REPORT NUMBER TR-P27120-01-NC

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

GENERAL MOTORS CORPORATION
2007 SAAB 9-3
4-DOOR SEDAN

NHTSA NUMBER: A70101

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MAY 8, 2007

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
RULEMAKING
MAIL CODE: W43-410
1200 NEW JERSEY AVE SE
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-03-D-32005.

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Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipients Catalog No.
TR-P27120-01-NC		

4. Title and Subtitle	5. Report Date
Final Report of Side Impact New Car Assessment Program Testing of a 2007 Saab 9-3 4-Door Sedan NHTSA No. A70101	May 8, 2007
	6. Performing Organization Code KAR
7. Authors Mr. Johnny H. Dutto, Project Engineer, Karco Mr. Frank Richardson, Program Manager, Karco	**8. Performing Organization Report No.** TR-P27120-01-NC
9. Performing Organization Name and Address Karco Engineering, LLC 9270 Holly Rd. Adelanto, CA, 92301	**10. Work Unit No.**
	11. Contract or Grant No. DTNH22-03-D-32005
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code: W43-410 1200 New Jersey Ave SE Washington, D.C 20590	**13. Type of Report and Period Covered** Final Test Report
	14. Sponsoring Agency Code DOT/NHTSA/NRM/OCS

15. Supplementary Notes

16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test was conducted on the subject 2007 Saab 9-3 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 May 8, 2007. The impact velocity of the Moving Deformable Barrier was 62.17 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 33.0 deg. C. The target vehicle's maximum post-test static crush was 305 mm located at level 2. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver SID/HIII	Pass. SID/HIII
Left Upper Rib (LUR) G's	49.6	75.8
Left Lower Rib (LLR) G's	48.0	67.2
Lower Spine (T_{12}) G's	62.4	57.6
Thoracic Trauma Index (TTI) G's	56.0	67.0
Pelvis (PEV) G's	83.1	53.5

17. Key Words	18. Distribution Statement
New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) Side Impact Dummy (SID/HIII)	Copies of this report are available from: National Highway Traffic Safety Admin. NHTSA Technical Reference Division 1200 New Jersey Ave SE Washington, DC 20590

19. Security Classification of this report	20. Security Classification of this page	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED	176	

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SECTION 1
PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This Side Impact NCAP test is conducted as part of the FY' 2007 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-03-D-32005. The purpose of this test is to generate comparative side impact data on a 2007 Saab 9-3 4-Door Sedan manufactured by General 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 2007 Saab 9-3 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 62.17 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 1714 kg and the test weight of the MDB was 1361 kg. The test was conducted at KARCO Engineering, LLC in Adelanto, California, on May 8, 2007.

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)

SUPPLEMENTAL RESTRAINT INFORMATION

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

The test vehicle was instrumented with twenty-one (21) 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

The driver and passenger doors remained closed during impact. The test vehicle sustained a maximum static crush of 305 mm at level 2, 1050 mm rearward of the left vertical impact point. The driver SID/Hybrid III, Serial No. 274 and the passenger SID/Hybrid III, Serial No. 275 were calibrated prior to this test. The SID/Hybrid III injury criteria is summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	56	67
Peak Pelvic G's (PEV)	G's	83	53

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: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

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	1.609
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	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: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	A70101	Anti-Lock Brakes	Yes
Make	Saab	All Wheel Drive	No
Model	9-3	Power Steering	Yes
Body Style	4-Door Sedan	Driver Front Airbag	Yes
Vin No.	YS3FD46YX71104947	Driver Side Torso Airbag	Yes
Color	Black	Driver Side Head Airbag	No
Delivery Date	4/23/2007	Driver Curtain/Airbag	Yes
Odometer (Miles)	125.6	Rear Pass. Airbag	No
Dealer	Saab of Mission Viejo	Rear Pass. Side Airbag	No
Transmission	6-Speed Manual	Rear Pass. Head Airbag	No
Final Drive	Front	Rear Pass. Curtain/Airbag	Yes
Type/No. Cyl.	Inline 4-Cylinder	Pre-Tensioners	Yes
Engine Disp. (L)	2.0	Load Limiters	Yes
Engine Placement	Transverse	Bucket Seats	Yes
Roof Rack	No	Air Cond.	Yes
Sunroof/T-Top	No	AM/FM CD	Yes
Tinted Glass	No	Tilt Steering	Yes
Traction Control	No	Automatic Door Locks	No
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	No
Rear Disc	Yes	Other	None

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Saab Automobile AB	GVWR (kg)	1887
Date of Manufacture	Nov-06	GAWR Front (kg)	1125
		GAWR Rear (kg)	1012

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				421
Cargo Weight (RCLW) (kg)				81

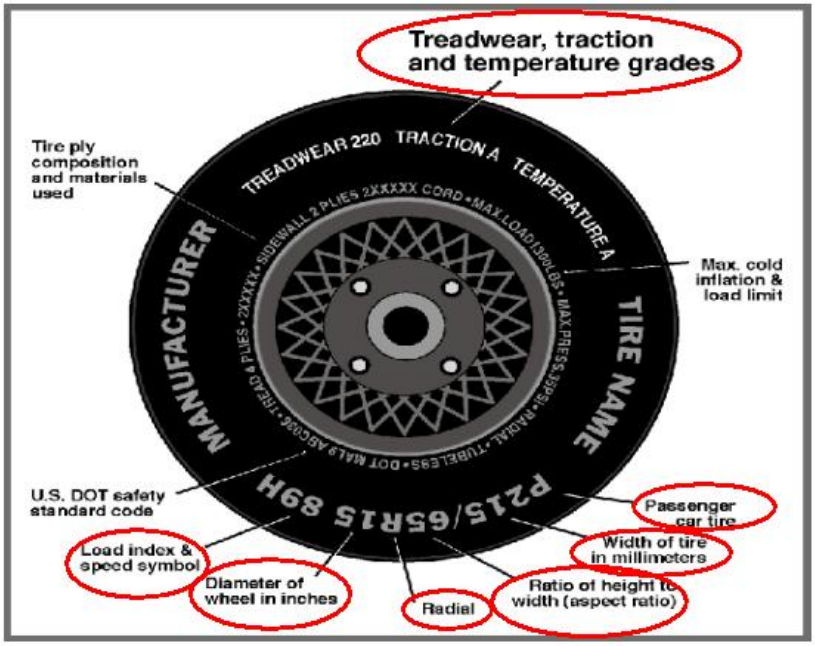
DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

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)	350	350
Cold Pressure (kpa)	240	240
Recommended Tire Size	P215/55R16 97H	P215/55R16 97H
Tire Size on Vehicle	P215/55R16 97H	P215/55R16 97H
Tire Manufacturer	Pirelli	Pirelli
Treadwear	400	400
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1 Rayon, 2 Steel	1 Rayon, 2 Steel
Tire Plies Body	1 Rayon, 2 Nylon	1 Rayon, 2 Nylon
Load Index/Speed Symbol	1609, 974H	1609, 974H
Tire Material	Rayon, Nylon, Steel	Rayon, Nylon, Steel
DOT Safety Code Right	XT BT H608 4506	XT BT H608 4506
DOT Safety Code Left	XT BT H608 4506	XT BT H608 4506

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	454	308	762	492	402	894
Right	kg	431	283	714	460	360	820
Ratio	%	60.0	40.0	100	55.5	44.5	100
Totals	kg	885	591	1476	952	762	1714

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1476
Weight of 2 P572 ATD's	kg	161
Rated Cargo/Luggage Wt. (RCLW)	kg	81
Calculated Vehicle Target Wt. (TVTW)	kg	1718

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	690	699	678	688	1072
As Tested	mm	677	698	647	677	1190
Fully Loaded	mm	677	691	643	658	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2677
Total Vehicle Length at Left Side	mm	3060
Total Vehicle Length at Centerline	mm	4621
Total Vehicle Length at Right Side	mm	3060
Weight of Ballast In Cargo Area	kg	44.45
Amount of Stoddard Solvent in Fuel Tank	liters	57.73

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	2677
Target Impact Point Aft of Front Axle	mm	399
Actual Impact Point Aft of Front Axle	mm	396

DATA SHEET NO. 1...(CONTINUED)

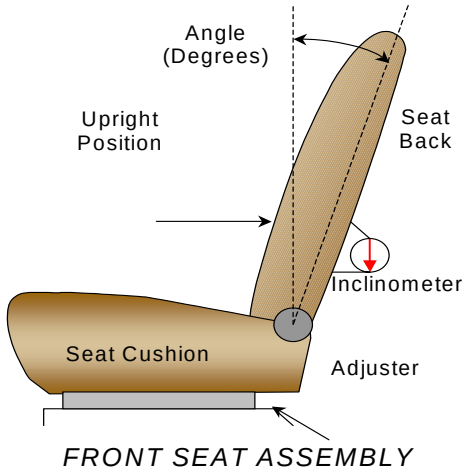
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturer's designated angle. The procedure is as follows: Seat back angle was measured at the seat back using a digital inclinometer.



FRONT SEAT ASSEMBLY

SEAT BACK ANGLES

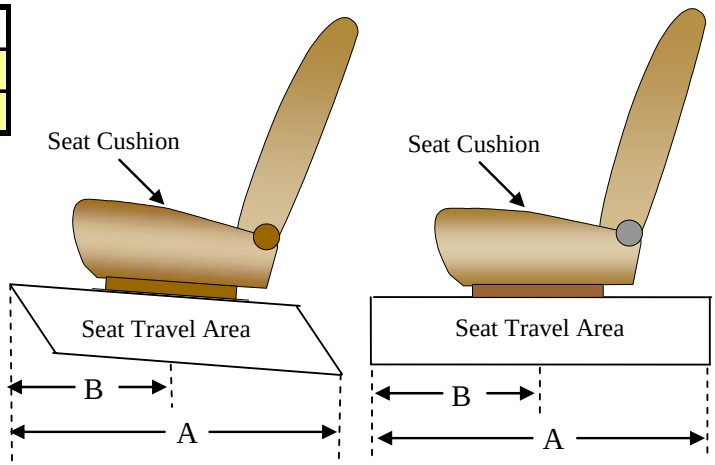
	Deg.
Driver w/seated Dummy	11.2 @ Seat back
Passenger w/seated Dummy	N/A

SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position at the highest vertical seat height to rearmost position at the lowest vertical seat height. The seat was set at the longitudinal mid position. 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	280 mm	140 mm
Rear Seat	N/A	N/A



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	2
Rear Seat	Fixed	Fixed

DATA SHEET NO. 1…(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

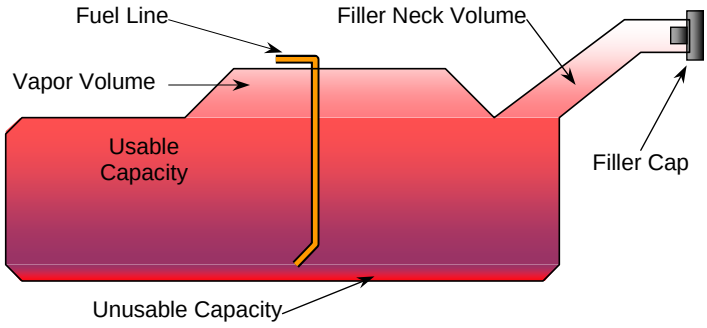
Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

.

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	62.07
Usable Capacity of "Optional" Tank	
Usable Capacity used for FMVSS 301	57.08 to 58.33
Actual Amount of Solvent used	57.73

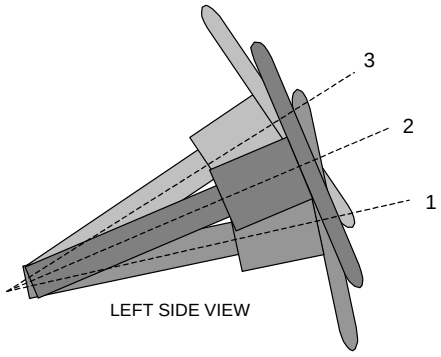
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for approximately two (2) seconds with the ignition in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the 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.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost positon No. 1	20.7	0
Geometric center position No. 2	22.3	22.5
Uppermost position No. 3	24.7	45

DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	454	308		492	402	
Right	kg	431	283		460	360	
Ratio	%	60.0	40.0		55.5	44.5	
Totals	kg	885	591	1476	952	762	1714

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	109	190
Level 2	Occupant H-Point	mm	305	513
Level 3	Mid Door	mm	266	594
Level 4	Window Sill	mm	285	831
Level 5	Window top	mm	129	1371
N/A	Maximum Penetration	mm	305	

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	4
High Speed, MDB On-Board	3
Real Time, Panning	2
Total	12

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

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	62.17
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.00
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	260
B	Top of Bumper	533	800	Right	180
C	Mid Level	686	800	Left	136
D	Top of Stack	813	800	Left	185

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	1
High Speed Cameras	2

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

TEST DUMMY INFORMATION AND CONTACT POINTS

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

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation
Sill Separation	Front & Rear passenger side sill separated
Windshield Damage	Cracked
Window Damage	Front Window Broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 01		Left Rear (Passenger) Occupant Location 04	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	No	No	
Side Torso Airbag	Yes	Yes	No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes		No	
Seat Belt Load Limiter	Yes		No	

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	-3 (left)
Vertical Offset	mm	+/- 20	-5 (below)

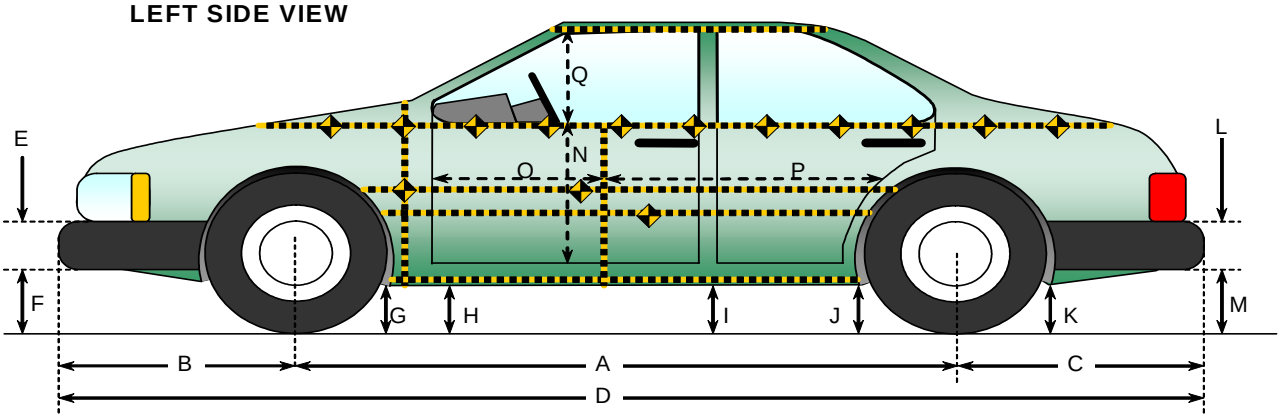
DATA SHEET NO. 5

VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

LEFT SIDE VIEW



VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

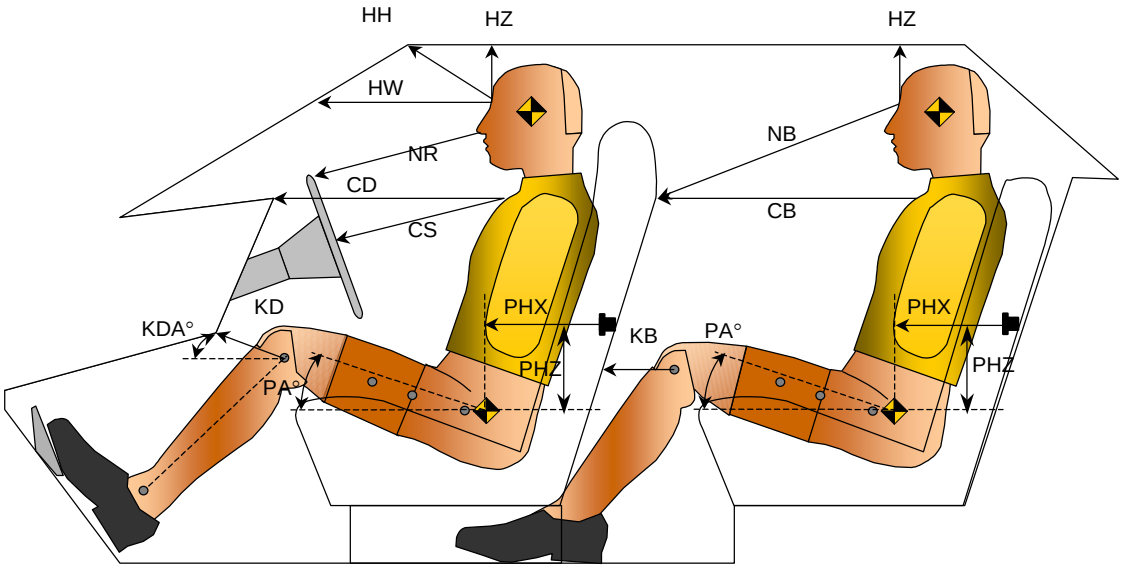
Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2677	2655	-22
B	Front Axle to FSOV	962	996	34
C	Rear Axle to RSOV	981	966	-15
D	Total Length at Centerline	4621	4615	-6
E	Front Bumper Thickness	440	390	-50
F	Front Bumper Bottom to Ground	206	1	-205
G	Sill Height at Front Wheel Well	146	189	43
H	Sill Height at Front Door Leading Edge	147	206	59
I	Sill Height at "B" Pillar	158	168	10
J1	Sill Height at Rear Wheel Well	149	187	38
J2	Pinch Weld Height at Rear Wheel Well	158	253	95
K	Sill Height aft of Rear Wheel Well	197	268	71
L	Rear Bumper Thickness	310	324	14
M	Rear Bumper Bottom to Ground	253	336	83
N	Sill Height to Window Bottom Sill	645	605	-40
O	Front Door Leading Edge to Impact CL	705	715	10
P	Rear Door Trailing Edge to Impact CL	1303	1053	-250
Q	Front Window Opening	401	405	4
R	Right Side Length	3060	3080	20
S	Left Side Length	3060	3017	-43
T	Vehicle Width at "B" Post	1760	1532	-228

DATA SHEET NO. 6

SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



LONGITUDINAL CLEARANCE DIMENSION INFORMATION

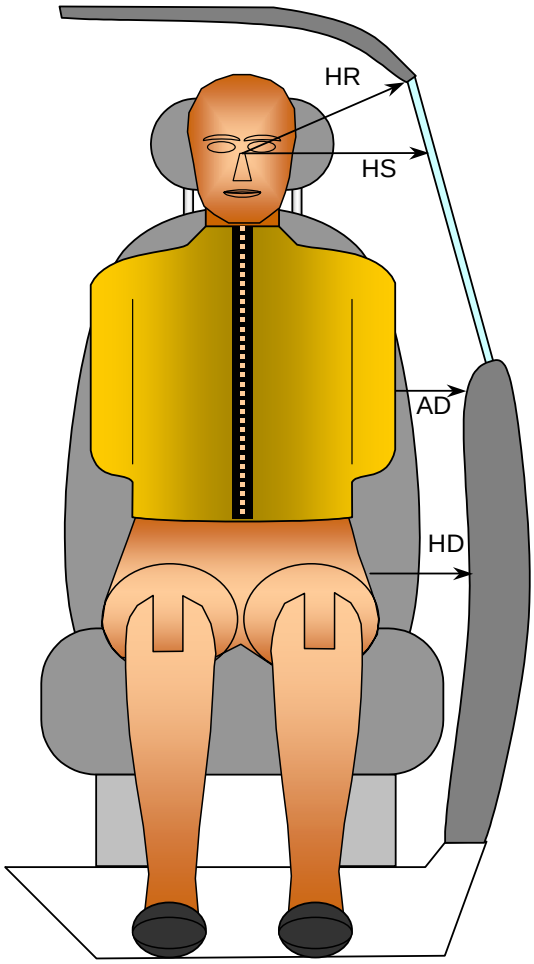
Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length(mm)	Angle	Length(mm)	Angle
HH		Head to Header	475	13.0		
HW		Head to Windshield	623	0.0		
HZ	HZ	Head to Roof	203	90.0	158	90.0
NR	NB	Nose to Rim/Nose to Seat Back	500	11.0	525	15.0
CD	CB	Chest to Dash or Seat Back	605	7.7	498	2.3
CS		Chest to Steering Wheel	422	10.5		
KDL	KBL	Left Knee to Dash or Seat Back	180	23.3	165	
KDR	KBR	Right Knee to Dash or Seat Back	166		180	
PA	PA	Pelvic Angle		24.1		23.5
PHX	PHX	H-Point to Striker (X-Axis)	182		197	
PHZ	PHZ	H-Point to Striker (Z-Axis)	154		266	

DATA SHEET NO. 7

SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



FRONT VIEW OF DUMMY

LATERAL CLEARANCE DIMENSION INFORMATION

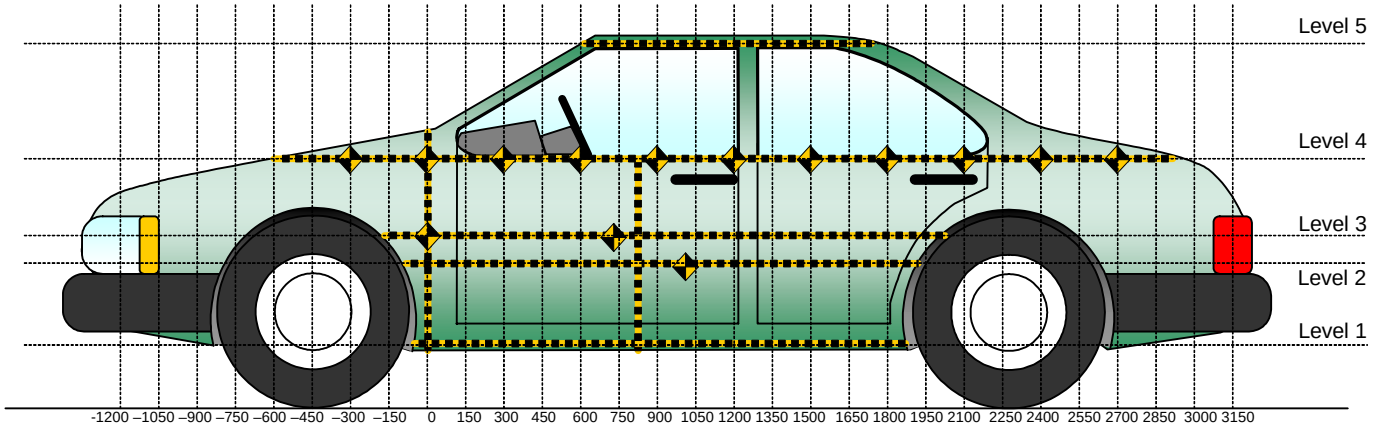
Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	238	220
HS	Head to Side Window	mm	275	285
AD	Arm to Door	mm	6	70
HD	H-Point to Door	mm	160	130

DATA SHEET NO. 8

VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.
Measurments taken 900 mm right of impact reference.
All measurements below in mm.

