

REPORT NUMBER: NCAP-KAR-16-003

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

**TOYOTA MOTOR CORPORATION
2016 LEXUS ES 350 4-DOOR SEDAN**

NHTSA NUMBER: M20165100

**PREPARED BY:
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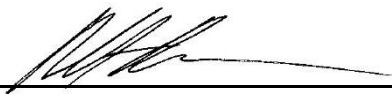


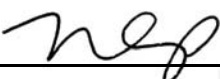
NOVEMBER 23, 2015


FINAL REPORT

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

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Approval Date: November 23, 2015

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

COTR, New Car Assessment Program
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16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2016 Lexus ES 350 4-door sedan 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 November 9, 2015. The impact velocity of the vehicle was 56.52 km/h and the ambient temperature at the barrier face at the time of impact was 13.3° C. The target vehicle's post-test maximum crush was 575 mm at the vehicle's centerline. The test vehicle's performance is as follows:																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700.0</td> <td>205.0</td> <td>700.0</td> <td>253.9</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-19</td> <td>52</td> <td>-15</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.32</td> <td>1</td> <td>0.36</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1860.2</td> <td>2620</td> <td>851.5</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-146.2</td> <td>2520</td> <td>-433.9</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-2057.4</td> <td>6805</td> <td>-2332.9</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-2839.6</td> <td>6805</td> <td>-2181.1</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	205.0	700.0	253.9	Maximum Chest Compression	mm	63	-19	52	-15	Nij	N/A	1	0.32	1	0.36	Neck Tension	N	4170	1860.2	2620	851.5	Neck Compression	N	4000	-146.2	2520	-433.9	Left Femur Force	N	10008	-2057.4	6805	-2332.9	Right Femur Force	N	10008	-2839.6	6805	-2181.1
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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 2016 Lexus ES 350 4-door sedan at a velocity of 56.52 km/h. The test was performed at KARCO Engineering, LLC. on November 9, 2015. 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.

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. 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 112 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 575 mm located 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 airbag and headrest. The upper torso contacted the airbag. Both the left and right knees contacted the knee airbag.

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

The occupant data is summarized below:

ATD Position	HIC ₁₅	T ¹	T ²	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	205.0	69.5	84.5	-19	0.32	1860.2	-146.2	-2057.4	-2839.6
Passenger (5th)	253.9	59.4	74.4	-15	0.36	851.5	-433.9	-2332.9	-2181.1

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

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: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20165100
Model Year	2016
Make	Lexus
Model	ES 350
Body Style	4-Door Sedan
VIN	JTHBK1GGXG2212929
Body Color	Nebula Gray Pearl
Odometer Reading (km / mi)	114 / 71
Engine Displacement (L)	3.5
Type / No. of Cylinders	V6
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
Sunroof / T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	Yes

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

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation
Date of Manufacture	Jul-15

GVWR (kg)	2132
GAWR Front (kg)	1191
GAWR Rear (kg)	1152

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				407.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				66.8	A-B

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	P215/55R17	P215/55R17
Tire Size on Vehicle	P215/55R17	P215/55R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Primacy MXV4	Primacy MXV4
Treadwear	500	500
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 1 Polyamide, 2 Steel	1 Polyester, 1 Polyamide, 2 Steel
Load Index / Speed Symbol	93V	93V
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Left	M33F 009X 0215	M33F 009X 0215
DOT Safety Code Right	M33F 009X 0215	M33F 009X 0215

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	509.5	309.5		548.0	405.5	
Right	kg	497.0	317.0		499.5	380.0	
Ratio	%	61.6%	38.4%	100.0%	57.1%	42.9%	100.0%
Total	kg	1006.5	626.5	1633.0	1047.5	785.5	1833.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1633.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	66.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1840.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	715	720	719	730	1084
As Tested	mm	710	718	686	698	1211
Post-Test	mm	707	732	691	690	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2825
Total Vehicle Length at Left Side	mm	4150
Total Vehicle Length at Centerline	mm	4913
Total Vehicle Length at Right Side	mm	4155
Weight of Ballast in Cargo Area	kg	88.2
Weight of Vehicle Components Removed	kg	24.5
Amount of Stoddard Solvent in Fuel Tank	L	59.00

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Spare Tire (14.5 kg), Tools (3.0 kg), Rear Trim (7.0 kg)

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

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test
1	Total Length	4913
2	Total Width	1815
3	Bumper Top Height	615
4	Bumper Bottom Height	230
5	Longitudinal Member Top Height	530
6	Distance Between Longitudinal Members	930
7	Longitudinal Member Width	110
8	Engine Top Height	890
9	Engine Bottom Height	156
10	Engine and Gearbox Width	610
11	Front Bumper to Engine Distance	541
12	Front Shock Absorber Fixing Height	988
13	Bonnet Leading Edge Height	784
14	Front Shock Absorber Fixing Width	1190
15	Front Bumper to Front Axle Distance	1000
16	Front Axle to A-Pillar Distance	480
17	A-Pillar to B-Pillar Distance	1064
18	B-Pillar to Rear Axle Distance	1169
19	B-Pillar to C-Pillar Distance	996
20	Roof Sill Bottom Height	1233
21	Roof Sill Top Height	1398
22	Floor Sill Bottom Height	205
23	Floor Sill Top Height	320

All measurements in millimeters.

DATA SHEET NO. 2

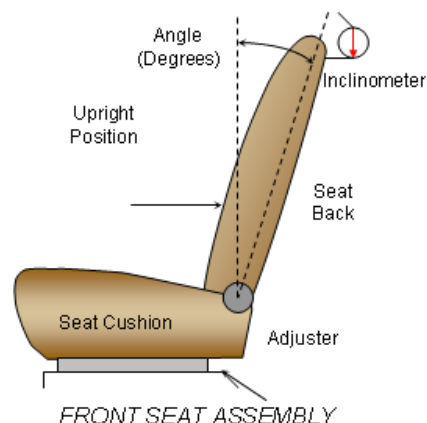
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20165100
 Test Date: 11/09/15

NOMINAL DESIGN RIDING POSITION

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

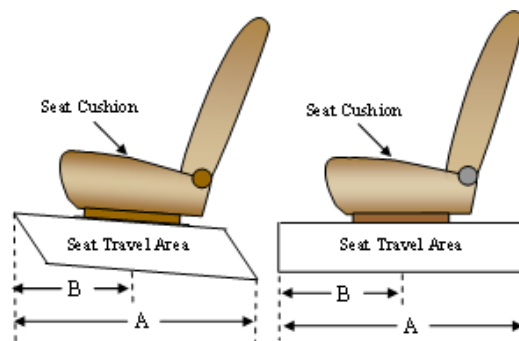


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	4.8
Passenger Seat Back Angle	3.6

SEAT FORE / AFT POSITIONING

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



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	307 mm	154 mm
Passenger Seat	260 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

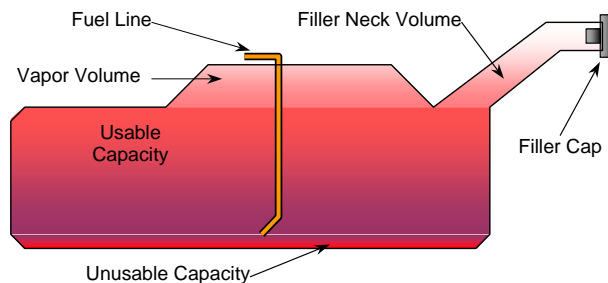
Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	63.44
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	58.36 to 59.63
Actual Amount of Stoddard Solvent Used	59.00
1/3 of Usable Capacity	21.15

FUEL PUMP

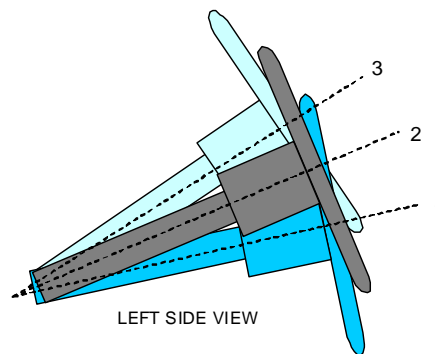
The vehicle is equipped with an electric fuel pump. The fuel pump does not operate when the vehicle's electrical system is activated. The fuel system is pressurized by turning the key to the start position.



VEHICLE FUEL TANK ASSEMBLY

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.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	19.2	72
Geometric Center Position, No. 2	22.0	92
Uppermost Position, No. 3	24.7	112
Telescoping Steering Wheel Travel		40
Test Position	22.0	92

DATA SHEET NO. 3

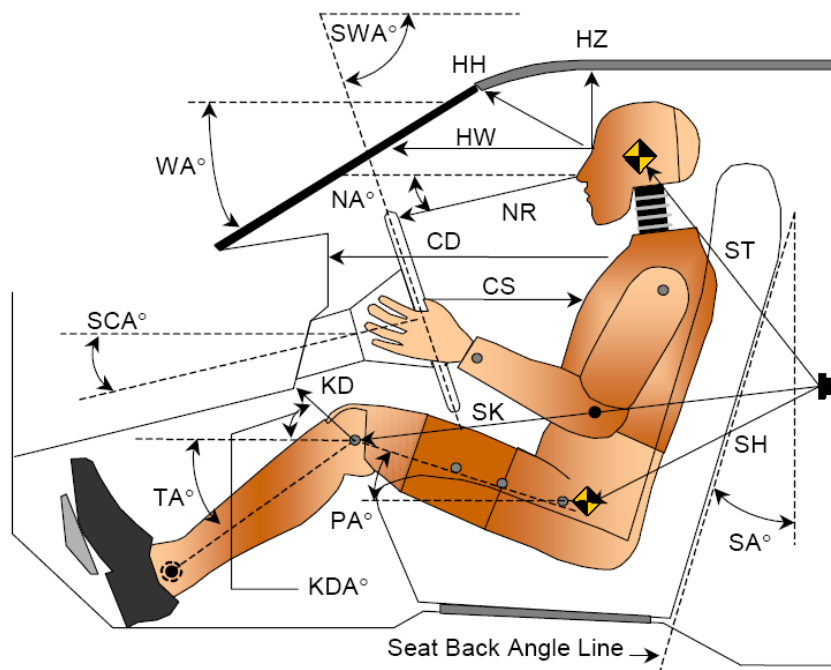
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan

NHTSA No.: M20165100

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/09/15



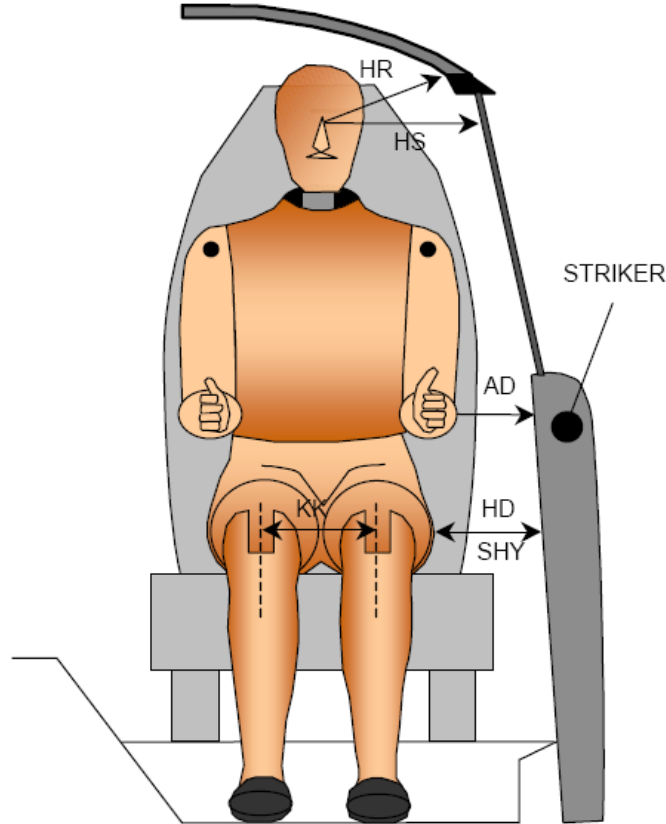
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		22.9		
SWA°	Steering Wheel Angle		68.1		
SCA°	Steering Column Angle		21.9		
SA°	Seat Back Angle (On Headrest Post)		4.8		3.6
HZ	Head to Roof	167	90.0	190	90.0
HH	Head to Header	323	25.4	250	50.0
HW	Head to Windshield	608	0.0	618	0.0
NR	Nose to Rim	385	10.6	435	22.3
CD	Chest to Dash	522	19.9	390	6.0
CS	Chest to Steering Hub	310	0.0		
RA	Rim to Abdomen	214	0.0		
KDL	Left Knee to Dash	235	40.0	107	26.9
KDR	Right Knee to Dash	199	48.1	113	21.4
PA°	Pelvic Angle		24.5		21.6
TA°	Tibia Angle		39.2		42.4
SK	Striker to Knee	638	13.0	755	8.9
ST	Striker to Head	413	64.9	430	48.7
SH	Striker to H-Point	376	46.6	481	29.1

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

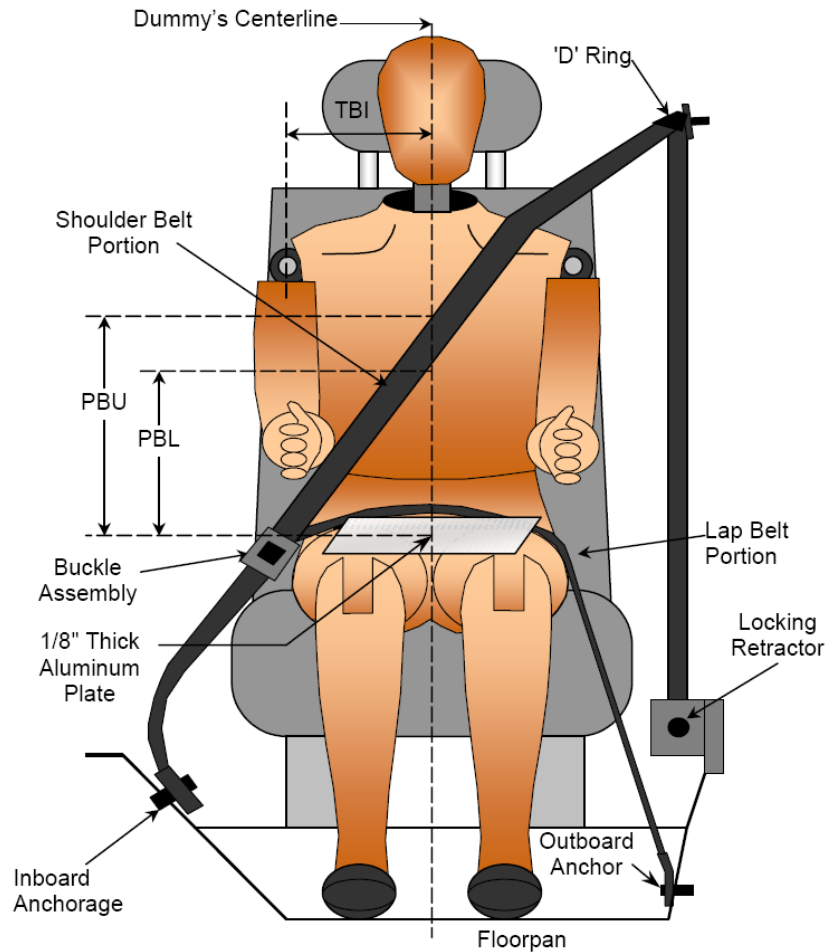


Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	135	94
HD	H-Point to Door	140	239
HR	Head to Side Header	219	241
HS	Head to Side Window	328	370
KK	Knee to Knee	308	222
SHY	Striker to H-Point (Y-Direction)	258	285
AA	Ankle to Ankle	335	165

DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20165100
 Test Date: 11/09/15



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	349	348
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	281	260

BELT LENGTH DATA

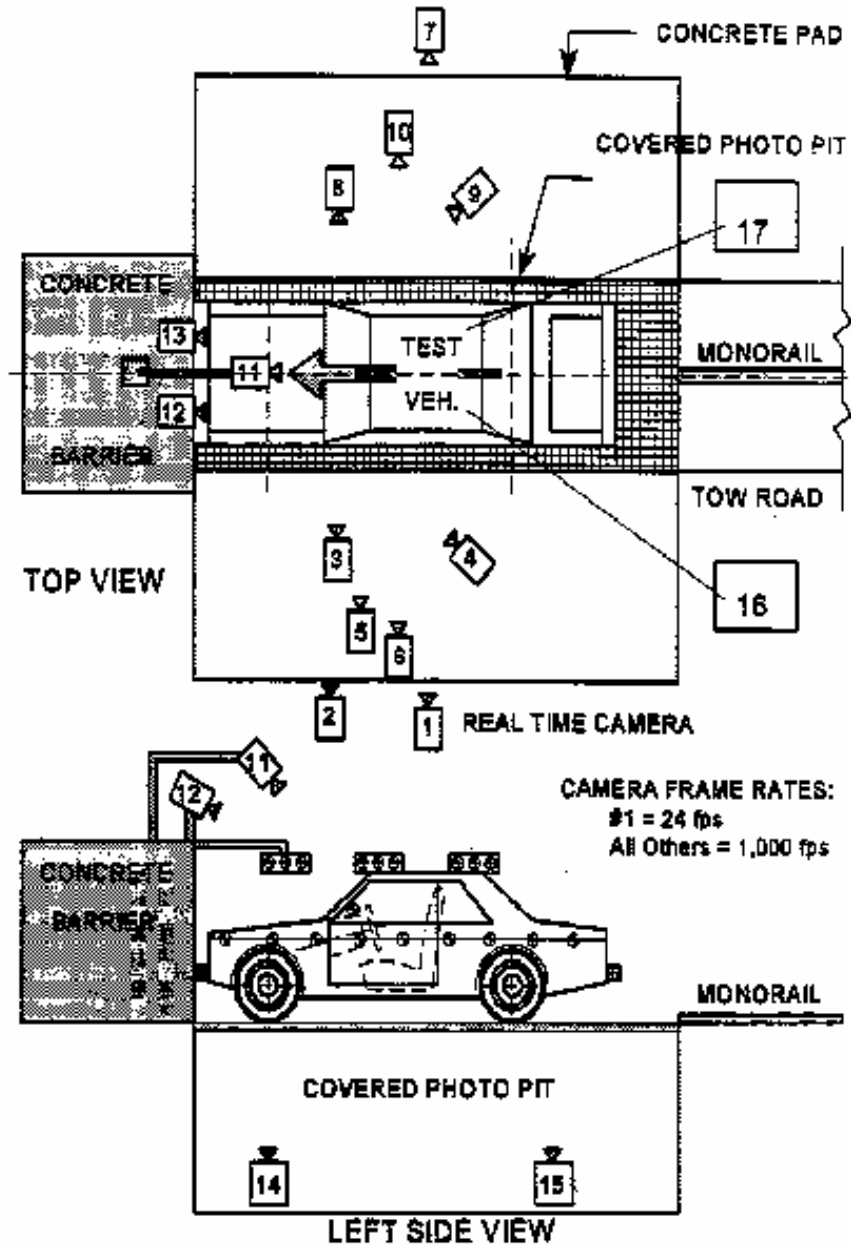
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	905	992
Lap Belt Length as Measured on ATD	mm	600	585
Remainder of Belt on Reel	mm	1120	947
Total Belt Length for Continuous Webbing Systems	mm	2625	2524

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

CAMERA LOCATIONS

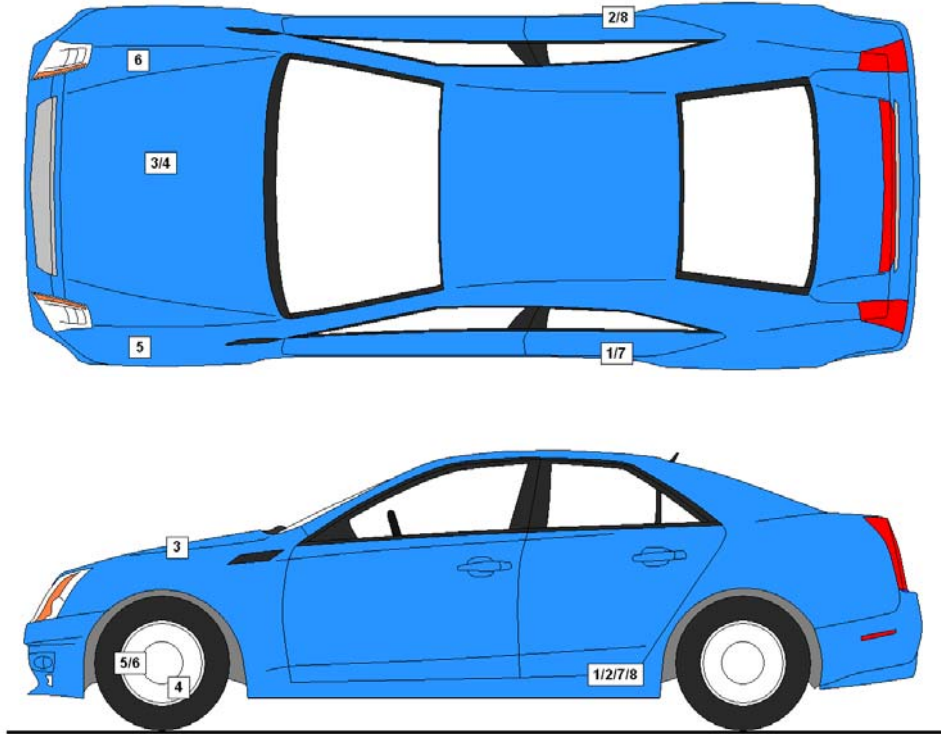
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering 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	20	1000
16	Onboard Driver Airbag (Optional)	-1840	300	-1250	12	1000
17	Onboard Passenger Airbag (Optional)	-1840	-300	-1250	12	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: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1955	-761	-352
2	Right Rear Accelerometer X-Direction	1953	761	-352
3	Engine Top X	4162	126	-708
4	Engine Bottom X	4071	144	-153
5	Left Rear Accelerometer Z-Direction	1955	-761	-352
6	Right Rear Accelerometer Z-Direction	1953	761	-352
7	Left Rear Accelerometer X-Direction Redundant	1930	-761	-352
8	Right Rear Accelerometer X-Direction Redundant	1928	761	-352

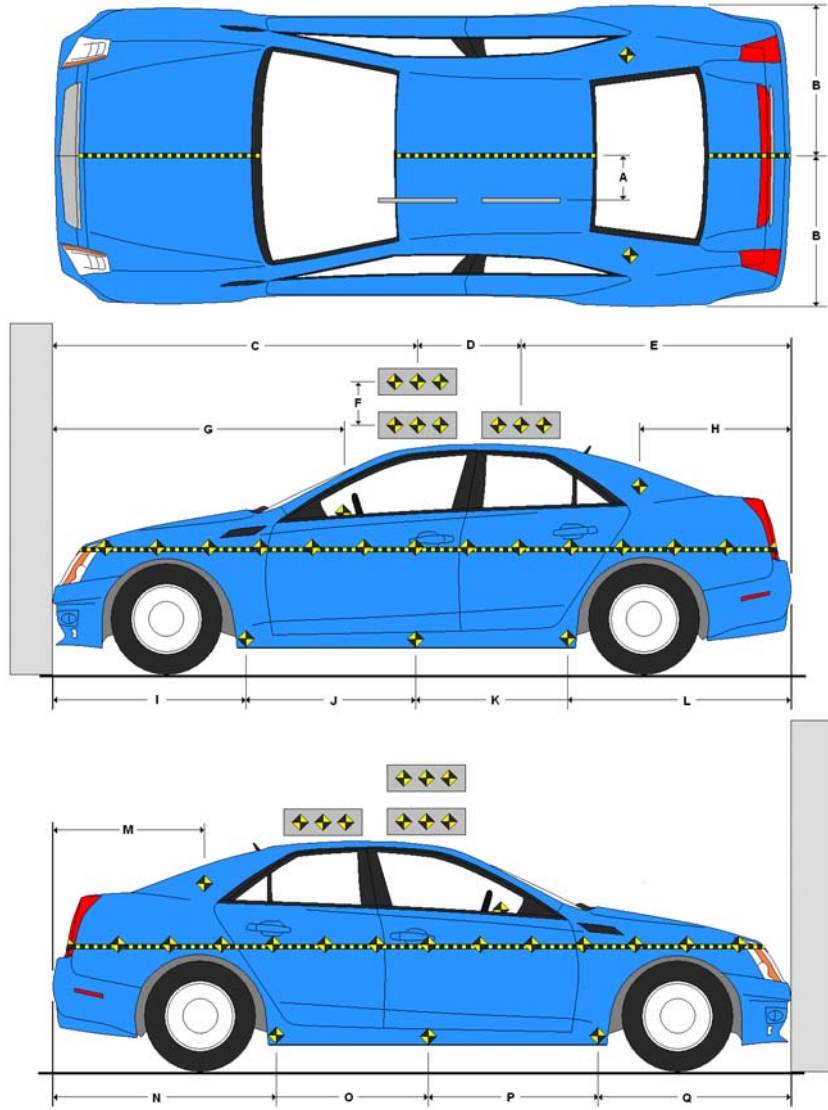
Reference Points:
 X – Rear Surface of Vehicle (+ forward)
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

Item	Value
A	N/A
B	908
C	2455
D	610
E	1840
F	305
G	1855
H	980
I	1440
J	972
K	972
L	1510
M	945
N	1520
O	970
P	970
Q	1430



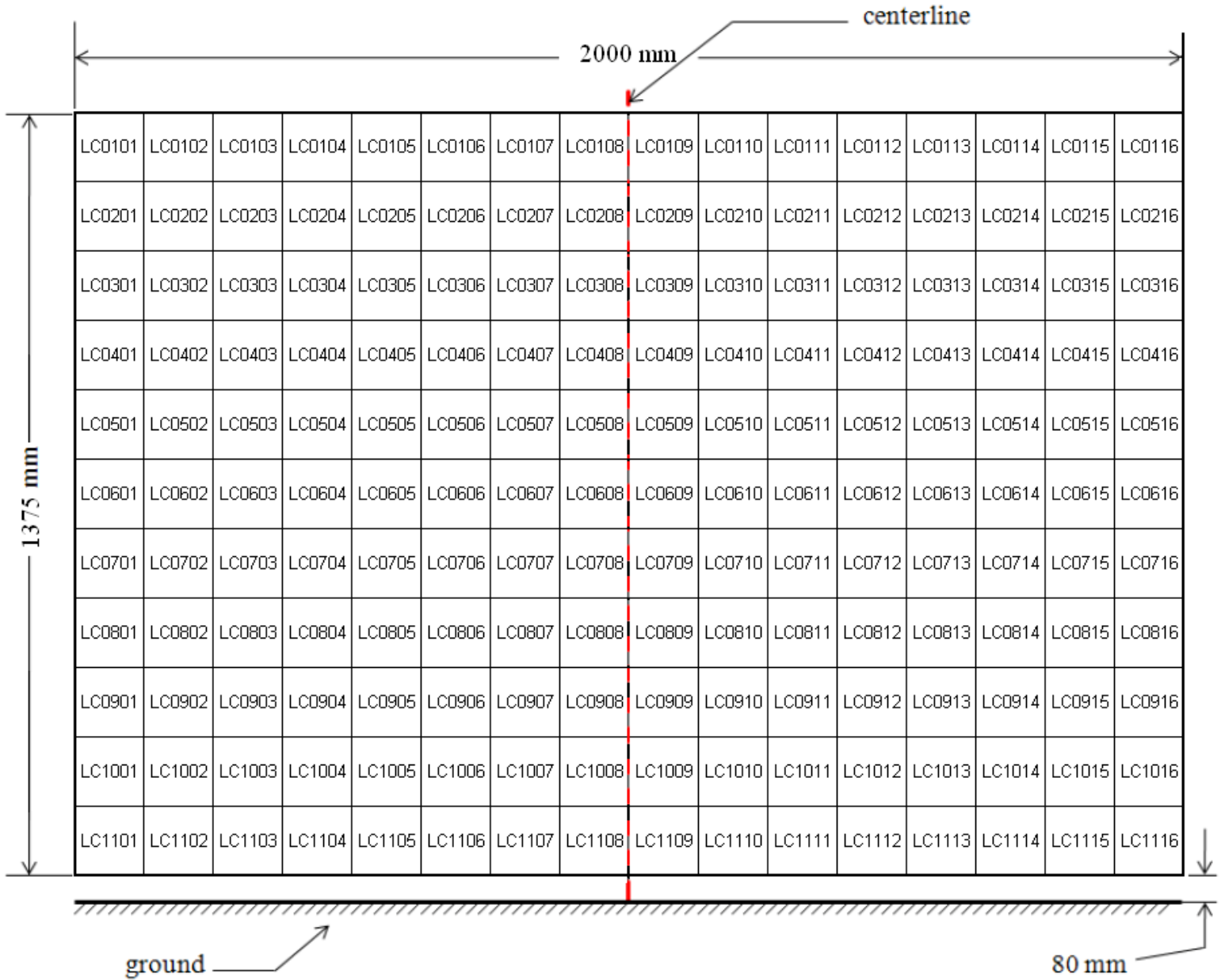
All measurements in millimeters.

DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15



DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

INSTRUMENTATION

Driver Dummy Accelerometers	50
Passenger Dummy Accelerometers	50
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	0
Load Cell Barrier	528
Total	636

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: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

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	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

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)	12	1
Seat Back Failure	None	None
Glazing Damage	None	None

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

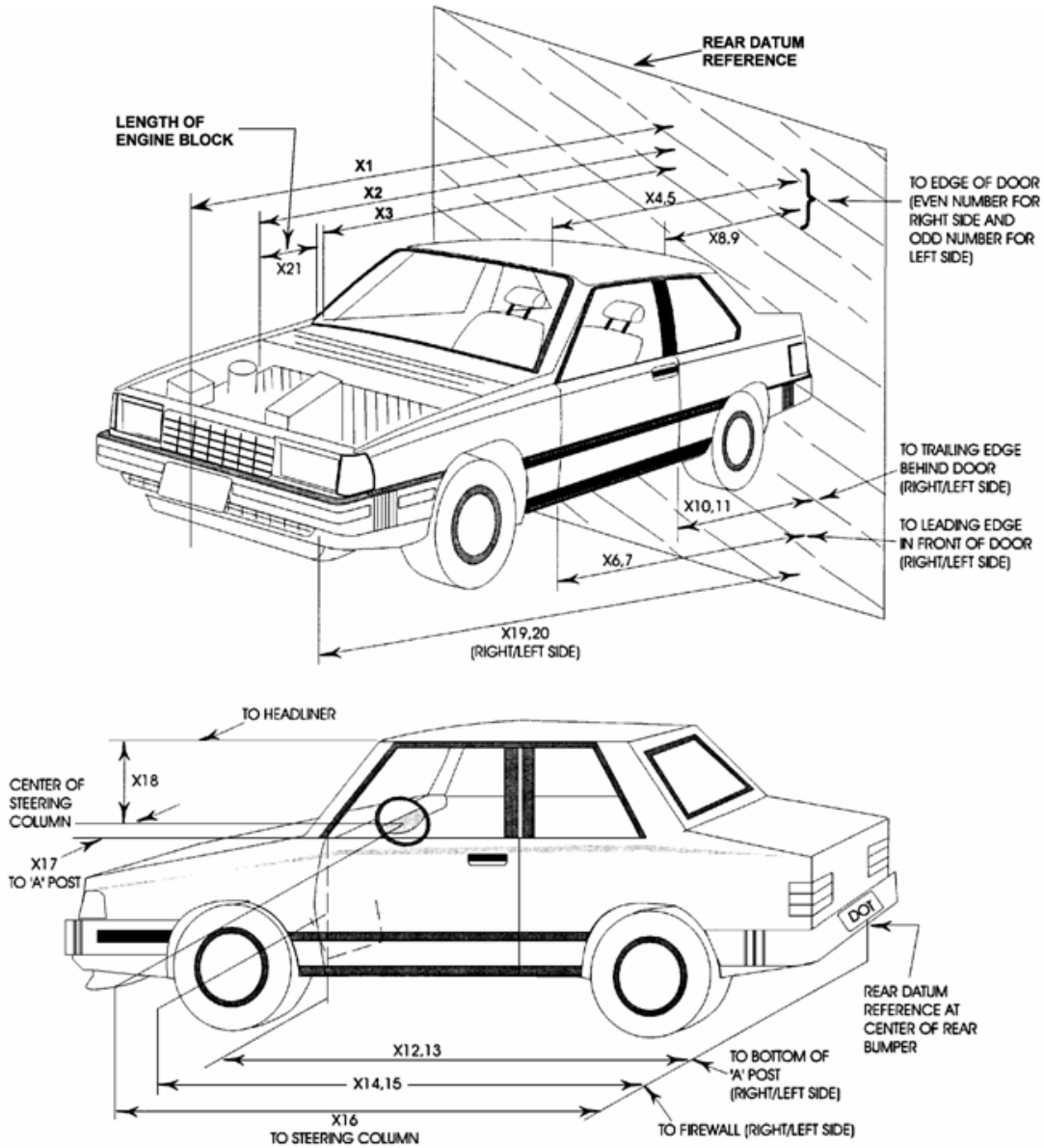
Measured Parameter	Units	Value
Left Side	mm	1213
Center	mm	1223
Right Side	mm	1244
Average	mm	1227

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	Yes	Yes
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15



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

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4913	4338	-575
2	Rear Surface of Vehicle to Front of Engine	4372	4070	-302
3	RSOV to Firewall	3778	3776	-2
4	RSOV to Upper Leading Edge of Right Door	3420	3438	18
5	RSOV to Upper Leading Edge of Left Door	3410	3430	20
6	RSOV to Lower Leading Edge of Right Door	3420	3408	-12
7	RSOV to Lower Leading Edge of Left Door	3420	3407	-13
8	RSOV to Upper Trailing Edge of Right Door	2253	2272	19
9	RSOV to Upper Trailing Edge of Left Door	2252	2259	7
10	RSOV to Lower Trailing Edge of Right Door	2270	2257	-13
11	RSOV to Lower Trailing Edge of Left Door	2260	2256	-4
12	RSOV to Bottom of A-Pillar, Right Side	3376	3385	9
13	RSOV to Bottom of A-Pillar, Left Side	3371	3385	14
14	RSOV to Firewall, Right Side	3673	3671	-2
15	RSOV to Firewall, Left Side	3798	3795	-3
16	RSOV to Steering Column	2970	2915	-55
17	Center of Steering Column to A-Pillar	430	430	0
18	Center of Steering Column to Headliner	430	400	-30
19	RSOV to Right Side of Front Bumper	4155	3960	-195
20	RSOV to Left Side of Front Bumper	4150	4100	-50
21	Length of Engine Block	480	480	0
RD	RSOV to Right Side of Dash Panel	3140	3340	200
CD	RSOV to Center of Dash Panel	3065	3085	20
LD	RSOV to Left Side of Dash Panel	3120	3125	5

All measurements in millimeters.

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

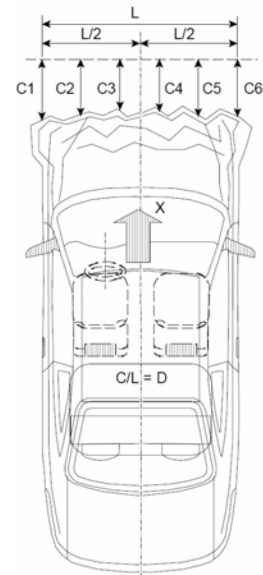
VEHICLE INFORMATION

VIN: JTHBK1GGXG2212929 Wheelbase (mm): 2825
 Vehicle Size Category: 4-Door Sedan Test Weight (kg): 1833.0

ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember
 Cal. Procedure/Interval: Drop Test / 6 months
 Integration Algorithm: NHTSA Standard
 Impact Velocity (km/h): 56.52
 Velocity Change (km/h): 65.6
 Time of Separation (msec): 72.2

Linearity: Good



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1428
 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	230	572	342
C2	Crush Zone 2 at Left Side	mm	255	590	335
C3	Crush Zone 3 at Left Side	mm	15	587	572
C4	Crush Zone 4 at Right Side	mm	15	564	549
C5	Crush Zone 5 at Right Side	mm	56	580	524
C6	Crush Zone 6 at Right Side	mm	230	555	325
L	C1 to C6	mm	1428		

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

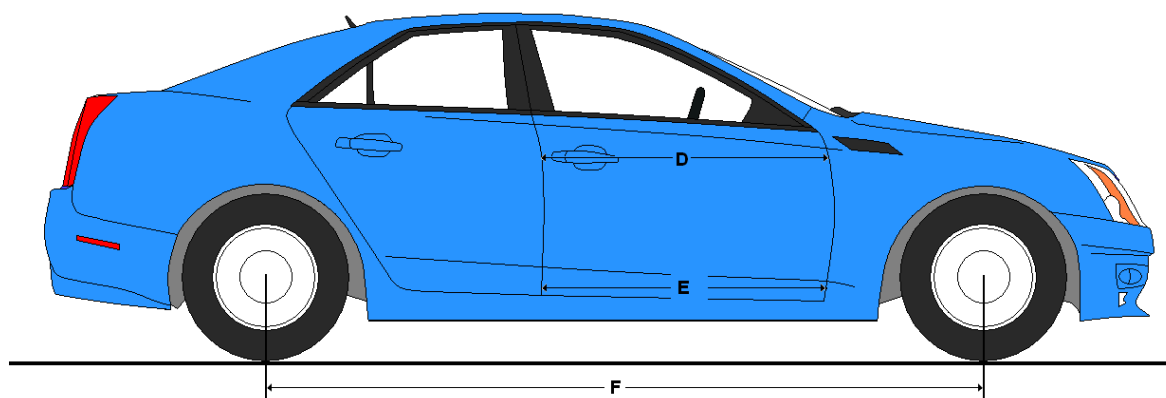
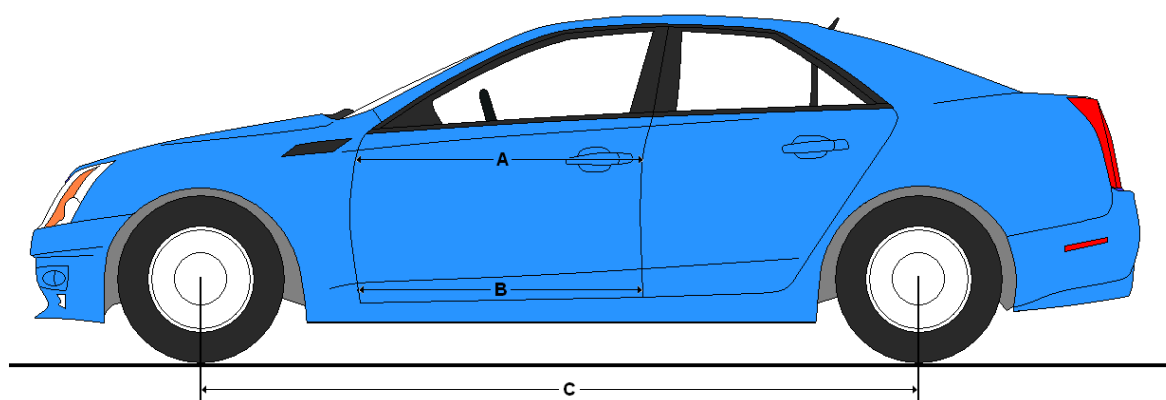
Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1064	1048	16
B	Left Side Lower	mm	976	976	0
D	Right Side Upper	mm	1061	1061	0
E	Right Side Lower	mm	941	915	26

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2825	2730	95
F	Right Side Wheelbase	mm	2825	2767	58



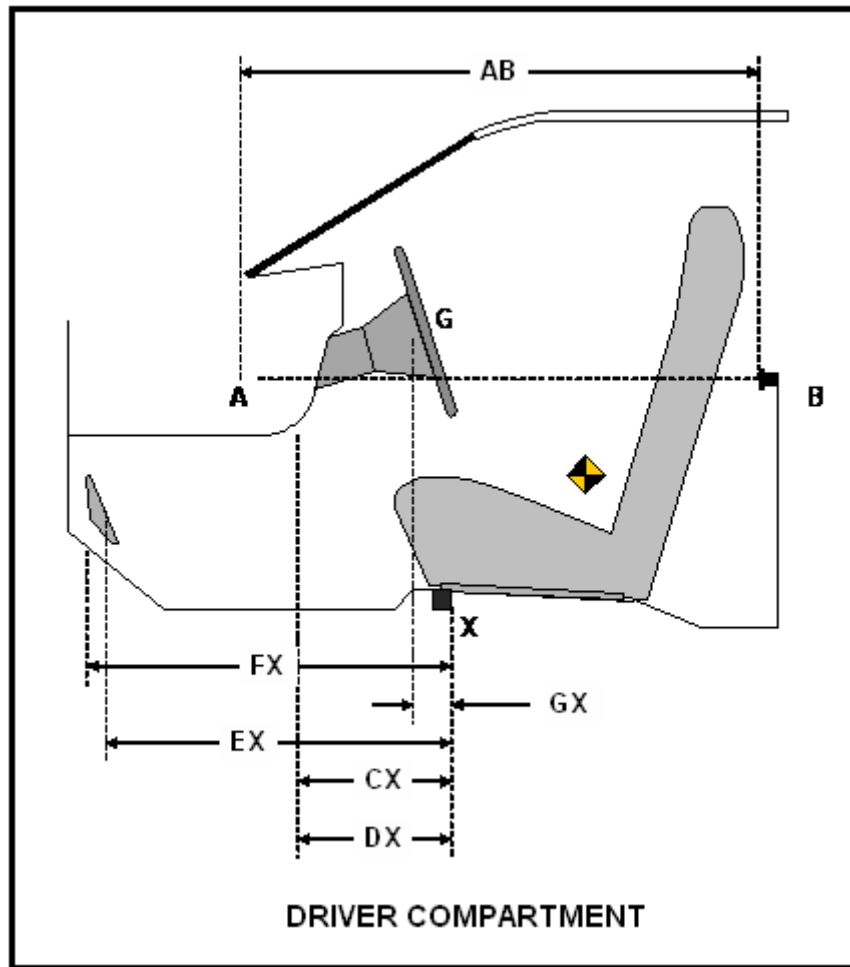
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	886	876	10
CX	Left Knee Bolster to X	mm	360	345	15
DX	Right Knee Bolster to X	mm	360	340	20
EX	Brake Pedal to X	mm	580	625	-45
FX	Foot Rest to X	mm	630	595	35
GX	Center of Steering Wheel Hub to X	mm	165	120	45

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15

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

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

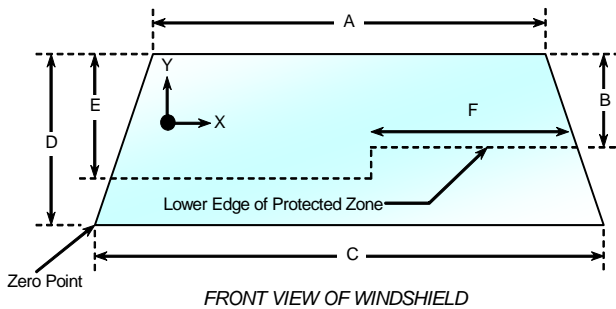
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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: 21.1 ° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2237	2237	100.0%
Right Side	2237	2237	100.0%
Total	4474	4474	100.0%



Item	Units	Value
A	mm	1210
B	mm	313
C	mm	1503
D	mm	880
E	mm	487
F	mm	470

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: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 13.3° C Test Time: 1:43 PM

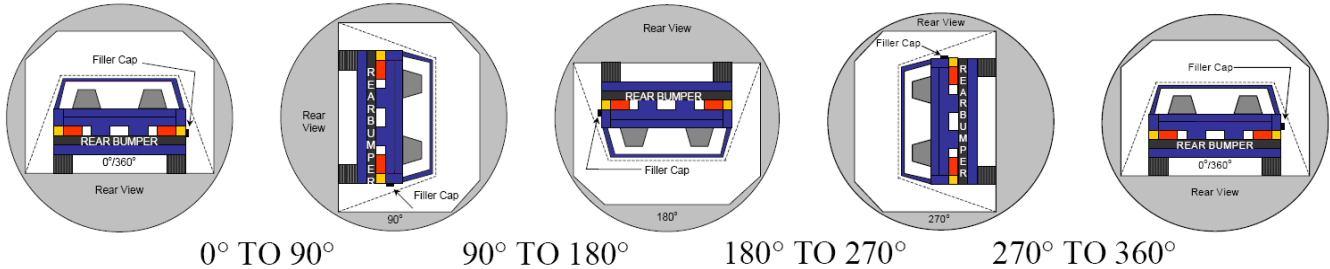
Stoddard Solvent Spillage Measurements

- 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: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15



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°	83	300	383
90° To 180°	81	300	381
180° To 270°	83	300	383
270° To 360°	81	300	381

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			

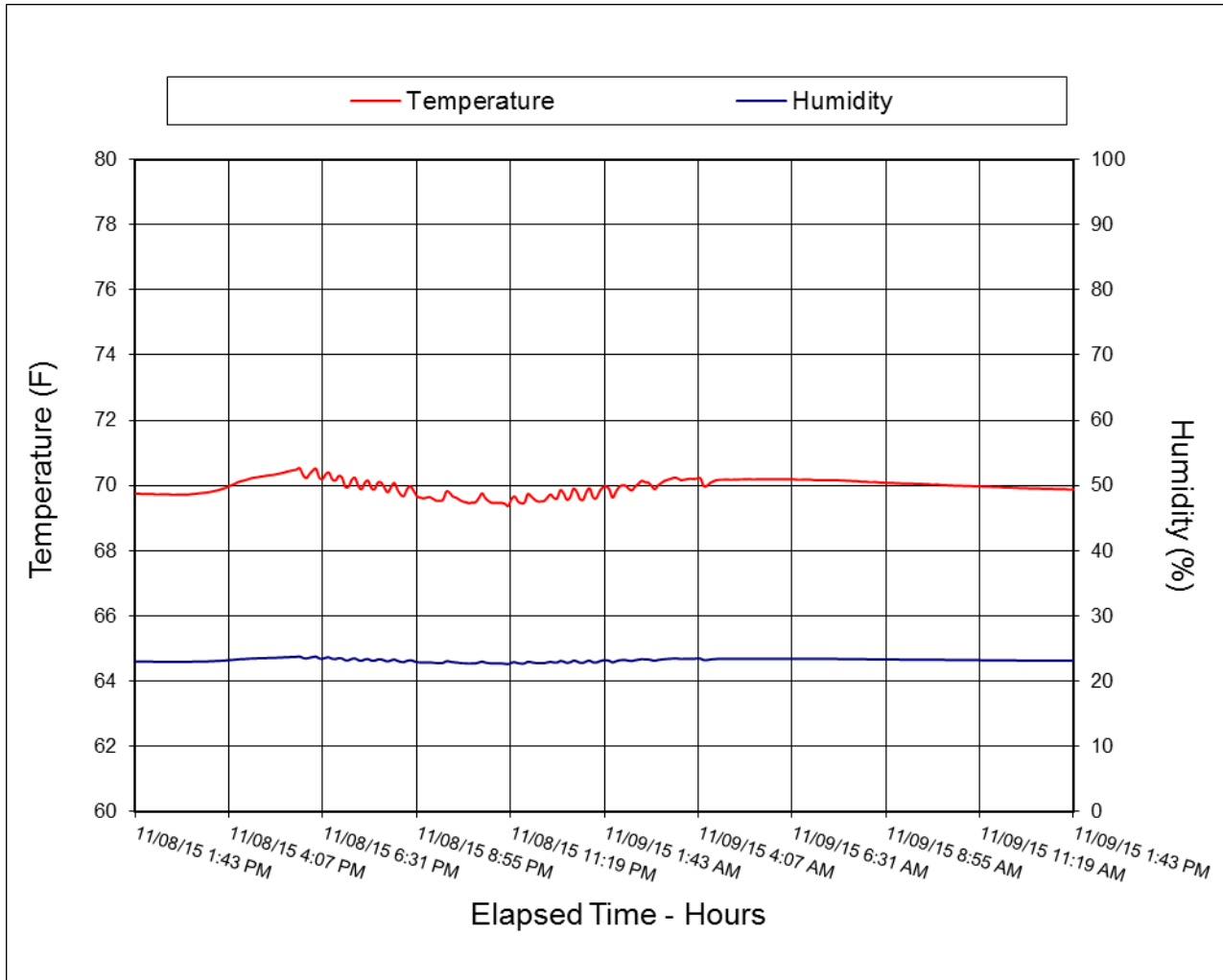
SOLVENT SPILLAGE LOCATION TABLE

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: 2016 Lexus ES 350 4-Door Sedan NHTSA No.: M20165100
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/09/15



**APPENDIX A
PHOTOGRAPHS**

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FIGURE 1. Load Cell Location

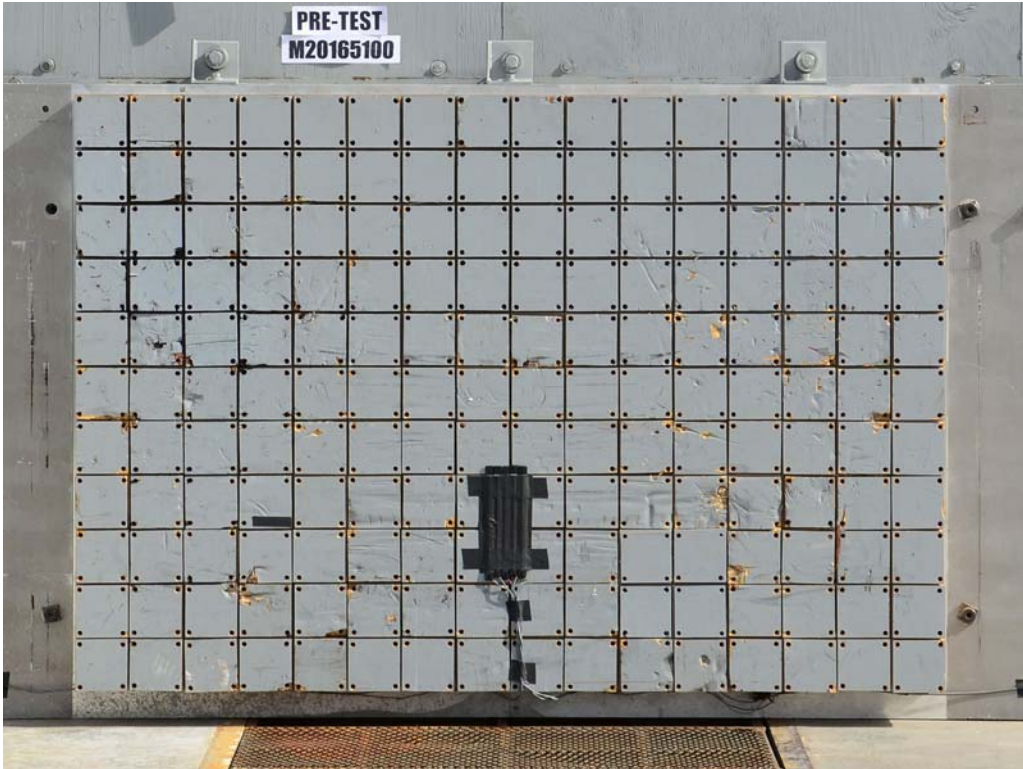


FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 3a. Close-Up View of Vehicle's Reduced Load Carrying Capacity Label



