

**Vehicle Research and Test Center  
FMVSS 213 Testing  
Hybrid III 6 Year Old**

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



**Summary Report**

**March 2022**

**Prepared For  
Vehicle Research and Test Center  
P. O. Box 37  
East Liberty, OH 43319**

**SECTION 1**  
**PURPOSE AND SUMMARY FOR HYBRID III 6 YEAR OLD**

The purpose of this test series was to evaluate the test bench and test procedures for the proposed FMVSS 213 frontal impact test

**SUMMARY**

A Hybrid III 6 year old dummy (serial number 027) was secured in the right rear occupant position (position 3 or P3) in a belt positioning booster and forward facing convertible child restraint system (CRS). The Hybrid III 6 year old was instrumented with head, chest, and pelvic triaxial accelerometers, upper neck, and lumbar force and moment load cells, a displacement potentiometer and a rate gyro in the chest. During this test series the dummy was restrained with a 3-point seatbelt (SB3PT) or 3-point seatbelt and top tether (SB3PT&T).

Section 2 contains the testing performed using forward facing CRS in the right rear seating position. Section 3 contains the testing performed using a belt positioning booster CRS in the right rear seating position. Section 4 contains the dummy certification information.

**SECTION 2**  
**FORWARD FACING CRS TEST SUMMARY**

**TEST DUMMY INFORMATION**

Description	Position # 3 CRS
ATD Type/Serial No.	Hybrid III 6 Year Old/027
Restrain System	SB3PT, SB3PT&T
CRS Direction	Forward Facing
Foam Cushion	WB16, WB8

**CAMERA POSITIONING FARO MEASUREMENTS**

Description	Units	X	Y	Z
Origin	mm	0.00	0.00	0.00
N5 Passenger Front	mm	--- <sup>1</sup>	--- <sup>1</sup>	--- <sup>1</sup>
Passenger Excursion	mm	719.84	938.84	-376.27
Passenger Side	mm	364.19	935.22	-382.12

<sup>1</sup> Measurements not recorded

## DUMMY POSITIONING

CRS: Graco Nautilus 65 LX – Forward Facing – SB3PT

TRC Test Number: S220307-1

VRTC Test Number: FR\_BE\_02



## DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.13	-0.02	-0.11
Center of the seat frame bottom	mm	615.23	-350.76	-103.63
CRS base center	mm	555.86	-350.12	-232.11
Center of seat frame back	mm	-120.34	-350.75	-679.62
Top of seat	mm	-21.53	-349.30	-655.25
Top of headrest	mm	-72.83	-353.73	-905.58
Top of the head	mm	131.57	-351.15	-855.44
Bridge of nose	mm	219.77	-349.30	-760.22
Head CG outboard	mm	146.91	-284.46	-758.32
Neck center	mm	166.59	-350.17	-658.94
Chest Clip	mm	235.43	-349.74	-609.98
Buckle	mm	353.91	-351.20	-409.32
Knee Outer	mm	536.48	-244.27	-411.72
Ankle Outer	mm	657.18	-244.64	-182.21
CRS 1	mm	36.17	-162.48	-609.63
CRS 4	mm	127.27	-210.58	-349.44
CRS 2	mm	276.97	-136.38	-293.04
CRS 3	mm	423.71	-116.00	-327.42

## DUMMY INJURY

HIC (36 ms)	464
Chest Clip (3 ms)	47.7 g
Head Excursion (mm)	672
Knee Excursion (mm)	746

## DUMMY POSITIONING

CRS: Britax Advocate – Forward Facing – SB3PT&T

TRC Test Number: S220308-1

VRTC Test Number: FR\_BE\_04



### DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.05	0.29	0.12
Center of the seat frame bottom	mm	615.23	-350.71	-103.64
CRS base center	mm	564.73	-349.70	-238.96
Center of seat frame back	mm	-119.95	-350.64	-679.65
Top of seat	mm	-53.65	-348.72	-704.52
Top of headrest	mm	-93.39	-352.64	-835.71
Top of the head	mm	94.33	-351.63	-846.76
Bridge of nose	mm	205.27	-350.04	-777.50
Head CG outboard	mm	133.48	-285.81	-755.43
Neck center	mm	176.02	-351.77	-663.89
Chest Clip	mm	247.78	-351.85	-623.93
Buckle	mm	416.54	-350.46	-434.74
Knee Outer	mm	587.75	-239.98	-457.74
Ankle Outer	mm	697.96	-247.74	-222.09
CRS 1	mm	26.32	-172.70	-635.50
CRS 4	mm	204.85	-157.62	-398.21
CRS 2	mm	344.15	-149.74	-322.23
CRS 3	mm	495.48	-143.88	-353.62

### DUMMY INJURY

HIC (36 ms)	395
Chest Clip (3 ms)	37 g
Head Excursion (mm)	643
Knee Excursion (mm)	747

## DUMMY POSITIONING

CRS: Britax Advocate – Forward Facing – SB3PT

TRC Test Number: S220309-1

VRTC Test Number: FR\_BE\_06



### DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.04	0.07	0.03
Center of the seat frame bottom	mm	615.02	-350.84	-103.56
CRS base center	mm	580.58	-349.73	-226.41
Center of seat frame back	mm	-120.25	-350.60	-679.74
Top of seat	mm	-39.77	-351.24	-698.98
Top of headrest	mm	-82.37	-349.39	-830.44
Top of the head	mm	103.29	-350.81	-844.18
Bridge of nose	mm	213.67	-349.40	-776.61
Head CG outboard	mm	144.62	-283.46	-754.24
Neck center	mm	187.99	-350.66	-663.20
Chest Clip	mm	264.01	-349.97	-621.50
Buckle	mm	431.81	-350.41	-438.42
Knee Outer	mm	600.33	-238.45	-472.34
Right knee top	mm	597.45	-273.81	-514.36
Left knee top	mm	594.75	-434.82	-511.80
Ankle Outer	mm	710.74	-246.18	-236.67
CRS 1	mm	34.00	-169.12	-635.35
CRS 4	mm	223.01	-154.43	-403.03
CRS 2	mm	365.83	-147.81	-323.64
CRS 3	mm	512.17	-147.80	-356.20

### DUMMY INJURY

HIC (36 ms)	549
Chest Clip (3 ms)	44.1 g
Head Excursion (mm)	693
Knee Excursion (mm)	791

**SECTION 3**  
**BELT POSITIONING BOOSTER CRS TEST SUMMARY**

**TEST DUMMY INFORMATION**

Description	Position # 3 CRS
ATD Type/Serial No.	Hybrid III 6 Year Old/027
Restrain System	SB3PT
CRS Direction	Forward Facing
Foam Cushion	WB8, WB16

**CAMERA POSITIONING FARO MEASUREMENTS**

Description	Units	X	Y	Z
Origin	mm	0.00	0.00	0.00
N5 Passenger Front	mm	--- <sup>1</sup>	--- <sup>1</sup>	--- <sup>1</sup>
Passenger Excursion	mm	719.84	938.84	-376.27
Passenger Side	mm	364.19	935.22	-382.12

<sup>1</sup> Measurements not recorded

## DUMMY POSITIONING

CRS: Maxi Cosi Pria – Belt Positioning Booster – SB3PT

TRC Test Number: S220309-2

VRTC Test Number: FR\_BE\_08



### DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.02	0.26	0.05
Center of the seat frame bottom	mm	615.06	-350.76	-103.56
CRS base center	mm	592.52	-349.08	-226.75
Center of seat frame back	mm	-120.09	-350.59	-679.70
Top of seat	mm	-46.76	-349.84	-704.44
Top of headrest	mm	-85.26	-353.39	-850.86
Top of the head	mm	111.60	-350.34	-872.46
Bridge of nose	mm	211.98	-348.14	-793.47
Head CG outboard	mm	138.49	-284.53	-776.60
Neck center	mm	174.34	-351.10	-682.43
Knee Outer	mm	562.80	-237.80	-470.13
Right knee top	mm	560.20	-270.01	-517.87
Left knee top	mm	557.28	-418.56	-517.81
Ankle Outer	mm	745.29	-256.41	-285.29
CRS 1	mm	10.53	-215.35	-623.55
CRS 4	mm	158.69	-213.68	-377.73
CRS 2	mm	325.85	-191.86	-315.32
CRS 3	mm	487.31	-208.48	-285.05
Shoulder belt top	mm	222.96	-350.57	-633.36
Shoulder belt bottom	mm	282.66	-350.35	-581.06
Lap belt top	mm	358.18	-350.08	-455.98
Lap belt bottom	mm	405.09	-351.03	-445.75

### DUMMY INJURY

HIC (36 ms)	787
Chest Clip (3 ms)	49.2 g
Head Excursion(mm)	606
Knee Excursion (mm)	788

## DUMMY POSITIONING

CRS: Evenflo EveryStage – Belt Positioning Booster – SB3PT

TRC Test Number: S220310-1

VRTC Test Number: FR\_BE\_10



### DUMMY POSITIONING FARO MEASUREMENTS

Description	Units	X	Y	Z
Z-Point	mm	0.06	-0.50	-0.01
Center of the seat frame bottom	mm	615.28	-350.99	-103.45
CRS base center	mm	590.61	-349.47	-230.13
Center of seat frame back	mm	-120.52	-350.75	-679.51
Top of seat	mm	-21.30	-350.58	-759.53
Top of headrest	mm	-29.96	-352.48	-842.04
Top of the head	mm	147.61	-350.12	-892.26
Bridge of nose	mm	244.16	-348.60	-805.56
Head CG outboard	mm	170.73	-283.52	-796.62
Neck center	mm	197.63	-350.35	-698.82
Knee Outer	mm	580.36	-237.84	-432.72
Right knee top	mm	585.00	-271.51	-478.90
Left knee top	mm	586.42	-424.19	-480.71
Ankle Outer	mm	728.01	-248.67	-219.60
CRS 1	mm	19.06	-182.33	-614.66
CRS 4	mm	138.77	-209.31	-364.58
CRS 2	mm	319.48	-130.99	-363.11
CRS 3	mm	475.77	-100.05	-382.40
Shoulder belt top	mm	249.93	-350.35	-642.64
Shoulder belt bottom	mm	302.33	-350.26	-583.61
Lap belt top	mm	367.85	-350.95	-460.22
Lap belt bottom	mm	406.23	-350.21	-433.10

**DUMMY INJURY**

HIC (36 ms)	512
Chest Clip (3 ms)	45.7 g
Head Excursion (mm)	594
Knee Excursion (mm)	NA

**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 (6) Year Old  
Serial No. 027  
Certification No. 27



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

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# Introduction

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Customer Name: VRTC  
Customer Contact: Bryan Crabtree  
Email: Bryan.Crabtree.CTR@dot.gov  
Phone: (937) 666-4511  
Date Received: February 23, 2022  
Date Completed: February 25, 2022

Special Instruction: N/A

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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). **This testing certification shall not be reproduced, except in full, without written approval of TRC Inc.**


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.

