

REPORT NUMBER: NCAP-KAR-17-003

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

**FORD MOTOR CO.
2017 FORD F-250 CREW CAB 4-DOOR TRUCK**

NHTSA NUMBER: M20170204

**PREPARED BY:
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DECEMBER 21, 2016


FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE
ROOM W43-410
WASHINGTON, DC 20590**

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Approval Date: December 21, 2016

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Date: _____

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16. Abstract <p>A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2017 Ford F-250 Crew Cab 4-door truck in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on December 7, 2016.</p> <p>The impact velocity of the vehicle was 56.35 km/h and the ambient temperature at the barrier face at the time of impact was 12°C. The target vehicle's post-test maximum crush was 630 mm at the vehicle's centerline. The test vehicle's performance is as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <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>77.2</td> <td>700</td> <td>287.7</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-18</td> <td>52</td> <td>-12</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.31</td> <td>1</td> <td>0.45</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>760.3</td> <td>2620</td> <td>645.5</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-114.8</td> <td>2520</td> <td>-350.5</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10000</td> <td>-172.4</td> <td>6800</td> <td>-2038.8</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10000</td> <td>-541.0</td> <td>6800</td> <td>-1221.7</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	77.2	700	287.7	Maximum Chest Compression	mm	63	-18	52	-12	Nij	N/A	1	0.31	1	0.45	Neck Tension	N	4170	760.3	2620	645.5	Neck Compression	N	4000	-114.8	2520	-350.5	Left Femur Force	N	10000	-172.4	6800	-2038.8	Right Femur Force	N	10000	-541.0	6800	-1221.7
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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 DTNH22-12-D-00259. 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 Frontal NCAP Laboratory Test Procedure, dated October 2015.

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2017 Ford F-250 Crew Cab 4-door truck at a velocity of 56.35 km/h. The test was performed at KARCO Engineering, LLC. on December 7, 2016. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time cameras 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.

Photographs and videos are labeled with the title “2017 Ford F-250” or “2017 F-250 SuperCrew” on the placards. All of the photographs and videos should be titled as “2017 F-250 Crew Cab.”

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

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 placed on both the driver's and passenger's shoulder and lap belts to measure the dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 360) and the right-front passenger (position 2) ATD (Serial No. 141) were calibrated 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.

There was 100% windshield retention and no intrusion into the protected zone of the windshield during the event.

The maximum static crush of the test vehicle was 630 mm at 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 airbag and headrest. The upper torso contacted the frontal airbag. Both the left and right knees contacted the knee bolster.

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

The occupant data is summarized below:

ATD Position	HIC ₁₅	T ¹ (ms)	T ² (ms)	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	77.2	59.8	74.8	-18	0.31	760.3	-114.8	-172.4	-541.0
Passenger (5th)	287.7	60.3	75.3	-12	0.45	645.5	-350.5	-2038.8	-1221.7

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

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: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20170204
Model Year	2017
Make	Ford
Model	F-250 Crew Cab
Body Style	4-Door Truck
VIN	1FT7W2B67HEB24677
Body Color	Magnetic
Odometer Reading (km / mi)	80 / 50
Engine Displacement (L)	6.2
Type / No. of Cylinders	V8
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	4X4
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	No

Traction Control System	Yes
Power Steering	Yes
Power Window Auto-Reverse	No
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	No
Front Pass. Frontal Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	No
Front Pass. Torso/Pelvis Airbag	Yes
Front Pass. Pelvis Airbag	No
Front Pass. Knee Airbag	No
Driver Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Seat Belt Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other Safety Restraint	No

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	Aug-16

GVWR (kg)	4536
GAWR Front (kg)	2177
GAWR Rear (kg)	2876

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bench	Bench		
Designated Seating Capacity	3	3		6
Capacity Weight (VCW) (kg)				1461.0
DSC x 68.04 (kg)				408.2
Cargo Weight (RCLW) (kg)				136.0*

*RCLW of 136 kg is used for a truck.

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
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VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	550	550
Cold Pressure (kPa)	480	550
Recommended Tire Size	LT245/75R17	LT245/75R17
Tire Size on Vehicle	LT245/75R17	LT245/75R17
Tire Manufacturer	Michelin	Michelin
Tire Model	LTX M/S ²	LTX M/S ²
Treadwear	N/A	N/A
Traction	N/A	N/A
Temperature Grades	N/A	N/A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index / Speed Symbol	121/118 R	121/118 R
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	M343 007X 3116	M343 007X 3116
DOT Safety Code Right	M343 007X 3116	M343 007X 3116

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	906.5	635.5		940.0	729.0	
Right	kg	897.0	605.0		939.0	705.5	
Ratio	%	59.2%	40.8%	100.0%	56.7%	43.3%	100.0%
Total	kg	1803.5	1240.5	3044.0	1879.0	1434.5	3313.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	3044.0	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	3321.0	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	1046	1056	1131	1136	1826
As Tested	mm	1032	1045	1116	1125	1940
Post-Test	mm	1098	1015	1155	1078	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	4480
Total Vehicle Length at Left Side	mm	6260
Total Vehicle Length at Centerline	mm	6771
Total Vehicle Length at Right Side	mm	6265
Weight of Ballast in Cargo Area	kg	121.0
Weight of Vehicle Components Removed	kg	0.0

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

N/A

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test
1	Total Length	6771
2	Total Width	2010
3	Bumper Top Height	770
4	Bumper Bottom Height	462
5	Longitudinal Member Top Height	798
6	Distance Between Longitudinal Members	810
7	Longitudinal Member Width	90
8	Engine Top Height	1215
9	Engine Bottom Height	460
10	Engine and Gearbox Width	750
11	Front Bumper to Engine Distance	852
12	Front Shock Absorber Fixing Height	975
13	Bonnet Leading Edge Height	1230
14	Front Shock Absorber Fixing Width	1260
15	Front Bumper to Front Axle Distance	971
16	Front Axle to A-Pillar Distance	695
17	A-Pillar to B-Pillar Distance	1091
18	B-Pillar to Rear Axle Distance	2580
19	B-Pillar to C-Pillar Distance	846
20	Roof Sill Bottom Height	1865
21	Roof Sill Top Height	1985
22	Floor Sill Bottom Height	581
23	Floor Sill Top Height	670

All measurements in millimeters.

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck

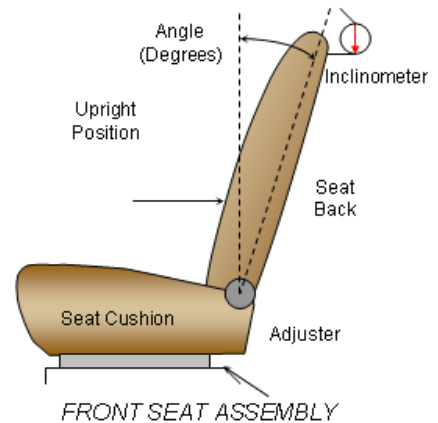
NHTSA No.: M20170204

Test Program: 56.3 km/h Frontal Impact NCAP Test

Test Date: 12/07/16

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° ± 0.5°. Seat back angle is measured at the headrest post.

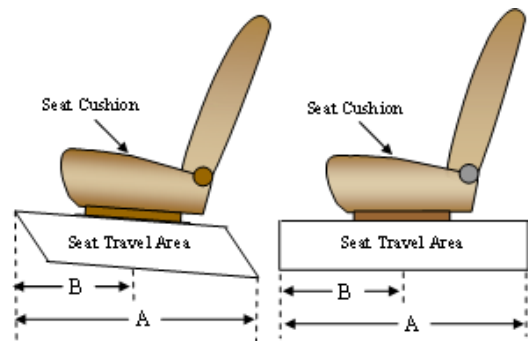


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	-3.2
Passenger Seat Back Angle	-4.3

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	253 mm	127 mm
Passenger Seat	255 mm	0 mm

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 “H” is the uppermost position, followed by position “M1”. Position “L” is the lowermost position.

SEAT BELT UPPER ANCHORAGES

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

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

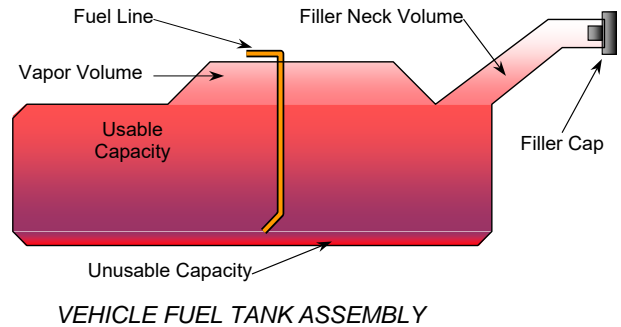
Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	183.57
Usable Capacity of "Optional Tank"	N/A
92 - 94% of Usable Capacity	168.88 to 172.56
Actual Amount of Stoddard Solvent Used	170.74
1/3 of Usable Capacity	61.19

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The electric fuel pump operates for 3 seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 3 seconds following ignition actuation the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls the fuel pump is deactivated. Also, the fuel pump is shut-off by the restraint control module to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude.



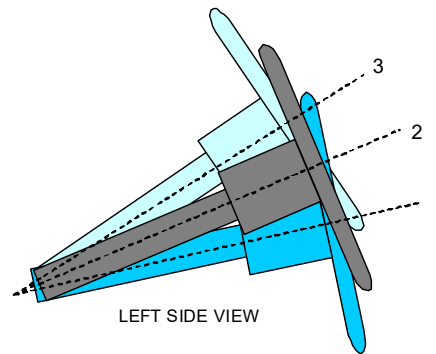
DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

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. A tape measure is used to measure telescoping steering wheel travel.



LEFT SIDE VIEW
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	21.2	170
Geometric Center Position, No. 2	23.3	191
Uppermost Position, No. 3	25.4	212
Telescoping Steering Wheel Travel		42
Test Position	23.3	191

DATA SHEET NO. 3

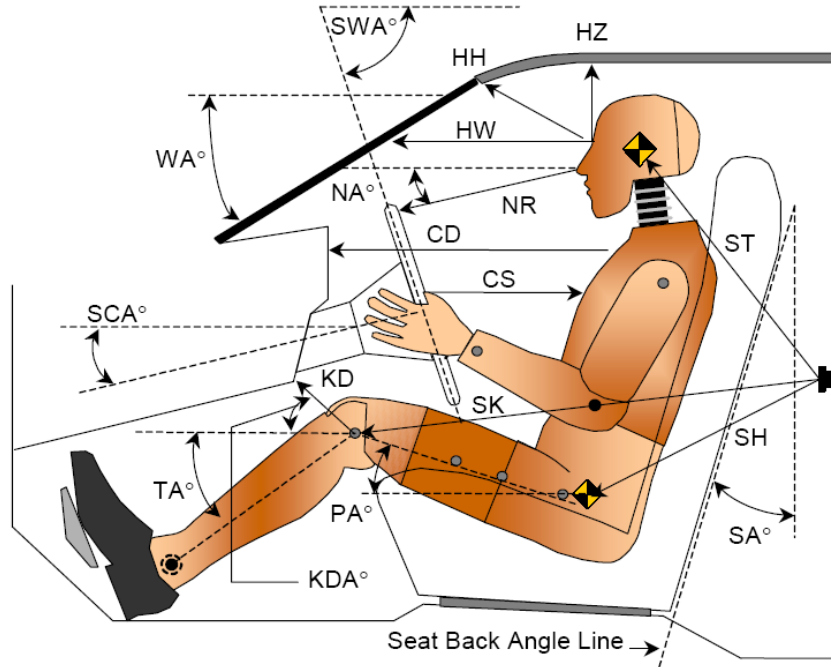
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck

NHTSA No.: M20170204

Test Program: 56.3 km/h Frontal Impact NCAP Test

Test Date: 12/07/16



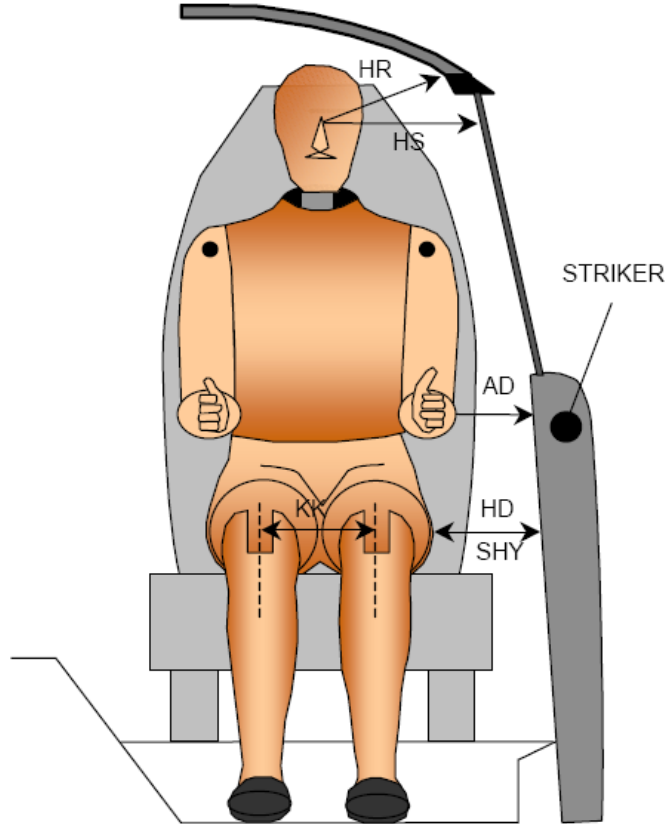
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		33.2		
SWA°	Steering Wheel Angle		66.3		
SCA°	Steering Column Angle		23.3		
SA°	Seat Back Angle (On Headrest Post)		-3.2		-4.3
HZ	Head to Roof	241	90.0	281	90.0
HH	Head to Header	430	24.8	371	40.4
HW	Head to Windshield	661	0.0	711	0.0
NR	Nose to Rim	372	11.3	472	25.5
CD	Chest to Dash	556	14.2	429	22.0
CS	Chest to Steering Hub	286	0.0		
RA	Rim to Abdomen	189	0.0		
KDL	Left Knee to Dash	175	25.6	72	26.1
KDR	Right Knee to Dash	157	31.7	76	26.5
PA°	Pelvic Angle		24.2		22.0
TA°	Tibia Angle		57.4		67.3
SK	Striker to Knee	688	3.2	797	0.1
ST	Striker to Head	636	70.1	596	55.6
SH	Striker to H-Point	310	12.1	468	8.1

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	127	93
HD	H-Point to Door	155	113
HR	Head to Side Header	233	288
HS	Head to Side Window	357	397
KK	Knee to Knee	309	223
SHY	Striker to H-Point (Y-Direction)	253	295
AA	Ankle to Ankle	312	167

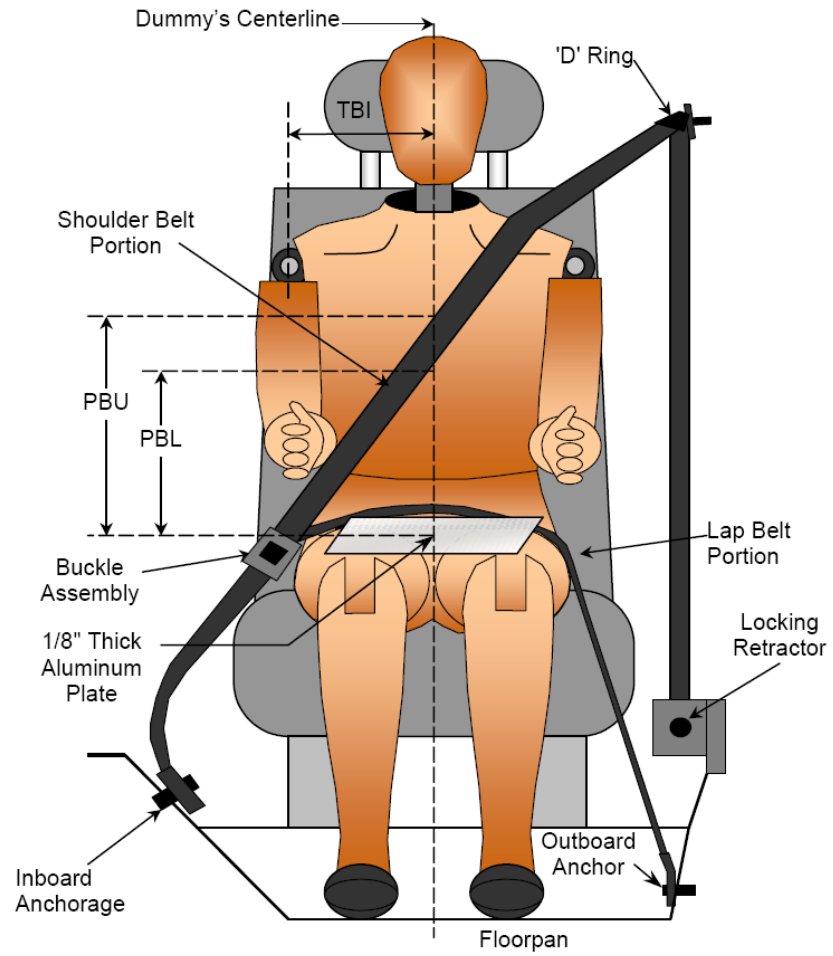
DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck

NHTSA No.: M20170204

Test Program: 56.3 km/h Frontal Impact NCAP Test

Test Date: 12/07/16



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	294	332
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	225	237

BELT LENGTH DATA

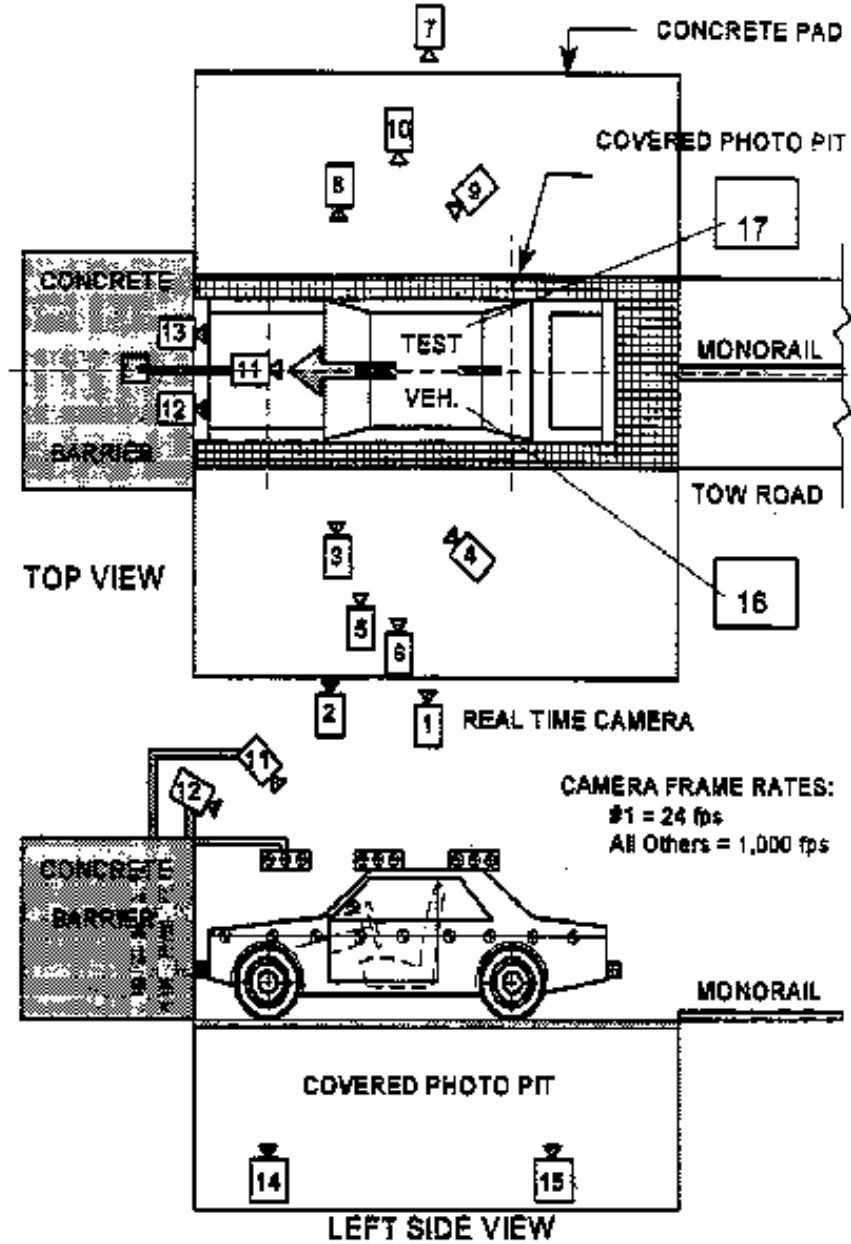
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	910	1007
Lap Belt Length as Measured on ATD	mm	718	801
Remainder of Belt on Reel	mm	932	725
Total Belt Length for Continuous Webbing Systems	mm	2560	2533

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

CAMERA LOCATIONS

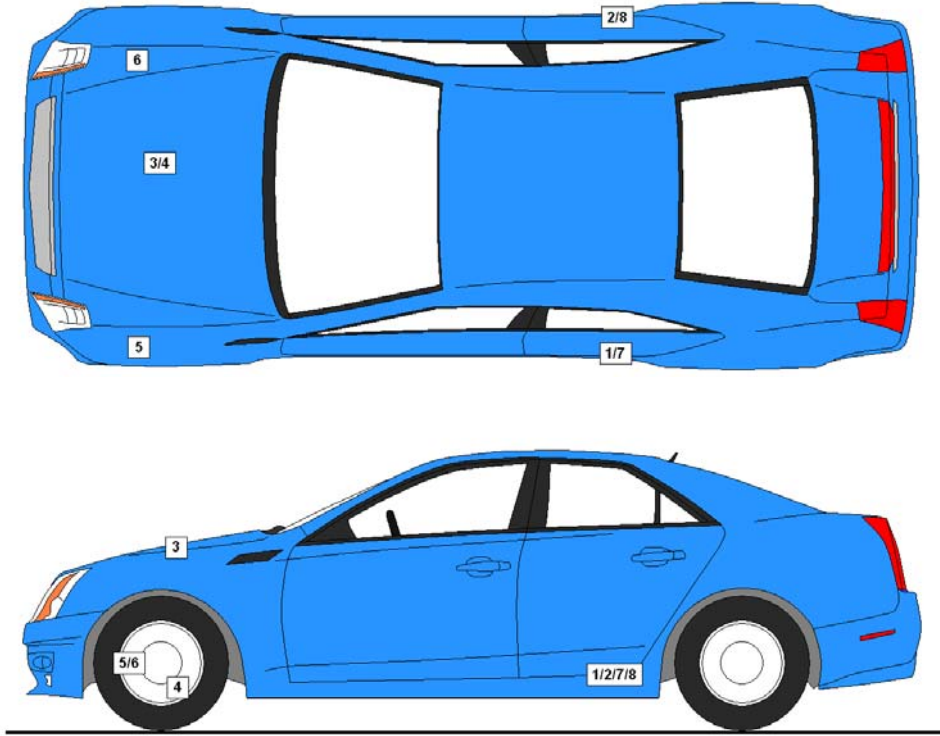
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering Column - Bottom	-1972	-10412	-3379	50	1000
7	Right Overall	-2336	7569	-1012	24	1000
8	Passenger Close-Up	-1733	7581	-1408	50	1000
9	Right Front Half	-1600	8214	-1811	ZOOM	1000
10	Right Angle	-6217	9516	-4830	ZOOM	1000
11	Windshield	-354	0	-5749	12	1000
12	Driver Windshield	297	-366	-2460	12	1000
13	Passenger Windshield	297	366	-2460	24	1000
14	Pit Front	-756	0	1495	20	1000
15	Pit Rear	-3398	0	1495	14	1000
16	Onboard Driver Airbag (Optional)	-3120	450	-1970	3	1000
17	Onboard Passenger Airbag (Optional)	-3120	-450	-1970	7	1000
18	Real-Time Left View of Impact					
19	Real-Time Right View of Impact					

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

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	3417	-708	-780
2	Right Rear Accelerometer X-Direction	3417	708	-780
3	Engine Top X	5742	294	-1100
4	Engine Bottom X	5294	64	-460
5	Left Rear Accelerometer Z-Direction	3417	-708	-780
6	Right Rear Accelerometer Z-Direction	3417	708	-780
7	Left Rear Accelerometer X-Direction Redundant	3417	-708	-780
8	Right Rear Accelerometer X-Direction Redundant	3417	708	-780

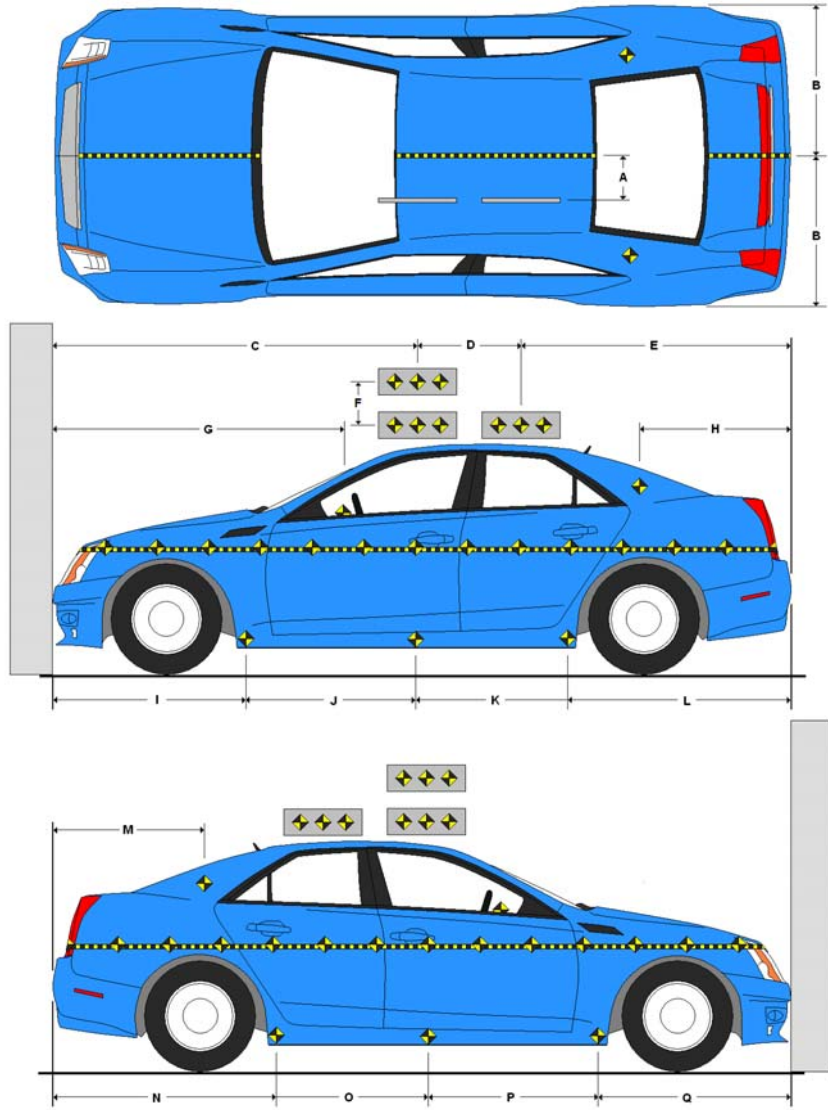
Reference Points: X – Rear Surface of Vehicle (+ forward)
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

Item	Value
A	465
B	1005
C	2450
D	608
E	3715
F	305
G	1929
H	2850
I	1552
J	1662
K	1662
L	1895
M	2840
N	1902
O	1657
P	1657
Q	1555



All measurements in millimeters.

