

Report Number: NCAP-KAR-25-001

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**BAYERISCHE MOTOREN WERKE AG
2025 BMW X3 XDRIVE30I 5-DOOR MPV**

NHTSA NUMBER: M20254100

**PREPARED BY:
APPLUS+ IDIADA KARCO ENGINEERING, LLC.
9270 HOLLY ROAD
ADELANTO, CA 92301**



JANUARY 29, 2025

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE : NRM-100
1200 NEW JERSEY AVE, SE
WASHINGTON, DC 20590**


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Approval Date: _____ January 29, 2025 _____

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

COTR, New Car Assessment Program
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16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2025 BMW X3 xDrive30i 5-Door MPV in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. The test was conducted at the Applus+ IDIADA KARCO Engineering, LLC. facility in Adelanto, California on January 15, 2025. The impact velocity of the vehicle was 56.12 km/h and the ambient temperature at the barrier face at the time of impact was 21.1°C. The target vehicle's post-test maximum crush was 450 mm at DPD 5 to the right of the vehicle's centerline. The test vehicle's performance is as follows:																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700</td> <td>95.963</td> <td>700</td> <td>119.493</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>24.886</td> <td>52</td> <td>20.395</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.322</td> <td>1</td> <td>0.402</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1163.458</td> <td>2620</td> <td>745.811</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>134.291</td> <td>2520</td> <td>317.491</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>2429.893</td> <td>6805</td> <td>2204.001</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>1994.839</td> <td>6805</td> <td>2384.462</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	95.963	700	119.493	Maximum Chest Compression	mm	63	24.886	52	20.395	Nij	N/A	1	0.322	1	0.402	Neck Tension	N	4170	1163.458	2620	745.811	Neck Compression	N	4000	134.291	2520	317.491	Left Femur Force	N	10008	2429.893	6805	2204.001	Right Femur Force	N	10008	1994.839	6805	2384.462
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 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 number 693JJ919D000004. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Procedure dated May 2018 for NCAP Full Frontal Rigid Barrier Impact Testing.

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2025 BMW X3 xDrive30i 5-Door MPV at a velocity of 56.12 km/h. The test was performed at Applus+ IDIADA KARCO Engineering, LLC. on January 15, 2025. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

One (1) real-time camera and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

One Part 572E HIII 50th percentile male anthropomorphic test device (ATD) was placed in the driver seating position and one Part 572O HIII 5th percentile female ATD was placed in the right-front passenger seating 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 force transducers, right / left femur load cells, and lower leg instrumentation. Seat belt load cells were installed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading.

The driver (position 1) ATD (Serial No. 360) and the right-front passenger (position 2) ATD (Serial No. DH1644) were qualified prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 106 channels of dummy and vehicle response data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces. Appendix D contains a complete list of instrumentation used for dummies and the vehicle.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the test vehicle was 450 mm at DPD 5 to the right of the vehicle's centerline. 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: the driver ATD's head contacted the frontal air bag, and headrest. The upper and lower torso contacted the frontal air bag. Both left and right knees contacted the knee air bag.

The passenger's visible contact points were as follows: the passenger ATD's head contacted the frontal air bag and headrest. The upper and lower torso contacted the frontal air bag. Both left and right knees contacted the knee air bag.

The occupant data is summarized below:

ATD Position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50th Male)	95.963	0.322	1163.458	134.291	33.103	24.886	2429.893	1994.839
Passenger (5th Female)	119.493	0.402	745.811	317.491	26.737	20.395	2204.001	2384.462

GENERAL COMMENTS:

None.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in ²	kPa	6.895
Temperature	General Use	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20254100
Model Year	2025
Make	BMW
Model	X3 xDrive30i
Body Style	5-Door MPV
VIN	5UX53GP06S9Y09964
Body Color	Dune Grey Metallic
Odometer Reading (km / mi)	13/8
Engine Displacement (L)	2.0
Type / No. of Cylinders	4 Cylinder
Engine Placement	Inline
Transmission Type	Automatic
Transmission Speeds	8
Overdrive	Yes
Final Drive	AWD
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	Yes

Traction Control System	Yes
Power Steering	Yes
Power Window Auto-Reverse	Yes
Driver Frontal Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Front Pass. Frontal Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	No
Front Pass. Torso/Pelvis Airbag	Yes
Front Pass. Pelvis Airbag	No
Front Pass. Knee Airbag	Yes
Driver Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Seat Belt Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other Safety Restraint	None

Does Owner's Manual provide instructions to turn off automatic door locks? No

DATA FROM CERTIFICATION LABEL

Manufactured By	BAYERISCHE MOTOREN WERKE AG
Date of Manufacture	Sep-24

GVWR (kg)	2500
GAWR Front (kg)	1175
GAWR Rear (kg)	1465

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

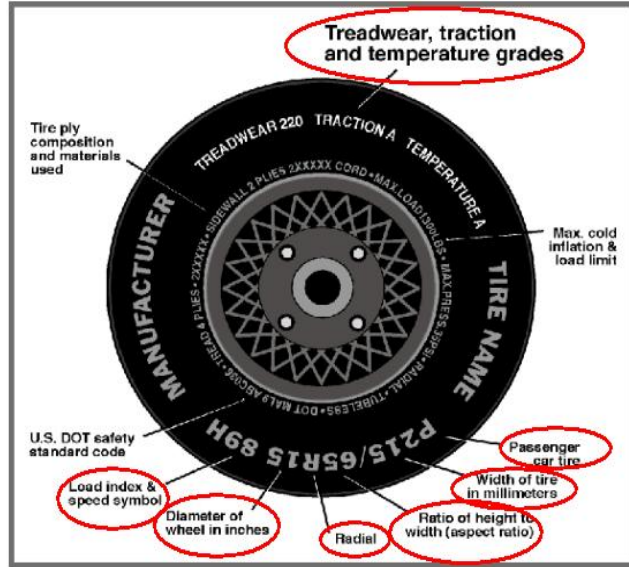
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				502.0
DSC x 68.0 (kg)				340.0
Cargo Weight (RCLW) (kg)				136.0

*For trucks, MPVs, or buses – if the RCLW calculated above is greater than 136 kg, use 136 kg as the RCLW.

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	270
Recommended Tire Size	245/50 R19	245/50 R19
Tire Size on Vehicle	245/50 R19	245/50 R19
Tire Manufacturer	Hankook	Hankook
Tire Model	Dynapro HPX	Dynapro HPX
Treadwear	500	500
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1	2 Polyester, 2 Steel, 1
Load Index / Speed Symbol	105	105
Tire Material	Rubber	Rubber
DOT Safety Code Left	12XAV BYHA 1724	12XAV BYHA 1724
DOT Safety Code Right	12XAV BYHA 1724	12XAV BYHA 1724

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UWV)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	492.0	467.5		528.0	576.5	
Right	kg	469.5	476.0		497.0	573.5	
Ratio	%	50.5%	49.5%	100.0%	47.1%	52.9%	100.0%
Total	kg	961.5	943.5	1905.0	1025.0	1150.0	2175.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UWV)	kg	1905.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	136.0	C
Calculated Vehicle Target Weight (TVTW)	kg	2182.0	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	790	790	800	800	1411
As Tested	mm	788	784	795	797	1506
Post-Test	mm	875	890	780	789	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheelbase	mm	2849
Total Vehicle Length at Left Side	mm	4510
Total Vehicle Length at Centerline	mm	4737
Total Vehicle Length at Right Side	mm	4510
Weight of Ballast in Cargo Area	kg	55.0
Weight of Vehicle Components Removed	kg	20.0
Amount of Stoddard Solvent in Fuel Tank	L	60.55

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Spare tire with tools (16.5 kg), and rear trim (3.5 kg).

DATA SHEET NO. 1 ... (CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test
1	Total Length	4737
2	Total Width	1924
3	Bumper Top Height	695
4	Bumper Bottom Height	552
5	Longitudinal Member Top Height	671
6	Distance Between Longitudinal Members	784
7	Longitudinal Member Width	90
8	Engine Top Height	1021
9	Engine Bottom Height	655
10	Engine and Gearbox Width	444
11	Front Bumper to Engine Distance	802
12	Front Shock Absorber Fixing Height	1070
13	Bonnet Leading Edge Height	847
14	Front Shock Absorber Fixing Width	1206
15	Front Bumper to Front Axle Distance	871
16	Front Axle to A-Pillar Distance	745
17	A-Pillar to B-Pillar Distance	847
18	B-Pillar to Rear Axle Distance	1256
19	B-Pillar to C-Pillar Distance	731
20	Roof Sill Bottom Height	1684
21	Roof Sill Top Height	1719
22	Floor Sill Bottom Height	469
23	Floor Sill Top Height	502

*All measurements in millimeters.

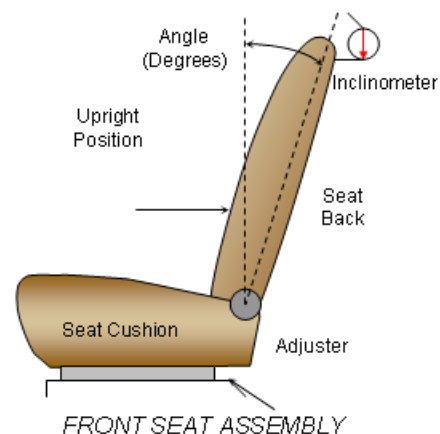
DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

NOMINAL DESIGN RIDING POSITION

The procedure for the driver is as follows: the seat back is set to the manufacturer’s designated angle. The procedure for the passenger is as follows: the seat back is set to position the transverse instrumentation platform of the dummy’s head at $0^\circ \pm 0.5^\circ$. Seat back angle is measured at the seatback with a straight edge.

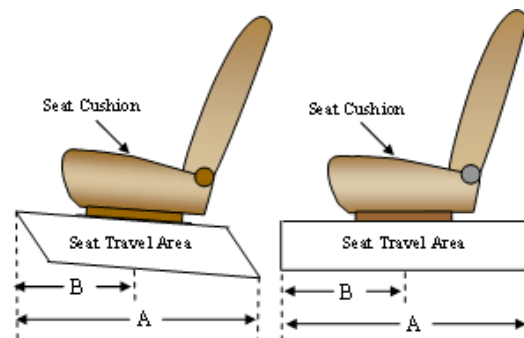


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	19.7
Passenger Seat Back Angle	22.6

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rear most possible position. The driver’s seat is set to the middle of the fore-aft travel. The passenger’s seat is set to the forward most position where the ATD will not contact any interior panels.



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	303	152
Passenger Seat	223	0

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer’s design position for a 50th percentile adult male ATD for the driver, and a 5th percentile adult female ATD for the passenger. Position “L” is the lowermost position, followed by position “M1”. Position “H” is the uppermost position.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	Fixed	Fixed
Passenger Seat	Fixed	Fixed

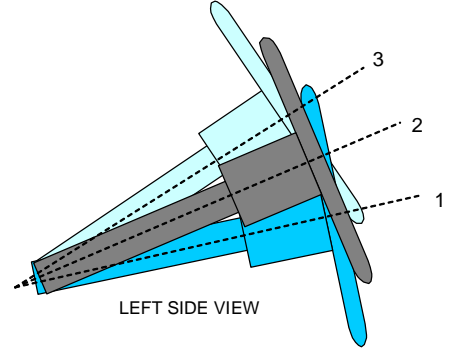
DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

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. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements.



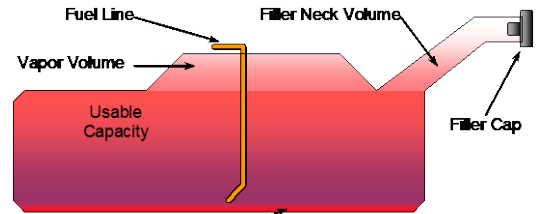
LEFT SIDE VIEW
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	20.4	0
Geometric Center Position, No. 2	22.2	41.5
Uppermost Position, No. 3	24.0	83
Telescoping Steering Wheel Travel		83
Test Position	22.2	41.5

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The pump will work at "ignition on" until pressure in the system has reached working pressure in the system; then it will stop pumping fuel until the engine has been started.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

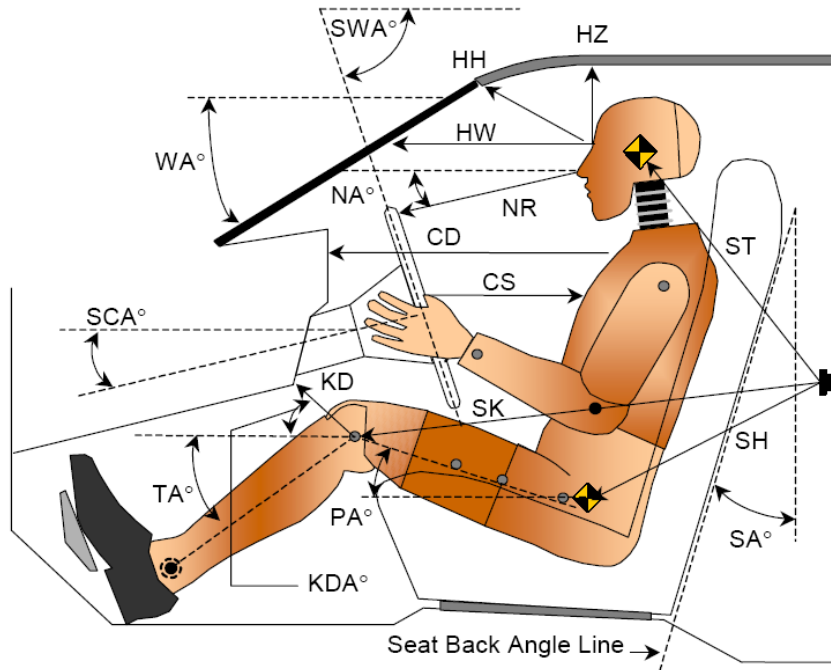
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	65.11
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	65.11
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	60.55
Actual Amount of Solvent Used in Test	60.55
1/3 of Usable Capacity	21.70

Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? Yes No

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025



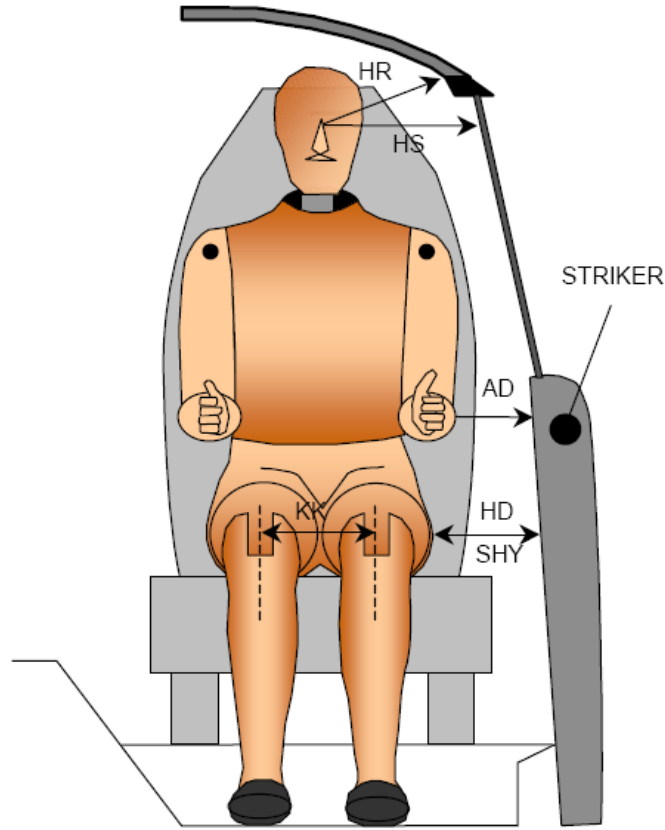
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		33.2		
SWA°	Steering Wheel Angle		18.0		
SCA°	Steering Column Angle		42.9		
SA°	Seat Back Angle (On Seatback)		19.7		22.8
HZ	Head to Roof	307	90.0	270	90.0
HH	Head to Header	404	23.8	382	35.6
HW	Head to Windshield	611	0.0	651	0.0
NR	Nose to Rim	359	6.5	458	23.8
CD	Chest to Dash	581		423	
CS	Chest to Steering Hub	277	0.0		
RA	Rim to Abdomen	190	0.0		
KDL	Left Knee to Dash	140	26.5	79	22.3
KDR	Right Knee to Dash	145	36.1	77	41.1
PA°	Pelvic Angle		24.5		20.3
TA°	Tibia Angle		39.1		41.7
SK	Striker to Knee	613	8.7	663	8.0
ST	Striker to Head	561	83.6	539	74.2
SH	Striker to H-Point	308	53.3	347	36.3

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

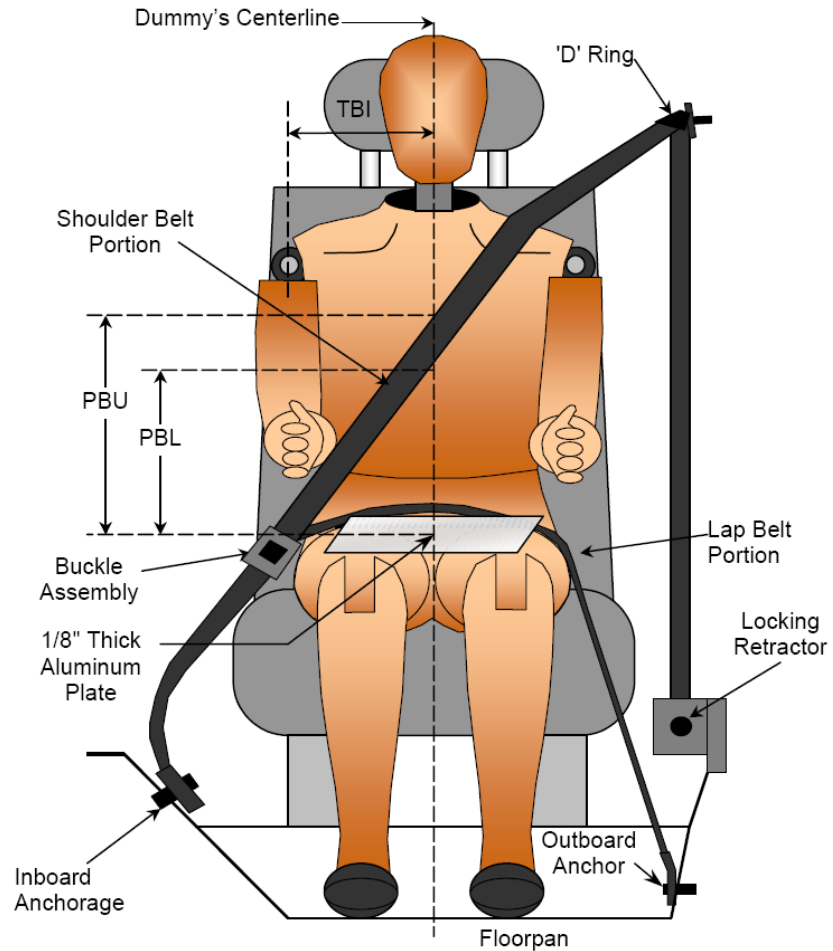
Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
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Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	175	109
HD	H-Point to Door	174	161
HR	Head to Side Header	300	286
HS	Head to Side Window	374	375
KK	Knee to Knee	170	380
AA	Ankle to Ankle	180	357

DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Code	Measurement Description	Units	Driver	Passenger
PBU	Top Surface of Aluminum Plate to Belt Upper Edge	mm	328	246
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	250	171

BELT LENGTH DATA

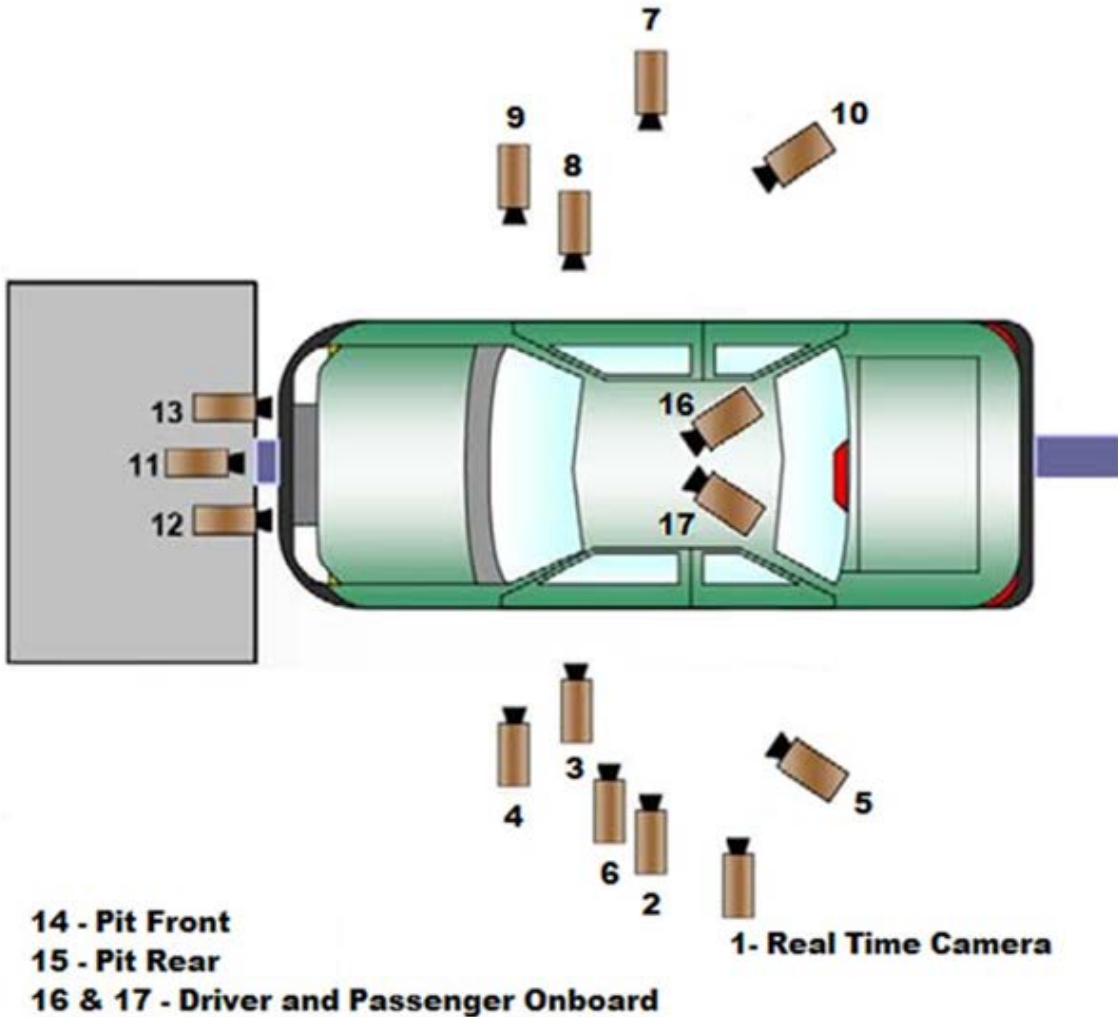
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	910	895
Lap Belt Length as Measured on ATD	mm	670	630
Remainder of Belt on Reel	mm	1300	1110
Total Belt Length for Continuous Webbing Systems	mm	2880	2635

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

CAMERA POSITIONS FOR FRONTAL IMPACTS



***Camera locations are approximate and not to scale*

DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

CAMERA LOCATIONS

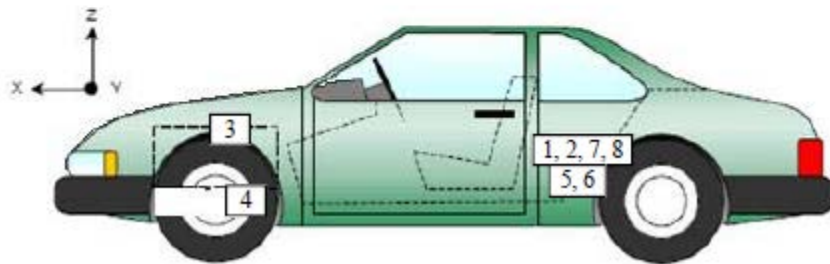
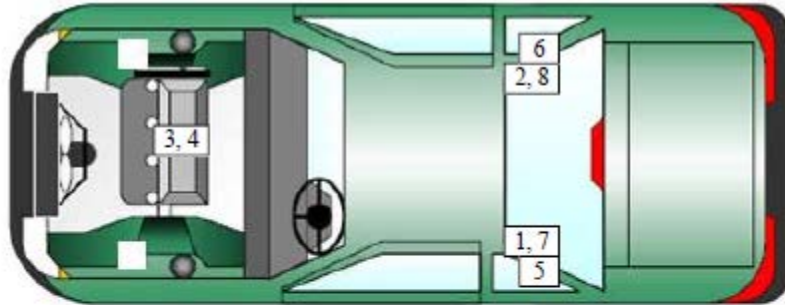
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Left Overall	-2456	-7975	-1025	20	1000
3	Driver Close-Up	-2590	-7950	-1371	50	1000
4	Left Front Half	-1701	-6197	-1701	35	1000
5	Left Angle	-6696	-10308	-3211	105	1000
6	Steering Column	-1966	-10412	-3688	35	1000
7	Right Overall	-2336	7569	-1012	20	1000
8	Passenger Close-Up	-1733	7581	-1408	50	1000
9	Right Front Half	-1600	8214	-1811	35	1000
10	Right Angle	-6217	9516	-4830	85	1000
11	Windshield	-354	0	-5749	28	1000
12	Driver Windshield	297	-366	-2460	24	1000
13	Passenger Windshield	297	366	-2460	24	1000
14	Pit Front	-756	0	1495	21	1000
15	Pit Rear	-3398	0	1495	15	1000
16	Driver Onboard	-1250	-275	-1510	8	1000
17	Passenger Onboard	-1250	275	-1510	8	1000

Coordinates: +X = forward impact plane
 +Y = right of monorail center
 +Z = into ground

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1982	-850	-284
2	Right Rear Accelerometer X-Direction	1950	727	-450
3	Engine Top X	3591	-215	-1060
4	Engine Bottom X	3595	-115	-205
5	Left Rear Accelerometer Z-Direction	1982	-850	-284
6	Right Rear Accelerometer Z-Direction	1950	727	-450
7	Left Rear Accelerometer X-Direction Redundant	1982	-850	-284
8	Right Rear Accelerometer X-Direction Redundant	1950	727	-450

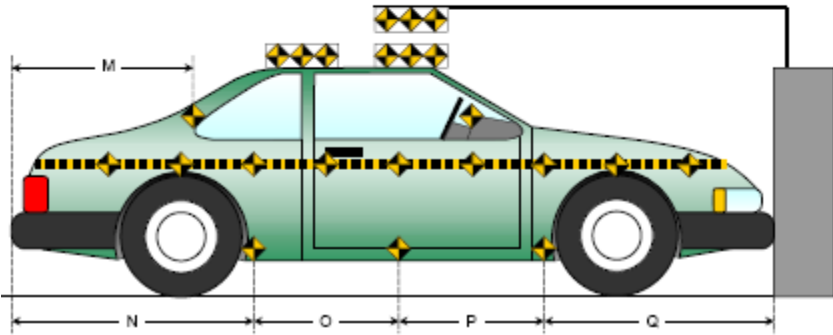
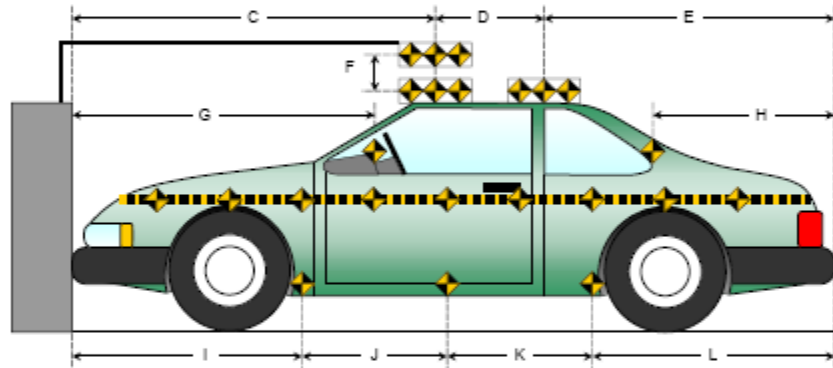
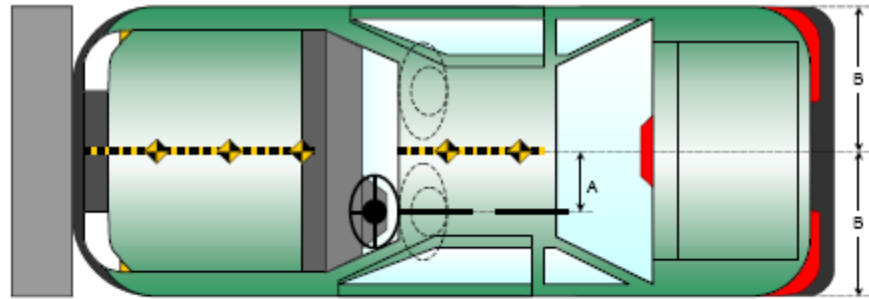
Reference Points: X – Rear Surface of Vehicle (+ forward)
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

Item	Value
A	370
B	962
C	
D	
E	
F	
G	1760
H	436
I	1393
J	841
K	1024
L	1479
M	436
N	1479
O	1024
P	841
Q	1393

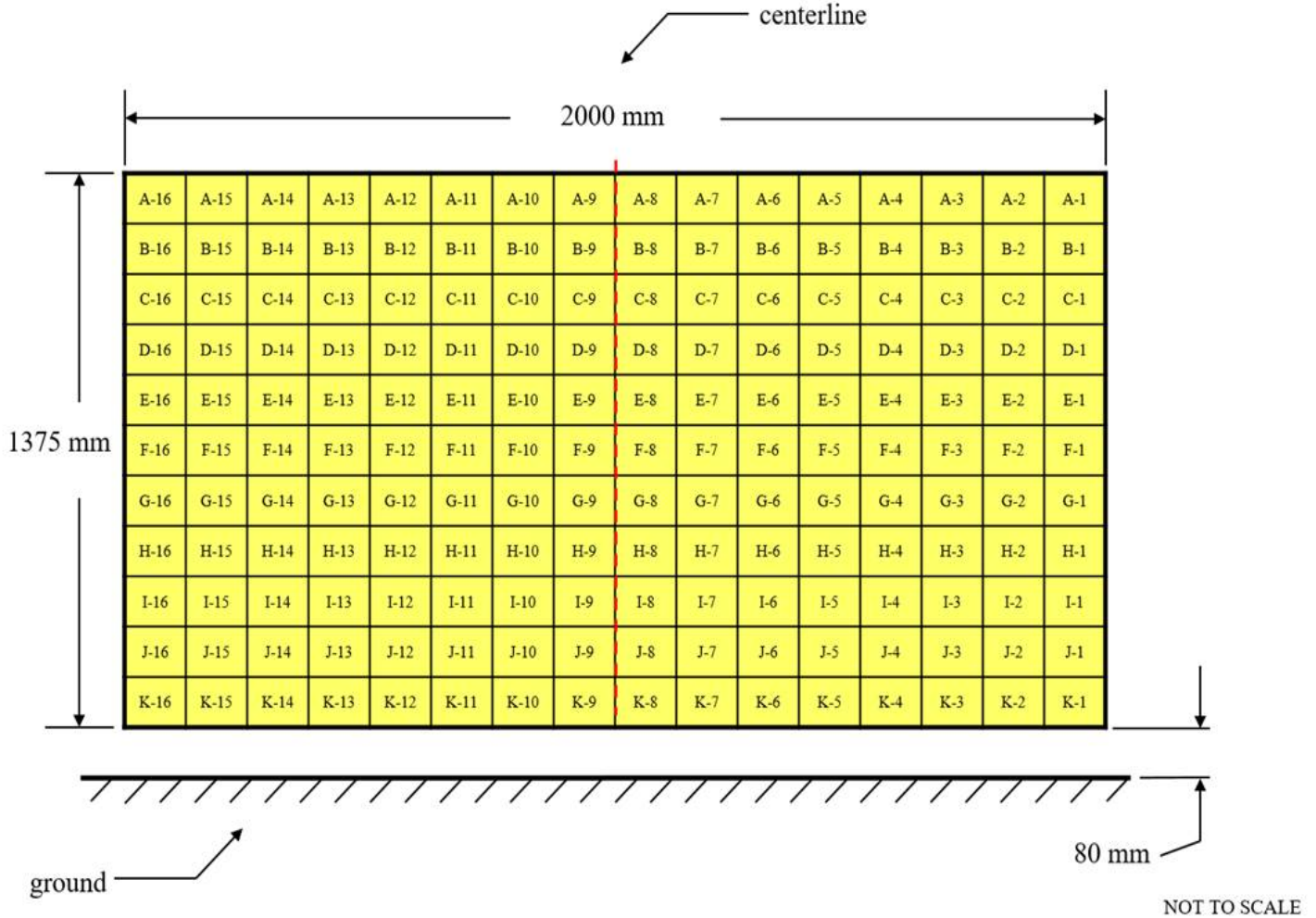


*All measurements in millimeters.

DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025



DATA SHEET NO. 10

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Sensors	47
Passenger Dummy Sensors	47
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	4
Load Cell Barrier	528
Total	634

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle On Board	2
High-Speed Off Board	14
Real Time	1
Total	17

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type/Serial No.	HIII 50th Percentile Male ATD / 360	HIII 5th Percentile Female ATD / DH1644
Head Contact	Frontal Air Bag, Headrest	Frontal Air Bag, Headrest
Upper Torso Contact	Frontal Air Bag	Frontal Air Bag
Lower Torso Contact	Frontal Air Bag	Frontal Air Bag
Left Knee Contact	Knee Air Bag	Knee Air Bag
Right Knee Contact	Knee Air Bag	Knee Air Bag

DOOR OPENING, TRUNK OPENING, AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Remained closed, latched, and operational	Remained closed, latched, and operational
Rear Door Opening	Remained closed, latched, and operational	Remained closed, latched, and operational
Trunk/Hatch/Tailgate Opening	Remained closed, latched, and operational	Remained closed, latched, and operational
Seat Track Shift (mm)	N/A	N/A
Seat Back Movement from Initial Position	None	None

OTHER VEHICLE POST-TEST OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

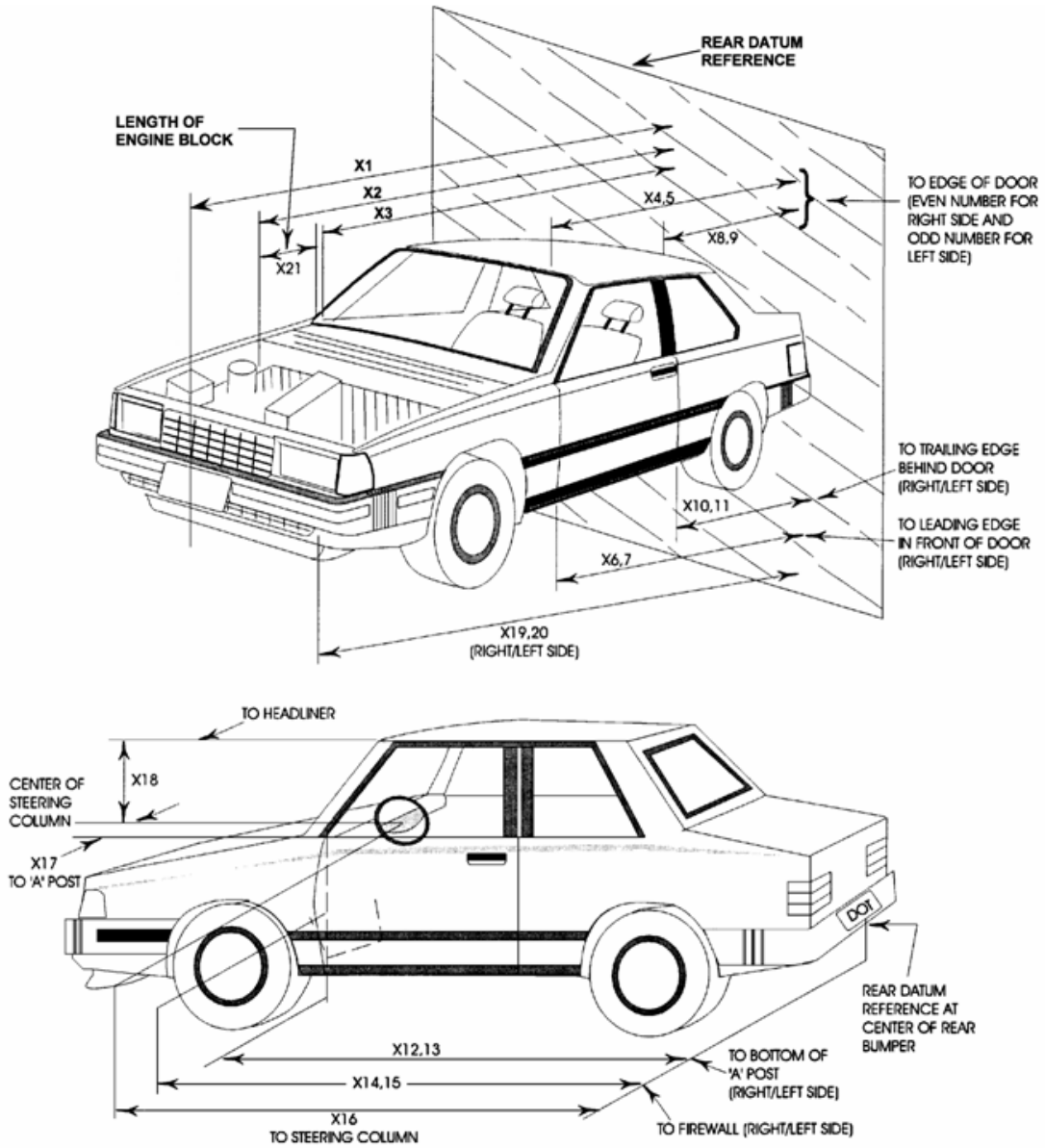
Measured Parameter	Units	Value
Left Side	mm	150
Center	mm	890
Right Side	mm	160
Average	mm	400

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Air Bag	Yes	Yes	Yes	Yes
Side Air Bag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Air Bag 2 (Torso/Pelvis)	Yes	No	Yes	No
Knee Air Bag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025



DATA SHEET NO. 12 ... (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

No.	Description	Pre-Test	Post-Test	Change
1	Total Length of Vehicle at Centerline	4737	4292	-445
2	Rear Surface of Vehicle to Front of Engine	3899	3896	-3
3	RSOV to Firewall	3380	3375	-5
4	RSOV to Upper Leading Edge of Right Door	3224	3224	0
5	RSOV to Upper Leading Edge of Left Door	3226	3204	-22
6	RSOV to Lower Leading Edge of Right Door	3218	3219	1
7	RSOV to Lower Leading Edge of Left Door	3219	3198	-21
8	RSOV to Upper Trailing Edge of Right Door	2065	2067	2
9	RSOV to Upper Trailing Edge of Left Door	2063	2053	-10
10	RSOV to Lower Trailing Edge of Right Door	2106	2126	20
11	RSOV to Lower Trailing Edge of Left Door	2105	2103	-2
12	RSOV to Bottom of A-Pillar, Right Side	3116	3135	19
13	RSOV to Bottom of A-Pillar, Left Side	3116	3117	1
14	RSOV to Firewall, Right Side	3381	3375	-6
15	RSOV to Firewall, Left Side	3380	3377	-3
16	RSOV to Steering Column	2634	2688	54
17	Center of Steering Column to A-Pillar	482	429	-53
18	Center of Steering Column to Headliner	570	578	8
19	RSOV to Right Side of Front Bumper	4581	4252	-329
20	RSOV to Left Side of Front Bumper	4580	4356	-224
21	Length of Engine Block	369	363	-6
RD	RSOV to Right Side of Dash Panel	2841	2846	5
CD	RSOV to Center of Dash Panel	2842	2849	7
LD	RSOV to Left Side of Dash Panel	2839	2834	-5

All measurements in millimeters.

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

VEHICLE INFORMATION

VIN: 5UX53GP06S9Y09964 Wheelbase (mm): 2849
 Vehicle Size Category: MPV Test Weight (kg): 2175.0

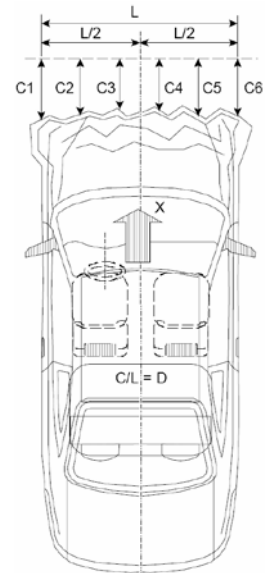
ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember
 Cal. Procedure/Interval: Vibration Test / 6 months
 Integration Algorithm: NHTSA Standard
 Impact Velocity (km/h): 56.12
 Velocity Change (km/h): 71.25
 Time of Separation (msec): 66.90

Linearity: Good

CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1280
 Impact Mode: Full Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Crush
C1	Crush Zone 1 at Left Side	mm	156	382	226
C2	Crush Zone 2 at Left Side	mm	39	370	331
C3	Crush Zone 3 at Left Side	mm	4	425	421
C4	Crush Zone 4 at Right Side	mm	2	447	445
C5	Crush Zone 5 at Right Side	mm	31	481	450
C6	Crush Zone 6 at Right Side	mm	155	486	331
L	C1 to C6	mm	1280		

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

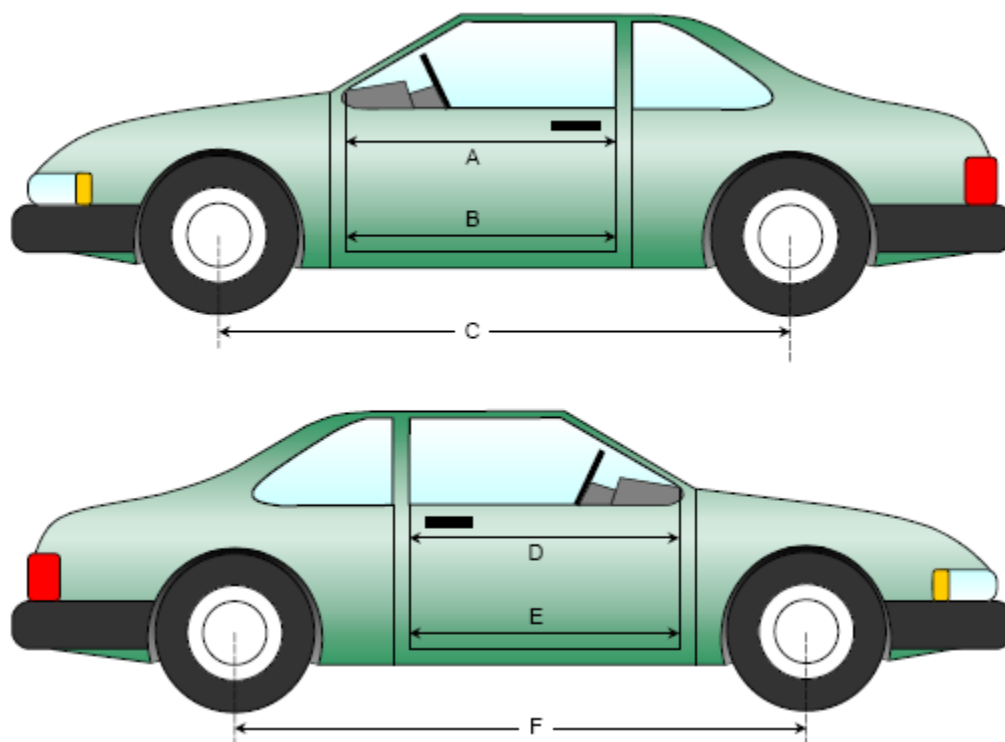
Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Change
A	Left Side Upper	mm	1163	1152	-11
B	Left Side Lower	mm	1114	1095	-19
D	Right Side Upper	mm	1161	1157	-4
E	Right Side Lower	mm	1112	1093	-18

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Change
C	Left Side Wheelbase	mm	2849	2773	-76
F	Right Side Wheelbase	mm	2851	2761	-90



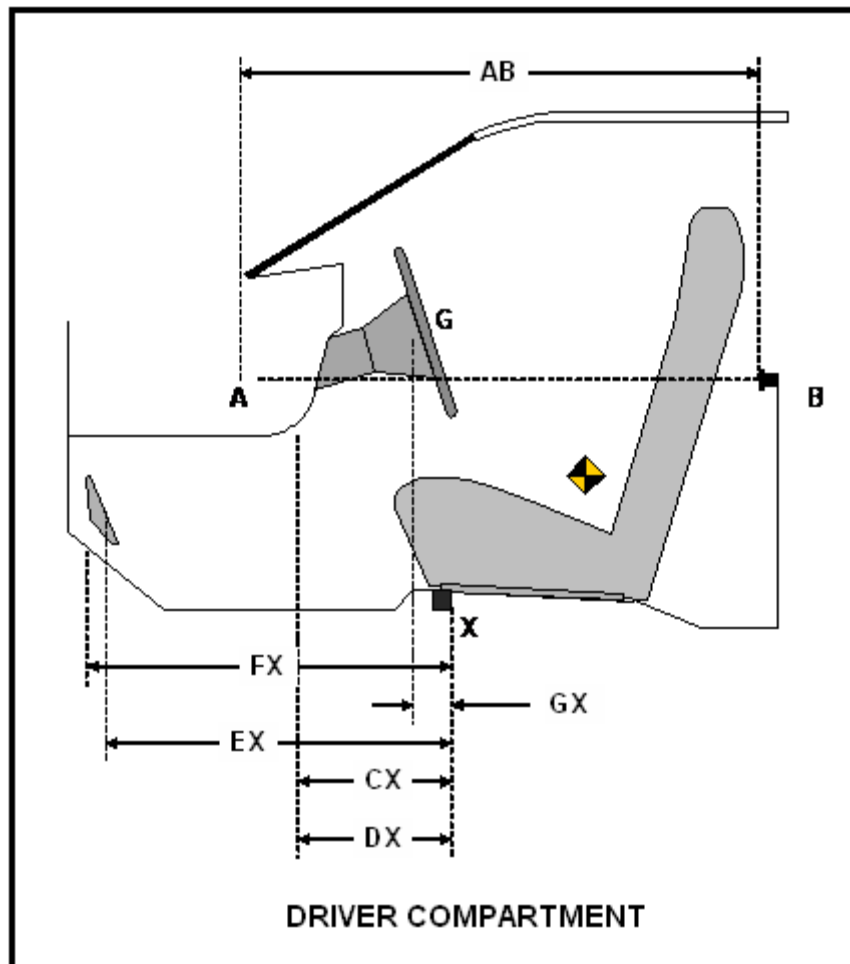
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Change
AB	Door Opening (Inside Window Jam)	mm	954	954	0
CX	Left Knee Bolster to X	mm	312	319	7
DX	Right Knee Bolster to X	mm	320	329	9
EX	Brake Pedal to X	mm	524	525	1
FX	Foot Rest to X	mm	506	510	4
GX	Center of Steering Wheel Hub to X	mm	10	43	33

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15

SUMMARY OF INDICANT FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

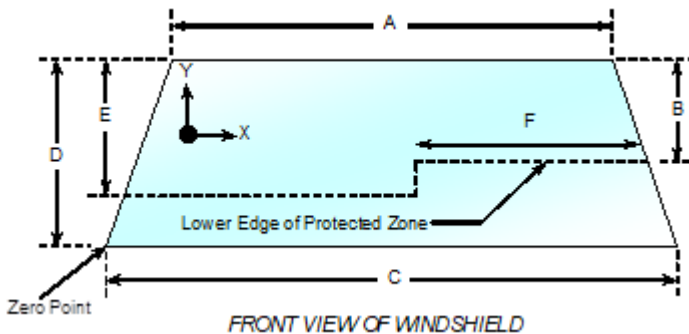
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with an adhesive and rubber molding.

