

REPORT NUMBER: NCAP-KAR-15-032

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

**MERCEDES-BENZ U.S. INTL., INC.
2015 MERCEDES-BENZ C300 4MATIC 4-DOOR SEDAN**

NHTSA NUMBER: M20154300

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



APRIL 29, 2015

FINAL REPORT

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

TECHNICAL REPORT DOCUMENTATION PAGE

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				14. Sponsoring Agency Code NVS-111																																																					
15. Supplementary Notes																																																									
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2015 Mercedes-Benz C300 4MATIC 4-door sedan in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on April 15, 2015. 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 392 mm at DPD 3 to the left of the vehicle's centerline. The test vehicle's performance is as follows: <table border="1"> <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>138.2</td> <td>700.0</td> <td>246.2</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-18</td> <td>52</td> <td>-16</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.24</td> <td>1</td> <td>0.60</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>902.3</td> <td>2620</td> <td>652.1</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-274.5</td> <td>2520</td> <td>-973.5</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-1874.2</td> <td>6805</td> <td>-1384.4</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-1998.8</td> <td>6805</td> <td>-715.6</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	138.2	700.0	246.2	Maximum Chest Compression	mm	63	-18	52	-16	Nij	N/A	1	0.24	1	0.60	Neck Tension	N	4170	902.3	2620	652.1	Neck Compression	N	4000	-274.5	2520	-973.5	Left Femur Force	N	10008	-1874.2	6805	-1384.4	Right Femur Force	N	10008	-1998.8	6805	-715.6
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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 Mercedes-Benz C300 4MATIC 4-door sedan at a velocity of 56.27 km/h. The test was performed at KARCO Engineering, LLC. on April 15, 2015. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

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

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

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck force transducers, right / left femur load cells, and lower leg instrumentation. Seat belt load cells were placed on the driver's and the passenger's shoulder and lap belts to measure the dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 360) and the right-front passenger (position 2) ATD (Serial No. 635) were calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 112 channels of dummy and vehicle response data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

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

The maximum static crush of the test vehicle was 392 mm located at DPD 3 to the left of the vehicle's centerline. Both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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

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

The occupant data is summarized below:

ATD Position	HIC ₁₅	T ¹	T ²	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	138.2	74.9	89.9	-18	0.24	902.3	-274.5	-1874.2	-1998.8
Passenger (5th)	246.2	60.5	75.5	-16	0.60	652.1	-973.5	-1384.4	-715.6

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in ²	kPa	6.895
Temperature	General Use	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20154300
Model Year	2015
Make	Mercedes-Benz
Model	C300 4MATIC
Body Style	4-Door Sedan
VIN	55SWF4KBXFU047558
Body Color	Palladium Silver
Odometer Reading (km / mi)	29 / 18
Engine Displacement (L)	2.0
Type / No. of Cylinders	Inline 4
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	7
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	Mercedes-Benz U.S. Intl., Inc.
Date of Manufacture	Feb-15

GVWR (kg)	2165
GAWR Front (kg)	1065
GAWR Rear (kg)	1125

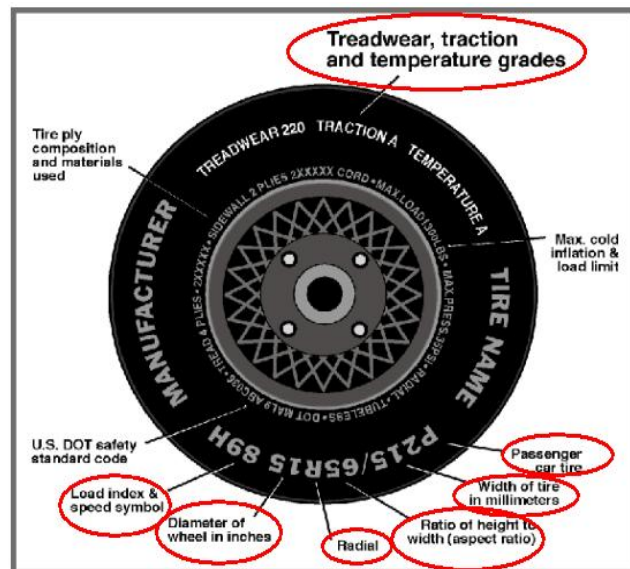
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bucket	Bench		
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				360.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				19.8	A-B

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2015 Mercedes-Benz C300 4MATIC 4-Door Sedan	NHTSA No.:	M20154300
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	04/15/15



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	270	310
Recommended Tire Size	225/50R17	225/50R17
Tire Size on Vehicle	225/50R17	225/50R17
Tire Manufacturer	Continental	Continental
Tire Model	ContiProContact SSR	ContiProContact SSR
Treadwear	400	400
Traction	AA	AA
Temperature Grades	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index / Speed Symbol	94H	94H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	A340 WBN3 5014	A340 WBN3 5014
DOT Safety Code Right	A340 WBN3 5014	A340 WBN3 5014

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

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	463.0	364.0		485.0	428.0	
Right	kg	437.5	359.0		453.0	413.5	
Ratio	%	55.5%	44.5%	100.0%	52.7%	47.3%	100.0%
Total	kg	900.5	723.0	1623.5	938.0	841.5	1779.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1623.5	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	19.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1784.3	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	713	717	728	716	1264
As Tested	mm	707	704	704	704	1343
Post-Test	mm	726	730	716	714	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2839
Total Vehicle Length at Left Side	mm	4125
Total Vehicle Length at Centerline	mm	4705
Total Vehicle Length at Right Side	mm	4120
Weight of Ballast in Cargo Area	kg	88.6
Weight of Vehicle Components Removed	kg	77.5
Amount of Stoddard Solvent in Fuel Tank	L	61.38

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Rear Seat Cushion (6.0 kg), Rear Door Panels (6.0 kg), Rear Windows and Trim (11.0 kg), Rear Trim (4.0 kg), Trunk Trim (7.0 kg), Rear Bumper Cover (9.0 kg), Tail Lights (2.0 kg), Outboard Mirrors (3.0 kg), Rear Seat Backs (21.5 kg), Rear Bumper Beam (8.0 kg)

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

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test
1	Total Length	4705
2	Total Width	1805
3	Bumper Top Height	585
4	Bumper Bottom Height	250
5	Longitudinal Member Top Height	440
6	Distance Between Longitudinal Members	800
7	Longitudinal Member Width	70
8	Engine Top Height	863
9	Engine Bottom Height	171
10	Engine and Gearbox Width	710
11	Front Bumper to Engine Distance	510
12	Front Shock Absorber Fixing Height	784
13	Bonnet Leading Edge Height	794
14	Front Shock Absorber Fixing Width	955
15	Front Bumper to Front Axle Distance	786
16	Front Axle to A-Pillar Distance	695
17	A-Pillar to B-Pillar Distance	916
18	B-Pillar to Rear Axle Distance	1060
19	B-Pillar to C-Pillar Distance	781
20	Roof Sill Bottom Height	1313
21	Roof Sill Top Height	1416
22	Floor Sill Bottom Height	285
23	Floor Sill Top Height	340

All measurements in millimeters.

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan

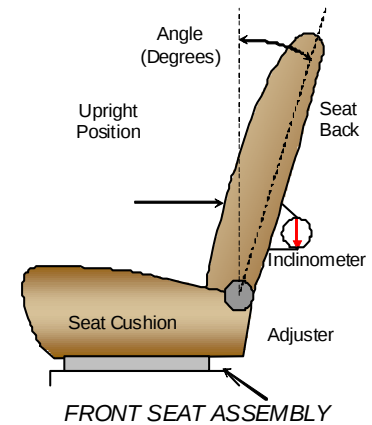
NHTSA No.: M20154300

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/15/15

NOMINAL DESIGN RIDING POSITION

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

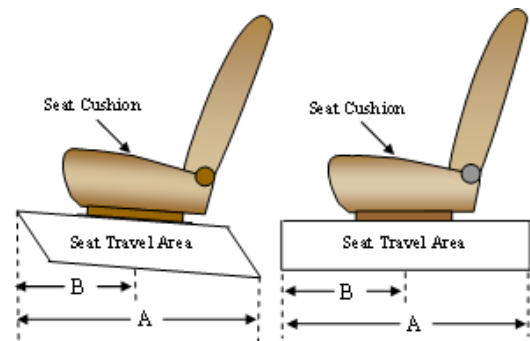


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	21.0
Passenger Seat Back Angle	20.9

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	299 mm	150 mm
Passenger Seat	260 mm	0 mm

SEAT BELT UPPER ANCHORAGE

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

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	5	H
Passenger Seat	5	H

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan

NHTSA No.: M20154300

Test Program: 56 km/h Frontal Impact NCAP Test

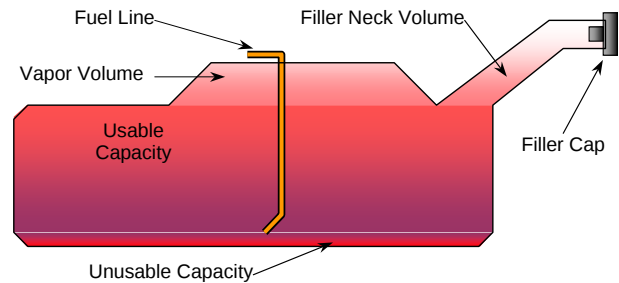
Test Date: 04/15/15

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	66.00
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	60.72 to 62.04
Actual Amount of Stoddard Solvent Used	61.38
1/3 of Usable Capacity	22.00

FUEL PUMP

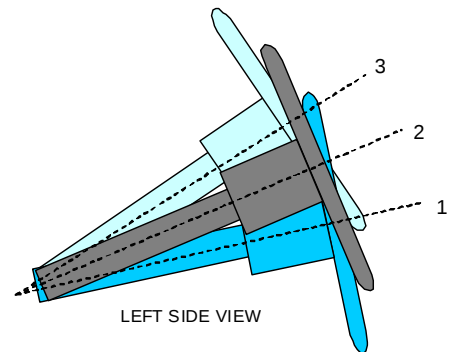
The vehicle is equipped with an electric fuel pump. The fuel pump is in operation if the ignition is switched to the "ON" position. After about 15 seconds the pump switches back to the standby mode, if the engine is not started.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. A tape measure is used to measure telescoping steering wheel travel.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	18.4	70
Geometric Center Position, No. 2	20.7	98
Uppermost Position, No. 3	23.0	125
Telescoping Steering Wheel Travel		55
Test Position	20.7	98

DATA SHEET NO. 3

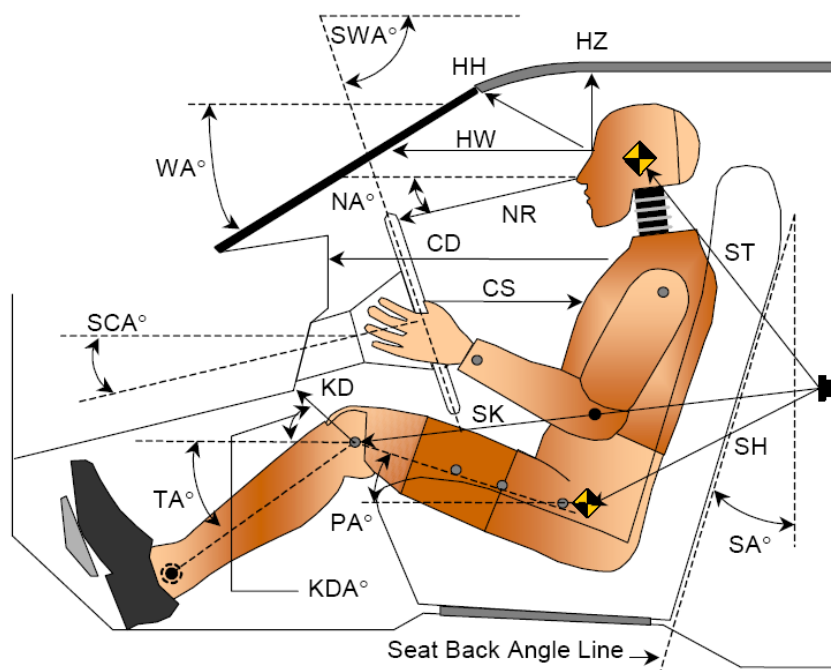
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan

NHTSA No.: M20154300

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/15/15



LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		25.4		
SWA°	Steering Wheel Angle		20.5		
SCA°	Steering Column Angle		69.5		
SA°	Seat Back Angle (On Headrest Post)		21.0		20.9
HZ	Head to Roof	219	90.0	190	90.0
HH	Head to Header	380	27.8	309	42.0
HW	Head to Windshield	667	0.0	589	0.0
NR	Nose to Rim	404	5.8	500	13.4
CD	Chest to Dash	548	17.1	432	1.8
CS	Chest to Steering Hub	334	0.0		
RA	Rim to Abdomen	239	0.0		
KDL	Left Knee to Dash	221	37.2	105	38.7
KDR	Right Knee to Dash	198	27.8	120	49.1
PA°	Pelvic Angle		24.1		20.1
TA°	Tibia Angle		27.5		44.6
SK	Striker to Knee	538	20.5	632	8.2
ST	Striker to Head	404	1.5	388	18.2
SH	Striker to H-Point	284	61.6	361	33.7

DATA SHEET NO. 4

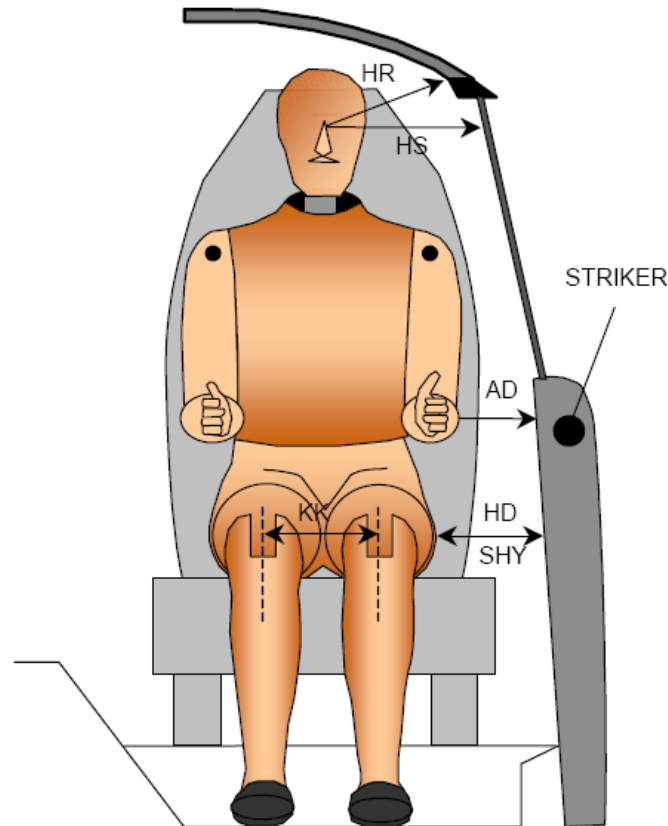
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan

NHTSA No.: M20154300

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/15/15



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	121	67
HD	H-Point to Door	161	155
HR	Head to Side Header	225	224
HS	Head to Side Window	342	300
KK	Knee to Knee	325	165
SHY	Striker to H-Point (Y-Direction)	232	340
AA	Ankle to Ankle	352	165

DATA SHEET NO. 5

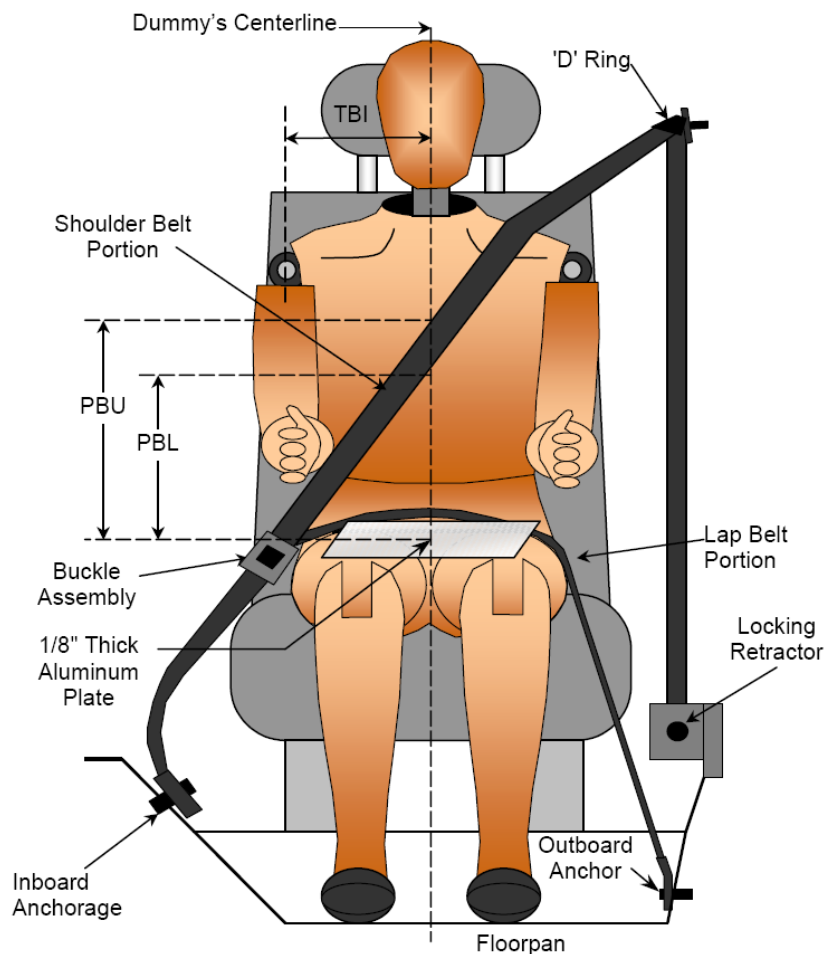
SEAT BELT POSITIONING DATA

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan

NHTSA No.: M20154300

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/15/15



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Code	Measurement Description	Units	Driver	Passenger
PBU	Top Surface of Aluminum Plate to Belt Upper Edge	mm	354	240
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	275	170

BELT LENGTH DATA

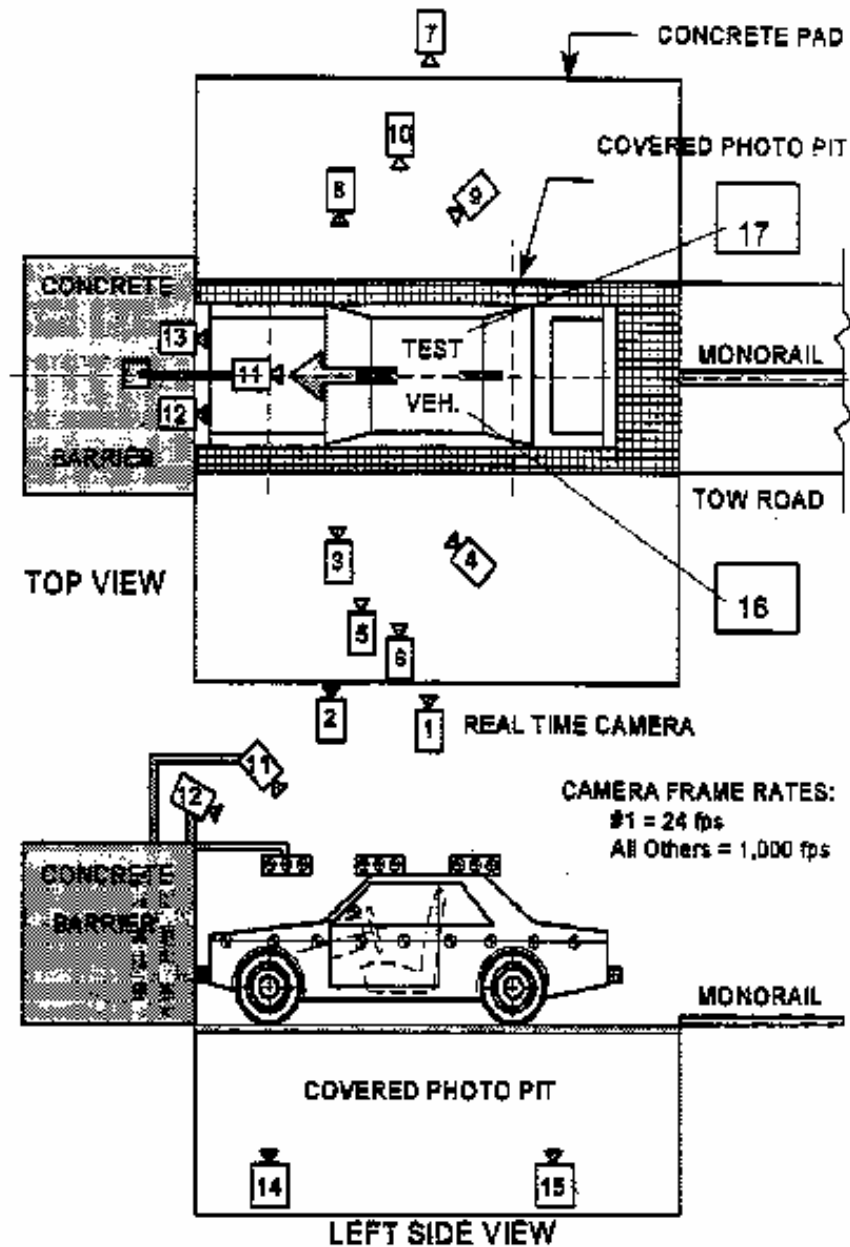
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	879	860
Lap Belt Length as Measured on ATD	mm	563	527
Remainder of Belt on Reel	mm	1029	1011
Total Belt Length for Continuous Webbing Systems	mm	2471	2398

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	<u>2015 Mercedes-Benz C300 4MATIC 4-Door Sedan</u>	NHTSA No.:	<u>M20154300</u>
Test Program:	<u>56 km/h Frontal Impact NCAP Test</u>	Test Date:	<u>04/15/15</u>

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

CAMERA LOCATIONS

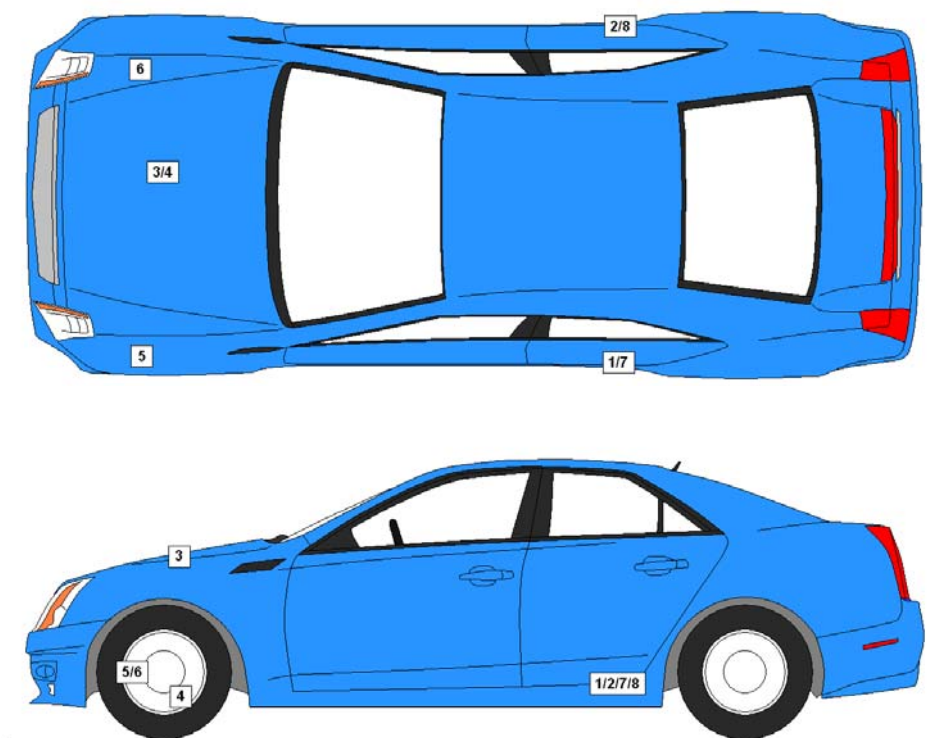
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering Column - Bottom	-1972	-10412	-3379	50	1000
7	Right Overall	-2336	7569	-1012	24	1000
8	Passenger Close-Up	-1733	7581	-1408	50	1000
9	Right Front Half	-1600	8214	-1811	ZOOM	1000
10	Right Angle	-6217	9516	-4830	ZOOM	1000
11	Windshield	-354	0	-5749	12	1000
12	Driver Windshield	297	-366	-2460	12	1000
13	Passenger Windshield	297	366	-2460	24	1000
14	Pit Front	-756	0	1495	20	1000
15	Pit Rear	-3398	0	1495	20	1000
16	Onboard Driver Airbag (Optional)	-1500	200	-1330	13	1000
17	Onboard Passenger Airbag (Optional)	-1500	-200	-1330	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 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1764	-702	-378
2	Right Rear Accelerometer X-Direction	1778	711	-382
3	Engine Top X	4016	32	-864
4	Engine Bottom X	4041	58	-216
5	Left Rear Accelerometer Z-Direction	1764	-702	-378
6	Right Rear Accelerometer Z-Direction	1778	711	-382
7	Left Rear Accelerometer X-Direction Redundant	1789	-702	-378
8	Right Rear Accelerometer X-Direction Redundant	1803	711	-382

Reference Points:

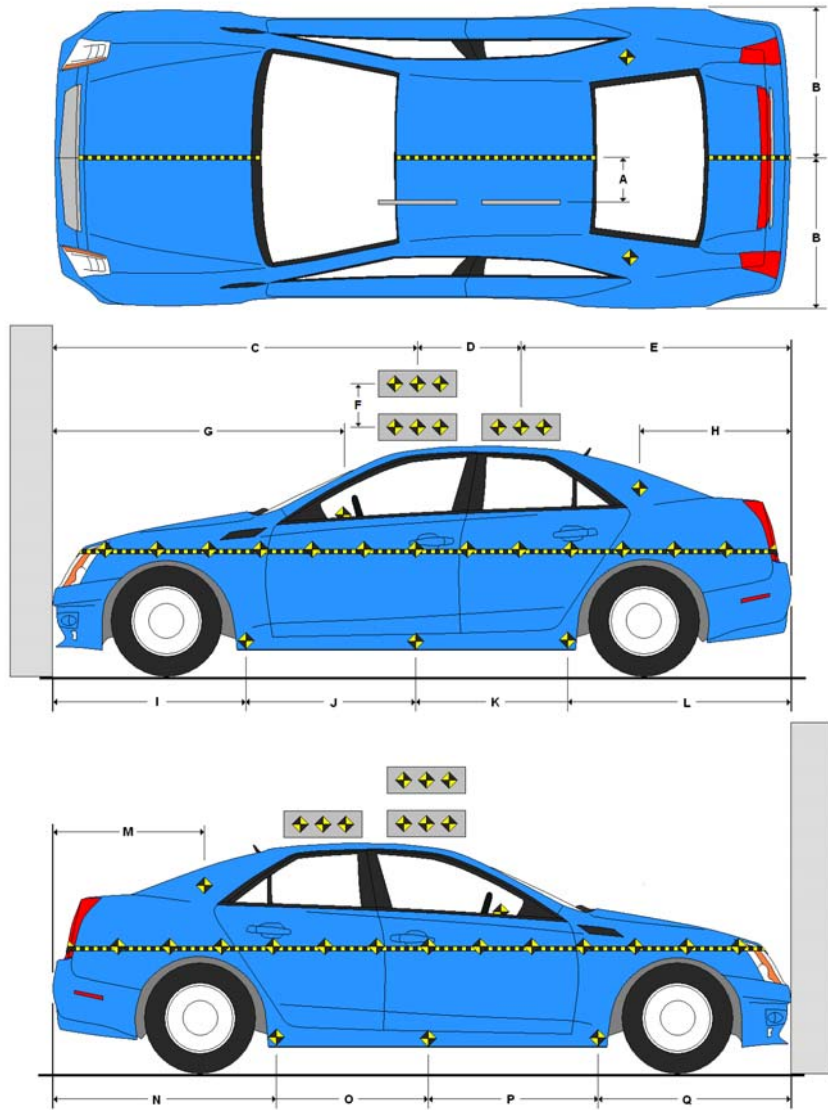
- X – Rear Surface of Vehicle (+ forward)
- Y – Vehicle Centerline (+ to right)
- Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

Item	Value
A	377
B	903
C	2333
D	610
E	1751
F	305
G	1850
H	894
I	1230
J	975
K	975
L	1520
M	902
N	1515
O	980
P	980
Q	1225



All measurements in millimeters.

