

REPORT NUMBER: NCAP-KAR-13-049

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

**HONDA MFG. OF INDIANA, LLC
2013 HONDA CIVIC HYBRID 4-DOOR SEDAN**

NHTSA NUMBER: MD5309

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



APRIL 10, 2013

FINAL REPORT

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

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15. Supplementary Notes																																																							
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2013 Honda Civic Hybrid 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 March 27, 2013. The impact velocity of the vehicle was 56.20 km/h and the ambient temperature at the barrier face at the time of impact was 26.6 deg. C. The target vehicle's post-test maximum crush was 510 mm at DPD 4 to the right 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>144.3</td> <td>700.0</td> <td>190.8</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-28</td> <td>52</td> <td>-17</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.30</td> <td>1</td> <td>0.40</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1049.7</td> <td>2620</td> <td>724.9</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-393.9</td> <td>2520</td> <td>-209.3</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-411.0</td> <td>6805</td> <td>-2381.3</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-2022.9</td> <td>6805</td> <td>-2429.0</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	144.3	700.0	190.8	Maximum Chest Compression	mm	63	-28	52	-17	Nij	N/A	1	0.30	1	0.40	Neck Tension	N	4170	1049.7	2620	724.9	Neck Compression	N	4000	-393.9	2520	-209.3	Left Femur Force	N	10008	-411.0	6805	-2381.3	Right Femur Force	N	10008	-2022.9	6805	-2429.0
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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 September 2012.

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2013 Honda Civic Hybrid 4-door sedan at a velocity of 56.20 km/h. The test was performed at KARCO Engineering, LLC, on March 27, 2013. 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 and passenger's lap belts to measure the dummy pelvic section loading. The driver (position 1) ATD (Serial No. 035) 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 110 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. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the test vehicle was 510 mm located at DPD 4 to the right of the vehicle's centerline. Both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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

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

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)	144.3	73.4	88.4	-28	0.30	1049.7	-393.9	-411.0	-2022.9
Passenger (5th)	190.8	66.7	81.7	-17	0.40	724.9	-209.3	-2381.3	-2429.0

SECTION 2
DATA SHEETS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 3/27/13

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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MD5309
Model Year	2013
Make	Honda
Model	Civic Hybrid
Body Style	4-Door Sedan
VIN	19XFB4F27DE200049
Body Color	Urban Titanium M.
Odometer Reading (km / mi)	76 / 47
Engine Displacement (L)	1.5
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	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	Yes
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Front Pass. Frontal Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	Yes
Front Pass. Torso/Pelvis Airbag	No
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	Honda Mfg. of Indiana, LLC
Date of Manufacture	Jan-13

GVWR (kg)	1740
GAWR Front (kg)	910
GAWR Rear (kg)	840

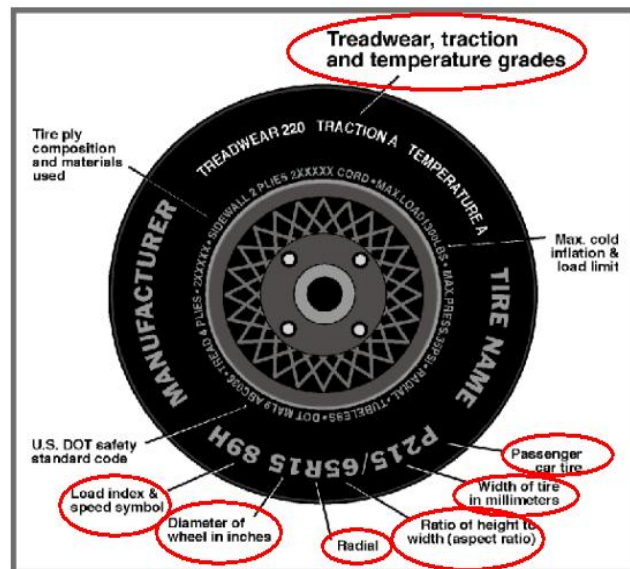
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Type of Seats	Bucket	Bench			
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				385.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				44.8	A-B

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2013 Honda Civic Hybrid 4-Door Sedan	NHTSA No.:	MD5309
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	3/27/13



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P195/65R15	P195/65R15
Tire Size on Vehicle	P195/65R15	P195/65R15
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Ecopia	Ecopia
Treadwear	380	380
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index / Speed Symbol	89S	89S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	EL9N JHN 4811	EL9N JHN 4811
DOT Safety Code Right	EL9N JHN 4811	EL9N JHN 4911

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

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	404.0	267.0		433.0	333.0	
Right	kg	375.0	257.5		401.0	316.0	
Ratio	%	59.8%	40.2%	100.0%	56.2%	43.8%	100.0%
Total	kg	779.0	524.5	1303.5	834.0	649.0	1483.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1303.5	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	44.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1489.3	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	672	671	685	688	1078
As Tested	mm	659	665	654	662	1173
Post-Test	mm	718	735	655	675	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2680
Total Vehicle Length at Left Side	mm	3867
Total Vehicle Length at Centerline	mm	4562
Total Vehicle Length at Right Side	mm	3866
Weight of Ballast in Cargo Area	kg	74.0
Weight of Vehicle Components Removed	kg	47.5
Amount of Stoddard Solvent in Fuel Tank	L	46.46

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Outboard Mirrors (3.0 kg), Tail Lights (2.0 kg), Rear Bumper Face and Beam (12.5 kg), Luggage Lid (10.5 kg), Rear Door Windows and Door Trim (10.0 kg), Trunk Trim and Tire Pump (9.5 kg)

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

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test
1	Total Length	4562
2	Total Width	1750
3	Bumper Top Height	560
4	Bumper Bottom Height	251
5	Longitudinal Member Top Height	486
6	Distance Between Longitudinal Members	910
7	Longitudinal Member Width	95
8	Engine Top Height	811
9	Engine Bottom Height	146
10	Engine and Gearbox Width	300
11	Front Bumper to Engine Distance	567
12	Front Shock Absorber Fixing Height	815
13	Bonnet Leading Edge Height	675
14	Front Shock Absorber Fixing Width	120
15	Front Bumper to Front Axle Distance	930
16	Front Axle to A-Pillar Distance	469
17	A-Pillar to B-Pillar Distance	1035
18	B-Pillar to Rear Axle Distance	1089
19	B-Pillar to C-Pillar Distance	854
20	Roof Sill Bottom Height	1265
21	Roof Sill Top Height	1383
22	Floor Sill Bottom Height	181
23	Floor Sill Top Height	325

All measurements in millimeters.

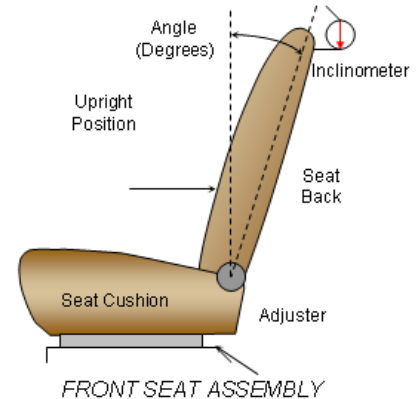
DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

NOMINAL DESIGN RIDING POSITION

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

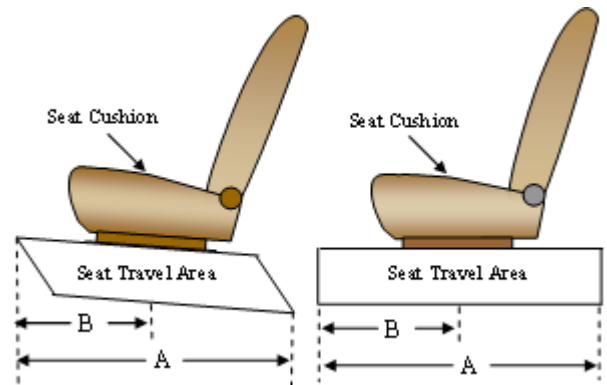


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	8.4
Passenger Seat Back Angle	3.9

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	280 mm	140 mm
Passenger Seat	239 mm	0 mm

SEAT BELT UPPER ANCHORAGE

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

SEAT BELT UPPER ANCHORAGES

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

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

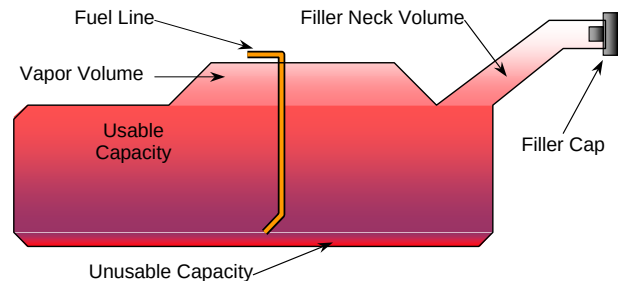
Test Date: 3/27/13

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	49.96
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	45.97 to 46.96
Actual Amount of Stoddard Solvent Used	46.46
1/3 of Usable Capacity	16.65

FUEL PUMP

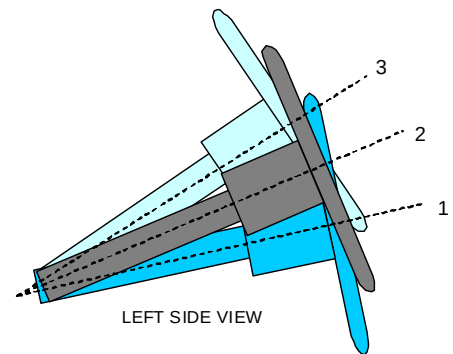
The vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned from the LOCK to the ON position. The pump will be filled up for two seconds and then pressure is maintained.



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	20.3	129
Geometric Center Position, No. 2	22.9	149
Uppermost Position, No. 3	25.6	169
Telescoping Steering Wheel Travel		40
Test Position	22.9	149

DATA SHEET NO. 3

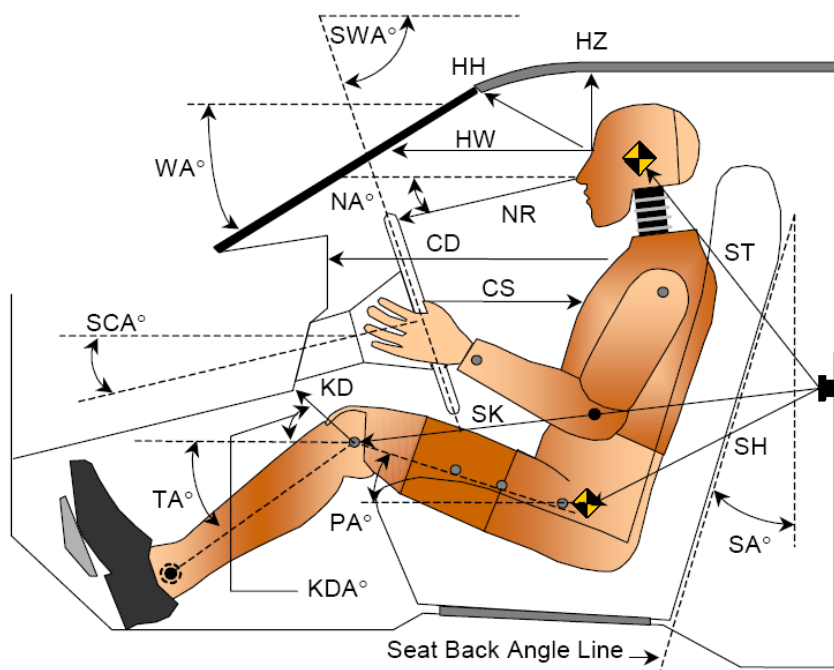
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 3/27/13



LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		21.2		
SWA°	Steering Wheel Angle		67.1		
SCA°	Steering Column Angle		22.9		
SA°	Seat Back Angle (On Headrest Post)		8.4		3.9
HZ	Head to Roof	191	90.0	201	90.0
HH	Head to Header	315	29.1	265	50.8
HW	Head to Windshield	683	0.0	726	0.0
NR	Nose to Rim	374	9.9	420	29.1
CD	Chest to Dash	536	12.3	363	3.0
CS	Chest to Steering Hub	306	0.0		
RA	Rim to Abdomen	194	0.0		
KDL	Left Knee to Dash	139	29.3	78	20.9
KDR	Right Knee to Dash	122	33.4	64	36.2
PA°	Pelvic Angle		23.7		20.1
TA°	Tibia Angle		52.5		53.0
SK	Striker to Knee	626	2.4	741	5.4
ST	Striker to Head	435	77.8	449	55.5
SH	Striker to H-Point	340	42.7	443	25.7

DATA SHEET NO. 4

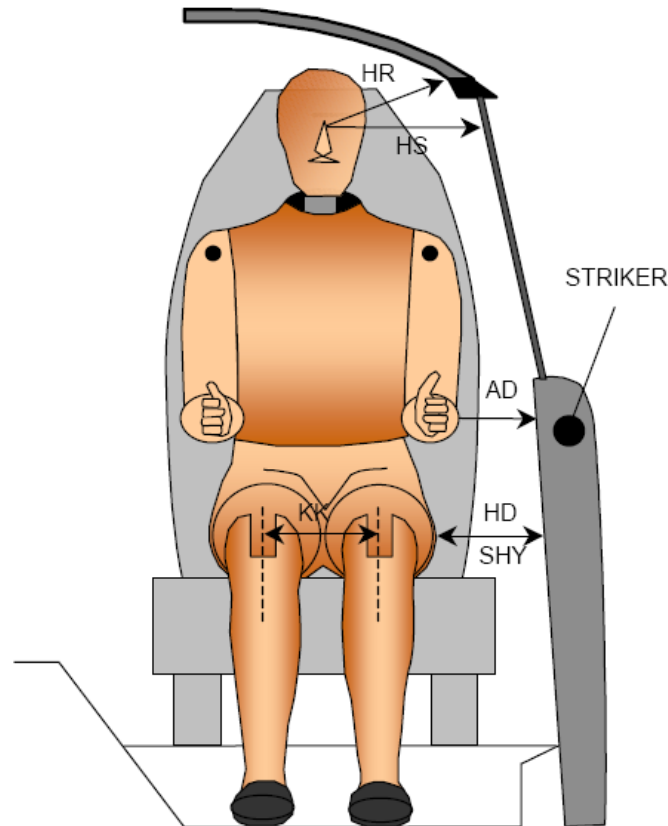
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 3/27/13



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	106	163
HD	H-Point to Door	156	199
HR	Head to Side Header	239	249
HS	Head to Side Window	340	369
KK	Knee to Knee	334	223
SHY	Striker to H-Point (Y-Direction)	247	280
AA	Ankle to Ankle	375	198

DATA SHEET NO. 5

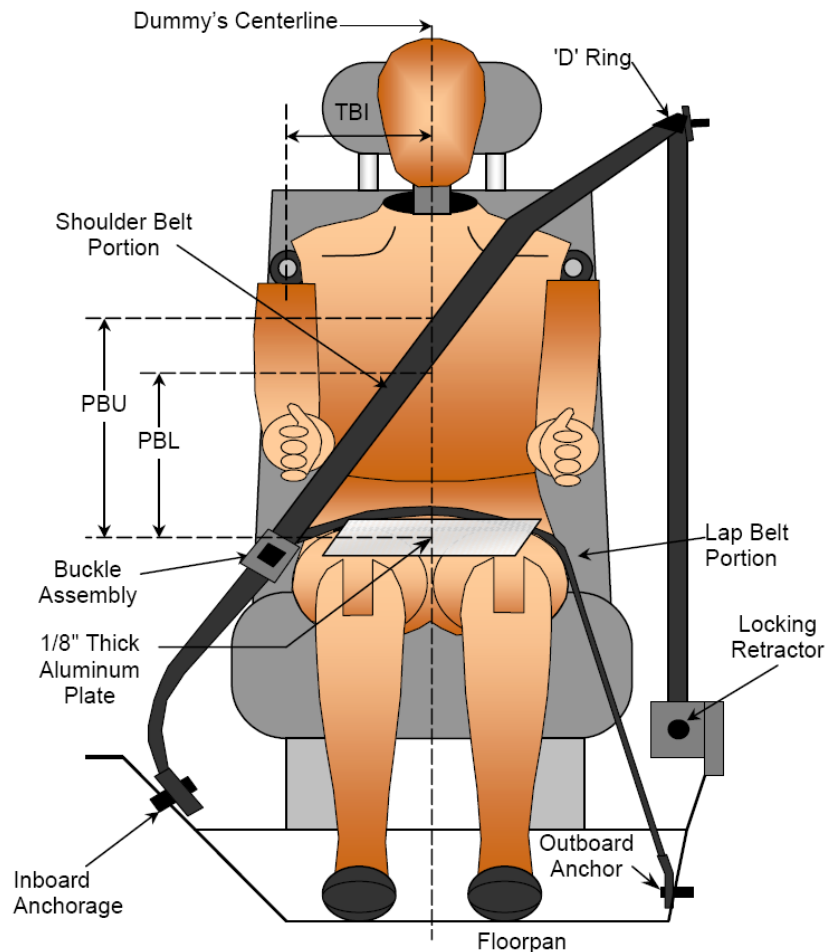
SEAT BELT POSITIONING DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 3/27/13



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	357	249
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	272	321

BELT LENGTH DATA

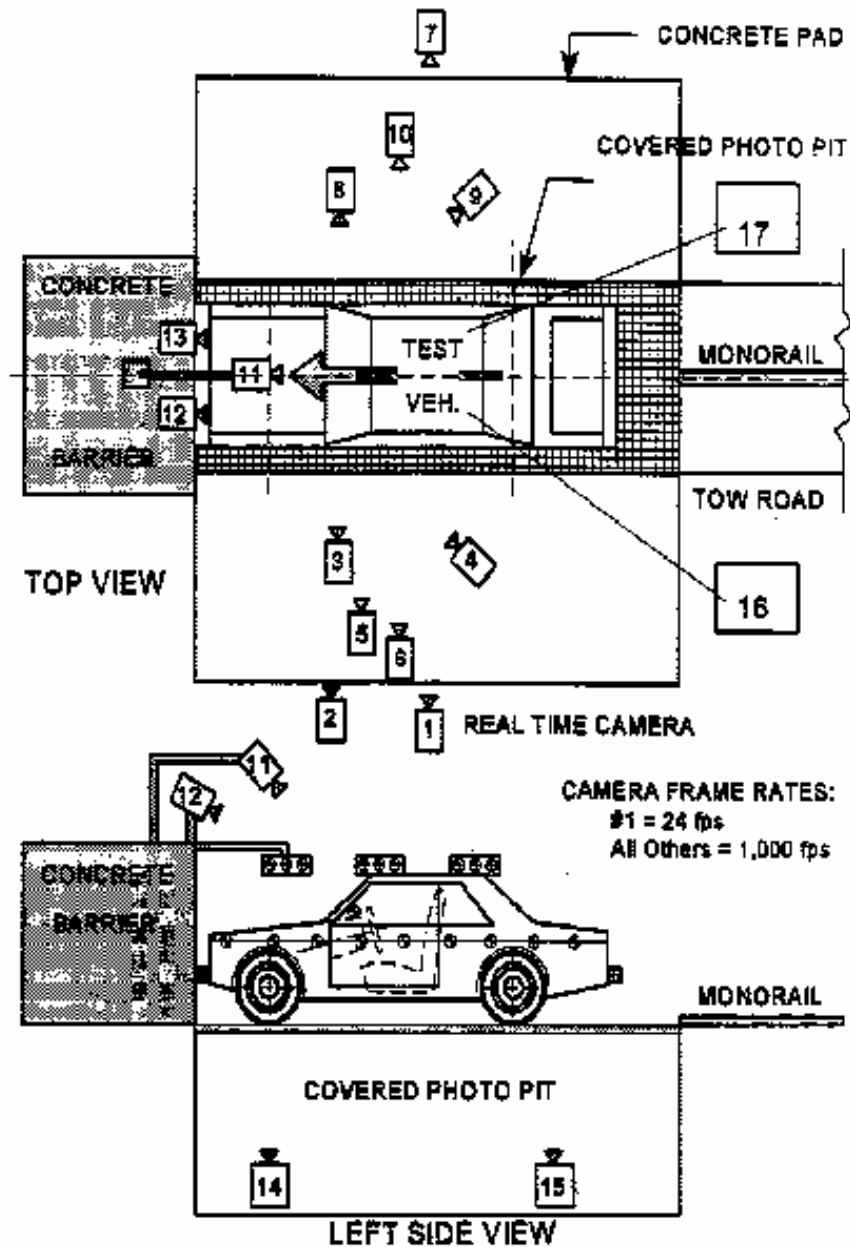
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	906	1009
Lap Belt Length as Measured on ATD	mm	579	497
Remainder of Belt on Reel	mm	958	975
Total Belt Length for Continuous Webbing Systems	mm	2443	2481

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2013 Honda Civic Hybrid 4-Door Sedan	NHTSA No.:	MD5309
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	3/27/13

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

CAMERA LOCATIONS

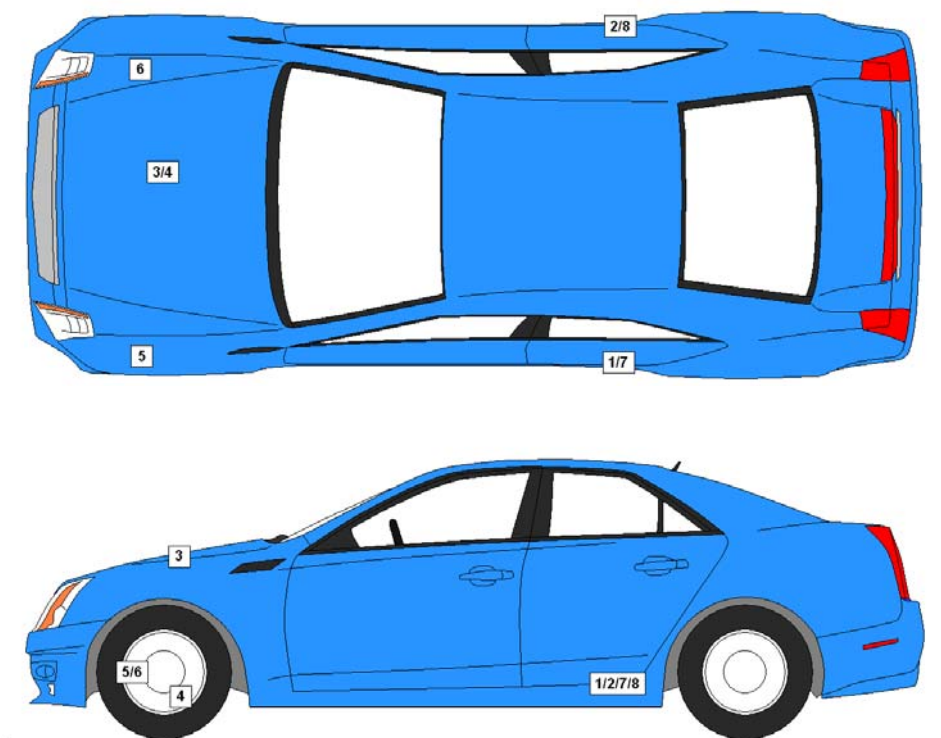
No.	Description	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	-11412	-8150	-1484		30
2	Driver Close-Up	-2590	-7950	-1371	24	1000
3	Left Front Half	-1701	-6197	-1701	50	1000
4	Left Angle	-6696	-10308	-3211	ZOOM	1000
5	Steering Column - Top	-1966	-10412	-3688	50	1000
6	Steering 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	12	1000
15	Pit Rear	-3398	0	1495	8	1000
16	Onboard Driver Airbag (Optional)	-1450	250	-1240	12	1000
17	Onboard Passenger Airbag (Optional)	-1450	-250	-1240	12	1000
18	Real-Time Left View of Impact					
19	Real-Time Right View of Impact					

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

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Accelerometer X-Direction	1723	-725	-349
2	Right Rear Accelerometer X-Direction	1723	725	-349
3	Engine Top X	3763	210	-787
4	Engine Bottom X	3667	271	-159
5	Left Rear Accelerometer Z-Direction	1723	-725	-349
6	Right Rear Accelerometer Z-Direction	1723	725	-349

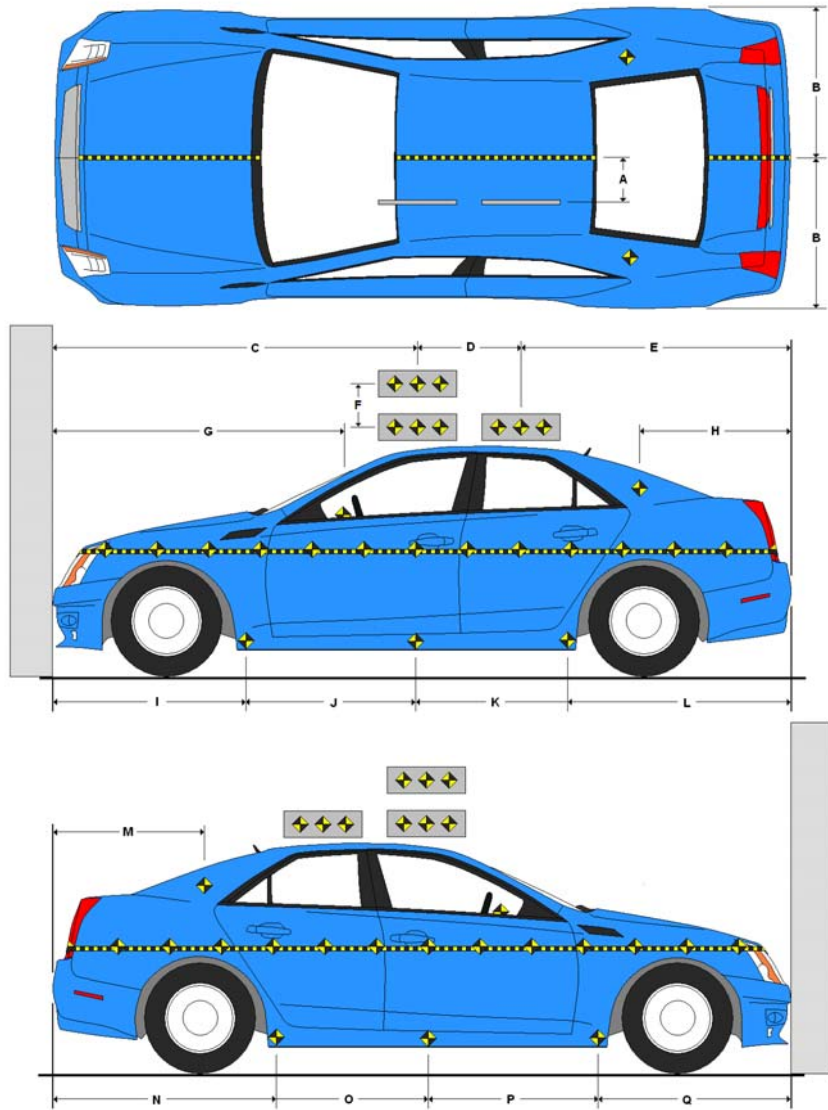
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

Item	Value
A	360
B	875
C	2188
D	610
E	1745
F	305
G	1695
H	855
I	1382
J	888
K	888
L	1395
M	845
N	1390
O	891
P	891
Q	1377



All measurements in millimeters.

