger's Side Floorpan



070 Post-Test Passenger's Side Floorpan



071 Post-Test Passenger Dummy Face



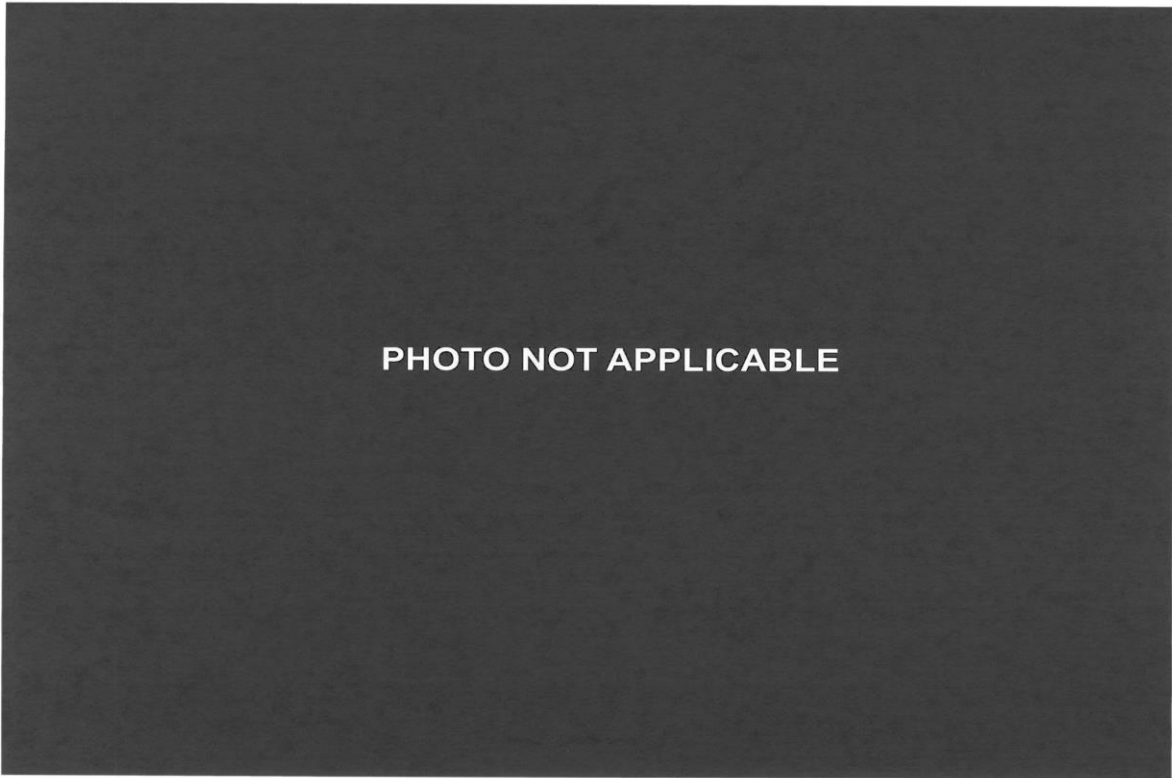
072 Post-Test Passenger Dummy Contact with Airbag



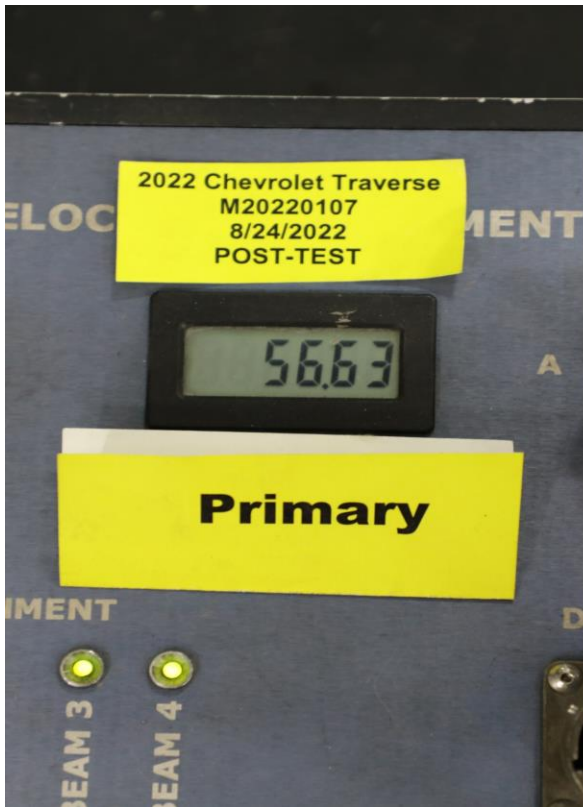
073 Post-Test Passenger Dummy Contact with Headrest



074 Photograph of Ballast Installed in Vehicle



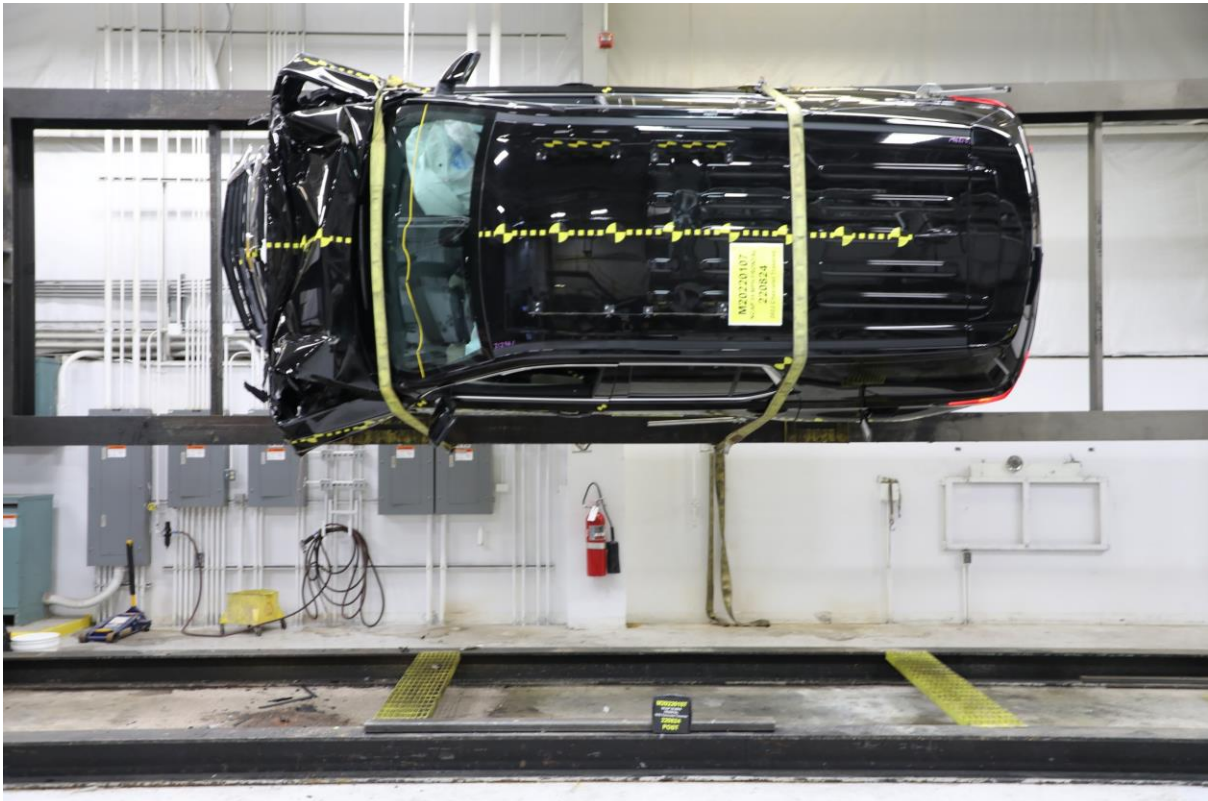
075 Post-Test Stoddard Spillage Location View



076 Post-Test Speed Trap Read out



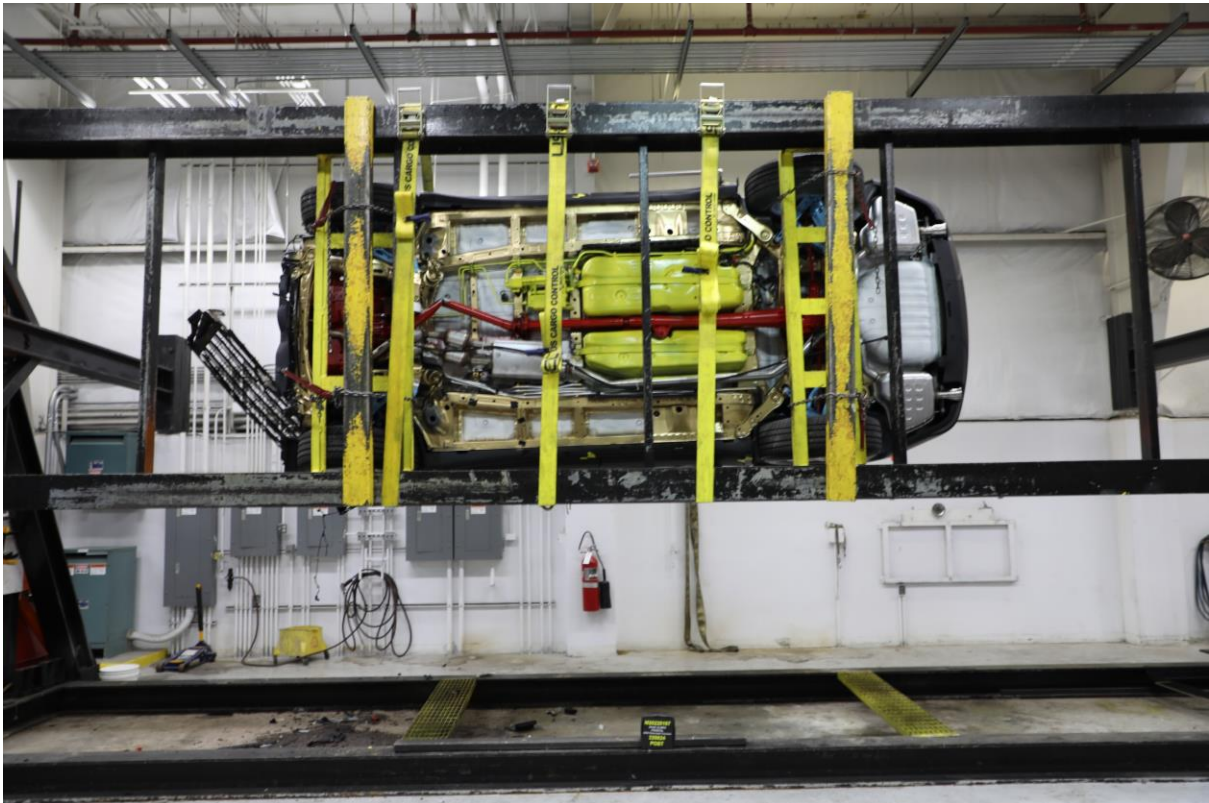
077 Vehicle at 0° on Static Rollover Device



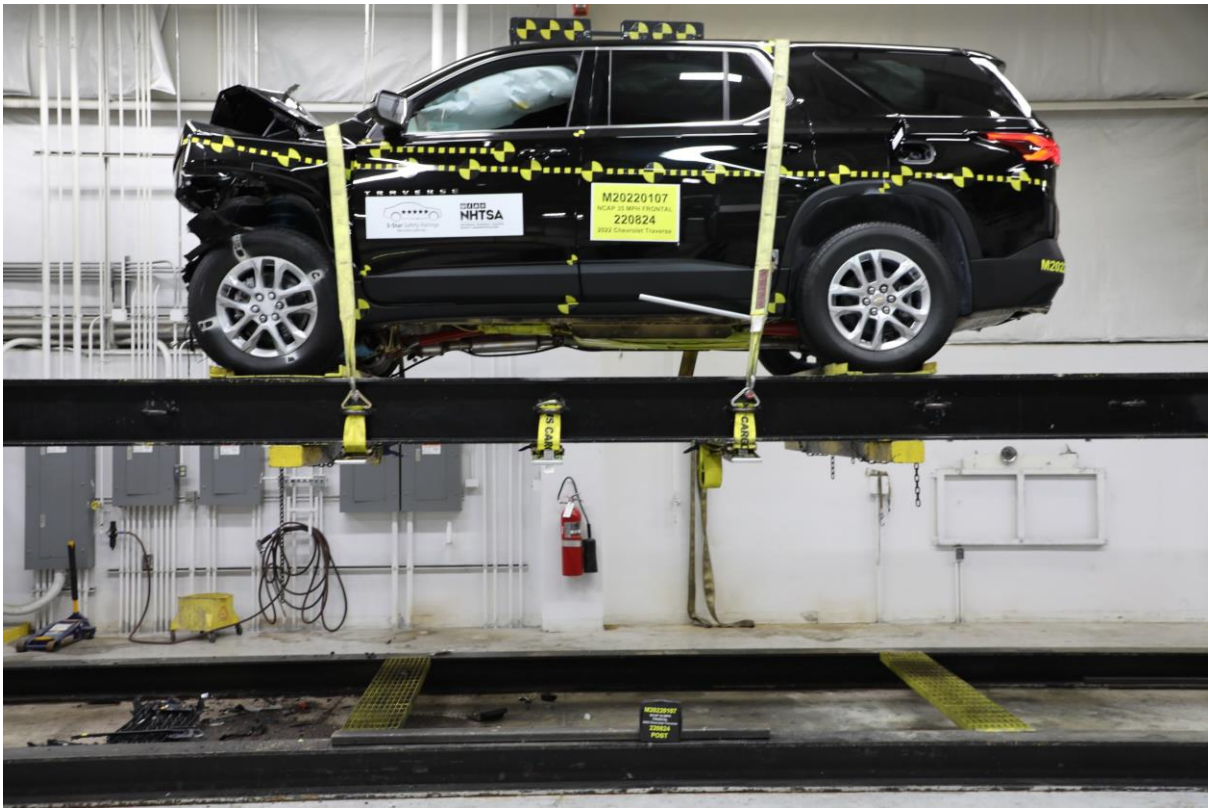
078 Vehicle at 90° on Static Rollover Device



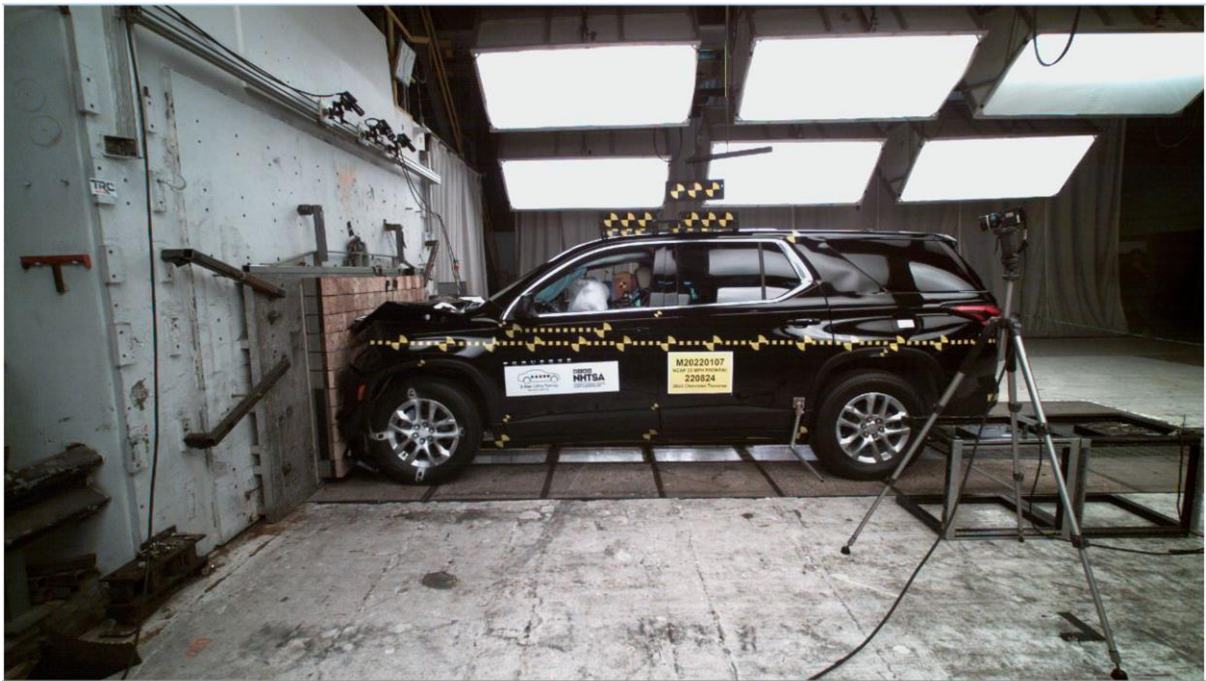
079 Vehicle at 180° on Static Rollover Device



080 Vehicle at 270° on Static Rollover Device



081 Vehicle at 360° on Static Rollover Device



082 2022 Chevrolet Traverse Frontal Impact Event



2022 TRAVERSE 1LS AWD

**EXTERIOR: MOSAIC BLACK METALLIC ENGINE: 3.6L V6, SIDI, VVT
INTERIOR: JET BLACK/ CHAI TRANSMISSION: 9-SPD AUTOMATIC**

Visit us at www.chevy.com

<p>STANDARD EQUIPMENT</p> <p><small>ITEMS LISTED BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE SHOWN.</small></p> <p>OWNER BENEFITS</p> <ul style="list-style-type: none"> • 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 • WHICHEVER COMES FIRST SEE CHEVROLET.COM OR DEALER FOR TERMS, DETAILS & LIMITS <p>PERFORMANCE & MECHANICAL</p> <ul style="list-style-type: none"> • WHEELS, 18" BRIGHT SILVER PAINTED ALUMINUM • WHEEL, SPARE, 18" STEEL <p>CONNECTIVITY & TECHNOLOGY</p> <ul style="list-style-type: none"> • CHEVROLET INFOTAINMENT 3 7" DIAG COLOR TOUCHSCREEN 	<p>ADDITIONAL FEATURES FOR COMPATIBLE PHONES INCLUDE:</p> <ul style="list-style-type: none"> • BLUETOOTH AUDIO STREAMING • VOICE COMMAND PASSTHROUGH TO PHONE, WIRELESS APPLE CARPLAY AND WIRELESS ANDROID AUTO • KEYLESS OPEN AND START • ONSTAR (R) SERVICES & Wi-Fi (R) HOTSPOT CAPABLE; SEE ONSTAR.COM FOR TERMS • SIRIUSXM RADIO CAPABLE. TRIAL INCLUDED WITH SUBSCRIPTION SOLD SEPARATELY <p>INTERIOR</p> <ul style="list-style-type: none"> • SEATING, 8-PASSENGER • SEAT ADJUSTER, DRIVER 6-WAY MANUAL • SEAT, THIRD ROW, 60/40 BENCH, MANUAL FOLD • AIR CONDITIONING, TRI ZONE • AUTO CLIMATE CONTROL 	<p>EXTERIOR</p> <ul style="list-style-type: none"> • MIRRORS, OUTSIDE HEATED POWER • ADJUSTABLE, MANUAL FOLDING • HEADLAMPS, LED • DAYTIME RUNNING LAMPS, LED • TAIL LAMP, LED <p>SAFETY & SECURITY</p> <ul style="list-style-type: none"> • TEBN DRIVER • CHEVY SAFETY ASSIST: • FOLLOWING DISTANCE INDICATOR • FORWARD COLLISION ALERT • LANE KEEP ASSIST W/ LANE DEPARTURE WARNING • FRONT PEDESTRIAN BRAKING • AUTOMATIC EMERGENCY BRAKING • INTELLIBEAM-AUTO HIGH BEAM <p><small>MANUFACTURER'S SUGGESTED RETAIL PRICE</small></p> <p>STANDARD VEHICLE PRICE \$35,700.00</p> <p>OPTIONS & PRICING</p>	<p><small>OPTIONS INSTALLED BY THE MANUFACTURER MAY REPLACE STANDARD EQUIPMENT SHOWN</small></p> <table border="1"> <tr> <td>TOTAL OPTIONS</td> <td>\$0.00</td> </tr> <tr> <td>TOTAL VEHICLE & OPTIONS</td> <td>\$35,700.00</td> </tr> <tr> <td>DESTINATION CHARGE</td> <td>1,395.00</td> </tr> <tr> <td>TOTAL VEHICLE PRICE*</td> <td>\$37,095.00</td> </tr> </table>	TOTAL OPTIONS	\$0.00	TOTAL VEHICLE & OPTIONS	\$35,700.00	DESTINATION CHARGE	1,395.00	TOTAL VEHICLE PRICE*	\$37,095.00
TOTAL OPTIONS	\$0.00										
TOTAL VEHICLE & OPTIONS	\$35,700.00										
DESTINATION CHARGE	1,395.00										
TOTAL VEHICLE PRICE*	\$37,095.00										

EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy

20 MPG combined city/hwy
17 MPG city
25 MPG highway

Standard SUVs range from 14 to 102 MPG. The best vehicle rates 142 MPG.

You spend \$2,250 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,750

Fuel Economy & Greenhouse Gas Rating (tailpipe only) **4**

Smog Rating (tailpipe only) **6**

This vehicle emits 448 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fuelconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$5,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.35 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov
Calculate personalized estimates and compare vehicles.

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash	Driver Not Rated Passenger Not Rated
Side Crash	Front seat Not Rated Rear seat Not Rated
Rollover	★★★★

Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.

Based on the risk of injury in a side impact.

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

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

PARTS CONTENT INFORMATION

This label has been applied pursuant to Federal law. Do not remove prior to delivery, unless the dealer is instructed by the manufacturer. The dealer is responsible for ensuring that the parts content information is accurate and accessible to you. Please do not alter or tamper with this label.

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 47%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 27%

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

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: LANSING, MI U.S.A.
COUNTRY OF ORIGIN: ENGINE: MEXICO TRANSMISSION: UNITED STATES

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ORDER NO. BK0002 SALES CODE: E
 DEALER NO. 10028 10056
 FINAL ASSEMBLY: LANSING, MI U.S.A.
 VIN 1GNEVFKW1N1J190413
 INCLUDES 10 MONTH UNLIMITED MILEAGE
 SPORT CHEVROLET COMPANY, LLC
 3101 AUTOMOBILE BLVD
 SILVER SPRING, MD 20904-4999

DV
1GA3364754

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

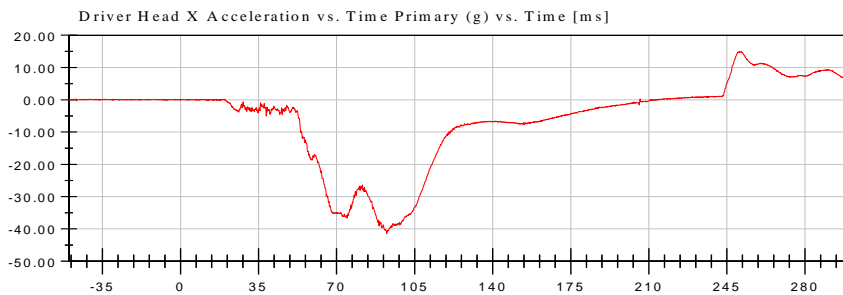
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



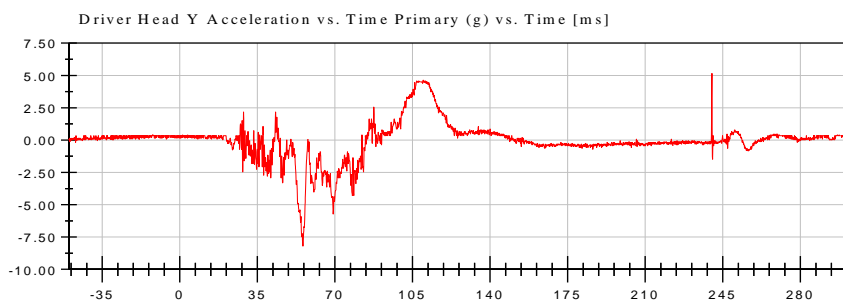
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14.88 g at 250.64 ms

<Min>

-41.45 g at 92.48 ms

CFC_1000



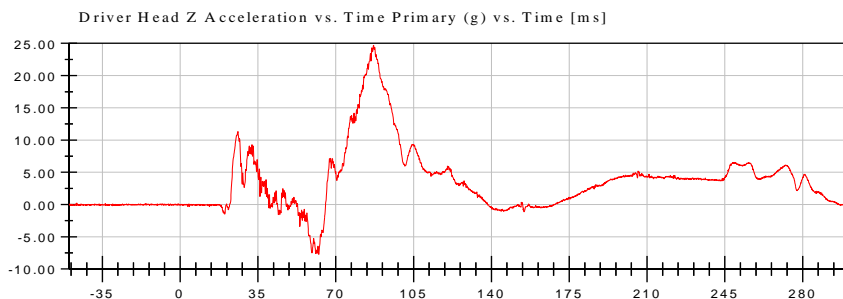
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5.16 g at 240.08 ms

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-8.20 g at 55.52 ms

CFC_1000



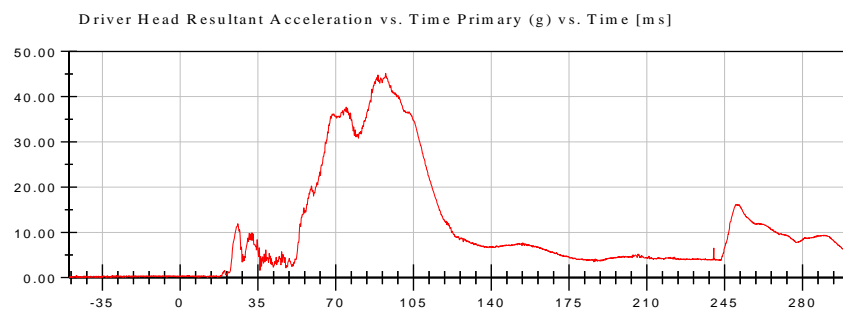
<Max>

24.69 g at 86.96 ms

<Min>

-7.74 g at 62.32 ms

CFC_1000



<Max>

45.17 g at 92.48 ms

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0.03 g at -49.28 ms

CFC_1000



NHTSA

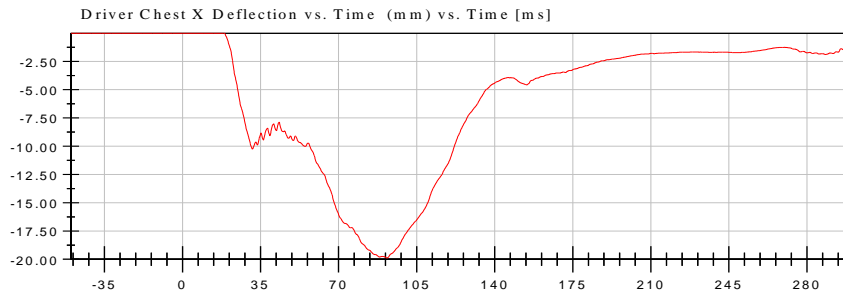
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