Level	Measurement Description	Height Above Ground
1	Sill Top	190
2	Occupant H-Point	513
3	Mid Door	594
4	Window Sill	831
5	Window Top	1371

All Dimensions shown in millimeters

DATA SHEET NO. 9

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

	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				724					736					12	
-150				698					726					28	
0	658	639	641	683		706	687	678	716		48	48	37	33	
150	658	645	643	677		714	881	846	754		56	236	203	77	
300	657	644	643	670		723	906	861	811		66	262	218	141	
450	656	640	639	670		732	916	866	846		76	276	227	176	
600	653	638	635	655	933	732	919	877	871	998	79	281	242	216	65
750	652	636	634	649	923	741	917	871	886	1003	89	281	237	237	80
900	651	636	633	648	923	750	909	876	893	1028	99	273	243	245	105
1050	651	628	633	645	925	760	933	890	894	1041	109	305	257	249	116
1200	651	628	633	648	927	750	924	899	903	1056	99	296	266	255	129
1350	651	629	635	649	931	716	921	869	934	1041	65	292	234	285	110
1500	651	631	637	651	937	698	882	836	922	1041	47	251	199	271	104
1650	648	633	638	655	943	665	827	795	900	1026	17	194	157	245	83
1800	650	634	642	657	955	643	746	765	857	1001	-7	112	123	200	46
1950		643	645	658			691	689	735			48	44	77	
2100			636	668				666	716					48	
2250				676					713					37	
2400				683					713					30	
2550															
2700															
2850															
3000															

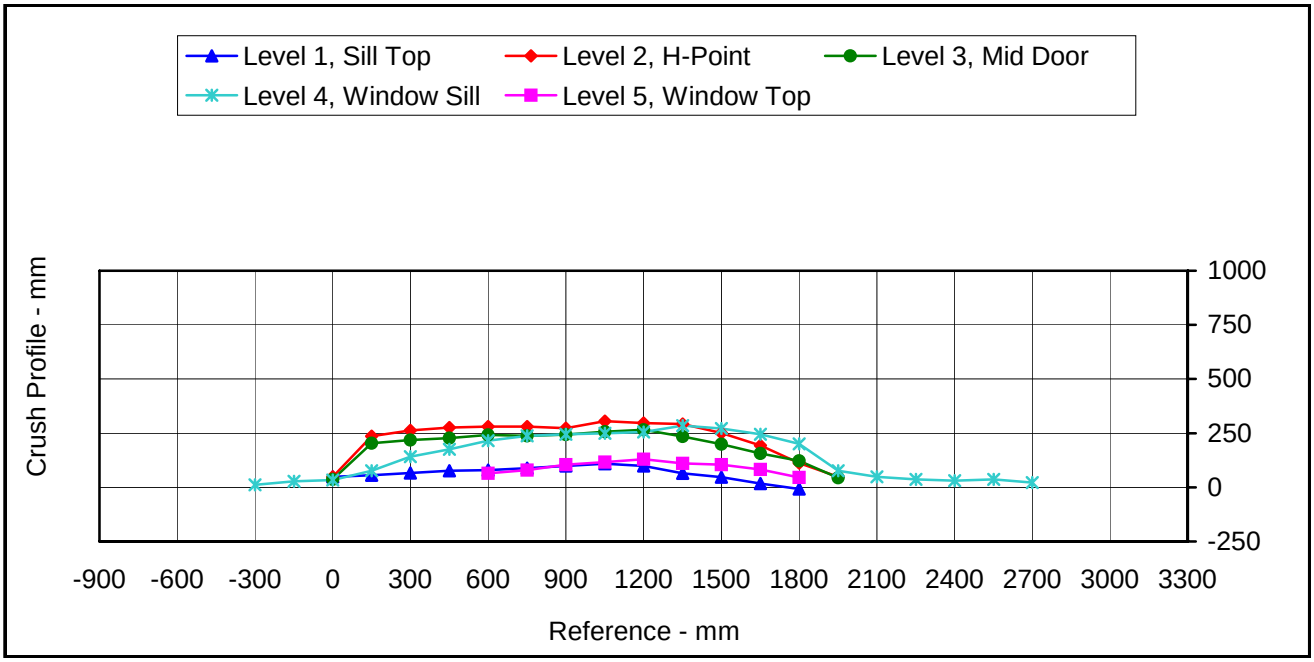
All Dimensions shown in millimeters

DATA SHEET NO. 9…(CONTINUED)

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



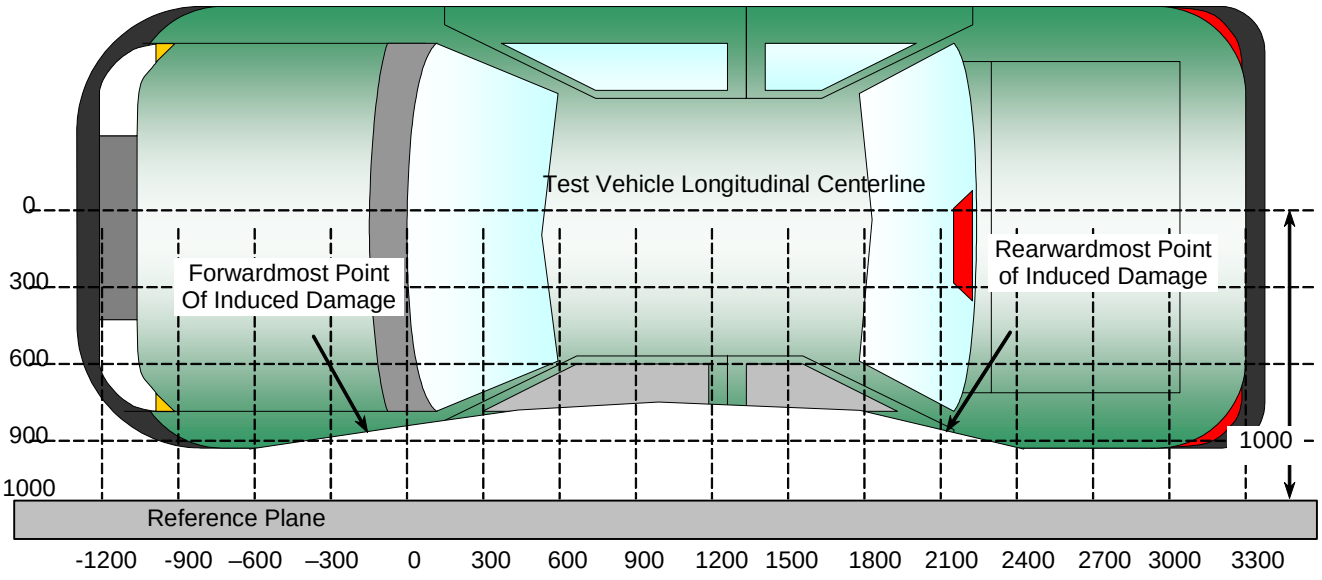
	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	109	305	266	285	129
Distance from Impact	mm	1050	1050	1200	1350	1200

DATA SHEET NO. 10

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



All Dimensions Shown in millimeters

TOP VIEW

DAMAGE PROFILE DISTANCES

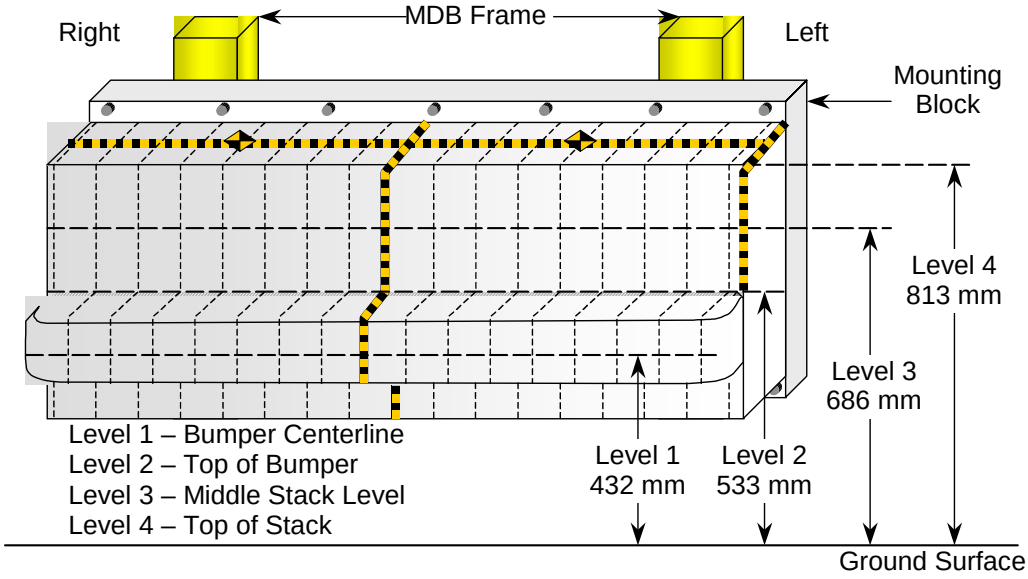
DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	1950	4	658	735	77
2	1500	4	651	922	271
3	1050	2	628	933	305
4	600	2	638	919	281
5	150	2	645	881	236
6	-300	4	724	736	12

DATA SHEET NO. 11

DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	778	742	702	666	634	624	620	616	619	617	620	621	624	637	636	648	673
2	800	790	746	704	671	660	660	660	659	663	670	680	683	690	696	704	713
3	724	695	666	641	635	635	644	641	638	636	636	640	646	658	677	704	756
4	669	659	637	617	621	627	651	644	639	637	641	651	675	702	734	766	805

All Dimensions in mm

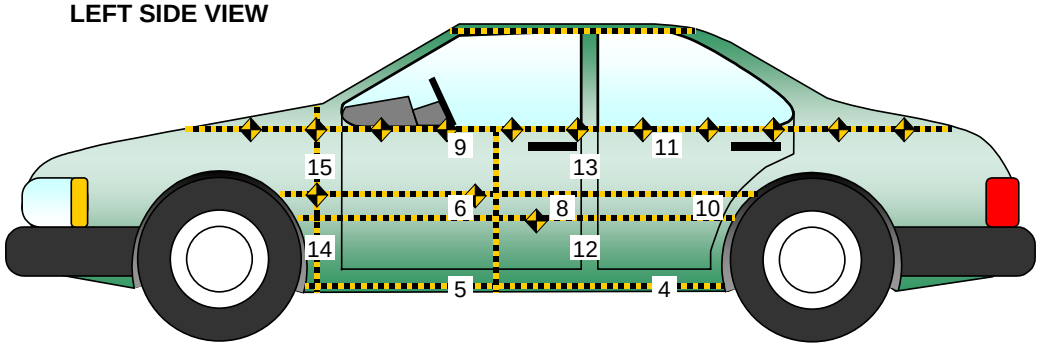
DATA SHEET NO. 12

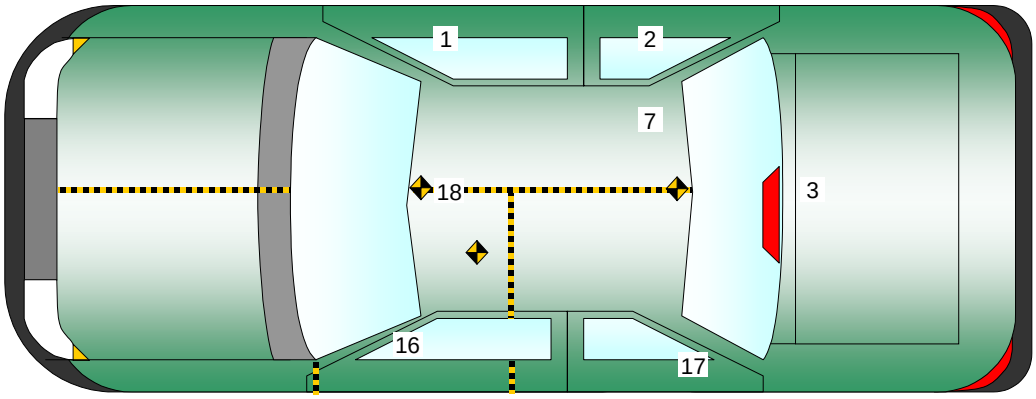
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

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 LOCATIONS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)			
		X	Y	Z	
1	Right Sill at Front Seat	2615	725	415	
2	Right Sill at Rear Seat	1790	725	415	
3	Rear Floorpan Above Axle	800	-50	685	
4	Left Sill at Rear Door	1900	-600	215	
5	Left Sill at Front Door	2370	-665	215	
6	Front Door Centerline				1
7	Rt. Rear Occ. Compartment	1970	455	320	
8	Front Door Mid-Rear				1
9	Front Door Upper Centerline				1
10	Rear Door Mid-Rear				1
11	Rear Door Upper Centerline				1
12	B-Post Lower	2030	-740	635	
13	B-Post Middle	2030	-740	866	
14	A-Post Lower	3151	-821	590	
15	A-Post Middle	3151	-821	742	
16	Front Seat Track	2670	-925	466	
17	Rear Seat Structure				1
18	Vehicle CG	2740	190	300	

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

1.) Not installed

DATA SHEET NO. 13

MDB ACCELEROMETER LOCATIONS

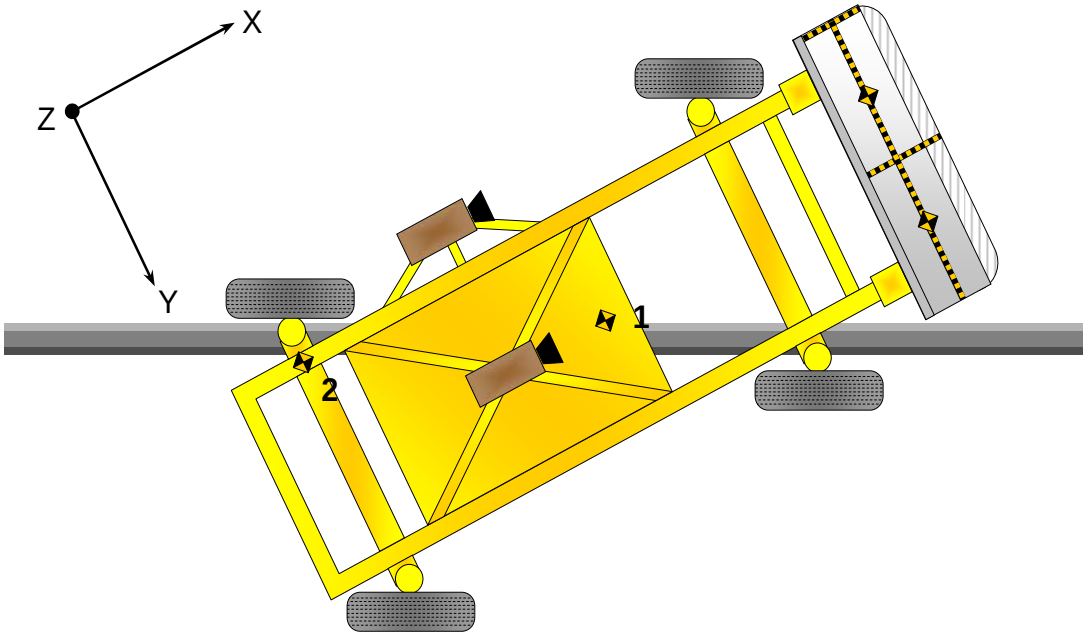
Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

MDB ACCELEROMETER LOCATIONS

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

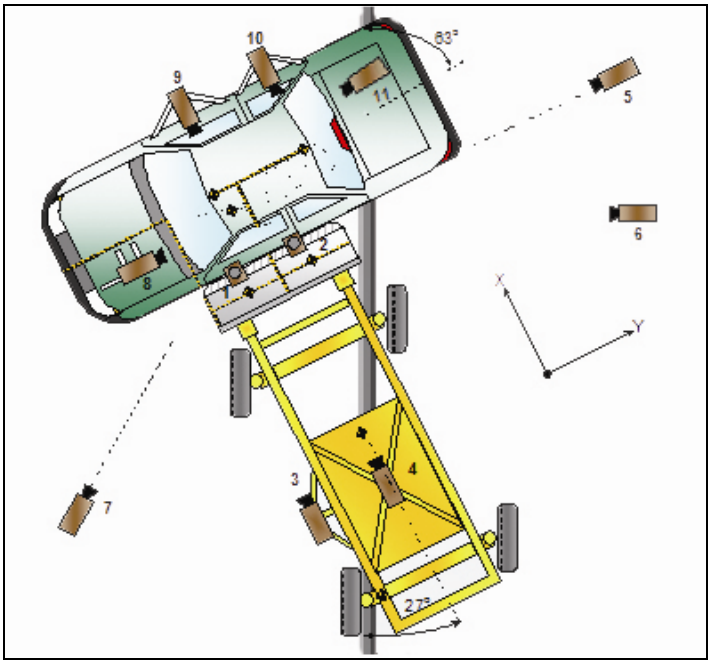


DATA SHEET NO. 14

HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



No.	Camera View	Location (mm)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		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	14mm	1000
2	Overhead Close Up	609	2287	-5102	-90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	-2	12mm	1000
4	Side Overall (MDB)	-3912	838	-1829	-4	12mm	1000
5	Rear	-64	20485	-1348	0	105mm	1000
6	Left Rear (MDB)	-2137	-1302	-339	-4	85mm	1000
7	Left Front	-2266	-3564	-1475	-2	24mm	1000
8	Driver Front (O.B.)	495	-458	1123	-12	35mm	1000
9	Driver Side (O.B.)	1708	772	1048	-2	20mm	1000
10	Passenger Side (O.B.)	1802	2317	1722	-2	20mm	1000

X = Barrier Face Y = Monorail Centerline Z = Ground DNR = Did Not Run NTM = No Timing Marks

DATA SHEET NO. 15

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

Test Time: 12:46 PM Temperature: 33.0 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)

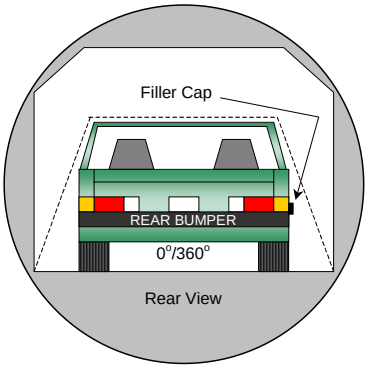
D. Spillage Details: No leakage occurred

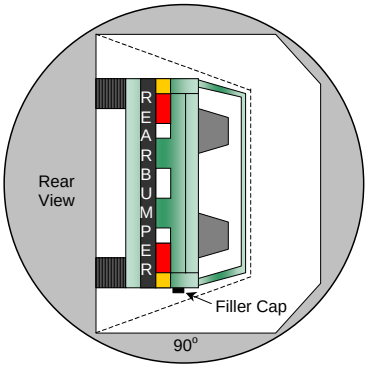
DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER DATA

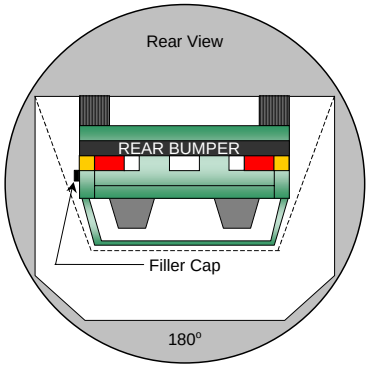
Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