DATA SHEET NO. 9

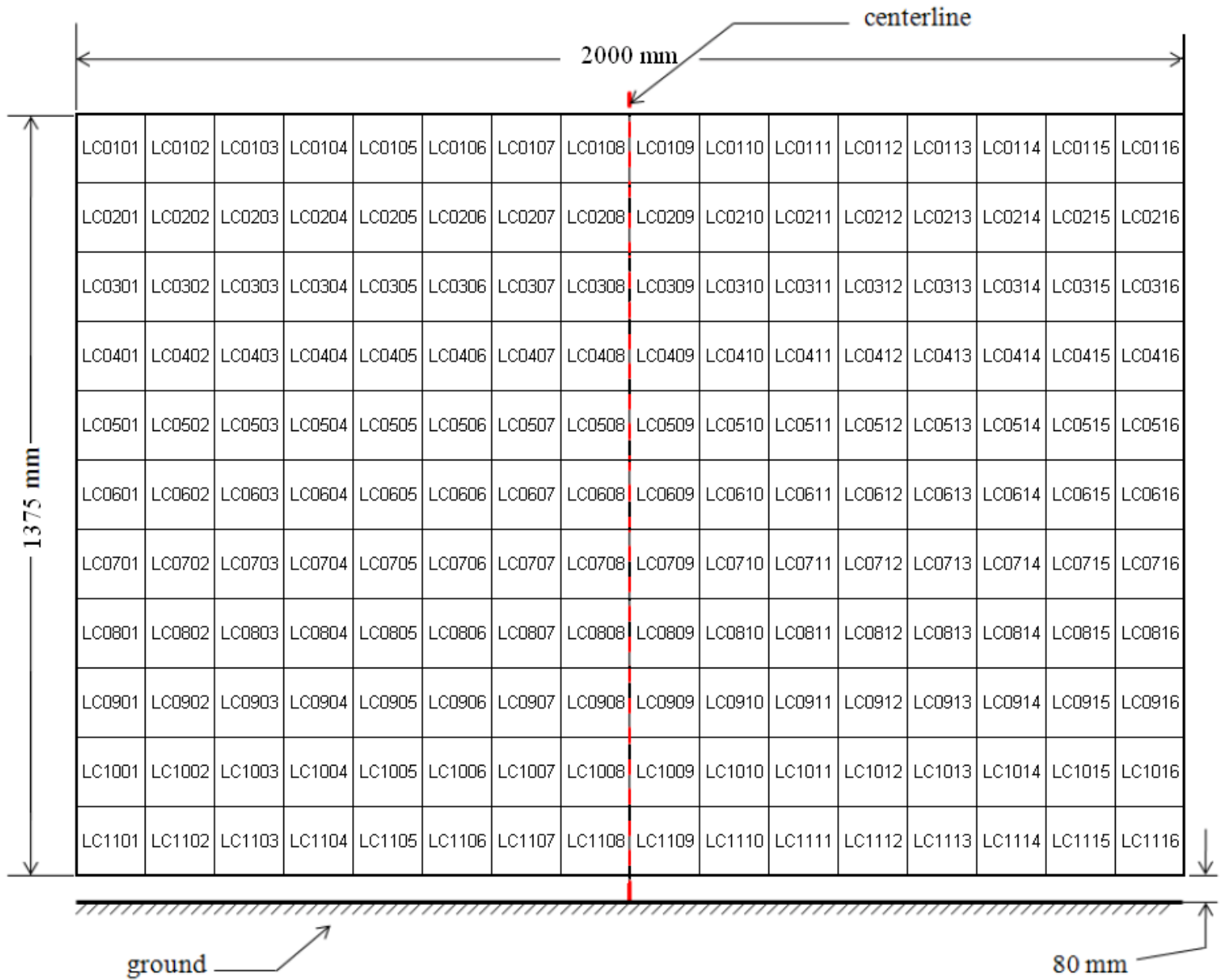
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 3/27/13



DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

INSTRUMENTATION

Driver Dummy Accelerometers	50
Passenger Dummy Accelerometers	50
Vehicle Structure Accelerometers	8
Seat Belt Load Cells	2
Load Cell Barrier	528
Total	638

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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 035	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 Bolster, Steering Column	Glovebox
Right Knee Contact	Knee Bolster, Steering Column	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)	-7	11
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1340
Center	mm	1260
Right Side	mm	1348
Average	mm	1316

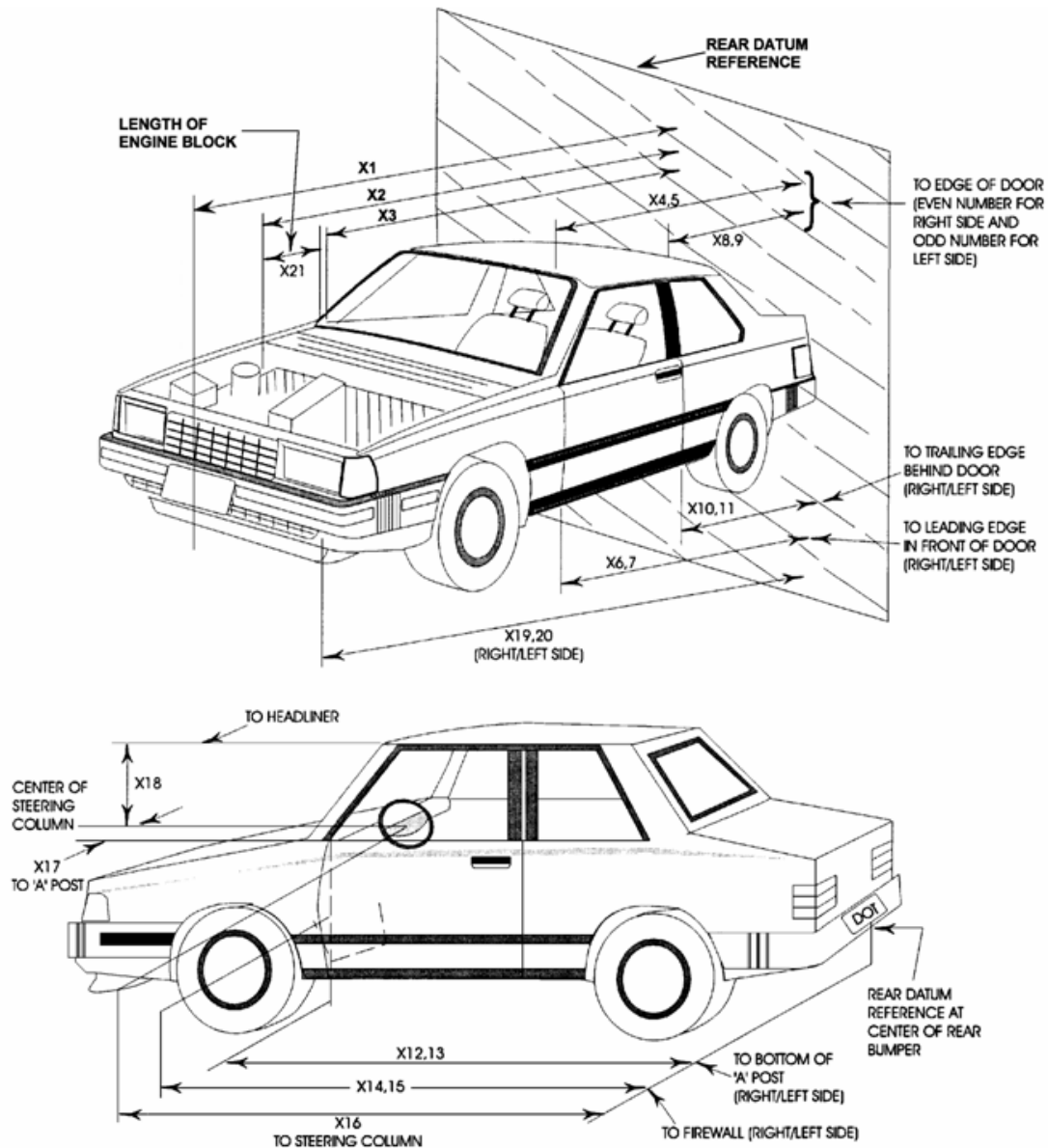
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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)	Yes	No	Yes	No
Knee Airbag	No		No	
Seat Belt Pretensioner	Yes	No	Yes	Yes
Seat Belt Load Limiter	Yes	No	Yes	Yes
Other				

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

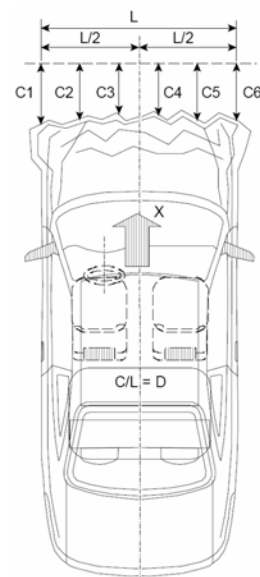


DATA SHEET NO. 12 ... (CONTINUED)**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4562	4067	-495
2	Rear Surface of Vehicle to Front of Engine	3995	3802	-193
3	RSOV to Firewall	3360	3362	2
4	RSOV to Upper Leading Edge of Right Door	3180	3175	-5
5	RSOV to Upper Leading Edge of Left Door	3178	3170	-8
6	RSOV to Lower Leading Edge of Right Door	3147	3145	-2
7	RSOV to Lower Leading Edge of Left Door	3151	3148	-3
8	RSOV to Upper Trailing Edge of Right Door	2015	1998	-17
9	RSOV to Upper Trailing Edge of Left Door	2004	1998	-6
10	RSOV to Lower Trailing Edge of Right Door	2043	2036	-7
11	RSOV to Lower Trailing Edge of Left Door	2045	2045	0
12	RSOV to Bottom of A-Pillar, Right Side	3123	3121	-2
13	RSOV to Bottom of A-Pillar, Left Side	3121	3116	-5
14	RSOV to Firewall, Right Side	3372	3327	-45
15	RSOV to Firewall, Left Side	3452	3262	-190
16	RSOV to Steering Column	2645	2655	10
17	Center of Steering Column to A-Pillar	415	435	20
18	Center of Steering Column to Headliner	410	420	10
19	RSOV to Right Side of Front Bumper	3866	3671	-195
20	RSOV to Left Side of Front Bumper	3867	3755	-112
21	Length of Engine Block	500	500	0
RD	RSOV to Right Side of Dash Panel	2800	2815	15
CD	RSOV to Center of Dash Panel	2770	2765	-5
LD	RSOV to Left Side of Dash Panel	2790	2745	-45

All measurements in millimeters.

DATA SHEET NO. 13**ACCIDENT INVESTIGATION DATA**Test Vehicle: 2013 Honda Civic Hybrid 4-Door SedanNHTSA No.: MD5309Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 3/27/13**VEHICLE INFORMATION**VIN: 19XFB4F27DE200049Wheelbase (mm): 2680Vehicle Size Category: 4-Door SedanTest Weight (kg): 1483.0**ACCELEROMETER DATA**Accelerometer Locations: Left Rear CrossmemberCal. Procedure/Interval: Drop Test / 6 monthsIntegration Algorithm: NHTSA StandardImpact Velocity (km/h): 56.20Velocity Change (km/h): 69.2Time of Separation (msec): 72.6Linearity: Good**CRUSH PROFILE**Collision Deformation Classification: 12FDEW2Midpoint of Damage: Vehicle CenterlineDamage Region Length (mm): 1533Impact Mode: Full Frontal

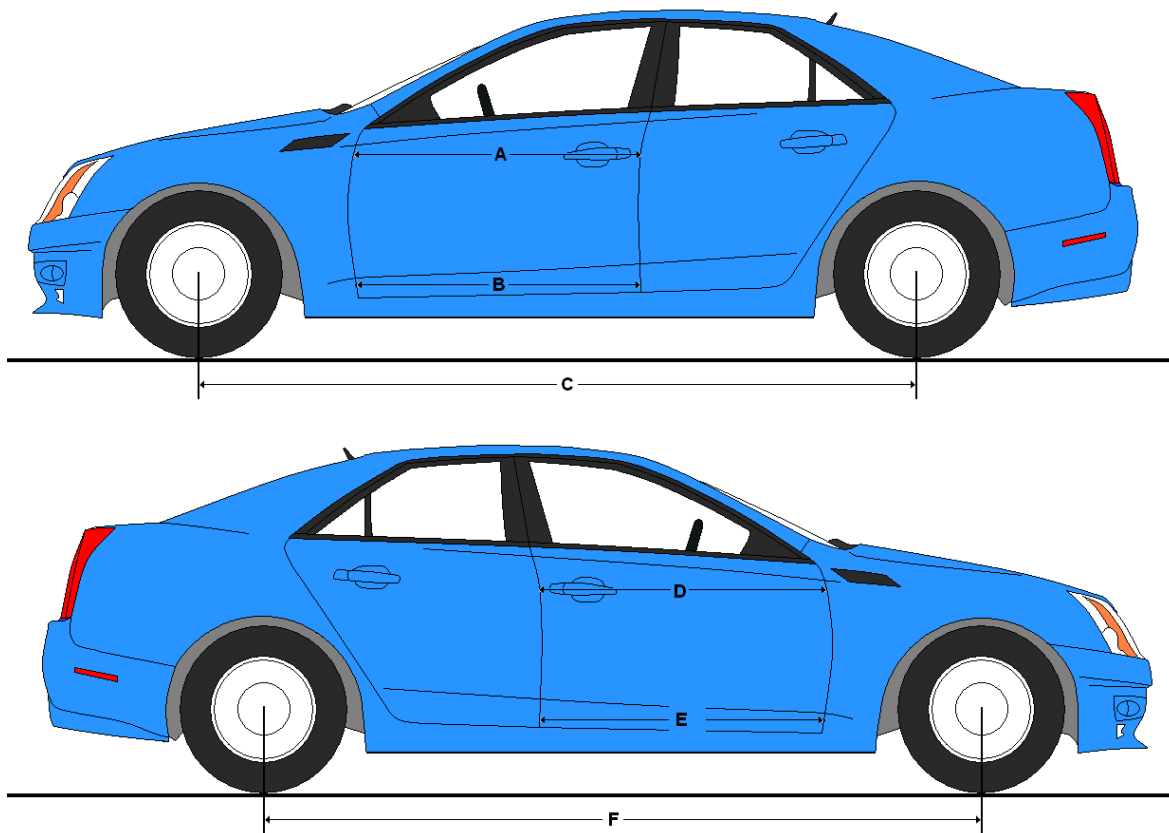
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	305	577	272
C2	Crush Zone 2 at Left Side	mm	102	547	445
C3	Crush Zone 3 at Left Side	mm	15	503	488
C4	Crush Zone 4 at Right Side	mm	15	525	510
C5	Crush Zone 5 at Right Side	mm	100	553	453
C6	Crush Zone 6 at Right Side	mm	300	617	317
L	C1 to C6	mm	1533		

DATA SHEET NO. 14**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2013 Honda Civic Hybrid 4-Door SedanNHTSA No.: MD5309Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 3/27/13**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1031	1034	-3
B	Left Side Lower	mm	961	961	0
D	Right Side Upper	mm	1027	1034	-7
E	Right Side Lower	mm	966	966	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2680	2535	145
F	Right Side Wheelbase	mm	2680	2545	135



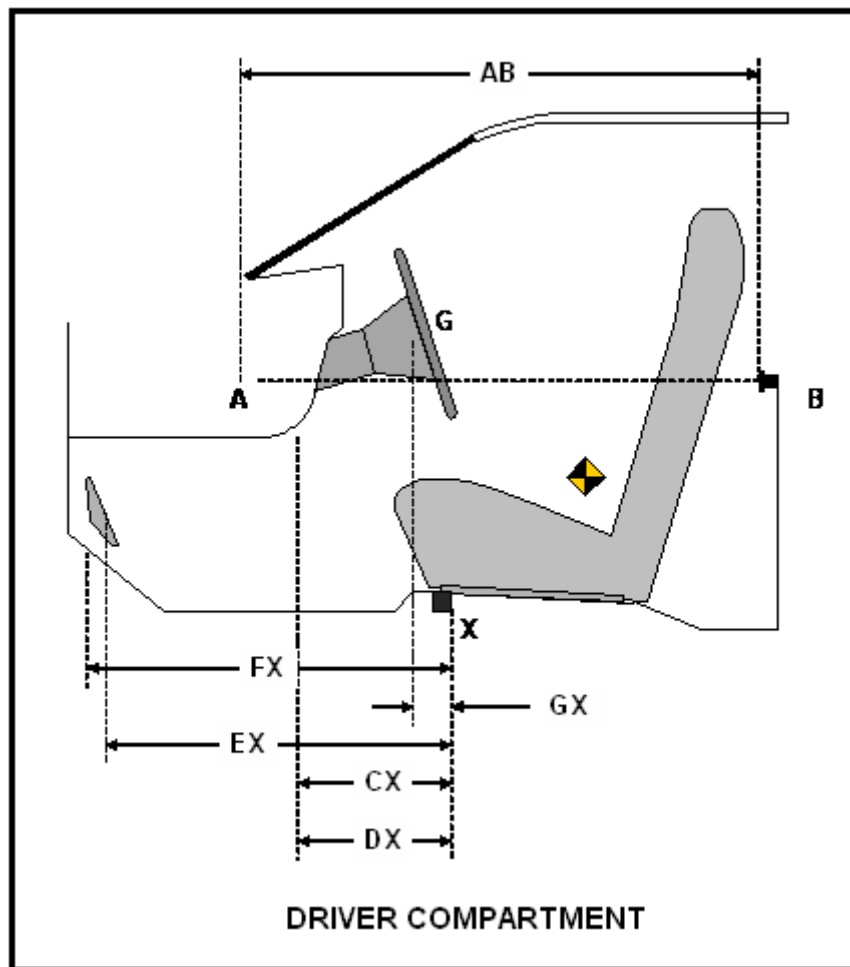
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	896	906	-10
CX	Left Knee Bolster to X	mm	320	290	30
DX	Right Knee Bolster to X	mm	322	285	37
EX	Brake Pedal to X	mm	570	570	0
FX	Foot Rest to X	mm	590	615	-25
GX	Center of Steering Wheel Hub to X	mm	170	115	55

X = Front of Seat Track (Stationary)



DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

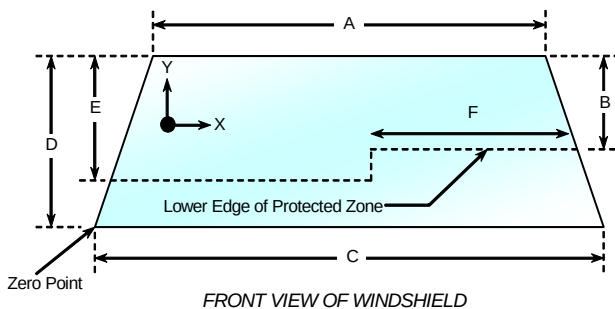
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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: 21.6 ° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2393	2393	100.0%
Right Side	2393	2393	100.0%
Total	4786	4786	100.0%



Item	Units	Value
A	mm	1220
B	mm	528
C	mm	1385
D	mm	1090
E	mm	632
F	mm	851

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 AND 219 (PARTIAL) DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No.: MD5309
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 3/27/13

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 26.6° C Test Time: 3:12 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.

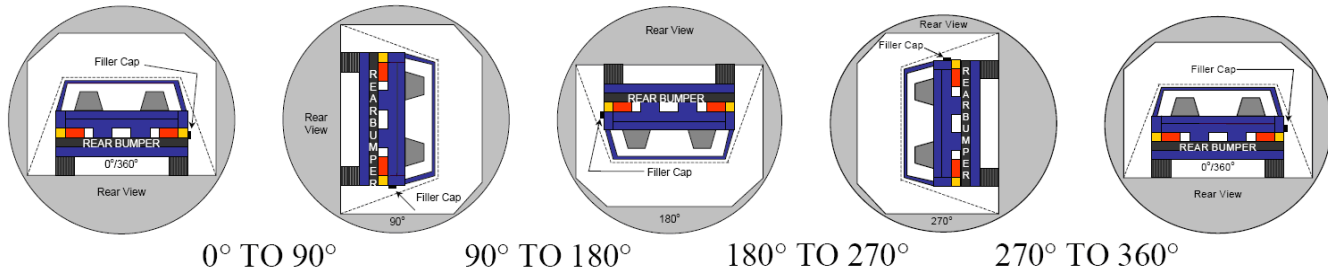
DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 3/27/13



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

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	82	300	382
90° To 180°	81	300	381
180° To 270°	78	440	518
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

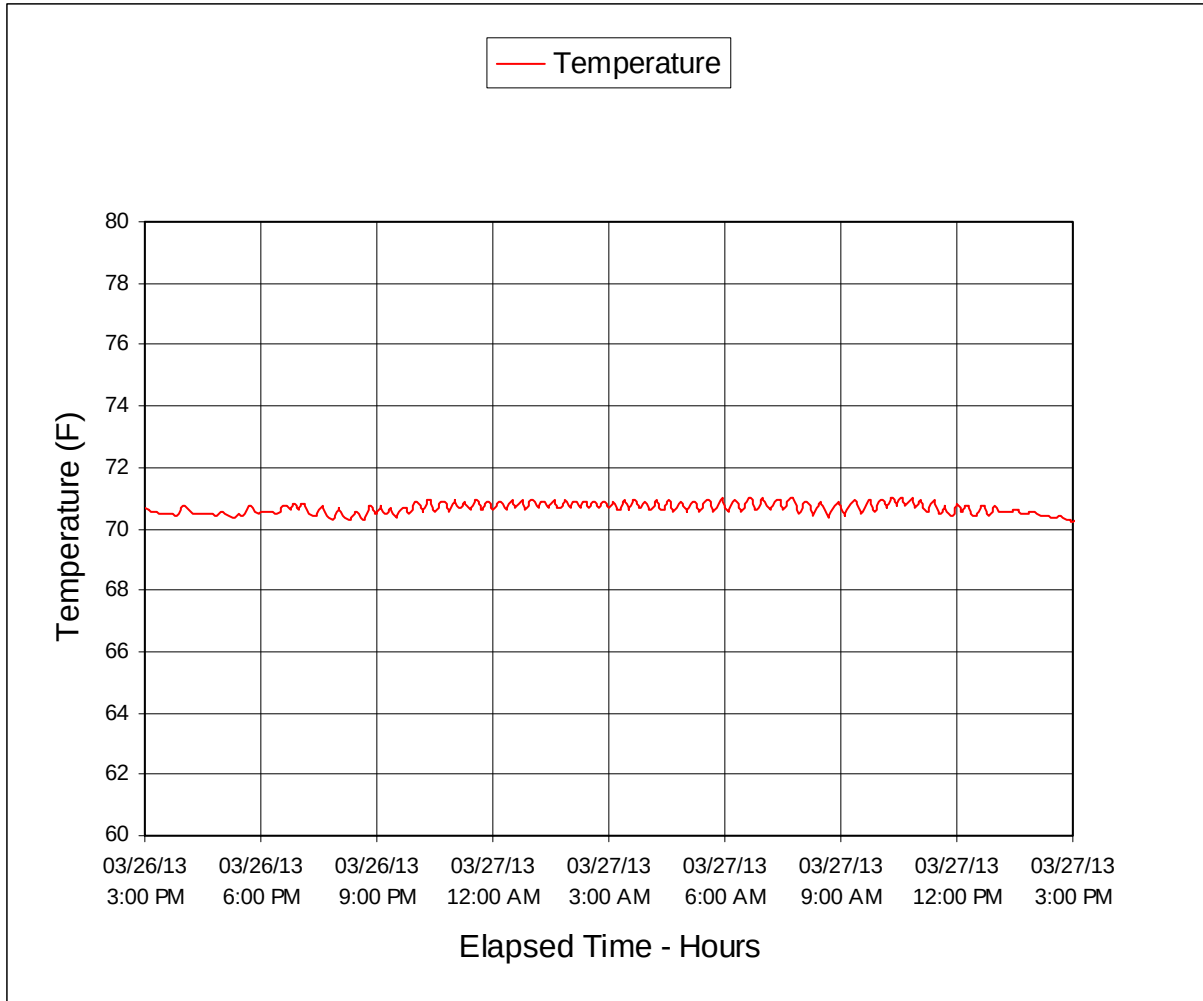
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No.: MD5309

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 3/27/13



APPENDIX A
PHOTOGRAPHS

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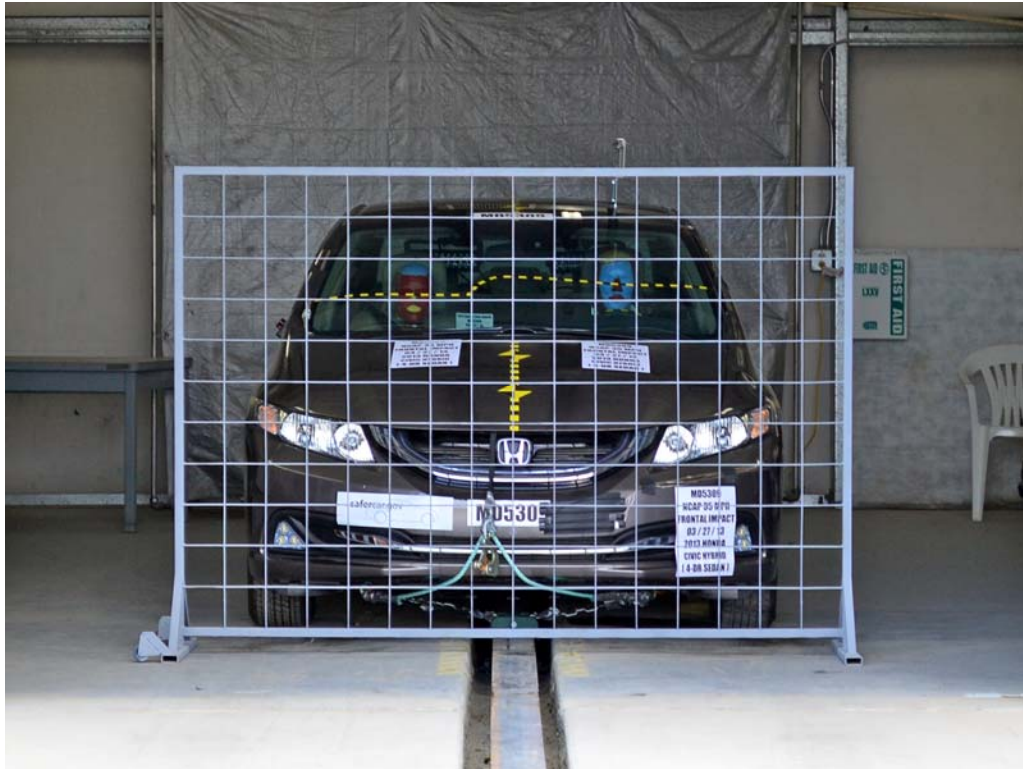


FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall

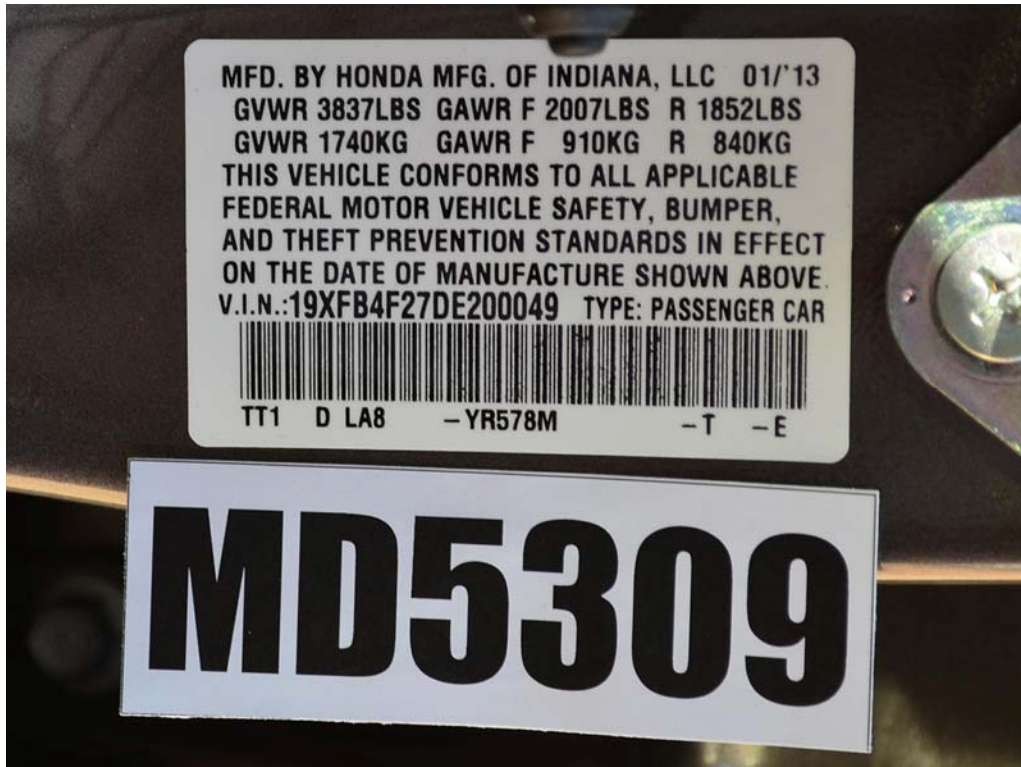


FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. 2013 Honda Civic Hybrid Frontal As Delivered



