U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LABORATORY TEST PROCEDURE

FOR

FMVSS No. 214, DYNAMIC SIDE IMPACT PROTECTION

-Moving Deformable Barrier Impact Test Requirements-

APPENDIX A
DATA SHEETS

ENFORCEMENT
Office of Vehicle Safety Compliance
Mail Code: NVS-220
1200 New Jersey Ave. SE
Washington, DC 20590

TABLE OF CONTENTS

DATA SHEET NO. 1
TEST VEHICLE INFORMATION AND OPTIONS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

Test Vehicle Information	
Make	
Model	
Body Style	
VIN	
Body Color	
Engine Disp (liters)	
Number of Cylinders	
Engine Placement	
Transmission Type	
Transmission Speeds	
Overdrive	
Final Drive	
Odometer Reading	

Optional Equipment	
Anti-lock Brakes (ABS)	
All-Wheel Drive (AWD)	
Traction Control System (TCS)	
Electronic Stability Control (ECS)	
Side Curtain Airbags	
Torso Airbag - Front seats	
Torso Airbag - Rear seats	
Combination/Head Torso Bag	
Pelvic Airbag - Front seats	
Pelvic Airbag - Rear seats	
Knee Airbaq – Driver	
Knee Airbag - Front Passenqer	
Seat belt pretentioners - Front seats	
Seat belt pretentioners - Rear seats	
Seat belt load limiters - Front seats	
Seat belt load limiters - Rear seats	
Tire pressure monitorinq system (TPMS)	
Tilt Steering Wheel	
Automatic Door Locks (ADL)	
Power Window Auto-reverse	
Power Seats	

DATA FROM CERTIFICATION LABEL

Manufactured by	
Date of Manufacture	

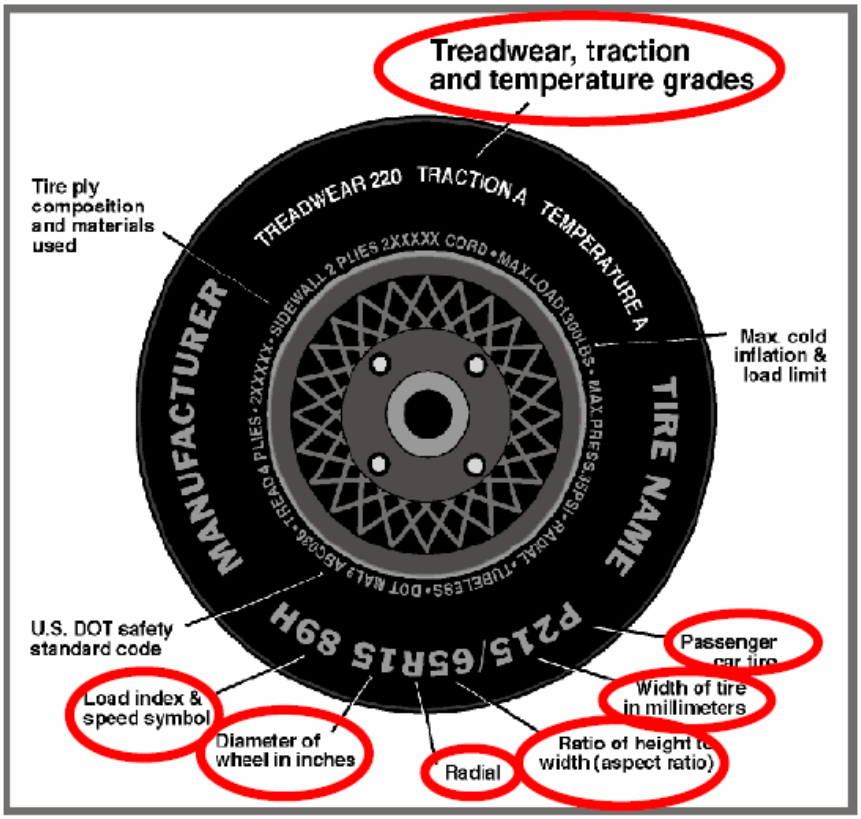
GVWR (kg)	
GAWR Front (kg)	
GAWR Rear (kg)	

VEHICLE CAPACITY DATA

	Front	Rear	Third	Total
Type of Seats (Bench or Bucket)				
Number of Occupants (DSC)				
Vehicle Capacity Weight (VCW) (kg)				

DATA SHEET NO. 1 (Continued)
TEST VEHICLE INFORMATION AND OPTIONS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____



Tire Placard	Front	Rear
Recommended Cold Pressure (kPa)		
Recommended Tire Size		
Tire Sidewall		
Maximum Tire Pressure (kPa)		
Tire Size on Vehicle		
Tire Manufacturer Model		
Tire Name		
Tire Type		
Tire Width		
Aspect Ratio		
Radial		
Wheel Diameter		
Load Index/Speed Symbol		
Treadwear		
Traction Grade		
Temperature Grade		

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

TIRE PRESSURES

	Units	LF	RF	RR	LR
As Delivered	kpa				
As Tested	Kpa				

TEST VEHICLE WEIGHTS

	Units	As Delivered			Fully Loaded			As Tested		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg									
Right	kg									
Ratio	%									
Totals	kg									