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

Temperature of windshield molding during test: 21.1°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2246	2246	100.0%
Right Side	2246	2246	100.0%
Total	4492	4492	100.0%



Item	Units	Value
A	mm	1263
B	mm	415
C	mm	1490
D	mm	869
E	mm	450
F	mm	480

AREAS OF PROTECTED ZONE FAILURES

A. Provide Coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield.

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y

DATA SHEET NO. 16

FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS

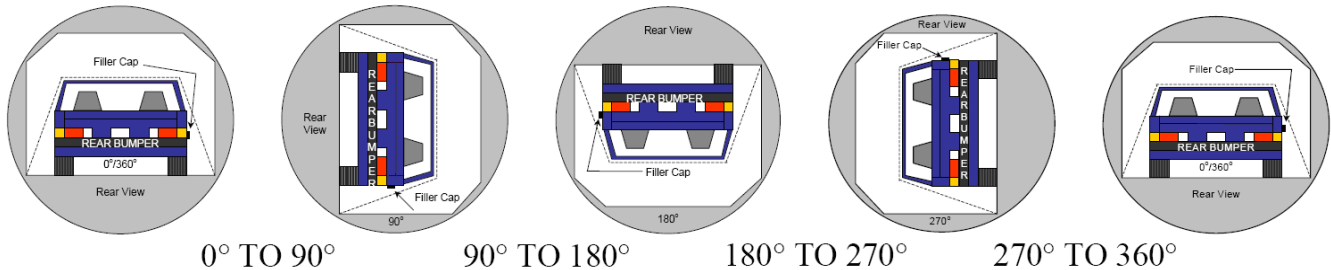
Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.1°C Test Time: 2:35 PM

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: N/A oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: N/A oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: N/A oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: _____



- The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
- The position hold time at each position is 300 seconds (minimum).
- Details of Stoddard solvent spillage: N/A

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	82	300	382
90° To 180°	82	300	382
180° To 270°	80	300	380
270° To 360°	81	300	381

DATA SHEET NO. 16 ... (CONTINUED)

FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER RESULTS

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100

Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° To 90°				
90° To 180°				
180° To 270°				
270° To 360°				

SOLVENT SPILLAGE LOCATION TABLE

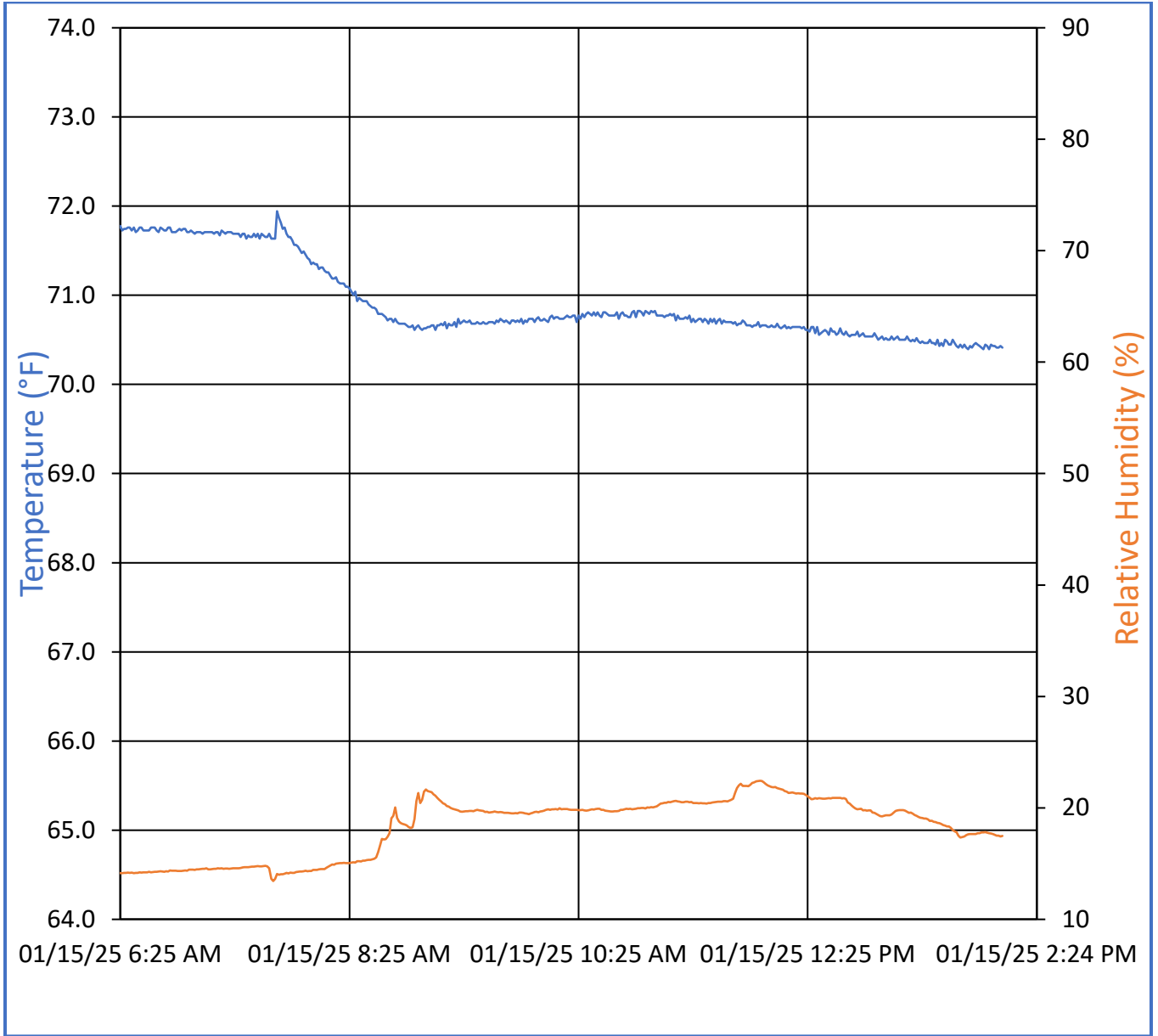
Test Phase	Spillage Location
0° To 90°	
90° To 180°	
180° To 270°	
270° To 360°	

DATA SHEET NO. 17

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2025 BMW X3 xDrive30i 5-Door MPV NHTSA No.: M20254100

Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 01/15/2025



APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

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FIGURE 1. Load Cell Location