<Max>

0.00 mm at -47.60 ms

<Min>

-19.87 mm at 91.60 ms

CFC_600



NHTSA

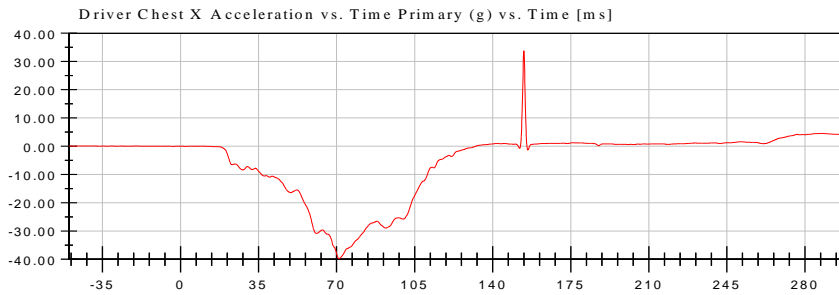
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



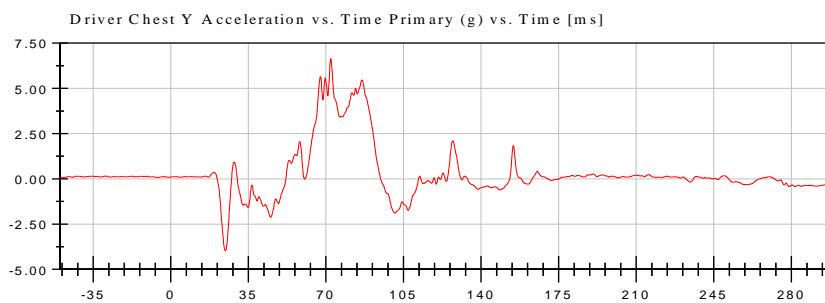
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33.77 g at 154.00 ms

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-39.83 g at 71.04 ms

CFC_180



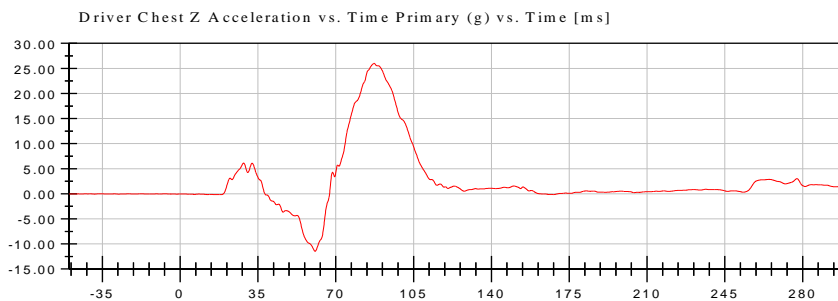
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6.64 g at 72.16 ms

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-3.97 g at 24.64 ms

CFC_180



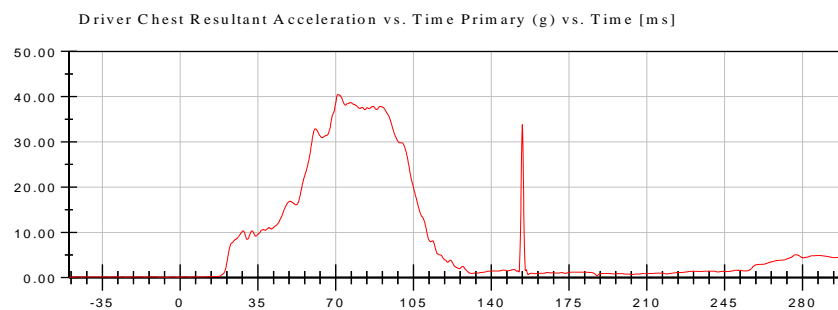
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26.03 g at 87.20 ms

<Min>

-11.47 g at 60.72 ms

CFC_180



<Max>

40.51 g at 71.04 ms

<Min>

0.08 g at -5.76 ms

CFC_180



NHTSA

Test Lab: CTF

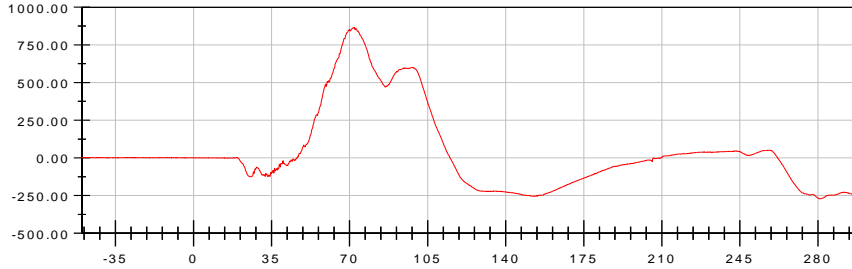
Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

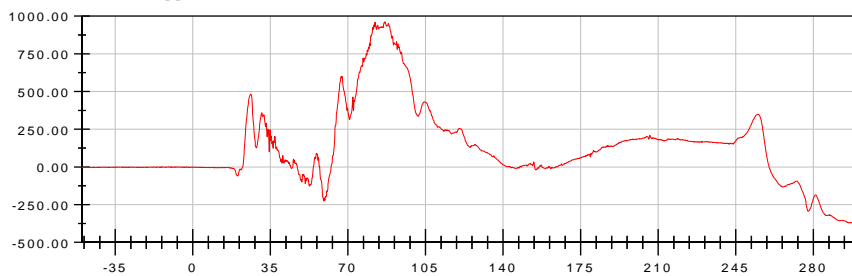
865.64 N at 72.08 ms

<Min>

-272.37 N at 280.72 ms

CFC_1000

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



<Max>

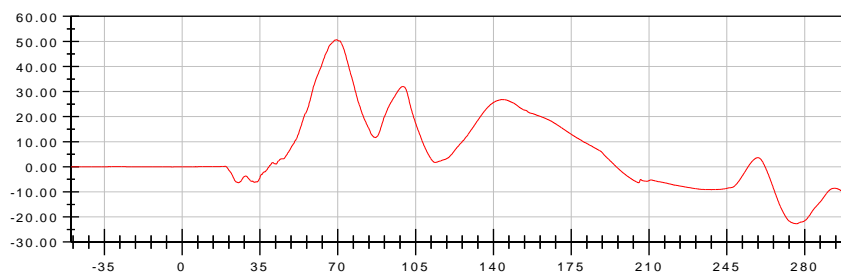
963.16 N at 86.64 ms

<Min>

-370.74 N at 296.48 ms

CFC_1000

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



<Max>

50.68 Nm at 69.44 ms

<Min>

-22.74 Nm at 276.32 ms

CFC_600





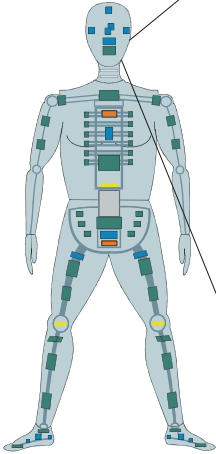
2022 Chevrolet Traverse NCAP 35 mph Frontal Impact

Date: 08/24/2022
Time: 12:34

Neck Injury Predictor (NIJ)

Customer: NHTSA
Test Number: M 22020107

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

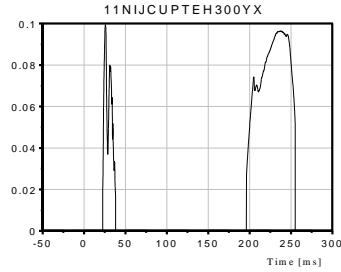


Dummy: HIII 50th Male
Seating Position:

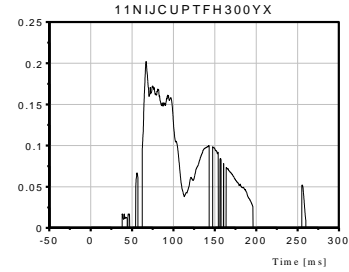
Driver

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

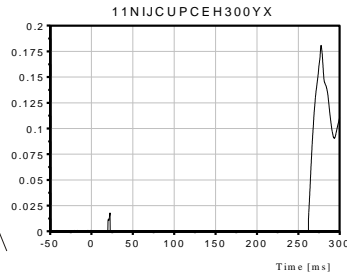
TRC Inc. Test Lab: CTF
Test Number: 220824



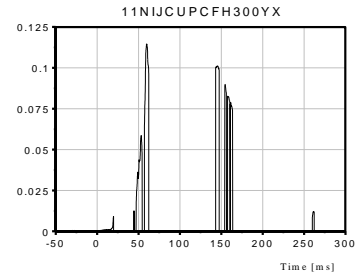
Max [NTE] 0.0994 at 25.84 ms



Max [NTF] 0.2020 at 67.20 ms



Max [NCE] 0.1809 at 277.52 ms



Max [NCF] 0.1145 at 59.76 ms

NHTSA

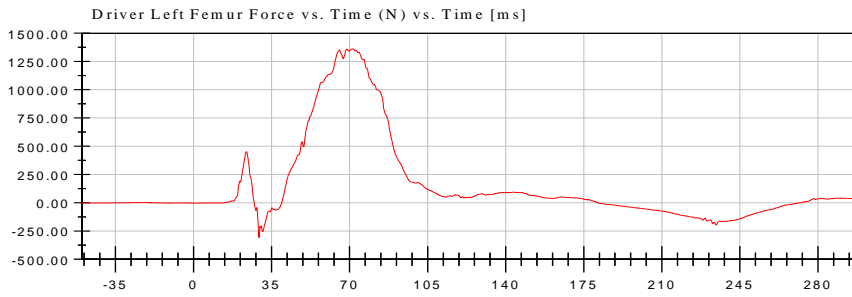
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



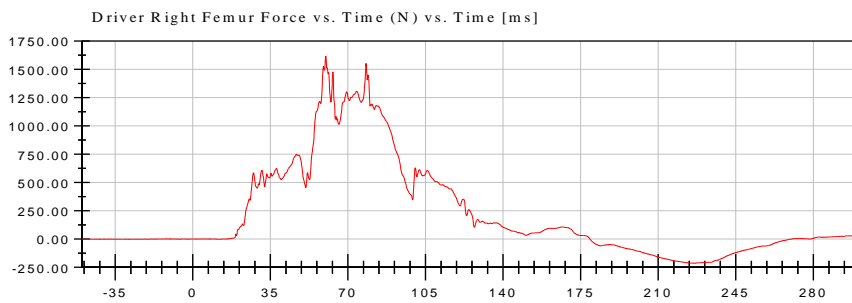
<Max>

1,361.00 N at 71.52 ms

<Min>

-308.54 N at 29.36 ms

CFC_600



<Max>

1,617.36 N at 60.00 ms

<Min>

-213.24 N at 226.72 ms

CFC_600



NHTSA

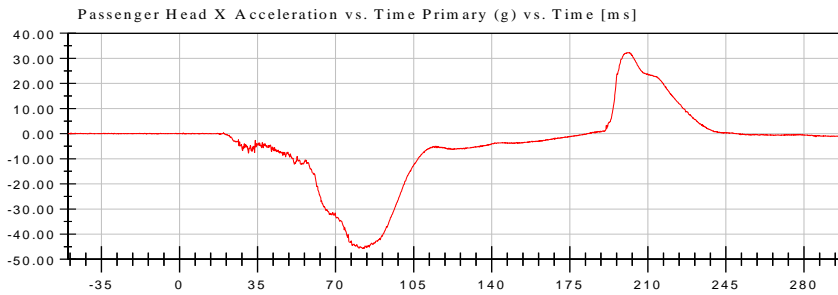
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



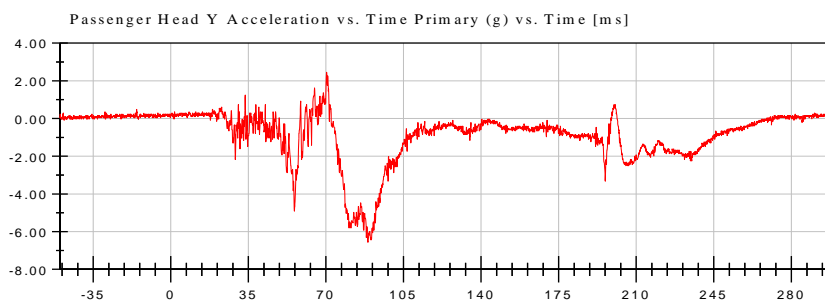
<Max>

32.31 g at 201.60 ms

<Min>

-45.74 g at 82.16 ms

CFC_1000



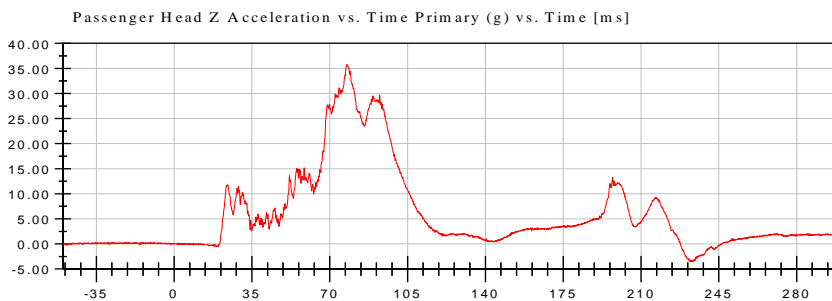
<Max>

2.45 g at 70.24 ms

<Min>

-6.56 g at 88.96 ms

CFC_1000



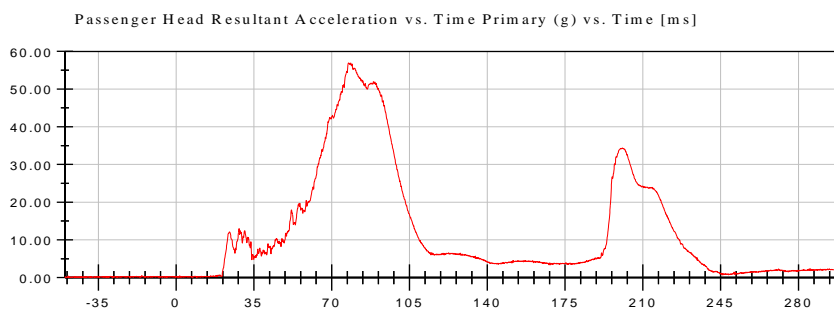
<Max>

35.79 g at 77.68 ms

<Min>

-3.48 g at 231.92 ms

CFC_1000



<Max>

56.90 g at 77.44 ms

<Min>

0.02 g at -49.44 ms

CFC_1000



NHTSA

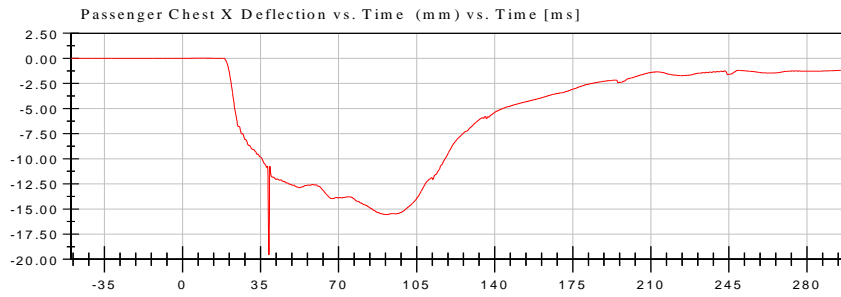
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



<Max>

0.01 mm at 7.68 ms

<Min>

-19.55 mm at 38.72 ms

CFC_600



NHTSA

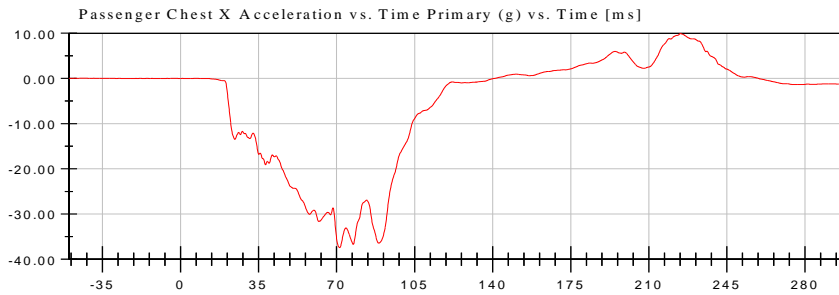
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



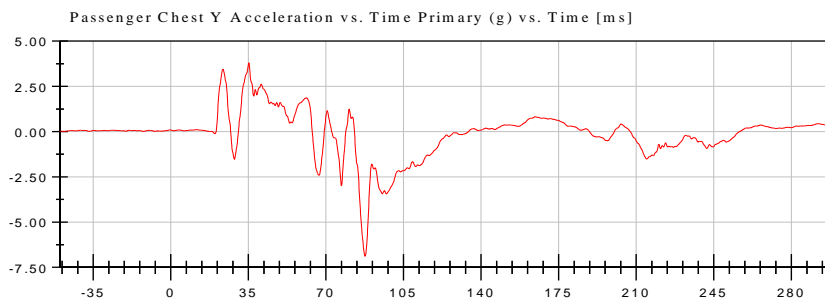
<Max>

9.92 g at 224.16 ms

<Min>

-37.43 g at 71.36 ms

CFC_180



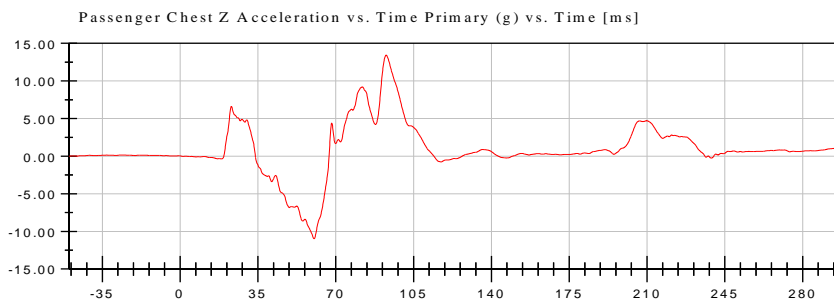
<Max>

3.80 g at 35.20 ms

<Min>

-6.89 g at 87.60 ms

CFC_180



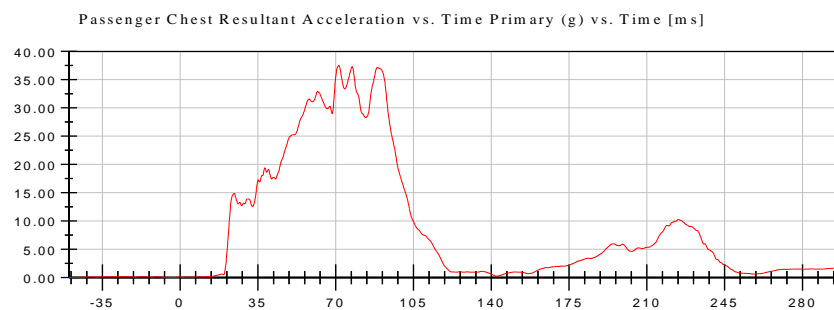
<Max>

13.43 g at 92.64 ms

<Min>

-10.98 g at 60.24 ms

CFC_180



<Max>

37.50 g at 71.36 ms

<Min>

0.02 g at -49.60 ms

CFC_180



NHTSA

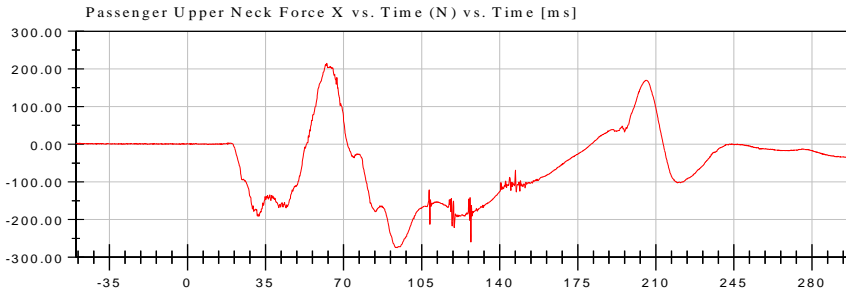
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



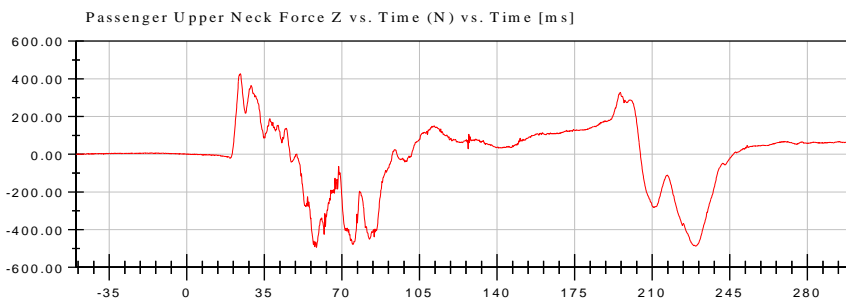
<Max>

214.42 N at 62.40 ms

<Min>

-274.44 N at 94.08 ms

CFC_1000



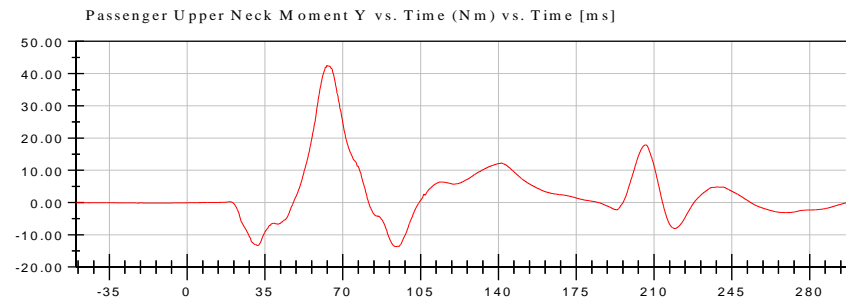
<Max>

427.27 N at 24.16 ms

<Min>

-494.43 N at 58.48 ms

CFC_1000



<Max>

42.48 Nm at 62.88 ms

<Min>

-13.66 Nm at 94.08 ms

CFC_600



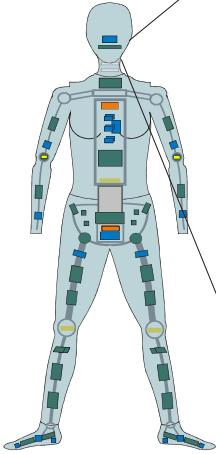


2022 Chevrolet Traverse NCAP 35 mph Frontal Impact
Neck Injury Predictor (NIJ)

Date: 08/24/2022
Time: 12:34

Customer: NHTSA
Test Number: M 22020107

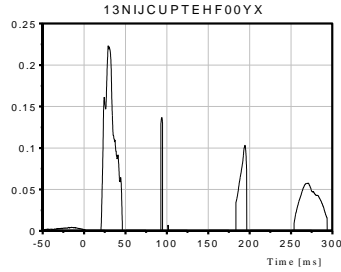
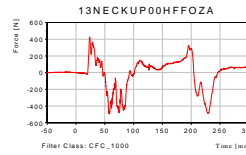
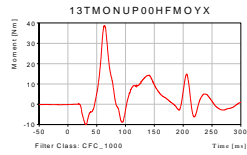
Test Orientation = Frontal
Fzc(Tension) = 4287
Fzc(Compression) = 3880
Myc(Extension) = 67
Myc(Flexion) = 155



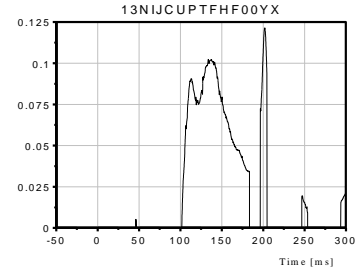
Dummy: HIII 5th Female
Seating Position:
Right Front Passenger

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

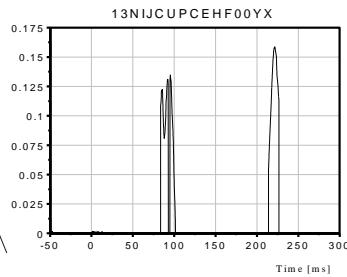
TRC Inc. Test Lab: CTF
Test Number: 220824



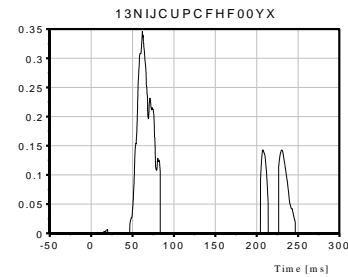
Max [NTE] 0.2233 at 29.20 ms



Max [NTF] 0.1215 at 202.00 ms



Max [NCE] 0.1586 at 221.52 ms



Max [NCF] 0.3457 at 61.92 ms

NHTSA

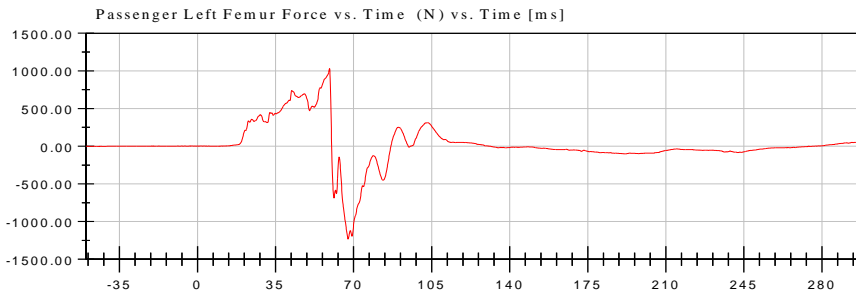
Test Lab: CTF

Test Number: 220824 (M22020107)

Test Date: 08/24/2022

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

Position #2 Hybrid III Small Adult Female (DH1659)



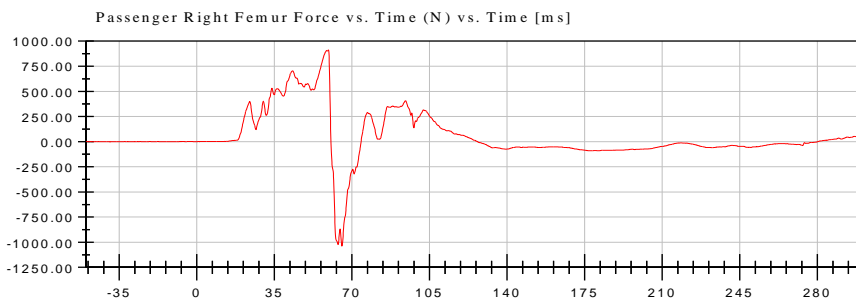
<Max>

1,028.51 N at 59.20 ms

<Min>

-1,232.15 N at 67.52 ms

CFC_600



<Max>

911.67 N at 59.36 ms

<Min>

-1,038.49 N at 65.44 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. 79

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	881	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	148	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	991	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes



Revised 8/10/12

Report Number: 037_H3F79

Page 25 of 27

Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 79-1
Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	263.8 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	10.5 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	4.05 %	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

08.19.2022 10:26:24 614

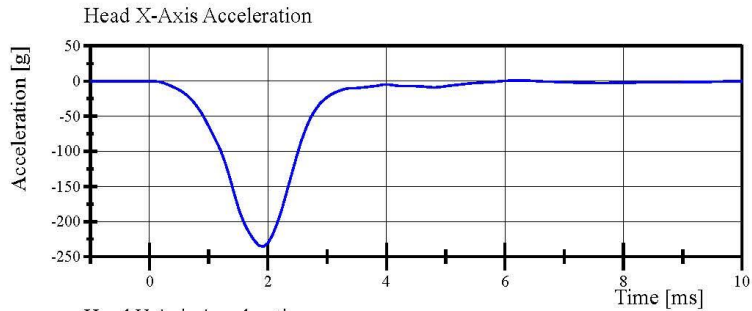


Transportation Research Center Inc.

