Vehicle Research and Test Center

FMVSS 213 Testing

Hybrid III 3 Year Old

Prepared By:

Transportation Research Center Inc.

10820 State Route 347

P. O. Box B-67

East Liberty, OH 43319

Summary Report

March – May 2020

Prepared For

Vehicle Research and Test Center

P. O. Box 37

East Liberty, OH 43319

SECTION 1
PURPOSE AND SUMMARY FOR HYBRID III 3 YEAR OLD

The purpose of the testing is: 1) to determine whether test data from the revised FMVSS No. 213 bench is repeatable and reproducible when compared to other test facility results; and, 2) to refine additional test procedure measures to improve R&R.

SUMMARY

A Hybrid III 3 year old dummy (serial number 1869) was secured in the right rear occupant position (position 3 or P3) in a rearward facing child restraint system (CRS) or secured in the left rear occupant position (position 4 or P4). The Hybrid III 3 year old was instrumented with head, chest, and pelvis triaxial accelerometers, upper neck and lumbar force and moment load cells and a displacement potentiometer in the chest. During this test series the dummy was restrained with a 3-point seatbelt (SB3PT) or Lower Anchors and Top Tether (LATCH).

Section 2 contains rearward facing CRS. Section 3 contains forward facing CRS. Section 4 contains the dummy certification data.

SECTION 2

REARWARD FACING CRS TEST SUMMARY

TEST DUMMY INFORMATION

Description	Position # 3 CRS
ATD Type/Serial No.	Hybrid III 3 Year Old/1869
Restraint System	SB3PT
CRS Direction	Rearward Facing
Foam Cushion	WB8, WB14

CAMERA POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin	mm	0.00	0.00	0.00
N1 Passenger Side	mm	366.66	904.22	-318.64
N4 Passenger Head Excursion	mm	813.61	906.94	-390.08

DUMMY POSITIONING

CRS: Graco MyRide 65 – Rearward Facing – SB3PT

TRC Test Number: S200320-1 VRTC Test Number: FR_RR1_02

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Frame Back	mm	-118.09	-351.65	-680.89
Top of Seat	mm	765.24	-351.57	-691.79
Top of Head	mm	637.18	-351.52	-703.24
Bridge of Nose	mm	520.42	-350.98	-669.34
Head CG Outboard	mm	587.46	-285.30	-640.63
Chest Clip	mm	450.38	-346.21	-542.52
Buckle	mm	298.37	-345.93	-426.79
Base Center	mm	570.20	-348.25	-295.38
Rear Seat Back Middle	mm	711.50	-346.08	-572.13
Center of Top of Base	mm	80.65	-351.72	-365.23
Center of Seat Frame Bottom	mm	617.57	-349.41	-109.31
Target 1 – Seat Side Upper	mm	718.87	-208.23	-602.61
Target 4 – Seat Side Lower	mm	605.73	-211.79	-363.03
Target 2 – Seat Base H-Point	mm	358.65	-203.99	-310.06
Target 3 – Seat Base Side	mm	205.00	-214.12	-294.79

DUMMY INJURY

HIC (36 ms)	475
Chest Clip (3 ms)	48.47 g

DUMMY POSITIONING

CRS: Graco MyRide 65 – Rearward Facing – SB3PT

TRC Test Number: S200323-1 VRTC Test Number: FR_RR1_04

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Frame Back	mm	-117.64	-348.92	-682.57
Top of Seat	mm	778.96	-350.64	-697.65
Top of Head	mm	648.97	-352.77	-705.08
Bridge of Nose	mm	532.25	-351.13	-671.17
Head CG Outboard	mm	601.91	-288.89	-637.59
Chest Clip	mm	457.52	-352.91	-546.51
Buckle	mm	301.56	-353.57	-426.16
Base Center	mm	576.86	-347.56	-300.22
Rear Seat Back Middle	mm	721.52	-351.57	-576.79
Center of Top of Base	mm	85.54	-352.71	-366.53
Center of Seat Frame Bottom	mm	616.95	-350.68	-110.89
Target 1 – Seat Side Upper	mm	719.26	-216.48	-602.66
Target 4 – Seat Side Lower	mm	604.68	-213.31	-363.78
Target 2 – Seat Base H-Point	mm	359.09	-206.85	-311.17
Target 3 – Seat Base Side	mm	206.83	-211.18	-295.64

DUMMY INJURY

HIC (36 ms)	494
Chest Clip (3 ms)	48.84 g

DUMMY POSITIONING

CRS: Graco MyRide 65 – Rearward Facing – SB3PT

TRC Test Number: S200323-2 VRTC Test Number: FR_RR1_06

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Frame Back	mm	-117.76	-348.89	-682.38
Top of Seat	mm	767.93	-352.40	-695.23
Top of Head	mm	641.66	-350.63	-706.10
Bridge of Nose	mm	525.24	-352.68	-672.21
Head CG Outboard	mm	594.55	-289.37	-642.46
Chest Clip	mm	443.20	-351.72	-540.75
Buckle	mm	302.18	-351.63	-430.82
Base Center	mm	575.53	-350.24	-302.02
Rear Seat Back Middle	mm	717.71	-352.77	-577.55
Center of Top of Base	mm	82.54	-352.98	-370.73
Center of Seat Frame Bottom	mm	616.90	-350.58	-110.47
Target 1 – Seat Side Upper	mm	718.37	-216.05	-604.21
Target 4 – Seat Side Lower	mm	605.41	-214.14	-361.58
Target 2 – Seat Base H-Point	mm	359.74	-206.67	-309.78
Target 3 – Seat Base Side	mm	207.04	-211.16	-295.58

DUMMY INJURY

HIC (36 ms)	494
Chest Clip (3 ms)	50.22 g

SECTION 3

FORWARD FACING CRS TEST SUMMARY

TEST DUMMY INFORMATION

Description	Position # 4 CRS
ATD Type/Serial No.	Hybrid III 3 Year Old/1869
Restraint System	LATCH
CRS Direction	Forward Facing
Foam Cushion	WB7, WB10

CAMERA POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Origin	mm	0.00	0.00	0.00
N1 Passenger Side	mm	325.28	-901.67	-375.68
N4 Passenger Head Excursion	mm	709.92	-907.72	-448.29

DUMMY POSITIONING

CRS: Cosco Scenera Next – Forward Facing – LATCH

TRC Test Number: S200518-1 VRTC Test Number: FR_RR1_33

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Back Frame	mm	-120.79	350.98	-682.93
Top of CRS	mm	-33.44	349.77	-673.44
Top of Head	mm	73.64	350.46	-686.94
Bridge of Nose	mm	192.35	351.78	-657.88
Head CG Outboard	mm	128.89	287.00	-623.77
Chest Clip	mm	275.24	349.71	-502.31
Buckle	mm	402.04	351.29	-392.54
Base Center	mm	584.37	349.66	-303.91
Center of Seat Frame Bottom	mm	619.68	350.41	-103.51
Outboard Knee	mm	505.69	241.32	-379.39
Outboard Ankle	mm	688.09	249.22	-305.84
Target 1 - Seat Side Upper	mm	59.40	214.24	-574.33
Target 4 - Seat Side Lower	mm	140.44	213.35	-316.96
Target 2 - Seat Base H-Point	mm	302.39	195.14	-248.72
Target 3 - Seat Base Side	mm	461.87	210.73	-243.54

DUMMY INJURY

HIC (36 ms)	469
Chest Clip (3 ms)	42.49

DUMMY POSITIONING

CRS: Cosco Scenera Next – Forward Facing – LATCH

TRC Test Number: S200519-1 VRTC Test Number: FR_RR1_35

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Back Frame	mm	-121.80	350.14	-682.64
Top of CRS	mm	-29.94	351.81	-669.63
Top of Head	mm	76.50	351.37	-685.23
Bridge of Nose	mm	196.07	351.21	-656.79
Head CG Outboard	mm	132.98	287.58	-622.80
Chest Clip	mm	278.67	347.79	-504.39
Buckle	mm	407.27	348.86	-393.02
Base Center	mm	577.50	349.51	-307.99
Center of Seat Frame Bottom	mm	619.24	351.25	-105.27
Outboard Knee	mm	508.79	241.31	-385.17
Outboard Ankle	mm	688.53	255.44	-306.49
Target 1 - Seat Side Upper	mm	55.40	219.63	-577.75
Target 4 - Seat Side Lower	mm	144.14	219.55	-323.79
Target 2 - Seat Base H-Point	mm	303.84	197.98	-252.32
Target 3 - Seat Base Side	mm	460.96	212.47	-242.85

