*** * * A T T E N T I O N * * ***

Individual Vehicle dimensions were obtained through the use of the Expert AutoStats(R) program.

The Expert AutoStats(R) program contains a multitude of vehicle dimensions and specifications on over 47,000 different vehicles and 203 different manufacturers spanning more than 71 years.

While every attempt has been made to ensure accurate data,these dimensions are meant to be used as first approximations. Some measurements are dependant on such factors as tire and rim sizes, tire inflation pressure and wear, suspension system condition, bumper type and style, and other manufacturing variations from vehicle to vehicle.

Whenever feasible, the vehicle in question or an exemplar vehicle should be measured to verify data important to your case.

Individual Vehicle Data Search Service (R)

Provided by:
4N6XPRT SYSTEMS (R)
Forensic Expert Software
8387 University Avenue
La Mesa, CA 91942-9342

(619) 464-3478 / (800) 266-9778 / FAX: (619) 464-2206
Web Site - www.4N6XPRT.com
Email - 4n6@4n6xprt.com

Through the use of

E X P E R T A U T O S T A T S (R)

DEVELOPED BY:
Daniel W. Vomhof III & Daniel W. Vomhof, Ph.D.

VEHICLE DATA RESEARCH BY:
Sheryl Cozby, Marion Vomhof, Muriel Vomhof, & Cindy Christensen

Expert VIN DeCoder®

Version Number 3.6.0.9

DeCoded VIN: 3G5DA03L06S622319

Model:	2006 Buick Rendezvous Four Door Cab/Utility
Engine Size:	3.5L / 214 cu.in.
Engine Description:	V6 Cylinder W/ Dual Overhead Cam
Horse Power:	200 @ 5200 rpm
Torque:	200 lb-ft @ 5200 rpm
Injection System:	Sequential Fuel Injection (SFI)
PSI:	N/A
Ignition:	electronic
Manufacturer:	Chevrolet - Pontiac - GM Canada
Assembly Plant:	Ramos Arizpe, Mexico
Drive Wheels:	This is a Front Wheel Drive vehicle

The First through Third characters (3G5) indicate a Buick MPV made in Mexico

The Fourth character (D) indicates a GVWR of 5001 - 6000 lbs.; Hydraulic Brakes

The Fifth through Sixth characters (A0) indicate a Rendezvous

The Seventh character (3) indicates Four Door Cab/Utility

The Eighth character (L) indicates the OEM engine: 3.5L / 214 cu.in., V6,DOHC

The Ninth character (the check digit) is entered as 0.
The VIN appears Valid, the calculated value is 0.

The Tenth character (6) indicates the model year 2006

The Eleventh character (S) indicates the vehicle was made in the assembly plant in Ramos Arizpe, Mexico

The Twelfth through Seventeenth characters (622319) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.7.1.2

PROVIDED BY:
4N6XPRT Systems
8387 University Avenue
La Mesa CA 91941

10/3/2017

2006 BUICK RENDEZVOUS 4 DOOR 4X2 UTILITY

Curb Weight:		4024	lbs.	1825	kg.
Curb Weight Distribution -	Front:	56	% Rear:	44	%
Gross Vehicle Weight Rating:		5357	lbs.	2430	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	187	15.58	4.75
Wheelbase:	112	9.33	2.84
Front Bumper to Front Axle:	37	3.08	0.94
Front Bumper to Front of Front Well:	21	1.75	0.53
Front Bumper to Front of Hood:	4	0.33	0.10
Front Bumper to Base of Windshield:	36	3.00	0.91
Front Bumper to Top of Windshield:	71	5.92	1.80
Rear Bumper to Rear Axle:	38	3.17	0.97
Rear Bumper to Rear of Rear Well:	19	1.58	0.48
Rear Bumper to Rear of Trunk:	5	0.42	0.13
Rear Bumper to Base of Rear Window:	8	0.67	0.20
Width Dimensions			
Maximum Width:	74	6.17	1.88
Front Track:	63	5.25	1.60
Rear Track:	64	5.33	1.63
Vertical Dimensions			
Height:	69	5.75	1.75
Ground to -			
Front Bumper (Top)	26	2.17	0.66
Headlight - center	33	2.75	0.84
Hood - top front:	35	2.92	0.89
Base of Windshield	43	3.58	1.09
Rear Bumper - top:	26	2.17	0.66
Trunk - top rear:	50	4.17	1.27
Base of Rear Window:	51	4.25	1.30

2006 BUICK RENDEZVOUS 4 DOOR 4X2 UTILITY

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	59	4.92	1.50
Front Seat to Headliner	41	3.42	1.04
Front Leg Room - seatback to floor (max)	41	3.42	1.04
Rear Seat Shoulder Width	59	4.92	1.50
Rear Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (min)	30	2.50	0.76

Seatbelts: 3pt - front and rear

Airbags: FRONT SEAT AIRBAGS + SIDE AIRBAGS

Steering Data

Turning Circle (Diameter)	444	37	11.28
Steering Ratio: 17.10:1			
Wheel Radius:	13	1.08	0.33
Tire Size (OEM): P215/70R16			

Acceleration & Braking Information

Brake Type: ALL DISC

ABS System: ALL WHEEL ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):

d = 136.0 ft t = 3.1 sec a = -28.4 ft/sec² G-force = -0.88

Acceleration:

0 to 30mph	t =	3.7	sec	a =	11.9	ft/sec²	G-force = 0.37
0 to 60mph	t =	11.0	sec	a =	8.0	ft/sec²	G-force = 0.25
45 to 65mph	t =	7.8	sec	a =	3.8	ft/sec²	G-force = 0.12

Transmission Type: 4spd AUTOMATIC

Notes:

Federal Bumper Standard Requirements: No Requirement

N.S.D.C = 2002 - 2007

2006 BUICK RENDEZVOUS 4 DOOR 4X2 UTILITY

Other Information

Tip-Over Stability Ratio =	1.15	Reasonably Stable
NHTSA Star Rating (calculated)		***

Center of Gravity (No Load):

Inches behind front axle	=	49.28
Inches in front of rear axle	=	62.72
Inches from side of vehicle	=	37.00
Inches from ground	=	27.53
Inches from front corner	=	93.88
Inches from rear corner	=	107.30
Inches from front bumper	=	86.28
Inches from rear bumper	=	100.72

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2801.72	lb*ft*sec²
Pitch Moment of Inertia	=	2849.88	lb*ft*sec²
Roll Moment of Inertia	=	650.28	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	66.0	deg
Angle Front of Hood to Windshield Base	=	14.0	deg
Angle Front of Hood to Windshield Top	=	25.5	deg
Angle of Windshield	=	34.4	deg
Angle of Steering Tires at Max Turn	=	28.9	deg

First Approximation Crush Factors:

Speed Equivalent (mph) of Kinetic Energy (KE) used in causing crush of indentation may be evaluated using the following formula, the appropriated Crush Factor (CF), and Maximum Indentation Depth (MID), in feet:

$$V(mph) = \sqrt{(30 * CF * MID)}$$

KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY (Tested for Rear/Side Impact only)	=	27 CF

These CF values are based upon analysis of NHTSA Barrier Crash data, and from over 1000 vehicle accidents where independent evaluation of speed was possible. (These are NOT 'A', 'B', 'C', or 'G' values)

The rear Impact data with more then 2-3 inches of crush damage should be looked at carefully, since some vehicles have very weak trunk & fender strength. Therefore, on some cars, especially GM, you estimate from the rear crush data may be high by as much as 4-5 mph (on a crush of 18 inches).

Stiffness Values and Test Data

Derived from

NHTSA Crash Test

#3852

2002 BUICK RENDEZVOUS

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
17R-030201SC02301

4N6XPRT Systems | 8387 University Avenue | La Mesa, CA 91942 | USA
(800) 266-9778 | (619) 464-3478 | FAX: (619) 464-2206 | Email: 4n6@4n6xprt.com

Similar Vehicle database reader

You entered: **2006 BUICK RENDEZVOUS**

The Similar Vehicle Year/Model list indicates the following are Similar Models

Year Range	Make	Model	Body Styles	Wheelbase
2001 - 2005	PONTIAC	AZTEK	SUV	108.3
Remarks: BASED ON VENTURE/MONTANA - SUV?? - Minivan??				
2002 - 2007	BUICK	RENDEZVOUS	SUV	112
Remarks: BASED ON VENTURE/MONTANA				

Test Information

Test #	3852	NHTSA Test Reference Guide Version #	V5			
Test Date	2001-12-05	Contract #	DTNH22-97-C-01033			
Contract/Study Title	VEHICLE SIDE IMPACT PROTECTION					
Test Objective(s)	TO EVALUATE VEHICLE SIDE IMPACT PROTECTION PERFORMANCE					
Test Type	COMPLIANCE - INDICANT TEST	Configuration	IMPACTOR INTO VEHICLE			
Impact Angle	270	Side Impact Point	N/A	mm	N/A	inches
		Offset Distance	9999	mm	0.0	inches
		Closing Speed	62.3	Km/Hr	38.70	MPH
Test Performer	CALSPAN					
Test Reference #	RUN1968					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	21 C	69.8 F	Total Number of Curves	49		
Data Recorder Type	DIGITAL DATA ACQUISITION	Data Link	UMBILICAL CABLE			
Test Commentary	FY 2002 FMVSS 214D INDICANT - 2002 BUICK RENDEZVOUS C20102					

Fixed Barrier Information

Barrier Type		Pole Barrier Diameter		mm	inches
Barrier Shape					
Barrier Commentary					

2002 BUICK RENDEZVOUS LEFT FRONT SEAT OCCUPANT

Test #	3852		
Vehicle #	2	Sex	MALE
Location	LEFT FRONT SEAT	Age	99
Position	CENTER POSITION	Height	9999 mm 0.0 inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	999.0 kg 2202 pounds
Size	50 PERCENTILE		
Calibration Method	SIDE IMPACT DUMMY		
Occupant Manufacturer	MFG: FIRST TECHNOLOGY SAFETY SYSTEMS S/N:013		
Occupant Modification	UNMODIFIED		
Occupant Description	SUBPART F SIDE IMPACT DUMMY		
Occupant Commentary	CONTACTS: CNTRL1:DOOR TRIM		

Head

Head to -

Windshielder Header	480	mm	18.9	inches	Head Injury Criteria (HIC)	72	
WindShield	752	mm	29.6	inches	HIC Lower Time Interval (ms)	45	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	76.5	
Side Header	236	mm	9.3	inches			
Side Window	378	mm	14.9	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	573	mm	22.6	inches	Arm to Door	120	mm	4.7	inches
Steering Wheel	304	mm	12.0	inches	Hip to Door	220	mm	8.7	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index: 9999 — Pelvic Peak Lateral Acceleration (g's): 67

Thoracic Trauma Index: 42 — Thorax Peak Acceleration (g's): 99999

Lap Belt Peak Load: 99999 Newtons 22480.8 pound Force

Shoulder Belt Peak Load: 99999 Newtons 22480.8 pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	158	mm	6.2	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load: 0 Newtons 0.0 pounds Force

Right Femur Peak Load: 0 Newtons 0.0 pounds Force

First Contact Region (Legs): OTHER

Second Contact Region (Legs):

2002 BUICK RENDEZVOUS LEFT FRONT SEAT OCCUPANT

Test #	3852					
Vehicle #	2	Sex	MALE			
Location	LEFT FRONT SEAT	Age	99			
Position	CENTER POSITION	Height	9999	mm	0.0	inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	999.0	kg	2202	pounds
Size	50 PERCENTILE					

Calibration Method	SIDE IMPACT DUMMY
Occupant Manufacturer	MFG: FIRST TECHNOLOGY SAFETY SYSTEMS S/N:013
Occupant Modification	UNMODIFIED
Occupant Description	SUBPART F SIDE IMPACT DUMMY
Occupant Commentary	CONTACTS: CNTRL1:DOOR TRIM

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	NOT APPLICABLE
Restraint Commentary	NONE
Restraint # 2	FRONTAL AIRBAG
Mounted	SEAT BACK
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NONE

2002 BUICK RENDEZVOUS LEFT REAR SEAT OCCUPANT

Test #	3852		
Vehicle #	2	Sex	MALE
Location	LEFT REAR SEAT	Age	99
Position	NON-ADJUSTABLE SEAT	Height	9999 mm 0.0 inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	999.0 kg 2202 pounds
Size	50 PERCENTILE		
Calibration Method	SIDE IMPACT DUMMY		
Occupant Manufacturer	MFG: FIRST TECHNOLOGY SAFETY SYSTEMS S/N:026		
Occupant Modification	UNMODIFIED		
Occupant Description	SUBPART F SIDE IMPACT DUMMY		
Occupant Commentary	CONTACTS: CNTRC1:DOOR TRIM; CNTRL1:DOOR TRIM		

Head

Head to -

Windshielder Header	9999	mm	0.0	inches	Head Injury Criteria (HIC)	606	
WindShield	9999	mm	0.0	inches	HIC Lower Time Interval (ms)	60.7	
Seatback	635	mm	25.0	inches	HIC Upper Time Interval (ms)	73.7	
Side Header	195	mm	7.7	inches			
Side Window	319	mm	12.6	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head): C PILLAR

