Final Report Number: NCAP-TRC-23-004

New Car Assessment Program (NCAP)

Frontal Barrier Impact Test

BAYERISCHE MOTOREN WERKE AG

2023 MINI Countryman 5HB

NHTSA Number: M20234103

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

Report Date: January 18, 2024

FINAL REPORT

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

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Prepared By: ILO Project Operations Group

Approved By: John Shultz

Approval Date: January 18, 2024

FINAL REPORT ACCEPTANCE BY OCWS:

_____

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

Date _____

_____

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

Date _____

Technical Report Documentation Page

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Final Report of NEW CAR ASSESSMENT PROGRAM Frontal Impact Testing of a 2023 MINI Countryman 5HB NHTSA No. M20234103	January 18, 2024
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16. Abstract

A 56.0 km/h NCAP Frontal Impact Test was conducted on a 2023 MINI Countryman 5HB, in accordance with the specifications of the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. The test was conducted at the Transportation Research Center Inc. in East Liberty, Ohio on June 13, 2023.

The impact velocity was 56.54 km/h, and the ambient temperature at the barrier face at the time of impact was 22.0° C. The target vehicle post-test maximum crush was 558 millimeters at vehicle C4. The test vehicle's performance is as follows:

	Driver ATD			Passenger ATD		
Measurement Description	Units	Threshold	Result	Units	Threshold	Result
Head Injury Criteria (HIC_{15})	NA	700	162.707	NA	700	300.508
Maximum Chest Compression	mm	63	-24.510	mm	52	-15.260
3ms Chest Clip	Gs	60	45.810	Gs	60	48.490
Nij	NA	1	0.356	NA	1	0.378
Neck Tension	Newtons	4170	1718.800	Newtons	2620	583.710
Neck Compression	Newtons	4000	-276.560	Newtons	2520	-699.250
Left Femur Force	Newtons	10008	-1439.600	Newtons	6805	-1266.700
Right Femur Force	Newtons	10008	-1822.190	Newtons	6805	-1294.830

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

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. Number of Pages	22. Price
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SECTION 1: PURPOSE AND SUMMARY OF THE TEST

PURPOSE

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

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

SUMMARY

A load cell barrier consisting of 288 load cells was impacted by a 2023 MINI Countryman 5HB at a velocity of 56.54 km/h. The test was performed at Transportation Research Center, Inc. on June 13, 2023. 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 558 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 airbag. The passenger's visible contact points were as follows: front airbag, headrest, and knee airbag.

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)	162.707	0.356	1,718.800	-276.560	45.810	-24.510	-1,439.600	-1,822.190
Passenger (5^{th} Female)	300.508	0.378	583.710	-699.250	48.490	-15.260	-1,266.700	-1,294.830

TEST COMMENTS:

Vehicle Engine Top X: Channel failed at 50.0 ms

SECTION 2: DATA SHEETS

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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

TEST VEHICLE INFORMATION

NHTSA No.	M20234103
Model Year	2023
Make	Mini
Model	Countryman
Body Style	MPV
VIN	WMZ53BR09P3R28376
Body Color	British Racing Green IV met
Odometer Reading (km/mi)	11 mi
Engine Displacement (L)	2.0
Type/No. Cylinders	Straight/4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	7
Overdrive	Yes
Final Drive	FWD
Roof Rack	Yes
Sunroof/T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
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	Yes
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	Yes
Driver Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other:	No

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

DATA FROM CERTIFICATION LABEL

Manufactured by	BAYERISCHE MOTOREN WERKE AG
Date of Manufacture	02/23

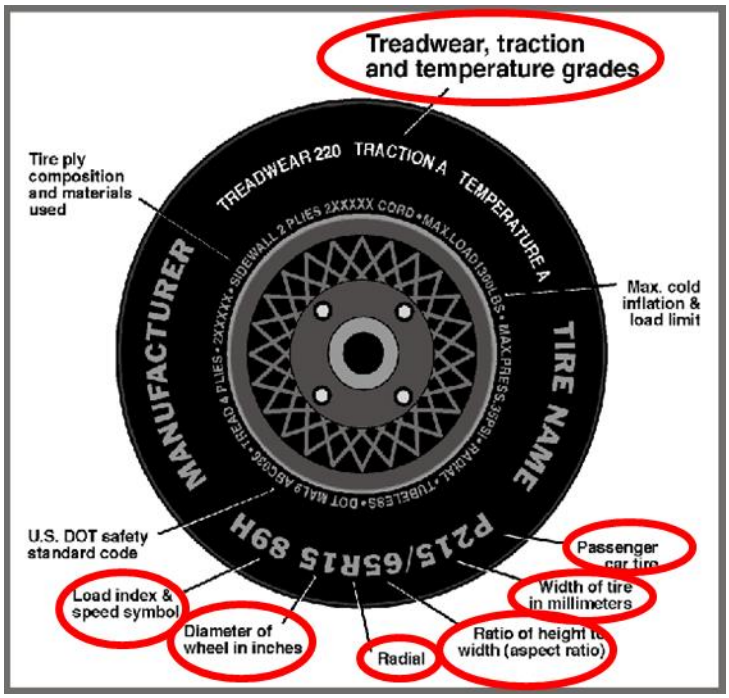
GVWR (kg)	2060 (4542 lbs)
GAWR Front (kg)	1090 (2403 lbs)
GAWR Rear (kg)	1025 (2260 lbs)

VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	N/A	
Number of Occupants	2	3	N/A	5
Capacity Wt. (VCW) (kg)				430.0
Cargo Wt. (RCLW) (kg)				90.0

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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold / Test Pressure (kPa)	260	260
Recommended Tire Size	225/45 R19	225/45 R19
Tire Size on Vehicle	225/45 R19	224/45 R19
Tire Manufacturer	Continental	Continental
Tire Model	Eco Contact 6 SSR	Eco Contact 6 SSR
Treadwear	420	420
Traction Grade	AA	AA
Temperature Grade	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	96W	96W
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Right	6Y82 D8U3 0223	6Y82 D8U3 0223
DOT Safety Code Left	6Y82 D8U3 0223	6Y82 D8U3 0223

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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	448.6	341.6		487.6	426.0	
Right	kg	474.2	313.2		487.0	398.6	
Ratio	%	58.5	41.5		54.2	45.8	
Totals	kg	922.8	654.8	1577.6	974.6	824.6	1799.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1577.6
Weight of 1 P572E ATD & 1 P572O ATD	kg	139.3
Rated Cargo/Luggage Weight (RCLW)	kg	90.0
Vehicle Target Weight (TVTW)	kg	1806.9

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front)
As Delivered	mm	775	772	780	784	1110
As Tested	mm	764	767	754	750	1226
Post Test	mm	N/A	N/A	757	742	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2675
Total Vehicle Length at Left Side	mm	4180
Total Vehicle Length at Centerline	mm	4314
Total Vehicle Length at Right Side	mm	4180
Weight of Ballast in Cargo Area	kg	45.4
Weight of Vehicle Components Removed	kg	0.0
Amount of Stoddard Solvent in Fuel Tank	liters	56.7

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: None

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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

TARGET VEHICLE STRUCTURAL MEASUREMENT

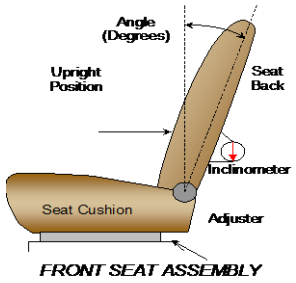
	Elements	Pre-Test (mm)
1	Total Length	4314
2	Total Width	1821
3	Bumper Top Height	555
4	Bumper Bottom Height	415
5	Longitudinal Member Top Height	630
6	Distance Between Longitudinal Members	800
7	Longitudinal Member Width	60
8	Engine Top Height	844
9	Engine Bottom Height	227
10	Engine and Gearbox Width	840
11	Front Bumper-Engine Distance	290
12	Front Shock Absorber Fixing Height	905
13	Bonnet Leading Edge Height	815
14	Front Shock Absorber Fixing Width	1227
15	Front Bumper – Front Axle Distance	864
16	Front Axle – A-Pillar Distance	623
17	A-Pillar – B-Pillar Distance	960
18	B-Pillar – Rear Axle Distance	1008
19	B-Pillar – C-Pillar Distance	900
20	Roof Sill Bottom Height	1403
21	Roof Sill Top Height	1460
22	Floor Sill Bottom Height	391
23	Floor Sill Top Height	428

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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

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:	20.4
Passenger Seat back angle:	17.8

SEAT FORE/AFT POSITIONS

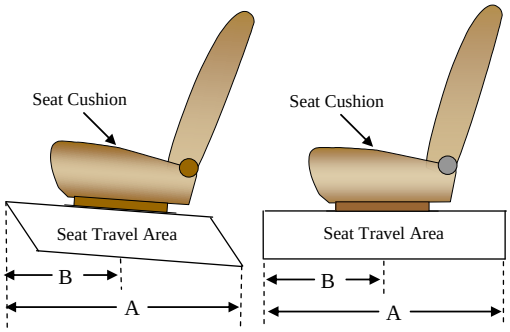
Describe the method of determining seat fore/aft positions.
Driver: Mid position, Positioned according to Form 1
Passenger: Full forward, Positioned according to Form 1

	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	293 mm	146, Mid
Passenger Seat	220 mm	0, full fwd

SEAT BELT UPPER ANCHORAGE

Describe the method of positioning seat belt upper anchorages.
Driver: One below uppermost, Positioned according to Form 1
Passenger: One below uppermost, Positioned according to Form 1

	Total No. of Positions	Placed in Position No.
Driver Seat	1	1
Passenger Seat	1	1



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

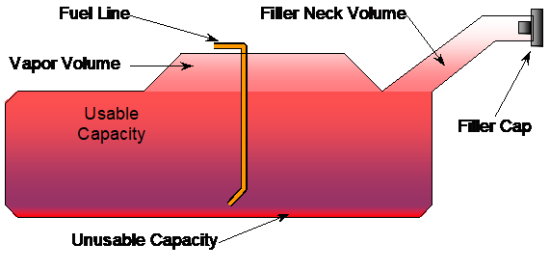
Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	60.9
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	56.7
Actual Amount of Solvent Used	56.7
1/3 of Usable Capacity	20.3

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

Fuel pump starts when ignition is on. The fuel pump will operate for 5 seconds. After pressure has been built up the fuel pump switches to sleep mode until the engine will be started or the pressure decreases

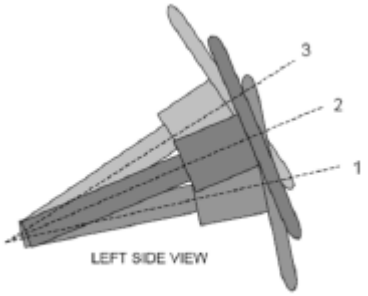


VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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

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



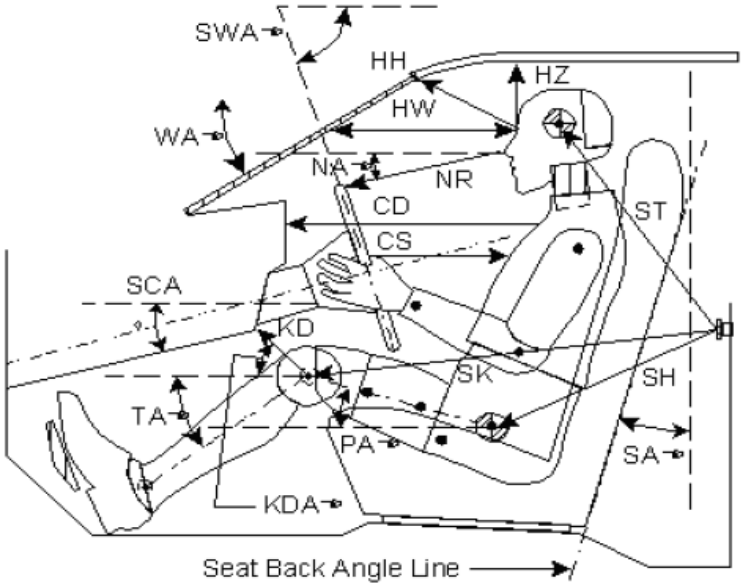
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost Position No. 1	39.3	
Geometric Center Position No. 2	26.2	
Uppermost Position No. 3	13.1	
Telescoping Steering Wheel Travel		60
Test Position	26.2	30

DATA SHEET NO. 3 - DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

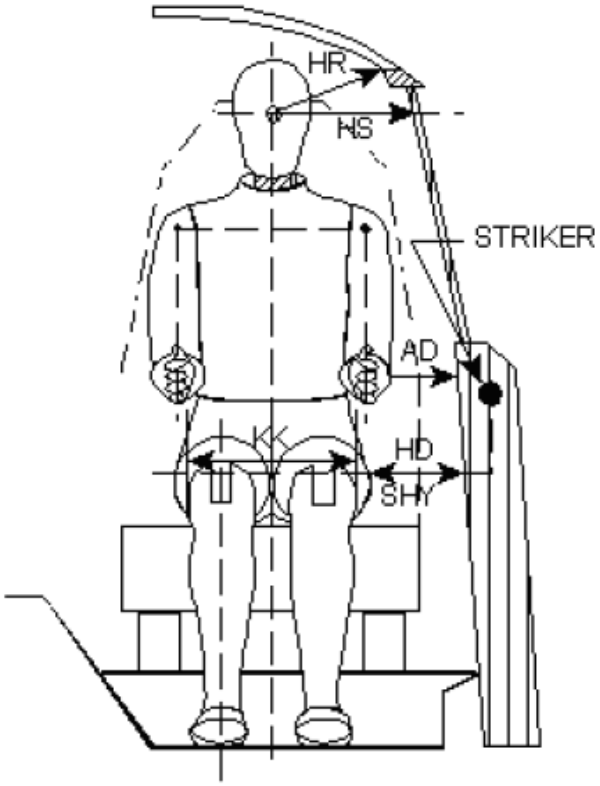
Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023



Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WAº	Windshield Angle		36.2		
SWAº	Steering Wheel Angle		64.8		
SCAº	Steering Column Angle		25.0		
SAº	Seat Back Angle (on head rest post)		5.2		5.5
HZ	Head to Roof (Z)	215		277	
HH	Head to Header	495		435	
HW	Head to Windshield	754		692	
NR	Nose to Rim	408	9.7		
CD	Chest to Dash	566		415	
CS	Chest to Steering Hub	308			
RA	Rim to Abdomen	189			
KDL	Left Knee to Dash	195	22.2	115	64.6
KDR	Right Knee to Dash	83	13.0	131	20.6
PAº	Pelvic Angle		24.8		22.2
TAº	Tibia Angle		46.1		52.0
SK	Striker to Knee	545	11.5	605	6.2
ST	Striker to Head	457	87.8	399	70.4
SH	Striker to H-Point	262	5.5	316	30.4

DATA SHEET NO. 4 - DUMMY LATERAL CLEARANCE DIMENSIONS

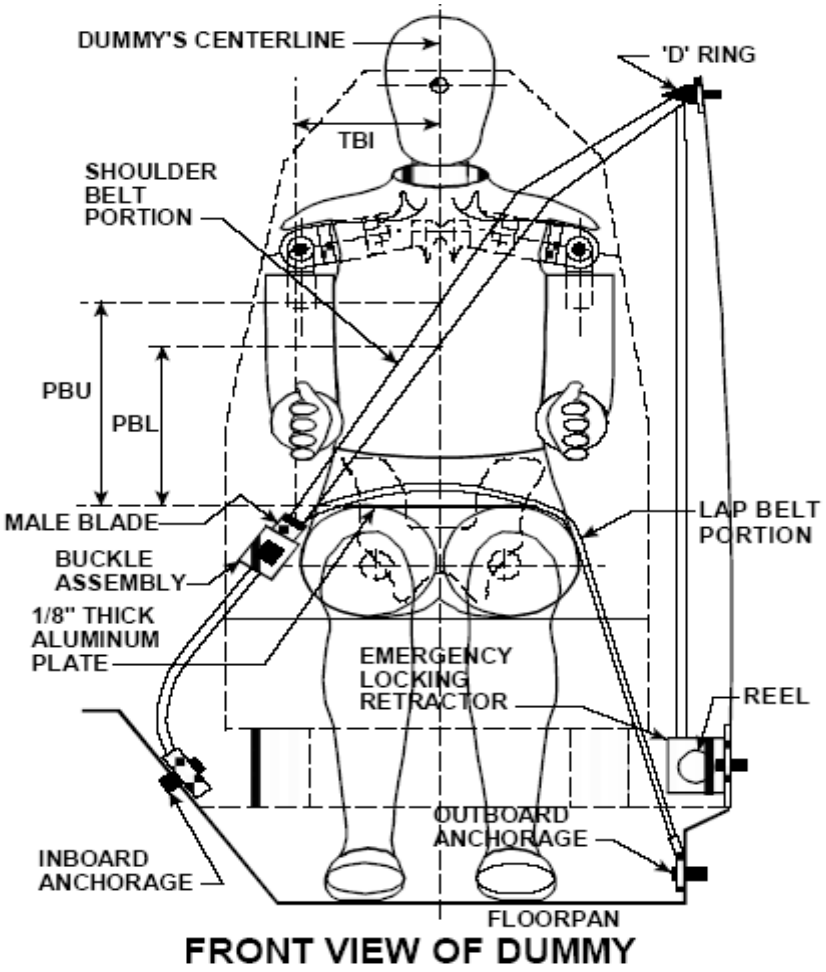
Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023



Code	Measurement Description	Driver	Passenger
AD	Arm to Door	50	61
HD	H-Point to Door	130	160
HR	Head to Side Header	234	264
HS	Head to Side Window	336	357
KK	Knee to Knee	269	215
SHY	Striker to H-Point (Y Direction)	250	275
AA	Ankle to Ankle	300	175

DATA SHEET NO. 5 - SEAT BELT POSITIONING DATA

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU – Top surface of reference to belt upper edge	mm	345	302
PBL – Top surface of reference to belt lower edge	mm	265	212

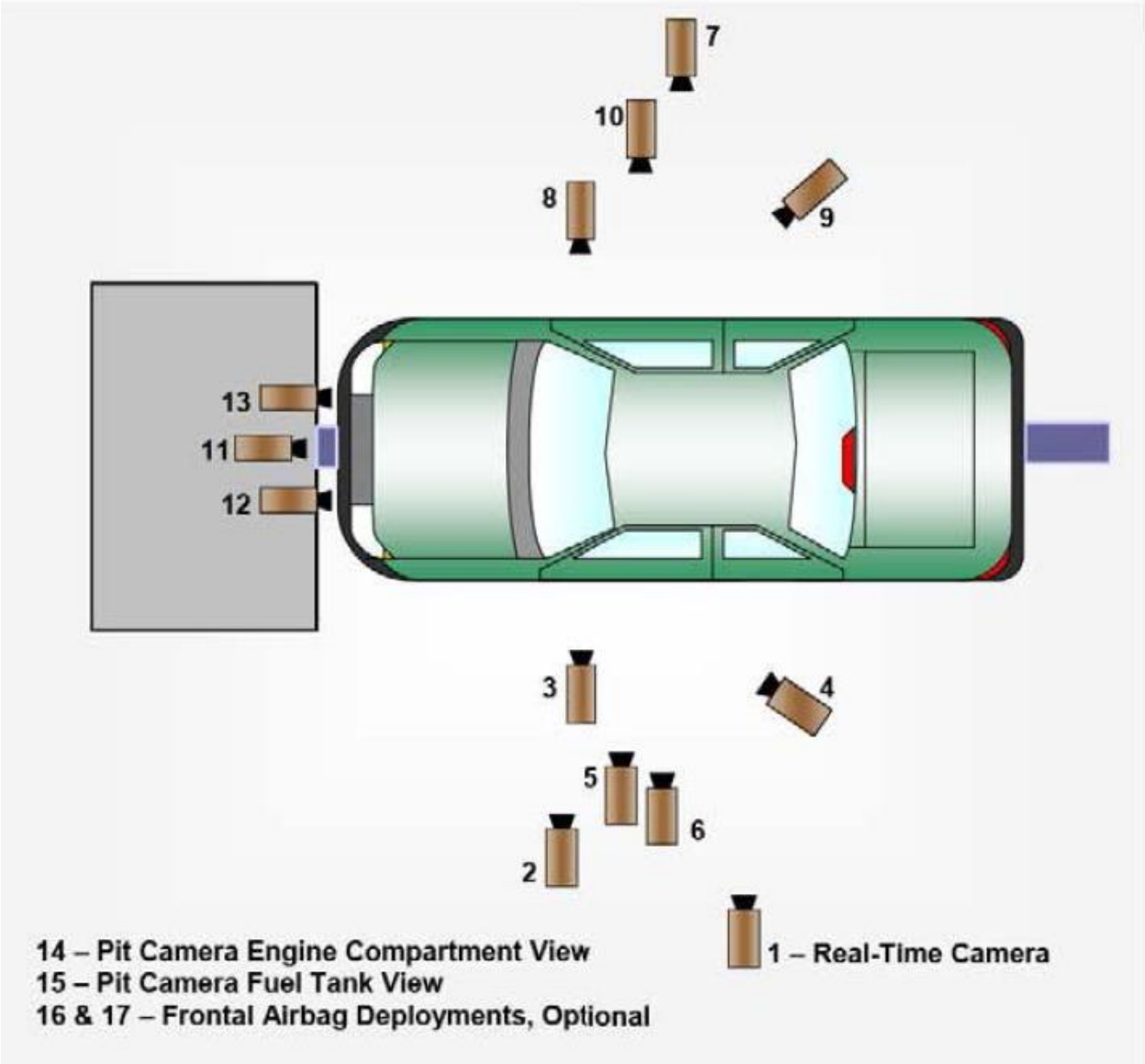
BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	906	947
Lap belt length as measured on ATD	mm	555	620
Remainder of belt on reel	mm	1269	1003
Total belt length for continuous webbing systems	mm	2730	2570

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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

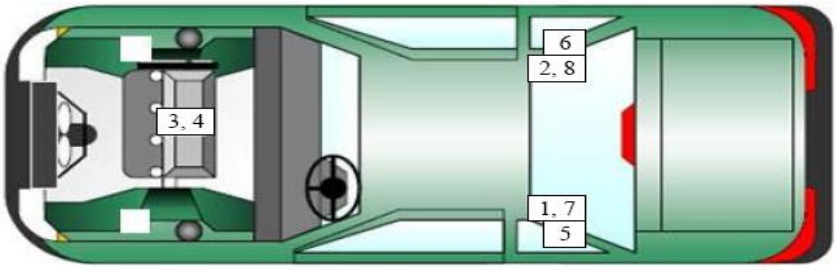
CAMERA LOCATIONS

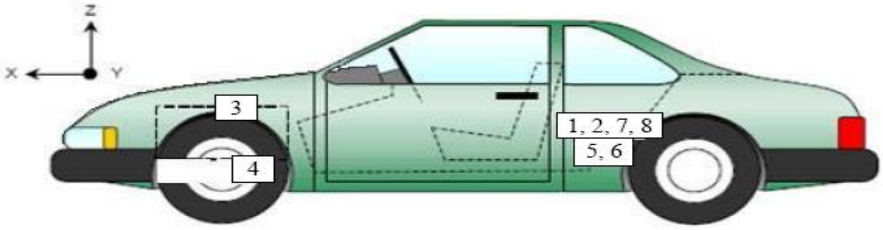
No.	Camera View	Location (mm)			Lens (mm)	Frame Speed (fps)
		X	Y	Z		
1	REAL-TIME LEFT OVERALL	-998	-5911	-1460	Zoom	30
2	LEFT OVERALL	-2601	-4052	-1422	8.5	1000
3	DRIVER CLOSE-UP	-2472	-4132	-1642	50	1000
4	LEFT FRONT HALF	-1573	-4612	-1222	25	1000
5	LEFT ANGLE	-3555	-2457	-1613	20	1000
6	STEERING COLUMN	-2412	-4712	-1572	50	1000
7	RIGHT OVERALL	-2212	4325	-1492	8.5	1000
8	PASSENGER CLOSE-UP	-1999	4652	-1535	50	1000
9	RIGHT FRONT HALF	-1560	4612	-1274	25	1000
10	RIGHT ANGLE	-3102	2565	-1812	20	1000
11	WINDSHIELD	0	0	-2613	20	1000
12	DRIVER WINDSHIELD	0	-316	-2652	16	1000
13	PASSENGER WINDSHIELD	0	201	-2675	16	1000
14	PIT FRONT	-870	0	3044	20	1000
15	PIT REAR	-3230	0	3012	20	1000
16	DRIVER ONBOARD				8.5	1000
17	PASSENGER ONBOARD				8.5	1000

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

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER DATA

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023





VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	1573	-372	-470
2	Right Rear Accelerometer – X Direction	1575	387	-471
3	Engine Top X	3699	110	-857
4	Engine Bottom X	3942	115	-290
5	Left Rear Accelerometer – Z Direction	1573	-372	-478
6	Right Rear Accelerometer – Z Direction	1575	387	-477
7	Left Rear Accelerometer – X Direction Redundant	1573	-442	-470
8	Right Rear Accelerometer- X Direction Redundant	1575	347	-470

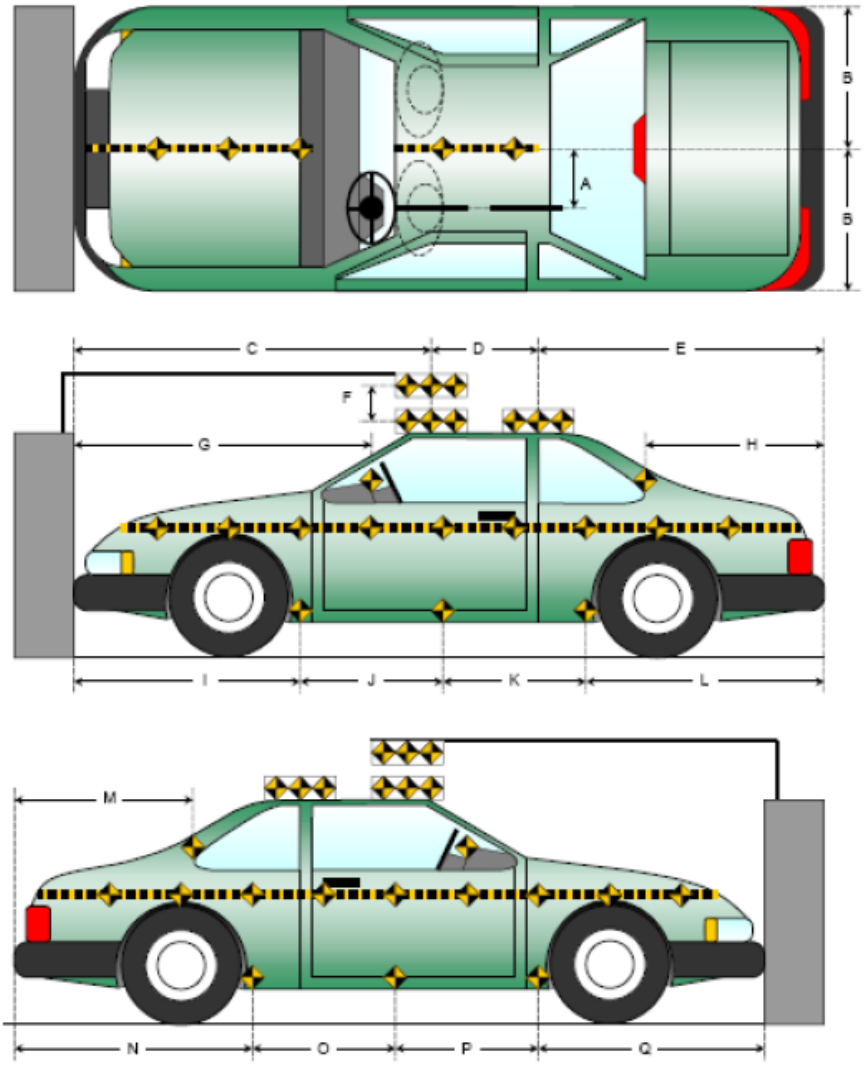
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8 - PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

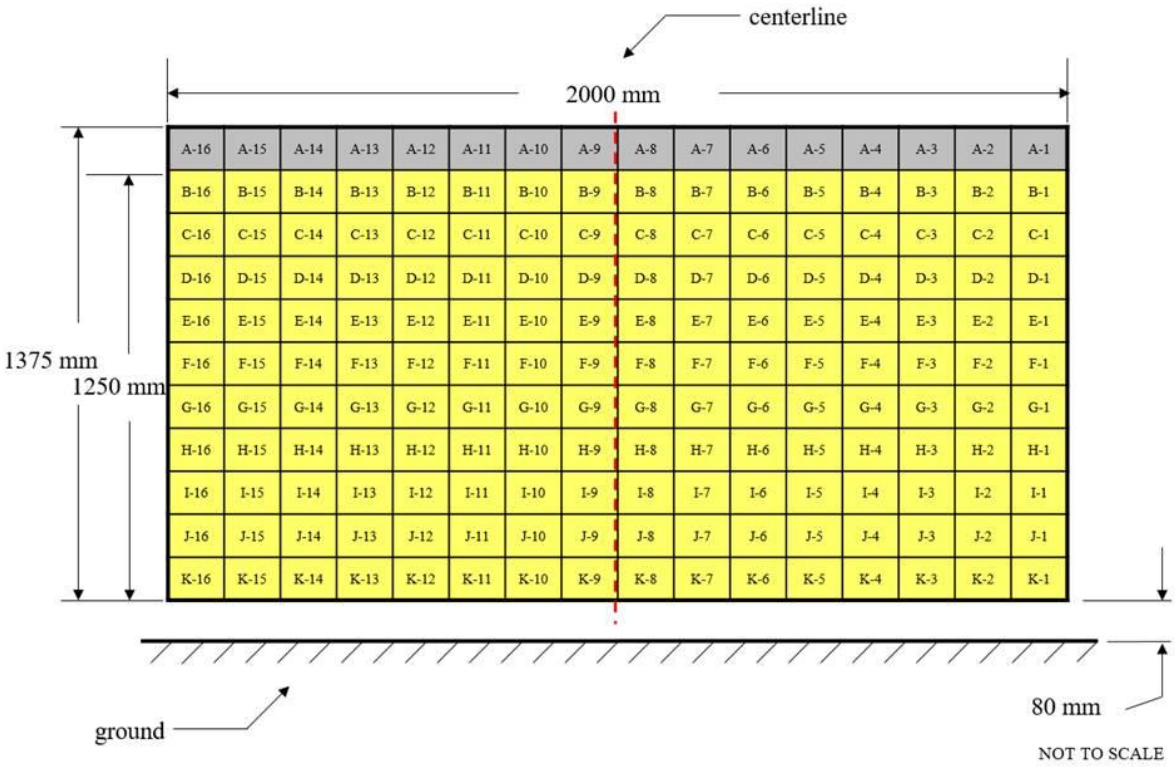
Item	Value
A	394
B	906
C	2226
D	600
E	1542
F	202
G	1687
H	1041
I	1315
J	873
K	873
L	1253
M	1042
N	1250
O	866
P	875
Q	1323

All units in millimeters



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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023



DATA SHEET NO. 10 - TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

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: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

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 Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

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	Cracked sides
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

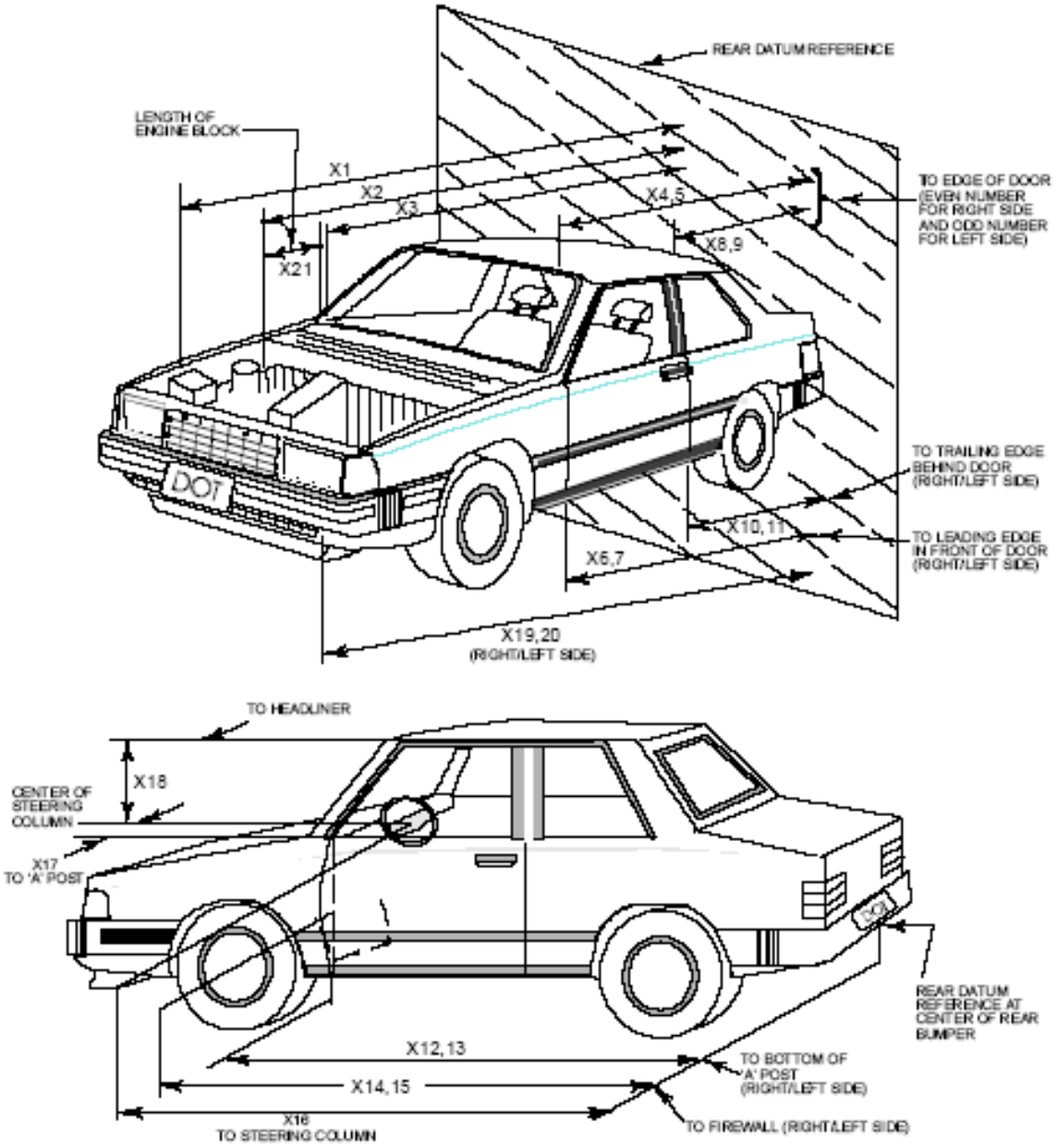
Measured Parameter	Units	Value
Left Side	mm	1892
Center	mm	1850
Right Side	mm	1845
Average	mm	1862

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12 - VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023



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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

No.	Measurement Description	Pre-Test	Post-Test	Change
1	Total Length of Vehicle at Centerline	4314	3745	-569
2	Rear Surface of Vehicle (RSOV) to Front of Engine	3864	3611	-253
3	RSOV to Firewall	3324	3139	-185
4	RSOV to Upper Leading Edge of Right Door	2829	2835	6
5	RSOV to Upper Leading Edge of Left Door	2832	2841	9
6	RSOV to Lower Leading Edge of Right Door	2880	2873	-7
7	RSOV to Lower Leading Edge of Left Door	2881	2880	-1
8	RSOV to Upper Trailing Edge of Right Door	1893	1898	5
9	RSOV to Upper Trailing Edge of Left Door	1888	1898	10
10	RSOV to Lower Trailing Edge of Right Door	1940	1937	-3
11	RSOV to Lower Trailing Edge of Left Door	1939	1940	1
12	RSOV to Bottom of "A" Post-of Right Side	2840	2838	-2
13	RSOV to Bottom of "A" Post-of Left Side	2840	2841	1
14	RSOV to Firewall, Right Side	3555	3541	-14
15	RSOV to Firewall, Left Side	3505	3498	-7
16	RSOV to Steering Column	2463	2576	113
17	Center of Steering Column to "A" Post	310	323	13
18	Center of Steering Column to Headliner	455	435	-20
19	RSOV to Right Side of Front Bumper	4180	3720	-460
20	RSOV to Left Side of Front Bumper	4180	3701	-479
21	Length of Engine Block	500	500	0
RD	RSOV to Right Side of Dash Panel	2705	2702	-3
CD	RSOV to Center of Dash Panel	2643	2643	0
LD	RSOV to Left Side of Dash Panel	2704	2710	6

All Dimensions in mm

DATA SHEET NO. 13 - ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

VEHICLE INFORMATION

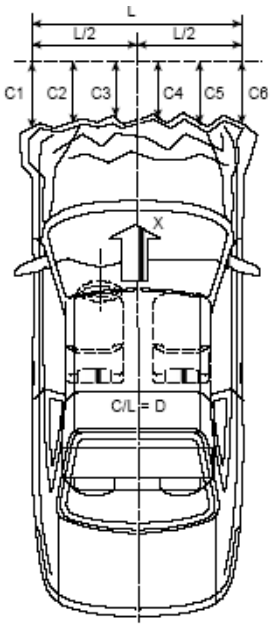
VIN: WMZ53BR09P3R28376 Wheelbase: 2675
Vehicle Size Category: MPV Test Weight (kg): 1799.2

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): 56.54
Velocity Change (km/h): 65.25
Time of Separation (ms): 99

CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: Centerline
Damage Region Length (mm): 1321
Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Crush
C1	Crush zone 1 at left side	mm	4180	3701	479
C2	Crush zone 2 at left side	mm	4258	3747	511
C3	Crush zone 3 at left side	mm	4304	3748	556
C4	Crush zone 4 at right side	mm	4302	3744	558
C5	Crush zone 5 at right side	mm	4257	3731	526
C6	Crush zone 6 at right side	mm	4180	3720	460
L	C1 to C6	mm	1321	1440	-119

DATA SHEET NO. 14 - VEHICLE INTRUSION MEASUREMENTS

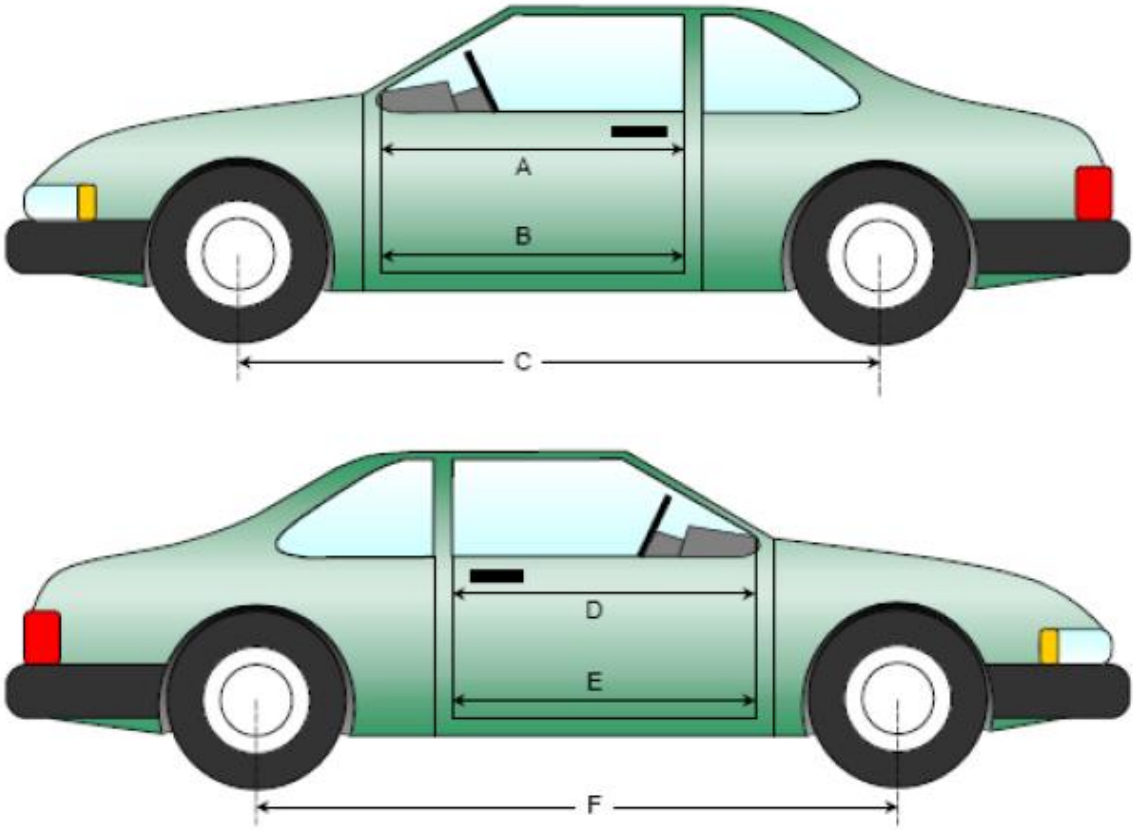
Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

DOOR OPENING WIDTH

No.	Description	Units	Pre-Test	Post-Test	Change
A	Left Side Upper	mm	897	897	0
B	Left Side Lower	mm	837	837	0
D	Right Side Upper	mm	894	895	1
E	Right Side Lower	mm	837	837	0

WHEELBASE MEASUREMENTS

No.	Description	Units	Pre-Test	Post-Test	Change
C	Left Side Wheelbase	mm	2675	2610	-65
F	Right Side Wheelbase	mm	2675	2597	-78



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

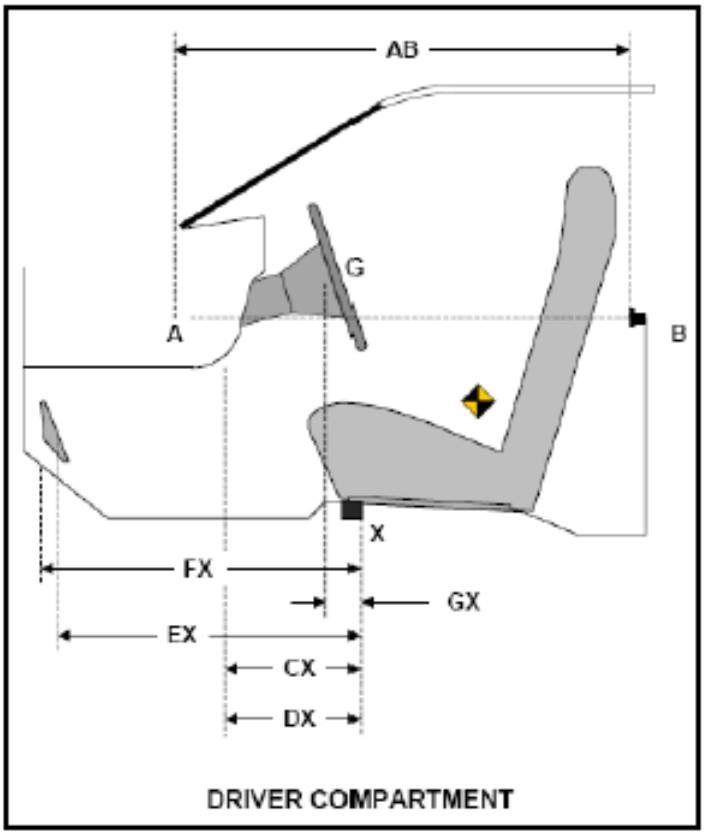
DATA SHEET NO. 14 - VEHICLE INTRUSION MEASUREMENTS (CONT'D)

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Change
AB	Door Opening (Inside Window Jam)	mm	864	867	3
CX	Left Knee Bolster to X	mm	312	322	10
DX	Right Knee Bolster to X	mm	330	324	-6
EX	Brake Pedal to X	mm	545	504	-41
FX	Foot Rest to X	mm	560	527	-33
GX	Center of Steering Column Wheel Hub to X	mm	25	136	111

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

Please provide windshield mounting details.