DUMMY INJURY

HIC (36 ms)	406
Chest Clip (3 ms)	40.85 g

DUMMY POSITIONING

CRS: Cosco Scenera Next – Forward Facing – LATCH

TRC Test Number: S200519-2 VRTC Test Number: FR_RR1_37

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Back Frame	mm	-118.32	350.22	-684.24
Top of CRS	mm	-35.63	350.38	-671.55
Top of Head	mm	80.58	351.51	-692.28
Bridge of Nose	mm	196.01	350.85	-655.03
Head CG Outboard	mm	131.35	287.64	-623.57
Chest Clip	mm	271.68	350.18	-506.29
Buckle	mm	402.96	350.06	-394.46
Base Center	mm	584.75	350.67	-299.85
Center of Seat Frame Bottom	mm	619.54	350.39	-106.08
Outboard Knee	mm	499.99	237.12	-385.37
Outboard Ankle	mm	680.99	246.02	-309.26
Target 1 - Seat Side Upper	mm	55.26	215.68	-577.05
Target 4 - Seat Side Lower	mm	135.71	217.24	-322.51
Target 2 - Seat Base H-Point	mm	294.33	199.03	-249.95
Target 3 - Seat Base Side	mm	456.31	215.20	-241.10

DUMMY INJURY

HIC (36 ms)	363
Chest Clip (3 ms)	39.92 g

DUMMY POSITIONING

CRS: Cosco Scenera Next – Forward Facing – LATCH

TRC Test Number: S200520-1 VRTC Test Number: FR_RR1_38

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Back Frame	mm	-119.30	350.36	-683.72
Top of CRS	mm	-36.36	351.77	-670.16
Top of Head	mm	68.88	349.60	-682.53
Bridge of Nose	mm	189.45	351.09	-656.81
Head CG Outboard	mm	126.85	285.59	-621.52
Chest Clip	mm	267.71	350.57	-503.89
Buckle	mm	400.24	349.67	-388.14
Base Center	mm	589.68	351.56	-297.74
Center of Seat Frame Bottom	mm	619.24	351.13	-105.11
Outboard Knee	mm	502.20	242.55	-378.46
Outboard Ankle	mm	682.14	254.34	-299.97
Target 1 - Seat Side Upper	mm	52.48	215.15	-568.74
Target 4 - Seat Side Lower	mm	136.46	218.31	-309.78
Target 2 - Seat Base H-Point	mm	298.30	202.18	-242.66
Target 3 - Seat Base Side	mm	462.35	217.77	-236.07

DUMMY INJURY

HIC (36 ms)	384
Chest Clip (3 ms)	40.43 g

DUMMY POSITIONING

CRS: Cosco Scenera Next – Forward Facing – LATCH

TRC Test Number: S200521-1 VRTC Test Number: FR_RR1_39

DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.00	0.00	0.00
Center of Seat Back Frame	mm	-119.87	350.77	-683.47
Top of CRS	mm	-34.32	350.12	-674.52
Top of Head	mm	74.20	349.36	-684.48
Bridge of Nose	mm	193.37	349.48	-657.09
Head CG Outboard	mm	128.81	285.12	-621.09
Chest Clip	mm	273.28	349.17	-503.49
Buckle	mm	401.53	350.51	-395.28
Base Center	mm	580.23	350.10	-309.02
Center of Seat Frame Bottom	mm	619.16	351.15	-105.27
Outboard Knee	mm	505.47	238.94	-381.83
Outboard Ankle	mm	684.47	248.29	-301.80
Target 1 - Seat Side Upper	mm	54.34	218.93	-575.43
Target 4 - Seat Side Lower	mm	141.70	221.70	-318.43
Target 2 - Seat Base H-Point	mm	300.96	204.97	-245.89
Target 3 - Seat Base Side	mm	461.50	220.12	-237.16

DUMMY INJURY

HIC (36 ms)	369
Chest Clip (3 ms)	40.83 g

SECTION 4
DUMMY CALIBRATION DATA

Transportation Research Center Inc.
ATD Certification Report

Customer:

Vehicle Research and Test Center
10820 State Route 347
East Liberty, OH 43319

Anthropomorphic Device:

Hybrid III (3) Year Old
Serial No. 1869
Certification No. 13

Transportation Research Center Inc.
P.O. Box B-67
10820 St. Rt. 347
East Liberty, OH 43319-0367

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Introduction

Customer Name:	VRTC
Customer Contact:	Bryan Crabtree
Email:	Bryan.Crabtree.CTR@dot.gov
Phone:	(937) 666-4511
Date Received:	February 24, 2020
Date Completed:	February 25, 2020

Special Instruction: N/A

This Certification Report meets the requirements set forth by the ANSI National Accreditation Board ISO/IEC 17025:2017 accreditation under the scope of Mechanical Testing for Crash Test Dummy Certification Testing (ANAB Certificate #L2187).

The evidence measurements of this Certification Report are traceable by the Serial Number and Certification Number located at the top of the first section for each certification.

Each certification test was conducted by an authorized Transportation Research Center Inc. (TRC Inc.) employee within the requirements of the ISO/IEC 17025:2017 standards and adheres to CFR Part 572 Subparts B, E, N, O, P, R, T, U, V, SAE J2860, J2856, J2862; depending on ATD type. Any statements of conformity in this report are made using the shared risk method.

Each component of the ATD to be tested was contained in a temperature controlled environment for a period of at least 4 hours before the test. The temperature in the ATD Certification Laboratory was between 20.6°C and 22.2°C (69.08°F – 71.96°F). The relative humidity in the ATD Certification Laboratory was between 10% and 70%.

Date Testing Requested: 02/24/2020

Testing Conducted by: _____ Date: 02/25/2020
Bryce Williams, Engineering Technician I

Testing Approved by: _____ Date: 03/02/2020
Sal LoPresti, Supervisor - Calibration Services

Appendix A – Incoming Inspection

TRC ATD Laboratory As Received Inspection Report

Name: Bryce Williams

Date: 02/25/2020

Customer: VRTC

ATD S/N: 1869

HEAD / NECK

No.	Comments	Photo No.
1	None to report.	
2		
3		

THORAX / ABDOMEN

No.	Comments	Photo No.
4	None to report.	
5		
6		

SHOULDERS / ARMS

No.	Comments	Photo No.
7	None to report.	
8		
9		

PELVIS / LUMBAR

No.	Comments	Photo No.
10	None to report.	
11		
12		

FEMUR / KNEES

No.	Comments	Photo No.
13	None to report.	
14		
15		

LOWER LEGS / FEET

No.	Comments	Photo No.
16	None to report.	
17		
18		

TRC ATD Laboratory As Received Inspection Photos

Name: Bryce Williams

Date: 02/25/2020

Customer: VRTC

ATD S/N: 1869

1	
2	
3	
4	
5	
6	

TRC ATD Laboratory Inspection Report Action Items

Name:	Bryce Williams	Date:	02/25/2020
Customer:	VRTC	ATD S/N:	1869

Action #1	None to report.
Resolution #1	
Action #2	
Resolution #2	
Action #3	
Resolution #3	
Comments	

Appendix B – Test Results

Transportation Research Center Inc.

Front Head Drop
HIII 3YO Serial No. 1869 Certification No. 13-1
Test Date: 2/25/2020

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 ºC	21.5 ºC	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Peak Head Resultant Acceleration	250 - 280 g	257.6 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-6.9 g	Yes
Is Acceleration Curve Unimodal?	< 10 %	4.70 %	Yes

Test meets specifications.

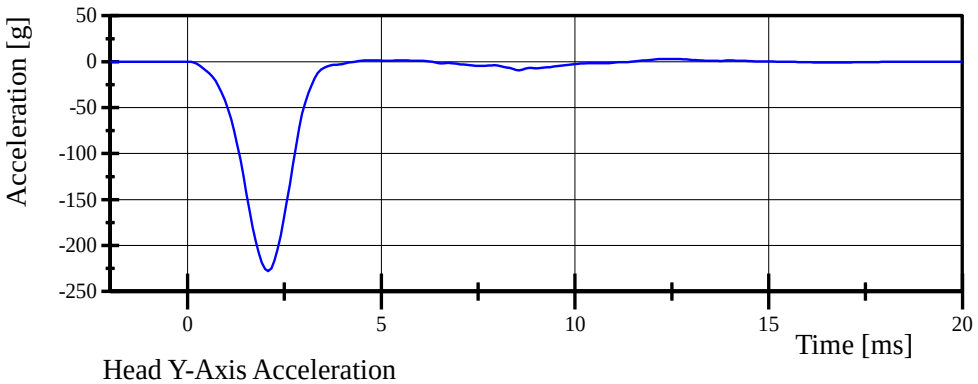
Condition: Used

Comments:
Head Skin S/N: 03254

Transportation Research Center Inc.

