

REPORT NUMBER TR-P30005-01-NC

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**KIA MOTORS CORPORATION
2010 KIA FORTE EX
4-DOOR SEDAN**

NHTSA NUMBER: KA0500

**Prepared By:
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FEBRUARY 4, 2010

FINAL REPORT

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16. Abstract A 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test was conducted on the subject 2010 Kia Forte EX 4-Door sedan in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedures for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering, LLC in Adelanto, CA, on February 4, 2010. The impact velocity of the Moving Deformable Barrier was 61.71 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 15.0 deg. C. The target vehicle's maximum post-test static crush was 262 mm located at Level 2. The test vehicle's occupant performance data is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 33%;">Measurement Description</th> <th style="width: 16.5%;">Driver SID/HIII</th> <th style="width: 16.5%;">Pass. SID/HIII</th> <th style="width: 34%;"></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) G's</td> <td style="text-align: center;">35.9</td> <td style="text-align: center;">61.7</td> <td rowspan="5"></td> </tr> <tr> <td>Left Lower Rib (LLR) G's</td> <td style="text-align: center;">33.8</td> <td style="text-align: center;">62.2</td> </tr> <tr> <td>Lower Spine (T₁₂) G's</td> <td style="text-align: center;">51.0</td> <td style="text-align: center;">70.6</td> </tr> <tr> <td>Thoracic Trauma Index (TTI) G's</td> <td style="text-align: center;">43</td> <td style="text-align: center;">66</td> </tr> <tr> <td>Pelvis (PEV) G's</td> <td style="text-align: center;">70.2</td> <td style="text-align: center;">94.8</td> </tr> </tbody> </table>				Measurement Description	Driver SID/HIII	Pass. SID/HIII		Left Upper Rib (LUR) G's	35.9	61.7		Left Lower Rib (LLR) G's	33.8	62.2	Lower Spine (T ₁₂) G's	51.0	70.6	Thoracic Trauma Index (TTI) G's	43	66	Pelvis (PEV) G's	70.2	94.8
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17. Key Words New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) Side Impact Dummy (SID/HIII)		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. NHTSA Technical Reference Division 1200 New Jersey Ave., SE, Room W43-410 Washington, DC 20590																					
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SECTION 1

PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This Side Impact NCAP test is conducted as part of the MY 2010 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-09-R-00201. The purpose of this test is to generate comparative side impact data on a 2010 Kia Forte EX 4-Door sedan manufactured by Kia Motors Corporation.

1.2 TEST PROCEDURE

The side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Crashworthiness Standards (OCS), laboratory test procedure NCAP Side Impact Testing, dated November 2002. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

2.1 SUMMARY OF SIDE IMPACT NCAP TEST

A model year 2010 Kia Forte EX 4-Door sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.71 km/h. The specified impact velocity range is from 61.14 to 62.75 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 1480.0 kg and the test weight of the MDB was 1361.0 kg. The test was conducted at KARCO Engineering, LLC in Adelanto, California, on February 4, 2010.

Two (2) real-time cameras and ten (10) high-speed video cameras were used to document the impact event. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and SID/HIIIs can be found in Appendix A. Two 50th percentile adult male Side Impact Dummies, Hybrid III (SID/HIIIs) were placed in the driver's and left rear passenger designated seating positions according to the test procedure. Each SID/HIII is instrumented with contact switches on the pelvis, thorax and six-axis neck load cells, and fourteen accelerometers in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X, Y, and Z axes primary and redundant)

Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Torso/ Pelvis Airbag	Yes	Yes	No	
Curtain Airbag	Yes	Yes	Yes	Yes

SECTION 2...(CONTINUED)

The test vehicle was instrumented with twelve (12) structural accelerometers and the MDB was instrumented with five (5) accelerometers and one (1) contact switch on the right bumper to compare left side to right side bumper impact timing. All data channels were recorded with the fully self contained on-board Data Acquisition System (DAS). The data was digitally sampled at 10,000 samples per second and processed per Appendix V of the Test Procedure.

2.2 GENERAL COMMENTS

Both the driver and passenger doors remained closed during the impact. The test vehicle sustained a maximum static crush of 262 mm at level 2, 450 mm rearward of the left vertical impact point. The driver SID/Hybrid III, Serial No. 275 and the passenger SID/Hybrid III, Serial No. 274 were calibrated prior to this test. The SID/Hybrid III injury criteria are summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	43	66
Peak Pelvic G's (PEV)	G's	70	95

Tests summaries and post-test observations are presented in Section 3. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID/HIIIs, vehicle, and MDB response data traces. Appendix C contains the SID Configuration and performance verification data.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION SHEETS

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	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	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	KA0500
Make	Kia
Model	Forte EX
Body Style	4-Door Sedan
Vin No.	KNAFU4A29A5185107
Color	Bright Silver
Delivery Date	1/29/2010
Odometer (Miles)	118
Dealer	First Kia
Transmission	4-Speed Automatic
Final Drive	Front
Type/No. Cyl.	Inline 4
Engine Disp. (L)	3.7
Engine Placement	Transverse
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Knee Airbag	No
Driver Side Torso/Pelvis Airbag	Yes
Driver Side Head Airbag	No
Driver Curtain Airbag	Yes
Rear Pass. Front Airbag	No
Rear Pass. Side Torso/ Pelvis Airbag	No
Rear Pass. Head Airbag	No
Rear Pass. Curtain Airbag	Yes
Pre-Tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
AM/FM CD	Yes
Tilt Steering	Yes
Automatic Door Locks	Yes
Power Windows	Yes
Power Seats	Yes
Other	See Below

Other: Bluetooth, Tire Pressure Monitor

Does Owners Manual provide instructions to turn off automatic door locks.

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Kia Motors Corporation
Date of Manufacture	Dec-09

GVWR (kg)	1730
GAWR Front (kg)	980
GAWR Rear (kg)	820

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				385.0
Cargo Weight (RCLW) (kg)				44.8

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

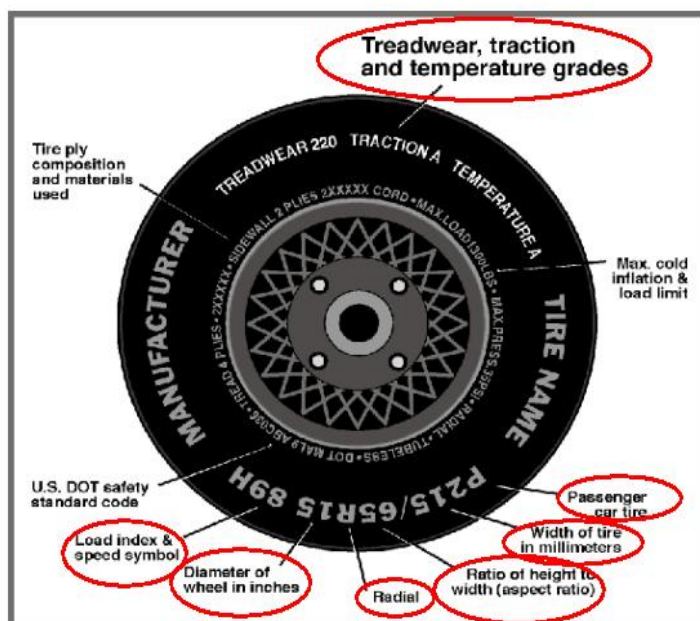
Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

Collect year, make, model, VIN, items circled in red, and tire manufacturer and tire name.



TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kpa)	220	220
Recommended Tire Size	P195/65R15	P195/65R15
Tire Size on Vehicle	P195/65R15	P195/65R15
Tire Manufacturer	Hankook	Hankook
Tire Model	Optimo H426	Optimo H426
Treadwear	440	440
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	89T	89T
Tire Material	Polyester, Nylon, Steel	Polyester, Nylon, Steel
DOT Safety Code Right	T7DY DLH 4909	T7DY DLH 4909
DOT Safety Code Left	T7DY DLH 4909	T7DY DLH 4909

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	409.0	254.5	663.5	460.0	329.0	789.0
Right	kg	382.5	232.5	615.0	407.0	284.0	691.0
Ratio	%	61.9	38.1	100.0	58.6	41.4	100.0
Total	kg	791.5	487.0	1278.5	867.0	613.0	1480.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1278.5
Weight of 2 P572 ATDs	kg	163.0
Rated Cargo/Luggage Wt (RCLW)	kg	44.8
Calculated Vehicle Target Wt (TVTW)	kg	1486.3

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	683	680	675	677	1009
As Tested	mm	664	660	645	652	1098
Fully Loaded	mm	662	660	643	653	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2650
Total Vehicle Length at Left Side	mm	3100
Total Vehicle Length at Centerline	mm	4457
Total Vehicle Length at Right Side	mm	3112
Weight of Ballast in Cargo Area	kg	0
Amount of Stoddard Solvent Added	L	70.4

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2650
Target Impact Point Aft of Front Axle	mm	388
Actual Impact Point Aft of Front Axle	mm	387

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

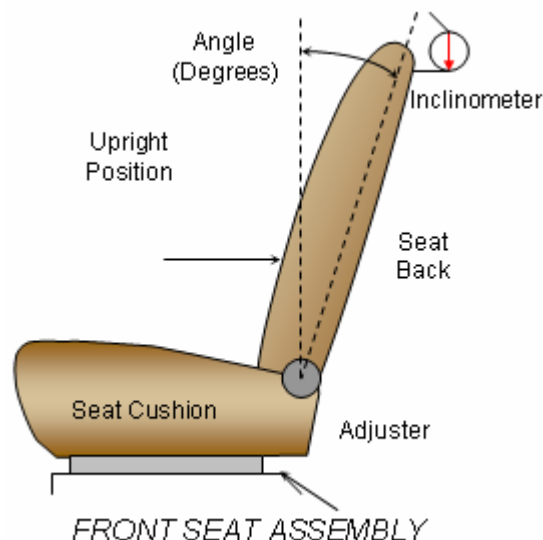
NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

NOMINAL DESIGN RIDING POSITION

The driver seat back is positioned using the manufacturer's designated measurement from a reference location. The left rear passenger seat back is positioned by detent to the manufacturer's location. The procedure for measuring angle is as follows: angle was measured at the headrest post using a digital inclinometer.



SEAT BACK ANGLES

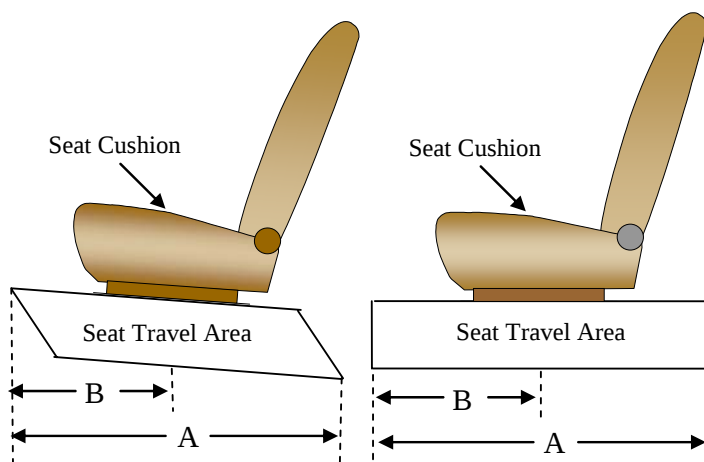
	Deg.
Driver w/seated Dummy	8.5°
Passenger w/seated Dummy	Fixed

SEAT FORE/AFT POSITIONS

Total seat travel was measured from forward most position to rearmost position possible. The driver seat was set at the longitudinal mid position. The passenger seat was fixed. There were vertical adjustments on the driver seat that was equipped with the vehicle. There were no vertical adjustments on the passenger seat. The driver seat was placed at the lowermost position.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	250 mm	125 mm
Rear Seat	Fixed	Fixed



SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position

SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	4	1
Rear Seat	Fixed	Fixed

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

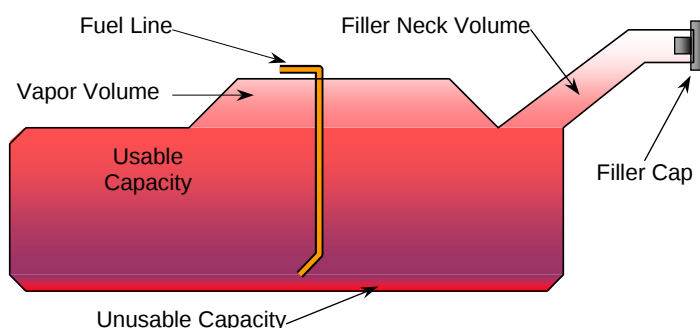
Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	52.0
Usable Capacity of "Optional" Tank	
Allowable Capacity used for FMVSS 301	47.8 to 48.9
Actual Amount of Solvent used	48.4

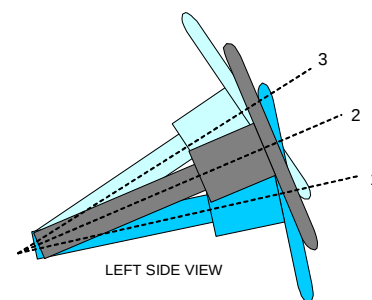
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate when the key is in the start position or when the engine is activated. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the left rear seat.



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. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured. The vehicle's steering column was placed in the mid-telescoping position.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

Description	Tilt Angle (°)	Fore/Aft Position (mm)
Lowermost position No. 1	20.9	
Geometric center position No. 2	23.2	
Uppermost position No. 3	25.5	

DATA SHEET NO. 2**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2010 Kia Forte EX 4-Door SedanNHTSA No.: KA0500Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/04/10**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	409.0	254.5	663.5	460.0	329.0	789.0
Right	kg	382.5	232.5	615.0	407.0	284.0	691.0
Ratio	%	61.9	38.1	100.0	58.6	41.4	100.0
Total	kg	791.5	487.0	1278.5	867.0	613.0	1480.0

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	67	238
Level 2	Occupant H-Point	mm	262	504
Level 3	Mid Door	mm	222	607
Level 4	Window Sill	mm	180	885
Level 5	Window top	mm	30	1388
N/A	Maximum Penetration	mm	262	

INSTRUMENTATION

Driver SID/Hybrid III Accelerometers	20
Passenger SID/Hybrid III Accelerometers	20
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total No. of Contact Switches	5
Total	71

CAMERA COVERAGE

High Speed, Vehicle On-Board	3
High Speed, Off-Board	5
High Speed, MDB On-Board	2
Real Time, Panning	1
Total	11

DATA SHEET NO. 3**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**Test Vehicle: 2010 Kia Forte EX 4-Door SedanNHTSA No.: KA0500Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/04/10**MDB SPECIFICATIONS (mm)**

Measurement Description	Length
Overall Width of Framework Carriage	1252
Overall Length including Honeycomb Face	4115
Wheel Base of Framework Carriage	2590
C.G. location aft of Front Axle	1127

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	384	308	
Right	kg	385	284	
Ratio	%	56.5	43.5	
Totals	kg	769	592	1361

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.71
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.5

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE (mm)

Vertical Location			From Centerline		Max. Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Right	202
B	Top of Bumper	533	800	Right	84
C	Mid Level	686	800	Right	100
D	Top of Stack	813	800	Left	138

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2
High Speed Cameras	2

DATA SHEET NO. 4**POST-TEST OBSERVATIONS**Test Vehicle: 2010 Kia Forte EX 4-Door SedanNHTSA No.: KA0500Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/04/10**TEST DUMMY INFORMATION AND CONTACT POINTS**

Description	Front Seat SID/Hybrid III	Rear Seat SID/Hybrid III
Dummy Type/Serial No.	P572F, SID/No. 275	P572F, SID/No. 274
Head Contact	Curtain Airbag, Headliner, Headrest	Curtain Airbag, Headliner, Headrest
Upper Torso Contact	Side Airbag, Door Panel	Curtain Airbag, Door Panel
Lower Torso Contact	Side Airbag	Door Panel
Left Knee Contact	Door Panel	Door Panel, R. Knee
Right Knee Contact	None	L. Knee

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Remained closed and latched, jammed.	Remained closed and latched, jammed.
Right Side Door Opening	Remained closed and latched, operational.	Remained closed and latched, operational.
Seat Movement	None	None
Seatback Failure	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Separation	No separation occurred
Windshield Damage	None
Window Damage	Left front window broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 2	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Torso/Pelvis Airbag	Yes	Yes	No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes
Pre-Tensioners	Yes	Yes	No	
Load Limiters	Yes		No	

MDB LEFT EDGE IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	-1 (Left)
Vertical Offset	mm	+/-20	+4 (Up)