FIGURE 2. Pre-Test Load Cell Wall

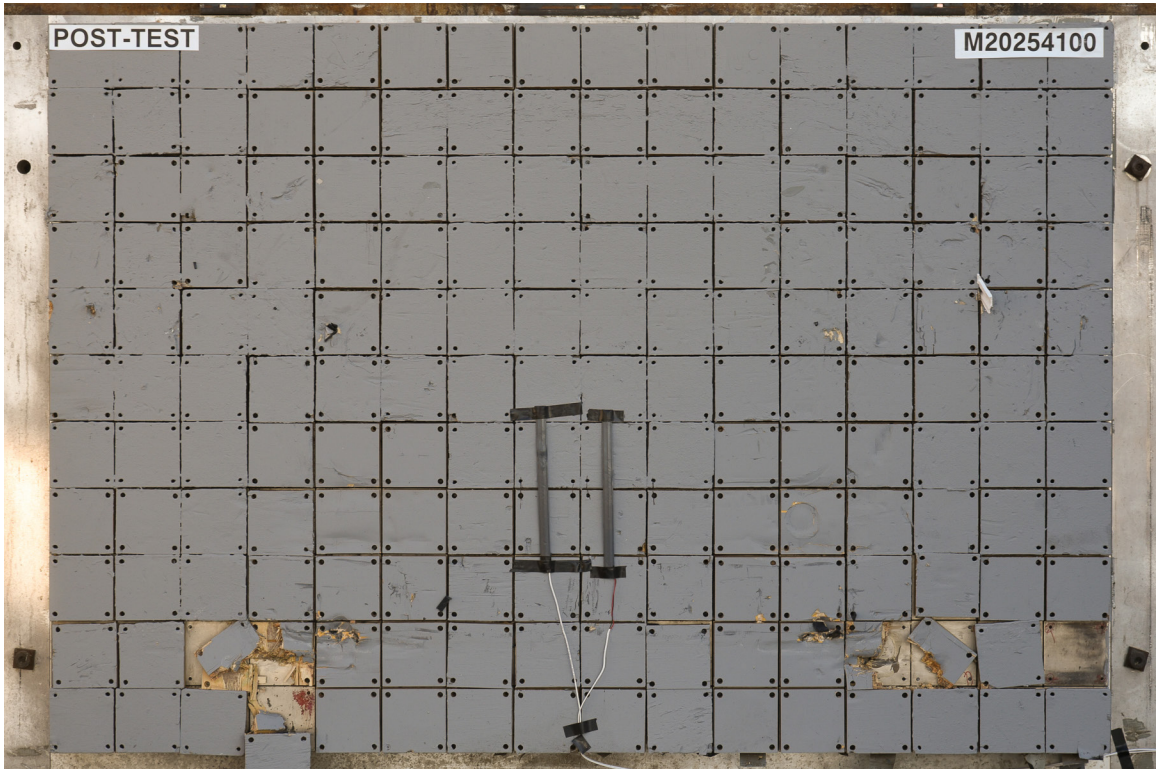


FIGURE 3. Post-Test Load Cell Wall



FIGURE 4. Manufacturer's Label

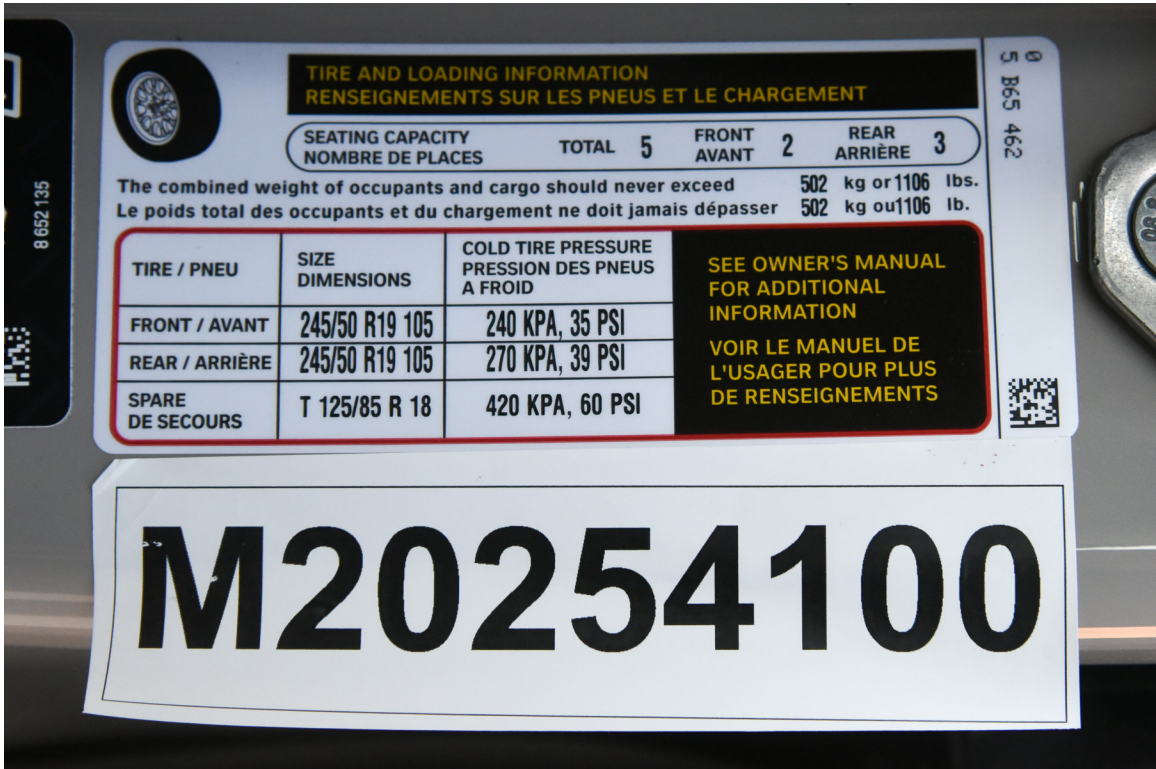


FIGURE 5. Tire Placard



FIGURE 6. 2025 BMW X3 xDrive30i Frontal As Delivered



FIGURE 7. Left Rear 3/4 View, As Received



FIGURE 8. Pre-Test Front View of Test Vehicle



FIGURE 9. Post-Test Front View of Test Vehicle



FIGURE 10. Pre-Test Left View of Test Vehicle



FIGURE 11. Post-Test Left View of Test Vehicle



FIGURE 12. Pre-Test Right View of Test Vehicle



FIGURE 13. Post-Test Right Vehicle of Test Vehicle



FIGURE 14. Pre-Test Right Front 3/4 View



FIGURE 15. Post-Test Right Front 3/4 View



FIGURE 16. Pre-Test Left Rear 3/4 View



FIGURE 17. Post-Test Left Rear 3/4 View

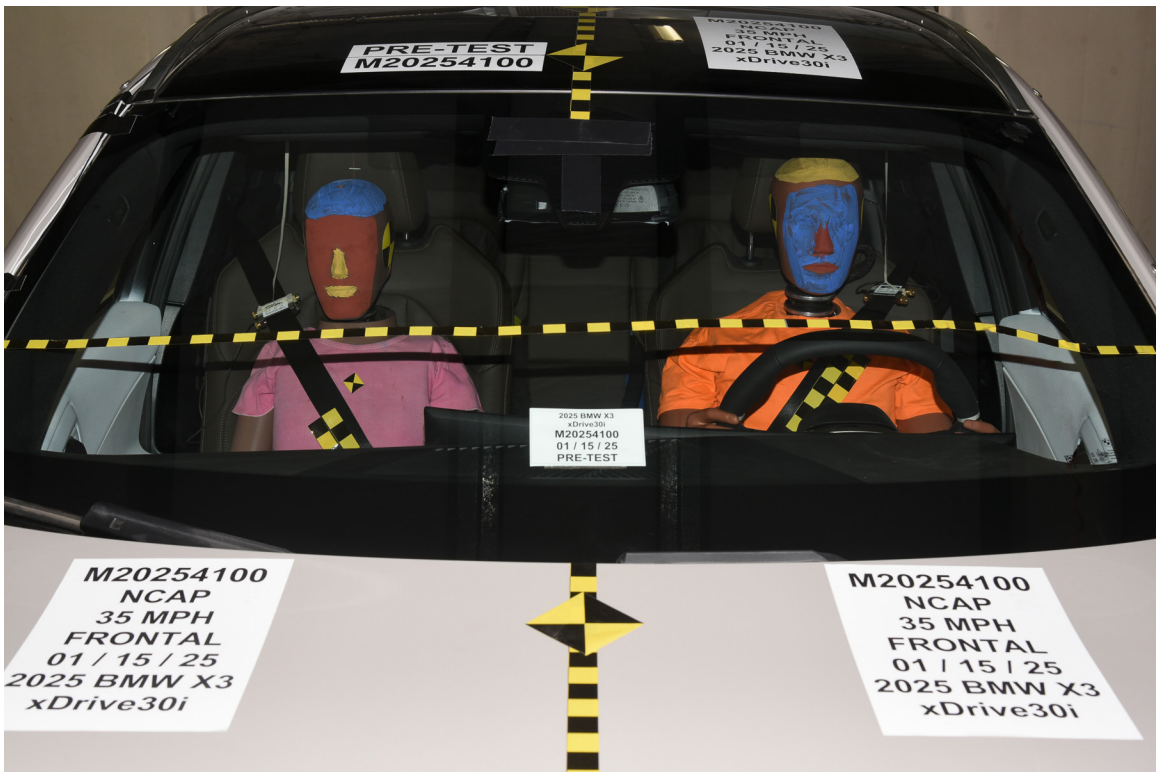


FIGURE 18. Pre-Test Windshield View



FIGURE 19. Post-Test Windshield View



FIGURE 20. Pre-Test Engine Compartment View



FIGURE 21. Post-Test Engine Compartment View



FIGURE 22. Pre-Test Fuel Filler Cap View



FIGURE 23. Post-Test Fuel Filler Cap View

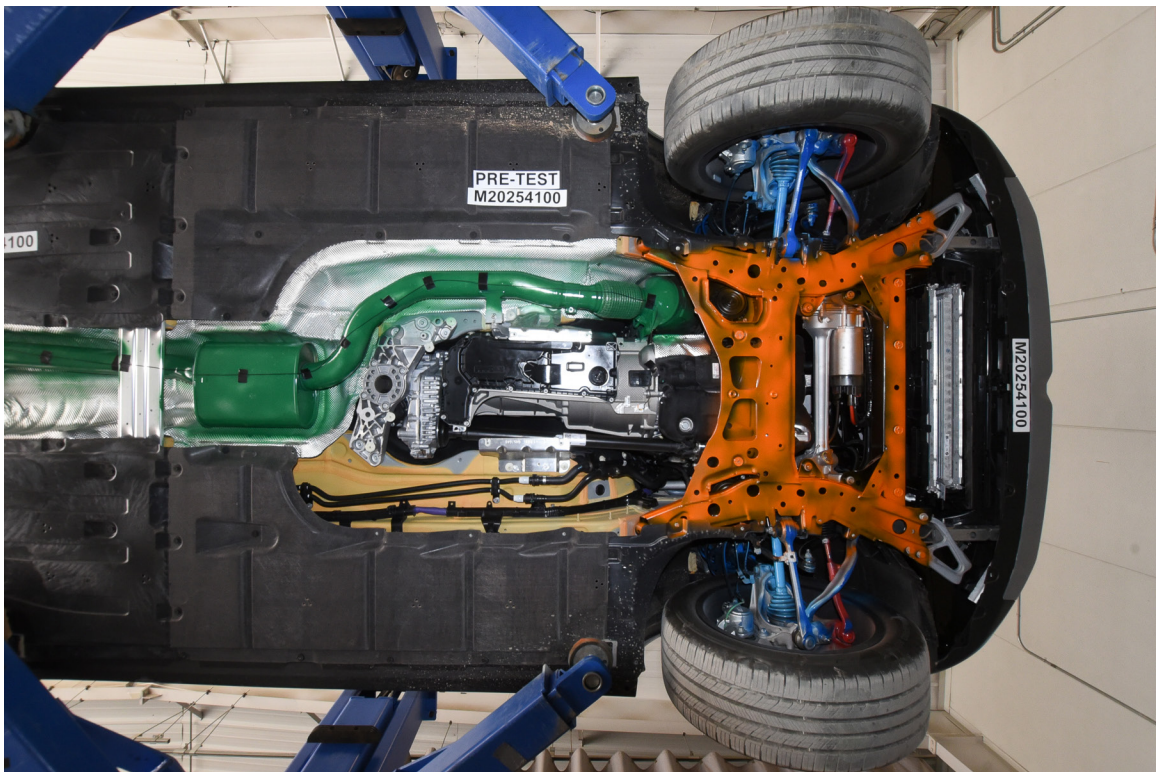


FIGURE 24. Pre-Test Front Underbody View

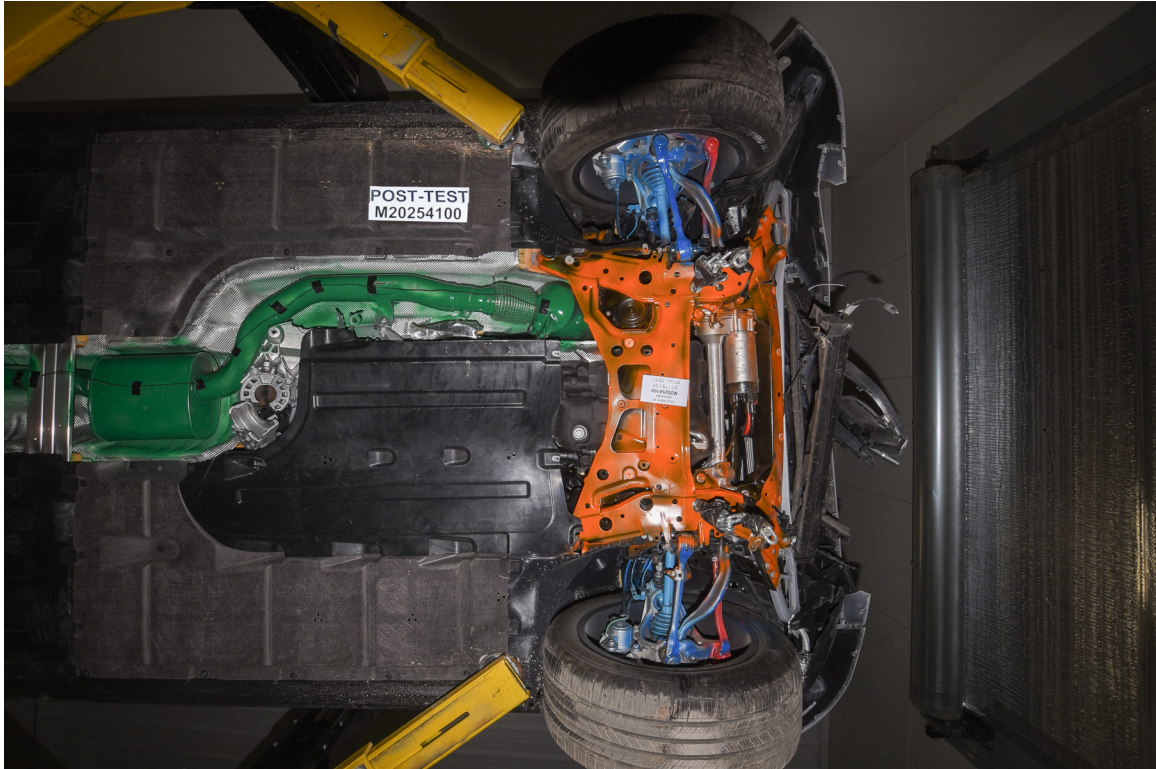


FIGURE 25. Post-Test Front Underbody View

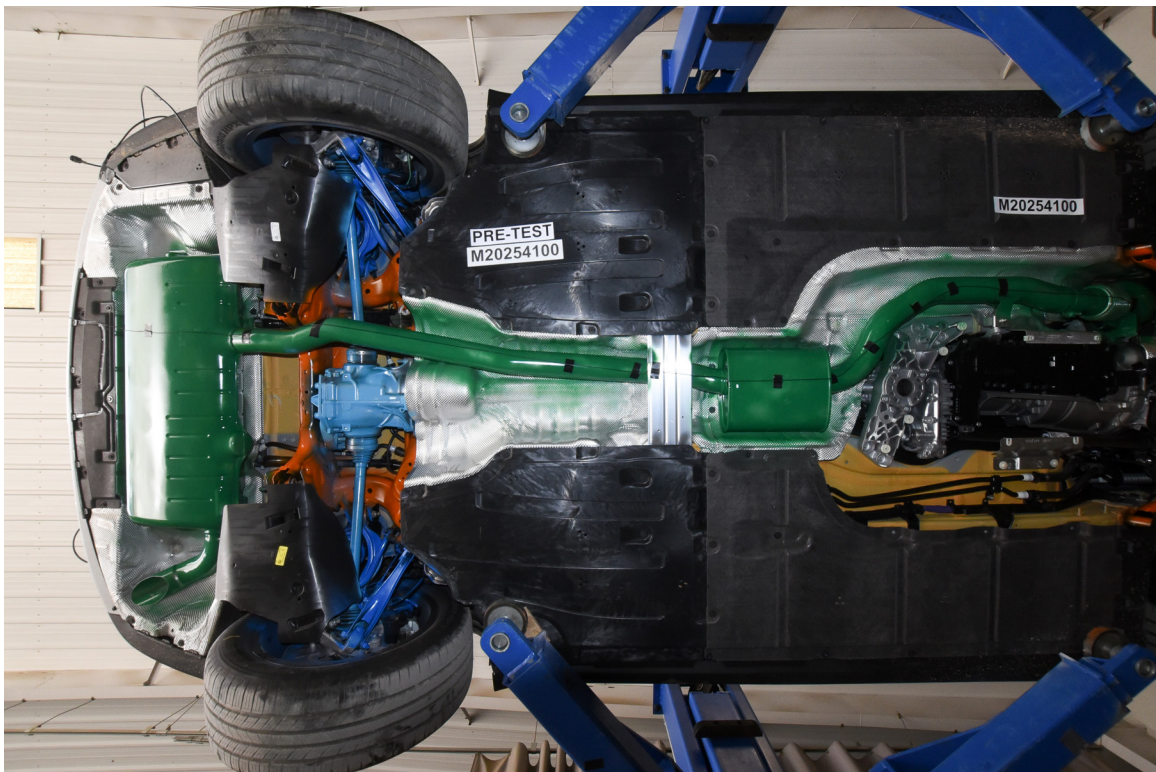


FIGURE 26. Pre-Test Rear Underbody View

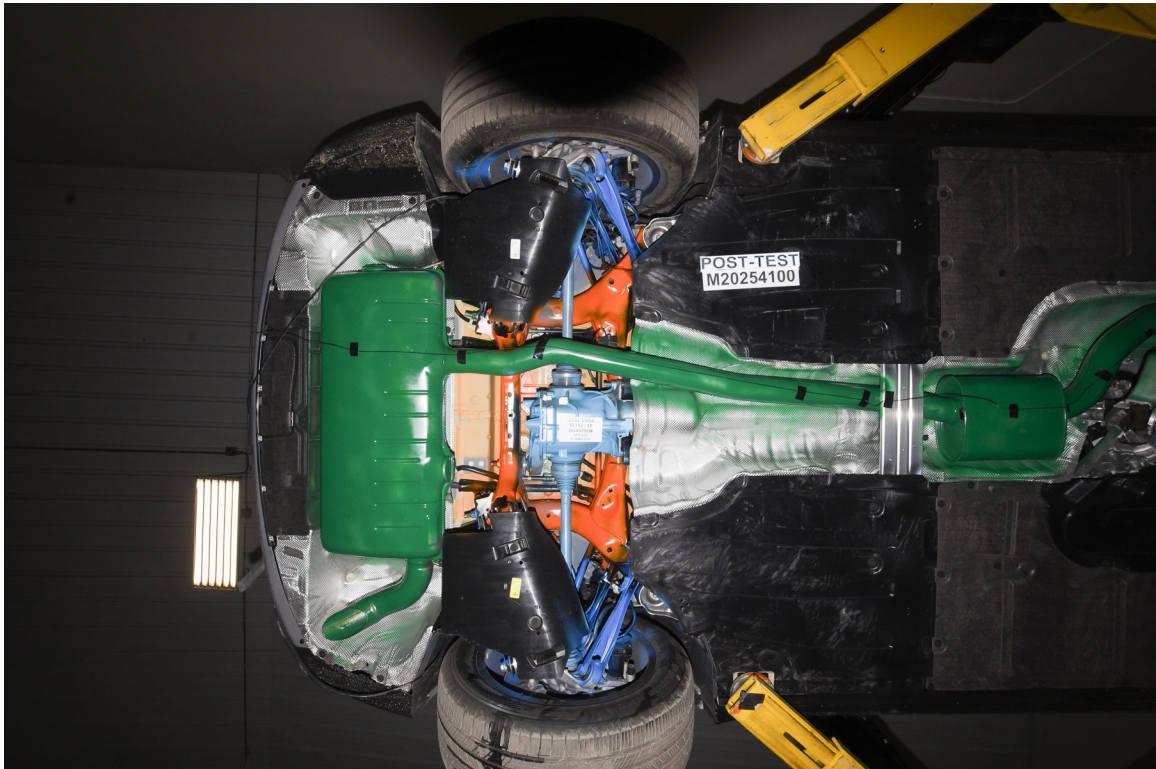


FIGURE 27. Post-Test Rear Underbody View



FIGURE 28. Pre-Test Dummy Cable Routing



FIGURE 29. Post-Test Dummy Cable Routing



FIGURE 30. Pre-Test Driver Dummy Front View



FIGURE 31. Post-Test Driver Dummy Front View



FIGURE 32. Pre-Test Driver Dummy Window View



FIGURE 33. Post-Test Driver Dummy Window View



FIGURE 34. Pre-Test Driver Dummy and Vehicle Interior View



FIGURE 35. Post-Test Driver Dummy and Vehicle Interior View



FIGURE 36. Pre-Test Driver's Seat Fore-Aft Markings



FIGURE 37. Post-Test Driver's Seat Fore-Aft Markings



FIGURE 38. Pre-Test View of Belt Anchorage for Driver Dummy



FIGURE 39. Post-Test View of Belt Anchorage for Driver Dummy



FIGURE 40. Pre-Test View of Belt Buckle and Latch Plate for Driver Dummy



FIGURE 41. Post-Test View of Belt Buckle and Latch Plate for Driver Dummy

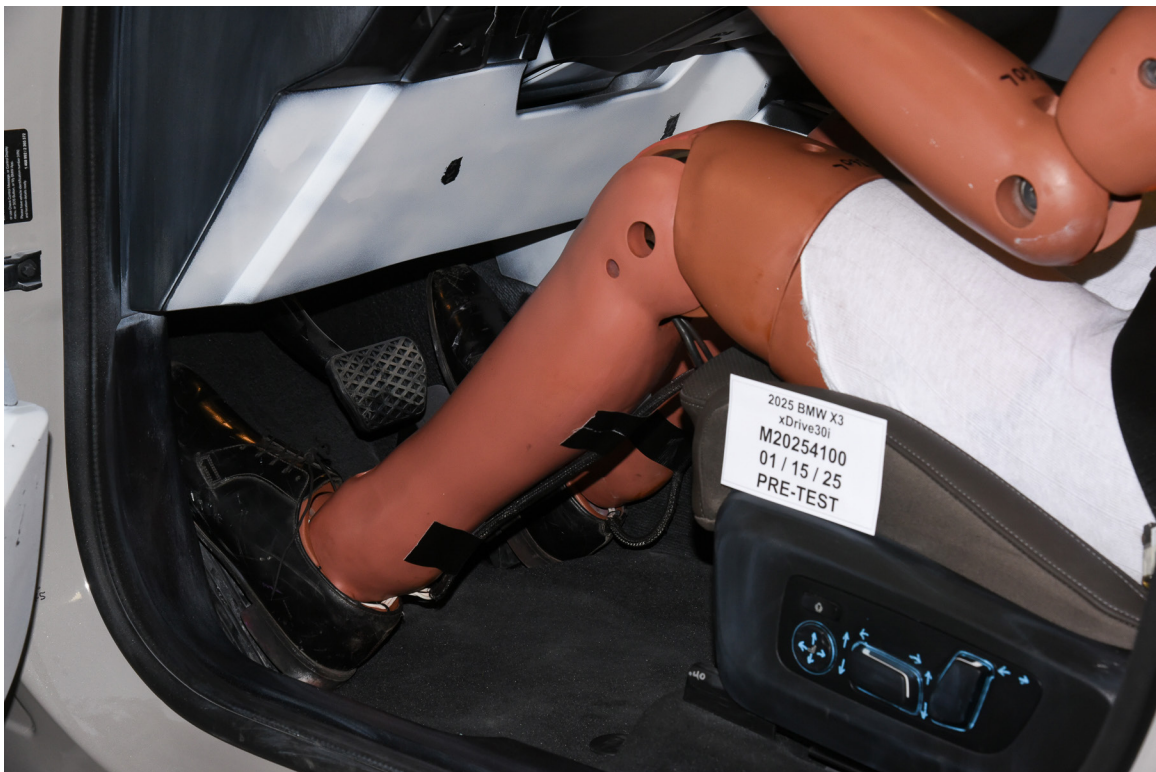


FIGURE 42. Pre-Test Driver Dummy Feet



FIGURE 43. Post-Test Driver Dummy Feet



FIGURE 44. Pre-Test Driver's Side Knee Bolster



FIGURE 45. Post-Test Driver's Side Knee Bolster



FIGURE 46. Pre-Test Driver's Side Floorpan



FIGURE 47. Post-Test Driver's Side Floorpan



FIGURE 48. Post-Test Driver Dummy Face



FIGURE 49. Post-Test Driver Dummy Contact with Air Bag

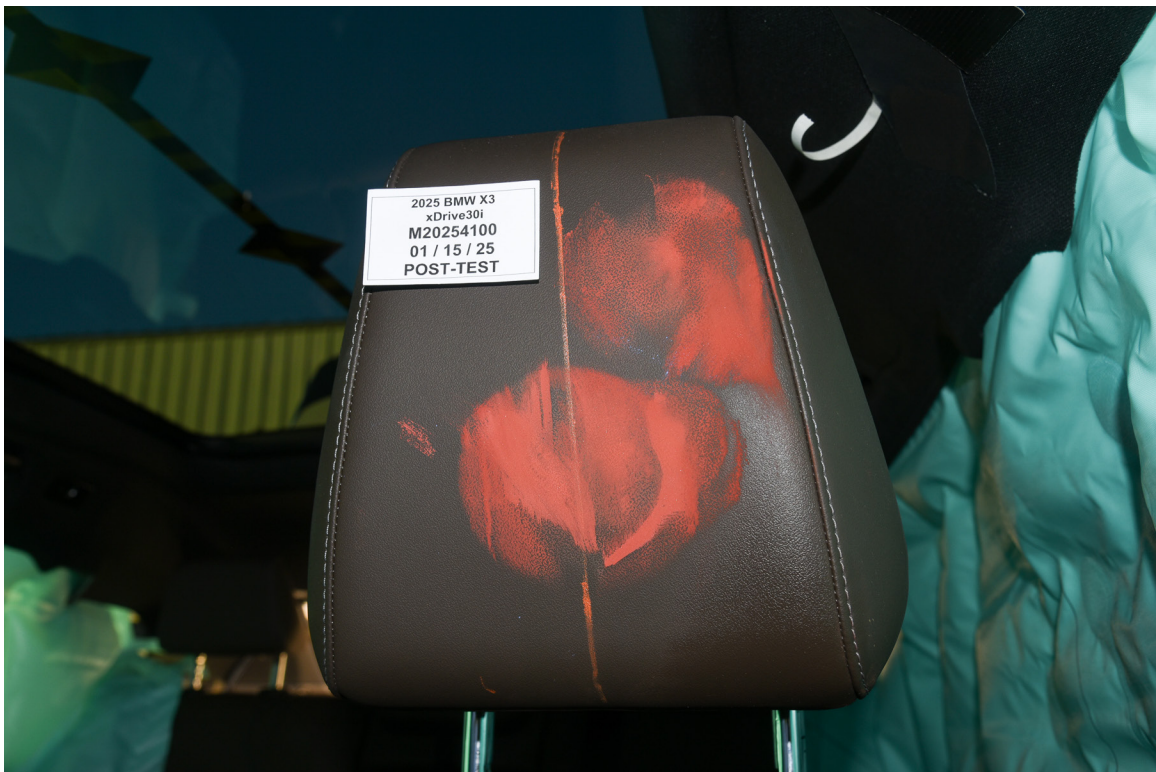


FIGURE 50. Post-Test Driver Dummy Contact with Headrest



FIGURE 50a. Post-Test Driver Dummy Contact with Knee Air Bag



FIGURE 51. Pre-Test View of the Steering Wheel



FIGURE 52. Post-Test View of the Steering Wheel



FIGURE 53. Pre-Test Passenger Dummy Front View



FIGURE 54. Post-Test Passenger Dummy Front View



FIGURE 55. Pre-Test Passenger Dummy Window View



FIGURE 56. Post-Test Passenger Dummy Window View



FIGURE 57. Pre-Test Passenger Dummy and Vehicle Interior View



FIGURE 58. Post-Test Passenger Dummy and Vehicle Interior View



FIGURE 59. Pre-Test Passenger's Seat Fore-Aft Markings



FIGURE 60. Post-Test Passenger's Seat Fore-Aft Markings



FIGURE 61. Pre-Test View of Belt Anchorage for Passenger Dummy



FIGURE 62. Post-Test View of Belt Anchorage for Passenger Dummy



FIGURE 63. Pre-Test View of Belt Buckle and Latch Plate for Passenger Dummy



FIGURE 64. Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy



FIGURE 65. Pre-Test Passenger Dummy Feet



FIGURE 66. Post-Test Passenger Dummy Feet



FIGURE 67. Pre-Test Passenger's Side Knee Bolster



FIGURE 68. Post-Test Passenger's Side Knee Bolster



FIGURE 69. Pre-Test Passenger's Side Floorpan



FIGURE 70. Post-Test Passenger's Side Floorpan



FIGURE 71. Post-Test Passenger Dummy Face



FIGURE 72. Post-Test Passenger Dummy Contact with Air Bag

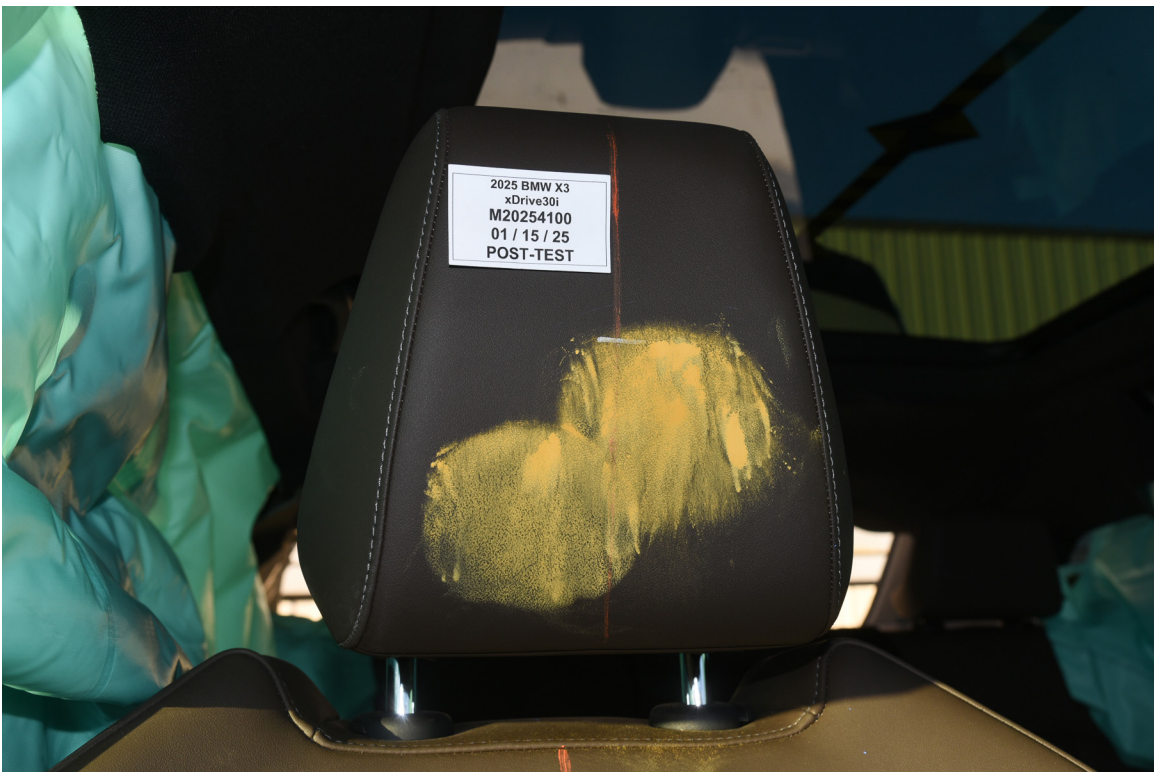


FIGURE 73. Post-Test Passenger Dummy Contact with Headrest



FIGURE 73a. Post-Test Passenger Dummy Contact with Knee Air Bag

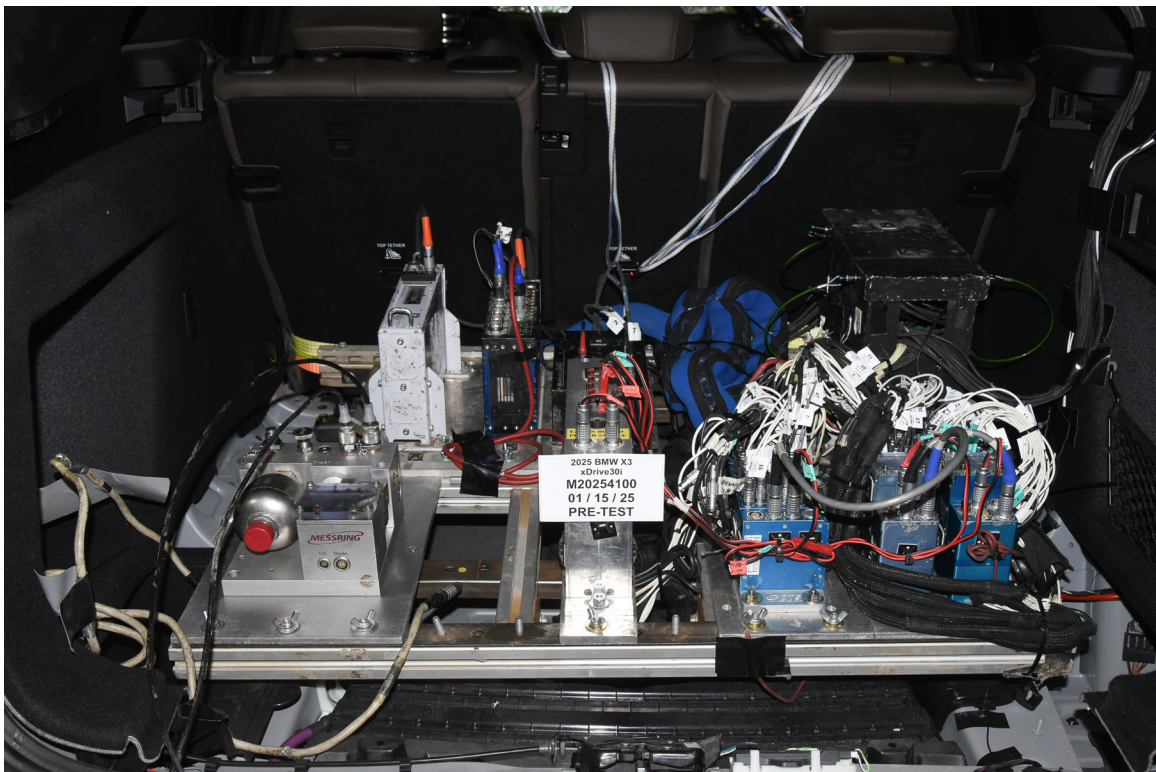


FIGURE 74. Photograph of Ballast Installed in Vehicle

Photograph Not Applicable No Stoddard Solvent Spillage

FIGURE 75. Post-Test Stoddard Solvent Spillage Location View



FIGURE 76. Post-Test Speed Trap Read-Out

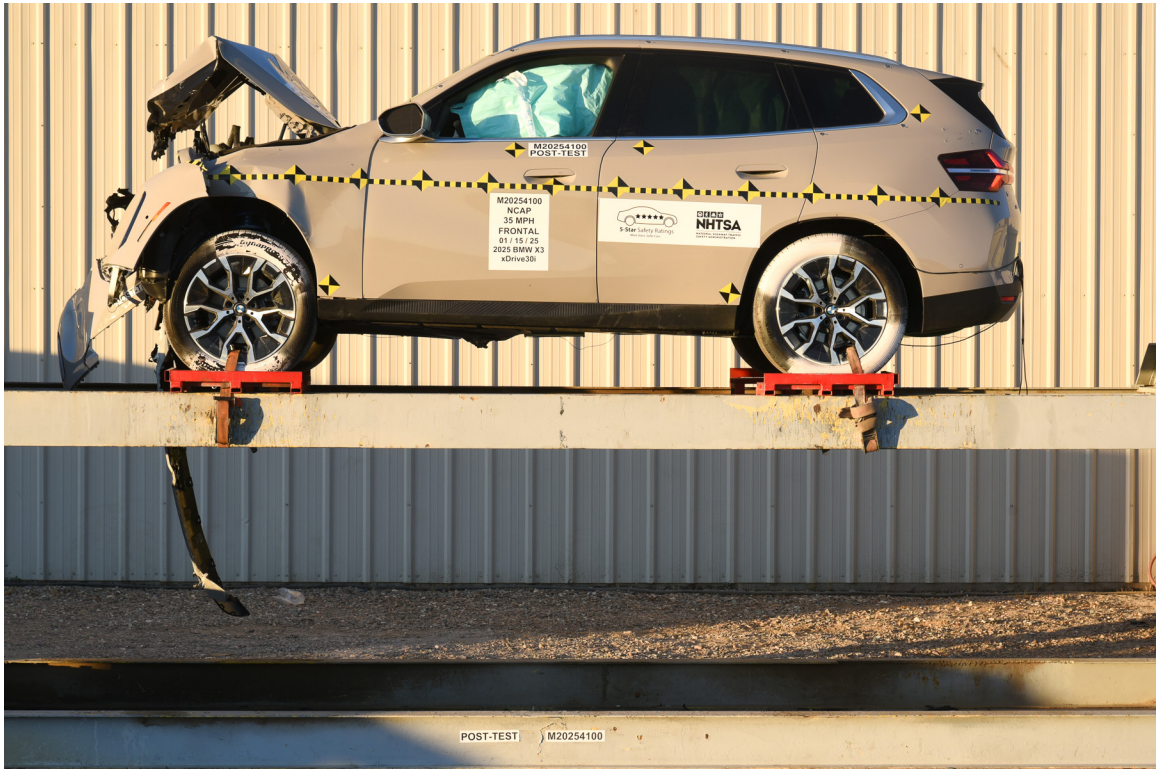


FIGURE 77. Vehicle at 0° on Static Rollover Device



FIGURE 78. Vehicle at 90° on Static Rollover Device

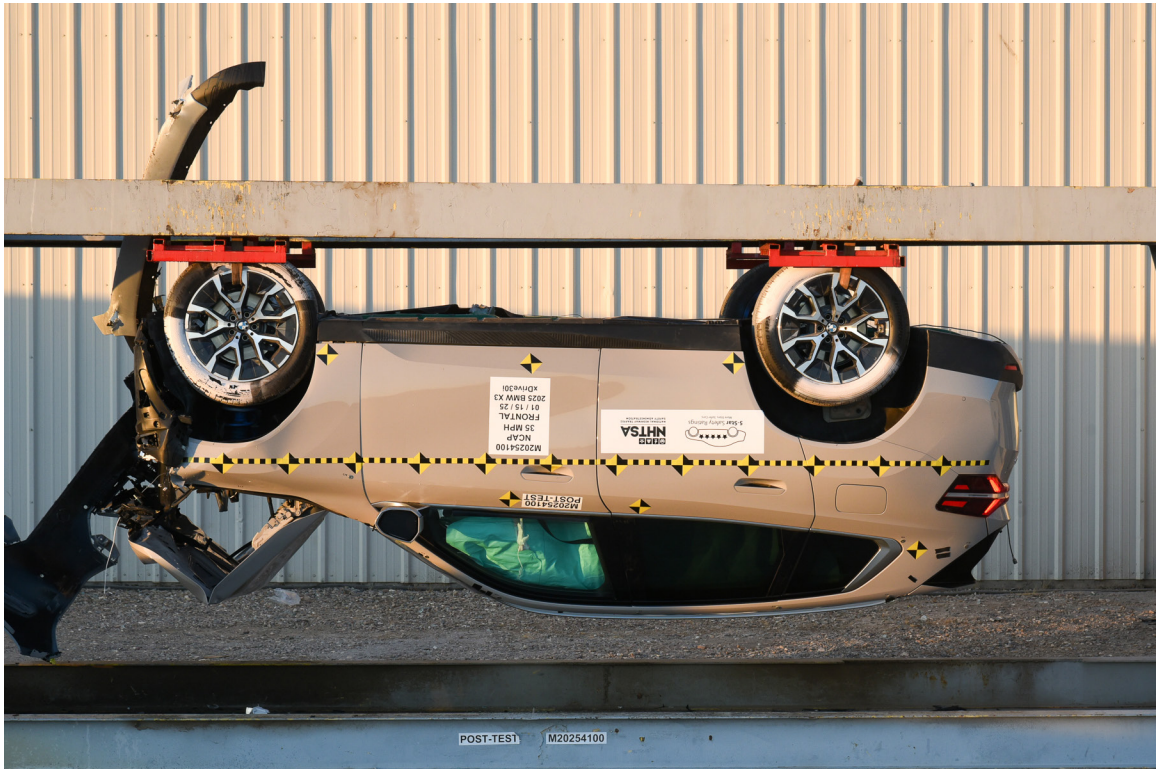


FIGURE 79. Vehicle at 180° on Static Rollover Device



FIGURE 80. Vehicle at 270° on Static Rollover Device



FIGURE 81. Vehicle at 360° on Static Rollover Device



FIGURE 82. 2025 BMW X3 xDrive30i Frontal Impact Event

The Ultimate Driving Machine®
2025 BMW X3 xDrive30i



Manufacturer's Suggested Retail Price	\$ 49,900.00
Options and Additional Charges: (Optional equipment may increase standard equipment; check with your authorized BMW center).	
Dune Grey Metallic	\$ 650.00
Ecor Brown Perforated Veganza	Included
Convenience Package	\$ 1,400.00
- Remote Engine Start	Included
- Heated Steering Wheel	Included
- Sky Lounge Panoramic Roof	Included
- Travel and Comfort System	Included
Speed Limit Info	Included
40V Mid Hybrid System	Included
Exhaust tech SULEV20 PM	Included
STEPTRONIC auto w/shift paddle	Included
Standard suspension	Included
19" Aero Midnight Grey Bicolor	Included
Satin aluminum exterior trim	Included
Comfort Access keyless entry	Included
Front and Rear Heated Seats	\$ 500.00
Ambient Lighting	Included
Ind Magnolia Fine Wood Trim	Included
Sport seats	Included
Lumbar support	Included
Active Driving Assistant	Included
Parking Assistant	Included
Rear Climate Control Console	\$ 200.00
BMW Assist eCall	Included
Wireless Device Charging	Included
Personal eSIM 5G	Included
SimuxM Satellite Radio with Hi-Fi sound system	Included
Anthraxite headliner	Included
Refrigerant	Included
SAT Preparation for FOD	Included
Destination Charge	\$ 1,175.00
Total Suggested Retail Price	\$ 53,425.00

Standard Features
Performance and efficiency

- 2.0-liter BMW TwinPower Turbo inline 4-cylinder, 16-valve engine with variable valve control (Double-VANOS and Valvetronic) and high-precision direct injection
- 48V mild hybrid system
- Driving Dynamics Control with selectable drive modes
- 8-speed STEPTRONIC automatic transmission

Handling, ride and braking

- Dynamic Stability Control (DSC) with Dynamic Traction Control (DTC)
- Front and rear anti-roll bars
- 8-way all-wheel-drive system

Connectivity

- ConnectedDrive Services with My BMW App
- Apple CarPlay and Android Auto compatibility
- Remote Software Upgrade capable
- Wireless Device Charging

Exterior

- Satin Aluminum line exterior trim
- Power-folding, heated side mirrors

Audio system

- Hi-Fi sound system
- SimuxM with 300L, 1-year Platinum Plan subscription

Instrumentation and controls

- BMW Curved Display features Navigation operated by voice, touchscreen, or Drive Controller
- Sport steering wheel
- Mi Miles includes Personal, Sport, and Efficient

Comfort and convenience

- Dual Zone Automatic Climate Control
- Ball-bearing ventilated spurs
- Comfort Access keyless entry
- Heated, power front sport seats with lumbar support

Safety and security

- Front and rear Head Protection System (HPS)
- Parking Assistant with trailer and reversing assist
- Dark-remained front side-impact airbags
- LATCH attachments for child-restraint safety installation
- BMW Assist eCall notification
- Forward Collision Mitigation, Active Blind Spot Detection, and Lane Keeping Assistant

Warranty

- 4-year/50,000-mile New Vehicle Limited Warranty for Passenger Cars and Light Trucks 2025 Model
- 12-year Unlimited Mileage Rust Perforation Limited Warranty
- 4-year Unlimited Mileage Roadside Assistance Program

PARTS CONTENT INFORMATION
For Vehicles in this Car Line:
US/Canadian Parts Content: **9%**
Major Source of Foreign Parts Content:
GERMANY: 15%

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

For this Vehicle:
Final Assembly Point: **SPARTANBURG, SC, USA**
Country of Origin: **UNITED KINGDOM**
Transmission: **GERMANY**

BMW Ultimate Care™

\$0 Maintenance Program For the first 3 years or 36,000 miles, whichever comes first on scheduled maintenance.

Your Maintenance Costs.

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

EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy

29 MPG combined city/hwy
27 city 33 highway
3.4 gallons per 100 miles

You spend \$1,500 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$2,200

Fuel Economy & Greenhouse Gas Rating (tailpipe only) 6 (Best)

Smog Rating (tailpipe only) 7 (Best)

This vehicle emits 290 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fuelconomy.gov.

Actual results will vary for many reasons, including driving conditions, etc. how you drive and maintain your vehicle. The average new vehicle gets 24 MPG and costs \$8,200 to fill over 5 years. Cost estimates are based on 15,000 miles per year at \$4.25 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code™

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score	Not Rated
Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.	
Frontal Crash	Driver: Not Rated Passenger: Not Rated
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.	
Side Crash	Front seat: Not Rated Rear seat: Not Rated
Based on the risk of injury in a side impact.	
Rollover	Not Rated
Based on the risk of rollover in a single-vehicle crash.	

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

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

BMW of North America, LLC
Woodcliff Lake, NJ 07677

VPC Location: Plant Spartanburg
Port of Entry: GREENVILLE-SPARTANBURG

Sold To: Century West BMW, PO Box 978, North Hollywood, CA (818) 432-5800

Ship To: Century West BMW, 4245 Lankershim Blvd, North Hollywood, CA (818) 432-5800

PH 01 00 0 039 6

FIGURE 83. Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

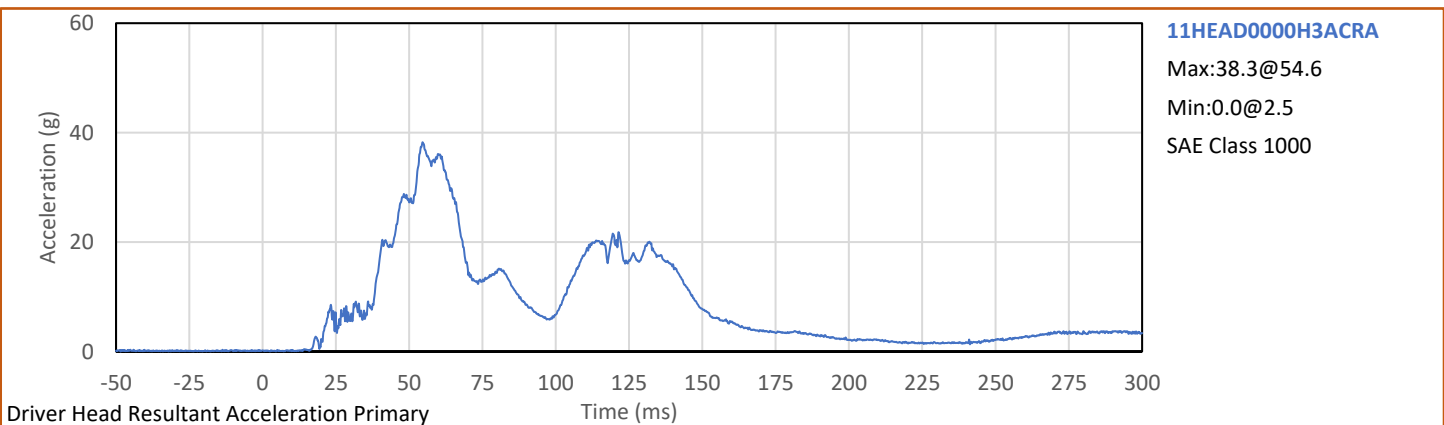
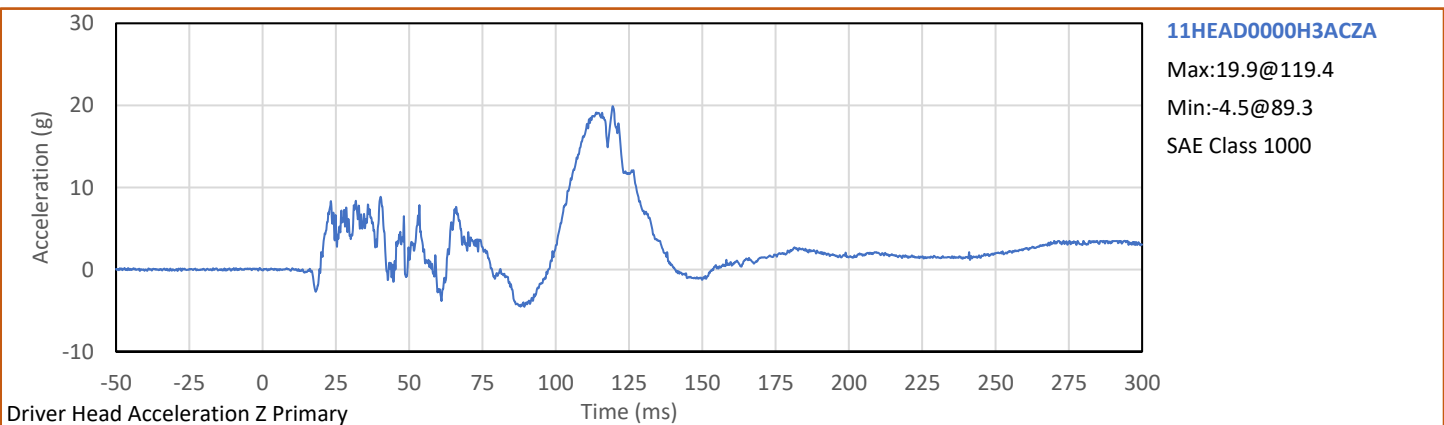
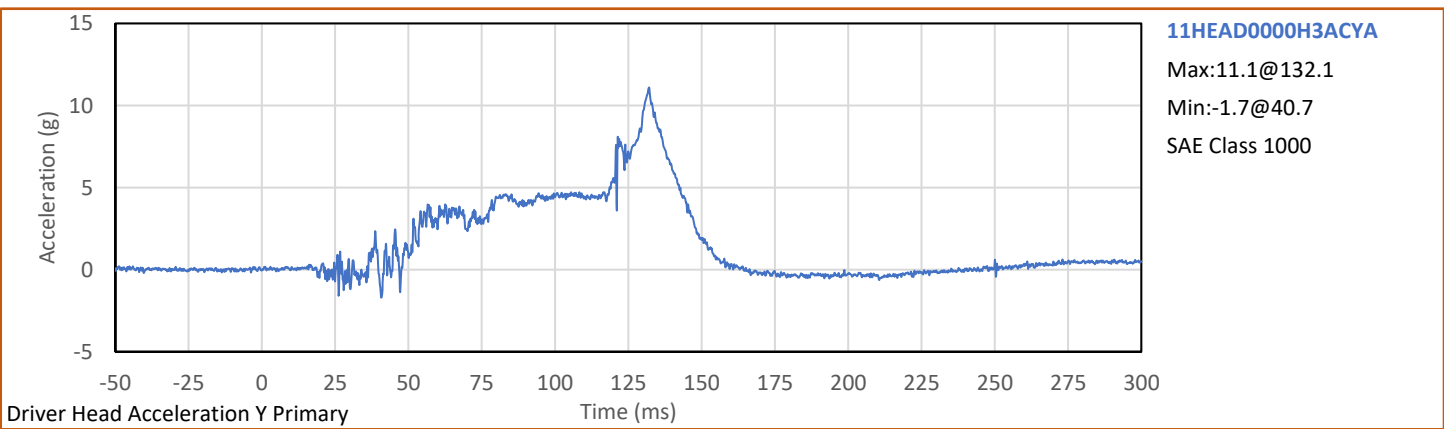
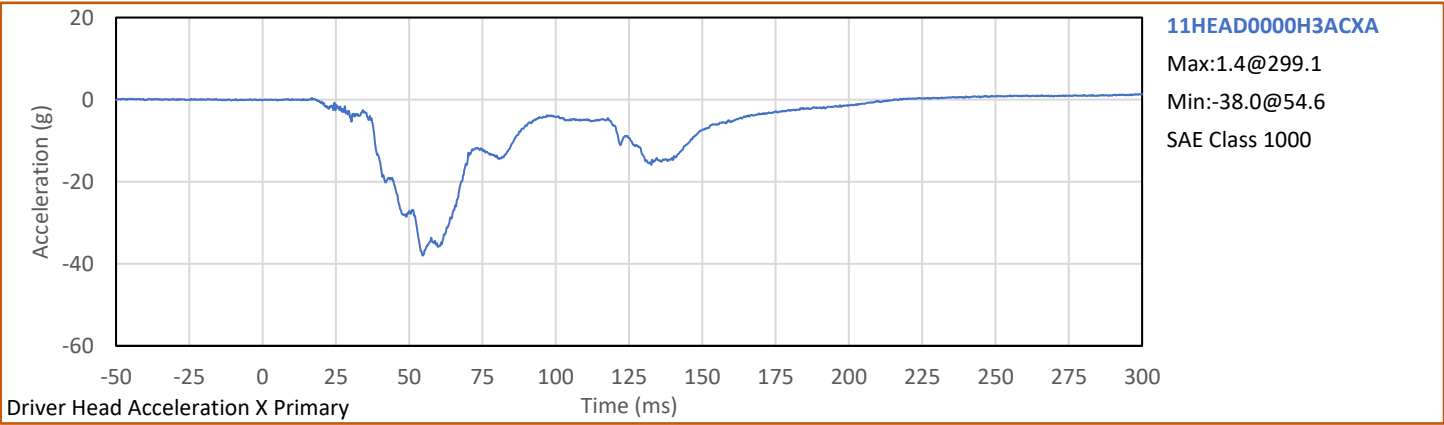
TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration X Primary	B-1
2	Driver Head Acceleration Y Primary	B-1
3	Driver Head Acceleration Z Primary	B-1
4	Driver Head Resultant Acceleration Primary	B-1
5	Driver Chest X Deflection	B-2
6	Driver Upper Neck Force X	B-3
7	Driver Upper Neck Force Z	B-3
8	Driver Upper Neck Moment Y	B-3
9	Driver Nij	B-3
10	Driver Chest Acceleration X Primary	B-4
11	Driver Chest Acceleration Y Primary	B-4
12	Driver Chest Acceleration Z Primary	B-4
13	Driver Chest Resultant Acceleration Primary	B-4
14	Driver Left Femur Force Z	B-5
15	Driver Right Femur Force Z	B-5
16	Passenger Head Acceleration X Primary	B-6
17	Passenger Head Acceleration Y Primary	B-6
18	Passenger Head Acceleration Z Primary	B-6
19	Passenger Head Resultant Acceleration Primary	B-6
20	Passenger Chest X Deflection	B-7
21	Passenger Upper Neck Force X	B-8
22	Passenger Upper Neck Force Z	B-8
23	Passenger Upper Neck Moment Y	B-8
24	Passenger Nij	B-8
25	Passenger Chest Acceleration X Primary	B-9
26	Passenger Chest Acceleration Y Primary	B-9
27	Passenger Chest Acceleration Z Primary	B-9
28	Passenger Chest Resultant Acceleration Primary	B-9
29	Passenger Left Femur Force Z	B-10
30	Passenger Right Femur Force Z	B-10

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

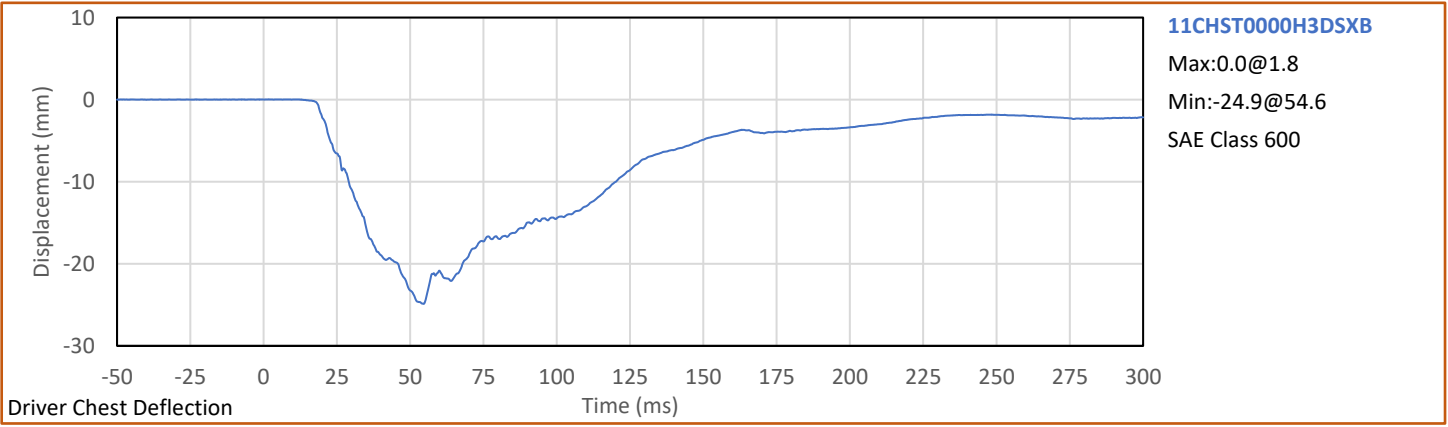
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Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
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Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver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

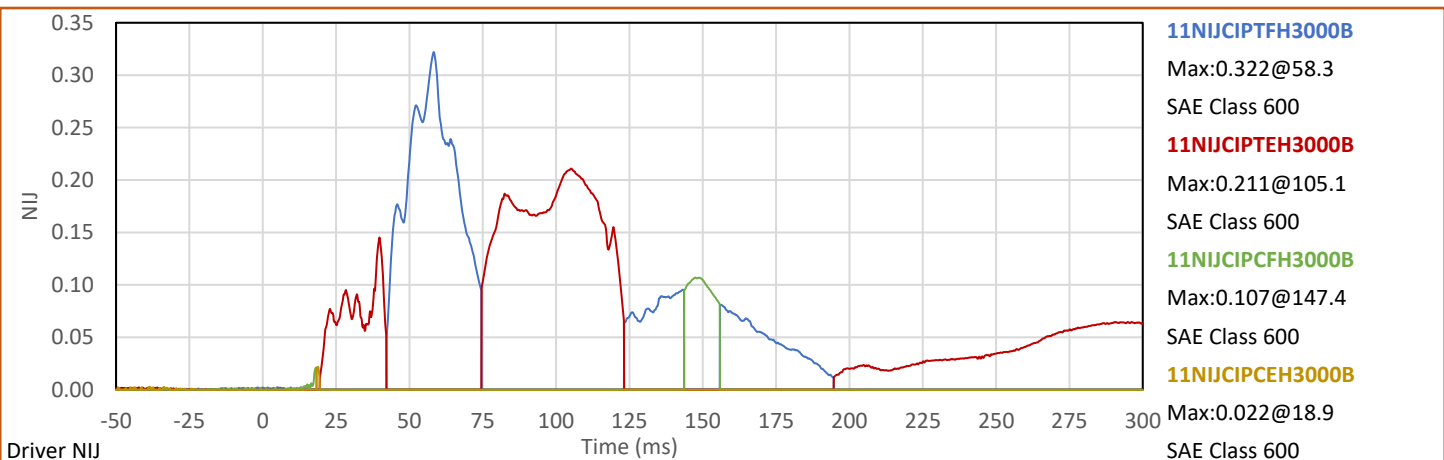
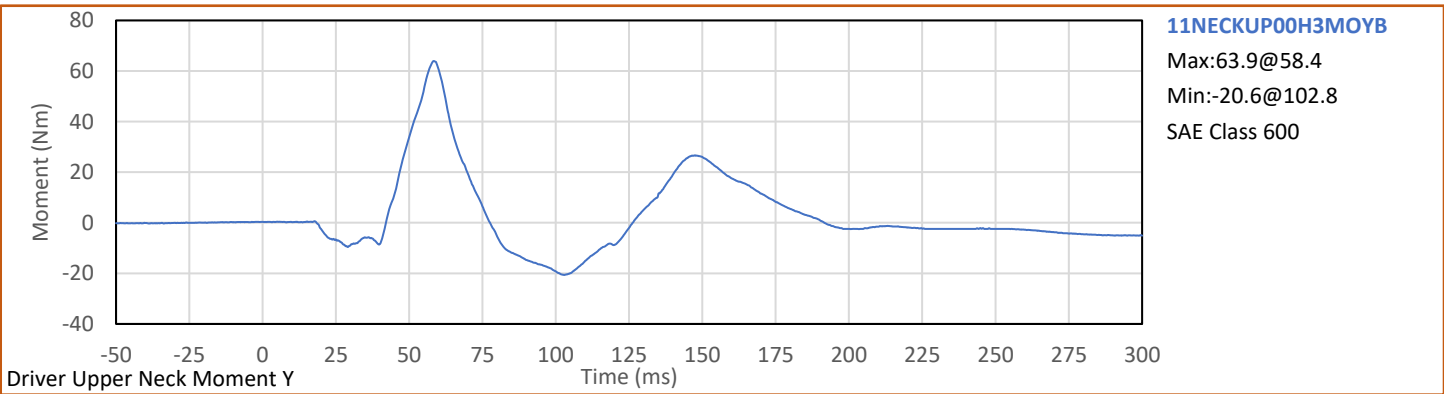
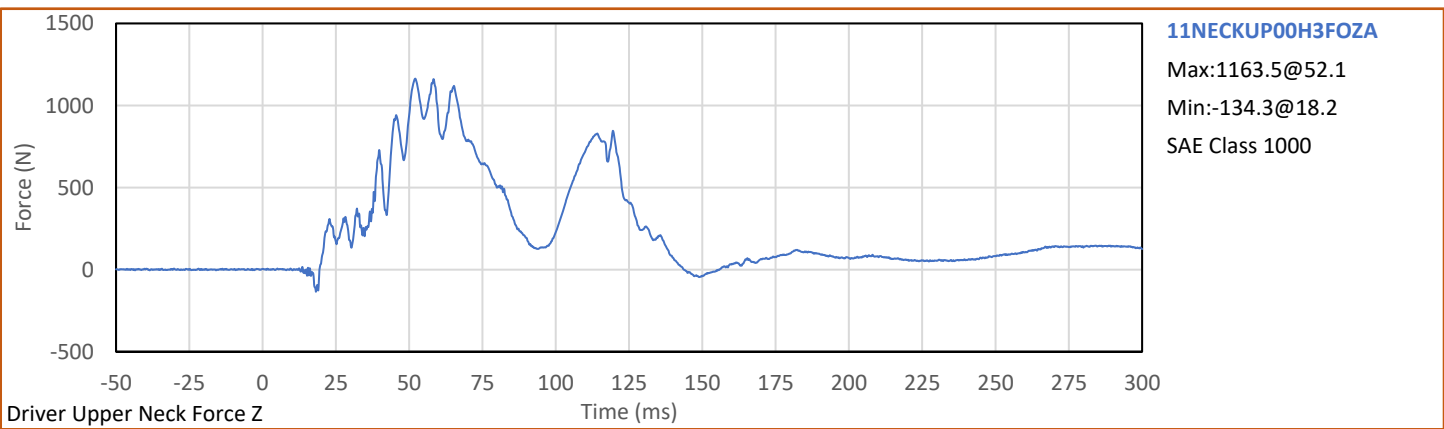
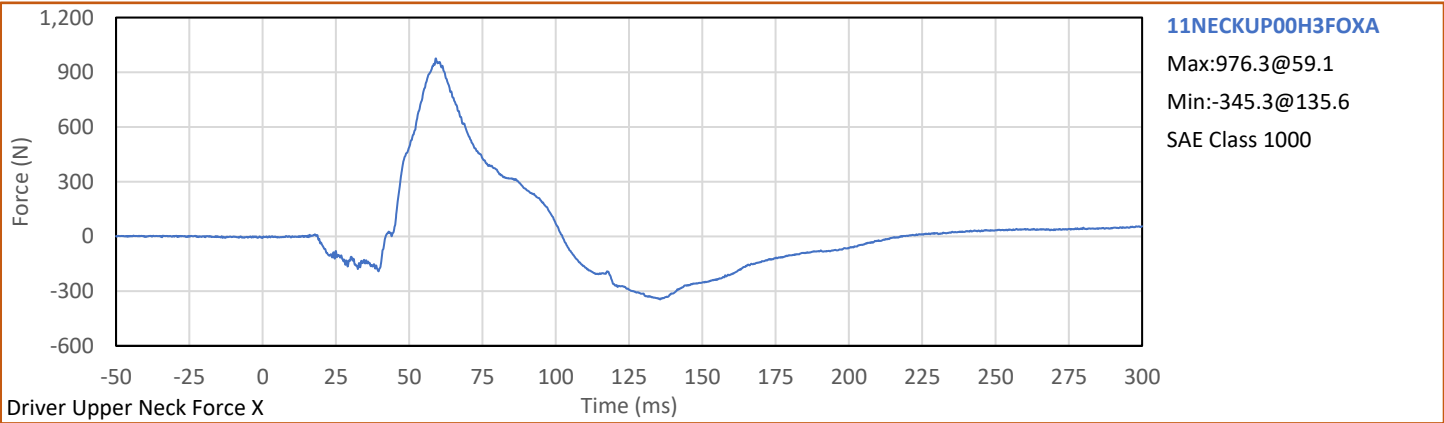
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Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
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Passenger Pelvis Z
Passenger Left Femur Force Redundant
Passenger Right Femur Force Redundant
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 Shoulder Belt Force
Passenger Lap Belt Force
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
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

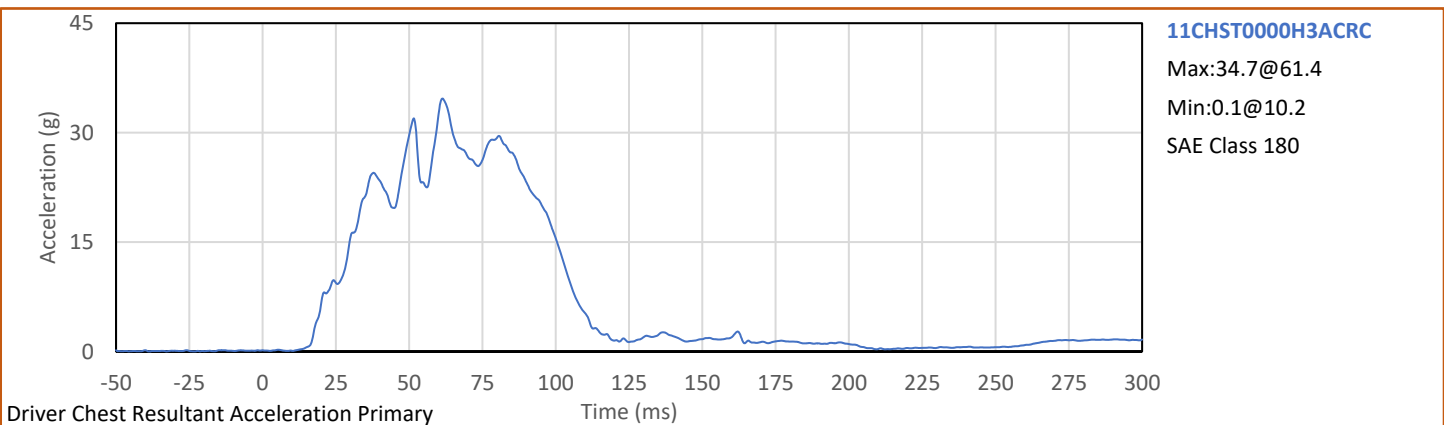
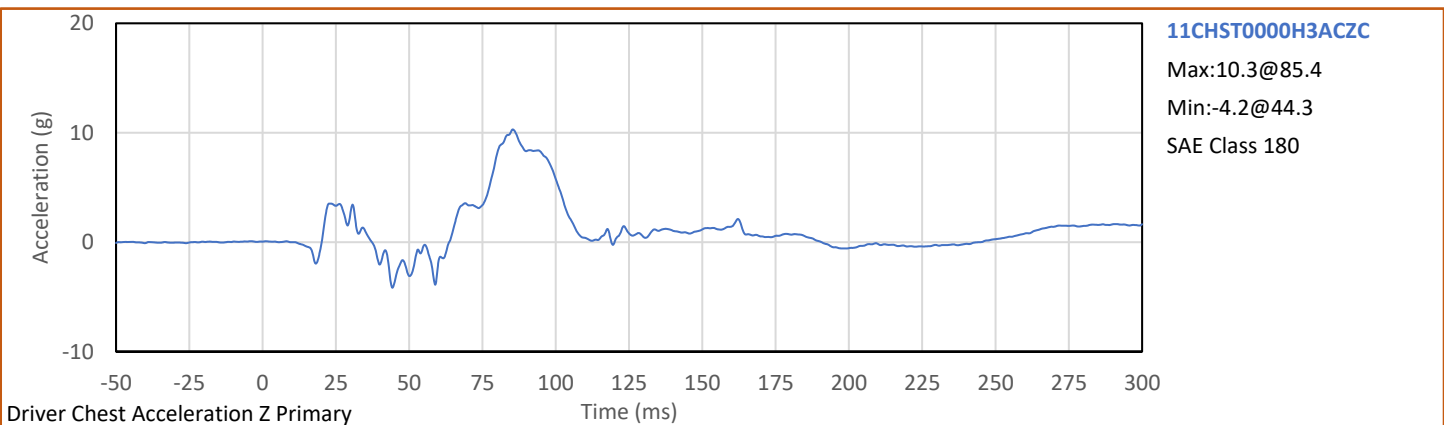
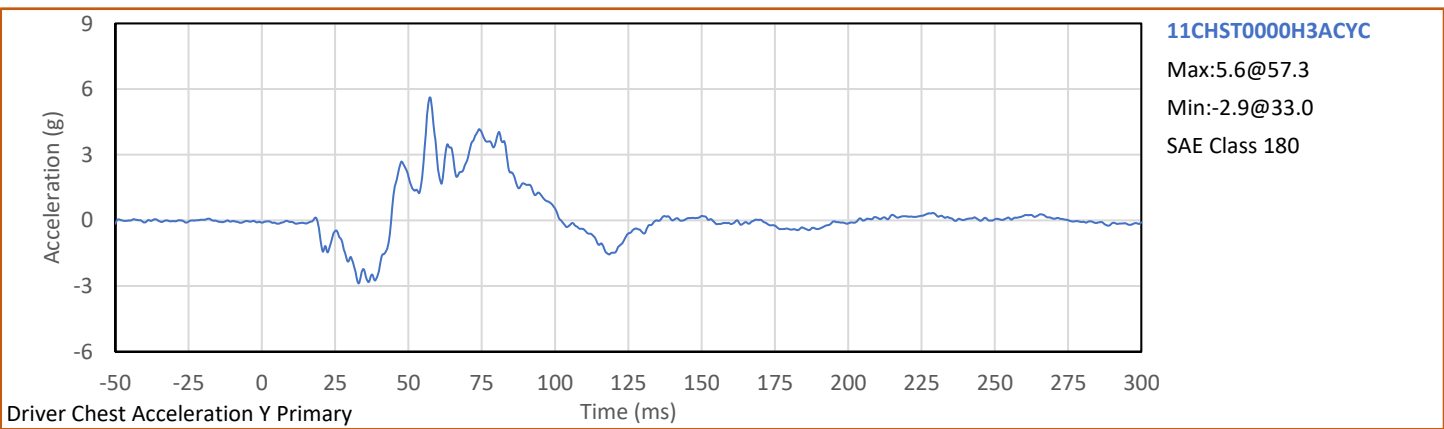
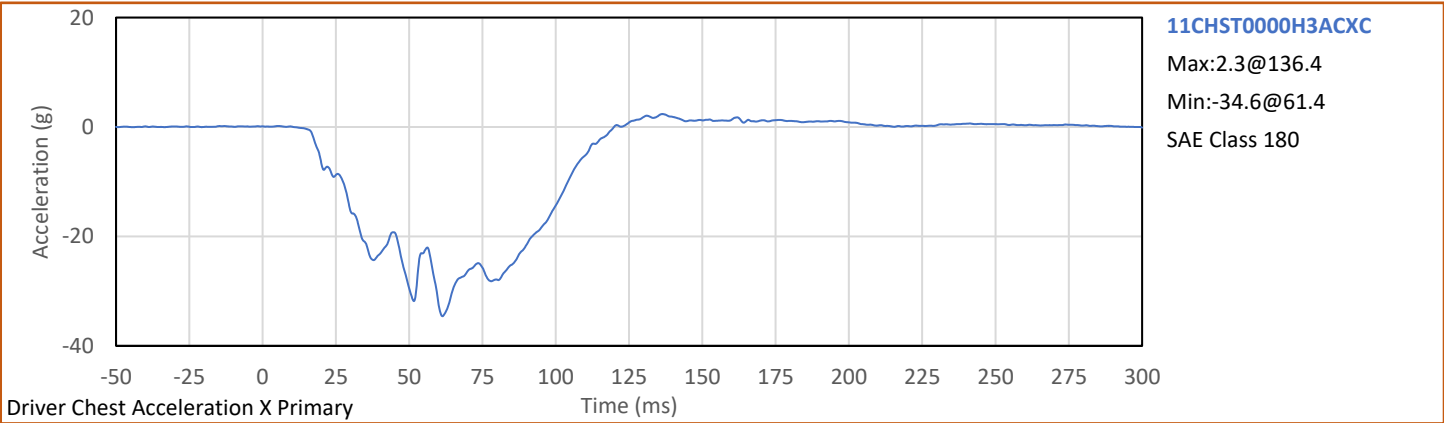


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Test Program: 56.3 km/h Frontal Impact NCAP Test

NHTSA No.: M20254100
Test Date: 1/15/2025

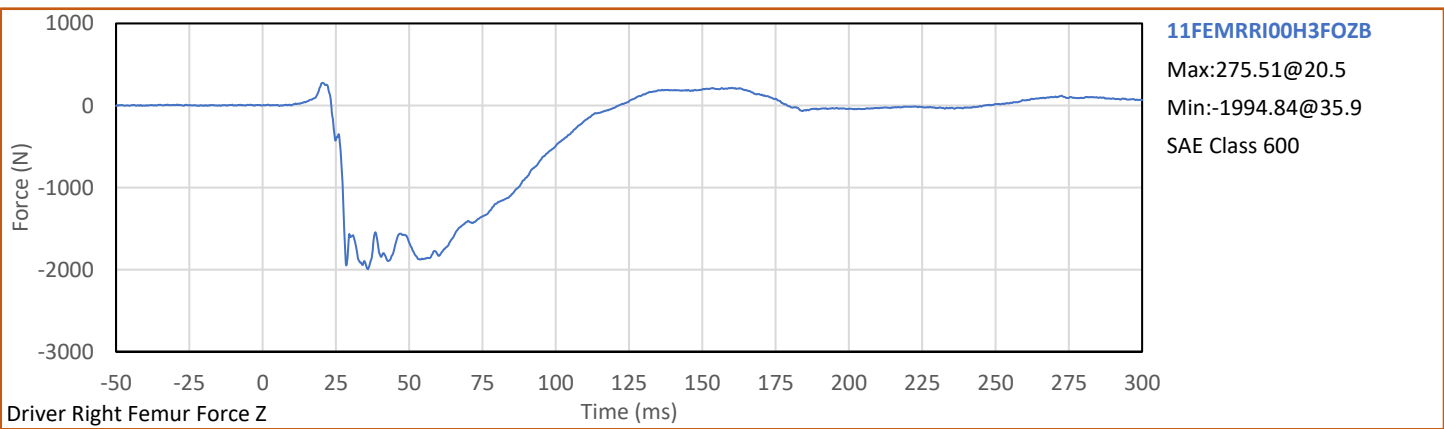
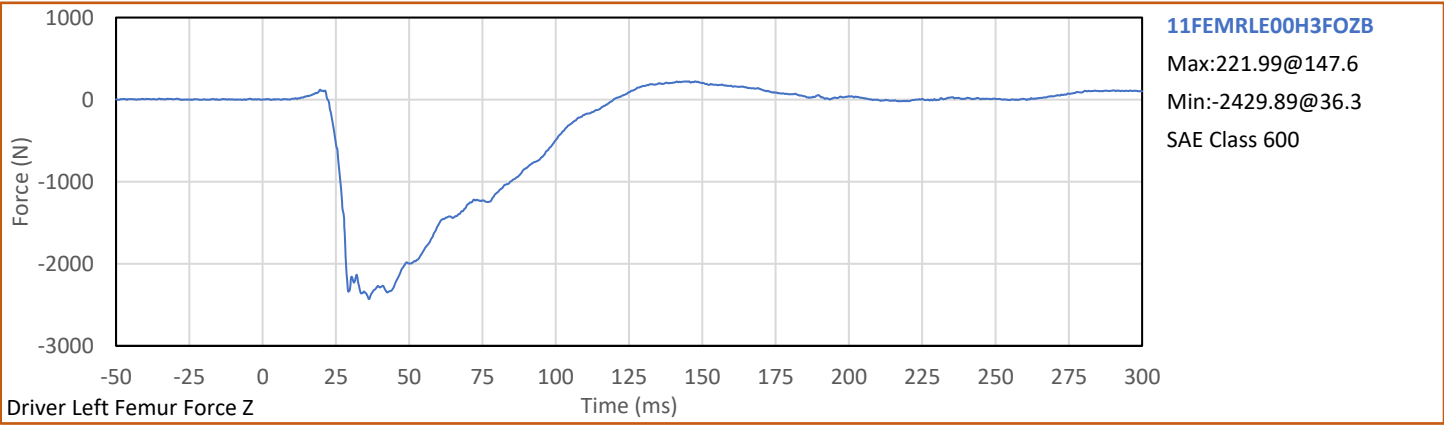