TEST VEHICLE TARGET WEIGHT (TVTW) CALCULATION

Measured Parameter	Value (kg)
As Delivered Weight	
Weight of 2 P572 ATDS	
Rated Cargo/Luggage Weight (RCLW)	
Calculated Target Vehicle Test Weight (TVTW)	

VEHICLE ATTITUDE

Wheel Opening Location	Distance (grd to ref. point above wheel opening in mm)		Diff (Δ mm)	Met Reqmnt (Δ ≤ 10 mm)
	Fully Loaded	As Tested		
Left Front				
Right Front				
Left Rear				
Right Rear				

MDB IMPACT POINT DATA

Measured Parameter	Distance (mm)	Met Reqmnt
Test Vehicle Wheel Base		
Target Vertical Impact Reference Line Aft of Front Axle		
Actual Impact Point Location (fore – aft, above - below)		

Note: Fore or above the target impact point is positive (+). Aft or below the target impact point is negative (-).

WEIGHT of BALLAST and VEHICLE COMPONENTS REMOVED TO MEET TVTW

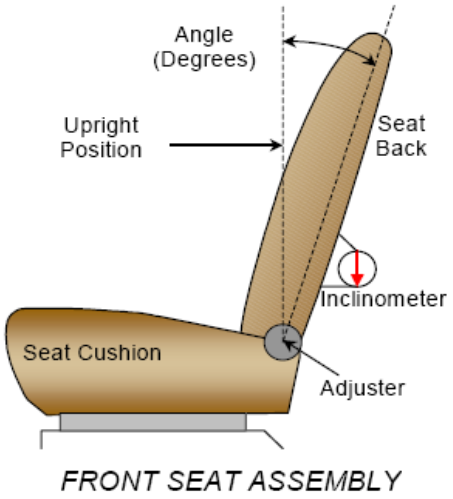
Description of Component	Weight (kg)
Ballast (if any)	

DATA SHEET NO. 3
SEAT AND SEAT BELT ADJUSTMENT DATA

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

NORMAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturer's designated angle. The procedure is as follows:



FRONT SEAT ASSEMBLY

SEAT BACK ANGLES

	Degrees
Driver w/ Seated Dummy	
Passenger w/ Seated Dummy	

SEAT FORE/AFT POSITIONS

Describe the method used for determining seat fore/aft positions:

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Front Seat		
Rear Seat		

SEAT BELT UPPER ANCHORAGES

Describe the method of positioning the seat belt upper anchorages:

SEAT BELT UPPER ANCHORAGES

	Total # of Positions	Placed in Position #
Driver Seat		
Rear Seat		

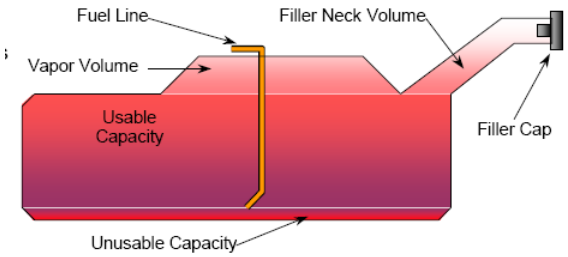
DATA SHEET NO. 4
FUEL SYSTEMS AND STEERING WHEEL POSITION DATA

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

FUEL TANK CAPACITY

	Liters
Usable Capacity (Form 1)	
Usable Capacity (Owner's Manual)	
92-94% of Usable Capacity	
Actual Amount of Solvent Used	

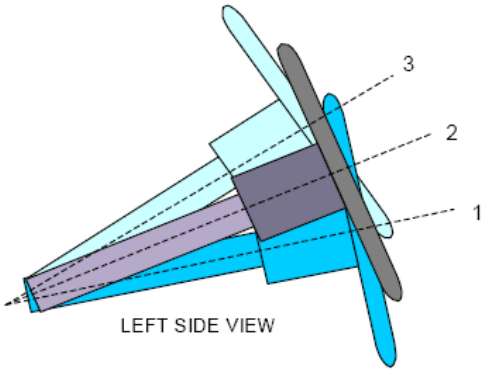
Describe the fuel pump type, its behavior, and the location of the fuel filler pipe:



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion. Describe how this measurement was attained:



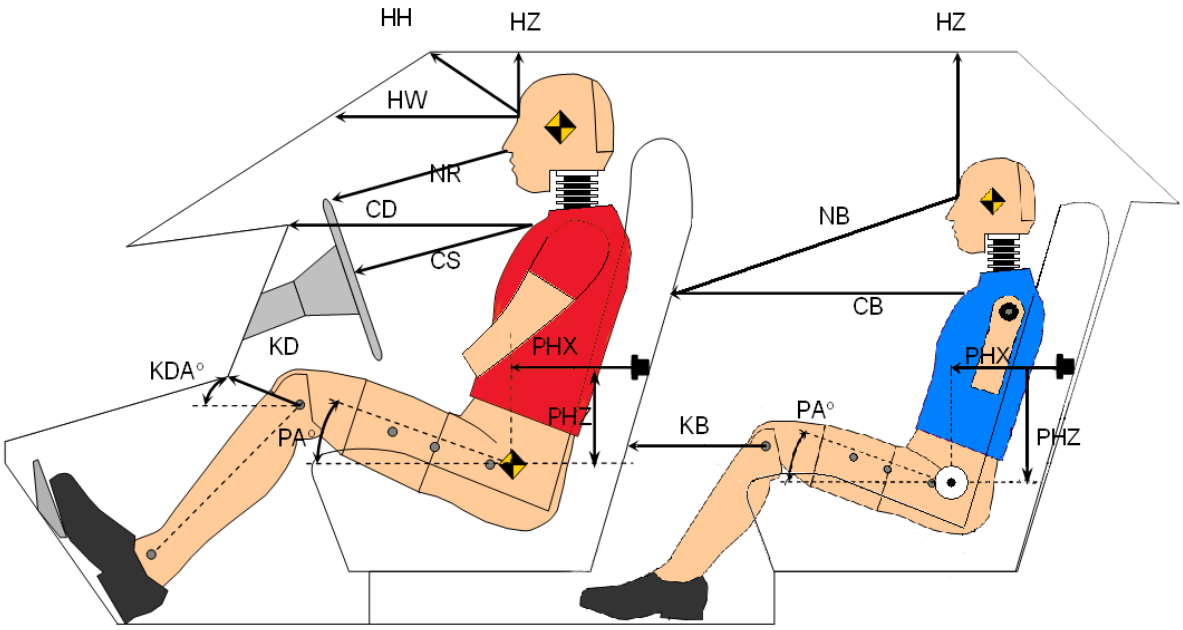
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1		
Geometric Center – Position 2		
Uppermost – Position 3		
Telescoping Steering Wheel Travel		
Test Position		

DATA SHEET NO. 5
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

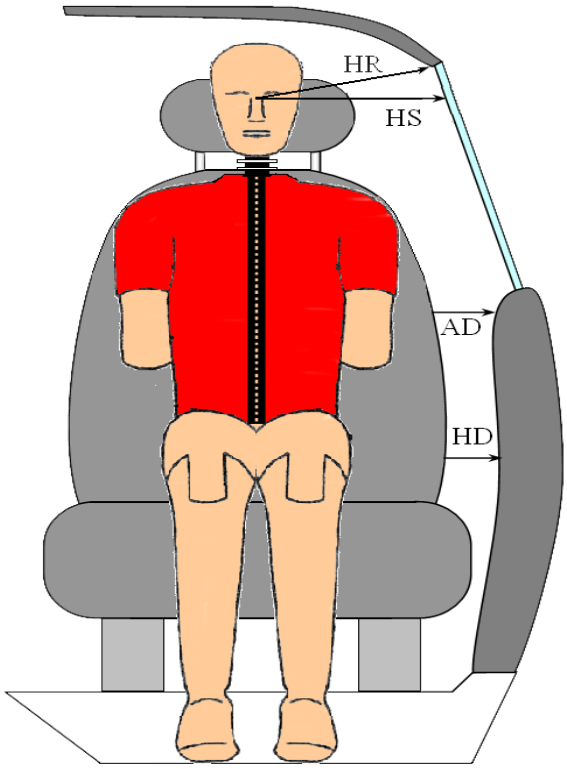


NOTE: 4-door vehicle shown. Rear dummy PHX and PHZ measurements for a 2-door vehicle would use the B-post striker as a reference point.

Driver Code	Rear Occupant Code	Measurement Description	ES2-re		SID-IIs	
			Length (mm)	Angle	Length (mm)	Angle
HH		Header to Header				
HW		Header to Windshield				
HZ	HZ	Head to Roof				
NR	NB	Nose to Rim/Seat Back				
CD	CB	Chest to Dash/Seat Back				
CS		Chest to Steering Wheel				
KDL	KBL	Left Knee to Dash/Seat Back				
KDR	KBR	Right Knee to Dash/Seat Back				
PA	PA	Pelvic Angle				
PHX	PHX	H-Point to Striker (X-Axis)				
PHZ	PHZ	H-Point to Striker (Z-Axis)				

