

Final Report Number: NCAP-TRC-22-001

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

**FCA US LLC
2022 Jeep Compass
NHTSA Number: M20220300**

**PREPARED BY:
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Report Date: May 23, 2022

FINAL REPORT

**Prepared For:
U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
1200 New Jersey Ave, SE Room W43-410
Washington, DC 20590**

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Prepared By: ILO Project Operations Group

Approved By: John Shultz

Approval Date: May 23, 2022

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date _____

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

Date _____

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16. Abstract A 56.0 km/h NCAP Frontal Impact Test was conducted on a 2022 Jeep Compass, 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 March 15, 2022. The impact velocity was 56.63 km/h, and the ambient temperature at the barrier face at the time of impact was 21.4° C. The target vehicle post-test maximum crush was 364 millimeters at crush zone 3 at left side. The test vehicle's performance is as follows:																																																																										
<table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD</th> <th colspan="3">Passenger ATD</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>NA</td> <td>700</td> <td>284</td> <td>NA</td> <td>700</td> <td>175</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-25.6</td> <td>mm</td> <td>52</td> <td>-16.9</td> </tr> <tr> <td>3ms Chest Clip</td> <td>Gs</td> <td>60</td> <td>39.6</td> <td>Gs</td> <td>60</td> <td>40.5</td> </tr> <tr> <td>Nij</td> <td>NA</td> <td>1</td> <td>0.37</td> <td>NA</td> <td>1</td> <td>0.40</td> </tr> <tr> <td>Neck Tension</td> <td>Newtons</td> <td>4170</td> <td>1353.5</td> <td>Newtons</td> <td>2620</td> <td>722.7</td> </tr> <tr> <td>Neck Compression</td> <td>Newtons</td> <td>4000</td> <td>-228.1</td> <td>Newtons</td> <td>2520</td> <td>-470.9</td> </tr> <tr> <td>Left Femur Force</td> <td>Newtons</td> <td>10000</td> <td>-1512.8</td> <td>Newtons</td> <td>6800</td> <td>-314.3</td> </tr> <tr> <td>Right Femur Force</td> <td>Newtons</td> <td>10000</td> <td>-1555.2</td> <td>Newtons</td> <td>6800</td> <td>-913.4</td> </tr> </tbody> </table>						Measurement Description	Driver ATD			Passenger ATD			Units	Threshold	Result	Units	Threshold	Result	Head Injury Criteria (HIC ₁₅)	NA	700	284	NA	700	175	Maximum Chest Compression	mm	63	-25.6	mm	52	-16.9	3ms Chest Clip	Gs	60	39.6	Gs	60	40.5	Nij	NA	1	0.37	NA	1	0.40	Neck Tension	Newtons	4170	1353.5	Newtons	2620	722.7	Neck Compression	Newtons	4000	-228.1	Newtons	2520	-470.9	Left Femur Force	Newtons	10000	-1512.8	Newtons	6800	-314.3	Right Femur Force	Newtons	10000	-1555.2	Newtons	6800	-913.4
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17. Key Words 56.3 km/h (35 mph) Full Frontal Rigid Barrier Impact Test New Car Assessment Program (NCAP)			18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590																																																																							
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1: PURPOSE AND SUMMARY OF THE TEST

PURPOSE

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

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

SUMMARY

A load cell barrier consisting of 288 load cells was impacted by a 2022 Jeep Compass at a velocity of 56.63 km/h. The test was performed at Transportation Research Center, Inc. on March 15, 2022. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

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

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

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

The driver (position 1) ATD (Serial No. 037), and the right-front passenger (position 2) ATD (Serial No. EB7513) were qualified prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

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

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

The maximum static crush of the vehicle was 364 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 glove box.

The occupant data is summarized below:

ATD Position	HIC ₁₅	Nij	Neck Tension (N)	Neck Compression (N)	3 ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th Male)	284	0.37	1353.5	-228.1	39.6	-25.6	-1512.8	-1555.2
Passenger (5 th Female)	175	0.40	722.7	-470.9	40.5	-16.9	-314.3	-913.4

TEST COMMENTS:

VEHICLE ENGINE BOTTOM X: FAILED AFTER 24.0 MS
 DRIVER HEAD Y ACCEL PRIMARY - SPIKE NEAR 96MS
 BARRIER J-14 FX: CHANNEL FAILURE
 BARRIER J-14 MY: CHANNEL FAILURE
 BARRIER J-14 MZ: CHANNEL FAILURE
 BARRIER H-15 FX: QUESTIONABLE DATA
 BARRIER H-15 MY: CHANNEL FAILED
 BARRIER E-10 FX: CHANNEL FAILED
 BARRIER C-05 FX: CHANNEL FAILED

2.2 REPORT AREA 2: DATA SHEETS

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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

TEST VEHICLE INFORMATION

NHTSA No.	M20220300
Model Year	2022
Make	Jeep
Model	Compass
Body Style	MPV
VIN	3C4NJDBB4NT125070
Body Color	Bright White
Odometer Reading (km/mi)	13.0 mi
Engine Displacement (L)	2.4
Type/No. Cylinders	Straight/4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	9
Overdrive	Yes
Final Drive	AWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes, Driver
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	No
Driver Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other:	No

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

DATA FROM CERTIFICATION LABEL

Manufactured by	FCA US LLC	GVWR (kg)	2110 (4650 lbs)
Date of Manufacture		12-21	GAWR Front (kg)
		GAWR Rear (kg)	1080 (2380 lbs)

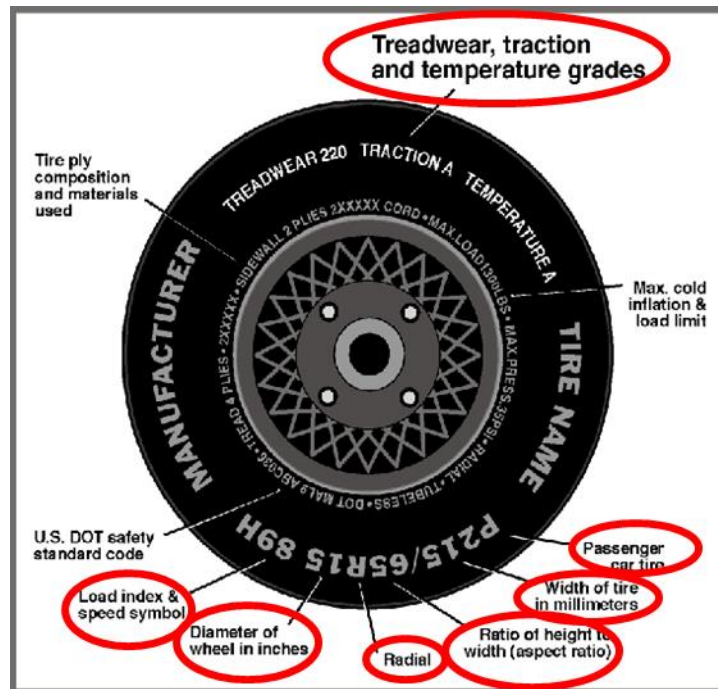
VEHICLE SEATING AND WEIGHT CAPACITY

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)				390.0
Cargo Wt. (RCLW) (kg)				50.0

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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	240	220
Recommended Tire Size	225/60R17	225/60R17
Tire Size on Vehicle	225/60R17	225/60R17
Tire Manufacturer	Firestone	Firestone
Tire Model	Destination	Destination
Treadwear	520	520
Traction Grade	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	99T	99T
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Right	V641 DE3 4821	V641 DE3 4821
DOT Safety Code Left	V641 DE3 4821	V641 DE3 4821

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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	485.0	332.8		516.2	396.4	
Right	kg	470.6	309.2		492.8	374.2	
Ratio	%	59.8	40.2		56.7	43.3	
Totals	kg	955.6	642.0	1597.6	1009.0	770.6	1779.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1597.6
Weight of 1 P572E ATD & 1 P572O ATD	kg	139.3
Rated Cargo/Luggage Weight (RCLW)	kg	50.0
Vehicle Target Weight (TVTW)	kg	1786.9

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front)
As Delivered	mm	786	783	788	789	1055
As Tested	mm	776	776	765	758	1137
Post Test	mm	812	798	760	750	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2625
Total Vehicle Length at Left Side	mm	4237
Total Vehicle Length at Centerline	mm	4404
Total Vehicle Length at Right Side	mm	4236
Weight of Ballast in Cargo Area	kg	0.0
Weight of Vehicle Components Removed	kg	7.0
Amount of Stoddard Solvent in Fuel Tank	liters	47.5

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: Rear bumper and rear wheel arch plastic cladding

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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4404
2	Total Width	1813
3	Bumper Top Height	630
4	Bumper Bottom Height	525
5	Longitudinal Member Top Height	625
6	Distance Between Longitudinal Members	900
7	Longitudinal Member Width	50
8	Engine Top Height	988
9	Engine Bottom Height	236
10	Engine and Gearbox Width	800
11	Front Bumper-Engine Distance	555
12	Front Shock Absorber Fixing Height	945
13	Bonnet Leading Edge Height	939
14	Front Shock Absorber Fixing Width	1130
15	Front Bumper – Front Axle Distance	749
16	Front Axle – A-Pillar Distance	532
17	A-Pillar – B-Pillar Distance	990
18	B-Pillar – Rear Axle Distance	1085
19	B-Pillar – C-Pillar Distance	920
20	Roof Sill Bottom Height	1467
21	Roof Sill Top Height	1527
22	Floor Sill Bottom Height	440
23	Floor Sill Top Height	487

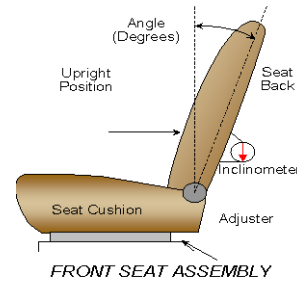
DATA SHEET NO. 2 - SEAT ADJUSTMENT, FUEL SYSTEM AND STEERING WHEEL DATA

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

NORMAL DESIGN RIDING POSITION

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



	Degree
Driver Seat back angle:	1.6
Passenger Seat back angle:	1.4

SEAT FORE/AFT POSITIONS

Describe the method of determining seat fore/aft positions.

Driver: Mid position, Positioned according to Form 1

Passenger: Full forward, Positioned according to Form 1

	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	268	MID 112 RWD
Passenger Seat	215/22 Detents	0 Detent

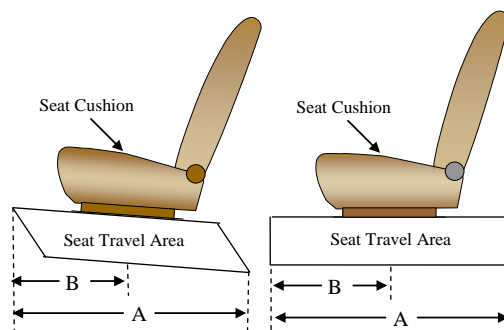
SEAT BELT UPPER ANCHORAGE

Describe the method of positioning seat belt upper anchorages.

Driver: Uppermost, Positioned according to Form 1

Passenger: Uppermost, Positioned according to Form 1

	Total No. of Positions	Placed in Position No.
Driver Seat	5	0 (uppermost)
Passenger Seat	5	0 (uppermost)



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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

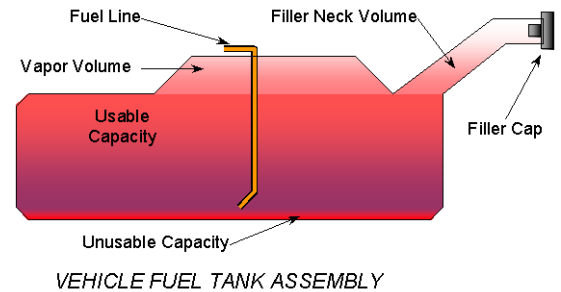
NHTSA No.: M20220300
 Test Date: 3/15/2022

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	51.1
Usable Capacity of "Optional Tank"	N/A
92%-94% of Usable Capacity	47.5
Actual Amount of Solvent Used	47.5
1/3 of Usable Capacity	17.0

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

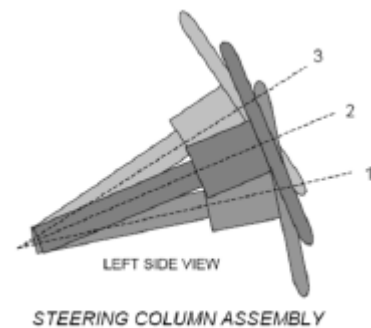
The fuel pump starts pumping fuel when the key is in "ON" position. However, the fuel Pump will stop in 5 seconds if the engine is not started,



STEERING COLUMN ADJUSTMENT

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

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



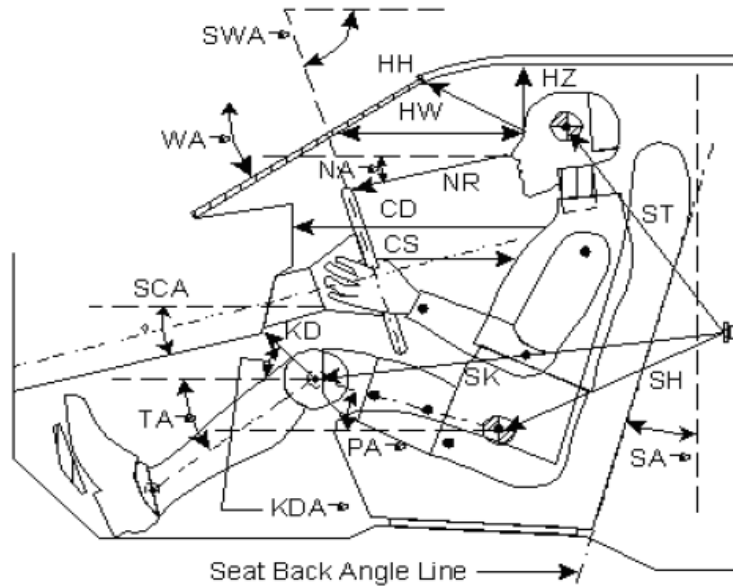
STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost Position No. 1	23.4	0
Geometric Center Position No. 2	26.1	17.5
Uppermost Position No. 3	28.8	35
Telescoping Steering Wheel Travel		35
Test Position	26.2	17

DATA SHEET NO. 3 - DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

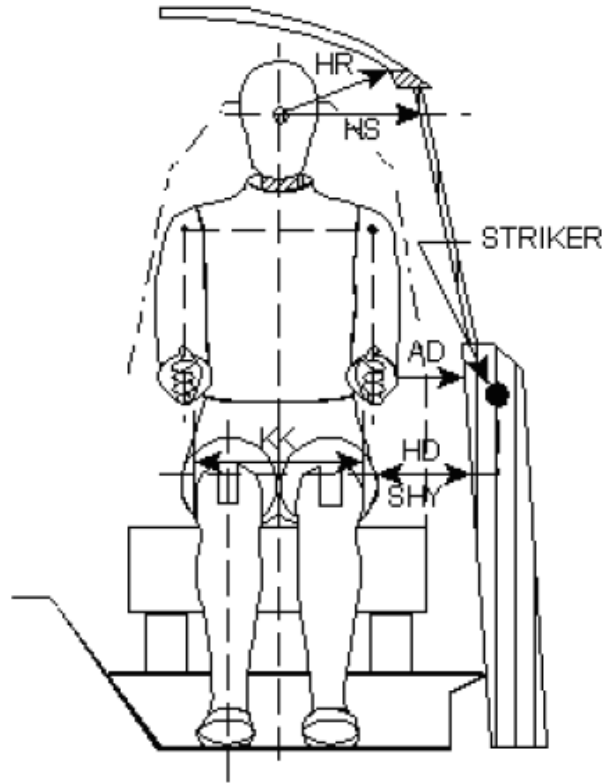


Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		26.8		
SWA°	Steering Wheel Angle		28.9		
SCA°	Steering Column Angle		28.6		
SA°	Seat Back Angle (on head rest post)		0.8		5.0
HZ	Head to Roof (Z)	210		220	
HH	Head to Header	372		307	
HW	Head to Windshield	639		636	
NR	Nose to Rim	420	6.8		
CD	Chest to Dash	580		364	
CS	Chest to Steering Hub	334			
RA	Rim to Abdomen	220			
KDL	Left Knee to Dash	198	14.1	115	35.5
KDR	Right Knee to Dash	187	13.9	112	36.2
PA°	Pelvic Angle		24.4		19.0
TA°	Tibia Angle		48.1		66.1
SK	Striker to Knee	565	1.5	630	2.4
ST	Striker to Head	520	82	486	65.5
SH	Striker to H-Point	216	-40	335	21.9

DATA SHEET NO. 4 - DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Jeep Compass
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 Test Date: 3/15/2022

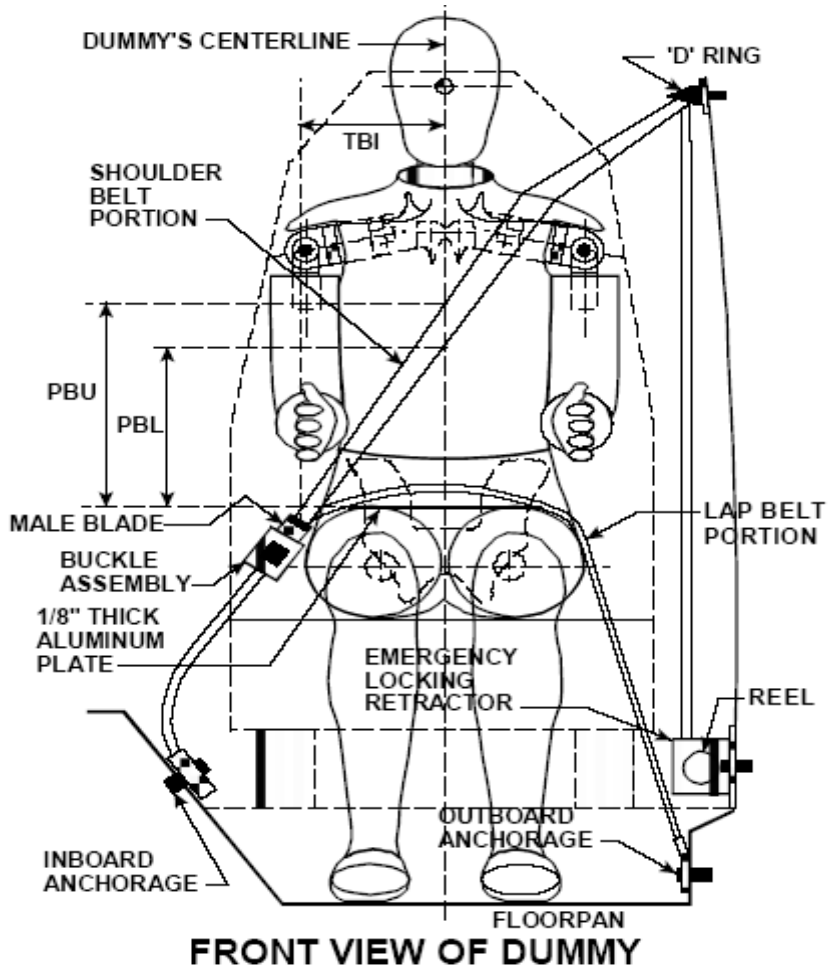


Code	Measurement Description	Driver	Passenger
AD	Arm to Door	80	92
HD	H-Point to Door	195	193
HR	Head to Side Header	204	2241
HS	Head to Side Window	340	351
KK	Knee to Knee	280	161
SHY	Striker to H-Point (Y Direction)	290	308
AA	Ankle to Ankle	310	164

DATA SHEET NO. 5 - SEAT BELT POSITIONING DATA

Test Vehicle: 2022 Jeep Compass
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 Test Date: 3/15/2022



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU – Top surface of reference to belt upper edge	mm	340	281
PBL – Top surface of reference to belt lower edge	mm	270	207

BELT LENGTH DATA

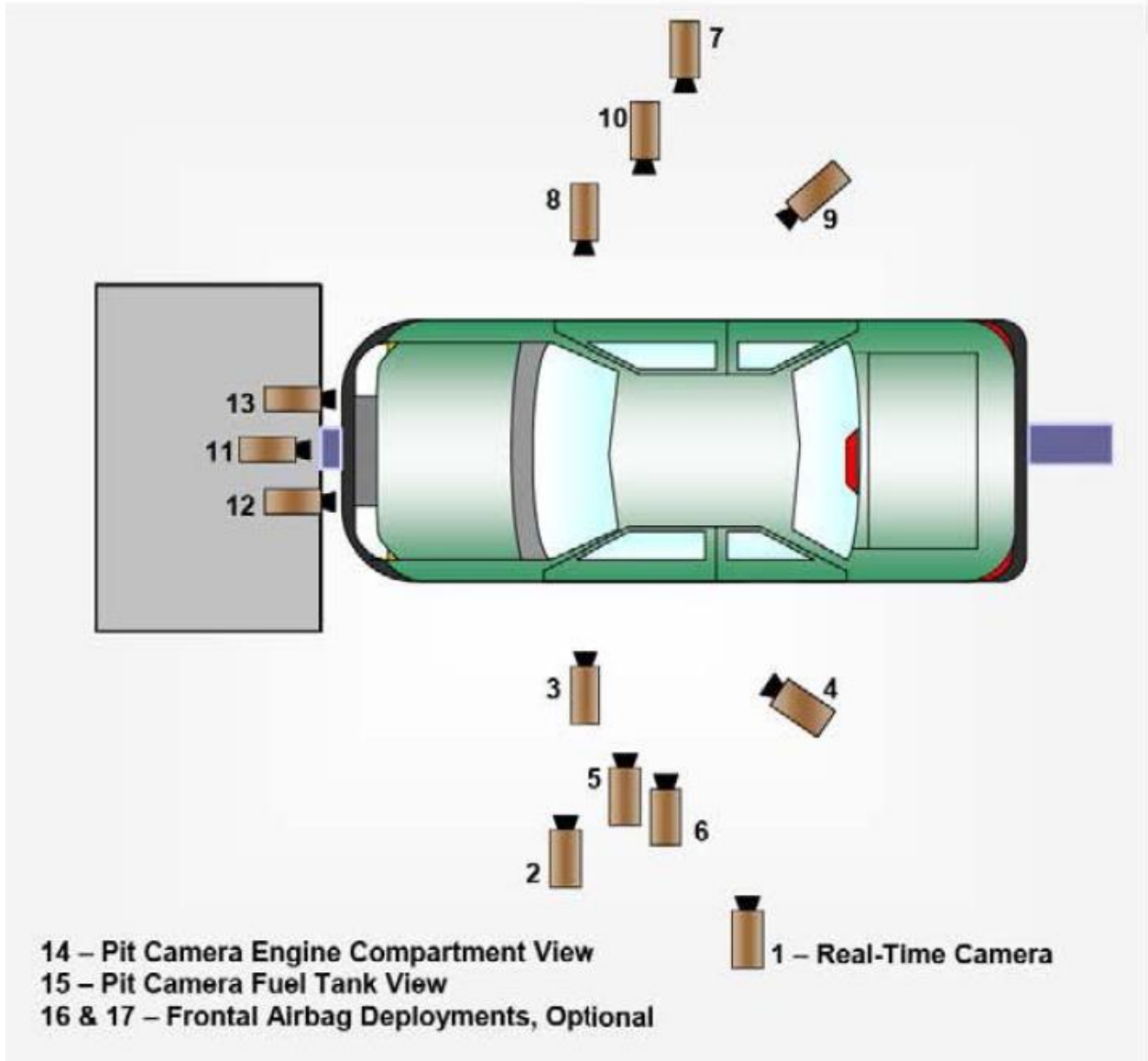
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	815	914
Lap belt length as measured on ATD	mm	613	810
Remainder of belt on reel	mm	1122	866
Total belt length for continuous webbing systems	mm	2550	2590

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

Test Vehicle: 2022 Jeep Compass
Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
Test Date: 3/15/2022

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

CAMERA LOCATIONS

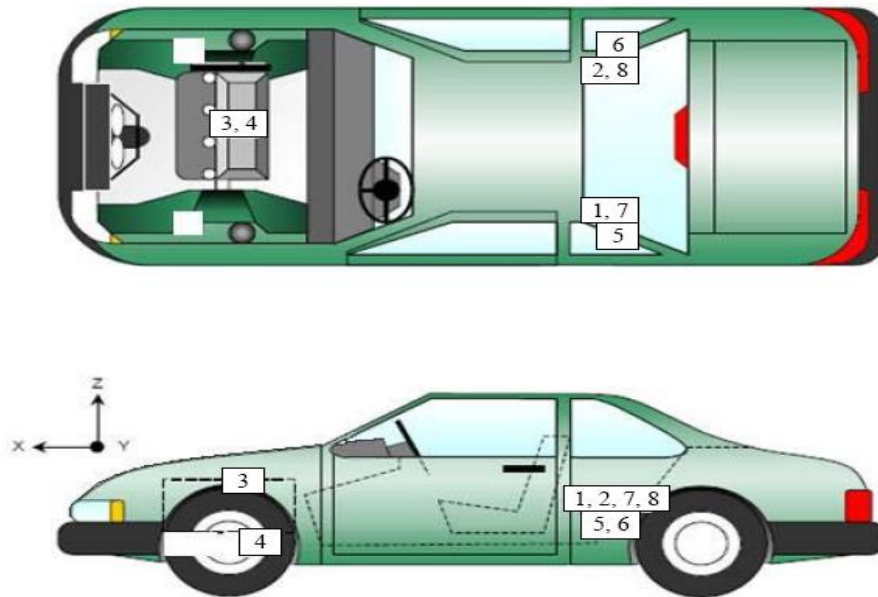
No.	Camera View	Location (mm)			Lens (mm)	Frame Speed (fps)
		X	Y	Z		
1	REAL-TIME LEFT OVERALL	-4061	-5211	-1430	Zoom	30
2	LEFT OVERALL	-1829	-5098	-1464	8.5	1000
3	DRIVER CLOSE-UP	-2144	-5164	-1532	50	1000
4	LEFT FRONT HALF	-680	-4626	-1219	25	1000
5	LEFT ANGLE	-2831	-4600	-1599	20	1000
6	STEERING COLUMN	-2246	-5132	-1548	50	1000
7	RIGHT OVERALL	-1530	4733	-1296	8.5	1000
8	PASSENGER CLOSE-UP	-1890	4479	-1561	50	1000
9	RIGHT FRONT HALF	-736	4260	-1466	25	1000
10	RIGHT ANGLE	-2845	2319	-1606	20	1000
11	WINDSHIELD	0	0	-2648	20	1000
12	DRIVER WINDSHIELD	0	-320	-2644	16	1000
13	PASSENGER WINDSHIELD	0	210	-2644	16	1000
14	PIT FRONT	880	0	3019	20	1000
15	PIT REAR	3110	0	3050	20	1000
16	DRIVER ONBOARD				12.5	1000
17	PASSENGER ONBOARD				12.5	1000

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

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER DATA

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	1625	-160	-555
2	Right Rear Accelerometer – X Direction	1625	180	-553
3	Engine Top X	3667	280	-901
4	Engine Bottom X	3564	142	-273
5	Left Rear Accelerometer – Z Direction	1625	-160	-560
6	Right Rear Accelerometer – Z Direction	1625	180	-558
7	Left Rear Accelerometer – X Direction Redundant	1625	-135	-555
8	Right Rear Accelerometer- X Direction Redundant	1625	155	-553

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

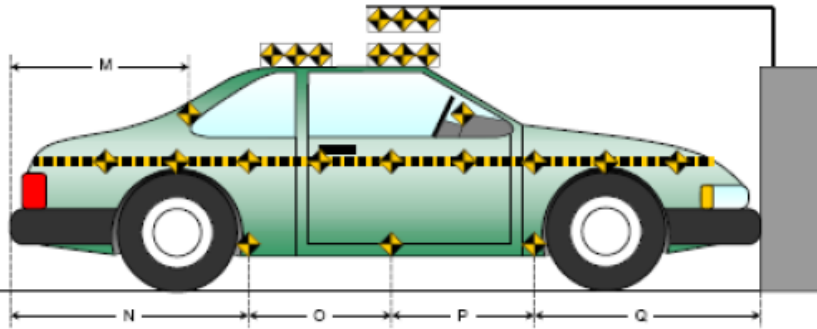
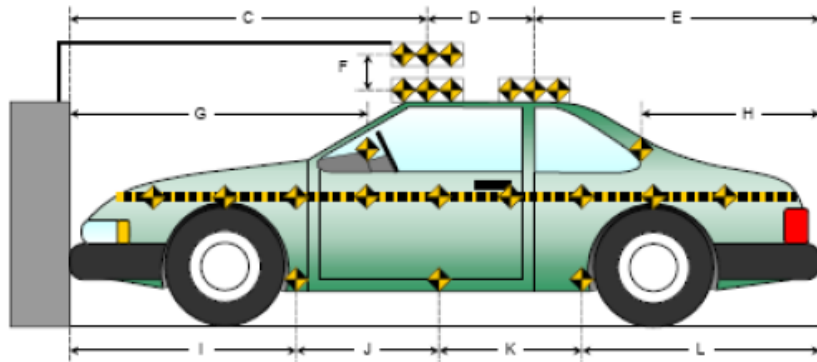
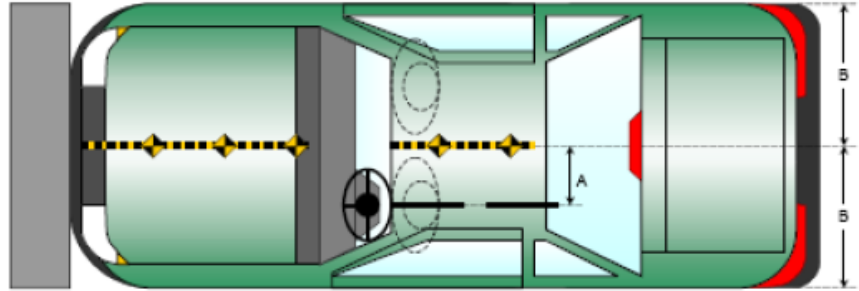
DATA SHEET NO. 8 - PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

Item	Value
A	320
B	907
C	2242
D	600
E	1564
F	302
G	1639
H	1114
I	1313
J	843
K	863
L	1382
M	1105
N	1382
O	865
P	840
Q	1316

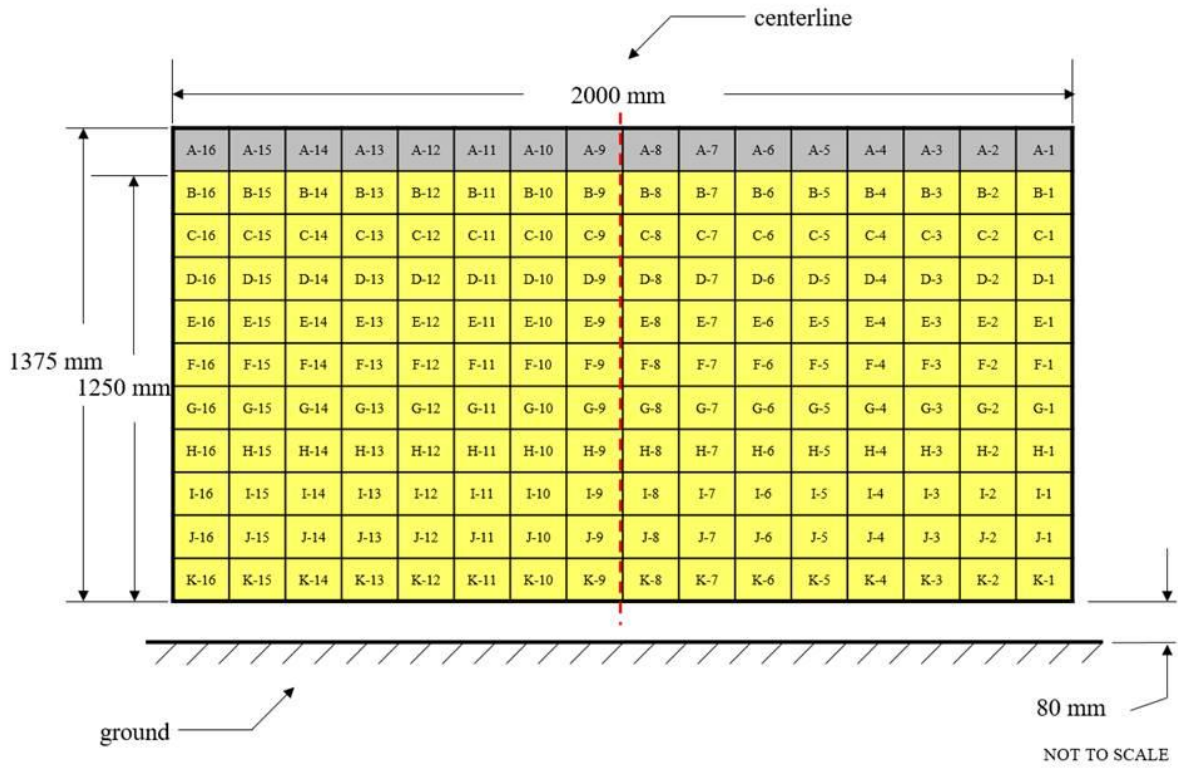
All units in millimeters



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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022



DATA SHEET NO. 10 - TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2022 Jeep Compass
Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
Test Date: 3/15/2022