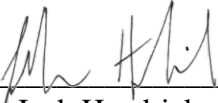
Each component of the ATD to be tested was contained in a temperature controlled environment for a period of at least 4 hours before the test. The temperature in the ATD Certification Laboratory was between 20.6°C and 22.2°C (69.08°F – 71.96°F). The relative humidity in the ATD Certification Laboratory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

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Date Received: 02/23/2022

Testing Conducted by:   
Robert Benavides

Date: 02/25/2022

Testing Approved by:   
Josh Hendricks

Date: 02/25/2022

## Appendix A – Incoming Inspection



# TRC ATD Laboratory As Received Inspection Report

Name: Robert Benavides

Date: 2/23/2022

Customer: VRTC

ATD S/N: 027

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		





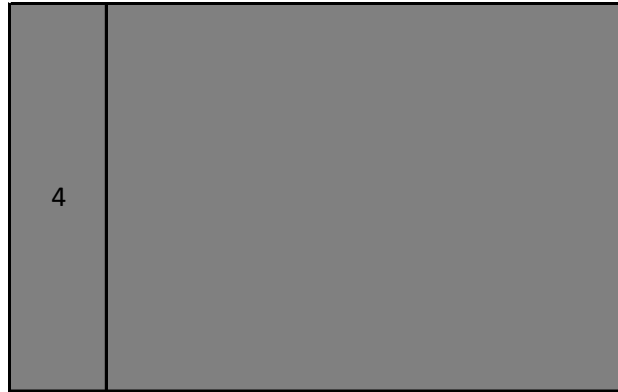
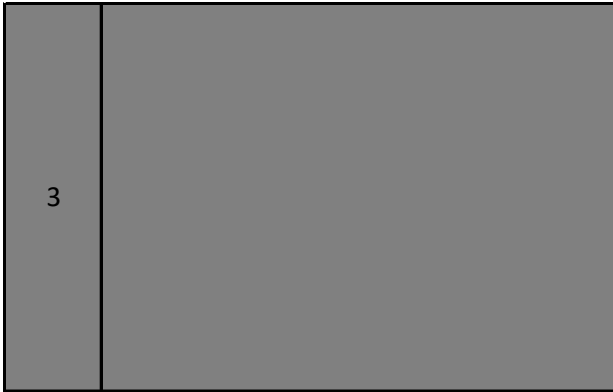
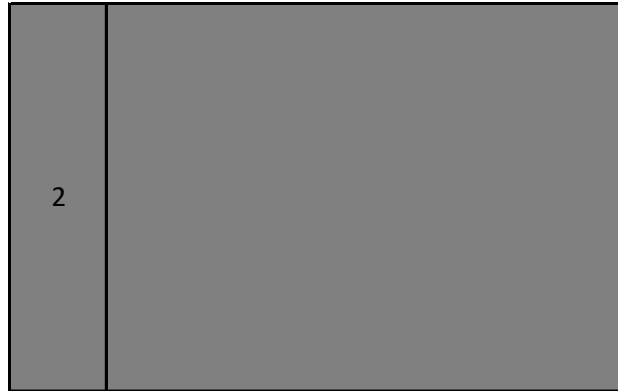
TRC ATD Laboratory As Received Inspection Photos

Name: Robert Benavides

Date: 2/23/2022

Customer: VRTC

ATD S/N: 027





# TRC ATD Laboratory Inspection Report Action Items

Name: Robert Benavides

Date: 2/23/2022

Customer: VRTC

ATD S/N: 027

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 6YO Serial No. 027 Certification No. 27-1

Test Date: 2/23/2022

<b>Test Parameter</b>	<b>Specification</b>	<b>Test Results</b>	<b>Pass</b>
Temperature	18.0 - 22.0 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Peak Head Resultant Acceleration	245 - 300 g	255.0 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	3.7 g	Yes
Is Acceleration Curve Unimodal	< 10 %	3.79 %	Yes

**Test meets specifications.**

**Condition: Used**

**Comments:**

**Head Skin S/N: 916**

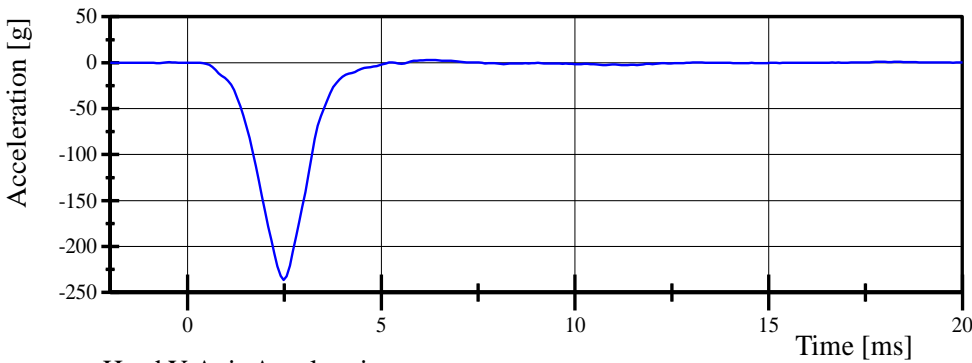
# Transportation Research Center Inc.

Front Head Drop

HIII 6YO Serial No. 027 Certification No. 27-1

Test Date: 2/23/2022

Head X-Axis Acceleration

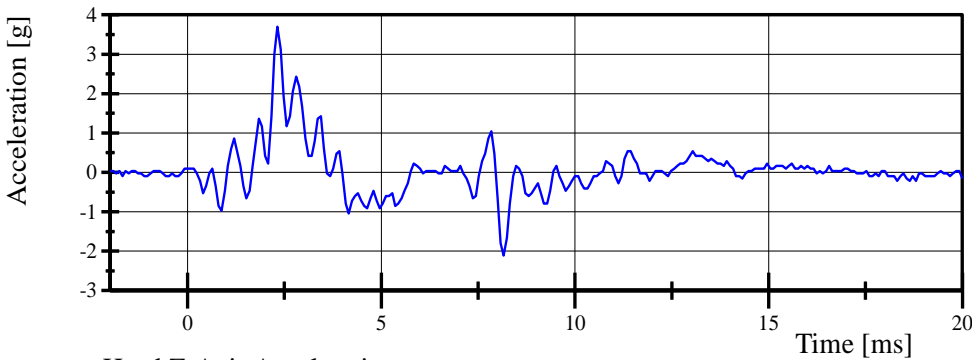


Filter Class: CFC\_1000

Max: 3.1 g at 6.2 ms

Min: -236.3 g at 2.5 ms

Head Y-Axis Acceleration

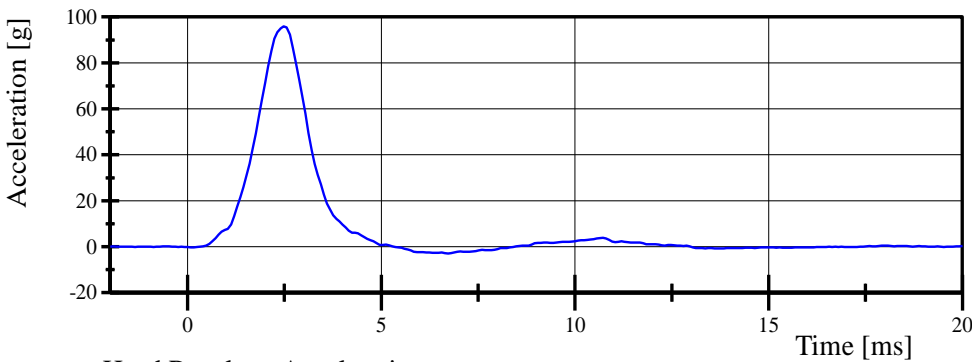


Filter Class: CFC\_1000

Max: 3.7 g at 2.3 ms

Min: -2.1 g at 8.2 ms

Head Z-Axis Acceleration

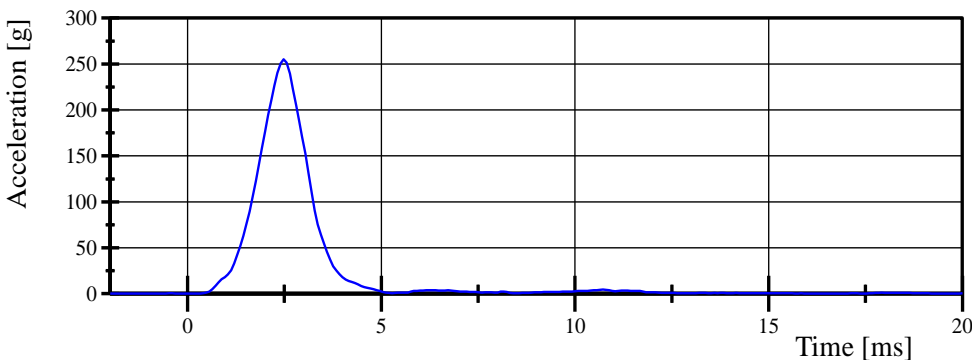


Filter Class: CFC\_1000

Max: 95.9 g at 2.5 ms

Min: -3.0 g at 6.7 ms

Head Resultant Acceleration



Filter Class: CFC\_1000

Max: 255.0 g at 2.5 ms

Min: 0.0 g at 16.7 ms

# Transportation Research Center Inc.

Neck Flexion

HIII 6YO Serial No. 027 Certification No. 27-2

Test Date: 2/23/2022

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Impact Velocity	4.83 - 5.07 m/s	4.894 m/s	Yes
Pendulum Integrated Velocity at 10ms	(-1.2) - (-1.6) m/s	-1.57 m/s	Yes
Pendulum Integrated Velocity at 20ms	(-2.4) - (-3.4) m/s	-3.02 m/s	Yes
Pendulum Integrated Velocity at 30ms	(-3.8) - (-5.0) m/s	-4.26 m/s	Yes
Total Head D-Plane Rotation	(-74) - (-92) °	-80.7 °	Yes
Peak Neck Occipital Condyles Moment Between -74° and -92° Rotation	27 - 33 Nm	30.2 Nm	Yes
Neck Occipital Condyles Moment Decay to 5 Nm	103 - 123 ms	114.7 ms	Yes