DATA SHEET NO. 9

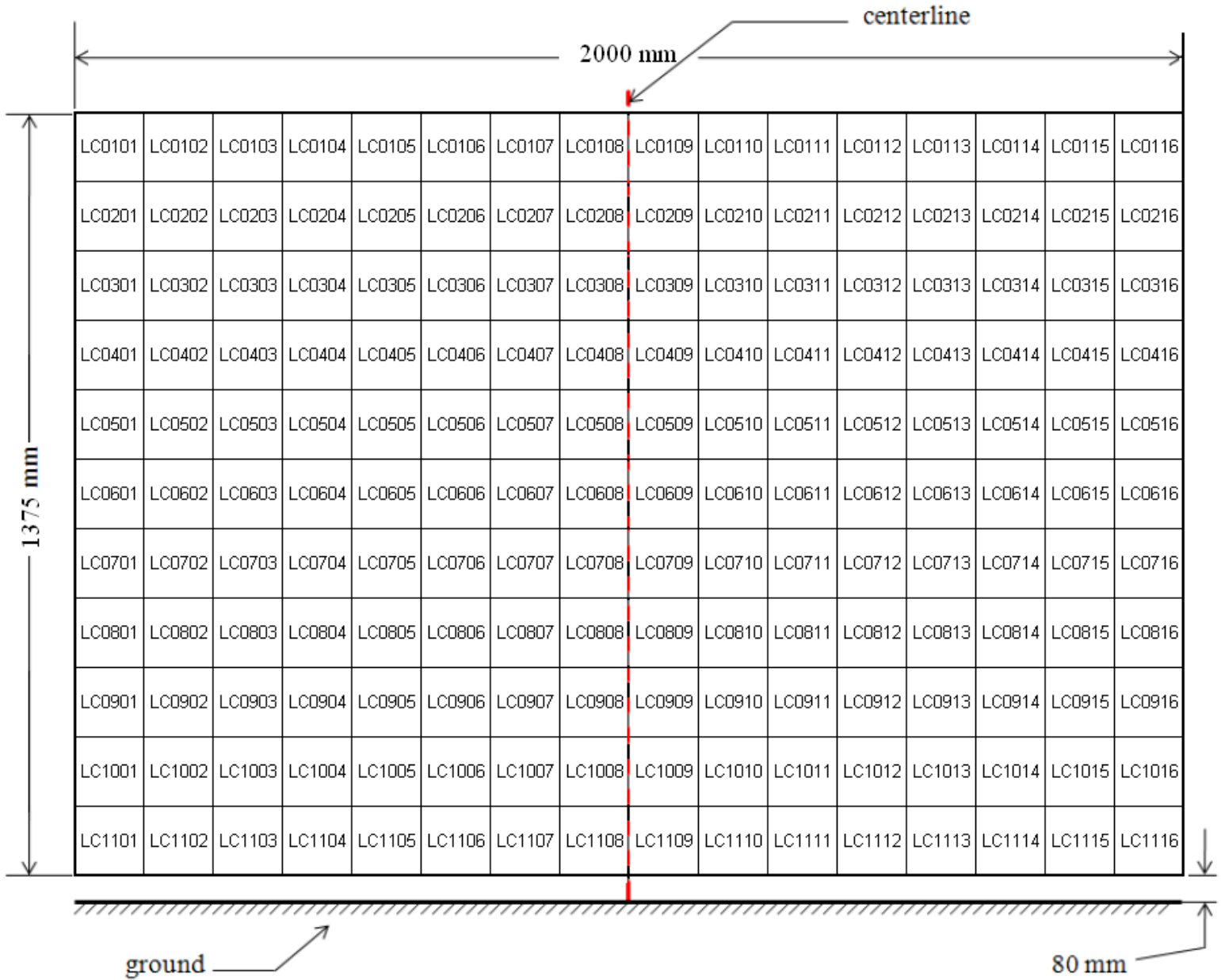
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck

NHTSA No.: M20170204

Test Program: 56.3 km/h Frontal Impact NCAP Test

Test Date: 12/07/16



DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

INSTRUMENTATION

Driver Dummy Accelerometers	47
Passenger Dummy Accelerometers	47
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	4
Load Cell Barrier	528
Total	634

CAMERA COVERAGE

High-Speed Vehicle On Board	2
High-Speed Off board	14
Real Time	3
Total	19

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 360	P572O 5th Percentile Female ATD / 141
Head Contact	Frontal Airbag, Headrest	Frontal Airbag, Headrest
Upper Torso Contact	Frontal Airbag	Frontal Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Bolster	Knee Bolster
Right Knee Contact	Knee Bolster	Knee Bolster

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Rear Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Track Shift (mm)	0	4
Seat Back Failure	None	None
Glazing Damage	Yes	Yes

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

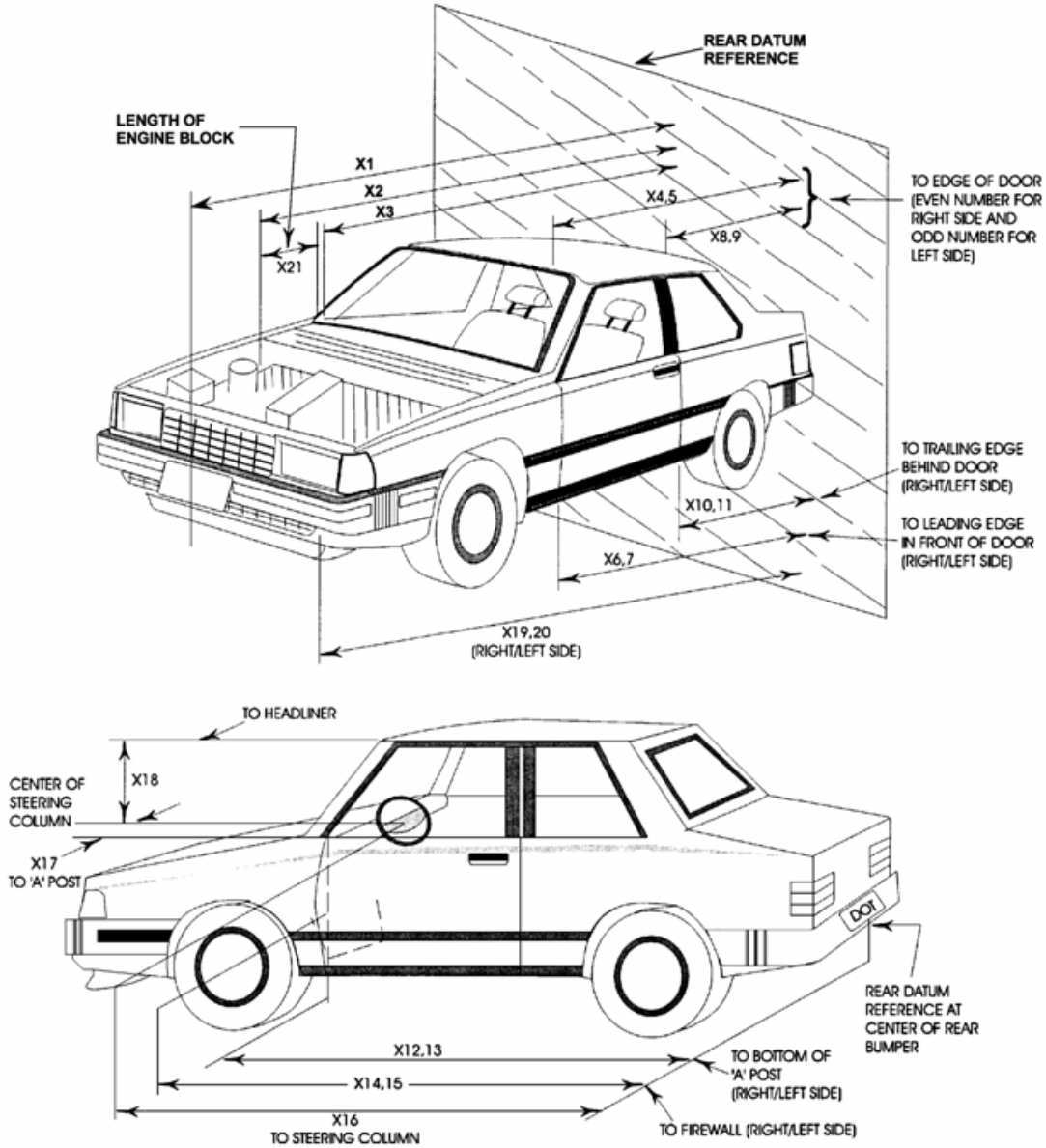
Measured Parameter	Units	Value
Left Side	mm	795
Center	mm	892
Right Side	mm	872
Average	mm	853

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16



DATA SHEET NO. 12 ... (CONTINUED)**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	6771	6141	-630
2	Rear Surface of Vehicle to Front of Engine	5919	5888	-31
3	RSOV to Firewall	5582	5315	-267
4	RSOV to Upper Leading Edge of Right Door	5135	5131	-4
5	RSOV to Upper Leading Edge of Left Door	5140	5152	12
6	RSOV to Lower Leading Edge of Right Door	5095	5095	0
7	RSOV to Lower Leading Edge of Left Door	5095	5094	-1
8	RSOV to Upper Trailing Edge of Right Door	3890	3900	10
9	RSOV to Upper Trailing Edge of Left Door	3896	3905	9
10	RSOV to Lower Trailing Edge of Right Door	3887	3888	1
11	RSOV to Lower Trailing Edge of Left Door	3890	3897	7
12	RSOV to Bottom of A-Pillar, Right Side	5054	4986	-68
13	RSOV to Bottom of A-Pillar, Left Side	4974	5013	39
14	RSOV to Firewall, Right Side	5561	5456	-105
15	RSOV to Firewall, Left Side	5571	5406	-165
16	RSOV to Steering Column	4618	4642	24
17	Center of Steering Column to A-Pillar	465	455	-10
18	Center of Steering Column to Headliner	460	580	120
19	RSOV to Right Side of Front Bumper	6265	5995	-270
20	RSOV to Left Side of Front Bumper	6260	6090	-170
21	Length of Engine Block	600	600	0
RD	RSOV to Right Side of Dash Panel	4839	4870	31
CD	RSOV to Center of Dash Panel	4775	4735	-40
LD	RSOV to Left Side of Dash Panel	4846	4854	8

All measurements in millimeters.

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

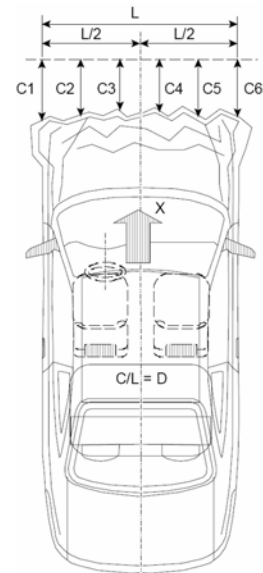
VEHICLE INFORMATION

VIN: 1FT7W2B67HEB24677 Wheelbase (mm): 4480
 Vehicle Size Category: Truck Test Weight (kg): 3313.5

ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember
 Cal. Procedure/Interval: Drop Test / 6 months
 Integration Algorithm: NHTSA Standard
 Impact Velocity (km/h): 56.35
 Velocity Change (km/h): 67.8
 Time of Separation (msec): 77.8

Linearity: Good



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1853
 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	272	560	288
C2	Crush Zone 2 at Left Side	mm	81	630	549
C3	Crush Zone 3 at Left Side	mm	11	630	619
C4	Crush Zone 4 at Right Side	mm	11	628	617
C5	Crush Zone 5 at Right Side	mm	81	605	524
C6	Crush Zone 6 at Right Side	mm	272	585	313
L	C1 to C6	mm	1853		

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck

NHTSA No.: M20170204

Test Program: 56.3 km/h Frontal Impact NCAP Test

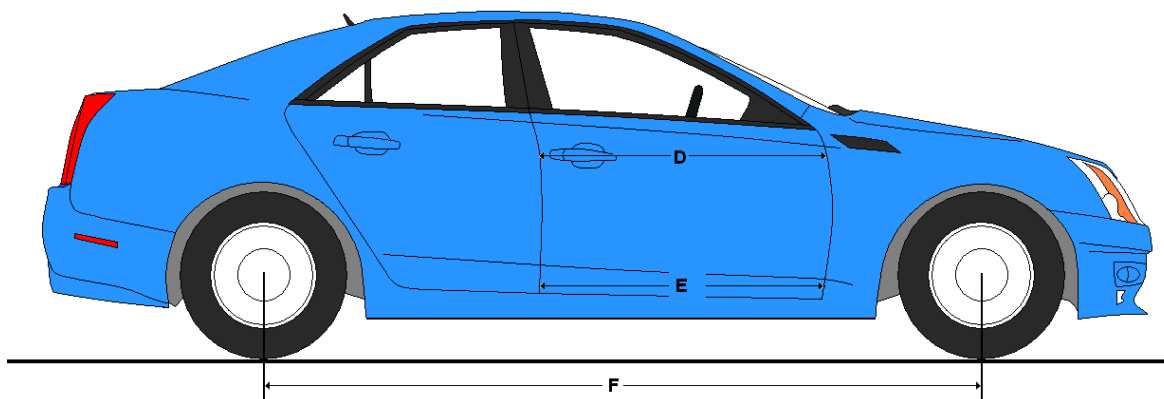
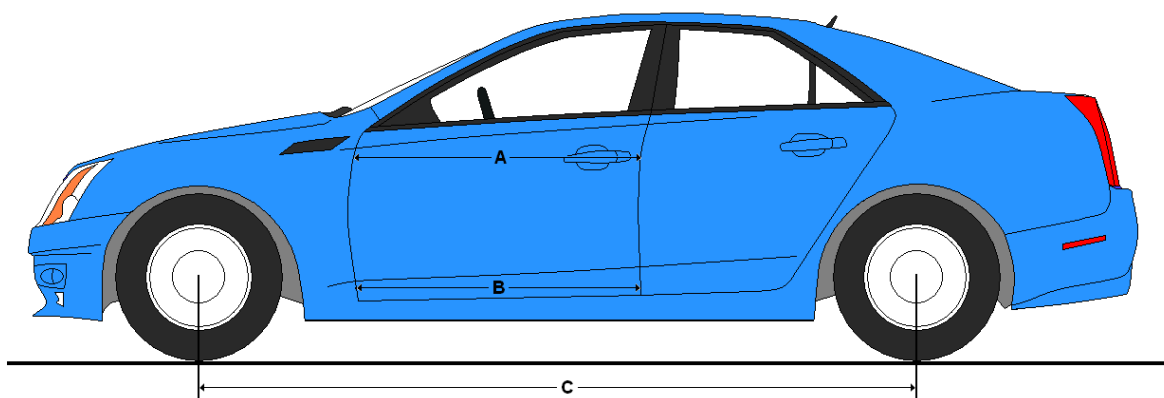
Test Date: 12/07/16

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1096	1100	-4
B	Left Side Lower	mm	1071	1070	1
D	Right Side Upper	mm	1096	1103	-7
E	Right Side Lower	mm	1076	1167	-91

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	4480	4420	60
F	Right Side Wheelbase	mm	4480	4430	50



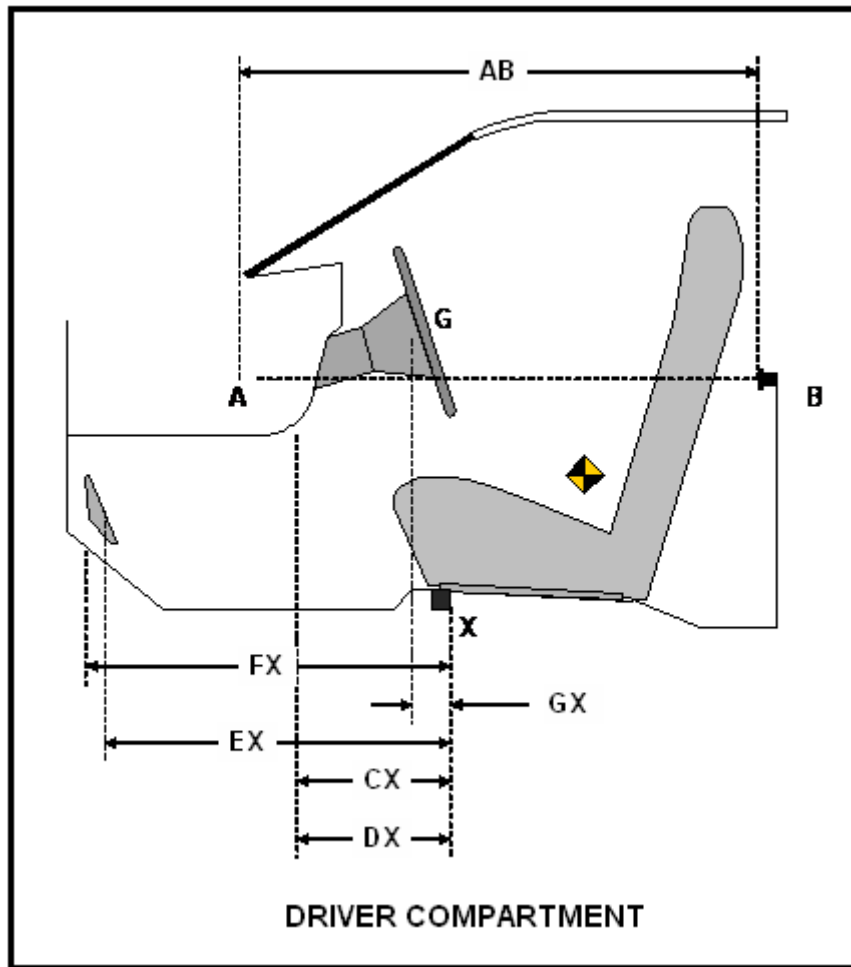
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	853	861	-8
CX	Left Knee Bolster to X	mm	335	317	18
DX	Right Knee Bolster to X	mm	330	305	25
EX	Brake Pedal to X	mm	530	458	72
FX	Foot Rest to X	mm	545	593	-48
GX	Center of Steering Wheel Hub to X	mm	70	65	5

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15

SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204

Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

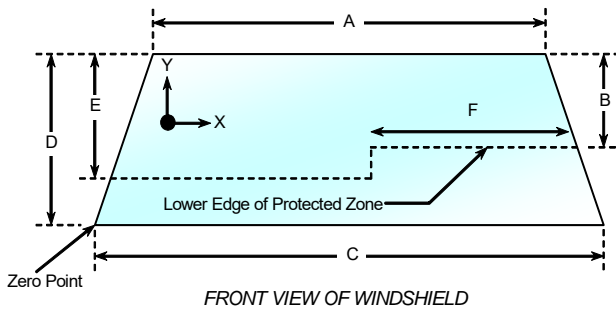
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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: 20.7° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2394.5	2394.5	100.0%
Right Side	2394.5	2394.5	100.0%
Total	4789	4789	100.0%



Item	Units	Value
A	mm	1472
B	mm	378
C	mm	1765
D	mm	776
E	mm	523
F	mm	541

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. 15 ... (CONTINUED)

SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 12.0° C Test Time: 1:00 PM

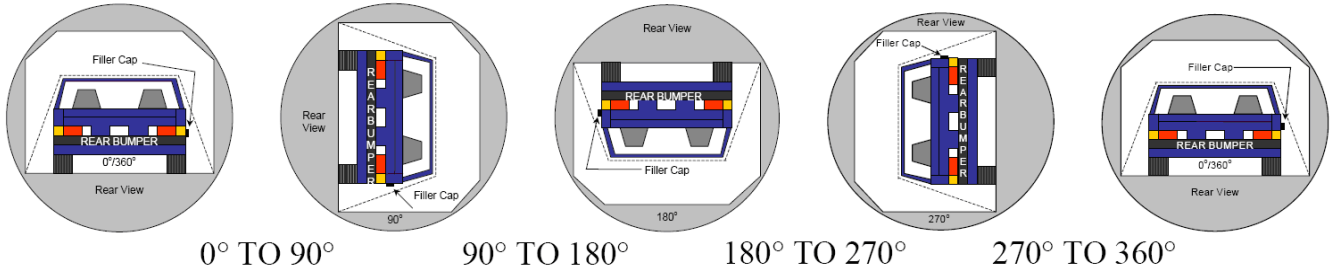
Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: There was no Stoddard solvent spillage.

DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204
 Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard solvent spillage: There was no Stoddard solvent spillage.

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	85	300	385
180° To 270°	77	300	377
270° To 360°	80	300	380

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

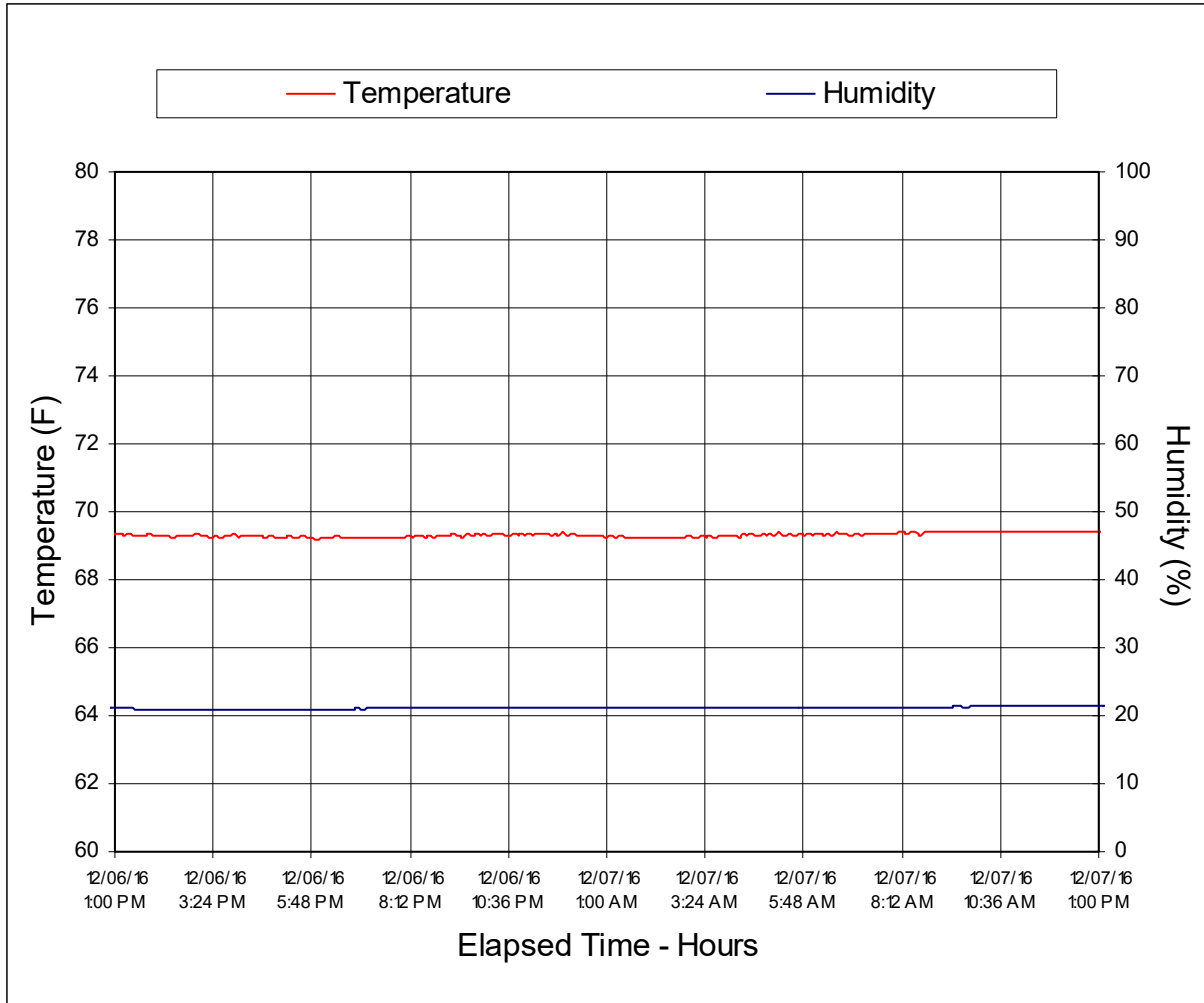
Test Phase	Spillage Location
0° To 90°	
90° To 180°	
180° To 270°	
270° To 360°	

DATA SHEET NO. 17

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck NHTSA No.: M20170204

Test Program: 56.3 km/h Frontal Impact NCAP Test Test Date: 12/07/16



**APPENDIX A
PHOTOGRAPHS**

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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. 2017 Ford F-250 Crew Cab Frontal as Delivered



FIGURE 7. Left Rear $\frac{3}{4}$ View, as Received



FIGURE 8. Pre-Test Front View of Test Vehicle

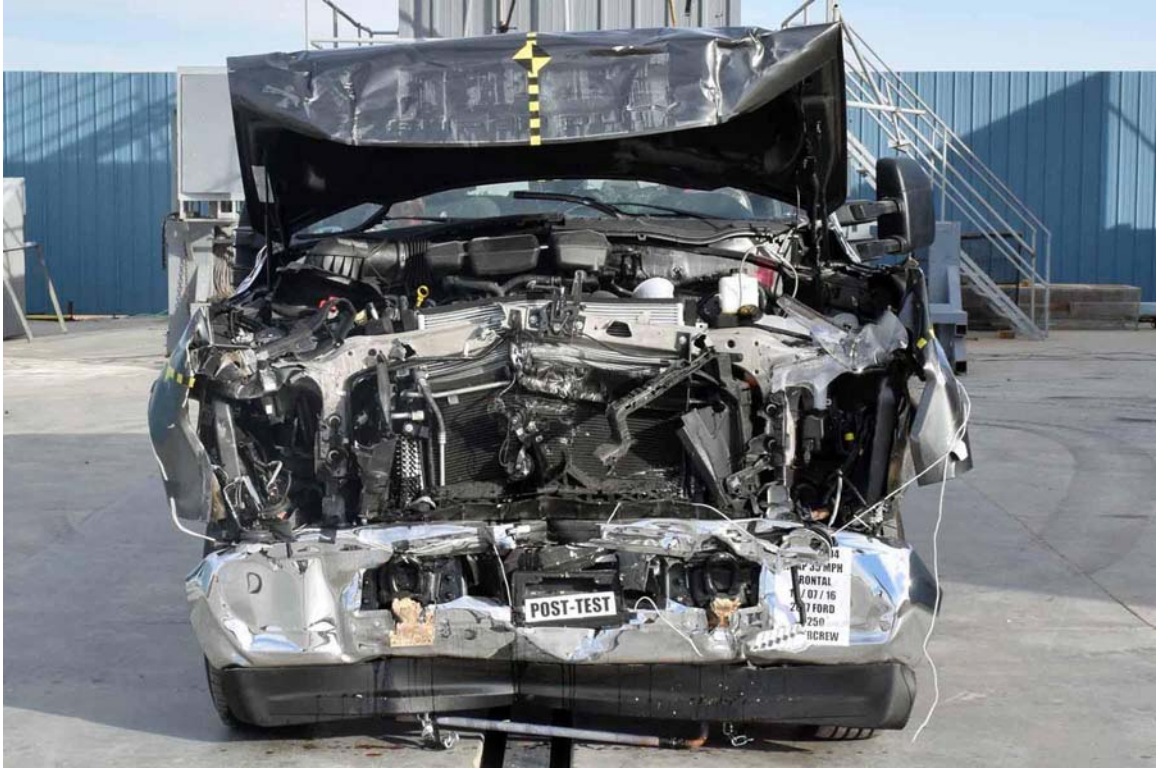


FIGURE 9. Post-Test Front View of Test Vehicle



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 View of Test Vehicle



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



FIGURE 15. Post-Test Right Front $\frac{3}{4}$ View



FIGURE 16. Pre-Test Left Rear $\frac{3}{4}$ View



FIGURE 17. Post-Test Left Rear $\frac{3}{4}$ 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