Second Contact Region (Head):

Chest

Chest to -

Dash	9999	mm	0.0	inches	Arm to Door	85	mm	3.3	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	114	mm	4.5	inches
Seatback	557	mm	21.9	inches					

Chest Severity Index	9999	Pelvic Peak Lateral Acceleration (g's)	83
Thoracic Trauma Index	48	Thorax Peak Acceleration (g's)	99999

Lap Belt Peak Load 99999 Newtons 22480.8 pound Force

Shoulder Belt Peak Load 99999 Newtons 22480.8 pound Force

First Contact Region (Chest/Abdomen): OTHER

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash 9999 mm 0.0 inches Knees to Seatback 222 mm 8.7 inches

Left Femur Peak Load 0 Newtons 0.0 pounds Force

Right Femur Peak Load 0 Newtons 0.0 pounds Force

First Contact Region (Legs): OTHER

Second Contact Region (Legs):

2002 BUICK RENDEZVOUS LEFT REAR SEAT OCCUPANT

Test #	3852					
Vehicle #	2	Sex	MALE			
Location	LEFT REAR SEAT	Age	99			
Position	NON-ADJUSTABLE SEAT	Height	9999	mm	0.0	inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	999.0	kg	2202	pounds
Size	50 PERCENTILE					

Calibration Method	SIDE IMPACT DUMMY
Occupant Manufacturer	MFG: FIRST TECHNOLOGY SAFETY SYSTEMS S/N:026
Occupant Modification	UNMODIFIED
Occupant Description	SUBPART F SIDE IMPACT DUMMY
Occupant Commentary	CONTACTS: CNTRC1:DOOR TRIM; CNTRL1:DOOR TRIM

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	NOT APPLICABLE
Restraint Commentary	NONE

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	3852		
VIN	9999	NHTSA Test Vehicle Number	1
Year	0	Vehicle Modification Indicator	RESEARCH VEHICLE
Make	NHTSA	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	DEFORMABLE IMPACTOR	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	NOT APPLICABLE		
Engine	NOT APPLICABLE		
Displacement	99 Liter	Transmission	NOT APPLICABLE
Vehicle Modification(s) Description	NONE		
Vehicle Commentary	NHTSA SIDE IMPACT CART WITH DEFORMABLE FACE		

Vehicle Length	4120	mm	162.2	inches	CG behind Front Axle	1104	mm	43.5	inches
Vehicle Width	1676	mm	66.0	inches	Center of Damage to CG Axis	99999	mm	0.0	inches
Vehicle Wheelbase	2590	mm	102.0	inches	Total Length of Indentation	1676	mm	66.0	inches
Vehicle Test Weight	1363	KG	3004	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	62	kph	38.7	mph

Vehicle Damage Index: 9999999

Principal Direction of Force: 27

Damage Profile Distance Measurements

(Measured Left-to-Right, Rear-to-Front)

DPD 1	9999	mm	0.0	inches
DPD 2	9999	mm	0.0	inches
DPD 3	9999	mm	0.0	inches
DPD 4	9999	mm	0.0	inches
DPD 5	9999	mm	0.0	inches
DPD 6	9999	mm	0.0	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	0.0	inches	0.0	inches	N/A	inches
	9999	mm	99999	mm	-90000	mm
Centerline	0.0	inches	0.0	inches	N/A	inches
	9999	mm	99999	mm	-90000	mm
Right Bumper Corner	0.0	inches	0.0	inches	N/A	inches
	9999	mm	99999	mm	-90000	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
27.0	NOT APPLICABLE	0.0

Moving Test Cart Angle	Moving Test Cart/Vehicle Crabbed Angle	Vehicle Orientation on Cart Moving Test Cart
DIRECT ENGAGEMENT	27.0	NOT APPLICABLE
Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground	*Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle*	*Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion*

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	3852		
VIN	9999	NHTSA Test Vehicle Number	1
Year	0	Vehicle Modification Indicator	RESEARCH VEHICLE
Make	NHTSA	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	DEFORMABLE IMPACTOR	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	NOT APPLICABLE		
Engine	NOT APPLICABLE		
Displacement	99 Liter	Transmission	NOT APPLICABLE
Vehicle Modification(s) Description	NONE		
Vehicle Commentary	NHTSA SIDE IMPACT CART WITH DEFORMABLE FACE		

Vehicle Length	4120	mm	162.2	inches	CG behind Front Axle	1104	mm	43.5	inches
Vehicle Width	1676	mm	66.0	inches	Center of Damage to CG Axis	99999	mm	0.0	inches
Vehicle Wheelbase	2590	mm	102.0	inches	Total Length of Indentation	1676	mm	66.0	inches
Vehicle Test Weight	1363	KG	3004	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	62	kph	38.7	mph

Vehicle Damage Index	9999999	Principal Direction of Force	27

Pre & Post Test Damage Measurements

(Measurements are taken in a longitudinaldirection. Except for Engine Block, all measurements are take from the Rear Vehicle Surface forward.)

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Length of Vehicle at Centerline							
				9999	0.0	99999	0.0				
				Engine Block							
				9999	0.0	99999	0.0				
9999	0.0	99999	0.0	Front Bumper Corner				9999	0.0	99999	0.0
				Front of Engine							
				9999	0.0	99999	0.0				
9999	0.0	99999	0.0	Firewall				9999	0.0	99999	0.0
				9999	0.0	99999	0.0				
9999	0.0	99999	0.0	Upper Leading Edge of Door				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Lower Leading Edge of Door				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Bottom of 'A' Post				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Upper Trailing Edge of Door				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Lower Trailing Edge of Door				9999	0.0	99999	0.0
				Steering Column							
				9999	0.0	99999	0.0				
				Center of Seering Column to 'A' Post (Horizontal)							
				9999	0.0	99999	0.0				
				Center of Steering Column to Headliner (Vertical)							
				9999	0.0	99999	0.0				

Vehicle 2 2002 BUICK RENDEZVOUS

Test #	3852		
VIN	3G5DA03E22S527420	NHTSA Test Vehicle Number	2
Year	2002	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	BUICK	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	RENDEZVOUS	Steering Column Collapse Mechanism	UNKNOWN
Body	UTILITY VEHICLE		
Engine	V6 TRANSVERSE FRONT		
Displacement	3.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NONE		
Vehicle Commentary	2002 BUICK RENDEZVOUS C20102		

Vehicle Length	4735	mm	186.4	inches	CG behind Front Axle	1265	mm	49.8	inches
Vehicle Width	1860	mm	73.2	inches	Center of Damage to CG Axis	-269	mm	-10.6	inches
Vehicle Wheelbase	2847	mm	112.1	inches	Total Length of Indentation	3900	mm	153.5	inches
Vehicle Test Weight	2055	KG	4530	pounds	Maximum Static Crush Depth	349	mm	13.7	inches
					Pre-Impact Speed	0	kph	0.0	mph

Vehicle Damage Index: 9999999

Principal Direction of Force: 297

Damage Profile Distance Measurements

(Measured Left-to-Right, Rear-to-Front)

DPD 1	0	mm	0.0	inches
DPD 2	85	mm	3.3	inches
DPD 3	336	mm	13.2	inches
DPD 4	248	mm	9.8	inches
DPD 5	60	mm	2.4	inches
DPD 6	0	mm	0.0	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	0.0	inches	0.0	inches	N/A	inches
	9999	mm	99999	mm	-90000	mm
Centerline	0.0	inches	0.0	inches	N/A	inches
	9999	mm	99999	mm	-90000	mm
Right Bumper Corner	0.0	inches	0.0	inches	N/A	inches
	9999	mm	99999	mm	-90000	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
27.0	DIRECT ENGAGEMENT	0.0

Moving Test Cart Angle	Moving Test Cart/Vehicle Crabbed Angle	Vehicle Orientation on Cart Moving Test Cart
NOT APPLICABLE	0.0	DIRECT ENGAGEMENT
Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground	*Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle*	*Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion*

Vehicle 2 2002 BUICK RENDEZVOUS

Test #	3852		
VIN	3G5DA03E22S527420	NHTSA Test Vehicle Number	2
Year	2002	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	BUICK	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	RENDEZVOUS	Steering Column Collapse Mechanism	UNKNOWN
Body	UTILITY VEHICLE		
Engine	V6 TRANSVERSE FRONT		
Displacement	3.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NONE		
Vehicle Commentary	2002 BUICK RENDEZVOUS C20102		

Vehicle Length	4735	mm	186.4	inches	CG behind Front Axle	1265	mm	49.8	inches
Vehicle Width	1860	mm	73.2	inches	Center of Damage to CG Axis	-269	mm	-10.6	inches
Vehicle Wheelbase	2847	mm	112.1	inches	Total Length of Indentation	3900	mm	153.5	inches
Vehicle Test Weight	2055	KG	4530	pounds	Maximum Static Crush Depth	349	mm	13.7	inches
					Pre-Impact Speed	0	kph	0.0	mph

Vehicle Damage Index: 9999999 | Principal Direction of Force: 297

Pre & Post Test Damage Measurements

(Measurements are taken in a longitudinaldirection. Except for Engine Block, all measurements are take from the Rear Vehicle Surface forward.)

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Length of Vehicle at Centerline							
				9999	0.0	99999	0.0				
				Engine Block							
				9999	0.0	99999	0.0				
9999	0.0	99999	0.0	Front Bumper Corner				9999	0.0	99999	0.0
				Front of Engine							
				9999	0.0	99999	0.0				
9999	0.0	99999	0.0	Firewall				9999	0.0	99999	0.0
				9999	0.0	99999	0.0				
9999	0.0	99999	0.0	Upper Leading Edge of Door				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Lower Leading Edge of Door				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Bottom of 'A' Post				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Upper Trailing Edge of Door				9999	0.0	99999	0.0
9999	0.0	99999	0.0	Lower Trailing Edge of Door				9999	0.0	99999	0.0
				Steering Column							
				9999	0.0	99999	0.0				
				Center of Seering Column to 'A' Post (Horizontal)							
				9999	0.0	99999	0.0				
				Center of Steering Column to Headliner (Vertical)							
				9999	0.0	99999	0.0				

2002 BUICK RENDEZVOUS

NHTSA Crash Test - #3852 - Side Impact

Max Crush Depth - Indention Length - KE Equivalent Speed

Test Vehicle Weight =	4530 pounds	Impactor Weight =	3004
KE Equivalent Speed =	24.4 mph	Impactor Test Speed =	38.7
Test Crush Length =	153.5 inches		

Maximum Crush Depth (inches)

Maximum Crush

13.7

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = N/A inches					
Using a Rated No Damage Speed of	1.0mph				
Using a Rated No Damage Speed of	2.0mph				
Using a Rated No Damage Speed of	3.0mph				
Using a Rated No Damage Speed of	5.0mph				
Average Crush = N/A inches					
Using a Rated No Damage Speed of	1.0mph				
Using a Rated No Damage Speed of	2.0mph				
Using a Rated No Damage Speed of	3.0mph				
Using a Rated No Damage Speed of	5.0mph				
Maximum Crush = 13.7 inches					75.2
Using a Rated No Damage Speed of	1.0mph	40.5	69.2	11.8	
Using a Rated No Damage Speed of	2.0mph	77.5	63.4	47.3	
Using a Rated No Damage Speed of	3.0mph	111.0	57.9	106.4	
Using a Rated No Damage Speed of	5.0mph	167.8	47.6	295.6	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A= Maximum force per inch of damage without permanent damage, lb/in

B = Crush resistance per inch of damage width (Crash), lb/in^2

G = Energy dissipated without permanent damage, lb

Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

****

4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	13.7	26.8	2.4	8.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 17.4

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

Available Test Results
Side Impact Test Summary

Report Filter Settings

Year Range: 2002 - 2007
Make: BUICK
Model: RENDEZVOUS

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	KEES (mph)	Indention Stiffness A	Indention Stiffness B	Length Values G	Length Values Kv	Crush Factor
3443	2001 PONTIAC AZTEK UTILITY VEHICLE	2.0	5.0	24.5	205.6	459.7	46.0	544.9	47.8
3852	2002 BUICK RENDEZVOUS UTILITY VEHICLE	2.0	4.8	24.4	221.9	520.3	47.3	617.2	49.9
	Average (AVG)				**213.7**	**490.0**	**46.6**	**581.1**	**48.9**
	Minimum (MIN)				**205.6**	**459.7**	**46.0**	**544.9**	**47.8**
	Maximum (MAX)				**221.9**	**520.3**	**47.3**	**617.2**	**49.9**
	Standard Deviation (STDev-sample)				**11.5**	**42.9**	**0.9**	**51.1**	**1.5**
	Number of Tests (n)			**2**					

Available Test Results
Side Impact Test Summary

Report Filter Settings

Year Range: 2002 - 2007
Make: BUICK
Model: RENDEZVOUS

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	KEES (mph)	Indention Stiffness A	Indention Stiffness B	Length Values G	Length Values Kv	Crush Factor
3443	2001 PONTIAC AZTEK UTILITY VEHICLE	2.0	13.5	24.5	76.5	63.6	46.0	75.4	17.8
3852	2002 BUICK RENDEZVOUS UTILITY VEHICLE	2.0	13.7	24.4	77.2	63.1	47.3	74.8	17.4
	Average (AVG)				**76.9**	**63.4**	**46.6**	**75.1**	**17.6**
	Minimum (MIN)				**76.5**	**63.1**	**46.0**	**74.8**	**17.4**
	Maximum (MAX)				**77.2**	**63.6**	**47.3**	**75.4**	**17.8**
	Standard Deviation (STDev-sample)				**0.5**	**0.4**	**0.9**	**0.5**	**0.3**
	Number of Tests (n)			**2**					

4N6XPRT Systems
Expert System Software for Litigation

8387 University Avenue
La Mesa, CA 91941-3842

Phone: (619) 464-3478
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Toll Free: 1- 800-266-9778

Web Site: http://www.4n6xprt.com

E-Mail: 4n6@4n6xprt.com

The NHTSA Crash Test database contains TWO SIDE Impact tests for the 2002-2007 Buick Rendezvous and its same/similar vehicles.