**Test meets specifications.**

**Condition: Used**

**Comments:**

**Neck S/N: N/A**

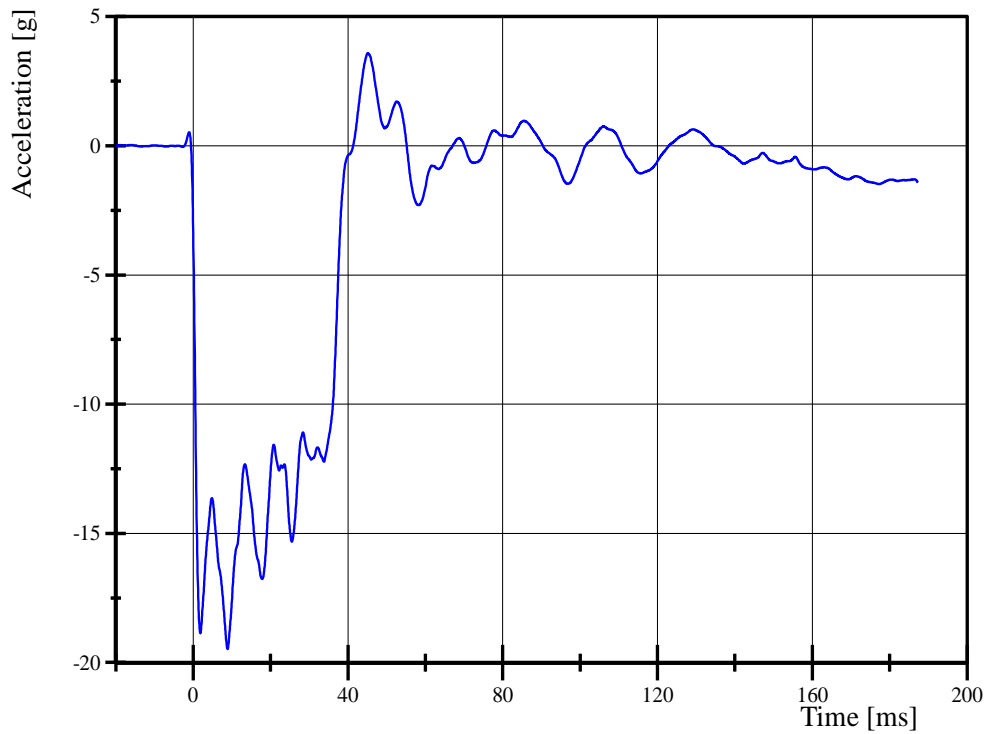
# Transportation Research Center Inc.

Neck Flexion

HIII 6YO Serial No. 027 Certification No. 27-2

Test Date: 2/23/2022

### Pendulum Acceleration

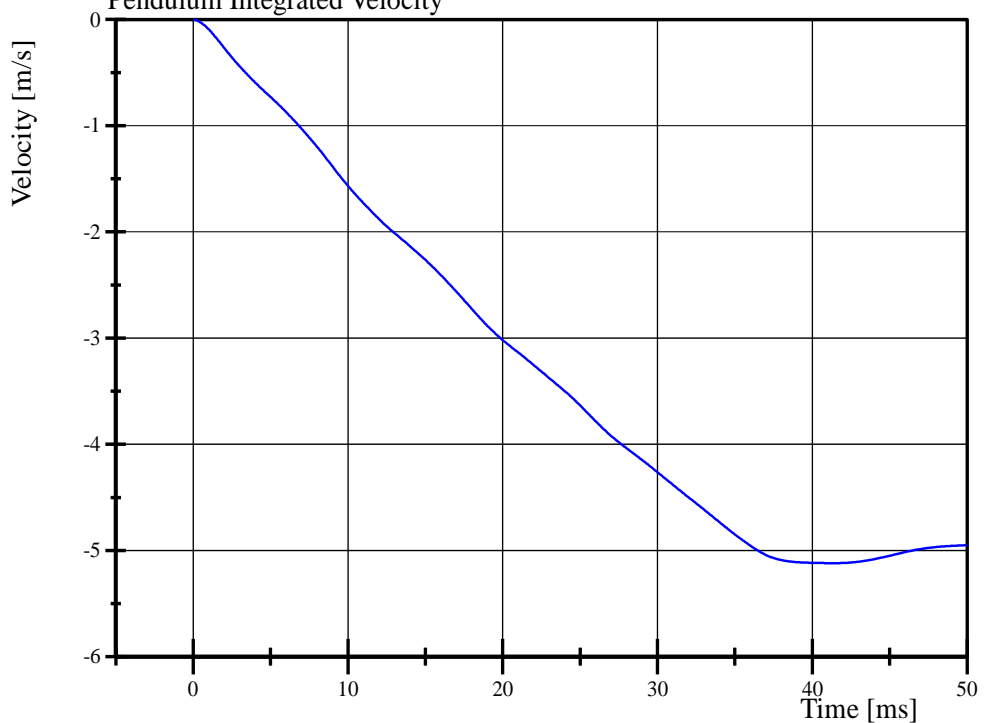


Filter Class: CFC\_180

Max: 3.6 g at 45.1 ms

Min: -19.5 g at 8.9 ms

### Pendulum Integrated Velocity



Filter Class: CFC\_180

Max: 0.0 m/s at 0.0 ms

Min: -5.1 m/s at 41.4 ms

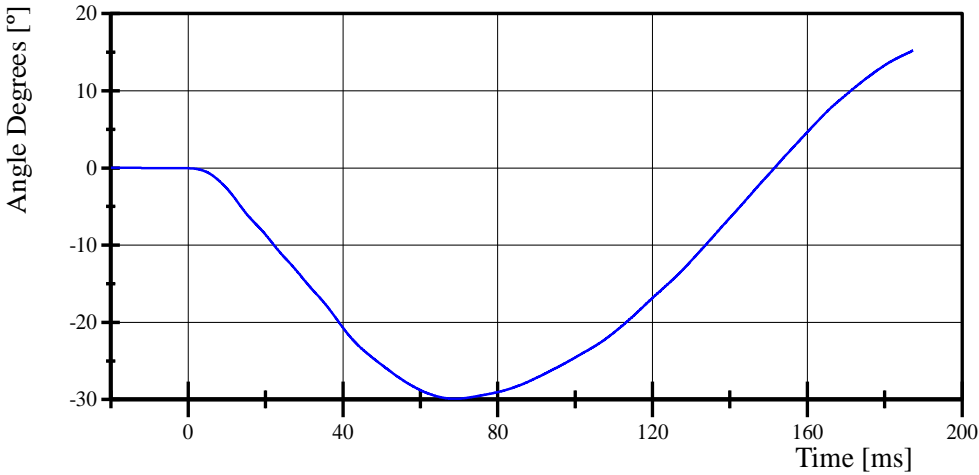
# Transportation Research Center Inc.

## Neck Flexion

HIII 6YO Serial No. 027 Certification No. 27-2

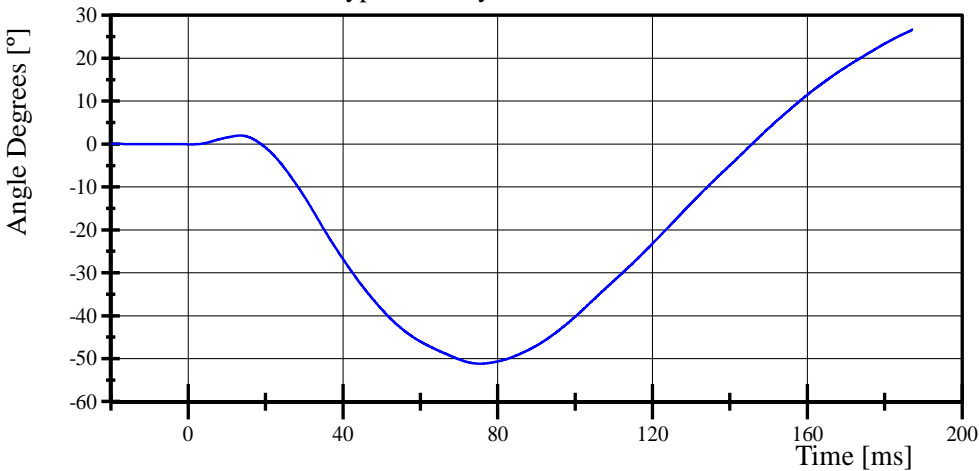
Test Date: 2/23/2022

### Pot Rotation at the Base of Neck



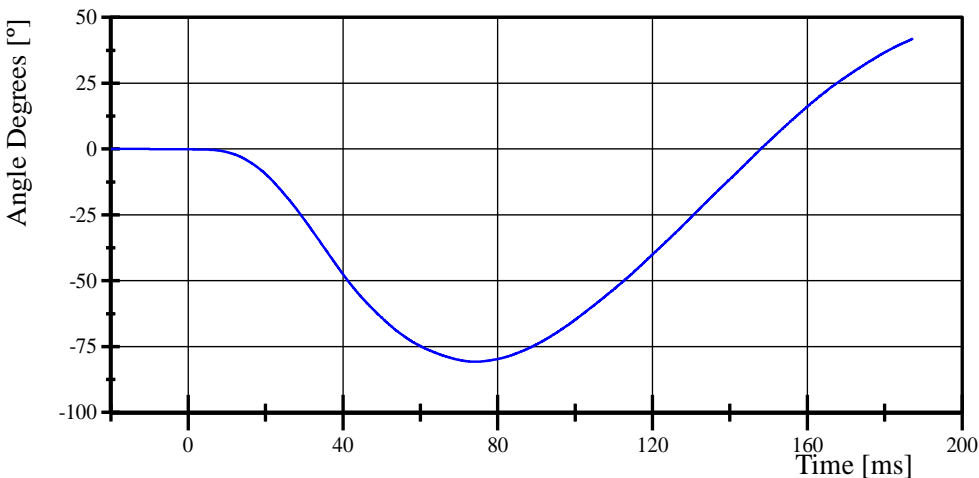
Filter Class: CFC\_60  
Max: 15.2 ° at 187.3 ms  
Min: -29.9 ° at 69.0 ms