FIGURE 4. Tire Placard



FIGURE 5. 2016 Lexus ES 350 Frontal as Delivered



FIGURE 6. Left Rear $\frac{3}{4}$ View, as Received



FIGURE 7. Pre-Test Front View of Test Vehicle



FIGURE 8. Post-Test Front View of Test Vehicle



FIGURE 9. Pre-Test Left View of Test Vehicle



FIGURE 10. Post-Test Left View of Test Vehicle



FIGURE 11. Pre-Test Right View of Test Vehicle



FIGURE 12. Post-Test Right View of Test Vehicle



FIGURE 13. Pre-Test Right Front ¼ View



FIGURE 14. Post-Test Right Front $\frac{3}{4}$ View

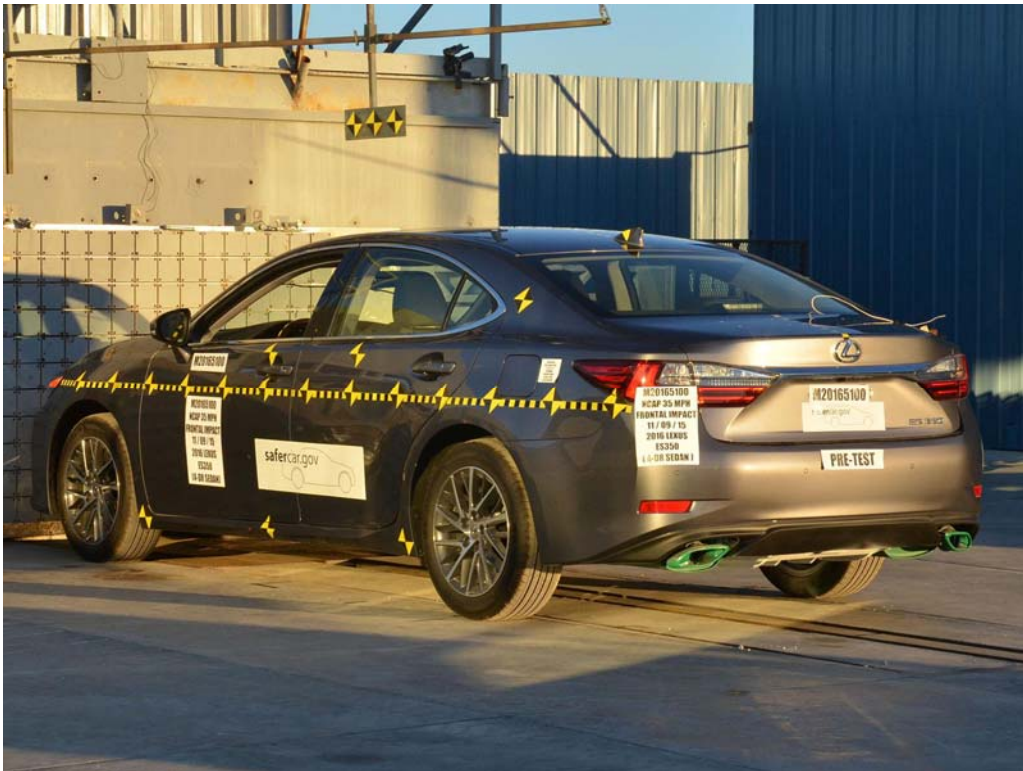


FIGURE 15. Pre-Test Left Rear $\frac{3}{4}$ View



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



FIGURE 17. Pre-Test Windshield View



FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View



FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View



FIGURE 23. Pre-Test Front Underbody View



FIGURE 24. Post-Test Front Underbody View

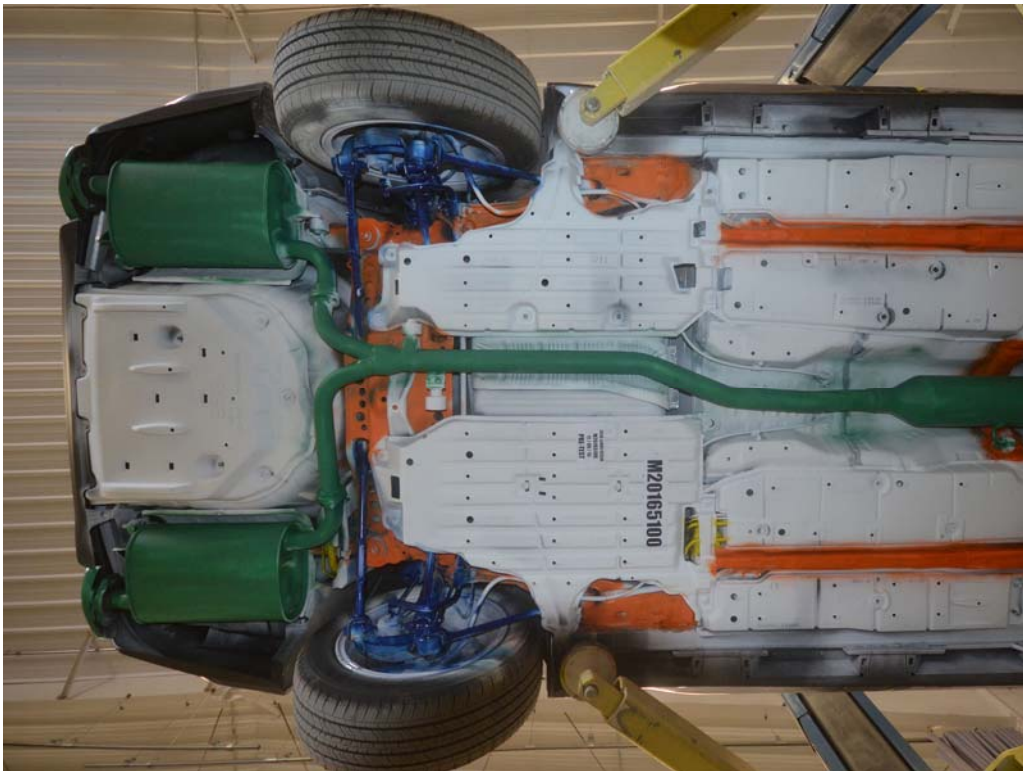


FIGURE 25. Pre-Test Rear Underbody View

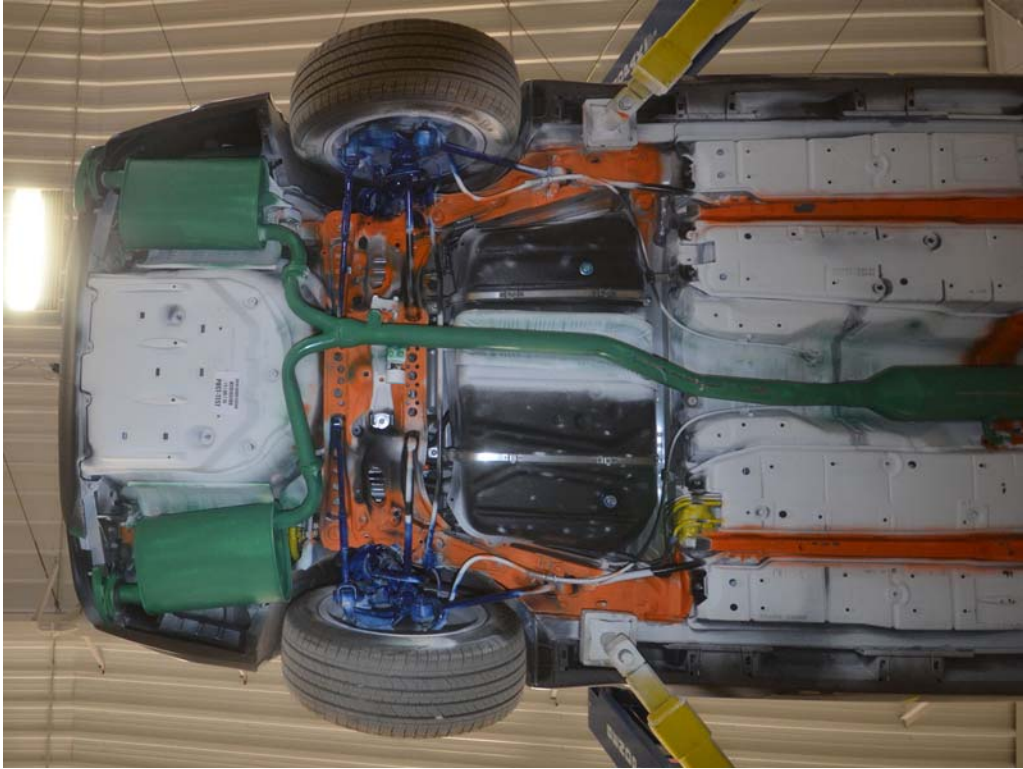


FIGURE 26. Post-Test Rear Underbody View



FIGURE 27. Pre-Test Dummy Cable Routing



FIGURE 28. Post-Test Dummy Cable Routing



FIGURE 29. Pre-Test Driver Dummy Front View



FIGURE 30. Post-Test Driver Dummy Front View



FIGURE 31. Pre-Test Driver Dummy Window View



FIGURE 32. Post-Test Driver Dummy Window View



FIGURE 33. Pre-Test Driver Dummy and Vehicle Interior View



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



FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings



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

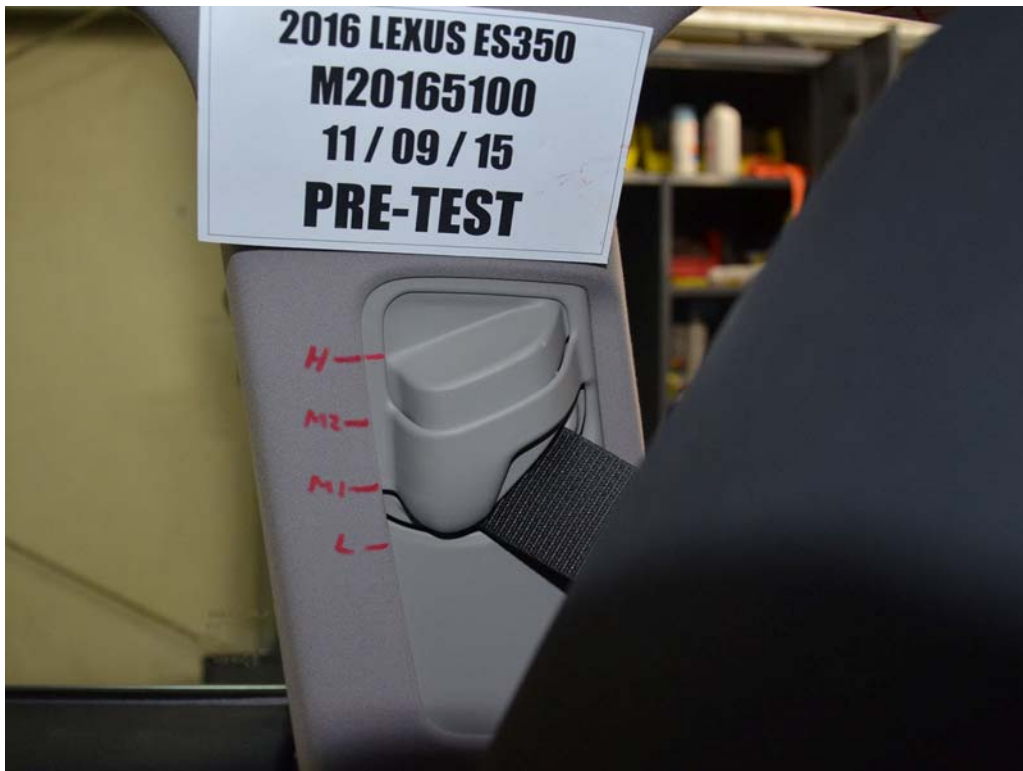


FIGURE 37. Pre-Test View of Belt Anchorage for Driver Dummy



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



FIGURE 39. Pre-Test Driver Dummy Feet



FIGURE 40. Post-Test Driver Dummy Feet



FIGURE 41. Pre-Test Driver's Side Knee Bolster



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



FIGURE 43. Pre-Test Driver's Side Floorpan



FIGURE 44. Post-Test Driver's Side Floorpan



FIGURE 45. Post-Test Driver Dummy Face



FIGURE 46. Post-Test Driver Dummy Contact with Airbag



FIGURE 47. Post-Test Driver Dummy Contact with Headrest



FIGURE 47a. Post-Test Driver Dummy Contact with Knee Airbag



FIGURE 48. Pre-Test View of the Steering Wheel



FIGURE 49. Post-Test View of the Steering Wheel



FIGURE 50. Pre-Test Passenger Dummy Front View



FIGURE 51. Post-Test Passenger Dummy Front View



FIGURE 52. Pre-Test Passenger Dummy Window View



FIGURE 53. Post-Test Passenger Dummy Window View



FIGURE 54. Pre-Test Passenger Dummy and Vehicle Interior View



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



FIGURE 56. Pre-Test Passenger's Seat Fore-Aft Markings



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



FIGURE 58. Pre-Test View of Belt Anchorage for Passenger Dummy



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



FIGURE 60. Pre-Test Passenger Dummy Feet



FIGURE 61. Post-Test Passenger Dummy Feet



FIGURE 62. Pre-Test Passenger's Side Knee Bolster



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



FIGURE 64. Pre-Test Passenger's Side Floorpan



FIGURE 65. Post-Test Passenger's Side Floorpan



FIGURE 66. Post-Test Passenger Dummy Face



FIGURE 67. Post-Test Passenger Dummy Contact with Airbag



FIGURE 68. Post-Test Passenger Dummy Contact with Headrest

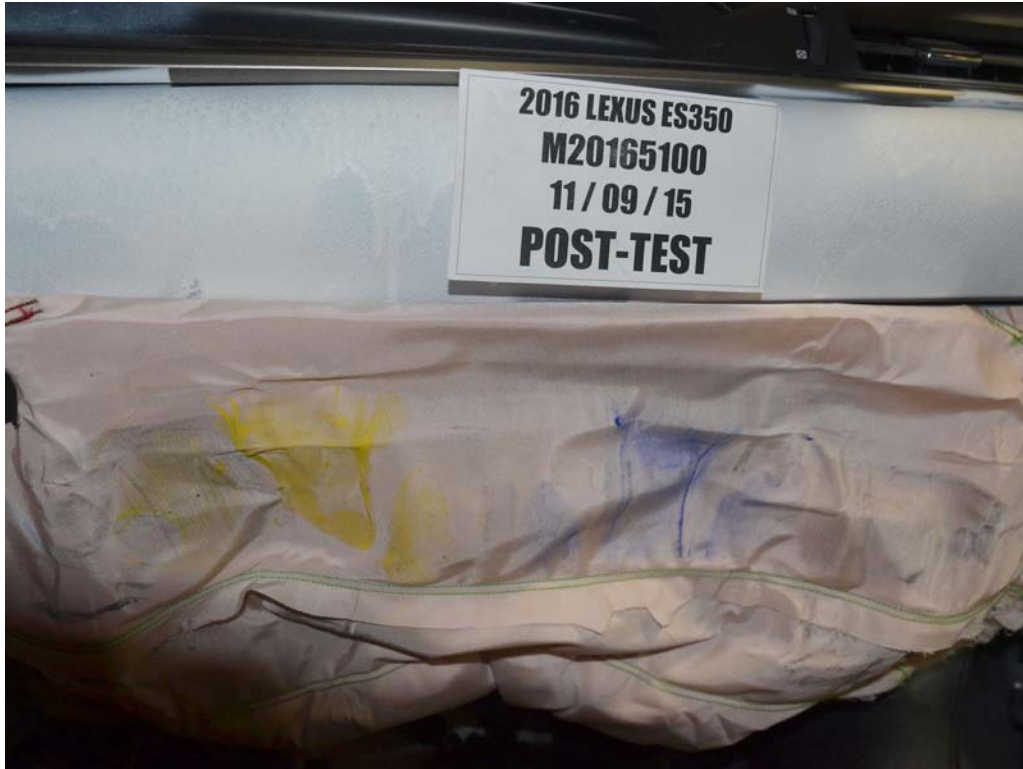


FIGURE 68a. Post-Test Passenger Dummy Contact with Knee Airbag

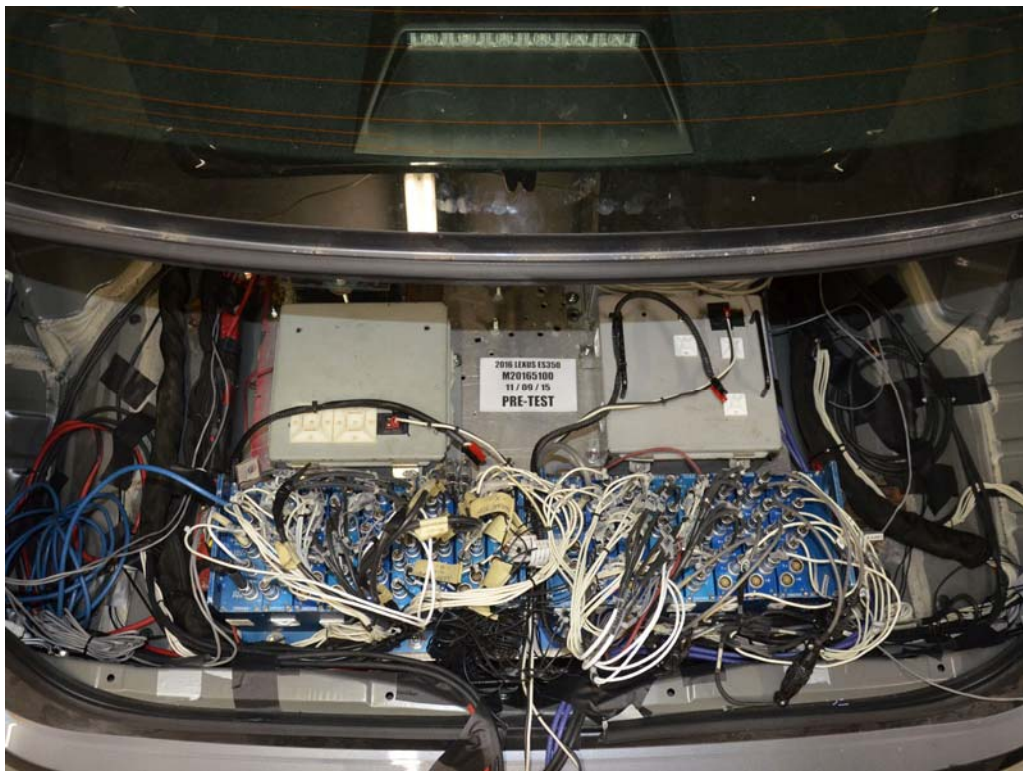


FIGURE 69. Photograph of Ballast Installed in Vehicle

Photograph Not Applicable

No Stoddard Solvent Spillage

FIGURE 70. Post-Test Stoddard Solvent Spillage Location View



FIGURE 71. Post-Test Speed Trap Read-Out



FIGURE 72. Vehicle at 0° on Static Rollover Device



FIGURE 73. Vehicle at 90° on Static Rollover Device



FIGURE 74. Vehicle at 180° on Static Rollover Device

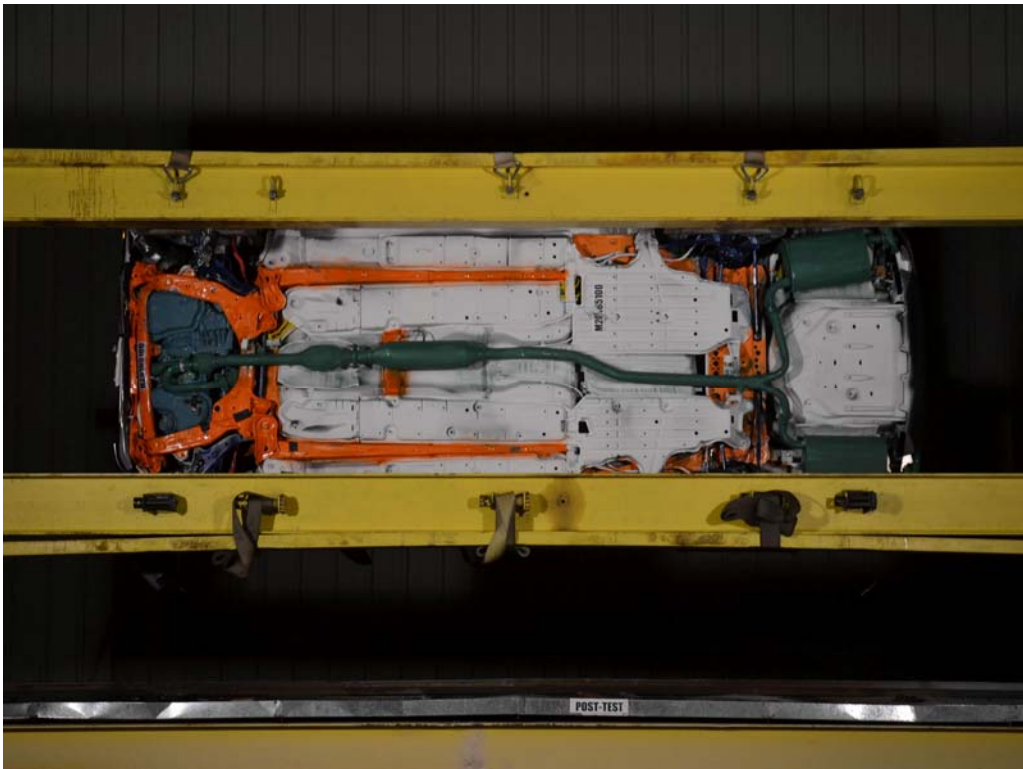



FIGURE 75. Vehicle at 270° on Static Rollover Device




FIGURE 76. Vehicle at 360° on Static Rollover Device



FIGURE 77. 2016 Lexus ES 350 Frontal Impact Event



Lexus San Diego
4870 Kearny Mesa Road,
San Diego, CA 92111
(858) 268-8000



Lexus San Diego
4870 Kearny Mesa Road,
San Diego, CA 92111
(858) 268-8000

2016 ES 350 4-DOOR SEDAN

<p>10-Way Driver's & Passenger's (including Lumbar) Power Seats</p> <p>Electrochromic Heated Outside Mirrors</p> <p>Automatic Dual Zone Climate Control</p> <p>One-Touch Open/Close Power Tilt-and-Slide Moonroof</p> <p>Lexus Premium Audio System with Automatic</p> <p>Optional Equipment</p> <table border="0" style="width: 100%;"> <tr><td>17" Split 10-Spoke Machined Finish Wheels</td><td style="text-align: right;">\$40.00</td></tr> <tr><td>Blind Spot Monitor w/Rear Cross Traffic Alert</td><td style="text-align: right;">\$500.00</td></tr> <tr><td>Heated and Ventilated Front Seats</td><td style="text-align: right;">\$640.00</td></tr> <tr><td>Intuitive Parking Assist</td><td style="text-align: right;">\$500.00</td></tr> <tr><td>Premium Package: Lexus Memory Sys for Driver's Seat, Outside Mirrors & Steering Wheel, Power Tilt-and-Telescopic Steering Wheel, Wood Interior Trim, Remote Keyless Entry-Linked Memory</td><td style="text-align: right;">\$730.00</td></tr> <tr><td>Wood & Leather Trimmed Steering Wheel</td><td style="text-align: right;">\$300.00</td></tr> <tr><td>Trunk Mat/Cargo Net/Whl Locks/Rr Bumper App/Glove</td><td style="text-align: right;">\$334.00</td></tr> <tr><td>Total Optional Equipment</td><td style="text-align: right;">\$3,044.00</td></tr> <tr><td>Vehicle Base Model</td><td style="text-align: right;">\$38,000.00</td></tr> <tr><td>Delivery Processing and Handling</td><td style="text-align: right;">\$940.00</td></tr> <tr><td>Total MSRP*</td><td style="text-align: right;">\$41,984.00</td></tr> </table>	17" Split 10-Spoke Machined Finish Wheels	\$40.00	Blind Spot Monitor w/Rear Cross Traffic Alert	\$500.00	Heated and Ventilated Front Seats	\$640.00	Intuitive Parking Assist	\$500.00	Premium Package: Lexus Memory Sys for Driver's Seat, Outside Mirrors & Steering Wheel, Power Tilt-and-Telescopic Steering Wheel, Wood Interior Trim, Remote Keyless Entry-Linked Memory	\$730.00	Wood & Leather Trimmed Steering Wheel	\$300.00	Trunk Mat/Cargo Net/Whl Locks/Rr Bumper App/Glove	\$334.00	Total Optional Equipment	\$3,044.00	Vehicle Base Model	\$38,000.00	Delivery Processing and Handling	\$940.00	Total MSRP*	\$41,984.00	<p>Sound Levelizer (ASL) & MP3 Player Connectivity (min-plug) and 8-Speakers, Bluetooth Technology, USB Audio Plug, SiriusXM Satellite Radio (3-month All Access trial subscription)</p> <p>Lexus Personalized Settings / Carpeted Floor Mats</p> <p>Lexus Personalized Settings / Carpeted Floor Mats</p>
17" Split 10-Spoke Machined Finish Wheels	\$40.00																						
Blind Spot Monitor w/Rear Cross Traffic Alert	\$500.00																						
Heated and Ventilated Front Seats	\$640.00																						
Intuitive Parking Assist	\$500.00																						
Premium Package: Lexus Memory Sys for Driver's Seat, Outside Mirrors & Steering Wheel, Power Tilt-and-Telescopic Steering Wheel, Wood Interior Trim, Remote Keyless Entry-Linked Memory	\$730.00																						
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Trunk Mat/Cargo Net/Whl Locks/Rr Bumper App/Glove	\$334.00																						
Total Optional Equipment	\$3,044.00																						
Vehicle Base Model	\$38,000.00																						
Delivery Processing and Handling	\$940.00																						
Total MSRP*	\$41,984.00																						

2016 ES 350 4-DOOR SEDAN

<p>Model: 9000A</p> <p>Year: 2016</p> <p>Interior Color: BLACK W/BIRD'S-EYE MAPLE</p> <p>Exterior Color: NEBULA GRAY PEARL</p> <p>Number of Cylinders: 6</p> <p>VIN: JTHBK1GGXG212929</p> <p>Stock No.:</p>	<p>Total MSRP*: \$41,984.00</p> <table border="0" style="width: 100%;"> <tr> <td style="text-align: center;">21</td> <td style="text-align: center;">31</td> </tr> <tr> <td style="text-align: center; font-size: 8px;">CITY</td> <td style="text-align: center; font-size: 8px;">MILE</td> </tr> <tr> <td style="text-align: center; font-size: 8px;">MPG</td> <td style="text-align: center; font-size: 8px;">MPG</td> </tr> </table>	21	31	CITY	MILE	MPG	MPG
21	31						
CITY	MILE						
MPG	MPG						

Standard Equipment

STANDARD FEATURES

<p>3.5 Liter 250HP Four Cam 24-Valve V6 Engine</p> <p>All-Aluminum Engine Construction & Dual VVT-i</p> <p>4-Wheel Independent MacPherson Strut-Type Suspension with Gas Pressurized Shock Absorbers</p> <p>Front and Rear Stabilizer Bars</p> <p>17" Aluminum Alloy Split 10-Spoke Wheels</p> <p>215/55R17 All-Season Tires</p> <p>Dual Fr Airbags, Dual Fr Knee Airbags, Fr & Rr Seat-Mounted Side Impact Airbags, Fr & Rr Side Curtain Airbags, Supplemental Restraint Sys (SRS)</p> <p>3-Point Safety Belts for All Seating Positions</p> <p>Fr & Rr Outboard Seatbelt Pretensioners with Force Limiters / Energy Managing Crumple Zones, Side Door Beams</p> <p>Theft-Deterrent System w/ Engine Immobilizer</p>	<p>Vehicle Stability Control (VSC) with TRAC</p> <p>4-Wheel Anti-Lock Braking System (ABS) with Electronic Brakeforce Distribution (EBD) and Brake Assist (BA)</p> <p>Smart Stop Technology</p> <p>SmartAccess with Push Button Start/Stop</p> <p>Drive Mode Select (Eco, Normal, Sport)</p> <p>Lexus Enform Safety Connect: Automatic Collision Notification, Stolen Vehicle Location, Emergency Assist Button (SOS), and Roadside Assistance, Lexus Enform Service Connect (1-year trial subscription included)</p> <p>Automatic On/Off LED Low Beam and Halogen High Beam Headlamps w/Integrated Foglamps, LED Daytime Running Lights (DRL) / Intermittent Wipers w/Mist Cycle</p>
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Disclaimer: This document is only representative of some of the information contained on an actual window sticker, and is not meant to replace or substitute for the actual window sticker on the vehicle. Please see your retailer for further information.