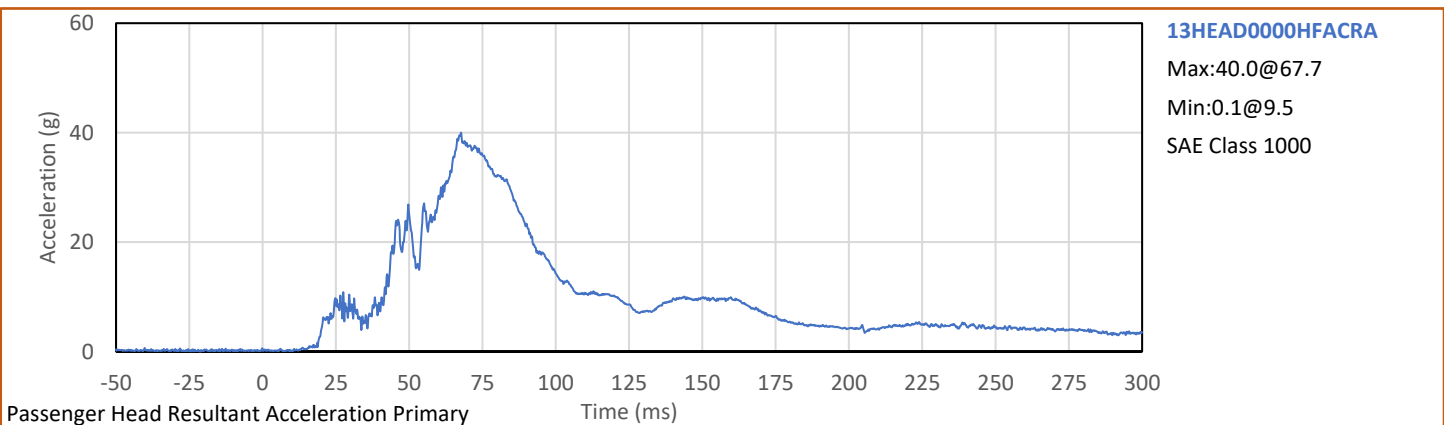
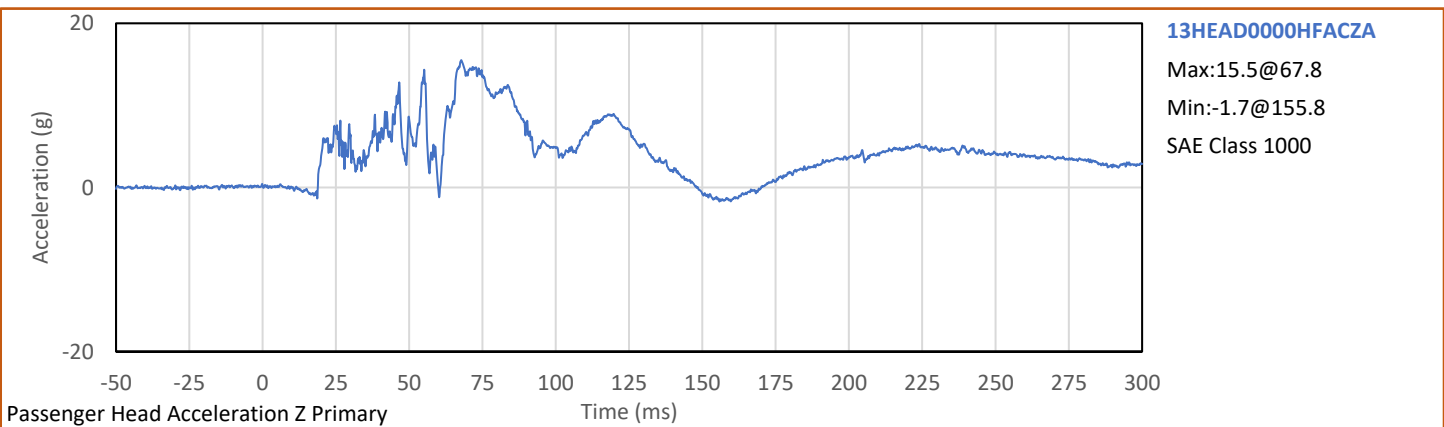
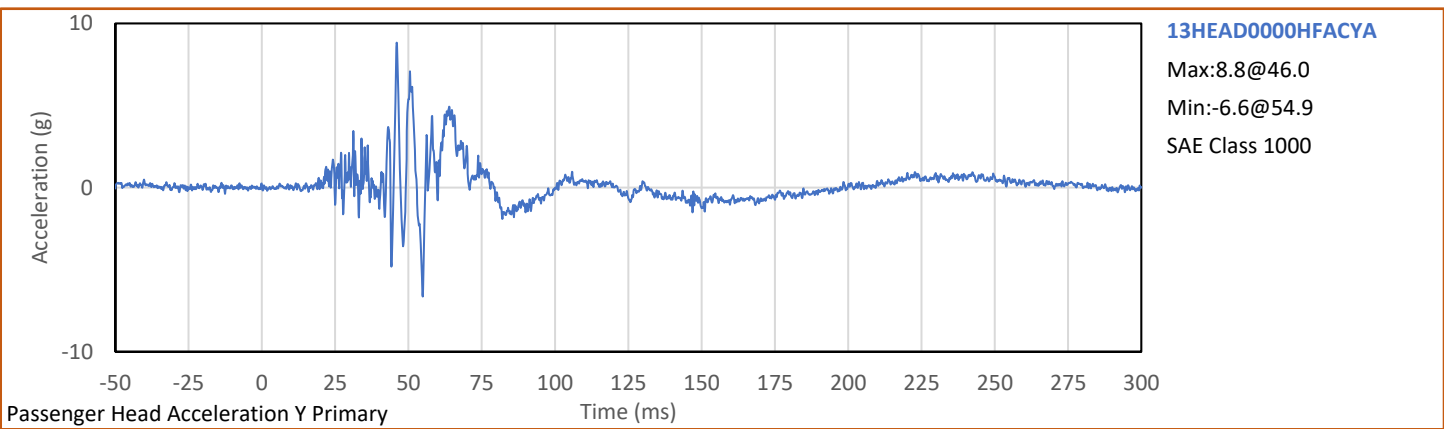
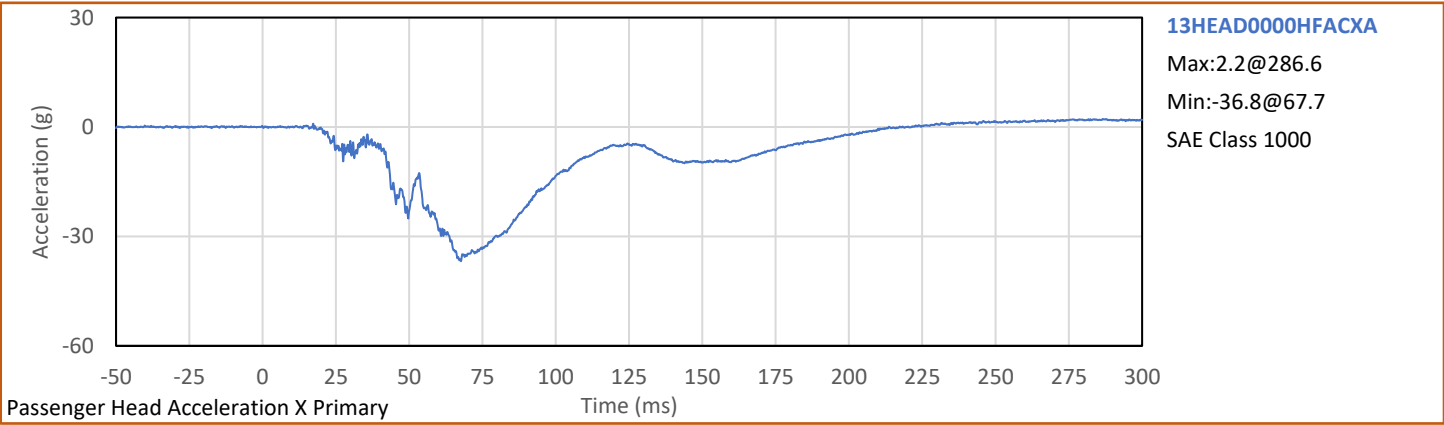




Test Vehicle: 2025 BMW X3 xDrive30i
Test Program: 56.3 km/h Frontal Impact NCAP Test

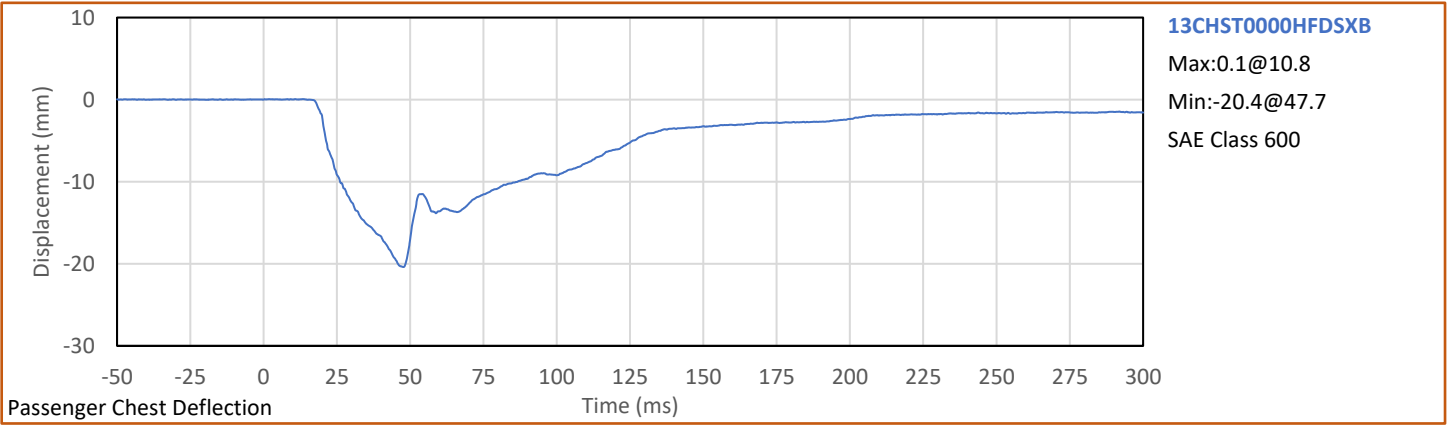
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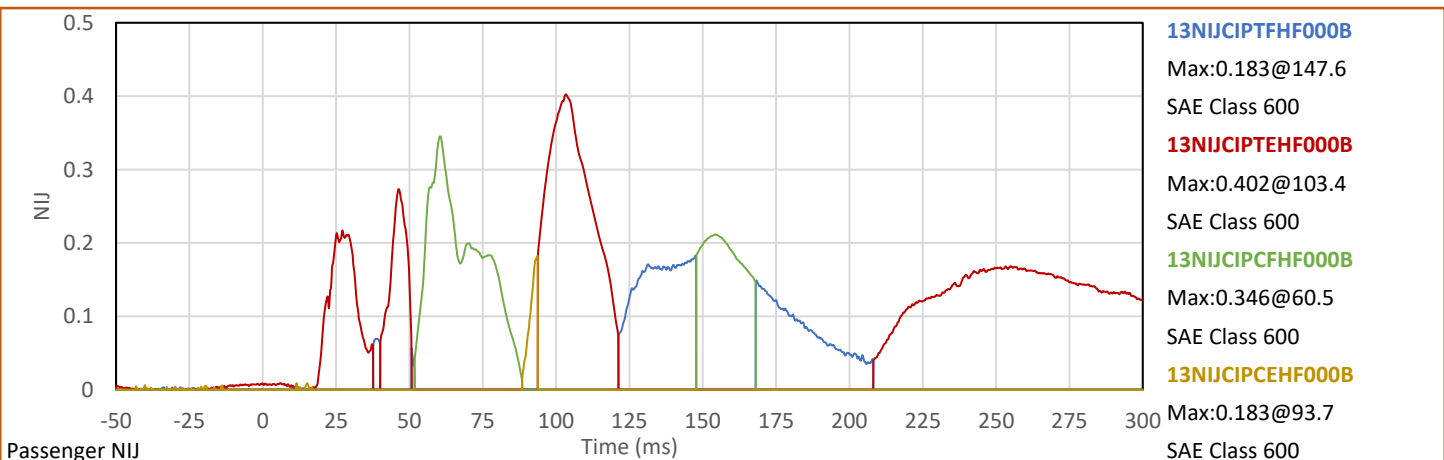
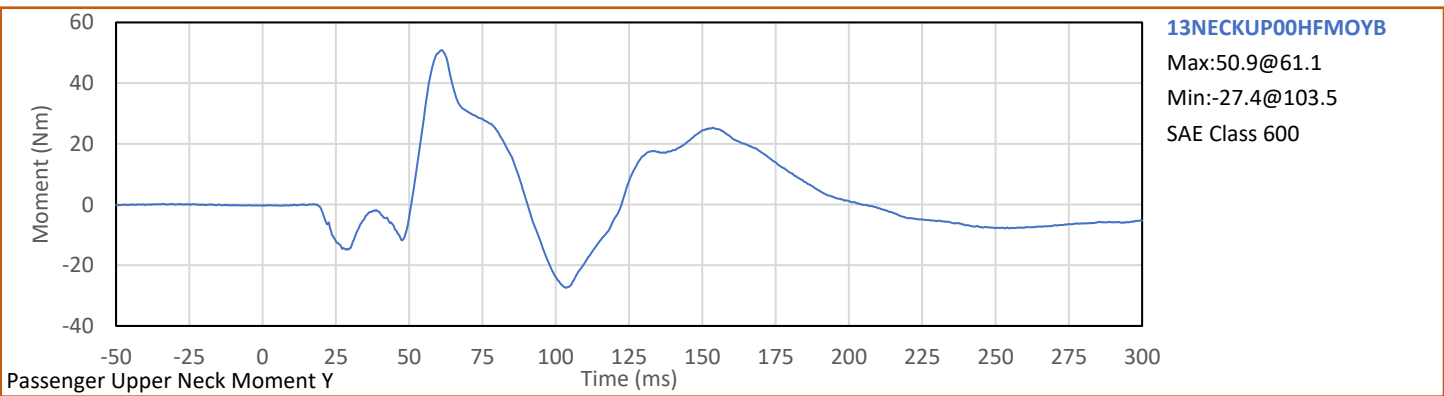
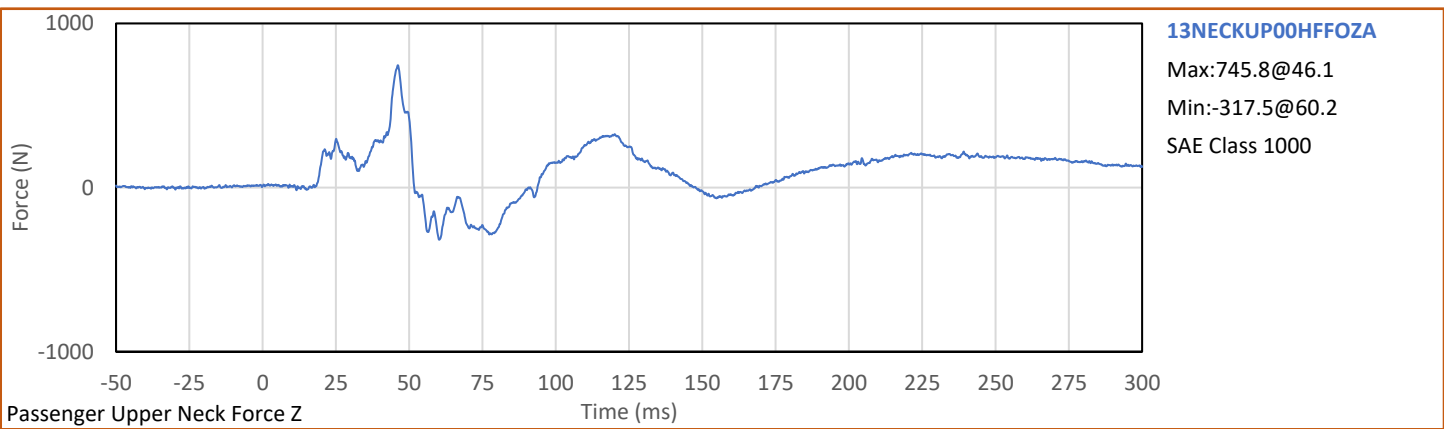
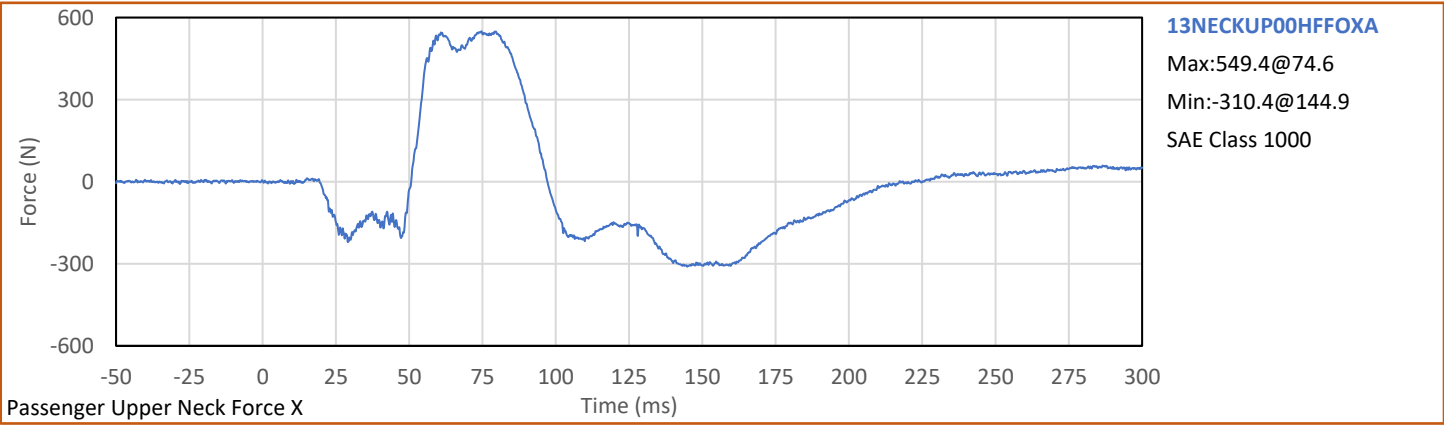


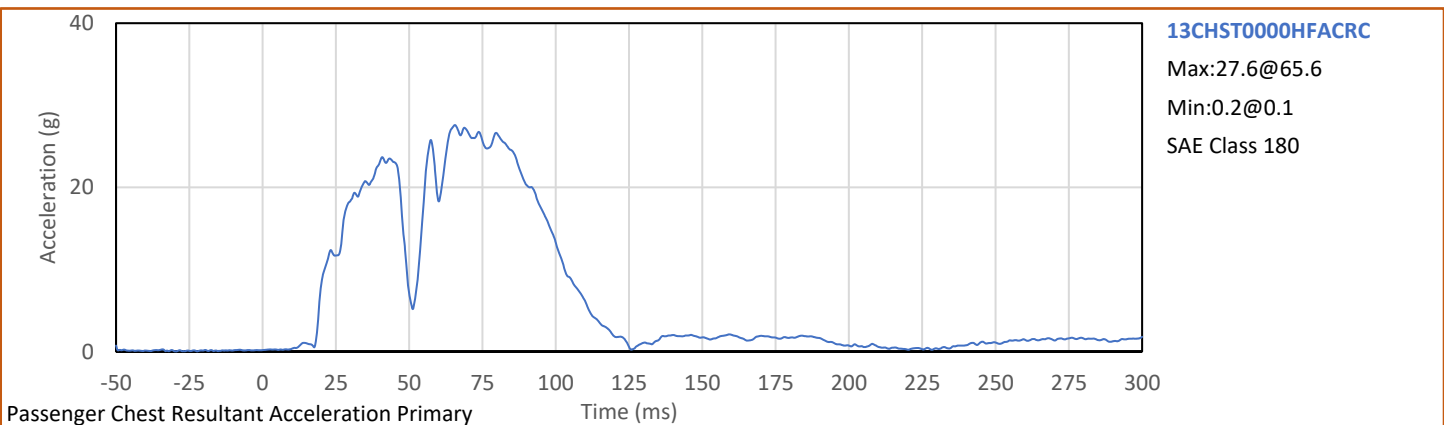
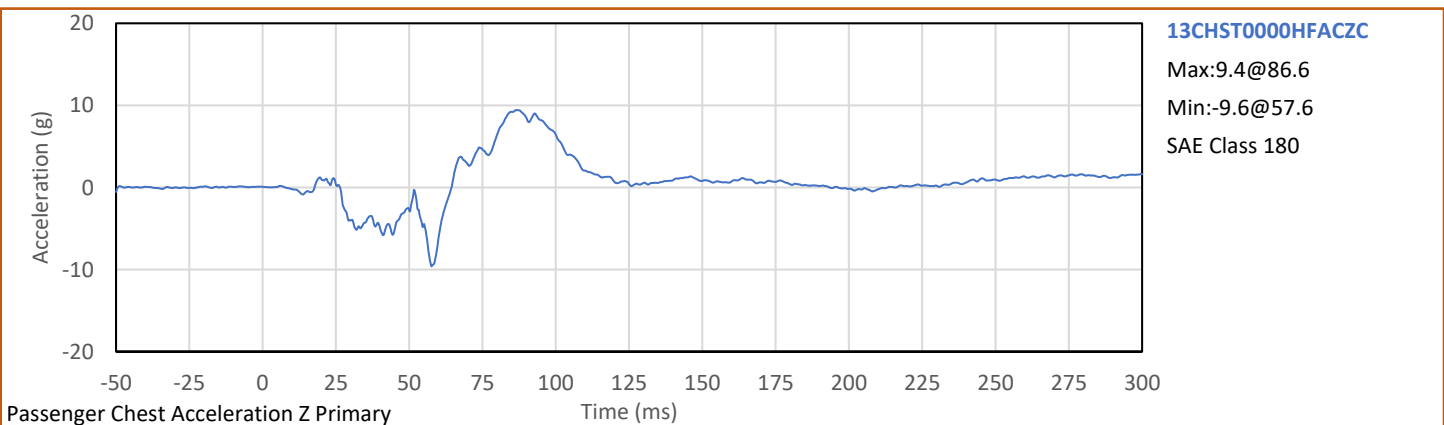
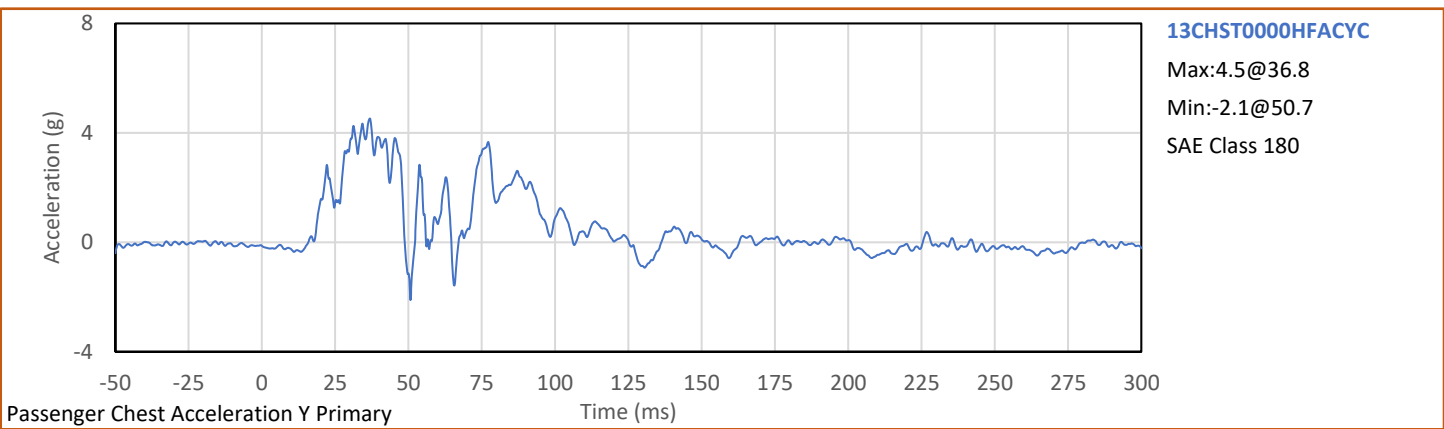
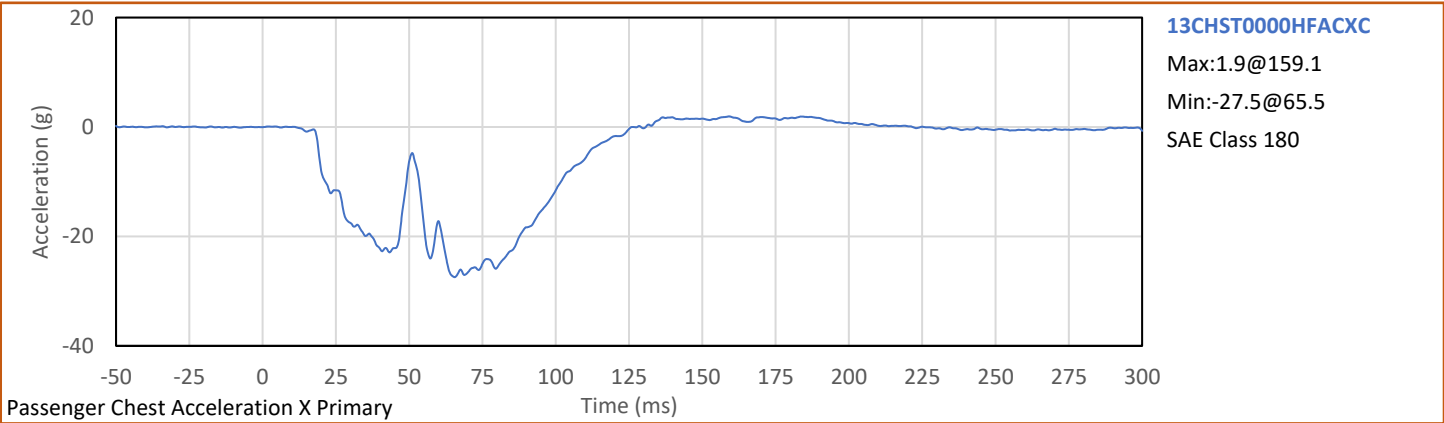


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Test Program: 56.3 km/h Frontal Impact NCAP Test

NHTSA No.: M20254100
Test Date: 1/15/2025

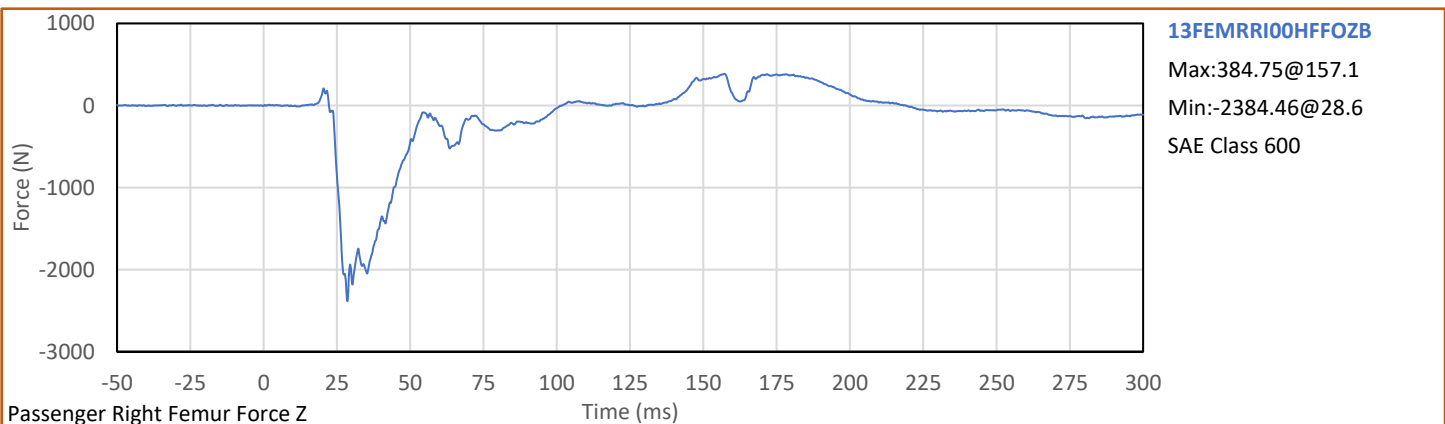
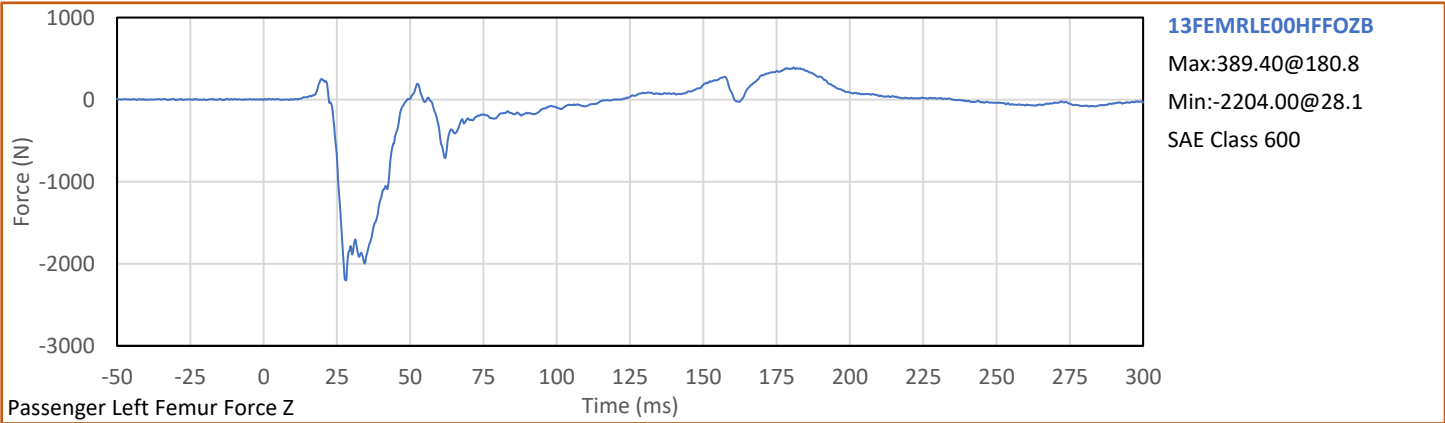






Test Vehicle: 2025 BMW X3 xDrive30i
Test Program: 56.3 km/h Frontal Impact NCAP Test

NHTSA No.: M20254100
Test Date: 1/15/2025



APPENDIX C
DUMMY QUALIFICATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
Pre-Test ATD Qualification and Performance Verification
Hybrid III 50th Percentile Male ATD
S/N: 360

ATD Serial No.: 360

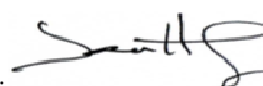
Test Date: 2025-01-07

Dummy Item	Inspect for	Comments	Damage	OK
Entire ATD	Perform general cleaning			✓
Outer Skin	Gashes, rips, cracks			✓
Head	Ballast secure			✓
	General appearance			✓
Neck bracket	Upper neck firmly attached to lower bracket			✓
Neck	Broken or cracked rubber			✓
	Looseness at the condyle joint			✓
Nodding block	Cracked or out of position			✓
Lumbar Spine	Broken or cracked rubber			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest Displ. Assembly	Bent shaft			✓
	Slider arm riding in track			✓
Sensors	Check cables for cuts, tears			✓
	Check for damaged insulation			✓
Accelerometer Mounting	Head mounting secure			✓
	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "resting" position			✓
Pelvis	Broken			✓
Other	Describe below as needed			✓

Describe any repairs or replacement of parts or other findings:

No Problems Found

Technician: 
J. Coronel

Approved By: 
J. Hernandez

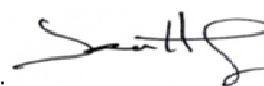
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
A - Total sitting height	mm	879	889	882	Pass
B - Shoulder pivot height	mm	505	521	516	Pass
C - 'H' point height	mm	84	89	87	Pass
D - 'H' point location from backline	mm	135	140	138	Pass
E - Shoulder pivot from backline	mm	84	94	89	Pass
F - Thigh clearance	mm	140	155	148	Pass
G - Back of elbow to wrist pivot	mm	290	305	298	Pass
H - Head back to backline	mm	41	46	44	Pass
I - Shoulder to elbow length	mm	330	345	338	Pass
J - Elbow rest height	mm	190	211	203	Pass
K - Buttock to knee length	mm	579	604	598	Pass
L - Popliteal length	mm	429	455	443	Pass
M - Knee pivot height	mm	485	500	496	Pass
N - Buttock popliteal length	mm	452	477	462	Pass
O - Chest depth without jacket	mm	213	229	227	Pass
P - Foot length	mm	251	267	258	Pass
V - Shoulder breadth	mm	422	437	428	Pass
W - Foot breadth	mm	91	107	102	Pass
Y - Chest circum. (w/chest jacket)	mm	970	1001	979	Pass
Z - Waist circum.	mm	836	866	849	Pass
AA - Location for chest circum.	mm	429	434	430	Pass
BB - Location for waist circum.	mm	226	231	230	Pass
Overall Test Results					Pass

Technician:



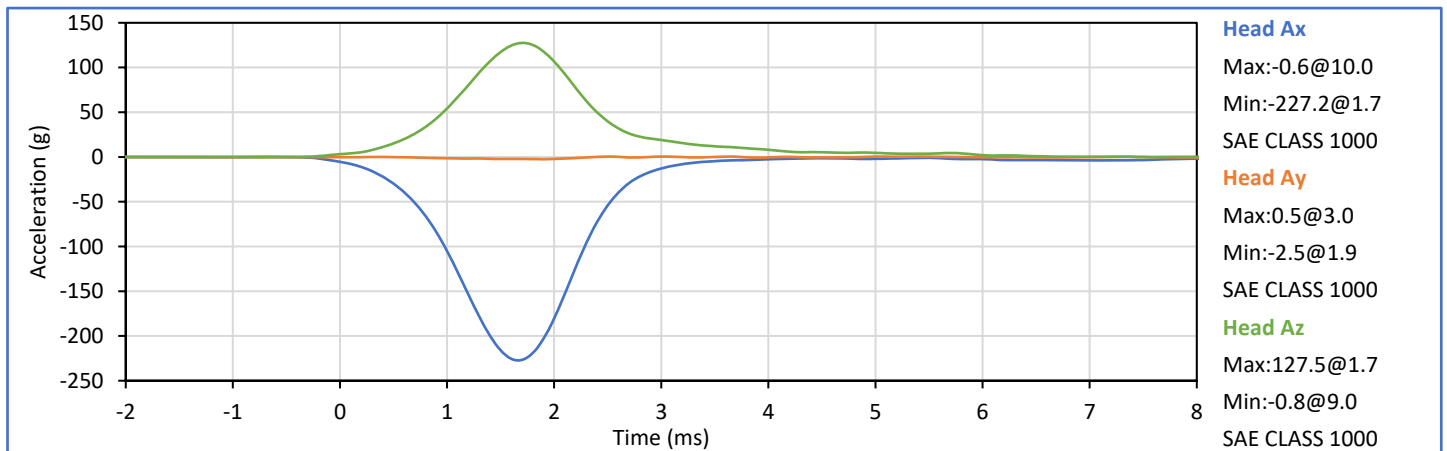
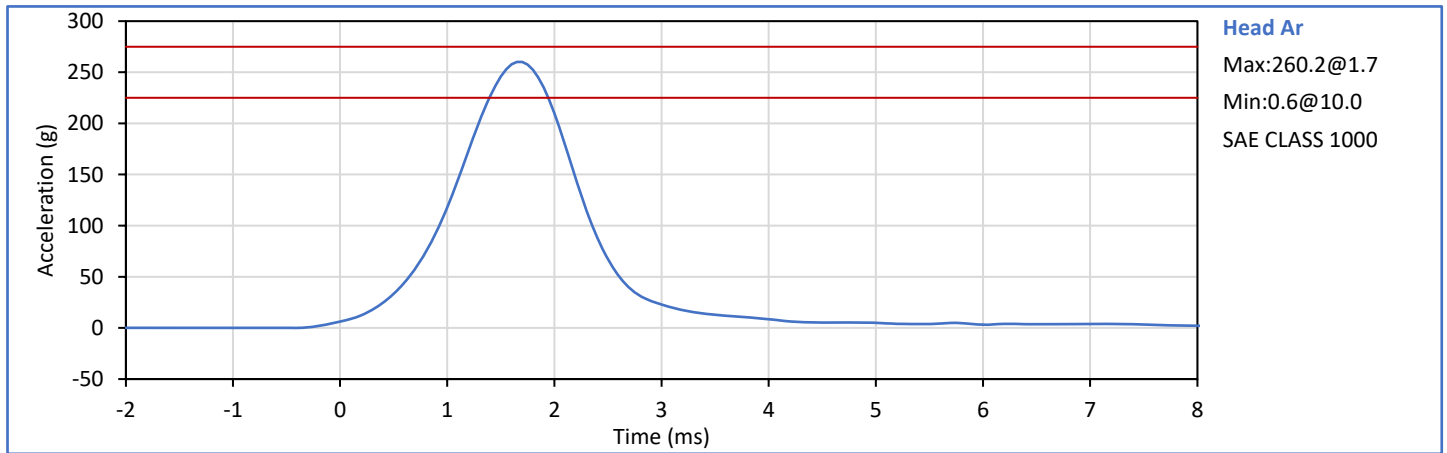
J. Coronel

Approved By:



J. Hernandez

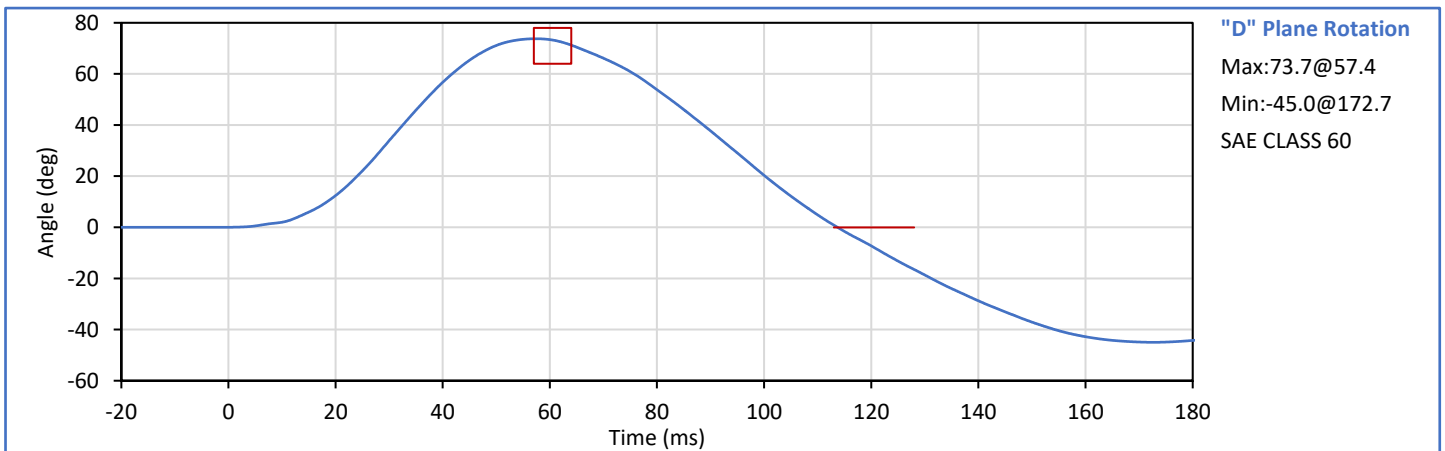
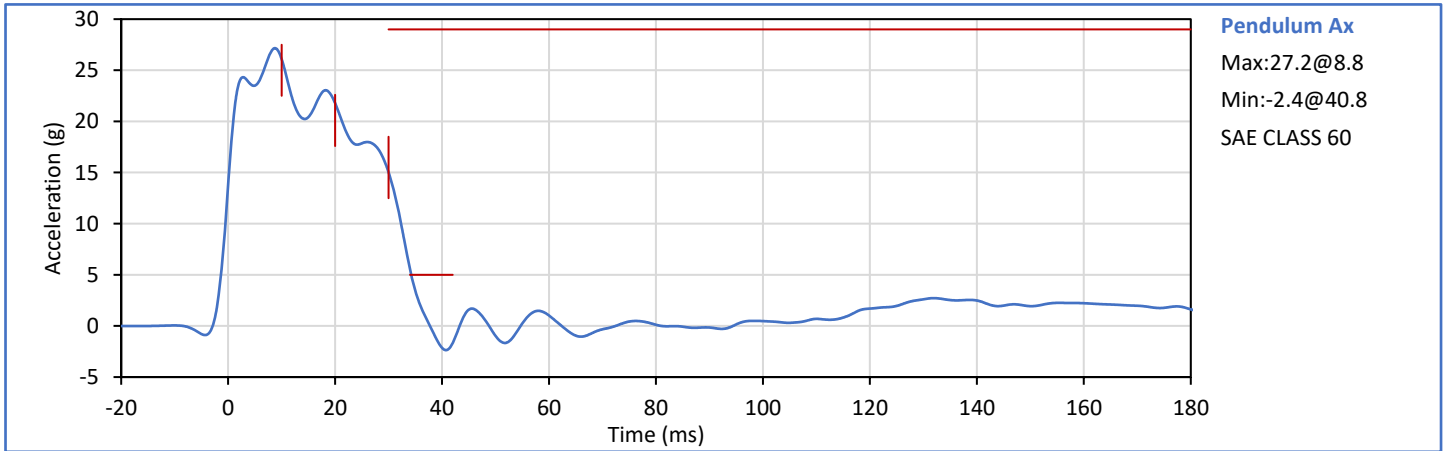
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Laboratory Temperature	°C	18.9	25.6	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Peak Resultant Acceleration	g	225.0	275.0	260.2	Pass
Peak Lateral Acceleration	g	-15.0	15.0	-2.5	Pass
Oscillations After Main Pulse	%	0.0	10.0	0.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



