

REPORT NUMBER: TWG-KAR-18-001

**SIDE AIRBAG OCCUPANT RISK PROGRAM
OCCUPANT OUT-OF-POSITION TESTS**

**FCA US LLC
2018 JEEP COMPASS SPORT 5-DOOR MPV**

NHTSA NUMBER: M20180308TWG2

**PREPARED BY:
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AUGUST 23, 2018

FINAL REPORT

**PREPARED FOR:
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This final test report was prepared for the U.S. Department of Transportation, Alpha Technology Associate, Inc., in response to Contract Number DTNH22-13-D-00311L.

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16. Abstract A side airbag out of position test was conducted on the subject 2018 Jeep Compass Sport 5-door MPV in accordance with the specifications of the Office of Crashworthiness Standards SAB OOP NCAP Laboratory Test Procedure for the generation of consumer information on vehicle side airbag protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on August 9, 2018. The curtain and torso/pelvis side airbags were deployed and responses were measured on a Hybrid III 6-year old child dummy. Three high speed cameras recorded the event. The ambient temperature at the time of airbag deployment was 21.7°C <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="4" style="text-align: center;">Section 3.3.3.5 - HIII 6-Year Old Child Dummy - P2</th> </tr> <tr> <th style="width: 30%;">Measurement Description</th> <th style="width: 10%;">Units</th> <th style="width: 20%;">IARV</th> <th style="width: 40%;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>723</td> <td style="background-color: yellow;">48.4</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td style="background-color: yellow;">0.76</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>1490</td> <td style="background-color: yellow;">217.7</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>1820</td> <td style="background-color: yellow;">-671.4</td> </tr> </tbody> </table>				Section 3.3.3.5 - HIII 6-Year Old Child Dummy - P2				Measurement Description	Units	IARV	Result	Head Injury Criteria (HIC ₁₅)	N/A	723	48.4	Nij	N/A	1	0.76	Neck Tension	N	1490	217.7	Neck Compression	N	1820	-671.4
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This occupant out-of-position static side airbag deployment test is part of the Technical Working Group Occupant Injury Risk from Deploying Side Airbags Testing Program sponsored by Alpha Technology Associate, Inc. under Contract No. DTNH22-13-D-00311L. The purpose of this test was to obtain occupant injury data for a side airbag deployment.

The occupant out-of-position (OOP) side airbag test was conducted in accordance with the Technical Working Group Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.

SUMMARY

The effects of a roof mounted curtain airbag and a seat mounted torso/pelvis airbag deployment in a 2018 Jeep Compass Sport 5-door MPV with an out-of-position 6-year old dummy were evaluated. The test was performed at KARCO Engineering, LLC. on August 9, 2018. Pre- and post-test photographs of the vehicle and dummy can be found in Appendix A.

Three (3) high-speed digital cameras and one (1) real time camera were used to document the deployment of the airbags. Camera locations and other pertinent camera information can be found on Data Sheet No.1 and Data Sheet No.6.

A 6-year old anthropomorphic test device (ATD) was placed in the right front passenger seating position facing forward according to the dummy placement instructions (3.3.3.5) in the July 2003 Revision of the Technical Working Group's 'Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags'.

The 6-year old ATD was instrumented with head tri-axial accelerometers and upper and lower neck force transducers.

The airbags were deployed and fifteen (15) channels of data were recorded using a data acquisition system. Appendix B contains dummy response data traces. Appendix C contains ATD calibration sheets. Appendix D contains the instrumentation data channel assignments.

Orientation of the 6-year old dummy was with the dummy facing forward. The seat is set at the 5th detent (60 mm) from the full forward position and adjusted vertically to its highest position. The seat was not tested in the lowest and rearmost position in order to maximize the interaction and contact between the dummy and airbag. The dummy is placed on the outboard edge of the foam block with the upper spine aligning with the deployment trajectory of the airbag. The dummy's head is placed between the seat bolster and pillar or side trim and the legs crossing the heel points. The pelvis is slid forward for spine alignment and outboard to contact the door panel. The outboard arm is placed on the armrest. This orientation complies with section 3.3.3.5 of the Technical Working Group (TWG) recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags.

The passenger side door remained closed during the test, and was operable after the airbag deployed.

The 6-year old dummy's visible contact points were as follows: The ATD's head contacted the curtain airbag. The ATD's torso contacted the curtain and torso/pelvis airbags. The 6-year old dummy ended up on the floor pan of the driver's side of the vehicle as a result of the airbag deployment.

The occupant data is summarized below:

Measurement Description	Passenger ATD (HIII 6YO)	
	IARV	Result
Head Injury Criteria (HIC ₁₅)	723	48.4
T ¹		23.0
T ²		38.0
Average g		25.3
Upper Neck		
Nij	1	0.76
Tension (N)	1490	217.7
Compression (N)	1820	-671.4

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2
Test Program: TWG 3.3.3.5 Test Date: 08/09/18

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	lb/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**TEST SUMMARY**

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2
Test Program: TWG 3.3.3.5 Test Date: 08/09/18

TEST DUMMY INFORMATION

Description	Passenger Seat
Dummy Type / Serial No.	HIII 6YO / 186
Head Contact	Curtain Airbag
Chest Contact	Curtain & Torso/Pelvis Airbag
Abdomen Contact	None
Pelvis Contact	None
Left Knee Contact	None
Right Knee Contact	None

VIDEO COVERAGE

Description	Quantity
High Speed Digital	3
Real Time	1
Total	4

DATA CHANNELS

Description	Quantity
Head CG Accelerometers	3
Upper Neck Load Cell	6
Lower Neck Load Cell	6
Total	15

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2
 Test Program: TWG 3.3.3.5 Test Date: 08/09/18

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20180308TWG2
Model Year	2018
Make	Jeep
Model	Compass Sport
Body Style	5-Door MPV
VIN	3C4NJCAB0JT136962
Body Color	Bullet Silver Metallic
Odometer Reading (km / mi)	53 / 33
Engine Displacement (L)	2.4
Type / No. of Cylinders	4 Cylinder
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	No
Driver Front 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
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	No

Does Owner's Manual provide instructions to turn off automatic door locks?

No

DATA FROM CERTIFICATION LABEL

Manufactured By	FCA US LLC
Date of Manufacture	Aug-17
Vehicle Type	MPV

GVWR (kg)	1996
GAWR Front (kg)	1076
GAWR Rear (kg)	928

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

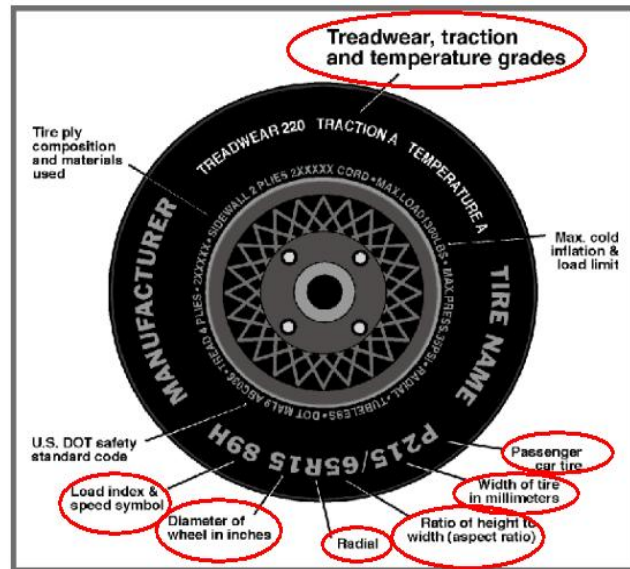
Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				390.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				49.8	A-B

*Vehicle underwent New Car Assessment Program MDB Side Impact Testing on November 7, 2017.

DATA SHEET NO. 2 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2
 Test Program: TWG 3.3.3.5 Test Date: 08/09/18



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	P215/65R16	P215/65R16
Tire Size on Vehicle	P215/65R16	P215/65R16
Tire Manufacturer	Continental	Continental
Tire Model	Cross Contact	Cross Contact
Treadware	480	480
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Rayon	1 Rayon
Tire Plies Body	1 Rayon, 2 Steel, 2 Polyamide	1 Rayon, 2 Steel, 2 Polyamide
Load Index/Speed Symbol	98H	98H
Tire Material	Rayon, Steel, Polyamide	Rayon, Steel, Polyamide
DOT Safety Code Left	HWGV WD36 1817	HWGV WD36 1817
DOT Safety Code Right	HWGV WD36 1817	HWGV WD36 1817

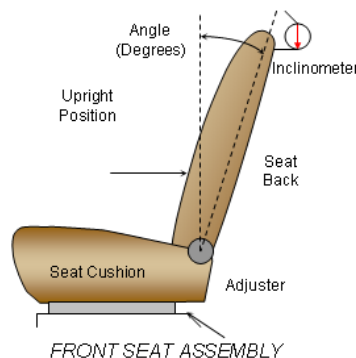
DATA SHEET NO. 3

SEAT ADJUSTMENTS

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2
 Test Program: TWG 3.3.3.5 Test Date: 08/09/18

SEAT BACK ANGLE

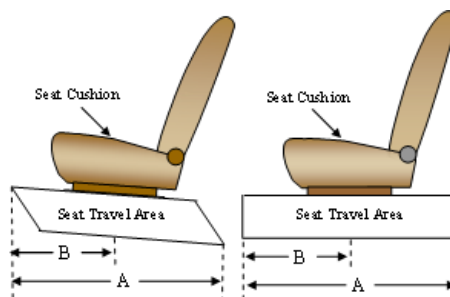
The passenger seat back is positioned per section 3.3.3.5 of the TWG recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags. Seat back angle is measured at the headrest post.