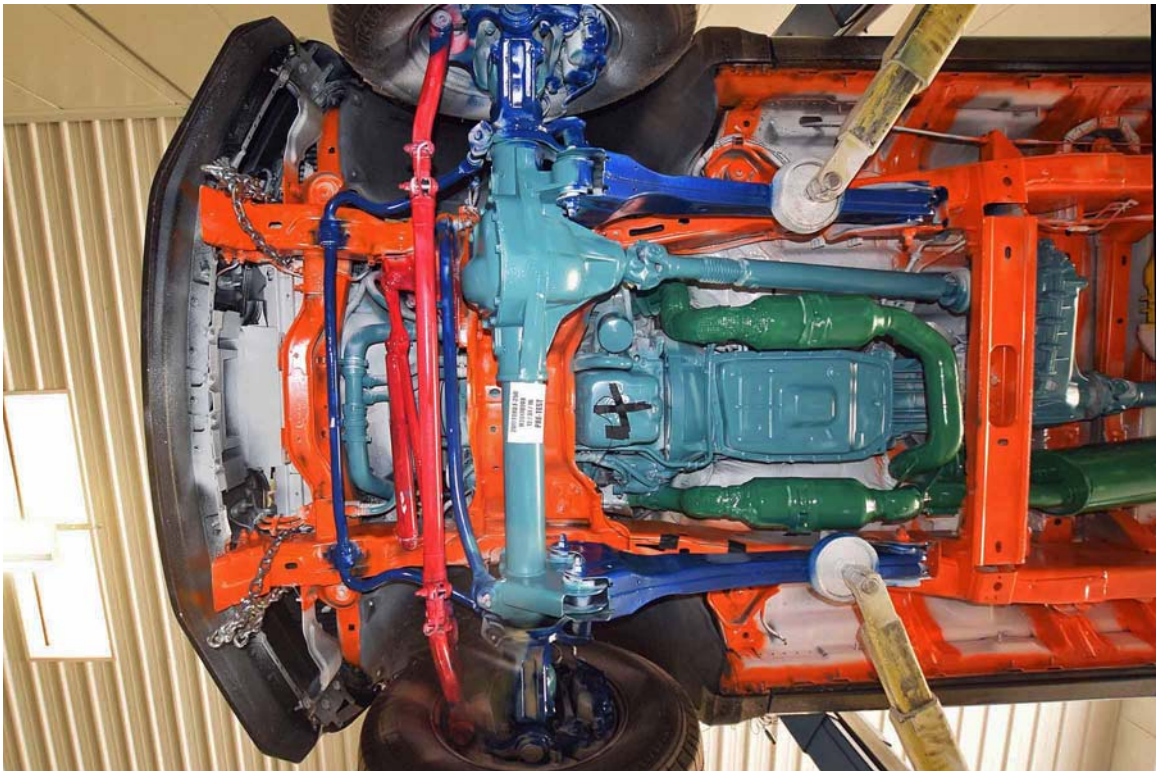


FIGURE 24. Pre-Test Front Underbody View



FIGURE 25. Post-Test Front Underbody View

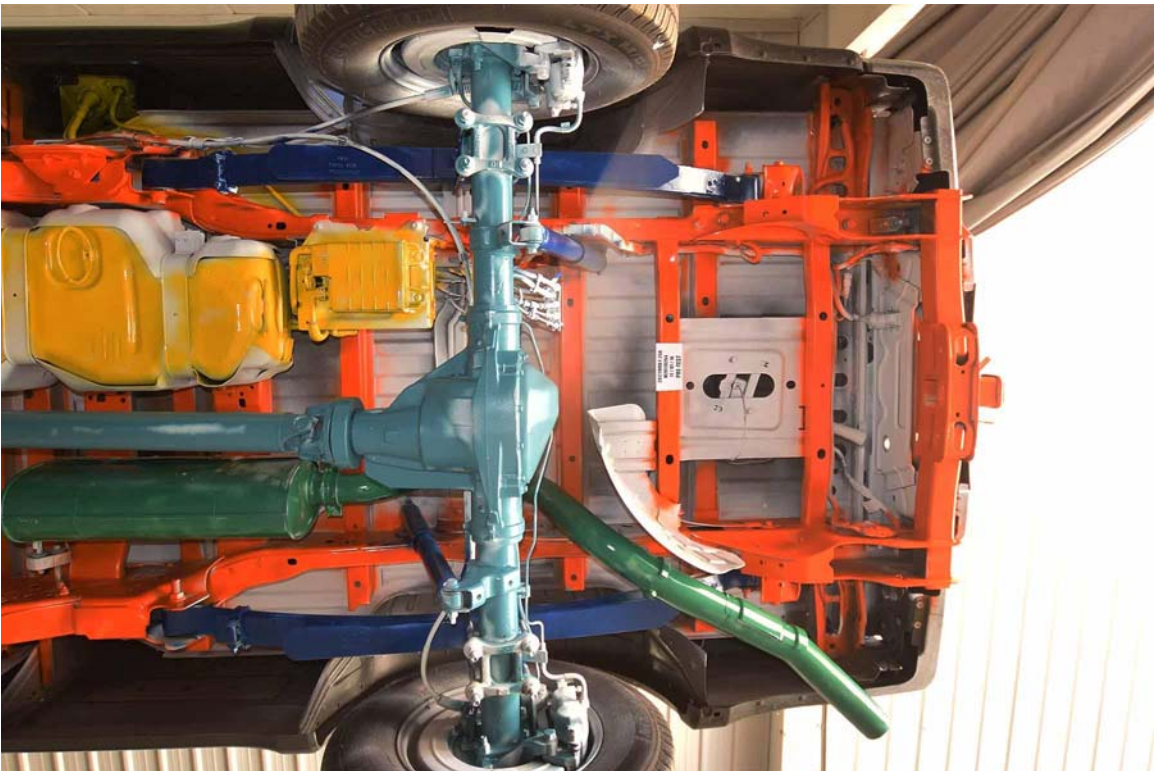


FIGURE 26. Pre-Test Rear Underbody View

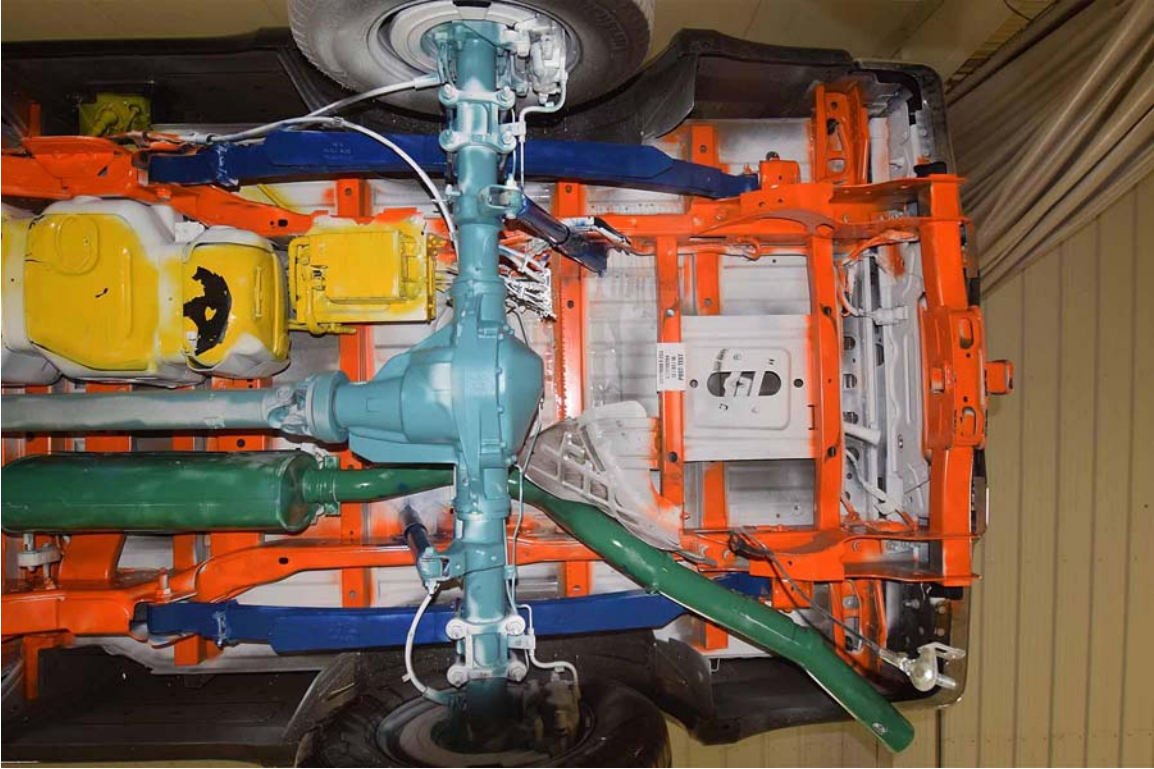


FIGURE 27. Post-Test Rear Underbody View

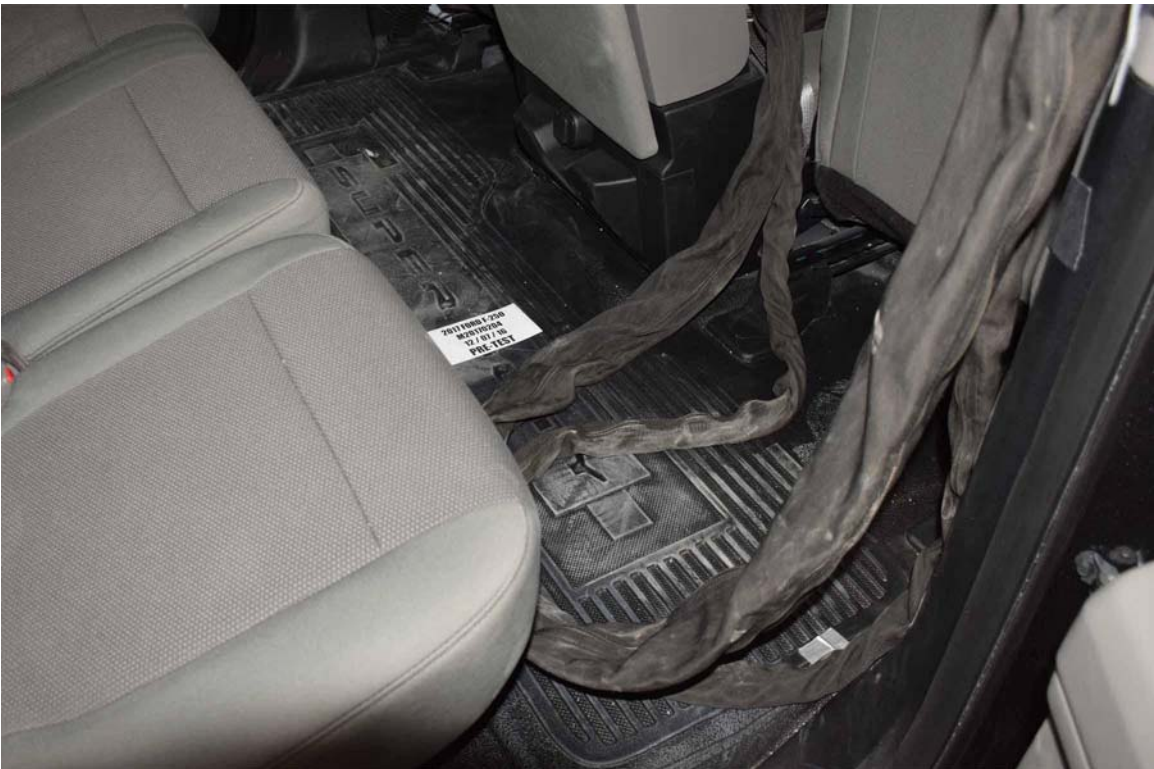


FIGURE 28. Pre-Test Dummy Cable Routing



FIGURE 29. Post-Test Dummy Cable Routing

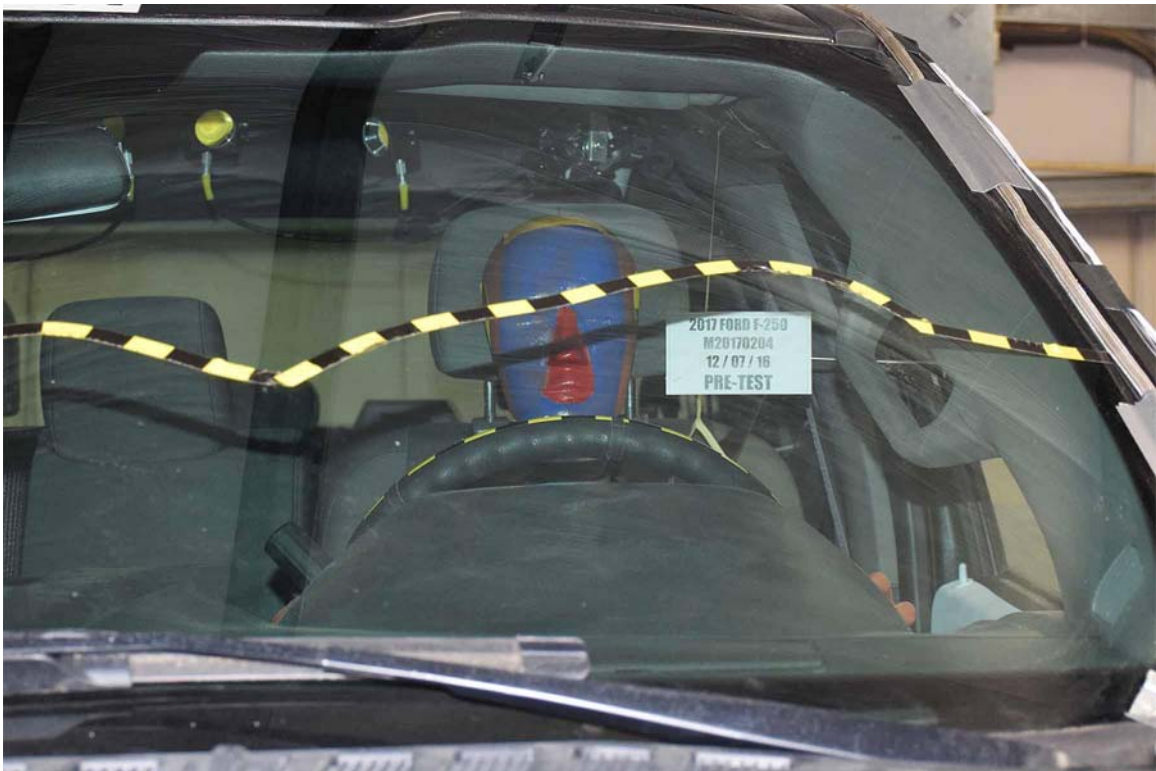


FIGURE 30. Pre-Test Driver Dummy Front View



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 Driver Dummy Feet



FIGURE 41. Post-Test Driver Dummy Feet



FIGURE 42. Pre-Test Driver's Side Knee Bolster



FIGURE 43. Post-Test Driver's Side Knee Bolster



FIGURE 44. Pre-Test Driver's Side Floorpan



FIGURE 45. Post-Test Driver's Side Floorpan

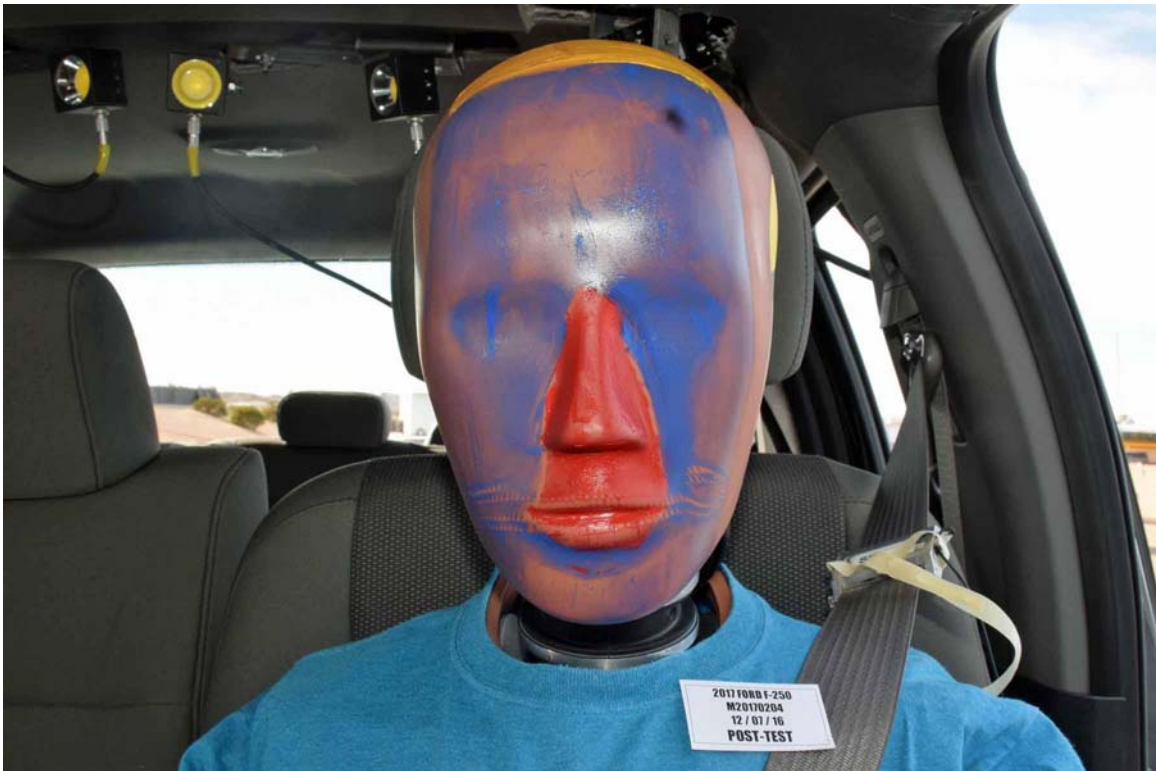


FIGURE 46. Post-Test Driver Dummy Face



FIGURE 47. Post-Test Driver Dummy Contact with Airbag



FIGURE 48. Post-Test Driver Dummy Contact with Headrest



FIGURE 48a. Post-Test Driver Dummy Contact with Knee Bolster



FIGURE 49. Pre-Test View of the Steering Wheel



FIGURE 50. Post-Test View of the Steering Wheel



FIGURE 51. Pre-Test Passenger Dummy Front View



FIGURE 52. Post-Test Passenger Dummy Front View



FIGURE 53. Pre-Test Passenger Dummy Window View



FIGURE 54. Post-Test Passenger Dummy Window View



FIGURE 55. Pre-Test Passenger Dummy and Vehicle Interior View



FIGURE 56. Post-Test Passenger Dummy and Vehicle Interior View



FIGURE 57. Pre-Test Passenger's Seat Fore-Aft Markings



FIGURE 58. Post-Test Passenger's Seat Fore-Aft Markings



FIGURE 59. Pre-Test View of Belt Anchorage for Passenger Dummy



FIGURE 60. Post-Test View of Belt Anchorage for Passenger Dummy



FIGURE 61. Pre-Test Passenger Dummy Feet



FIGURE 62. Post-Test Passenger Dummy Feet



FIGURE 63. Pre-Test Passenger's Side Knee Bolster



FIGURE 64. Post-Test Passenger's Side Knee Bolster



FIGURE 65. Pre-Test Passenger's Side Floorpan



FIGURE 66. Post-Test Passenger's Side Floorpan



FIGURE 67. Post-Test Passenger Dummy Face



FIGURE 68. Post-Test Passenger Dummy Contact with Airbag



FIGURE 69. Post-Test Passenger Dummy Contact with Headrest



FIGURE 69a. Post-Test Passenger Dummy Contact with Knee Bolster

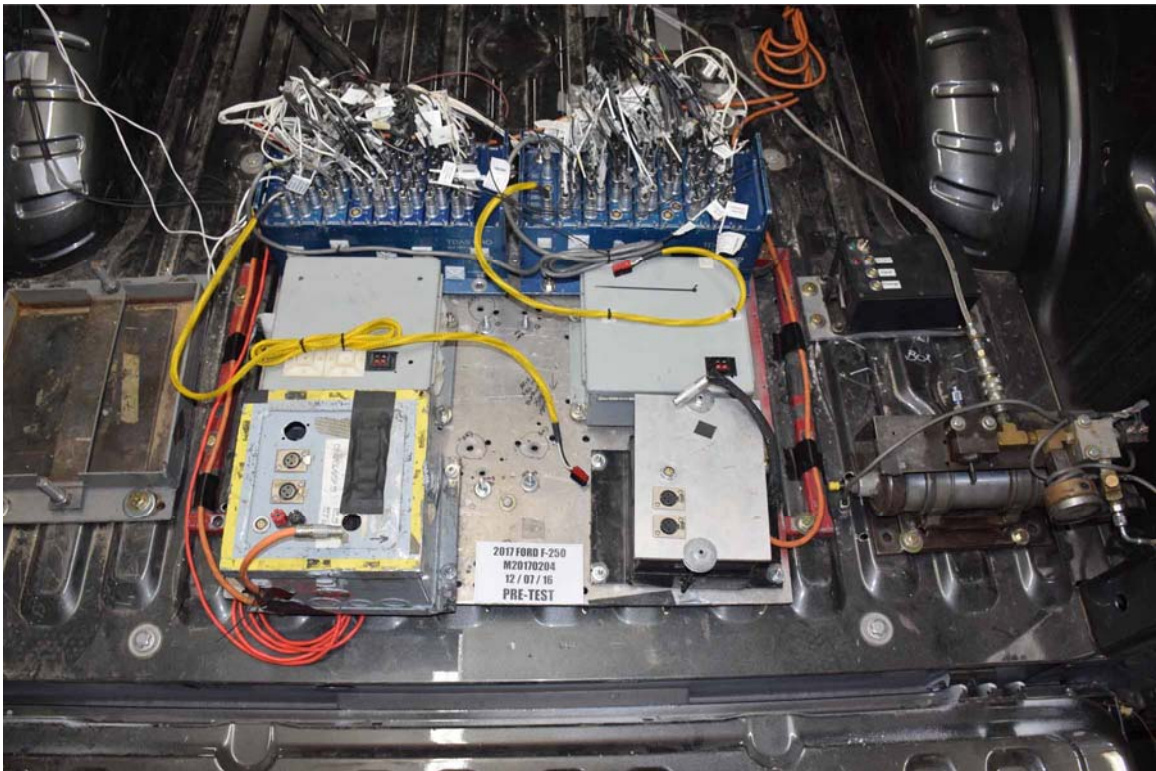


FIGURE 70. Photograph of Ballast Installed in Vehicle

Photograph Not Applicable

No Stoddard Solvent Spillage

FIGURE 71. Post-Test Stoddard Solvent Spillage Location View



FIGURE 72. Post-Test Speed Trap Read-Out



FIGURE 73. Vehicle at 0° on Static Rollover Device



FIGURE 74. Vehicle at 90° on Static Rollover Device

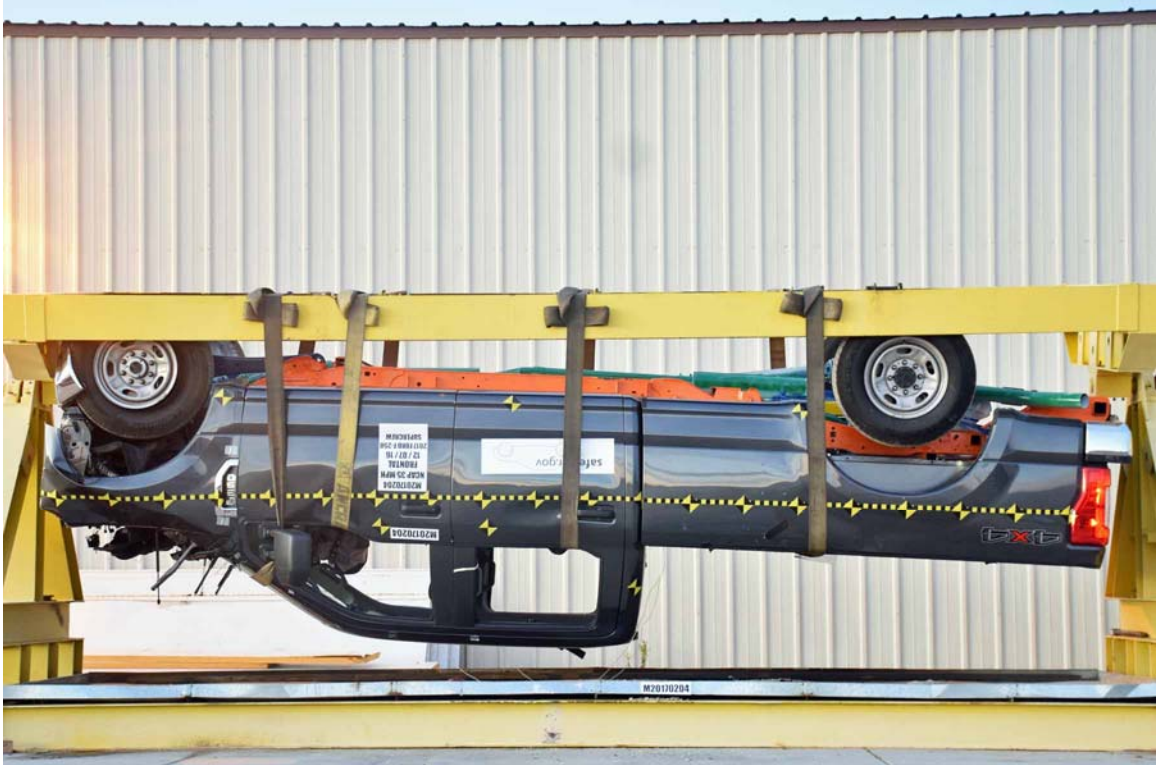


FIGURE 75. Vehicle at 180° on Static Rollover Device



FIGURE 76. Vehicle at 270° on Static Rollover Device



FIGURE 77. Vehicle at 360° on Static Rollover Device



FIGURE 78. 2017 Ford F-250 Crew Cab Frontal Impact Event


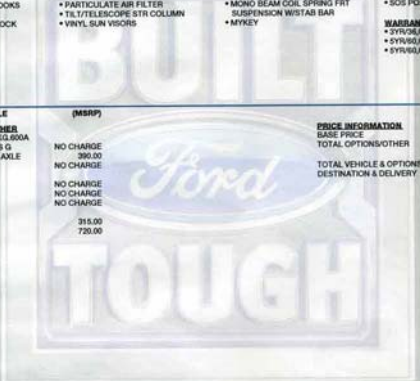
 Go Further ford.com		VEHICLE DESCRIPTION SUPER DUTY 2017 F250 SRW 4X4 CREW CAB XL 176" WB STYLESIDE 3.2L ETR V-6 ENGINE 6 SPEED AUTOMATIC TRANS G		HE B24677 EXTERIOR MAGNETIC INTERIOR MEDIUM EARTH GRAY CLOTH		EPA DOT Fuel Economy and Environment	
STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE							
EXTERIOR • DOOR HANDLES - BLACK • DOOR HANDLES - BLACK • HEADLAMPS - WIPER ACTIVATED • LOCKING REMOVABLE TAILGATE • WULF ASST-NA W/BOX DLT • PICKUP BOX, TIE DOWN HOOKS • NA W/BOX DLT • SPARE TIRE AND WHEEL LOCK • NA W/BOX DLT • TOW HOOKS • TRAILER SWAY CONTROL		INTERIOR • 60/40 REAR BENCH W/FLIP-UP • FLIP-DOWN W/ HEAD REST • AIR COND. MANUAL, FRONT • DRIVER SEAT-MANUAL LUMBAR • OUTSIDE TEMP DISPLAY • PARTICULATE AIR FILTER • TILT/TELESCOPE STR COLUMN • VINYL SUN VISORS		FUNCTIONAL • 4 WHEEL ANTI-LOCK DISC BRAKING SYSTEM • HILL START ASSIST • JEWEL EFFECT HEADLAMPS • MANUAL LOCKING HUBS • MONO BEAM COIL SPRING FRT SUSPENSION W/STAB BAR • MPKEY		SAFETY/SECURITY • ADVANCETRAC WITH RSC • AIRBAGS - SAFETY CANOPY • BELT MINDER CHIME • DRIVER/PASSENGER AIR BAGS • SECURLOCK PASS ANTI THEFT • 505 POST CRASH ALERT SYS WARRANTY • 3YR/50,000 BUMPER / BUMPER • 5YR/100,000 POWERTRAIN • 5YR/100,000 ROADSIDE ASSIST	
							