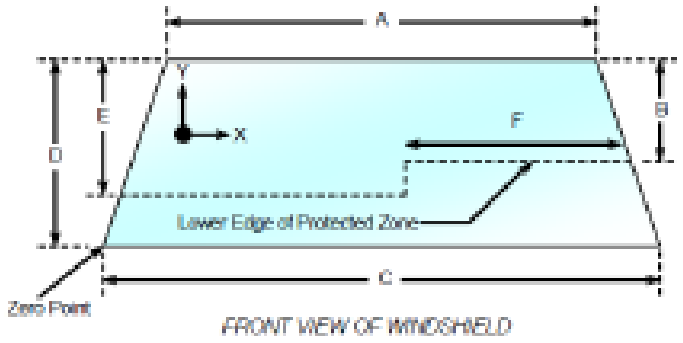
The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicle not equipped with occupant passive restraint and 50% for each side of the windshield for vehicle which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 22.0°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2048	2048	100.0
Right Side	2048	2048	100.0
Total	4096	4096	100.0

Item	Units	Value
A	mm	1200
B	mm	432
C	mm	1420
D	mm	738
E	mm	440
F	mm	397



FRONT VIEW OF WINDSHIELD

AREAS OF PROTECTED ZONE FAILURES

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

X	Y
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: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

FMVSS 301 FUEL SYSTEM INTEGRTY POST IMPACT DATA

Temperature at Time of Impact: 22.0°C Test Time: 15:45

Stoddard Solvent Spillage Measurements

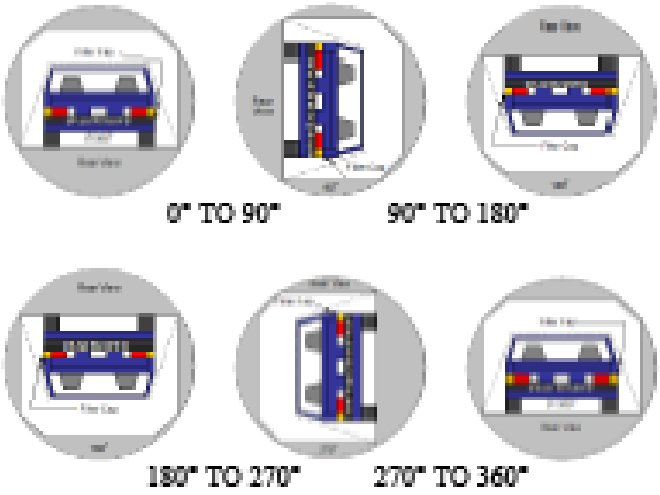
A	From impact until vehicle motion ceases: (maximum allowable – 1 oz.)	0 oz.
B	For the 5-minute period after motion ceases: (maximum allowable – 5 oz.)	0 oz.
C	For the following 25 minutes: (maximum allowable – 1 oz./minutes)	0 oz.
D	Spillage: None	

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

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023

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

None



SOLVENT COLLECTION TIME TABLE IN SECONDS

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

FMVSS 301 SPILLAGE TABLE

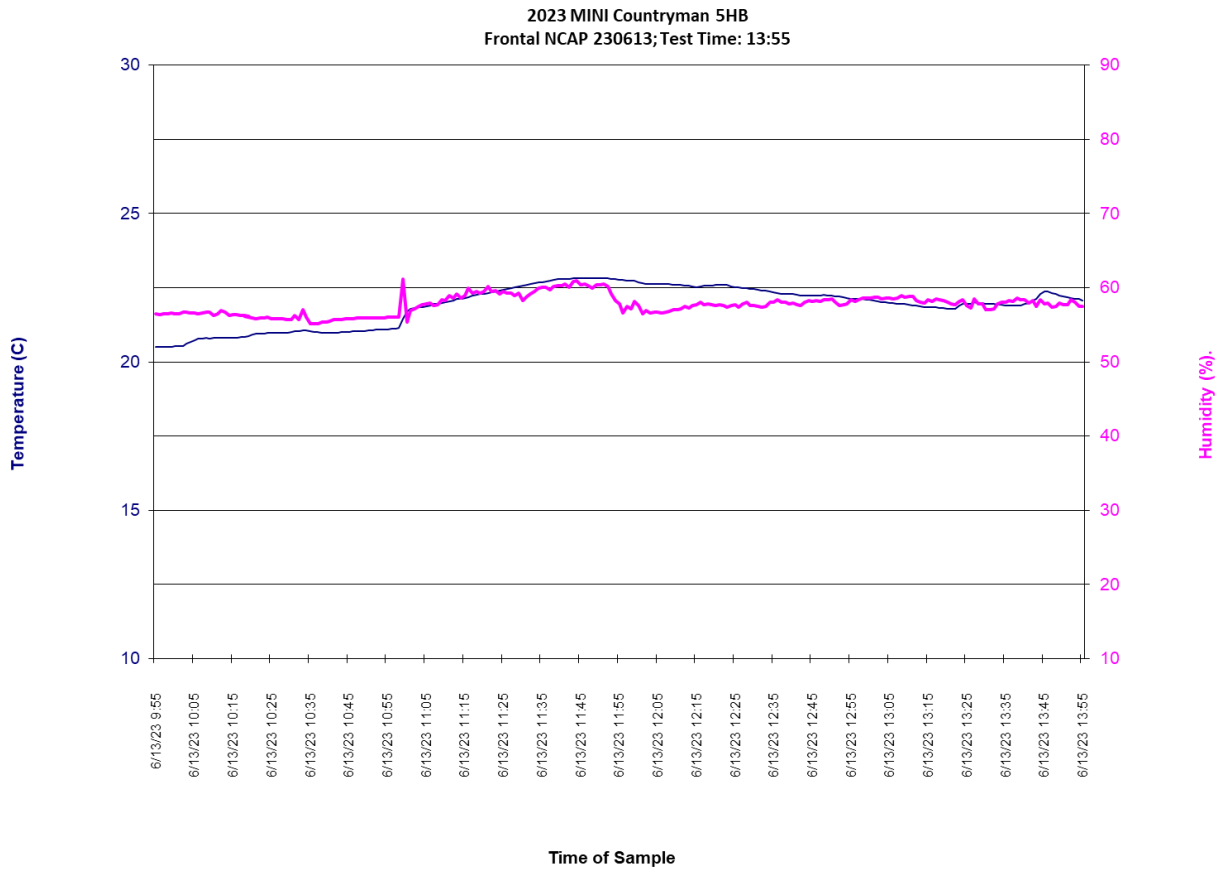
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0º to 90º	0	0	0	N/A
90º to 180º	0	0	0	N/A
180º to 270º	0	0	0	N/A
270º to 360º	0	0	0	N/A

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17 - DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2023 MINI Countryman 5HB NHTSA No.: M20234103
Test Program: NCAP Frontal Impact Test Date: 6/13/2023



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

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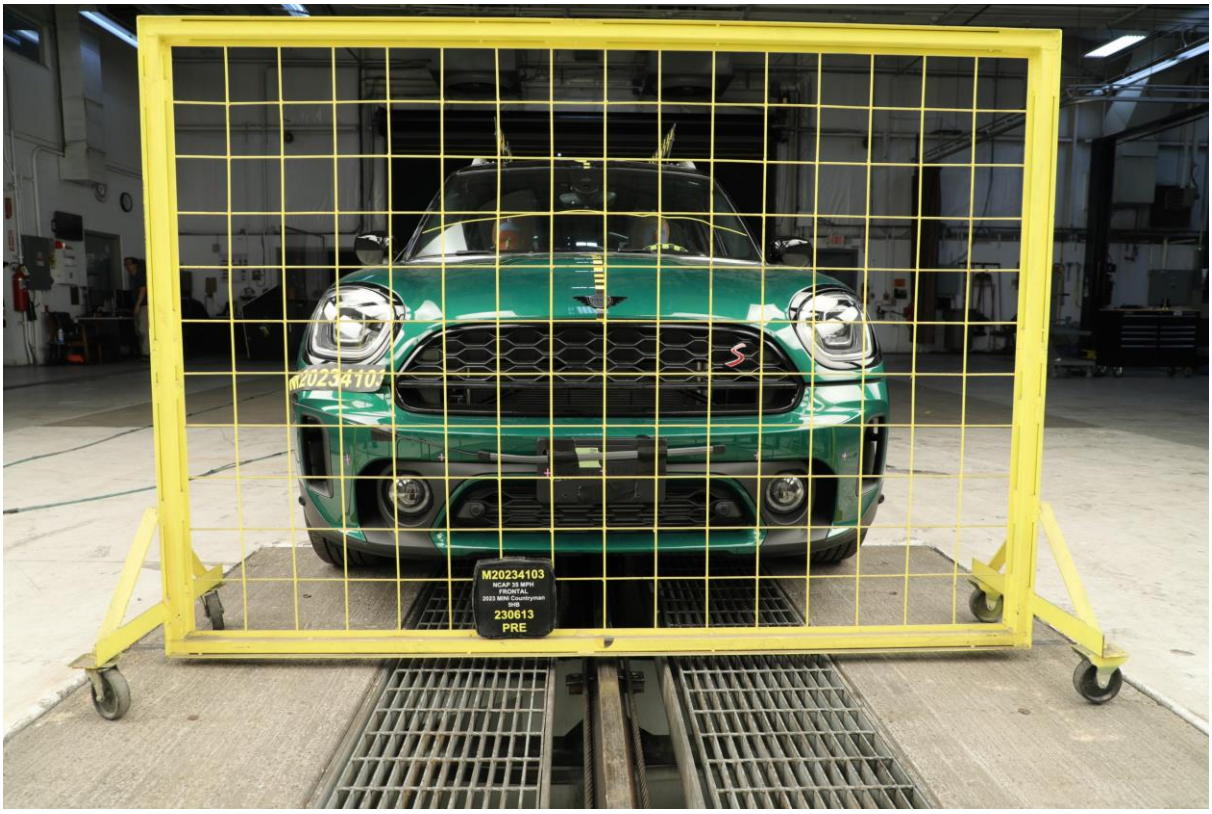
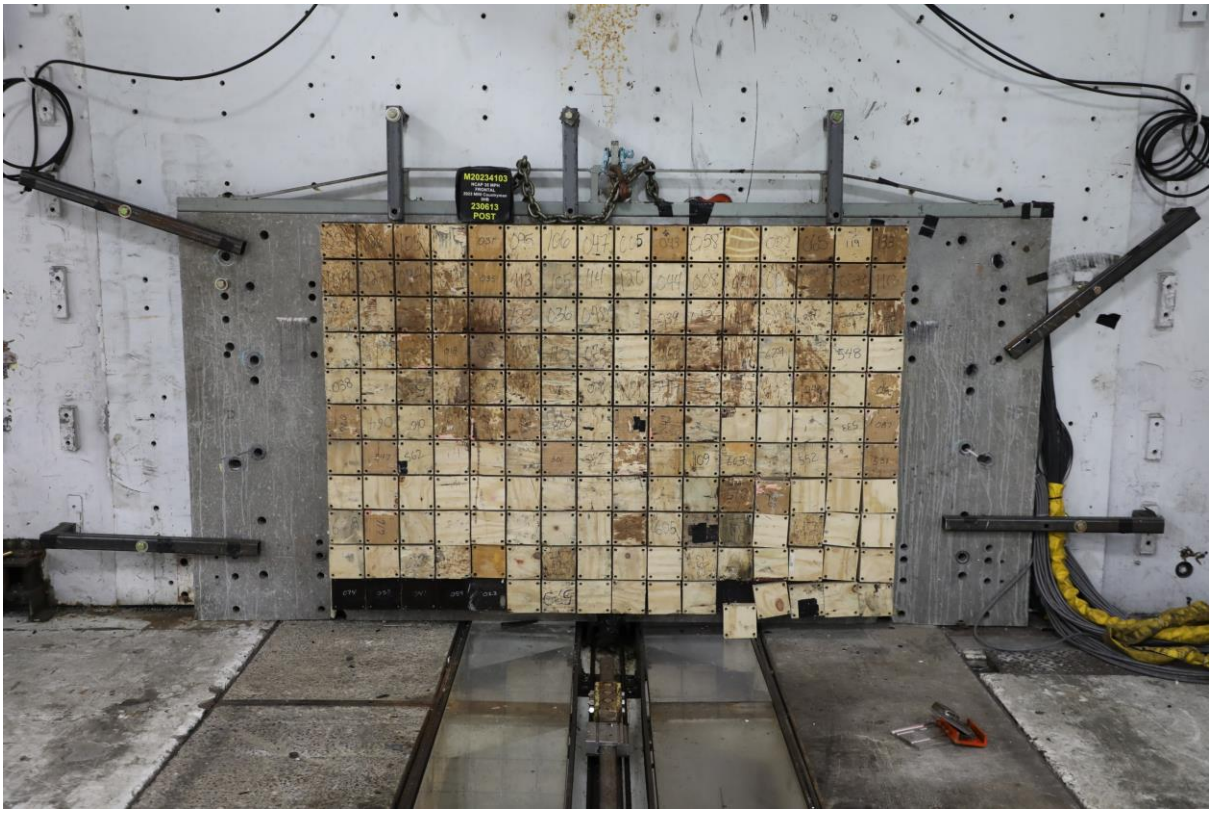


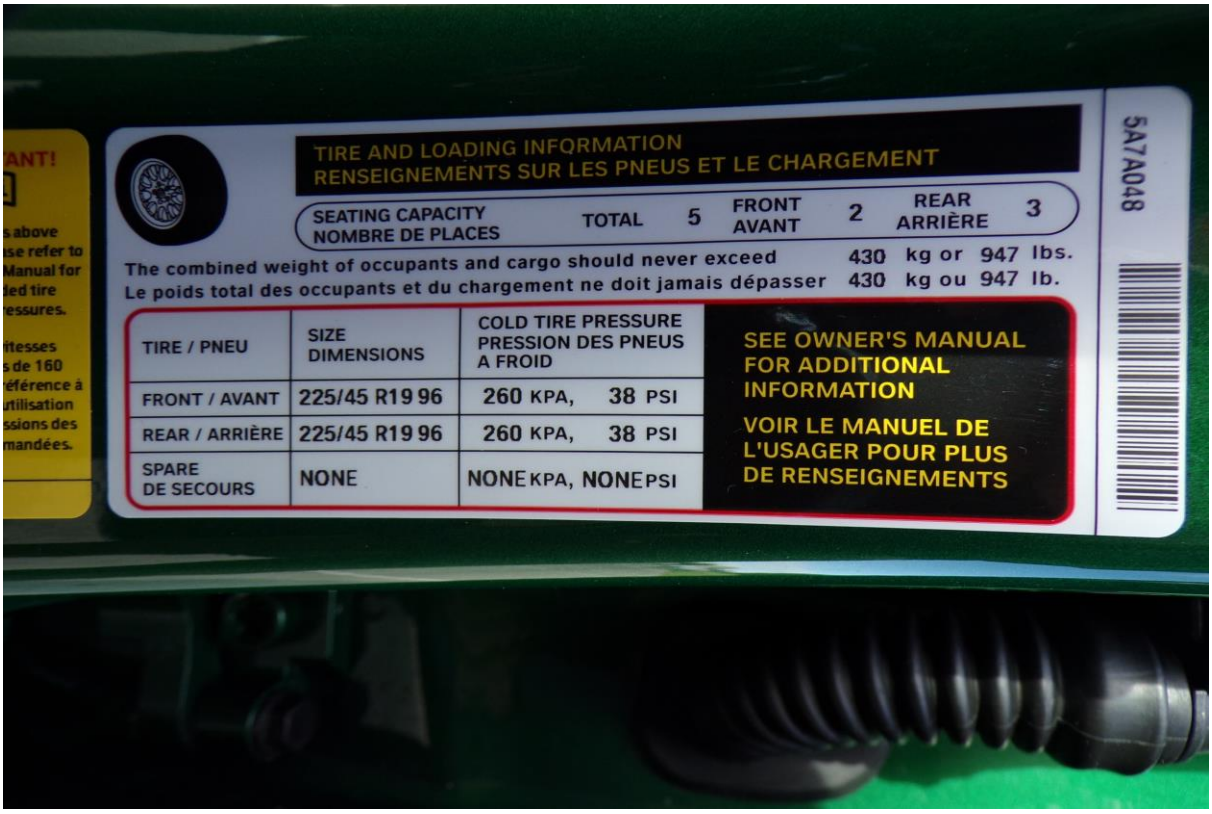
001 Load Cell Location

002 Pre-Test Load Cell Wall



003 Post-Test Load Cell Wall

004 Manufacturer's Label



005 Tire Placard

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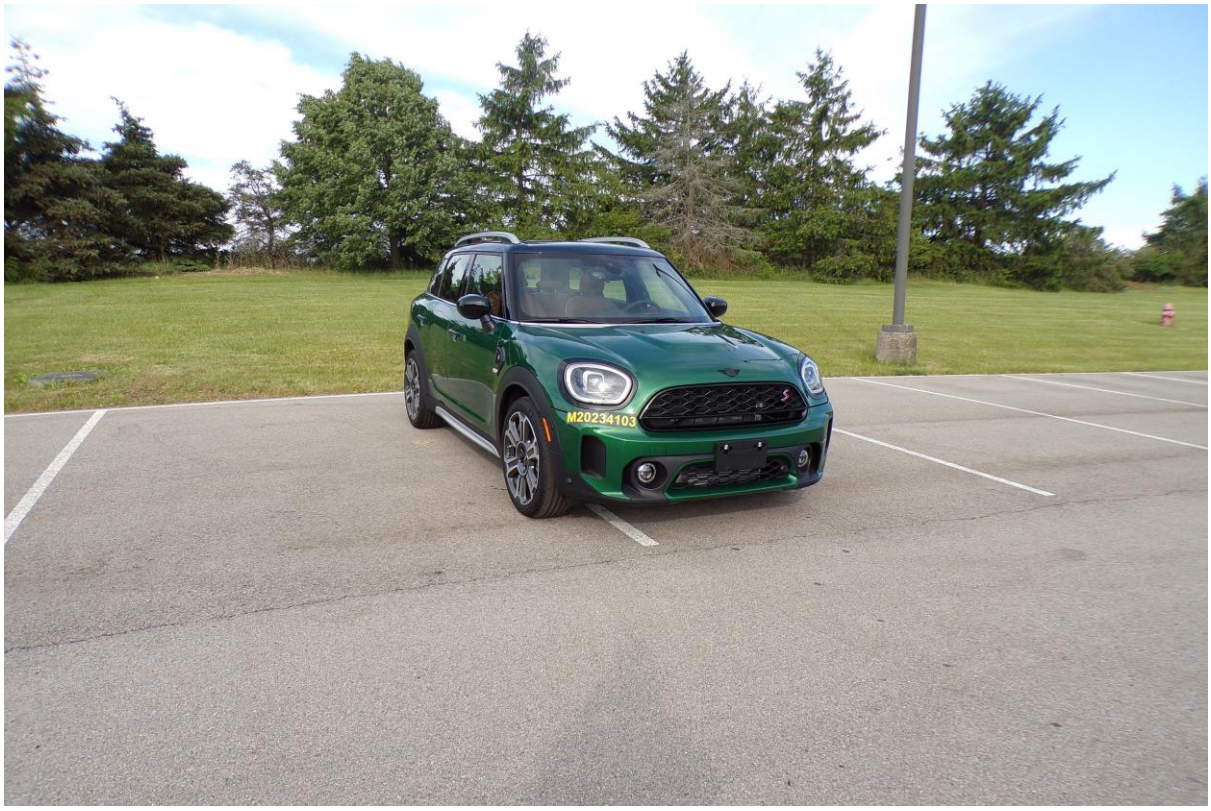
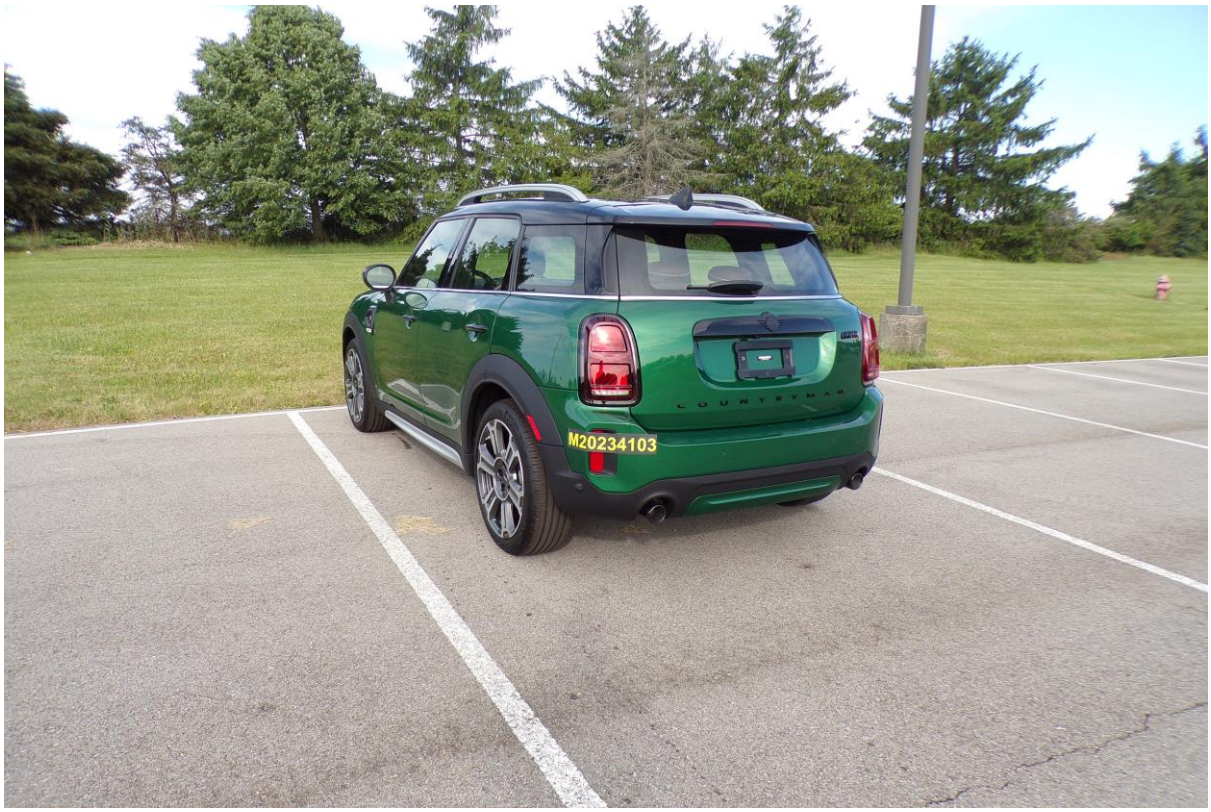
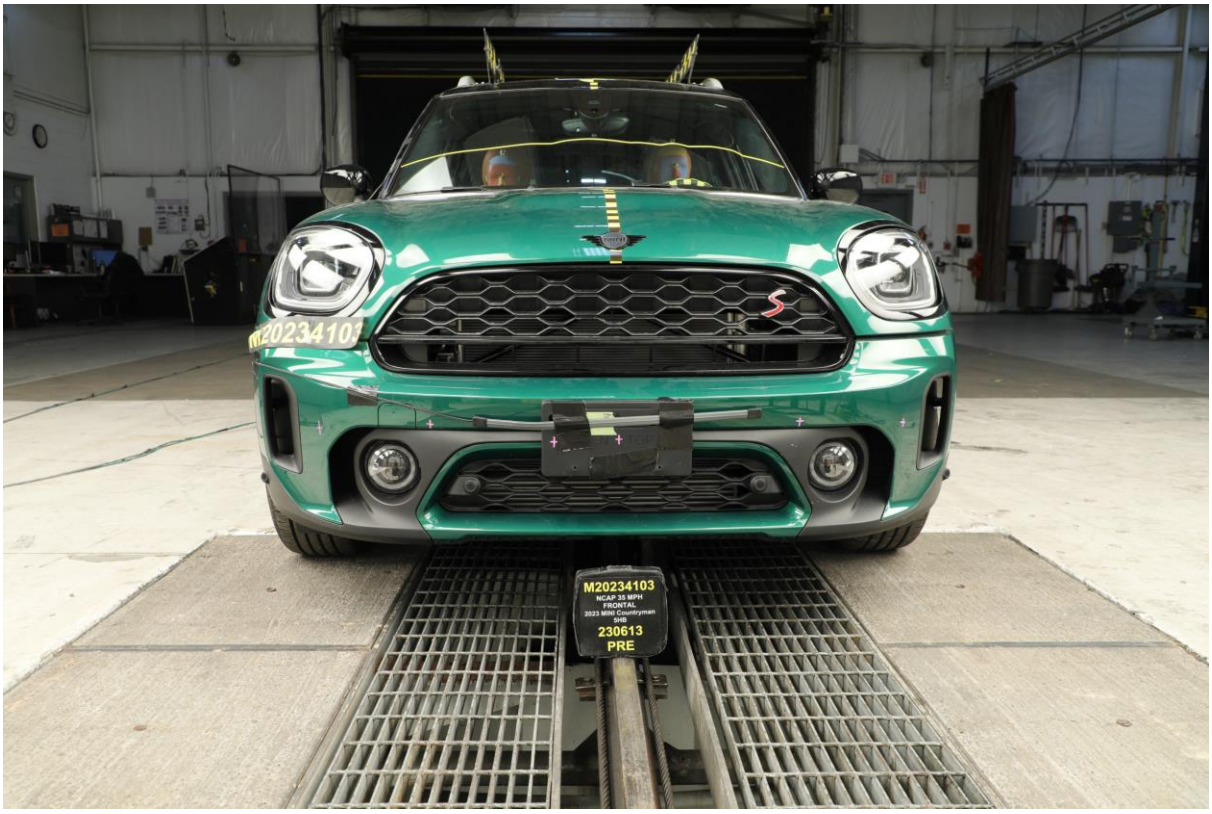


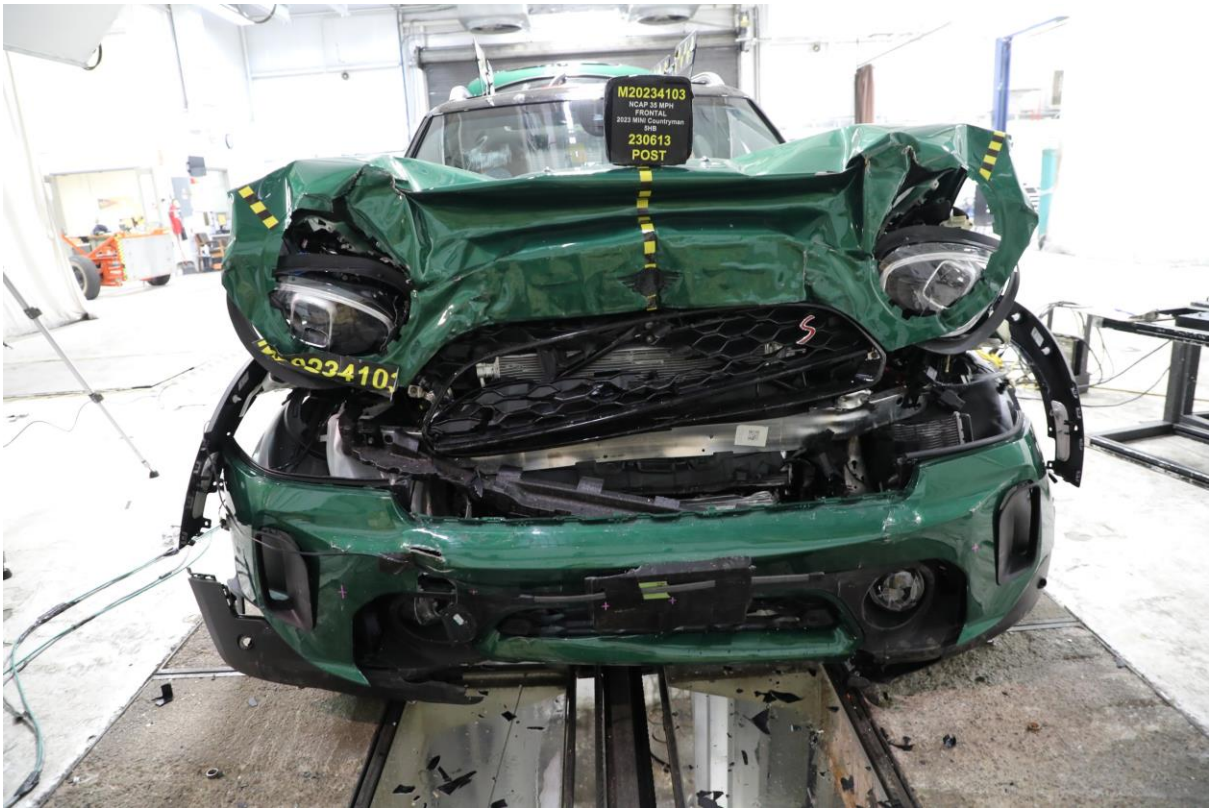
006 2023 MINI Countryman 5HB Frontal As Delivered



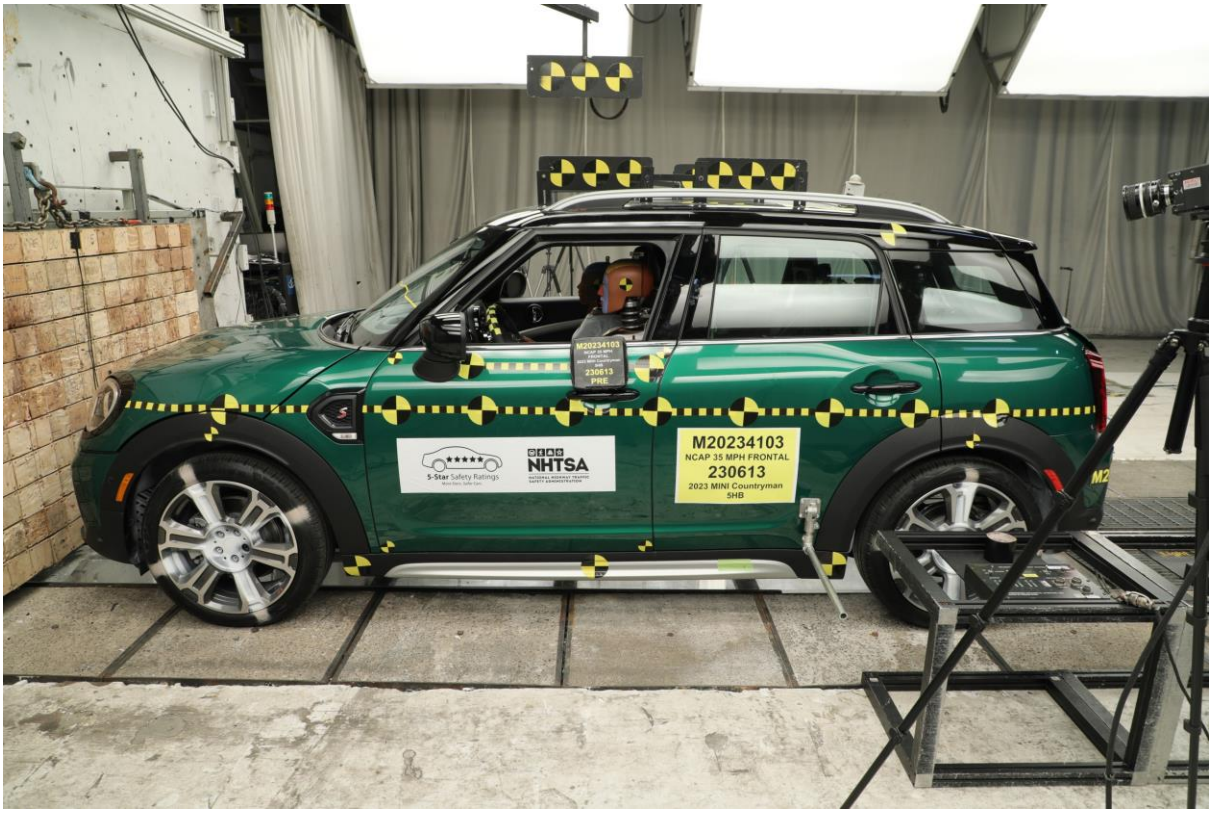
007 Left Rear 3-4 View, as Received



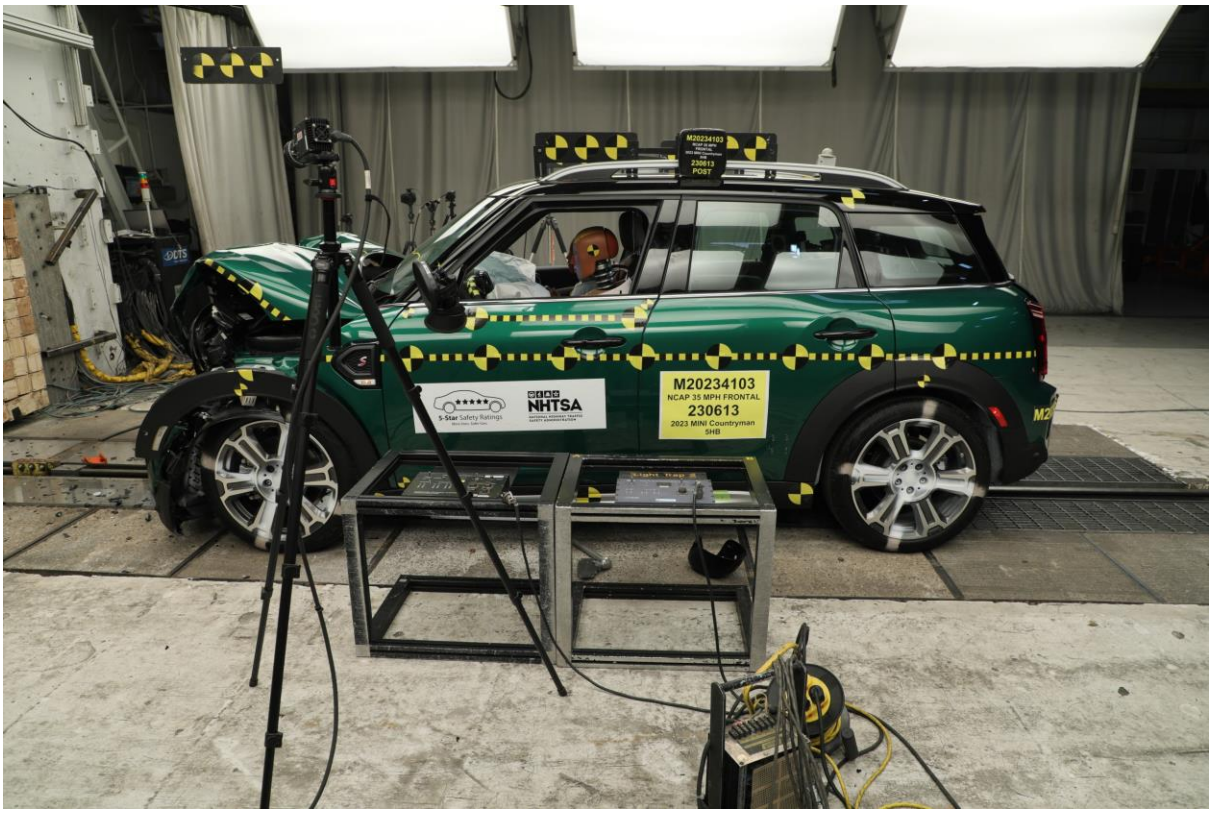
008 Pre-Test Front View of Test Vehicle



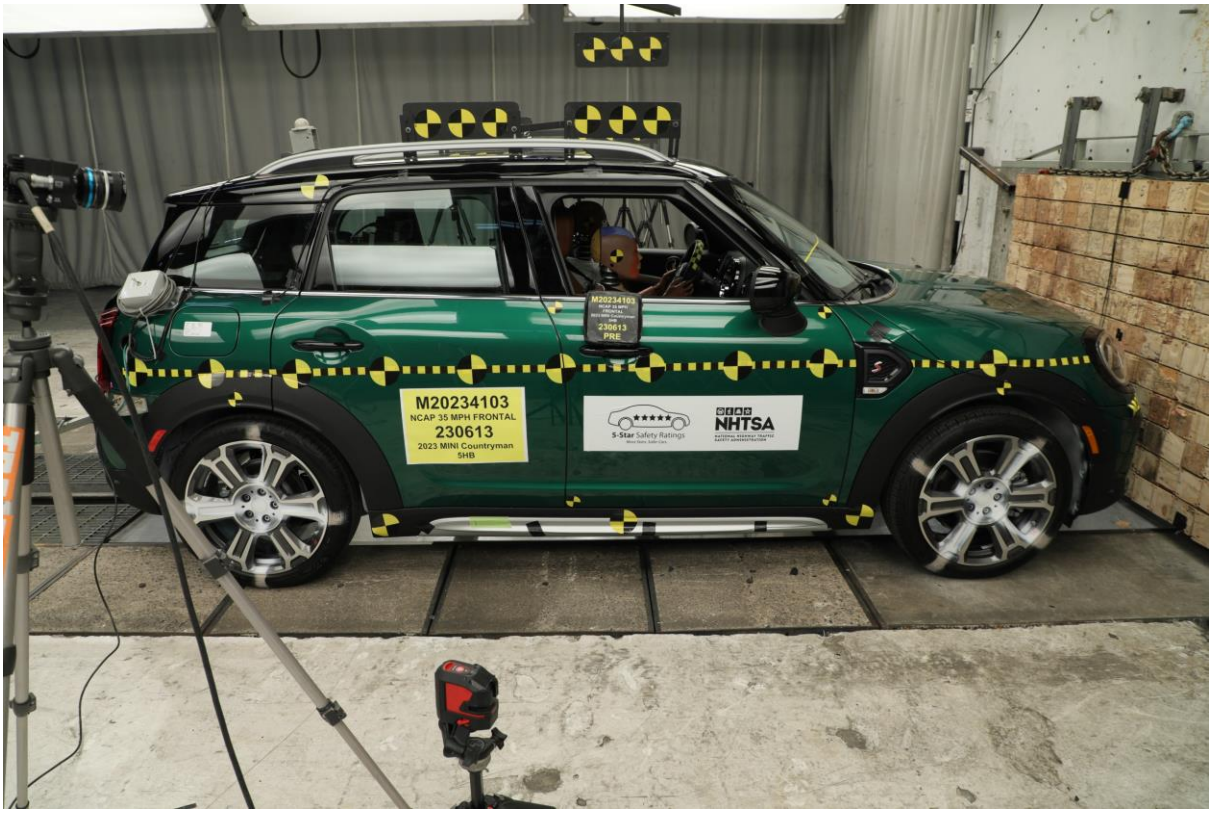
009 Post-Test Front View of Test Vehicle