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



FIGURE 7. Pre-Test Front View of Test Vehicle

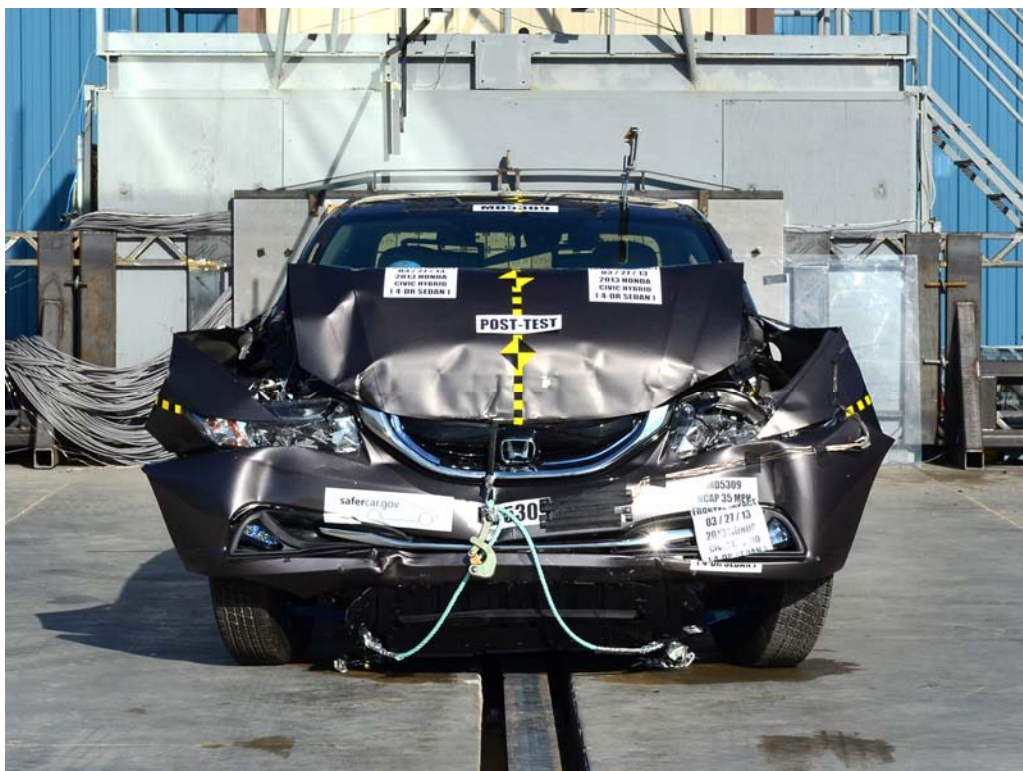


FIGURE 8. Post-Test Front View of Test Vehicle



FIGURE 9. Pre-Test Left View of Test Vehicle



FIGURE 10. Post-Test Left View of Test Vehicle



FIGURE 11. Pre-Test Right View of Test Vehicle



FIGURE 12. Post-Test Right View of Test Vehicle



FIGURE 13. Pre-Test Right Front $\frac{3}{4}$ View



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



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



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



FIGURE 17. Pre-Test Windshield View



FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View



FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

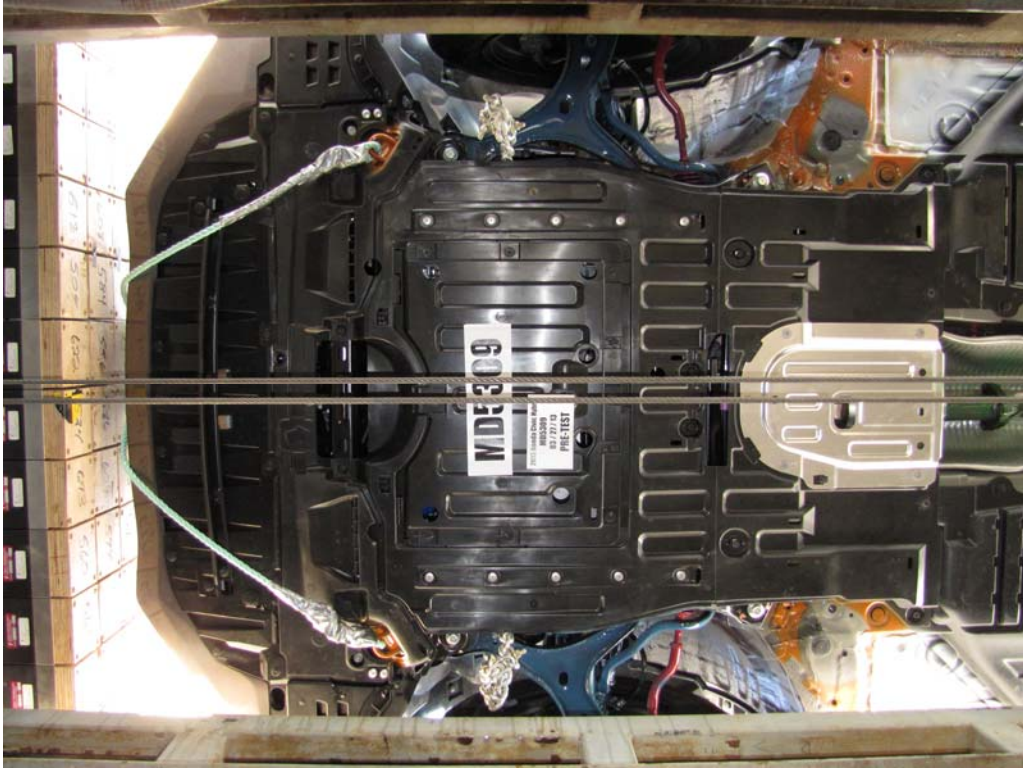


FIGURE 23. Pre-Test Front Underbody View

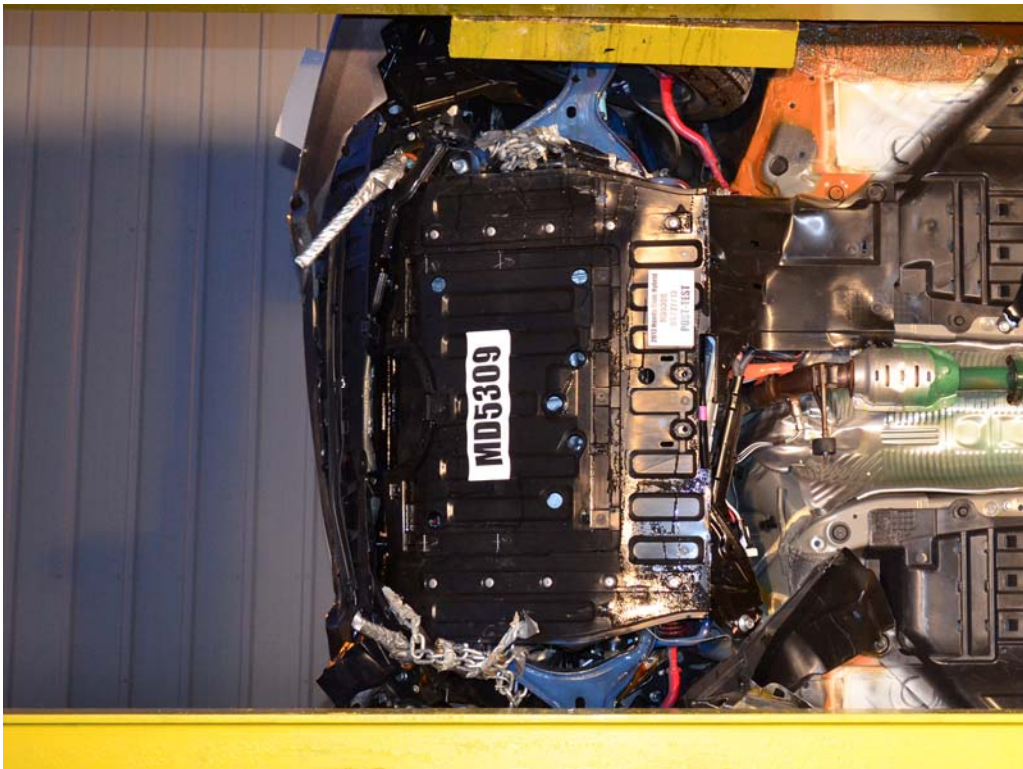


FIGURE 24. Post-Test Front Underbody View



FIGURE 25. Pre-Test Rear Underbody View

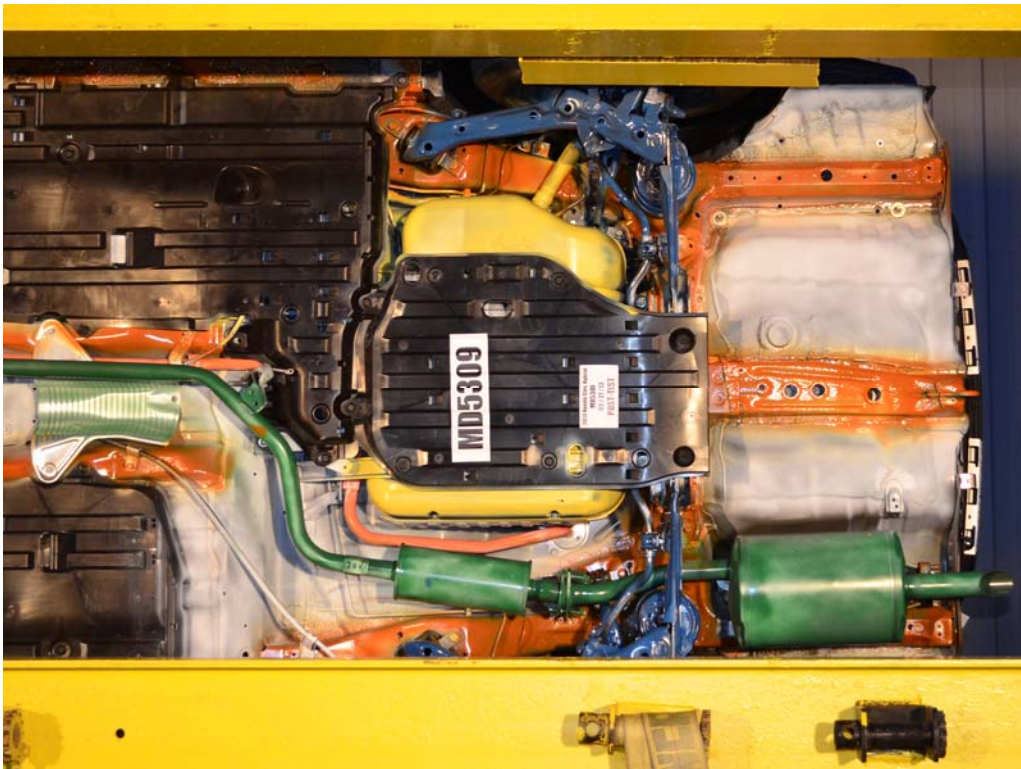


FIGURE 26. Post-Test Rear Underbody View



FIGURE 27. Pre-Test Dummy Cable Routing

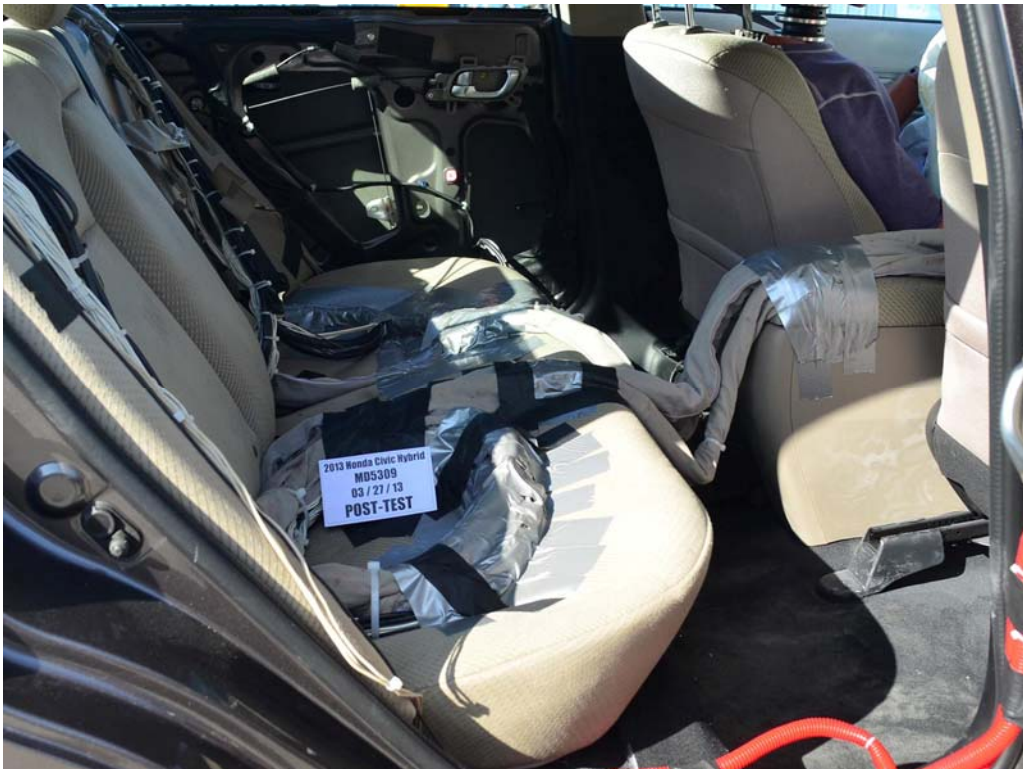


FIGURE 28. Post-Test Dummy Cable Routing



FIGURE 29. Pre-Test Driver Dummy Front View



FIGURE 30. Post-Test Driver Dummy Front View



FIGURE 31. Pre-Test Driver Dummy Window View



FIGURE 32. Post-Test Driver Dummy Window View



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



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

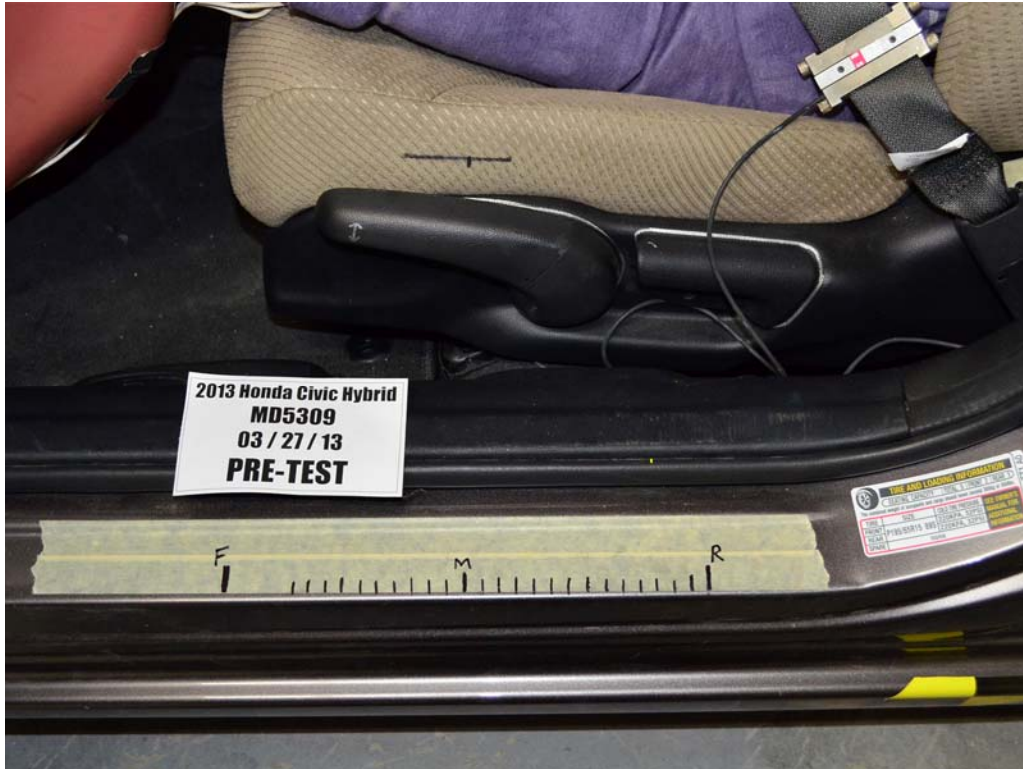


FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings



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



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



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



FIGURE 39. Pre-Test Driver Dummy Feet



FIGURE 40. Post-Test Driver Dummy Feet



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



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



FIGURE 43. Pre-Test Driver's Side Floorpan



FIGURE 44. Post-Test Driver's Side Floorpan



FIGURE 45. Post-Test Driver Dummy Face

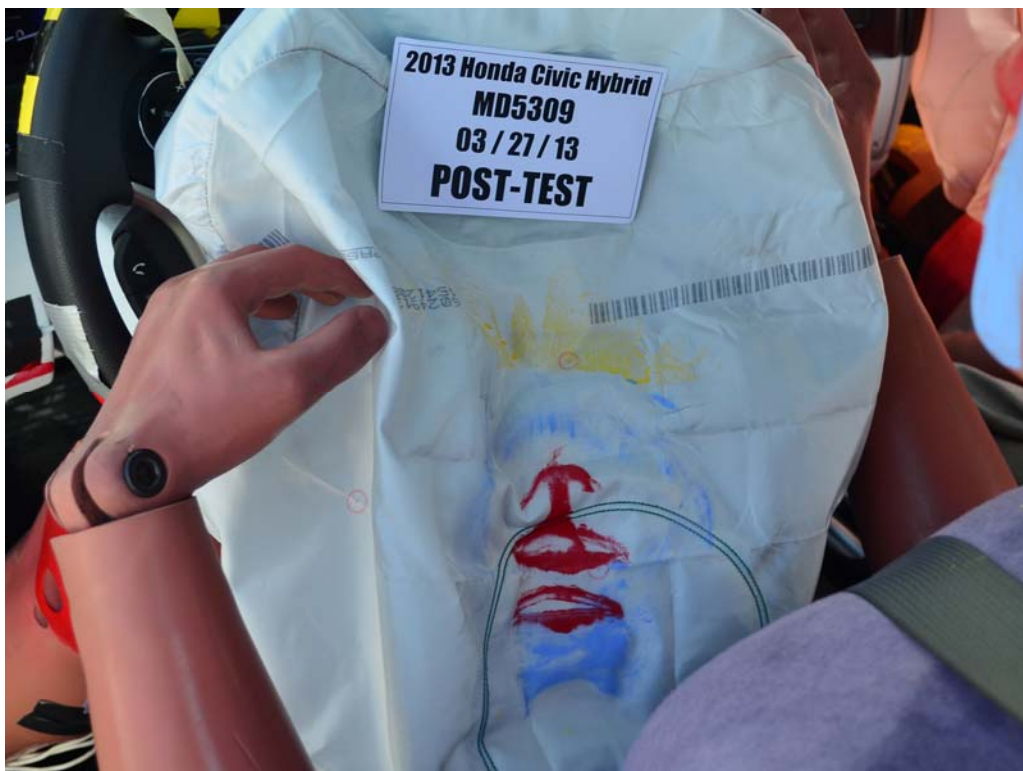


FIGURE 46. Post-Test Driver Dummy Contact with Airbag



FIGURE 47. Post-Test Driver Dummy Contact with Headrest



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



FIGURE 47b. Post-Test Driver Dummy Contact with Steering Column



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

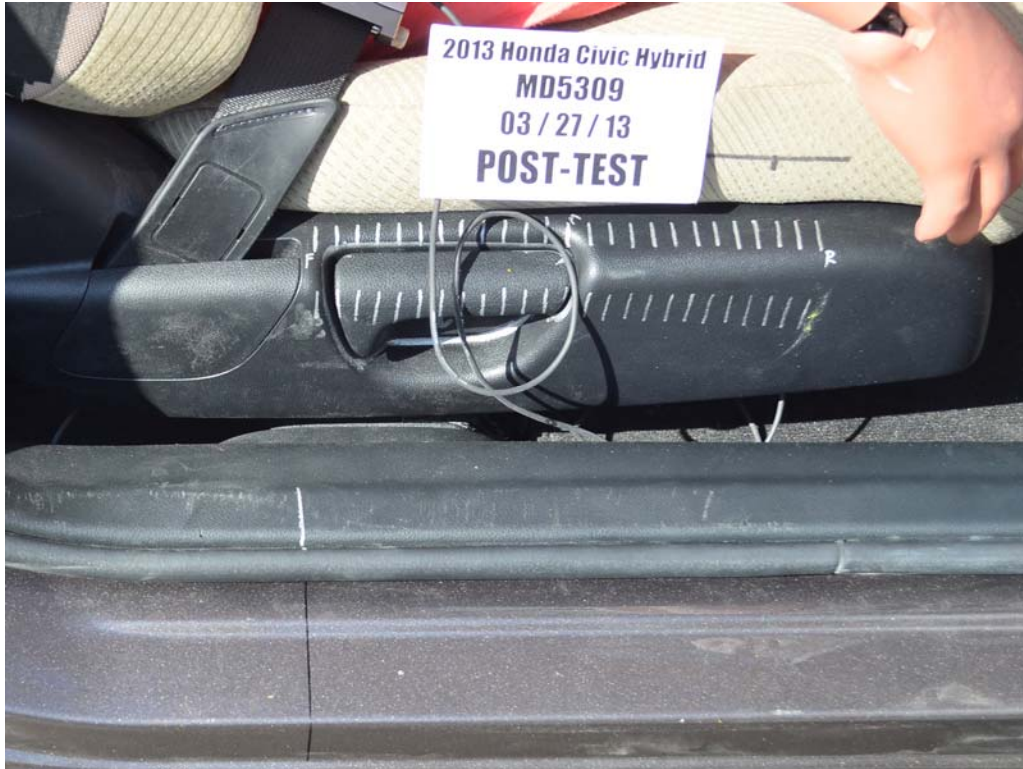


FIGURE 57. Post-Test Passenger's Seat Fore-Aft Markings



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

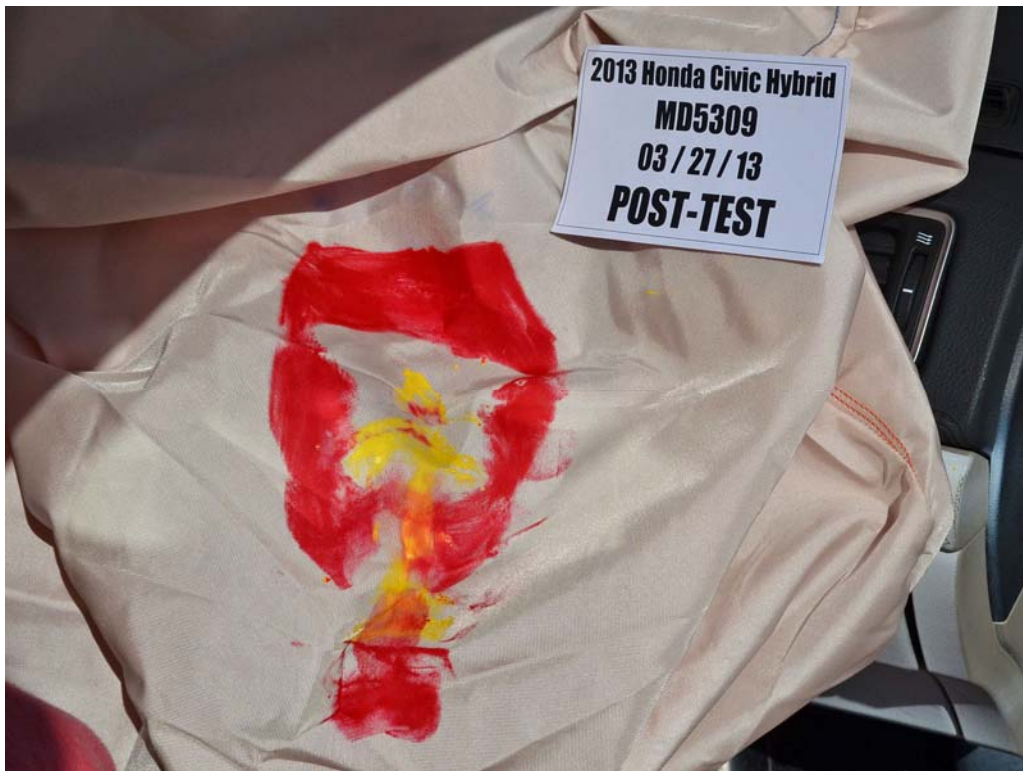


FIGURE 66. Post-Test Passenger Dummy Contact with Airbag



FIGURE 66a. Post-Test Passenger Dummy Contact with Headrest



FIGURE 66b. Post-Test Passenger Dummy Contact with Glovebox

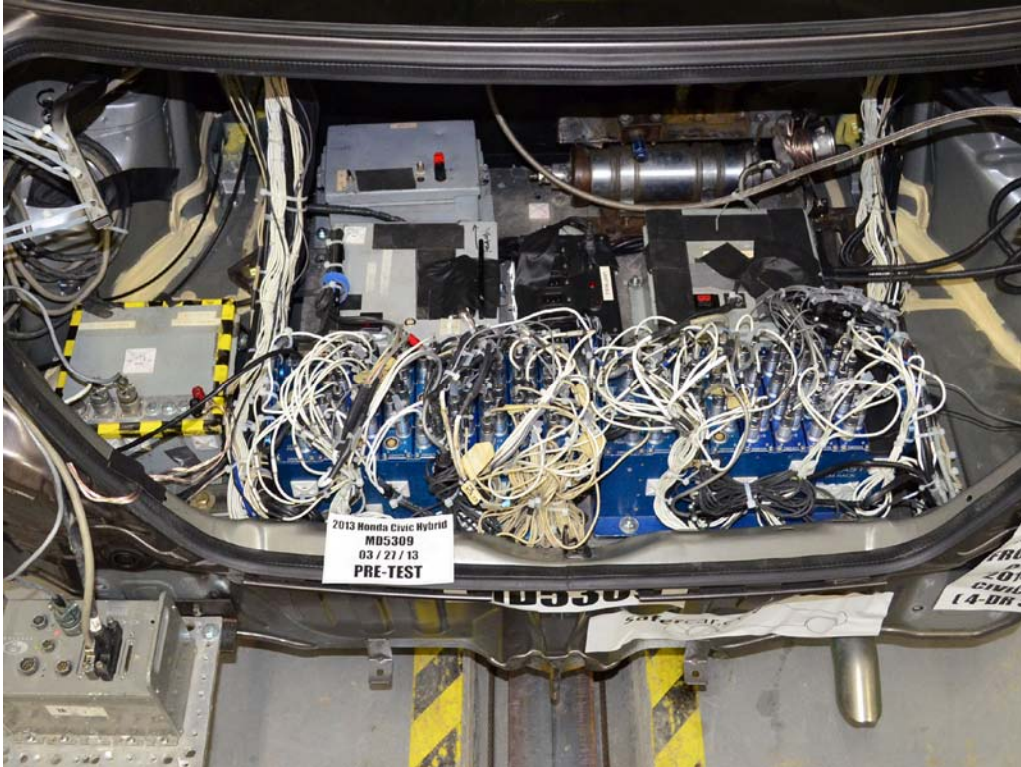


FIGURE 67. Photograph of Ballast Installed in Vehicle

Photograph Not Applicable

No Stoddard
Solvent Leakage

FIGURE 68. Post-Test Stoddard Solvent Spillage Location View



FIGURE 69. Post-Test Speed Trap Read-Out

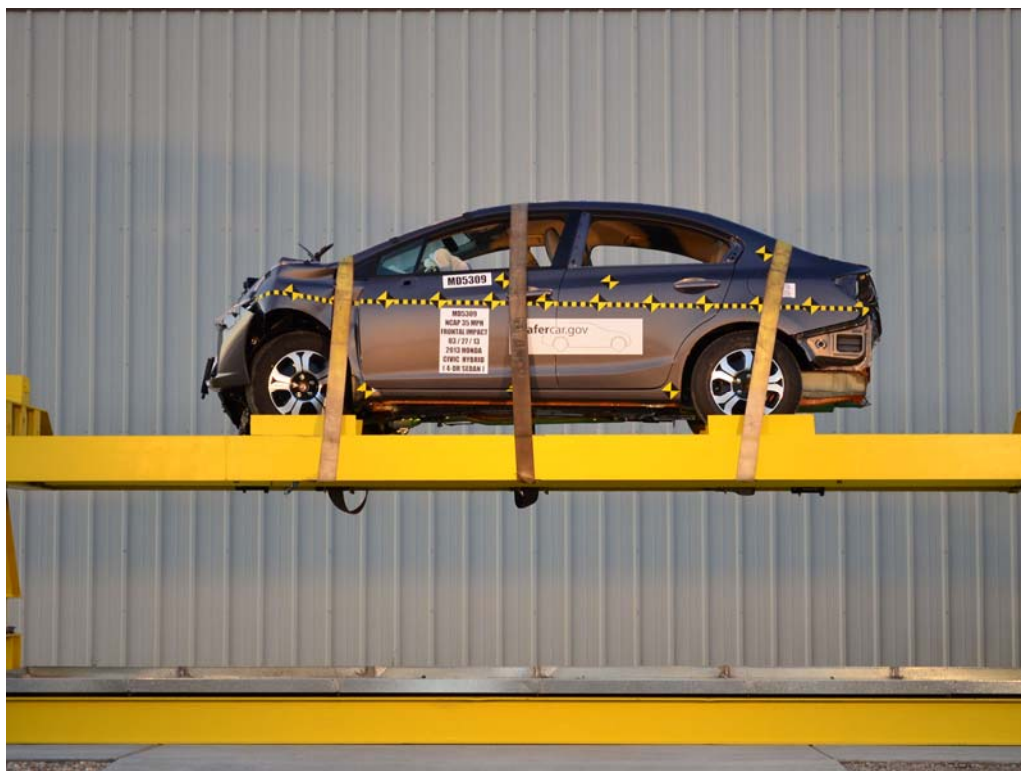


FIGURE 70. Vehicle at 0° on Static Rollover Device



FIGURE 71. Vehicle at 90° on Static Rollover Device



FIGURE 72. Vehicle at 180° on Static Rollover Device



FIGURE 73. Vehicle at 270° on Static Rollover Device

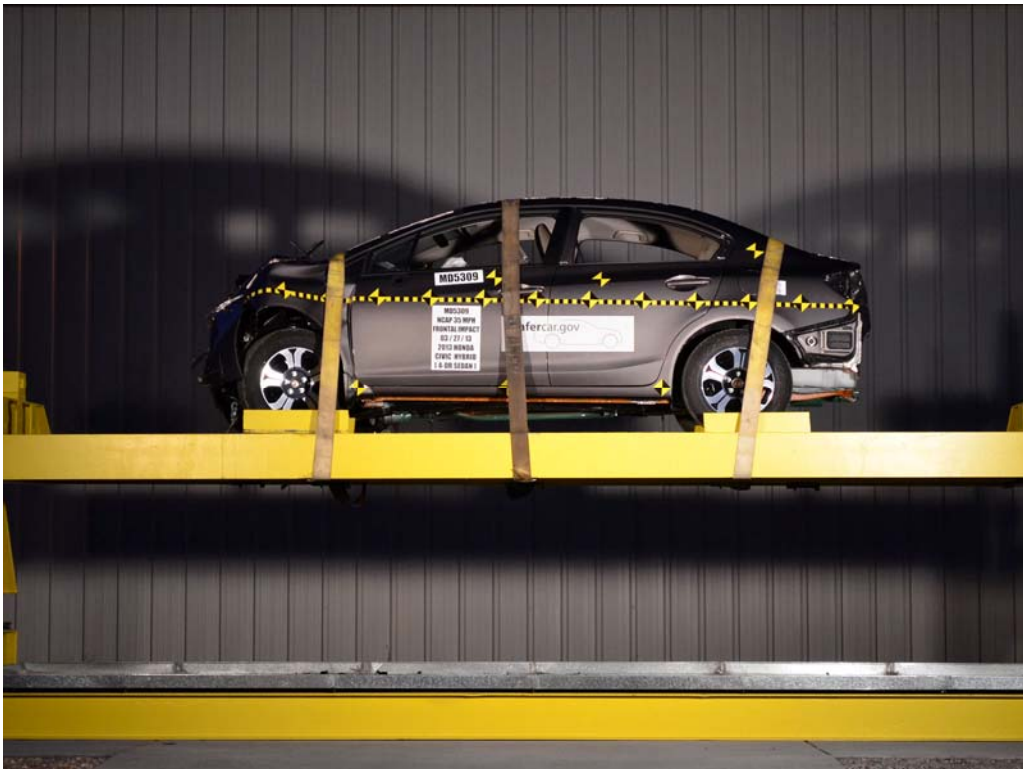


FIGURE 74. Vehicle at 360° on Static Rollover Device



FIGURE 75. 2013 Honda Civic Hybrid Frontal Impact Event

2013 CIVIC IMA 4DR HYB
EX: URBAN TITANIUM M ENGINE MODEL: LEA2-200370
EX: BEIGE

STANDARD EQUIPMENT AT NO EXTRA COST

*** TECHNICAL FEATURES ***

- 110hp 1.8-Liter SOHC i-VTEC 4-Cylinder Engine with Integrated Motor Assist (IMA)
- Idle Stop Feature
- Continuously Variable Transmission (CVT)
- Front MacPherson Strut Suspension
- Rear Multi-Link Suspension
- Electric Power-Assisted Rack-and-Pinion Steering
- CAIR: Certified AT P22V
- Intelligent Theft-Deterrent System

*** SAFETY FEATURES ***

- Driver's and Front Passenger's Dual-Stage Airbags (SRS)
- Driver's and Front Passenger's Side Airbags w/ SmartVent Side Curtain Airbags
- With Roll-over Sensor
- Forward Collision Warning
- Lane Departure Warning
- Anti-Lock Braking System (ABS)
- Brake Assist
- Electronic Brake Distribution (EBD)
- Vehicle Stability Assist (VSA)
- 3 Point Seat Belts
- Front Seat Belts with Automatic Tensioning System
- Tire Pressure Monitoring System
- Side Impact Door Beams
- Front and Rear Crumple Zones
- ACE Body Structure
- Daytime Running Lights (DRL)
- LATCH System for Child Seats

*** INTERIOR FEATURES ***

- 160-Watt AM/FM/CD Audio System with 6 Speakers incl. MP3/WMA Playback
- XM Satellite Radio

Manufacturer's Suggested Retail Price

\$24,360.00

Full Tank of Fuel

XM Satellite Radio Includes Free Activation and 3 Months Free Service (post. AR & HQ)

KEY STANDARD FEATURES

- *Rearview Camera
- *Bluetooth HandsFreeLink
- *USB Audio Interface
- *Side Curtain Airbags with Roll-over Sensor

Destination and Handling

790.00

TOTAL VEHICLE PRICE

\$25,150.00

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

EXTERIOR FEATURES *

- 18" x 8" 17" Lightweight Alloy Wheels
- P195/65 R15 All-Season Tires
- Auto-On/Off Headlights
- Variable Intermittent Windshield Wipers
- Rear Window Defroster
- Power Door Mirrors with Turn Indicators
- Power Entry System with Trunk Opener
- Power Windows
- Tire Sealant and Inflator Kit (in place of spare tire)

AVERY GREENE HONDA
800 ADMIRAL CALLAHAN
VALLEJO, CA 94591

PORT OF ENTRY: INDIANA
DELIVERY POINT: RICHMOND
SHIP: SHIP
ROWSPACE: 764-624
TRANSIT/DEL: CHS RICHMOND
VIN: 19XFB4F27D200049

OPIS, QLR: 200802
REF NO: 40315
HW CODE: HW-4150
DISASSON: CALIFORNIA
CONTROL NO: 476428
DEALER: 200802

FOR THIS VEHICLE
Final Assembly Plant:
GREENSBURG, INDIANA
USA
Country of Origin: Engine:
JAPAN
Transmission:
JAPAN

EPA DOT Fuel Economy and Environment

Fuel Economy

44 MPG

Combined city/hwy 44/44

2.3 gallons per 100 miles

Compacted city range from 14 to 155 MPG. The best vehicle rates 112 MPG.

You Save \$5,600

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

Annual fuel cost \$1,200

Fuel Economy & Greenhouse Gas Rating (lower is better) Smog Rating (lower is better)

1 (out of 10)