DATA SHEET NO. 6
DUMMY LATERAL CLEARANCE DIMENSIONS

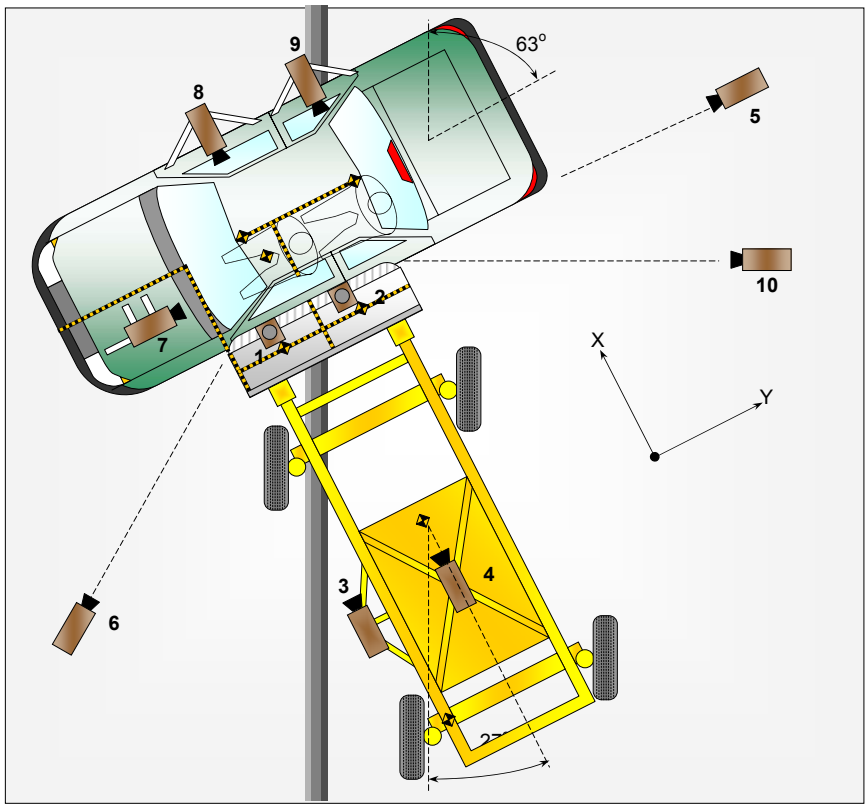
Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____



Code	Description	Units	Front Occupant	Rear Occupant
HR	Head to Side Header	mm		
HS	Head to Side Window	mm		
AD	Arm to Door	mm		
HD	H-point to Door	mm		

DATA SHEET NO. 7
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____



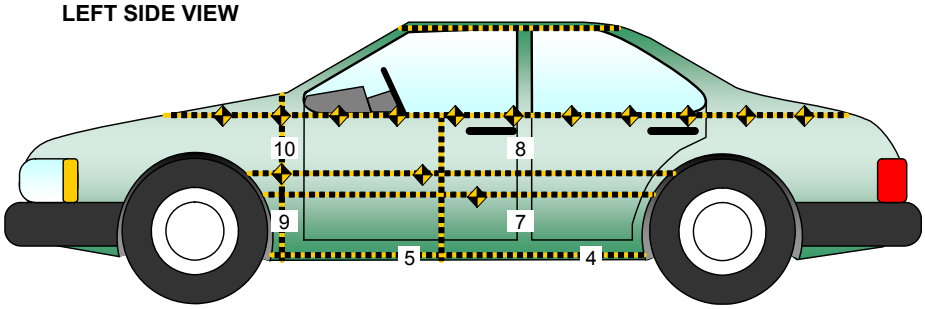
No.	Camera View	Location			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Overhead Overall					
2	Overhead Close-up					
3	Impact Point Close-up (MDB)					
4	Centerline of Impact (MDB)					
5	Right Side View					
6	Left Side View					
7	Front Seat Occupant - Frontal View (OB)					
8	Front Seat Occupant – Side View (OB)					
9	Rear Passenger - Side View (OB)					
10	Real Time Coverage					

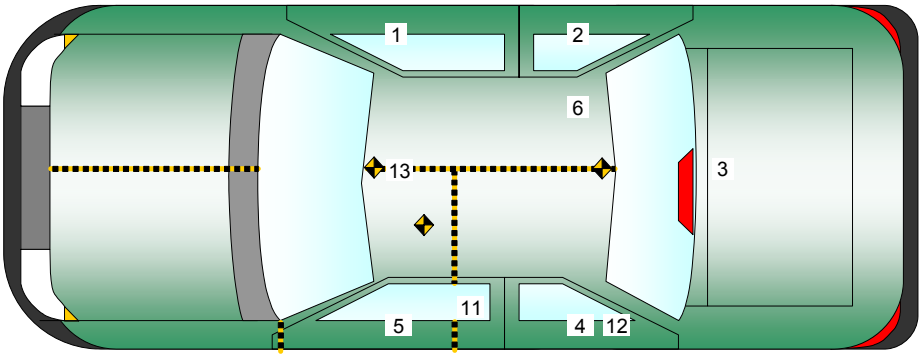
Reference: Impact Point projected to Ground
+X = To Front of MDB, +Y = To Right of MDB, +Z = Down

DATA SHEET NO. 8
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

LEFT SIDE VIEW





Loc. No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Left (or Rt) Sill at Front Seat			
2	Left (or Rt.) Sill at Rear Seat			
3	Rear Floorpan Above Axle			
4	Left (or Rt.) Sill at Rear Door			
5	Left (or Rt.) Sill at Front Door			
6	Left (or Rt.) Rear Occ. Compartment			
7	Left (or Rt.) B-Post Lower			
8	Left (or Rt.) B-Post Middle			
9	Left (or Rt.) A-Post Lower			
10	Left (or Rt.) A-Post Middle			
11	Front Seat Track			
12	Rear Seat Track or Structure			
13	Vehicle CG			

X – Test Vehicle Rear Bumper (+ forward)
Y – Test Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