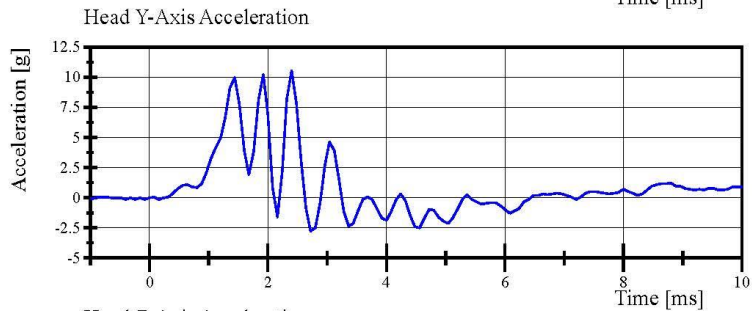
Front Head Drop

HIII 50th Serial No. 037 Certification No. 79-1

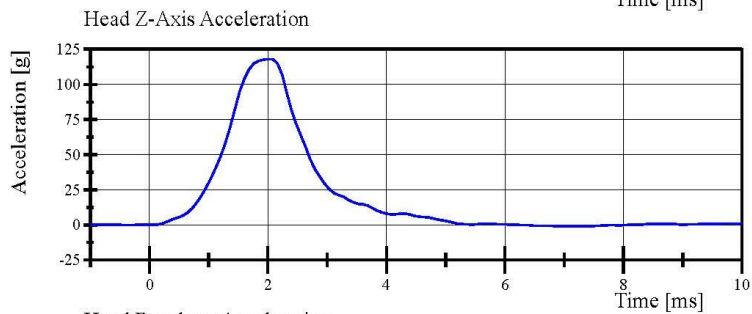
Test Date: 8/19/2022



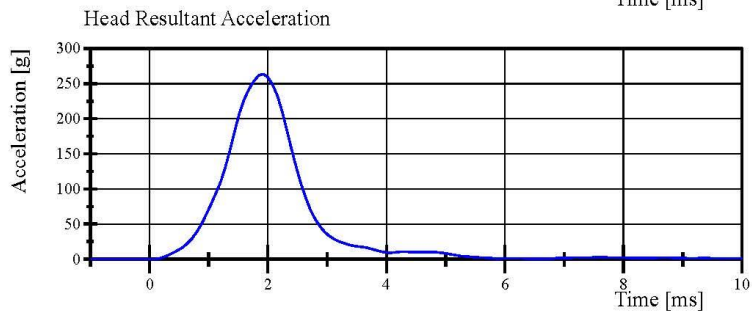
Filter Class: CFC_1000
Max: 0.8 g at 6.2 ms
Min: -235.9 g at 1.9 ms



Filter Class: CFC_1000
Max: 10.5 g at 2.4 ms
Min: -2.8 g at 2.7 ms



Filter Class: CFC_1000
Max: 118.0 g at 2.0 ms
Min: -0.9 g at 7.0 ms



Filter Class: CFC_1000
Max: 263.8 g at 1.9 ms
Min: 0.0 g at -1.0 ms

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

08.19.2022 10:27:00 614



Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 79-1

Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.919 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	37.0 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-25.35 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-20.54 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-15.81 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-15.81 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-72.0 °	Yes
Time of Peak	57 - 64 ms	59.4 ms	Yes
Total Head D-Plane Rotation Decay to 0°	113 - 128 ms	118.1 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	98.66 N·m	Yes
Time of Peak	47 - 58 ms	50.7 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	97 - 107 ms	97.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 47287

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

08.19.2022 11:00:40 1869

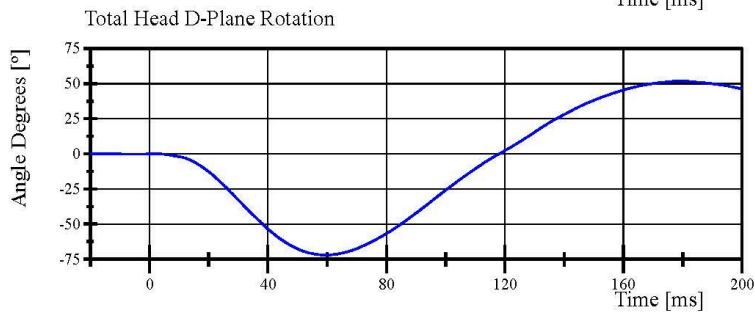
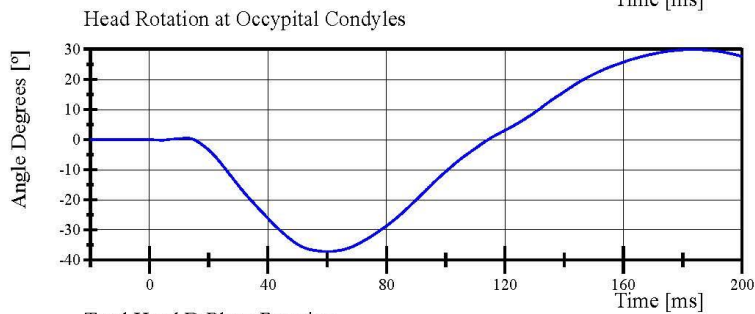
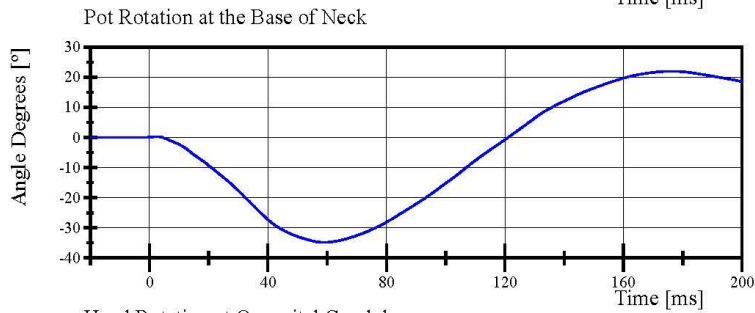
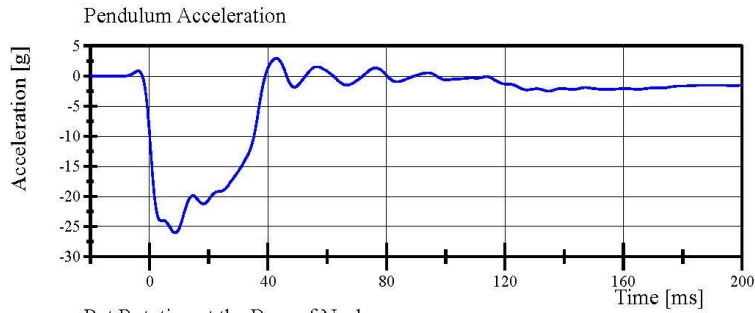


Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 79-1

Test Date: 8/19/2022



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

08.19.2022 11:01:40 1869

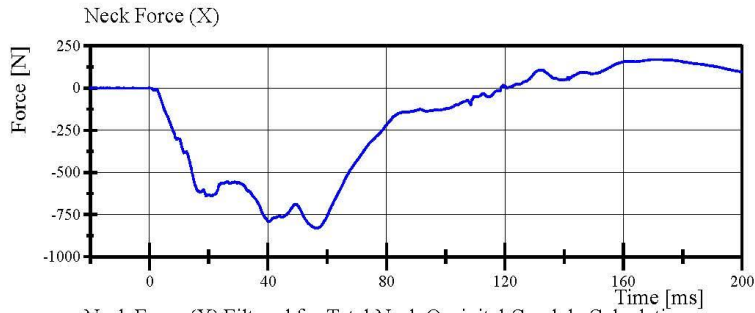


Transportation Research Center Inc.

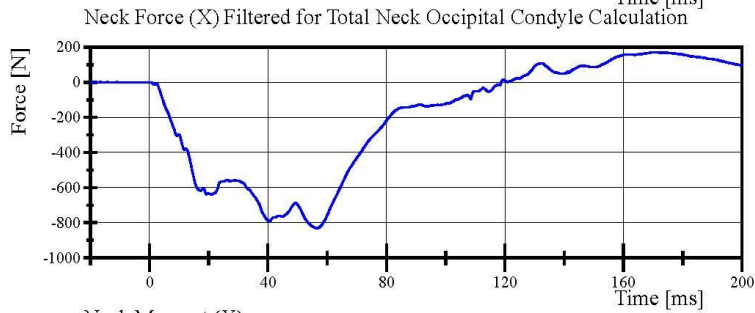
Neck Flexion

HIII 50th Serial No. 037 Certification No. 79-1

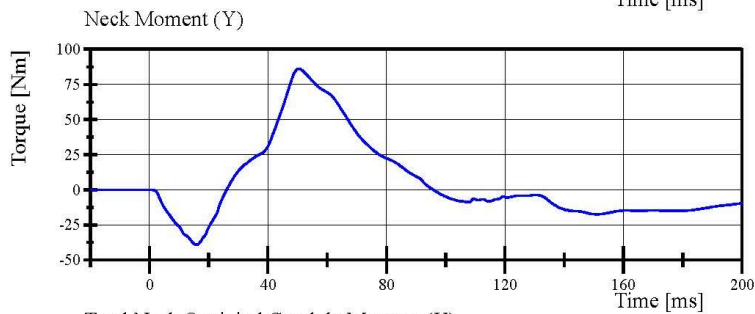
Test Date: 8/19/2022



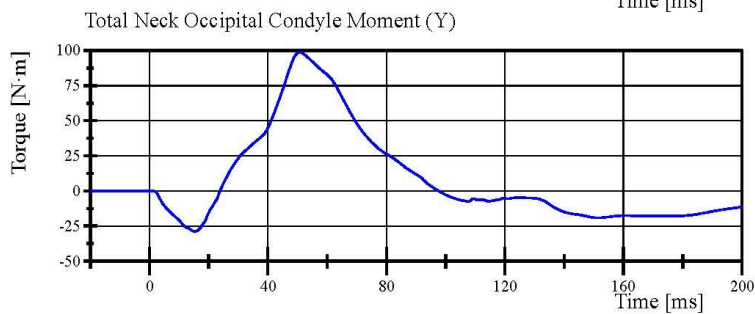
Filter Class: CFC_1000
Max: 170.0 N at 170.0 ms
Min: -830.4 N at 56.6 ms



Filter Class: CFC_600
Max: 169.5 N at 170.1 ms
Min: -830.4 N at 56.7 ms



Filter Class: CFC_600
Max: 86.1 Nm at 50.5 ms
Min: -39.0 Nm at 16.0 ms



Filter Class: Without_(Constar
Max: 98.7 N·m at 50.7 ms
Min: -28.7 N·m at 15.2 ms

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

08.19.2022 11:01:41 1869



Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 037 Certification No. 79-1

Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	64 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.970 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	38.1 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	20.08 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	18.31 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	15.04 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	15.04 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	97.1 °	Yes
Time of Peak	72 - 82 ms	78.2 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	158.7 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-69.58 N·m	Yes
Time of Peak	65 - 79 ms	70.4 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	143.0 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 47287

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

08.19.2022 11:39:52 2010

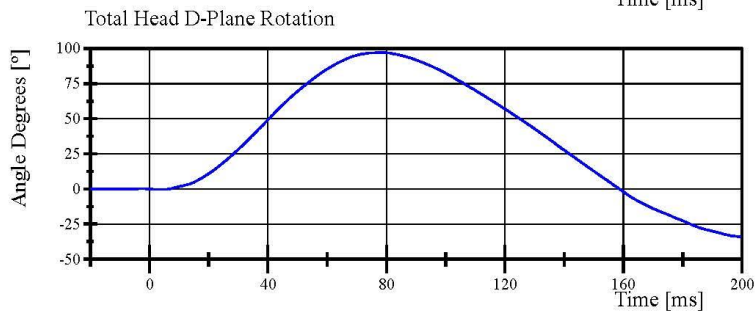
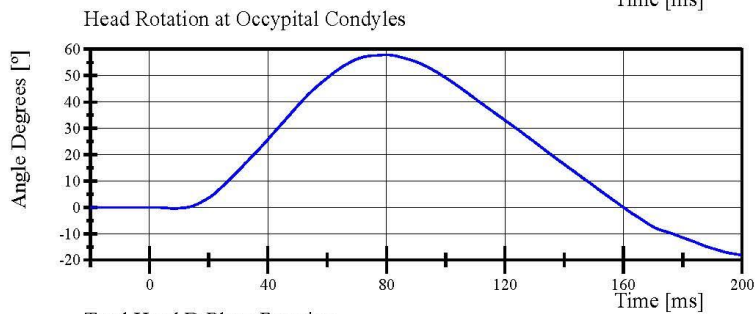
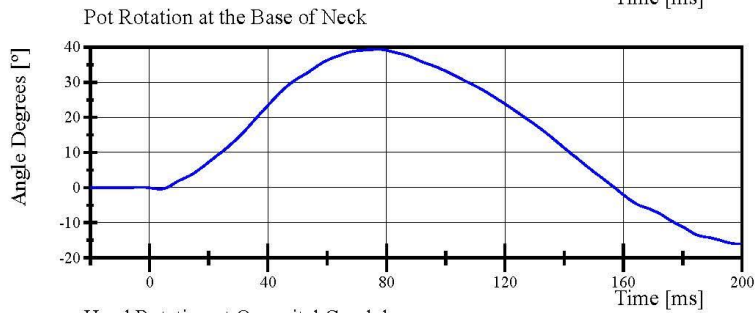
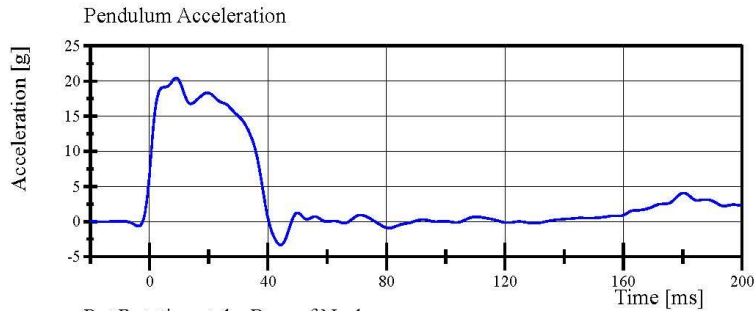


Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 037 Certification No. 79-1

Test Date: 8/19/2022



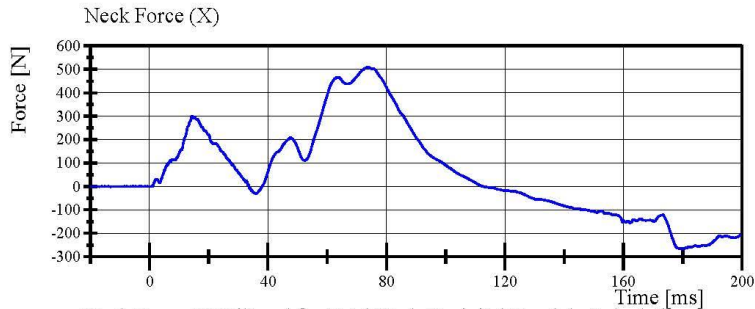
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

08.19.2022 11:41:19 2010

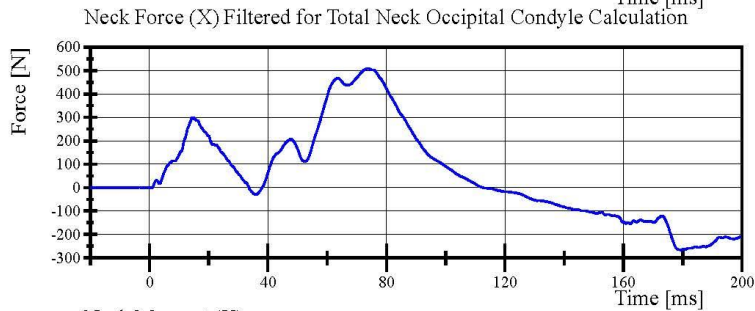


Transportation Research Center Inc.

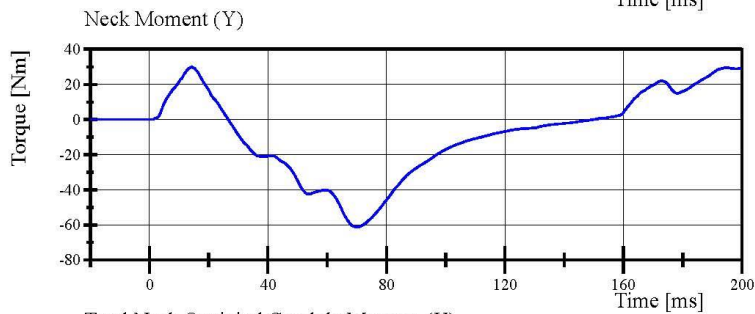
Neck Extension
HIII 50th Serial No. 037 Certification No. 79-1
Test Date: 8/19/2022



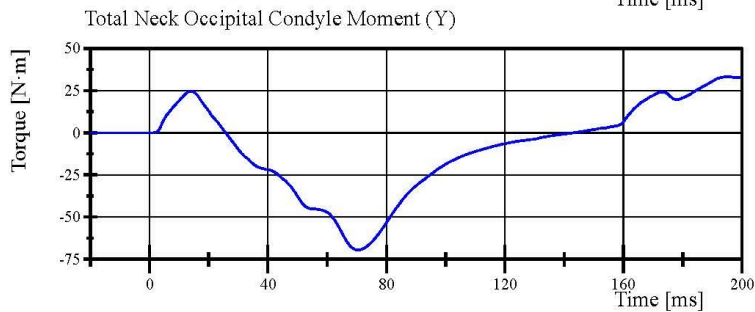
Filter Class: CFC_1000
Max: 510.1 N at 73.7 ms
Min: -266.4 N at 179.4 ms



Filter Class: CFC_600
Max: 509.3 N at 73.8 ms
Min: -265.6 N at 179.3 ms



Filter Class: CFC_600
Max: 29.9 Nm at 14.3 ms
Min: -61.2 Nm at 70.1 ms



Filter Class: Without_(Constar
Max: 33.3 N·m at 195.2 ms
Min: -69.6 N·m at 70.4 ms

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

08.19.2022 11:41:19 2010



Transportation Research Center Inc.

Front Thorax
HIII 50th Serial No. 037 Certification No. 79-1
Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.601 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,227.2 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-70.54 mm	Yes
Internal Hysteresis	69 - 85 %	70.4 %	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

08.19.2022 08:15:24 405

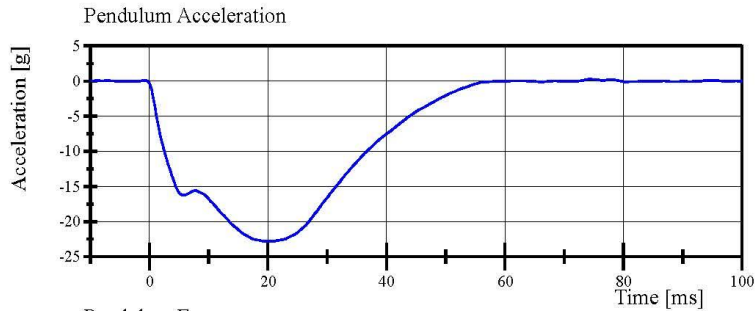


Transportation Research Center Inc.

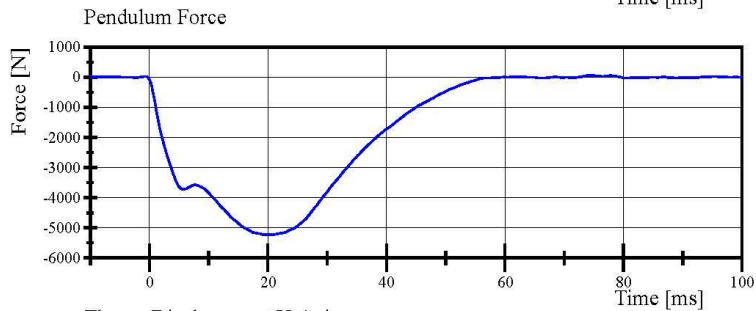
Front Thorax

HIII 50th Serial No. 037 Certification No. 79-1

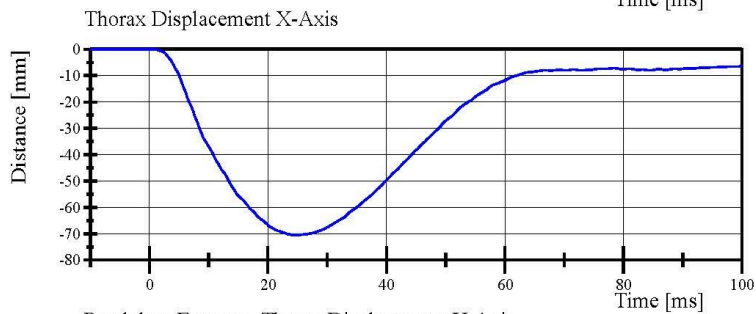
Test Date: 8/19/2022



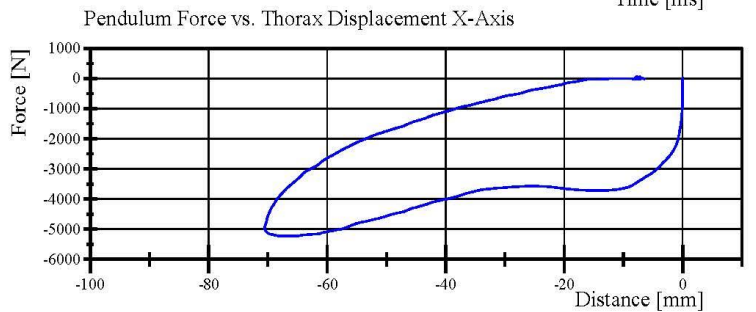
Filter Class: CFC_180
Max: 0.3 g at 74.3 ms
Min: -22.8 g at 19.4 ms



Filter Class: CFC_180
Max: 64.9 N at 74.3 ms
Min: -5,227.2 N at 19.4 ms



Filter Class: CFC_600
Max: 0.0 mm at -8.3 ms
Min: -70.5 mm at 24.9 ms



Filter Class: CFC_180
Max: 64.9 N at -7.8 mm
Min: -5,227.2 N at -65.5 mm

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

08.19.2022 08:17:32 405

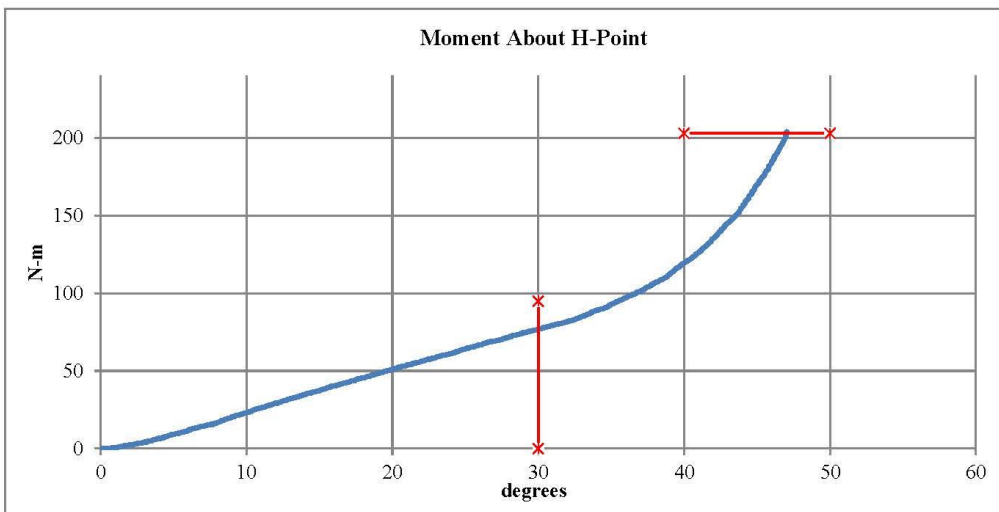


Transportation Research Center Inc.
Hybrid III 50th Male Hip Range of Motion

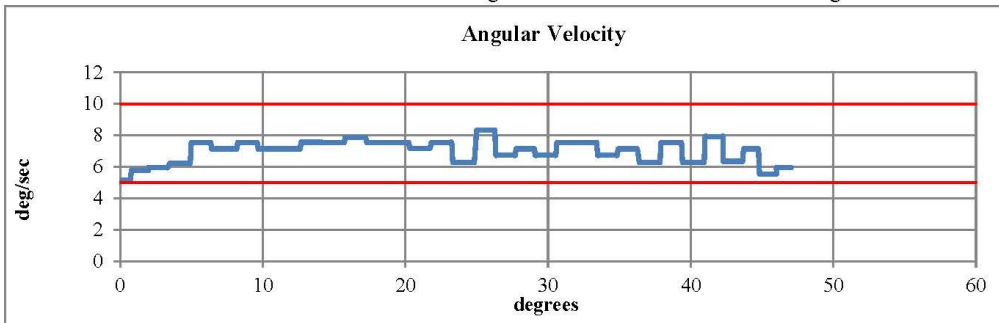


Serial Number: 037 Date: 19-Aug-2022
Side Tested: Left Hip Time: 8:31
Test Number: 1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	20.9 °C Pass
Humidity	10 - 70	65 % Pass
Moment at 30°	0 ≤ 94.9	76.97 N-m Pass
Angle at 203 Nm	40 - 50	47.04 deg Pass
Average Velocity	5 - 10	6.99 deg/sec Pass