### Head Rotation at Occypital Condyles



Filter Class: CFC\_60  
Max: 26.7 ° at 187.3 ms  
Min: -51.2 ° at 75.4 ms

### Total Head D-Plane Rotation



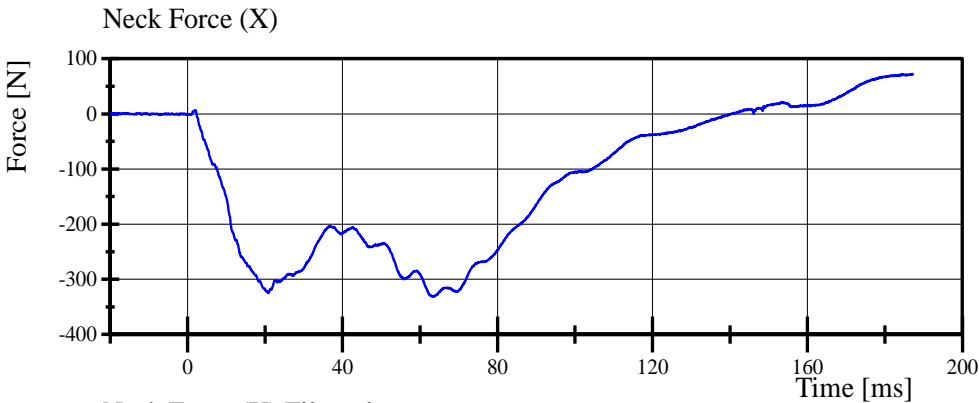
Filter Class: CFC\_60  
Max: 42.0 ° at 187.3 ms  
Min: -80.7 ° at 74.1 ms

# Transportation Research Center Inc.

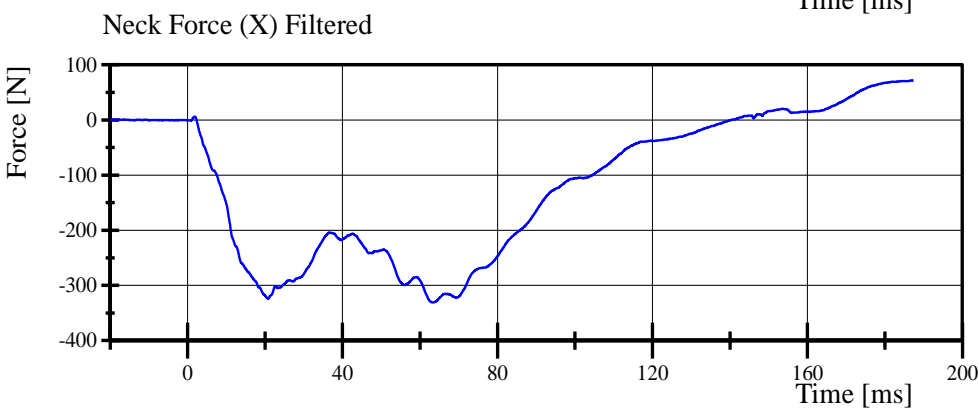
## Neck Flexion

HIII 6YO Serial No. 027 Certification No. 27-2

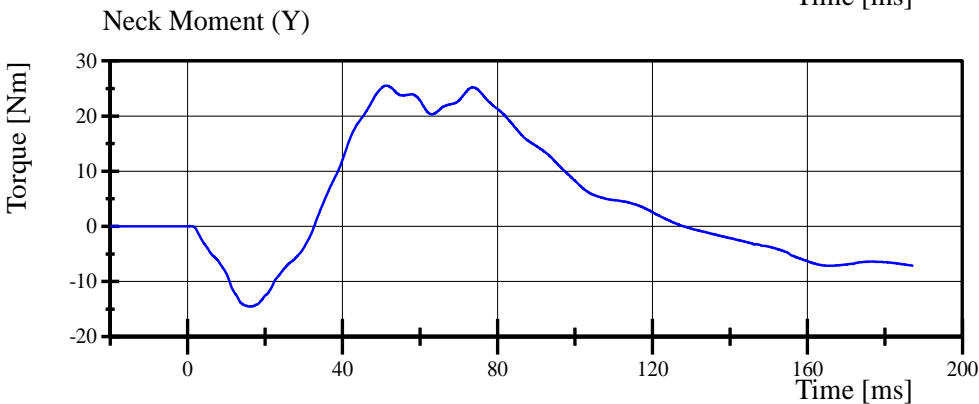
Test Date: 2/23/2022



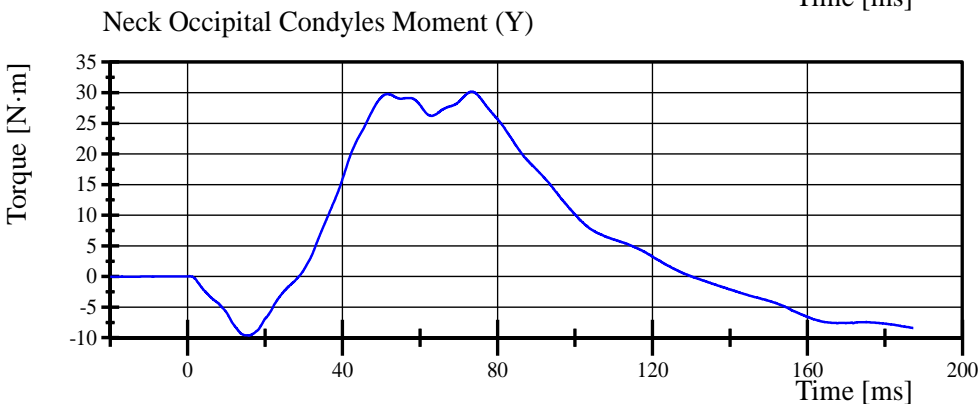
Filter Class: CFC\_1000  
Max: 72.2 N at 187.1 ms  
Min: -331.4 N at 63.3 ms



Filter Class: CFC\_600  
Max: 71.8 N at 186.9 ms  
Min: -331.1 N at 63.3 ms



Filter Class: CFC\_600  
Max: 25.5 Nm at 51.2 ms  
Min: -14.5 Nm at 16.3 ms



Filter Class: Without\_(Constar  
Max: 30.2 N·m at 73.3 ms  
Min: -9.6 N·m at 15.7 ms

# Transportation Research Center Inc.

Neck Extension

HIII 6YO Serial No. 027 Certification No. 27-1

Test Date: 2/23/2022

<b>Test Parameter</b>	<b>Specification</b>	<b>Test Results</b>	<b>Pass</b>
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Pendulum Impact Velocity	4.18 - 4.42 m/s	4.389 m/s	Yes
Pendulum Integrated Velocity at 10ms	(-1.0) - (-1.4) m/s	-1.35 m/s	Yes
Pendulum Integrated Velocity at 20ms	(-2.2) - (-3.0) m/s	-2.56 m/s	Yes
Pendulum Integrated Velocity at 30ms	(-3.2) - (-4.2) m/s	-3.69 m/s	Yes
Total Head D-Plane Rotation	85 - 103 °	97.4 °	Yes
Peak Neck Occipital Condyles Moment Between 85° and 103° Rotation	(-19) - (-24) Nm	-20.4 Nm	Yes
Neck Occipital Condyles Moment Decay to 5 Nm	123 - 147 ms	137.2 ms	Yes

**Test meets specifications.**

**Condition: Used**

**Comments:**

**Neck S/N: N/A**

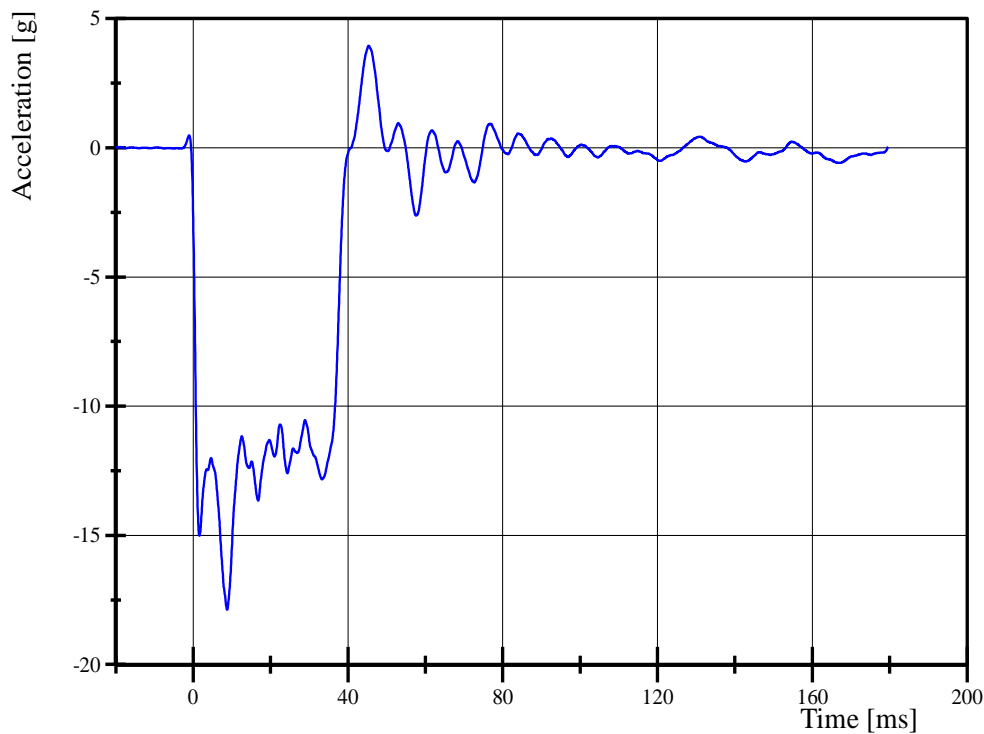
# Transportation Research Center Inc.

Neck Extension

HIII 6YO Serial No. 027 Certification No. 27-1

Test Date: 2/23/2022

Pendulum Acceleration

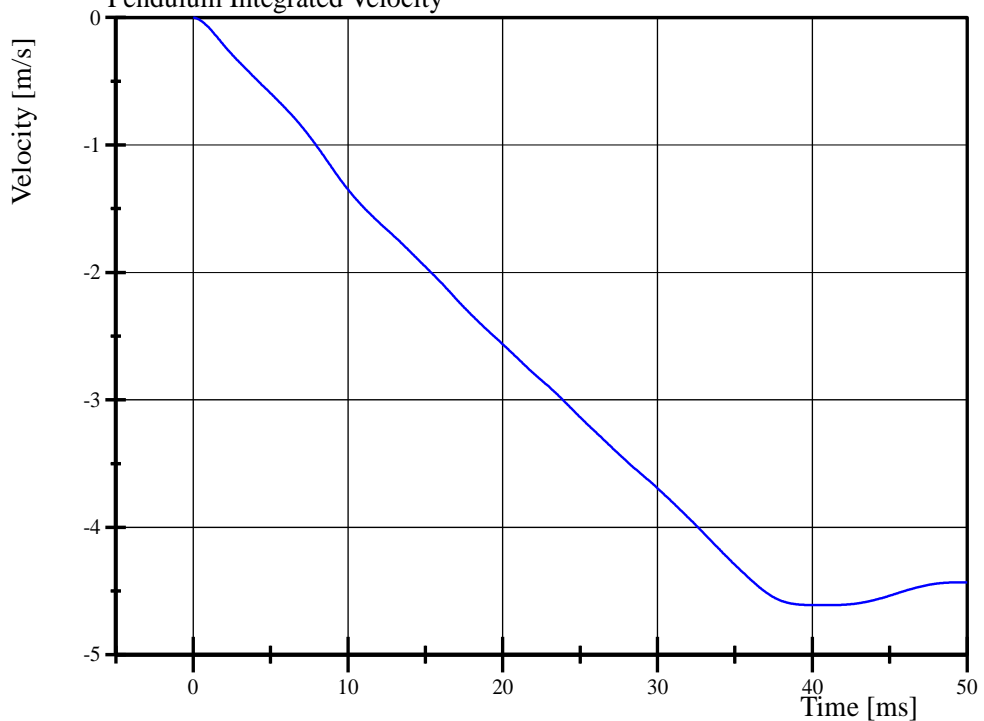


Filter Class: CFC\_180

Max: 4.0 g at 45.4 ms

Min: -17.9 g at 8.8 ms

Pendulum Integrated Velocity



Filter Class: CFC\_180

Max: 0.0 m/s at 0.0 ms

Min: -4.6 m/s at 40.9 ms

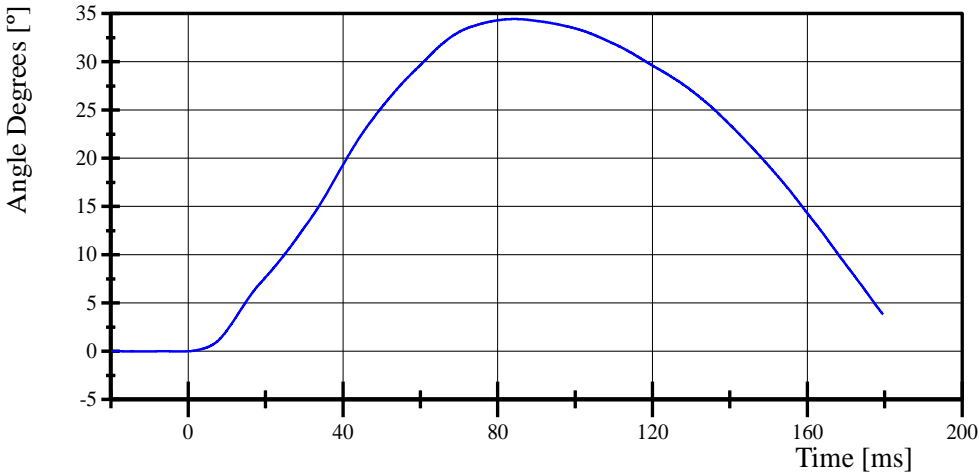
# Transportation Research Center Inc.

## Neck Extension

HIII 6YO Serial No. 027 Certification No. 27-1

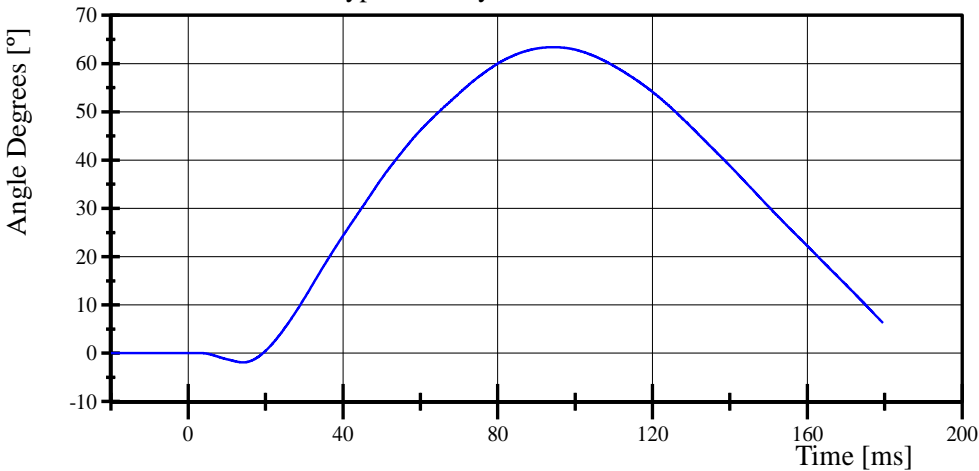
Test Date: 2/23/2022

### Pot Rotation at the Base of Neck



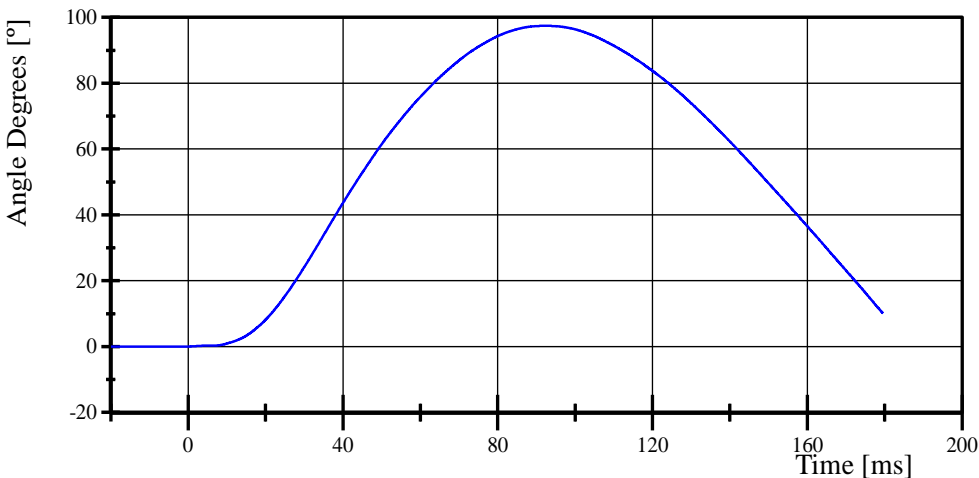
Filter Class: CFC\_60  
Max: 34.4 ° at 84.3 ms  
Min: -0.0 ° at -1.8 ms

### Head Rotation at Occypital Condyles



Filter Class: CFC\_60  
Max: 63.4 ° at 94.4 ms  
Min: -1.9 ° at 14.2 ms

### Total Head D-Plane Rotation



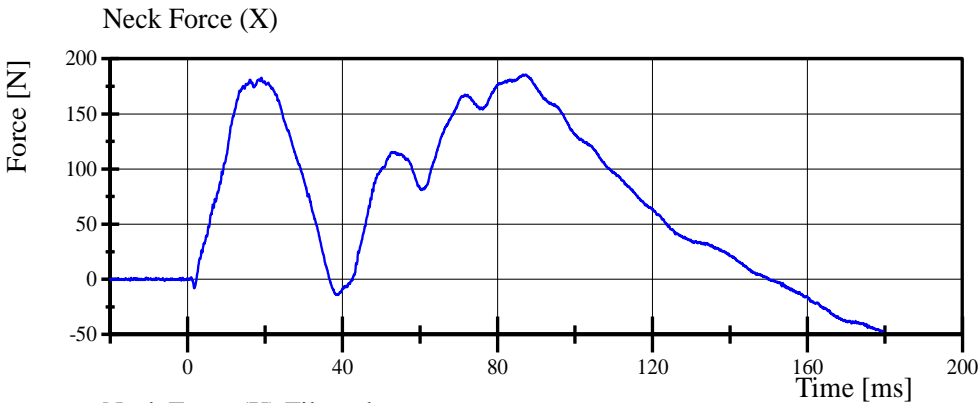
Filter Class: CFC\_60  
Max: 97.4 ° at 92.4 ms  
Min: -0.0 ° at -2.4 ms