This vehicle rates 200 grams CO₂ per mile. The best rates 9 grams per mile (lighter only). Producing and distributing fuel also create emissions, from trees at the refinery and at the pump.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 21 MPG and costs \$11,000 to fuel over 5 years. Cost estimates are based on 12,000 miles per year at \$3.20 per gallon. MPGs to miles per gallon are rounded. Vehicle are a registered owner at the time of sale and being.

fuel economy.gov

Country of origin for the vehicle and engine

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE

U.S./Canadian Parts Content: **65 %**

Main Sources of Foreign Parts Content: **JAPAN 20 %**

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

FOR THIS VEHICLE

Final Assembly Plant:
GREENSBURG, INDIANA
USA
Country of Origin: Engine:
JAPAN
Transmission:
JAPAN

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score

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

Frontal Crash

Driver: **Not Rated**
Passenger: **Not Rated**

Side Crash

Front seat: **Not Rated**
Rear seat: **Not Rated**

Rollover

Based on the risk of rollover in a single vehicle crash. **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 1-800-327-4256

This vehicle is equipped with a front bumper of a type that has been tested at an impact speed of 8 miles per hour, and a rear bumper of a type that has been tested at an impact speed of 5 miles per hour, resulting in no damage to the vehicle's body and safety systems and minimal damage to the bumper and after-market hardware. "Structural damage to the bumper" means minor cosmetic damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper the less likely the vehicle will require repair after a low-speed collision. This vehicle exceeds the current federal bumper standard of 2.5 miles per hour.

FIGURE 76. 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
17	Passenger Head Y Acceleration vs. Time Primary	B-6
18	Passenger Head Z Acceleration vs. Time Primary	B-6
19	Passenger Head Resultant Acceleration vs. Time Primary	B-6
20	Passenger Chest X Deflection vs. Time	B-7
21	Passenger Chest X Acceleration vs. Time Primary	B-8
22	Passenger Chest Y Acceleration vs. Time Primary	B-8
23	Passenger Chest Z Acceleration vs. Time Primary	B-8
24	Passenger Chest Resultant Acceleration vs. Time Primary	B-8
25	Passenger Upper Neck Force X vs. Time Primary	B-9
26	Passenger Upper Neck Force Z vs. Time Primary	B-9
27	Passenger Upper Neck Moment Y vs. Time Primary	B-9
28	Passenger Nij vs. Time Primary	B-9
29	Passenger Left Femur Force vs. Time	B-10
30	Passenger Right Femur Force vs. Time	B-10

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

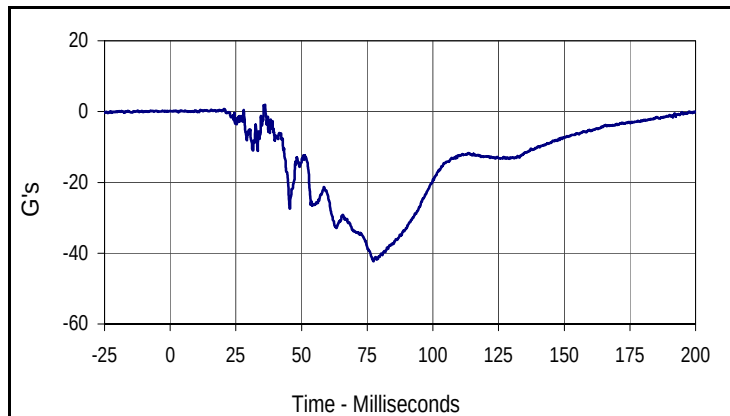
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Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Head Front Y Acceleration
Driver Head Front Z Acceleration
Driver Head Top X Acceleration
Driver Head Top Y Acceleration
Driver Head Left X Acceleration
Driver Head Left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

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

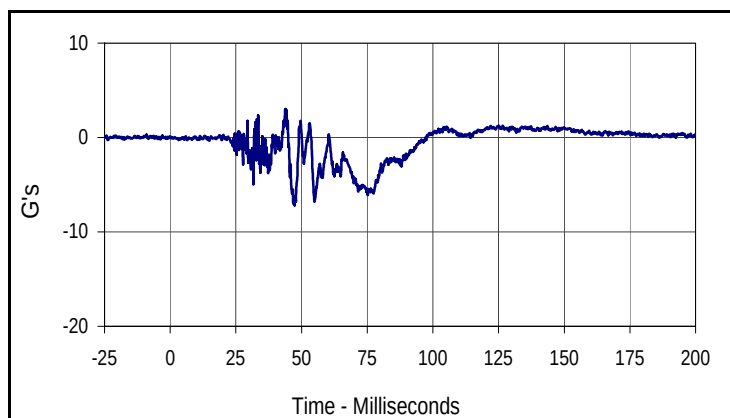
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right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

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

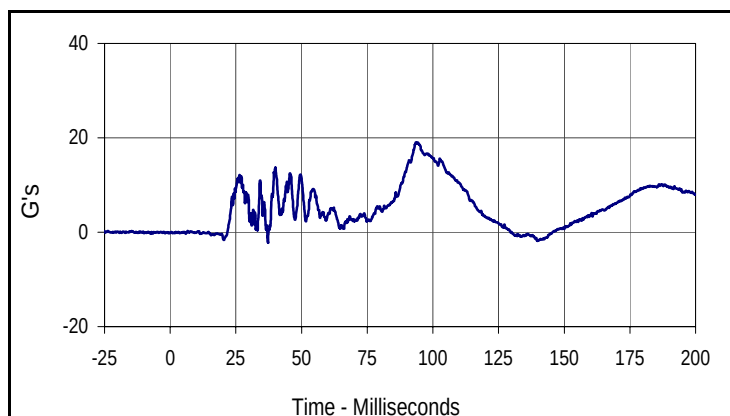
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 Test Date: 3/27/13



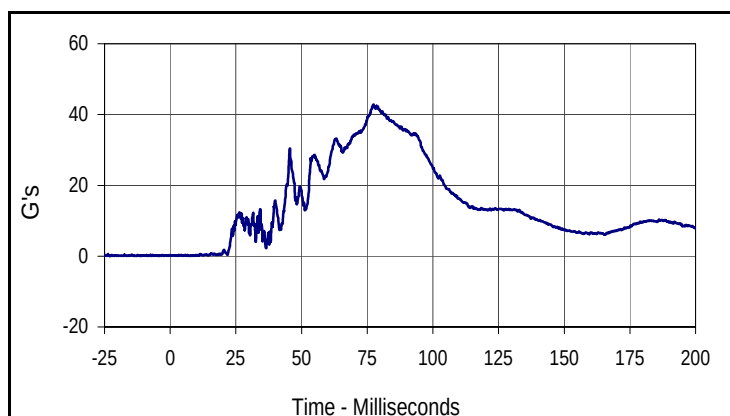
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001	FIL	1000	G's
Max	Time	Min	Time
1.9	36.1	-42.3	77.4



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.0	43.8	-7.2	47.4



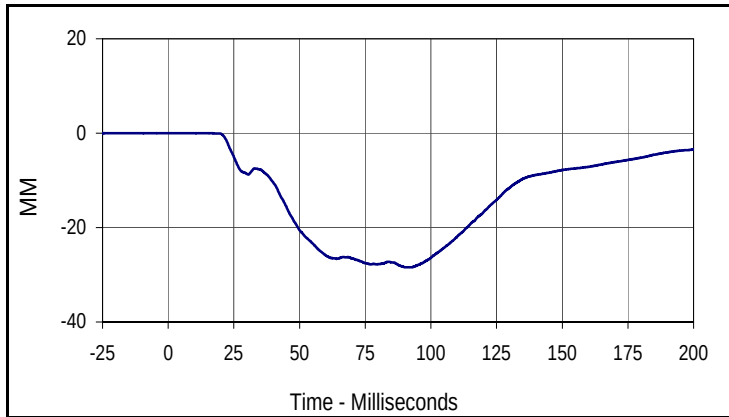
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Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
19.0	93.5	-2.2	37.2



Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
42.8	77.4	0.0	8.7

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

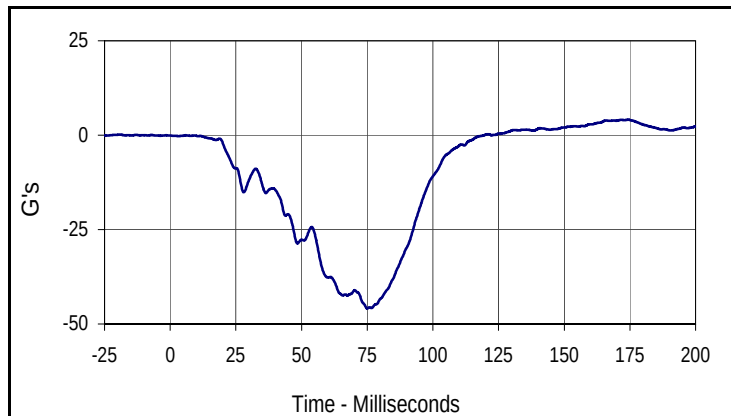
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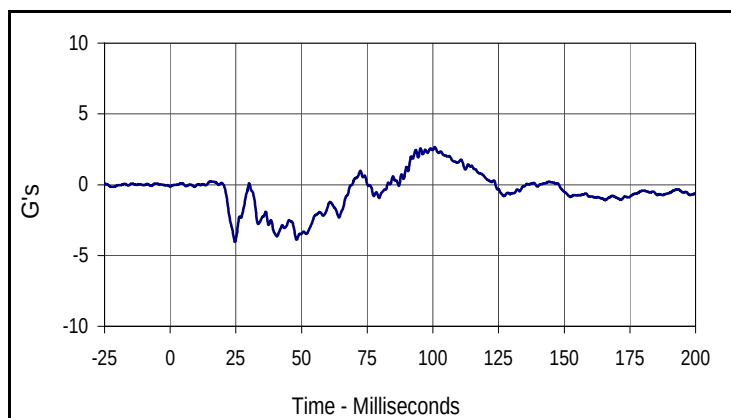
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Driver Chest Deflection			
Plot No.	Type	SAE Class	Units
005	FIL	600	MM
Max	Time	Min	Time
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Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

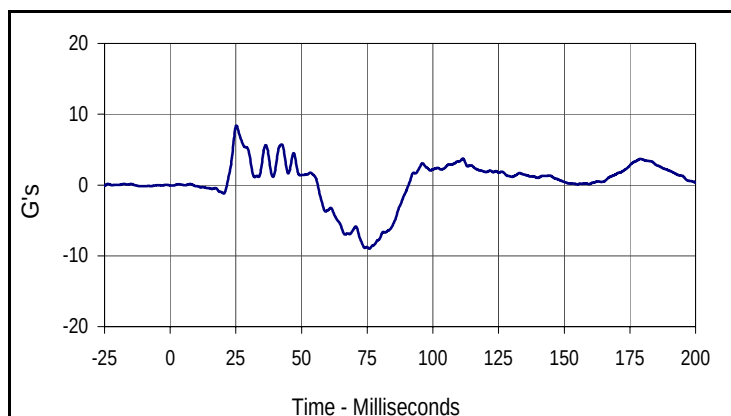
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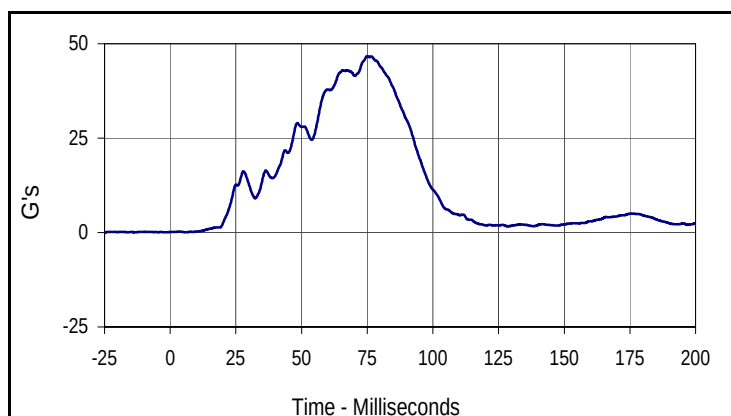
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Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
4.1	174.3	-45.9	75.0



Curve Description			
Driver Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
2.7	100.7	-4.0	24.7



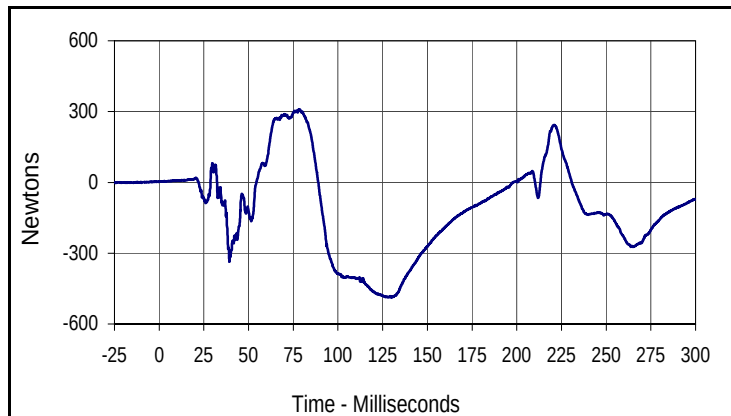
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Driver Chest Acceleration Z Primary			
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Max	Time	Min	Time
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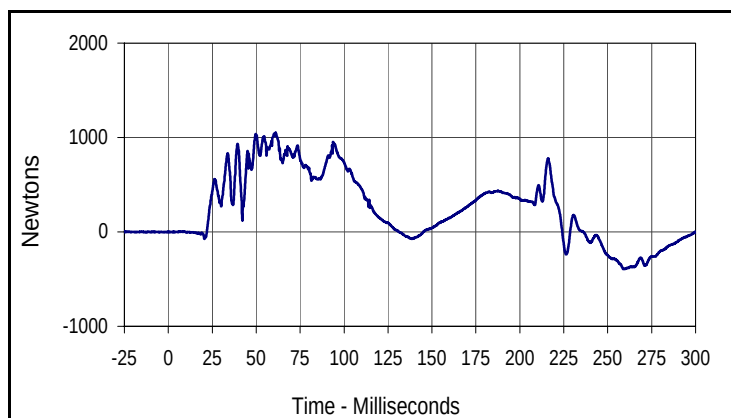
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Driver Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
009	RES	180	G's
Max	Time	Min	Time
46.7	75.0	0.1	5.5

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

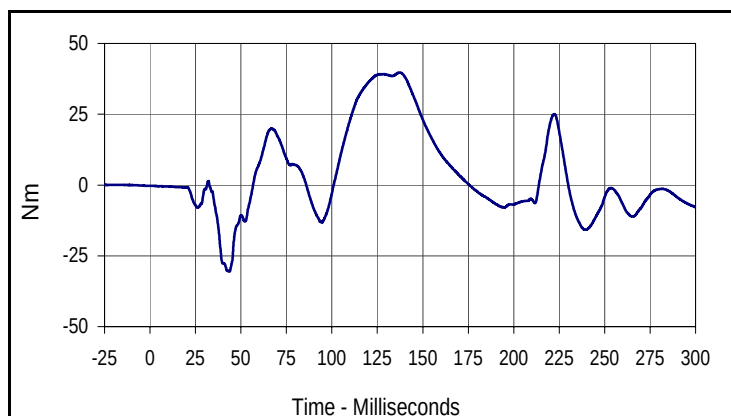
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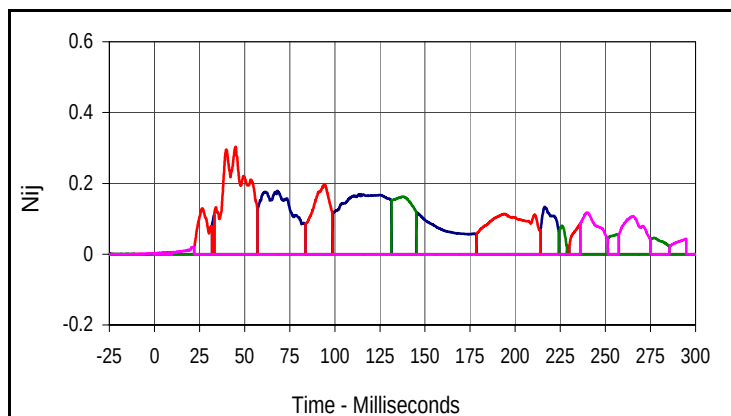
Curve Description			
Driver Upper Neck Force X			
Plot No.	Type	SAE Class	Units
010	FIL	1000	Newtons
Max	Time	Min	Time
310.5	78.4	-487.6	128.0



Curve Description			
Driver Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
011	FIL	1000	Newtons
Max	Time	Min	Time
1049.7	61.2	-393.9	259.8



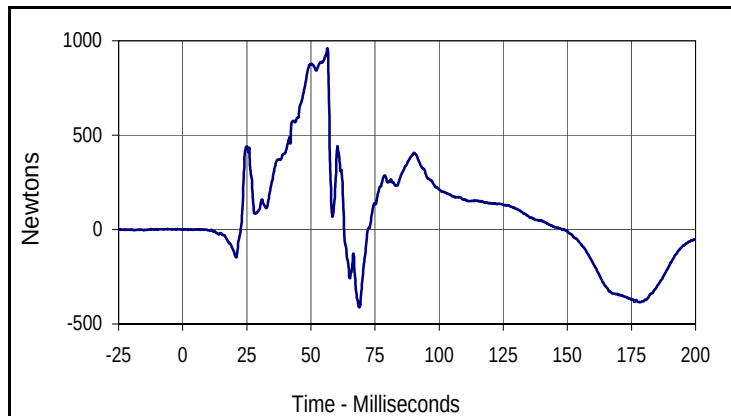
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Driver Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
39.8	137.3	-30.6	43.7



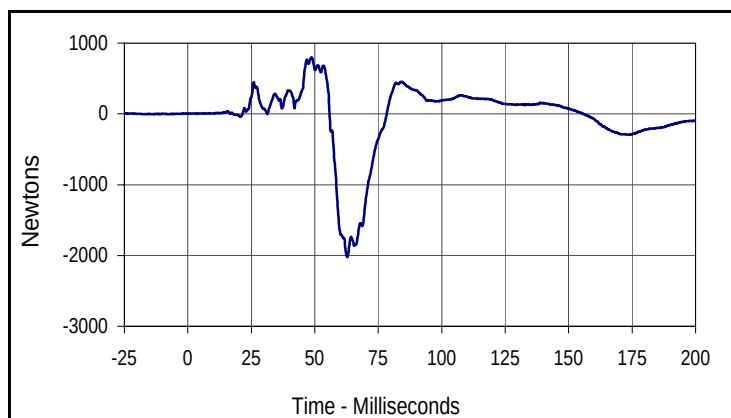
Curve Description			
Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.18	68.1
Units	Type	Max	Time
Nte	FIL	0.30	45.0
Units	Type	Max	Time
Ncf	FIL	0.16	137.8
Units	Type	Max	Time
Nce	FIL	0.12	240.2

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: MD5309
 Test Date: 3/27/13



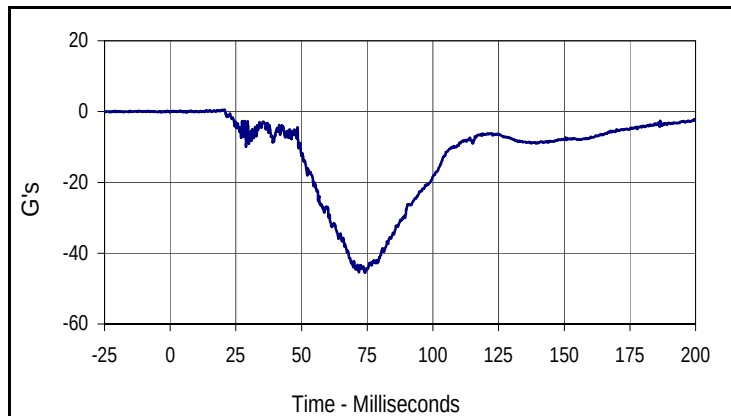
Curve Description			
Driver Left Femur Force Z			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
960.2	56.4	-411.0	68.8