DATA SHEET NO. 5

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

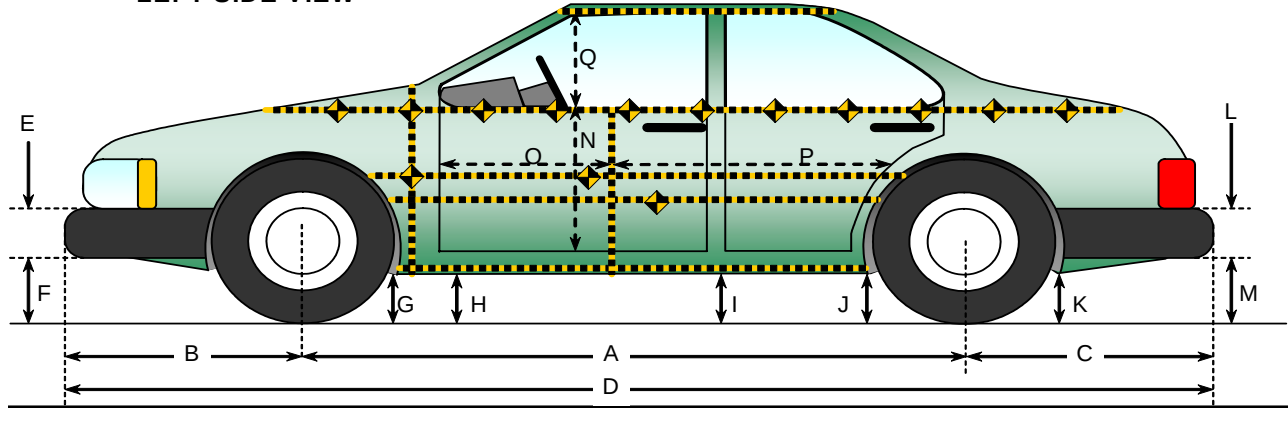
Test Vehicle: 2010 Acura ZDX Advance 5-Door MPV

NHTSA No.: HA5301

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 01/22/10

LEFT SIDE VIEW



VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2650	2661	11
B	Front Axle to FSOV	896	900	4
C	Rear Axle to RSOV	911	897	-14
D	Total Length at Centerline	4457	4458	1
E	Front Bumper Thickness	150	154	4
F	Front Bumper Bottom to Ground	414	425	11
G	Sill Height at Front Wheel Well	199	223	24
H	Sill Height at Front Door Leading Edge	265	329	64
I	Sill Height at "B" Pillar	256	349	93
J1	Sill Height at Rear Wheel Well	204	300	96
J2	Pinch Weld Height at Rear Wheel Well	157	224	67
K	Sill Height aft of Rear Wheel Well	243	275	32
L	Rear Bumper Thickness	313	312	-1
M	Rear Bumper Bottom to Ground	316	369	53
N	Sill Height to Window Bottom Sill	597	556	-41
O	Front Door Leading Edge to Impact CL	71	169	98
P	Rear Door Trailing Edge to Impact CL	2271	2258	-13
Q	Front Window Opening	444	442	-2
R	Right Side Length	3112	3087	-25
S	Left Side Length	3100	3104	4
T	Vehicle Width at "B" Post	1745	1584	-161

All dimensions shown in millimeters

DATA SHEET NO. 6

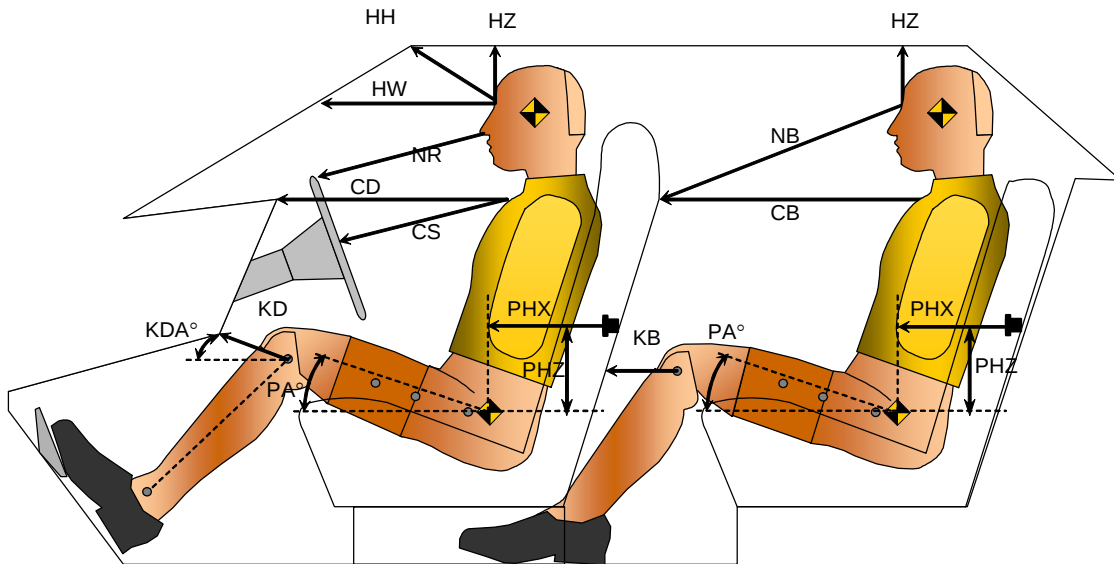
SID/HII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	341	20.6		
HW		Head to Windshield	584	0.0		
HZ	HZ	Head to Roof	173	90.0	162	90.0
NR	NB	Nose to Rim/Nose to Seat Back	415	15.6	657	19.2
CD	CB	Chest to Dash or Seat Back	534	7.9	557	1.8
CS		Chest to Steering Wheel	335	13.4		
KDL	KBL	Left Knee to Dash or Seat Back	184	28.8	235	20.0
KDR	KBR	Right Knee to Dash or Seat Back	176	38.6	235	25.2
PA	PA	Pelvic Angle		24.2		23.1
PHX	PHX	H-Point to Striker (X-Axis)	210		230	
PHZ	PHZ	H-Point to Striker (Z-Axis)	221		209	

All dimensions shown in millimeters

DATA SHEET NO. 7

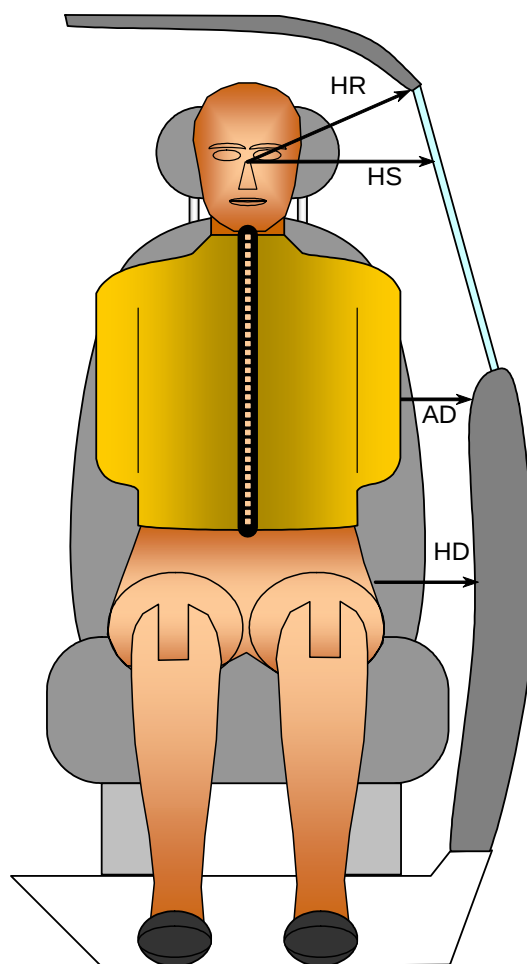
SID/HII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



FRONT VIEW OF DUMMY

LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	241	256
HS	Head to Side Window	mm	315	331
AD	Arm to Door	mm	114	115
HD	H-Point to Door	mm	141	158

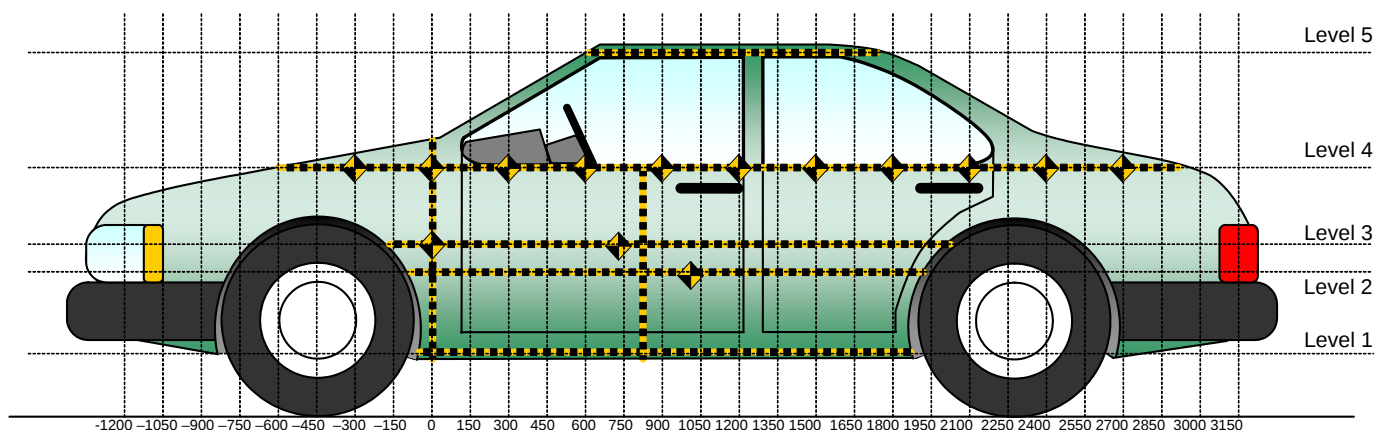
DATA SHEET NO. 8 **VEHICLE SIDE MEASUREMENTS**

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.

Measurements taken 900 mm right of impact reference.

All measurements below in mm.

Level	Measurement Description	Height Above Ground
1	Sill Top	238
2	Occupant H-Point	504
3	Mid Door	607
4	Window Sill	885
5	Window Top	1388

All dimensions shown in millimeters

DATA SHEET NO. 9

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150			644	729				649	745				5	16	
0	706	653	657	706		709	676	678	724		3	23	21	18	
150	706	659	657	692		765	857	824	760		59	198	167	68	
300	704	657	654	704		763	910	865	804		59	253	211	100	
450	702	655	652	714		763	917	870	865		61	262	218	151	
600	702	653	650	703		765	910	864	869		63	257	214	166	
750	702	652	648	694		767	895	862	874		65	243	214	180	
900	702	651	647	685	939	769	888	853	857	959	67	237	206	172	20
1050	701	650	645	680	928	766	865	840	837	948	65	215	195	157	20
1200	702	649	645	676	923	763	889	858	835	953	61	240	213	159	30
1350	702	649	645	675	921	760	904	866	827	950	58	255	221	152	29
1500	700	650	646	672	926	754	905	868	832	952	54	255	222	160	26
1650	700	650	646	674	932	749	886	855	827	956	49	236	209	153	24
1800	700	650	647	675	952	737	867	803	810	973	37	217	156	135	21
1950		645	643	679			729	762	776			84	119	97	
2100			638	683				687	721				49	38	
2250				689					690					1	
2400				696					709					13	
2550				707					711					4	
2700				721					714					-7	
2850															
3000															

All dimensions shown in millimeters.

DATA SHEET NO. 9...(CONTINUED)

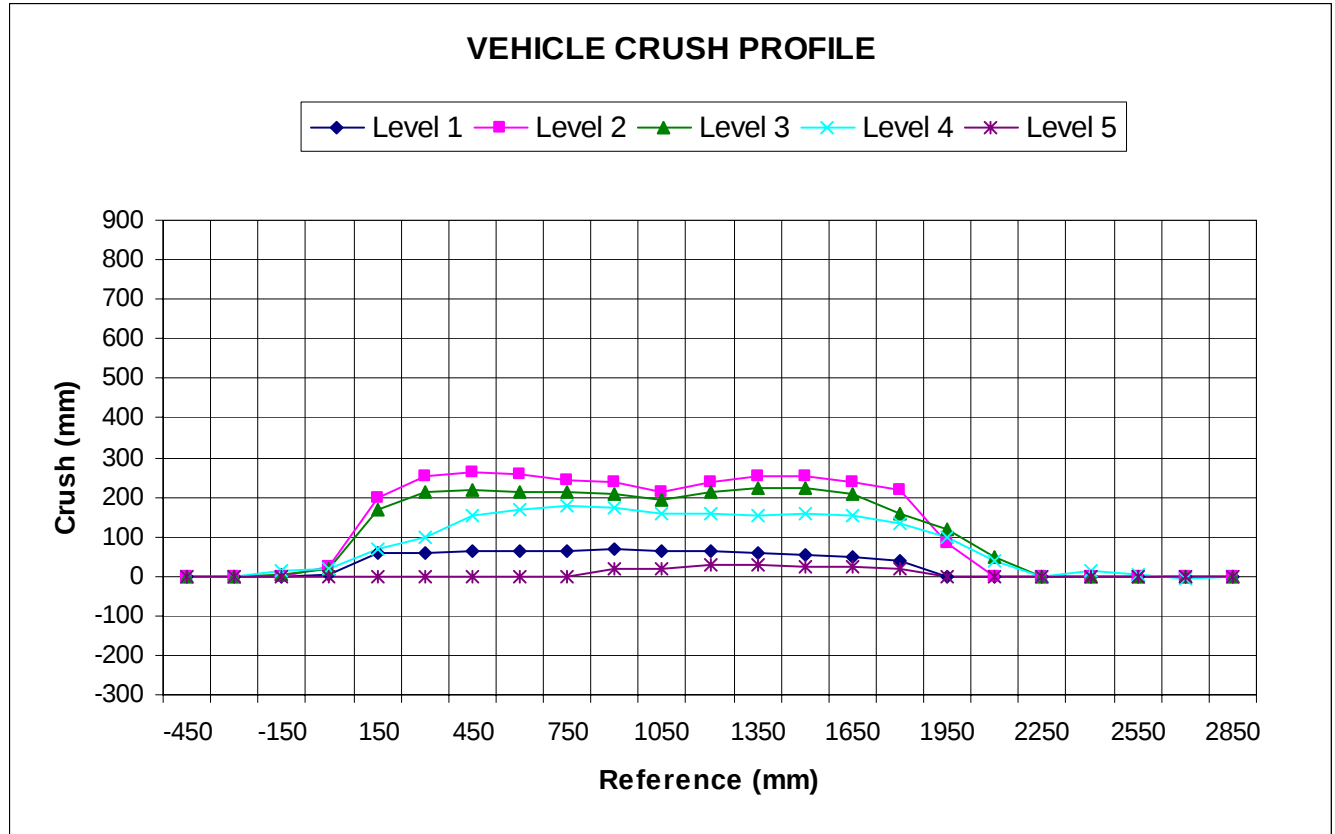
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



DATA SHEET NO. 10

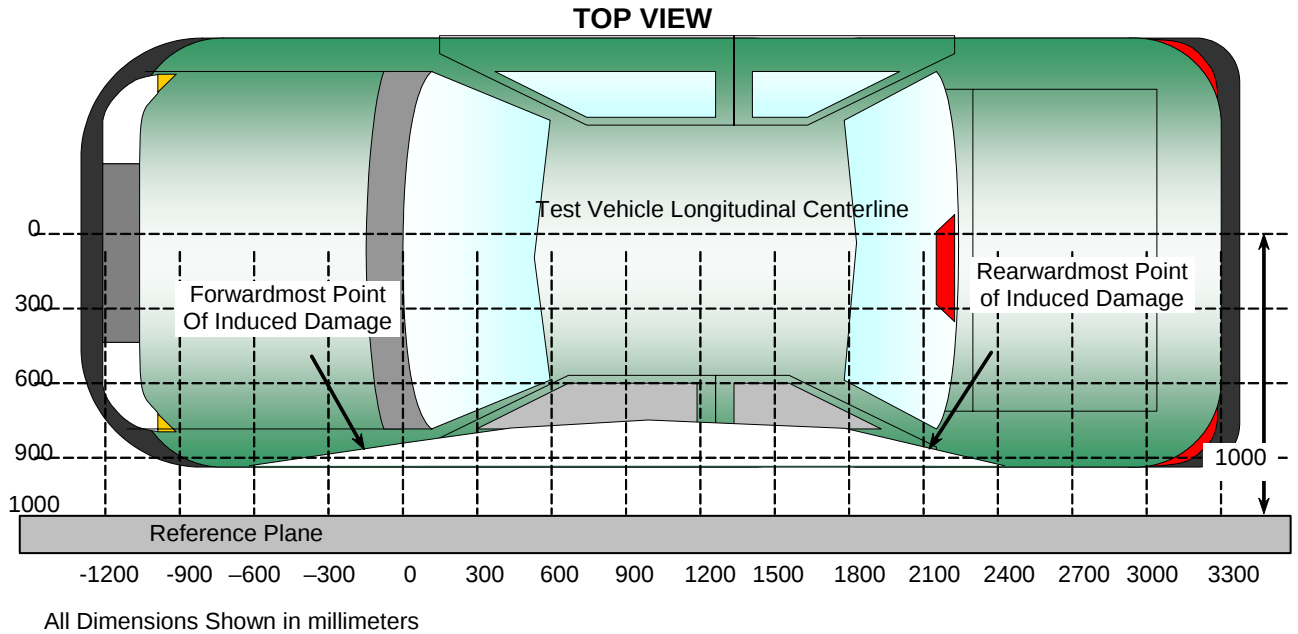
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2250	4	689	690	1
2	1800	2	650	867	217
3	1350	2	649	904	255
4	900	2	651	888	237
5	450	2	655	917	262
6	0	2	653	676	23