# Transportation Research Center Inc.

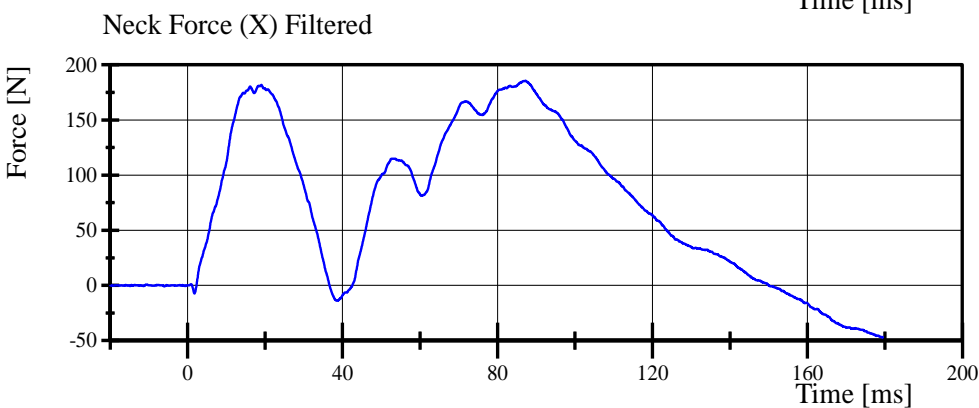
Neck Extension

HIII 6YO Serial No. 027 Certification No. 27-1

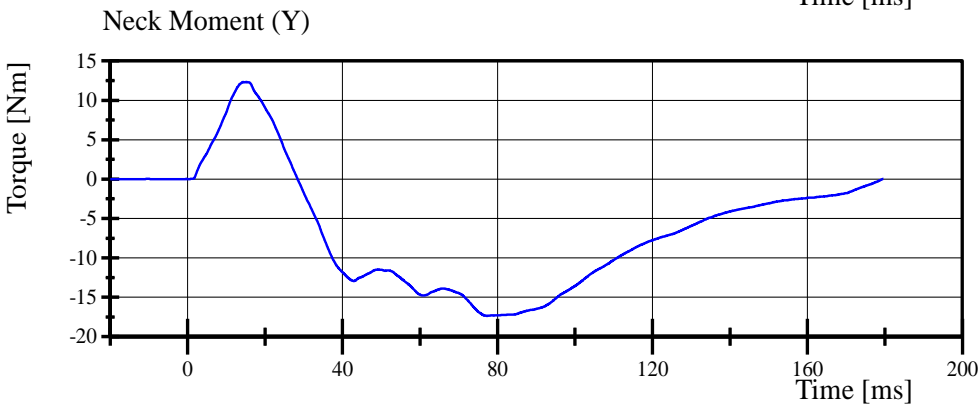
Test Date: 2/23/2022



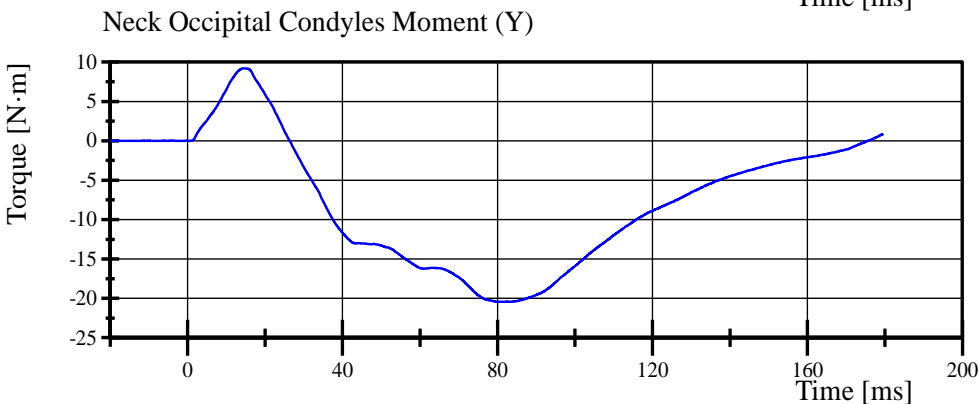
Filter Class: CFC\_1000  
Max: 185.7 N at 86.6 ms  
Min: -47.9 N at 179.6 ms



Filter Class: CFC\_600  
Max: 185.5 N at 87.3 ms  
Min: -47.9 N at 179.6 ms



Filter Class: CFC\_600  
Max: 12.3 Nm at 15.1 ms  
Min: -17.4 Nm at 77.3 ms



Filter Class: Without\_(Constar  
Max: 9.2 N·m at 14.4 ms  
Min: -20.4 N·m at 80.4 ms

# Transportation Research Center Inc.

Front Thorax

HIII 6YO Serial No. 027 Certification No. 27-2

Test Date: 2/25/2022

<b>Test Parameter</b>	<b>Specification</b>	<b>Test Results</b>	<b>Pass</b>
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.770 m/s	Yes
Probe Force Peak Between 38.0 mm and 46.0 mm Chest Deflection	(-1,150) - (-1,380) N	-1,301.0 N	Yes
Probe Force Peak Between 12.5 mm and 38.0 mm Chest Deflection	>= (-1,500) N	-1,418.6 N	Yes
Maximum Chest Compression	(-38) - (-46) mm	-41.4 mm	Yes
Internal Hysteresis	65 - 85 %	74.6 %	Yes

**Test meets specifications.**

**Condition: Used**

**Comments:**

**Jacket S/N: DL6916**

**Rib Set S/N: 18031815A**

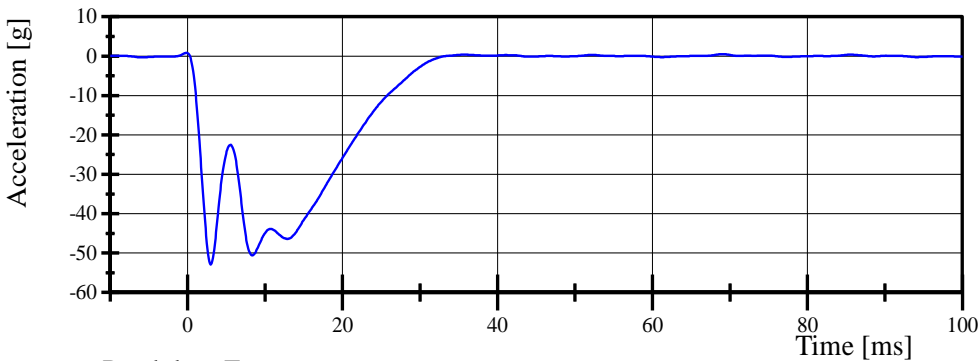
# Transportation Research Center Inc.

Front Thorax

HIII 6YO Serial No. 027 Certification No. 27-2

Test Date: 2/25/2022

Pendulum Acceleration

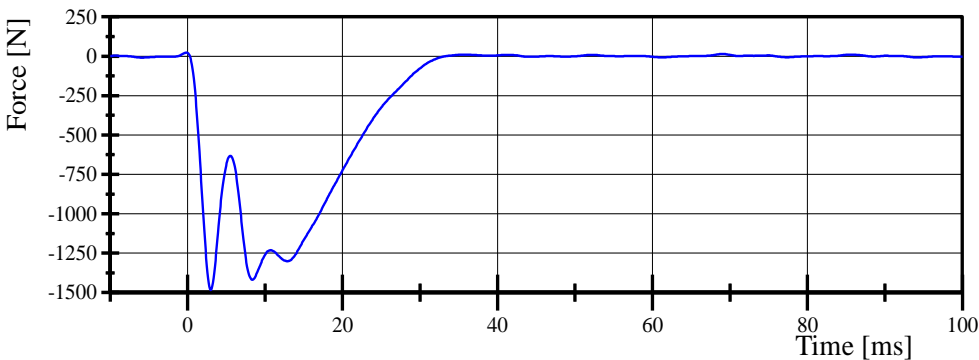


Filter Class: CFC\_180

Max: 0.8 g at -0.2 ms

Min: -52.9 g at 3.0 ms

Pendulum Force

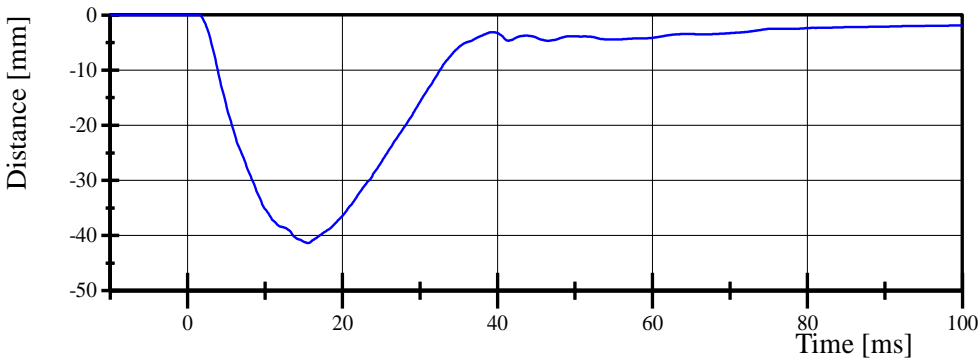


Filter Class: CFC\_180

Max: 23.4 N at -0.2 ms

Min: -1,484.3 N at 3.0 ms

Thorax Displacement X-Axis

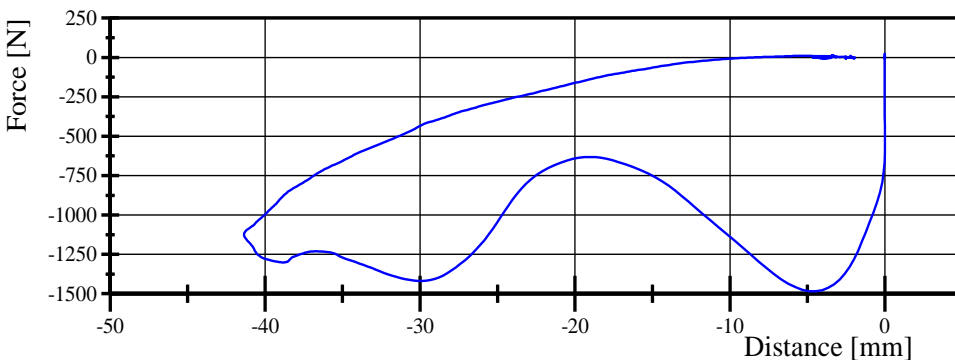


Filter Class: CFC\_600

Max: 0.0 mm at 1.4 ms

Min: -41.4 mm at 15.5 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC\_180