Seating Position	Degrees
Passenger Seat	4.5

SEAT FORE / AFT POSITIONING

The passenger seat track travel is set per section 3.3.3.5 of the TWG recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags. The first or forward most position is counted as zero (0).



Seating Position	Total Fore-Aft Travel		Placed in Position	
	mm	Detents	mm	Detents
Passenger Seat	220	22	60	5

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the uppermost position. Position "H" is the uppermost position, followed by position "M1" and "M2". Position "L" is the lowermost position.

Seating Position	Total No. of Positions	Placed in Position
Passenger Seat	4	H

SEAT HEIGHT POSITIONING

The passenger seat height is set to the position described in section 3.3.3.5 of the TWG recommendation in the Recommended Procedures for Evaluating Occupant Injury Risk from Deploying Side Airbags. For this test the passenger seat was adjusted to its highest position to minimize the vertical distance between the dummy's head and the roof-rail module and to maximize the cushion to head interaction.

DATA SHEET NO. 4

DUMMY POSITIONING AND AIRBAG DIMENSIONS

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2
 Test Program: TWG 3.3.3.5 Test Date: 08/09/18

DUMMY POSITIONING

Code	Measurement Description	Passenger	
		Length (mm)	Angle (°)
SA	Seat Back Angle		4.5
AN	Top of Airbag Module to Head/Neck Junction	209	90.0
HD	Head CG to Door Panel/ Window	112	0.0
HSC	Head to Seat Back Centerline	128	0.0
HB	Head to B-Pillar (first contact)	79	0.8
HZ	Head to Roof (Z)	251	90.0
HHD	Head to Header (measured from back of head)	393	25.2
ND	Nose to Dash	621	28.0
NS	Nose to Seat Back	266	0.0
NR	Nose to Header	405	36.3
CD	Chest to Dash	475	7.8
CS	Chest to Seat Back	245	0.0
RACL	Right Arm to Seat Back	360	0.0
LACL	Left Arm to Seat Back	15	0.0
RA	Right Arm to Door Panel	0	0.0
LA	Left Arm to Door Panel	280	0.0
KK	Knee to Knee	155	0.0
TT	Toe to Toe	145	0.0
KSCR	Right Knee to Seat Cushion Centerline	105	0.0
KSCL	Left Knee to Seat Cushion Centerline	30	0.0
	Head Level (X Direction)		16.0
	Head Level (Y Direction)		10.0

AIRBAG DIMENSIONS

Code	Measurement Description	Airbag
		Length (mm)
AMW	Curtain Airbag Module Diameter	25
AML	Curtain Airbag Module Length	305
ABL	Curtain Airbag Length	1805
ABW	Curtain Airbag Width	470
AMW	Torso/Pelvis Airbag Module Diameter	20
AML	Torso/Pelvis Airbag Module Length	150
ABW	Torso/Pelvis Airbag Length	550
ABL	Torso/Pelvis Airbag Width	300

DATA SHEET NO. 5

DUMMY INJURY CRITERIA AND PERFORMANCE DATA

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2
 Test Program: TWG 3.3.3.5 Test Date: 08/09/18

HEAD PEAK ACCELERATIONS

Location	Axis	Units	6 Yr. Old			
			Max	Time	Min	Time
Head CG	X	g	16.5	13.3	-14.8	25.3
Head CG	Y	g	14.3	7.7	-28.4	7.4
Head CG	Z	g	24.4	29.4	-11.7	9.1
Head CG Resultant	N/A	g	35.5	29.4		

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	6 Yr. Old			
			Max	Time	Min	Time
Neck Force	X	N	527.7	38.7	-41.6	164.5
Neck Force	Y	N	268.9	38.7	-118.0	12.3
Neck Force	Z	N	217.7	52.2	-671.4	11.4
Neck Force Resultant	N/A	N	767.1	15.0		
Neck Moment	X	Nm	11.6	59.1	-16.7	20.7
Neck Moment	Y	Nm	37.0	14.7	-25.6	54.4
Neck Moment	Z	Nm	3.7	157.6	-17.4	40.2
Neck Moment Resultant	N/A	Nm	37.5	14.5		

LOWER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	6 Yr. Old			
			Max	Time	Min	Time
Neck Force	X	N	366.1	15.0	-299.3	6.7
Neck Force	Y	N	284.0	40.7	-246.7	14.9
Neck Force	Z	N	169.5	114.6	-732.3	14.9
Neck Force Resultant	N/A	N	811.2	14.9		
Neck Moment	X	Nm	28.4	65.5	-22.6	12.5
Neck Moment	Y	Nm	10.9	8.8	-25.4	53.0
Neck Moment	Z	Nm	4.5	159.1	-22.5	12.0
Neck Moment Resultant	N/A	Nm	37.4	65.5		

HEAD INJURY CRITERIA (HIC 15)

Location	6 Yr. Old			
	HIC15	T ¹	T ²	Avg g
Head CG	48.4	23.0	38.0	25.3

UPPER NECK NIJ VALUES

Location	6 Yr. Old			
	Ntf	Nte	Ncf	Nce
Upper Neck	0.07	0.76	0.55	0.34

DATA SHEET NO. 6**HIGH SPEED CAMERA LOCATIONS AND DATA**Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV NHTSA No.: M20180308TWG2Test Program: TWG 3.3.3.5 Test Date: 08/09/18**CAMERA LOCATIONS**

No.	Camera View	Location (mm)			Angle (Deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	High Speed Front View	2546	-505	-1570	8.7	24	1000
2	High Speed 3/4 View	2205	-1795	-1445	9.0	28	1000
3	High Speed Left Side View	0	-2622	-975	0.2	20	1000
4	Real Time	0	-2622	-1085	0.0	18	60

Coordinates: +X = forward of vehicle relative to dummy's head CG

+Y = right of vehicle relative to dummy's head CG

+Z = into ground

APPENDIX A
PHOTOGRAPHS

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FIGURE 1. Right Front ¾ View, As Received



FIGURE 2. Vehicle Certification Label



FIGURE 3. Post-Test Left Front 3/4 View of NCAP Side MDB Impact Test



FIGURE 4. Post-Test Left Side View of NCAP Side MDB Impact Test



FIGURE 5. Post-Test Left Rear ¾ View of NCAP Side MDB Impact Test



FIGURE 6. Post-Test Right Side View of NCAP Side MDB Impact Test



FIGURE 7. Pre-Test Dummy Position, Left View



FIGURE 8. Post-Test Dummy Position, Left View



FIGURE 9. Pre-Test Dummy Position, $\frac{3}{4}$ View



FIGURE 10. Post-Test Dummy Position, $\frac{3}{4}$ View



FIGURE 11. Pre-Test Dummy Position, Front View



FIGURE 12. Post-Test Dummy Position, Front View



FIGURE 13. Pre-Test Dummy Position, Close-Up Front View



FIGURE 14. Post-Test Dummy Position, Close-Up Front View



FIGURE 15. Pre-Test Dummy Position, Close-Up Rear View



FIGURE 16. Post-Test Dummy Position, Close-Up Rear View



FIGURE 17. Post Test Dummy Position, Overall Side View



FIGURE 18. Post-Test Dummy Position, Overall Front View



FIGURE 19. Post-Test Airbags, Left Side View



FIGURE 20. Post-Test Airbags, Left Front $\frac{3}{4}$ View

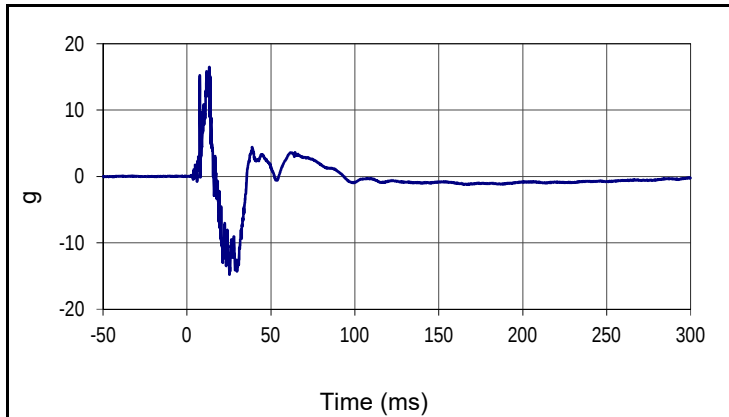
APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