* 2016 Manufacturer's Suggested Retail Price, excludes the Delivery, Processing and Handling Fee, taxes, license, title and available or regionally required equipment. Actual Dealer price may vary. Pricing, specifications, standard features and available equipment are based on information available when this page was produced and subject to change without notice.

Disclaimer: This document is only representative of some of the information contained on an actual window sticker, and is not meant to replace or substitute for the actual window sticker on the vehicle. Please see your retailer for further information.

FIGURE 78. Monroney label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

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

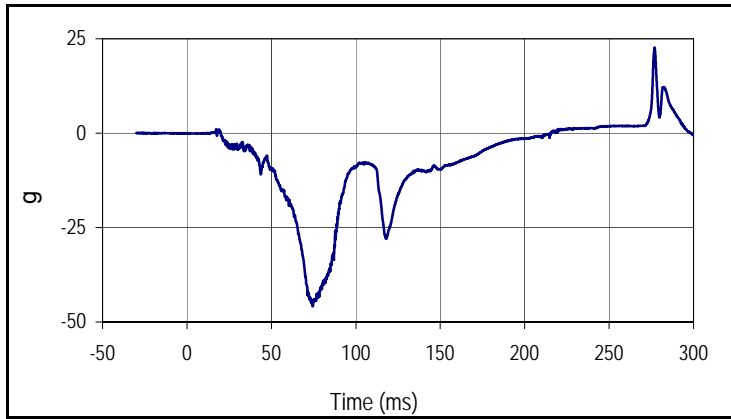
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Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Head Front Y Acceleration
Driver Head Front Z Acceleration
Driver Head Top X Acceleration
Driver Head Top Y Acceleration
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Driver Head Left Z Acceleration
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 Shoulder Belt Force
Driver Lap Belt Force
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
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Head Front Y Acceleration
Passenger Head Front Z Acceleration
Passenger Head Top X Acceleration
Passenger Head Top Y Acceleration
Passenger Head Left X Acceleration
Passenger Head Left Z Acceleration
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 Z Redundant
Passenger Right Femur Force Z Redundant
Passenger Shoulder Belt Force
Passenger Lap Belt Force
Passenger Left Upper Tibia Moment X
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Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X

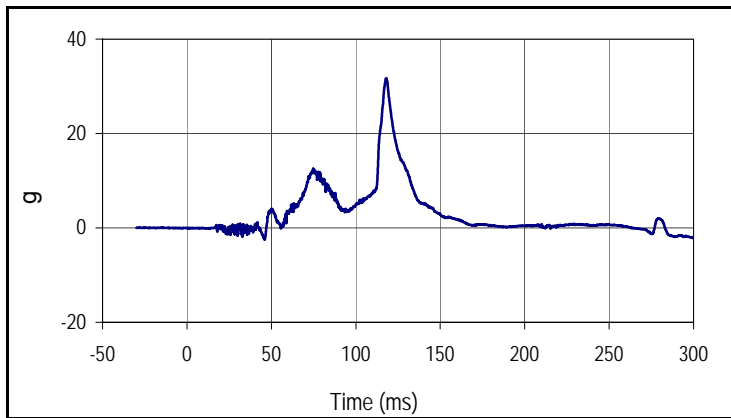
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Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Left Rear Seat Crossmember X
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Rear Z
Vehicle Right Rear Z
Load Cell Barrier LC0101 – LC 1116

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

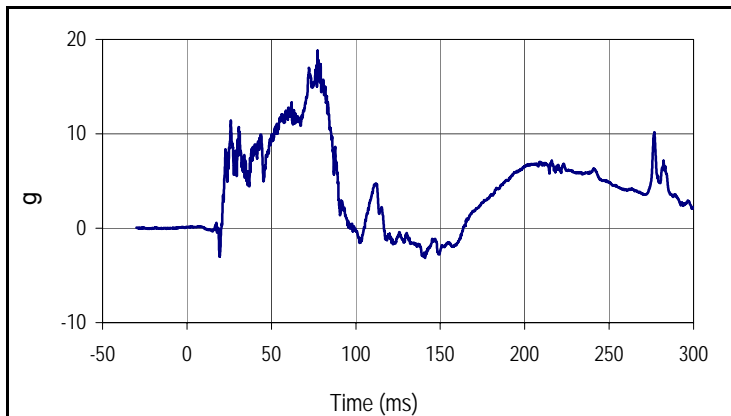
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 Test Date: 11/9/15



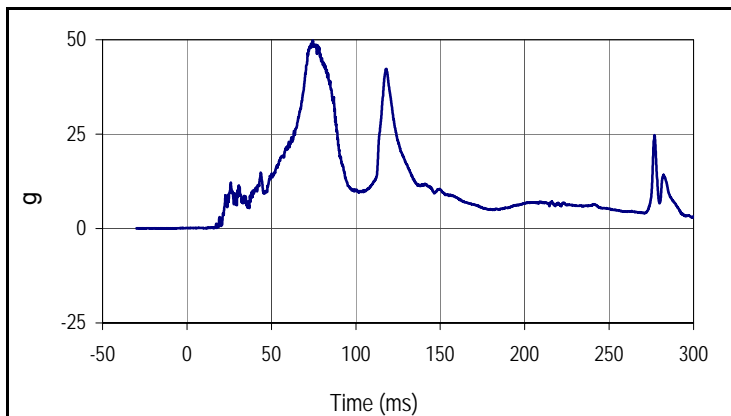
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Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
22.6	276.9	-45.8	74.5



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
31.8	118.0	-2.5	45.9



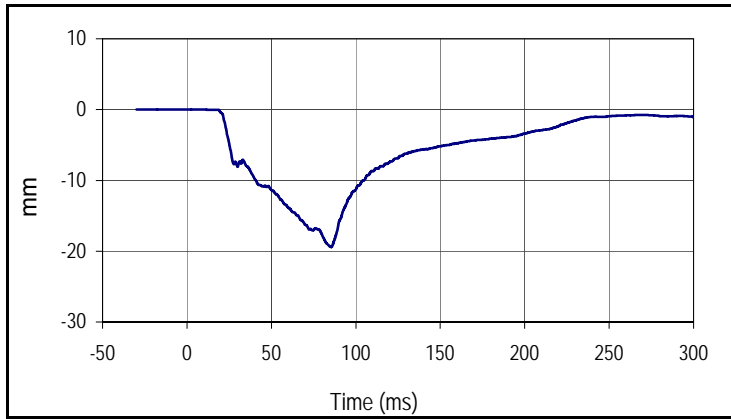
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Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
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Max	Time	Min	Time
18.8	77.3	-3.1	141.0



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
49.7	74.5	0.1	10.4

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

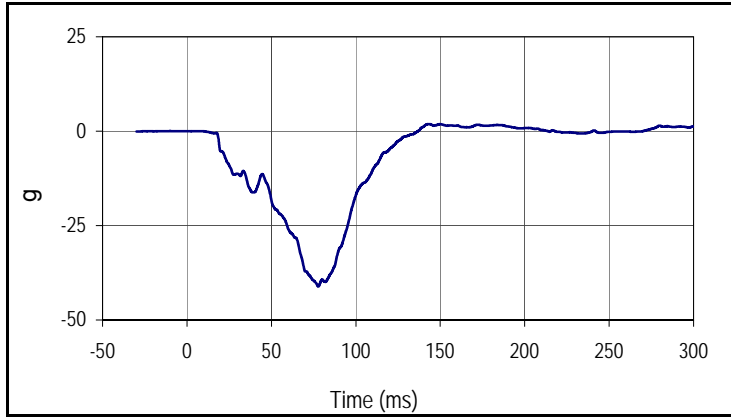
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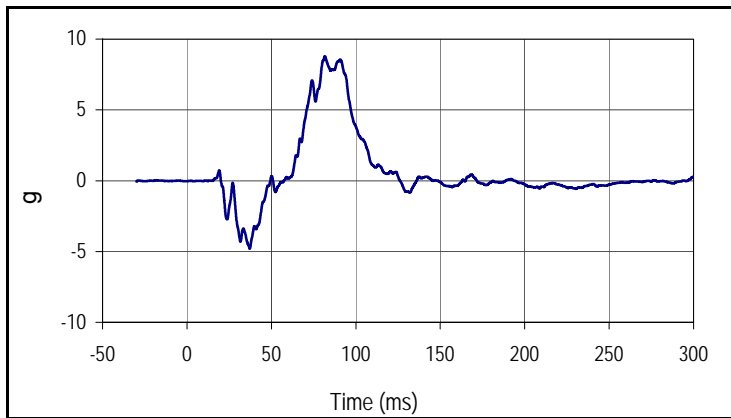
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Plot No.		SAE Class	Units
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Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

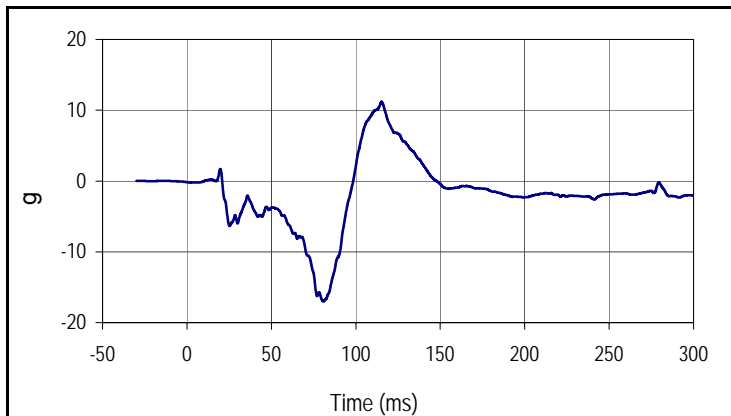
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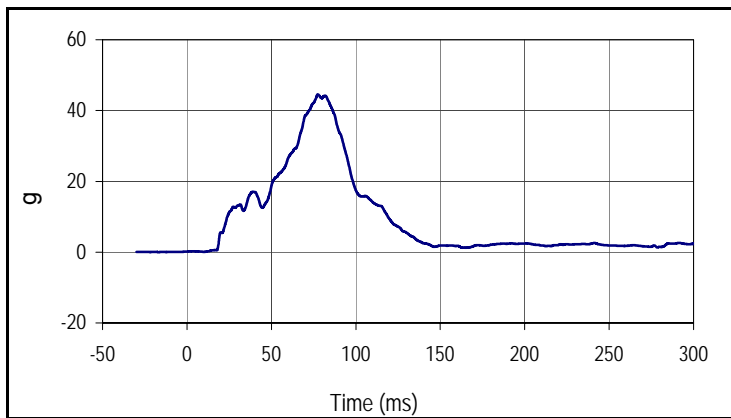
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Plot No.		SAE Class	Units
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1.9	143.4	-41.1	77.8



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.		SAE Class	Units
007		180	g
Max	Time	Min	Time
8.8	81.7	-4.8	37.2



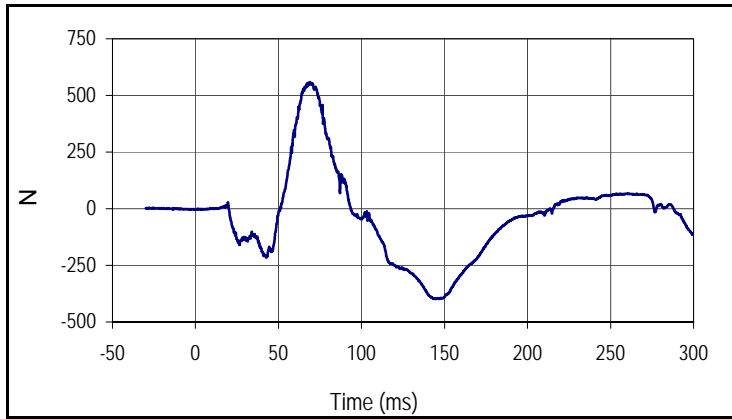
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Driver Chest Acceleration Z Primary			
Plot No.		SAE Class	Units
008		180	g
Max	Time	Min	Time
11.2	115.3	-17.0	80.8



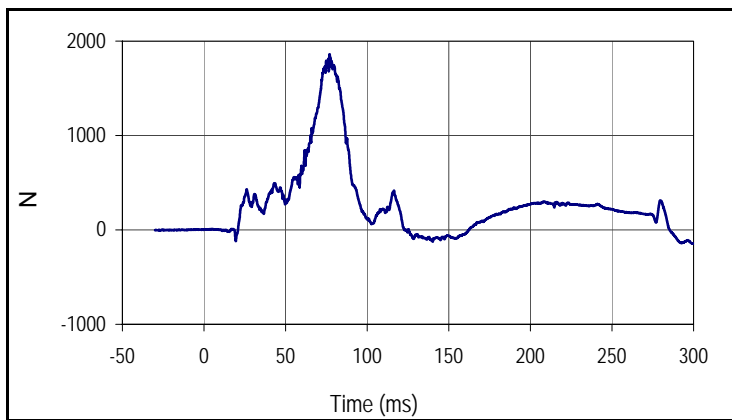
Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.		SAE Class	Units
009		180	g
Max	Time	Min	Time
44.5	77.6	0.0	10.2

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

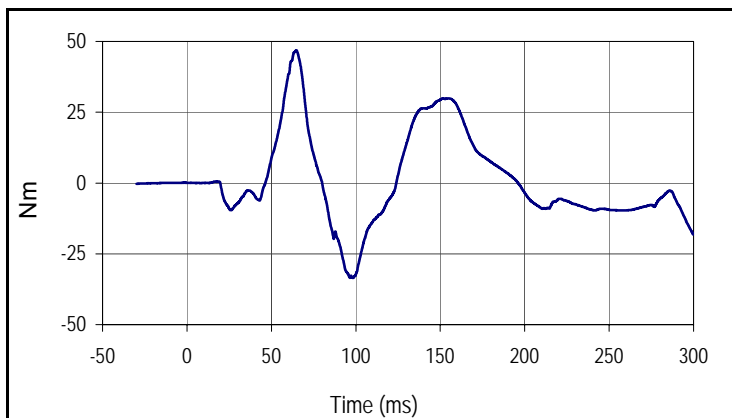
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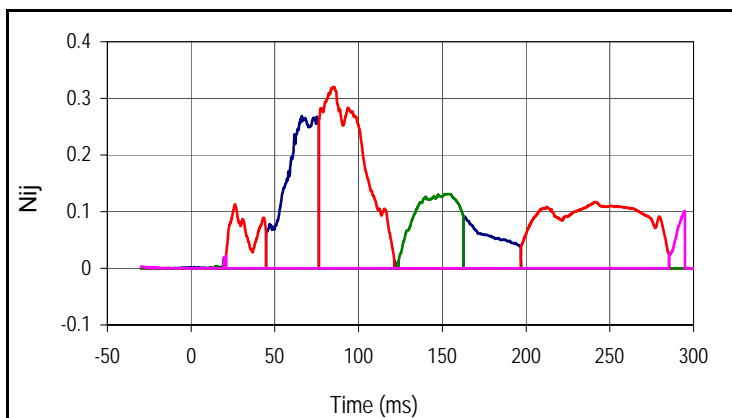
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Driver Upper Neck Force X			
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558.9	69.1	-398.7	144.4



Curve Description			
Driver Upper Neck Force Z			
Plot No.		SAE Class	Units
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1860.2	77.0	-146.2	299.2



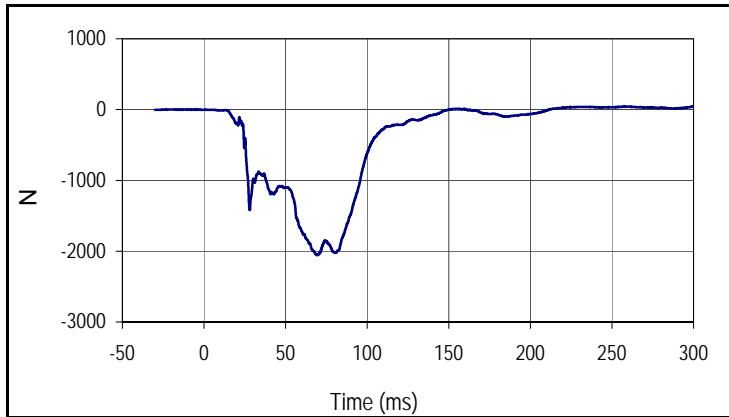
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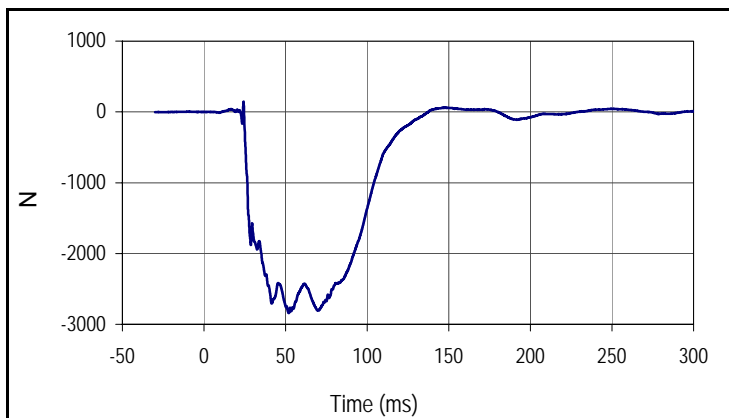
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Driver Nij		
Units	Max	Time
Ntf	0.27	66.1
Units	Max	Time
Nte	0.32	85.4
Units	Max	Time
Ncf	0.13	153.1
Units	Max	Time
Nce	0.10	294.8

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20165100
 Test Date: 11/9/15



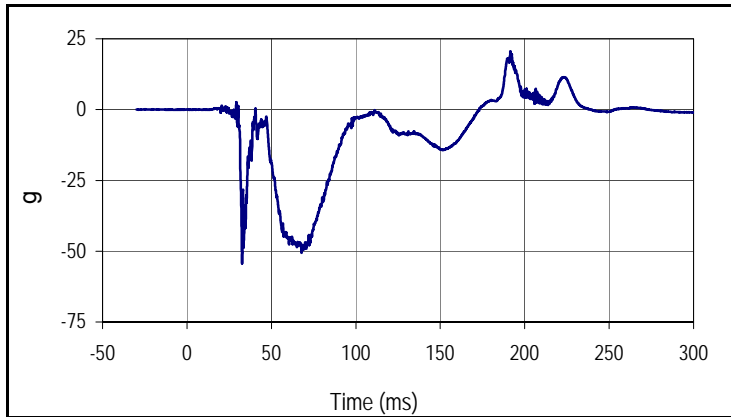
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Max	Time	Min	Time
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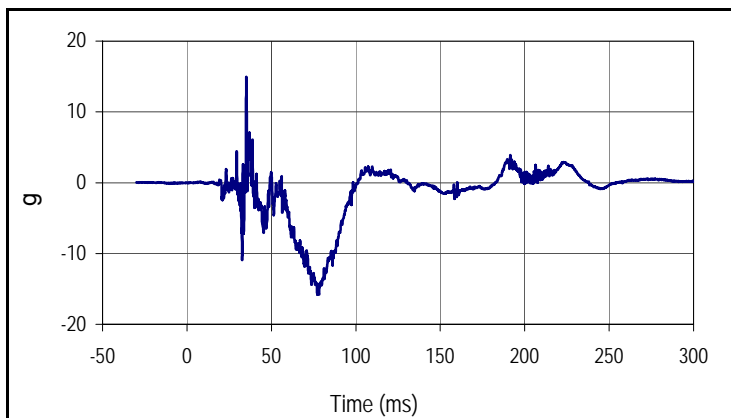
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Plot No.		SAE Class	Units
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Max	Time	Min	Time
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Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

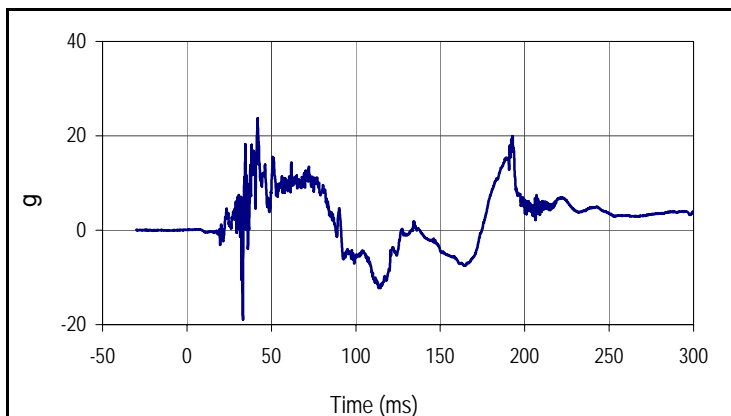
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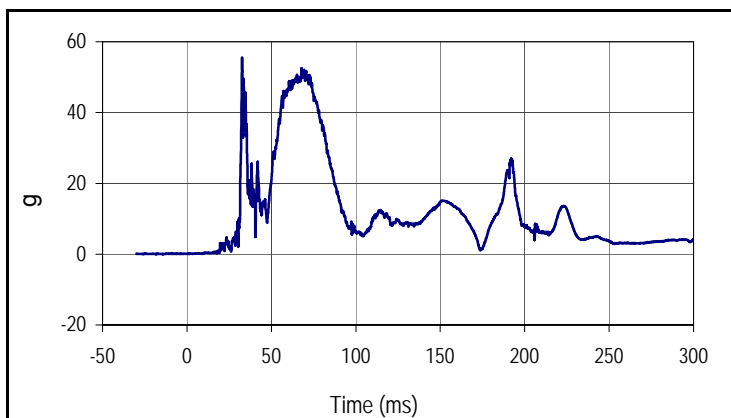
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Plot No.		SAE Class	Units
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Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.		SAE Class	Units
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Max	Time	Min	Time
14.9	35.1	-15.8	78.1



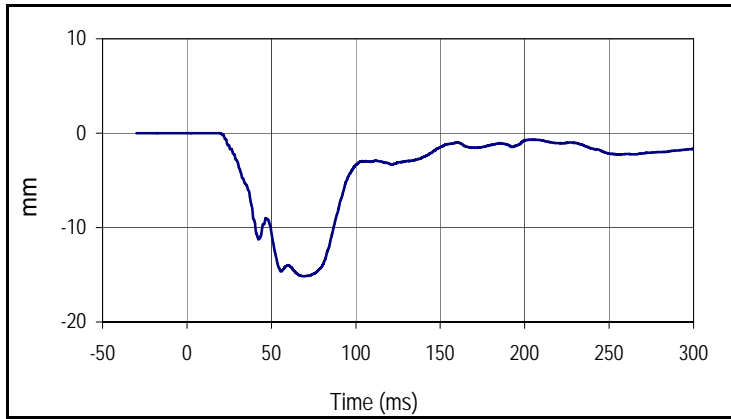
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Passenger Head Acceleration Z Primary			
Plot No.		SAE Class	Units
018		1000	g
Max	Time	Min	Time
23.7	41.9	-18.8	33.1



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
019		1000	g
Max	Time	Min	Time
55.3	32.7	0.0	9.1

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

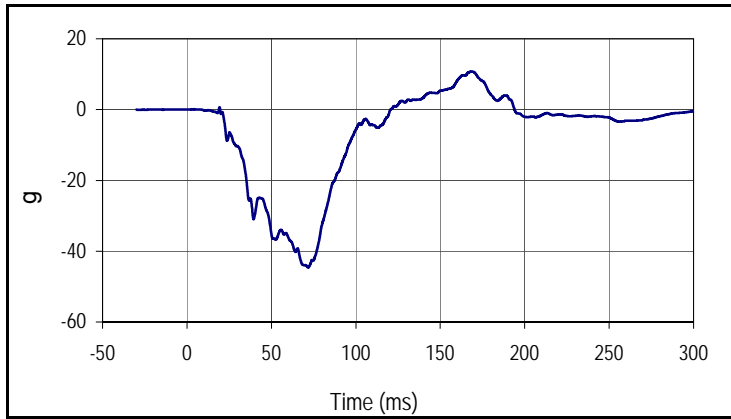
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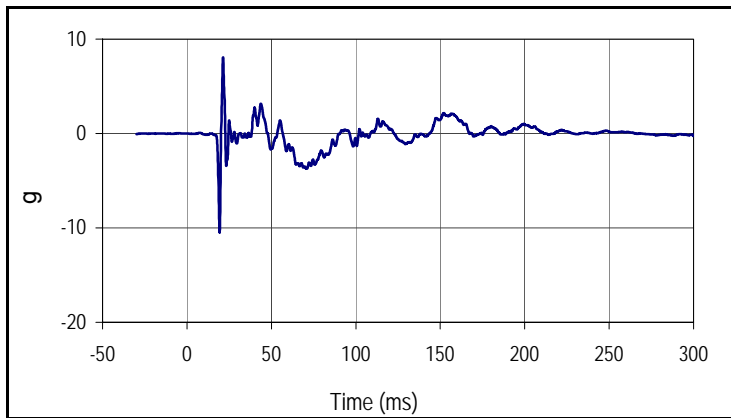
Curve Description			
Passenger Chest Deflection			
Plot No.		SAE Class	Units
020		600	mm
Max	Time	Min	Time
0.0	13.0	-15.2	69.3

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

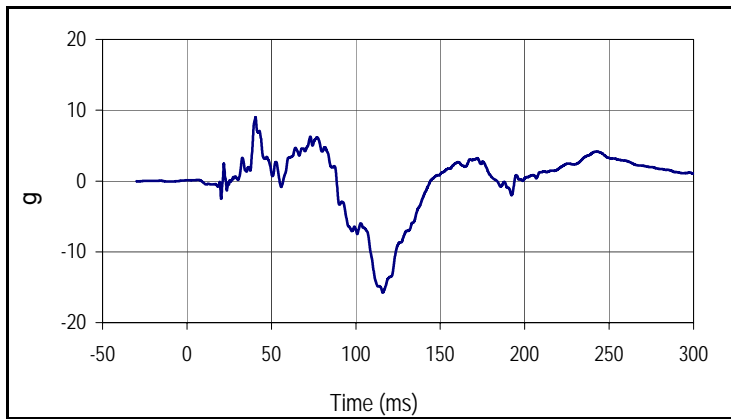
NHTSA No.: M20165100
 Test Date: 11/9/15