To create a SIMILAR class of vehicle, we looked at the NHTSA database for UTILITY vehicles that have SIDE IMPACT TESTS, a wheelbase range of +/- 2 inches of the wheelbase in Report 3852, and were +/- 4 years of the crash test model year of 2006.

For the crush summary reports, all tests with a A value greater than 500, and B value greater than 1000 were removed from the summary.

The Test Summary Reports based on the Average and Maximum crush depths follow.

Available Test Results
Side Impact Test Summary

Report Filter Settings

Year Range: 2002 - 2010

Bodystyle: UTILITY VEHICLE

Wheelbase Range: 110.1-114.1

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	KEES (mph)	Indention Stiffness A	Indention Stiffness B	Length Values G	Length Values Kv	Crush Factor
4379	2002 FORD EXPLORER UTILITY VEHICLE	2.0	4.9	20.1	175.3	324.0	47.4	399.7	33.0
5302	2005 NISSAN MURANO UTILITY VEHICLE	2.0	7.0	24.6	189.2	303.7	58.9	359.9	34.3
4977	2003 NISSAN MURANO UTILITY VEHICLE	2.0	6.1	24.7	203.1	378.3	54.5	448.0	40.0
4600	2003 NISSAN MURANO UTILITY VEHICLE	2.0	6.1	24.7	203.1	378.3	54.5	448.0	40.0
5035	2005 CHEVROLET EQUINOX UTILITY VEHICLE	2.0	5.5	24.4	204.9	416.9	50.3	494.6	43.3
6479	2009 CHEVROLET EQUINOX UTILITY VEHICLE	2.0	8.2	24.9	218.3	305.3	78.1	361.1	30.2
3852	2002 BUICK RENDEZVOUS UTILITY VEHICLE	2.0	4.8	24.4	221.9	520.3	47.3	617.2	49.9
5975	2007 HYUNDAI VERACRUZ UTILITY VEHICLE	2.0	7.9	24.0	237.4	328.1	85.9	390.5	28.9
5893	2007 INFINITI FX35 UTILITY VEHICLE	2.0	7.8	24.0	243.6	344.6	86.1	410.0	29.7
6065	2008 SUZUKI XL-7 UTILITY VEHICLE	2.0	5.0	24.1	243.7	541.5	54.8	643.8	46.8
6048	2007 CHEVROLET TRAILBLAZER UTILITY VEHICLE	2.0	7.9	23.4	246.2	330.8	91.6	395.6	27.5
6318	2009 NISSAN MURANO UTILITY VEHICLE	2.0	5.5	24.7	247.7	516.2	59.5	611.0	44.8
5913	2007 FORD EDGE UTILITY VEHICLE	2.0	6.5	24.0	251.3	422.7	74.7	503.2	35.2
4087	2002 FORD EXPLORER UTILITY VEHICLE	2.0	4.3	23.8	260.4	665.6	50.9	793.3	53.1
4959	2004 INFINITI FX35 UTILITY VEHICLE	2.0	6.8	23.7	270.5	433.9	84.3	517.5	33.3
6158	2007 MAZDA CX-9 UTILITY VEHICLE	2.0	6.9	24.1	275.2	441.6	85.8	525.0	33.8
5560	2006 FORD EXPLORER UTILITY VEHICLE	2.0	5.2	22.9	285.7	570.1	71.6	684.2	40.1
4563	2002 FORD EXPLORER UTILITY VEHICLE	2.0	3.0	19.8	287.6	841.1	49.2	1040.5	51.6
5829	2006 FORD FREESTYLE UTILITY VEHICLE	2.0	4.7	24.3	295.5	705.4	61.9	837.7	50.5
6074	2007 FORD EXPLORER UTILITY VEHICLE	2.0	6.8	23.2	297.7	466.2	95.0	558.3	31.8
5253	2005 FORD FREESTYLE UTILITY VEHICLE	2.0	5.7	24.3	299.6	581.8	77.2	690.8	41.2
3835	2002 CHEVROLET TRAILBLAZER UTILITY VEHICLE	2.0	4.0	23.2	310.7	824.2	58.5	986.7	54.0
6827	2010 CADILLAC SRX UTILITY VEHICLE	2.0	5.2	23.8	323.0	672.0	77.6	800.7	43.3
4926	2004 CHEVROLET TRAILBLAZER UTILITY VEHICLE	2.0	4.6	23.3	327.9	762.5	70.5	912.4	47.4
4566	2003 BMW X5 UTILITY VEHICLE	2.0	5.2	23.1	328.1	667.4	80.7	800.0	41.1
5910	2007 SUZUKI XL-7 UTILITY VEHICLE	2.0	5.8	24.2	329.4	633.3	85.6	752.7	40.6
6789	2010 CHEVROLET EQUINOX UTILITY VEHICLE	2.0	4.5	24.8	353.2	887.7	70.3	1050.1	54.3
	Average (AVG)				**264.1**	**528.3**	**69.0**	**630.8**	**40.7**
	Minimum (MIN)				**175.3**	**303.7**	**47.3**	**359.9**	**27.5**
	Maximum (MAX)				**353.2**	**887.7**	**95.0**	**1050....**	**54.3**
	Standard Deviation (STDev-sample)				**48.5**	**177.5**	**15.1**	**214.0**	**8.3**
	Number of Tests (n)			**27**					

Available Test Results
Side Impact Test Summary

Report Filter Settings

Year Range: 2002 - 2010

Bodystyle: UTILITY VEHICLE

Wheelbase Range: 110.1 -114.1

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	KEES (mph)	Indention Stiffness A	Indention Stiffness B	Length Values G	Length Values Kv	Crush Factor
4379	2002 FORD EXPLORER UTILITY VEHICLE	2.0	21.3	20.1	40.2	17.0	47.4	21.0	7.6
4601	2002 FORD EXPLORER UTILITY VEHICLE	2.0	15.3	20.2	58.4	34.7	49.1	42.7	10.7
4563	2002 FORD EXPLORER UTILITY VEHICLE	2.0	14.3	19.8	61.3	38.2	49.2	47.3	11.0
3852	2002 BUICK RENDEZVOUS UTILITY VEHICLE	2.0	13.7	24.4	77.2	63.1	47.3	74.8	17.4
5035	2005 CHEVROLET EQUINOX UTILITY VEHICLE	2.0	13.4	24.4	84.2	70.4	50.3	83.5	17.8
4087	2002 FORD EXPLORER UTILITY VEHICLE	2.0	12.8	23.8	86.8	74.0	50.9	88.1	17.7
4600	2003 NISSAN MURANO UTILITY VEHICLE	2.0	13.8	24.7	89.6	73.7	54.5	87.3	17.7
4977	2003 NISSAN MURANO UTILITY VEHICLE	2.0	13.8	24.7	89.6	73.7	54.5	87.3	17.7
5302	2005 NISSAN MURANO UTILITY VEHICLE	2.0	14.2	24.6	93.7	74.6	58.9	88.4	17.0
6065	2008 SUZUKI XL-7 UTILITY VEHICLE	2.0	12.9	24.1	94.0	80.5	54.8	95.8	18.0
6856	2010 HONDA ACCORD CROSSTOUR UTILITY VEH...	2.0	10.4	24.8	98.4	108.2	44.7	128.0	23.7
3835	2002 CHEVROLET TRAILBLAZER UTILITY VEHICLE	2.0	11.2	23.2	110.8	104.9	58.5	125.6	19.3
5975	2007 HYUNDAI VERACRUZ UTILITY VEHICLE	2.0	16.7	24.0	113.0	74.3	85.9	88.5	13.8
6318	2009 NISSAN MURANO UTILITY VEHICLE	2.0	11.6	24.7	116.3	113.8	59.5	134.7	21.0
4926	2004 CHEVROLET TRAILBLAZER UTILITY VEHICLE	2.0	12.3	23.3	122.3	106.0	70.5	126.8	17.7
6479	2009 CHEVROLET EQUINOX UTILITY VEHICLE	2.0	13.5	24.9	131.8	111.3	78.1	131.6	18.3
6508	2009 KIA BORREGO UTILITY VEHICLE	2.0	11.7	24.1	137.7	130.6	72.6	155.3	19.9
5829	2006 FORD FREESTYLE UTILITY VEHICLE	2.0	9.4	24.3	146.0	172.2	61.9	204.5	25.0
5893	2007 INFINITI FX35 UTILITY VEHICLE	2.0	12.8	24.0	147.8	126.8	86.1	150.9	18.0
5910	2007 SUZUKI XL-7 UTILITY VEHICLE	2.0	12.8	24.2	148.0	127.9	85.6	152.0	18.2
4959	2004 INFINITI FX35 UTILITY VEHICLE	2.0	11.8	23.7	155.1	142.6	84.3	170.1	19.1
5560	2006 FORD EXPLORER UTILITY VEHICLE	2.0	9.6	22.9	155.4	168.6	71.6	202.4	21.8
5913	2007 FORD EDGE UTILITY VEHICLE	2.0	10.4	24.0	157.3	165.6	74.7	197.1	22.0
6048	2007 CHEVROLET TRAILBLAZER UTILITY VEHICLE	2.0	12.2	23.4	159.8	139.3	91.6	166.6	17.8
4958	2004 VOLKSWAGEN TOUAREG UTILITY VEHICLE	2.0	8.9	22.3	166.3	189.1	73.1	228.2	22.3
5253	2005 FORD FREESTYLE UTILITY VEHICLE	2.0	10.3	24.3	167.0	180.7	77.2	214.5	22.9
6789	2010 CHEVROLET EQUINOX UTILITY VEHICLE	2.0	9.6	24.8	167.6	200.0	70.3	236.6	25.8
6158	2007 MAZDA CX-9 UTILITY VEHICLE	2.0	11.2	24.1	169.8	168.0	85.8	199.7	20.8
6827	2010 CADILLAC SRX UTILITY VEHICLE	2.0	9.6	23.8	177.2	202.3	77.6	241.1	23.8
4566	2003 BMW X5 UTILITY VEHICLE	2.0	9.4	23.1	181.5	204.3	80.7	244.8	22.8
4622	2003 VOLVO XC90 UTILITY VEHICLE	2.0	6.9	23.3	196.7	302.8	63.9	362.2	31.4
6335	2009 DODGE JOURNEY UTILITY VEHICLE	2.0	7.1	24.9	199.1	320.4	61.8	378.7	34.9
6074	2007 FORD EXPLORER UTILITY VEHICLE	2.0	10.1	23.2	200.0	210.5	95.0	252.0	21.4
5277	2005 NISSAN PATHFINDER UTILITY VEHICLE	2.0	6.1	23.3	273.5	478.0	78.2	571.8	35.7
6731	2009 AUDI Q5 UTILITY VEHICLE	2.0	6.9	23.7	279.8	439.7	89.0	524.7	32.5
5566	2006 HUMMER H3 UTILITY VEHICLE	2.0	7.0	23.4	283.7	429.8	93.6	514.1	31.0
6861	2010 TOYOTA 4RUNNER UTILITY VEHICLE	2.0	6.8	23.8	287.4	462.6	89.3	551.4	33.5
6058	2007 HUMMER H3 UTILITY VEHICLE	2.0	7.0	22.9	288.2	427.2	97.2	512.9	29.7

4N6XPRT StifCalcs®

Available Test Results
Side Impact Test Summary

Report Filter Settings

Year Range: 2002 - 2010

Bodystyle: UTILITY VEHICLE

Wheelbase Range: 110.1 -114.1

Average (AVG)		**150.3**	**173.9**	**70.4**	**207.4**	**21.5**
Minimum (MIN)		**40.2**	**17.0**	**44.7**	**21.0**	**7.6**
Maximum (MAX)		**288.2**	**478.0**	**97.2**	**571.8**	**35.7**
Standard Deviation (STDev-sample)		**66.1**	**126.5**	**15.8**	**151.1**	**6.6**
Number of Tests (n)	**38**					

Expert VIN DeCoder®

Version Number 3.6.0.9

DeCoded VIN: 1GKDT13S822326698

Model: 2002 GMC Envoy 1/2 Ton Four Door Cab/Utility

Engine Size: 4.2 L/ 256 cu.in.