DATA SHEET NO. 11

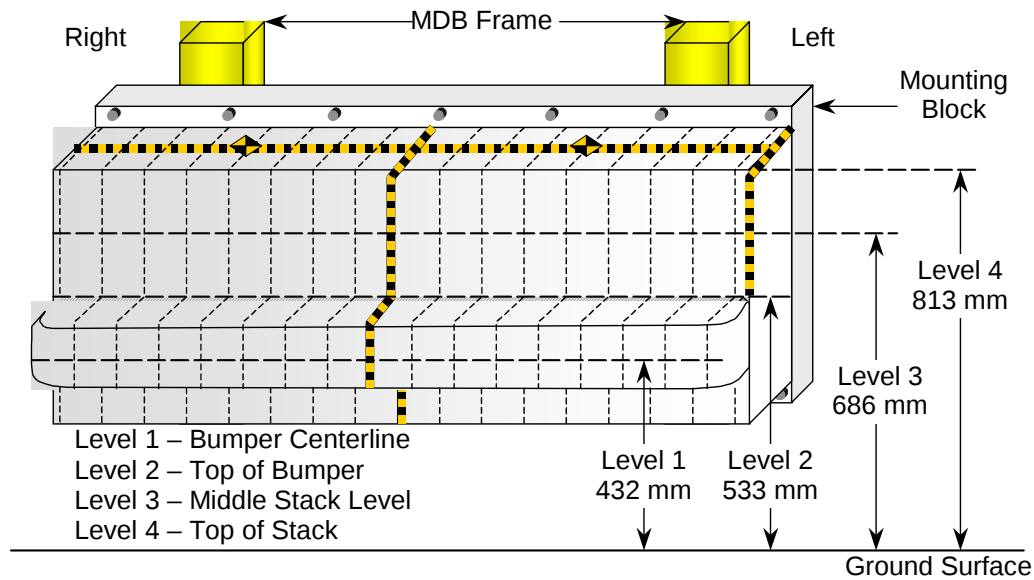
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	720	703	683	678	675	673	670	664	658	658	651	653	649	646	646	663	693
2	704	698	685	677	673	671	671	688	680	675	670	673	673	675	676	683	696
3	720	686	674	650	641	643	647	654	641	634	634	635	640	647	653	673	713
4	710	670	648	638	634	654	674	654	640	633	634	637	643	647	678	723	758

All Dimensions in mm

DATA SHEET NO. 12

VEHICLE ACCELEROMETER LOCATIONS

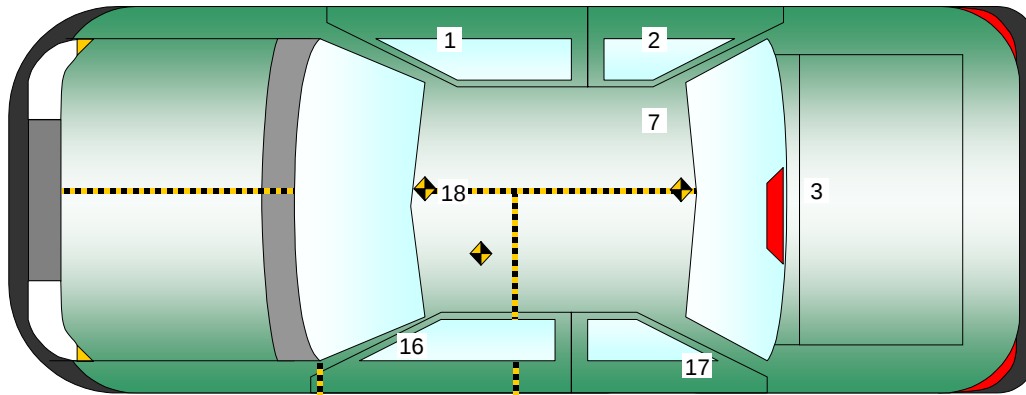
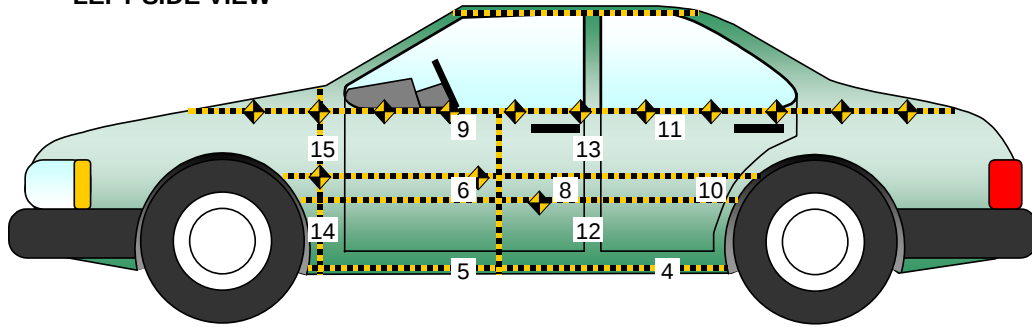
Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

LEFT SIDE VIEW



No.	Location
1	Right Sill at Front Seat
2	Right Sill at Rear Seat
3	Rear Floorpan Above Axle
4	Left Sill at Rear Door
5	Left Sill at Front Door
6	Left Front Door Centerline
7	Right Rear Occupant Compartment
8	Left Front Door Mid-Rear
9	Left Front Door Upper Centerline

No.	Location
10	Left Rear Door Mid-Rear
11	Left Rear Door Upper Centerline
12	Left Lower B-Post
13	Left Middle B-Post
14	Left Lower A-Post
15	Left Middle A-Post
16	Front Seat Track
17	Rear Seat Track or Structure
18	Vehicle CG

DATA SHEET NO. 12...(CONTINUED)

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

VEHICLE ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2605	690	-280
2	Right Sill at Rear Seat	1665	695	-320
3	Rear Floorpan Above Axle	750	180	-500
4	Left Sill at Rear Door	1470	-600	-170
5	Left Sill at Front Door	2240	-560	-170
6	Front Door Centerline			
7	Rt. Rear Occ. Compartment	1860	400	-230
8	Front Door Mid-Rear			
9	Front Door Upper Centerline			
10	Rear Door Mid-Rear			
11	Rear Door Upper Centerline			
12	B-Post Lower	2070	-700	-600
13	B-Post Middle	2065	-700	-880
14	A-Post Lower	3165	-720	-500
15	A-Post Middle	3135	-720	-780
16	Front Seat Track	2200	-580	-280
17	Rear Seat Structure			
18	Vehicle CG	1645	0	-280

Reference Planes: X=From Rear Bumper, Y=Vehicle Centerline, Z=Ground Plane

¹ - Not Installed

DATA SHEET NO. 13

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

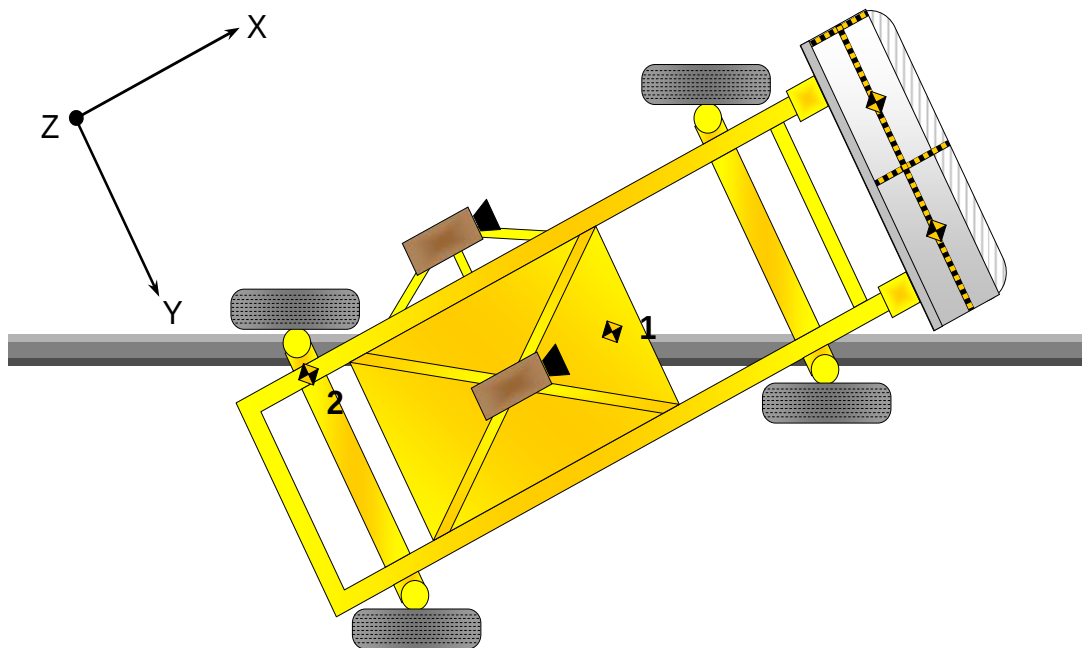
NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10

Loc. No.	Accelerometer Locations	Measurements (mm)		
		X	Y	Z
1	MDB CG	-1195	0	430
2	MDB Rear	-2642	-593	608

Reference Points:
X - MDB Front Axle
Y - MDB Centerline
Z - Ground Plane



DATA SHEET NO. 14

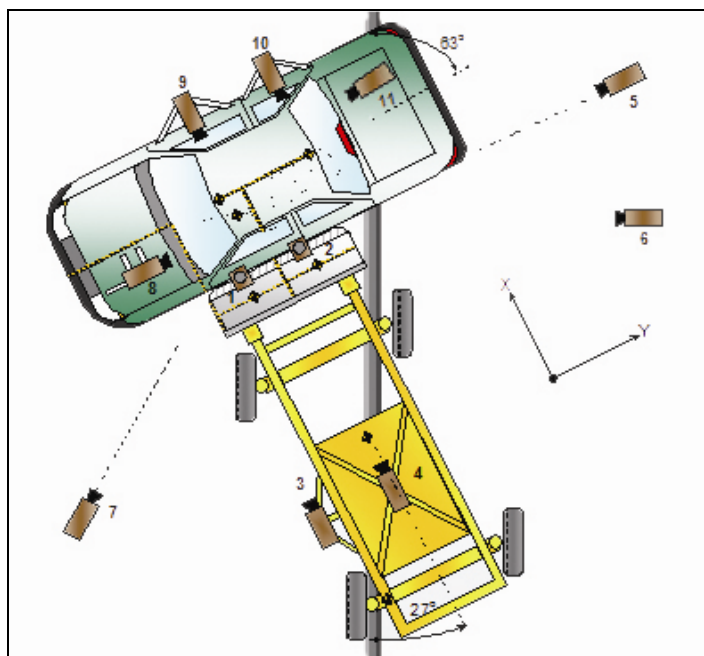
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



No.	Camera View	Location			Angle (deg)	Lens (mm)	Film Speed
		x	y	z			
Doc	Real Time Inrun	-2484	-3958	-1506	0		30
Doc	Real Time Left Front	-2266	3549	-1475	-2		30
1	Overhead Overall	1220	2287	-5486	-90	14	1000
2	Overhead Close-Up	609	2287	-5102	-90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	-2	12	1000
4	Side Overall (MDB)	-3912	838	-1829	-4	15	1000
5	Rear	-64	20485	-1348	0	105	1000
6	Left Rear (MDB)	-2137	-1302	-339	-4	85	1000
7	Left Front	-2266	-3564	-1475	-2	24	1000
8	Driver Front (O.B.)					35	1000 *
9	Driver Side (O.B.)					20	1000 *
10	Passenger Side (O.B.)					20	1000 *

All measurements are made relative to the point of impact at ground level.

* - Measurement Unavailable

DATA SHEET NO. 15

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP Test Date: 02/04/10

Test Time: 12:20 PM

Temperature: 15.0 Deg. C.

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)
- D. Spillage Details: No leakage occurred

DATA SHEET NO. 16

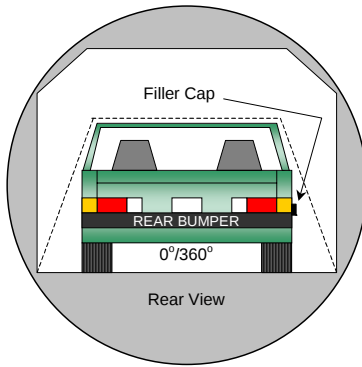
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

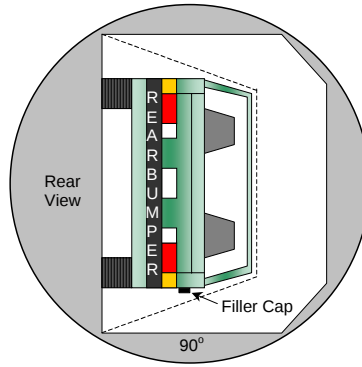
NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

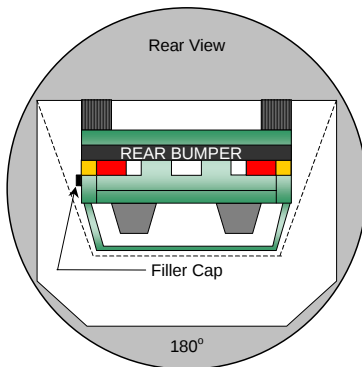
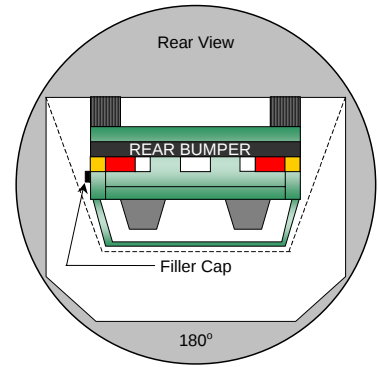
Test Date: 02/04/10



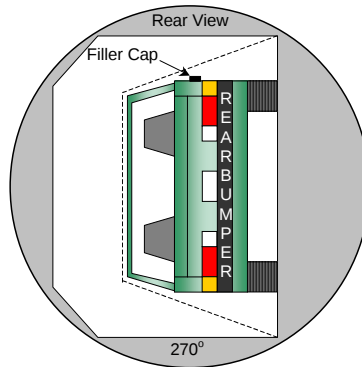
0° to 90°



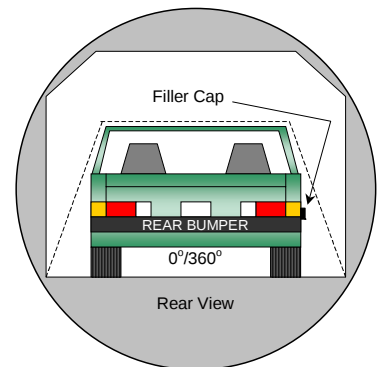
90° to 180°



180° to 270°



270° to 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations.
No solvent leakage occurred during static rollover testing.

DATA SHEET NO. 16...(CONTINUED)**FMVSS 301 STATIC ROLLOVER DATA SHEET**Test Vehicle: 2010 Kia Forte EX 4-Door SedanNHTSA No.: KA0500Test Program: 55/28 km/h Side Impact NCAPTest Date: 02/04/10**FMVSS 301 ROLLOVER TIME TABLE (SECONDS)**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	86	300	386
90° to 180°	83	300	383
180° to 270°	79	300	379
270° to 360°	86	300	386

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

First 5 Minutes	5.0
Sixth Minute	1.0
Seventh Minute	1.0
Eighth Minute	1.0

FMVSS 301 SOLVENT COLLECTED

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

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17

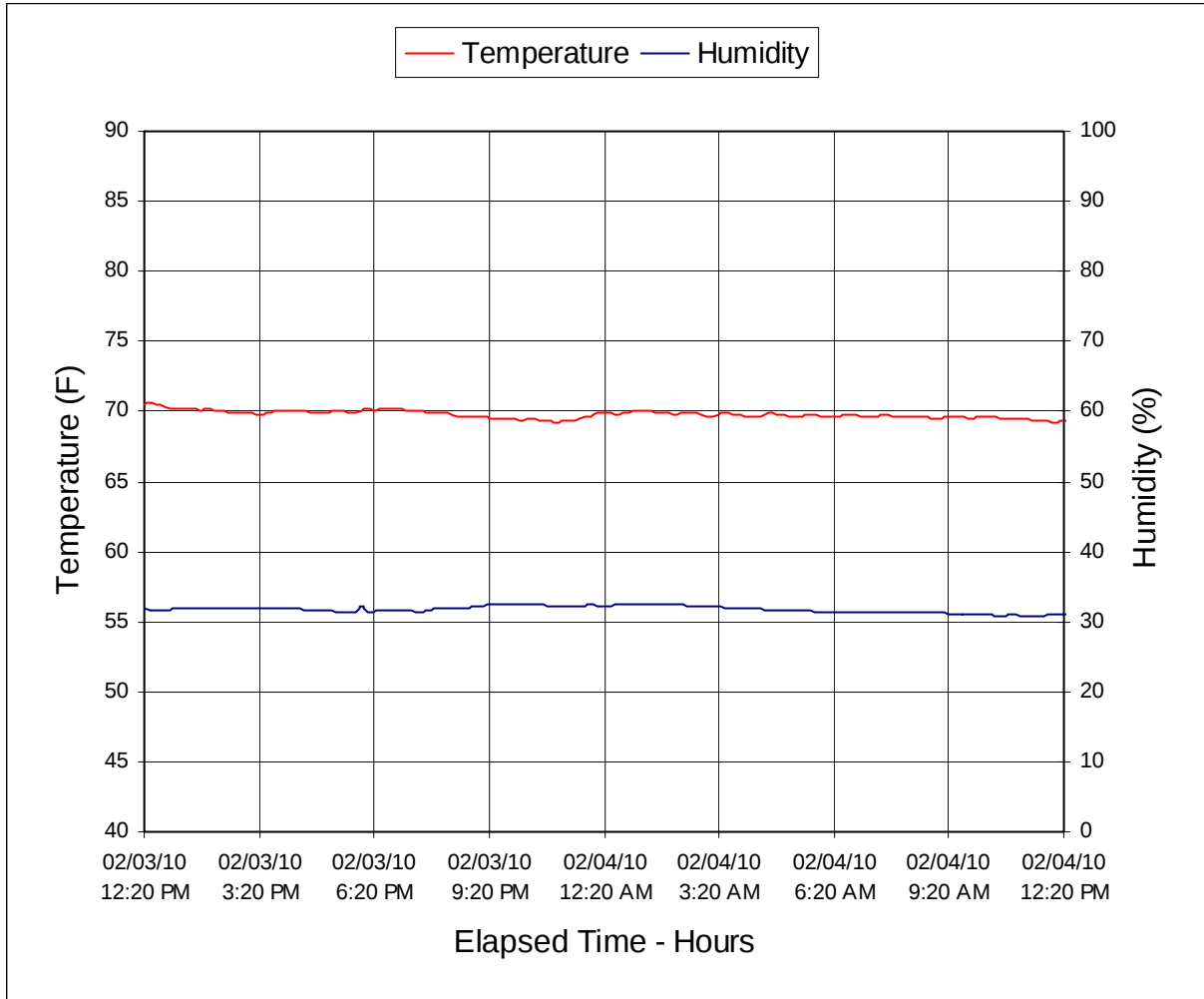
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan

NHTSA No.: KA0500

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 02/04/10



APPENDIX A
PHOTOGRAPHS

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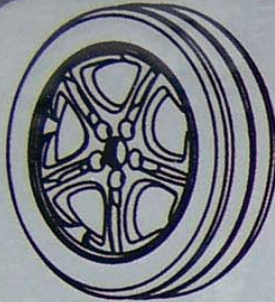
Figure A-1: Right Front $\frac{3}{4}$ View, as Received



Figure A-2: Left Rear $\frac{3}{4}$ View, as Received



Figure A-3: Manufacturer's Label



TIRE AND LOADING INFORMATION RENSEIGNEMENTS SUR LES PNEUS ET LE CHARGEMENT

SEATING CAPACITY
NOMBRE DE PLACES

TOTAL 5

FRONT
AVANT 2

REAR
ARRIÈRE 3

The combined weight of occupants and cargo should never exceed 385 kg or 849 lbs.
Le poids total des occupants et du chargement ne doit jamais dépasser 385 kg ou 849 lb.