INSTRUMENTATION

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

CAMERA COVERAGE

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

DATA SHEET NO. 11 - POST-TEST OBSERVATIONS

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	Hybrid III 50th / 037	Hybrid III 5th / EB7513
Head Contact	Frontal Airbag and Head Restraint	Frontal Airbag and Head Restraint
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	Airbag	Airbag
Left Knee Contact	Knee Airbag	Glove Box
Right Knee Contact	Knee Airbag	Glove Box

DOOR OPENING, TRUNK OPENING, AND SEAT TRACK INFORMATION

Description	Driver	Passenger	Other
Locked/Unlocked Doors**	Unlocked	Unlocked	
Front Door Opening**	No	No	
Rear Door Opening**	No	No	
Trunk/Hatch/Tailgate Opening**			No
Seat Track Shift (mm) **	No	No	
Seat Back Movement from Initial Position**	No	No	

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

POST- OTHER VEHICLE POST-TEST OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	2645
Center	mm	2635
Right Side	mm	2655
Average	mm	2645

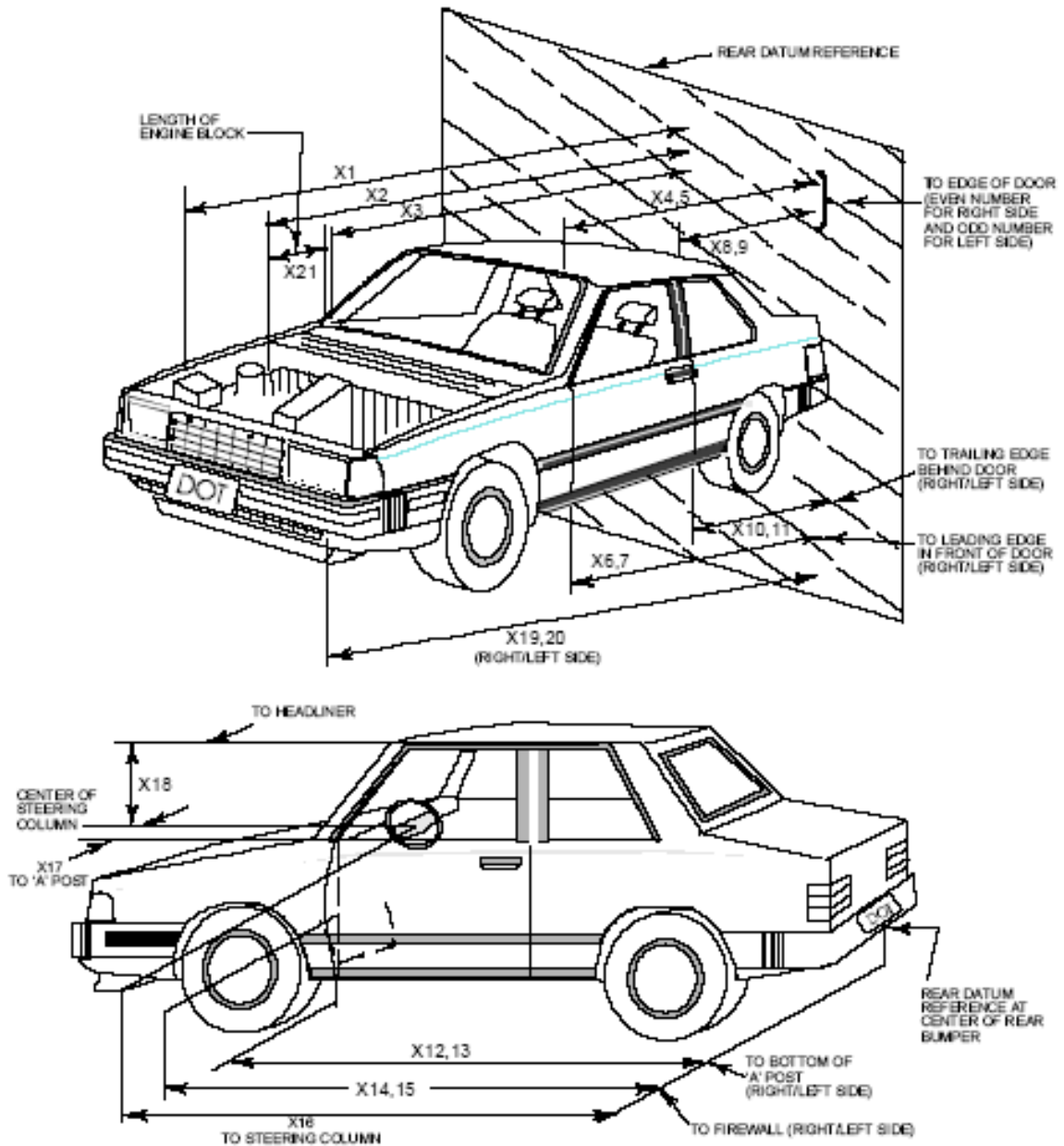
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	No
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: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022



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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4404	4050	354
2	Rear Surface of Vehicle (RSOV) to Front of Engine	3849	3800	49
3	RSOV to Firewall	3404	3435	-31
4	RSOV to Upper Leading Edge of Right Door	2978	2983	-5
5	RSOV to Upper Leading Edge of Left Door	2982	2982	0
6	RSOV to Lower Leading Edge of Right Door	2942	2947	-5
7	RSOV to Lower Leading Edge of Left Door	2947	2955	-8
8	RSOV to Upper Trailing Edge of Right Door	1946	1952	-6
9	RSOV to Upper Trailing Edge of Left Door	1949	1950	-1
10	RSOV to Lower Trailing Edge of Right Door	1981	1986	-5
11	RSOV to Lower Trailing Edge of Left Door	1987	1991	-4
12	RSOV to Bottom of "A" Post-of Right Side	2955	2955	0
13	RSOV to Bottom of "A" Post-of Left Side	2955	2955	0
14	RSOV to Firewall, Right Side	3468	3487	-19
15	RSOV to Firewall, Left Side	3455	3518	-63
16	RSOV to Steering Column	2561	2542	19
17	Center of Steering Column to "A" Post	352	352	0
18	Center of Steering Column to Headliner	430	465	-35
19	RSOV to Right Side of Front Bumper	4236	3988	248
20	RSOV to Left Side of Front Bumper	4237	4035	202
21	Length of Engine Block	550	550	0
RD	RSOV to Right Side of Dash Panel	2826	2835	-9
CD	RSOV to Center of Dash Panel	2790	2794	-4
LD	RSOV to Left Side of Dash Panel	2835	2845	-10

All Dimensions in mm

DATA SHEET NO. 13 - ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

VEHICLE INFORMATION

VIN: 3C4NJDBB4NT125070
 Vehicle Size Category: MPV

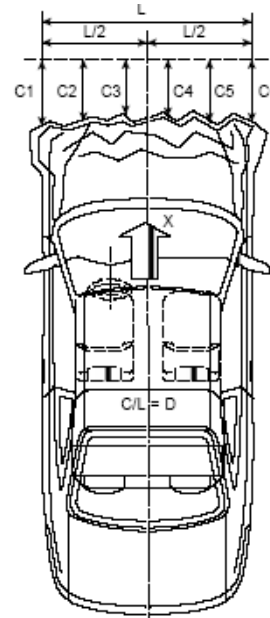
Wheelbase: 2625
 Test Weight (kg): 1779.6

ACCELEROMETER DATA

Accelerometer Locations: As listed on Page 15 of this report.
 Cal. Procedure/Interval: TRC procedure / 6 month interval
 Integration Algorithm: Trapezoidal
 Linearity: > 99%
 Impact Velocity (km/h): 56.63
 Velocity Change (km/h): 64.62
 Time of Separation (ms): 155

CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Centerline
 Damage Region Length (mm): 1423
 Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4237	4035	202
C2	Crush zone 2 at left side	mm	4367	4020	347
C3	Crush zone 3 at left side	mm	4404	4040	364
C4	Crush zone 4 at right side	mm	4400	4070	330
C5	Crush zone 5 at right side	mm	4367	4060	307
C6	Crush zone 6 at right side	mm	4236	3988	248
L	C1 to C6	mm	1423	1403	20

DATA SHEET NO. 14 - VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

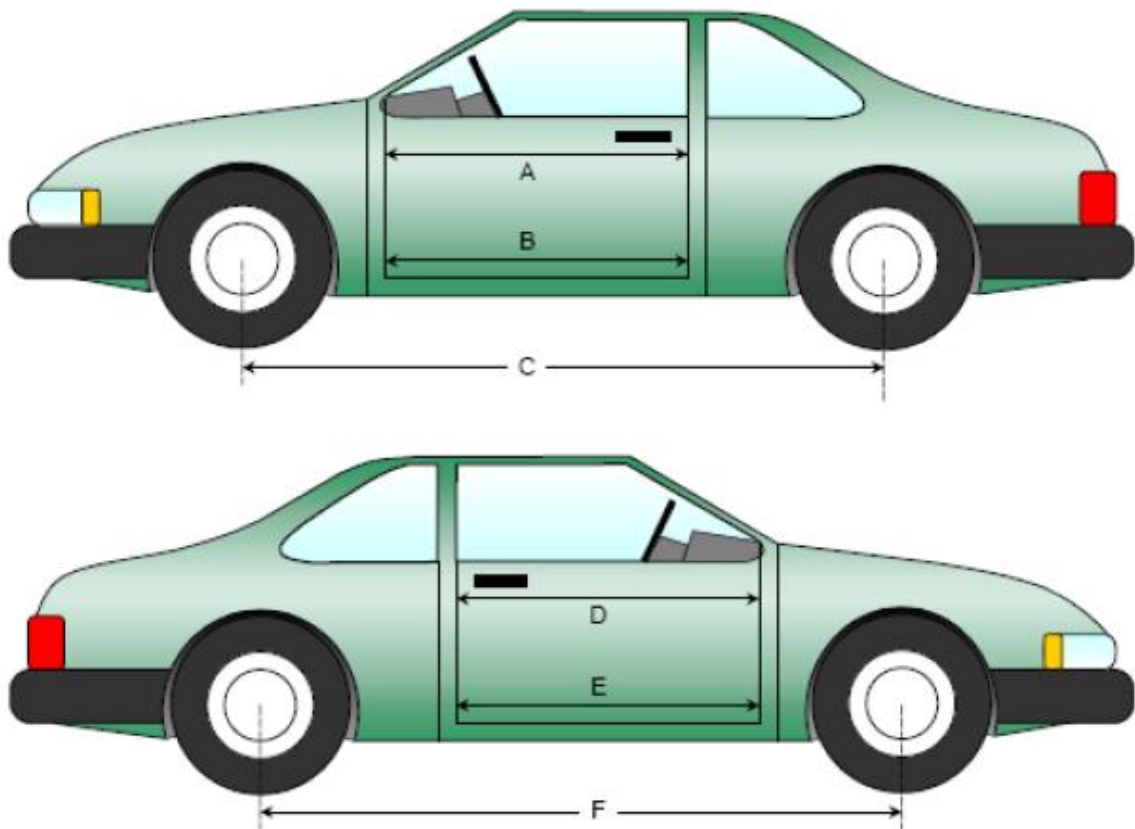
NHTSA No.: M20220300
 Test Date: 3/15/2022

DOOR OPENING WIDTH

No.	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	955	955	0
B	Left Side Lower	mm	835	835	0
D	Right Side Upper	mm	955	955	0
E	Right Side Lower	mm	835	835	0

WHEELBASE MEASUREMENTS

No.	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2625	2618	7
F	Right Side Wheelbase	mm	2625	2648	-23



¹ Front suspension damaged and wheels fell off measurements not available

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

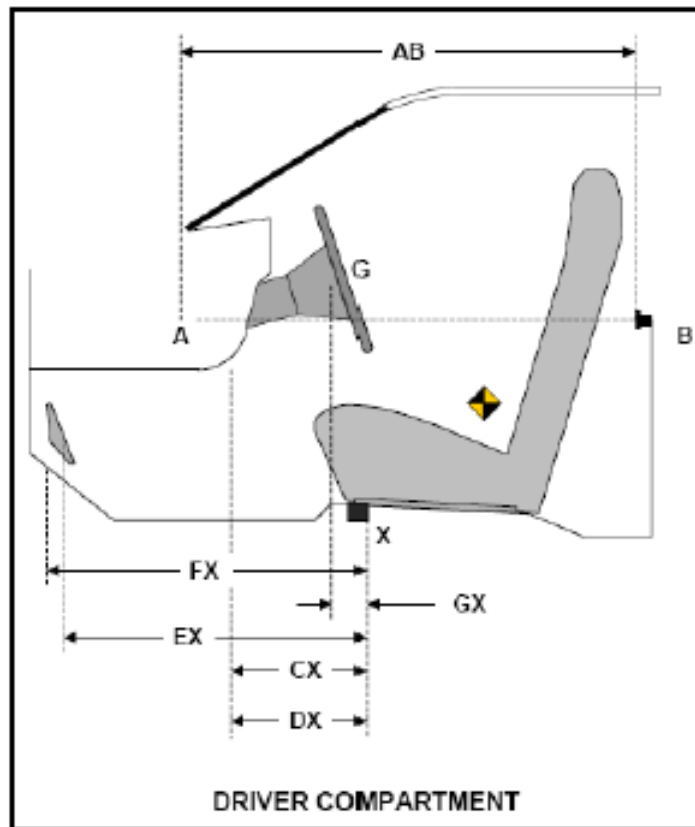
Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	960	960	0
CX	Left Knee Bolster to X	mm	312	308	4
DX	Right Knee Bolster to X	mm	312	320	-8
EX	Brake Pedal to X	mm	593	597	-4
FX	Foot Rest to X	mm	600	585	15
GX	Center of Steering Column Wheel Hub to X	mm	127	105	22

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

Please provide windshield mounting details.

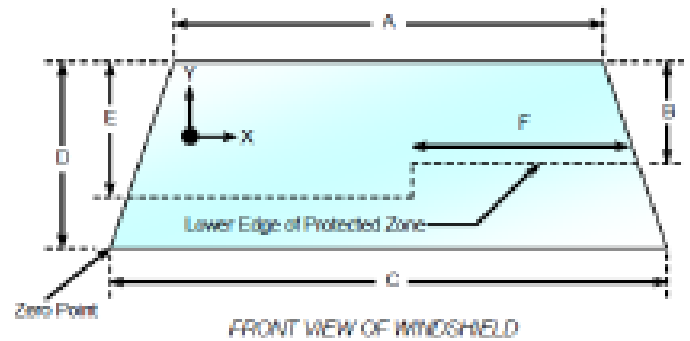
The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicle not equipped with occupant passive restraint and 50% for each side of the windshield for vehicle which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.4°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2200	2200	100.0
Right Side	2200	2200	100.0
Total	4400	4400	100.0

Item	Units	Value
A	mm	1226
B	mm	523
C	mm	1625
D	mm	775
E	mm	510
F	mm	544



AREAS OF PROTECTED ZONE FAILURES

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

X	Y
NA	NA
NA	NA
NA	NA
NA	NA

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

X	Y
NA	NA
NA	NA
NA	NA
NA	NA

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

Test Vehicle: 2022 Jeep Compass
Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
Test Date: 3/15/2022

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.4°C

Test Time: 15:12

Stoddard Solvent Spillage Measurements

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

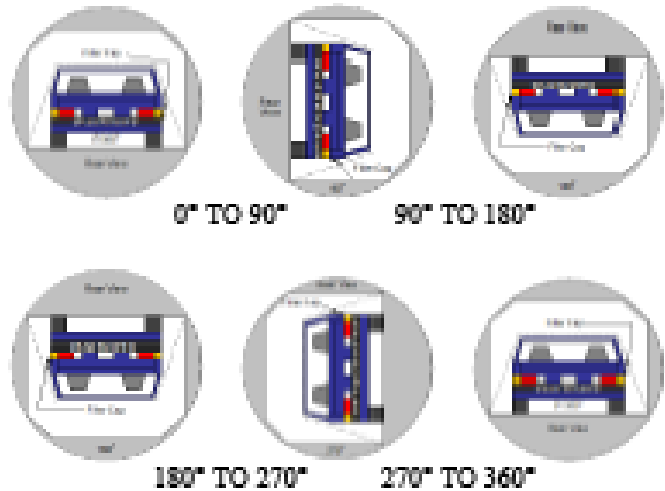
DATA SHEET NO. 16 - FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS (CONT'D)

Test Vehicle: 2022 Jeep Compass
 Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
 Test Date: 3/15/2022

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

None _____



SOLVENT COLLECTION TIME TABLE IN SECONDS

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

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

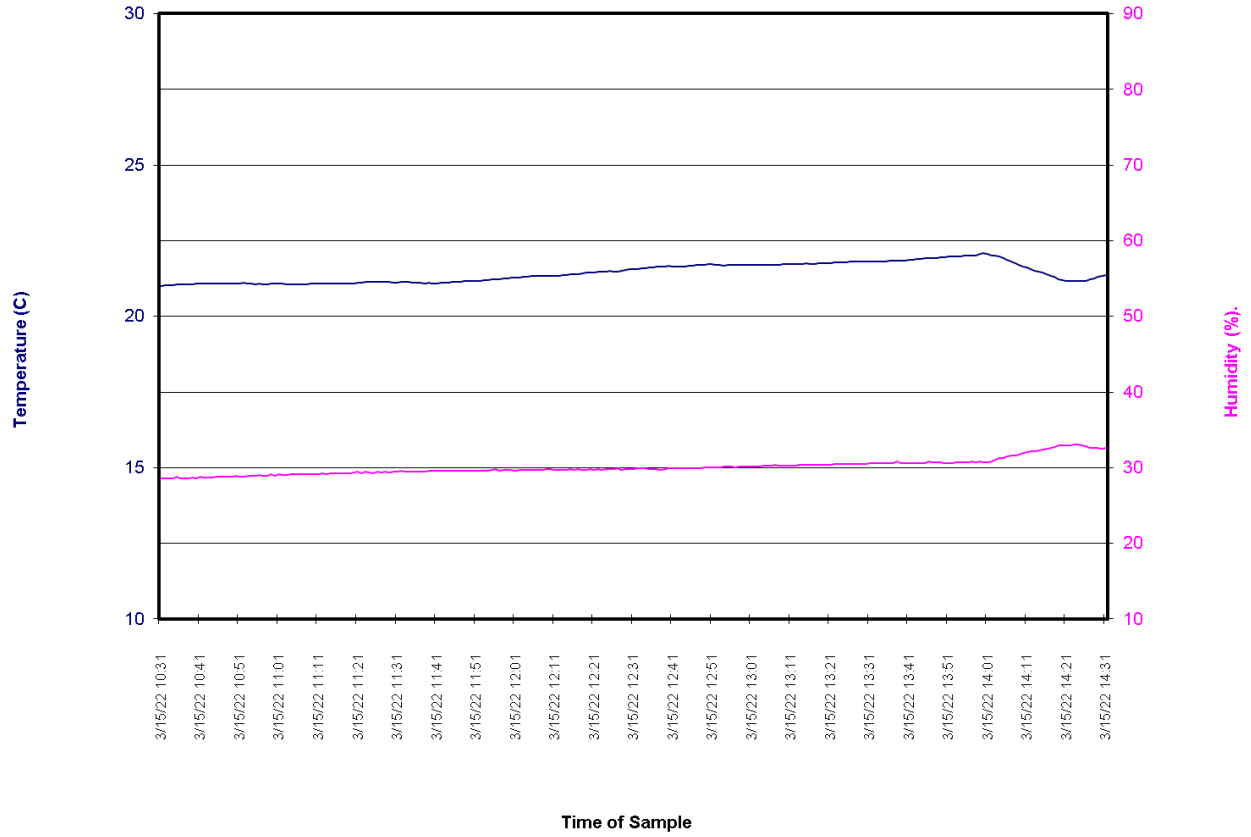
Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 17 - DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2022 Jeep Compass
Test Program: NCAP Frontal Impact

NHTSA No.: M20220300
Test Date: 3/15/2022

Frontal NCAP 220315 Test Time 14:31



APPENDIX A
PHOTOGRAPHS

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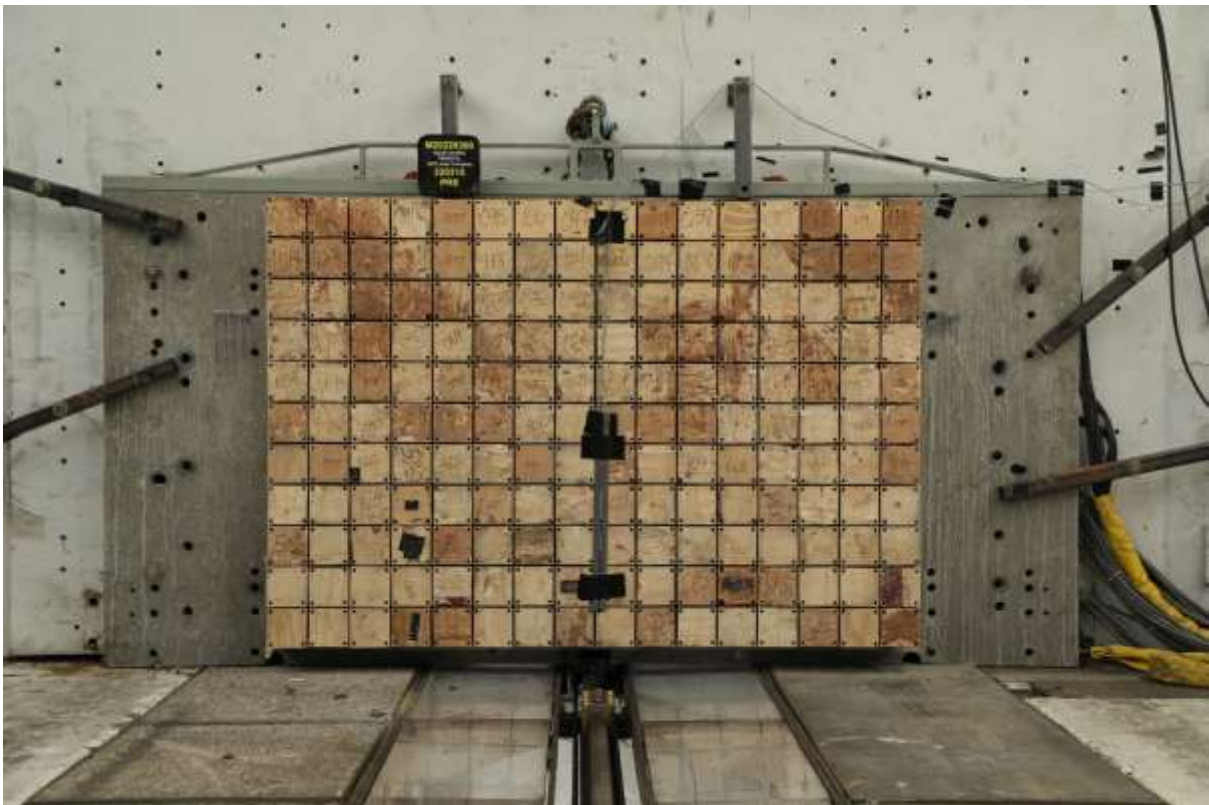
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35	Post-Test Driver Dummy and Vehicle Interior View	A-24
36	Pre-Test Driver's Seat Fore-Aft Markings	A-25
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41	Post-Test View of Belt Buckle and Latch Plate for Driver Dummy	A-27
42	Pre-Test Driver Dummy Feet	A-28
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69	Pre-Test Passenger Side Floorpan	A-42
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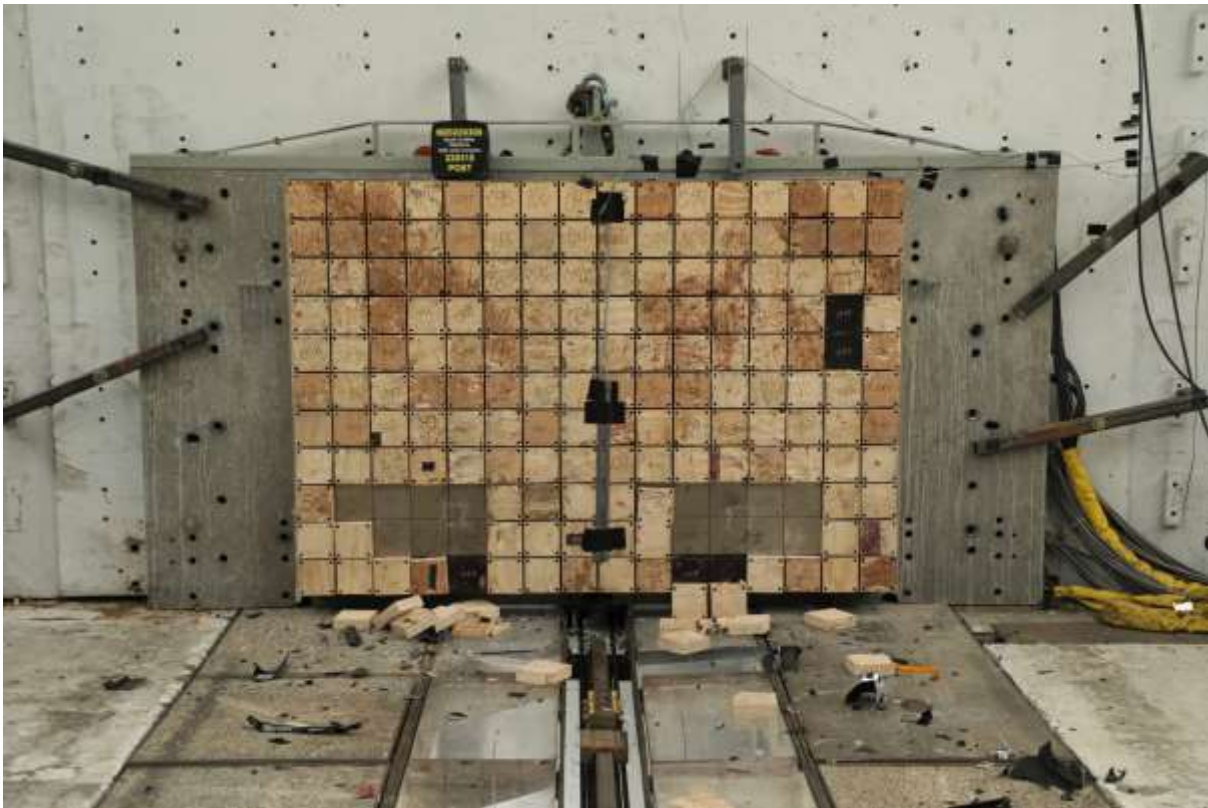
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71	Post-Test Passenger Dummy Face	A-43
72	Post-Test Passenger Dummy Contact with Airbag	A-43
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83	Monroney Label Photograph	A-49



001 Load Cell Location



002 Pre-Test Load Cell Wall



003 Post-Test Load Cell Wall



004 Manufacturer's Label



005 Tire Placard

Intentionally Left Blank



006 2022 Jeep Compass Frontal As Delivered



007 Left Rear 3-4 View, as Received



008 Pre-Test Front View of Test Vehicle



009 Post-Test Front View of Test Vehicle



010 Pre-Test Left View of Test Vehicle



011 Post-Test Left View of Test Vehicle



012 Pre-Test Right View of Test Vehicle



013 Post-Test Right View of Test Vehicle



014 Pre-Test Right Front 3-4 View



015 Post-Test Right Front 3-4 View



016 Pre-Test Left Rear 3-4 View



017 Post-Test Left Rear 3-4 View



018 Pre-Test Windshield View



019 Post-Test Windshield View



020 Pre-Test Engine Compartment View



021 Post-Test Engine Compartment View



022 Pre-Test Fuel Filler Cap View



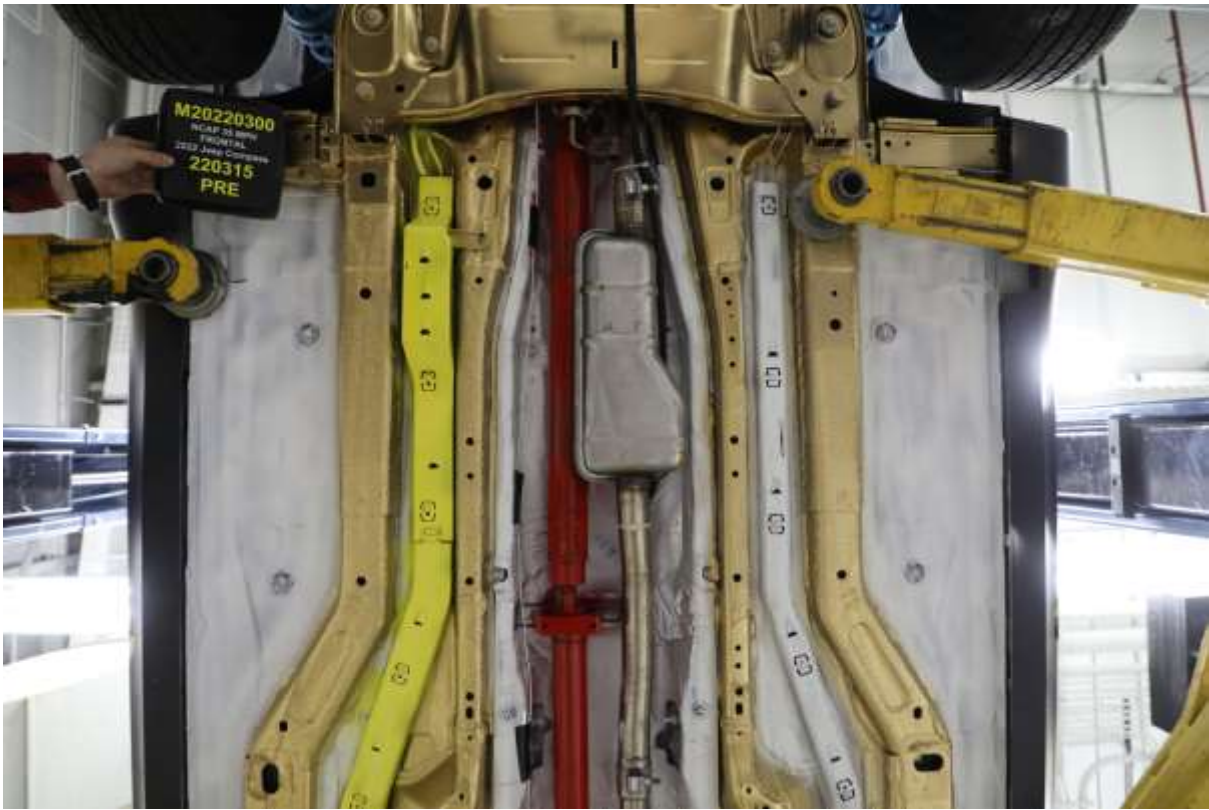
023 Post-Test Fuel Filler Cap View



024 Pre-Test Front Underbody View



025 Post-Test Front Underbody View



025a Pre-Test Mid Front Underbody View



025b Post-Test Mid Front Underbody View



025c Pre-Test Mid Rear Underbody View



025d Post-Test Mid Rear Underbody View



026 Pre-Test Rear Underbody View



027 Post-Test Rear Underbody View



028 Pre-Test Dummy Cable Routing



029 Post-Test Dummy Cable Routing



030 Pre-Test Driver Dummy Front View



031 Post-Test Driver Dummy Front View



032 Pre-Test Driver Dummy Window View



033 Post-Test Driver Dummy Window View



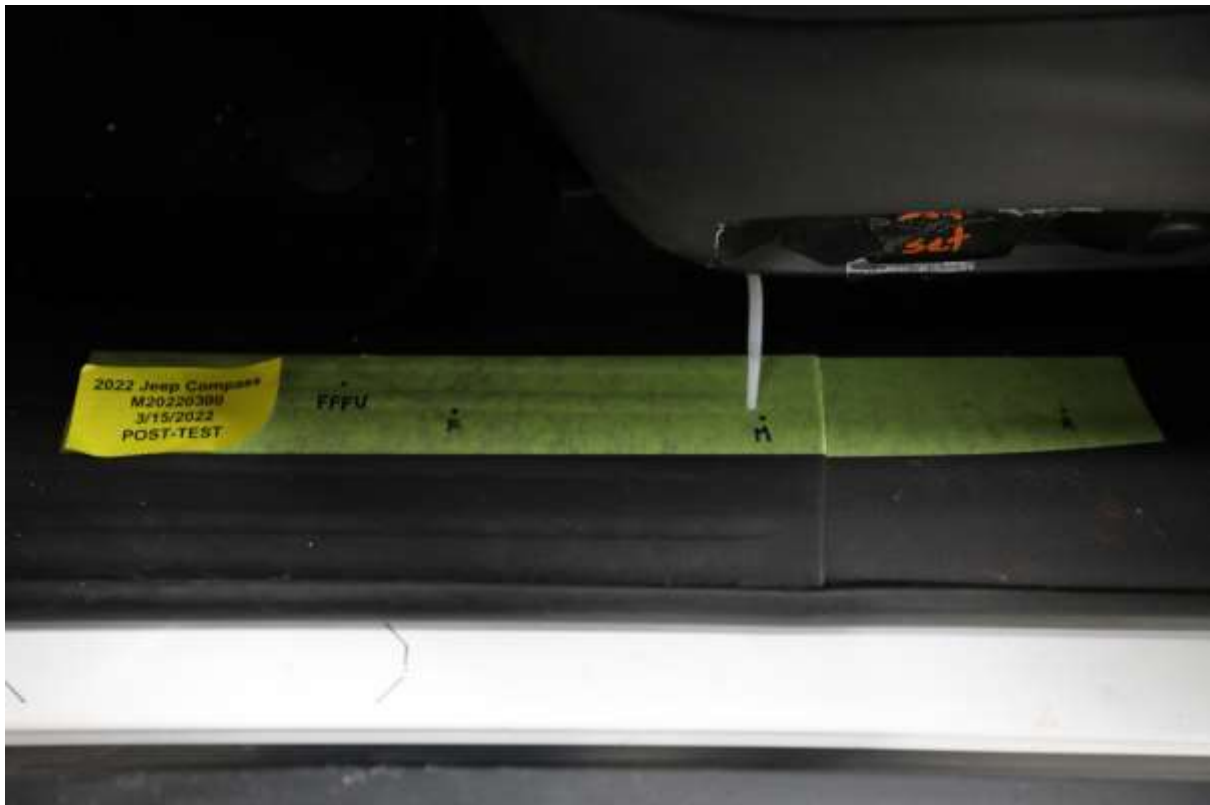
034 Pre-Test Driver Dummy and Vehicle Interior View



035 Post-Test Driver Dummy and Vehicle Interior View



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



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



038 Pre-Test View of Belt Anchorage for Driver Dummy



039 Post-Test View of Belt Anchorage for Driver Dummy



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



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



042 Pre-Test Driver Dummy Feet



043 Post-Test Driver Dummy Feet



044 Pre-Test Driver's Side Knee Bolster



045 Post-Test Driver's Side Knee Bolster



046 Pre-Test Driver's Side Floorpan



047 Post-Test Driver's Side Floorpan



048 Post-Test Driver Dummy Face



049 Post-Test Driver Dummy Contact with Airbag



050 Post-Test Driver Dummy Contact with Headrest

Intentionally Left Blank



051 Pre-Test View of the Steering Wheel¹

¹ The pointer was bumped out of alignment after setup, but the steering column was verified to be in the correct position prior to the test.



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



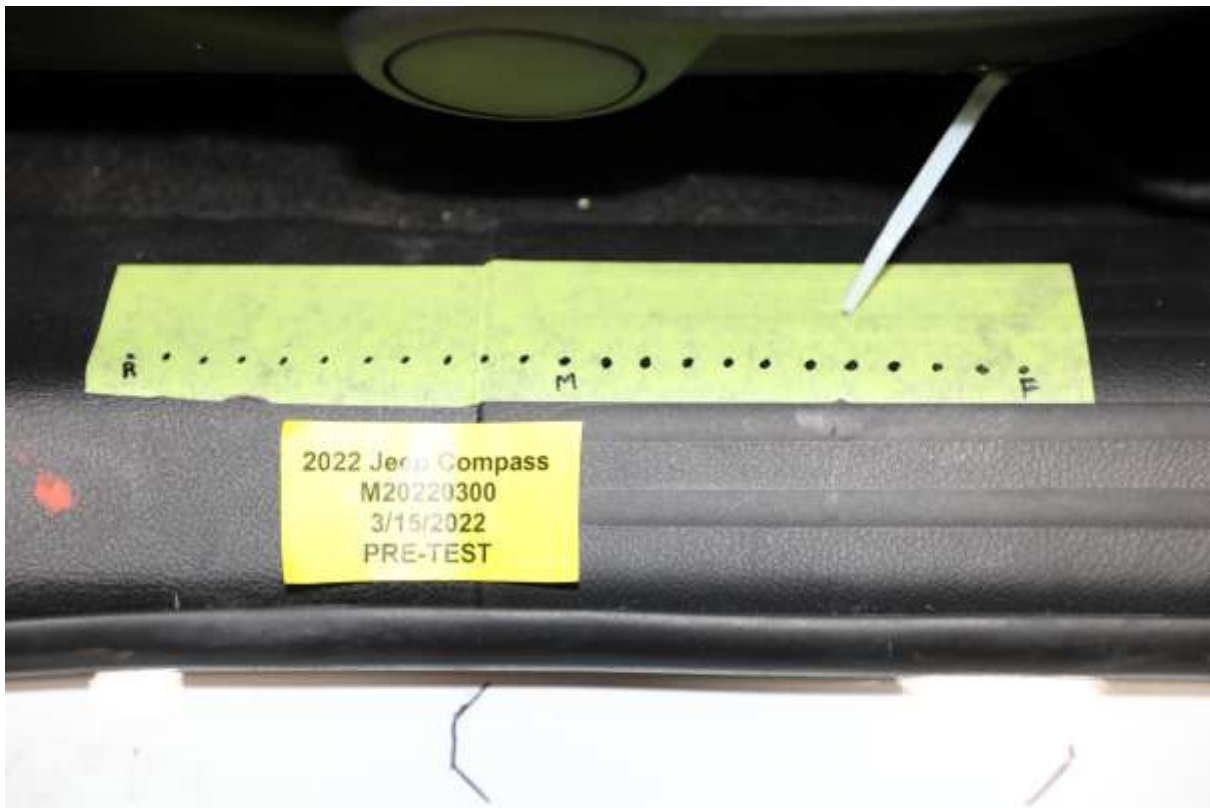
056 Post-Test Passenger Dummy Window View



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 Markings¹

¹ The pointer was bumped out of alignment after setup, but the seat was verified to be in the correct position prior to the test.



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



061 Pre-Test View of Belt Anchorage for Passenger Dummy



062 Post-Test View of Belt Anchorage for Passenger Dummy



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



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



065 Pre-Test Passenger Dummy Feet



066 Post-Test Passenger Dummy Feet



067 Pre-Test Passenger's Side Knee Bolster



068 Post-Test Passenger's Side Knee Bolster



069 Pre-Test Passenger's Side Floorpan



070 Post-Test Passenger's Side Floorpan



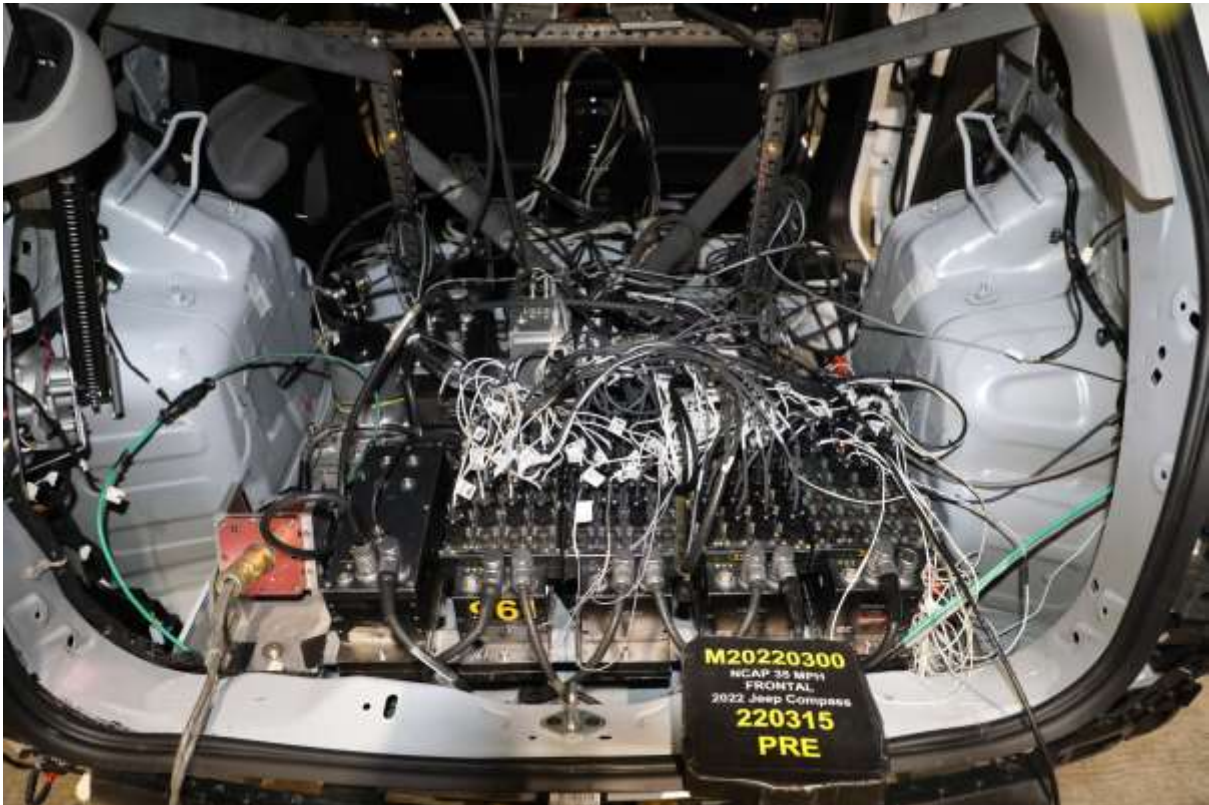
071 Post-Test Passenger Dummy Face



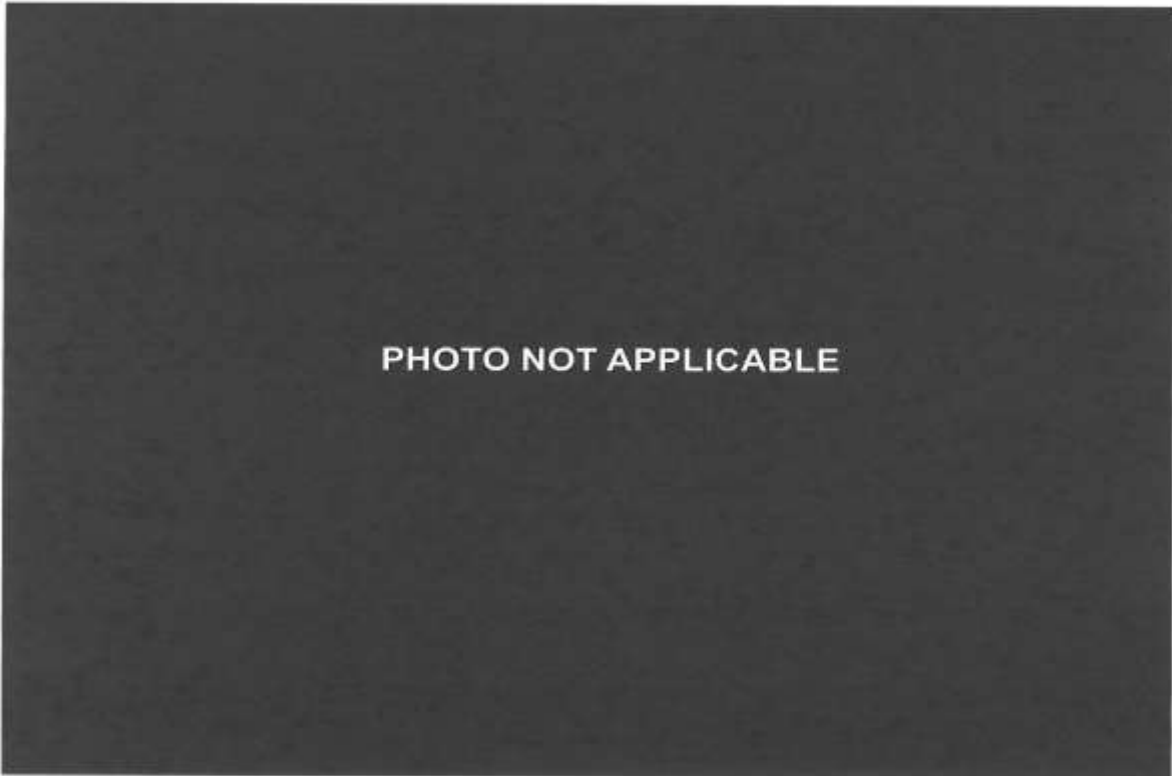
072 Post-Test Passenger Dummy Contact with Airbag



073 Post-Test Passenger Dummy Contact with Headrest



074 Photograph of Ballast Installed in Vehicle



075 Post-Test Stoddard Spillage Location View



076 Post-Test Speed Trap Read out



077 Vehicle at 0° on Static Rollover Device



078 Vehicle at 90° on Static Rollover Device



079 Vehicle at 180° on Static Rollover Device



080 Vehicle at 270° on Static Rollover Device



081 Vehicle at 360° on Static Rollover Device



082 2022 Jeep Compass Frontal Impact Event

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

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

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

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

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

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

NHTSA

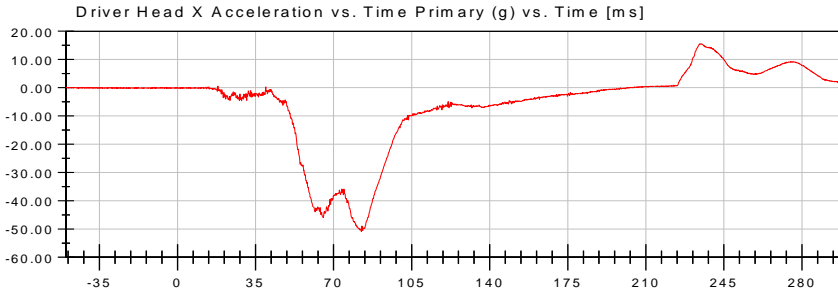
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

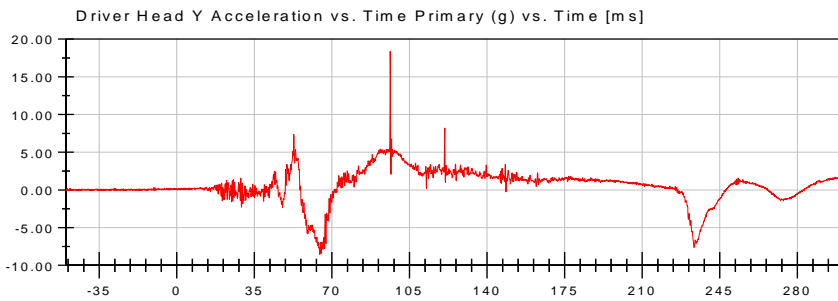
Position #2 Hybrid III Small Adult Female (EB7513)



<Max>
15.52 g at 234.08 ms

<Min>
-50.91 g at 82.40 ms

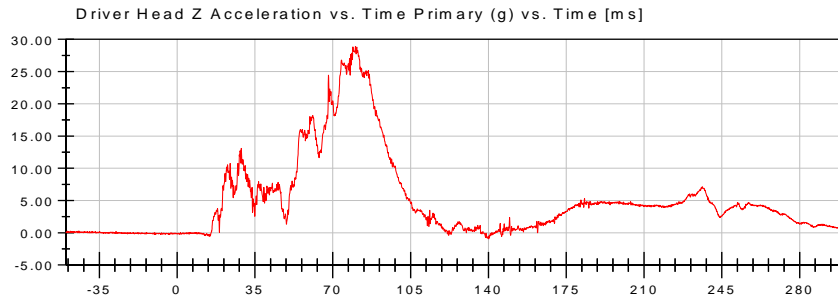
CFC_1000



<Max>
18.37 g at 96.32 ms

<Min>
-8.54 g at 64.48 ms

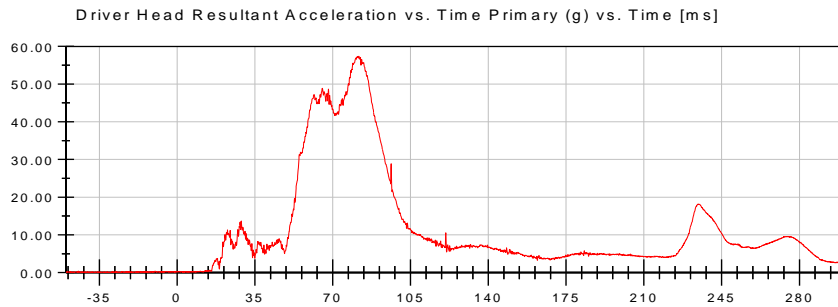
CFC_1000



<Max>
28.88 g at 80.24 ms

<Min>
-0.96 g at 140.08 ms

CFC_1000



<Max>
57.38 g at 81.76 ms

<Min>
0.01 g at -42.16 ms

CFC_1000



NHTSA

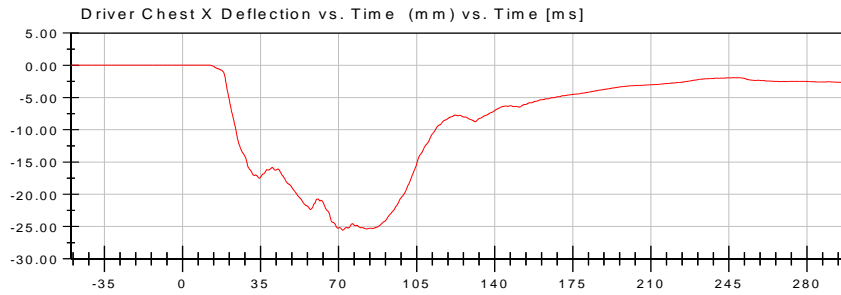
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



<Max>

0.03 mm at 5.52 ms

<Min>

-25.56 mm at 71.92 ms

CFC_600



NHTSA

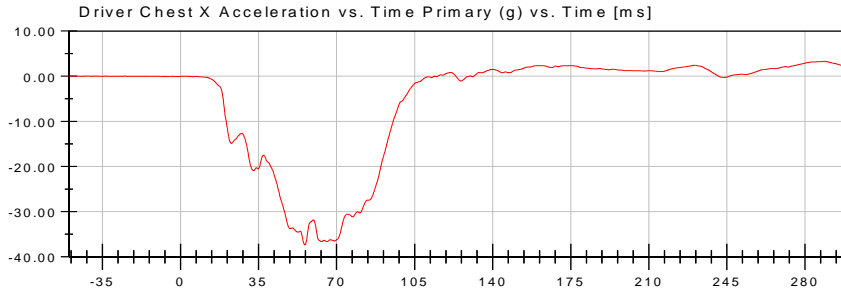
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



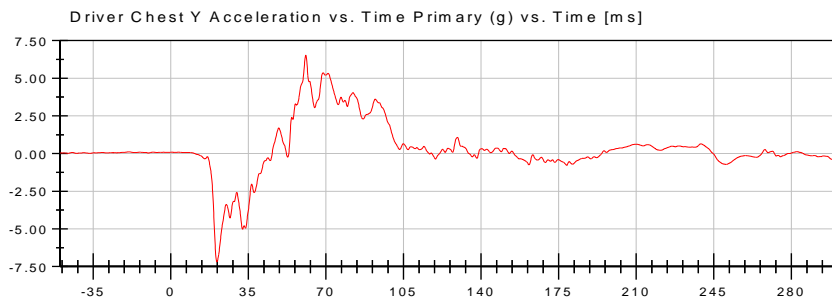
<Max>

3.30 g at 288.80 ms

<Min>

-37.35 g at 55.76 ms

CFC_180



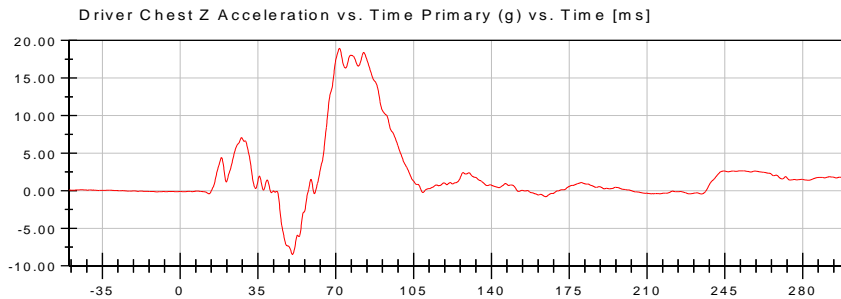
<Max>

6.54 g at 60.96 ms

<Min>

-7.19 g at 20.80 ms

CFC_180



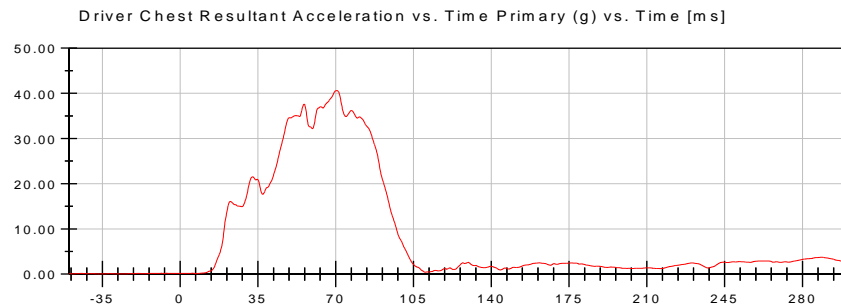
<Max>

18.94 g at 71.68 ms

<Min>

-8.49 g at 50.48 ms

CFC_180



<Max>

40.60 g at 70.48 ms

<Min>

0.04 g at -36.72 ms

CFC_180



NHTSA

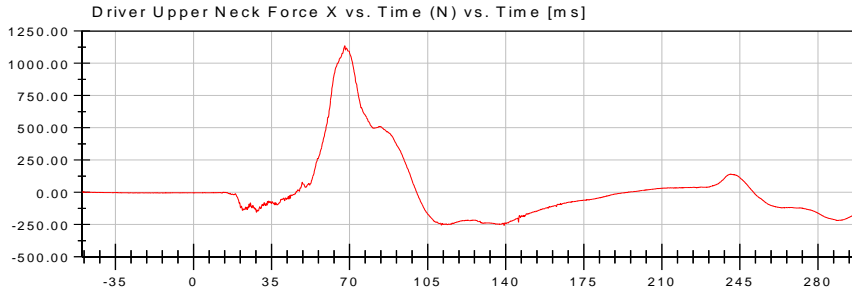
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



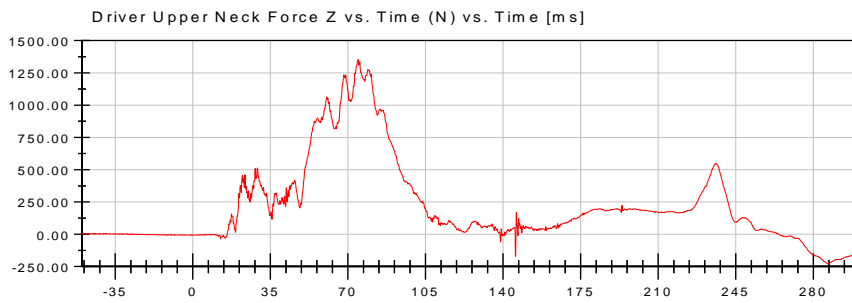
<Max>

1,135.70 N at 67.84 ms

<Min>

-256.41 N at 139.28 ms

CFC_1000



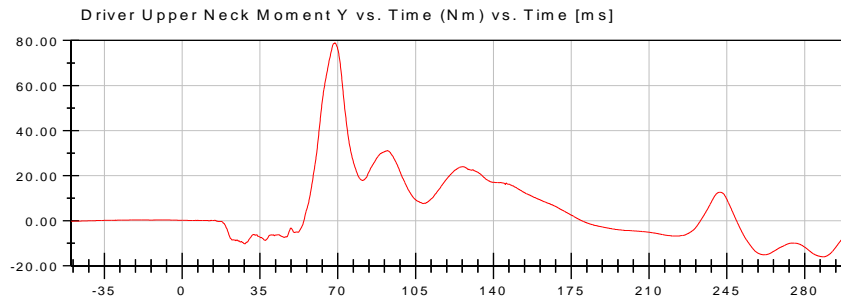
<Max>

1,353.53 N at 74.64 ms

<Min>

-228.09 N at 286.40 ms

CFC_1000



<Max>

78.90 Nm at 68.72 ms

<Min>

-16.02 Nm at 288.48 ms

CFC_600





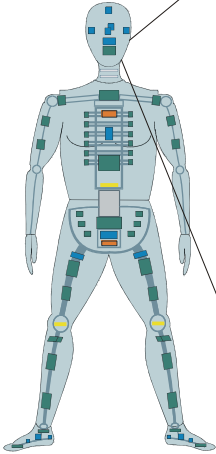
2022 Jeep Compass NCAP 35 mph Frontal Impact

Date: 03/15/2022
Time: 14:31

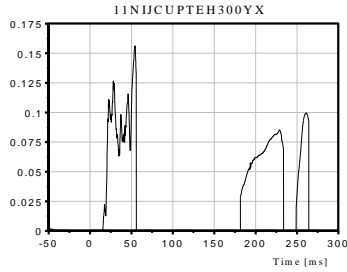
Neck Injury Predictor (NIJ)

Customer: NHTSA
Test Number: M20220300
Test Orientation = Frontal
Fzc(Tension) = 6806
Fzc(Compression) = 6160
Myc(Extension) = 135
Myc(Flexion) = 310

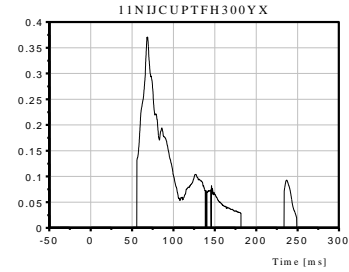
TRC Inc. Test Lab: CTF
Test Number: 220315



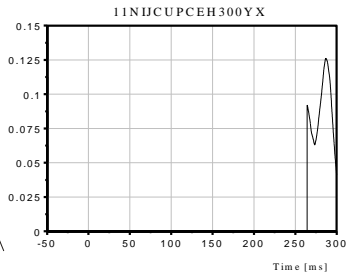
Dummy: HIII 50th Male
Seating Position:
Driver
NIJ Source Code: (Fz/Fzc)+(My/Myc)



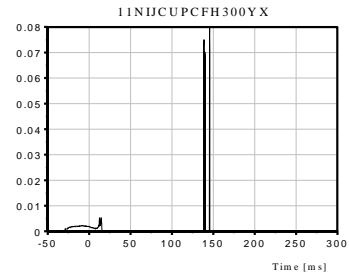
Max [NTE] 0.1563 at 54.32 ms



Max [NTF] 0.3708 at 68.88 ms



Max [NCE] 0.1261 at 287.04 ms



Max [NCF] 0.0797 at 145.60 ms

NHTSA

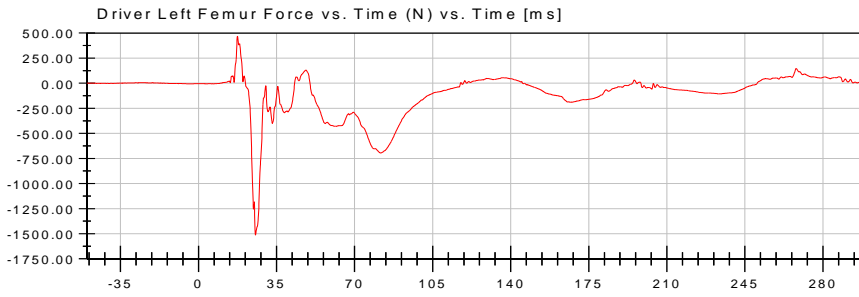
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



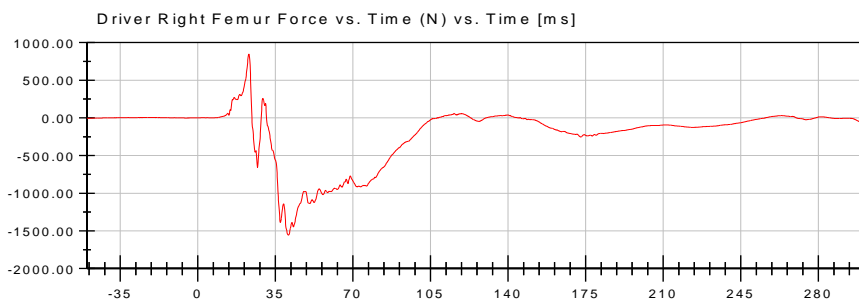
<Max>

466.77 N at 17.44 ms

<Min>

-1,512.76 N at 25.52 ms

CFC_600



<Max>

845.50 N at 23.04 ms

<Min>

-1,555.19 N at 40.88 ms

CFC_600



NHTSA

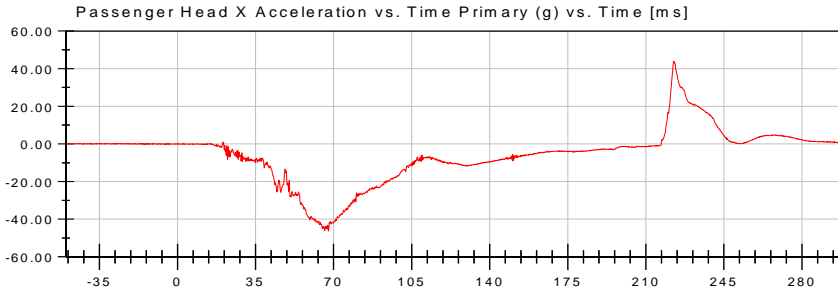
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



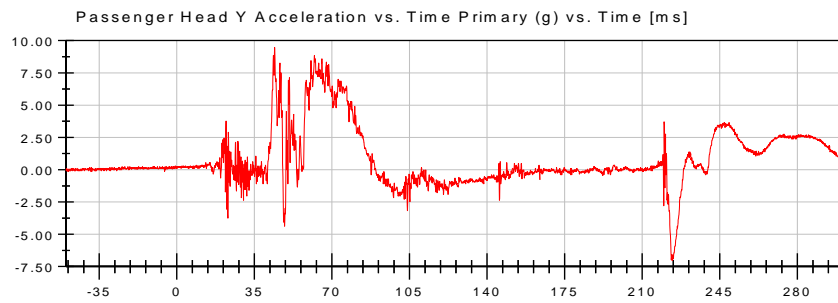
<Max>

43.92 g at 222.56 ms

<Min>

-46.35 g at 67.68 ms

CFC_1000



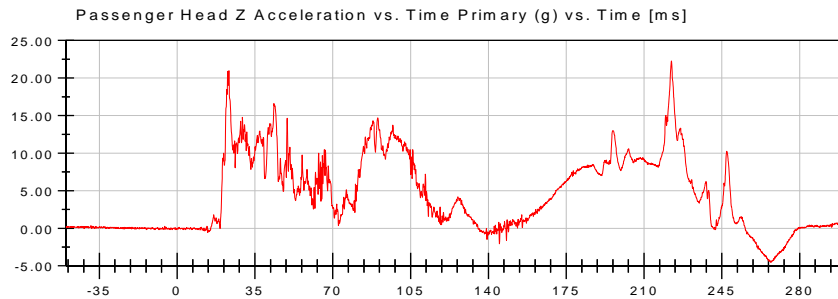
<Max>

9.47 g at 44.16 ms

<Min>

-7.04 g at 223.52 ms

CFC_1000



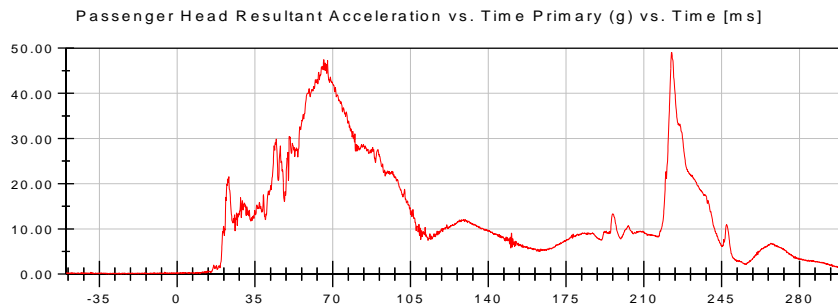
<Max>

22.27 g at 222.32 ms

<Min>

-4.55 g at 267.04 ms

CFC_1000



<Max>

49.03 g at 222.48 ms

<Min>

0.03 g at -37.84 ms

CFC_1000



NHTSA

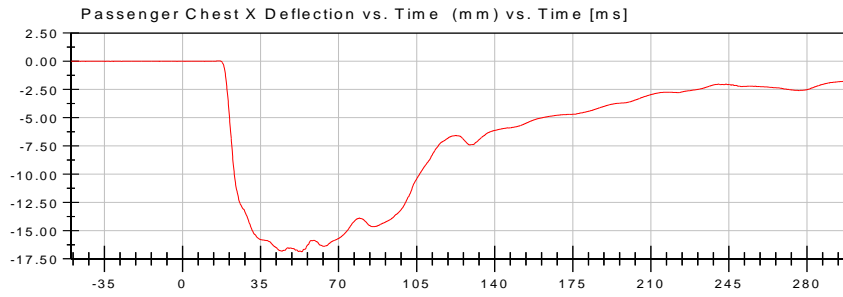
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



<Max>

0.02 mm at 16.72 ms

<Min>

-16.88 mm at 53.44 ms

CFC_600



NHTSA

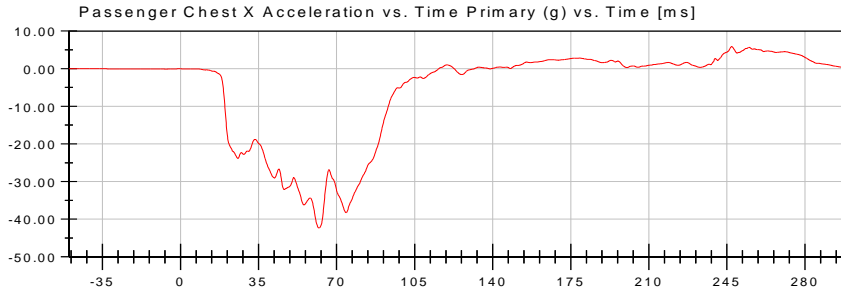
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



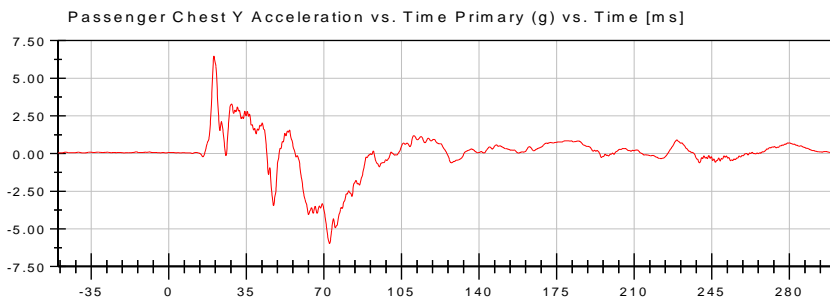
<Max>

5.86 g at 247.12 ms

<Min>

-42.33 g at 62.08 ms

CFC_180



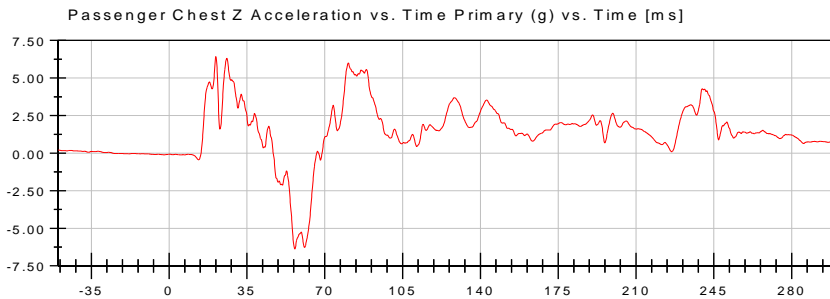
<Max>

6.47 g at 20.40 ms

<Min>

-5.97 g at 72.56 ms

CFC_180



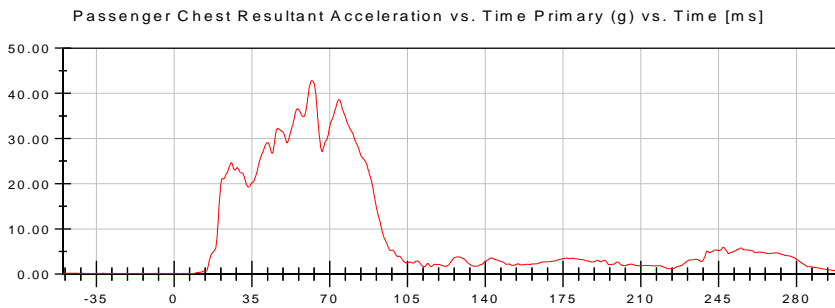
<Max>

6.43 g at 20.96 ms

<Min>

-6.37 g at 56.56 ms

CFC_180



<Max>

42.84 g at 62.00 ms

<Min>

0.08 g at -19.92 ms

CFC_180



NHTSA

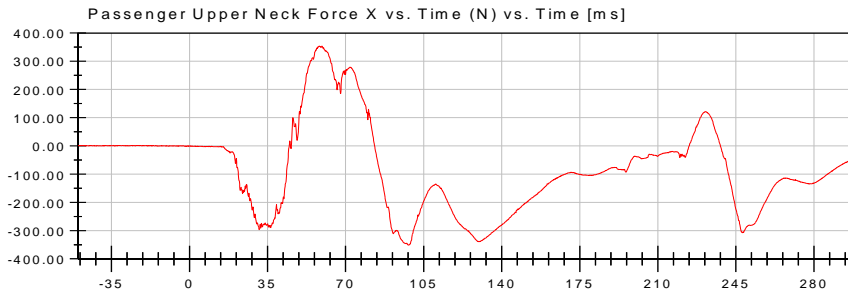
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



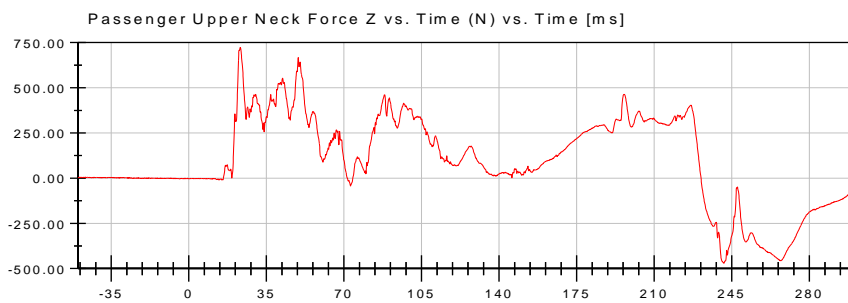
<Max>

353.83 N at 58.08 ms

<Min>

-351.97 N at 98.32 ms

CFC_1000



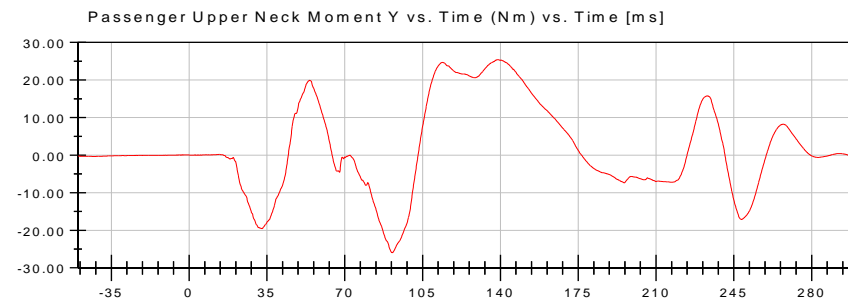
<Max>

722.70 N at 23.20 ms

<Min>

-470.91 N at 241.44 ms

CFC_1000



<Max>

25.42 Nm at 138.88 ms

<Min>

-25.95 Nm at 91.36 ms

CFC_600





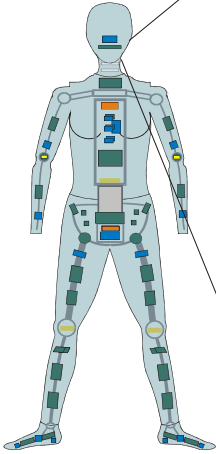
2022 Jeep Compass NCAP 35 mph Frontal Impact

Date: 03/15/2022
Time: 14:31

Neck Injury Predictor (NIJ)

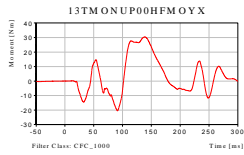
Customer: NHTSA
Test Number: M20220300

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

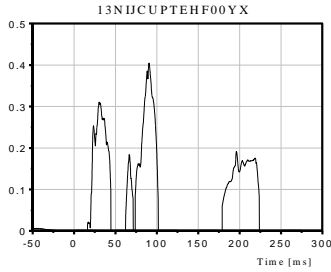


Dummy: HIII 5th Female
Seating Position:
Right Front Passenger

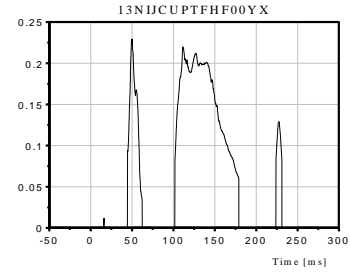
NIJ Source Code: (Fz/Fzc)+(My/Myc)



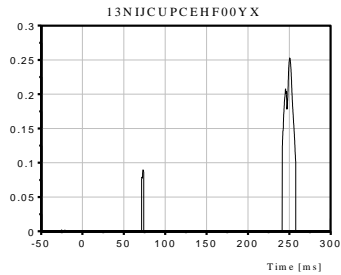
TRC Inc. Test Lab: CTF
Test Number: 220315



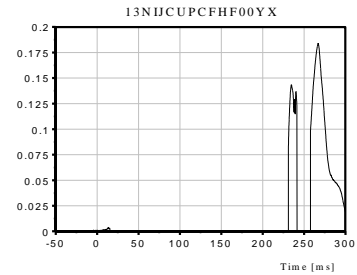
Max [NTE] 0.4049 at 90.64 ms



Max [NTF] 0.2294 at 50.24 ms



Max [NCE] 0.2528 at 250.56 ms



Max [NCF] 0.1838 at 267.12 ms

NHTSA

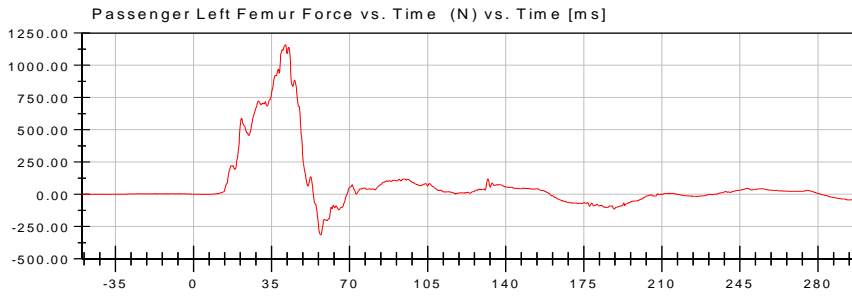
Test Lab: CTF

Test Number: 220315 (M20220300)

Test Date: 03/15/2022

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

Position #2 Hybrid III Small Adult Female (EB7513)



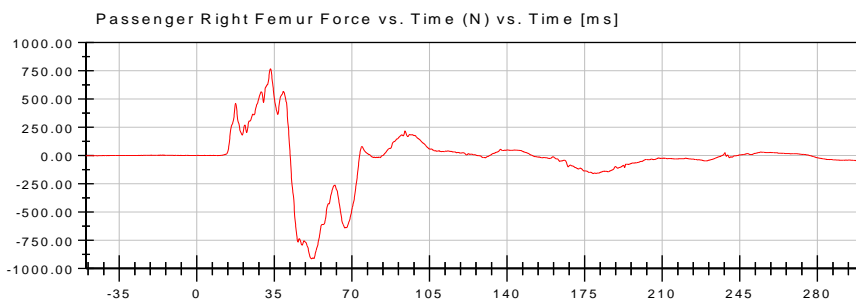
<Max>

1,161.14 N at 41.28 ms

<Min>

-314.33 N at 57.12 ms

CFC_600



<Max>

768.23 N at 33.28 ms

<Min>

-913.35 N at 51.76 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. 75

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	880	Yes
B	Shoulder Pivot Height	505.5 - 520.7	510	Yes
C	H-Point Height	83.8 - 88.9	86	Yes
D	H-Point From Seatback	134.6 - 139.7	137	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	90	Yes
F	Thigh Clearance	139.7 - 154.9	146	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	295	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	337	Yes
J	Elbow Rest Height	190.5 - 210.8	198	Yes
K	Buttock Knee Length	579.1 - 604.5	601	Yes
L	Popliteal Height	429.3 - 454.7	440	Yes
M	Knee Pivot Height	485.1 - 500.4	494	Yes
N	Buttock Popliteal Length	452.1 - 477.5	470	Yes
O	Chest Depth	213.4 - 228.6	221	Yes
P	Foot Length	251.5 - 266.7	264	Yes
V	Shoulder Breadth	421.6 - 436.9	425	Yes
W	Foot Breadth	91.4 - 106.7	96	Yes
Y	Chest Circumference	970.3 - 1000.8	990	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 75-2
Test Date: 2/15/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	252.7 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	6.3 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	5.81 %	Yes

Test meets specifications.

Condition: Used

Comments:

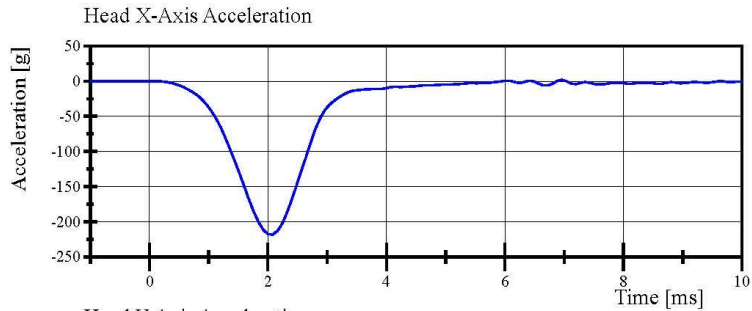
Head Skin S/N: N/A

Transportation Research Center Inc.

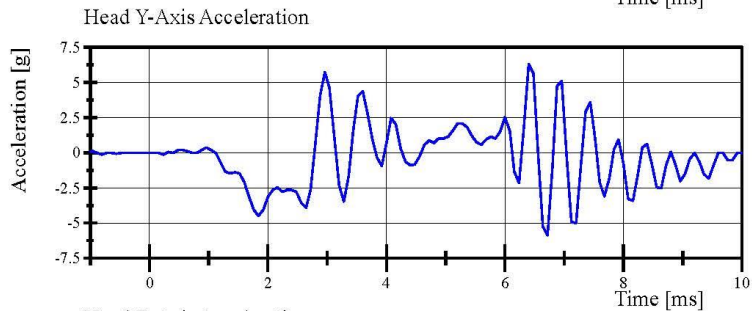
Front Head Drop

HIII 50th Serial No. 037 Certification No. 75-2

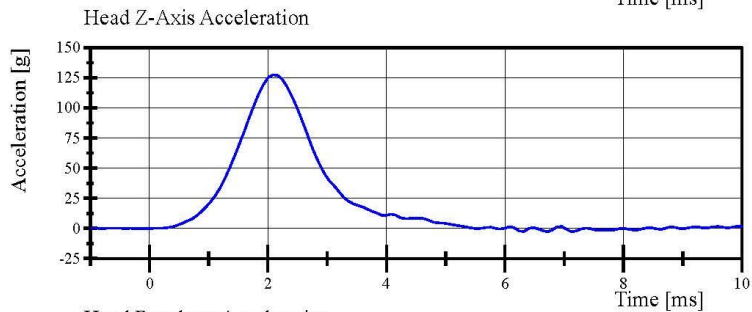
Test Date: 2/15/2022



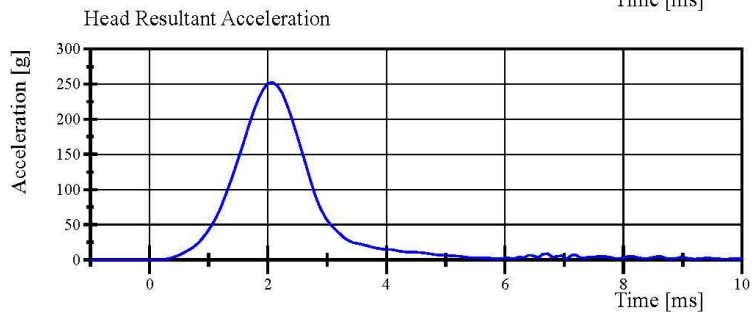
Filter Class: CFC_1000
Max: 2.2 g at 7.0 ms
Min: -218.0 g at 2.1 ms



Filter Class: CFC_1000
Max: 6.3 g at 6.4 ms
Min: -5.9 g at 6.7 ms



Filter Class: CFC_1000
Max: 127.6 g at 2.1 ms
Min: -2.7 g at 6.7 ms



Filter Class: CFC_1000
Max: 252.7 g at 2.1 ms
Min: 0.0 g at -0.7 ms

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

02.15.2022 11:27:30 612



Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 75-1

Test Date: 2/14/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.897 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	34.0 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-27.26 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-20.68 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-18.45 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-18.45 g	Yes
Total Head D-Plane Rotation			
Peak	(-64) - (-78) °	-66.8 °	Yes
Time of Peak	57 - 64 ms	58.7 ms	Yes
Total Head D-Plane Rotation			
Decay to 0°	113 - 128 ms	117.5 ms	Yes
Total Neck Occipital Condyles Moment			
Peak	88.1 - 108.4 N·m	96.40 N·m	Yes
Time of Peak	47 - 58 ms	48.6 ms	Yes
Total Neck Occipital Condyles Moment			
Decay to 0 N·m	97 - 107 ms	97.3 ms	Yes

Test meets specifications.

Condition: Used

Comments:

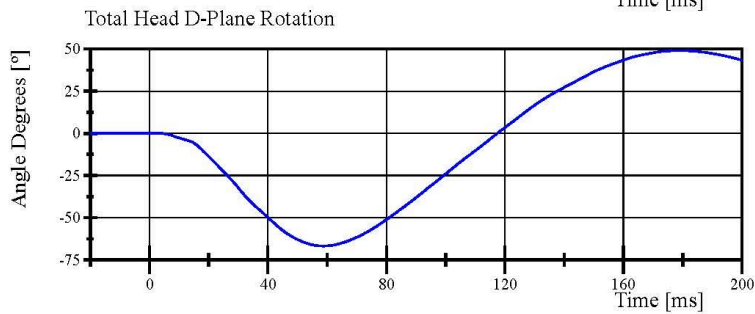
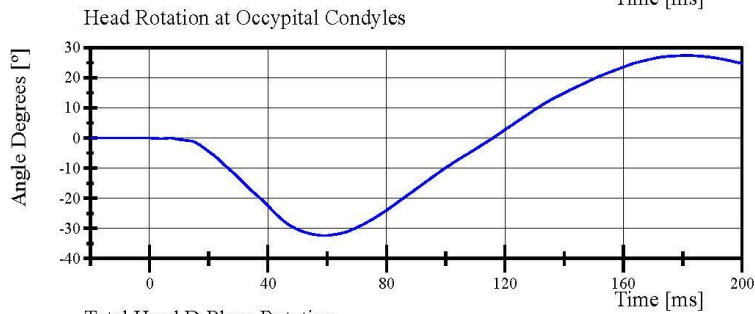
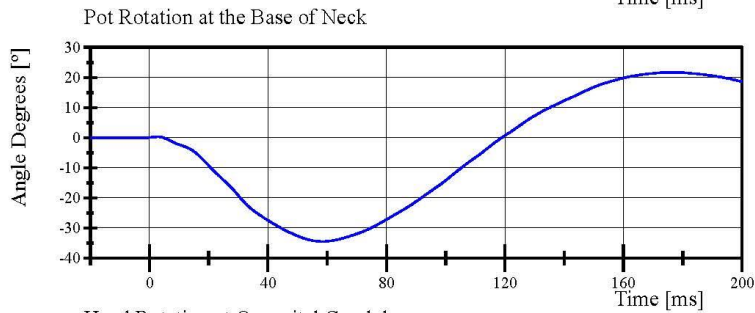
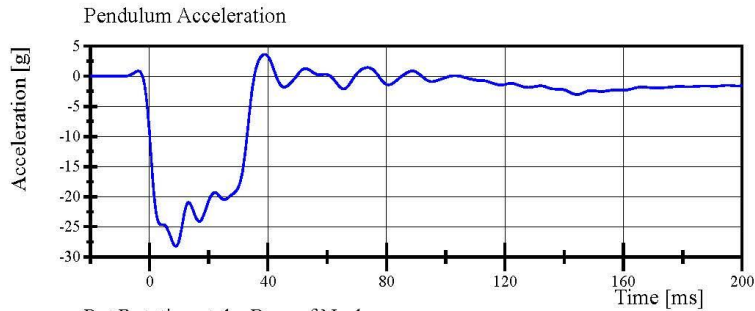
Neck S/N: 4728

Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 037 Certification No. 75-1

Test Date: 2/14/2022



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

02.14.2022 12:43:53 1875

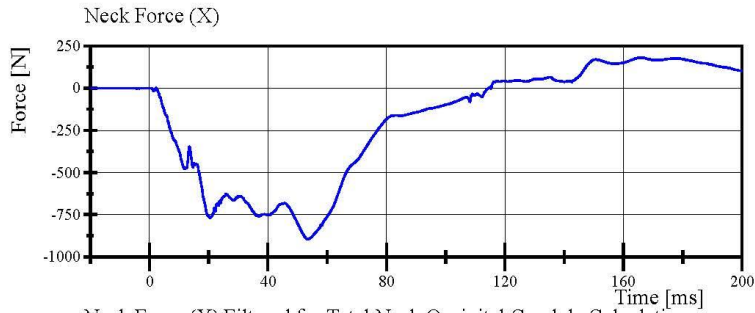


Transportation Research Center Inc.

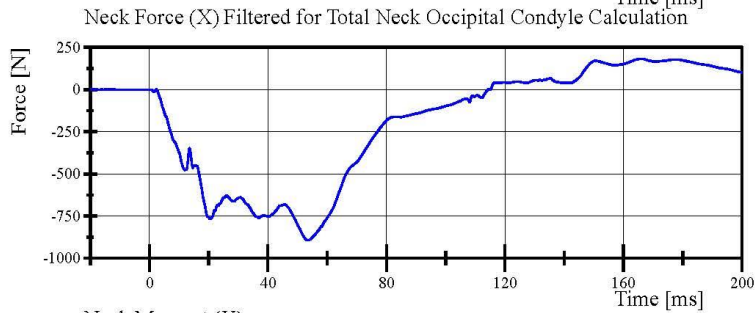
Neck Flexion

HIII 50th Serial No. 037 Certification No. 75-1

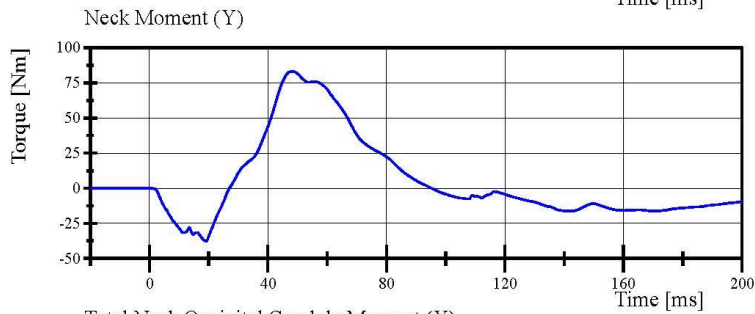
Test Date: 2/14/2022



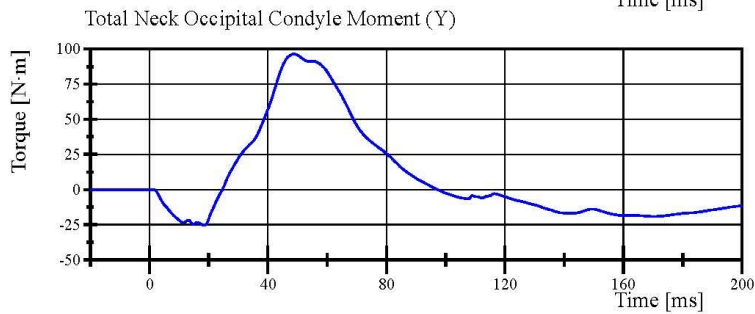
Filter Class: CFC_1000
Max: 183.0 N at 166.1 ms
Min: -894.2 N at 53.7 ms



Filter Class: CFC_600
Max: 182.1 N at 166.1 ms
Min: -894.0 N at 53.6 ms



Filter Class: CFC_600
Max: 83.2 Nm at 48.3 ms
Min: -37.8 Nm at 19.1 ms



Filter Class: Without_(Constar
Max: 96.4 N·m at 48.6 ms
Min: -25.3 N·m at 18.5 ms

Transportation Research Center Inc.

Neck Extension
HIII 50th Serial No. 037 Certification No. 75-3
Test Date: 2/14/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.951 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	38.6 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	20.18 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	18.51 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	14.62 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	14.62 g	Yes
Total Head D-Plane Rotation Peak	81 - 106 °	94.0 °	Yes
Time of Peak	72 - 82 ms	79.3 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	159.2 ms	Yes
Total Neck Occipital Condyles Moment Peak	(-52.9) - (-80) N·m	-70.93 N·m	Yes
Time of Peak	65 - 79 ms	73.1 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	143.4 ms	Yes

Test meets specifications.

Condition: Used

Comments:

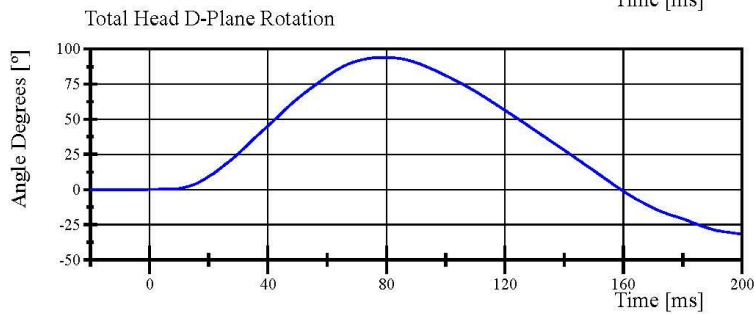
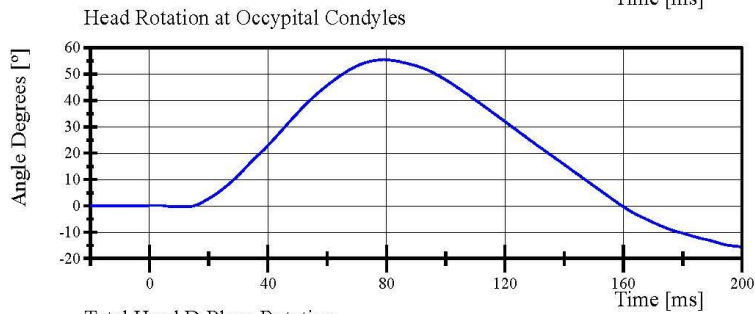
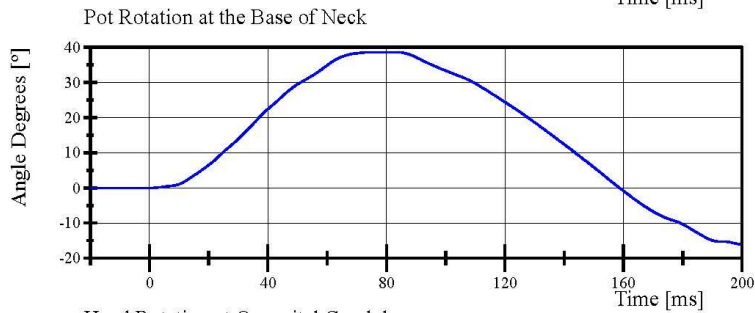
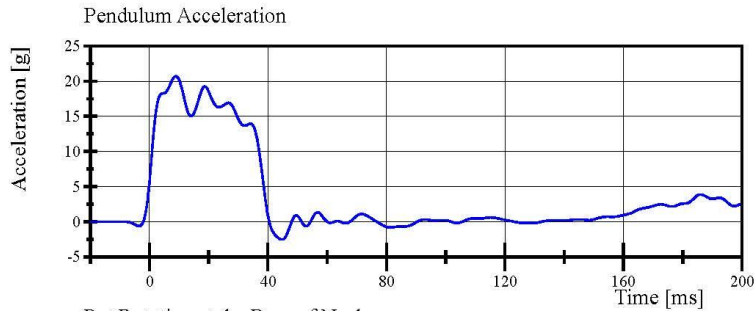
Neck S/N: 4728

Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 037 Certification No. 75-3

Test Date: 2/14/2022



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

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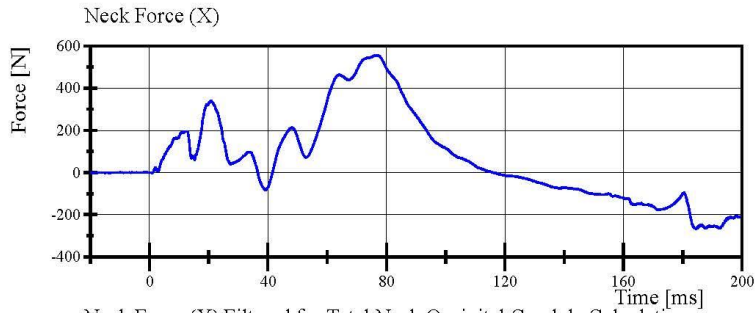


Transportation Research Center Inc.

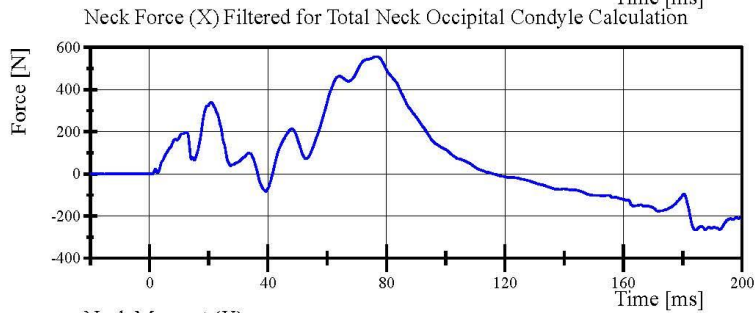
Neck Extension

HIII 50th Serial No. 037 Certification No. 75-3

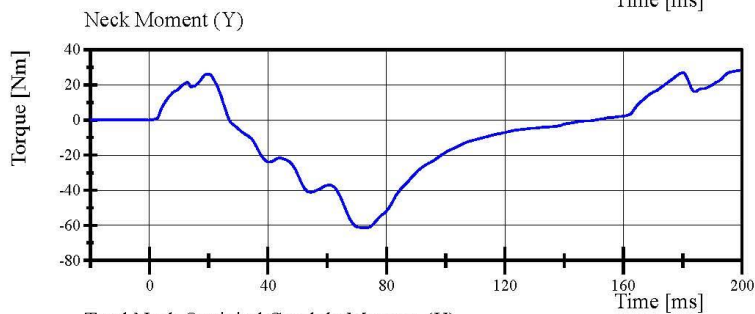
Test Date: 2/14/2022



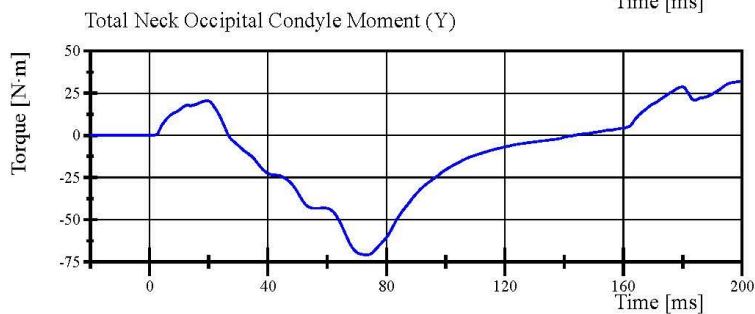
Filter Class: CFC_1000
Max: 556.7 N at 76.4 ms
Min: -267.4 N at 184.6 ms



Filter Class: CFC_600
Max: 556.3 N at 76.4 ms
Min: -265.7 N at 184.5 ms



Filter Class: CFC_600
Max: 28.4 Nm at 199.4 ms
Min: -61.4 Nm at 72.9 ms



Filter Class: Without_(Constar
Max: 32.1 N·m at 199.4 ms
Min: -70.9 N·m at 73.1 ms

Transportation Research Center Inc.

Front Thorax
HIII 50th Serial No. 037 Certification No. 75-1
Test Date: 2/15/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.610 m/s	Yes
Probe Force Peak	(-5,160) - (-5,894) N	-5,326.8 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-67.89 mm	Yes
Internal Hysteresis	69 - 85 %	72.3 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: 2565

Rib Set S/N: 02033121A

Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211
Report Number: 037_H3F75

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02.15.2022 15:00:13 417

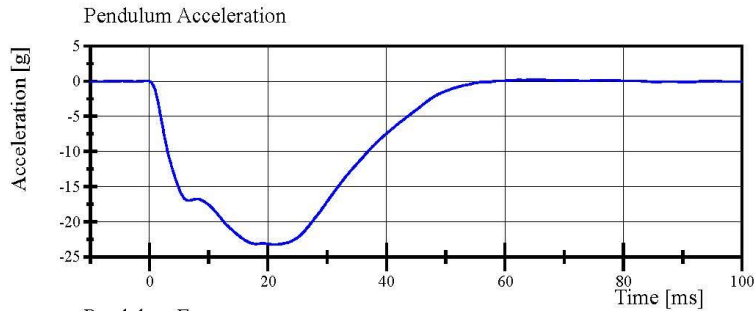


Transportation Research Center Inc.

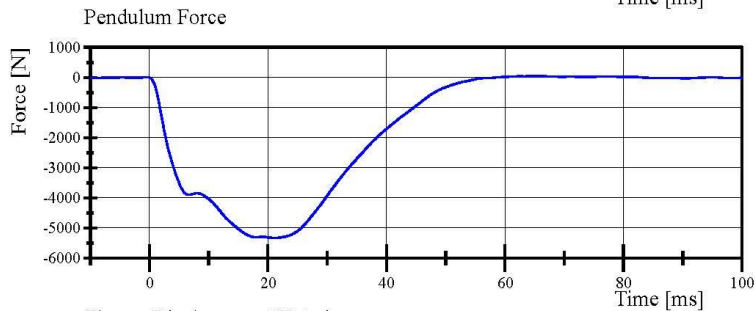
Front Thorax

HIII 50th Serial No. 037 Certification No. 75-1

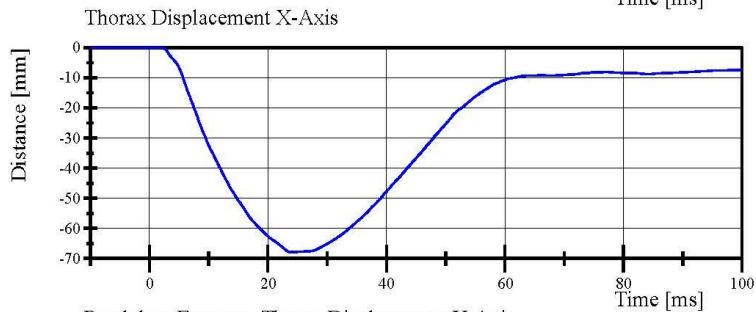
Test Date: 2/15/2022



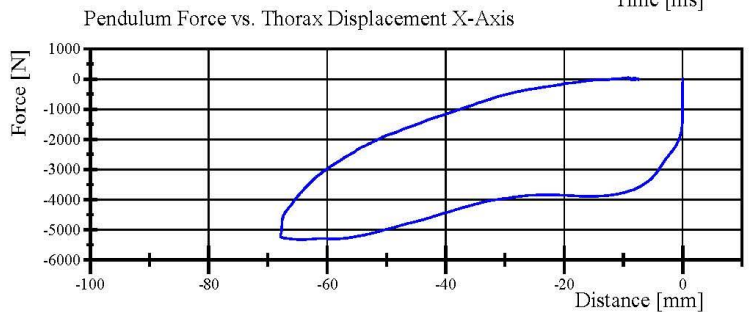
Filter Class: CFC_180
Max: 0.2 g at 65.6 ms
Min: -23.2 g at 21.2 ms



Filter Class: CFC_180
Max: 50.4 N at 65.6 ms
Min: -5,326.8 N at 21.2 ms



Filter Class: CFC_600
Max: 0.0 mm at -9.5 ms
Min: -67.9 mm at 23.9 ms



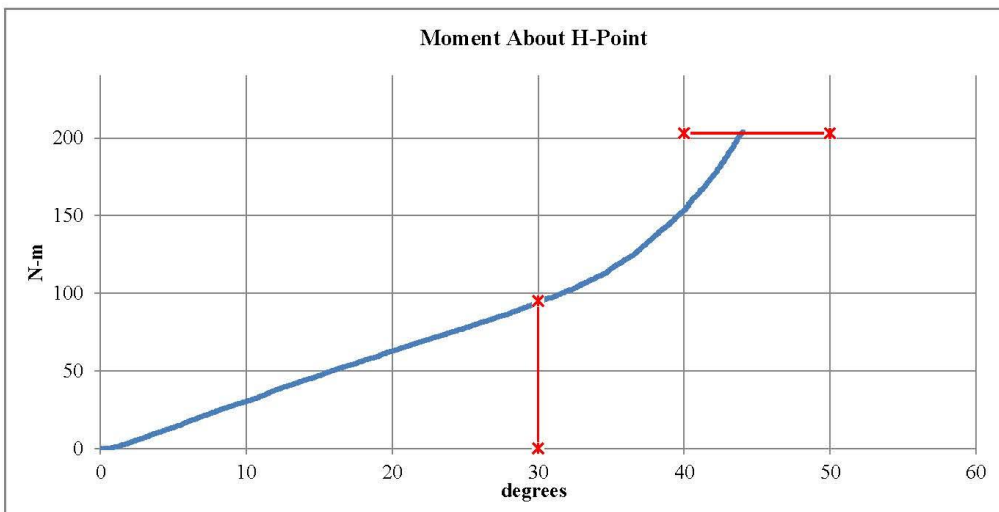
Filter Class: CFC_180
Max: 50.4 N at -9.2 mm
Min: -5,326.8 N at -64.4 mm

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

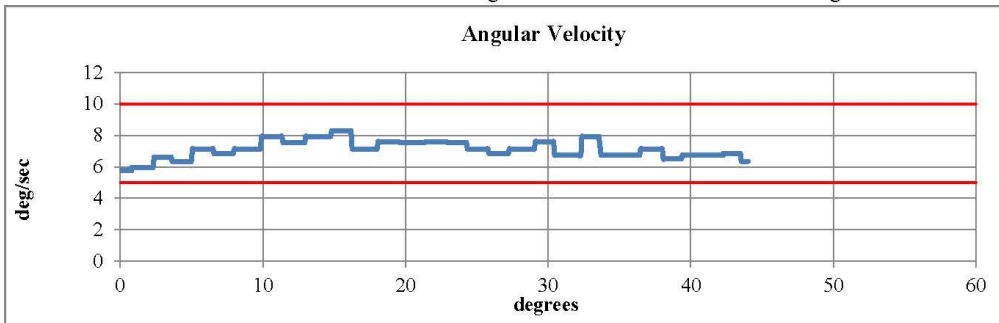


Serial Number: 037 Date: 14-Feb-2022
Side Tested: Left Hip Time: 14:09
Test Number: 1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.7 °C Pass
Humidity	10 - 70	30 % Pass
Moment at 30°	0 ≤ 94.9	94.45 N-m Pass
Angle at 203 Nm	40 - 50	44.03 deg Pass
Average Velocity	5 - 10	7.1 deg/sec Pass



Max: 8.29 deg/sec Min: 5.77 deg/sec



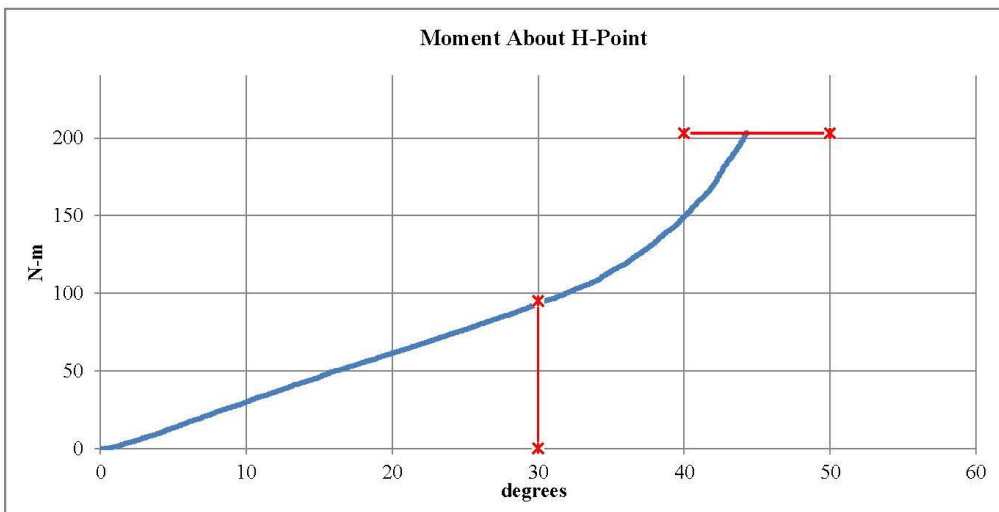
Comments:
Pelvis S/N: EK3565

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

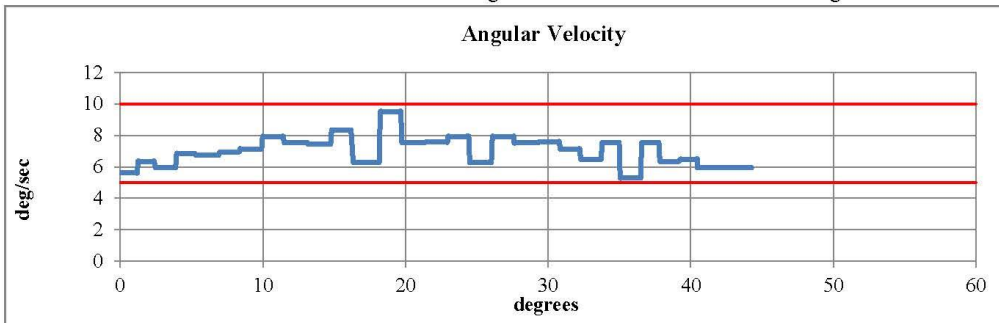


Serial Number: 037 Date: 15-Feb-2022
Side Tested: Right Hip Time: 7:17
Test Number: 1

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.4 °C Pass
Humidity	10 - 70	30 % Pass
Moment at 30°	0 ≤ 94.9	93.84 N-m Pass
Angle at 203 Nm	40 - 50	44.27 deg Pass
Average Velocity	5 - 10	6.99 deg/sec Pass



Max: 9.52 deg/sec Min: 5.29 deg/sec



Comments:
Pelvis S/N: EK3565

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 75-2
Test Date: 2/14/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.103 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,764.65 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: 2672

Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211
Report Number: 037_H3F75

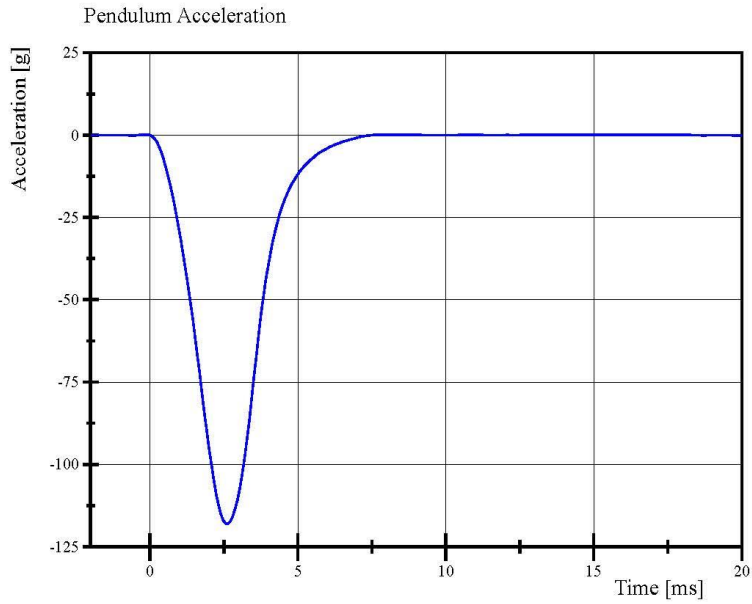
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02.14.2022 11:17:08 1719

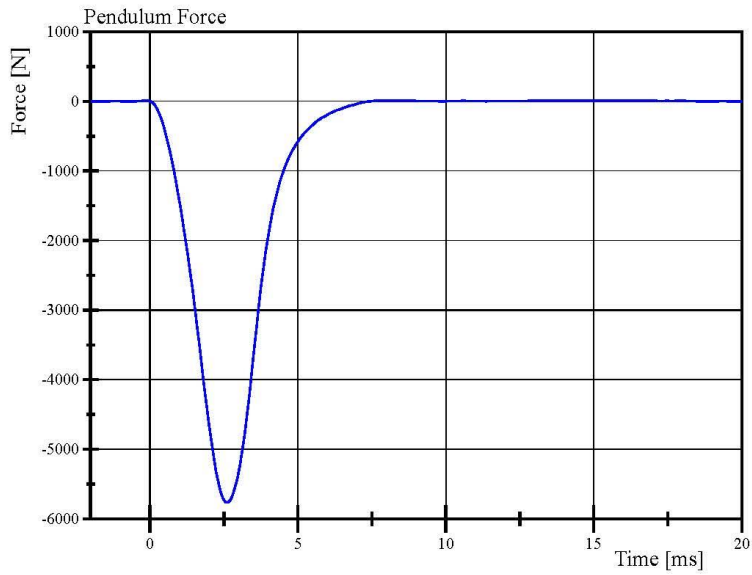


Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 75-2
Test Date: 2/14/2022



Filter Class: CFC_600
Max: 0.2 g at -0.2 ms
Min: -118.0 g at 2.6 ms



Filter Class: CFC_600
Max: 10.2 N at -0.2 ms
Min: -5,764.6 N at 2.6 ms

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 75-1
Test Date: 2/14/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.105 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,461.78 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: 1248

Specification Source: CFR49 Part 572 Subpart E
with Polarity in accordance with J211
Report Number: 037_H3F75

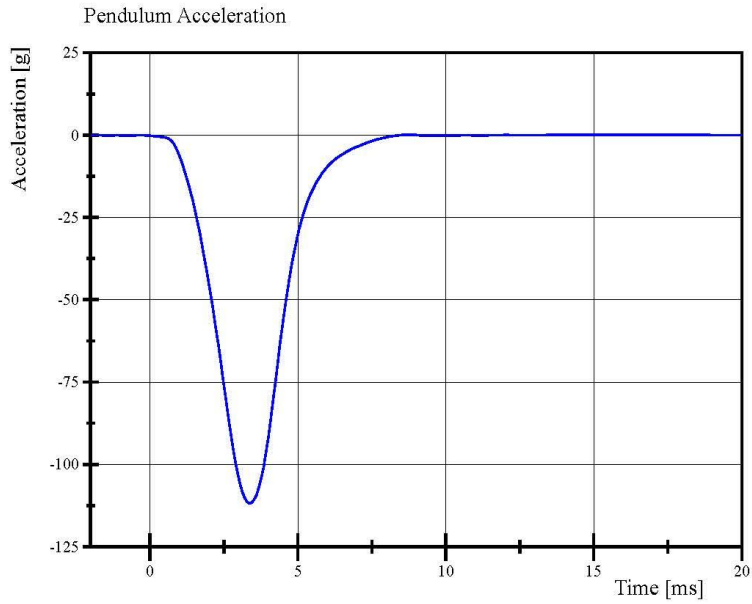
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02.14.2022 10:52:53 1706

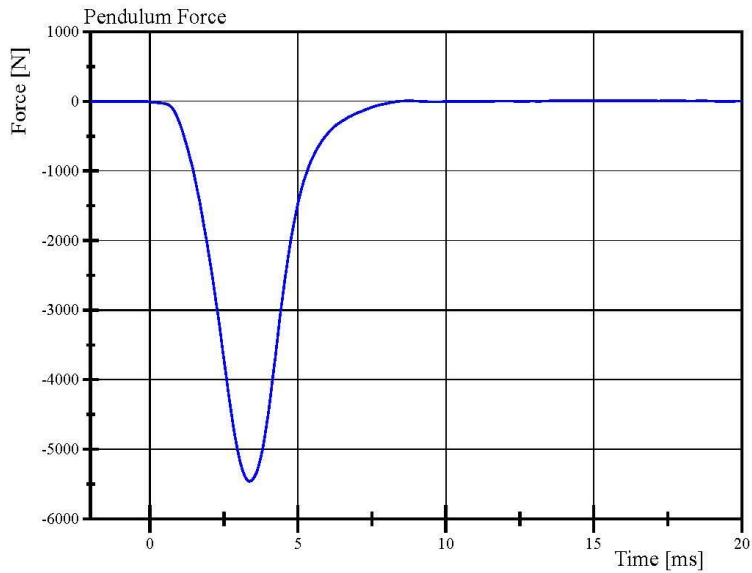


Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 037 Certification No. 75-1
Test Date: 2/14/2022



Filter Class: CFC_600
Max: 0.2 g at 15.6 ms
Min: -111.8 g at 3.4 ms



Filter Class: CFC_600
Max: 9.2 N at 15.6 ms
Min: -5,461.8 N at 3.4 ms

Post-Test Calibration Sheets

Driver S/N 037

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 037
Calibration No. 76

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	880	Yes
B	Shoulder Pivot Height	505.5 - 520.7	510	Yes
C	H-Point Height	83.8 - 88.9	86	Yes
D	H-Point From Seatback	134.6 - 139.7	137	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	90	Yes
F	Thigh Clearance	139.7 - 154.9	146	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	295	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	337	Yes
J	Elbow Rest Height	190.5 - 210.8	198	Yes
K	Buttock Knee Length	579.1 - 604.5	601	Yes
L	Popliteal Height	429.3 - 454.7	440	Yes
M	Knee Pivot Height	485.1 - 500.4	494	Yes
N	Buttock Popliteal Length	452.1 - 477.5	470	Yes
O	Chest Depth	213.4 - 228.6	221	Yes
P	Foot Length	251.5 - 266.7	264	Yes
V	Shoulder Breadth	421.6 - 436.9	425	Yes
W	Foot Breadth	91.4 - 106.7	96	Yes
Y	Chest Circumference	970.3 - 1000.8	990	Yes
Z	Waist Circumference	835.7 - 866.1	865	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Transportation Research Center Inc.

Front Head Drop
HIII 50th Serial No. 037 Certification No. 76-1
Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

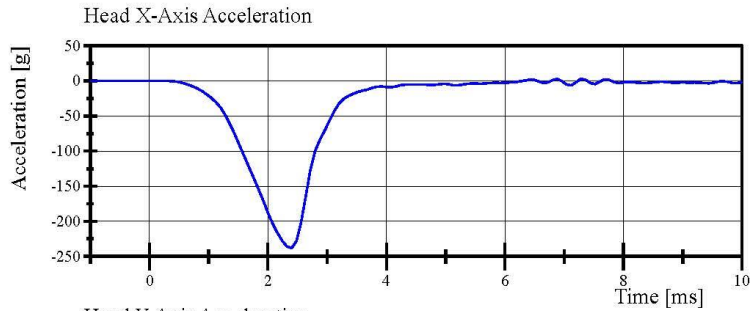
Head Skin S/N: N/A

Transportation Research Center Inc.

Front Head Drop

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

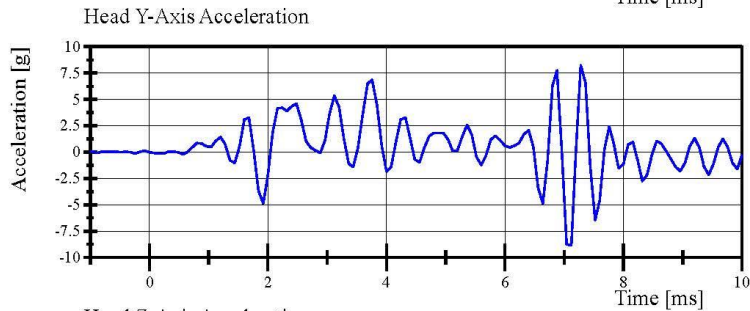
Test Date: 3/16/2022



Filter Class: CFC_1000

Max: 2.9 g at 6.9 ms

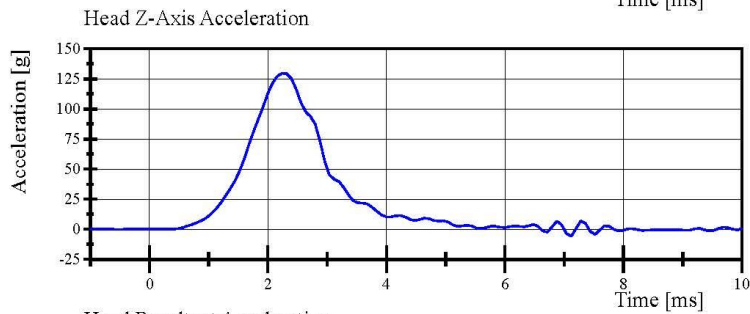
Min: -238.4 g at 2.4 ms



Filter Class: CFC_1000

Max: 8.3 g at 7.3 ms

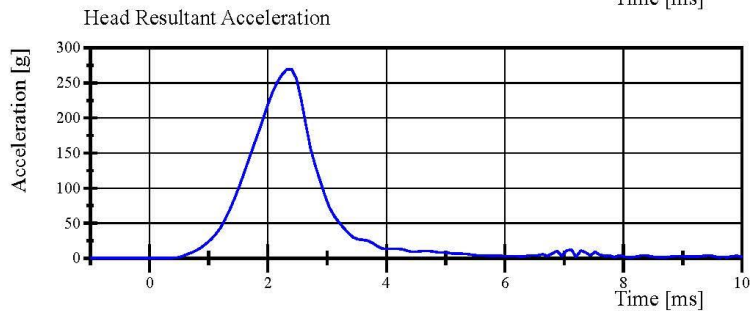
Min: -8.9 g at 7.1 ms



Filter Class: CFC_1000

Max: 129.7 g at 2.2 ms

Min: -5.8 g at 7.1 ms



Filter Class: CFC_1000

Max: 269.2 g at 2.4 ms

Min: 0.0 g at -0.4 ms

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

03.16.2022 13:39:53 609

Report Number: 037_H3F76

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Transportation Research Center Inc.

Neck Flexion

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

Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

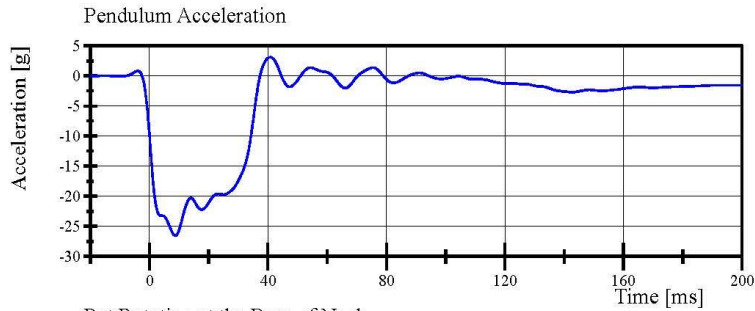
Neck S/N: 4728

Transportation Research Center Inc.

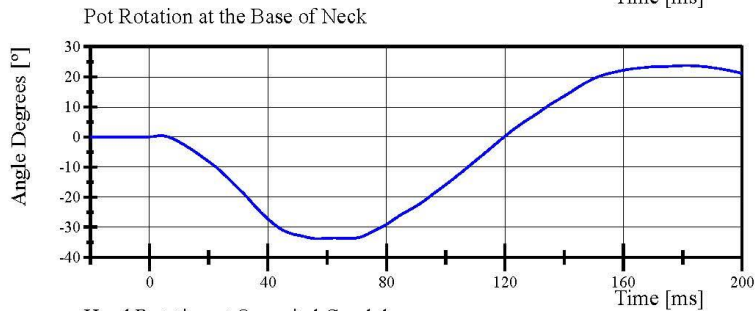
Neck Flexion

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

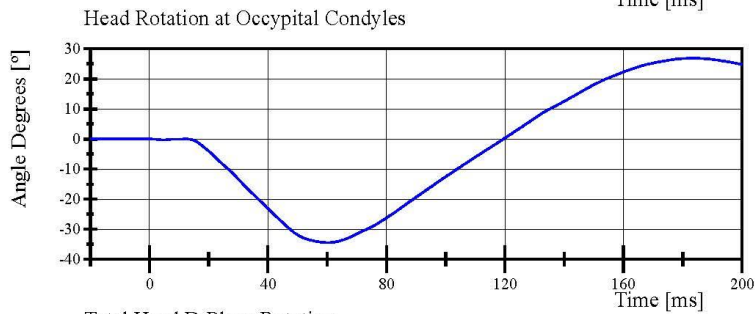
Test Date: 3/16/2022



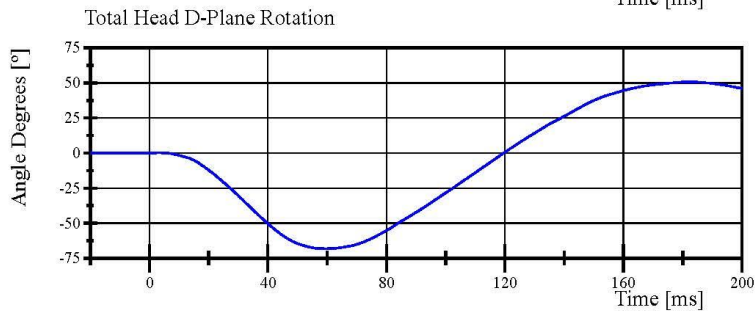
Filter Class: CFC_60
Max: 3.1 g at 40.8 ms
Min: -26.6 g at 8.8 ms



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



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



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

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

03.16.2022 15:05:04 1876

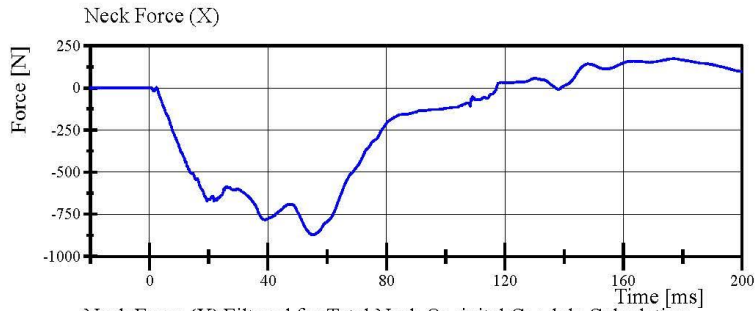


Transportation Research Center Inc.

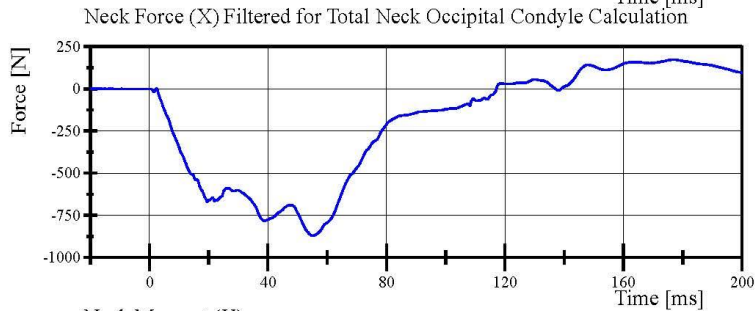
Neck Flexion

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

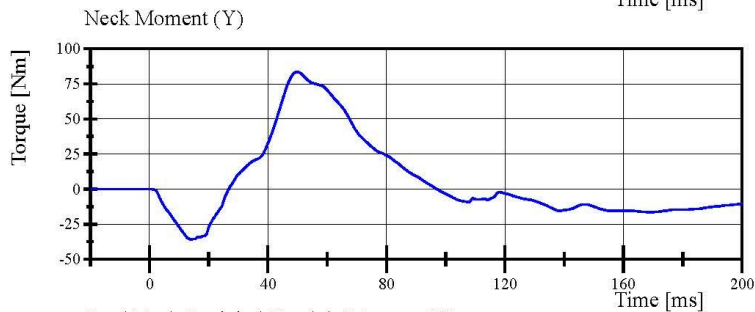
Test Date: 3/16/2022



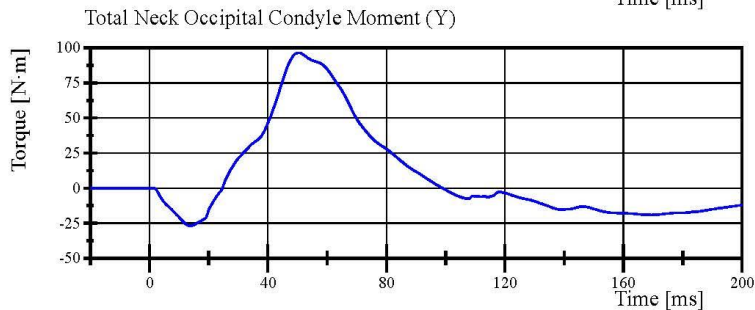
Filter Class: CFC_1000
Max: 174.3 N at 176.8 ms
Min: -871.8 N at 55.1 ms



Filter Class: CFC_600
Max: 173.7 N at 176.8 ms
Min: -871.5 N at 55.1 ms



Filter Class: CFC_600
Max: 83.4 Nm at 49.7 ms
Min: -35.8 Nm at 14.1 ms



Filter Class: Without_(Constar
Max: 96.4 N·m at 50.4 ms
Min: -26.9 N·m at 13.9 ms

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

03.16.2022 15:05:04 1876



Report Number: 037_H3F76

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Transportation Research Center Inc.

Neck Extension
HIII 50th Serial No. 037 Certification No. 76-1
Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

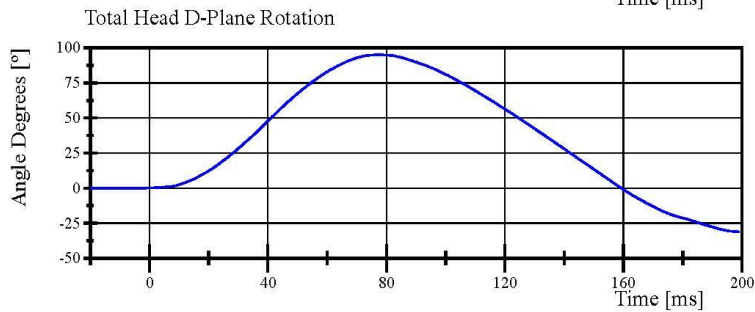
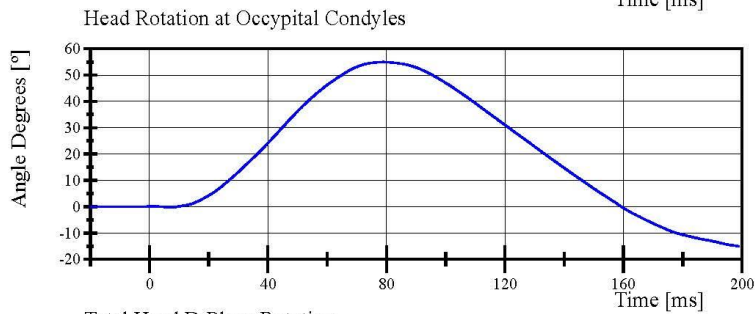
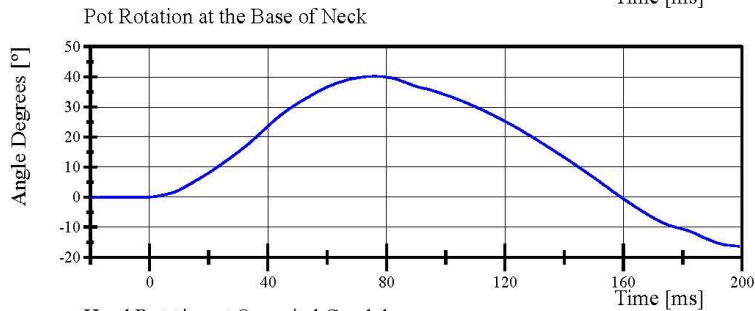
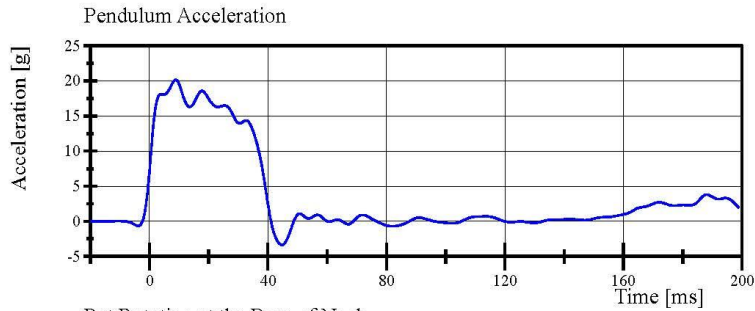
Neck S/N: 4728

Transportation Research Center Inc.

Neck Extension

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

Test Date: 3/16/2022



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

03.16.2022 15:36:36 2020

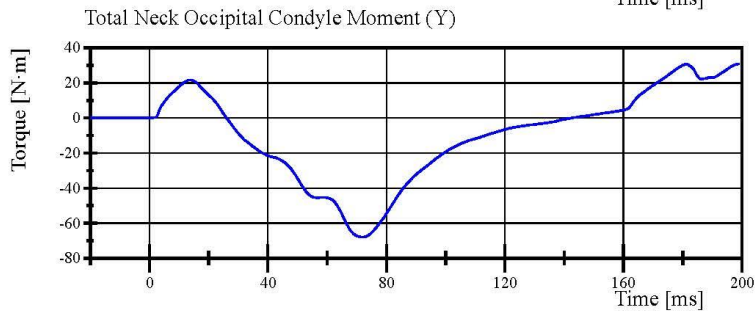
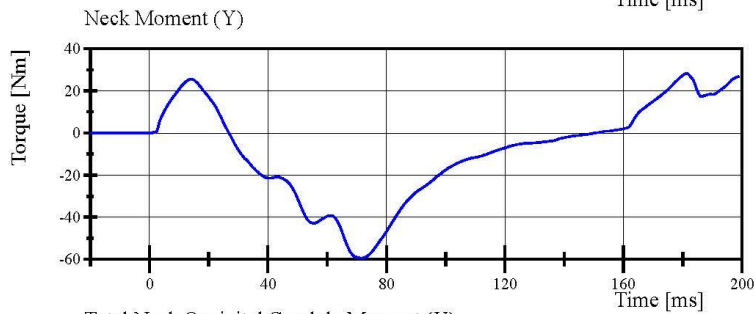
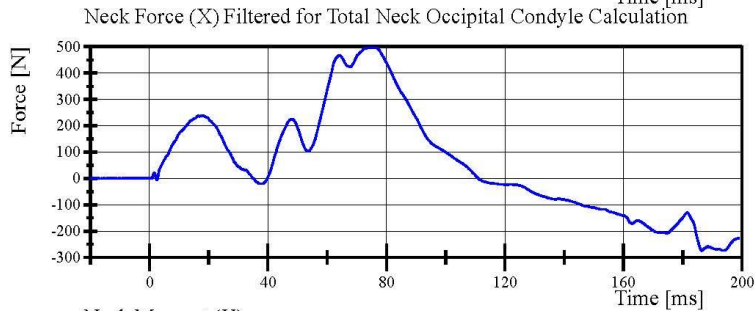
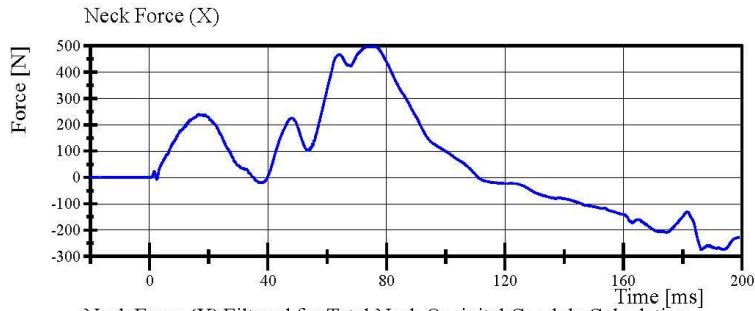


Transportation Research Center Inc.

Neck Extension

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

Test Date: 3/16/2022



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

03.16.2022 15:36:36 2020



Transportation Research Center Inc.

Front Thorax
HIII 50th Serial No. 037 Certification No. 76-1
Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: 2565

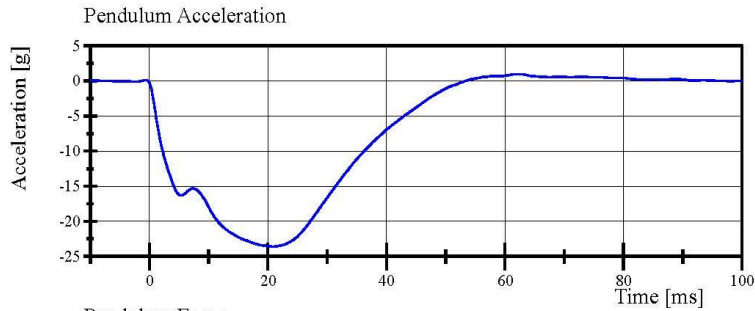
Rib Set S/N: 02033121A

Transportation Research Center Inc.

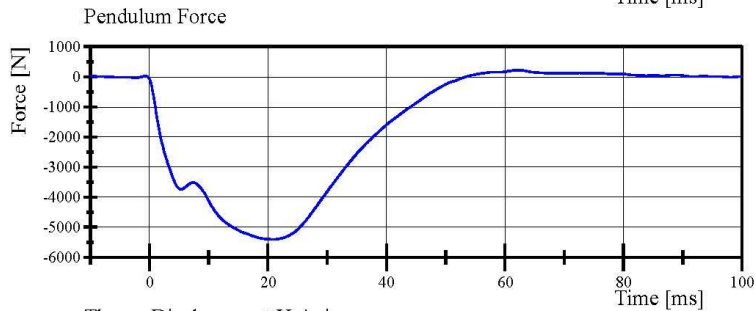
Front Thorax

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

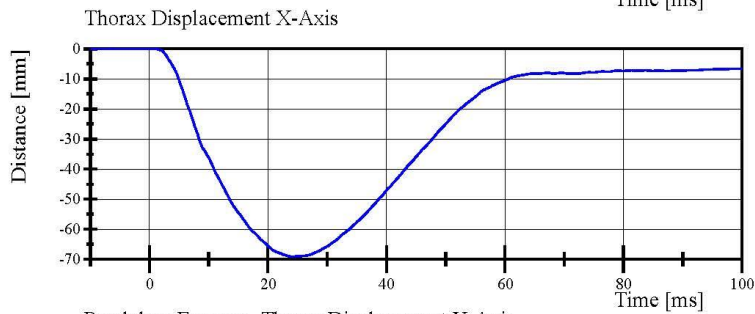
Test Date: 3/16/2022



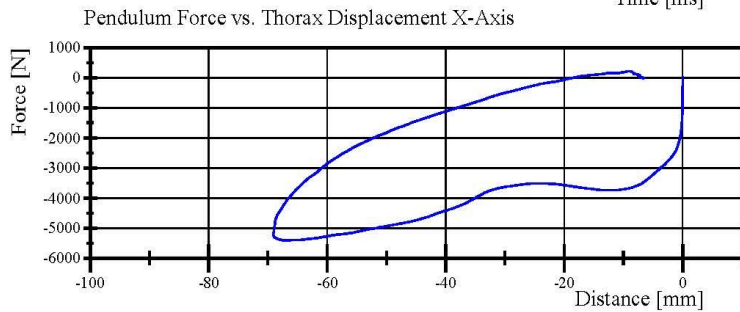
Filter Class: CFC_180
Max: 0.9 g at 62.5 ms
Min: -23.6 g at 20.9 ms



Filter Class: CFC_180
Max: 216.2 N at 62.5 ms
Min: -5,407.3 N at 20.9 ms



Filter Class: CFC_600
Max: 0.0 mm at -6.7 ms
Min: -69.1 mm at 24.2 ms



Filter Class: CFC_180
Max: 216.2 N at -8.9 mm
Min: -5,407.3 N at -67.0 mm

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

03.16.2022 13:00:38 440

Report Number: 037_H3F76

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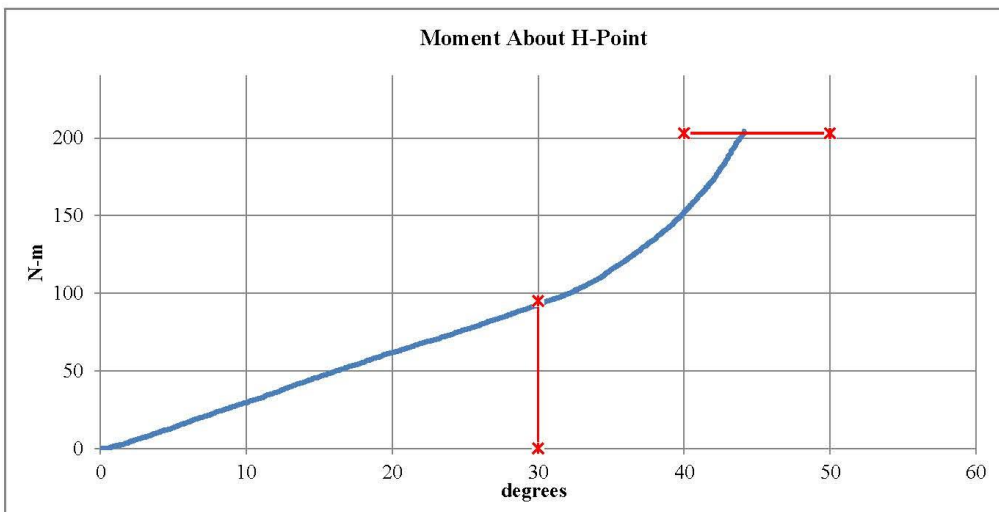


Transportation Research Center Inc.
Hybrid III 50th Male Hip Range of Motion

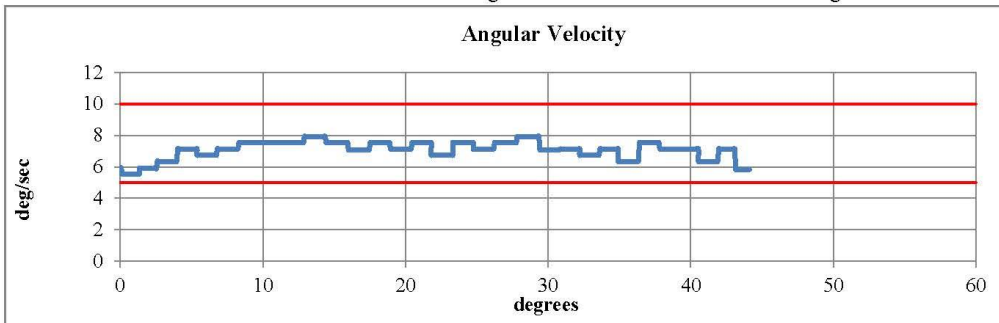


Serial Number: 037 Date: 16-Mar-2022
Side Tested: Left Hip Time: 13:21
Test Number: 1

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



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



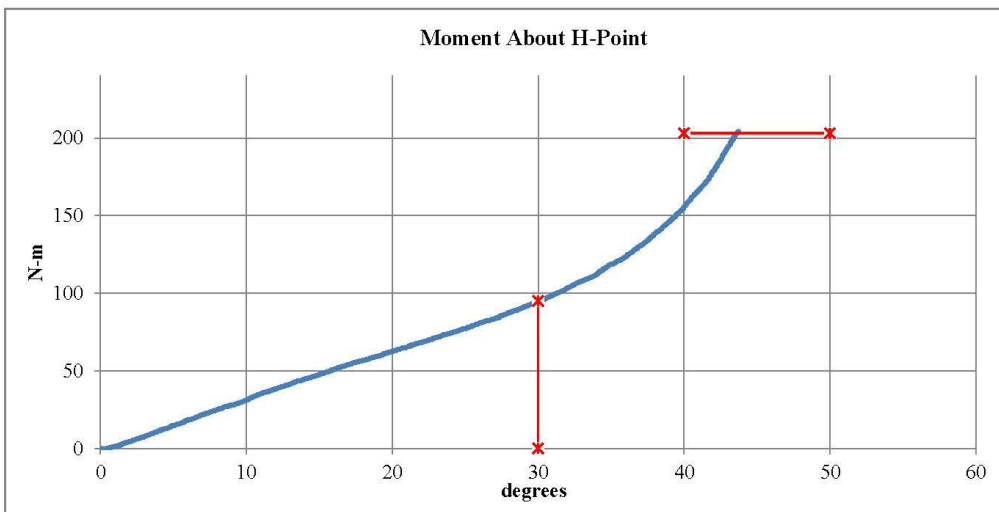
Comments:
Pelvis S/N: EK3565

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

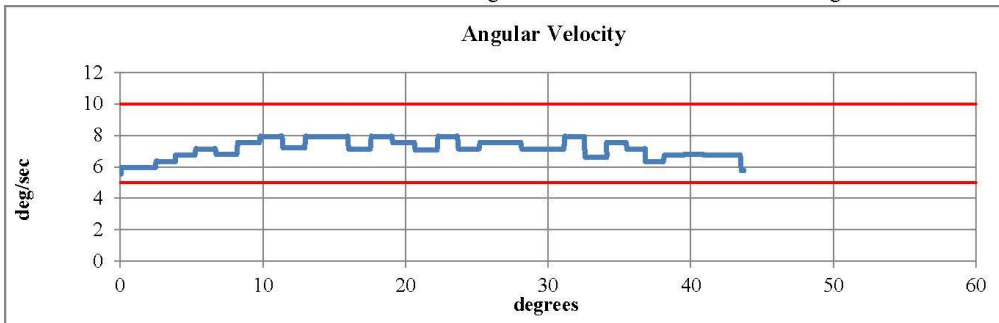


Serial Number: 037 Date: 16-Mar-2022
Side Tested: Right Hip Time: 14:31
Test Number: 1

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



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



Comments:
Pelvis S/N: EK3565

Transportation Research Center Inc.

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

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

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: 2672

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

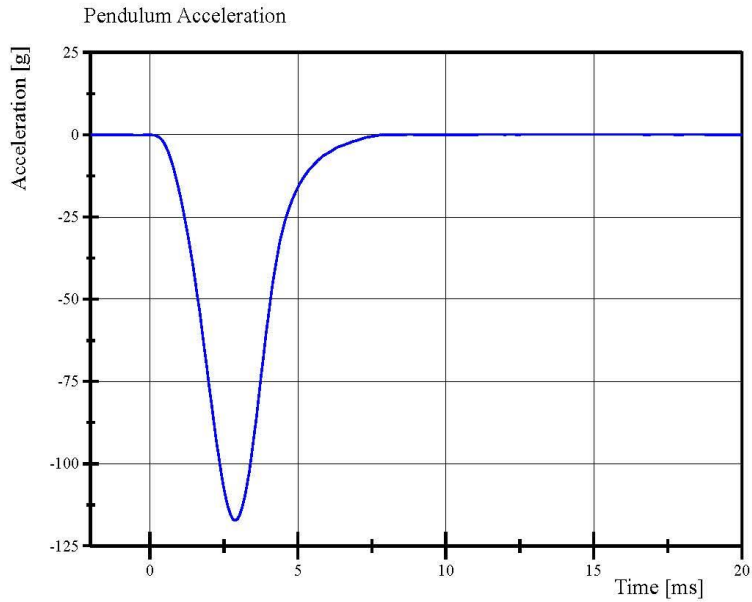
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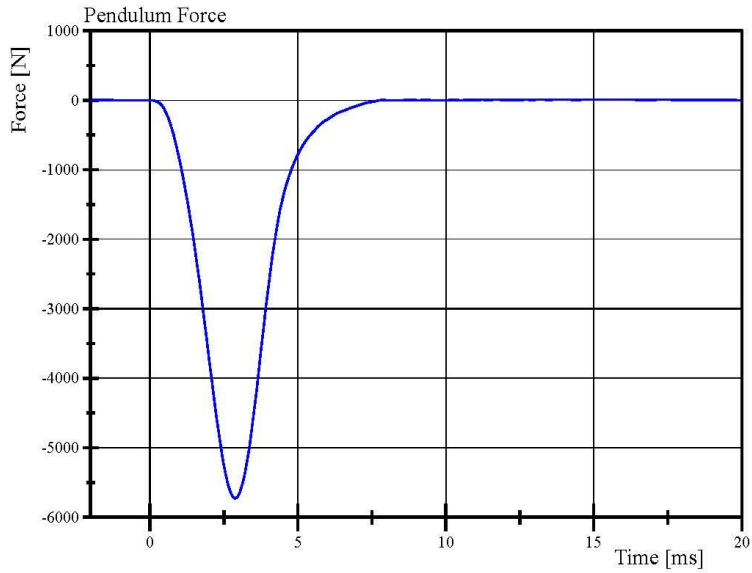


Transportation Research Center Inc.

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



Filter Class: CFC_600
Max: 0.1 g at 16.2 ms
Min: -117.3 g at 2.9 ms



Filter Class: CFC_600
Max: 7.2 N at 16.2 ms
Min: -5,727.8 N at 2.9 ms

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

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Transportation Research Center Inc.

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

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

Test meets specifications.

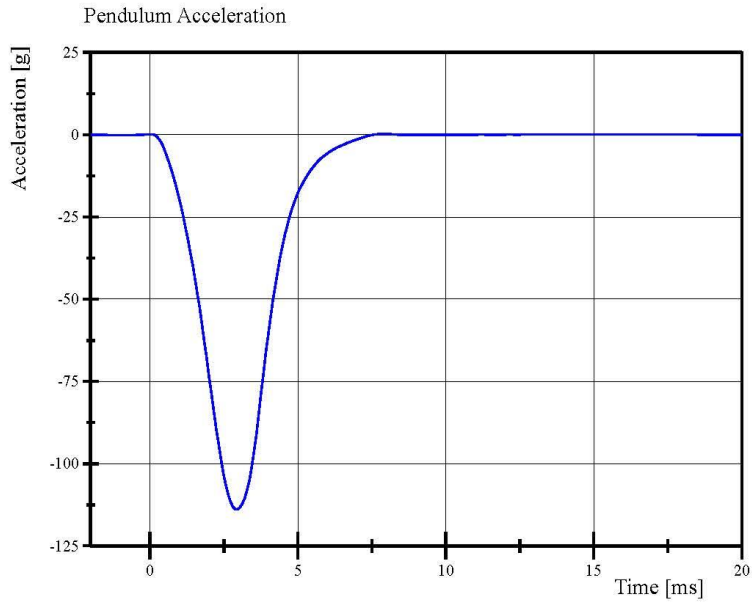
Condition: Used

Comments:

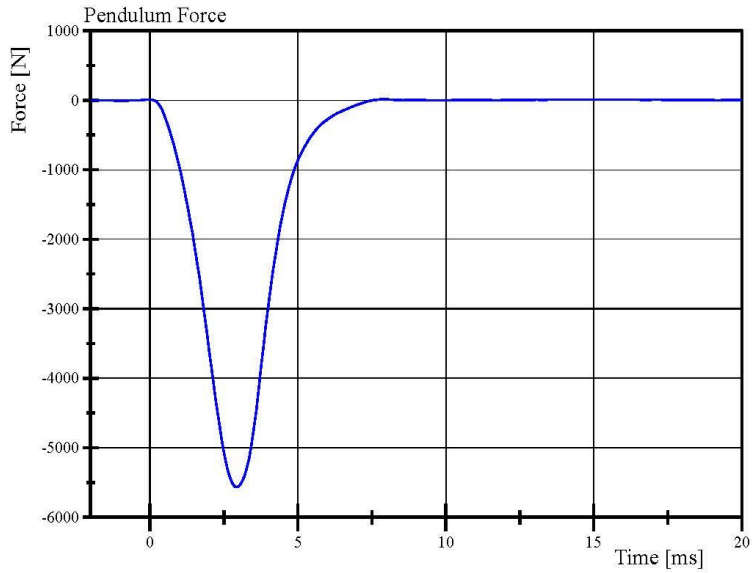
Knee Skin S/N: 1248

Transportation Research Center Inc.

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



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



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

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

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03.16.2022 12:50:15 1760



Pre-Test Calibration Sheets
Front Passenger S/N EB7513

Transportation Research Center Inc.
5720 HIII 5th Dummy
External Dimensions
Serial No. EB7513 Calibration No. 18

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	774.7 - 800.1	781	Yes
B	Shoulder Pivot Height	431.8 - 457.2	445	Yes
C	Hip Pivot Height	81.3 - 86.3	85	Yes
D	Hip Pivot from Backline	144.8 - 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6 - 83.8	80	Yes
F	Thigh Clearance	119.4 - 134.6	130	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	198	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	359	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	183	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	306	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	867	Yes
Z	Waist Circumference	759.5 - 789.9	775	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Revised 8/10/12



Report Number: EB7513_HFH18

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Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. EB7513 Certification No. 18-1
Test Date: 2/15/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Peak Head Resultant Acceleration	250 - 300 g	251.3 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	9.8 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	< 10 %	5.84 %	Yes

Test meets specifications.

Condition: Used

Comments:

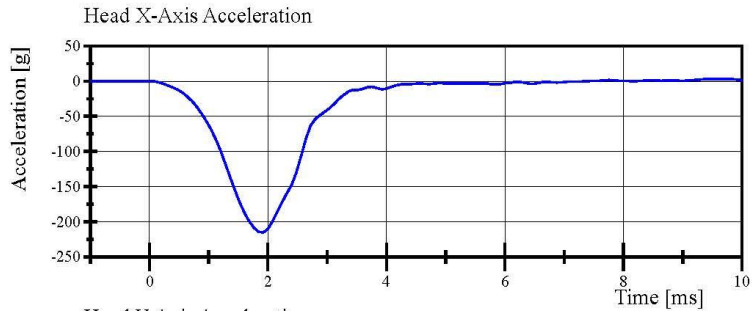
Head Skin S/N: EA8751

Transportation Research Center Inc.

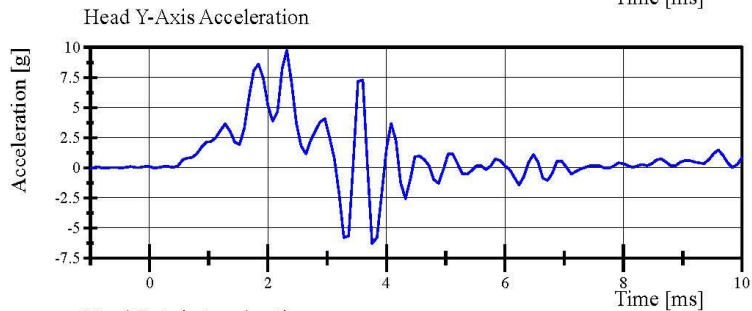
Front Head Drop

HIII 5th Serial No. EB7513 Certification No. 18-1

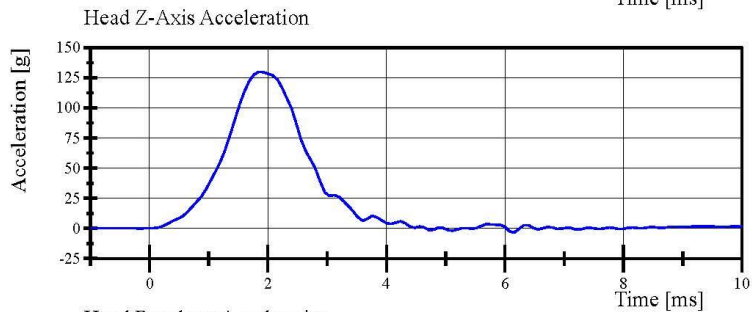
Test Date: 2/15/2022



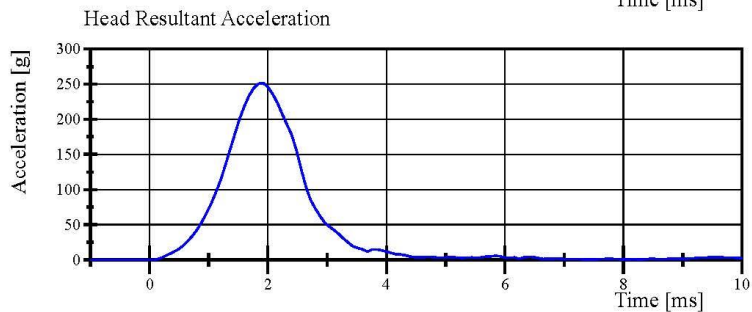
Filter Class: CFC_1000
Max: 3.4 g at 9.5 ms
Min: -215.1 g at 1.9 ms



Filter Class: CFC_1000
Max: 9.8 g at 2.3 ms
Min: -6.3 g at 3.8 ms



Filter Class: CFC_1000
Max: 130.0 g at 1.8 ms
Min: -3.3 g at 6.2 ms



Filter Class: CFC_1000
Max: 251.3 g at 1.9 ms
Min: 0.0 g at -1.0 ms

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

02.15.2022 14:03:07 614

Report Number: EB7513_HFH18

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Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 18-1

Test Date: 2/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	7.061 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	(-2.1) - (-2.5) m/s	-2.45 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	(-4.0) - (-5.0) m/s	-4.73 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	(-5.8) - (-7.0) m/s	-6.77 m/s	Yes
Total Head D-Plane Rotation	(-77) - (-91) °	-87.2 °	Yes
Total Neck Occipital Condyles Moment Between -77° and -91° Rotation	69 - 83 N·m	70.6 N·m	Yes
Total Neck Occipital Condyles Moment Decay to 10 N·m	80 - 100 ms	87.8 ms	Yes

Test meets specifications.

Condition: Used

Comments:

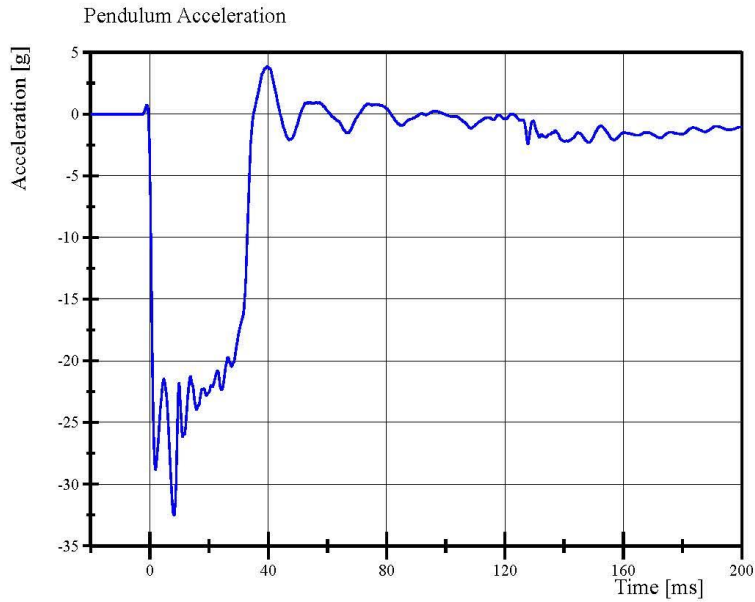
Neck S/N: EB6930

Transportation Research Center Inc.

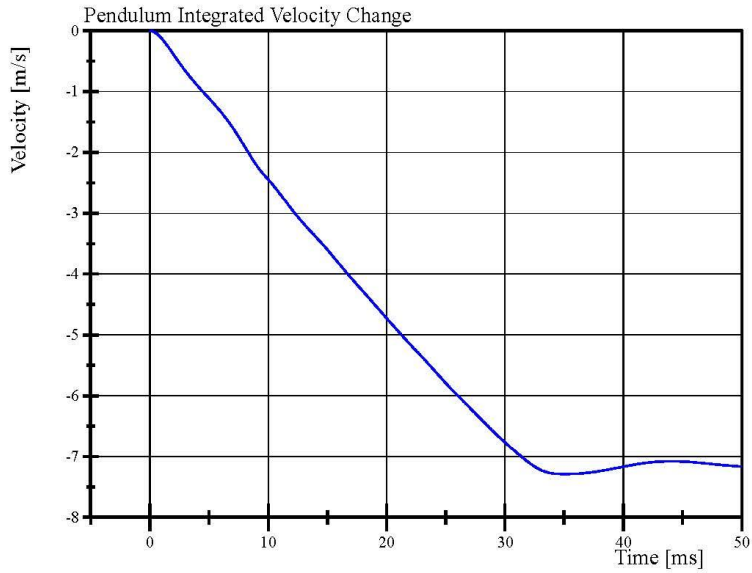
Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 18-1

Test Date: 2/16/2022



Filter Class: CFC_180
Max: 3.9 g at 39.8 ms
Min: -32.5 g at 8.2 ms



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -7.3 m/s at 35.0 ms

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

02.16.2022 09:53:10 1851

Report Number: EB7513_HFH18

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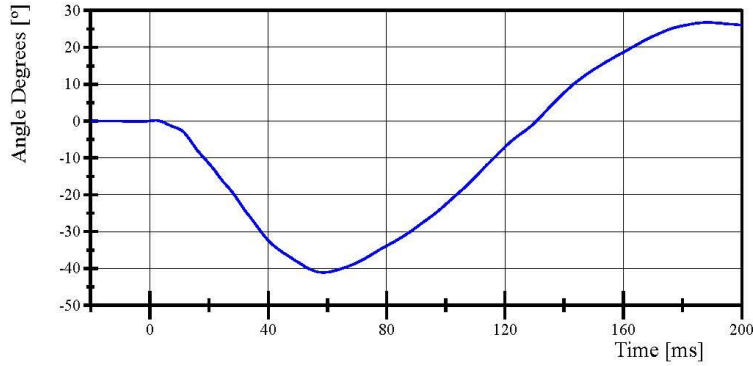
Transportation Research Center Inc.

Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 18-1

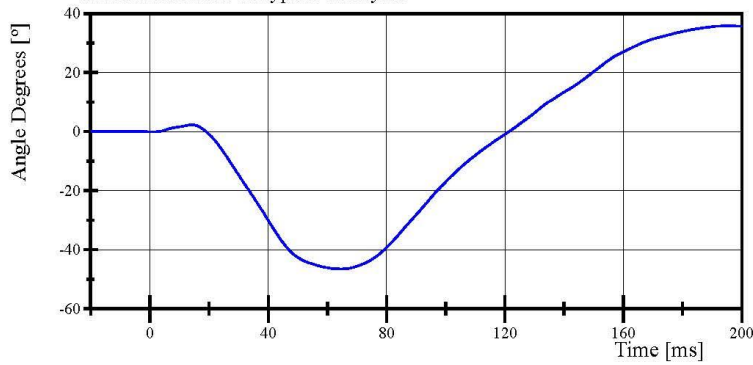
Test Date: 2/16/2022

Pot Rotation at the Base of Neck



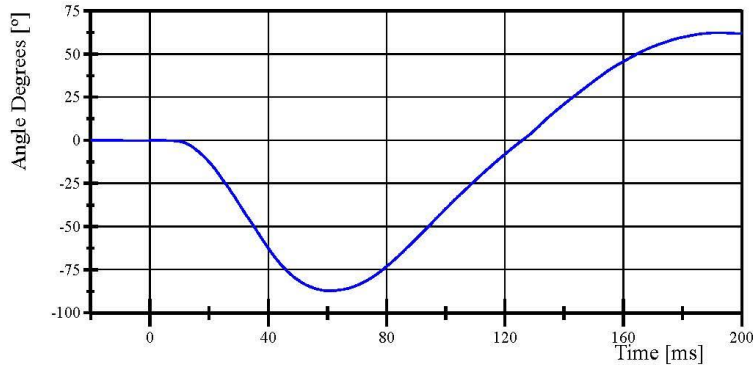
Filter Class: CFC_60
Max: 26.8 ° at 188.5 ms
Min: -41.1 ° at 58.7 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 35.9 ° at 195.4 ms
Min: -46.5 ° at 64.7 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 62.4 ° at 192.1 ms
Min: -87.2 ° at 60.7 ms

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

02.16.2022 09:53:10 1851

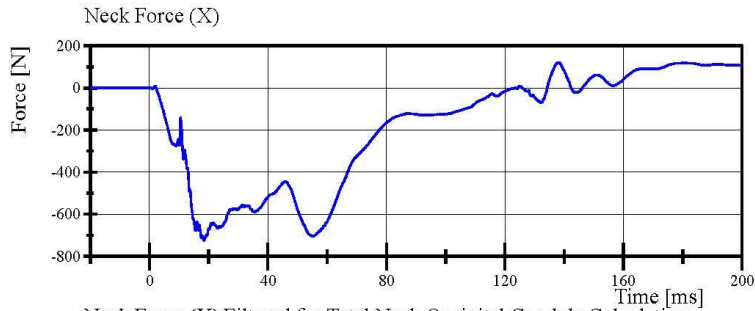


Transportation Research Center Inc.

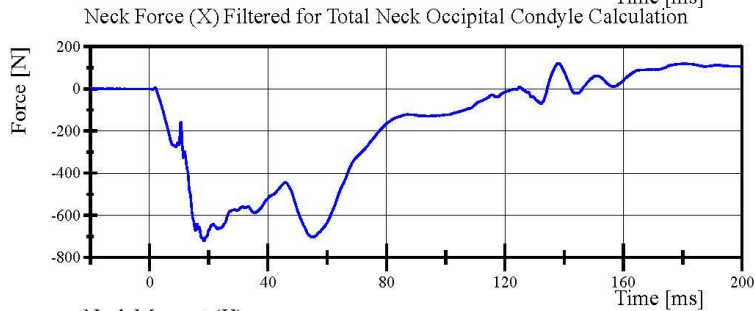
Neck Flexion

HIII 5th Serial No. EB7513 Certification No. 18-1

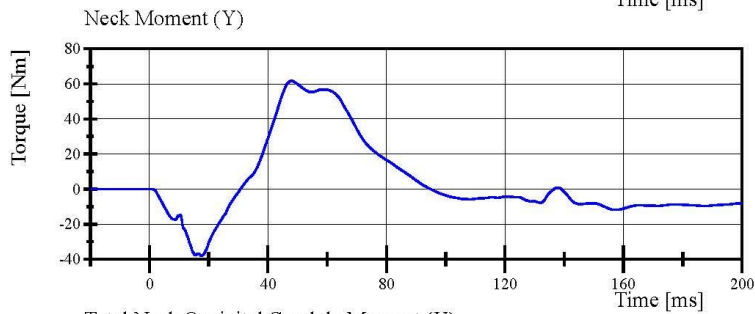
Test Date: 2/16/2022



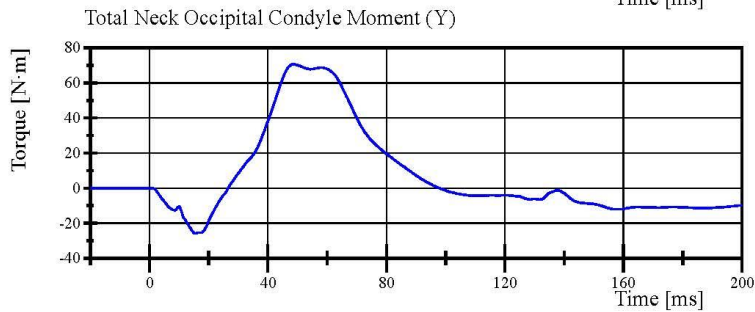
Filter Class: CFC_1000
Max: 120.8 N at 138.2 ms
Min: -723.7 N at 18.4 ms



Filter Class: CFC_600
Max: 120.5 N at 138.1 ms
Min: -722.4 N at 18.4 ms



Filter Class: CFC_600
Max: 61.8 Nm at 48.0 ms
Min: -38.0 Nm at 17.5 ms



Filter Class: Without_(Constar
Max: 70.6 N·m at 48.7 ms
Min: -25.8 N·m at 15.5 ms

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

02.16.2022 09:53:11 1851



Report Number: EB7513_HFH18

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Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 18-3

Test Date: 2/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	32 %	Yes
Pendulum Velocity	(-5.95) - (-6.19) m/s	-6.042 m/s	Yes
Pendulum Integrated Velocity Change at 10ms	1.5 - 1.9 m/s	1.80 m/s	Yes
Pendulum Integrated Velocity Change at 20ms	3.1 - 3.9 m/s	3.61 m/s	Yes
Pendulum Integrated Velocity Change at 30ms	4.6 - 5.6 m/s	5.16 m/s	Yes
Total Head D-Plane Rotation	99 - 114 °	111.7 °	Yes
Total Neck Occipital Condyles Moment Between 99° and 114° Rotation	(-53) - (-65) N·m	-56.8 N·m	Yes
Total Neck Occipital Condyles Moment Decay to -10 N·m	94 - 114 ms	105.2 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: EB6930

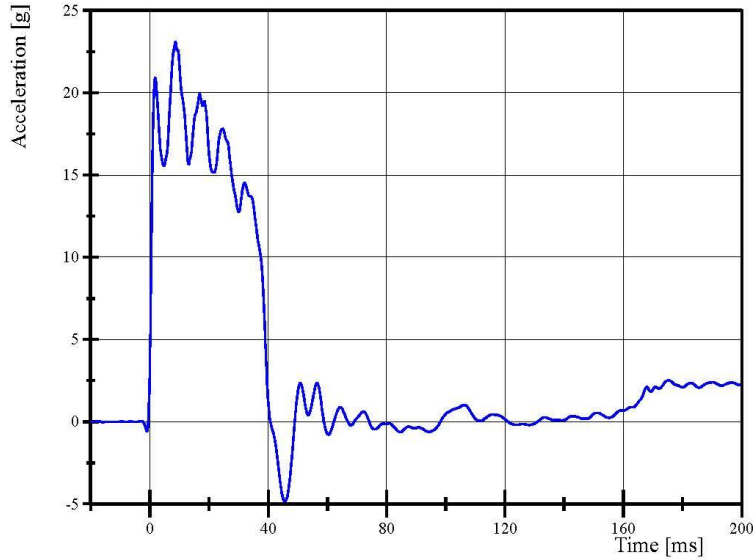
Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 18-3

Test Date: 2/16/2022

Pendulum Acceleration

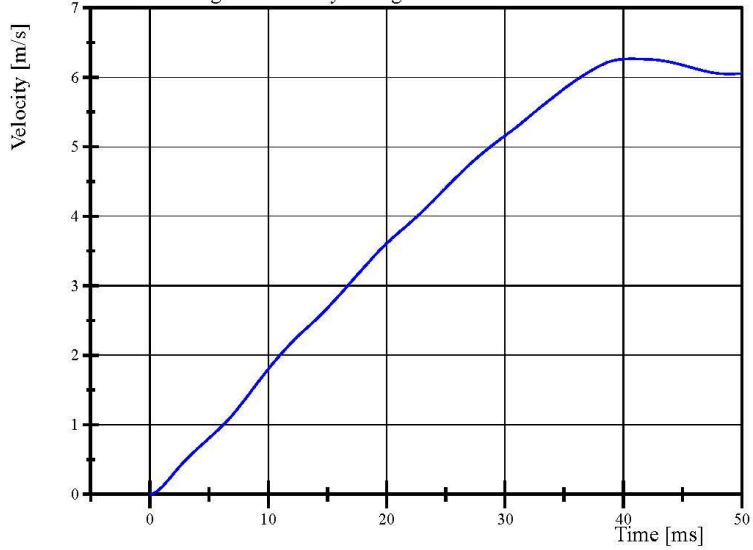


Filter Class: CFC_180

Max: 23.1 g at 8.7 ms

Min: -4.8 g at 45.7 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180

Max: 6.3 m/s at 40.7 ms

Min: 0.0 m/s at 0.0 ms

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

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Report Number: EB7513_HFH18

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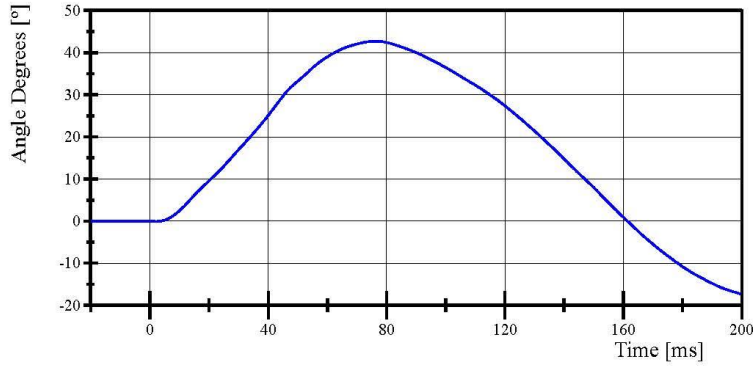
Transportation Research Center Inc.

Neck Extension

HIII 5th Serial No. EB7513 Certification No. 18-3

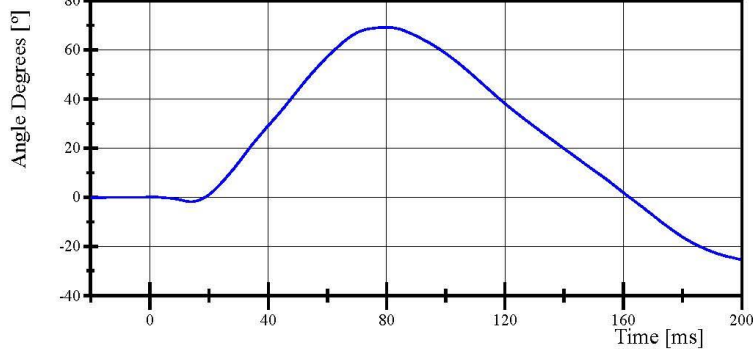
Test Date: 2/16/2022

Pot Rotation at the Base of Neck



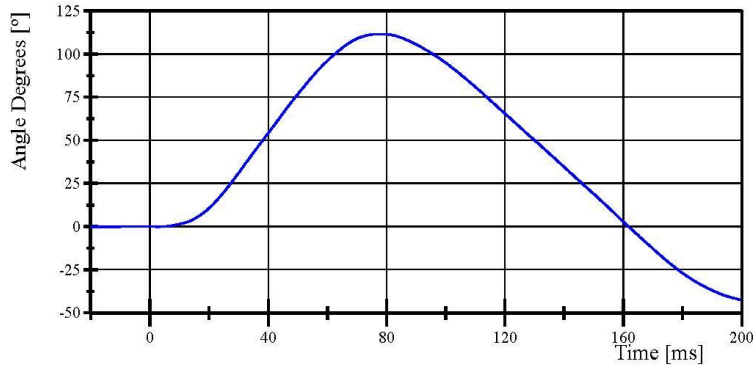
Filter Class: CFC_60
Max: 42.7 ° at 76.3 ms
Min: -17.3 ° at 199.6 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 69.1 ° at 80.3 ms
Min: -25.4 ° at 199.6 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 111.7 ° at 77.7 ms
Min: -42.6 ° at 199.6 ms

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

02.16.2022 11:47:16 2009

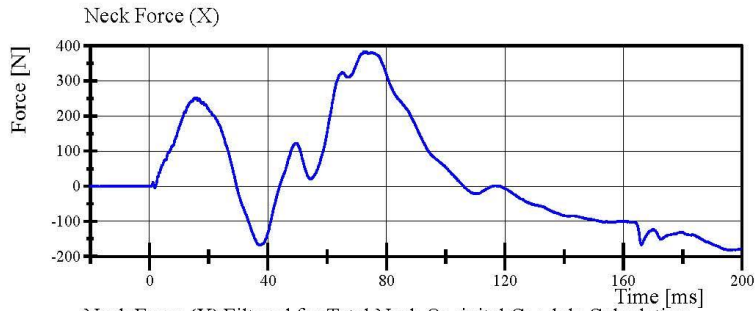


Transportation Research Center Inc.

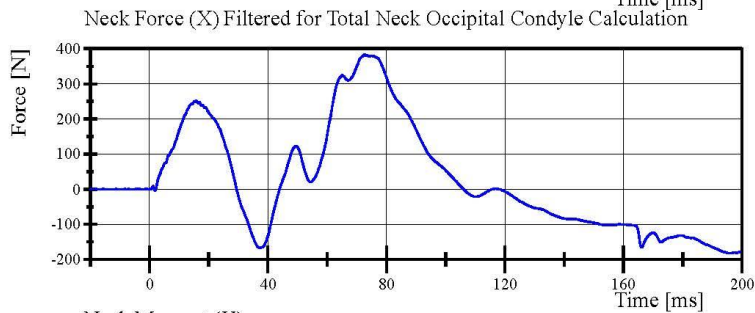
Neck Extension

HIII 5th Serial No. EB7513 Certification No. 18-3

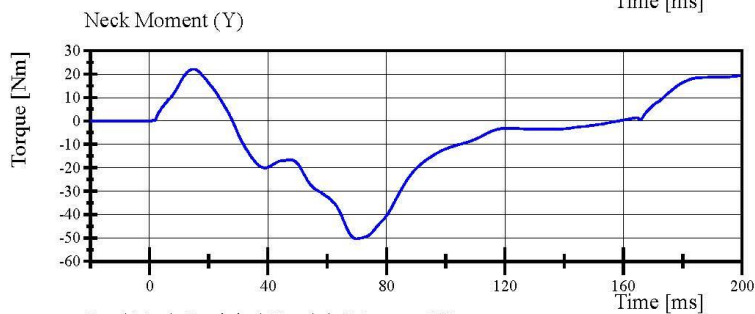
Test Date: 2/16/2022



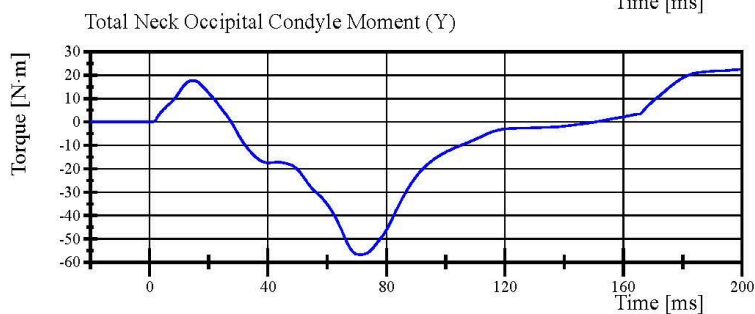
Filter Class: CFC_1000
Max: 383.5 N at 72.4 ms
Min: -182.6 N at 196.1 ms



Filter Class: CFC_600
Max: 383.3 N at 72.6 ms
Min: -182.4 N at 196.2 ms



Filter Class: CFC_600
Max: 22.1 Nm at 15.2 ms
Min: -50.3 Nm at 69.9 ms



Filter Class: Without_(Constar
Max: 22.5 N·m at 199.6 ms
Min: -56.8 N·m at 71.4 ms

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

02.16.2022 11:47:16 2009



Transportation Research Center Inc.

Front Thorax

HIII 5th Serial No. EB7513 Certification No. 18-1

Test Date: 2/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.799 m/s	Yes
Probe Force Peak Between 50.0 mm and 58.0 mm Chest Deflection	(-3,900) - (-4,400) N	-4,207.7 N	Yes
Probe Force Peak Between 18.0 mm and 50.0 mm Chest Deflection	>= (-4,600) N	-4,302.4 N	Yes
Maximum Chest Compression	(-50) - (-58) mm	-51.2 mm	Yes
Internal Hysteresis	69 - 85 %	76.3 %	Yes

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: DZ8735

Rib Set S/N: EB7630

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

Report Number: EB7513_HFH18

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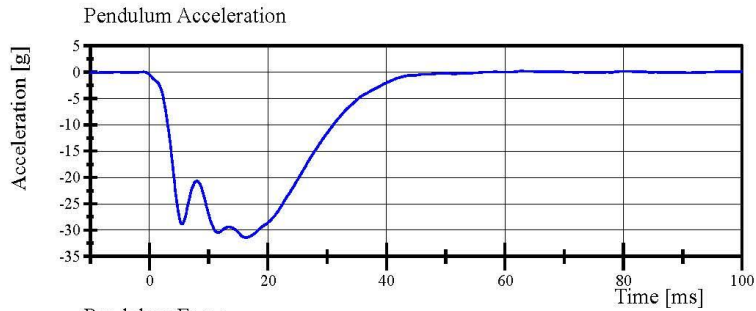


Transportation Research Center Inc.

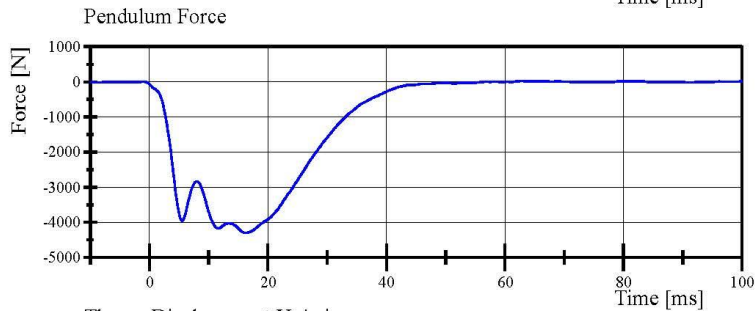
Front Thorax

HIII 5th Serial No. EB7513 Certification No. 18-1

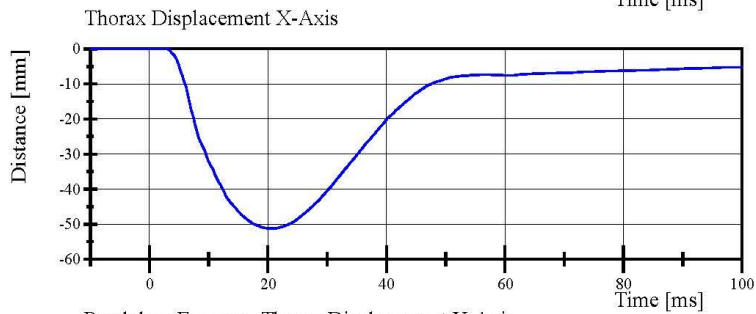
Test Date: 2/16/2022



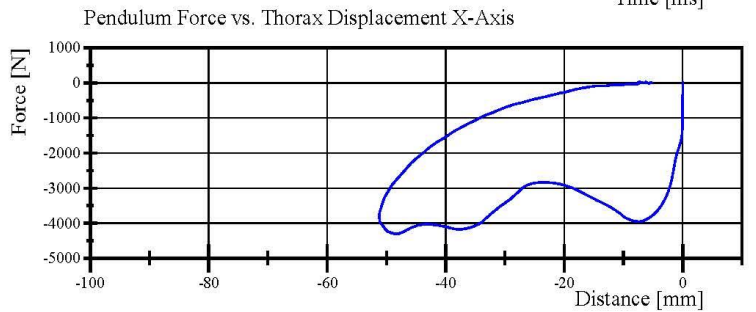
Filter Class: CFC_180
Max: 0.2 g at 62.8 ms
Min: -31.4 g at 16.2 ms



Filter Class: CFC_180
Max: 26.8 N at 62.8 ms
Min: -4,302.4 N at 16.2 ms



Filter Class: CFC_600
Max: 0.0 mm at -9.8 ms
Min: -51.2 mm at 20.9 ms



Filter Class: CFC_180
Max: 26.8 N at -7.3 mm
Min: -4,302.4 N at -48.3 mm

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

02.16.2022 14:13:06 394

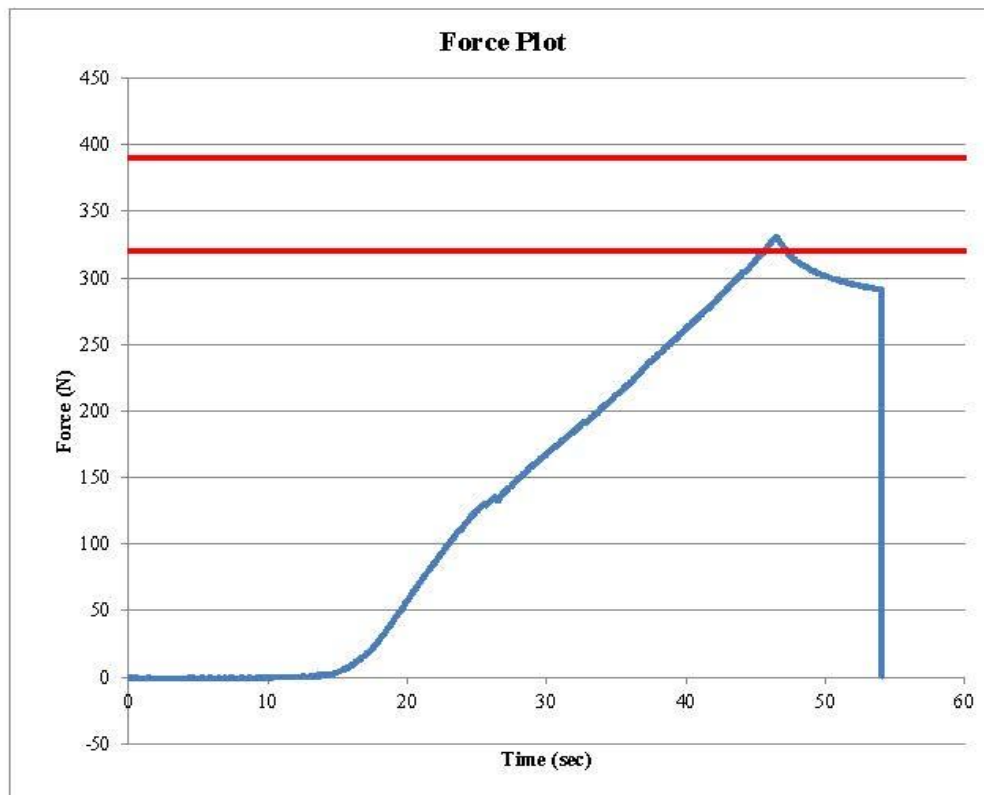


Transportation Research Center Inc.
Hybrid III Small Female Torso Flexion



Customer: NHTSA
 Serial Number: EB7513 Date: 2/16/2022
 Test Number: 1 Time: 14:22

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.4 °C Pass
Humidity	10 - 70	30 % Pass
Average Angular Velocity	0.5 - 1.5	0.98 deg/sec Pass
Initial Angle	0 - 20	14.77 deg Pass
Peak Force at 45.13°	320 - 390	330.79 N Pass
Final Angle	-8 - 8	4.04 deg Pass



Comments:
 Jacket S/N: DZ8735
 Abdomen S/N: EB8206

Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 18-1
Test Date: 2/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.098 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,751.0 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EB7773

Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH18

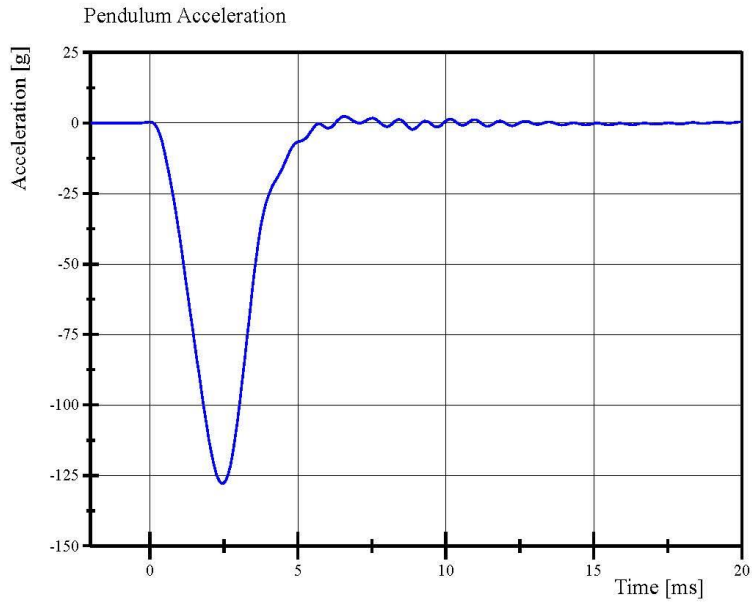
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02.16.2022 13:27:36 1874



Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 18-1
Test Date: 2/16/2022



Filter Class: CFC_600
Max: 2.4 g at 6.6 ms
Min: -127.9 g at 2.5 ms



Filter Class: CFC_600
Max: 70.1 N at 6.6 ms
Min: -3,751.0 N at 2.5 ms



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 18-1
Test Date: 2/16/2022

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.097 m/s	Yes
Peak Femur Force	(-3,450) - (-4,060) N	-3,794.5 N	Yes

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EB7550

Specification Source: CFR49 Part 572 Subpart O
with Polarity in accordance with J211
Report Number: EB7513_HFH18

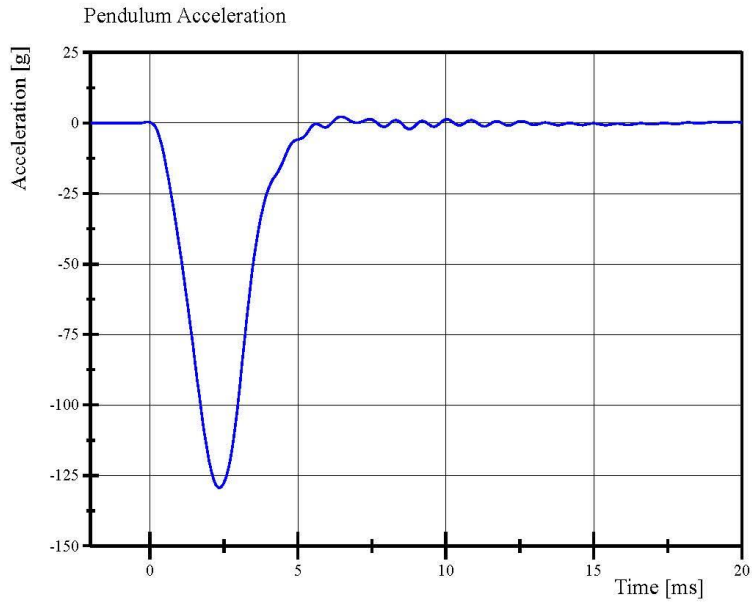
Page 24 of 28

02.16.2022 13:34:17 1875



Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 5th Serial No. EB7513 Certification No. 18-1
Test Date: 2/16/2022



Filter Class: CFC_600
Max: 2.3 g at 6.5 ms
Min: -129.4 g at 2.3 ms



Filter Class: CFC_600
Max: 66.5 N at 6.5 ms
Min: -3,794.5 N at 2.3 ms



Post-Test Calibration Sheets

Front Passenger S/N EB7513

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

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	774.7 - 800.1	781	Yes
B	Shoulder Pivot Height	431.8 - 457.2	445	Yes
C	Hip Pivot Height	81.3 - 86.3	85	Yes
D	Hip Pivot from Backline	144.8 - 149.8	148	Yes
E	Shoulder Pivot from Backline	68.6 - 83.8	80	Yes
F	Thigh Clearance	119.4 - 134.6	130	Yes
G	Back of Elbow to Wrist Pivot	243.9 - 259.1	249	Yes
H	Head Back to Backline	43.2 - 48.2	45	Yes
I	Shoulder to Elbow Length	276.8 - 297.2	286	Yes
J	Elbow Rest Height	182.8 - 203.2	198	Yes
K	Buttock Knee Length	520.7 - 546.1	533	Yes
L	Popliteal Height	355.6 - 376.0	359	Yes
M	Knee Pivot Height	393.7 - 419.1	409	Yes
N	Buttock Popliteal Length	414.0 - 439.4	430	Yes
O	Chest Depth without Jacket	175.3 - 190.5	183	Yes
P	Foot Length	218.5 - 233.7	225	Yes
R	Buttock to Knee Pivot Length	457.2 - 482.6	473	Yes
S	Head Breadth	137.1 - 147.3	141	Yes
T	Head Depth	177.8 - 188.0	180	Yes
U	Hip Breadth	299.7 - 314.9	306	Yes
V	Shoulder Breadth	350.5 - 365.7	356	Yes
W	Foot Breadth	78.8 - 94.0	85	Yes
X	Head Circumference	528.3 - 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 - 881.3	867	Yes
Z	Waist Circumference	759.5 - 789.9	775	Yes
AA	Reference Location for Chest Circumference	332.7 - 358.1	345	Yes
BB	Reference Location for Waist Circumference	160.0 - 170.2	165	Yes

Revised 8/10/12



Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Front Head Drop
HIII 5th Serial No. EB7513 Certification No. 19-1
Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

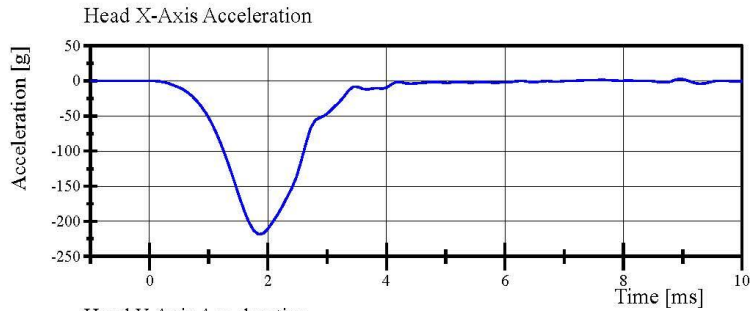
Head Skin S/N: EA8751

Transportation Research Center Inc.

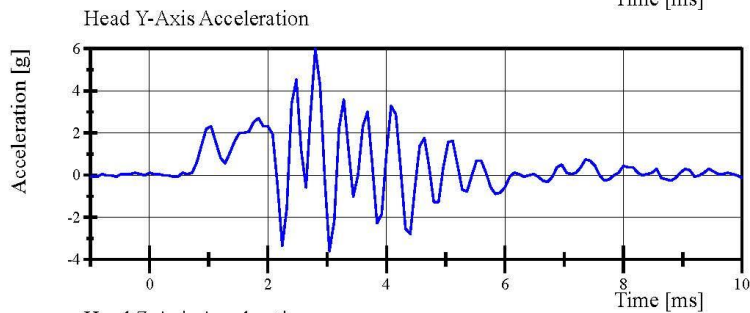
Front Head Drop

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

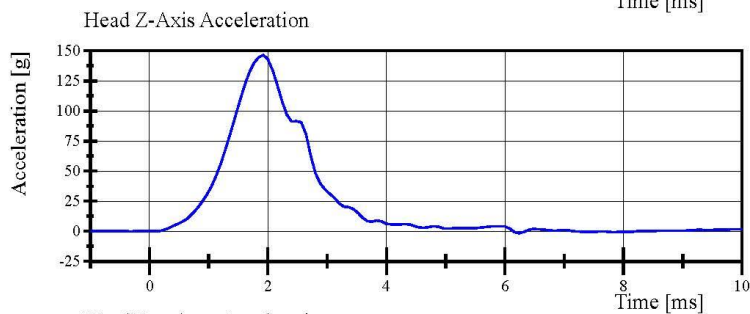
Test Date: 3/16/2022



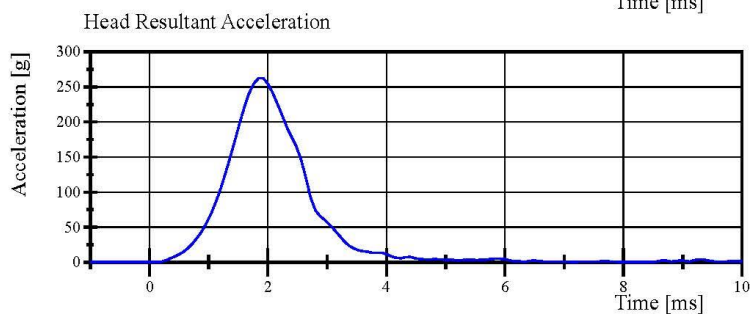
Filter Class: CFC_1000
Max: 2.9 g at 9.0 ms
Min: -218.6 g at 1.8 ms



Filter Class: CFC_1000
Max: 6.0 g at 2.8 ms
Min: -3.6 g at 3.0 ms



Filter Class: CFC_1000
Max: 146.3 g at 1.9 ms
Min: -1.7 g at 6.2 ms



Filter Class: CFC_1000
Max: 262.1 g at 1.9 ms
Min: 0.0 g at -0.6 ms

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

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Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Neck Flexion

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

Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

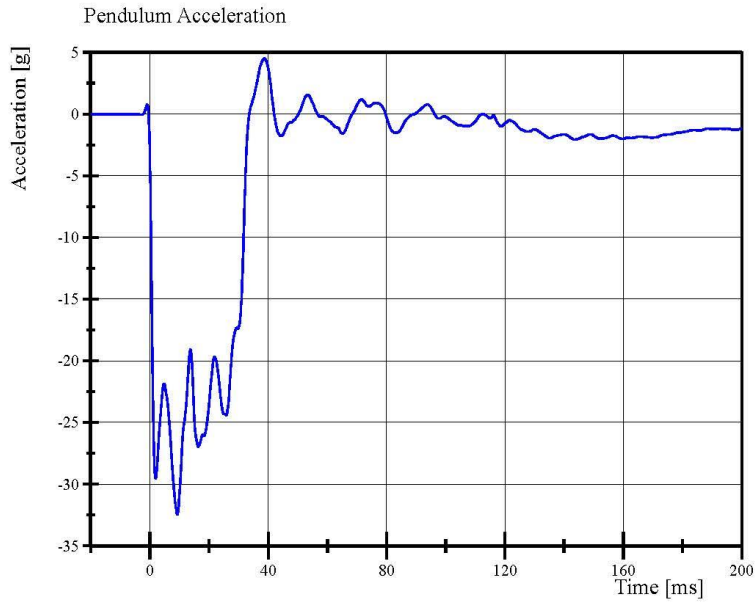
Neck S/N: EB6930

Transportation Research Center Inc.

Neck Flexion

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

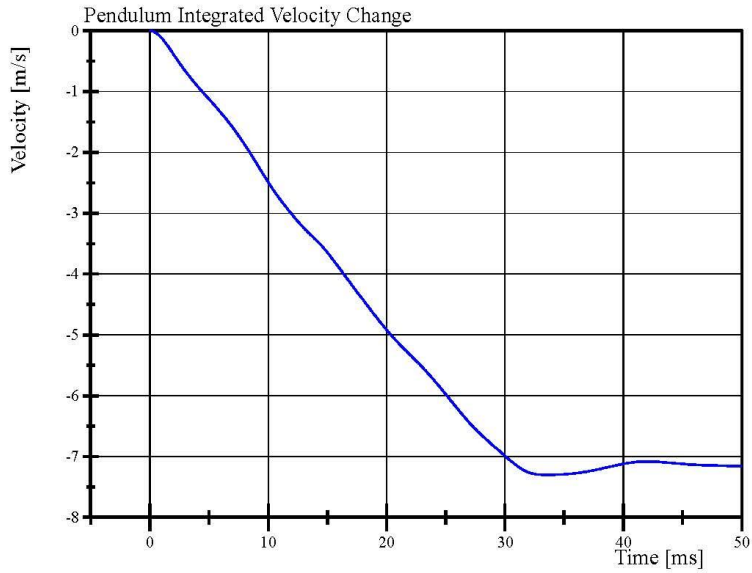
Test Date: 3/16/2022



Filter Class: CFC_180

Max: 4.5 g at 38.7 ms

Min: -32.5 g at 9.3 ms



Filter Class: CFC_180

Max: 0.0 m/s at 0.0 ms

Min: -7.3 m/s at 33.6 ms

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

03.16.2022 09:45:46 1850

Report Number: EB7513_HFH19

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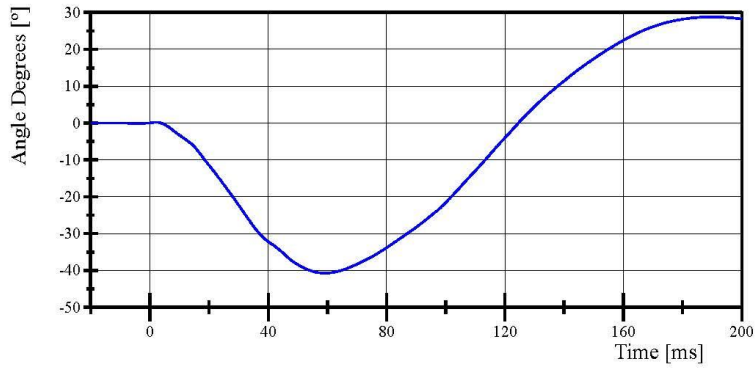
Transportation Research Center Inc.

Neck Flexion

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

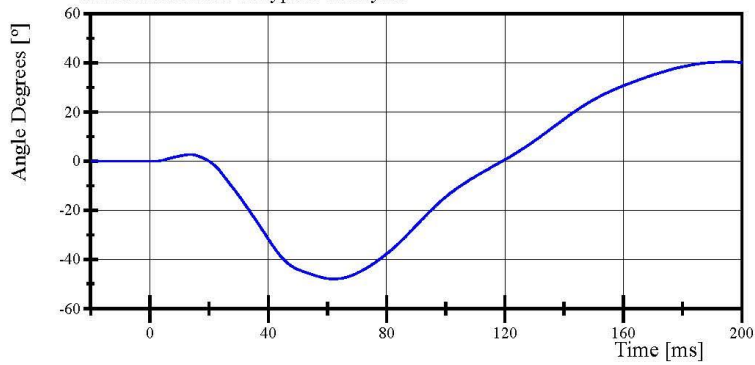
Test Date: 3/16/2022

Pot Rotation at the Base of Neck



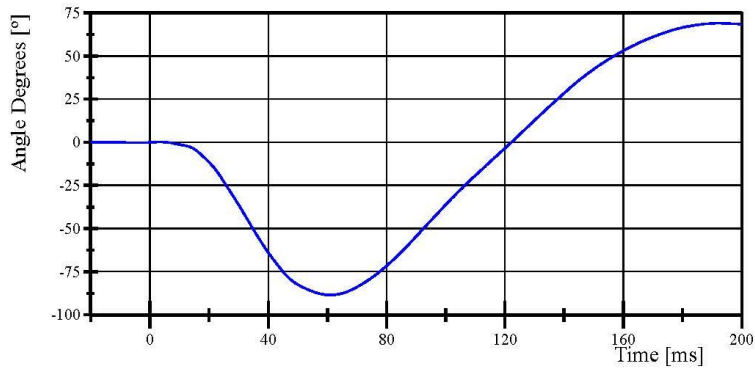
Filter Class: CFC_60
Max: 28.9 ° at 190.2 ms
Min: -40.7 ° at 59.2 ms

Head Rotation at Occypital Condyles



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

Total Head D-Plane Rotation



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

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

03.16.2022 09:45:46 1850

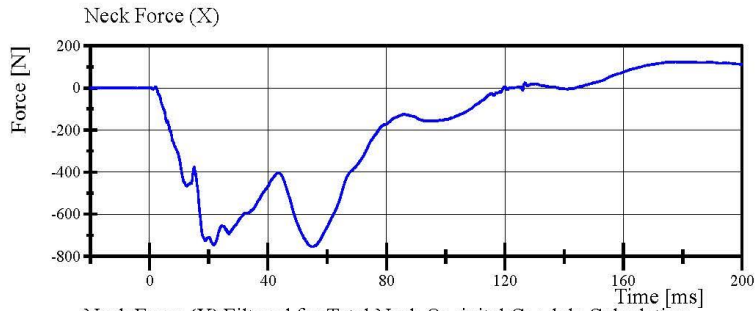


Transportation Research Center Inc.

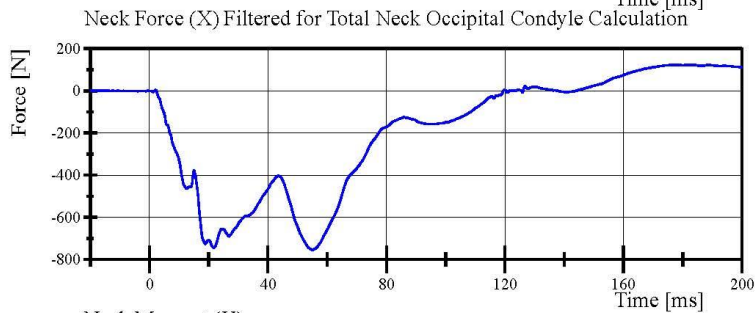
Neck Flexion

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

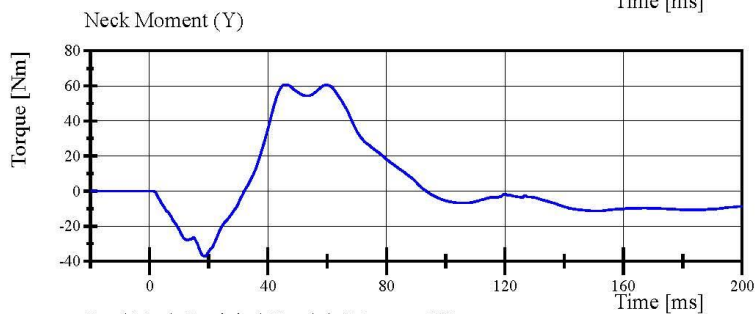
Test Date: 3/16/2022



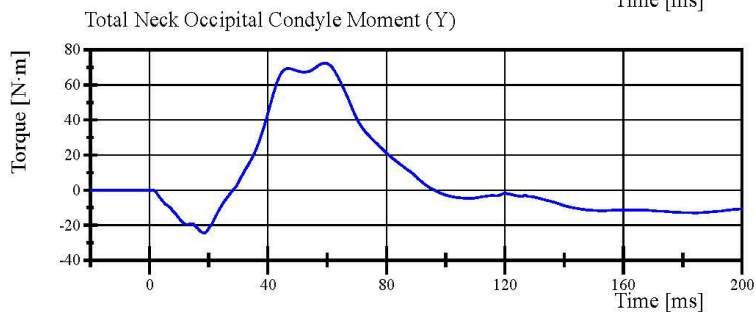
Filter Class: CFC_1000
Max: 124.6 N at 177.6 ms
Min: -754.9 N at 54.8 ms



Filter Class: CFC_600
Max: 124.0 N at 177.6 ms
Min: -754.9 N at 55.1 ms



Filter Class: CFC_600
Max: 60.8 Nm at 46.0 ms
Min: -37.1 Nm at 18.7 ms



Filter Class: Without_(Constar
Max: 72.4 N·m at 59.2 ms
Min: -24.3 N·m at 18.5 ms

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

03.16.2022 09:45:46 1850



Transportation Research Center Inc.

Neck Extension

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

Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

Neck S/N: EB6930

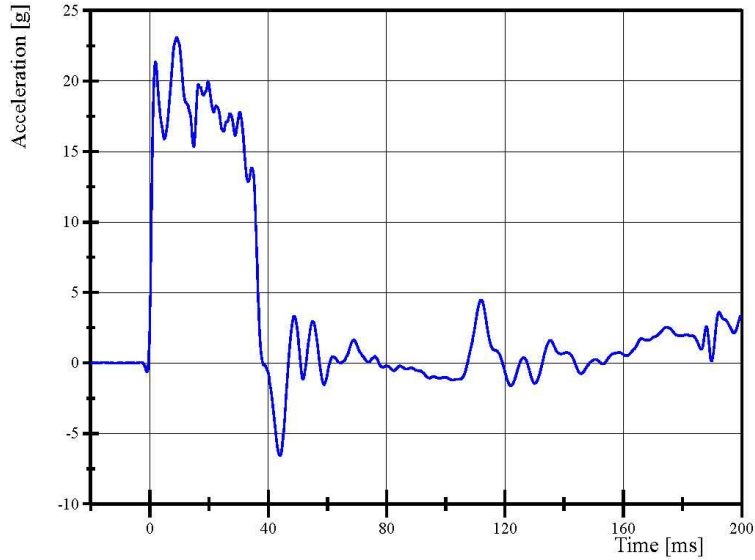
Transportation Research Center Inc.

Neck Extension

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

Test Date: 3/16/2022

Pendulum Acceleration

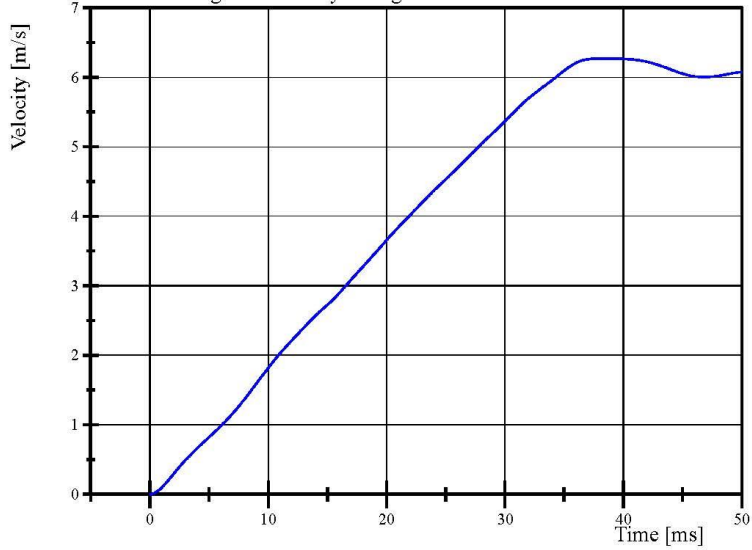


Filter Class: CFC_180

Max: 23.1 g at 9.1 ms

Min: -6.6 g at 44.0 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180

Max: 6.3 m/s at 38.1 ms

Min: 0.0 m/s at 0.0 ms

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

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Report Number: EB7513_HFH19

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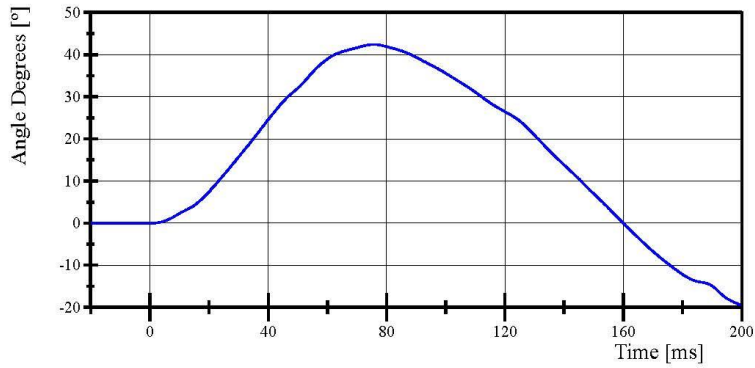
Transportation Research Center Inc.

Neck Extension

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

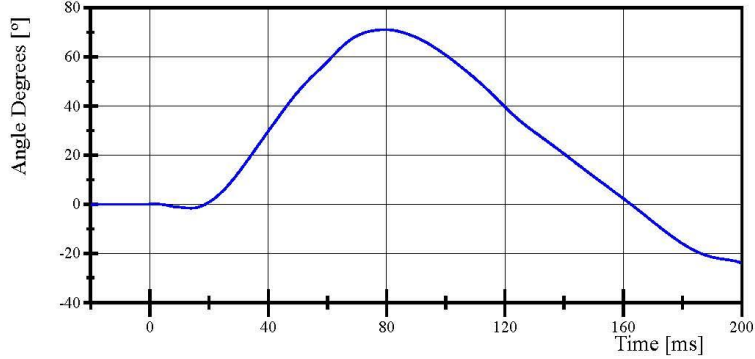
Test Date: 3/16/2022

Pot Rotation at the Base of Neck



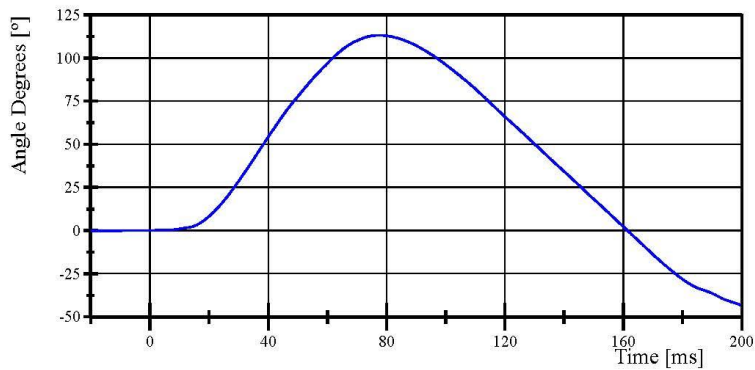
Filter Class: CFC_60
Max: 42.4 ° at 75.8 ms
Min: -19.5 ° at 199.7 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 71.1 ° at 79.5 ms
Min: -23.7 ° at 199.7 ms

Total Head D-Plane Rotation



Filter Class: CFC_60
Max: 113.3 ° at 77.5 ms
Min: -43.3 ° at 199.7 ms

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

03.16.2022 11:15:22 2007

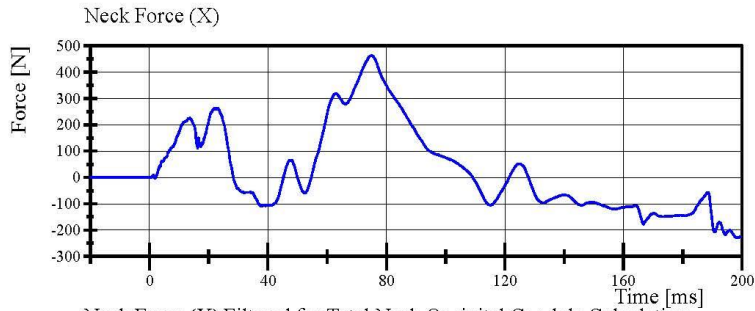


Transportation Research Center Inc.

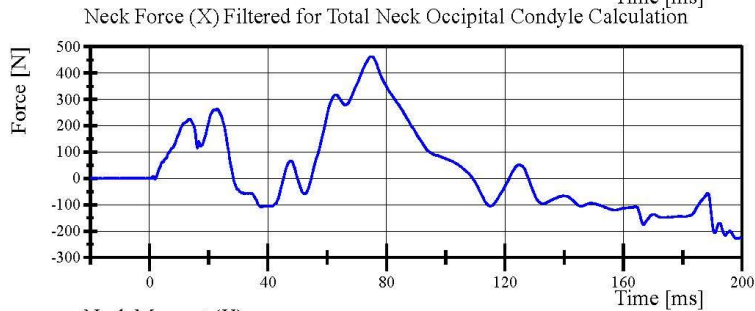
Neck Extension

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

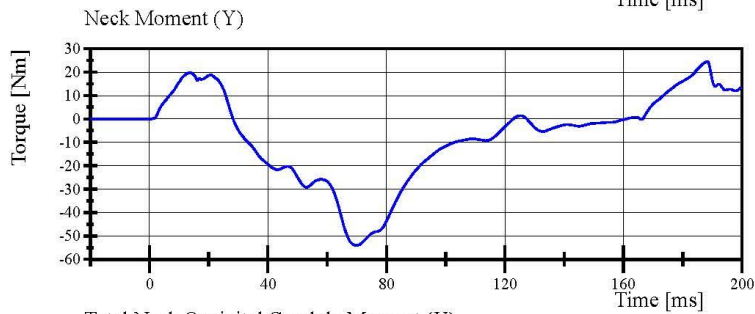
Test Date: 3/16/2022



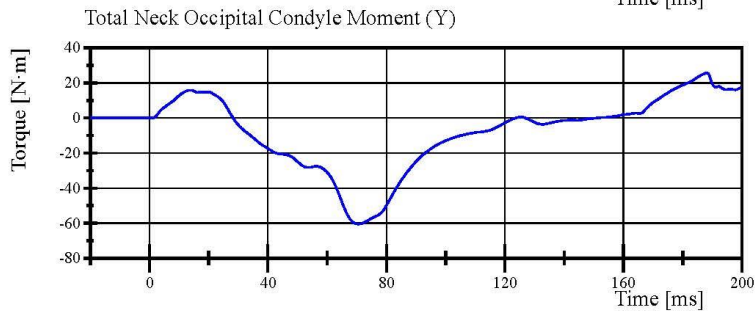
Filter Class: CFC_1000
Max: 463.5 N at 75.0 ms
Min: -229.7 N at 198.3 ms



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



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



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

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

03.16.2022 11:15:23 2007



Report Number: EB7513_HFH19

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Transportation Research Center Inc.

Front Thorax

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

Test Date: 3/16/2022

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

Test meets specifications.

Condition: Used

Comments:

Jacket S/N: DZ8735

Rib Set S/N: EB7630

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

Report Number: EB7513_HFH19

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03.16.2022 08:12:23 454

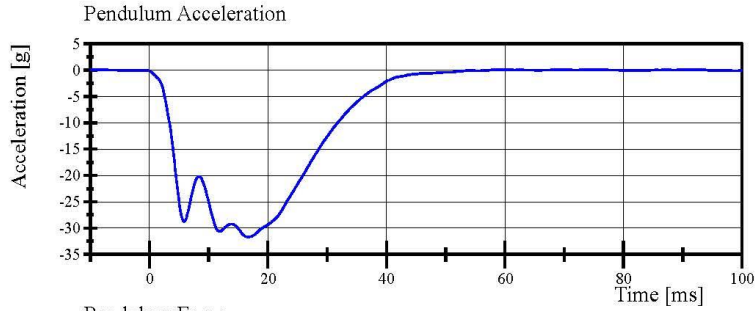


Transportation Research Center Inc.

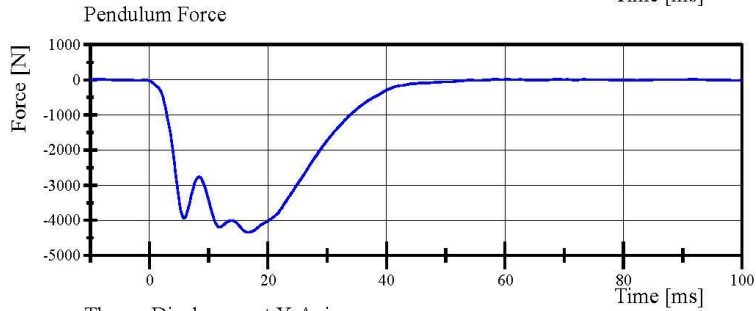
Front Thorax

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

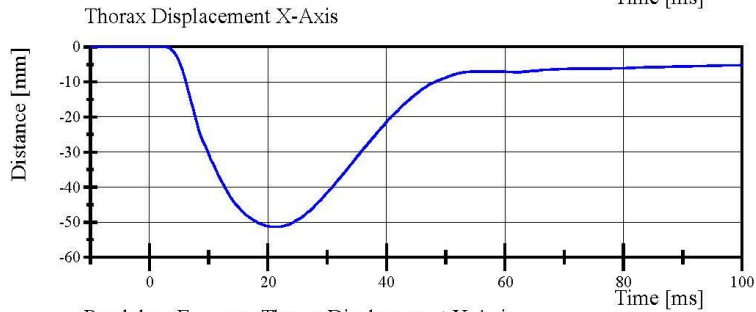
Test Date: 3/16/2022



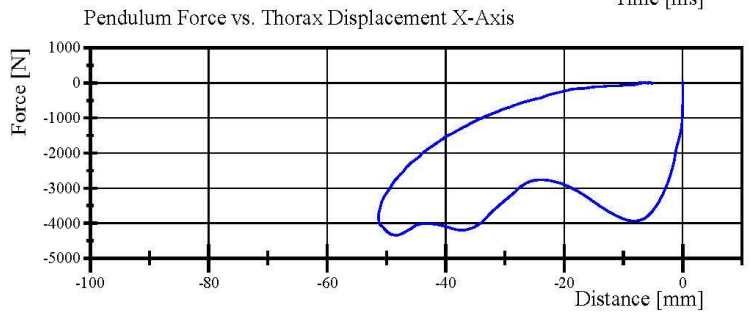
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Max: 0.1 g at 91.7 ms
Min: -31.7 g at 16.7 ms



Filter Class: CFC_180
Max: 16.6 N at 91.7 ms
Min: -4,341.3 N at 16.7 ms



Filter Class: CFC_600
Max: 0.0 mm at -8.6 ms
Min: -51.4 mm at 21.7 ms



Filter Class: CFC_180
Max: 16.6 N at -5.5 mm
Min: -4,341.3 N at -48.4 mm

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

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Report Number: EB7513_HFH19

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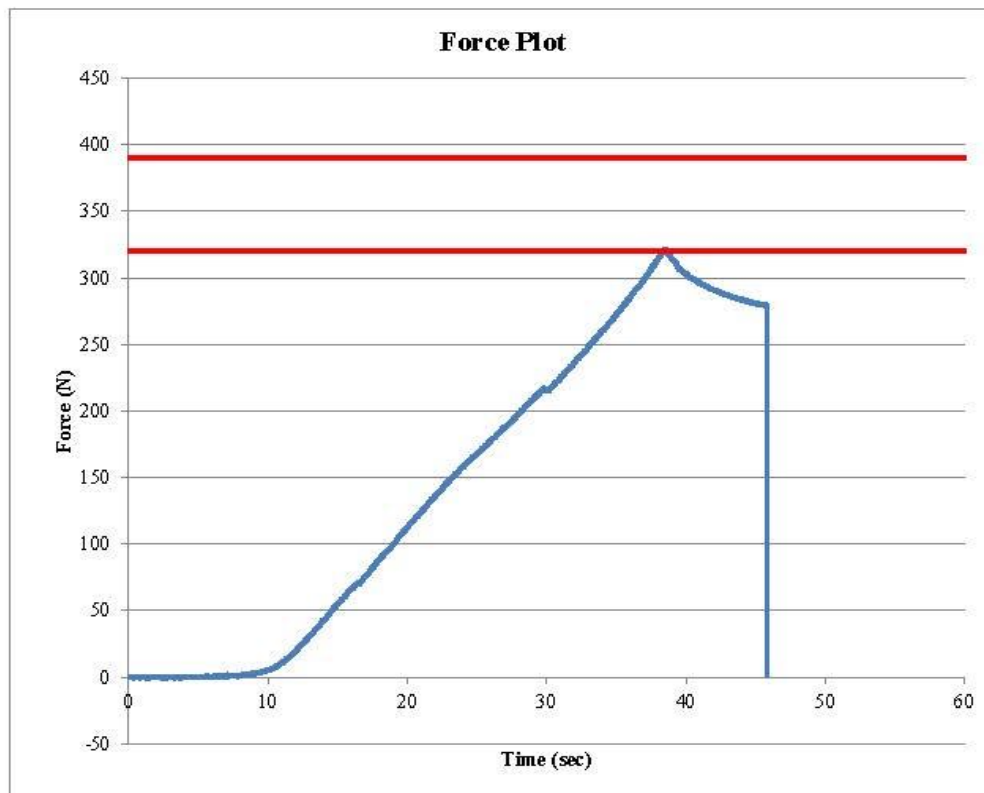


Transportation Research Center Inc.
Hybrid III Small Female Torso Flexion



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

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



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

Transportation Research Center Inc.

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

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

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EB7773

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

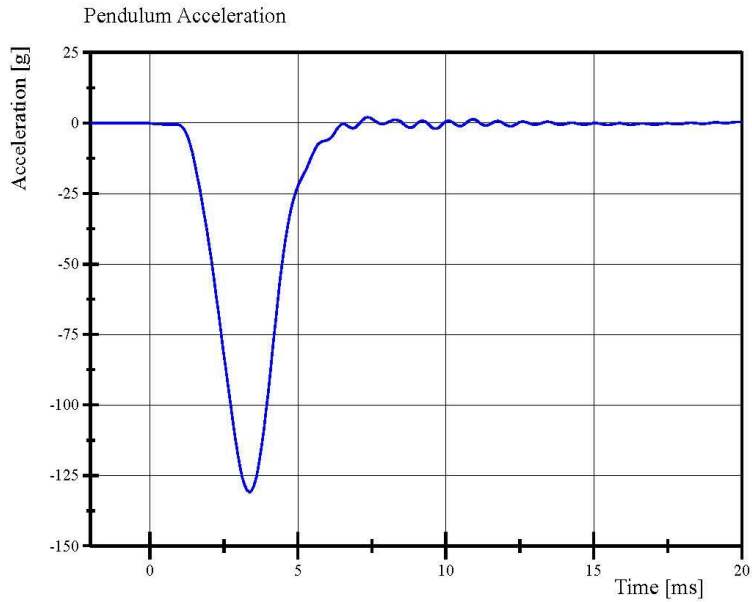
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03.16.2022 08:19:21 1784

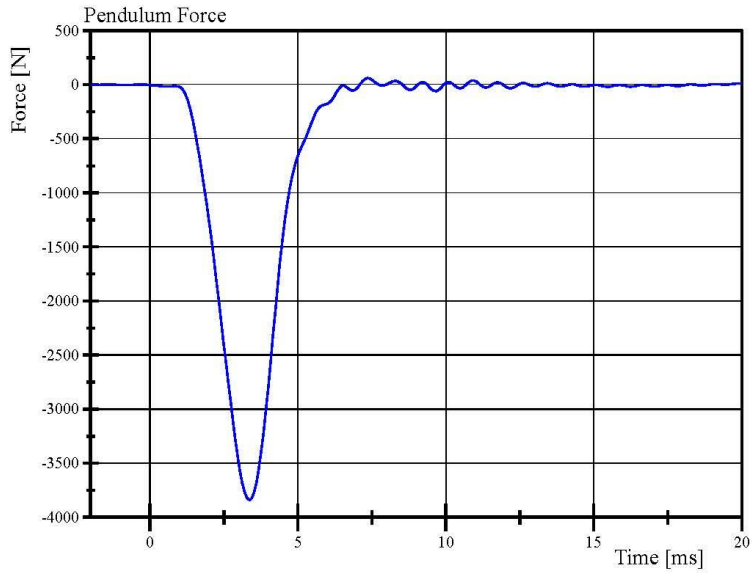


Transportation Research Center Inc.

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



Filter Class: CFC_600
Max: 2.1 g at 7.4 ms
Min: -130.9 g at 3.4 ms



Filter Class: CFC_600
Max: 61.5 N at 7.4 ms
Min: -3,839.4 N at 3.4 ms

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

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Transportation Research Center Inc.

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

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

Test meets specifications.

Condition: Used

Comments:

Knee Skin S/N: EB7550

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

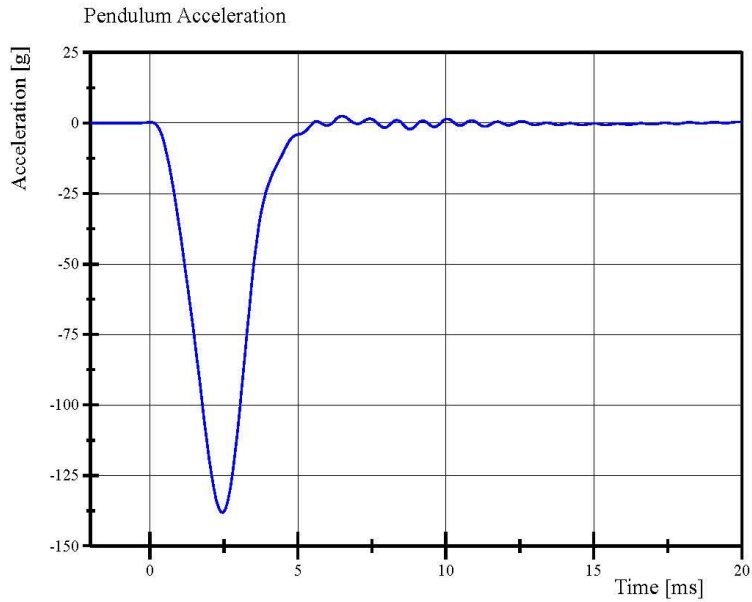
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03.16.2022 08:22:46 1795

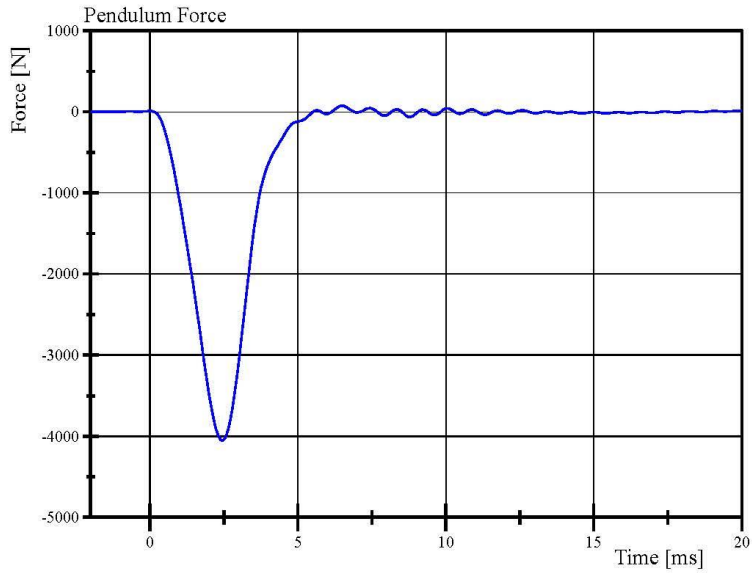


Transportation Research Center Inc.

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



Filter Class: CFC_600
Max: 2.5 g at 6.5 ms
Min: -138.2 g at 2.5 ms



Filter Class: CFC_600
Max: 73.1 N at 6.5 ms
Min: -4,052.2 N at 2.5 ms



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

TABLE 1 – Driver Dummy Instrumentation

Instrumentation			Axis/Location	Hybrid III 50th S/N 037			
				Serial Number	Manufacturer	Calibration Date	
Head Accelerometers	Primary	X	T10650	Endevco	21-Feb-2022		
		Y	P94650	Endevco	21-Feb-2022		
		Z	P94622	Endevco	21-Feb-2022		
	Redundant	X	P94431	Endevco	21-Feb-2022		
		Y	P94487	Endevco	21-Feb-2022		
		Z	P94645	Endevco	21-Feb-2022		
Head Angular Rate Sensors			X	ARS4733	DTS	09-Aug-2021	
			Y	ARS15227	DTS	11-Aug-2021	
			Z	ARS15685	DTS	09-Aug-2021	
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	2021	Humanetics	21-Feb-2022	
Chest Accelerometers	Primary	X	P87834	Endevco	4-Feb-2021		
		Y	P61255	Endevco	21-Feb-2022		
		Z	P45008	Endevco	21-Feb-2022		
	Redundant	X	P91177	Endevco	21-Feb-2022		
		Y	P94570	Endevco	21-Feb-2022		
		Z	P91172	Endevco	21-Feb-2022		
Chest Potentiometer			X	CST037	Servo	23-Feb-2022	
Pelvis Accelerometers			X	T11801	Endevco	21-Feb-2022	
			Y	P91876	Endevco	21-Feb-2022	
			Z	T11390	Endevco	21-Feb-2022	
Femur Load Cells	Left	Primary	Z	DI4215-FZ1	Denton	22-Feb-2022	
		Redundant	Z	DI4215-FZ2	Denton	22-Feb-2022	
	Right	Primary	Z	DI4216-FZ1	Denton	22-Feb-2022	
		Redundant	Z	DI4216-FZ2	Denton	22-Feb-2022	
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-94	Denton	22-Feb-2022	
		Lower	MX, MY, FZ	3644-370	Denton	21-Feb-2022	
	Right	Upper	MX, MY, FZ	3643-413	Denton	22-Feb-2022	
		Lower	MX, MY, FZ	3644-401	Denton	22-Feb-2022	
Foot Accelerometers	Left	Rear	X	P90848	Endevco	21-Feb-2022	
			Z	P91498	Endevco	21-Feb-2022	
		Front	Z	P90841	Endevco	21-Feb-2022	
	Right	Rear	X	P93467	Endevco	21-Feb-2022	
			Z	P97619	Endevco	21-Feb-2022	
		Front	Z	P94523	Endevco	21-Feb-2022	
Seat Belt Load Cells			Lap	N/A	T1210A	Measurement Specialties	19-Aug-2021
			Shoulder	N/A	N100EC	Measurement Specialties	19-Aug-2021

TABLE 2 – Front Passenger Dummy Instrumentation

Instrumentation			Axis/Location	Hybrid III 5th S/N EB7513			
				Serial Number	Manufacturer	Calibration Date	
Head Accelerometers	Primary	X	P44972	Endevco	17-Feb-2022		
		Y	T11806	Endevco	17-Feb-2022		
		Z	P69062	Endevco	17-Feb-2022		
	Redundant	X	T11046	Endevco	17-Feb-2022		
		Y	P97525	Endevco	17-Feb-2022		
		Z	P73228	Endevco	17-Feb-2022		
Head Angular Rate Sensors			X	ARS4732	DTS	9-Aug-2021	
			Y	ARS6120	DTS	9-Aug-2021	
			Z	ARS10776	DTS	11-Aug-2021	
Upper Neck Load Cell			FX, FY, FZ, MX, MY, MZ	1874	Denton	17-Feb-2022	
Chest Accelerometers	Primary	X	P80855	Endevco	17-Feb-2022		
		Y	P97544	Endevco	17-Feb-2022		
		Z	P57791	Endevco	17-Feb-2022		
	Redundant	X	P73221	Endevco	17-Feb-2022		
		Y	T11872	Endevco	17-Feb-2022		
		Z	T16784	Endevco	17-Feb-2022		
Chest Potentiometer			X	4223	Servo	17-Feb-2022	
Pelvis Accelerometers			X	P91969	Endevco	17-Feb-2022	
			Y	P91958	Endevco	17-Feb-2022	
			Z	P80721	Endevco	17-Feb-2022	
Femur Load Cells	Left	Primary	Z	DT0997-FZ1	Denton	17-Feb-2022	
		Redundant	Z	DT0997-FZ2	Denton	17-Feb-2022	
	Right	Primary	Z	DS4140-FZ1	Denton	17-Feb-2022	
		Redundant	Z	DS4140-FZ2	Denton	17-Feb-2022	
Tibia Load Cells	Left	Upper	MX, MY, FZ	3643-92	Denton	18-Feb-2022	
		Lower	MX, MY, FZ	3644-92	Denton	18-Feb-2022	
	Right	Upper	MX, MY, FZ	3643-484	Denton	18-Feb-2022	
		Lower	MX, MY, FZ	3644-369	Denton	21-Feb-2022	
Foot Accelerometers	Left	Rear	X	P90866	Endevco	21-Feb-2022	
			Z	T11816	Endevco	21-Feb-2022	
		Front	Z	P97890	Endevco	21-Feb-2022	
	Right	Rear	X	P97640	Endevco	21-Feb-2022	
			Z	P91471	Endevco	21-Feb-2022	
		Front	Z	P91907	Endevco	21-Feb-2022	
Seat Belt Load Cells			Lap	N/A	N100EA	Measurement Specialties	19-Jul-2021
			Shoulder	N/A	R141C6	Measurement Specialties	19-Aug-2021

TABLE 3 – Vehicle Instrumentation

Instrumentation			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember/Rear Seat Accelerometers	Left	Primary	X	P90297	Endevco	8-Mar-2022
			Z	P45669	Endevco	8-Mar-2022
		Redundant	X	P91965	Endevco	8-Mar-2022
	Right	Primary	X	T11434	Endevco	8-Mar-2022
			Z	P88554	Endevco	8-Mar-2022
		Redundant	X	T11804	Endevco	8-Mar-2022
Engine Accelerometers	Top		X	P91613	Endevco	8-Mar-2022
	Bottom		X	T10644	Endevco	8-Mar-2022