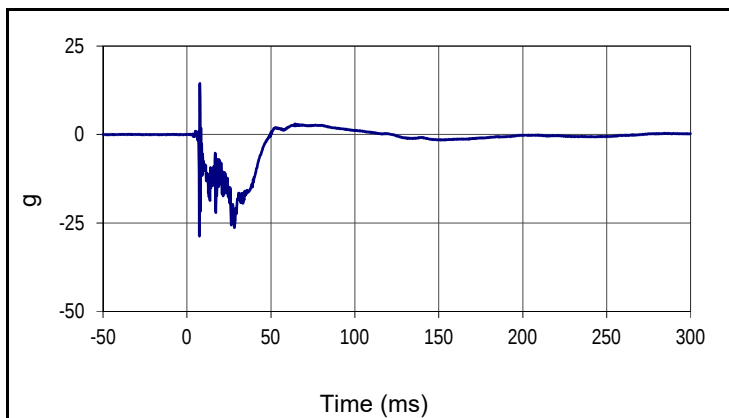
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Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV
 Test Program: TWG 3.3.3.5

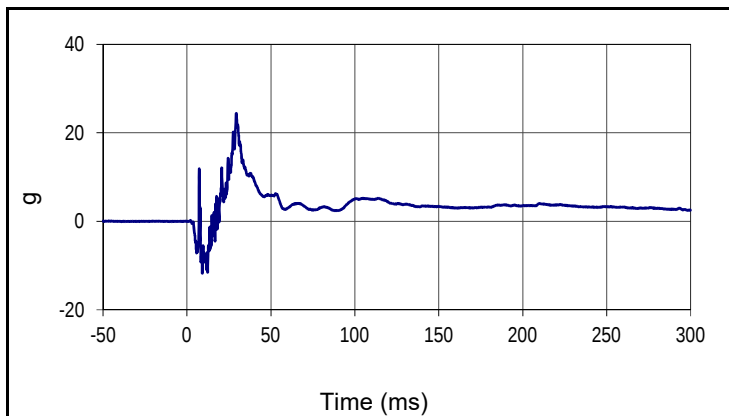
Test Date: 08/09/18
 NHTSA No.: M20180308TWG2



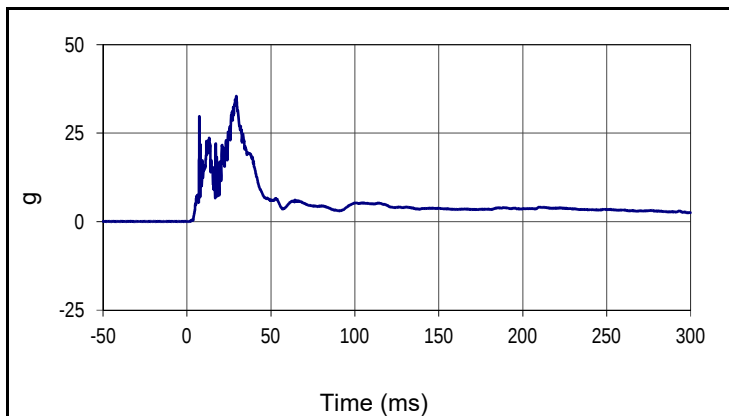
Curve Description			
6 Year Old Head Acceleration X			
Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
16.5	13.3	-14.8	25.3



Curve Description			
6 Year Old Head Acceleration Y			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
14.3	7.7	-28.4	7.4



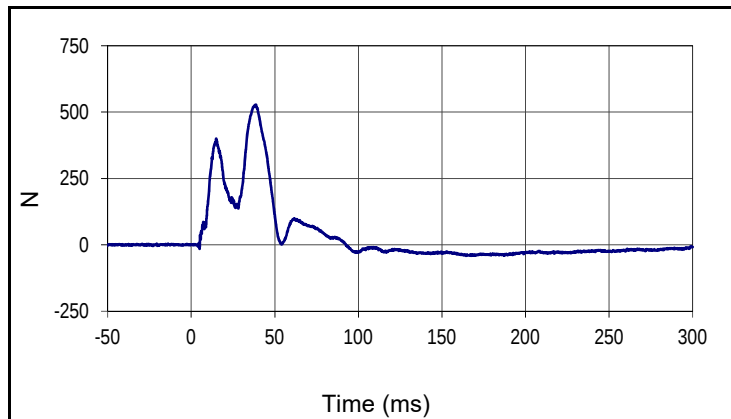
Curve Description			
6 Year Old Head Acceleration Z			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
24.4	29.4	-11.7	9.1



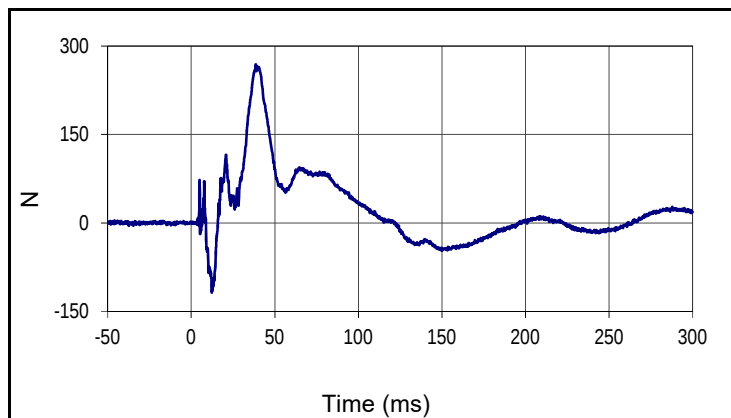
Curve Description			
6 Year Old Head Acceleration Primary Resultant			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
35.5	29.4	0.0	1.4

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV
 Test Program: TWG 3.3.3.5

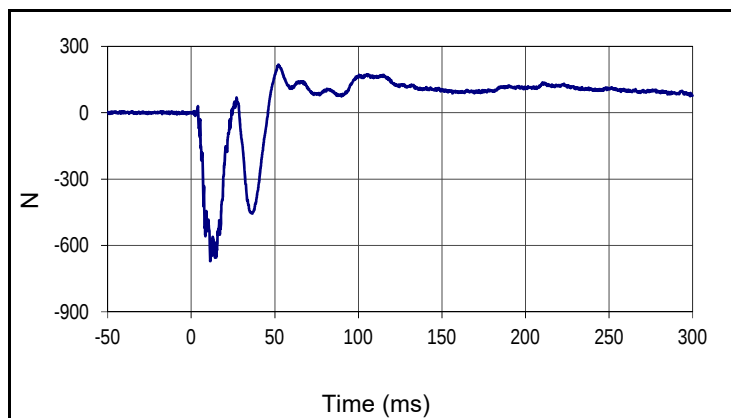
Test Date: 08/09/18
 NHTSA No.: M20180308TWG2



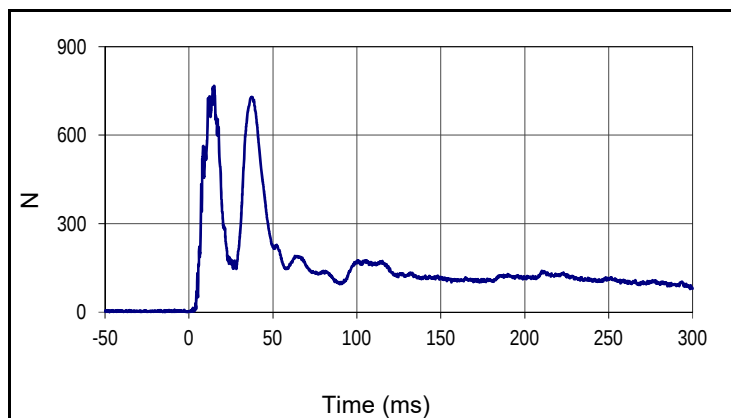
Curve Description			
6 Year Old Upper Neck Force X			
Plot No.		SAE Class	Units
005		1000	N
Max	Time	Min	Time
527.7	38.7	-41.6	164.5



Curve Description			
6 Year Old Upper Neck Force Y			
Plot No.		SAE Class	Units
006		1000	N
Max	Time	Min	Time
268.9	38.7	-118.0	12.3