TIRE PNEU	SIZE DIMENSIONS	COLD TIRE PRESSURE PRESSION DES PNEUS À FROID
FRONT AVANT	P195/65R15	220kPa, 32psi
REAR ARRIÈRE	P195/65R15	220kPa, 32psi
SPARE DE SECOURS	T125/80D15	420kPa, 60psi

**SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION**

**VOIR LE MANUEL
DE L'USAGER
POUR PLUS DE
RENSEIGNEMENTS**

Figure A-4: Tire Placard



Figure A-5: Pre-Test Front View



Figure A-6: Post-Test Front View



Figure A-7: Pre-Test Left Front 3/4 View

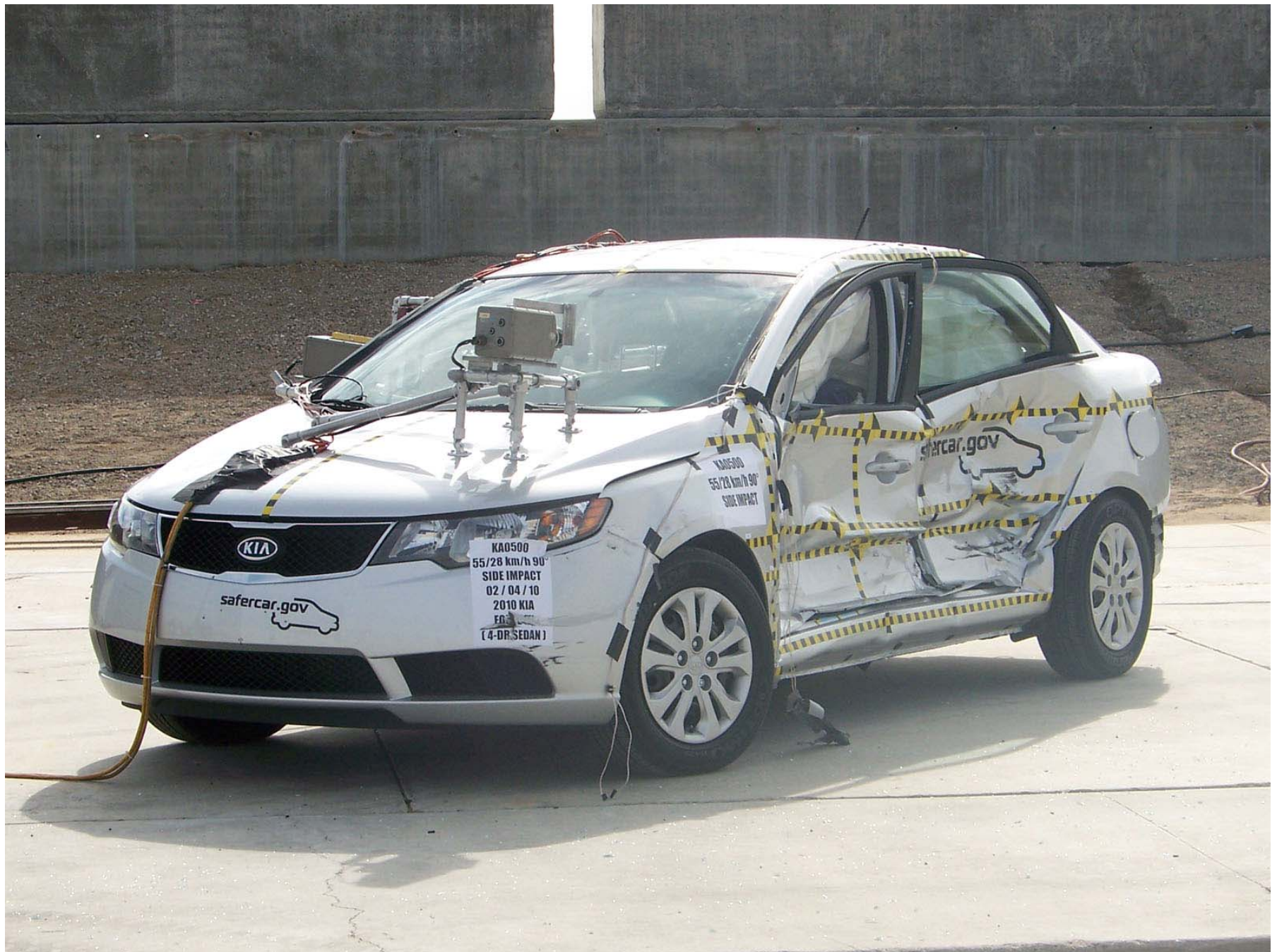


Figure A-8: Post-Test Left Front $\frac{3}{4}$ View



Figure A-9: Pre-Test Left Side View



Figure A-10: Post-Test Left Side View



Figure A-11: Pre-Test Left Rear $\frac{3}{4}$ View



Figure A-12: Post-Test Left Rear $\frac{3}{4}$ View



Figure A-13: Pre-Test Rear View



Figure A-14: Post-Test Rear View



Figure A-15: Pre-Test Right Rear $\frac{3}{4}$ View



Figure A-16: Post-Test Right Rear $\frac{3}{4}$ View



Figure A-17: Pre-Test Right Side View



Figure A-18: Post-Test Right Side View



Figure A-19: Pre-Test Right Front ¾ View



Figure A-20: Post-Test Right Front $\frac{3}{4}$ View



Figure A-21: Pre-Test Overhead View



Figure A-22: Post-Test Overhead View



Figure A-23: Pre-Test Overhead Close-up View

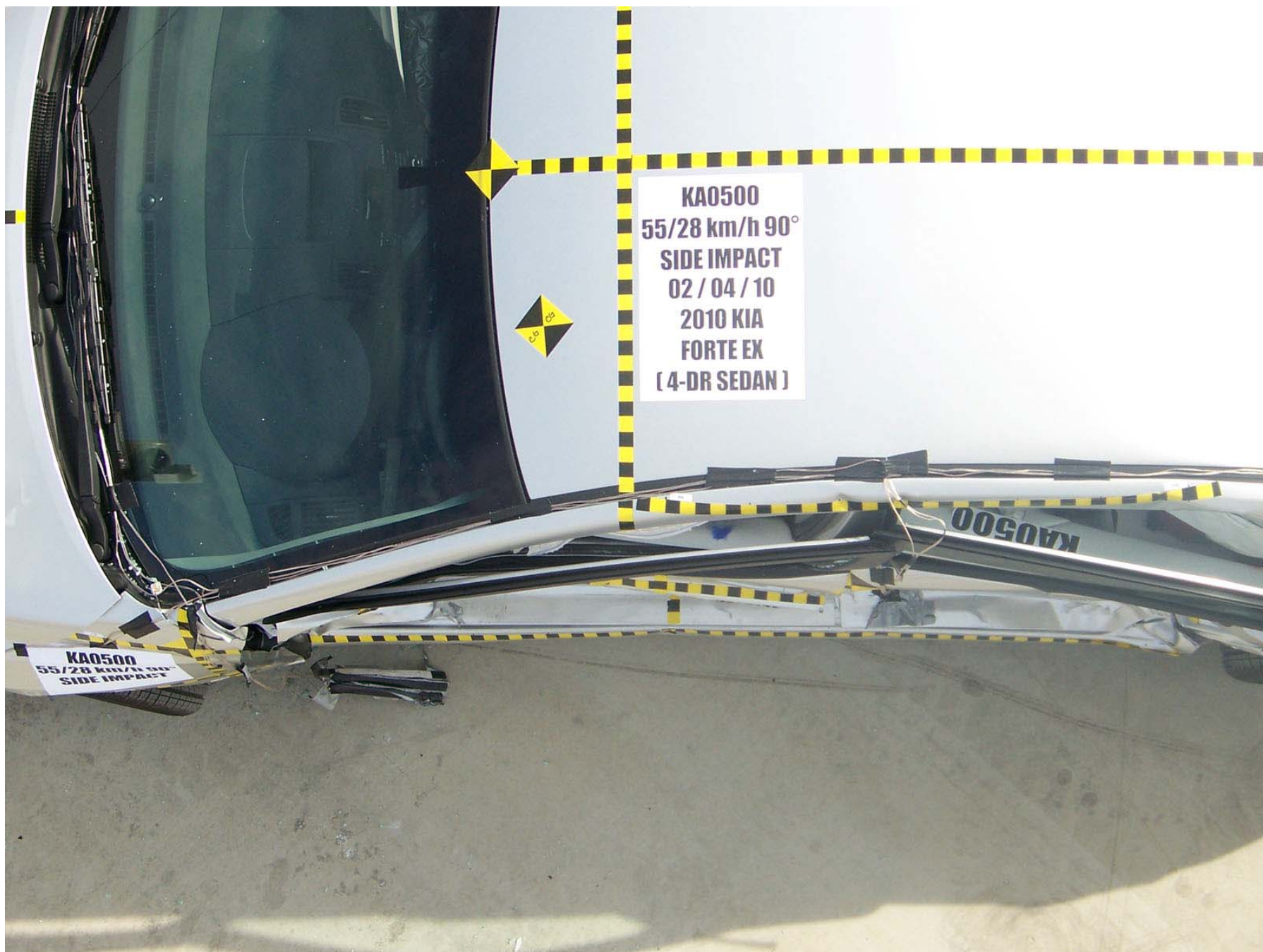


Figure A-24: Post-Test Overhead Close-up View



Figure A-25: Pre-Test Left Impact Point

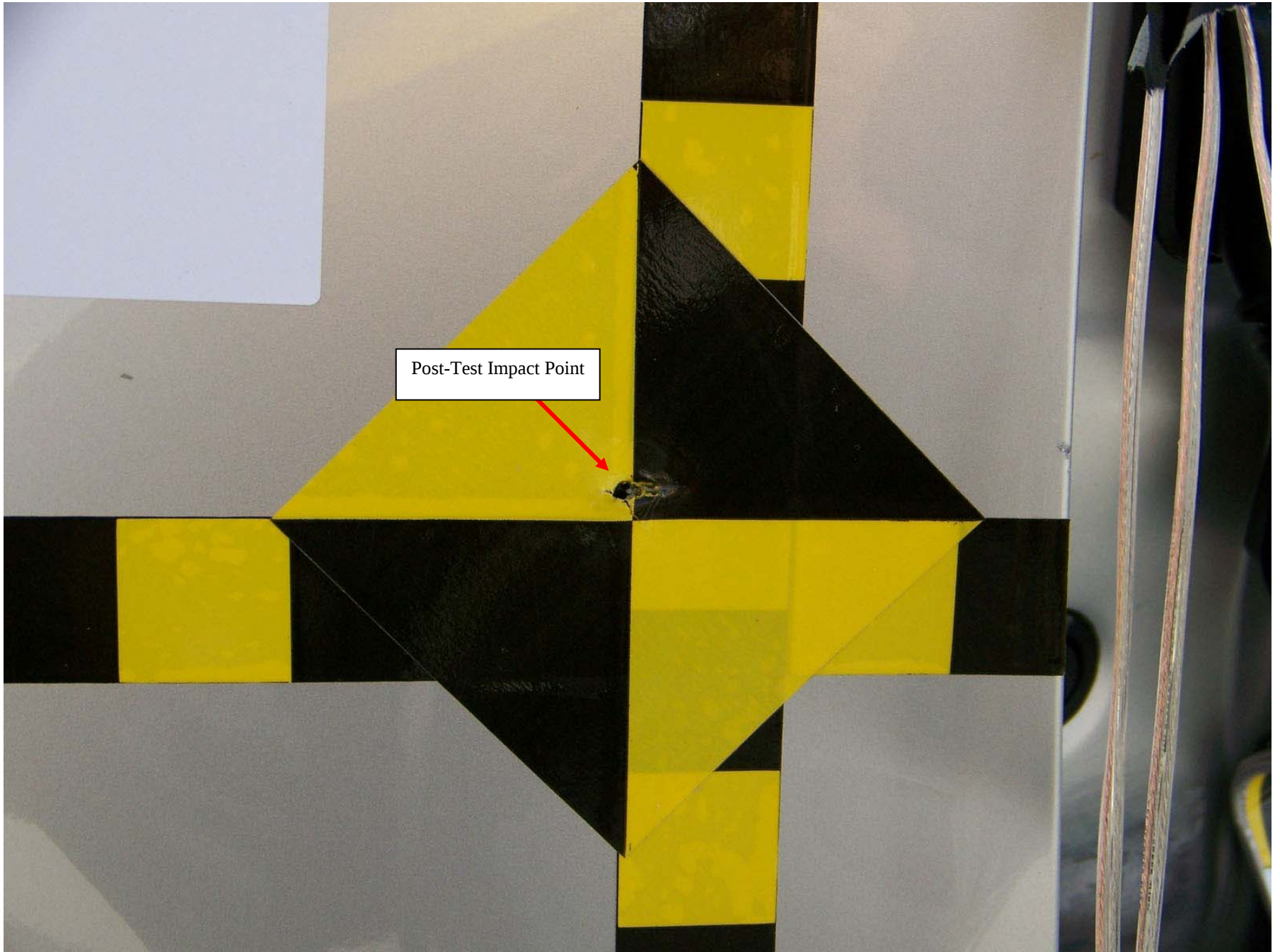


Figure A-26: Post-Test Left Impact Point



Figure A-27: Pre-Test Front $\frac{3}{4}$ View of Left Side Door



Figure A-28: Post-Test Front $\frac{3}{4}$ View of Left Side Door



Figure A-29: Pre-Test Rear $\frac{3}{4}$ View of Left Side Door



Figure A-30: Post-Test Rear ¾ View of Left Side Door



Figure A-31: Pre-Test Left Front Door



Figure A-32: Post-Test Left Front Door



Figure A-33: Pre-Test Left Rear Door



Figure A-34: Post-Test Left Rear Door



Figure A-35: Pre-Test Driver Dummy (Door Open)



Figure A-36: Pre-Test Driver Dummy (Through Window)



Figure A-37: Post-Test Driver Dummy (Through Window)



Figure A-38: Pre-Test Driver Dummy Clearance From Door



Figure A-39: Post-Test Driver Dummy Clearance From Door



Figure A-40: Pre-Test Driver Dummy Right Side View



Figure A-41: Post-Test Driver Dummy Right Side View



Figure A-42: Pre-Test Front Door Panel (Interior)



Figure A-43: Post-Test Front Door Panel (Interior)



Figure A-44: Pre-Test Passenger Dummy Left Side (Door Open)



Figure A-45: Pre-Test Passenger Dummy Left Side (Through Window)



Figure A-46: Post-Test Passenger Dummy Left Side (Through Window)



Figure A-47: Pre-Test Passenger Dummy Clearance From Door



Figure A-48: Post-Test Passenger Dummy Clearance From Door



Figure A-49: Pre-Test Passenger Dummy Right Side View



Figure A-50: Post-Test Passenger Dummy Right Side View



Figure A-51: Pre-Test Rear Door Panel (Interior)



Figure A-52: Post-Test Rear Door Panel (Interior)



Figure A-53: Pre-Test Front View of Deformable Barrier



Figure A-54: Post-Test Front View of Deformable Barrier

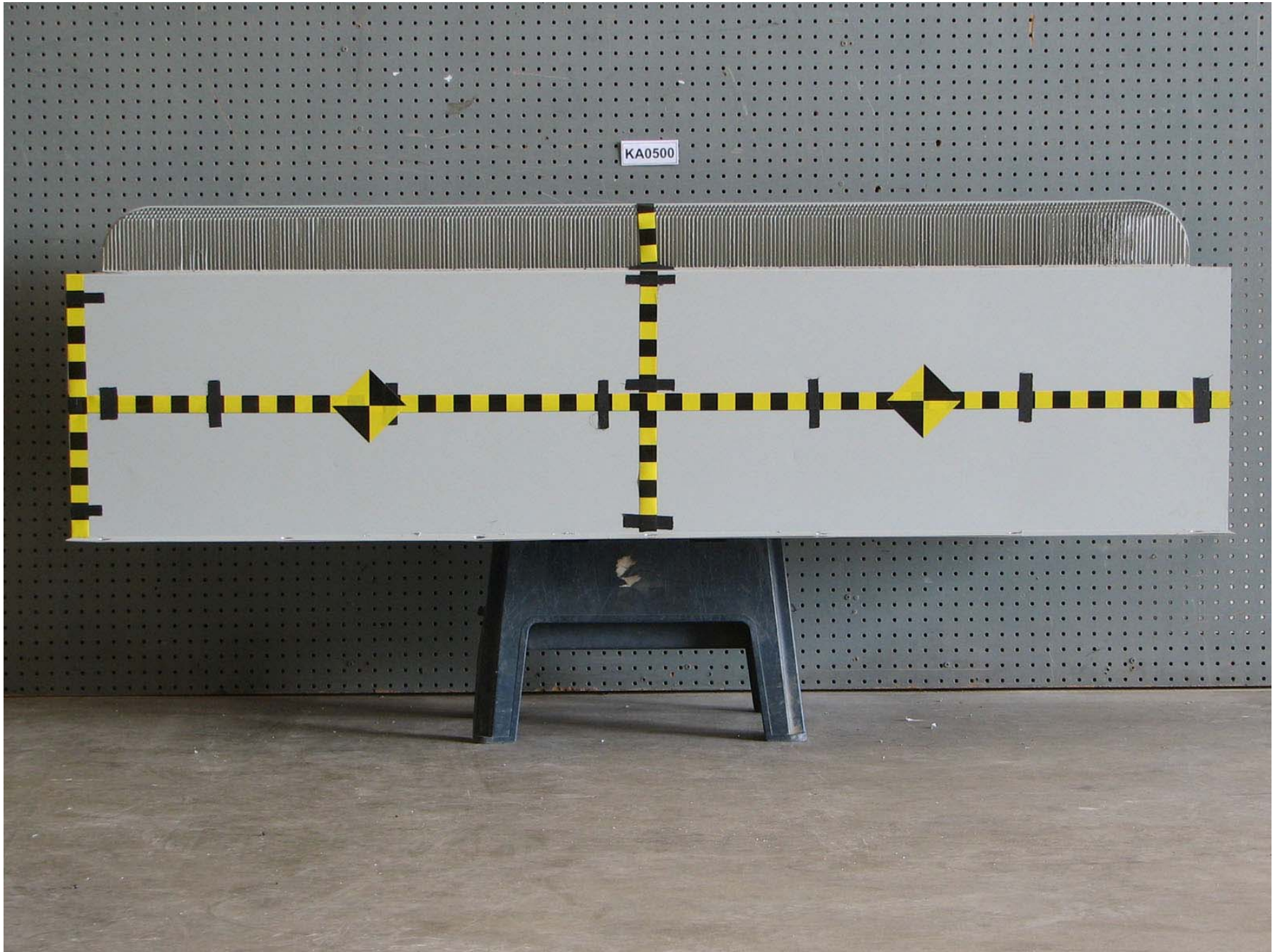


Figure A-55: Pre-Test Top View of Deformable Barrier



Figure A-56: Post-Test Top View of Deformable Barrier



Figure A-57: Pre-Test Right Side View of Deformable Barrier



Figure A-58: Post-Test Right Side View of Deformable Barrier



Figure A-59: Pre-Test Left Side View of Deformable Barrier



Figure A-60: Post-Test Left Side View of Deformable Barrier

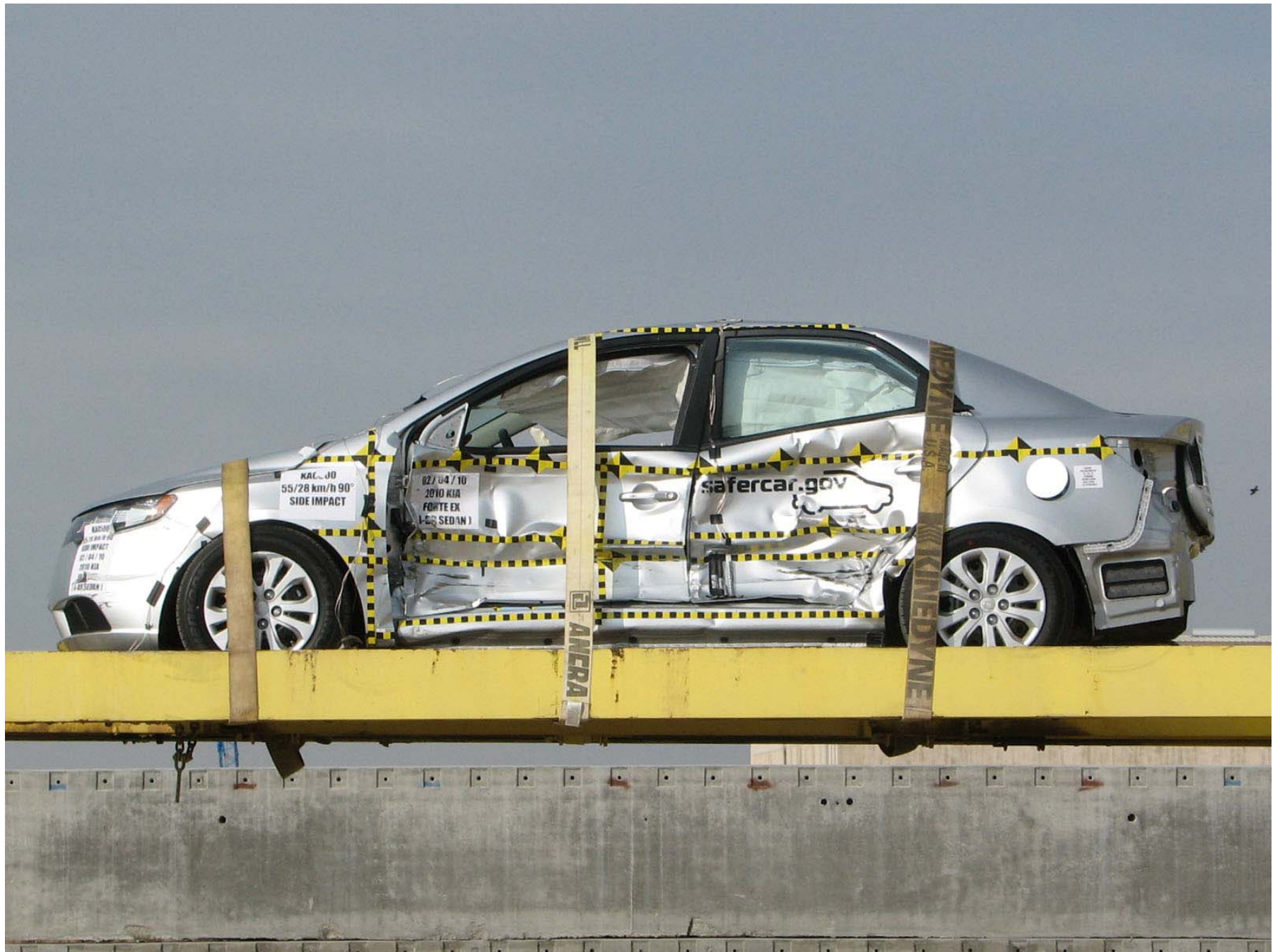


Figure A-61: Vehicle on Rollover Device (0°)



Figure A-62: Vehicle on Rollover Device (90°)



Figure A-63: Vehicle on Rollover Device (180°)

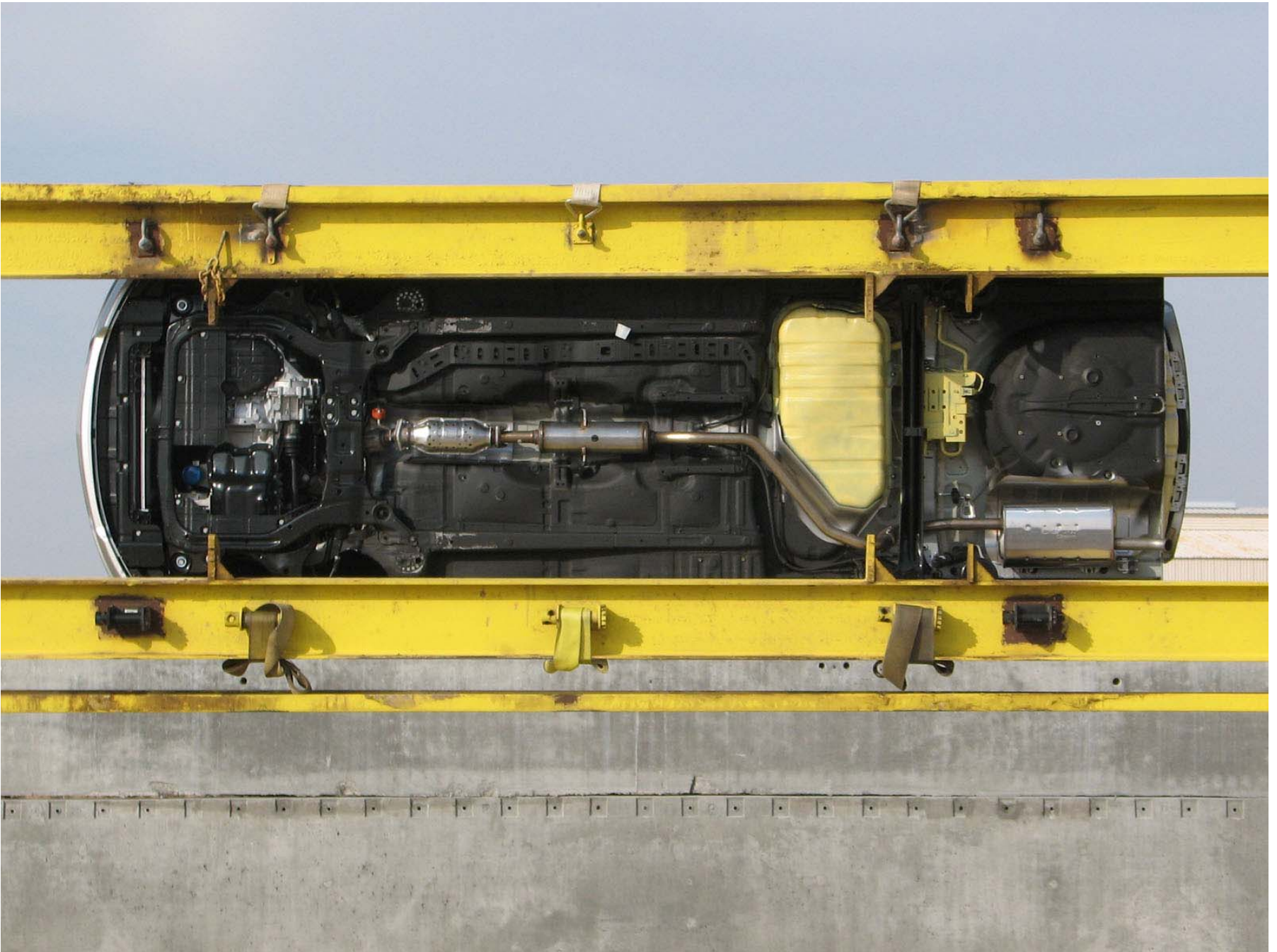


Figure A-64: Vehicle on Rollover Device (270°)



Figure A-65: Vehicle on Rollover Device (360°)



Figure A-66: Timers



Figure A-67: Vehicle Impact

APPENDIX B
SID/HIII, VEHICLE AND MDB RESPONSE DATA

LIST OF DATA PLOTS

Data Plot		Page
B-1	Driver Upper Rib Y Primary	B-1
	Driver Lower Rib Y Primary	B-1
	Driver Lower Spine Y Primary	B-1
	Driver Pelvis Primary Y	B-1
B-2	Passenger Upper Rib Y Primary	B-2
	Passenger Lower Rib Y Primary	B-2
	Passenger Lower Spine Y Primary	B-2
	Passenger Pelvis Y Primary	B-2

The following additional data plots for this test can be obtained from the research and development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov

LIST OF DATA PLOTS...(CONTINUED)

Driver Head X Primary
Driver Head Y Primary
Driver Head Z Primary
Driver Head Resultant Primary
Driver Head Primary X Velocity
Driver Head Primary Y Velocity
Driver Head Primary Z Velocity
Driver Head X Redundant
Driver Head Y Redundant
Driver Head Z Redundant
Driver Head Resultant Redundant
Driver Head Redundant X Velocity
Driver Head Redundant Y Velocity
Driver Head Redundant Z Velocity
Driver Upper Neck Force X
Driver Upper Neck Force Y
Driver Upper Neck Force Z
Driver Upper Neck Force Resultant
Driver Upper Neck Moment X
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Neck Moment Resultant
Driver Upper Rib Primary Y Velocity
Driver Lower Rib Primary Y Velocity
Driver Lower Spine Primary Y Velocity
Driver Pelvis Primary Y Velocity
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y

LIST OF DATA PLOTS...(CONTINUED)

Driver Upper Rib Redundant Y Velocity
Driver Lower Rib Redundant Y Velocity
Driver Lower Spine Redundant Y Velocity
Driver Pelvis Redundant Y Velocity
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head Resultant Primary
Passenger Head Primary X Velocity
Passenger Head Primary Y Velocity
Passenger Head Primary Z Velocity
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
Passenger Head Resultant Redundant
Passenger Head Redundant X Velocity
Passenger Head Redundant Y Velocity
Passenger Head Redundant Z Velocity
Passenger Upper Neck Force X
Passenger Upper Neck Force Y
Passenger Upper Neck Force Z
Passenger Upper Neck Force Resultant
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Y
Passenger Upper Neck Moment Z
Passenger Upper Neck Moment Resultant

LIST OF DATA PLOTS...(CONTINUED)

Passenger Upper Rib Primary Y Velocity
Passenger Lower Rib Primary Y Velocity
Passenger Lower Spine Primary Y Velocity
Passenger Pelvis Primary Y Velocity
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
Passenger Upper Rib Redundant Y Velocity
Passenger Lower Rib Redundant Y Velocity
Passenger Lower Spine Redundant Y Velocity
Passenger Pelvis Redundant Y Velocity
Passenger Thorax Contact
Passenger Pelvis Contact
Vehicle Right Sill at Front Seat X
Vehicle Right Sill at Front Seat Y
Vehicle Right Sill at Front Seat Z
Vehicle Right Sill Front Seat Resultant
Vehicle Right Sill at Front Seat X Velocity
Vehicle Right Sill at Front Seat Y Velocity
Vehicle Right Sill at Front Seat Z Velocity
Vehicle Right Sill at Rear Seat X
Vehicle Right Sill at Rear Seat Y
Vehicle Right Sill at Rear Seat Z
Vehicle Right Sill Rear Seat Resultant
Vehicle Right Sill at Rear Seat X Velocity
Vehicle Right Sill at Rear Seat Y Velocity
Vehicle Right Sill at Rear Seat Z Velocity
Vehicle Rear Floor Above Axle X
Vehicle Rear Floor Above Axle Y
Vehicle Rear Floor Above Axle Z
Vehicle Rear Floor Above Axle Resultant
Vehicle Rear Floor Above Axle X Velocity
Vehicle Rear Floor Above Axle Y Velocity
Vehicle Rear Floor Above Axle Z Velocity

LIST OF DATA PLOTS...(CONTINUED)

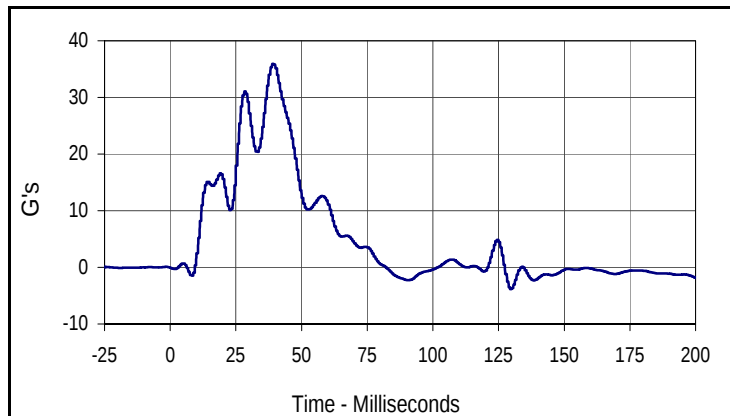
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Vehicle Left Sill at Front Door Y
Vehicle Left Sill at Rear Door Y Velocity
Vehicle Left Sill at Front Door Y Velocity
Vehicle Left Front Door C/L Y
Vehicle Right Rear Occupant Compartment
Vehicle Left Front Door Mid Rear Y
Vehicle Left Front Door Upper CL Y
Vehicle Left Front Door CL Y Velocity
Vehicle Right Rear Occupant Compartment Y Velocity
Vehicle Left Front Door Mid Rear Y Velocity
Vehicle Left Rear Door Upper CL Y Velocity
Vehicle Left Rear Door Mid Rear Y
Vehicle Left Rear Door Upper C/L Y
Vehicle Left Rear Door Mid Rear Y Velocity
Vehicle Left Rear Door Upper CL Y Velocity
Vehicle B-Post Lower Y
Vehicle B-Post Middle Y
Vehicle B-Post Lower Y Velocity
Vehicle B-Post Middle Y Velocity
Vehicle A-Post Lower Y
Vehicle A-Post Middle Y
Vehicle A-Post Lower Y Velocity
Vehicle A-Post Middle Y Velocity
Vehicle Left Front Seat Track
Vehicle Rear Seat Structure
Vehicle Left Front Seat Track Y Velocity
Vehicle Rear Seat Structure Y Velocity
Vehicle CG X
Vehicle CG Y
Vehicle CG Z
Vehicle CG Resultant
Vehicle CG X Velocity
Vehicle CG Y Velocity
Vehicle CG Z Velocity

LIST OF DATA PLOTS...(CONTINUED)

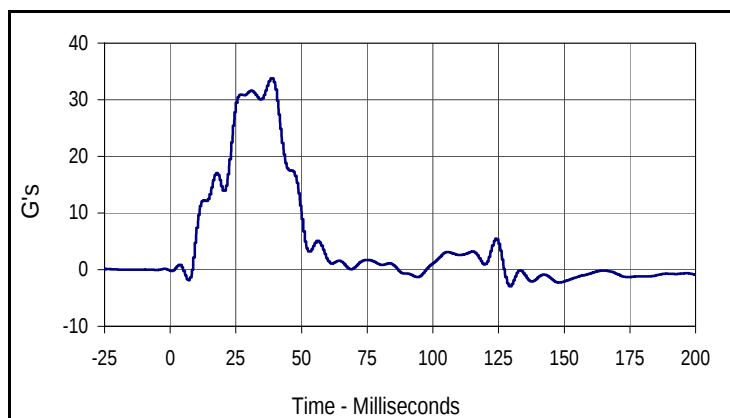
Driver Upper Rib Primary Y
Driver Lower Rib Primary Y
Driver Lower Spine Primary Y
Driver Pelvis Primary Y
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Passenger Upper Rib Primary Y
Passenger Lower Rib Primary Y
Passenger Lower Spine Primary Y
Passenger Pelvis Primary Y
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
MDB CG X
MDB CG Y
MDB CG Z
MDB CG Resultant
MDB CG X Velocity
MDB CG Y Velocity
MDB CG Z Velocity
MDB Rear X
MDB Rear Y
MDB Rear X Velocity
MDB Rear Y Velocity
MDB Right Bumper Contact

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

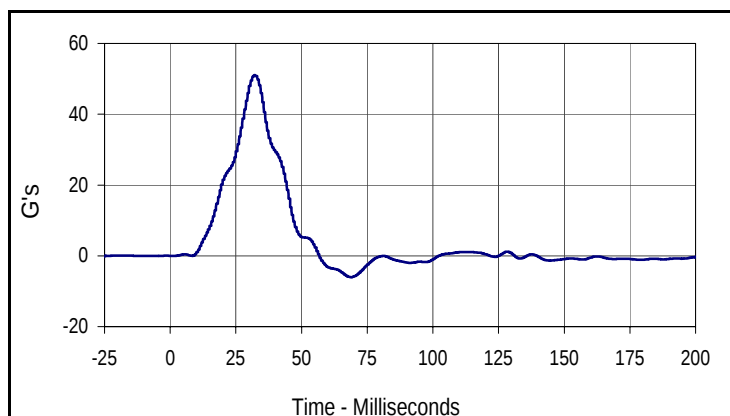
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 NHTSA No.: KA0500



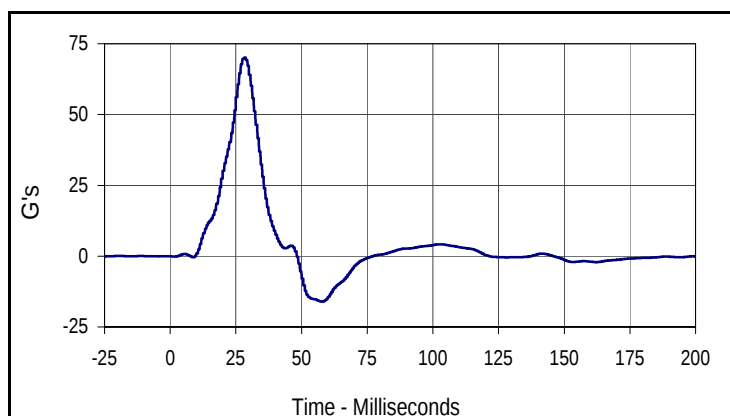
Curve Description			
Driver Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIR	FIR100	G's
Max	Time	Min	Time
35.9	38.8	-3.9	129.4



Curve Description			
Driver Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIR	FIR100	G's
Max	Time	Min	Time
33.8	38.2	-2.9	129.4



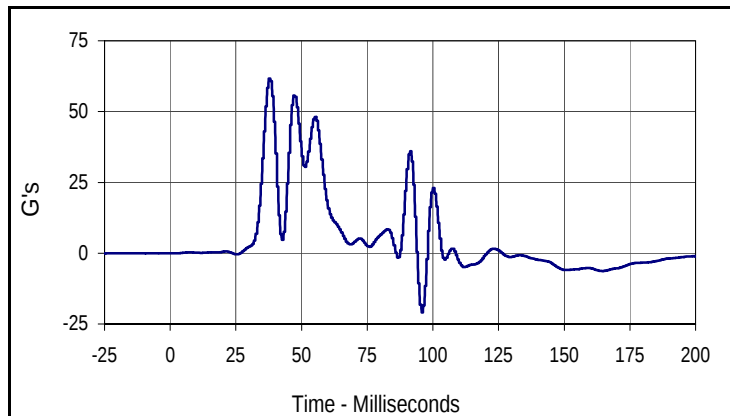
Curve Description			
Driver Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIR	FIR100	G's
Max	Time	Min	Time
51.0	31.9	-6.0	68.8



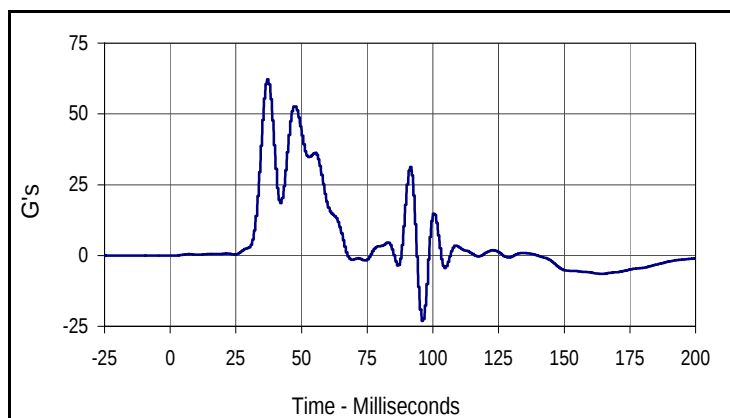
Curve Description			
Driver Pelvis Primary Y			
CURNO	Type	SAE Class	Units
004	FIR	FIR100	G's
Max	Time	Min	Time
70.2	28.2	-16.1	57.5

Test Vehicle: 2010 Kia Forte EX 4-Door Sedan
 Test Program: 55/28 km/h Side Impact NCAP

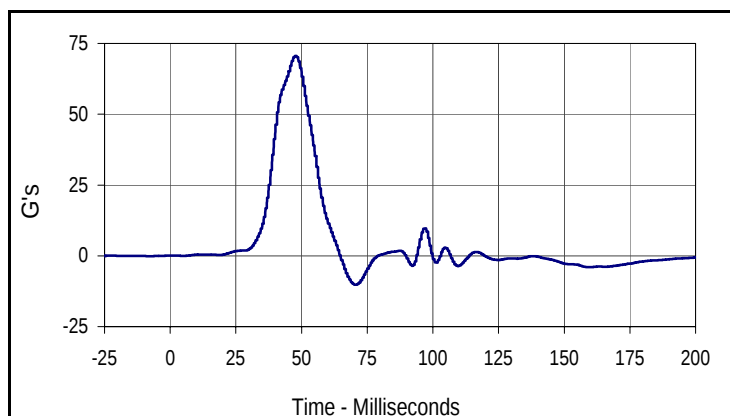
Test Date: 2/4/10
 NHTSA No.: KA0500



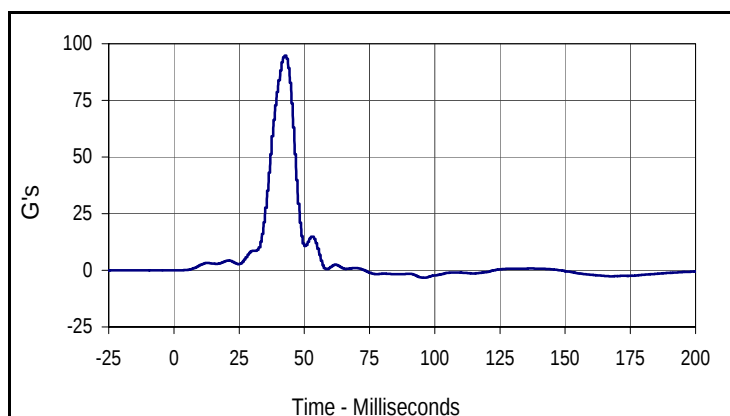
Curve Description			
Passenger Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
005	FIR	FIR100	G's
Max	Time	Min	Time
61.7	37.5	-20.9	95.7



Curve Description			
Passenger Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
006	FIR	FIR100	G's
Max	Time	Min	Time
62.2	36.9	-23.1	95.7



Curve Description			
Passenger Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
007	FIR	FIR100	G's
Max	Time	Min	Time
70.6	47.5	-10.2	70.7



Curve Description			
Passenger Pelvis Y Primary			
CURNO	Type	SAE Class	Units
008	FIR	FIR100	G's
Max	Time	Min	Time
94.8	42.5	-3.3	95.7

APPENDIX C
SID/HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: SID / HIII External Measurements
 ATD Serial No.: 275

Test Date: 2/2/10
 Test I.D.: N/A



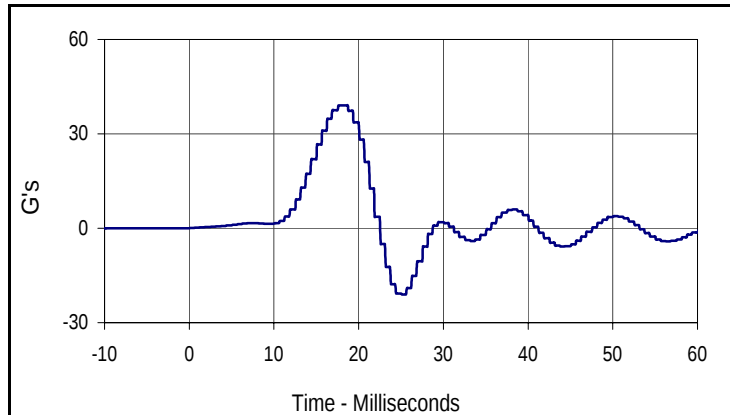
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	892	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	515	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	516	Pass
KV- Knee Pivot From Floor	mm	490 to 505	504	Pass
HW- Hip Width	mm	356 to 391	362	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 274

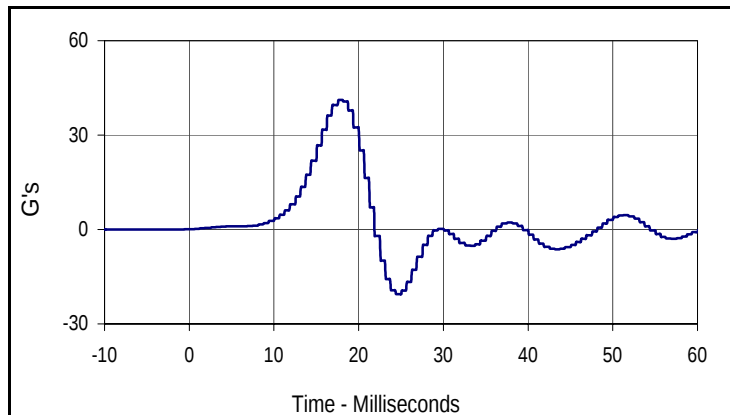
Test Date: 2/2/10
 Test I.D.: TH02b



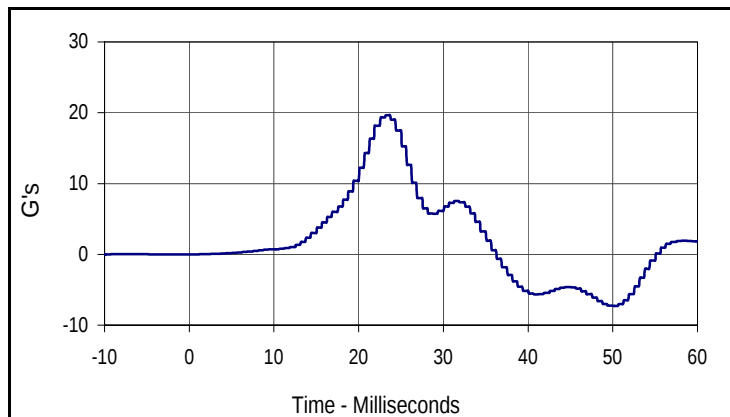
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.26	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	39.1	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	41.2	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
39.1	18.2	-21.0	25.1



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
41.2	17.6	-20.5	24.4



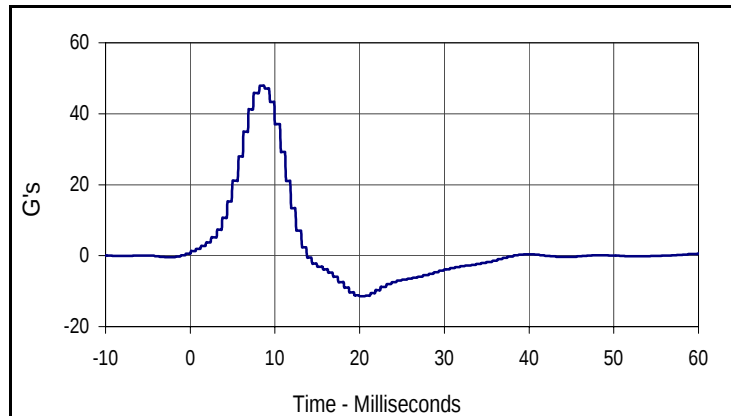
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
19.6	23.2	-7.3	50.1

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 275

Test Date: 2/2/10
 Test I.D.: PL02b



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
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	48.0	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



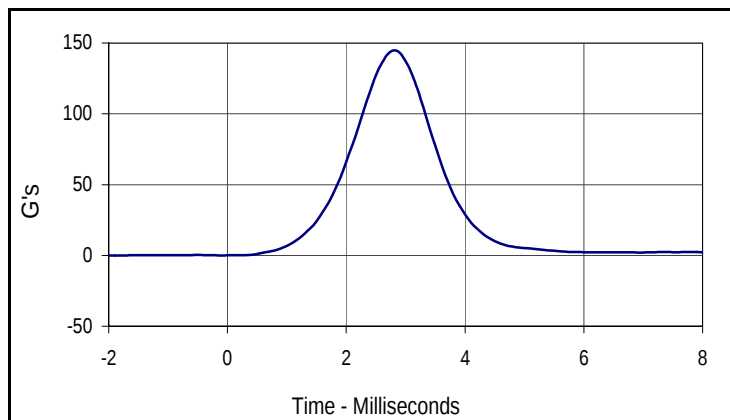
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
48.0	8.2	-11.5	20.0

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 275

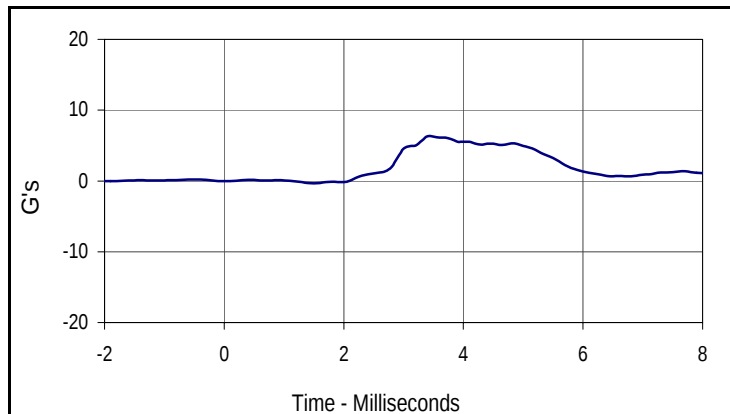
Test Date: 2/2/10
 Test I.D.: HD02B



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	120.0 to 150.0	144.8	Pass
Peak Longitudinal Acceleration	G's	≤15.0	6.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.6	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
144.8	2.8	0.0	-0.1