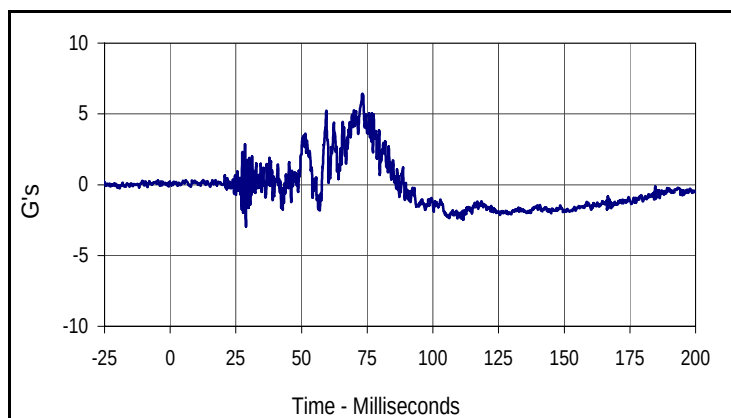
Curve Description			
Driver Right Femur Force Z			
Plot No.	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
797.2	48.7	-2022.9	62.8

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

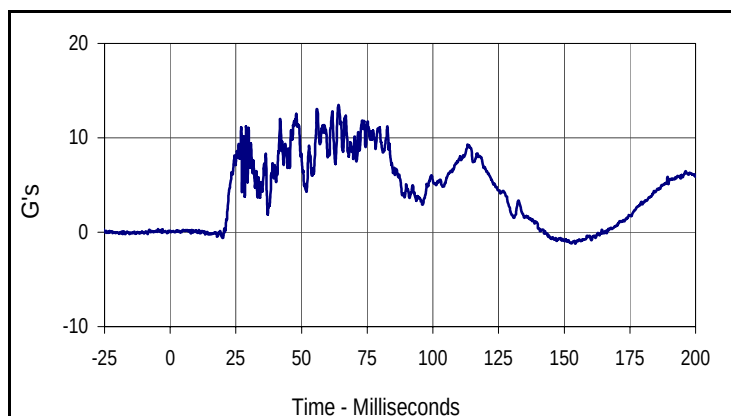
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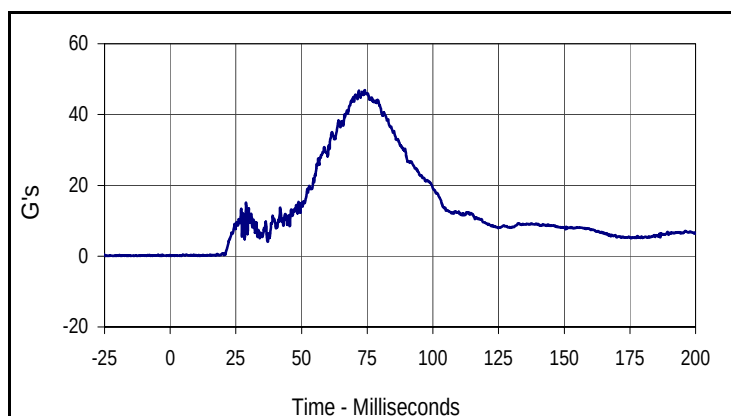
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
0.5	20.7	-45.6	74.1



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
6.4	73.2	-2.9	28.8



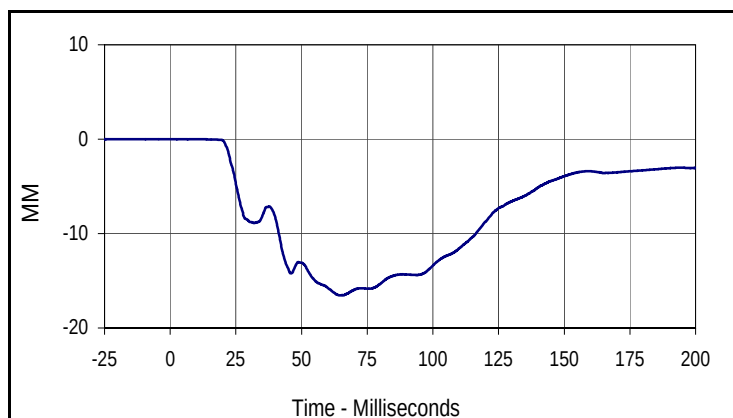
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
017	FIL	1000	G's
Max	Time	Min	Time
13.5	64.1	-1.2	154.2



Curve Description			
Passenger Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
018	RES	1000	G's
Max	Time	Min	Time
46.9	74.1	0.0	11.4

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

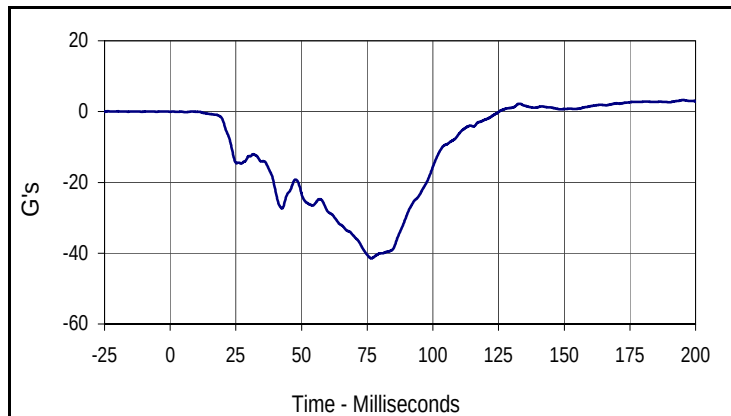
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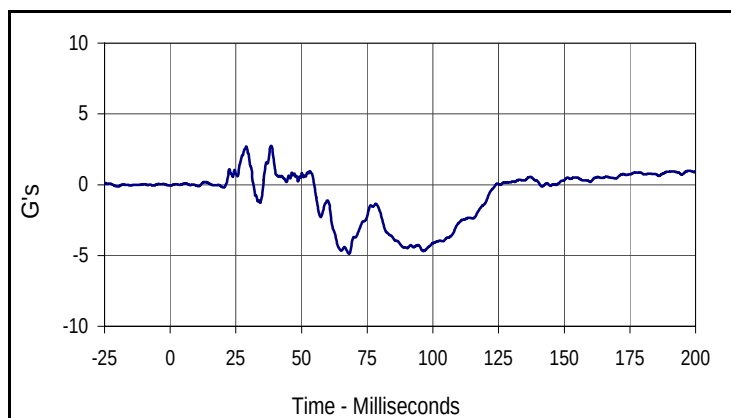
Curve Description			
Passenger Chest Deflection			
Plot No.	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
0.0	2.0	-16.5	64.7

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

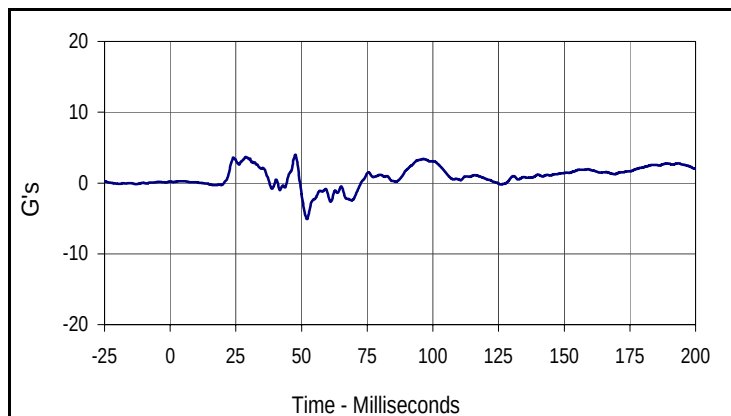
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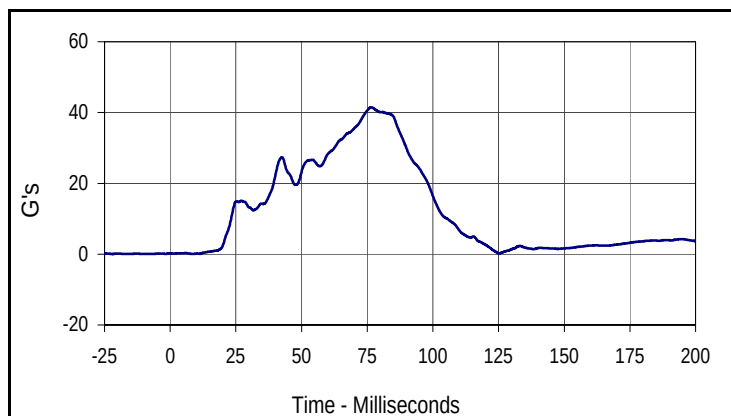
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Passenger Chest Acceleration X Primary			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
3.3	195.1	-41.5	76.6



Curve Description			
Passenger Chest Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
2.8	38.5	-4.9	68.0



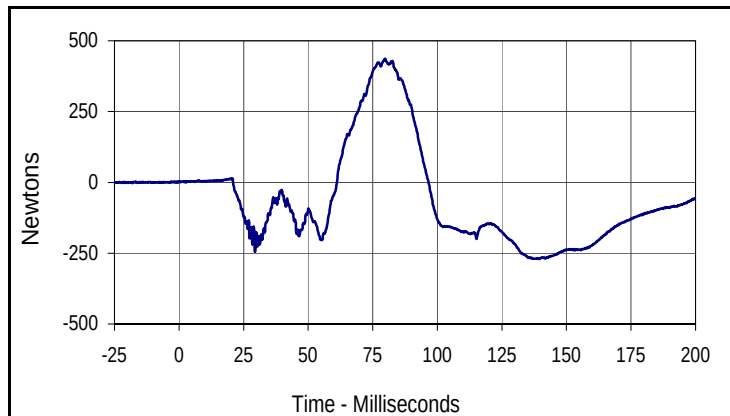
Curve Description			
Passenger Chest Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
022	FIL	180	G's
Max	Time	Min	Time
4.0	47.7	-5.1	52.1



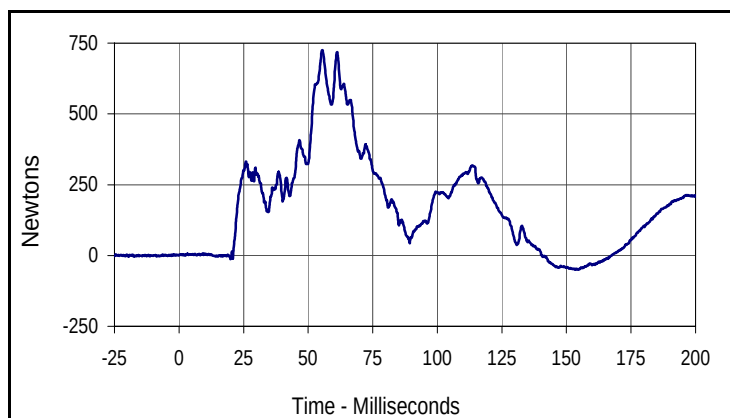
Curve Description			
Passenger Chest Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
023	RES	180	G's
Max	Time	Min	Time
41.5	76.5	0.1	8.1

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 56 km/h Frontal Impact NCAP Test

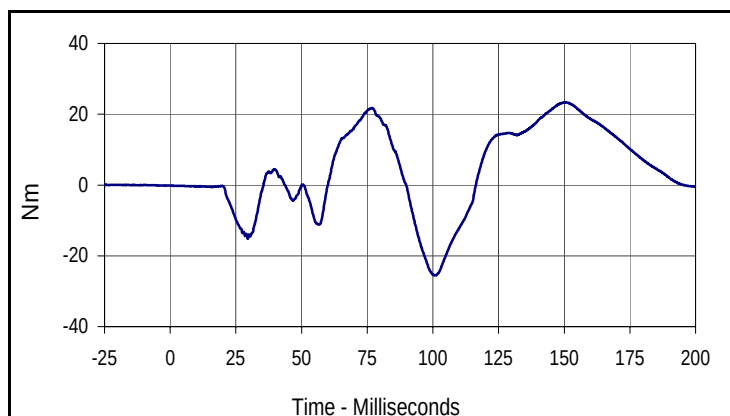
NHTSA No.: MD5309
 Test Date: 3/27/13



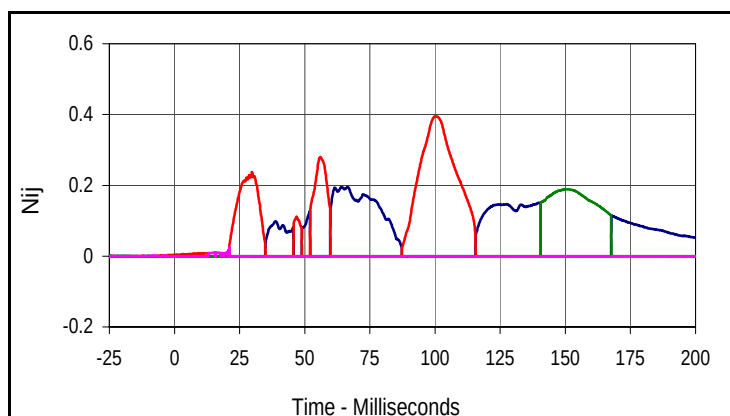
Curve Description			
Passenger Upper Neck Force X			
Plot No.	Type	SAE Class	Units
024	FIL	1000	Newtons
Max	Time	Min	Time
436.7	79.7	-271.1	139.1



Curve Description			
Passenger Upper Neck Force Z			
Plot No.	Type	SAE Class	Units
025	FIL	1000	Newtons
Max	Time	Min	Time
724.9	55.5	-50.4	154.6



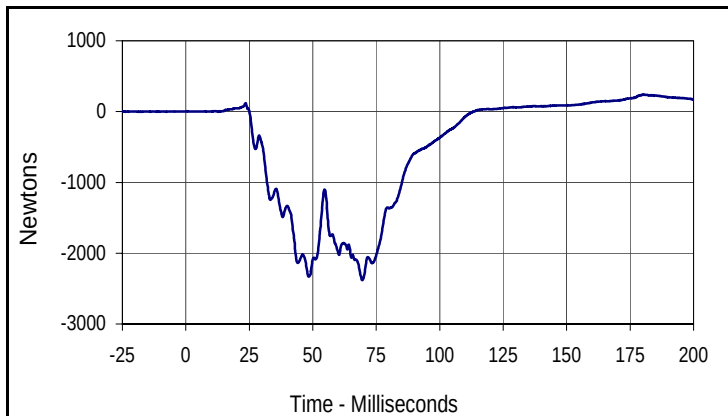
Curve Description			
Passenger Upper Neck Moment Y			
Plot No.	Type	SAE Class	Units
026	FIL	600	Nm
Max	Time	Min	Time
23.4	150.2	-25.5	100.9



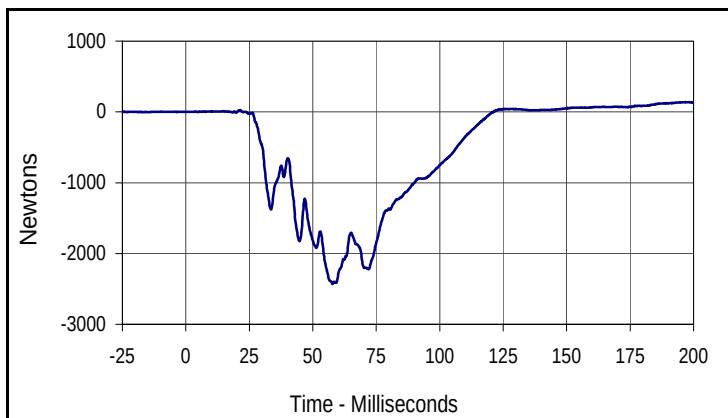
Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.20	64.1
Units	Type	Max	Time
Nte	FIL	0.40	100.0
Units	Type	Max	Time
Ncf	FIL	0.19	151.1
Units	Type	Max	Time
Nce	FIL	0.14	284.8

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
Test Program: 56 km/h Frontal Impact NCAP Test

NHTSA No.: MD5309
Test Date: 3/27/13



Curve Description			
Passenger Left Femur Force Z			
Plot No.	Type	SAE Class	Units
027	FIL	600	Newtons
Max	Time	Min	Time
238.5	180.1	-2381.3	69.5



Curve Description			
Passenger Right Femur Force Z			
Plot No.	Type	SAE Class	Units
028	FIL	600	Newtons
Max	Time	Min	Time
139.1	196.8	-2429.0	57.8

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: 3/19/13



ATD Serial No.: 035

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 repair or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 3/19/13

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	29.7	Pass
A - Total sitting height	mm	879 to 889	884	Pass
B - Shoulder pivot height	mm	505 to 521	512	Pass
C - H point height	mm	84 to 89	85	Pass
D - H point location from backline	mm	135 to 140	137	Pass
E - Shoulder pivot from backline	mm	84 to 94	89	Pass
F - Thigh clearance	mm	140 to 155	146	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	297	Pass
H - Head back to backline	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	336	Pass
J - Elbow rest height	mm	190 to 211	201	Pass
K - Buttock to knee length	mm	579 to 604	586	Pass
L - Popliteal length	mm	429 to 455	438	Pass
M - Knee pivot height	mm	485 to 500	493	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	433	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	981	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	429	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results			Pass	

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

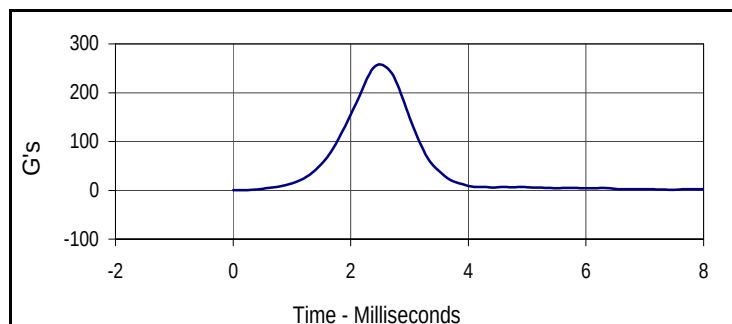
Test Date: 3/19/13



ATD Serial No.: 035

Test I.D.: M035HD053

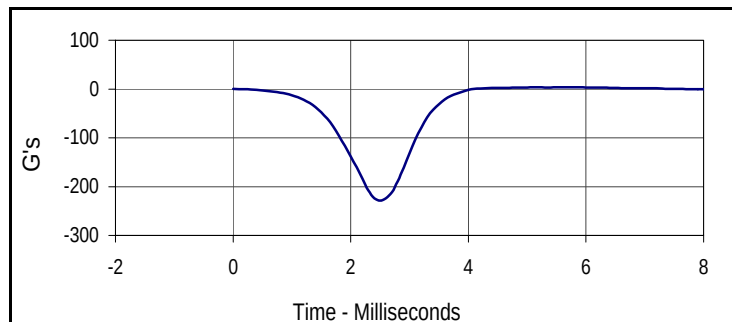
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	465	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.8	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	258.1	Pass
Peak Lateral Acceleration		G's	≤15.0	5.3	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.8	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

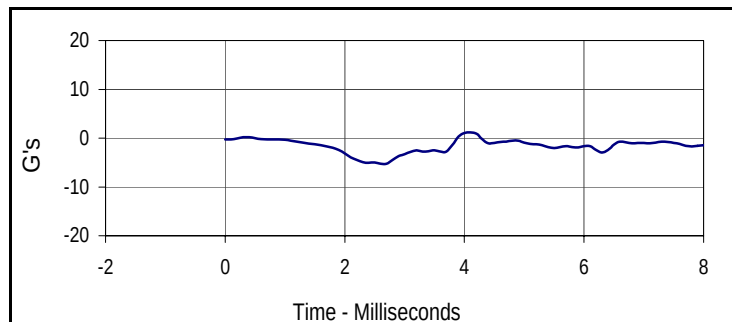
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
258.1	2.5	0.3	0.0



Curve Description

Head X

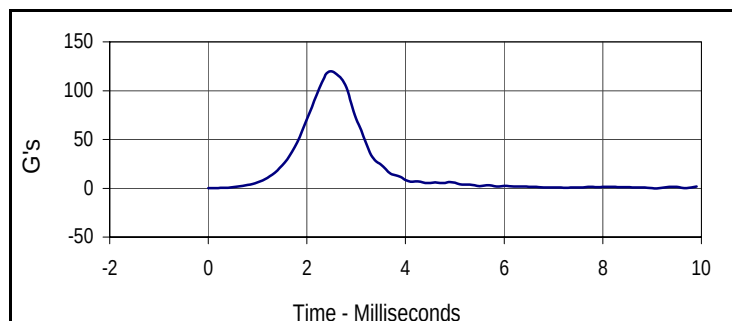
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.7	5.2	-228.6	2.5



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.2	4.1	-5.3	2.7



Curve Description

Head Z

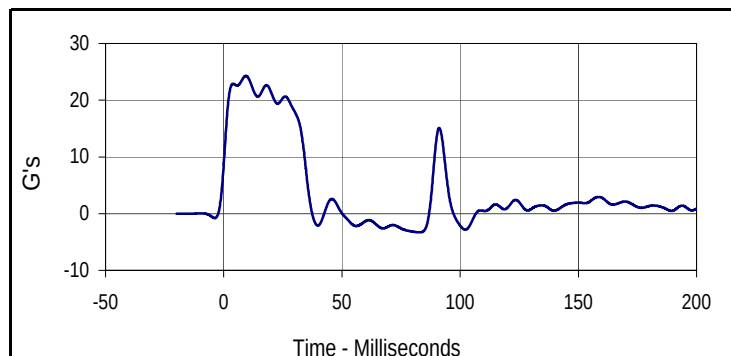
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
119.7	2.5	0.0	0.0

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

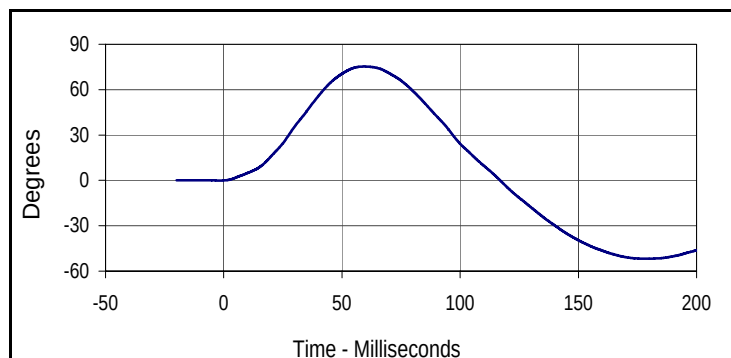
Test Date: 3/19/13
 Test I.D.: M035NF053



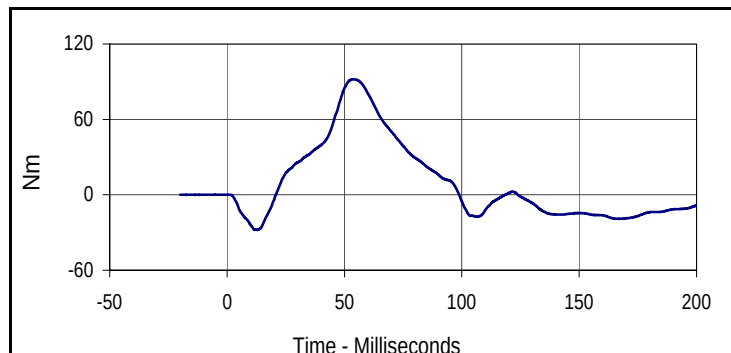
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	530	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.8	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.2	Pass
	20 Msec.	G's	17.6 to 22.6	21.4	Pass
	30 Msec.	G's	12.5 to 18.5	18.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.6	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	75.3	Pass
	Time	Msec.	57.0 to 64.0	59.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	117	Pass
Moment About Occ. Condyle	Max	Nm	88.1 to 108.5	91.9	Pass
	Time	Msec.	47.0 to 58.0	53.8	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.9	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.3	9.4	-3.3	82.8



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
75.3	59.3	-51.7	178.2



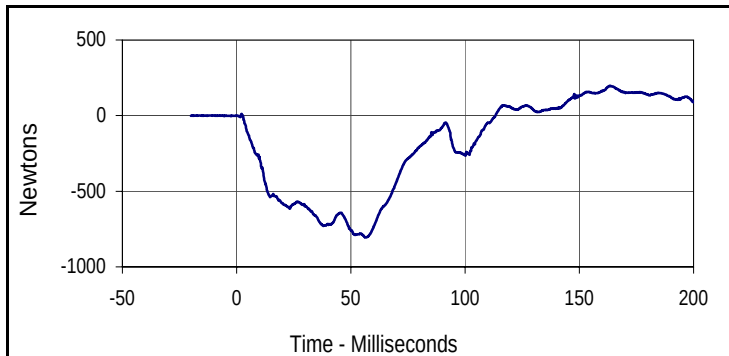
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
91.9	53.8	-28.0	12.8

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

ATD Serial No.: 035

Test Date: 3/19/13

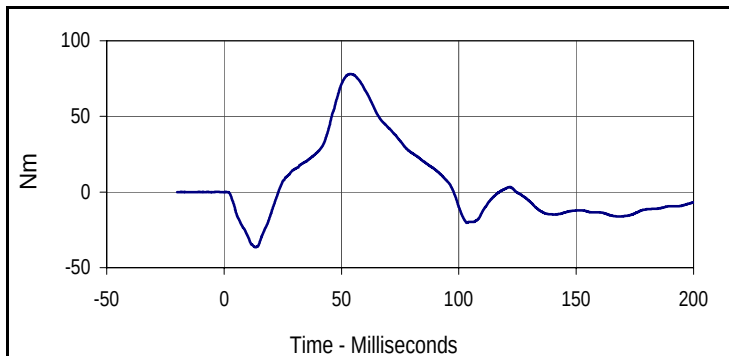
Test I.D.: M035NF053



Curve Description

Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
196.9	163.6	-806.0	56.4



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
78.0	53.8	-36.5	13.3

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

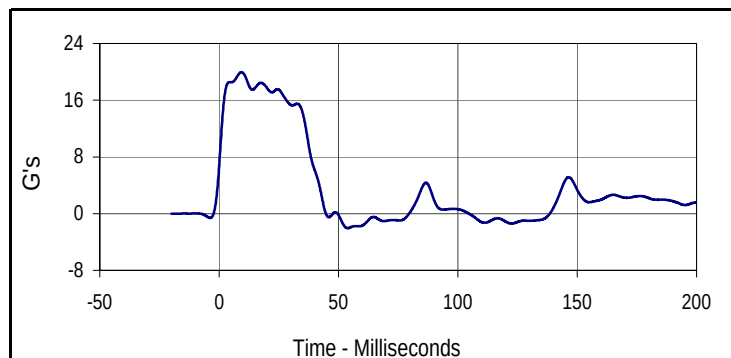
Test Date: 3/19/13



ATD Serial No.: 035

Test I.D.: M035NE053

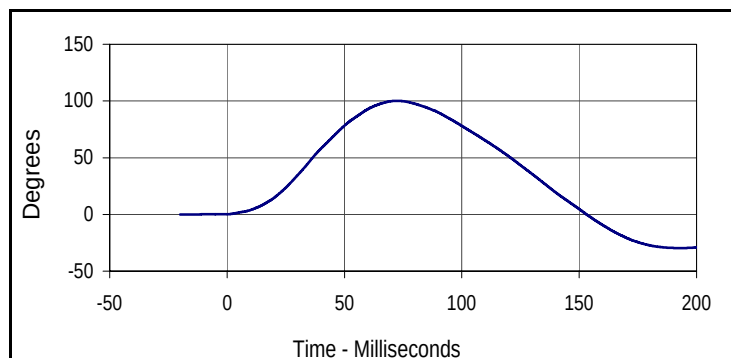
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	575	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.8	Pass
Pendulum Velocity		m/s	5.94 to 6.19	5.95	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.9	Pass
	20 Msec.	G's	14.0 to 19.0	17.7	Pass
	30 Msec.	G's	11.0 to 16.0	15.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	41.2	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	100.1	Pass
	Time	Msec.	72.0 to 82.0	72.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	153.2	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-74.3	Pass
	Time	Msec.	65.0 to 79.0	67.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	135.2	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