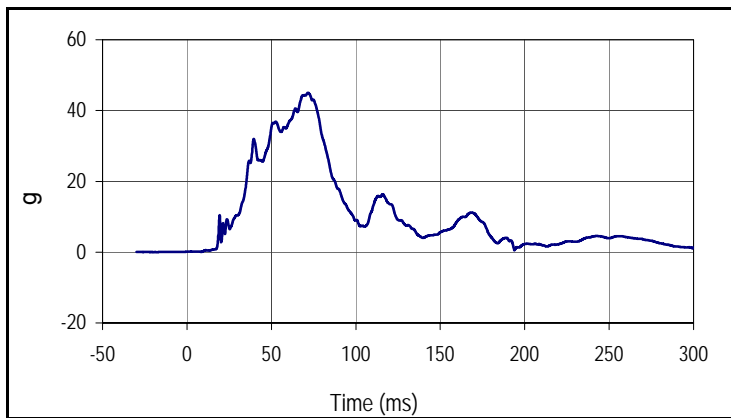
Curve Description			
Passenger Chest Acceleration X Primary			
Plot No.		SAE Class	Units
021		180	g
Max	Time	Min	Time
10.8	168.5	-44.6	71.7



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.		SAE Class	Units
022		180	g
Max	Time	Min	Time
8.1	21.4	-10.5	19.4



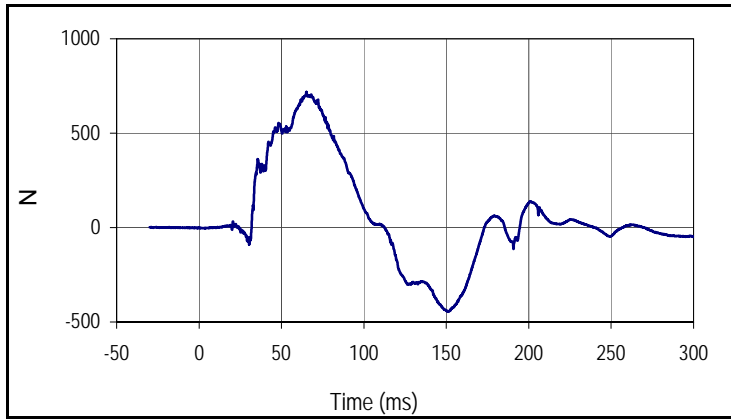
Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.		SAE Class	Units
023		180	g
Max	Time	Min	Time
9.0	40.6	-15.7	116.0



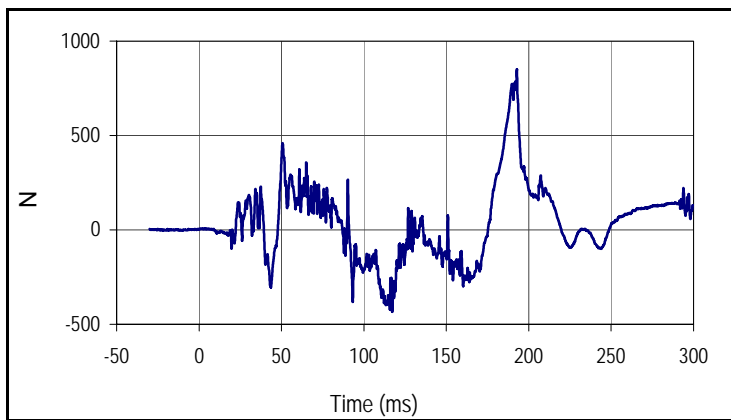
Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.		SAE Class	Units
024		180	g
Max	Time	Min	Time
45.0	71.7	0.0	8.6

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

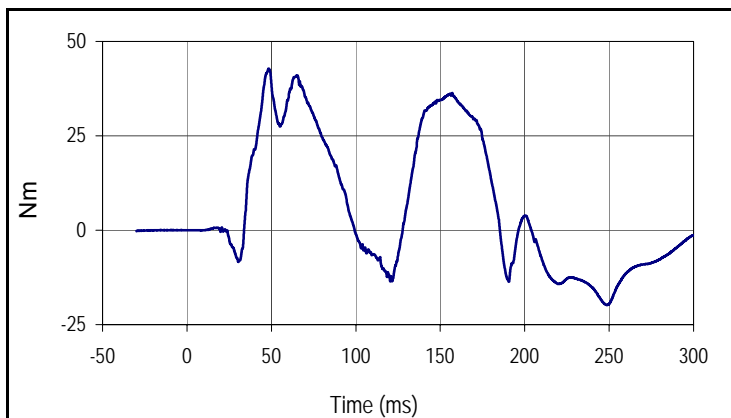
NHTSA No.: M20165100
 Test Date: 11/9/15



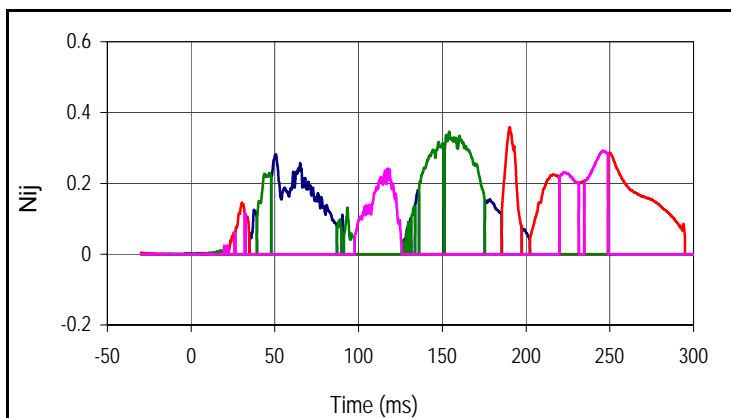
Curve Description			
Passenger Upper Neck Force X			
Plot No.		SAE Class	Units
025		1000	N
Max	Time	Min	Time
718.8	65.2	-445.4	151.0



Curve Description			
Passenger Upper Neck Force Z			
Plot No.		SAE Class	Units
026		1000	N
Max	Time	Min	Time
851.5	192.8	-433.9	117.2



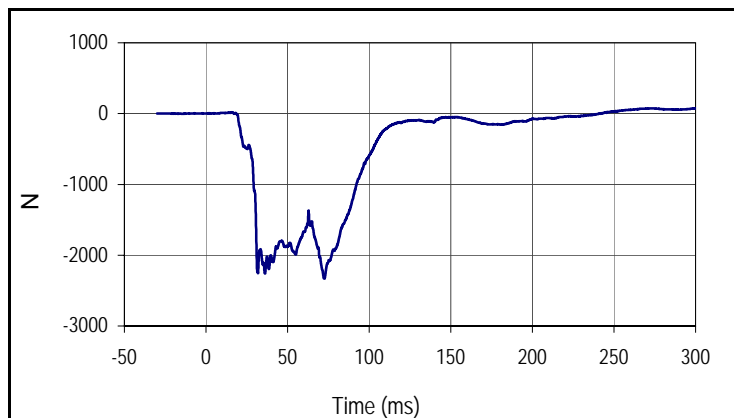
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.		SAE Class	Units
027		600	Nm
Max	Time	Min	Time
42.8	48.4	-19.9	248.7



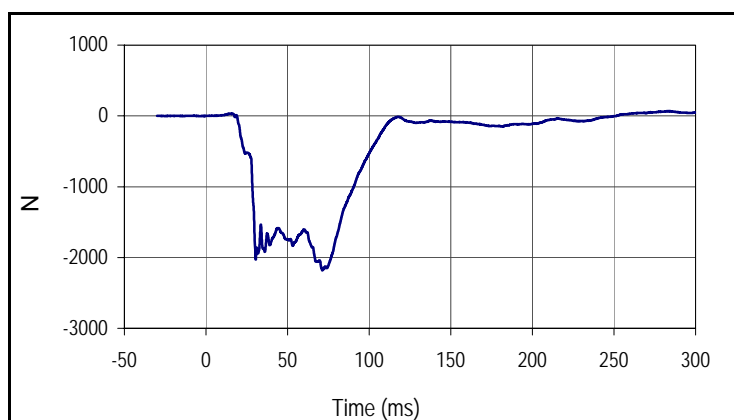
Curve Description		
Passenger Nij		
Units	Max	Time
Ntf	0.29	151.1
Nte	0.36	190.3
Ncf	0.35	154.2
Nce	0.29	246.1

Test Vehicle: 2016 Lexus ES 350 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20165100
 Test Date: 11/9/15



Curve Description			
Passenger Left Femur Force Z			
Plot No.		SAE Class	Units
029		600	N
Max	Time	Min	Time
74.8	273.4	-2332.9	72.6



Curve Description			
Passenger Right Femur Force Z			
Plot No.		SAE Class	Units
030		600	N
Max	Time	Min	Time
68.4	282.6	-2181.1	71.3

APPENDIX C
DUMMY 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: 10/26/15

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: 10/26/15

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

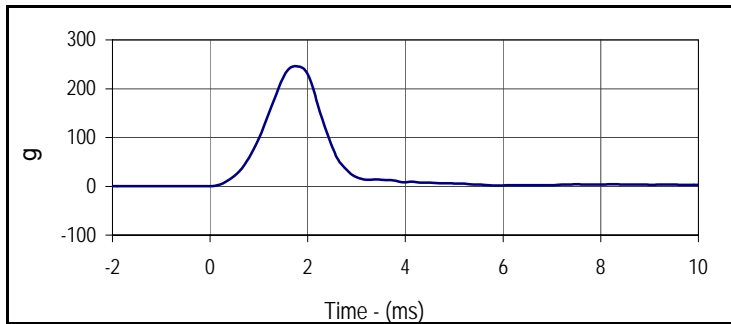
Test Date: 10/26/15



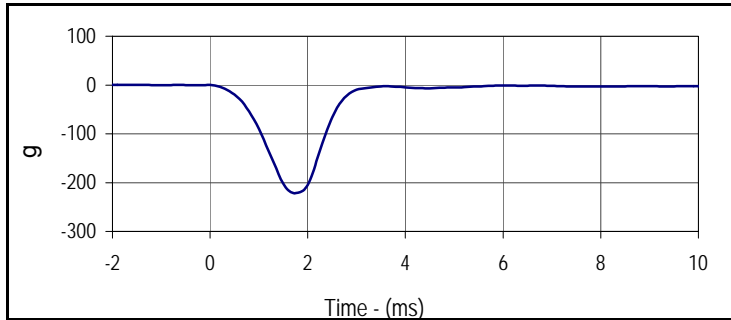
ATD Serial No.: 360

Test I.D.: M360HD011

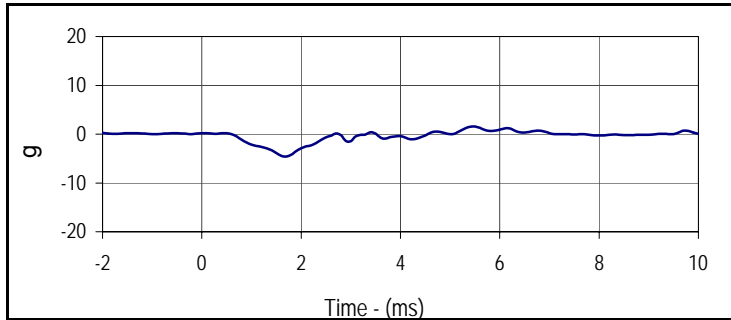
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	322	Pass
Temperature During Soak	Max	18.9 to 25.6	22.1	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.2	Pass
	Min		19.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.2	Pass
Peak Resultant Acceleration	g	225.0 to 275.0	245.8	Pass
Peak Lateral Acceleration	g	≤15.0	4.6	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	8.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



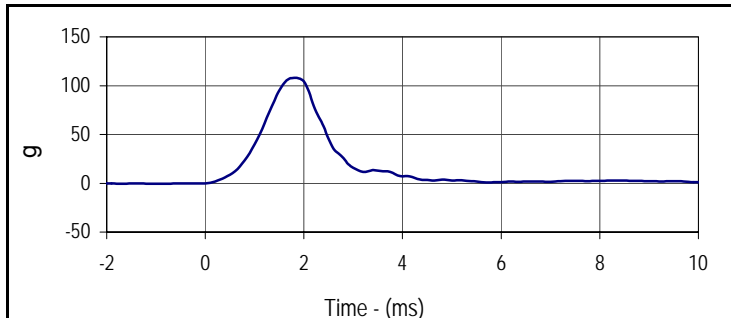
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
245.8	1.8	0.1	37.3



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
2.1	32.3	-221.2	1.7



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
1.6	5.5	-4.6	1.7



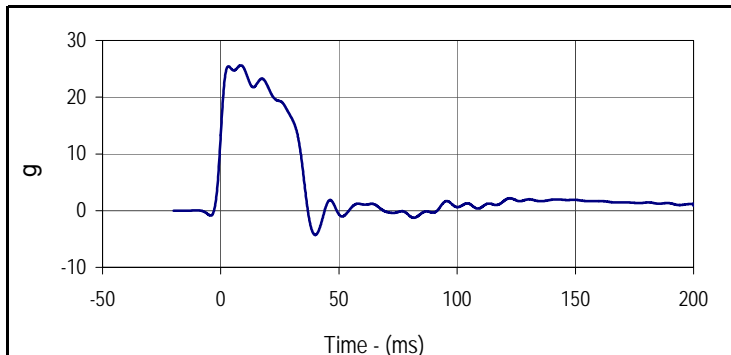
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
107.9	1.8	-1.8	97.8

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

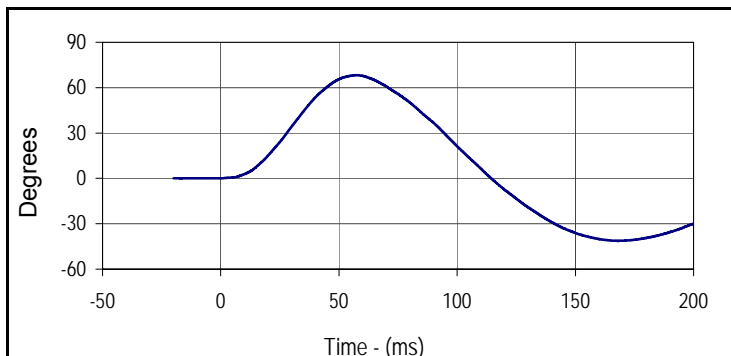
Test Date: 10/26/15
 Test I.D.: M360NF011



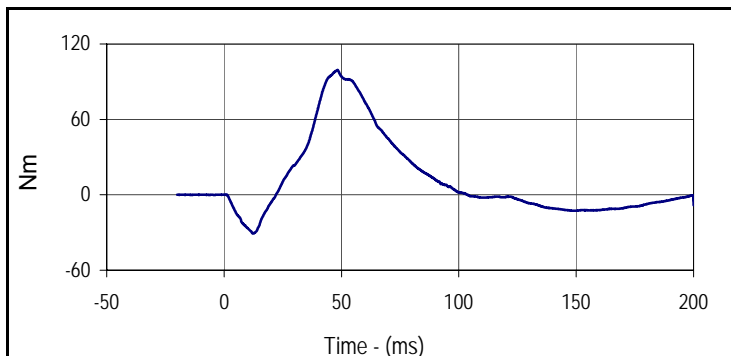
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	387	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.2	Pass
	Min		19.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	22.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.9	Pass
Pendulum Velocity	m/s	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 Msec.	22.5 to 27.5	24.9	Pass
	20 Msec.	17.6 to 22.6	21.8	Pass
	30 Msec.	12.5 to 18.5	16.3	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 29.0	16.3	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	35.4	Pass
Maximum "D" Plane Rotation	Max	64.0 to 78.0	68.2	Pass
	Time	57.0 to 64.0	57.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	114.5	Pass
Moment About Occ. Condyle	Max	88.1 to 108.5	99.4	Pass
	Time	47.0 to 58.0	48.4	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	103.7	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
25.6	8.5	-4.3	40.0



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
68.2	57.5	-41.3	168.0



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
99.4	48.4	-30.8	12.3

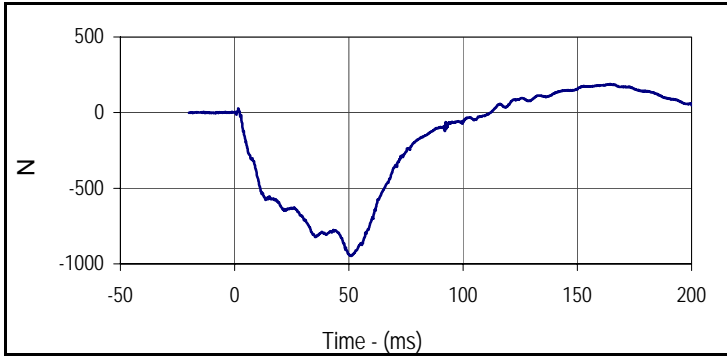
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 10/26/15

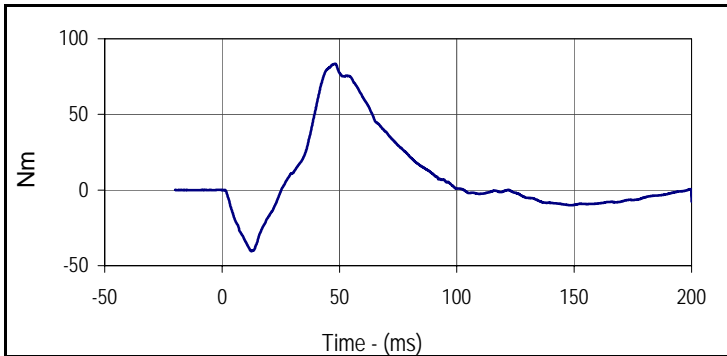


ATD Serial No.: 360

Test I.D.: M360NF011



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
189.0	164.3	-948.0	51.1



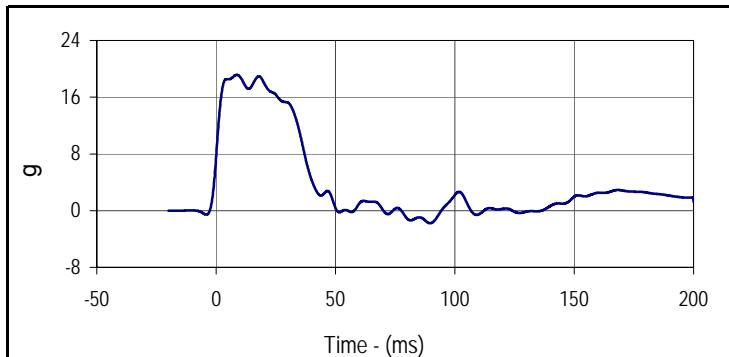
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
83.4	48.3	-40.4	12.5

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

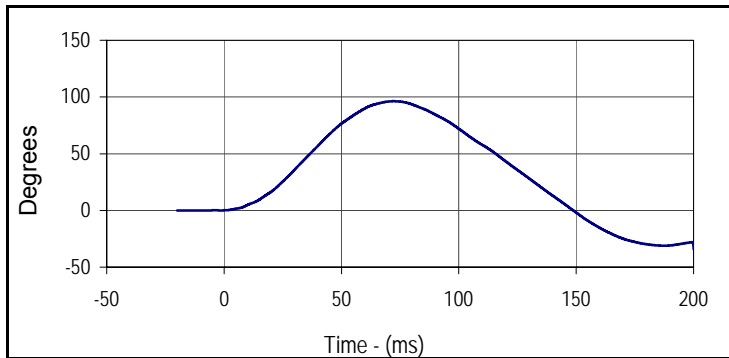
Test Date: 10/26/15
 Test I.D.: M360NE011



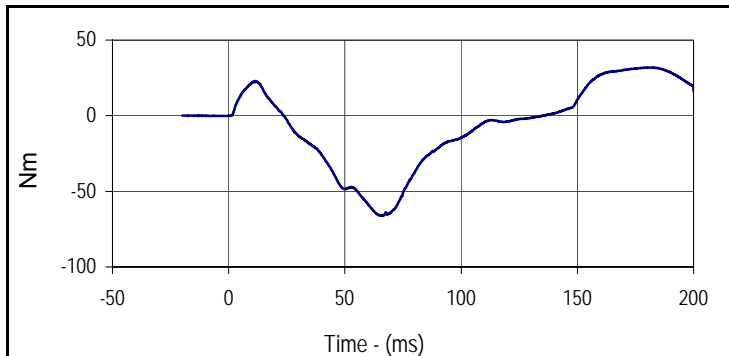
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	432	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.2	Pass
	Min		19.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	22.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.8	Pass
Pendulum Velocity	m/s	5.94 to 6.19	5.98	Pass
Pendulum Deceleration	10 Msec.	17.2 to 21.2	18.9	Pass
	20 Msec.	14.0 to 19.0	18.0	Pass
	30 Msec.	11.0 to 16.0	15.2	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 22.0	15.2	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	39.4	Pass
Maximum "D" Plane Rotation	Max	81.0 to 106.0	96.3	Pass
	Time	72.0 to 82.0	72.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	148.7	Pass
Moment About Occ. Condyle	Max	-52.9 to -79.9	-66.1	Pass
	Time	65.0 to 79.0	66.1	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	135.7	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
19.2	8.7	-1.8	89.7



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
96.3	72.2	-34.3	200.0



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.9	180.5	-66.1	66.1

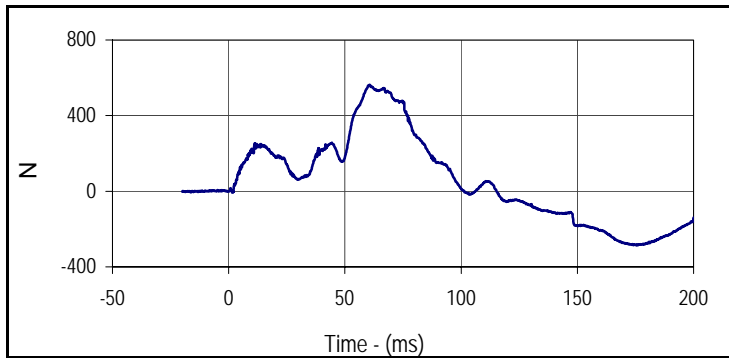
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 10/26/15

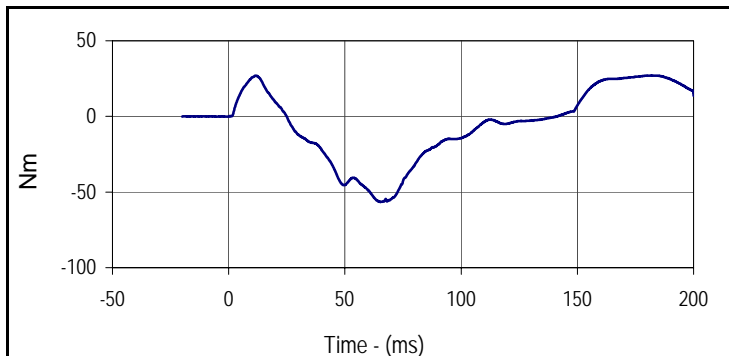


ATD Serial No.: 360

Test I.D.: M360NE011



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
562.7	60.6	-286.5	175.5



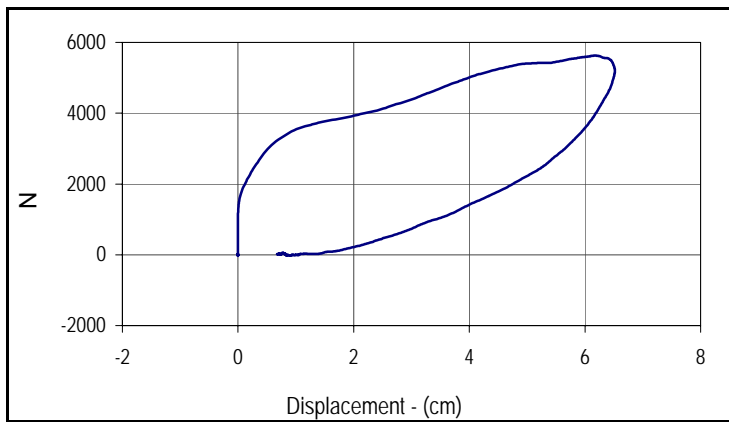
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
27.1	182.1	-56.5	65.3

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test
 ATD Serial No.: 360

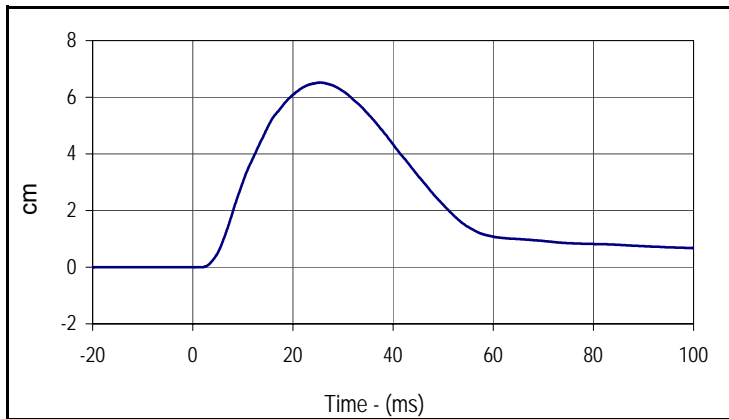
Test Date: 10/26/15
 Test I.D.: M360CH011



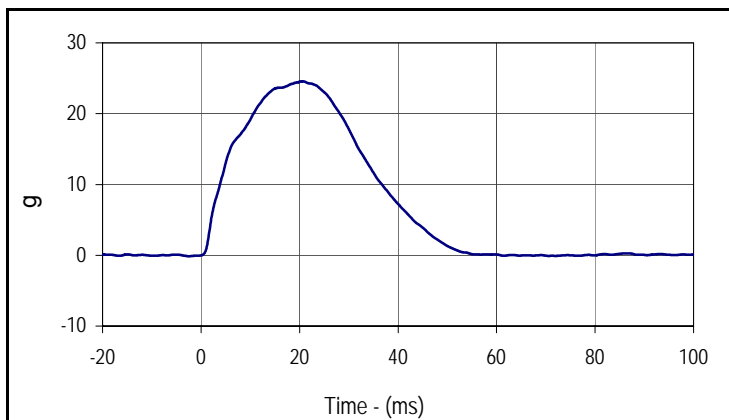
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	507	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.2	Pass
	Min		19.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.8	Pass
Probe Velocity	m/s	6.58 to 6.82	6.62	Pass
Peak Probe Force	N	5159 to 5893	5626	Pass
Peak Sternum Deflection	cm	6.35 to 7.26	6.52	Pass
Internal Hysteresis	%	69 to 85	71.0	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.0
Peak Probe Force		Peak Chest Deflection	
5626		6.52	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	cm
Max	Time	Min	Time
6.5	25.5	0.0	1.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
24.6	20.6	-0.1	-2.4