INCLUDED ON THIS VEHICLE OPTIONAL EQUIPMENT/OTHER PREFERRED EQUIPMENT PKG.500A 6 SPEED AUTOMATIC TRANS G 3.73 ELECTRONIC LOCKING AXLE XL DECOR PACKAGE 10000R GVWR PACKAGE ENGINE BLOCK HEATER 50 STATE EMISSIONS SPARE TIRE AND WHEEL JACK CLOTH 40/20/40 SEAT XL VALUE PACKAGE CRUISE CONTROL JAM/FM STEREO CD/CLK		(MSRP) NO CHARGE 290.00 NO CHARGE NO CHARGE NO CHARGE 315.00 720.00		PRICE INFORMATION BASE PRICE TOTAL OPTIONS/OTHER TOTAL VEHICLE & OPTIONS/OTHER DESTINATION & DELIVERY		(MSRP) \$39,136.00 1,429.00 40,565.00 1,190.00	
SOLD TO Ferrario Ford-Lincoln 2472 Corning Road Ellettsville NY 14903		13V 829 RA46		RA46 13V 529		TOTAL MSRP \$41,755.00	
SHIP TO Ferrario Ford-Lincoln 2472 Corning Road Ellettsville NY 14903		RA46		13V 529		SPECIAL ORDER	
SHIP TO Ferrario Ford-Lincoln 2472 Corning Road Ellettsville NY 14903		RA46		13V 529		SPECIAL ORDER	
SHIP TO Ferrario Ford-Lincoln 2472 Corning Road Ellettsville NY 14903		RA46		13V 529		SPECIAL ORDER	

FIGURE 79. Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

<u>Plot</u>		<u>Page</u>
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 Chest Acceleration X Primary	B-3
7	Driver Chest Acceleration Y Primary	B-3
8	Driver Chest Acceleration Z Primary	B-3
9	Driver Chest Resultant Acceleration Primary	B-3
10	Driver Upper Neck Force X	B-4
11	Driver Upper Neck Force Z	B-4
12	Driver Upper Neck Moment Y	B-4
13	Driver Nij	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 Chest Acceleration X Primary	B-8
22	Passenger Chest Acceleration Y Primary	B-8
23	Passenger Chest Acceleration Z Primary	B-8
24	Passenger Chest Resultant Acceleration Primary	B-8
25	Passenger Upper Neck Force X	B-9
26	Passenger Upper Neck Force Z	B-9
27	Passenger Upper Neck Moment Y	B-9
28	Passenger Nij	B-9
29	Passenger Left Femur Force Z	B-10
30	Passenger Right Femur Force Z	B-10

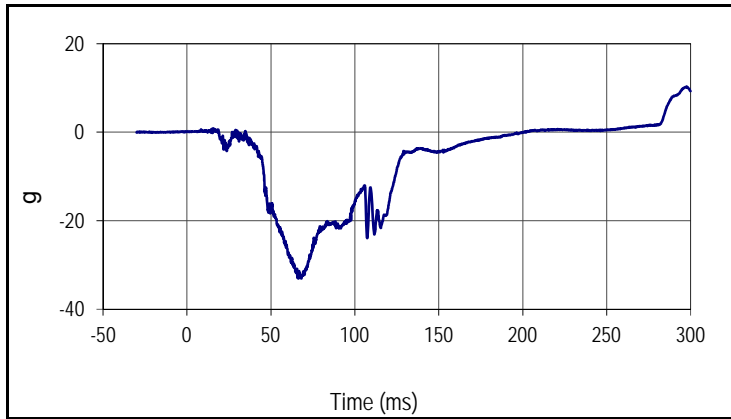
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Left Femur 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
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant

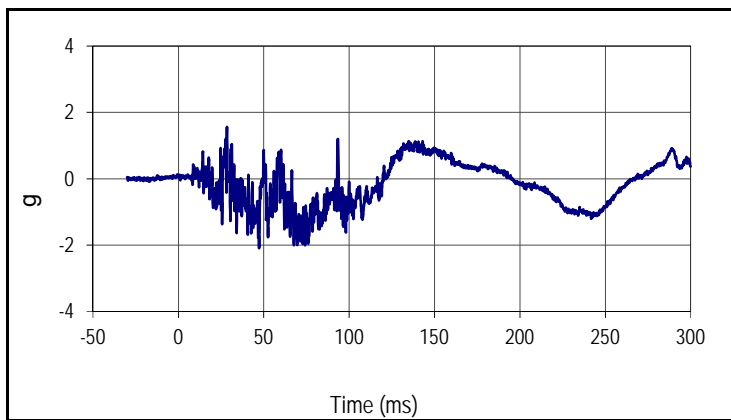
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Force Redundant
Passenger Right Femur Force Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia 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
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 and Moments

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

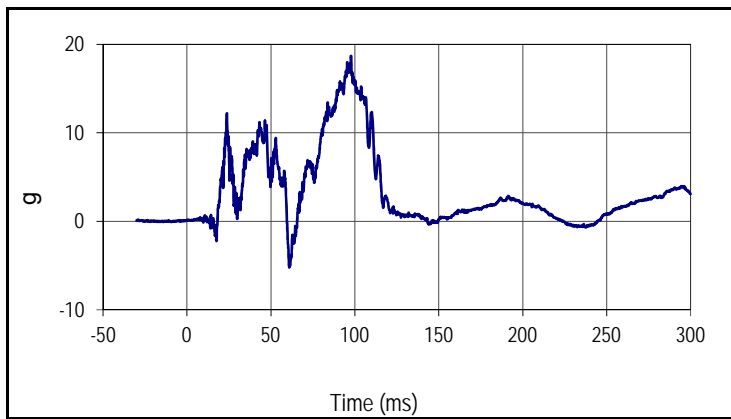
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 Test Date: 12/7/2016



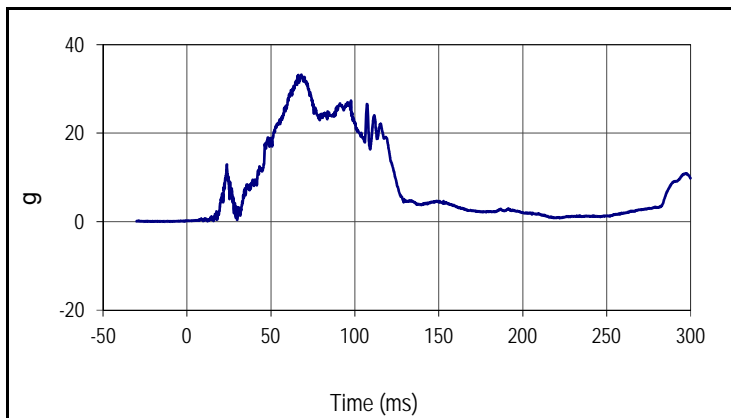
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Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
10.3	297.6	-33.1	66.4



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
1.6	28.4	-2.1	47.2



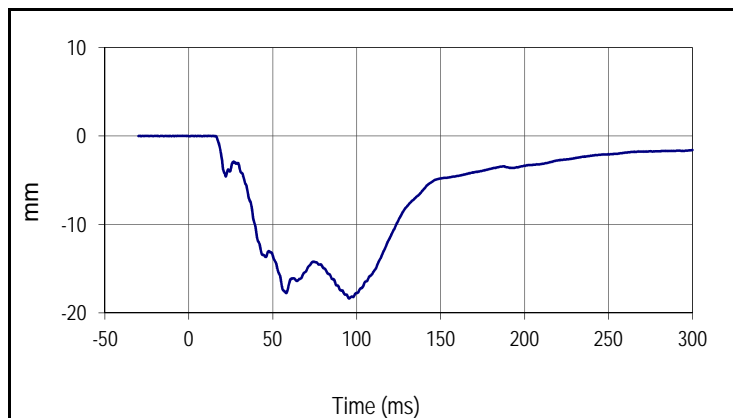
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
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Max	Time	Min	Time
18.7	97.7	-5.2	60.9



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
33.2	68.1	0.1	12.2

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

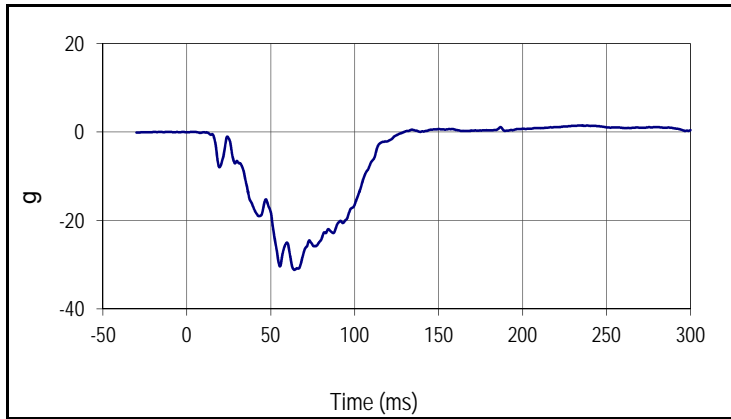
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 Test Date: 12/7/2016



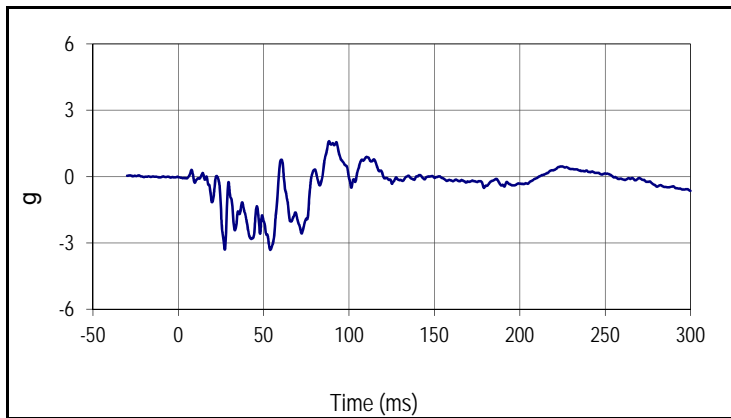
Curve Description			
Driver Chest Deflection			
Plot No.		SAE Class	Units
005		600	mm
Max	Time	Min	Time
0.0	12.3	-18.4	95.4

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

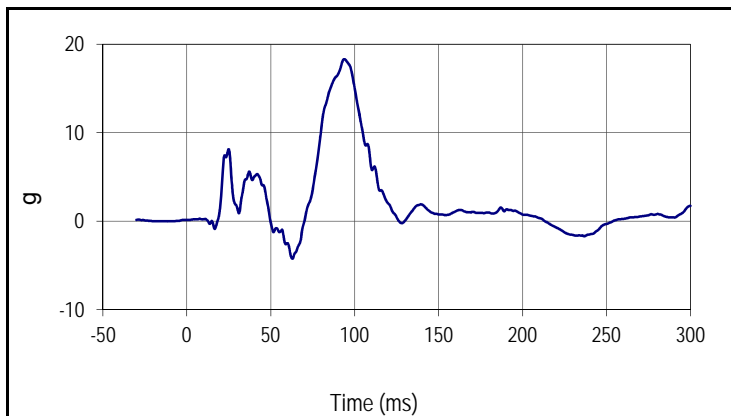
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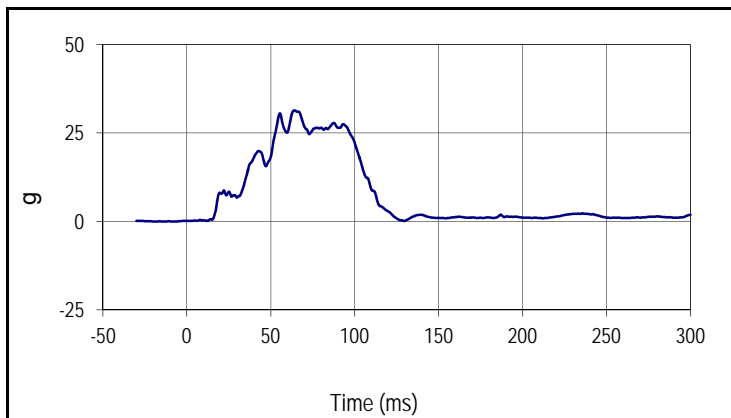
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Driver Chest Acceleration X Primary			
Plot No.		SAE Class	Units
006		180	g
Max	Time	Min	Time
1.5	235.5	-31.2	64.0



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.		SAE Class	Units
007		180	g
Max	Time	Min	Time
1.6	88.3	-3.3	53.9



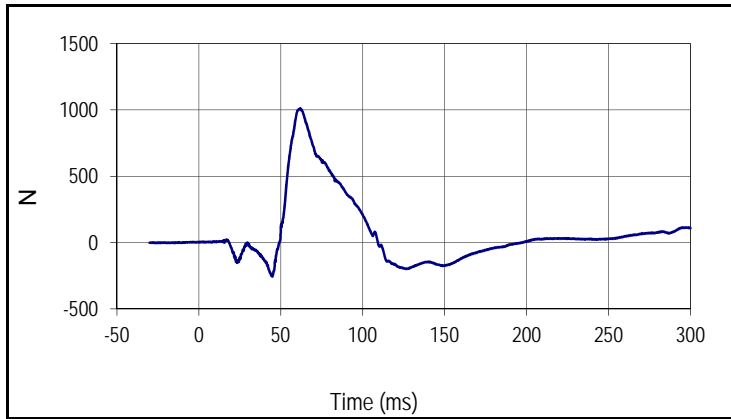
Curve Description			
Driver Chest Acceleration Z Primary			
Plot No.		SAE Class	Units
008		180	g
Max	Time	Min	Time
18.3	93.8	-4.2	62.9



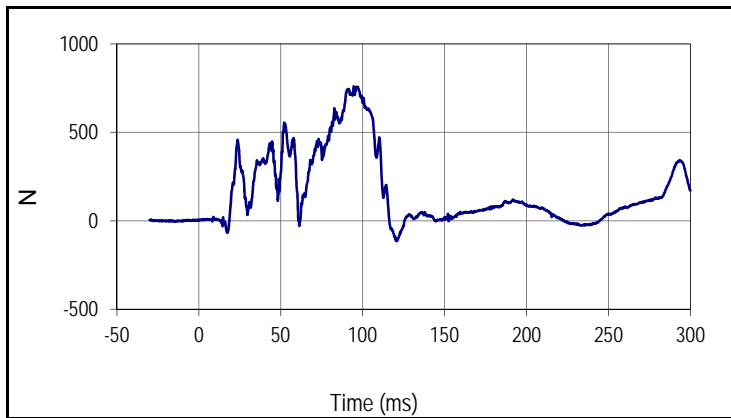
Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.		SAE Class	Units
009		180	g
Max	Time	Min	Time
31.4	64.0	0.1	0.5

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

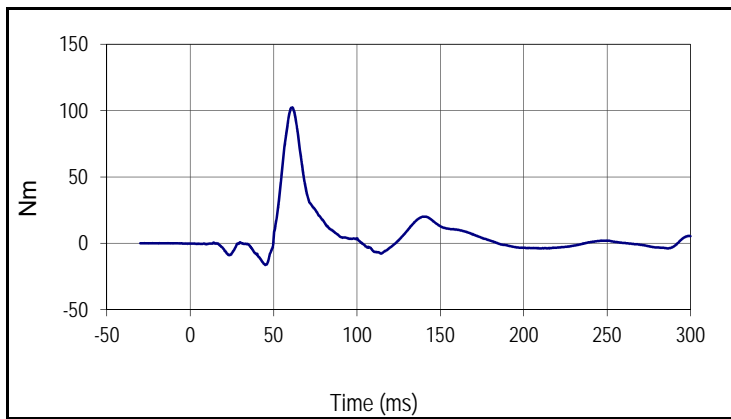
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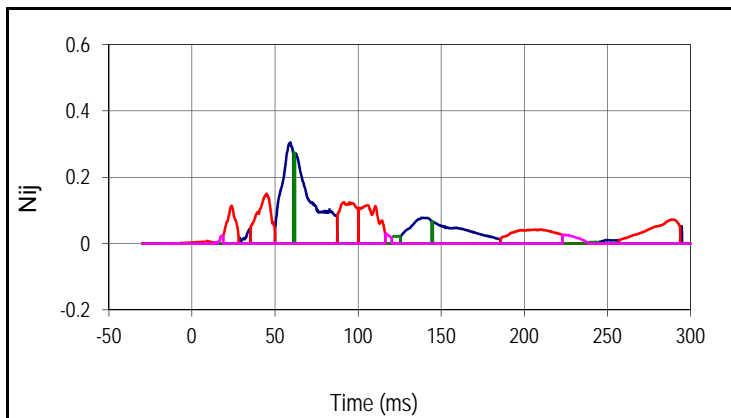
Curve Description			
Driver Upper Neck Force X			
Plot No.		SAE Class	Units
010		1000	N
Max	Time	Min	Time
1010.4	61.7	-254.8	44.9



Curve Description			
Driver Upper Neck Force Z			
Plot No.		SAE Class	Units
011		1000	N
Max	Time	Min	Time
760.3	94.5	-114.8	120.7



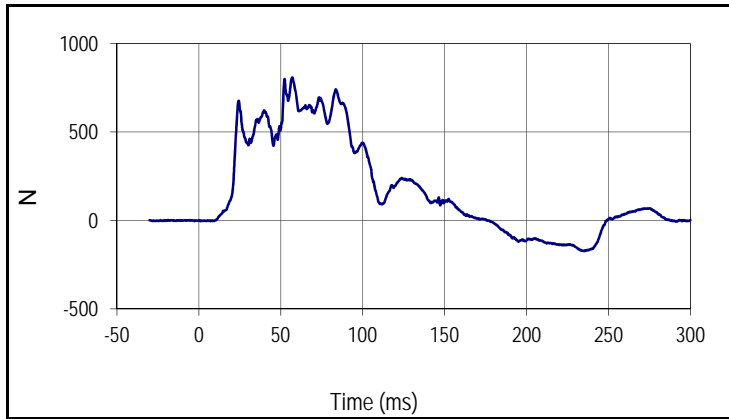
Curve Description			
Driver Upper Neck Moment Y			
Plot No.		SAE Class	Units
012		600	Nm
Max	Time	Min	Time
102.4	61.2	-16.3	45.1



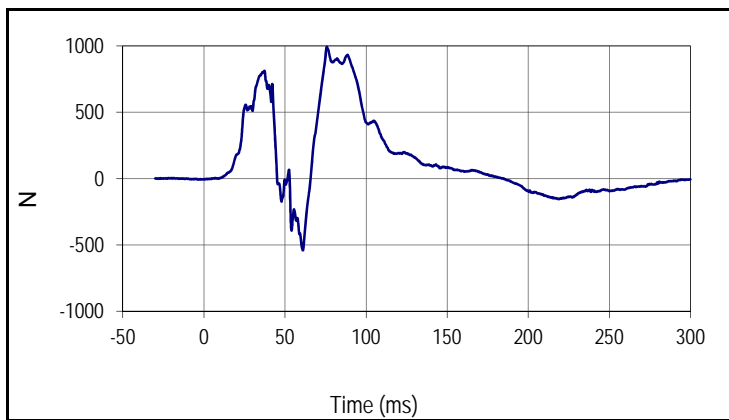
Curve Description		
Driver Nij		
Units	Max	Time
Ntf	0.30	59.1
Units	Max	Time
Nte	0.15	44.9
Units	Max	Time
Ncf	0.28	61.4
Units	Max	Time
Nce	0.03	117.1

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20170204
 Test Date: 12/7/2016



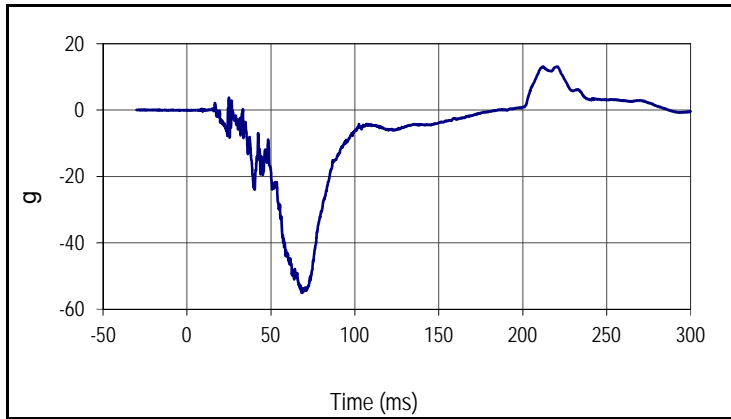
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Driver Left Femur Force Z			
Plot No.		SAE Class	Units
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Max	Time	Min	Time
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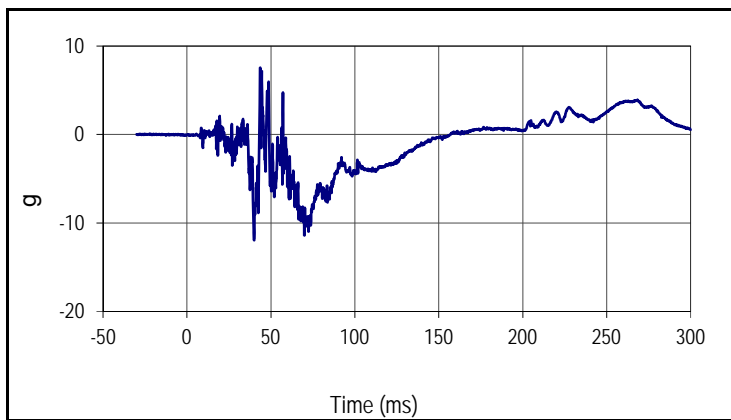
Curve Description			
Driver Right Femur Force Z			
Plot No.		SAE Class	Units
015		600	N
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993.0	75.8	-541.0	61.0

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

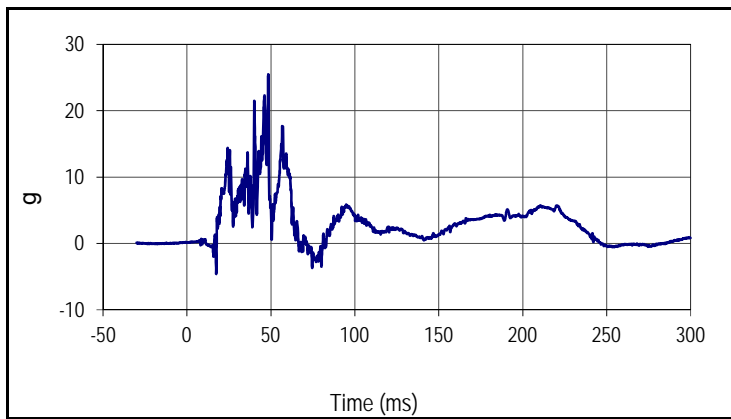
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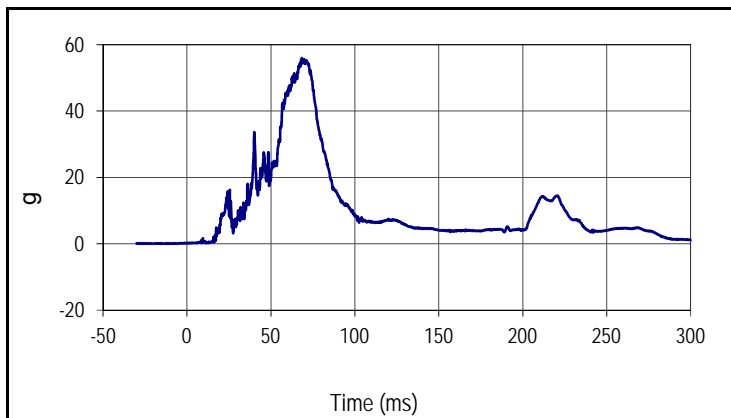
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Passenger Head Acceleration X Primary			
Plot No.		SAE Class	Units
016		1000	g
Max	Time	Min	Time
13.1	220.8	-55.1	68.4



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.		SAE Class	Units
017		1000	g
Max	Time	Min	Time
7.5	43.6	-11.9	40.0



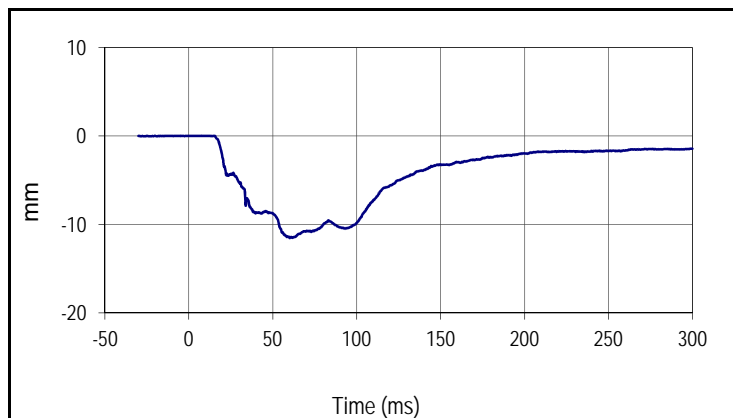
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.		SAE Class	Units
018		1000	g
Max	Time	Min	Time
25.5	48.4	-4.6	17.4



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
019		1000	g
Max	Time	Min	Time
55.9	68.4	0.1	0.2

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

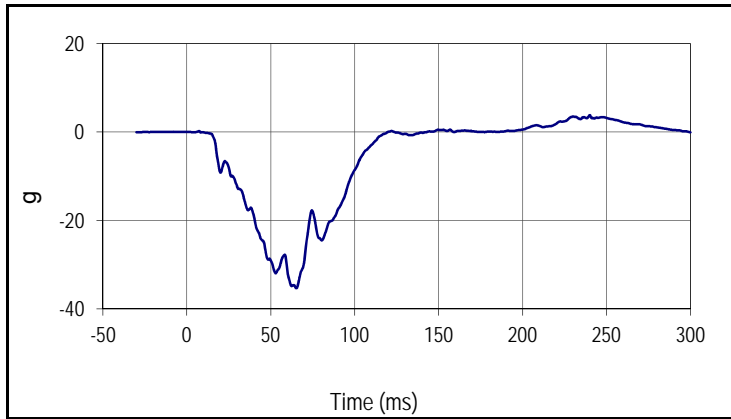
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 Test Date: 12/7/2016



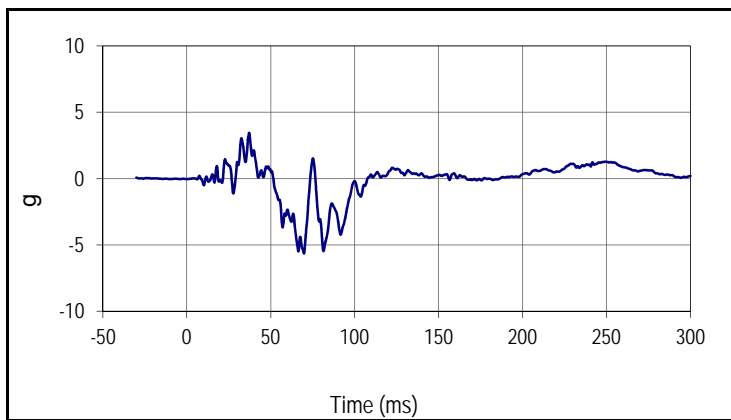
Curve Description			
Passenger Chest Deflection			
Plot No.		SAE Class	Units
020		600	mm
Max	Time	Min	Time
0.0	15.4	-11.5	60.1

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

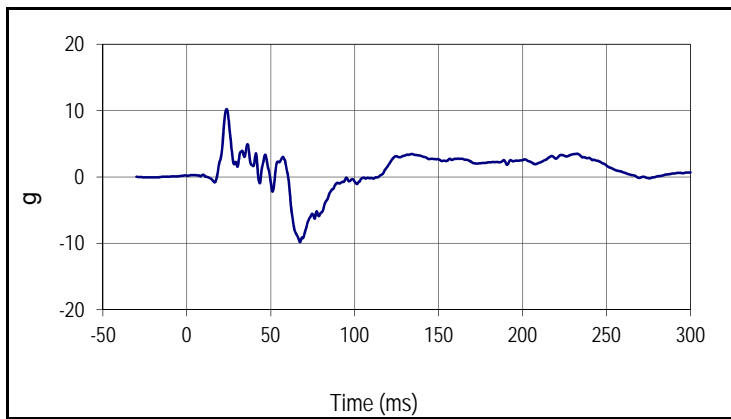
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 Test Date: 12/7/2016