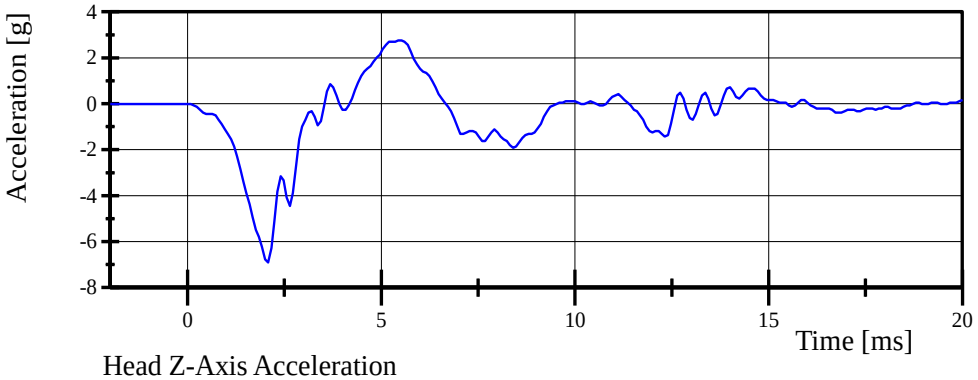
Front Head Drop
HIII 3YO Serial No. 1869 Certification No. 13-1
Test Date: 2/25/2020

Head X-Axis Acceleration



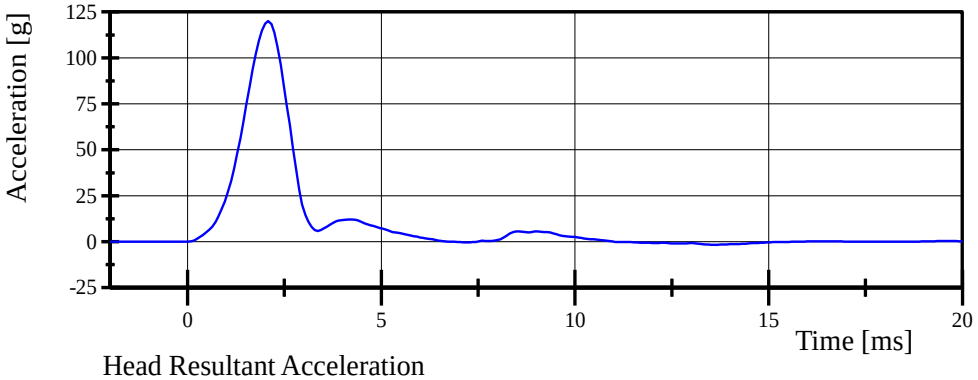
Filter Class: CFC_1000
Max: 3.1 g at 12.4 ms
Min: -227.8 g at 2.1 ms

Head Y-Axis Acceleration



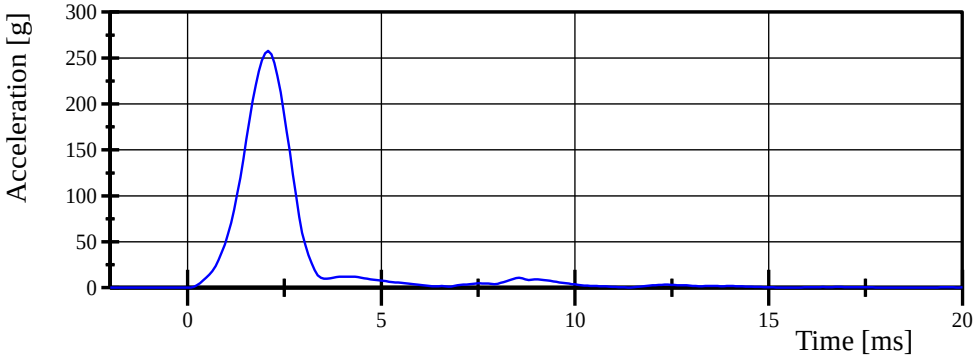
Filter Class: CFC_1000
Max: 2.8 g at 5.4 ms
Min: -6.9 g at 2.1 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 120.1 g at 2.1 ms
Min: -1.6 g at 13.5 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 257.6 g at 2.1 ms
Min: 0.0 g at -2.0 ms

Transportation Research Center Inc.

Neck Flexion
HIII 3YO Serial No. 1869 Certification No. 13-1
Test Date: 2/25/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 ºC	21.2 ºC	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Impact Velocity	5.40 - 5.60 m/s	5.581 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	(-2.0) - (-2.7) m/s	-2.39 m/s	Yes
Pendulum Integrated Velocity Change at 15 ms	(-3.0) - (-4.0) m/s	-3.55 m/s	Yes
Pendulum Integrated Velocity Change at 20 ms	(-4.0) - (-5.1) m/s	-4.85 m/s	Yes
Total Headform D-Plane Rotation	(-70) - (-82) º	-79.2 º	Yes
Peak Neck Occipital Condyles Moment	42 - 53 Nm	46.3 Nm	Yes
Neck Occipital Condyles Moment Decay to 10 Nm	60 - 80 ms	69.0 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: DG7094

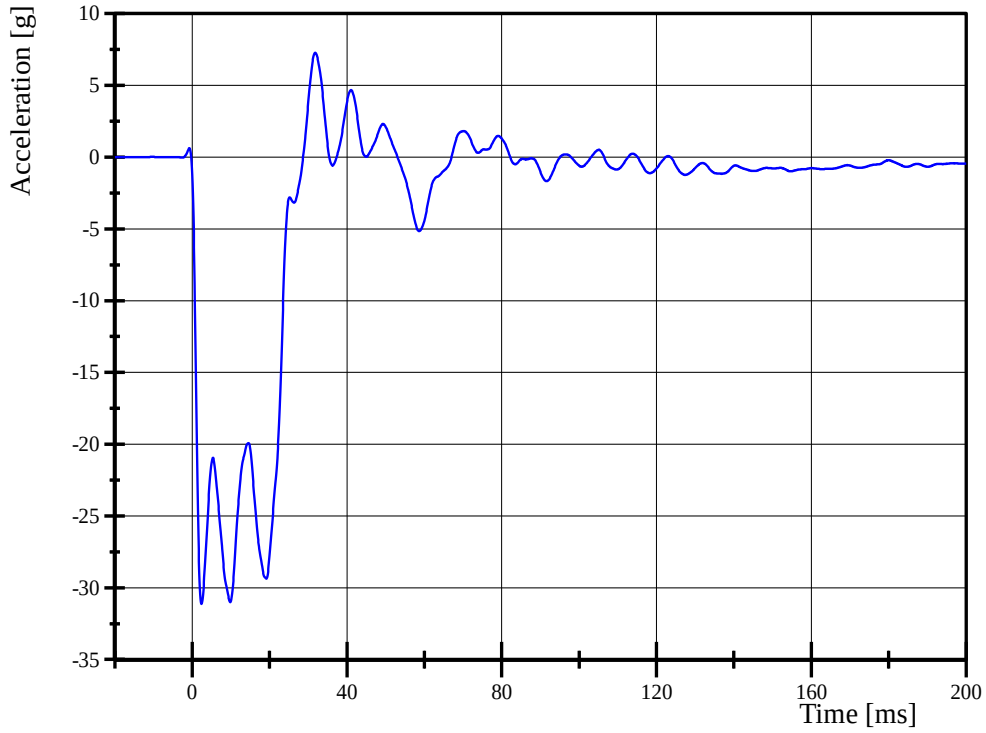
Transportation Research Center Inc.