Technician: J. Coronel

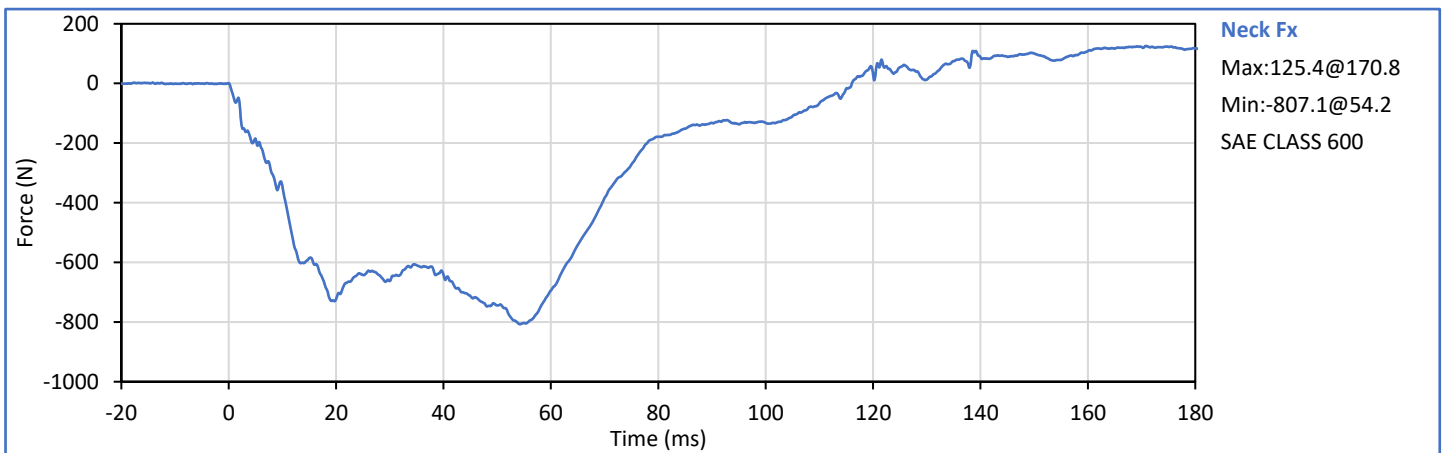
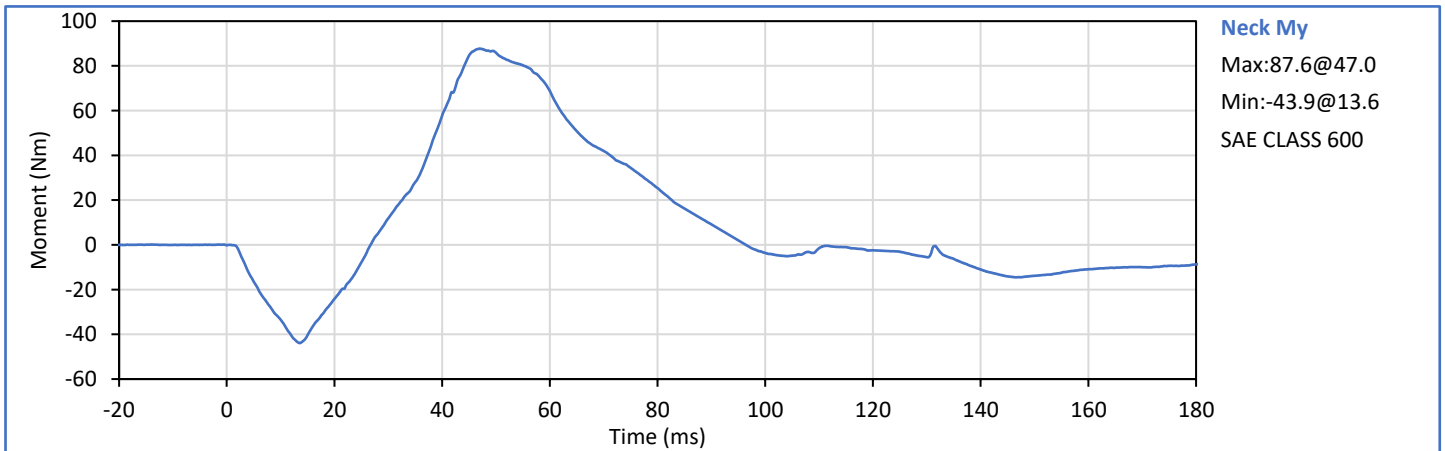
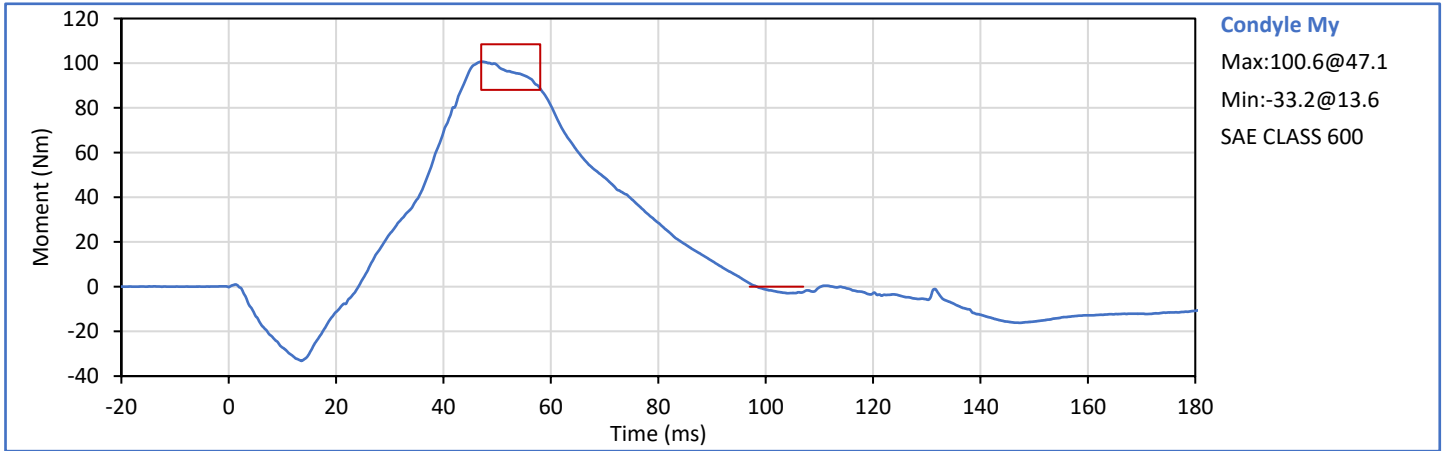
Approved By: J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Pendulum Velocity	m/s	6.89	7.13	7.03	Pass
Pendulum Deceleration at 10 ms	g	22.5	27.5	26.1	Pass
Pendulum Deceleration at 20 ms	g	17.6	22.6	21.8	Pass
Pendulum Deceleration at 30 ms	g	12.5	18.5	15.0	Pass
Peak Pendulum Decel After 30 ms	g	0.0	29.0	15.0	Pass
Deceleration Decay to Cross 5g	ms	34.0	42.0	34.2	Pass
"D" Plane Rotation peak	deg	64.0	78.0	73.7	Pass
	ms	57.0	64.0	57.4	Pass
"D" Plane Rotation Decay to Zero	ms	113.0	128.0	114.1	Pass
Moment About Occipital Condyle	Nm	88.1	108.5	100.6	Pass
	ms	47.0	58.0	47.1	Pass
Moment Decay, Peak to Zero	ms	97.0	107.0	98.4	Pass
Overall Test Results					Pass

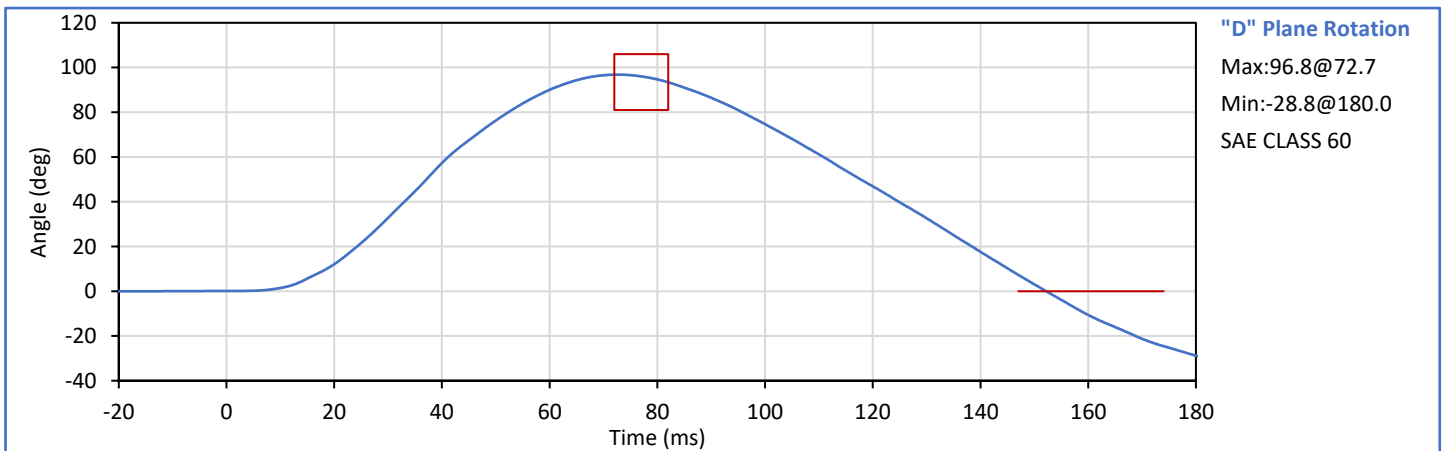
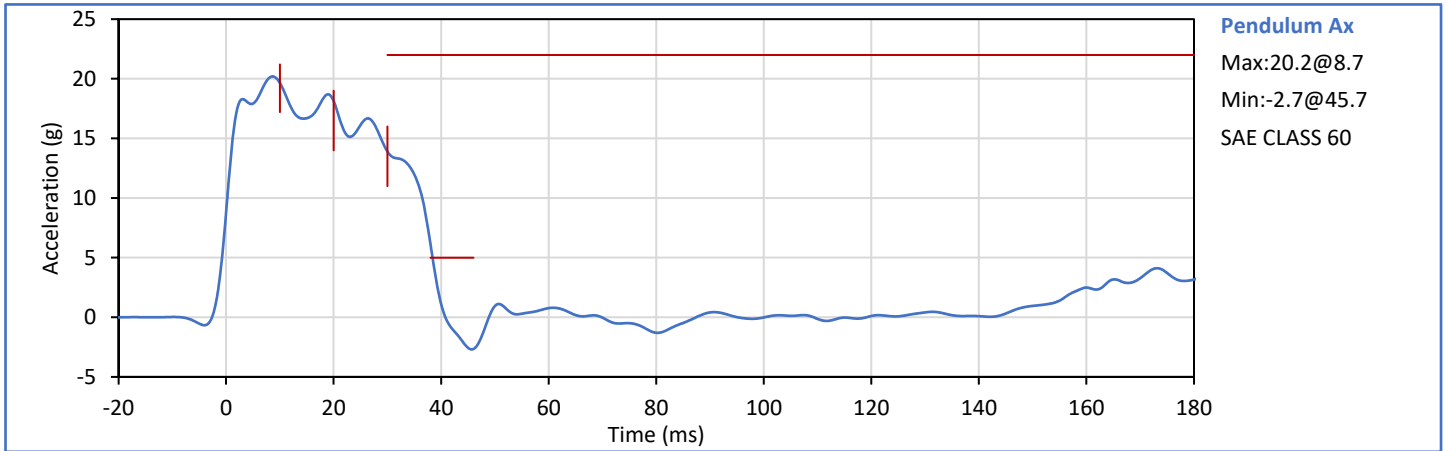


Technician: J. Coronel

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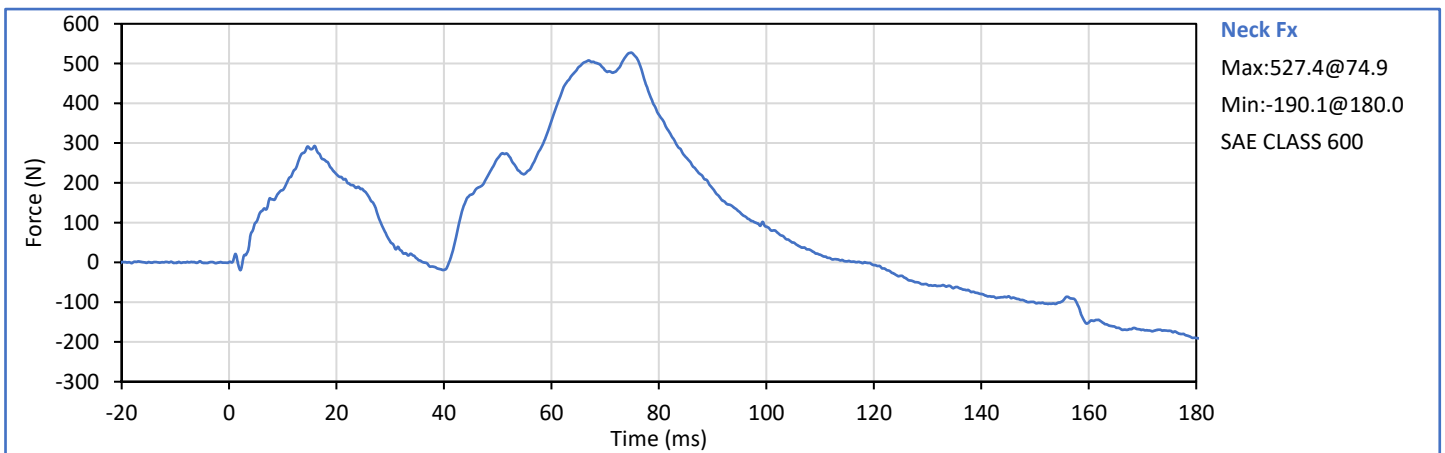
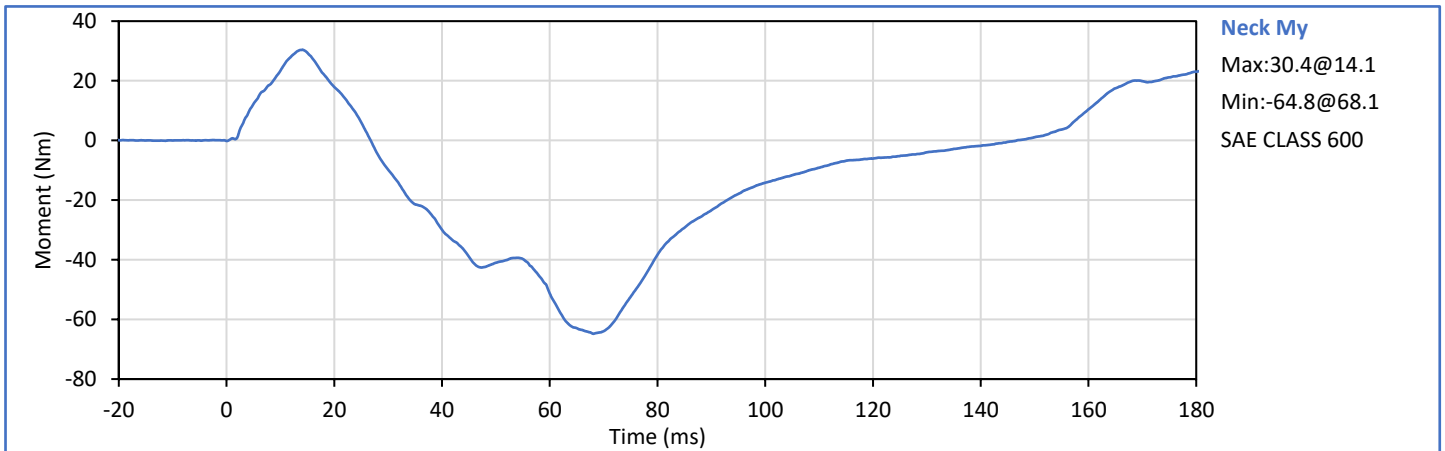
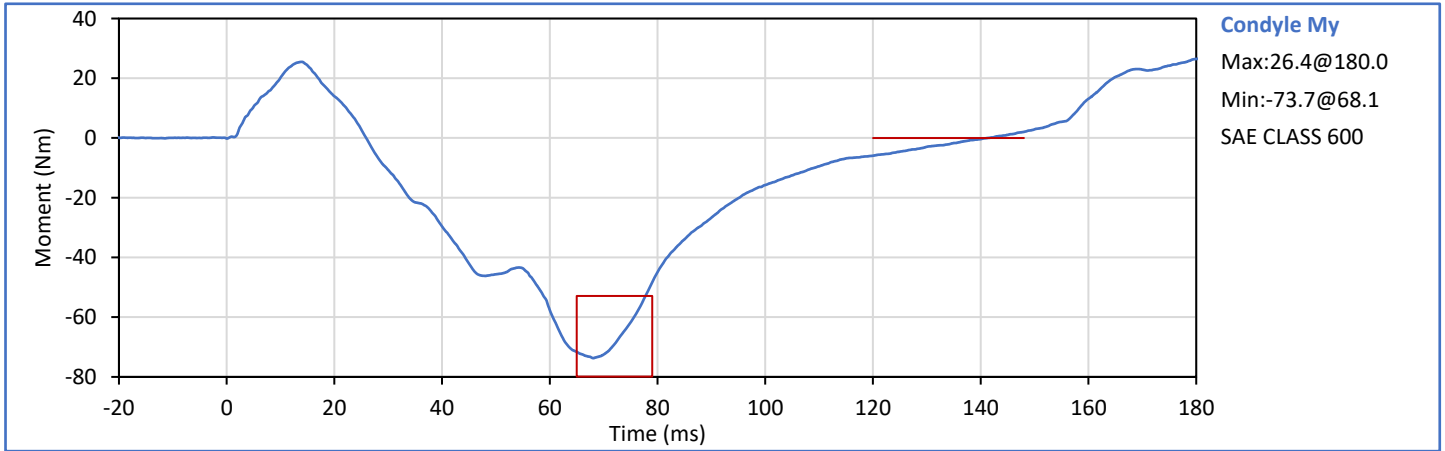


Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	35	Pass
Pendulum Velocity	m/s	5.94	6.19	6.05	Pass
Pendulum Deceleration at 10 ms	g	17.2	21.2	19.7	Pass
Pendulum Deceleration at 20 ms	g	14.0	19.0	18.1	Pass
Pendulum Deceleration at 30 ms	g	11.0	16.0	13.9	Pass
Peak Pendulum Decel After 30 ms	g	0.0	22.0	13.9	Pass
Deceleration Decay to Cross 5g	ms	38.0	46.0	38.4	Pass
"D" Plane Rotation peak	deg	81.0	106.0	96.8	Pass
	ms	72.0	82.0	72.7	Pass
"D" Plane Rotation Decay to Zero	ms	147.0	174.0	152.6	Pass
Moment About Occipital Condyle	Nm	-79.9	-52.9	-73.7	Pass
	ms	65.0	79.0	68.1	Pass
Moment Decay, Peak to Zero	ms	120.0	148.0	141.5	Pass
Overall Test Results					Pass

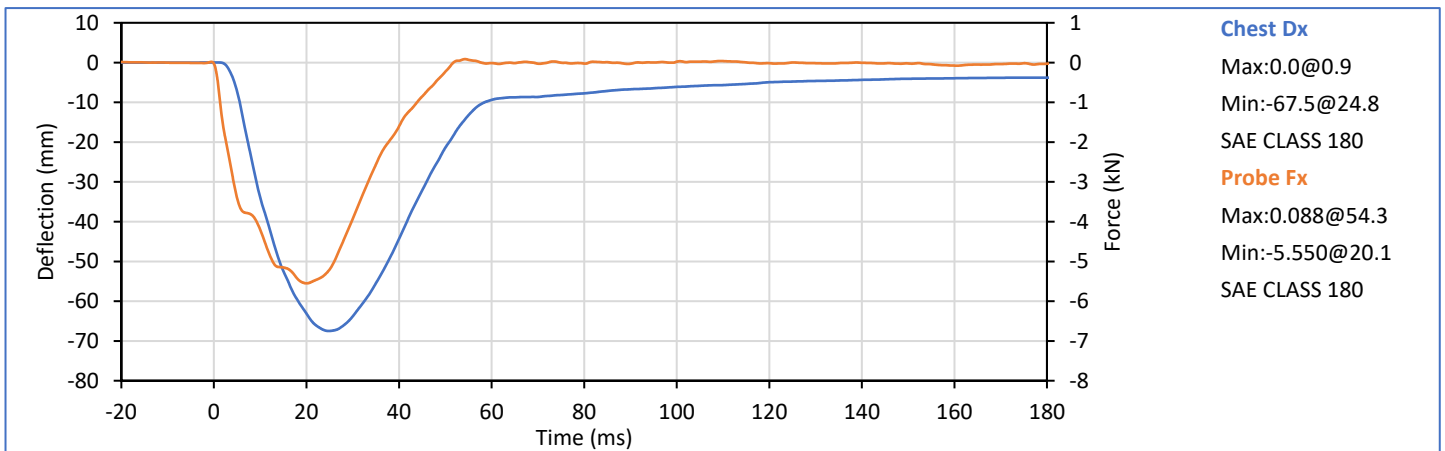
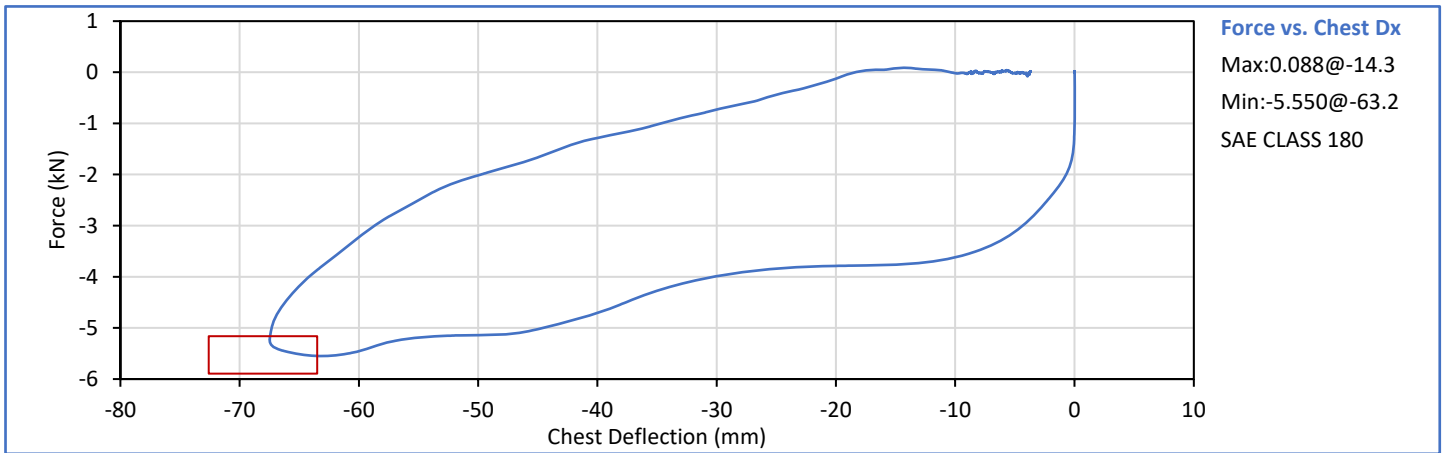


Technician: J. Coronel

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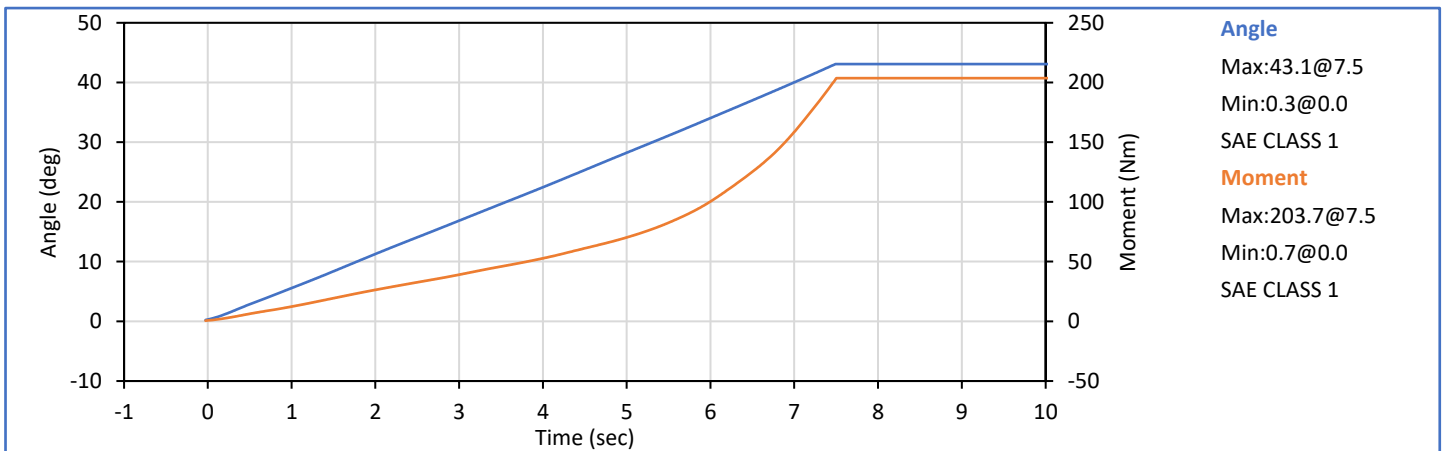
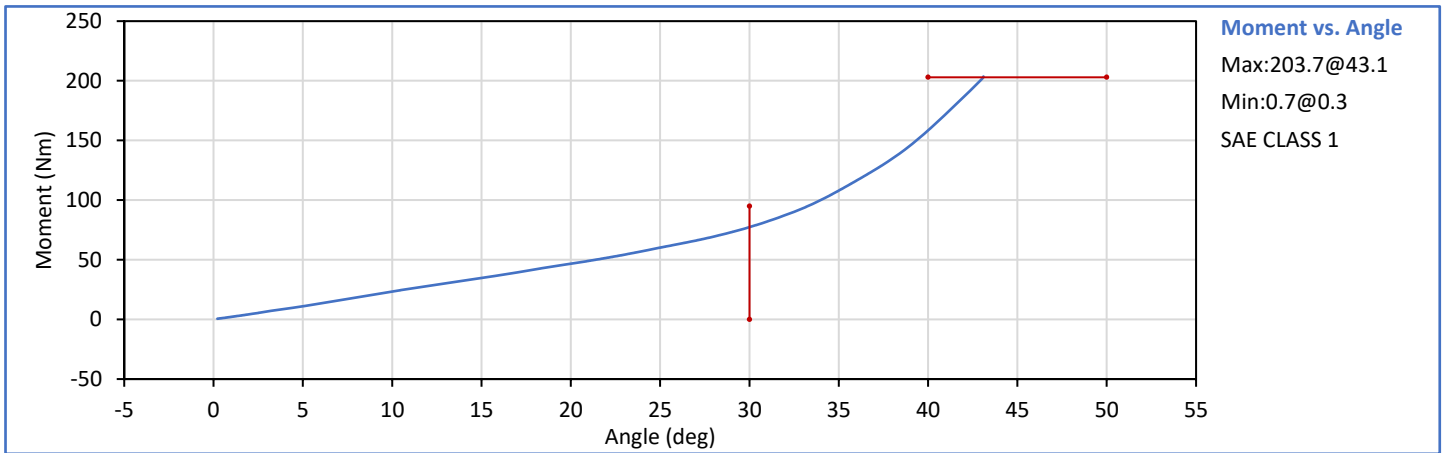
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
Probe Velocity	m/s	6.58	6.82	6.71	Pass
Peak Chest Deflection	mm	-72.6	-63.5	-67.5	Pass
Peak Probe Force	kN	-5.893	-5.159	-5.550	Pass
Internal Hysteresis	%	69.0	85.0	70.5	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

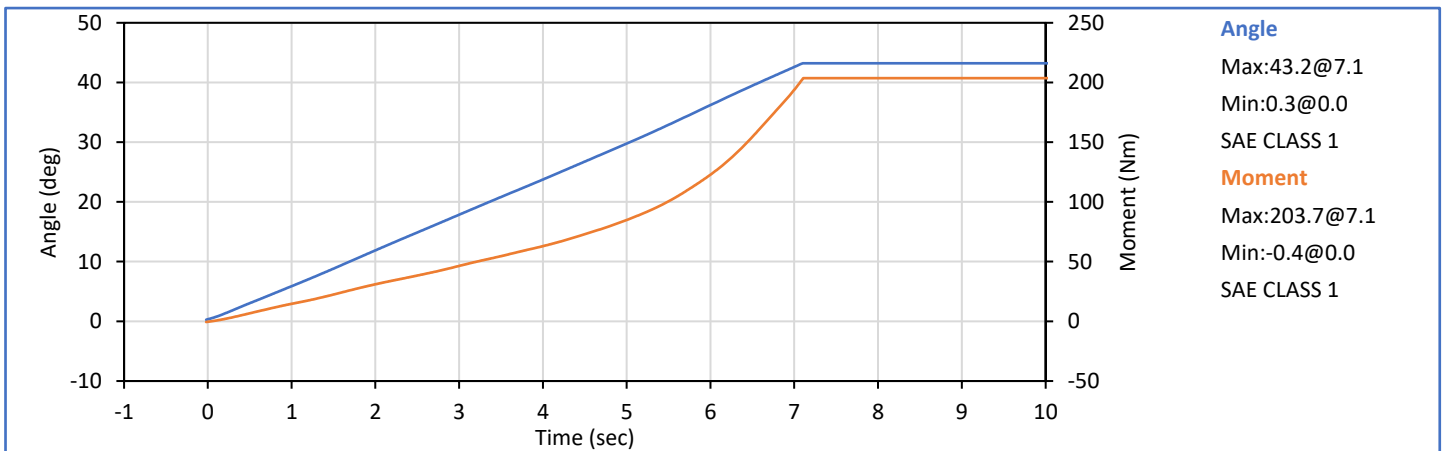
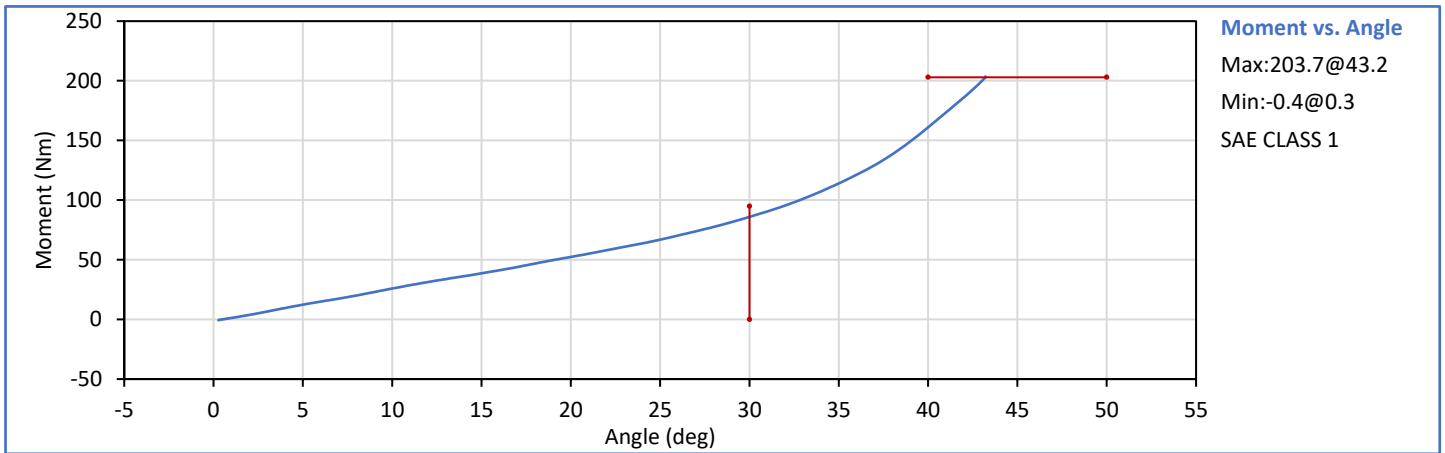
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Left Hip Rotation Rate	deg/s	5.0	10.0	5.7	Pass
Left Femur Torque at 30°	Nm	0.0	95.0	77.3	Pass
Left Hip Rotation at 203 Nm	deg	40.0	50.0	43.1	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

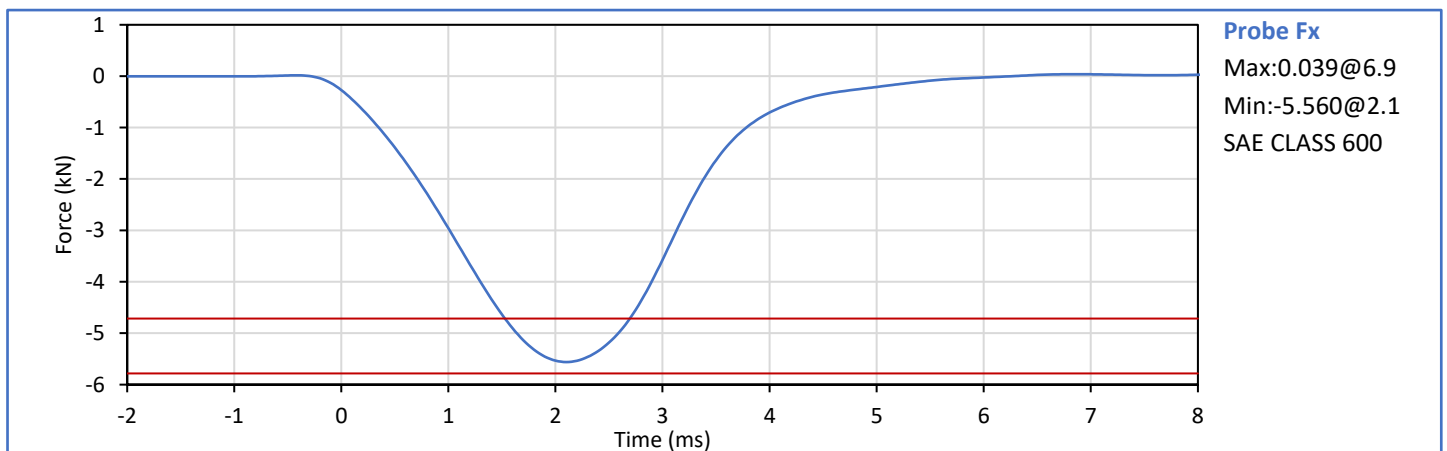
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Right Hip Rotation Rate	deg/s	5.0	10.0	6.1	Pass
Right Femur Torque at 30°	Nm	0.0	95.0	85.8	Pass
Right Hip Rotation at 203 Nm	deg	40.0	50.0	43.2	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

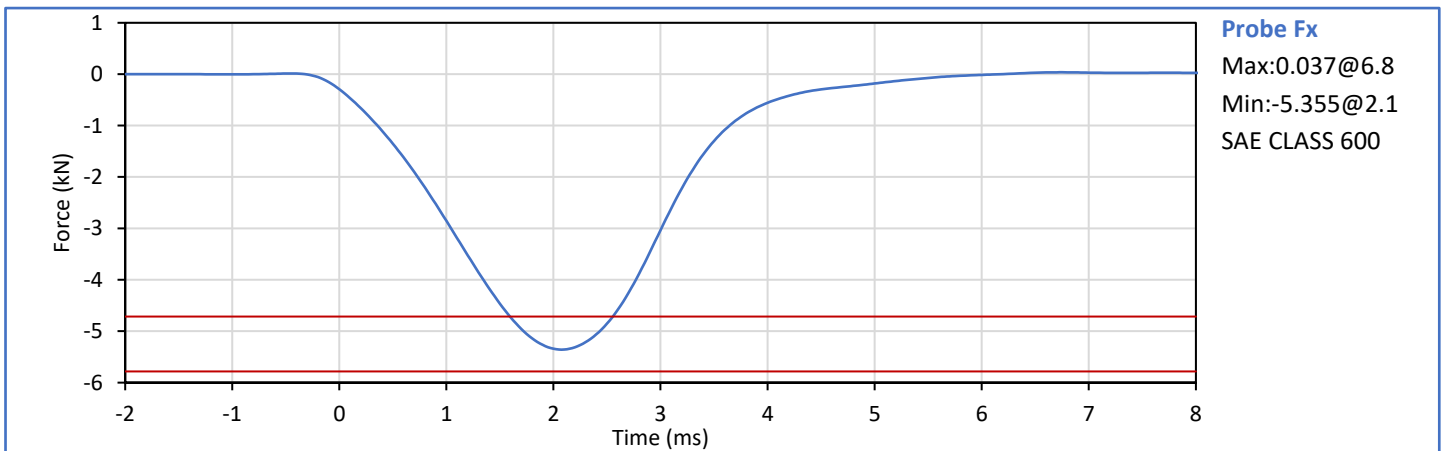
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.6	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Probe Velocity	m/s	2.070	2.130	2.101	Pass
Peak Resistive Force	kN	-5.782	-4.715	-5.560	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Probe Velocity	m/s	2.070	2.130	2.103	Pass
Peak Resistive Force	kN	-5.782	-4.715	-5.355	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

APPENDIX C
Pre-Test ATD Qualification and Performance Verification
Hybrid III 5th Percentile Female ATD
S/N: DH1644

Dummy Item	Inspect for	Comments	Damage	Okay
Entire ATD	Perform general cleaning			✓
Outer Skin	Gashes, rips, cracks			✓
Head	Ballast secure			✓
	General appearance			✓
Neck bracket	Upper neck firmly attached to lower bracket			✓
Neck	Broken or cracked rubber			✓
	Looseness at the condyle joint			✓
Nodding block	Cracked or out of position			✓
Lumbar Spine	Broken or cracked rubber			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest Displ. Assembly	Bent shaft			✓
	Slider arm riding in track			✓
Sensors	Check cables for cuts, tears			✓
	Check for damaged insulation			✓
Accelerometer Mounting	Head mounting secure			✓
	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "resting" position			✓
Pelvis	Broken			✓
Other	Describe below as needed			✓

Describe any repairs or replacement of parts or other findings:

No Problems Found

Technician: _____

J. Coronel

Approved By: _____

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
A - Total sitting height	mm	775	800	796	Pass
B - Shoulder pivot height	mm	432	457	445	Pass
C - 'H' point height	mm	81	86	85	Pass
D - 'H' point location from backline	mm	145	150	149	Pass
E - Shoulder pivot from backline	mm	69	84	78	Pass
F - Thigh clearance	mm	119	135	129	Pass
G - Back of elbow to wrist pivot	mm	244	259	254	Pass
H - Head back to backline	mm	41	46	45	Pass
I - Shoulder to elbow length	mm	277	297	287	Pass
J - Elbow rest height	mm	183	203	200	Pass
K - Buttock to knee length	mm	521	546	526	Pass
L - Popliteal length	mm	356	376	368	Pass
M - Knee pivot height	mm	394	419	404	Pass
N - Buttock popliteal length	mm	414	439	432	Pass
O - Chest depth without jacket	mm	175	191	182	Pass
P - Foot length	mm	219	234	228	Pass
R - Buttock to Knee Pivot Length	mm	457	483	469	Pass
S - Head Breadth	mm	137	147	146	Pass
T - Head Depth	mm	178	188	183	Pass
U - Hip Breadth	mm	300	315	310	Pass
V - Shoulder breadth	mm	351	366	356	Pass
W - Foot breadth	mm	79	94	88	Pass
X - Head circum.	mm	528	549	538	Pass
Y - Chest circum. (w/chest jacket)	mm	851	881	868	Pass
Z - Waist circum.	mm	760	790	779	Pass
AA - Location for chest circum.	mm	333	358	347	Pass
BB - Location for waist circum.	mm	160	170	166	Pass
Overall Test Results					Pass

Technician:



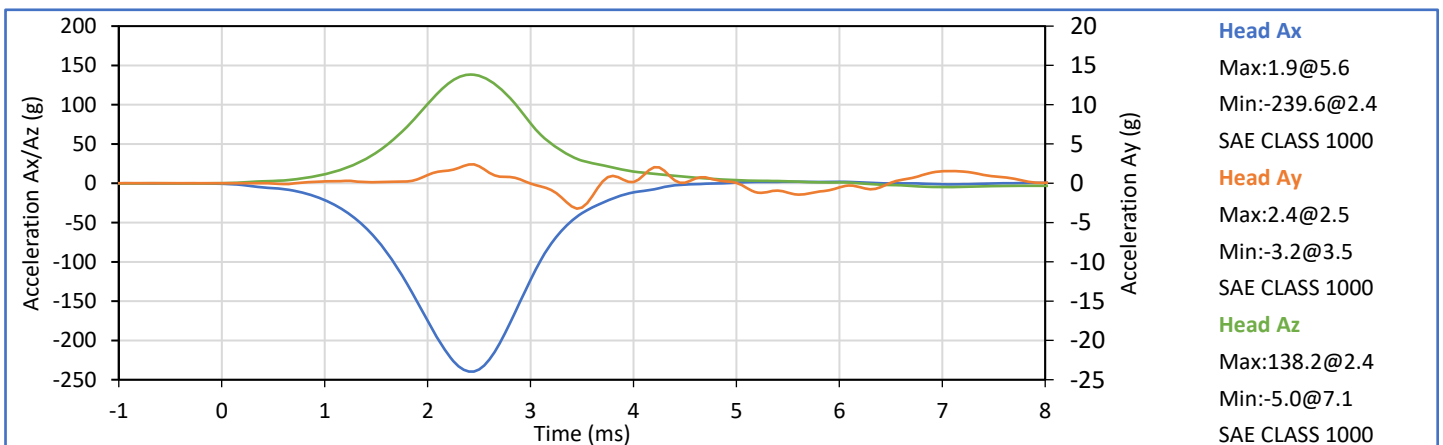
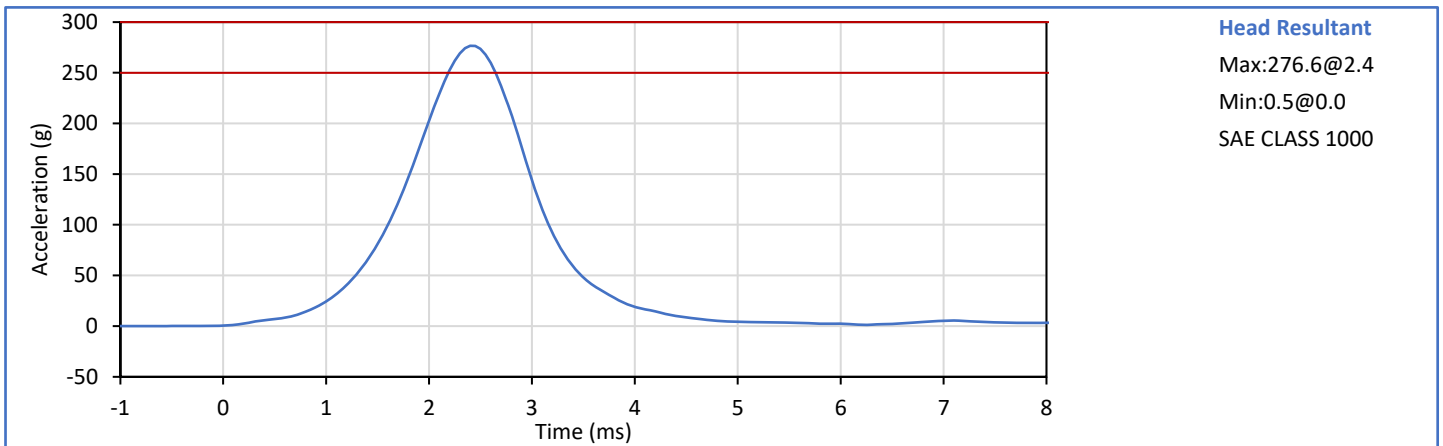
J. Coronel

Approved By:

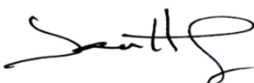


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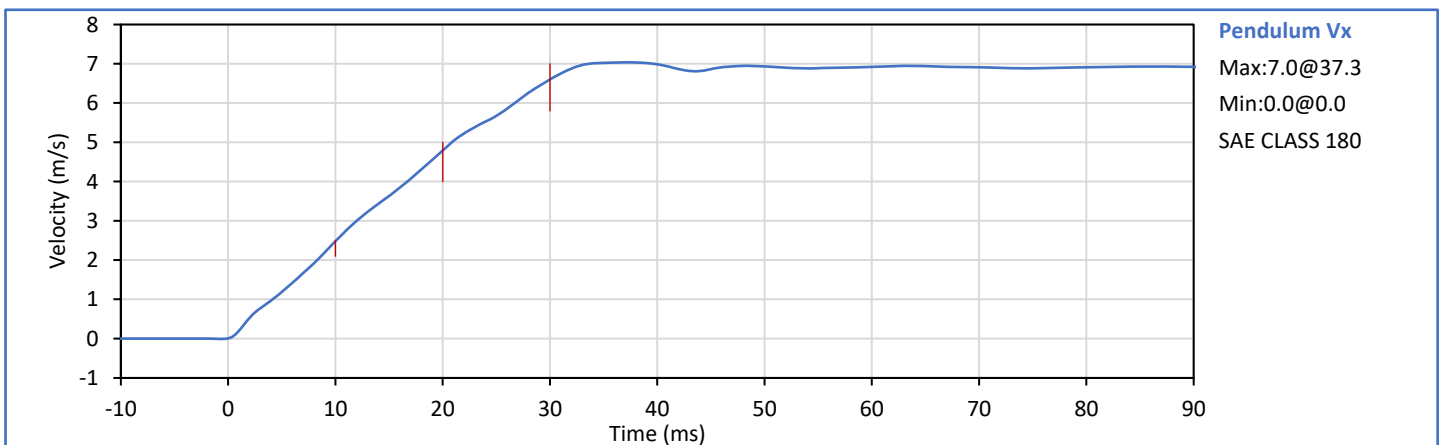
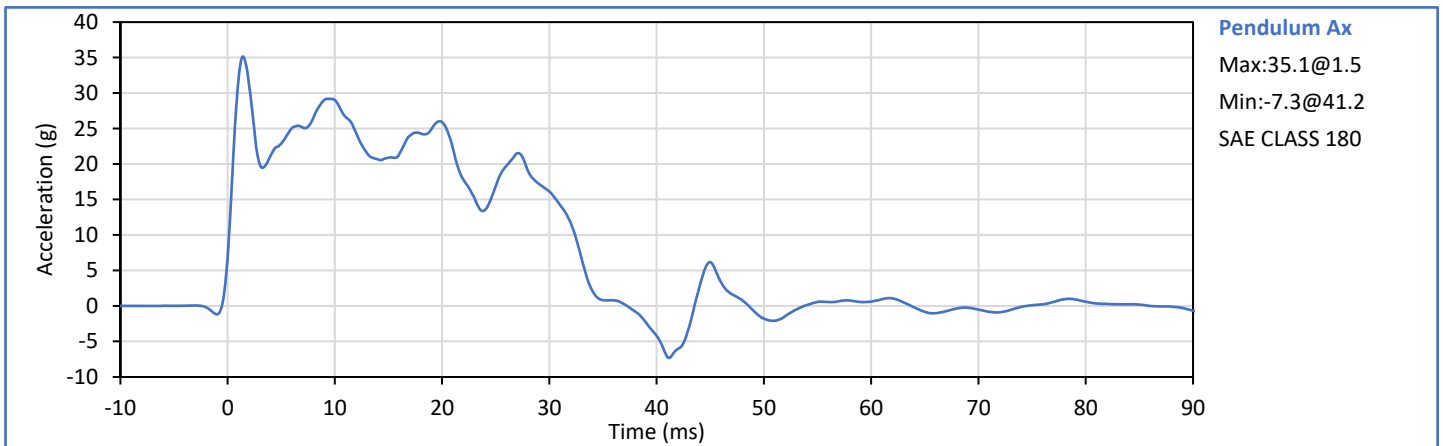
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.6	Pass
Laboratory Humidity	%	10	70	20	Pass
Peak Resultant Acceleration	g	250.0	300.0	276.6	Pass
Peak Lateral Acceleration	g	-15.0	15.0	-3.2	Pass
Oscillations After Main Pulse	%	0.0	10.0	2.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