DATA SHEET NO. 9

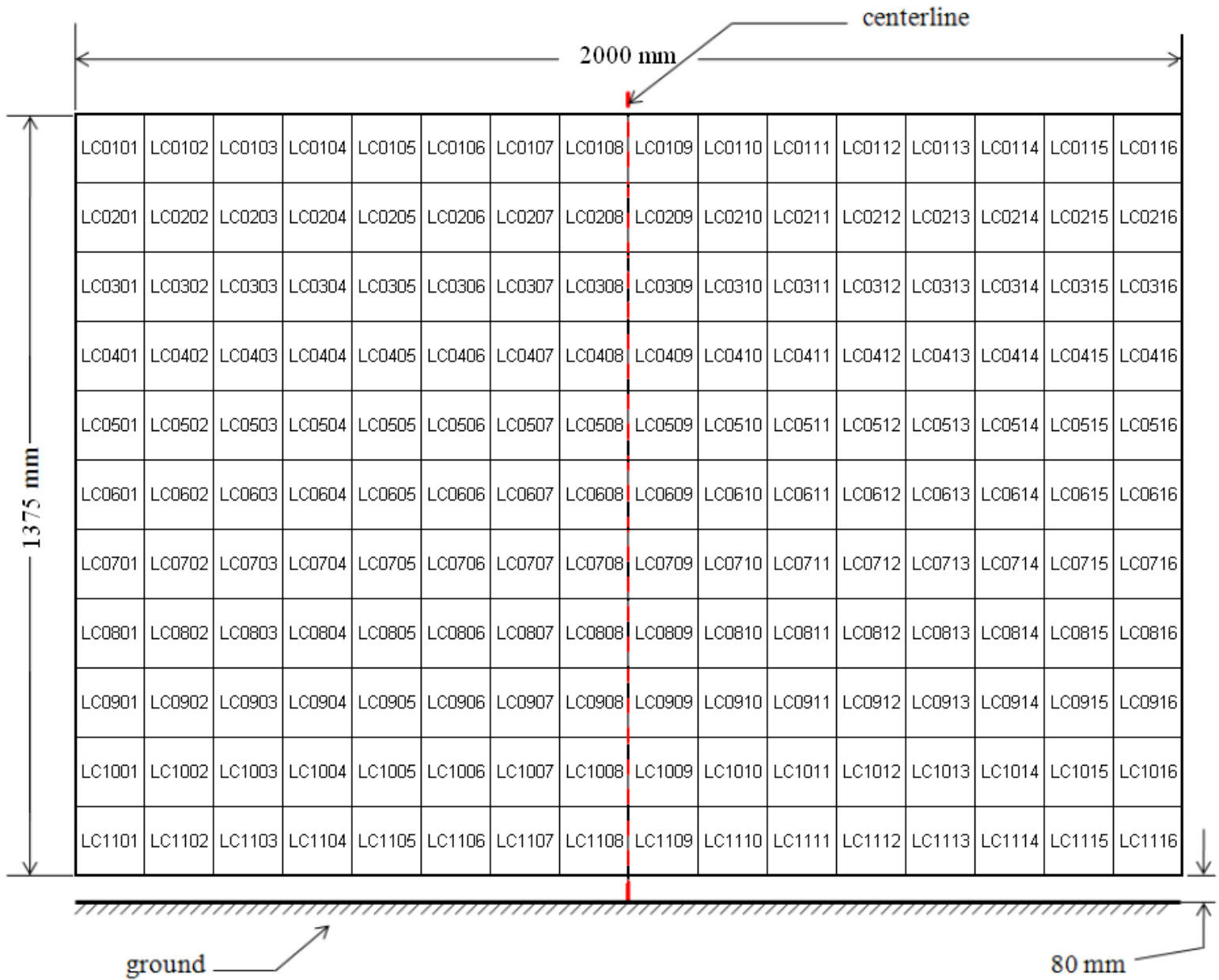
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan

NHTSA No.: M20154300

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 04/15/15



DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

INSTRUMENTATION

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

CAMERA COVERAGE

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

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 360	P572O 5th Percentile Female ATD / 635
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)	3	1
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

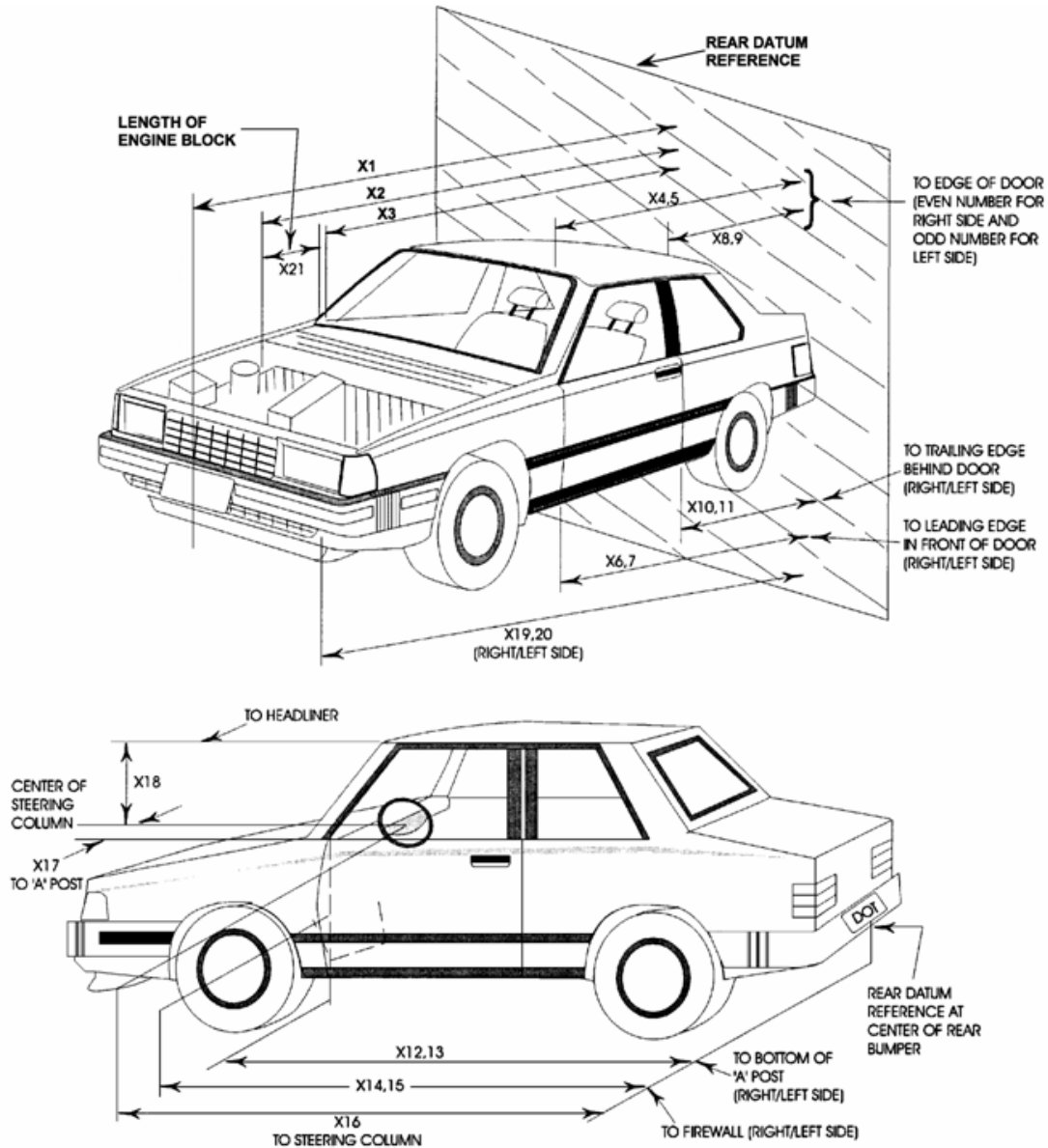
Measured Parameter	Units	Value
Left Side	mm	840
Center	mm	788
Right Side	mm	806
Average	mm	811

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 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15



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

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4705	4325	-380
2	Rear Surface of Vehicle to Front of Engine	4195	4033	-162
3	RSOV to Firewall	3580	3579	-1
4	RSOV to Upper Leading Edge of Right Door	3234	3233	-1
5	RSOV to Upper Leading Edge of Left Door	3235	3246	11
6	RSOV to Lower Leading Edge of Right Door	3195	3181	-14
7	RSOV to Lower Leading Edge of Left Door	3200	3185	-15
8	RSOV to Upper Trailing Edge of Right Door	2094	2091	-3
9	RSOV to Upper Trailing Edge of Left Door	2094	2104	10
10	RSOV to Lower Trailing Edge of Right Door	2123	2110	-13
11	RSOV to Lower Trailing Edge of Left Door	2127	2112	-15
12	RSOV to Bottom of A-Pillar, Right Side	3076	3078	2
13	RSOV to Bottom of A-Pillar, Left Side	3076	3093	17
14	RSOV to Firewall, Right Side	3380	3381	1
15	RSOV to Firewall, Left Side	3425	3425	0
16	RSOV to Steering Column	2660	2740	80
17	Center of Steering Column to A-Pillar	410	422	12
18	Center of Steering Column to Headliner	420	422	2
19	RSOV to Right Side of Front Bumper	4120	3930	-190
20	RSOV to Left Side of Front Bumper	4125	4035	-90
21	Length of Engine Block	570	570	0
RD	RSOV to Right Side of Dash Panel	2870	2878	8
CD	RSOV to Center of Dash Panel	2800	2805	5
LD	RSOV to Left Side of Dash Panel	2875	2885	10

All measurements in millimeters.

DATA SHEET NO. 13**ACCIDENT INVESTIGATION DIVISION DATA**

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

VEHICLE INFORMATION

VIN: 55SWF4KBXFU047558 Wheelbase (mm): 2839
Vehicle Size Category: 4-Door Sedan Test Weight (kg): 1779.5

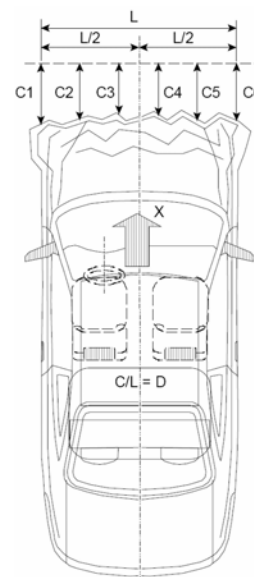
ACCELEROMETER DATA

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): 70.3
Time of Separation (msec): 61.2

Linearity: Good

CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1475
Impact Mode: Full Frontal



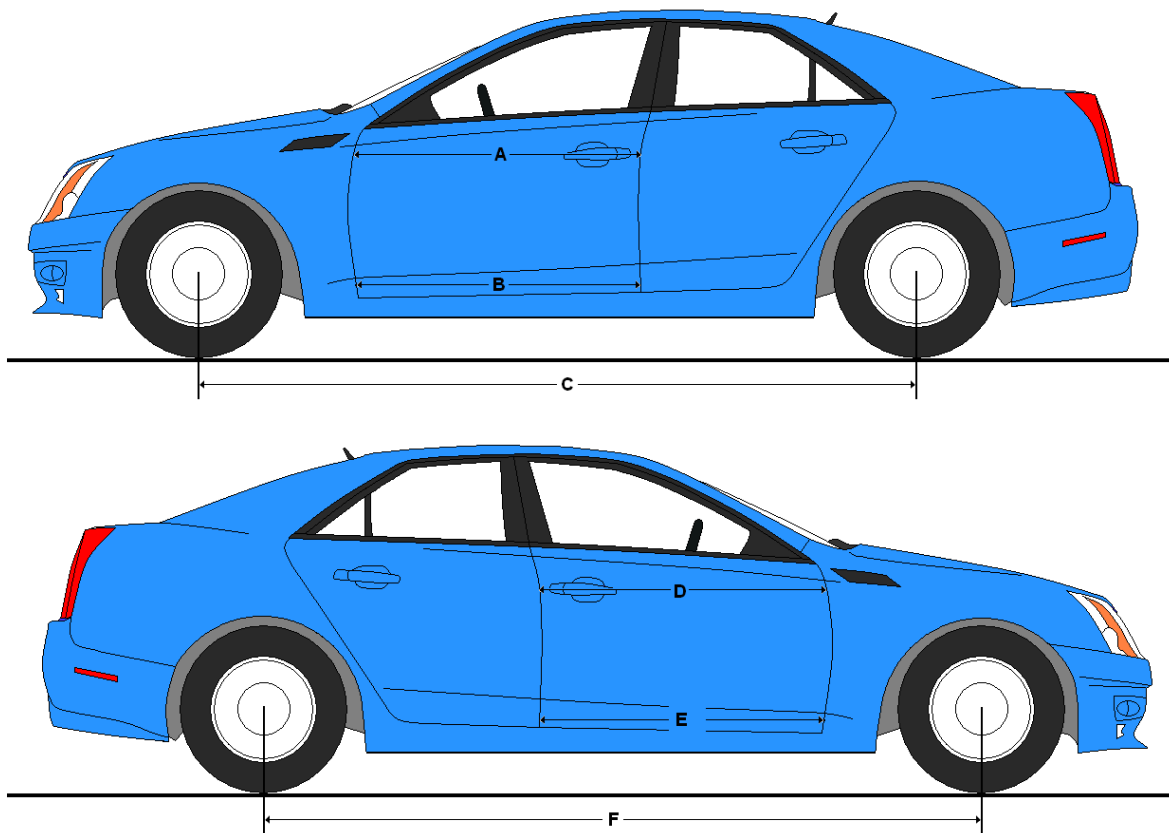
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	220	420	200
C2	Crush Zone 2 at Left Side	mm	110	448	338
C3	Crush Zone 3 at Left Side	mm	40	432	392
C4	Crush Zone 4 at Right Side	mm	40	431	391
C5	Crush Zone 5 at Right Side	mm	110	456	346
C6	Crush Zone 6 at Right Side	mm	220	472	252
L	C1 to C6	mm	1475		

DATA SHEET NO. 14**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door SedanNHTSA No.: M20154300Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 04/15/15**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	916	907	9
B	Left Side Lower	mm	851	843	8
D	Right Side Upper	mm	906	897	9
E	Right Side Lower	mm	851	852	-1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2839	2717	122
F	Right Side Wheelbase	mm	2839	2715	124



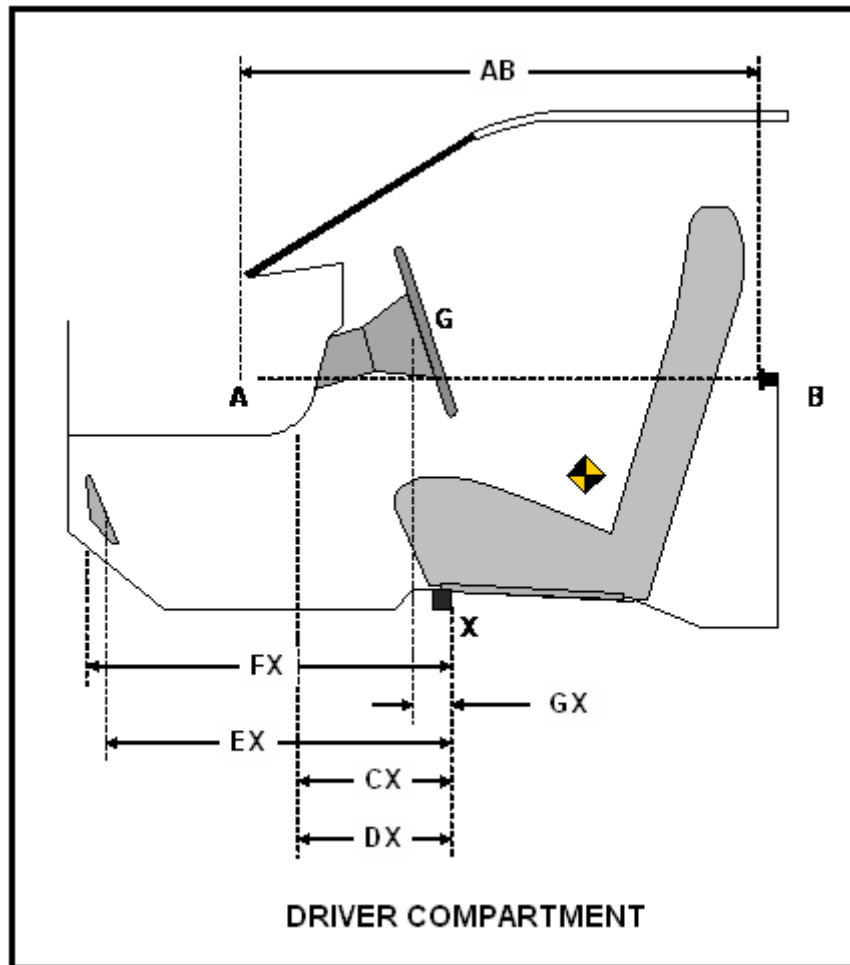
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	811	801	10
CX	Left Knee Bolster to X	mm	315	341	-26
DX	Right Knee Bolster to X	mm	310	327	-17
EX	Brake Pedal to X	mm	620	622	-2
FX	Foot Rest to X	mm	640	630	10
GX	Center of Steering Wheel Hub to X	mm	80	180	-100

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15

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

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300

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

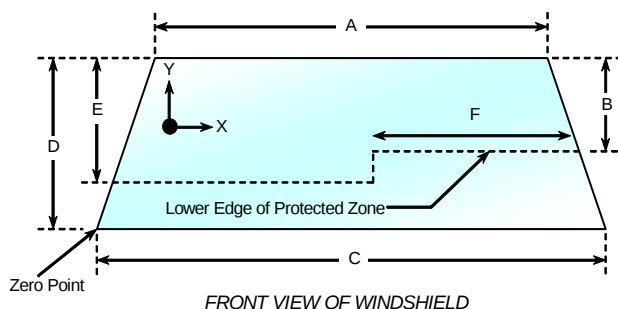
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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

Temperature of windshield molding during test: 21.1 ° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2116	2116	100.0%
Right Side	2116	2116	100.0%
Total	4232	4232	100.0%



Item	Units	Value
A	mm	1140
B	mm	330
C	mm	1392
D	mm	850
E	mm	465
F	mm	515

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 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.1° C Test Time: 1:41 PM

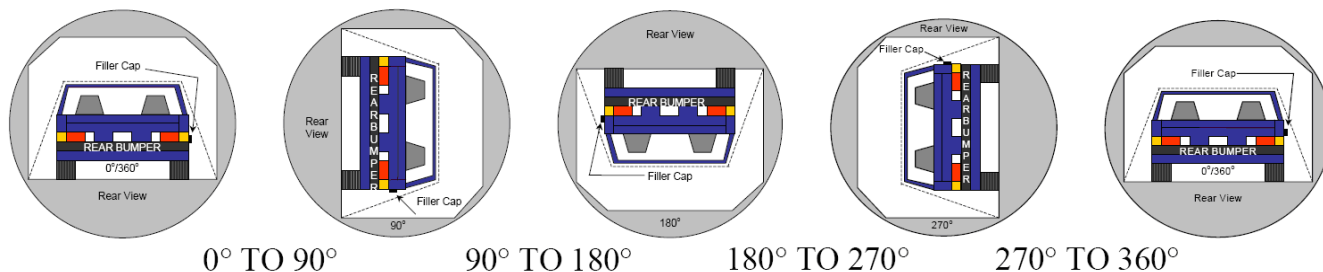
Stoddard Solvent Spillage Measurements

- 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 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15



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

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	83	300	383
90° To 180°	84	300	384
180° To 270°	77	300	377
270° To 360°	80	300	380

FMVSS 301 SPILLAGE TABLE

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

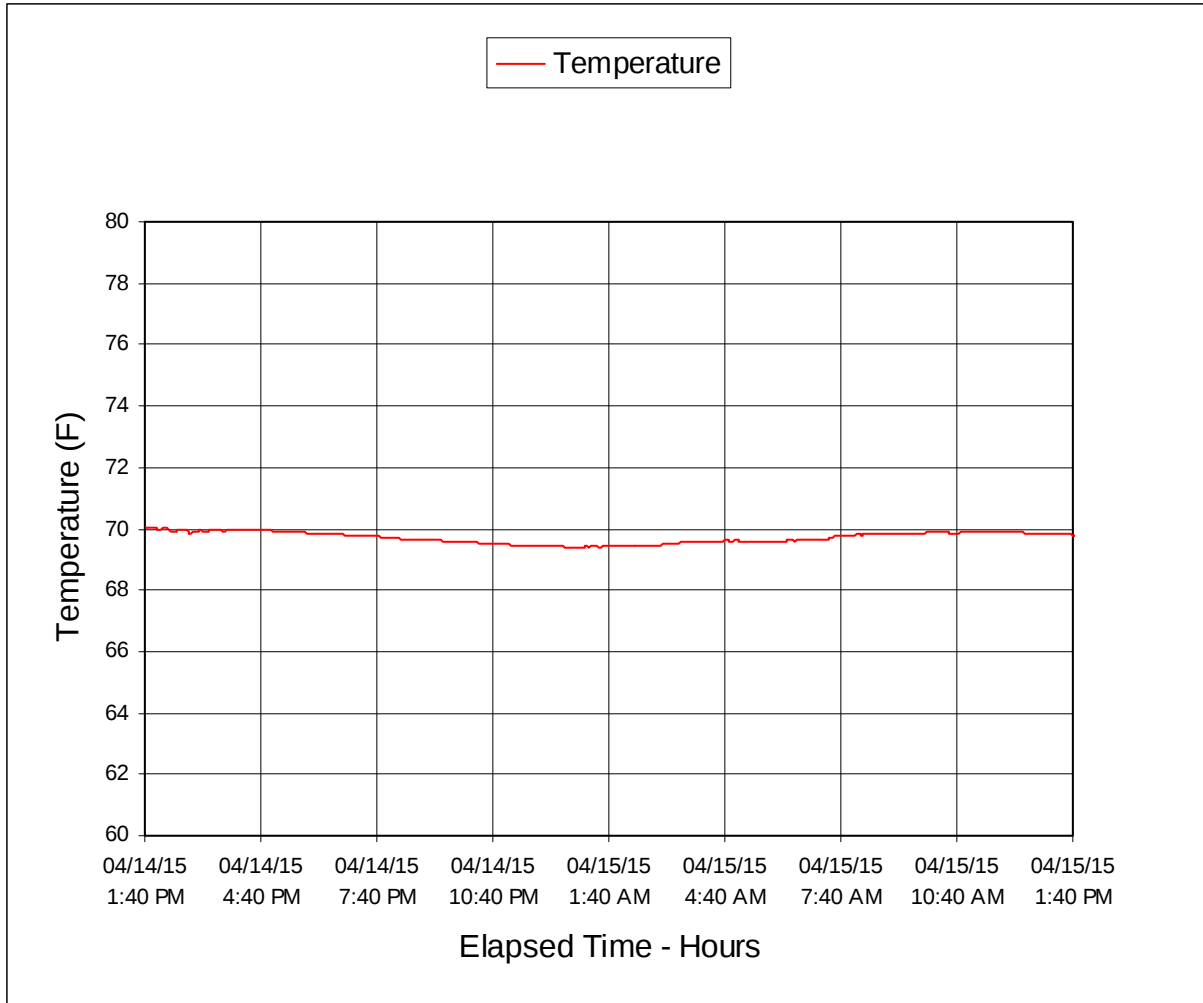
SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan NHTSA No.: M20154300
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 04/15/15