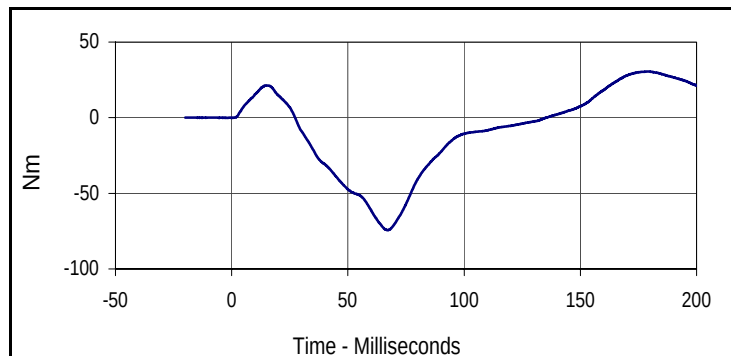
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.0	9.4	-2.1	53.9



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
100.1	72.3	-29.6	193.2



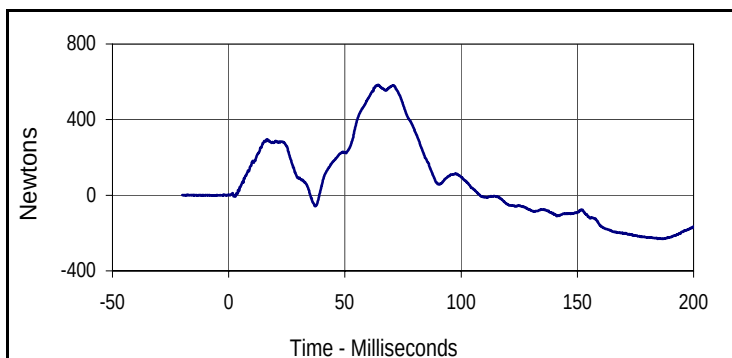
Curve Description

Moment About Occipital Condyle

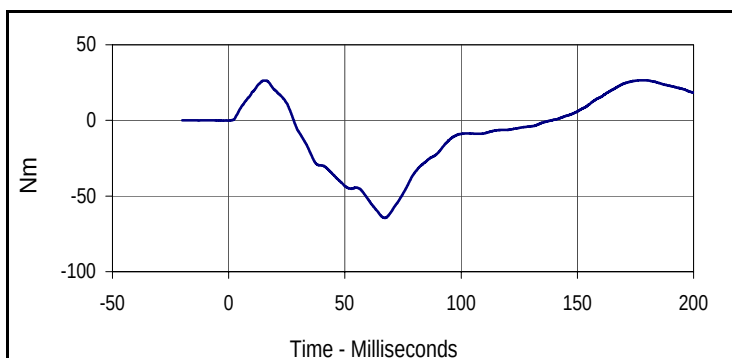
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
30.5	179.0	-74.3	67.2

Test Program: Hybrid III 50th Percentile Male Neck Extension Test
 ATD Serial No.: 035

Test Date: 3/19/13
 Test I.D.: M035NE053



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
583.8	64.1	-230.7	186.8



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
26.6	178.9	-64.4	67.2

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

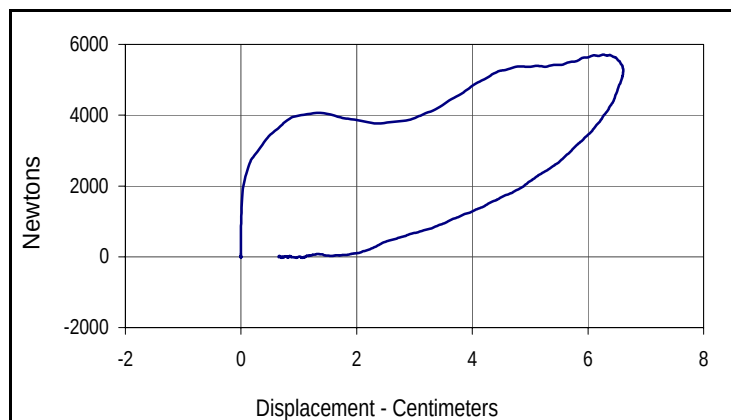
Test Date: 3/19/13



ATD Serial No.: 035

Test I.D.: M035CH053

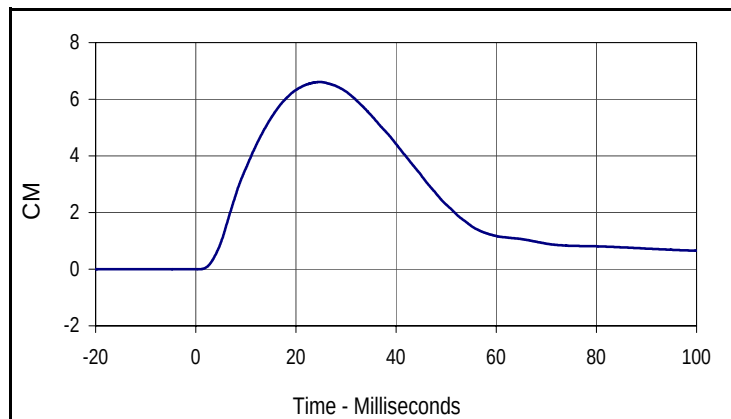
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	640	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Probe Velocity		m/s	6.58 to 6.82	6.71	Pass
Peak Probe Force		Newtons	5159 to 5893	5709	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.61	Pass
Internal Hysteresis		%	69 to 85	71.8	Pass
Overall Test Results				Pass	



Curve Description

Probe Force vs. Chest Deflection

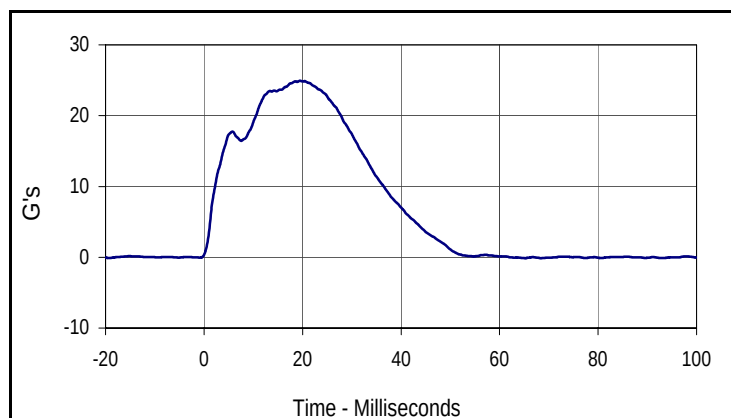
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.8
Peak Probe Force		Peak Chest Deflection	
5709		6.61	



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.6	24.7	0.0	0.5



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
24.9	19.5	-0.1	68.4

Test Program: Hybrid III 50th Percentile Male Knee Impact Test
 ATD Serial No.: 035

Test Date: 3/19/13
 Test I.D.: M035LK053, M035RK053

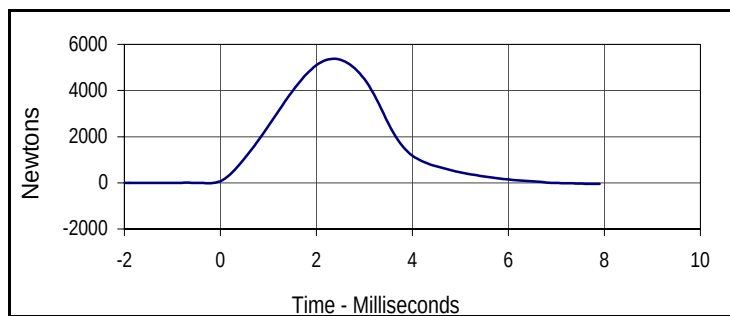


Left Knee

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	675	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	4715 to 5782	5370	Pass
Overall Test Results				Pass	

Right Knee

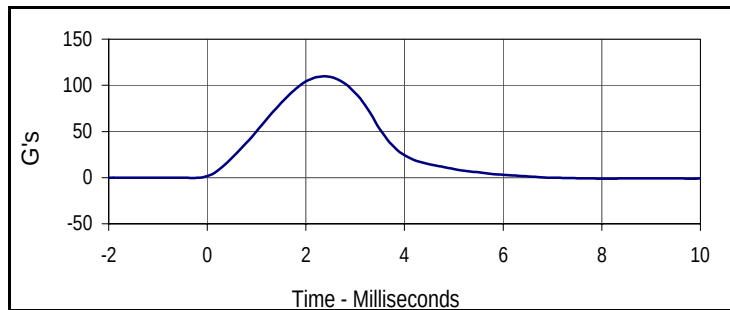
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force		Newtons	4715 to 5782	5382	Pass
Overall Test Results				Pass	



Curve Description

Left Knee Probe Force

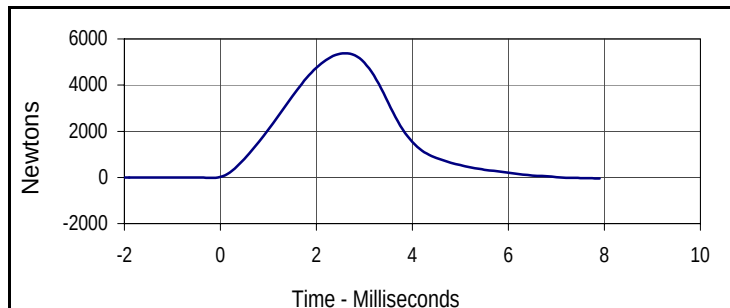
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5370.5	2.4	-47.8	7.9



Curve Description

Left Knee Acceleration

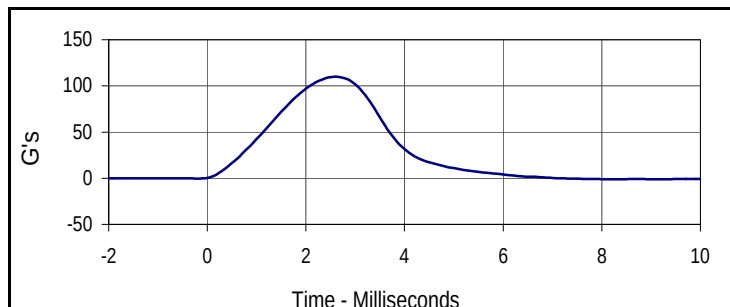
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
109.8	2.4	-1.2	9.9



Curve Description

Right Knee Probe Force

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5381.9	2.6	-46.2	7.9



Curve Description

Right Knee Acceleration

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
110.0	2.6	-1.1	9.2

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test
 ATD Serial No.: 035

Test Date: 3/19/13
 Test I.D.: M035LF053, M035RF053

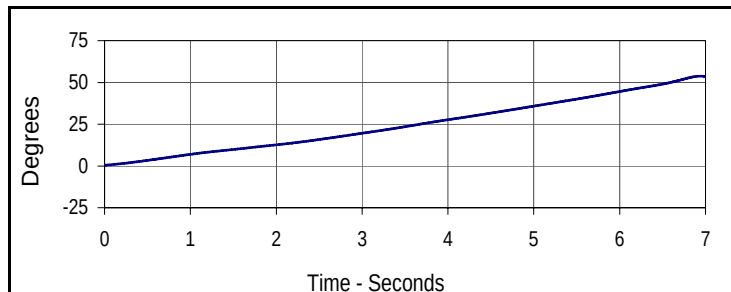


Left Hip Joint-Femur Results

Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	725	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	30.1	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Rotation Rate	deg/sec	5 to 10	7.7	Pass
Femur Torque at 30°	Nm	≤ 95	91.5	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.9	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

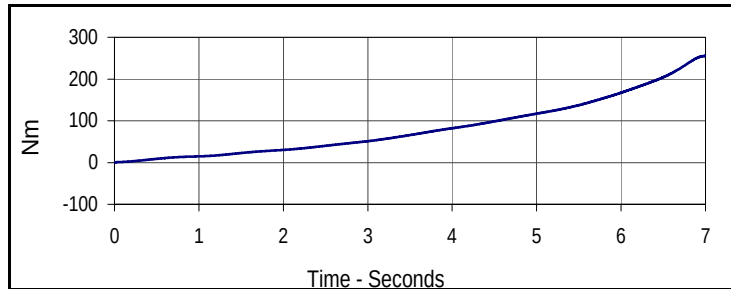
Rotation Rate	deg/sec	5 to 10	7.9	Pass
Femur Torque at 30°	Nm	≤ 95	92.9	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	49.4	Pass
Overall Test Results				Pass



Curve Description

Left Hip-Femur Rotation

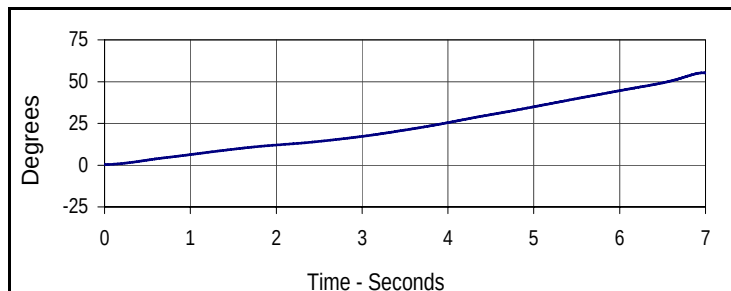
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
53.8	6.9	0.4	0.0



Curve Description

Left Femur Torque

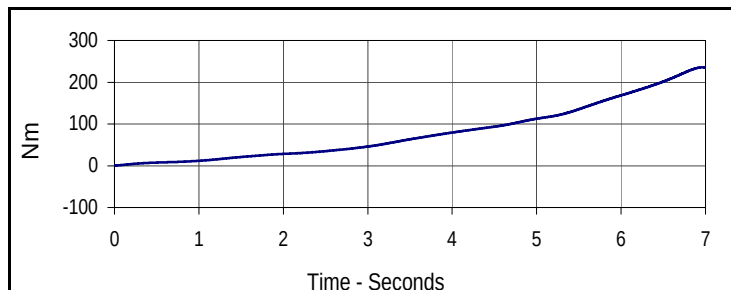
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
255.2	7.0	0.6	0.0



Curve Description

Right Hip-Femur Rotation

Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
55.2	7.0	0.3	0.0



Curve Description

Right Femur Torque

Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
235.7	7.0	0.4	0.0

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

Test Date: 3/22/13



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 repair or replacement of parts:

Replacement of neck, neck transducer pivot pin, nodding blocks, and nodding joint washers.

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 3/22/13

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.27	Pass
Laboratory Relative Humidity	%	10 to 70	29.7	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

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

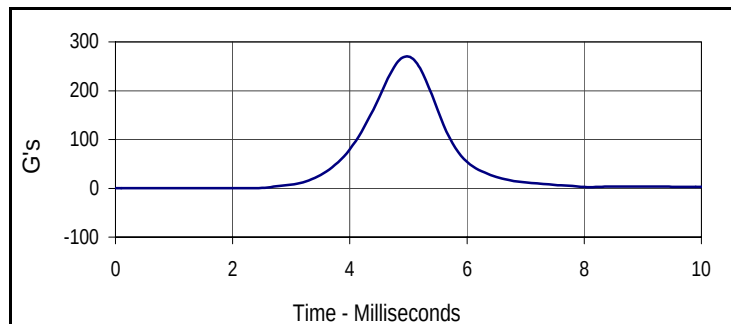
Test Date: 3/22/13



ATD Serial No.: 635

Test I.D.: F635HD039

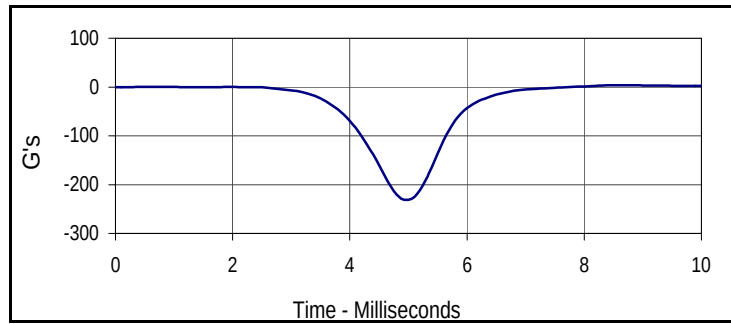
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	275	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.3	Pass
	Min	%		29.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.8	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	269.8	Pass
Peak Lateral Acceleration		G's	≤15.0	10.0	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	1.5	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

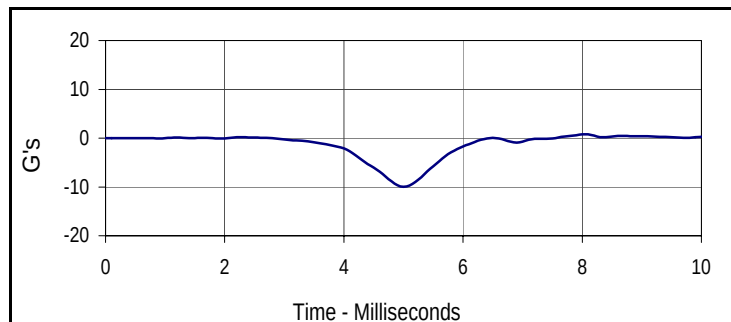
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
269.8	5.0	0.0	0.3



Curve Description

Head X

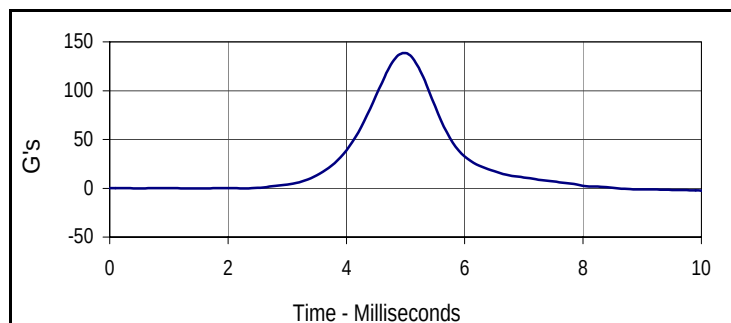
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.1	8.0	-231.3	5.0



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
0.8	8.0	-10.0	5.0



Curve Description

Head Z

Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
138.5	5.0	-0.1	2.3

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

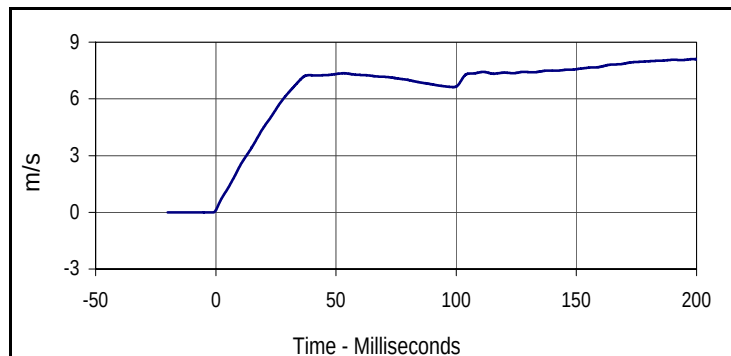
Test Date: 3/25/13



ATD Serial No.: 635

Test I.D.: F635NF039

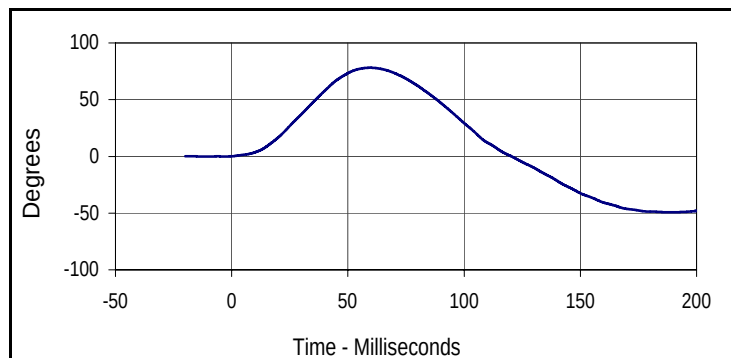
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	355	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.3	Pass
	Min	%		29.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.97	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.3	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	78.2	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	73.0	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	90.5	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

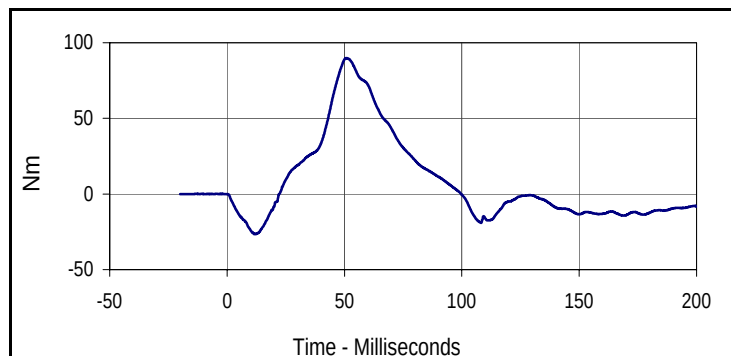
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.1	199.2	0.0	-1.4



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
78.2	59.6	-49.3	187.9



Curve Description

Moment About Occipital Condyle

Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
89.9	50.8	-26.5	12.3

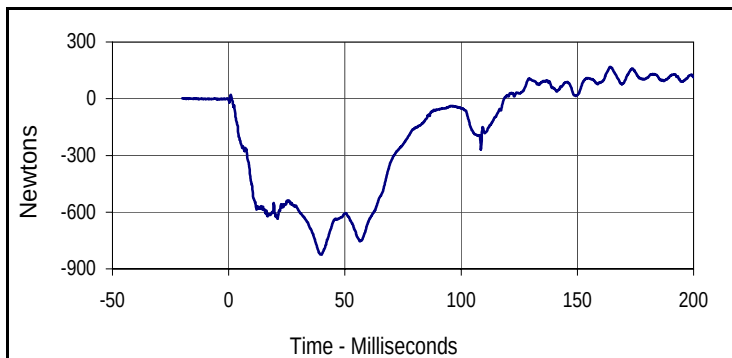
Test Program: Hybrid III 5th Percentile Female Neck Flexion Test

Test Date: 3/25/13

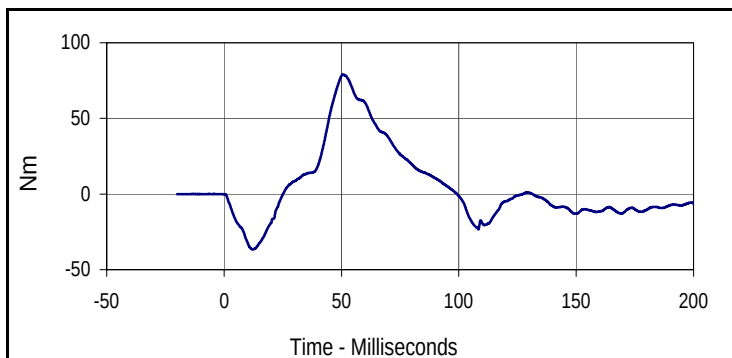


ATD Serial No.: 635

Test I.D.: F635NF039



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
167.8	164.1	-824.4	39.5



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
79.1	50.6	-36.8	12.1

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

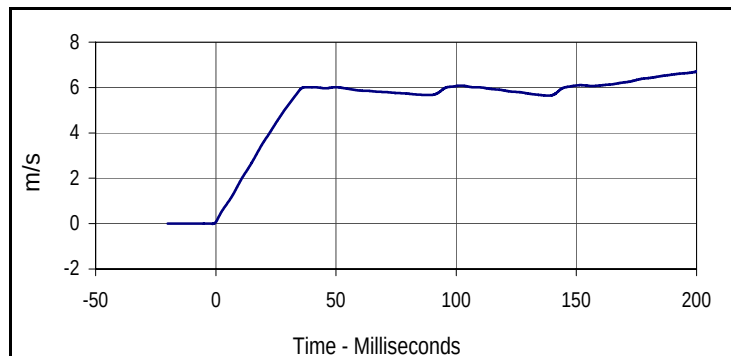
Test Date: 3/25/13



ATD Serial No.: 635

Test I.D.: F635NE039

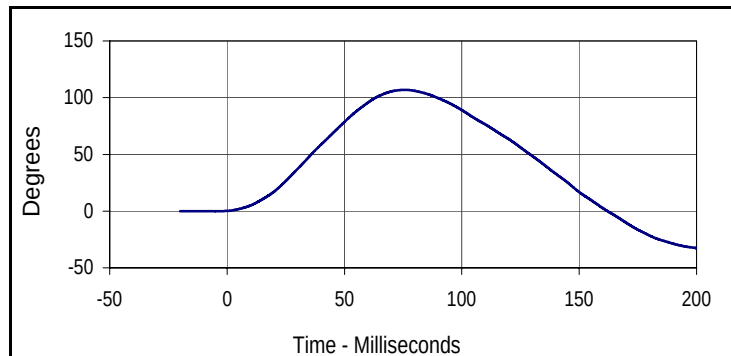
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	420	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.3	Pass
	Min	%		29.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.95	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.6	Pass
	30 Msec.	m/s	4.6 to 5.6	5.2	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	106.9	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-59.0	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	100.9	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

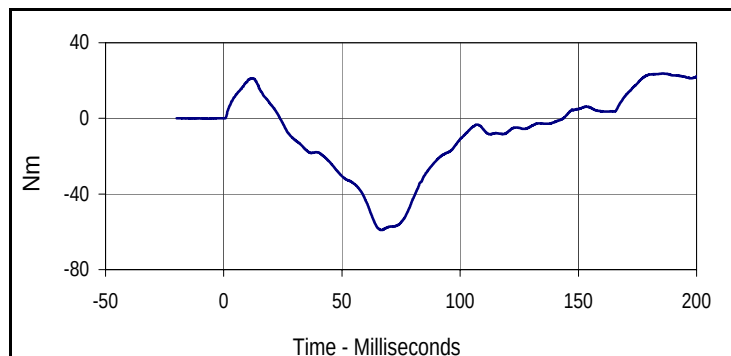
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.7	200.0	0.0	-1.3



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
106.9	75.7	-32.5	200.0



Curve Description

Moment About Occipital Condyle

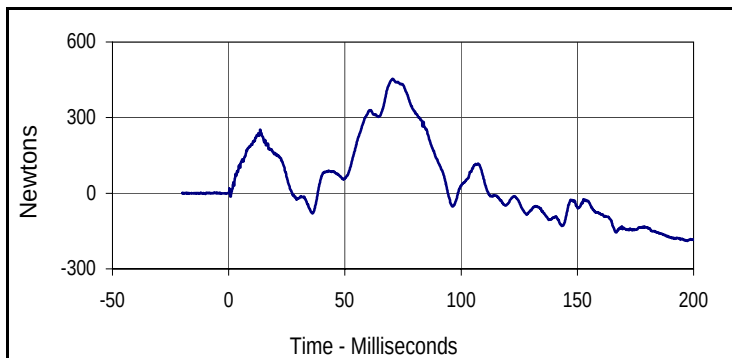
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
23.7	185.6	-59.0	67.0

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

ATD Serial No.: 635

Test Date: 3/25/13

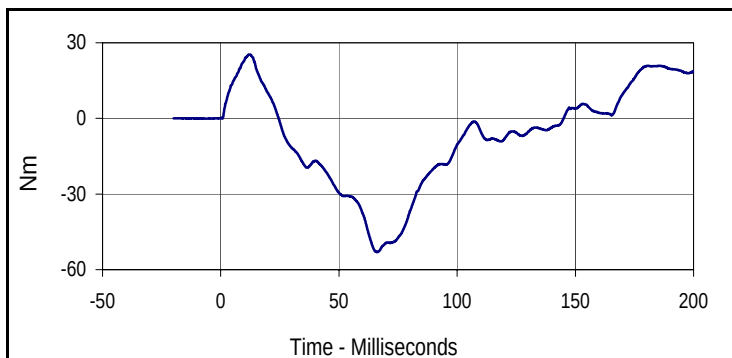
Test I.D.: F635NE039



Curve Description

Upper Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
453.8	70.5	-189.4	197.3