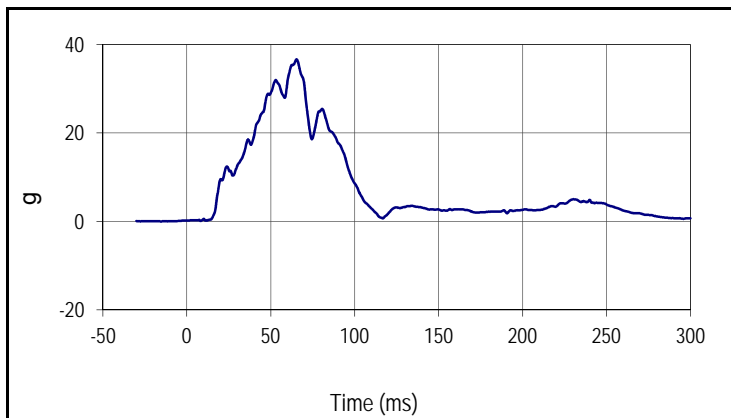
Curve Description			
Passenger Chest Acceleration X Primary			
Plot No.		SAE Class	Units
021		180	g
Max	Time	Min	Time
3.8	240.0	-35.3	65.2



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.		SAE Class	Units
022		180	g
Max	Time	Min	Time
3.4	37.1	-5.6	69.7



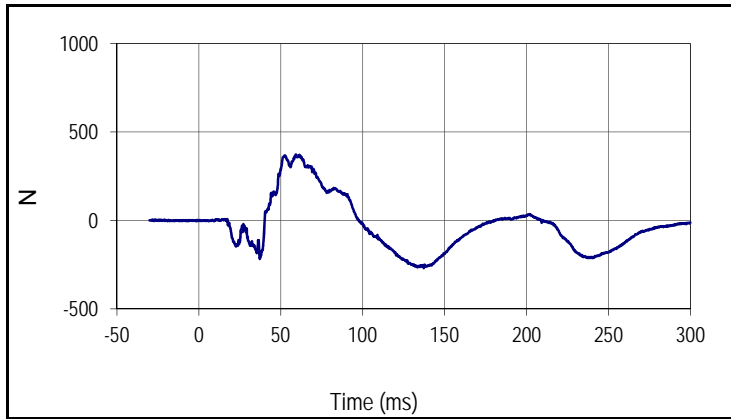
Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.		SAE Class	Units
023		180	g
Max	Time	Min	Time
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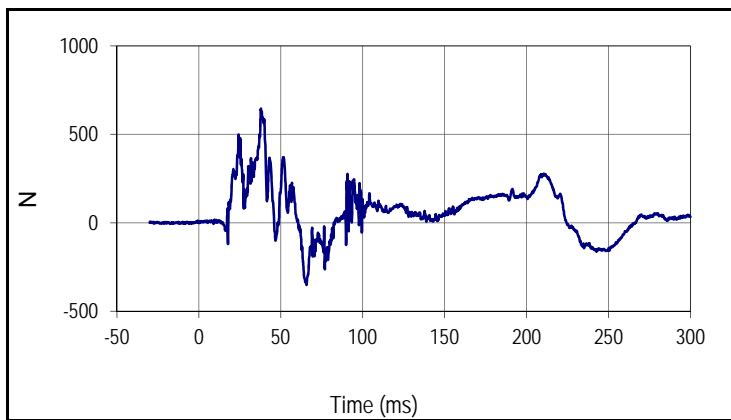
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Passenger Chest Resultant Acceleration Primary			
Plot No.		SAE Class	Units
024		180	g
Max	Time	Min	Time
36.6	65.3	0.1	8.1

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

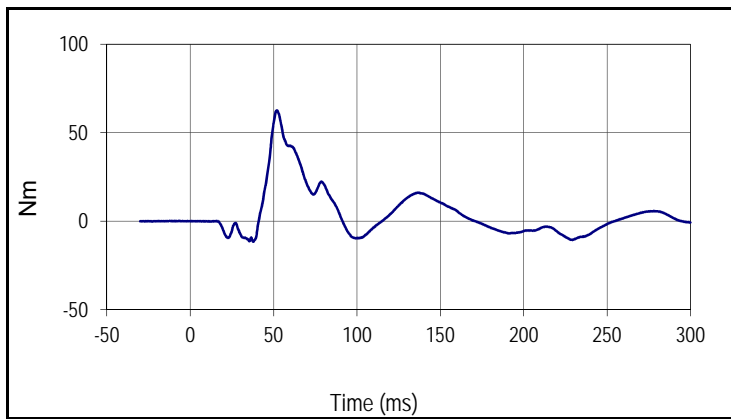
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 Test Date: 12/7/2016



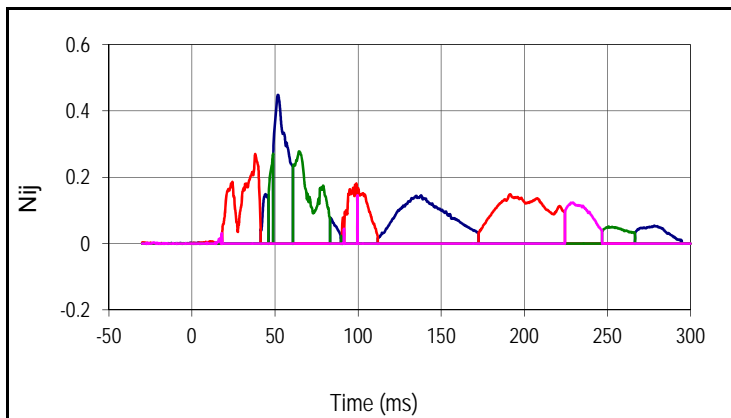
Curve Description			
Passenger Upper Neck Force X			
Plot No.		SAE Class	Units
025		1000	N
Max	Time	Min	Time
373.4	59.2	-269.2	137.3



Curve Description			
Passenger Upper Neck Force Z			
Plot No.		SAE Class	Units
026		1000	N
Max	Time	Min	Time
645.5	37.9	-350.5	65.7



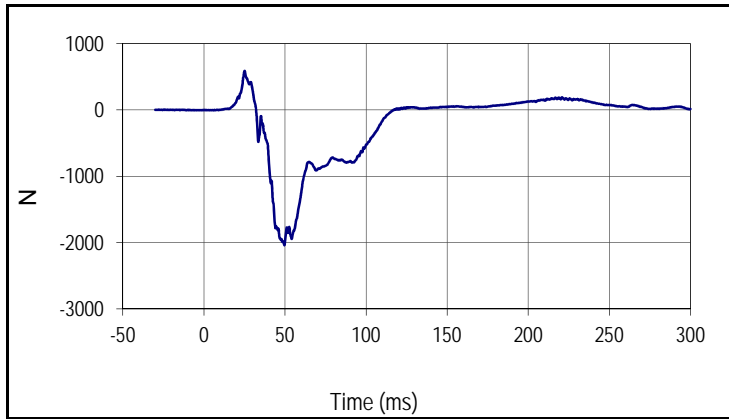
Curve Description			
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Plot No.		SAE Class	Units
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Max	Time	Min	Time
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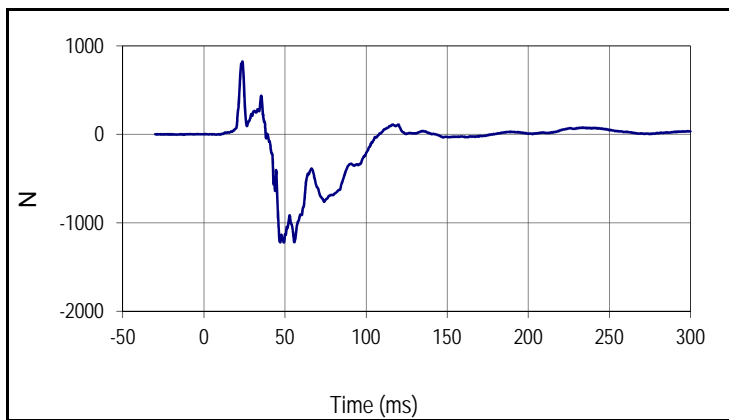
Curve Description		
Passenger Nij		
Units	Max	Time
Ntf	0.45	51.8
Units	Max	Time
Nte	0.27	38.0
Units	Max	Time
Ncf	0.28	64.5
Units	Max	Time
Nce	0.15	99.6

Test Vehicle: 2017 Ford F-250 Crew Cab 4-Door Truck
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20170204
 Test Date: 12/7/2016



Curve Description			
Passenger Left Femur Force Z			
Plot No.		SAE Class	Units
029		600	N
Max	Time	Min	Time
589.1	25.1	-2038.8	49.6



Curve Description			
Passenger Right Femur Force Z			
Plot No.		SAE Class	Units
030		600	N
Max	Time	Min	Time
822.8	23.7	-1221.7	49.3

APPENDIX C
ATD CALIBRATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Dummy Damage Checklist

Test Date: 12/6/16

ATD Serial No.: 360

Test I.D.: N/A



Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 12/6/16

ATD Serial No.: 360

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	29.5	Pass
A - Total sitting height	mm	879 to 889	886	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - H point height	mm	84 to 89	86	Pass
D - H point location from backline	mm	135 to 140	139	Pass
E - Shoulder pivot from backline	mm	84 to 94	91	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	298	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	337	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	437	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	473	Pass
O - Chest depth without jacket	mm	213 to 229	227	Pass
P - Foot length	mm	251 to 267	263	Pass
V - Shoulder breadth	mm	422 to 437	436	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	982	Pass
Z - Waist circumference	mm	836 to 866	865	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	231	Pass
Overall Test Results			Pass	

Test Program: Hybrid III 50th Percentile Male Head Drop Test

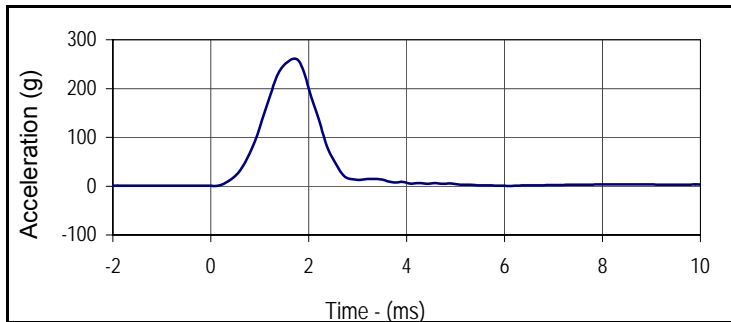
Test Date: 12/6/16



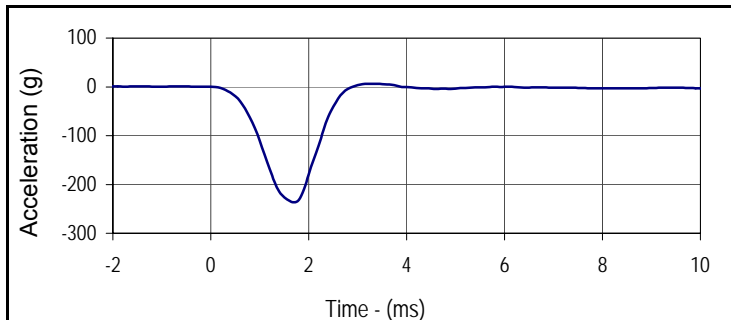
ATD Serial No.: 360

Test I.D.: M360HD021

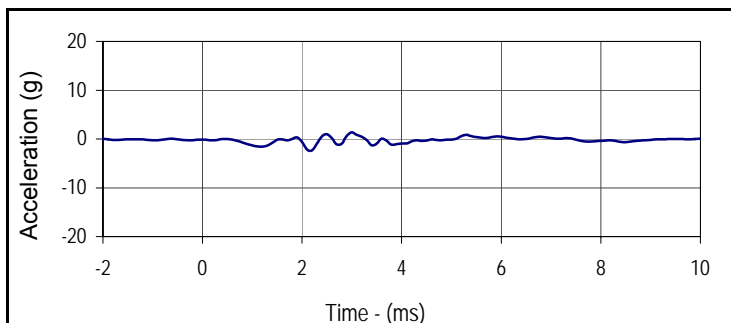
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	250	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	20.9	Pass
	Min		20.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.9	Pass
Peak Resultant Acceleration	g	225.0 to 275.0	261.1	Pass
Peak Lateral Acceleration	g	≤15.0	2.4	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	6.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



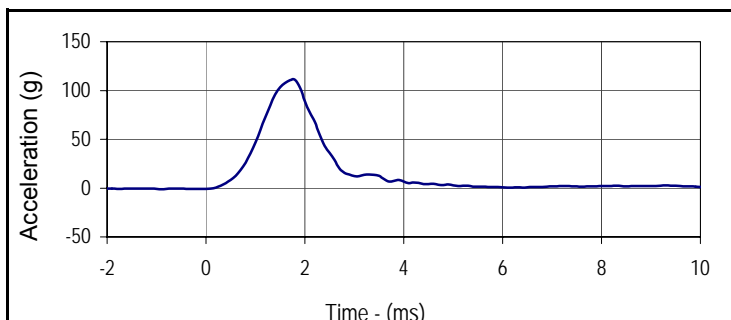
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
261.1	1.7	0.2	89.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
6.2	3.2	-236.5	1.7



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
1.4	3.0	-2.4	2.2



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
110.8	1.8	-2.9	97.6

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

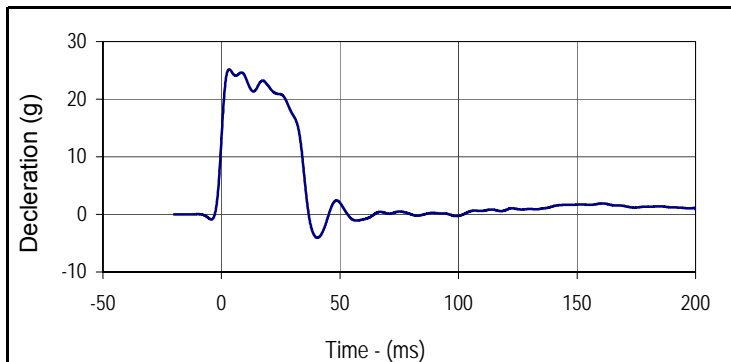
Test Date: 12/6/16



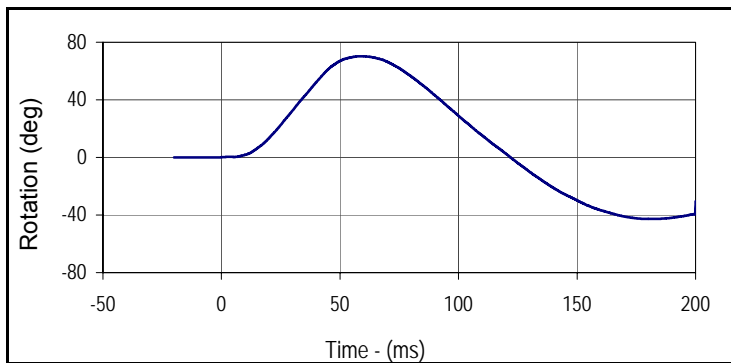
ATD Serial No.: 360

Test I.D.: M360NF021

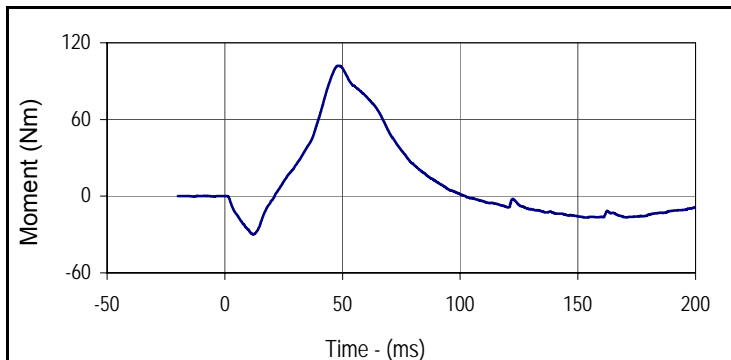
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	315	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	20.9	Pass
	Min		20.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.8	Pass
Pendulum Velocity	m/s	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	22.5 to 27.5	23.9	Pass
	20 Msec.	17.6 to 22.6	22.2	Pass
	30 Msec.	12.5 to 18.5	17.4	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 29.0	17.4	Pass
Deceleration Decay, Time to Cross 5 G's	ms	34.0 to 42.0	35.4	Pass
Maximum "D" Plane Rotation	Max	64.0 to 78.0	70.2	Pass
	Time	57.0 to 64.0	58.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	ms	113.0 to 128.0	122	Pass
Moment About Occ. Condyle	Max	88.1 to 108.5	102.1	Pass
	Time	47.0 to 58.0	48.4	Pass
Positive Moment Decay, Time To Zero Crossing	ms	97.0 to 107.0	102.2	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
25.2	3.2	-4.0	40.4



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
70.2	58.5	-42.8	181.3



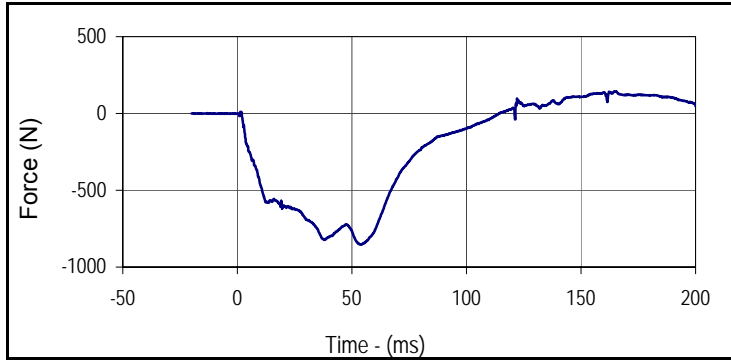
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
102.1	48.4	-29.8	11.9

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

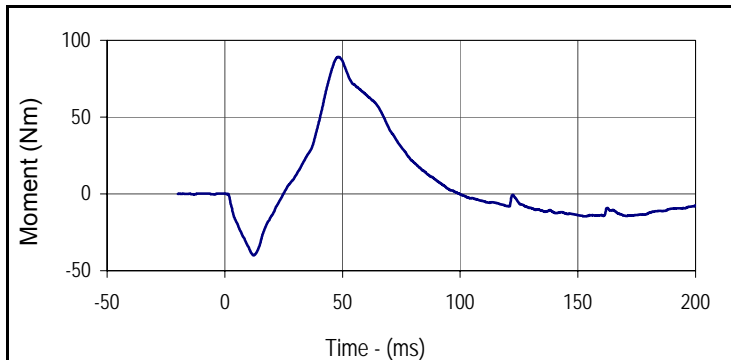
ATD Serial No.: 360

Test Date: 12/6/16

Test I.D.: M360NF021



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
144.1	165.1	-854.6	54.1



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
89.1	48.2	-39.9	12.2

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

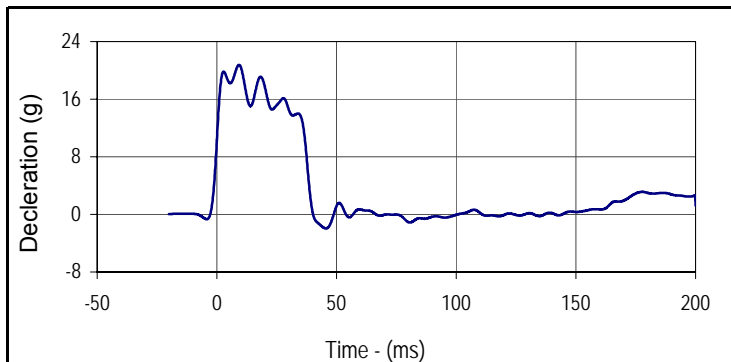
Test Date: 12/6/16



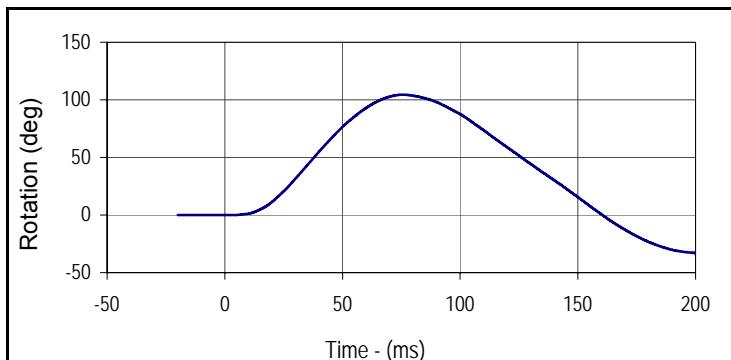
ATD Serial No.: 360

Test I.D.: M360NE021

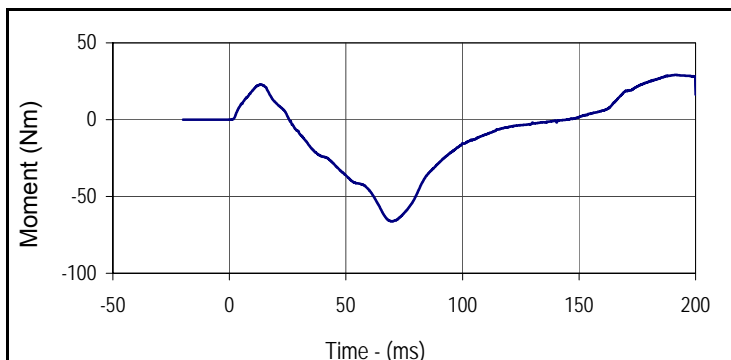
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	360	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	20.9	Pass
	Min		20.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.8	Pass
Pendulum Velocity	m/s	5.94 to 6.19	6.03	Pass
Pendulum Deceleration	10 Msec.	17.2 to 21.2	20.4	Pass
	20 Msec.	14.0 to 19.0	17.8	Pass
	30 Msec.	11.0 to 16.0	14.6	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 22.0	14.6	Pass
Deceleration Decay, Time to Cross 5 G's	ms	38.0 to 46.0	38.3	Pass
Maximum "D" Plane Rotation	Max	81.0 to 106.0	104.5	Pass
	Time	72.0 to 82.0	75.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	ms	147.0 to 174.0	160.4	Pass
Moment About Occ. Condyle	Max	-52.9 to -79.9	-66.2	Pass
	Time	65.0 to 79.0	69.7	Pass
Positive Moment Decay, Time To Zero Crossing	ms	120.0 to 148.0	144.6	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
20.8	9.2	-2.0	45.5



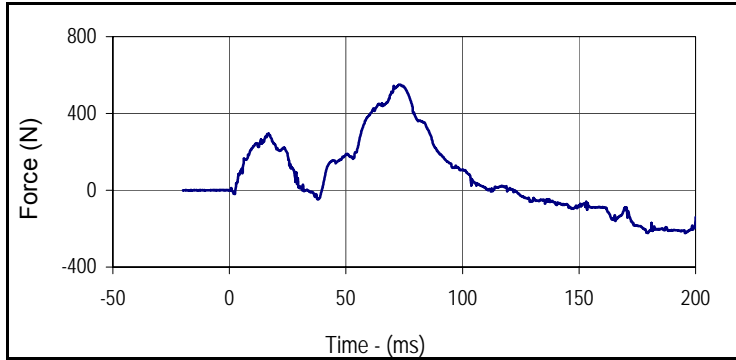
Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
104.5	75.7	-34.3	200.0



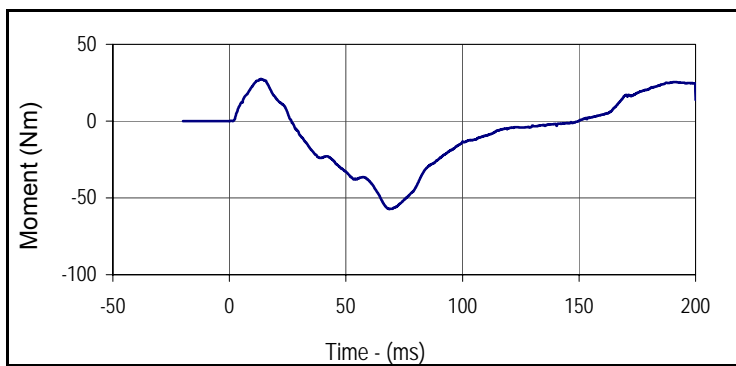
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
29.1	191.4	-66.2	69.7

Test Program: Hybrid III 50th Percentile Male Neck Extension Test
 ATD Serial No.: 360

Test Date: 12/6/16
 Test I.D.: M360NE021



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
549.9	73.0	-223.9	195.6



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
27.4	13.5	-57.2	68.6

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

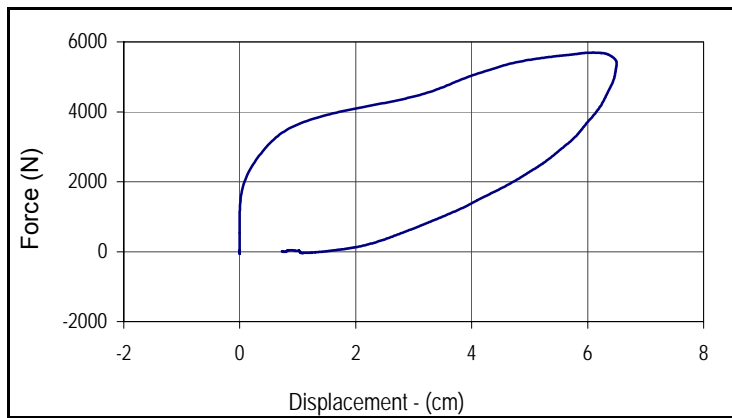
Test Date: 12/6/16



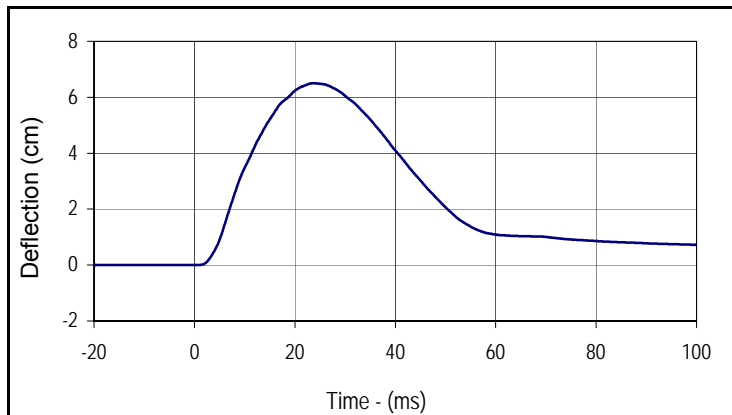
ATD Serial No.: 360

Test I.D.: M360CH021

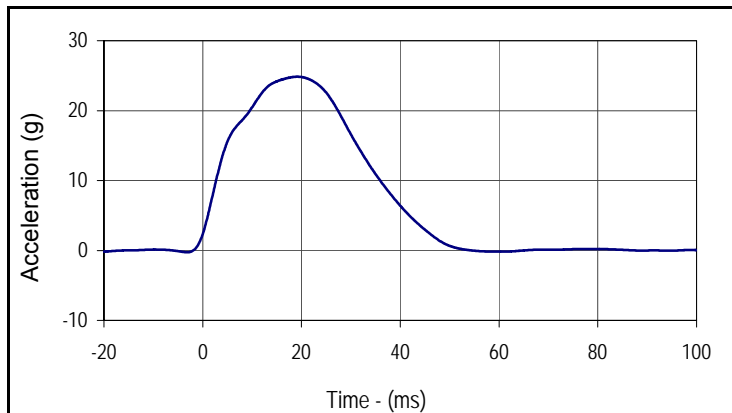
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	435	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	20.9	Pass
	Min		20.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.8	Pass
Probe Velocity	m/s	6.58 to 6.82	6.71	Pass
Peak Probe Force	N	5159 to 5893	5693	Pass
Peak Sternum Deflection	cm	6.35 to 7.26	6.50	Pass
Internal Hysteresis	%	69 to 85	71.9	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.9
Peak Probe Force		Peak Chest Deflection	
5693		6.50	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	cm
Max	Time	Min	Time
6.5	23.8	0.0	0.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
24.9	19.2	-0.3	-3.2