Max: 8.33 deg/sec Min: 5.16 deg/sec



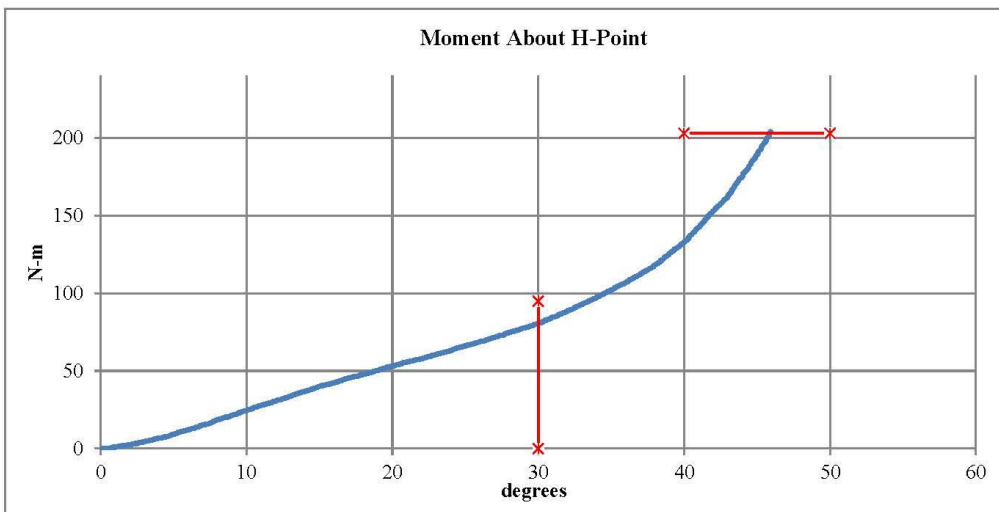
Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.
Hybrid III 50th Male Hip Range of Motion

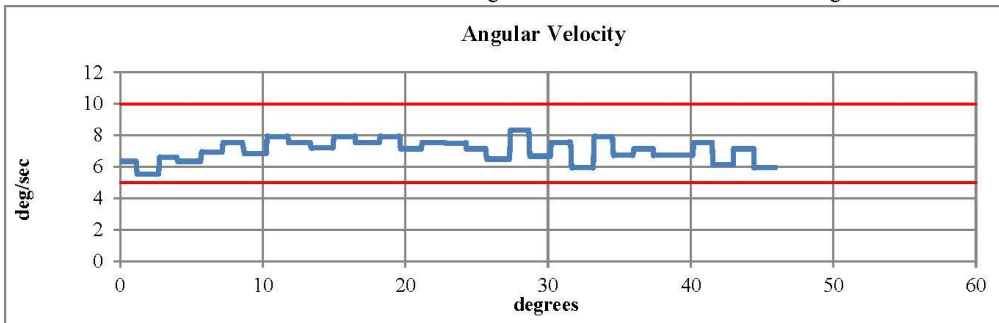


Serial Number: 037 Date: 19-Aug-2022
Side Tested: Right Hip Time: 9:06
Test Number: 1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	20.8 °C Pass
Humidity	10 - 70	67 % Pass
Moment at 30°	0 ≤ 94.9	80.85 N-m Pass
Angle at 203 Nm	40 - 50	45.93 deg Pass
Average Velocity	5 - 10	7.04 deg/sec Pass



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



Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 79-2
Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.116 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,539.09 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

08.19.2022 09:35:31 1966

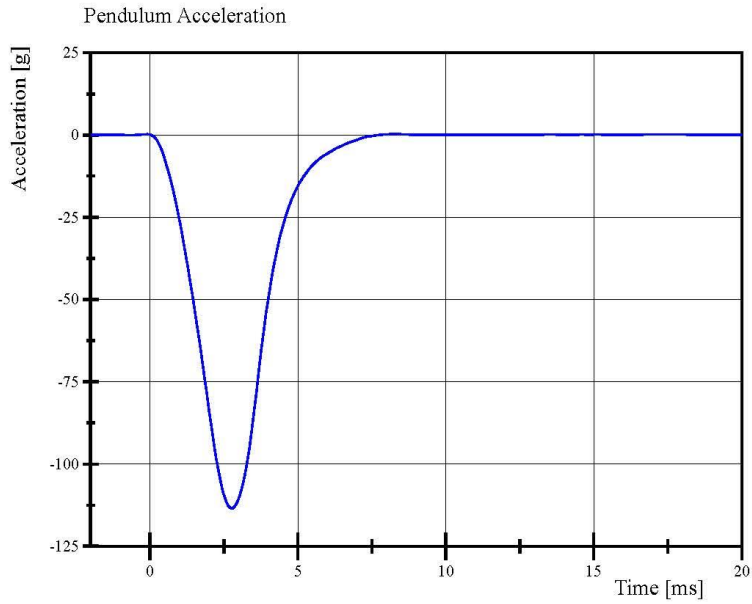


Report Number: 037_H3F79

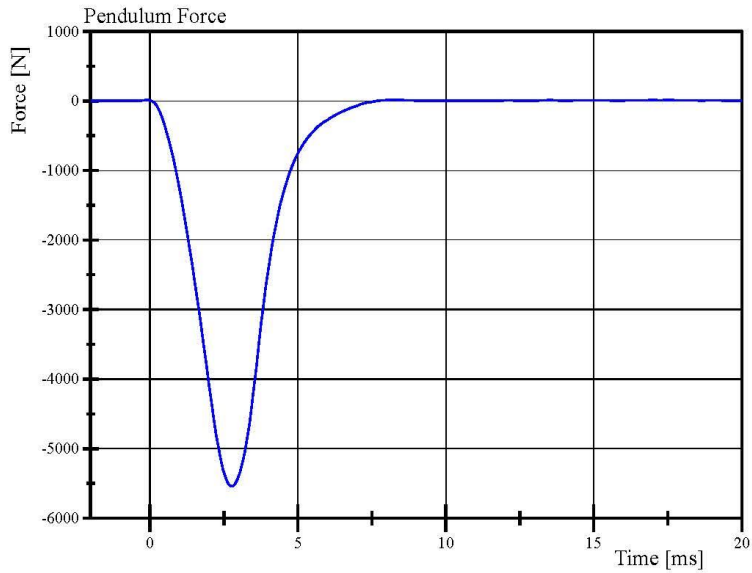
Page 21 of 27

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 79-2
Test Date: 8/19/2022



Filter Class: CFC_600
Max: 0.3 g at 8.2 ms
Min: -113.4 g at 2.8 ms



Filter Class: CFC_600
Max: 15.7 N at 8.2 ms
Min: -5,539.1 N at 2.8 ms

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

08.19.2022 09:36:20 1966



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 79-1
Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.120 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,473.29 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

08.26.2022 12:48:41 1957

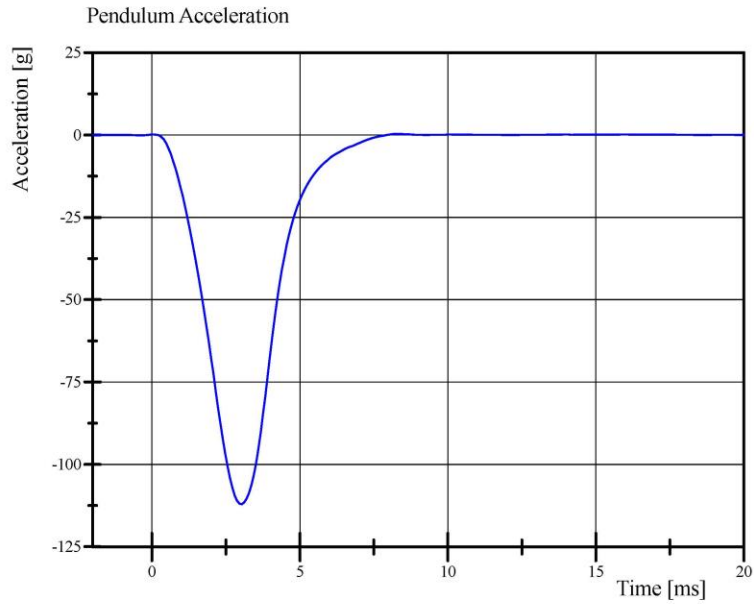


Report Number: 037_H3F79

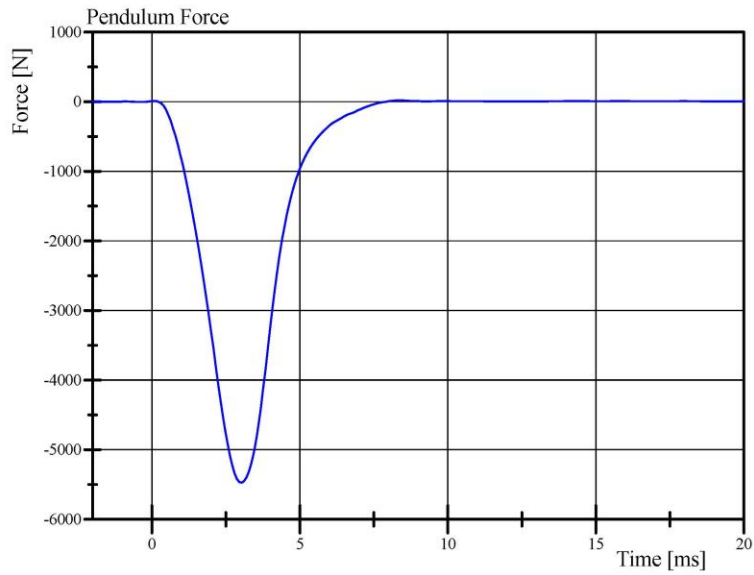
Page 23 of 27

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 79-1
Test Date: 8/19/2022



Filter Class: CFC_600
Max: 0.4 g at 8.5 ms
Min: -112.1 g at 3.0 ms



Filter Class: CFC_600
Max: 17.7 N at 8.5 ms
Min: -5,473.3 N at 3.0 ms

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

08.26.2022 12:54:42 1957



Post-Test Calibration Sheets

Driver S/N 037

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 037
Calibration No. 80

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	881	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	148	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	991	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes



Revised 8/10/12

Report Number: 037_H3F80

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Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 80-3
Test Date: 8/26/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	241.4 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-4.0 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	5.73 %	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

08.26.2022 09:17:56 612

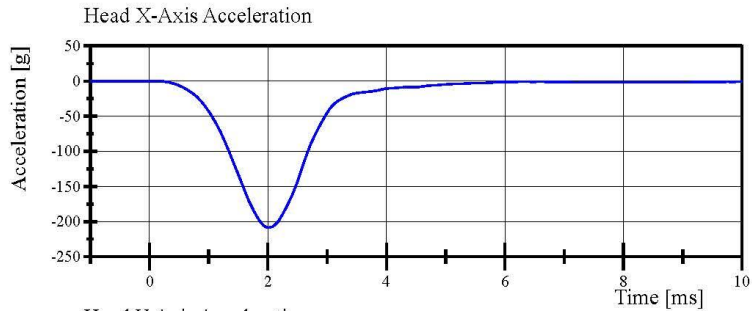


Transportation Research Center Inc.

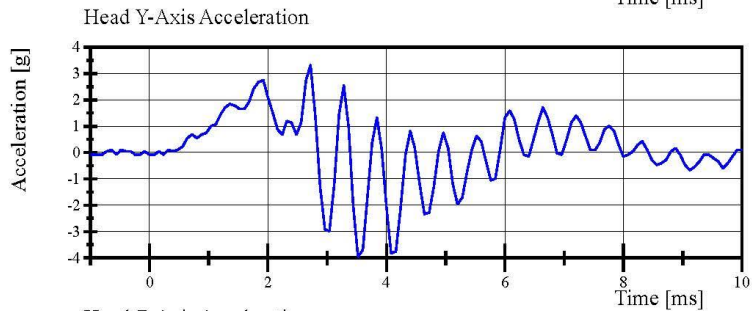
Front Head Drop

HIII 50th Serial No. 037 Certification No. 80-3

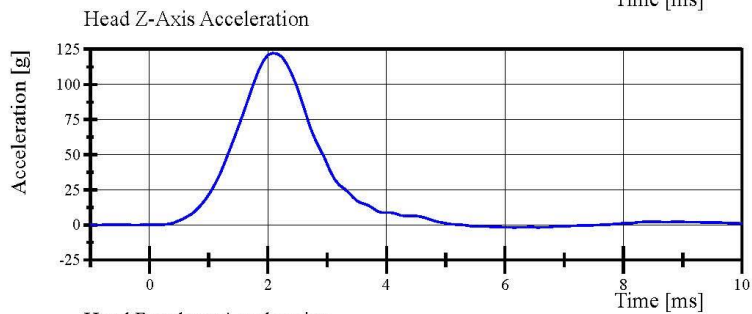
Test Date: 8/26/2022



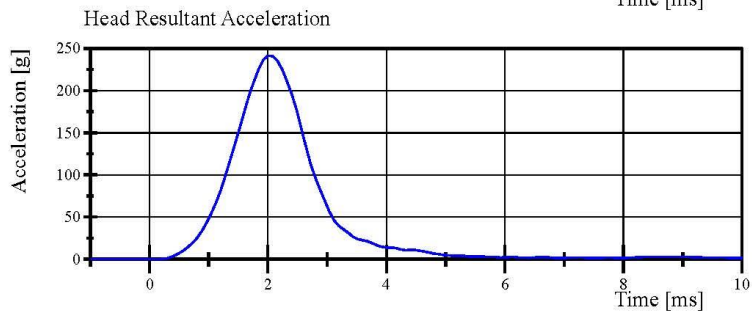
Filter Class: CFC_1000
Max: 0.1 g at -0.9 ms
Min: -208.9 g at 2.0 ms



Filter Class: CFC_1000
Max: 3.3 g at 2.7 ms
Min: -4.0 g at 3.5 ms



Filter Class: CFC_1000
Max: 122.3 g at 2.1 ms
Min: -1.8 g at 6.2 ms



Filter Class: CFC_1000
Max: 241.4 g at 2.0 ms
Min: 0.1 g at -0.1 ms

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

08.26.2022 09:18:24 612



Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 80-1

Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.915 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	36.4 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-24.99 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-20.26 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-16.66 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-16.66 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-72.7 °	Yes
Time of Peak	57 - 64 ms	59.3 ms	Yes
Total Head D-Plane Rotation Decay to 0°	113 - 128 ms	117.1 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	99.94 N·m	Yes
Time of Peak	47 - 58 ms	50.1 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	97 - 107 ms	97.4 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 47287

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

08.25.2022 11:10:31 1870

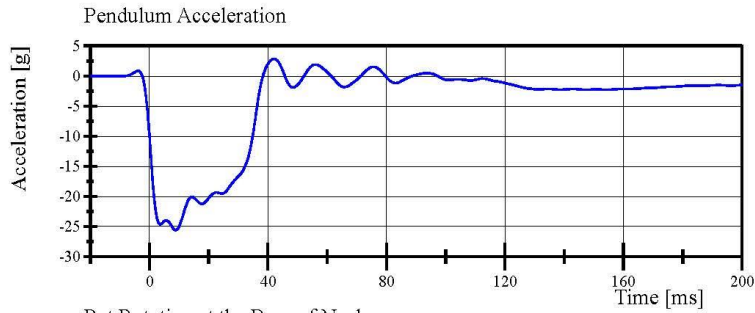


Transportation Research Center Inc.

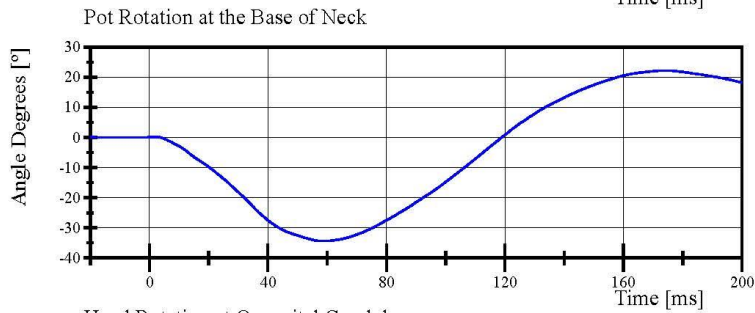
Neck Flexion

HIII 50th Serial No. 037 Certification No. 80-1

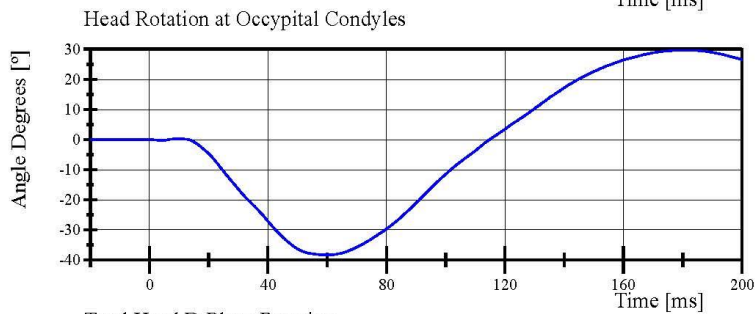
Test Date: 8/25/2022



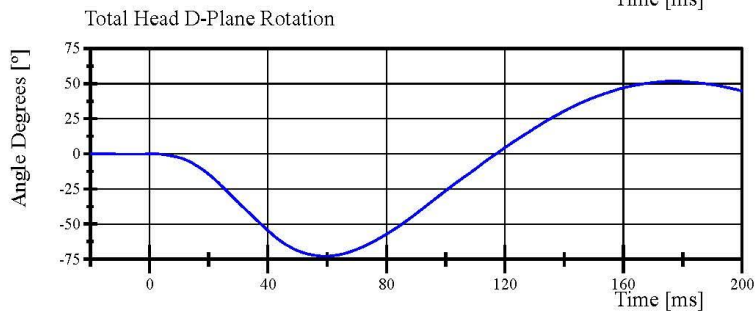
Filter Class: CFC_60
Max: 2.9 g at 42.1 ms
Min: -25.6 g at 8.9 ms



Filter Class: CFC_60
Max: 22.2 ° at 174.2 ms
Min: -34.4 ° at 58.8 ms



Filter Class: CFC_60
Max: 29.7 ° at 181.0 ms
Min: -38.3 ° at 60.0 ms



Filter Class: CFC_60
Max: 51.7 ° at 176.7 ms
Min: -72.7 ° at 59.3 ms

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

08.25.2022 11:10:58 1870

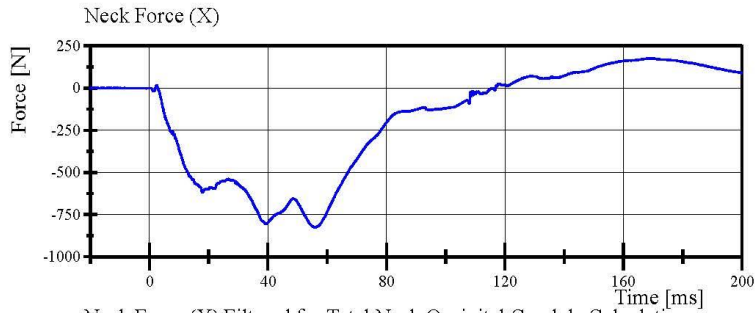


Transportation Research Center Inc.

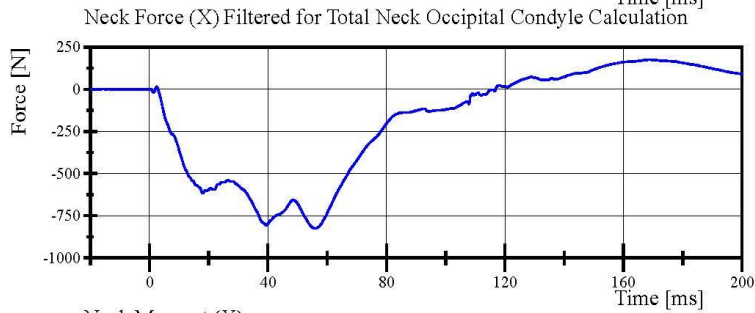
Neck Flexion

HIII 50th Serial No. 037 Certification No. 80-1

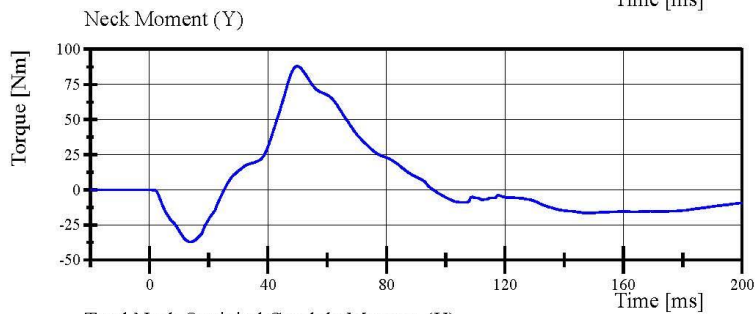
Test Date: 8/25/2022



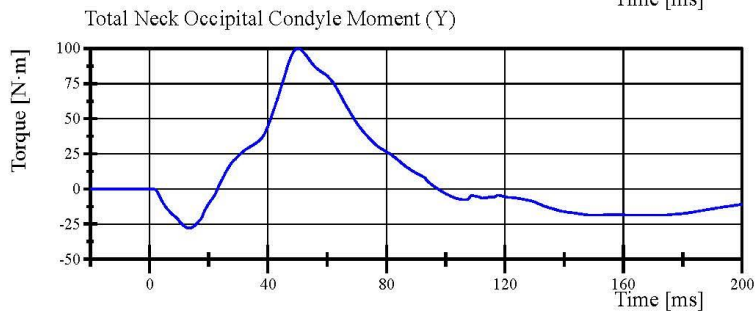
Filter Class: CFC_1000
Max: 175.1 N at 168.7 ms
Min: -826.3 N at 56.0 ms



Filter Class: CFC_600
Max: 174.6 N at 168.8 ms
Min: -825.7 N at 56.0 ms



Filter Class: CFC_600
Max: 88.0 Nm at 49.9 ms
Min: -37.1 Nm at 13.5 ms



Filter Class: Without_(Constar
Max: 99.9 N·m at 50.1 ms
Min: -27.9 N·m at 13.4 ms

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

08.25.2022 11:10:58 1870



Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 037 Certification No. 80-2

Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.970 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	41.2 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	18.54 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	16.71 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	14.19 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	14.19 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	98.1 °	Yes
Time of Peak	72 - 82 ms	79.6 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	161.2 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-65.59 N·m	Yes
Time of Peak	65 - 79 ms	72.2 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	144.1 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 47287

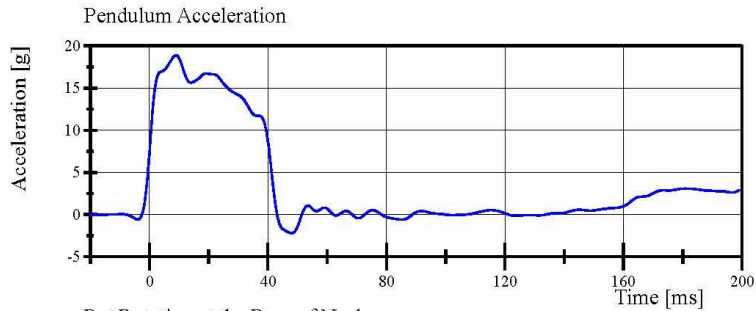
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

08.25.2022 12:48:38 2017

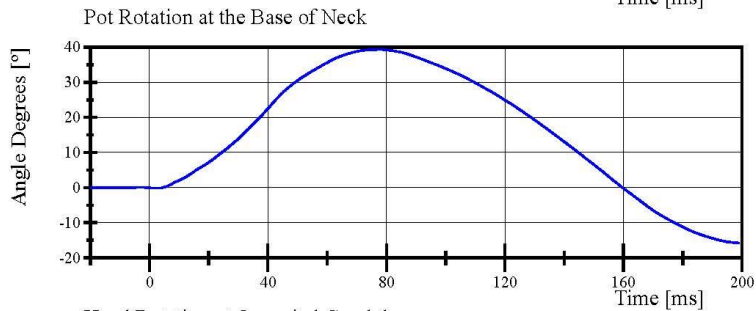


Transportation Research Center Inc.

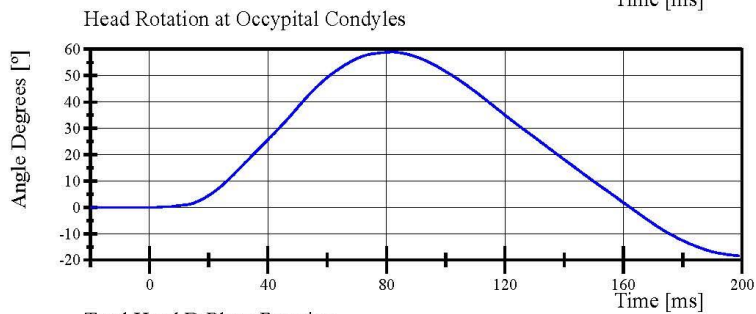
Neck Extension
HIII 50th Serial No. 037 Certification No. 80-2
Test Date: 8/25/2022



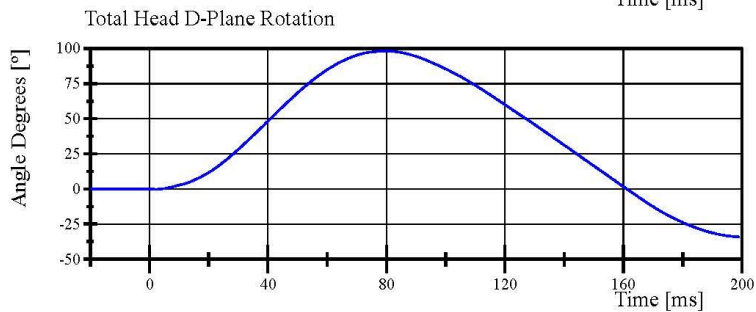
Filter Class: CFC_60
Max: 18.9 g at 9.0 ms
Min: -2.2 g at 48.0 ms



Filter Class: CFC_60
Max: 39.4 ° at 77.7 ms
Min: -15.8 ° at 199.2 ms



Filter Class: CFC_60
Max: 58.9 ° at 82.0 ms
Min: -18.4 ° at 199.2 ms



Filter Class: CFC_60
Max: 98.1 ° at 79.6 ms
Min: -34.2 ° at 199.2 ms

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

08.25.2022 12:49:01 2017

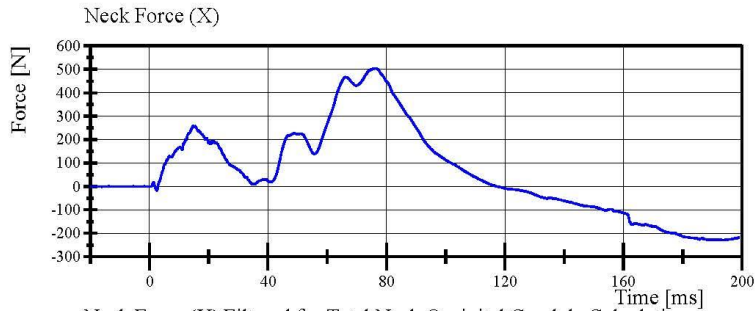


Transportation Research Center Inc.