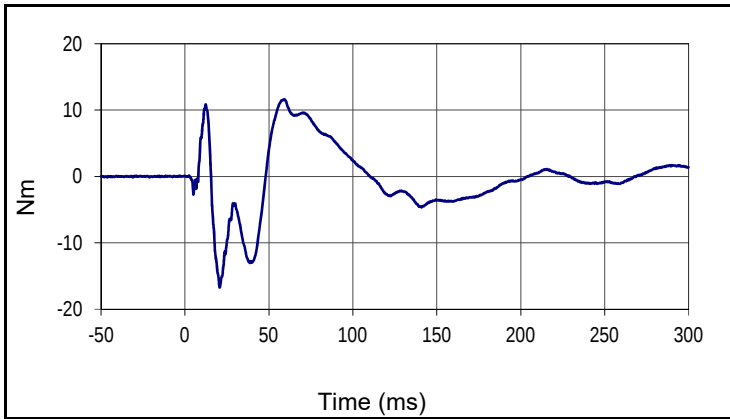
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Plot No.		SAE Class	Units
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Max	Time	Min	Time
217.7	52.2	-671.4	11.4



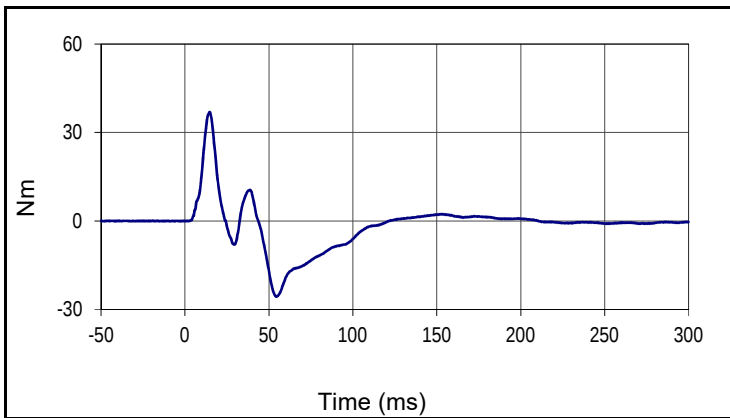
Curve Description			
6 Year Old Upper Neck Force Resultant			
Plot No.		SAE Class	Units
008		1000	N
Max	Time	Min	Time
767.1	15.0	1.1	0.4

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV
 Test Program: TWG 3.3.3.5

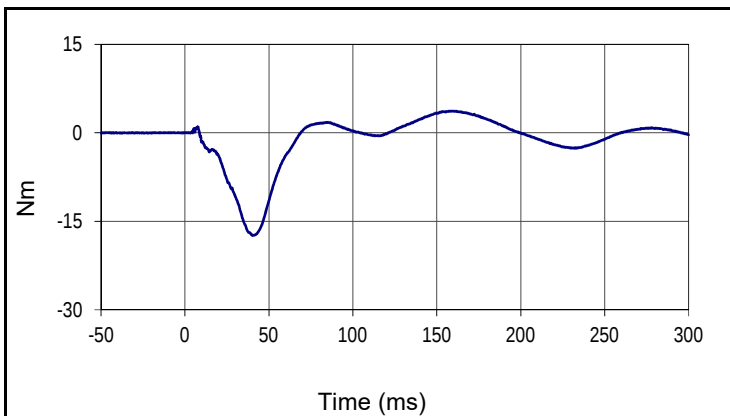
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 NHTSA No.: M20180308TWG2



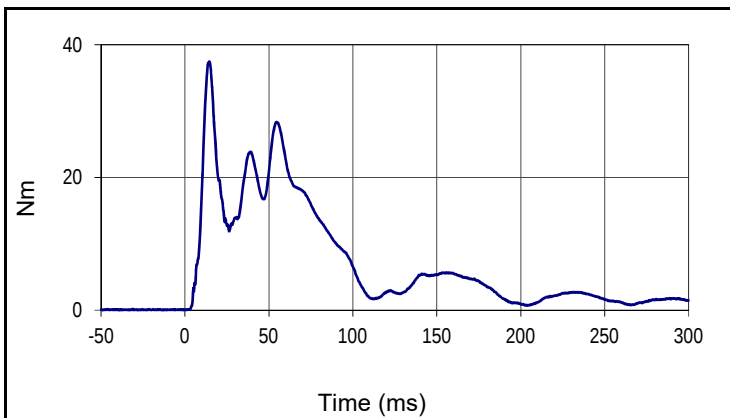
Curve Description			
6 Year Old Upper Neck Moment X			
Plot No.		SAE Class	Units
009		600	Nm
Max	Time	Min	Time
11.6	59.1	-16.7	20.7



Curve Description			
6 Year Old Upper Neck Moment Y			
Plot No.		SAE Class	Units
010		600	Nm
Max	Time	Min	Time
37.0	14.7	-25.6	54.4



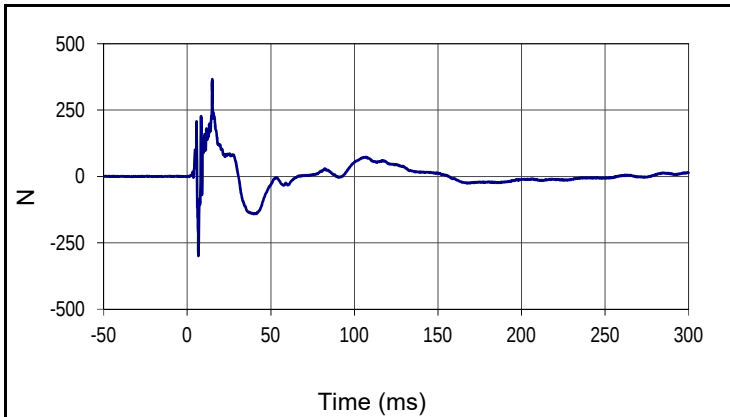
Curve Description			
6 Year Old Upper Neck Moment Z			
Plot No.		SAE Class	Units
011		600	Nm
Max	Time	Min	Time
3.7	157.6	-17.4	40.2



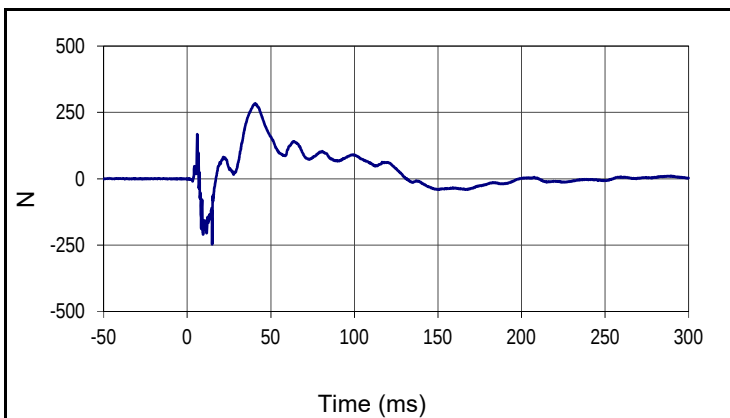
Curve Description			
6 Year Old Upper Neck Moment Resultant			
Plot No.		SAE Class	Units
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Max	Time	Min	Time
37.5	14.5	0.0	0.4

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV
 Test Program: TWG 3.3.3.5

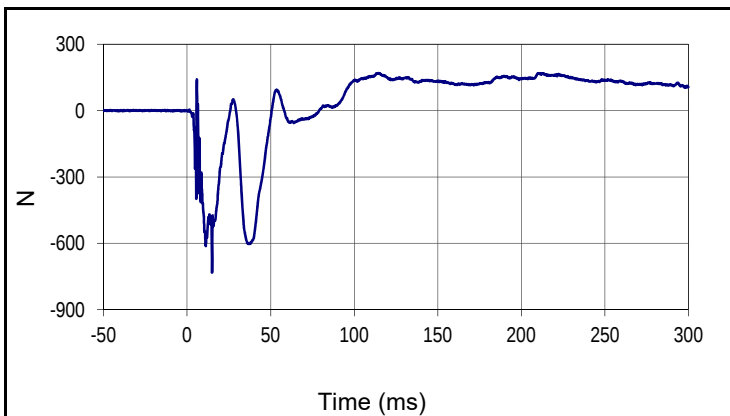
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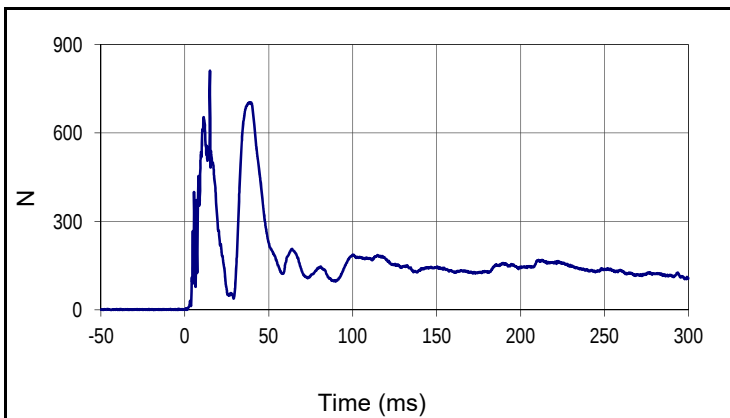
Curve Description			
6 Year Old Lower Neck Force X			
Plot No.		SAE Class	Units
013		1000	N
Max	Time	Min	Time
366.1	15.0	-299.3	6.7