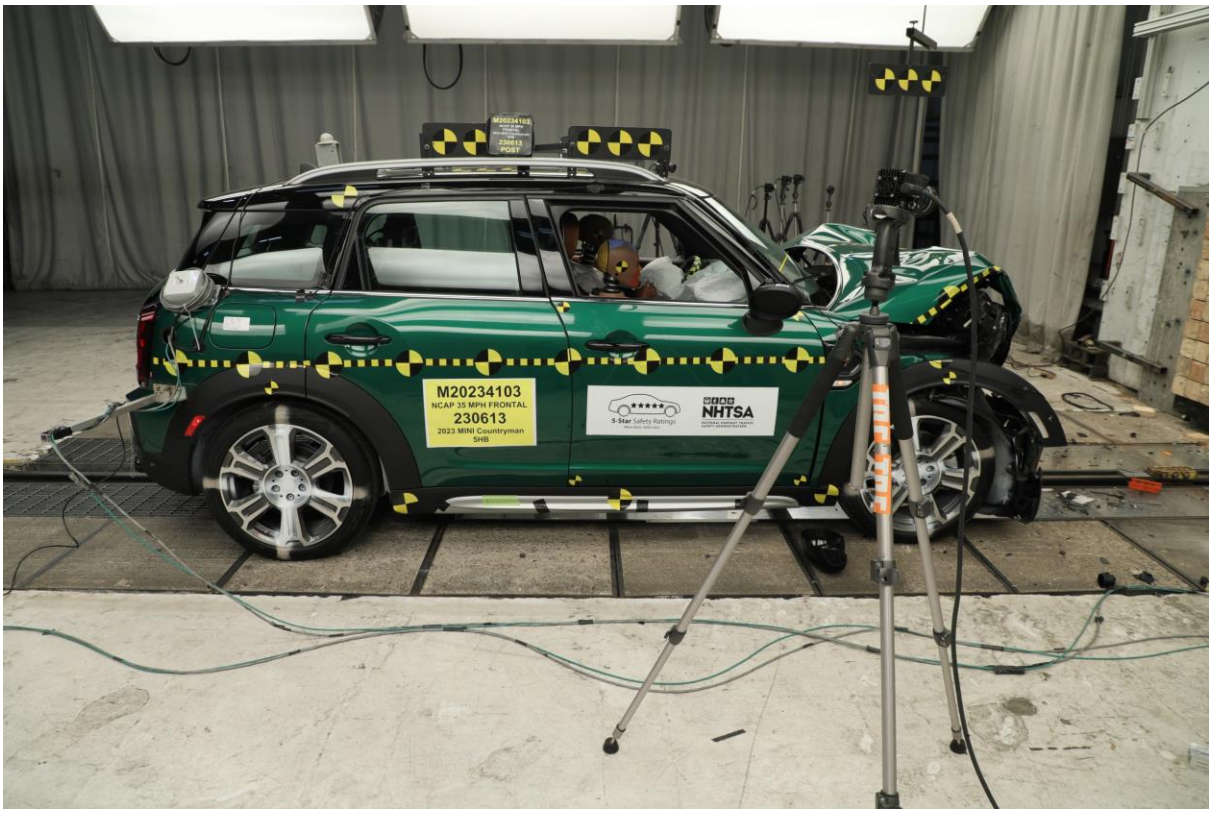
010 Pre-Test Left View of Test Vehicle



011 Post-Test Left View of Test Vehicle



012 Pre-Test Right View of Test Vehicle



013 Post-Test Right View of Test Vehicle

014 Pre-Test Right Front 3-4 View

015 Post-Test Right Front 3-4 View

016 Pre-Test Left Rear 3-4 View

017 Post-Test Left Rear 3-4 View

018 Pre-Test Windshield View

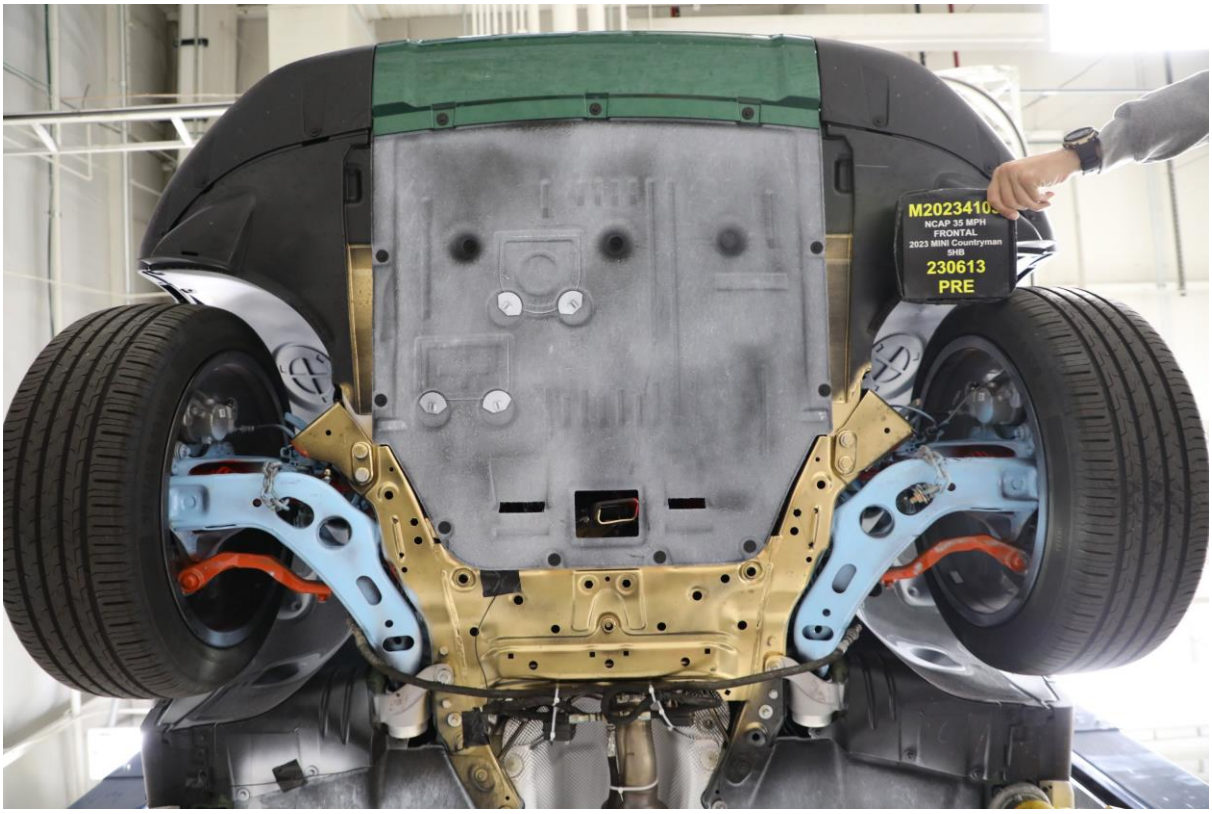
019 Post-Test Windshield View

020 Pre-Test Engine Compartment View

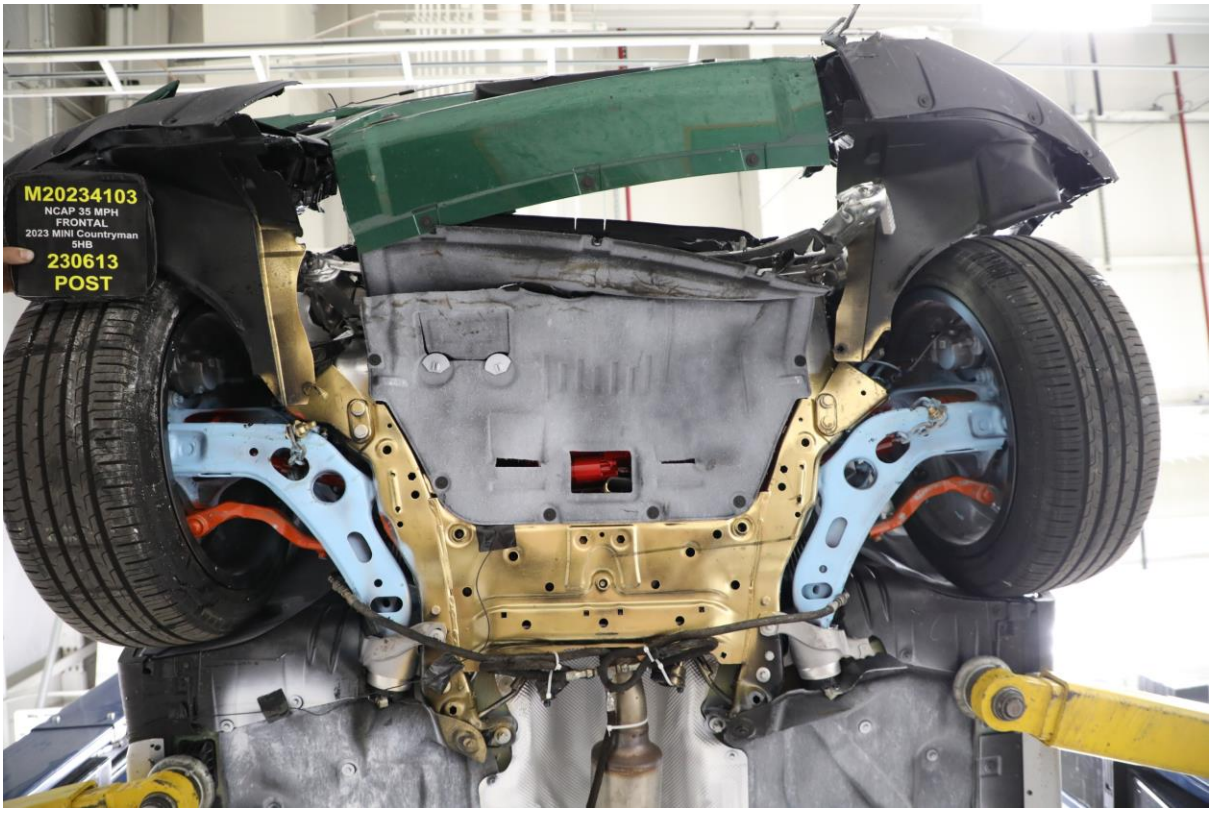
021 Post-Test Engine Compartment View

022 Pre-Test Fuel Filler Cap View

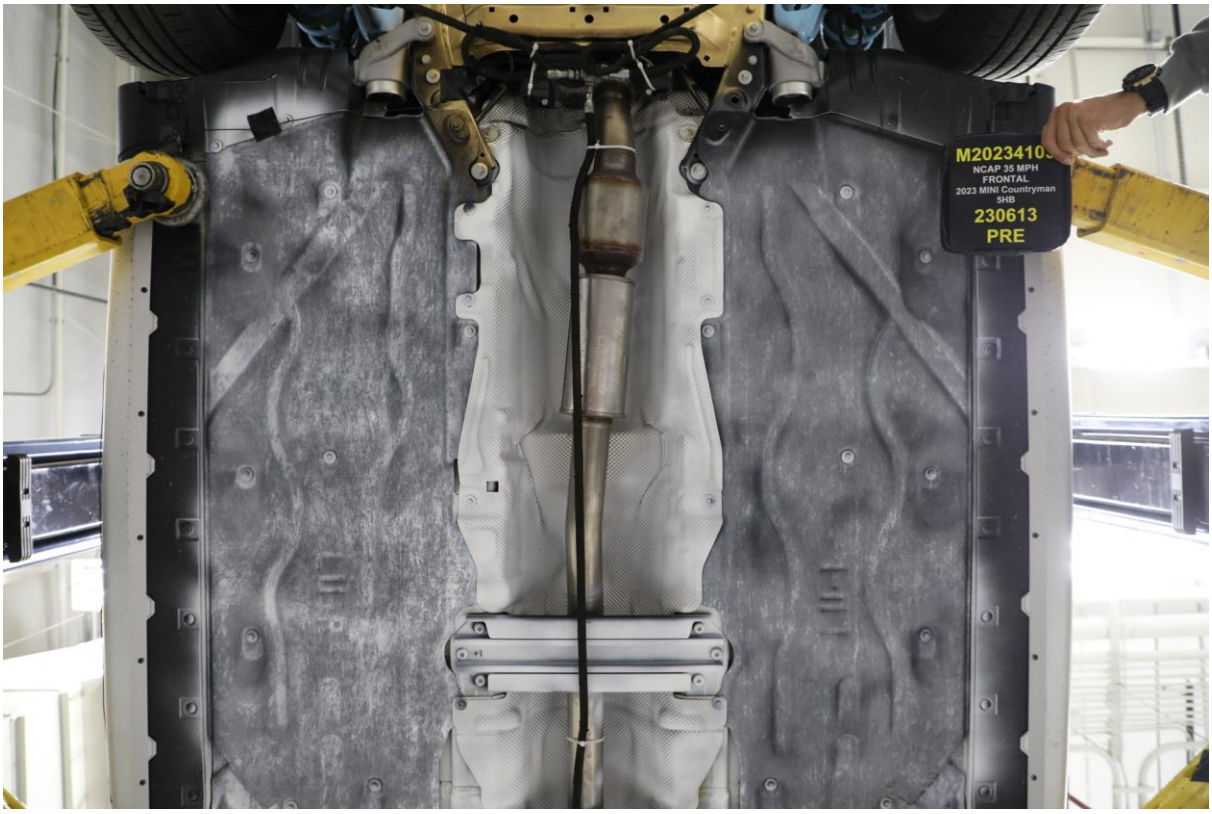
023 Post-Test Fuel Filler Cap View



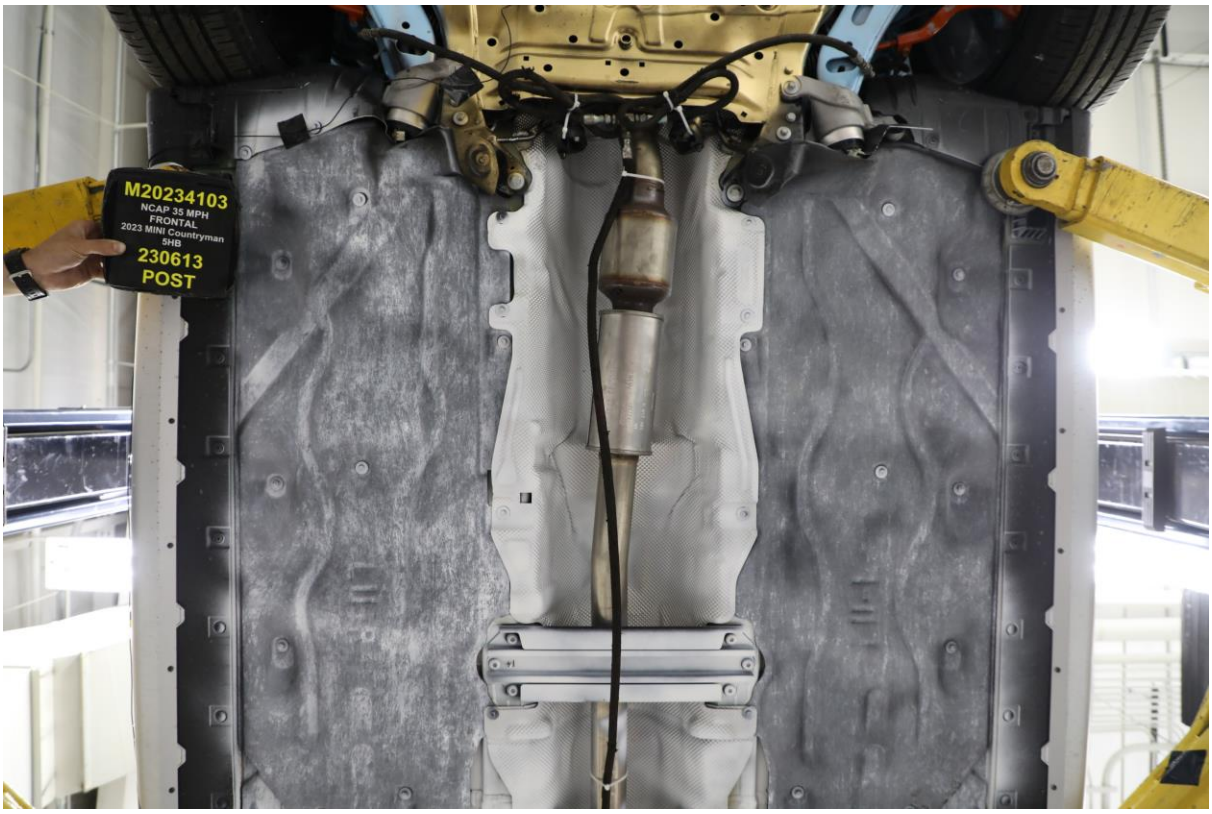
024 Pre-Test Front Underbody View



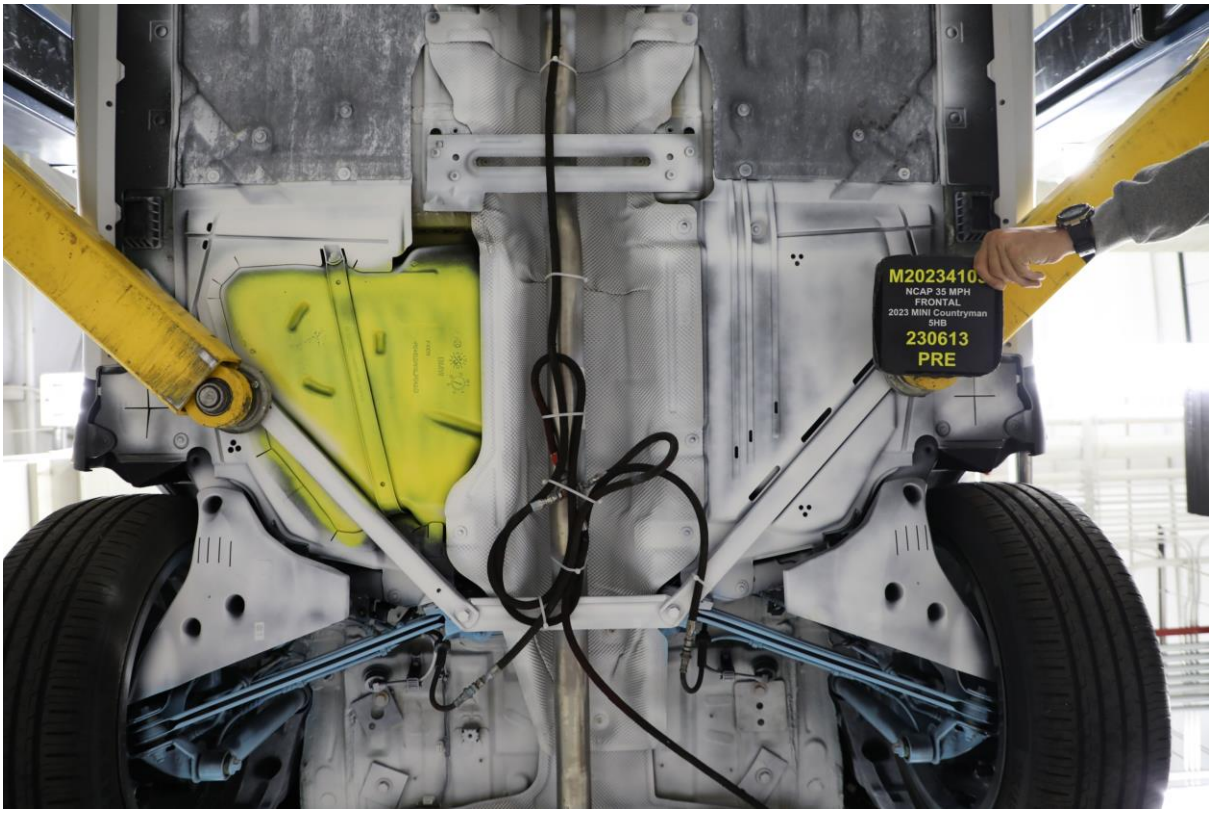
025 Post-Test Front Underbody View



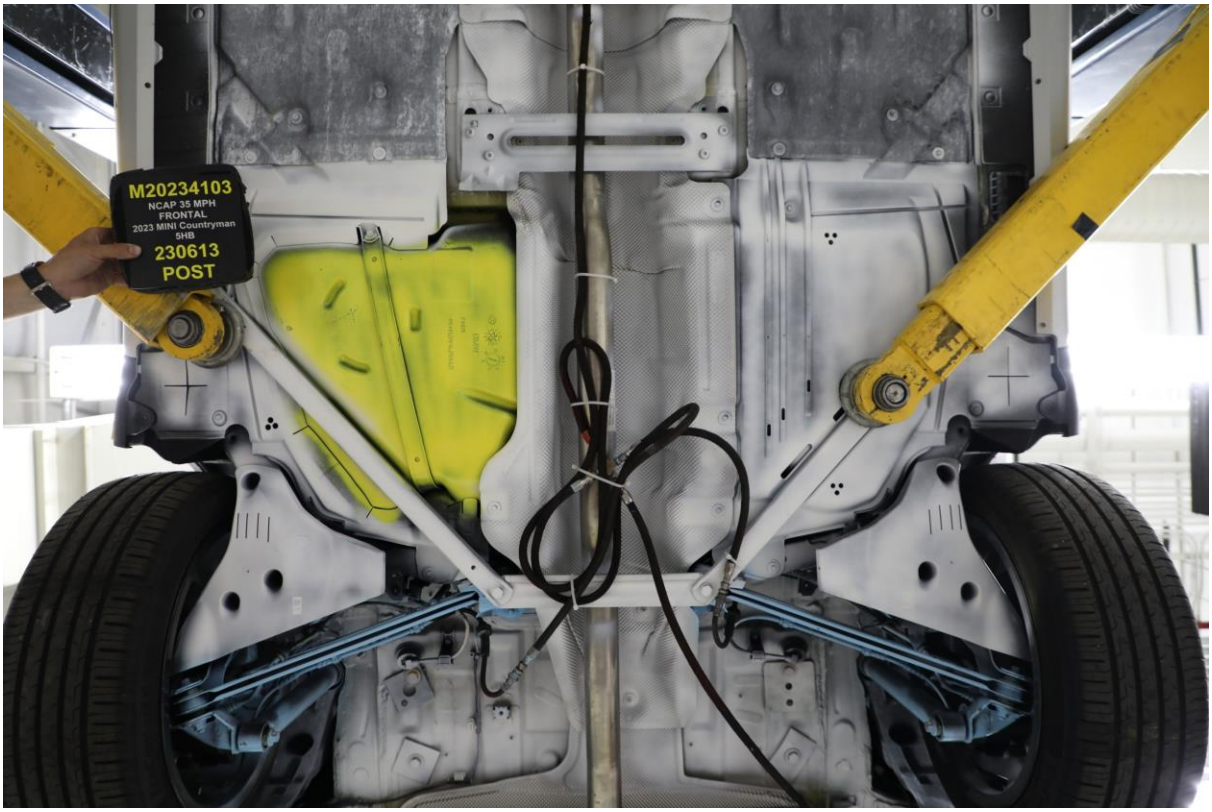
025a Pre-Test Mid Front Underbody View



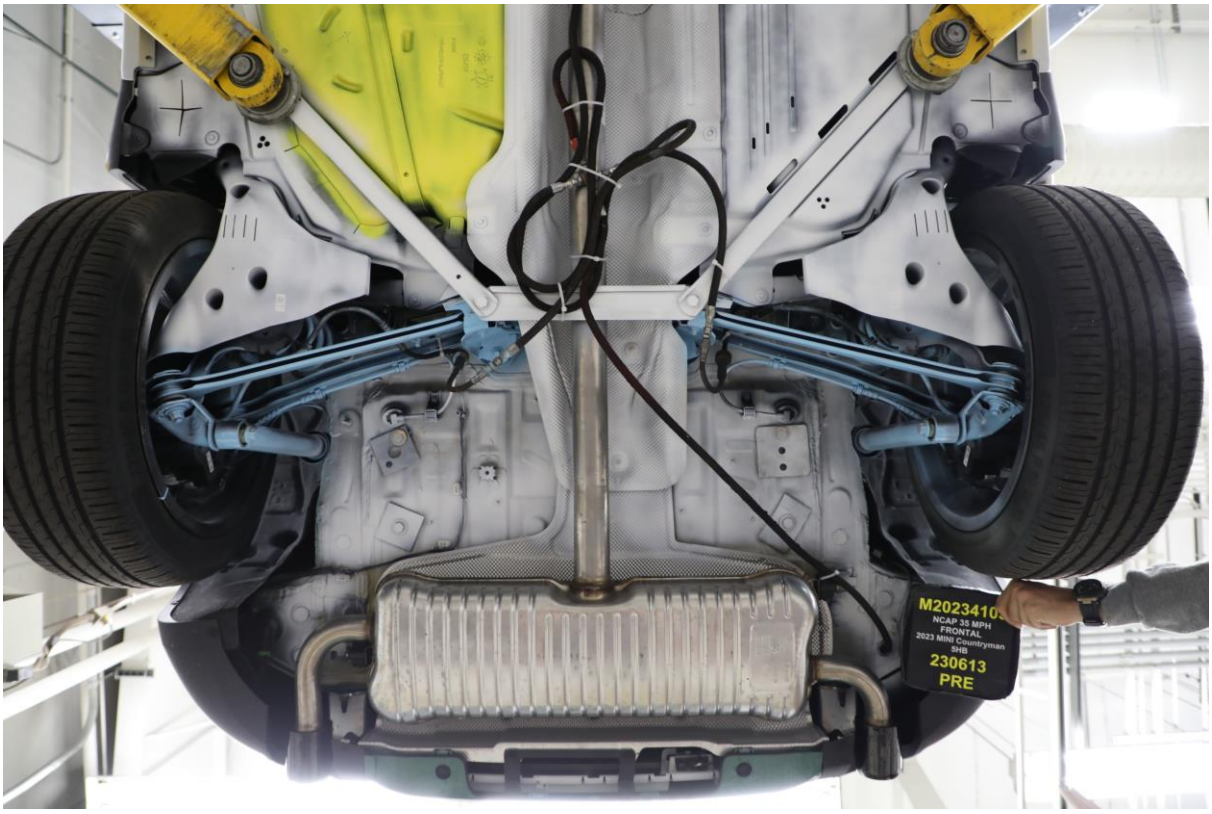
025b Post-Test Mid Front Underbody View



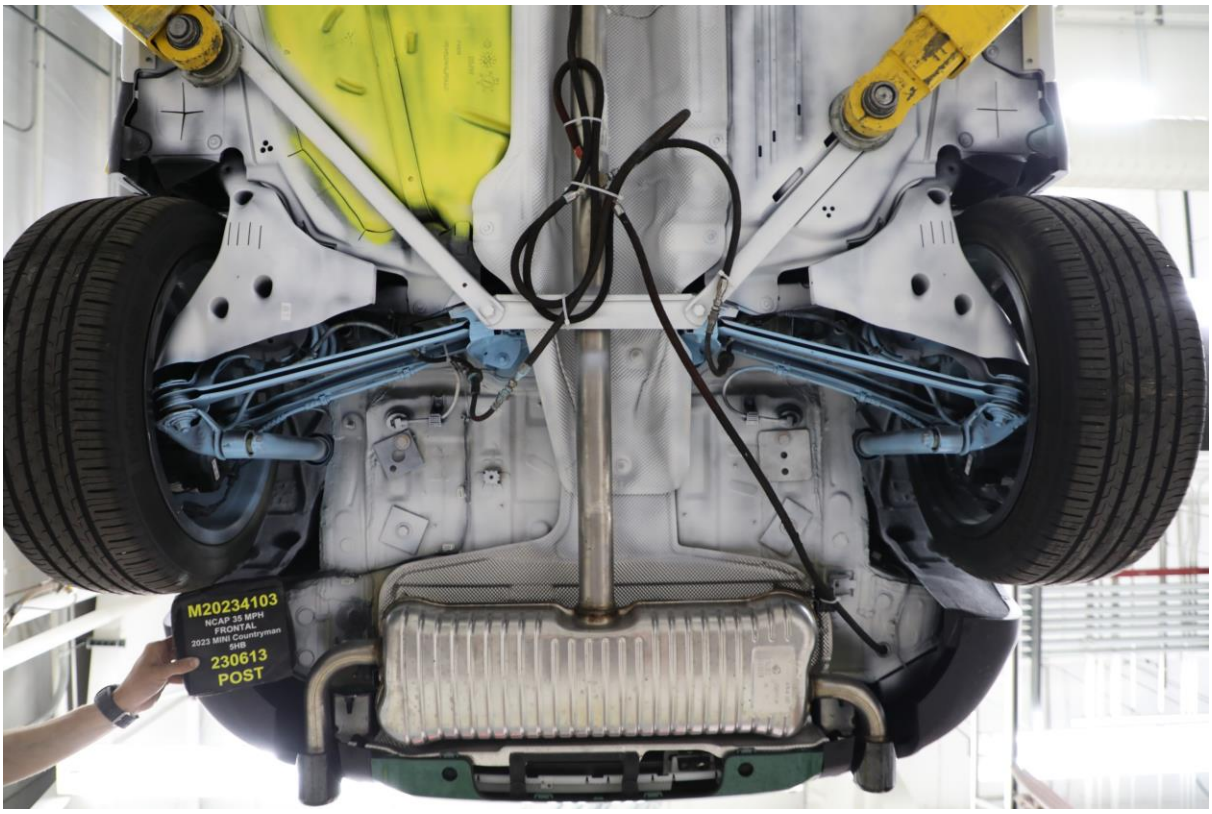
025c Pre-Test Mid Rear Underbody View



025d Post-Test Mid Rear Underbody View



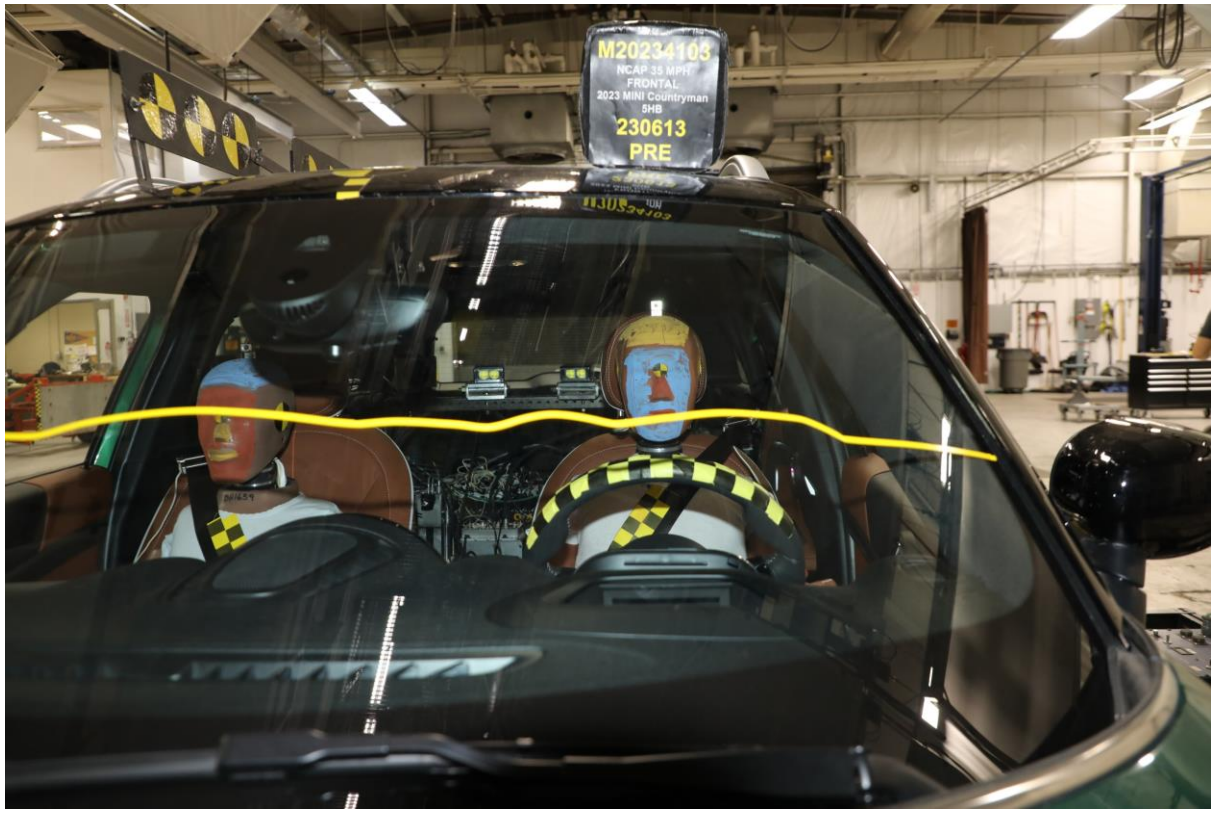
026 Pre-Test Rear Underbody View



027 Post-Test Rear Underbody View

028 Pre-Test Dummy Cable Routing

029 Post-Test Dummy Cable Routing



030 Pre-Test Driver Dummy Front View

031 Post-Test Driver Dummy Front View

032 Pre-Test Driver Dummy Window View

033 Post-Test Driver Dummy Window View

034 Pre-Test Driver Dummy and Vehicle Interior View

035 Post-Test Driver Dummy and Vehicle Interior View

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

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

038 Pre-Test View of Belt Anchorage for Driver Dummy

039 Post-Test View of Belt Anchorage for Driver Dummy

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

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

042 Pre-Test Driver Dummy Feet

043 Post-Test Driver Dummy Feet

044 Pre-Test Driver's Side Knee Bolster

045 Post-Test Driver's Side Knee Bolster

046 Pre-Test Driver's Side Floorpan

047 Post-Test Driver's Side Floorpan

048 Post-Test Driver Dummy Face

049 Post-Test Driver Dummy Contact with Airbag

050 Post-Test Driver Dummy Contact with Headrest

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051 Pre-Test View of the Steering Wheel

052 Post-Test View of the Steering Wheel

53 Pre-Test Passenger Dummy Front View

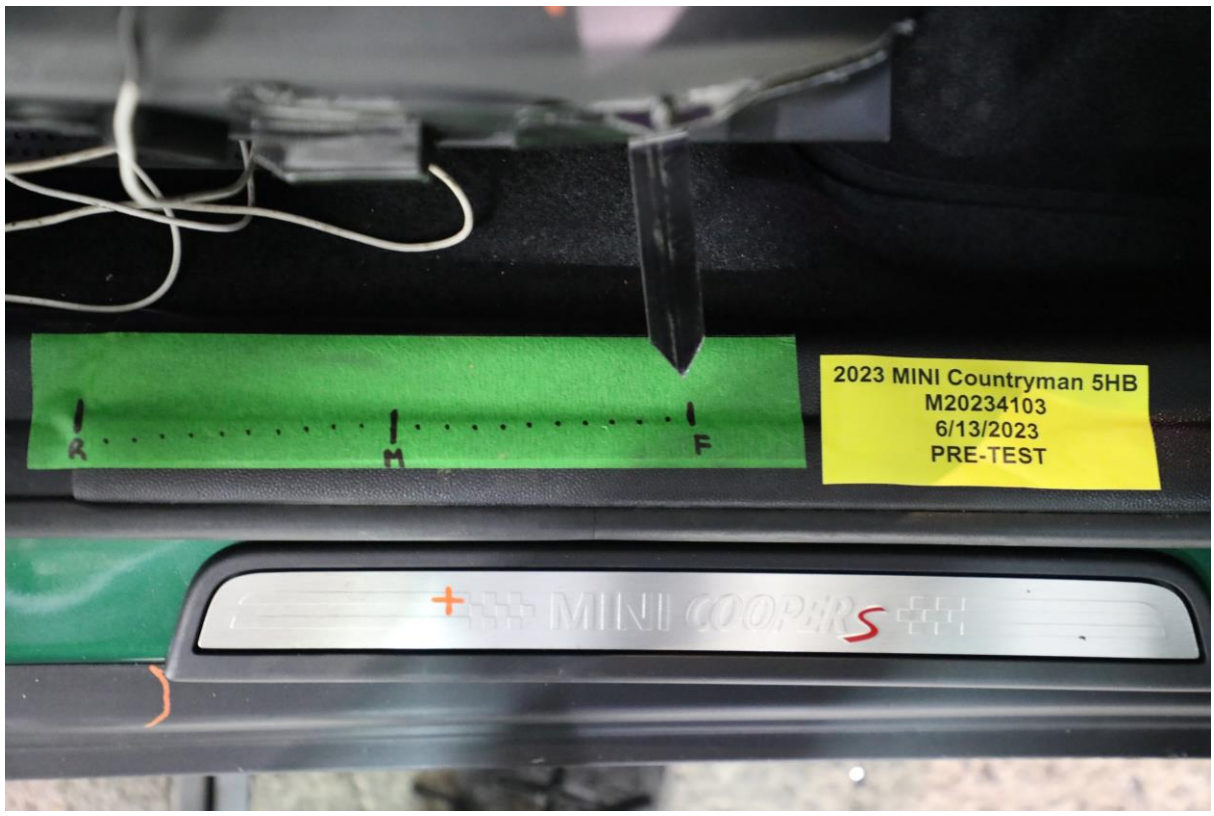
054 Post-Test Passenger Dummy Front View

055 Pre-Test Passenger Dummy Window View

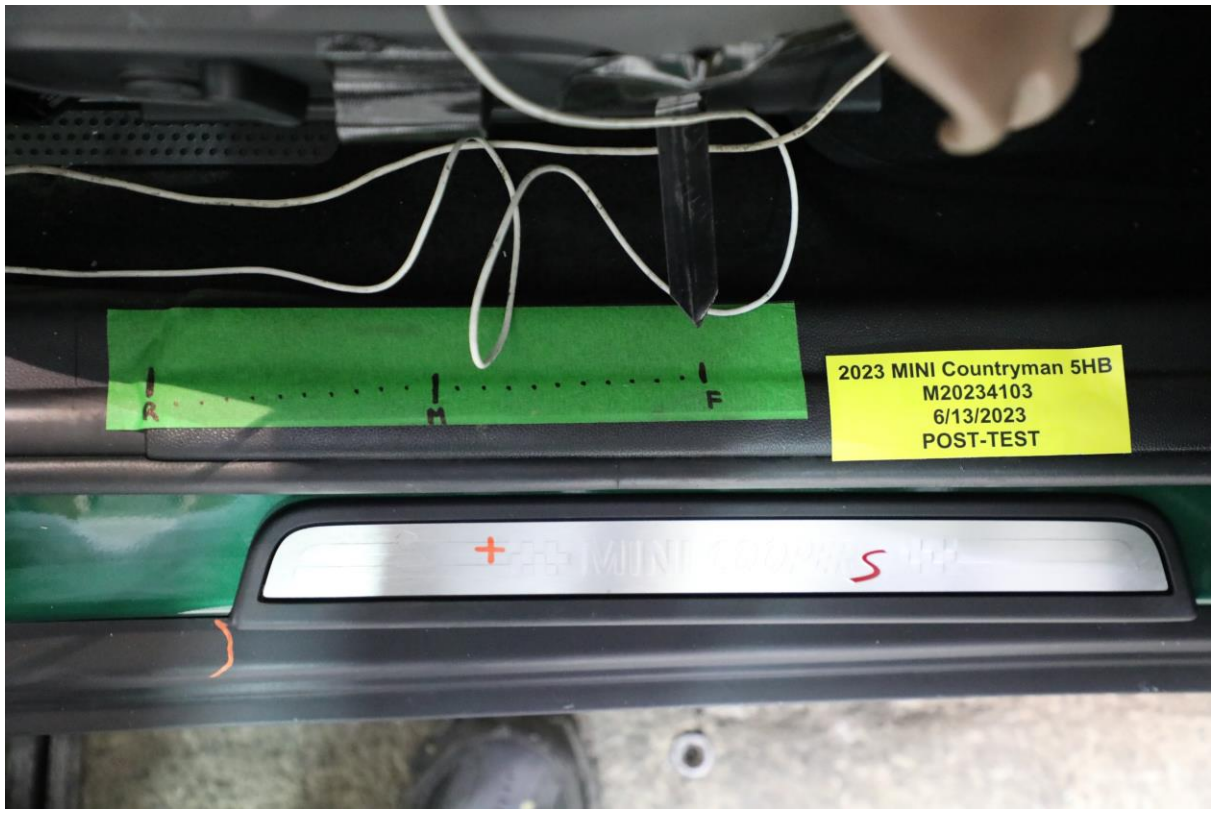
056 Post-Test Passenger Dummy Window View