Neck Flexion

HIII 3YO Serial No. 1869 Certification No. 13-1

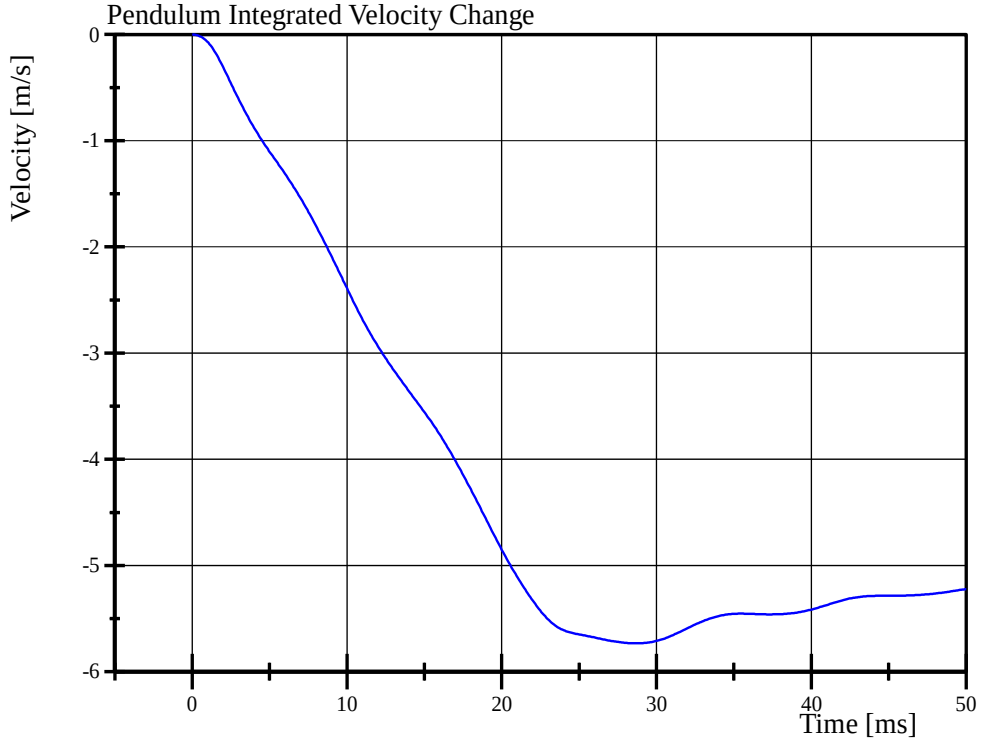
Test Date: 2/25/2020

Pendulum Acceleration



Filter Class: CFC_180
Max: 7.3 g at 31.8 ms
Min: -31.1 g at 2.4 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 0.0 m/s at 0.0 ms
Min: -5.7 m/s at 28.6 ms

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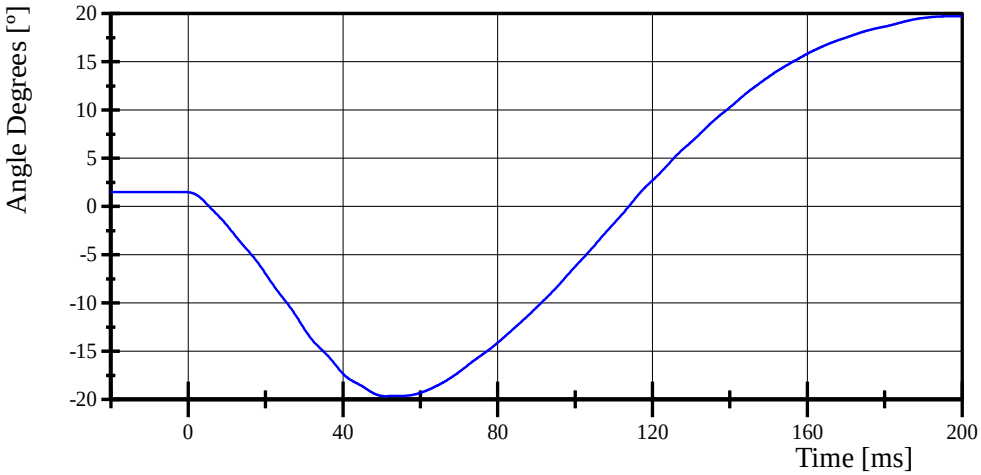
Neck Flexion

HIII 3YO Serial No. 1869 Certification No. 13-1

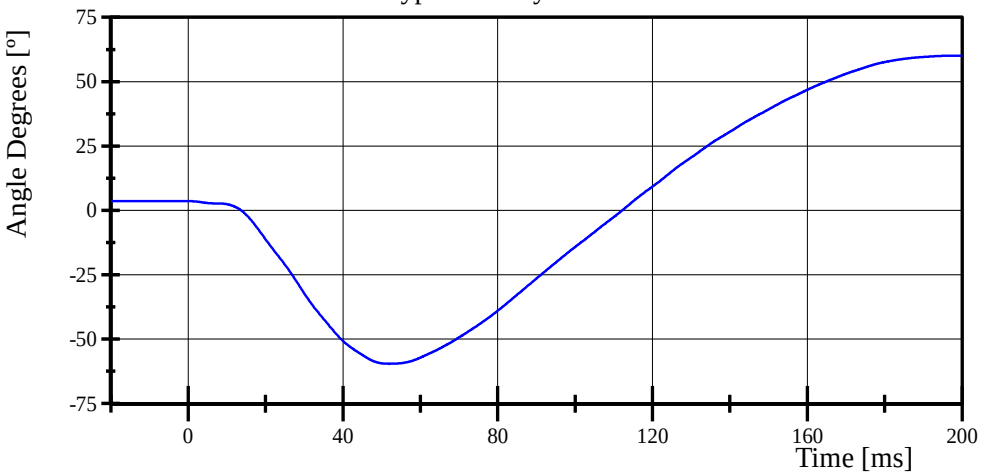
Test Date: 2/25/2020

Pot Rotation at the Base of Neck



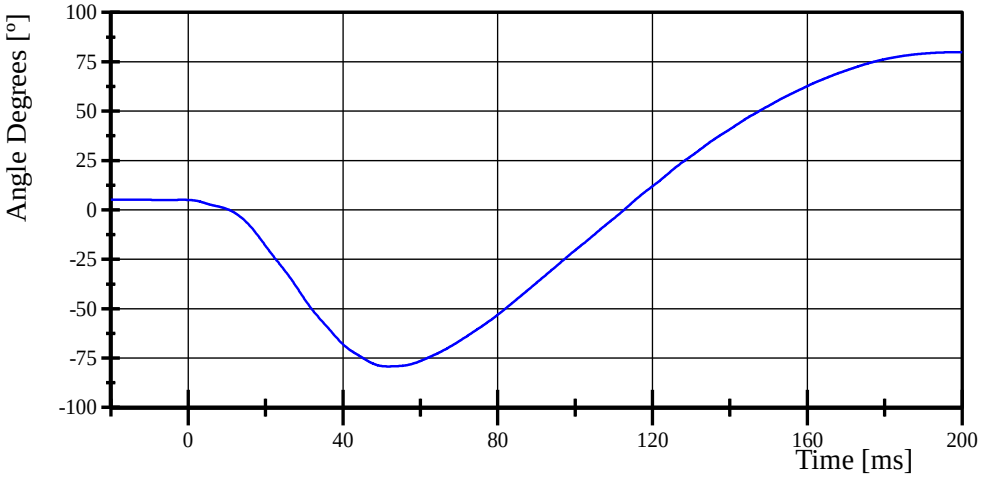
Filter Class: CFC_60
Max: 19.7 º at 196.9 ms
Min: -19.7 º at 51.0 ms

Headform Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 60.1 º at 200.0 ms
Min: -59.6 º at 51.9 ms

Total Headform D-Plane Rotation



Filter Class: CFC_60
Max: 79.8 º at 200.0 ms
Min: -79.2 º at 51.7 ms

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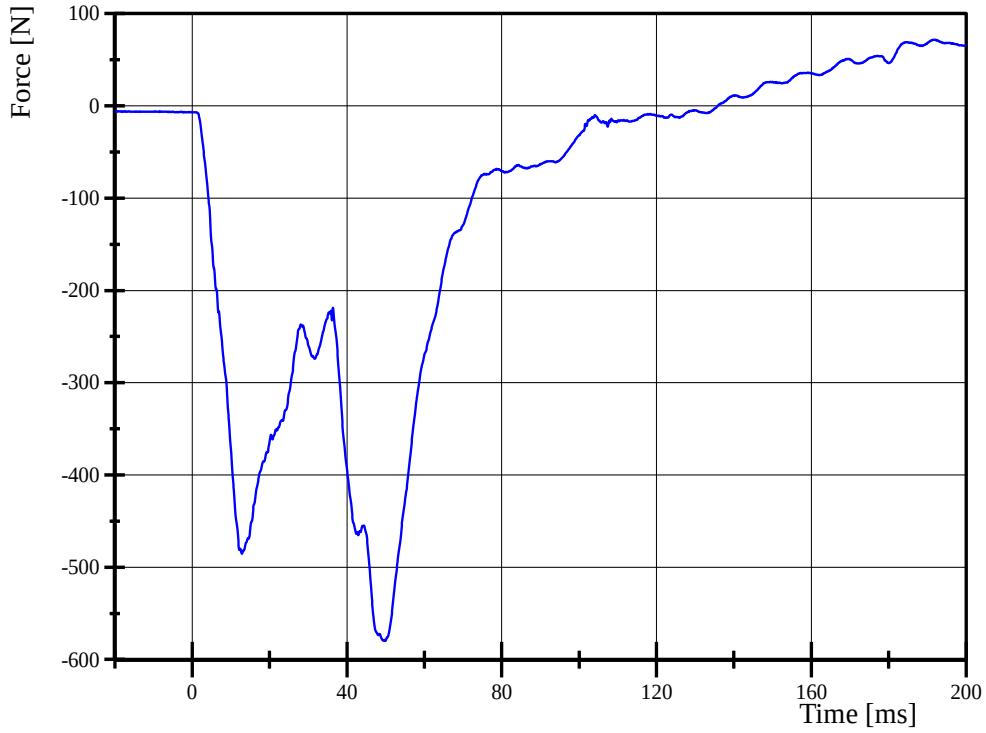
Neck Flexion