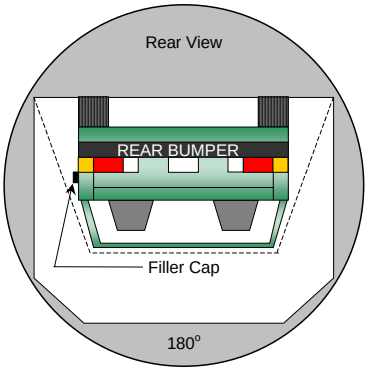




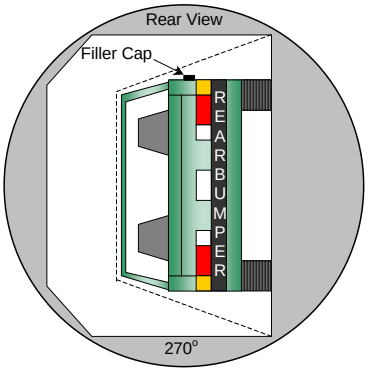
0° to 90°

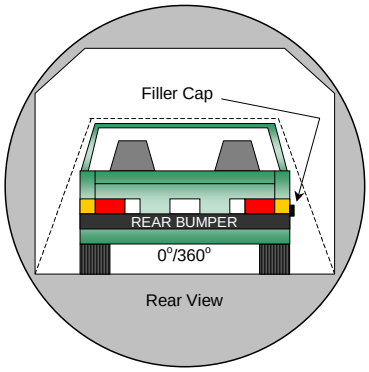


90° to 180°



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: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	94	300	394
90° to 180°	80	300	380
180° to 270°	83	300	383
270° to 360°	80	300	380

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

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

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

APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

Figure A-1: Left Front ¾ View, as Received

Figure A-2: Right Rear ¾ View, as Received

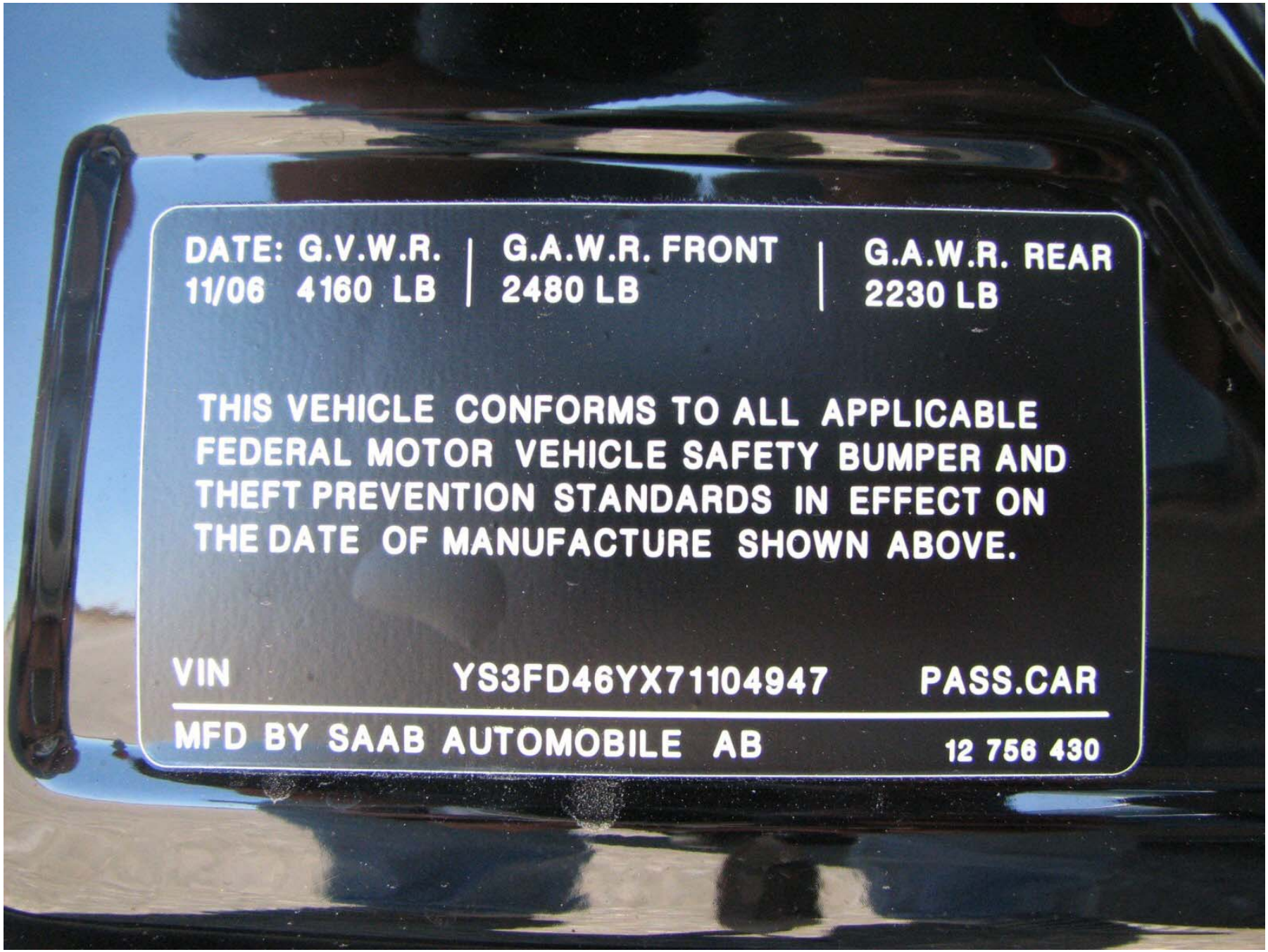


Figure A-3: Manufacturer's Label

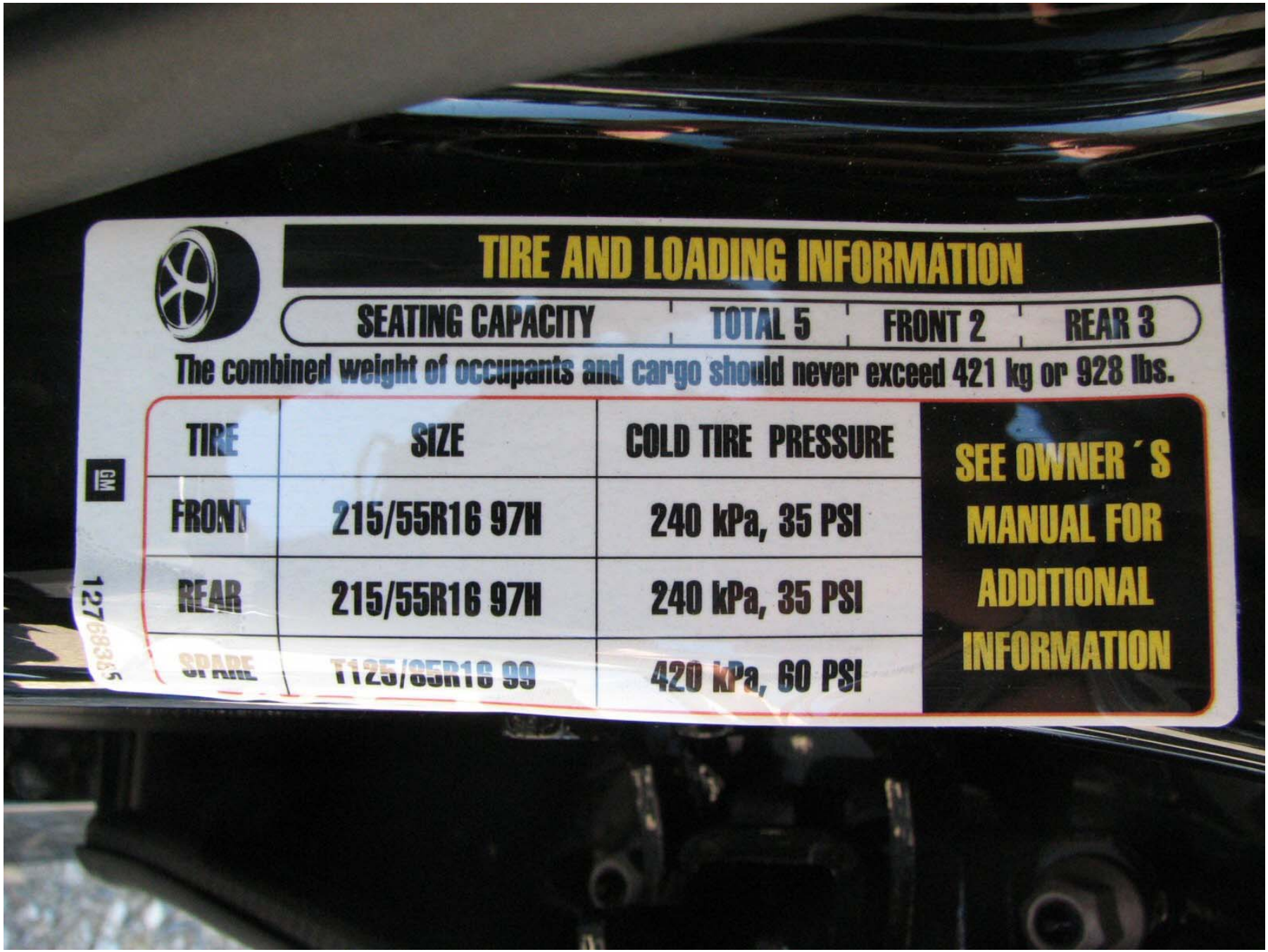


Figure A-4: Tire Placard

Figure A-5: Pre-Test Front View

Figure A-6: Post-Test Front View

Figure A-7: Pre-Test Left Front ¾ View

Figure A-8: Post-Test Left Front ¾ View

Figure A-9: Pre-Test Left Side View

Figure A-10: Post-Test Left Side View

Figure A-11: Pre-Test Left Rear ¾ View

Figure A-12: Post-Test Left Rear ¾ View

Figure A-13: Pre-Test Rear View

Figure A-14: Post-Test Rear View

Figure A-15: Pre-Test Right Rear ¾ View

Figure A-16: Post-Test Right Rear ¾ 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 ¾ View

Figure A-21: Pre-Test Overhead View

Figure A-22: Post-Test Overhead View

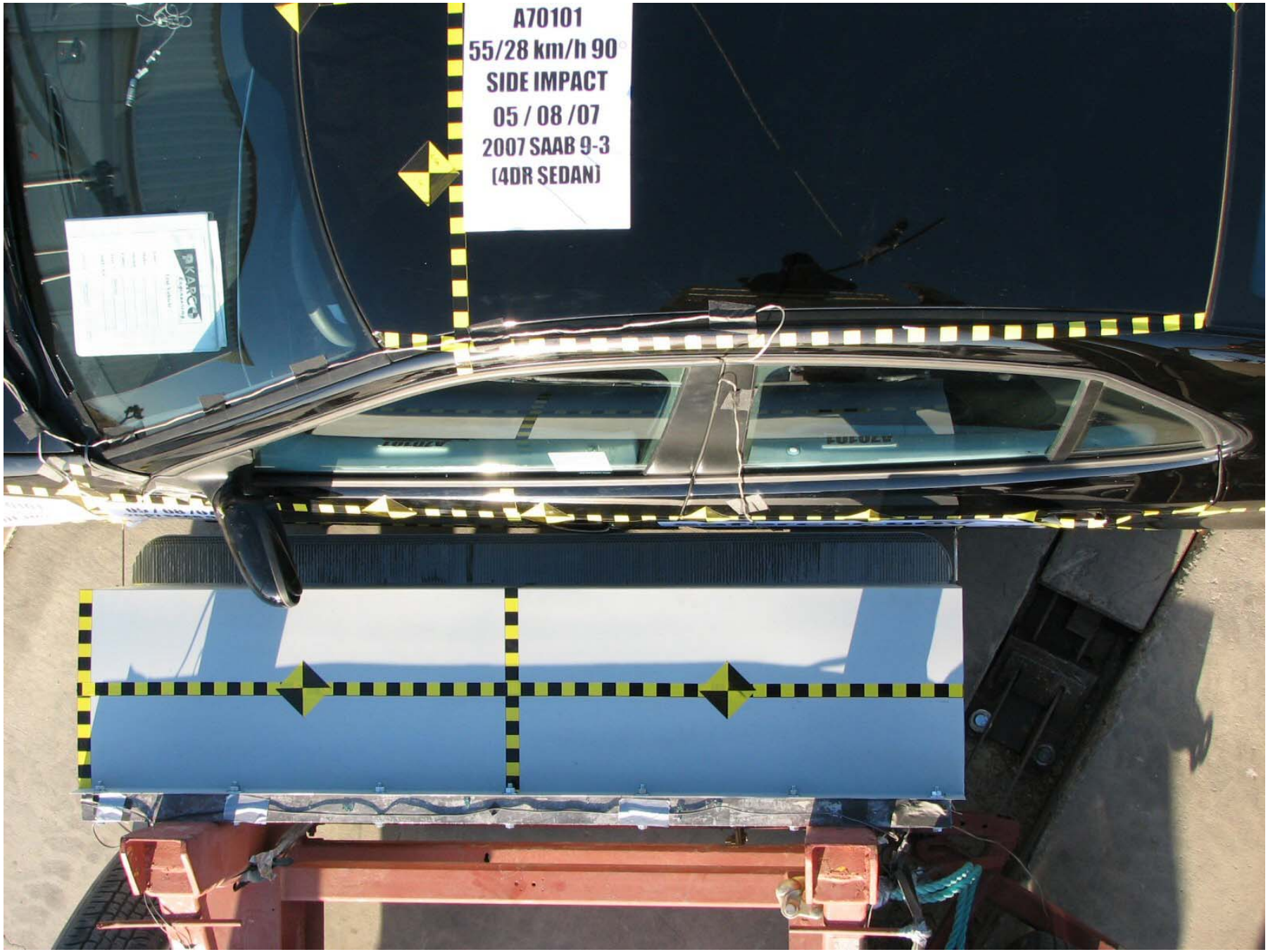


Figure A-23: Pre-Test Overhead Close-up View

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

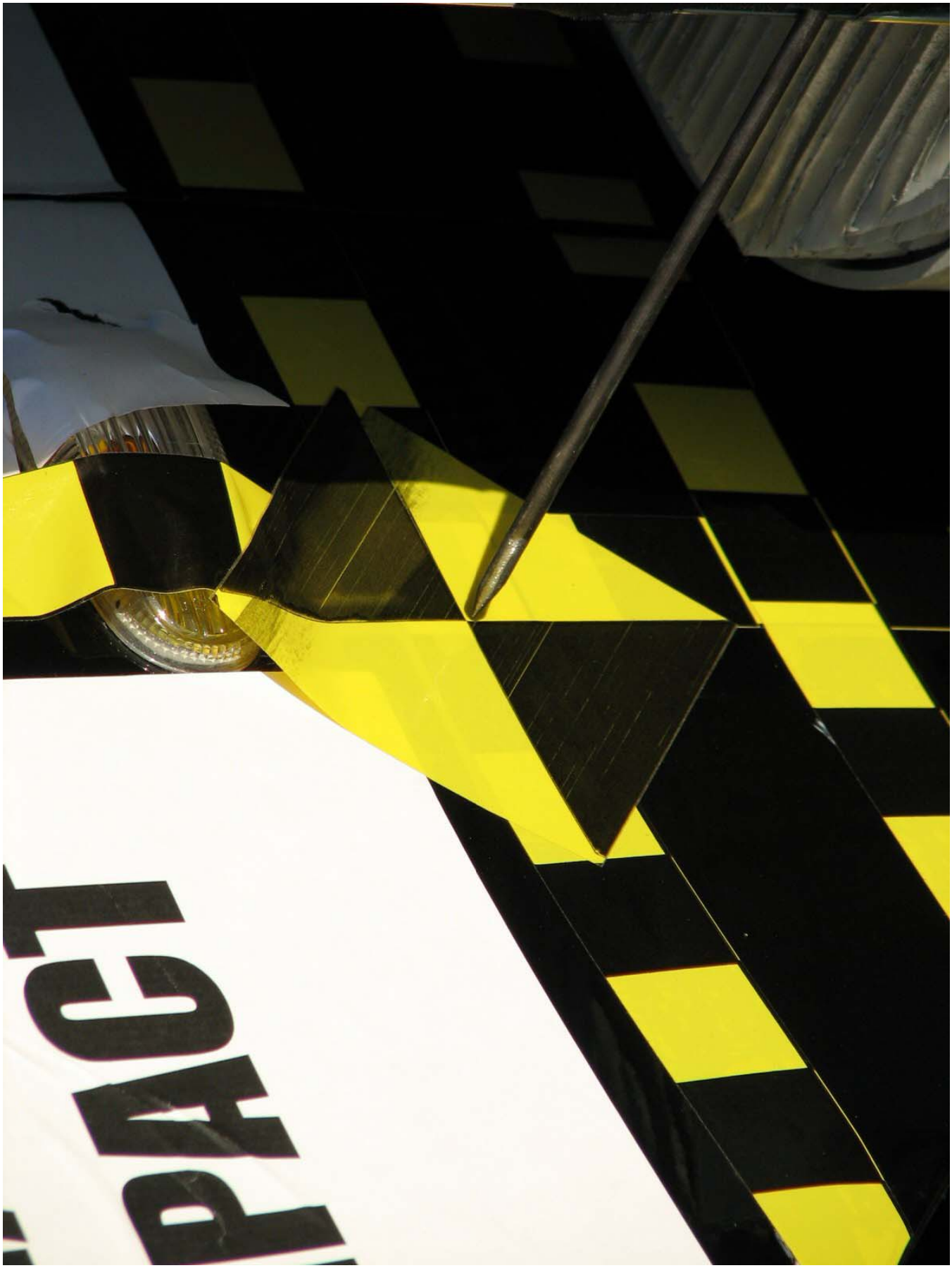


Figure A-25: Pre-Test Left Impact Point

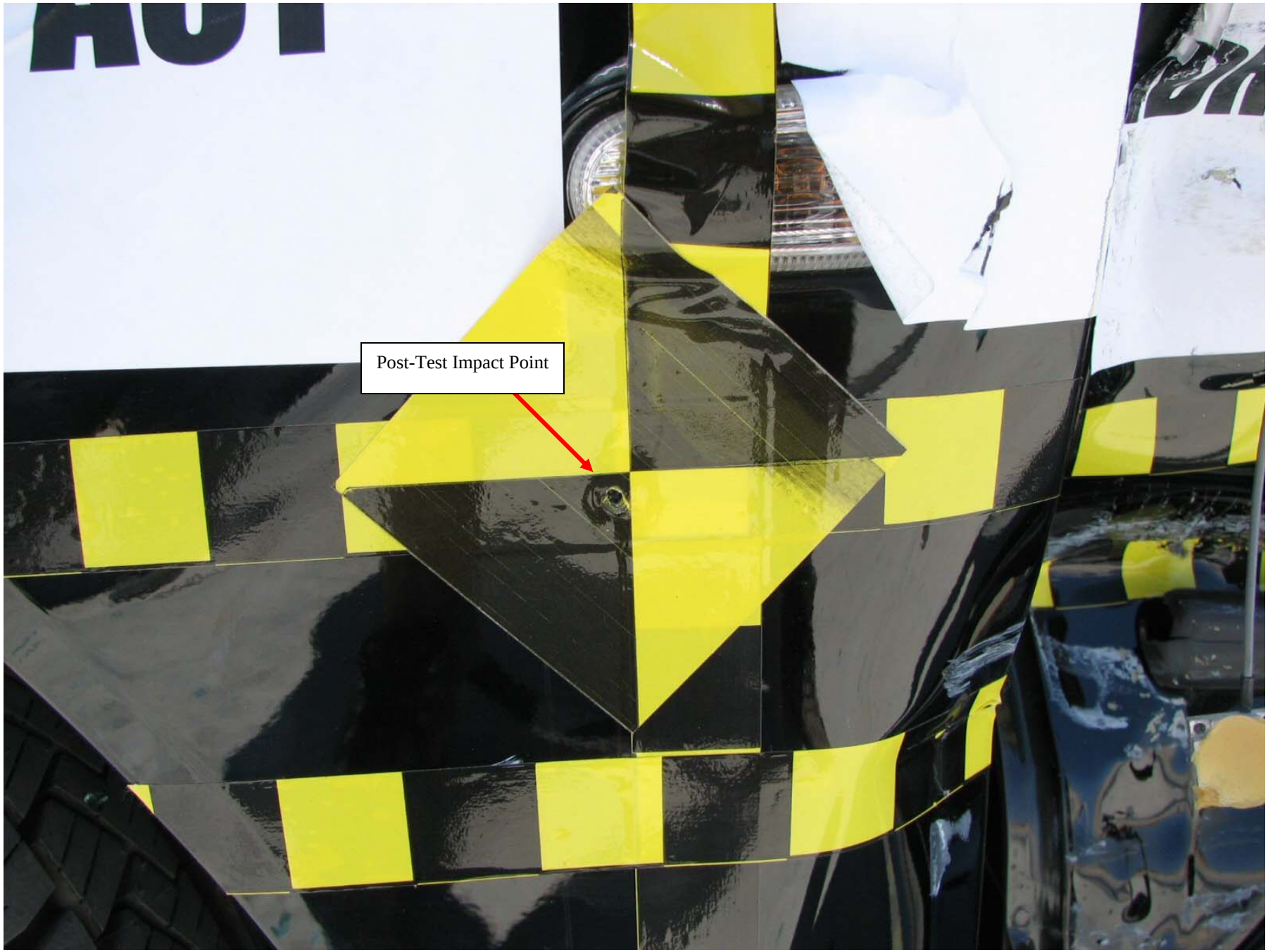


Figure A-26: Post-Test Left Impact Point

Figure A-27: Pre-Test Front ¾ View of Left Side Door

Figure A-28: Post-Test Front ¾ View of Left Side Door

Figure A-29: Pre-Test Rear ¾ 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)