057 Pre-Test Passenger Dummy and Vehicle Interior View

058 Post-Test Passenger Dummy and Vehicle Interior View



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

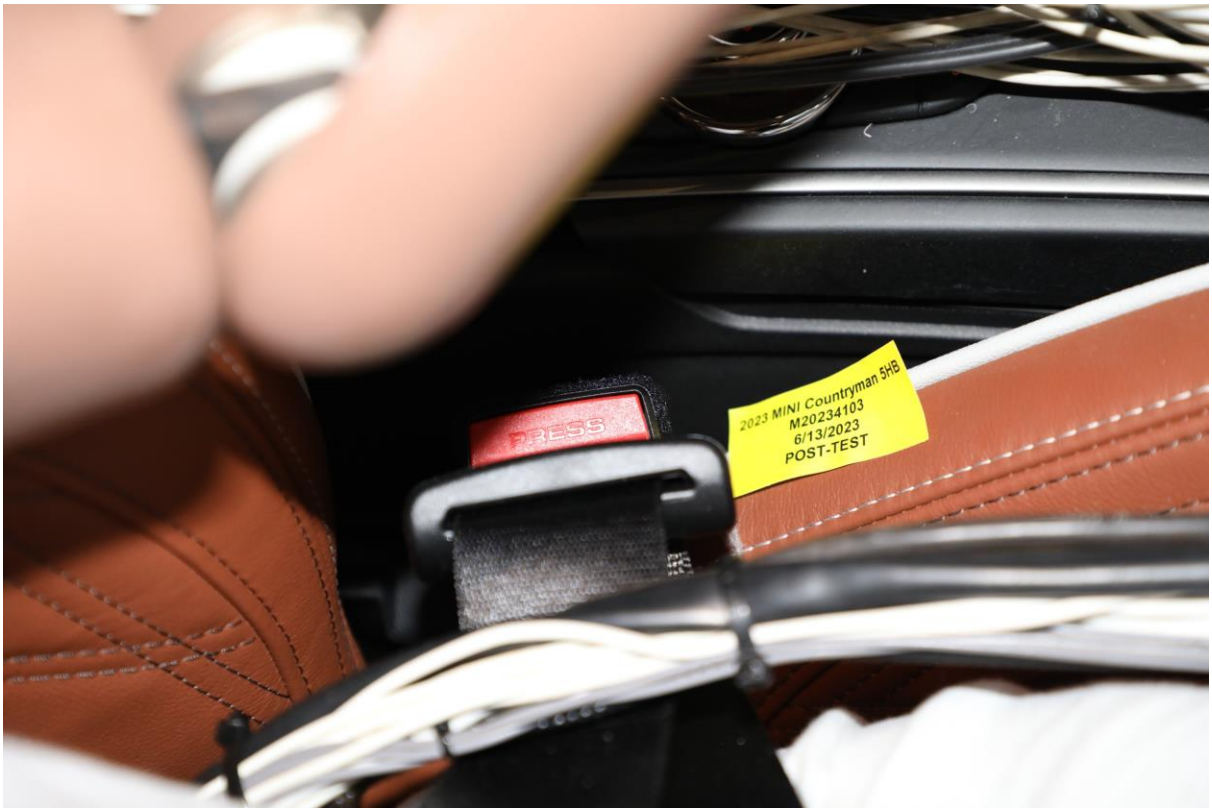


060 Post-Test Passenger's Seat Fore-Aft Markings

061 Pre-Test View of Belt Anchorage for Passenger Dummy

062 Post-Test View of Belt Anchorage for Passenger Dummy

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



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

065 Pre-Test Passenger Dummy Feet

066 Post-Test Passenger Dummy Feet

067 Pre-Test Passenger's Side Knee Bolster

068 Post-Test Passenger's Side Knee Bolster

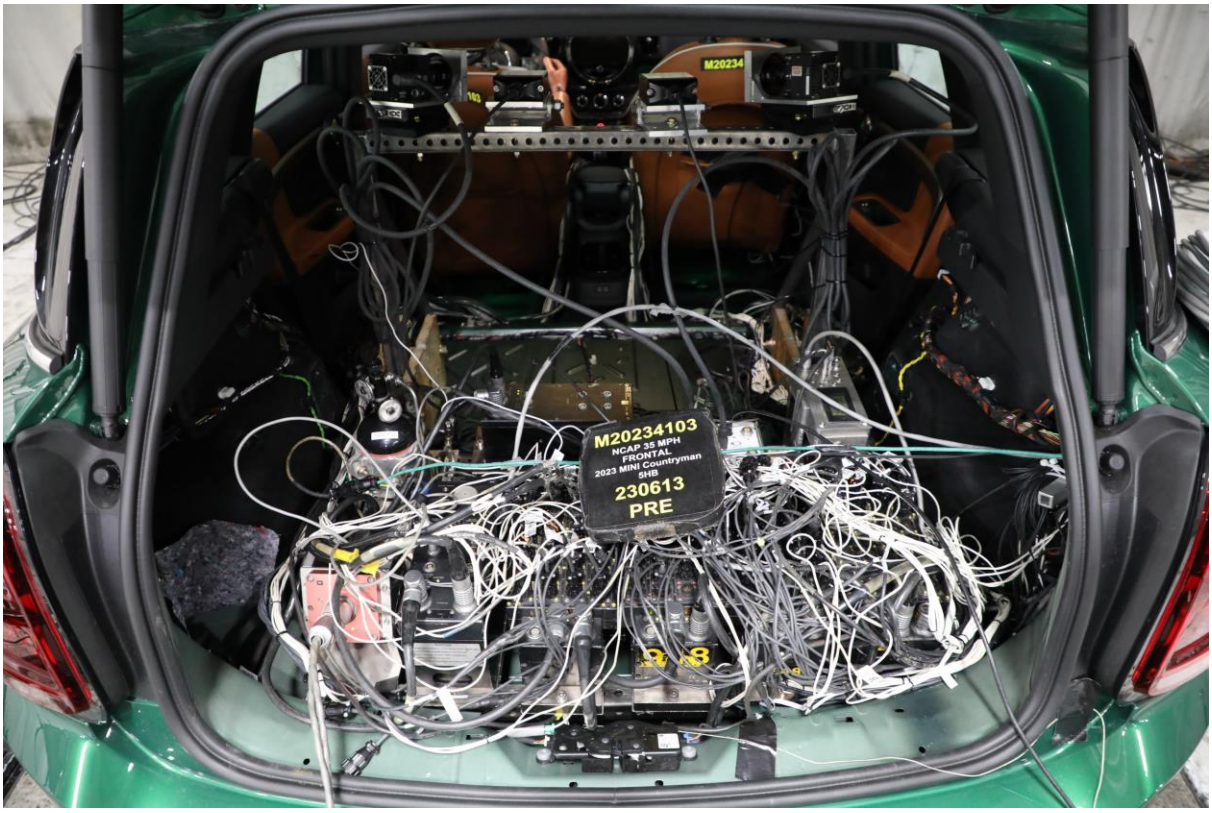
069 Pre-Test Passenger's Side Floorpan

070 Post-Test Passenger's Side Floorpan

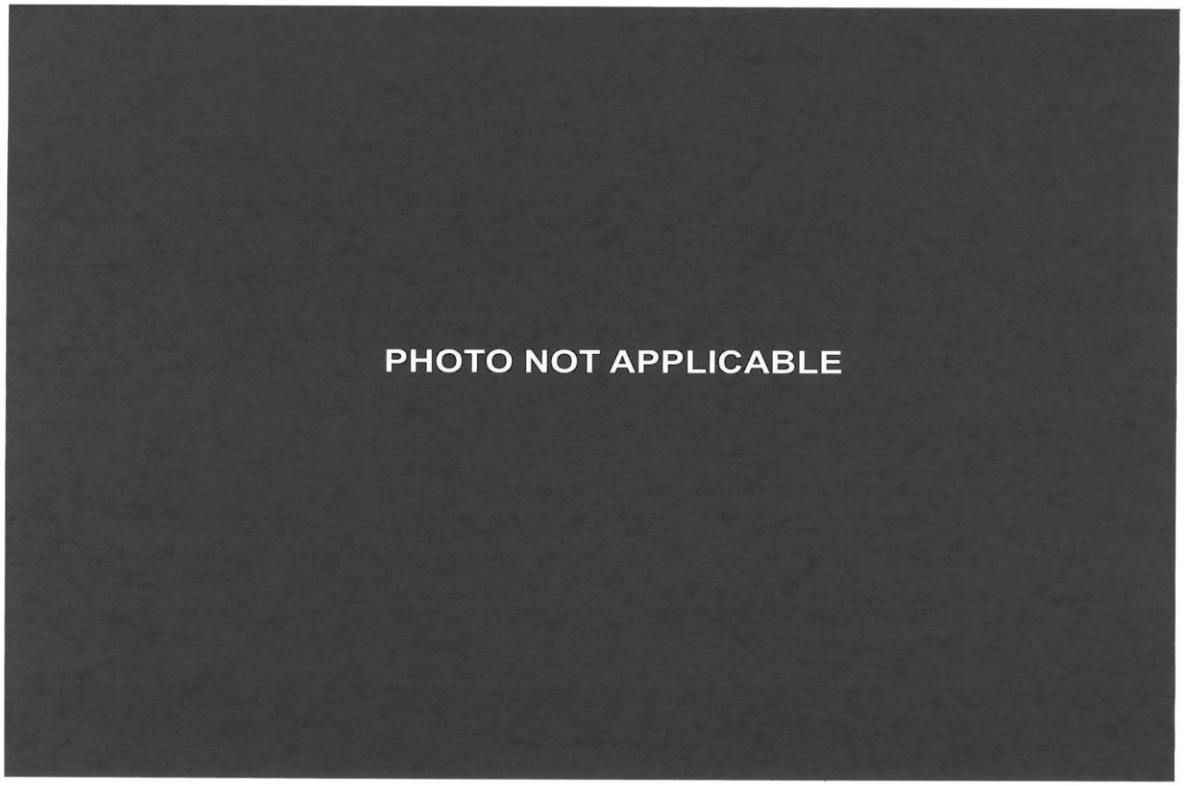
071 Post-Test Passenger Dummy Face

072 Post-Test Passenger Dummy Contact with Airbag

073 Post-Test Passenger Dummy Contact with Headrest



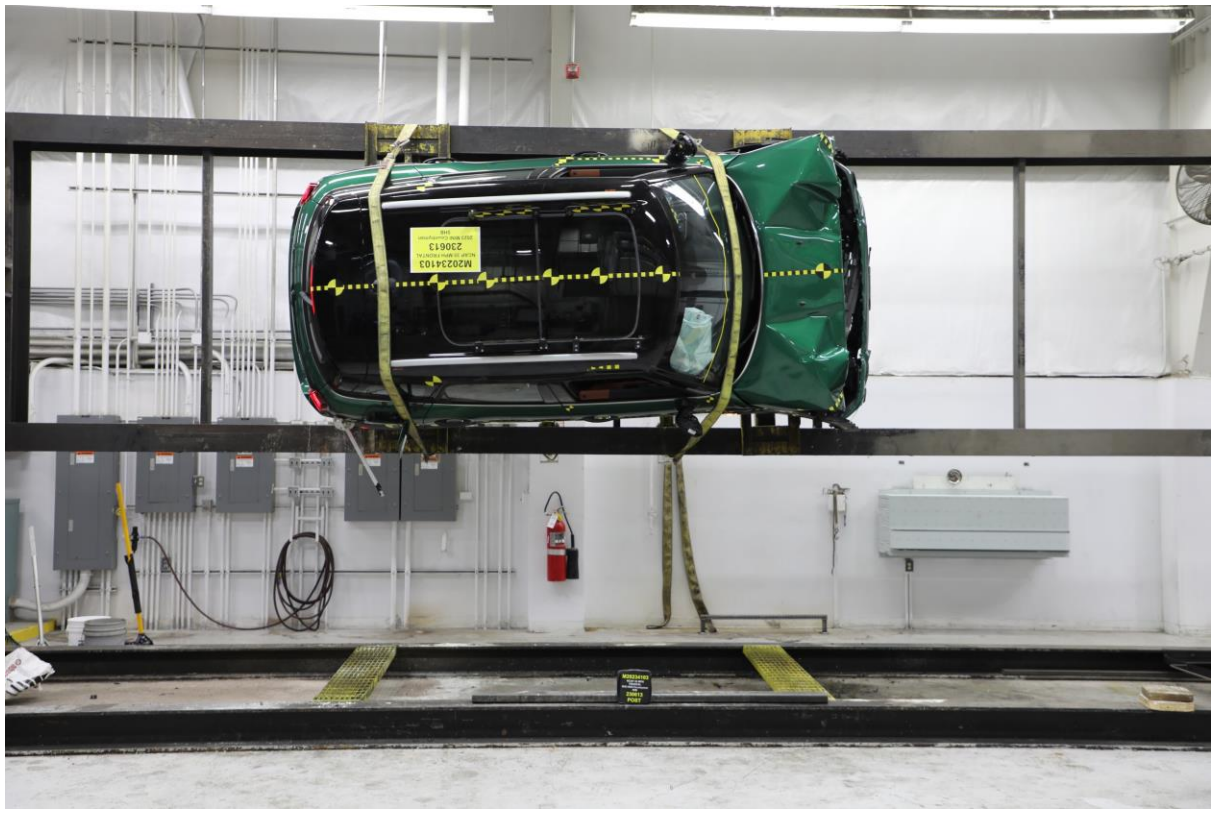
074 Photograph of Ballast Installed in Vehicle



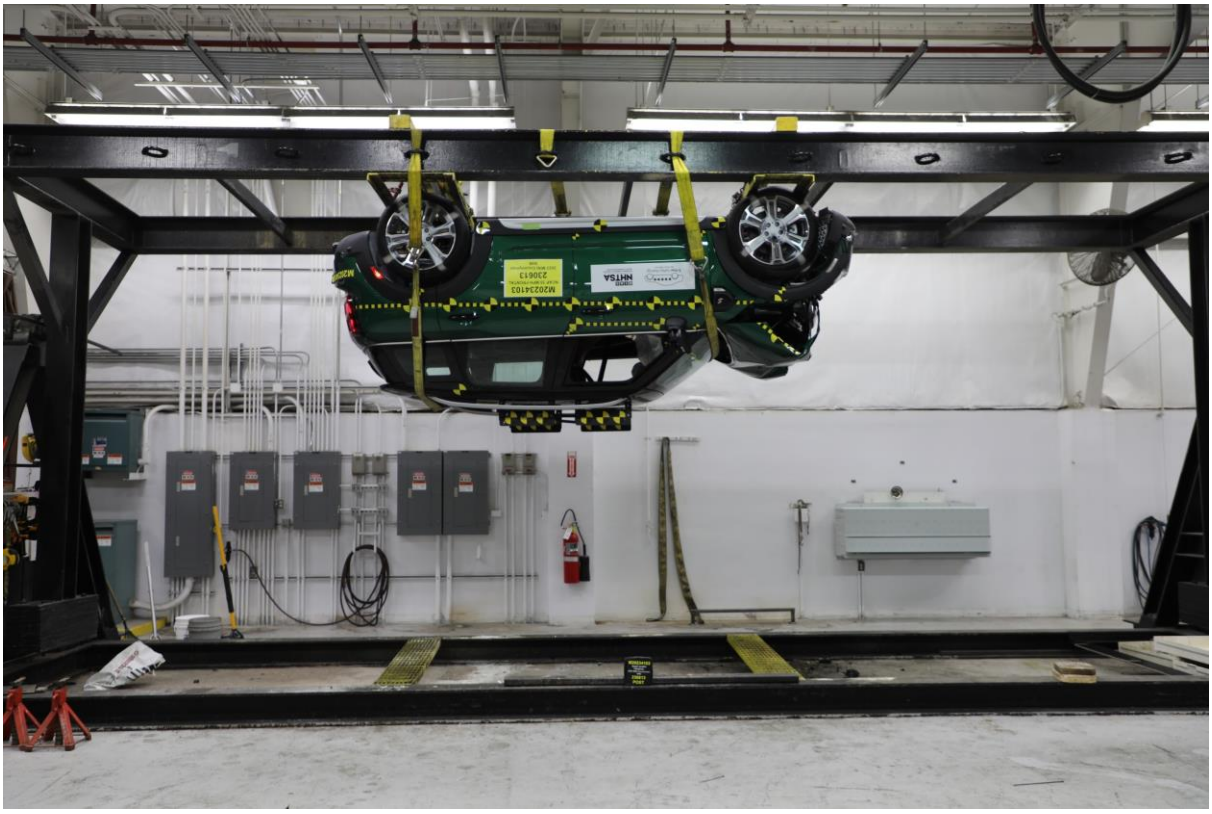
075 Post-Test Stoddard Spillage Location View

076 Post-Test Speed Trap Read out

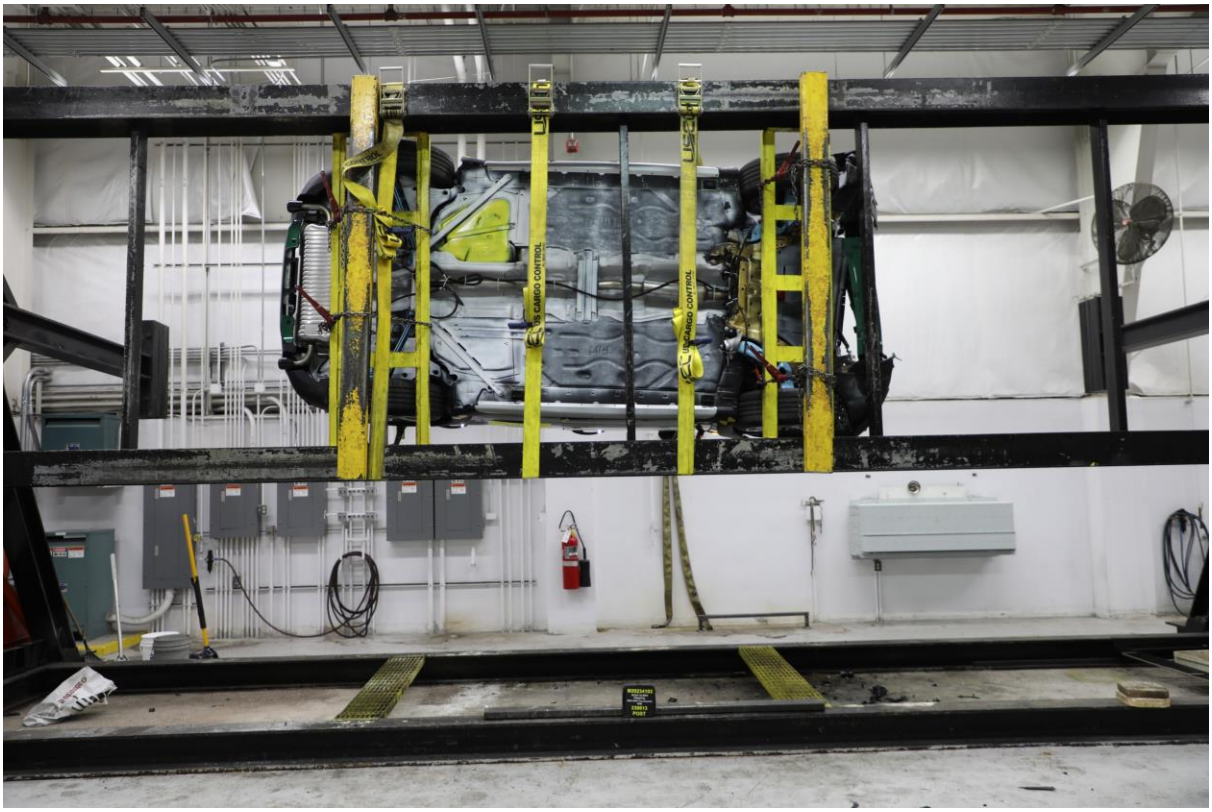
077 Vehicle at 0º on Static Rollover Device



078 Vehicle at 90º on Static Rollover Device

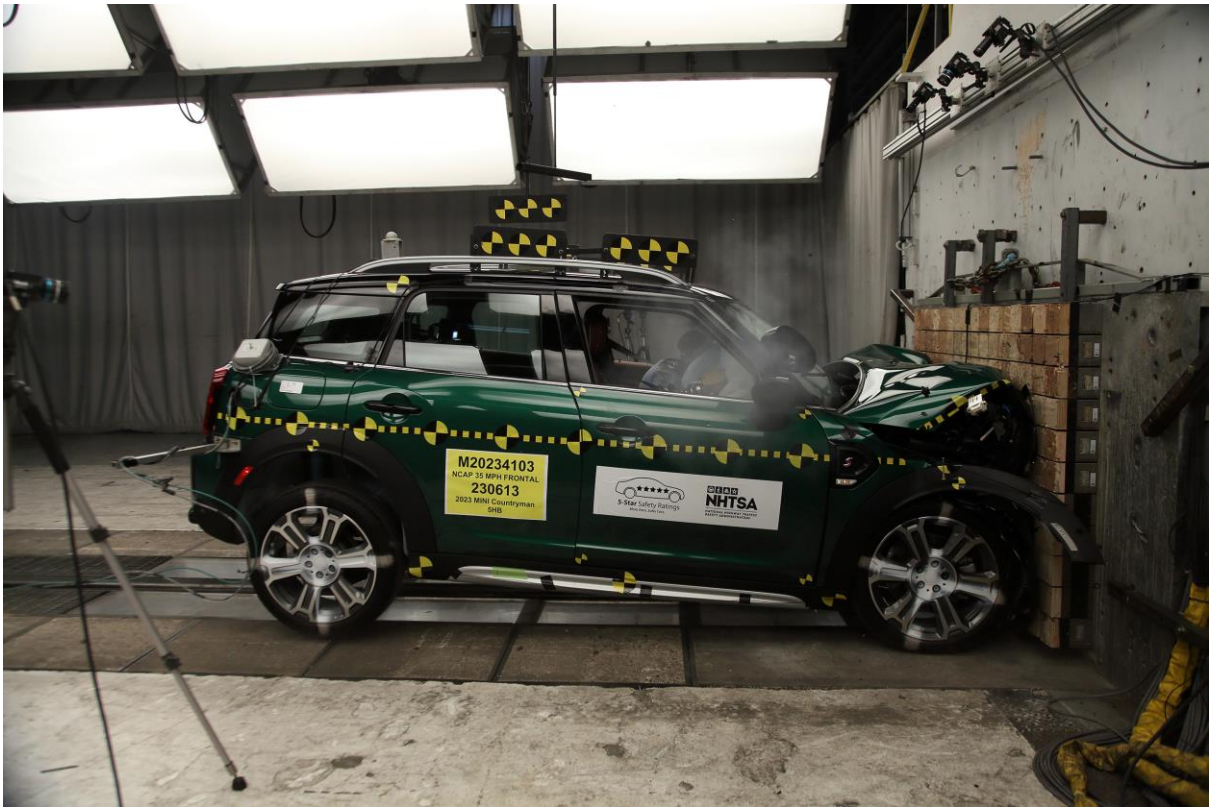


079 Vehicle at 180º on Static Rollover Device

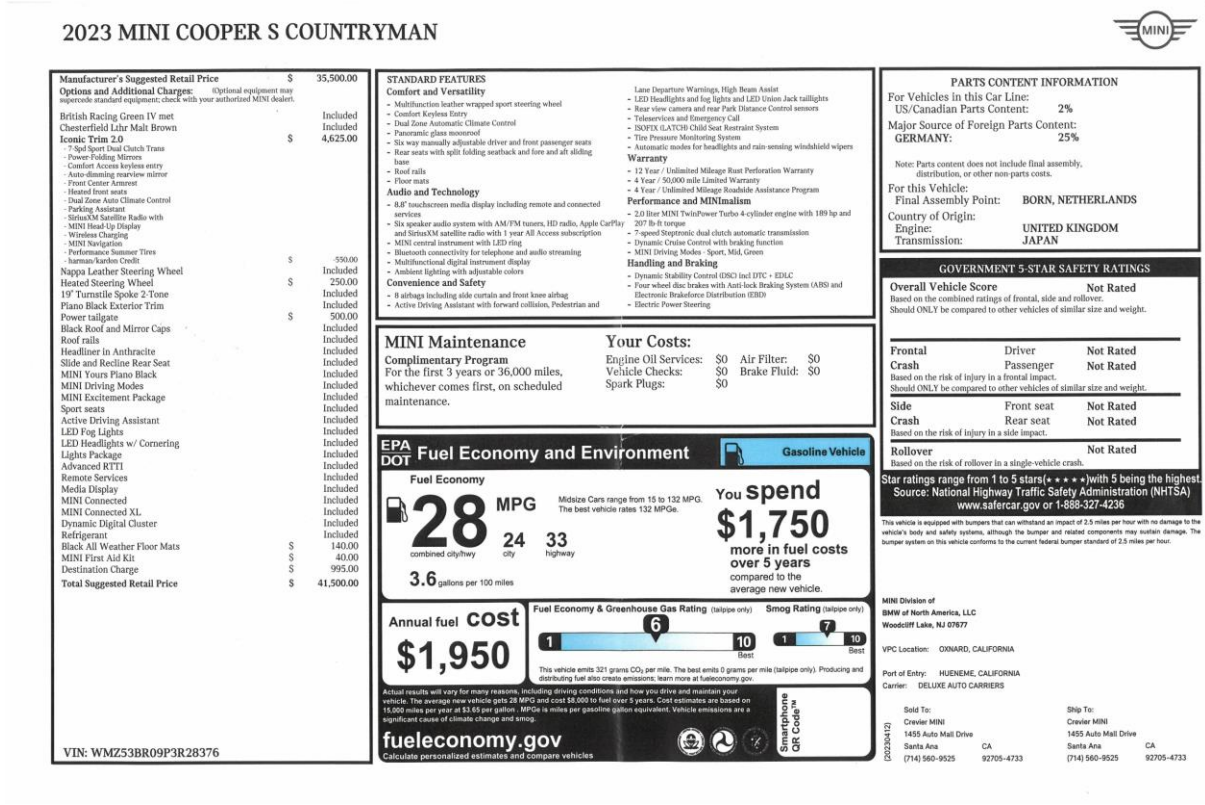


080 Vehicle at 270º on Static Rollover Device

081 Vehicle at 360º on Static Rollover Device



082 2023 MINI Countryman 5HB Frontal Impact Event



2023 MINI COOPER S COUNTRYMAN

Manufacturer's Suggested Retail Price	$	35,500.00
Options and Additional Charges: (Optional equipment may supercede standard equipment; check with your authorized MINI dealer).		
British Racing Green IV met		Included
Chesterfield Lthr Malt Brown		Included
Iconic Trim 2.0	$	4,625.00
- 7-Spd Sport Dual Clutch Trans - Power-Folding Mirrors - Comfort Access keyless entry - Auto-dimming rearview mirror - Front Center Armrest - Heated front seats - Dual Zone Auto Climate Control - Parking Assistant - SiriusXM Satellite Radio with - MINI Head-Up Display - Wireless Charging - MINI Navigation - Performance Summer Tires		
- harman/kardon Credit	$	-550.00
Nappa Leather Steering Wheel		Included
Heated Steering Wheel	$	250.00
19" Turnstile Spoke 2-Tone		Included
Piano Black Exterior Trim		Included
Power tailgate	$	500.00
Black Roof and Mirror Caps		Included
Roof rails		Included
Headliner in Anthracite		Included
Slide and Recline Rear Seat		Included
MINI Yours Piano Black		Included
MINI Driving Modes		Included
MINI Excitement Package		Included
Sport seats		Included
Active Driving Assistant		Included
LED Fog Lights		Included
LED Headlights w/ Cornering		Included
Lights Package		Included
Advanced RTTI		Included
Remote Services		Included
Media Display		Included
MINI Connected		Included
MINI Connected XL		Included
Dynamic Digital Cluster		Included
Refrigerant		Included
Black All Weather Floor Mats	$	140.00
MINI First Aid Kit	$	40.00
Destination Charge	$	995.00
Total Suggested Retail Price	$	41,500.00

VIN: WMZ53BR09P3R28376

STANDARD FEATURES

Comfort and Versatility
- Multifunction leather wrapped sport steering wheel
- Comfort Keyless Entry
- Dual Zone Automatic Climate Control
- Panoramic glass moonroof
- Six way manually adjustable driver and front passenger seats
- Rear seats with split folding seatback and fore and aft sliding base
- Roof rails
- Floor mats

Audio and Technology
- 8.8" touchscreen media display including remote and connected services
- Six speaker audio system with AM/FM tuners, HD radio, Apple CarPlay and SiriusXM satellite radio with 1 year All Access subscription
- MINI central instrument with LED ring
- Bluetooth connectivity for telephone and audio streaming
- Multifunctional digital instrument display
- Ambient lighting with adjustable colors

Convenience and Safety
- 8 airbags including side curtain and front knee airbag
- Active Driving Assistant with forward collision, Pedestrian and Lane Departure Warnings, High Beam Assist
- LED Headlights and fog lights and LED Union Jack taillights
- Rear view camera and rear Park Distance Control sensors
- Teleservices and Emergency Call
- ISOFIX (LATCH) Child Seat Restraint System
- Tire Pressure Monitoring System
- Automatic modes for headlights and rain-sensing windshield wipers

Warranty
- 12 Year / Unlimited Mileage Rust Perforation Warranty
- 4 Year / 50,000 mile Limited Warranty
- 4 Year / Unlimited Mileage Roadside Assistance Program

Performance and MINImalism
- 2.0 liter MINI TwinPower Turbo 4-cylinder engine with 189 hp and 207 lb ft torque
- 7-speed Steptronic dual clutch automatic transmission
- Dynamic Cruise Control with braking function
- MINI Driving Modes - Sport, Mid, Green

Handling and Braking
- Dynamic Stability Control (DSC) incl DTC + EDLC
- Four wheel disc brakes with Anti-lock Braking System (ABS) and Electronic Brakeforce Distribution (EBD)
- Electric Power Steering

MINI Maintenance

Complimentary Program
For the first 3 years or 36,000 miles, whichever comes first, on scheduled maintenance.

Your Costs:

Engine Oil Services:	$0	Air Filter:	$0
Vehicle Checks:	$0	Brake Fluid:	$0
Spark Plugs:	$0		

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy: **28** MPG combined city/hwy (**24** city, **33** highway)

3.6 gallons per 100 miles

Midsize Cars range from 15 to 132 MPG. The best vehicle rates 132 MPGe.

You spend **$1,750** more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost **$1,950**

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

Smog Rating (tailpipe only): 7 (1 – 10, Best)

This vehicle emits 321 grams CO_2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creats emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and cost $8,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $3.65 per gallon . MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code™

PARTS CONTENT INFORMATION

For Vehicles in this Car Line:
US/Canadian Parts Content: 2%
Major Source of Foreign Parts Content:
GERMANY: 25%

Note: Parts content does not include final assembly, distribution, or other non-parts costs.

For this Vehicle:
Final Assembly Point: BORN, NETHERLANDS
Country of Origin:
Engine: UNITED KINGDOM
Transmission: JAPAN

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

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

Side Crash	Front seat	Not Rated
	Rear seat	Not Rated

Based on the risk of injury in a side impact.

Rollover Not Rated
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

This vehicle is equipped with bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety systems, although the bumper and related components may sustain damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

MINI Division of
BMW of North America, LLC
Woodcliff Lake, NJ 07677

VPC Location: OXNARD, CALIFORNIA

Port of Entry: HUENEME, CALIFORNIA
Carrier: DELUXE AUTO CARRIERS

(202304I2)

Sold To:
Crevier MINI
1455 Auto Mall Drive
Santa Ana CA
(714) 560-9525 92705-4733

Ship To:
Crevier MINI
1455 Auto Mall Drive
Santa Ana CA
(714) 560-9525 92705-4733

083 Monroney Label Photograph

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

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

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

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

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

NHTSA

Test Date: 06/13/2023

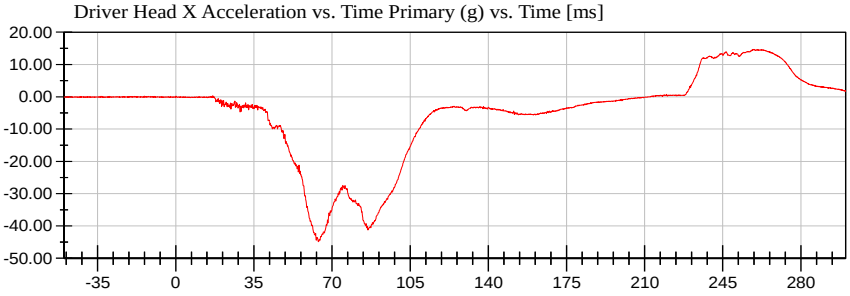
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

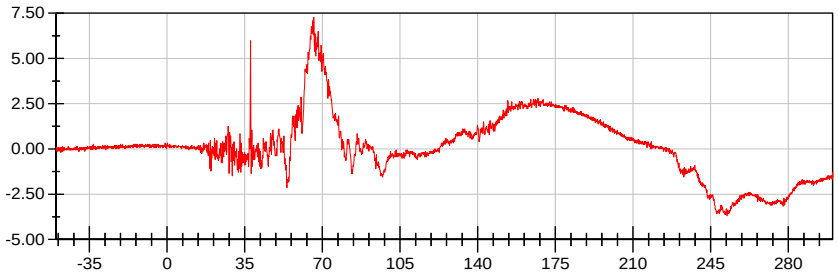
14.71 g at 258.96 ms

<Min>

-44.88 g at 63.92 ms

CFC_1000

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



<Max>

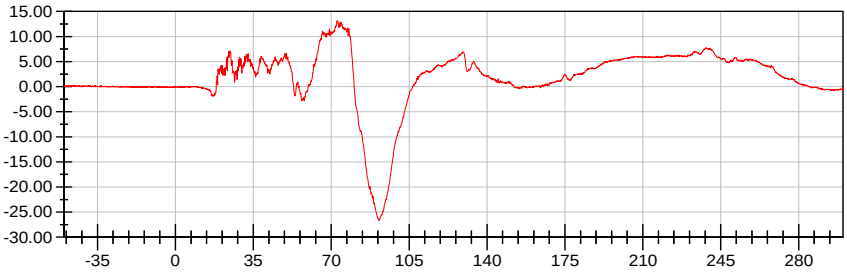
7.27 g at 66.16 ms

<Min>

-3.69 g at 252.32 ms

CFC_1000

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



<Max>

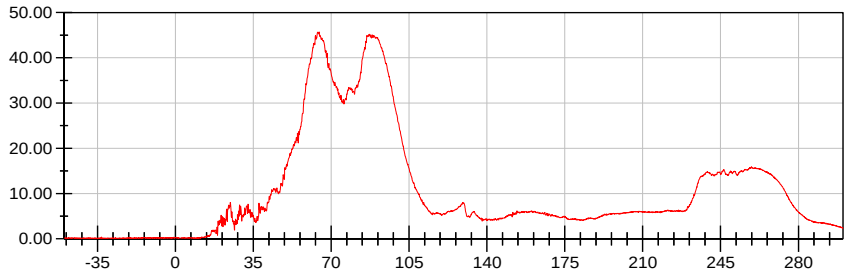
13.10 g at 72.64 ms

<Min>

-26.68 g at 91.52 ms

CFC_1000

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



<Max>

45.71 g at 64.64 ms

<Min>

0.01 g at -44.24 ms

CFC_1000

NHTSA

Test Date: 06/13/2023

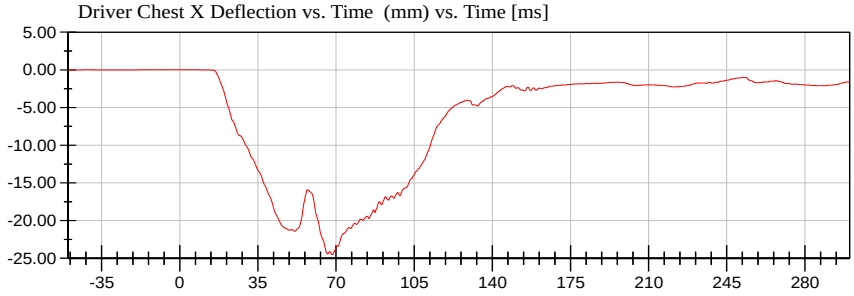
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

0.01 mm at -3.04 ms

<Min>

-24.51 mm at 68.32 ms

CFC_600

NHTSA

Test Date: 06/13/2023

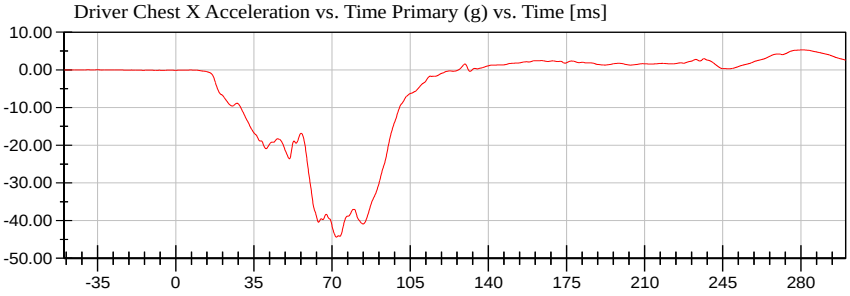
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

5.30 g at 280.16 ms

<Min>

-44.40 g at 71.92 ms

CFC_180

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

<Max>

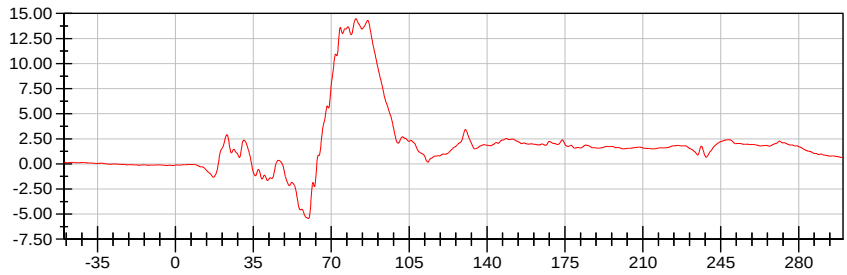
8.06 g at 72.88 ms

<Min>

-3.18 g at 40.40 ms

CFC_180

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



<Max>

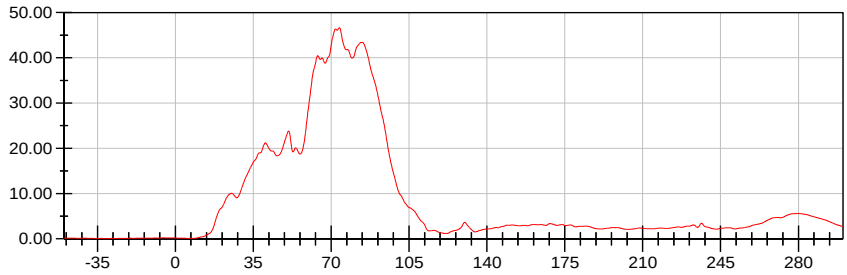
14.47 g at 81.12 ms

<Min>

-5.45 g at 59.68 ms

CFC_180

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



<Max>

46.65 g at 73.68 ms

<Min>

0.03 g at -31.44 ms

CFC_180

NHTSA

Test Date: 06/13/2023

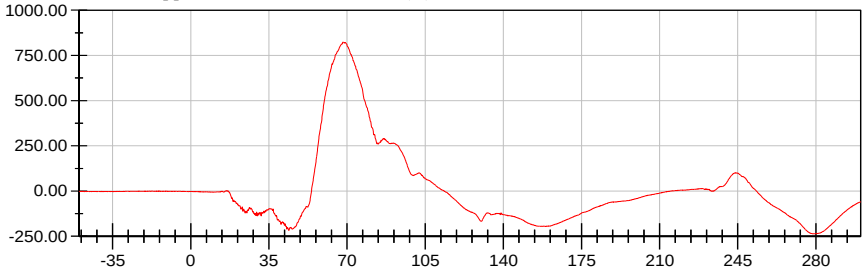
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

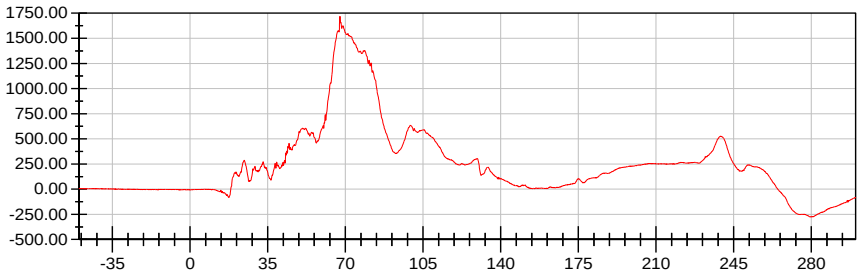
824.26 N at 68.24 ms

<Min>

-237.04 N at 278.64 ms

CFC_1000

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



<Max>

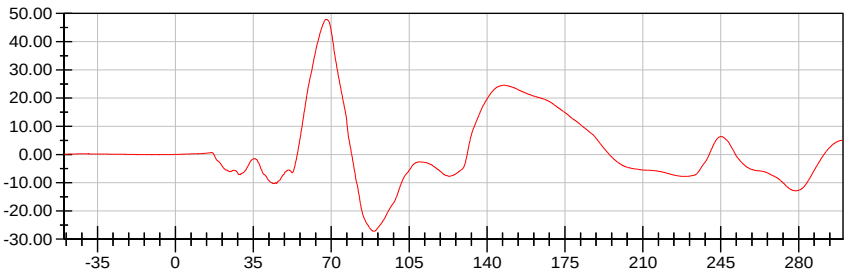
1,718.80 N at 67.52 ms

<Min>

-276.56 N at 280.24 ms

CFC_1000

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



<Max>

47.85 Nm at 67.84 ms

<Min>

-27.22 Nm at 89.20 ms

CFC_600

2023 MINI Countryman 5HB NCAP 35 mph Frontal Impact

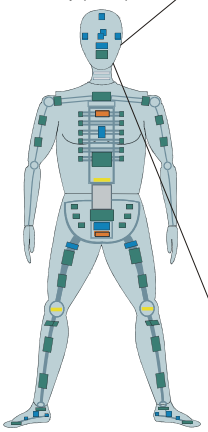
Neck Injury Predictor (NIJ)

Date: 06/13/2023
Time: 13:55

Customer: NHTSA
Test Number: M20234103

TRC Inc. Test Lab: CTF
Test Number: 230613

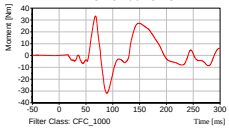
Test Orientation = Frontal
Fzc(Tension) = 6806
Fzc(Compression) = 6160
Myc(Extension) = 135
Myc(Flexion) = 310



Dummy:HIII 50th Male
Seating Position:
Driver

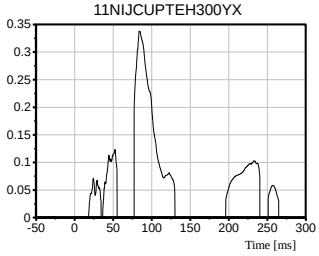
NIJ Source Code: (Fz/Fzc)+(My/Myc)

11TMONUP00H3MOYX



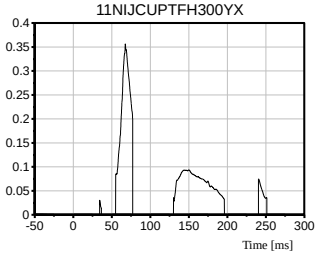
11NECKUP00H3FOZA

11NIJCUPTEH300YX



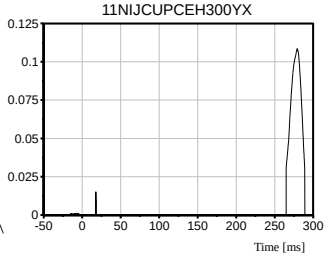
Max [NTE] 0.3378 at 84.80 ms

11NIJCUPTFH300YX



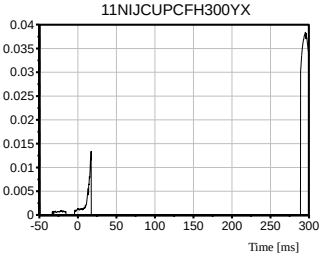
Max [NTF] 0.3564 at 67.60 ms

11NIJCUPCEH300YX



Max [NCE] 0.1085 at 279.20 ms

11NIJCUPCFH300YX



Max [NCF] 0.0384 at 295.36 ms

NHTSA

Test Date: 06/13/2023

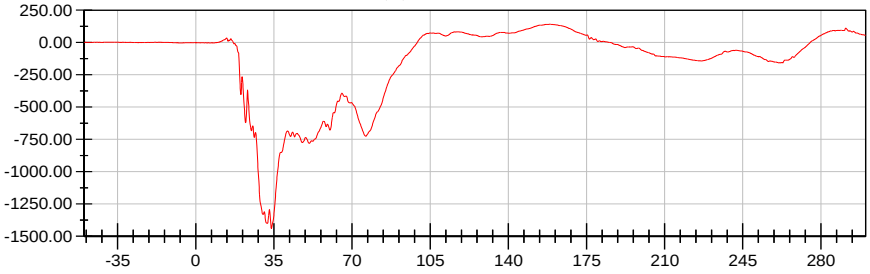
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

