REPORT NUMBER: NCAP-KAR-11-022

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

HONDA MOTOR CO., LTD.
2011 HONDA CR-Z BASE 3-DOOR HATCHBACK

NHTSA NUMBER: HB5302

PREPARED BY:
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SEPTEMBER 27, 2010

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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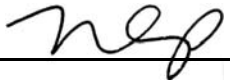
Reviewed By: 

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16. Abstract

A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2011 Honda CR-Z Base 3-Door Hatchback 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 foot well intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on September 27, 2010.

The impact velocity of the vehicle was 56.51 km/h and the ambient temperature at the barrier face at the time of impact was 38.9 deg. C. The target vehicle's post-test maximum crush was 452 mm at DPD 4 to the right of the centerline. The test vehicle's performance is as follows:

Measurement Description	Units	Driver ATD		Passenger ATD	
		Threshold	Result	Threshold	Result
Head Injury Criteria (HIC_{15})	N/A	700.0	250.6	700.0	411.2
Maximum Chest Compression	mm	63	-34	52	-24
Nij	N/A	1	0.40	1	0.61
Neck Tension	N	4170	1423.3	2620	770.3
Neck Compression	N	4000	-530.8	2520	-641.7
Left Femur Force	N	10008	-1007.9	6805	-3645.2
Right Femur Force	N	10008	-1646.8	6805	-2015.6

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SECTION 1
PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program, sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-06-D-00027. 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 January, 2010.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2011 Honda CR-Z Base 3-Door Hatchback at a velocity of 56.51 km/h. The test was performed at KARCO Engineering, LLC. on September 27, 2010. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time camera 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 also on the driver's and passenger's lap and shoulder belts to measure the dummy torso and 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 128 channels of 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 or electrolyte leakage after the event or during any phase of the static rollover.

The maximum static crush of the test vehicle was 452 mm located at DPD 4 to the right of the vehicle centerline. Both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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

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

The occupant data is summarized below:

ATD Position	HIC_{15}	T^1	T^2	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	250.6	68.2	83.2	-34	0.40	1423.3	-530.8	-1007.9	-1646.8
Passenger (5th)	411.2	67.2	82.2	-24	0.61	770.3	-641.7	-3645.2	-2015.6

SECTION 2

DATA SHEETS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

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	29.573
Pressure	Tire Pressures	lbf/in^2	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	^oF	^oC	=(tf -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: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	HB5302	Anti-Lock Brakes	Yes
Make	Honda	All Wheel Drive	No
Model	CR-Z Base	Power Steering	Yes
Body Style	3-Door Hatchback	Driver Front Airbag	Yes
VIN	JHMZF1D41BS000412	Driver Curtain Airbag	Yes
Body Color	North Shore Blue	Driver Head/Torso Airbag	No
Delivery Date	9/16/2010	Driver Torso Airbag	No
Odometer Reading (mi)	88	Driver Torso/Pelvis Airbag	Yes
Odometer Reading (km)	142	Driver Pelvis Airbag	No
Dealer	Riverside Honda	Driver Knee Airbag	No
Transmission	CVT	Pass. Front Airbag	Yes
Final Drive	Front	Pass. Curtain Airbag	Yes
Type / No. of Cylinders	Inline 4	Pass. Head/Torso Airbag	No
Engine Displacement (L)	1.5	Pass. Torso Airbag	No
Engine Placement	Transverse	Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Pass. Pelvis Airbag	No
Sunroof / T-Top	No	Pass. Knee Airbag	No
Tinted Glass	No	Pre-Tensioners	Yes
Traction Control	Yes	Load Limiters	Yes
Power Brakes	Yes	Automatic Door Locks	Yes
Front Disc	Yes	Tilt Steering	Yes
Rear Disc	Yes	Other	

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda Motor Co., Ltd.	GVWR (kg)	1435
Date of Manufacture	Jun-10	GAWR Front (kg)	815
		GAWR Rear (kg)	625

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

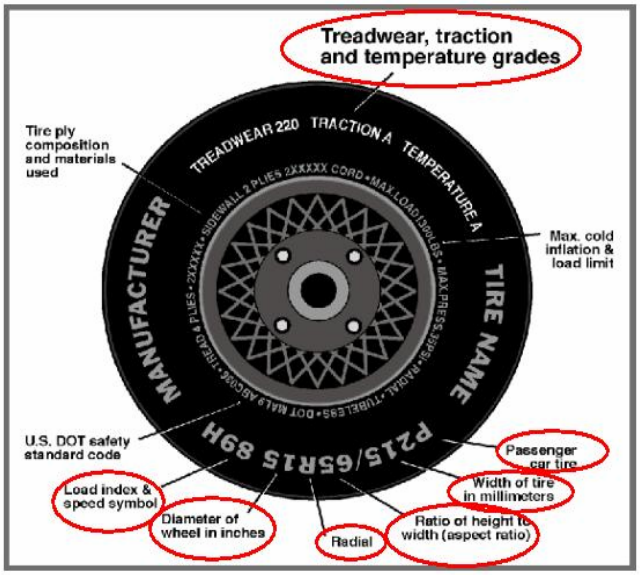
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket			
Number of Occupants	2			2
Capacity Weight (VCW) (kg)				181.0
Cargo Weight (RCLW) (kg)				44.9

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	210	210
Recommended Tire Size	P195/55R16	P195/55R16
Tire Size on Vehicle	P195/55R16	P195/55R16
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Turanza EL470	Turanza EL470
Treadwear	530	530
Traction	A	A
Temperature Grades	A	A
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	86V	86V
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	ELL3 CKM 1710	ELL3 CKM 1710
DOT Safety Code Right	ELL3 CKM 1710	ELL3 CKM 1710

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	374.0	255.0		411.0	317.0	
Right	kg	347.0	231.5		370.5	287.0	
Ratio	%	59.7%	40.3%	100.0%	56.4%	43.6%	100.0%
Total	kg	721.0	486.5	1207.5	781.5	604.0	1385.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1207.5	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	44.9	C
Calculated Vehicle Target Weightt (TVTW)	kg	1393.4	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	657	665	672	673	979
As Tested	mm	643	645	646	653	1059
Post-Test	mm	696	724	640	669	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2430
Total Vehicle Length at Left Side	mm	3398
Total Vehicle Length at Centerline	mm	4080
Total Vehicle Length at Right Side	mm	3399
Weight of Ballast in Cargo Area	kg	82
Weight of Vehicle Components Removed	kg	44
Amount of Stoddard Solvent in Fuel Tank	L	37.31

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Folding cargo cover (8.5 kg), Rear bumper cover (5.5 kg), Bumper beam (6.5 kg), Tail lights (4.0 kg), Plastic lining (2.5 kg), Spare tire and tools (12.5 kg), Trim and rolling cargo cover (4.5 kg)

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length	4080	3463	617
2	Total Width	1730	1921	-191
3	Bumper Top Height	560	557	3
4	Bumper Bottom Height	343	409	-66
5	Longitudinal Member Top Height	494	482	12
6	Distance Between Longitudinal Members	900	1008	-108
7	Longitudinal Member Width	100	104	-4
8	Engine Top Height	815	812	3
9	Engine Bottom Height	168	182	-14
10	Engine and Gearbox Width	760	760	0
11	Front Bumper to Engine Distance	570	134	436
12	Front Shock Absorber Fixing Height	853	860	-7
13	Bonnet Leading Edge Height	683	743	-60
14	Front Shock Absorber Fixing Width	1135	1103	32
15	Front Bumper to Front Axle Distance	950	395	555
16	Front Axle to A-Pillar Distance	468	348	120
17	A-Pillar to B-Pillar Distance	1239	1240	-1
18	B-Pillar to Rear Axle Distance	782	807	-25
19	B-Pillar to C-Pillar Distance	769	746	23
20	Roof Sill Bottom Height	1193	1199	-6
21	Roof Sill Top Height	1297	1303	-6
22	Floor Sill Bottom Height	165	175	-10
23	Floor Sill Top Height	359	366	-7

All measurements in millimeters.

DATA SHEET NO. 2

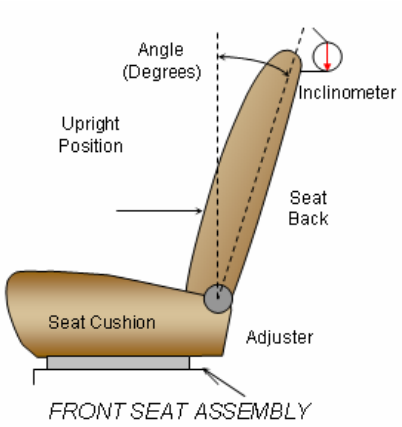
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

NOMINAL DESIGN RIDING POSITION

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

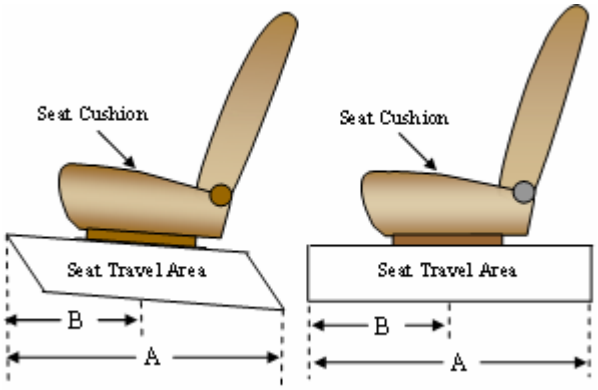


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	10.0
Passenger Seat Back Angle	5.8

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rearmost possible position. The driver's seat is set to the closest detent rearward of the measured mid-travel. The passenger's seat is set to the forward most position where the ATD will not contact any interior panels. The passenger seat height and cushion angle are both fixed for this test.



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	273 mm	143 mm
Passenger Seat	190 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. The seat belt upper anchorages were fixed for this test.

SEAT BELT UPPER ANCHORAGES

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

DATA SHEET NO. 2 … (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

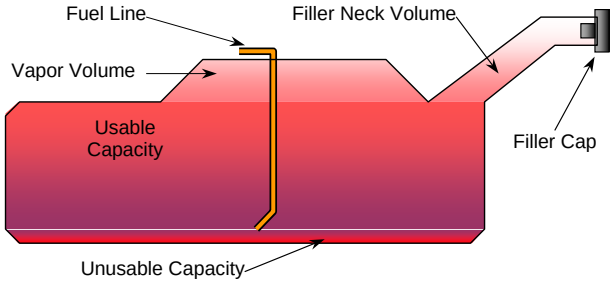
Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	40.12
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacit	36.91 to 37.71
Actual Amount of Stoddard Solvent Used	37.31
1/3 of Usable Capacity	13.37

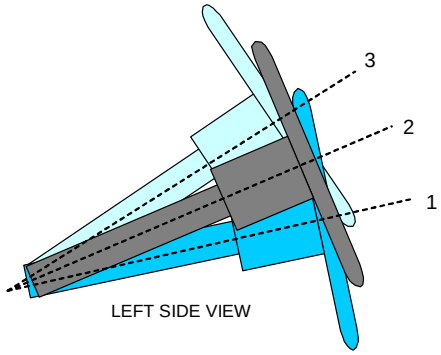
The test vehicle is equipped with an electric fuel pump. The fuel filler door is located on the left rear fender. The standard fuel tank is located under the area behind the front seats.



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 with a reference mark on the steering column to measure telescoping travel.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

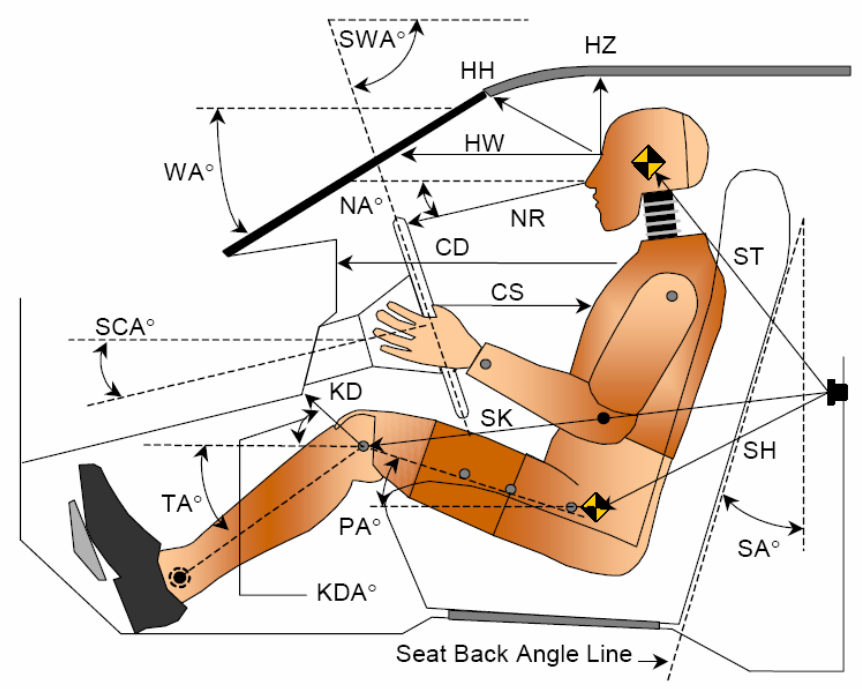
	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	15.8	169
Geometric Center Position, No. 2	17.9	184.5
Uppermost Position, No. 3	19.9	200
Telescoping Steering Wheel Travel		31
Test Position	18.0	185

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



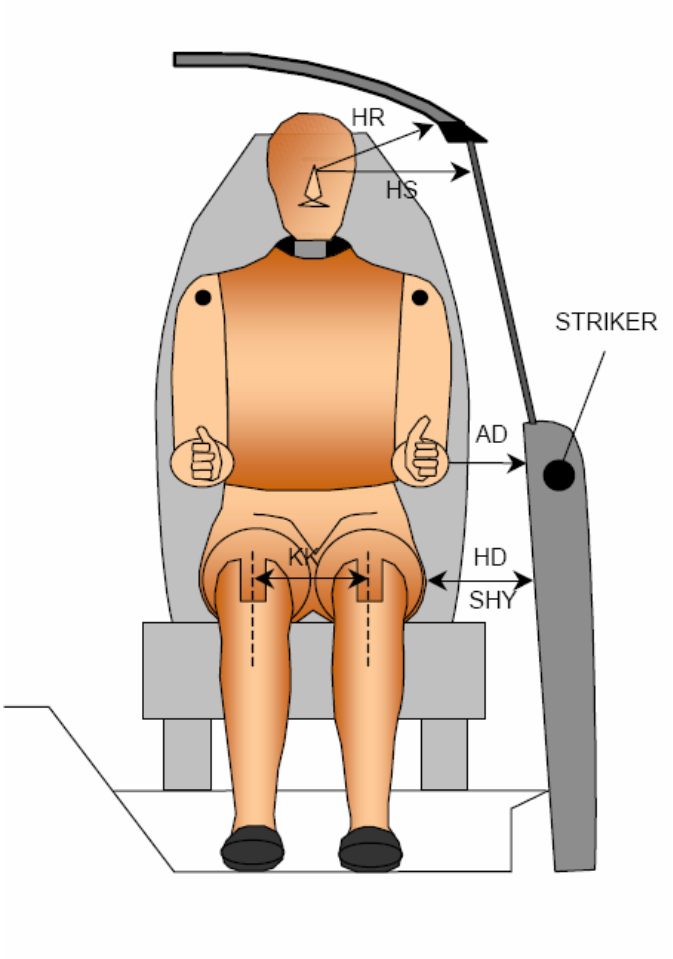
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		20.0		
SWA°	Steering Wheel Angle		72.5		
SCA°	Steering Column Angle		16.5		
SA°	Seat Back Angle (On Headrest Post)		10.0		5.8
HZ	Head to Roof	192	90.0	246	90.0
HH	Head to Header	375	22.4	353	42.7
HW	Head to Windshield	725	0.0	813	0.0
HR	Head to Side Header	241	28.5	275	41.1
NR	Nose to Rim	355	5.9	451	16.3
CD	Chest to Dash	518	15.8	395	12.3
CS	Chest to Steering Hub	311	1.5		
RA	Rim to Abdomen	208	0.0		
KDL	Left Knee to Dash	152	46.0	105	41.8
KDR	Right Knee to Dash	123	47.6	123	48.6
PA°	Pelvic Angle		24.9		26.3
TA°	Tibia Angle		32.8		30.0
SK	Striker to Knee	875	14.7	950	14.5
ST	Striker to Head	461	41.2	488	30.3
SH	Striker to H-Point	570	34.8	661	27.0

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



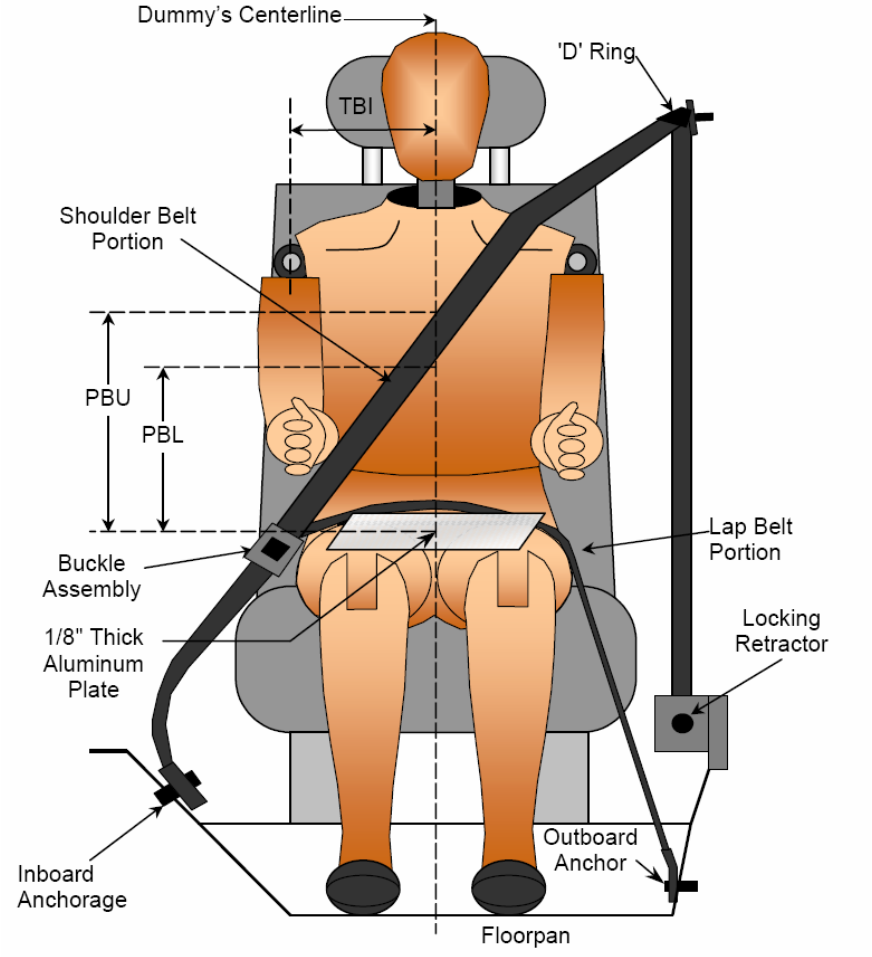
Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	133	95
HD	H-Point to Door	138	195
HR	Head to Side Header	241	275
HS	Head to Side Window	330	347
KK	Knee to Knee	345	215
SHY	Striker to H-Point (Y-Direction)	220	260
AA	Ankle to Ankle	360	165

DATA SHEET NO. 5

SEAT BELT POSITIONING DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



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	358	290
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	275	190

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	985	1071
Lap Belt Length as Measured on ATD	mm	686	550
Remainder of Belt on Reel	mm	911	831
Total Belt Length for Continuous Webbing Systems	mm	2582	2452

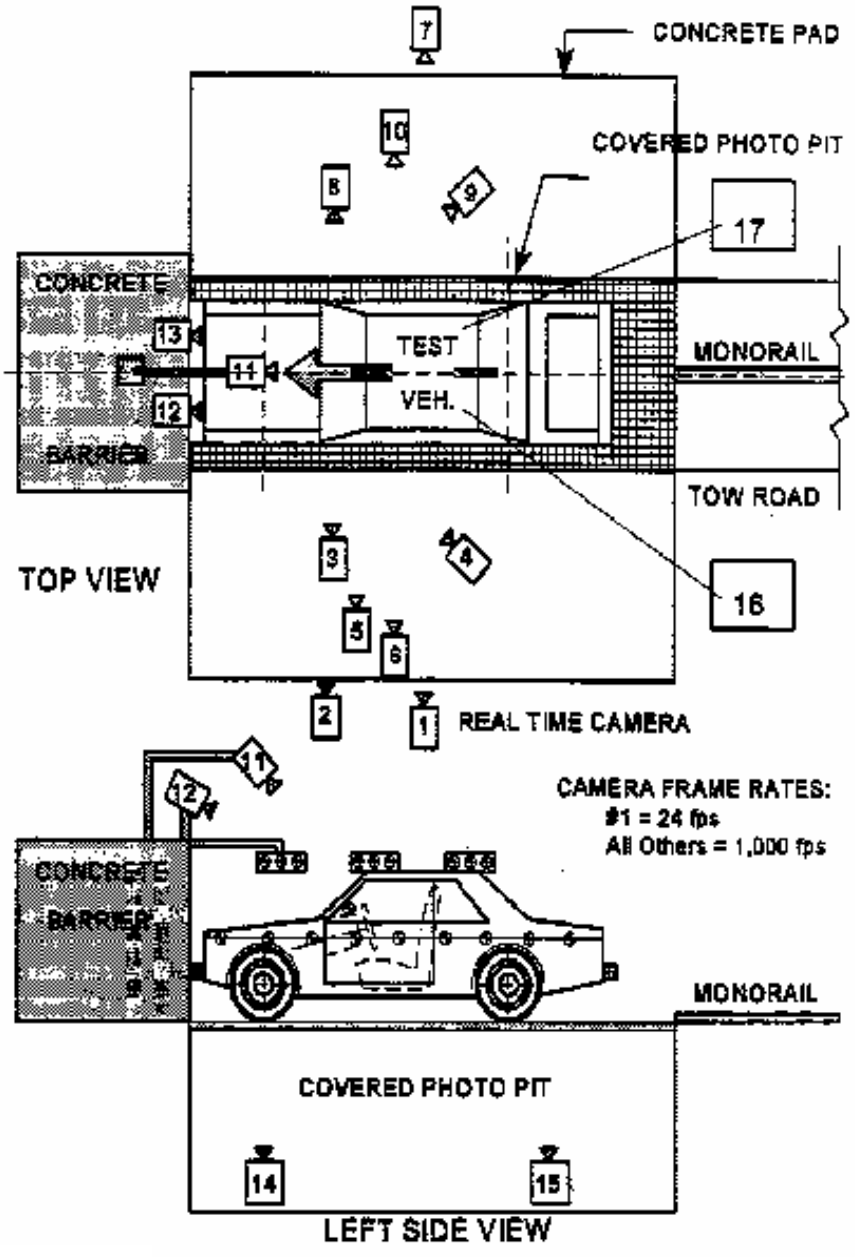
DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 … (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

No.	Description	Location			Angle (°)	Film Plane to Head Target	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real-Time Camera	-11412	-8150	-1484				30
2	Overall Left Side	-2590	-7950	-1371	0	9881	24	1000
3	Left Side A-Pillar	-1701	-6197	-1701	0	7921	85	1000
4	Left Side B-Pillar	-6696	-10308	-3211	-17	11281	ZOOM	1000
5	Steering Column Upper	-1966	-10412	-3688	-13	9887	35	1000
6	Steering Column Lower	-1972	-10412	-3379	-13	9870	35	1000
7	Overall Right Side	-2336	7569	-1012	0	9417	24	1000
8	Right Side A-Pillar	-1733	7581	-1408	0	7789	70	1000
9	Passenger IP View	-1600	8214	-1811	0	7795	ZOOM	1000
10	Right Side B-Pillar	-6217	9516	-4830	-10	12626	ZOOM	1000
11	Overhead Windshield View	297	366	-2460	-34		12	1000
12	Overhead Driver View	297	-366	-2460	-34		12	1000
13	Overhead Passenger View	-354	0	-5749	-90		24	1000
14	Pit View of Engine Compartment	-756	0	1495	90		12	1000
15	Pit View of Fuel Tank	-3398	0	1495	90		8	1000
16	Driver's On Board View	2873	-235	1162	-22		12	1000
17	Passenger's On Board View	-2873	235	1162	-22		12	1000

Reference Points: X – Front Surface of Vehicle (+ Forward)

Y – Vehicle Centerline (+ Passenger Side)

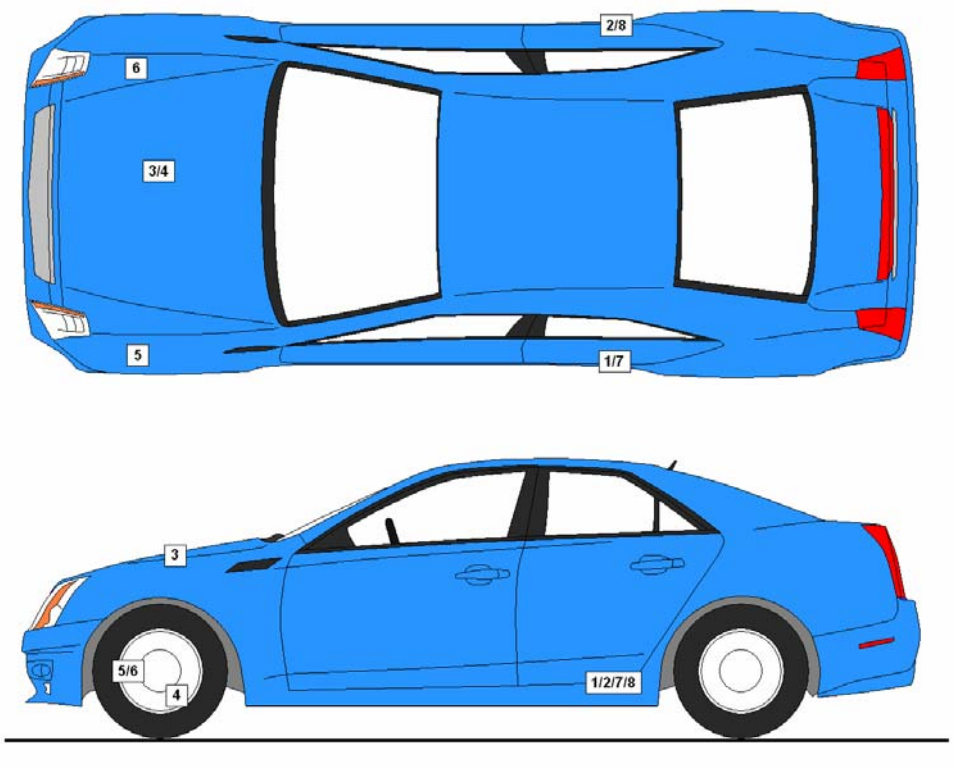
Z – Ground Plane (+ Down)

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Cross Member X	1672	-690	-308
2	Right Rear Cross Member X	1670	697	-308
3	Engine Top X	3350	160	-838
4	Engine Bottom X	3417	298	-178
5	Left Brake Caliper X	3212	-700	-335
6	Right Brake Caliper X	3212	700	-335
7	Left Rear Cross Member Z	1672	-690	-308
8	Right Rear Cross Member Z	1670	697	-308

Reference Points: X – Rear Surface of Vehicle (+ Forward)

Y – Vehicle Centerline (+ Passenger Side)

Z – Ground Plane (+ Down)

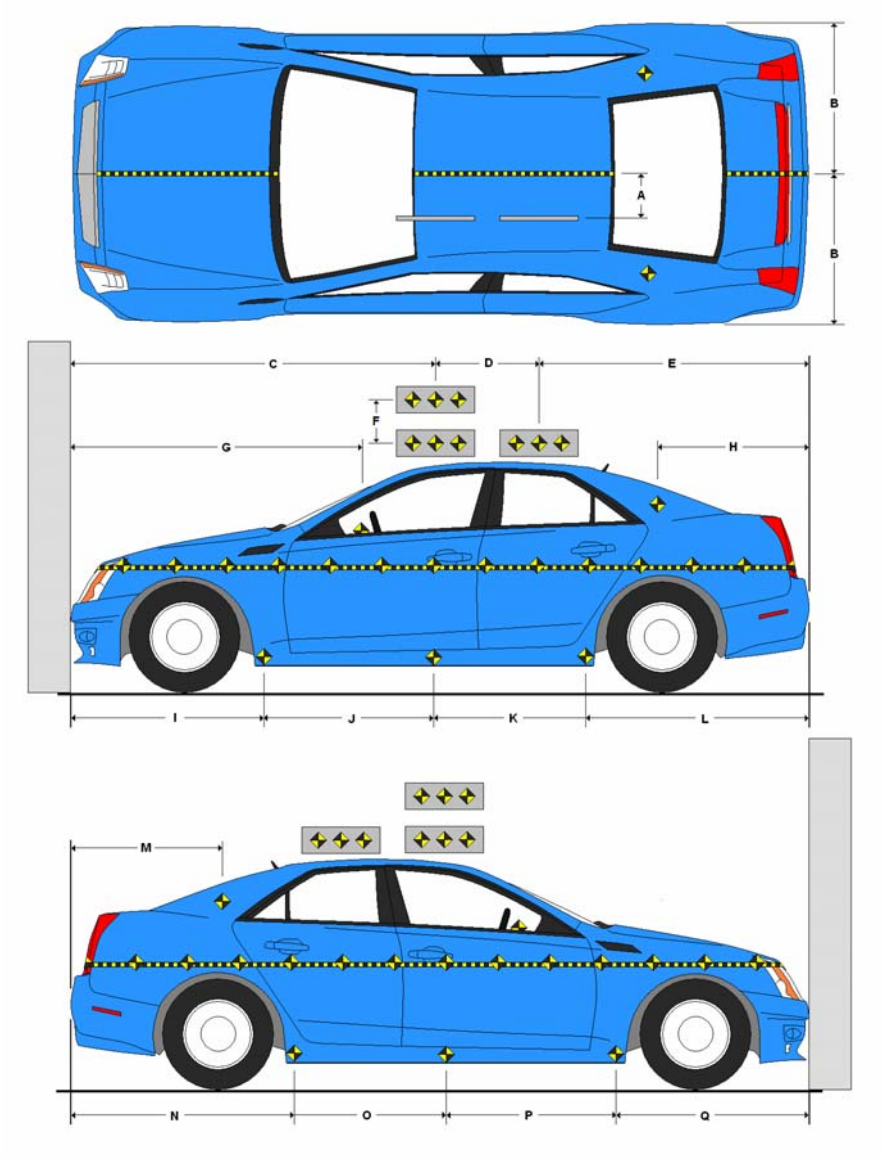
DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

Item	Value
A	355
B	865
C	2102
D	610
E	1365
F	
G	1730
H	682
I	1400
J	785
K	785
L	1102
M	698
N	1105
O	785
P	785
Q	1400



All measurements in millimeters.