Engine Description: INLINE 6 Cylinder w/ Dual Overhead Cam

Horse Power: 270 @ 6000 rpm

Torque: 275 lb-ft @ 3600 rpm

Injection System: Multi-Port Fuel Injection (MFI)

PSI: N/A Ignition: electronic

Manufacturer: Chevrolet - Pontiac - GM Canada

Assembly Plant: Moraine (T&B), OH

Drive Wheels: This is a 4 Wheel Drive vehicle

The First through Third characters (1GK) indicate a GMC MPV made in the U.S.A.

The Fourth character (D) indicates a GVWR of 5001 - 6000 lbs.; Hydraulic Brakes

The Fifth through Sixth characters (T1) indicate an Envoy and a 1/2 Ton series

The Seventh character (3) indicates Restraints Four Door Cab/Utility

The Eighth character (S) indicates the OEM engine: 4.2 L/ 256 cu.in., L6, DOHC

The Ninth character (the check digit) is entered as 8.
The VIN appears Valid, the calculated value is 8.

The Tenth character (2) indicates the model year 2002

The Eleventh character (2) indicates the vehicle was made in the assembly plant in Moraine (T&B), OH

The Twelfth through Seventeenth characters (326698) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.7.1.2

PROVIDED BY:
4N6XPRT Systems
8387 University Avenue
La Mesa CA 91941

8/28/2017

2002 GMC ENVOY 4 DOOR 4X4 UTILITY

Curb Weight:		4628	lbs.	2099	kg.
Curb Weight Distribution -	Front:	54	% Rear:	46	%
Gross Vehicle Weight Rating:		5750	lbs.	2608	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		4 Wheel Drive			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	192	16.00	4.88
Wheelbase:	113	9.42	2.87
Front Bumper to Front Axle:	35	2.92	0.89
Front Bumper to Front of Front Well:	17	1.42	0.43
Front Bumper to Front of Hood:	5	0.42	0.13
Front Bumper to Base of Windshield:	52	4.33	1.32
Front Bumper to Top of Windshield:	77	6.42	1.96
Rear Bumper to Rear Axle:	44	3.67	1.12
Rear Bumper to Rear of Rear Well:	25	2.08	0.64
Rear Bumper to Rear of Trunk:	6	0.50	0.15
Rear Bumper to Base of Rear Window:	8	0.67	0.20
Width Dimensions			
Maximum Width:	75	6.25	1.91
Front Track:	63	5.25	1.60
Rear Track:	62	5.17	1.57
Vertical Dimensions			
Height:	72	6.00	1.83
Ground to -			
Front Bumper (Top)	28	2.33	0.71
Headlight - center	34	2.83	0.86
Hood - top front:	39	3.25	0.99
Base of Windshield	47	3.92	1.19
Rear Bumper - top:	29	2.42	0.74
Trunk - top rear:	44	3.67	1.12
Base of Rear Window:	49	4.08	1.24

2002 GMC ENVOY 4 DOOR 4X4 UTILITY

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	59	4.92	1.50
Front Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (max)	43	3.58	1.09
Rear Seat Shoulder Width	49	4.08	1.24
Rear Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (min)	37	3.08	0.94

Seatbelts: 3pt - front and rear
Airbags: FRONT SEAT AIRBAGS + SIDE AIRBAGS

Steering Data

Turning Circle (Diameter)	468	39	11.89
Steering Ratio: 20.40:1			
Wheel Radius:	14	1.17	0.36
Tire Size (OEM): P245/65R17			

Acceleration & Braking Information

Brake Type: ALL DISC
ABS System: ALL WHEEL ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):
d = 146.0 ft t = 3.3 sec a = -26.5 ft/sec² G-force = -0.82

Acceleration:

0 to 30mph	t =	3.0	sec	a =	14.7	ft/sec²	G-force = 0.46
0 to 60mph	t =	8.5	sec	a =	10.4	ft/sec²	G-force = 0.32
45 to 65mph	t =	5.6	sec	a =	5.2	ft/sec²	G-force = 0.16

Transmission Type: 4spd AUTOMATIC

Notes:
Federal Bumper Standard Requirements: No Requirement

N.S.D.C = 2002 - 2009

2002 GMC ENVOY 4 DOOR 4X4 UTILITY

Other Information

Tip-Over Stability Ratio =	1.09	Reasonably Stable
NHTSA Star Rating (calculated)		**

Center of Gravity (No Load):

Inches behind front axle	=	51.98
Inches in front of rear axle	=	61.02
Inches from side of vehicle	=	37.50
Inches from ground	=	28.73
Inches from front corner	=	94.72
Inches from rear corner	=	111.51
Inches from front bumper	=	86.98
Inches from rear bumper	=	105.02

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	3423.84	lb*ft*sec²
Pitch Moment of Inertia	=	3526.36	lb*ft*sec²
Roll Moment of Inertia	=	783.16	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	65.6	deg
Angle Front of Hood to Windshield Base	=	9.7	deg
Angle Front of Hood to Windshield Top	=	23.3	deg
Angle of Windshield	=	42.6	deg
Angle of Steering Tires at Max Turn	=	27.7	deg

First Approximation Crush Factors:

Speed Equivalent (mph) of Kinetic Energy (KE) used in causing crush of indentation may be evaluated using the following formula, the appropriated Crush Factor (CF), and Maximum Indentation Depth (MID), in feet:

$$V(mph) = \sqrt{(30 * CF * MID)}$$

KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY (Tested for Rear/Side Impact only)	=	27 CF

These CF values are based upon analysis of NHTSA Barrier Crash data, and from over 1000 vehicle accidents where independent evaluation of speed was possible. (These are NOT 'A', 'B', 'C', or 'G' values)

The rear Impact data with more then 2-3 inches of crush damage should be looked at carefully, since some vehicles have very weak trunk & fender strength. Therefore, on some cars, especially GM, you estimate from the rear crush data may be high by as much as 4-5 mph (on a crush of 18 inches).

Stiffness Values and Test Data

Derived from

NHTSA Crash Test

#4918

2004 GMC ENVOY XUV

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
17R-030201SC02301

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Similar Vehicle database reader

You entered: **2002 GMC ENVOY**

The Similar Vehicle Year/Model list indicates the following are Similar Models

Year Range	Make	Model	Body Styles	Wheelbase
2002 - 2004	OLDSMOBILE	BRAVADA	SUV	117
Remarks:				
2004 - 2007	BUICK	RAINIER	SUV	113
Remarks:				
2002 - 2006	GMC	ENVOY XL	SUV	113
Remarks:				
2002 - 2009	CHEVROLET	TRAILBLAZER	SUV	113
Remarks:				
2002 - 2009	GMC	ENVOY	SUV	113
Remarks:				
2003 - 2008	ISUZU	ASCENDER	SUV	107
Remarks:				
2002 - 2007	CHEVROLET	TRAILBLAZER EXT	SUV	113
Remarks:				
2005 - 2009	SAAB	9-7X	SW	113
Remarks:				

Test Information

Test #	4918	NHTSA Test Reference Guide Version #	V5			
Test Date	2004-02-03	Contract #	DTNH22-01-D-32005			
Contract/Study Title	NEW CAR ASSESSMENT PROGRAM FRONTAL BARRIER IMPACT TEST					
Test Objective(s)	TO OBTAIN VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT INFORMATION					
Test Type	NEW CAR ASSESSMENT TEST	Configuration	VEHICLE INTO BARRIER			
Impact Angle	0	Side Impact Point	9999	mm	0.0	inches
		Offset Distance	0	mm	0.0	inches
		Closing Speed	56.7	Km/Hr	35.20	MPH
Test Performer	CALSPAN					
Test Reference #	RUN2112					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	21 C	69.8 F	Total Number of Curves	197		
Data Recorder Type	DIGITAL DATA ACQUISITION	Data Link	UMBILICAL CABLE			
Test Commentary	FY 04 NCAP - 2004 GMC ENVOY XUV M40107					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	9999	mm	9999	inches
Barrier Shape	LOAD CELL BARRIER					
Barrier Commentary	FRONTAL FLAT BARRIER WITH 36 LOADCELLS					

2004 GMC ENVOY XUV LEFT FRONT SEAT OCCUPANT

Test #	4918		
Vehicle #	1	Sex	MALE
Location	LEFT FRONT SEAT	Age	99
Position	CENTER POSITION	Height	9999 mm 0.0 inches
Type	HYBRID III DUMMY	Weight	999.0 kg 2202 pounds
Size	50 PERCENTILE		
Calibration Method	HYBRID III		
Occupant Manufacturer	MFG: ARL S/N:150		
Occupant Modification	NO COMMENTS		
Occupant Description	NO COMMENTS		
Occupant Commentary	CNTRH2: HEAD RESTRAINT		

Head

Head to -

Windshielder Header	468	mm	18.4	inches	Head Injury Criteria (HIC)	762	
WindShield	745	mm	29.3	inches	HIC Lower Time Interval (ms)	61	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	97	
Side Header	288	mm	11.3	inches			
Side Window	360	mm	14.2	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	555	mm	21.9	inches	Arm to Door	120	mm	4.7	inches
Steering Wheel	312	mm	12.3	inches	Hip to Door	142	mm	5.6	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	633	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	59.3

Lap Belt Peak Load	5900	Newtons	1326.4	pound Force
Shoulder Belt Peak Load	0	Newtons	0.0	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	185	mm	7.3	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	-8442	Newtons	-1897.8	pounds Force
Right Femur Peak Load	-8168	Newtons	-1836.2	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2004 GMC ENVOY XUV LEFT FRONT SEAT OCCUPANT

Test #	4918					
Vehicle #	1	Sex	MALE			
Location	LEFT FRONT SEAT	Age	99			
Position	CENTER POSITION	Height	9999	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	999.0	kg	2202	pounds
Size	50 PERCENTILE					

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: ARL S/N:150
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	CNTRH2: HEAD RESTRAINT

Restraints

Restraint # 1	3 POINT BELT
Mounted	SEAT BACK
Deployment	NOT APPLICABLE
Restraint Commentary	SHOULDER BELT FORCE LIMITER
Restraint # 2	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NONE

2004 GMC ENVOY XUV RIGHT FRONT SEAT OCCUPANT

Test #	4918						
Vehicle #	1			Sex	MALE		
Location	RIGHT FRONT SEAT			Age	99		
Position	CENTER POSITION			Height	9999	mm	0.0 inches
Type	HYBRID III DUMMY			Weight	999.0	kg	2202 pounds
Size	50 PERCENTILE						

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: ARL S/N:245
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	CNTRH2: HEAD RESTRAINT

Head

Head to -

Windshielder Header	443	mm	17.4	inches	Head Injury Criteria (HIC)	891			
WindShield	675	mm	26.6	inches	HIC Lower Time Interval (ms)	69.3			
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	105.3			
Side Header	284	mm	11.2	inches					
Side Window	365	mm	14.4	inches					

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head)	AIR BAG
Second Contact Region (Head)	

Chest

Chest to -

Dash	519	mm	20.4	inches	Arm to Door	124	mm	4.9	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	148	mm	5.8	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	603	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	52.1

Lap Belt Peak Load	6691	Newtons	1504.2	pound Force
Shoulder Belt Peak Load	0	Newtons	0.0	pound Force

First Contact Region (Chest/Abdomen)	AIR BAG
Second Contact Region (Chest/Abdomen)	NONE

Legs

Knees to Dash	169	mm	6.7	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	-4285	Newtons	-963.3	pounds Force
Right Femur Peak Load	-3390	Newtons	-762.1	pounds Force

First Contact Region (Legs)	DASHPANEL
Second Contact Region (Legs)	

2004 GMC ENVOY XUV RIGHT FRONT SEAT OCCUPANT

Test #	4918					
Vehicle #	1	Sex	MALE			
Location	RIGHT FRONT SEAT	Age	99			
Position	CENTER POSITION	Height	9999	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	999.0	kg	2202	pounds
Size	50 PERCENTILE					

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: ARL S/N:245
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	CNTRH2: HEAD RESTRAINT

Restraints

Restraint # 1	3 POINT BELT
Mounted	SEAT BACK
Deployment	NOT APPLICABLE
Restraint Commentary	SHOULDER BELT FORCE LIMITER
Restraint # 2	FRONTAL AIRBAG
Mounted	DASH PANEL - MID
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NONE

2004 GMC ENVOY XUV RIGHT REAR SEAT OCCUPANT

Test #	4918		
Vehicle #	1	Sex	NOT APPLICABLE
Location	RIGHT REAR SEAT	Age	1
Position	NON-ADJUSTABLE SEAT	Height	9999 mm 0.0 inches
Type	HYBRID III DUMMY	Weight	999.0 kg 2202 pounds
Size	3 YEAR OLD CHILD		
Calibration Method	HYBRID III		
Occupant Manufacturer	MFG: DENTON S/N:044		
Occupant Modification	UNMODIFIED		
Occupant Description	SUBPART P THREE YEAR OLD CHILD		
Occupant Commentary	CONTACTS: CNTRH1: CHEST, CNTRH2: CRS BACK AND P3 HEAD RESTRAINT		

Head

Head to -

Windshielder Header	9999	mm	0.0	inches	Head Injury Criteria (HIC)	0	
WindShield	9999	mm	0.0	inches	HIC Lower Time Interval (ms)	0	
Seatback	637	mm	25.1	inches	HIC Upper Time Interval (ms)	0	
Side Header	9999	mm	0.0	inches			
Side Window	405	mm	15.9	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head): OTHER