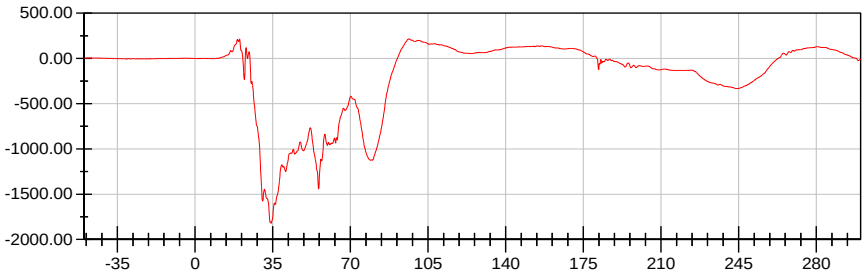
141.45 N at 158.48 ms

<Min>

-1,439.60 N at 33.92 ms

CFC_600

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



<Max>

216.07 N at 96.48 ms

<Min>

-1,822.19 N at 34.32 ms

CFC_600

NHTSA

Test Date: 06/13/2023

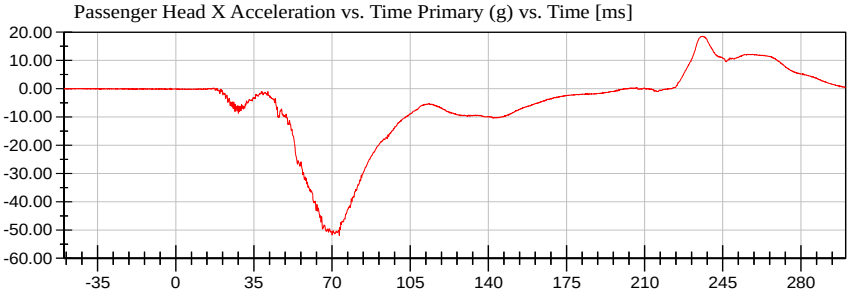
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

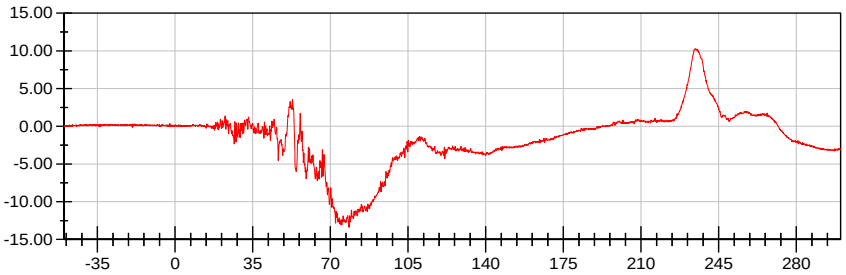
18.57 g at 235.76 ms

<Min>

-51.92 g at 73.20 ms

CFC_1000

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



<Max>

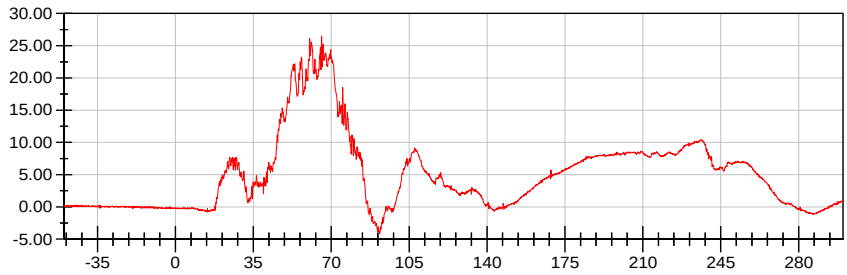
10.29 g at 234.32 ms

<Min>

-13.39 g at 78.40 ms

CFC_1000

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



<Max>

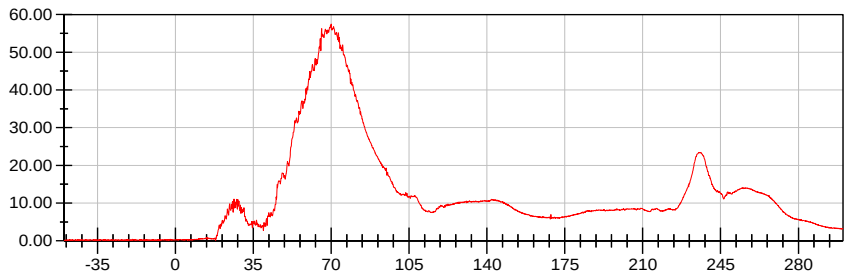
26.48 g at 65.68 ms

<Min>

-4.16 g at 91.76 ms

CFC_1000

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



<Max>

57.47 g at 70.00 ms

<Min>

0.03 g at -49.12 ms

CFC_1000

NHTSA

Test Date: 06/13/2023

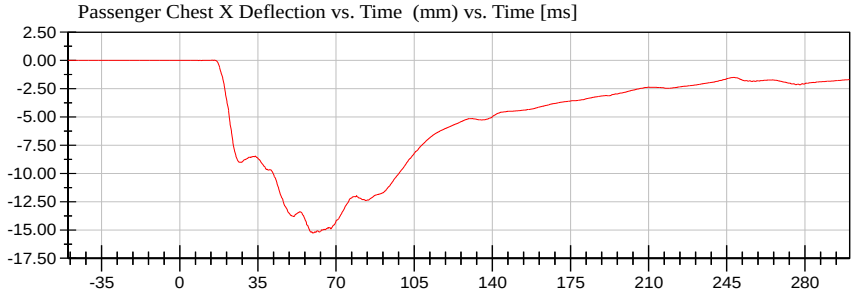
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

0.02 mm at 15.52 ms

<Min>

-15.26 mm at 59.60 ms

CFC_600

NHTSA

Test Date: 06/13/2023

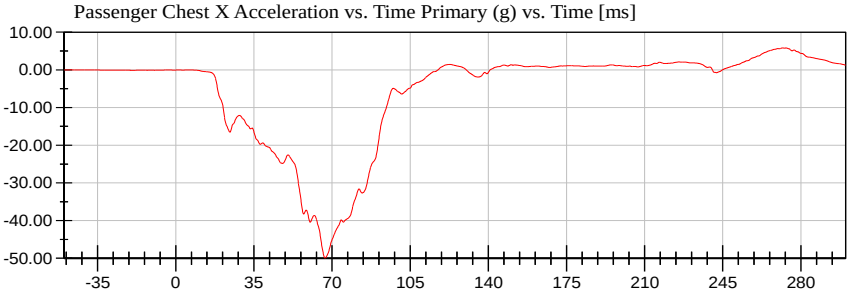
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

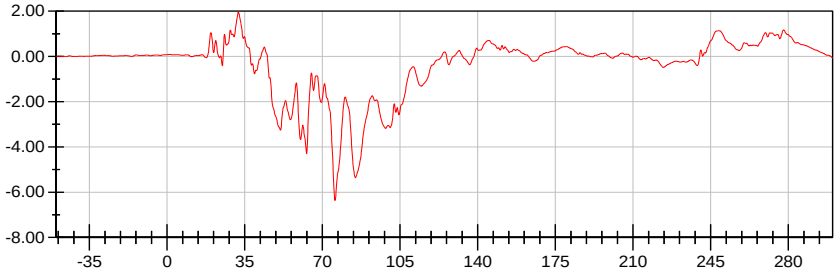
5.84 g at 271.76 ms

<Min>

-49.93 g at 66.88 ms

CFC_180

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



<Max>

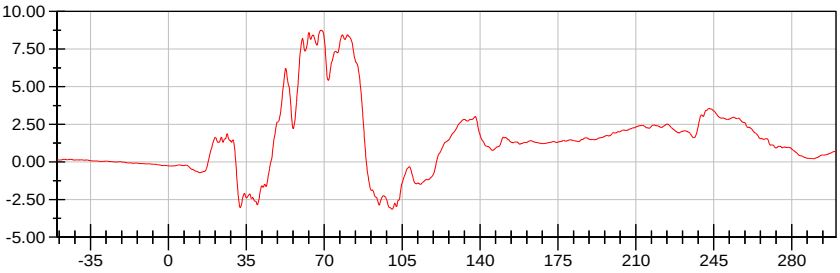
1.96 g at 32.16 ms

<Min>

-6.37 g at 75.68 ms

CFC_180

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



<Max>

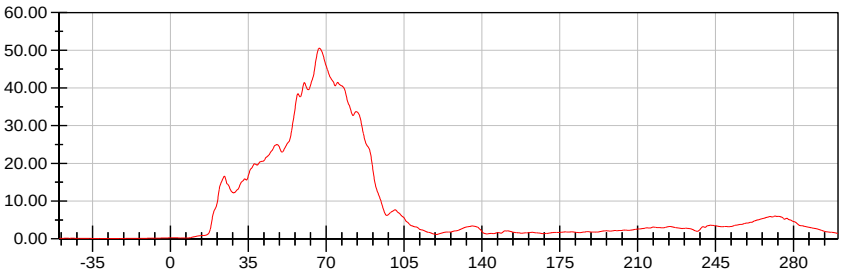
8.75 g at 68.48 ms

<Min>

-3.14 g at 100.48 ms

CFC_180

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



<Max>

50.55 g at 66.96 ms

<Min>

0.05 g at -23.04 ms

CFC_180

NHTSA

Test Date: 06/13/2023

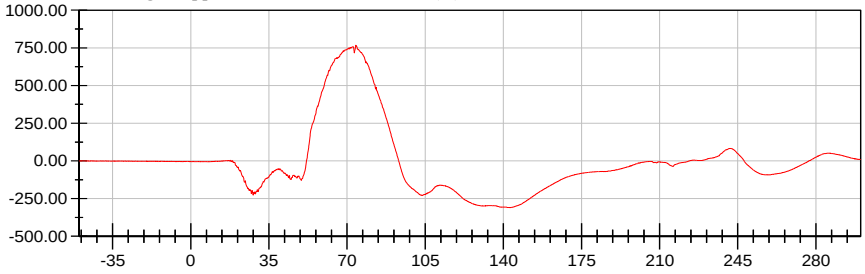
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

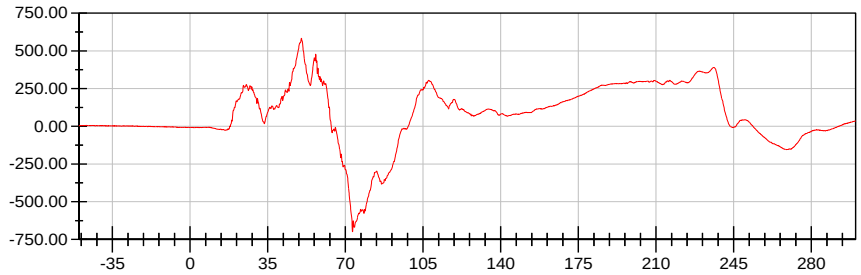
767.81 N at 73.92 ms

<Min>

-309.91 N at 142.72 ms

CFC_1000

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



<Max>

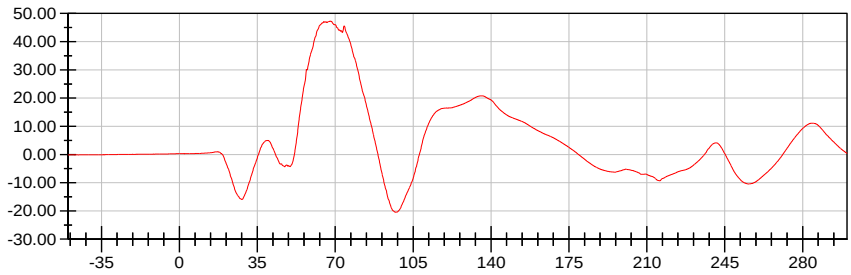
583.71 N at 50.16 ms

<Min>

-699.25 N at 73.20 ms

CFC_1000

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



<Max>

47.27 Nm at 67.76 ms

<Min>

-20.46 Nm at 96.96 ms

CFC_600

2023 MINI Countryman 5HB NCAP 35 mph Frontal Impact

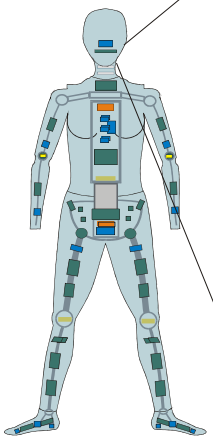
Neck Injury Predictor (NIJ)

Date: 06/13/2023
Time: 13:55

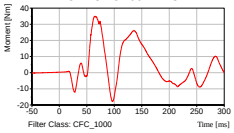
Customer: NHTSA
Test Number: M20234103

TRC Inc. Test Lab: CTF
Test Number: 230613

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

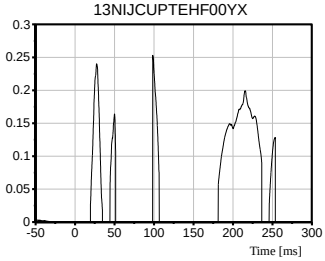


13TMONUP00HFMOYX



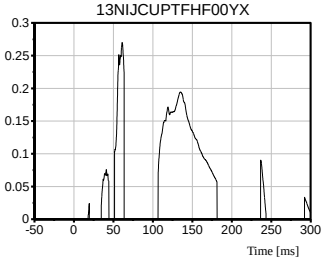
13NECKUP00HFFOZA

13NIJCUPTEHF00YX



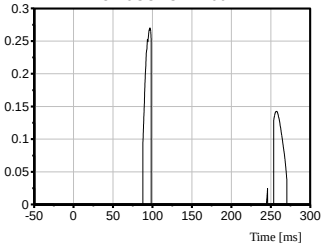
Max [NTE] 0.2530 at 98.40 ms

13NIJCUPTFHF00YX



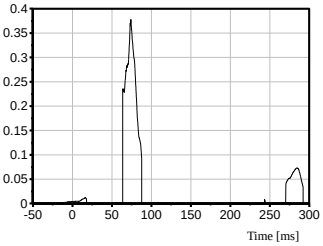
Max [NTF] 0.2700 at 61.20 ms

13NIJCUPCEHF00YX



Max [NCE] 0.2703 at 96.88 ms

13NIJCUPCFHF00YX



Max [NCF] 0.3778 at 74.00 ms

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

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

NHTSA

Test Date: 06/13/2023

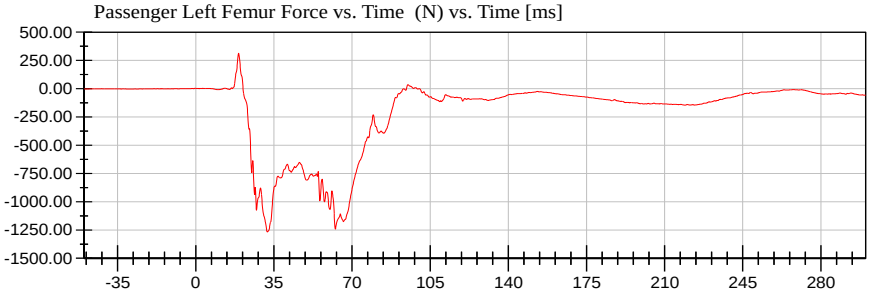
Test Lab: CTF

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

Test Number: 230613 (M20234103)

Position #2 Hybrid III Small Adult Female (DH1659)

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



<Max>

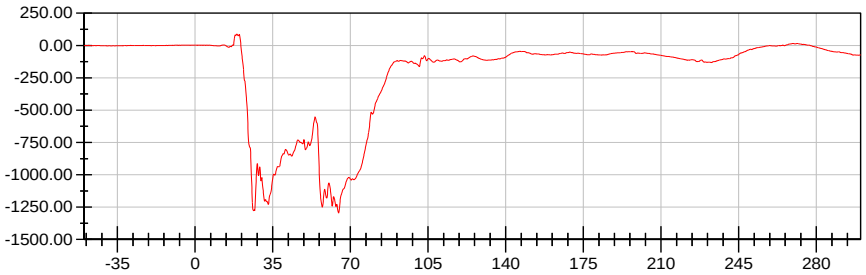
312.99 N at 19.20 ms

<Min>

-1,266.70 N at 32.08 ms

CFC_600

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



<Max>

88.40 N at 18.80 ms

<Min>

-1,294.83 N at 64.72 ms

CFC_600

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION

Pre-Test Calibration Sheets

Driver S/N 037

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 037
Calibration No. 85

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	880	Yes
B	Shoulder Pivot Height	505.5 - 520.7	510	Yes
C	H-Point Height	83.8 - 88.9	86	Yes
D	H-Point From Seatback	134.6 - 139.7	137	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	90	Yes
F	Thigh Clearance	139.7 - 154.9	150	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	295	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	337	Yes
J	Elbow Rest Height	190.5 - 210.8	198	Yes
K	Buttock Knee Length	579.1 - 604.5	601	Yes
L	Popliteal Height	429.3 - 454.7	440	Yes
M	Knee Pivot Height	485.1 - 500.4	494	Yes
N	Buttock Popliteal Length	452.1 - 477.5	470	Yes
O	Chest Depth	213.4 - 228.6	223	Yes
P	Foot Length	251.5 - 266.7	264	Yes
V	Shoulder Breadth	421.6 - 436.9	425	Yes
W	Foot Breadth	91.4 - 106.7	96	Yes
Y	Chest Circumference	970.3 - 1000.8	992	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 85-2
Test Date: 5/17/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	265.7 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	2.6 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	4.17 %	Yes

Test meets specifications.

Condition: Used
Comments:
Head Skin S/N: N/A

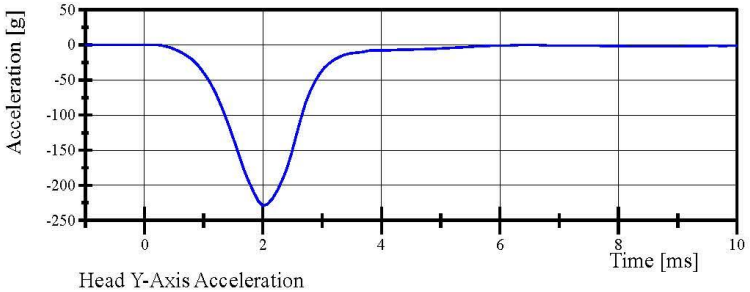
Specification Source: CFR49 Part 572 Subpart E with Polarity in accordance with J211

05.17.2023 12:45:15 612

Transportation Research Center Inc.

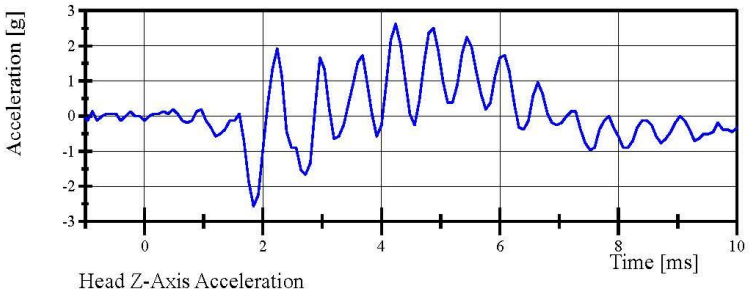
Front Head Drop
HIII 50th Serial No. 037 Certification No. 85-2
Test Date: 5/17/2023

Head X-Axis Acceleration



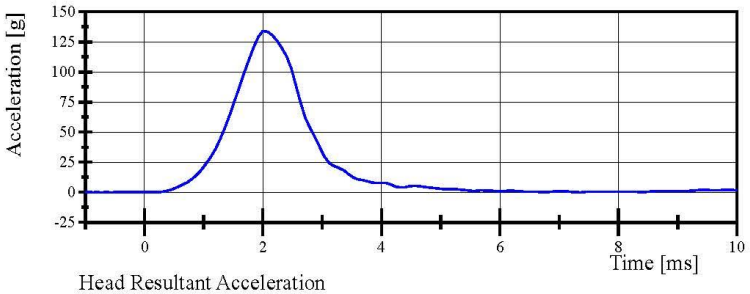
Filter Class: CFC_1000
Max: 0.1 g at -0.4 ms
Min: -229.5 g at 2.0 ms

Head Y-Axis Acceleration



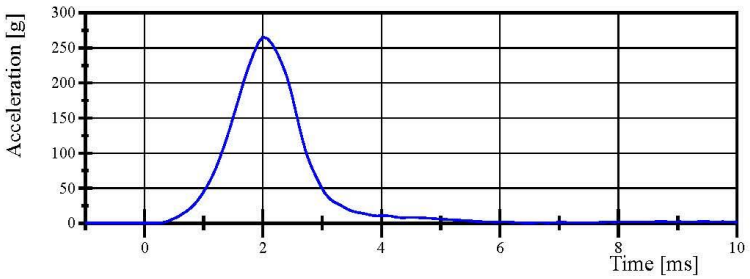
Filter Class: CFC_1000
Max: 2.6 g at 4.2 ms
Min: -2.6 g at 1.8 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 134.0 g at 2.0 ms
Min: -0.1 g at 7.4 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 265.7 g at 2.0 ms
Min: 0.0 g at -0.1 ms

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

05.17.2023 12:46:10 612

Transportation Research Center Inc.

Neck Flexion
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.917 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	40.7 ms	Yes
Pendulum Acceleration			
at 10ms	(-22.5) - (-27.5) g	-23.01 g	Yes
at 20ms	(-17.6) - (-22.6) g	-19.08 g	Yes
at 30ms	(-12.5) - (-18.5) g	-15.89 g	Yes
> 30ms	>= (-29.0) g	-15.89 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-72.4 °	Yes
Time of Peak	57 - 64 ms	61.2 ms	Yes
Decay to 0°	113 - 128 ms	120.1 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	98.68 N·m	Yes
Time of Peak	47 - 58 ms	53.9 ms	Yes
Decay to 0 N·m	97 - 107 ms	99.9 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 4728

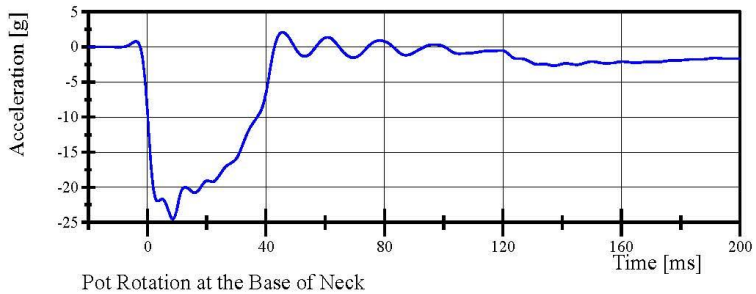
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.17.2023 09:47:43 1865

Transportation Research Center Inc.

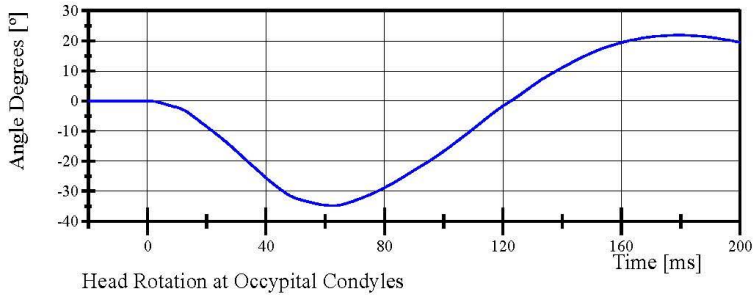
Neck Flexion
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Pendulum Acceleration



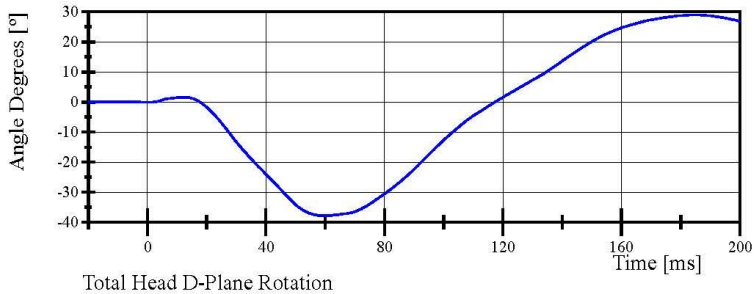
Filter Class: CFC_60
Max: 2.1 g at 45.6 ms
Min: -24.5 g at 8.6 ms

Pot Rotation at the Base of Neck



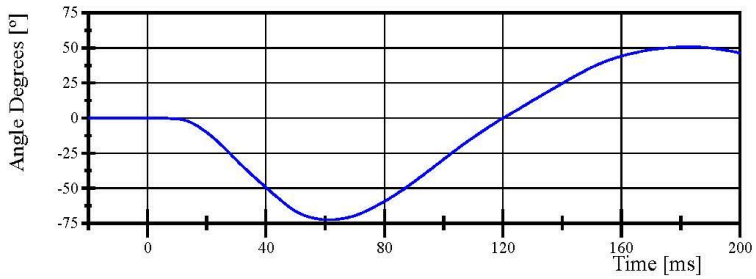
Filter Class: CFC_60
Max: 21.9 ° at 179.6 ms
Min: -34.8 ° at 62.7 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 28.9 ° at 184.8 ms
Min: -37.8 ° at 59.7 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 50.7 ° at 182.4 ms
Min: -72.4 ° at 61.2 ms

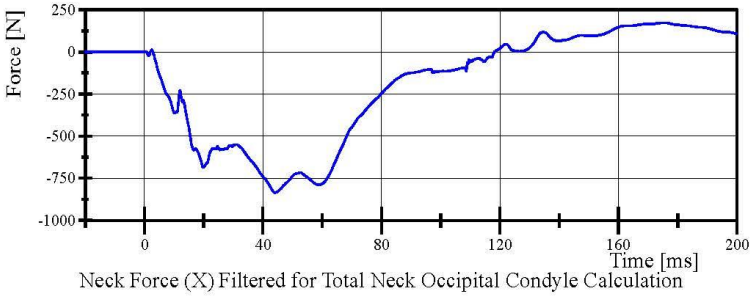
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.17.2023 09:49:26 1865

Transportation Research Center Inc.

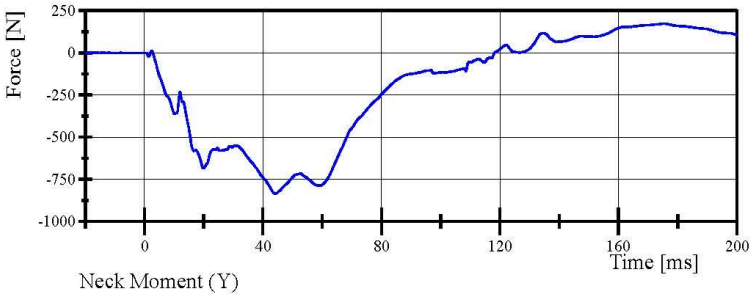
Neck Flexion
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Neck Force (X)



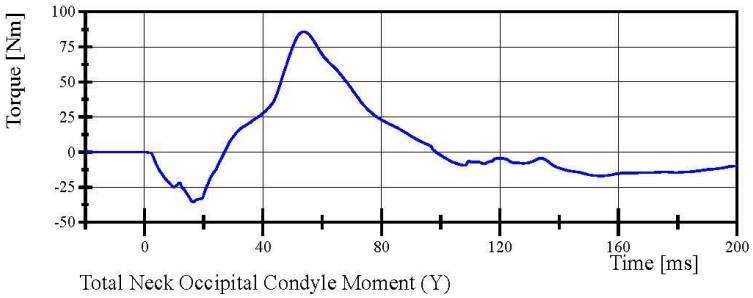
Filter Class: CFC_1000
Max: 173.7 N at 175.3 ms
Min: -834.6 N at 44.0 ms

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



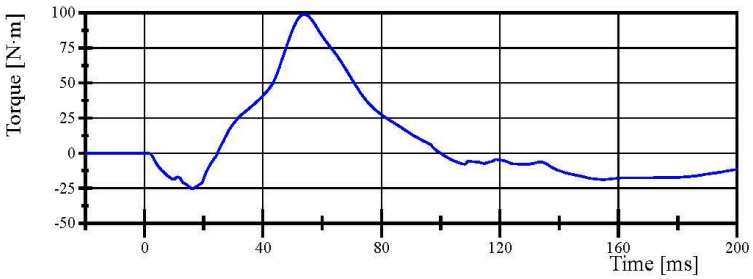
Filter Class: CFC_600
Max: 173.4 N at 175.4 ms
Min: -834.5 N at 44.1 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 85.8 Nm at 53.7 ms
Min: -35.5 Nm at 16.4 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 98.7 N·m at 53.9 ms
Min: -25.3 N·m at 16.2 ms

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

05.17.2023 09:49:26 1865

Transportation Research Center Inc.

Neck Extension
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.957 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	39.1 ms	Yes
Pendulum Acceleration			
at 10ms	17.2 - 21.2 g	19.16 g	Yes
at 20ms	14.0 - 19.0 g	17.79 g	Yes
at 30ms	11.0 - 16.0 g	15.15 g	Yes
> 30ms	<= 22.0 g	15.15 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	98.6 °	Yes
Time of Peak	72 - 82 ms	78.3 ms	Yes
Decay to 0°	147 - 174 ms	158.9 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-67.71 N·m	Yes
Time of Peak	65 - 79 ms	71.3 ms	Yes
Decay to 0 N·m	120 - 148 ms	142.5 ms	Yes

Test meets specifications.

Condition: Used
Comments:
Neck S/N: 4728

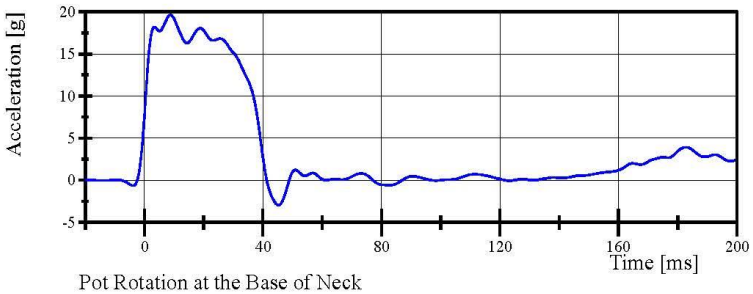
Specification Source: CFR49 Part 572 Subpart E with Polarity in accordance with J211

05.17.2023 10:18:37 2013

Transportation Research Center Inc.

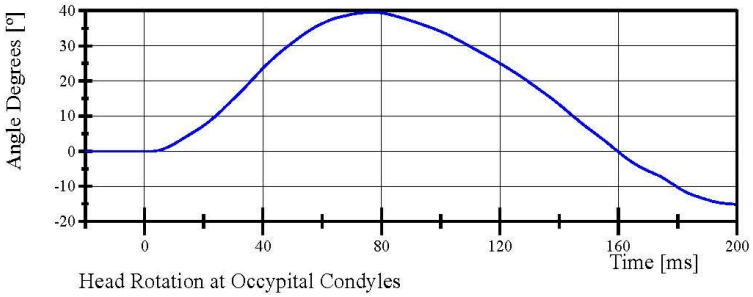
Neck Extension
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Pendulum Acceleration



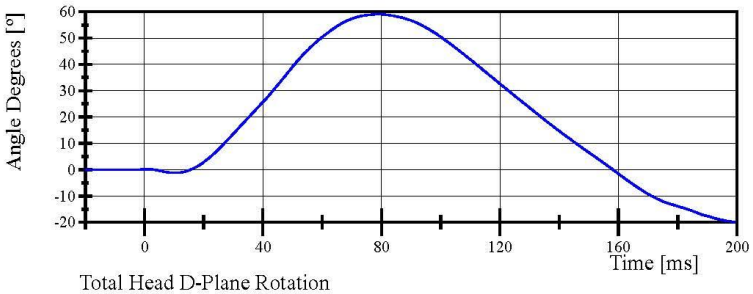
Filter Class: CFC_60
Max: 19.6 g at 8.8 ms
Min: -2.9 g at 45.3 ms

Pot Rotation at the Base of Neck



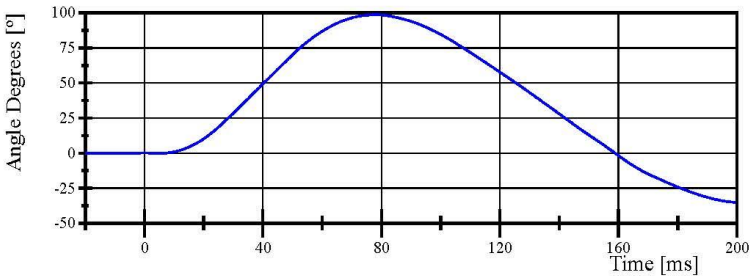
Filter Class: CFC_60
Max: 39.6 ° at 77.1 ms
Min: -15.2 ° at 199.4 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 59.1 ° at 79.0 ms
Min: -19.9 ° at 199.4 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 98.6 ° at 78.3 ms
Min: -35.1 ° at 199.4 ms

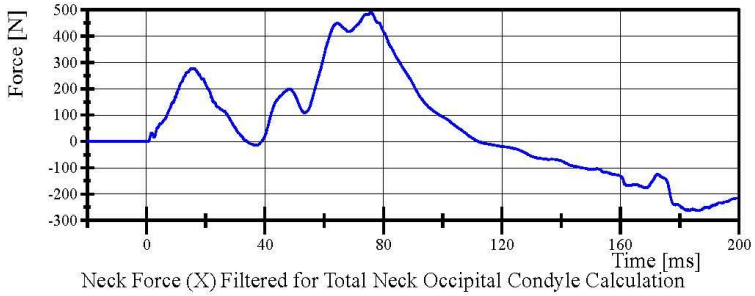
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.17.2023 10:19:27 2013

Transportation Research Center Inc.

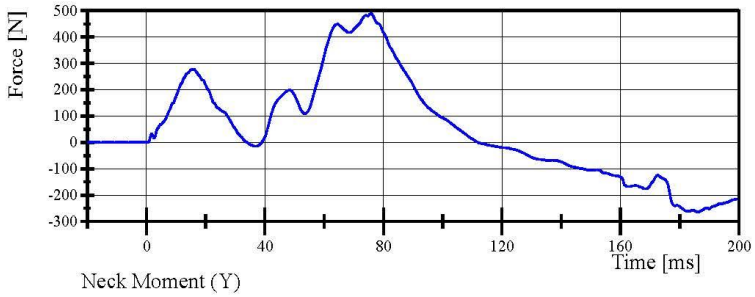
Neck Extension
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Neck Force (X)



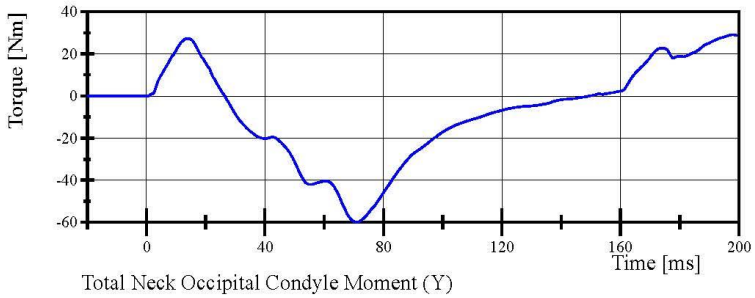
Filter Class: CFC_1000
Max: 488.8 N at 76.0 ms
Min: -264.2 N at 186.3 ms

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



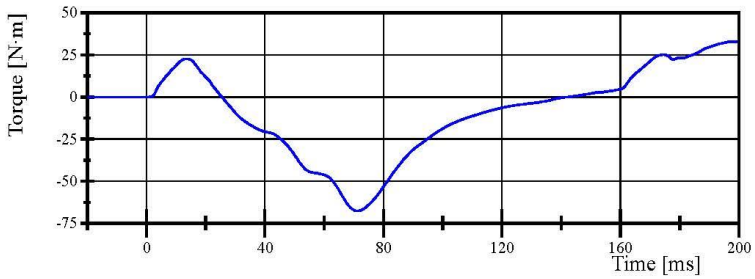
Filter Class: CFC_600
Max: 488.7 N at 75.9 ms
Min: -263.7 N at 186.3 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 29.0 Nm at 197.8 ms
Min: -59.9 Nm at 71.1 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 32.9 N·m at 197.7 ms
Min: -67.7 N·m at 71.3 ms

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

05.17.2023 10:19:27 2013

Transportation Research Center Inc.

Front Thorax
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.607 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,304.7 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-68.78 mm	Yes
Internal Hysteresis	69 - 85 %	69.6 %	Yes

Test meets specifications.

Condition: Used

Comments:
Jacket S/N: ER6442
Rib Set S/N: 02033121A

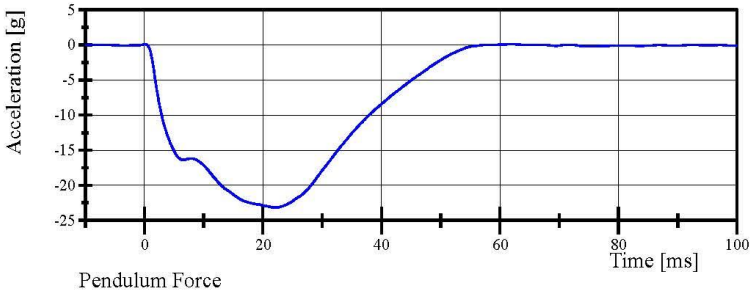
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.17.2023 09:00:39 427

Transportation Research Center Inc.

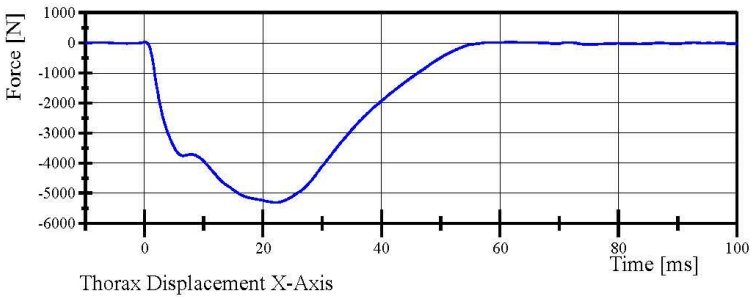
Front Thorax
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Pendulum Acceleration



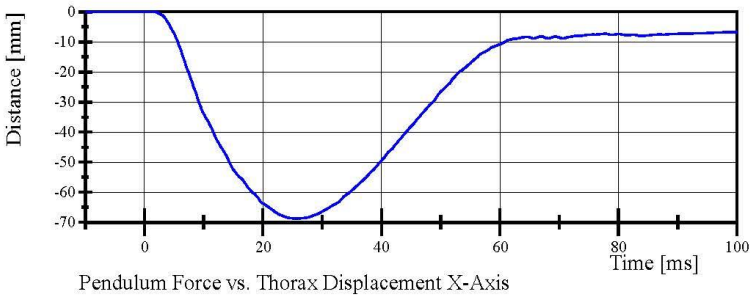
Filter Class: CFC_180
Max: 0.1 g at 61.8 ms
Min: -23.1 g at 22.2 ms

Pendulum Force



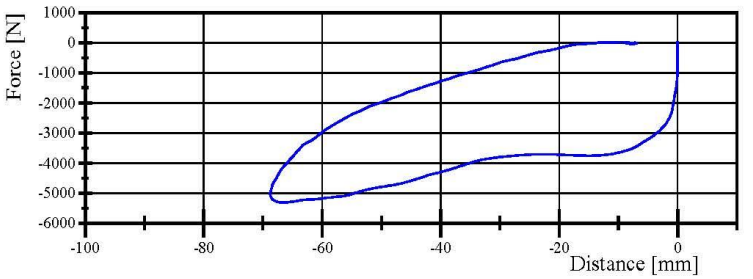
Filter Class: CFC_180
Max: 24.4 N at 61.8 ms
Min: -5,304.7 N at 22.2 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -9.5 ms
Min: -68.8 mm at 25.7 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 24.4 N at -9.2 mm
Min: -5,304.7 N at -66.7 mm

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

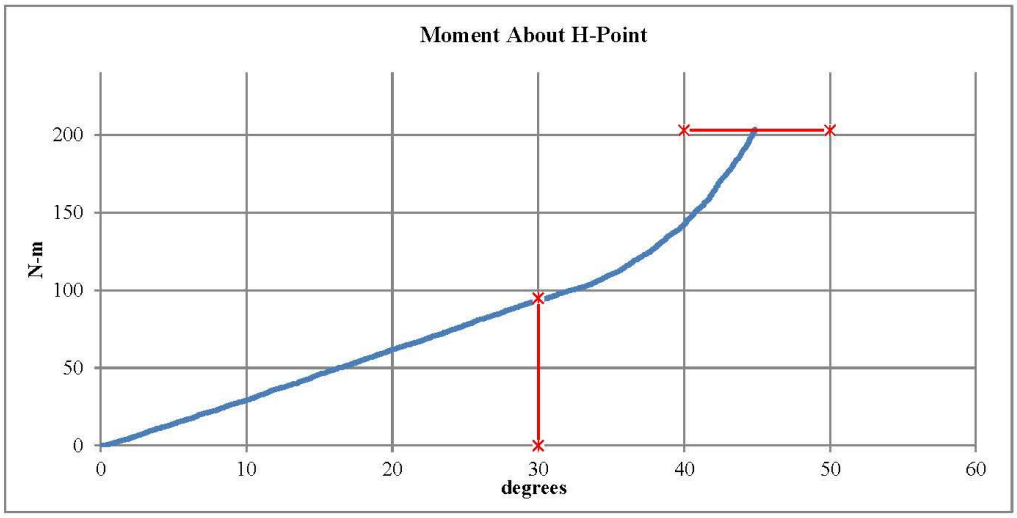
05.17.2023 09:05:05 427

Transportation Research Center Inc.