Curve Description			
6 Year Old Lower Neck Force Y			
Plot No.		SAE Class	Units
014		1000	N
Max	Time	Min	Time
284.0	40.7	-246.7	14.9



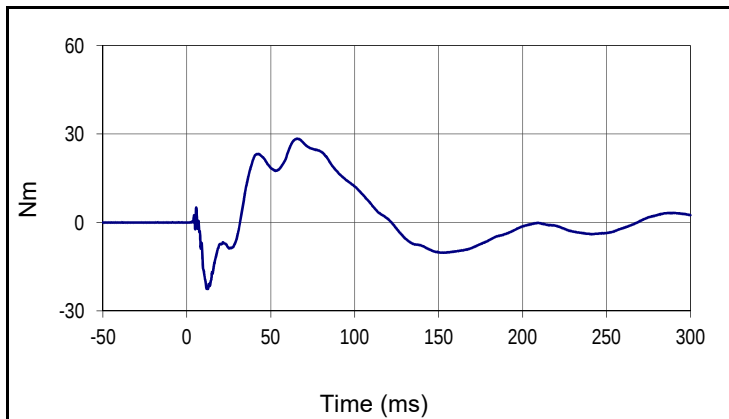
Curve Description			
6 Year Old Lower Neck Force Z			
Plot No.		SAE Class	Units
015		1000	N
Max	Time	Min	Time
169.5	114.6	-732.3	14.9



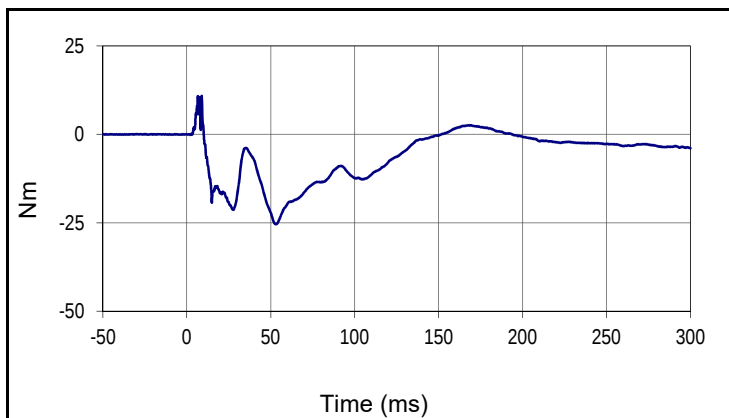
Curve Description			
6 Year Old Lower Neck Force Resultant			
Plot No.		SAE Class	Units
016		1000	N
Max	Time	Min	Time
811.2	14.9	0.7	0.8

Test Vehicle: 2018 Jeep Compass Sport 5-Door MPV
 Test Program: TWG 3.3.3.5

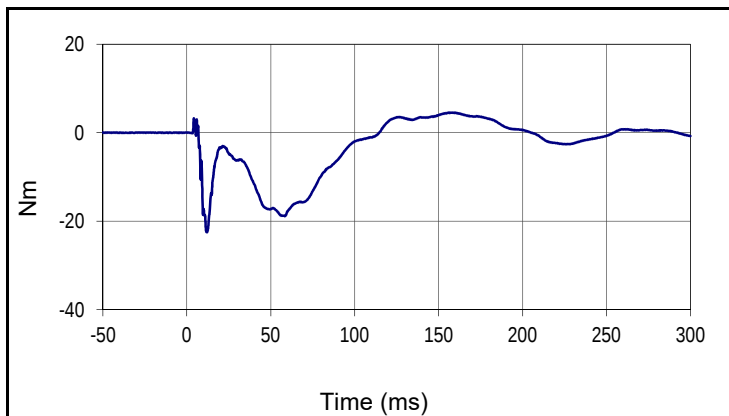
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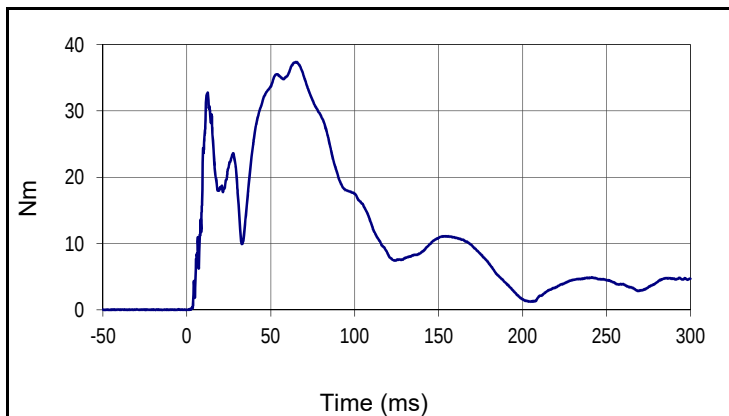
Curve Description			
6 Year Old Lower Neck Moment X			
Plot No.		SAE Class	Units
017		600	Nm
Max	Time	Min	Time
28.4	65.5	-22.6	12.5



Curve Description			
6 Year Old Lower Neck Moment Y			
Plot No.		SAE Class	Units
018		600	Nm
Max	Time	Min	Time
10.9	8.8	-25.4	53.0



Curve Description			
6 Year Old Lower Neck Moment Z			
Plot No.		SAE Class	Units
019		600	Nm
Max	Time	Min	Time
4.5	159.1	-22.5	12.0



Curve Description			
6 Year Old Lower Neck Moment Resultant			
Plot No.		SAE Class	Units
020		600	Nm
Max	Time	Min	Time
37.4	65.5	0.0	1.5

APPENDIX C
PRE-TEST ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

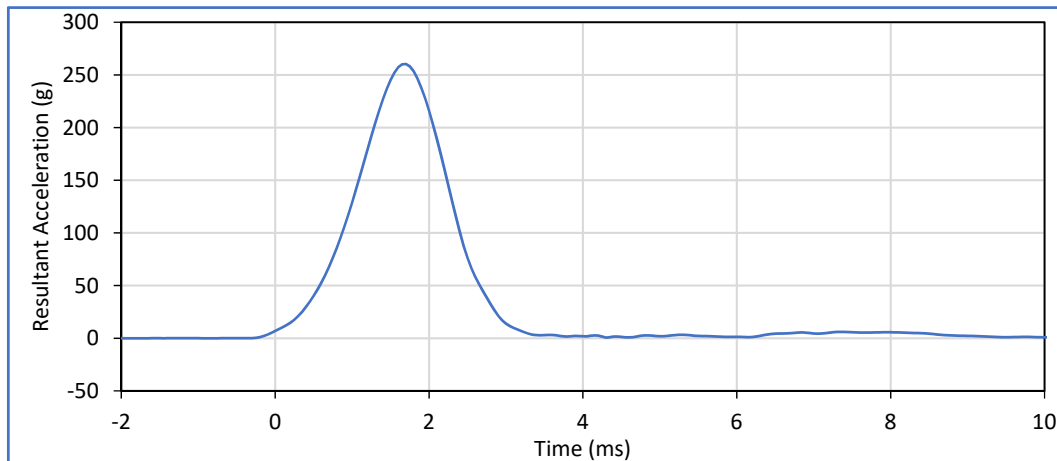


Hybrid III 6 Year-Old Child Dummy Head Drop

ATD Serial No.: 186

Test Date: 2018-08-07

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.1	Pass
Laboratory Humidity	%	10	70	22	Pass
Peak Resultant Acceleration	g	250.0	280.0	260.4	Pass
Peak Lateral Acceleration	g	-15.0	15.0	-9.6	Pass
Oscillations After Main Pulse	%	0.0	10.0	2.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results	Pass	