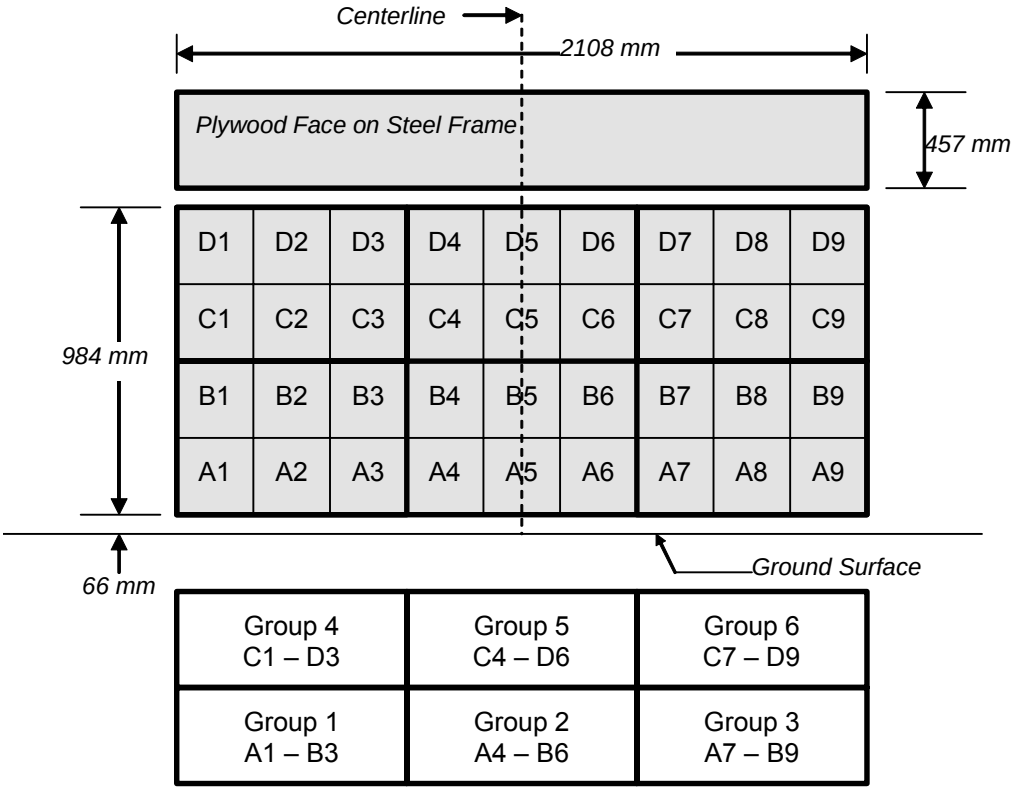
DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

36 Load Cell Rigid Barrier (NHTSA Standard)
Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

INSTRUMENTATION

Driver Dummy Accelerometers	44
Passenger Dummy Accelerometers	44
Vehicle Structure Accelerometers	8
Load Cell Barrier	36
Total	132

CAMERA COVERAGE

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

DATA SHEET NO. 11

POST-TEST OBSERVATIONS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

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	Steering Column, Knee Bolster, Steering Wheel	Glovebox
Right Knee Contact	Steering Column, Knee Bolster, Steering Wheel	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		
Seat Track Shift (mm)	-3 mm	21 mm
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1040
Center	mm	910
Right Side	mm	941
Average	mm	964

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

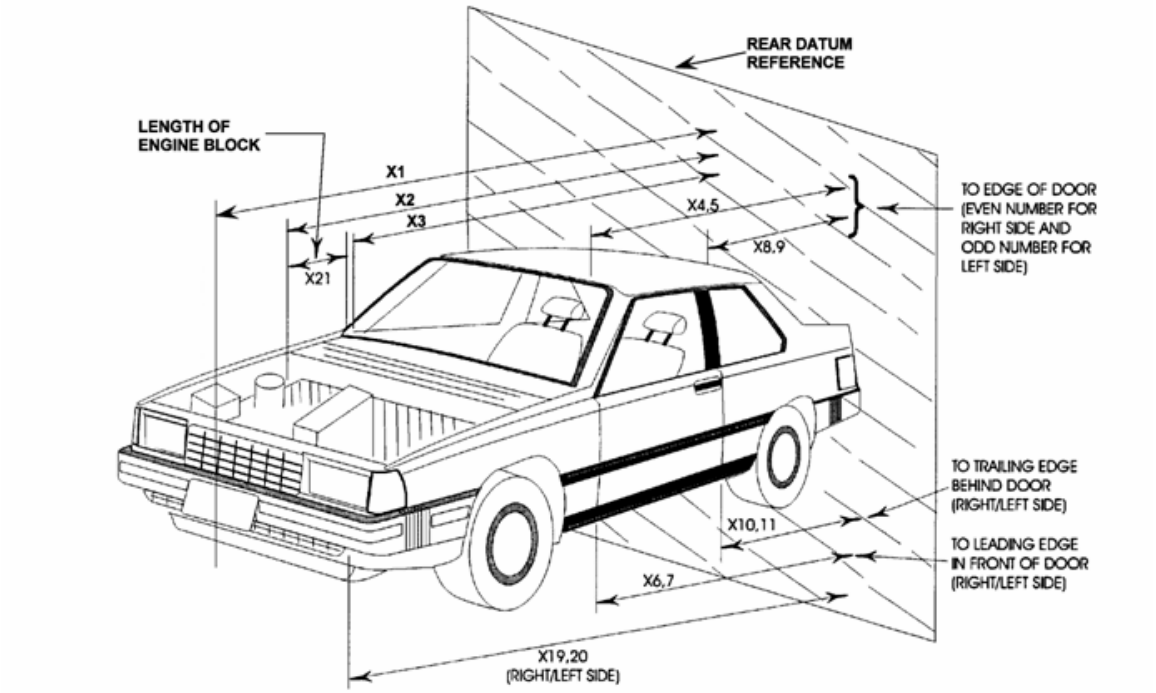
Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Curtain Airbag	Yes	No	Yes	No
Torso/Pelvis Airbag	Yes	No	Yes	No
Knee Airbag	No		No	
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

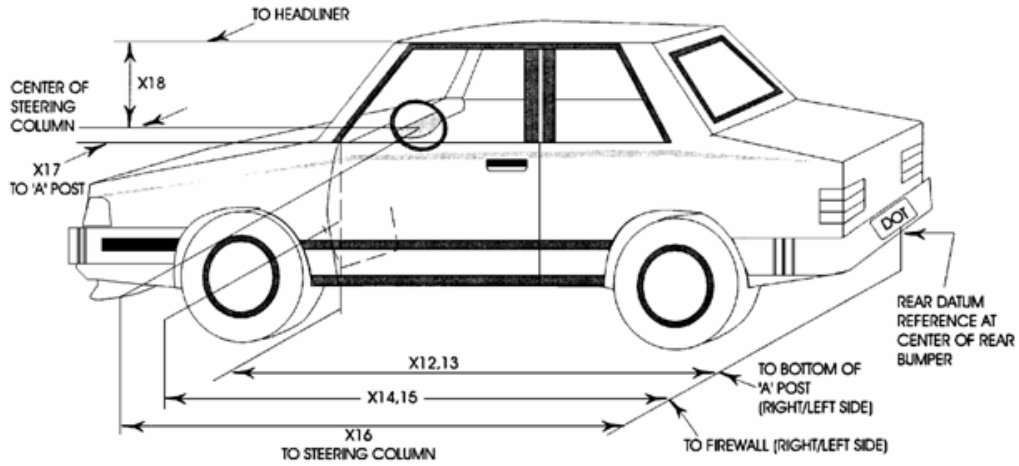
DATA SHEET NO. 12

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10





DATA SHEET NO. 12 … (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4080	3643	437
2	Rear Surface of Vehicle to Front of Engine	3510	3304	206
3	RSOV to Firewall	3250	3256	-6
4	RSOV to Upper Leading Edge of Right Door	2697	2705	-8
5	RSOV to Upper Leading Edge of Left Door	2690	2691	-1
6	RSOV to Lower Leading Edge of Right Door	2640	2646	-6
7	RSOV to Lower Leading Edge of Left Door	2637	2647	-10
8	RSOV to Upper Trailing Edge of Right Door	1323	1339	-16
9	RSOV to Upper Trailing Edge of Left Door	1324	1333	-9
10	RSOV to Lower Trailing Edge of Right Door	1473	1487	-14
11	RSOV to Lower Trailing Edge of Left Door	1468	1476	-8
12	RSOV to Bottom of A-Pillar of Right Side	2611	2613	-2
13	RSOV to Bottom of A-Pillar Left Side	2609	2620	-11
14	RSOV to Firewall, Right Side	3130	3144	-14
15	RSOV to Firewall, Left Side	3155	3154	1
16	RSOV to Steering Column	2194	2197	-3
17	Center of Steering Column to A-Pillar	422	428	-6
18	Center of Steering Column to Headliner	378	385	0
19	RSOV to Right Side of Front Bumper	3399	3274	125
20	RSOV to Left Side of Front Bumper	3398	3287	111
21	Length of Engine Block	345	345	0
RD	RSOV to Right Side of Dash Panel	2346	2377	-31
CD	RSOV to Center of Dash Panel	2323	2297	26
LD	RSOV to Left Side of Dash Panel	2340	2344	-4

All measurements in millimeters.

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

VEHICLE INFORMATION

VIN: JHMZF1D41BS000412 Wheelbase (mm): 2430

Vehicle Size Category: 3-Door Hatchback Test Weight (kg): 1385.5

ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember

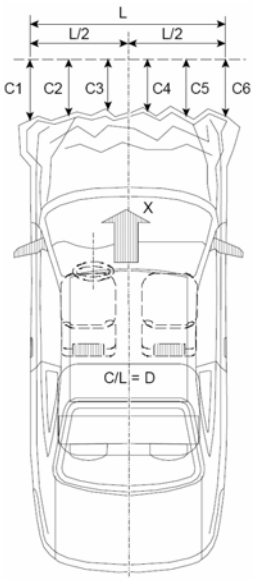
Cal. Procedure/Interval: Drop Test / 6 months

Integration Algorithm: NHTSA Standard Linearity: Good

Impact Velocity (km/h): 56.51

Velocity Change (km/h): 63.2

Time of Separation (msec): 69.9



CRUSH PROFILE

Collision Deformation Classification: 12FCEW2

Midpoint of Damage: Vehicle Centerline

Damage Region Length (mm): 1722

Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	683	830	-147
C2	Crush Zone 2 at Left Side	mm	166	485	-319
C3	Crush Zone 3 at Left Side	mm	68	495	-427
C4	Crush Zone 4 at Right Side	mm	68	520	-452
C5	Crush Zone 5 at Right Side	mm	166	565	-399
C6	Crush Zone 6 at Right Side	mm	683	900	-217
L	C1 to C6	mm	1722		

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

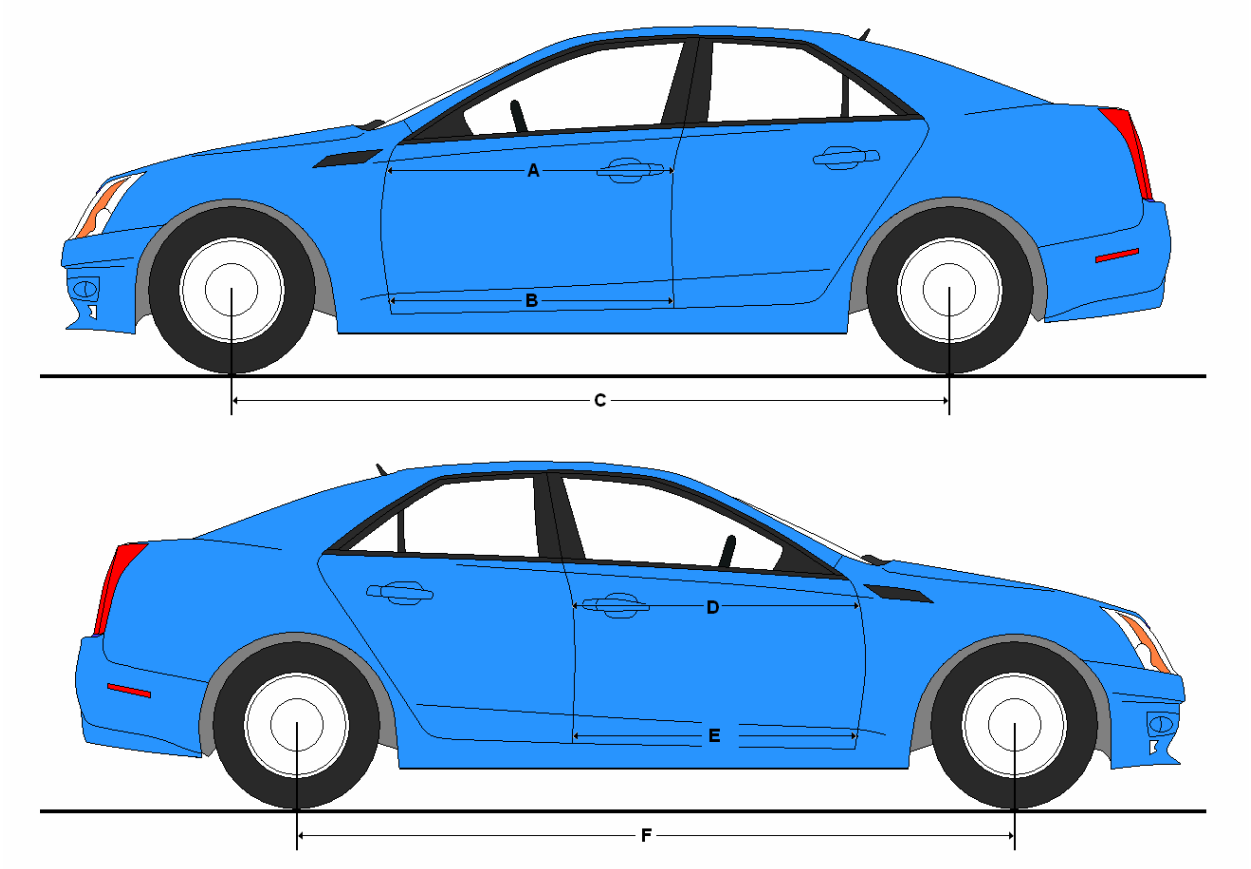
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1239	1240	-1
B	Left Side Lower	mm	1022	1019	3
D	Right Side Upper	mm	1242	1241	1
E	Right Side Lower	mm	1034	1043	-9

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2430	2318	112
F	Right Side Wheelbase	mm	2430	2338	92



DATA SHEET NO. 14 ... (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

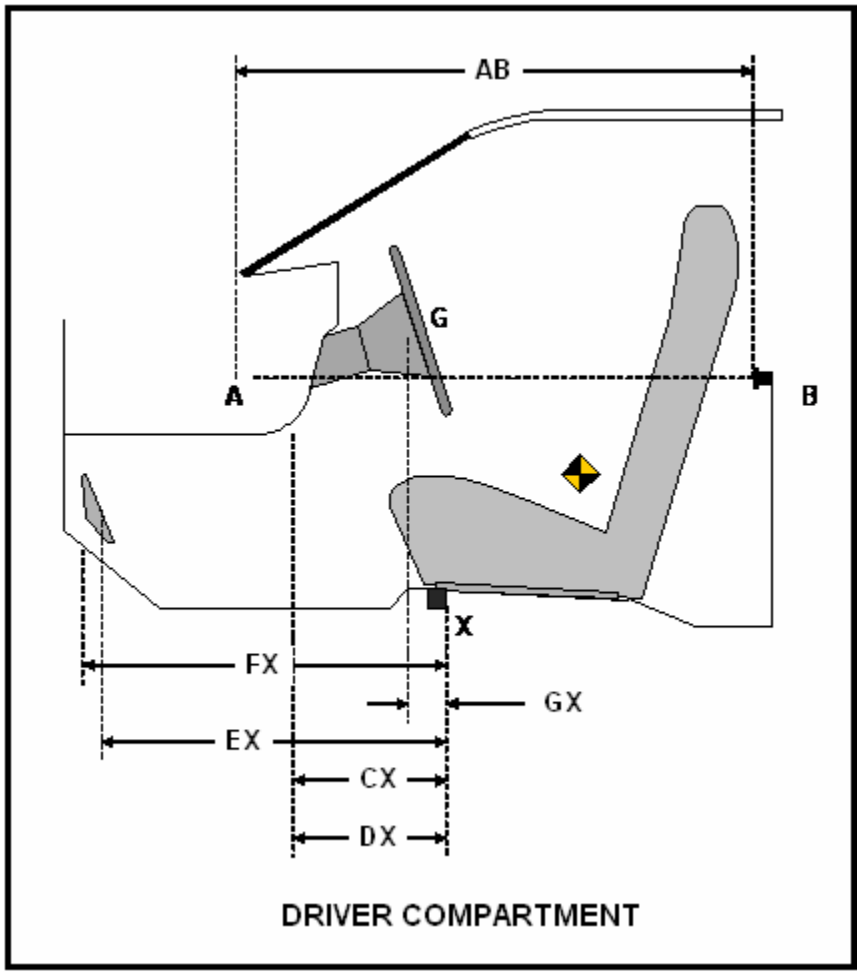
Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	1239	1240	-1
CX	Left Knee Bolster to X	mm	250	278	-28
DX	Right Knee Bolster to X	mm	223	280	-57
EX	Brake Pedal to X	mm	595	508	87
FX	Foot Rest to X	mm	633	672	-39
GX	Center of Steering Wheel Hub to X	mm	50	87	-37

X = Front of Seat Track (Stationary)

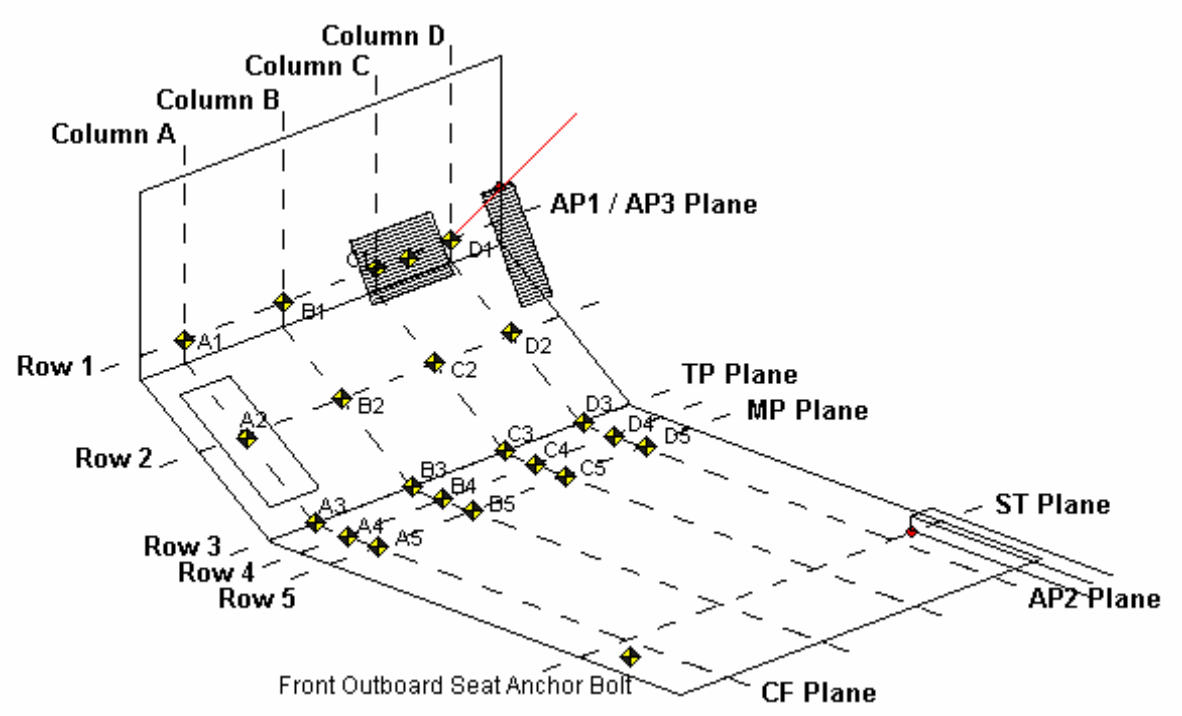


DATA SHEET NO. 14 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

MP: Y-Z plane, halfway between the ST plane and AP1 plane

CF Plane: X-Z plane passes through center of footrest.

BP Plane: X-Z plane passes through center of brake pedal

TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

DATA SHEET NO. 14 ... (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	701	734	729	693	655	680	667	607	-46	-54	-62	-86
2	664	661	655	663	618	613	599	590	-46	-48	-56	-73
3	593	589	583	585	548	547	535	550	-45	-42	-48	-35
4	438	438	438	441	396	399	402	414	-42	-39	-36	-27
5	280	281	286	292	238	245	253	266	-42	-36	-33	-26

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-5	-94	-183	-358	8	-87	-177	-342	13	7	6	16
2	0	-94	-182	-362	13	-82	-168	-337	13	12	14	25
3	-2	-94	-184	-366	14	-74	-164	-338	16	20	20	28
4	-4	-95	-188	-368	18	-73	-166	-342	22	22	22	26
5	-5	-103	-194	-369	12	-87	-173	-347	17	16	21	22

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	102	79	89	109	141	118	122	150	39	39	33	41
2	29	34	43	34	68	64	67	74	39	30	24	40
3	-15	-11	-3	-8	21	11	12	4	36	22	15	12
4	-22	-20	-17	-11	-9	-8	-7	-3	13	12	10	8
5	-20	-16	-16	-14	-14	-22	-32	-22	6	-6	-16	-8

All measurements in millimeters

DATA SHEET NO. 14 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	725	738	753	702	709	720	735	684	-16	-18	-18	-18
2	655	663	668	672	643	648	657	661	-12	-15	-11	-11
3	599	598	608	608	591	587	599	597	-8	-11	-9	-11
4	443	449	453	457	436	442	446	450	-7	-7	-7	-7
5	280	282	281	281	273	275	272	274	-7	-7	-9	-7

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	353	187	88	-2	352	187	88	-6	-1	0	0	-4
2	360	184	96	-4	356	180	92	-7	-4	-4	-4	-3
3	365	187	90	2	359	183	85	-2	-6	-4	-5	-4
4	367	190	95	1	362	186	90	-3	-5	-4	-5	-4
5	369	196	94	0	363	191	89	-4	-6	-5	-5	-4

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	107	98	92	122	111	114	113	141	4	16	21	19
2	53	52	38	40	51	63	52	57	-2	11	14	17
3	1	9	-1	-2	-4	14	9	15	-5	5	10	17
4	-9	-16	-16	-19	-24	-16	-14	-11	-15	0	2	8
5	-14	-13	-16	-17	-38	-26	-23	-17	-24	-13	-7	0

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

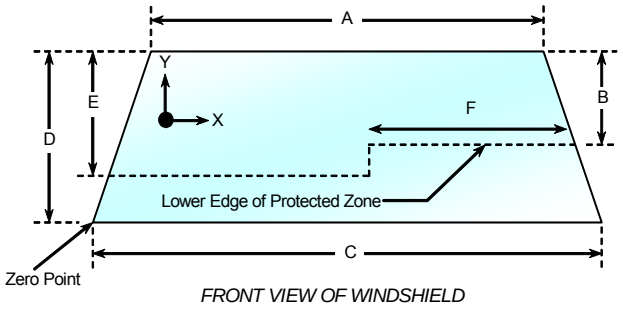
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber plastic and rubber molding sealed with rubber cement.