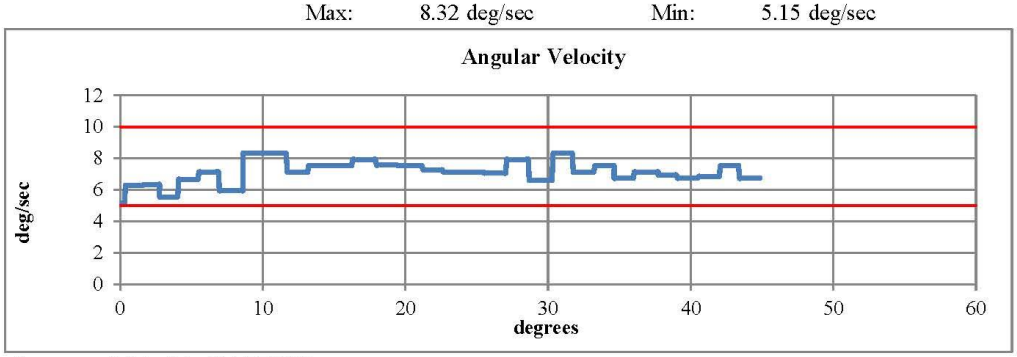
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	17-May-2023
Side Tested:	Left Hip	Time:	11:01
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.4	°C	Pass
Humidity	10	-	70	35	%	Pass
Moment at 30°	0	≤	94.9	93.62	N-m	Pass
Angle at 203 Nm	40	-	50	44.85	deg	Pass
Average Velocity	5	-	10	7.14	deg/sec	Pass



Max: 8.32 deg/sec Min: 5.15 deg/sec



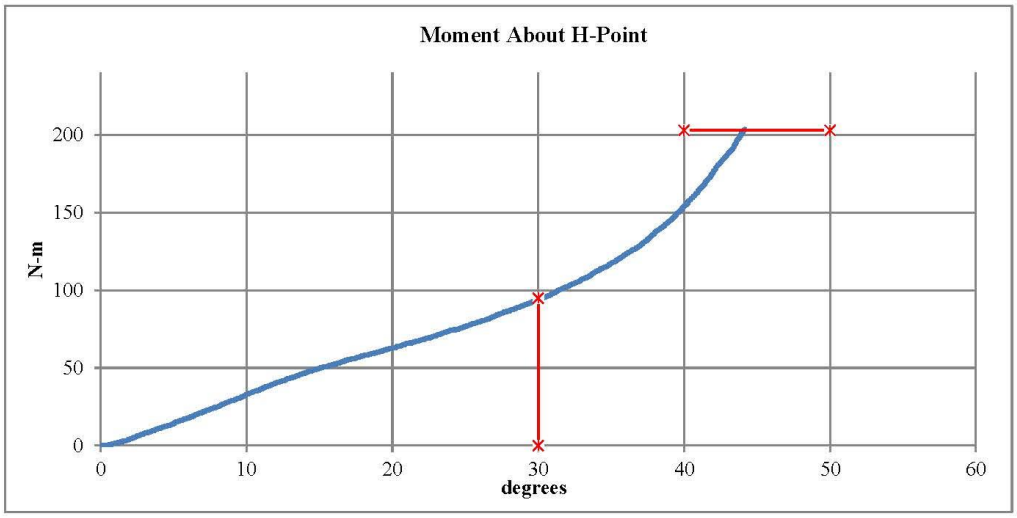
Comments: Pelvis Skin S/N: EU6859

Transportation Research Center Inc.

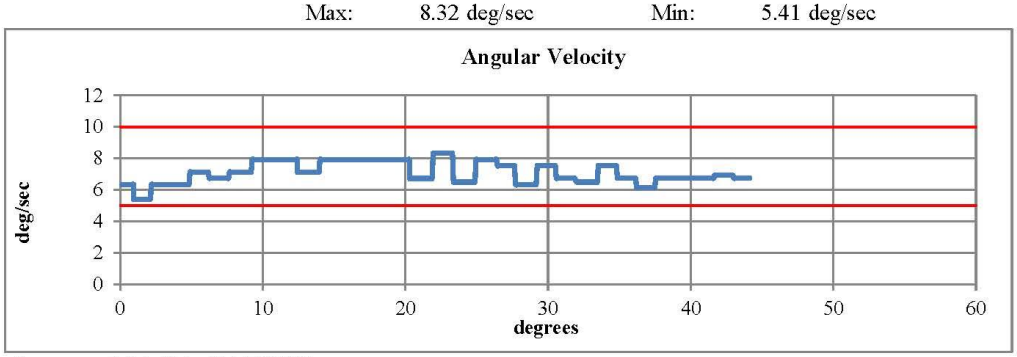
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	17-May-2023
Side Tested:	Right Hip	Time:	11:42
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.4	°C	Pass
Humidity	10	-	70	35	%	Pass
Moment at 30°	0	≤	94.9	94.53	N-m	Pass
Angle at 203 Nm	40	-	50	44.14	deg	Pass
Average Velocity	5	-	10	7.06	deg/sec	Pass



Max: 8.32 deg/sec Min: 5.41 deg/sec



Comments: Pelvis Skin S/N: EU6859

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.086 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,502.39 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 2672

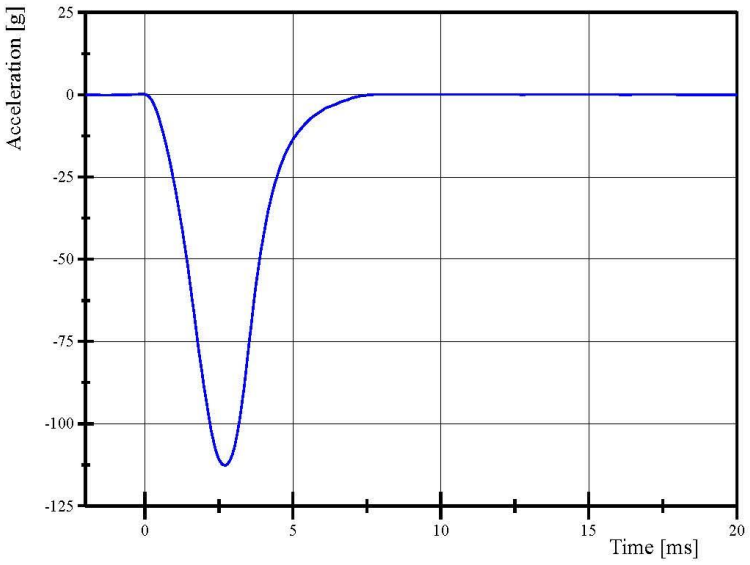
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.17.2023 09:14:39 1770

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at -0.1 ms
Min: -112.7 g at 2.7 ms

Pendulum Force

Filter Class: CFC_600
Max: 11.6 N at -0.1 ms
Min: -5,502.4 N at 2.7 ms

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

05.17.2023 09:15:18 1770

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.085 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,283.48 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 1248

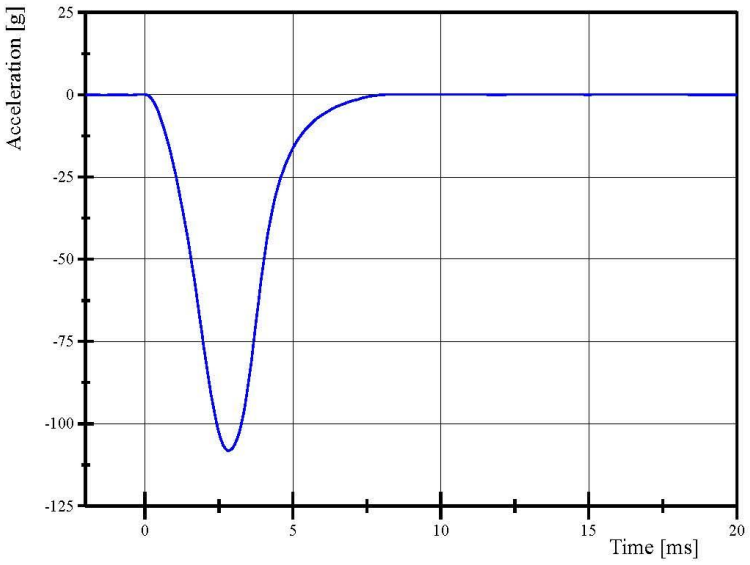
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

05.17.2023 09:18:08 1766

Transportation Research Center Inc.

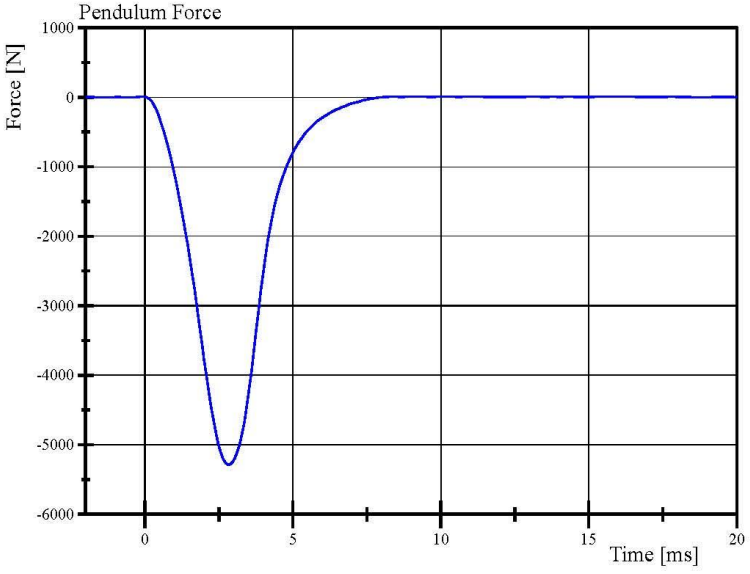
Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 85-1
Test Date: 5/17/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at 9.3 ms
Min: -108.2 g at 2.8 ms

Pendulum Force



Filter Class: CFC_600
Max: 8.8 N at 9.3 ms
Min: -5,283.5 N at 2.8 ms

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

05.17.2023 09:18:36 1766

Post-Test Calibration Sheets

Driver S/N 037

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 037
Calibration No. 86

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	880	Yes
B	Shoulder Pivot Height	505.5 - 520.7	510	Yes
C	H-Point Height	83.8 - 88.9	86	Yes
D	H-Point From Seatback	134.6 - 139.7	137	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	90	Yes
F	Thigh Clearance	139.7 - 154.9	150	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	295	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	337	Yes
J	Elbow Rest Height	190.5 - 210.8	198	Yes
K	Buttock Knee Length	579.1 - 604.5	601	Yes
L	Popliteal Height	429.3 - 454.7	440	Yes
M	Knee Pivot Height	485.1 - 500.4	494	Yes
N	Buttock Popliteal Length	452.1 - 477.5	470	Yes
O	Chest Depth	213.4 - 228.6	223	Yes
P	Foot Length	251.5 - 266.7	264	Yes
V	Shoulder Breadth	421.6 - 436.9	425	Yes
W	Foot Breadth	91.4 - 106.7	96	Yes
Y	Chest Circumference	970.3 - 1000.8	992	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	254.6 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	7.2 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	3.77 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: N/A

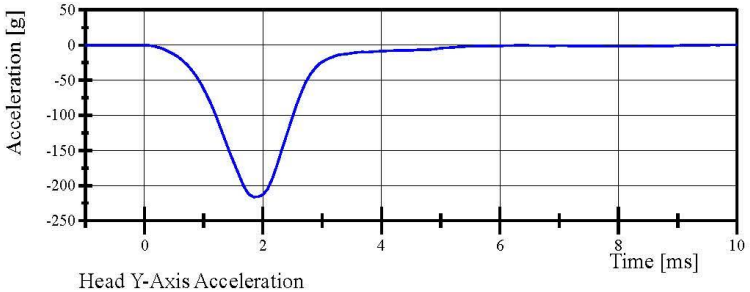
Specification Source: CFR49 Part 572 Subpart E with Polarity in accordance with J211

06.14.2023 14:55:23 614

Transportation Research Center Inc.

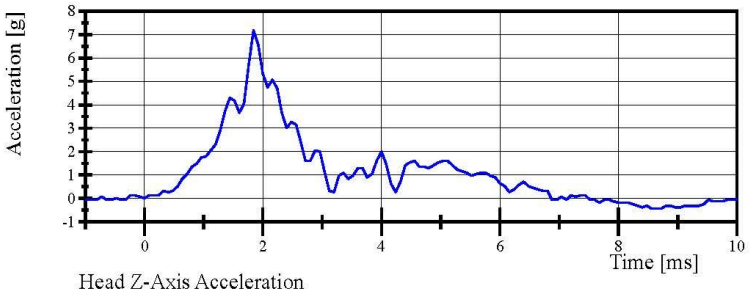
Front Head Drop
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/14/2023

Head X-Axis Acceleration



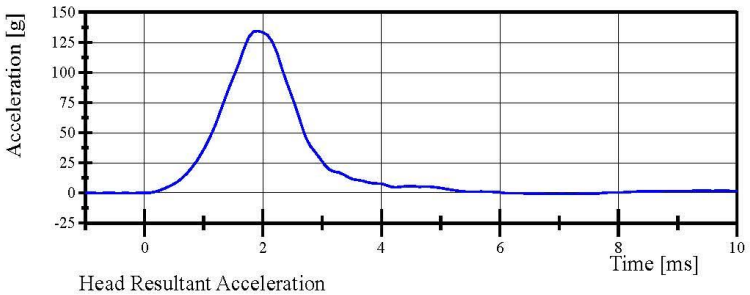
Filter Class: CFC_1000
Max: 0.3 g at 9.9 ms
Min: -216.4 g at 1.8 ms

Head Y-Axis Acceleration



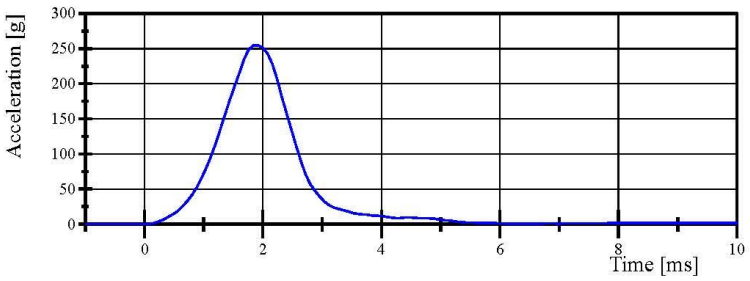
Filter Class: CFC_1000
Max: 7.2 g at 1.8 ms
Min: -0.4 g at 8.6 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 134.4 g at 1.9 ms
Min: -0.9 g at 7.1 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 254.6 g at 1.8 ms
Min: 0.1 g at -1.0 ms

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

06.14.2023 14:55:48 614

Transportation Research Center Inc.

Neck Flexion
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/15/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.921 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	39.5 ms	Yes
Pendulum Acceleration			
at 10ms	(-22.5) - (-27.5) g	-24.00 g	Yes
at 20ms	(-17.6) - (-22.6) g	-21.01 g	Yes
at 30ms	(-12.5) - (-18.5) g	-15.26 g	Yes
> 30ms	>= (-29.0) g	-15.26 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-72.7 °	Yes
Time of Peak	57 - 64 ms	60.2 ms	Yes
Decay to 0°	113 - 128 ms	120.2 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	99.22 N·m	Yes
Time of Peak	47 - 58 ms	52.2 ms	Yes
Decay to 0 N·m	97 - 107 ms	98.8 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 4728

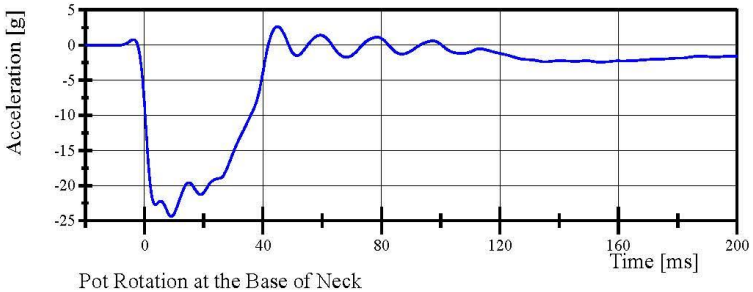
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.15.2023 08:12:41 1864

Transportation Research Center Inc.

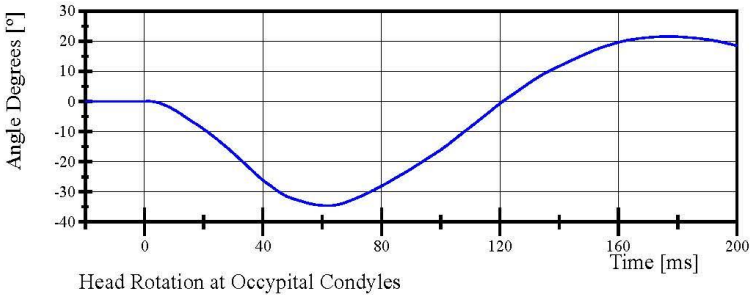
Neck Flexion
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/15/2023

Pendulum Acceleration



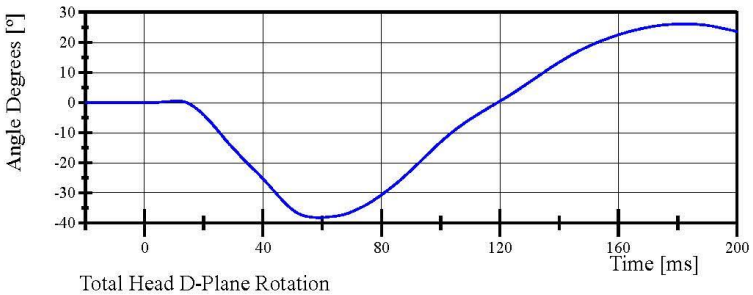
Filter Class: CFC_60
Max: 2.6 g at 44.9 ms
Min: -24.4 g at 9.0 ms

Pot Rotation at the Base of Neck



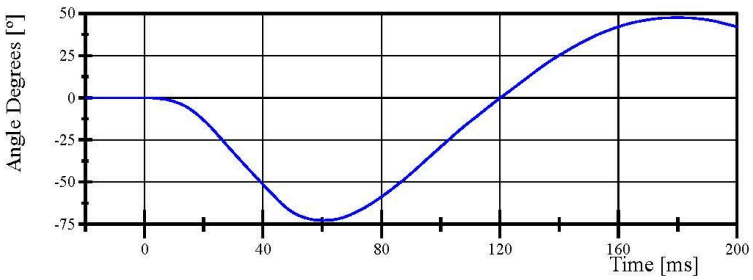
Filter Class: CFC_60
Max: 21.5 ° at 177.0 ms
Min: -34.6 ° at 62.1 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 26.1 ° at 182.7 ms
Min: -38.2 ° at 58.9 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 47.6 ° at 180.0 ms
Min: -72.7 ° at 60.2 ms

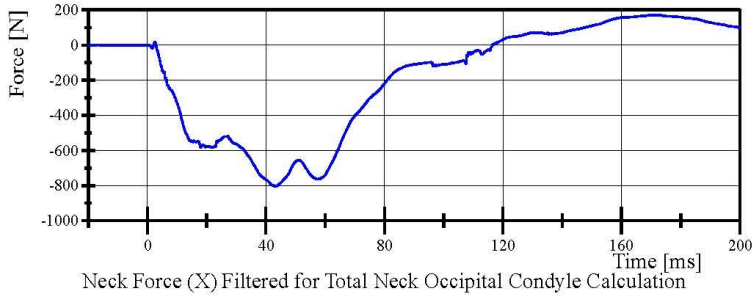
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.15.2023 08:13:09 1864

Transportation Research Center Inc.

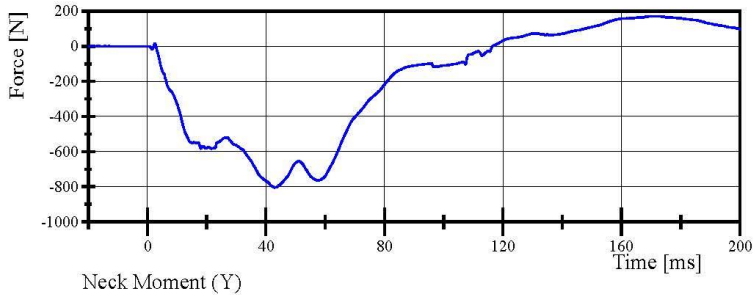
Neck Flexion
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/15/2023

Neck Force (X)



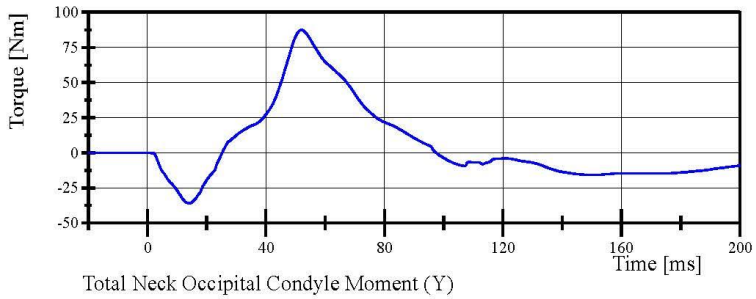
Filter Class: CFC_1000
Max: 171.1 N at 171.0 ms
Min: -803.8 N at 42.9 ms

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



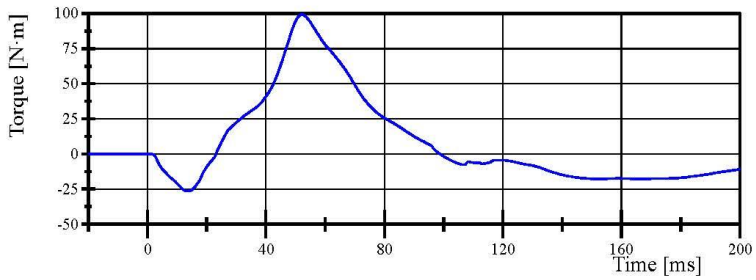
Filter Class: CFC_600
Max: 170.8 N at 171.9 ms
Min: -803.5 N at 43.0 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 87.4 Nm at 52.1 ms
Min: -35.9 Nm at 14.1 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 99.2 N·m at 52.2 ms
Min: -26.5 N·m at 13.6 ms

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

06.15.2023 08:13:09 1864

Transportation Research Center Inc.

Neck Extension
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/15/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.957 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	43.7 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	17.92 g	Yes
at 20ms	14.0 - 19.0 g	16.48 g	Yes
at 30ms	11.0 - 16.0 g	13.61 g	Yes
> 30ms	<= 22.0 g	13.61 g	Yes
Total Head D-Plane Rotation			
Peak	81 - 106 °	95.6 °	Yes
Time of Peak	72 - 82 ms	79.8 ms	Yes
Decay to 0°	147 - 174 ms	162.3 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	(-52.9) - (-80) N·m	-62.18 N·m	Yes
Time of Peak	65 - 79 ms	74.7 ms	Yes
Decay to 0 N·m	120 - 148 ms	144.3 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 4728

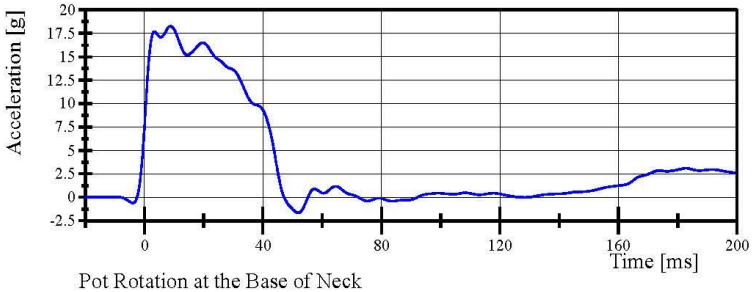
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.15.2023 08:47:21 2012

Transportation Research Center Inc.

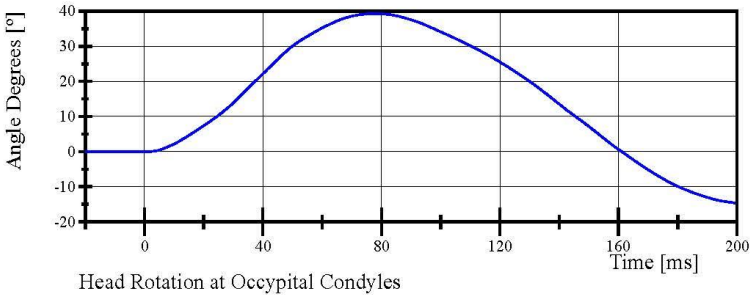
Neck Extension
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/15/2023

Pendulum Acceleration



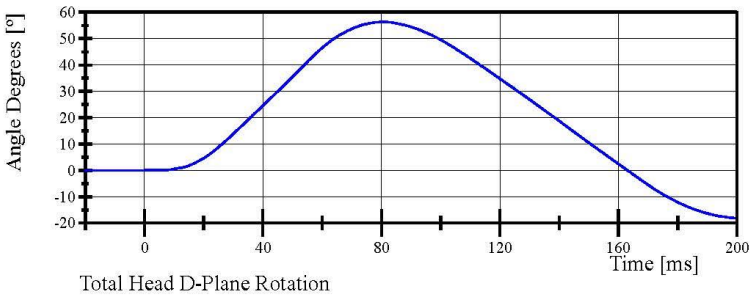
Filter Class: CFC_60
Max: 18.3 g at 8.8 ms
Min: -1.7 g at 52.0 ms

Pot Rotation at the Base of Neck



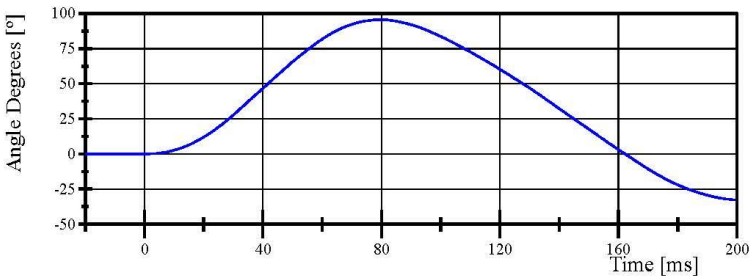
Filter Class: CFC_60
Max: 39.3 ° at 77.7 ms
Min: -14.6 ° at 199.4 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 56.4 ° at 80.6 ms
Min: -18.2 ° at 199.4 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 95.6 ° at 79.8 ms
Min: -32.8 ° at 199.4 ms

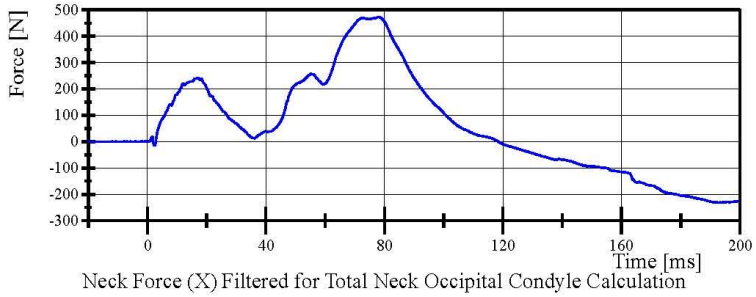
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.15.2023 08:47:36 2012

Transportation Research Center Inc.

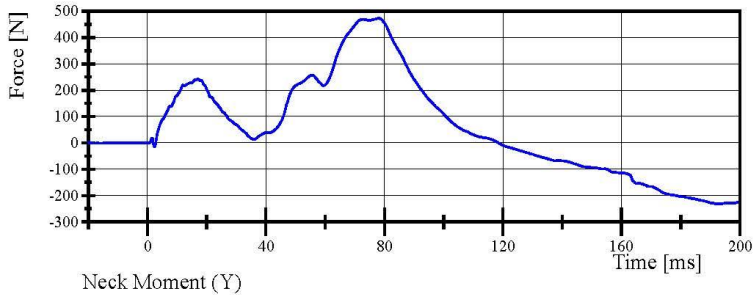
Neck Extension
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/15/2023

Neck Force (X)



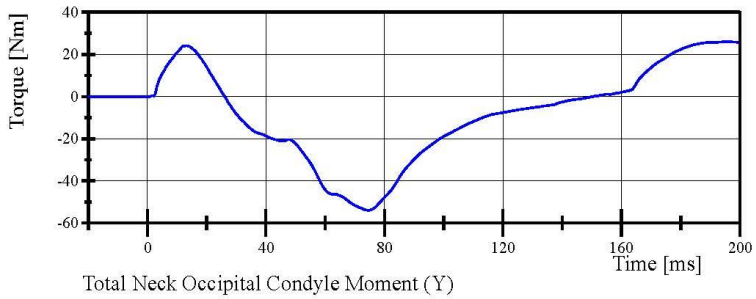
Filter Class: CFC_1000
Max: 473.1 N at 77.8 ms
Min: -231.5 N at 193.8 ms

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



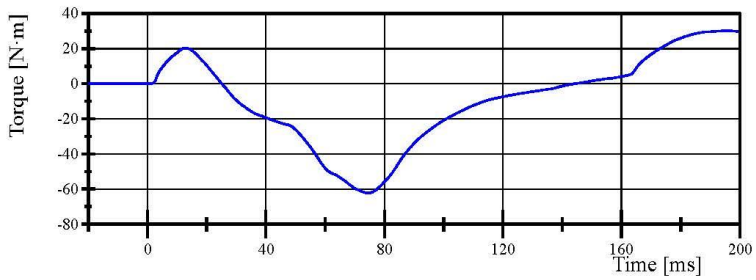
Filter Class: CFC_600
Max: 472.9 N at 77.9 ms
Min: -230.9 N at 192.7 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 26.1 Nm at 195.9 ms
Min: -54.0 Nm at 74.7 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 30.1 N·m at 195.2 ms
Min: -62.2 N·m at 74.7 ms

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

06.15.2023 08:47:36 2012

Transportation Research Center Inc.

Front Thorax
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.599 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,359.0 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-69.34 mm	Yes
Internal Hysteresis	69 - 85 %	69.0 %	Yes

Test meets specifications.

Condition: Used

Comments:
Jacket S/N: ER6442
Rib Set S/N: 02033121A

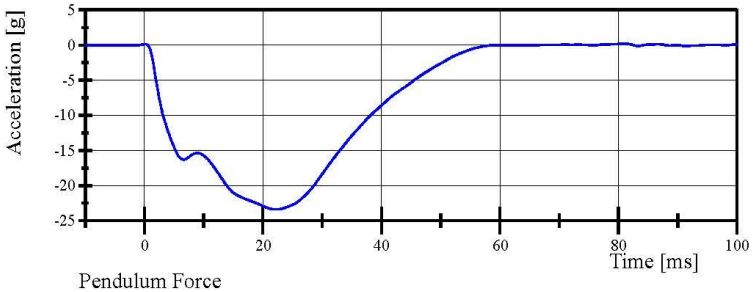
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.14.2023 13:43:35 392

Transportation Research Center Inc.

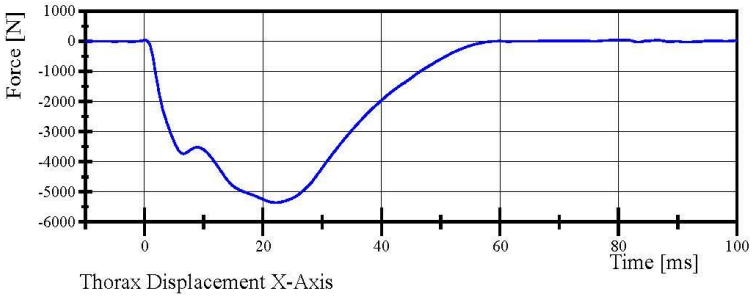
Front Thorax
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/14/2023

Pendulum Acceleration



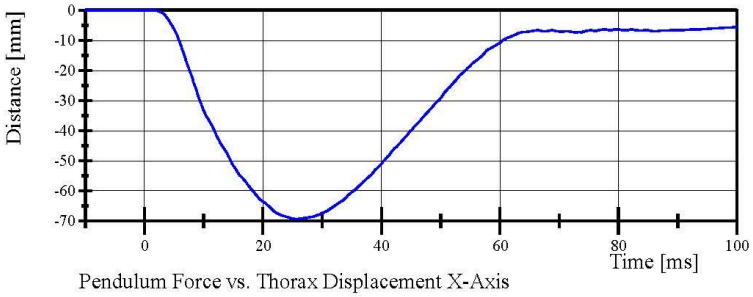
Filter Class: CFC_180
Max: 0.2 g at 81.0 ms
Min: -23.4 g at 22.2 ms

Pendulum Force



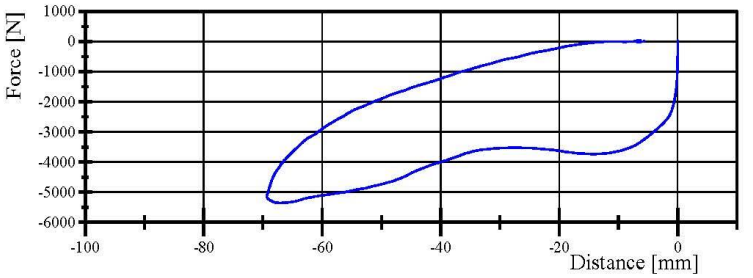
Filter Class: CFC_180
Max: 47.8 N at 81.0 ms
Min: -5,359.0 N at 22.2 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -2.9 ms
Min: -69.3 mm at 25.7 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 47.8 N at -6.6 mm
Min: -5,359.0 N at -67.1 mm

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

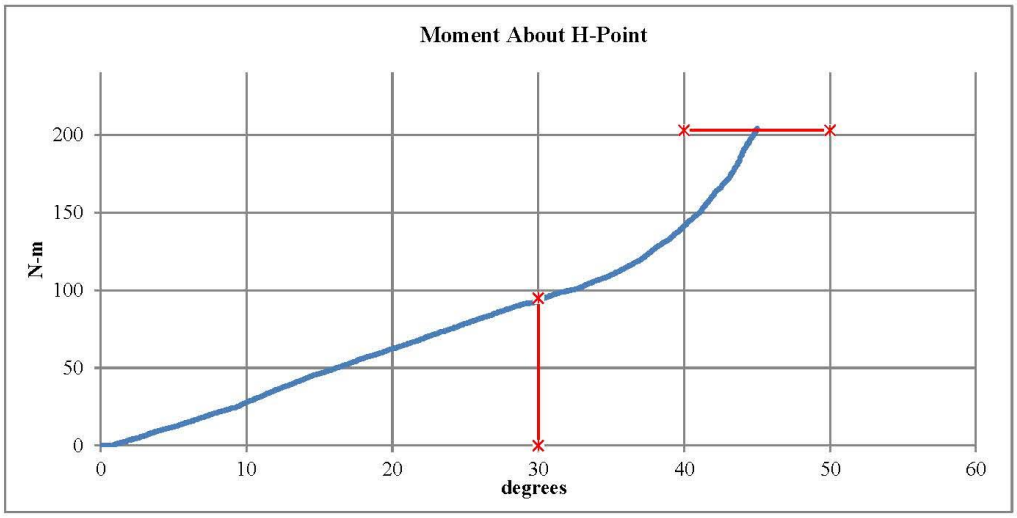
06.14.2023 13:44:08 392

Transportation Research Center Inc.

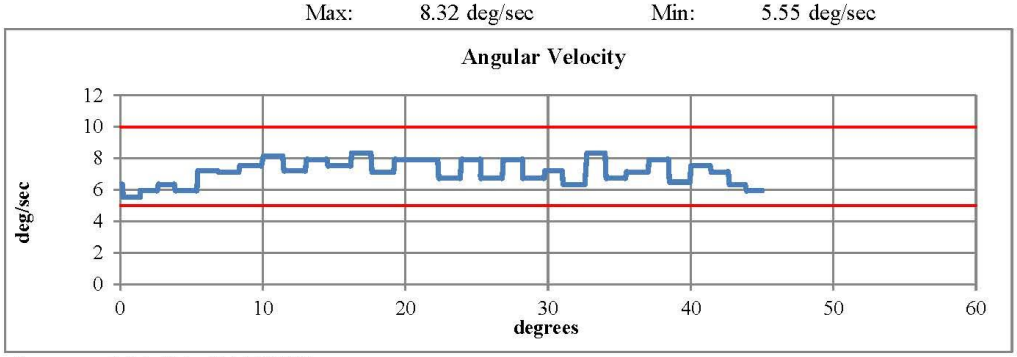
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	15-Jun-2023
Side Tested:	Left Hip	Time:	7:59
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.2	°C	Pass
Humidity	10	-	70	52	%	Pass
Moment at 30°	0	≤	94.9	93.62	N-m	Pass
Angle at 203 Nm	40	-	50	45.01	deg	Pass
Average Velocity	5	-	10	7.13	deg/sec	Pass



Max: 8.32 deg/sec Min: 5.55 deg/sec



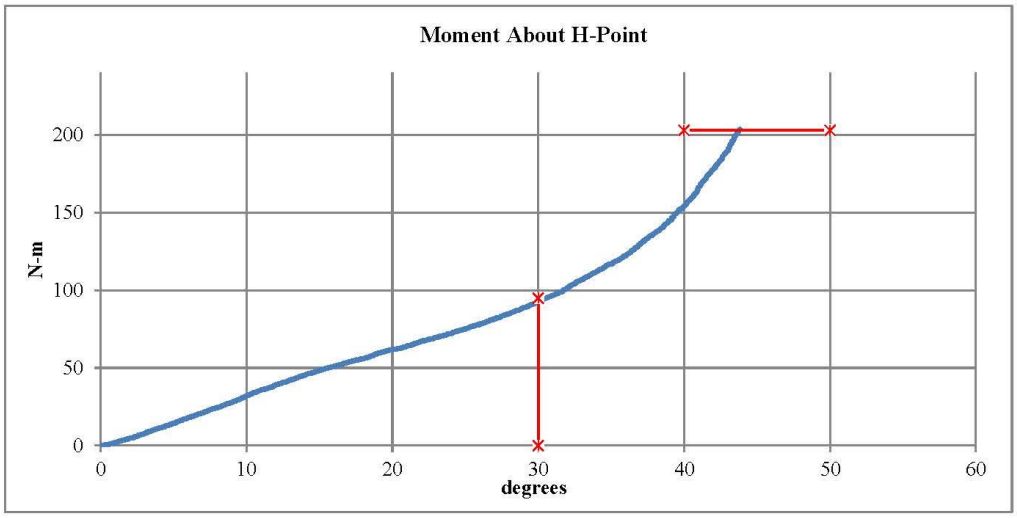
Comments: Pelvis Skin S/N: EU6859

Transportation Research Center Inc.

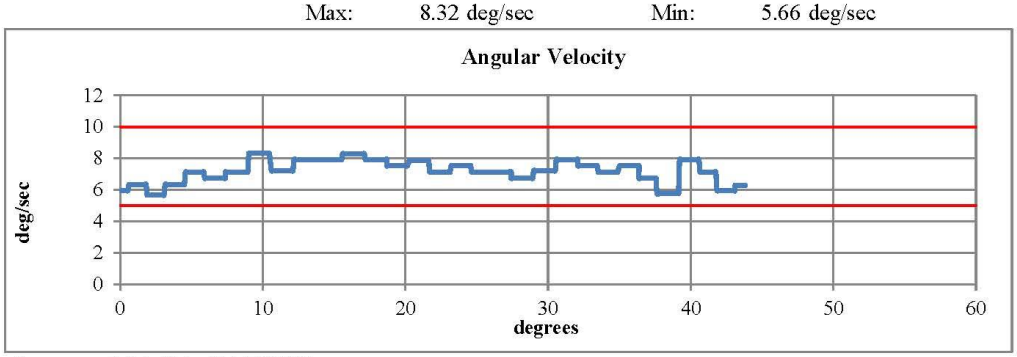
Hybrid III 50th Male Hip Range of Motion

Serial Number:	037	Date:	15-Jun-2023
Side Tested:	Right Hip	Time:	8:37
Test Number:	1		

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.1	°C	Pass
Humidity	10	-	70	52	%	Pass
Moment at 30°	0	≤	94.9	92.71	N-m	Pass
Angle at 203 Nm	40	-	50	43.82	deg	Pass
Average Velocity	5	-	10	7.17	deg/sec	Pass



Max: 8.32 deg/sec Min: 5.66 deg/sec



Comments: Pelvis Skin S/N: EU6859

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 86-2
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.092 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,352.88 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 2672

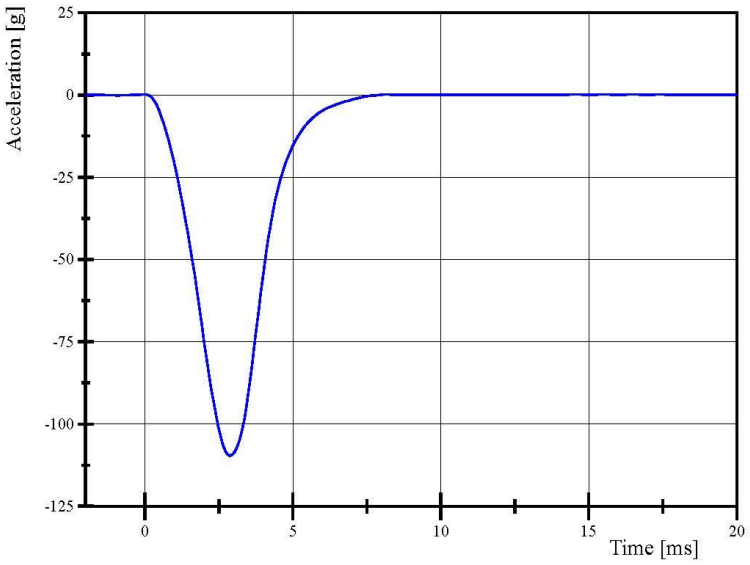
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.14.2023 14:35:51 1755

Transportation Research Center Inc.

