

REPORT NUMBER: NCAP-KAR-15-015

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

**FORD MOTOR CO.
2015 FORD ESCAPE SE 4WD 5-DOOR MPV**

NHTSA NUMBER: M20150209

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



NOVEMBER 26, 2014

FINAL REPORT

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

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Date: _____

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16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2015 Ford Escape SE 4WD 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 November 14, 2014. The impact velocity of the vehicle was 56.27 km/h and the ambient temperature at the barrier face at the time of impact was 21.1° C. The target vehicle's post-test maximum crush was 166 mm at DPD 5 to the right of the vehicle's centerline. The test vehicle's performance is as follows:																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700.0</td> <td>243.0</td> <td>700.0</td> <td>241.7</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-17</td> <td>52</td> <td>-11</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.43</td> <td>1</td> <td>0.47</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1763.1</td> <td>2620</td> <td>776.6</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-498.4</td> <td>2520</td> <td>-473.7</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-1036.0</td> <td>6805</td> <td>-2015.5</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-1384.0</td> <td>6805</td> <td>-855.6</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	243.0	700.0	241.7	Maximum Chest Compression	mm	63	-17	52	-11	Nij	N/A	1	0.43	1	0.47	Neck Tension	N	4170	1763.1	2620	776.6	Neck Compression	N	4000	-498.4	2520	-473.7	Left Femur Force	N	10008	-1036.0	6805	-2015.5	Right Femur Force	N	10008	-1384.0	6805	-855.6
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program, sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-12-D-00259. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure, dated August 2013.

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2015 Ford Escape SE 4WD 5-door MPV at a velocity of 56.27 km/h. The test was performed at KARCO Engineering, LLC. on November 14, 2014. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

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

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck force transducers, right / left femur load cells, and lower leg instrumentation. The driver (position 1) ATD (Serial No. 034) 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 108 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 166 mm located at DPD 5 to the right 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)	243.0	66.7	81.7	-17	0.43	1763.1	-498.4	-1036.0	-1384.0
Passenger (5th)	241.7	62.9	77.9	-11	0.47	776.6	-473.7	-2015.5	-855.6

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

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 Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20150209
Model Year	2015
Make	Ford
Model	Escape SE 4WD
Body Style	5-Door MPV
VIN	1FMCU9GX5FUA08925
Body Color	Ingot Silver Metallic
Odometer Reading (km / mi)	195 / 121
Engine Displacement (L)	1.6
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
Other	No

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	Sep-14

GVWR (kg)	2159
GAWR Front (kg)	1125
GAWR Rear (kg)	1040

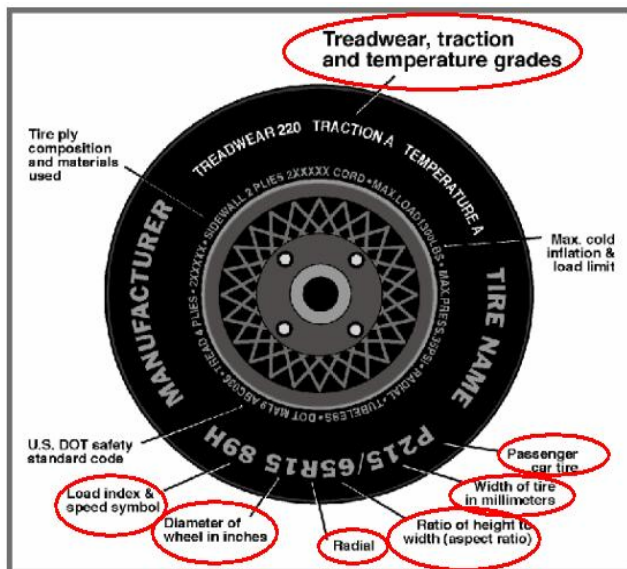
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				375.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				34.8	A-B

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
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VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	P235/55R17	P235/55R17
Tire Size on Vehicle	P235/55R17	P235/55R17
Tire Manufacturer	Continental	Continental
Tire Model	ContiProContact E	ContiProContact E
Treadwear	500	500
Traction	AA	AA
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 2 Polyamide	2 Polyester, 2 Steel, 2 Polyamide
Load Index / Speed Symbol	99H	99H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	A37A 47JB 3414	A37A 47JB 3414
DOT Safety Code Right	A37A 47JB 3414	A37A 47JB 3414

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	465.0	346.0		510.5	409.0	
Right	kg	471.0	359.0		492.5	396.0	
Ratio	%	57.0%	43.0%	100.0%	55.5%	44.5%	100.0%
Total	kg	936.0	705.0	1641.0	1003.0	805.0	1808.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1641.0	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	34.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1816.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	805	807	836	843	1156
As Tested	mm	795	798	819	828	1198
Post-Test	mm	796	810	827	822	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2690
Total Vehicle Length at Left Side	mm	3907
Total Vehicle Length at Centerline	mm	4535
Total Vehicle Length at Right Side	mm	3907
Weight of Ballast in Cargo Area	kg	88.5
Weight of Vehicle Components Removed	kg	73.5
Amount of Stoddard Solvent in Fuel Tank	L	53.03

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Rear Door Panels (5.5 kg), Rear Radio Speakers (1.0 kg), Rear Windows and Window Trim (8.0 kg), Left Rear Seat (29.0 kg), Outboard Mirrors (1.5 kg), Tail Lights (2.0 kg), Rear Bumper Cover (4.0 kg), Spare Tire and Tools (18.5 kg), Cargo Area Trim (4.0 kg)

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test
1	Total Length	4535
2	Total Width	1830
3	Bumper Top Height	750
4	Bumper Bottom Height	425
5	Longitudinal Member Top Height	650
6	Distance Between Longitudinal Members	930
7	Longitudinal Member Width	70
8	Engine Top Height	910
9	Engine Bottom Height	266
10	Engine and Gearbox Width	430
11	Front Bumper to Engine Distance	490
12	Front Shock Absorber Fixing Height	890
13	Bonnet Leading Edge Height	870
14	Front Shock Absorber Fixing Width	1190
15	Front Bumper to Front Axle Distance	915
16	Front Axle to A-Pillar Distance	482
17	A-Pillar to B-Pillar Distance	959
18	B-Pillar to Rear Axle Distance	1160
19	B-Pillar to C-Pillar Distance	853
20	Roof Sill Bottom Height	1483
21	Roof Sill Top Height	1610
22	Floor Sill Bottom Height	290
23	Floor Sill Top Height	375

All measurements in millimeters.

DATA SHEET NO. 2

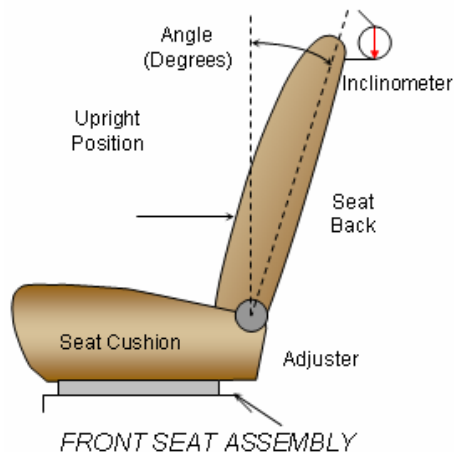
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20150209
 Test Date: 11/14/14

NOMINAL DESIGN RIDING POSITION

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

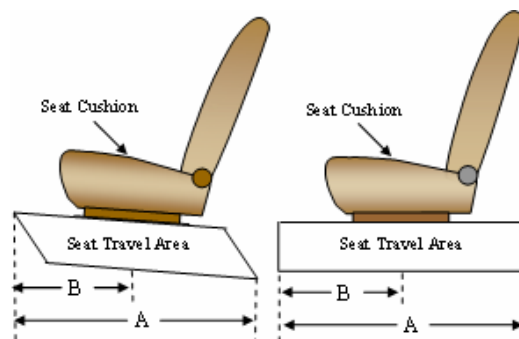


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	4.1
Passenger Seat Back Angle	0.2

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	317 mm	159 mm
Passenger Seat	369 mm	19 mm

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer’s design position for a 50th percentile adult male ATD for the driver, and a 5th percentile adult female ATD for the passenger. Position “H” is the uppermost position, followed by position “M1”. Position “L” is the lowermost position.

SEAT BELT UPPER ANCHORAGES

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

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

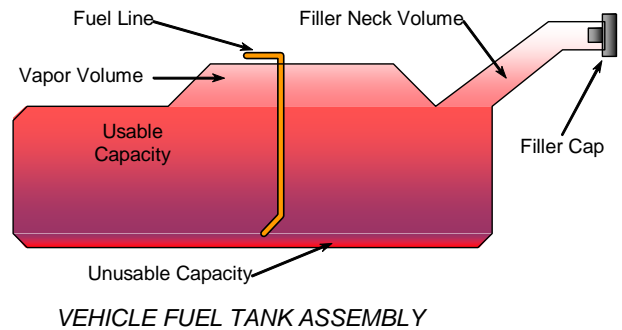
Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	57.00
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	52.44 to 53.58
Actual Amount of Stoddard Solvent Used	53.03
1/3 of Usable Capacity	19.00

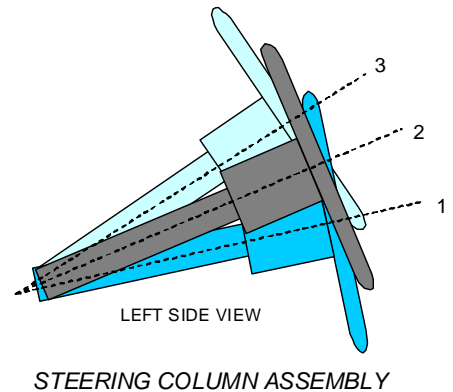
FUEL PUMP

The vehicle is equipped with an electric fuel pump. The electronic fuel pump operates for a prescribed amount of time to pressurize the fuel system following the actuation of the ignition and operates while the engine is running. Fuel pump shut-off is provided if the engine stalls or if the vehicle sustains an impact above a certain magnitude.



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 POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	22.9	91
Geometric Center Position, No. 2	25.8	117
Uppermost Position, No. 3	28.8	143
Telescoping Steering Wheel Travel		52
Test Position	25.8	117

DATA SHEET NO. 3

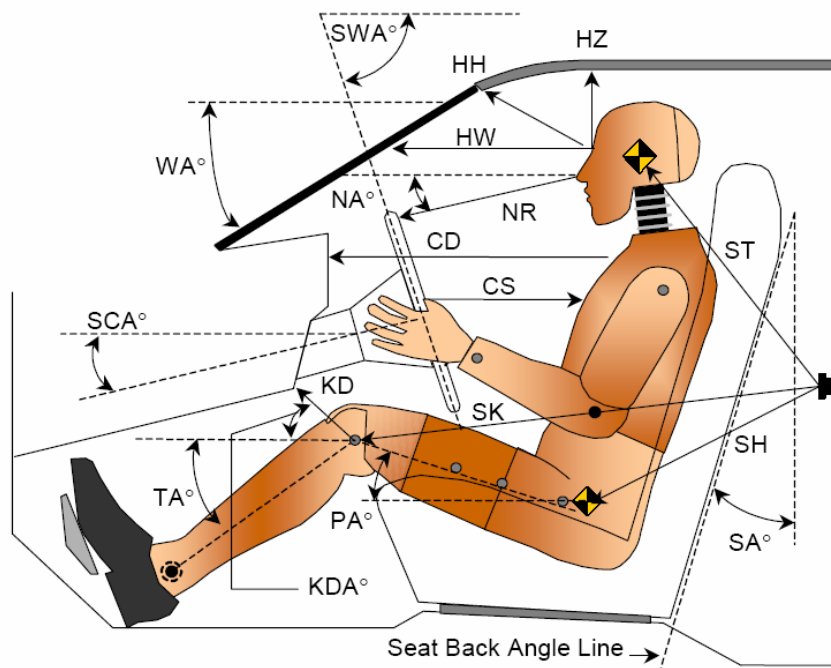
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV

NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/14/14



LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		22.4		
SWA°	Steering Wheel Angle		64.2		
SCA°	Steering Column Angle		25.8		
SA°	Seat Back Angle (On Headrest Post)		4.1		0.2
HZ	Head to Roof	269	90.0	247	90.0
HH	Head to Header	429	30.5	322	47.1
HW	Head to Windshield	845	0.0	720	0.0
NR	Nose to Rim	439	4.7	450	30.8
CD	Chest to Dash	558	10.2	417	
CS	Chest to Steering Hub	354	0.0		
RA	Rim to Abdomen	221	0.0		
KDL	Left Knee to Dash	156	37.2	56	42.1
KDR	Right Knee to Dash	170	32.8	92	33.6
PA°	Pelvic Angle		24.8		20.1
TA°	Tibia Angle		59.8		70.3
SK	Striker to Knee	563	0.4	682	1.2
ST	Striker to Head	529	81.5	539	61.7
SH	Striker to H-Point	225	33.4	364	11.9

DATA SHEET NO. 4

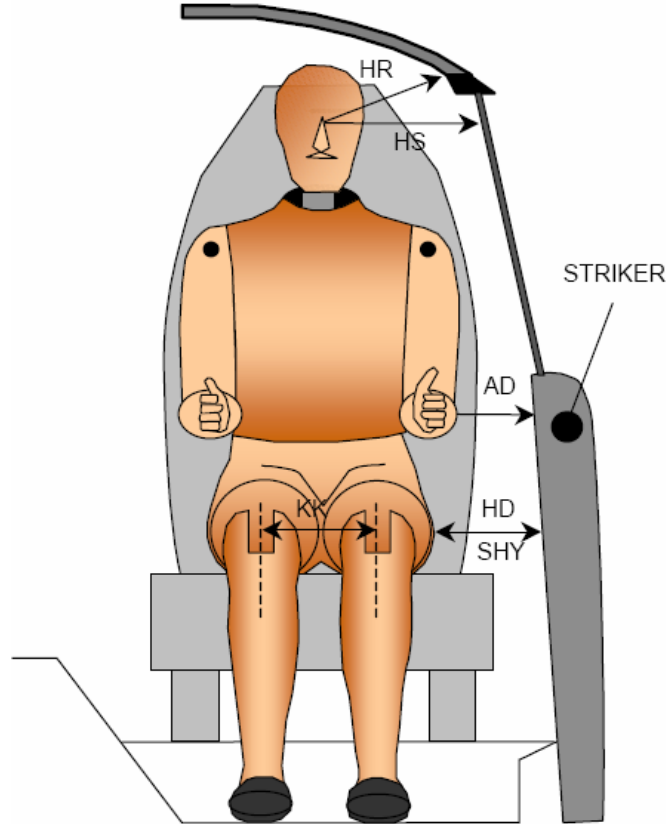
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV

NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/14/14



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	118	99
HD	H-Point to Door	153	184
HR	Head to Side Header	270	290
HS	Head to Side Window	393	409
KK	Knee to Knee	305	170
SHY	Striker to H-Point (Y-Direction)	246	284
AA	Ankle to Ankle	310	223

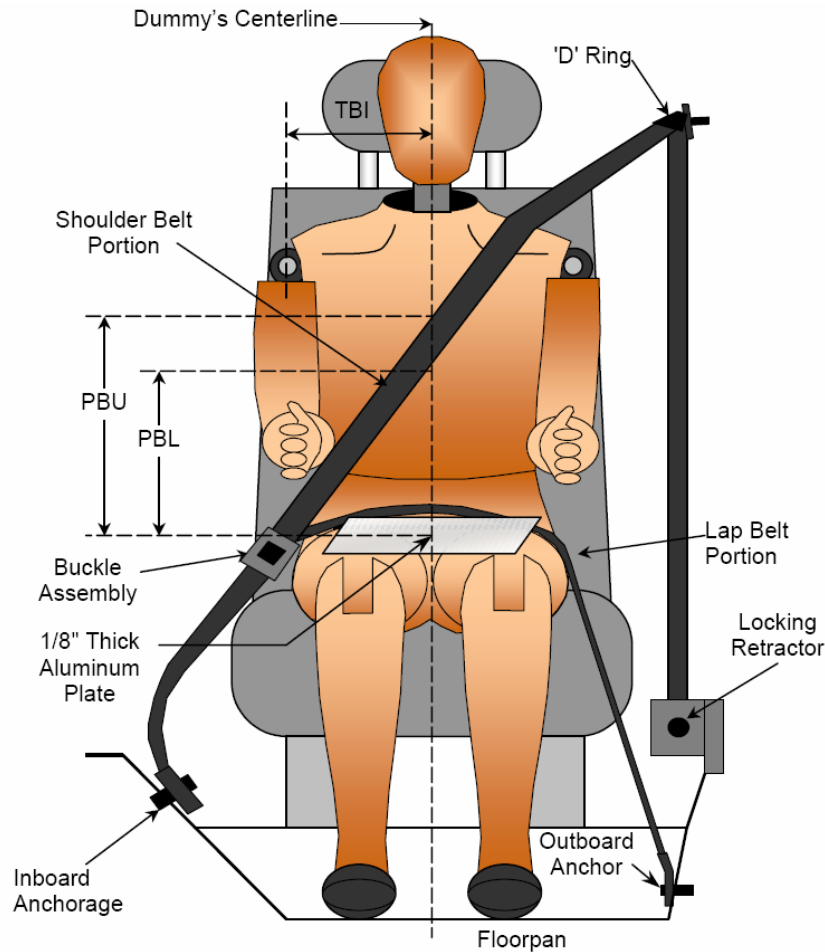
DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV

NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/14/14



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	375	369
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	281	266

BELT LENGTH DATA

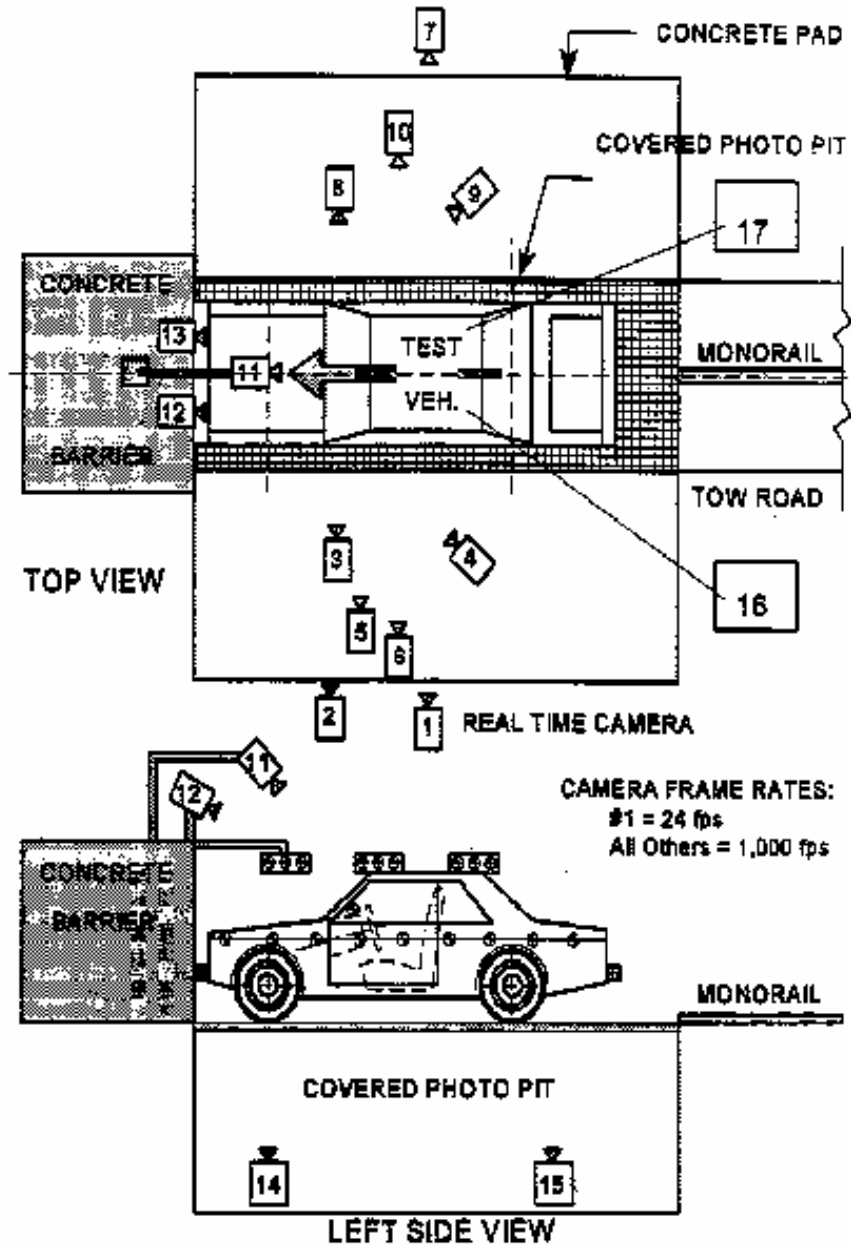
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	825	918
Lap Belt Length as Measured on ATD	mm	597	713
Remainder of Belt on Reel	mm	991	608
Total Belt Length for Continuous Webbing Systems	mm	2413	2239

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

CAMERA LOCATIONS

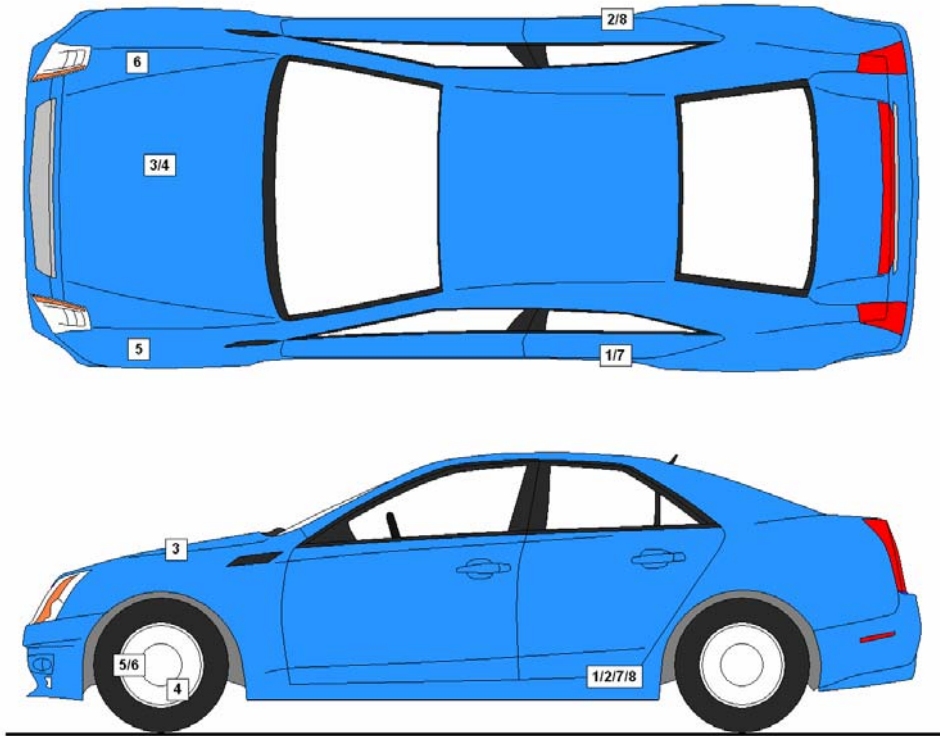
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering 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)	-1040	300	-1540	13	1000
17	Onboard Passenger Airbag (Optional)	-1040	-300	-1540	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 Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1623	-683	-419
2	Right Rear Accelerometer X-Direction	1623	683	-419
3	Engine Top X	3745	81	-877
4	Engine Bottom X	3707	252	-250
5	Left Rear Accelerometer Z-Direction	1623	-683	-419
6	Right Rear Accelerometer Z-Direction	1623	683	-419
7	Left Rear Accelerometer X-Direction Redundant	1598	-683	-419
8	Right Rear Accelerometer X-Direction Redundant	1598	683	-419

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

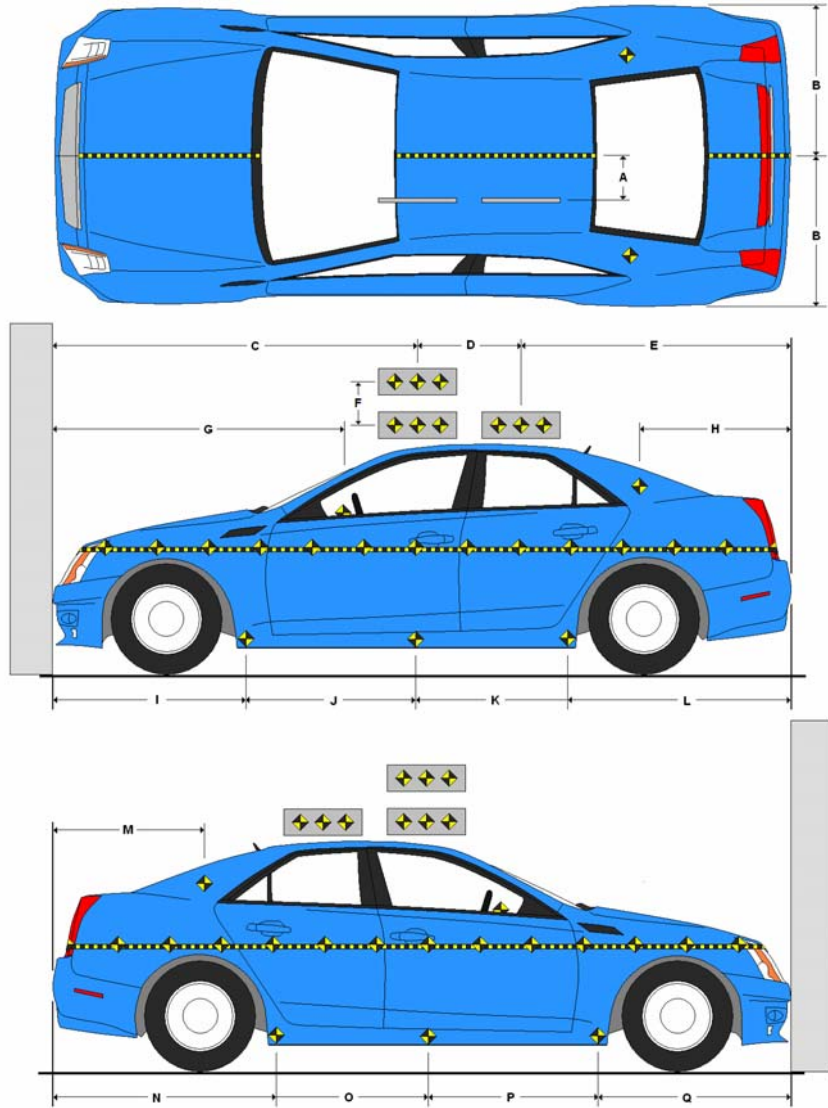
DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

Item	Value
A	390
B	915
C	2255
D	610
E	1659
F	305
G	1720
H	556
I	1370
J	891
K	891
L	1384
M	559
N	1387
O	891
P	891
Q	1366



All measurements in millimeters.