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

Temperature of windshield molding during test: 21.1° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2141.5	2141.5	
Right Side	2141.5	2141.5	
Total	4283	4283	100%



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1162
B	mm	425
C	mm	1485
D	mm	818
E	mm	464
F	mm	593

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. 16

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

Temperature at Time of Impact: 38.9° Test Time: 12:35 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)

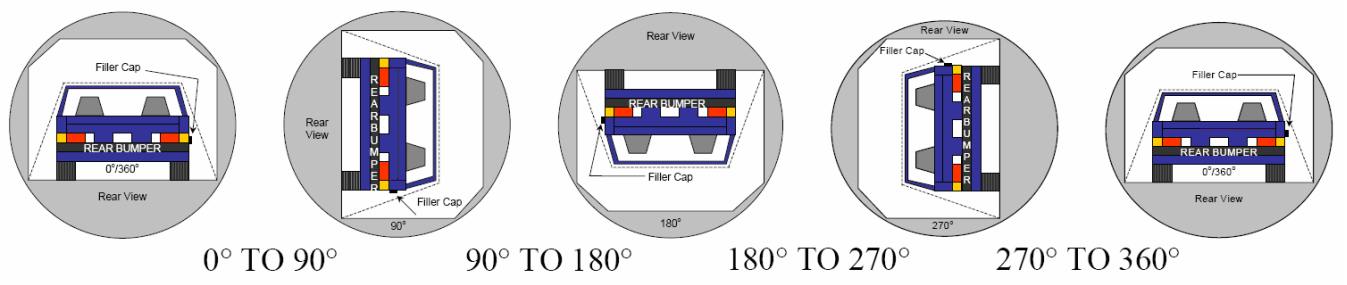
D. Spillage: No spillage occurred

DATA SHEET NO. 17

FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



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: No spillage occurred

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	86	300	386
90° To 180°	80	305	385
180° To 270°	77	330	407
270° To 360°	83	300	383

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° To 90°	None
90° To 180°	None
180° To 270°	None
270° To 360°	None

DATA SHEET NO. 18

FMVSS 305 ELECTRIC VEHICLE PROPULSION SYSTEM DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 55/28 km/h Side Impact NCAP Test Date: 09/27/10

ELECTRIC VEHICLE PROPULSION SYSTEM DATA

Type of Electric Vehicle	Gas-Electric Hybrid
Propulsion Battery Type	Ni-MH
Nominal Voltage	100 V
Physical Location of Automatic Propulsion Battery Disconnect	No Automatic Disconnect
Auxilliary Battery Type	Lead-Acid Battery

PROPULSION BATTERY SYSTEM DATA

Electrolyte Fluid Type	
Electrolyte Fluid Specific Gravity	
Electrolyte Fluid Kinematic Viscosity	
Electrolyte Fluid Color	Orange
Propulsion Battery Coolant Type, Color, Specific Gravity	
Location of Battery Modules	Rear Cargo Compartment

DATA SHEET NO. 19

FMVSS 305 POST-IMPACT DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 55/28 km/h Side Impact NCAP Test Date: 09/27/10

ELECTROLYTE SPILLAGE MEASUREMENTS

A. From impact until 30 minutes later: 0.0 L

(Maximum Allowable = 5.0 L total)

B. Spillage Details: No leakage occurred

MEASUREMENT DESCRIPTIONS

Code	Units	Description
V_b	V	Propulsion Battery Voltage
V_1	V	Propulsion Battery Negative to Chassis
V_2	V	Propulsion Battery Positive to Chassis
R_O	Ω	Resistance of Grounding Circuit
V_1'	V	Propulsion Battery Negative to Chassis with R_O installed
V_2'	V	Propulsion Battery Positive to Chassis with R_O installed
R_{i1}	Ω	Electrical Isolation Value of Propulsion Battery Negative to Chassis Ground
R_{i2}	Ω	Electrical Isolation Value of Propulsion Battery Positive to Chassis Ground
R_i	Ω	Electrical Isolation Value of Propulsion Battery - The Minimum of R_{i1} and R_{i2}
R_i/V_b	Ω/v	Electrical Isolation per Volt of Propulsion Battery

ELECTRICAL ISOLATION DATA

Code	Units	Threshold	Pre-Test	Post-Test
V_b	V		110.8	3.0
V_1	V		0.0	0.0
V_2	V		0.0	0.0
R_o	Ω		219,500	219,500
V_1'	V		0.0	0.0
V_2'	V		0.0	0.0
R_{i1}	Ω		Zero Volts	Zero Volts
R_{i2}	Ω		Zero Volts	Zero Volts
R_i	Ω		Zero Volts	Zero Volts
R_i/V_b	Ω/V	500	Zero Volts*	Zero Volts*

* "Zero Volts" is considered as being compliant.

DATA SHEET NO. 20

FMVSS 305 STATIC ROLLOVER DATA

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 55/28 km/h Side Impact NCAP Test Date: 09/27/10

STATIC ROLLOVER ELECTRICAL ISOLATION DATA

Code	Units	Threshold	Rollover Position			
			90°	180°	270°	360°
V_b	V		0.0	0.0	0.0	0.0
V_1	V		0.0	0.0	0.0	0.0
V_2	V		0.0	0.0	0.0	0.0
R_o	Ω		219,500	219,500	219,500	219,500
V_1'	V		0.0	0.0	0.0	0.0
V_2'	V		0.0	0.0	0.0	0.0
R_{i1}	Ω		Zero Volts	Zero Volts	Zero Volts	Zero Volts
R_{i2}	Ω		Zero Volts	Zero Volts	Zero Volts	Zero Volts
R_i	Ω		Zero Volts	Zero Volts	Zero Volts	Zero Volts
R_i/V_b	Ω/V	500	Zero Volts*	Zero Volts*	Zero Volts*	Zero Volts*

FMVSS 305 Requirements: Maximum allowable propulsion battery electrolyte spillage is 5.0 L.

FMVSS 305 ELECTROLYTE SPILLAGE REQUIREMENT

Maximum Allowable Spillage	5.0L throughout impact test and static rollover

FMVSS 305 ELECTROLYTE COLLECTED

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

ELECTROLYTE SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

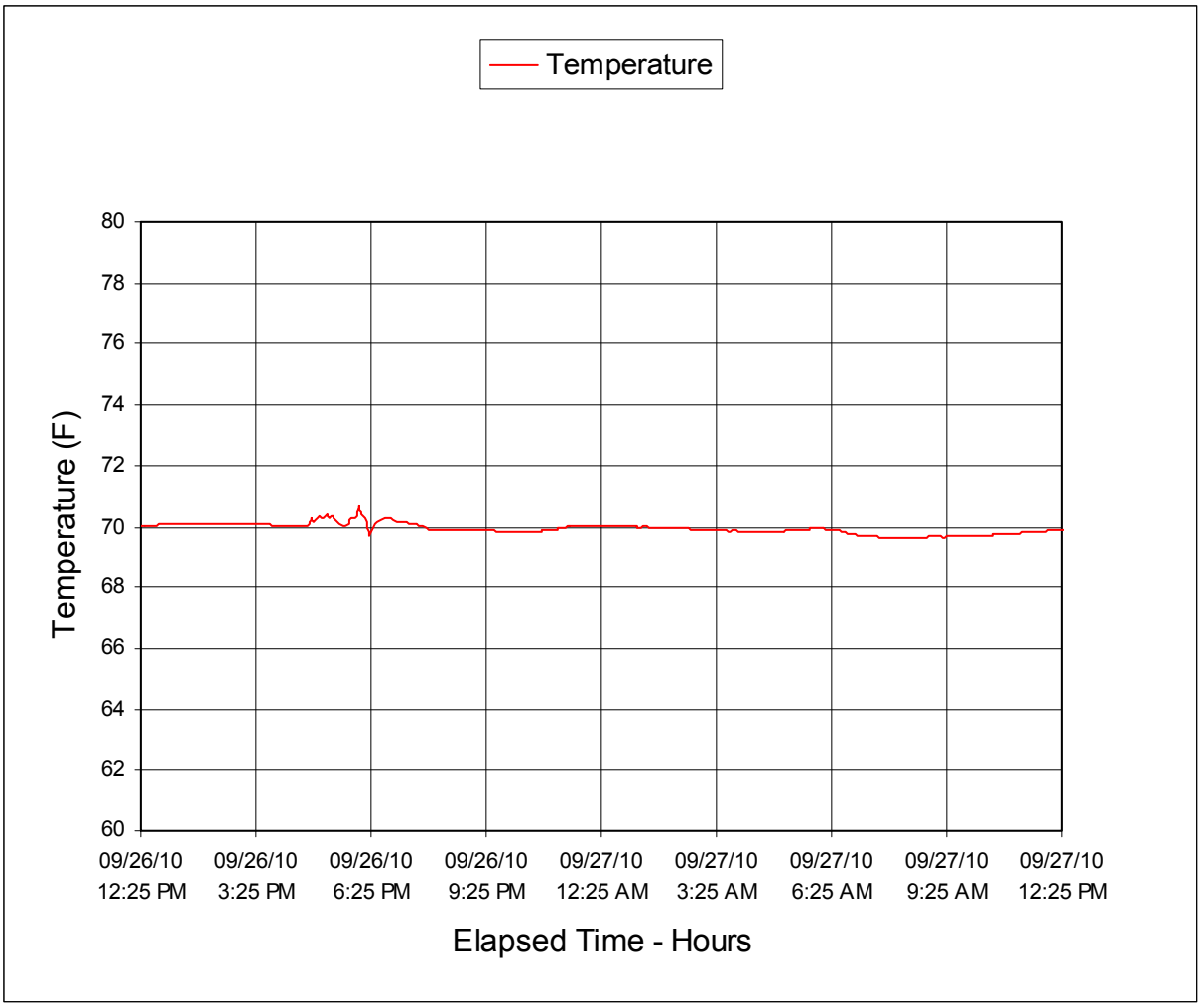
* - “Zero Volts” is considered as being compliant.

DATA SHEET NO. 21

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2011 Honda CR-Z Base 3-Door Hatchback NHTSA No.: HB5302

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 09/27/10



APPENDIX A

PHOTOGRAPHS

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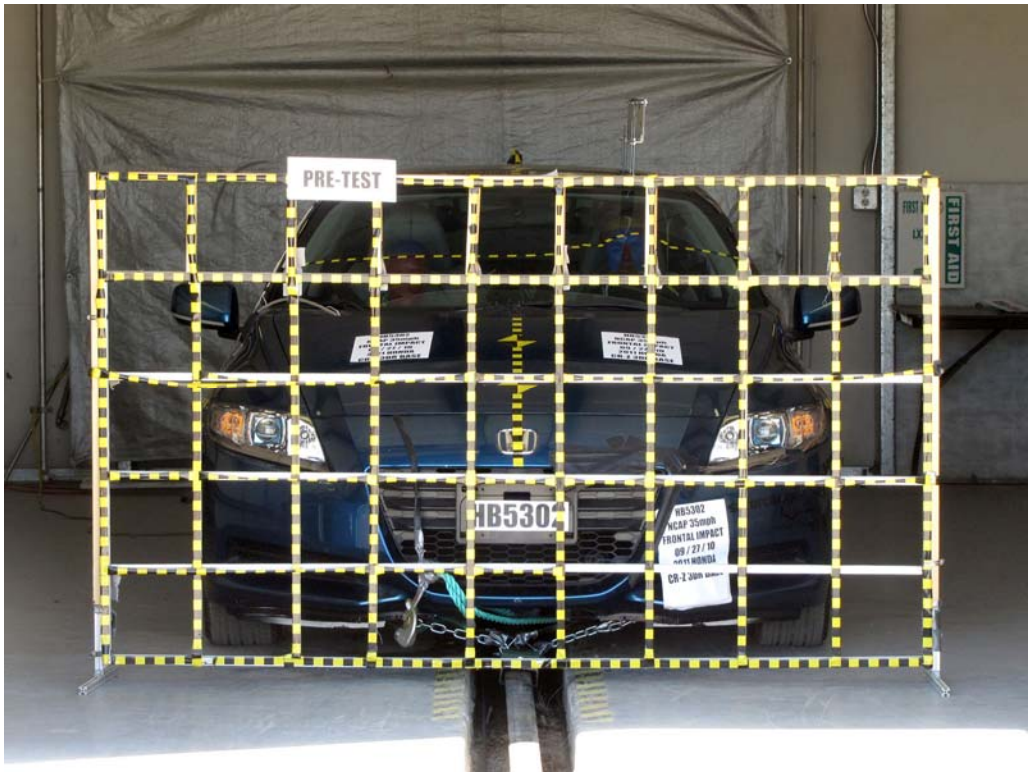

FIGURE 1. Load Cell Location

FIGURE 2. Load Cell Wall

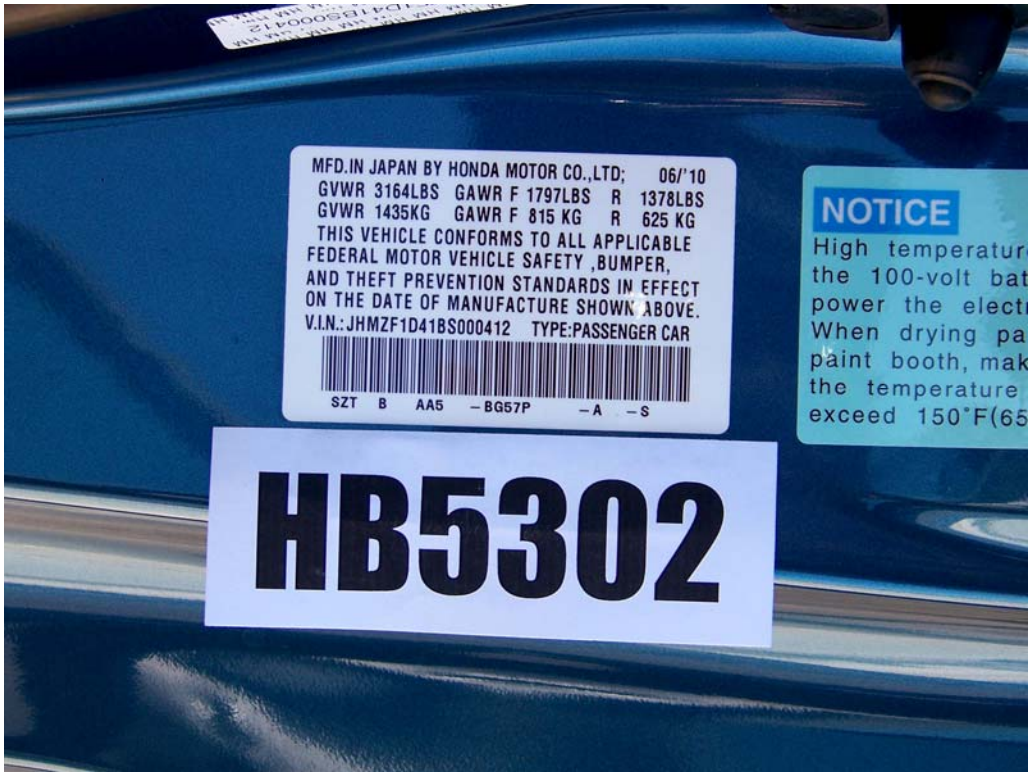

FIGURE 3. Manufacturer's Label

FIGURE 4. Tire Placard

FIGURE 5. Right Front ¾ View, As Received

FIGURE 6. Left Rear ¾ View of Vehicle, 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 ¾ View