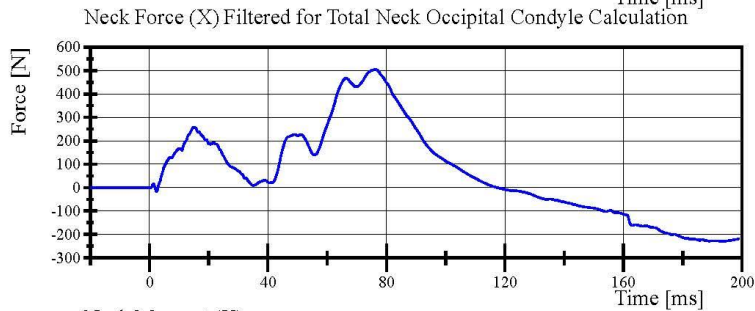
Neck Extension

HIII 50th Serial No. 037 Certification No. 80-2

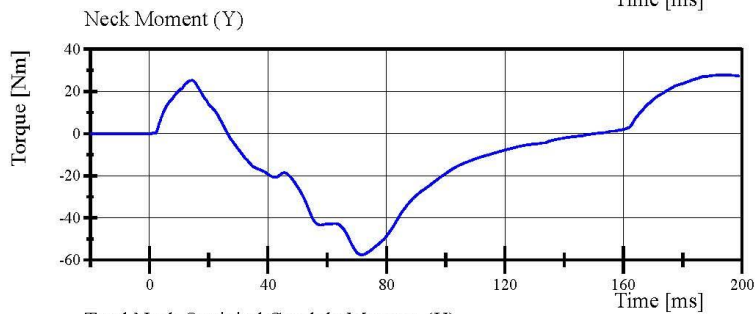
Test Date: 8/25/2022



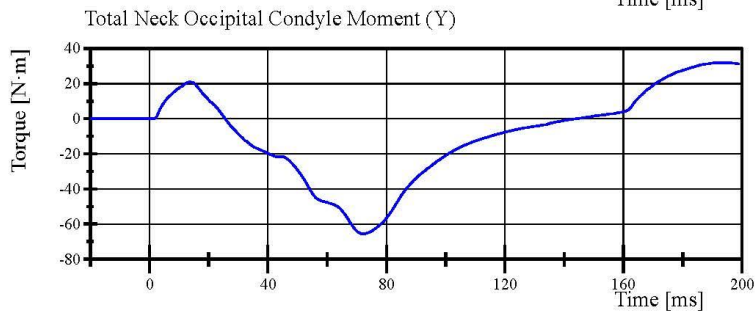
Filter Class: CFC_1000
Max: 505.0 N at 76.5 ms
Min: -229.3 N at 193.5 ms



Filter Class: CFC_600
Max: 504.6 N at 76.4 ms
Min: -229.0 N at 193.6 ms



Filter Class: CFC_600
Max: 27.8 Nm at 192.8 ms
Min: -57.5 Nm at 71.7 ms



Filter Class: Without_(Constar)
Max: 31.8 N·m at 192.8 ms
Min: -65.6 N·m at 72.2 ms

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

08.25.2022 12:49:01 2017



Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 037 Certification No. 80-1

Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.620 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,380.0 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-70.56 mm	Yes
Internal Hysteresis	69 - 85 %	69.4 %	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

08.25.2022 09:32:28 430



Report Number: 037_H3F80

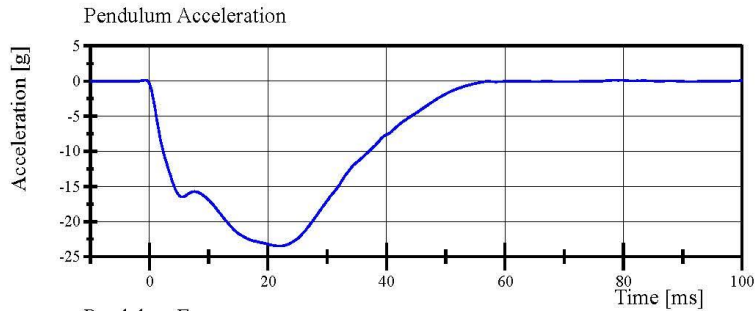
Page 17 of 27

Transportation Research Center Inc.

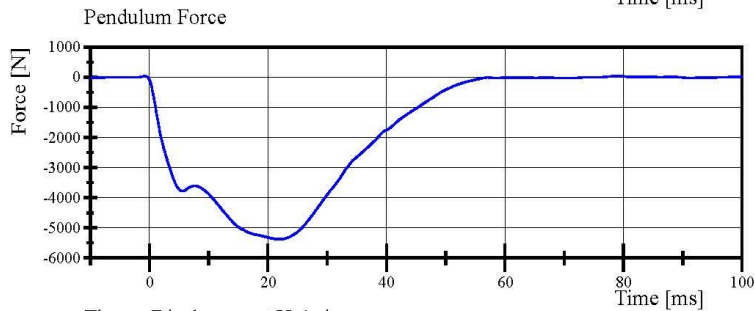
Front Thorax

HIII 50th Serial No. 037 Certification No. 80-1

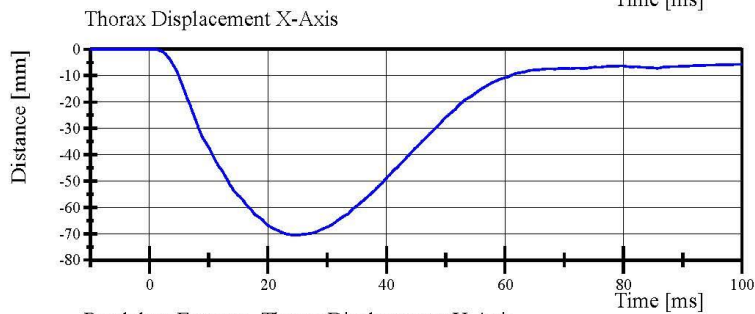
Test Date: 8/25/2022



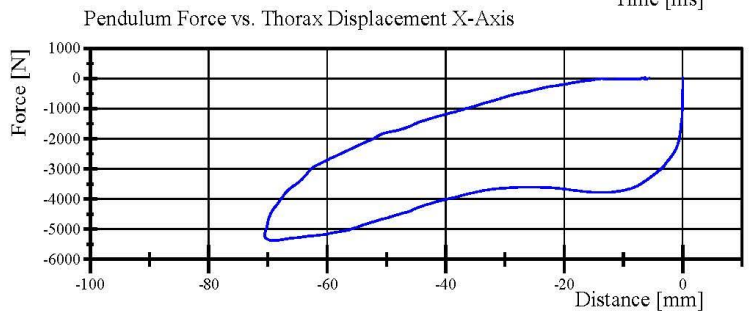
Filter Class: CFC_180
Max: 0.2 g at -0.7 ms
Min: -23.5 g at 22.0 ms



Filter Class: CFC_180
Max: 35.3 N at -0.7 ms
Min: -5,380.0 N at 22.0 ms



Filter Class: CFC_600
Max: 0.0 mm at -6.1 ms
Min: -70.6 mm at 24.6 ms



Filter Class: CFC_180
Max: 35.3 N at -0.0 mm
Min: -5,380.0 N at -69.2 mm

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

08.25.2022 09:33:02.430

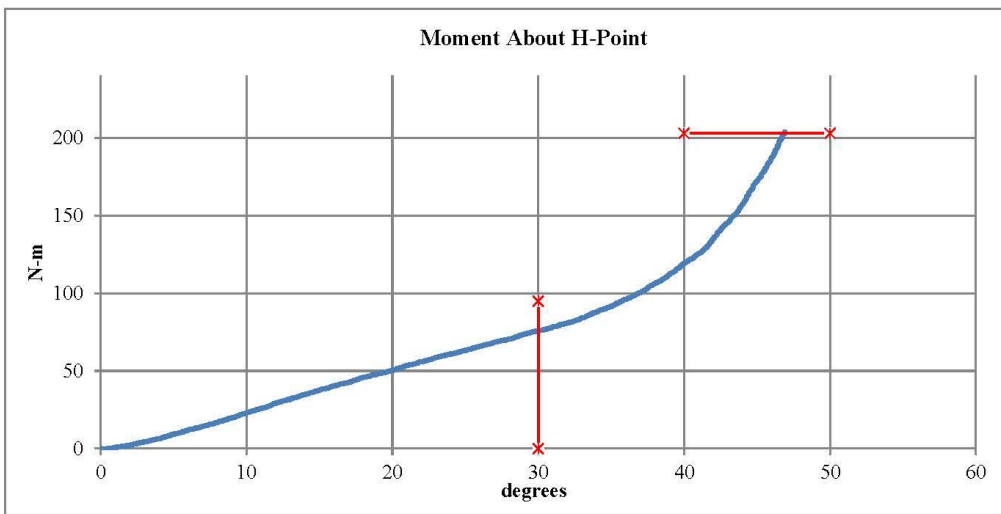


Transportation Research Center Inc.
Hybrid III 50th Male Hip Range of Motion

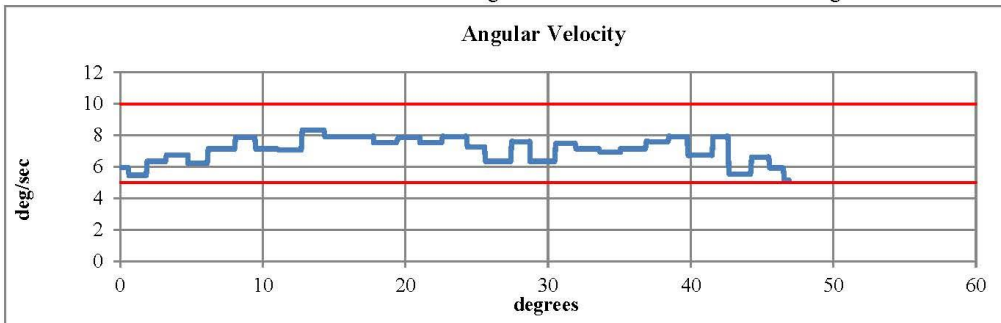


Serial Number: 037 Date: 25-Aug-2022
Side Tested: Left Hip Time: 10:13
Test Number: 1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	20.9 °C Pass
Humidity	10 - 70	66 % Pass
Moment at 30°	0 ≤ 94.9	76.07 N-m Pass
Angle at 203 Nm	40 - 50	46.89 deg Pass
Average Velocity	5 - 10	7.09 deg/sec Pass



Max: 8.33 deg/sec Min: 5.16 deg/sec



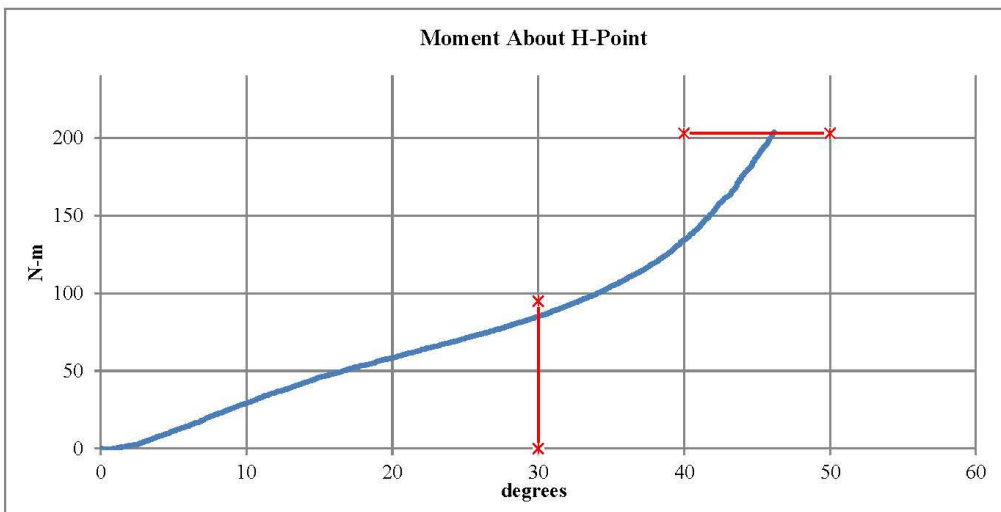
Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.
 Hybrid III 50th Male Hip Range of Motion

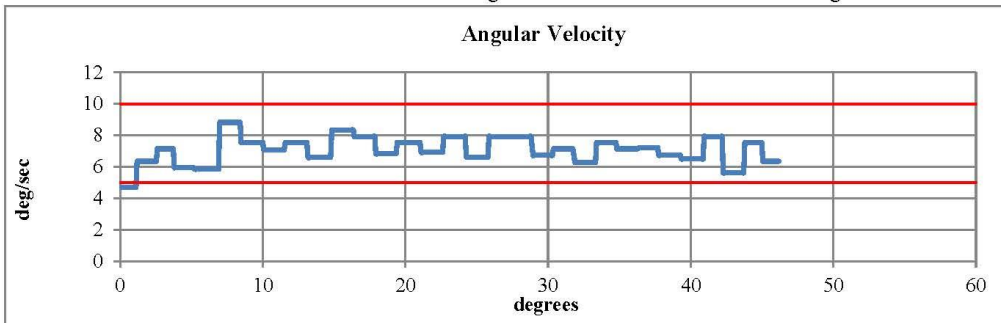


Serial Number: 0374 Date: 25-Aug-2022
 Side Tested: Right Hip Time: 10:46
 Test Number: 1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.1 °C Pass
Humidity	10 - 70	66 % Pass
Moment at 30°	0 ≤ 94.9	85.32 N-m Pass
Angle at 203 Nm	40 - 50	46.17 deg Pass
Average Velocity	5 - 10	7.06 deg/sec Pass



Max: 8.82 deg/sec Min: 4.69 deg/sec



Comments: Pelvis S/N: EU6859

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 80-1
Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.071 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,516.72 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: 2672

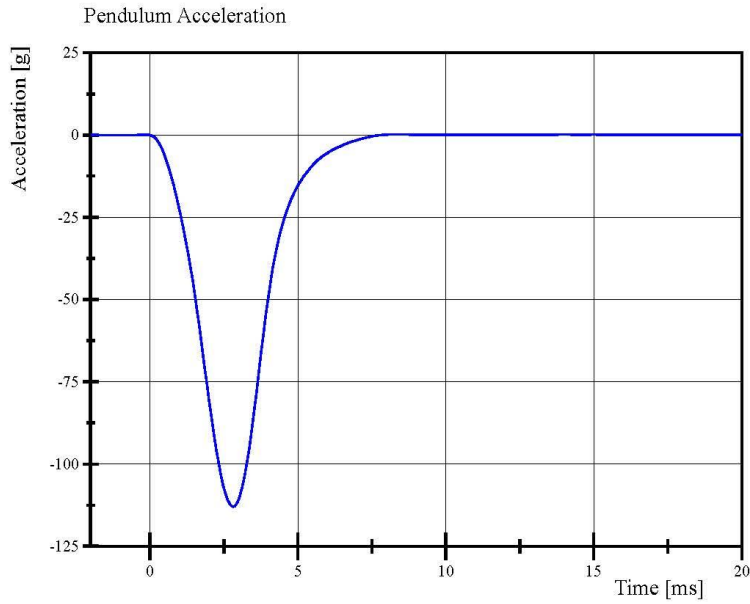
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

08.25.2022 09:01:32 1864

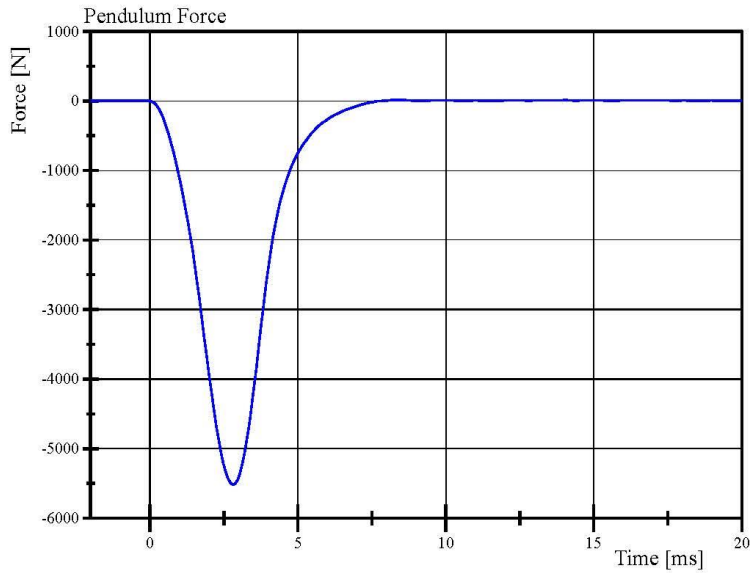


Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 80-1
Test Date: 8/25/2022



Filter Class: CFC_600
Max: 0.2 g at 8.2 ms
Min: -113.0 g at 2.8 ms



Filter Class: CFC_600
Max: 9.1 N at 8.2 ms
Min: -5,516.7 N at 2.8 ms

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

08.25.2022 09:02:39 1864



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 80-1
Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.077 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,373.65 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

08.25.2022 09:08:08 1856

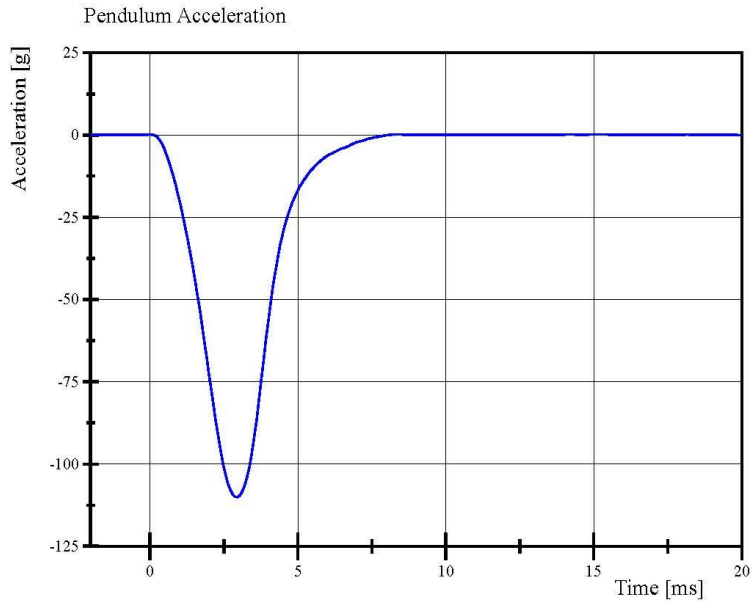


Report Number: 037_H3F80

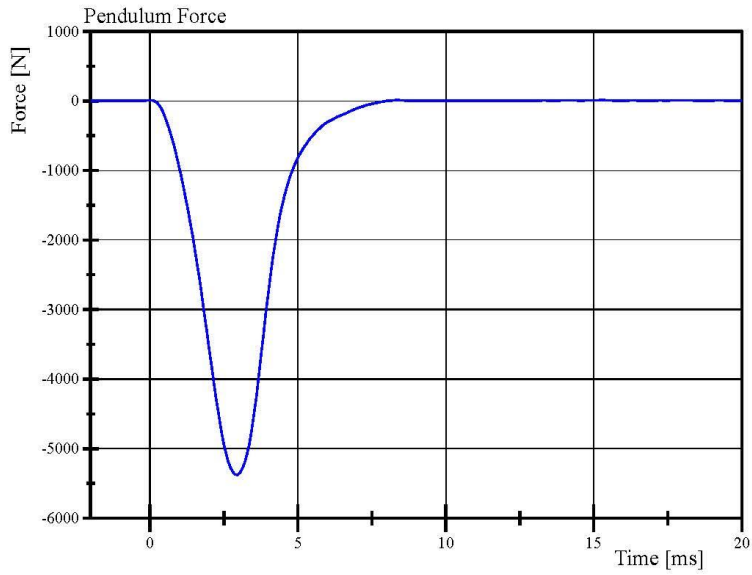
Page 23 of 27

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 80-1
Test Date: 8/25/2022



Filter Class: CFC_600
Max: 0.2 g at 8.4 ms
Min: -110.0 g at 3.0 ms



Filter Class: CFC_600
Max: 9.4 N at 8.4 ms
Min: -5,373.7 N at 3.0 ms

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

08.25.2022 09:08:44 1856



Pre-Test Calibration Sheets

Passenger S/N DH1659

**Transportation Research Center Inc.
5720 HIII 5th Dummy
External Dimensions
Serial No. DH1659 Calibration No. 05**

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	774.7 - 800.1	781	Yes
B	Shoulder Pivot Height	431.8 - 457.2	445	Yes
C	Hip Pivot Height	81.3 - 86.3	86	Yes
D	Hip Pivot from Backline	144.8 - 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6 - 83.8	80	Yes
F	Thigh Clearance	119.4 - 134.6	131	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	198	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	360	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	184	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	305	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	869	Yes
Z	Waist Circumference	759.5 - 789.9	776	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Revised 8/10/12



Report Number: DH1659_HFH05

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Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 5-2
Test Date: 8/22/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	274.0 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-6.6 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	1.60 %	Yes

Test meets specifications.

Condition: Used

Comments:

Head Skin S/N: DU2864

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

08.22.2022 08:16:28 614

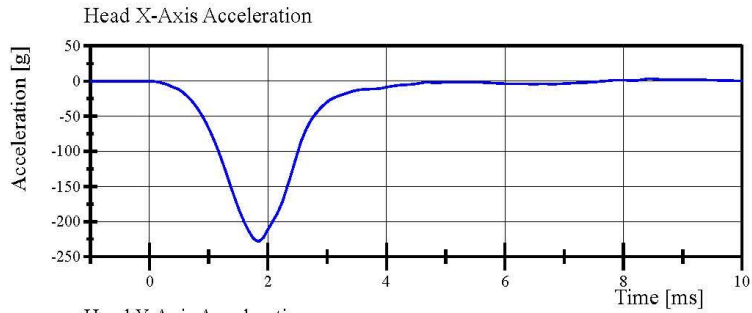


Transportation Research Center Inc.

Front Head Drop

HIII 5th Serial No. DH1659 Certification No. 5-2

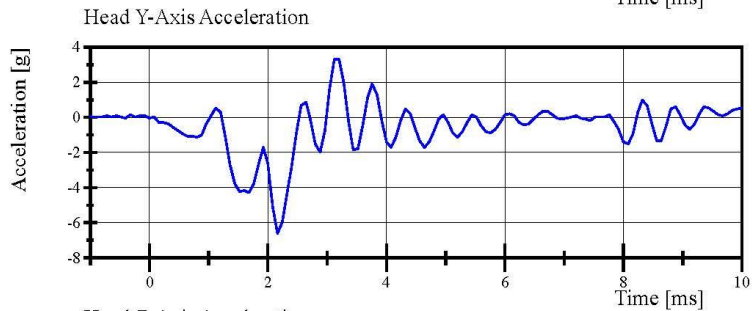
Test Date: 8/22/2022



Filter Class: CFC_1000

Max: 3.4 g at 8.5 ms

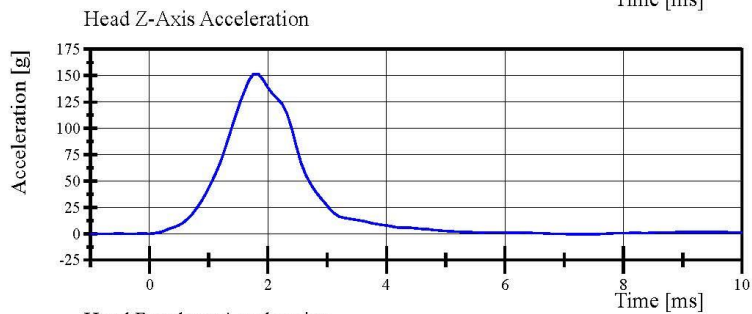
Min: -228.5 g at 1.8 ms



Filter Class: CFC_1000

Max: 3.3 g at 3.1 ms

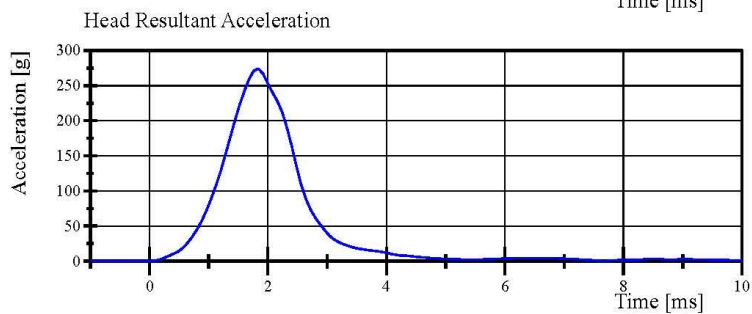
Min: -6.6 g at 2.2 ms



Filter Class: CFC_1000

Max: 151.7 g at 1.8 ms

Min: -0.6 g at 7.4 ms



Filter Class: CFC_1000

Max: 274.0 g at 1.8 ms

Min: 0.0 g at -0.9 ms

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

08.22.2022 08:18:34 614



Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 5-1

Test Date: 8/22/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	70 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.076 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.30 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	(-4.0) - (-5.0) m/s	-4.49 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	(-5.8) - (-7.0) m/s	-6.48 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-82.6 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	77.3 N·m	Yes
Total Neck Occipital Condyles Moment Decay to 10 N·m	80 - 100 ms	89.0 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: EE9454

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

08.22.2022 08:58:40 1847

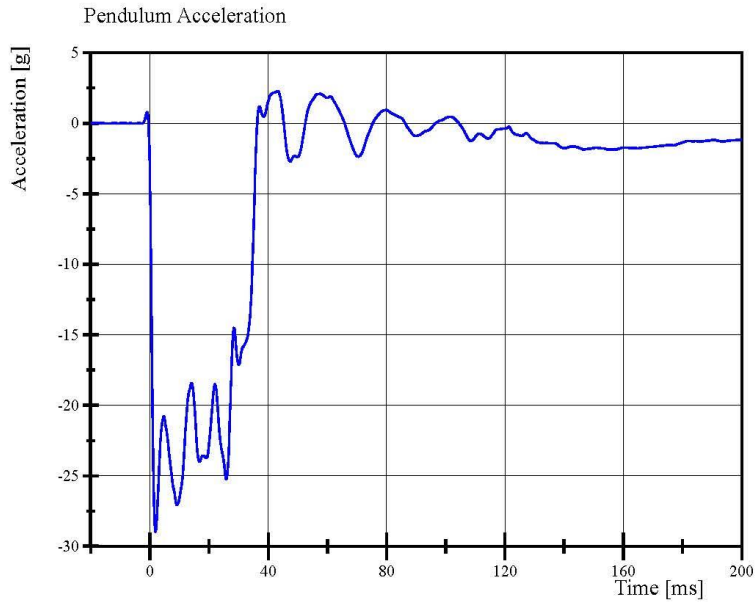


Transportation Research Center Inc.

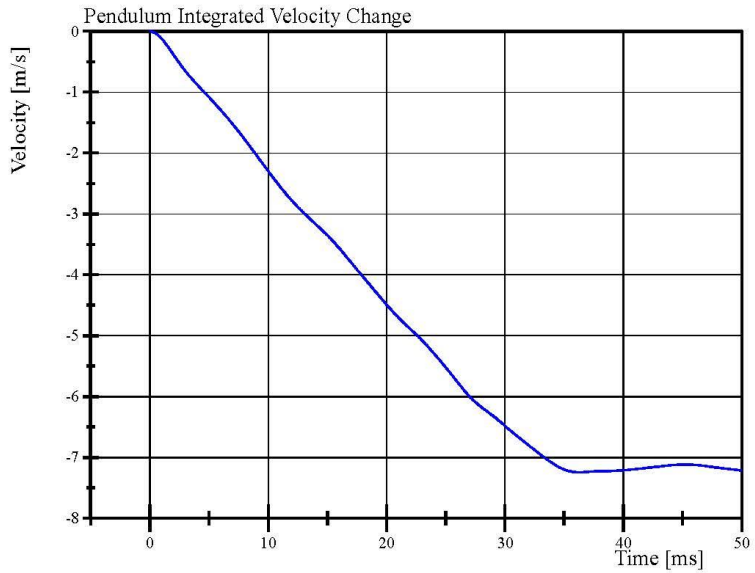
Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 5-1

Test Date: 8/22/2022



Filter Class: CFC_180
Max: 2.3 g at 43.1 ms
Min: -28.9 g at 1.9 ms



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -7.2 m/s at 36.3 ms

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

08.22.2022 08:59:43 1847



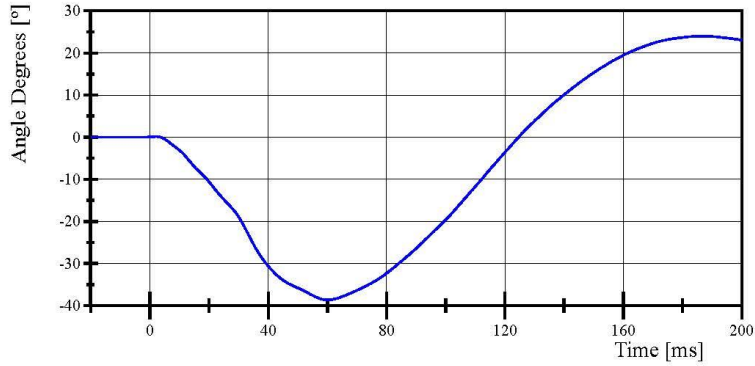
Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 5-1

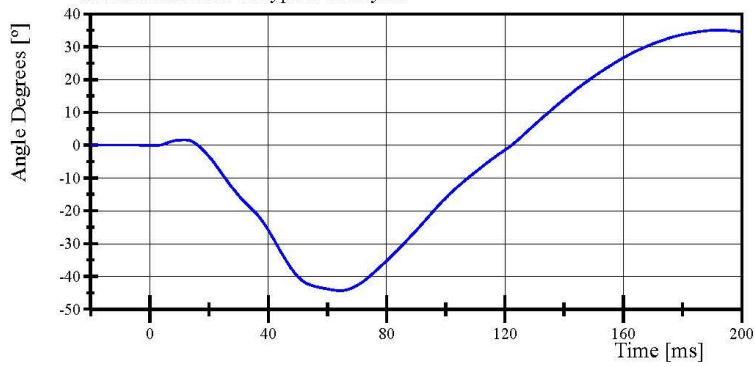
Test Date: 8/22/2022

Pot Rotation at the Base of Neck



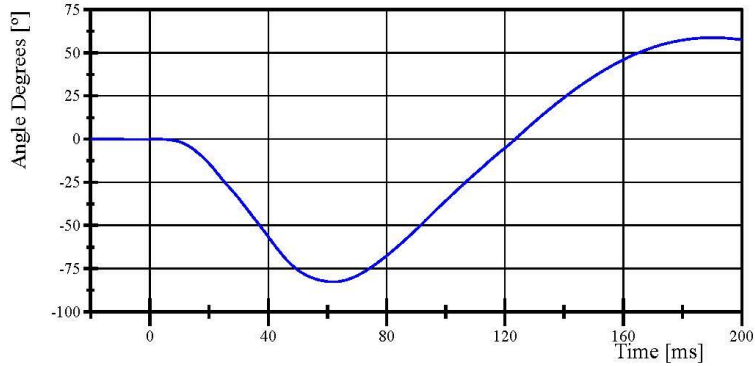
Filter Class: CFC_60
Max: 23.9 ° at 187.0 ms
Min: -38.6 ° at 60.1 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 35.1 ° at 192.3 ms
Min: -44.3 ° at 64.2 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 58.9 ° at 190.2 ms
Min: -82.6 ° at 62.0 ms

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

08.22.2022 08:59:43 1847

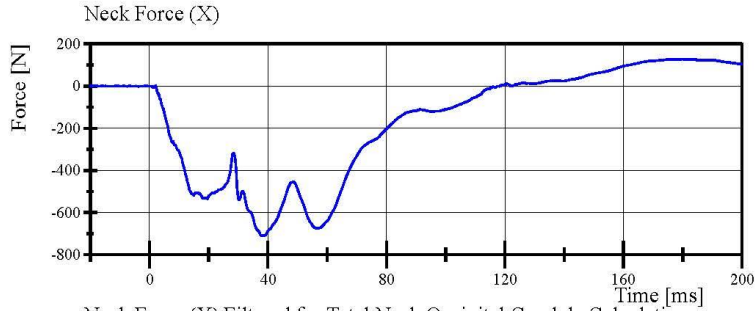


Transportation Research Center Inc.

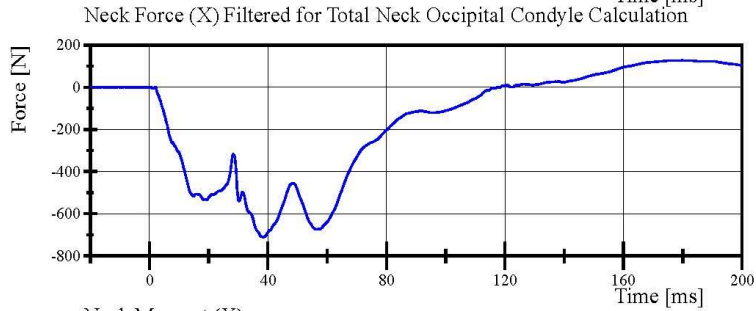
Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 5-1

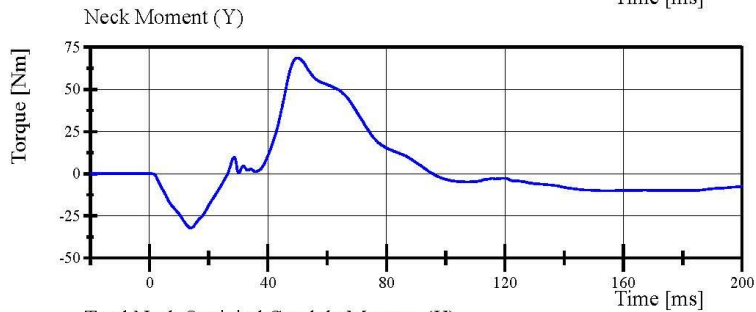
Test Date: 8/22/2022



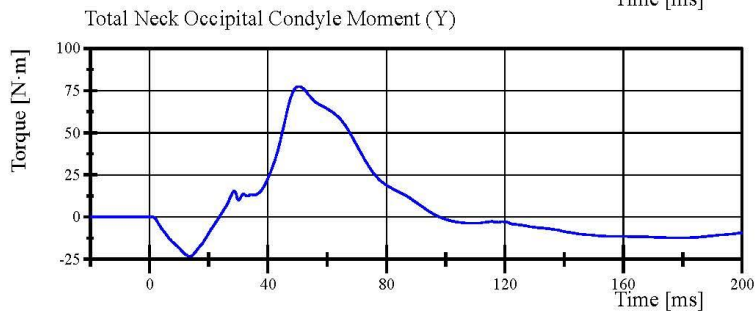
Filter Class: CFC_1000
Max: 128.3 N at 178.6 ms
Min: -711.1 N at 38.6 ms



Filter Class: CFC_600
Max: 128.1 N at 179.8 ms
Min: -710.4 N at 38.5 ms



Filter Class: CFC_600
Max: 68.7 Nm at 49.9 ms
Min: -32.1 Nm at 13.9 ms



Filter Class: Without_(Constar
Max: 77.5 N·m at 50.4 ms
Min: -23.3 N·m at 13.6 ms

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

08.22.2022 08:59:44 1847



Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. DH1659 Certification No. 5-1

Test Date: 8/22/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.049 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.84 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	3.1 - 3.9 m/s	3.63 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	4.6 - 5.6 m/s	5.25 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	-56.6 N·m	Yes
Total Neck Occipital Condyles Moment Decay to -10 N·m	94 - 114 ms	103.8 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: EE9454

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

08.22.2022 09:50:17 2003



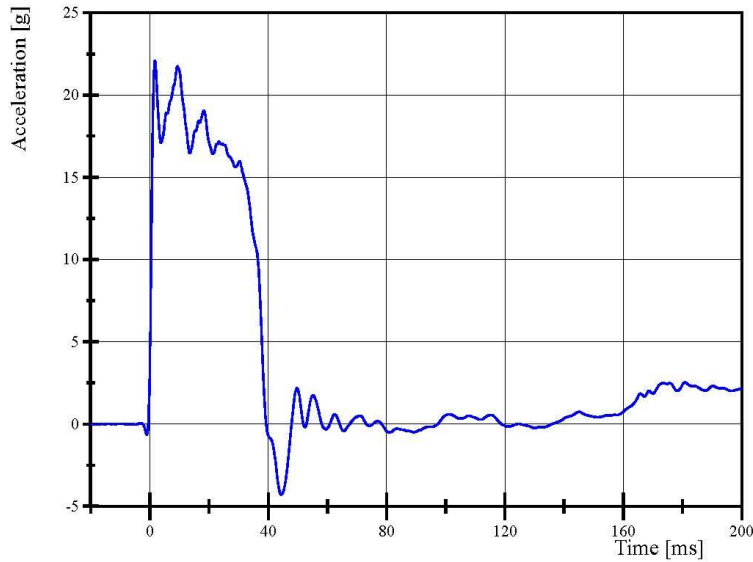
Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. DH1659 Certification No. 5-1

Test Date: 8/22/2022

Pendulum Acceleration

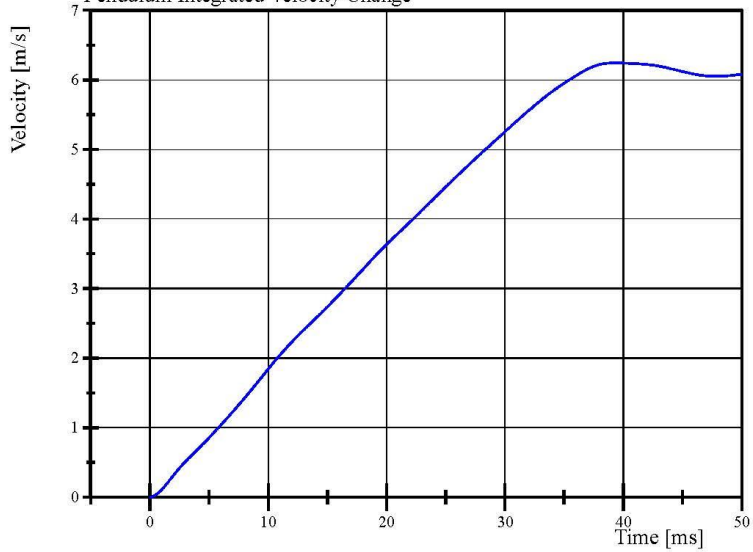


Filter Class: CFC_180

Max: 22.1 g at 1.7 ms

Min: -4.3 g at 44.4 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180

Max: 6.2 m/s at 39.3 ms

Min: 0.0 m/s at 0.0 ms

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

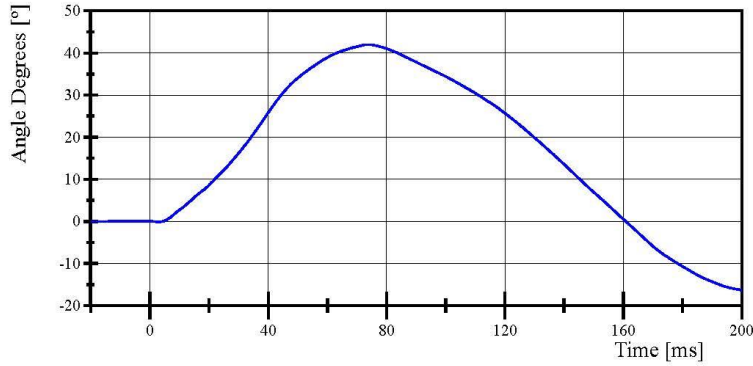
08.22.2022 09:50:58 2003



Transportation Research Center Inc.

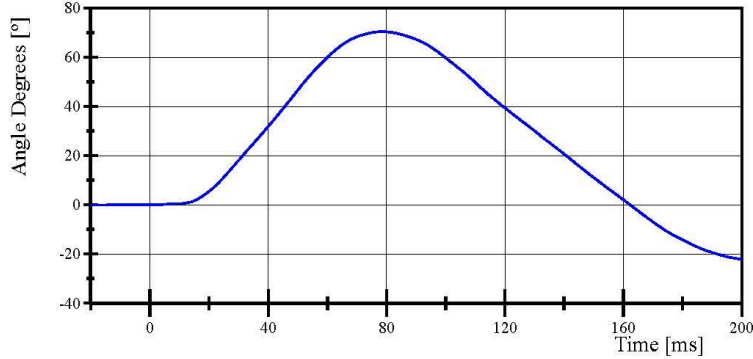
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 5-1
Test Date: 8/22/2022

Pot Rotation at the Base of Neck



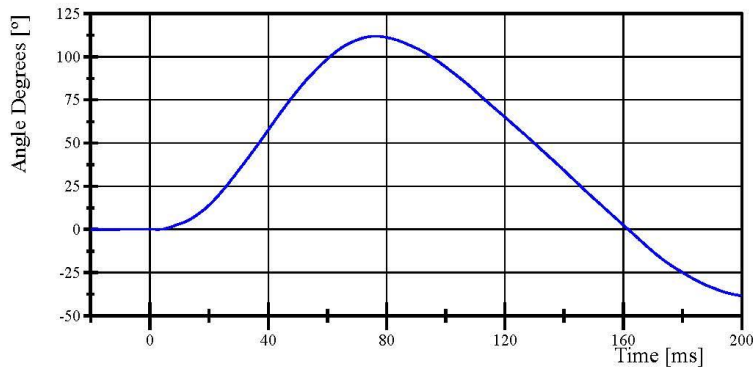
Filter Class: CFC_60
Max: 42.0 ° at 73.8 ms
Min: -16.3 ° at 199.9 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 70.4 ° at 78.5 ms
Min: -22.2 ° at 199.9 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 112.0 ° at 76.4 ms
Min: -38.5 ° at 199.9 ms

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

08.22.2022 09:50:58 2003

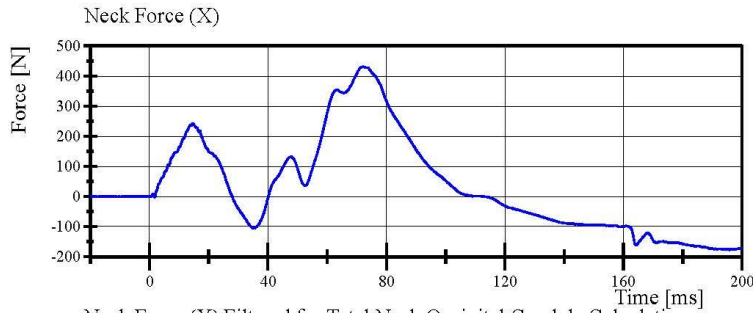


Transportation Research Center Inc.

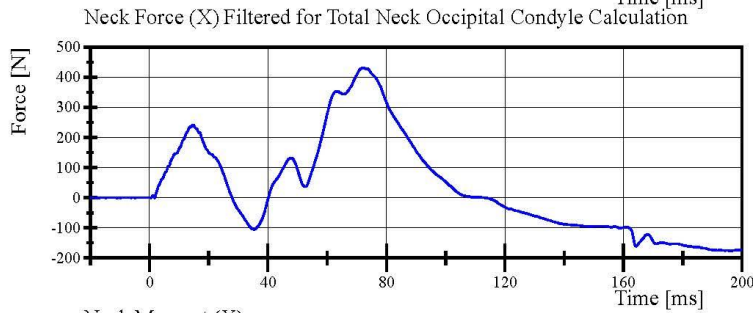
Neck Extension

HIII 5th Serial No. DH1659 Certification No. 5-1

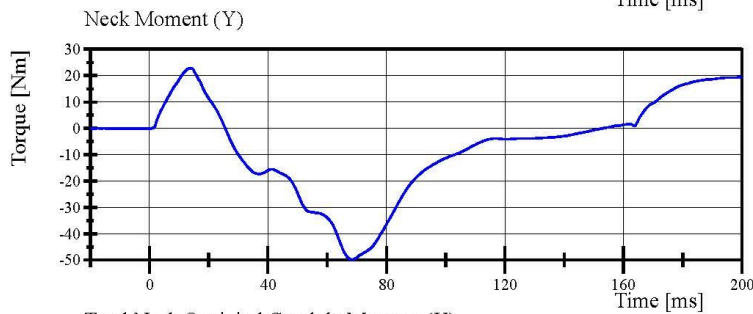
Test Date: 8/22/2022



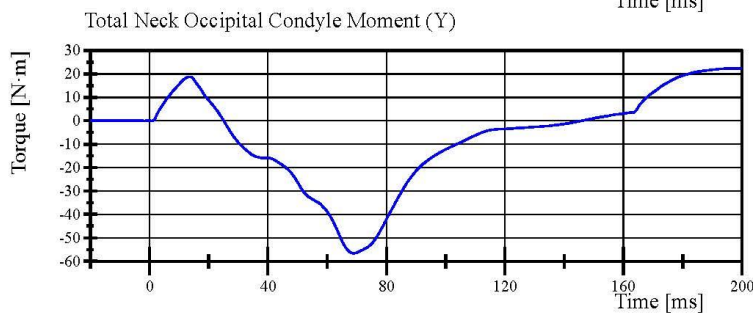
Filter Class: CFC_1000
Max: 431.4 N at 72.2 ms
Min: -176.6 N at 194.3 ms



Filter Class: CFC_600
Max: 430.8 N at 72.2 ms
Min: -176.2 N at 195.8 ms



Filter Class: CFC_600
Max: 22.9 Nm at 13.7 ms
Min: -49.8 Nm at 68.4 ms



Filter Class: Without_(Constar
Max: 22.4 N·m at 199.1 ms
Min: -56.6 N·m at 69.0 ms

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

08.22.2022 09:50:59 2003



Transportation Research Center Inc.

Front Thorax

HIII 5th Serial No. DH1659 Certification No. 5-3

Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.830 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,261.6 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,437.6 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-50.3 mm	Yes
Internal Hysteresis	69 - 85 %	75.6 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: EE8365

Ribset S/N: EA4110

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

08.19.2022 10:19:33 477

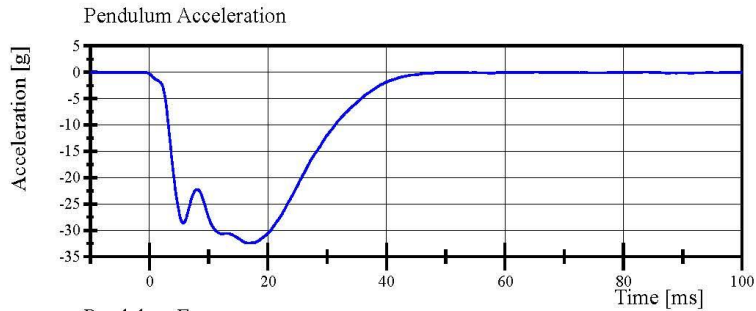


Report Number: DH1659_HFH05

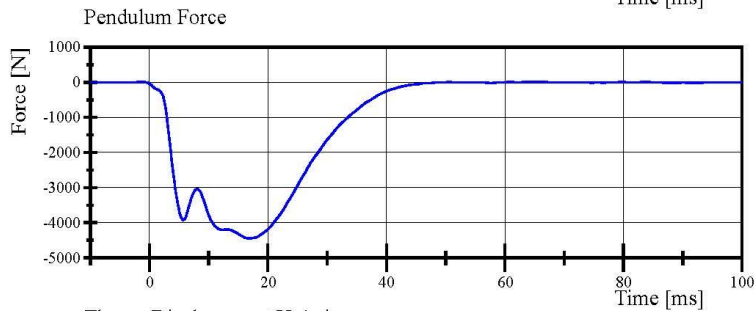
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Transportation Research Center Inc.

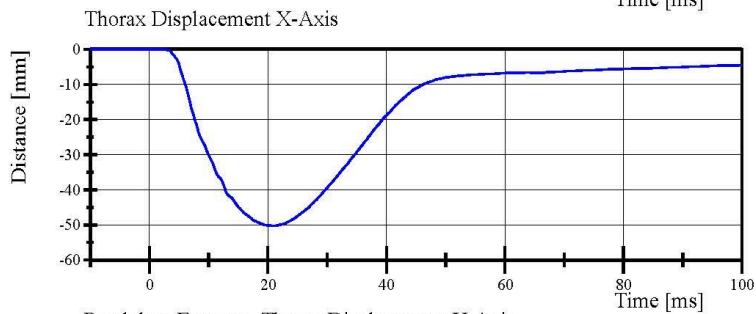
Front Thorax
 HIII 5th Serial No. DH1659 Certification No. 5-3
 Test Date: 8/19/2022



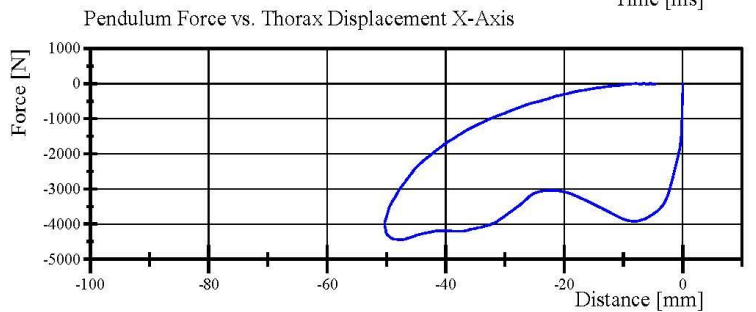
Filter Class: CFC_180
 Max: 0.1 g at 83.8 ms
 Min: -32.4 g at 16.7 ms



Filter Class: CFC_180
 Max: 8.1 N at 83.8 ms
 Min: -4,437.6 N at 16.7 ms



Filter Class: CFC_600
 Max: 0.0 mm at -2.6 ms
 Min: -50.3 mm at 21.0 ms



Filter Class: CFC_180
 Max: 8.1 N at -5.4 mm
 Min: -4,437.6 N at -47.5 mm

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

08.19.2022 10:21:01 477

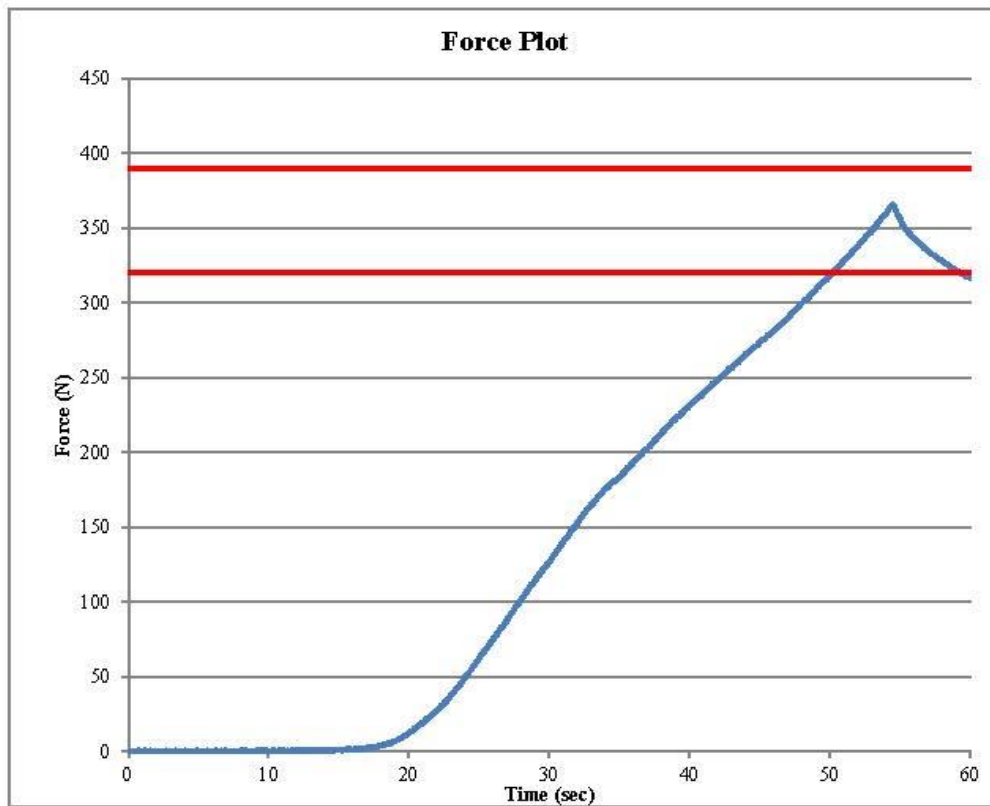


Transportation Research Center Inc.
Hybrid III Small Female Torso Flexion



Customer: NHTSA
 Serial Number: DH1659 Date: 8/19/2022
 Test Number: 1 Time: 11:13

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.1 °C Pass
Humidity	10 - 70	69 % Pass
Average Angular Rate	0.5 - 1.5	0.89 deg/sec Pass
Initial Angle	0 - 20	13.49 deg Pass
Peak Force at 45.24°	320 - 390	365.53 N Pass
Final Angle	-8 - 8	4.38 deg Pass



Components: Comments:
 Jacket S/N: EE8385
 Abdomen S/N: EE8393
 Lumbar S/N: DG9121

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 5-6
Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.7 °C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.071 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-4,004.7 N	Yes

Test meets specifications.

Condition: Used

Comments:

Left Knee Skin S/N: ED6729

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

08.19.2022 16:51:37 1756

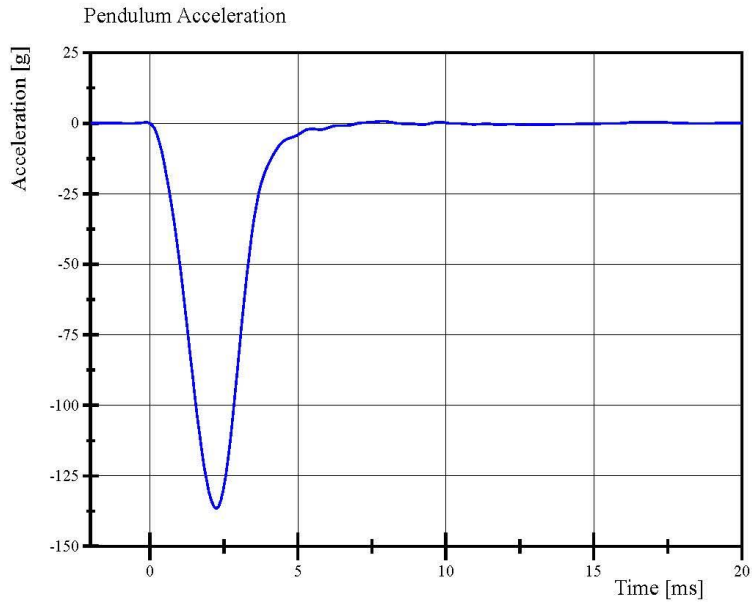


Report Number: DH1659_HFH05

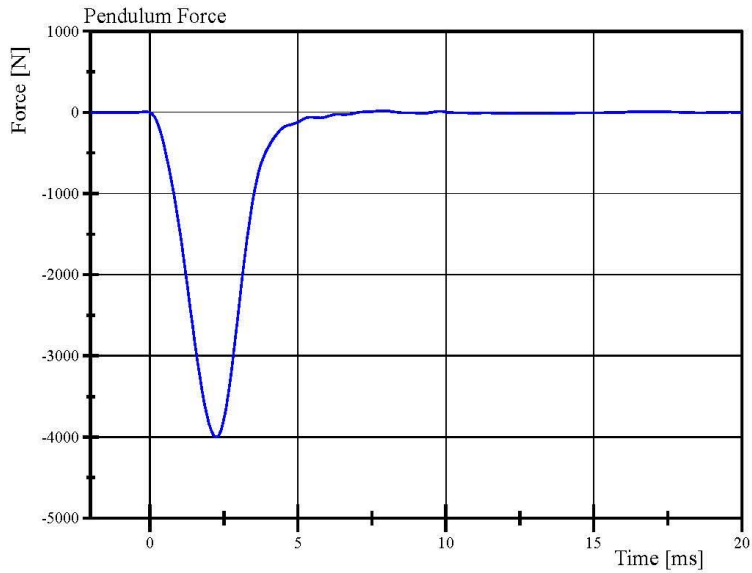
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Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 5-6
Test Date: 8/19/2022



Filter Class: CFC_600
Max: 0.7 g at 7.8 ms
Min: -136.6 g at 2.2 ms



Filter Class: CFC_600
Max: 21.3 N at 7.8 ms
Min: -4,004.7 N at 2.2 ms

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

08.19.2022 16:53:08 1756



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 5-2
Test Date: 8/19/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	63 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.097 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-4,038.3 N	Yes

Test meets specifications.

Condition: Used

Comments:

Right Knee Skin S/N: EC5852

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

08.19.2022 17:03:44 1737

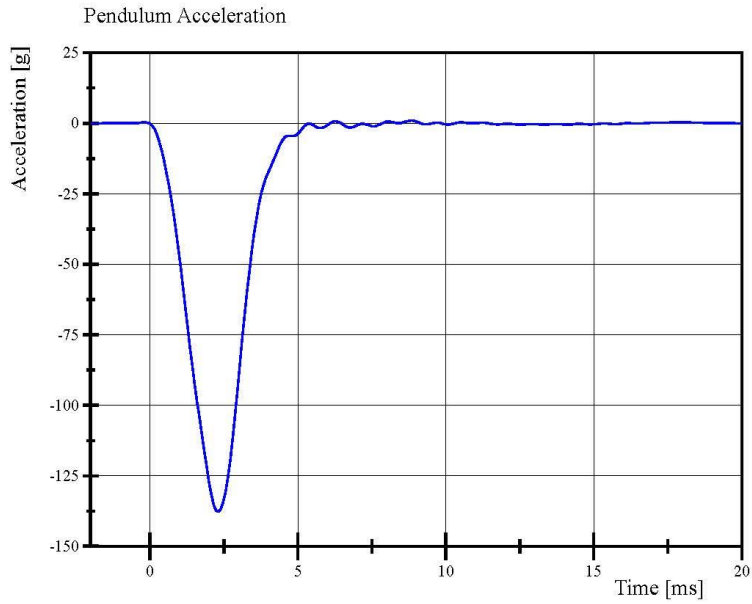


Report Number: DH1659_HFH05

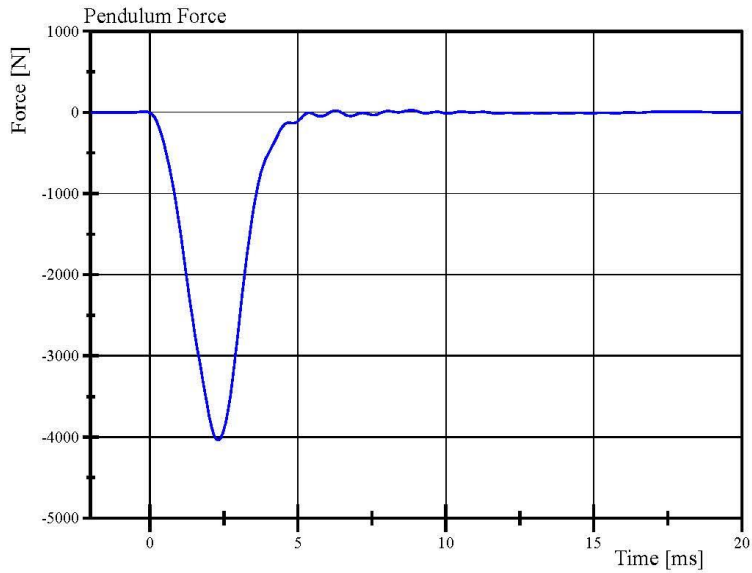
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Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 5-2
Test Date: 8/19/2022



Filter Class: CFC_600
Max: 0.9 g at 8.8 ms
Min: -137.7 g at 2.3 ms



Filter Class: CFC_600
Max: 27.4 N at 8.8 ms
Min: -4,038.3 N at 2.3 ms

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

08.19.2022 17:04:41 1737



Post-Test Calibration Sheets

Passenger S/N DH1659

**Transportation Research Center Inc.
5720 HIII 5th Dummy
External Dimensions
Serial No. DH1659 Calibration No. 06**

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	774.7 - 800.1	781	Yes
B	Shoulder Pivot Height	431.8 - 457.2	445	Yes
C	Hip Pivot Height	81.3 - 86.3	86	Yes
D	Hip Pivot from Backline	144.8 - 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6 - 83.8	80	Yes
F	Thigh Clearance	119.4 - 134.6	131	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	198	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	360	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	184	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	305	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	869	Yes
Z	Waist Circumference	759.5 - 789.9	776	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Revised 8/10/12



Report Number: DH1659_HFH06

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Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 6-2
Test Date: 8/26/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	251.0 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	3.8 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	1.57 %	Yes

Test meets specifications.

Condition: Used

Comments:

Head Skin S/N: DU2864

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

08.26.2022 08:51:08 613

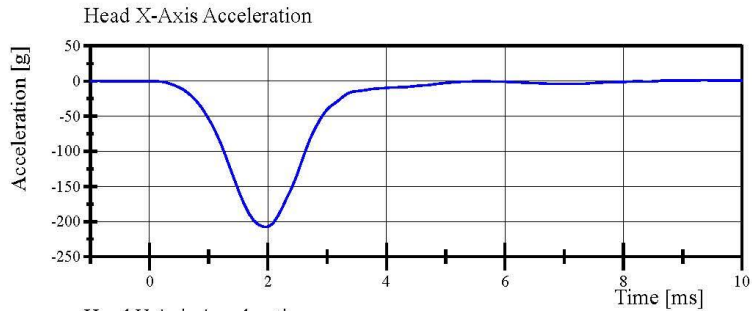


Transportation Research Center Inc.

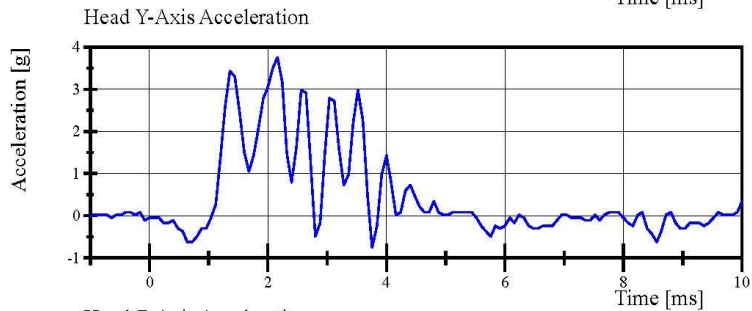
Front Head Drop

HIII 5th Serial No. DH1659 Certification No. 6-2

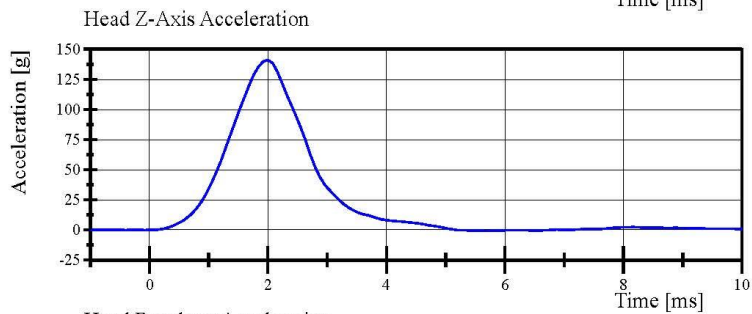
Test Date: 8/26/2022



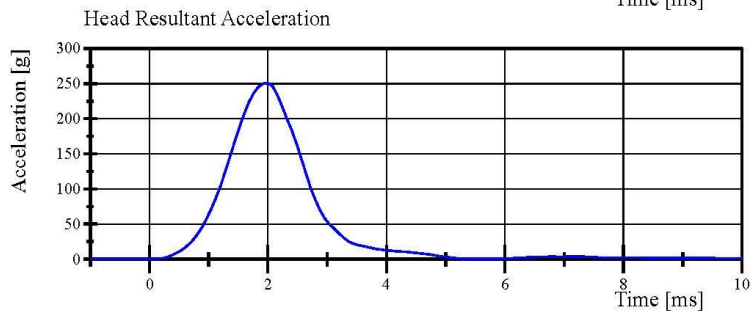
Filter Class: CFC_1000
Max: 1.3 g at 9.4 ms
Min: -207.5 g at 2.0 ms



Filter Class: CFC_1000
Max: 3.8 g at 2.2 ms
Min: -0.8 g at 3.8 ms



Filter Class: CFC_1000
Max: 141.1 g at 2.0 ms
Min: -0.7 g at 5.7 ms



Filter Class: CFC_1000
Max: 251.0 g at 2.0 ms
Min: 0.0 g at -0.2 ms

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

08.26.2022 08:51:49 613



Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 6-2

Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	67 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.076 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.40 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	(-4.0) - (-5.0) m/s	-4.61 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	(-5.8) - (-7.0) m/s	-6.60 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-83.9 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	76.4 N·m	Yes
Total Neck Occipital Condyles Moment Decay to 10 N·m	80 - 100 ms	88.0 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: EE9454

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

08.25.2022 14:48:16 1845

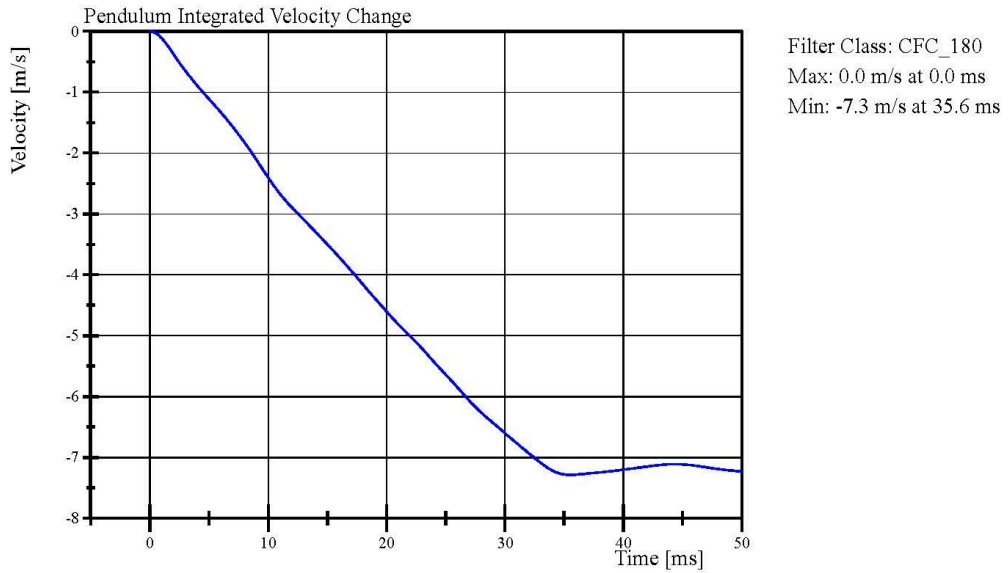
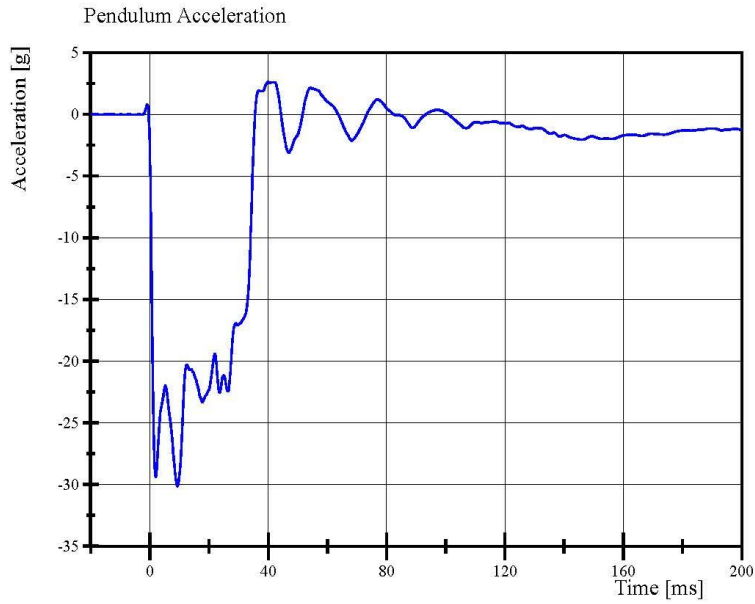


Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 6-2

Test Date: 8/25/2022



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

08.25.2022 14:49:19 1845



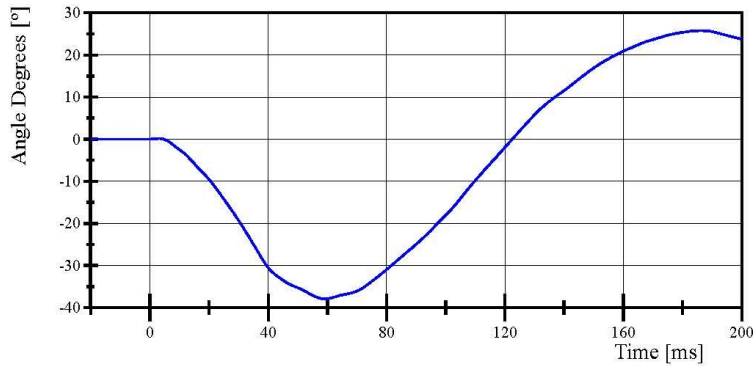
Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 6-2

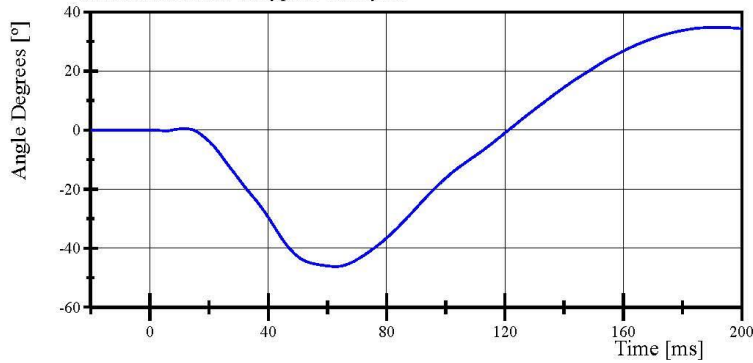
Test Date: 8/25/2022

Pot Rotation at the Base of Neck



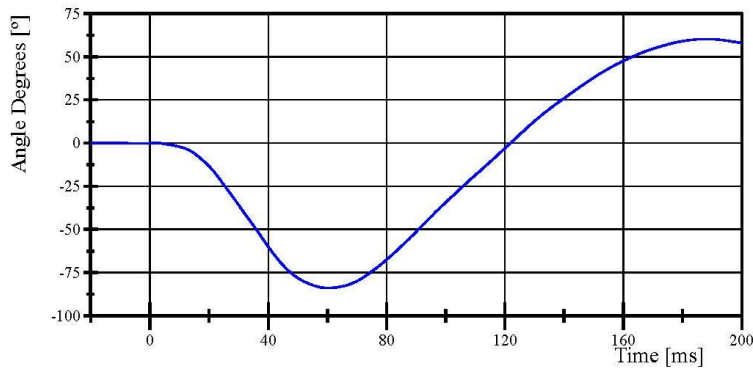
Filter Class: CFC_60
Max: 25.7 ° at 186.3 ms
Min: -37.9 ° at 59.1 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 34.9 ° at 192.4 ms
Min: -46.2 ° at 62.7 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 60.4 ° at 188.2 ms
Min: -83.9 ° at 60.4 ms

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

08.25.2022 14:49:19 1845

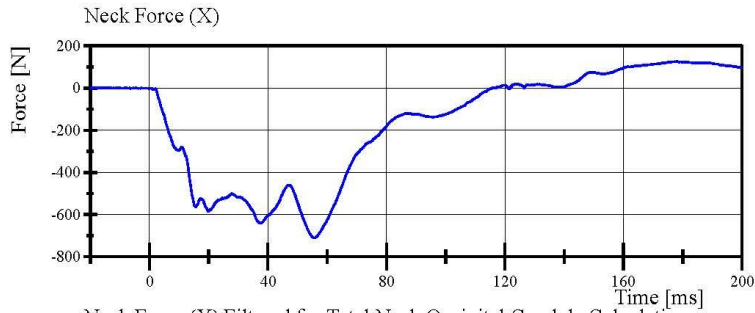


Transportation Research Center Inc.

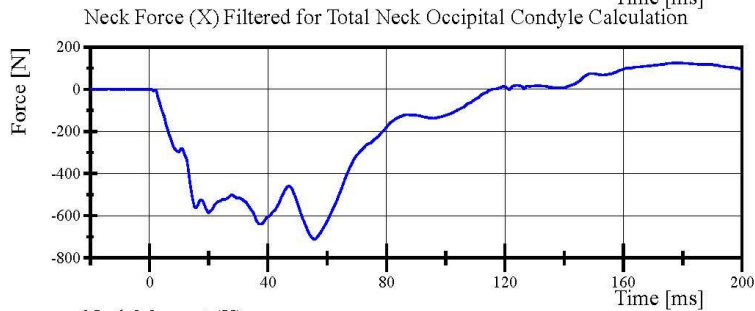
Neck Flexion

HIII 5th Serial No. DH1659 Certification No. 6-2

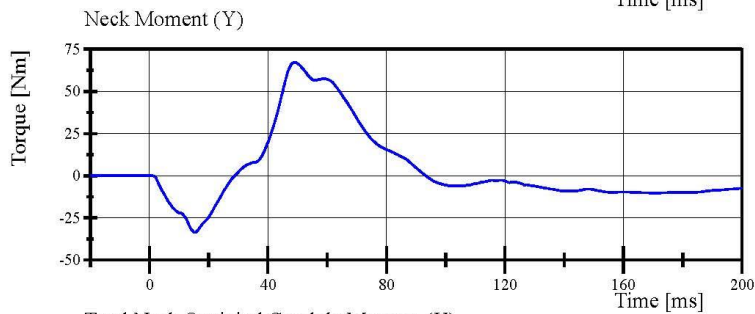
Test Date: 8/25/2022



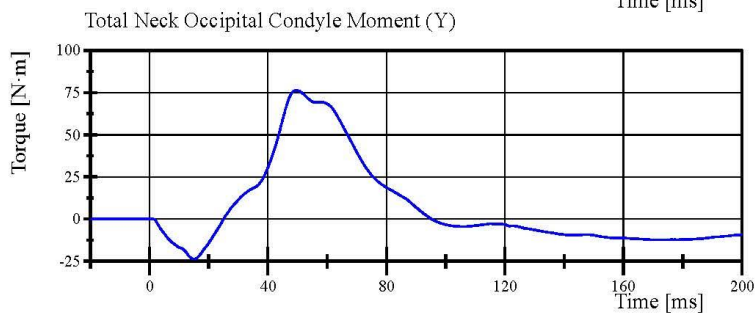
Filter Class: CFC_1000
Max: 126.0 N at 178.1 ms
Min: -710.4 N at 55.5 ms



Filter Class: CFC_600
Max: 125.6 N at 178.1 ms
Min: -710.5 N at 55.7 ms



Filter Class: CFC_600
Max: 67.2 Nm at 49.1 ms
Min: -33.6 Nm at 15.3 ms



Filter Class: Without_(Constar
Max: 76.4 N·m at 49.5 ms
Min: -23.7 N·m at 15.1 ms

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

08.25.2022 14:49:20 1845



Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. DH1659 Certification No. 6-1

Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	65 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.049 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.77 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	3.1 - 3.9 m/s	3.49 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	4.6 - 5.6 m/s	5.09 m/s	Yes
Total Head D-Plane Rotation	99 - 114 °	110.2 °	Yes
Total Neck Occipital Condyles Moment Between 99° and 114° Rotation	(-53) - (-65) N·m	-57.3 N·m	Yes
Total Neck Occipital Condyles Moment Decay to -10 N·m	94 - 114 ms	104.8 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: EE9454

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

08.25.2022 15:19:49 2003



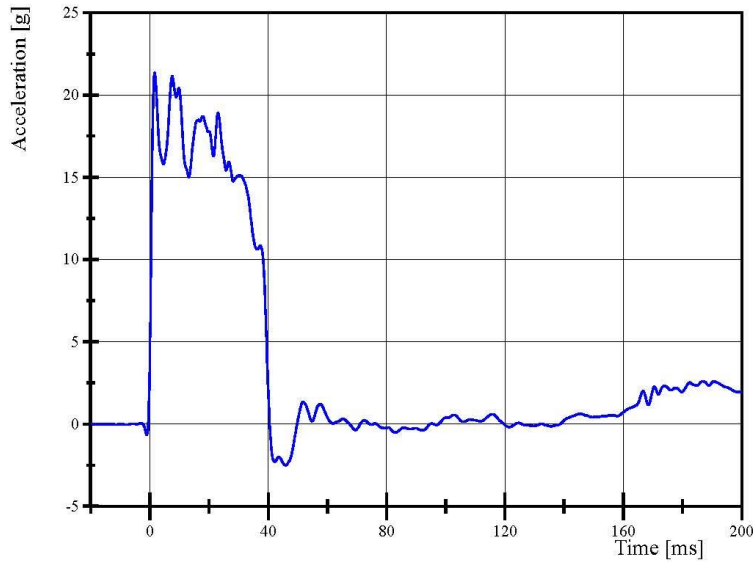
Transportation Research Center Inc.