APPENDIX A
PHOTOGRAPHS

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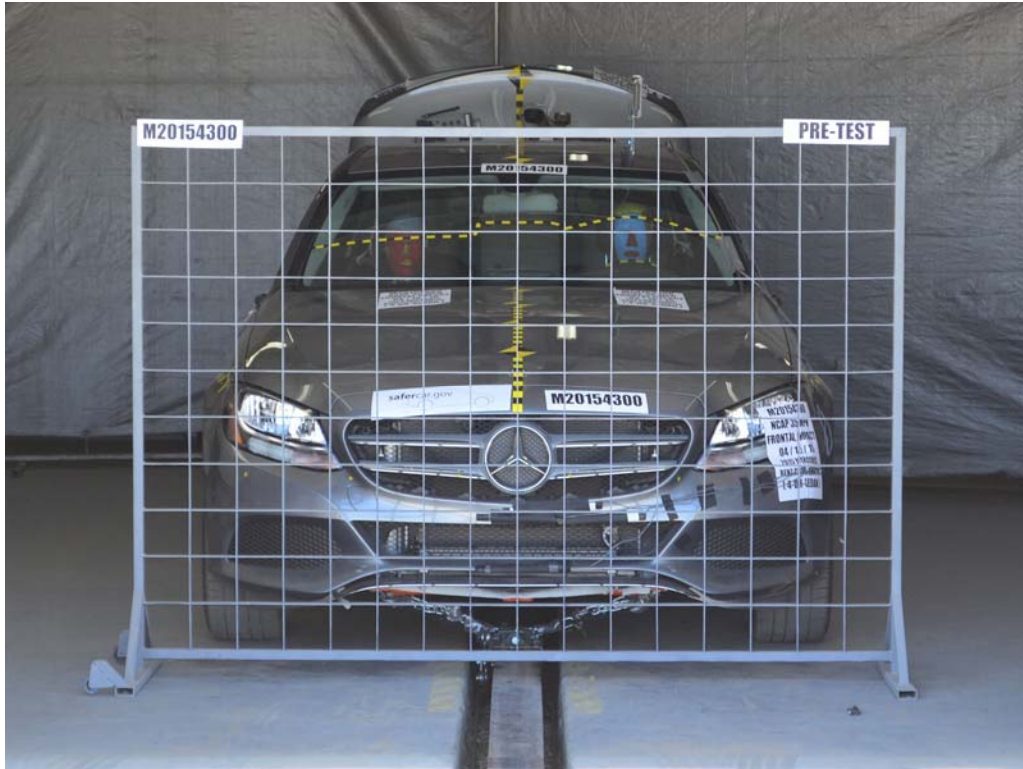


FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. 2015 Mercedes-Benz C300 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

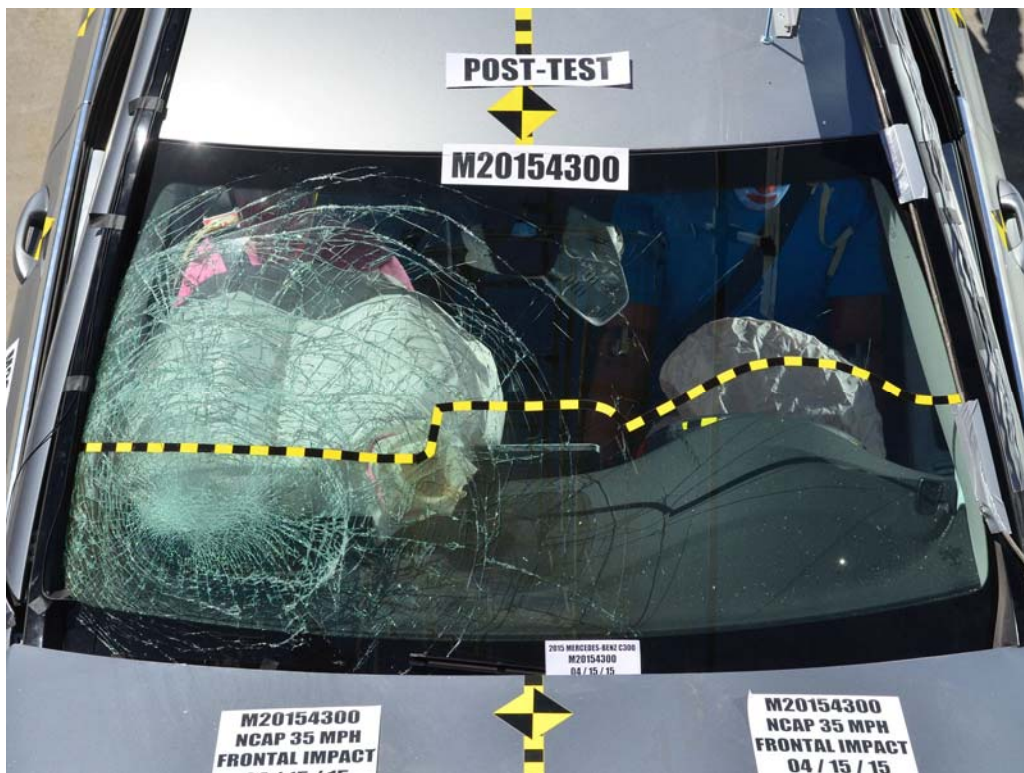


FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View

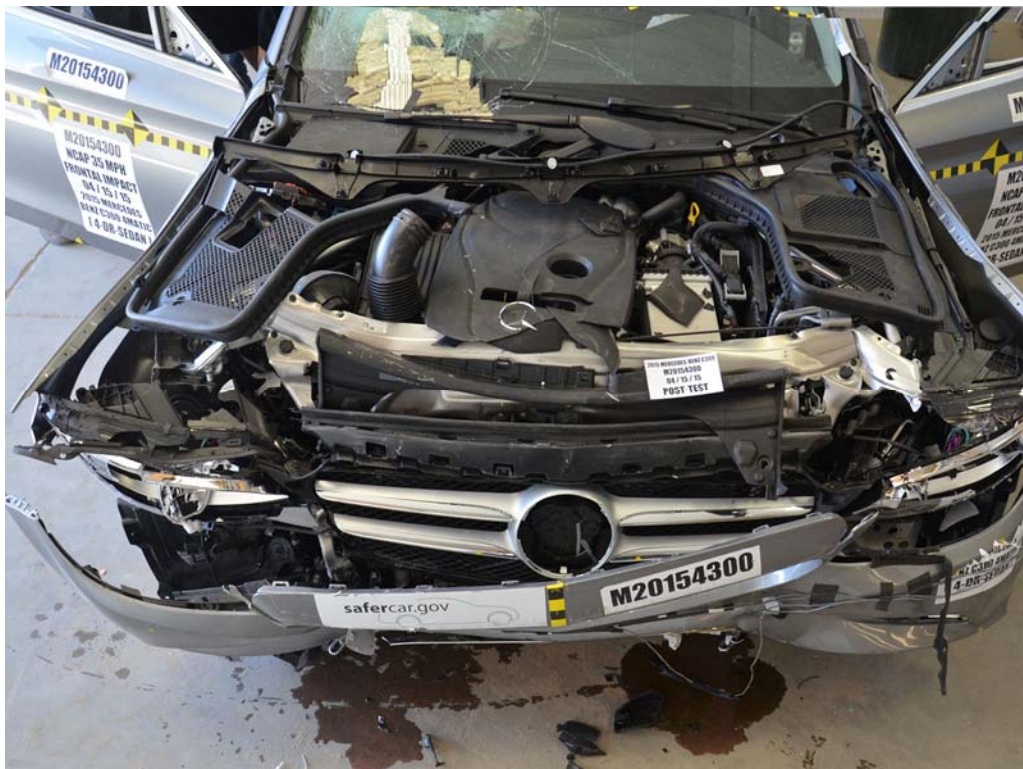


FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

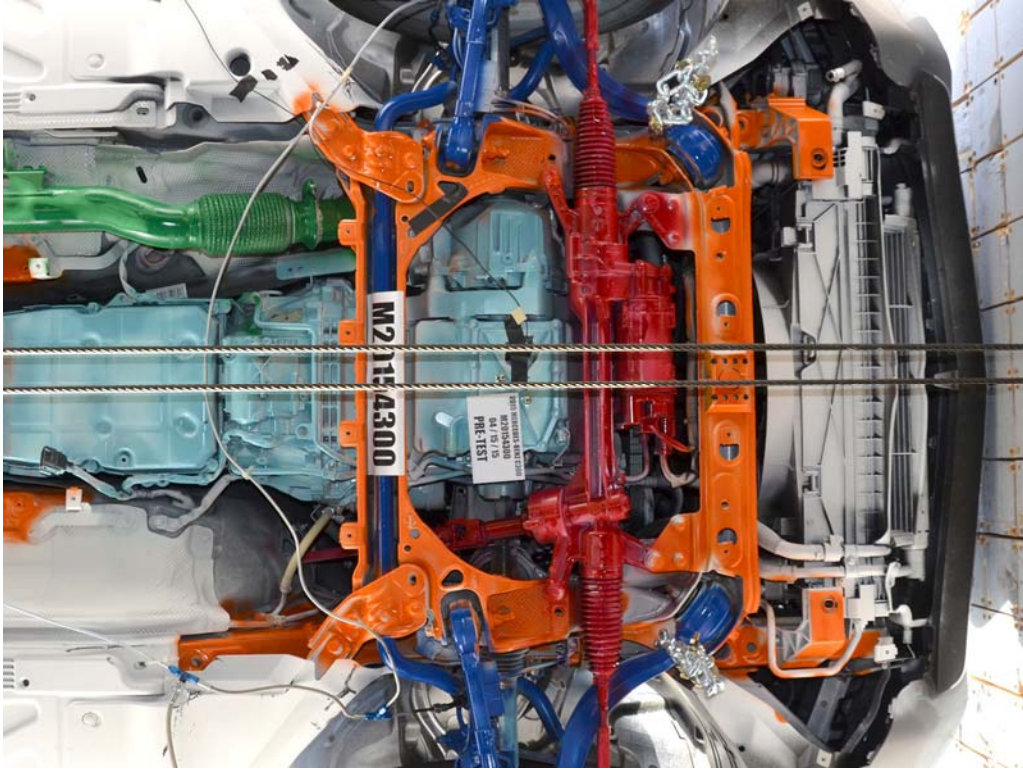


FIGURE 23. Pre-Test Front Underbody View

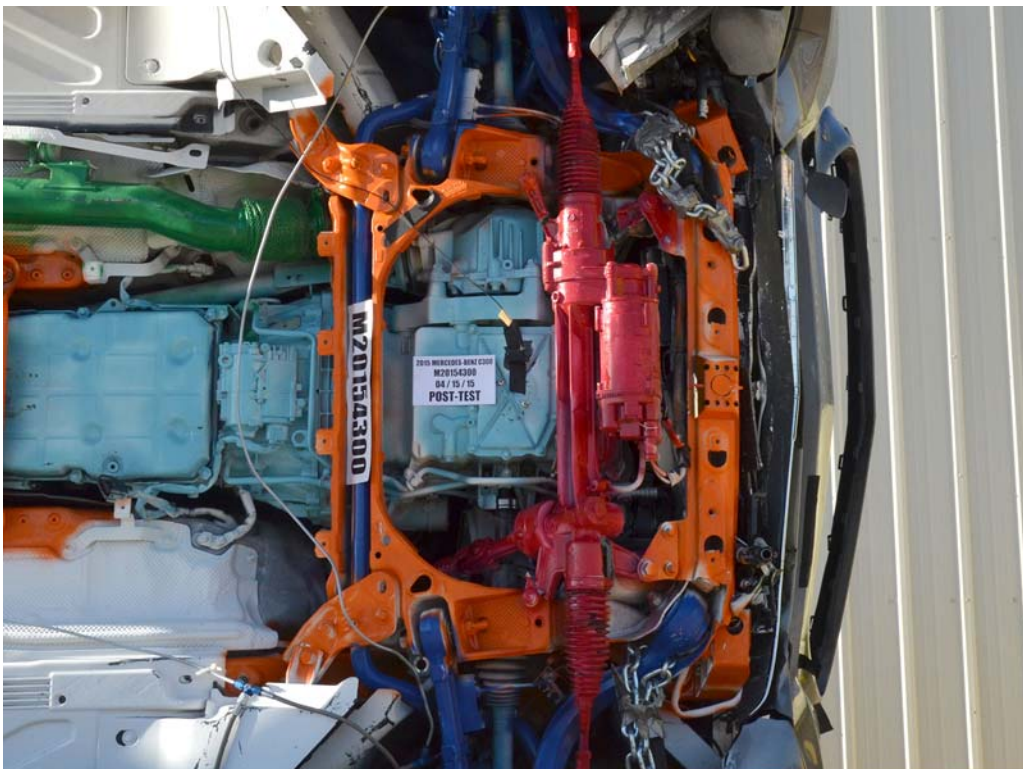


FIGURE 24. Post-Test Front Underbody View



FIGURE 25. Pre-Test Rear Underbody View

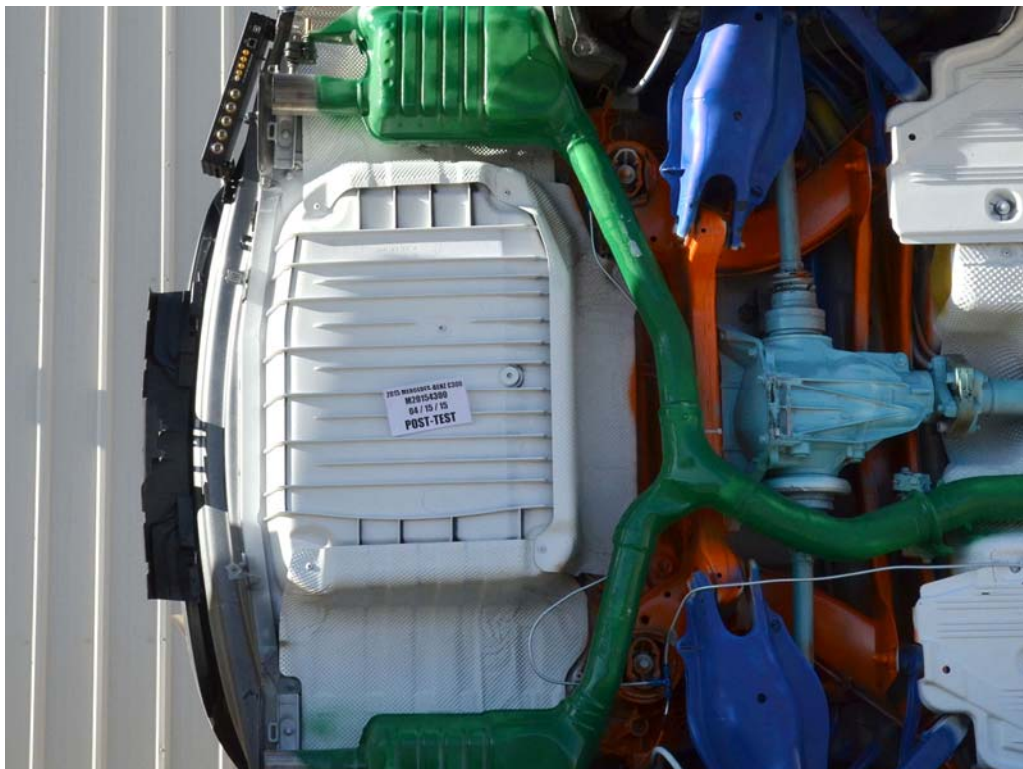


FIGURE 26. Post-Test Rear Underbody View



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

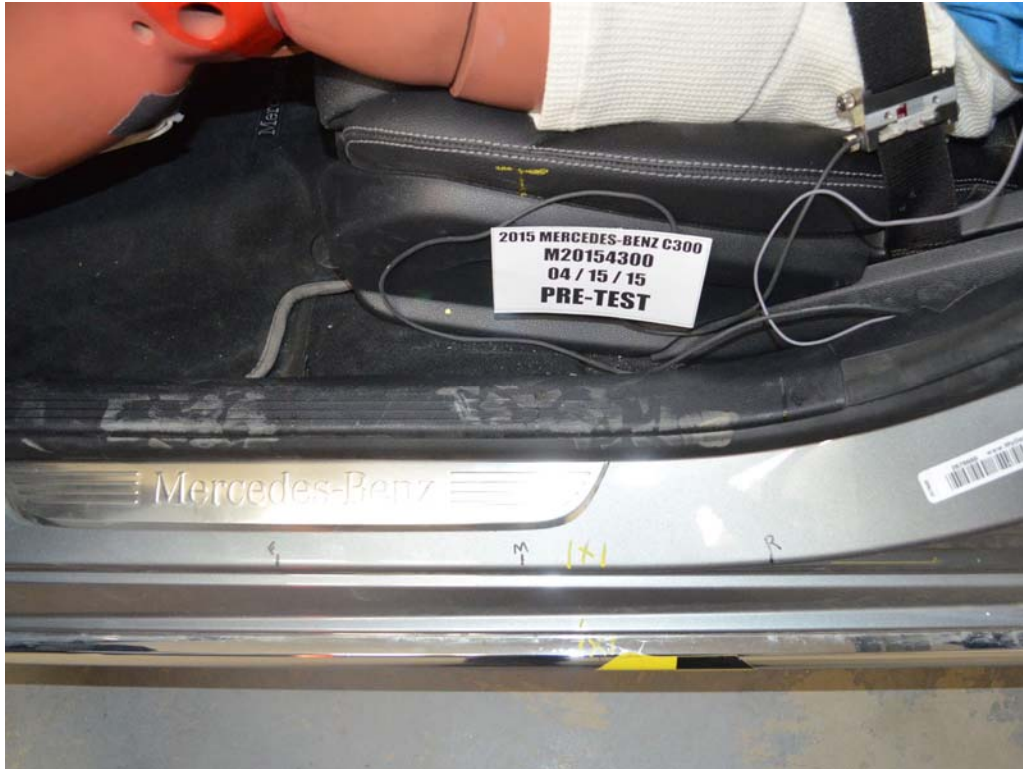


FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings



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

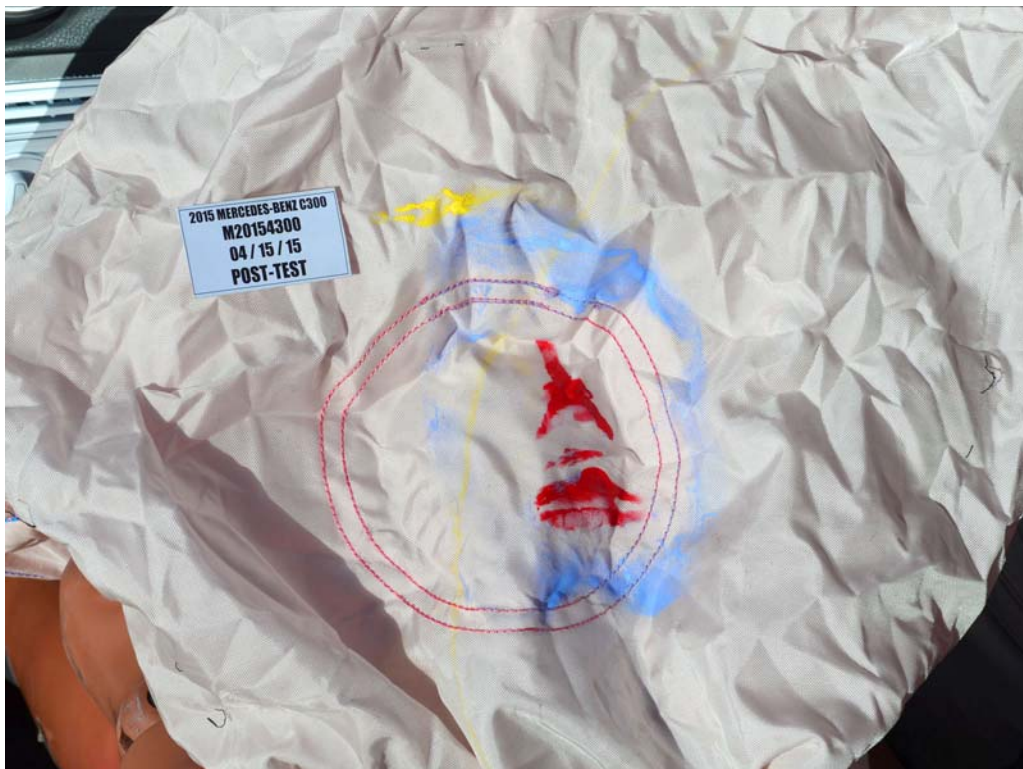


FIGURE 46. Post-Test Driver Dummy Contact with Airbag



FIGURE 47. Post-Test Driver Dummy Contact with Headrest



FIGURE 47a. Post-Test Driver Dummy Contact with Headliner



FIGURE 47b. 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 74. Vehicle at 180° on Static Rollover Device

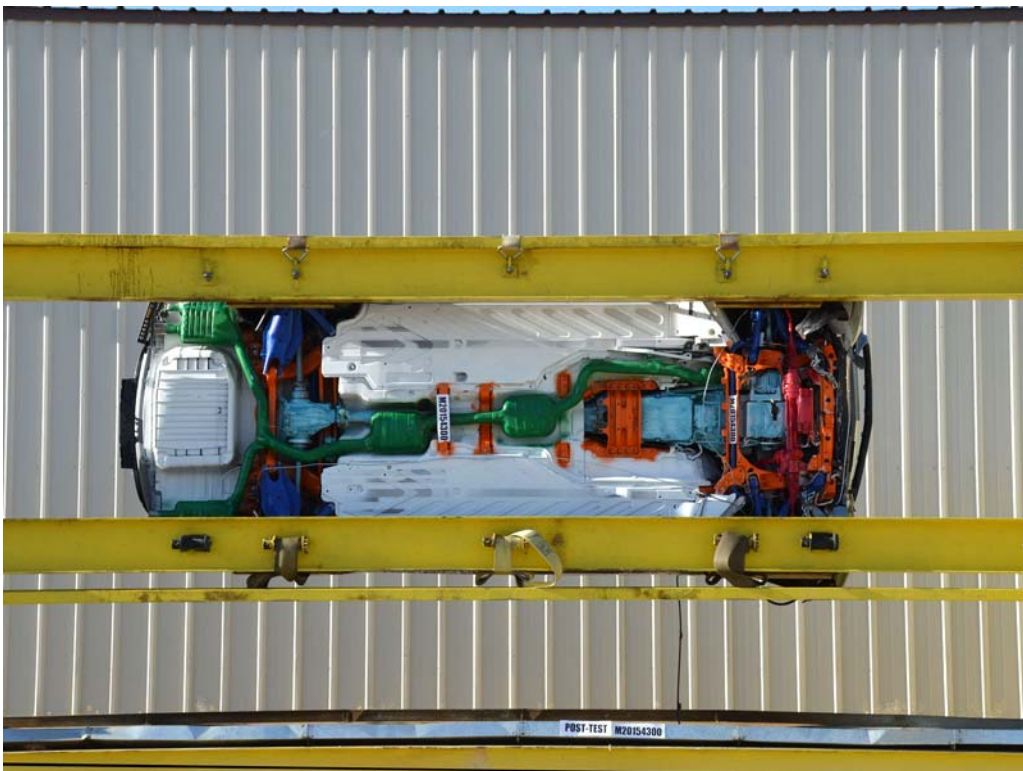


FIGURE 75. Vehicle at 270° on Static Rollover Device



2015 C300 4MATIC Sedan

PO#: 0571733316
VIN: 555WF4KRXFU047558

www.MBUSA.com

Standard Features

PERFORMANCE/HANDLING

- 2.8 Liter 34 Turbo Engine with Direct Injection
- 241 Horsespower
- 273 9.9" Turbos
- 7-Speed Automatic
- 4MATIC Permanent All-Wheel Drive
- ECO Start/Stop System
- Independent Front/Rear Suspension
- 4MATIC SELECT
- 17 Inch Wheels
- All-Season Tires

COMFORT/CONVENIENCE

- Radio System with Single-Disc CD
- TripAdvisor
- 7 Inch Color Display
- Bluetooth® Connectivity
- intouch™ - w/ real period by Various Telematics
- KEYLESS-START
- Power Memory for Driver's Seat, Steering Column, and Exterior Mirrors
- Split Folding Rear Seats
- Dual Zone Automatic Climate Control
- CarPlay/Android Auto
- Power Folding Mirrors
- Auto-Dimming Driver and Rearview Mirrors
- Rain-Sensing Wipers
- Washer/Wipers

SAFETY/SECURITY

- New Vehicle 4-year/50,000 Mile Warranty
- 24 Hour Roadside Assistance Program
- Advanced Airbag Protection System
- Anti-Lock Braking System
- COLLISION PREVENTION ASSIST PLUS
- ATTENTION ASSIST
- PRE-SAFE® Proactive Occupant Protection System
- Brake Assist System (BAS)
- Automatic Headlights w/ Twilight Sensor & Laser Lighting
- LED Daytime Running Lights
- Rear Door Child Safety Locks
- Top Tether Anchors (All Rear Seats)
- Anti-Lock Braking System (ABS)
- Electronic Stability Program (ESP)
- ADAPTIVE BRAKE Technology

Suggested Retail Price

PAINT/UPHOLSTERY & TRIM

- 712 Evolution Silver
- 181 Black MB-Tex
- 718 Black Ash Open Pore Wood

OPTIONAL EQUIPMENT AND VALUE ADDED PACKAGES

- N/C
- 844 17 Inch Light 5-Spoke Alloy Wheel
- 218 Sunroof - Carbon
- 273 18 Inch Alloy Wheel
- Destination and Delivery

Total Retail Price

\$43,410.00

EPA DOT Fuel Economy and Environment

Fuel Economy

27 MPG

combined city/hwy

3.7 gallons per 100 miles

Compacts range from 14 to 116 MPG. The best vehicle rates 119 MPG.

You Save \$500

in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$2,100

Fuel Economy & Greenhouse Gas Rating

Smog Rating

1 2 3 4 5 6 7 8 9 10

10 Best

Worst

Actual results may vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 24 MPG and emits 11.0 tons of CO₂ per year. Cost estimates are based on 10,000 miles per year at \$3.50 per gallon. EPA's 100 mpg is only a guide. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov

Calculate personalized estimates and compare vehicles

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score

Not Rated

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Crash	Driver Passenger	Not Rated
Frontal	Not Rated	Not Rated
Side	Not Rated	Not Rated
Rollover	Not Rated	Not Rated

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA) www.safercar.gov or 1-800-327-4236

PARTS CONTENT INFORMATION

For vehicles in this class:

U.S./Canadian Parts Content: 40 %

Major Sources of Foreign Parts Content: GERMANY: 35 %

NOTE: Parts content does not include final assembly, distribution or other non-parts costs.

For this vehicle:

Final Assembly Plant: VANCE, ALABAMA C-CLASS

Country of Origin: GERMANY

Engine: GERMANY

Transmission: GERMANY

Ship To:

MONROE, LA 70601

Part of Entry: MBUSA-Alabama

Transport:

FIGURE 78. Monroney label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

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

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

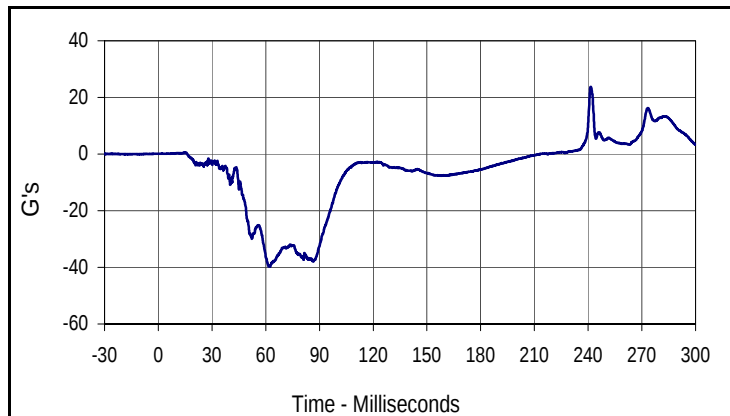
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Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Head Front Y Acceleration
Driver Head Front Z Acceleration
Driver Head Top X Acceleration
Driver Head Top Y Acceleration
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Driver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

Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Head Front Y Acceleration
Passenger Head Front Z Acceleration
Passenger Head Top X Acceleration
Passenger Head Top Y Acceleration
Passenger Head Left X Acceleration
Passenger Head Left Z Acceleration
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Force Z Redundant
Passenger Right Femur Force Z Redundant
Passenger Shoulder Belt Force
Passenger Lap Belt Force
Passenger Left Upper Tibia Moment X
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

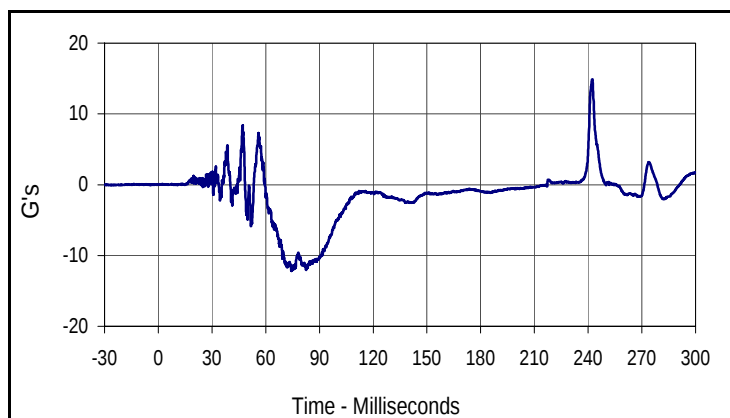
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Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore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

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

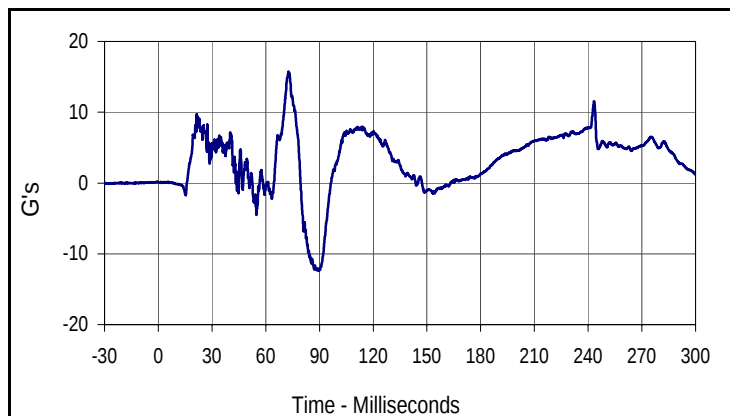
NHTSA No.: M20154300
 Test Date: 4/15/2015



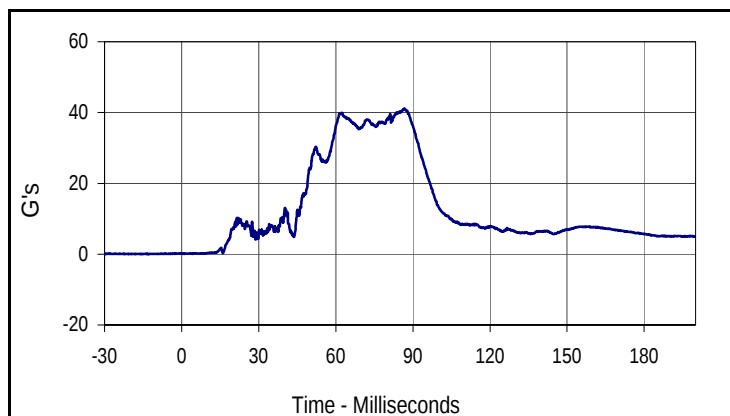
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
23.8	241.4	-39.7	62.3



Curve Description			
Driver Head Acceleration Y Primary			
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002	FIL	1000	G's
Max	Time	Min	Time
14.9	242.4	-12.2	74.3



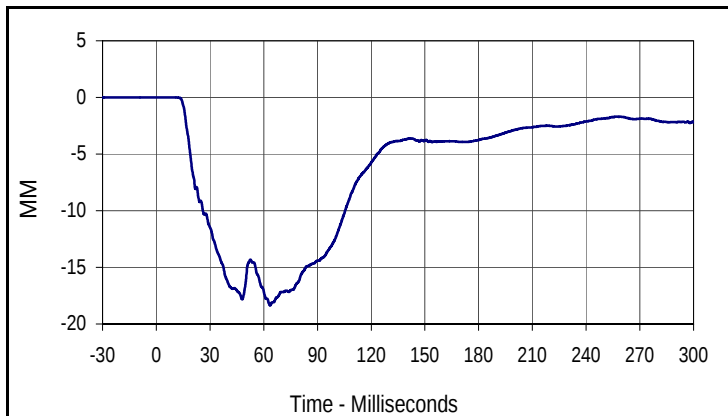
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Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
15.7	72.7	-12.4	89.5



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
41.1	86.8	0.1	0.5

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

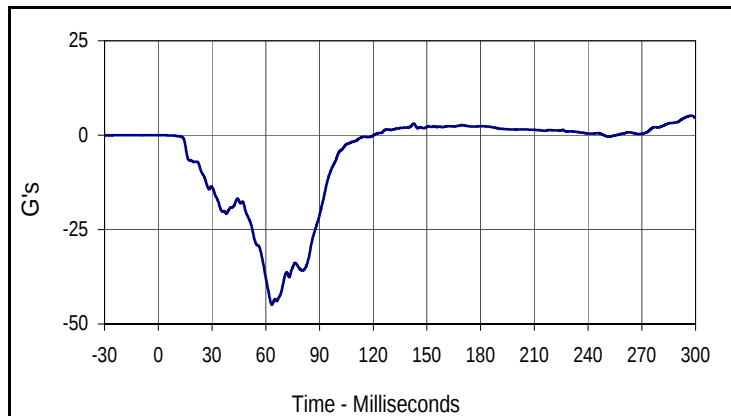
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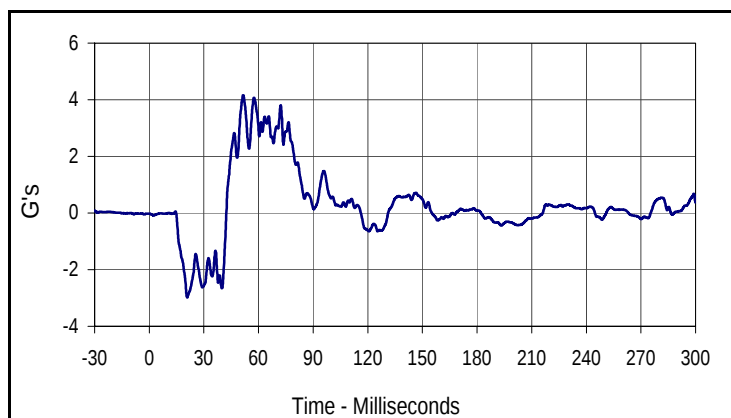
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Driver Chest Deflection			
Plot No.	Type	SAE Class	Units
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Max	Time	Min	Time
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Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

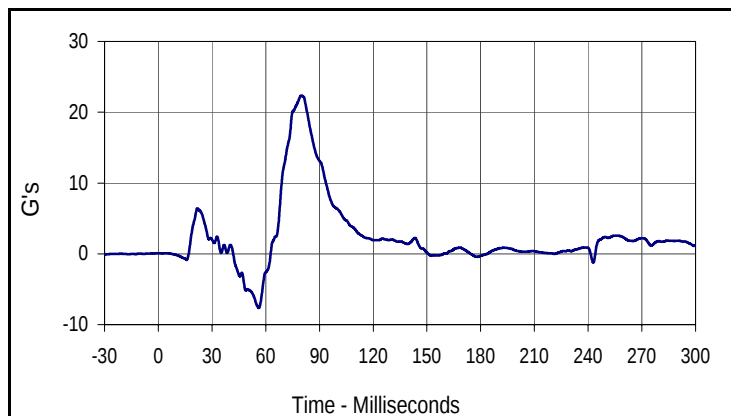
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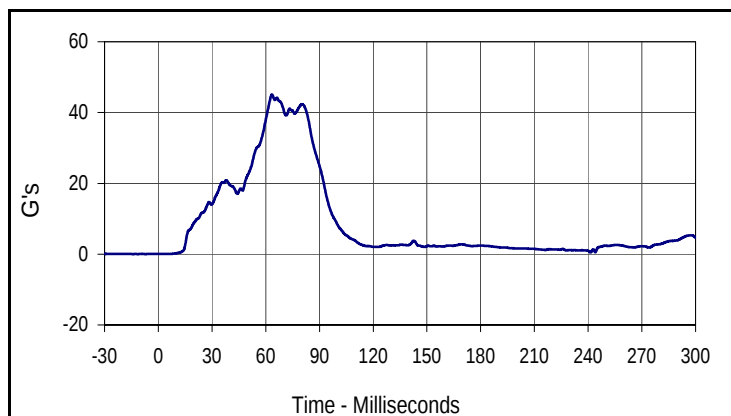
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Driver Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
5.1	298.1	-44.9	63.5



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
4.2	51.6	-3.0	20.8



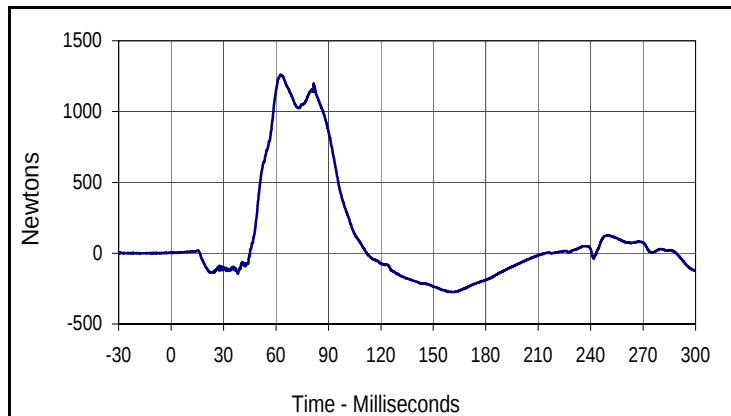
Curve Description			
Driver Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
008	FIL	180	G's
Max	Time	Min	Time
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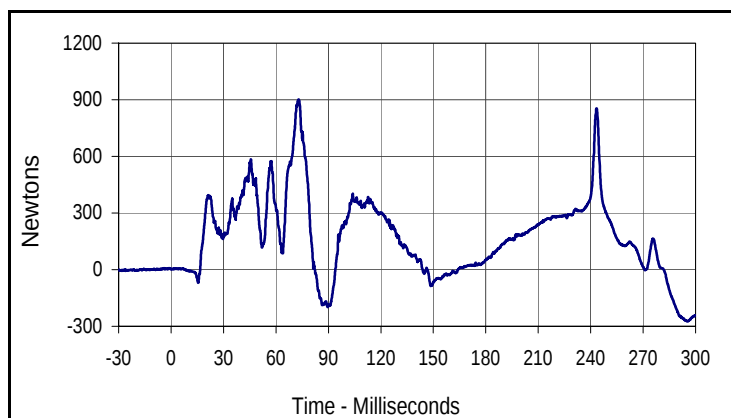
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Driver Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
009	RES	180	G's
Max	Time	Min	Time
45.1	63.5	0.1	1.1

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

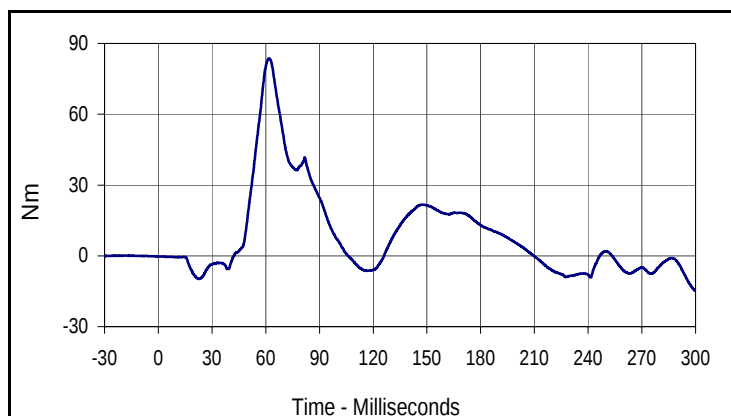
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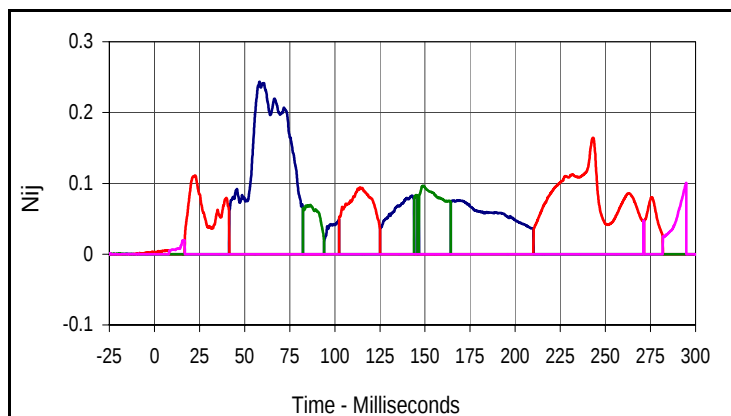
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Driver Upper Neck Force X			
Plot No.	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
1261.3	62.9	-275.1	162.1



Curve Description			
Driver Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
902.3	72.9	-274.5	295.5



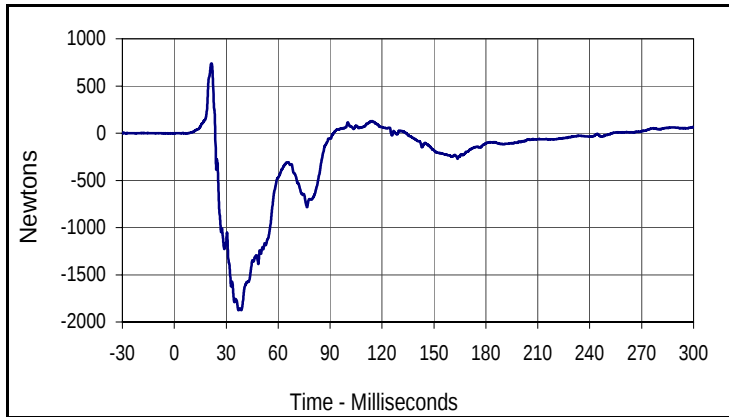
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Driver Upper Neck Moment Y			
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Max	Time	Min	Time
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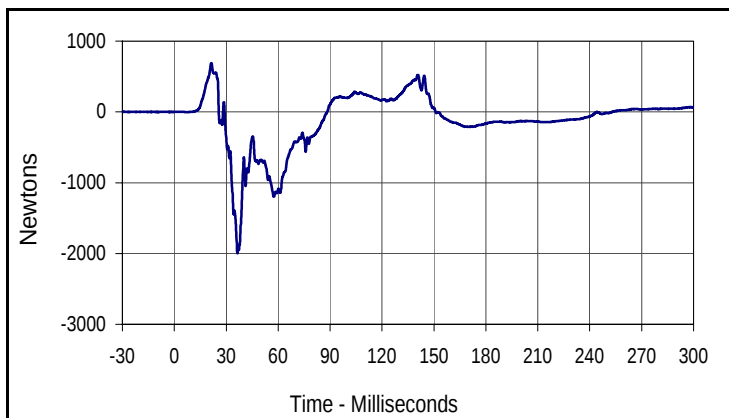
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Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.24	58.3
Units	Type	Max	Time
Nte	FIL	0.16	243.2
Units	Type	Max	Time
Ncf	FIL	0.10	148.7
Units	Type	Max	Time
Nce	FIL	0.10	294.8

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20154300
 Test Date: 4/15/2015



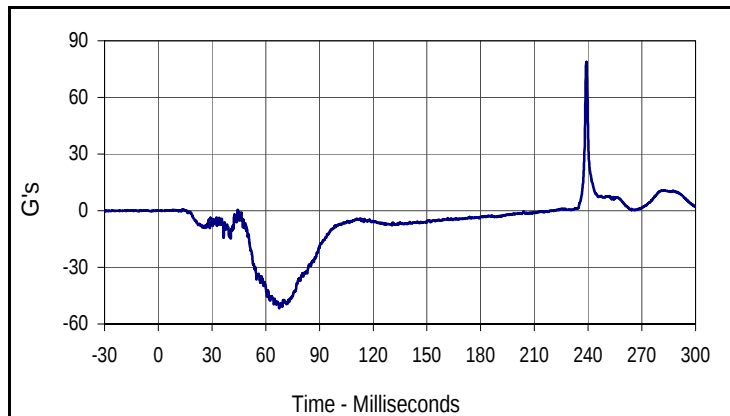
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Driver Left Femur Force Z			
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Max	Time	Min	Time
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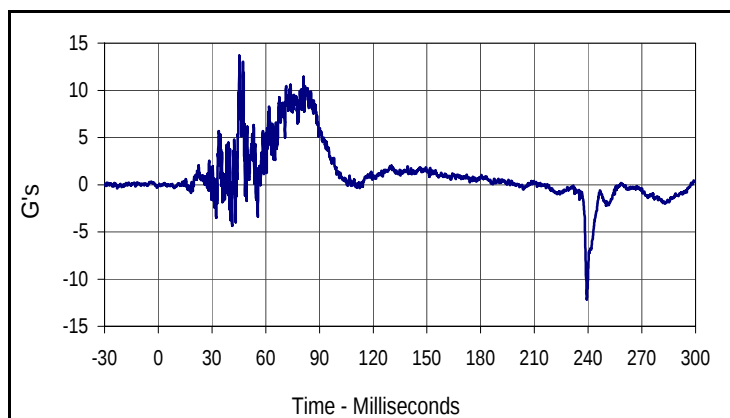
Curve Description			
Driver Right Femur Force Z			
Plot No.	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
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Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

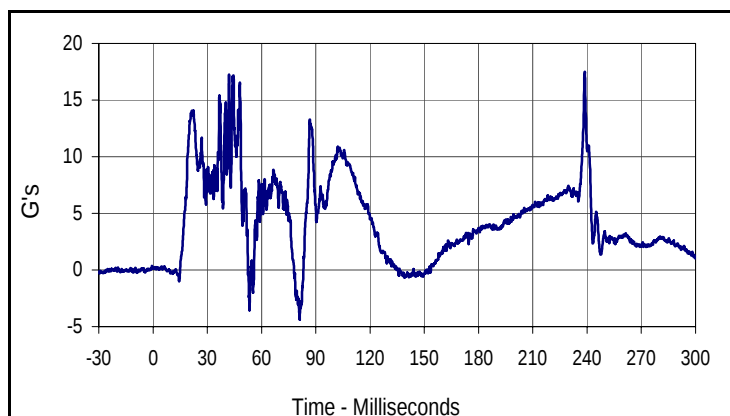
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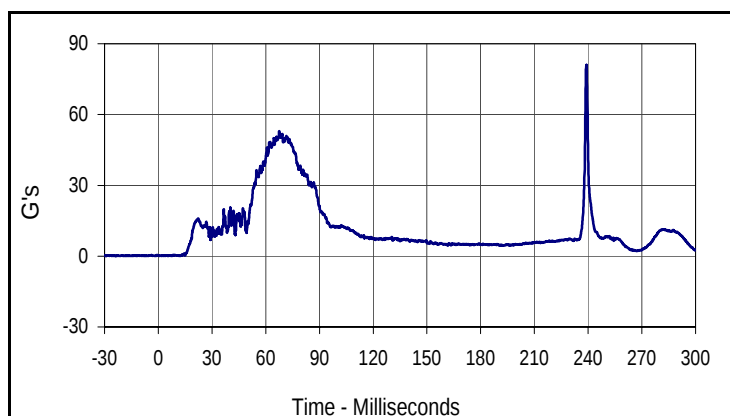
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
78.8	239.0	-51.6	67.5



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
13.6	45.3	-12.2	239.3



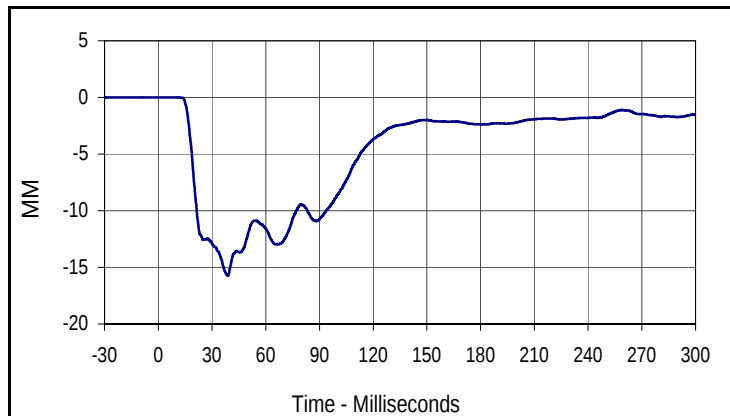
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
017	FIL	1000	G's
Max	Time	Min	Time
17.5	238.7	-4.4	81.1



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
018	RES	1000	G's
Max	Time	Min	Time
81.1	239.0	0.0	5.2

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

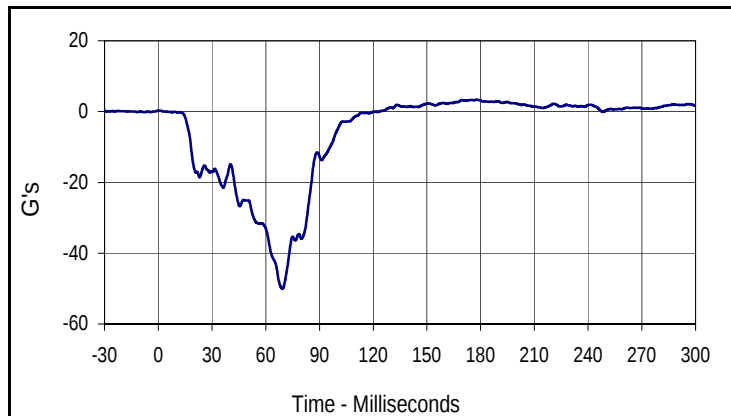
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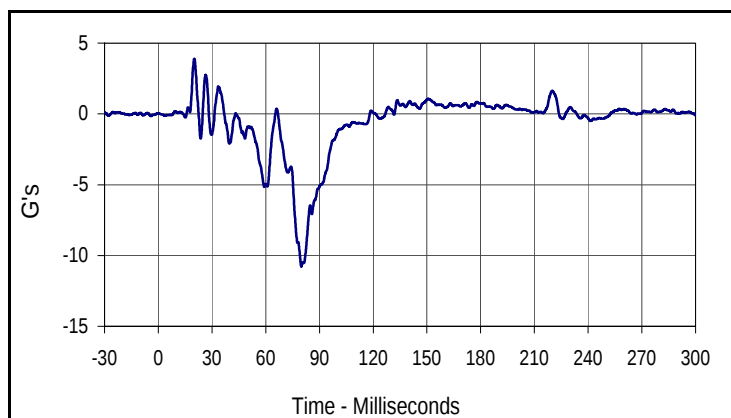
Curve Description			
Passenger Chest Deflection			
Plot No.	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
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Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

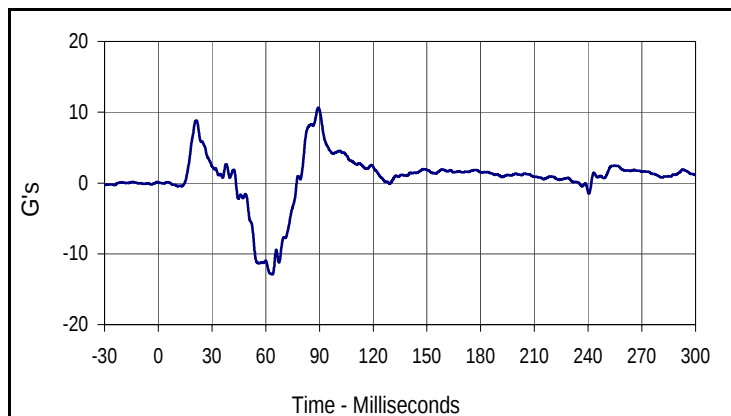
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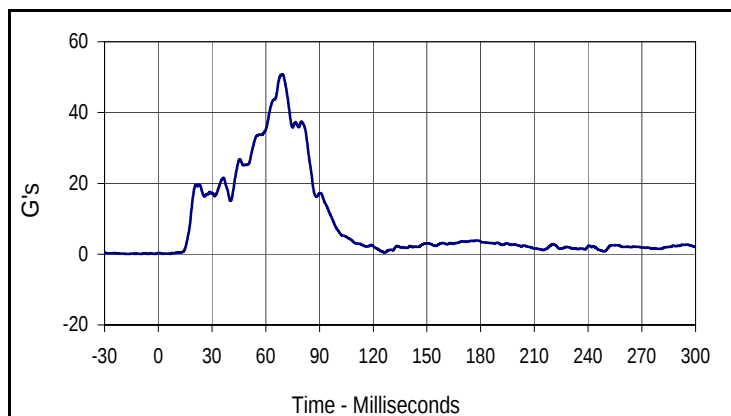
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Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
3.3	177.5	-50.1	69.4



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
3.9	20.1	-10.8	79.8



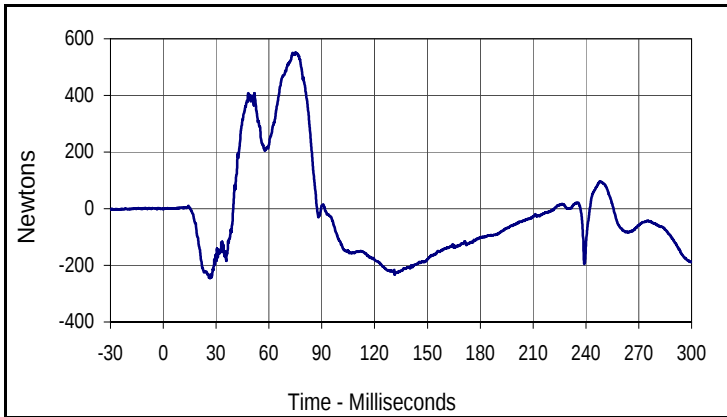
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Passenger Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
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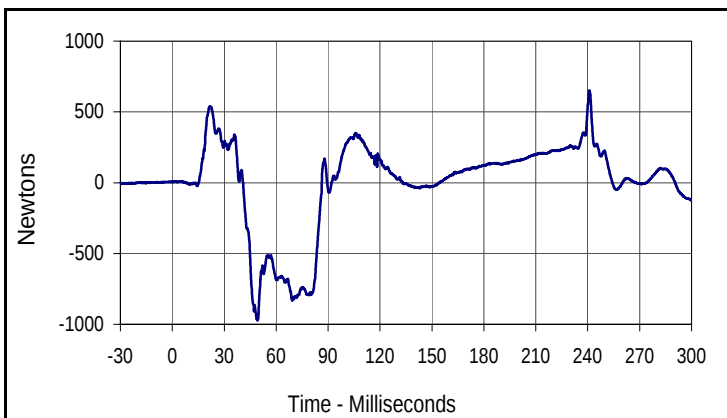
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Passenger Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
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Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

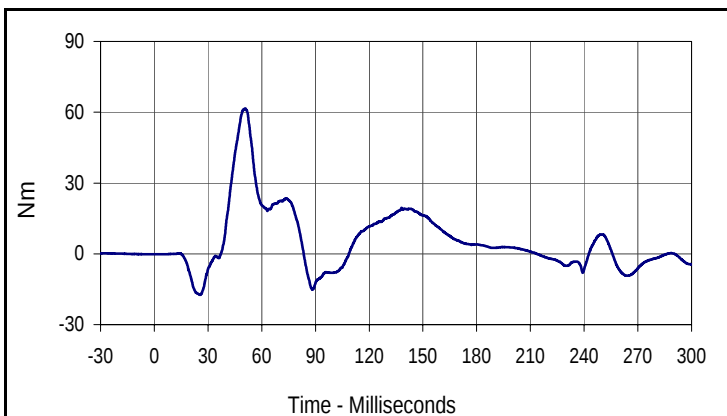
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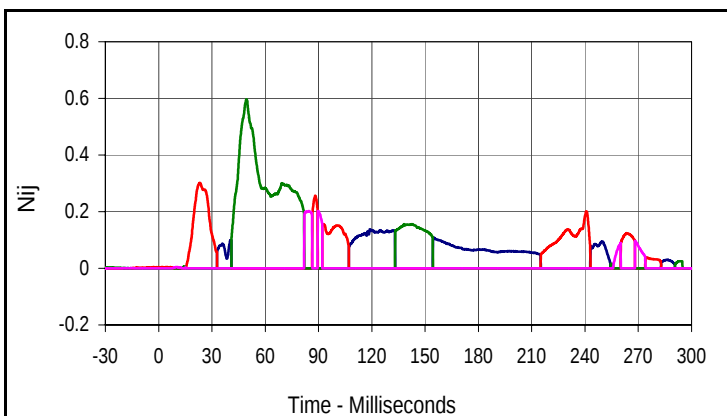
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024	FIL	1000	Newtons
Max	Time	Min	Time
553.1	75.2	-245.2	26.6



Curve Description			
Passenger Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
025	FIL	1000	Newtons
Max	Time	Min	Time
652.1	241.0	-973.5	49.2



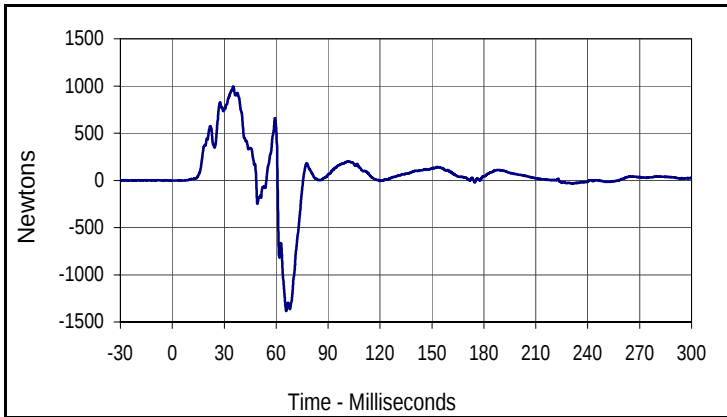
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
61.5	51.0	-17.3	25.6



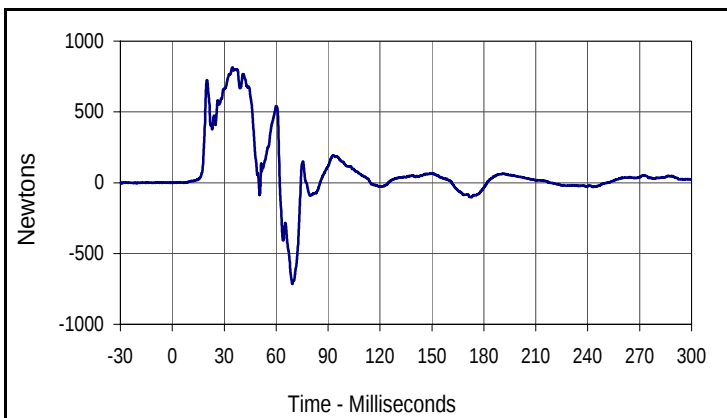
Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.14	119.0
Units	Type	Max	Time
Nte	FIL	0.30	23.2
Units	Type	Max	Time
Ncf	FIL	0.60	49.5
Units	Type	Max	Time
Nce	FIL	0.20	89.8

Test Vehicle: 2015 Mercedes-Benz C300 4MATIC 4-Door Sedan
Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: M20154300
Test Date: 4/15/2015



Curve Description			
Passenger Left Femur Force Z			
Plot No.	Type	SAE Class	Units
027	FIL	600	Newtons
Max	Time	Min	Time
994.8	35.2	-1384.4	65.8



Curve Description			
Passenger Right Femur Force Z			
Plot No.	Type	SAE Class	Units
028	FIL	600	Newtons
Max	Time	Min	Time
814.3	34.7	-715.6	69.3

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

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

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

Test Date: 3/10/15



ATD Serial No.: 360

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 3/10/15

ATD Serial No.: 360

Test I.D.: N/A



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

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

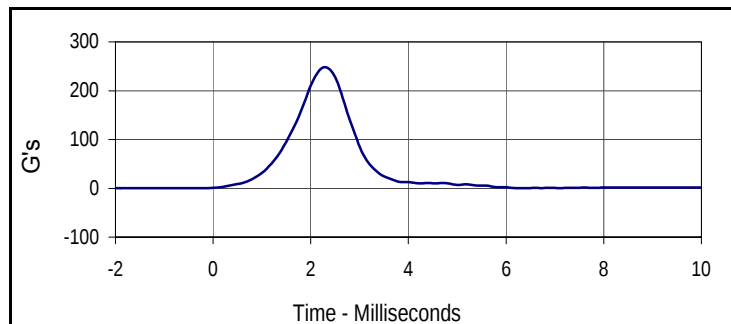
Test Date: 3/10/15



ATD Serial No.: 360

Test I.D.: M360HD008

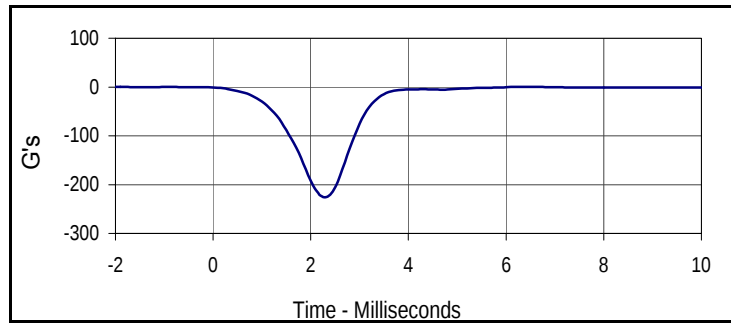
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	266	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.8	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.3	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	248.3	Pass
Peak Lateral Acceleration		G's	≤15.0	3.1	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	5.0	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

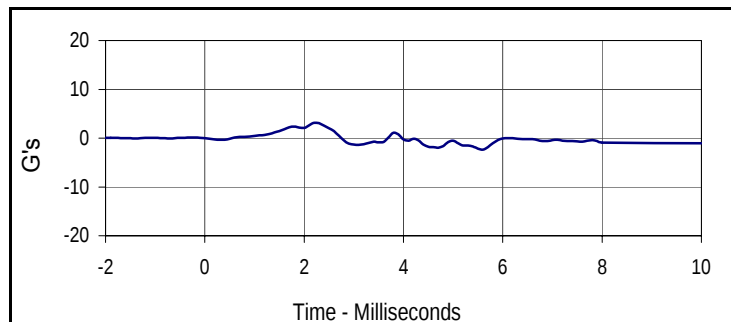
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
248.3	2.3	0.3	-1.4



Curve Description

Head X

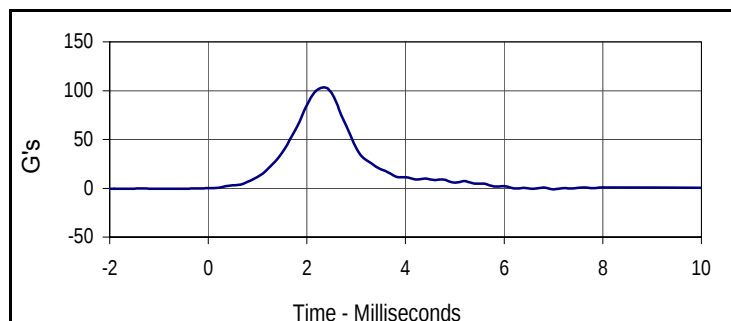
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-2.0	-225.9	2.3



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
3.1	2.2	-2.4	5.6



Curve Description

Head Z

Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
103.1	2.3	-0.6	-2.0

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

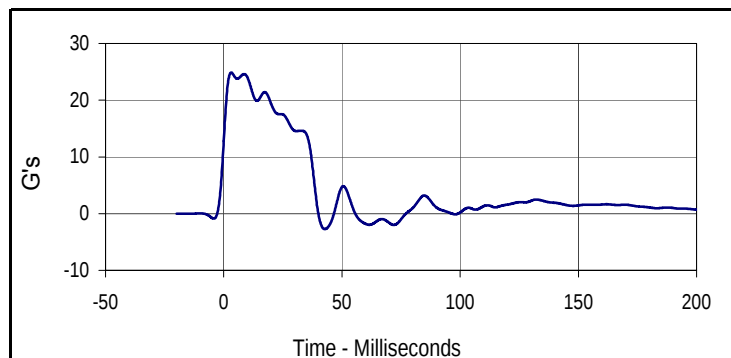
Test Date: 3/10/15



ATD Serial No.: 360

Test I.D.: M360NF008

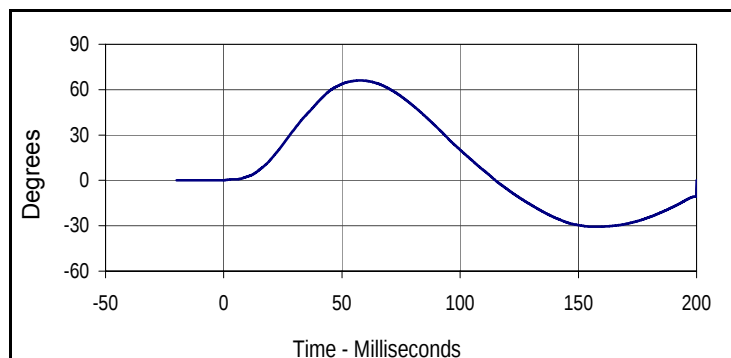
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	331	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.8	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.1	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.0	Pass
	20 Msec.	G's	17.6 to 22.6	19.4	Pass
	30 Msec.	G's	12.5 to 18.5	14.6	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	14.6	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.5	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	66.1	Pass
	Time	Msec.	57.0 to 64.0	57.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	115	Pass
Moment About Occ. Condyle	Max	Nm	88.1 to 108.5	99.2	Pass
	Time	Msec.	47.0 to 58.0	50.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.3	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

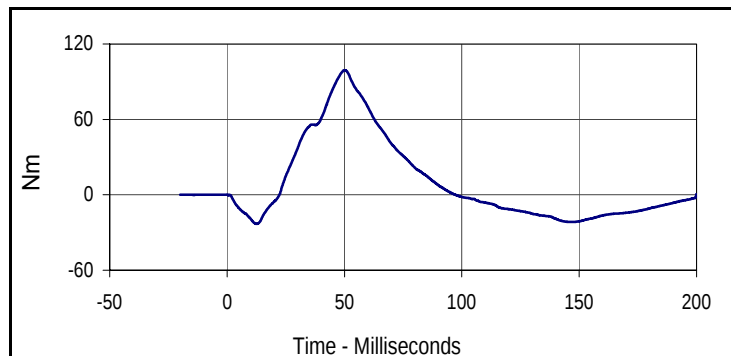
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.9	3.1	-2.7	42.7



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
66.1	57.7	-30.7	157.3



Curve Description

Moment About Occipital Condyle

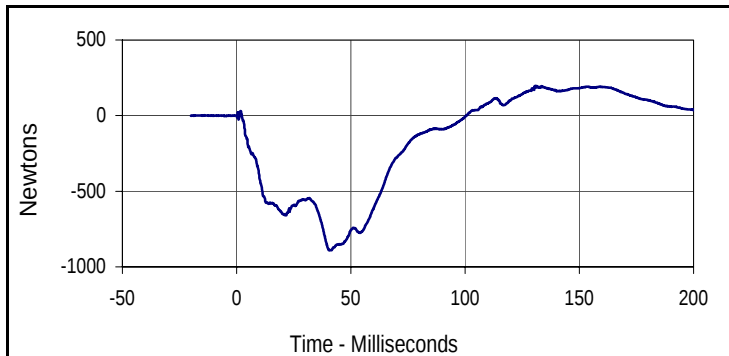
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
99.2	50.1	-23.1	12.8

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

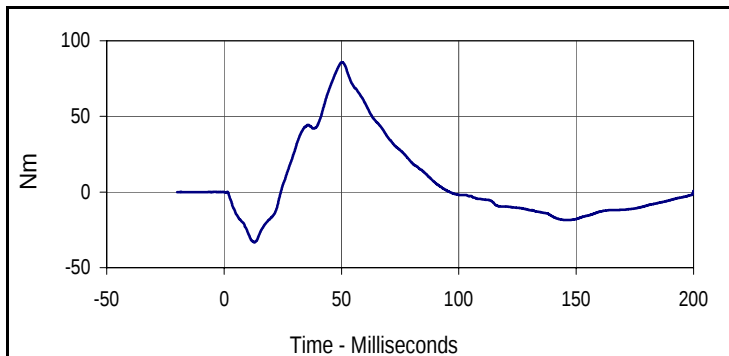
ATD Serial No.: 360

Test Date: 3/10/15

Test I.D.: M360NF008



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
197.7	131.0	-890.8	41.0



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
85.8	50.2	-33.3	12.9

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

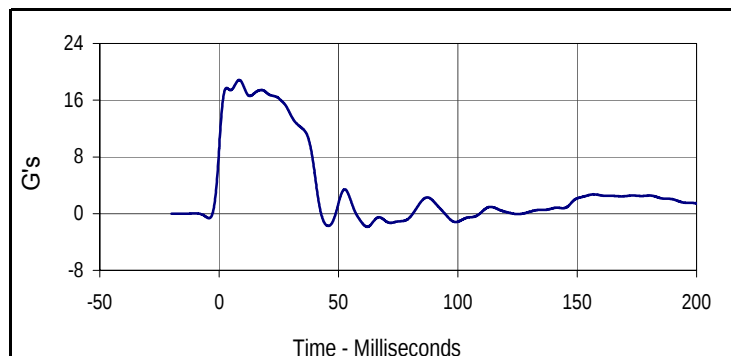
Test Date: 3/10/15



ATD Serial No.: 360

Test I.D.: M360NE008

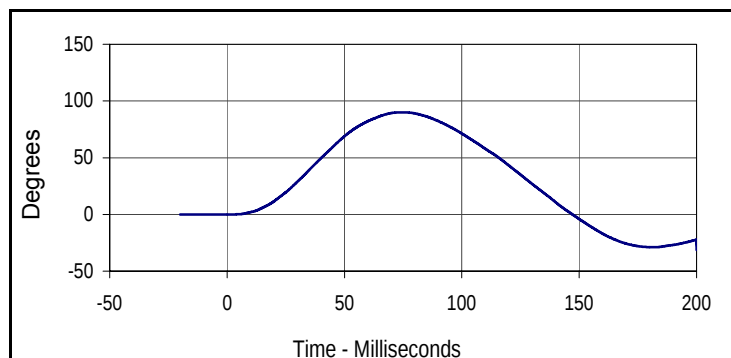
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	376	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.8	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.4	Pass
Pendulum Velocity		m/s	5.94 to 6.19	5.95	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.2	Pass
	20 Msec.	G's	14.0 to 19.0	17.0	Pass
	30 Msec.	G's	11.0 to 16.0	13.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	13.9	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.3	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	90.0	Pass
	Time	Msec.	72.0 to 82.0	74.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	147.1	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-64.0	Pass
	Time	Msec.	65.0 to 79.0	68.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	127.3	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

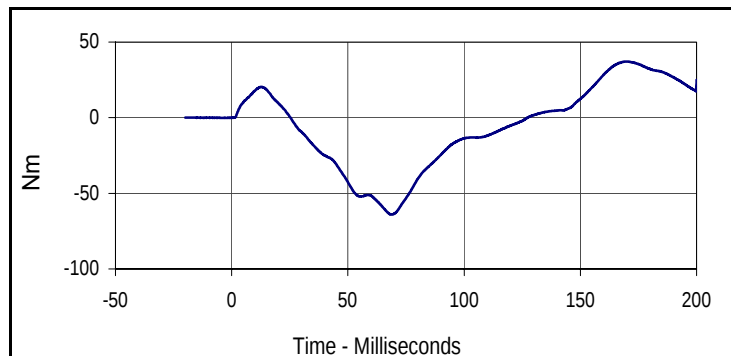
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
18.9	8.4	-1.9	62.1



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
90.0	74.2	-31.3	200.0



Curve Description

Moment About Occipital Condyle

Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
37.2	170.2	-64.0	68.9

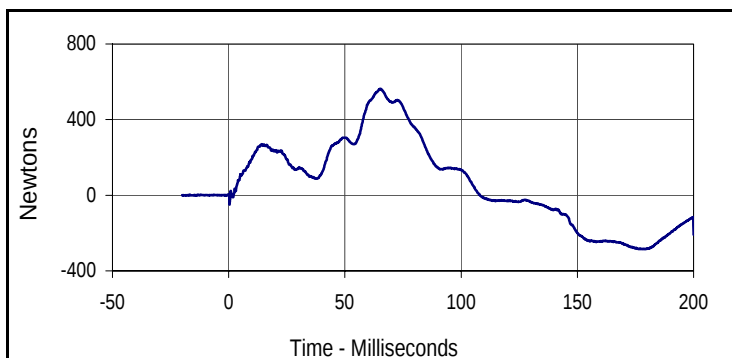
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 3/10/15

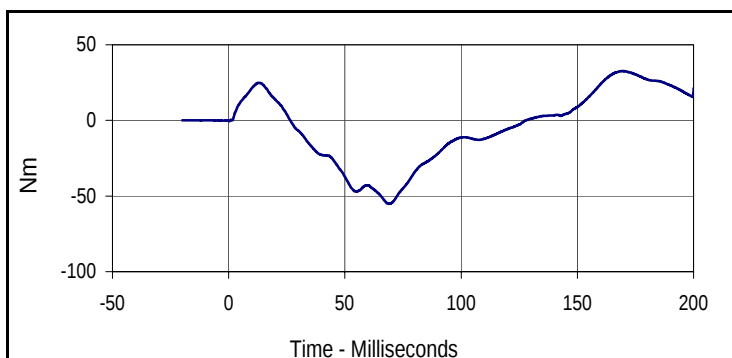


ATD Serial No.: 360

Test I.D.: M360NE008



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
562.6	65.3	-285.5	179.3



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
32.6	169.2	-55.1	69.1

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

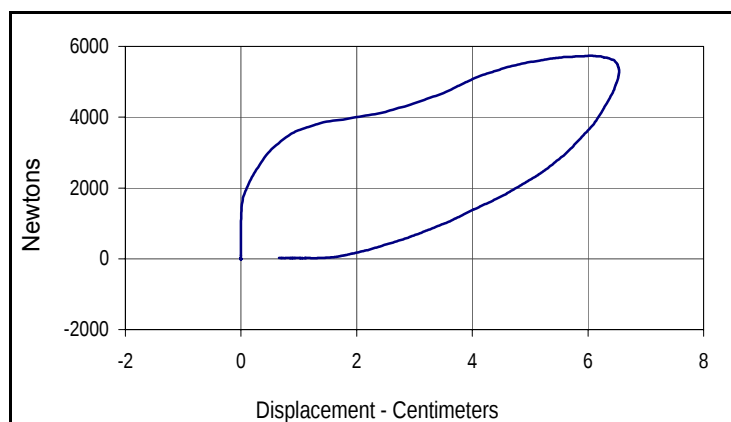
Test Date: 3/10/15



ATD Serial No.: 360

Test I.D.: M360CH008

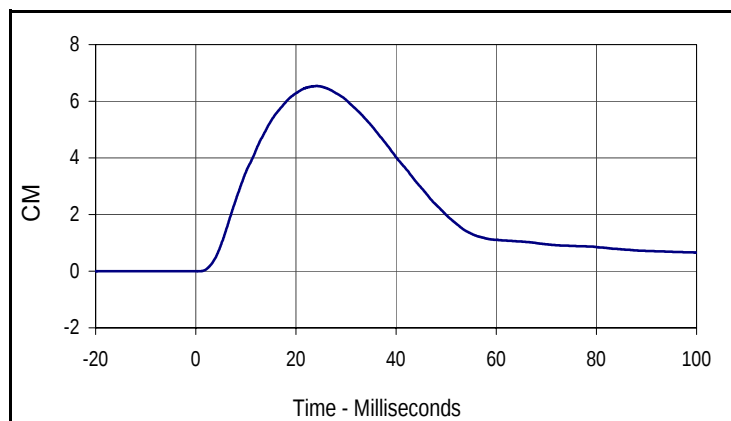
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	451	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.8	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.3	Pass
Probe Velocity		m/s	6.58 to 6.82	6.75	Pass
Peak Probe Force		Newtons	5159 to 5893	5737	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.54	Pass
Internal Hysteresis		%	69 to 85	71.7	Pass
Overall Test Results				Pass	



Curve Description

Probe Force vs. Chest Deflection

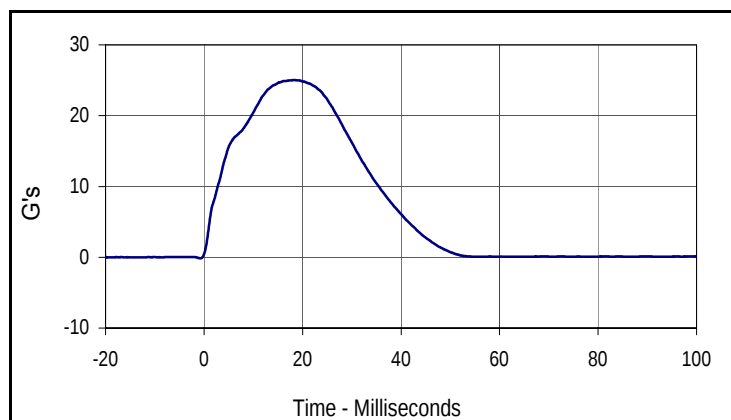
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.7
Peak Probe Force		Peak Chest Deflection	
5737		6.54	



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.5	24.1	0.0	0.5



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
25.0	18.3	-0.1	-0.8

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

Test Date: 3/10/15

ATD Serial No.: 360

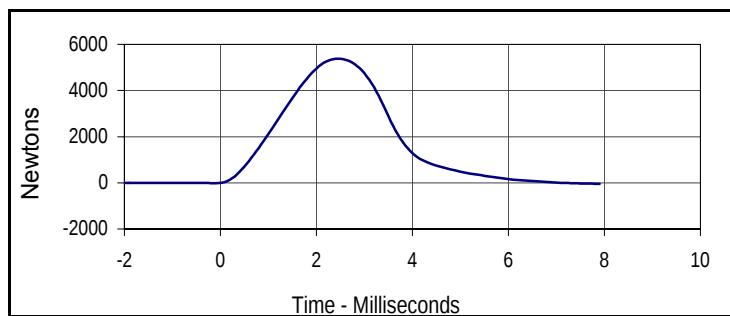
Test I.D.: M360LK008 , M360RK008

**Left Knee**

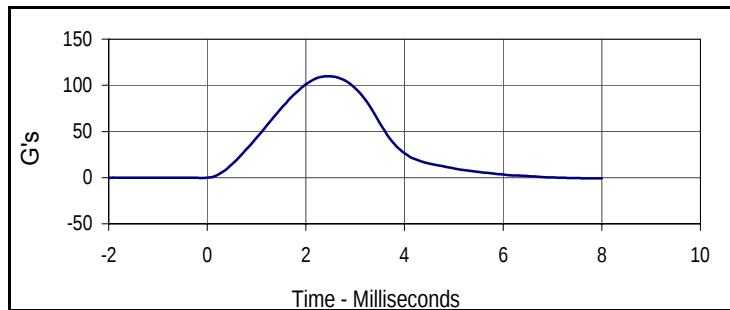
Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	506	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.8	Pass
	Min	%		25.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.3	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	4715 to 5782	5378	Pass
Overall Test Results				Pass	

Right Knee

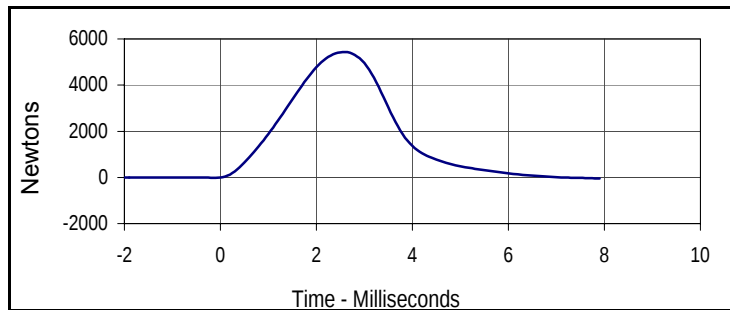
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	4715 to 5782	5431	Pass
Overall Test Results				Pass	

**Curve Description****Left Knee Probe Force**

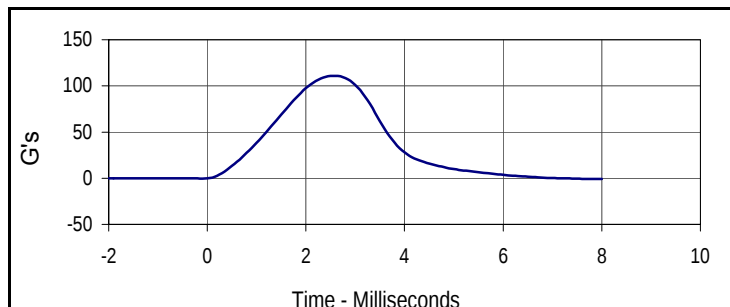
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5378.0	2.5	-42.4	7.9

**Curve Description****Left Knee Acceleration**

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
109.9	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
5430.6	2.6	-44.4	7.9

**Curve Description****Right Knee Acceleration**

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
111.0	2.6	-1.1	0.0

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

Test Date: 3/10/15
 Test I.D.: M360LF008, M360RF008

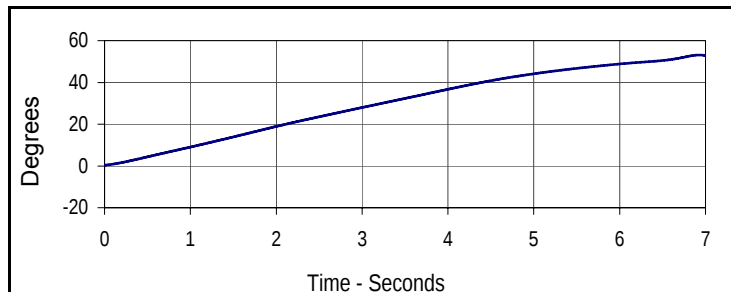


Left Hip Joint-Femur Results

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		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	25.8	Pass
	Min		25.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	25.8	Pass
Rotation Rate	deg/sec	5 to 10	7.7	Pass
Femur Torque at 30°	Nm	≤ 95	71.8	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	41.9	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

Rotation Rate	deg/sec	5 to 10	7.7	Pass
Femur Torque at 30°	Nm	≤ 95	82.9	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	43.6	Pass
Overall Test Results				Pass



Curve Description

Left Hip-Femur Rotation

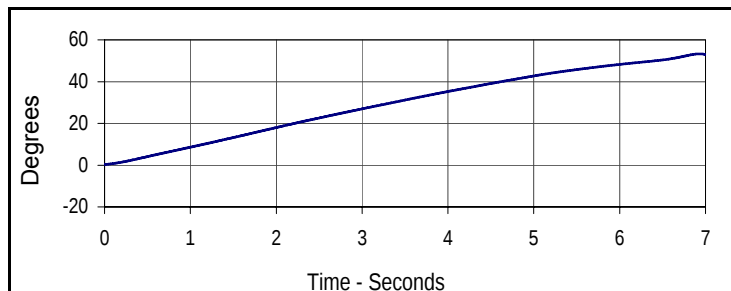
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
53.1	6.9	0.4	0.0



Curve Description

Left Femur Torque

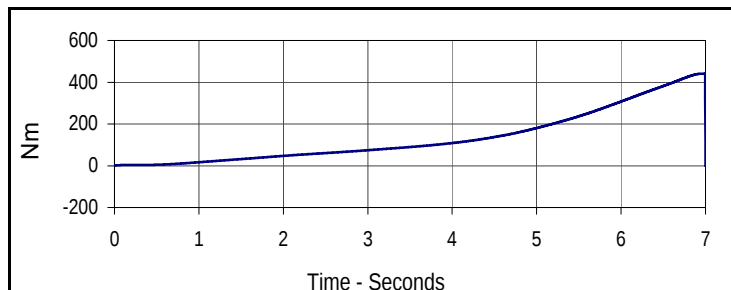
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
490.3	6.9	0.4	0.0



Curve Description

Right Hip-Femur Rotation

Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
53.3	6.9	0.4	0.0



Curve Description

Right Femur Torque

Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
441.1	7.0	0.4	0.0

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

Test Date: 4/8/15



ATD Serial No.: 635

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 4/8/15

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.38	Pass
Laboratory Relative Humidity	%	10 to 70	27.9	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

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

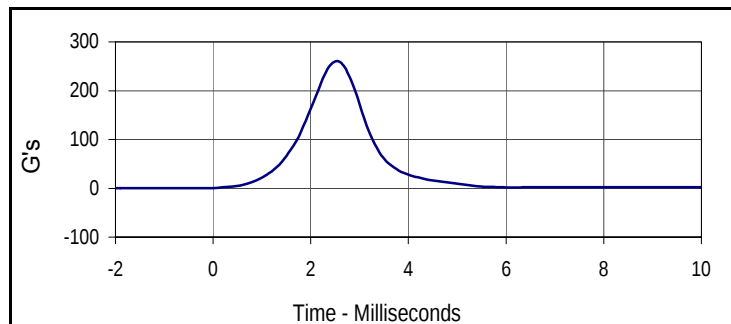
Test Date: 4/8/15



ATD Serial No.: 635

Test I.D.: F635HD051

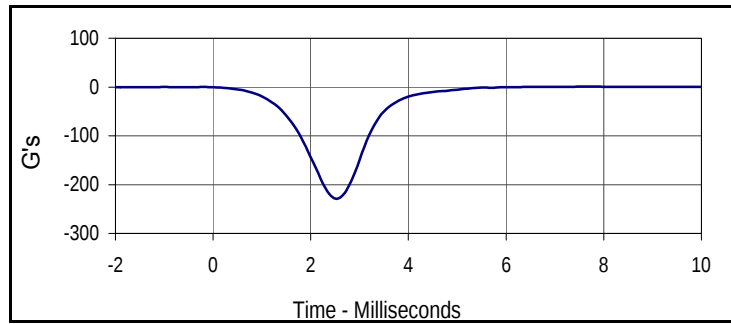
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	365	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.4	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	28.0	Pass
	Min	%		27.9	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.0	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	260.2	Pass
Peak Lateral Acceleration		G's	≤15.0	4.3	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.0	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

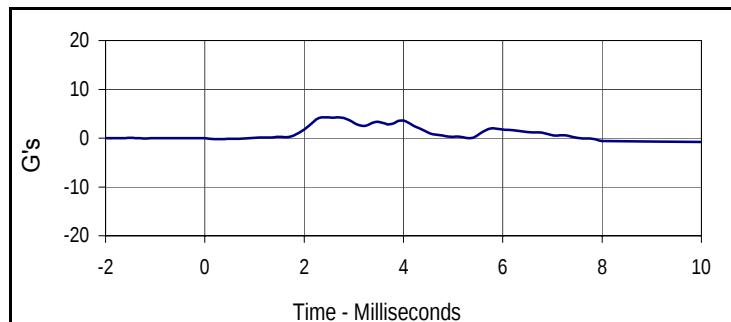
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
260.2	2.5	0.0	-0.2



Curve Description

Head X

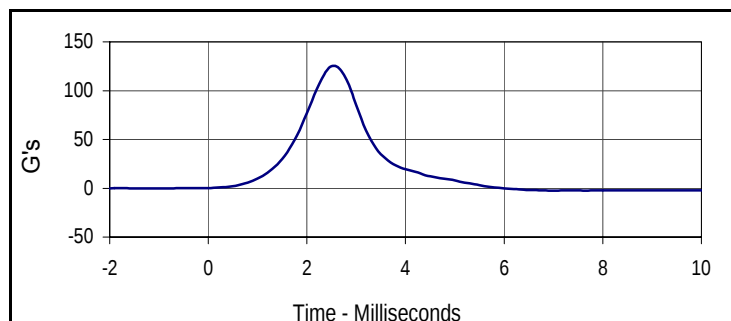
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.0	-1.0	-228.2	2.5



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
4.3	2.4	-0.2	0.3



Curve Description

Head Z

Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
124.9	2.5	-0.2	-1.2

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

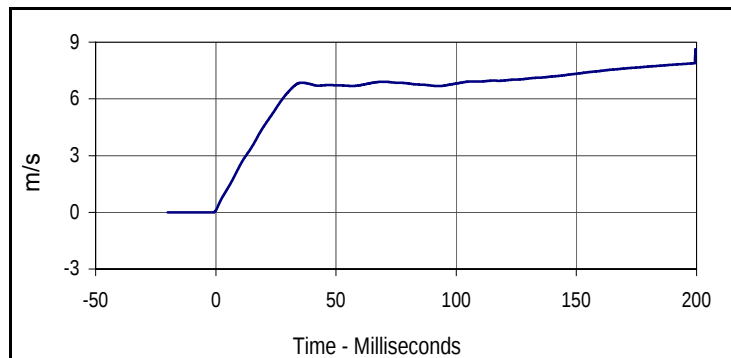
Test Date: 4/8/15



ATD Serial No.: 635

Test I.D.: F635NF051

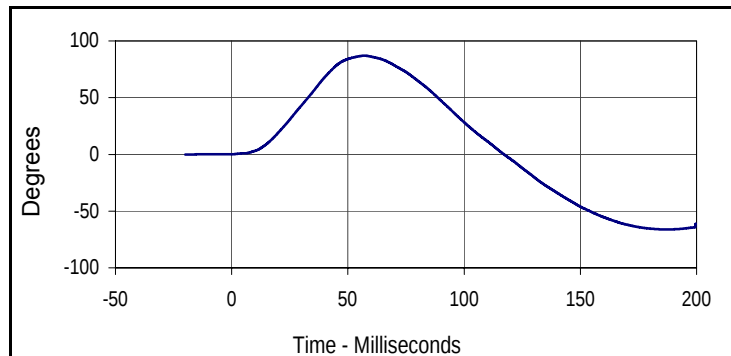
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	430	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	28.0	Pass
	Min	%		27.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	27.9	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.5	Pass
	20 Msec.	m/s	4.0 to 5.0	4.6	Pass
	30 Msec.	m/s	5.8 to 7.0	6.3	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	87.0	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	77.8	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	85.0	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

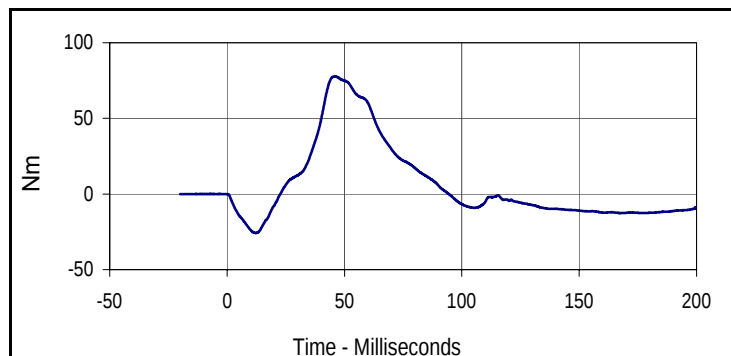
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.6	199.5	0.0	-1.3



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
87.0	57.0	-66.2	186.8



Curve Description

Moment About Occipital Condyle

Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
77.8	45.8	-25.8	12.3

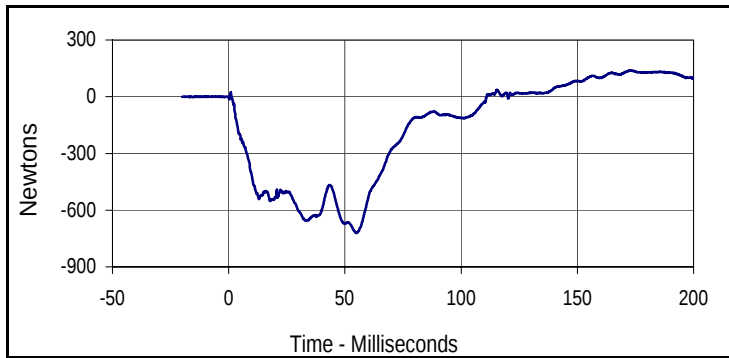
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 4/8/15

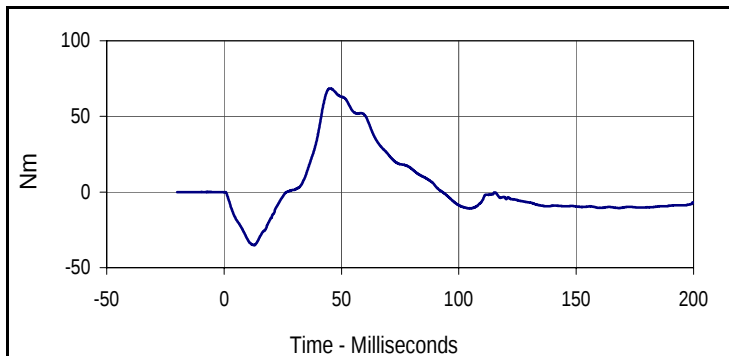


ATD Serial No.: 635

Test I.D.: F635NF051



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
139.3	172.9	-720.7	55.1



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
68.5	45.1	-35.1	13.0

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

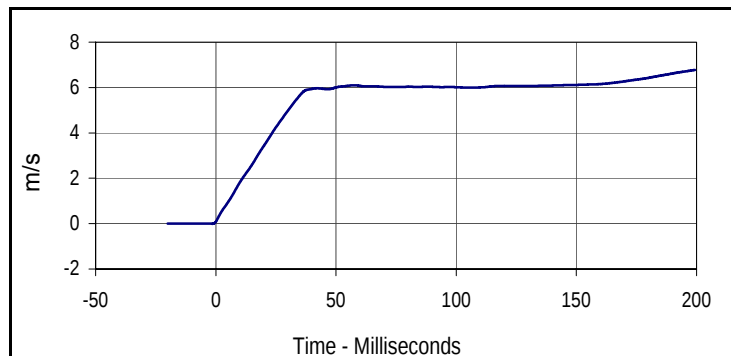
Test Date: 4/8/15



ATD Serial No.: 635

Test I.D.: F635NE051

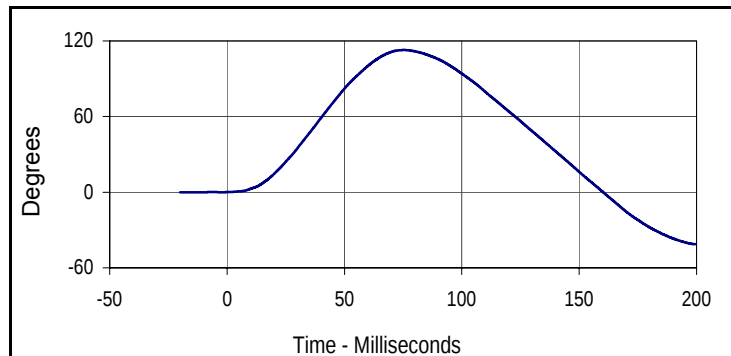
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	495	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	28.0	Pass
	Min	%		27.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	27.9	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	112.8	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-58.1	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	104.5	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

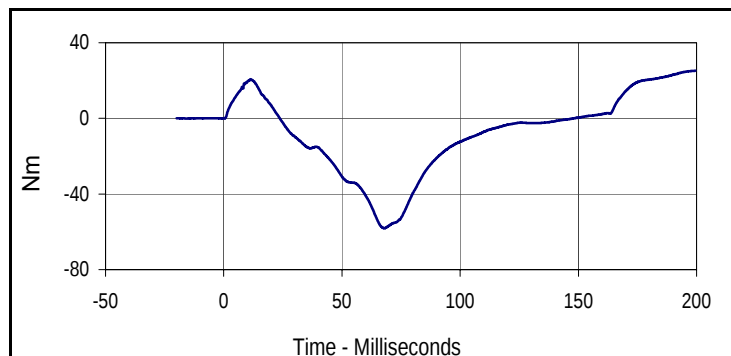
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.8	199.4	0.0	-1.4



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
112.8	75.4	-41.3	199.4



Curve Description

Moment About Occipital Condyle

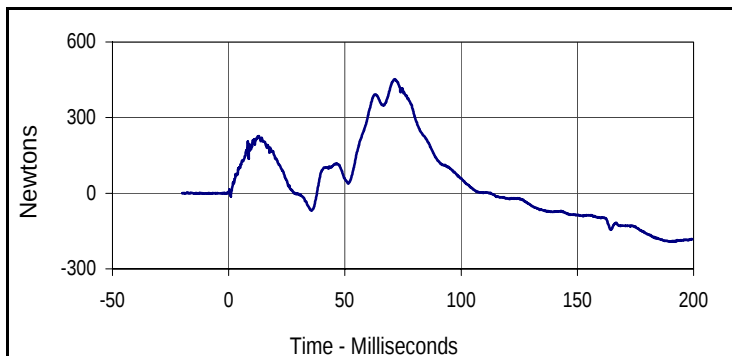
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
25.2	199.4	-58.1	68.0

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

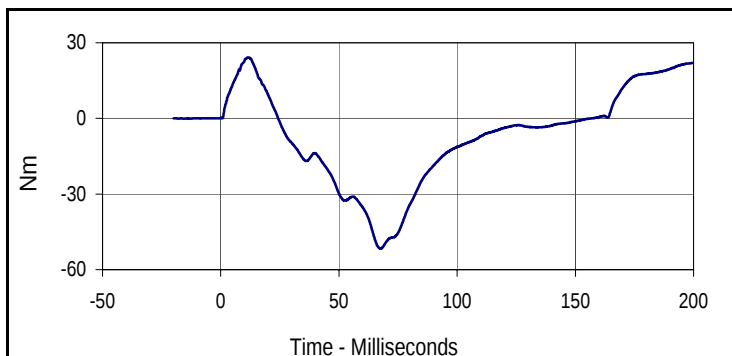
ATD Serial No.: 635

Test Date: 4/8/15

Test I.D.: F635NE051



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
452.3	71.6	-192.5	191.7



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
24.2	11.4	-51.6	67.6

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

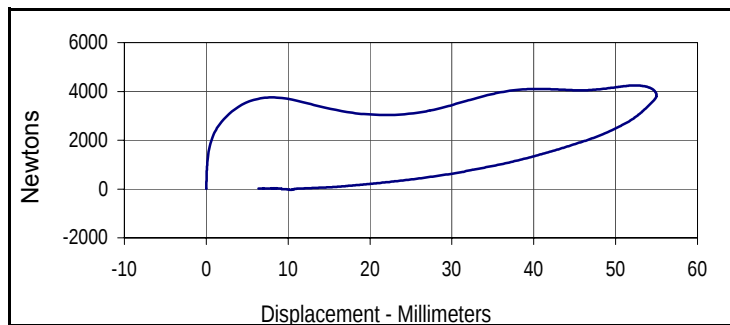
Test Date: 4/8/15



ATD Serial No.: 635

Test I.D.: F635CH051

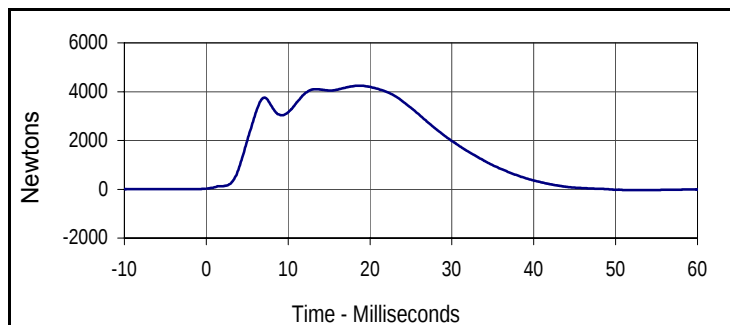
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	540	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	28.0	Pass
	Min	%		27.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	27.9	Pass
Probe Velocity		m/s	6.59 to 6.83	6.67	Pass
Peak Chest Deflection		mm	50.0 to 58.0	55.0	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4172	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	4245	Pass
Internal Hysteresis		%	69 to 85	75.6	Pass
Overall Test Results					Pass



Curve Description

Probe Force vs. Chest Deflection

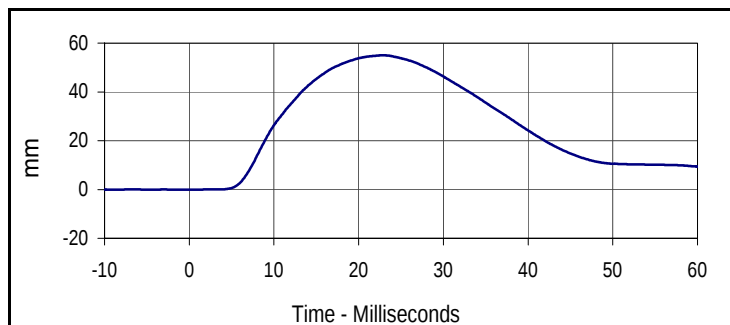
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	75.6
Peak Probe Force		Peak Chest Deflection	
4245.5		55.0	



Curve Description

Probe Force

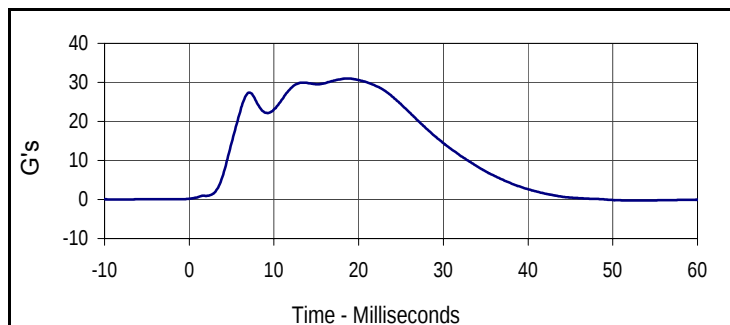
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4245.5	18.8	-38.5	53.0



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
55.0	22.9	0.0	-1.2



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
31.0	18.8	-0.3	53.0

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

Test Date: 4/8/15

ATD Serial No.: 635

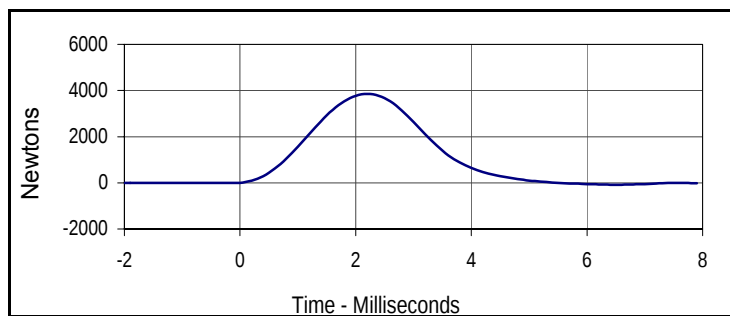
Test I.D.: F635LK051, F635RK051

**Left Knee**

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	595	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.4	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	28.0	Pass
	Min	%		27.9	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	27.9	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	3450 to 4060	3853	Pass
Overall Test Results					Pass

Right Knee

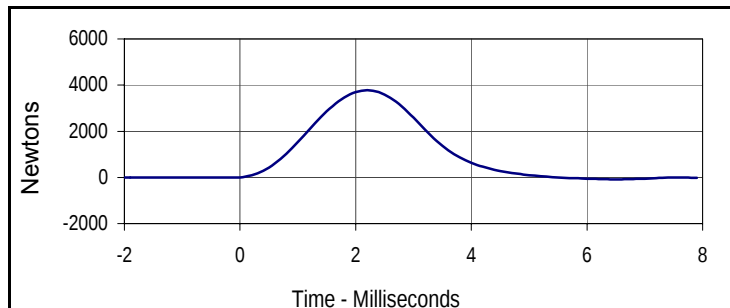
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	3450 to 4060	3776	Pass
Overall Test Results					Pass

**Curve Description****Left Knee Probe Force**

Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3853.3	2.2	-83.2	6.5

**Curve Description****Left Knee Acceleration**

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
131.5	2.2	-2.8	6.5

**Curve Description****Right Knee Probe Force**

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3776.2	2.2	-81.8	6.5

**Curve Description****Right Knee Acceleration**

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
128.8	2.2	-2.8	6.5

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

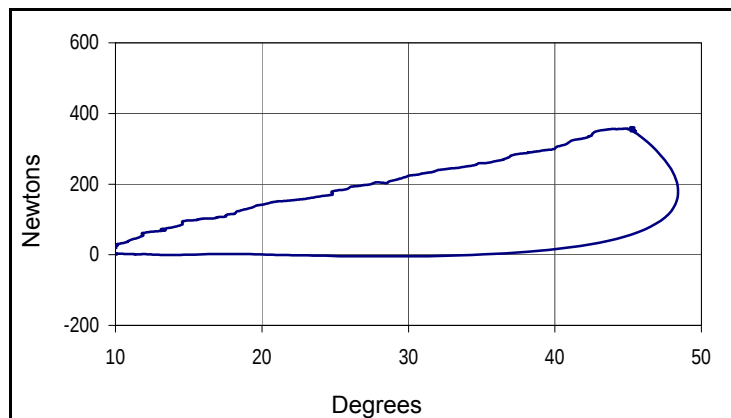
Test Date: 4/8/15



ATD Serial No.: 635

Test I.D.: TF051

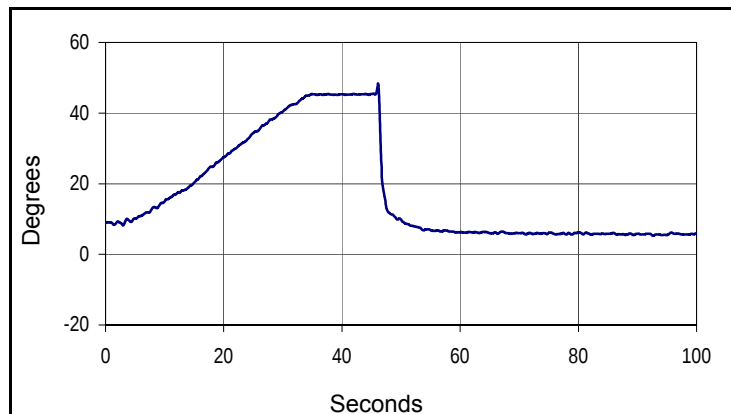
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	660	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.4	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	28.0	Pass
	Min	%		27.9	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	27.9	Pass
Initial Reference Plane Angle		Degrees	≤ 20	9.2	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	360.5	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	1.0	Pass
Final Reference Plane Angle		Degrees	+/-8	5.8	Pass
Overall Test Results				Pass	



Curve Description

Force vs Torso Rotation

Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
360.5		48.4



Curve Description

Torso Rotation

Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
48.4	46.1	5.3	92.6

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

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

Test Date: 4/17/15



ATD Serial No.: 360

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 4/17/15

ATD Serial No.: 360

Test I.D.: N/A



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

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

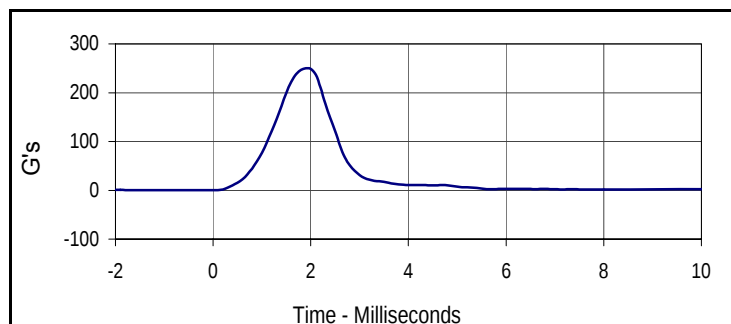
Test Date: 4/17/15



ATD Serial No.: 360

Test I.D.: M360HD009

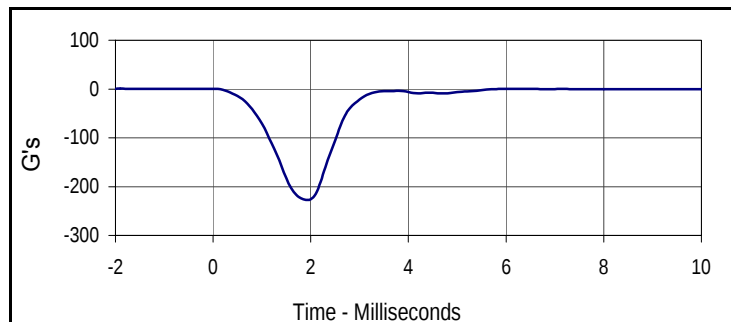
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	302	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	37.3	Pass
	Min	%		36.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass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



Curve Description

Head Resultant

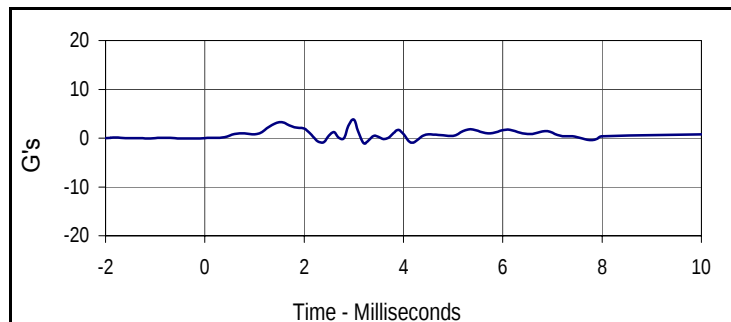
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
249.9	1.9	0.2	0.1



Curve Description

Head X

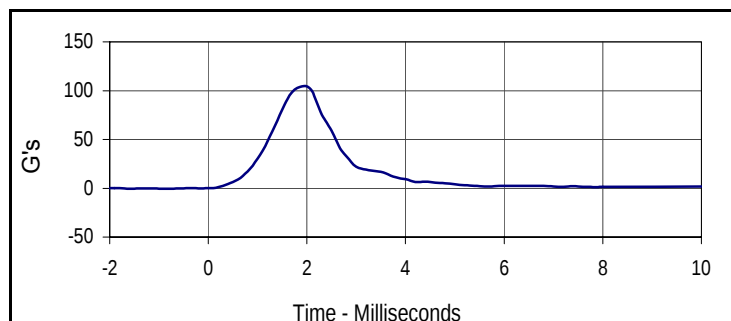
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.7	-1.9	-227.0	1.9



Curve Description

Head Y

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



Curve Description

Head Z

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

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

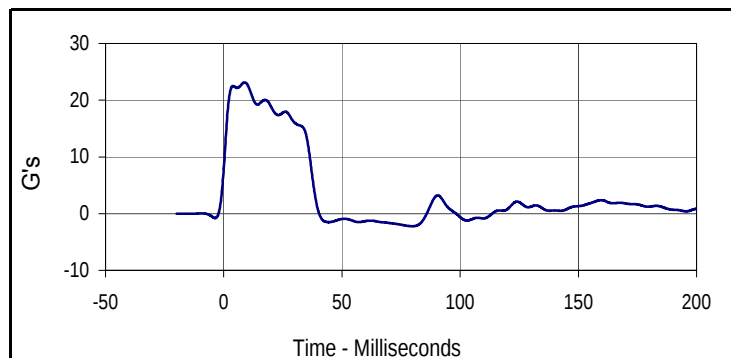
Test Date: 4/17/15

ATD Serial No.: 360

Test I.D.: M360NF009



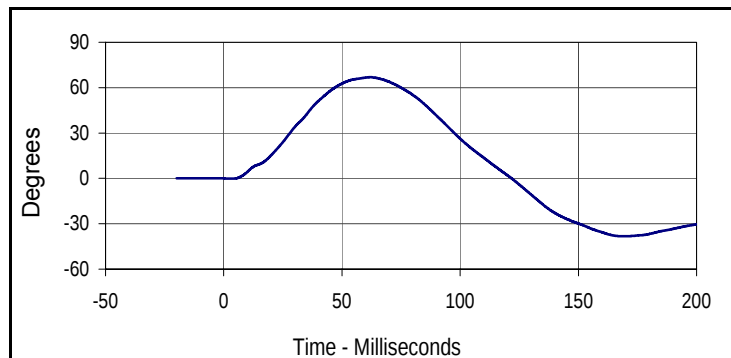
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	367	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	37.3	Pass
	Min	%		36.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass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



Curve Description

Pendulum Deceleration

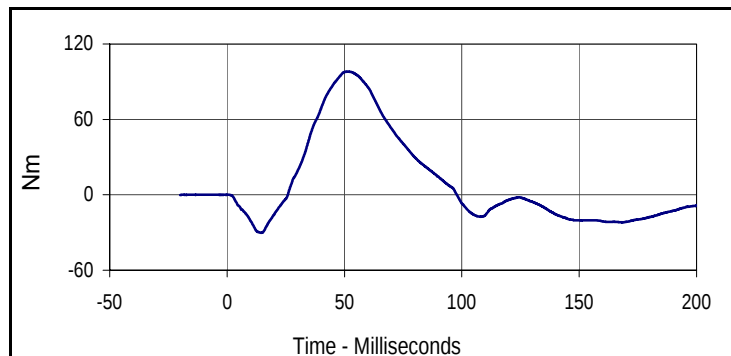
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.1	8.8	-2.2	79.8



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
66.9	62.1	-38.2	169.3



Curve Description

Moment About Occipital Condyle

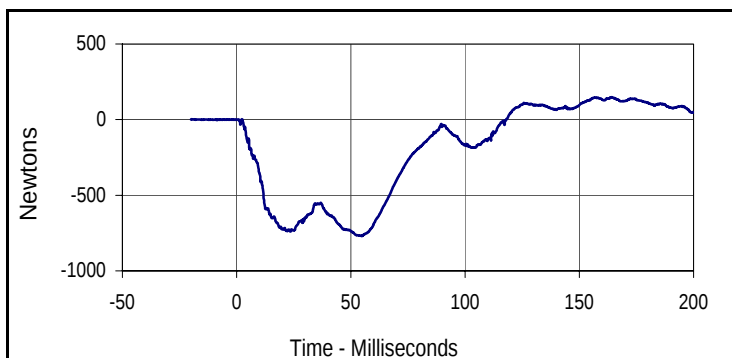
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
98.1	51.4	-30.3	14.3

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

ATD Serial No.: 360

Test Date: 4/17/15

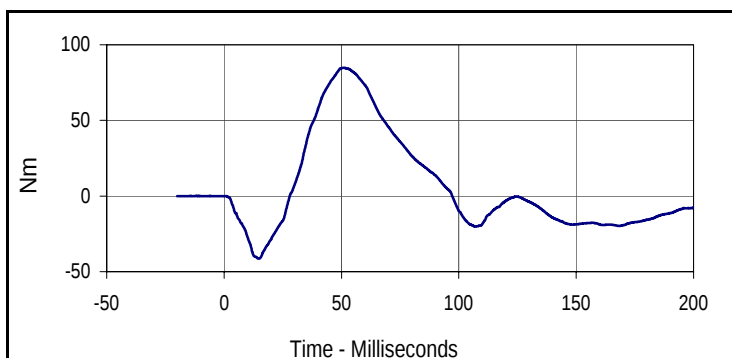
Test I.D.: M360NF009



Curve Description

Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
148.0	164.2	-768.9	55.0



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
84.7	51.1	-41.4	14.5

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

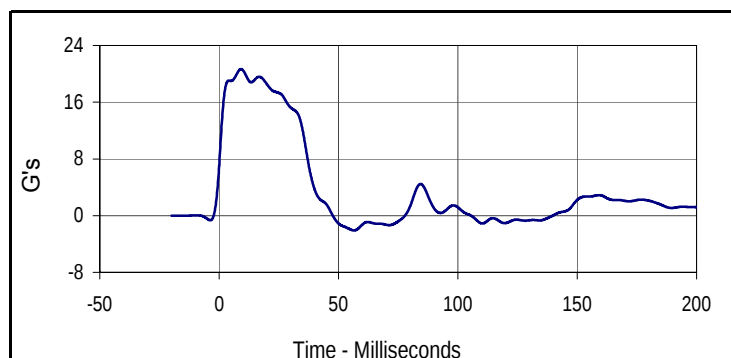
Test Date: 4/17/15

ATD Serial No.: 360

Test I.D.: M360NE009



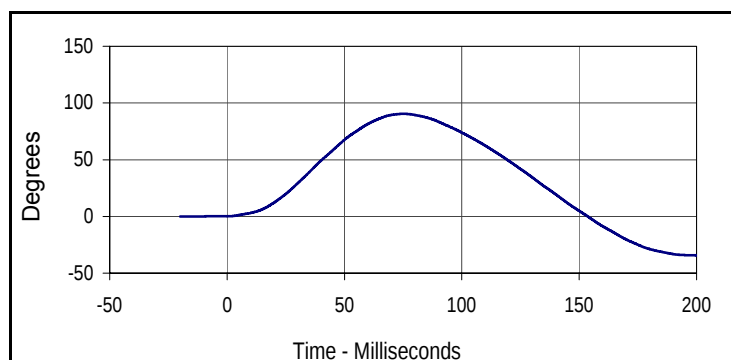
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	412	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	37.3	Pass
	Min	%		36.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass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



Curve Description

Pendulum Deceleration

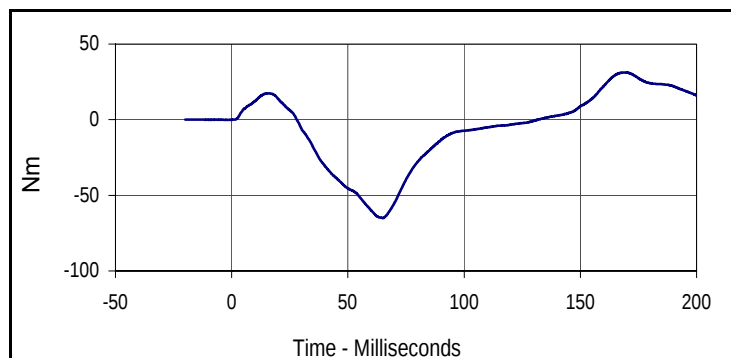
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.7	9.2	-2.1	56.5



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
90.4	75.2	-34.3	200.0



Curve Description

Moment About Occipital Condyle

Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
31.3	169.8	-65.1	65.1

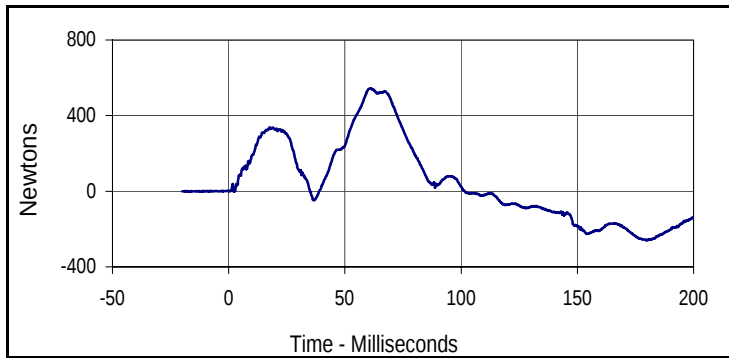
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 4/17/15

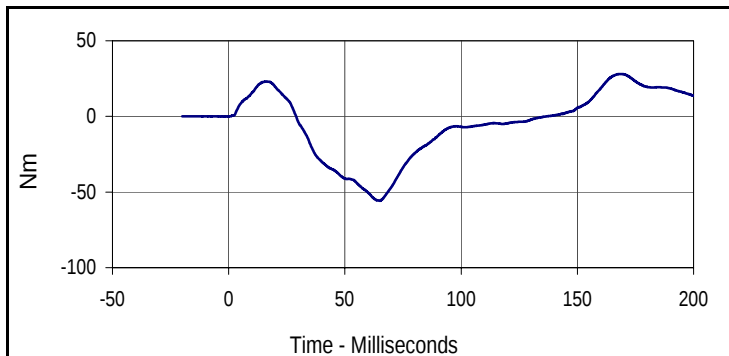


ATD Serial No.: 360

Test I.D.: M360NE009



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



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

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

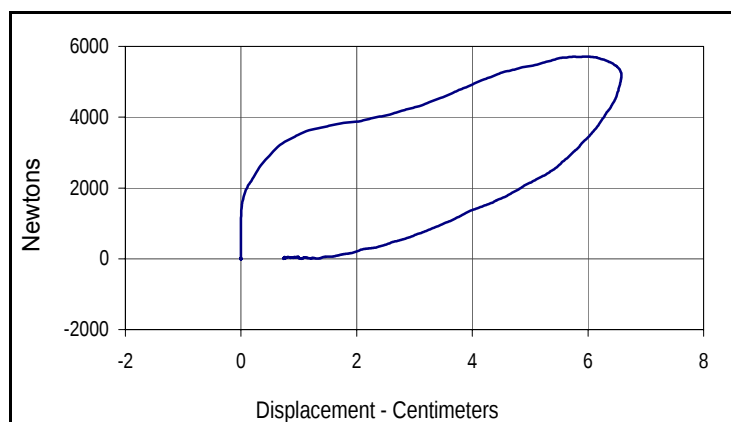
Test Date: 4/17/15



ATD Serial No.: 360

Test I.D.: M360CH009

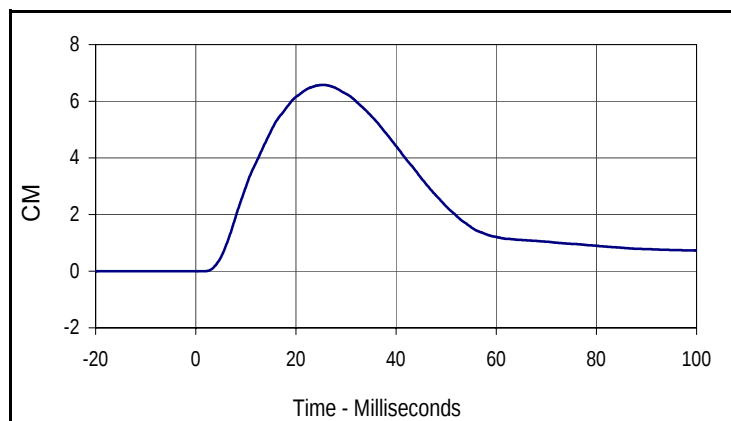
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	487	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	37.3	Pass
	Min	%		36.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory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



Curve Description

Probe Force vs. Chest Deflection

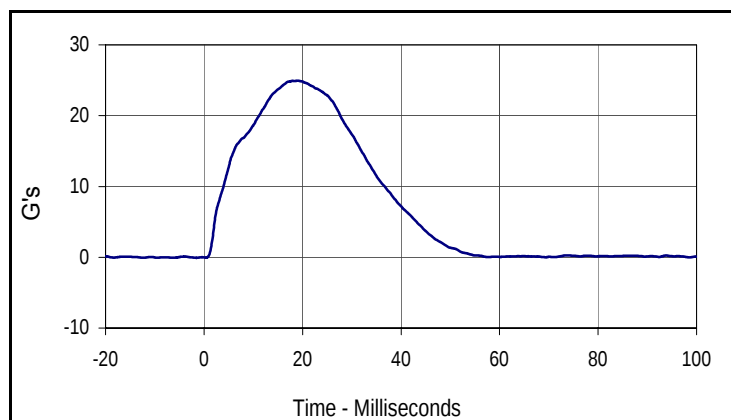
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.7
Peak Probe Force		Peak Chest Deflection	
5714		6.58	



Curve Description

Chest Deflection

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



Curve Description

Impactor Acceleration

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

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

Test Date: 4/17/15

ATD Serial No.: 360

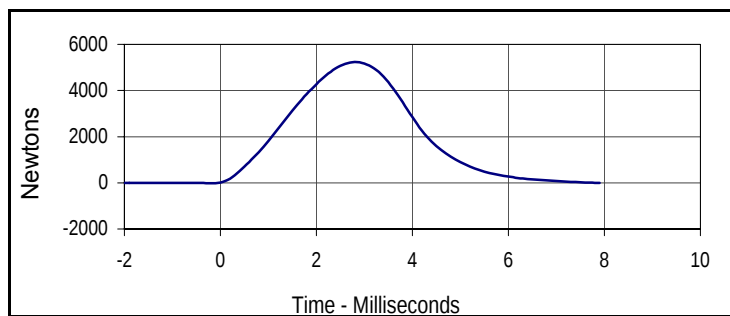
Test I.D.: M360LK009, M360RK009

**Left Knee**

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

Right Knee

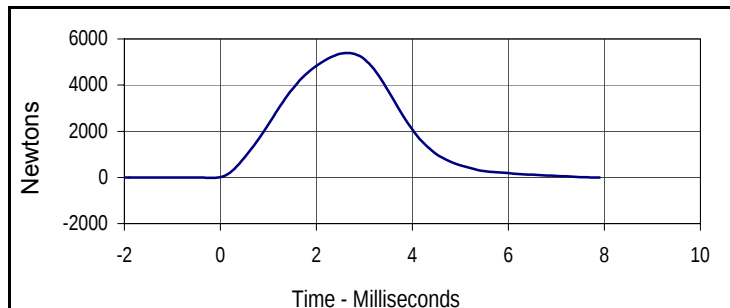
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	4715 to 5782	5389	Pass
Overall Test Results					Pass

**Curve Description****Left Knee Probe Force**

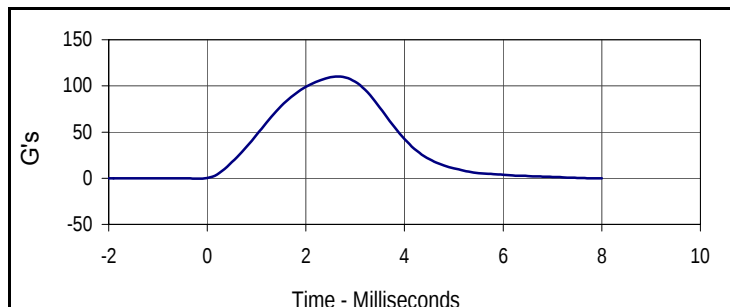
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5233.2	2.8	-20.1	-0.2

**Curve Description****Left Knee Acceleration**

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

**Curve Description****Right Knee Probe Force**

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5388.6	2.6	-22.0	-0.2

**Curve Description****Right Knee Acceleration**

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

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

Test Date: 4/17/15
 Test I.D.: M360LF009, M360RF009

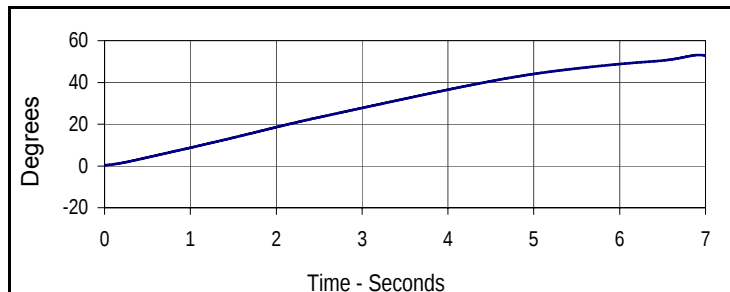


Left Hip Joint-Femur Results

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

Right Hip Joint-Femur Results

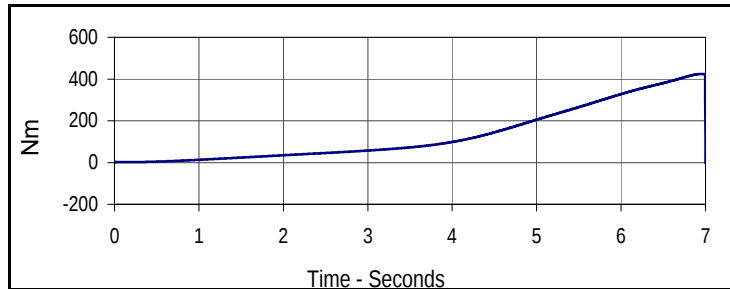
Rotation Rate	deg/sec	5 to 10	7.5	Pass
Femur Torque at 30°	Nm	≤ 95	79.3	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	42.4	Pass
Overall Test Results				Pass



Curve Description

Left Hip-Femur Rotation

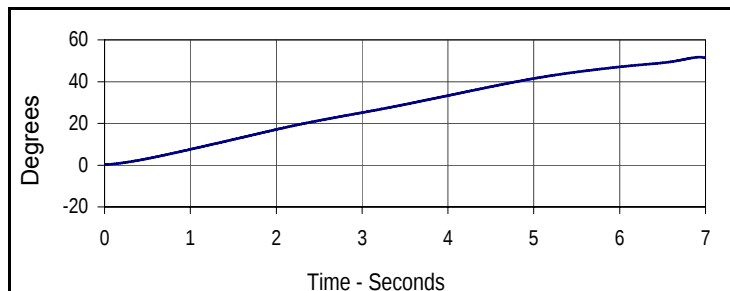
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
53.2	6.9	0.3	0.0



Curve Description

Left Femur Torque

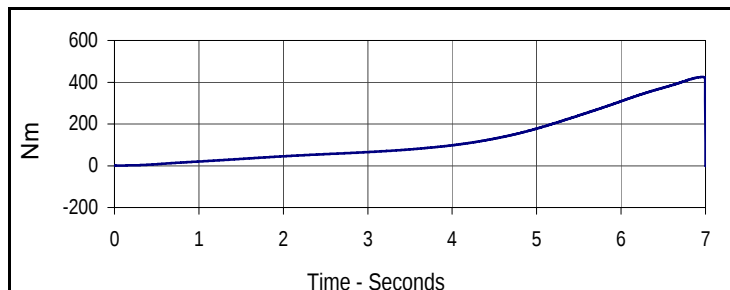
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
423.9	6.9	0.3	0.0



Curve Description

Right Hip-Femur Rotation

Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
51.7	6.9	0.3	0.0



Curve Description

Right Femur Torque

Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
424.8	7.0	0.3	0.0

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

Test Date: 4/18/15



ATD Serial No.: 635

Test I.D.: N/A

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

Describe the repair on or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 4/18/15

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.28	Pass
Laboratory Relative Humidity	%	10 to 70	36.3	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

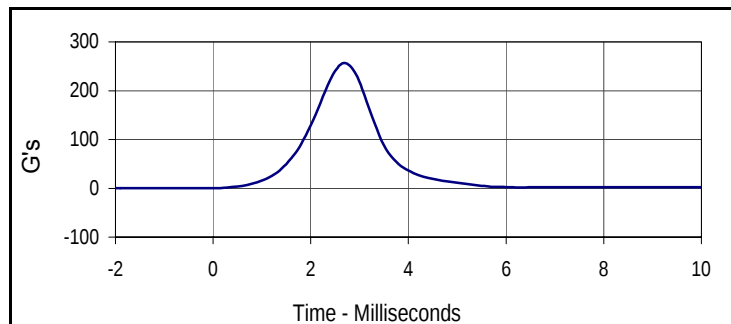
Test Date: 4/18/15



ATD Serial No.: 635

Test I.D.: F635HD052

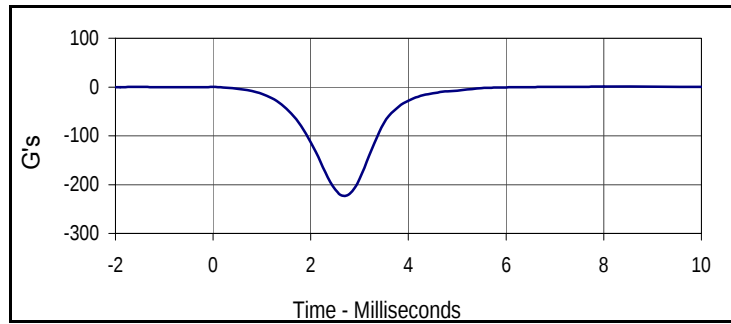
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	322	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.4	Pass
	Min	%		36.3	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.3	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	256.5	Pass
Peak Lateral Acceleration		G's	≤15.0	2.9	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.0	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

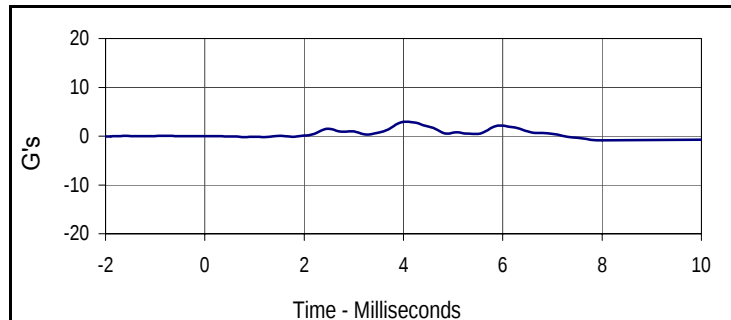
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
256.5	2.7	0.0	0.0



Curve Description

Head X

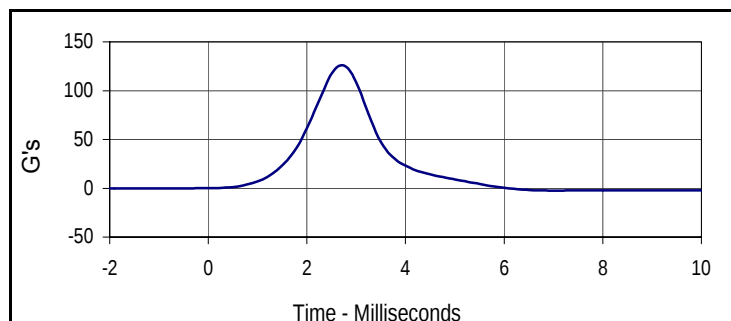
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.0	-1.5	-223.3	2.7



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
2.9	4.1	-0.2	0.8



Curve Description

Head Z

Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
126.1	2.7	-0.3	-2.0

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

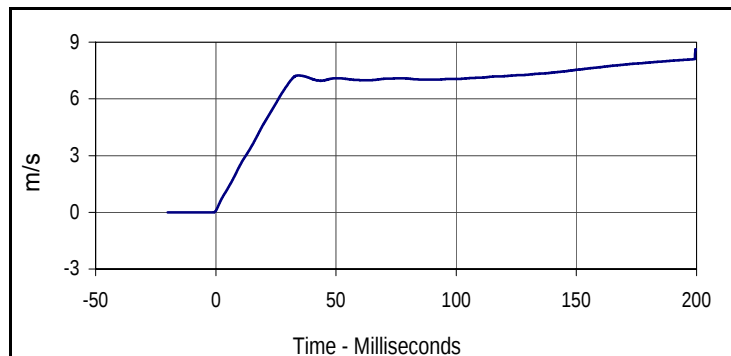
Test Date: 4/18/15



ATD Serial No.: 635

Test I.D.: F635NF052

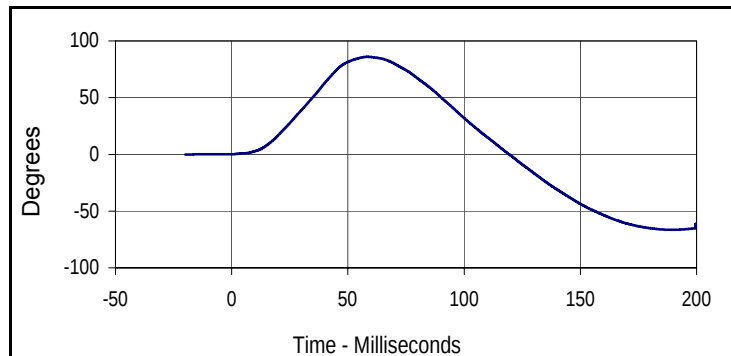
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	387	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.4	Pass
	Min	%		36.3	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.4	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.5	Pass
	20 Msec.	m/s	4.0 to 5.0	4.7	Pass
	30 Msec.	m/s	5.8 to 7.0	6.8	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	86.0	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	76.2	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	84.9	Pass
Overall Test Results					Pass



Curve Description

Pendulum Velocity

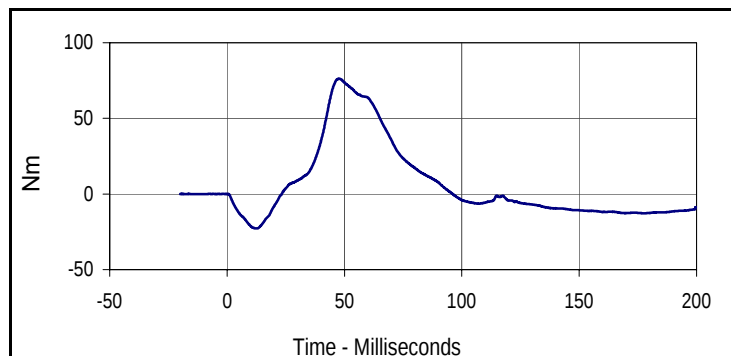
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.6	199.5	0.0	-1.2



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
86.0	58.4	-66.4	189.9



Curve Description

Moment About Occipital Condyle

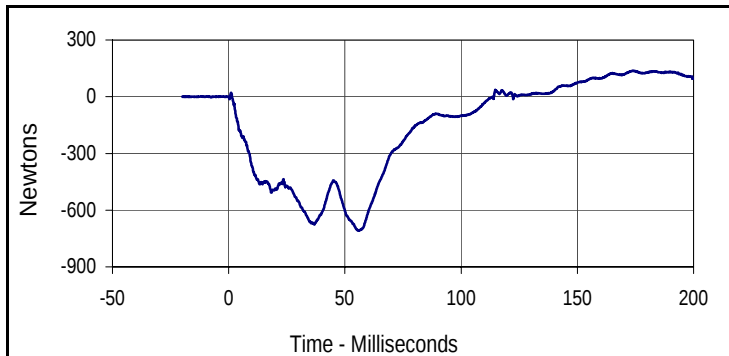
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
76.2	47.7	-22.8	12.5

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

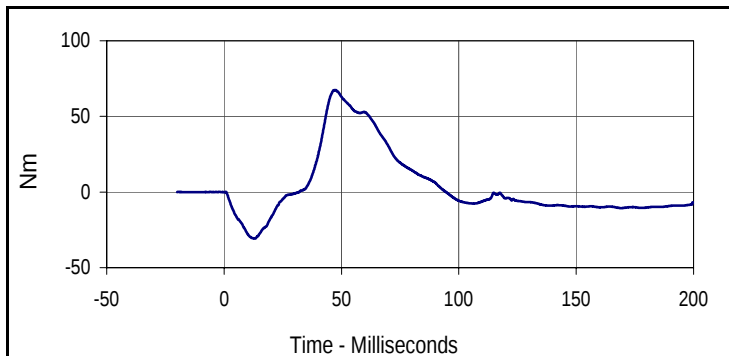
ATD Serial No.: 635

Test Date: 4/18/15

Test I.D.: F635NF052



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
137.3	174.0	-709.0	55.7



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
67.4	47.4	-30.7	13.1

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

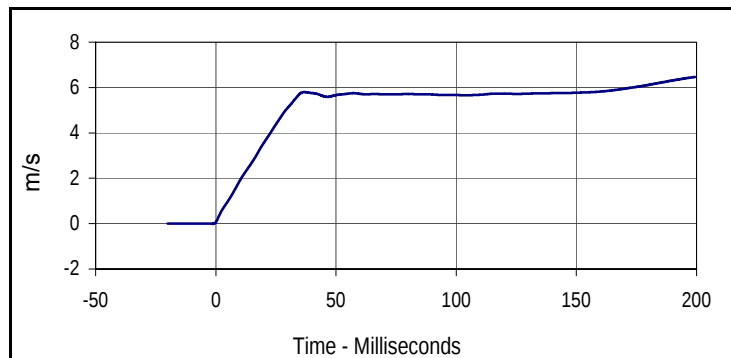
Test Date: 4/18/15



ATD Serial No.: 635

Test I.D.: F635NE052

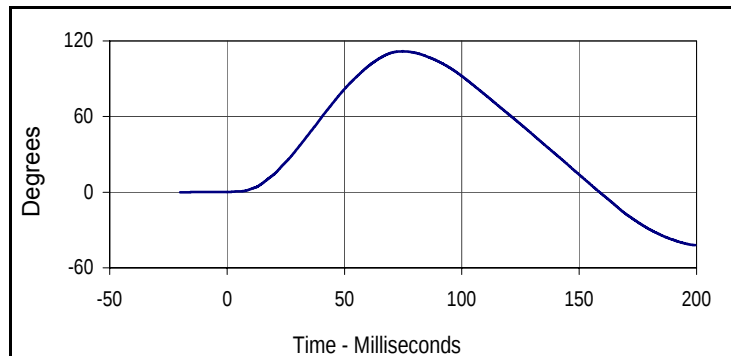
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	452	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.4	Pass
	Min	%		36.3	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.4	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.9	Pass
	20 Msec.	m/s	3.1 to 3.9	3.6	Pass
	30 Msec.	m/s	4.6 to 5.6	5.1	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	-57.3	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	102.9	Pass
Overall Test Results					Pass



Curve Description

Pendulum Velocity

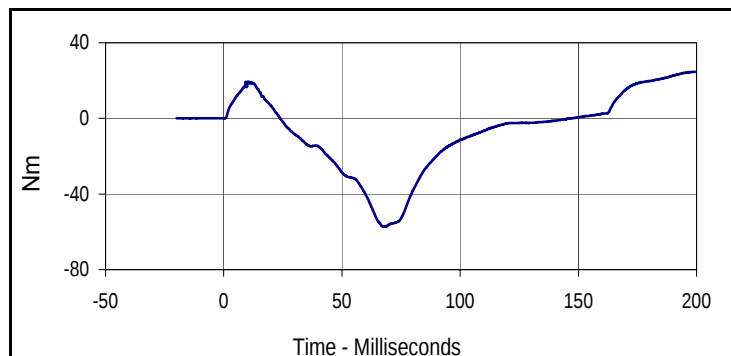
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.5	199.4	0.0	-1.2



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
111.8	74.9	-42.0	199.4



Curve Description

Moment About Occipital Condyle

Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
24.6	199.4	-57.3	68.4

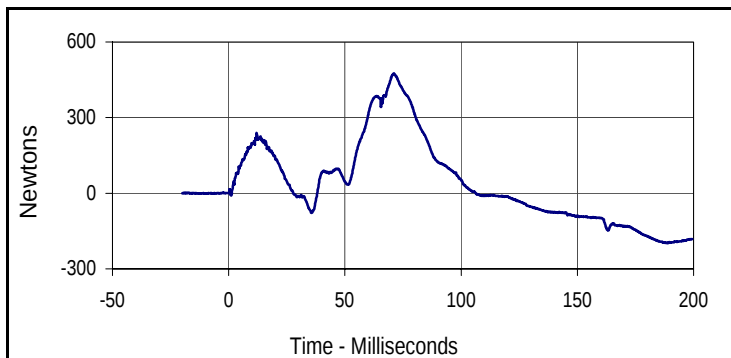
Test Program: Hybrid III 5th Percentile Female Neck Extension Test

Test Date: 4/18/15

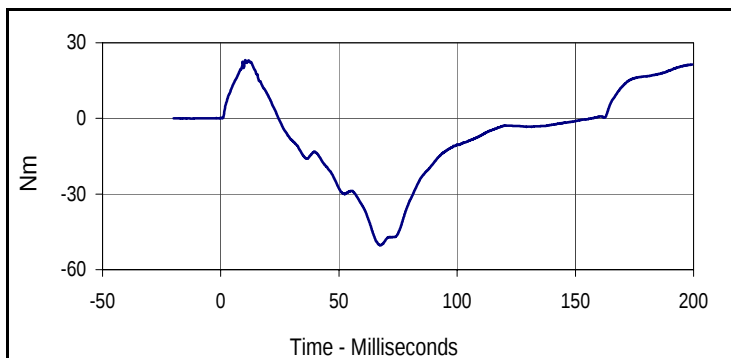


ATD Serial No.: 635

Test I.D.: F635NE052



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
475.4	71.0	-198.3	188.7



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
23.1	10.4	-50.4	67.5

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

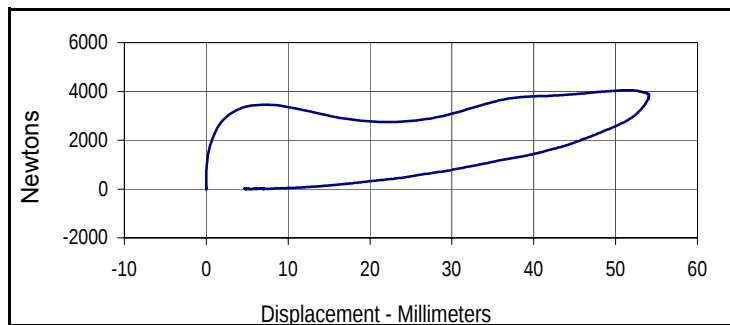
Test Date: 4/18/15



ATD Serial No.: 635

Test I.D.: F635CH052

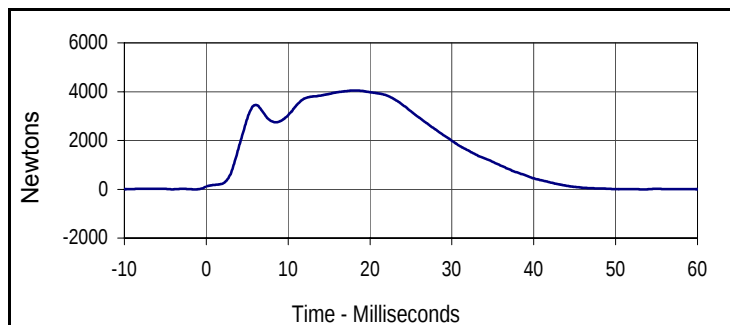
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	497	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.4	Pass
	Min	%		36.3	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.4	Pass
Probe Velocity		m/s	6.59 to 6.83	6.61	Pass
Peak Chest Deflection		mm	50.0 to 58.0	54.1	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4027	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	4049	Pass
Internal Hysteresis		%	69 to 85	72.3	Pass
Overall Test Results					Pass



Curve Description

Probe Force vs. Chest Deflection

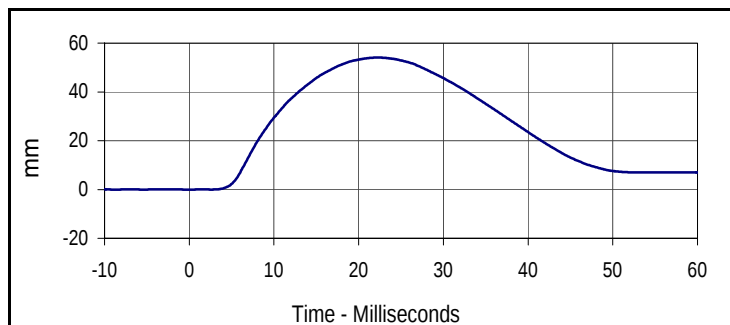
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	72.3
Peak Probe Force		Peak Chest Deflection	
4049.4		54.1	



Curve Description

Probe Force

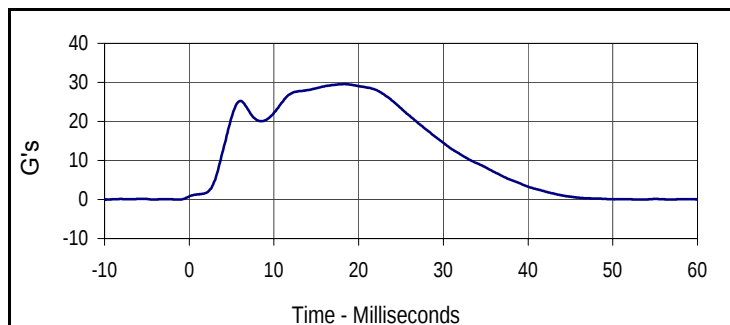
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4049.4	18.3	-10.7	76.8



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
003	FIL	180	mm
Max	Time	Min	Time
54.1	22.2	0.0	0.0



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
29.6	18.3	-0.1	0.0

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

Test Date: 4/18/15

ATD Serial No.: 635

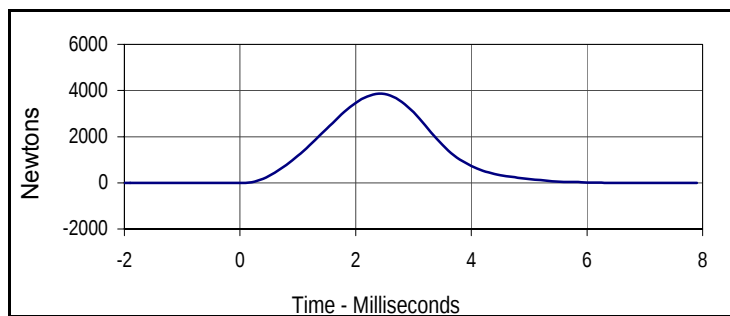
Test I.D.: F635LK052, F635RK052

**Left Knee**

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	552	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.4	Pass
	Min	%		36.3	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.4	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	3450 to 4060	3860	Pass
Overall Test Results					Pass

Right Knee

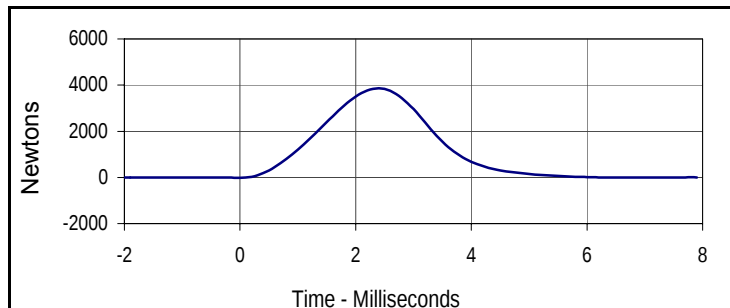
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	3450 to 4060	3861	Pass
Overall Test Results					Pass

**Curve Description****Left Knee Probe Force**

Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3860.2	2.4	-8.3	0.0

**Curve Description****Left Knee Acceleration**

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
131.7	2.4	-0.7	0.0

**Curve Description****Right Knee Probe Force**

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3861.3	2.4	-11.4	-0.1

**Curve Description****Right Knee Acceleration**

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
131.7	2.4	-0.7	0.0

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

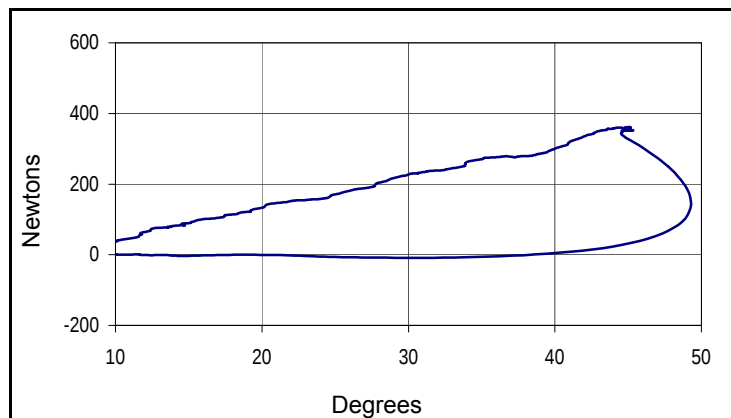
Test Date: 4/18/15

ATD Serial No.: 635

Test I.D.: TF052



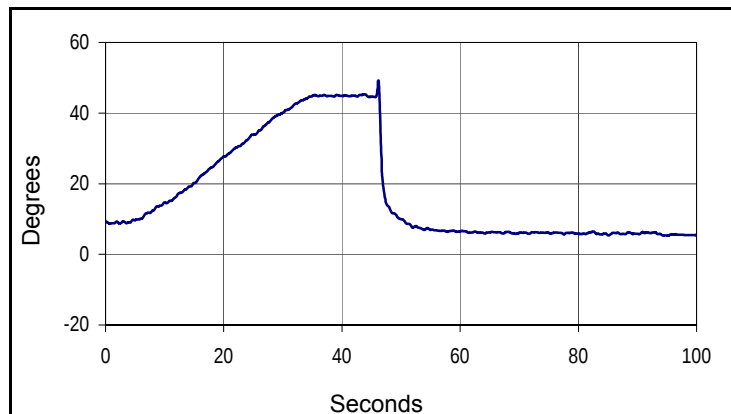
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	617	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	36.4	Pass
	Min	%		36.3	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.4	Pass
Initial Reference Plane Angle		Degrees	≤ 20	9.2	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	361.5	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	1.1	Pass
Final Reference Plane Angle		Degrees	+/-8	5.5	Pass
Overall Test Results				Pass	



Curve Description

Force vs Torso Rotation

Plot No.	Type	Filter Freq
001	FIL	1 Hz
Peak Force		Peak Rotation
361.5		49.3



Curve Description

Torso Rotation

Plot No.	Type	Filter Freq	Units
002	FIL	1 Hz	Degrees
Max	Time	Min	Time
49.3	46.2	5.3	95.2