HIII 3YO Serial No. 1869 Certification No. 13-1

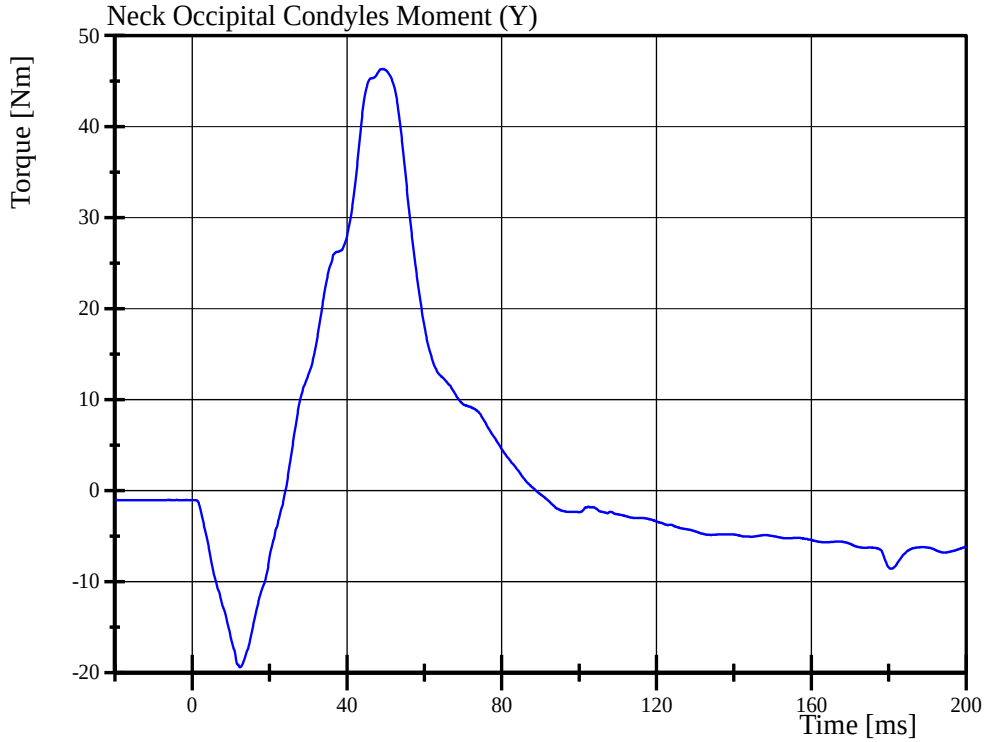
Test Date: 2/25/2020

Neck Force (X)



Filter Class: CFC_1000
Max: 71.7 N at 191.5 ms
Min: -579.7 N at 49.9 ms

Neck Occipital Condyles Moment (Y)



Filter Class: CFC_600
Max: 46.3 Nm at 49.4 ms
Min: -19.4 Nm at 12.4 ms

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Neck Extension
HIII 3YO Serial No. 1869 Certification No. 13-1
Test Date: 2/25/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 ºC	21.3 ºC	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Pendulum Impact Velocity	(-3.55) - (-3.75) m/s	-3.737 m/s	Yes
Pendulum Integrated Velocity Change at 6 ms	1.0 - 1.4 m/s	1.14 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	1.9 - 2.5 m/s	2.10 m/s	Yes
Pendulum Integrated Velocity Change at 14 ms	2.8 - 3.5 m/s	3.01 m/s	Yes
Total Headform D-Plane Rotation	83 - 93 º	89.0 º	Yes
Peak Neck Occipital Condyles Moment	(-43.7) - (-53.3) Nm	-51.54 Nm	Yes
Neck Occipital Condyles Moment Decay to 10 Nm	60 - 80 ms	67.3 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: DG7094

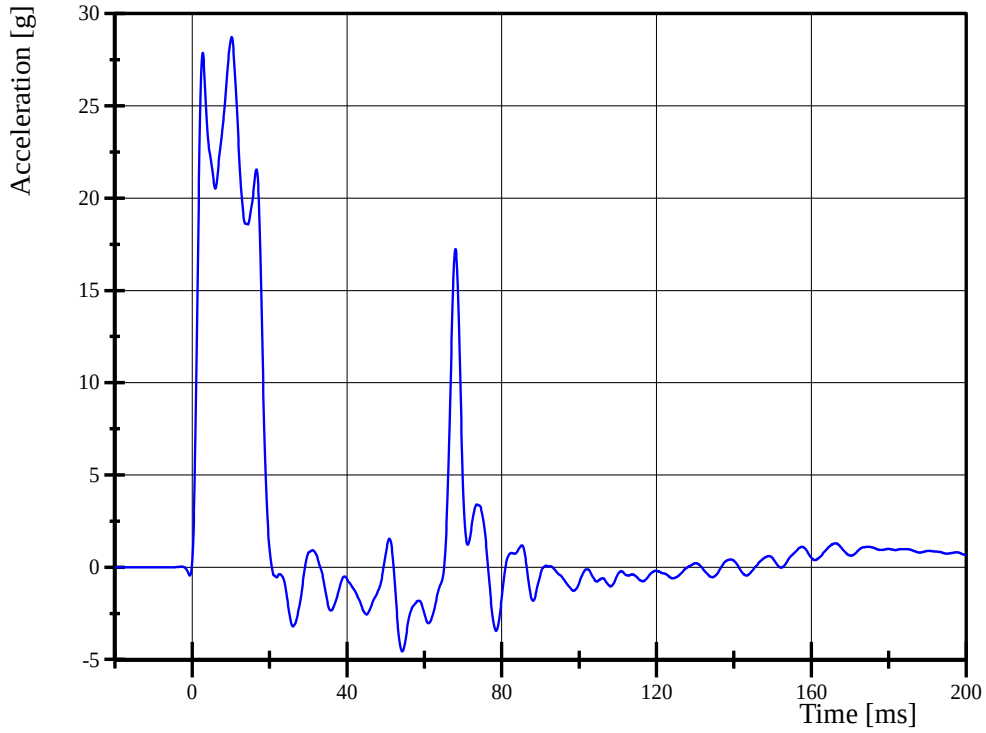
Transportation Research Center Inc.

Neck Extension

HIII 3YO Serial No. 1869 Certification No. 13-1

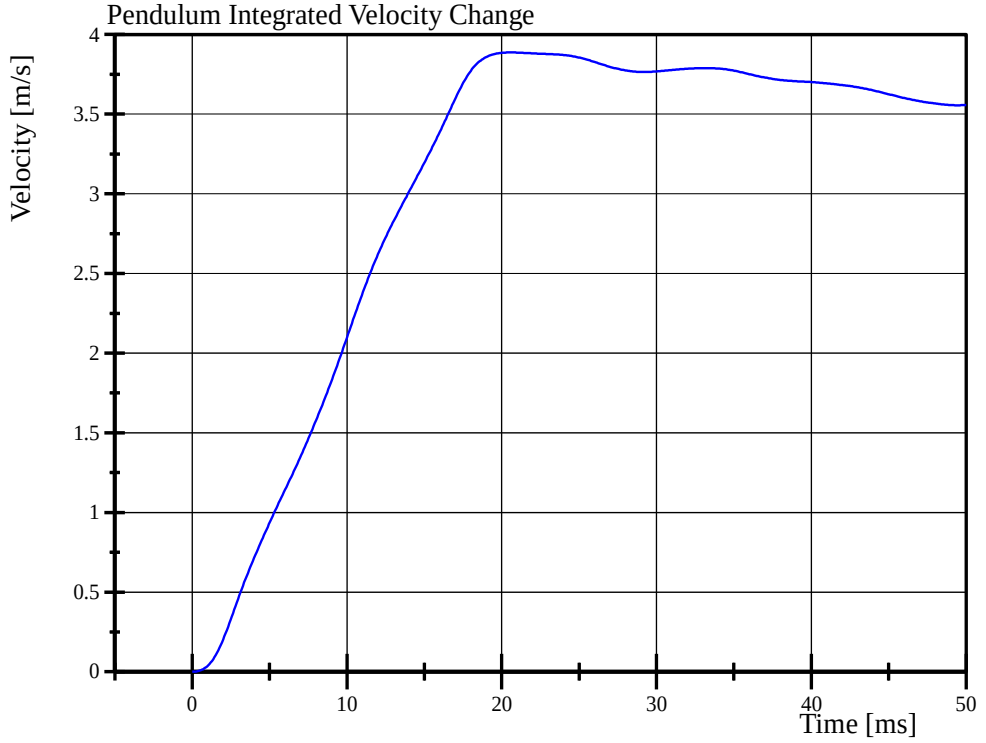
Test Date: 2/25/2020

Pendulum Acceleration



Filter Class: CFC_180
Max: 28.7 g at 10.2 ms
Min: -4.6 g at 54.2 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 3.9 m/s at 20.6 ms
Min: 0.0 m/s at 0.0 ms