Max: 23.4 N at -0.0 mm

Min: -1,484.3 N at -4.5 mm

# Transportation Research Center Inc.

Hybrid III Six-Year-Old Child Torso Flexion



Customer: VRTC

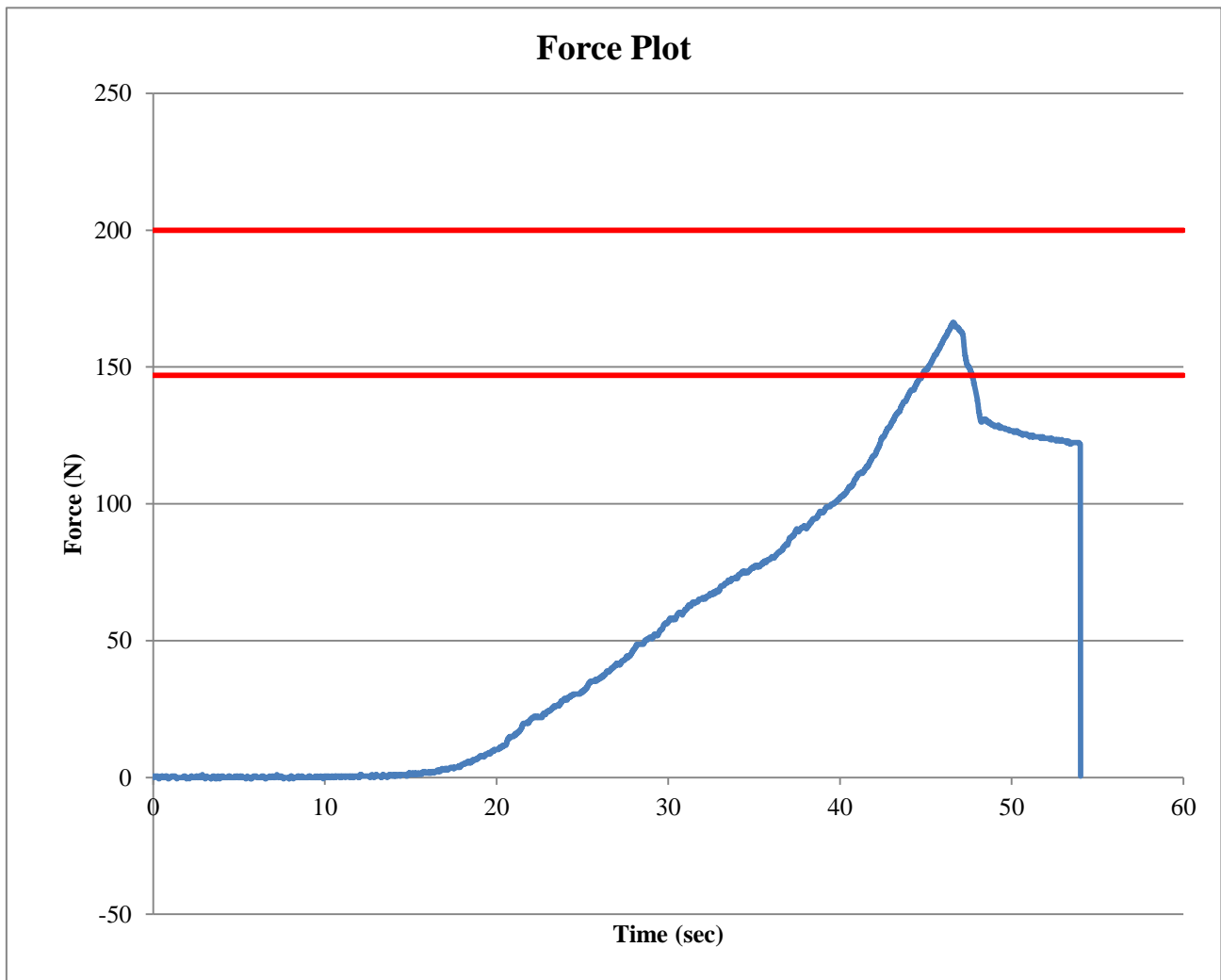
Serial Number: 027

Date: 2/23/2022

Test Number: 1

Time: 11:06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.7 °C Pass
Humidity	10 - 70	30 % Pass
Average Angular Velocity	0.5 - 1.5	0.9 deg/sec Pass
Initial Angle	0 - 22	17.56 deg Pass
Peak Force at 45.44°	147 - 200	166.2 N Pass
Final Angle	-8 - 8	2.07 deg Pass



Comments:

Jacket S/N: DL6916

Abdomen S/N: DL8691

# Transportation Research Center Inc.

Left Knee Femur Response Test  
HIII 6YO Serial No. 027 Certification No. 27-2  
Test Date: 2/23/2022

<b>Test Parameter</b>	<b>Specification</b>	<b>Test Results</b>	<b>Pass</b>
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.086 m/s	Yes
Peak Femur Force	(-2,000) - (-3,000) N	-2,440.4 N	Yes

**Test meets specifications.**

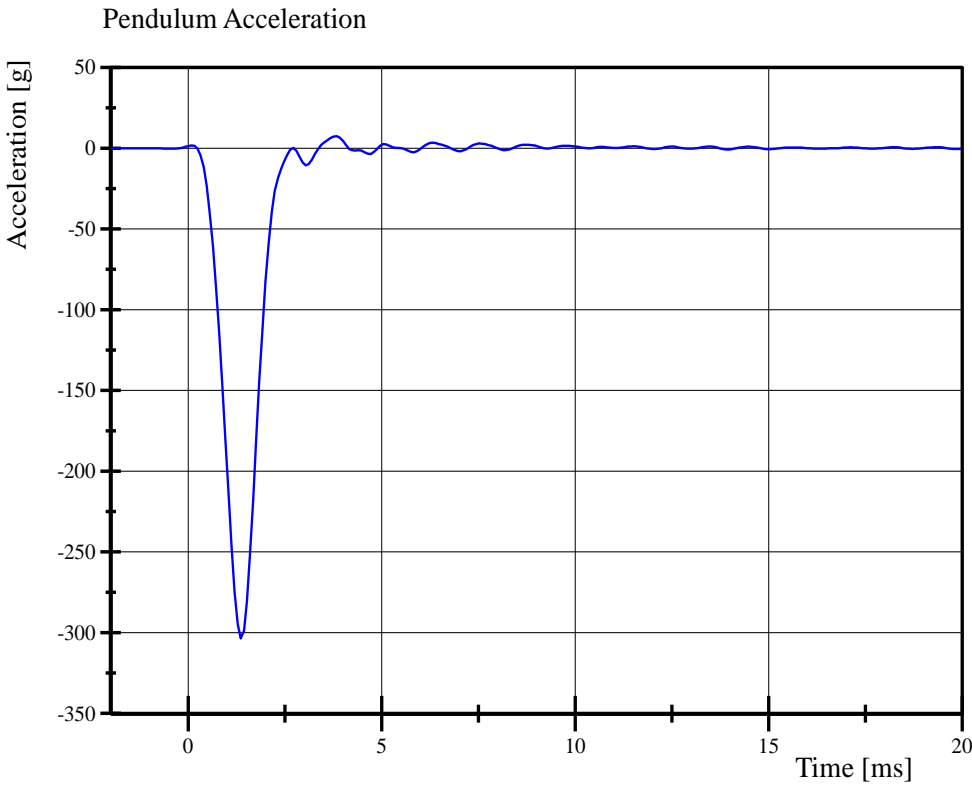
**Condition: Used**

**Comments:**

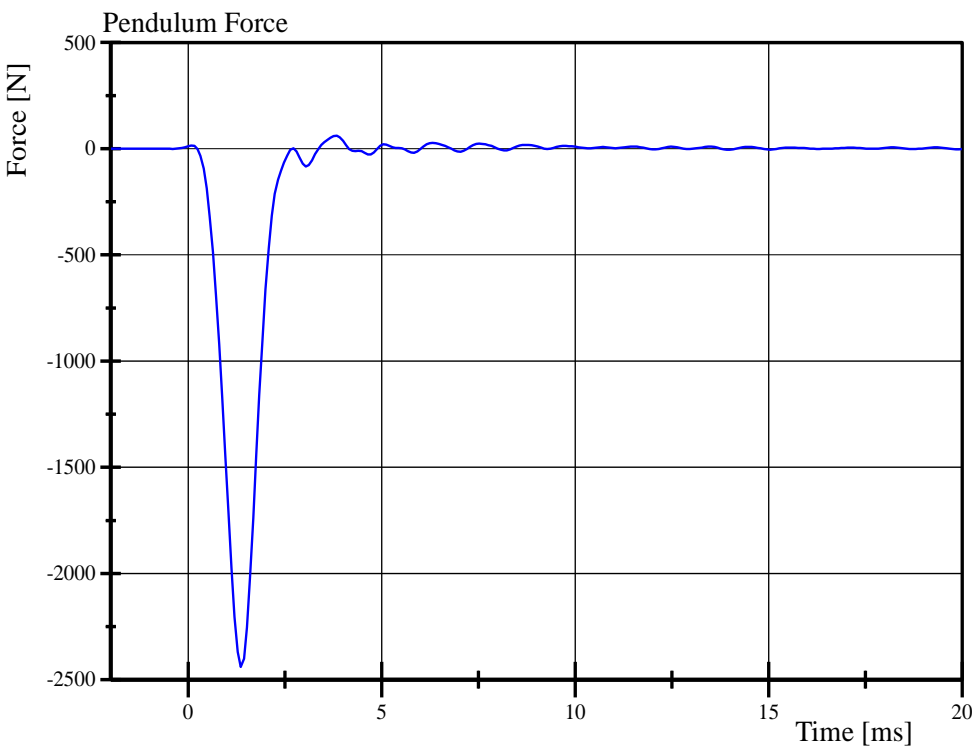
**Knee Skin S/N: 640**

# Transportation Research Center Inc.

Left Knee Femur Response Test  
HIII 6YO Serial No. 027 Certification No. 27-2  
Test Date: 2/23/2022



Filter Class: CFC\_600  
Max: 7.6 g at 3.8 ms  
Min: -303.5 g at 1.4 ms



Filter Class: CFC\_600  
Max: 61.2 N at 3.8 ms  
Min: -2,440.4 N at 1.4 ms

# Transportation Research Center Inc.

Right Knee Femur Response Test  
HIII 6YO Serial No. 027 Certification No. 27-1  
Test Date: 2/23/2022

<b>Test Parameter</b>	<b>Specification</b>	<b>Test Results</b>	<b>Pass</b>
Temperature	18.9 - 25.6 °C	22.1 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Probe Velocity	2.07 - 2.13 m/s	2.082 m/s	Yes
Peak Femur Force	(-2,000) - (-3,000) N	-2,198.6 N	Yes

**Test meets specifications.**

**Condition: Used**

**Comments:**

**Knee Skin S/N: 643**

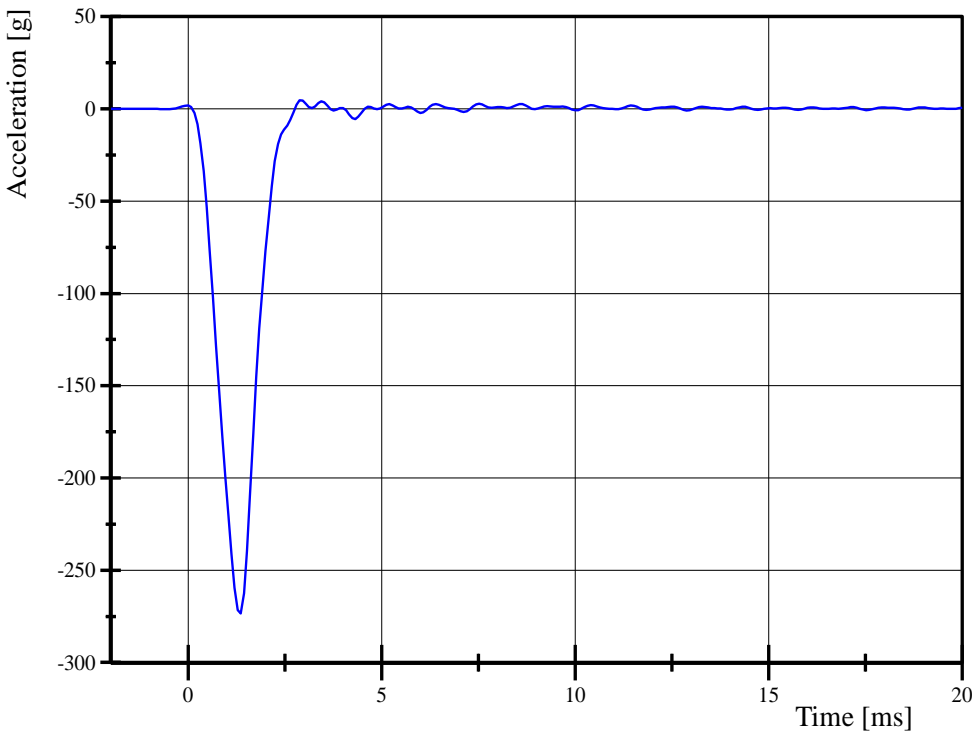
# Transportation Research Center Inc.

Right Knee Femur Response Test

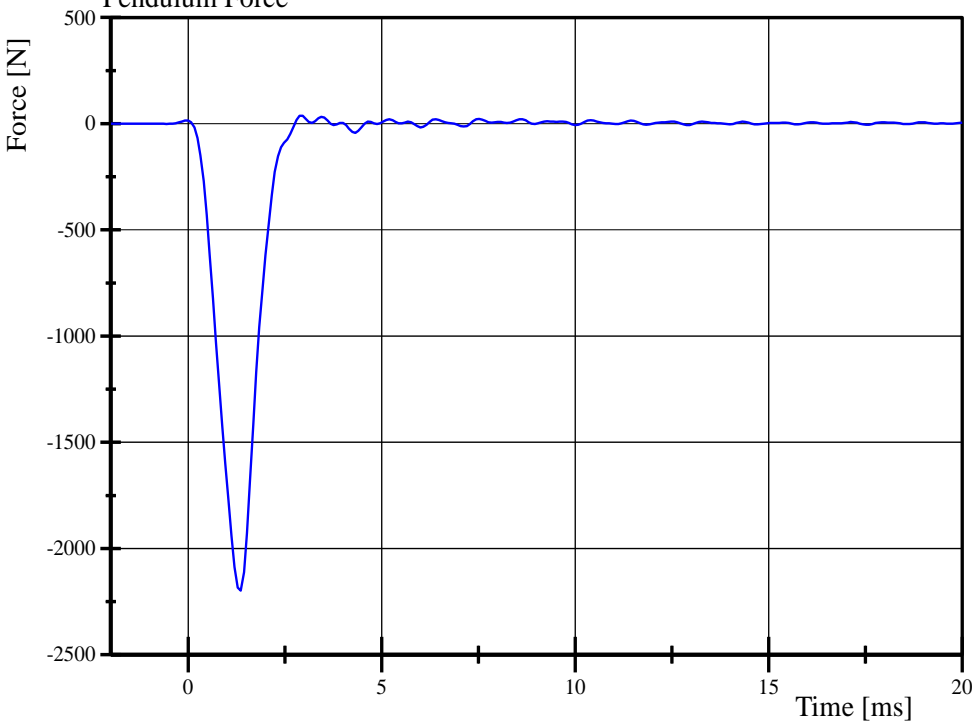
HIII 6YO Serial No. 027 Certification No. 27-1

Test Date: 2/23/2022

Pendulum Acceleration



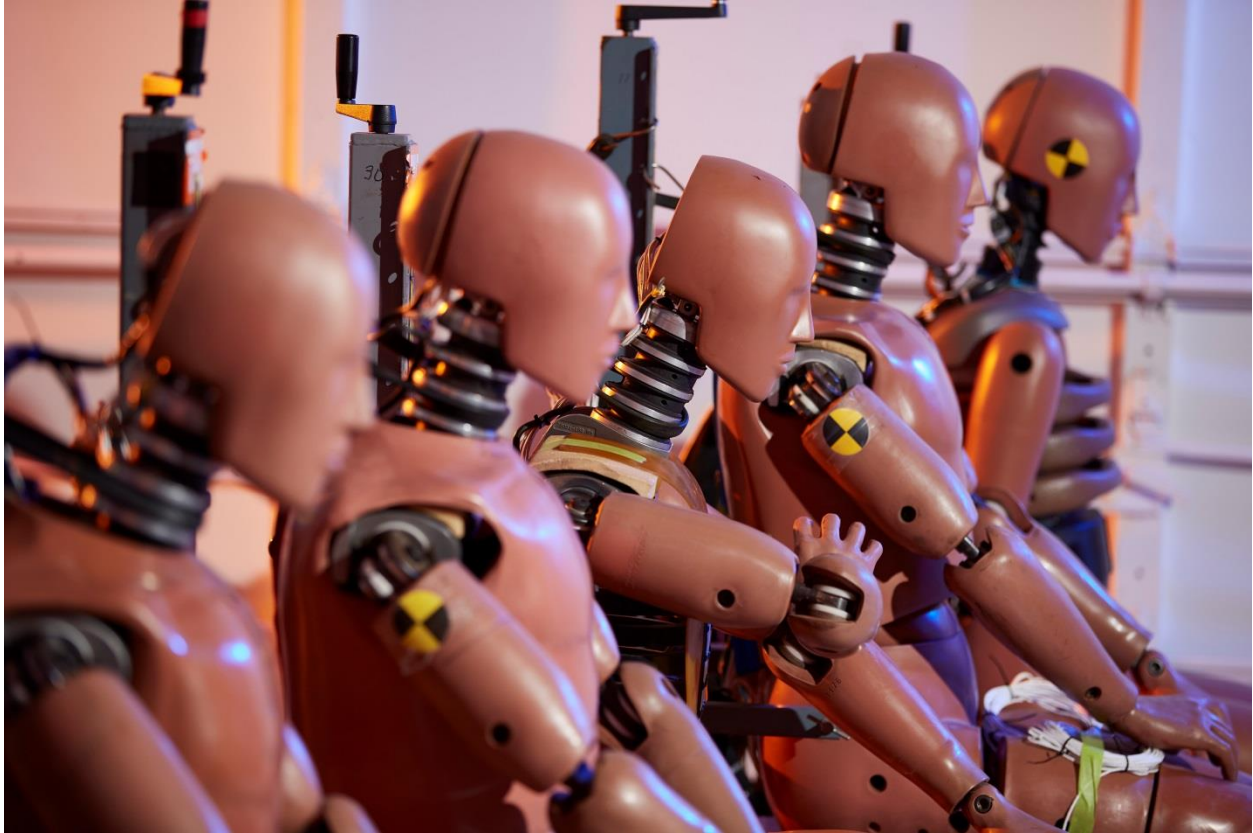
Pendulum Force



## Appendix C – Quality Assurance

# Quality Assurance

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## ATD Assembly & Final Inspection

ATD Type: Hybrid III (6) Year Old

ATD Serial Number: 027

Assembled by: *Dot Benda*

Date Inspected: 02/25/2022