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 12/6/16



ATD Serial No.: 360

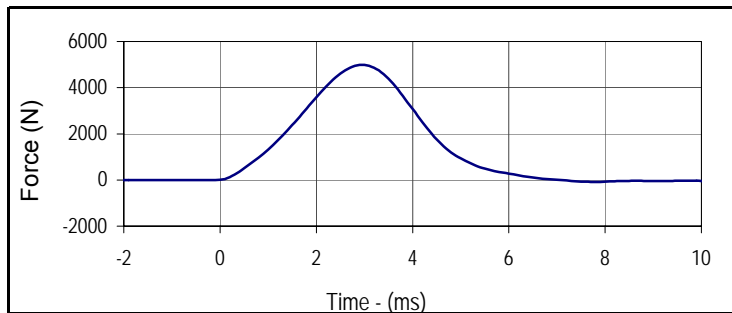
Test I.D.: M360LK021, M360RK021

Left Knee

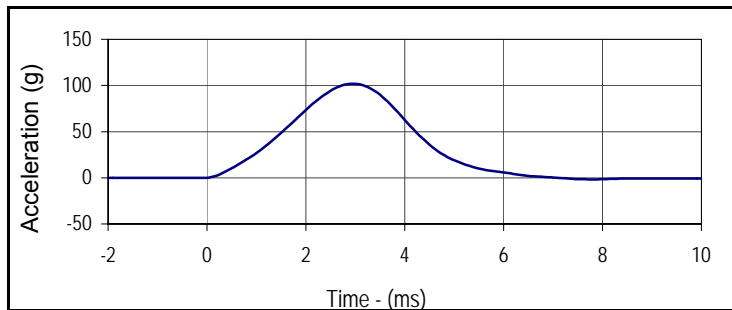
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	490	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	20.9	Pass
	Min		20.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.9	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	4986	Pass
Overall Test Results				Pass

Right Knee

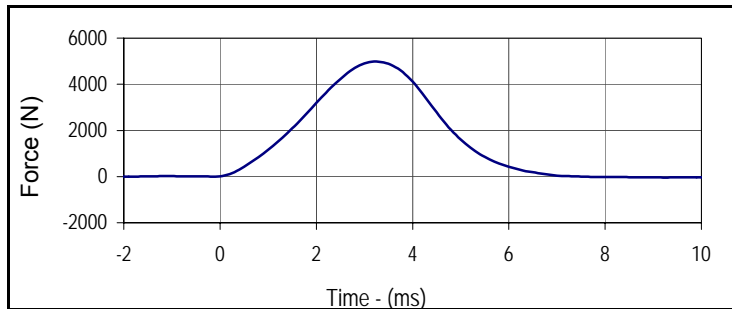
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	4985	Pass
Overall Test Results				Pass



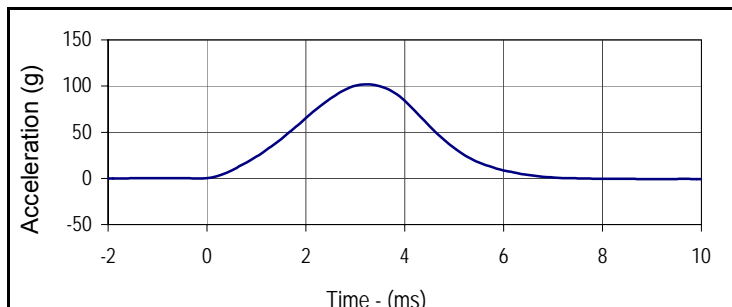
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4985.7	2.9	-85.8	7.8



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
101.9	2.9	-1.8	7.8



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
4984.9	3.2	-39.2	9.2



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
101.9	3.2	-0.8	9.2

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test
 ATD Serial No.: 360

Test Date: 12/6/16

Test I.D.: M360LF021, M360RF021

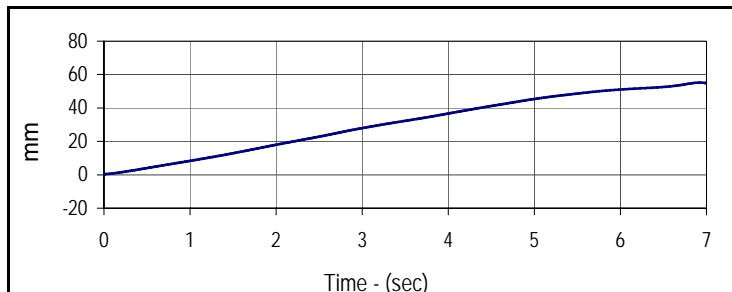


Left Hip Joint-Femur Results

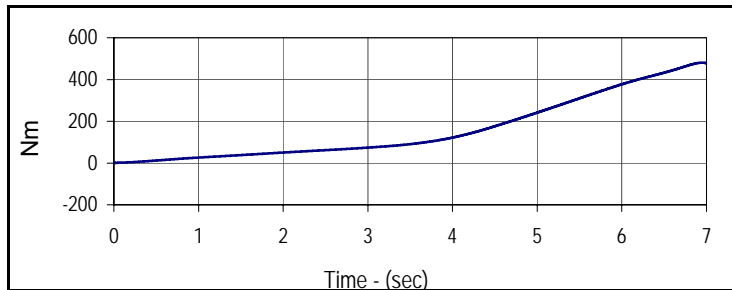
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	565	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	20.9	Pass
	Min		20.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.7	Pass
Rotation Rate	deg/sec	5 to 10	8.0	Pass
Femur Torque at 30°	Nm	≤ 95	78.1	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	42.3	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

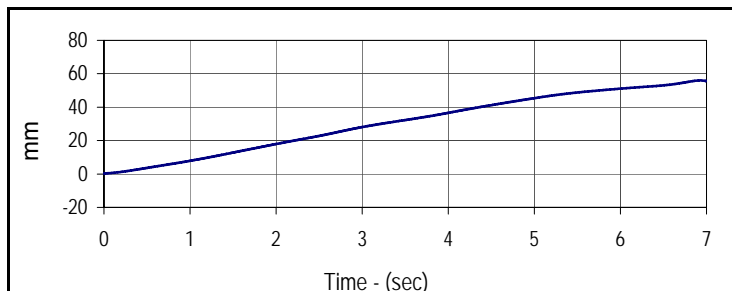
Rotation Rate	deg/sec	5 to 10	8.1	Pass
Femur Torque at 30°	Nm	≤ 95	85.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	44.2	Pass
Overall Test Results				Pass



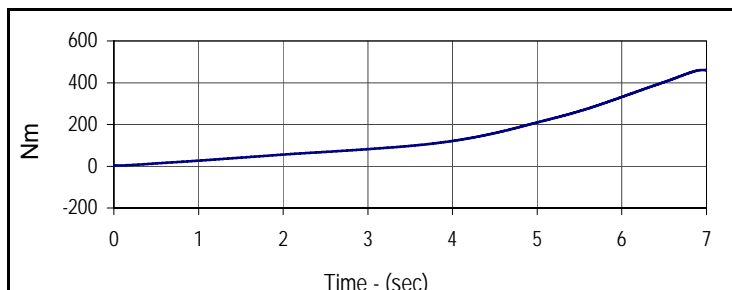
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	mm
Max	Time	Min	Time
55.2	6.9	0.3	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
480.4	6.9	0.3	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	mm
Max	Time	Min	Time
56.0	6.9	0.3	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
460.9	7.0	0.3	0.0

Test Program: Hybrid III 5th Percentile Female Dummy Damage Checklist

Test Date: 12/6/16



ATD Serial No.: 141

Test I.D.: N/A

Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 12/6/16

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.31	Pass
Laboratory Relative Humidity	%	10 to 70	29.9	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop Test

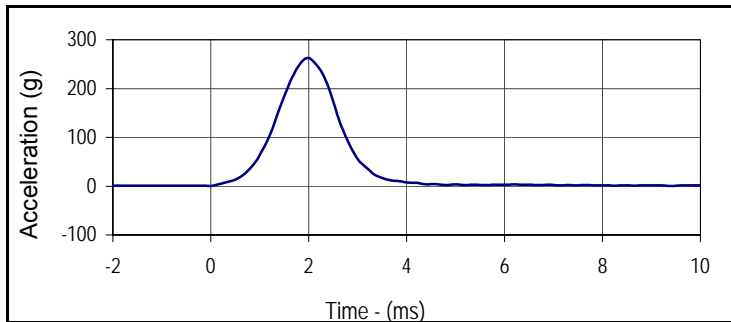
Test Date: 12/6/16



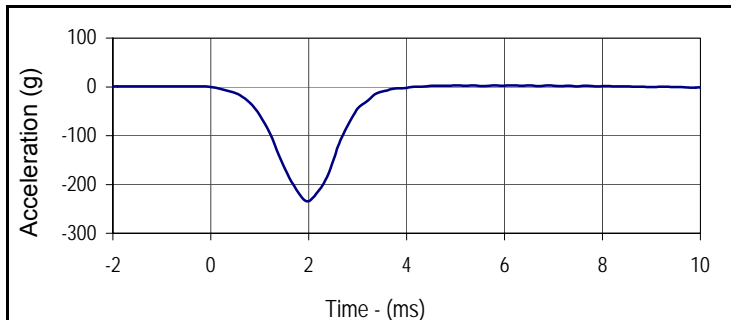
ATD Serial No.: 141

Test I.D.: F141HD077

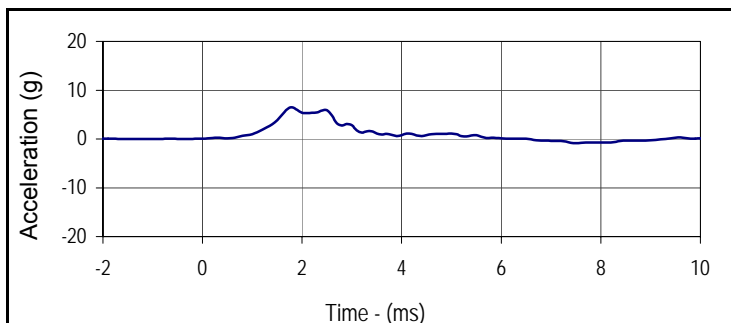
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	260	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	30.3	Pass
	Min		29.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.9	Pass
Peak Resultant Acceleration	g	250.0 to 300.0	262.8	Pass
Peak Lateral Acceleration	g	≤15.0	6.5	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	9.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



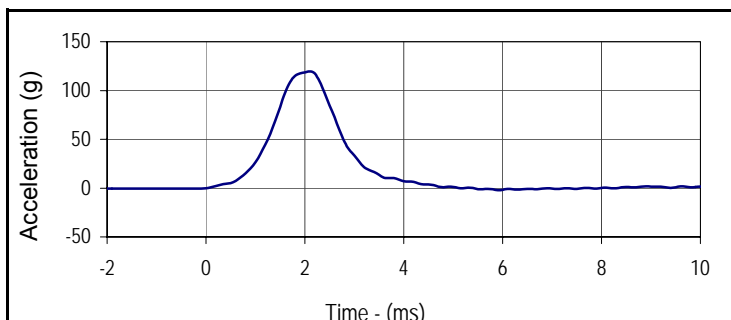
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
262.8	2.0	0.3	0.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
3.1	6.1	-234.5	2.0



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
6.5	1.8	-0.8	7.5



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
119.5	2.1	-9.2	191.3

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

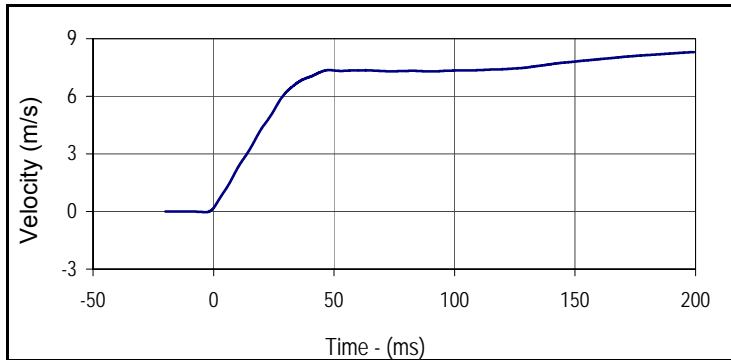
Test Date: 12/6/16



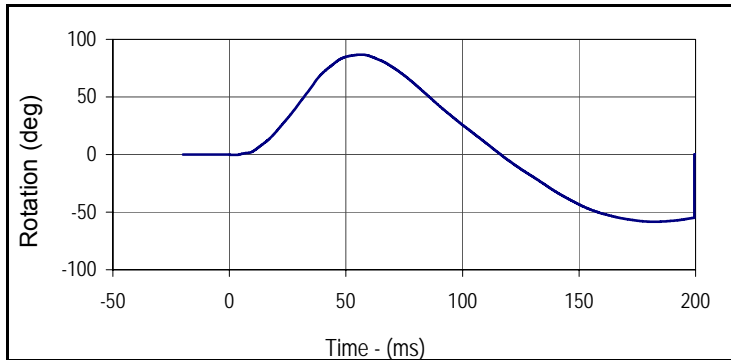
ATD Serial No.: 141

Test I.D.: F141NF077

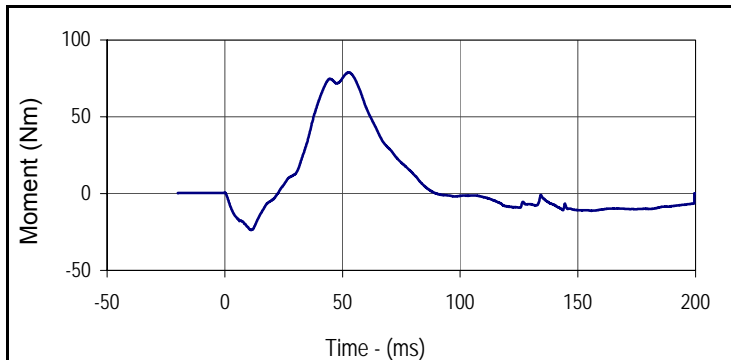
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	325	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass	
	Min		21.3	Pass	
Humidity During Soak	Max	10.0 to 70.0	30.3	Pass	
	Min		29.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	29.9	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.02	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.3	Pass
	30 Msec.	m/s	5.8 to 7.0	6.2	Pass
"D" Plane Rotation	Max	deg	77.0 to 91.0	86.8	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	78.9	Pass
Positive Moment Decay, Time To 10 Nm	ms	80.0 to 100.0	80.9	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.3	199.9	0.0	-2.9



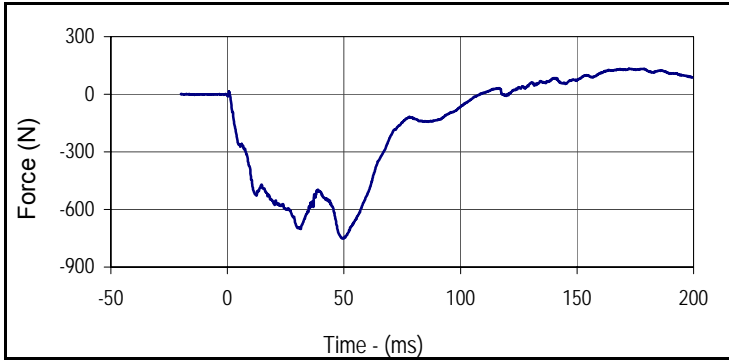
Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
86.8	56.6	-58.3	181.9



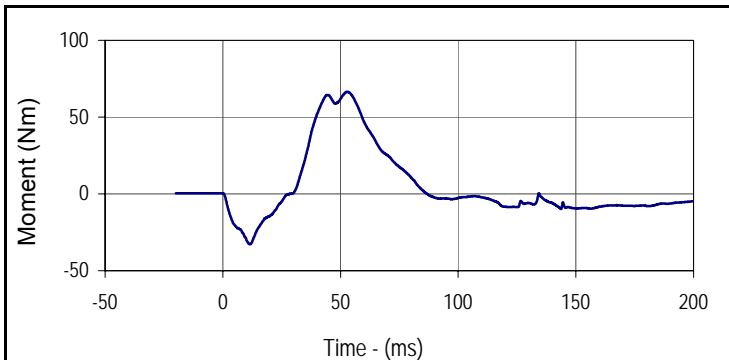
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
78.9	52.5	-23.7	11.2

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

Test Date: 12/6/16
 Test I.D.: F141NF077



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
134.9	172.8	-752.1	50.4



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
66.6	53.3	-32.7	12.1

Test Program: Hybrid III 5th Percentile Female Neck Extension Test

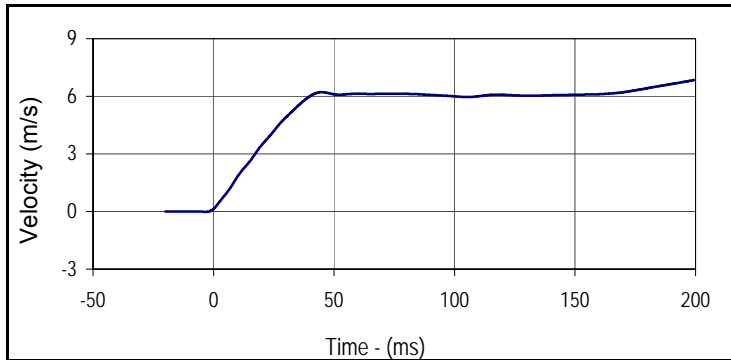
Test Date: 12/6/16



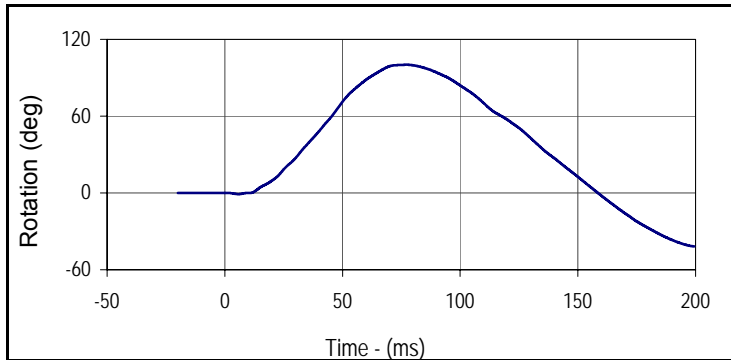
ATD Serial No.: 141

Test I.D.: F141NE077

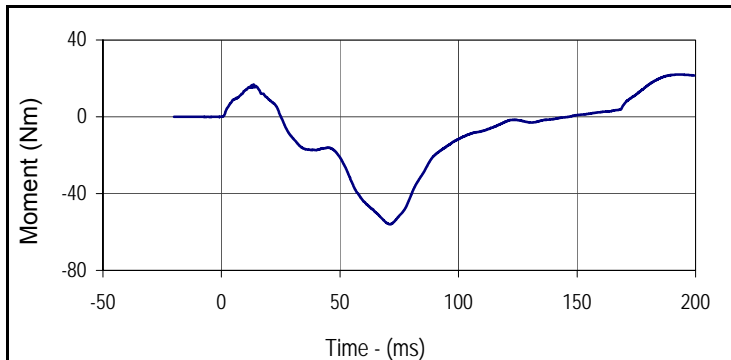
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	390	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass	
	Min		21.3	Pass	
Humidity During Soak	Max	10.0 to 70.0	30.3	Pass	
	Min		29.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	30.0	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.03	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.5	Pass
	30 Msec.	m/s	4.6 to 5.6	4.9	Pass
"D" Plane Rotation	Max	deg	99.0 to 114.0	100.2	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-56.0	Pass
Positive Moment Decay, Time To -10 Nm	ms	94.0 to 114.0	102.8	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.9	199.4	0.0	-3.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
100.2	77.3	-41.7	199.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
22.1	193.4	-56.0	71.0

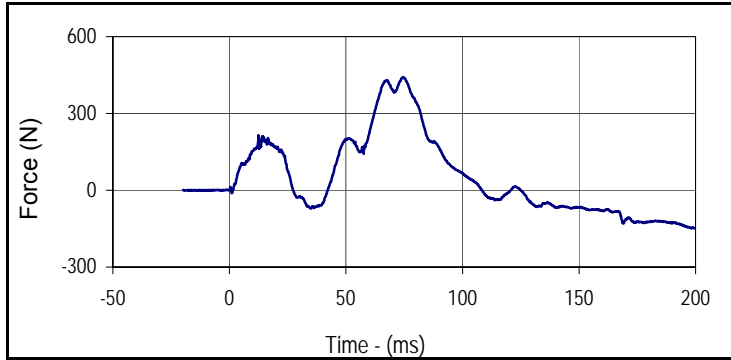
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 12/6/16

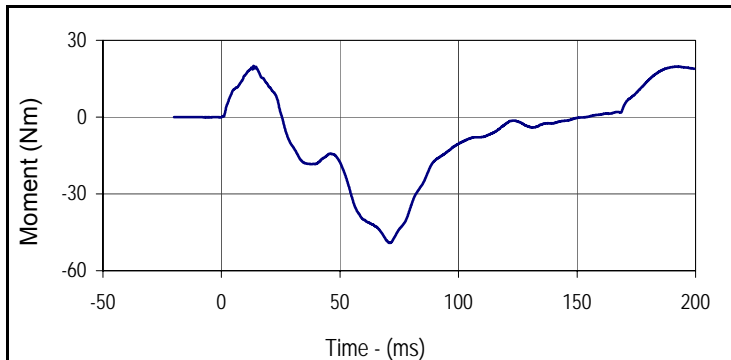


ATD Serial No.: 141

Test I.D.: F141NE077



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
442.2	74.6	-149.1	198.3



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
20.0	13.6	-49.1	70.8

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test

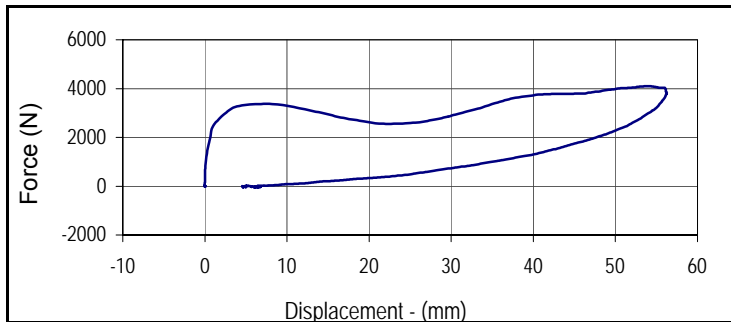
Test Date: 12/6/16



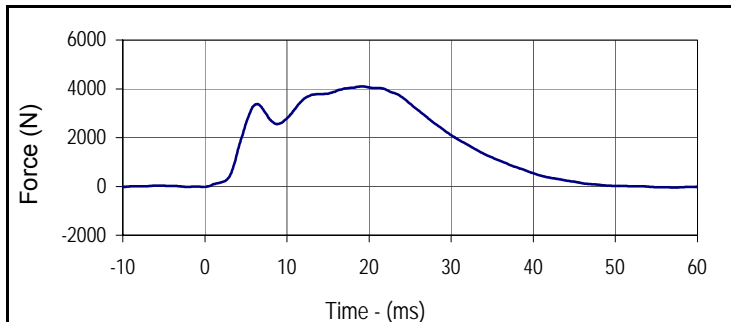
ATD Serial No.: 141

Test I.D.: F141CH077

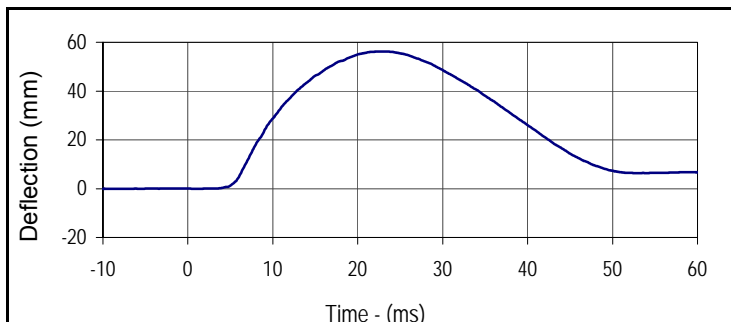
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	435	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.3	Pass
	Min	%		29.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Probe Velocity		m/s	6.59 to 6.83	6.71	Pass
Peak Chest Deflection		mm	50.0 to 58.0	56.3	Pass
Peak Force Between 50 and 58 MM		N	3900 to 4400	3994	Pass
Peak Force Between 18 and 50 MM		N	≤4600	4100	Pass
Internal Hysteresis		%	69 to 85	71.3	Pass
Overall Test Results					Pass



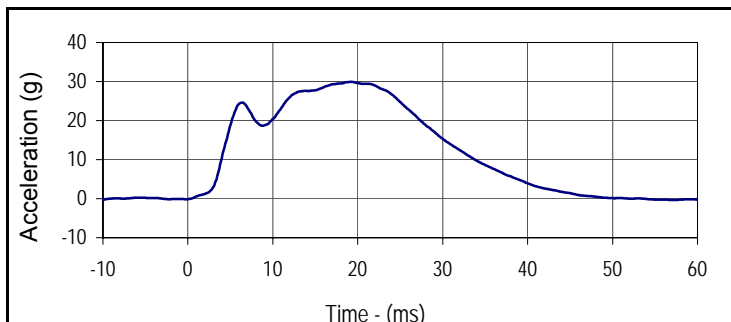
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.3
Peak Probe Force		Peak Chest Deflection	
4100.1		56.3	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4100.1	19.3	-47.5	66.4



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.3	23.1	0.0	1.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
29.9	19.3	-0.3	66.4

Test Program: Hybrid III 5th Percentile Female Knee Impact Test

Test Date: 12/6/16



ATD Serial No.: 141

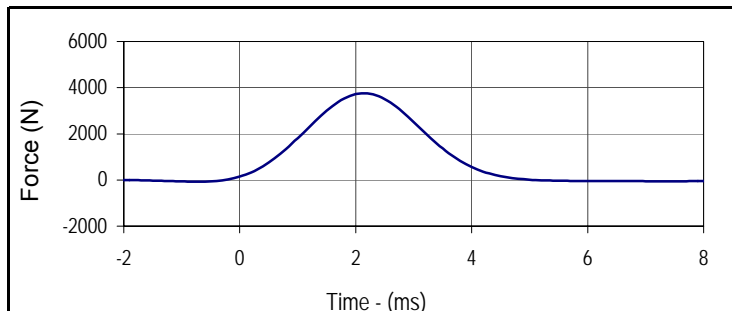
Test I.D.: F141LK077, F141RK077

Left Knee

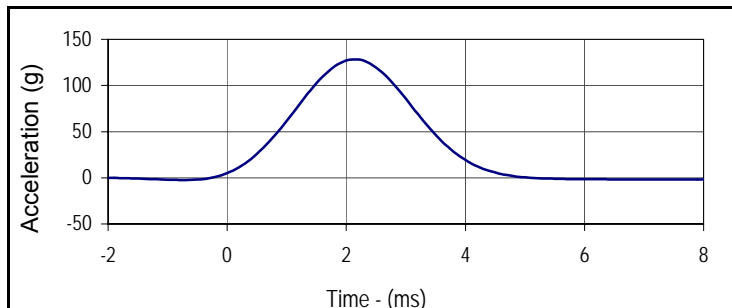
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	490	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	30.3	Pass
	Min		29.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	3450 to 4060	3760	Pass
Overall Test Results				Pass