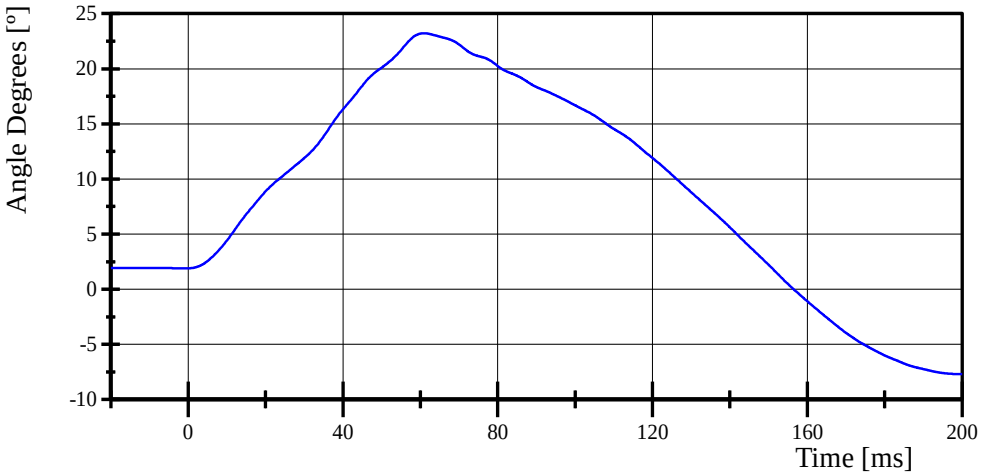
Transportation Research Center Inc.

Neck Extension

HIII 3YO Serial No. 1869 Certification No. 13-1

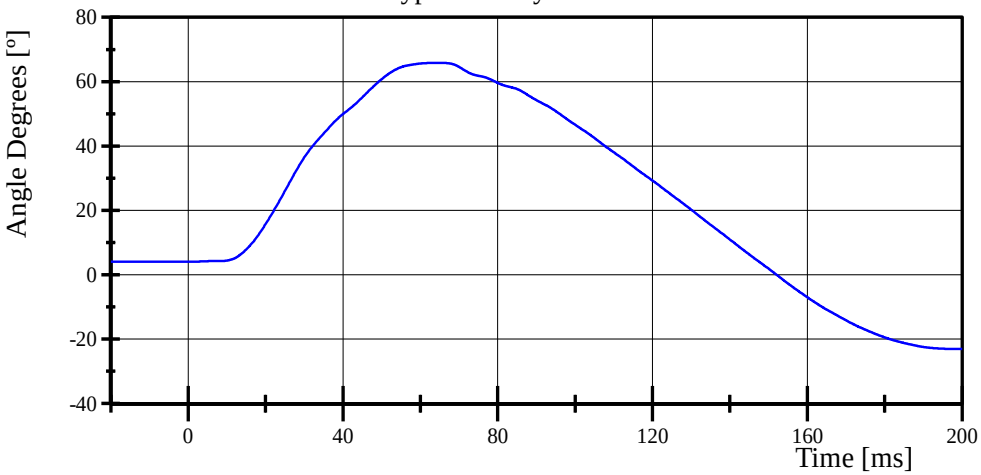
Test Date: 2/25/2020

Pot Rotation at the Base of Neck



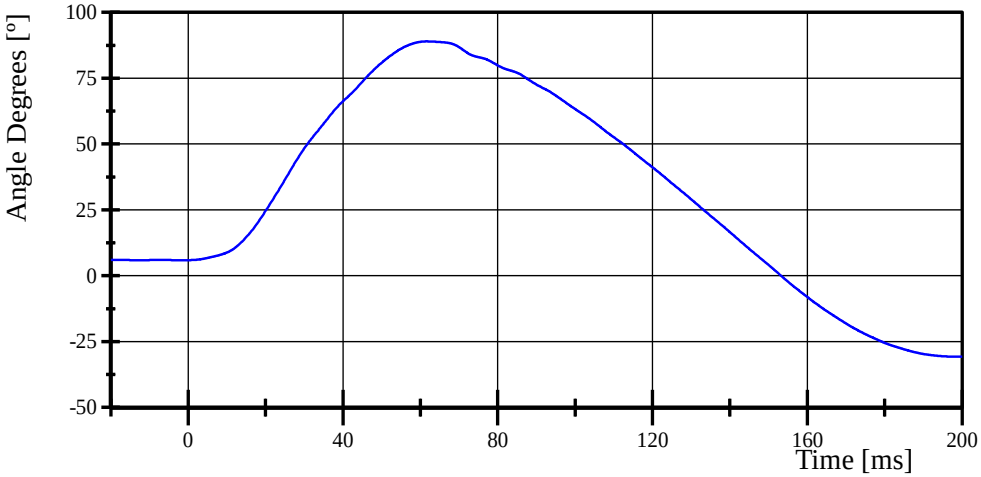
Filter Class: CFC_60
Max: 23.2 ° at 60.9 ms
Min: -7.7 ° at 200.0 ms

Headform Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 65.8 ° at 64.9 ms
Min: -23.1 ° at 199.1 ms

Total Headform D-Plane Rotation

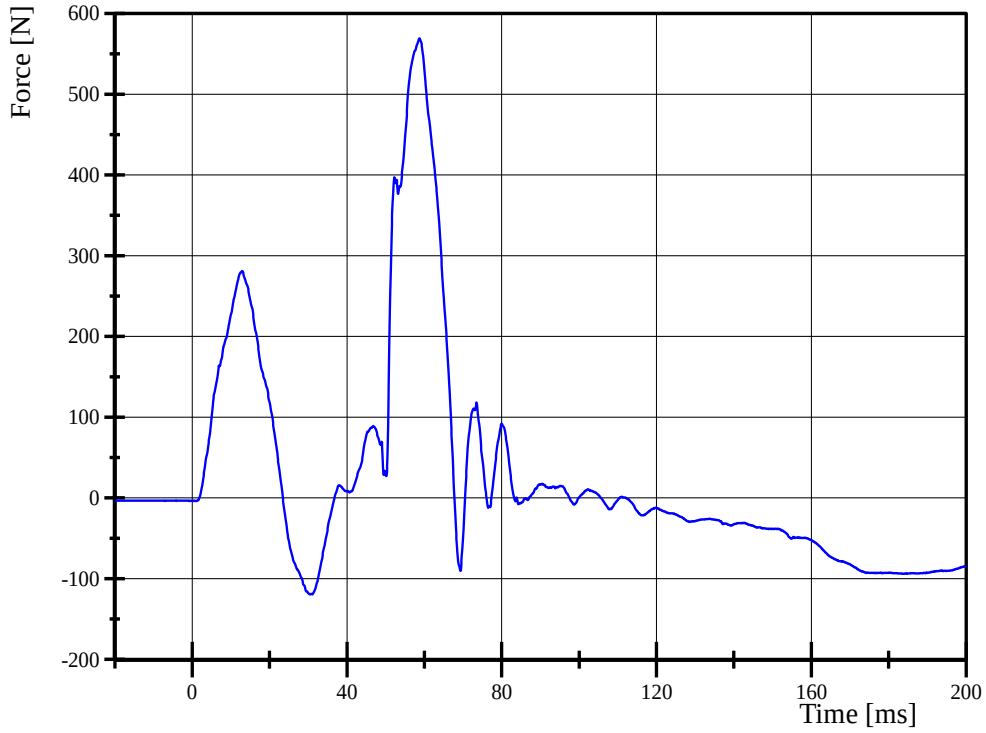


Filter Class: CFC_60
Max: 89.0 ° at 61.7 ms
Min: -30.8 ° at 200.0 ms

Transportation Research Center Inc.