This Space Intentionally Left Blank

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)

This Space Intentionally Left Blank

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

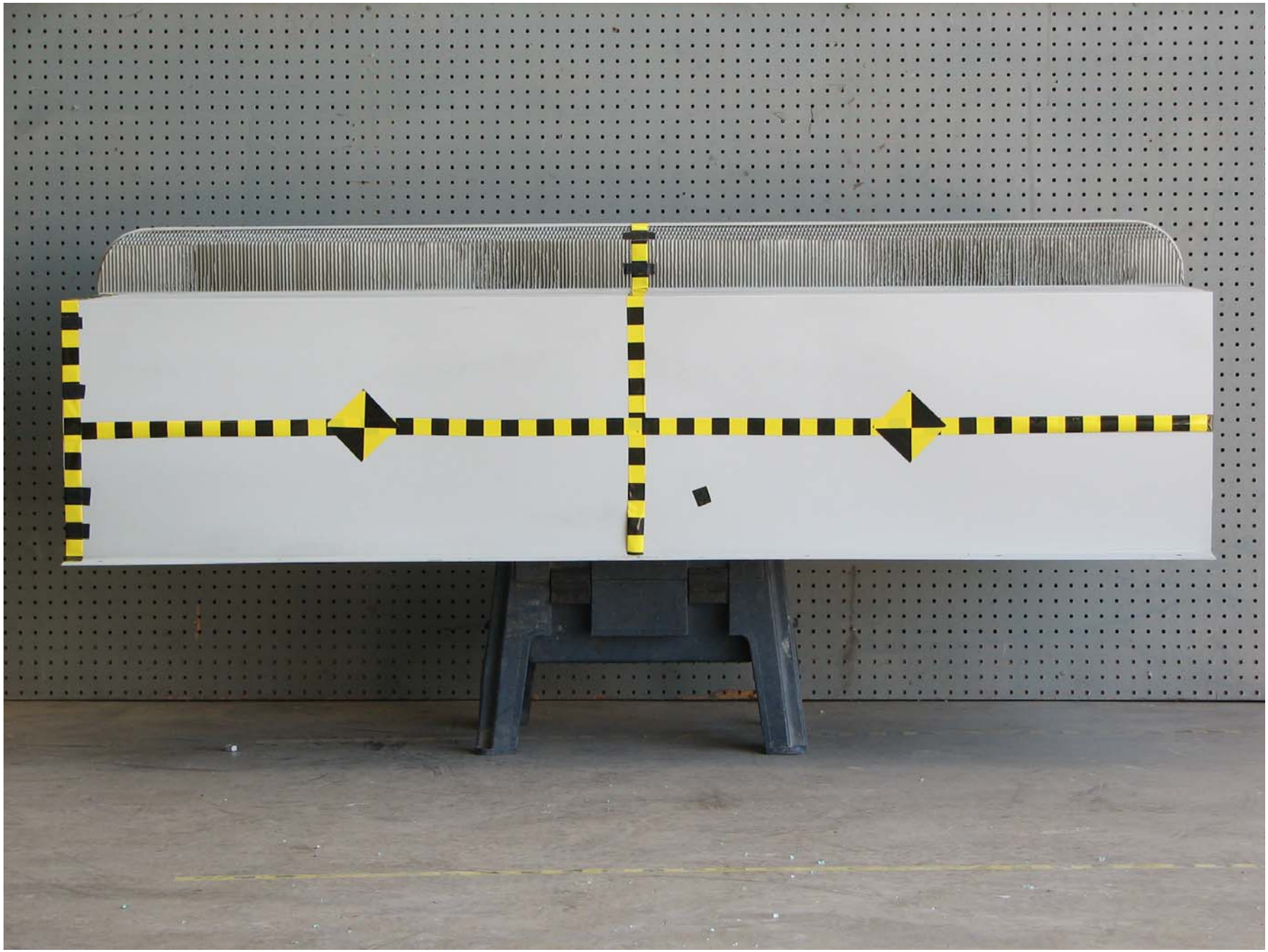


Figure A-55: Pre-Test Top View of Deformable Barrier

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

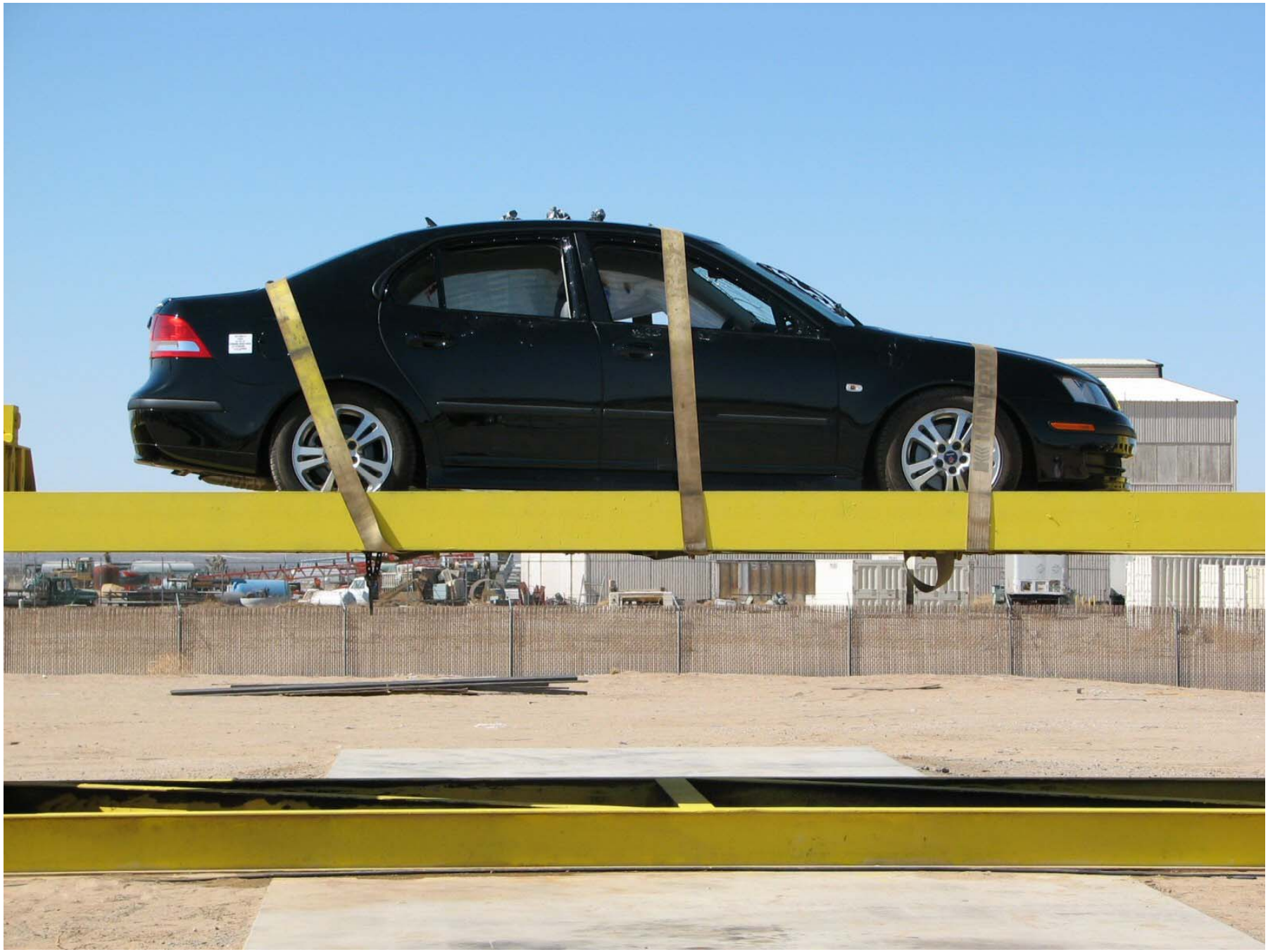


Figure A-61: Vehicle on Rollover Device (0°)

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

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

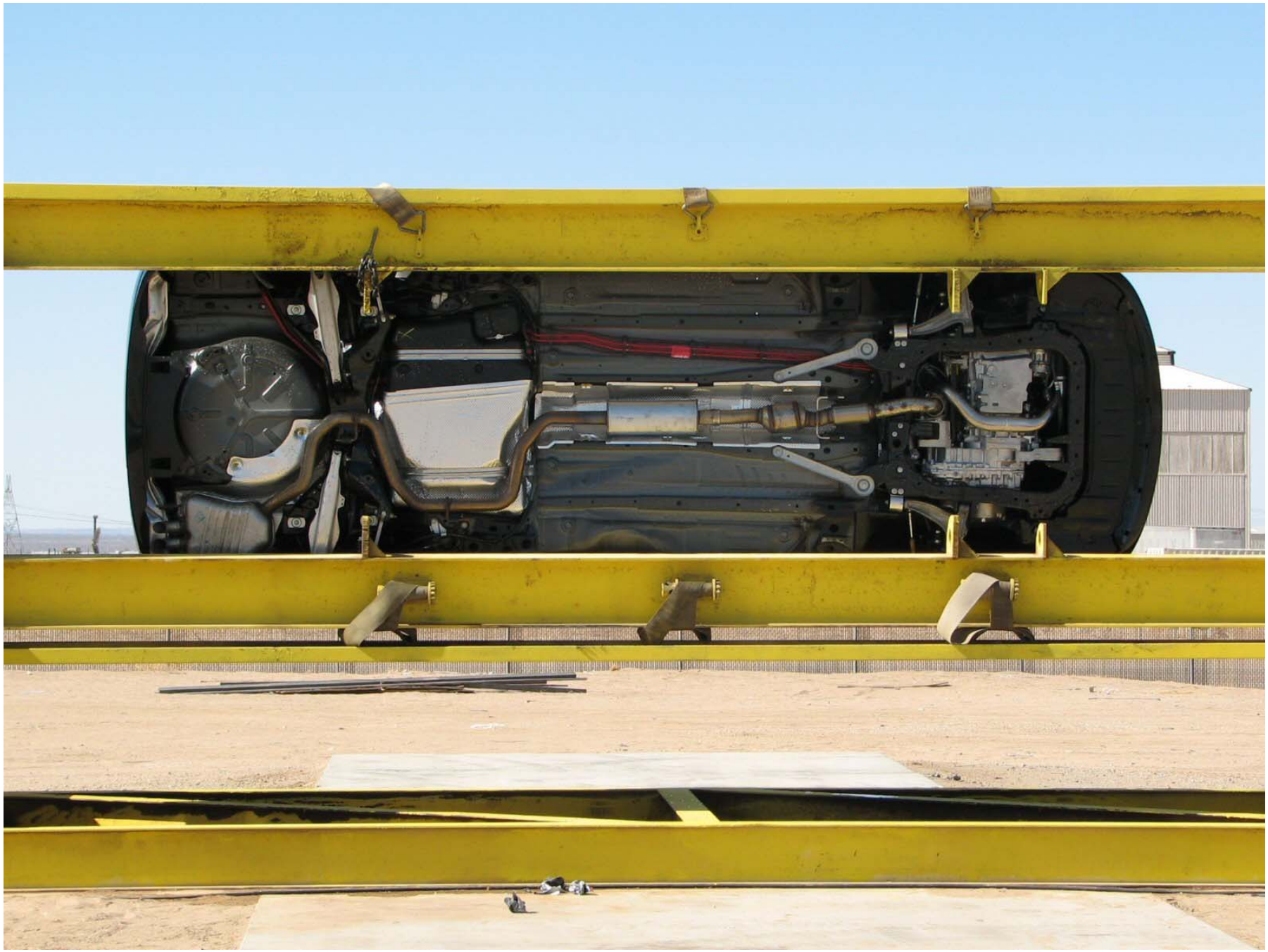


Figure A-64: Vehicle on Rollover Device (270°)

Figure A-65: Vehicle Impact

APPENDIX B
SID/HIII, VEHICLE AND MDB RESPONSE DATA

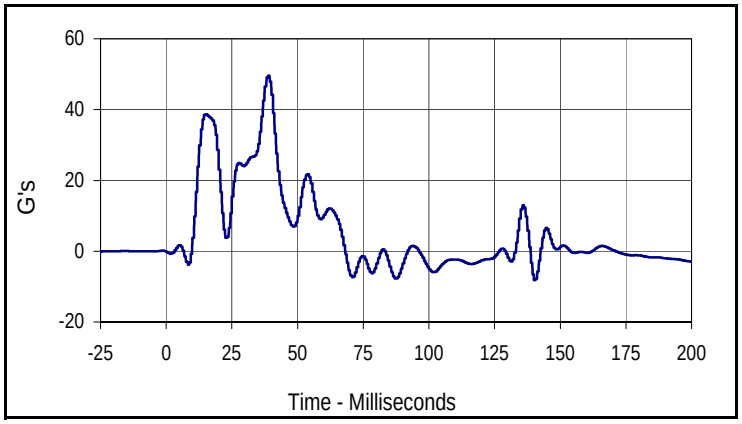
LIST OF DATA PLOTS

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

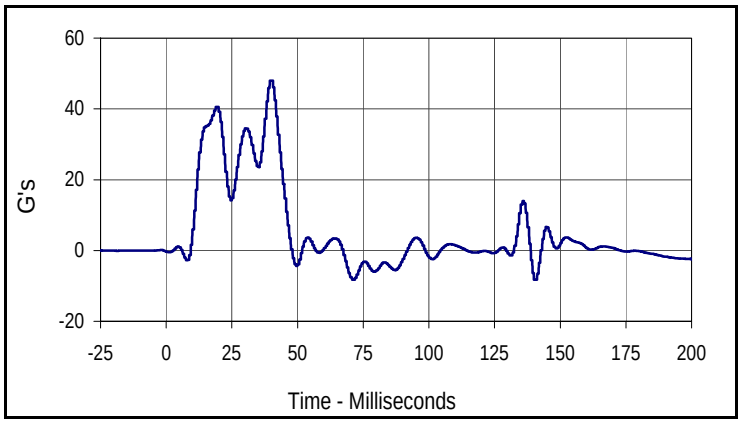
LIST OF DATA PLOTS…(CONTINUED)

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

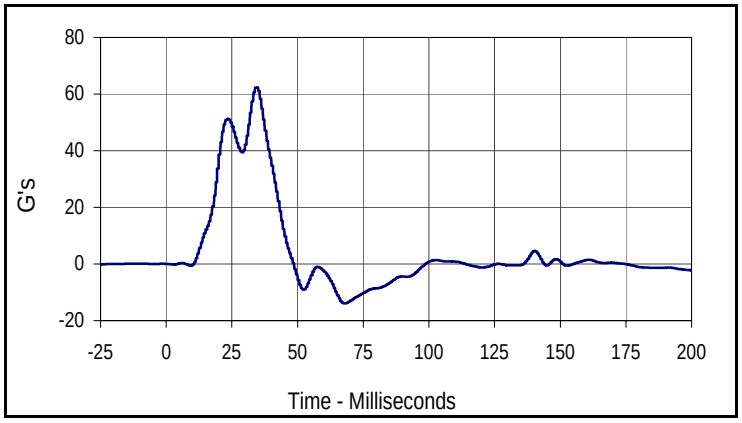
Test Vehicle:	2007 Saab 9-3 4-Door Sedan	Test Date:	5/8/07
Test Program:	55/28 km/h Side Impact NCAP	NHTSA No.:	A70101



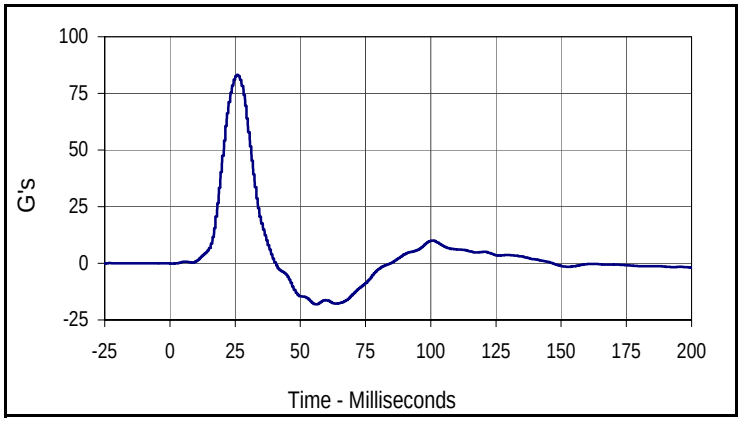
Curve Description			
Driver Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIR	FIR100	G's
Max	Time	Min	Time
49.6	38.8	-8.1	140.0



Curve Description			
Driver Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIR	FIR100	G's
Max	Time	Min	Time
48.0	40.0	-8.3	140.0

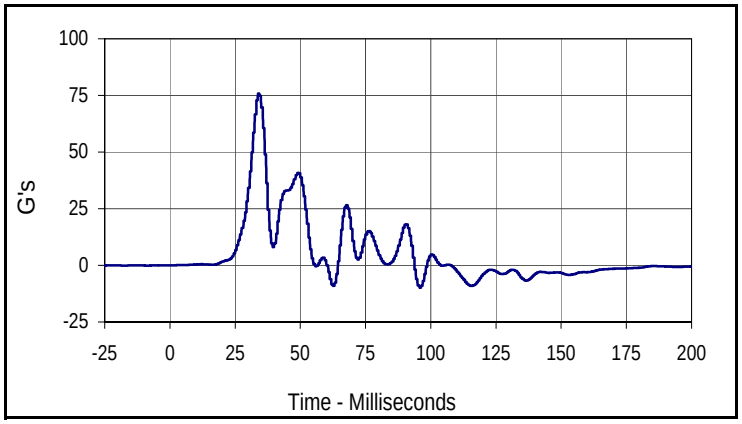


Curve Description			
Driver Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIR	FIR100	G's
Max	Time	Min	Time
62.4	34.4	-13.9	67.5

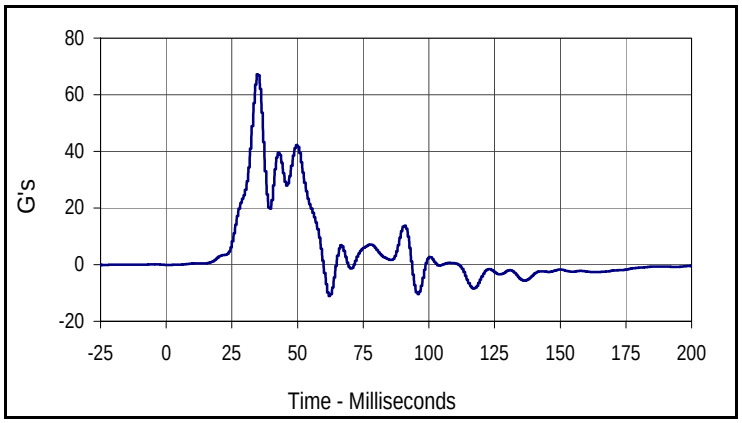


Curve Description			
Driver Pelvis Y Primary			
CURNO	Type	SAE Class	Units
004	FIR	FIR100	G's
Max	Time	Min	Time
83.1	25.7	-18.1	55.7

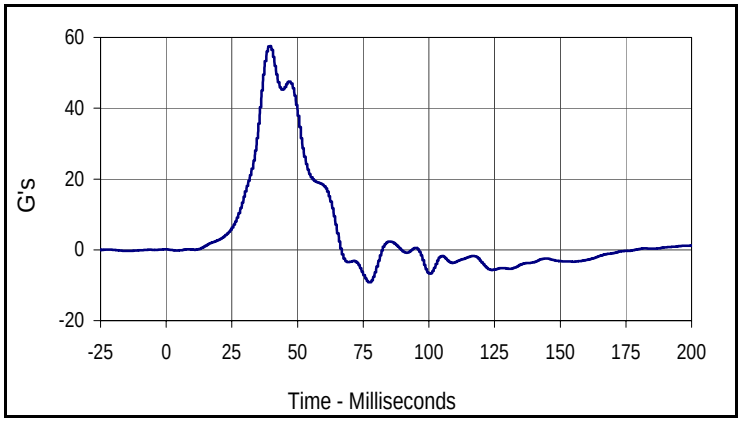
Test Vehicle:	2007 Saab 9-3 4-Door Sedan	Test Date:	5/8/07
Test Program:	55/28 km/h Side Impact NCAP	NHTSA No.:	A70101



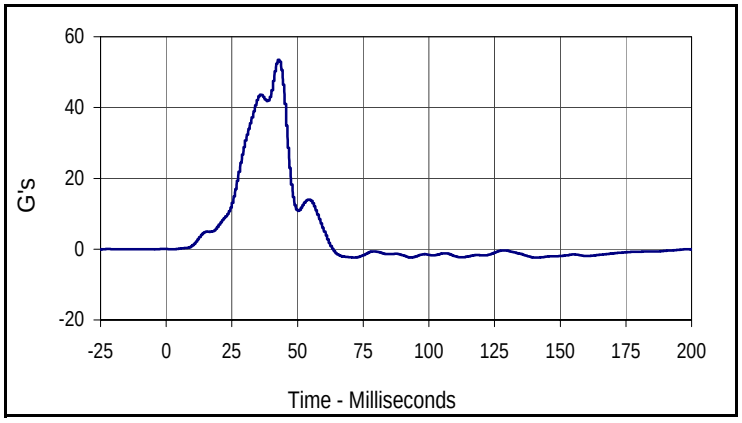
Curve Description			
Passenger Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
005	FIR	FIR100	G's
Max	Time	Min	Time
75.8	33.8	-9.9	95.7



Curve Description			
Passenger Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
006	FIR	FIR100	G's
Max	Time	Min	Time
67.2	34.4	-11.0	61.9



Curve Description			
Passenger Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
007	FIR	FIR100	G's
Max	Time	Min	Time
57.6	39.4	-9.2	76.9



Curve Description			
Passenger Pelvis Primary Y			
CURNO	Type	SAE Class	Units
008	FIR	FIR100	G's
Max	Time	Min	Time
53.5	42.5	-2.4	140.7

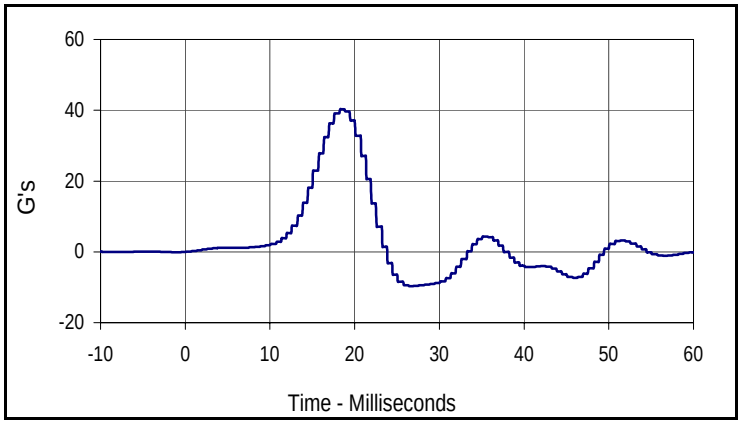
APPENDIX C
SID/HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program:	SID / HIII External Measurements	Test Date:	5/7/07
ATD Serial No.:	274	Test I.D.:	N/A

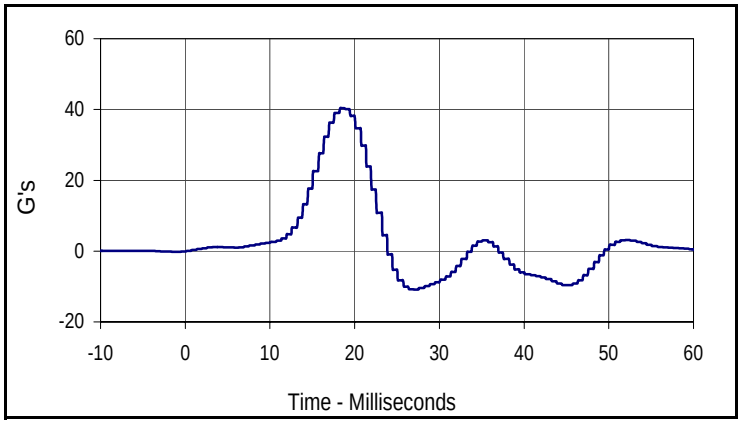
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	889	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	510	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	512	Pass
KV- Knee Pivot From Floor	mm	490 to 505	497	Pass
HW- Hip Width	mm	356 to 391	376	Pass
		Overall Test Results		Pass

Test Program:	SID / HIII Thorax Lateral Impact	Test Date:	5/7/07
ATD Serial No.:	274	Test I.D.:	TH05O

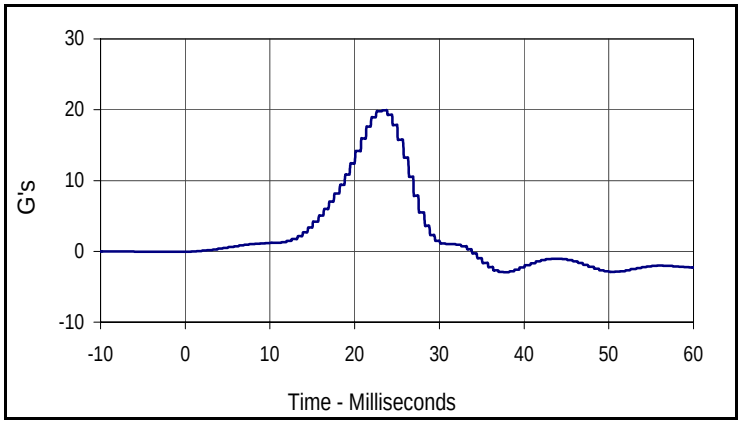
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.32	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	40.3	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	40.4	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.9	Pass
		Overall Test Results		Pass



Curve Description			
Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
40.3	18.3	-9.7	26.4



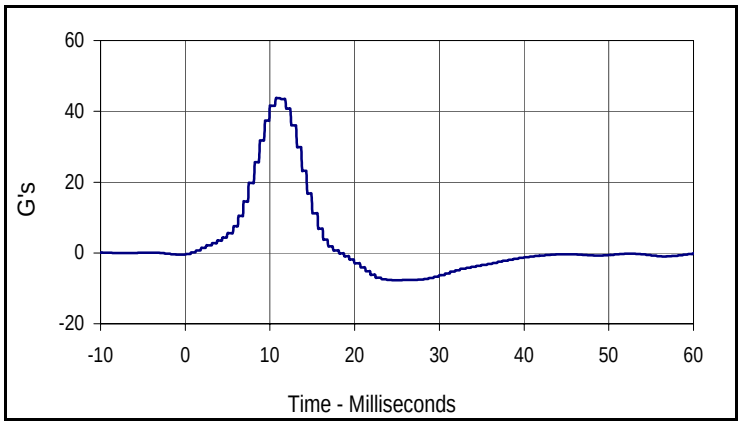
Curve Description			
Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
40.4	18.3	-10.8	27.0



Curve Description			
Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
19.9	23.3	-2.9	37.6

Test Program:	SID / HIII Pelvis Lateral Impact	Test Date:	5/7/07
ATD Serial No.:	274	Test I.D.:	PL05P

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
Peak Pelvis Acceleration	G's	40.0 to 60.0	43.7	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	5.40	Pass
		Overall Test Results		Pass

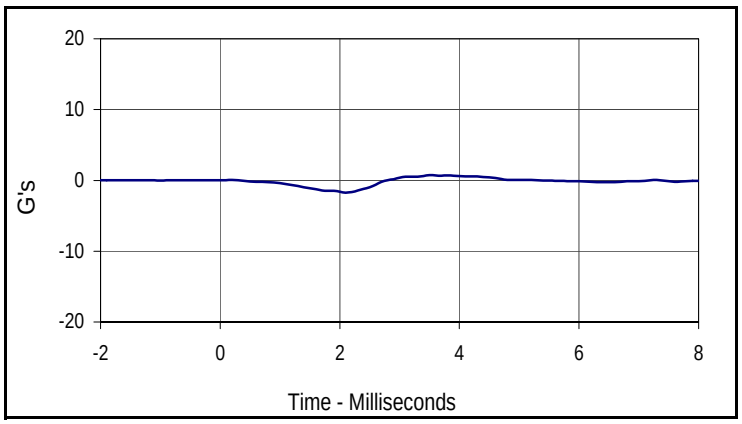


Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.7	10.7	-7.7	24.4

Test Program:	SID / HIII Head Drop Lateral Impact Test	Test Date:	5/7/07
ATD Serial No.:	274	Test I.D.:	HD05O

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	141.6	Pass
Peak Longitudinal Acceleration	G's	≤15.0	1.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.6	Pass
		Overall Test Results		Pass

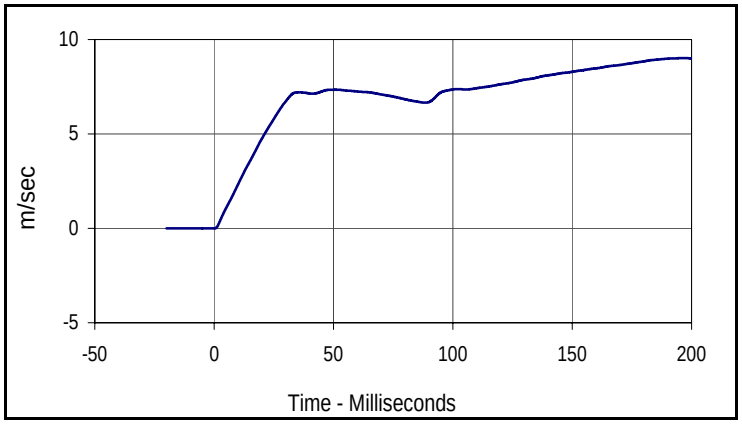
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
141.6	2.2	0.3	-2.0



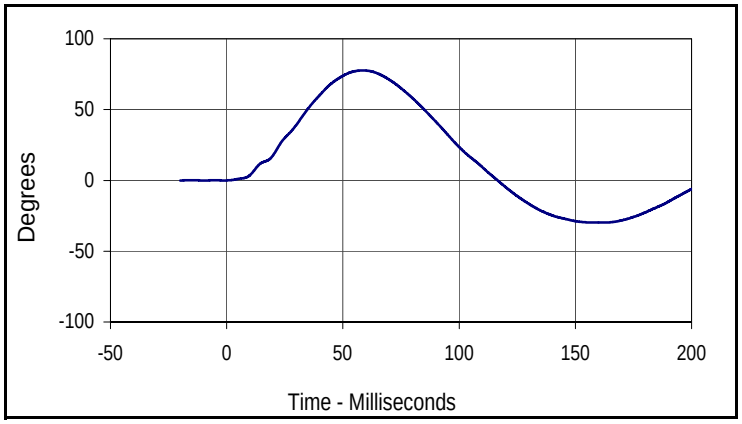
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.7	3.5	-1.8	2.1

Test Program:	SID / HIII Neck Pendulum Lateral Test	Test Date:	5/7/07
ATD Serial No.:	274	Test I.D.:	NB05O

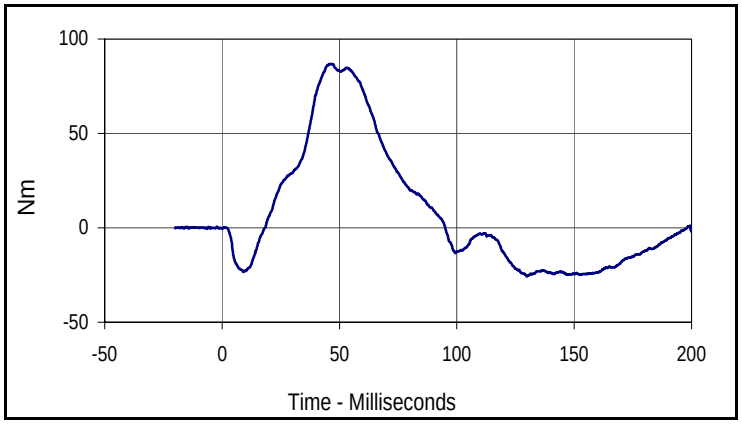
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.97	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.33	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.75	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.73	Pass
	40 to 70	m/sec	6.27 to 7.64	7.35	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	77.7	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	12.5	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	58.1	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	86.8	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.1	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.0	197.3	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
77.7	58.5	-29.8	161.6



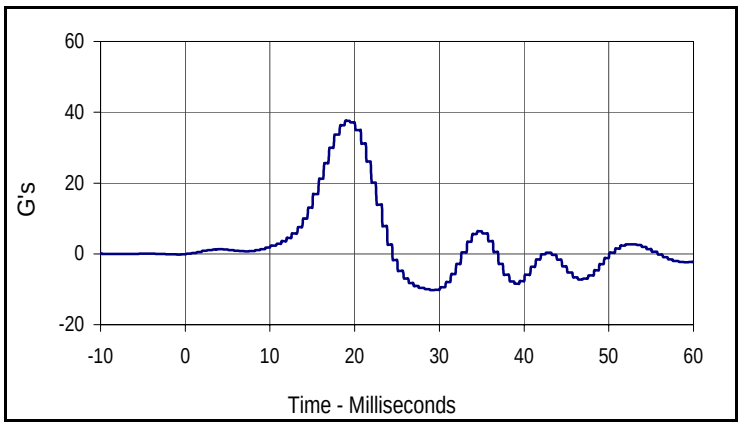
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
86.8	46.0	-25.8	129.9

Test Program:	SID / HIII External Measurements	Test Date:	5/7/07
ATD Serial No.:	275	Test I.D.:	N/A

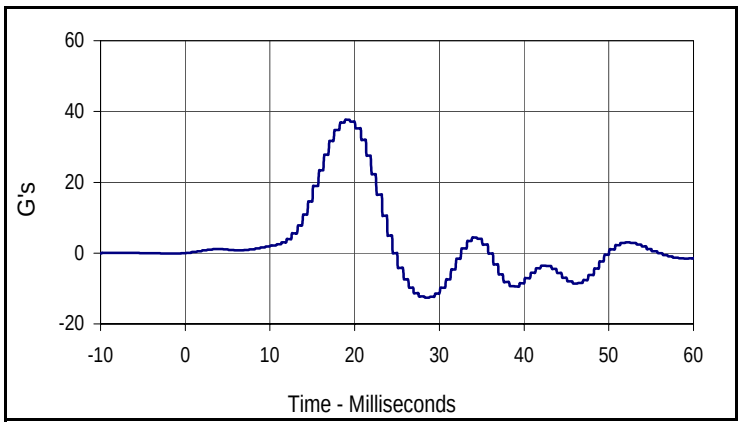
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	894	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	510	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	512	Pass
KV- Knee Pivot From Floor	mm	490 to 505	502	Pass
HW- Hip Width	mm	356 to 391	374	Pass
		Overall Test Results		Pass

Test Program:	SID / HIII Thorax Lateral Impact	Test Date:	5/7/07
ATD Serial No.:	275	Test I.D.:	TH05T

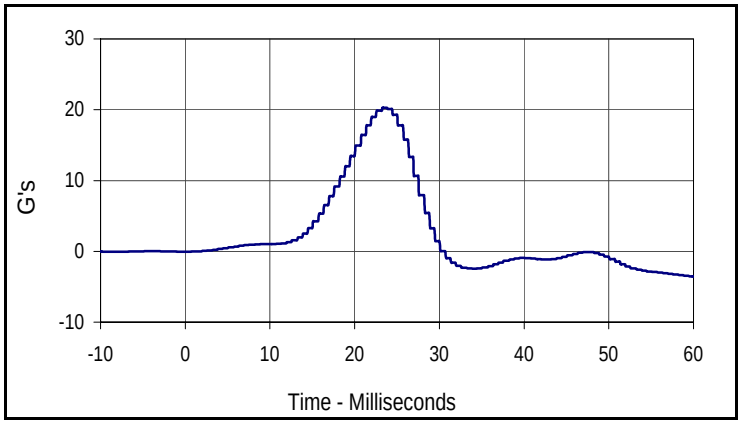
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.33	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	37.6	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	37.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.3	Pass
		Overall Test Results		Pass



Curve Description			
Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
37.6	18.9	-10.2	28.9



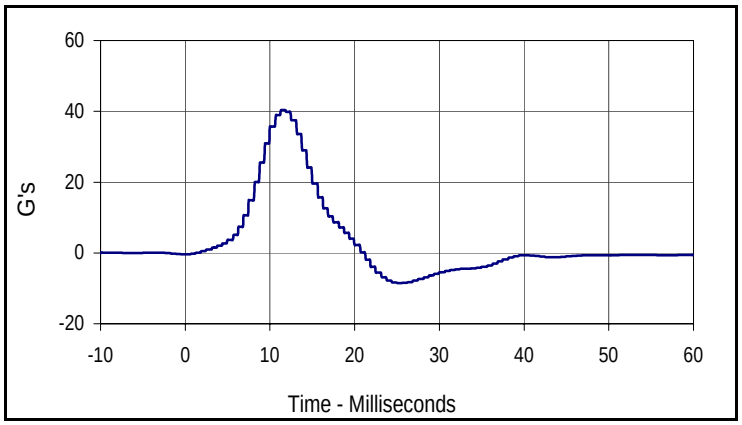
Curve Description			
Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
37.7	18.9	-12.6	28.3



Curve Description			
Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
20.3	23.3	-3.6	60.8

Test Program:	SID / HIII Pelvis Lateral Impact	Test Date:	5/7/07
ATD Serial No.:	275	Test I.D.:	PL05Q

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
Peak Pelvis Acceleration	G's	40.0 to 60.0	40.4	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	6.70	Pass
		Overall Test Results		Pass

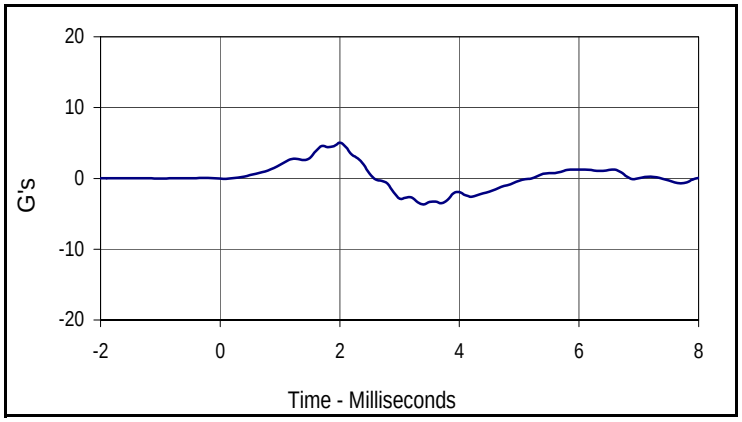


Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
40.4	11.3	-8.5	25.0

Test Program:	SID / HIII Head Drop Lateral Impact Test	Test Date:	5/7/07
ATD Serial No.:	275	Test I.D.:	HD05T

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	140.9	Pass
Peak Longitudinal Acceleration	G's	≤15.0	5.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	1.9	Pass
		Overall Test Results		Pass

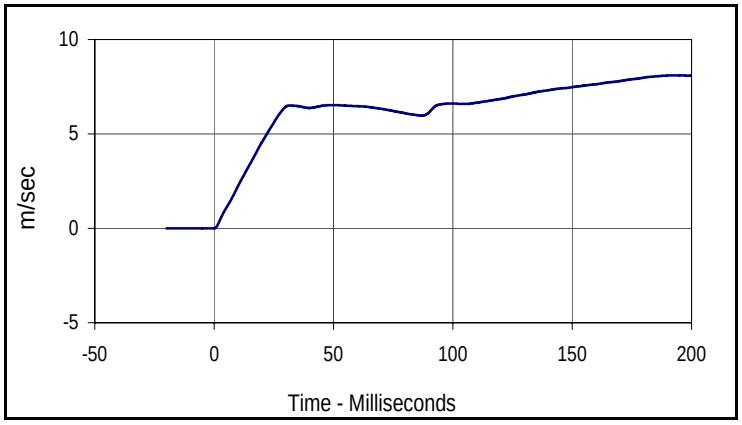
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
140.9	2.1	0.0	-1.6



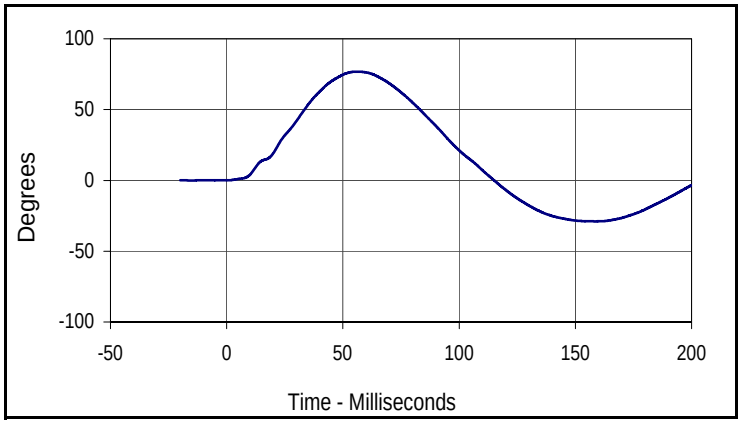
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.0	2.0	-3.7	3.4

Test Program:	SID / HIII Neck Pendulum Lateral Test	Test Date:	5/7/07
ATD Serial No.:	275	Test I.D.:	NB05T

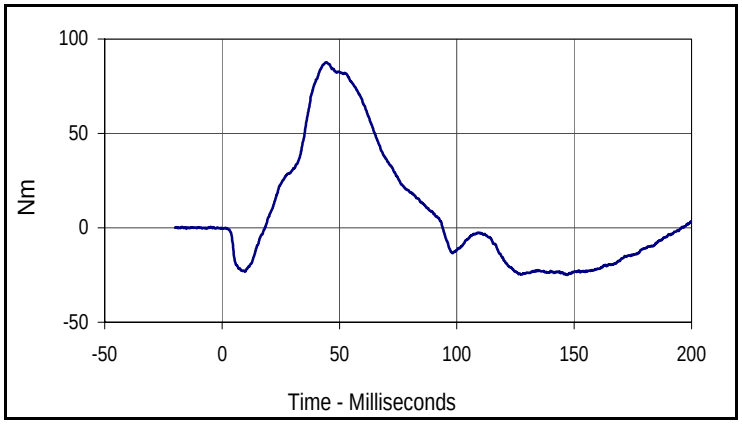
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.24	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.56	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.44	Pass
	40 to 70	m/sec	6.27 to 7.64	6.53	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	76.8	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	11.7	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	59.2	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	87.7	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	49.8	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
8.1	191.7	0.0	-0.3



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.8	55.9	-28.9	158.6



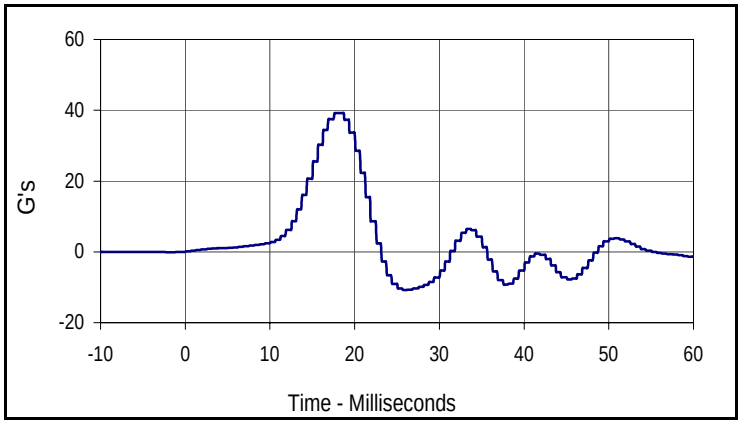
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
87.7	44.2	-24.9	146.6

Test Program:	SID / HIII External Measurements	Test Date:	5/11/07
ATD Serial No.:	275	Test I.D.:	N/A

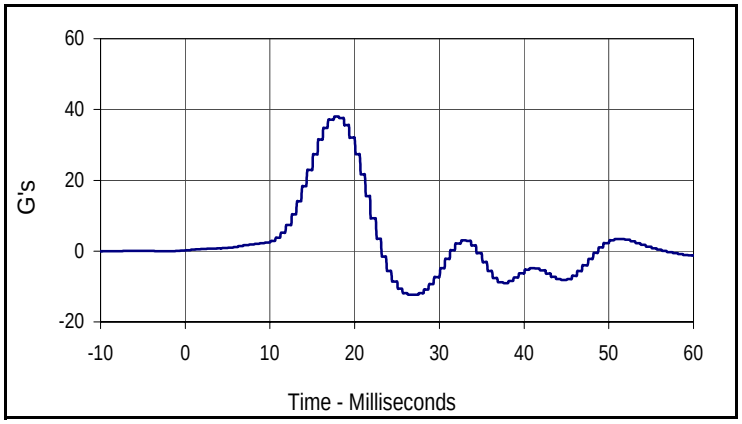
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	890	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	509	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	511	Pass
KV- Knee Pivot From Floor	mm	490 to 505	499	Pass
HW- Hip Width	mm	356 to 391	375	Pass
		Overall Test Results		Pass

Test Program:	SID / HIII Thorax Lateral Impact	Test Date:	5/10/07
ATD Serial No.:	275	Test I.D.:	TH05Q

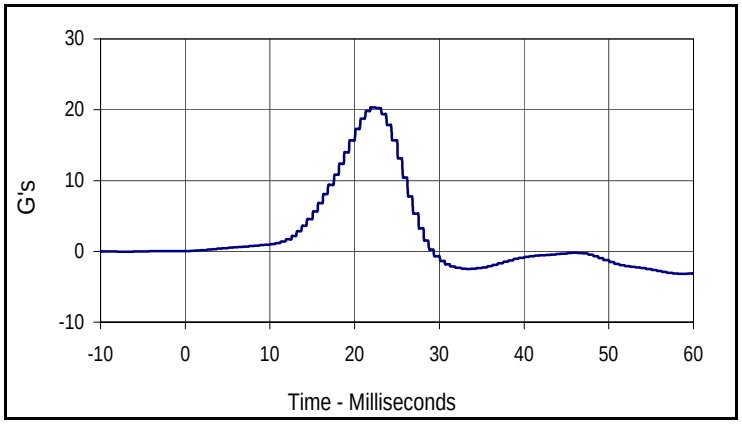
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.27	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	37.6	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	37.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.3	Pass
		Overall Test Results		Pass



Curve Description			
Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
37.6	18.9	-10.2	28.9



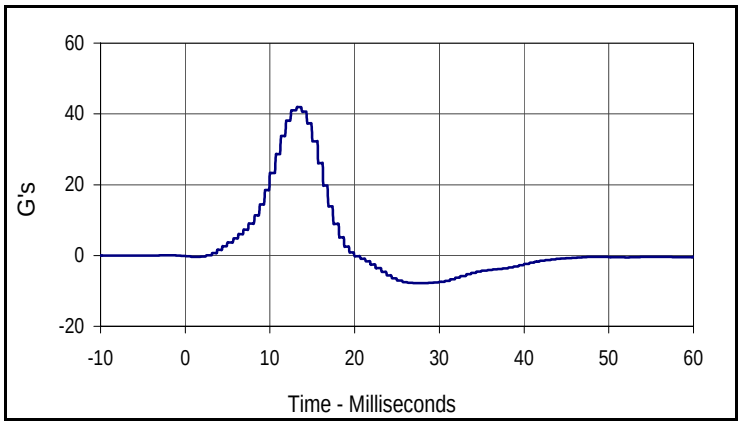
Curve Description			
Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
37.7	18.9	-12.6	28.3



Curve Description			
Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
20.3	23.3	-3.6	60.8

Test Program:	SID / HIII Pelvis Lateral Impact	Test Date:	5/10/07
ATD Serial No.:	275	Test I.D.:	PL05R

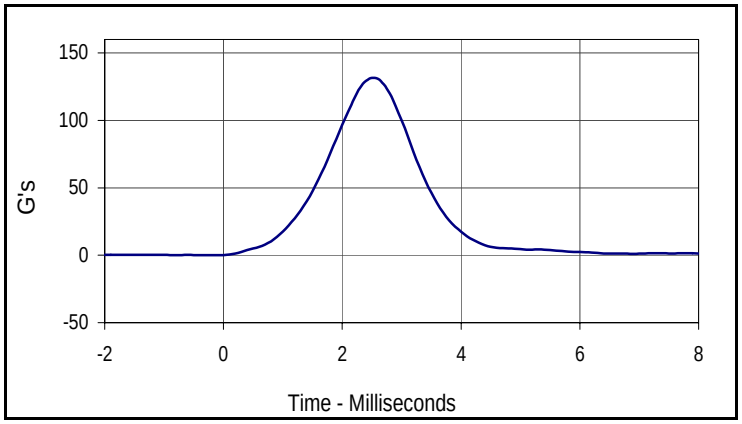
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.30	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	41.9	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
		Overall Test Results		Pass



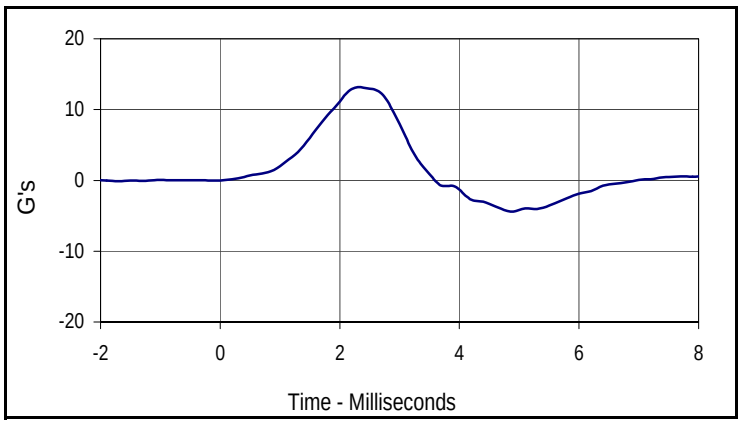
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
41.9	13.2	-7.8	27.5

Test Program:	SID / HIII Head Drop Lateral Impact Test	Test Date:	5/11/07
ATD Serial No.:	274	Test I.D.:	HD05Q

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	131.5	Pass
Peak Longitudinal Acceleration	G's	≤15.0	13.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.4	Pass
		Overall Test Results		Pass



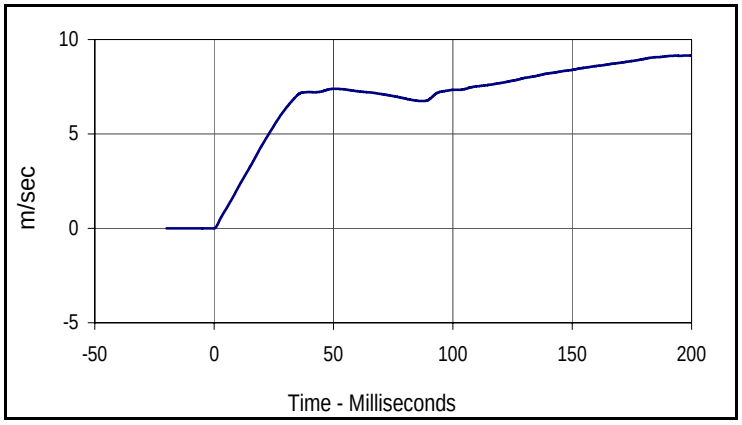
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
131.5	2.5	0.1	0.0



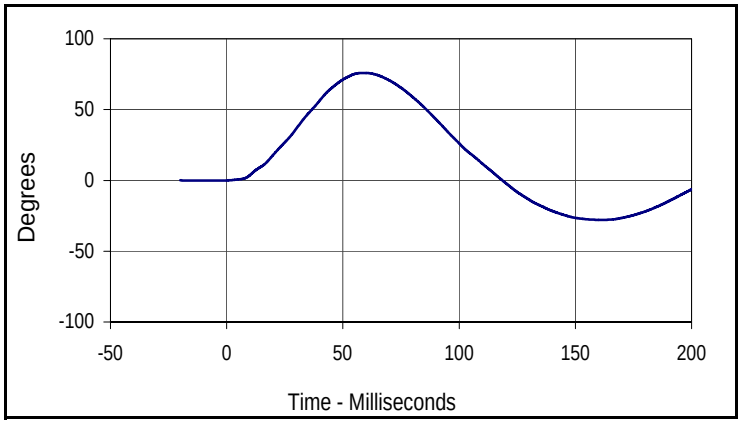
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
13.2	2.3	-4.4	4.9

Test Program:	SID / HIII Neck Pendulum Lateral Test	Test Date:	5/11/07
ATD Serial No.:	274	Test I.D.:	NB05Q

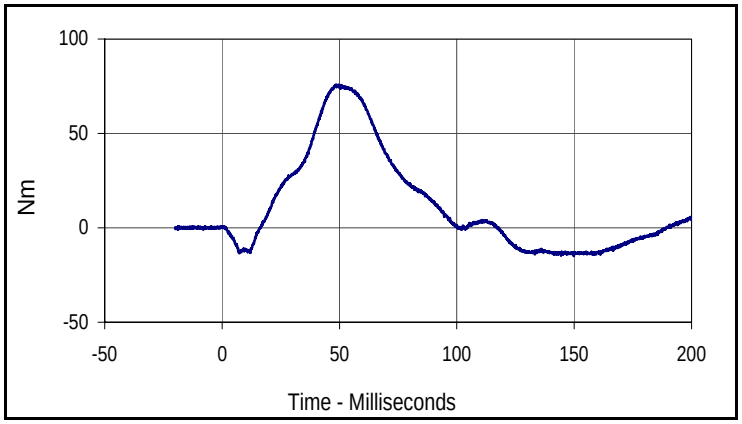
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.08	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.15	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.39	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.36	Pass
	40 to 70	m/sec	6.27 to 7.64	7.39	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	75.9	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	9.4	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	59.4	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	75.8	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	50.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.2	198.8	0.0	-0.5



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.9	59.2	-27.8	161.2



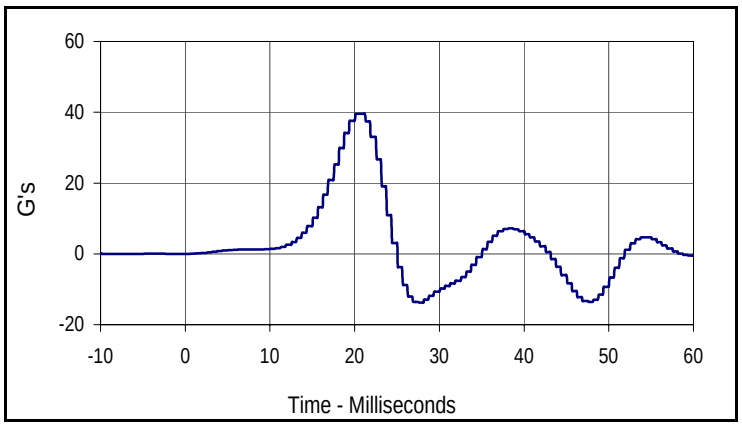
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	60	Nm
Max	Time	Min	Time
75.8	49.8	-14.9	149.8

Test Program:	SID / HIII External Measurements	Test Date:	5/11/07
ATD Serial No.:	275	Test I.D.:	N/A

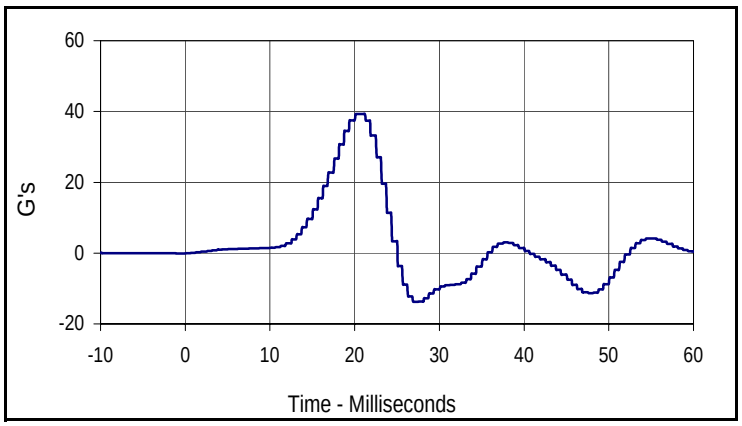
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	^{o}C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	892	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	511	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	513	Pass
KV- Knee Pivot From Floor	mm	490 to 505	503	Pass
HW- Hip Width	mm	356 to 391	375	Pass
		Overall Test Results		Pass

Test Program:	SID / HIII Thorax Lateral Impact	Test Date:	5/10/07
ATD Serial No.:	275	Test I.D.:	TH05R

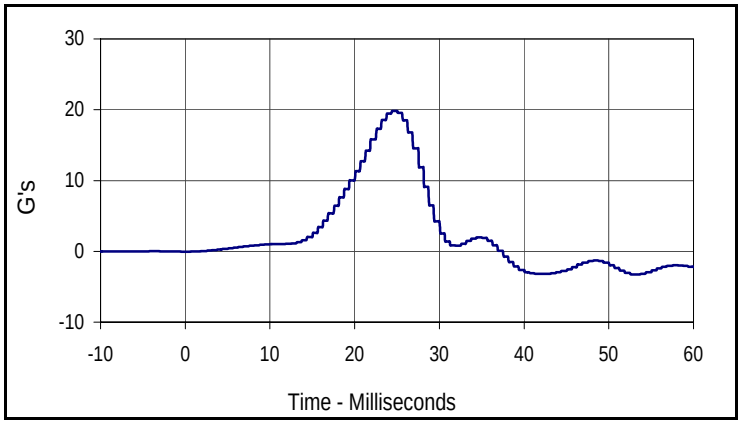
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.30	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	37.6	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	37.7	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	20.3	Pass
		Overall Test Results		Pass



Curve Description			
Upper Rib Primary Y			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
37.6	18.9	-10.2	28.9



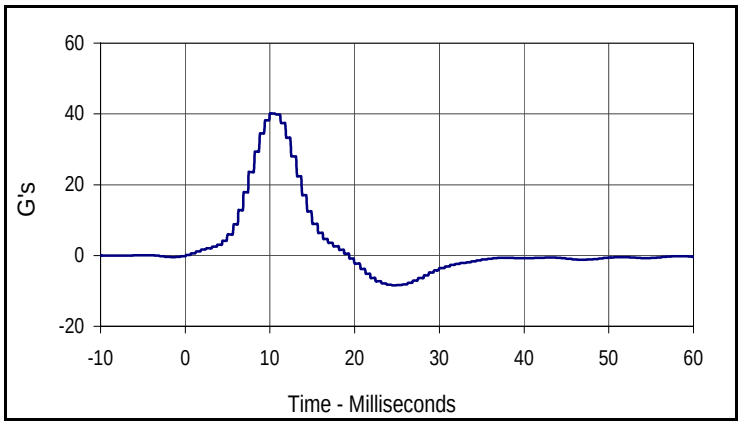
Curve Description			
Lower Rib Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
37.7	18.9	-12.6	28.3



Curve Description			
Lower Spine Primary Y			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
20.3	23.3	-3.6	60.8

Test Program:	SID / HIII Pelvis Lateral Impact	Test Date:	5/10/07
ATD Serial No.:	275	Test I.D.:	PL05T

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	4.28	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	40.1	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
		Overall Test Results		Pass

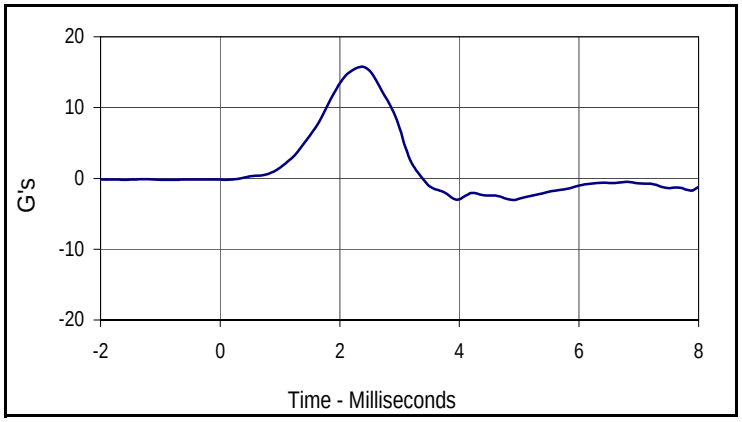


Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
40.1	10.0	-8.4	24.4

Test Program:	SID / HIII Head Drop Lateral Impact Test	Test Date:	5/10/07
ATD Serial No.:	275	Test I.D.:	HD05R

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	137.6	Pass
Peak Longitudinal Acceleration	G's	≤15.0	12.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.4	Pass
		Overall Test Results		Pass

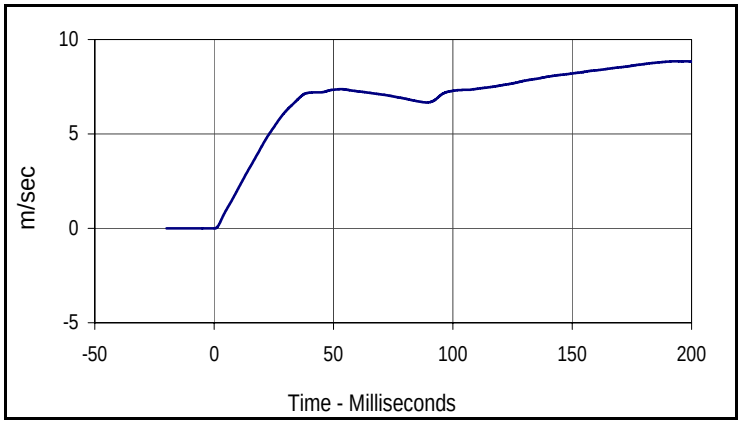
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
137.6	2.3	0.4	-1.8



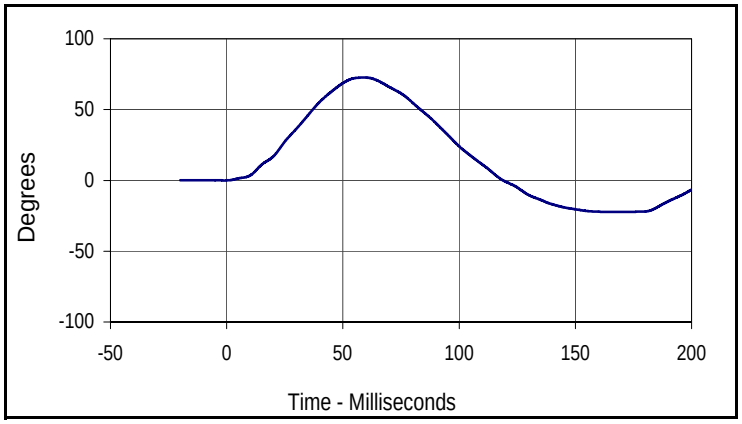
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.3	-0.8	-12.8	2.3

Test Program:	SID / HIII Neck Pendulum Lateral Test	Test Date:	5/11/07
ATD Serial No.:	275	Test I.D.:	NB05R

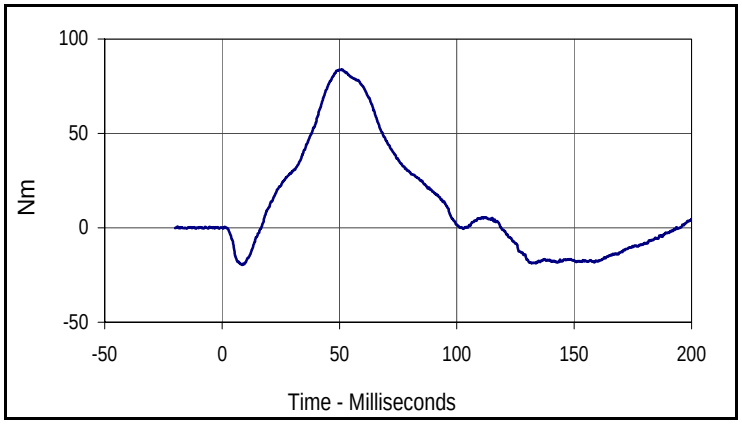
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/sec	6.89 to 7.13	7.07	Pass
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.09	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.36	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.21	Pass
	40 to 70	m/sec	6.27 to 7.64	7.37	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	72.6	Pass
Max Rotation Time After Peak Moment		Msec.	2.0 to 16.0	7.7	Pass
Rotation Time From Peak to Zero Angle		Msec.	58.0 to 67.0	60.0	Pass
Moment About Occipital Condyle		Nm	73.0 to 88.0	83.8	Pass
Positive Moment Decay, Time To 0 Nm		Msec.	49.0 to 64.0	51.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
8.8	192.7	0.0	0.0



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
72.6	58.9	-22.3	165.2



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
83.8	51.2	-19.6	8.6

APPENDIX D

CHILD RESTRAINT SYSTEM

REPORT NUMBER TR-P27120-01-NC

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

GENERAL MOTORS CORPORATION
2007 SAAB 9-3
4-DOOR SEDAN

NHTSA NUMBER: A70101

Prepared By:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301

MAY 8, 2007

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
RULEMAKING
MAIL CODE: W43-410
1200 NEW JERSEY AVE SE
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-03-D-32005.

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Prepared by:  Date: May 8, 2007

Mr. Johnny H. Dutto, Project Engineer
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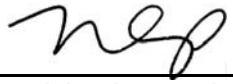
Reviewed by:  Date: May 8, 2007

Mr. Michael L. Dunlap, Quality Assurance Manager
KARCO Engineering, LLC

Approved by:  Date: May 8, 2007

Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipients Catalog No.
TR-P27120-01-NC		

4. Title and Subtitle	5. Report Date
Final Report of a Combi Centre Base CRS NHTSA No. A70101	May 8, 2007
	6. Performing Organization Code KAR

7. Authors	8. Performing Organization Report No.
Mr. Johnny H. Dutto, Project Engineer, Karco Mr. Frank Richardson, Program Manager, Karco	TR-P27120-01-NC

9. Performing Organization Name and Address	10. Work Unit No.
Karco Engineering, LLC 9270 Holly Rd. Adelanto, CA, 92301	**11. Contract or Grant No.** DTNH22-03-D-32005

12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
U. S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code: W43-410 1200 New Jersey Ave SE Washington, D.C 20590	Final Test Report Base Year
	14. Sponsoring Agency Code DOT/NHTSA/NRM/OCS

15. Supplementary Notes

16. Abstract

A side impact test was conducted on the subject CRS Combi Centre Base in conjunction with side impact NCAP testing on a 2007 Saab 9-3 4-Door Sedan and in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the determination of CRS crashworthiness. This test was conducted at Karco Engineering, LLC on May 8, 2007.

Measurement Description	Units	Threshold	Right Rear (P3)
Head Injury Criteria (HIC15)	N/A	390	103.0
3 msec. Chest Clip	G's	50	25.0

17. Key Words	18. Distribution of Statement
New Car Assesment Program (Side Impact NCAP) Side Impact Moving Deformable Barrier (MDB) Final Report of a Combi Centre Base CRS	Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 1200 New Jersey Ave SE Washington, D.C. 20590

19. Security Classification (this report)	20. Security Classification (this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	44	

Form DOT F1700.7 (8-72)

TABLE OF CONTENTS

SECTION D-1

PURPOSE AND SUMMARY OF TEST A70101

The purpose of this test is to obtain CRS performance data during a 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test

The Side Impact NCAP test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

One 12-month old CRABI (P3) was instrumented with head, chest, and six-axis upper neck load cells. A tri-axial accelerometer was installed on the CRS and the CRS base. Seat belt load cells were placed on the inboard and outboard lower anchors.

The right rear (Serial No. 022) CRABI was calibrated prior to this test. CRABI calibration information is found in Section D-4.

CHILD DUMMY VALUES		
Location	HIC15 Value	3 Msec. Chest Clip
CRABI (P3)	103.0	25.0

DATA SHEET NO.1

CRASH TEST SUMMARY

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

CHILD RESTRAINT SYSTEM INFORMATION

Description	Position #3 CRS
Manufacturer	Combi
Model Name	Centre Base
Serial No.	CC41C0160BC00548
Type	Infant
Forward/Rearward	Rearward

VISIBLE DUMMY CONTACT POINTS

Description	Position #3 CRS
Head Contact	Both Sides of CRS
Chest Contact	None
Abdomen Contact	None
Left Knee Contact	None
Right Knee Contact	None
Left Toe Contact	Seatback
Right Toe Contact	Seatback

POST-TEST DOOR OPENINGS

Description	Position #3 CRS
Right Rear Door	Opened without tools, Remained closed during test

CAMERA COVERAGE

Description	Standard
High Speed	1
Real Time	0
Total	1

DATA CHANNELS

CRABI (P3) Sensors	13
Belt Sensors	2
CRS Sensors	6
Total	21

DATA SHEET NO.2

VEHICLE PARAMETER DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	454	308	762	492	402	894
Right	kg	431	283	714	460	360	820
Ratio	%	60.0	40.0	100	55.5	44.5	100
Totals	kg	885	591	1476	952	762	1714

TARGET TEST WEIGHT CALCULATION

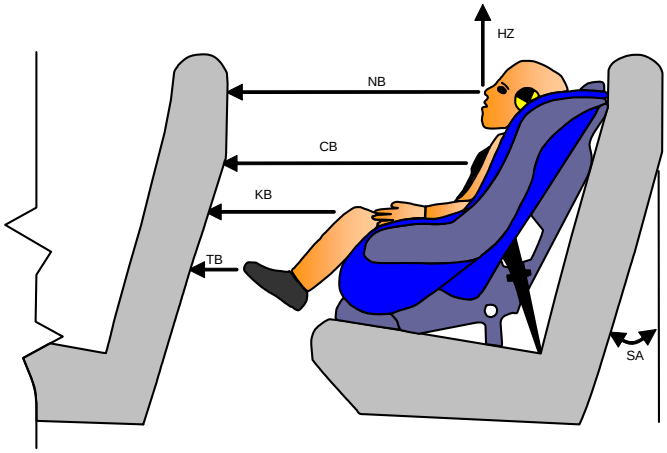
Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1476
Weight of 2 P572 ATD's	kg	161
Rated Cargo/Luggage Wt. (RCLW)	kg	81
Calculated Vehicle Target Wt. (TVTW)	kg	1718

DATA SHEET NO.3

CRABI POSITIONING IN VEHICLE

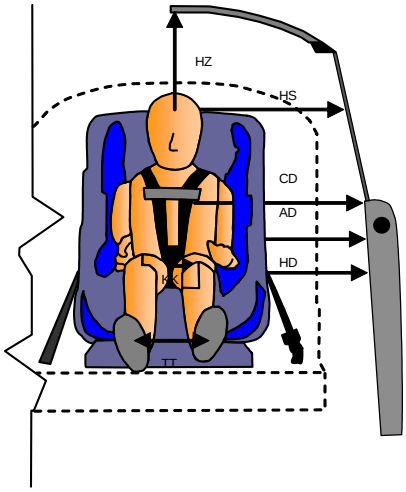
Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

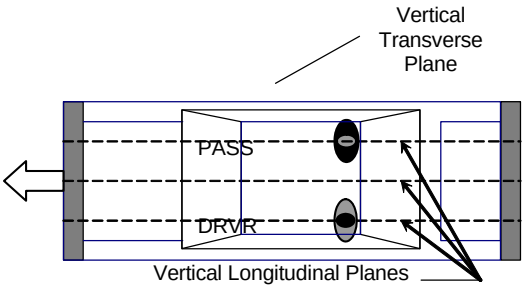
Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07



AD	Arm to Door
CD	Chest to Door
HD	H-Point to Door
HS	Head to Side Window
KK	Knee to Knee
TT	Toe to Toe

CB	Chest to Seat Back
HZ	Head to Roof
KB	Knee to Seat Back
NB	Nose to Seat Back
SA	Seat Back Angle
TB	Toe to Seat Back





DUMMY MEASUREMENTS FOR REAR SEAT OCCUPANTS

DATA SHEET NO.3

CRABI POSITIONING IN VEHICLE…(CONTINUED)

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

CRABI POSITION MEASUREMENTS

Code	Measurement	P3 (Passenger's Side)	
		Length (mm)	Angle (°)
SA	Seat Back Angle		26.0
HZ	Head to Roof (Z)	411	
CD	Chest to Door	355	
KK	Knee to Knee (Y)	110	
HS	Head to Side Window	410	
HD	H-Point to Door (Y)	275	
AD	Arm to Door	230	
NB	Nose to Seat Back	489	
CB	Chest to Seat Back	425	
FF	Foot to Foot	110	
KB-Left	Knee to Seat Back	175	
KB-Right	Knee to Seat Back	175	
TB-Left	Toe to Seat Back	65	
TB-Right	Toe to Seat Back	60	

DATA SHEET NO.4

CRS PERFORMANCE DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

CRS PERFORMANCE DATA

Location	CRS (P3)	
	Damage	Post-Test
Upper Tether Strap		
Upper Tether Buckle		
Upper Tether Hook		
Veh. Upper Tether Anchor		
Lower Anchor Strap	No	None
Lower Anchor Buckle	No	None
Lower Anchor Hooks	No	None
Veh. Lower CRS Anchors	No	None
5-Point Harness Connections	No	None
Cracks on CRS	No	None
Fabric Tears on CRS	No	None
Vehicle Seat Structure	No	None
Vehicle Seat Fabric Tears	No	None

DATA SHEET NO. 5

CRS ACCELEROMETER LOCATIONS

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

CRS ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	CRS	1700	603	715
2	CRS Base	1675	603	649

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

DATA SHEET NO.6

CRS CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Saab 9-3 4-Door Sedan NHTSA No.: A70101

Test Program: 55/28 km/h Side Impact NCAP Test Date: 5/8/07

CAMERA LOCATIONS

No.	Camera View	Location(mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Passenger CRS (O.B.)	1802	2317	1722	-2	n/a	10	1000

X = Barrier Face Y = Monorail Centerline Z = Ground DNR = Did Not Run NTM = No Time Marks

SECTION D2

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

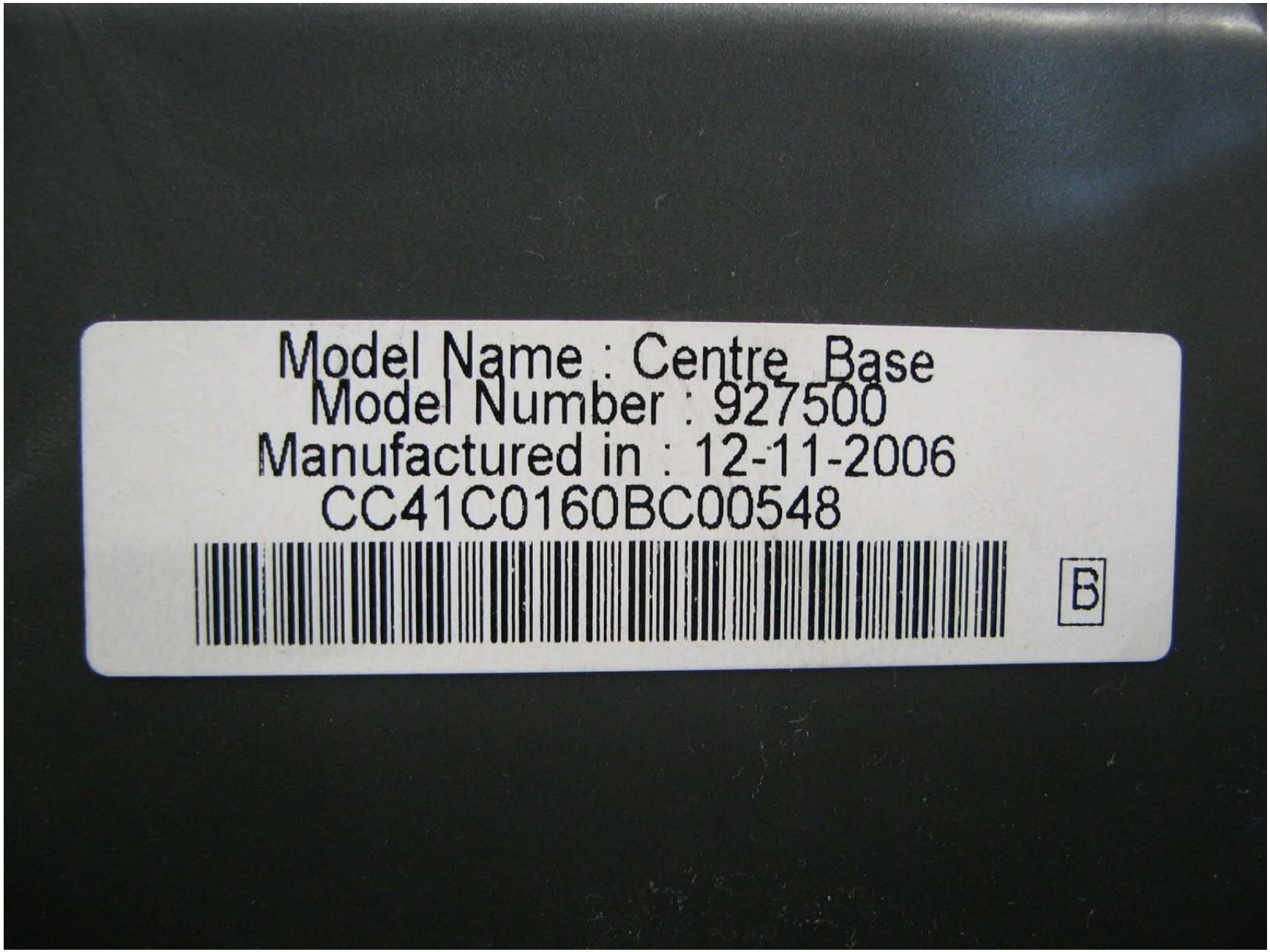


Figure D2-1: Position 3 CRS Label

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Figure D2-2: Pre-Test Frontal View of Position 3 CRS

Figure D2-3: Post-Test Frontal View of Position 3 CRS

Figure D2-4: Pre-Test Rear View of Position 3 CRS

Figure D2-5: Post-Test Rear View of Position 3 CRS

Figure D2-6: Pre-Test Left Side View of Position 3 CRS

Figure D2-7: Post-Test Left Side View of Position 3 CRS

Figure D2-8: Pre-Test Right Side View of Position 3 CRS

Figure D2-9: Post-Test Right Side View of Position 3 CRS

Figure D2-10: Pre-Test Position 3 Front View (Head and Seat Belt Position)

Figure D2-11: Post-Test Position 3 Front View (Head and Seat Belt Position)

Figure D2-12: Pre-Test Position 3 Front View (Seat Belt Position)

Figure D2-13: Post-Test Position 3 Front View (Seat Belt Position)

Figure D2-14: Pre-Test Position 3 Right Side View

Figure D2-15: Post-Test Position 3 Right Side View

Figure D2-16: Pre-Test Position 3 Right Side View (Through Window)

Figure D2-17: Post-Test Position 3 Right Side View (Through Window)

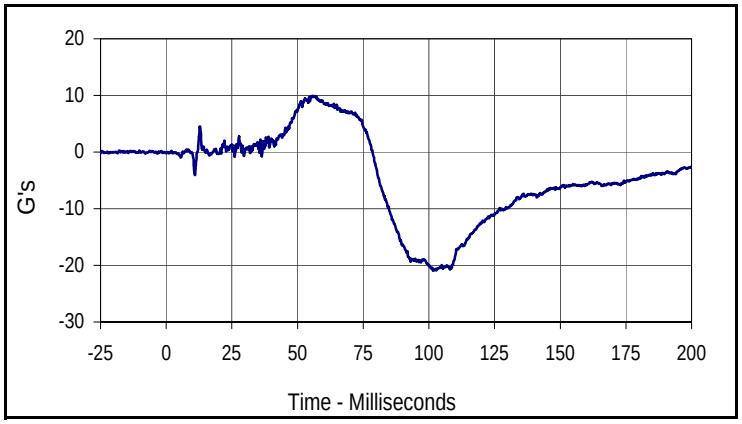
Figure D2-18: Post-Test Position 3 Dummy Legs

SECTION D3

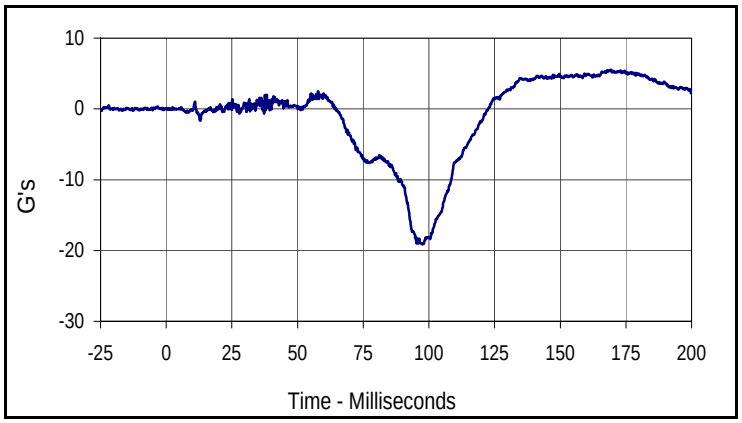
CRABI RESPONSE AND CRS DATA TRACES

LIST OF DATA PLOTS

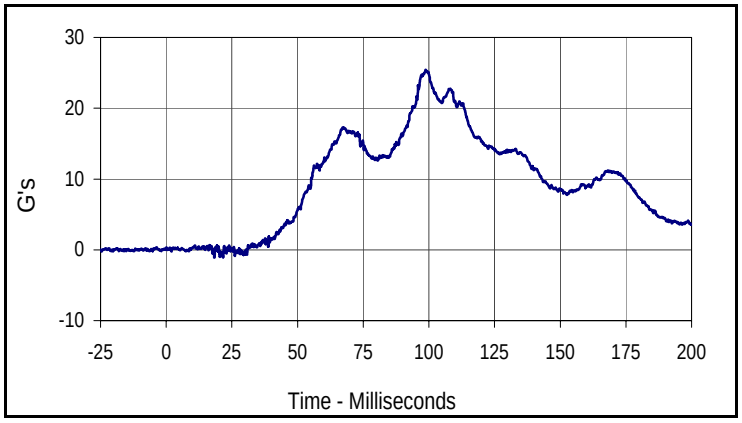
Test Vehicle:	2007 Saab 9-3 4-Door Sedan	Test Date:	5/8/07
Test Program:	55/28 km/h Side Impact NCAP	NHTSA No.:	A70101



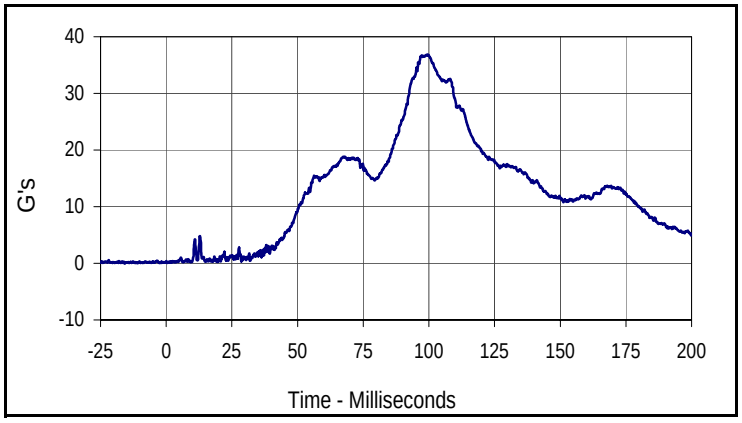
Curve Description			
CRABI Head X			
CURNO	Type	SAE Class	Units
072	FIL	1000	G's
Max	Time	Min	Time
9.9	55.9	-21.0	101.7



Curve Description			
CRABI Head Y			
CURNO	Type	SAE Class	Units
073	FIL	1000	G's
Max	Time	Min	Time
5.5	169.4	-19.2	97.5

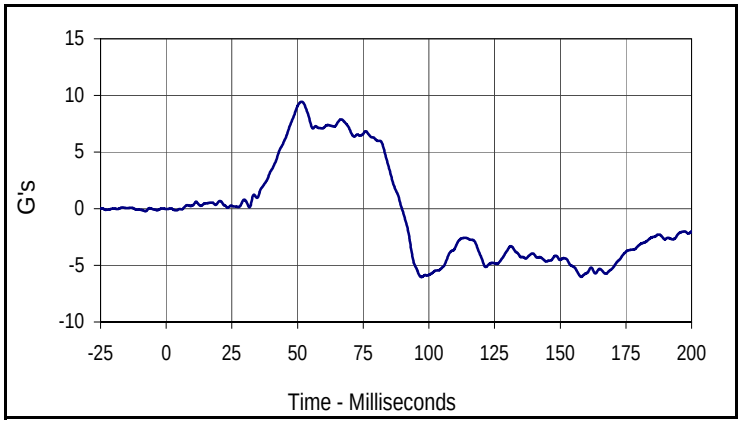


Curve Description			
CRABI Head Z			
CURNO	Type	SAE Class	Units
074	FIL	1000	G's
Max	Time	Min	Time
25.4	98.8	-1.1	18.3

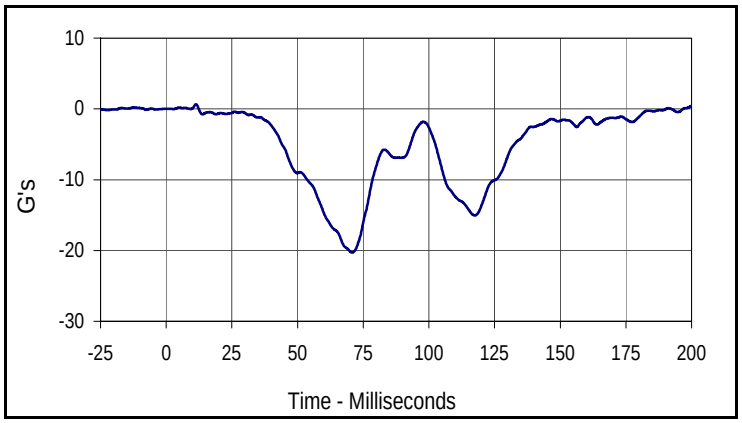


Curve Description			
CRABI CRABI Head Resultant			
CURNO	Type	SAE Class	Units
072	RES	1000	G's
Max	Time	Min	Time
36.9	99.8	0.1	0.5

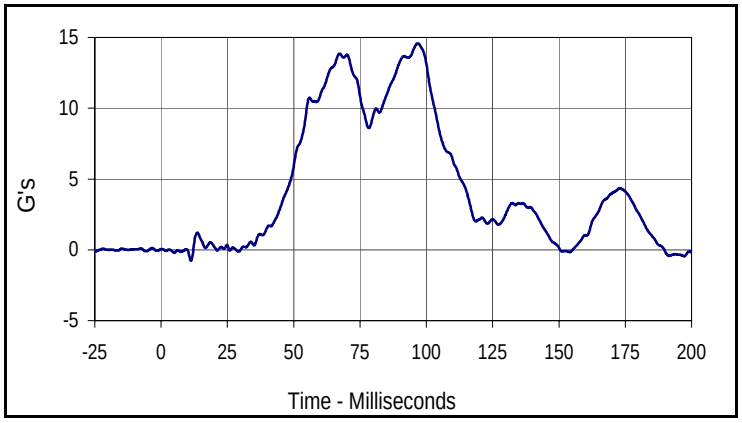
Test Vehicle:	2007 Saab 9-3 4-Door Sedan	Test Date:	5/8/07
Test Program:	55/28 km/h Side Impact NCAP	NHTSA No.:	A70101



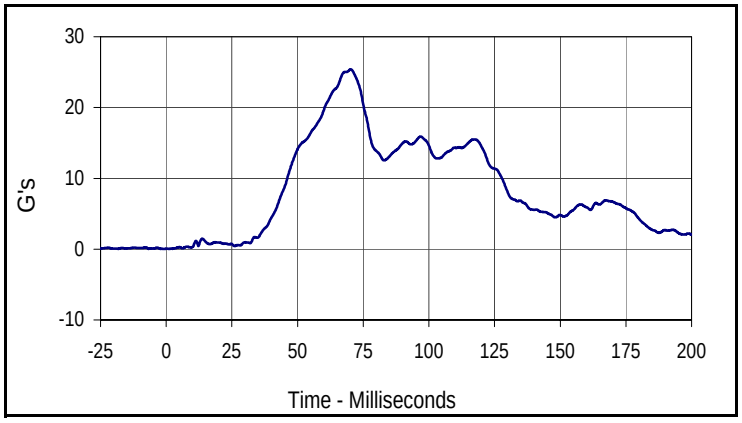
Curve Description			
CRABI Chest X			
CURNO	Type	SAE Class	Units
082	FIL	180	G's
Max	Time	Min	Time
9.4	51.6	-6.0	97.2



Curve Description			
CRABI Chest Y			
CURNO	Type	SAE Class	Units
083	FIL	180	G's
Max	Time	Min	Time
0.6	11.3	-20.3	70.8



Curve Description			
CRABI Chest Z			
CURNO	Type	SAE Class	Units
084	FIL	180	G's
Max	Time	Min	Time
14.6	96.9	-0.8	11.3



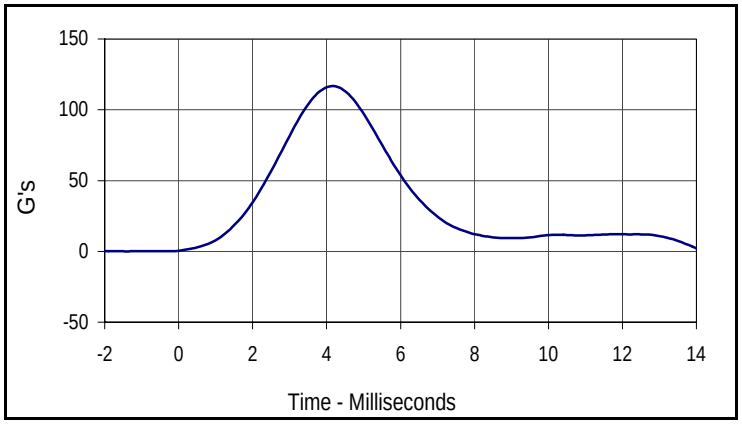
Curve Description			
CRABI CRABI Chest Resultant			
CURNO	Type	SAE Class	Units
082	RES	180	G's
Max	Time	Min	Time
25.4	70.3	0.0	1.1

SECTION D4

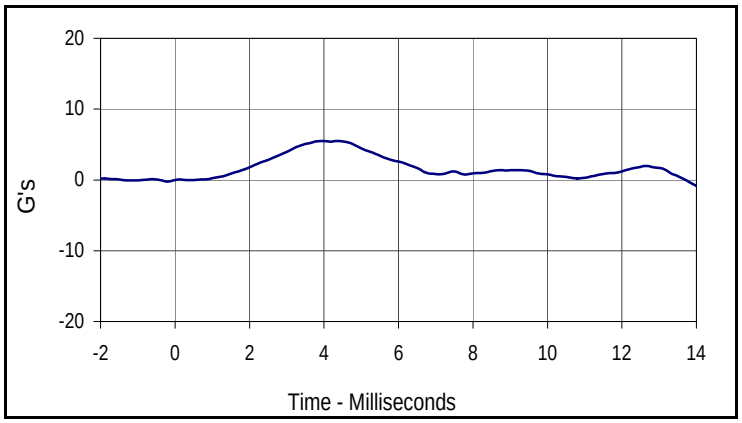
CRABI CALIBRATION INFORMATION

Test Program:	CRABI 12 Month Old Frontal Head Drop Test	Test Date:	5/7/07
ATD Serial No.:	022	Test I.D.:	HD022R

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	100.0 to 120.0	116.7	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
116.7	4.2	0.0	-1.4

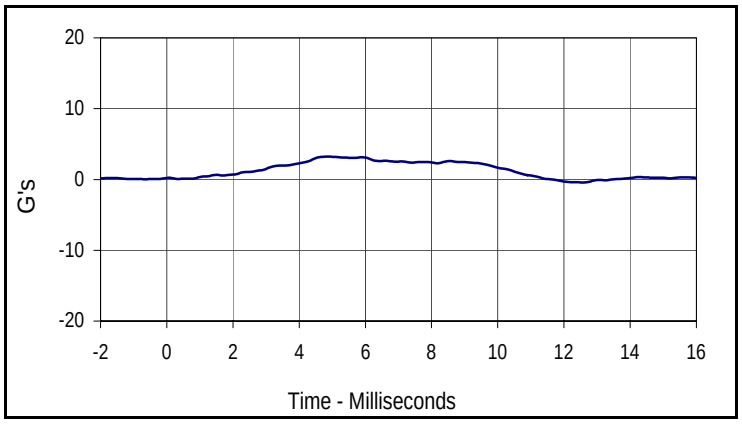


Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.5	3.9	-0.2	-0.2

Test Program:	CRABI 12 Month Old Rear Head Drop Test	Test Date:	5/7/07
ATD Serial No.:	022	Test I.D.:	HDR22R

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	55.0 to 71.0	67.8	Pass
Peak Lateral Acceleration	G's	≤15.0	3.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
		Overall Test Results		Pass

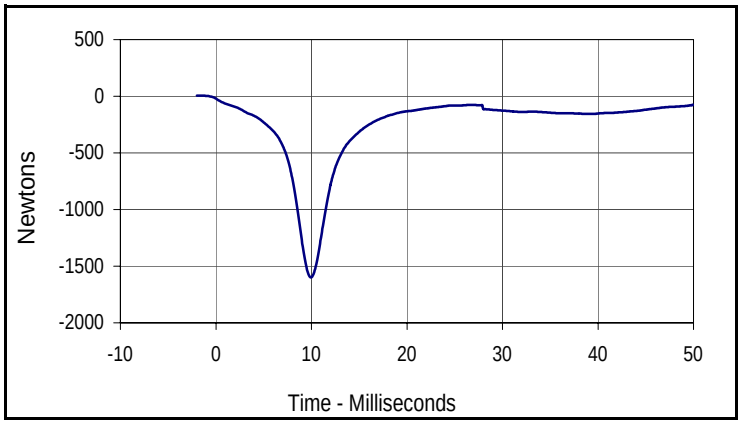
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
67.8	6.0	0.1	-1.1



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.2	4.8	0.0	-0.6

Test Program:	CRABI 12 Month Old Thorax Impact Test	Test Date:	5/7/07
ATD Serial No.:	022	Test I.D.:	CH22R

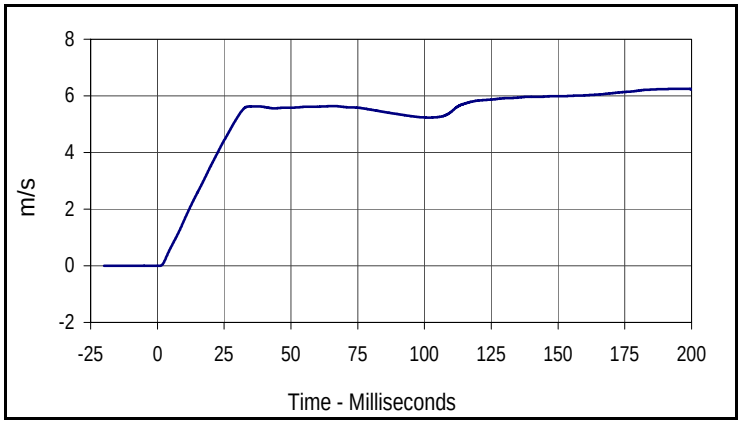
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	4.90 to 5.10	4.90	Pass
Peak Probe Force	Newtons	-1514 to -1796	-1598	Pass
		Overall Test Results		Pass



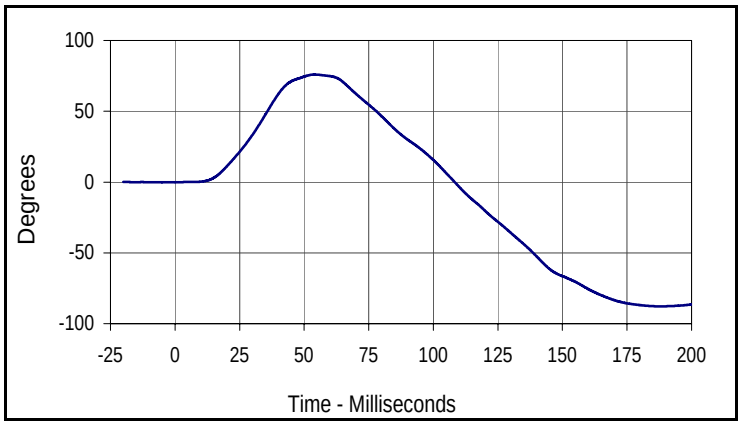
Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5.6	-1.7	-1598.4	10.0

Test Program:	CRABI 12 Month Old Neck Flexion Test	Test Date:	5/7/07
ATD Serial No.:	022	Test I.D.:	NF22R

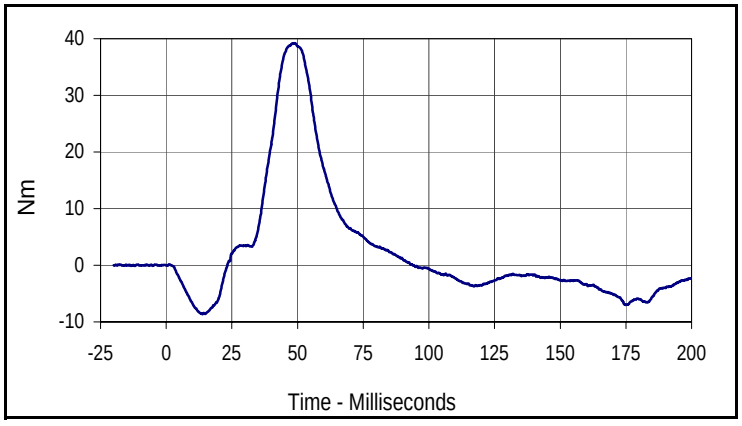
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.10 to 5.30	5.18	Pass
Pendulum Deceleration	10 Msec.	m/s	1.6 to 2.3	1.6	Pass
	20 Msec.	m/s	3.4 to 4.2	3.5	Pass
	25 Msec.	m/s	4.3 to 5.2	4.4	Pass
"D" Plane Rotation	Max	Degrees	75.0 to 86.0	75.9	Pass
Peak Moment in Rotation	Max	Nm	36.0 to 45.0	38.4	Pass
Positive Moment Decay, Time To 5 Nm		Msec.	60.0 to 80.0	75.1	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.2	197.7	0.0	0.6



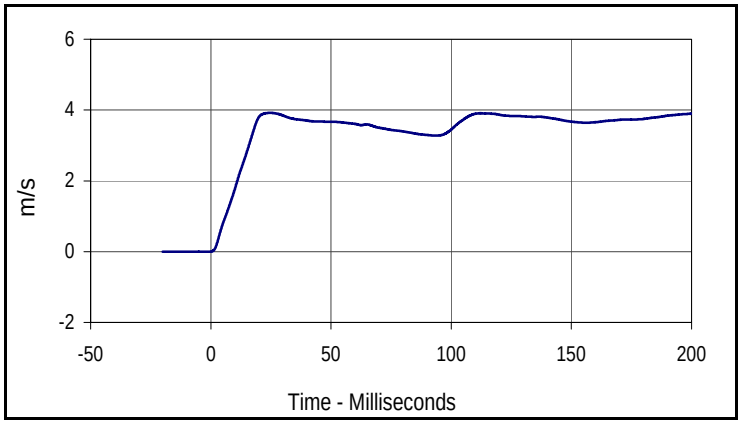
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.9	54.0	-87.8	188.0



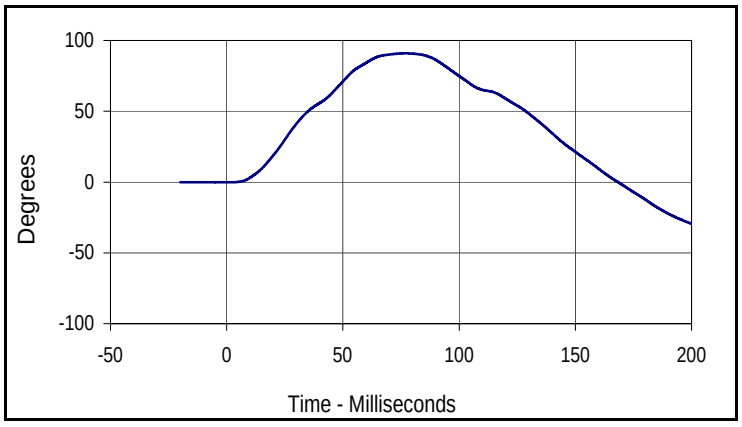
Curve Description			
Upper Neck Force Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
39.2	48.7	-8.6	13.7

Test Program:	CRABI 12 Month Old Neck Extension Test	Test Date:	5/7/07
ATD Serial No.:	022	Test I.D.:	NE22R

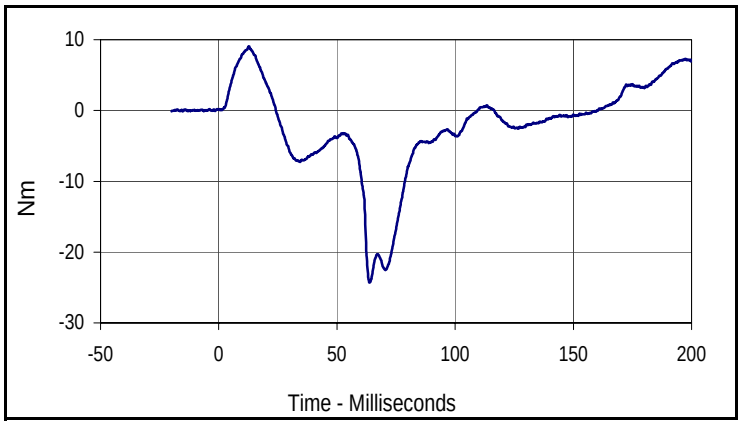
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	2.4 to 2.6	2.43	Pass
Pendulum Deceleration	6 Msec.	m/s	0.8 to 1.2	1.0	Pass
	10 Msec.	m/s	1.5 to 2.1	1.8	Pass
	14 Msec.	m/s	2.2 to 2.9	2.6	Pass
"D" Plane Rotation	Max	Degrees	80.0 to 92.0	90.9	Pass
Peak Moment in Rotation	Max	Nm	-12 to -23	-12.9	Pass
Positive Moment Decay, Time To -5 Nm		Msec.	76.0 to 90.0	80.1	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
3.9	24.6	0.0	-0.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
90.9	77.0	-29.3	200.0



Curve Description			
Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
9.0	12.8	-24.3	63.8

Test Program:	CRABI 12 Month Old External Dimensions	Test Date:	5/7/07
ATD Serial No.:	022	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	456.0 to 471.2	459	Pass
B - Shoulder pivot height	mm	276.6 to 291.8	279	Pass
C - "H" point height	mm	27.9 to 38.1	35	Pass
D - "H" point from backline	mm	40.1 to 50.3	45	Pass
E - Shoulder pivot from back	mm	50.3 to 60.5	54	Pass
F - Thigh clearance	mm	63.0 to 73.2	64	Pass
G - Elbow pivot to fingertip	mm	176.6 to 191.8	180	Pass
I - Shoulder pivot to elbow pivot	mm	99.1 to 114.3	102	Pass
J - Elbow rest height	mm	150.1 to 165.3	159	Pass
K - Buttock to knee length	mm	202.7 to 217.9	205	Pass
L - Poplipteal length	mm	138.7 to 153.9	140	Pass
M - Knee pivot height	mm	165.1 to 180.3	171	Pass
N - Buttock poplipteal length	mm	144.8 to 160.0	148	Pass
O - Chest depth with jacket	mm	107.5 to 122.7	110	Pass
P - Foot length	mm	92.4 to 102.6	102	Pass
Q- Stature	mm	727.7 to 753.1	N/A	N/A
R - Buttock to knee pivot length	mm	178.5 to 188.7	182	Pass
S - Head Breadth	mm	124.4 to 134.6	134	Pass
T - Head Depth	mm	149.9 to 165.1	155	Pass
U - Hip breadth	mm	158.5 to 173.7	163	Pass
V - Shoulder breadth	mm	200.7 to 215.9	215	Pass
W - Foot breadth	mm	39.1 to 49.3	46	Pass
Y - Chest circumference with jacket	mm	452.4 to 477.8	462	Pass
Z - Waist circumference	mm	447.0 to 472.4	455	Pass
AA - Refrence location for dimension Y & O	mm	256.5 to 266.7	264	Pass
BB - Reference Location For dimension Z	mm	106.7 to 116.9	108	Pass
CC - Shoulder Height	mm	299.7 to 314.9	305	Pass
DD - Chin Height	mm	289.6 to 304.8	300	Pass
		Overall Test Results		Pass