Right Knee

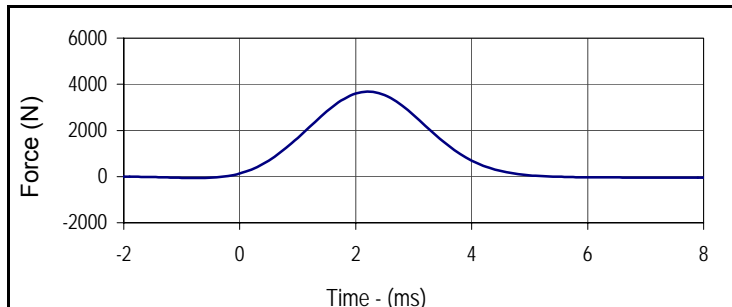
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	3450 to 4060	3684	Pass
Overall Test Results				Pass



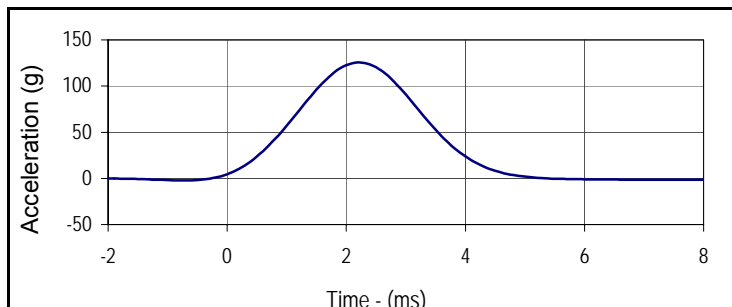
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
3760.4	2.1	-72.2	-0.7



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
128.3	2.1	-2.5	-0.7



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	180	N
Max	Time	Min	Time
3683.7	2.2	-63.1	-0.7



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
125.7	2.2	-2.2	-0.7

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

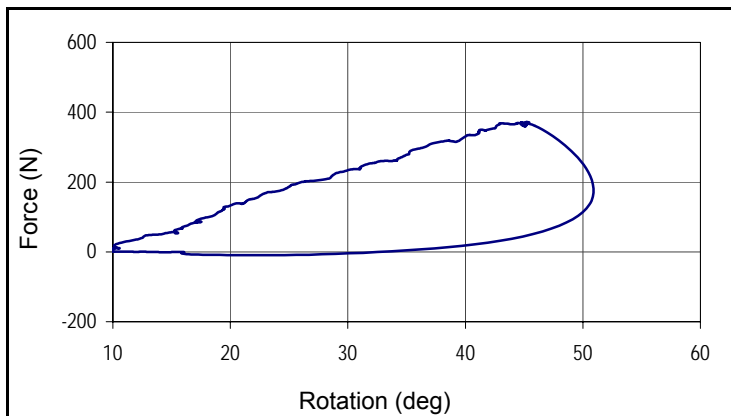
Test Date: 12/6/16

ATD Serial No.: 141

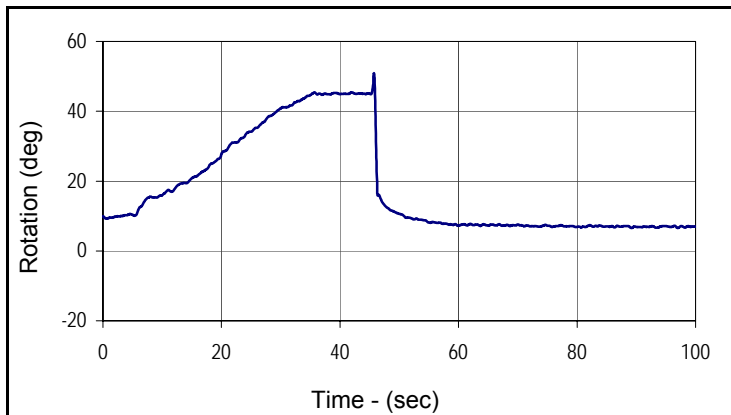
Test I.D.: TF077



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	555	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	30.3	Pass
	Min		29.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Initial Reference Plane Angle	deg	≤ 20	10.0	Pass
Peak Force at 45° +/-0.5°	N	320.0 to 390.0	371.7	Pass
Torso Rotation Rate	deg/s	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle	deg	+/-8	6.9	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
371.7		50.9



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	deg
Max	Time	Min	Time
50.9	45.8	6.6	89.2

APPENDIX C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Dummy Damage Checklist

Test Date: 12/9/16

ATD Serial No.: 360

Test I.D.: N/A



Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 12/9/16

ATD Serial No.: 360

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	29.5	Pass
A - Total sitting height	mm	879 to 889	886	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - H point height	mm	84 to 89	86	Pass
D - H point location from backline	mm	135 to 140	139	Pass
E - Shoulder pivot from backline	mm	84 to 94	91	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	298	Pass
H - Head back to backline	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	337	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	437	Pass
M - Knee pivot height	mm	485 to 500	495	Pass
N - Buttock popliteal length	mm	452 to 477	473	Pass
O - Chest depth without jacket	mm	213 to 229	227	Pass
P - Foot length	mm	251 to 267	263	Pass
V - Shoulder breadth	mm	422 to 437	436	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	982	Pass
Z - Waist circumference	mm	836 to 866	865	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	231	Pass
Overall Test Results			Pass	

Test Program: Hybrid III 50th Percentile Male Head Drop Test

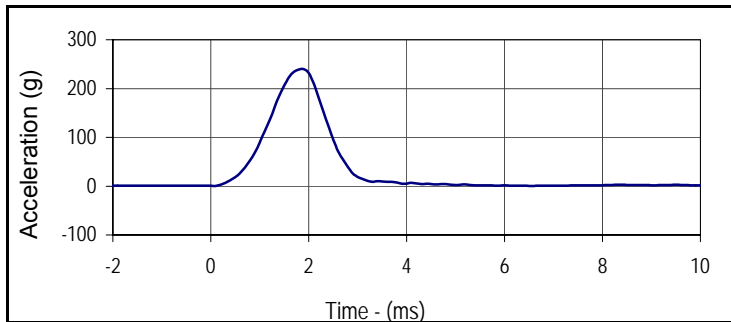
Test Date: 12/7/16



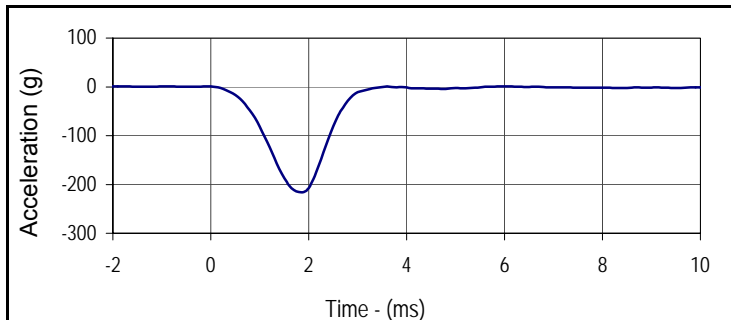
ATD Serial No.: 360

Test I.D.: M360HD022

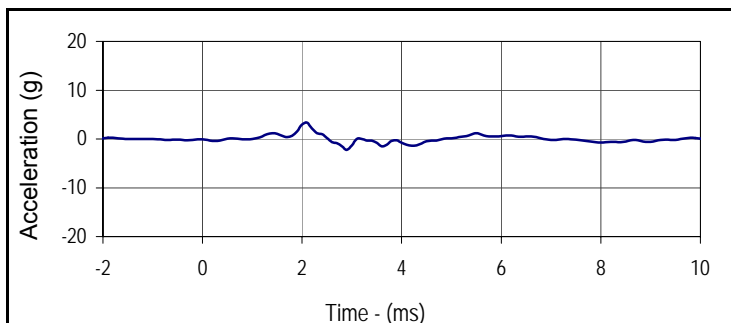
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	306	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	32.9	Pass
	Min		32.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.7	Pass
Peak Resultant Acceleration	g	225.0 to 275.0	239.5	Pass
Peak Lateral Acceleration	g	≤15.0	3.4	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	9.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



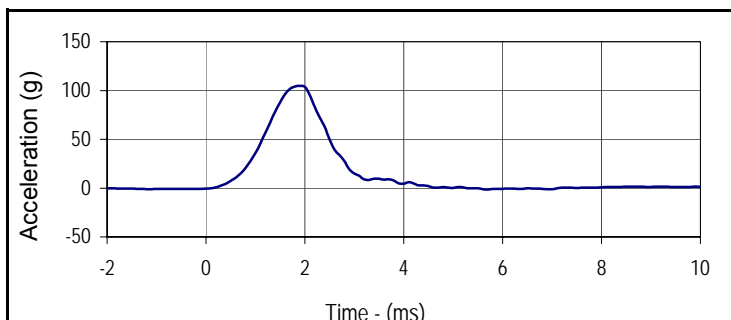
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
239.5	1.9	0.3	0.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.9	13.8	-215.5	1.8



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
3.4	2.1	-2.3	2.9



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
104.9	1.9	-2.2	14.4

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

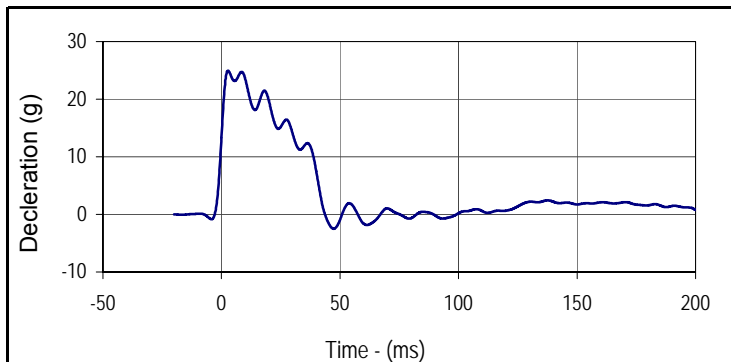
Test Date: 12/9/16



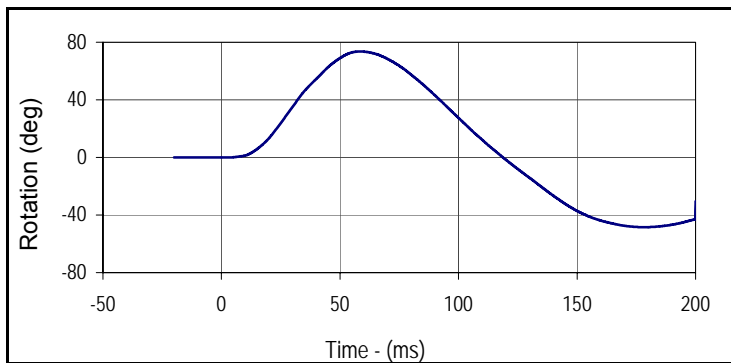
ATD Serial No.: 360

Test I.D.: M360NF022

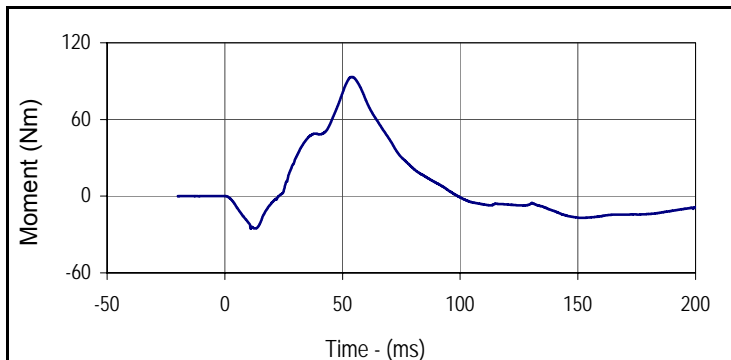
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	371	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	32.9	Pass
	Min		32.5	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.8	Pass
Pendulum Velocity	m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 Msec.	22.5 to 27.5	23.6	Pass
	20 Msec.	17.6 to 22.6	19.7	Pass
	30 Msec.	12.5 to 18.5	14.0	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 29.0	14.0	Pass
Deceleration Decay, Time to Cross 5 G's	ms	34.0 to 42.0	41.1	Pass
Maximum "D" Plane Rotation	Max	64.0 to 78.0	73.5	Pass
	Time	57.0 to 64.0	58.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	ms	113.0 to 128.0	118.8	Pass
Moment About Occ. Condyle	Max	88.1 to 108.5	93.2	Pass
	Time	47.0 to 58.0	53.8	Pass
Positive Moment Decay, Time To Zero Crossing	ms	97.0 to 107.0	99.0	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
25.0	2.8	-2.5	47.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
73.5	58.4	-48.4	178.1



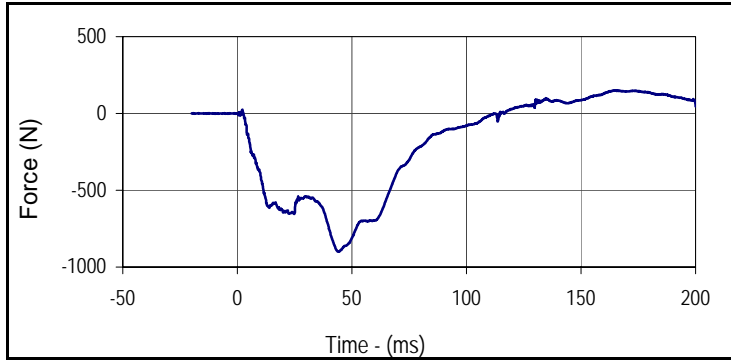
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
93.2	53.8	-25.4	11.1

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

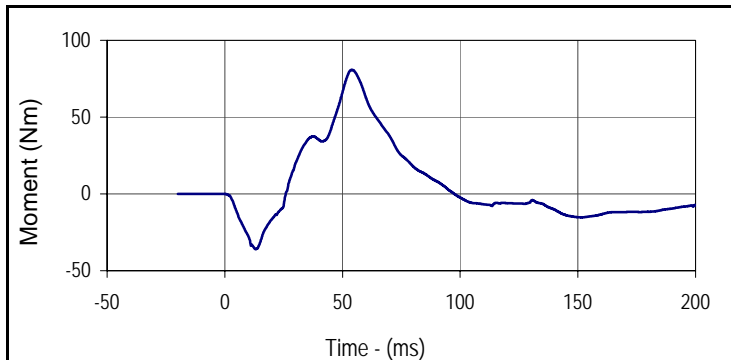
ATD Serial No.: 360

Test Date: 12/9/16

Test I.D.: M360NF022



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
151.0	165.0	-900.6	43.9



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
80.8	54.1	-35.9	13.2

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

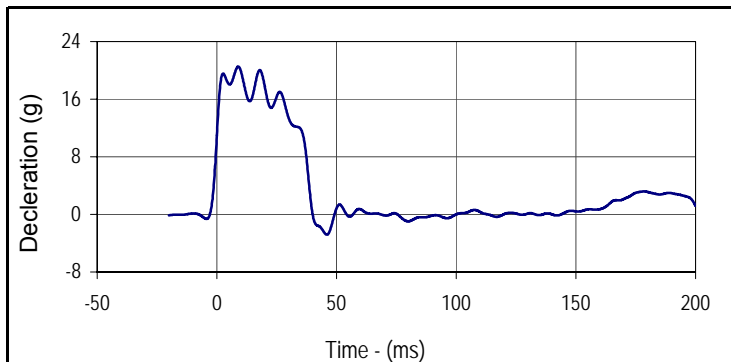
Test Date: 12/9/16



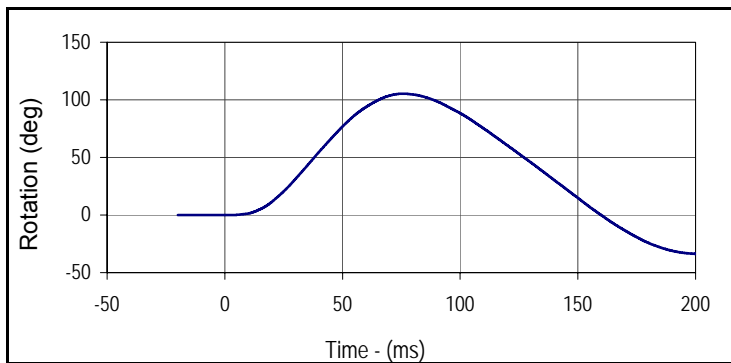
ATD Serial No.: 360

Test I.D.: M360NE022

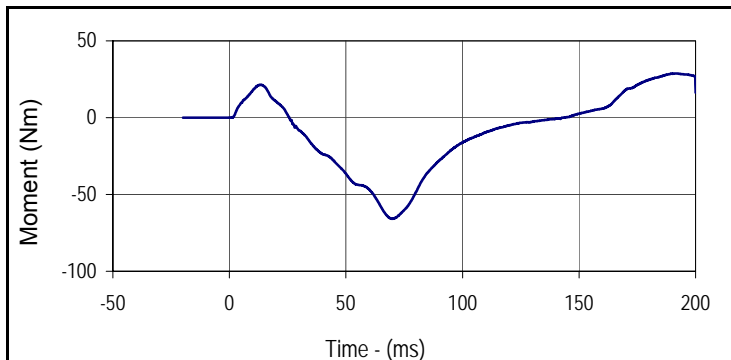
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	416	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	32.9	Pass
	Min		32.5	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.6	Pass
Pendulum Velocity	m/s	5.94 to 6.19	6.03	Pass
Pendulum Deceleration	10 Msec.	17.2 to 21.2	19.9	Pass
	20 Msec.	14.0 to 19.0	17.8	Pass
	30 Msec.	11.0 to 16.0	13.4	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 22.0	13.4	Pass
Deceleration Decay, Time to Cross 5 G's	ms	38.0 to 46.0	38.3	Pass
Maximum "D" Plane Rotation	Max	81.0 to 106.0	105.4	Pass
	Time	72.0 to 82.0	75.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	ms	147.0 to 174.0	159.9	Pass
Moment About Occ. Condyle	Max	-52.9 to -79.9	-65.9	Pass
	Time	65.0 to 79.0	69.7	Pass
Positive Moment Decay, Time To Zero Crossing	ms	120.0 to 148.0	143.0	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
20.5	8.9	-2.8	45.9



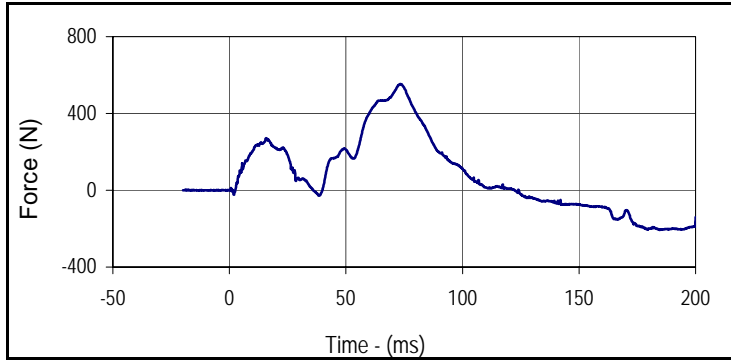
Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
105.4	75.6	-34.3	200.0



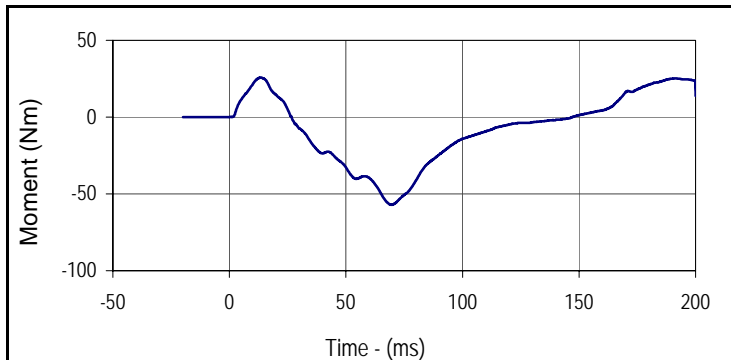
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
28.8	191.8	-65.9	69.7

Test Program: Hybrid III 50th Percentile Male Neck Extension Test
 ATD Serial No.: 360

Test Date: 12/9/16
 Test I.D.: M360NE022



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
554.0	73.2	-205.9	184.6



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
25.8	13.5	-57.1	69.6

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

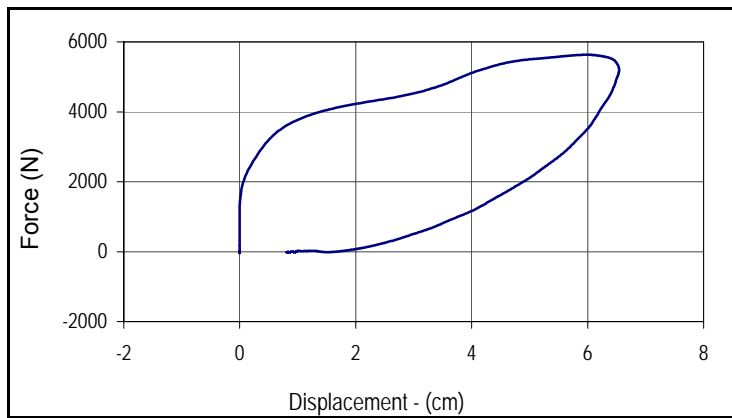
Test Date: 12/9/16



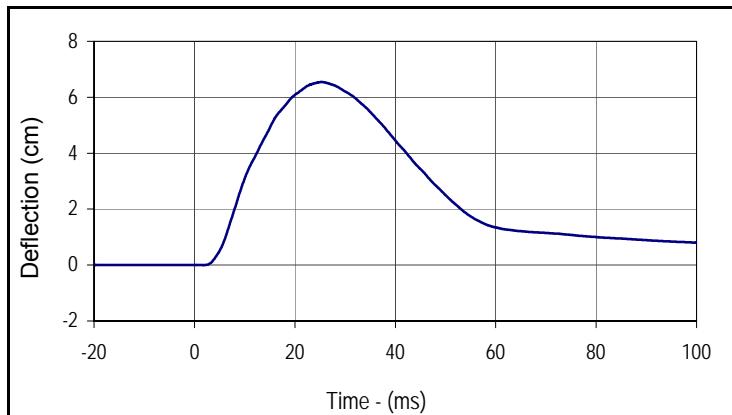
ATD Serial No.: 360

Test I.D.: M360CH022

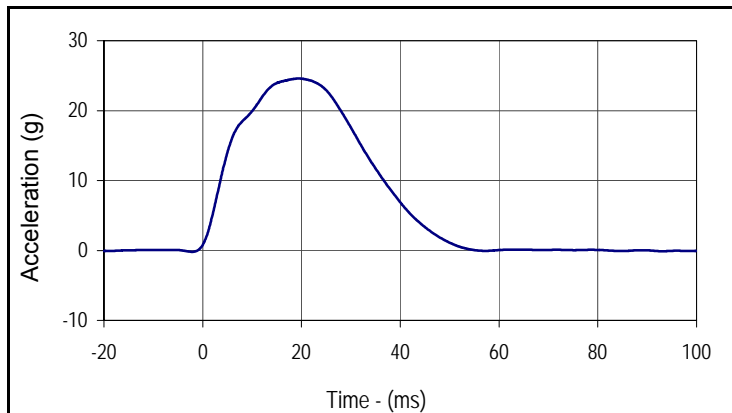
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	491	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	32.9	Pass
	Min		32.5	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.6	Pass
Probe Velocity	m/s	6.58 to 6.82	6.70	Pass
Peak Probe Force	N	5159 to 5893	5632	Pass
Peak Sternum Deflection	cm	6.35 to 7.26	6.54	Pass
Internal Hysteresis	%	69 to 85	74.3	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	74.3
Peak Probe Force		Peak Chest Deflection	
5632		6.54	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	cm
Max	Time	Min	Time
6.5	25.3	0.0	1.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
24.6	19.4	-0.2	-2.1

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 12/7/16



ATD Serial No.: 360

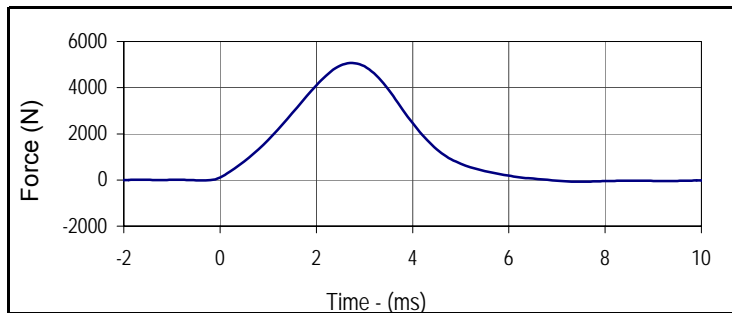
Test I.D.: M360LK022 , M360RK022

Left Knee

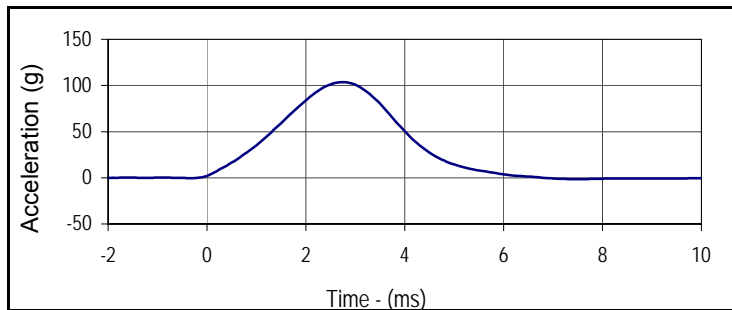
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	546	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	32.9	Pass
	Min		32.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.7	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5068	Pass
Overall Test Results				Pass

Right Knee

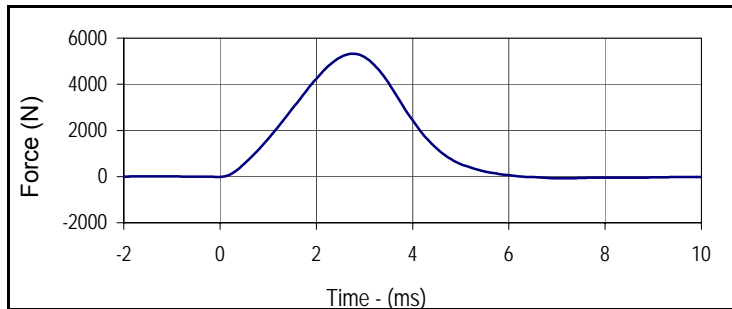
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5320	Pass
Overall Test Results				Pass



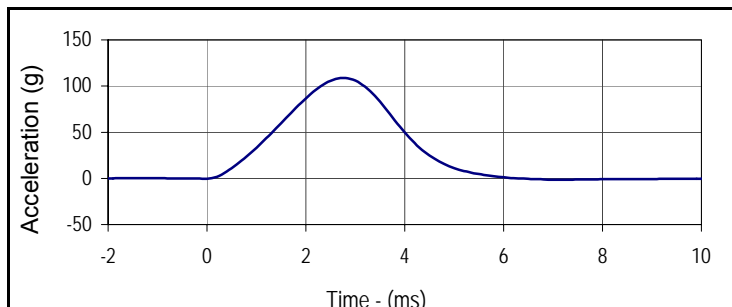
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
5067.7	2.7	-75.0	7.5



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
103.6	2.7	-1.5	7.5



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
5319.7	2.8	-73.4	7.1



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
108.7	2.8	-1.5	7.1

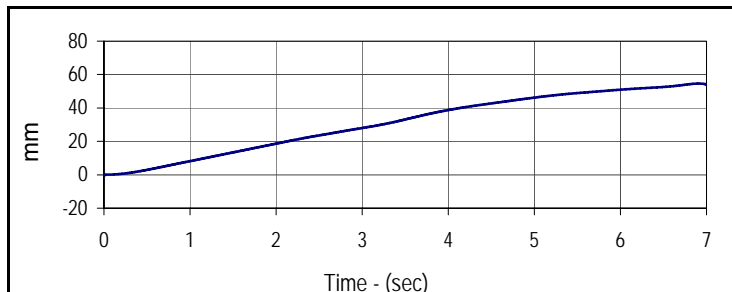


Left Hip Joint-Femur Results

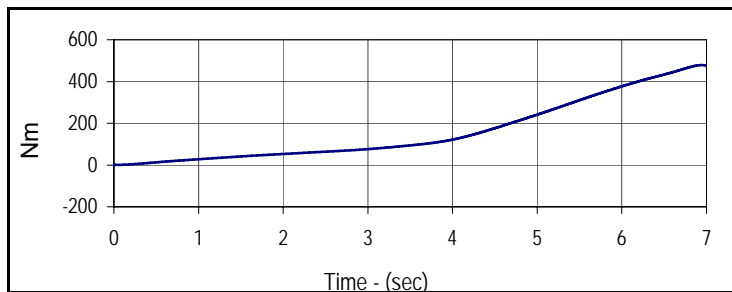
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	621	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	32.9	Pass
	Min		32.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.9	Pass
Rotation Rate	deg/sec	5 to 10	7.9	Pass
Femur Torque at 30°	Nm	≤ 95	80.9	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	43.7	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