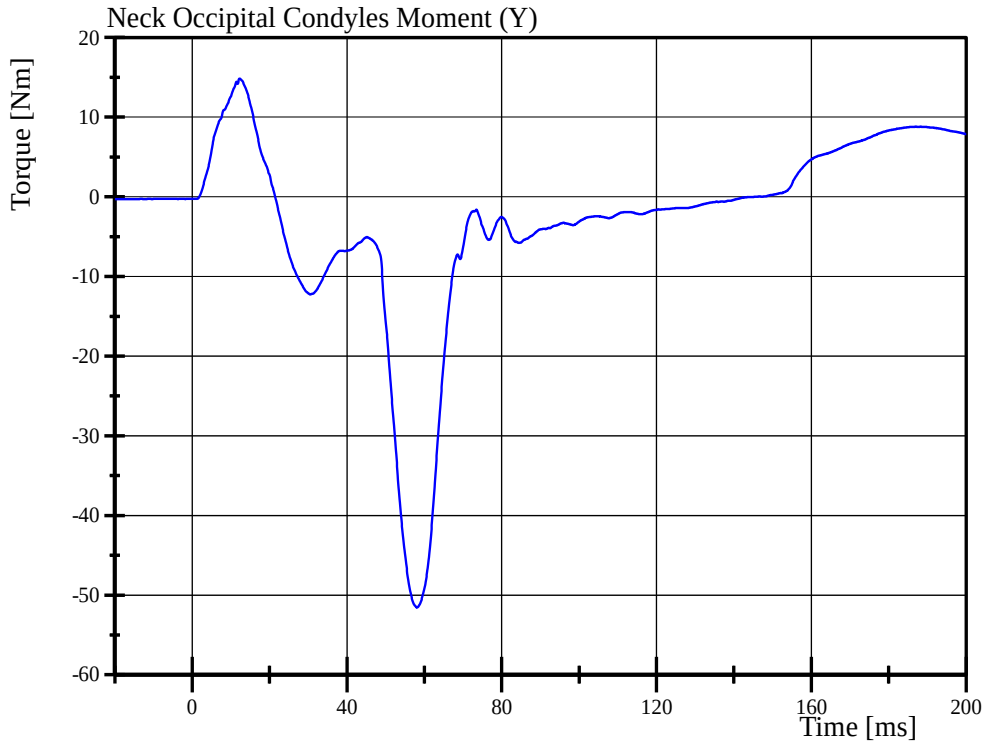
Neck Extension
HIII 3YO Serial No. 1869 Certification No. 13-1
Test Date: 2/25/2020

Neck Force (X)



Filter Class: CFC_1000
Max: 569.4 N at 58.7 ms
Min: -119.1 N at 30.4 ms

Neck Occipital Condyles Moment (Y)



Filter Class: CFC_600
Max: 14.8 Nm at 12.2 ms
Min: -51.5 Nm at 58.1 ms

Transportation Research Center Inc.

Front Thorax
HIII 3YO Serial No. 1869 Certification No. 13-1
Test Date: 2/25/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 ºC	21.3 ºC	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Probe Velocity	5.9 - 6.1 m/s	6.04 m/s	Yes
Probe Force Peak Between 32.0 mm and 38.0 mm Chest Deflection	(-680) - (-810) N	-738.3 N	Yes
Probe Force Peak Between 12.5 mm and 32.0 mm Chest Deflection	>= (-910) N	-741.7 N	Yes
Maximum Chest Compression	(-32) - (-38) mm	-33.5 mm	Yes
Internal Hysteresis	65 - 85 %	66.0 %	Yes

Test meets specifications.

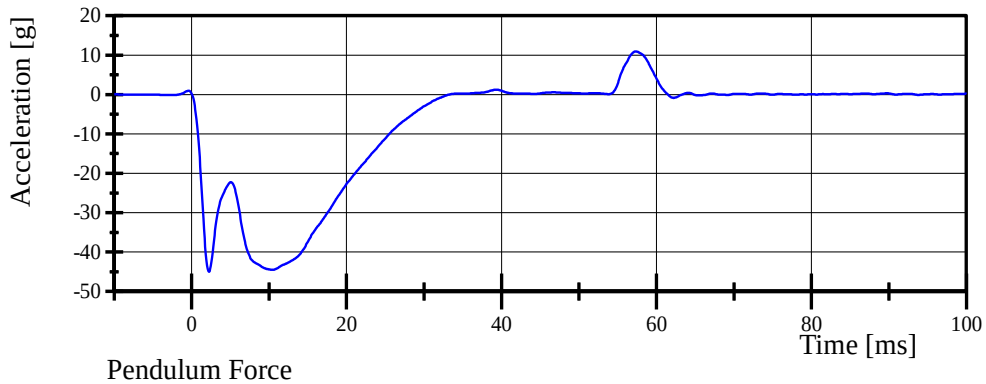
Condition: Used

Comments:
Torso Flesh S/N: 16503
Rib Set S/N: 16031758A

Transportation Research Center Inc.

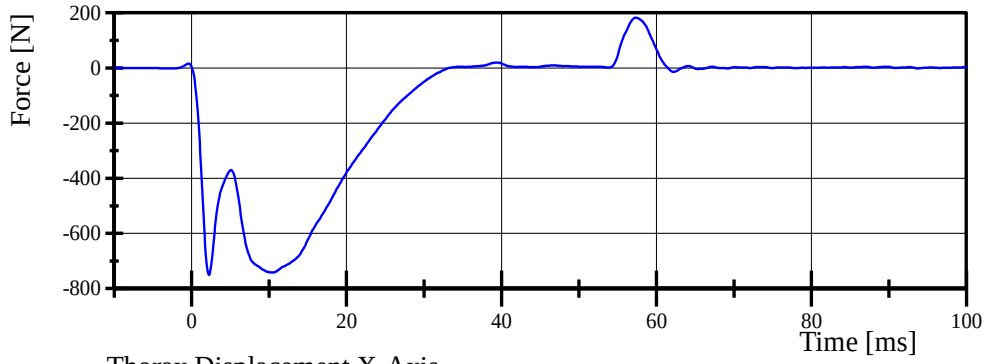
Front Thorax
HIII 3YO Serial No. 1869 Certification No. 13-1
Test Date: 2/25/2020

Pendulum Acceleration



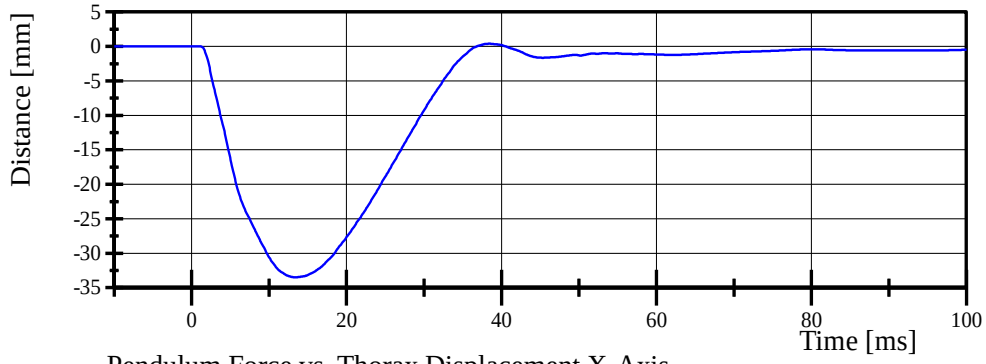
Filter Class: CFC_180
Max: 10.9 g at 57.3 ms
Min: -45.0 g at 2.2 ms

Pendulum Force



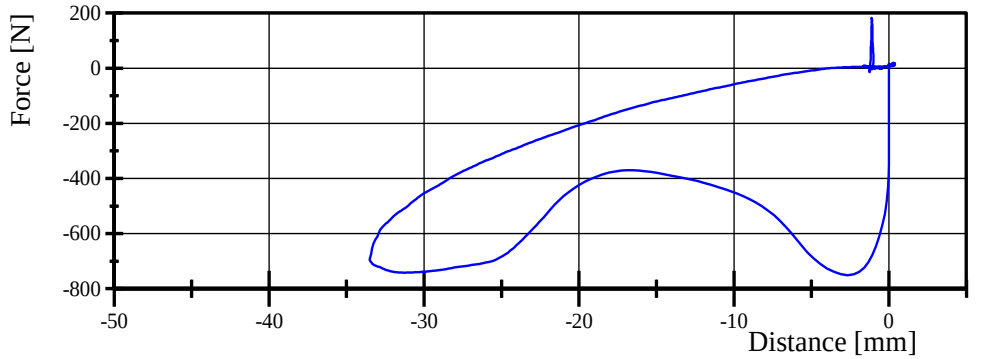
Filter Class: CFC_180
Max: 182.1 N at 57.3 ms
Min: -750.5 N at 2.2 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.4 mm at 38.4 ms
Min: -33.5 mm at 13.4 ms