Second Contact Region (Head):

Chest

Chest to -

Dash	9999	mm	0.0	inches	Arm to Door	210	mm	8.3	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	262	mm	10.3	inches
Seatback	601	mm	23.7	inches					

Chest Severity Index	461	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	39.8

Lap Belt Peak Load	0	Newtons	0.0	pound Force
Shoulder Belt Peak Load	0	Newtons	0.0	pound Force

First Contact Region (Chest/Abdomen): NONE

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	9999	mm	0.0	inches	Knees to Seatback	364	mm	14.3	inches

Left Femur Peak Load	0	Newtons	0.0	pounds Force
Right Femur Peak Load	0	Newtons	0.0	pounds Force

First Contact Region (Legs): SEAT BACK

Second Contact Region (Legs):

2004 GMC ENVOY XUV RIGHT REAR SEAT OCCUPANT

Test #	4918					
Vehicle #	1	Sex	NOT APPLICABLE			
Location	RIGHT REAR SEAT	Age	1			
Position	NON-ADJUSTABLE SEAT	Height	9999	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	999.0	kg	2202	pounds
Size	3 YEAR OLD CHILD					

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: DENTON S/N:044
Occupant Modification	UNMODIFIED
Occupant Description	SUBPART P THREE YEAR OLD CHILD
Occupant Commentary	CONTACTS: CNTRH1: CHEST, CNTRH2: CRS BACK AND P3 HEAD RESTRAINT

Restraints

Restraint # 1	CONVERTIBLE CHILD SAFETY SEAT, FRONT FACING
Mounted	LATCH - LOWER ANCHORAGES AND TOP TETHER
Deployment	NOT APPLICABLE
Restraint Commentary	EVENFLO VANGAURD V LATCH
Restraint # 2	5 POINT BELT
Mounted	CHILD SEAT
Deployment	NOT APPLICABLE
Restraint Commentary	EVENFLO VANGAURD V LATCH

2004 GMC ENVOY XUV LEFT REAR SEAT OCCUPANT

Test #	4918						
Vehicle #	1			Sex	NOT APPLICABLE		
Location	LEFT REAR SEAT			Age	1		
Position	NON-ADJUSTABLE SEAT			Height	9999 mm	0.0	inches
Type	HYBRID III DUMMY			Weight	999.0 kg	2202	pounds
Size	3 YEAR OLD CHILD						

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: DENTON S/N:142
Occupant Modification	UNMODIFIED
Occupant Description	SUBPART P THREE YEAR OLD CHILD
Occupant Commentary	CONTACTS: CNTRH1: CHEST, CNTRH2: CRS BACK

Head

Head to -

Windshielder Header	9999	mm	0.0	inches	Head Injury Criteria (HIC)	739			
WindShield	9999	mm	0.0	inches	HIC Lower Time Interval (ms)	79.8			
Seatback	602	mm	23.7	inches	HIC Upper Time Interval (ms)	115.8			
Side Header	9999	mm	0.0	inches					
Side Window	415	mm	16.3	inches					
Neck to Seatback	9999	mm	0.0	inches					

First Contact Region (Head)	OTHER
Second Contact Region (Head)	

Chest

Chest to -

Dash	9999	mm	0.0	inches	Arm to Door	226	mm	8.9	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	274	mm	10.8	inches
Seatback	566	mm	22.3	inches					

Chest Severity Index	457	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	38.3

Lap Belt Peak Load	0	Newtons	0.0	pound Force
Shoulder Belt Peak Load	0	Newtons	0.0	pound Force

First Contact Region (Chest/Abdomen)	NONE
Second Contact Region (Chest/Abdomen)	NONE

Legs

Knees to Dash	9999	mm	0.0	inches	Knees to Seatback	369	mm	14.5	inches
Left Femur Peak Load	0	Newtons	0.0	pounds Force					
Right Femur Peak Load	0	Newtons	0.0	pounds Force					

First Contact Region (Legs)	SEAT BACK
Second Contact Region (Legs)	

2004 GMC ENVOY XUV LEFT REAR SEAT OCCUPANT

Test #	4918						
Vehicle #	1		Sex	NOT APPLICABLE			
Location	LEFT REAR SEAT		Age	1			
Position	NON-ADJUSTABLE SEAT		Height	9999	mm	0.0	inches
Type	HYBRID III DUMMY		Weight	999.0	kg	2202	pounds
Size	3 YEAR OLD CHILD						

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: DENTON S/N:142
Occupant Modification	UNMODIFIED
Occupant Description	SUBPART P THREE YEAR OLD CHILD
Occupant Commentary	CONTACTS: CNTRH1: CHEST, CNTRH2: CRS BACK

Restraints

Restraint # 1	CONVERTIBLE CHILD SAFETY SEAT, FRONT FACING
Mounted	LATCH - LOWER ANCHORAGES AND TOP TETHER
Deployment	NOT APPLICABLE
Restraint Commentary	COSCO ALPHA OMEGA V
Restraint # 2	5 POINT BELT
Mounted	CHILD SEAT
Deployment	NOT APPLICABLE
Restraint Commentary	COSCO ALPHA OMEGA V

Vehicle 1 2004 GMC ENVOY XUV

Test #	4918		
VIN	1GKET12S346177067	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	GMC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	ENVOY XUV	Steering Column Collapse Mechanism	UNKNOWN
Body	UTILITY VEHICLE		
Engine	STRAIGHT 6 INLINE FRONT		
Displacement	4.2 Liter	Transmission	AUTOMATIC - FOUR WHEEL DRIVE
Vehicle Modification(s) Description	NONE		
Vehicle Commentary	2004 GMC ENVOY XUV M40107		

Vehicle Length	5300	mm	208.7	inches	CG behind Front Axle	1672	mm	65.8	inches
Vehicle Width	1897	mm	74.7	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	3280	mm	129.1	inches	Total Length of Indentation	9999	mm	0.0	inches
Vehicle Test Weight	2597	KG	5724	pounds	Maximum Static Crush Depth	499	mm	19.6	inches
					Pre-Impact Speed	57	kph	35.2	mph

Vehicle Damage Index: 12FDEW3

Principal Direction of Force: 0

Damage Profile Distance Measurements

(Measured Left-to-Right, Rear-to-Front)

DPD 1	389	mm	15.3	inches
DPD 2	452	mm	17.8	inches
DPD 3	487	mm	19.2	inches
DPD 4	494	mm	19.4	inches
DPD 5	482	mm	19.0	inches
DPD 6	377	mm	14.8	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	206.1	inches	189.1	inches	17.0	inches
	5235	mm	4804	mm	431	mm
Centerline	208.7	inches	189.0	inches	19.6	inches
	5300	mm	4801	mm	499	mm
Right Bumper Corner	206.5	inches	188.9	inches	17.6	inches
	5245	mm	4798	mm	447	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
0.0	NOT APPLICABLE	0.0

Moving Test Cart Angle	Moving Test Cart/Vehicle Crabbed Angle	Vehicle Orientation on Cart Moving Test Cart
DIRECT ENGAGEMENT	0.0	NOT APPLICABLE
Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground	*Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle*	*Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion*

Vehicle 1 2004 GMC ENVOY XUV

Test #	4918		
VIN	1GKET12S346177067	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	GMC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	ENVOY XUV	Steering Column Collapse Mechanism	UNKNOWN
Body	UTILITY VEHICLE		
Engine	STRAIGHT 6 INLINE FRONT		
Displacement	4.2 Liter	Transmission	AUTOMATIC - FOUR WHEEL DRIVE
Vehicle Modification(s) Description	NONE		
Vehicle Commentary	2004 GMC ENVOY XUV M40107		

Vehicle Length	5300	mm	208.7	inches	CG behind Front Axle	1672	mm	65.8	inches
Vehicle Width	1897	mm	74.7	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	3280	mm	129.1	inches	Total Length of Indentation	9999	mm	0.0	inches
Vehicle Test Weight	2597	KG	5724	pounds	Maximum Static Crush Depth	499	mm	19.6	inches
					Pre-Impact Speed	57	kph	35.2	mph

Vehicle Damage Index	12FDEW3	Principal Direction of Force	0

Pre & Post Test Damage Measurements

(Measurements are taken in a longitudinaldirection. Except for Engine Block, all measurements are take from the Rear Vehicle Surface forward.)

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Length of Vehicle at Centerline							
				5300	208.7	4801	189.0				
				Engine Block							
				448	17.6	464	18.3				
5235	206.1	4804	189.1	Front Bumper Corner				5245	206.5	4798	188.9
				Front of Engine							
				4708	185.4	4461	175.6				
4159	163.7	4057	159.7	Firewall				4166	164.0	4068	160.2
				4199	165.3	3957	155.8				
3827	150.7	3757	147.9	Upper Leading Edge of Door				3825	150.6	3794	149.4
3770	148.4	3747	147.5	Lower Leading Edge of Door				3768	148.3	3760	148.0
3850	151.6	3782	148.9	Bottom of 'A' Post				3850	151.6	3811	150.0
2631	103.6	2623	103.3	Upper Trailing Edge of Door				2632	103.6	2622	103.2
2633	103.7	2622	103.2	Lower Trailing Edge of Door				2632	103.6	2625	103.3
				Steering Column							
				3287	129.4	3192	125.7				
				Center of Seering Column to 'A' Post (Horizontal)							
				335	13.2	334	13.1				
				Center of Steering Column to Headliner (Vertical)							
				445	17.5	597	23.5				

2004 GMC ENVOY XUV

NHTSA Crash Test - #4918 - Front Impact

Pre/Post Depths - Vehicle Width - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 5724 pounds
Vehicle Closing Speed = 35.2 mph
Test Crush Length = 74.7 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	17.0	19.6	17.6	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 17.0 inches					263.4
Using a Rated No Damage Speed of	2.5mph	295.5	227.3	192.0	
Using a Rated No Damage Speed of	5.0mph	545.8	193.9	768.0	
Using a Rated No Damage Speed of	7.5mph	750.9	163.1	1728.1	
Using a Rated No Damage Speed of	10.0mph	910.8	135.0	3072.1	
Average Crush = 18.5 inches					222.4
Using a Rated No Damage Speed of	2.5mph	271.5	192.0	192.0	
Using a Rated No Damage Speed of	5.0mph	501.5	163.7	768.0	
Using a Rated No Damage Speed of	7.5mph	690.0	137.8	1728.1	
Using a Rated No Damage Speed of	10.0mph	837.0	114.0	3072.1	
Maximum Crush = 19.6 inches					198.2
Using a Rated No Damage Speed of	2.5mph	256.3	171.0	192.0	
Using a Rated No Damage Speed of	5.0mph	473.4	145.9	768.0	
Using a Rated No Damage Speed of	7.5mph	651.3	122.7	1728.1	
Using a Rated No Damage Speed of	10.0mph	790.0	101.6	3072.1	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

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4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	19.6	32.1	-3.1	-9.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 25.3

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

2004 GMC ENVOY XUV

NHTSA Crash Test - #4918 - Front Impact

Damage Profile Distances - Vehicle Width - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 5724 pounds
Vehicle Closing Speed = 35.2 MPH
Test Crush Length = 74.7 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	15.3	17.8	19.2	19.4	19.0	14.8	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 14.8 inches					347.6
Using a Rated No Damage Speed of	2.5mph	339.4	300.0	192.0	
Using a Rated No Damage Speed of	5.0mph	626.9	255.8	768.0	
Using a Rated No Damage Speed of	7.5mph	862.5	215.2	1728.1	
Using a Rated No Damage Speed of	10.0mph	1046.2	178.1	3072.1	
Average Crush = 16.3 inches					286.5
Using a Rated No Damage Speed of	2.5mph	308.2	247.3	192.0	
Using a Rated No Damage Speed of	5.0mph	569.2	210.9	768.0	
Using a Rated No Damage Speed of	7.5mph	783.1	177.5	1728.1	
Using a Rated No Damage Speed of	10.0mph	949.9	146.9	2139.1	
Maximum Crush = 19.4 inches					202.3
Using a Rated No Damage Speed of	2.5mph	258.9	174.6	192.0	
Using a Rated No Damage Speed of	5.0mph	478.3	148.9	768.0	
Using a Rated No Damage Speed of	7.5mph	658.0	125.3	1728.1	
Using a Rated No Damage Speed of	10.0mph	798.1	103.7	3072.1	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

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4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	19.4	31.9	-3.3	-10.3

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 25.5

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2002 - 2009
Make: GMC
Model: ENVOY