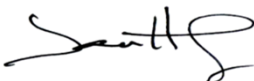
Technician: 
J. Coronel

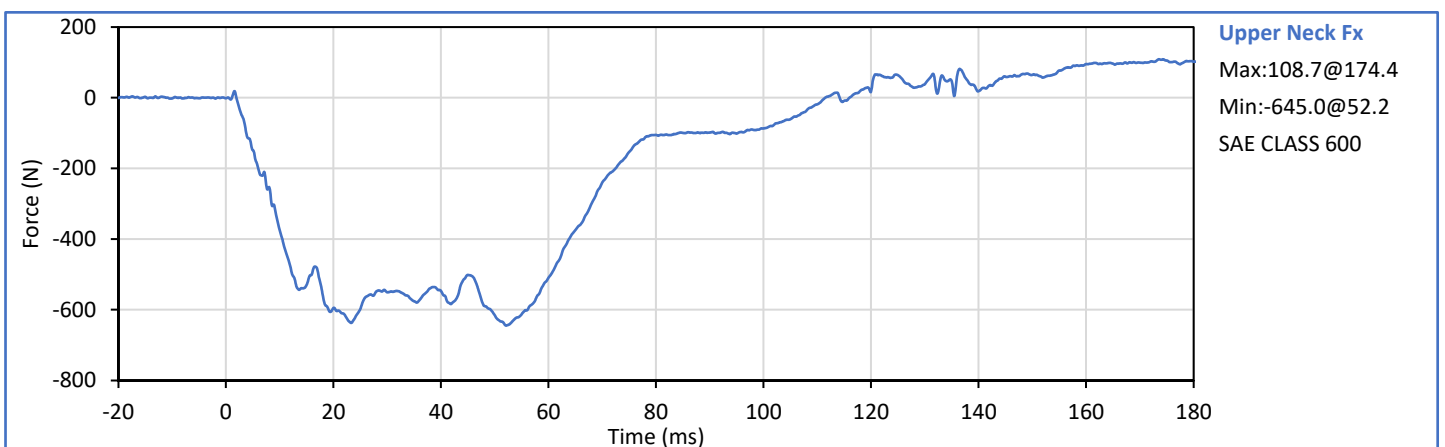
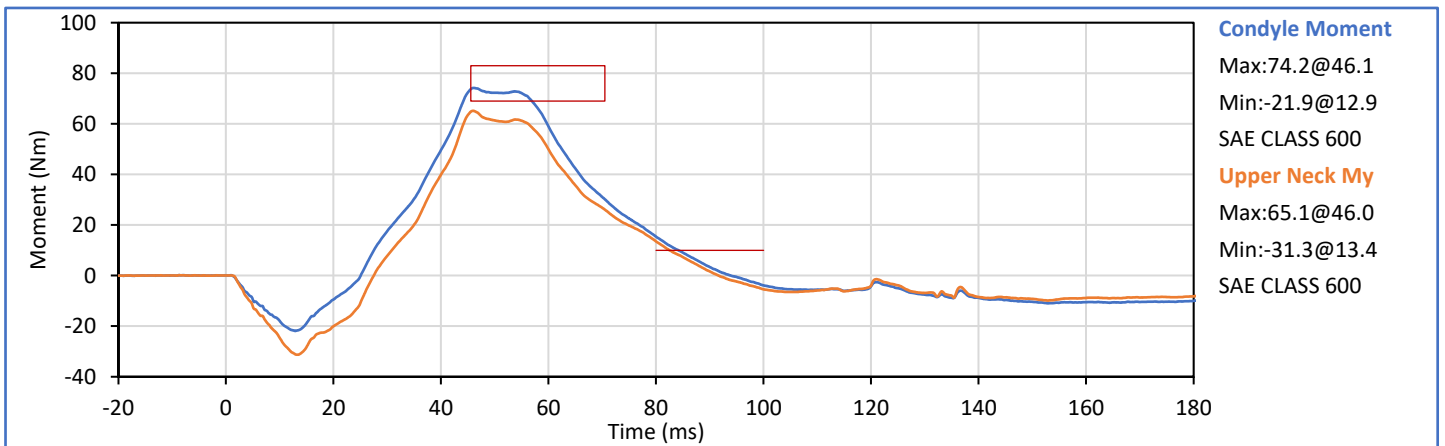
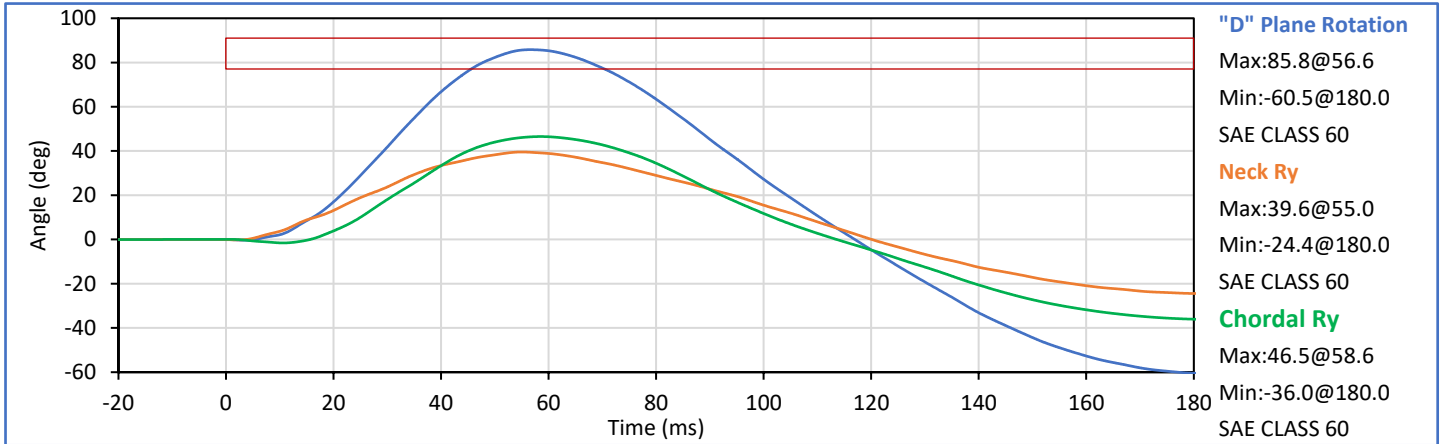
Approved By: 
J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Humidity	%	10	70	21	Pass
Pendulum Velocity	m/s	6.89	7.13	7.08	Pass
Pendulum Velocity at 10 ms	m/s	2.10	2.50	2.48	Pass
Pendulum Velocity at 20 ms	m/s	4.00	5.00	4.79	Pass
Pendulum Velocity at 30 ms	m/s	5.80	7.00	6.60	Pass
Peak "D" Plane Rotation	deg	77.0	91.0	85.8	Pass
Peak Moment in Rotation	Nm	69.0	83.0	74.2	Pass
Positive Moment Decay to 10 Nm	ms	80.0	100.0	84.2	Pass
Overall Test Results					Pass

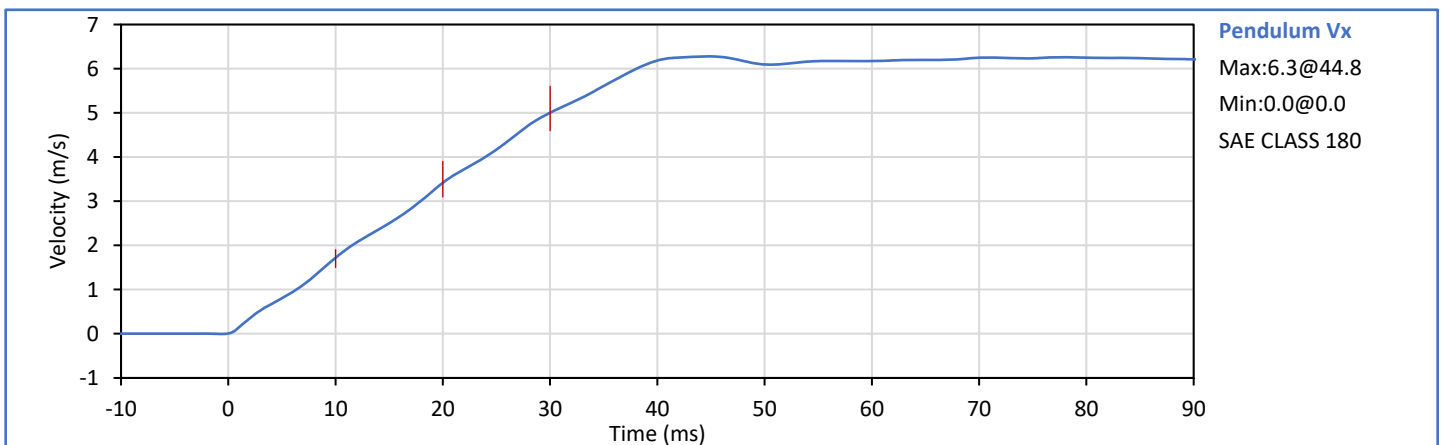
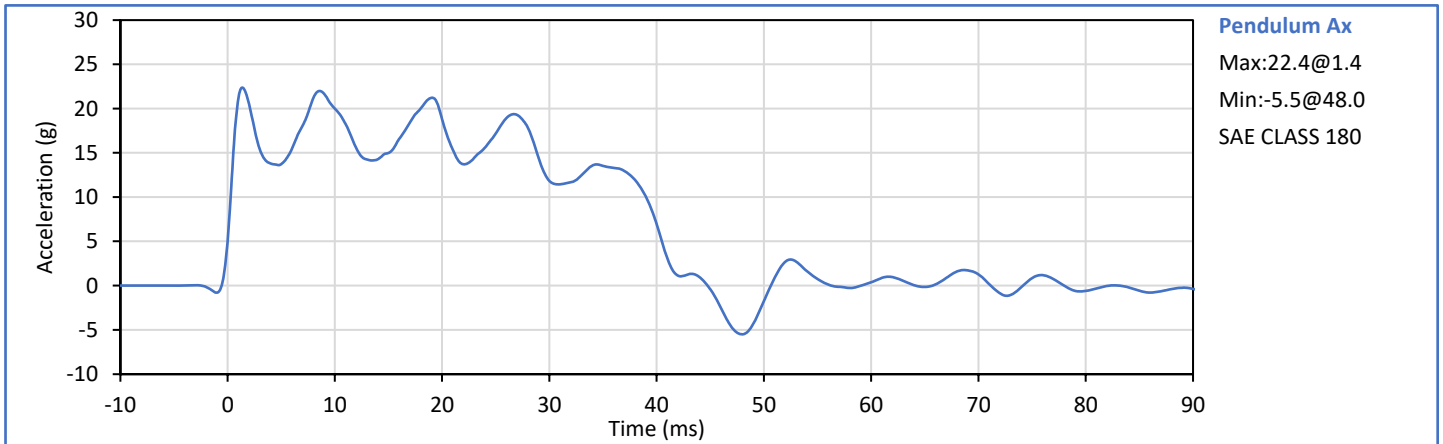


Technician: 
J. Coronel

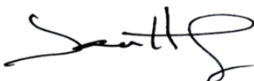
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J. Hernandez

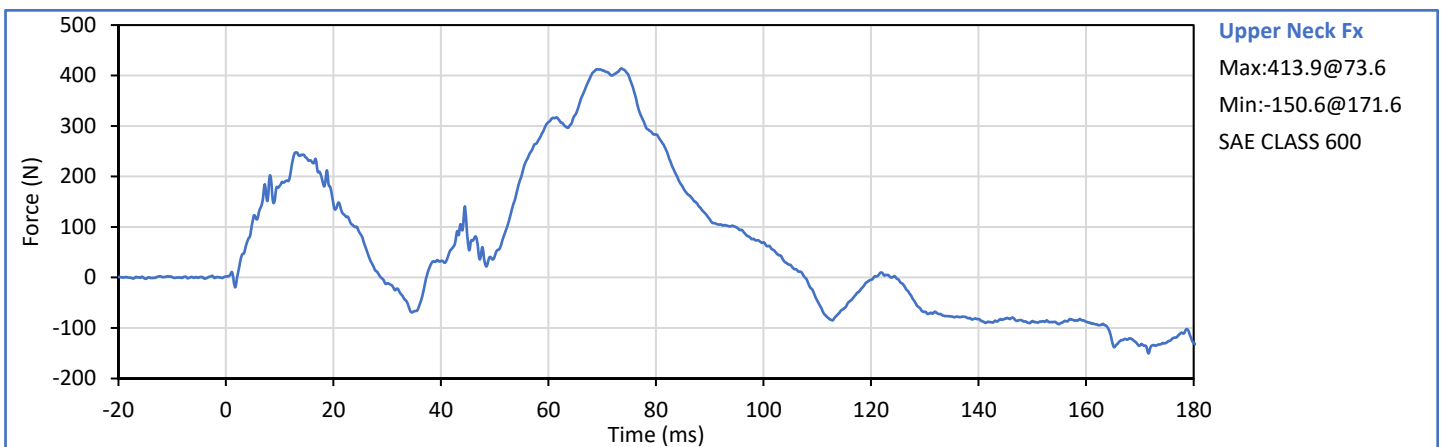
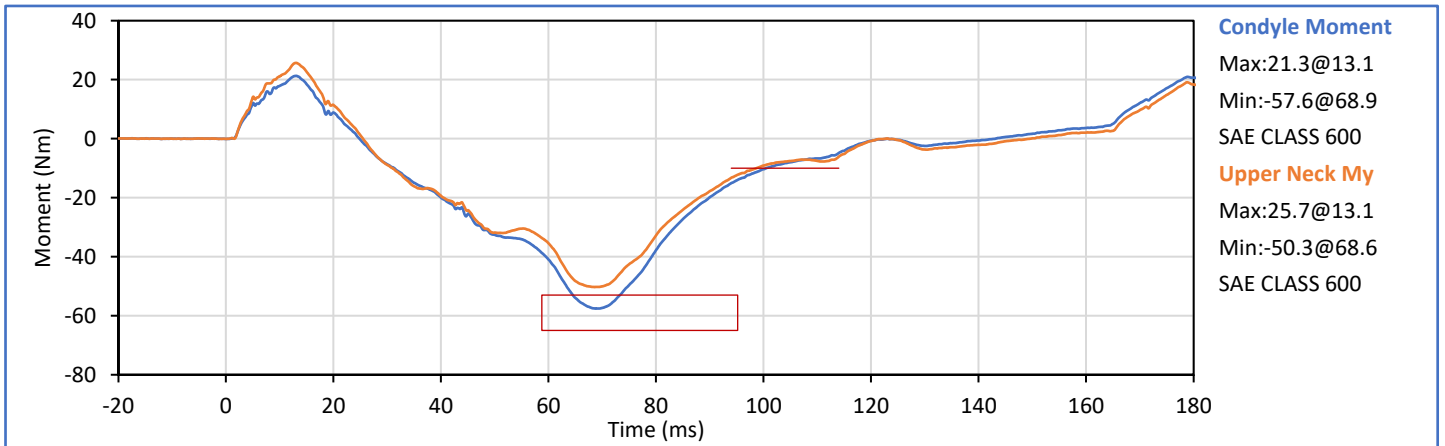
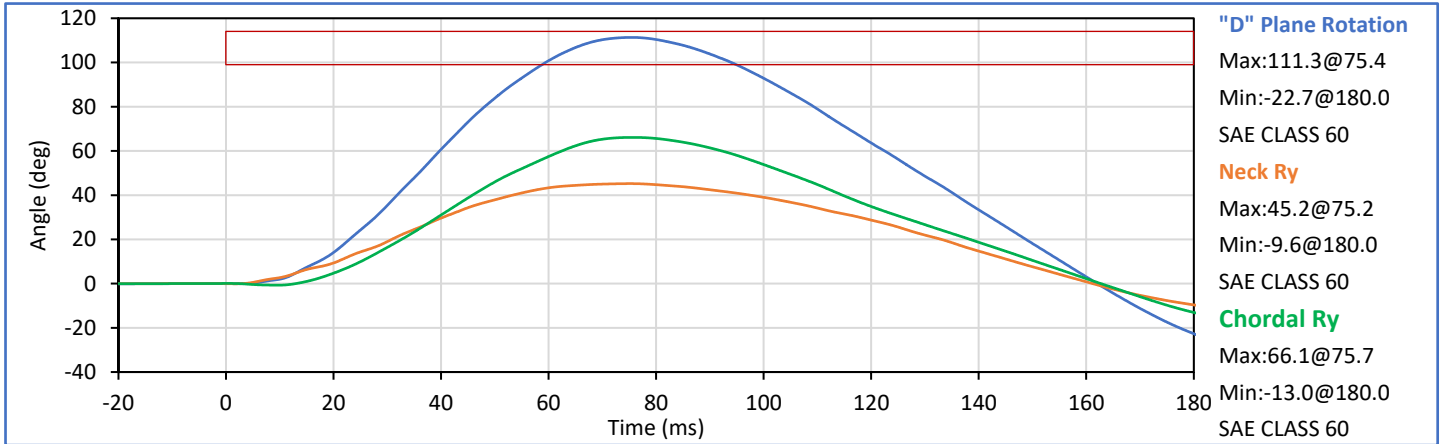


Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Pendulum Velocity	m/s	5.95	6.19	6.15	Pass
Pendulum Velocity at 10 ms	m/s	1.50	1.90	1.72	Pass
Pendulum Velocity at 20 ms	m/s	3.10	3.90	3.42	Pass
Pendulum Velocity at 30 ms	m/s	4.60	5.60	5.00	Pass
Peak "D" Plane Rotation	deg	99.0	114.0	111.3	Pass
Peak Moment in Rotation	Nm	-65.0	-53.0	-57.6	Pass
Negative Moment Decay to -10 Nm	ms	94.0	114.0	100.5	Pass
Overall Test Results					Pass

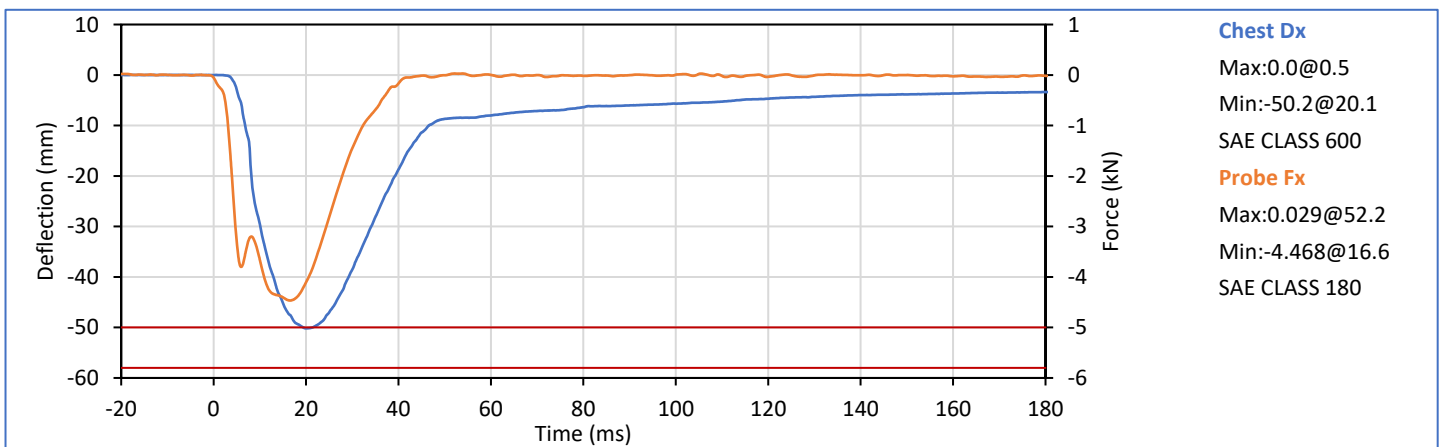
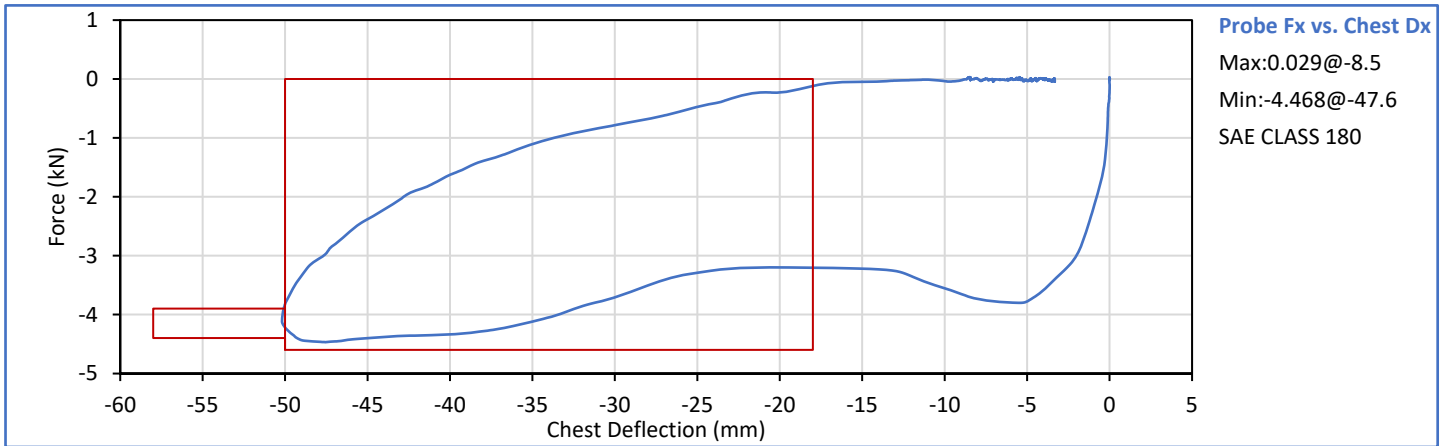


Technician: 
J. Coronel


Approved By: 
J. Hernandez



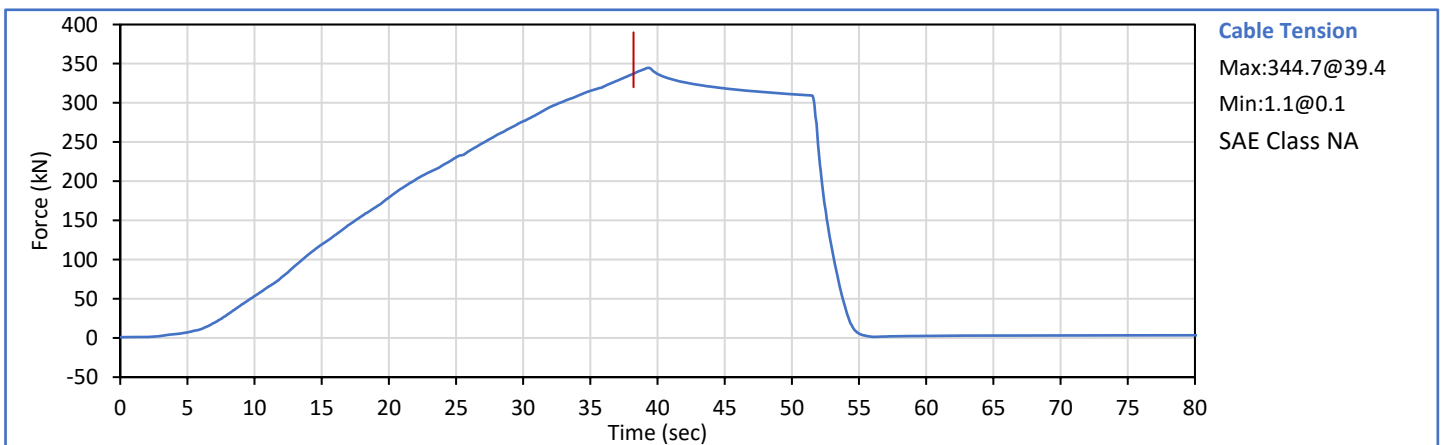
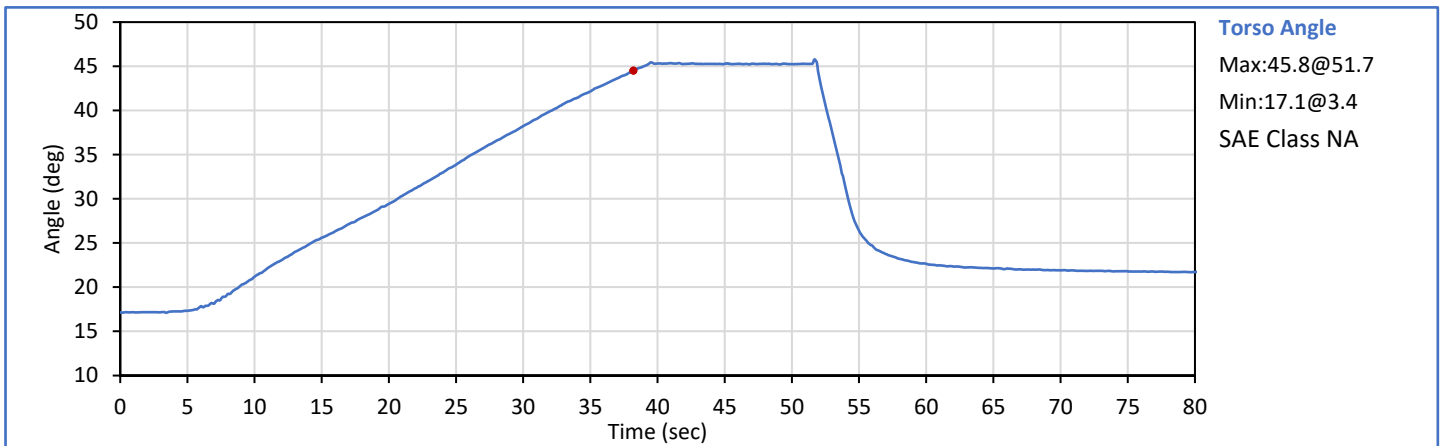
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory RelativeHumidity	%	10	70	23	Pass
Probe Velocity	m/s	6.59	6.83	6.68	Pass
Peak Chest Deflection	mm	-58.0	-50.0	-50.2	Pass
Peak Probe Force, 50 and 58 mm	kN	-4.400	-3.900	-4.221	Pass
Peak Probe Force, 18 and 50 mm	kN	-4.600	0.000	-4.468	Pass
Internal Hysteresis	%	69.0	85.0	77.0	Pass
Overall Test Results					Pass



Technician: 
 J. Coronel

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 J. Hernandez

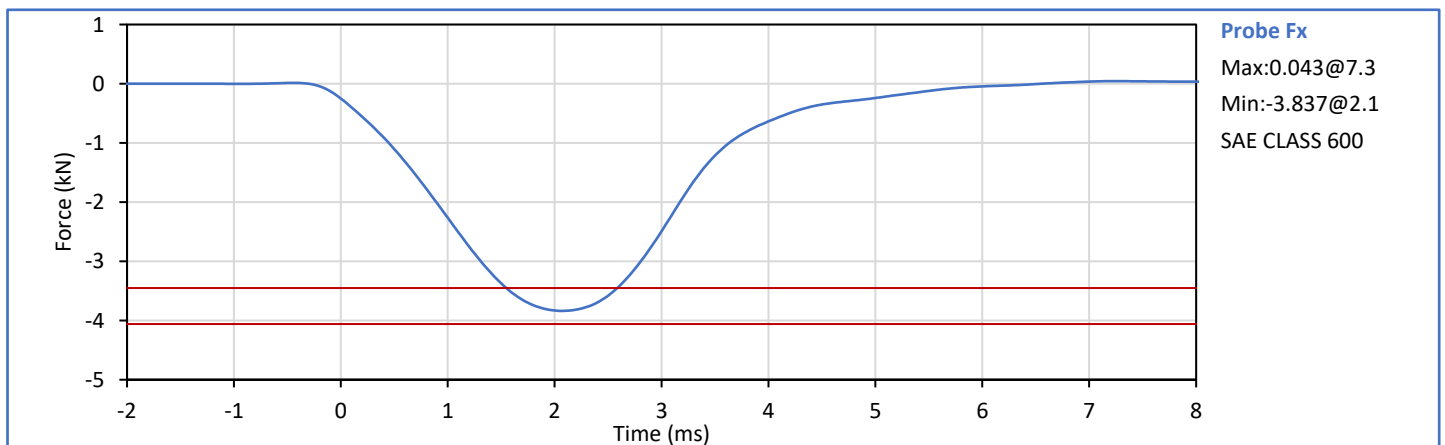
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Humidity	%	10	70	22	Pass
Orientation Angle	deg	0.0	20.0	16.8	Pass
Test Initial Angle	deg	11.0	19.0	17.1	Pass
Peak Force at 45° (+/-0.5°)	N	320.0	390.0	337.1	Pass
Torso Flexion Rate	deg/s	0.50	1.50	0.85	Pass
Final Reference Plane Angle	deg	-8.0	8.0	4.1	Pass
Overall Test Results					Pass



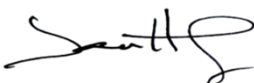
Technician: *J. Coronel*
J. Coronel

Approved By: *J. Hernandez*
J. Hernandez

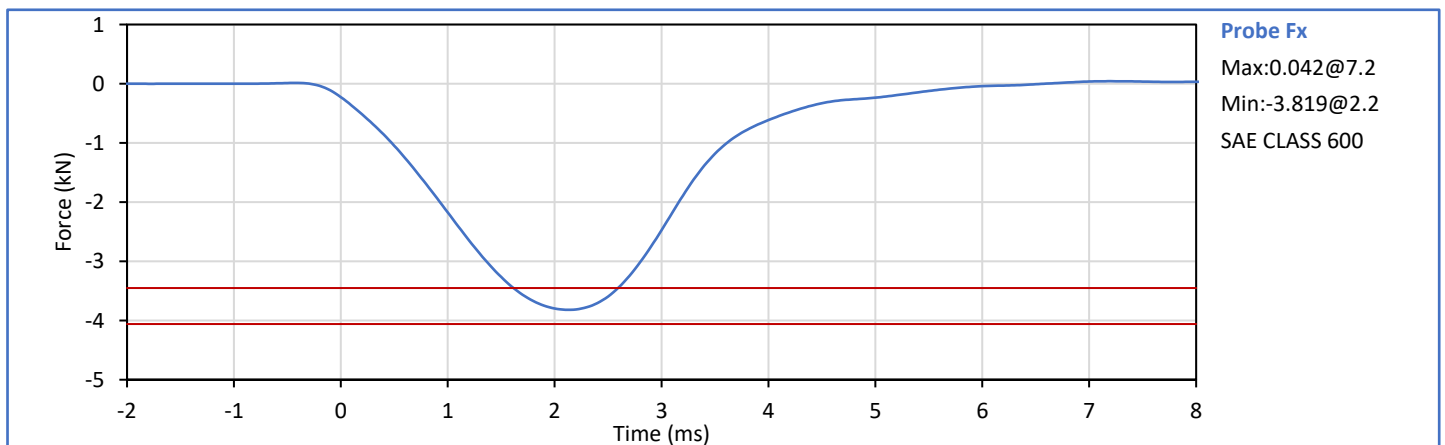
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.6	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Probe Velocity	m/s	2.070	2.130	2.109	Pass
Peak Resistive Force	kN	-4.060	-3.450	-3.837	Pass
Overall Test Results					Pass




Technician: 
J. Coronel

Approved By: 
J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.1	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Probe Velocity	m/s	2.070	2.130	2.108	Pass
Peak Resistive Force	kN	-4.060	-3.450	-3.819	Pass
Overall Test Results					Pass



Technician: 
J. Coronel

Approved By: 
J. Hernandez

APPENDIX C
Post-Test ATD Qualification and Performance Verification
Hybrid III 50th Percentile Male ATD
S/N: 360


ATD Serial No.: 360

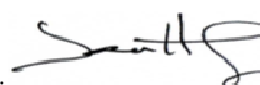
Test Date: 2025-01-21

Dummy Item	Inspect for	Comments	Damage	OK
Entire ATD	Perform general cleaning			✓
Outer Skin	Gashes, rips, cracks			✓
Head	Ballast secure			✓
	General appearance			✓
Neck bracket	Upper neck firmly attached to lower bracket			✓
Neck	Broken or cracked rubber			✓
	Looseness at the condyle joint			✓
Nodding block	Cracked or out of position			✓
Lumbar Spine	Broken or cracked rubber			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest Displ. Assembly	Bent shaft			✓
	Slider arm riding in track			✓
Sensors	Check cables for cuts, tears			✓
	Check for damaged insulation			✓
Accelerometer Mounting	Head mounting secure			✓
	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "resting" position			✓
Pelvis	Broken			✓
Other	Describe below as needed			✓

Describe any repairs or replacement of parts or other findings:

No Problems Found

Technician: 
J. Coronel

Approved By: 
J. Hernandez

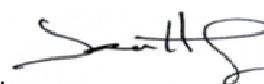
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
A - Total sitting height	mm	879	889	885	Pass
B - Shoulder pivot height	mm	505	521	518	Pass
C - 'H' point height	mm	84	89	87	Pass
D - 'H' point location from backline	mm	135	140	136	Pass
E - Shoulder pivot from backline	mm	84	94	88	Pass
F - Thigh clearance	mm	140	155	149	Pass
G - Back of elbow to wrist pivot	mm	290	305	298	Pass
H - Head back to backline	mm	41	46	45	Pass
I - Shoulder to elbow length	mm	330	345	341	Pass
J - Elbow rest height	mm	190	211	202	Pass
K - Buttock to knee length	mm	579	604	591	Pass
L - Popliteal length	mm	429	455	440	Pass
M - Knee pivot height	mm	485	500	494	Pass
N - Buttock popliteal length	mm	452	477	460	Pass
O - Chest depth without jacket	mm	213	229	226	Pass
P - Foot length	mm	251	267	256	Pass
V - Shoulder breadth	mm	422	437	430	Pass
W - Foot breadth	mm	91	107	102	Pass
Y - Chest circum. (w/chest jacket)	mm	970	1001	995	Pass
Z - Waist circum.	mm	836	866	847	Pass
AA - Location for chest circum.	mm	429	434	430	Pass
BB - Location for waist circum.	mm	226	231	230	Pass
Overall Test Results					Pass

Technician:



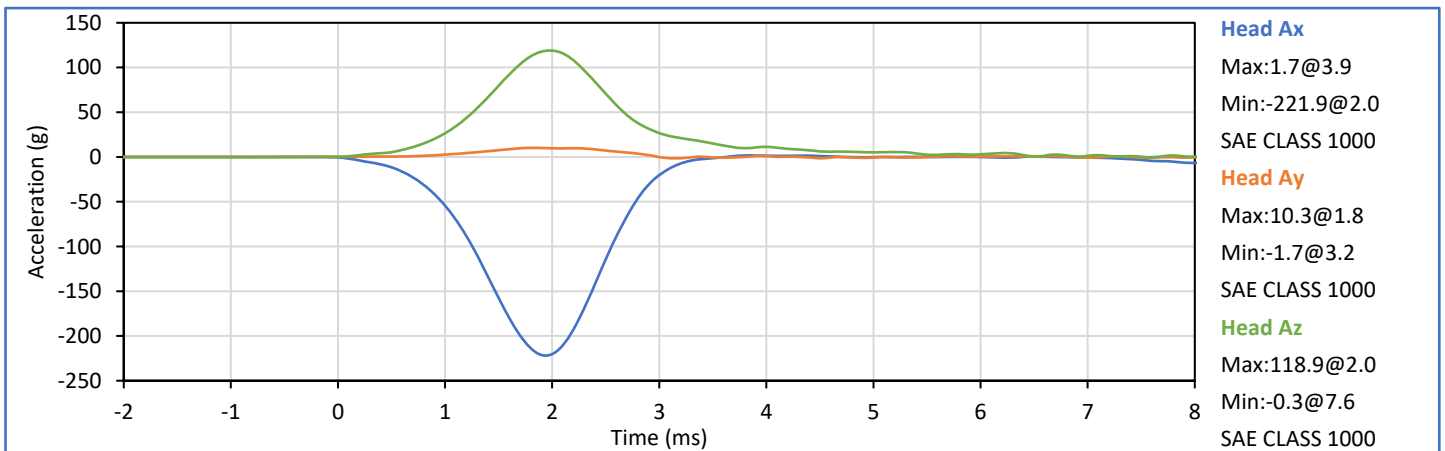
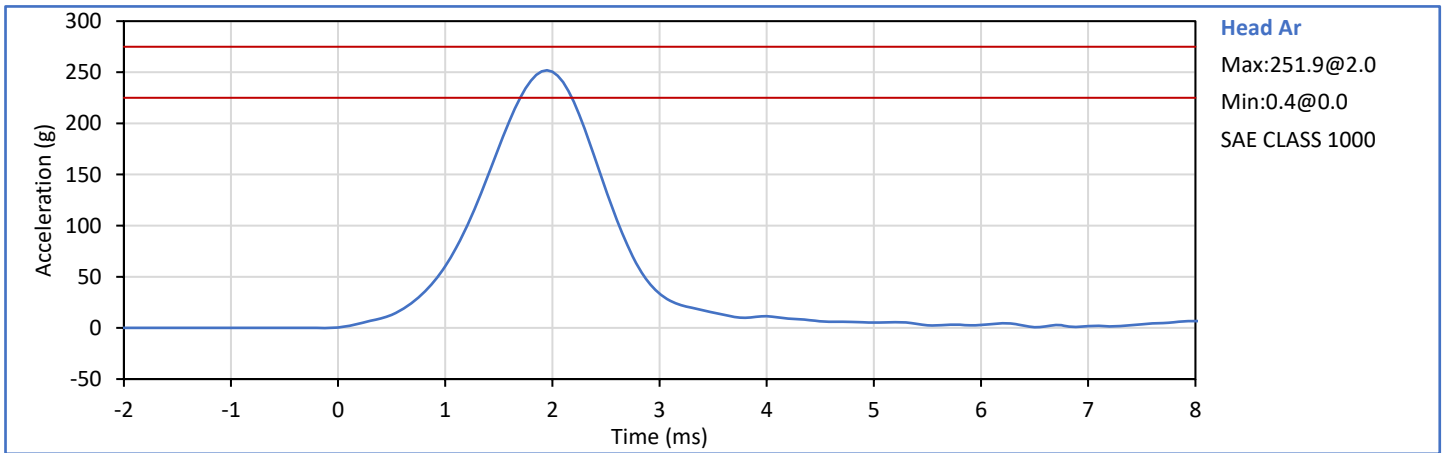
J. Coronel

Approved By:



J. Hernandez

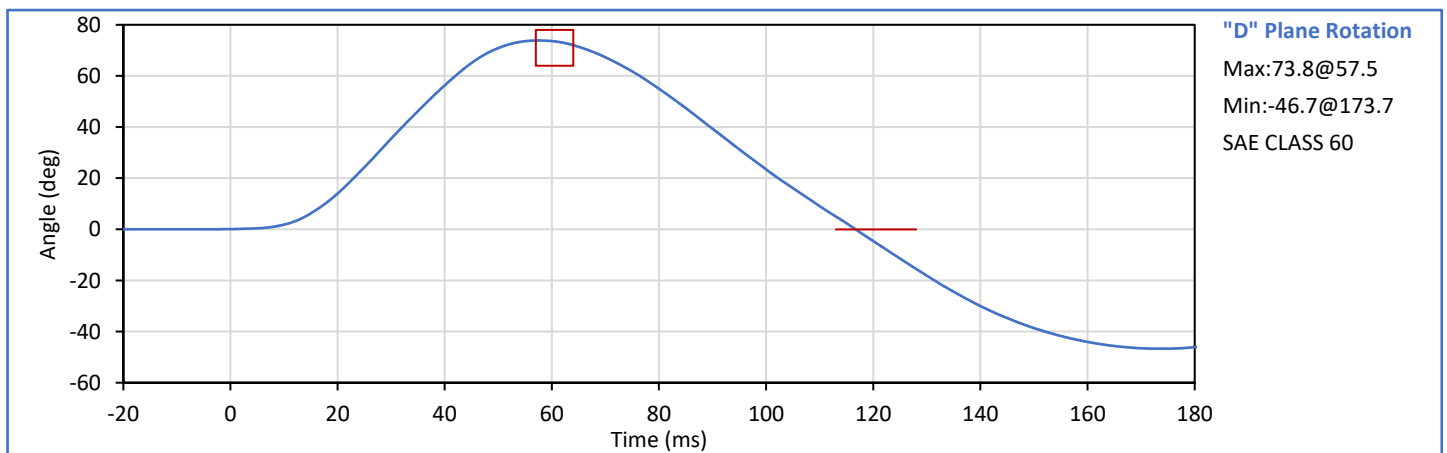
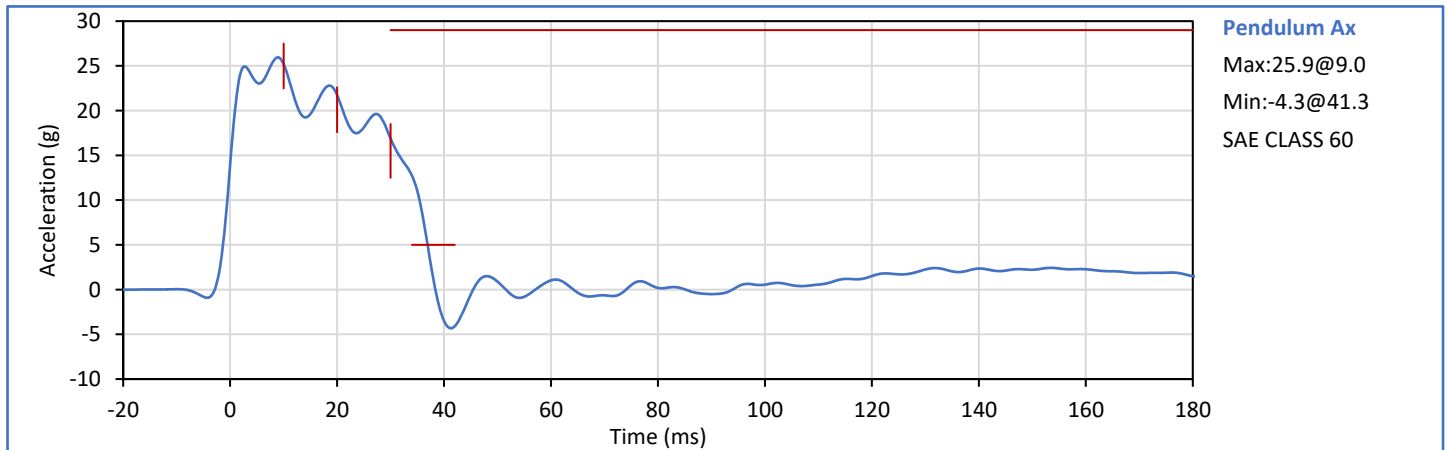
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Peak Resultant Acceleration	g	225.0	275.0	251.9	Pass
Peak Lateral Acceleration	g	-15.0	15.0	10.3	Pass
Oscillations After Main Pulse	%	0.0	10.0	0.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