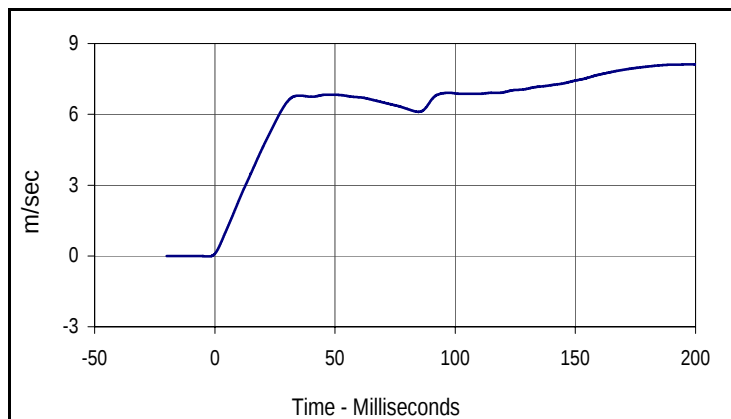
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.3	3.4	-0.3	1.5

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 275

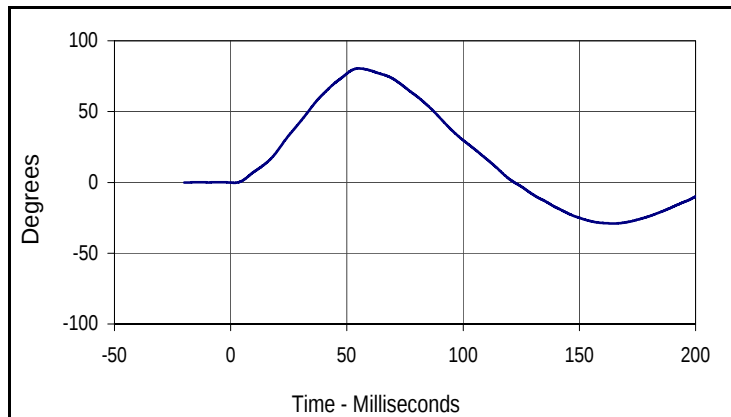
Test Date: 2/2/10
 Test I.D.: NB02A



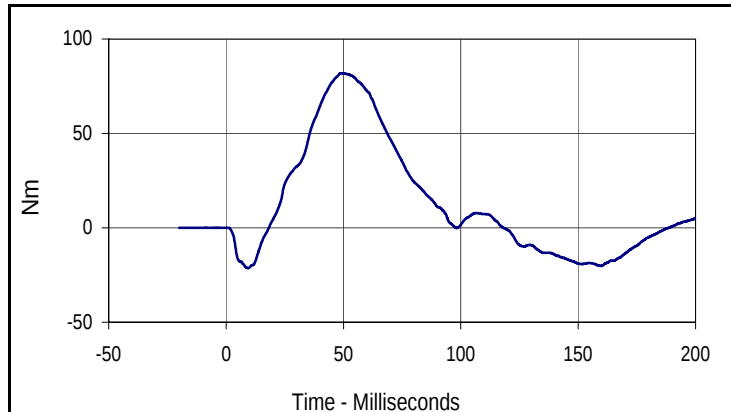
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.95	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.35	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.62	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.51	Pass
	40 to 70	m/sec	6.27 to 7.64	6.83	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	80.5	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	6.2	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	66.9	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	81.9	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.1	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
8.1	200.0	0.0	-2.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
80.5	55.1	-29.0	164.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
81.9	48.9	-21.4	9.3

Test Program: SID / HIII External Measurements
 ATD Serial No.: 274

Test Date: 2/2/10
 Test I.D.: N/A



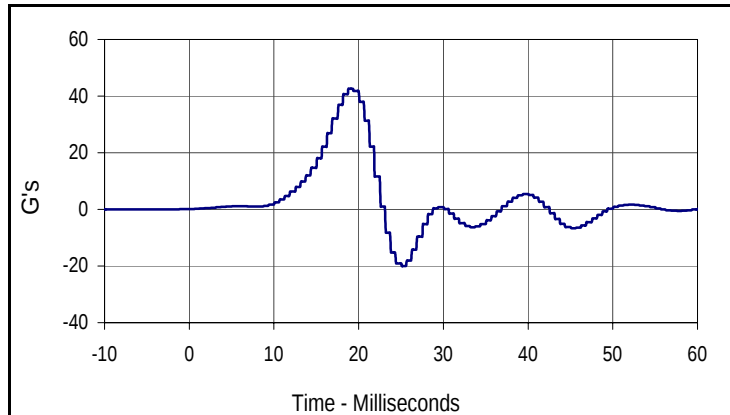
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	893	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	514	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	363	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 274

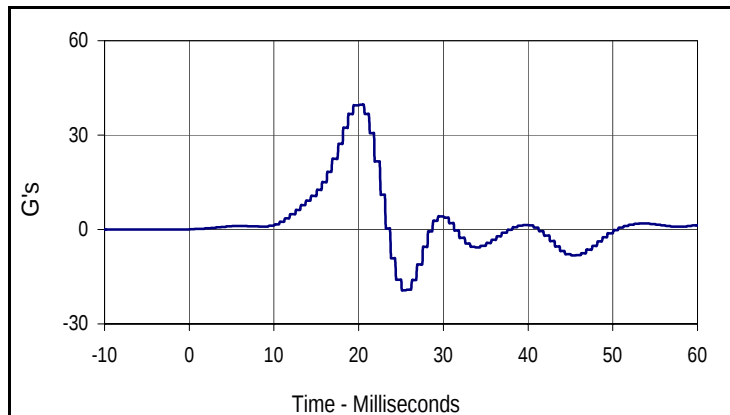
Test Date: 2/2/10
 Test I.D.: TH02a



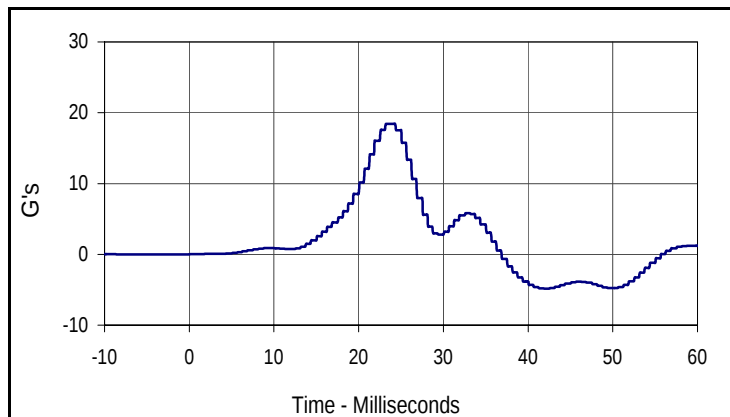
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.32	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	42.5	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	39.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	18.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
42.5	18.8	-20.0	25.1



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
39.7	20.1	-19.3	25.1



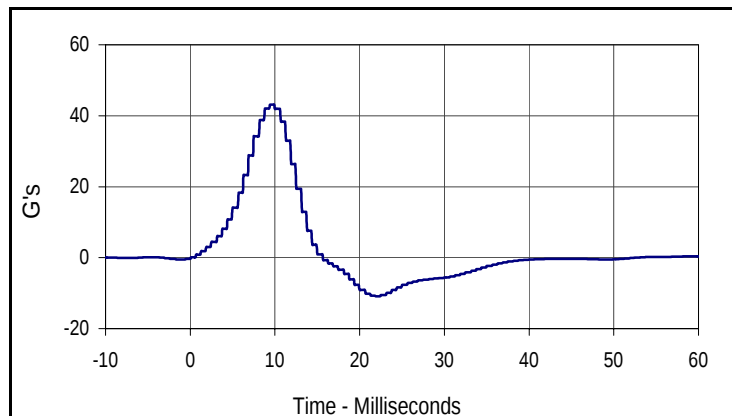
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
18.4	23.8	-4.8	41.9

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 274

Test Date: 2/2/10
 Test I.D.: PL02A



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
Probe Velocity	m/s	4.21 to 4.33	4.32	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	43.2	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



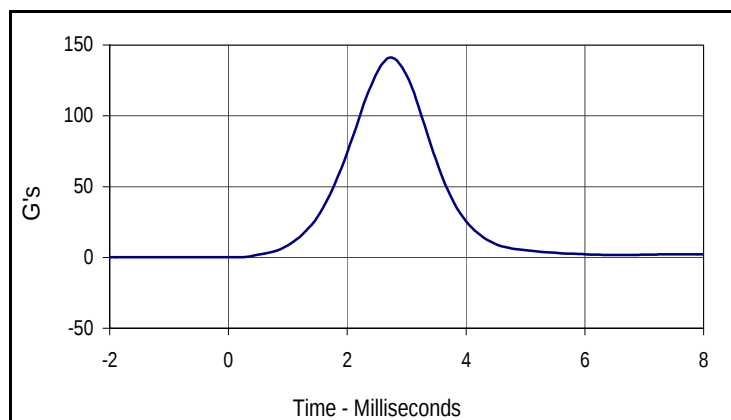
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.2	9.4	-10.9	21.9

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 274

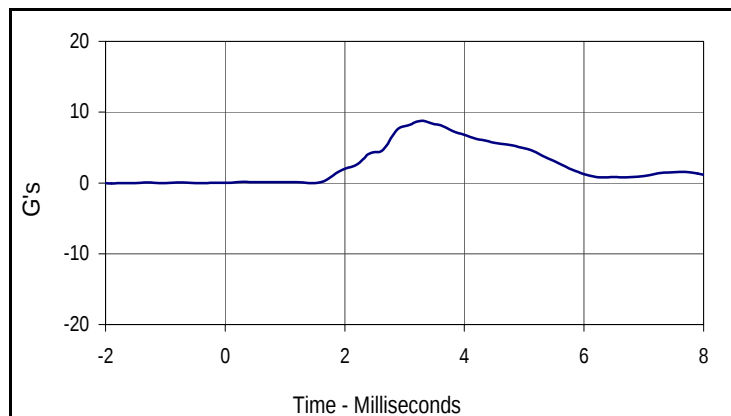
Test Date: 2/2/10
 Test I.D.: HD02A



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	120.0 to 150.0	141.0	Pass
Peak Longitudinal Acceleration	G's	≤15.0	8.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.6	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
141.0	2.7	0.1	0.1



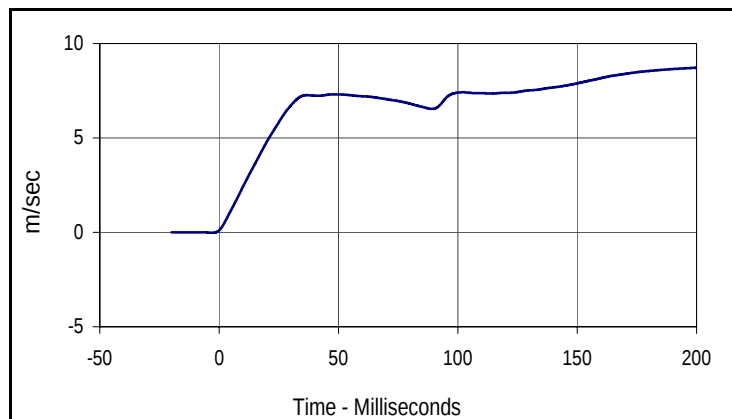
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.8	3.3	0.0	-1.9

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 274

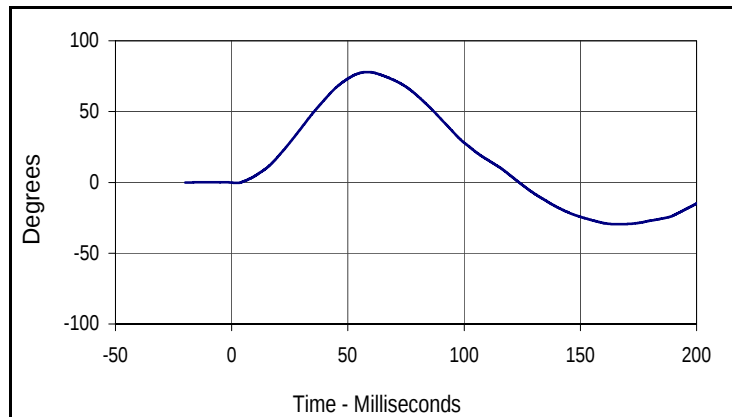
Test Date: 2/2/10
 Test I.D.: NB01D



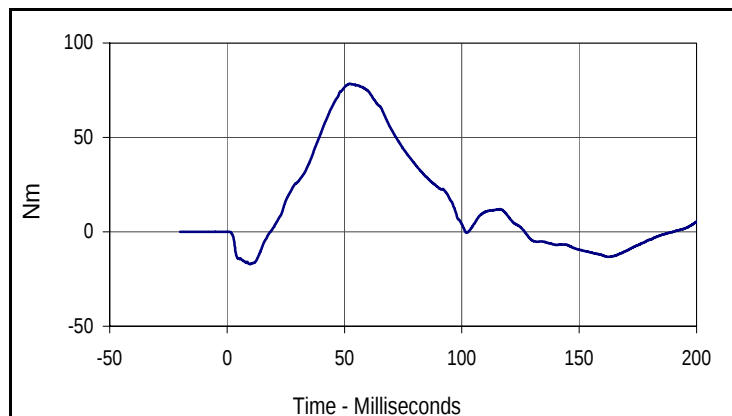
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.93	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.42	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.80	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.72	Pass
	40 to 70	m/sec	6.27 to 7.64	7.31	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	77.9	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	6.3	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	65.3	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	78.5	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.5	Pass
Overall Test Results				Pass	



Curve Description			
ion			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
8.7	200.0	0.0	-2.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
77.9	58.4	-29.6	165.9



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
78.5	52.1	-17.1	9.8

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

Test Program: SID / HIII External Measurements
 ATD Serial No.: 274

Test Date: 2/5/10
 Test I.D.: N/A



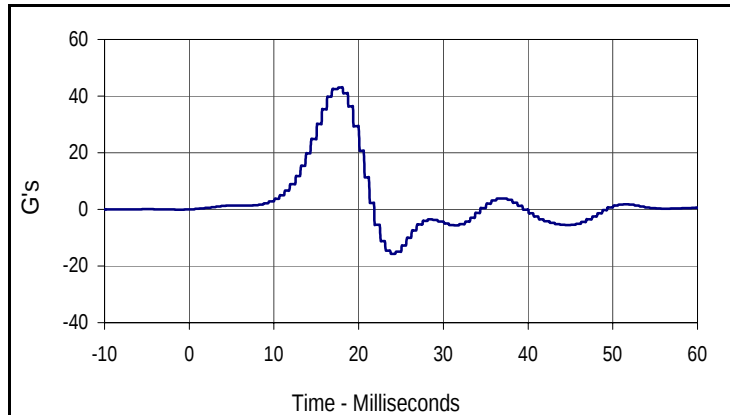
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	893	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	512	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	516	Pass
KV- Knee Pivot From Floor	mm	490 to 505	493	Pass
HW- Hip Width	mm	356 to 391	361	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 274

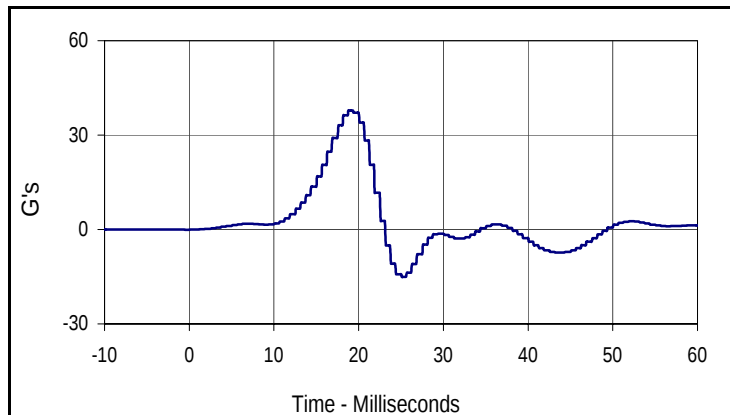
Test Date: 2/5/10
 Test I.D.: TH02E



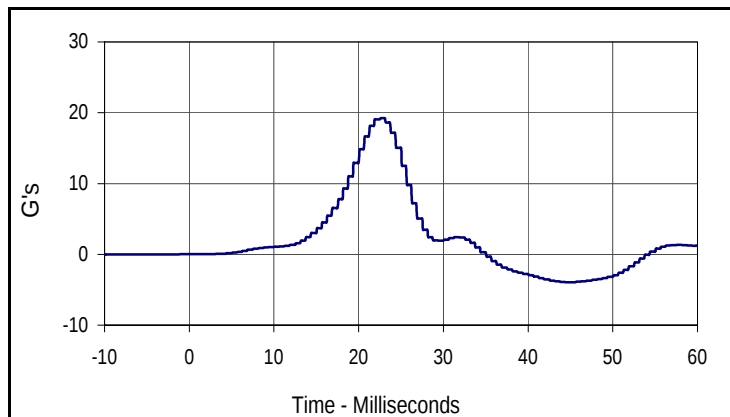
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.25	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	43.1	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	37.8	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.1	17.6	-15.7	23.8