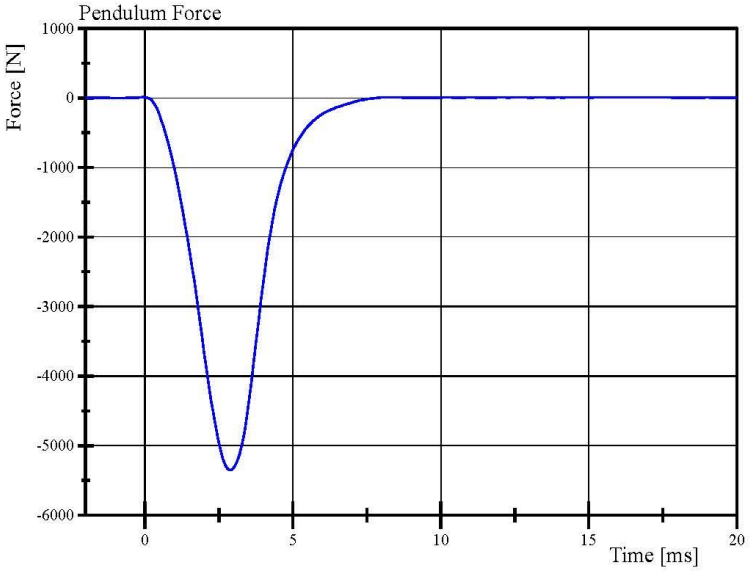
Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 86-2
Test Date: 6/14/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at 0.0 ms
Min: -109.6 g at 2.9 ms

Pendulum Force



Filter Class: CFC_600
Max: 8.1 N at 0.0 ms
Min: -5,352.9 N at 2.9 ms

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

06.14.2023 14:36:26 1755

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	54 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.092 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,293.16 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: 1248

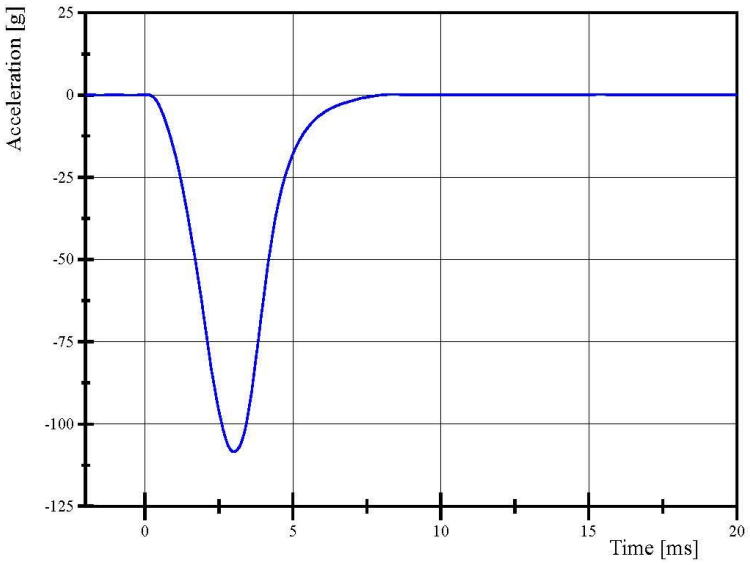
Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211

06.14.2023 14:00:44 1752

Transportation Research Center Inc.

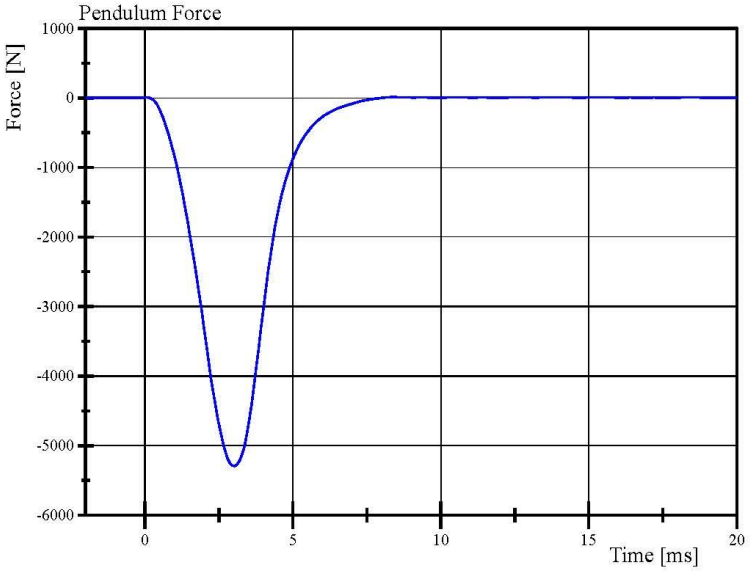
Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 86-1
Test Date: 6/14/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 0.2 g at 8.4 ms
Min: -108.4 g at 3.0 ms

Pendulum Force



Filter Class: CFC_600
Max: 9.2 N at 8.4 ms
Min: -5,293.2 N at 3.0 ms

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

06.14.2023 14:01:32 1752

Pre-Test Calibration Sheets

Passenger S/N DH1659

Transportation Research Center Inc.
572O HIII 5th Dummy
External Dimensions
Serial No. DH1659 Calibration No. 11

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	130	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	198	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	360	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	185	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	305	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	869	Yes
Z	Waist Circumference	759.5 - 789.9	776	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 11-6
Test Date: 5/24/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 ºC	21.3 ºC	Yes
Relative Humidity	10 - 70 %	51 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	253.6 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	3.8 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	1.36 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: DU2864

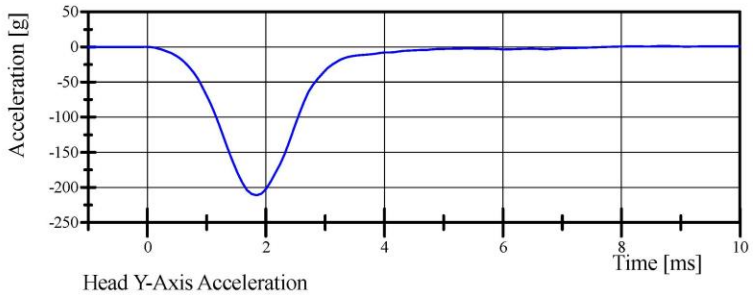
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

05.24.2023 17:49:58 614

Transportation Research Center Inc.

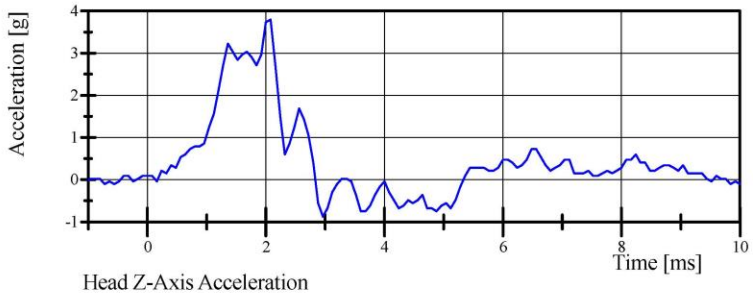
Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 11-6
Test Date: 5/24/2023

Head X-Axis Acceleration



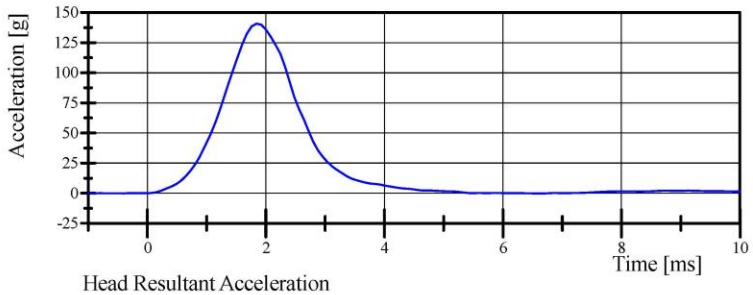
Filter Class: CFC_1000
Max: 1.4 g at 8.7 ms
Min: -211.0 g at 1.8 ms

Head Y-Axis Acceleration



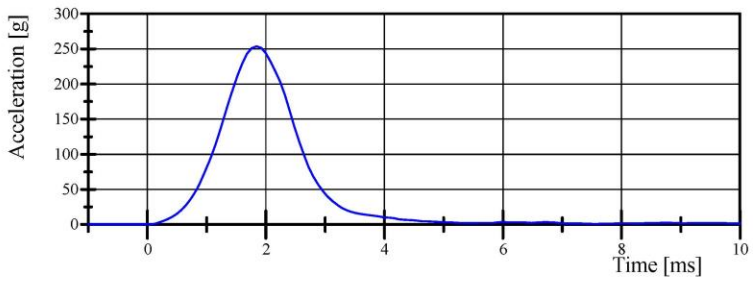
Filter Class: CFC_1000
Max: 3.8 g at 2.1 ms
Min: -0.9 g at 3.0 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 140.7 g at 1.8 ms
Min: -0.2 g at 6.6 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 253.6 g at 1.8 ms
Min: 0.1 g at -0.9 ms

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

05.24.2023 17:50:54 614

Transportation Research Center Inc.

Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.035 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.32 m/s	Yes
Change at 20ms	(-4.0) - (-5.0) m/s	-4.49 m/s	Yes
Change at 30ms	(-5.8) - (-7.0) m/s	-6.43 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-80.9 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	75.3 N·m	Yes
Decay to 10 N·m	80 - 100 ms	88.1 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

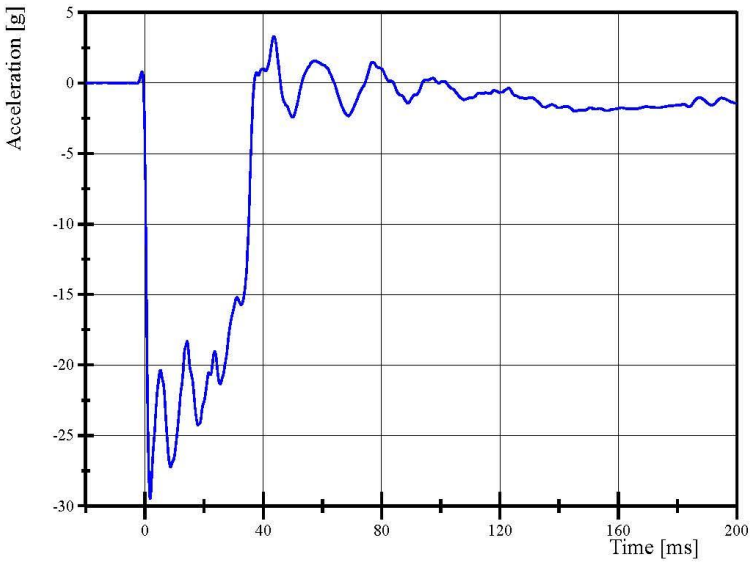
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

05.19.2023 10:00:08 1849

Transportation Research Center Inc.

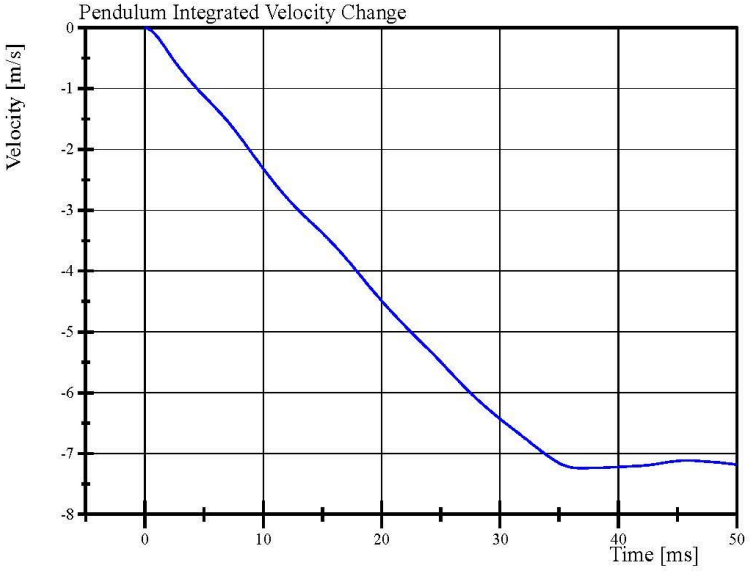
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Pendulum Acceleration



Filter Class: CFC_180
Max: 3.3 g at 43.6 ms
Min: -29.5 g at 1.8 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -7.2 m/s at 37.0 ms

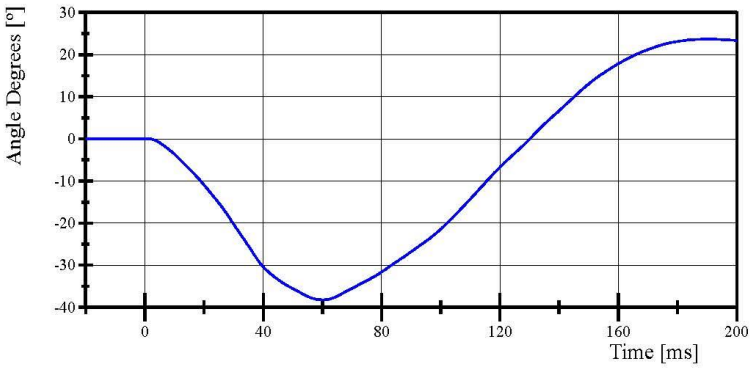
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.19.2023 10:00:37 1849

Transportation Research Center Inc.

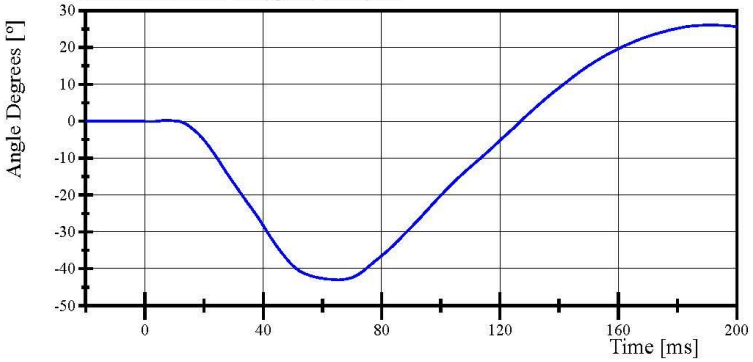
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Pot Rotation at the Base of Neck



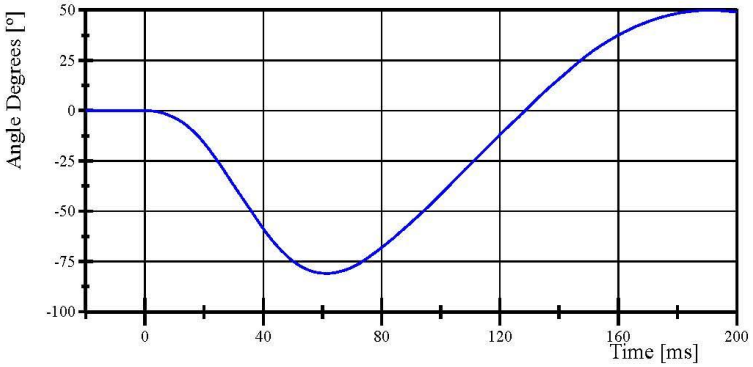
Filter Class: CFC_60
Max: 23.7 ° at 190.7 ms
Min: -38.2 ° at 60.2 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 26.1 ° at 191.2 ms
Min: -43.0 ° at 65.4 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 49.8 ° at 190.9 ms
Min: -80.9 ° at 61.5 ms

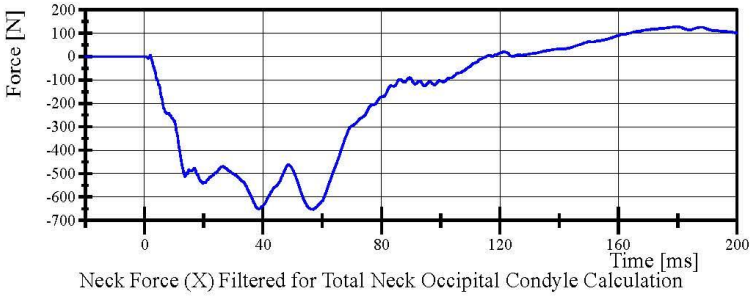
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.19.2023 10:00:37 1849

Transportation Research Center Inc.

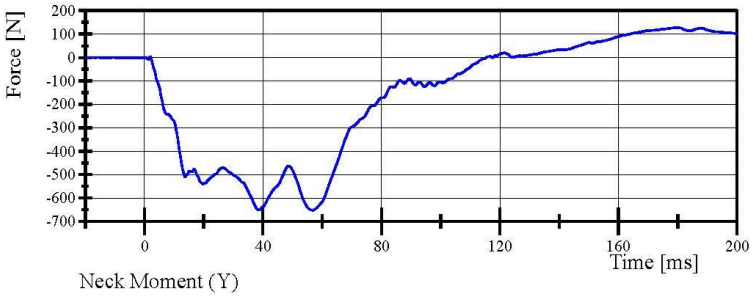
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Neck Force (X)



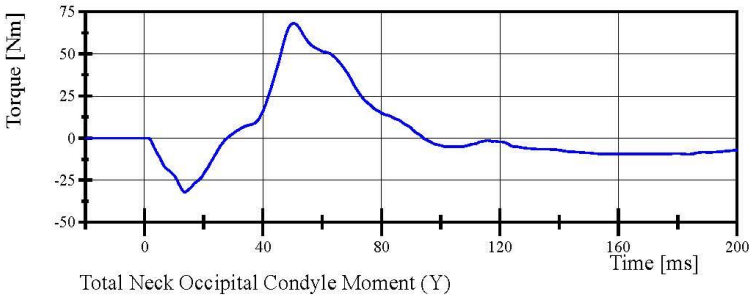
Filter Class: CFC_1000
Max: 128.1 N at 179.4 ms
Min: -653.3 N at 56.9 ms

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



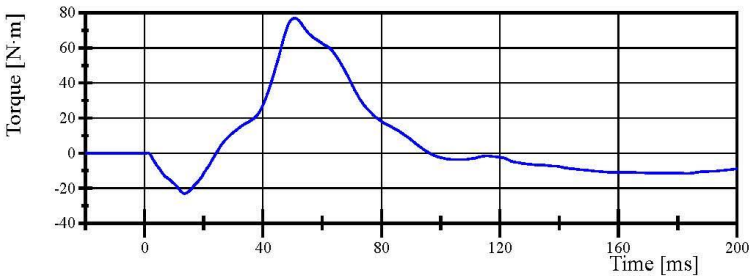
Filter Class: CFC_600
Max: 128.0 N at 179.6 ms
Min: -652.6 N at 56.9 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 68.1 Nm at 50.4 ms
Min: -32.1 Nm at 13.7 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 76.9 N·m at 50.7 ms
Min: -23.0 N·m at 13.6 ms

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

05.19.2023 10:00:38 1849

Transportation Research Center Inc.

Neck Extension
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	44 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.012 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.71 m/s	Yes
Change at 20ms	3.1 - 3.9 m/s	3.45 m/s	Yes
Change at 30ms	4.6 - 5.6 m/s	5.08 m/s	Yes
Total Head D-Plane Rotation	99 - 114 °	104.8 °	Yes
Total Neck Occipital Condyles Moment Between 99° and 114° Rotation	(-53) - (-65) N·m	-55.0 N·m	Yes
Decay to -10 N·m	94 - 114 ms	105.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

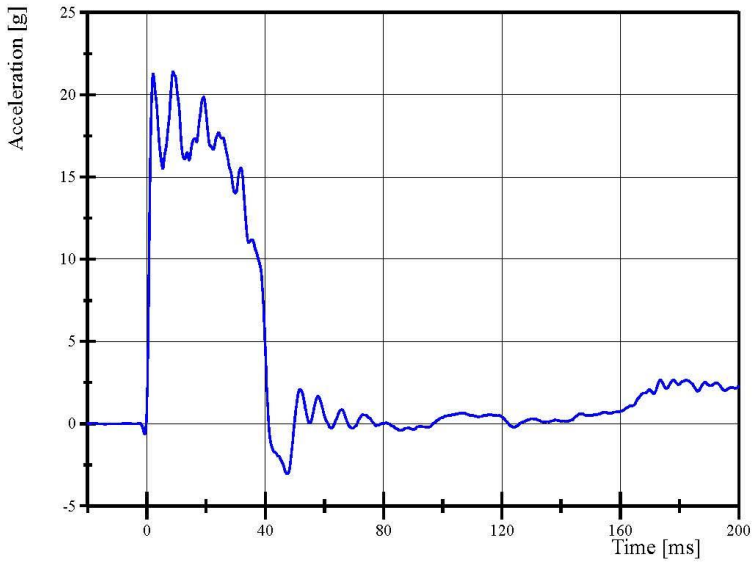
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.19.2023 10:32:06 1998

Transportation Research Center Inc.

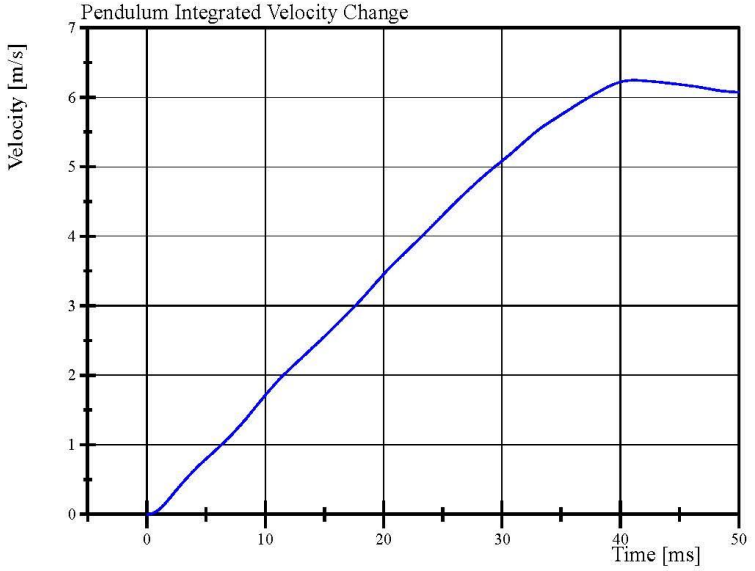
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Pendulum Acceleration



Filter Class: CFC_180
Max: 21.4 g at 8.9 ms
Min: -3.0 g at 47.6 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 6.2 m/s at 41.2 ms
Min: 0.0 m/s at 0.0 ms

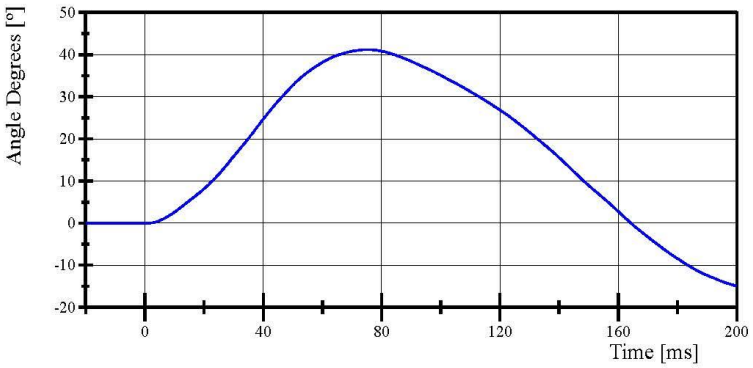
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.19.2023 10:32:25 1998

Transportation Research Center Inc.

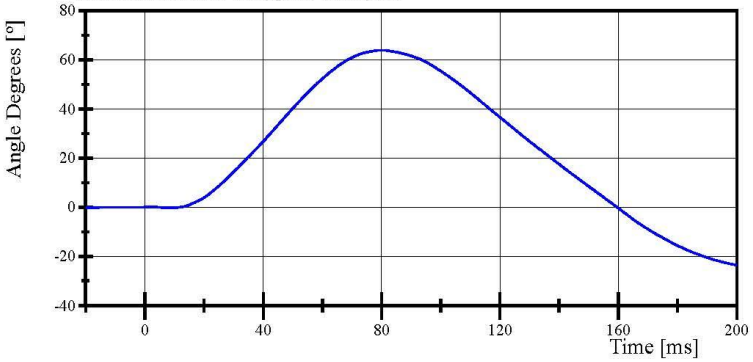
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Pot Rotation at the Base of Neck



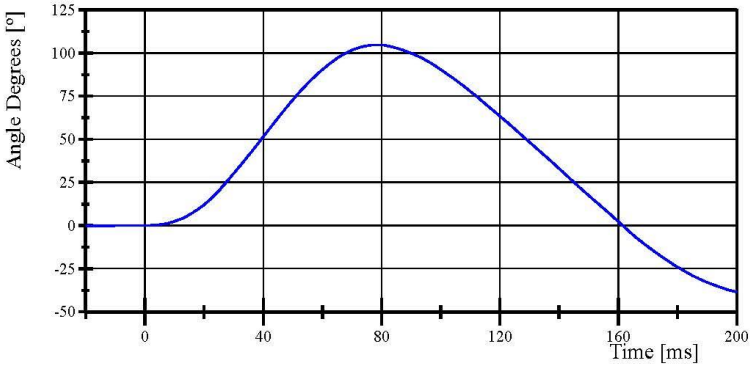
Filter Class: CFC_60
Max: 41.2 ° at 75.1 ms
Min: -15.0 ° at 200.0 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 63.9 ° at 80.0 ms
Min: -23.6 ° at 200.0 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 104.8 ° at 78.9 ms
Min: -38.5 ° at 200.0 ms

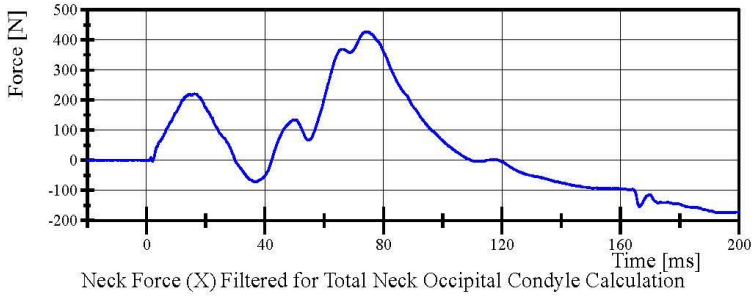
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.19.2023 10:32:25 1998

Transportation Research Center Inc.

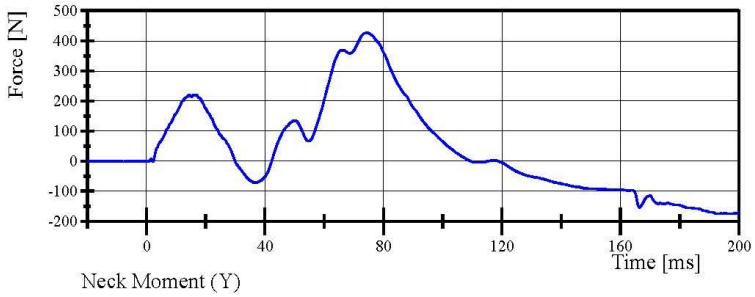
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Neck Force (X)



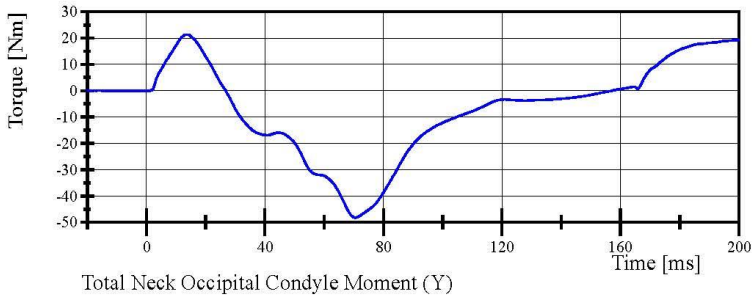
Filter Class: CFC_1000
Max: 427.6 N at 74.2 ms
Min: -175.5 N at 192.3 ms

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



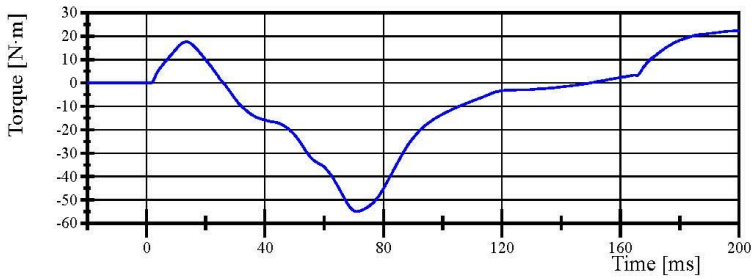
Filter Class: CFC_600
Max: 427.2 N at 74.4 ms
Min: -174.8 N at 192.4 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 21.3 Nm at 13.8 ms
Min: -48.2 Nm at 70.6 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 22.4 N·m at 200.0 ms
Min: -55.0 N·m at 71.0 ms

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

05.19.2023 10:32:26 1998

Transportation Research Center Inc.

Front Thorax
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/18/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.817 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,343.9 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,439.9 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-50.7 mm	Yes
Internal Hysteresis	69 - 85 %	77.6 %	Yes

Test meets specifications.

Condition: Used

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

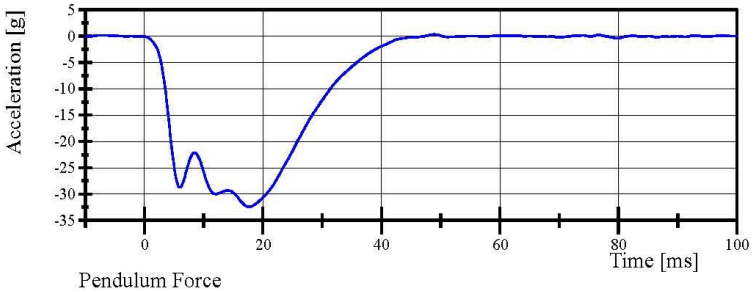
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

05.18.2023 13:13:48 394

Transportation Research Center Inc.

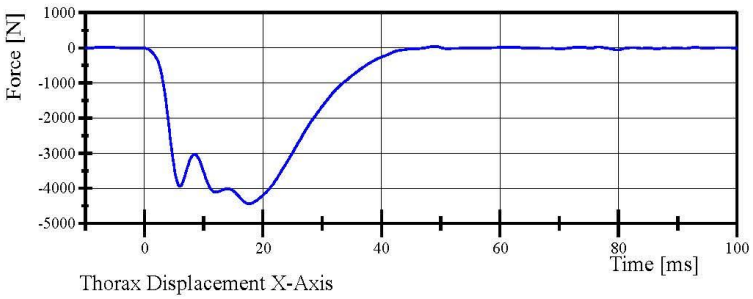
Front Thorax
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/18/2023

Pendulum Acceleration



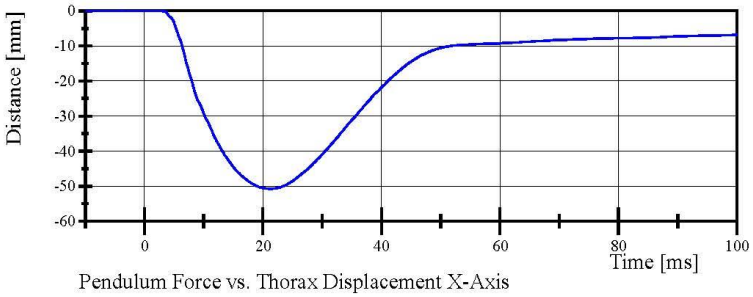
Filter Class: CFC_180
Max: 0.3 g at 49.0 ms
Min: -32.4 g at 17.7 ms

Pendulum Force



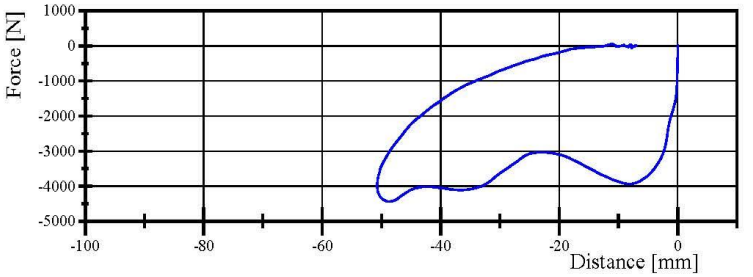
Filter Class: CFC_180
Max: 46.1 N at 49.0 ms
Min: -4,439.9 N at 17.7 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -3.8 ms
Min: -50.7 mm at 21.3 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 46.1 N at -11.1 mm
Min: -4,439.9 N at -48.7 mm

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

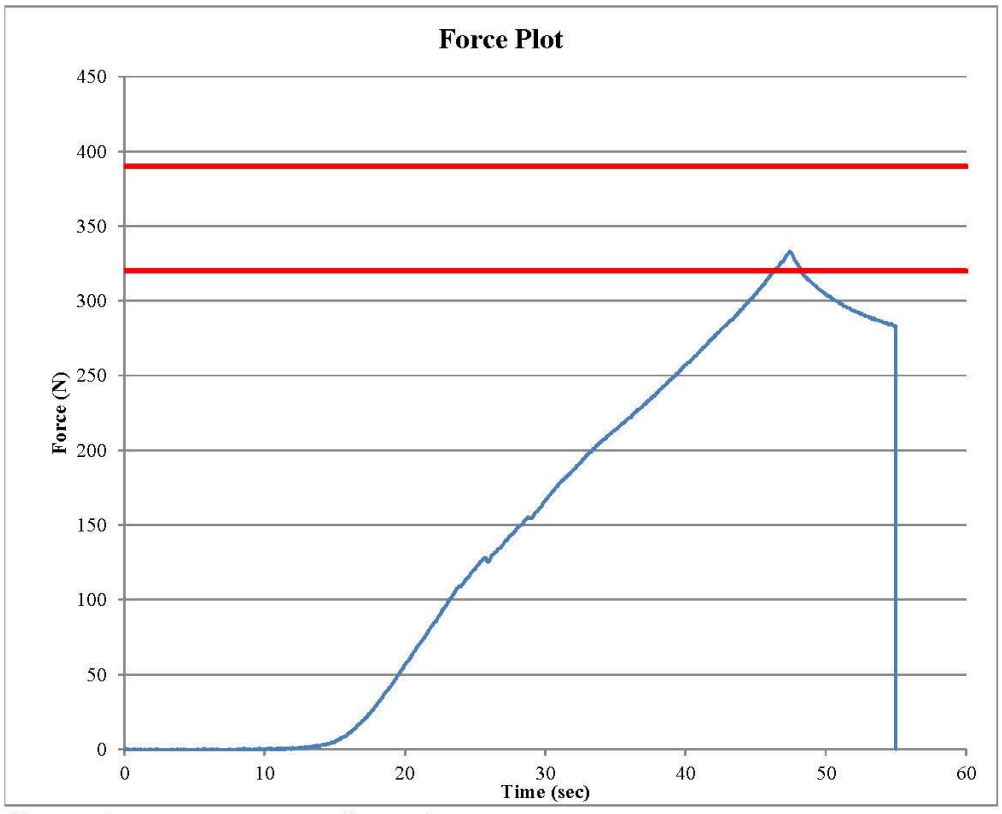
05.18.2023 13:15:33 394

Transportation Research Center Inc.

Hybrid III Small Female Torso Flexion

Customer:	NHTSA		
Serial Number:	DH1659	Date:	5/19/2023
Test Number:	1	Time:	7:59

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.1	°C	Pass
Humidity	10	-	70	41	%	Pass
Average Angular Rate	0.5	-	1.5	0.84	deg/sec	Pass
Initial Angle	0	-	20	17.82	deg	Pass
Peak Force at 45.63°	320	-	390	333.1	N	Pass
Final Angle	-8	-	8	2.78	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. 11-1
Test Date: 5/19/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.095 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,788.5 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: ED6729

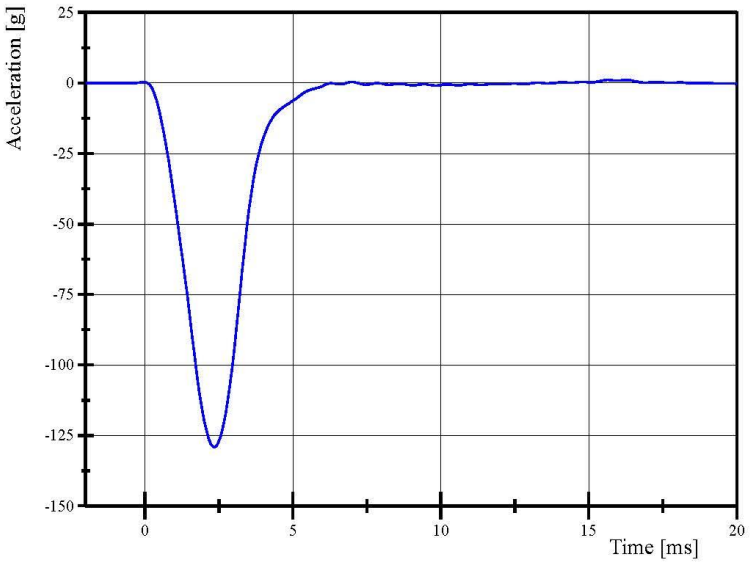
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.19.2023 08:25:35 1848

Transportation Research Center Inc.

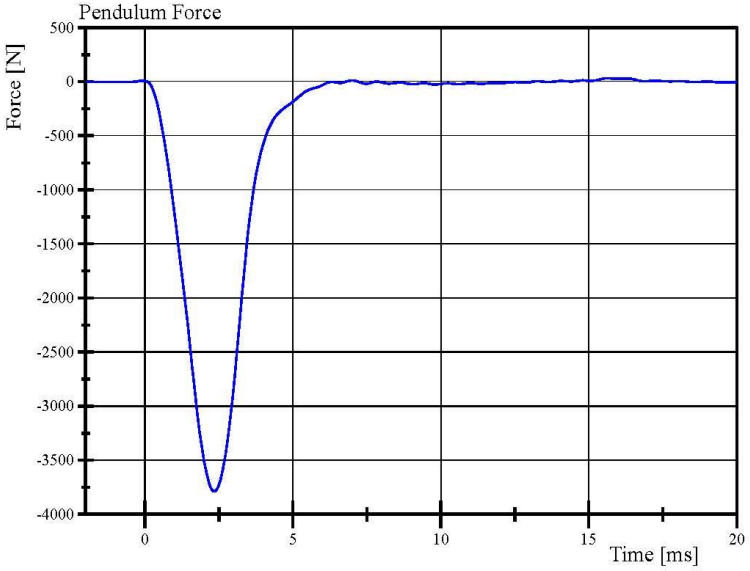
Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.1 g at 15.6 ms
Min: -129.2 g at 2.3 ms

Pendulum Force



Filter Class: CFC_600
Max: 32.4 N at 15.6 ms
Min: -3,788.5 N at 2.3 ms

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

05.19.2023 08:29:17 1848

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	44 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.094 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,820.9 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: EC5852

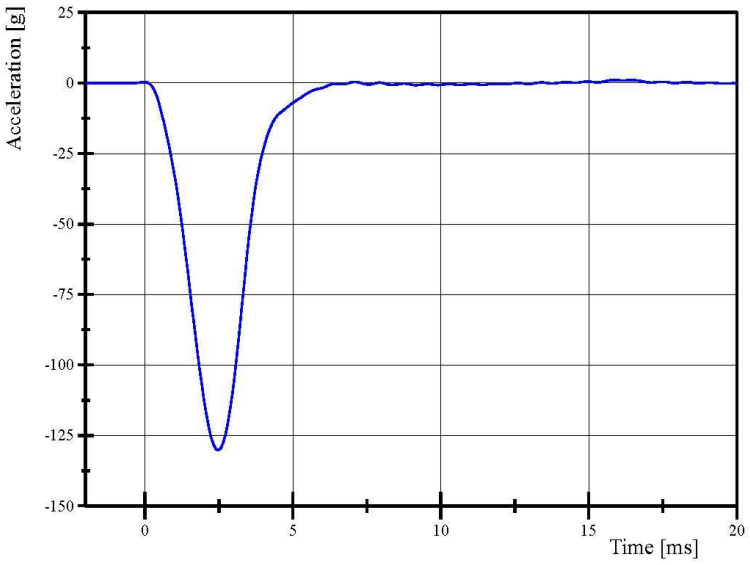
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

05.19.2023 08:31:40 1847

Transportation Research Center Inc.

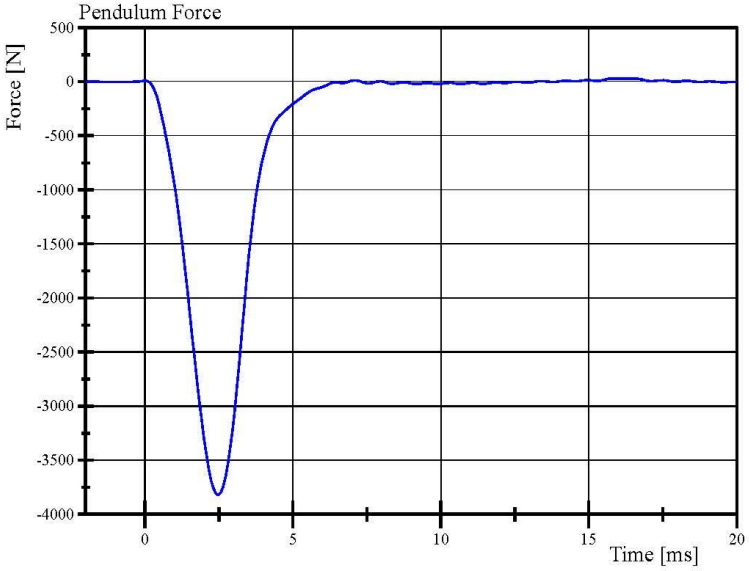
Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 11-1
Test Date: 5/19/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.1 g at 15.8 ms
Min: -130.3 g at 2.5 ms

Pendulum Force



Filter Class: CFC_600
Max: 31.3 N at 15.8 ms
Min: -3,820.9 N at 2.5 ms

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

05.19.2023 08:32:07 1847

Post-Test Calibration Sheets

Passenger S/N DH1659

Transportation Research Center Inc.
572O HIII 5th Dummy
External Dimensions
Serial No. DH1659 Calibration No. 12

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	130	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	198	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	360	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	185	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	305	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	869	Yes
Z	Waist Circumference	759.5 - 789.9	776	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	268.8 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-3.6 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	1.37 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head Skin S/N: DU2864

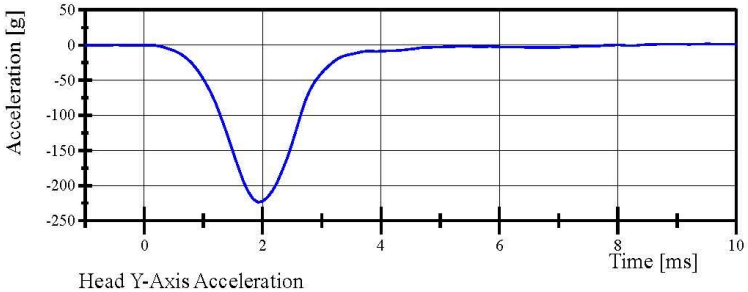
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

06.14.2023 09:51:57 612

Transportation Research Center Inc.