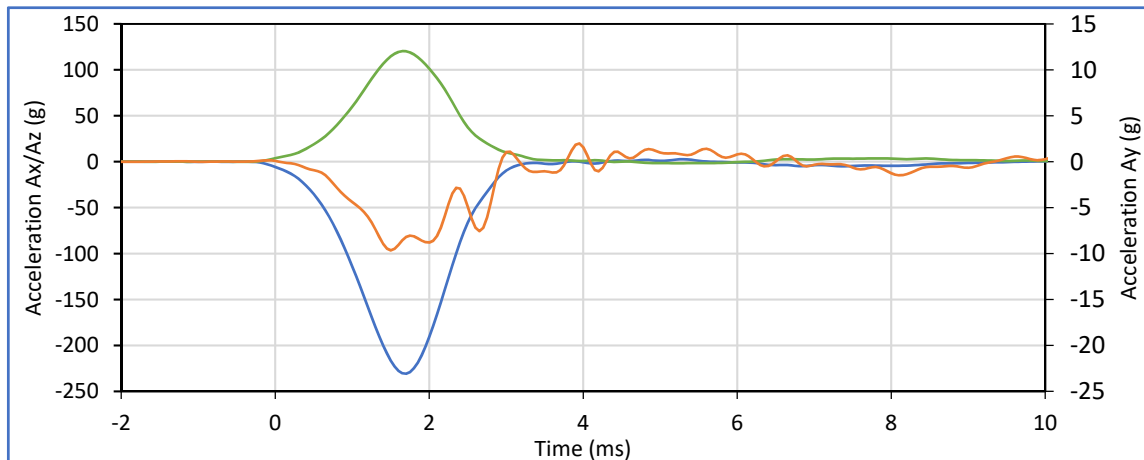


Head Resultant

Max:260.4@1.7

Min:0.5@4.3

SAE Class 1000



Head Ax

Max:2.7@5.3

Min:-230.8@1.7

SAE Class 1000

Head Ay

Max:2.0@4.0

Min:-9.6@1.5

SAE Class 1000

Head Az

Max:120.4@1.7

Min:-1.7@5.3

SAE Class 1000

Technician: P. Puzzuto

P. Puzzuto

Approved By: P. Puzzuto

P. Puzzuto

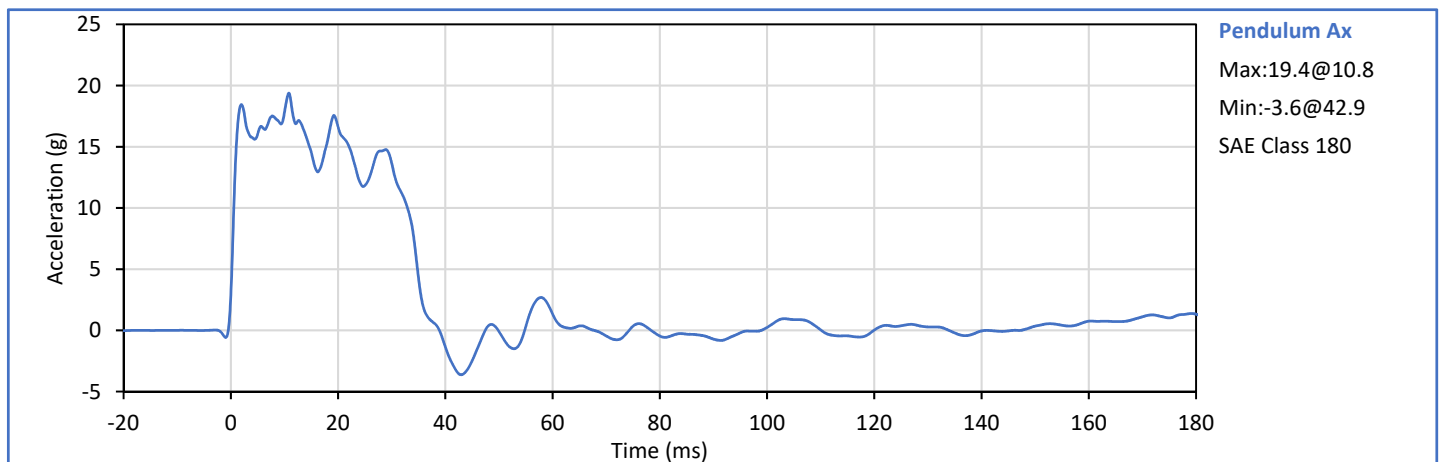
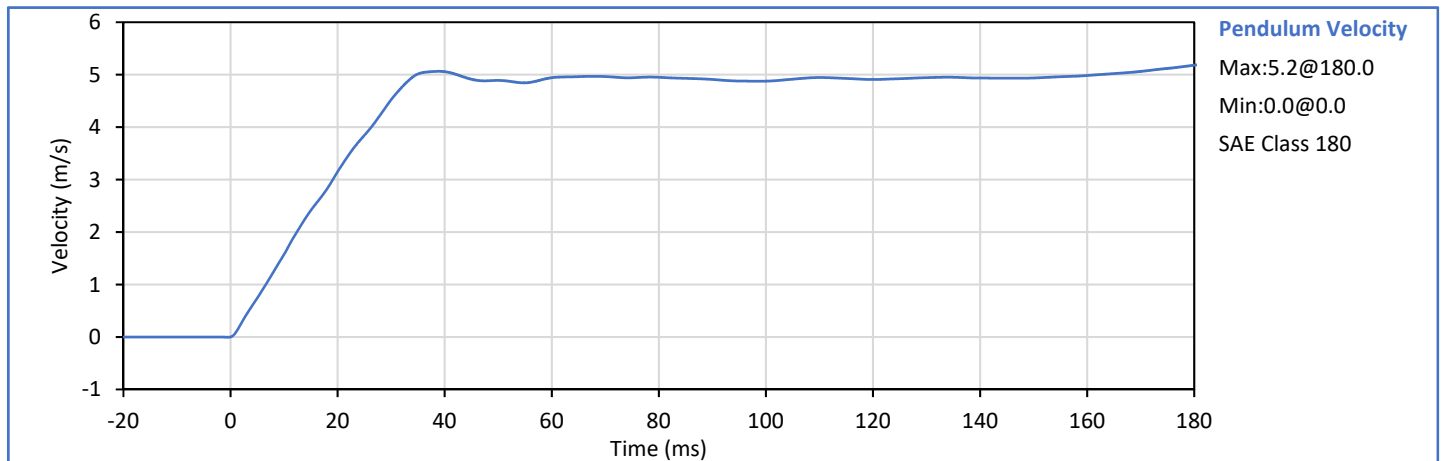


Hybrid III 6 Year-Old Child Dummy Neck Flexion Test

ATD Serial No.: 186

Test Date: 2018-08-07

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Humidity	%	10	70	39	Pass
Pendulum Velocity	m/s	4.83	5.07	4.87	Pass
Pendulum Velocity at 10 ms	m/s	1.20	1.60	1.57	Pass
Pendulum Velocity at 20 ms	m/s	2.40	3.40	3.15	Pass
Pendulum Velocity at 30 ms	m/s	3.80	5.00	4.52	Pass
Peak Moment in Rotation	Nm	27.0	33.0	31.0	Pass
	deg	74.0	92.0	91.4	Pass
Positive Moment Decay to 5 Nm	ms	103.0	123.0	115.6	Pass
Overall Test Results					Pass