Neck Extension

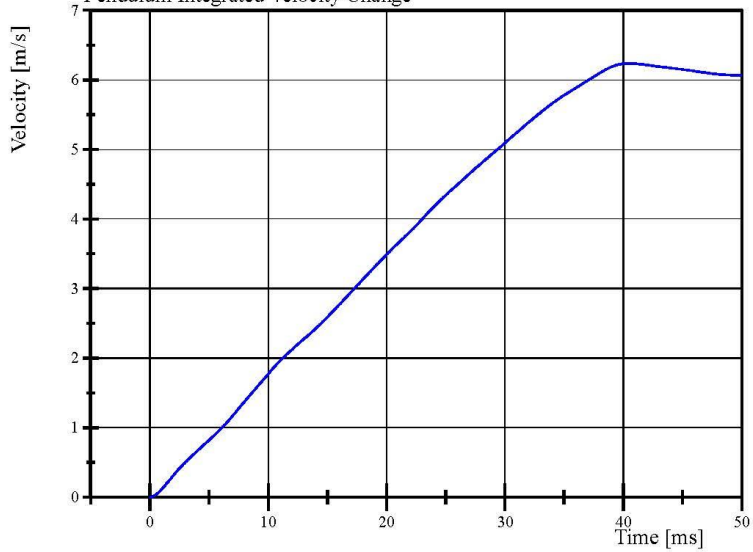
HIII 5th Serial No. DH1659 Certification No. 6-1

Test Date: 8/25/2022

Pendulum Acceleration



Pendulum Integrated Velocity Change



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

08.25.2022 15:20:34 2003



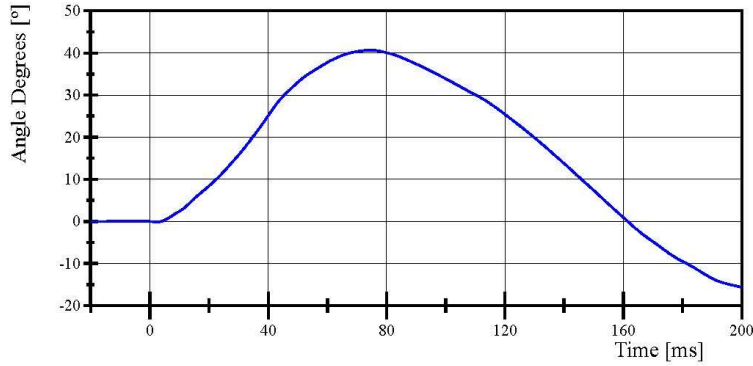
Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. DH1659 Certification No. 6-1

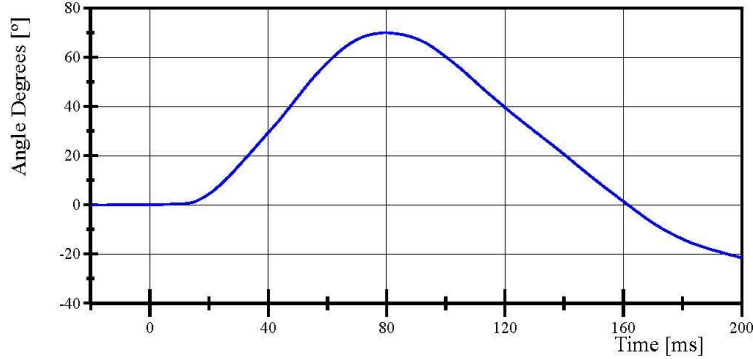
Test Date: 8/25/2022

Pot Rotation at the Base of Neck



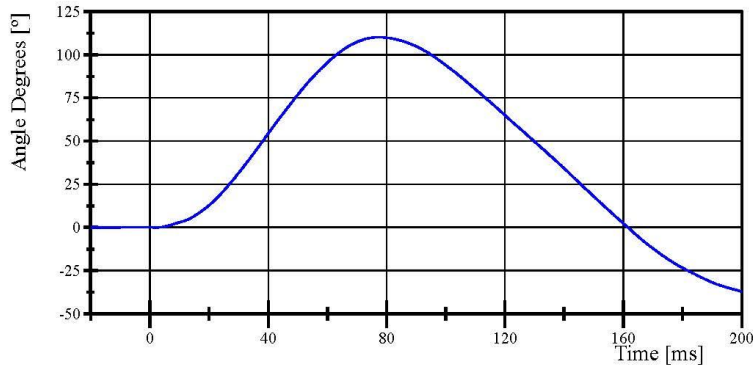
Filter Class: CFC_60
Max: 40.6 ° at 74.6 ms
Min: -15.6 ° at 199.9 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 69.9 ° at 79.8 ms
Min: -21.5 ° at 199.9 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 110.2 ° at 77.4 ms
Min: -37.1 ° at 199.9 ms

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

08.25.2022 15:20:34 2003

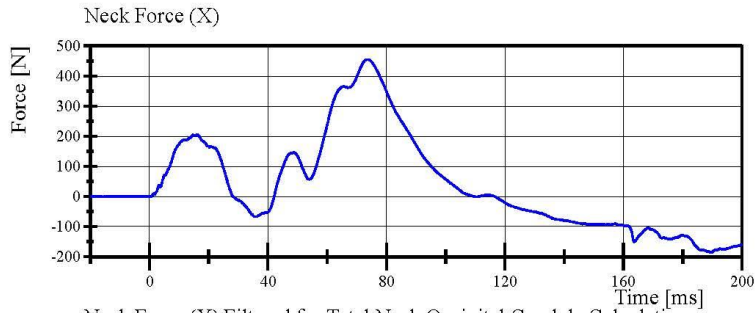


Transportation Research Center Inc.

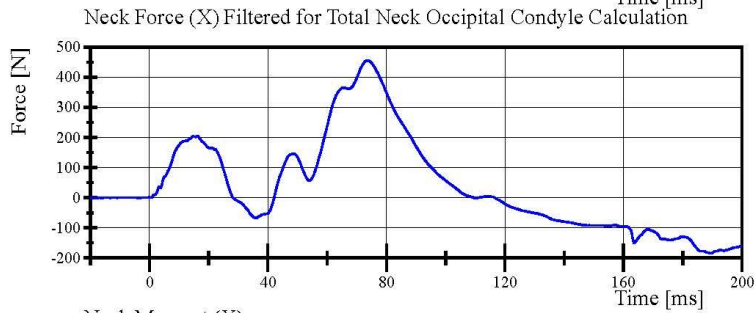
Neck Extension

HIII 5th Serial No. DH1659 Certification No. 6-1

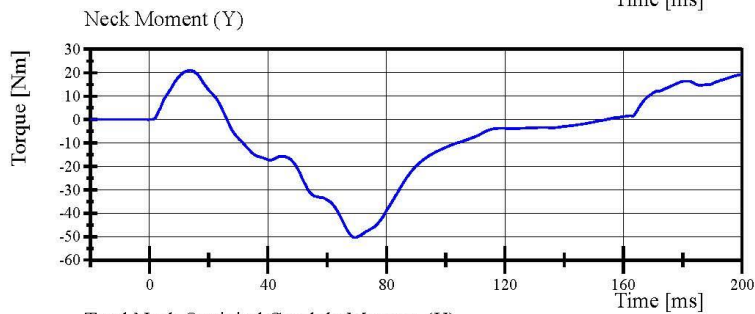
Test Date: 8/25/2022



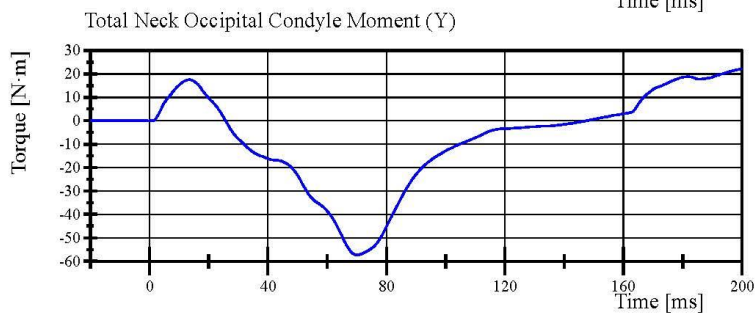
Filter Class: CFC_1000
Max: 455.6 N at 73.2 ms
Min: -185.7 N at 189.4 ms



Filter Class: CFC_600
Max: 455.5 N at 73.5 ms
Min: -185.6 N at 189.6 ms



Filter Class: CFC_600
Max: 21.0 Nm at 13.7 ms
Min: -50.4 Nm at 69.5 ms



Filter Class: Without_(Constar
Max: 22.2 N·m at 199.9 ms
Min: -57.3 N·m at 70.1 ms

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

08.25.2022 15:20:34 2003



Transportation Research Center Inc.

Front Thorax

HIII 5th Serial No. DH1659 Certification No. 6-3

Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.794 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,263.8 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,344.1 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-51.1 mm	Yes
Internal Hysteresis	69 - 85 %	75.5 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: EE8365

Rib Set S/N: EA4110

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

08.25.2022 12:05:05 475

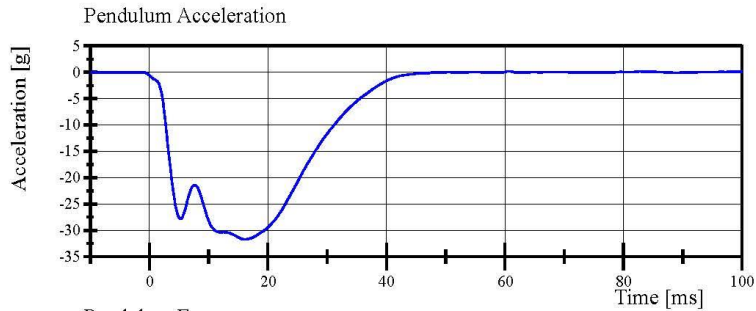


Transportation Research Center Inc.

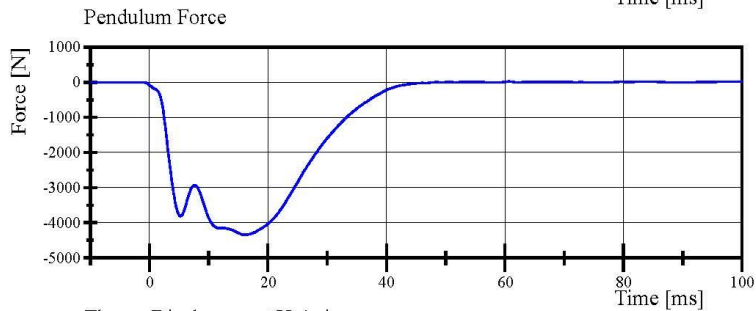
Front Thorax

HIII 5th Serial No. DH1659 Certification No. 6-3

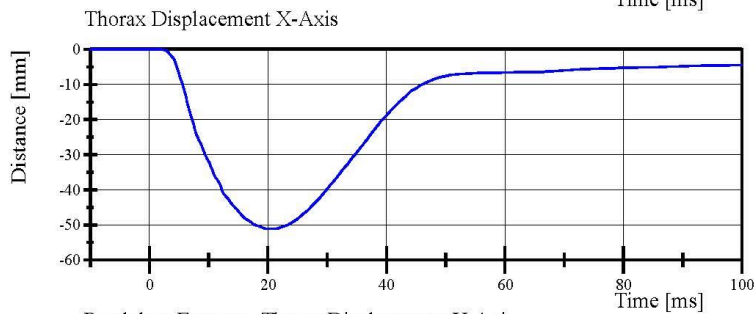
Test Date: 8/25/2022



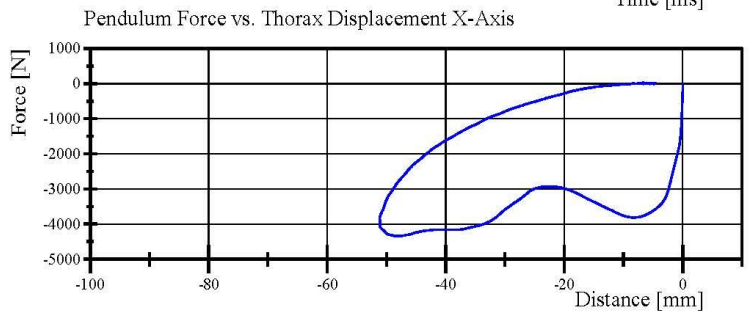
Filter Class: CFC_180
Max: 0.2 g at 60.7 ms
Min: -31.7 g at 16.1 ms



Filter Class: CFC_180
Max: 25.1 N at 60.7 ms
Min: -4,344.1 N at 16.1 ms



Filter Class: CFC_600
Max: 0.0 mm at -10.0 ms
Min: -51.1 mm at 21.2 ms



Filter Class: CFC_180
Max: 25.1 N at -6.6 mm
Min: -4,344.1 N at -48.1 mm

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

08.25.2022 12:06:29 475

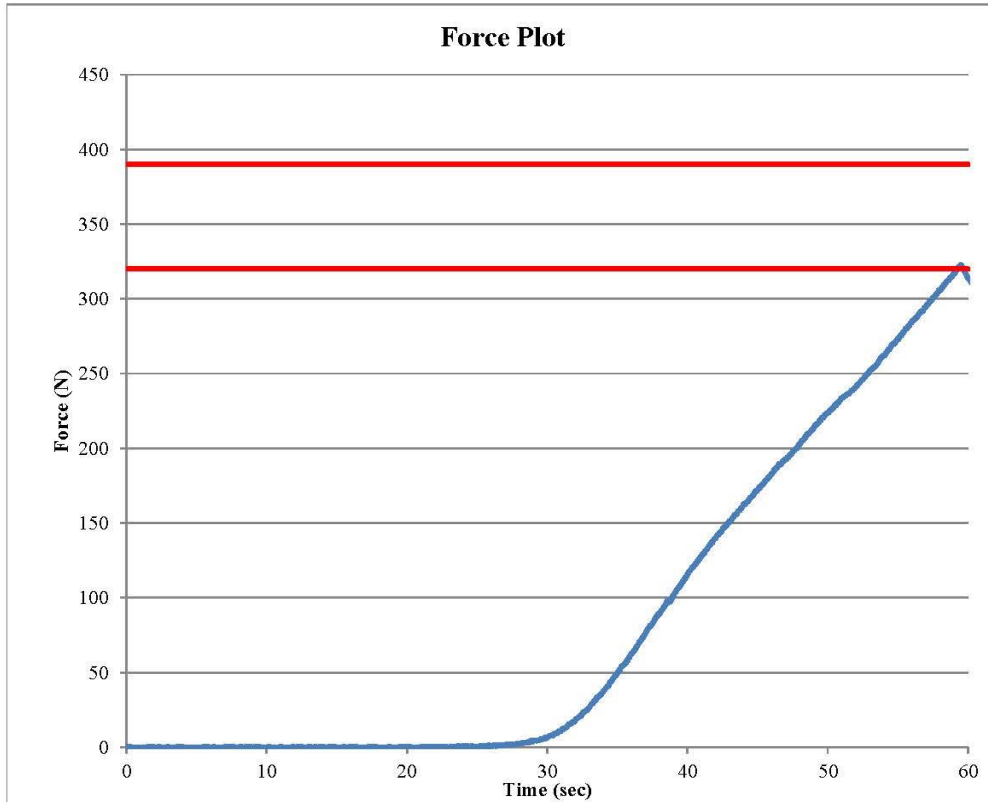


Transportation Research Center Inc.
Hybrid III Small Female Torso Flexion



Customer: NHTSA
 Serial Number: DH1659 Date: 8/25/2022
 Test Number: 1 Time: 8:59

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.3 °C Pass
Humidity	10 - 70	68 % Pass
Average Angular Rate	0.5 - 1.5	0.93 deg/sec Pass
Initial Angle	0 - 20	17.76 deg Pass
Peak Force at 45.24°	320 - 390	322.78 N Pass
Final Angle	-8 - 8	4.38 deg Pass



Components: Comments:
 Jacket S/N: EE8385
 Abdomen S/N: EE8393
 Lumbar S/N: DG9121

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 6-4
Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	66 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.080 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,717.3 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: ED6729

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

08.25.2022 15:39:45 1843

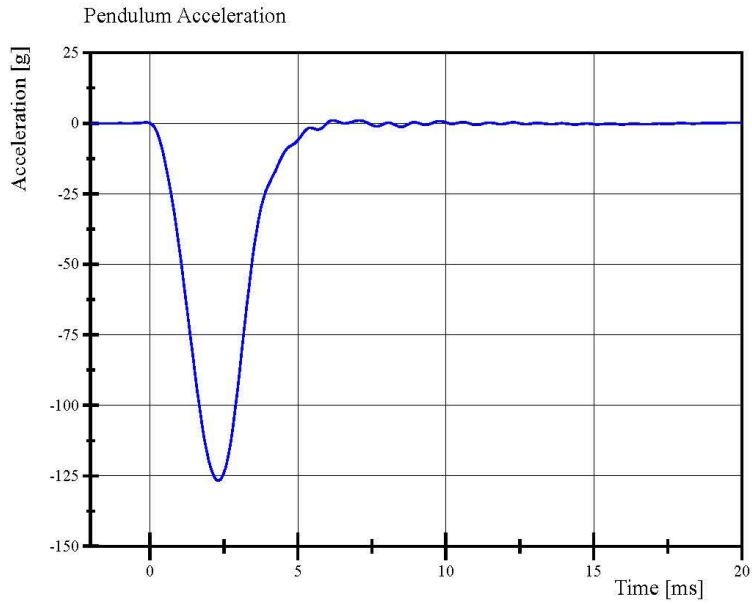


Report Number: DH1659_HFH06

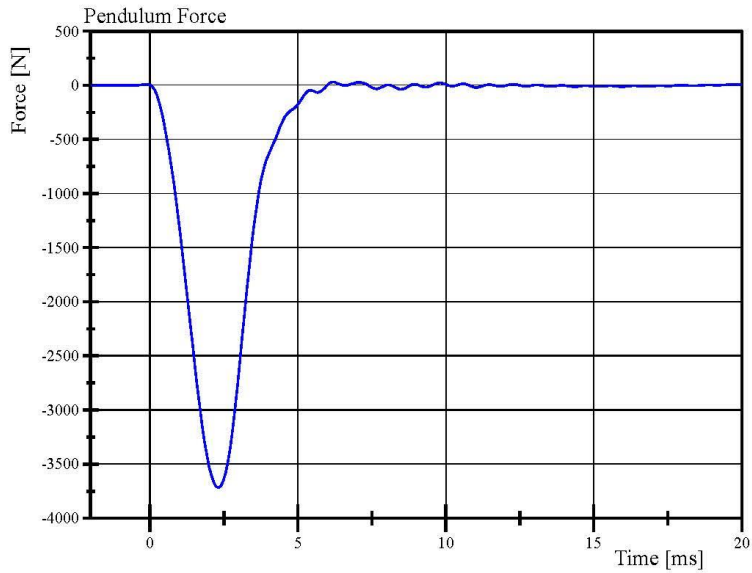
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Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 6-4
Test Date: 8/25/2022



Filter Class: CFC_600
Max: 1.0 g at 6.2 ms
Min: -126.8 g at 2.3 ms



Filter Class: CFC_600
Max: 30.4 N at 6.2 ms
Min: -3,717.3 N at 2.3 ms

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

08.25.2022 15:40:30 1843



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 6-2
Test Date: 8/25/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	68 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.073 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,687.3 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EC5852

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

08.26.2022 12:10:17 2197

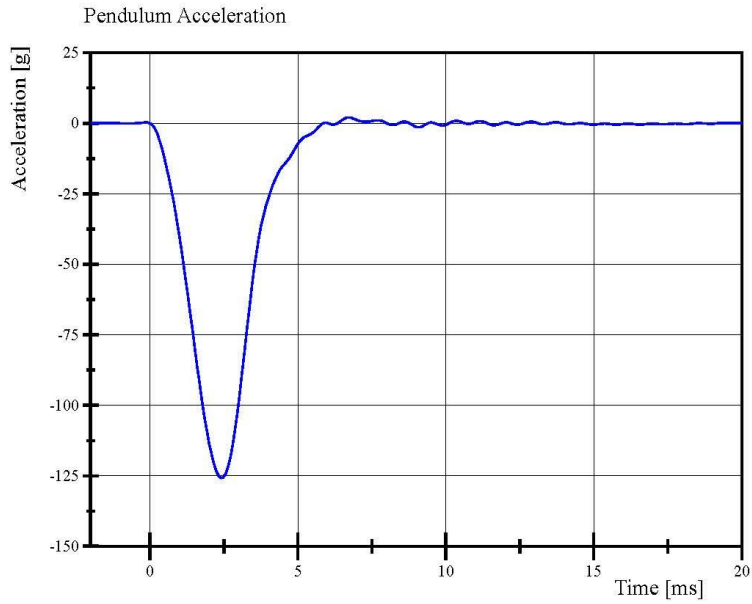


Report Number: DH1659_HFH06

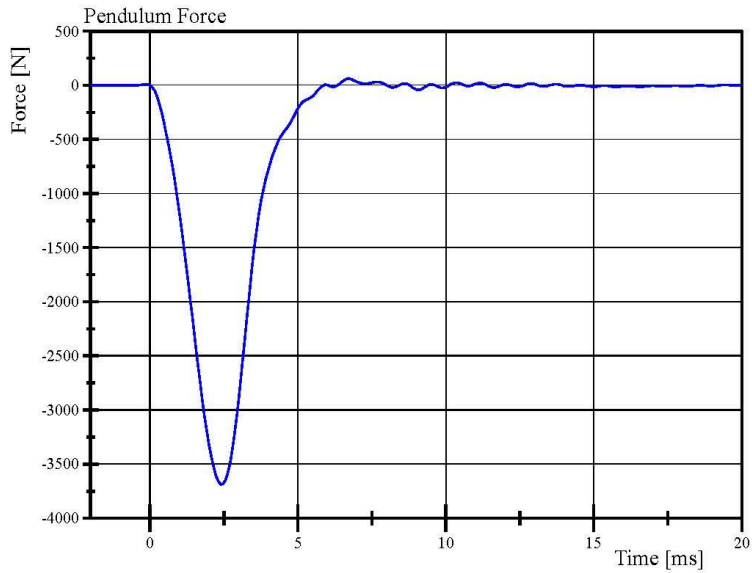
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Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 6-2
Test Date: 8/25/2022



Filter Class: CFC_600
Max: 2.1 g at 6.7 ms
Min: -125.8 g at 2.4 ms



Filter Class: CFC_600
Max: 61.4 N at 6.7 ms
Min: -3,687.3 N at 2.4 ms

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

08.26.2022 12:10:59 2197



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	28-Jul-2022		
		Y	P94650	Endevco	28-Jul-2022		
		Z	P94622	Endevco	28-Jul-2022		
	Redundant	X	P94431	Endevco	28-Jul-2022		
		Y	P94487	Endevco	28-Jul-2022		
		Z	P94645	Endevco	28-Jul-2022		
Head Angular Rate Sensors			X	ARS10787	DTS	15-Mar-2022	
			Y	ARS10789	DTS	15-Mar-2022	
			Z	ARS10793	DTS	15-Mar-2022	
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	2021	Humanetics	21-Feb-2022	
Chest Accelerometers	Primary	X	P97714	Endevco	28-Jul-2022		
		Y	P61255	Endevco	28-Jul-2022		
		Z	P45008	Endevco	28-Jul-2022		
	Redundant	X	P91177	Endevco	28-Jul-2022		
		Y	P94570	Endevco	28-Jul-2022		
		Z	P91172	Endevco	28-Jul-2022		
Chest Potentiometer			X	CST037	Servo	23-Feb-2022	
Pelvis Accelerometers			X	T11801	Endevco	28-Jul-2022	
			Y	P91876	Endevco	28-Jul-2022	
			Z	T11390	Endevco	28-Jul-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	28-Jul-2022	
			Z	P91498	Endevco	28-Jul-2022	
		Front	Z	P90841	Endevco	28-Jul-2022	
	Right	Rear	X	P93467	Endevco	28-Jul-2022	
			Z	P97619	Endevco	28-Jul-2022	
		Front	Z	P94523	Endevco	28-Jul-2022	
Seat Belt Load Cells			Lap	N/A	X08012	Measurement Specialties	26-May-2022
			Shoulder	N/A	T1210D	Measurement Specialties	26-May-2022

TABLE 2 – Front Passenger Dummy Instrumentation

Instrumentation			Axis/Location	Hybrid III 5th S/N DH1659			
				Serial Number	Manufacturer	Calibration Date	
Head Accelerometers	Primary	X	P44972	Endevco	27-Jul-2022		
		Y	T11806	Endevco	27-Jul-2022		
		Z	P69062	Endevco	27-Jul-2022		
	Redundant	X	T11046	Endevco	27-Jul-2022		
		Y	P97525	Endevco	27-Jul-2022		
		Z	P73228	Endevco	27-Jul-2022		
Head Angular Rate Sensors			X	ARS4731	DTS	15-Mar-2022	
			Y	ARS4735	DTS	15-Mar-2022	
			Z	ARS6644	DTS	15-Mar-2022	
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	1874	Denton	17-Feb-2022	
Chest Accelerometers	Primary	X	P80855	Endevco	27-Jul-2022		
		Y	P97544	Endevco	27-Jul-2022		
		Z	P57791	Endevco	27-Jul-2022		
	Redundant	X	P73221	Endevco	27-Jul-2022		
		Y	T11872	Endevco	27-Jul-2022		
		Z	T16784	Endevco	27-Jul-2022		
Chest Potentiometer			X	CST3410	Servo	27-Jul-2022	
Pelvis Accelerometers			X	P91969	Endevco	27-Jul-2022	
			Y	P91958	Endevco	27-Jul-2022	
			Z	P80721	Endevco	27-Jul-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	27-Jul-2022	
			Z	T11816	Endevco	27-Jul-2022	
		Front	Z	P97890	Endevco	27-Jul-2022	
	Right	Rear	X	P97640	Endevco	27-Jul-2022	
			Z	P91471	Endevco	27-Jul-2022	
		Front	Z	P91907	Endevco	27-Jul-2022	
Seat Belt Load Cells			Lap	N/A	R141C7	Measurement Specialties	26-May-2022
			Shoulder	N/A	T1210A	Measurement Specialties	19-Aug-2022

TABLE 3 – Vehicle Instrumentation

Instrumentation			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember/Rear Seat Accelerometers	Left	Primary	X	A251664	Measurement Specialties	23-Mar-2022
			Z	A298343	Measurement Specialties	23-Mar-2022
		Redundant	X	A222964	Measurement Specialties	23-Mar-2022
	Right	Primary	X	A298534	Measurement Specialties	23-Mar-2022
			Z	A400128	Measurement Specialties	31-Mar-2022
		Redundant	X	A318442	Measurement Specialties	23-Mar-2022
Engine Accelerometers	Top		X	A254922	Measurement Specialties	23-Mar-2022
	Bottom		X	A254934	Measurement Specialties	23-Mar-2022