Pendulum Force vs. Thorax Displacement X-Axis



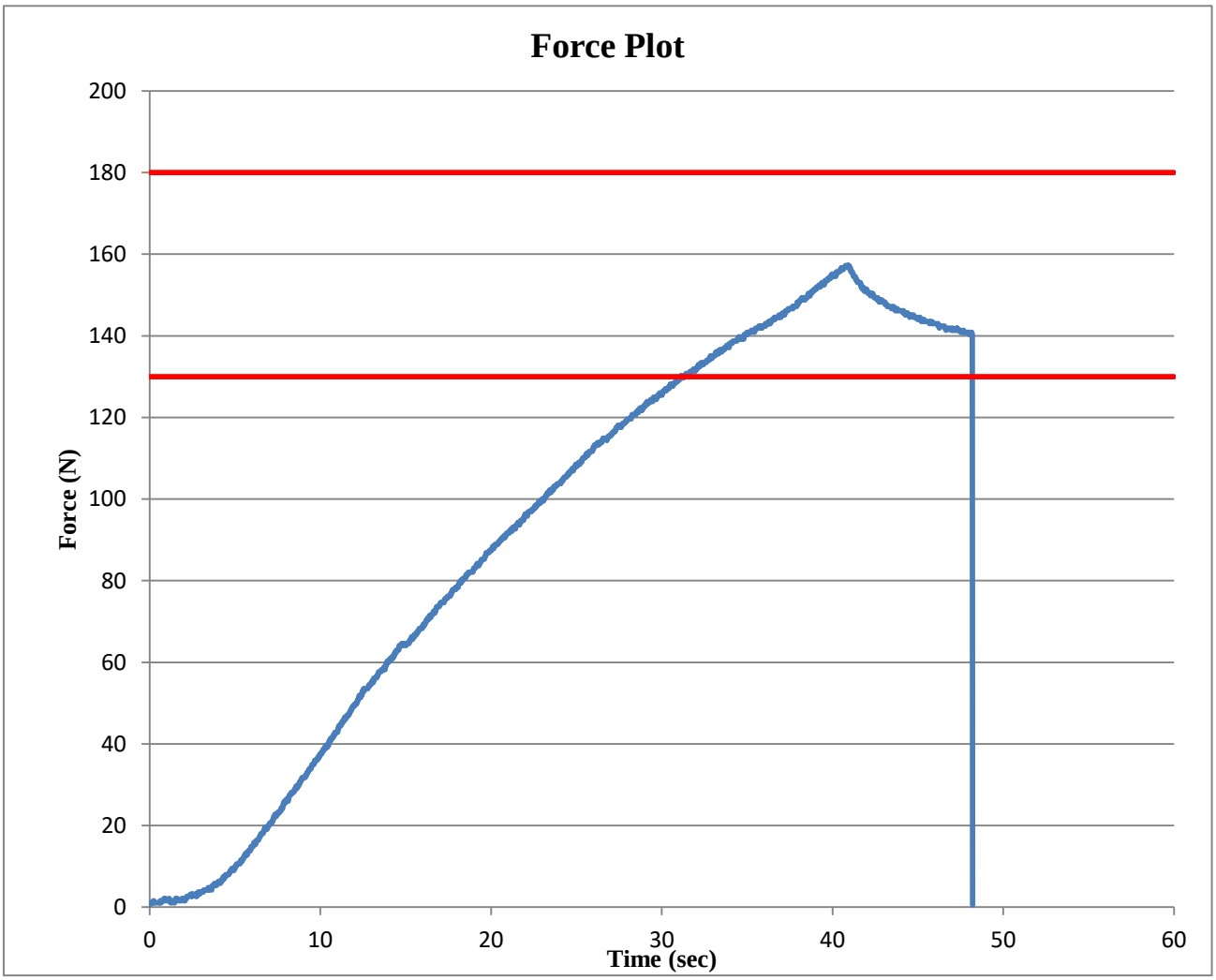
Filter Class: CFC_180
Max: 182.1 N at -1.1 mm
Min: -750.5 N at -2.7 mm

Transportation Research Center Inc.

Hybrid III 3-Year Old Child Torso Flexion

Customer:	VRTC		
Serial Number:	1869	Date:	2/25/2020
Test Number:	1	Time:	13:42

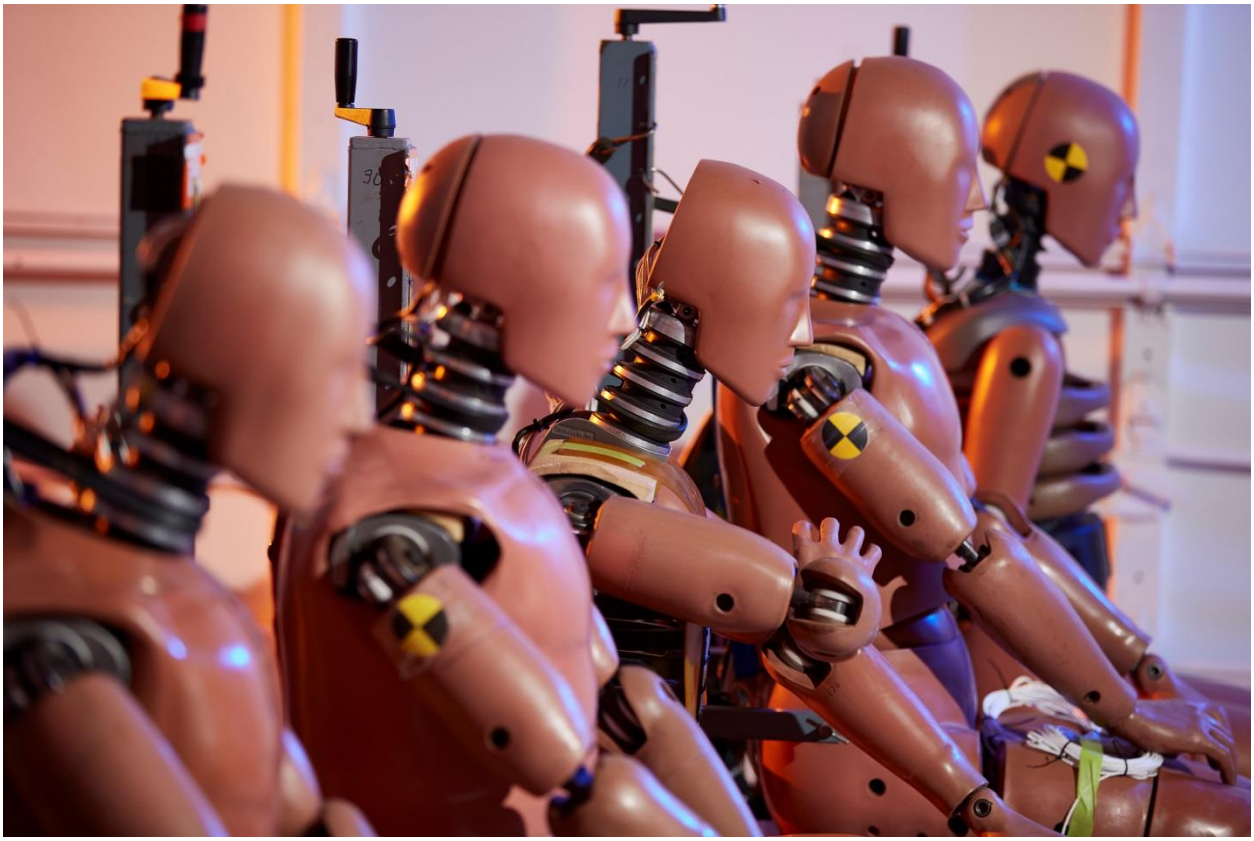
TEST PARAMETER	SPECIFICATION			TEST RESULTS		
Temperature	18.9	-	25.6	21.3	°C	Pass
Humidity	10	-	70	39	%	Pass
Average Angular Velocity	0.5	-	1.5	1.03	deg/sec	Pass
Initial Angle	0	-	15	5.13	deg	Pass
Peak Force at 45.29°	130	-	180	157.25	N	Pass
Final Angle	-10	-	10	3.97	deg	Pass



Lumbar S/N: N/A
Abdomen S/N: D63677

Appendix C – Quality Assurance

Quality Assurance



ATD Assembly & Final Inspection

ATD Type:	Hybrid III (3) Year Old
ATD Serial Number:	1869
Assembled by:	
Inspected by:	
Date Inspected:	02/25/2020