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

Test Date: 10/26/15



ATD Serial No.: 360

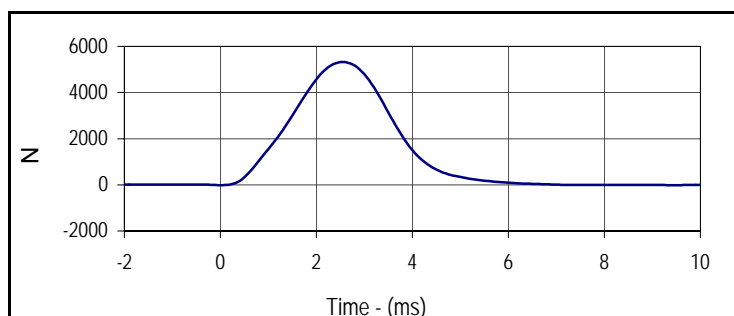
Test I.D.: M360LK011, M360RK011

Left Knee

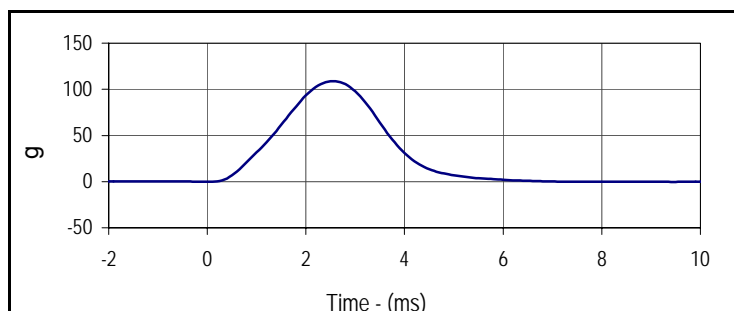
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	562	Pass
Temperature During Soak	Max	18.9 to 25.6	22.1	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.2	Pass
	Min		19.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.4	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5319	Pass
Overall Test Results				Pass

Right Knee

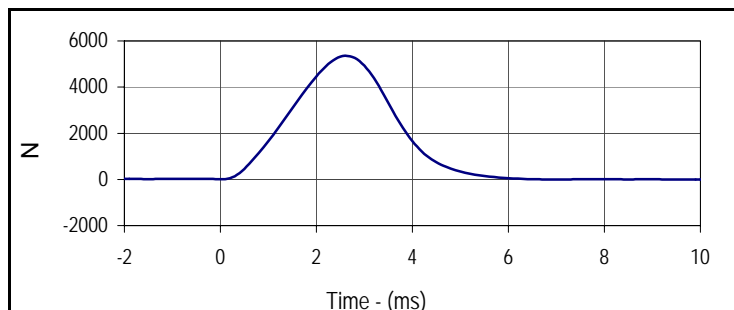
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5357	Pass
Overall Test Results				Pass



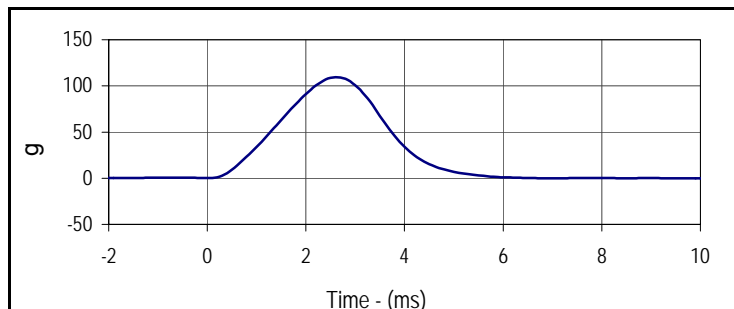
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
5319.1	2.5	-13.6	9.4



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
108.7	2.5	-0.3	9.4



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
5357.1	2.6	-5.6	14.6



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
109.5	2.6	-0.1	14.6

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

Test Date: 10/26/15
 Test I.D.: M360LF011_M360RF011

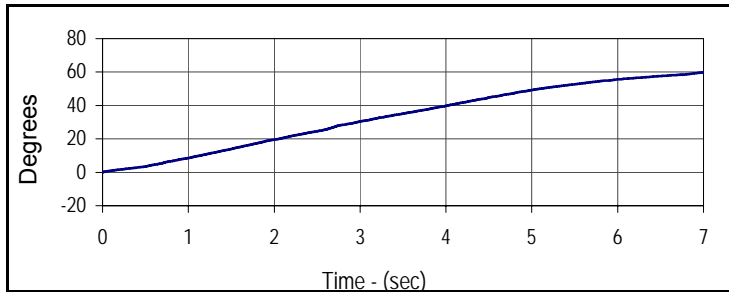


Left Hip Joint-Femur Results

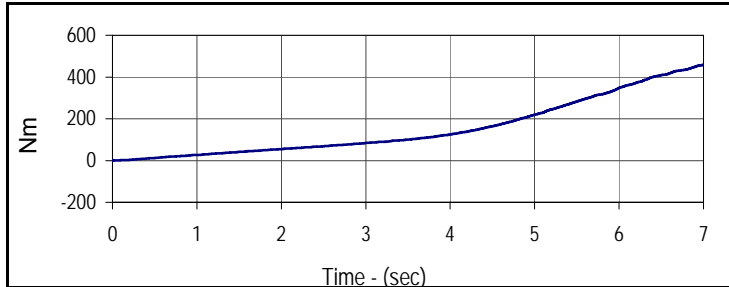
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	637	Pass
Temperature During Soak	Max	18.9 to 25.6	22.1	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.2	Pass
	Min		19.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.4	Pass
Rotation Rate	deg/sec	5 to 10	8.6	Pass
Femur Torque at 30°	Nm	≤ 95	80.4	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.2	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

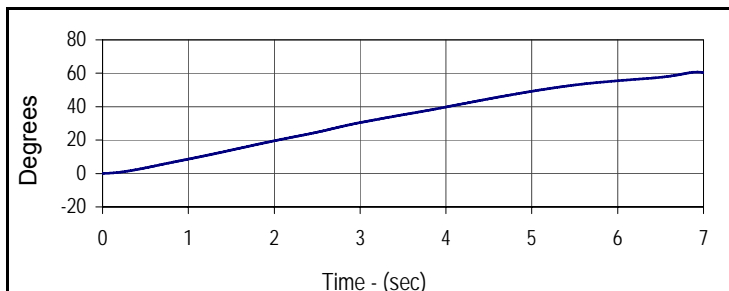
Rotation Rate	deg/sec	5 to 10	8.8	Pass
Femur Torque at 30°	Nm	≤ 95	79.7	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.3	Pass
Overall Test Results				Pass



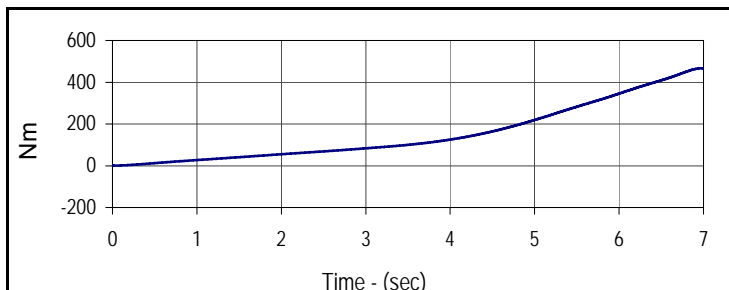
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
59.8	7.0	0.1	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
458.1	7.0	0.1	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
60.8	6.9	0.1	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
466.4	7.0	0.1	0.0

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

Test Date: 10/28/15

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: 10/28/15

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	16.8	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

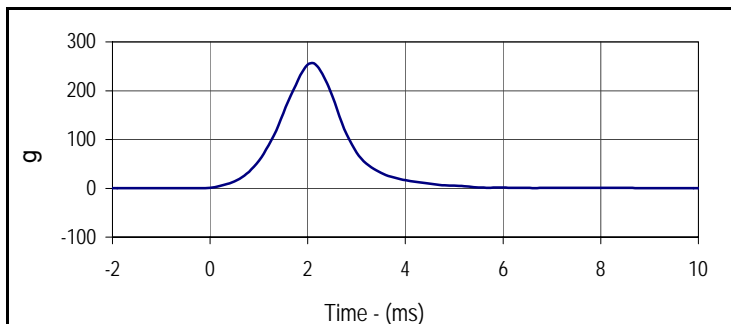
Test Date: 10/28/15



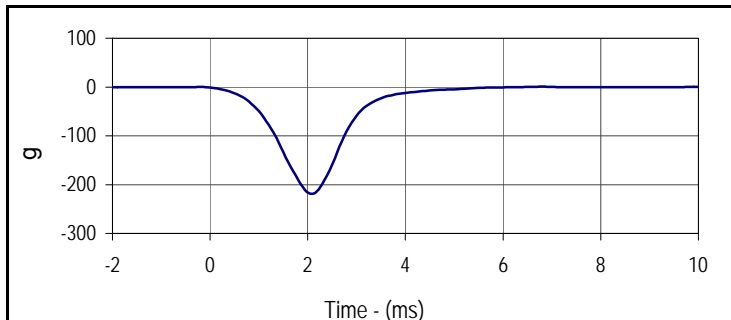
ATD Serial No.: 141

Test I.D.: F141HD069

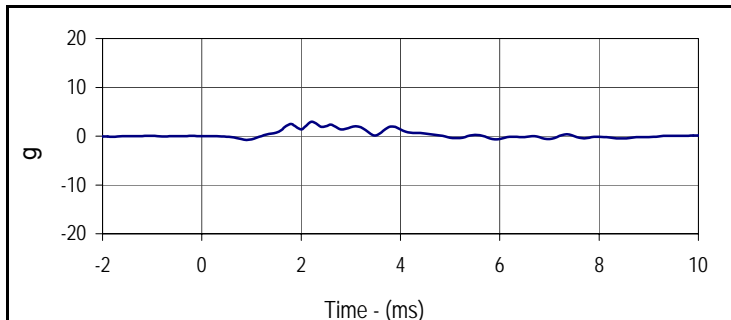
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	365	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	17.5	Pass
	Min		16.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	16.9	Pass
Peak Resultant Acceleration	g	250.0 to 300.0	256.8	Pass
Peak Lateral Acceleration	g	≤15.0	3.0	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



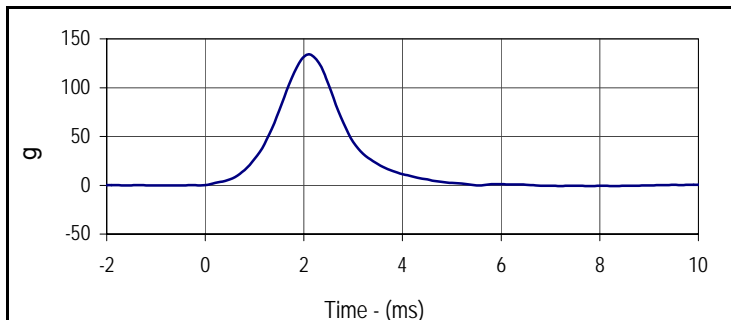
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
256.8	2.1	0.0	-0.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
0.7	6.8	-218.9	2.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
3.0	2.2	-0.8	0.9



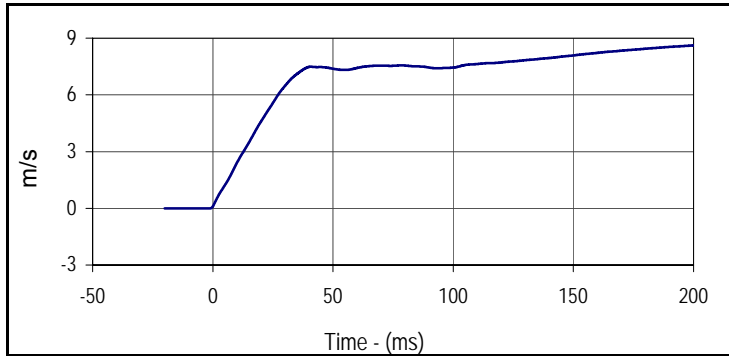
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
134.2	2.1	-0.7	7.8

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

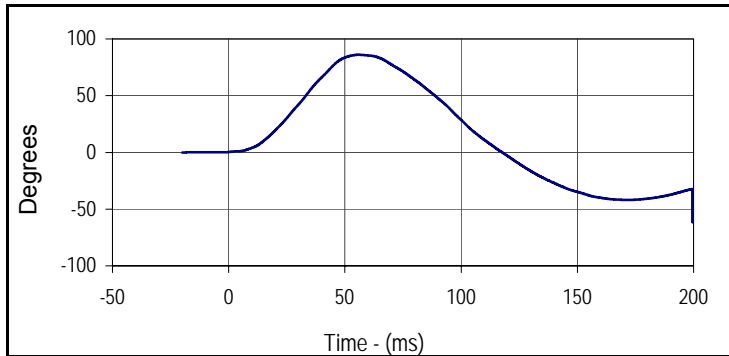
Test Date: 10/28/15
 Test I.D.: F141NF069



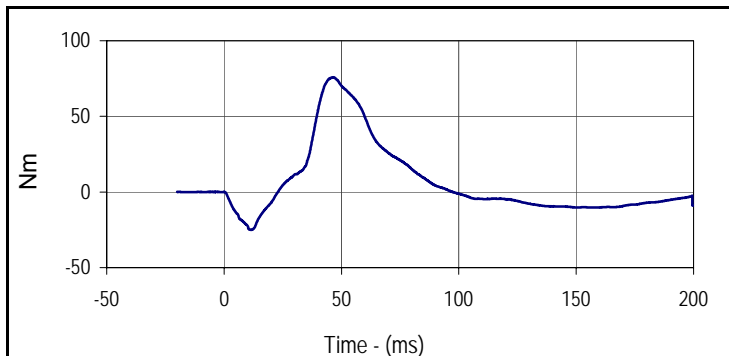
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	430	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	17.5	Pass	
	Min		16.6	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	16.6	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.03	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.6	Pass
	30 Msec.	m/s	5.8 to 7.0	6.5	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	86.1	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	75.8	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	82.9	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.6	199.4	0.0	-1.4



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
86.1	55.9	-61.3	199.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
75.8	46.8	-25.1	11.6

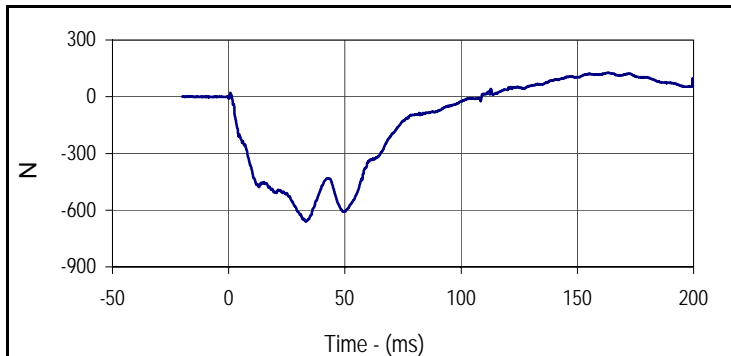
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 10/28/15

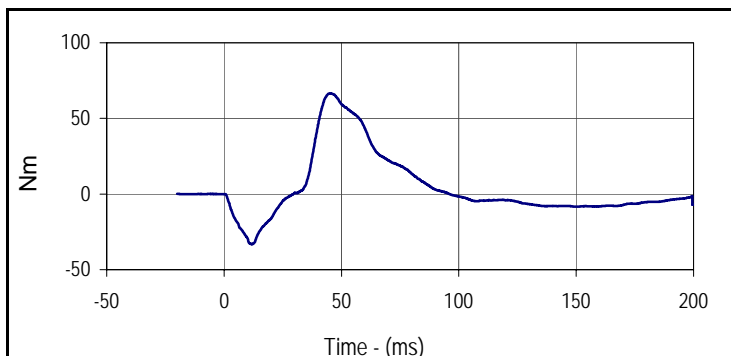


ATD Serial No.: 141

Test I.D.: F141NF069



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
127.2	163.1	-659.1	33.2



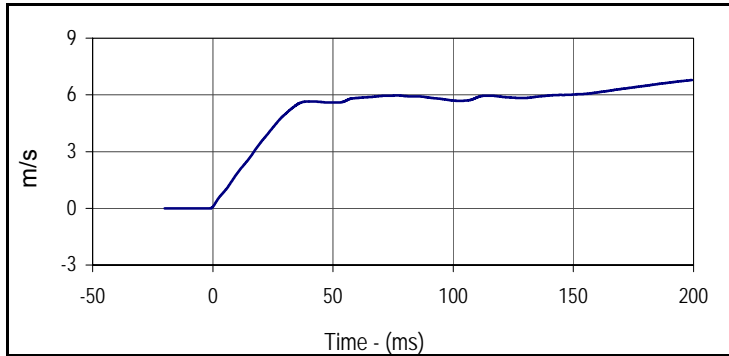
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
66.5	45.4	-33.3	11.9

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

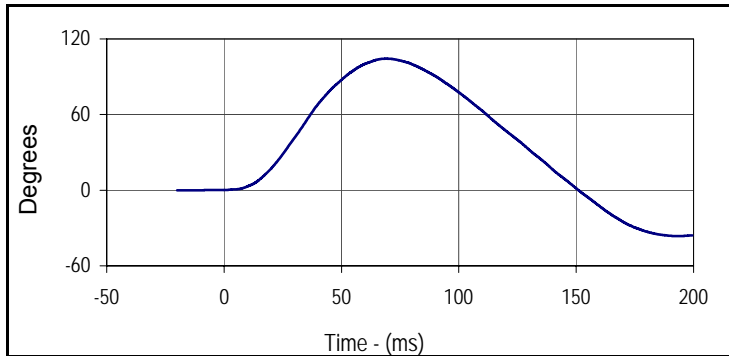
Test Date: 10/28/15
 Test I.D.: F141NE069



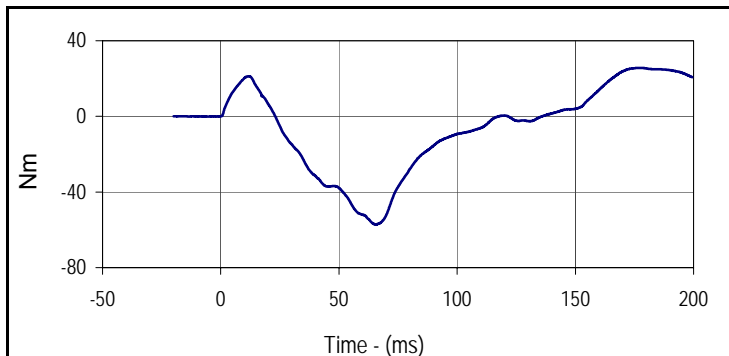
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	495	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	17.5	Pass	
	Min		16.6	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	16.7	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.01	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	5.0	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	104.4	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-57.2	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	98.5	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.8	199.4	0.0	-1.4



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
104.4	69.1	-36.4	193.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
25.7	178.0	-57.2	65.7

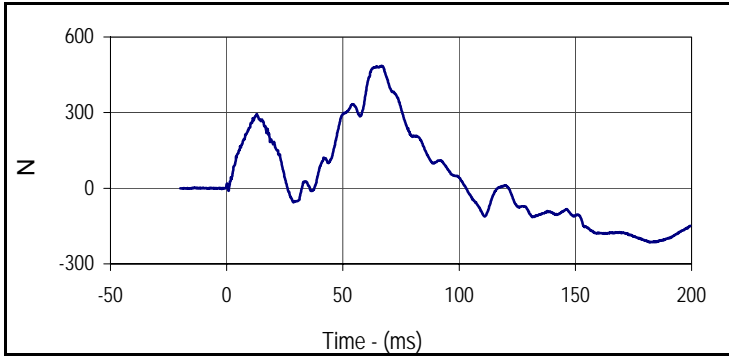
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 10/28/15

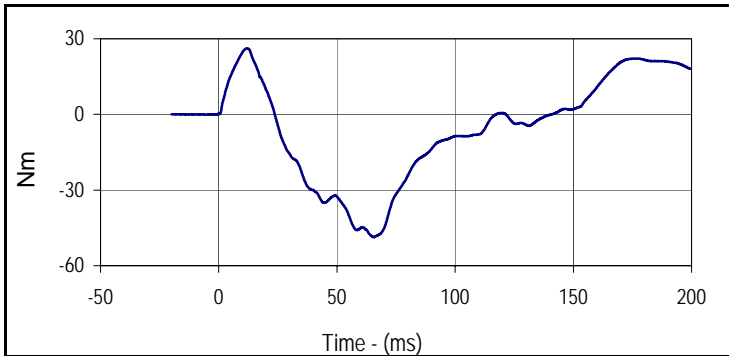


ATD Serial No.: 141

Test I.D.: F141NE069



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
485.6	66.6	-214.6	181.9



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
26.2	12.1	-48.7	65.7

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

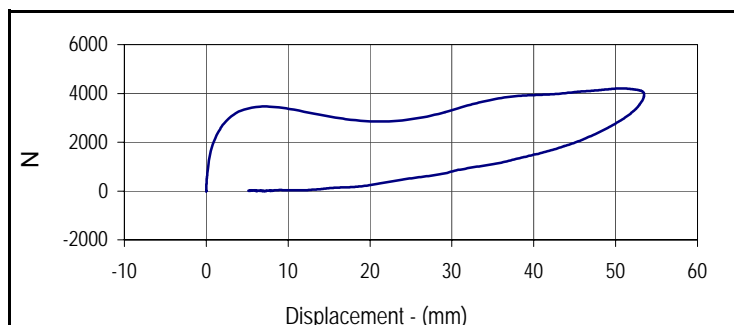
Test Date: 10/28/15



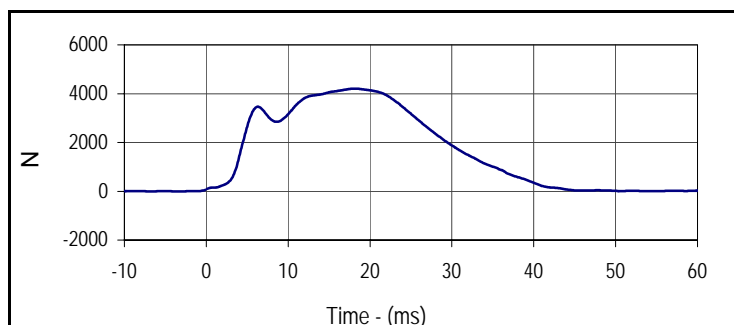
ATD Serial No.: 141

Test I.D.: F141CH069

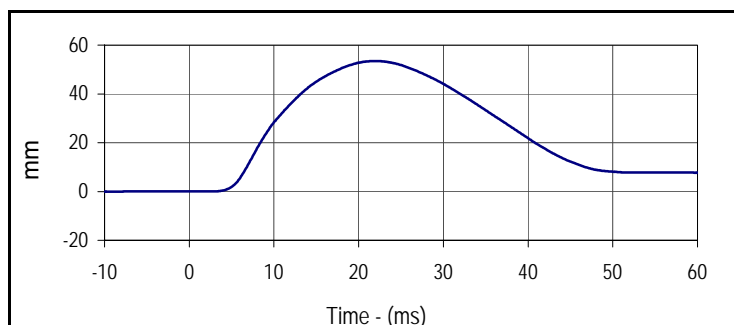
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	540	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	17.5	Pass
	Min		16.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.2	Pass
Probe Velocity	m/s	6.59 to 6.83	6.82	Pass
Peak Chest Deflection	mm	50.0 to 58.0	53.5	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4198	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4205	Pass
Internal Hysteresis	%	69 to 85	73.2	Pass
Overall Test Results				Pass



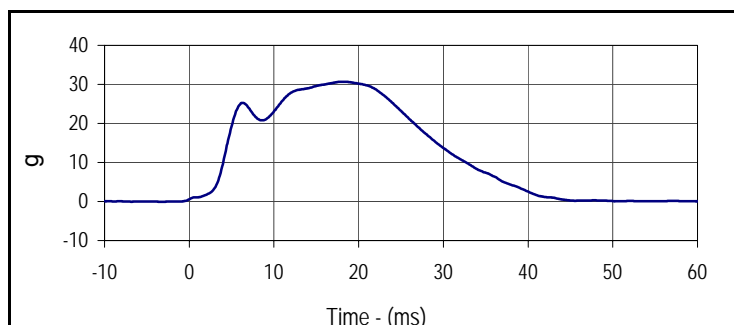
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	73.2
Peak Probe Force		Peak Chest Deflection	
4205.0		53.5	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4205.0	18.2	-9.9	-3.2



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
53.5	21.9	0.0	-9.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
30.7	18.2	-0.1	-3.2

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

Test Date: 10/28/15



ATD Serial No.: 141

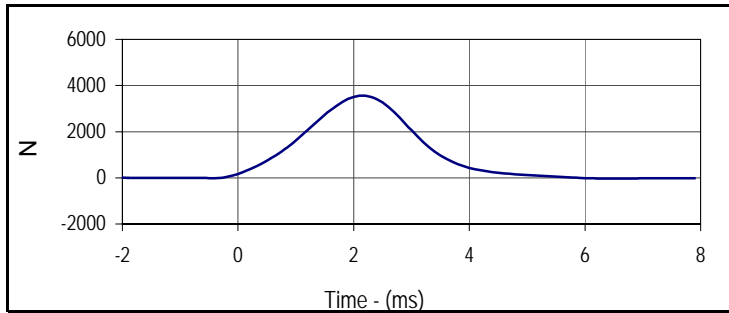
Test I.D.: F141LK069 , F141RK069

Left Knee

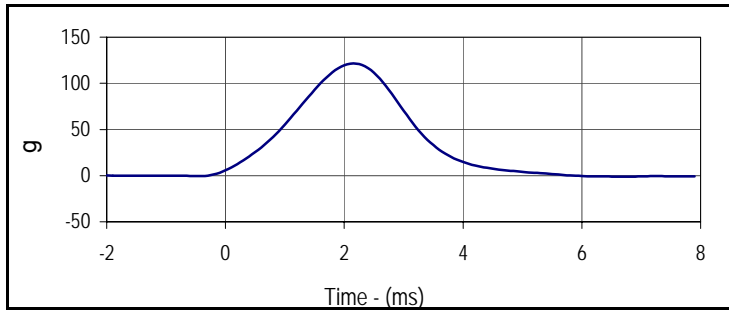
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	595	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	17.5	Pass
	Min		16.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.3	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	3450 to 4060	3557	Pass
Overall Test Results				Pass

Right Knee

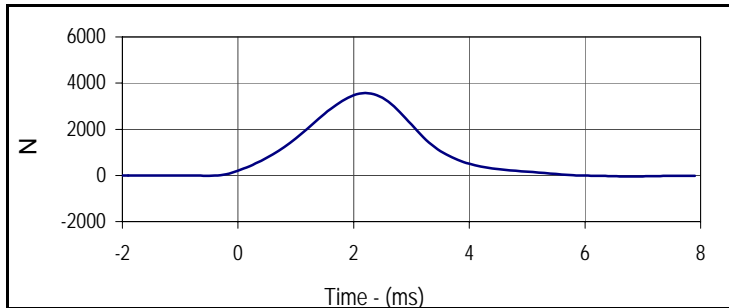
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	3450 to 4060	3568	Pass
Overall Test Results				Pass



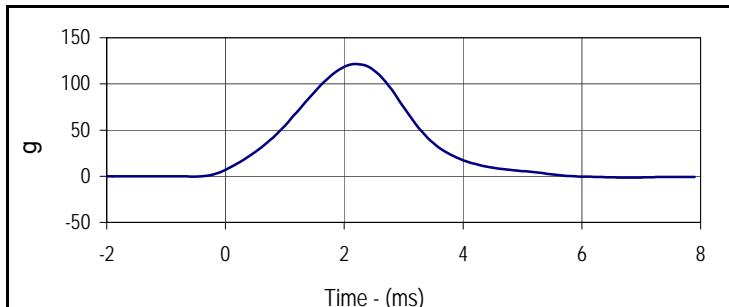
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3556.5	2.2	-32.3	6.7



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
121.3	2.2	-1.1	6.7



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
3568.0	2.2	-45.2	6.8



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
121.7	2.2	-1.5	6.8

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

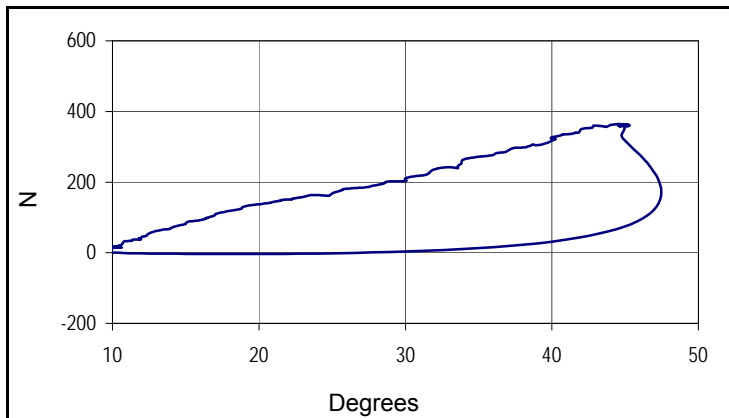
Test Date: 10/28/15



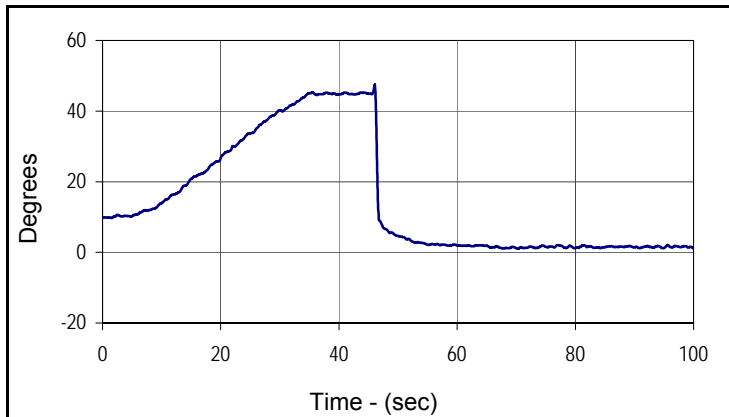
ATD Serial No.: 141

Test I.D.: TF069

Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	660	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	17.5	Pass
	Min		16.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	17.5	Pass
Initial Reference Plane Angle	Degrees	≤ 20	9.9	Pass
Peak Force at 45° +/-0.5°	Newtons	320.0 to 390.0	364.1	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.0	Pass
Final Reference Plane Angle	Degrees	+/-8	1.1	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
364.1		47.5



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
47.5	46.1	1.0	70.3

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

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

Test Date: 11/11/15

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: 11/11/15

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

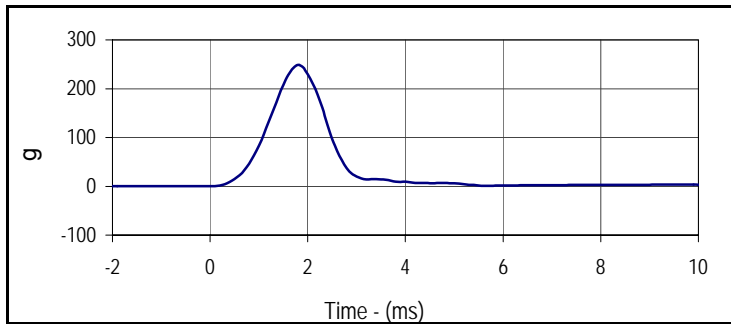
Test Date: 11/11/15



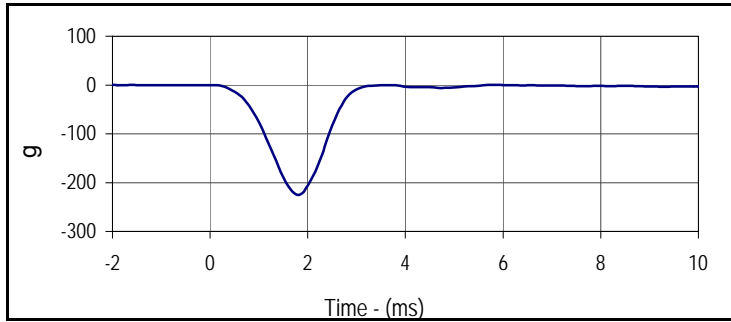
ATD Serial No.: 360

Test I.D.: M360HD012

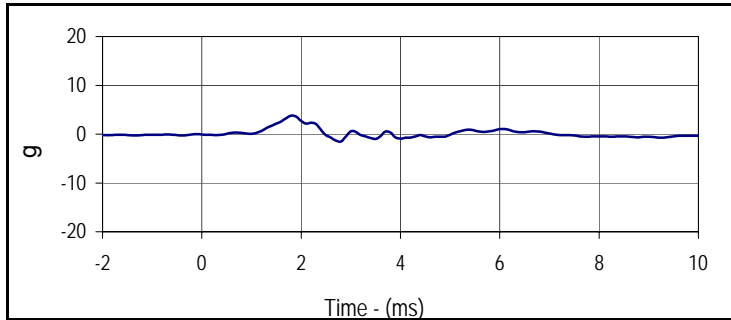
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	405	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	22.7	Pass
	Min		22.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass
Peak Resultant Acceleration	g	225.0 to 275.0	248.7	Pass
Peak Lateral Acceleration	g	≤15.0	3.8	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	8.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



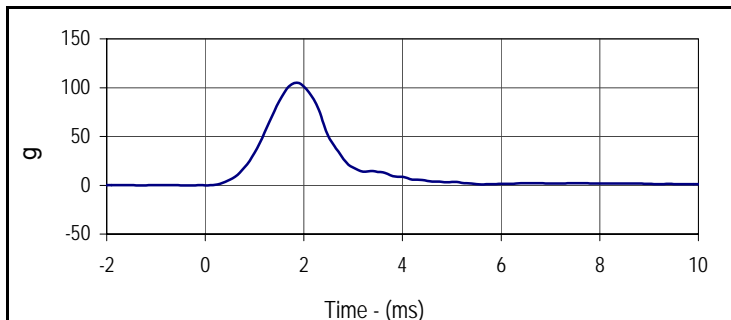
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
248.7	1.8	0.0	33.7



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.3	12.5	-225.5	1.8



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
3.8	1.8	-1.5	2.8



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
104.8	1.8	-2.1	97.2

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

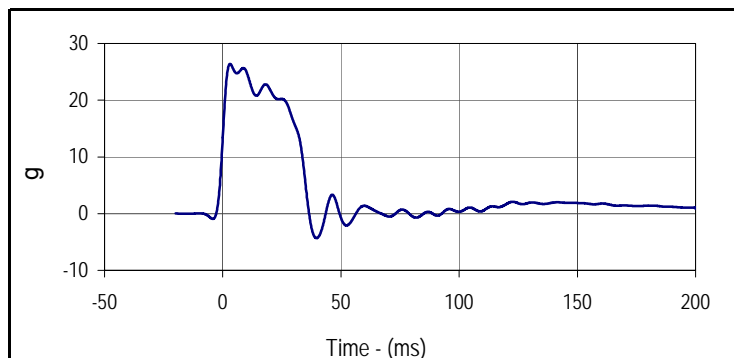
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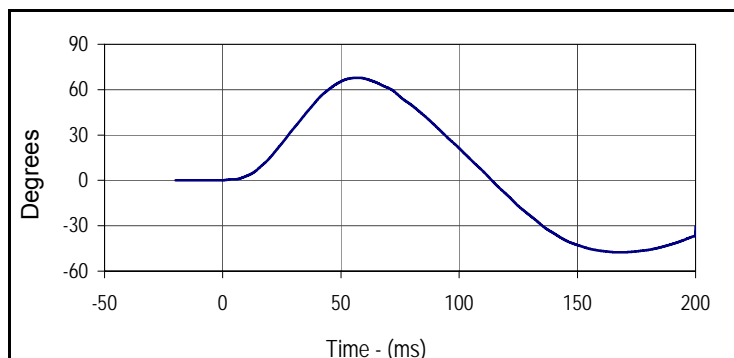
ATD Serial No.: 360

Test I.D.: M360NF012

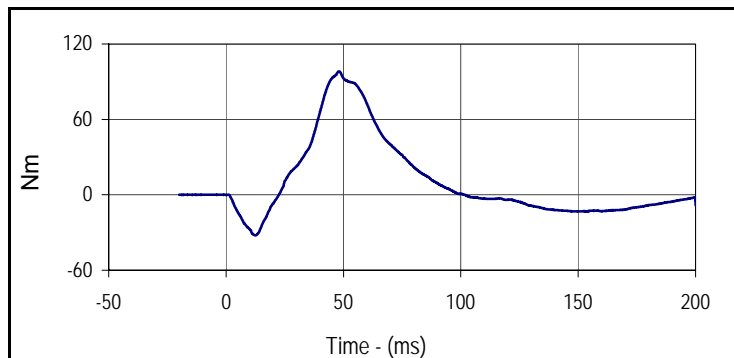
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	470	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	22.7	Pass
	Min		22.5	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass
Pendulum Velocity	m/s	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 Msec.	22.5 to 27.5	25.0	Pass
	20 Msec.	17.6 to 22.6	21.9	Pass
	30 Msec.	12.5 to 18.5	16.1	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 29.0	16.1	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	35.1	Pass
Maximum "D" Plane Rotation	Max	64.0 to 78.0	67.9	Pass
	Time	57.0 to 64.0	57.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	113.9	Pass
Moment About Occ. Condyle	Max	88.1 to 108.5	98.1	Pass
	Time	47.0 to 58.0	47.9	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	101.7	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
26.4	3.1	-4.3	39.6



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
67.9	57.2	-47.6	168.1



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
98.1	47.9	-32.3	12.5

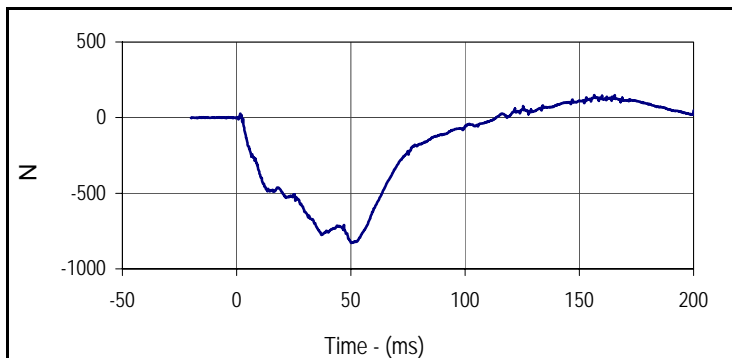
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 11/11/15

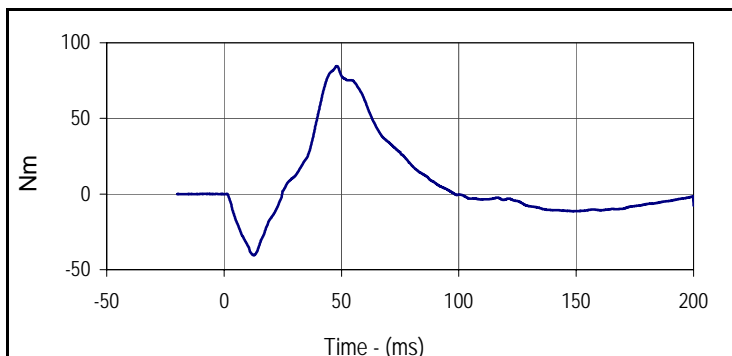


ATD Serial No.: 360

Test I.D.: M360NF012



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
149.4	156.5	-829.4	50.2



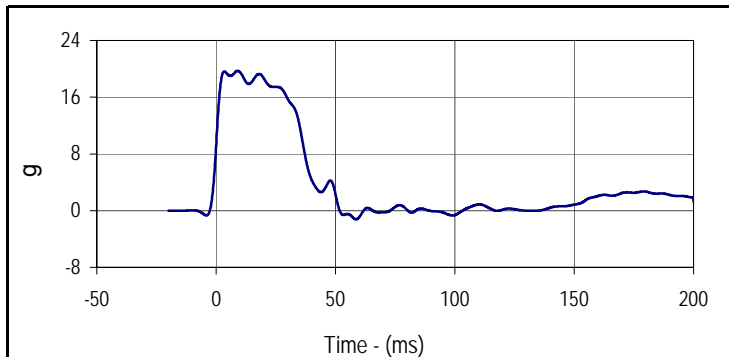
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
84.5	47.9	-40.5	12.7

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

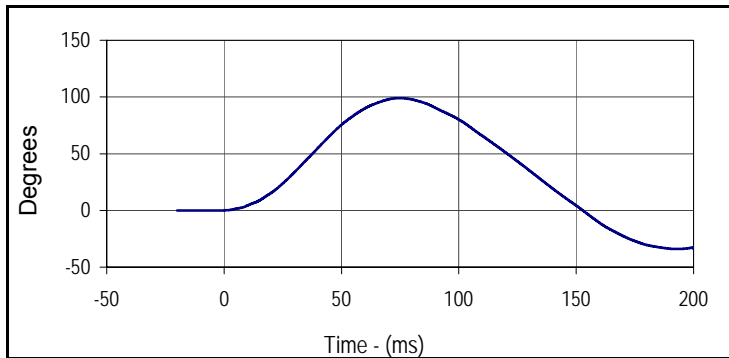
Test Date: 11/11/15
 Test I.D.: M360NE012



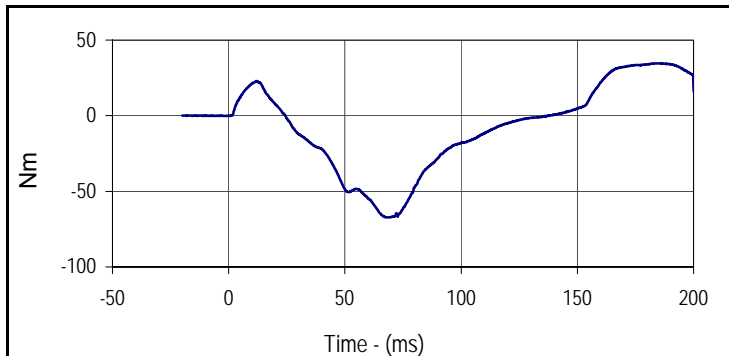
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	515	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	22.7	Pass
	Min		22.5	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass
Pendulum Velocity	m/s	5.94 to 6.19	6.01	Pass
Pendulum Deceleration	10 Msec.	17.2 to 21.2	19.5	Pass
	20 Msec.	14.0 to 19.0	18.6	Pass
	30 Msec.	11.0 to 16.0	15.7	Pass
Peak Pendulum Decel. after 30 Msec.	g	≤ 22.0	15.7	Pass
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	39.3	Pass
Maximum "D" Plane Rotation	Max	81.0 to 106.0	99.0	Pass
	Time	72.0 to 82.0	74.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	152.8	Pass
Moment About Occ. Condyle	Max	-52.9 to -79.9	-67.3	Pass
	Time	65.0 to 79.0	68.3	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	137.8	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
19.7	9.0	-1.2	58.6



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
99.0	74.9	-34.3	200.0



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
34.6	185.2	-67.3	68.3

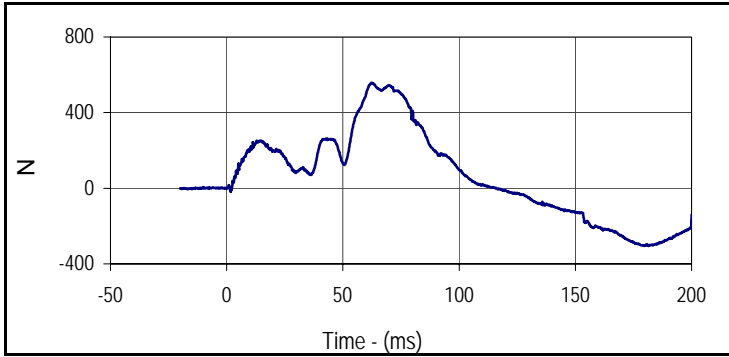
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 11/11/15

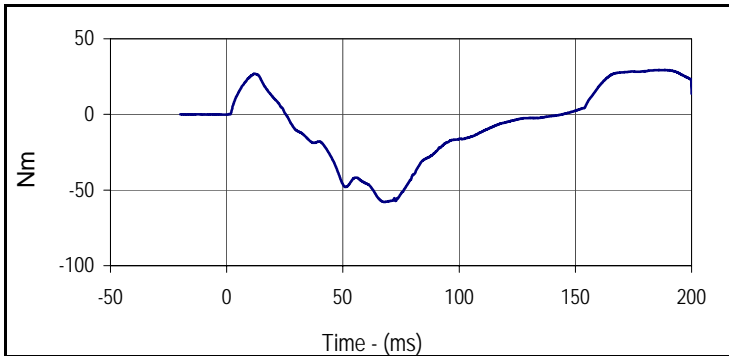


ATD Serial No.: 360

Test I.D.: M360NE012



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
557.9	62.5	-305.1	179.7



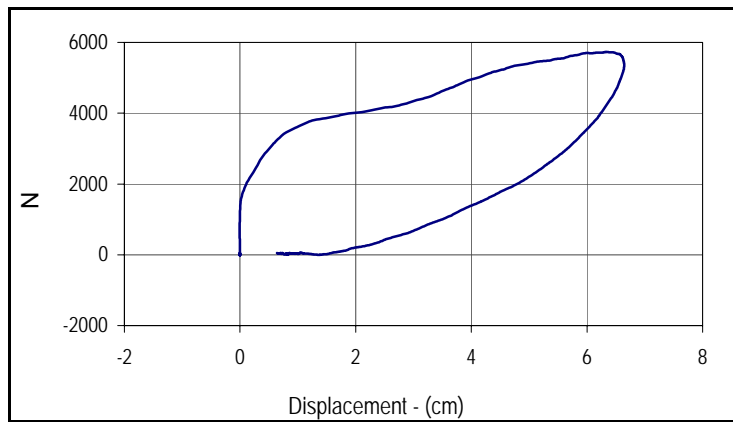
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
29.4	188.5	-57.9	68.2

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test
 ATD Serial No.: 360

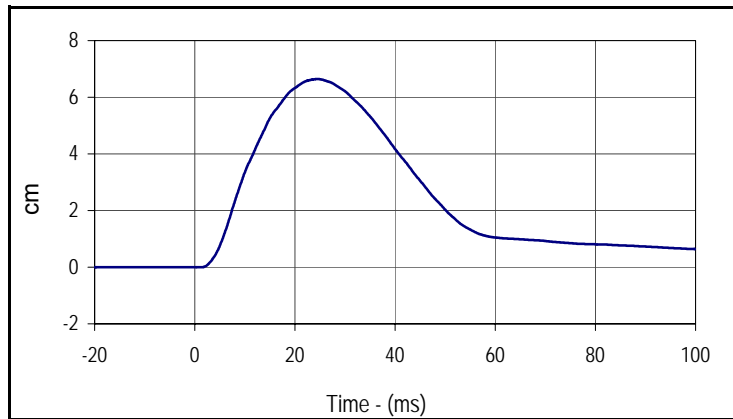
Test Date: 11/11/15
 Test I.D.: M360CH012



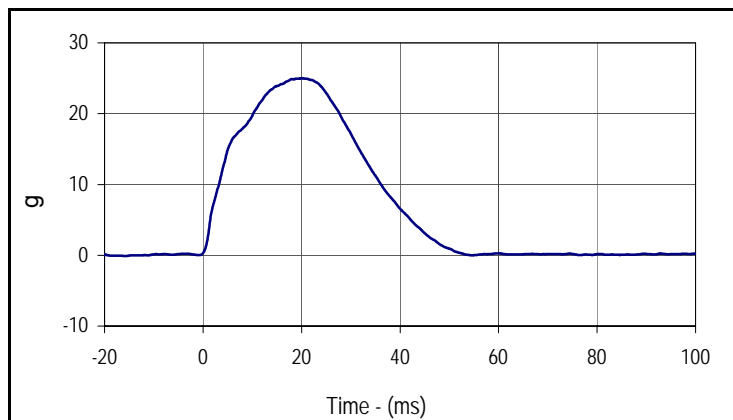
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	590	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	22.7	Pass
	Min		22.5	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass
Probe Velocity	m/s	6.58 to 6.82	6.62	Pass
Peak Probe Force	Newtons	5159 to 5893	5729	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.64	Pass
Internal Hysteresis	%	69 to 85	70.5	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	70.5
Peak Probe Force		Peak Chest Deflection	
5729		6.64	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	cm
Max	Time	Min	Time
6.6	24.5	0.0	1.1



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
25.0	20.1	-0.1	-15.7

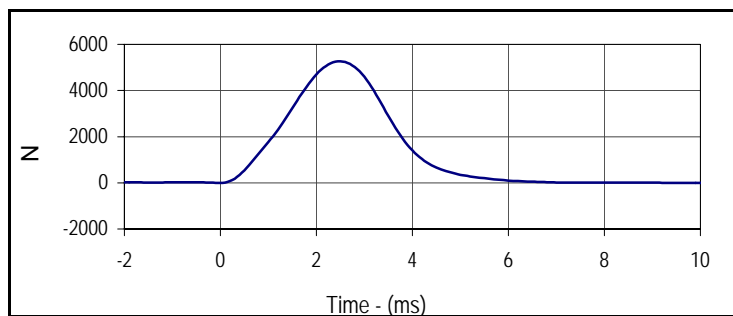


Left Knee

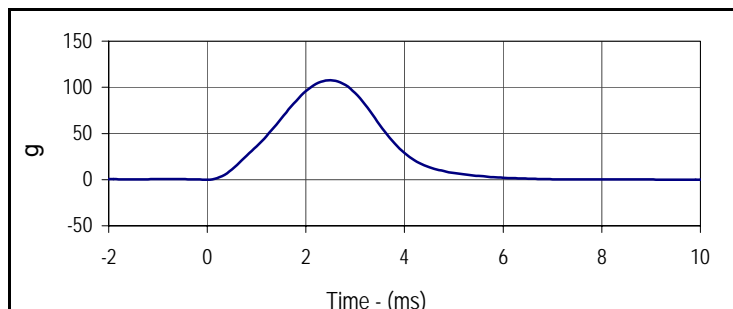
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	645	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	22.7	Pass
	Min		22.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5262	Pass
Overall Test Results				Pass

Right Knee

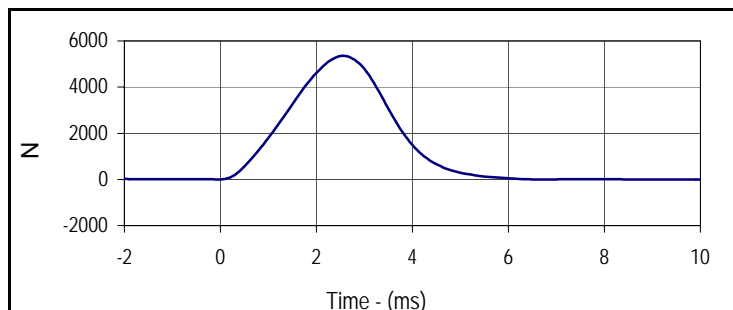
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	N	4715 to 5782	5347	Pass
Overall Test Results				Pass



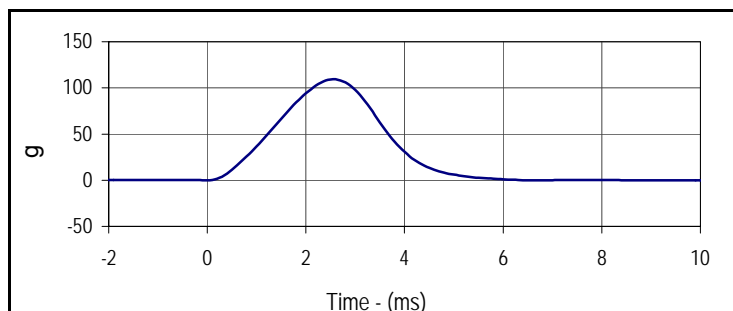
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
5261.9	2.5	-5.1	12.4



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
107.5	2.5	-0.1	12.4



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
5347.5	2.6	-15.5	11.5



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
109.3	2.6	-0.3	11.5

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

Test Date: 11/11/15
 Test I.D.: M360LF012, M360RF012

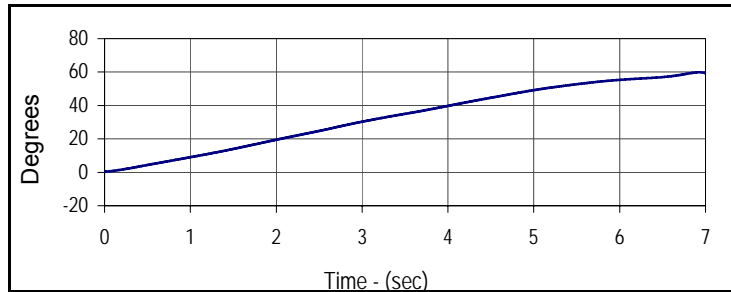


Left Hip Joint-Femur Results

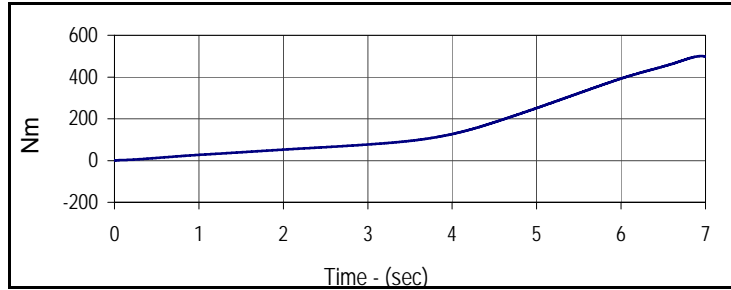
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	720	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	22.7	Pass
	Min		22.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.5	Pass
Rotation Rate	deg/sec	5 to 10	8.6	Pass
Femur Torque at 30°	Nm	≤ 95	73.9	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	45.3	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

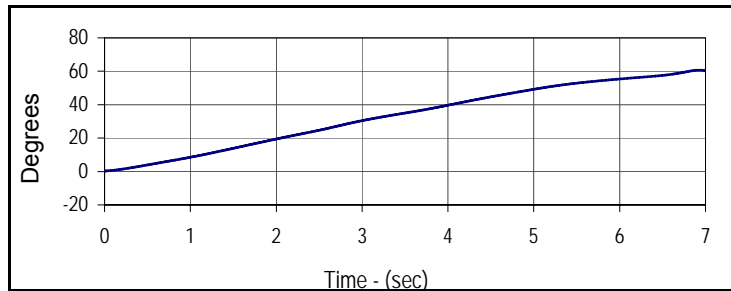
Rotation Rate	deg/sec	5 to 10	8.8	Pass
Femur Torque at 30°	Nm	≤ 95	81.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	47.3	Pass
Overall Test Results				Pass



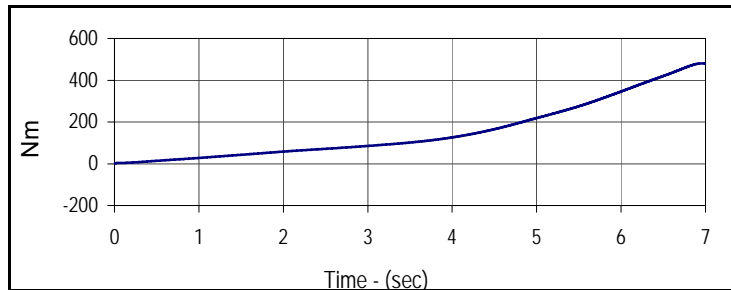
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
59.8	6.9	0.4	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
500.2	6.9	0.4	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
60.7	6.9	0.4	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
480.7	7.0	0.4	0.0

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

Test Date: 11/12/15

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: 11/12/15

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	20.2	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

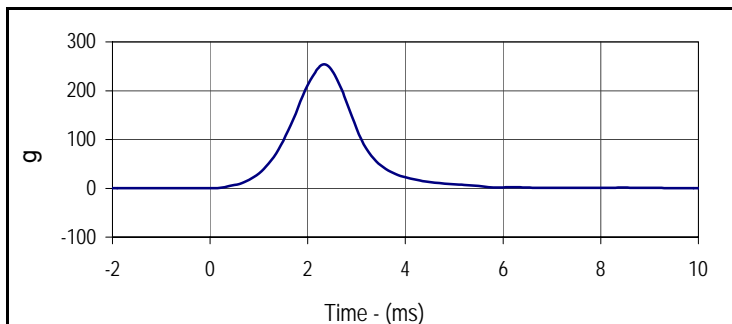
Test Date: 11/12/15



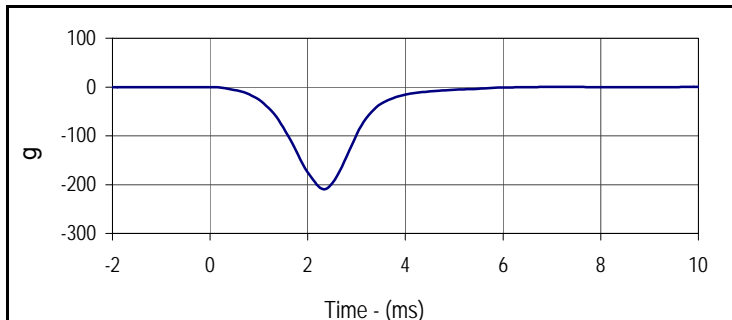
ATD Serial No.: 141

Test I.D.: F141HD070

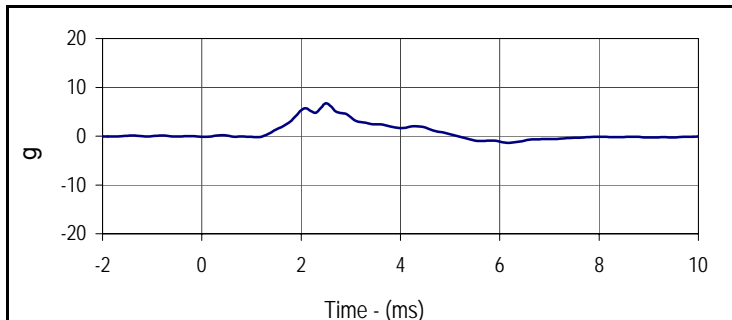
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	542	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.2	Pass
Peak Resultant Acceleration	g	250.0 to 300.0	253.5	Pass
Peak Lateral Acceleration	g	≤15.0	6.7	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	7.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



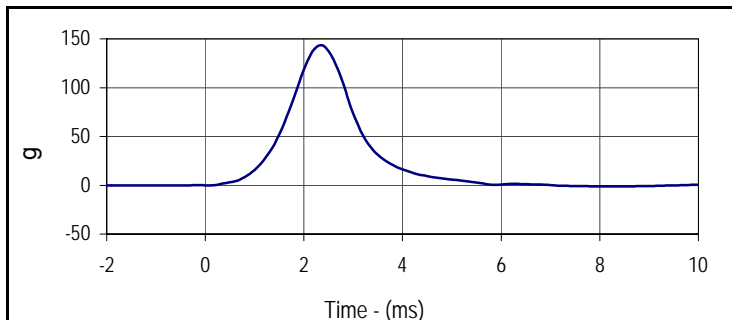
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
253.5	2.3	0.0	172.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
0.5	7.1	-209.1	2.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
6.7	2.5	-1.4	6.2



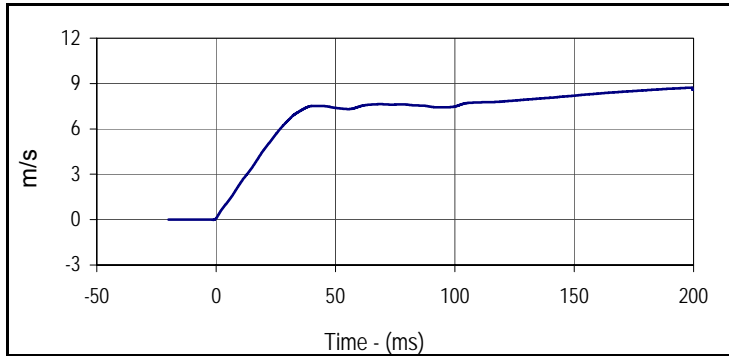
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
143.1	2.3	-1.2	8.5

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

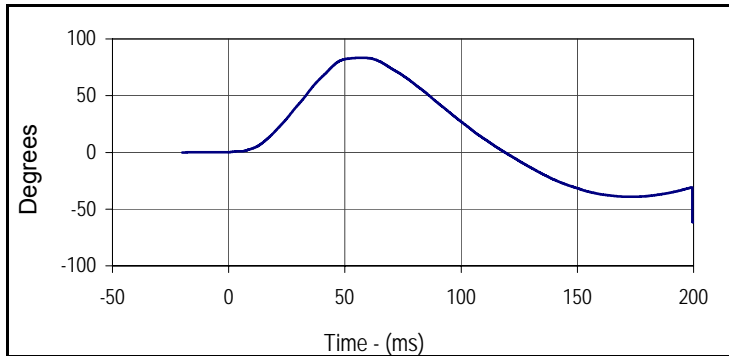
Test Date: 11/12/15
 Test I.D.: F141NF070



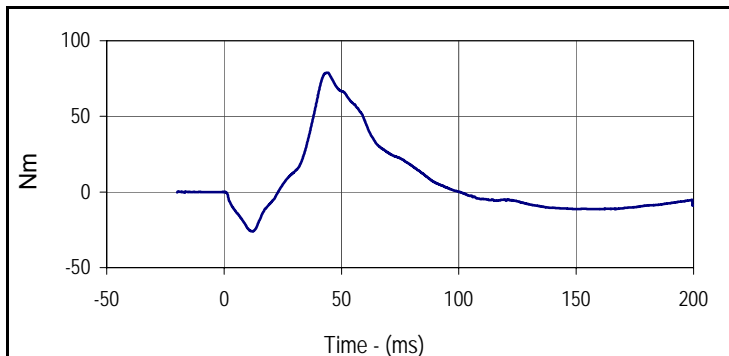
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	607	Pass	
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass	
	Min		20.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	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	4.6	Pass
	30 Msec.	m/s	5.8 to 7.0	6.5	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	83.4	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	76.6	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	85.3	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.7	199.4	0.0	-1.2



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
83.4	57.1	-61.3	199.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
78.8	44.1	-26.0	12.1

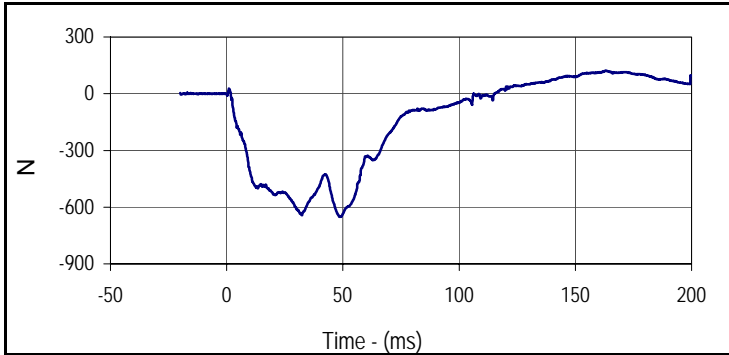
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 11/12/15

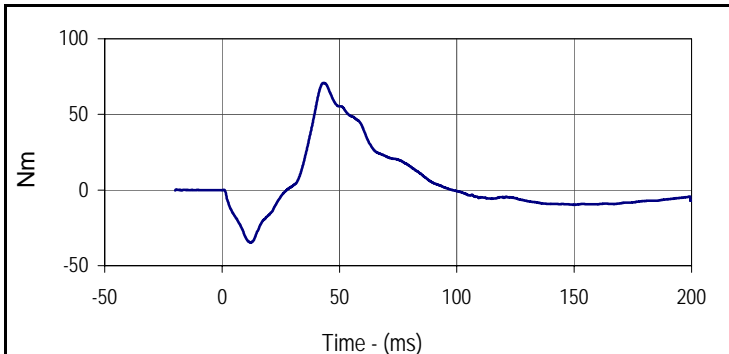


ATD Serial No.: 141

Test I.D.: F141NF070



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
121.4	163.3	-651.5	48.7



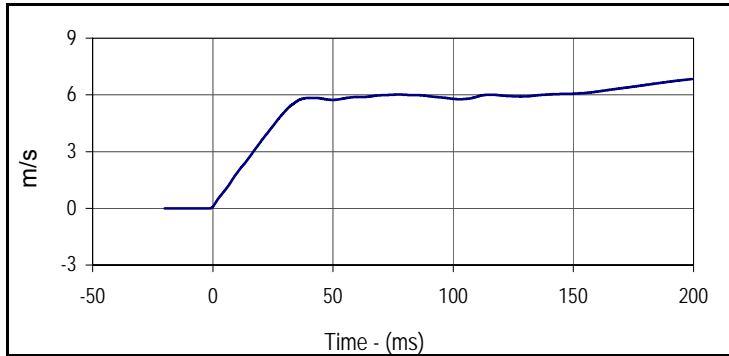
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
70.8	43.2	-34.7	12.2

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

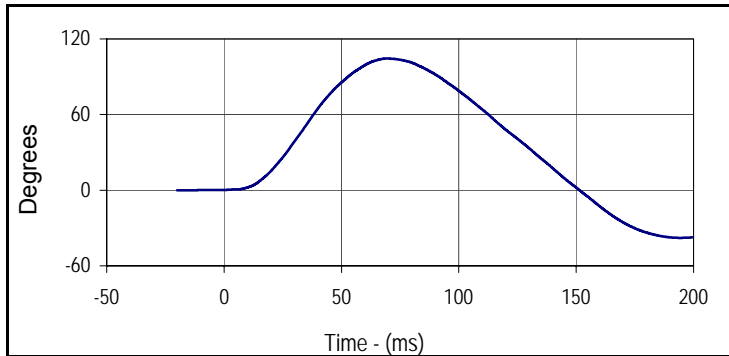
Test Date: 11/12/15
 Test I.D.: F141NE070



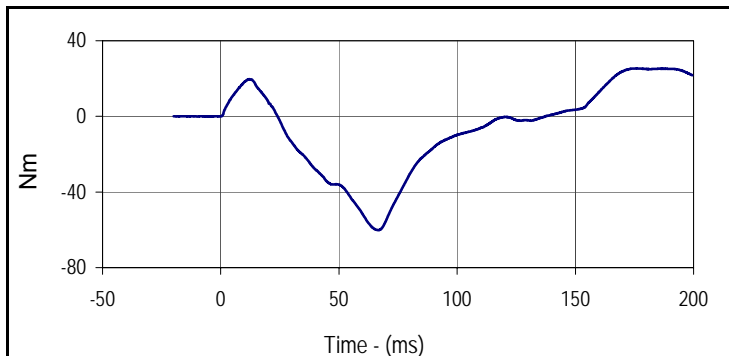
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	672	Pass	
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass	
	Min		20.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	22.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.2	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.02	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	5.1	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	104.5	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-60.2	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	99.7	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.8	199.4	0.0	-1.4



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
104.5	69.3	-37.8	194.2



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
25.4	175.7	-60.2	66.8

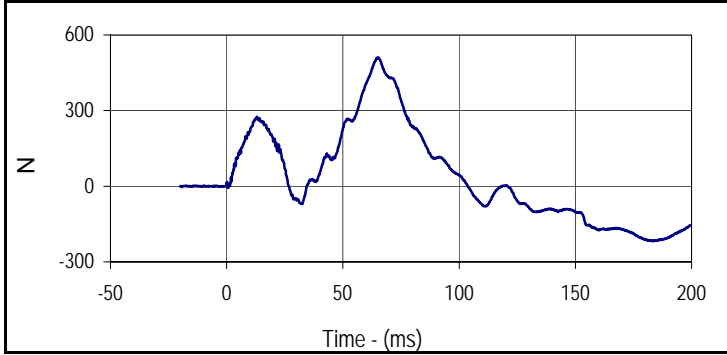
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 11/12/15

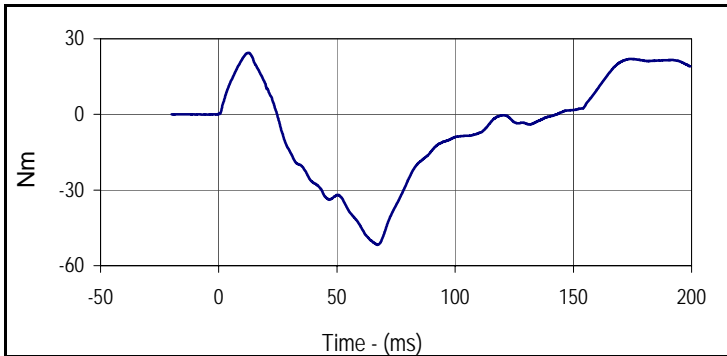


ATD Serial No.: 141

Test I.D.: F141NE070



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
510.8	65.1	-217.5	183.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
24.4	12.4	-51.7	67.0

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

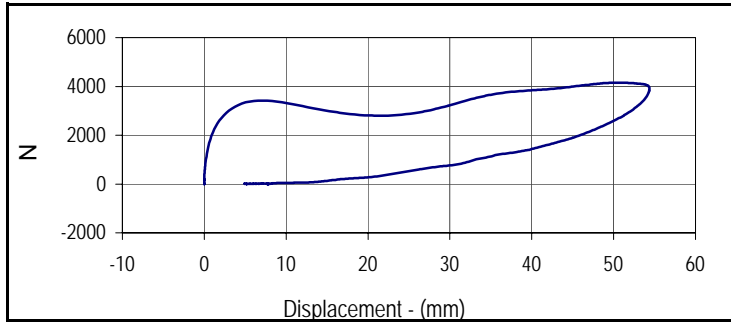
Test Date: 11/12/15



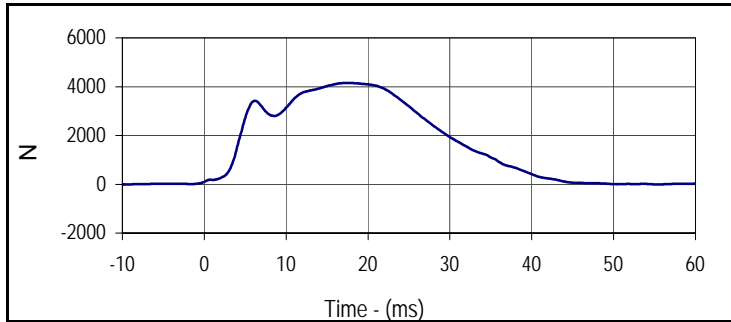
ATD Serial No.: 141

Test I.D.: F141CH070

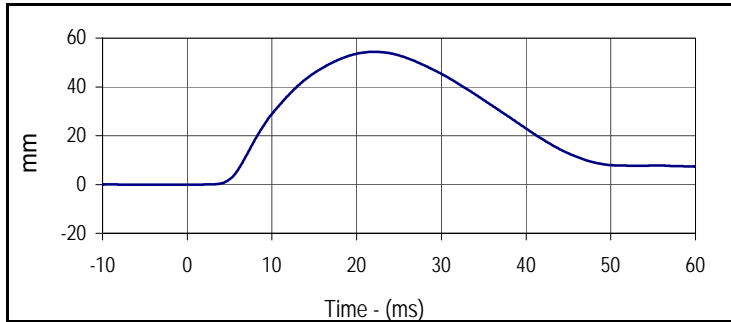
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	717	Pass
Temperature During Soak	Max	20.6 to 22.2	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Probe Velocity	m/s	6.59 to 6.83	6.72	Pass
Peak Chest Deflection	mm	50.0 to 58.0	54.4	Pass
Peak Force Between 50 and 58 MM	N	3900 to 4400	4153	Pass
Peak Force Between 18 and 50 MM	N	≤4600	4153	Pass
Internal Hysteresis	%	69 to 85	72.4	Pass
Overall Test Results				Pass



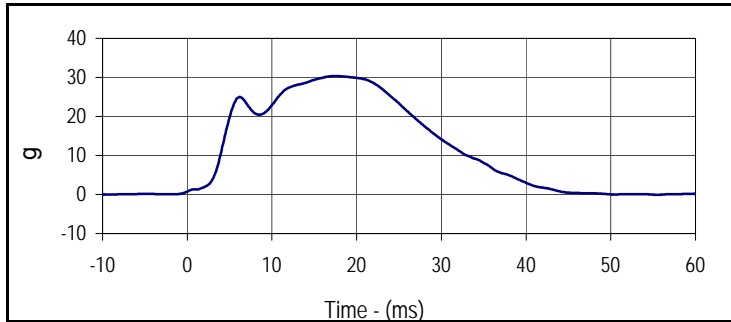
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	72.4
Peak Probe Force		Peak Chest Deflection	
4153.1		54.4	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4153.1	17.3	-9.6	55.5



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
54.4	22.0	0.0	-4.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
30.3	17.3	-0.1	55.5

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

Test Date: 11/12/15



ATD Serial No.: 141

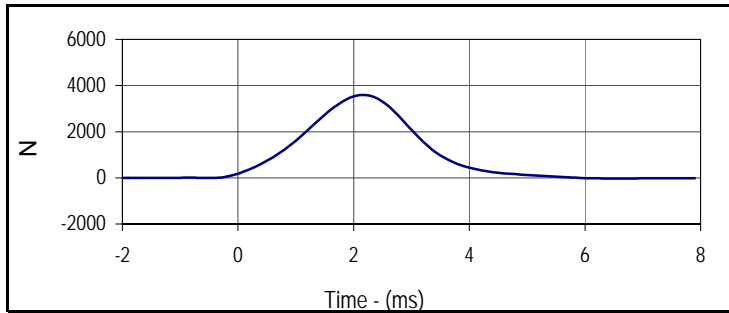
Test I.D.: F141LK070, F141RK070

Left Knee

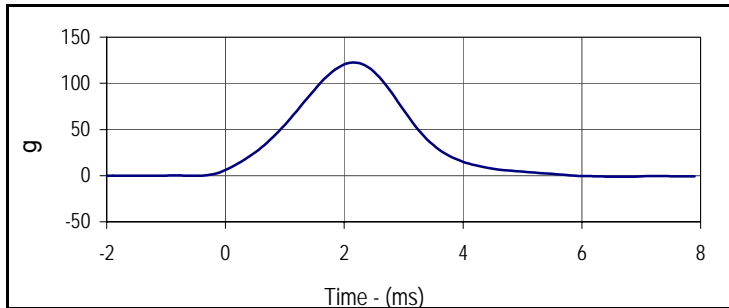
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	772	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	3450 to 4060	3588	Pass
Overall Test Results				Pass

Right Knee

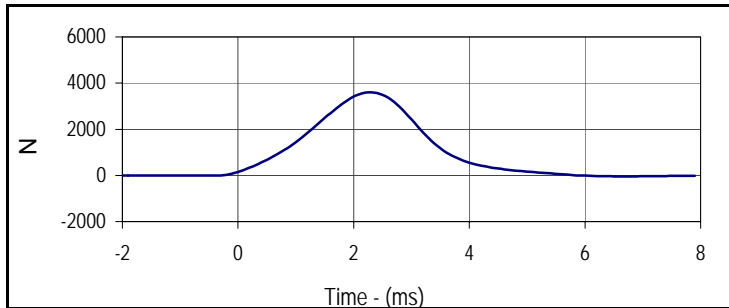
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	3450 to 4060	3607	Pass
Overall Test Results				Pass



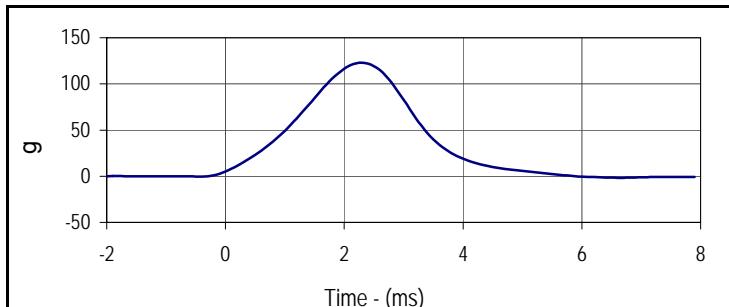
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3587.8	2.2	-34.8	6.7



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	g
Max	Time	Min	Time
122.4	2.2	-1.2	6.7



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
3607.0	2.3	-50.2	6.7



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	g
Max	Time	Min	Time
123.1	2.3	-1.7	6.7

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

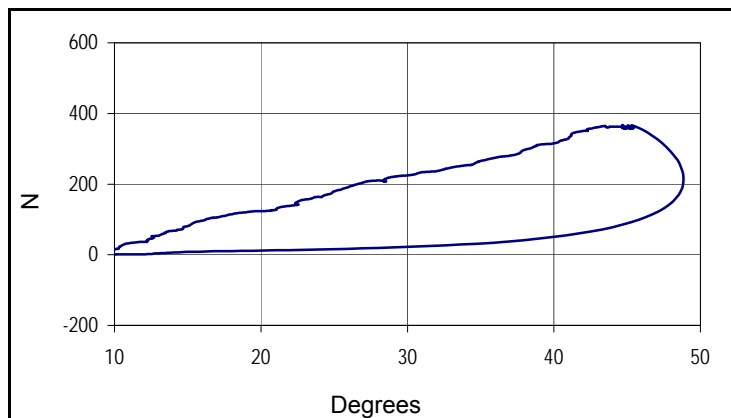
Test Date: 11/12/15



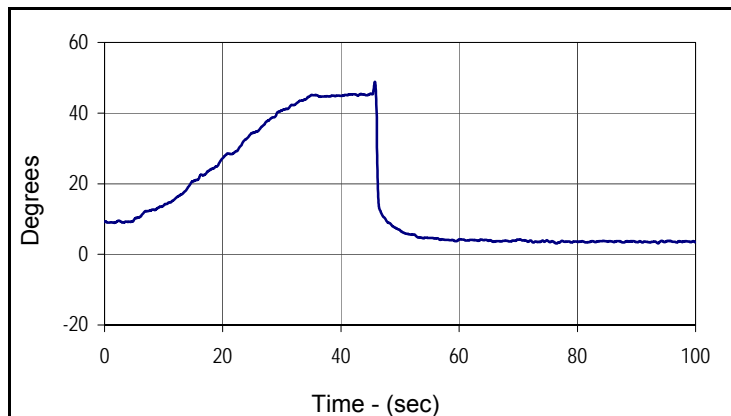
ATD Serial No.: 141

Test I.D.: TF070

Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	837	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	20.3	Pass
	Min		20.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	20.3	Pass
Initial Reference Plane Angle	Degrees	≤ 20	9.1	Pass
Peak Force at 45° +/-0.5°	N	320.0 to 390.0	367.0	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle	Degrees	+/-8	3.4	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
367.0		48.8



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
48.8	45.8	3.1	76.5