DATA SHEET NO. 9

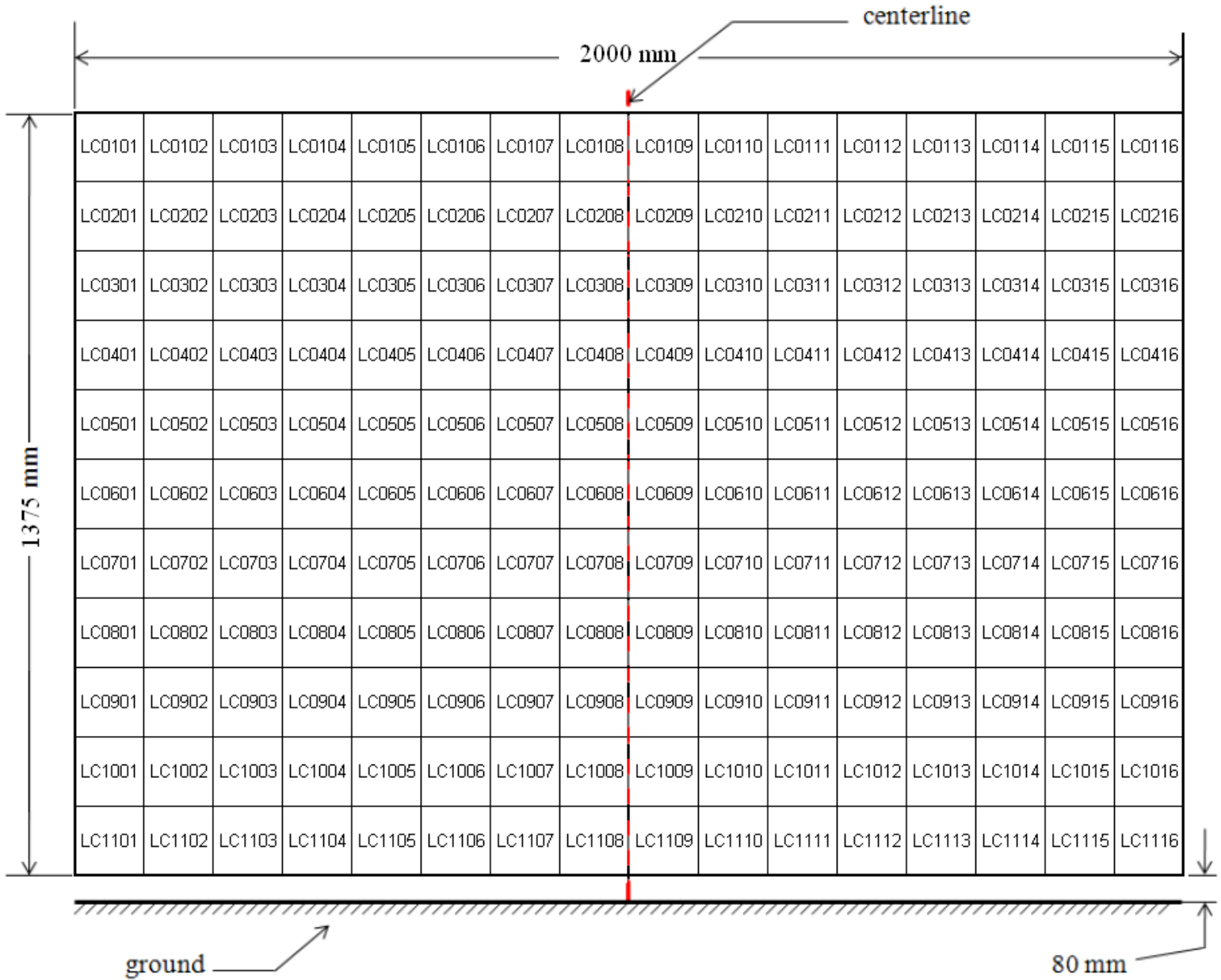
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV

NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/14/14



DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

INSTRUMENTATION

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

CAMERA COVERAGE

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

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 034	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)	1	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

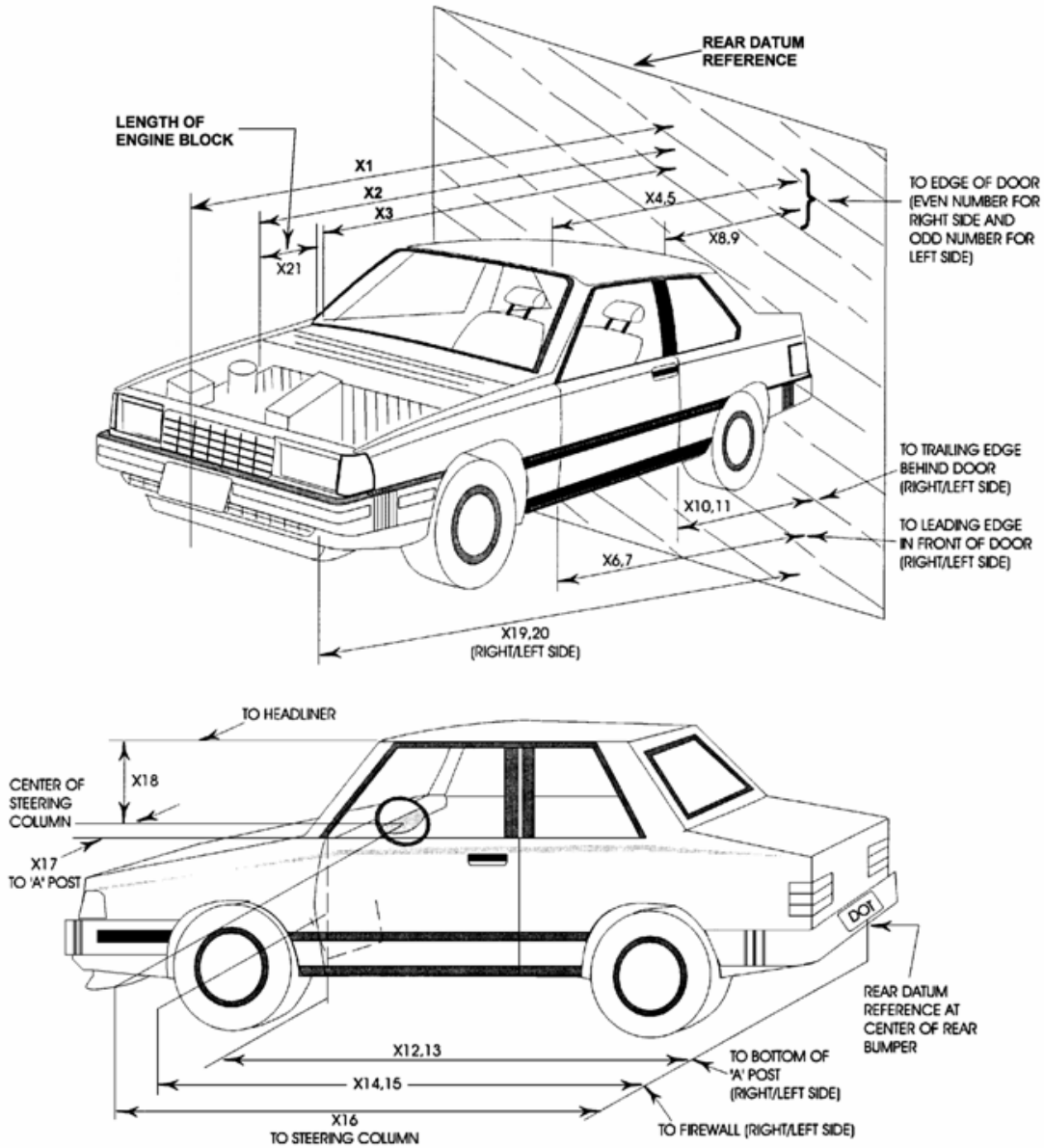
Measured Parameter	Units	Value
Left Side	mm	818
Center	mm	528
Right Side	mm	796
Average	mm	714

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
Other	No		No	

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14



DATA SHEET NO. 12 ... (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4535	4419	-116
2	Rear Surface of Vehicle to Front of Engine	4045	3825	-220
3	RSOV to Firewall	3485	3467	-18
4	RSOV to Upper Leading Edge of Right Door	3145	3150	5
5	RSOV to Upper Leading Edge of Left Door	3140	3139	-1
6	RSOV to Lower Leading Edge of Right Door	3118	3112	-6
7	RSOV to Lower Leading Edge of Left Door	3117	3112	-5
8	RSOV to Upper Trailing Edge of Right Door	2036	2051	15
9	RSOV to Upper Trailing Edge of Left Door	2030	2041	11
10	RSOV to Lower Trailing Edge of Right Door	2080	2080	0
11	RSOV to Lower Trailing Edge of Left Door	2078	2074	-4
12	RSOV to Bottom of A-Pillar, Right Side	3059	3048	-11
13	RSOV to Bottom of A-Pillar, Left Side	3056	3044	-12
14	RSOV to Firewall, Right Side	3305	3280	-25
15	RSOV to Firewall, Left Side	3350	3329	-21
16	RSOV to Steering Column	2635	2722	87
17	Center of Steering Column to A-Pillar	455	455	0
18	Center of Steering Column to Headliner	430	467	37
19	RSOV to Right Side of Front Bumper	3907	3892	-15
20	RSOV to Left Side of Front Bumper	3907	3875	-32
21	Length of Engine Block	590	590	0
RD	RSOV to Right Side of Dash Panel	2870	2878	8
CD	RSOV to Center of Dash Panel	2770	2760	-10
LD	RSOV to Left Side of Dash Panel	2830	2848	18

All measurements in millimeters.

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

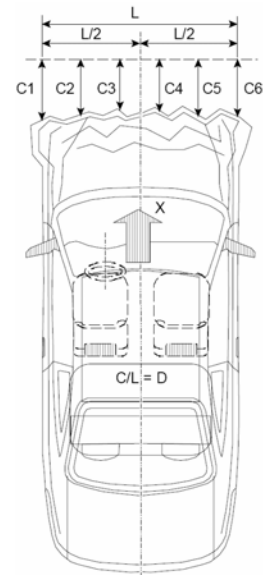
VEHICLE INFORMATION

VIN: 1FMCU9GX5FUA08925 Wheelbase (mm): 2690
 Vehicle Size Category: 5-Door MPV Test Weight (kg): 1808.0

ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember
 Cal. Procedure/Interval: Drop Test / 6 months
 Integration Algorithm: NHTSA Standard
 Impact Velocity (km/h): 56.27
 Velocity Change (km/h): 64.9
 Time of Separation (msec): 67.9

Linearity: Good



CRUSH PROFILE

Collision Deformation Classification: 12FDEW1
 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1365
 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	230	327	97
C2	Crush Zone 2 at Left Side	mm	35	119	84
C3	Crush Zone 3 at Left Side	mm	8	120	112
C4	Crush Zone 4 at Right Side	mm	8	147	139
C5	Crush Zone 5 at Right Side	mm	35	201	166
C6	Crush Zone 6 at Right Side	mm	230	376	146
L	C1 to C6	mm	1365		

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV

NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test

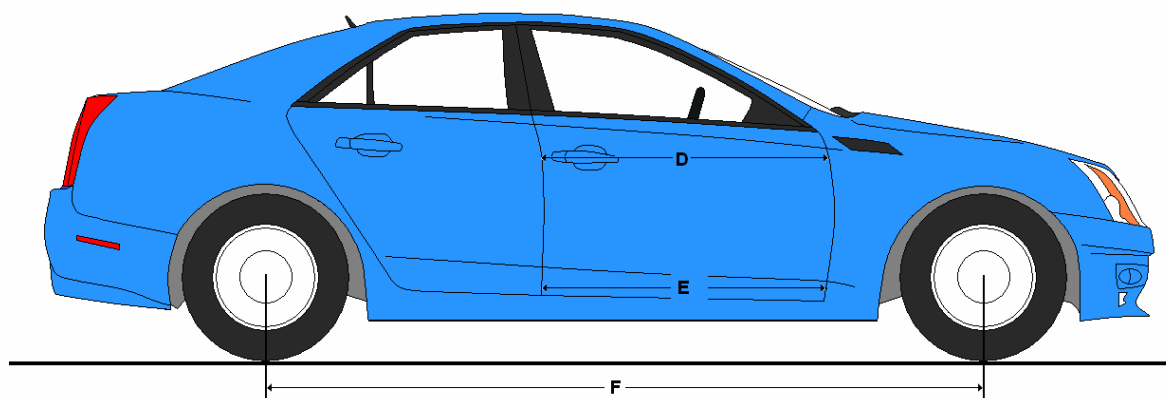
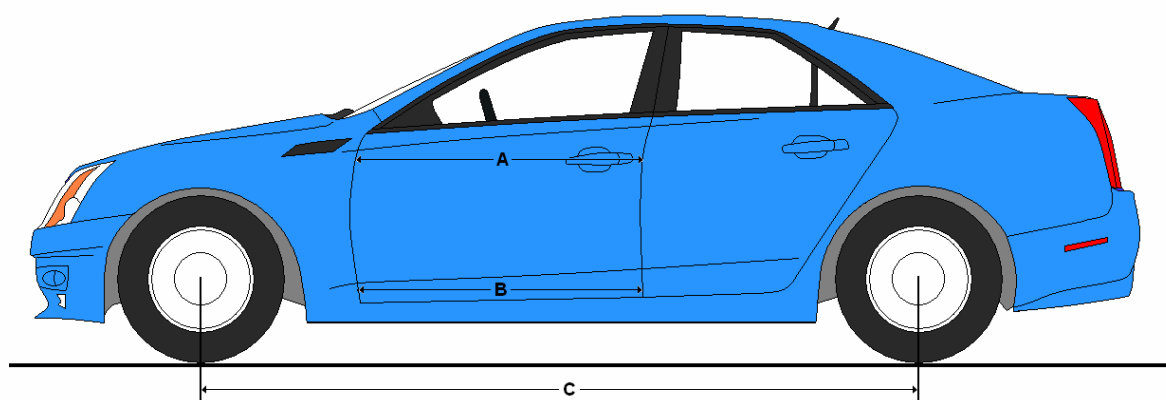
Test Date: 11/14/14

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	956	957	-1
B	Left Side Lower	mm	891	895	-4
D	Right Side Upper	mm	951	952	-1
E	Right Side Lower	mm	874	876	-2

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2690	2616	74
F	Right Side Wheelbase	mm	2690	2608	82



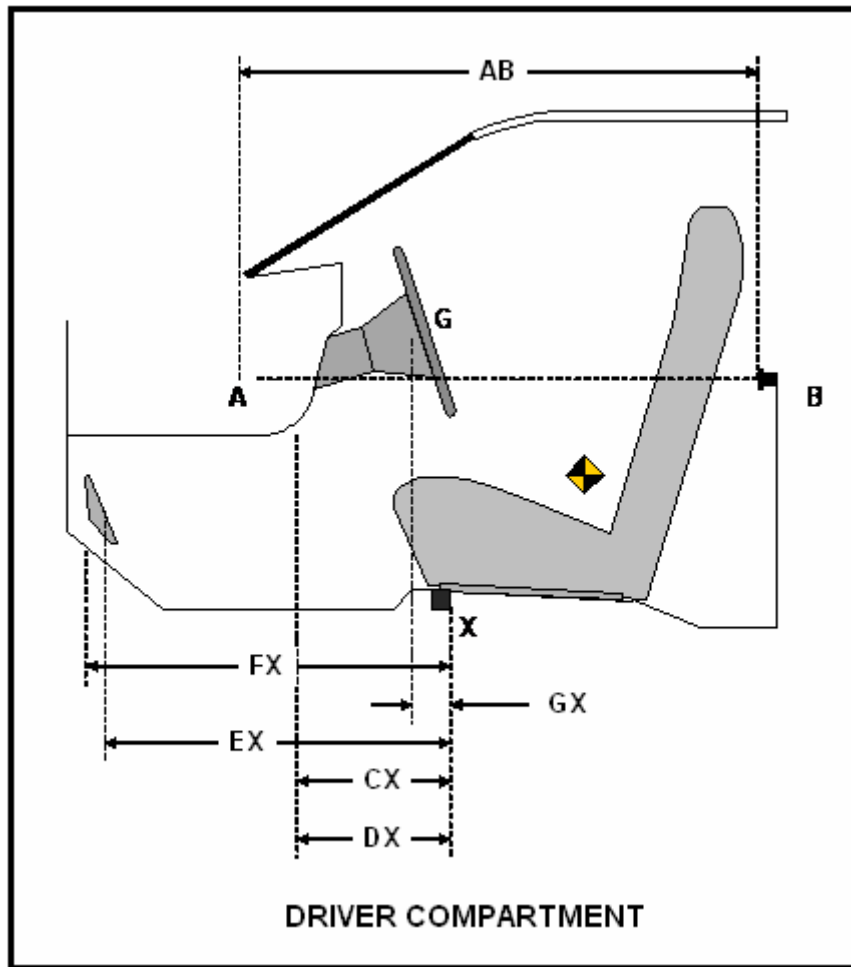
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jamb)	mm	836	831	5
CX	Left Knee Bolster to X	mm	360	329	31
DX	Right Knee Bolster to X	mm	370	325	45
EX	Brake Pedal to X	mm	500	458	42
FX	Foot Rest to X	mm	510	432	78
GX	Center of Steering Wheel Hub to X	mm	210	111	99

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15

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

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

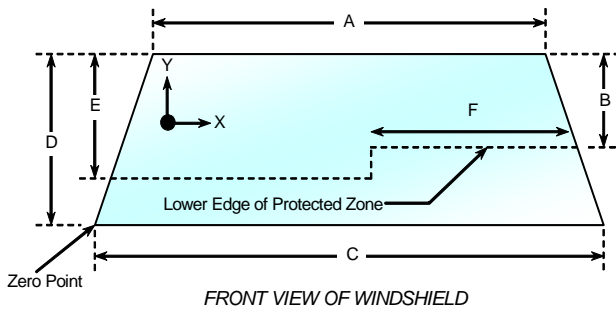
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.1 ° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2423	2423	100.0%
Right Side	2423	2423	100.0%
Total	4846	4846	100.0%



Item	Units	Value
A	mm	1270
B	mm	610
C	mm	1345
D	mm	1115
E	mm	627
F	mm	530

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 Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.1° C Test Time: 12:54 PM

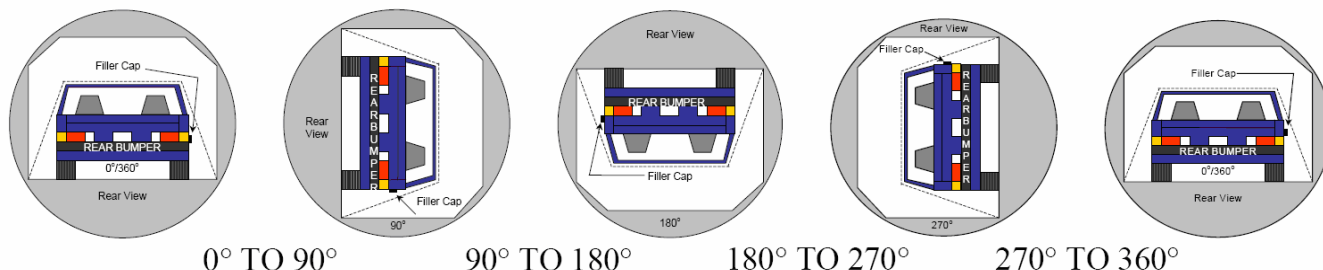
Stoddard Solvent Spillage Measurements

- 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 Escape SE 4WD 5-Door MPV NHTSA No.: M20150209
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 11/14/14



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°	82	300	382
90° To 180°	82	300	382
180° To 270°	79	300	379
270° To 360°	86	300	386

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°	N/A
90° To 180°	N/A
180° To 270°	N/A
270° To 360°	N/A

DATA SHEET NO. 17

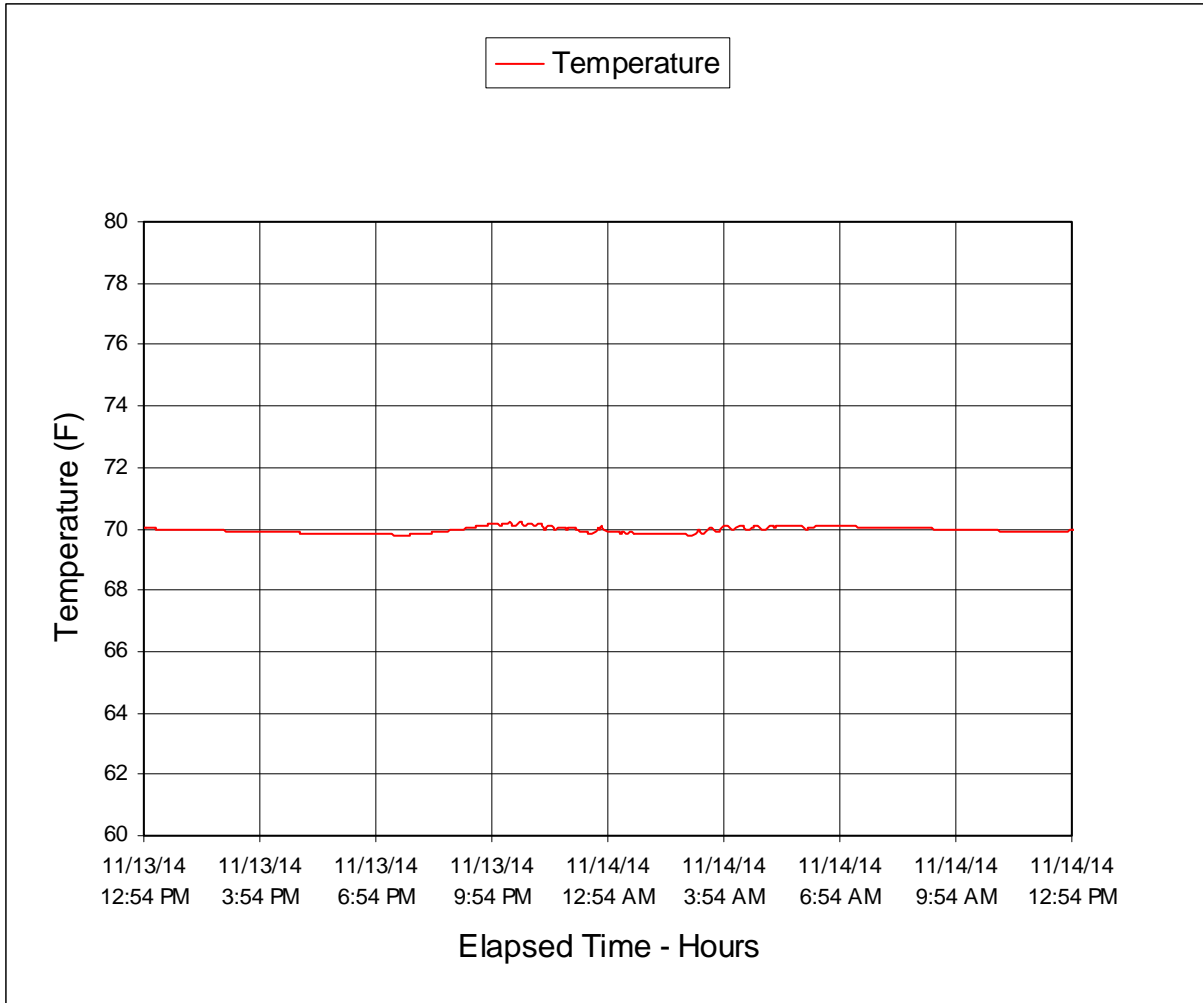
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV

NHTSA No.: M20150209

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 11/14/14



**APPENDIX A
PHOTOGRAPHS**

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FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall

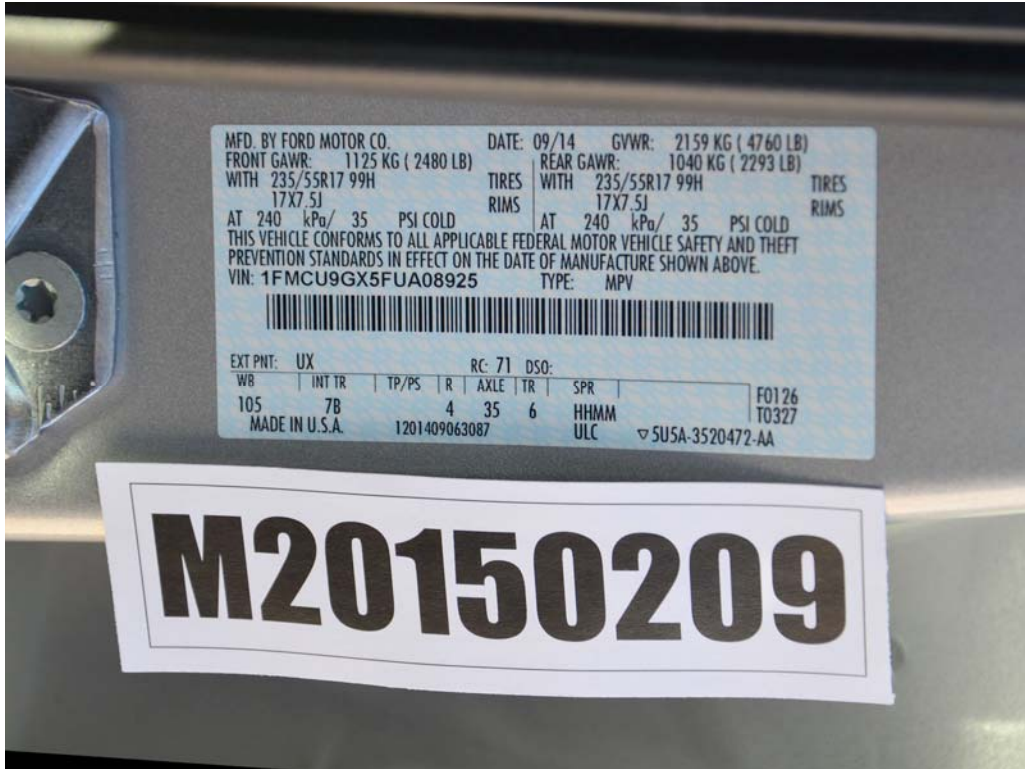


FIGURE 3. Manufacturer's Label

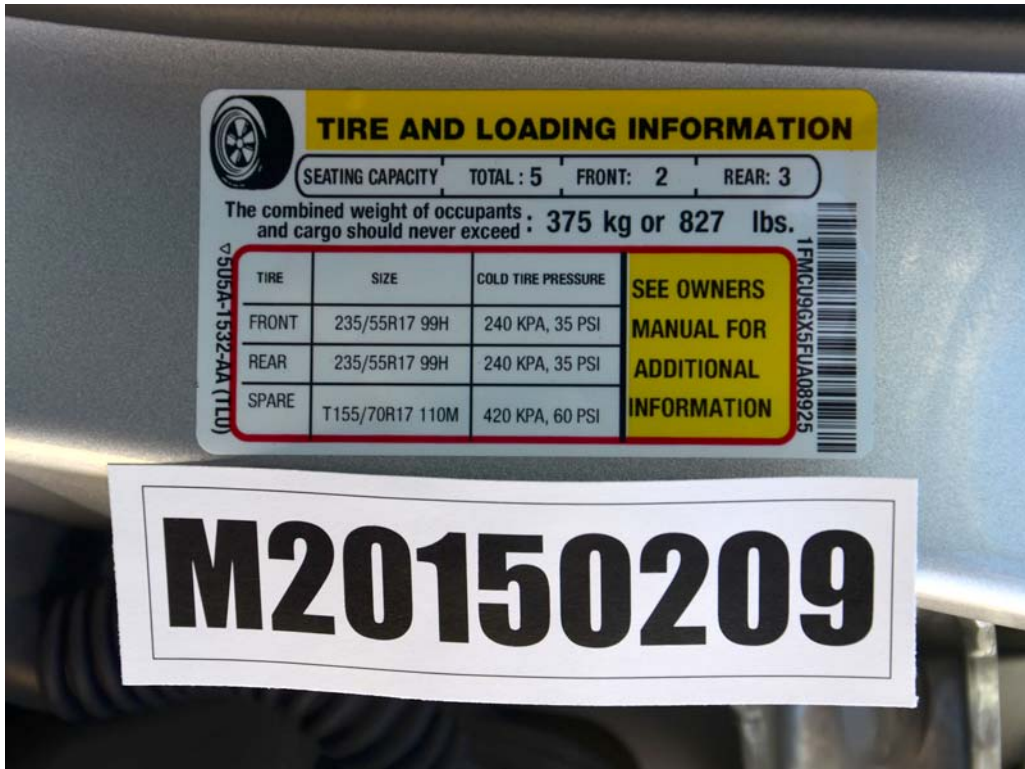


FIGURE 4. Tire Placard



FIGURE 5. 2015 Ford Escape Frontal as Delivered



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



FIGURE 7. Pre-Test Front View of Test Vehicle

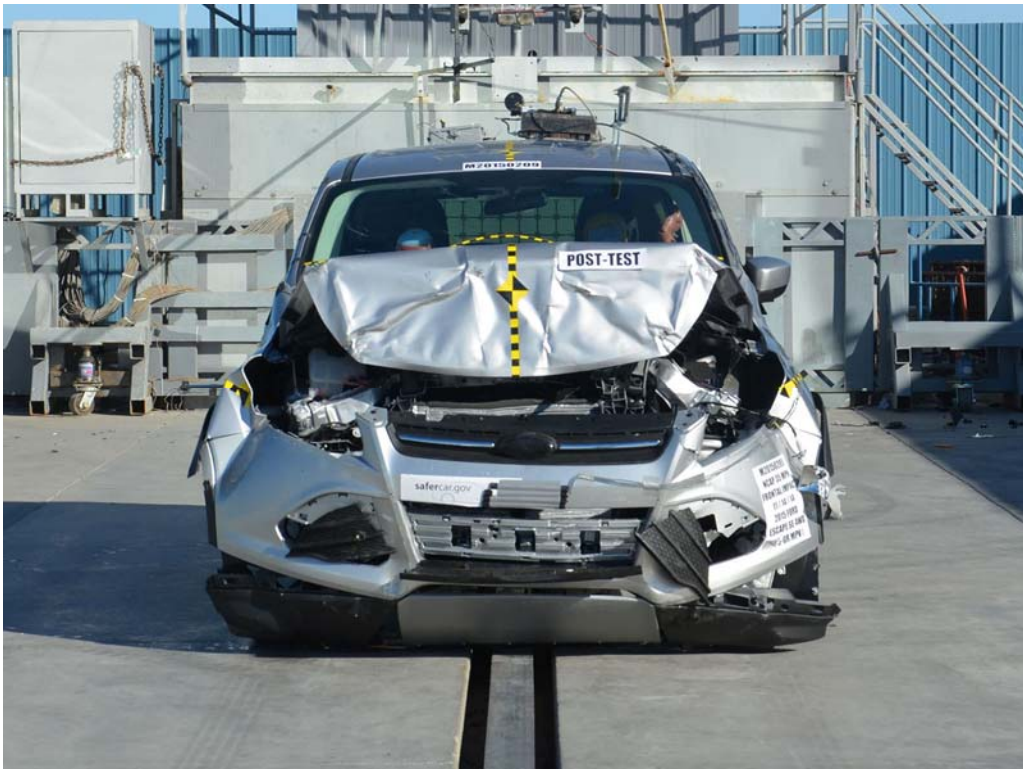


FIGURE 8. Post-Test Front View of Test Vehicle



FIGURE 9. Pre-Test Left View of Test Vehicle

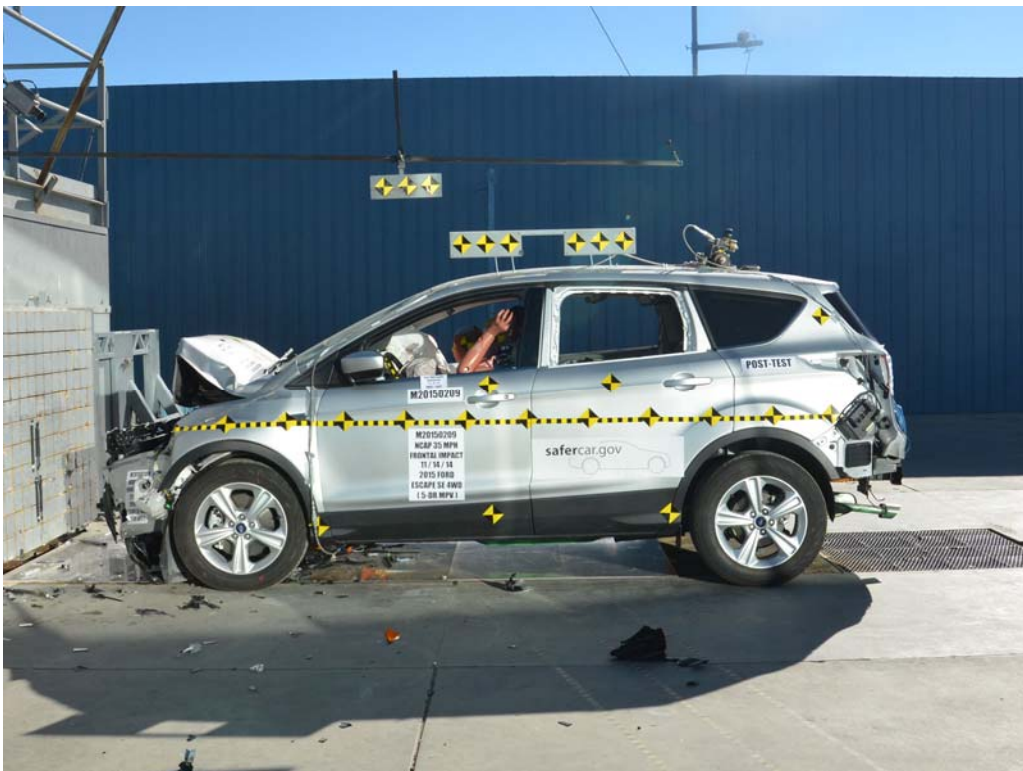


FIGURE 10. Post-Test Left View of Test Vehicle



FIGURE 11. Pre-Test Right View of Test Vehicle

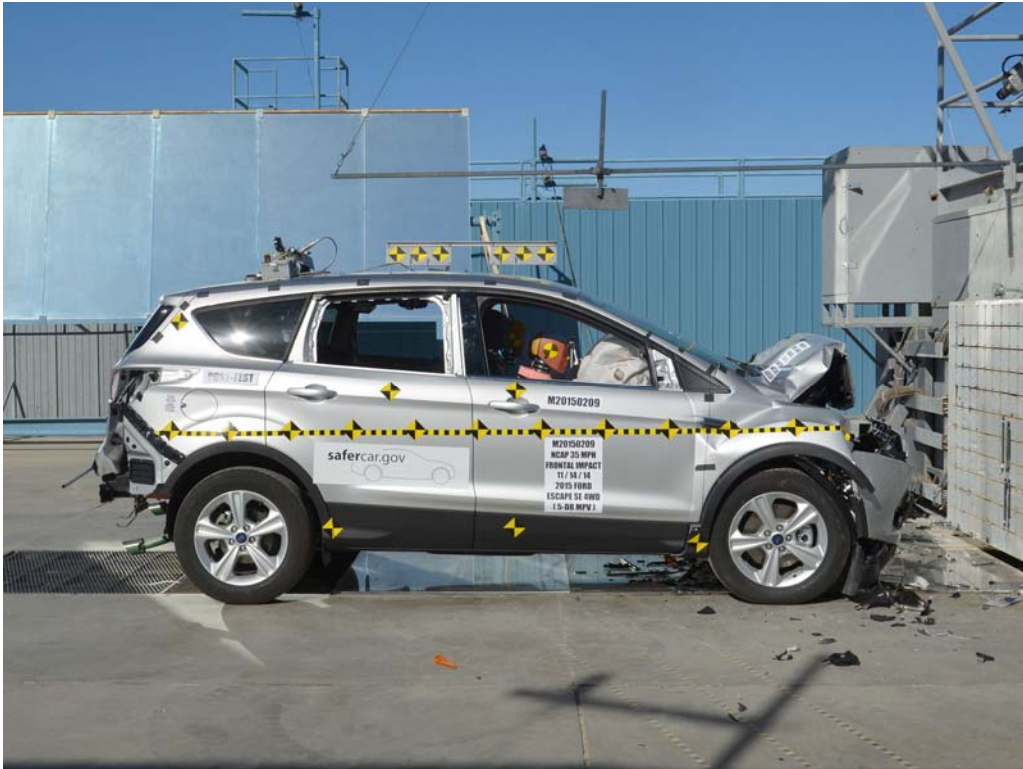


FIGURE 12. Post-Test Right View of Test Vehicle



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

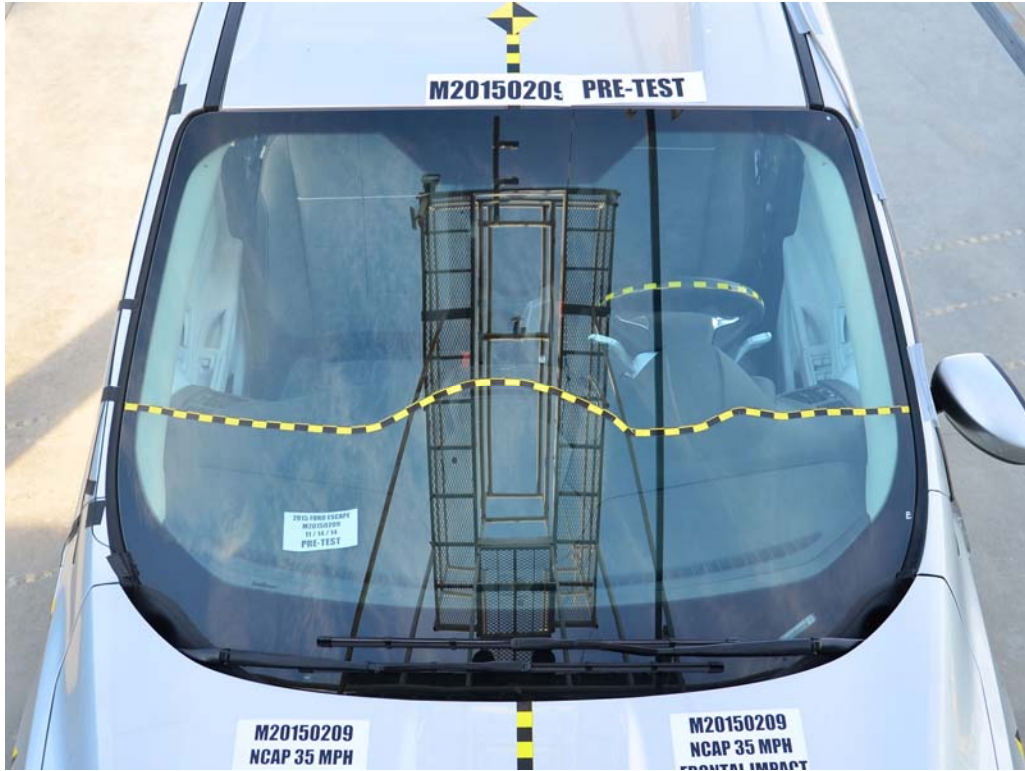


FIGURE 17. Pre-Test Windshield View



FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View

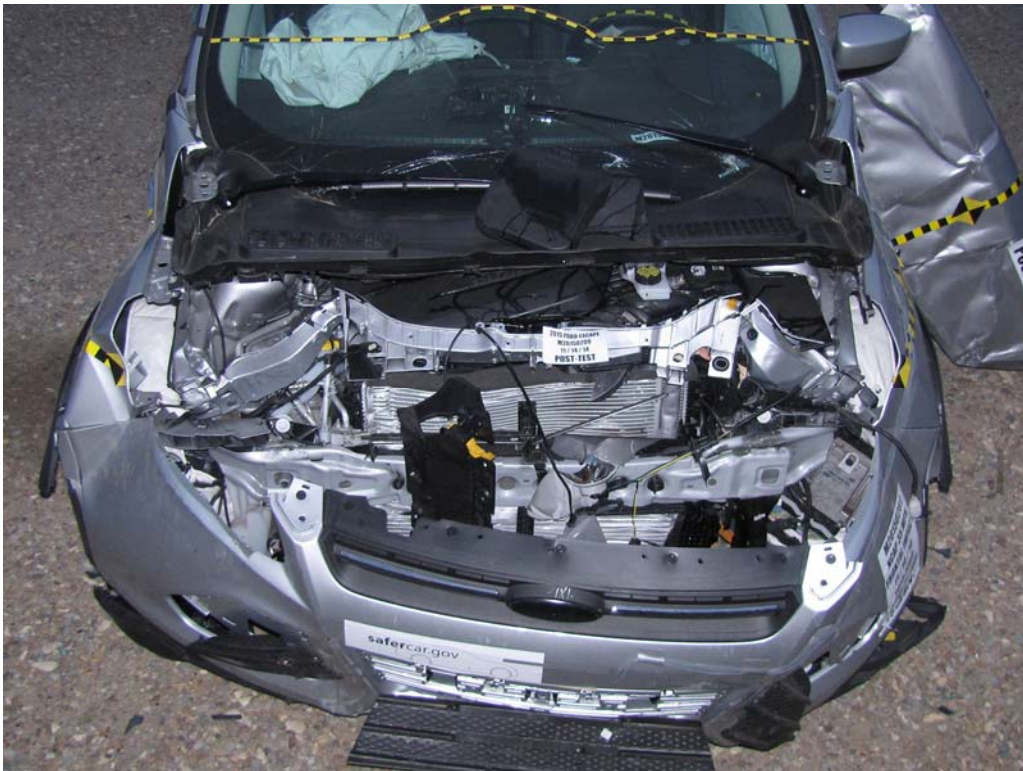


FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

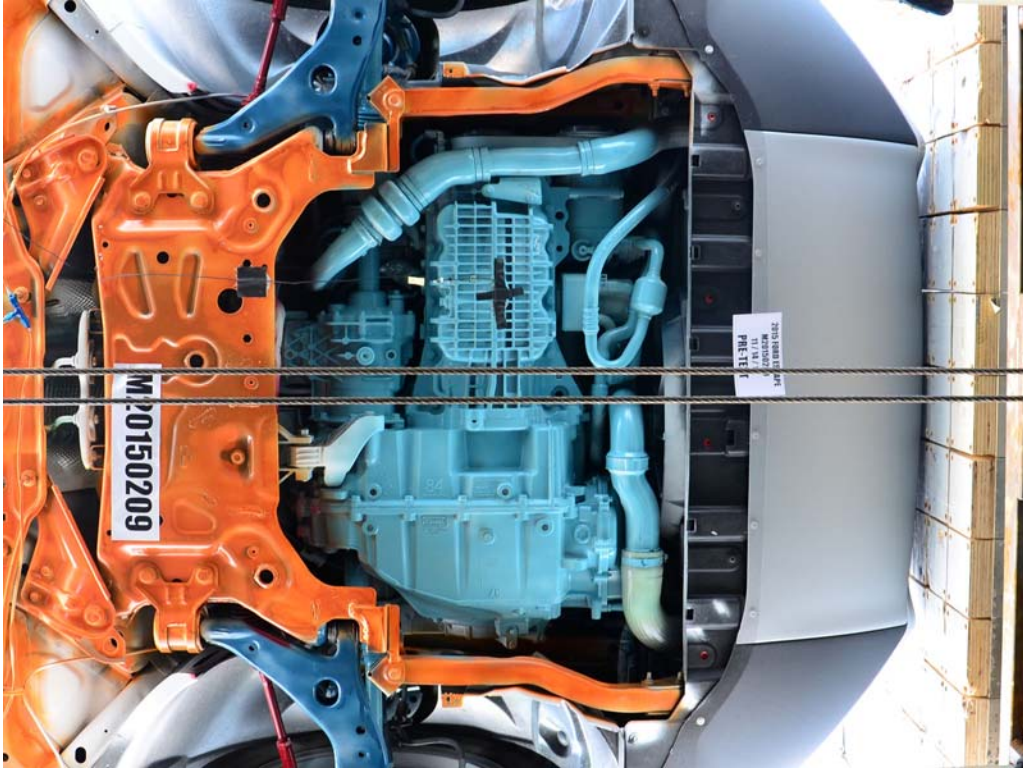


FIGURE 23. Pre-Test Front Underbody View

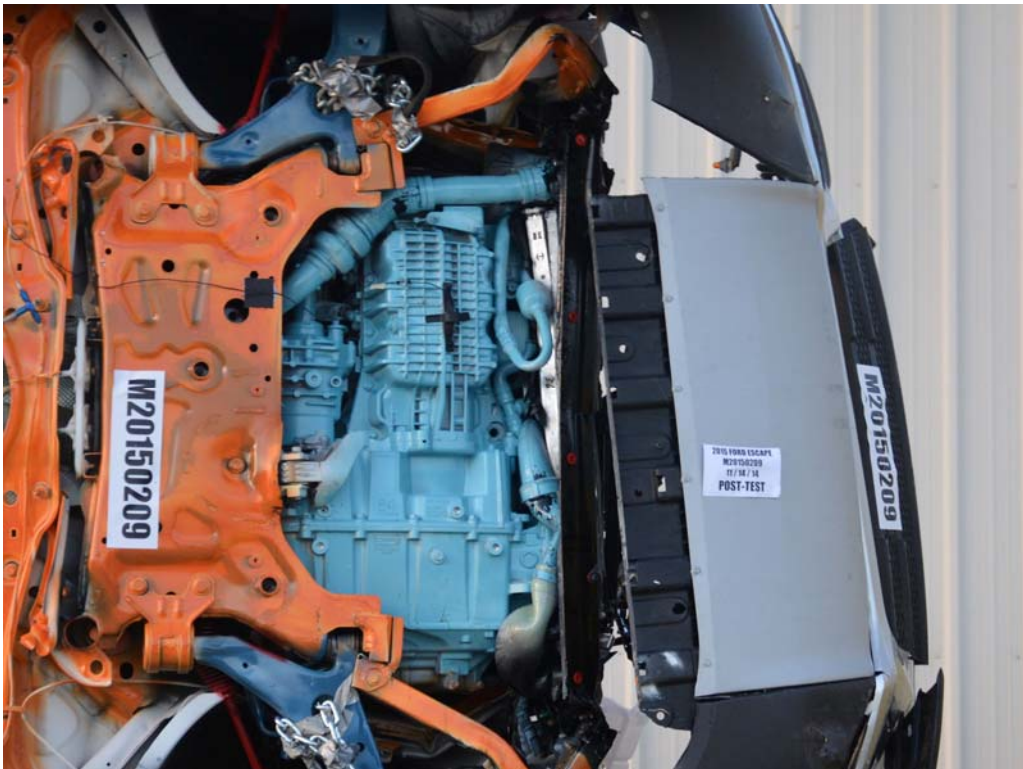


FIGURE 24. Post-Test Front Underbody View

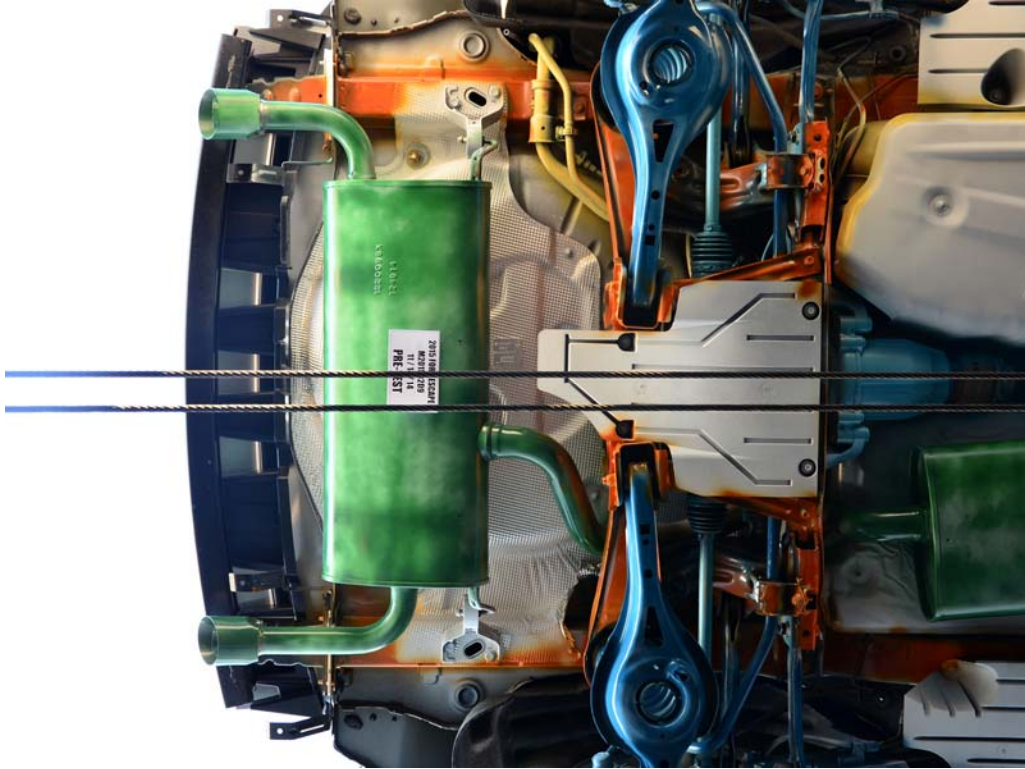


FIGURE 25. Pre-Test Rear Underbody View

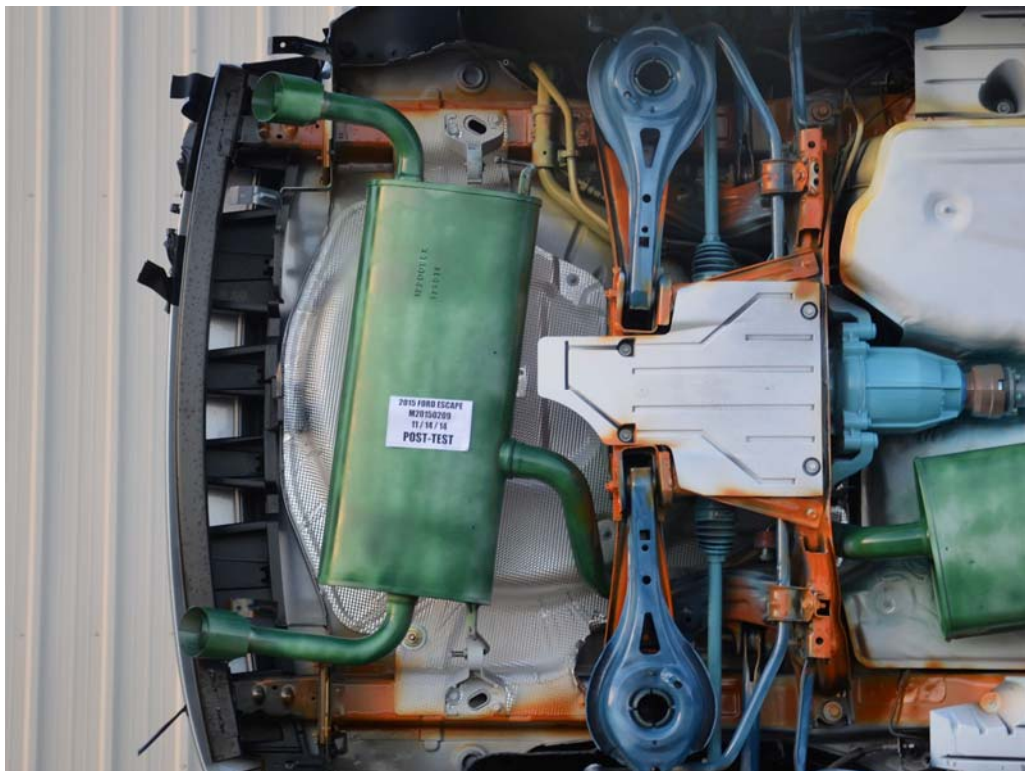


FIGURE 26. Post-Test Rear Underbody View



FIGURE 27. Pre-Test Dummy Cable Routing



FIGURE 28. Post-Test Dummy Cable Routing



FIGURE 29. Pre-Test Driver Dummy Front View

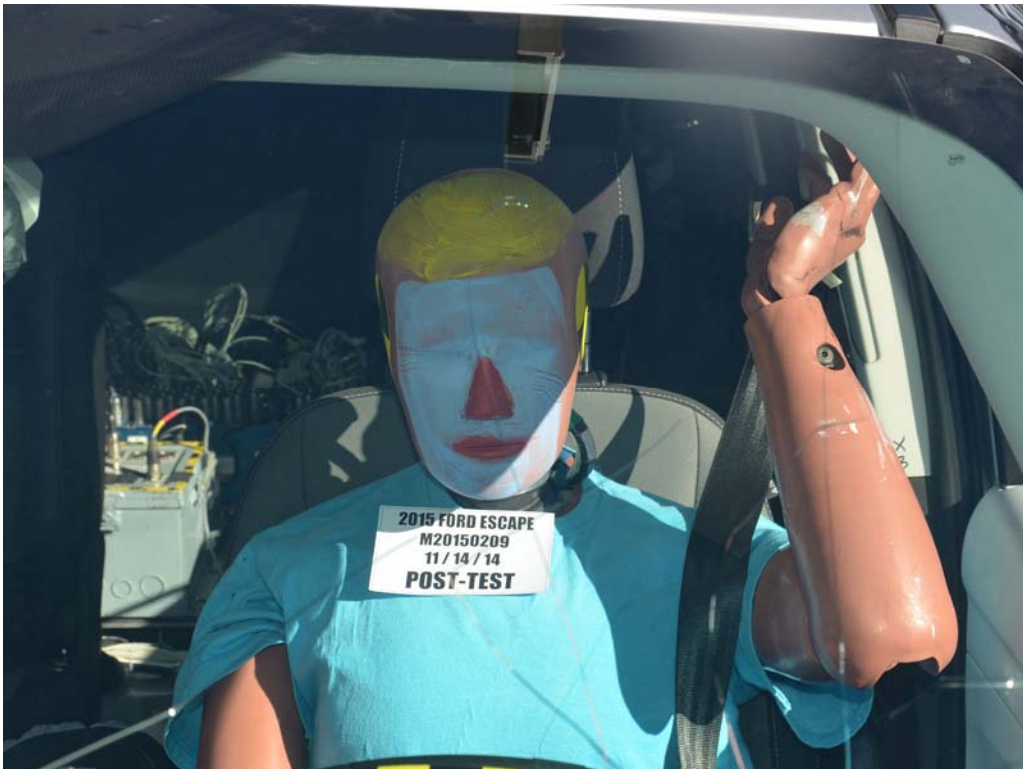


FIGURE 30. Post-Test Driver Dummy Front View



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

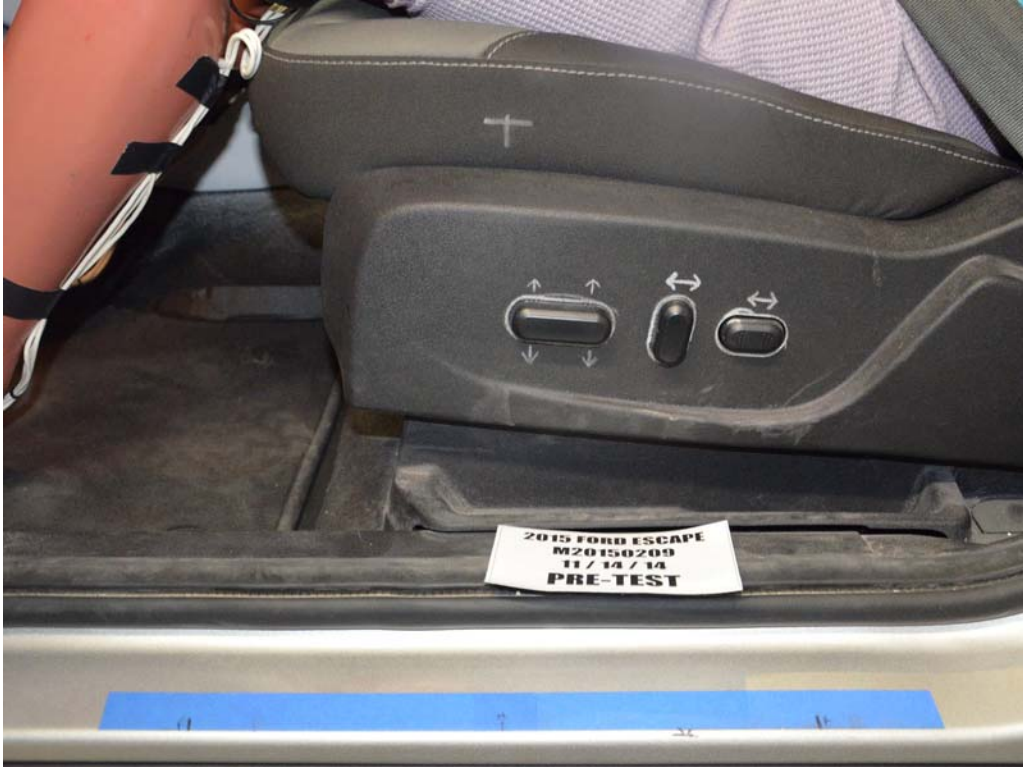


FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings



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 Airbag



FIGURE 48. Pre-Test View of the Steering Wheel



FIGURE 49. Post-Test View of the Steering Wheel



FIGURE 50. Pre-Test Passenger Dummy Front View



FIGURE 51. Post-Test Passenger Dummy Front View



FIGURE 52. Pre-Test Passenger Dummy Window View



FIGURE 53. Post-Test Passenger Dummy Window View



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



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

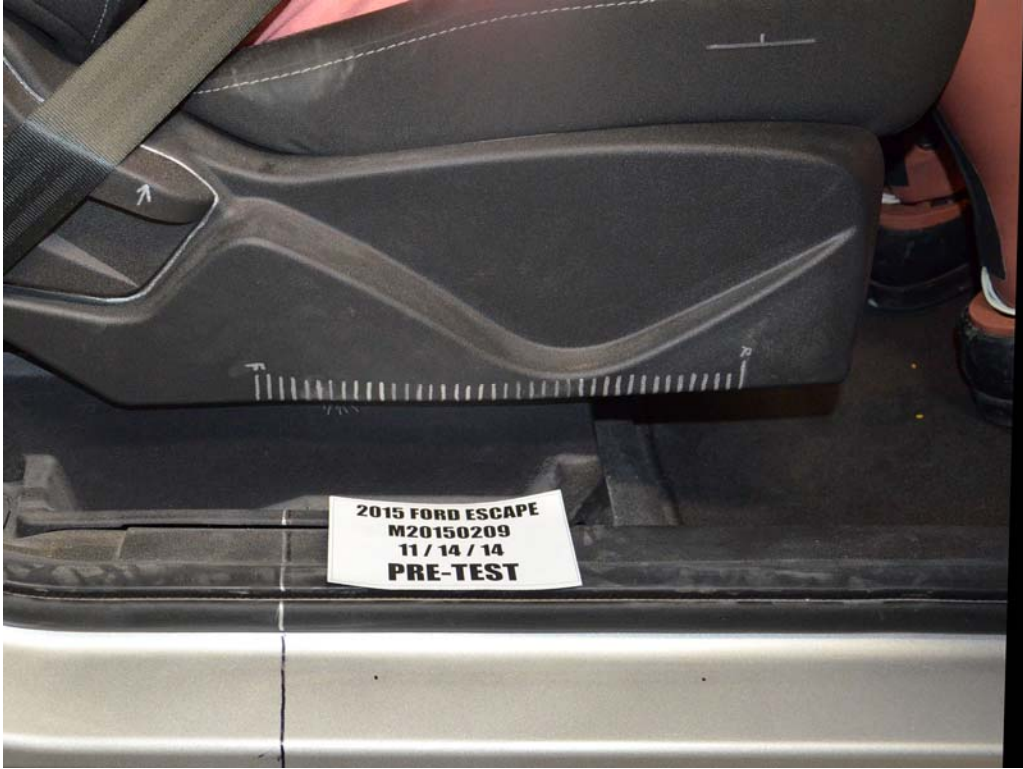


FIGURE 56. Pre-Test Passenger's Seat Fore-Aft Markings



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



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



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



FIGURE 60. Pre-Test Passenger Dummy Feet



FIGURE 61. Post-Test Passenger Dummy Feet

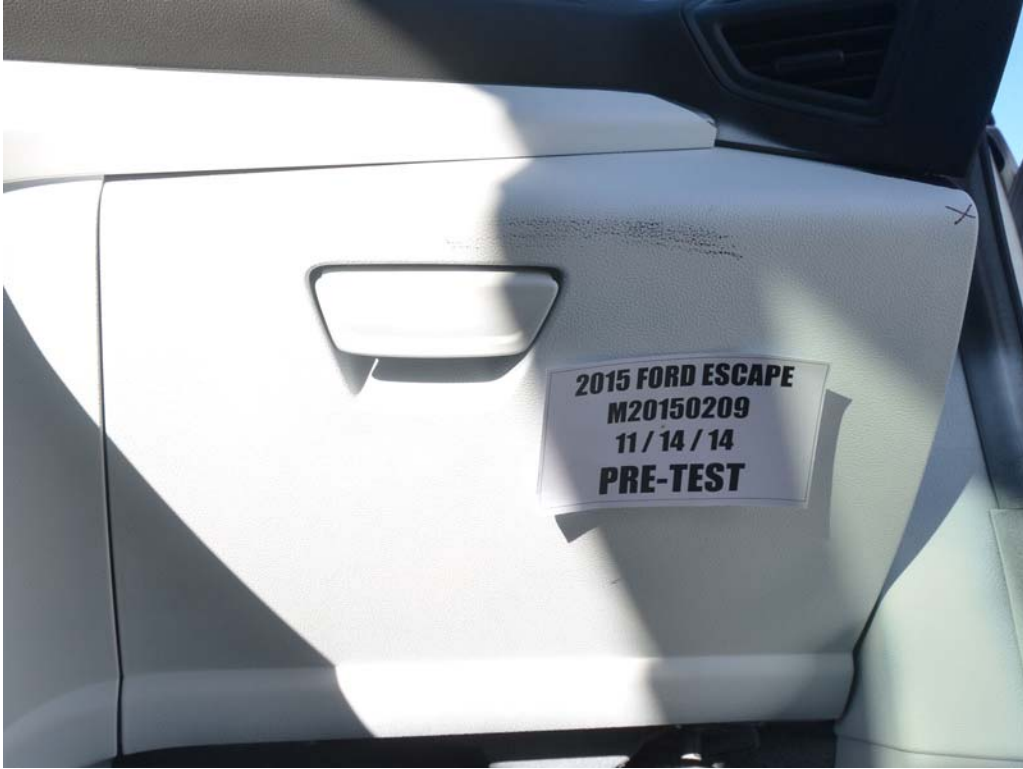


FIGURE 62. Pre-Test Passenger's Side Knee Bolster



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



FIGURE 64. Pre-Test Passenger's Side Floorpan



FIGURE 65. Post-Test Passenger's Side Floorpan



FIGURE 66. Post-Test Passenger Dummy Face



FIGURE 67. Post-Test Passenger Dummy Contact with Airbag



FIGURE 68. Post-Test Passenger Dummy Contact with Headrest



FIGURE 68a. Post-Test Passenger Dummy Contact with Glovebox

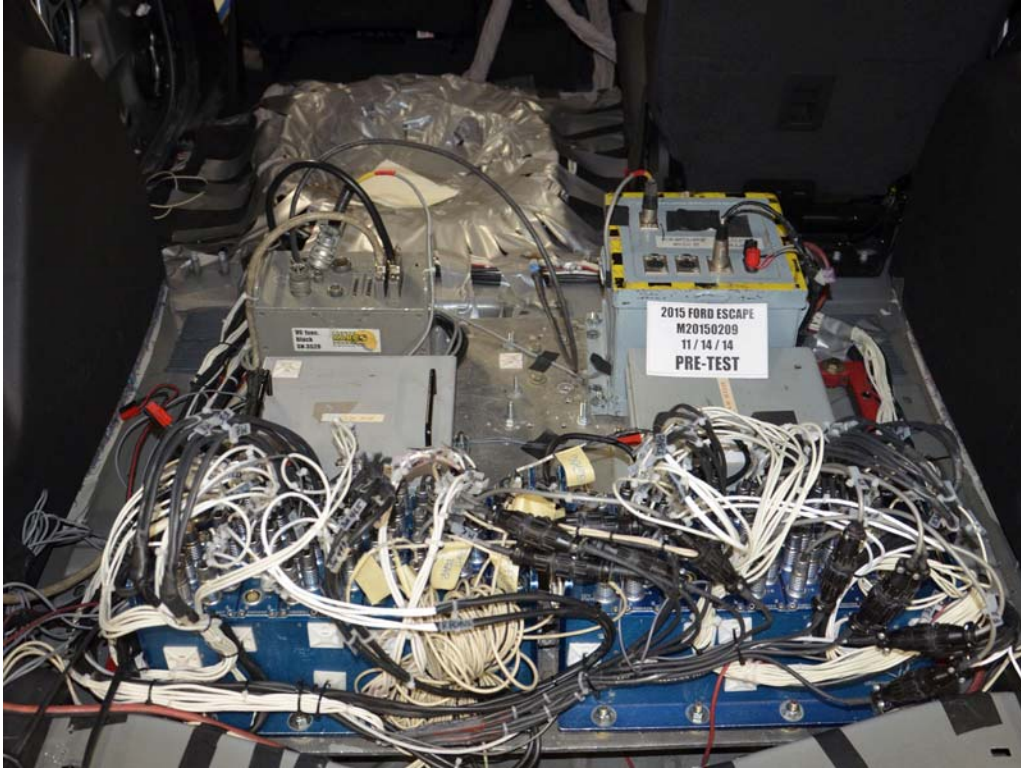


FIGURE 69. Photograph of Ballast Installed in Vehicle

Photograph Not Applicable

**No Stoddard
Solvent Spillage**

FIGURE 70. Post-Test Stoddard Solvent Spillage Location View



FIGURE 71. Post-Test Speed Trap Read-Out

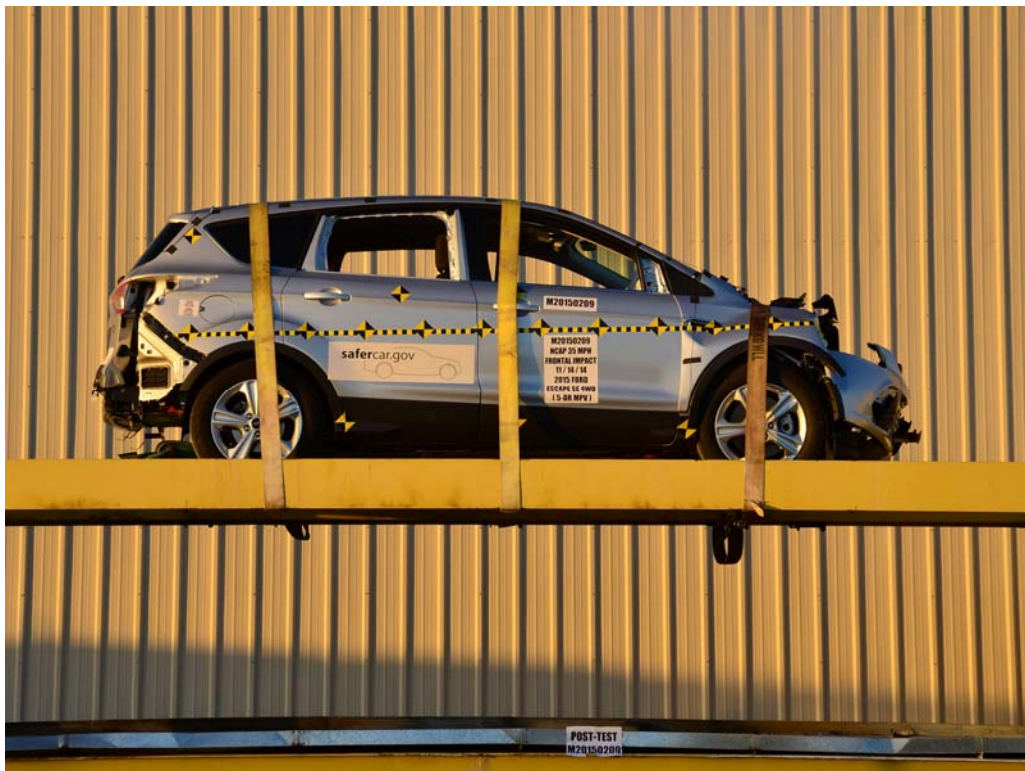


FIGURE 72. Vehicle at 0° on Static Rollover Device