Technician: J. Hernandez

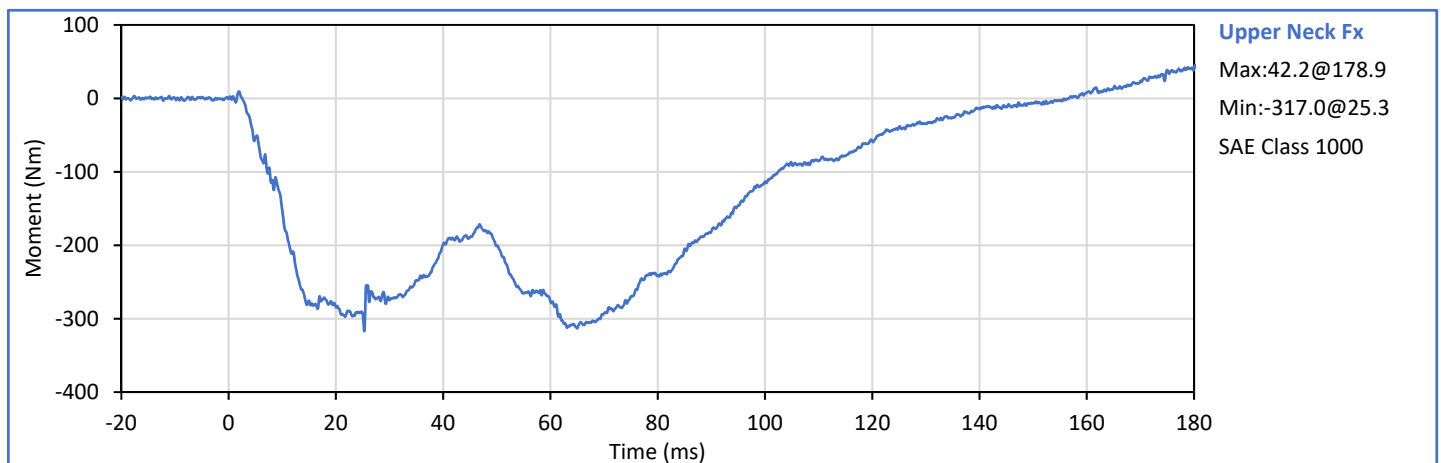
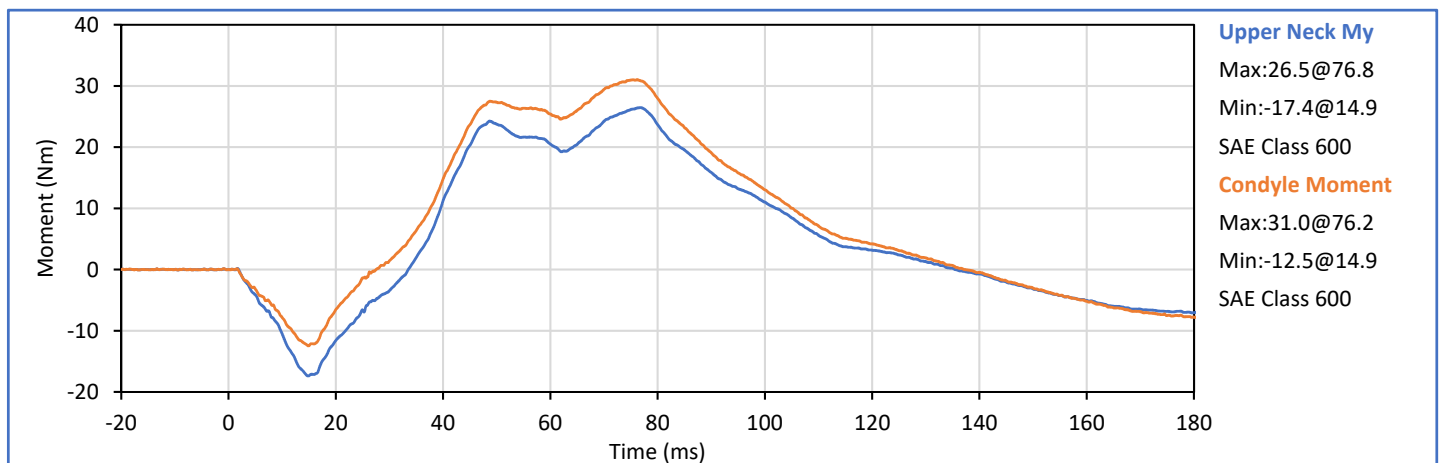
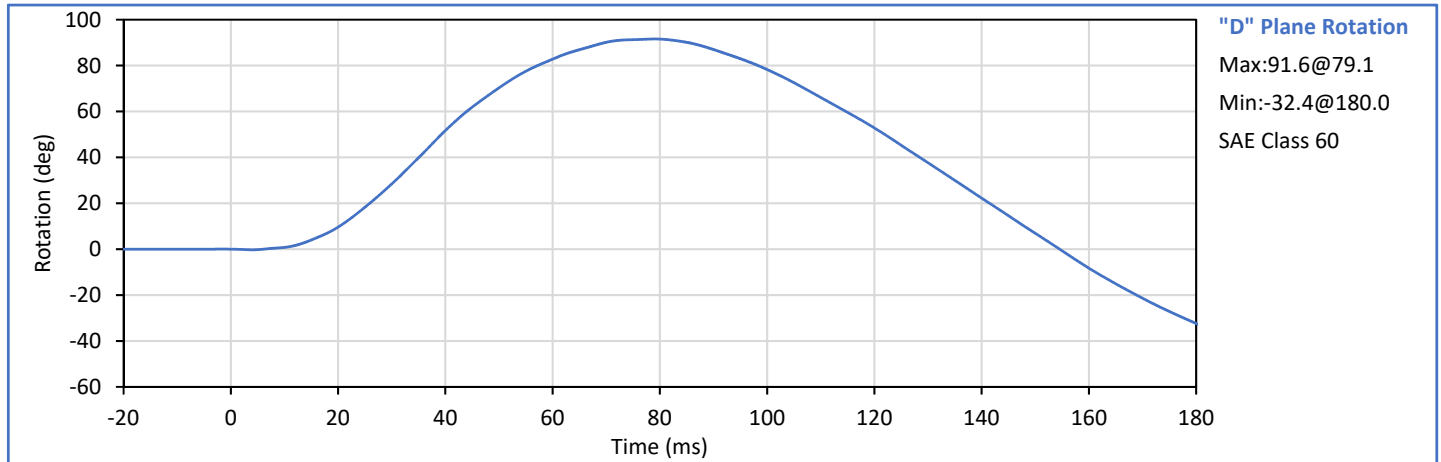
Approved By: P. Puzzuto



Hybrid III 6 Year-Old Child Dummy Neck Flexion Test

ATD Serial No.: 186

Test Date: 2018-08-07





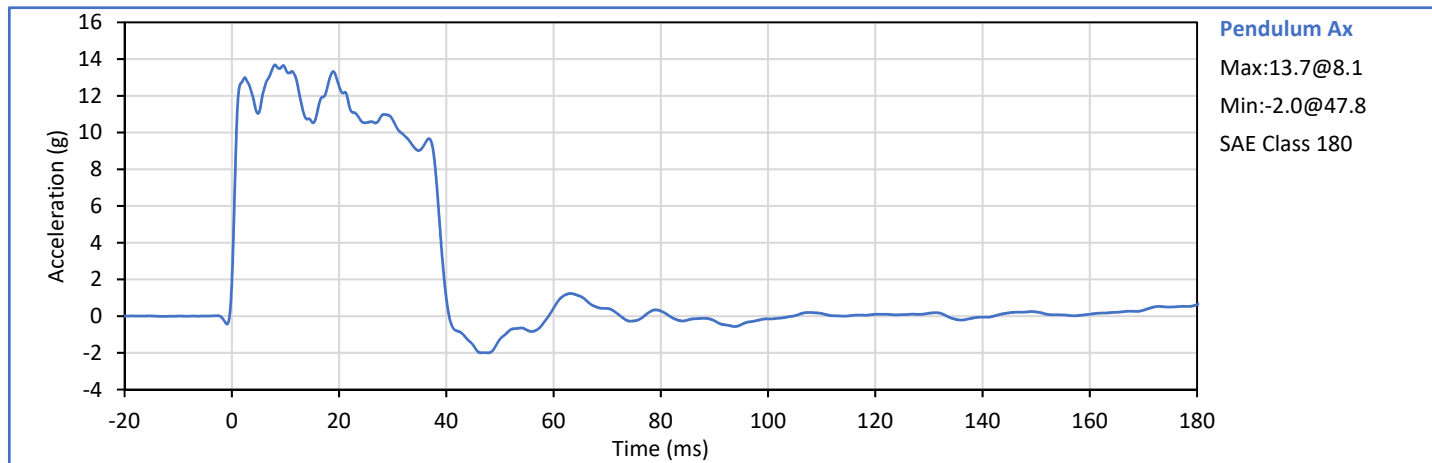
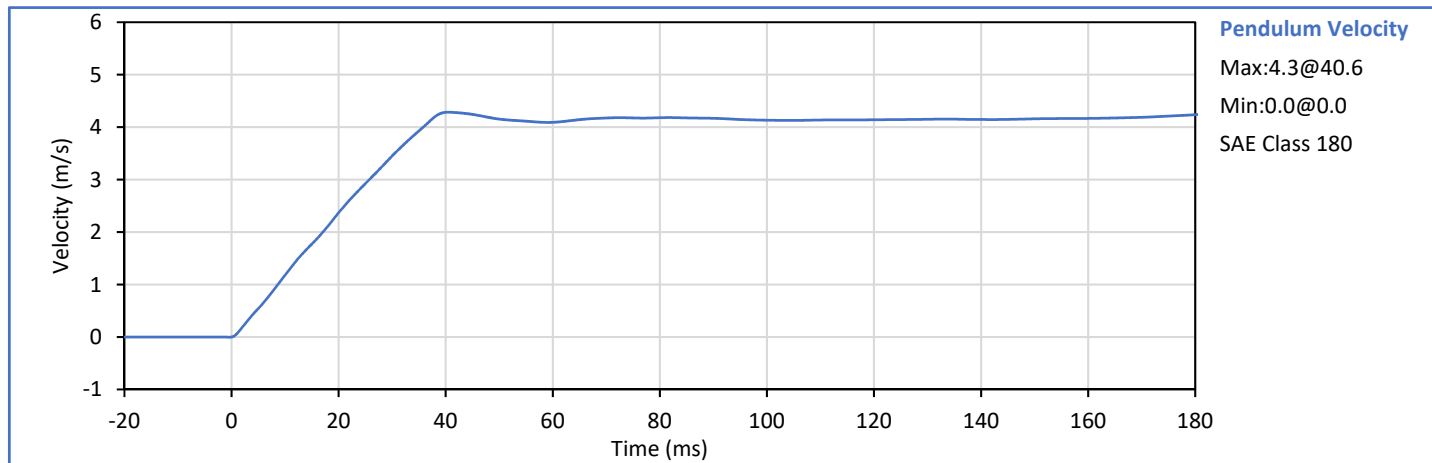
9270 Holly Road, Adelanto, CA 92301
 Tel: +1 760 246 1672 Fax: +1 760 246 8112
 Info@karco.com www.karco.com