FIGURE 14. Post-Test Right Front ¾ View

FIGURE 15. Pre-Test Left Rear ¾ View

FIGURE 16. Post-Test Left Rear ¾ View

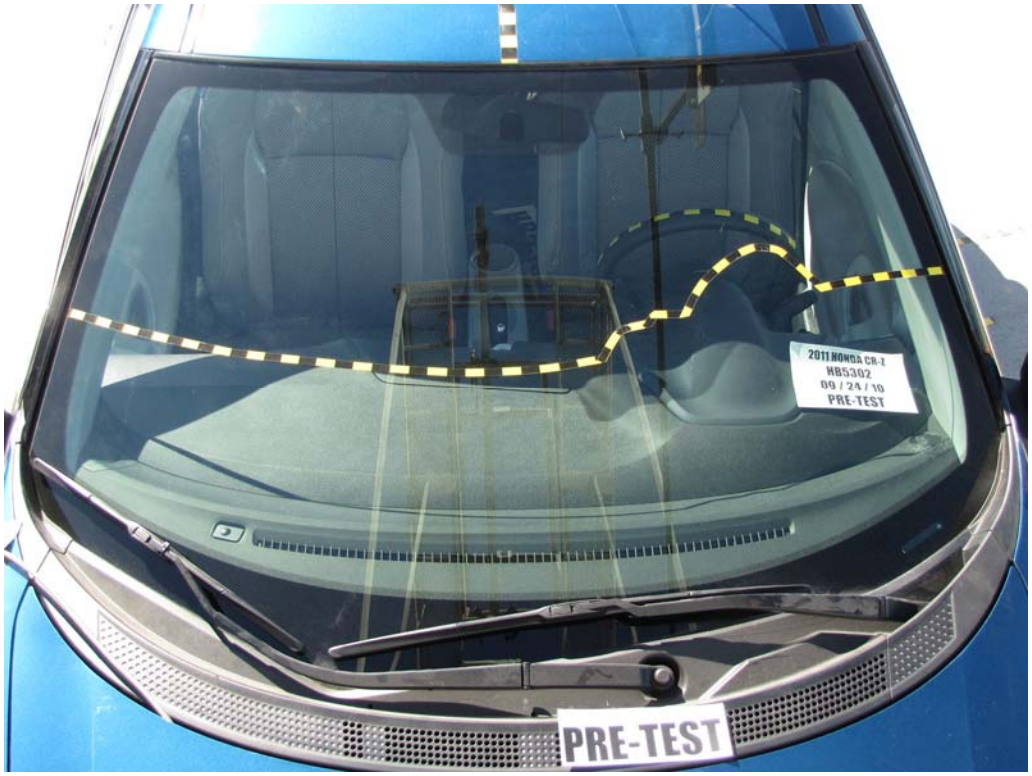

FIGURE 17. Pre-Test Windshield View

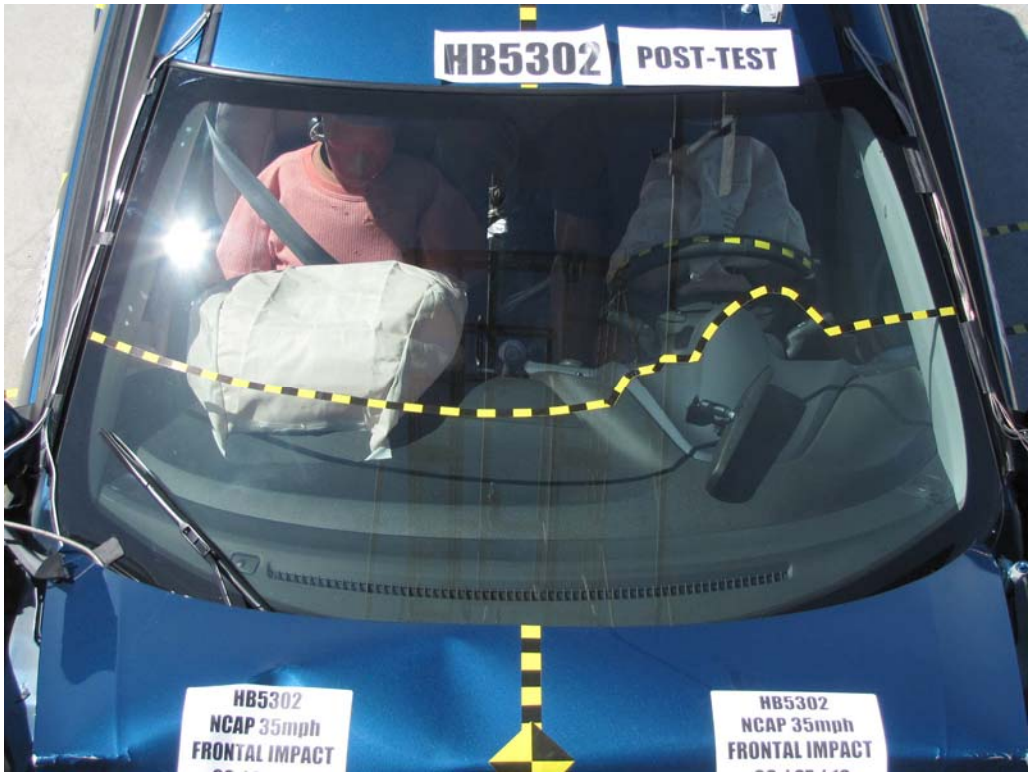

FIGURE 18. Post-Test Windshield View

FIGURE 19. Pre-Test Engine Compartment View

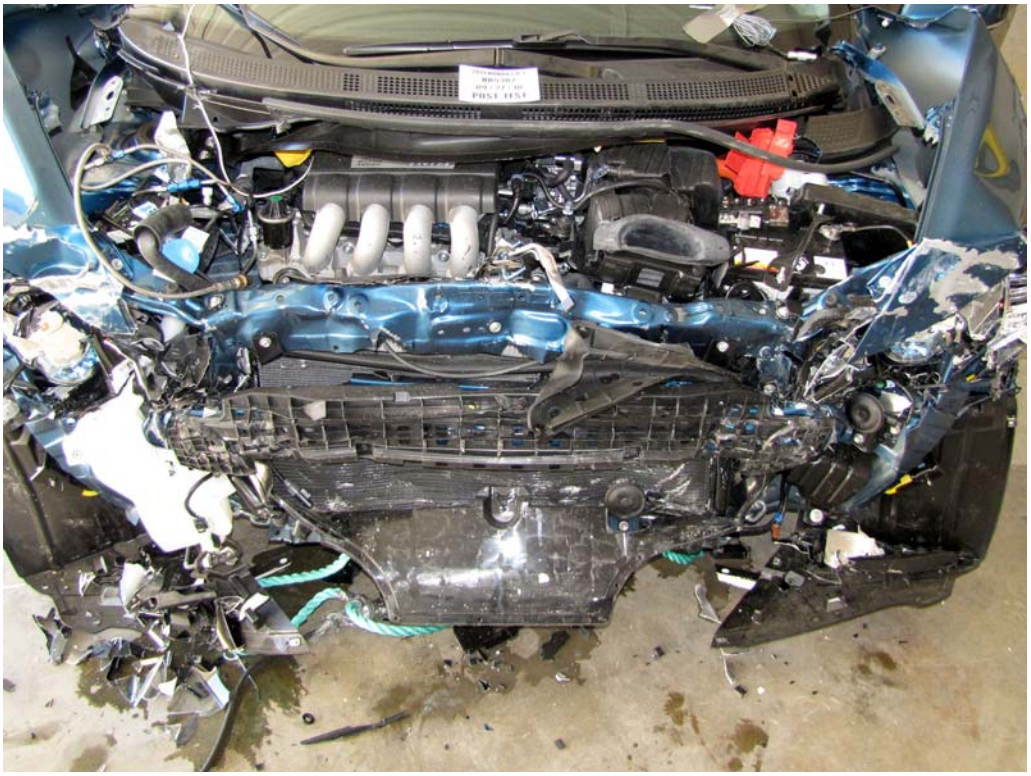

FIGURE 20. Post-Test Engine Compartment View

Photograph Not Available

FIGURE 21. Pre-Test Fuel Filler Cap View

FIGURE 22. Post-Test Fuel Filler Cap View

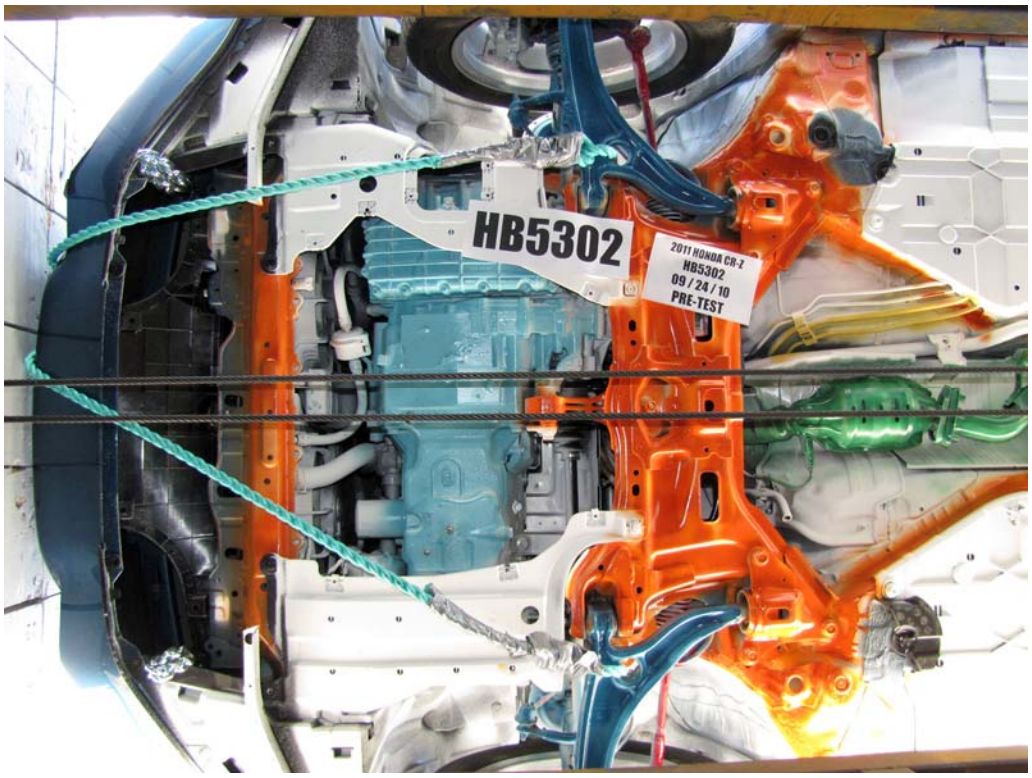

FIGURE 23. Pre-Test Front Underbody View


FIGURE 24. Post-Test Front Underbody View

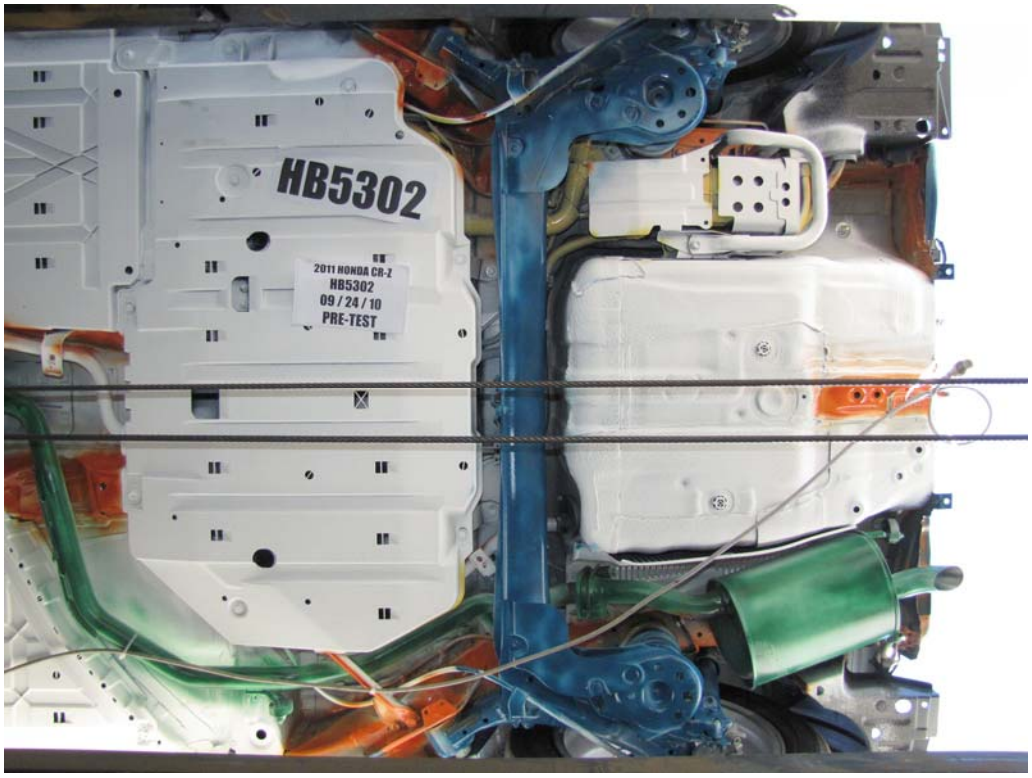

FIGURE 25. Pre-Test Rear Underbody View

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

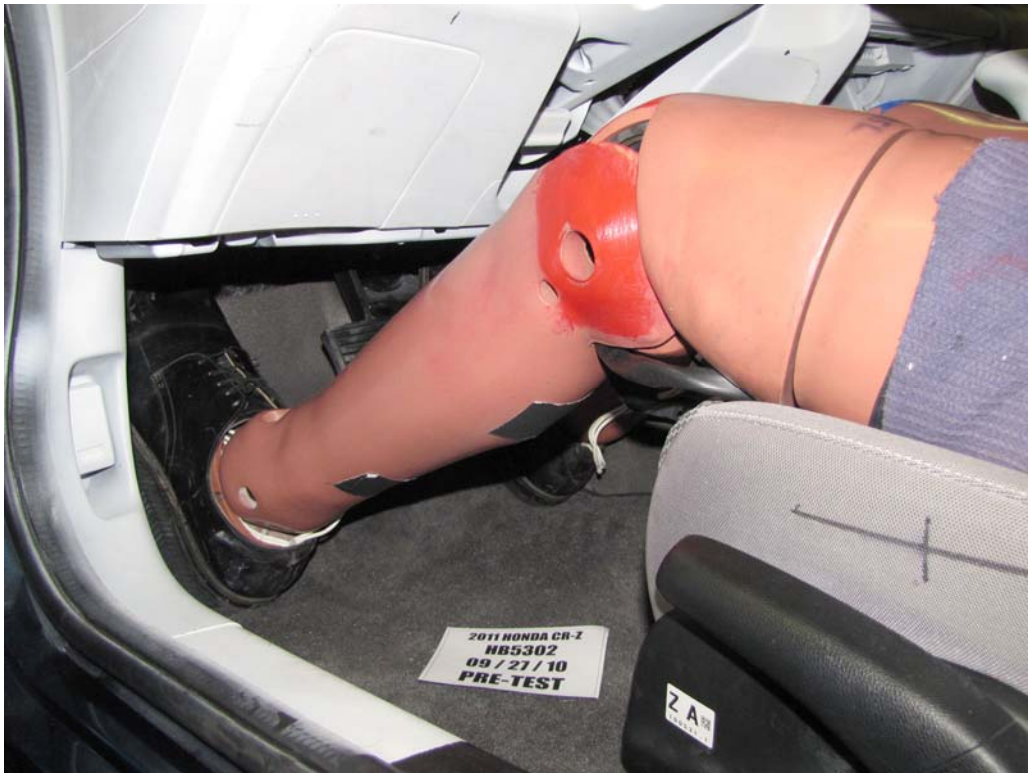

FIGURE 37. Pre-Test Driver Dummy Feet

FIGURE 38. Post-Test Driver Dummy Feet

FIGURE 39. Pre-Test Driver's Side Knee Bolster

FIGURE 40. Post-Test Driver's Side Knee Bolster

FIGURE 41. Pre-Test Driver's Side Floorpan

FIGURE 42. Post-Test Driver's Side Floorpan

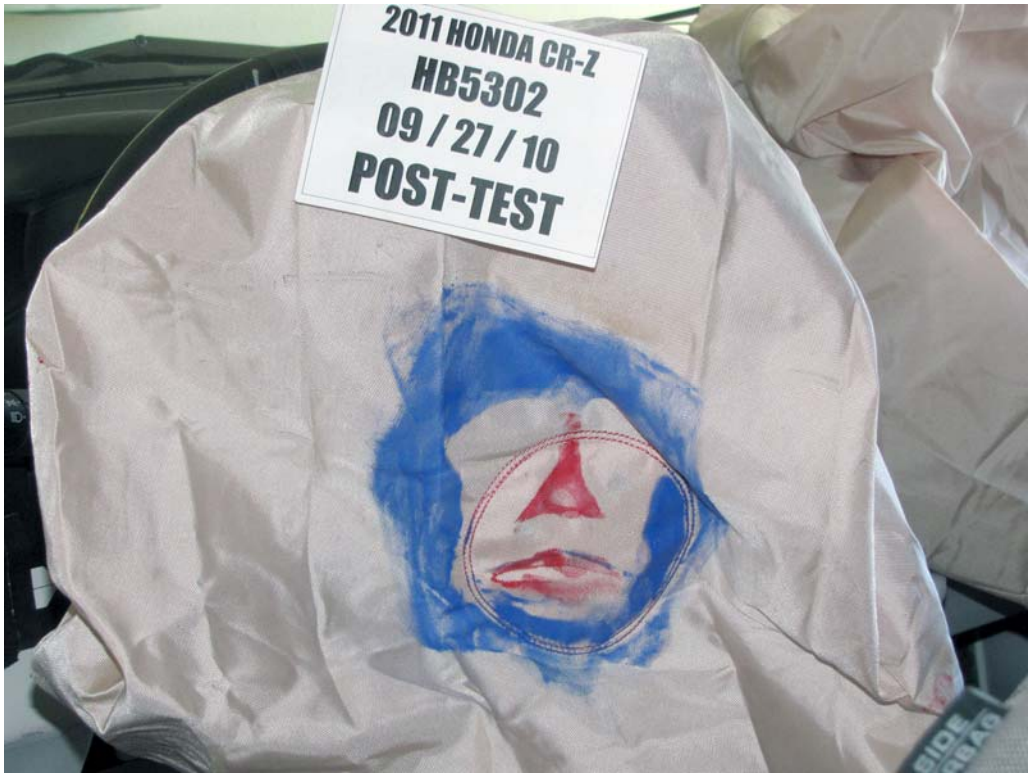

FIGURE 43. Post-Test Driver Dummy Contact With Airbag

FIGURE 43a. Post-Test Driver Dummy Contact With Headrest

FIGURE 43b. Post-Test Driver Dummy Contact With Knee Bolster

FIGURE 44. Pre-Test View of Steering Column Shear Capsule

FIGURE 45. Post-Test View of Steering Column Shear Capsule

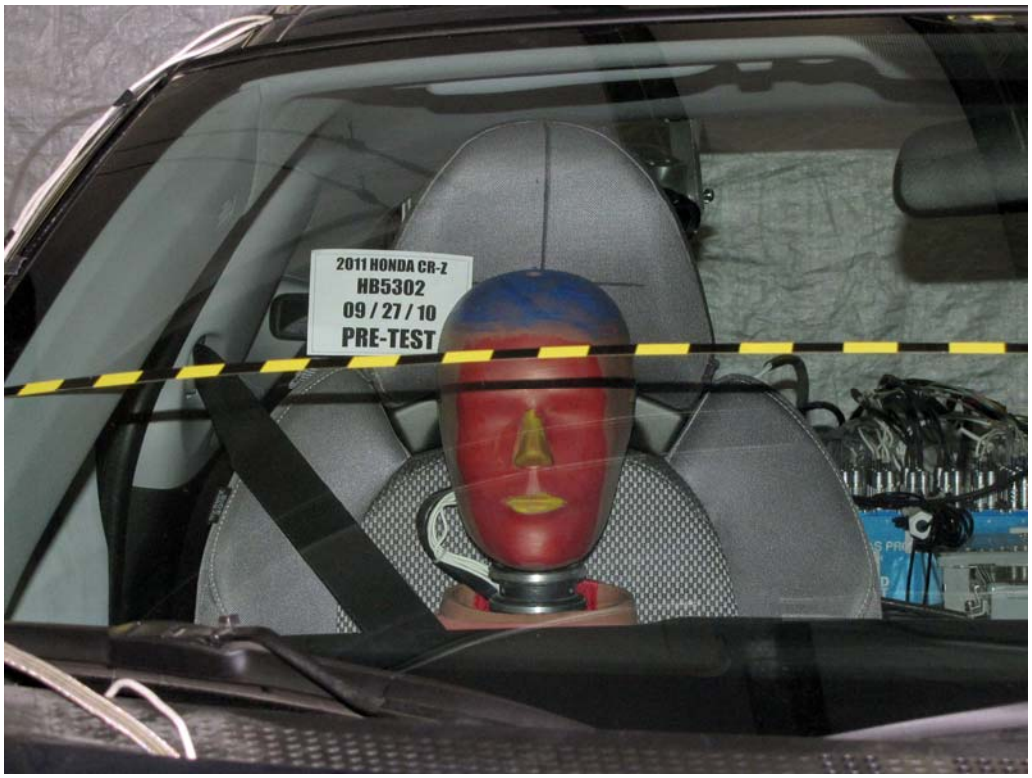

FIGURE 46. Pre-Test Passenger Dummy Front View

FIGURE 47. Post-Test Passenger Dummy Front View

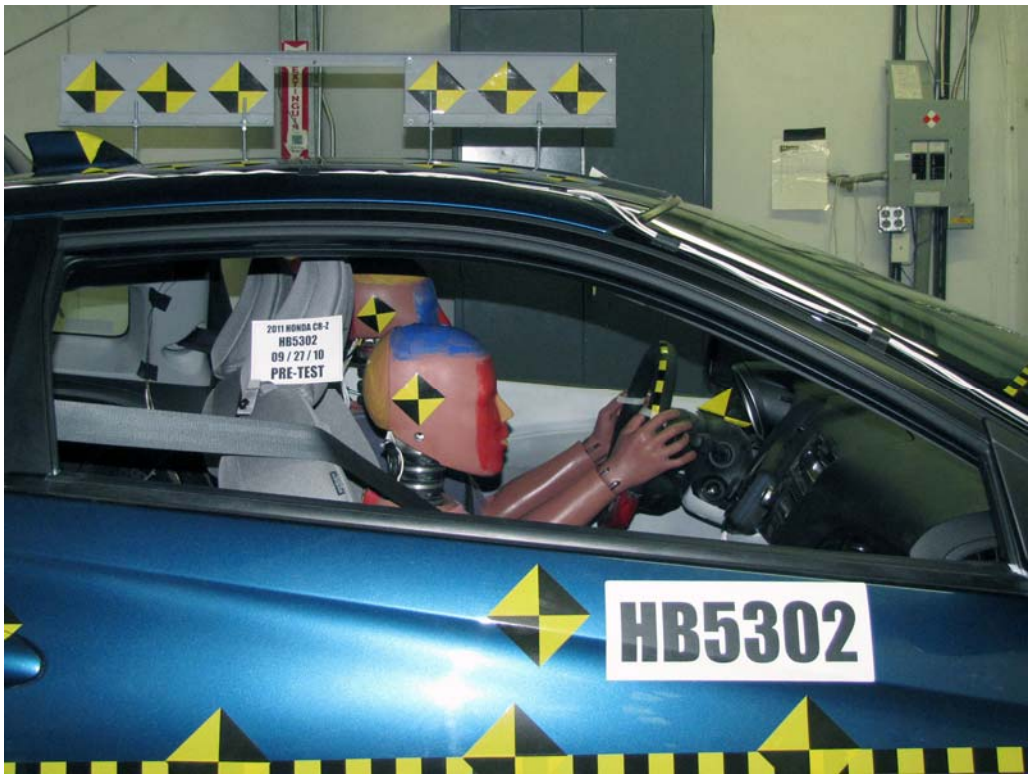

FIGURE 48. Pre-Test Passenger Dummy Window View

FIGURE 49. Post-Test Passenger Dummy Window View

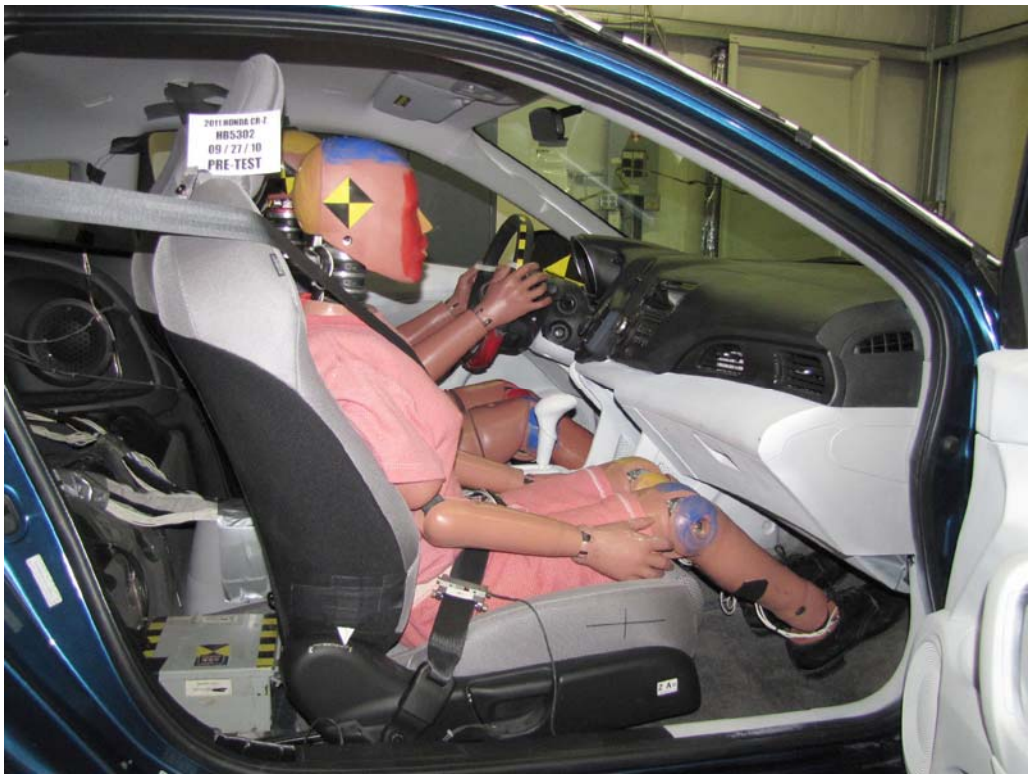

FIGURE 50. Pre-Test Passenger Dummy and Vehicle Interior View

FIGURE 51. Post-Test Passenger Dummy and Vehicle Interior View

FIGURE 52. Pre-Test Passenger's Seat Fore-Aft Markings

FIGURE 53. Post-Test Passenger's Seat Fore-Aft Markings

FIGURE 54. Pre-Test Passenger Dummy Feet

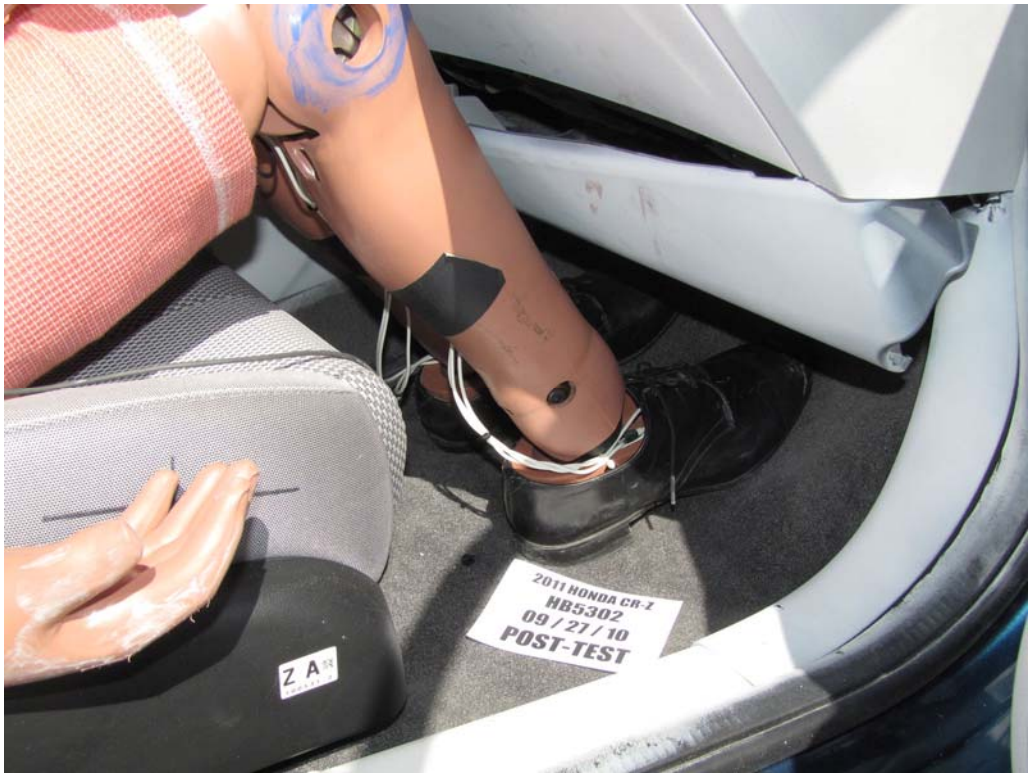

FIGURE 55. Post-Test Passenger Dummy Feet

FIGURE 56. Pre-Test Passenger's Side Knee Bolster

FIGURE 57. Post-Test Passenger's Side Knee Bolster

FIGURE 58. Pre-Test Passenger's Side Floorpan

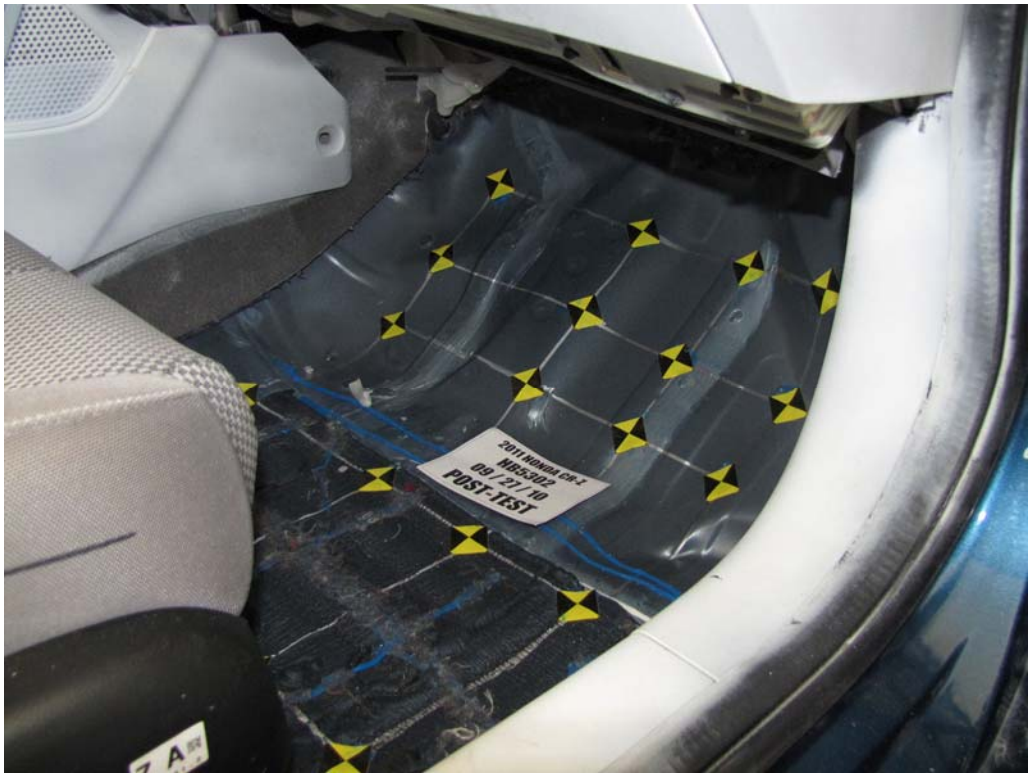

FIGURE 59. Post-Test Passenger's Side Floorpan

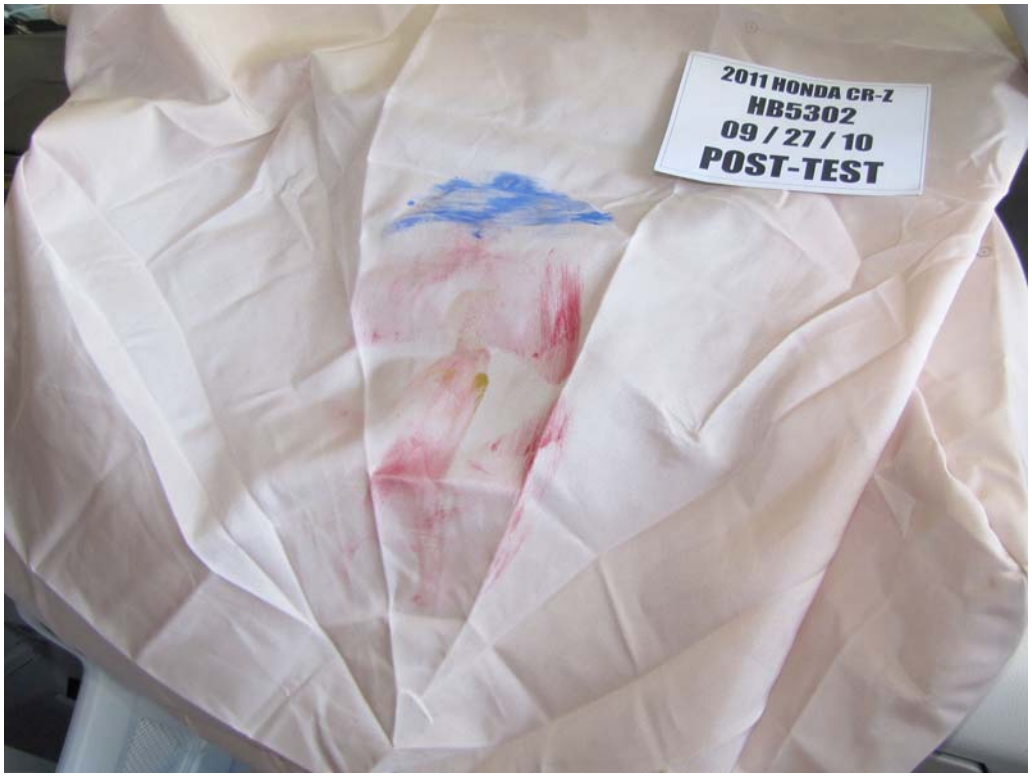

FIGURE 60. Post-Test Passenger Dummy Contact With Airbag

FIGURE 60a. Post-Test Passenger Dummy Contact With Headrest

FIGURE 60b. Post-Test Passenger Dummy Contact With Knee Bolster

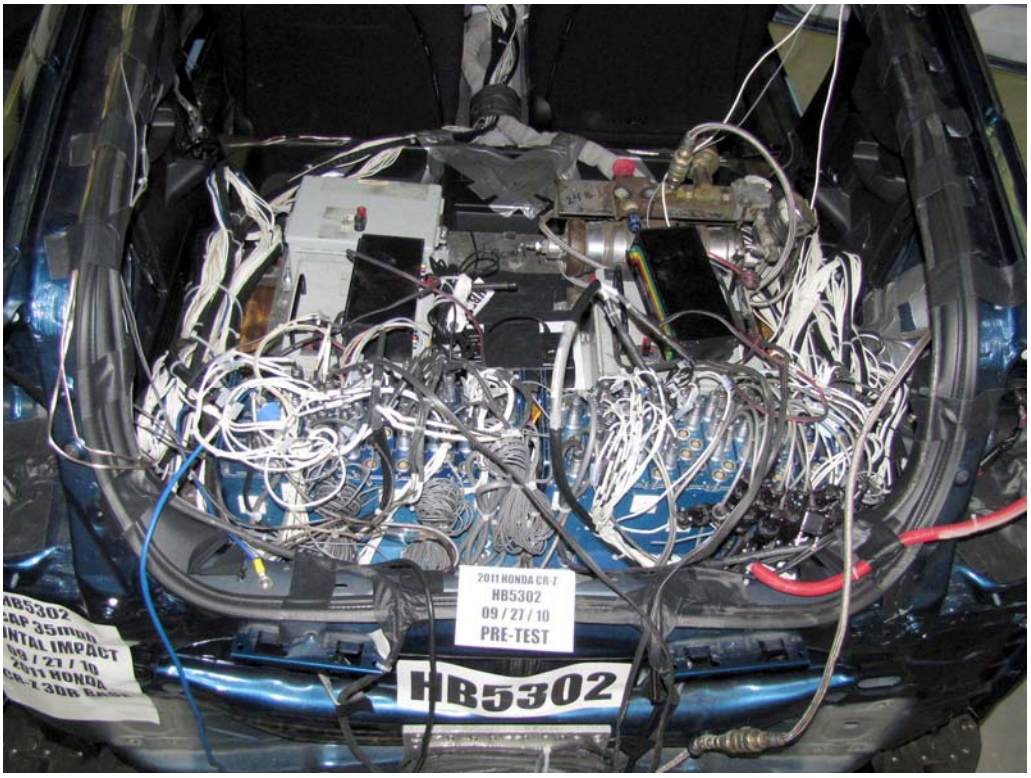

FIGURE 61. Pre-Test of Ballast Installed in Vehicle

Photograph Not Applicable
No Stoddard
Solvent Spillage

FIGURE 62. Post-Test Stoddard Solvent Spillage Location

FIGURE 63. Post-Test Speed Trap Read Out

FIGURE 64. Vehicle at 0°on Static Rollover Device

FIGURE 65. Vehicle at 90°on Static Rollover Device

FIGURE 66. Vehicle at 180°on Static Rollover Device

FIGURE 67. Vehicle at 270°on Static Rollover Device

FIGURE 68. Vehicle at 360°on Static Rollover Device

FIGURE 69. Impact Photograph

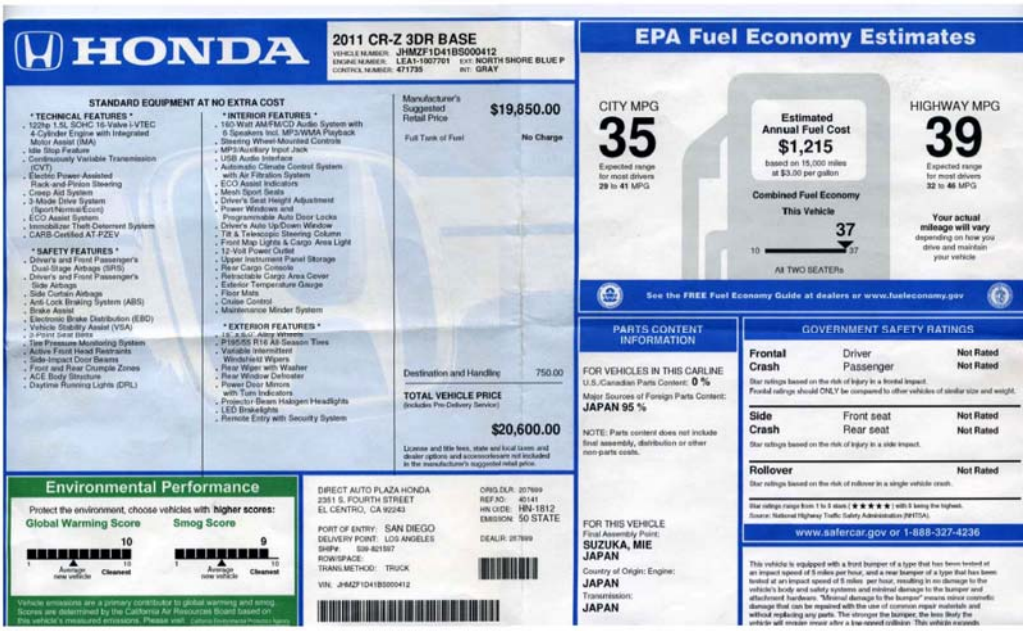

FIGURE 70. Monroney Label Photograph

FIGURE 71. Hybrid System Label

FIGURE 72. Hybrid System Label

FIGURE 73. Hybrid System Label

FIGURE 74. Hybrid System Label

FIGURE 75. Hybrid System Label

FIGURE 76. Pre-Test Electrical Propulsion Components

FIGURE 77. Post-Test Electrical Propulsion Components

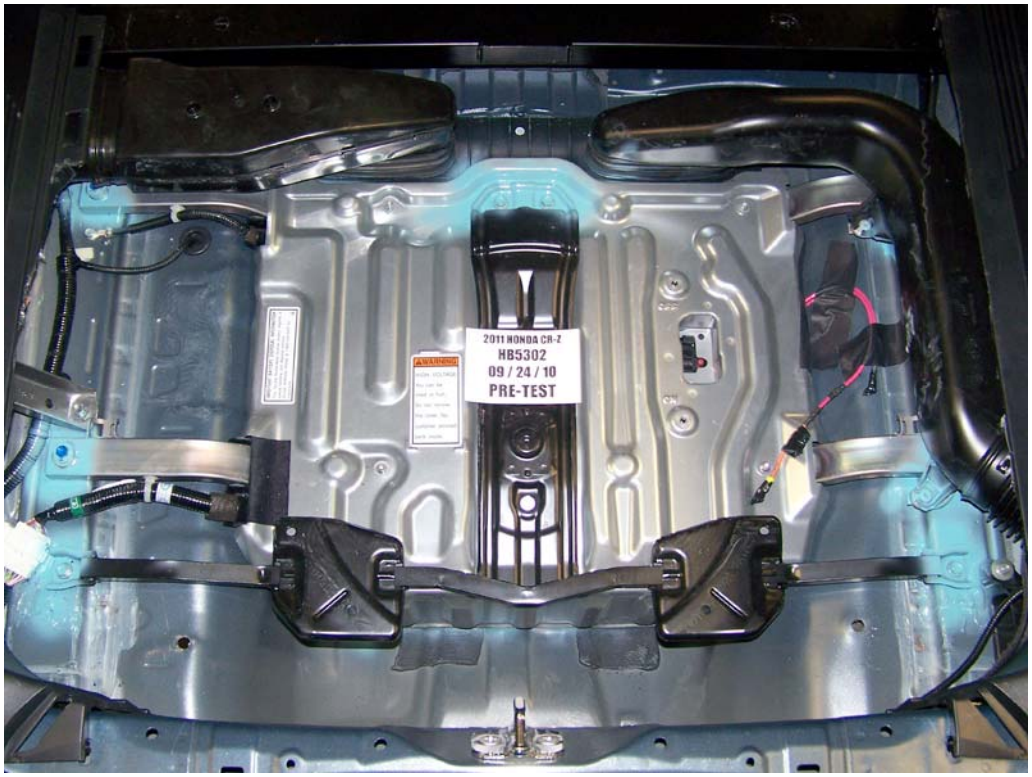

FIGURE 78. Pre-Test Battery Compartment

FIGURE 79. Post-Test Battery Compartment

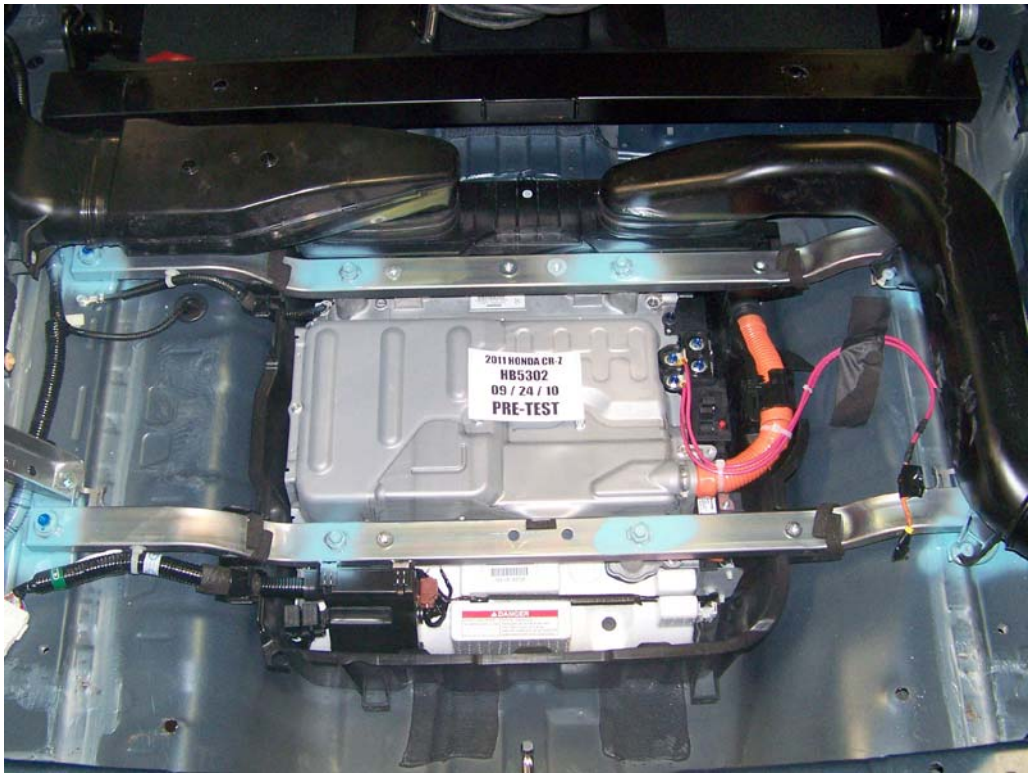

FIGURE 80. Pre-Test Battery Compartment

FIGURE 81. Post-Test Battery Compartment

FIGURE 82. Pre-Test Propulsion Battery Disconnect

FIGURE 83. Post-Test Propulsion Battery Disconnect

FIGURE 84. Pre-Test Propulsion Battery Disconnect

FIGURE 85. Post-Test Propulsion Battery Disconnect

Photograph Not Applicable