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
5036	2002 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	18.2	35.2	473.0	157.2	711.6	213.5	27.3
5303	2005 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	17.3	35.0	490.0	170.0	706.2	231.4	28.3
4918	2004 GMC ENVOY XUV UTILITY VEHICLE	5.0	16.3	35.2	568.7	210.5	768.0	286.0	30.4
4244	2002 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	14.5	35.1	575.8	238.3	695.5	324.1	33.9
4416	2002 CHEVROLET TRAILBLAZER FIVE DOOR HAT...	5.0	13.4	34.8	607.5	270.9	681.3	369.4	36.2
5572	2006 CHEVROLET TRAILBLAZER EXT UTILITY VE...	5.0	14.6	35.2	650.3	268.9	786.4	365.4	33.9
5537	2005 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	12.6	34.9	663.4	316.0	696.3	430.5	38.8
	Average (AVG)				**575.5**	**233.1**	**720.8**	**317.2**	**32.7**
	Minimum (MIN)				**473.0**	**157.2**	**681.3**	**213.5**	**27.3**
	Maximum (MAX)				**663.4**	**316.0**	**786.4**	**430.5**	**38.8**
	Standard Deviation (STDev-sample)				**73.3**	**57.5**	**40.1**	**78.5**	**4.2**
	Number of Tests (n)			**7**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2002 - 2009
Make: GMC
Model: ENVOY

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Width Values G	Width Values Kv	Crush Factor
4873	2003 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	23.1	35.2	362.7	94.8	693.9	128.8	21.4
5303	2005 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	21.6	35.0	392.8	109.3	706.2	148.7	22.7
5036	2002 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	20.8	35.2	414.0	120.4	711.6	163.5	23.9
4416	2002 CHEVROLET TRAILBLAZER FIVE DOOR HAT...	5.0	18.9	34.8	430.5	136.0	681.3	185.5	25.7
5537	2005 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	19.3	34.9	432.0	134.0	696.3	182.5	25.3
5538	2005 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	12.3	25.0	456.1	148.3	701.0	231.6	20.4
4244	2002 CHEVROLET TRAILBLAZER UTILITY VEHICLE	5.0	18.2	35.1	459.4	151.7	695.5	206.3	27.0
4918	2004 GMC ENVOY XUV UTILITY VEHICLE	5.0	19.6	35.2	472.3	145.2	768.0	197.3	25.2
5572	2006 CHEVROLET TRAILBLAZER EXT UTILITY VE...	5.0	18.9	35.2	501.1	159.7	786.4	217.0	26.1
4512	2002 CHEVROLET TRAILBLAZER FIVE DOOR HAT...	5.0	11.5	29.8	587.5	253.9	679.8	366.4	31.0
4675	2003 CHEVROLET TRAILBLAZER OTHER	5.0	10.5	29.7	651.2	306.8	691.1	443.8	33.6
	Average (AVG)				**469.1**	**160.0**	**710.1**	**224.7**	**25.7**
	Minimum (MIN)				**362.7**	**94.8**	**679.8**	**128.8**	**20.4**
	Maximum (MAX)				**651.2**	**306.8**	**786.4**	**443.8**	**33.6**
	Standard Deviation (STDev-sample)				**84.6**	**63.6**	**34.7**	**95.5**	**3.9**
	Number of Tests (n)			**11**					

Expert VIN DeCoder®

Version Number 3.6.0.9

DeCoded VIN: 1C3LC56R18N244752

Model: 2008 Chrysler Sebring Touring 4-Door Sedan

Engine Size: 2.7 L/ 167 cu.in.

Engine Description: V-6 cylinder with Dual Overhead Cam

Horse Power: 200 @ 5800 rpm

Torque: 190 lb-ft @ 4850 rpm

Injection System: Multi-Port Fuel Injection (MFI)

PSI: 58 psi

Ignition: Electronic

Manufacturer: Chrysler

Assembly Plant: Sterling Hts, MI

Drive Wheels: This is a Front Wheel Drive vehicle w/ Dual Front and Front Side Air Bags

The First through Third characters (1C3) indicate a Chrysler Passenger Car made in the U.S.A.

The Fourth character (L) indicates Dual Front and Front Side Air Bags

The Fifth through Sixth characters (C5) indicate a Sebring

The Seventh character (6) indicates a 4-Door Sedan

The Eighth character (R) indicates the OEM engine: 2.7 L/ 167 cu.in., L4, DOHC

The Ninth character (the check digit) is entered as 1.
The VIN appears Valid, the calculated value is 1.

The Tenth character (8) indicates the model year 2008

The Eleventh character (N) indicates the vehicle was made in the assembly plant in Sterling Hts, MI

The Twelfth through Seventeenth characters (244752) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.7.1.2

PROVIDED BY:
4N6XPRT Systems
8387 University Avenue
La Mesa CA 91941

10/3/2017

2008 CHRYSLER SEBRING 4 DOOR SEDAN

Curb Weight:		3287	lbs.	1491	kg.
Curb Weight Distribution -	Front:	60	% Rear:	40	%
Gross Vehicle Weight Rating:		4600	lbs.	2087	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	191	15.92	4.85
Wheelbase:	109	9.08	2.77
Front Bumper to Front Axle:	38	3.17	0.97
Front Bumper to Front of Front Well:	22	1.83	0.56
Front Bumper to Front of Hood:	7	0.58	0.18
Front Bumper to Base of Windshield:	47	3.92	1.19
Front Bumper to Top of Windshield:	77	6.42	1.96
Rear Bumper to Rear Axle:	44	3.67	1.12
Rear Bumper to Rear of Rear Well:	26	2.17	0.66
Rear Bumper to Rear of Trunk:	7	0.58	0.18
Rear Bumper to Base of Rear Window:	22	1.83	0.56
Width Dimensions			
Maximum Width:	71	5.92	1.80
Front Track:	62	5.17	1.57
Rear Track:	62	5.17	1.57
Vertical Dimensions			
Height:	59	4.92	1.50
Ground to -			
Front Bumper (Top)	22	1.83	0.56
Headlight - center	29	2.42	0.74
Hood - top front:	32	2.67	0.81
Base of Windshield	40	3.33	1.02
Rear Bumper - top:	27	2.25	0.69
Trunk - top rear:	43	3.58	1.09
Base of Rear Window:	44	3.67	1.12

2008 CHRYSLER SEBRING 4 DOOR SEDAN

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	56	4.67	1.42
Front Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (max)	42	3.50	1.07
Rear Seat Shoulder Width	56	4.67	1.42
Rear Seat to Headliner	38	3.17	0.97
Front Leg Room - seatback to floor (min)	38	3.17	0.97

Seatbelts: 3pt - front and rear

Airbags: FRONT SEAT AIRBAGS + SIDE AIRBAGS

Steering Data

Turning Circle (Diameter)	444	37	11.28
Steering Ratio:	:1		
Wheel Radius:			
Tire Size (OEM):	P215/65R16		

Acceleration & Braking Information

Brake Type: ALL DISC

ABS System: ALL WHEEL ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):

d = 138.0 ft t = 3.1 sec a = -28.0 ft/sec² G-force = -0.87

Acceleration:

0 to 30mph	t =	3.3	sec	a =	13.3	ft/sec²	G-force = 0.41
0 to 60mph	t =	9.5	sec	a =	9.3	ft/sec²	G-force = 0.29
45 to 65mph	t =	5.3	sec	a =	5.5	ft/sec²	G-force = 0.17

Transmission Type: 4spd AUTOMATIC

Notes:

Federal Bumper Standard Requirements: 2.5 mph

This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2007 - 2009

2008 CHRYSLER SEBRING 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.34	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	43.60
Inches in front of rear axle	=	65.40
Inches from side of vehicle	=	35.50
Inches from ground	=	23.16
Inches from front corner	=	88.99
Inches from rear corner	=	115.02
Inches from front bumper	=	81.60
Inches from rear bumper	=	109.40

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2179.61	lb*ft*sec²
Pitch Moment of Inertia	=	2105.13	lb*ft*sec²
Roll Moment of Inertia	=	441.66	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	55.0	deg
Angle Front of Hood to Windshield Base	=	11.3	deg
Angle Front of Hood to Windshield Top	=	19.7	deg
Angle of Windshield	=	29.5	deg
Angle of Steering Tires at Max Turn	=	28.1	deg

First Approximation Crush Factors:

Speed Equivalent (mph) of Kinetic Energy (KE) used in causing crush of indentation may be evaluated using the following formula, the appropriated Crush Factor (CF), and Maximum Indentation Depth (MID), in feet:

$$V(mph) = \sqrt{(30 * CF * MID)}$$

KE Equivalent Speed (Front/Rear/Side)	=	21	CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY (Tested for Rear/Side Impact only)	=	27	CF

These CF values are based upon analysis of NHTSA Barrier Crash data, and from over 1000 vehicle accidents where independent evaluation of speed was possible. (These are NOT 'A', 'B', 'C', or 'G' values)

The rear Impact data with more then 2-3 inches of crush damage should be looked at carefully, since some vehicles have very weak trunk & fender strength. Therefore, on some cars, especially GM, you estimate from the rear crush data may be high by as much as 4-5 mph (on a crush of 18 inches).

Expert VIN DeCoder®

Version Number 3.6.0.9

DeCoded VIN: 1G2HY54KX24175618

Model: 2002 Pontiac Bonneville SLE 4 Door Sedan

Engine Size: 3.8L / 231cu.in.

Engine Description: V6 Cylinder with Overhead Valves (OHV)

Horse Power: 205 @ 5200 rpm

Torque: 230 lb-ft at 4000 rpm

Injection System: Multi-Port Fuel Injection (MFI)

PSI: 41-47 psi Ignition: Electronic

Manufacturer: Buick, Olsmobile, Cadillac

Assembly Plant: Orion, MI

Drive Wheels: This is a Front Wheel Drive vehicle w/ Active (Manual) Seatbelts + Front and Side Air Bags

The First through Third characters (1G2) indicate a Pontiac Passenger Car made in the U.S.A.

The Fourth through Fifth characters (HY) indicate a Bonneville SLE

The Sixth character (5) indicates a 4 Door Sedan

The Seventh character (4) indicates Active (Manual) Seatbelts + Front and Side Air Bags

The Eighth character (K) indicates the OEM engine: 3.8L / 231cu.in., V6 OHV

The Ninth character (the check digit) is entered as X.

The VIN appears Valid, the calculated value is 10. (The display Character should be X)

The Tenth character (2) indicates the model year 2002

The Eleventh character (4) indicates the vehicle was made in the assembly plant in Orion, MI

The Twelfth through Seventeenth characters (175618) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.7.1.2

PROVIDED BY:
4N6XPRT Systems
8387 University Avenue
La Mesa CA 91941

10/3/2017

2002 PONTIAC BONNEVILLE 4 DOOR SEDAN

Curb Weight:		3700	lbs.	1678	kg.
Curb Weight Distribution -	Front:	61	% Rear:	39	%
Gross Vehicle Weight Rating:		4808	lbs.	2181	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	203	16.92	5.16
Wheelbase:	112	9.33	2.84
Front Bumper to Front Axle:	44	3.67	1.12
Front Bumper to Front of Front Well:	28	2.33	0.71
Front Bumper to Front of Hood:	6	0.50	0.15
Front Bumper to Base of Windshield:	53	4.42	1.35
Front Bumper to Top of Windshield:	87	7.25	2.21
Rear Bumper to Rear Axle:	47	3.92	1.19
Rear Bumper to Rear of Rear Well:	32	2.67	0.81
Rear Bumper to Rear of Trunk:	7	0.58	0.18
Rear Bumper to Base of Rear Window:	30	2.50	0.76
Width Dimensions			
Maximum Width:	74	6.17	1.88
Front Track:	63	5.25	1.60
Rear Track:	62	5.17	1.57
Vertical Dimensions			
Height:	57	4.75	1.45
Ground to -			
Front Bumper (Top)	21	1.75	0.53
Headlight - center	27	2.25	0.69
Hood - top front:	28	2.33	0.71
Base of Windshield	37	3.08	0.94
Rear Bumper - top:	25	2.08	0.64
Trunk - top rear:	39	3.25	0.99
Base of Rear Window:	42	3.50	1.07

2002 PONTIAC BONNEVILLE 4 DOOR SEDAN

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	58	4.83	1.47
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	43	3.58	1.09
Rear Seat Shoulder Width	58	4.83	1.47
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	38	3.17	0.97

Seatbelts: 3pt - front and rear

Airbags: FRONT SEAT AIRBAGS + SIDE AIRBAGS

Steering Data

Turning Circle (Diameter)	480	40	12.19
Steering Ratio:	:1		
Wheel Radius:	12	1.00	0.30
Tire Size (OEM):	P225/60R16		

Acceleration & Braking Information

Brake Type: ALL DISC

ABS System: ALL WHEEL ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):

d = 125.0 ft t = 2.8 sec a = -30.9 ft/sec² G-force = -0.96

Acceleration:

0 to 30mph	t =	2.9	sec	a =	15.2	ft/sec²	G-force = 0.47
0 to 60mph	t =	8.0	sec	a =	11.0	ft/sec²	G-force = 0.34
45 to 65mph	t =	6.3	sec	a =	4.7	ft/sec²	G-force = 0.15

Transmission Type: 4spd AUTOMATIC

Notes:

Federal Bumper Standard Requirements: 2.5 mph

This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2002 - 2005

2002 PONTIAC BONNEVILLE 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.40	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	43.68
Inches in front of rear axle	=	68.32
Inches from side of vehicle	=	37.00
Inches from ground	=	22.37
Inches from front corner	=	95.17
Inches from rear corner	=	121.11
Inches from front bumper	=	87.68
Inches from rear bumper	=	115.32

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2605.00	lb*ft*sec²
Pitch Moment of Inertia	=	2514.00	lb*ft*sec²
Roll Moment of Inertia	=	516.00	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	49.4	deg
Angle Front of Hood to Windshield Base	=	10.8	deg
Angle Front of Hood to Windshield Top	=	18.4	deg
Angle of Windshield	=	27.9	deg
Angle of Steering Tires at Max Turn	=	26.7	deg

First Approximation Crush Factors:

Speed Equivalent (mph) of Kinetic Energy (KE) used in causing crush of indentation may be evaluated using the following formula, the appropriated Crush Factor (CF), and Maximum Indentation Depth (MID), in feet:

$$V(mph) = \sqrt{(30 * CF * MID)}$$

KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY (Tested for Rear/Side Impact only)	=	27 CF

These CF values are based upon analysis of NHTSA Barrier Crash data, and from over 1000 vehicle accidents where independent evaluation of speed was possible. (These are NOT 'A', 'B', 'C', or 'G' values)

The rear Impact data with more then 2-3 inches of crush damage should be looked at carefully, since some vehicles have very weak trunk & fender strength. Therefore, on some cars, especially GM, you estimate from the rear crush data may be high by as much as 4-5 mph (on a crush of 18 inches).

Stiffness Values and Test Data

Derived from

NHTSA Crash Test

#4837

2004 CADILLAC DE VILLE

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
17R-030201SC02301

4N6XPRT Systems | 8387 University Avenue | La Mesa, CA 91942 | USA
(800) 266-9778 | (619) 464-3478 | FAX: (619) 464-2206 | Email: 4n6@4n6xprt.com

Similar Vehicle database reader

You entered: **2002 PONTIAC BONNEVILLE**

The Similar Vehicle Year/Model list indicates the following are Similar Models

Year Range	Make	Model	Body Styles	Wheelbase
1998 - 2004	CADILLAC	SEVILLE	4D	112.2
Remarks:				
2000 - 2005	BUICK	LESABRE	2D, 4D, SW	112.2, 127
Remarks: MOVES TO PARK AVENUE CHASSIS				
1997 - 2005	BUICK	PARK AVENUE	2D, 4D	113.8
Remarks:				
2000 - 2005	CADILLAC	DEVILLE	2D, 4D	115.3
Remarks: MOVES TO NEW SEVILLE CHAS				
1995 - 1999	BUICK	RIVIERA	2D	113.8
Remarks: BASED ON AURORA CHASSIS				
1995 - 1999	OLDSMOBILE	AURORA	4D	113.8
Remarks:				
2000 - 2005	PONTIAC	BONNEVILLE	2D, 4D, SW	112.2, 127
Remarks:				

If you have suggestions and/or corrections, we request and urge you to contact us - 4n6@4n6xprt.com.

Test Information

Test #	4837	NHTSA Test Reference Guide Version #	V5			
Test Date	2003-11-17	Contract #	DTNH22-01-D-02005			
Contract/Study Title	35 MPH NCAP FRONTAL - 2004 CADILLAC DEVILLE DHS 4 DOOR SEDAN					
Test Objective(s)	OBTAIN ATD AND VEHICLE DATA					
Test Type	OPTIONAL NEW CAR ASSESSMENT TEST	Configuration	VEHICLE INTO BARRIER			
Impact Angle	0	Side Impact Point	0	mm	0.0	inches
		Offset Distance	0	mm	0.0	inches
		Closing Speed	56.0	Km/Hr	34.80	MPH
Test Performer	KARCO ENGINEERING					
Test Reference #	G40100					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	14 C	57.2 F	Total Number of Curves	185		
Data Recorder Type	DIGITAL DATA ACQUISITION	Data Link	OTHER			
Test Commentary	DATALINK IS NONE, ON-BOARD DAS					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	0	mm	0	inches
Barrier Shape	LOAD CELL BARRIER					
Barrier Commentary	NO COMMENTS					

2004 CADILLAC DE VILLE LEFT FRONT SEAT OCCUPANT

Test #	4837		
Vehicle #	1	Sex	MALE
Location	LEFT FRONT SEAT	Age	0
Position	CENTER POSITION	Height	0 mm 0.0 inches
Type	HYBRID III DUMMY	Weight	0.0 kg 0 pounds
Size	50 PERCENTILE		
Calibration Method	HYBRID III		
Occupant Manufacturer	VECTOR, S/N:035		
Occupant Modification	UNMODIFIED		
Occupant Description	N0 COMMENTS		
Occupant Commentary	NO COMMENTS		

Head

Head to -

Windshielder Header	350	mm	13.8	inches	Head Injury Criteria (HIC)	414	
WindShield	625	mm	24.6	inches	HIC Lower Time Interval (ms)	56.1	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	92	
Side Header	285	mm	11.2	inches			
Side Window	360	mm	14.2	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	542	mm	21.3	inches	Arm to Door	155	mm	6.1	inches
Steering Wheel	300	mm	11.8	inches	Hip to Door	170	mm	6.7	inches
Seatback	0	mm	0.0	inches					

Chest Severity Index	0	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	49.2

Lap Belt Peak Load	5194	Newtons	1167.7	pound Force
Shoulder Belt Peak Load	4574	Newtons	1028.3	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	170	mm	6.7	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-4246	Newtons	-954.5	pounds Force
Right Femur Peak Load	-5294	Newtons	-1190.1	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2004 CADILLAC DE VILLE LEFT FRONT SEAT OCCUPANT

Test #	4837					
Vehicle #	1	Sex	MALE			
Location	LEFT FRONT SEAT	Age	0			
Position	CENTER POSITION	Height	0	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	0.0	kg	0	pounds
Size	50 PERCENTILE					

Calibration Method	HYBRID III
Occupant Manufacturer	VECTOR, S/N:035
Occupant Modification	UNMODIFIED
Occupant Description	N0 COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2004 CADILLAC DE VILLE RIGHT FRONT SEAT OCCUPANT

Test #	4837		
Vehicle #	1	Sex	MALE
Location	RIGHT FRONT SEAT	Age	0
Position	CENTER POSITION	Height	0 mm 0.0 inches
Type	HYBRID III DUMMY	Weight	0.0 kg 0 pounds
Size	50 PERCENTILE		
Calibration Method	HYBRID III		
Occupant Manufacturer	VECTOR, S/N:034		
Occupant Modification	UNMODIFIED		
Occupant Description	N0 COMMENTS		
Occupant Commentary	NO COMMENTS		

Head

Head to -

Windshielder Header	360	mm	14.2	inches	Head Injury Criteria (HIC)	438	
WindShield	645	mm	25.4	inches	HIC Lower Time Interval (ms)	62.8	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	98.7	
Side Header	270	mm	10.6	inches			
Side Window	340	mm	13.4	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	568	mm	22.4	inches	Arm to Door	48	mm	1.9	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	160	mm	6.3	inches
Seatback	0	mm	0.0	inches					

Chest Severity Index	0	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	46.9

Lap Belt Peak Load	4454	Newtons	1001.3	pound Force
Shoulder Belt Peak Load	5254	Newtons	1181.2	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	155	mm	6.1	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-3706	Newtons	-833.1	pounds Force
Right Femur Peak Load	-4735	Newtons	-1064.5	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2004 CADILLAC DE VILLE RIGHT FRONT SEAT OCCUPANT

Test #	4837					
Vehicle #	1	Sex	MALE			
Location	RIGHT FRONT SEAT	Age	0			
Position	CENTER POSITION	Height	0	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	0.0	kg	0	pounds
Size	50 PERCENTILE					

Calibration Method	HYBRID III
Occupant Manufacturer	VECTOR, S/N:034
Occupant Modification	UNMODIFIED
Occupant Description	N0 COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	DASH PANEL - TOP
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2004 CADILLAC DE VILLE RIGHT REAR SEAT OCCUPANT

Test #	4837						
Vehicle #	1			Sex	NOT APPLICABLE		
Location	RIGHT REAR SEAT			Age	0		
Position	NOT APPLICABLE			Height	0	mm 0.0	inches
Type	HYBRID III DUMMY			Weight	0.0	kg 0	pounds
Size	3 YEAR OLD CHILD						
Calibration Method	HYBRID III						
Occupant Manufacturer	FIRST TECHNOLOGY SAFETY SYSTEMS, S/N:139						
Occupant Modification	UNMODIFIED						
Occupant Description	N0 COMMENTS						
Occupant Commentary	NO COMMENTS						

Head

Head to -

Windshielder Header	0	mm	0.0	inches	Head Injury Criteria (HIC)	571	
WindShield	0	mm	0.0	inches	HIC Lower Time Interval (ms)	74.5	
Seatback	618	mm	24.3	inches	HIC Upper Time Interval (ms)	110.5	
Side Header	0	mm	0.0	inches			
Side Window	400	mm	15.7	inches			
Neck to Seatback	0	mm	0.0	inches			
First Contact Region (Head)	NONE						
Second Contact Region (Head)							

Chest

Chest to -

Dash	0	mm	0.0	inches	Arm to Door	305	mm	12.0	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	350	mm	13.8	inches
Seatback	590	mm	23.2	inches					
Chest Severity Index	0				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	40.1			
Lap Belt Peak Load	0	Newtons	0.0	pound Force					
Shoulder Belt Peak Load	0	Newtons	0.0	pound Force					
First Contact Region (Chest/Abdomen)	NONE								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	0	mm	0.0	inches	Knees to Seatback	402	mm	15.8	inches
Left Femur Peak Load	0	Newtons	0.0	pounds Force					
Right Femur Peak Load	0	Newtons	0.0	pounds Force					
First Contact Region (Legs)	NONE								
Second Contact Region (Legs)									

2004 CADILLAC DE VILLE RIGHT REAR SEAT OCCUPANT

Test #	4837					
Vehicle #	1	Sex	NOT APPLICABLE			
Location	RIGHT REAR SEAT	Age	0			
Position	NOT APPLICABLE	Height	0	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	0.0	kg	0	pounds
Size	3 YEAR OLD CHILD					

Calibration Method	HYBRID III
Occupant Manufacturer	FIRST TECHNOLOGY SAFETY SYSTEMS, S/N:139
Occupant Modification	UNMODIFIED
Occupant Description	N0 COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	CONVERTIBLE CHILD SAFETY SEAT, FRONT FACING
Mounted	LATCH - LOWER ANCHORAGES AND TOP TETHER
Deployment	NOT APPLICABLE
Restraint Commentary	MANUFACTURER:EVENFLO, MODEL:VANGUARD 5, MODEL#3691261 P1
Restraint # 2	5 POINT BELT
Mounted	CHILD SEAT
Deployment	NOT APPLICABLE
Restraint Commentary	NO COMMENTS

2004 CADILLAC DE VILLE LEFT REAR SEAT OCCUPANT

Test #	4837		
Vehicle #	1	Sex	NOT APPLICABLE
Location	LEFT REAR SEAT	Age	0
Position	NOT APPLICABLE	Height	0 mm 0.0 inches
Type	HYBRID III DUMMY	Weight	0.0 kg 0 pounds
Size	3 YEAR OLD CHILD		
Calibration Method	HYBRID III		
Occupant Manufacturer	FIRST TECHNOLOGY SAFETY SYSTEMS, S/N:082		
Occupant Modification	UNMODIFIED		
Occupant Description	N0 COMMENTS		
Occupant Commentary	CNTRH1, HEAD CONTACTED THE SEAT BAR		

Head

Head to -

Windshielder Header	0	mm	0.0	inches	Head Injury Criteria (HIC)	766	
WindShield	0	mm	0.0	inches	HIC Lower Time Interval (ms)	68	
Seatback	622	mm	24.5	inches	HIC Upper Time Interval (ms)	104	
Side Header	0	mm	0.0	inches			
Side Window	400	mm	15.7	inches			
Neck to Seatback	0	mm	0.0	inches			
First Contact Region (Head)	OTHER						
Second Contact Region (Head)							

Chest

Chest to -

Dash	0	mm	0.0	inches	Arm to Door	280	mm	11.0	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	348	mm	13.7	inches
Seatback	620	mm	24.4	inches					
Chest Severity Index	0				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	41.3			
Lap Belt Peak Load	0	Newtons	0.0	pound Force					
Shoulder Belt Peak Load	0	Newtons	0.0	pound Force					
First Contact Region (Chest/Abdomen)	NONE								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	0	mm	0.0	inches	Knees to Seatback	415	mm	16.3	inches
Left Femur Peak Load	0	Newtons	0.0	pounds Force					
Right Femur Peak Load	0	Newtons	0.0	pounds Force					
First Contact Region (Legs)	NONE								
Second Contact Region (Legs)									

2004 CADILLAC DE VILLE LEFT REAR SEAT OCCUPANT

Test #	4837					
Vehicle #	1	Sex	NOT APPLICABLE			
Location	LEFT REAR SEAT	Age	0			
Position	NOT APPLICABLE	Height	0	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	0.0	kg	0	pounds
Size	3 YEAR OLD CHILD					

Calibration Method	HYBRID III
Occupant Manufacturer	FIRST TECHNOLOGY SAFETY SYSTEMS, S/N:082
Occupant Modification	UNMODIFIED
Occupant Description	N0 COMMENTS
Occupant Commentary	CNTRH1, HEAD CONTACTED THE SEAT BAR