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
25.3	12.2	-53.0	66.1

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

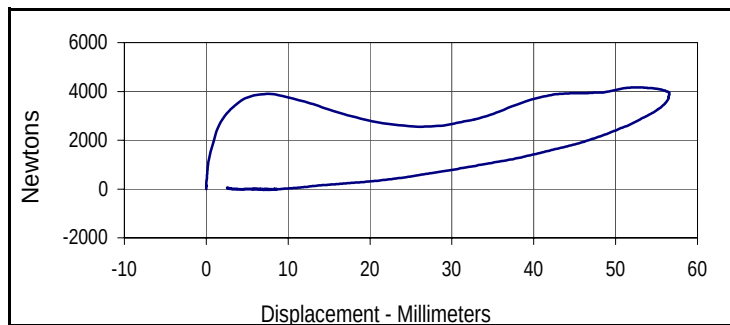
Test Date: 3/22/13



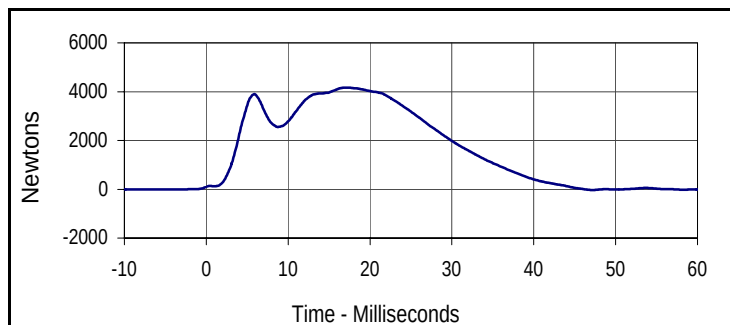
ATD Serial No.: 635

Test I.D.: F635CH039

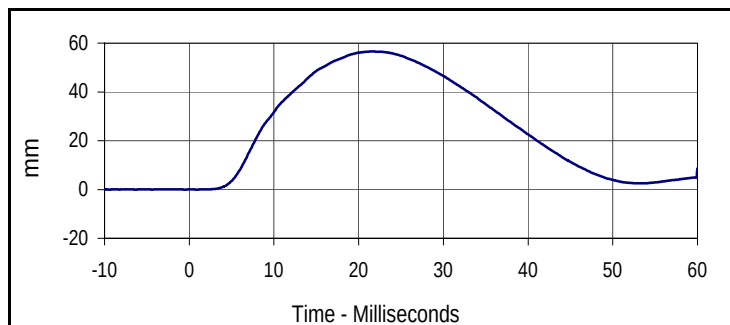
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	395	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.3	Pass
	Min	%		29.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Probe Velocity		m/s	6.59 to 6.83	6.79	Pass
Peak Chest Deflection		mm	50.0 to 58.0	56.6	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4068	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	4168	Pass
Internal Hysteresis		%	69 to 85	70.6	Pass
Overall Test Results					Pass



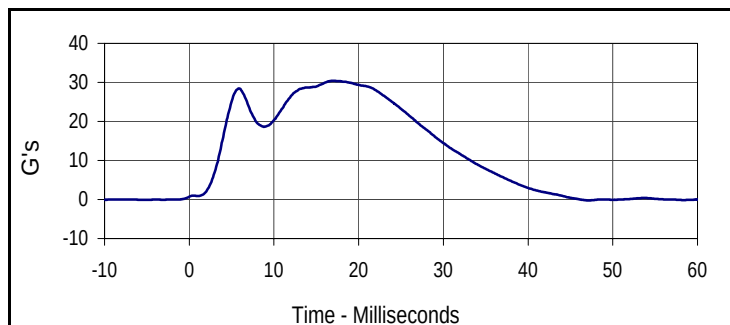
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	70.6
Peak Probe Force		Peak Chest Deflection	
4167.9		56.6	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4167.9	16.9	-32.1	47.1



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.6	21.6	0.0	-9.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
30.4	16.9	-0.2	47.1

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

Test Date: 3/22/13

ATD Serial No.: 635

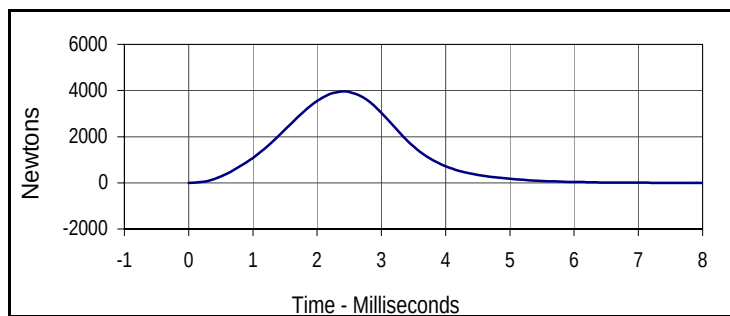
Test I.D.: F635LK039, F635RK039

**Left Knee**

Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	435	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.3	Pass
	Min	%		29.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.8	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	3450 to 4060	3956	Pass
Overall Test Results				Pass	

Right Knee

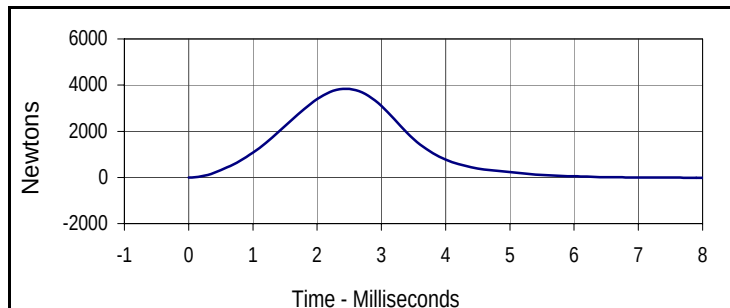
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force		Newtons	3450 to 4060	3844	Pass
Overall Test Results				Pass	

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

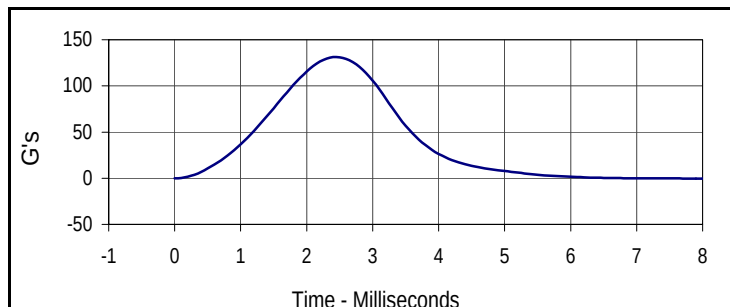
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3956.3	2.4	-23.0	8.9

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

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
135.0	2.4	-1.2	0.0

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

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
3843.7	2.4	-21.7	9.2

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

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
131.1	2.4	-1.2	0.0

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

Test Date: 3/22/13

ATD Serial No.: 635

Test I.D.: F635TF039

**Left Hip Joint-Femur Results**

Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	475	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.3	Pass
	Min	%		29.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Initial Reference Plane Angle		Degrees	≤ 20	15.5	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	355.2	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	1.00	Pass
Final Reference Plane Angle		Degrees	+/-8	4.0	Pass
Overall Test Results					Pass

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

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

Test Date: 3/29/13



ATD Serial No.: 035

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 repair or replacement of parts:

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 3/29/13

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.47	Pass
Laboratory Relative Humidity	%	10 to 70	29.7	Pass
A - Total sitting height	mm	879 to 889	884	Pass
B - Shoulder pivot height	mm	505 to 521	512	Pass
C - H point height	mm	84 to 89	85	Pass
D - H point location from backline	mm	135 to 140	137	Pass
E - Shoulder pivot from backline	mm	84 to 94	89	Pass
F - Thigh clearance	mm	140 to 155	146	Pass
G - Back of elbow to wrist pivot	mm	290 to 305	297	Pass
H - Head back to backline	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	336	Pass
J - Elbow rest height	mm	190 to 211	201	Pass
K - Buttock to knee length	mm	579 to 604	586	Pass
L - Popliteal length	mm	429 to 455	438	Pass
M - Knee pivot height	mm	485 to 500	493	Pass
N - Buttock popliteal length	mm	452 to 477	472	Pass
O - Chest depth without jacket	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	260	Pass
V - Shoulder breadth	mm	422 to 437	433	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference (with chest jacket)	mm	970 to 1001	981	Pass
Z - Waist circumference	mm	836 to 866	864	Pass
AA - Location for chest circumference	mm	429 to 434	429	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results			Pass	

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

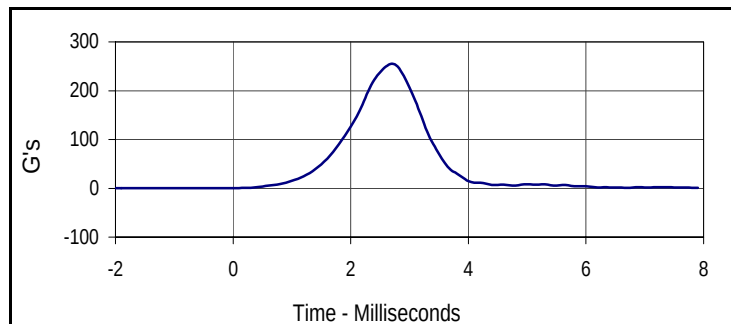
Test Date: 3/29/13



ATD Serial No.: 035

Test I.D.: M035HD054

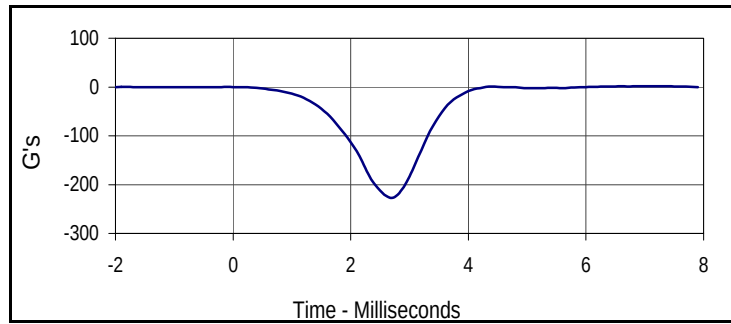
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	255	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Peak Resultant Acceleration		G's	225.0 to 275.0	255.5	Pass
Peak Lateral Acceleration		G's	≤15.0	7.5	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	5.8	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

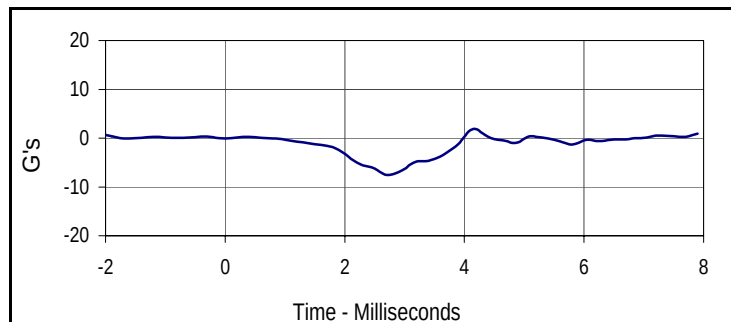
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
255.5	2.7	0.1	-0.1



Curve Description

Head X

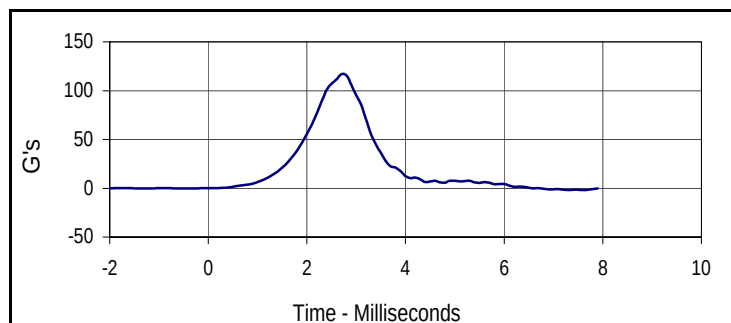
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.2	4.4	-227.1	2.7



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
1.8	4.2	-7.5	2.7



Curve Description

Head Z

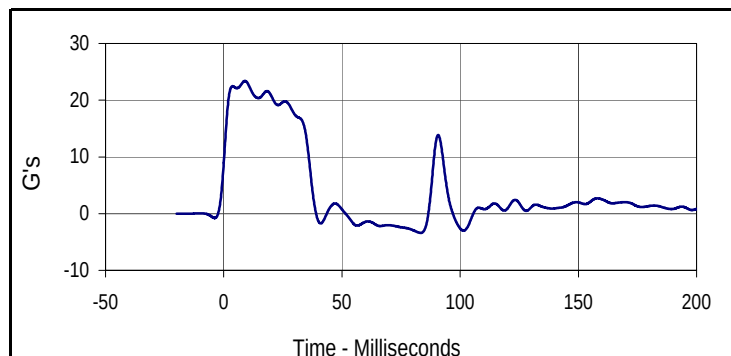
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
116.9	2.7	-0.3	-0.5

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

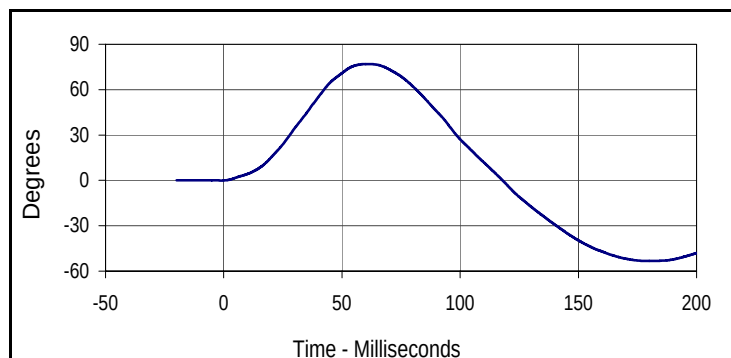
Test Date: 3/29/13
 Test I.D.: M035NF054



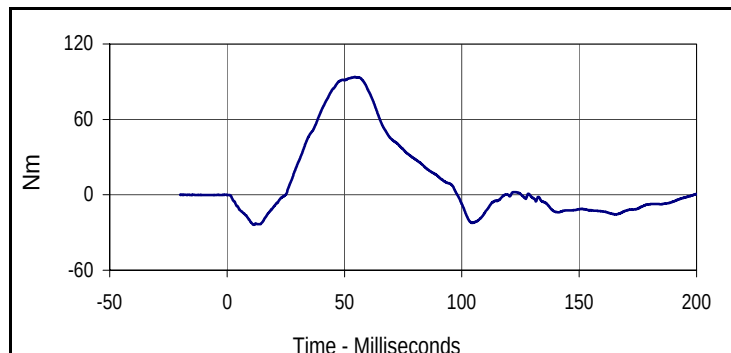
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	325	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.2	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.90	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.0	Pass
	20 Msec.	G's	17.6 to 22.6	20.9	Pass
	30 Msec.	G's	12.5 to 18.5	17.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	37.3	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	76.9	Pass
	Time	Msec.	57.0 to 64.0	60.8	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	118	Pass
Moment About Occ. Condyle	Max	Nm	88.1 to 108.5	93.8	Pass
	Time	Msec.	47.0 to 58.0	54.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.1	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.4	8.9	-3.4	83.3



Curve Description			
"D" Plane Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
76.9	60.8	-53.3	179.5



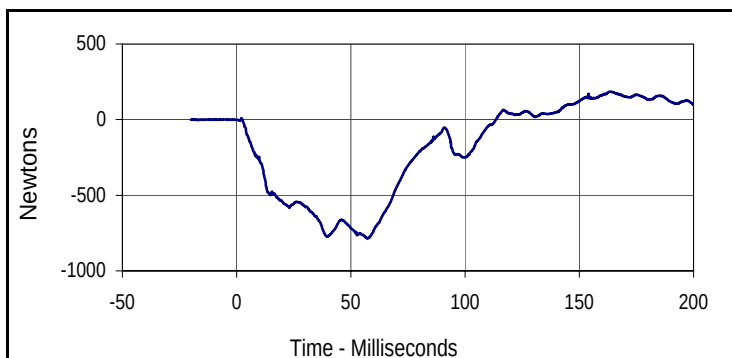
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
93.8	54.5	-23.9	11.4

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

ATD Serial No.: 035

Test Date: 3/29/13

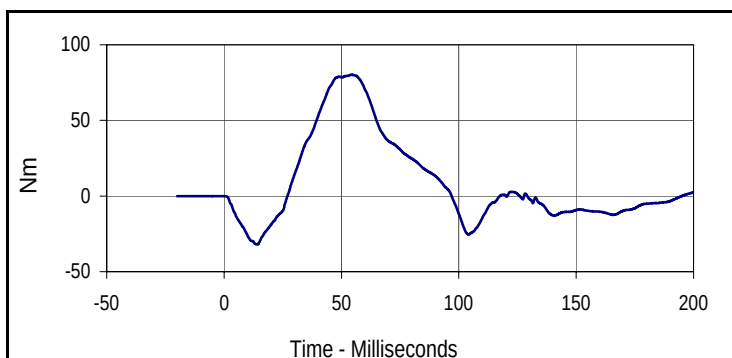
Test I.D.: M035NF054



Curve Description

Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
185.7	163.1	-785.4	57.1



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
80.3	54.3	-32.0	14.1

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

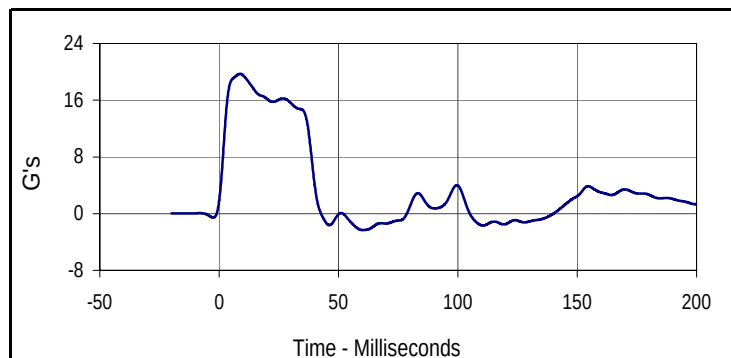
Test Date: 3/29/13



ATD Serial No.: 035

Test I.D.: M035NE054

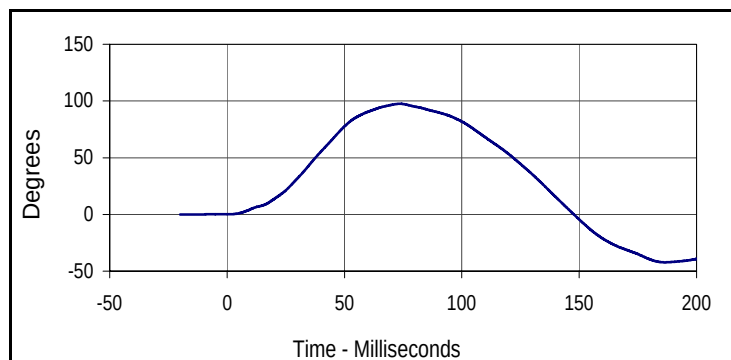
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	385	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.2	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Pendulum Velocity		m/s	5.94 to 6.19	5.96	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.5	Pass
	20 Msec.	G's	14.0 to 19.0	16.2	Pass
	30 Msec.	G's	11.0 to 16.0	15.6	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.6	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.7	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	97.5	Pass
	Time	Msec.	72.0 to 82.0	73.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	147.8	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to -79.9	-66.4	Pass
	Time	Msec.	65.0 to 79.0	69.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	140.2	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

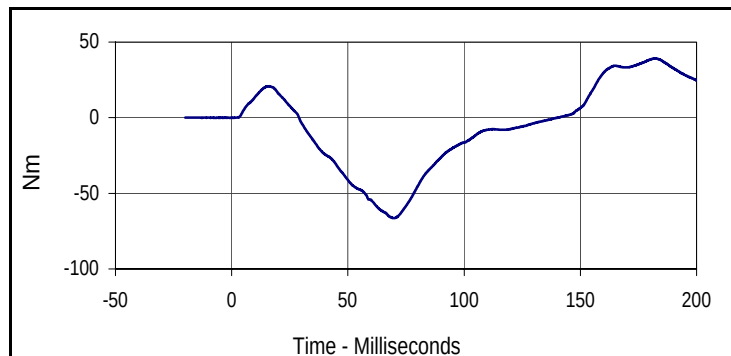
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.7	8.8	-2.3	60.2



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
97.5	73.5	-42.3	186.5



Curve Description

Moment About Occipital Condyle

Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
39.1	181.7	-66.4	69.9

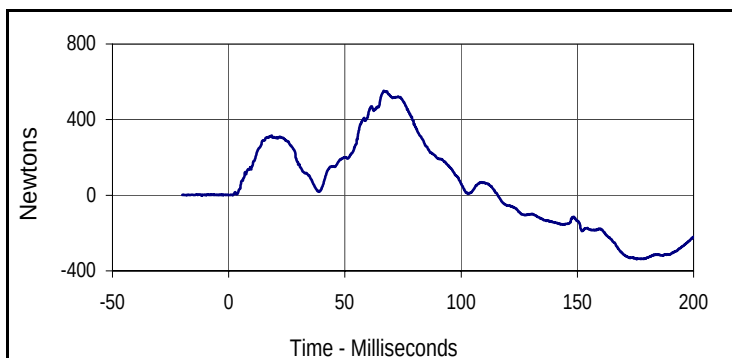
Test Program: Hybrid III 50th Percentile Male Neck Extension Test

Test Date: 3/29/13

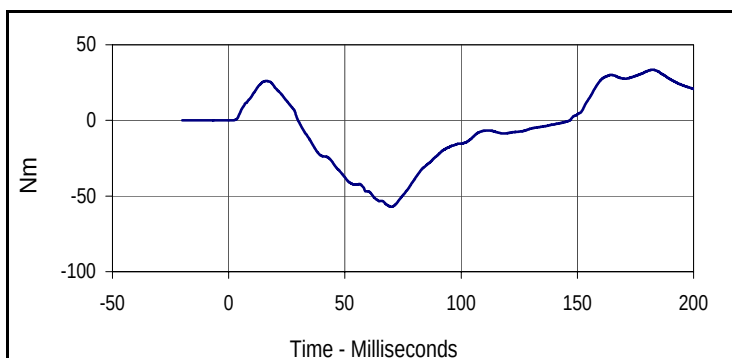


ATD Serial No.: 035

Test I.D.: M035NE054



Curve Description			
Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
552.6	66.7	-337.8	175.8



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
33.5	182.6	-57.1	70.1

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

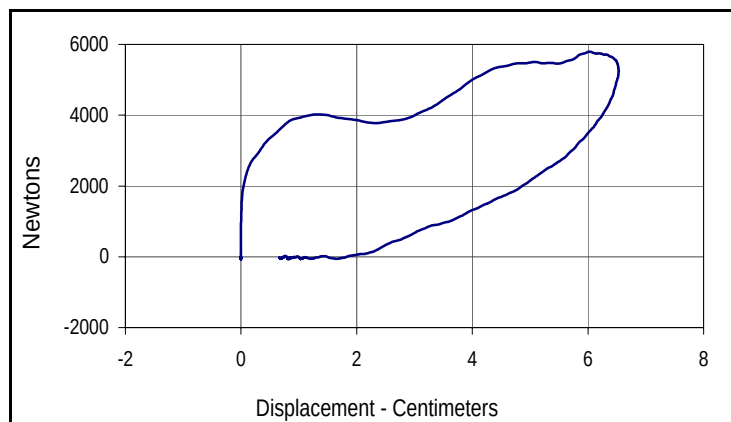
Test Date: 3/29/13



ATD Serial No.: 035

Test I.D.: M035CH054

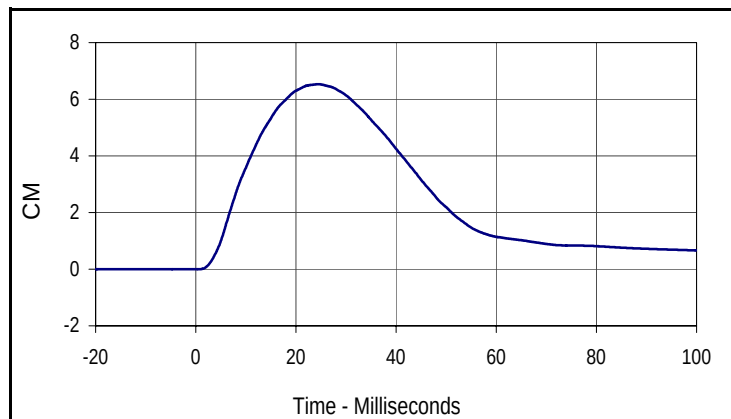
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	450	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.2	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Probe Velocity		m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force		Newtons	5159 to 5893	5791	Pass
Peak Sternum Deflection		CM	6.35 to 7.26	6.53	Pass
Internal Hysteresis		%	69 to 85	73.0	Pass
Overall Test Results				Pass	



Curve Description

Probe Force vs. Chest Deflection

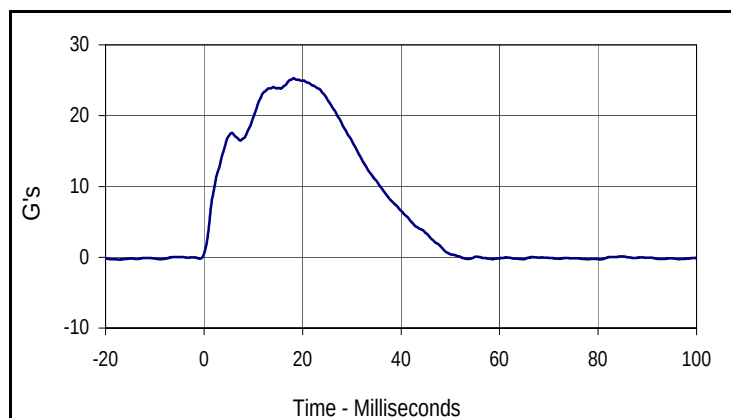
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	73.0
Peak Probe Force		Peak Chest Deflection	
5791		6.53	



Curve Description

Chest Deflection

Plot No.	Type	SAE Class	Units
002	FIL	180	CM
Max	Time	Min	Time
6.5	24.5	0.0	0.5



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
25.3	18.2	-0.3	-17.2

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

Test Date: 3/29/13

ATD Serial No.: 035

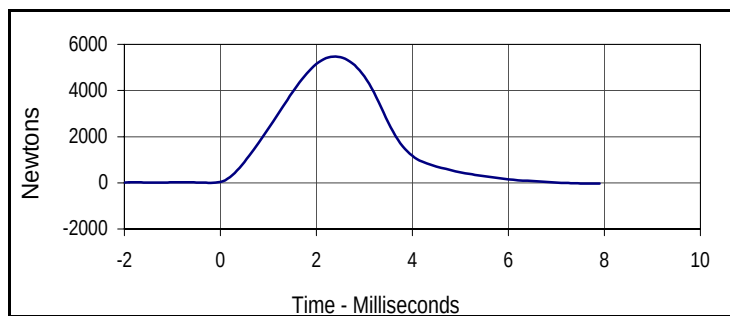
Test I.D.: M035LK054, M035RK054

**Left Knee**

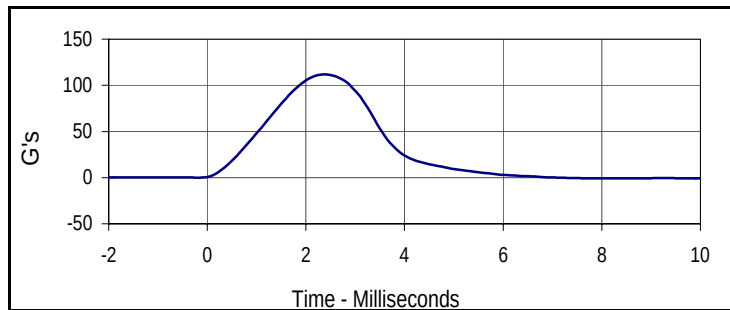
Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	505	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.1	Pass
	Min	%		28.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force		Newtons	4715 to 5782	5476	Pass
Overall Test Results				Pass	