No Electrolyte Leakage

FIGURE 86. Post-Test Electrolyte Leakage

FIGURE 87. Pre-Test Battery Mounting Hardware

FIGURE 88. Post-Test Battery Mounting Hardware

FIGURE 89. Pre-Test Battery Mounting Hardware

FIGURE 90. Post-Test Battery Mounting Hardware

FIGURE 91. Pre-Test Battery Mounting Hardware

FIGURE 92. Post-Test Battery Mounting Hardware

FIGURE 93. Pre-Test Battery Mounting Hardware

FIGURE 94. Post-Test Battery Mounting Hardware

FIGURE 95. Pre-Test Battery Mounting Hardware

FIGURE 96. Post-Test Battery Mounting Hardware

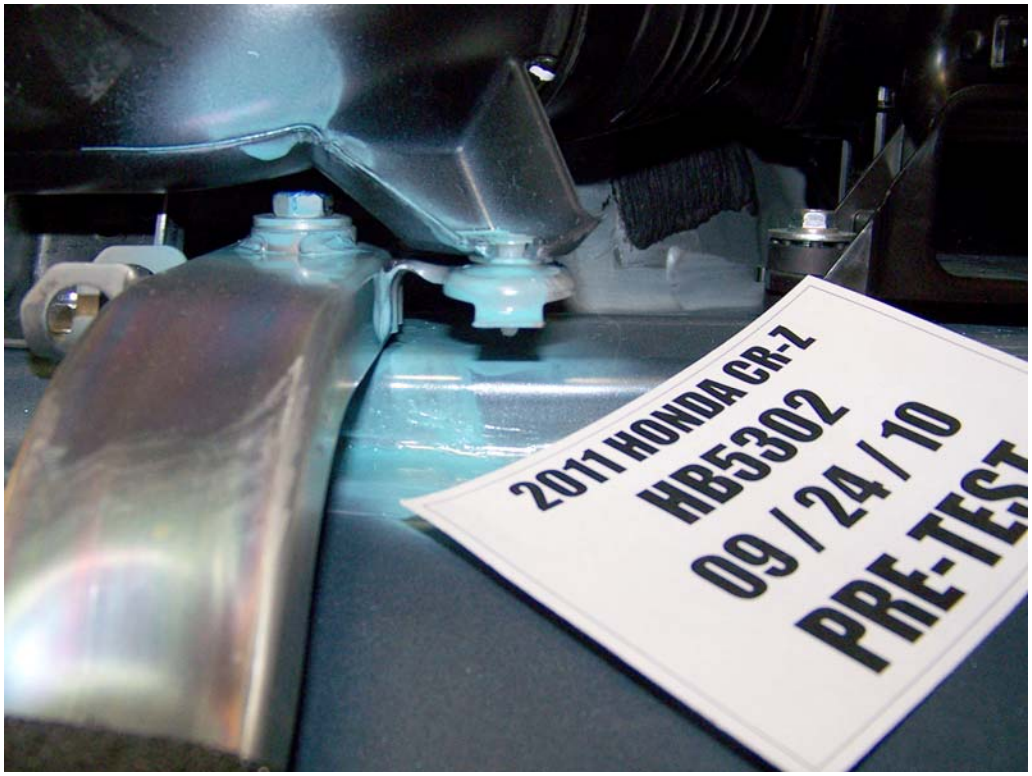

FIGURE 97. Pre-Test Battery Mounting Hardware

FIGURE 98. Post-Test Battery Mounting Hardware

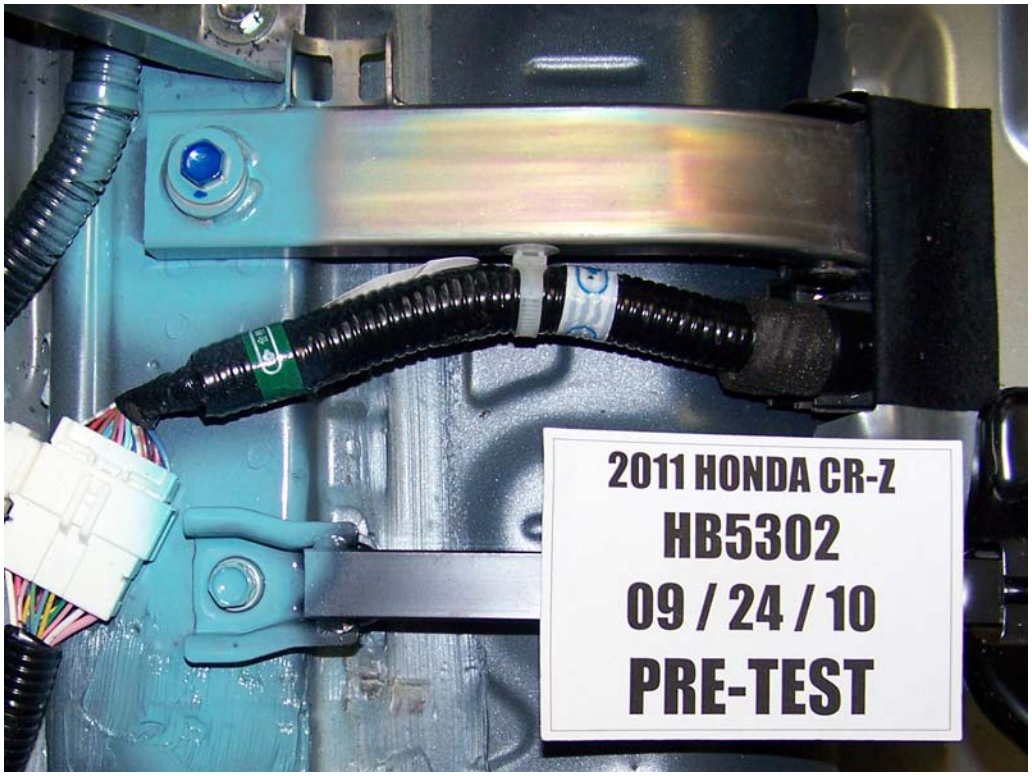

FIGURE 99. Pre-Test Battery Mounting Hardware

FIGURE 100. Post-Test Battery Mounting Hardware

FIGURE 101. Pre-Test Battery Mounting Hardware

FIGURE 102. Post-Test Battery Mounting Hardware

FIGURE 103. Pre-Test Battery Mounting Hardware

FIGURE 104. Post-Test Battery Mounting Hardware

FIGURE 105. Pre-Test Battery Mounting Hardware

FIGURE 106. Post-Test Battery Mounting Hardware

FIGURE 107. Pre-Test Battery Mounting Hardware

FIGURE 108. Post-Test Battery Mounting Hardware

APPENDIX B
DUMMY RESPONSE DATA TRACES

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6	Driver Chest X Acceleration vs. Time Primary	B-3
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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
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17	Passenger Head Y Acceleration vs. Time Primary	B-6
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19	Passenger Head Resultant Acceleration vs. Time Primary	B-6
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25	Passenger Upper Neck Force X vs. Time Primary	B-9
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27	Passenger Upper Neck Moment Y vs. Time Primary	B-9
28	Passenger Nij vs. Time Primary	B-9
29	Passenger Left Femur Force vs. Time	B-10
30	Passenger Right Femur Force vs. Time	B-10

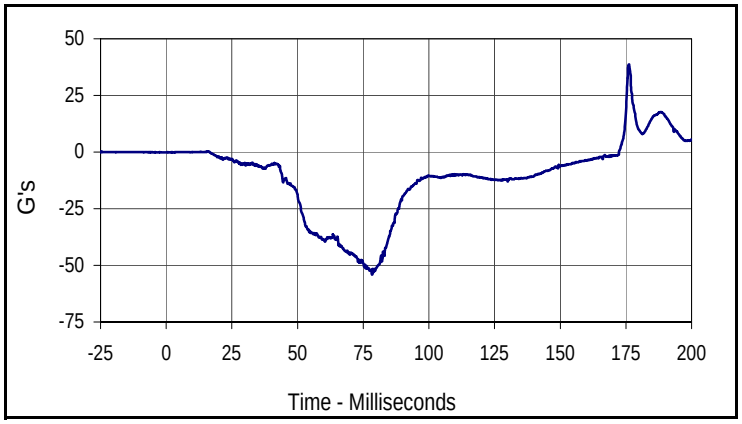
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver 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 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

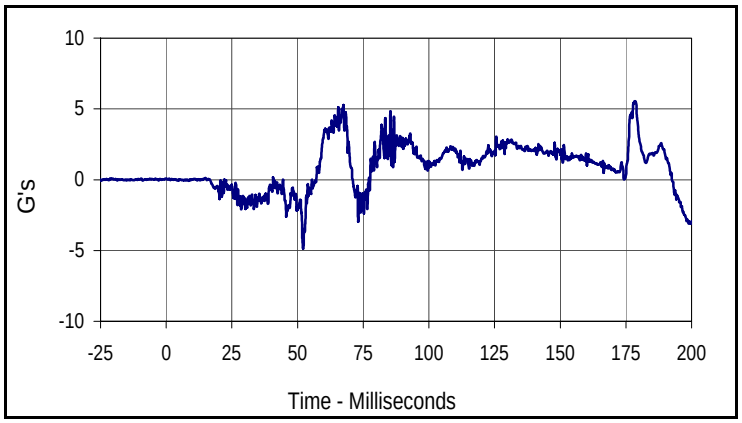
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger 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 Food 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 Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9

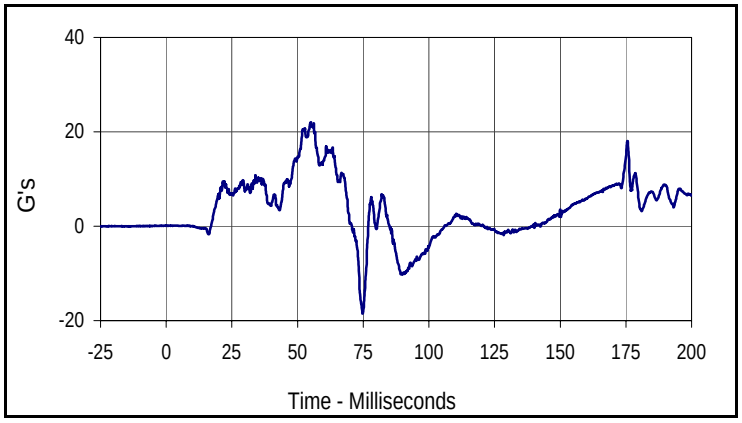
Test Vehicle:	2011 Honda CR-Z Base 3-Door Hatchback	Test Date:	9/27/10
Test Program:	56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test	NHTSA No.:	HB5302



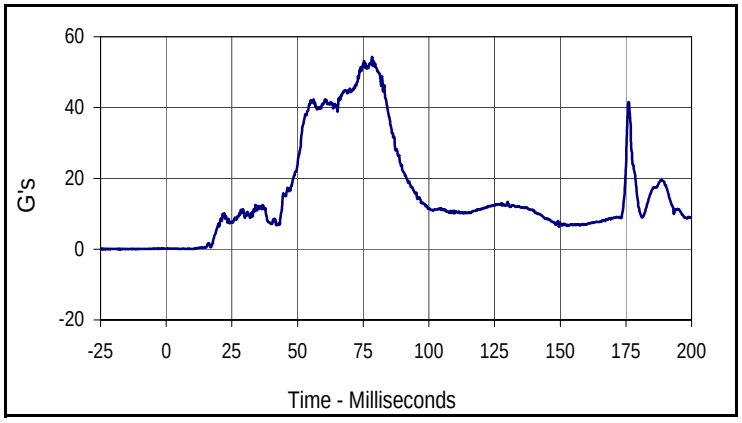
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
38.7	176.1	-54.1	78.4



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.6	178.3	-4.9	52.1

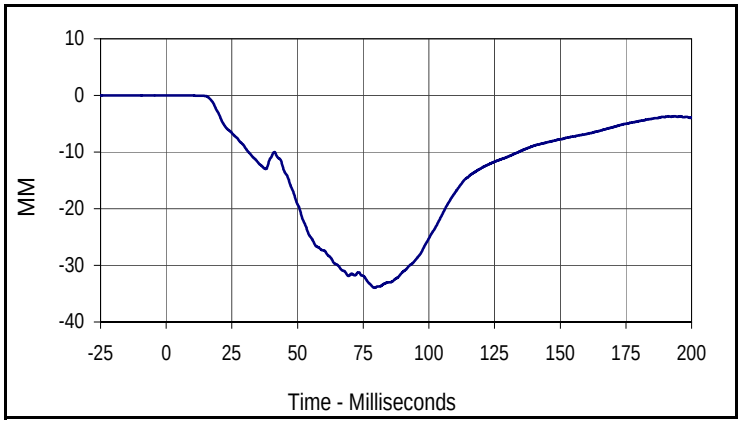


Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
22.1	55.0	-18.5	74.8

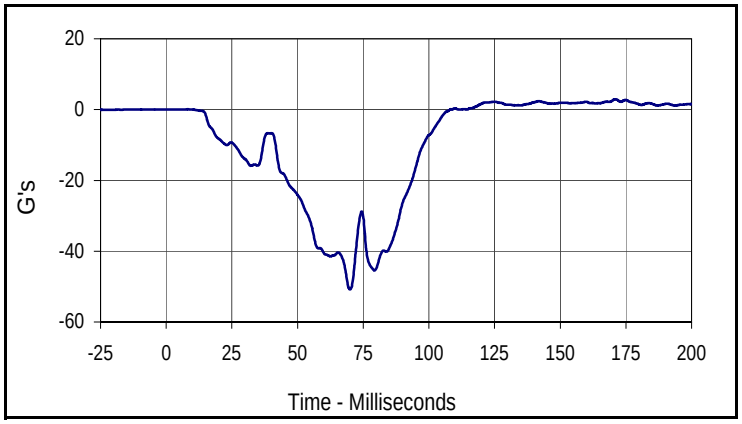


Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
54.3	78.4	0.0	10.0

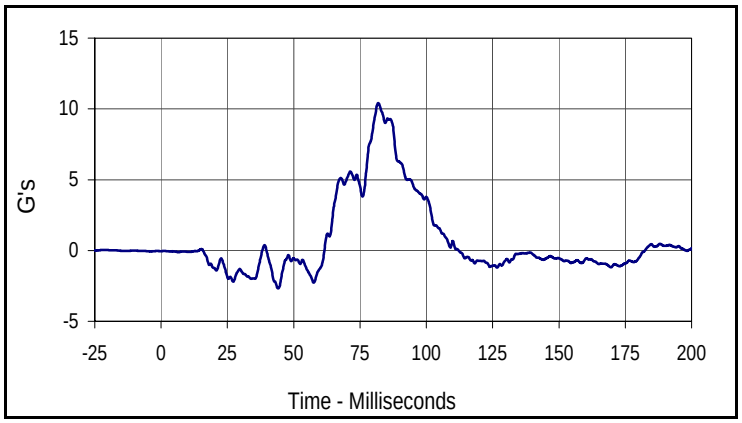
Test Vehicle:	2011 Honda CR-Z Base 3-Door Hatchback	Test Date:	9/27/10
Test Program:	56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test	NHTSA No.:	HB5302



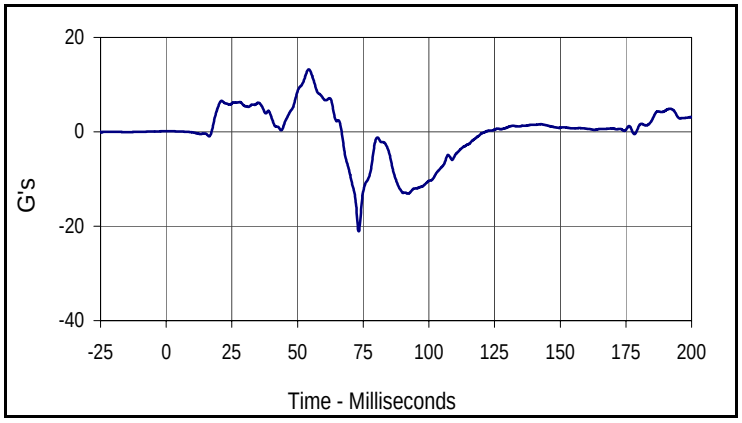
Curve Description			
Driver Chest Deflection			
CURNO	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
0.0	3.4	-34.0	79.3



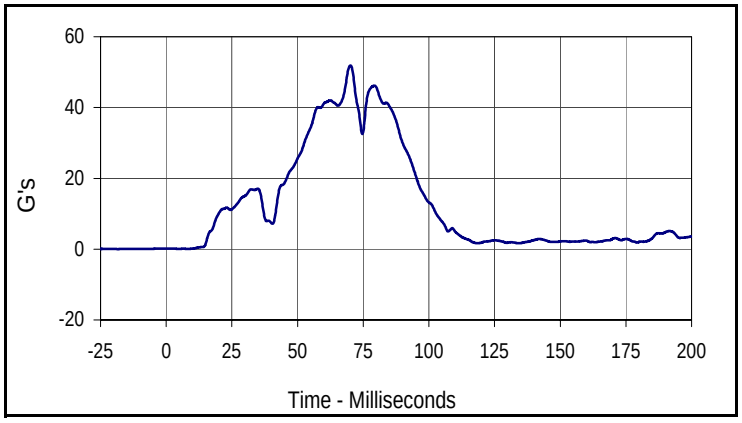
Curve Description			
Driver Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.9	171.0	-50.8	70.0



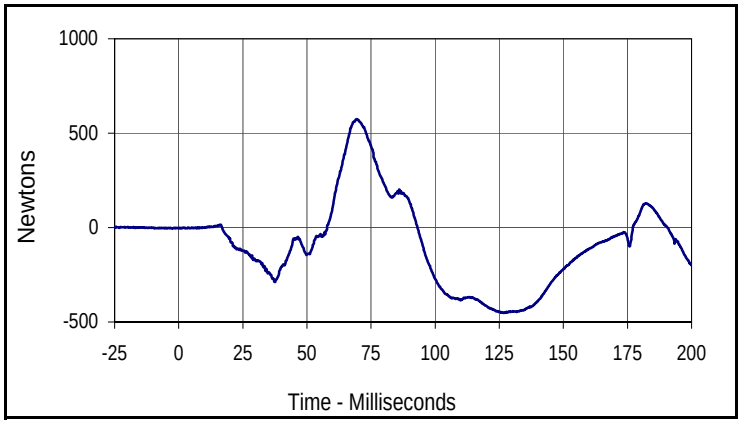
Curve Description			
Driver Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
10.4	81.8	-2.7	44.1



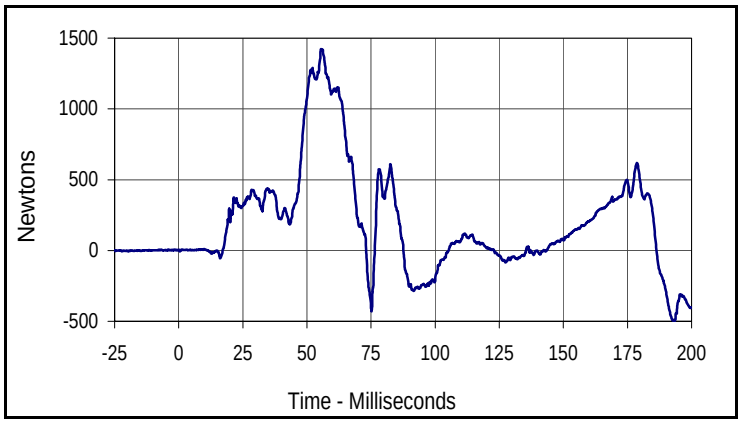
Curve Description			
Driver Chest Acceleration Z Primary			
CURNO	Type	SAE Class	Units
015	FIL	180	G's
Max	Time	Min	Time
13.2	54.2	-21.1	73.3