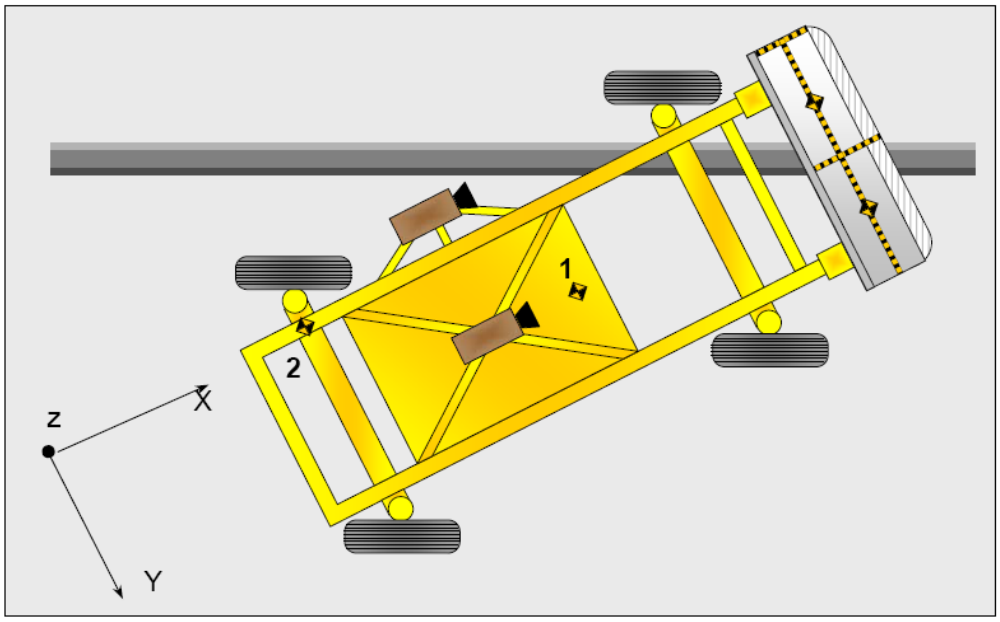
DATA SHEET NO. 9
TEST VEHICLE ACCELEROMETER DATA SUMMARY

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

Loc. No	Description	Peak Values (g's)			
		Max	Time (ms)	Min	Time (ms)
1	Left (or Rt.) Sill at Front Seat (X)				
	(Y)				
	(Z)				
	Resultant				
2	Left (or Rt.) Sill at Rear Seat (X)				
	(Y)				
	(Z)				
	Resultant				
3	Rear Floor Pan Above Axle (X)				
	(Y)				
	(Z)				
	Resultant				
4	Left (or Rt.) Sill at Rear Door (Y)				
5	Left (or Rt.) Sill at Front Door (Y)				
6	Left (or Rt.) Rear Occ. Compartment(Y)				
7	Left (or Rt.) B-Post Lower (Y)				
8	Left (or Rt.) B-Post Middle (Y)				
9	Left (or Rt.) A-Post Lower(Y)				
10	Left (or Rt.) A-Post Middle (Y)				
11	Front Seat Track (Y)				
12	Rear Seat Track or Structure (Y)				
13	Vehicle CG (X)				
	(Y)				
	(Z)				
	Resultant				

DATA SHEET NO. 10
MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____



No.	Accelerometer Location	Coordinates (mm)			Peak Values (G's)				
		X	Y	Z	Axis	Max	Time	Min	Time
1	MDB CG				X				
					Y				
					Z				
					RES				
2	MDB Rear				X				
					Y				

Reference: +X = Rearward +Y = To Right +Z = Up

DATA SHEET NO. 11
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

MDB SPECIFICATIONS

Measurement Description	Requirement	Value
Overall Width of the Framework Carriage (mm)	1241 – 1261	
Overall length including honeycomb face (mm)	4140 – 3990	
Wheelbase of Framework Carriage	2566 – 2616	
Center of gravity location aft of front axle		
MDB Front Axle Weight		
MDB Rear Axle Weight		
MDB Total Weight	1356.5 – 1365.5	

SPEED AND IMPACT ANGLE DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h		
Trap No. 2 Velocity (Redundant)	km/h		
MDB C/L to Target Vehicle C/L	Degrees		

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
1	Center of Bumper	432	800		
2	Top of Bumper	533	700		
3	Mid-Level	686	800		
4	Top of Stack	813	800		

MDB IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	
Vertical Offset	mm	+/- 20	

DATA SHEET NO. 12
DUMMY INJURY RESPONSE DATA
(Subpart U, ES-2re)

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

DUMMY Serial # _____				
	Positive		**Negative**	
	MAX	**TIME (ms)**	**MAX**	**TIME (ms)**
HEAD ACCELERATION (g)				
Longitudinal (X)				
Lateral (Y)				
Vertical (Z)				
Resultant (R)				
HIC36 (t1, t2)			**t1 =**	**t2 =**
THORAX DEFLECTION (mm)				
Upper Rib				
Middle Rib				
Lower Rib				
ABDOMINAL FORCES (N)				
Front				
Middle				
Rear				
SUM				
PELVIS FORCE (N)				
Pubic Symphysis (Y)				

Reference: Positive Direction - Longitudinal (X) = forward
- Lateral (Y) = to right
- Vertical (Z) = down

DATA SHEET NO. 13
DUMMY INJURY RESPONSE DATA
(Subpart V, SIDIIs)