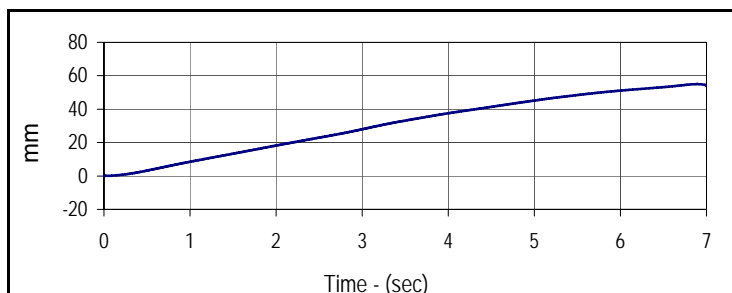
Rotation Rate	deg/sec	5 to 10	8.0	Pass
Femur Torque at 30°	Nm	≤ 95	75.2	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	44.6	Pass
Overall Test Results				Pass



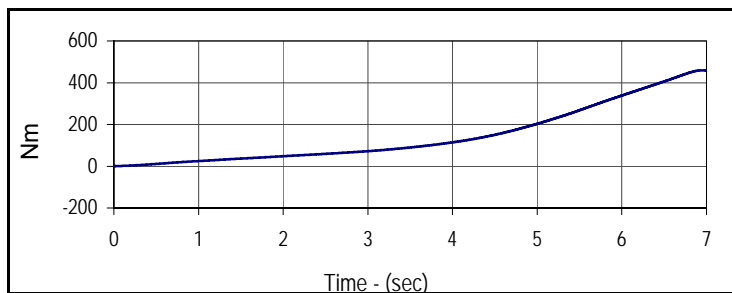
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	mm
Max	Time	Min	Time
54.6	6.9	0.0	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
478.5	6.9	0.0	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	mm
Max	Time	Min	Time
55.0	6.9	0.0	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
459.5	6.9	0.0	0.0

Test Program: Hybrid III 5th Percentile Female Dummy Damage Checklist

Test Date: 12/8/16

ATD Serial No.: 141

Test I.D.: N/A



Dummy Item	Inspect for	Comments	Damaged	OK
Entire Dummy	Perform general cleaning			X
Outer Skin	Gashes, rips, cracks			X
Head	Ballast secure			X
	General appearance			X
Neck	Broken or cracked rubber			X
	Upper neck bracket firmly attached to the lower neck bracket			X
	Looseness at the condyle joint			X
	Nodding blocks cracked or out of position			X
Spine	Broken or cracks in rubber			X
Ribs	Broken or bent ribs			X
	Broken or bent rib supports			X
	Damping material separated or cracked			X
	Rubber bumpers in place			X
Chest Displacement Assembly	Bent shaft			X
	Slider arm riding in track			X
Transducer Leads	Torn cables			X
Accelerometer Mountings	Head mounting secure			X
	Chest mounting secure			X
Knees	Skin condition			X
	Insert (do not remove)			X
	Casting			X
Limbs	Normal movement and adjustment			X
Knee Sliders	Wires intact			X
	Rubber returned to "at rest" position			X
Pelvis	Broken			X
Other				X

Describe the repair on or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 12/8/16

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.51	Pass
Laboratory Relative Humidity	%	10 to 70	32.7	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop Test

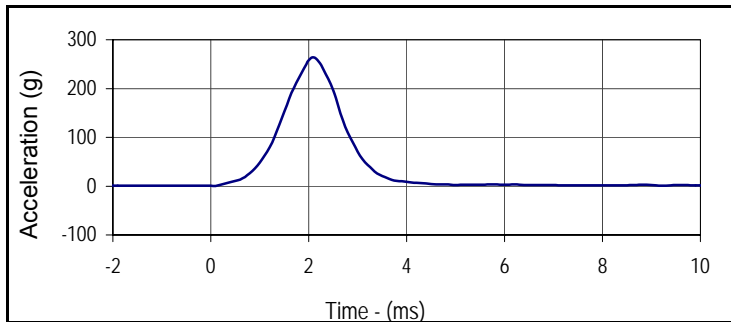
Test Date: 12/8/16



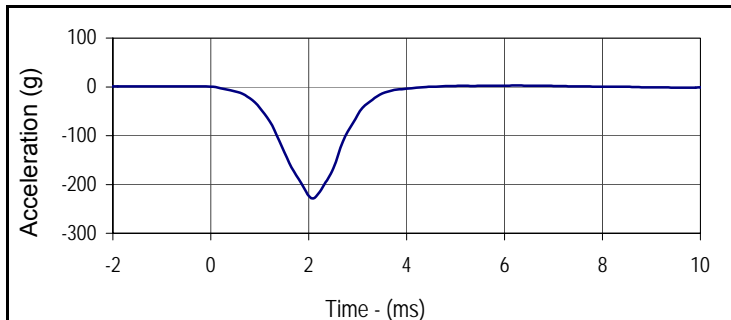
ATD Serial No.: 141

Test I.D.: F141HD078

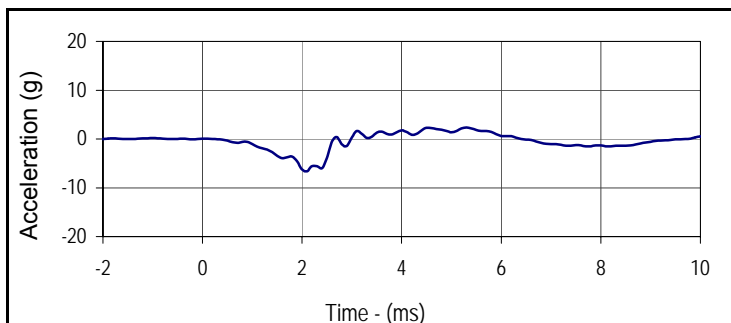
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	560	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.8	Pass
	Min		32.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.7	Pass
Peak Resultant Acceleration	g	250.0 to 300.0	264.1	Pass
Peak Lateral Acceleration	g	≤15.0	6.6	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	8.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



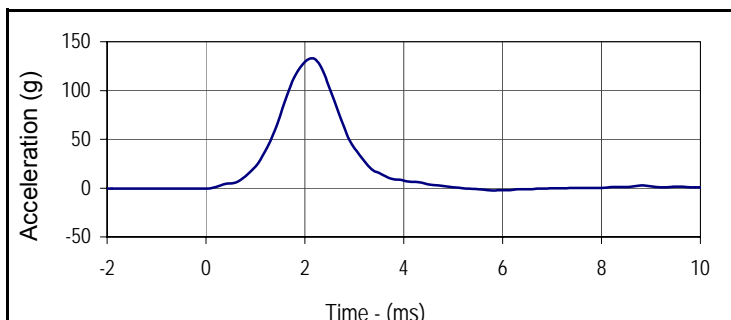
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
264.1	2.1	0.6	0.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
2.8	6.2	-228.3	2.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
2.3	5.3	-6.6	2.1



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
132.7	2.1	-2.3	5.8

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

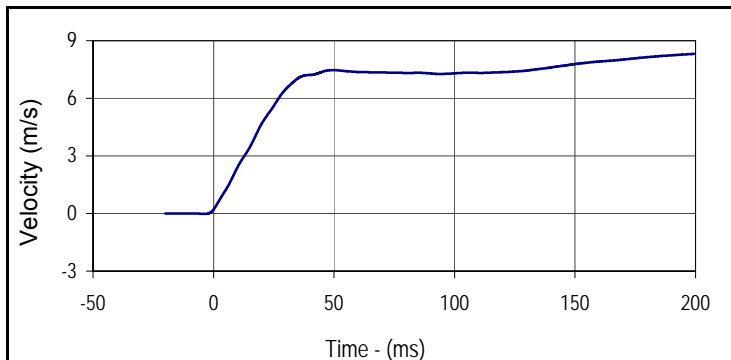
Test Date: 12/8/16



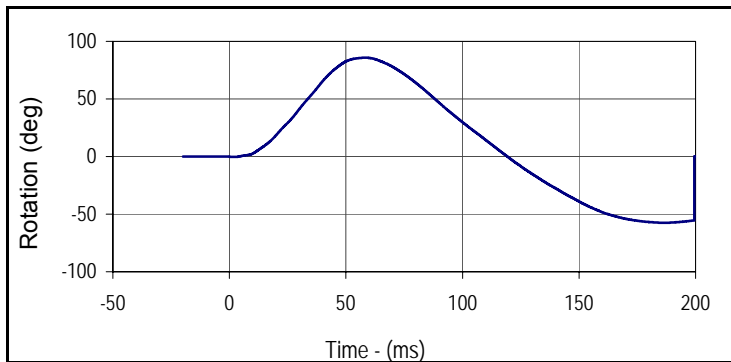
ATD Serial No.: 141

Test I.D.: F141NF078

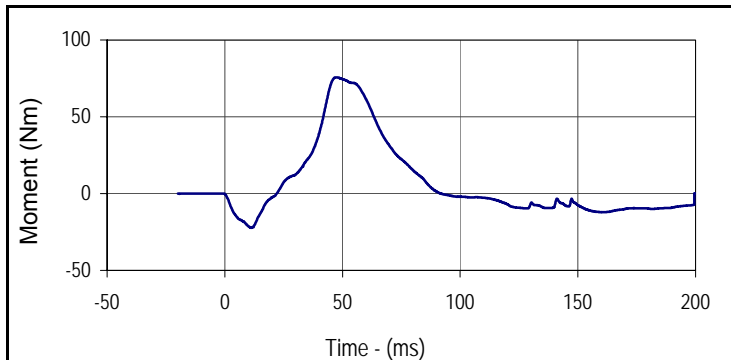
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	625	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.5	Pass	
Humidity During Soak	Max	10.0 to 70.0	32.8	Pass	
	Min		32.6	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	32.8	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.01	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.7	Pass
	30 Msec.	m/s	5.8 to 7.0	6.5	Pass
"D" Plane Rotation	Max	deg	77.0 to 91.0	85.8	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	75.7	Pass
Positive Moment Decay, Time To 10 Nm	ms	80.0 to 100.0	82.8	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.3	199.9	0.0	-3.1



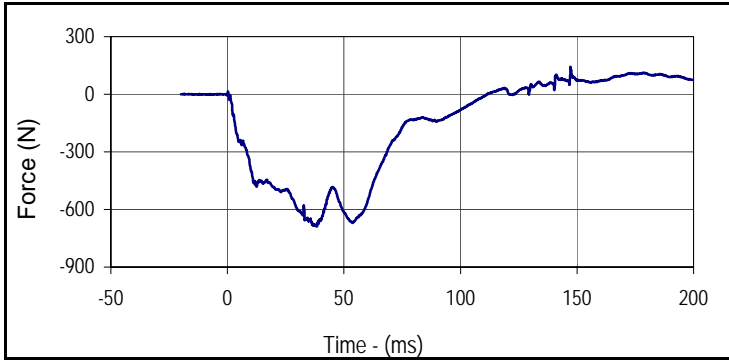
Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
85.8	58.2	-57.5	186.6



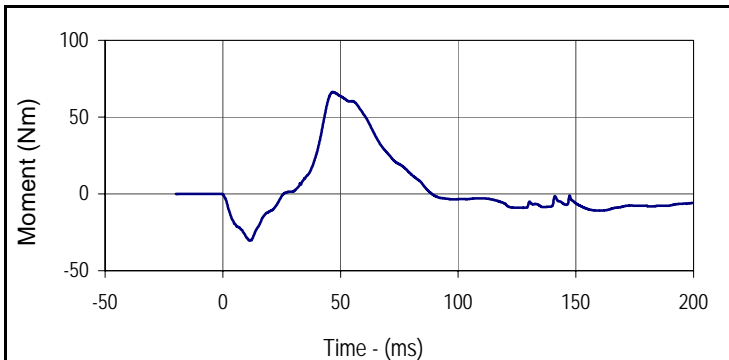
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
75.7	47.3	-22.2	11.1

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

Test Date: 12/8/16
 Test I.D.: F141NF078



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
143.2	147.7	-688.3	38.9



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
66.4	47.1	-30.4	11.8

Test Program: Hybrid III 5th Percentile Female Neck Extension Test

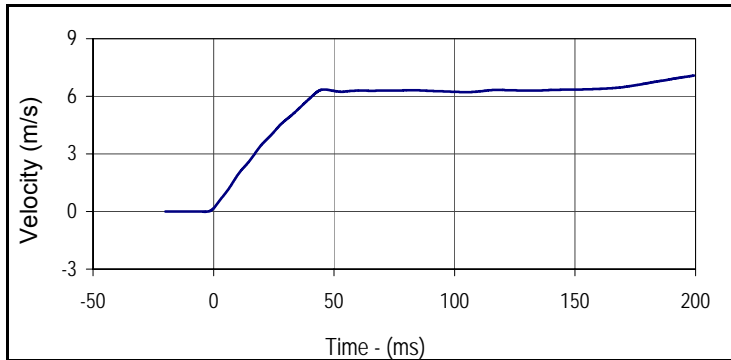
Test Date: 12/8/16



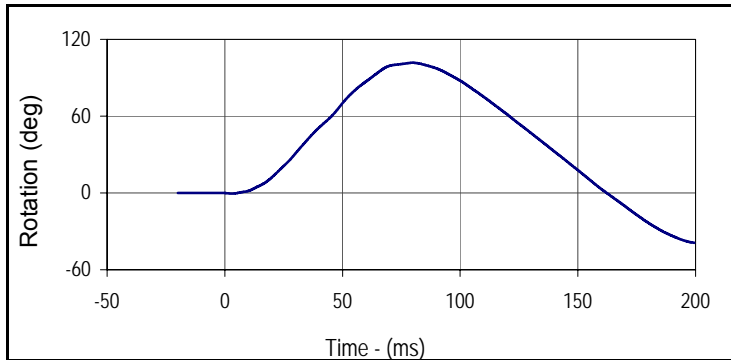
ATD Serial No.: 141

Test I.D.: F141NE078

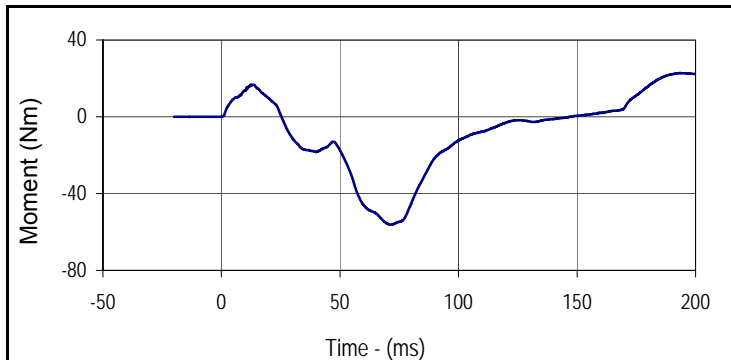
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	690	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.5	Pass	
Humidity During Soak	Max	10.0 to 70.0	32.8	Pass	
	Min		32.6	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	32.8	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.03	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.9	Pass
	20 Msec.	m/s	3.1 to 3.9	3.5	Pass
	30 Msec.	m/s	4.6 to 5.6	4.8	Pass
"D" Plane Rotation	Max	deg	99.0 to 114.0	101.7	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-56.2	Pass
Positive Moment Decay, Time To -10 Nm	ms	94.0 to 114.0	104.1	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.1	199.4	0.0	-3.5



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	deg
Max	Time	Min	Time
101.7	79.8	-38.9	199.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
22.8	193.6	-56.2	71.6

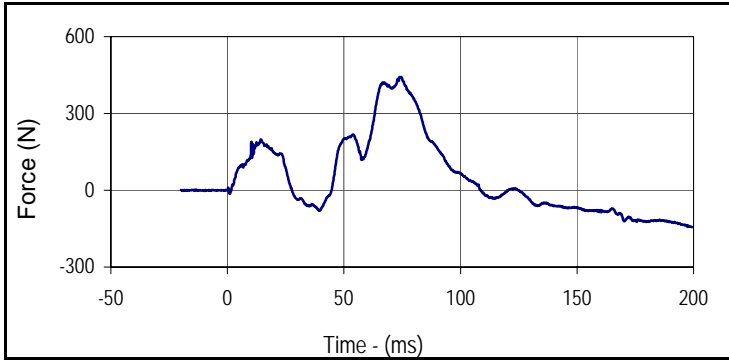
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 12/8/16

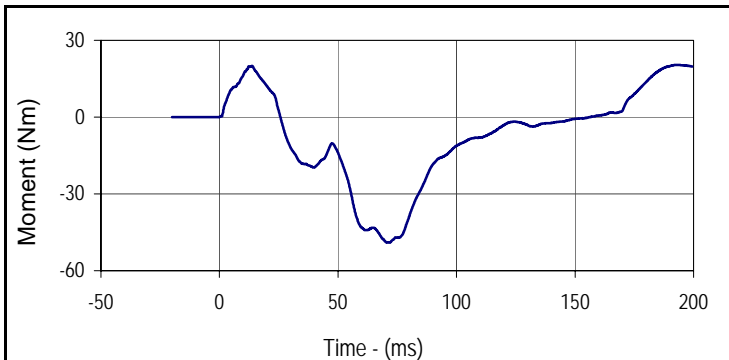


ATD Serial No.: 141

Test I.D.: F141NE078



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
442.2	74.6	-143.5	199.3



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
20.4	193.4	-49.0	71.5

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test

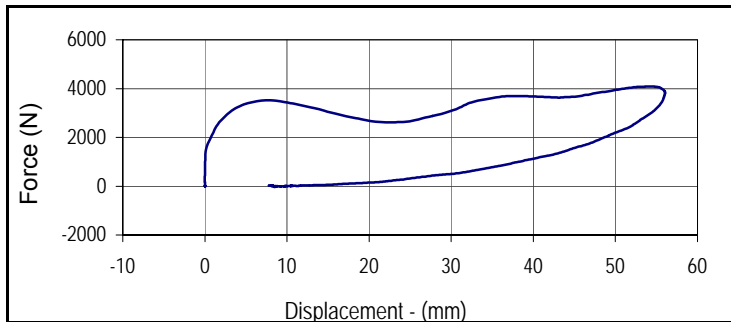
Test Date: 12/8/16



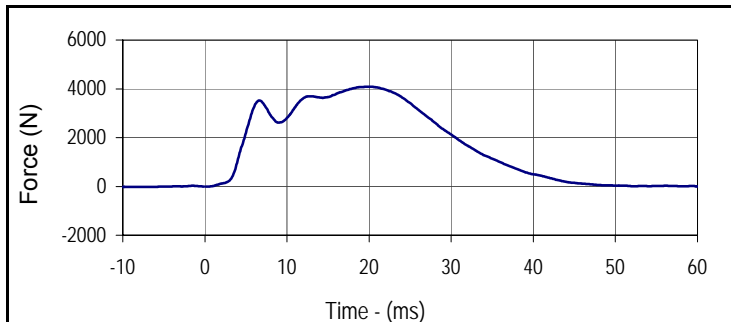
ATD Serial No.: 141

Test I.D.: F141CH078

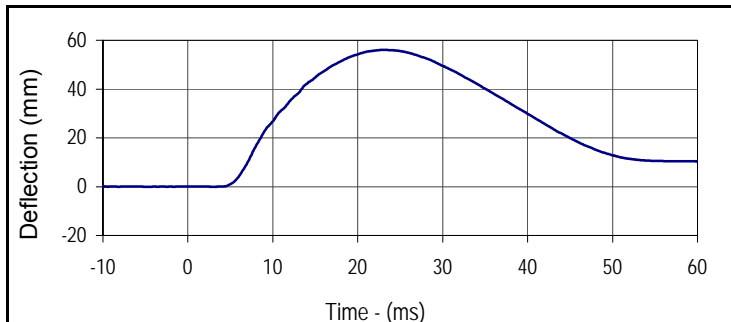
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	735	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.8	Pass
	Min		32.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.6	Pass
Probe Velocity	m/s	6.59 to 6.83	6.70	Pass
Peak Chest Deflection	mm	50.0 to 58.0	56.1	Pass
Peak Force Between 50 and 58 MM	N	3900 to 4400	3949	Pass
Peak Force Between 18 and 50 MM	N	≤4600	4084	Pass
Internal Hysteresis	%	69 to 85	76.2	Pass
Overall Test Results				Pass



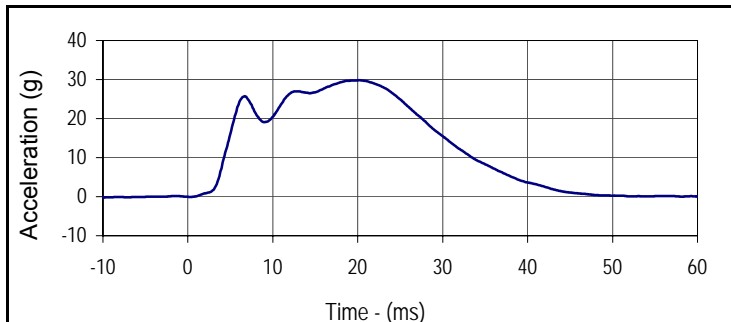
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	76.2
Peak Probe Force		Peak Chest Deflection	
4084.0		56.1	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4084.0	20.2	-33.4	80.1



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.1	23.1	0.0	3.1



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
29.8	20.2	-0.2	80.1

Test Program: Hybrid III 5th Percentile Female Knee Impact Test

Test Date: 12/8/16



ATD Serial No.: 141

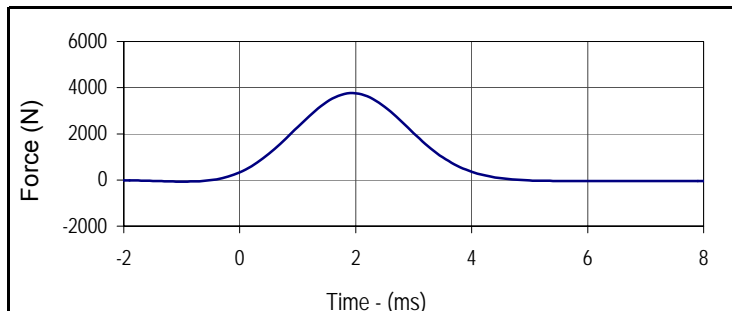
Test I.D.: F141LK078, F141RK078

Left Knee

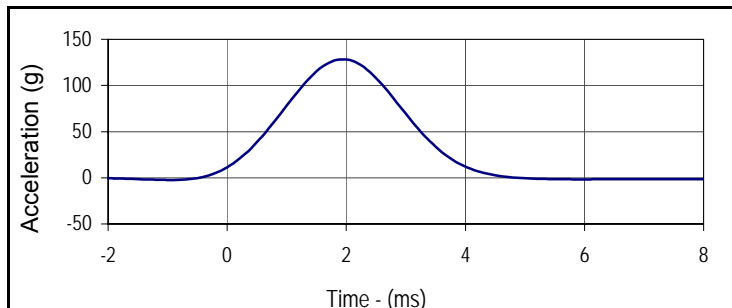
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	790	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.8	Pass
	Min		32.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.8	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	3450 to 4060	3761	Pass
Overall Test Results				Pass

Right Knee

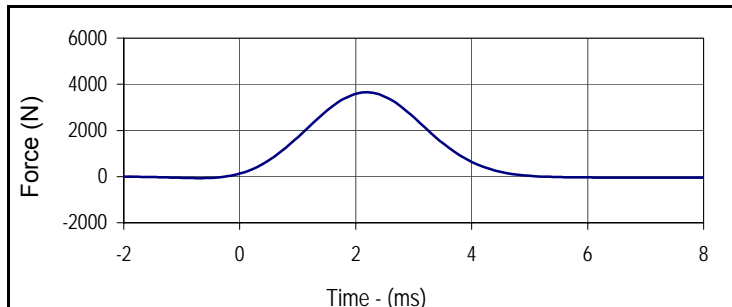
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	3450 to 4060	3652	Pass
Overall Test Results				Pass



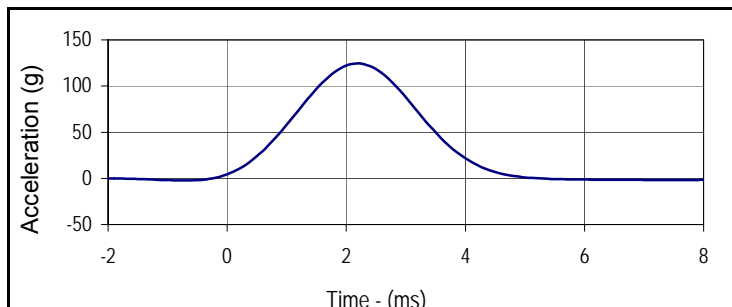
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
3761.0	1.9	-71.0	-1.0



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
128.3	1.9	-2.4	-1.0



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	180	N
Max	Time	Min	Time
3651.9	2.2	-66.9	-0.7



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
124.6	2.2	-2.3	-0.7

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

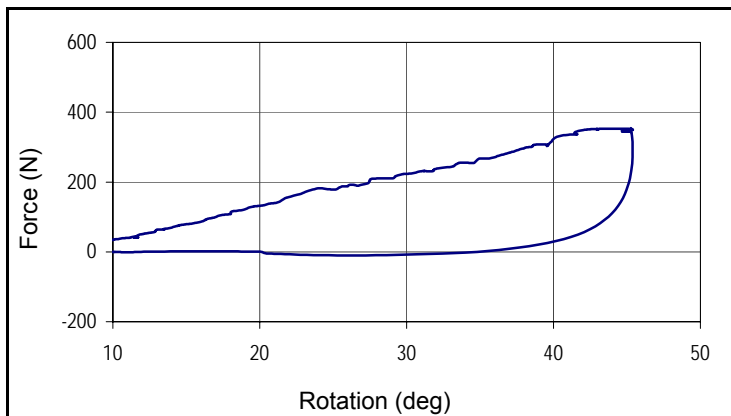
Test Date: 12/8/16

ATD Serial No.: 141

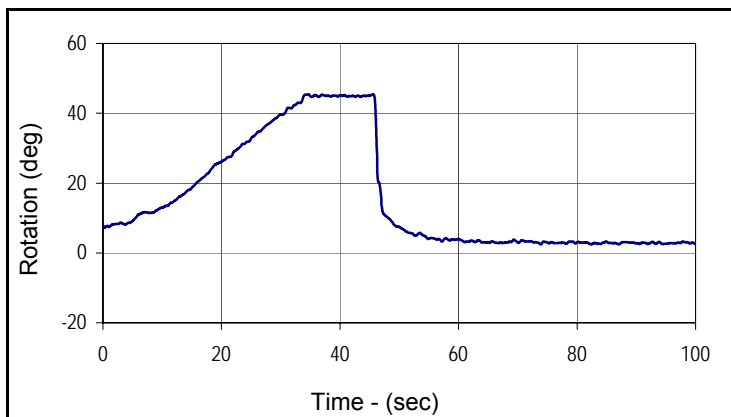
Test I.D.: TF078



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	855	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.8	Pass
	Min		32.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.8	Pass
Initial Reference Plane Angle	deg	≤ 20	7.8	Pass
Peak Force at 45° +/-0.5°	N	320.0 to 390.0	354.2	Pass
Torso Rotation Rate	deg/s	0.5 to 1.5	1.3	Pass
Final Reference Plane Angle	deg	+/-8	2.7	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
354.2		45.4



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	deg
Max	Time	Min	Time
45.4	34.7	2.4	73.9