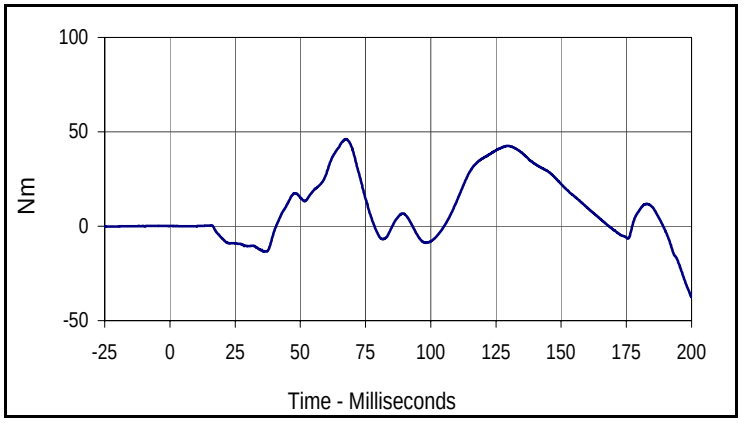
Curve Description			
Driver Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
013	RES	180	G's
Max	Time	Min	Time
51.9	70.1	0.1	4.6



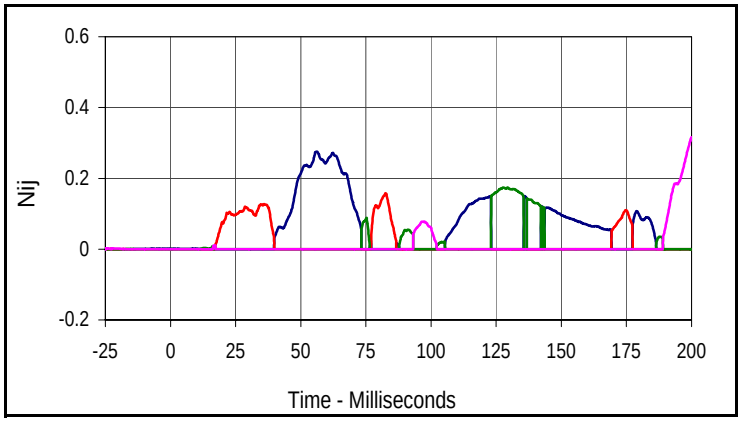
Curve Description			
Driver Upper Neck Force X			
CURNO	Type	SAE Class	Units
007	FIL	1000	Newtons
Max	Time	Min	Time
574.9	69.4	-451.9	126.9



Curve Description			
Driver Upper Neck Force Z			
CURNO	Type	SAE Class	Units
009	FIL	1000	Newtons
Max	Time	Min	Time
1423.3	55.5	-499.2	193.3

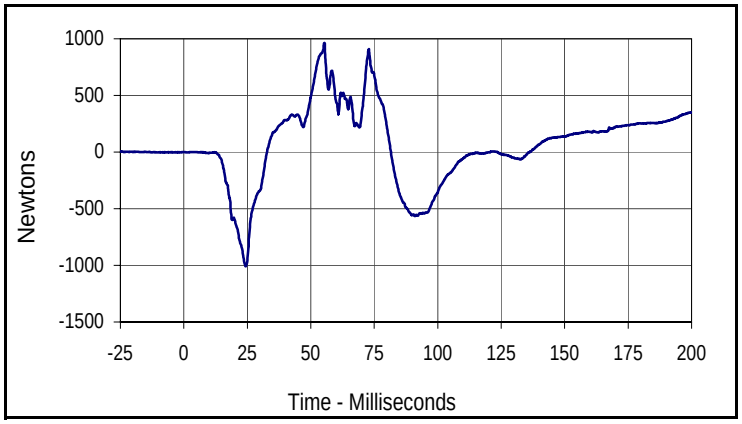


Curve Description			
Driver Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
011	FIL	600	Nm
Max	Time	Min	Time
46.1	67.4	-37.7	200.0

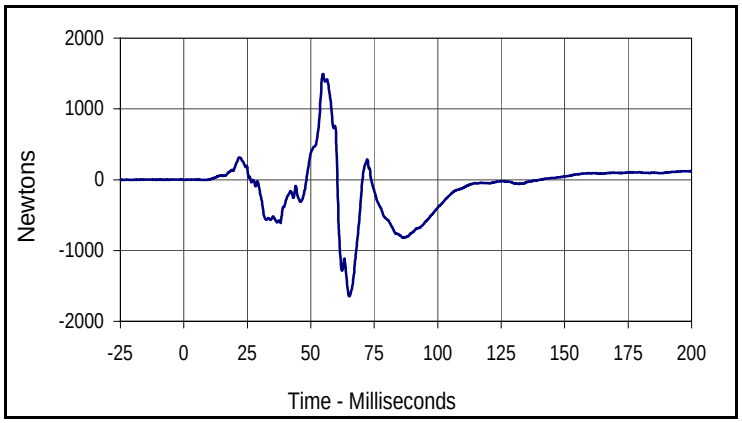


Curve Description			
Driver Nij			
Units	Type	Max	Time
Ntf	FIL	0.28	56.2
Units	Type	Max	Time
Nte	FIL	0.16	82.6
Units	Type	Max	Time
Ncf	FIL	0.17	127.6
Units	Type	Max	Time
Nce	FIL	0.40	208.8

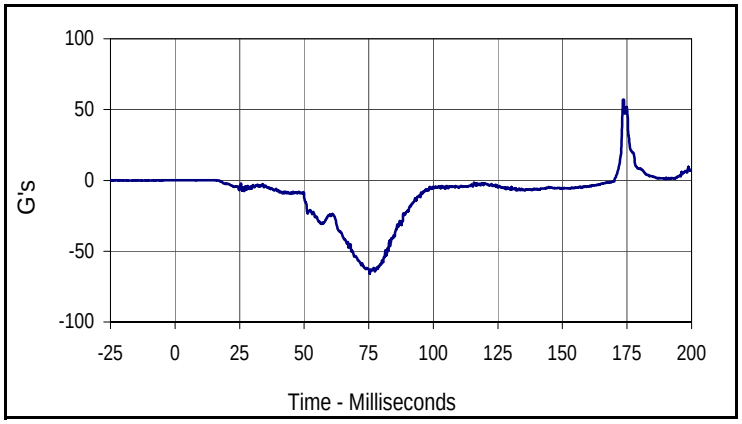
Test Vehicle:	2011 Honda CR-Z Base 3-Door Hatchback	Test Date:	9/27/10
Test Program:	56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test	NHTSA No.:	HB5302



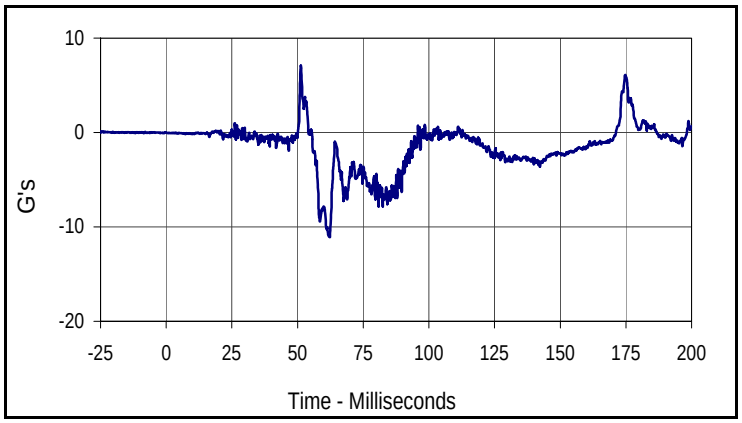
Curve Description			
Driver Left Femur Force Z			
CURNO	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
963.6	55.4	-1007.9	24.4



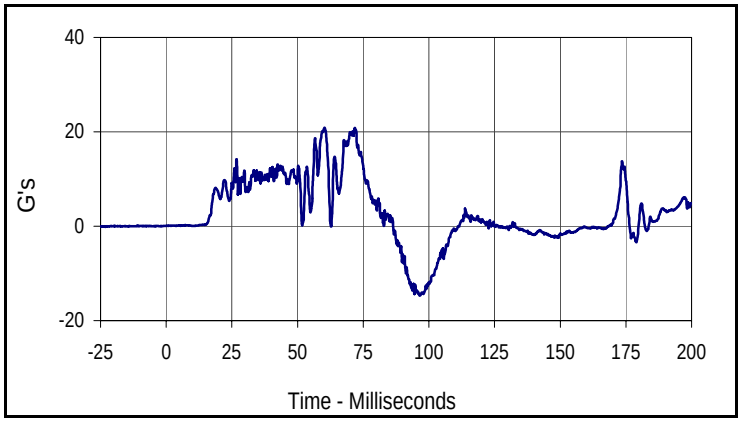
Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
1495.9	54.9	-1646.8	65.2



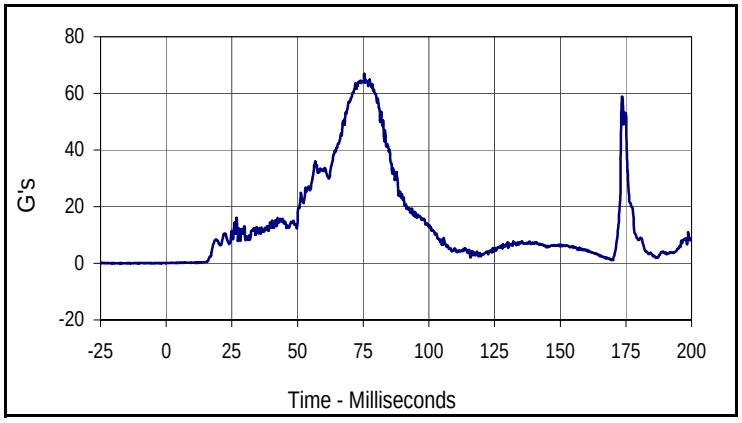
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
045	FIL	1000	G's
Max	Time	Min	Time
57.1	173.6	-65.8	75.4



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
046	FIL	1000	G's
Max	Time	Min	Time
7.1	51.3	-11.1	62.3

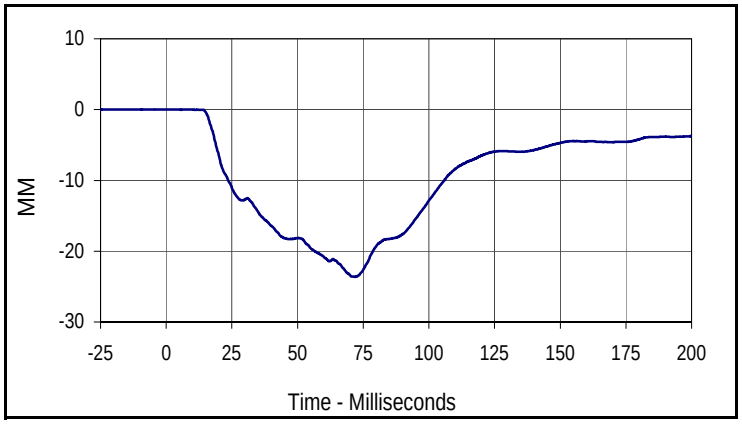


Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
047	FIL	1000	G's
Max	Time	Min	Time
20.9	60.3	-14.7	96.6

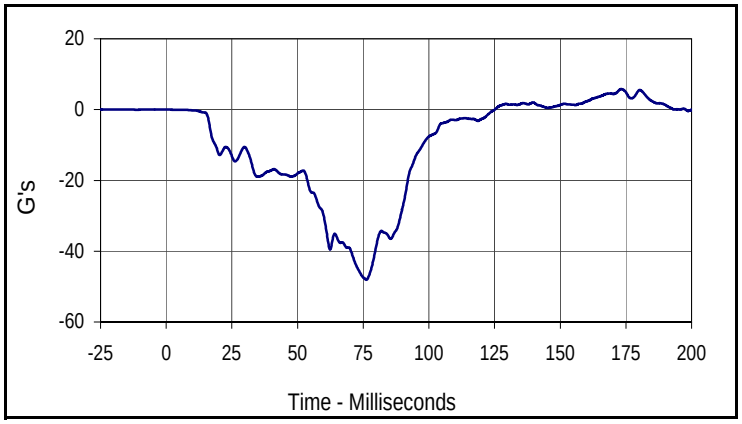


Curve Description			
Passenger Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
045	RES	1000	G's
Max	Time	Min	Time
66.9	75.4	0.0	0.0

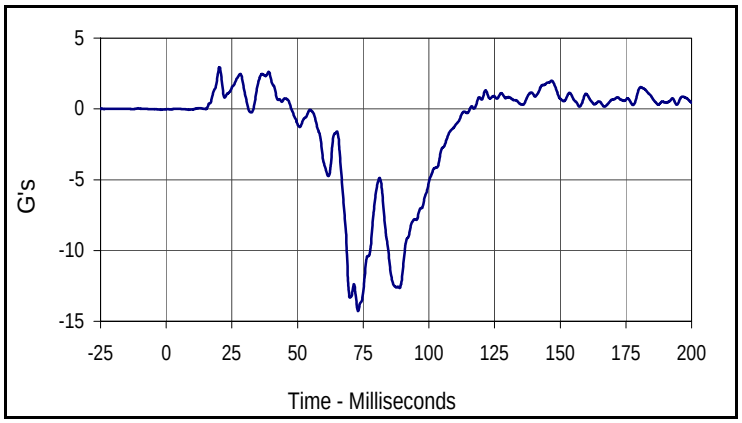
Test Vehicle:	2011 Honda CR-Z Base 3-Door Hatchback	Test Date:	9/27/10
Test Program:	56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test	NHTSA No.:	HB5302



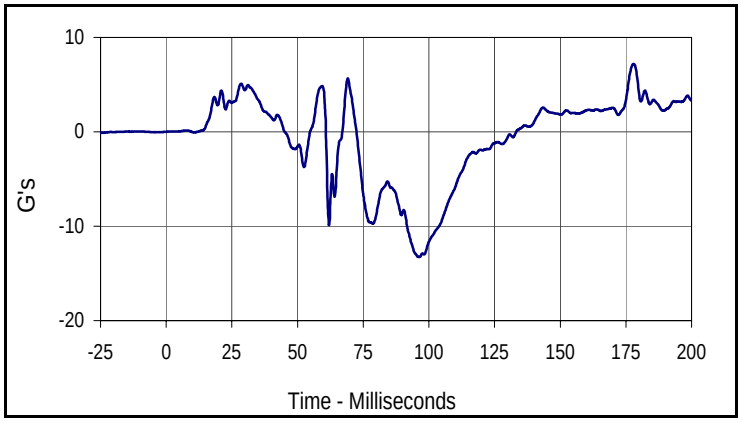
Curve Description			
Passenger Chest Deflection			
CURNO	Type	SAE Class	Units
063	FIL	600	MM
Max	Time	Min	Time
0.0	4.8	-23.6	71.8



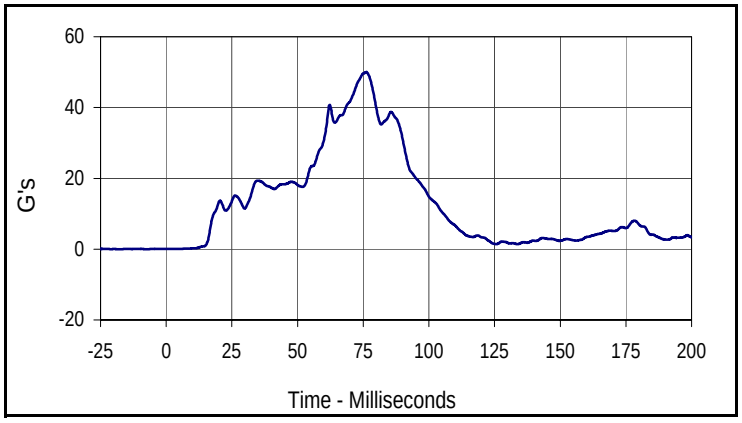
Curve Description			
Passenger Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
057	FIL	180	G's
Max	Time	Min	Time
5.8	173.3	-48.1	76.2



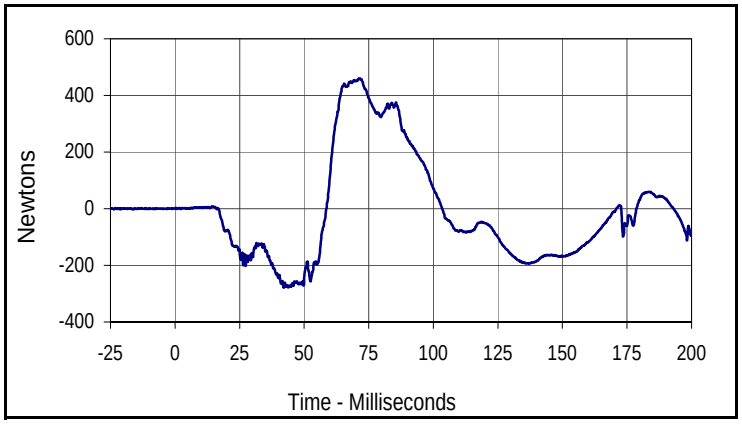
Curve Description			
Passenger Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
058	FIL	180	G's
Max	Time	Min	Time
2.9	20.3	-14.3	73.0



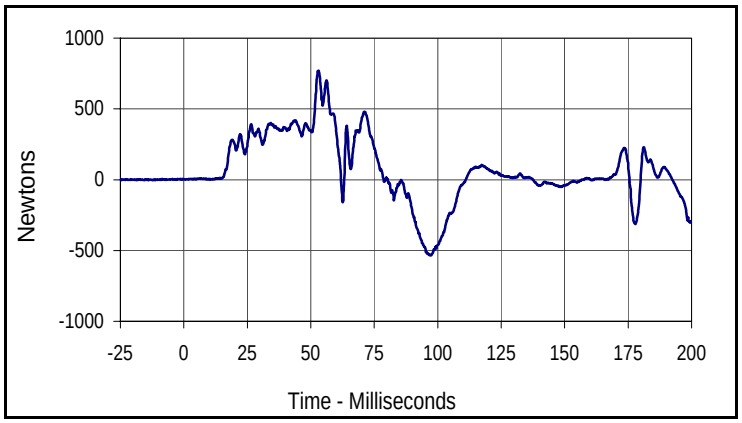
Curve Description			
Passenger Chest Acceleration Z Primary			
CURNO	Type	SAE Class	Units
059	FIL	180	G's
Max	Time	Min	Time
7.2	177.9	-13.3	96.5



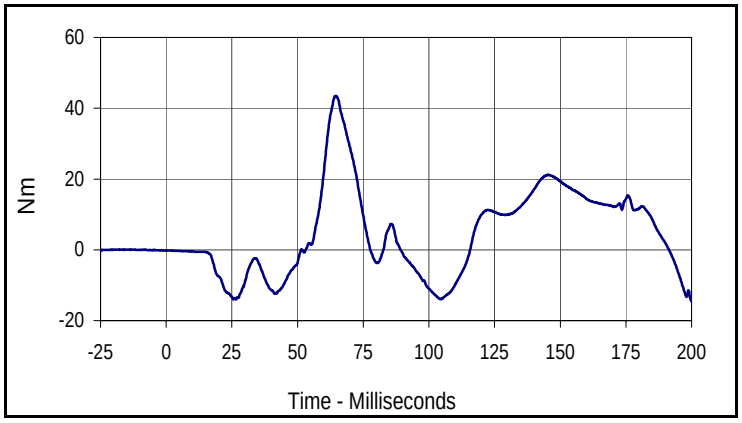
Curve Description			
Passenger Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
057	RES	180	G's
Max	Time	Min	Time
50.0	76.2	0.0	0.2



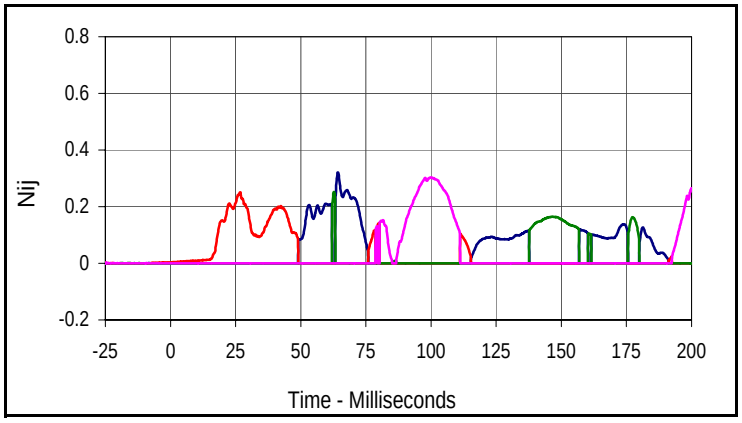
Curve Description			
Passenger Upper Neck Force X			
CURNO	Type	SAE Class	Units
051	FIL	1000	Newtons
Max	Time	Min	Time
460.4	71.5	-279.3	42.1



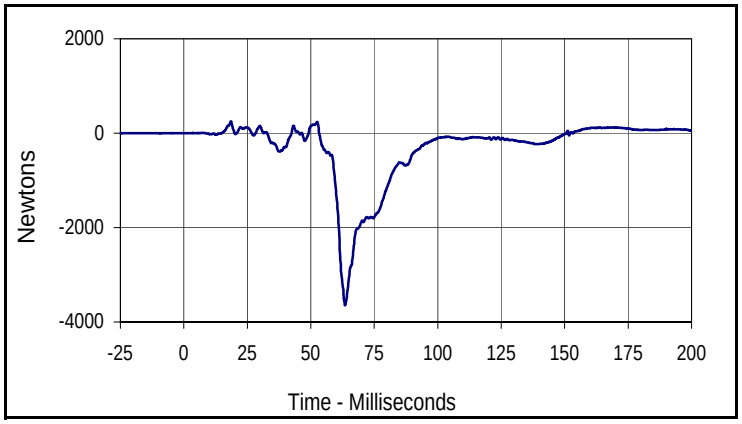
Curve Description			
Passenger Upper Neck Force Z			
CURNO	Type	SAE Class	Units
053	FIL	1000	Newtons
Max	Time	Min	Time
770.3	53.0	-534.8	97.3



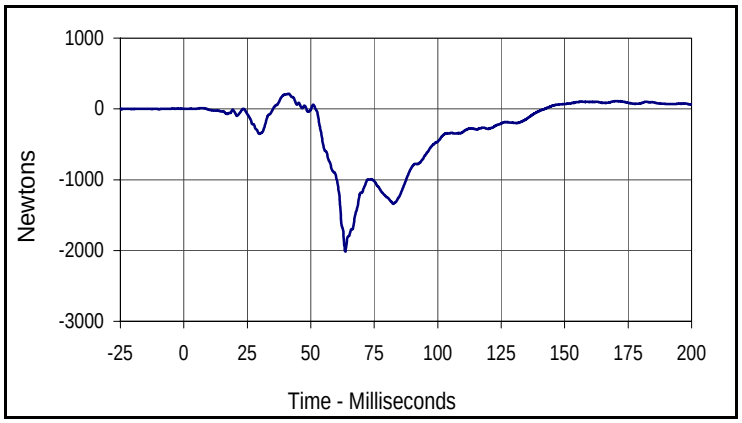
Curve Description			
Passenger Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
055	FIL	600	Nm
Max	Time	Min	Time
43.5	64.6	-14.6	200.0



Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.32	64.3
Units	Type	Max	Time
Nte	FIL	0.29	206.6
Units	Type	Max	Time
Ncf	FIL	0.25	62.8
Units	Type	Max	Time
Nce	FIL	0.61	235.3



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
067	FIL	600	Newtons
Max	Time	Min	Time
252.1	18.5	-3645.2	63.5



Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
068	FIL	600	Newtons
Max	Time	Min	Time
213.0	41.3	-2015.6	63.6

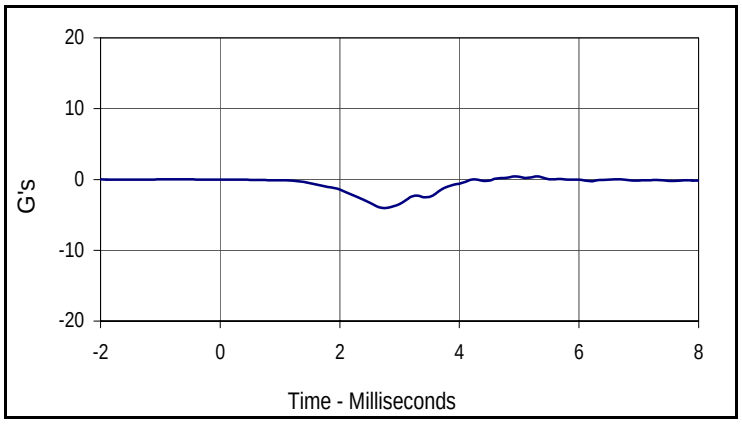
APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

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

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	9/11/10
ATD Serial No.:	035	Test I.D.:	HDM09B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	242.2	Pass
Peak Lateral Acceleration	G's	≤15.0	4.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

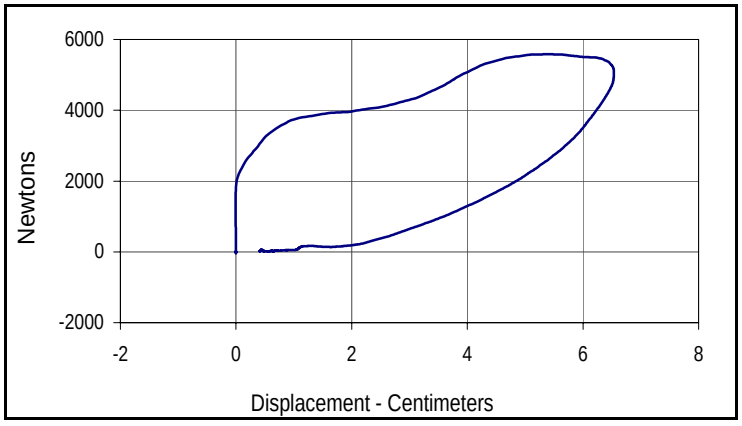
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
242.2	2.7	0.0	-1.6



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.4	5.3	-4.0	2.7

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	9/11/10
ATD Serial No.:	035	Test I.D.:	CHM09B

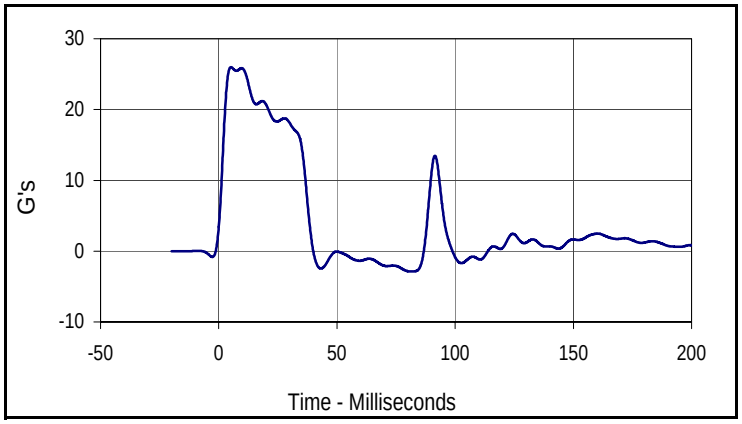
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.64	Pass
Peak Probe Force	Newtons	5159 to 5893	5585	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.53	Pass
Internal Hysterysis	%	69 to 85	72.4	Pass
		Overall Test Results		Pass