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

DUMMY Serial No. _____				
	Positive		**Negative**	
	MAX	**TIME (ms)**	**MAX**	**TIME (ms)**
HEAD ACCELERATION (g)				
Longitudinal (X)				
Lateral (Y)				
Vertical (Z)				
Resultant (R)				
HIC36 (t1, t2)			**t1 =**	**t2 =**
LOWER SPINE (g)				
Longitudinal (X)				
Lateral (Y)				
Vertical (Z)				
Resultant (R)				
PELVIS FORCE (N)				
Acetabular				
Iliac				

DATA SHEET NO. 14
POST TEST OBSERVATIONS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

TEST DUMMY INFORMATION AND CONTACT

Description	Front Occupant	Rear Occupant
Head Contact		
Upper Torso Contact		
Lower Torso Contact		
Left Knee Contact		
Right Knee Contact		

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Doors	** See note below	** See note below
Right Side Doors	** See note below	** See note below
Hatch and Other Doors	** See note below	** See note below
Seat Movement		
Seat Back Failure		

***Note: Description for door opening must be specific with the following three categories: Remained closed and operational, opened/unlatched during the crash, or jammed shut. Sometimes, the door is jammed and unlatched. If the door cannot be opened, then note the door as jammed shut. If open, measurement must be taken for the width of the door opening (mm).*

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	
Sill Separation	
Windshield Damage	
Window Damage	
Other Notable Effects	

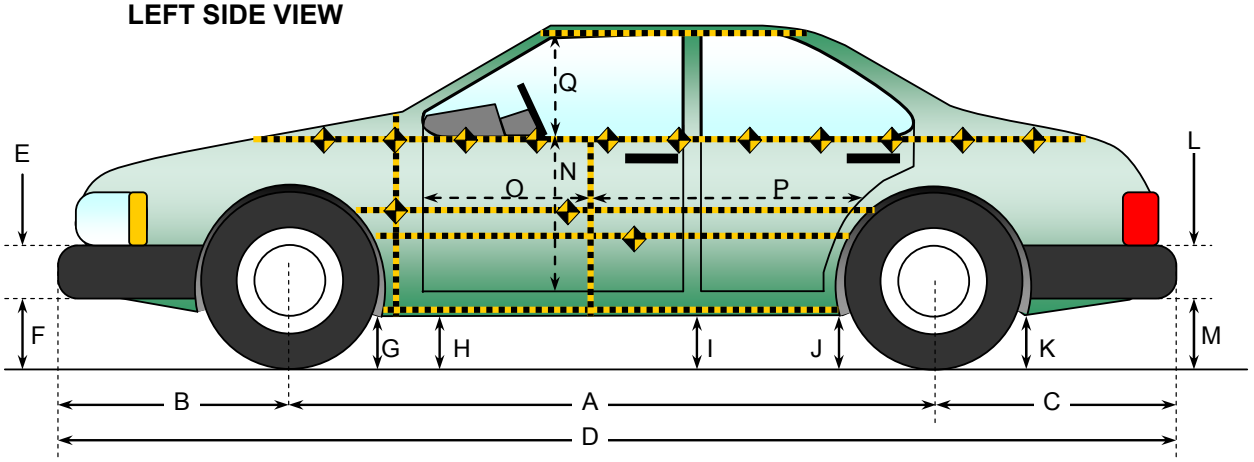
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Front Occupant		Rear Occupant	
	Installed	Deployed	Installed	Deployed
Front Airbag				
Side Torso Airbag				
Head Airbag				
Curtain Airbag				
Seat Belt Pretensioner				
Seat Belt Load Limiter				