Right Knee

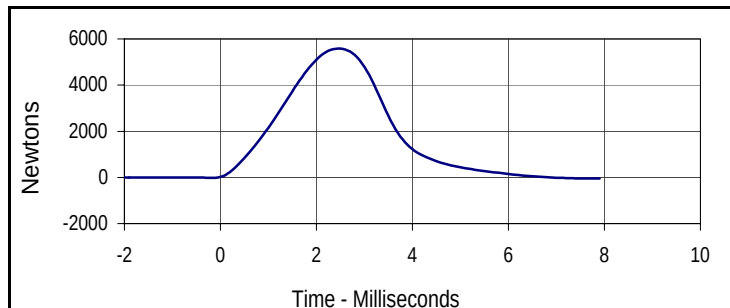
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	4715 to 5782	5582	Pass
Overall Test Results				Pass	

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

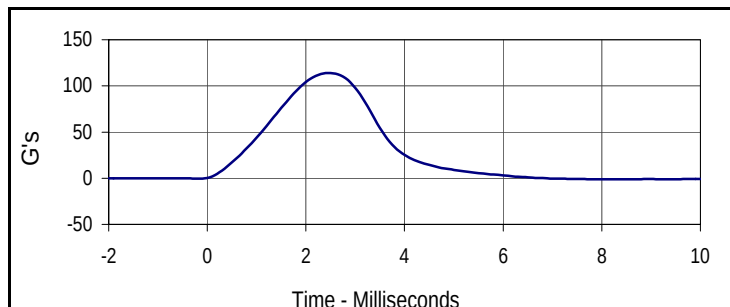
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5475.6	2.4	-36.3	7.9

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

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
111.9	2.4	-0.8	10.0

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

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
5581.9	2.5	-49.9	7.9

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

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
114.1	2.5	-1.2	9.4

Test Program: Hybrid III 50th Percentile Male Hip Joint-Femur Flexion Test
 ATD Serial No.: 035

Test Date: 3/29/13
 Test I.D.: M035LF054, M035RF054

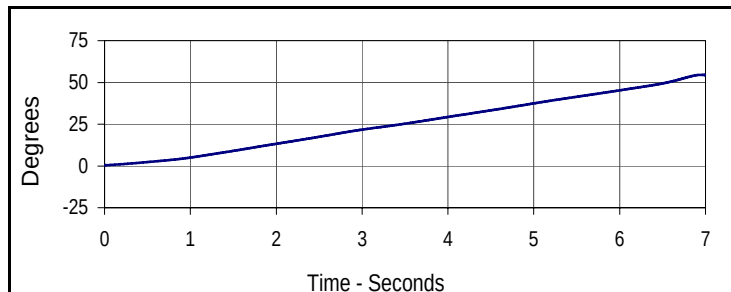


Left Hip Joint-Femur Results

Tested Parameter	Units	Specification	Result	Pass/Fail
Hip Joint-Femur Assembly Soak Time	Minutes	≥240	570	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	30.1	Pass
	Min		28.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.6	Pass
Rotation Rate	deg/sec	5 to 10	7.9	Pass
Femur Torque at 30°	Nm	≤ 95	83.7	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.6	Pass
Overall Test Results				Pass

Right Hip Joint-Femur Results

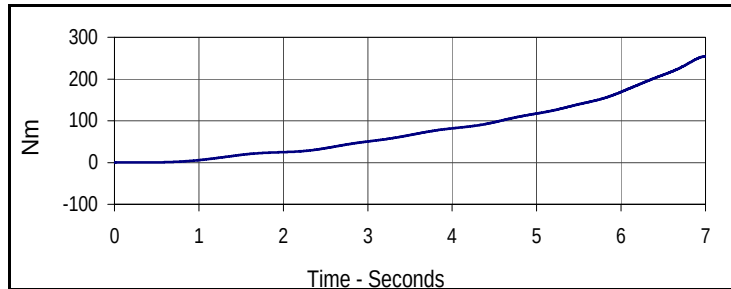
Rotation Rate	deg/sec	5 to 10	7.7	Pass
Femur Torque at 30°	Nm	≤ 95	93.7	Pass
Rotation at 203 Nm	Degrees	40.0 to 50.0	48.8	Pass
Overall Test Results				Pass



Curve Description

Left Hip-Femur Rotation

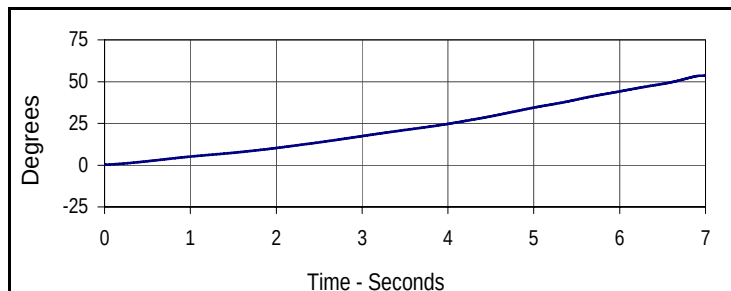
Plot No.	Type	SAE Class	Units
001	FIL	60	Degrees
Max	Time	Min	Time
54.6	6.9	0.4	0.0



Curve Description

Left Femur Torque

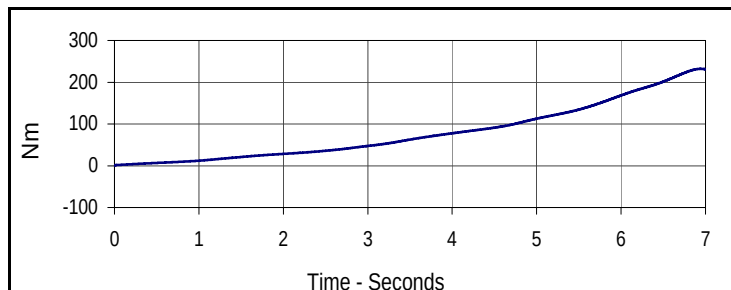
Plot No.	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
254.1	7.0	0.1	0.2



Curve Description

Right Hip-Femur Rotation

Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
53.6	7.0	0.2	0.0



Curve Description

Right Femur Torque

Plot No.	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
232.2	6.9	1.4	0.0

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

Test Date: 4/1/13



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 repair or replacement of parts:

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 4/1/13

ATD Serial No.: 635

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.36	Pass
Laboratory Relative Humidity	%	10 to 70	29.6	Pass
A - Total sitting height	mm	774.7 to 800.1	786	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	450	Pass
C - H point height	mm	81.3 to 86.3	85	Pass
D - H point location from backline	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	77	Pass
F - Thigh clearance	mm	119.4 to 134.6	126	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	250	Pass
H - Head back to backline	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest height	mm	182.8 to 203.2	198	Pass
K - Buttock to knee length	mm	520.7 to 546.1	531	Pass
L - Popliteal length	mm	355.6 to 376.0	371	Pass
M - Knee pivot height	mm	393.7 to 419.1	402	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	186	Pass
P - Foot length	mm	218.5 to 233.7	221	Pass
R - Buttock to Knee Pivot Length	mm	457.2 to 482.6	473	Pass
S - Head Breadth	mm	137.1 to 147.3	144	Pass
T - Head Depth	mm	177.8 to 188.0	180	Pass
U - Hip Breadth	mm	299.7 to 314.9	302	Pass
V - Shoulder breadth	mm	350.5 to 365.7	359	Pass
W - Foot breadth	mm	78.8 to 94.0	90	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference (with chest jacket)	mm	850.8 to 881.3	864	Pass
Z - Waist circumference	mm	759.5 to 789.9	766	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	300	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	164	Pass
Overall Test Results				Pass

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

Test Date: 4/1/13



ATD Serial No.: 635

Test I.D.: F635HD040

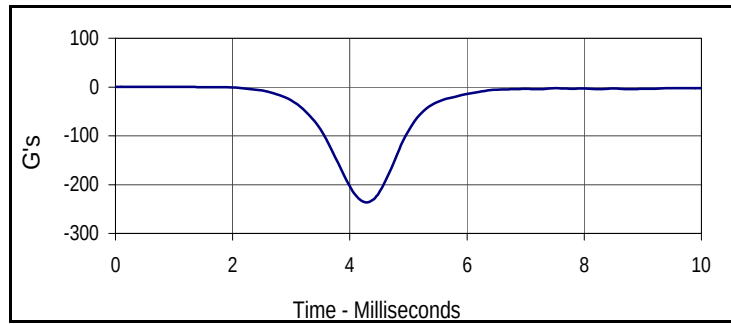
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	305	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Peak Resultant Acceleration		G's	250.0 to 300.0	271.9	Pass
Peak Lateral Acceleration		G's	≤15.0	11.4	Pass
Oscillations After Main Pulse		%	<10% of peak Res. Acceleration	2.0	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Overall Test Results				Pass	



Curve Description

Head Resultant

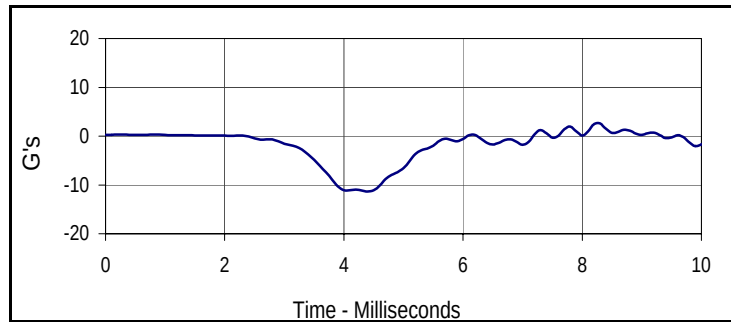
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
271.9	4.3	0.4	1.9



Curve Description

Head X

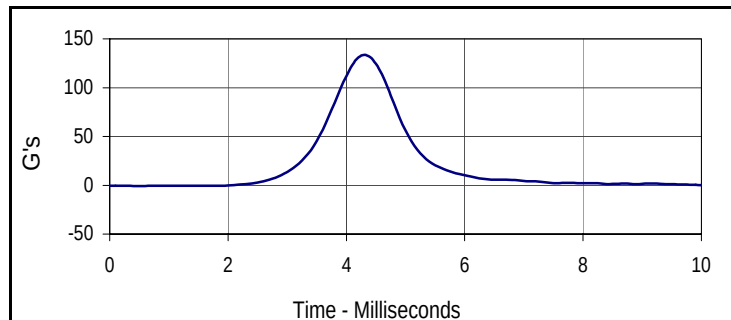
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	0.8	-236.4	4.3



Curve Description

Head Y

Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
2.0	7.8	-11.4	4.4



Curve Description

Head Z

Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
133.8	4.3	-0.7	0.5

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

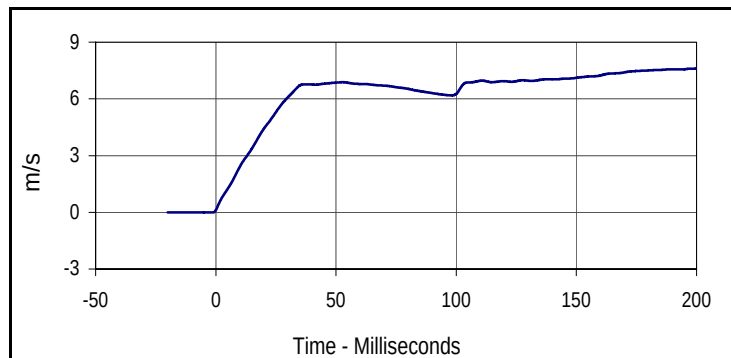
Test Date: 4/1/13



ATD Serial No.: 635

Test I.D.: F635NF040

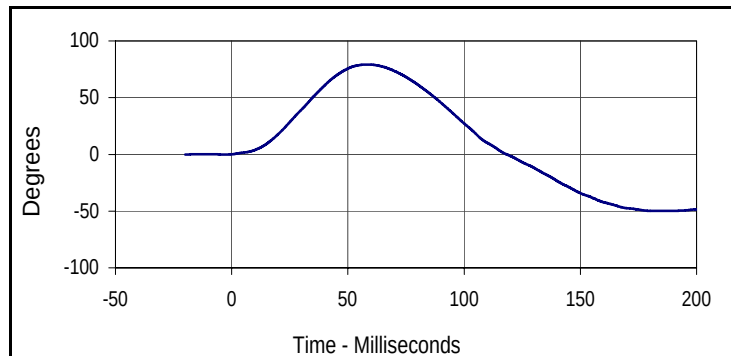
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	380	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.5	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.04	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.4	Pass
	20 Msec.	m/s	4.0 to 5.0	4.4	Pass
	30 Msec.	m/s	5.8 to 7.0	6.1	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	79.3	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	74.8	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	89.8	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

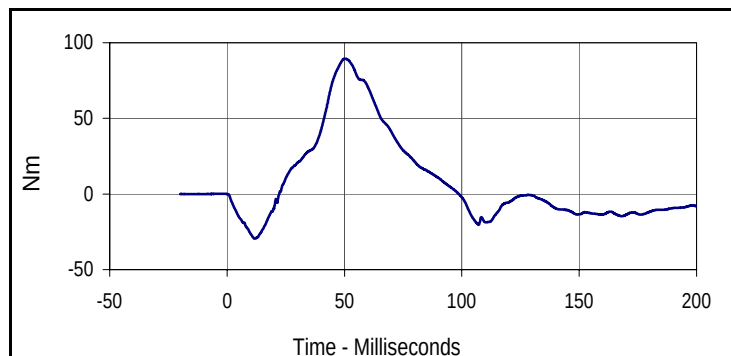
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.6	198.3	0.0	-1.3



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
79.3	58.3	-49.9	187.2



Curve Description

Moment About Occipital Condyle

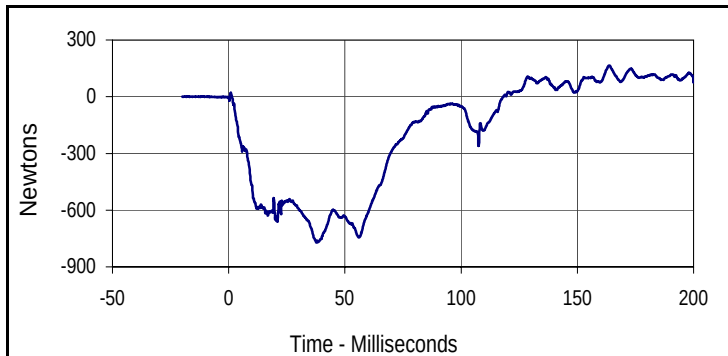
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
89.4	50.3	-29.5	11.8

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

ATD Serial No.: 635

Test Date: 4/1/13

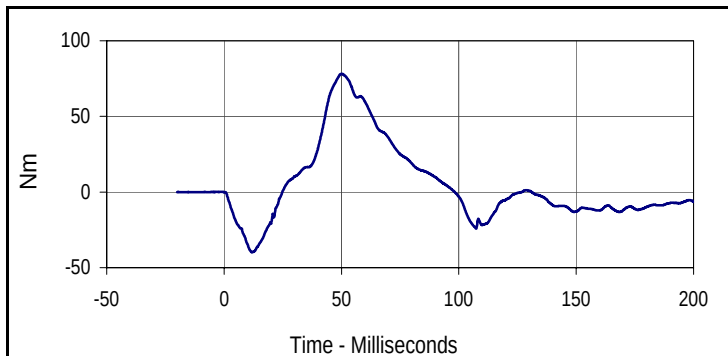
Test I.D.: F635NF040



Curve Description

Upper Neck Force X

Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
164.7	163.9	-770.8	37.7



Curve Description

Neck Moment Y

Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
78.1	50.2	-39.9	12.0

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

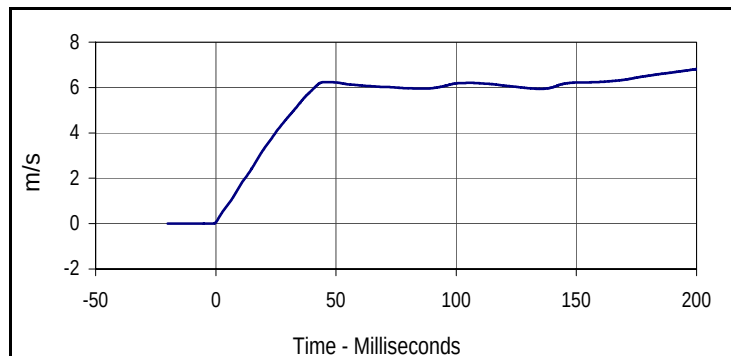
Test Date: 4/1/13



ATD Serial No.: 635

Test I.D.: F635NE040

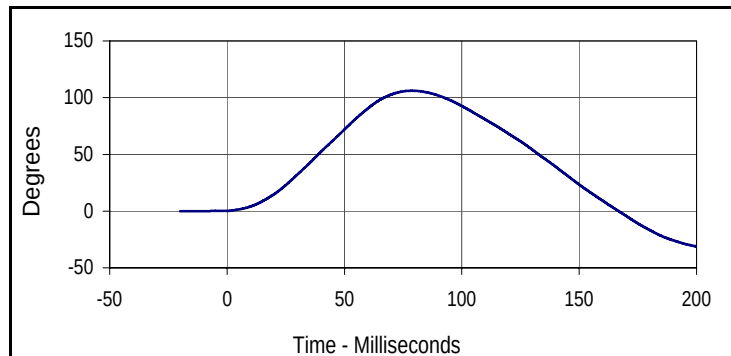
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	445	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.5	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.08	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.3	Pass
	30 Msec.	m/s	4.6 to 5.6	4.7	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	106.1	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-60.3	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	105.7	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Velocity

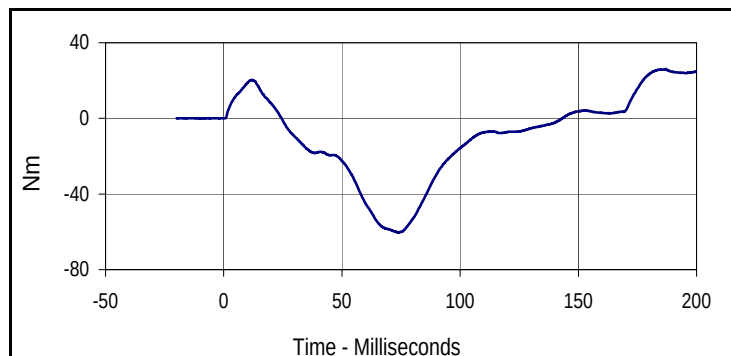
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.8	200.0	0.0	-1.3



Curve Description

"D" Plane Rotation

Plot No.	Type	SAE Class	Units
002	FIL	60	Degrees
Max	Time	Min	Time
106.1	78.6	-31.2	200.0



Curve Description

Moment About Occipital Condyle

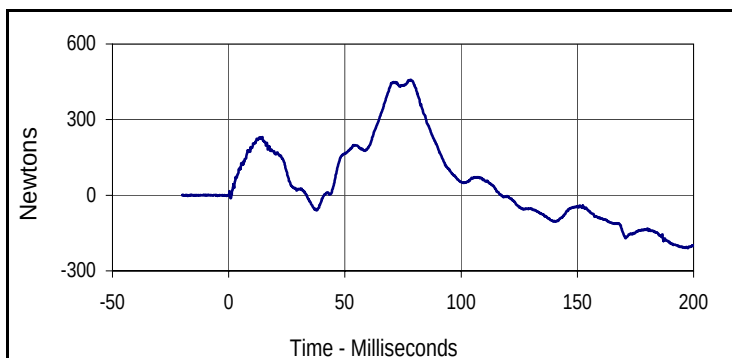
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
26.1	187.0	-60.3	73.8

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

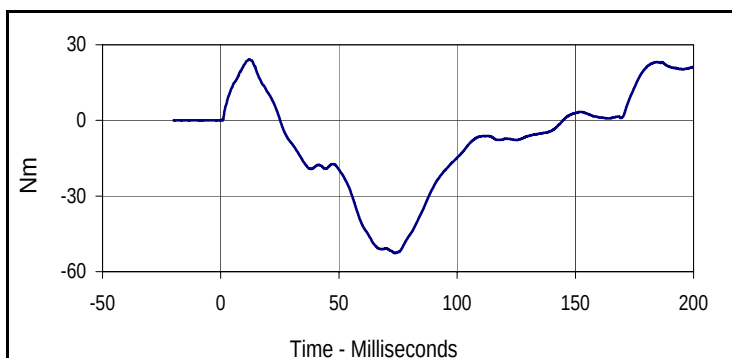
ATD Serial No.: 635

Test Date: 4/1/13

Test I.D.: F635NE040



Curve Description			
Upper Neck Force X			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
458.2	78.3	-209.2	197.5



Curve Description			
Neck Moment Y			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
24.3	12.0	-52.6	73.6

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

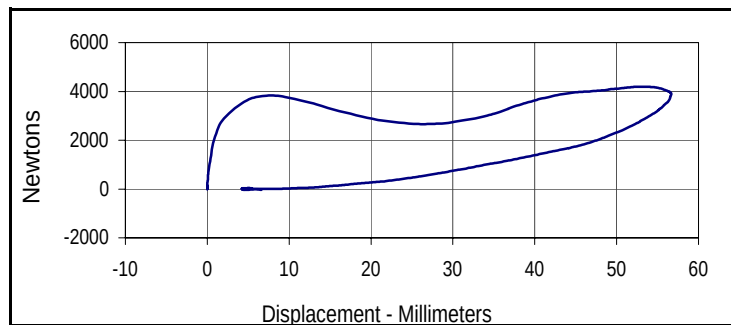
Test Date: 4/1/13



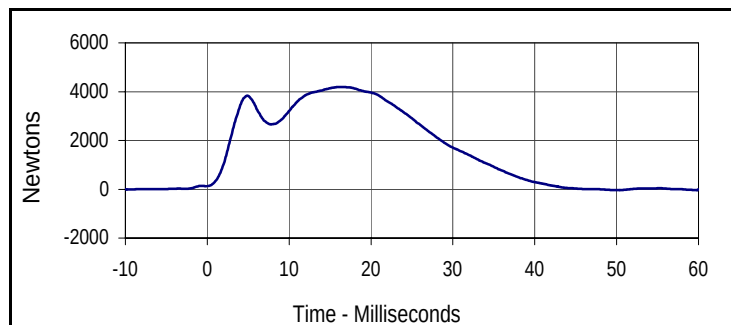
ATD Serial No.: 635

Test I.D.: F635CH040

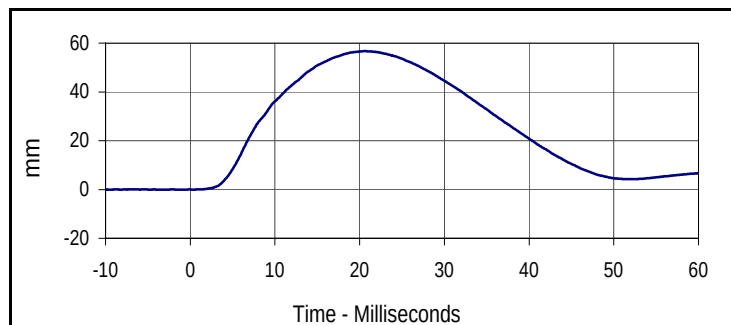
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	520	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.5	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Probe Velocity		m/s	6.59 to 6.83	6.82	Pass
Peak Chest Deflection		mm	50.0 to 58.0	56.7	Pass
Peak Force Between 50 and 58 MM		Newtons	3900 to 4400	4116	Pass
Peak Force Between 18 and 50 MM		Newtons	≤4600	4191	Pass
Internal Hysteresis		%	69 to 85	71.8	Pass
Overall Test Results					Pass



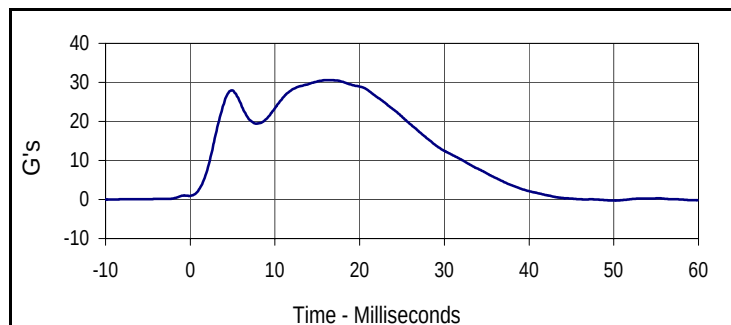
Curve Description			
Probe Force vs. Chest Deflection			
Plot No.	Type	SAE Class	Hysteresis
001	FIL	180	71.8
Peak Probe Force		Peak Chest Deflection	
4191.1		56.7	



Curve Description			
Probe Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4191.1	16.6	-34.5	50.0



Curve Description			
Chest Deflection			
Plot No.	Type	SAE Class	Units
003	FIL	600	mm
Max	Time	Min	Time
56.7	20.6	0.0	-2.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
30.6	16.6	-0.3	50.0

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

Test Date: 4/1/13

ATD Serial No.: 635

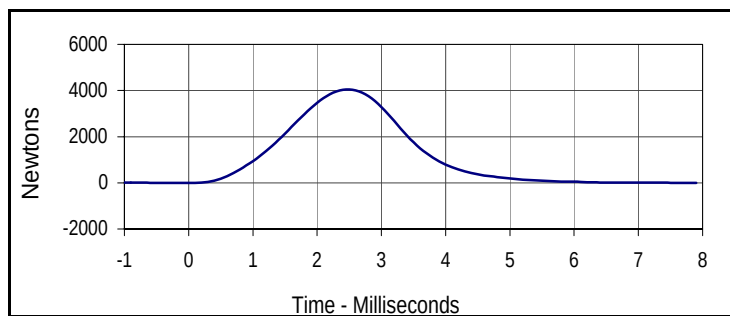
Test I.D.: F635LK040 , F635RK040

**Left Knee**

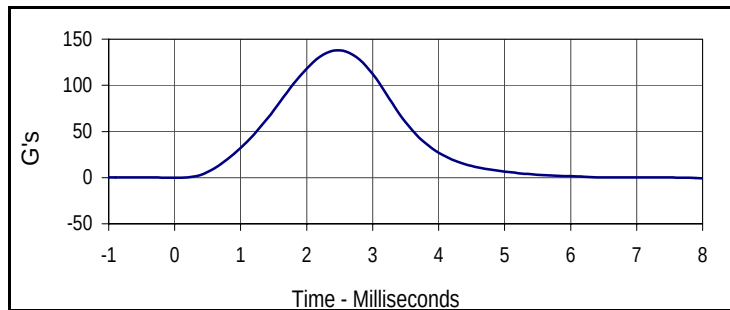
Tested Parameter		Units	Specification	Result	Pass/Fail
Knee Assembly Soak Time		Minutes	≥240	575	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	3450 to 4060	4046	Pass
Overall Test Results					Pass

Right Knee

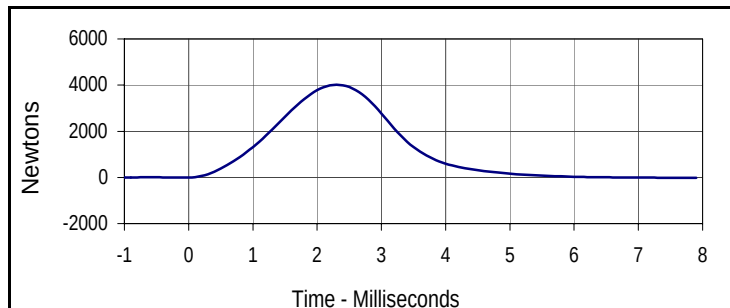
Pendulum Velocity at T=0		m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force		Newtons	3450 to 4060	4018	Pass
Overall Test Results					Pass

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

Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4046.1	2.5	-9.0	7.9

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

Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
138.0	2.5	-1.2	8.8

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

Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
4017.8	2.3	-16.2	7.4

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

Plot No.	Type	SAE Class	Units
004	FIL	600	G's
Max	Time	Min	Time
137.1	2.3	-1.2	9.6

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

Test Date: 4/1/13

ATD Serial No.: 635

Test I.D.: F635TF040

**Left Hip Joint-Femur Results**

Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	640	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.4	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		29.5	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Initial Reference Plane Angle		Degrees	≤ 20	14.3	Pass
Peak Force at 45° +/-0.5°		Newtons	320.0 to 390.0	359.0	Pass
Torso Rotation Rate		deg/sec	0.5 to 1.5	0.99	Pass
Final Reference Plane Angle		Degrees	+/-8	4.6	Pass
Overall Test Results					Pass