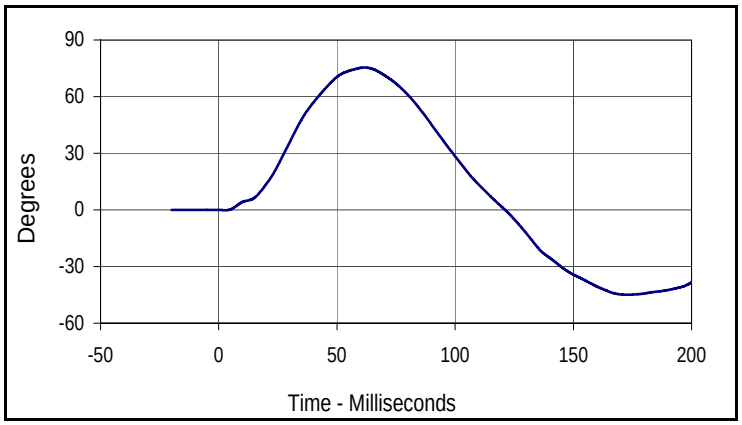
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	72.4
Peak Probe Force		Peak Chest Deflection	
5585		6.53	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	9/11/10
ATD Serial No.:	035	Test I.D.:	NFM09B

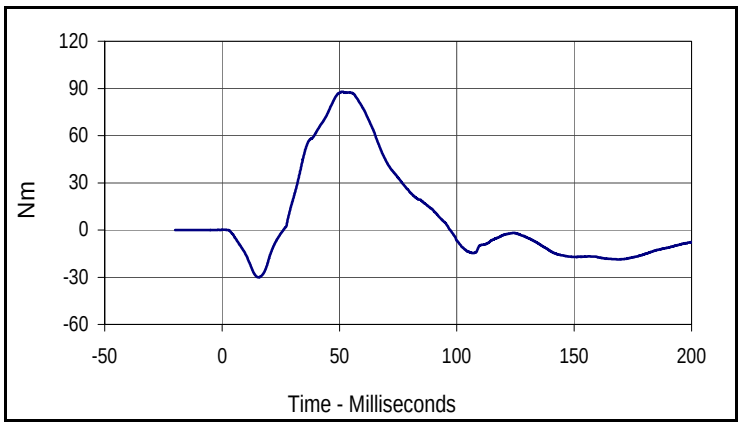
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.02	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	25.8	Pass
	20 Msec.	G's	17.6 to 22.6	20.7	Pass
	30 Msec.	G's	12.5 to 18.5	18.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	38.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	75.4	Pass
	Time	Msec.	57.0 to 64.0	61.6	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.2	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	87.9	Pass
	Time	Msec.	47.0 to 58.0	51.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
26.0	5.2	-2.9	81.6



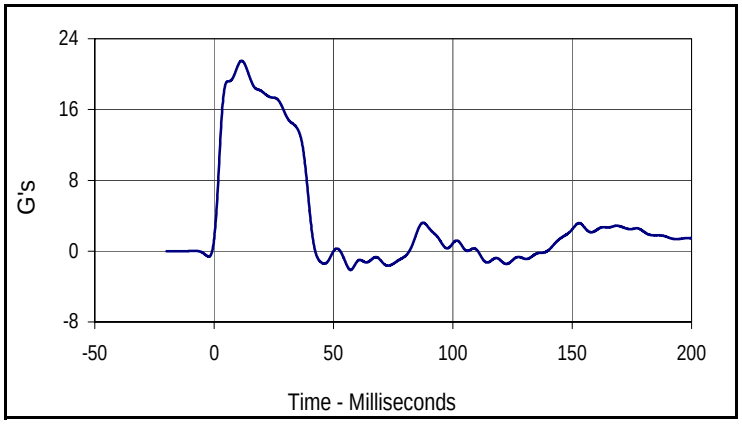
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.4	61.6	-44.9	172.9



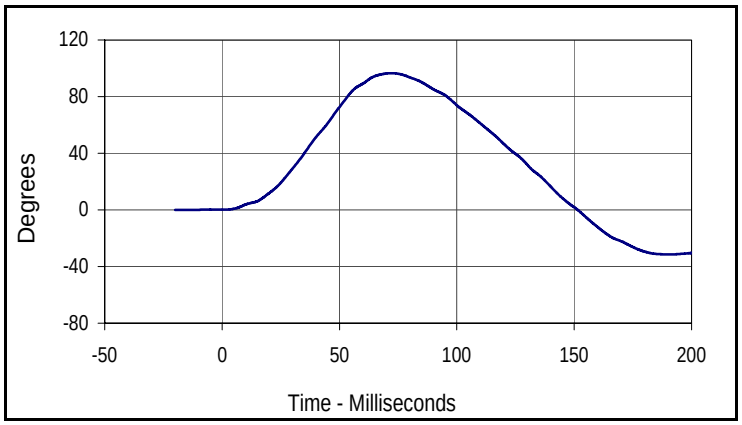
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
87.9	51.1	-30.1	15.7

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	9/11/10
ATD Serial No.:	035	Test I.D.:	NEM09B

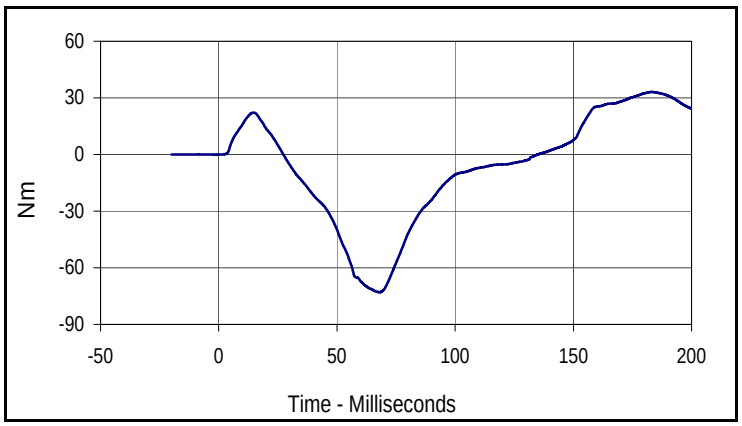
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.15	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	21.0	Pass
	20 Msec.	G's	14.0 to 19.0	18.1	Pass
	30 Msec.	G's	11.0 to 16.0	15.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	96.6	Pass
	Time	Msec.	72.0 to 82.0	72.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	151.6	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-73.0	Pass
	Time	Msec.	65.0 to 79.0	68.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	135.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
21.5	11.5	-2.1	57.2



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
96.6	72.1	-31.5	190.4



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
33.2	183.3	-73.0	68.2

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	9/11/10
ATD Serial No.:	035	Test I.D.:	LKM09A , RKM09A

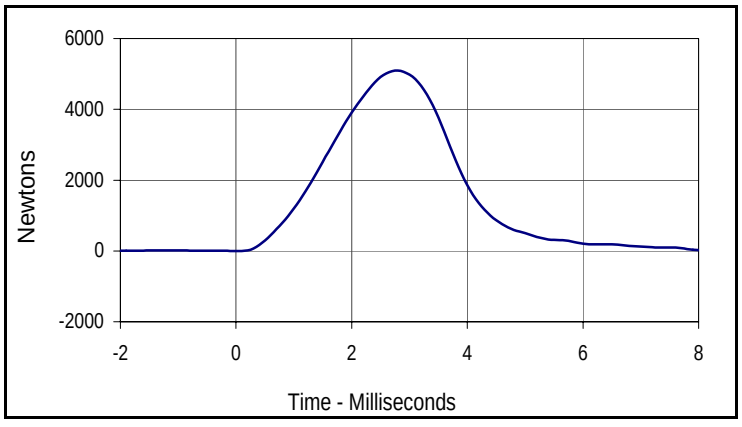
Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.13	Pass
Peak Probe Force	Newtons	4715 to 5782	5115	Pass
		Overall Test Results		Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5093	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5115.5	2.8	-13.4	8.7



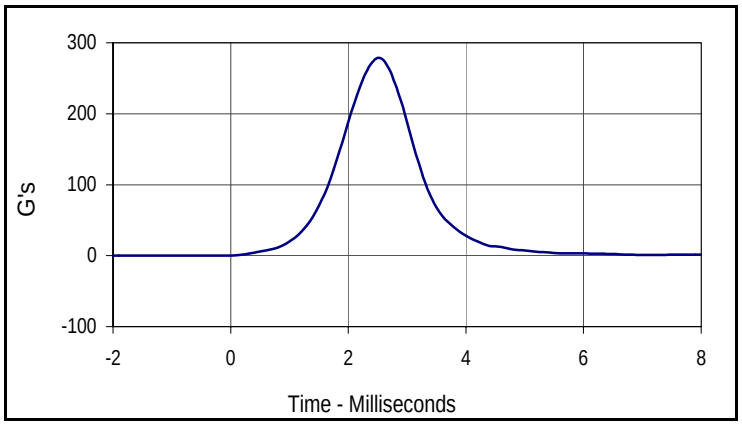
Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5092.5	2.8	-44.5	10.0

Test Program:	Hybrid III 50th Percentile Male External Measurements	Test Date:	9/11/10
ATD Serial No.:	035	Test I.D.:	N/A

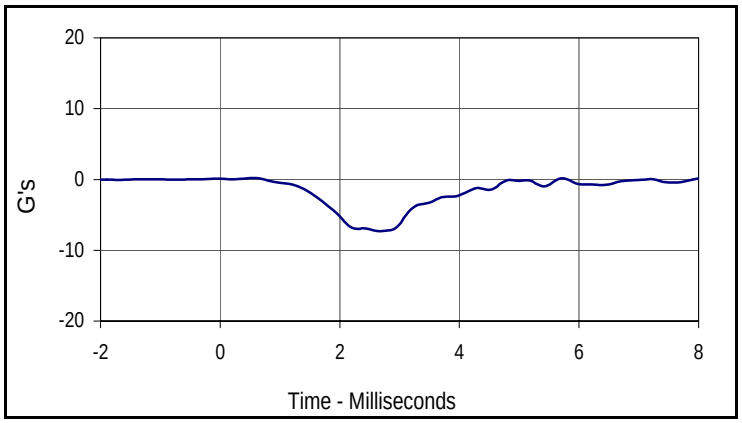
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	881	Pass
B - Shoulder pivot height	mm	505 to 521	518	Pass
C - "H" point height	mm	84 to 89	84	Pass
D - "H" point from seat back	mm	135 to 140	138	Pass
E - Shoulder pivot from back	mm	84 to 94	84	Pass
F - Thigh clearance	mm	140 to 155	148	Pass
G - Elbow back to wrist pivot	mm	290 to 305	298	Pass
H - Skull cap to back line	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	334	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	588	Pass
L - Poplipteal length	mm	429 to 455	431	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock poplipteal length	mm	452 to 477	469	Pass
O - Chest depth	mm	213 to 229	214	Pass
P - Foot length	mm	251 to 267	259	Pass
V - Shoulder breadth	mm	422 to 437	431	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	862	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
		Overall Test Results		Pass

Test Program:	Hybrid III 5th Percentile Female Head Drop Test		Test Date:	9/11/10	
ATD Serial No.:	635		Test I.D.:	HDF09C	

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	278.7	Pass
Peak Lateral Acceleration	G's	≤15.0	7.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass



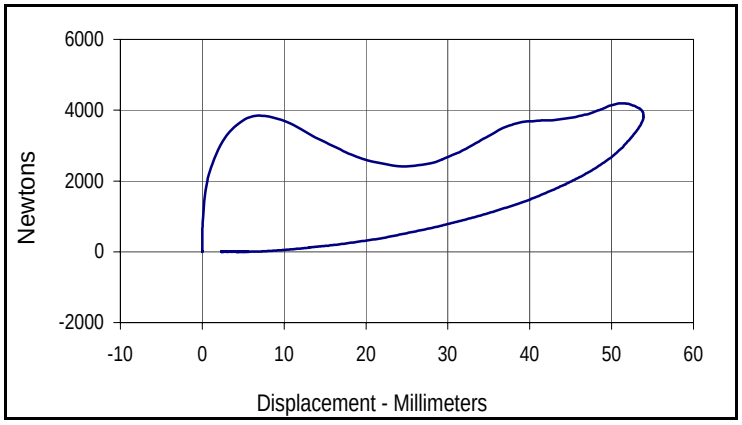
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
278.7	2.5	0.0	-2.0



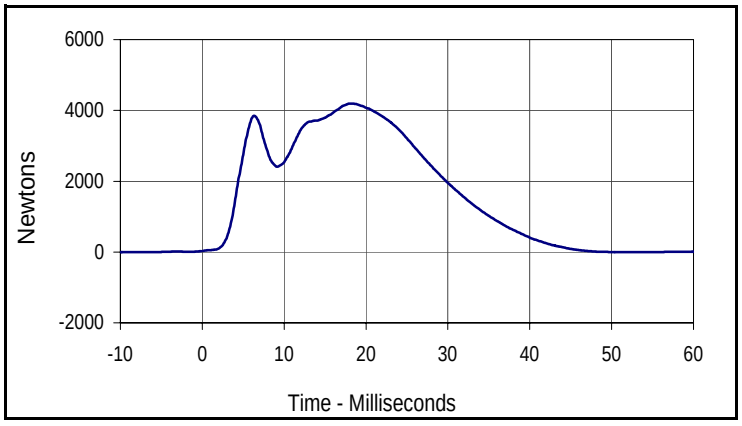
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	0.5	-7.3	2.7

Test Program:	Hybrid III 5th Percentile Female Thorax Impact Test	Test Date:	9/11/10
ATD Serial No.:	635	Test I.D.:	CHF09D

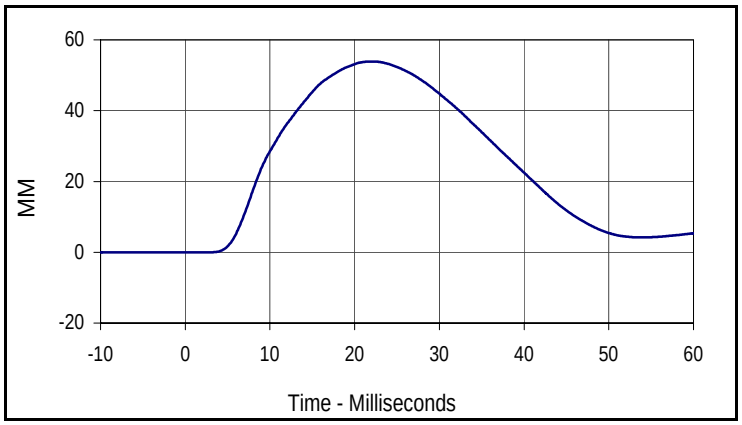
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.59 to 6.83	6.71	Pass
Peak Chest Deflection	MM	50.0 to 58.0	53.9	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4149	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4196	Pass
Internal Hysterysis	%	69 to 85	71.4	Pass
		Overall Test Results		Pass



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
003	FIL	180	71.4
Peak Probe Force		Peak Chest Displ.	
4195.7		53.9	



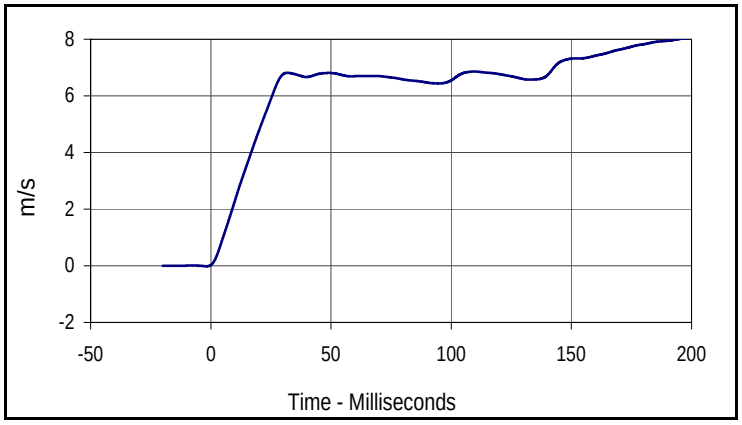
Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4195.7	18.0	-6.0	144.8



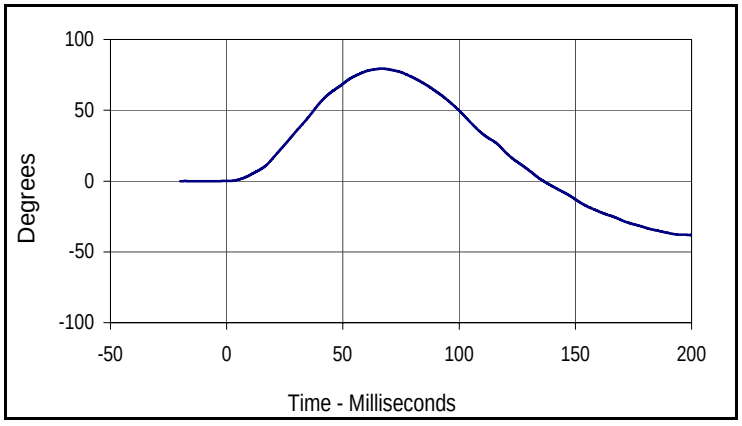
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
53.9	22.0	0.0	2.7

Test Program:	Hybrid III 5th Percentile Female Neck Flexion Test	Test Date:	9/11/10
ATD Serial No.:	635	Test I.D.:	NF09C

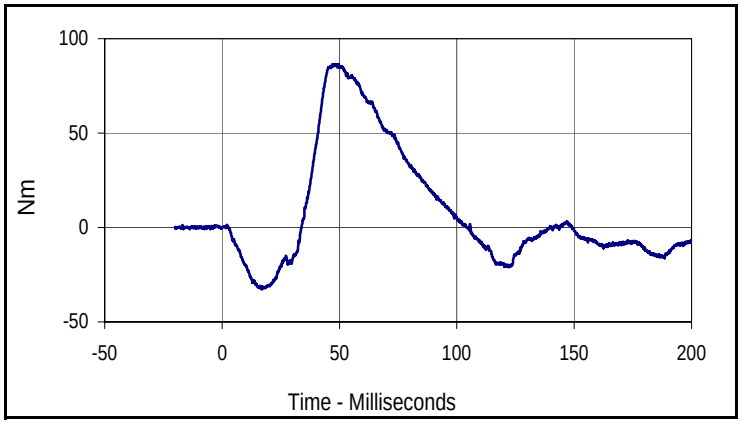
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.8	Pass
	30 Msec.	m/s	5.8 to 7.0	6.8	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	79.4	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	73.1	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	95.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
8.1	200.0	0.0	-1.8



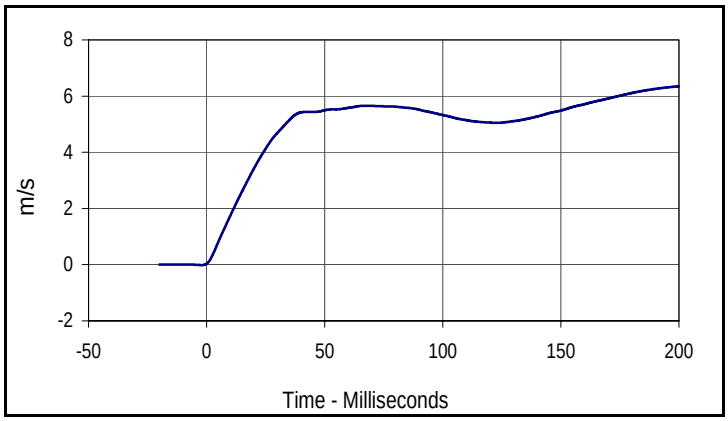
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
79.4	66.8	-38.0	200.0



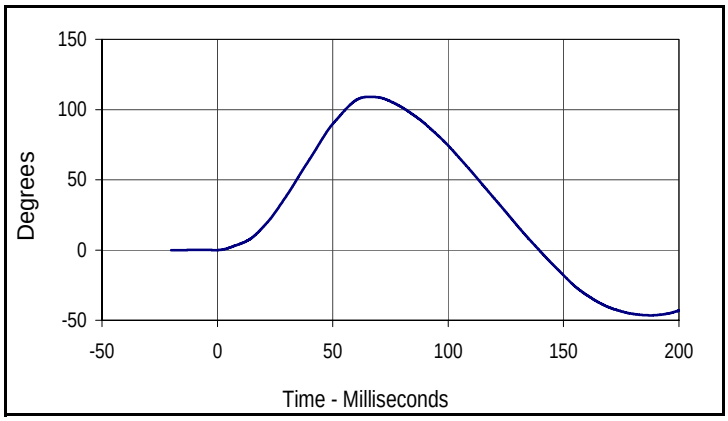
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
86.5	48.0	-32.9	16.9

Test Program:	Hybrid III 5th Percentile Female Neck Extension Test	Test Date:	9/11/10
ATD Serial No.:	635	Test I.D.:	NE09C

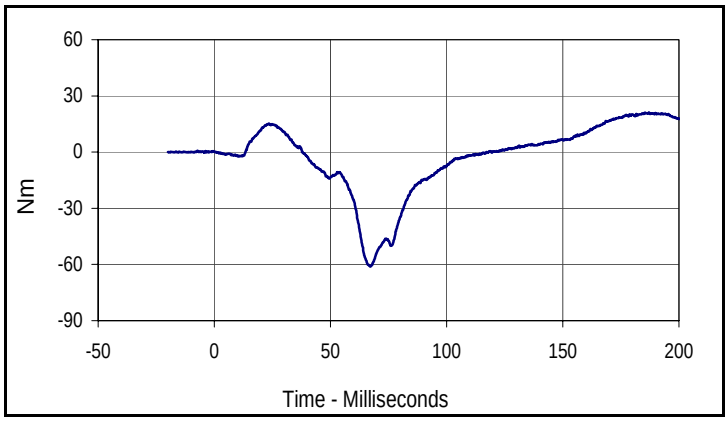
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.08	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.4	Pass
	30 Msec.	m/s	4.6 to 5.6	4.7	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	109.0	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-58.3	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	96.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
6.3	200.0	0.0	-2.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
109.0	65.4	-46.5	187.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
21.2	187.1	-61.1	67.1

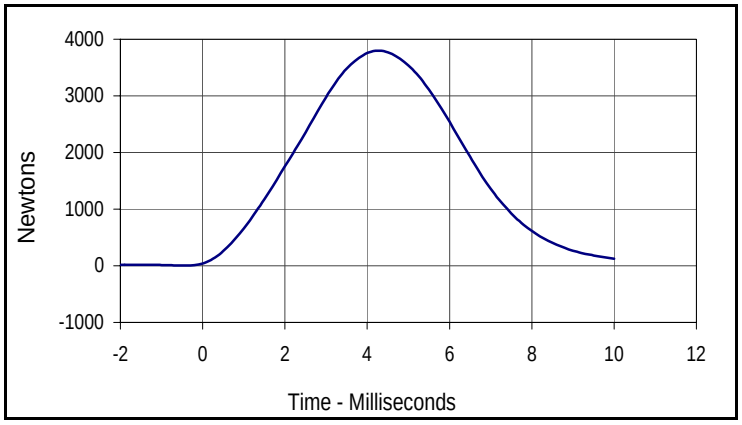
Test Program:	Hybrid III 5th Percentile Female Knee Impact Test	Test Date:	9/11/10
ATD Serial No.:	635	Test I.D.:	LKF09C , RKB09C

Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	3450 to 4060	3797	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	3450 to 4060	3845	Pass
		Overall Test Results		Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3796.8	4.3	4.2	-0.4

Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
3844.6	4.3	-2.4	-0.4

Test Program:	Hybrid III 5th Percentile Female Torso Flexion Test	Test Date:	9/11/10
ATD Serial No.:	635	Test I.D.:	TF09A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Initial reference plane angle	Degrees	≤20.0	0.7	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	340.0	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.3	Pass
Final reference plane angle	Degrees	+/-8	2.9	Pass
		Overall Test Results		Pass

Test Program:	Hybrid III 5th Percentile Female External Measurements	Test Date:	9/11/10
ATD Serial No.:	635	Test I.D.:	N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	774.7 to 800.1	782	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	443	Pass
C - "H" point height (Reference)	mm	81.3 to 86.3	85	Pass
D - "H" point from seat back (Ref.)	mm	144.8 to 149.8	145	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	82	Pass
F - Thigh clearance	mm	119.4 to 134.6	131	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	253	Pass
H - Head to back line	mm	40.7 to 45.7	44	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest heignt	mm	182.8 to 203.2	199	Pass
K - Buttock to knee length	mm	520.7 to 546.1	533	Pass
L - Poplipteal height	mm	355.6 to 376.0	365	Pass
M - Knee pivot height	mm	393.7 to 419.1	415	Pass
N - Buttock poplipteal length	mm	414.0 to 439.4	420	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	184	Pass
P - Foot length	mm	218.5 to 233.7	223	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	462	Pass
S - Head breadth	mm	137.1 to 147.3	143	Pass
T - Head depth	mm	177.8 to 188.0	181	Pass
U - Hip breadth	mm	299.7 to 314.9	313	Pass
V - Shoulder breadth	mm	350.5 to 365.7	365	Pass
W - Foot breadth	mm	78.8 to 94.0	89	Pass
X - Head circumference	mm	528.3 to 548.7	541	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	861	Pass
Z - Waist circumference	mm	759.5 to 789.9	784	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	301	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	163	Pass
		Overall Test Results		Pass

Test Program:	Dummy Damage Checklist	Test Date:	9/11/10
ATD Serial No.:	035	Test I.D.:	N/A

GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

Test Program:	Dummy Damage Checklist	Test Date:	9/11/10
ATD Serial No.:	635	Test I.D.:	N/A

GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

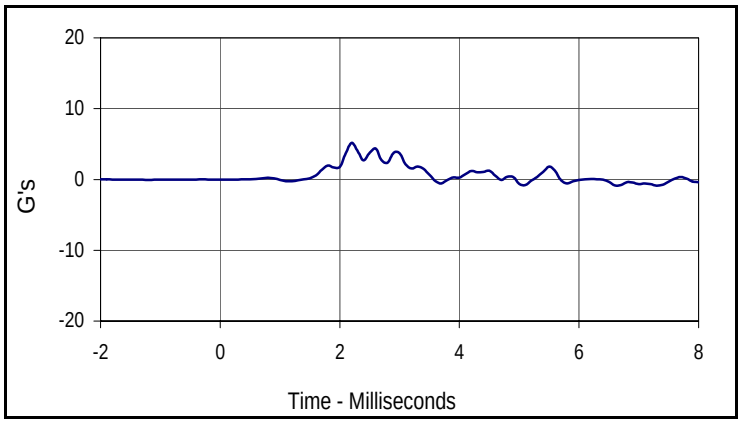
Comments on repair or replacement parts:

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

Test Program:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	9/29/10
ATD Serial No.:	035	Test I.D.:	HDM09C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	250.1	Pass
Peak Lateral Acceleration	G's	≤15.0	5.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