Hybrid III 6 Year-Old Child Dummy Neck Flexion Test

ATD Serial No.: 186

Test Date: 2018-08-08

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Humidity	%	10	70	39	Pass
Pendulum Velocity	m/s	4.18	4.42	4.20	Pass
Pendulum Velocity at 10 ms	m/s	1.00	1.40	1.18	Pass
Pendulum Velocity at 20 ms	m/s	2.20	3.00	2.37	Pass
Pendulum Velocity at 30 ms	m/s	3.20	4.20	3.45	Pass
Peak Moment in Rotation	Nm	-24.0	-19.0	-23.2	Pass
	deg	85.0	103.0	89.0	Pass
Negative Moment Decay to -5 Nm	ms	123.0	147.0	132.8	Pass
Overall Test Results				Pass	



Technician: J. Hernandez

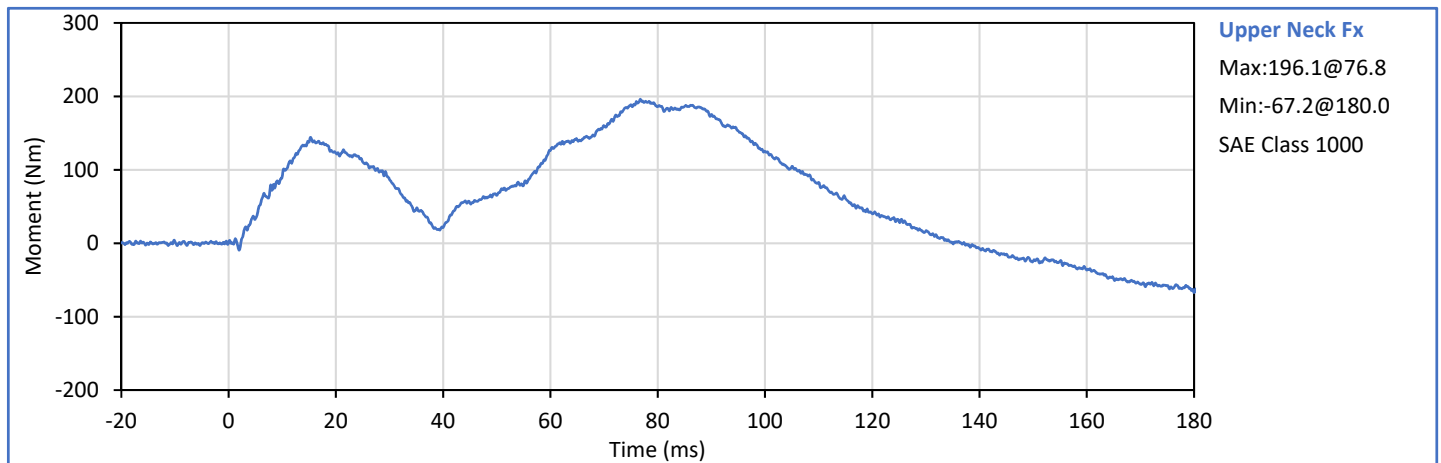
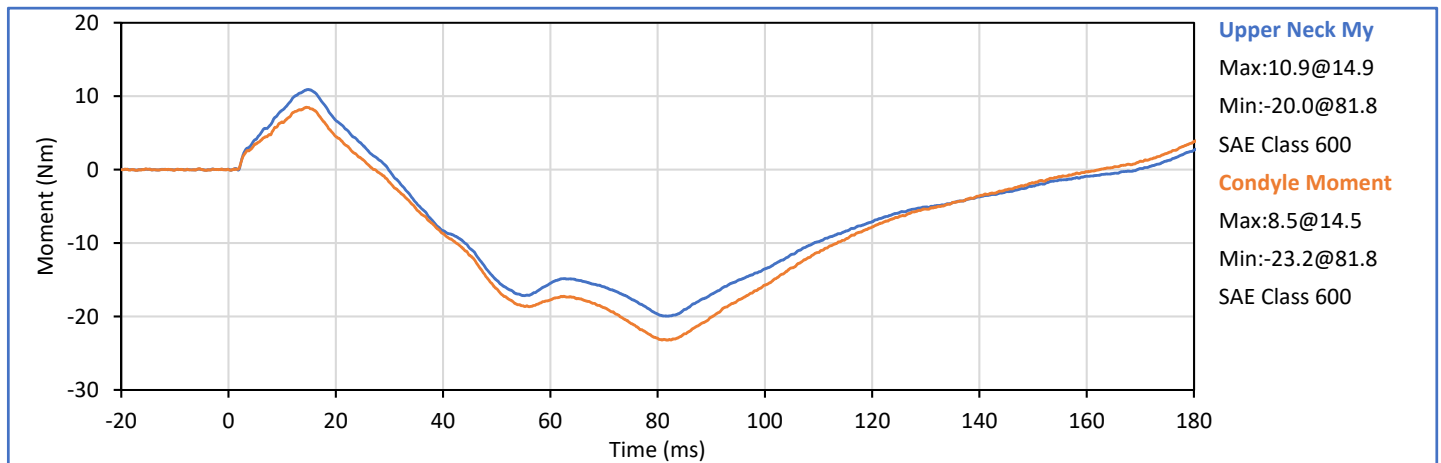
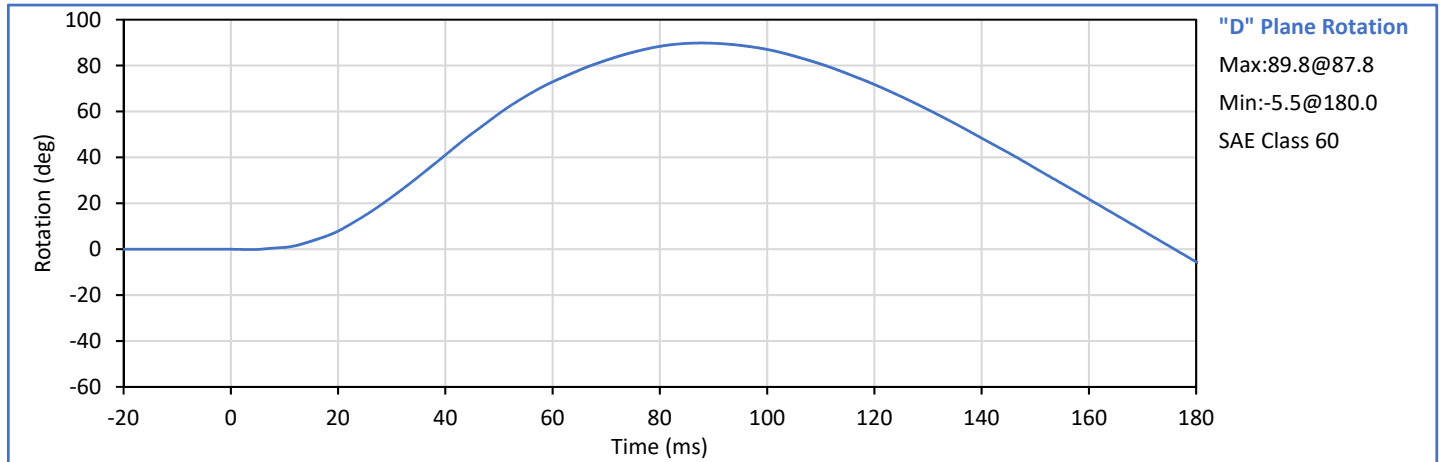
Approved By: P. Puzzuto



Hybrid III 6 Year-Old Child Dummy Neck Flexion Test

ATD Serial No.: 186

Test Date: 2018-08-08



APPENDIX D
INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

TWG 3.3.3.5**Test Equipment and Instrumentation Calibration Data****A.T.D. Serial Number 186****8/9/2018****2018 Jeep Compass Sport 5-Door MPV**

Channel	Location	Axis	Sensor S/N	MFR	Model	Units
1	Head Acceleration	X	J20438	Endevco	7264-2000	g
2	Head Acceleration	Y	J34330	Endevco	7264-2000	g
3	Head Acceleration	Z	ACCW9	Endevco	7264-2000	g
4	Upper Neck Force	X	1643 Fx	R.A. Denton	1716A	N
5	Upper Neck Force	Y	1643 Fy	R.A. Denton	1716A	N
6	Upper Neck Force	Z	1643 Fz	R.A. Denton	1716A	N
7	Upper Neck Moment	X	1643 Mx	R.A. Denton	1716A	Nm
8	Upper Neck Moment	Y	1643 My	R.A. Denton	1716A	Nm
9	Upper Neck Moment	Z	1643 Mz	R.A. Denton	1716A	Nm
10	Lower Neck Force	X	146 Fx	R.A. Denton	2430-D	N
11	Lower Neck Force	Y	146 Fy	R.A. Denton	2430-D	N
12	Lower Neck Force	Z	146 Fz	R.A. Denton	2430-D	N
13	Lower Neck Moment	X	146 Mx	R.A. Denton	2430-D	Nm
14	Lower Neck Moment	Y	146 My	R.A. Denton	2430-D	Nm
15	Lower Neck Moment	Z	146 Mz	R.A. Denton	2430-D	Nm