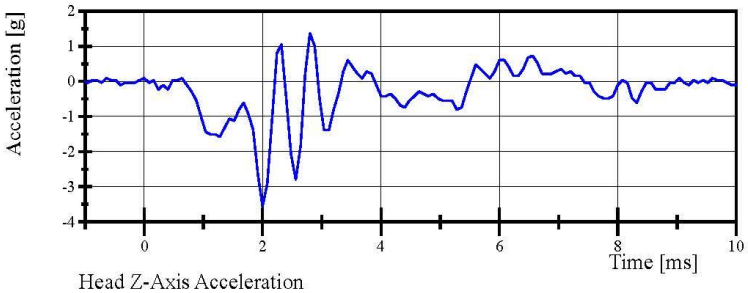
Front Head Drop
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Head X-Axis Acceleration



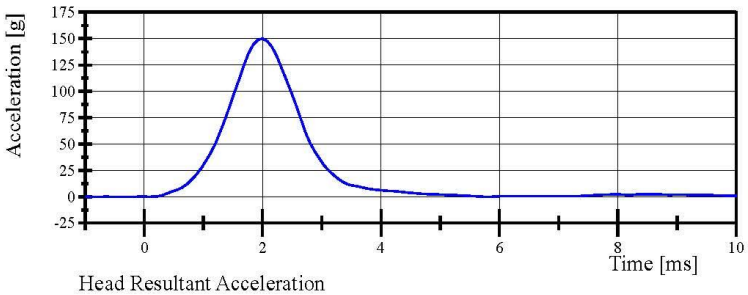
Filter Class: CFC_1000
Max: 1.6 g at 9.5 ms
Min: -223.7 g at 1.9 ms

Head Y-Axis Acceleration



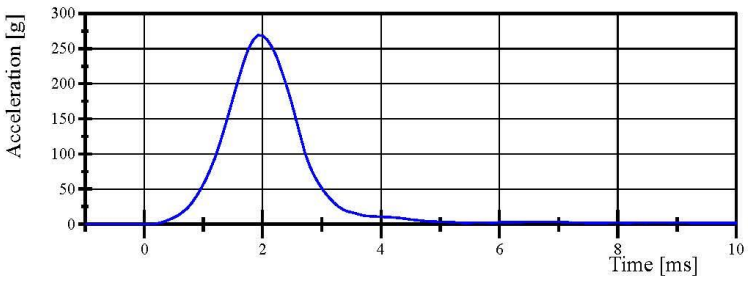
Filter Class: CFC_1000
Max: 1.4 g at 2.8 ms
Min: -3.6 g at 2.0 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 150.2 g at 2.0 ms
Min: -0.0 g at -1.0 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 268.8 g at 1.9 ms
Min: 0.0 g at -0.6 ms

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

06.14.2023 09:52:23 612

Transportation Research Center Inc.

Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 12-2
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.056 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.29 m/s	Yes
Change at 20ms	(-4.0) - (-5.0) m/s	-4.54 m/s	Yes
Change at 30ms	(-5.8) - (-7.0) m/s	-6.49 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-80.0 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	72.4 N·m	Yes
Decay to 10 N·m	80 - 100 ms	87.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

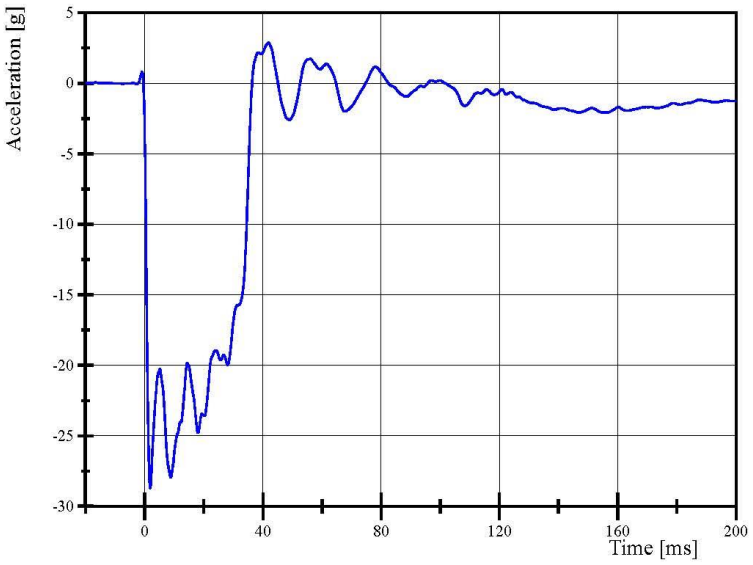
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

06.14.2023 11:16:48 1848

Transportation Research Center Inc.

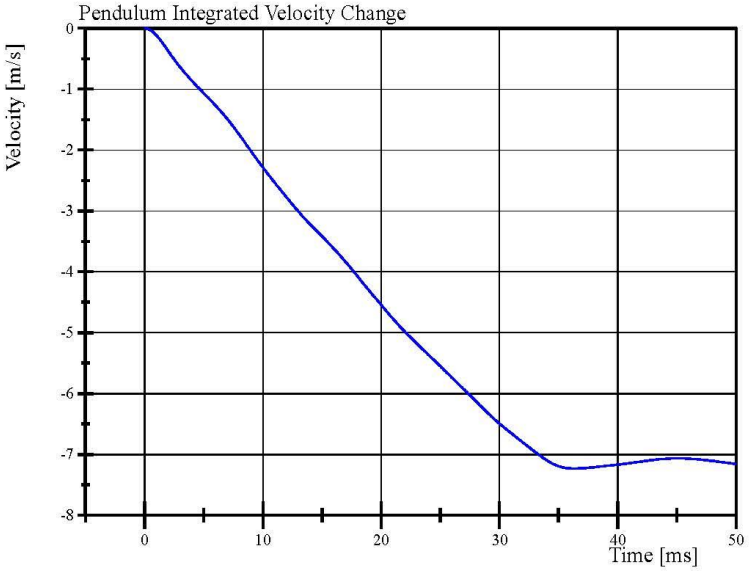
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 12-2
Test Date: 6/14/2023

Pendulum Acceleration



Filter Class: CFC_180
Max: 2.9 g at 41.9 ms
Min: -28.7 g at 1.9 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -7.2 m/s at 36.4 ms

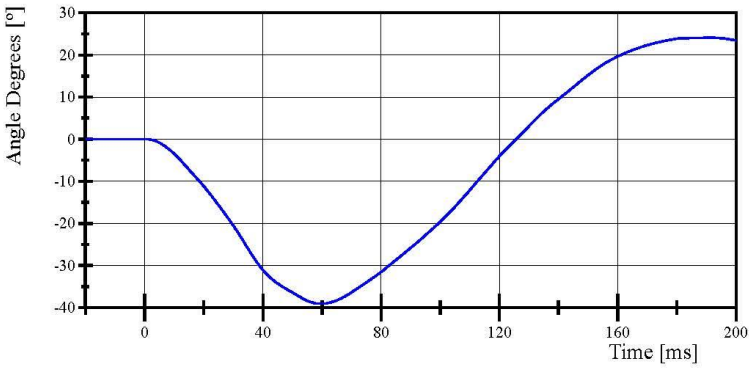
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.14.2023 11:17:46 1848

Transportation Research Center Inc.

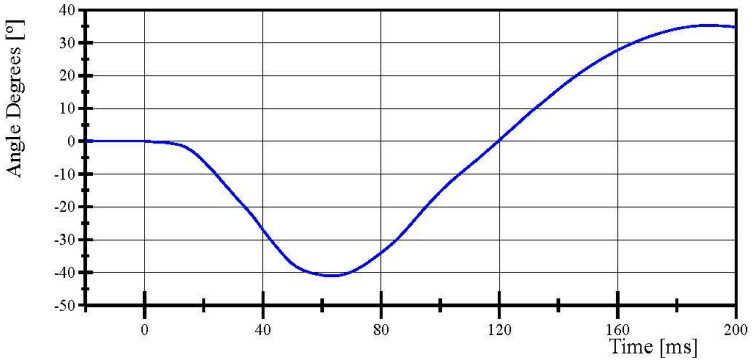
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 12-2
Test Date: 6/14/2023

Pot Rotation at the Base of Neck



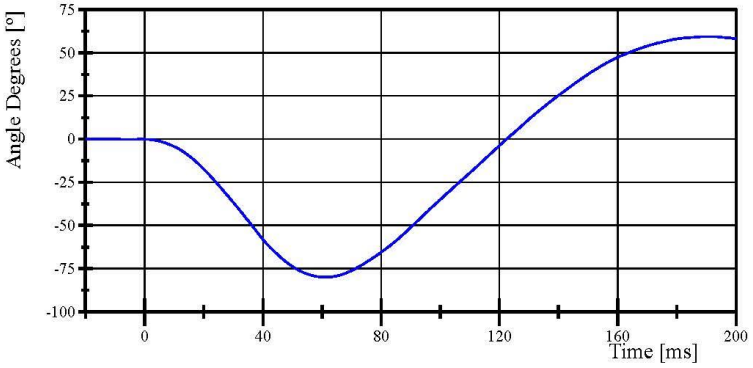
Filter Class: CFC_60
Max: 24.1 ° at 191.4 ms
Min: -39.1 ° at 59.6 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 35.3 ° at 190.7 ms
Min: -41.1 ° at 63.1 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 59.4 ° at 191.0 ms
Min: -80.0 ° at 61.1 ms

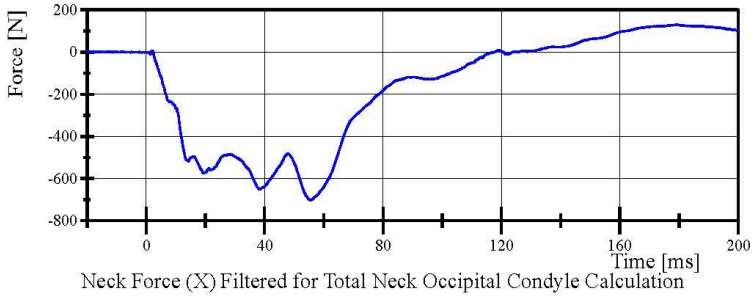
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.14.2023 11:17:46 1848

Transportation Research Center Inc.

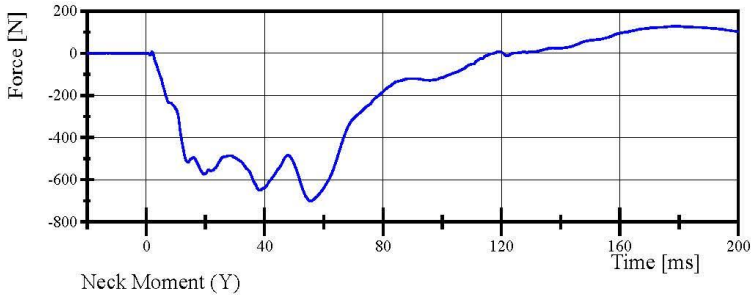
Neck Flexion
HIII 5th Serial No. DH1659 Certification No. 12-2
Test Date: 6/14/2023

Neck Force (X)



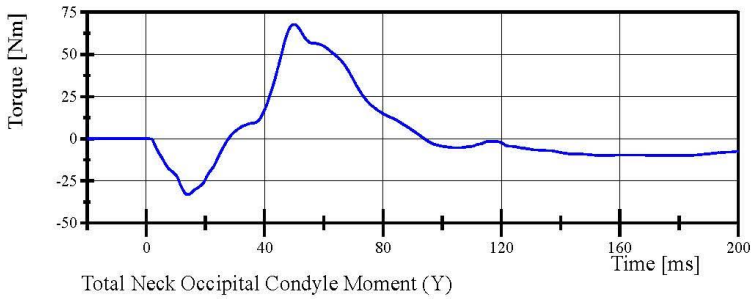
Filter Class: CFC_1000
Max: 130.4 N at 179.1 ms
Min: -702.0 N at 55.4 ms

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



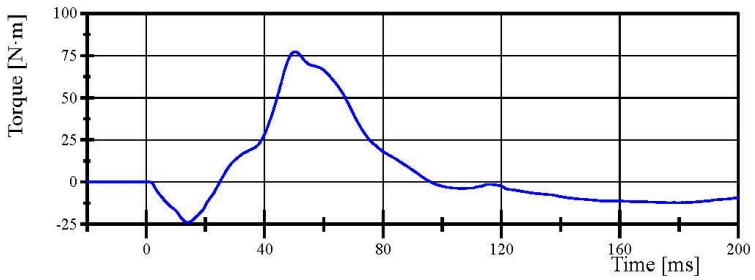
Filter Class: CFC_600
Max: 129.8 N at 179.0 ms
Min: -701.5 N at 55.4 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 67.8 Nm at 50.0 ms
Min: -33.2 Nm at 14.2 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 77.2 N·m at 50.3 ms
Min: -24.0 N·m at 14.2 ms

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

06.14.2023 11:17:47 1848

Transportation Research Center Inc.

Neck Extension
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 ºC	20.8 ºC	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.013 m/s	Yes
Pendulum Integrated Velocity			
Change at 10ms	1.5 - 1.9 m/s	1.68 m/s	Yes
Change at 20ms	3.1 - 3.9 m/s	3.41 m/s	Yes
Change at 30ms	4.6 - 5.6 m/s	5.00 m/s	Yes
Total Head D-Plane Rotation	99 - 114 º	104.4 º	Yes
Total Neck Occipital Condyles Moment			
Between 99º and 114º Rotation	(-53) - (-65) N·m	-54.1 N·m	Yes
Decay to -10 N·m	94 - 114 ms	106.1 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: EE9454

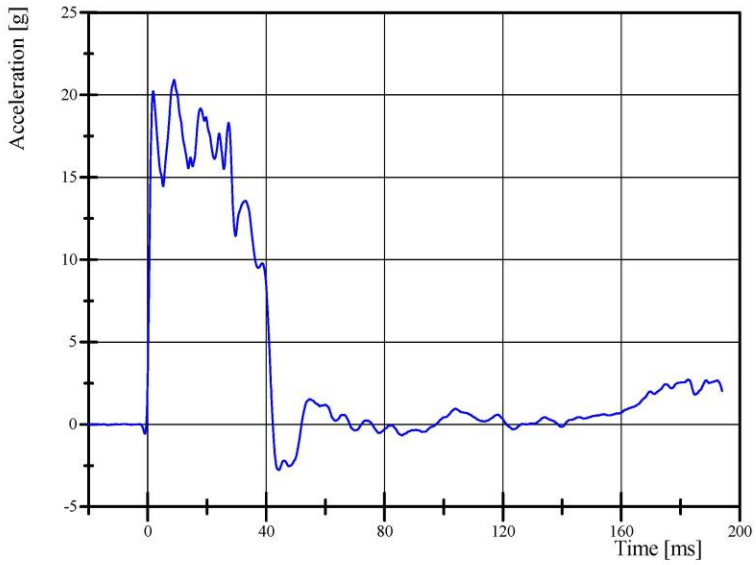
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

06.15.2023 11:07:09 2005

Transportation Research Center Inc.

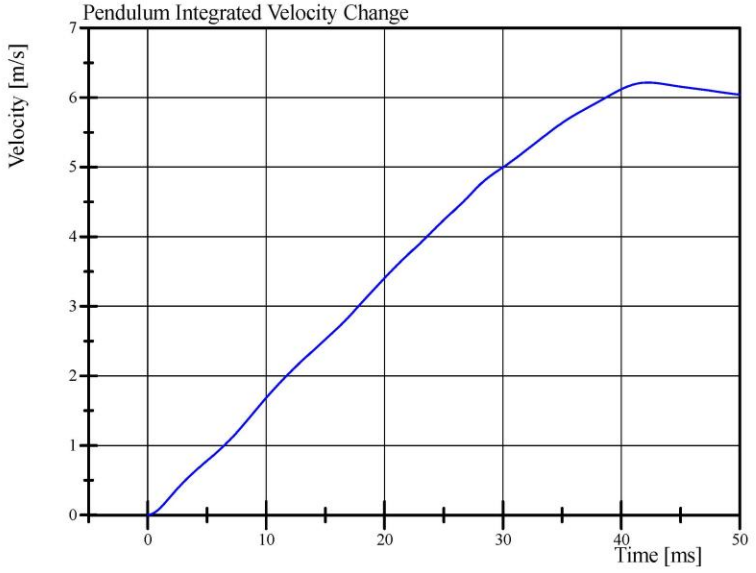
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Pendulum Acceleration



Filter Class: CFC_180
Max: 20.9 g at 8.9 ms
Min: -2.8 g at 44.3 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 6.2 m/s at 42.3 ms
Min: 0.0 m/s at 0.0 ms

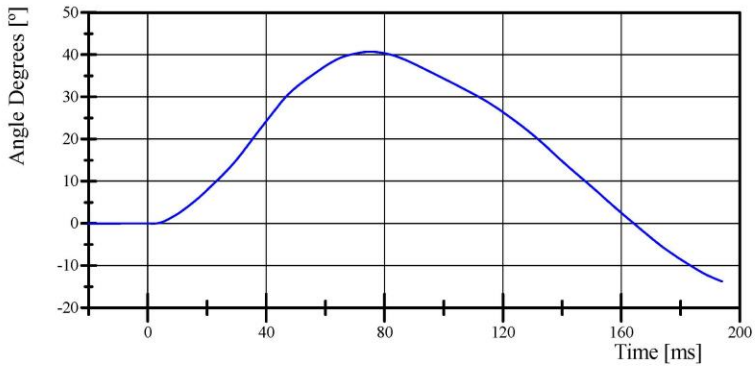
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.15.2023 11:08:34 2005

Transportation Research Center Inc.

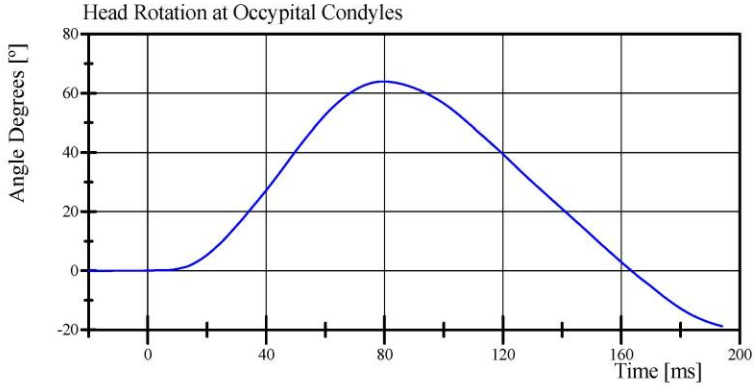
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Pot Rotation at the Base of Neck



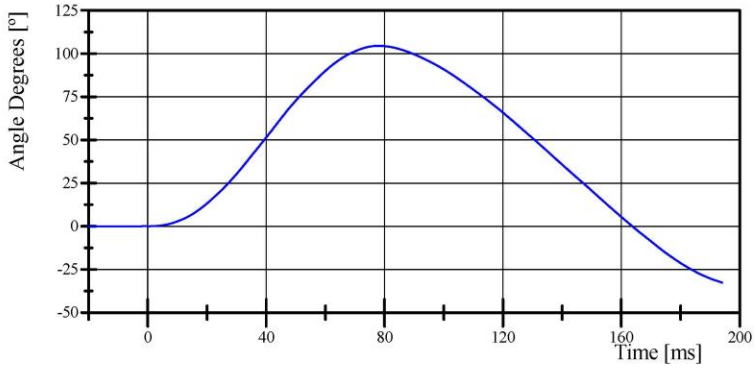
Filter Class: CFC_60
Max: 40.7 ° at 75.1 ms
Min: -13.8 ° at 194.0 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 63.9 ° at 79.6 ms
Min: -18.8 ° at 194.0 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 104.4 ° at 78.0 ms
Min: -32.6 ° at 194.0 ms

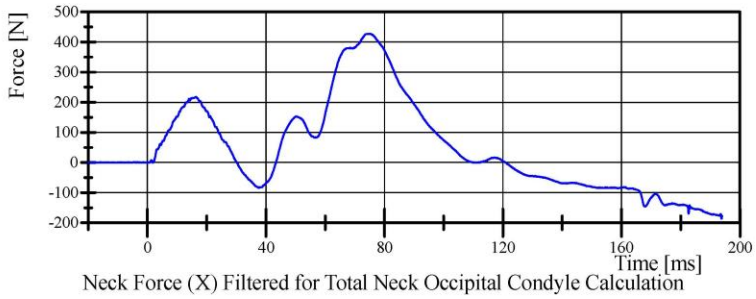
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.15.2023 11:08:34 2005

Transportation Research Center Inc.

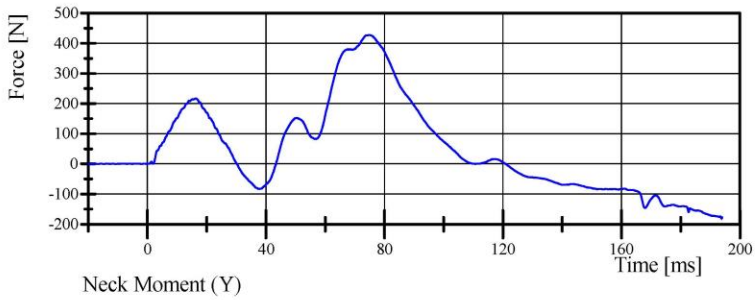
Neck Extension
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Neck Force (X)



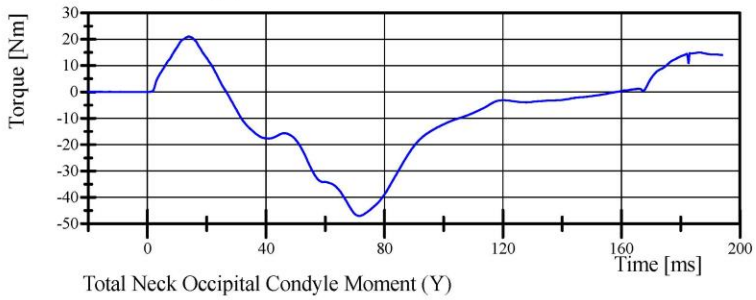
Filter Class: CFC_1000
Max: 427.7 N at 74.8 ms
Min: -186.3 N at 193.8 ms

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



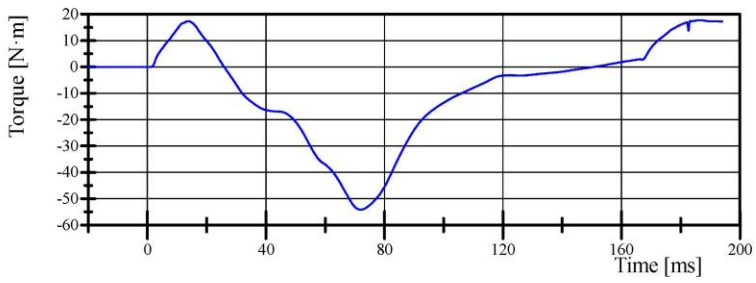
Filter Class: CFC_600
Max: 427.3 N at 74.7 ms
Min: -181.5 N at 193.8 ms

Neck Moment (Y)



Filter Class: CFC_600
Max: 21.0 Nm at 13.9 ms
Min: -47.1 Nm at 71.6 ms

Total Neck Occipital Condyle Moment (Y)



Filter Class: Without_(Constar
Max: 17.7 N·m at 186.7 ms
Min: -54.1 N·m at 71.8 ms

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

06.15.2023 11:08:34 2005

Transportation Research Center Inc.

Front Thorax
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.821 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,222.3 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,346.3 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-51.1 mm	Yes
Internal Hysteresis	69 - 85 %	76.7 %	Yes

Test meets specifications.

Condition: Used

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

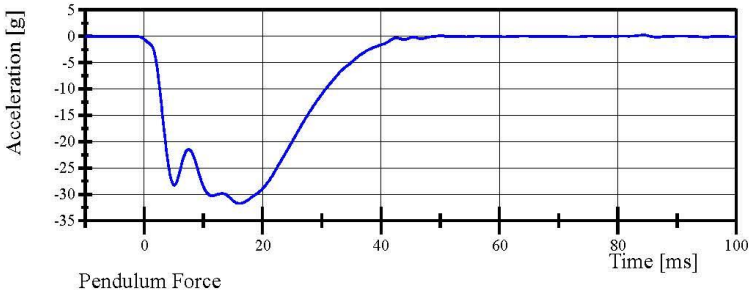
Specification Source: CFR49 Part 572 Subpart O with Polarity in accordance with J211

06.14.2023 08:14:18 445

Transportation Research Center Inc.

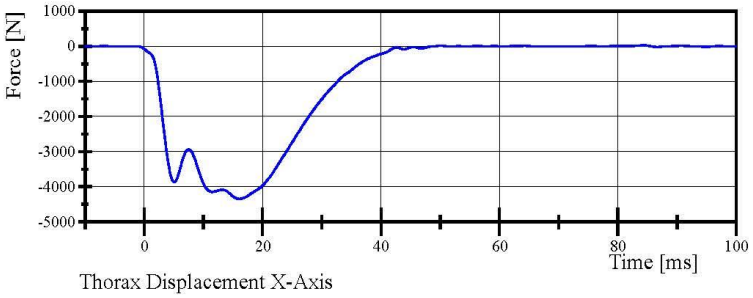
Front Thorax
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Pendulum Acceleration



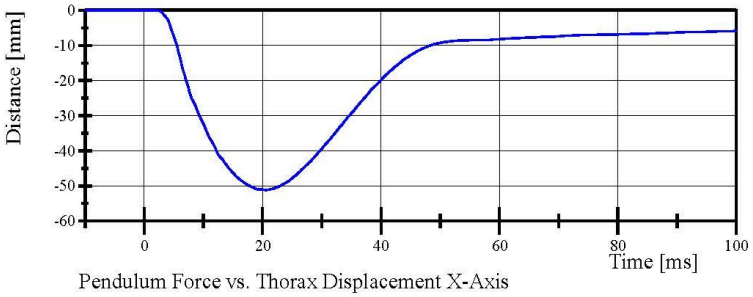
Filter Class: CFC_180
Max: 0.2 g at 84.4 ms
Min: -31.7 g at 16.1 ms

Pendulum Force



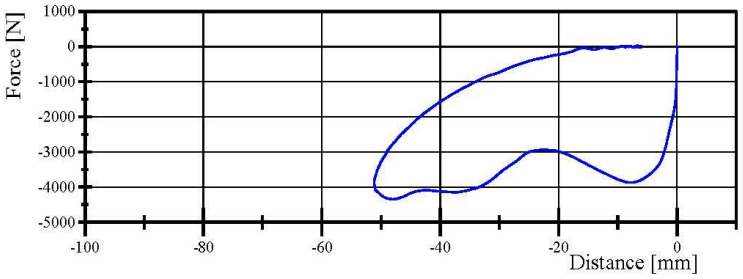
Filter Class: CFC_180
Max: 28.3 N at 84.4 ms
Min: -4,346.3 N at 16.1 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.0 mm at -7.7 ms
Min: -51.1 mm at 20.6 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 28.3 N at -6.7 mm
Min: -4,346.3 N at -48.0 mm

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

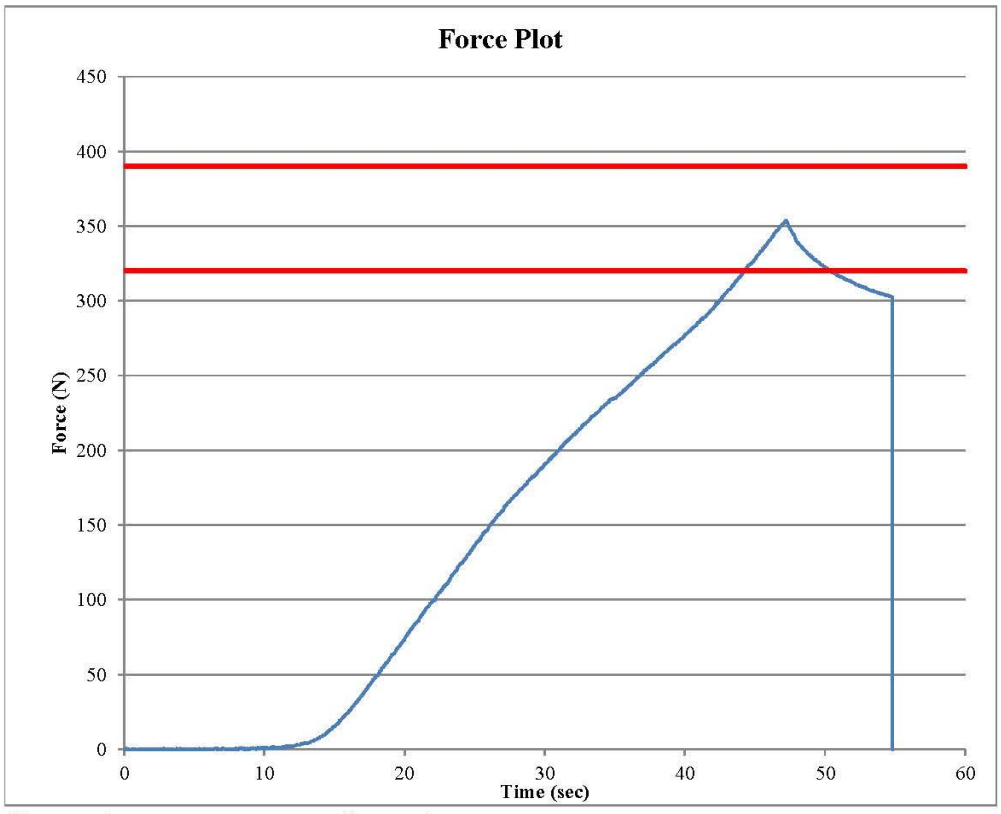
06.14.2023 08:15:03 445

Transportation Research Center Inc.

Hybrid III Small Female Torso Flexion

Customer:	NHTSA		
Serial Number:	DH1659	Date:	6/14/2023
Test Number:	1	Time:	8:42

TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.3	°C	Pass
Humidity	10	-	70	57	%	Pass
Average Angular Rate	0.5	-	1.5	0.85	deg/sec	Pass
Initial Angle	0	-	20	17.2	deg	Pass
Peak Force at 45.63°	320	-	390	353.55	N	Pass
Final Angle	-8	-	8	2.16	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. 12-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.074 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,881.4 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: ED6729

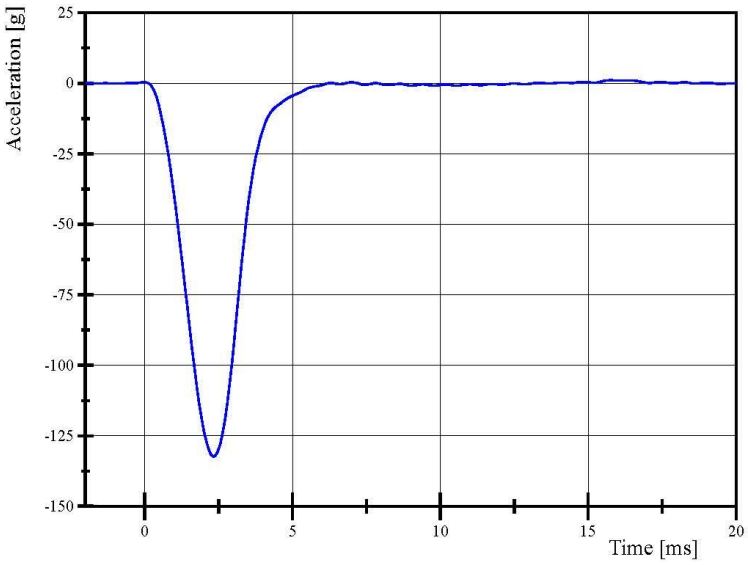
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.14.2023 08:18:41 1972

Transportation Research Center Inc.

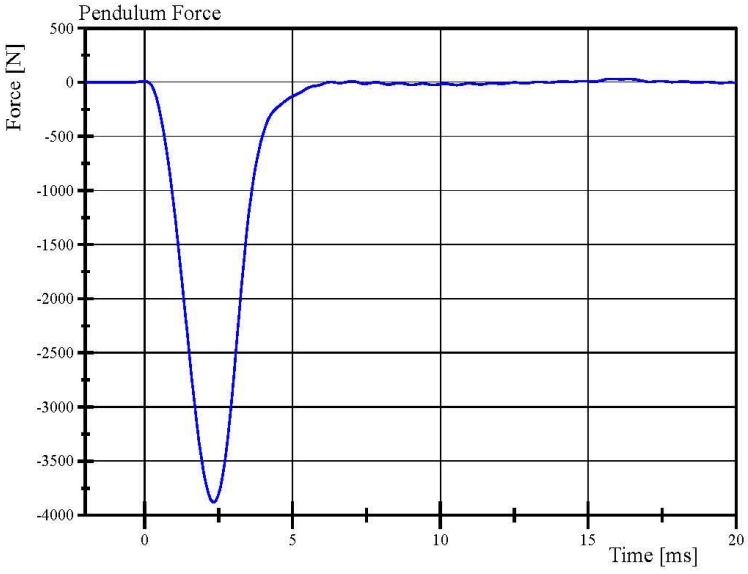
Left Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.1 g at 15.8 ms
Min: -132.4 g at 2.3 ms

Pendulum Force



Filter Class: CFC_600
Max: 32.5 N at 15.8 ms
Min: -3,881.4 N at 2.3 ms

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

06.14.2023 08:18:55 1972

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	58 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.075 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,900.3 N	Yes

Test meets specifications.

Condition: Used

Comments:
Knee Skin S/N: EC5852

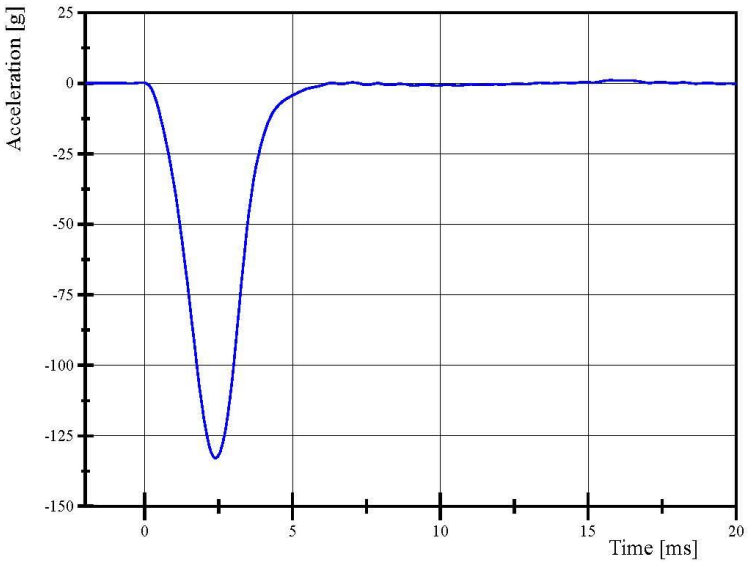
Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211

06.14.2023 08:23:42 1972

Transportation Research Center Inc.

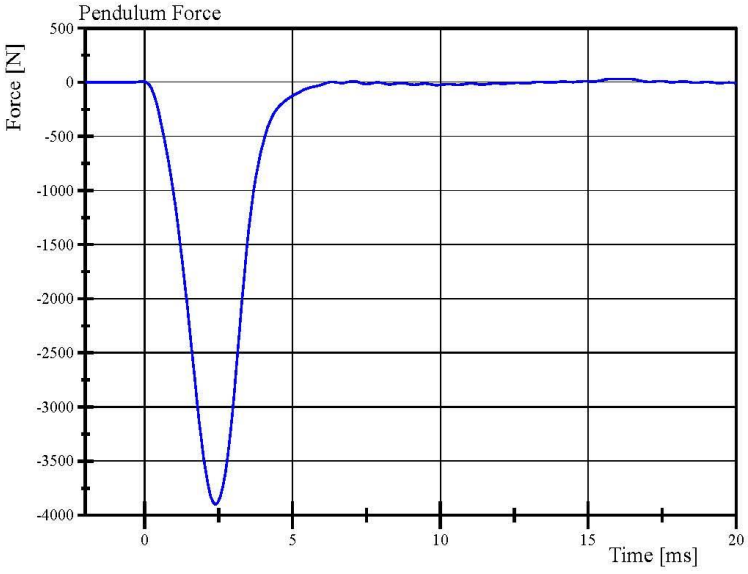
Right Knee Femur Response Test
HIII 5th Serial No. DH1659 Certification No. 12-1
Test Date: 6/14/2023

Pendulum Acceleration



Filter Class: CFC_600
Max: 1.1 g at 15.8 ms
Min: -133.0 g at 2.4 ms

Pendulum Force



Filter Class: CFC_600
Max: 32.0 N at 15.8 ms
Min: -3,900.3 N at 2.4 ms

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

06.14.2023 08:23:56 1972

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	23-Jan-2023
			Y	P94650	Endevco	23-Jan-2023
			Z	P94622	Endevco	23-Jan-2023
		Redundant	X	P94431	Endevco	23-Jan-2023
			Y	P94487	Endevco	23-Jan-2023
			Z	P94645	Endevco	23-Jan-2023
Head Angular Rate Sensors			X	ARS14948	DTS	13-Sep-2022
			Y	ARS14949	DTS	13-Sep-2022
			Z	ARS14952	DTS	13-Sep-2022
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	2021	Humanetics	24-Jan-2023
Chest Accelerometers		Primary	X	P97714	Endevco	23-Jan-2023
			Y	P61255	Endevco	23-Jan-2023
			Z	P45008	Endevco	23-Jan-2023
		Redundant	X	P91177	Endevco	23-Jan-2023
			Y	P94570	Endevco	23-Jan-2023
			Z	P91172	Endevco	23-Jan-2023
Chest Potentiometer			X	CST037	Servo	24-Jan-2023
Pelvis Accelerometers			X	T11801	Endevco	23-Jan-2023
			Y	P91876	Endevco	23-Jan-2023
			Z	P93543	Endevco	20-Feb-2023
Femur Load Cells	Left	Primary	Z	DI4215-FZ1	Denton	24-Jan-2023
		Redundant	Z	DI4215-FZ2	Denton	24-Jan-2023
	Right	Primary	Z	DI4216-FZ1	Denton	24-Jan-2023
		Redundant	Z	DI4216-FZ2	Denton	24-Jan-2023
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-94	Denton	27-Jan-2023
		Lower	MX, MY, FZ	3644-370	Denton	27-Jan-2023
	Right	Upper	MX, MY, FZ	3643-413	Denton	27-Jan-2023
		Lower	MX, MY, FZ	3644-401	Denton	27-Jan-2023
Foot Accelerometers	Left	Rear	X	P90848	Endevco	27-Jan-2023
			Z	P91498	Endevco	30-Jan-2023
		Front	Z	P90841	Endevco	30-Jan-2023
	Right	Rear	X	P93467	Endevco	30-Jan-2023
			Z	P97619	Endevco	30-Jan-2023
		Front	Z	P94523	Endevco	30-Jan-2023
Seat Belt Load Cells		Lap	N/A	R141C4	Measurement Specialties	19-Oct-2022
		Shoulder	N/A	T1210C	Measurement Specialties	19-Oct-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	26-Jan-2023
			Y	T11806	Endevco	26-Jan-2023
			Z	P69062	Endevco	26-Jan-2023
		Redundant	X	T11046	Endevco	26-Jan-2023
			Y	P97525	Endevco	26-Jan-2023
			Z	P73228	Endevco	26-Jan-2023
Head Angular Rate Sensors			X	ARS6120	DTS	13-Sep-2022
			Y	ARS10776	DTS	13-Sep-2022
			Z	ARS4732	DTS	13-Sep-2022
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	1874	Denton	24-Jan-2023
Chest Accelerometers		Primary	X	P80855	Endevco	26-Jan-2023
			Y	P93546	Endevco	26-Jan-2023
			Z	P57791	Endevco	26-Jan-2023
		Redundant	X	P73221	Endevco	26-Jan-2023
			Y	T11872	Endevco	27-Jan-2023
			Z	T16784	Endevco	26-Jan-2023
Chest Potentiometer			X	CST3410	Servo	27-Jan-2023
Pelvis Accelerometers			X	P91969	Endevco	26-Jan-2023
			Y	P91958	Endevco	26-Jan-2023
			Z	P80721	Endevco	26-Jan-2023
Femur Load Cells	Left	Primary	Z	DT0997-FZ1	Denton	26-Jan-2023
		Redundant	Z	DT0997-FZ2	Denton	26-Jan-2023
	Right	Primary	Z	DS4140-FZ1	Denton	26-Jan-2023
		Redundant	Z	DS4140-FZ2	Denton	26-Jan-2023
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-92	Denton	26-Jan-2023
		Lower	MX, MY, FZ	3644-92	Denton	26-Jan-2023
	Right	Upper	MX, MY, FZ	3643-484	Denton	26-Jan-2023
		Lower	MX, MY, FZ	3644-369	Denton	25-Jan-2023
Foot Accelerometers	Left	Rear	X	P90866	Endevco	26-Jan-2023
			Z	P93533	Endevco	20-Feb-2023
		Front	Z	P97890	Endevco	26-Jan-2023
	Right	Rear	X	P97640	Endevco	26-Jan-2023
			Z	P91471	Endevco	26-Jan-2023
		Front	Z	P91907	Endevco	26-Jan-2023
Seat Belt Load Cells		Lap	N/A	X08011	Measurement Specialties	19-Oct-2022
		Shoulder	N/A	R141CA	Measurement Specialties	19-Oct-2022

TABLE 3 – Vehicle Instrumentation

Instrumentation			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember/Rear Seat Accelerometers	Left	Primary	X	A298558	Measurement Specialties	29-Mar-2023
			Z	A378309	Measurement Specialties	29-Mar-2023
		Redundant	X	A298329	Measurement Specialties	29-Mar-2023
	Right	Primary	X	A191018	Measurement Specialties	3-Apr-2023
			Z	A381835	Measurement Specialties	3-Apr-2023
		Redundant	X	A300432	Measurement Specialties	29-Mar-2023
Engine Accelerometers	Top		X	A377406	Measurement Specialties	29-Mar-2023
	Bottom		X	A297050	Measurement Specialties	29-Mar-2023