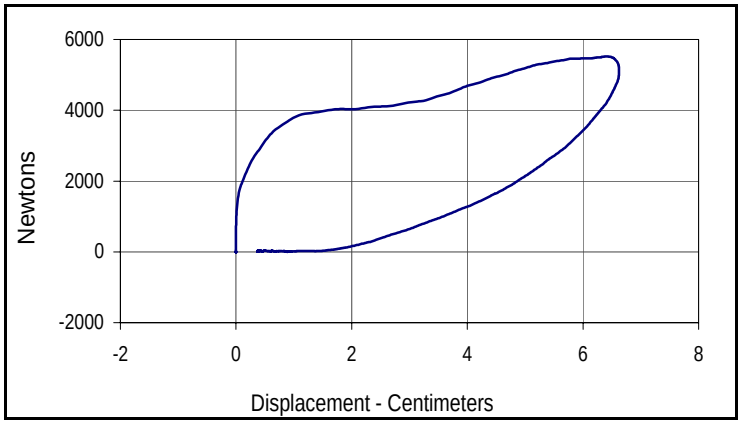
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
250.1	2.4	0.0	-1.7



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.2	2.2	-0.8	5.1

Test Program:	Hybrid III 50th Percentile Male Thorax Impact Test	Test Date:	9/29/10
ATD Serial No.:	035	Test I.D.:	CHM09C

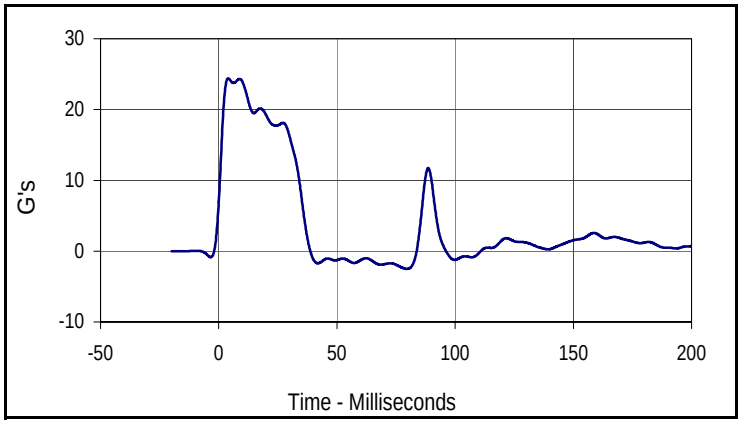
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5518	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.62	Pass
Internal Hysterysis	%	69 to 85	71.3	Pass
		Overall Test Results		Pass



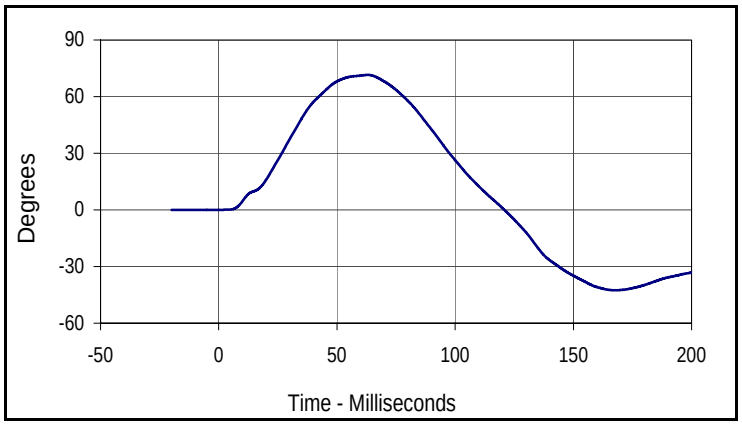
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	71.3
Peak Probe Force		Peak Chest Deflection	
5518		6.62	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	9/29/10
ATD Serial No.:	035	Test I.D.:	NFM09C

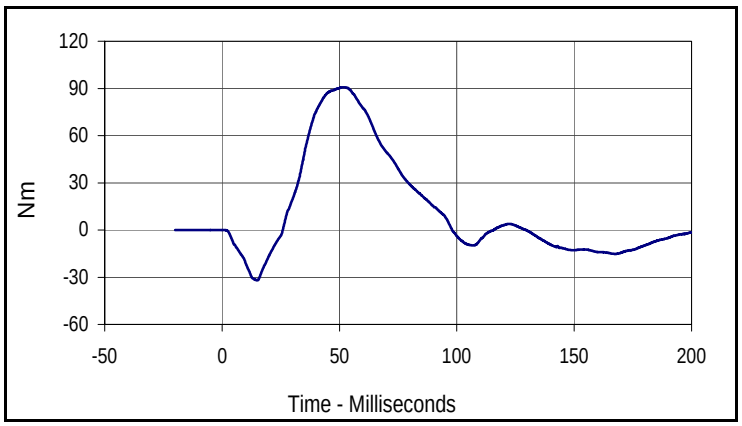
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.9	Pass
	20 Msec.	G's	17.6 to 22.6	19.2	Pass
	30 Msec.	G's	12.5 to 18.5	16.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	71.5	Pass
	Time	Msec.	57.0 to 64.0	63.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	120.9	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	90.8	Pass
	Time	Msec.	47.0 to 58.0	52.3	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			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.4	4.0	-2.5	79.6



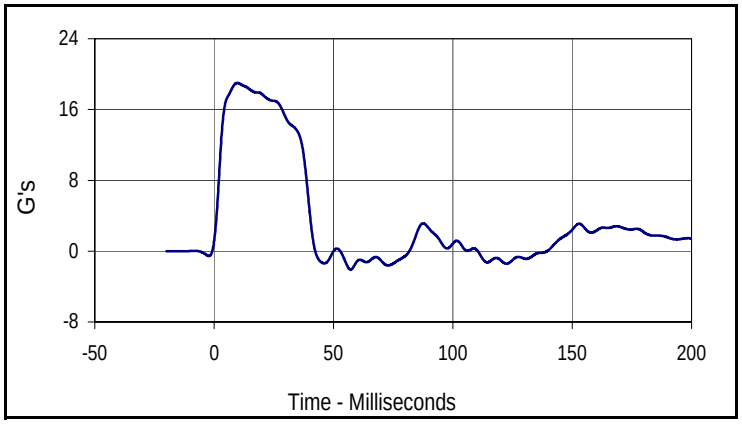
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
71.5	63.1	-42.5	167.7



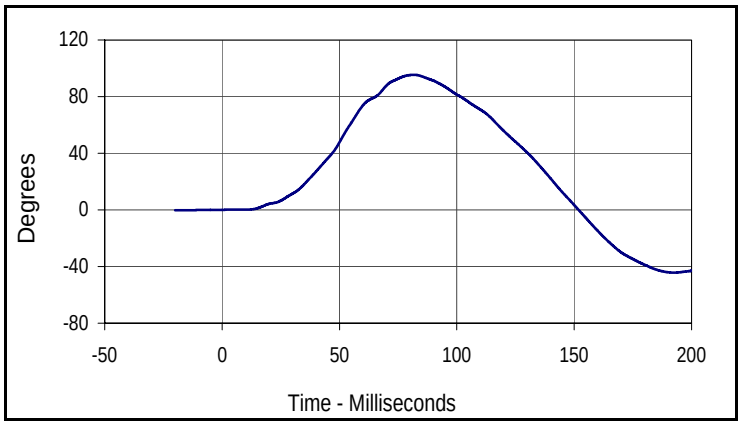
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
90.8	52.3	-31.9	15.0

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	9/29/10
ATD Serial No.:	035	Test I.D.:	NEM09C

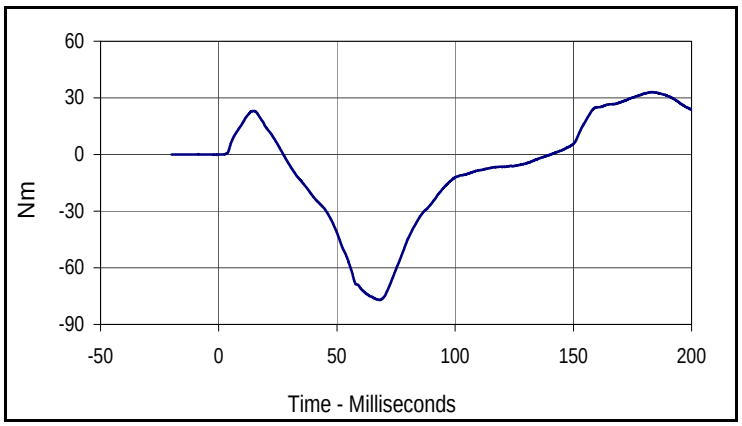
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.13	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.0	Pass
	20 Msec.	G's	14.0 to 19.0	17.8	Pass
	30 Msec.	G's	11.0 to 16.0	15.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	95.4	Pass
	Time	Msec.	72.0 to 82.0	81.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	151.9	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-77.0	Pass
	Time	Msec.	65.0 to 79.0	68.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	140.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.0	9.6	-2.1	57.2



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
95.4	81.7	-44.3	192.3



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
33.1	183.3	-77.0	68.2

Test Program:	Hybrid III 50th Percentile Male Knee Impact Test	Test Date:	9/29/10
ATD Serial No.:	035	Test I.D.:	LKM09C , RKM09C

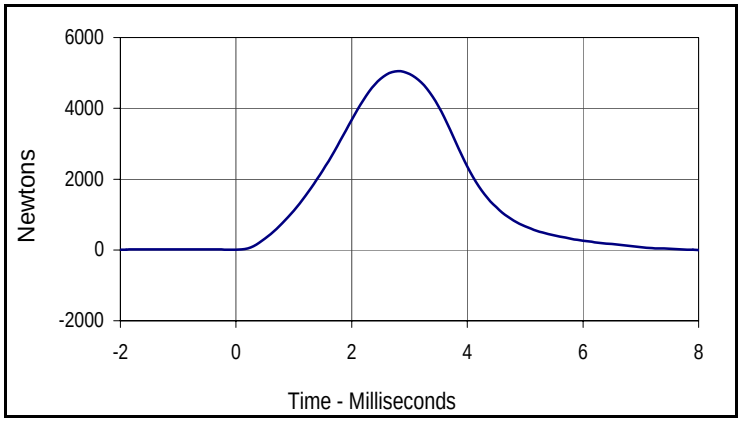
Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5220	Pass
		Overall Test Results		Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5052	Pass
		Overall Test Results		Pass

Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5219.7	2.8	-13.6	8.7



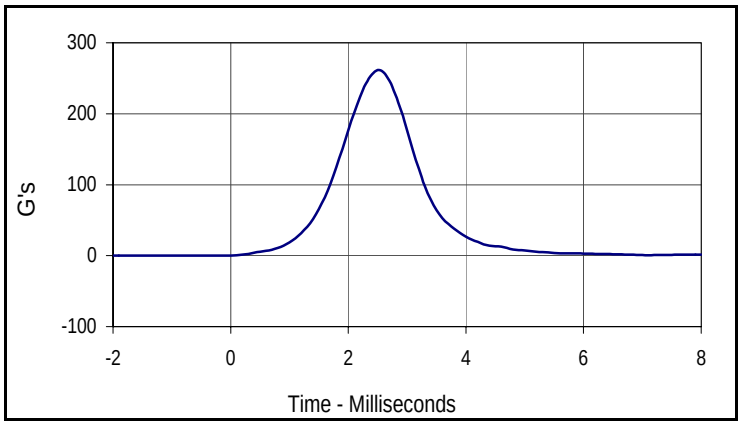
Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5052.1	2.8	-13.1	8.7

Test Program:	Hybrid III 50th Percentile Male External Measurements	Test Date:	9/29/10
ATD Serial No.:	035	Test I.D.:	N/A

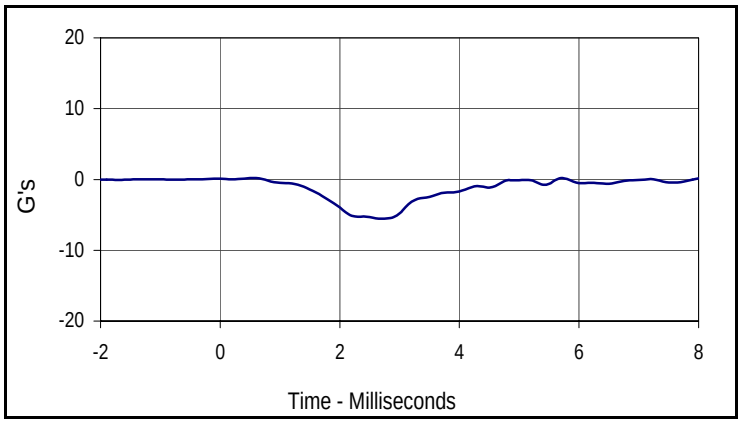
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	881	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	138	Pass
E - Shoulder pivot from back	mm	84 to 94	85	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Elbow back to wrist pivot	mm	290 to 305	296	Pass
H - Skull cap to back line	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	333	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Poplipteal length	mm	429 to 455	432	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock poplipteal length	mm	452 to 477	468	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	259	Pass
V - Shoulder breadth	mm	422 to 437	431	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	862	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	231	Pass
		Overall Test Results		Pass

Test Program:	Hybrid III 5th Percentile Female Head Drop Test	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	HDF09D

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	261.6	Pass
Peak Lateral Acceleration	G's	≤15.0	5.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass



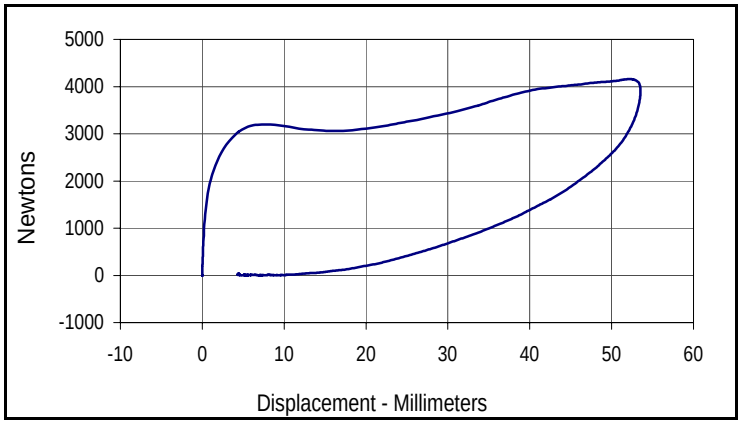
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
261.6	2.5	0.0	-2.0



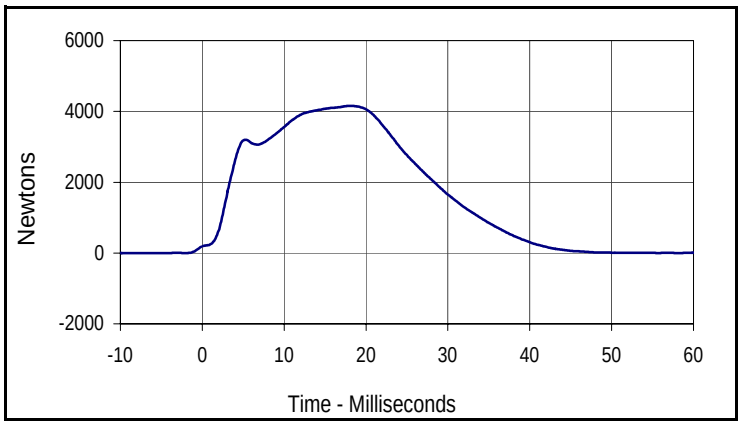
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	0.5	-5.5	2.7

Test Program:	Hybrid III 5th Percentile Female Thorax Impact Test	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	CHF09E

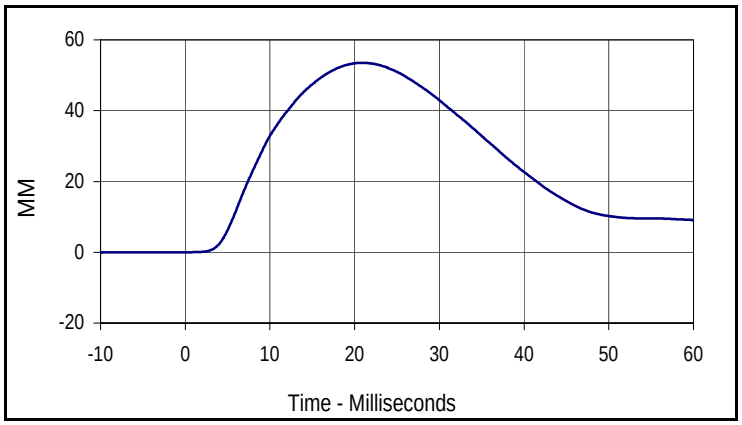
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.59 to 6.83	6.69	Pass
Peak Chest Deflection	MM	50.0 to 58.0	53.5	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4114	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4160	Pass
Internal Hysterysis	%	69 to 85	75.4	Pass
		Overall Test Results		Pass



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
003	FIL	180	75.4
Peak Probe Force		Peak Chest Displ.	
4159.9		53.5	



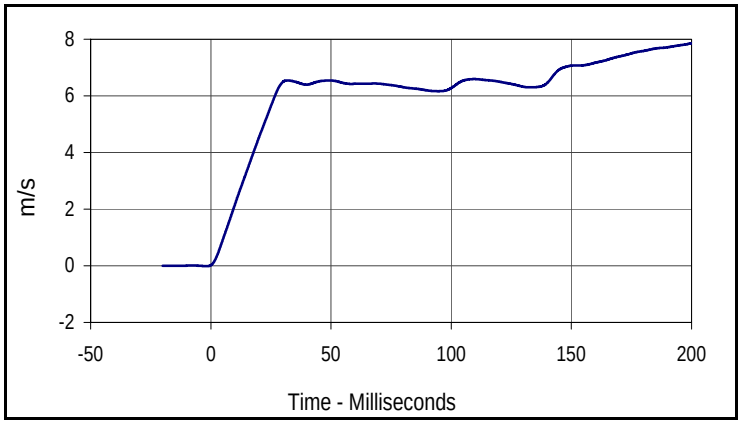
Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4159.9	18.2	-3.2	-7.7



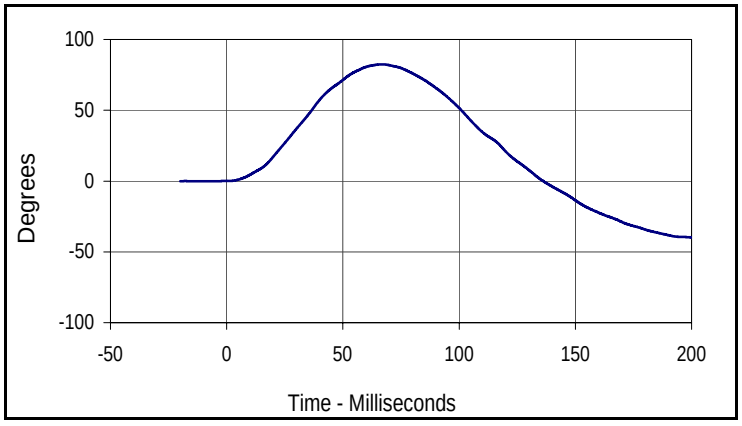
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
53.5	20.9	0.0	-7.0

Test Program:	Hybrid III 5th Percentile Female Neck Flexion Test	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	NF09C

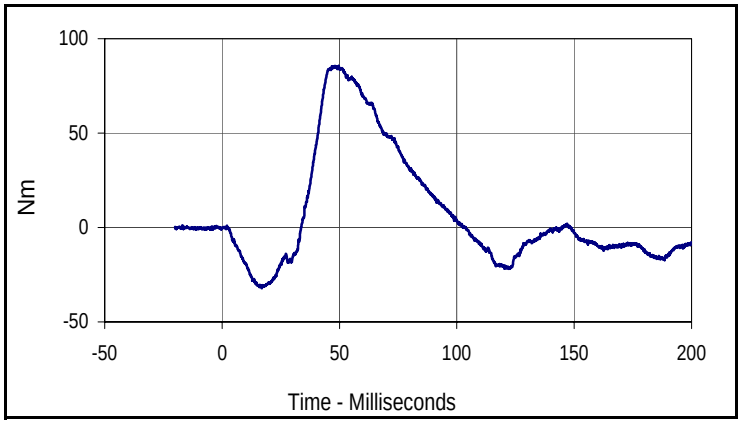
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.94	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.2	Pass
	20 Msec.	m/s	4.0 to 5.0	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.5	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	82.5	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	79.8	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	93.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.9	200.0	0.0	-1.7



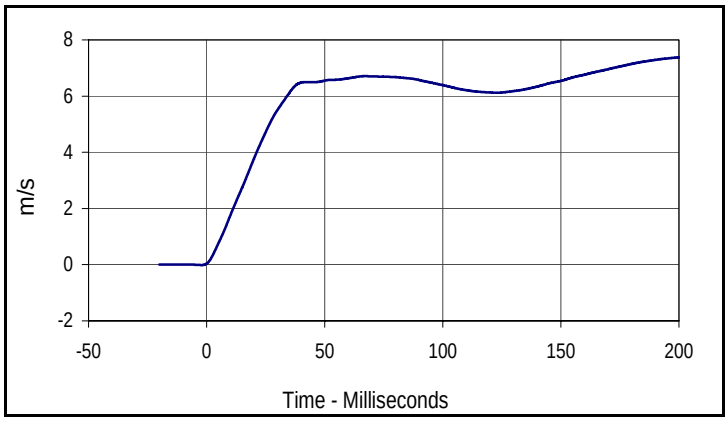
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
82.5	66.8	-39.6	200.0



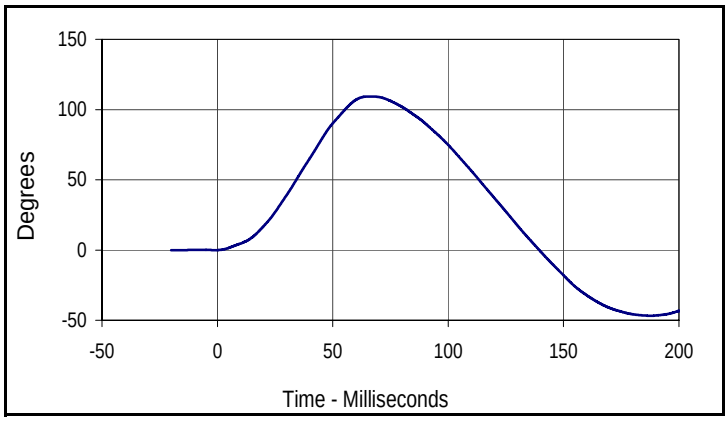
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
85.6	48.0	-32.1	16.9

Test Program:	Hybrid III 5th Percentile Female Neck Extension Test	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	NE09D

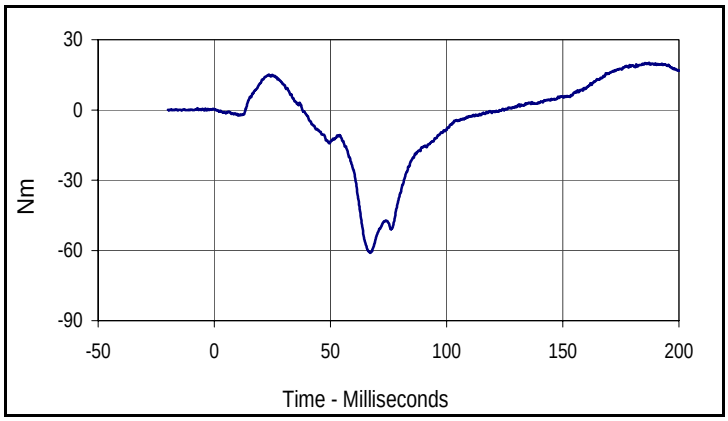
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.07	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.8	Pass
	30 Msec.	m/s	4.6 to 5.6	5.5	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	109.3	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-58.0	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	97.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.4	200.0	0.0	-2.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
109.3	65.3	-46.8	187.8



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
20.2	187.1	-61.1	67.1

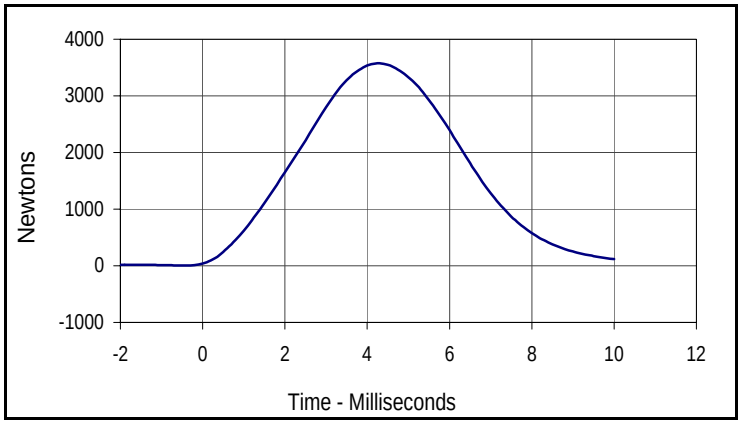
Test Program:	Hybrid III 5th Percentile Female Knee Impact Test	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	LKF09D , RKB09D

Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3574	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	3547	Pass
		Overall Test Results		Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3573.9	4.3	3.1	-0.4

Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
3547.4	4.3	-2.4	-0.4

Test Program:	Hybrid III 5th Percentile Female Torso Flexion Test	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	TF09D

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Initial reference plane angle	Degrees	≤20.0	1.0	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	343.5	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	1.2	Pass
Final reference plane angle	Degrees	+/-8	2.3	Pass
		Overall Test Results		Pass

Test Program:	Hybrid III 5th Percentile Female External Measurements	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	N/A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory relative humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	774.7 to 800.1	781	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	445	Pass
C - "H" point height (Reference)	mm	81.3 to 86.3	84	Pass
D - "H" point from seat back (Ref.)	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	82	Pass
F - Thigh clearance	mm	119.4 to 134.6	130	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	253	Pass
H - Head to back line	mm	40.7 to 45.7	45	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	285	Pass
J - Elbow rest heignt	mm	182.8 to 203.2	201	Pass
K - Buttock to knee length	mm	520.7 to 546.1	530	Pass
L - Poplipteal height	mm	355.6 to 376.0	365	Pass
M - Knee pivot height	mm	393.7 to 419.1	414	Pass
N - Buttock poplipteal length	mm	414.0 to 439.4	417	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	183	Pass
P - Foot length	mm	218.5 to 233.7	223	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	462	Pass
S - Head breadth	mm	137.1 to 147.3	140	Pass
T - Head depth	mm	177.8 to 188.0	180	Pass
U - Hip breadth	mm	299.7 to 314.9	312	Pass
V - Shoulder breadth	mm	350.5 to 365.7	362	Pass
W - Foot breadth	mm	78.8 to 94.0	85	Pass
X - Head circumference	mm	528.3 to 548.7	543	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	860	Pass
Z - Waist circumference	mm	759.5 to 789.9	783	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	162	Pass
		Overall Test Results		Pass

Test Program:	Dummy Damage Checklist	Test Date:	9/30/10
ATD Serial No.:	035	Test I.D.:	N/A

GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

Test Program:	Dummy Damage Checklist	Test Date:	9/30/10
ATD Serial No.:	635	Test I.D.:	N/A

GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts: