

REPORT NUMBER: NCAP-KAR-15-033

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

**FORD MOTOR CO.
2015 FORD EDGE SEL AWD 5-DOOR MPV**

NHTSA NUMBER: M20150206

**PREPARED BY:
KARCO ENGINEERING, LLC.
9270 HOLLY ROAD
ADELANTO, CA 92301**



MAY 04, 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**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: Matthew S. Hubbard
Mr. Matthew S. Hubbard, Test Engineer
KARCO Engineering, LLC.

Reviewed By: MLD
Mr. Michael L. Dunlap, Director of Operations
KARCO Engineering, LLC.

Approved By: Frank D. Richardson
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC.

Approval Date: May 04, 2015

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. NCAP-KAR-15-033	2. Government Accession No.	3. Recipient's Catalog No.																																																					
4. Title and Subtitle Final Report of New Car Assessment Program Testing of a 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No. M20150206		5. Report Date May 4, 2015																																																					
		6. Performing Organization Code KAR																																																					
7. Authors Mr. Matthew S. Hubbard, Test Engineer, KARCO Mr. Frank Richardson, Program Manager, KARCO		8. Performing Organization Report No. TR-P34001-10-NC																																																					
		10. Work Unit No.																																																					
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301		11. Contract or Grant No. DTNH22-12-D-00259																																																					
		13. Type of Report and Period Covered Final Test Report, April 20 - May 4, 2015																																																					
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590		14. Sponsoring Agency Code NVS-111																																																					
		15. Supplementary Notes																																																					
16. Abstract <p>A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2015 Ford Edge SEL AWD 5-door MPV 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 April 20, 2015.</p> <p>The impact velocity of the vehicle was 56.48 km/h and the ambient temperature at the barrier face at the time of impact was 23.3° C. The target vehicle's post-test maximum crush was 410 mm at the vehicle's centerline and at DPD 3 to the left of the vehicle's centerline. The test vehicle's performance is as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700.0</td> <td>95.8</td> <td>700.0</td> <td>-208.7</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>0.27</td> <td>1</td> <td>0.32</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>888.7</td> <td>2620</td> <td>802.2</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-103.1</td> <td>2520</td> <td>-369.0</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-1882.8</td> <td>6805</td> <td>-540.4</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-2285.0</td> <td>6805</td> <td>-111.1</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	95.8	700.0	-208.7	Maximum Chest Compression	mm	63	-19	52	-15	Nij	N/A	1	0.27	1	0.32	Neck Tension	N	4170	888.7	2620	802.2	Neck Compression	N	4000	-103.1	2520	-369.0	Left Femur Force	N	10008	-1882.8	6805	-540.4	Right Femur Force	N	10008	-2285.0	6805	-111.1
Measurement Description	Units	Driver ATD				Passenger ATD																																																	
		Threshold	Result	Threshold	Result																																																		
Head Injury Criteria (HIC ₁₅)	N/A	700.0	95.8	700.0	-208.7																																																		
Maximum Chest Compression	mm	63	-19	52	-15																																																		
Nij	N/A	1	0.27	1	0.32																																																		
Neck Tension	N	4170	888.7	2620	802.2																																																		
Neck Compression	N	4000	-103.1	2520	-369.0																																																		
Left Femur Force	N	10008	-1882.8	6805	-540.4																																																		
Right Femur Force	N	10008	-2285.0	6805	-111.1																																																		
17. Key Words 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP)		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																																																					
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 134	22. Price																																																				

TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	Purpose and Summary of Test	1
2	Occupant and Vehicle Information / Data Sheets	3
<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	4
2	Seat Adjustment, Fuel System, and Steering Wheel Data	8
3	Dummy Longitudinal Clearance Dimensions	10
4	Dummy Lateral Clearance Dimensions	11
5	Seat Belt Positioning Data	12
6	High-Speed Camera Locations and Data	13
7	Vehicle Accelerometer Locations	15
8	Photographic Reference Target Locations	16
9	Load Cell Locations on Fixed Barrier	17
10	Test Vehicle Camera and Instrumentation Summary	18
11	Post-Test Observations	19
12	Vehicle Profile Measurements	20
13	Accident Investigation Division Data	22
14	Vehicle Intrusion Measurements	23
15	Summary of FMVSS 212, 219 (Partial), and FMVSS 301 Data	25
16	FMVSS 301 Static Rollover Results	27
17	Dummy / Vehicle Temperature Stabilization	28
<u>Appendix</u>		<u>Page No.</u>
A	Photographs	A
B	Dummy Response Data Traces	B
C	Dummy Calibration and Performance Verification Data	C

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 August 2013.

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2015 Ford Edge SEL AWD 5-door MPV at a velocity of 56.48 km/h. The test was performed at KARCO Engineering, LLC. on April 20, 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. Seat belt load cells were placed on the driver's and the passenger's shoulder and lap belts to measure the dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 360) and the right-front passenger (position 2) ATD (Serial No. 141) were calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 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 410 mm located at the vehicle's centerline and at DPD 3 to the left of 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 glovebox.

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)	95.8	52.0	67.0	-19	0.27	888.7	-103.1	-1882.8	-2285.0
Passenger (5th)	208.7	62.4	77.4	-15	0.32	802.2	-369.0	-540.4	-111.1

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

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: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20150206
Model Year	2015
Make	Ford
Model	Edge SEL AWD
Body Style	5-Door MPV
VIN	2FMTK4J92FBB10997
Body Color	Ingot Silver Metallic
Odometer Reading (km / mi)	130 / 81
Engine Displacement (L)	2.0
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	AWD
Roof Rack	No
Sunroof / T-Top	No
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	No
Driver Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Seat Belt Pretensioner	Yes
Front Pass. Load Limiter	Yes
Front Passenger Active Glove Box	Yes

Does Owner's Manual provide instructions to turn off automatic door locks? No

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	Mar-15

GVWR (kg)	2513
GAWR Front (kg)	1325
GAWR Rear (kg)	1207

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bucket	Bench		
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				430.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				89.8	A-B

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P245/60R18	P245/60R18
Tire Size on Vehicle	P245/60R18	P245/60R18
Tire Manufacturer	Michelin	Michelin
Tire Model	Latitude	Latitude
Treadwear	440	440
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Polyamide, 2 Steel	2 Polyester, 1 Polyamide, 2 Steel
Load Index / Speed Symbol	104H	104H
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Left	B94A 00AX 5014	B94A 00AX 5014
DOT Safety Code Right	B94A 00AX 5014	B94A 00AX 5014

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	558.0	401.5		589.5	499.0	
Right	kg	534.5	388.0		549.5	469.0	
Ratio	%	58.0%	42.0%	100.0%	54.1%	45.9%	100.0%
Total	kg	1092.5	789.5	1882.0	1139.0	968.0	2107.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1882.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	89.8	C
Calculated Vehicle Target Weight (TVTW)	kg	2112.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	818	811	850	846	1196
As Tested	mm	805	806	817	819	1309
Post-Test	mm	842	823	821	801	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2850
Total Vehicle Length at Left Side	mm	4065
Total Vehicle Length at Centerline	mm	4765
Total Vehicle Length at Right Side	mm	4065
Weight of Ballast in Cargo Area	kg	116.9
Weight of Vehicle Components Removed	kg	28.5
Amount of Stoddard Solvent in Fuel Tank	L	64.76

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Spare Tire (19.5 kg), Tools (3.0 kg), Rear Trim (6.0 kg)

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

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test
1	Total Length	4765
2	Total Width	1915
3	Bumper Top Height	688
4	Bumper Bottom Height	425
5	Longitudinal Member Top Height	625
6	Distance Between Longitudinal Members	905
7	Longitudinal Member Width	60
8	Engine Top Height	875
9	Engine Bottom Height	246
10	Engine and Gearbox Width	520
11	Front Bumper to Engine Distance	465
12	Front Shock Absorber Fixing Height	960
13	Bonnet Leading Edge Height	940
14	Front Shock Absorber Fixing Width	1220
15	Front Bumper to Front Axle Distance	955
16	Front Axle to A-Pillar Distance	523
17	A-Pillar to B-Pillar Distance	966
18	B-Pillar to Rear Axle Distance	1290
19	B-Pillar to C-Pillar Distance	916
20	Roof Sill Bottom Height	1510
21	Roof Sill Top Height	1640
22	Floor Sill Bottom Height	295
23	Floor Sill Top Height	383

All measurements in millimeters.

DATA SHEET NO. 2

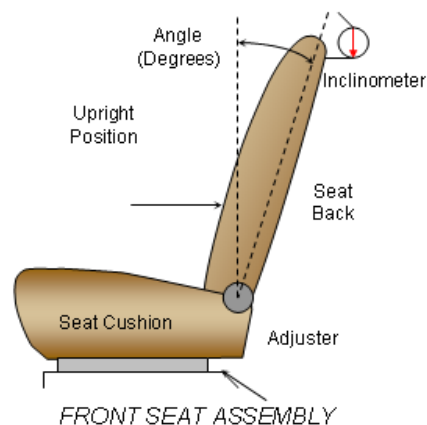
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20150206
 Test Date: 04/20/15

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

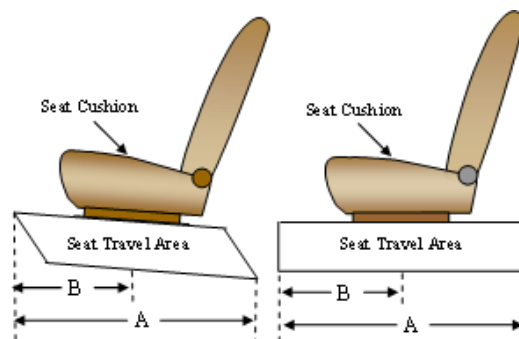


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	2.5
Passenger Seat Back Angle	2.6

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	324 mm	162 mm
Passenger Seat	241 mm (36 detents)	0 mm (0 detent)

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

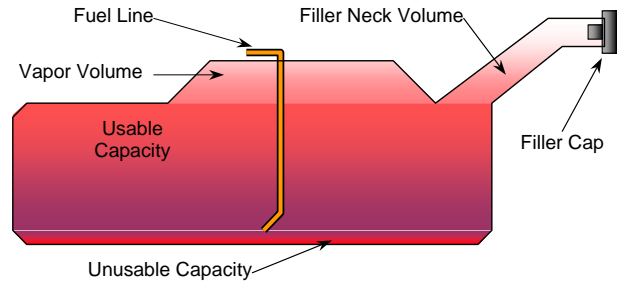
Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	69.65
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	64.08 to 65.47
Actual Amount of Stoddard Solvent Used	64.76
1/3 of Usable Capacity	23.22

FUEL PUMP

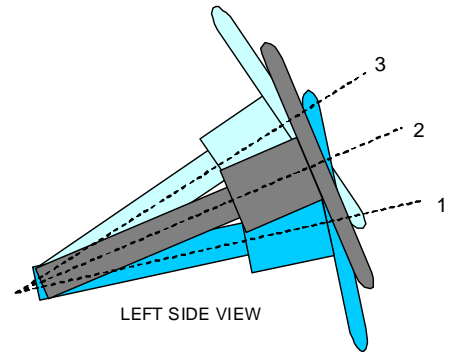
The vehicle is equipped with an electric fuel pump. Fuel pump cycles for a brief period when key is moved to the "ON" position, but does not pump fuel unless the engine is running.



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	25.0	115
Geometric Center Position, No. 2	27.7	135
Uppermost Position, No. 3	30.4	155
Telescoping Steering Wheel Travel		40
Test Position	27.7	135

DATA SHEET NO. 3

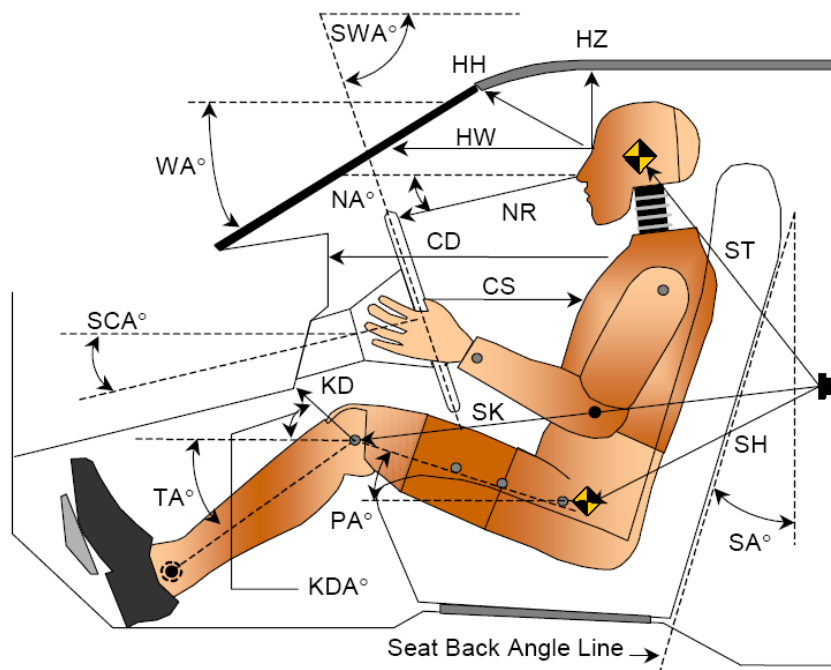
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV

NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/20/15



LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		23.3		
SWA°	Steering Wheel Angle		28.0		
SCA°	Steering Column Angle		62.0		
SA°	Seat Back Angle (On Headrest Post)		2.5		2.6
HZ	Head to Roof	249	90.0	244	90.0
HH	Head to Header	411	27.6	357	46.7
HW	Head to Windshield	736	0.0	744	0.0
NR	Nose to Rim	400	11.0	482	28.5
CD	Chest to Dash	562	4.8	439	3.1
CS	Chest to Steering Hub	279	0.0		
RA	Rim to Abdomen	187	0.0		
KDL	Left Knee to Dash	201	19.9	129	24.8
KDR	Right Knee to Dash	195	36.3	121	27.8
PA°	Pelvic Angle		23.6		21.5
TA°	Tibia Angle		57.3		65.1
SK	Striker to Knee	577	6.9	700	10.9
ST	Striker to Head	491	77.0	455	60.1
SH	Striker to H-Point	291	39.6	387	23.3

DATA SHEET NO. 4

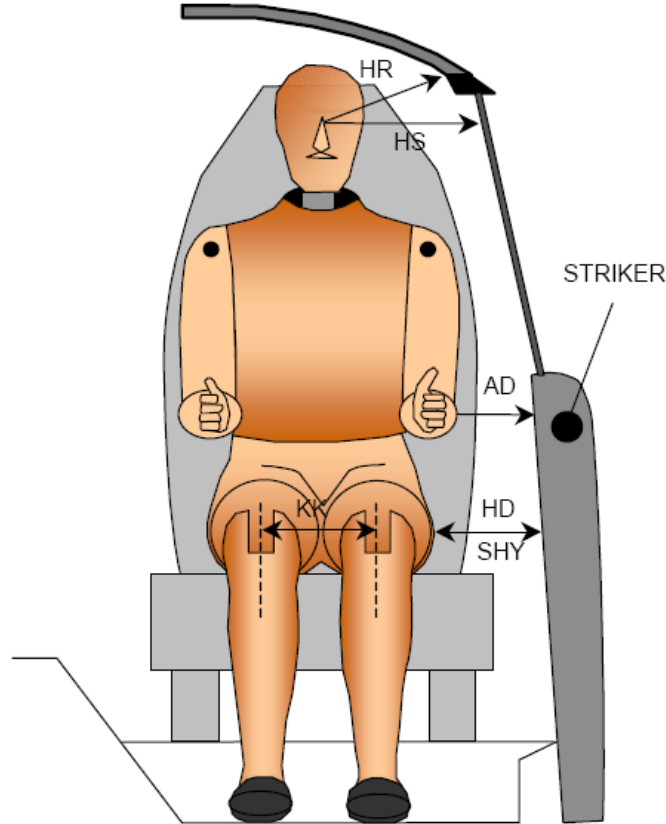
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV

NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/20/15



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	146	95
HD	H-Point to Door	158	185
HR	Head to Side Header	258	276
HS	Head to Side Window	401	404
KK	Knee to Knee	305	165
SHY	Striker to H-Point (Y-Direction)	222	284
AA	Ankle to Ankle	346	162

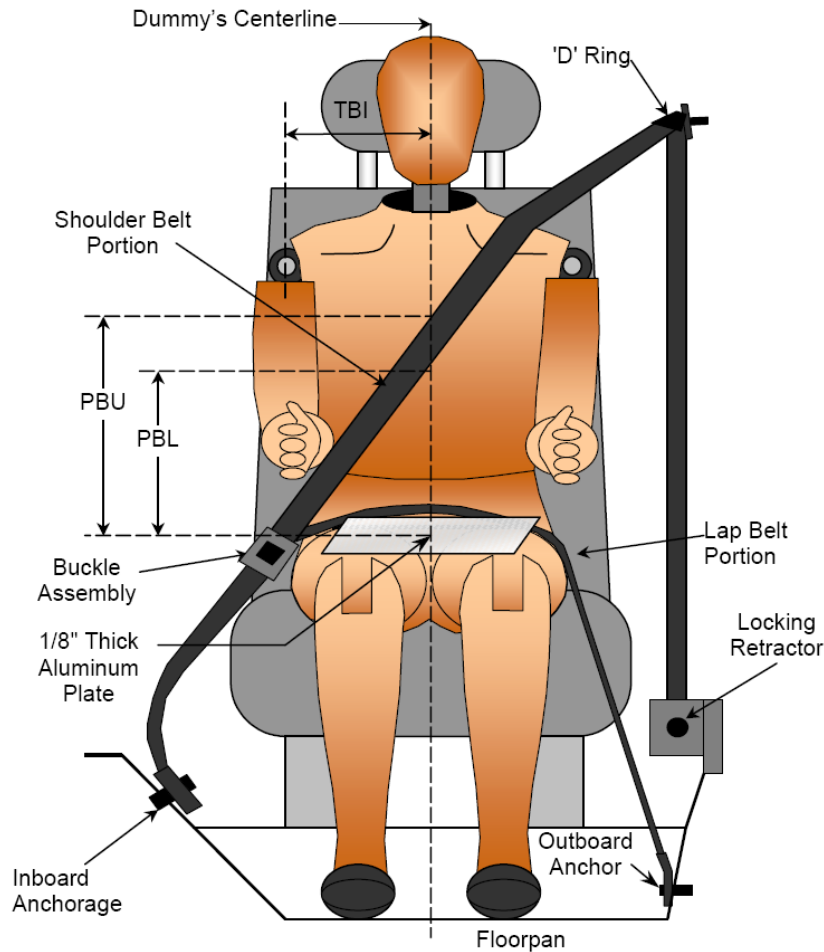
DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV

NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/20/15



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	328	311
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	242	220

BELT LENGTH DATA

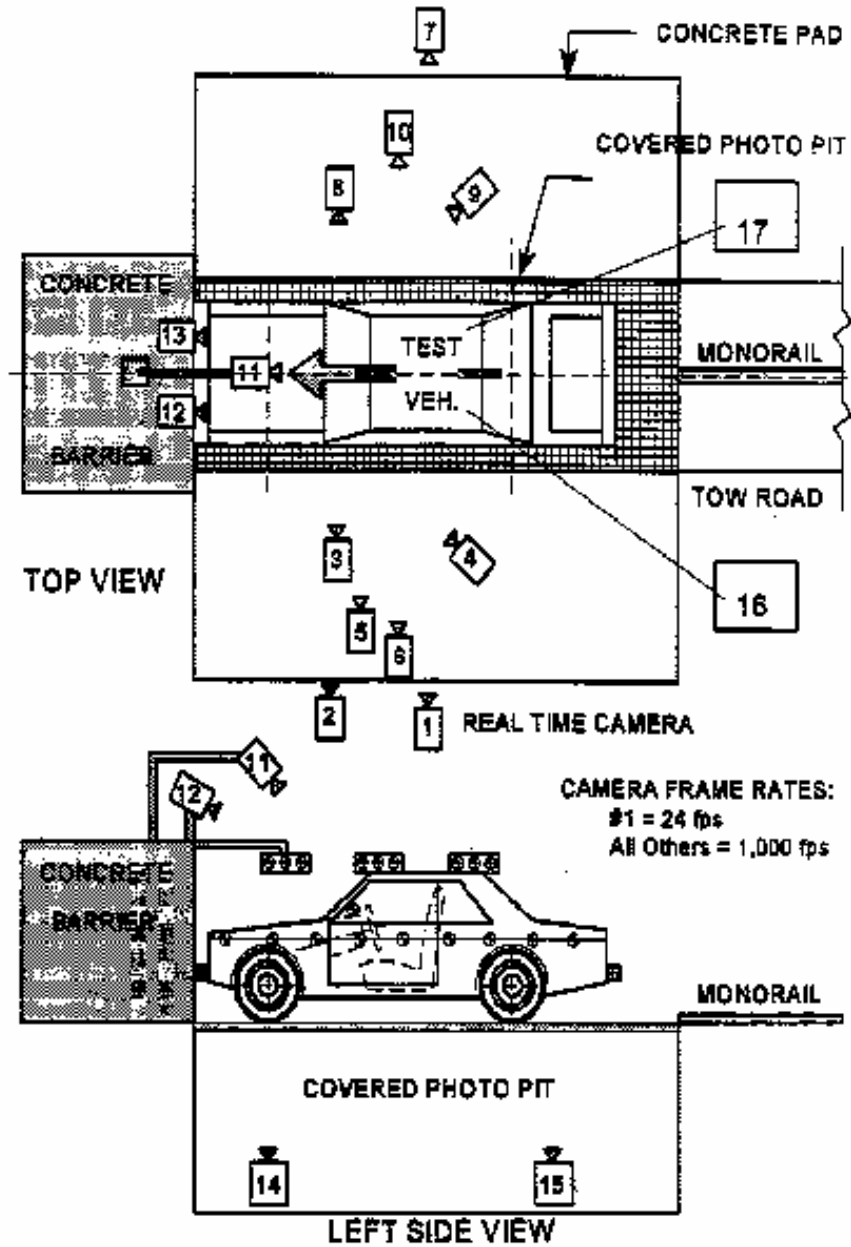
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	878	935
Lap Belt Length as Measured on ATD	mm	710	780
Remainder of Belt on Reel	mm	802	620
Total Belt Length for Continuous Webbing Systems	mm	2390	2335

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

CAMERA LOCATIONS

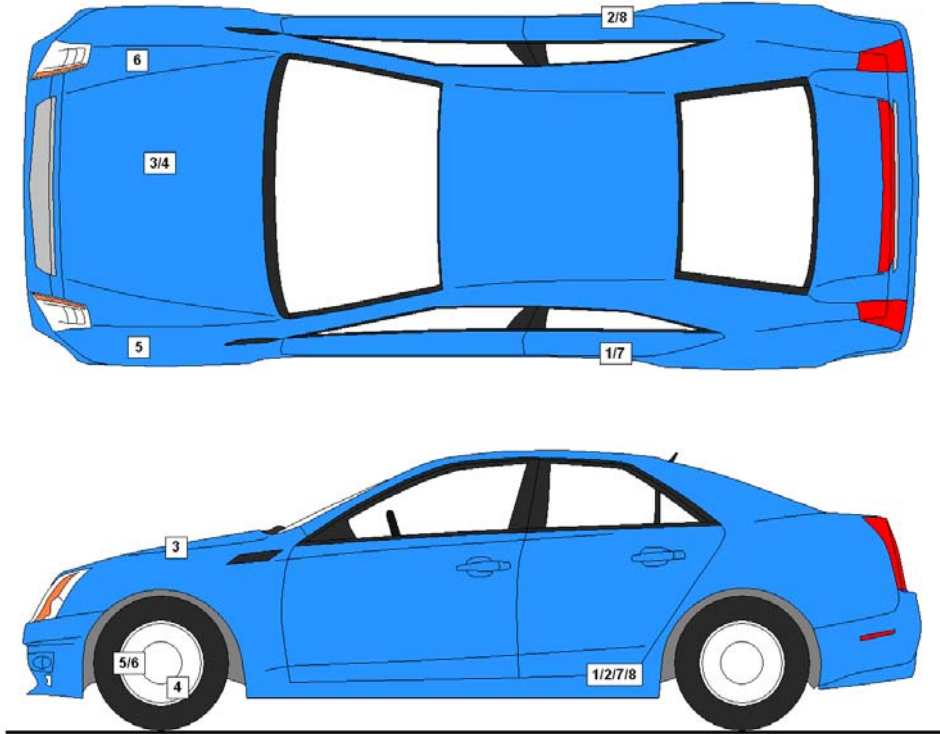
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering 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)	-1600	200	-1550	13	1000
17	Onboard Passenger Airbag (Optional)	-1600	-200	-1550	13	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: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	-2059	-733	-392
2	Right Rear Accelerometer X-Direction	-2059	733	-392
3	Engine Top X	-3980	226	-861
4	Engine Bottom X	-3961	216	-268
5	Left Rear Accelerometer Z-Direction	-2059	-733	-392
6	Right Rear Accelerometer Z-Direction	-2059	733	-392
7	Left Rear Accelerometer X-Direction Redundant	-2084	-733	-392
8	Right Rear Accelerometer X-Direction Redundant	-2084	733	-392

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

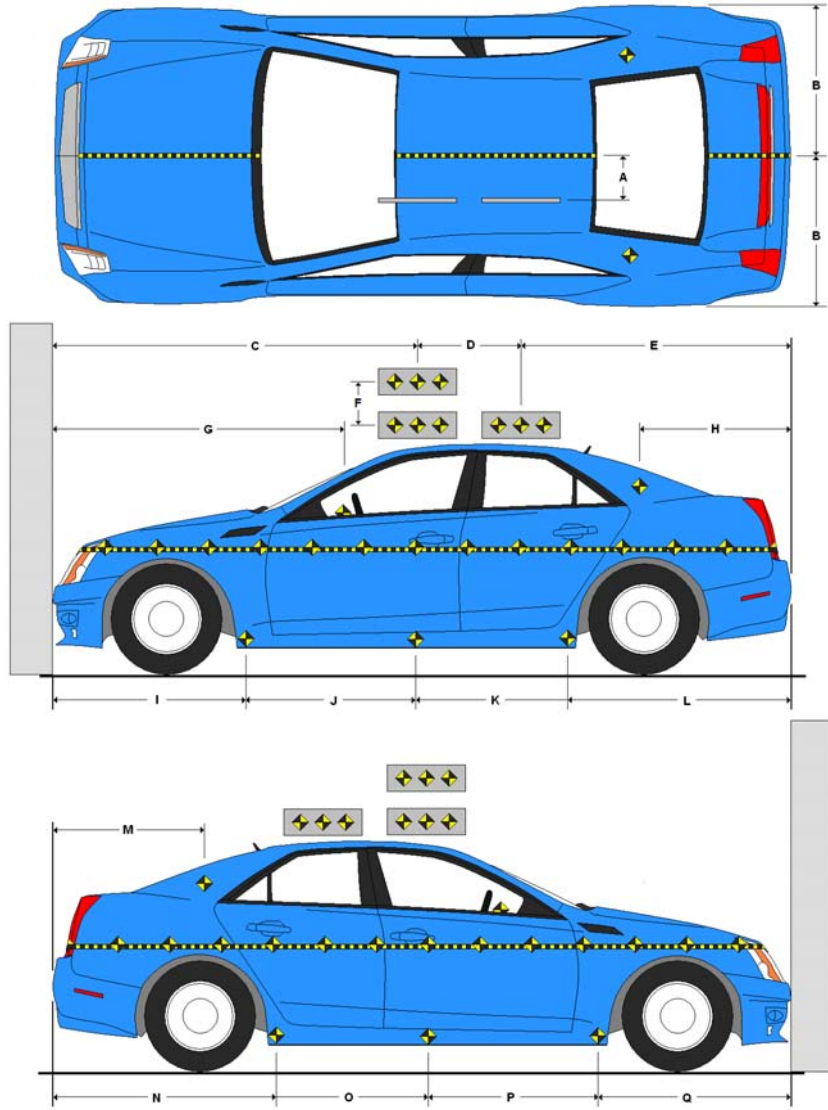
DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

Item	Value
A	400
B	958
C	2237
D	610
E	1903
F	305
G	1780
H	746
I	1461
J	922
K	922
L	1460
M	760
N	1462
O	924
P	924
Q	1460



All measurements in millimeters.

DATA SHEET NO. 9

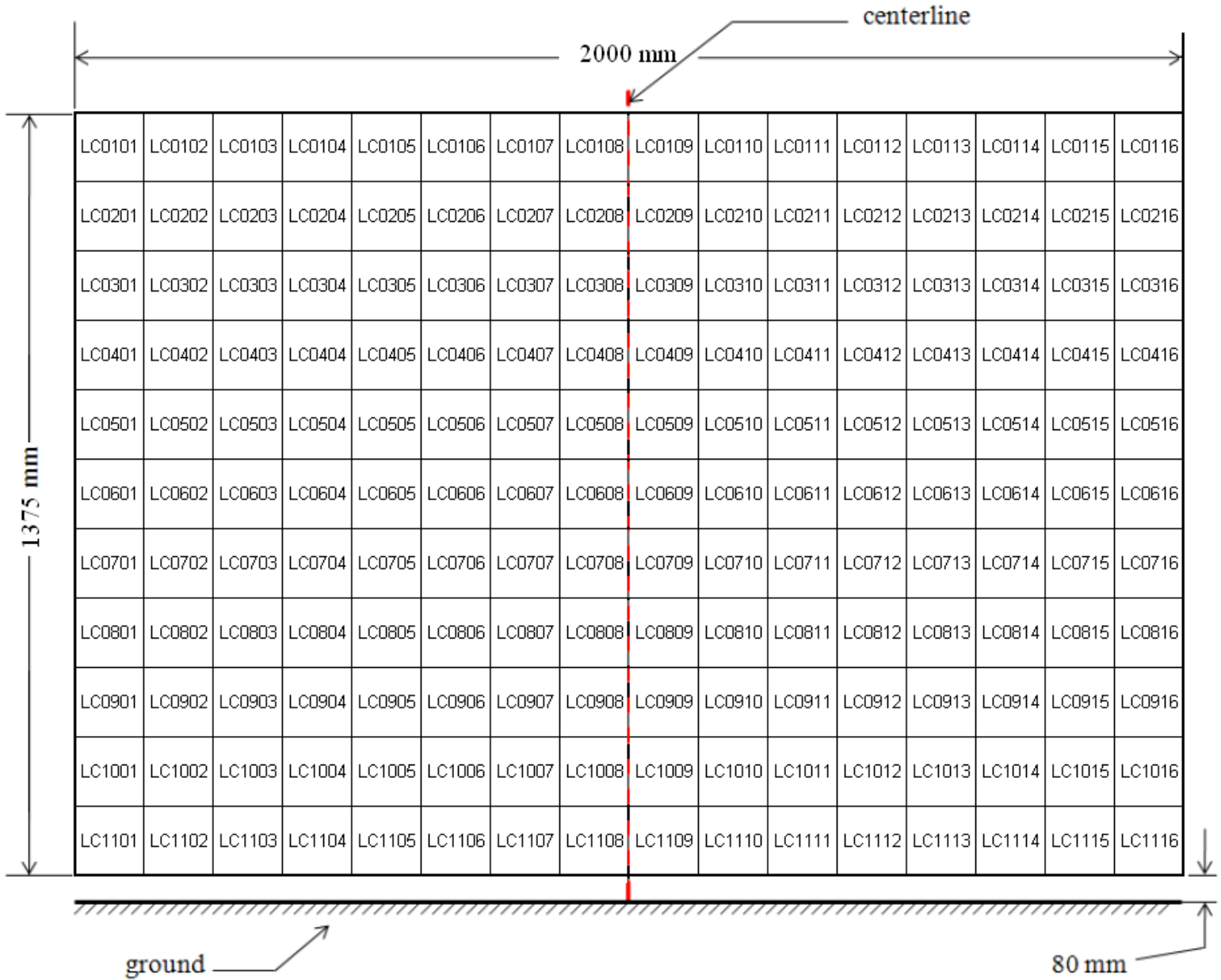
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV

NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/20/15



DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

INSTRUMENTATION

Driver Dummy Accelerometers	50
Passenger Dummy Accelerometers	50
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	4
Load Cell Barrier	528
Total	640

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: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

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	Glovebox
Right Knee Contact	Knee Airbag	Glovebox

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)	17	0
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	735
Center	mm	723
Right Side	mm	794
Average	mm	751

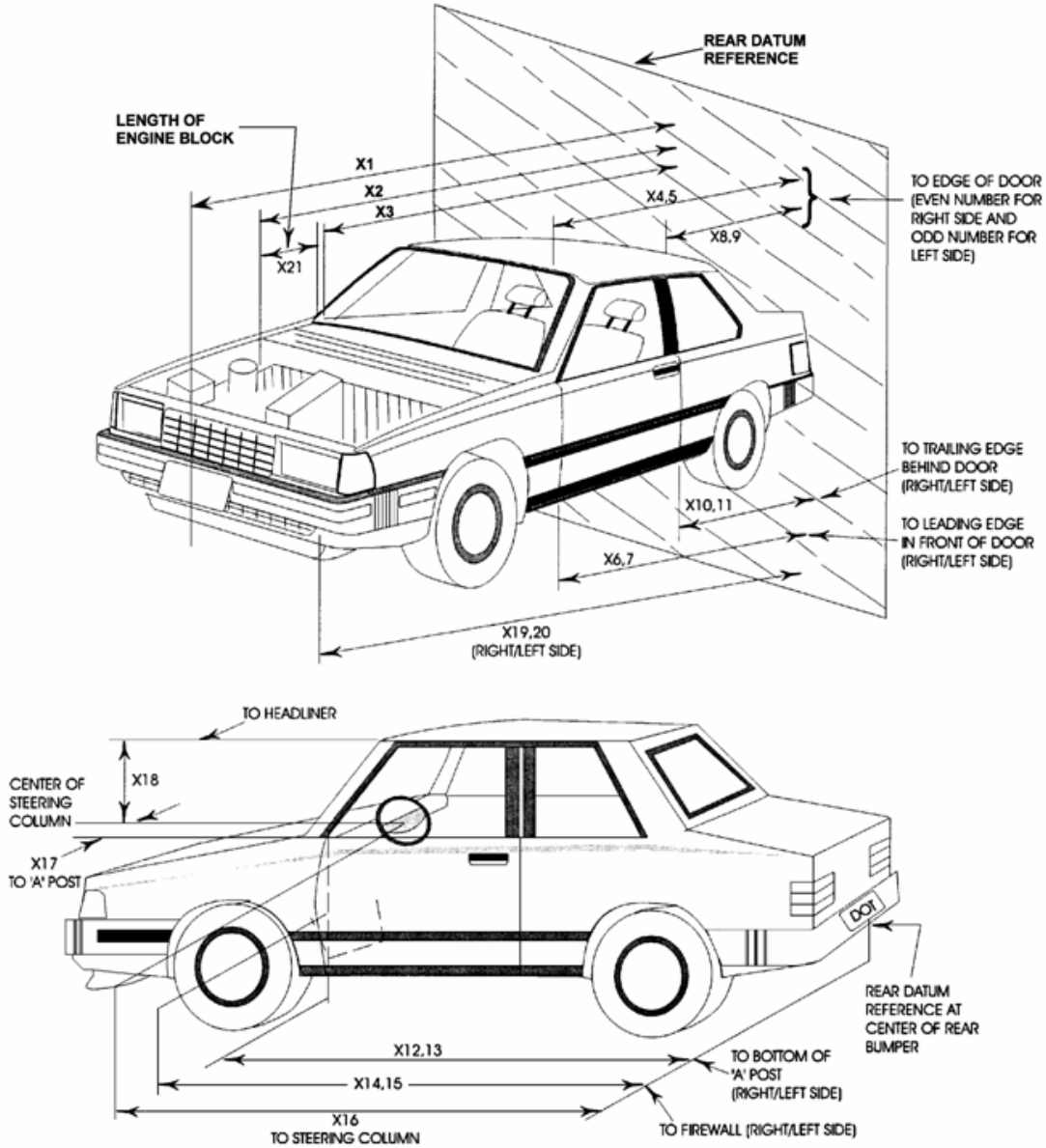
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

*This device is not designed to deploy in a full frontal impact with a belted 5th occupant.

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15



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

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4765	4355	-410
2	Rear Surface of Vehicle to Front of Engine	4300	4100	-200
3	RSOV to Firewall	3775	3774	-1
4	RSOV to Upper Leading Edge of Right Door	3315	3325	10
5	RSOV to Upper Leading Edge of Left Door	3310	3337	27
6	RSOV to Lower Leading Edge of Right Door	3301	3308	7
7	RSOV to Lower Leading Edge of Left Door	3303	3325	22
8	RSOV to Upper Trailing Edge of Right Door	2195	2205	10
9	RSOV to Upper Trailing Edge of Left Door	2194	2217	23
10	RSOV to Lower Trailing Edge of Right Door	2258	2268	10
11	RSOV to Lower Trailing Edge of Left Door	2261	2282	21
12	RSOV to Bottom of A-Pillar, Right Side	3241	3262	21
13	RSOV to Bottom of A-Pillar, Left Side	3241	3269	28
14	RSOV to Firewall, Right Side	3760	3755	-5
15	RSOV to Firewall, Left Side	3760	3757	-3
16	RSOV to Steering Column	2840	2831	-9
17	Center of Steering Column to A-Pillar	455	475	20
18	Center of Steering Column to Headliner	400	453	53
19	RSOV to Right Side of Front Bumper	4065	4005	-60
20	RSOV to Left Side of Front Bumper	4065	4015	-50
21	Length of Engine Block	600	600	0
RD	RSOV to Right Side of Dash Panel	3027	3056	29
CD	RSOV to Center of Dash Panel	2965	2910	-55
LD	RSOV to Left Side of Dash Panel	3020	3064	44

All measurements in millimeters.

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

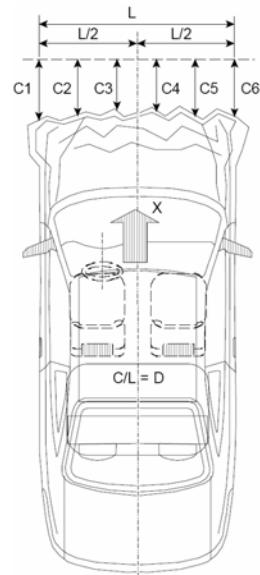
VEHICLE INFORMATION

VIN: 2FMTK4J92FBB10997 Wheelbase (mm): 2850
 Vehicle Size Category: 5-Door MPV Test Weight (kg): 2107.0

ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember
 Cal. Procedure/Interval: Drop Test / 6 months
 Integration Algorithm: NHTSA Standard
 Impact Velocity (km/h): 56.48
 Velocity Change (km/h): 65.6
 Time of Separation (msec): 74.9

Linearity: Good



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1495
 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	240	435	195
C2	Crush Zone 2 at Left Side	mm	65	442	377
C3	Crush Zone 3 at Left Side	mm	50	460	410
C4	Crush Zone 4 at Right Side	mm	51	443	392
C5	Crush Zone 5 at Right Side	mm	65	413	348
C6	Crush Zone 6 at Right Side	mm	240	434	194
L	C1 to C6	mm	1495		

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV

NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test

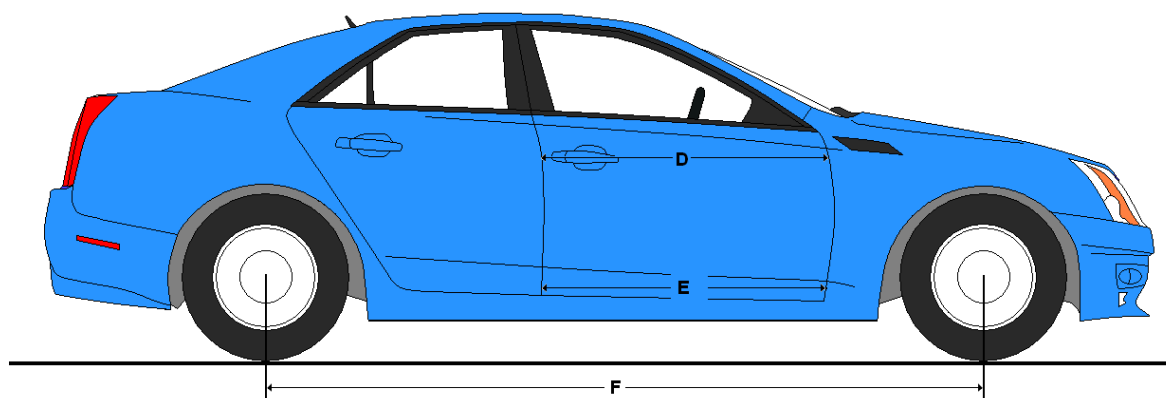
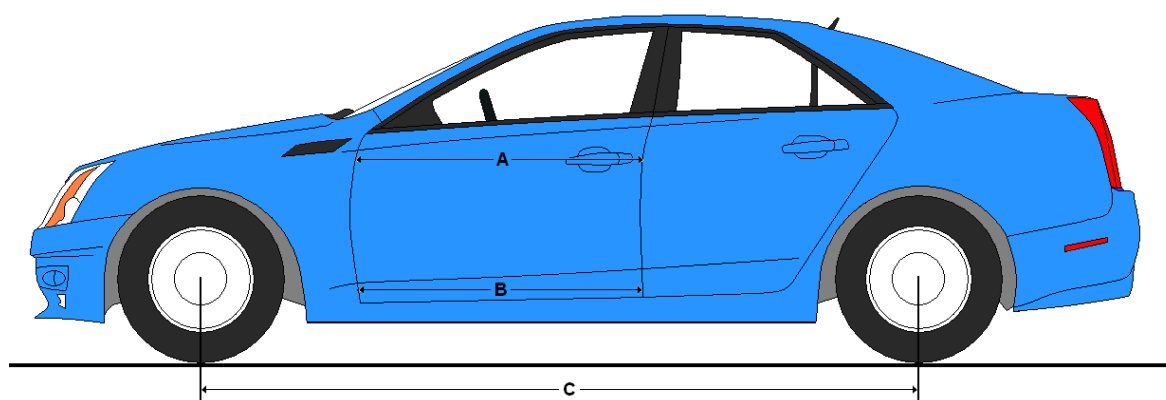
Test Date: 04/20/15

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	961	966	-5
B	Left Side Lower	mm	903	904	-1
D	Right Side Upper	mm	971	978	-7
E	Right Side Lower	mm	889	891	-2

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2850	2757	93
F	Right Side Wheelbase	mm	2851	2725	126



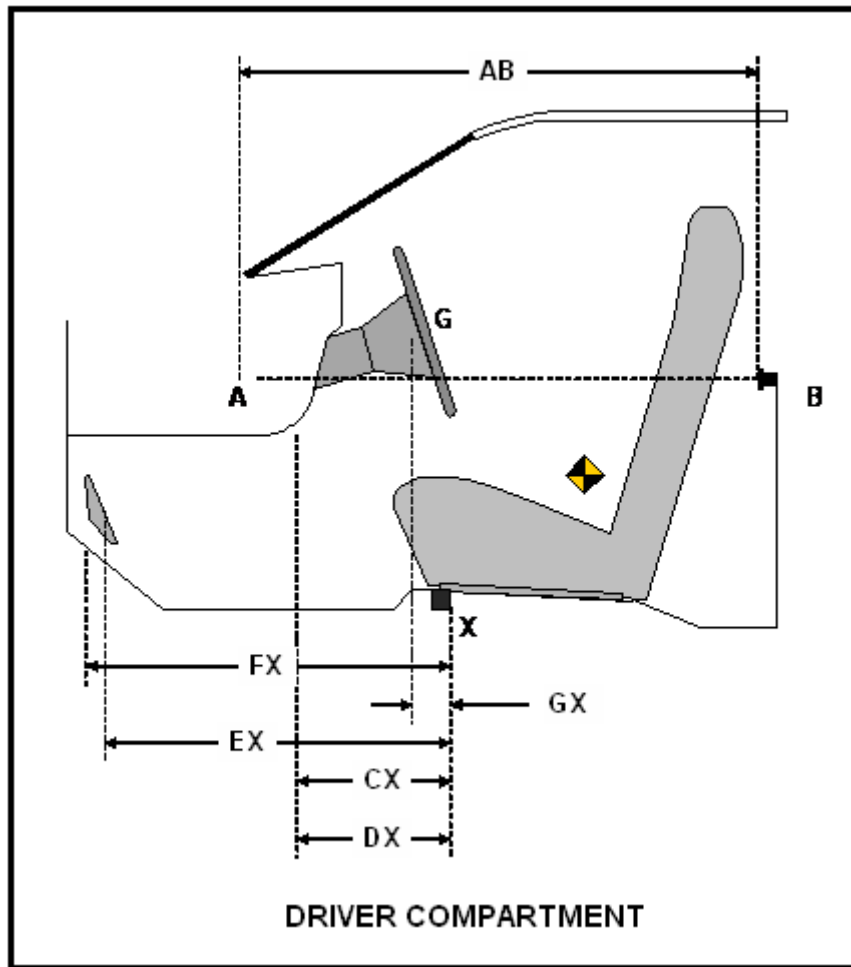
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	926	921	5
CX	Left Knee Bolster to X	mm	280	260	20
DX	Right Knee Bolster to X	mm	260	250	10
EX	Brake Pedal to X	mm	465	345	120
FX	Foot Rest to X	mm	470	460	10
GX	Center of Steering Wheel Hub to X	mm	40	-18	58

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15

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

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

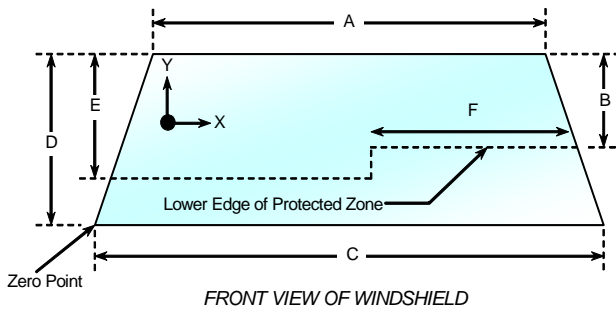
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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: 21.2 ° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2400	2400	100.0%
Right Side	2400	2400	100.0%
Total	4800	4800	100.0%



Item	Units	Value
A	mm	1280
B	mm	570
C	mm	1420
D	mm	50
E	mm	620
F	mm	560

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: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 23.3° C Test Time: 2:44 PM

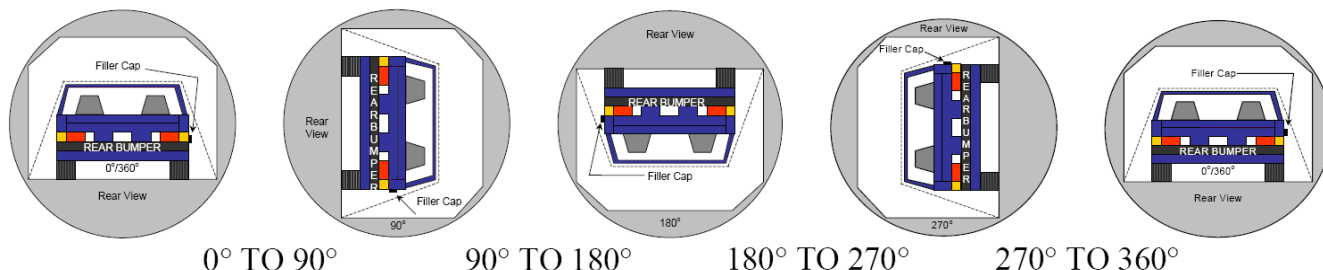
Stoddard Solvent Spillage Measurements

- 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: 2015 Ford Edge SEL AWD 5-Door MPV NHTSA No.: M20150206
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/20/15



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°	84	300	384
90° To 180°	80	300	380
180° To 270°	79	300	379
270° To 360°	79	300	379

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

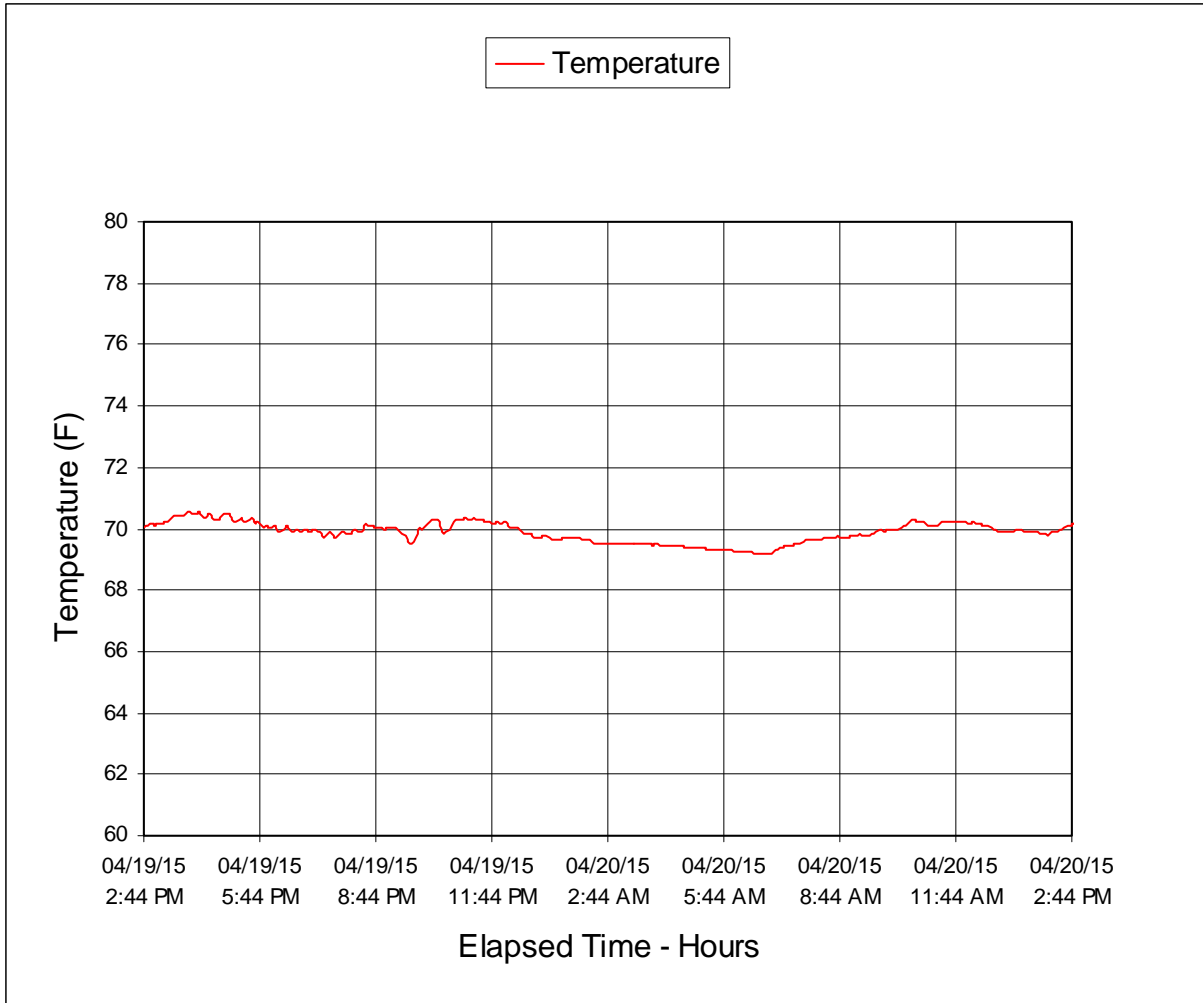
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV

NHTSA No.: M20150206

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/20/15



**APPENDIX A
PHOTOGRAPHS**

TABLE OF PHOTOGRAPHS

Figure		Page
1	Load Cell Location	A-1
2	Load Cell Wall	A-1
3	Manufacturer's Label	A-2
4	Tire Placard	A-2
5	2015 Ford Edge Frontal as Delivered	A-3
6	Left Rear $\frac{3}{4}$ View, as Received	A-3
7	Pre-Test Front View of Test Vehicle	A-4
8	Post-Test Front View of Test Vehicle	A-4
9	Pre-Test Left View of Test Vehicle	A-5
10	Post-Test Left View of Test Vehicle	A-5
11	Pre-Test Right View of Test Vehicle	A-6
12	Post-Test Right View of Test Vehicle	A-6
13	Pre-Test Right Front $\frac{3}{4}$ View	A-7
14	Post-Test Right Front $\frac{3}{4}$ View	A-7
15	Pre-Test Left Rear $\frac{3}{4}$ View	A-8
16	Post-Test Left Rear $\frac{3}{4}$ View	A-8
17	Pre-Test Windshield View	A-9
18	Post-Test Windshield View	A-9
19	Pre-Test Engine Compartment View	A-10
20	Post-Test Engine Compartment View	A-10
21	Pre-Test Fuel Filler Cap View	A-11
22	Post-Test Fuel Filler Cap View	A-11
23	Pre-Test Front Underbody View	A-12
24	Post-Test Front Underbody View	A-12
25	Pre-Test Rear Underbody View	A-13
26	Post-Test Rear Underbody View	A-13
27	Pre-Test Dummy Cable Routing	A-14
28	Post-Test Dummy Cable Routing	A-14
29	Pre-Test Driver Dummy Front View	A-15
30	Post-Test Driver Dummy Front View	A-15
31	Pre-Test Driver Dummy Window View	A-16
32	Post-Test Driver Dummy Window View	A-16
33	Pre-Test Driver Dummy and Vehicle Interior View	A-17
34	Post-Test Driver Dummy and Vehicle Interior View	A-17
35	Pre-Test Driver's Seat Fore-Aft Markings	A-18

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
36	Post-Test Driver's Seat Fore-Aft Markings	A-18
37	Pre-Test View of Belt Anchorage for Driver Dummy	A-19
38	Post-Test View of Belt Anchorage for Driver Dummy	A-19
39	Pre-Test Driver Dummy Feet	A-20
40	Post-Test Driver Dummy Feet	A-20
41	Pre-Test Driver's Side Knee Bolster	A-21
42	Post-Test Driver's Side Knee Bolster	A-21
43	Pre-Test Driver's Side Floorpan	A-22
44	Post-Test Driver's Side Floorpan	A-22
45	Post-Test Driver Dummy Face	A-23
46	Post-Test Driver Dummy Contact with Airbag	A-23
47	Post-Test Driver Dummy Contact with Headrest	A-24
47a	Post-Test Driver Dummy Contact with Knee Airbag	A-24
48	Pre-Test View of the Steering Wheel	A-25
49	Post-Test View of the Steering Wheel	A-25
50	Pre-Test Passenger Dummy Front View	A-26
51	Post-Test Passenger Dummy Front View	A-26
52	Pre-Test Passenger Dummy Window View	A-27
53	Post-Test Passenger Dummy Window View	A-27
54	Pre-Test Passenger Dummy and Vehicle Interior View	A-28
55	Post-Test Passenger Dummy and Vehicle Interior View	A-28
56	Pre-Test Passenger's Seat Fore-Aft Markings	A-29
57	Post-Test Passenger's Seat Fore-Aft Markings	A-29
58	Pre-Test View of Belt Anchorage for Passenger Dummy	A-30
59	Post-Test View of Belt Anchorage for Passenger Dummy	A-30
60	Pre-Test Passenger Dummy Feet	A-31
61	Post-Test Passenger Dummy Feet	A-31
62	Pre-Test Passenger's Side Knee Bolster	A-32
63	Post-Test Passenger's Side Knee Bolster	A-32
64	Pre-Test Passenger's Side Floorpan	A-33
65	Post-Test Passenger's Side Floorpan	A-33
66	Post-Test Passenger Dummy Face	A-34
67	Post-Test Passenger Dummy Contact with Airbag	A-34
68	Post-Test Passenger Dummy Contact with Headrest	A-35
68a	Post-Test Passenger Dummy Contact with Glovebox	A-35

TABLE OF PHOTOGRAPHS ... (CONTINUED)

<u>Figure</u>		<u>Page</u>
69	Photograph of Ballast Installed in Vehicle	A-36
70	Post-Test Stoddard Solvent Spillage Location View	A-36
71	Post-Test Speed Trap Read-Out	A-37
72	Vehicle at 0° on Static Rollover Device	A-37
73	Vehicle at 90° on Static Rollover Device	A-38
74	Vehicle at 180° on Static Rollover Device	A-38
75	Vehicle at 270° on Static Rollover Device	A-39
76	Vehicle at 360° on Static Rollover Device	A-39
77	2015 Ford Edge Frontal Impact Event	A-40
78	Monroney Label Photograph	A-40



FIGURE 1. Load Cell Location

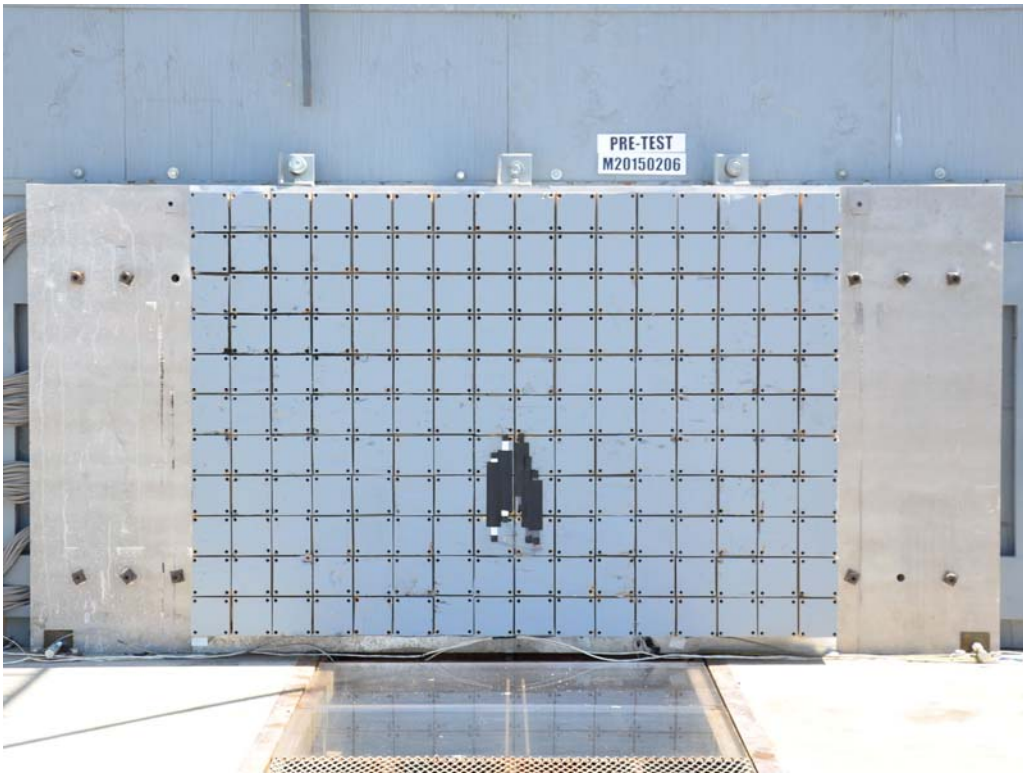


FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. 2015 Ford Edge 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 $\frac{3}{4}$ 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

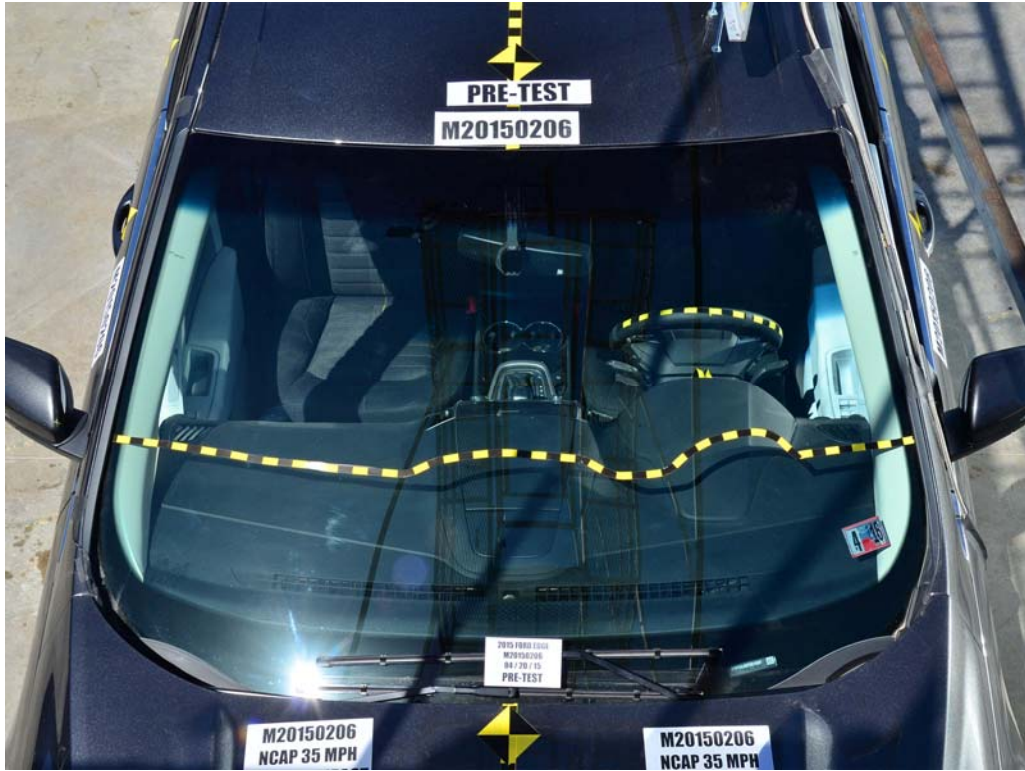


FIGURE 17. Pre-Test Windshield View



FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View

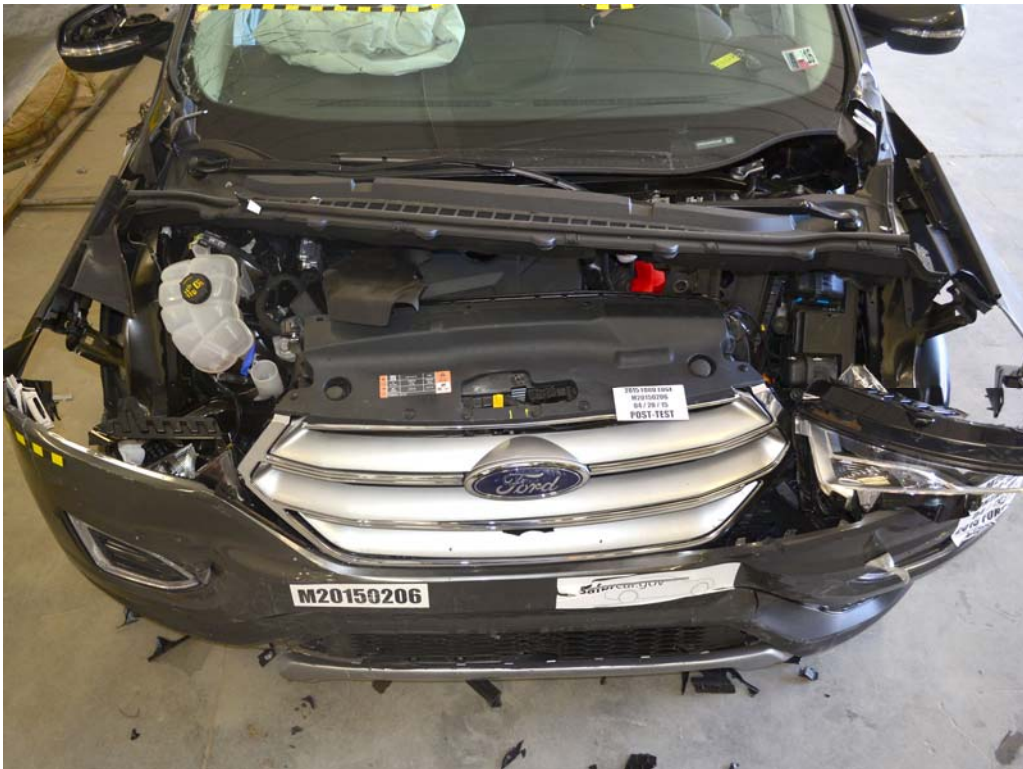


FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

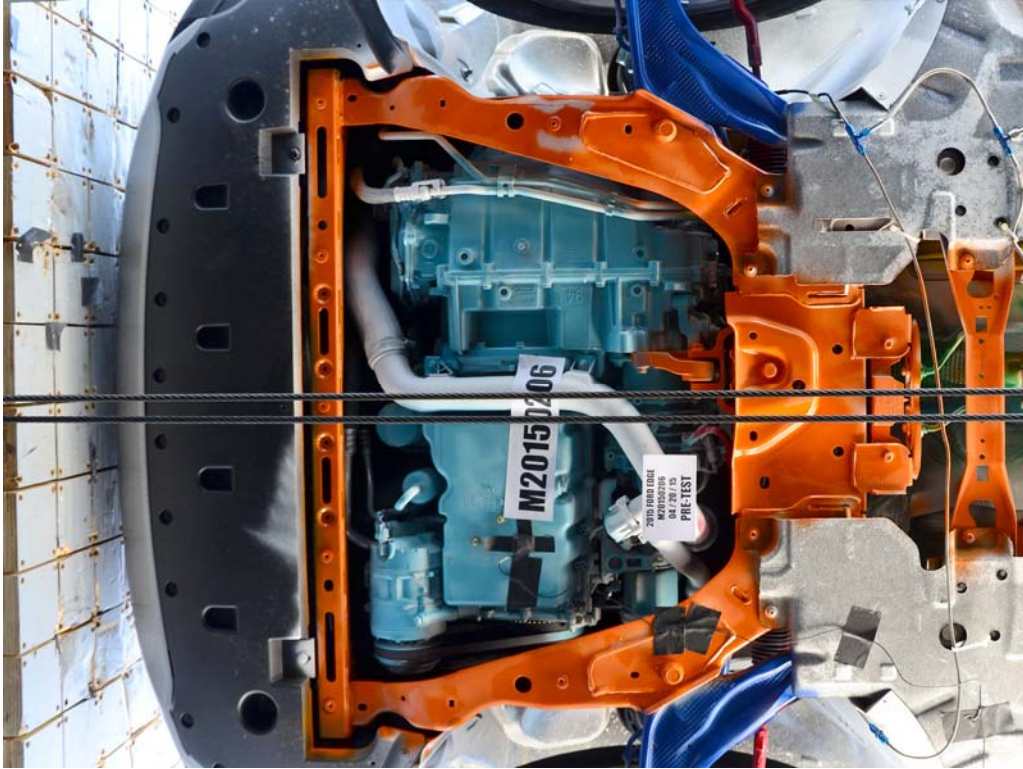


FIGURE 23. Pre-Test Front Underbody View

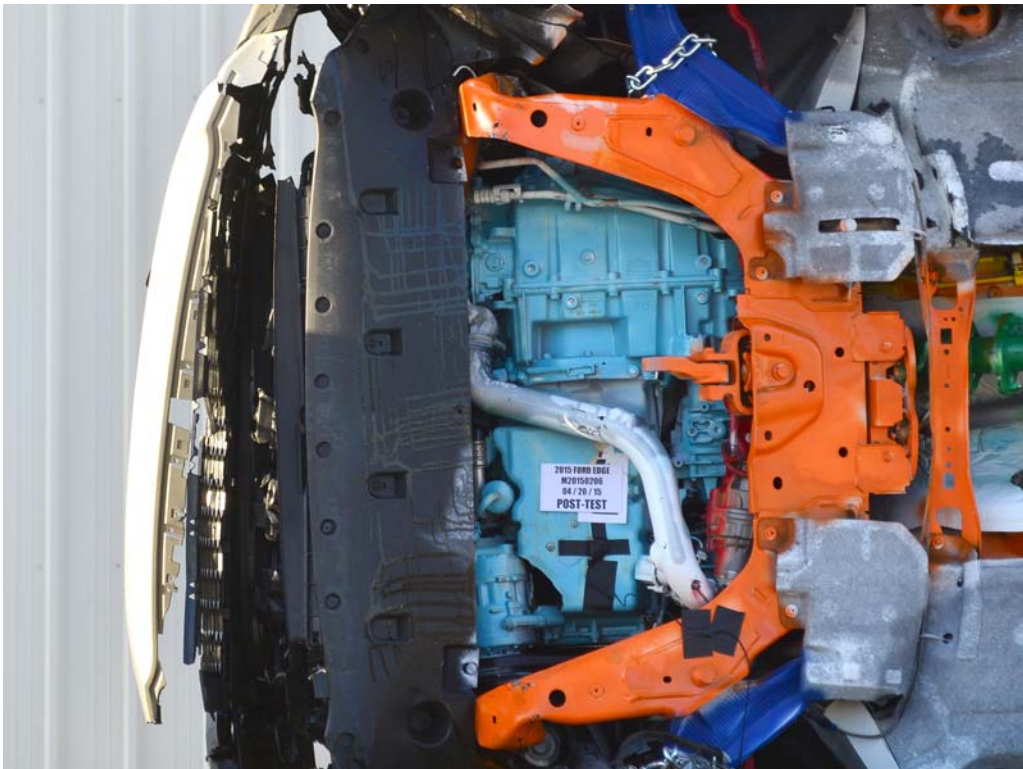


FIGURE 24. Post-Test Front Underbody View

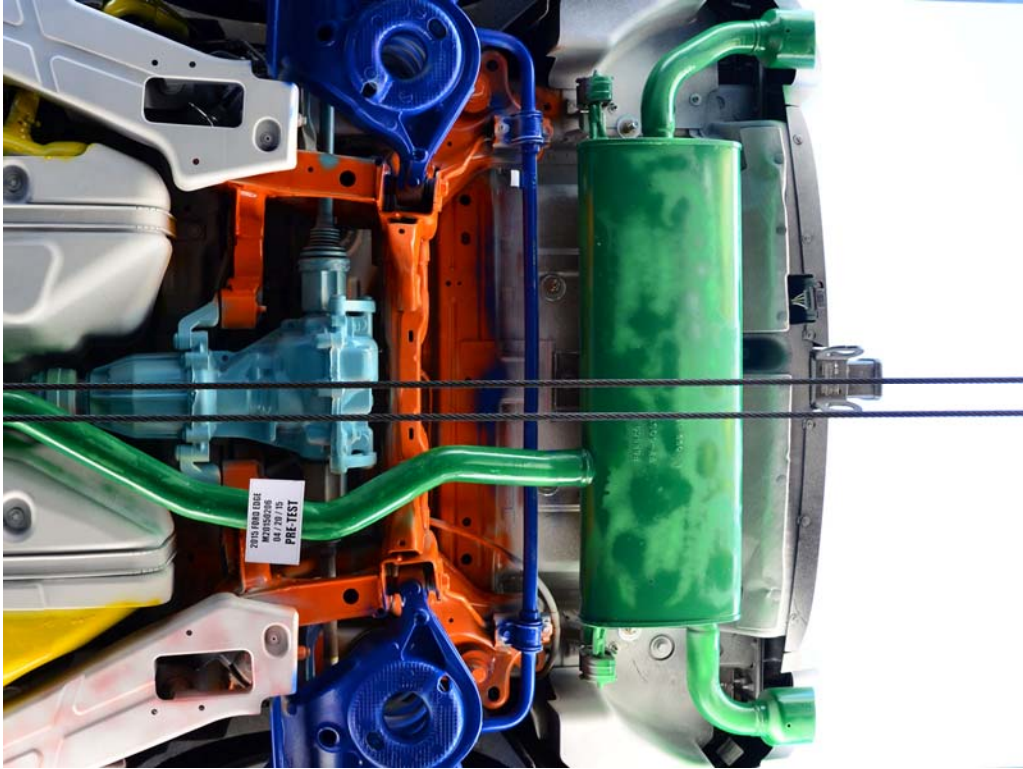


FIGURE 25. Pre-Test Rear Underbody View



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

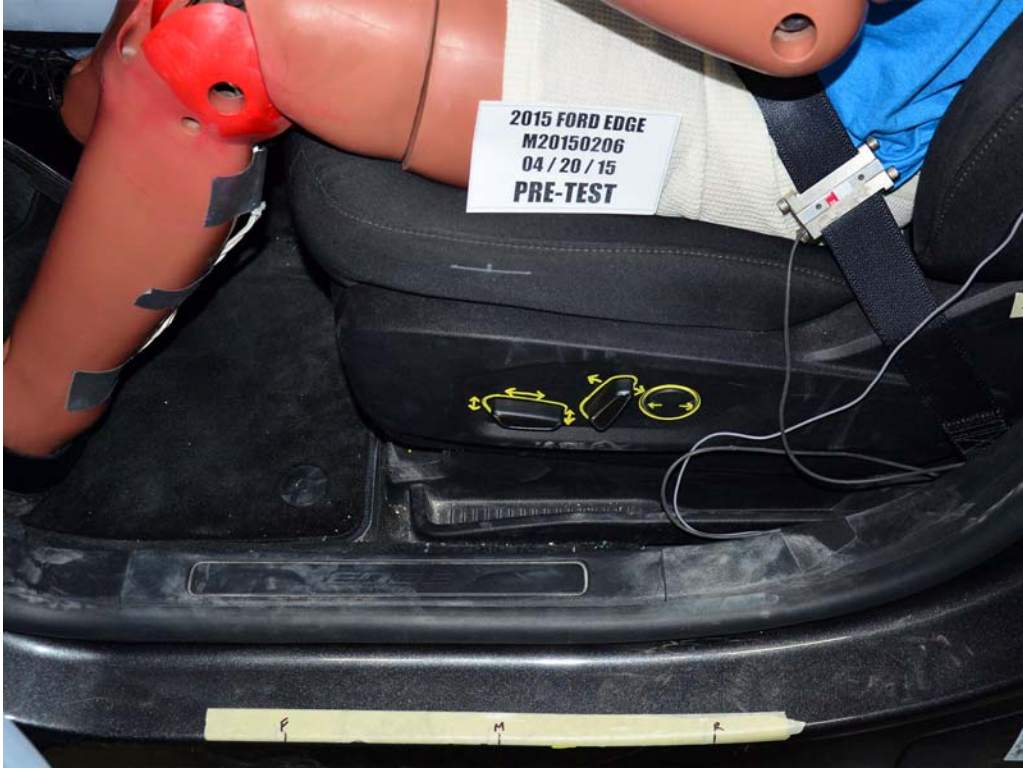


FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings



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 Bolster



FIGURE 48. Pre-Test View of the Steering Wheel

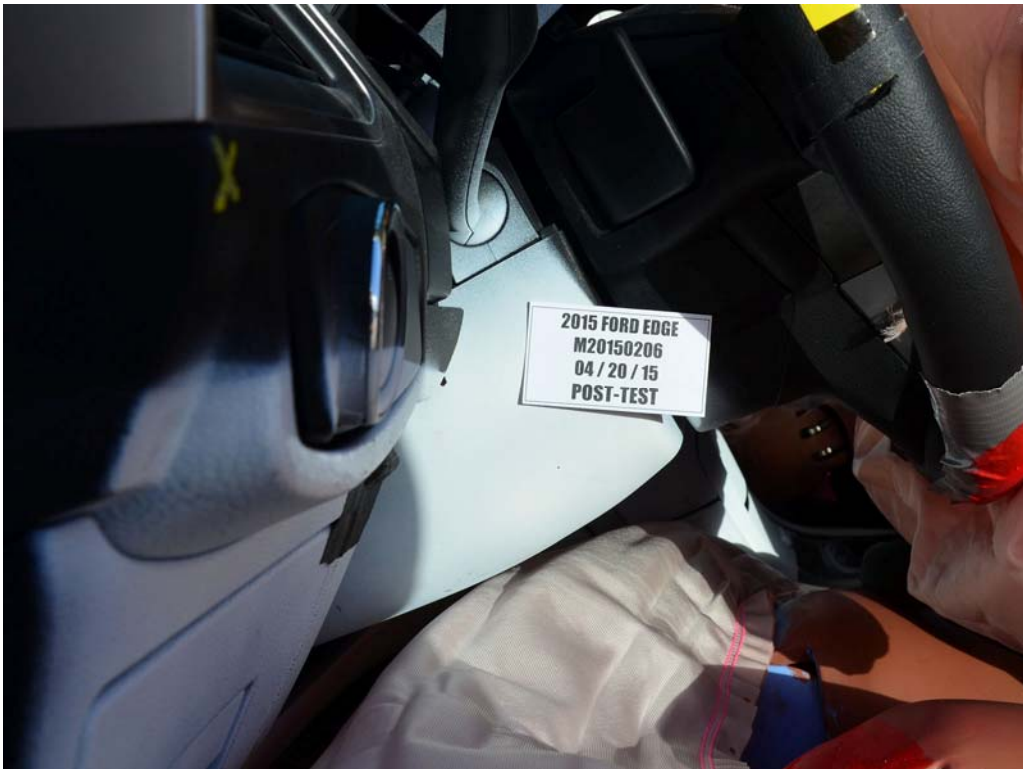


FIGURE 49. Post-Test View of the Steering Wheel



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 Glovebox



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

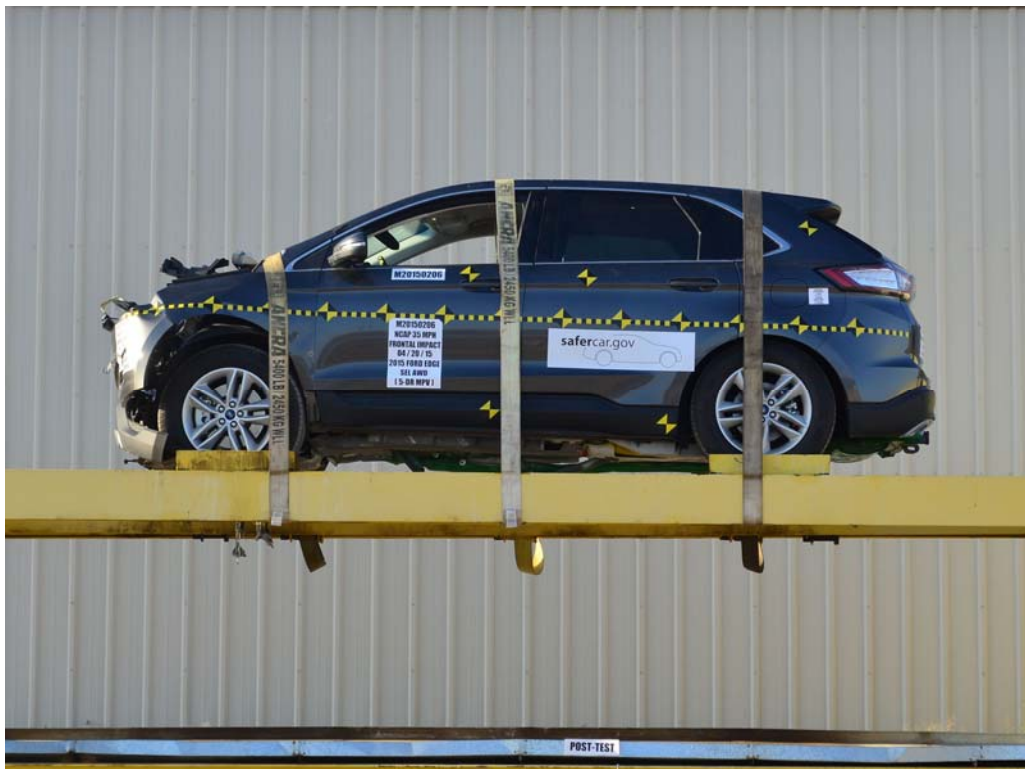


FIGURE 72. Vehicle at 0° on Static Rollover Device



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

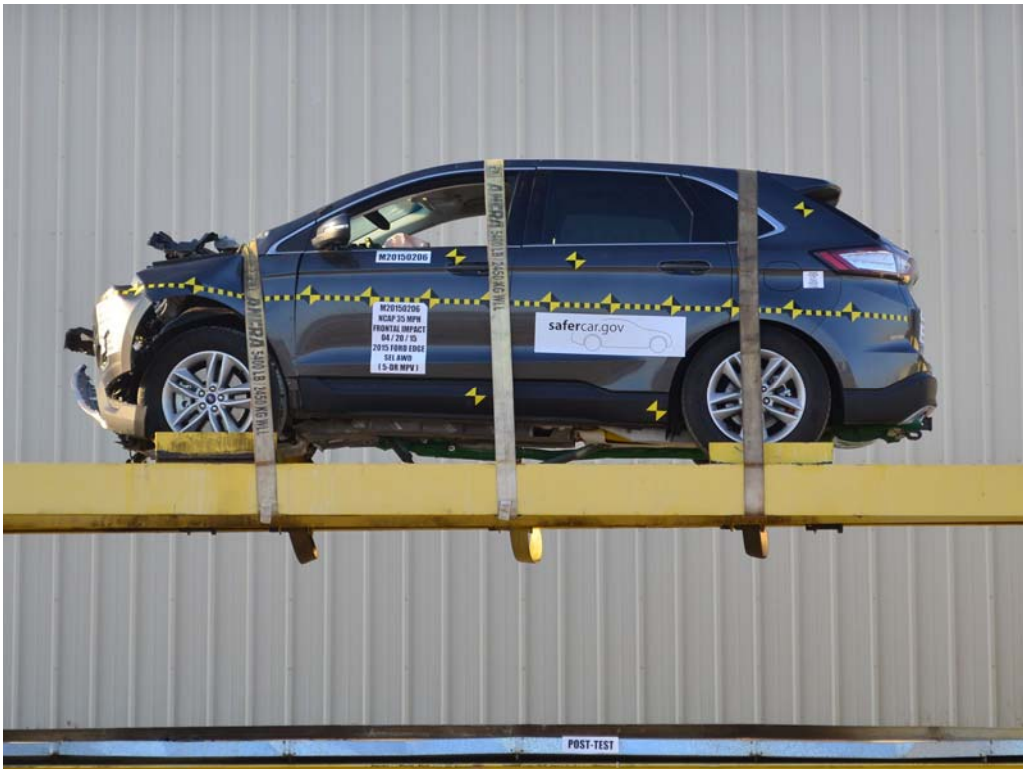


FIGURE 76. Vehicle at 360° on Static Rollover Device



FIGURE 77. 2015 Ford Edge Frontal Impact Event

VEHICLE DESCRIPTION		FB B10997		EPA Fuel Economy and Environment		Gasoline Vehicle	
Ford EDGE 2015 FORD EDGE-SEL AWD 5-SPD AUTOMATIC TRANSD 2.0L I4 ECOBOOST ENGINE		EXTERIOR MAGNETIC INTERIOR Ebony Cloth		Fuel Economy 23 MPG <small>combined city/hwy</small> 20 city 28 highway 4.3 gallons per 100 miles		You spend \$500 more in fuel costs over 5 years compared to the average new vehicle.	
STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE				Annual fuel cost \$2,300 <small>This vehicle emits 308 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and transporting fuel also create emissions. See more at www.epa.gov</small>			
EXTRAS 201 • 18" PUNTED ALUM WHEELS • BRIGHT BELLINE MOLDED DOOR HANDLES - BODY COLOR • DUAL EXHAUST TIPS • GRILLE - PAINTED BRIGHT • INTEGRATED SPOTTER MIRRORS • LED SIGNATURE LAMPS • LED TAILLAMPS • MIRRORS - PWR/HEADMAN FOLD • WLED SIG & APPROACH LAMPS • PINKI BEAM HALOGEN HEADLAMP • REAR SPOILER, BODY COLOR				INTERIOR • 11" TOUCH UP/DOWN DRIVER WIN • 6-SPD AUTOMATIC TRANSD • 6-SPD AUTOMATIC TRANSD • 2.0L I4 ECOBOOST ENGINE • 2.0L I4 ECOBOOST ENGINE • 2.0L I4 ECOBOOST ENGINE			
INCLUDED ON THIS VEHICLE				GOVERNMENT 5-STAR SAFETY RATINGS			
OPTIONAL EQUIPMENT/OTHER PASSENGER AIR BAGS GLASS & TINTED TOW PKG FRONT LICENSE PLATE BRACKET CALIFORNIA/ARIZONA STATES DAMAGE				Overall Vehicle Score To Be Rated Crash Frontal Driver Passenger To Be Rated Crash Side Front seat Rear seat To Be Rated Rollover To Be Rated			
PRICE INFORMATION MSRP \$33,999.00 SALES PRICE \$33,999.00 TOTAL OPTIONS/OTHER \$95.00 TOTAL VEHICLE & OPTION/OTHER \$34,094.00 DESTINATION & DELIVERY \$300.00 TOTAL BEFORE DISCOUNTS \$34,394.00 AWD DISCOUNT \$500.00 TOTAL SAVINGS \$500.00				Star ratings range from 1 to 5 stars (*****), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4236			
DEALER INFO Monroey Motors 88 Grove Avenue Monroey PA 18001				SALES PRICE \$34,325.00			
SALES TAX 13V 562				SALES TAX 13V 562			
SALES TAX 13V 562				SALES TAX 13V 562			
SALES TAX 13V 562				SALES TAX 13V 562			

FIGURE 78. Monroey 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

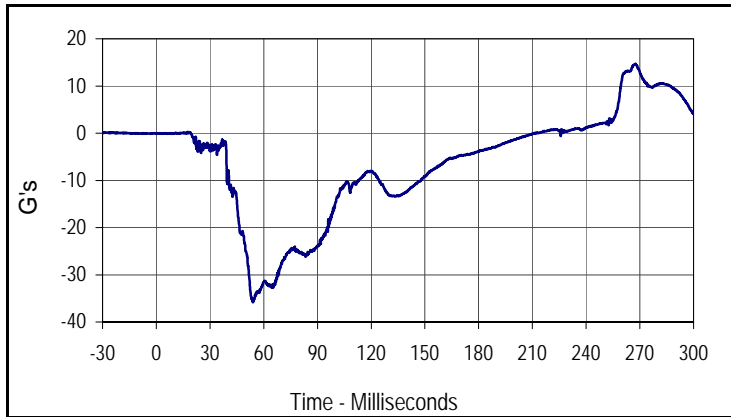
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Head Front Y Acceleration
Driver Head Front Z Acceleration
Driver Head Top X Acceleration
Driver Head Top Y Acceleration
Driver Head Left X Acceleration
Driver Head Left Z Acceleration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

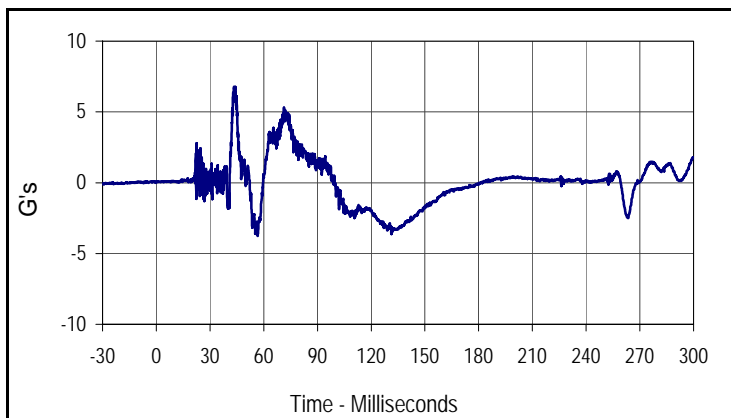
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
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: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

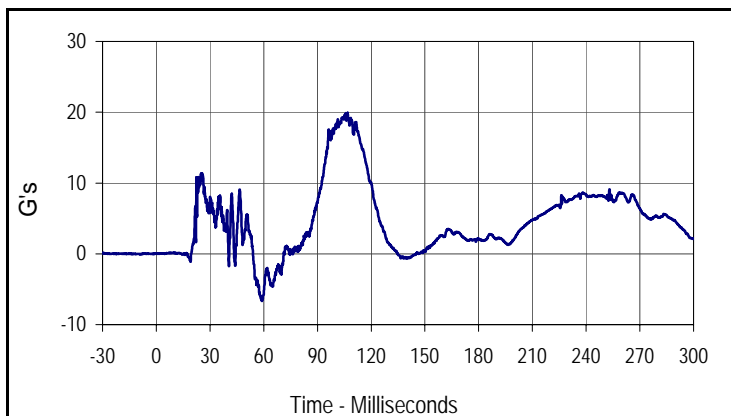
NHTSA No.: M20150206
 Test Date: 4/20/15



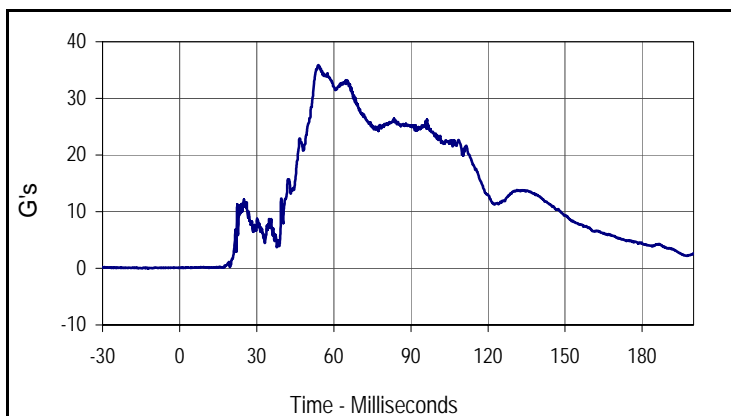
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
14.7	267.5	-35.8	53.9



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.8	44.1	-3.8	56.6



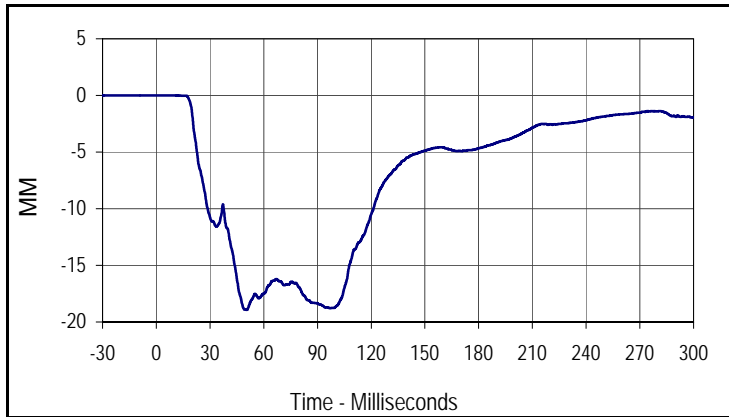
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
19.9	106.9	-6.6	59.0



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
35.9	53.9	0.0	0.5

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

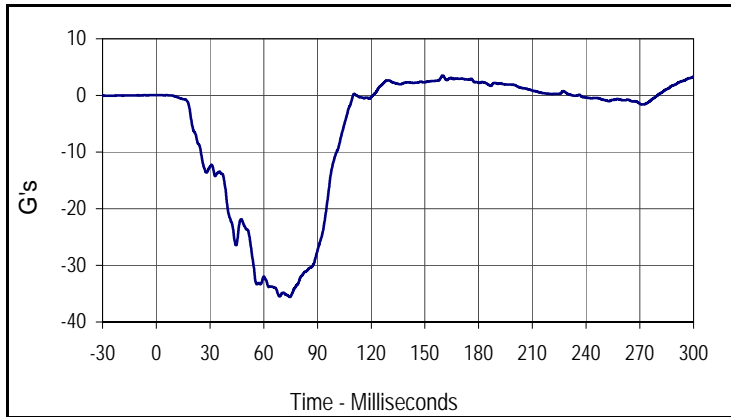
NHTSA No.: M20150206
 Test Date: 4/20/15



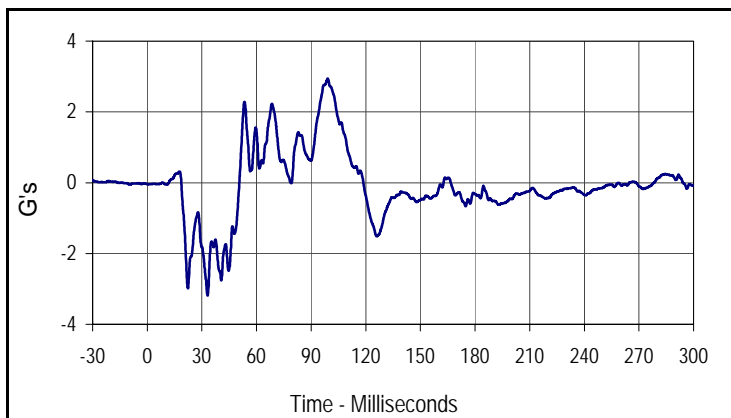
Curve Description			
Driver Chest Deflection			
Plot No.	Type	SAE Class	Units
005	FIL	600	MM
Max	Time	Min	Time
0.0	0.8	-18.9	50.6

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

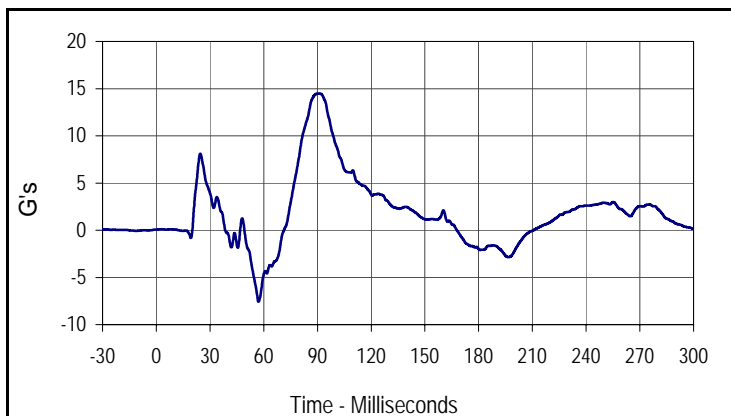
NHTSA No.: M20150206
 Test Date: 4/20/15



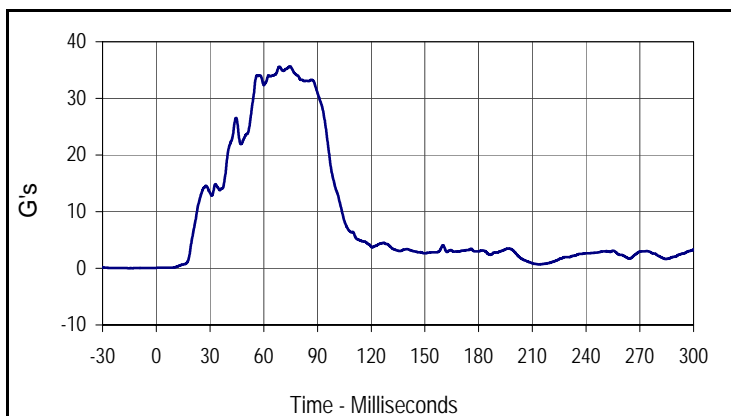
Curve Description			
Driver Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
3.5	159.9	-35.6	74.6



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
2.9	99.1	-3.2	33.1



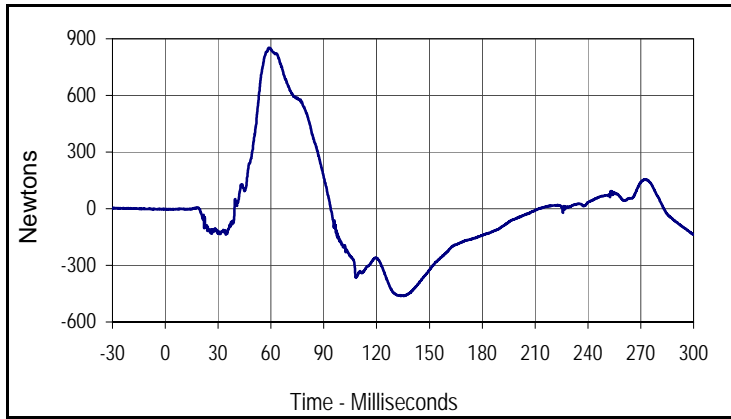
Curve Description			
Driver Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
008	FIL	180	G's
Max	Time	Min	Time
14.5	91.0	-7.6	57.1



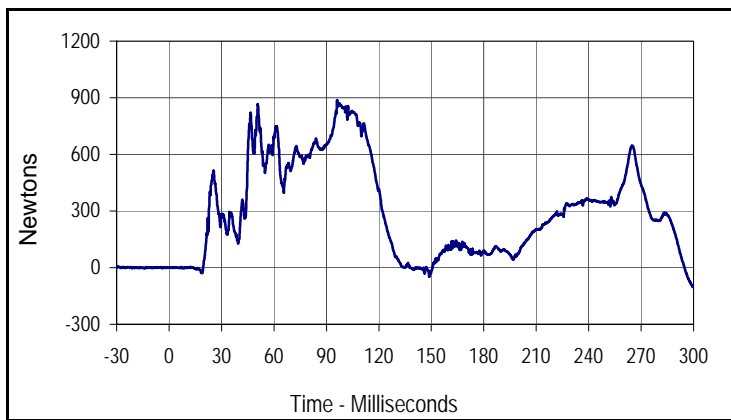
Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
009	RES	180	G's
Max	Time	Min	Time
35.7	74.7	0.1	0.0

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

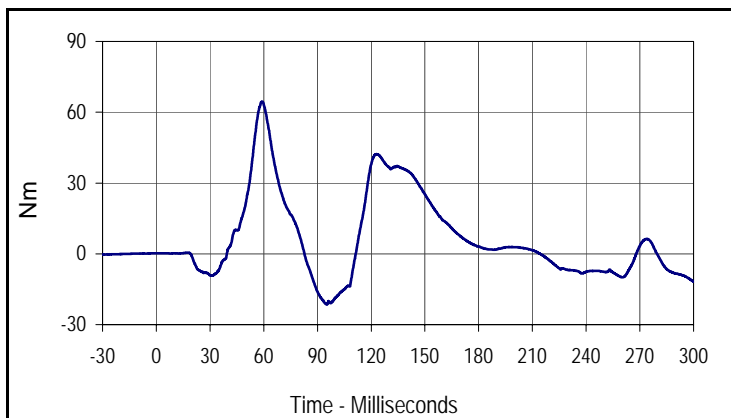
NHTSA No.: M20150206
 Test Date: 4/20/15



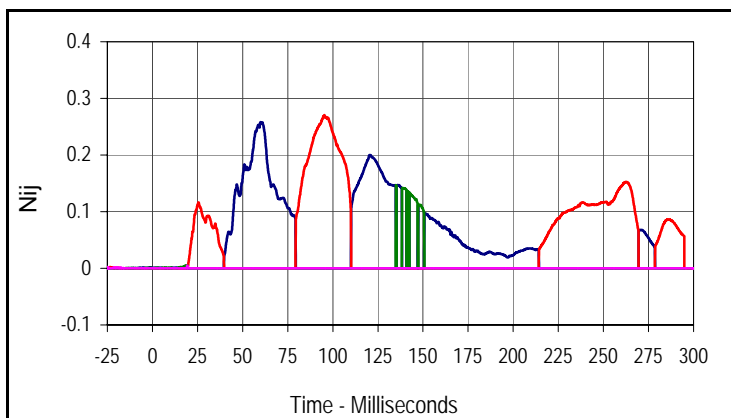
Curve Description			
Driver Upper Neck Force X			
Plot No.	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
852.7	58.9	-462.2	133.8



Curve Description			
Driver Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
888.7	96.1	-103.1	299.9



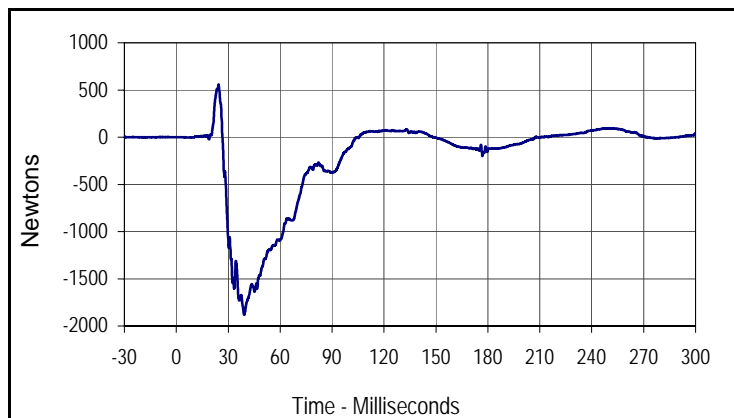
Curve Description			
Driver Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
64.5	59.2	-21.4	95.2



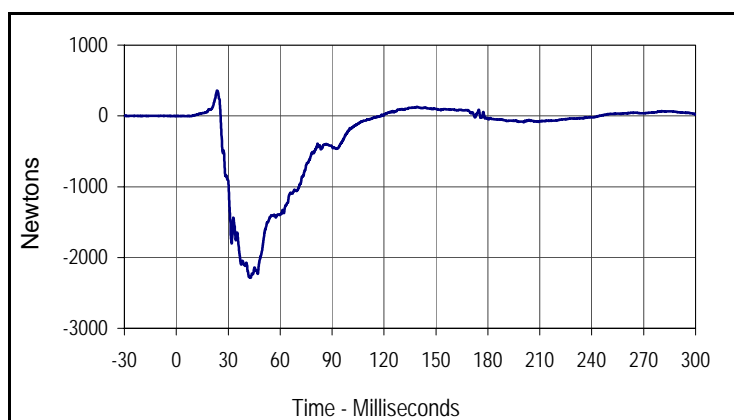
Curve Description			
Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.26	59.9
Nte	FIL	0.27	95.3
Ncf	FIL	0.15	135.0
Nce	FIL	0.00	19.2

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20150206
 Test Date: 4/20/15



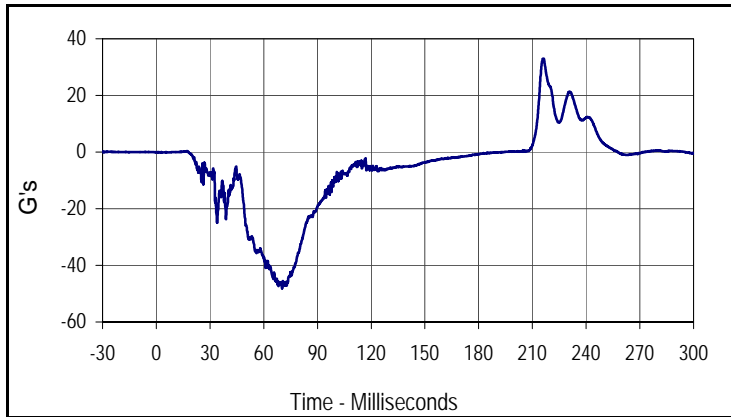
Curve Description			
Driver Left Femur Force Z			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
557.7	24.4	-1882.8	39.3



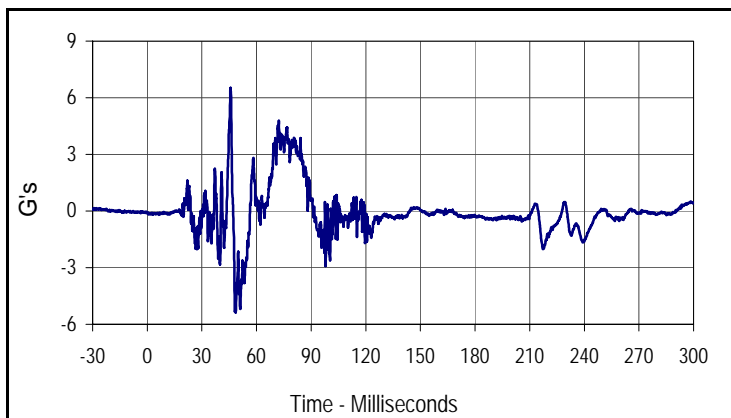
Curve Description			
Driver Right Femur Force Z			
Plot No.	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
359.0	23.7	-2285.0	43.0

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

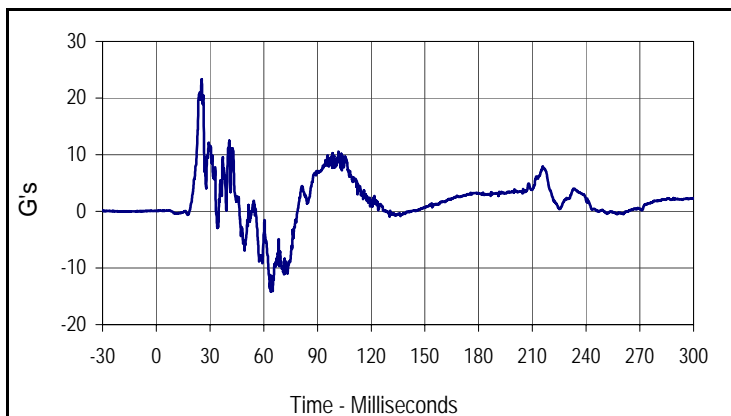
NHTSA No.: M20150206
 Test Date: 4/20/15



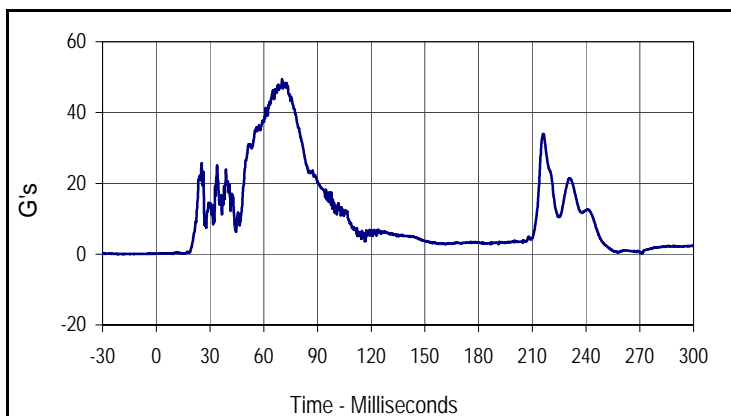
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
33.0	216.1	-48.1	70.3



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
6.5	45.8	-5.4	48.6



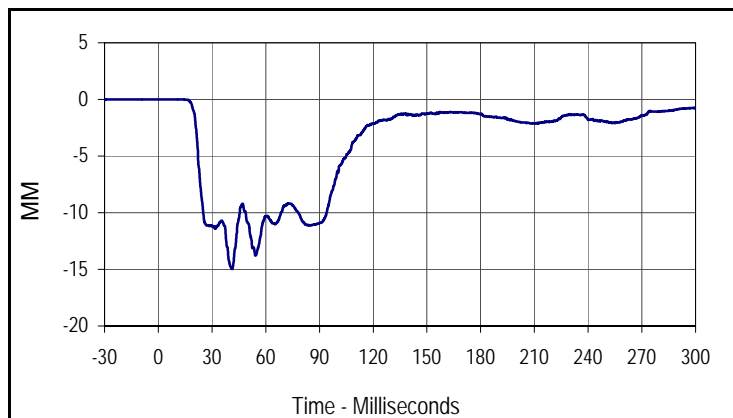
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
017	FIL	1000	G's
Max	Time	Min	Time
23.3	25.3	-14.2	64.0



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
018	RES	1000	G's
Max	Time	Min	Time
49.3	70.3	0.1	9.0

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

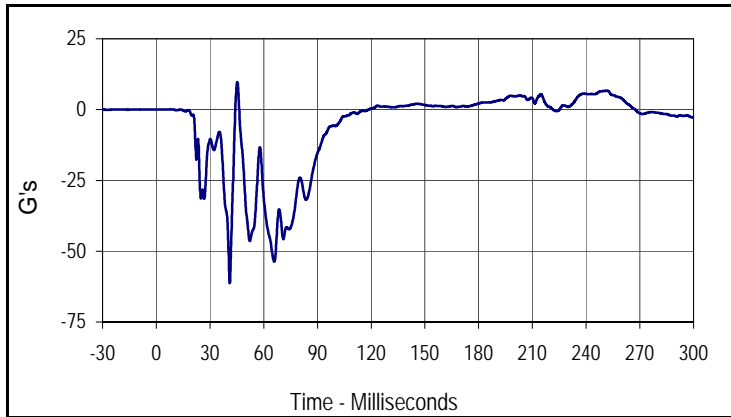
NHTSA No.: M20150206
 Test Date: 4/20/15



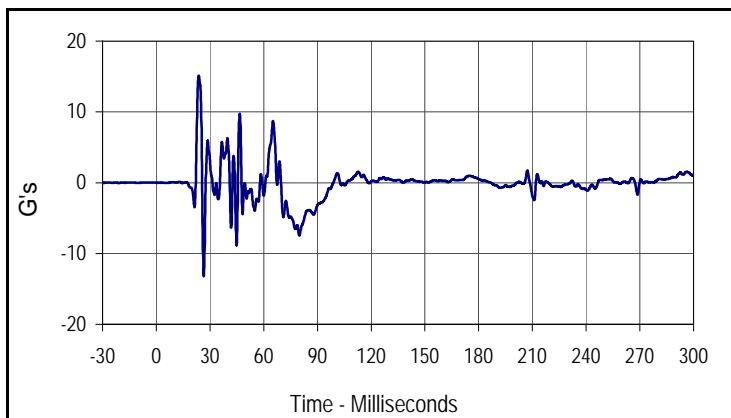
Curve Description			
Passenger Chest Deflection			
Plot No.	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
0.0	9.3	-15.0	41.2

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

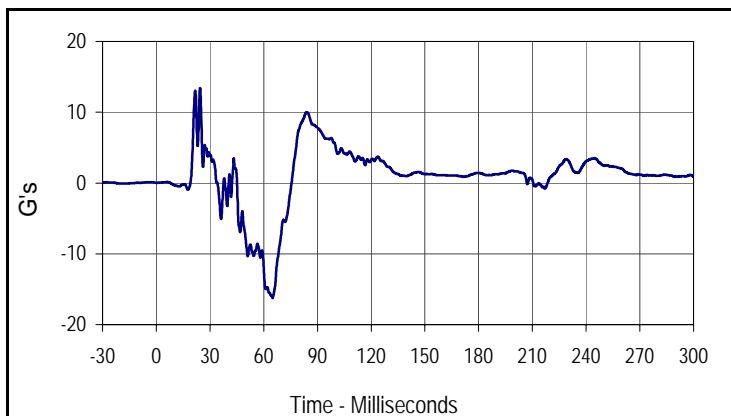
NHTSA No.: M20150206
 Test Date: 4/20/15



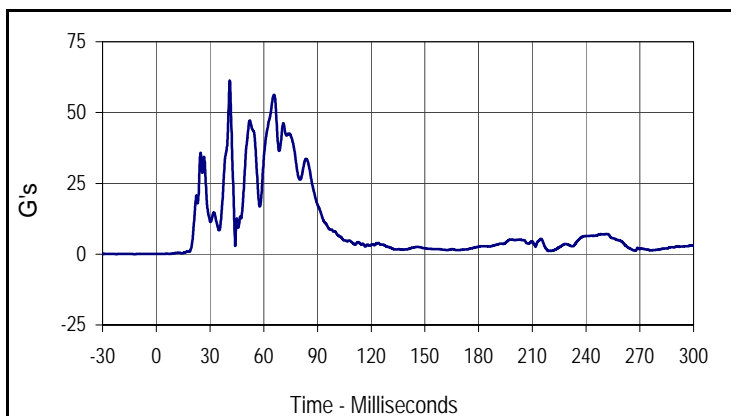
Curve Description			
Passenger Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
9.7	45.2	-61.3	41.0



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
15.1	23.7	-13.2	26.5



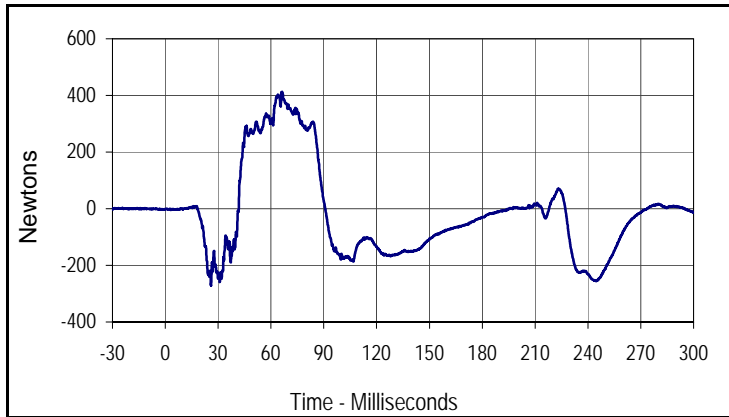
Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
022	FIL	180	G's
Max	Time	Min	Time
13.4	24.5	-16.2	65.0



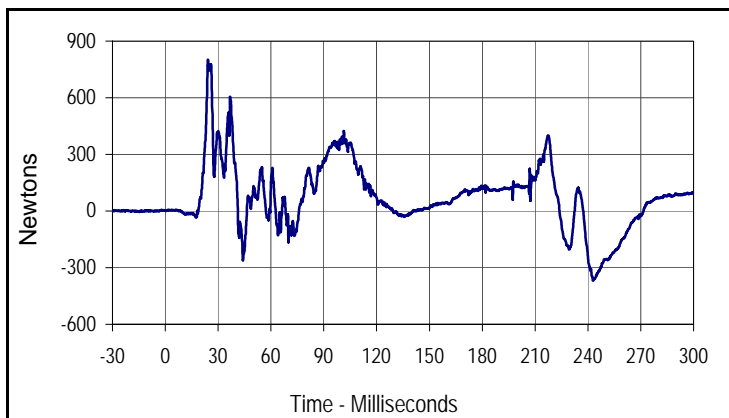
Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
023	RES	180	G's
Max	Time	Min	Time
61.3	41.0	0.0	0.0

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

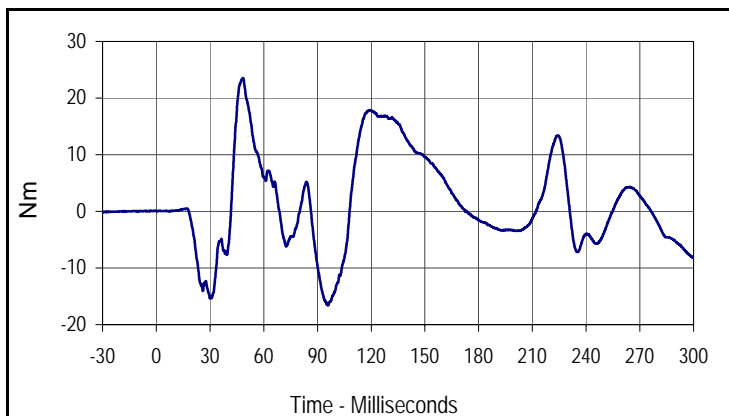
NHTSA No.: M20150206
 Test Date: 4/20/15



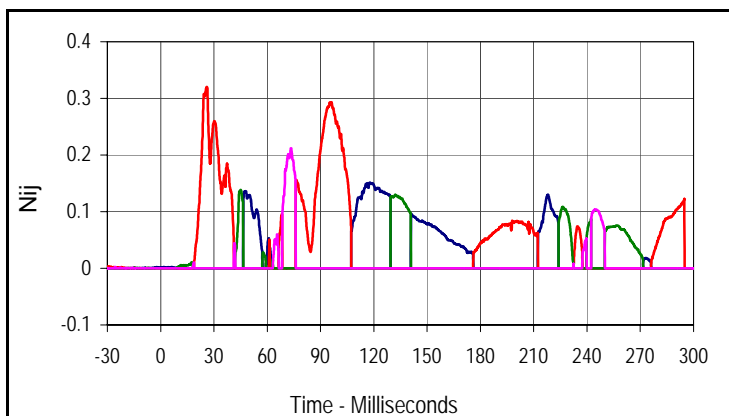
Curve Description			
Passenger Upper Neck Force X			
Plot No.	Type	SAE Class	Units
024	FIL	1000	Newtons
Max	Time	Min	Time
412.7	66.3	-271.3	25.9



Curve Description			
Passenger Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
025	FIL	1000	Newtons
Max	Time	Min	Time
802.2	24.2	-369.0	242.9



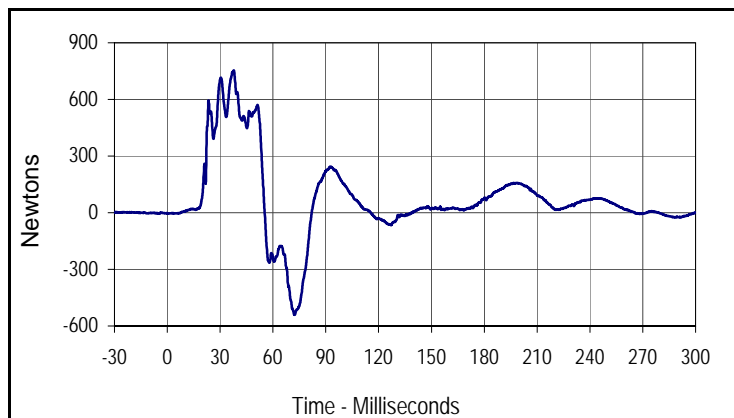
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
23.5	48.5	-16.6	96.0



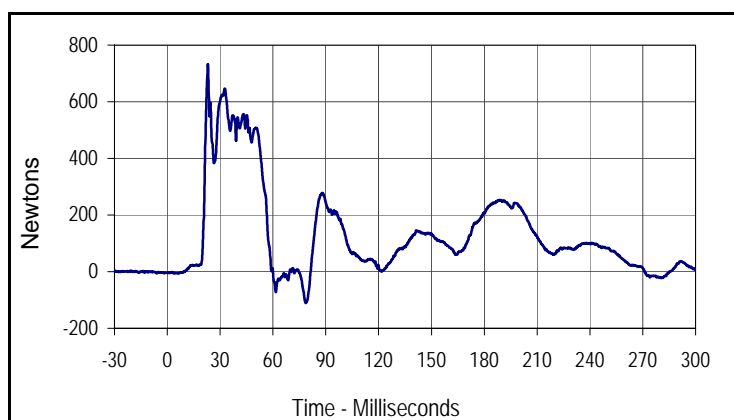
Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.15	117.8
Units	Type	Max	Time
Nte	FIL	0.32	26.1
Units	Type	Max	Time
Ncf	FIL	0.14	45.1
Units	Type	Max	Time
Nce	FIL	0.21	73.4

Test Vehicle: 2015 Ford Edge SEL AWD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20150206
 Test Date: 4/20/15



Curve Description			
Passenger Left Femur Force Z			
Plot No.	Type	SAE Class	Units
027	FIL	600	Newtons
Max	Time	Min	Time
753.9	37.7	-540.4	72.3



Curve Description			
Passenger Right Femur Force Z			
Plot No.	Type	SAE Class	Units
028	FIL	600	Newtons
Max	Time	Min	Time
732.0	23.1	-111.1	78.6

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: 4/17/15



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: 4/17/15

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

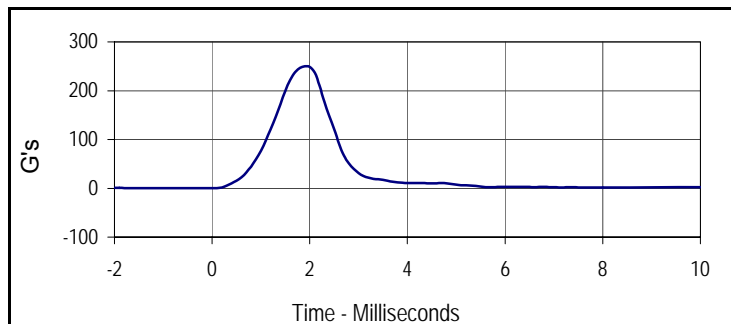
Test Date: 4/17/15



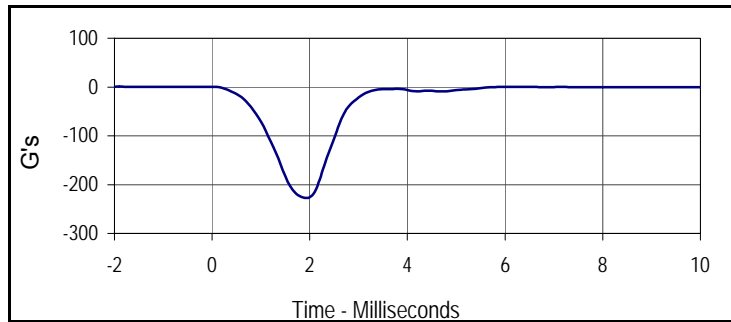
ATD Serial No.: 360

Test I.D.: M360HD009

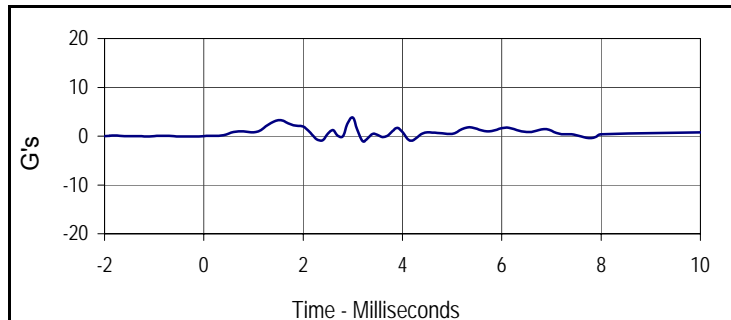
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	302	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	37.3	Pass
	Min		36.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.5	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	249.9	Pass
Peak Lateral Acceleration	G's	≤15.0	3.8	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	4.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



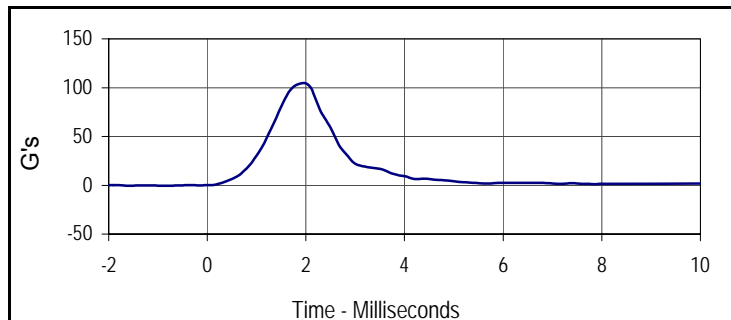
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
249.9	1.9	0.2	0.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.7	-1.9	-227.0	1.9



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
3.8	3.0	-1.0	3.2



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
104.5	2.0	-0.5	-0.9

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

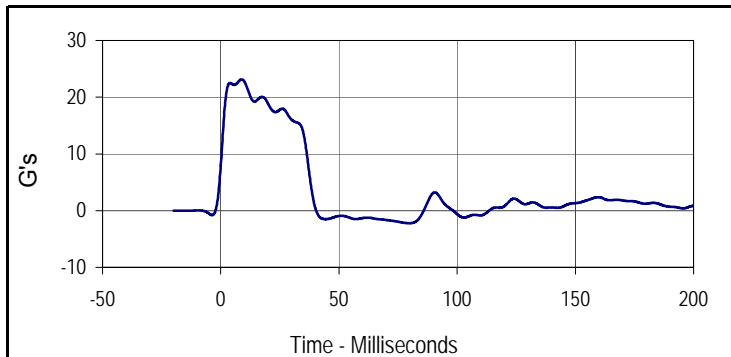
Test Date: 4/17/15



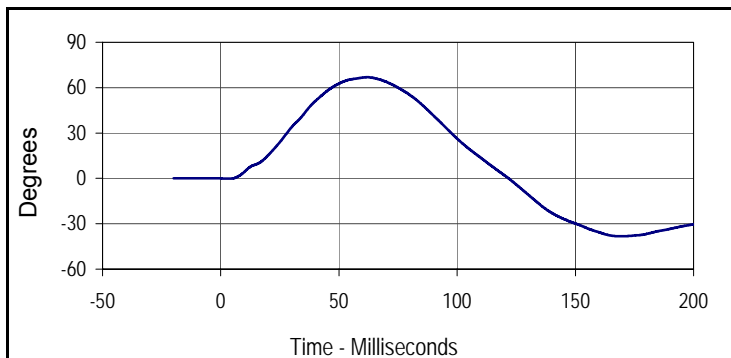
ATD Serial No.: 360

Test I.D.: M360NF009

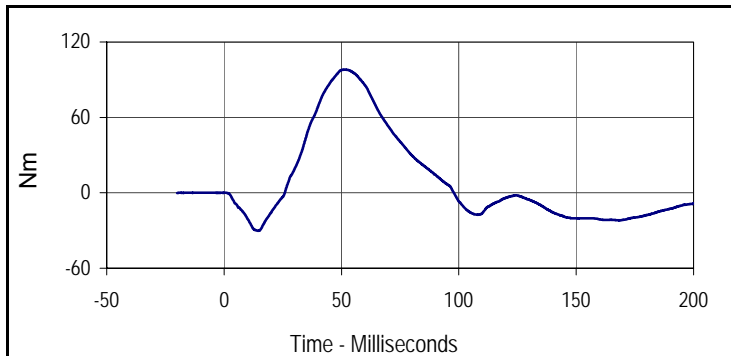
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	367	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.2	Pass	
Humidity During Soak	Max	10.0 to 70.0	37.3	Pass	
	Min		36.4	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	36.6	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.02	Pass	
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.7	Pass
	20 Msec.	G's	17.6 to 22.6	18.9	Pass
	30 Msec.	G's	12.5 to 18.5	16.0	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 29.0	16.0	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	38	Pass	
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	66.9	Pass
	Time	Msec.	57.0 to 64.0	62.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	121.8	Pass	
Moment About Occ. Condyle	Max	Nm	88.1 to 108.5	98.1	Pass
	Time	Msec.	47.0 to 58.0	51.4	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	97.9	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.1	8.8	-2.2	79.8



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
66.9	62.1	-38.2	169.3



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
98.1	51.4	-30.3	14.3

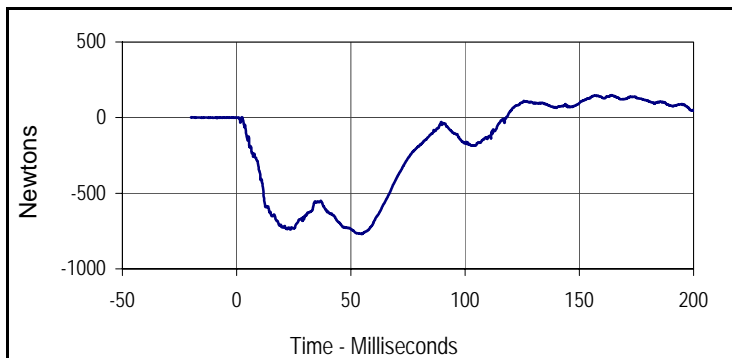
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 4/17/15

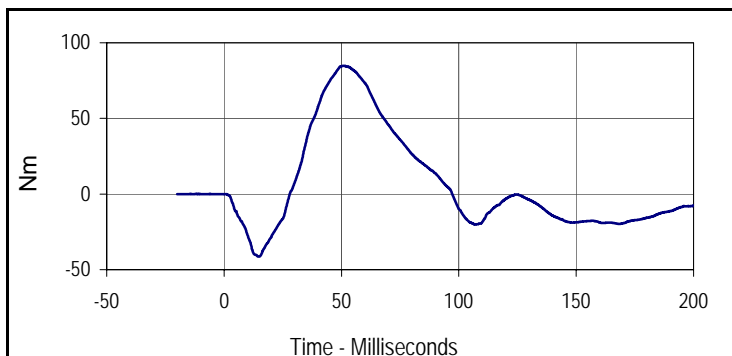


ATD Serial No.: 360

Test I.D.: M360NF009



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
148.0	164.2	-768.9	55.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
84.7	51.1	-41.4	14.5

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

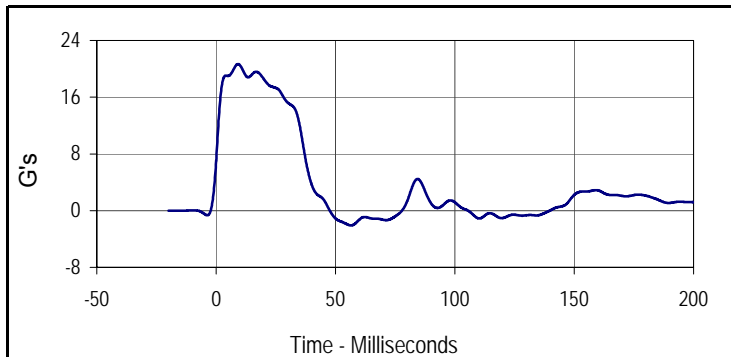
Test Date: 4/17/15



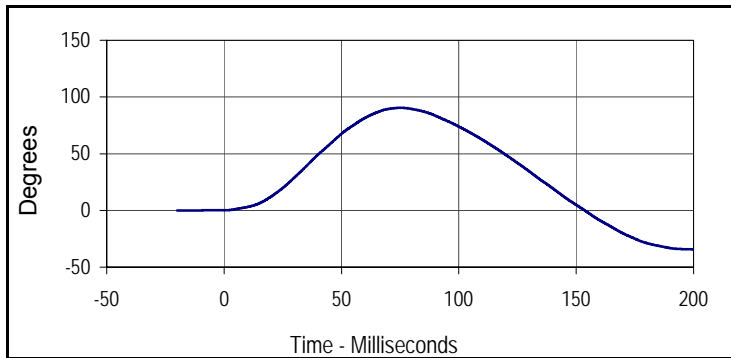
ATD Serial No.: 360

Test I.D.: M360NE009

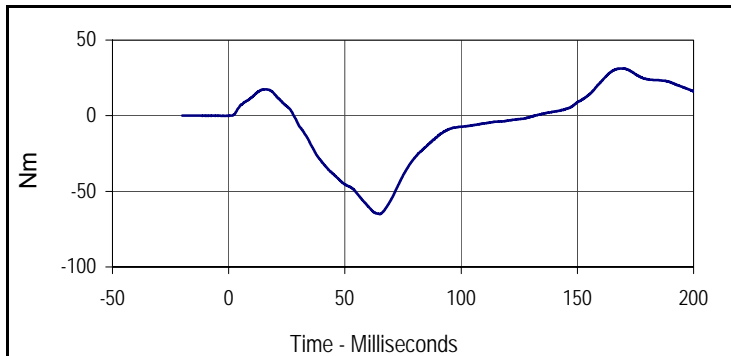
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	412	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.2	Pass	
Humidity During Soak	Max	10.0 to 70.0	37.3	Pass	
	Min		36.4	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	36.5	Pass	
Pendulum Velocity	m/s	5.94 to 6.19	6.02	Pass	
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.5	Pass
	20 Msec.	G's	14.0 to 19.0	18.6	Pass
	30 Msec.	G's	11.0 to 16.0	15.2	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 22.0	15.2	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	38.9	Pass	
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	90.4	Pass
	Time	Msec.	72.0 to 82.0	75.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	153.6	Pass	
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-65.1	Pass
	Time	Msec.	65.0 to 79.0	65.1	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	131.7	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.7	9.2	-2.1	56.5



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
90.4	75.2	-34.3	200.0



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.3	169.8	-65.1	65.1

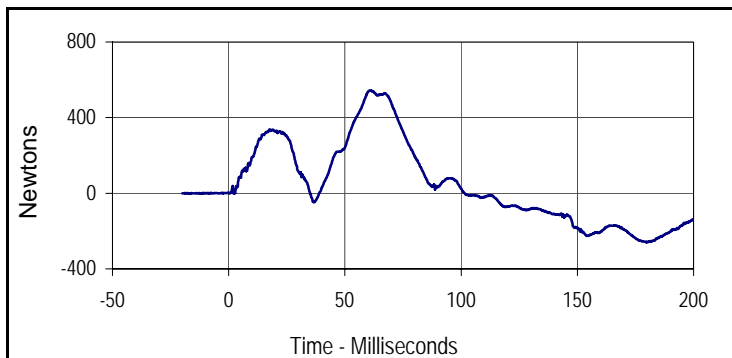
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 4/17/15

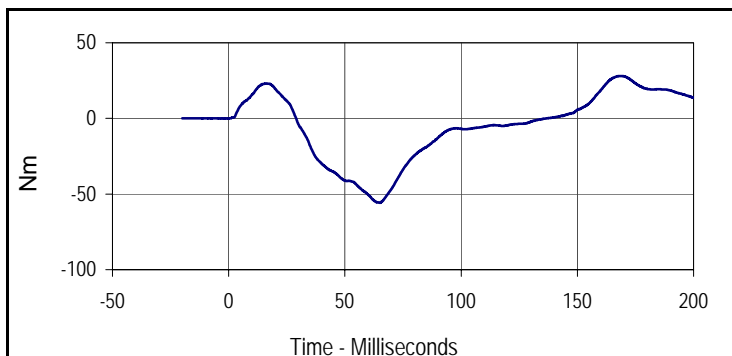


ATD Serial No.: 360

Test I.D.: M360NE009



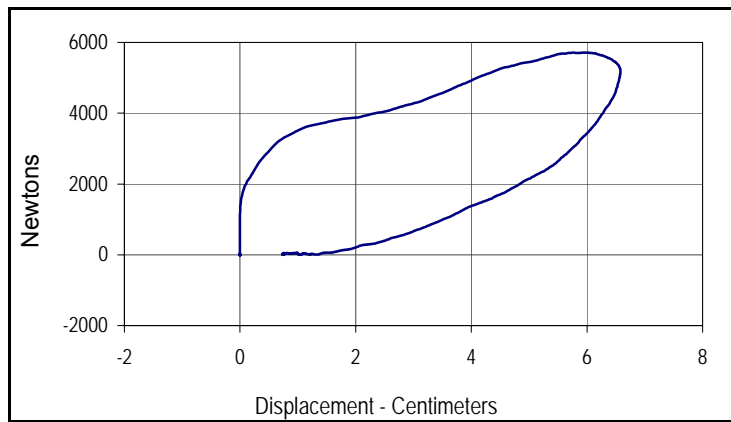
Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
545.1	61.0	-259.0	179.7



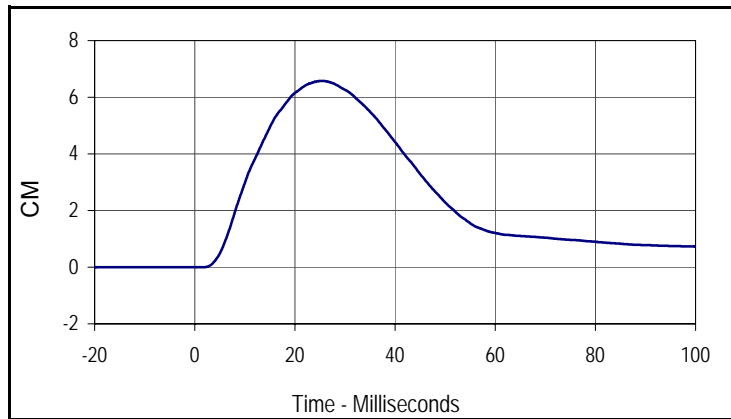
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
28.0	168.1	-55.8	65.1



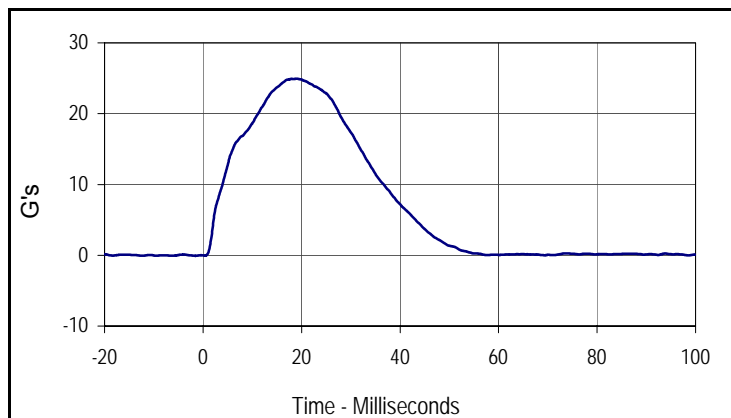
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	487	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	37.3	Pass
	Min		36.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.7	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5714	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.58	Pass
Internal Hysteresis	%	69 to 85	71.7	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.7
Peak Probe Force		Peak Chest Deflection	
5714		6.58	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.6	25.4	0.0	1.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.9	19.0	-0.1	-1.5

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

Test Date: 4/17/15



ATD Serial No.: 360

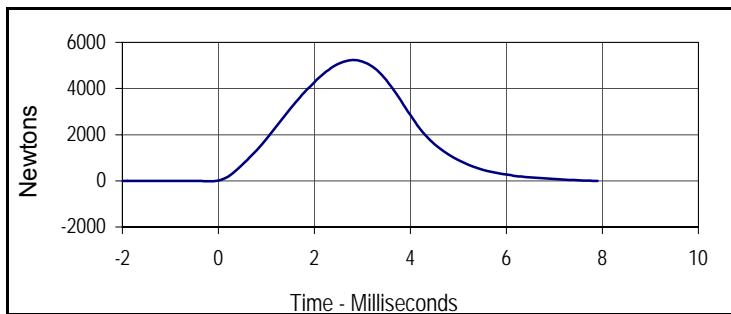
Test I.D.: M360LK009, M360RK009

Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	542	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	37.3	Pass
	Min		36.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.3	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5233	Pass
Overall Test Results				Pass

Right Knee

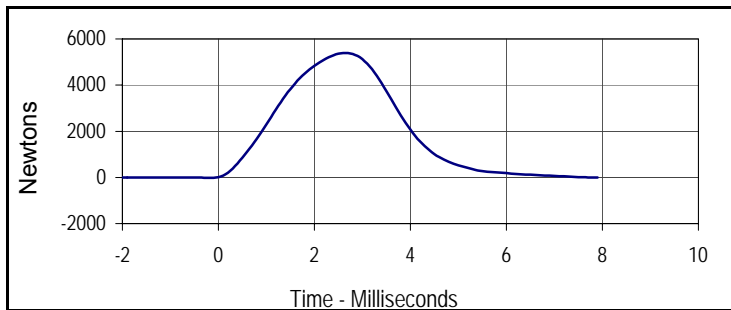
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5389	Pass
Overall Test Results				Pass



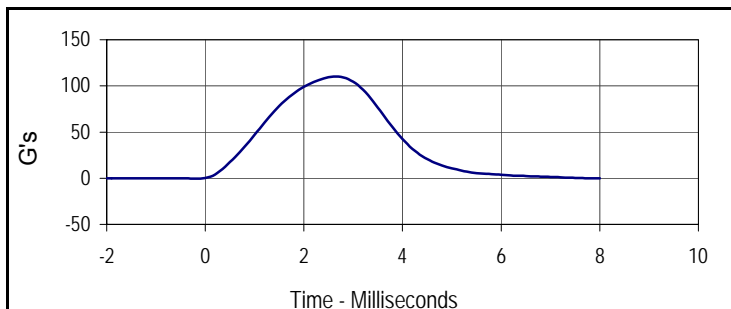
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5233.2	2.8	-20.1	-0.2



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
107.0	2.8	-1.2	0.0



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5388.6	2.6	-22.0	-0.2



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
110.1	2.6	-0.5	0.0

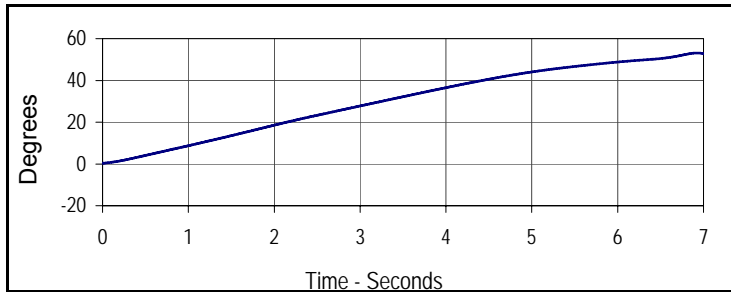


Left Hip Joint-Femur Results

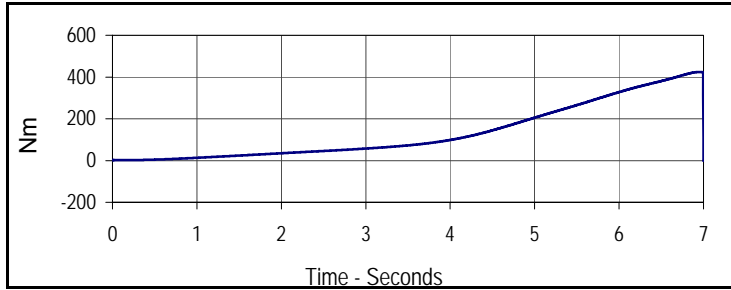
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	617	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	37.3	Pass
	Min		36.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.7	Pass
Rotation Rate	deg/sec	5 to 10	7.7	Pass
Femur Torque at 30°	Nm	≤ 95	62.2	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	43.5	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

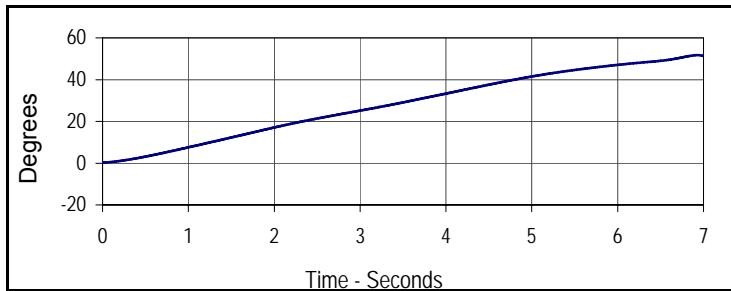
Rotation Rate	deg/sec	5 to 10	7.5	Pass
Femur Torque at 30°	Nm	≤ 95	79.3	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	42.4	Pass
Overall Test Results				Pass



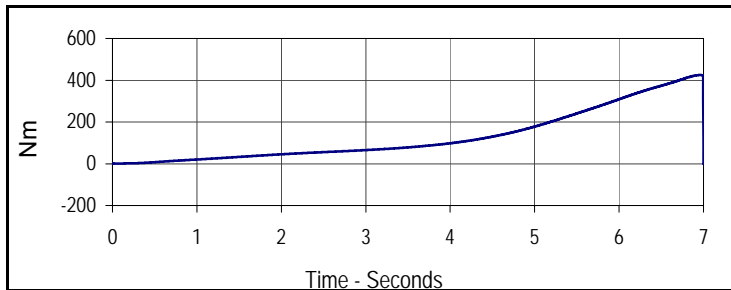
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
53.2	6.9	0.3	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
423.9	6.9	0.3	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
51.7	6.9	0.3	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
424.8	7.0	0.3	0.0

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

Test Date: 3/11/15



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: 3/11/15



ATD Serial No.: 141

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.23	Pass
Laboratory Relative Humidity	%	10 to 70	27.4	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

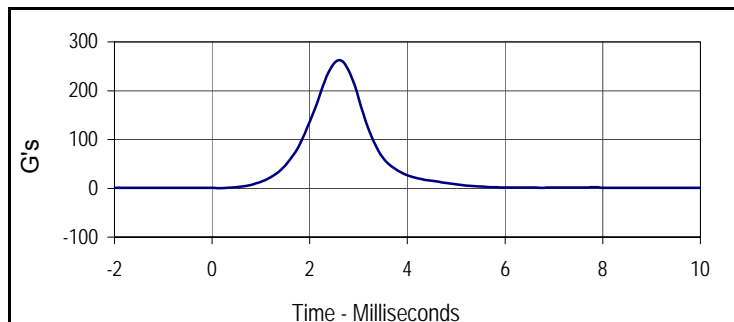
Test Date: 3/11/15



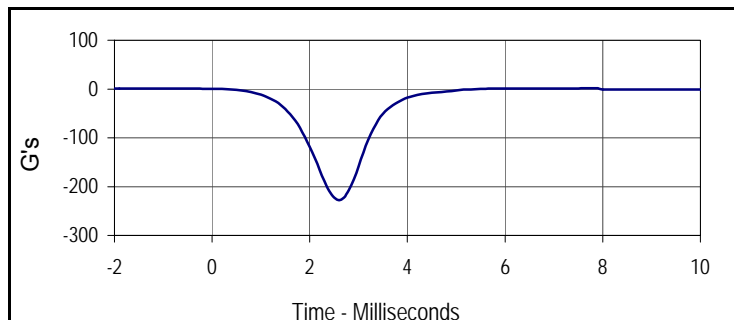
ATD Serial No.: 141

Test I.D.: F141HD067

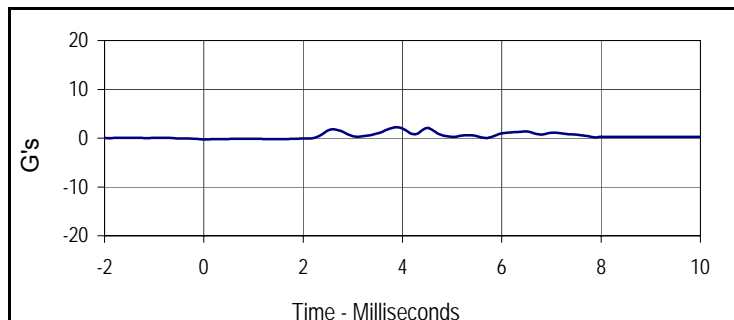
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	275	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	27.8	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.3	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	262.8	Pass
Peak Lateral Acceleration	G's	≤15.0	2.2	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	0.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



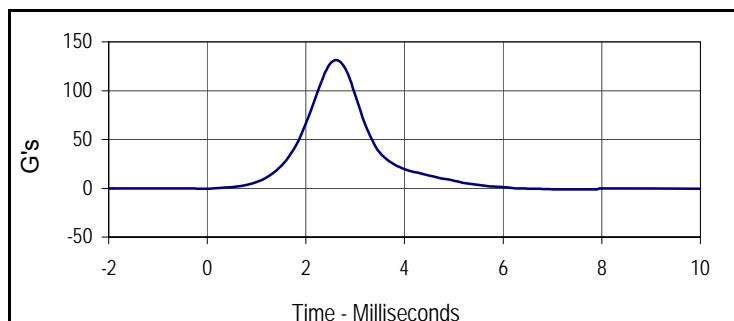
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
262.8	2.6	0.3	0.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.0	6.0	-227.6	2.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
2.2	3.9	-0.3	0.0



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
131.5	2.6	-0.4	-0.1

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

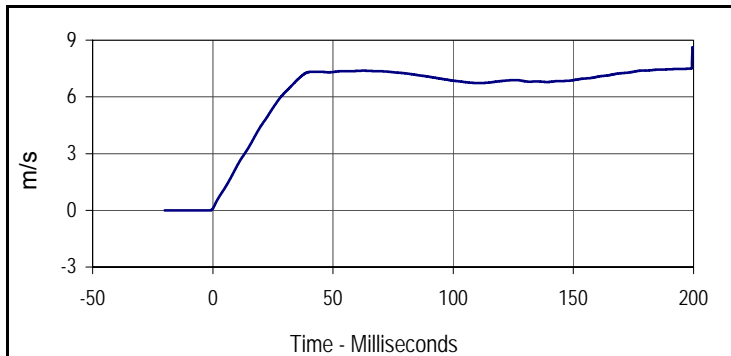
Test Date: 3/11/15



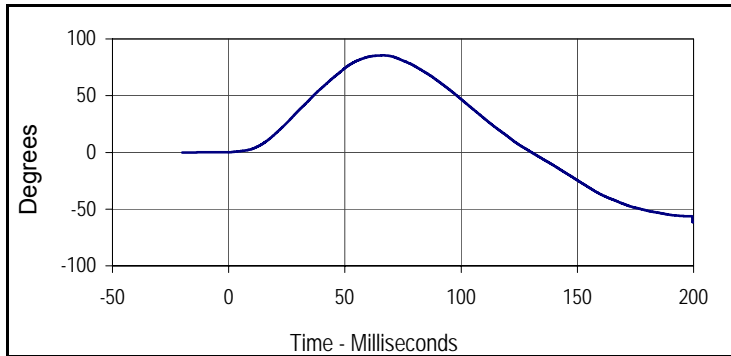
ATD Serial No.: 141

Test I.D.: F141NF067

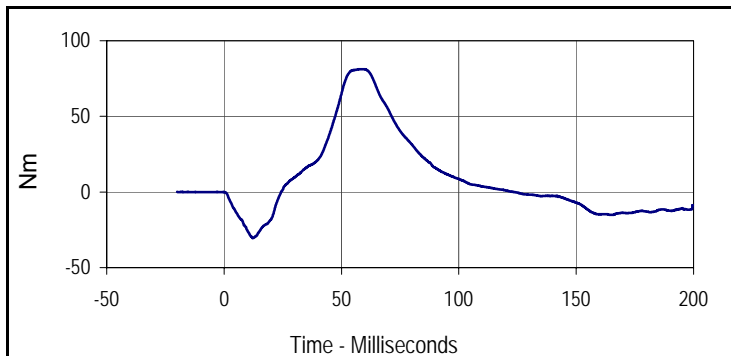
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	340	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	27.8	Pass	
	Min		27.3	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	27.7	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.91	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.2	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	85.5	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	81.3	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	95.9	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	199.5	0.0	-1.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
85.5	66.5	-61.3	199.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
81.3	57.9	-30.5	12.2

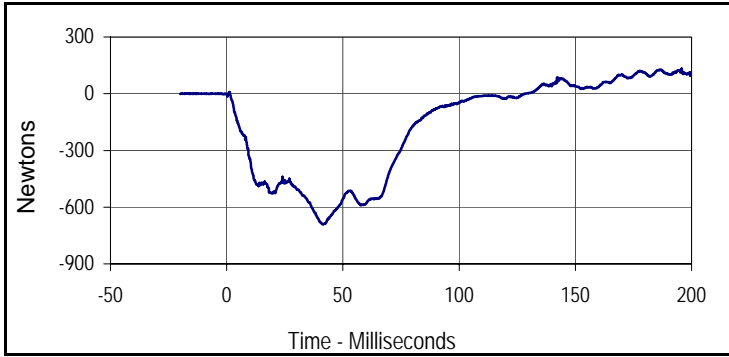
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 3/11/15

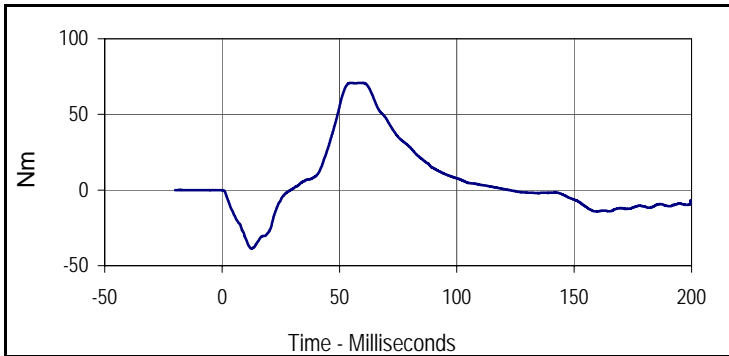


ATD Serial No.: 141

Test I.D.: F141NF067



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
132.2	195.7	-691.9	41.5



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
70.9	54.6	-38.7	12.6

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

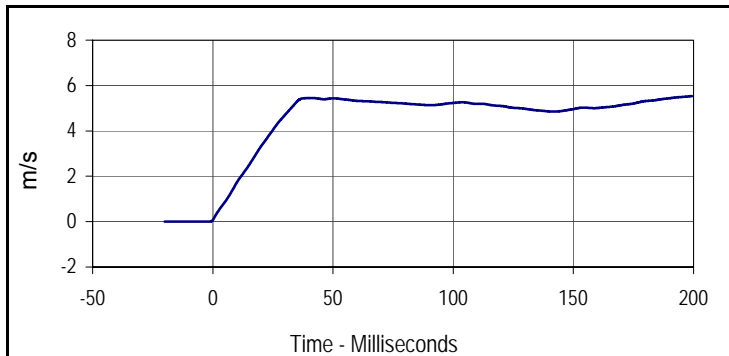
Test Date: 3/11/15



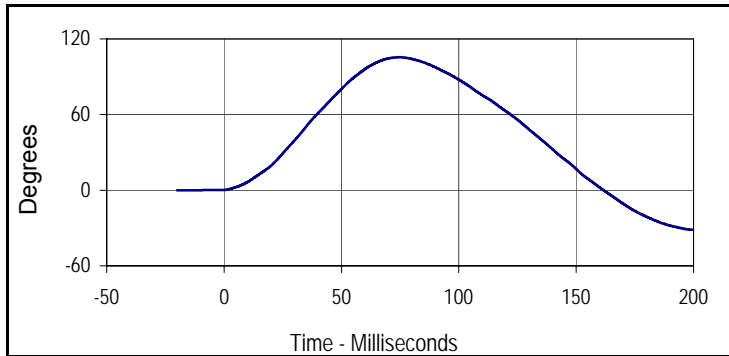
ATD Serial No.: 141

Test I.D.: F141NE067

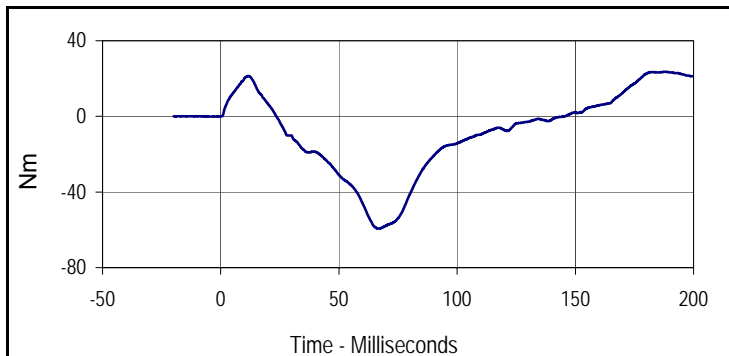
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	405	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	27.8	Pass	
	Min		27.3	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	27.8	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.03	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.3	Pass
	30 Msec.	m/s	4.6 to 5.6	4.7	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	105.5	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-59.4	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	108.1	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
5.5	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
105.5	74.7	-31.3	199.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
23.6	187.6	-59.4	66.4

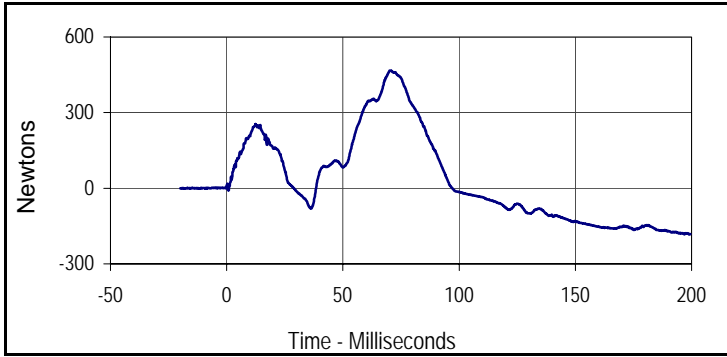
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 3/11/15

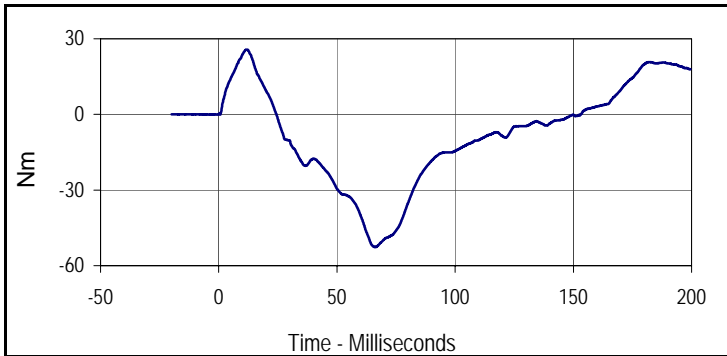


ATD Serial No.: 141

Test I.D.: F141NE067



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
467.2	70.2	-182.9	196.9



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
25.7	11.8	-52.7	66.3

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

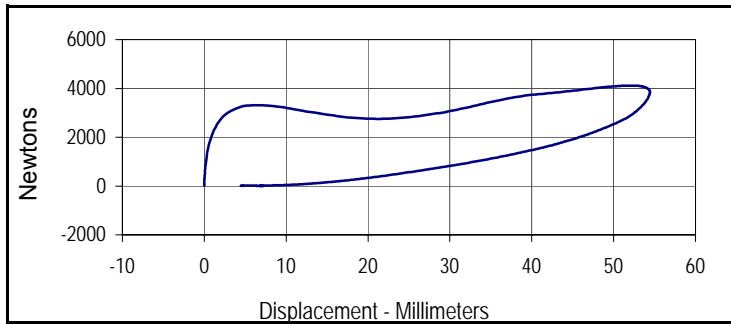
Test Date: 3/11/15



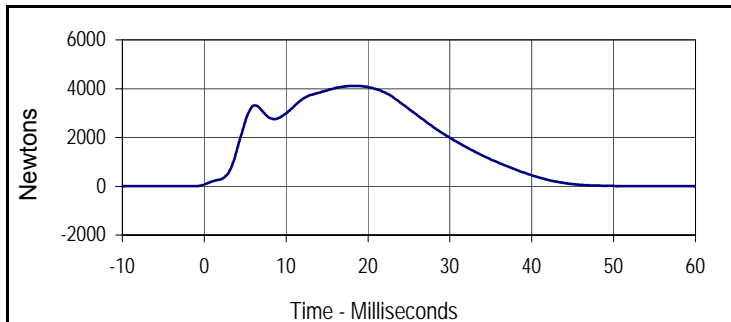
ATD Serial No.: 141

Test I.D.: F141CH067

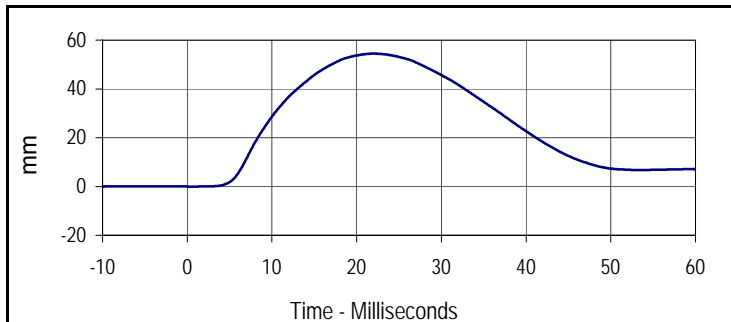
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	450	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	27.8	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.7	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	Newtons	3900 to 4400	4085	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4117	Pass
Internal Hysteresis	%	69 to 85	71.3	Pass
Overall Test Results				Pass



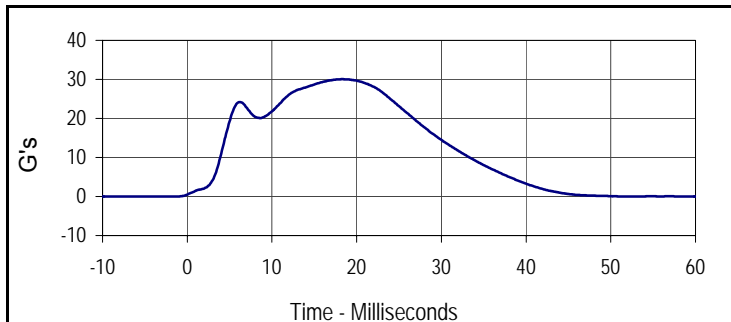
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.3
Peak Probe Force		Peak Chest Deflection	
4117.1		54.4	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4117.1	18.3	0.2	-3.8



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
54.4	22.0	0.0	0.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
30.1	18.3	0.0	-3.8



Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	505	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	27.8	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.8	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	3450 to 4060	3858	Pass
Overall Test Results				Pass

Right Knee

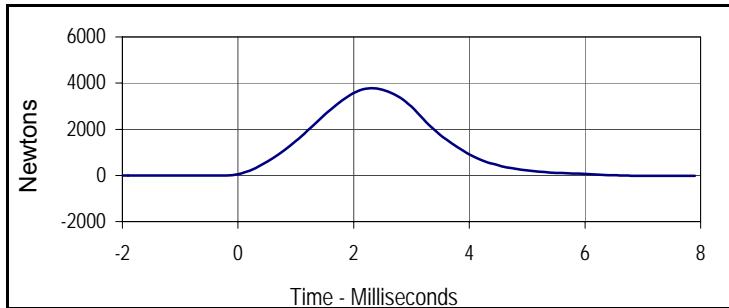
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	3450 to 4060	3779	Pass
Overall Test Results				Pass



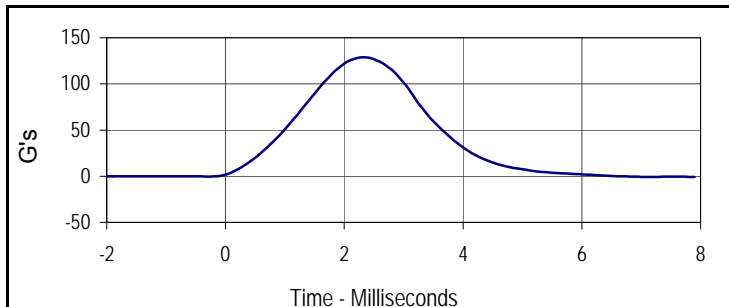
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3858.1	2.2	-28.1	7.9



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
131.6	2.2	-1.4	0.0



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3778.6	2.3	-23.5	7.9



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
128.9	2.3	-1.6	0.0

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

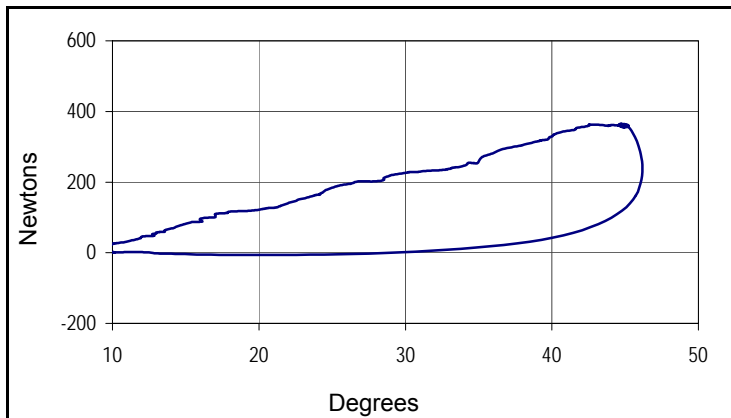
Test Date: 3/11/15



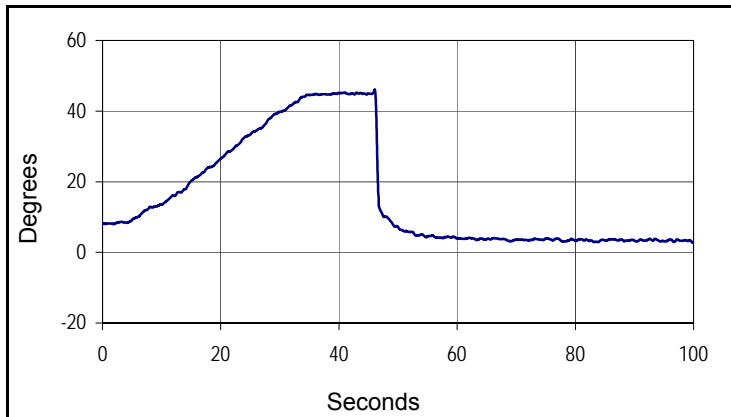
ATD Serial No.: 141

Test I.D.: TF067

Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	570	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	27.8	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.8	Pass
Initial Reference Plane Angle	Degrees	≤ 20	8.0	Pass
Peak Force at 45° +/-0.5°	Newtons	320.0 to 390.0	365.0	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.0	Pass
Final Reference Plane Angle	Degrees	+/-8	2.9	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
365.0		46.2



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
46.2	46.1	2.8	99.9

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

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

Test Date: 4/21/15



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: 4/21/15



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

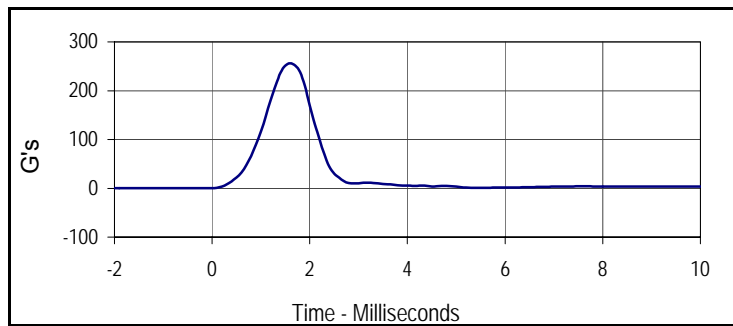
Test Date: 4/21/15



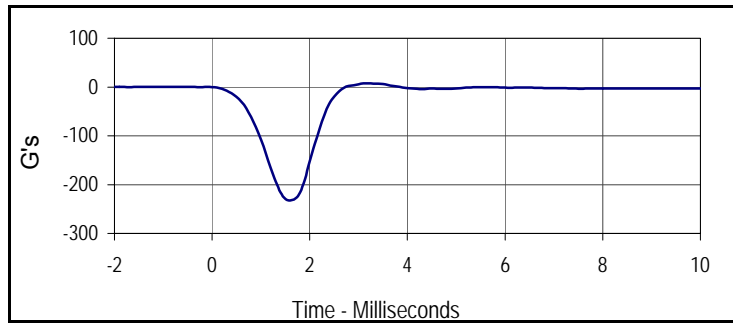
ATD Serial No.: 360

Test I.D.: M360HD010

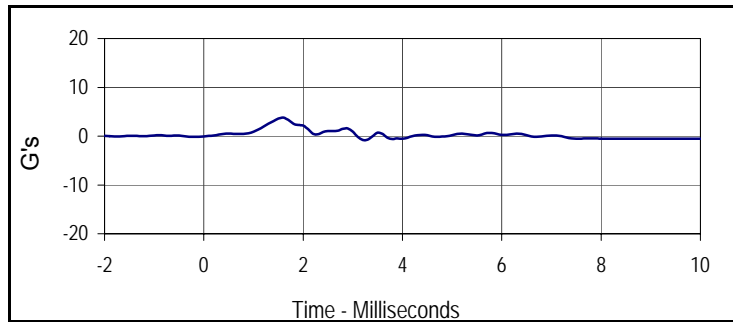
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	322	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	34.0	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.8	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	255.8	Pass
Peak Lateral Acceleration	G's	≤15.0	3.8	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	2.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



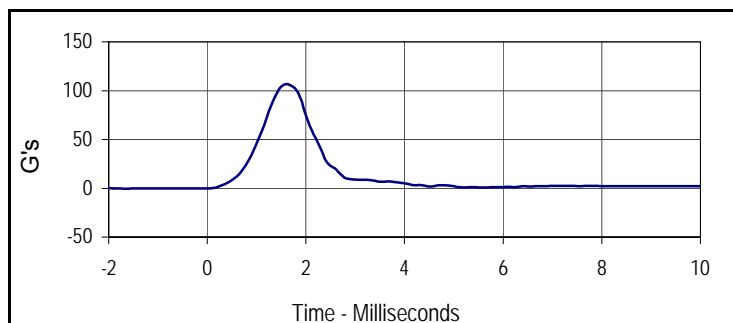
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
255.8	1.6	0.1	0.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.7	3.2	-232.5	1.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
3.8	1.6	-0.8	3.2



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
106.6	1.6	-0.4	-1.6

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

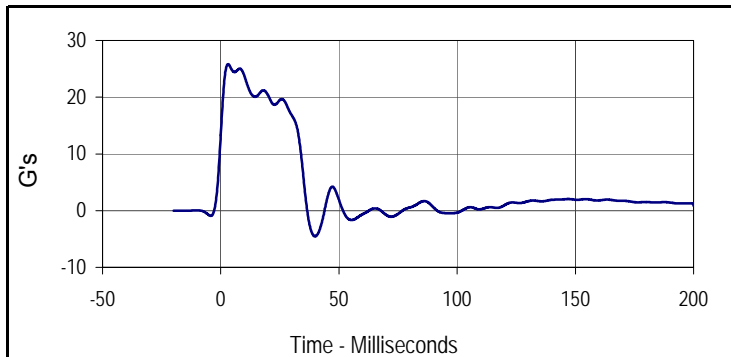
Test Date: 4/21/15



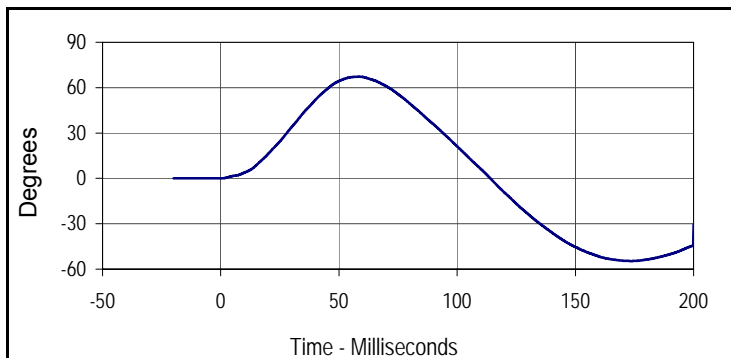
ATD Serial No.: 360

Test I.D.: M360NF010

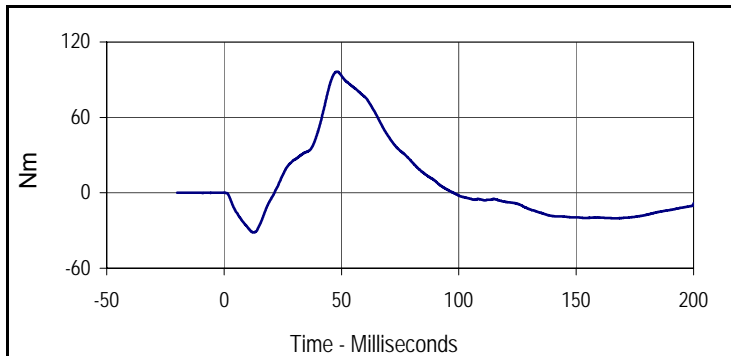
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	387	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	34.0	Pass	
	Min		33.6	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	33.9	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.01	Pass	
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	20.4	Pass
	30 Msec.	G's	12.5 to 18.5	16.8	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 29.0	16.8	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	35.2	Pass	
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	67.3	Pass
	Time	Msec.	57.0 to 64.0	58.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	114.1	Pass	
Moment About Occ. Condyle	Max	Nm	88.1 to 108.5	96.4	Pass
	Time	Msec.	47.0 to 58.0	48.1	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	97.7	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
25.8	3.1	-4.5	39.9



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
67.3	58.4	-54.6	173.6



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
96.4	48.1	-31.6	12.8

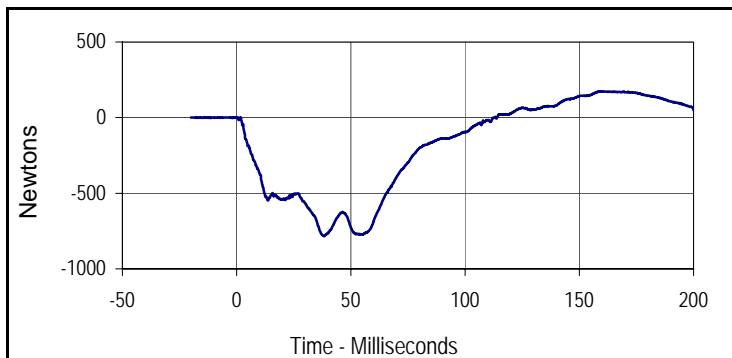
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 4/21/15

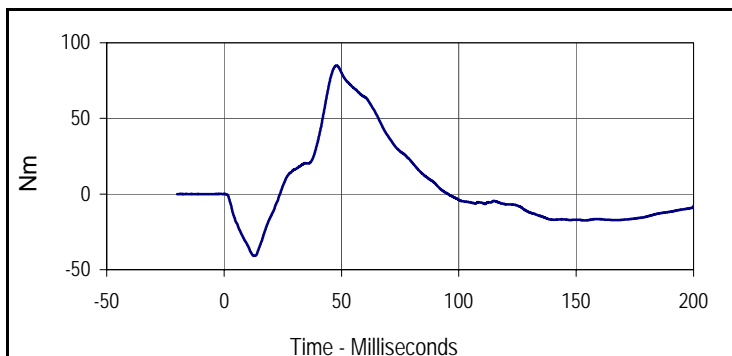


ATD Serial No.: 360

Test I.D.: M360NF010



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
174.9	159.2	-784.9	38.3



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
84.9	48.0	-40.9	12.7

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

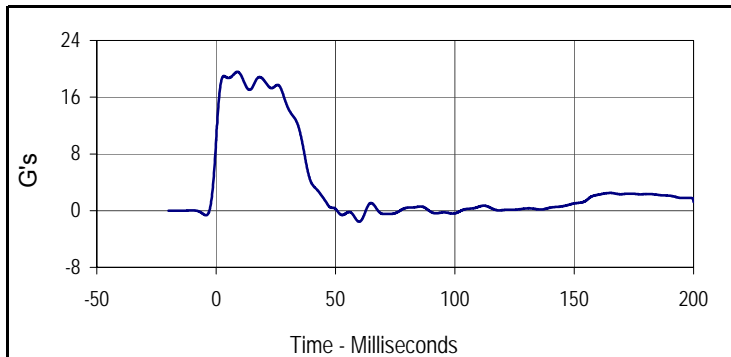
Test Date: 4/21/15



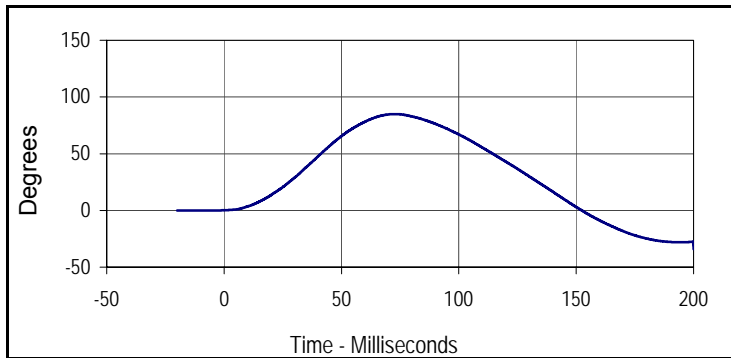
ATD Serial No.: 360

Test I.D.: M360NE010

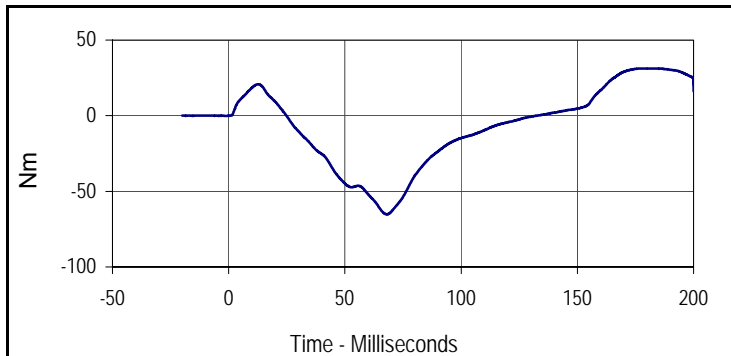
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	432	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	34.0	Pass	
	Min		33.6	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	33.6	Pass	
Pendulum Velocity	m/s	5.94 to 6.19	6.01	Pass	
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.3	Pass
	20 Msec.	G's	14.0 to 19.0	18.4	Pass
	30 Msec.	G's	11.0 to 16.0	14.5	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 22.0	14.5	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	38.9	Pass	
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	85.0	Pass
	Time	Msec.	72.0 to 82.0	72.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	152.4	Pass	
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-65.2	Pass
	Time	Msec.	65.0 to 79.0	68.1	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	132.5	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.6	8.9	-1.6	59.9



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
85.0	72.6	-34.3	200.0



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.3	177.7	-65.2	68.1

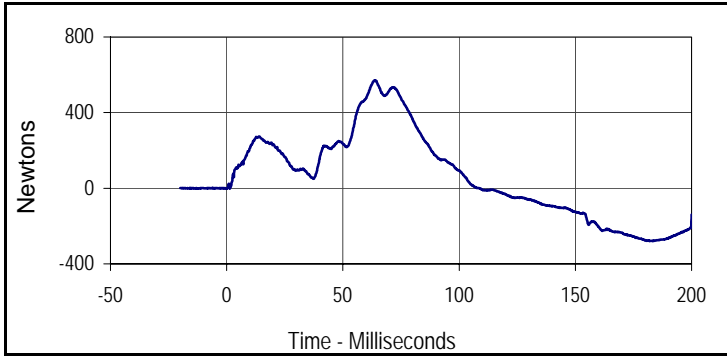
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 4/21/15

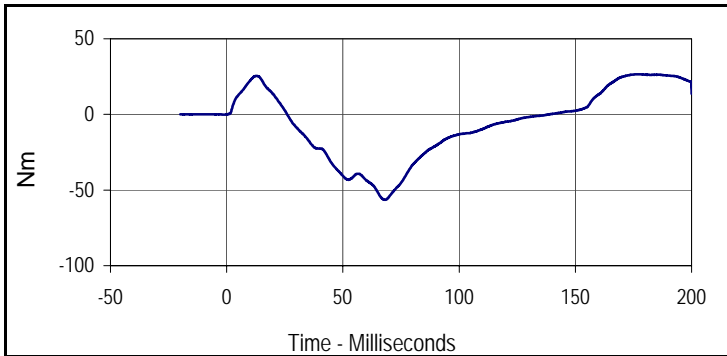


ATD Serial No.: 360

Test I.D.: M360NE010



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
569.6	63.6	-279.5	183.2



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
26.5	177.0	-56.5	68.0

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

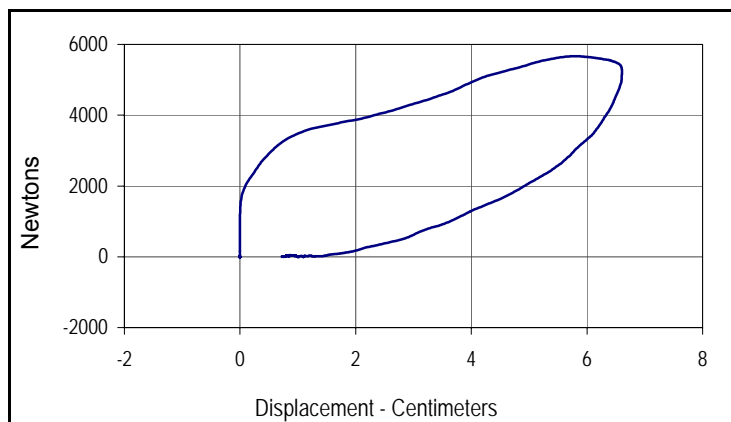
Test Date: 4/21/15



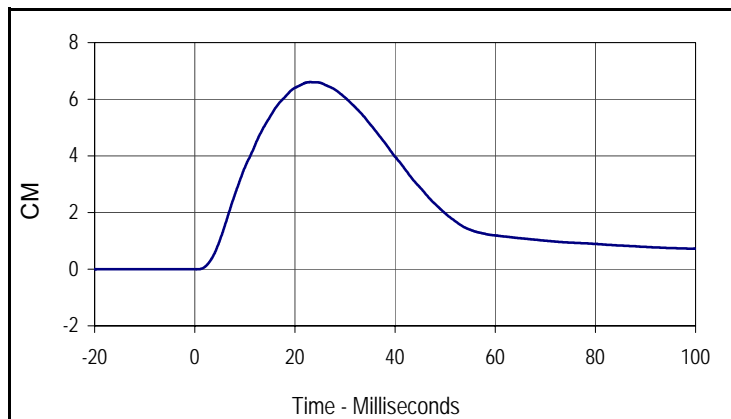
ATD Serial No.: 360

Test I.D.: M360CH010

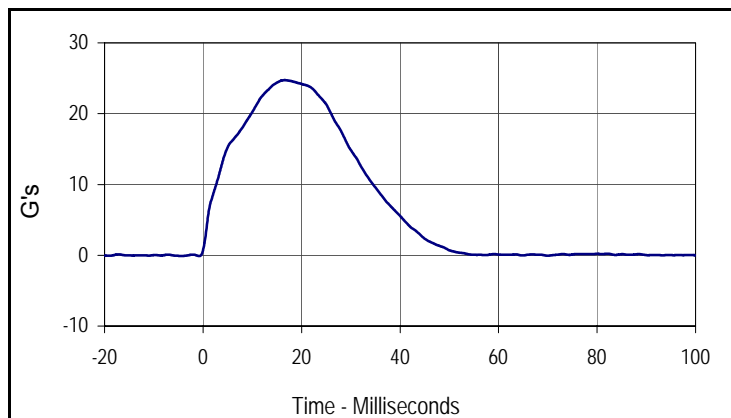
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	507	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	34.0	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.7	Pass
Probe Velocity	m/s	6.58 to 6.82	6.62	Pass
Peak Probe Force	Newtons	5159 to 5893	5667	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.60	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	
5667		6.60	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.6	23.0	0.0	0.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.7	16.6	-0.1	-0.8

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

Test Date: 4/21/15



ATD Serial No.: 360

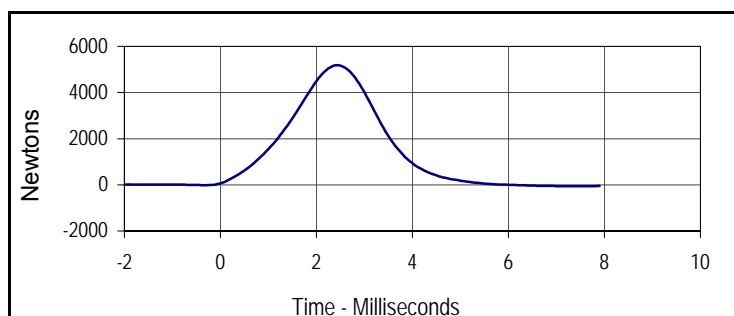
Test I.D.: M360LK010, M360RK010

Left Knee

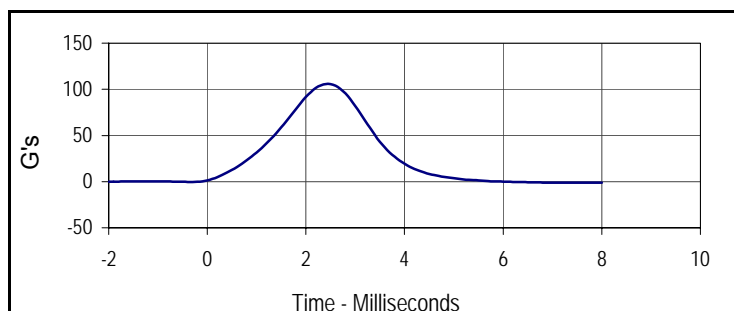
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	562	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	34.0	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.8	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5176	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	Newtons	4715 to 5782	5354	Pass
Overall Test Results				Pass



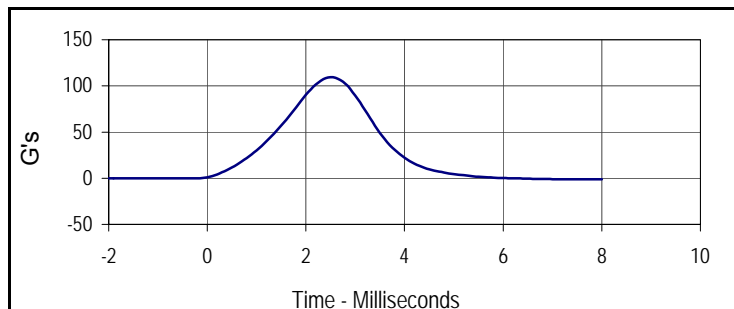
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5175.5	2.4	-56.6	7.2



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
105.8	2.4	-1.2	7.2



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5353.9	2.5	-59.4	7.5



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
109.4	2.5	-1.2	7.5

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

Test Date: 4/21/15
 Test I.D.: M360LF010_M360RF010

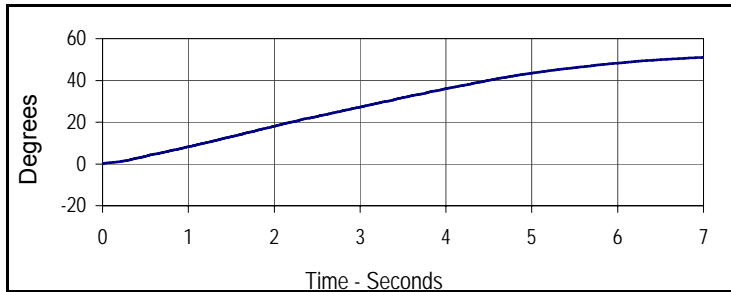


Left Hip Joint-Femur Results

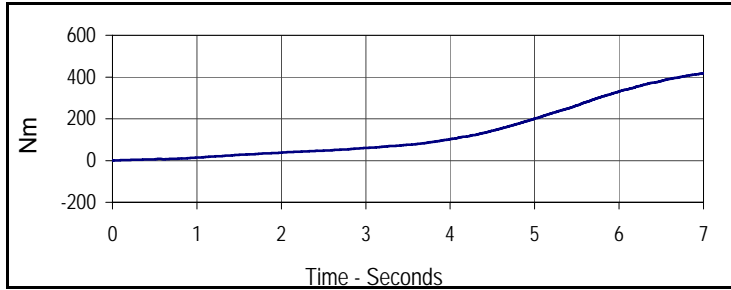
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	637	Pass
Temperature During Soak	Max	18.9 to 25.6	21.2	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	34.0	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.0	Pass
Rotation Rate	deg/sec	5 to 10	7.3	Pass
Femur Torque at 30°	Nm	≤ 95	66.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	43.1	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

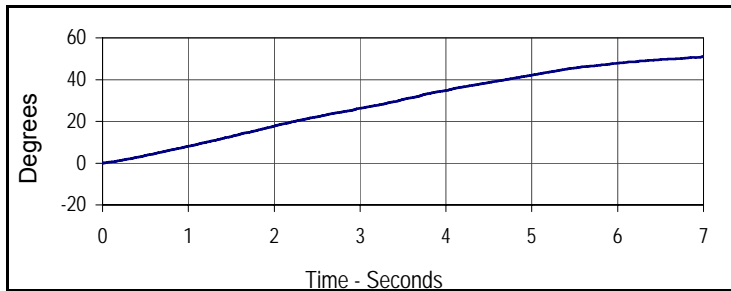
Rotation Rate	deg/sec	5 to 10	7.3	Pass
Femur Torque at 30°	Nm	≤ 95	70.7	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	42.4	Pass
Overall Test Results				Pass



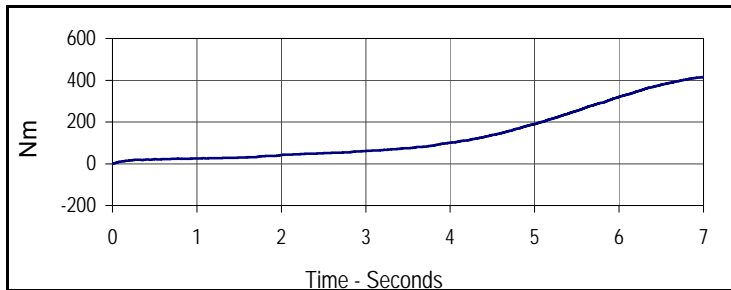
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
51.0	7.0	0.2	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
418.1	7.0	0.2	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
51.0	7.0	0.2	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
415.3	7.0	0.2	0.0

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

Test Date: 4/22/15



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: 4/22/15



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

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

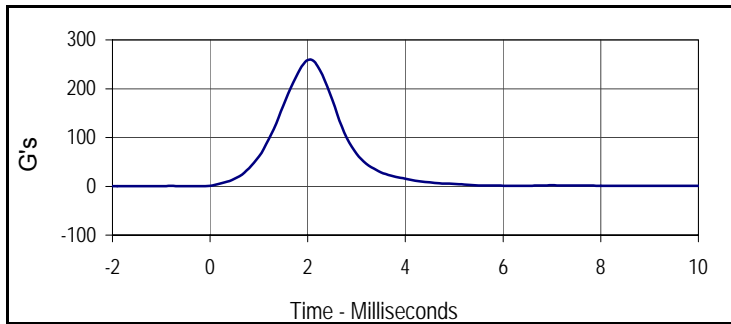
Test Date: 4/22/15



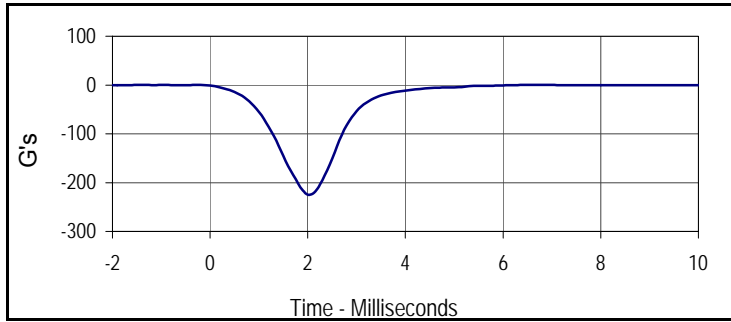
ATD Serial No.: 141

Test I.D.: F141HD068

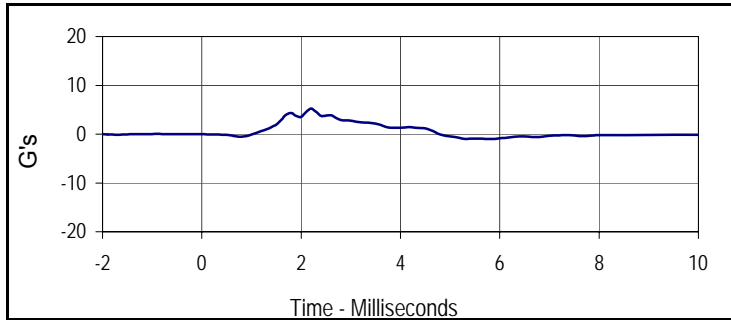
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	365	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		34.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.7	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	258.8	Pass
Peak Lateral Acceleration	G's	≤15.0	5.2	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	0.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



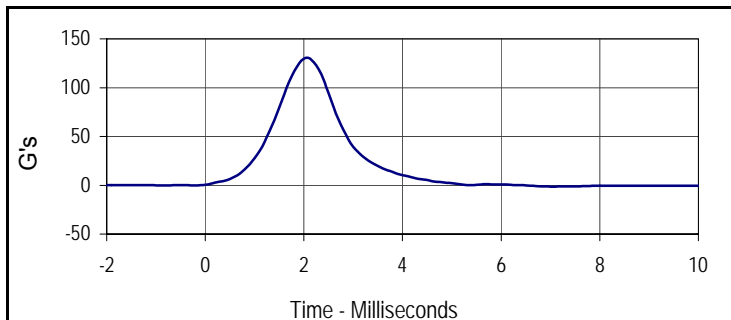
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
258.8	2.0	0.5	-1.4



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.4	-224.3	2.0



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
5.2	2.2	-1.0	5.8



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
130.2	2.1	-0.1	-0.8

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

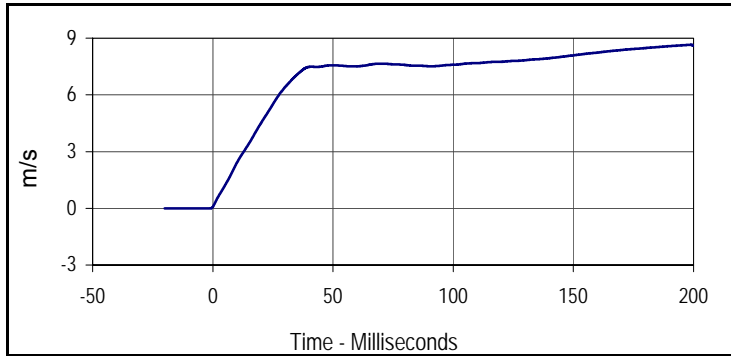
Test Date: 4/22/15



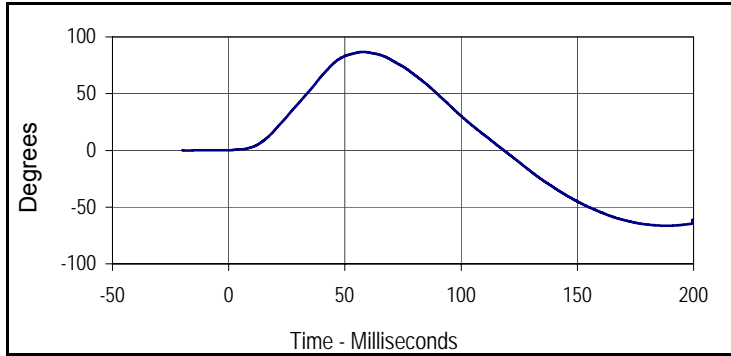
ATD Serial No.: 141

Test I.D.: F141NF068

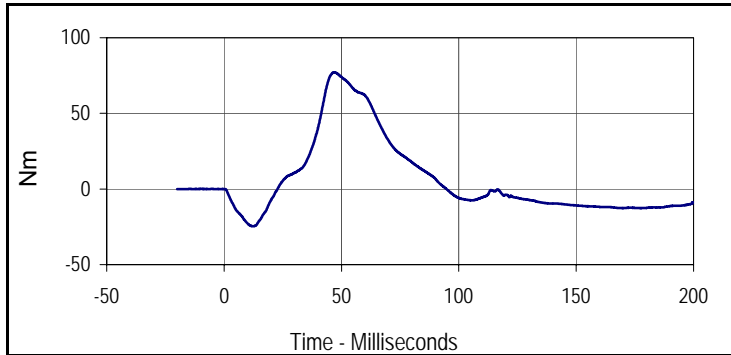
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	430	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass	
	Min		34.7	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	34.7	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	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.4	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	86.9	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	77.1	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	85.5	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.7	199.4	0.0	-1.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
86.9	57.8	-66.4	188.6



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
77.1	46.8	-24.7	12.5

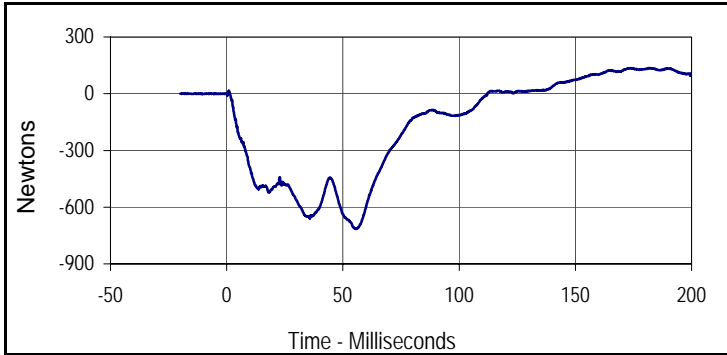
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 4/22/15

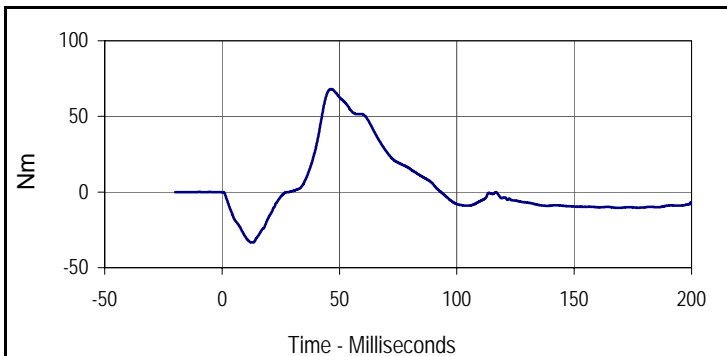


ATD Serial No.: 141

Test I.D.: F141NF068



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
136.4	182.2	-716.0	55.6



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
68.1	46.4	-33.3	13.0

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

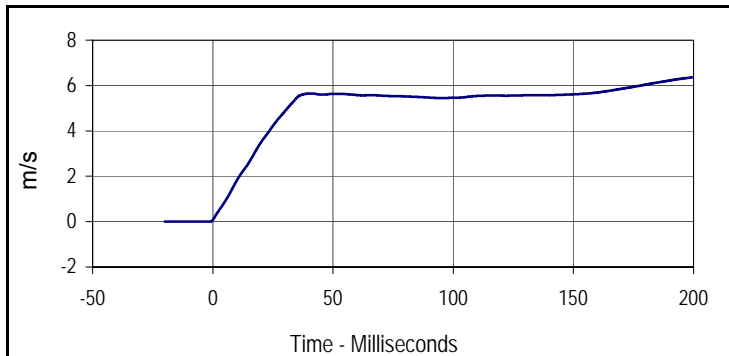
Test Date: 4/22/15



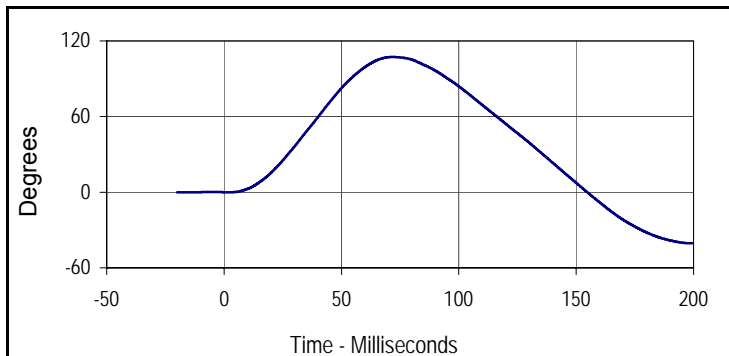
ATD Serial No.: 141

Test I.D.: F141NE068

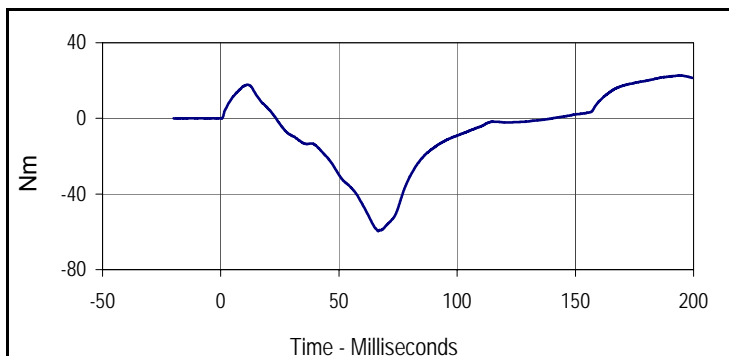
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	495	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass	
	Min		34.7	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	34.7	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.02	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.5	Pass
	30 Msec.	m/s	4.6 to 5.6	4.9	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	107.3	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-59.7	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	98.1	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.4	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
107.3	71.6	-40.5	199.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
22.7	19.7	-59.7	66.6

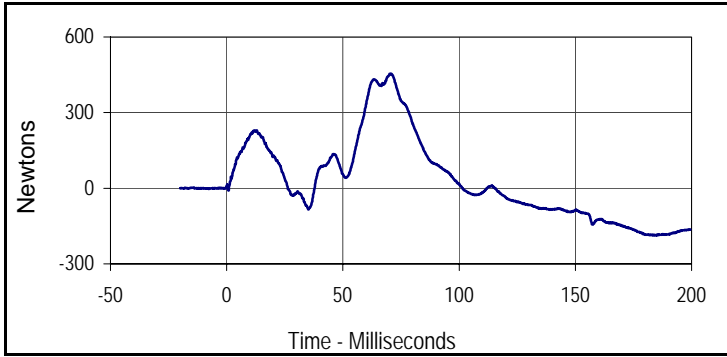
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 4/22/15

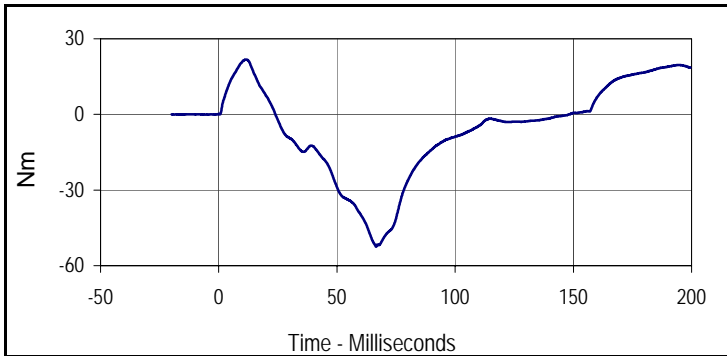


ATD Serial No.: 141

Test I.D.: F141NE068



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
454.4	70.3	-187.1	184.4



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
21.8	11.5	-52.5	66.6

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

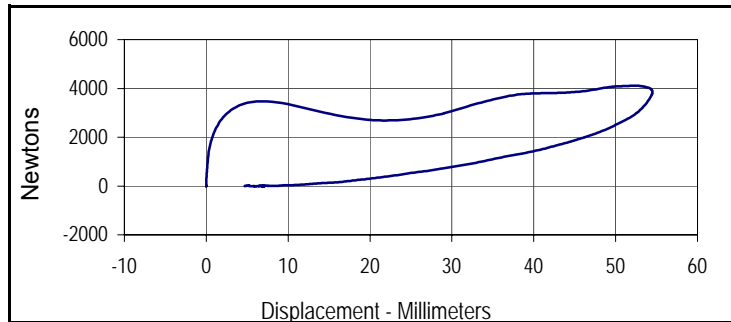
Test Date: 4/22/15



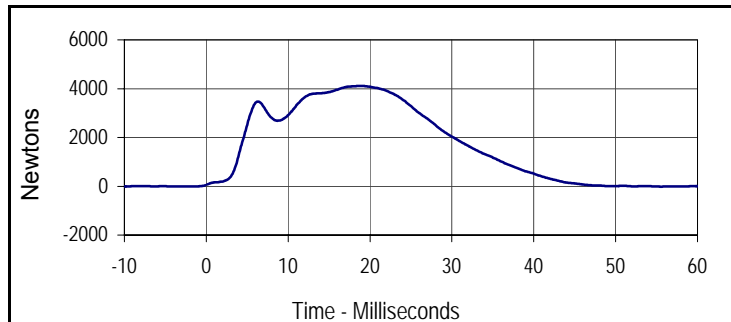
ATD Serial No.: 141

Test I.D.: F141CH068

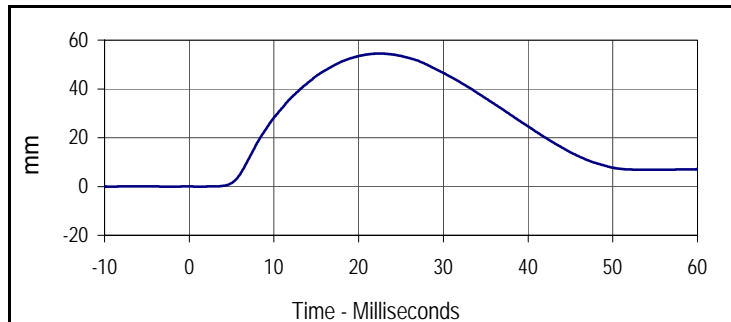
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	540	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		34.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.7	Pass
Probe Velocity	m/s	6.59 to 6.83	6.65	Pass
Peak Chest Deflection	mm	50.0 to 58.0	54.5	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4080	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4114	Pass
Internal Hysteresis	%	69 to 85	72.2	Pass
Overall Test Results				Pass



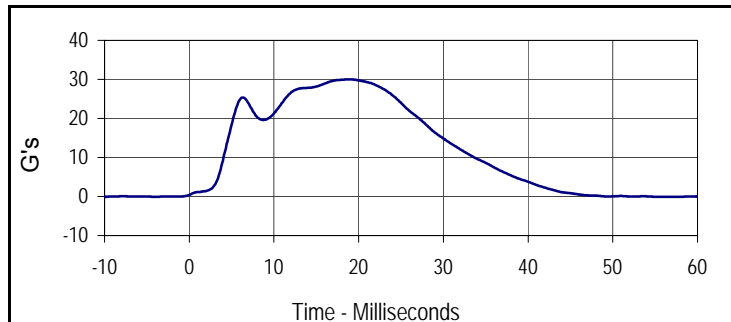
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	72.2
Peak Probe Force		Peak Chest Deflection	
4114.0		54.5	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4114.0	18.9	-23.6	77.6



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
54.5	22.4	0.0	1.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
30.0	18.9	-0.2	77.6

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

Test Date: 4/22/15



ATD Serial No.: 141

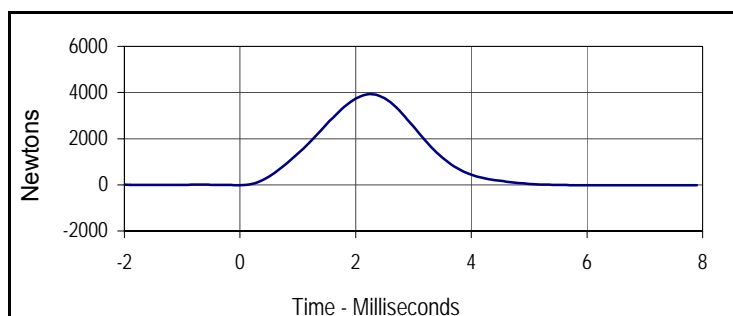
Test I.D.: F141LK068, F141RK068

Left Knee

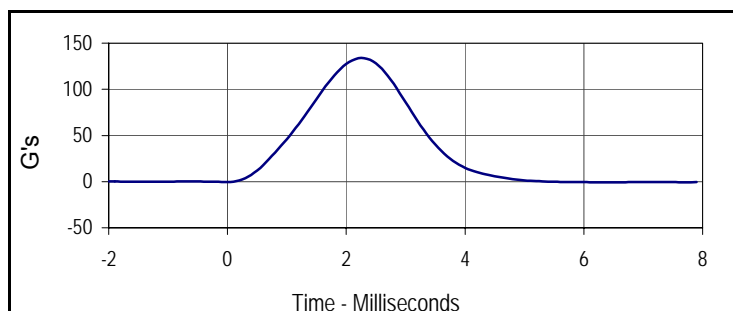
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	595	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		34.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.7	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	3450 to 4060	3924	Pass
Overall Test Results				Pass

Right Knee

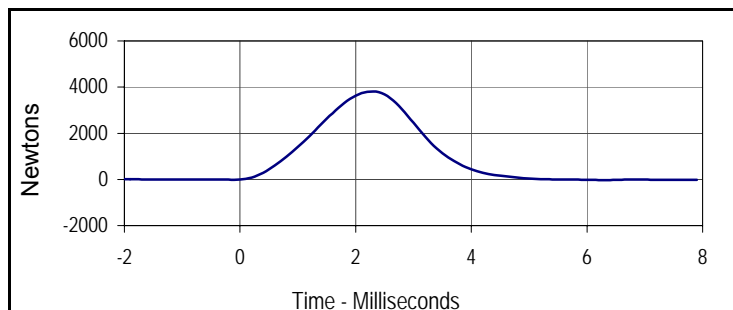
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	3450 to 4060	3815	Pass
Overall Test Results				Pass



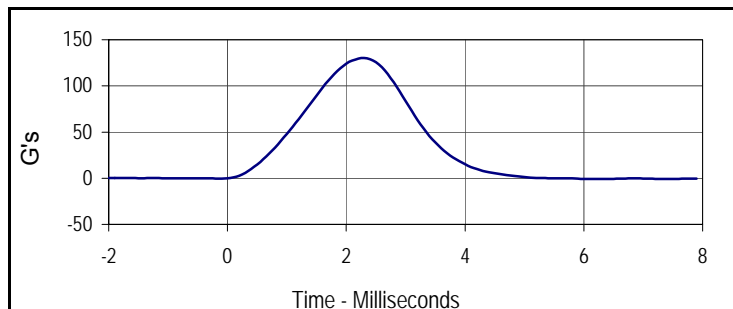
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3923.5	2.3	-20.7	6.5



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
133.9	2.3	-1.0	0.0



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3815.5	2.3	-26.8	6.3



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
130.2	2.3	-0.9	6.3

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

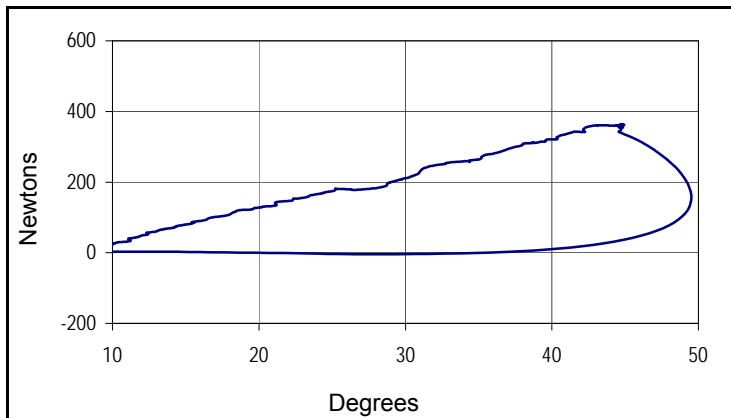
Test Date: 4/22/15



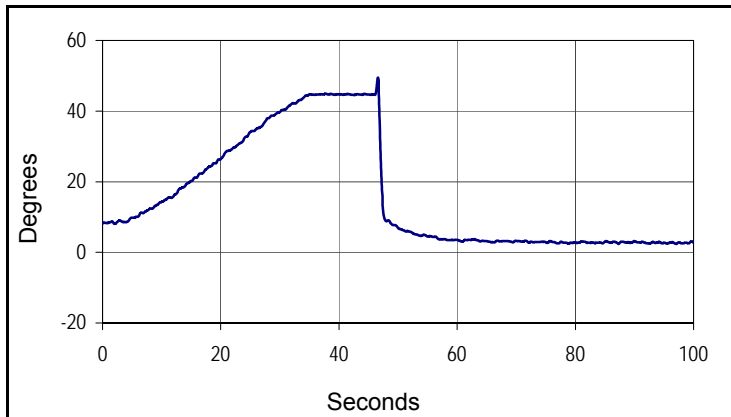
ATD Serial No.: 141

Test I.D.: TF068

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	34.7	Pass
	Min		34.7	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.7	Pass
Initial Reference Plane Angle	Degrees	≤ 20	8.3	Pass
Peak Force at 45° +/-0.5°	Newtons	320.0 to 390.0	362.8	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle	Degrees	+/-8	2.9	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
362.8		49.5



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
49.5	46.6	2.4	97.1