DATA SHEET NO. 15
VEHICLE PRETEST AND POST TEST MEASUREMENTS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____

LEFT SIDE VIEW

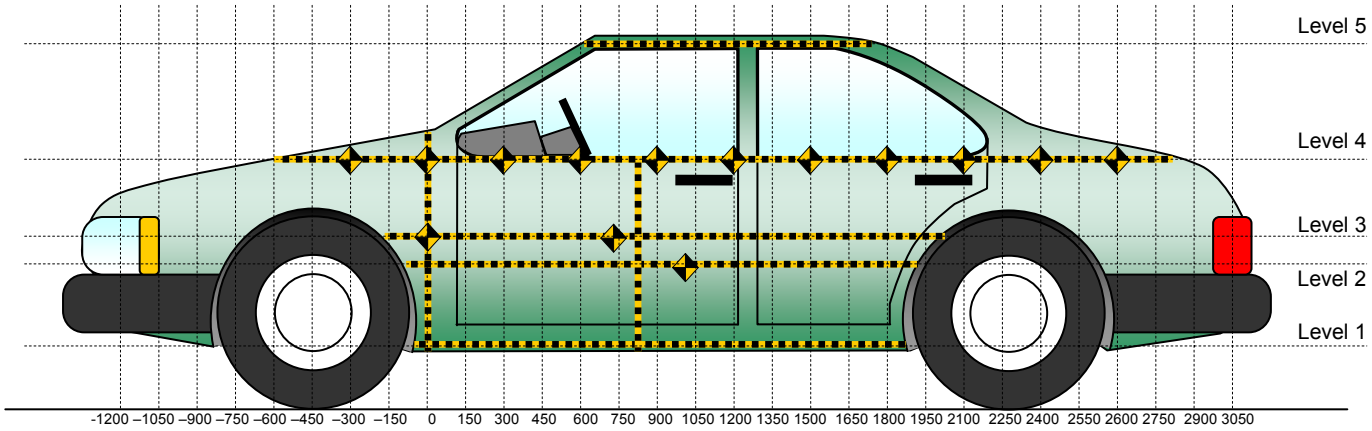


Code	Description	Pre-Test	Post-Test	Diff Δ
A	Wheelbase			
B	Front Axle to FSOV			
C	Rear Axle to RSOV			
D	Total Length at Centerline			
E	Front Bumper Thickness			
F	Front Bumper Bottom to Ground			
G	Sill Height at Front Wheel Well			
H	Sill Height at Front Door Leading Edge			
I	Sill Height at B Pillar			
J1	Sill Height at Rear Wheel Well			
J2	Pinch Weld Height at Rear Wheel Well			
K	Sill Height Aft of Rear Wheel Well			
L	Rear Bumper Thickness			
M	Rear Bumper Bottom to Ground			
N	Sill Height to Window Bottom Sill			
O	Front Door Leading Edge to Impact CL			
P	Rear Door Trailing Edge to Impact CL			
Q	Front Window Opening			
R	Right Side Length			
S	Left Side Length			
T	Vehicle Width at B Post			

D = Length at Centerline E&L = Bumper thickness J1 = To Pinch Weld
R = Right Side Length S = Left Side Length J2 = To Sill
T = Width at B -Post

DATA SHEET NO. 16
EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____



All Measurements Shown in mm

LEFT SIDE VIEW

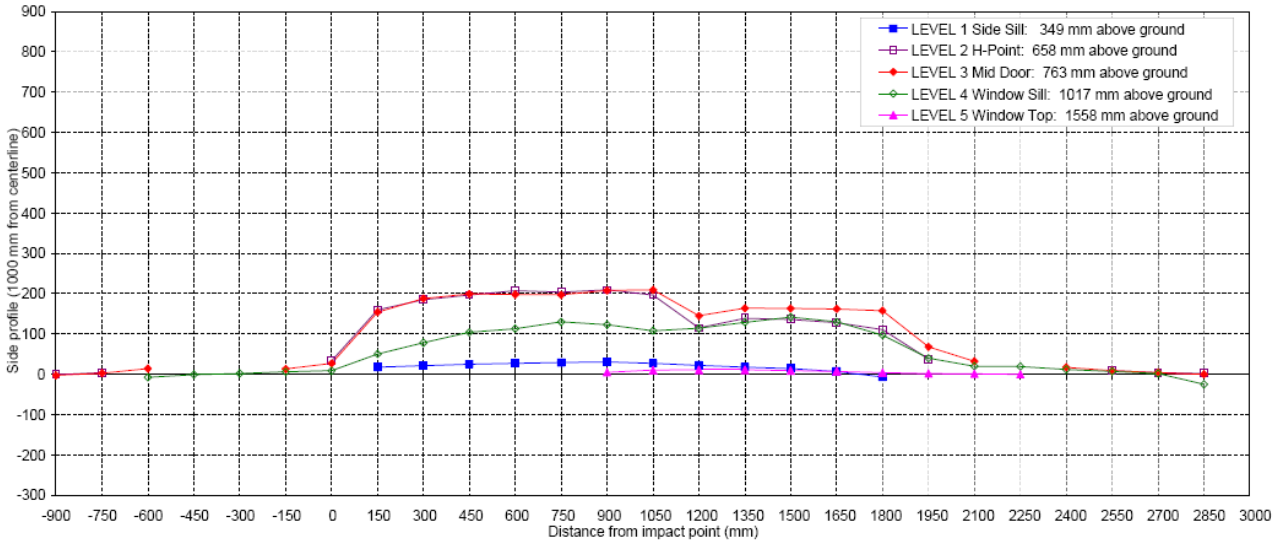
Maximum Exterior Crush Measurements

Level	Measurement Description	Maximum Exterior Static Crush	Distance from Impact	Height Above Ground
1	Sill Top			
2	Occupant H-Point			
3	Mid-Door			
4	Window Sill			
5	Window Top			

DATA SHEET NO. 17
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: _____ NHTSA No.: _____

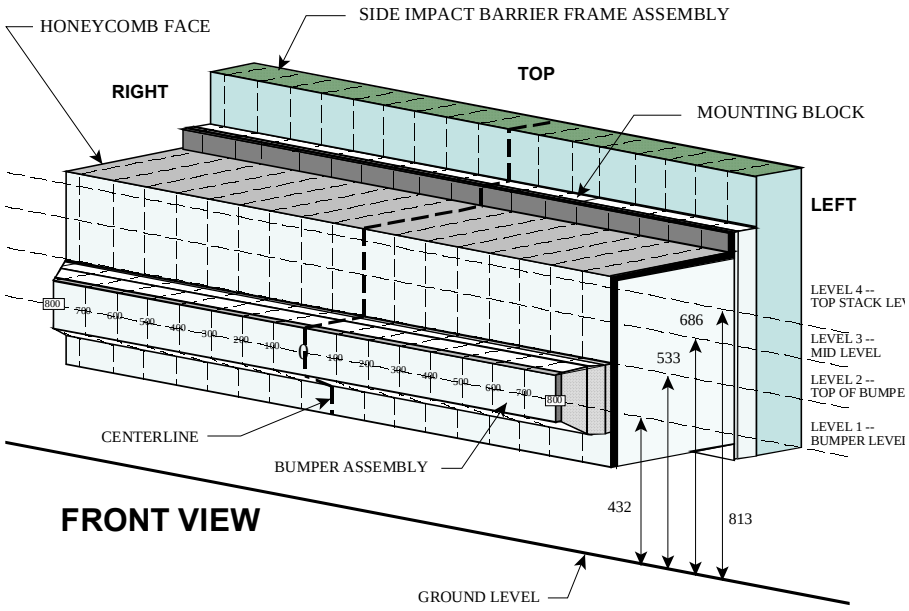
Test Facility: _____ Test Date: _____



	Pre-Test					Post-Test					Diff Δ				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150															
0															
150															
300															
450															
600															
750															
900															
1050															
1200															
1350															
1500															
1650															
1800															
1950															
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 18
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: _____ NHTSA No.: _____
Test Facility: _____ Test Date: _____



NOTE: Dimensions are shown in millimeters, mm

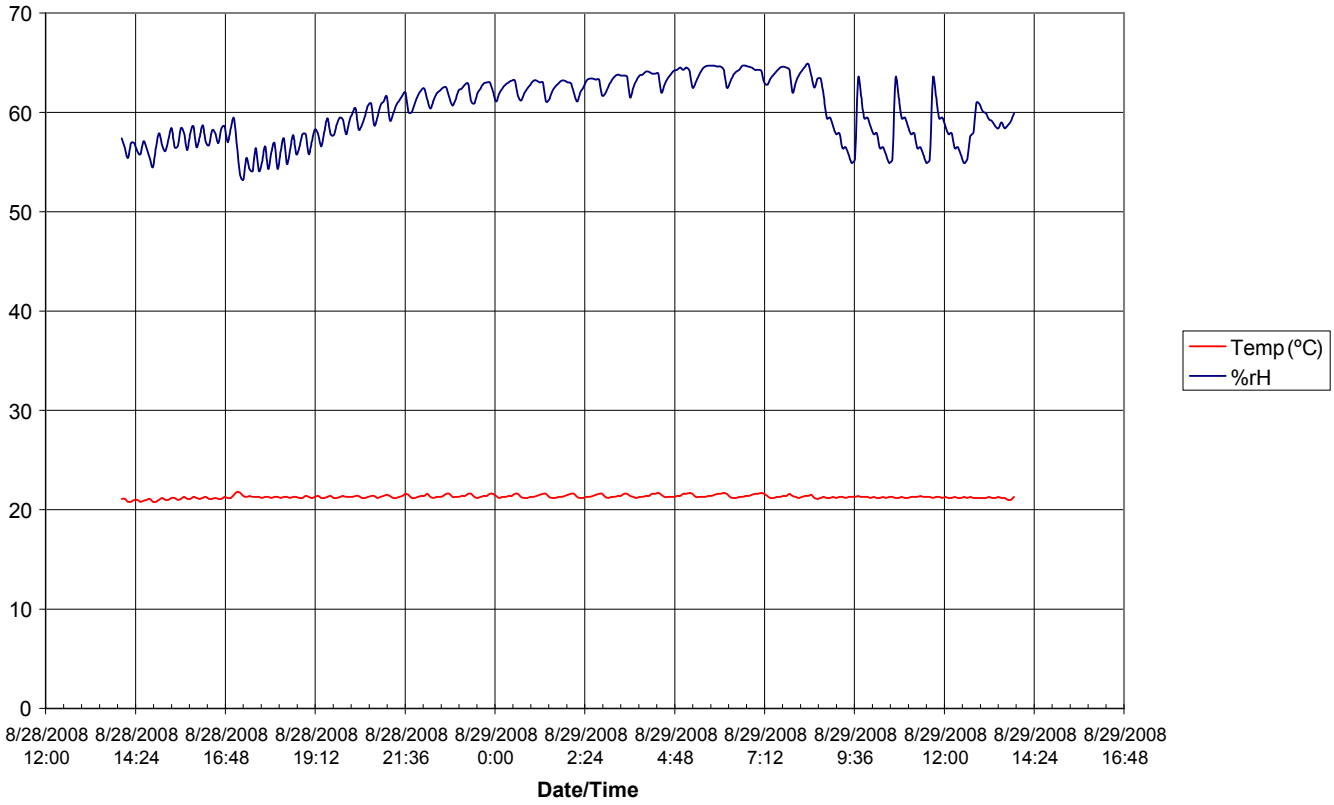
	Distance Right of Center								C/L	Distance Left of Center							
Stack Level	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Level 1																	
Level 2																	
Level 3																	
Level 4																	

Reference: + X = Forward + Y = To Right + Z = Down

DATA SHEET NO. 19
TEMPERATURE AND HUMIDITY TRACE

Test Vehicle: _____ NHTSA No.: _____

Test Facility: _____ Test Date: _____



This page intentionally left blank.