Technician: J. Coronel
J. Coronel

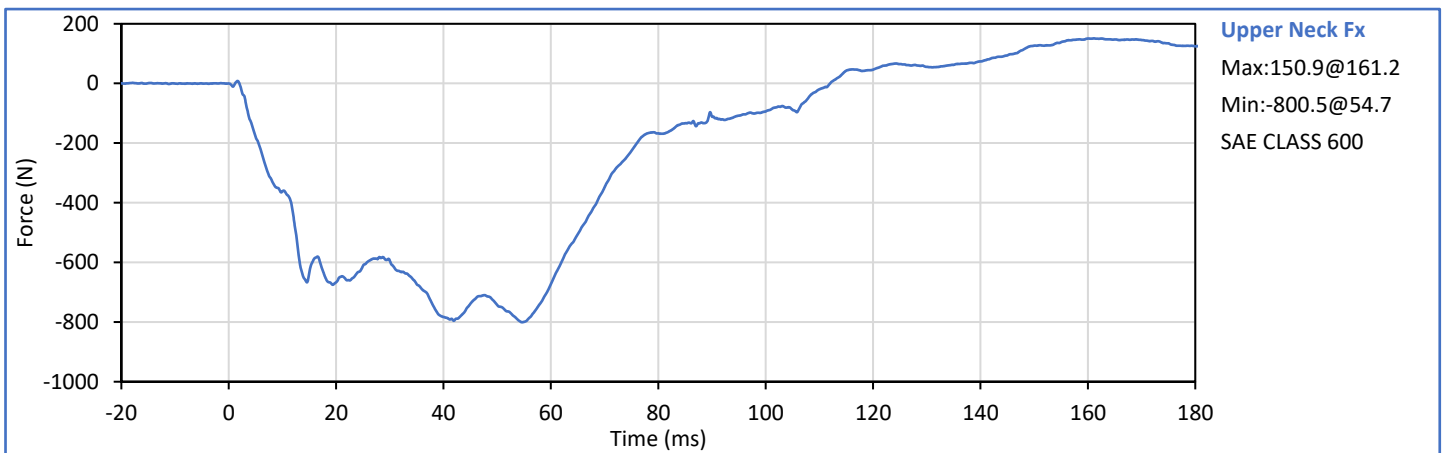
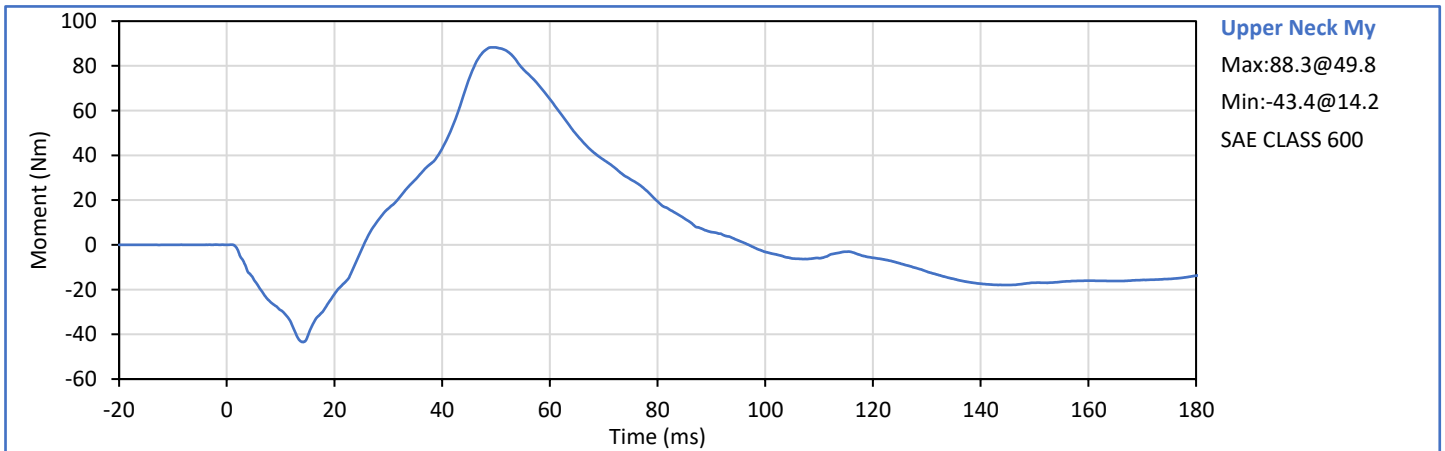
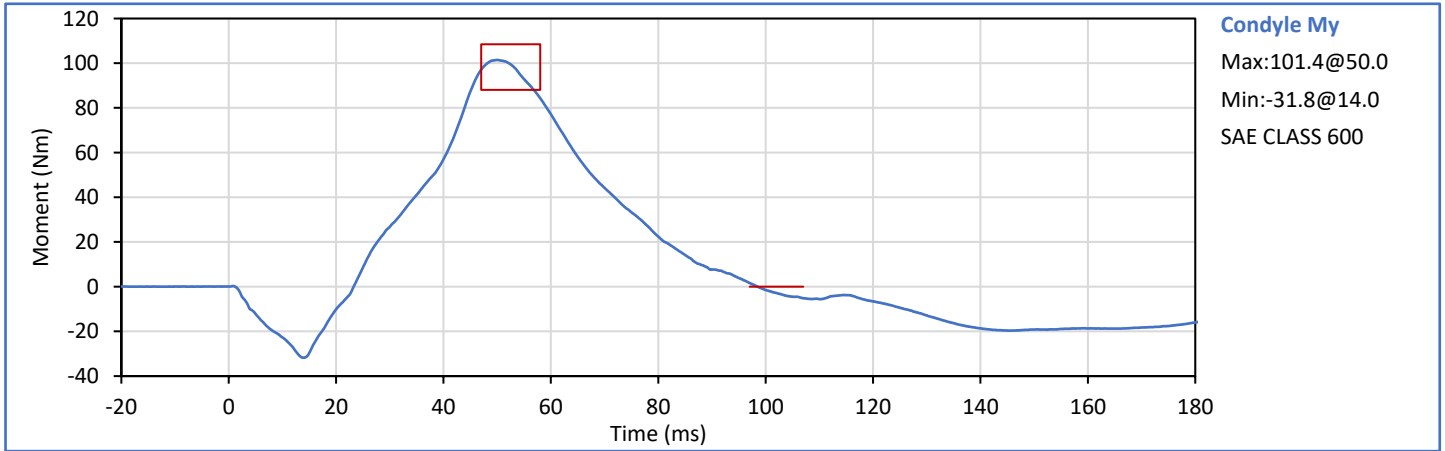
Approved By: J. Hernandez
J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Pendulum Velocity	m/s	6.89	7.13	7.04	Pass
Pendulum Deceleration at 10 ms	g	22.5	27.5	25.2	Pass
Pendulum Deceleration at 20 ms	g	17.6	22.6	21.8	Pass
Pendulum Deceleration at 30 ms	g	12.5	18.5	16.9	Pass
Peak Pendulum Decel After 30 ms	g	0.0	29.0	16.9	Pass
Deceleration Decay to Cross 5g	ms	34.0	42.0	36.9	Pass
"D" Plane Rotation peak	deg	64.0	78.0	73.8	Pass
	ms	57.0	64.0	57.5	Pass
"D" Plane Rotation Decay to Zero	ms	113.0	128.0	116.8	Pass
Moment About Occipital Condyle	Nm	88.1	108.5	101.4	Pass
	ms	47.0	58.0	50.0	Pass
Moment Decay, Peak to Zero	ms	97.0	107.0	98.5	Pass
Overall Test Results					Pass

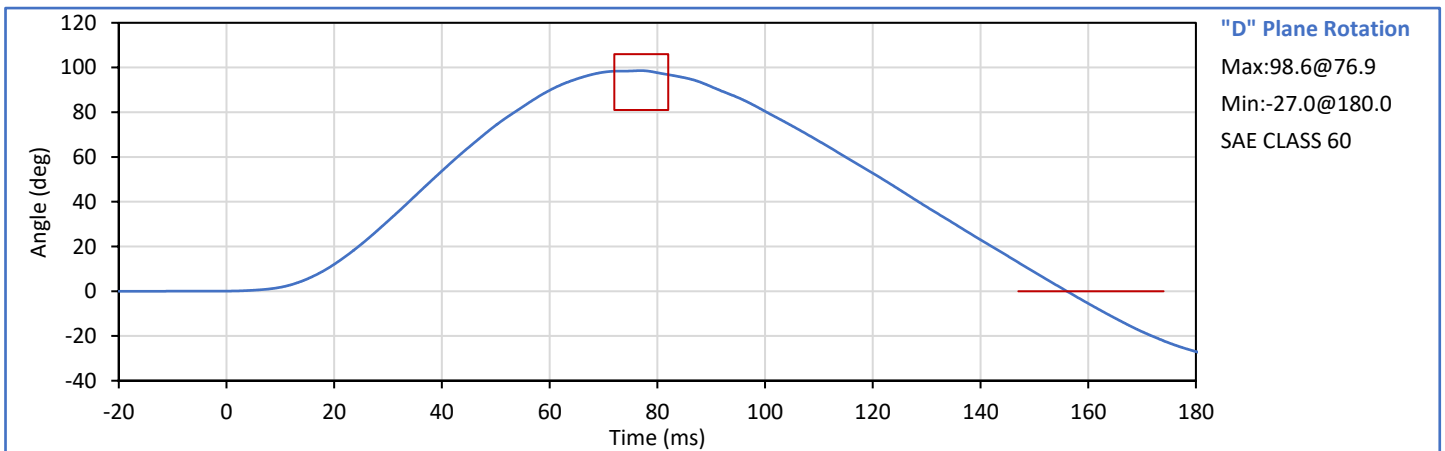
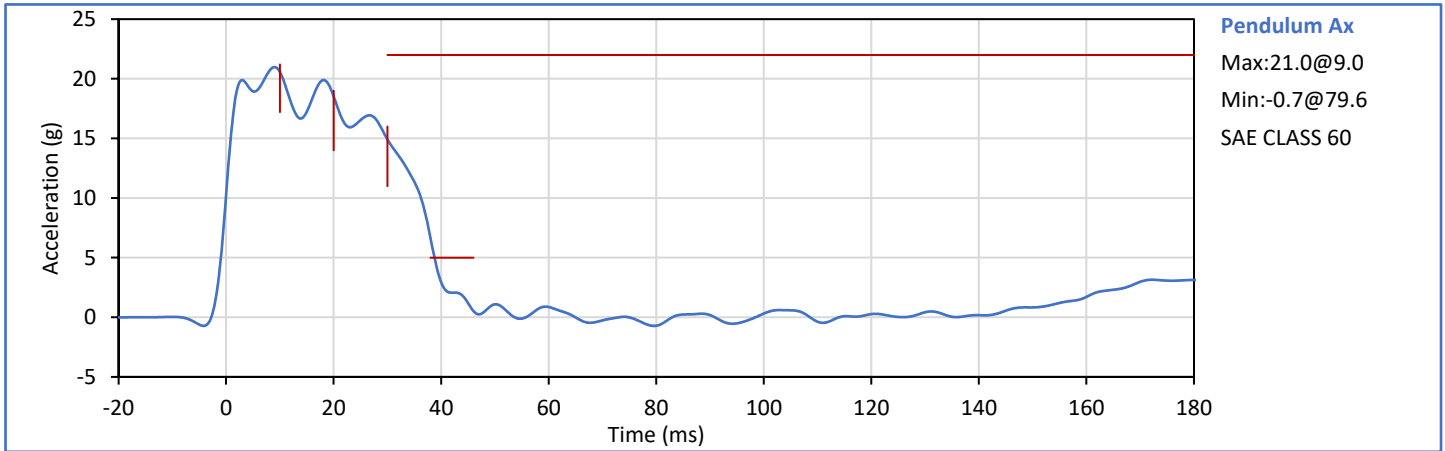


Technician: J. Coronel

Approved By: J. Hernandez

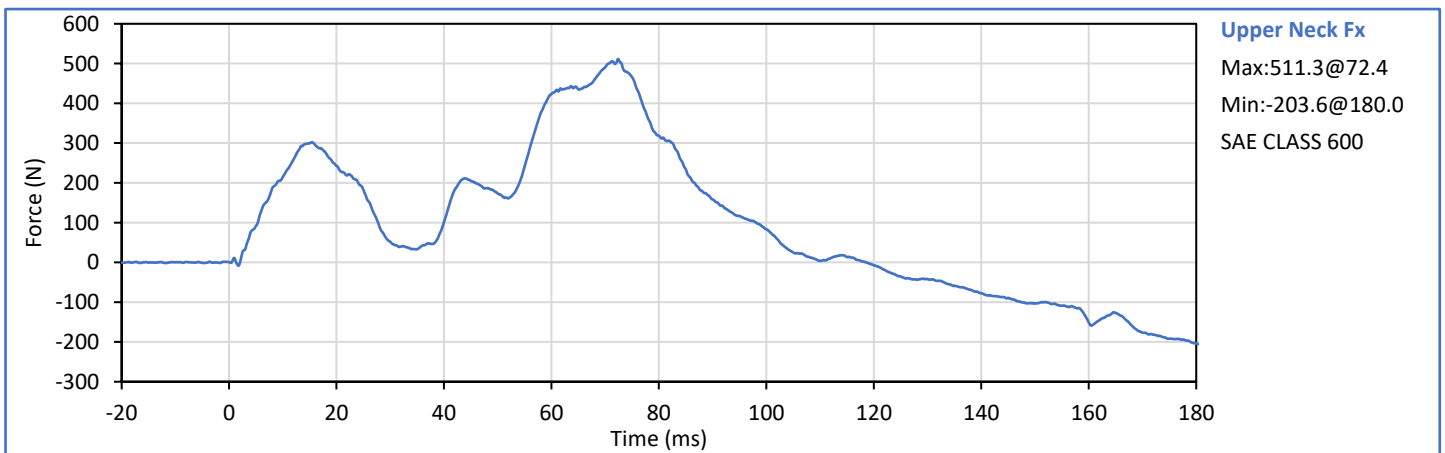
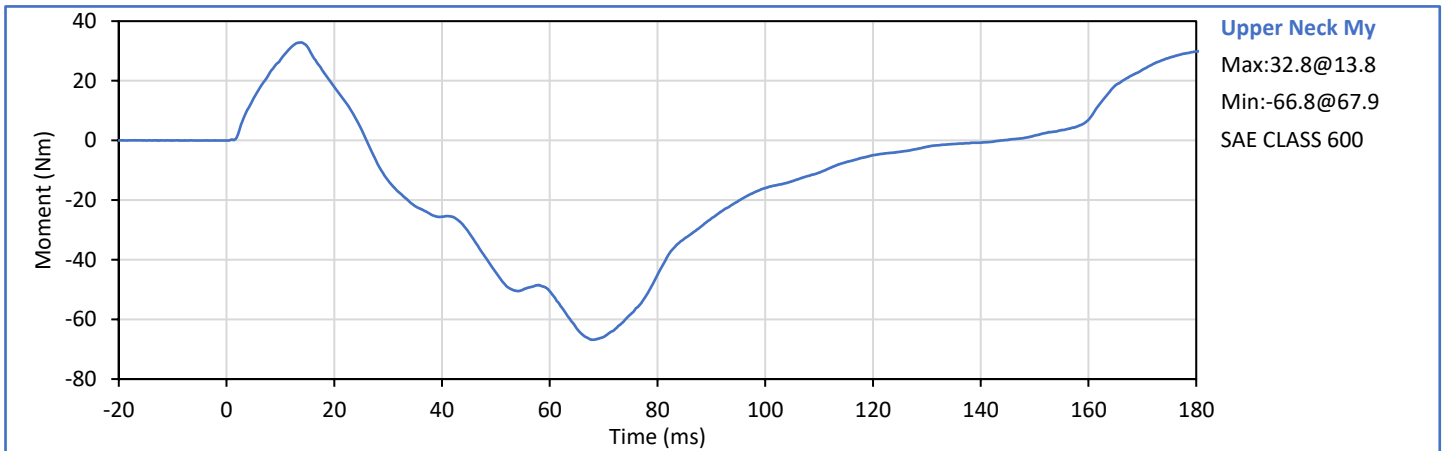
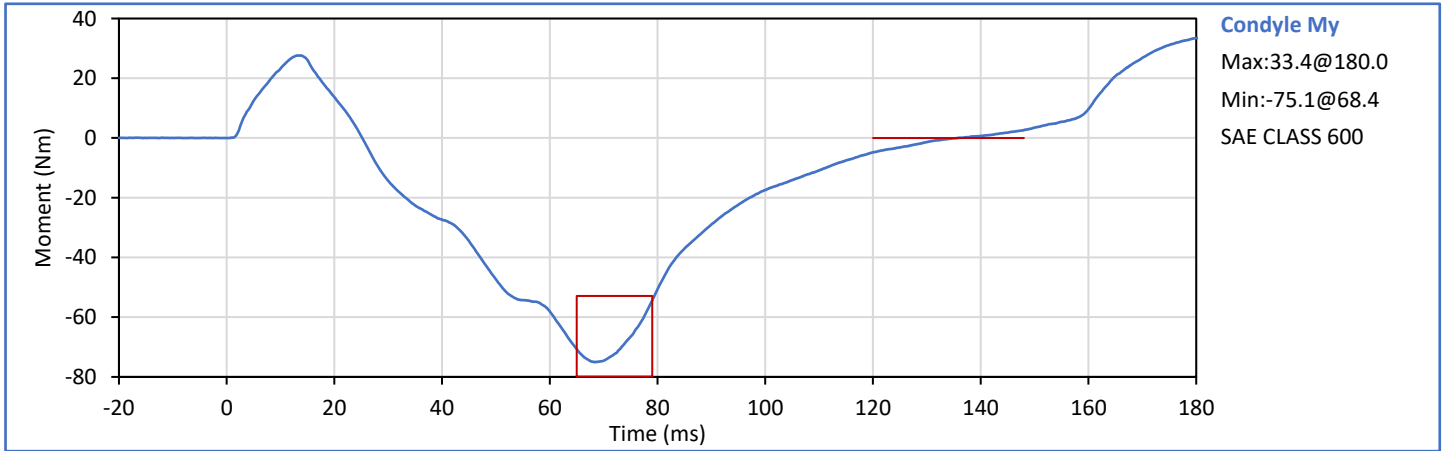


Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Pendulum Velocity	m/s	5.94	6.19	6.06	Pass
Pendulum Deceleration at 10 ms	g	17.2	21.2	20.6	Pass
Pendulum Deceleration at 20 ms	g	14.0	19.0	18.5	Pass
Pendulum Deceleration at 30 ms	g	11.0	16.0	14.9	Pass
Peak Pendulum Decel After 30 ms	g	0.0	22.0	14.9	Pass
Deceleration Decay to Cross 5g	ms	38.0	46.0	38.8	Pass
"D" Plane Rotation peak	deg	81.0	106.0	98.6	Pass
	ms	72.0	82.0	76.9	Pass
"D" Plane Rotation Decay to Zero	ms	147.0	174.0	156.1	Pass
Moment About Occipital Condyle	Nm	-79.9	-52.9	-75.1	Pass
	ms	65.0	79.0	68.4	Pass
Moment Decay, Peak to Zero	ms	120.0	148.0	135.9	Pass
Overall Test Results					Pass

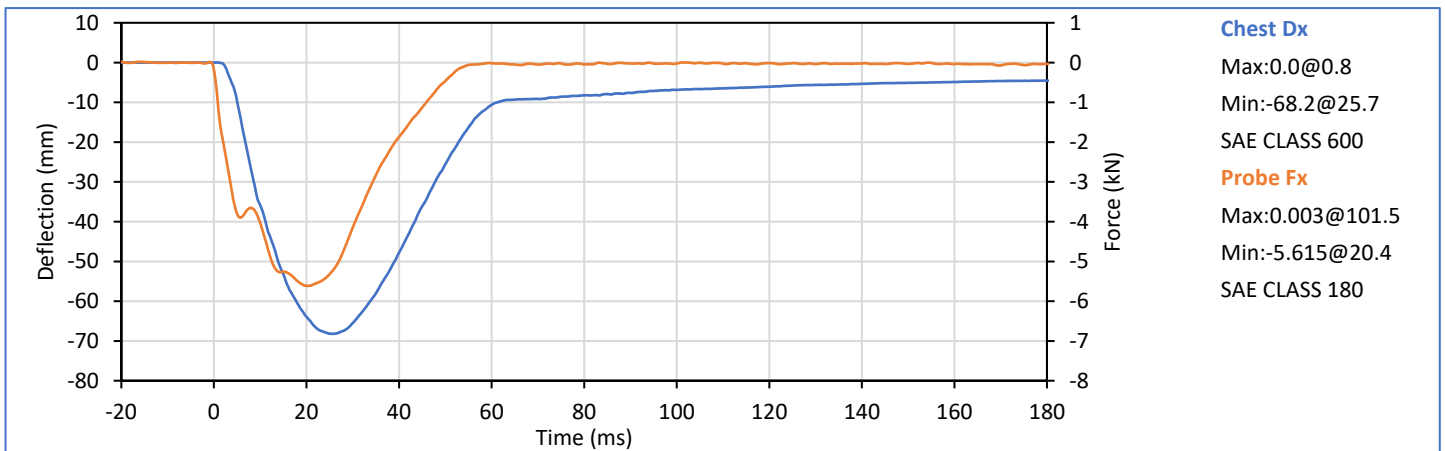
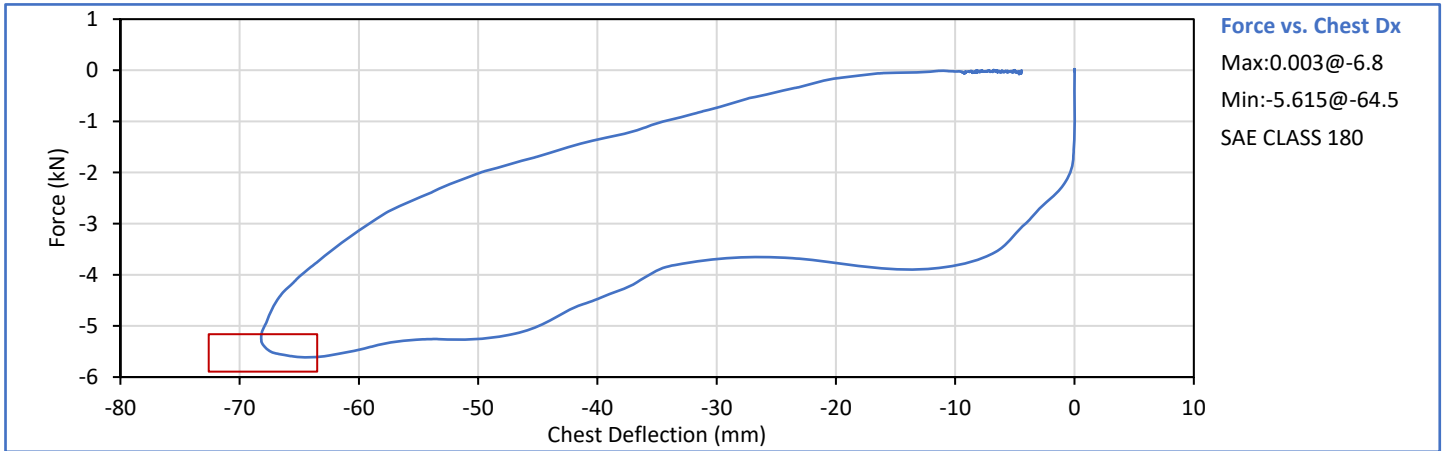


Technician: J. Coronel

Approved By: J. Hernandez



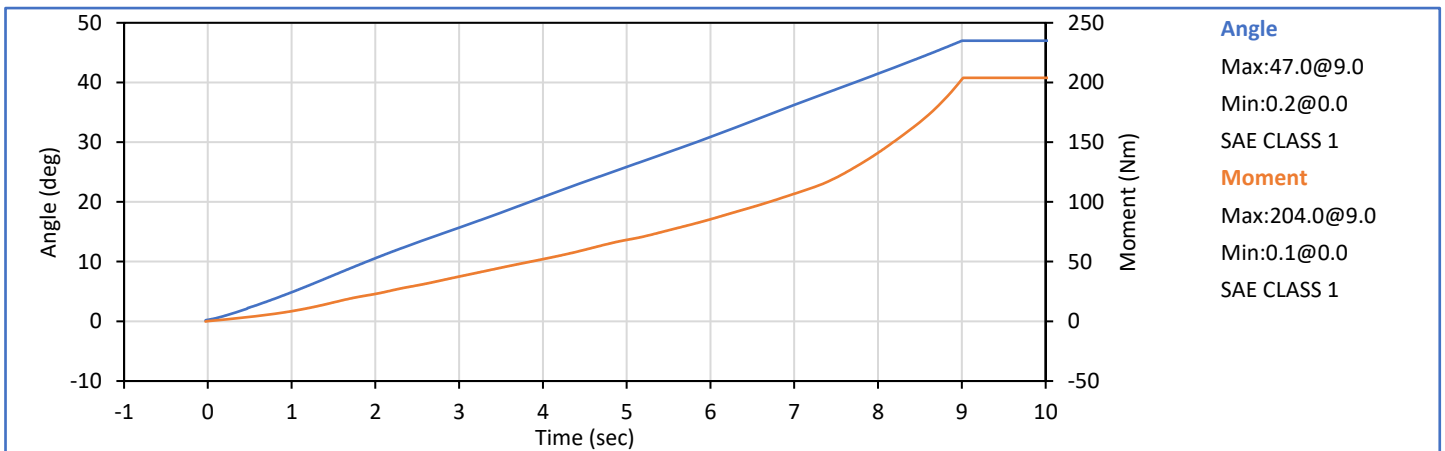
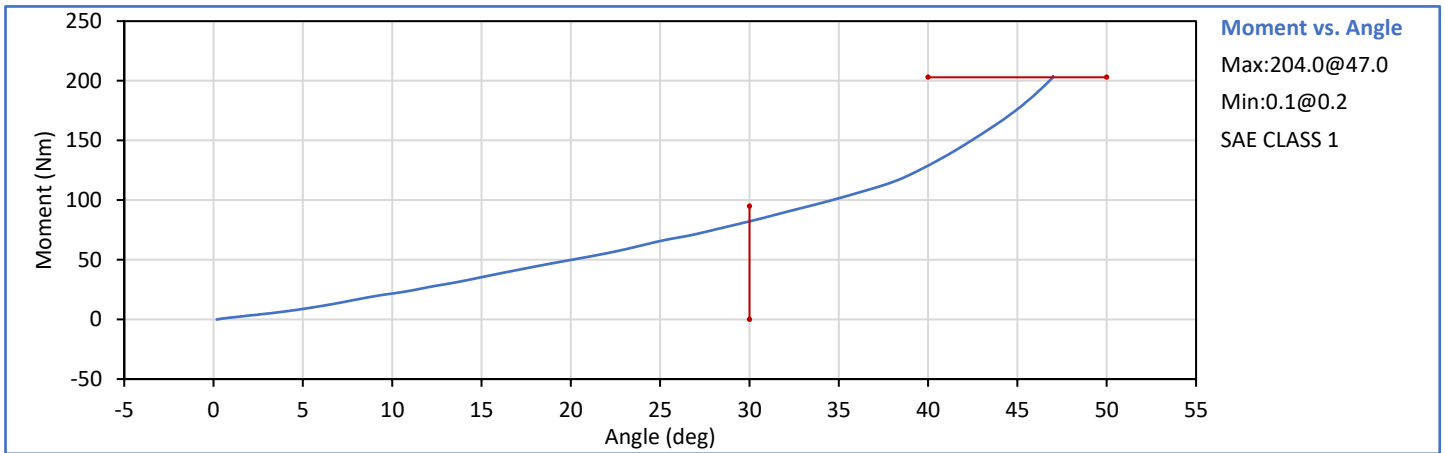
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
Probe Velocity	m/s	6.58	6.82	6.71	Pass
Peak Chest Deflection	mm	-72.6	-63.5	-68.2	Pass
Peak Probe Force	kN	-5.893	-5.159	-5.615	Pass
Internal Hysterisis	%	69.0	85.0	69.5	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

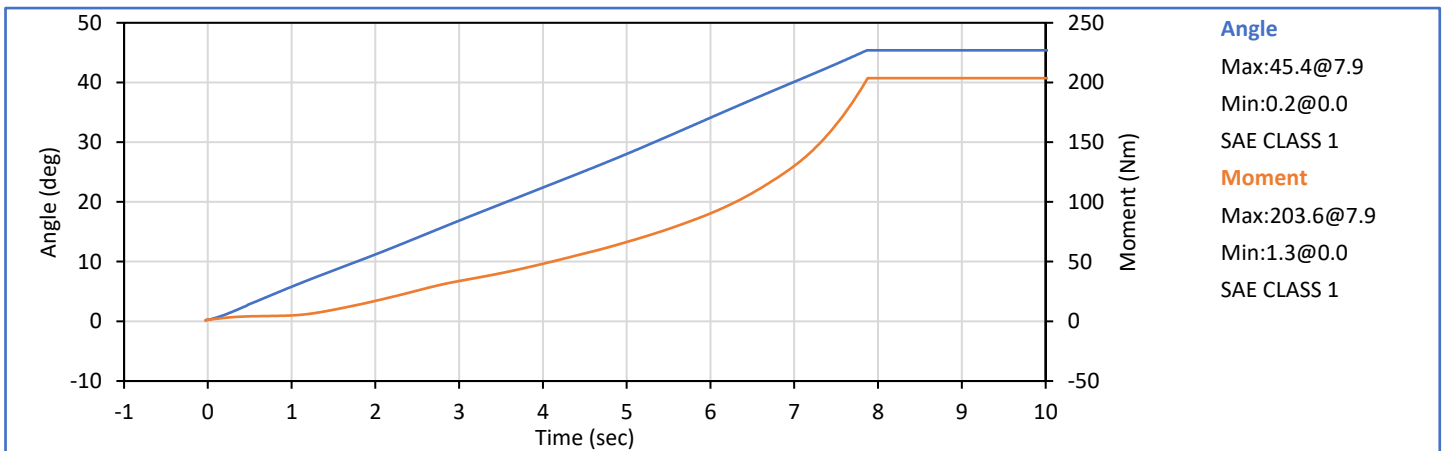
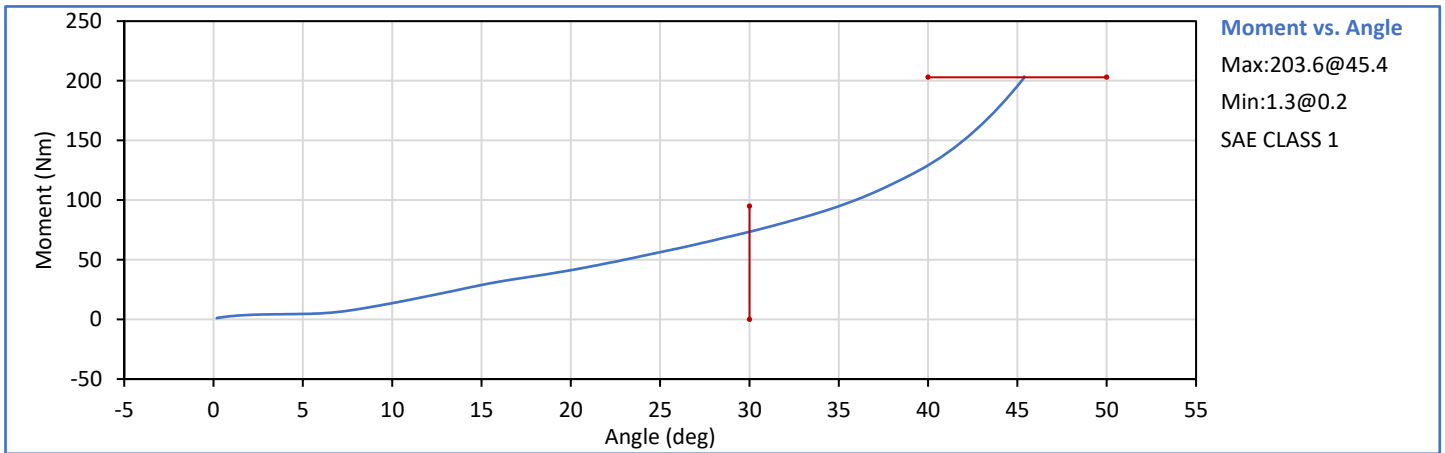
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Left Hip Rotation Rate	deg/s	5.0	10.0	5.2	Pass
Left Femur Torque at 30°	Nm	0.0	95.0	82.1	Pass
Left Hip Rotation at 203 Nm	deg	40.0	50.0	47.0	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

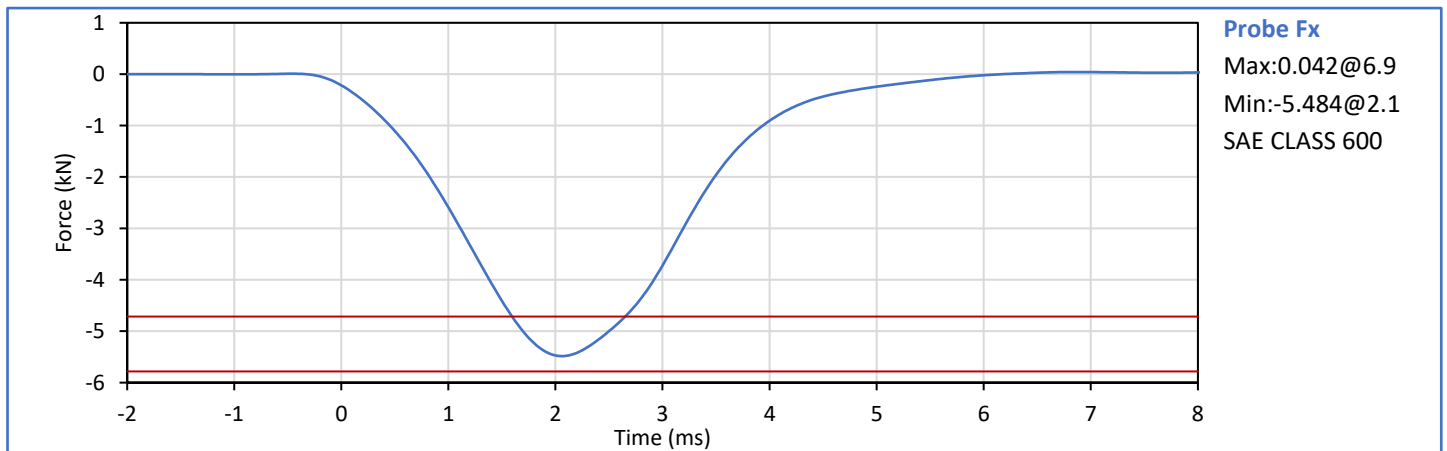
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Right Hip Rotation Rate	deg/s	5.0	10.0	5.7	Pass
Right Femur Torque at 30°	Nm	0.0	95.0	73.3	Pass
Right Hip Rotation at 203 Nm	deg	40.0	50.0	45.4	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

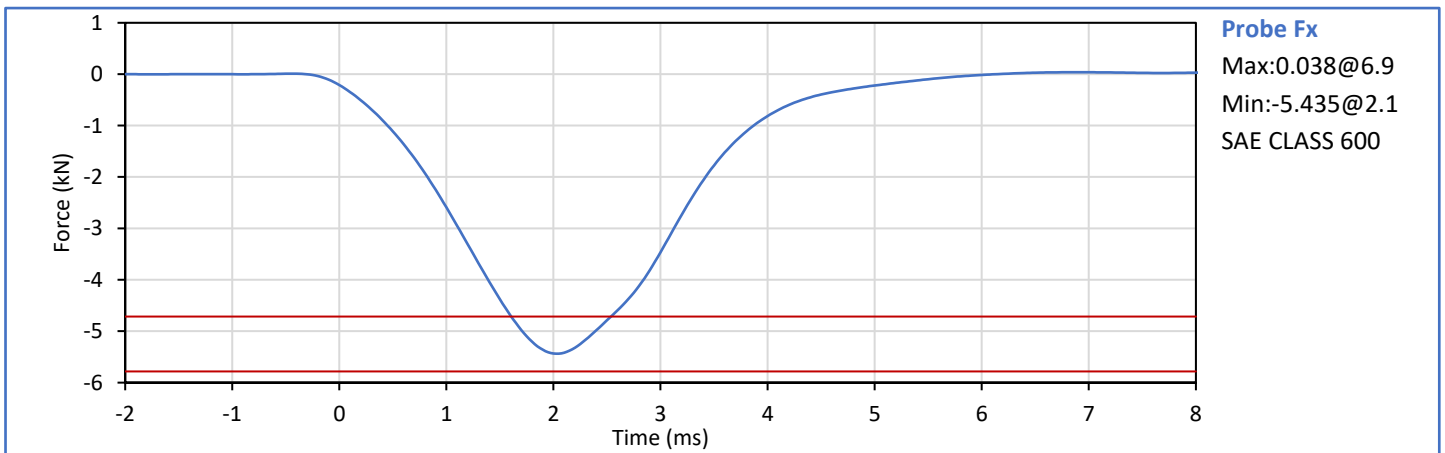
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Probe Velocity	m/s	2.070	2.130	2.098	Pass
Peak Resistive Force	kN	-5.782	-4.715	-5.484	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Probe Velocity	m/s	2.070	2.130	2.099	Pass
Peak Resistive Force	kN	-5.782	-4.715	-5.435	Pass
Overall Test Results					Pass



Technician: J. Coronel

Approved By: J. Hernandez

APPENDIX C
Post-Test ATD Qualification and Performance Verification
Hybrid III 5th Percentile Female ATD
S/N: DH1644

Dummy Item	Inspect for	Comments	Damage	Okay
Entire ATD	Perform general cleaning			✓
Outer Skin	Gashes, rips, cracks			✓
Head	Ballast secure			✓
	General appearance			✓
Neck bracket	Upper neck firmly attached to lower bracket			✓
Neck	Broken or cracked rubber			✓
	Looseness at the condyle joint			✓
Nodding block	Cracked or out of position			✓
Lumbar Spine	Broken or cracked rubber			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest Displ. Assembly	Bent shaft			✓
	Slider arm riding in track			✓
Sensors	Check cables for cuts, tears			✓
	Check for damaged insulation			✓
Accelerometer Mounting	Head mounting secure			✓
	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "resting" position			✓
Pelvis	Broken			✓
Other	Describe below as needed			✓

Describe any repairs or replacement of parts or other findings:

No Problems Found

Technician: _____

J. Coronel

Approved By: _____

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
A - Total sitting height	mm	775	800	793	Pass
B - Shoulder pivot height	mm	432	457	450	Pass
C - 'H' point height	mm	81	86	86	Pass
D - 'H' point location from backline	mm	145	150	149	Pass
E - Shoulder pivot from backline	mm	69	84	80	Pass
F - Thigh clearance	mm	119	135	125	Pass
G - Back of elbow to wrist pivot	mm	244	259	256	Pass
H - Head back to backline	mm	41	46	44	Pass
I - Shoulder to elbow length	mm	277	297	291	Pass
J - Elbow rest height	mm	183	203	201	Pass
K - Buttock to knee length	mm	521	546	535	Pass
L - Popliteal length	mm	356	376	364	Pass
M - Knee pivot height	mm	394	419	402	Pass
N - Buttock popliteal length	mm	414	439	430	Pass
O - Chest depth without jacket	mm	175	191	186	Pass
P - Foot length	mm	219	234	228	Pass
R - Buttock to Knee Pivot Length	mm	457	483	474	Pass
S - Head Breadth	mm	137	147	142	Pass
T - Head Depth	mm	178	188	186	Pass
U - Hip Breadth	mm	300	315	306	Pass
V - Shoulder breadth	mm	351	366	360	Pass
W - Foot breadth	mm	79	94	91	Pass
X - Head circum.	mm	528	549	542	Pass
Y - Chest circum. (w/chest jacket)	mm	851	881	869	Pass
Z - Waist circum.	mm	760	790	778	Pass
AA - Location for chest circum.	mm	333	358	341	Pass
BB - Location for waist circum.	mm	160	170	164	Pass
Overall Test Results					Pass

Technician:



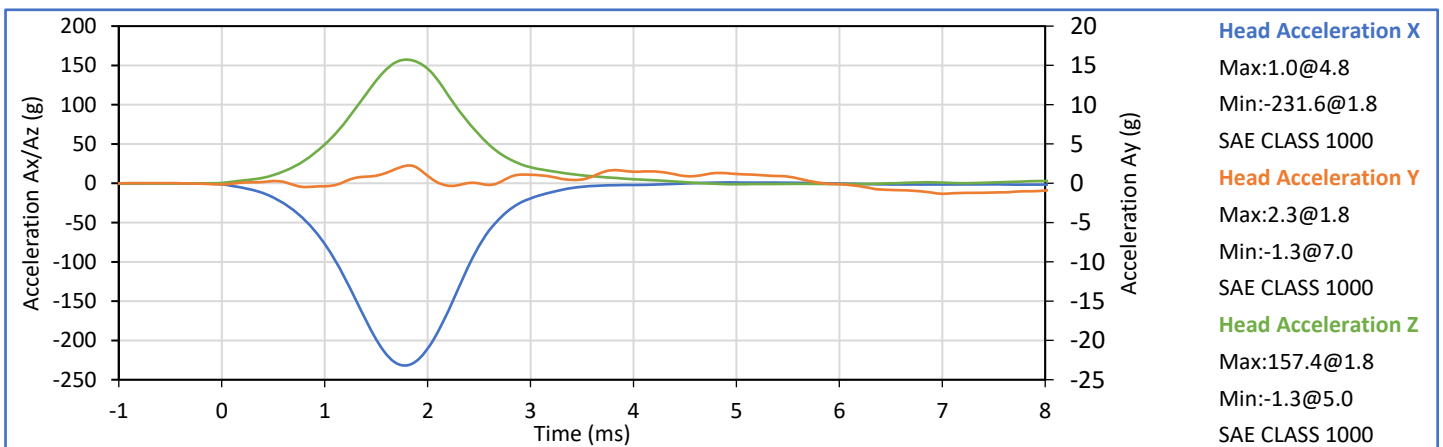
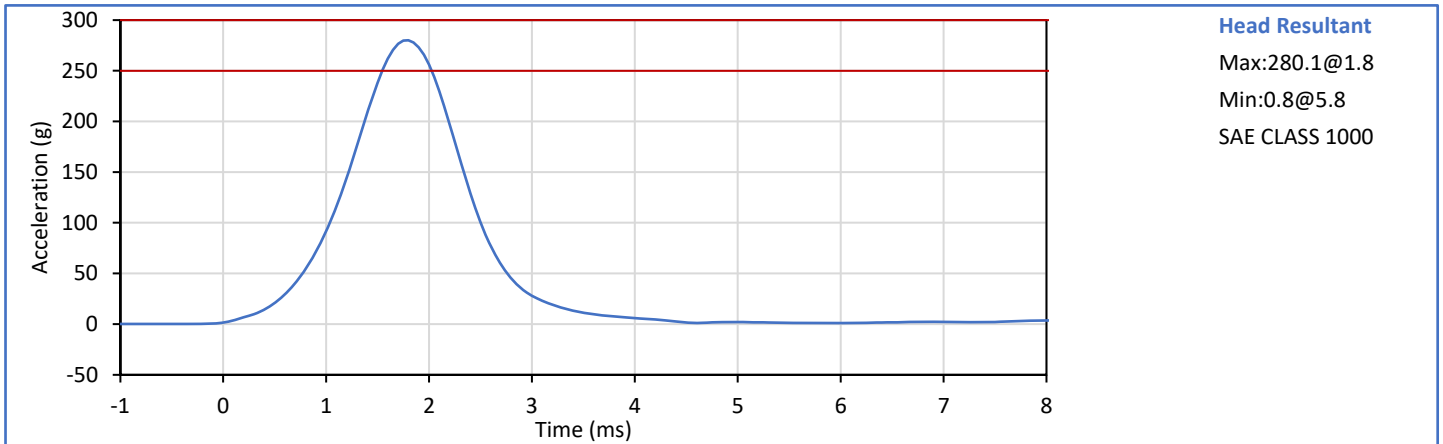
J. Coronel

Approved By:




J. Hernandez

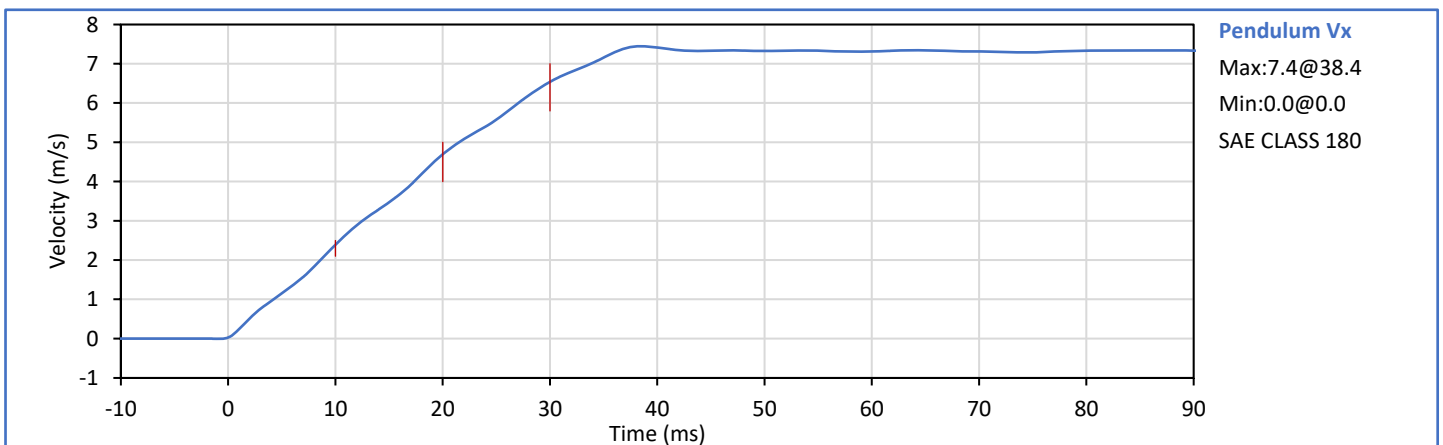
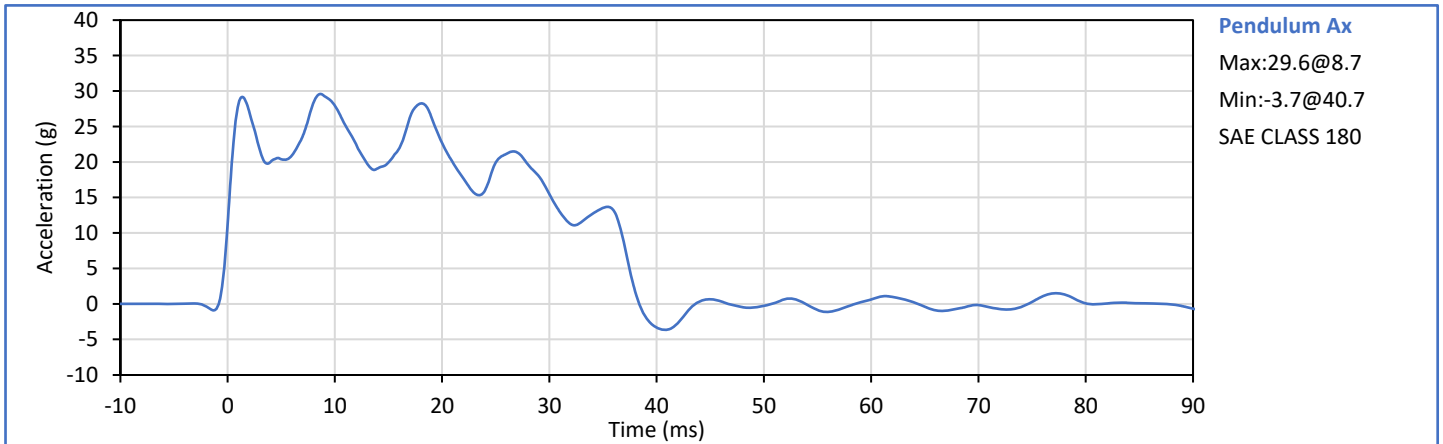
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.6	Pass
Laboratory Humidity	%	10	70	20	Pass
Peak Resultant Acceleration	g	250.0	300.0	280.1	Pass
Peak Lateral Acceleration	g	-15.0	15.0	2.3	Pass
Oscillations After Main Pulse	%	0.0	10.0	1.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



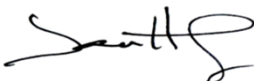
Technician: 
J. Coronel

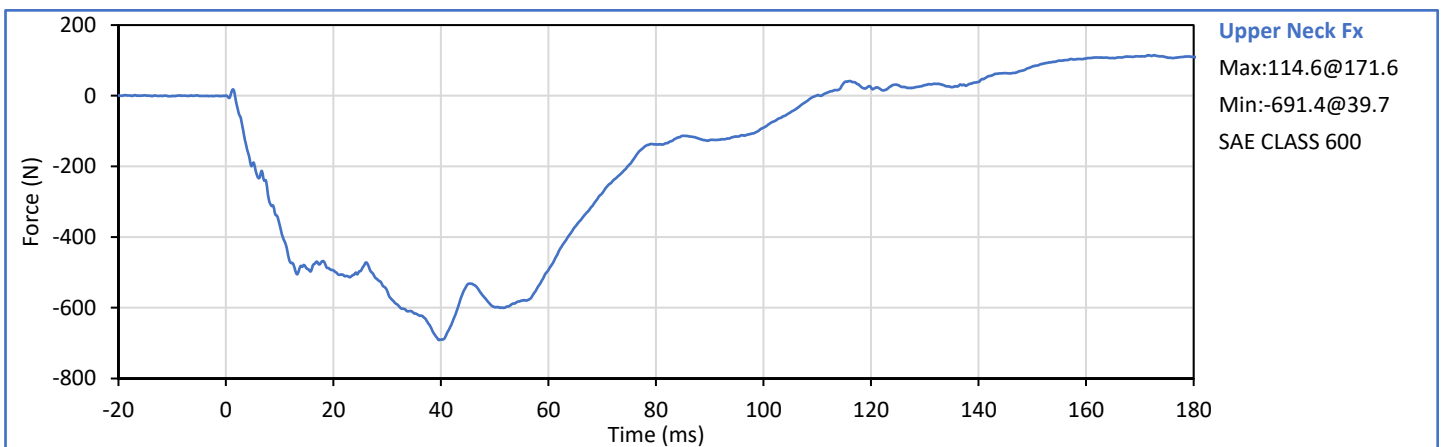
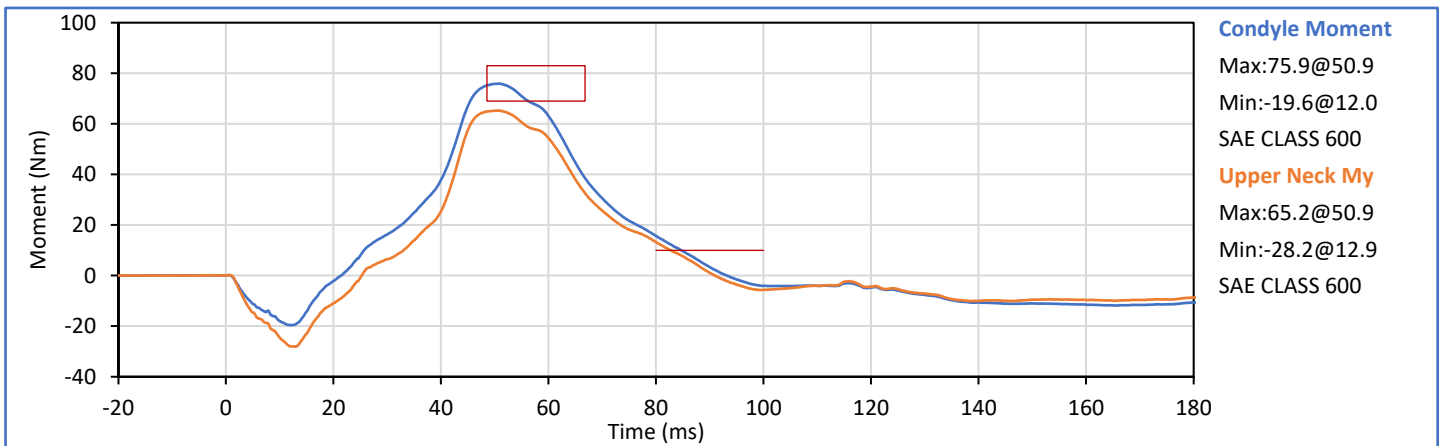
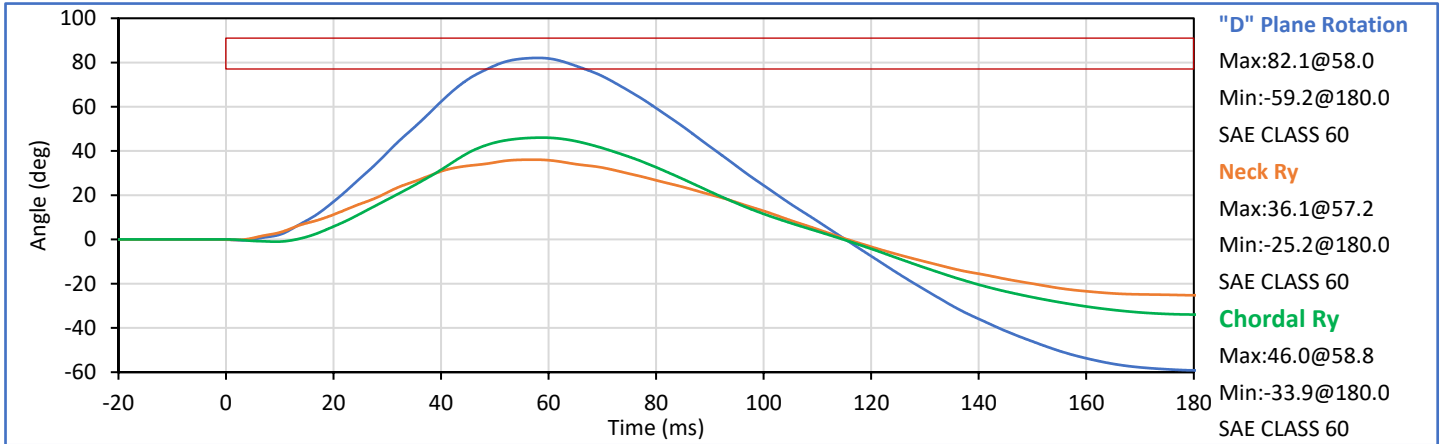
Approved By: 
J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Humidity	%	10	70	20	Pass
Pendulum Velocity	m/s	6.89	7.13	7.05	Pass
Pendulum Velocity at 10 ms	m/s	2.10	2.50	2.39	Pass
Pendulum Velocity at 20 ms	m/s	4.00	5.00	4.69	Pass
Pendulum Velocity at 30 ms	m/s	5.80	7.00	6.54	Pass
Peak "D" Plane Rotation	deg	77.0	91.0	82.1	Pass
Peak Moment in Rotation	Nm	69.0	83.0	75.9	Pass
Positive Moment Decay to 10 Nm	ms	80.0	100.0	84.7	Pass
Overall Test Results					Pass

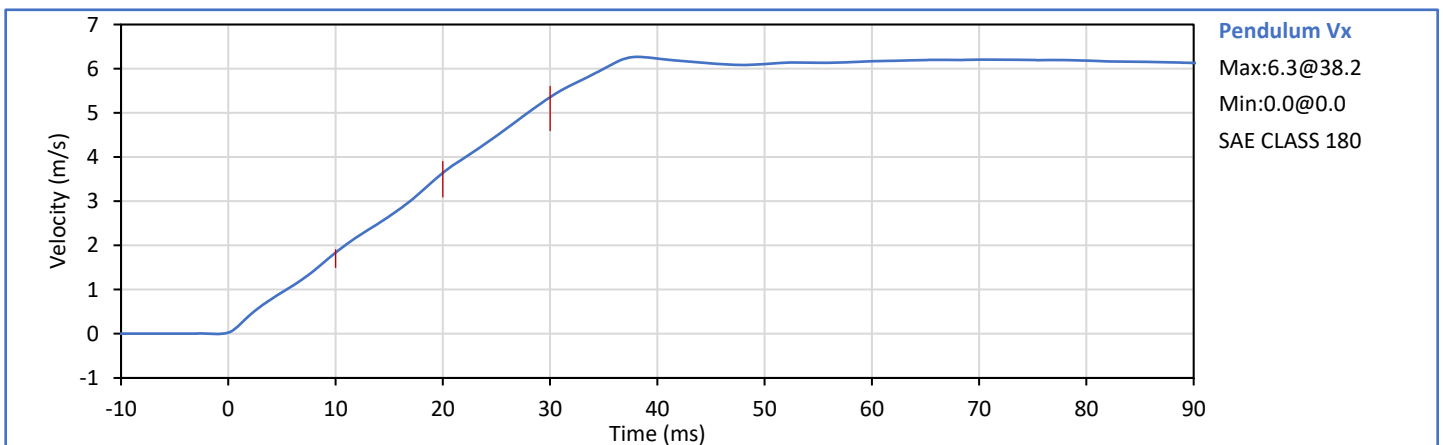
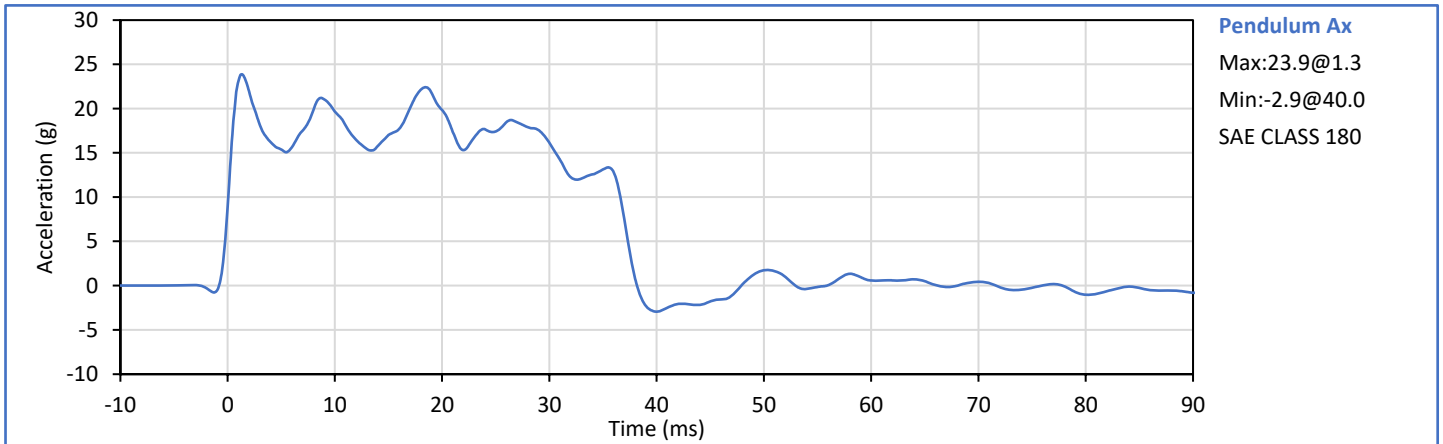


Technician: 
J. Coronel


Approved By: 
J. Hernandez

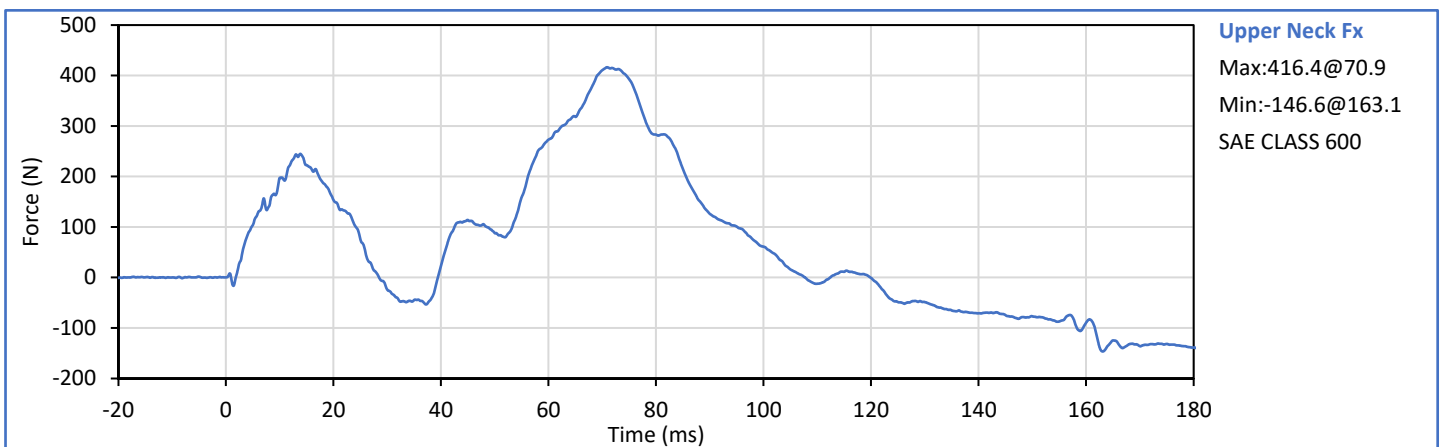
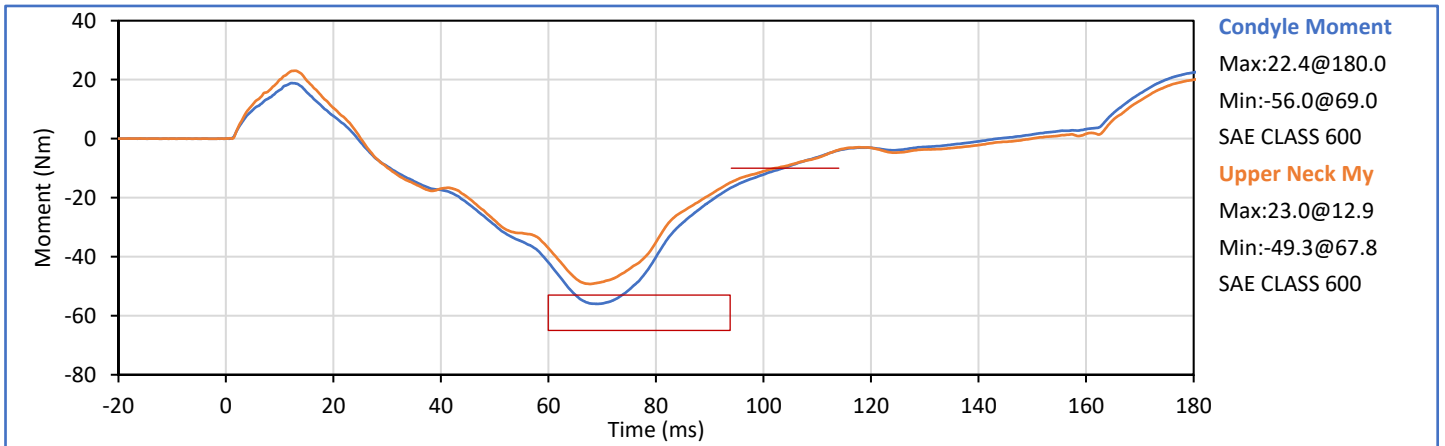
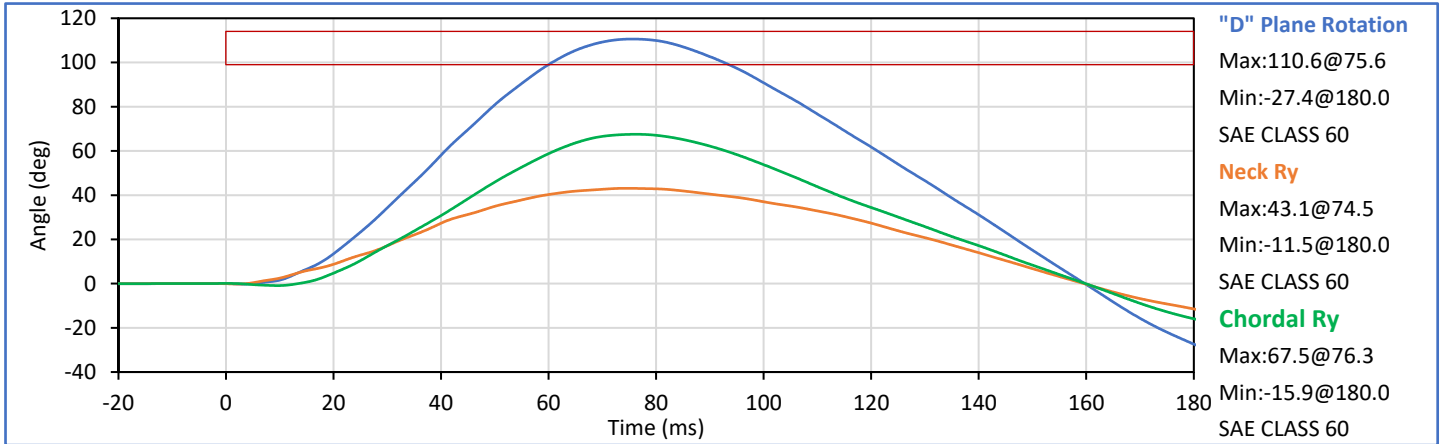


Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Pendulum Velocity	m/s	5.95	6.19	6.11	Pass
Pendulum Velocity at 10 ms	m/s	1.50	1.90	1.83	Pass
Pendulum Velocity at 20 ms	m/s	3.10	3.90	3.64	Pass
Pendulum Velocity at 30 ms	m/s	4.60	5.60	5.35	Pass
Peak "D" Plane Rotation	deg	99.0	114.0	110.6	Pass
Peak Moment in Rotation	Nm	-65.0	-53.0	-56.0	Pass
Negative Moment Decay to -10 Nm	ms	94.0	114.0	103.7	Pass
Overall Test Results					Pass

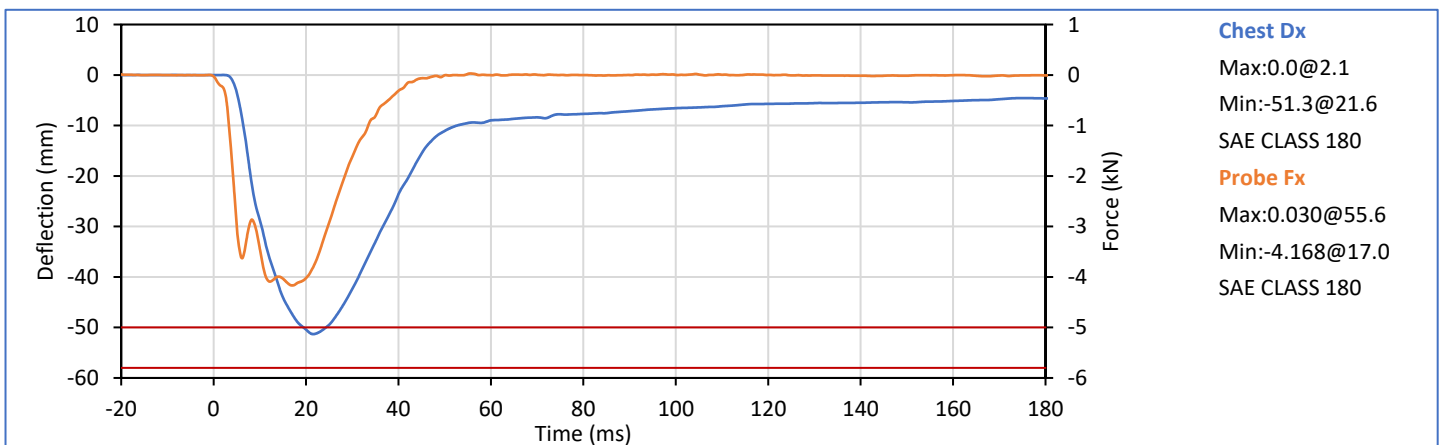
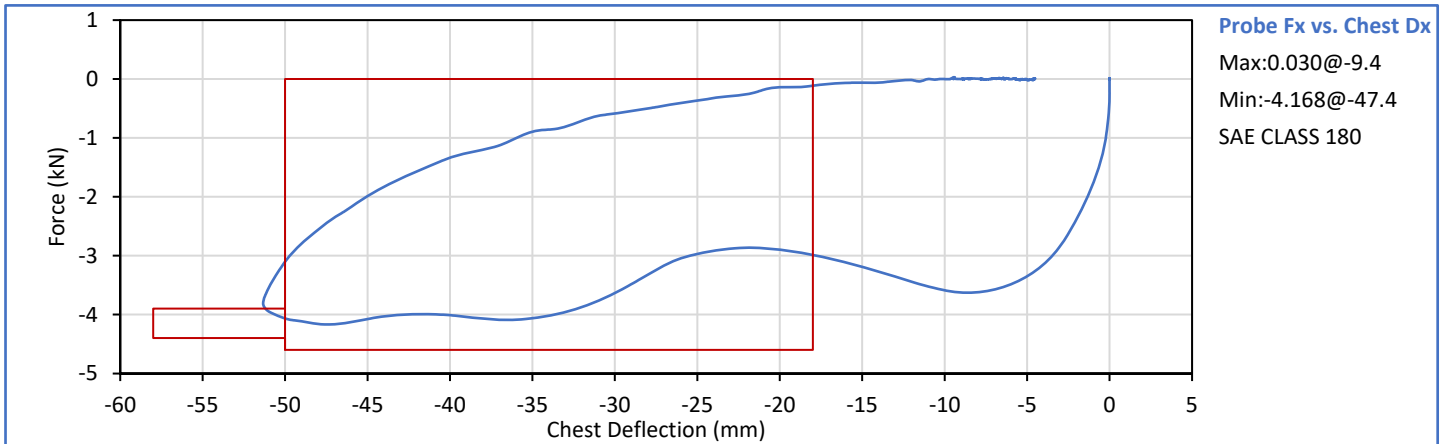


Technician: 
J. Coronel

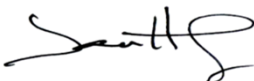
Approved By: 
J. Hernandez



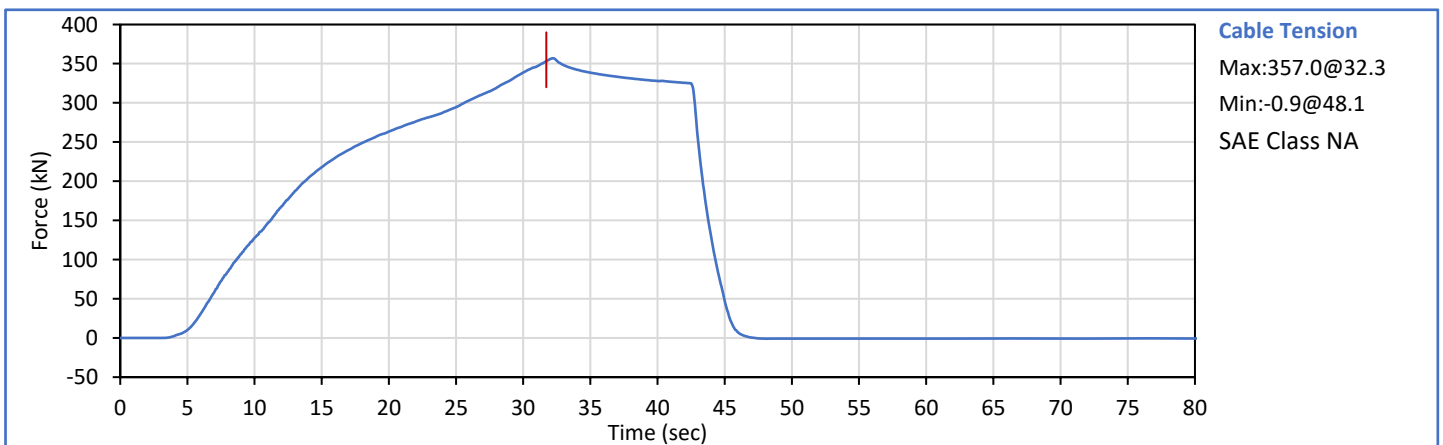
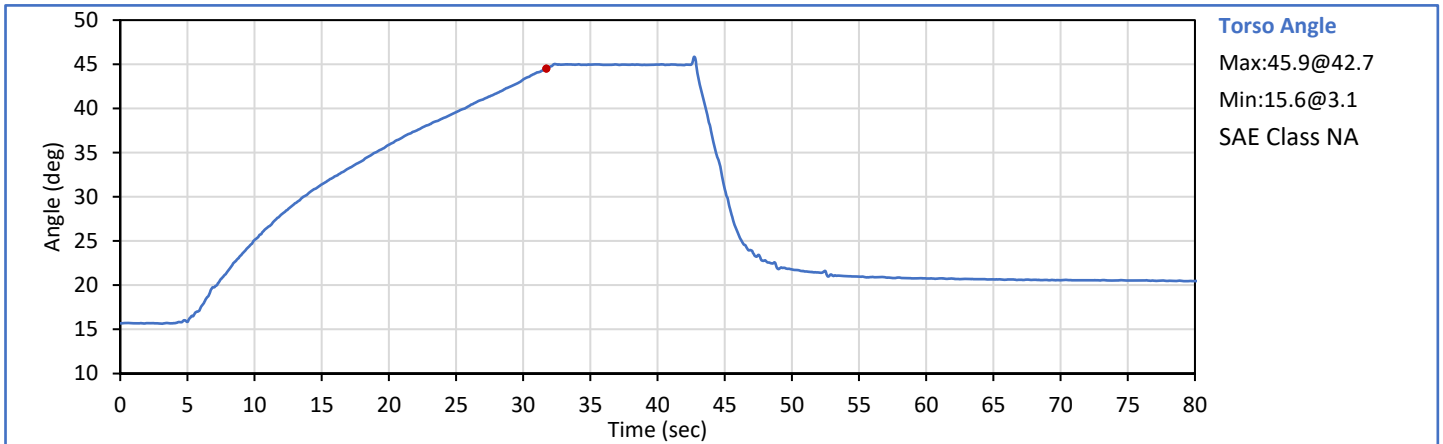
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory RelativeHumidity	%	10	70	20	Pass
Probe Velocity	m/s	6.59	6.83	6.70	Pass
Peak Chest Deflection	mm	-58.0	-50.0	-51.3	Pass
Peak Probe Force, 50 and 58 mm	kN	-4.400	-3.900	-4.068	Pass
Peak Probe Force, 18 and 50 mm	kN	-4.600	0.000	-4.168	Pass
Internal Hysteresis	%	69.0	85.0	78.2	Pass
Overall Test Results					Pass



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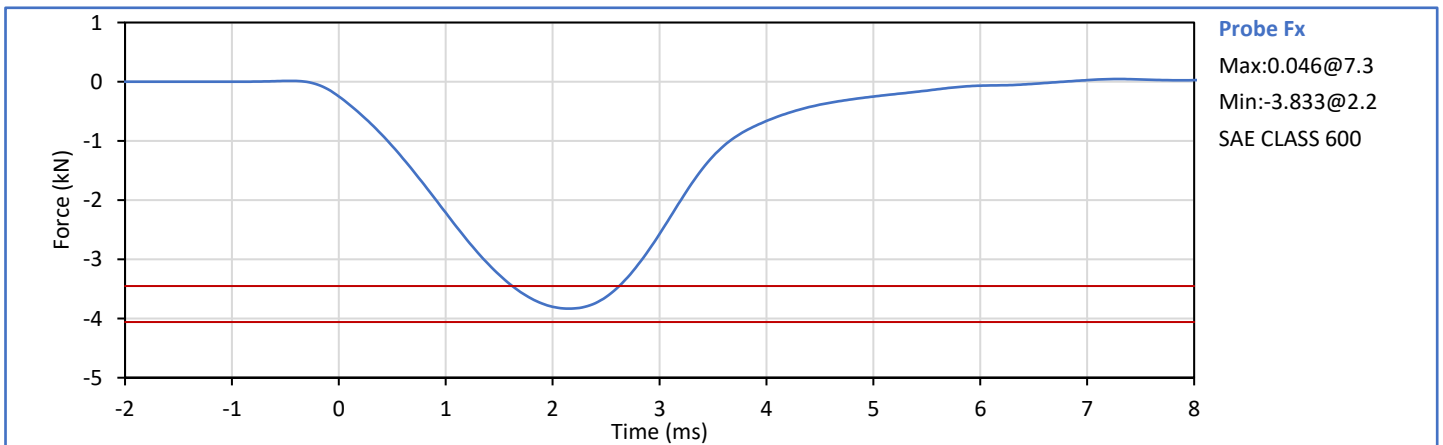
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Humidity	%	10	70	22	Pass
Orientation Angle	deg	0.0	20.0	14.8	Pass
Test Initial Angle	deg	11.0	19.0	15.7	Pass
Peak Force at 45° (+/-0.5°)	N	320.0	390.0	353.0	Pass
Torso Flexion Rate	deg/s	0.50	1.50	1.08	Pass
Final Reference Plane Angle	deg	-8.0	8.0	4.5	Pass
Overall Test Results					Pass



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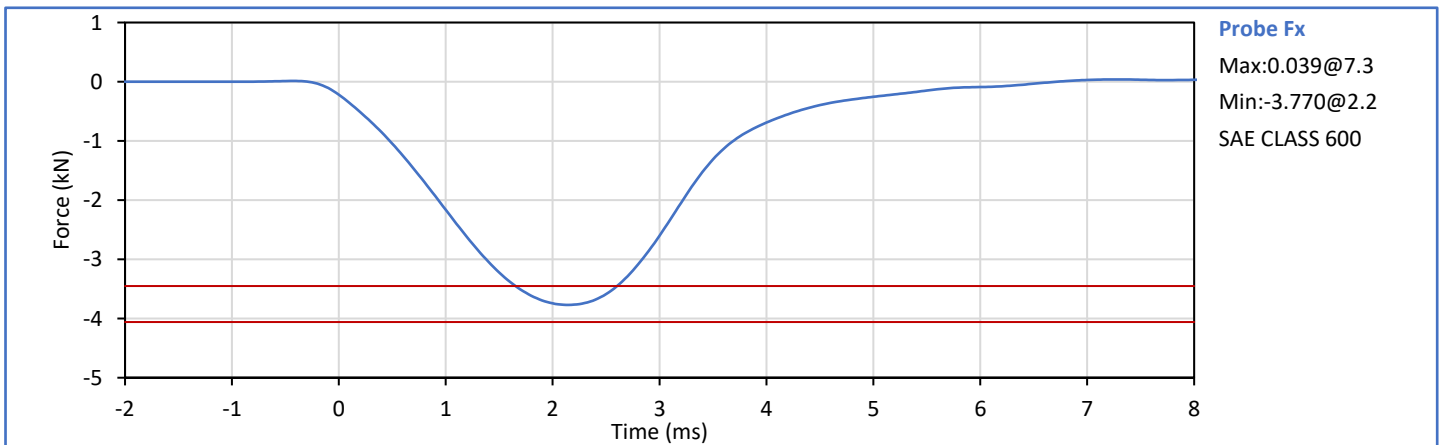
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Relative Humidity	%	10	70	20	Pass
Probe Velocity	m/s	2.070	2.130	2.105	Pass
Peak Resistive Force	kN	-4.060	-3.450	-3.833	Pass
Overall Test Results					Pass



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Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.3	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Probe Velocity	m/s	2.070	2.130	2.101	Pass
Peak Resistive Force	kN	-4.060	-3.450	-3.770	Pass
Overall Test Results					Pass



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APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

Table 1 - Driver ATD Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Head Acceleration X Primary	P49209	Endevco	7264C-2k	2024-11-16
Head Acceleration Y Primary	P49228	Endevco	7264C-2k	2024-11-16
Head Acceleration Z Primary	P50101	Endevco	7264C-2k	2024-11-16
Head Acceleration X Redundant	P50103	Endevco	7264C-2k	2024-11-16
Head Acceleration Y Redundant	P49210	Endevco	7264C-2k	2024-11-16
Head Acceleration Z Redundant	P58713	Endevco	7264C-2k	2024-11-16
Head Rotation Rate X	ARS7426	DTS	ARS PRO-8k (2kHz)	2024-07-26
Head Rotation Rate Y	ARS7587	DTS	ARS PRO-8k (2kHz)	2024-07-31
Head Rotation Rate Z	ARS7480	DTS	ARS PRO-8k (2kHz)	2024-07-31
Upper Neck Force X	1646 Fx	R.A. Denton	1716A	2024-09-20
Upper Neck Force Y	1646 Fy	R.A. Denton	1716A	2024-09-20
Upper Neck Force Z	1646 Fz	R.A. Denton	1716A	2024-09-20
Upper Neck Moment X	1646 Mx	R.A. Denton	1716A	2024-09-20
Upper Neck Moment Y	1646 My	R.A. Denton	1716A	2024-09-20
Upper Neck Moment Z	1646 Mz	R.A. Denton	1716A	2024-09-20
Chest Acceleration X Primary	P52072	Endevco	7264C-2k	2024-11-15
Chest Acceleration Y Primary	P49208	Endevco	7264C-2k	2024-11-15
Chest Acceleration Z Primary	P51264	Endevco	7264C-2k	2024-11-15
Chest Acceleration X Redundant	P49461	Endevco	7264C-2k	2024-11-15
Chest Acceleration Y Redundant	P58774	Endevco	7264C-2k	2024-11-15
Chest Acceleration Z Redundant	P49168	Endevco	7264C-2k	2024-11-15
Chest Deflection	0606 (H3)	Servo	14CBI-3615	2024-11-16
Pelvis Acceleration X	P49238	Endevco	7264C-2k	2024-11-15
Pelvis Acceleration Y	P51278	Endevco	7264C-2KTZ	2024-11-15
Pelvis Acceleration Z	P50087	Endevco	7264C-2k	2024-11-15
Left Femur Force Z	DT0999 (pri)	Humanetics	3821JLN2	2024-07-25
Right Femur Force Z	DS4141 (pri)	Humanetics	3821JLN2	2024-07-25
Left Femur Force Z Redundant	DT0999 (red)	Humanetics	3821JLN2	2024-07-25
Right Femur Force Z Redundant	DS4141 (red)	Humanetics	3821JLN2	2024-07-25
Left Upper Tibia Moment X	374 Mx	R.A. Denton	3643	2024-05-24
Left Upper Tibia Moment Y	374 My	R.A. Denton	3643	2024-05-24
Left Upper Tibia Force Z	374 Fz	R.A. Denton	3643	2024-05-24
Left Lower Tibia Moment X	DH3317 Mx	FTSS	IF-853	2024-05-24
Left Lower Tibia Moment Y	DH3317 My	FTSS	IF-853	2024-05-24
Left Lower Tibia Force Z	DH3317 Fz	FTSS	IF-853	2024-05-24
Right Upper Tibia Moment X	414 Mx	R.A. Denton	3643	2024-05-24
Right Upper Tibia Moment Y	414 My	R.A. Denton	3643	2024-05-24
Right Upper Tibia Force Z	414 Fz	R.A. Denton	3643	2024-05-24
Right Lower Tibia Moment X	405 Mx	R.A. Denton	3644	2024-05-24
Right Lower Tibia Moment Y	405 My	R.A. Denton	3644	2024-05-24
Right Lower Tibia Force Z	405 Fz	R.A. Denton	3644	2024-05-24
Left Ankle Acceleration X	03E20-N09	Entran	EGEB6Q-2k	2024-11-16
Left Ankle Acceleration Z	P68074	Endevco	7264C-2k	2024-11-16
Left Toe Acceleration Z	03H07-Z10	Entran	EGEB6Q-2k	2024-11-16
Right Ankle Acceleration X	06E20-R08	Entran	EGEB6Q-2k	2024-11-16
Right Ankle Acceleration Z	06A07-R08	Entran	EGEB6Q-2k	2024-11-16
Right Toe Acceleration Z	02I10-N27	Entran	EGEB6Q-2k	2024-11-16
Seat Belt Outside Lap Force	251	FTSS	IF-964	2024-03-27
Seat Belt Upper Diagonal Force	315	FTSS	IF-964	2024-03-26

Table 2 - Right Front Passenger ATD Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Head Acceleration X Primary	P51889	Endevco	7264C-2k	2024-11-13
Head Acceleration Y Primary	P51861	Endevco	7264C-2k	2024-11-13
Head Acceleration Z Primary	P52077	Endevco	7264C-2k	2024-11-13
Head Acceleration X Redundant	P58835	Endevco	7264C-2k	2024-11-13
Head Acceleration Y Redundant	P51703	Endevco	7264C-2k	2024-11-13
Head Acceleration Z Redundant	P52096	Endevco	7264C-2k	2024-11-13
Head Rotation Rate X	ARS7510	DTS	ARS PRO-8k (2kHz)	2024-07-31
Head Rotation Rate Y	ARS7548	DTS	ARS PRO-8k (2kHz)	2024-07-31
Head Rotation Rate Z	ARS7573	DTS	ARS PRO-8k (2kHz)	2024-07-31
Upper Neck Force X	452 Fx	R.A. Denton	1716A	2024-06-04
Upper Neck Force Y	452 Fy	R.A. Denton	1716A	2024-06-04
Upper Neck Force Z	452 Fz	R.A. Denton	1716A	2024-06-04
Upper Neck Moment X	452 Mx	R.A. Denton	1716A	2024-06-04
Upper Neck Moment Y	452 My	R.A. Denton	1716A	2024-06-04
Upper Neck Moment Z	452 Mz	R.A. Denton	1716A	2024-06-04
Chest Acceleration X Primary	P58860	Endevco	7264C-2k	2024-11-13
Chest Acceleration Y Primary	P51724	Endevco	7264C-2k	2024-11-13
Chest Acceleration Z Primary	P58711	Endevco	7264C-2k	2024-11-14
Chest Acceleration X Redundant	P52049	Endevco	7264C-2k	2024-11-14
Chest Acceleration Y Redundant	P51862	Endevco	7264C-2k	2024-11-14
Chest Acceleration Z Redundant	P52048	Endevco	7264C-2k	2024-11-14
Chest Deflection	0724 (HF)	Servo	14CBI-3615	2024-11-15
Pelvis Acceleration X	P52090	Endevco	7264C-2k	2024-11-14
Pelvis Acceleration Y	P58849	Endevco	7264C-2k	2024-11-13
Pelvis Acceleration Z	P58756	Endevco	7264C-2k	2024-11-14
Left Femur Force Z	112 (pri)	R.A. Denton	3821JTF	2024-06-05
Right Femur Force Z	132 (pri)	R.A. Denton	3821JTF	2024-06-05
Left Femur Force Z Redundant	112 (red)	R.A. Denton	3821JTF	2024-06-05
Right Femur Force Z Redundant	132 (red)	R.A. Denton	3821JTF	2024-06-05
Left Upper Tibia Moment X	468 Mx	R.A. Denton	3643	2024-05-10
Left Upper Tibia Moment Y	468 My	R.A. Denton	3643	2024-05-10
Left Upper Tibia Force Z	468 Fz	R.A. Denton	3643	2024-05-10
Left Lower Tibia Moment X	499 Mx	R.A. Denton	3644	2024-05-10
Left Lower Tibia Moment Y	499 My	R.A. Denton	3644	2024-05-10
Left Lower Tibia Force Z	499 Fz	R.A. Denton	3644	2024-05-10
Right Upper Tibia Moment X	DH3302 Mx	FTSS	IF-857	2024-05-10
Right Upper Tibia Moment Y	DH3302 My	FTSS	IF-857	2024-05-10
Right Upper Tibia Force Z	DH3302 Fz	FTSS	IF-857	2024-05-10
Right Lower Tibia Moment X	399 Mx	R.A. Denton	3644	2024-05-10
Right Lower Tibia Moment Y	399 My	R.A. Denton	3644	2024-05-10
Right Lower Tibia Force Z	399 Fz	R.A. Denton	3644	2024-05-10
Left Ankle Acceleration X	P58897	Endevco	7264C-2k	2024-05-18
Left Ankle Acceleration Z	P52057	Endevco	7264C-2k	2024-11-12
Left Toe Acceleration Z	P49224	Endevco	7264C-2k	2024-11-12
Right Ankle Acceleration X	P52019	Endevco	7264C-2k	2024-11-12
Right Ankle Acceleration Z	P58755	Endevco	7264C-2k	2024-11-12
Right Toe Acceleration Z	P52076	Endevco	7264C-2k	2024-11-12
Seat Belt Outside Lap Force	313	FTSS	IF-964	2024-03-27
Seat Belt Upper Diagonal Force	263	FTSS	IF-964	2024-03-27

Table 3 - Vehicle Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Left Rear Primary Ax	M14673	Endevco	7264HM6-2k-360	2024-09-15
Right Rear Primary Ax	M14426	Endevco	7264HM6-2k-360	2024-08-10
Engine Top Ax	A358745	MSI	52F-2k	2024-10-15
Engine Bottom Ax	A354816	MSI	52F-2k	2024-10-08
Left Rear Az	M14413	Endevco	7264C-2KTZ-2-360	2024-08-10
Right Rear Az	M14409	Endevco	7264C-2KTZ-2-360	2024-08-10
Left Rear Redundant Ax	M14572	Endevco	7264C-2KTZ-2-360	2024-08-15
Right Rear Redundant Ax	M14416	Endevco	7264HM6-2k-360	2024-08-10