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
37.8	18.8	-15.1	25.1



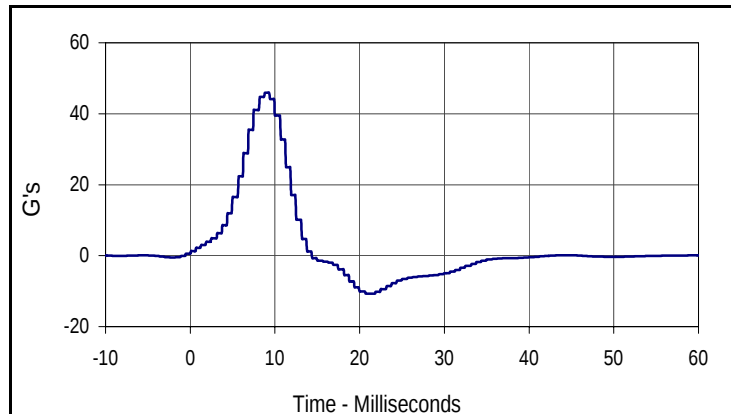
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
19.2	22.6	-3.9	44.4

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 274

Test Date: 2/5/10
 Test I.D.: PL02E



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
Probe Velocity	m/s	4.21 to 4.33	4.23	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	45.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



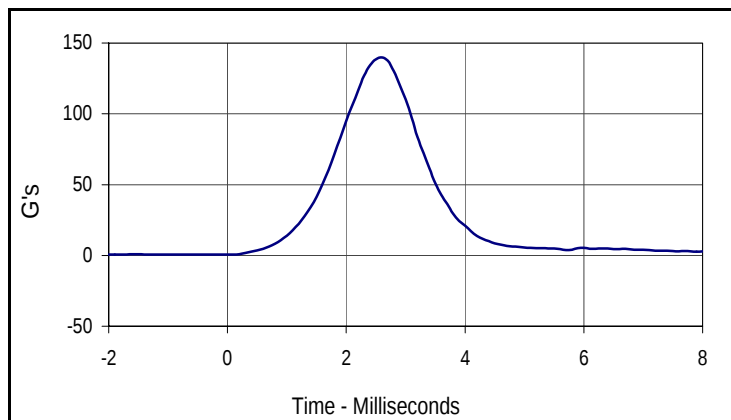
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
45.9	8.8	-10.7	21.3

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 274

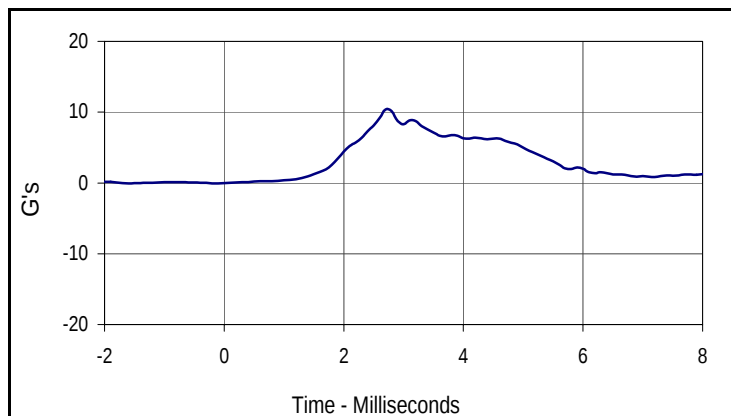
Test Date: 2/8/10
 Test I.D.: HD02I



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	120.0 to 150.0	139.9	Pass
Peak Longitudinal Acceleration	G's	≤15.0	10.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.1	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
139.9	2.6	0.5	0.1



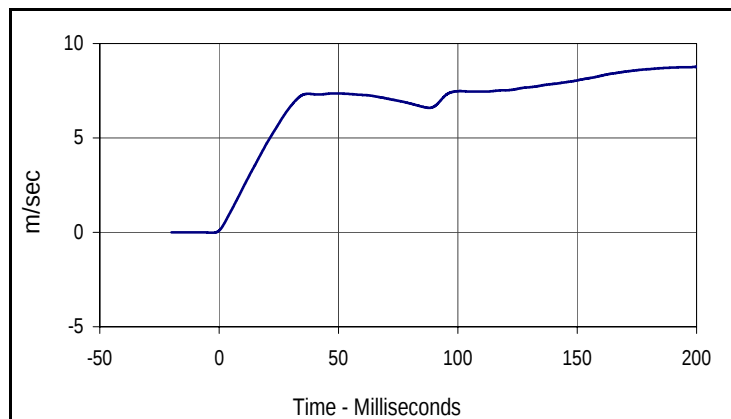
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
10.4	2.7	-0.1	-0.1

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 274

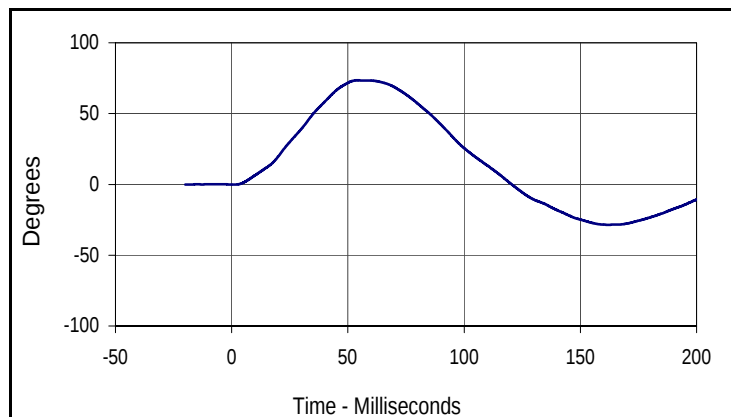
Test Date: 2/5/10
 Test I.D.: NB02D



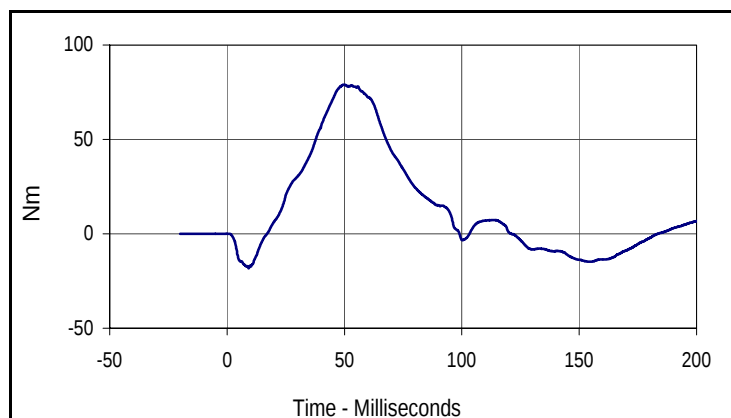
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.10	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.37	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.73	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.69	Pass
	40 to 70	m/sec	6.27 to 7.64	7.36	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	73.5	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	4.4	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	66.4	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	79.0	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.3	Pass
Overall Test Results				Pass	



Curve Description			
ion			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
8.8	200.0	0.0	-2.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
73.5	54.1	-28.5	161.8



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
79.0	49.7	-18.3	9.2

Test Program: SID / HIII External Measurements
 ATD Serial No.: 275

Test Date: 2/5/10
 Test I.D.: N/A



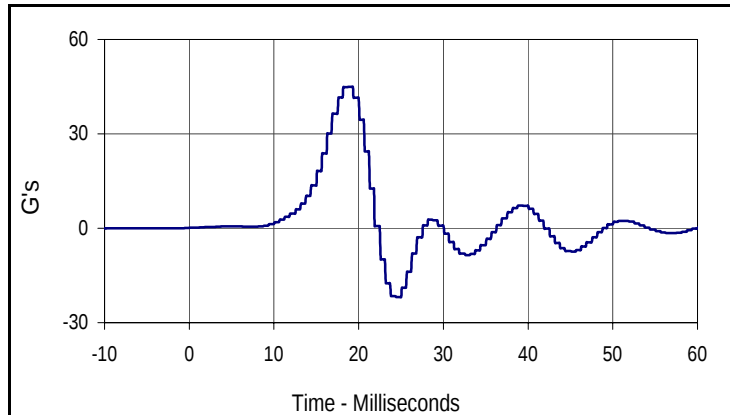
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	890	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	514	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	515	Pass
KV- Knee Pivot From Floor	mm	490 to 505	504	Pass
HW- Hip Width	mm	356 to 391	357	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 275

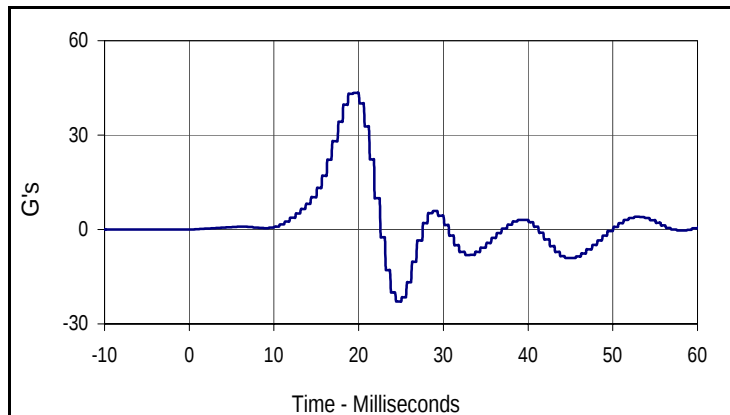
Test Date: 2/5/10
 Test I.D.: TH02E



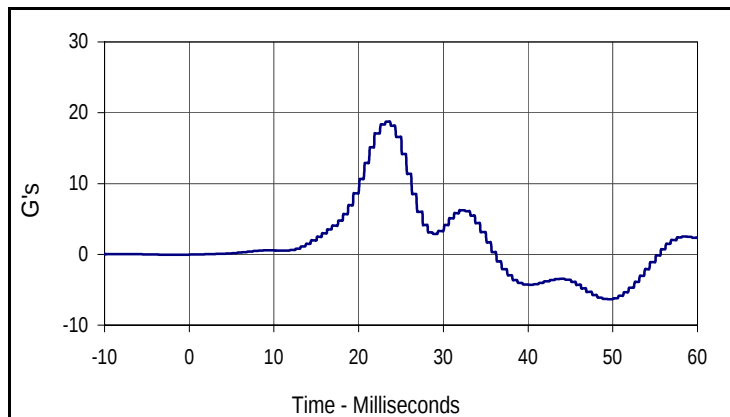
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.31	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	45.0	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	43.5	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	18.8	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
45.0	18.8	-21.8	24.4



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
43.5	19.4	-22.9	24.4



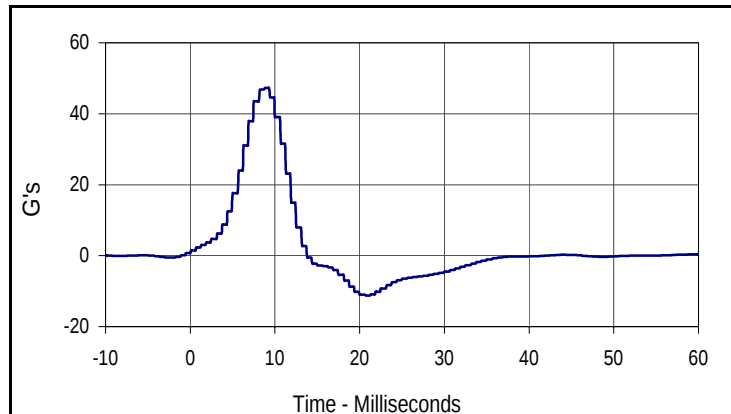
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
18.8	23.2	-6.3	49.4

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 275

Test Date: 2/5/10
 Test I.D.: PL02F



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
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	47.3	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



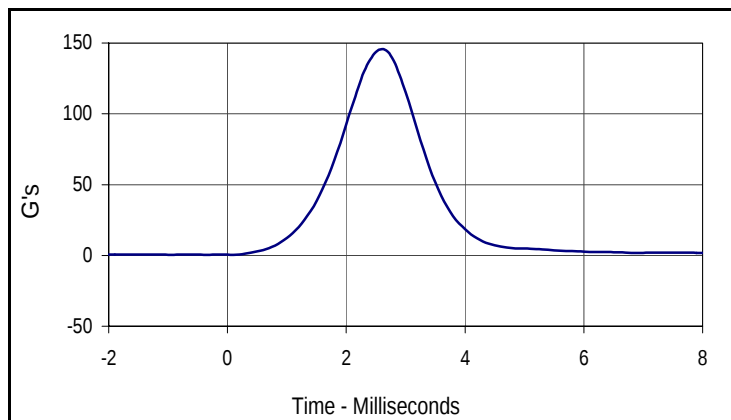
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
47.3	8.8	-11.3	20.7

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 275

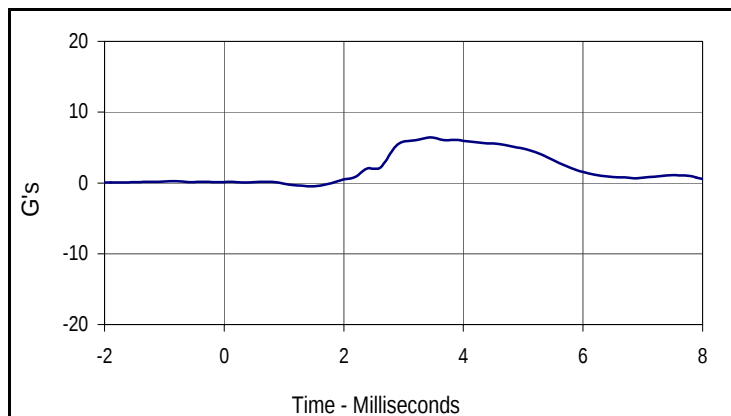
Test Date: 2/5/10
 Test I.D.: HD02H



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	120.0 to 150.0	145.7	Pass
Peak Longitudinal Acceleration	G's	≤15.0	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.3	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
145.7	2.6	0.5	-0.3



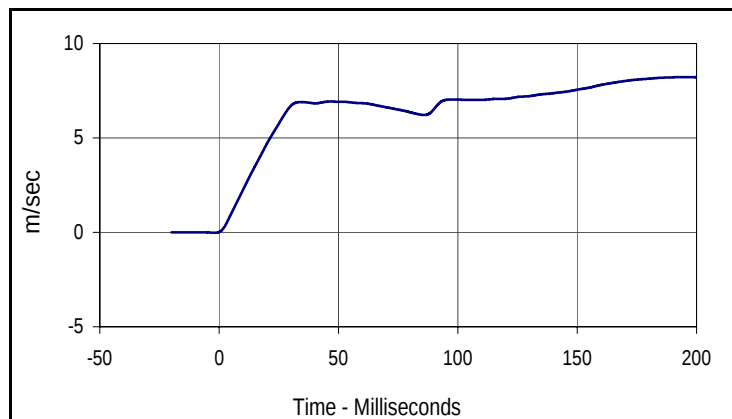
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.4	3.5	-0.5	1.5

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 275

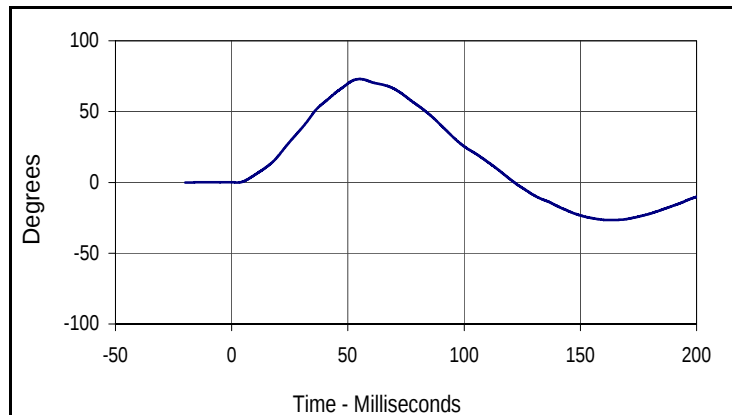
Test Date: 2/5/10
 Test I.D.: NB02C



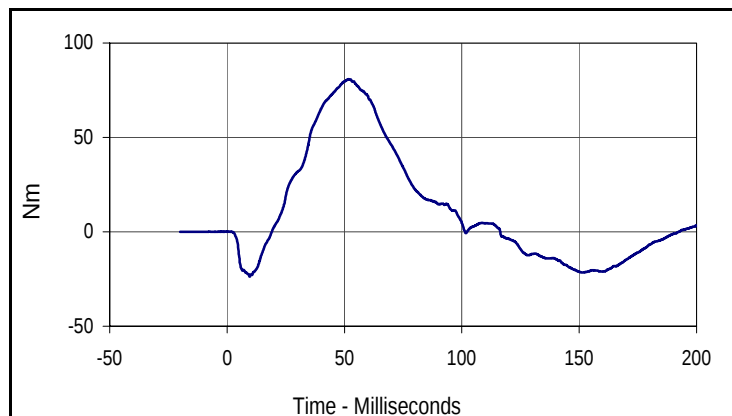
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.92	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.25	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.69	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.70	Pass
	40 to 70	m/sec	6.27 to 7.64	6.93	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	73.0	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	3.3	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	66.5	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	80.8	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.6	Pass
Overall Test Results					Pass



Curve Description			
ion			
CURNO	Type	SAE Class	Units
001	FIL	none	m/sec
Max	Time	Min	Time
8.2	200.0	0.0	-1.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	none	Degrees
Max	Time	Min	Time
73.0	55.1	-26.6	162.4



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	none	Nm
Max	Time	Min	Time
80.8	51.8	-23.8	9.7