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

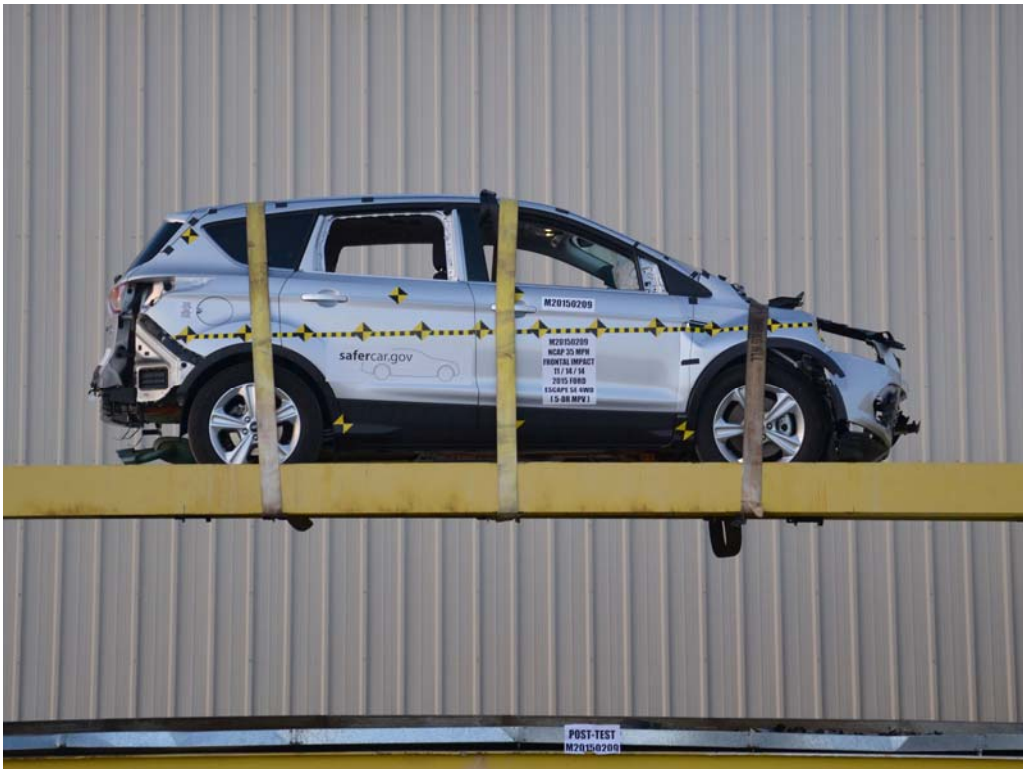


FIGURE 76. Vehicle at 360° on Static Rollover Device

APPENDIX B
DUMMY RESPONSE DATA TRACES

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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
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13	Driver Nij vs. Time Primary	B-4
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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

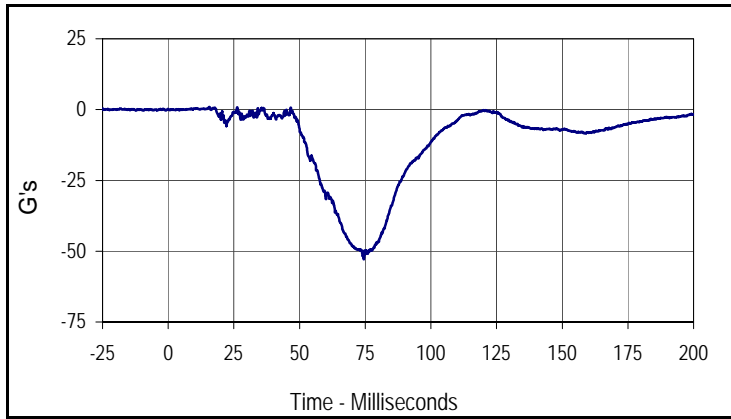
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Head Front Y Acceleration
Driver Head Front Z Acceleration
Driver Head Top X Acceleration
Driver Head Top Y Acceleration
Driver Head Left X Acceleration
Driver Head Left Z Acceleration
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

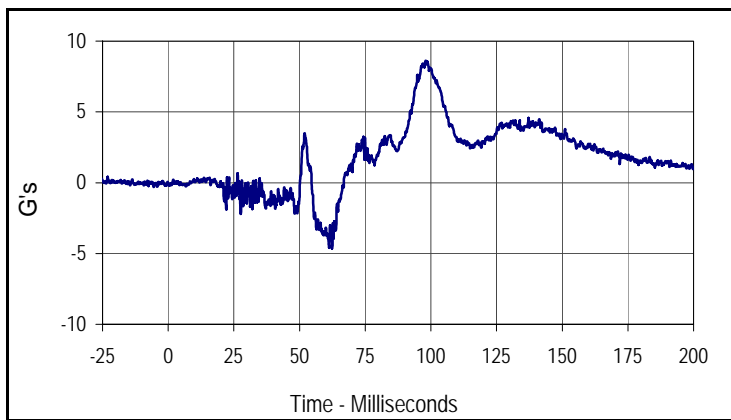
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Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
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Passenger Left Foot Aft X
Passenger Left Foot Aft 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 Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

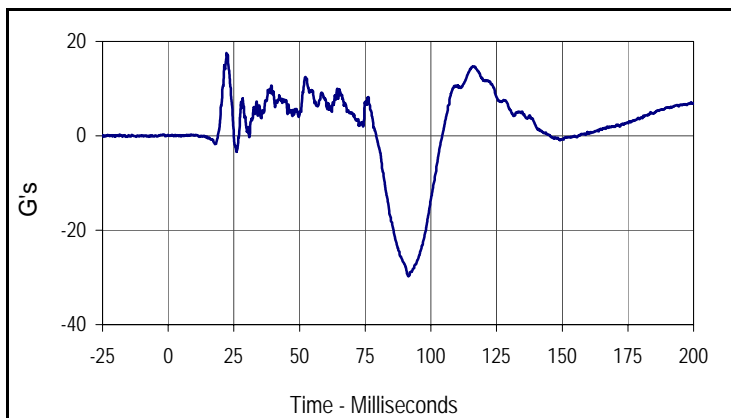
NHTSA No.: M20150209
 Test Date: 11/14/14



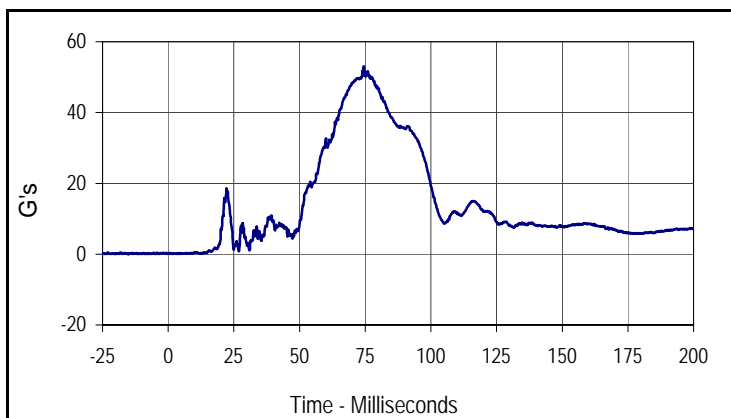
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
0.9	15.7	-52.8	74.5



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.6	98.0	-4.6	62.4



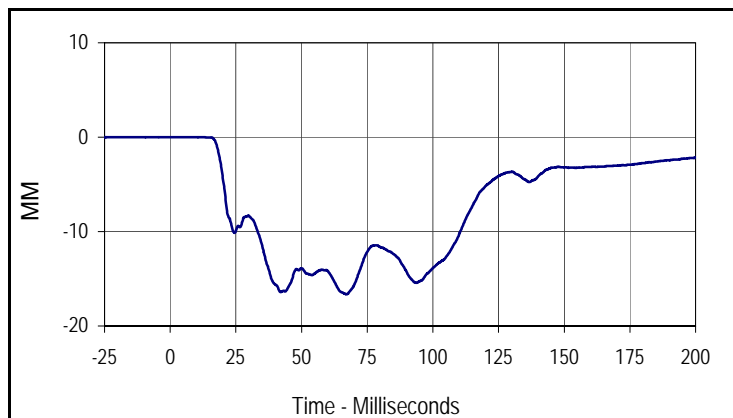
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
17.5	22.2	-29.7	91.5



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
53.0	74.5	0.0	3.1

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

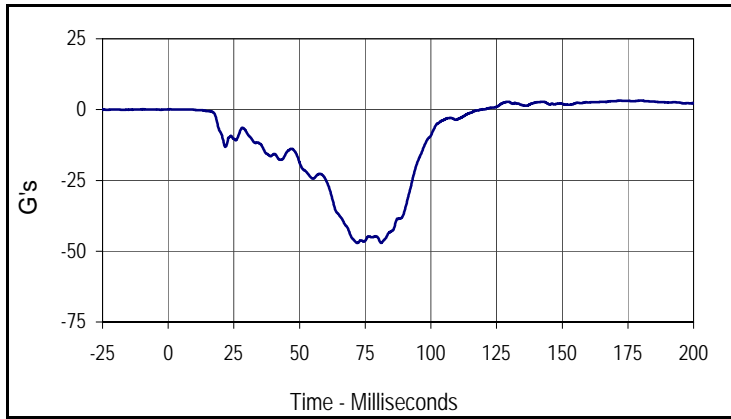
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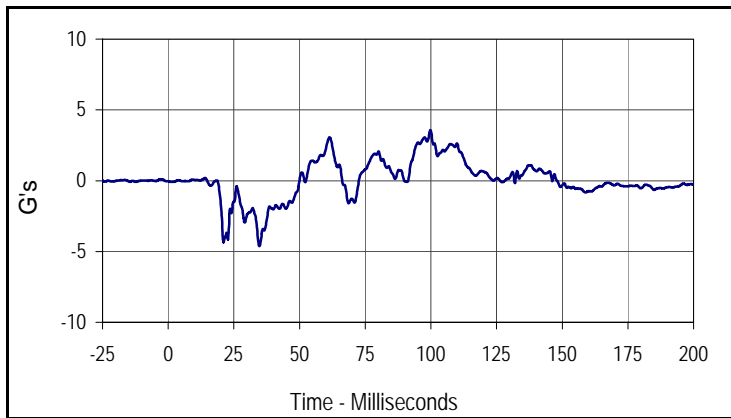
Curve Description			
Driver Chest Deflection			
Plot No.	Type	SAE Class	Units
005	FIL	600	MM
Max	Time	Min	Time
0.0	4.2	-16.6	67.1

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

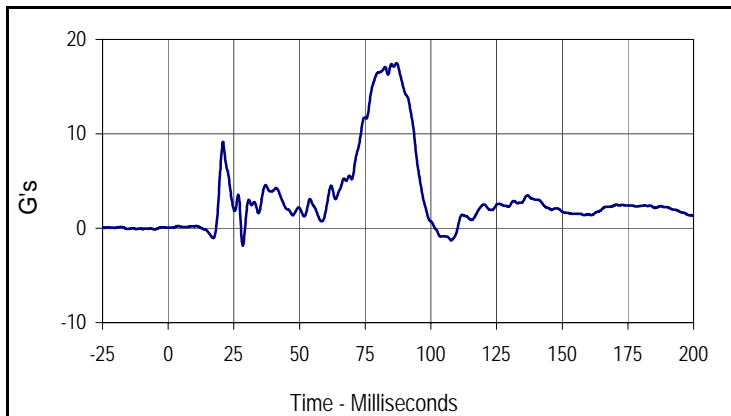
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 Test Date: 11/14/14



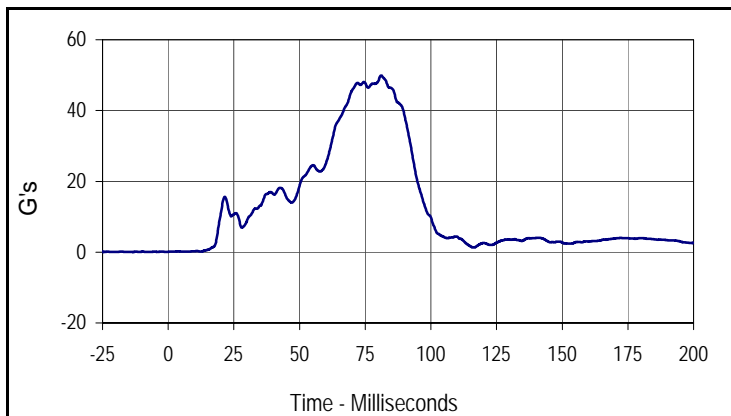
Curve Description			
Driver Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
3.2	171.9	-47.1	72.0



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
3.6	99.8	-4.6	34.7



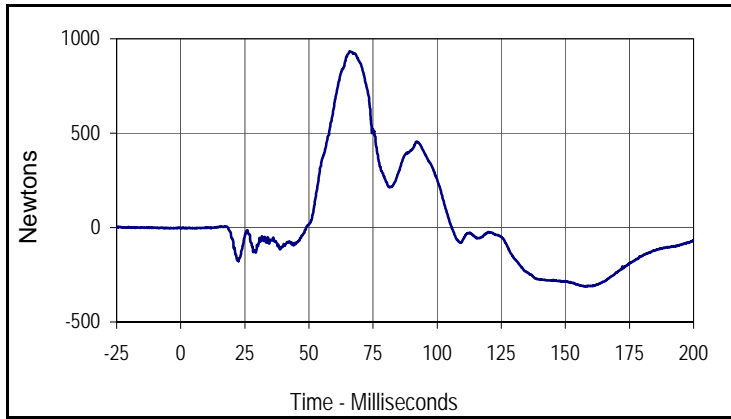
Curve Description			
Driver Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
008	FIL	180	G's
Max	Time	Min	Time
17.5	86.9	-1.9	28.4



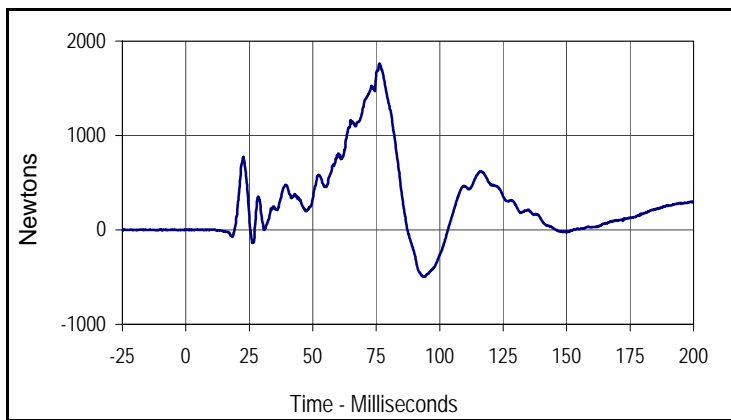
Curve Description			
Driver Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
009	RES	180	G's
Max	Time	Min	Time
49.9	81.1	0.1	0.0

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

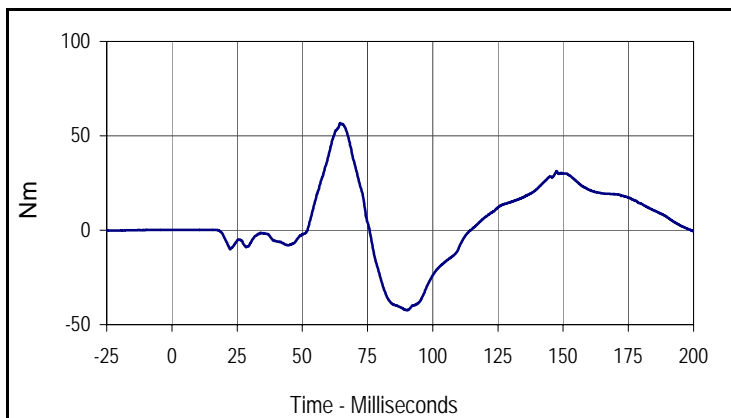
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 Test Date: 11/14/14



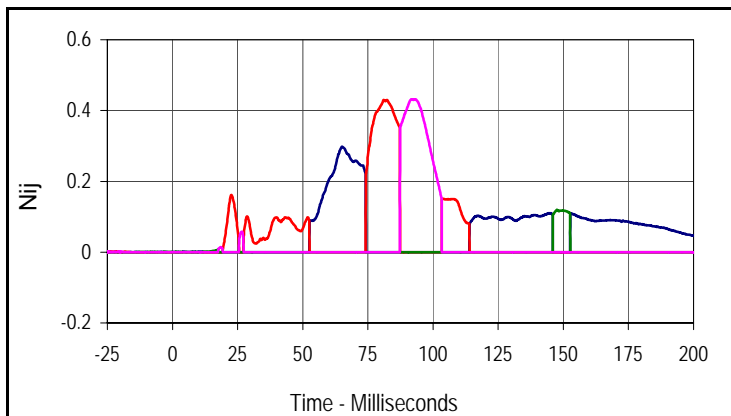
Curve Description			
Driver Upper Neck Force X			
Plot No.	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
933.6	65.9	-311.6	157.3



Curve Description			
Driver Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
1763.1	76.3	-498.4	94.2



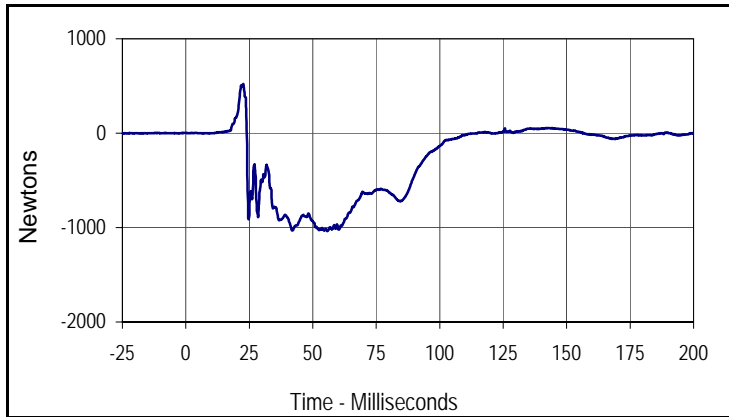
Curve Description			
Driver Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
56.8	64.5	-42.4	90.2



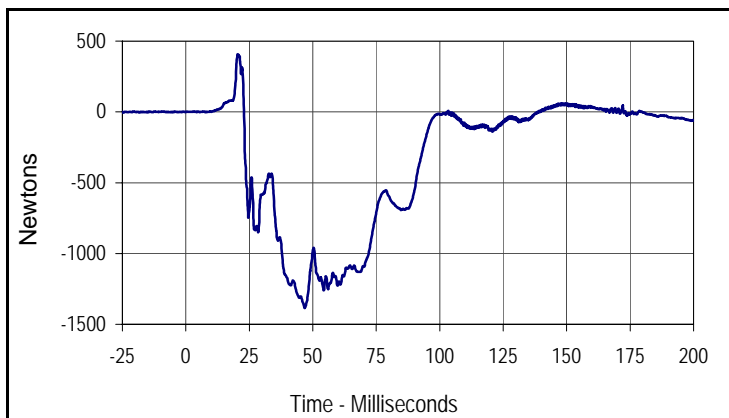
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Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.30	65.1
Units	Type	Max	Time
Nte	FIL	0.43	82.3
Units	Type	Max	Time
Ncf	FIL	0.12	147.5
Units	Type	Max	Time
Nce	FIL	0.43	93.1

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20150209
 Test Date: 11/14/14



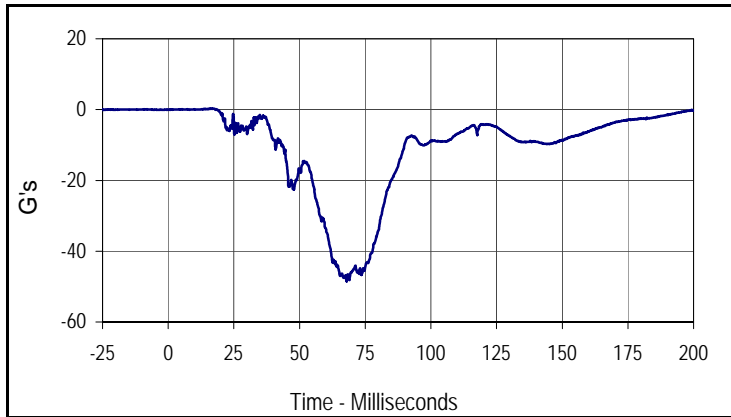
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Driver Left Femur Force Z			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
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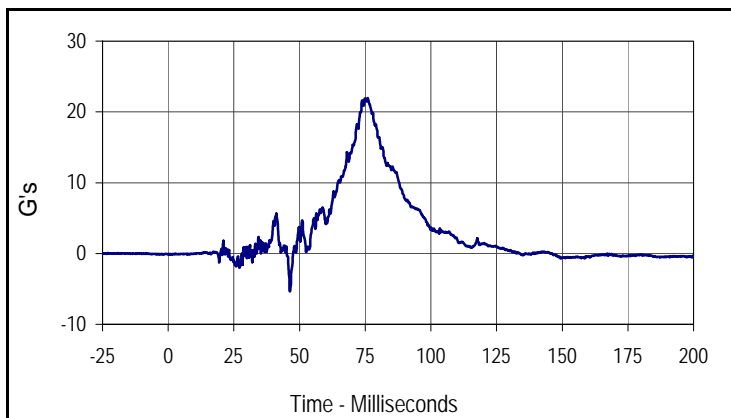
Curve Description			
Driver Right Femur Force Z			
Plot No.	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
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Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

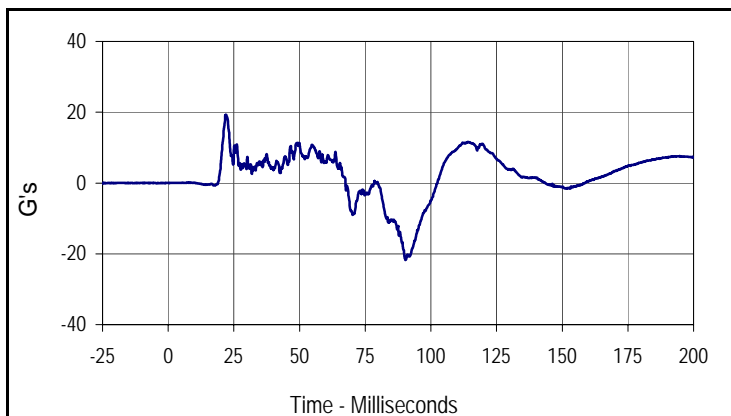
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 Test Date: 11/14/14



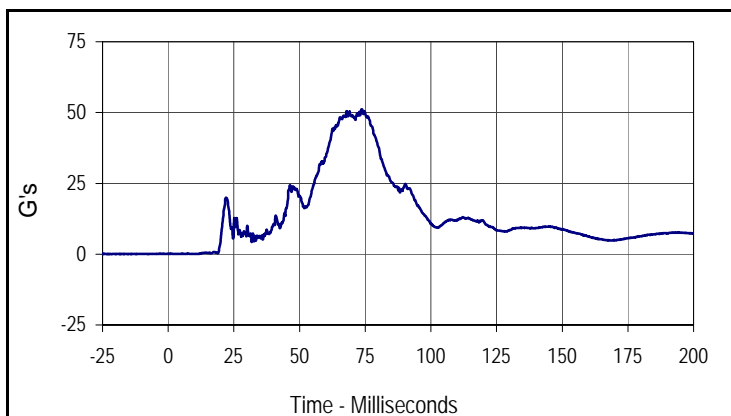
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
0.3	17.2	-48.5	67.9



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
22.0	76.0	-5.3	46.4



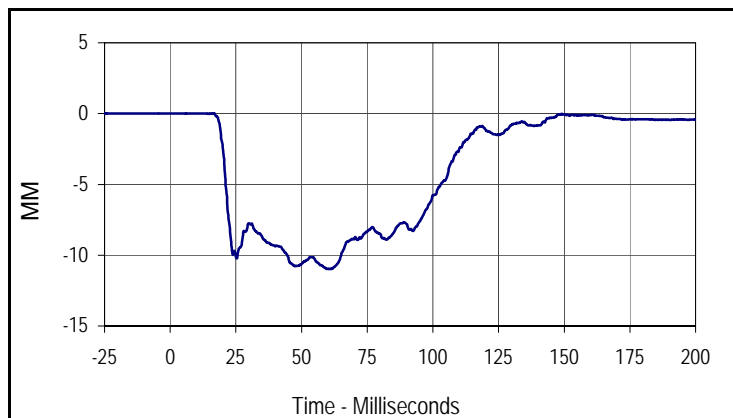
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
017	FIL	1000	G's
Max	Time	Min	Time
19.3	22.0	-21.7	90.4



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
018	RES	1000	G's
Max	Time	Min	Time
51.2	73.7	0.0	10.7

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

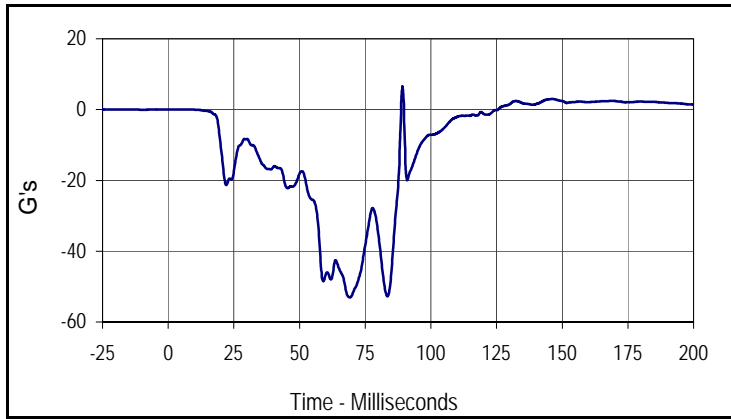
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 Test Date: 11/14/14



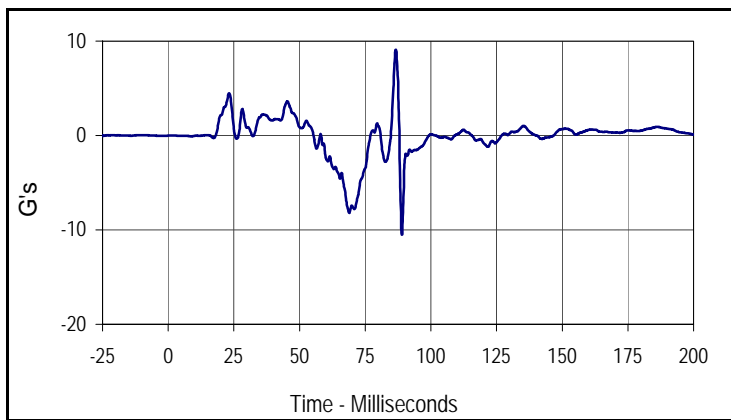
Curve Description			
Passenger Chest Deflection			
Plot No.	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
0.0	16.7	-11.0	60.4

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

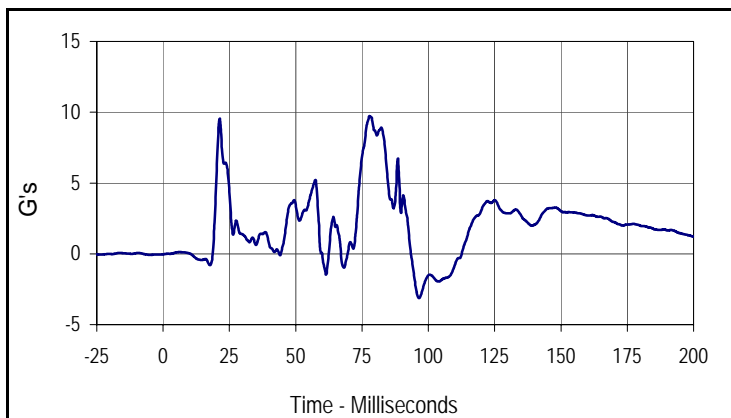
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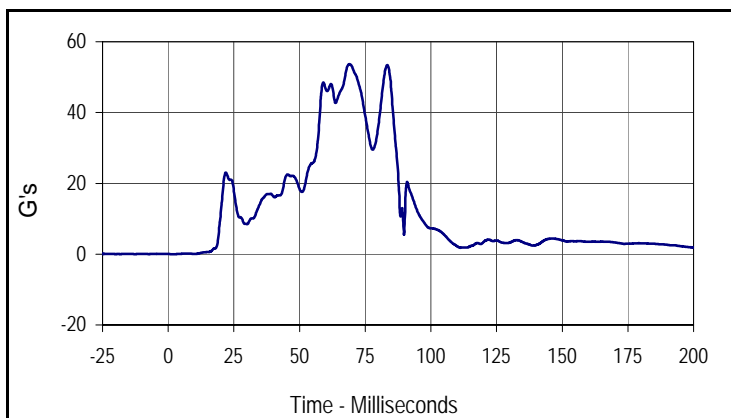
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Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
6.5	89.2	-53.0	69.1



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
9.1	86.7	-10.5	89.0



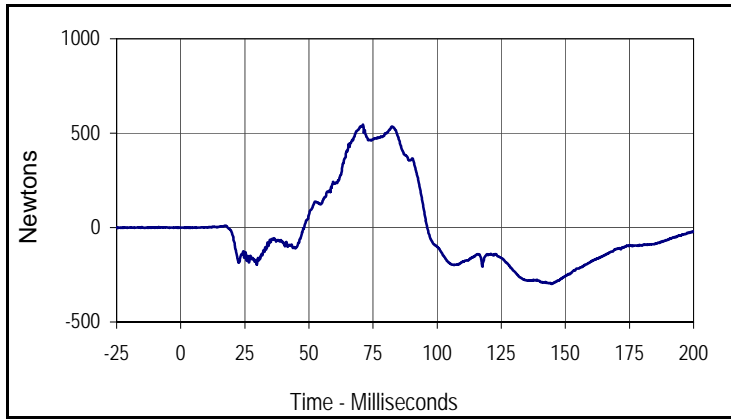
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Max	Time	Min	Time
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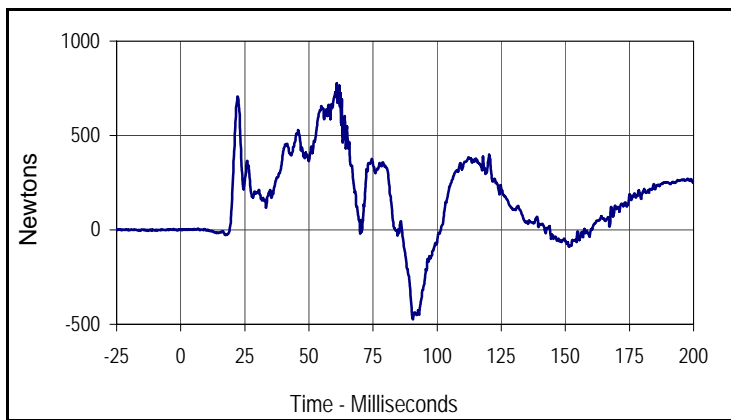
Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
023	RES	180	G's
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53.6	69.0	0.0	1.4

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

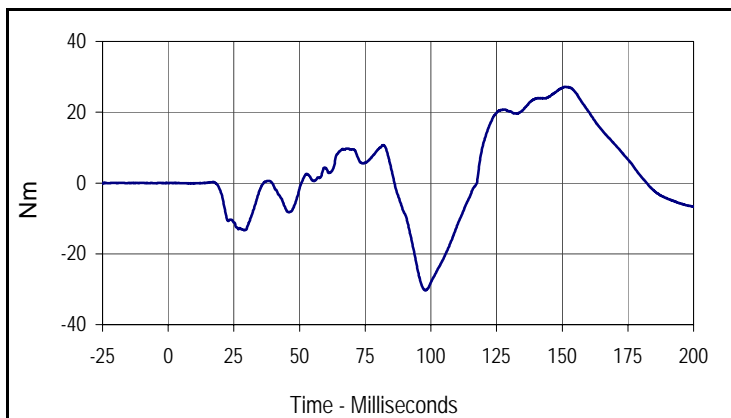
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 Test Date: 11/14/14



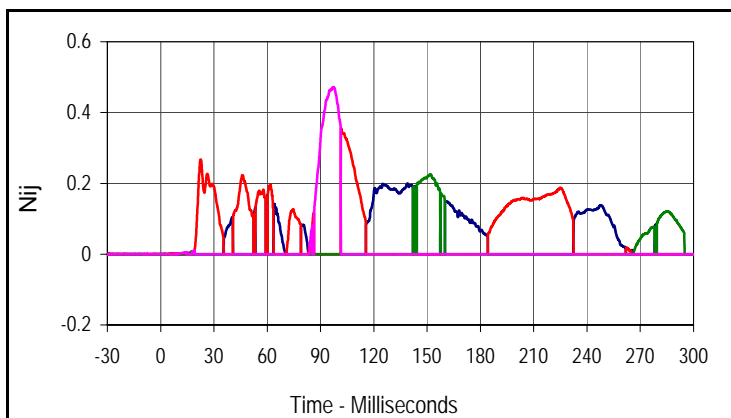
Curve Description			
Passenger Upper Neck Force X			
Plot No.	Type	SAE Class	Units
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Max	Time	Min	Time
544.9	71.1	-299.1	144.7



Curve Description			
Passenger Upper Neck Force Z			
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025	FIL	1000	Newtons
Max	Time	Min	Time
776.6	60.8	-473.7	90.5



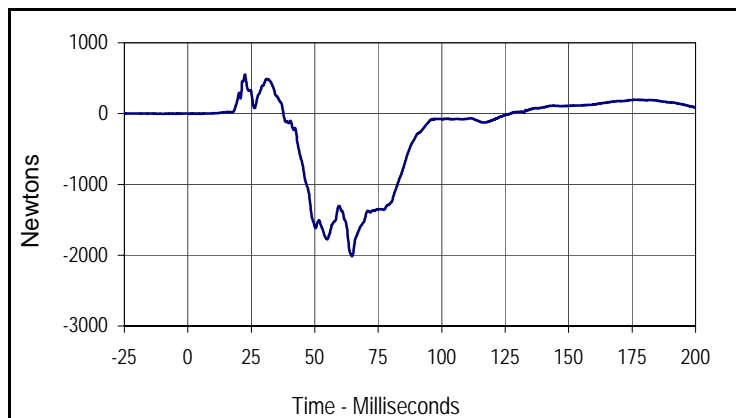
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
27.1	151.2	-30.3	98.0



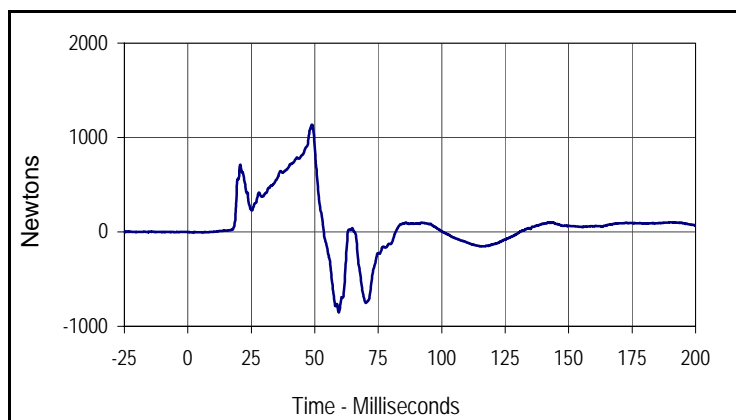
Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.20	139.1
Units	Type	Max	Time
Nte	FIL	0.36	101.5
Units	Type	Max	Time
Ncf	FIL	0.23	151.6
Units	Type	Max	Time
Nce	FIL	0.47	97.5

Test Vehicle: 2015 Ford Escape SE 4WD 5-Door MPV
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20150209
 Test Date: 11/14/14



Curve Description			
Passenger Left Femur Force Z			
Plot No.	Type	SAE Class	Units
027	FIL	600	Newtons
Max	Time	Min	Time
550.8	22.5	-2015.5	64.7



Curve Description			
Passenger Right Femur Force Z			
Plot No.	Type	SAE Class	Units
028	FIL	600	Newtons
Max	Time	Min	Time
1135.7	48.9	-855.6	59.4

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: 11/6/14



ATD Serial No.: 034

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 11/6/14



ATD Serial No.: 034

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	884	Pass
B - Shoulder pivot height	mm	505 to 521	512	Pass
C - H point height	mm	84 to 89	85	Pass
D - H point location from backline	mm	135 to 140	137	Pass
E - Shoulder pivot from backline	mm	84 to 94	89	Pass
F - Thigh clearance	mm	140 to 155	146	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	297	Pass
H - Head back to backline	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	336	Pass
J - Elbow rest height	mm	190 to 211	201	Pass
K - Buttock to knee length	mm	579 to 604	586	Pass
L - Popliteal length	mm	429 to 455	438	Pass
M - Knee pivot height	mm	485 to 500	493	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	433	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	981	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	429	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

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

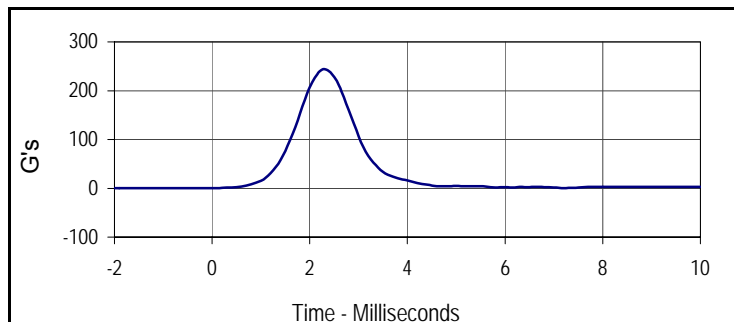
Test Date: 11/6/14



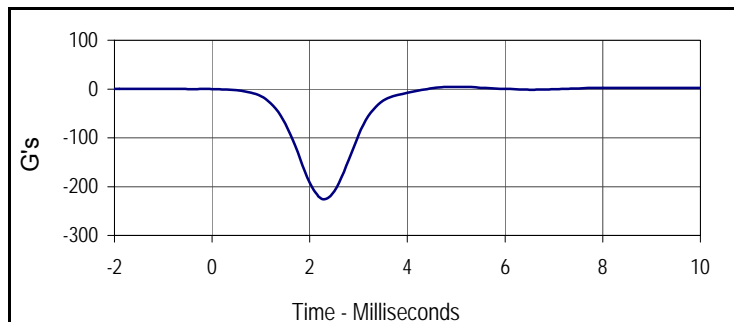
ATD Serial No.: 034

Test I.D.: M034HD050

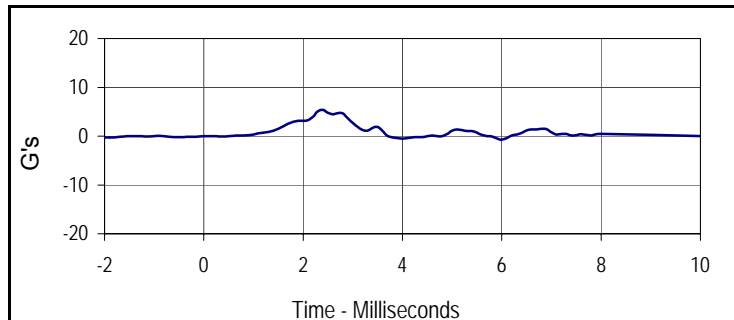
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	306	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	20.0	Pass
	Min		19.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.9	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	244.3	Pass
Peak Lateral Acceleration	G's	≤15.0	5.4	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	6.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



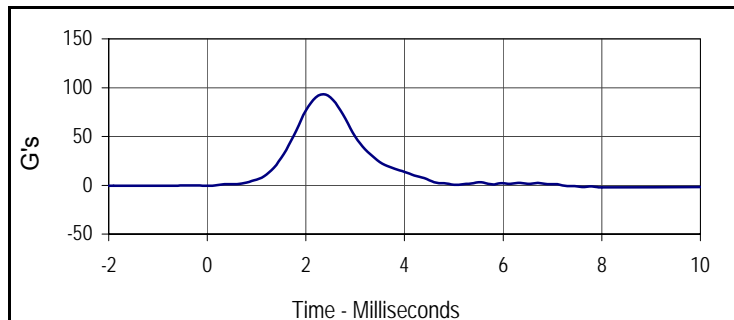
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
244.3	2.3	0.3	-0.3



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.5	5.0	-225.8	2.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
5.4	2.4	-0.7	6.0



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
93.1	2.4	-0.5	0.0

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

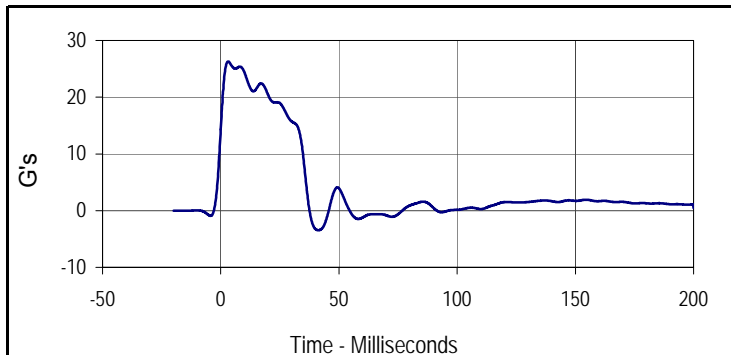
Test Date: 11/6/14



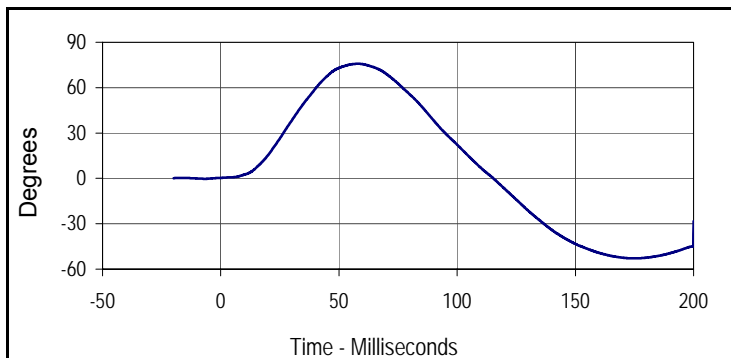
ATD Serial No.: 034

Test I.D.: M034NF050

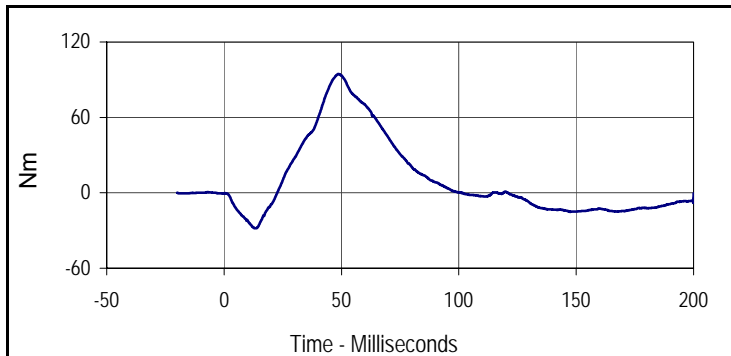
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	371	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.5	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.0	Pass	
	Min		19.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.0	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.92	Pass	
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.4	Pass
	20 Msec.	G's	17.6 to 22.6	20.4	Pass
	30 Msec.	G's	12.5 to 18.5	15.7	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 29.0	15.7	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	36.1	Pass	
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	75.8	Pass
	Time	Msec.	57.0 to 64.0	58.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	115.4	Pass	
Moment About Occ. Condyle	Max	Nm	88.1 to 108.5	94.5	Pass
	Time	Msec.	47.0 to 58.0	48.8	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	101.0	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
26.3	3.1	-3.5	41.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
75.8	58.0	-52.9	174.6



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
94.5	48.8	-28.3	13.7

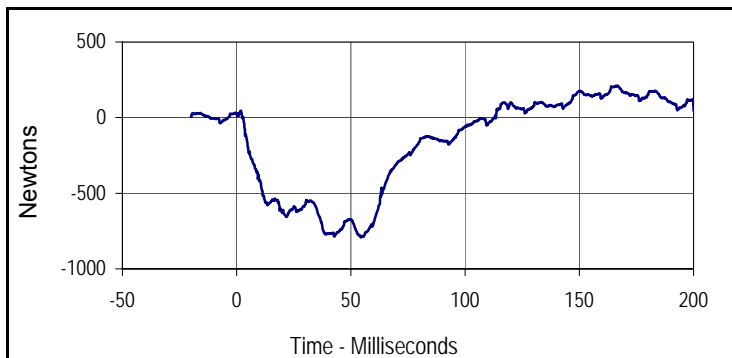
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 11/6/14

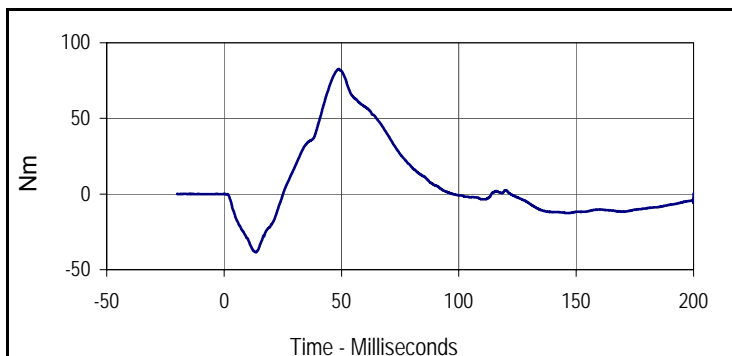


ATD Serial No.: 034

Test I.D.: M034NF050



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
210.6	166.6	-793.1	54.4



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
82.5	48.7	-38.5	13.6

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

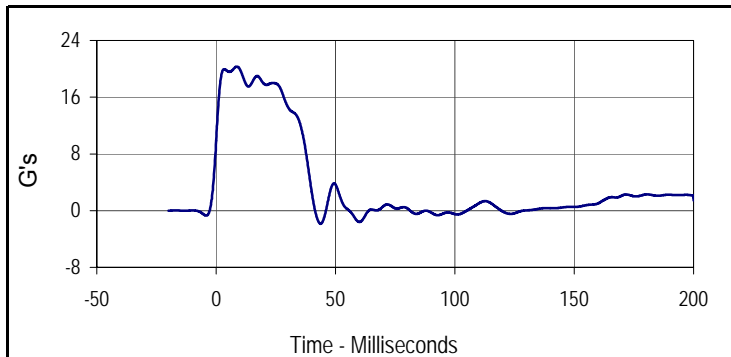
Test Date: 11/6/14



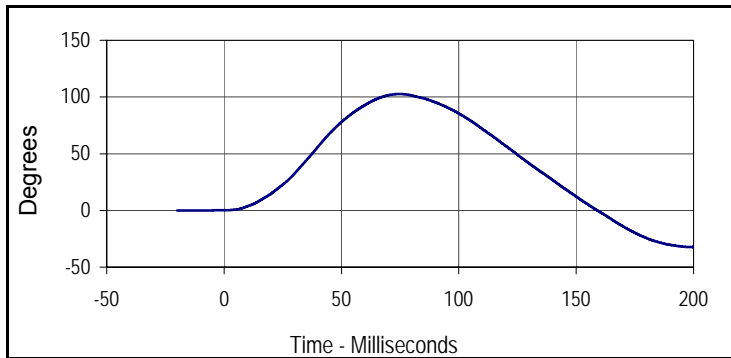
ATD Serial No.: 034

Test I.D.: M034NE050

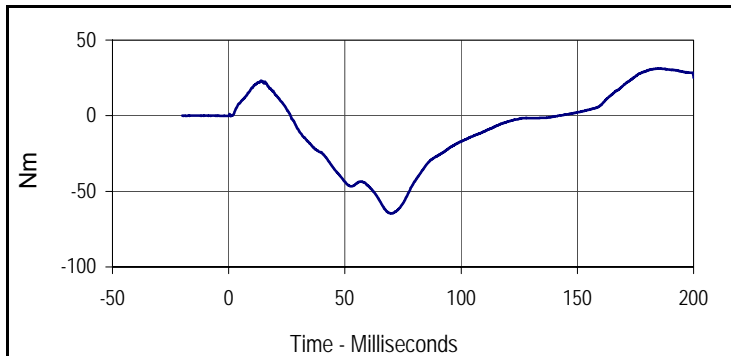
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	416	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.5	Pass	
Humidity During Soak	Max	10.0 to 70.0	20.0	Pass	
	Min		19.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	20.0	Pass	
Pendulum Velocity	m/s	5.94 to 6.19	5.95	Pass	
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.9	Pass
	20 Msec.	G's	14.0 to 19.0	17.9	Pass
	30 Msec.	G's	11.0 to 16.0	14.6	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 22.0	14.6	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	39.1	Pass	
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	102.6	Pass
	Time	Msec.	72.0 to 82.0	74.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	159	Pass	
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-64.7	Pass
	Time	Msec.	65.0 to 79.0	70.0	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	141.8	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.3	8.7	-1.8	43.8



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
102.6	74.7	-32.4	199.9



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.3	186.0	-64.7	70.0

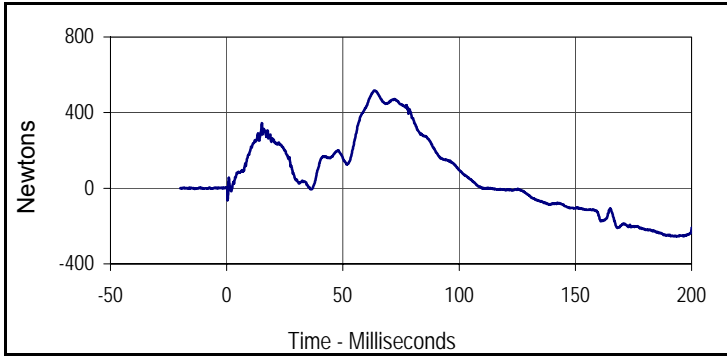
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 11/6/14

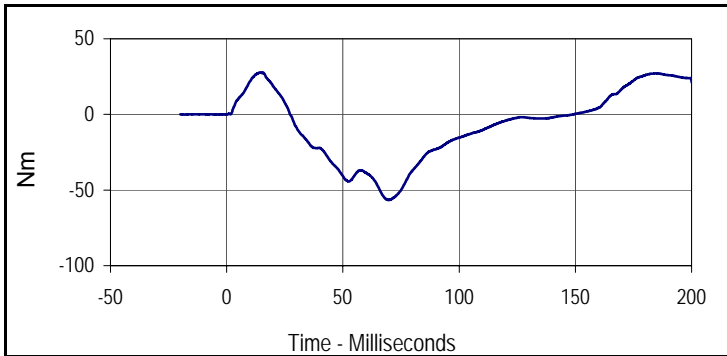


ATD Serial No.: 034

Test I.D.: M034NE050



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
516.7	63.5	-254.8	191.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
27.8	14.2	-56.5	69.4

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

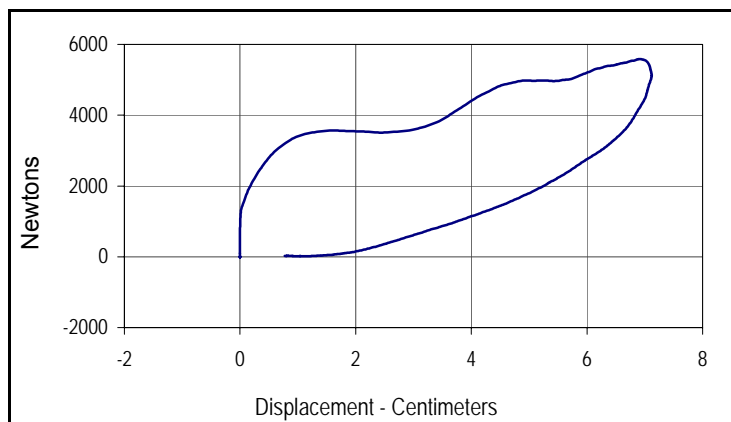
Test Date: 11/6/14



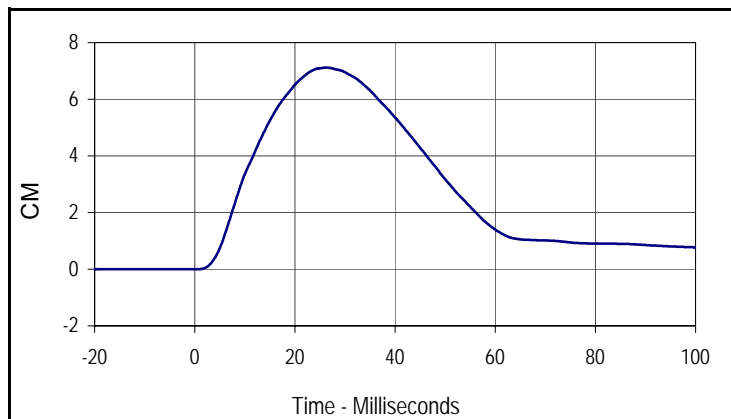
ATD Serial No.: 034

Test I.D.: M034CH050

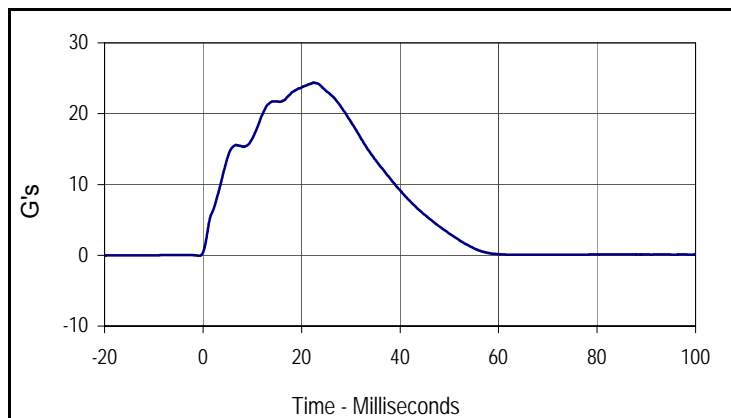
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	491	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	19.9	Pass
	Min		19.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.9	Pass
Probe Velocity	m/s	6.58 to 6.82	6.71	Pass
Peak Probe Force	Newtons	5159 to 5893	5584	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	7.12	Pass
Internal Hysteresis	%	69 to 85	69.5	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	69.5
Peak Probe Force		Peak Chest Deflection	
5584		7.12	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
7.1	26.4	0.0	0.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.4	22.5	-0.1	-0.8

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

Test Date: 11/6/14



ATD Serial No.: 034

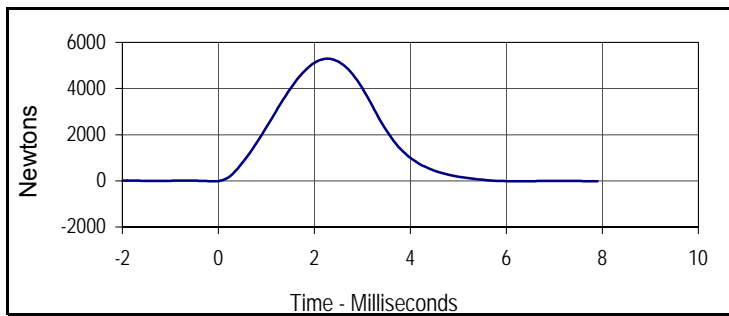
Test I.D.: M034LK050, M034RK050

Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	546	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	19.9	Pass
	Min		19.8	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.9	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5288	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5241	Pass
Overall Test Results				Pass



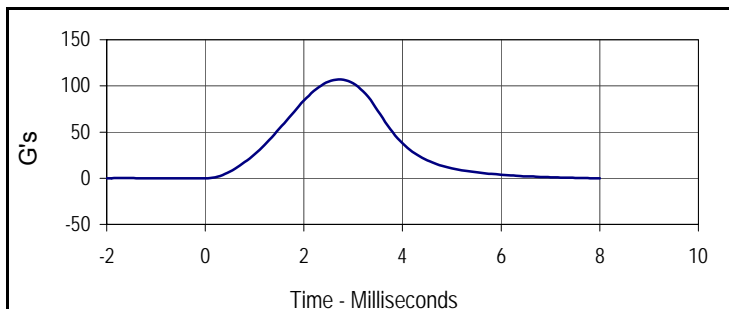
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5288.0	2.3	-24.2	-0.1



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
108.1	2.3	-0.5	-0.1



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5241.4	2.7	-9.1	-0.1



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
107.1	2.7	-0.4	0.0

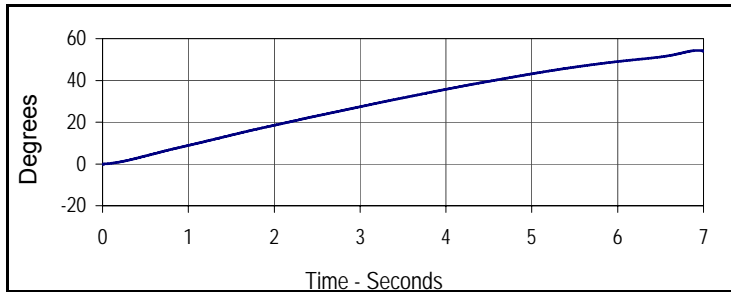


Left Hip Joint-Femur Results

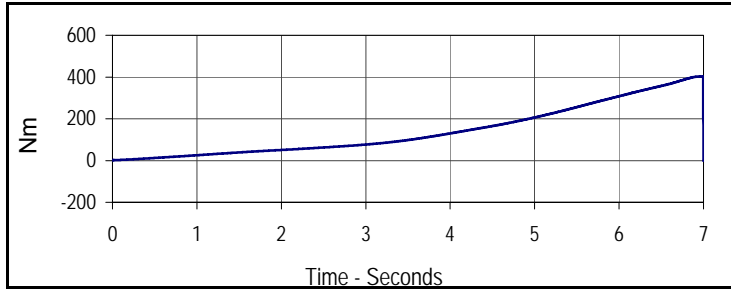
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	621	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	20.0	Pass
	Min		19.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.9	Pass
Rotation Rate	deg/sec	5 to 10	7.8	Pass
Femur Torque at 30°	Nm	≤ 95	84.9	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	42.4	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

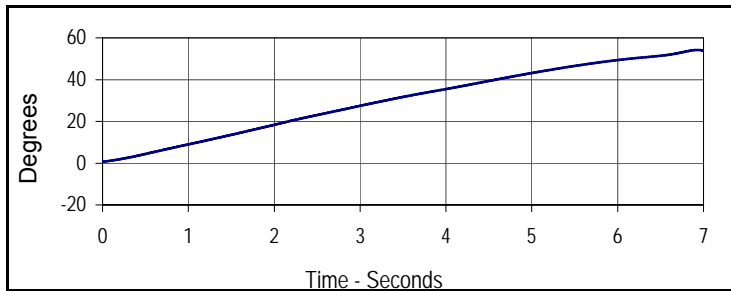
Rotation Rate	deg/sec	5 to 10	7.8	Pass
Femur Torque at 30°	Nm	≤ 95	94.6	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	42.9	Pass
Overall Test Results				Pass



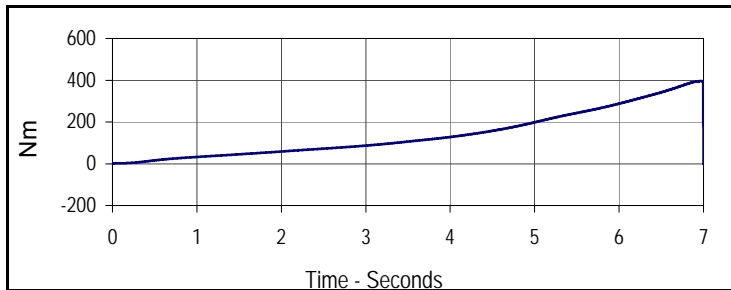
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
54.4	6.9	-0.1	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
402.8	7.0	-0.1	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
54.2	6.9	-0.1	0.0



Curve Description			
Right Femur Torque			
Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
395.6	7.0	-0.1	0.0

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

Test Date: 11/7/14



ATD Serial No.: 141

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 11/7/14



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

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

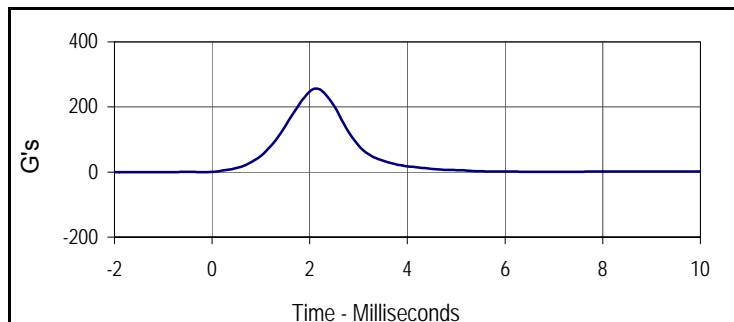
Test Date: 11/7/14



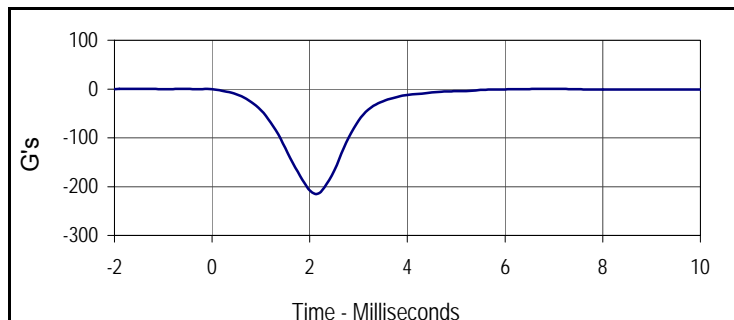
ATD Serial No.: 141

Test I.D.: F141HD063

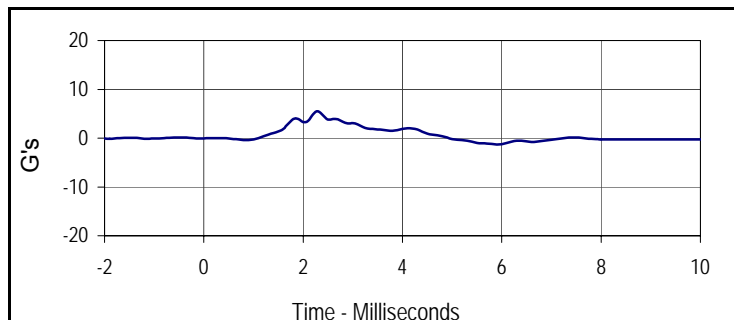
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	284	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.4	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	256.1	Pass
Peak Lateral Acceleration	G's	≤15.0	5.5	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	0.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



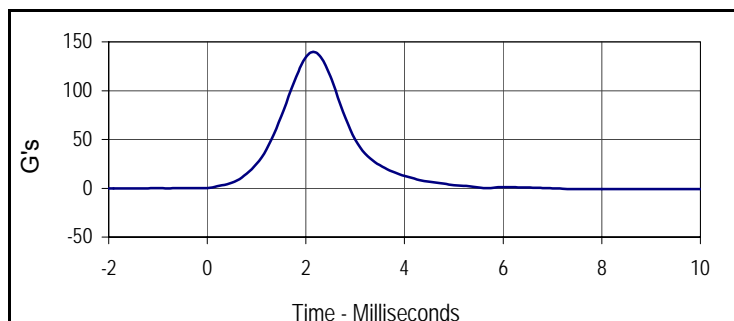
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
256.1	2.1	0.0	-0.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.7	-214.9	2.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
5.5	2.3	-1.3	5.9



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
139.2	2.1	-0.1	-1.4

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

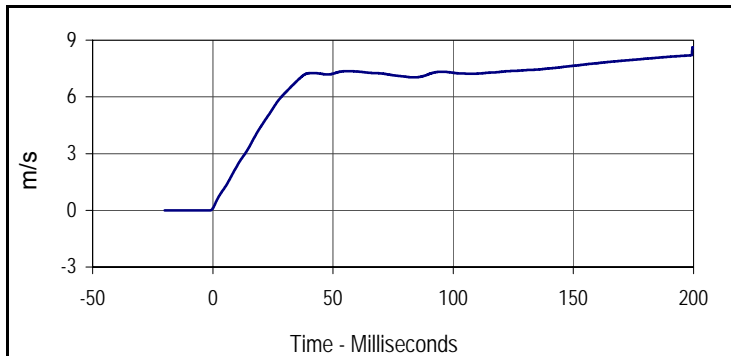
Test Date: 11/7/14



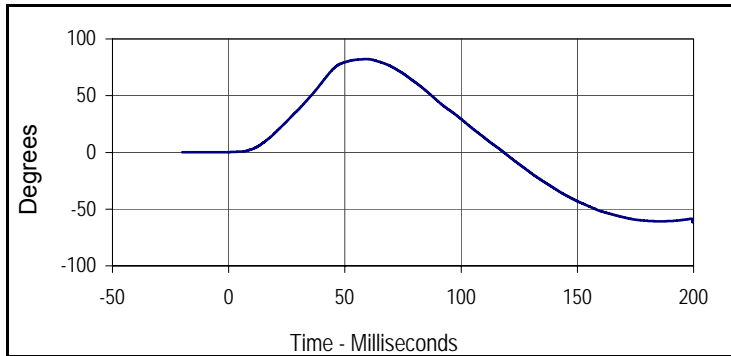
ATD Serial No.: 141

Test I.D.: F141NF063

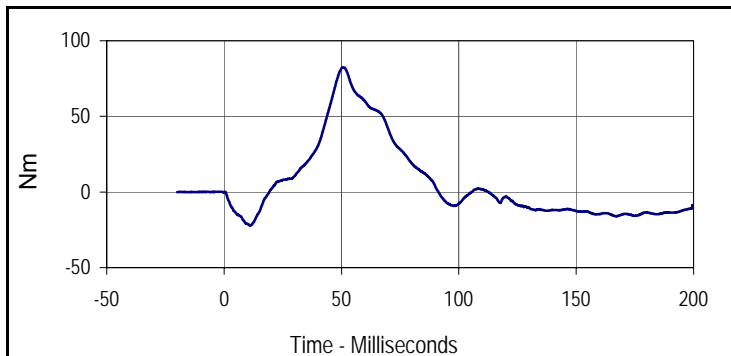
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	349	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass	
	Min		29.0	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	29.3	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.90	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.4	Pass
	30 Msec.	m/s	5.8 to 7.0	6.2	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	82.2	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	82.5	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	84.7	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.6	199.5	0.0	-1.4



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
82.2	59.3	-61.3	199.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
82.5	50.6	-22.3	11.0

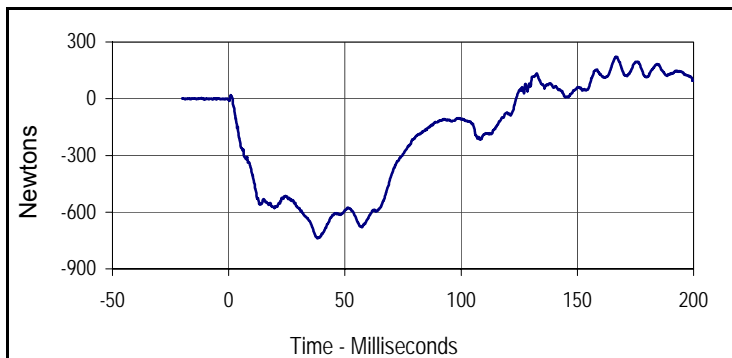
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 11/7/14

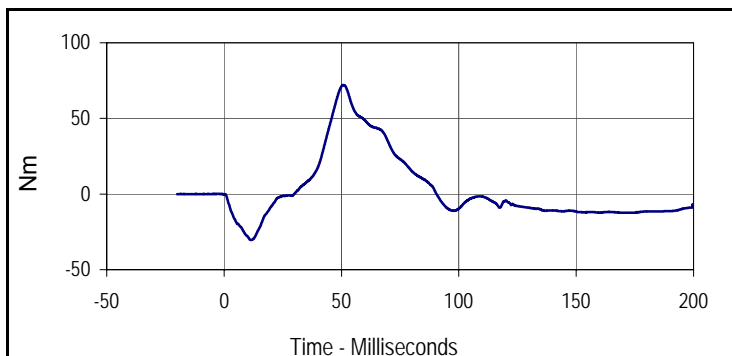


ATD Serial No.: 141

Test I.D.: F141NF063



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
221.6	166.7	-737.9	38.5



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
72.1	50.8	-30.4	11.8

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

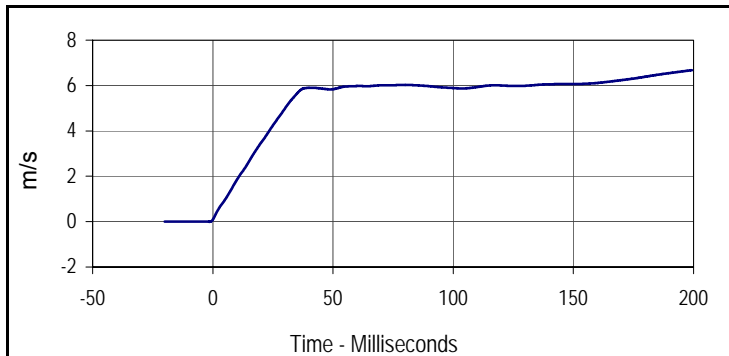
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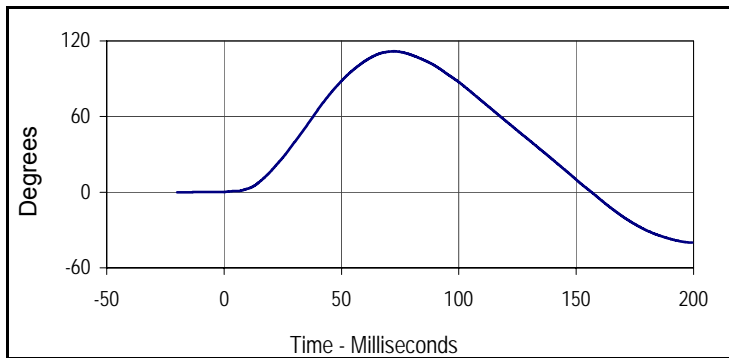
ATD Serial No.: 141

Test I.D.: F141NE063

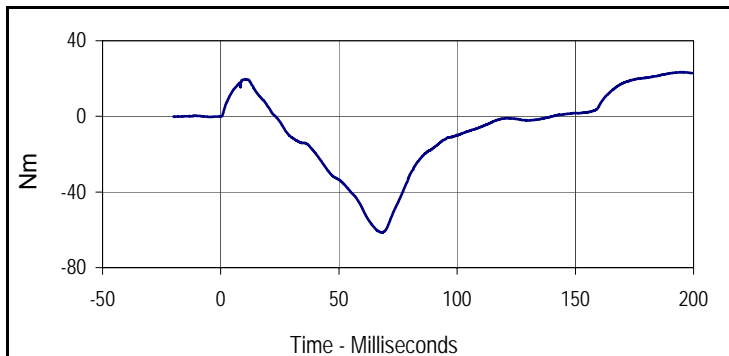
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	404	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass	
	Min		29.0	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	29.3	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	5.97	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.5	Pass
	30 Msec.	m/s	4.6 to 5.6	5.0	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	111.8	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-61.6	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	100.3	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.7	199.4	0.0	-1.5



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
111.8	72.4	-40.0	199.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
23.4	195.8	-61.6	68.2

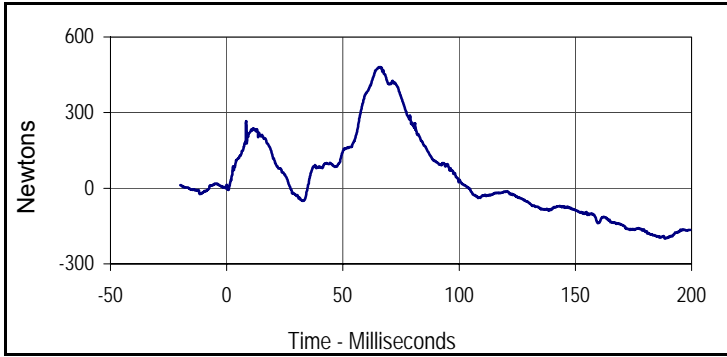
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 11/7/14

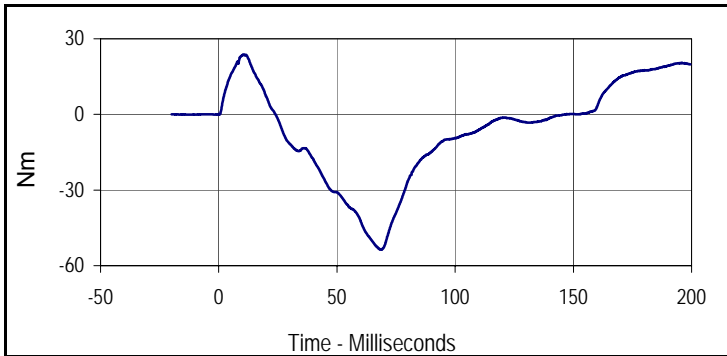


ATD Serial No.: 141

Test I.D.: F141NE063



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
480.8	65.6	-200.0	188.5



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
23.7	10.5	-53.6	68.5

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

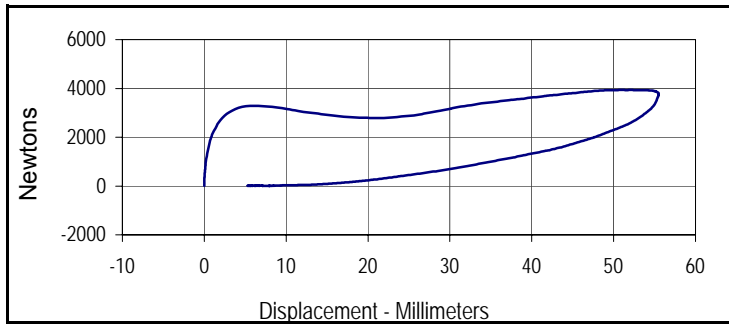
Test Date: 11/7/14



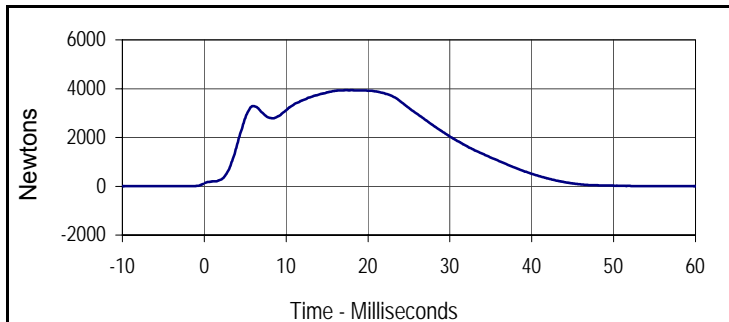
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Test I.D.: F141CH063

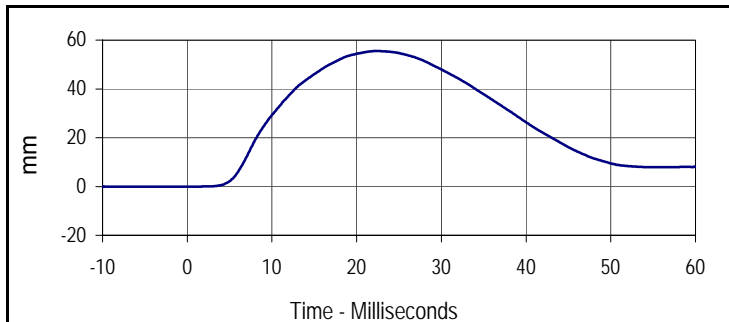
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	459	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.2	Pass
Probe Velocity	m/s	6.59 to 6.83	6.62	Pass
Peak Chest Deflection	mm	50.0 to 58.0	55.5	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	3932	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	3938	Pass
Internal Hysteresis	%	69 to 85	73.2	Pass
Overall Test Results				Pass



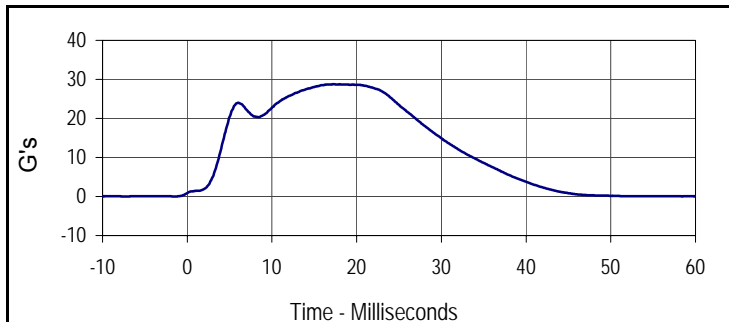
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	73.2
Peak Probe Force		Peak Chest Deflection	
3937.6		55.5	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
3937.6	17.3	4.2	-1.4



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
55.5	22.4	0.0	1.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
28.7	17.3	0.0	-1.4

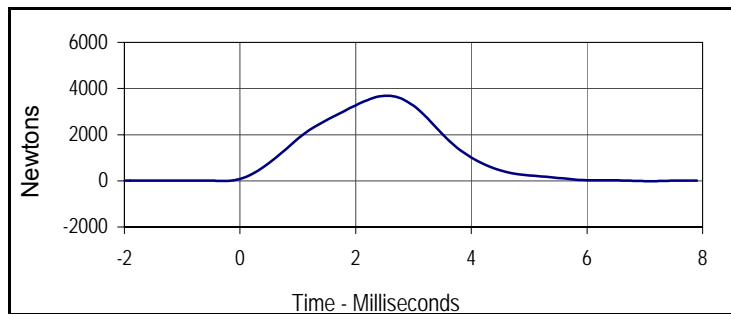


Left Knee

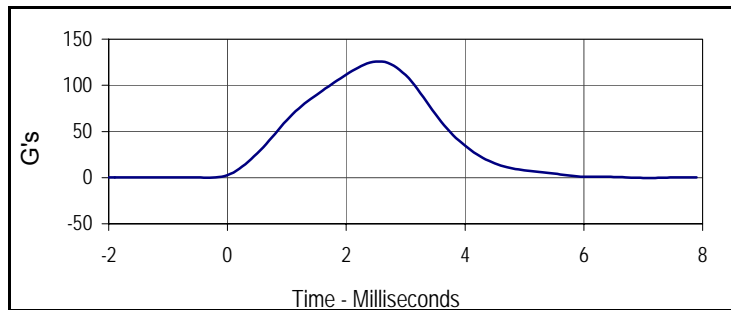
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	519	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.1	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3688	Pass
Overall Test Results				Pass

Right Knee

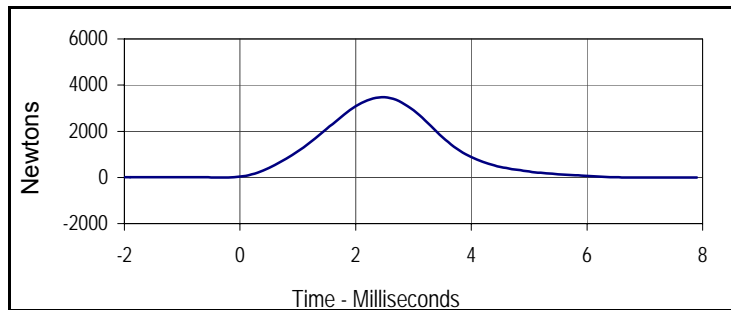
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	3450 to 4060	3473	Pass
Overall Test Results				Pass



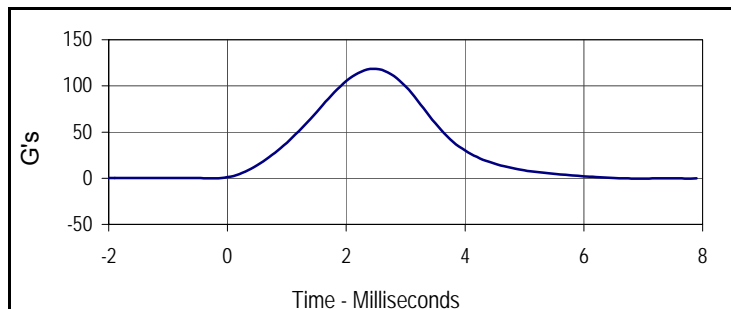
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3688.0	2.5	-12.2	7.1



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
125.8	2.5	-1.2	0.0



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3473.3	2.5	-8.9	7.0



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
118.5	2.5	-1.1	0.0

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

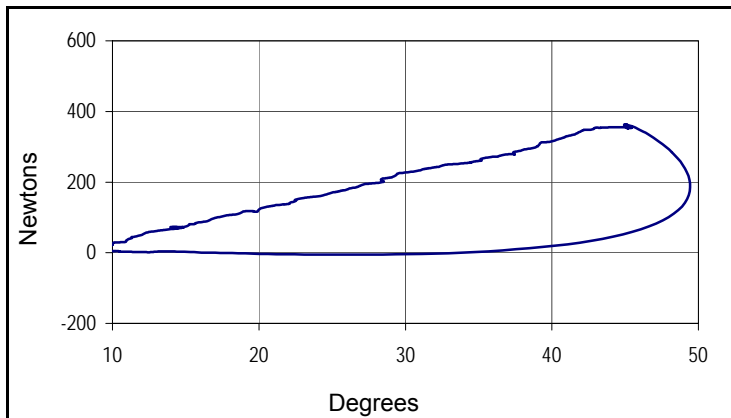
Test Date: 11/7/14



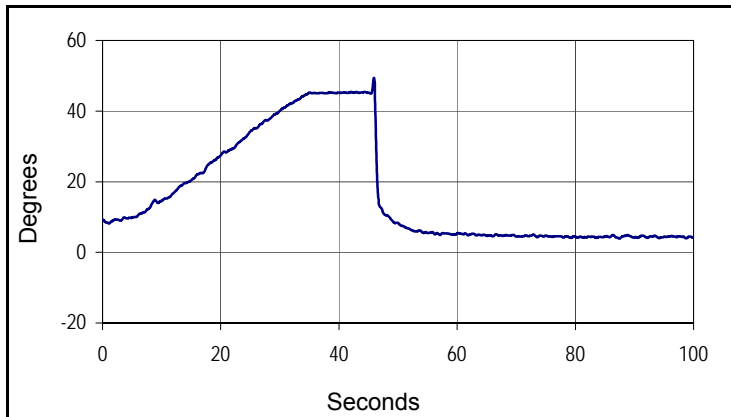
ATD Serial No.: 141

Test I.D.: TF063

Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	584	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.0	Pass
Initial Reference Plane Angle	Degrees	≤ 20	9.2	Pass
Peak Force at 45° +/-0.5°	Newtons	320.0 to 390.0	363.9	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle	Degrees	+/-8	4.2	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
363.9		49.4



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
49.4	45.9	3.9	87.5

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

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

Test Date: 11/17/14



ATD Serial No.: 034

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 11/17/14



ATD Serial No.: 034

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	884	Pass
B - Shoulder pivot height	mm	505 to 521	512	Pass
C - H point height	mm	84 to 89	85	Pass
D - H point location from backline	mm	135 to 140	137	Pass
E - Shoulder pivot from backline	mm	84 to 94	89	Pass
F - Thigh clearance	mm	140 to 155	146	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	297	Pass
H - Head back to backline	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	336	Pass
J - Elbow rest height	mm	190 to 211	201	Pass
K - Buttock to knee length	mm	579 to 604	586	Pass
L - Popliteal length	mm	429 to 455	438	Pass
M - Knee pivot height	mm	485 to 500	493	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	433	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	981	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	429	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results			Pass	

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

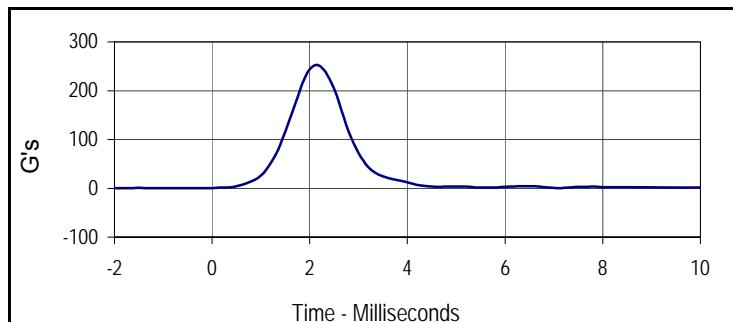
Test Date: 11/17/14



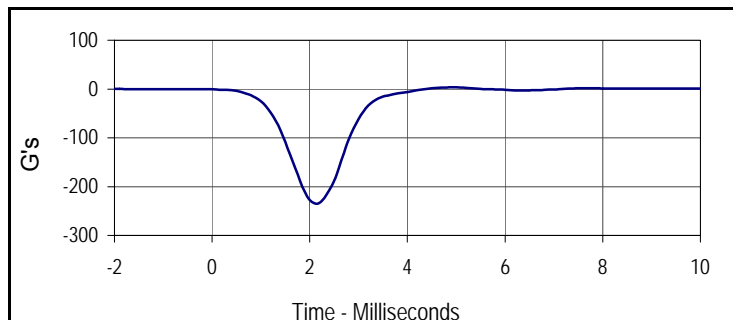
ATD Serial No.: 034

Test I.D.: M034HD051

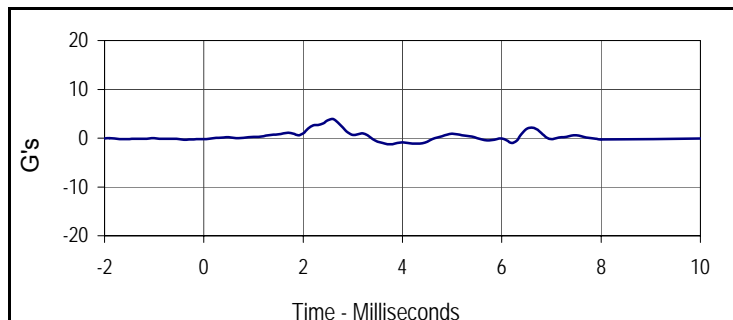
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	266	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.4	Pass
	Min		31.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.4	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	251.9	Pass
Peak Lateral Acceleration	G's	≤15.0	3.9	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	4.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



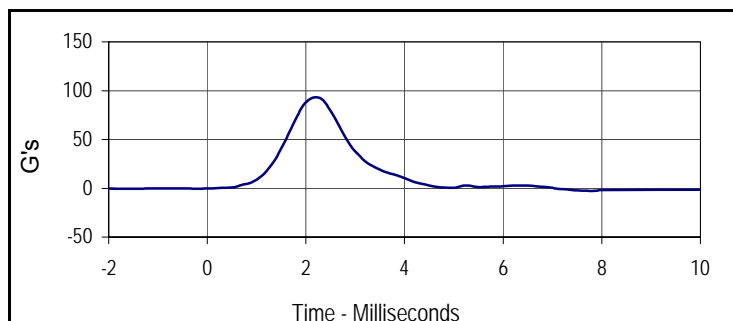
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
251.9	2.1	0.3	-2.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.5	4.9	-234.6	2.1



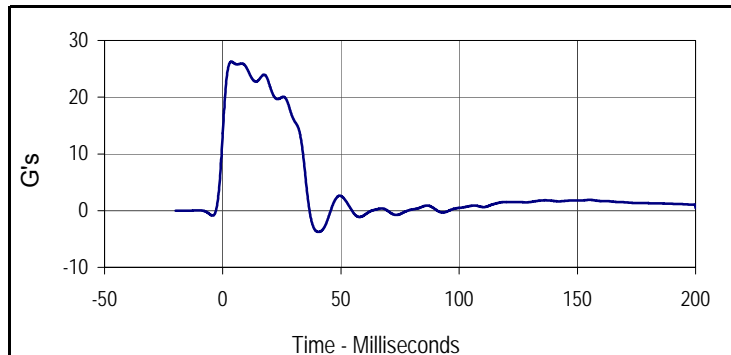
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
3.9	2.6	-1.3	3.8



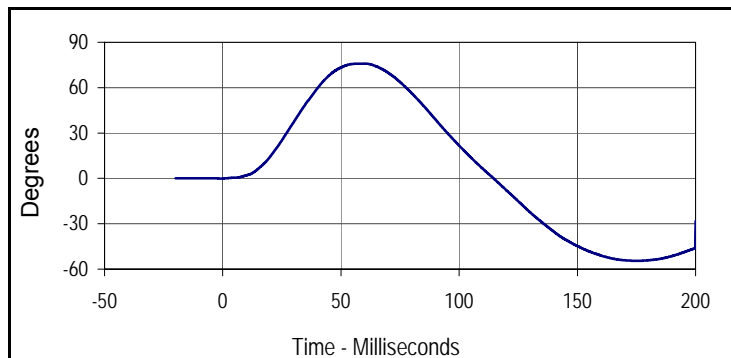
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
93.4	2.2	-0.5	-1.4



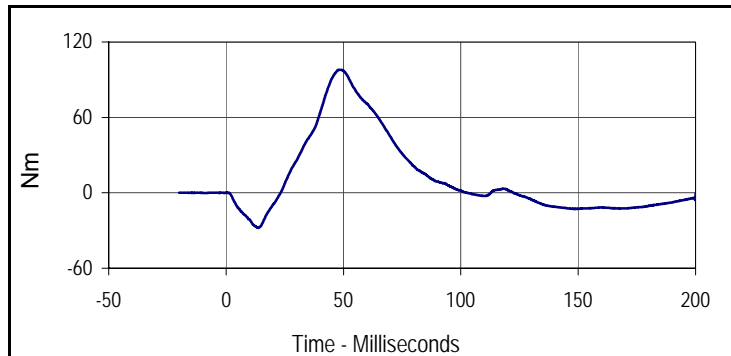
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	331	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.5	Pass	
Humidity During Soak	Max	10.0 to 70.0	32.4	Pass	
	Min		31.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	32.2	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.93	Pass	
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	25.2	Pass
	20 Msec.	G's	17.6 to 22.6	21.9	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	35.3	Pass	
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	75.9	Pass
	Time	Msec.	57.0 to 64.0	59.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	114.6	Pass	
Moment About Occ. Condyle	Max	Nm	88.1 to 108.5	98.0	Pass
	Time	Msec.	47.0 to 58.0	48.7	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	102.6	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
26.3	3.6	-3.8	40.5



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
75.9	59.5	-54.5	175.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
98.0	48.7	-28.0	13.7

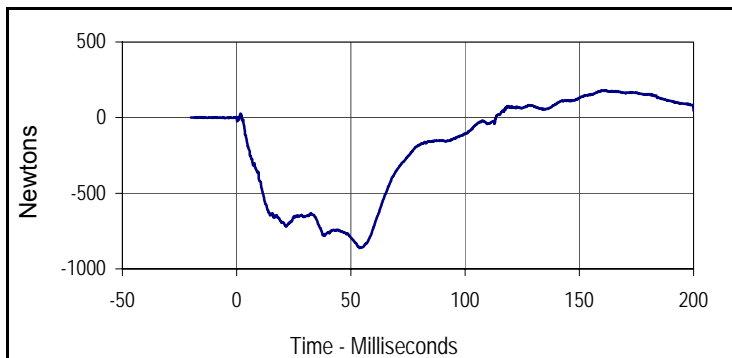
Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

Test Date: 11/17/14

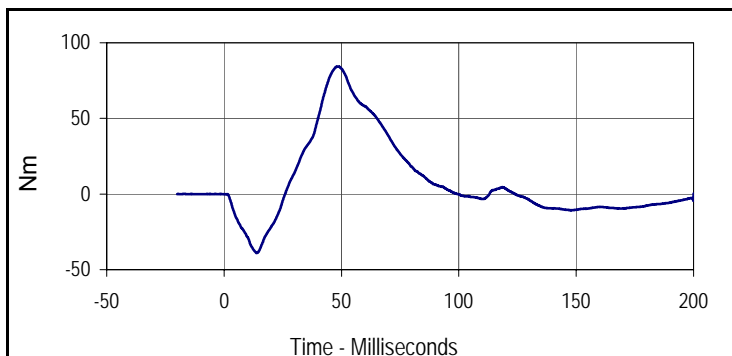


ATD Serial No.: 034

Test I.D.: M034NF051



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
180.6	161.5	-861.7	53.8



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
84.3	48.6	-39.0	13.8

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

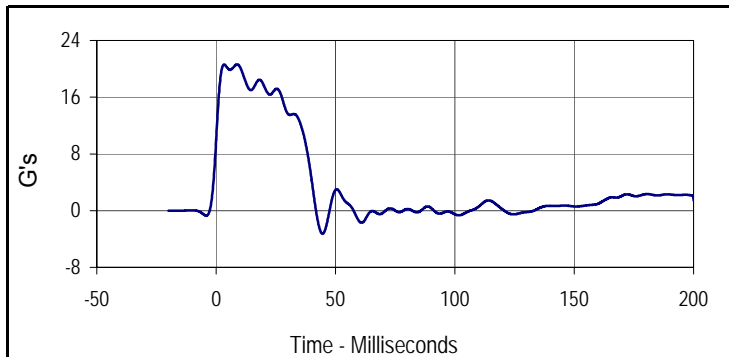
Test Date: 11/17/14



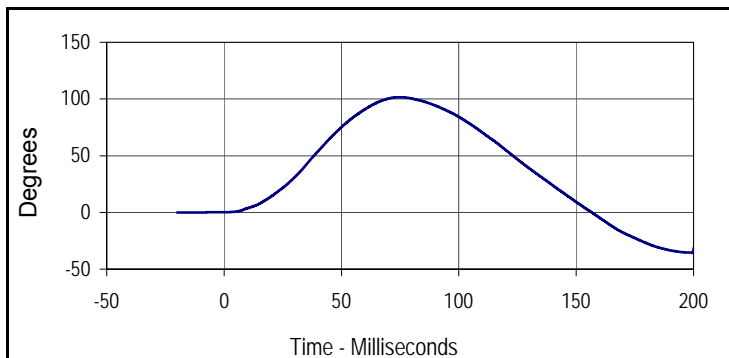
ATD Serial No.: 034

Test I.D.: M034NE051

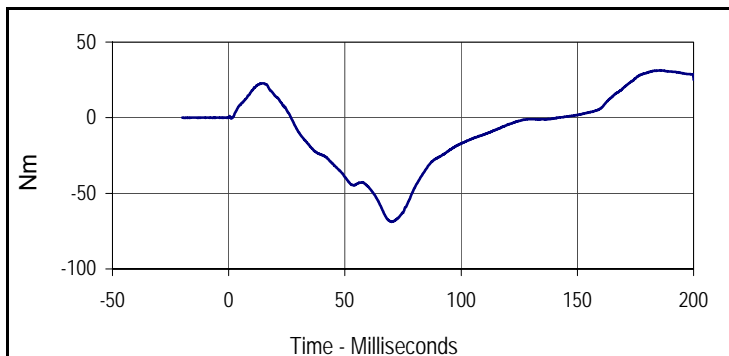
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	376	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.5	Pass	
Humidity During Soak	Max	10.0 to 70.0	32.4	Pass	
	Min		31.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	32.1	Pass	
Pendulum Velocity	m/s	5.94 to 6.19	5.96	Pass	
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.3	Pass
	20 Msec.	G's	14.0 to 19.0	17.6	Pass
	30 Msec.	G's	11.0 to 16.0	13.7	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 22.0	13.7	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	39.8	Pass	
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	101.5	Pass
	Time	Msec.	72.0 to 82.0	74.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	156.6	Pass	
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-68.8	Pass
	Time	Msec.	65.0 to 79.0	70.1	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	141.7	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.6	8.8	-3.3	44.6



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
101.5	74.7	-35.5	199.9



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.3	185.8	-68.8	70.1

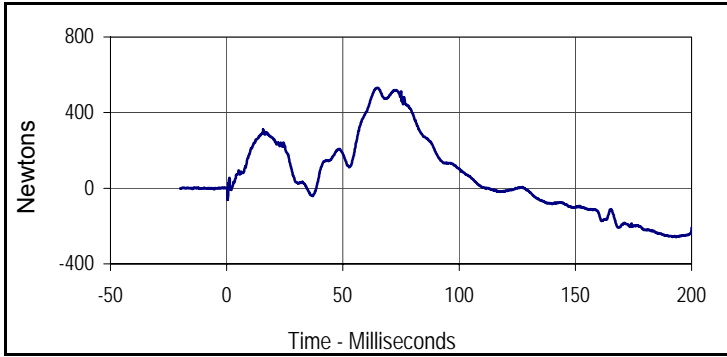
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 11/17/14

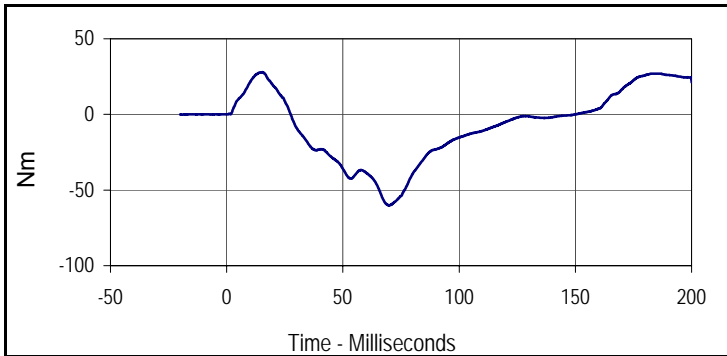


ATD Serial No.: 034

Test I.D.: M034NE051



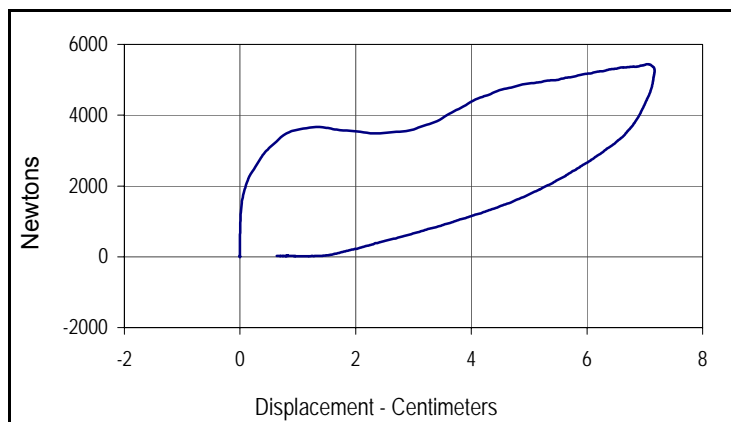
Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
531.3	65.0	-257.9	191.9



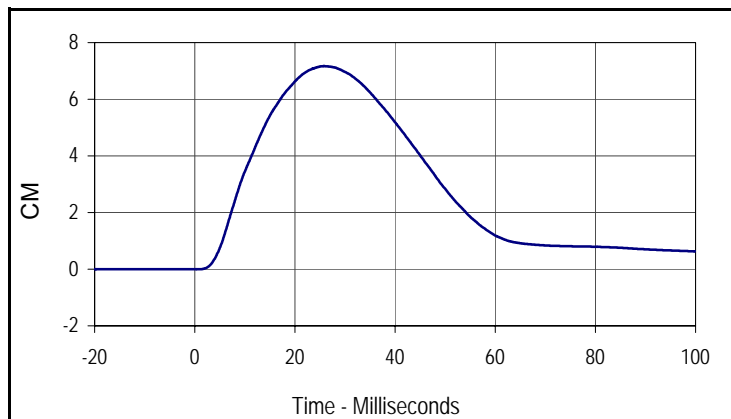
Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
27.9	15.3	-60.1	69.8



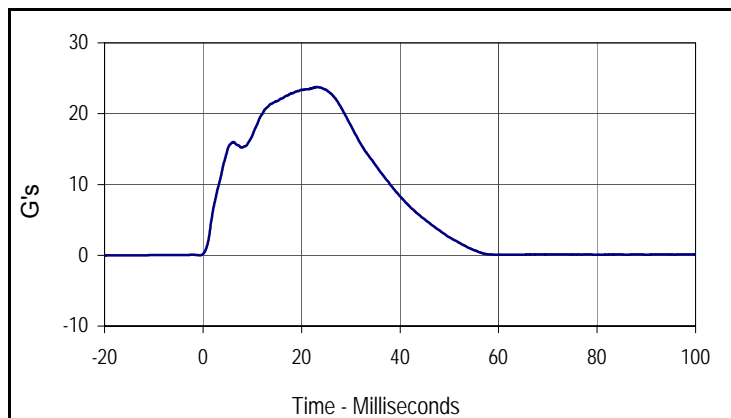
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	451	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.4	Pass
	Min		31.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.1	Pass
Probe Velocity	m/s	6.58 to 6.82	6.63	Pass
Peak Probe Force	Newtons	5159 to 5893	5442	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	7.17	Pass
Internal Hysteresis	%	69 to 85	69.4	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	69.4
Peak Probe Force		Peak Chest Deflection	
5442		7.17	



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
7.2	25.8	0.0	0.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
23.8	23.1	0.0	-20.0

Test Program: Hybrid III 50th Percentile Male Knee Impact Test
 ATD Serial No.: 034

Test Date: 11/17/14
 Test I.D.: M034LK051, M034RK051

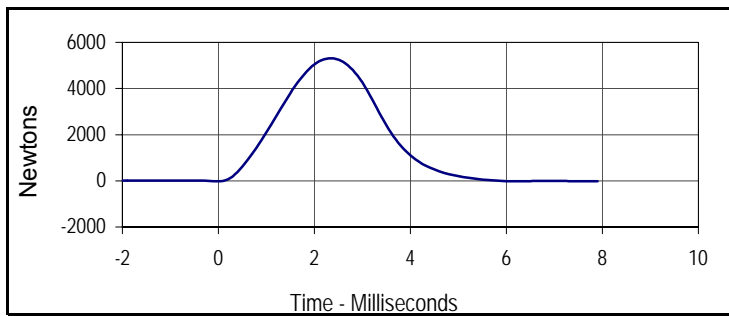


Left Knee

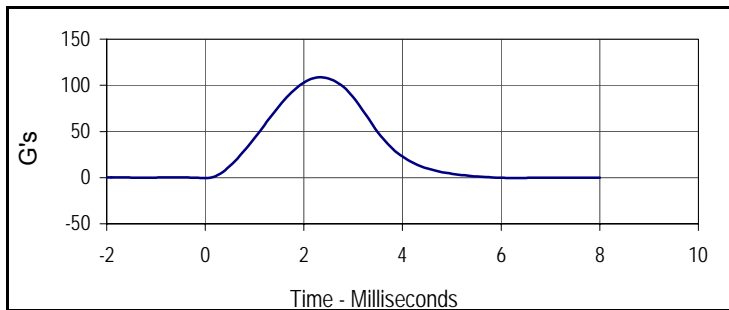
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	506	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.4	Pass
	Min		31.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.2	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5313	Pass
Overall Test Results				Pass

Right Knee

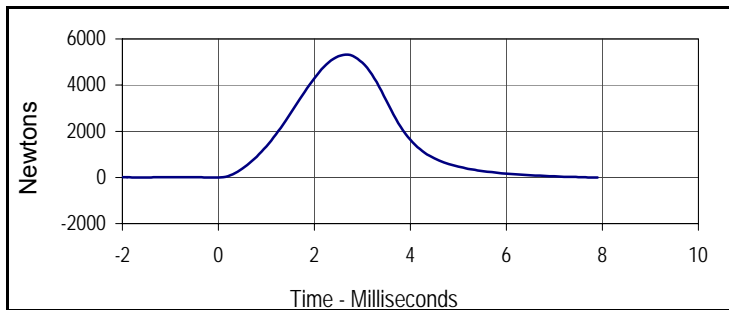
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5314	Pass
Overall Test Results				Pass



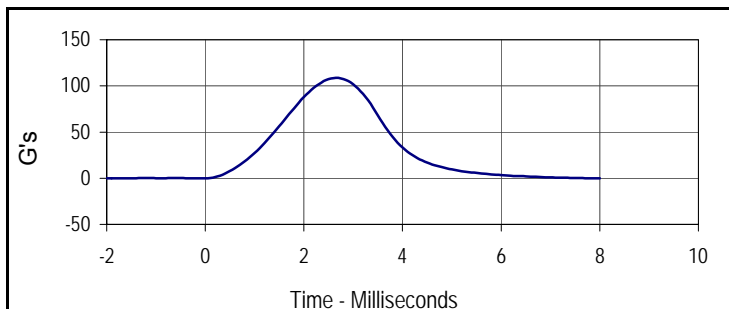
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5313.0	2.3	-20.0	6.3



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
108.6	2.3	-0.4	0.0



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5313.9	2.7	-7.5	-0.1



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
108.6	2.7	-0.5	0.0

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test
 ATD Serial No.: 034

Test Date: 11/17/14
 Test I.D.: M034LF051, M034RF051

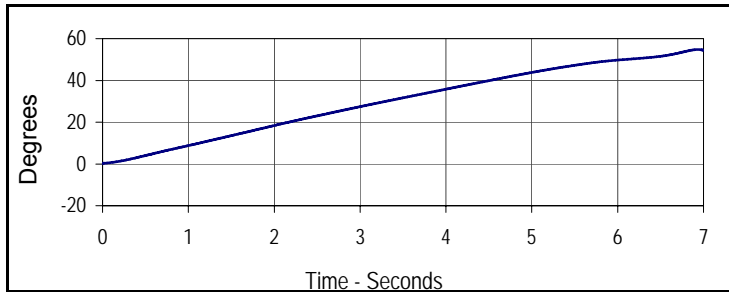


Left Hip Joint-Femur Results

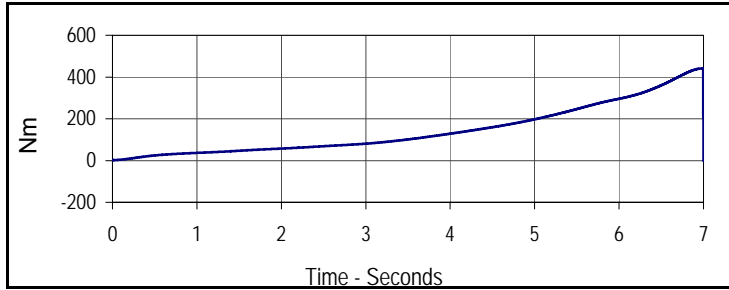
Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	581	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	32.4	Pass
	Min		31.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.2	Pass
Rotation Rate	deg/sec	5 to 10	7.9	Pass
Femur Torque at 30°	Nm	≤ 95	88.7	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	43.7	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

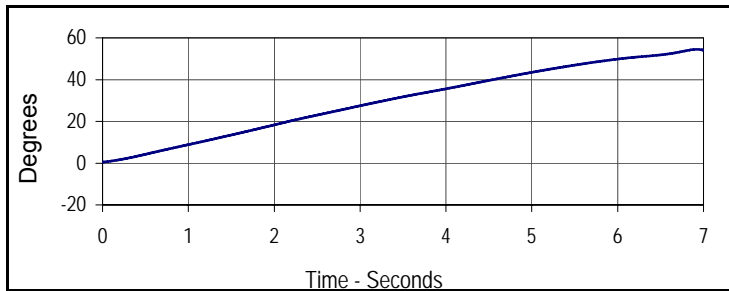
Rotation Rate	deg/sec	5 to 10	7.9	Pass
Femur Torque at 30°	Nm	≤ 95	92.1	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	43.2	Pass
Overall Test Results				Pass



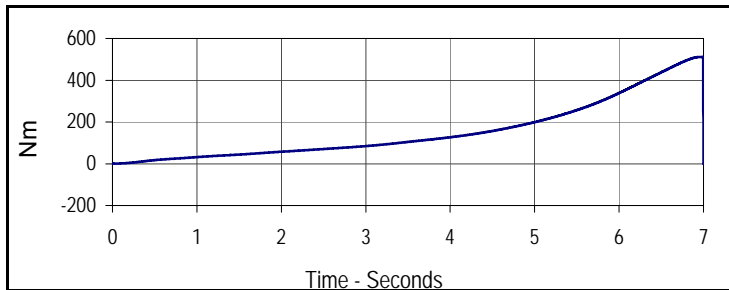
Curve Description			
Left Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
54.8	6.9	0.3	0.0



Curve Description			
Left Femur Torque			
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
440.6	7.0	0.3	0.0



Curve Description			
Right Hip-Femur Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
54.5	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
511.4	7.0	0.3	0.0

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

Test Date: 11/18/14



ATD Serial No.: 141

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 11/18/14



ATD Serial No.: 141

Test I.D.: N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.42	Pass
Laboratory Relative Humidity	%	10 to 70	31.3	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

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

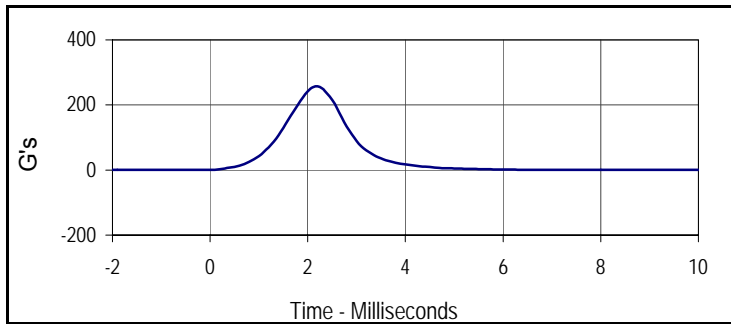
Test Date: 11/18/14



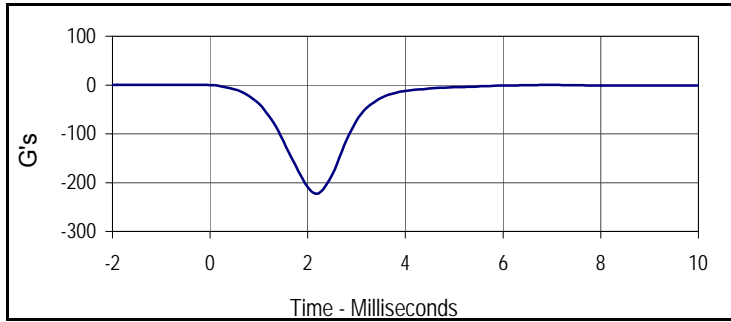
ATD Serial No.: 141

Test I.D.: F141HD064

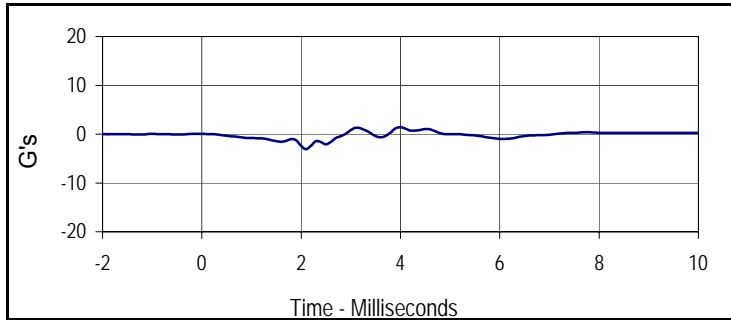
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	279	Pass
Temperature During Soak	Max	18.9 to 25.6	21.5	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	31.3	Pass
	Min		30.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.1	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	257.7	Pass
Peak Lateral Acceleration	G's	≤15.0	3.1	Pass
Oscillations After Main Pulse	%	<10% of peak Res. Acceleration	0.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



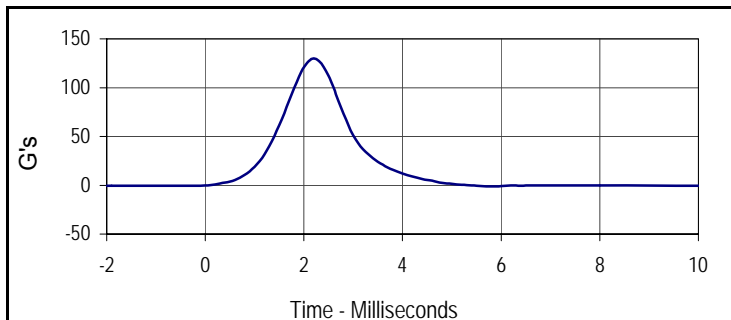
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
257.7	2.2	0.3	0.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.3	-0.7	-222.5	2.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.4	4.0	-3.1	2.1



Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
130.0	2.2	-1.2	5.8

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

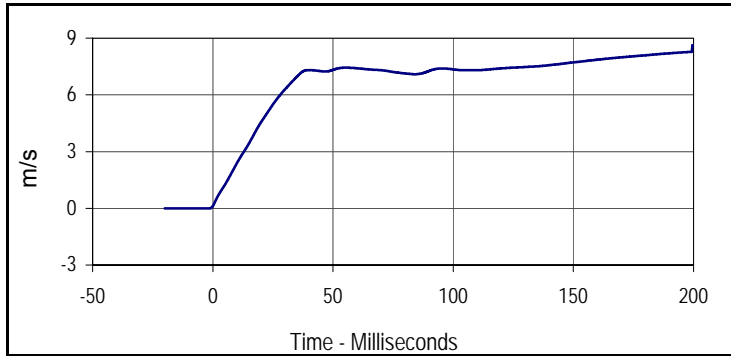
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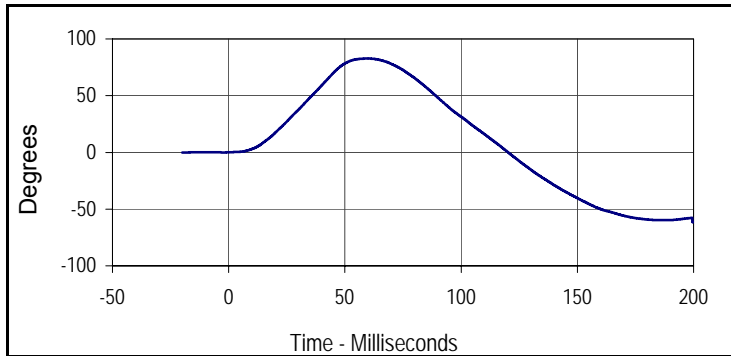
ATD Serial No.: 141

Test I.D.: F141NF064

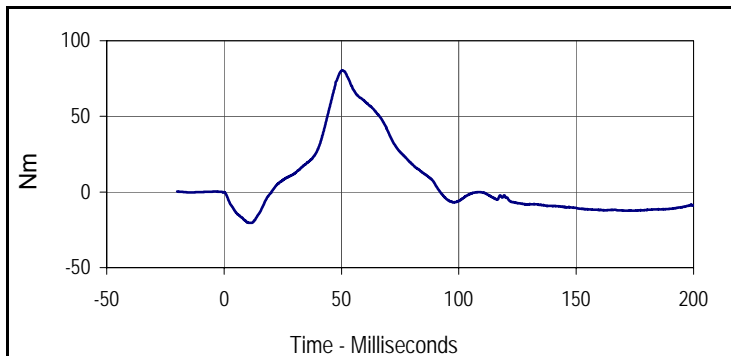
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	344	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass	
	Min		21.4	Pass	
Humidity During Soak	Max	10.0 to 70.0	31.3	Pass	
	Min		30.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	30.9	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.92	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	6.3	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	82.8	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	80.4	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	80.0 to 100.0	85.9	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	-1.5



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
82.8	59.7	-61.3	199.5



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
80.4	50.5	-20.5	11.0

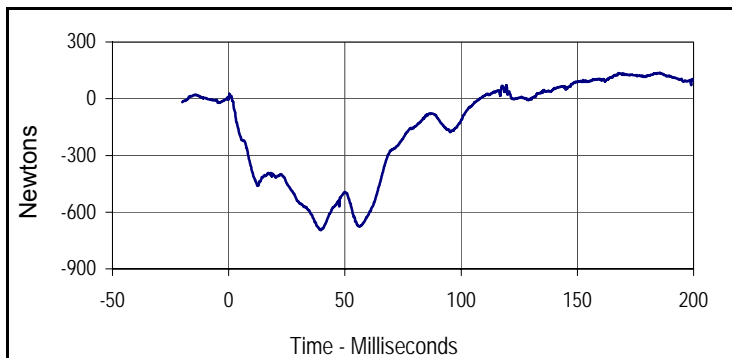
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 11/18/14

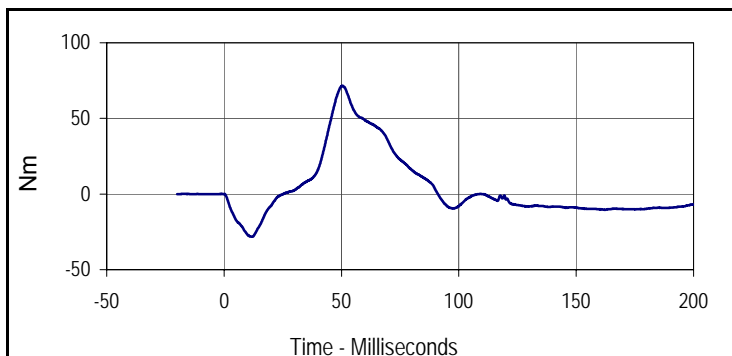


ATD Serial No.: 141

Test I.D.: F141NF064



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
138.3	185.3	-695.2	39.6



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
71.6	50.4	-28.3	11.9

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

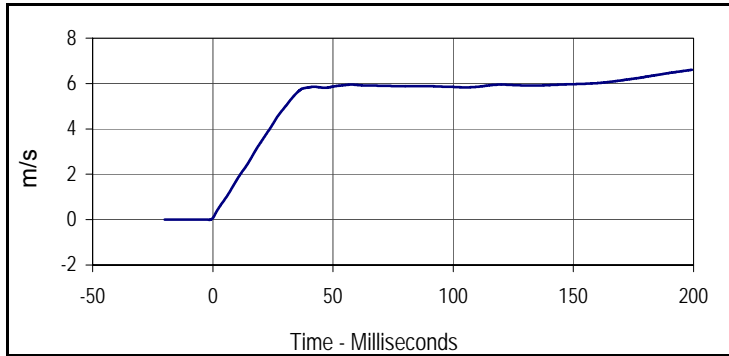
Test Date: 11/18/14



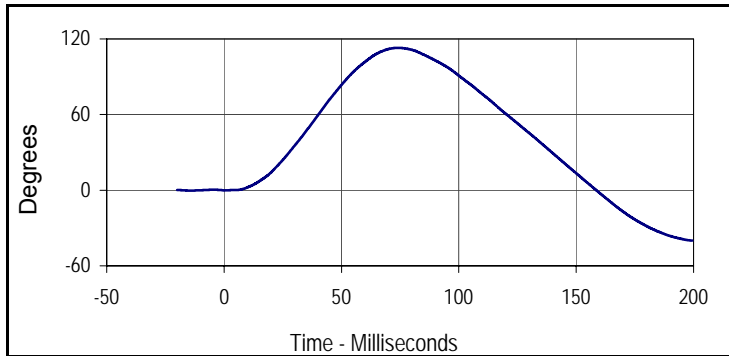
ATD Serial No.: 141

Test I.D.: F141NE064

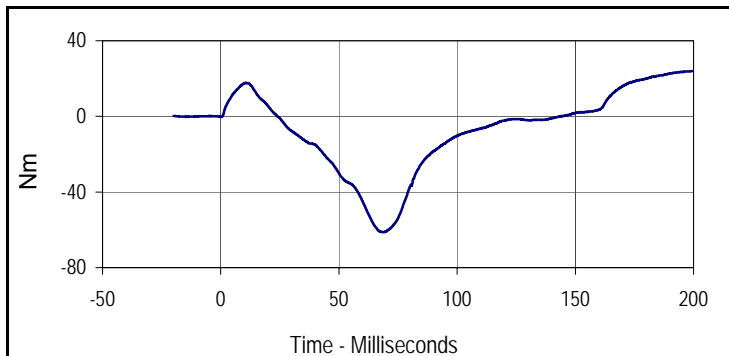
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	399	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass	
	Min		21.4	Pass	
Humidity During Soak	Max	10.0 to 70.0	31.3	Pass	
	Min		30.9	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	30.9	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	5.97	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.4	Pass
	30 Msec.	m/s	4.6 to 5.6	5.0	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	112.9	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-61.3	Pass
Positive Moment Decay, Time To -10 Nm	Msec.	94.0 to 114.0	100.5	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.6	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
112.9	74.0	-40.0	199.4



Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
23.9	199.2	-61.3	68.3

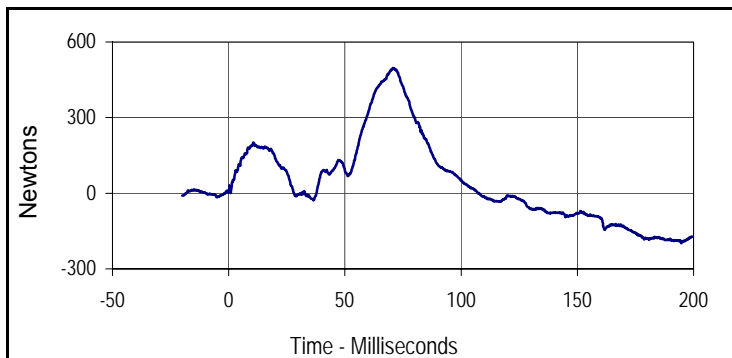
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 11/18/14

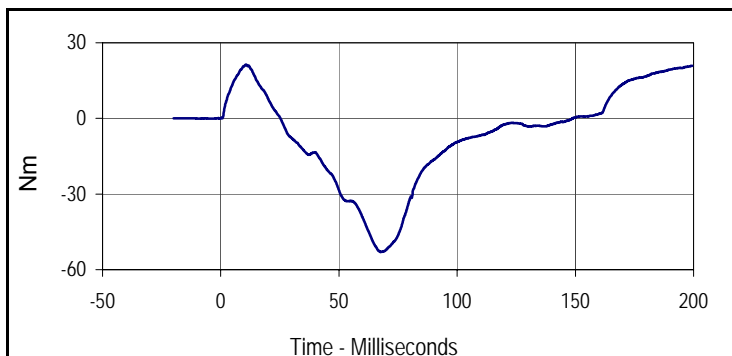


ATD Serial No.: 141

Test I.D.: F141NE064



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
496.6	70.8	-198.0	194.7



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
21.4	10.7	-53.0	67.6

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

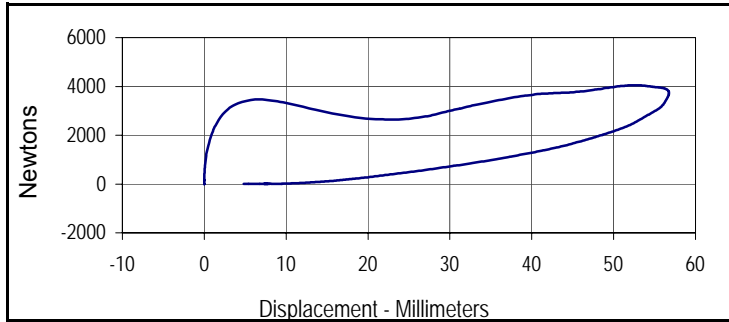
Test Date: 11/18/14



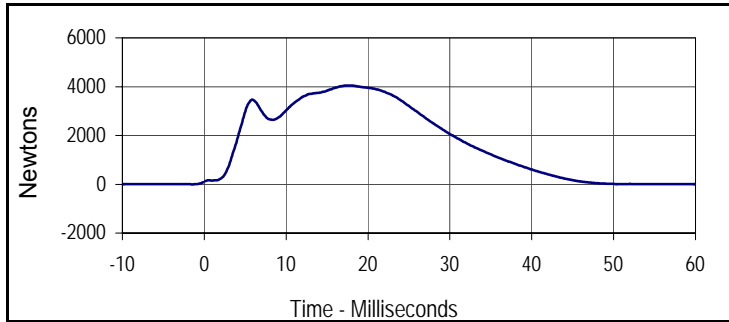
ATD Serial No.: 141

Test I.D.: F141CH064

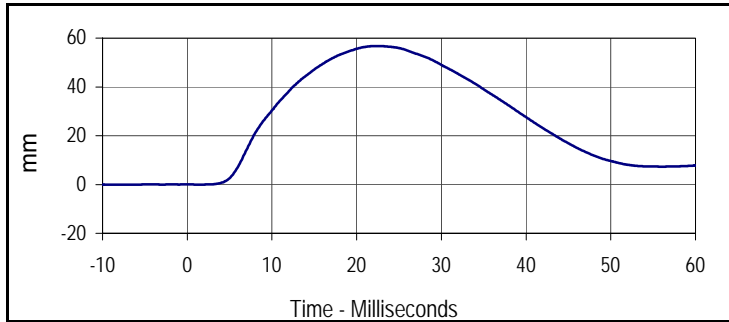
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	454	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	31.3	Pass
	Min		30.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.0	Pass
Probe Velocity	m/s	6.59 to 6.83	6.61	Pass
Peak Chest Deflection	mm	50.0 to 58.0	56.8	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	3982	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4047	Pass
Internal Hysteresis	%	69 to 85	72.4	Pass
Overall Test Results				Pass



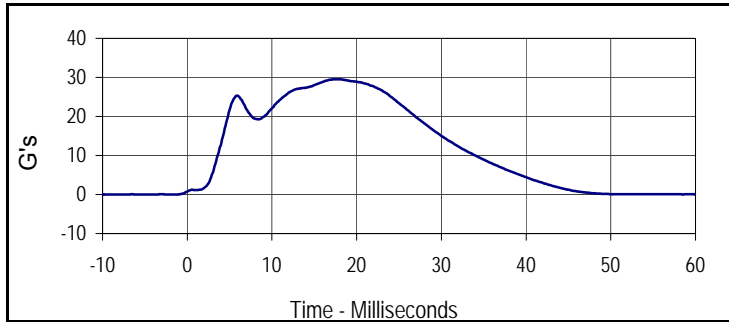
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	72.4
Peak Probe Force		Peak Chest Deflection	
4047.4		56.8	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4047.4	17.5	-0.9	-1.4



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
56.8	22.4	0.0	-10.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
29.5	17.5	0.0	-1.4

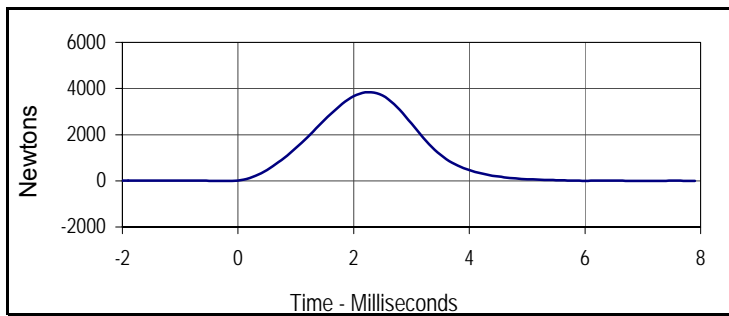


Left Knee

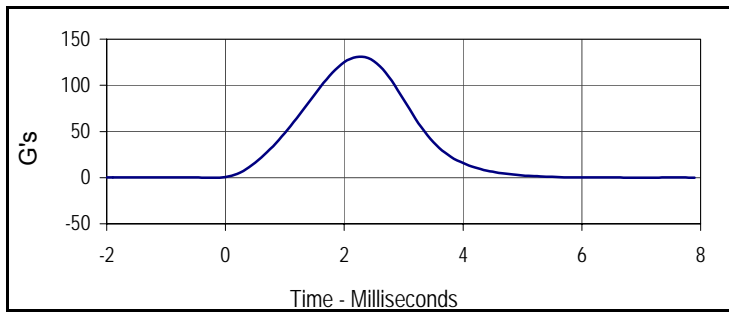
Tested Parameter	Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time	Minutes	≥240	514	Pass
Temperature During Soak	Max	18.9 to 25.6	21.5	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	31.3	Pass
	Min		30.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.0	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	3450 to 4060	3841	Pass
Overall Test Results				Pass

Right Knee

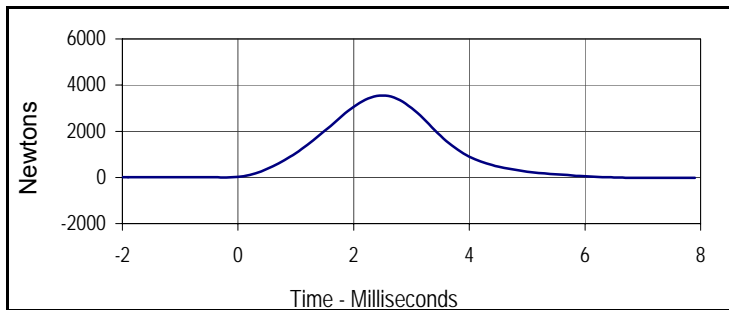
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	3450 to 4060	3553	Pass
Overall Test Results				Pass



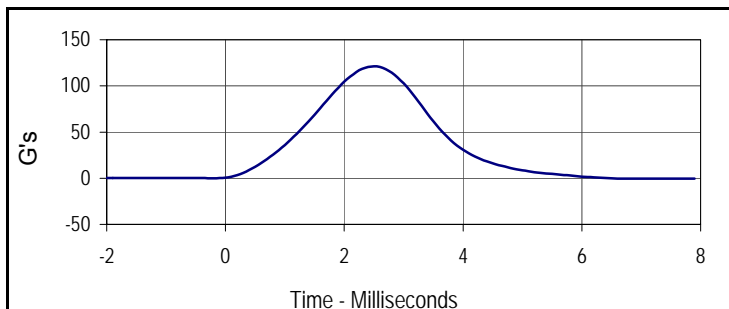
Curve Description			
Left Knee Probe Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3841.2	2.3	-5.2	7.0



Curve Description			
Left Knee Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
131.0	2.3	-1.2	0.0



Curve Description			
Right Knee Probe Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3552.5	2.5	-16.4	7.9



Curve Description			
Right Knee Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
121.2	2.5	-1.1	0.0

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

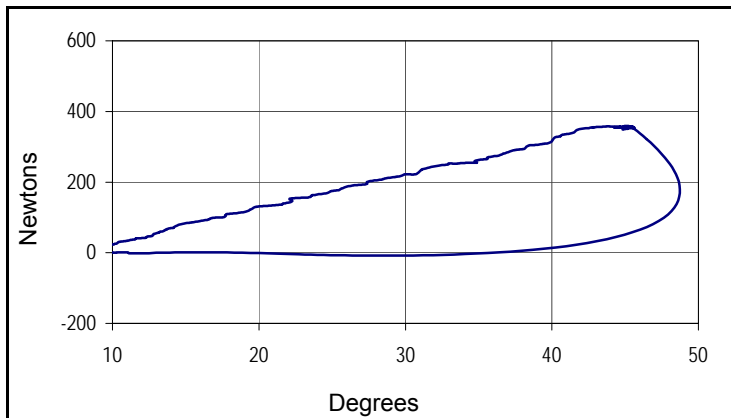
Test Date: 11/18/14



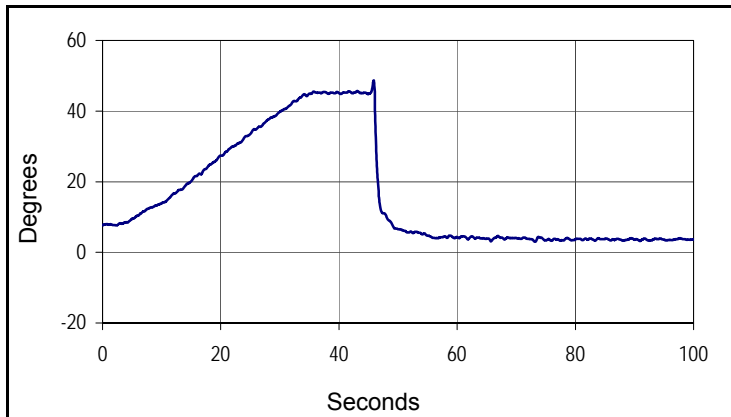
ATD Serial No.: 141

Test I.D.: TF064

Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	579	Pass
Temperature During Soak	Max	18.9 to 25.6	21.5	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	31.3	Pass
	Min		30.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.9	Pass
Initial Reference Plane Angle	Degrees	≤ 20	7.7	Pass
Peak Force at 45° +/-0.5°	Newtons	320.0 to 390.0	358.7	Pass
Torso Rotation Rate	deg/sec	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle	Degrees	+/-8	3.7	Pass
Overall Test Results				Pass



Curve Description		
Force vs Torso Rotation		
Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
358.7		48.7



Curve Description			
Torso Rotation			
Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
48.7	45.9	3.0	73.2