Restraints

Restraint # 1	CONVERTIBLE CHILD SAFETY SEAT, FRONT FACING
Mounted	LATCH - LOWER ANCHORAGES AND TOP TETHER
Deployment	NOT APPLICABLE
Restraint Commentary	MANUFACTURER:COSCO, MODEL:REGAL RIDE, MODEL#22-139-MON
Restraint # 2	5 POINT BELT
Mounted	CHILD SEAT
Deployment	NOT APPLICABLE
Restraint Commentary	NO COMMENTS

Vehicle 1 2004 CADILLAC DE VILLE

Test #	4837		
VIN	1G6KE54Y64U152437	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CADILLAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	DE VILLE	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	V8 TRANSVERSE FRONT		
Displacement	4.6 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	DHS MODEL		

Vehicle Length	5258	mm	207.0	inches	CG behind Front Axle	1238	mm	48.7	inches
Vehicle Width	1891	mm	74.4	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2934	mm	115.5	inches	Total Length of Indentation	1291	mm	50.8	inches
Vehicle Test Weight	2054	KG	4527	pounds	Maximum Static Crush Depth	615	mm	24.2	inches
					Pre-Impact Speed	56	kph	34.8	mph

Vehicle Damage Index: 12FDEW6

Principal Direction of Force: 0

Damage Profile Distance Measurements

(Measured Left-to-Right, Rear-to-Front)

DPD 1	-480	mm	-18.9	inches
DPD 2	-553	mm	-21.8	inches
DPD 3	-605	mm	-23.8	inches
DPD 4	-608	mm	-23.9	inches
DPD 5	-559	mm	-22.0	inches
DPD 6	-485	mm	-19.1	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	201.1	inches	182.2	inches	18.9	inches
	5108	mm	4628	mm	480	mm
Centerline	207.0	inches	182.8	inches	24.2	inches
	5258	mm	4643	mm	615	mm
Right Bumper Corner	201.1	inches	182.0	inches	19.1	inches
	5108	mm	4623	mm	485	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
0.0	NOT APPLICABLE	0.0

Moving Test Cart Angle	Moving Test Cart/Vehicle Crabbed Angle	Vehicle Orientation on Cart Moving Test Cart
DIRECT ENGAGEMENT	0.0	NOT APPLICABLE
Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground	*Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle*	*Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion*

Vehicle 1 2004 CADILLAC DE VILLE

Test #	4837		
VIN	1G6KE54Y64U152437	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CADILLAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	DE VILLE	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	V8 TRANSVERSE FRONT		
Displacement	4.6 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	DHS MODEL		

Vehicle Length	5258	mm	207.0	inches	CG behind Front Axle	1238	mm	48.7	inches
Vehicle Width	1891	mm	74.4	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2934	mm	115.5	inches	Total Length of Indentation	1291	mm	50.8	inches
Vehicle Test Weight	2054	KG	4527	pounds	Maximum Static Crush Depth	615	mm	24.2	inches
					Pre-Impact Speed	56	kph	34.8	mph

Vehicle Damage Index	12FDEW6	Principal Direction of Force	0

Pre & Post Test Damage Measurements

(Measurements are taken in a longitudinaldirection. Except for Engine Block, all measurements are take from the Rear Vehicle Surface forward.)

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Length of Vehicle at Centerline							
				5258	207.0	4643	182.8				
				Engine Block							
				646	25.4	646	25.4				
5108	201.1	4628	182.2	Front Bumper Corner				5108	201.1	4623	182.0
				Front of Engine							
				4725	186.0	4512	177.6				
4219	166.1	4187	164.8	Firewall				4234	166.7	4133	162.7
				4107	161.7	4010	157.9				
3651	143.7	3650	143.7	Upper Leading Edge of Door				3656	143.9	3656	143.9
3633	143.0	3620	142.5	Lower Leading Edge of Door				3636	143.1	3631	143.0
3586	141.2	3572	140.6	Bottom of 'A' Post				3601	141.8	3590	141.3
2529	99.6	2528	99.5	Upper Trailing Edge of Door				2537	99.9	2537	99.9
2500	98.4	2483	97.8	Lower Trailing Edge of Door				2497	98.3	2495	98.2
				Steering Column							
				3146	123.9	3200	126.0				
				Center of Seering Column to 'A' Post (Horizontal)							
				410	16.1	410	16.1				
				Center of Steering Column to Headliner (Vertical)							
				425	16.7	333	13.1				

2004 CADILLAC DE VILLE

NHTSA Crash Test - #4837 - Front Impact

Pre/Post Depths - Vehicle Width - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 4527 pounds
Vehicle Closing Speed = 34.8 mph
Test Crush Length = 74.4 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	18.9	24.2	19.1	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 18.9 inches					165.3
Using a Rated No Damage Speed of	2.5mph	208.3	142.4	152.3	
Using a Rated No Damage Speed of	5.0mph	384.4	121.2	609.4	
Using a Rated No Damage Speed of	7.5mph	528.2	101.7	1371.1	
Using a Rated No Damage Speed of	10.0mph	639.8	84.0	2437.5	
Average Crush = 21.6 inches					126.6
Using a Rated No Damage Speed of	2.5mph	182.3	109.0	152.3	
Using a Rated No Damage Speed of	5.0mph	336.3	92.8	609.4	
Using a Rated No Damage Speed of	7.5mph	462.2	77.9	1371.1	
Using a Rated No Damage Speed of	10.0mph	559.8	64.3	2437.5	
Maximum Crush = 24.2 inches					100.8
Using a Rated No Damage Speed of	2.5mph	162.7	86.9	152.3	
Using a Rated No Damage Speed of	5.0mph	300.2	73.9	609.4	
Using a Rated No Damage Speed of	7.5mph	412.5	62.1	1371.1	
Using a Rated No Damage Speed of	10.0mph	499.6	51.2	2437.5	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

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4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	24.2	35.6	0.8	2.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 20.0

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

2004 CADILLAC DE VILLE

NHTSA Crash Test - #4837 - Front Impact

Pre/Post Depths - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 4527 pounds
Vehicle Closing Speed = 34.8 mph
Test Crush Length = 50.8 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	18.9	24.2	19.1	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 18.9 inches					242.1
Using a Rated No Damage Speed of	2.5mph	305.1	208.6	223.1	
Using a Rated No Damage Speed of	5.0mph	563.0	177.6	892.6	
Using a Rated No Damage Speed of	7.5mph	773.7	149.0	2008.3	
Using a Rated No Damage Speed of	10.0mph	937.1	123.0	3570.3	
Average Crush = 21.6 inches					185.4
Using a Rated No Damage Speed of	2.5mph	267.0	159.7	223.1	
Using a Rated No Damage Speed of	5.0mph	492.6	135.9	892.6	
Using a Rated No Damage Speed of	7.5mph	677.0	114.1	2008.3	
Using a Rated No Damage Speed of	10.0mph	820.0	94.2	3570.3	
Maximum Crush = 24.2 inches					147.7
Using a Rated No Damage Speed of	2.5mph	238.3	127.2	223.1	
Using a Rated No Damage Speed of	5.0mph	439.7	108.3	892.6	
Using a Rated No Damage Speed of	7.5mph	604.2	90.9	2008.3	
Using a Rated No Damage Speed of	10.0mph	731.9	75.0	3570.3	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

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4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	24.2	35.6	0.8	2.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 20.0

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2000 - 2005
Make: PONTIAC
Model: BONNEVILLE

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
4691	2003 BUICK PARK AVENUE FOUR DOOR SEDAN	5.0	19.2	29.8	301.6	77.7	585.6	112.2	18.4
3534	2001 BUICK PARK AVENUE FOUR DOOR SEDAN	5.0	21.5	35.1	322.3	90.3	574.9	122.8	22.9
3520	2001 BUICK LESABRE FOUR DOOR SEDAN	5.0	18.7	35.1	360.9	116.5	559.2	158.4	26.4
4837	2004 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	20.0	34.8	363.0	108.1	609.4	147.4	24.2
4238	2002 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	19.1	35.3	384.5	121.9	606.4	165.5	26.1
3282	2000 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	18.6	35.4	387.4	126.8	591.9	171.9	27.0
3274	2000 BUICK LESABRE FOUR DOOR SEDAN	5.0	17.1	35.1	394.9	139.3	559.5	189.5	28.9
4490	2003 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	14.1	29.3	422.7	145.6	613.8	211.5	24.3
2193	1995 OLDSMOBILE AURORA FOUR DOOR SEDAN	5.0	16.7	34.7	439.5	156.1	618.6	213.2	28.8
	Average (AVG)				**375.2**	**120.3**	**591.0**	**165.8**	**25.2**
	Minimum (MIN)				**301.6**	**77.7**	**559.2**	**112.2**	**18.4**
	Maximum (MAX)				**439.5**	**156.1**	**618.6**	**213.2**	**28.9**
	Standard Deviation (STDev-sample)				**44.1**	**25.5**	**22.8**	**35.4**	**3.3**
	Number of Tests (n)			**9**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2000 - 2005
Make: PONTIAC
Model: BONNEVILLE

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Width Values G	Width Values Kv	Crush Factor
4691	2003 BUICK PARK AVENUE FOUR DOOR SEDAN	5.0	22.3	29.8	260.2	57.8	585.6	83.5	15.9
3534	2001 BUICK PARK AVENUE FOUR DOOR SEDAN	5.0	25.5	35.1	271.8	64.2	574.9	87.3	19.3
3520	2001 BUICK LESABRE FOUR DOOR SEDAN	5.0	24.1	35.1	279.9	70.1	559.2	95.3	20.5
3282	2000 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	24.9	35.4	289.4	70.8	591.9	95.9	20.2
4238	2002 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	24.6	35.3	298.7	73.6	606.4	99.8	20.3
4837	2004 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	24.2	34.8	300.0	73.9	609.4	100.7	20.0
4490	2003 CADILLAC DE VILLE FOUR DOOR SEDAN	5.0	18.3	29.3	326.3	86.7	613.8	126.0	18.8
2193	1995 OLDSMOBILE AURORA FOUR DOOR SEDAN	5.0	22.0	34.7	334.2	90.3	618.6	123.3	21.9
3274	2000 BUICK LESABRE FOUR DOOR SEDAN	5.0	19.8	35.1	339.6	103.1	559.5	140.1	24.8
4874	2003 CADILLAC SEVILLE FOUR DOOR SEDAN	5.0	20.9	35.1	343.6	98.8	597.8	134.3	23.5
	Average (AVG)				**304.4**	**78.9**	**591.7**	**108.6**	**20.5**
	Minimum (MIN)				**260.2**	**57.8**	**559.2**	**83.5**	**15.9**
	Maximum (MAX)				**343.6**	**103.1**	**618.6**	**140.1**	**24.8**
	Standard Deviation (STDev-sample)				**29.9**	**15.0**	**21.6**	**20.4**	**2.5**
	Number of Tests (n)			**10**					

Expert VIN DeCoder®

Version Number 3.6.0.9

DeCoded VIN: 1FMDK03196GA45644

Model:	2006 Ford Freestyle Limited 4x2 4-Door Wagon
Engine Size:	3.0 L / 183 cu.in.
Engine Description:	V6 cylinder with Dual Overhead Cam
Horse Power:	200 @ 5500 rpm
Torque:	200 lb-ft at 4500 rpm
Injection System:	Sequential Port Fuel Injection (SEFI)
PSI:	65 psi
Ignition:	electronic
Manufacturer:	Ford
Assembly Plant:	Chicago, IL
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Second Generation Front Air Bags/Side Air Bags

The First through Third characters (1FM) indicate a Ford Multi-Purpose Vehicle (MPV) made in the U.S.A.
The Fourth character (D) indicates a GVWR of 5001-6000 lbs.

The Fifth through Seventh characters (K03) indicate a Freestyle Limited 4x2 and a 4-Door Wagon
The Eighth character (1) indicates the OEM engine: 3.0 L / 183 cu.in., V6, DOHC

The Ninth character (the check digit) is entered as 9.
The VIN appears Valid, the calculated value is 9.

The Tenth character (6) indicates the model year 2006

The Eleventh character (G) indicates the vehicle was made in the assembly plant in Chicago, IL

The Twelfth through Seventeenth characters (A45644) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.7.1.2

PROVIDED BY:
4N6XPRT Systems
8387 University Avenue
La Mesa CA 91941

8/28/2017

2006 FORD FREESTYLE 4 DOOR 4X2 UTILITY

Curb Weight:		3959	lbs.	1796	kg.
Curb Weight Distribution -	Front:	55	% Rear:	45	%
Gross Vehicle Weight Rating:		5380	lbs.	2440	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		FRONT			

	Inches	Feet	Meters
Horizontal Dimensions			
Total Length	200	16.67	5.08
Wheelbase:	113	9.42	2.87
Front Bumper to Front Axle:	41	3.42	1.04
Front Bumper to Front of Front Well:	24	2.00	0.61
Front Bumper to Front of Hood:	9	0.75	0.23
Front Bumper to Base of Windshield:	50	4.17	1.27
Front Bumper to Top of Windshield:	80	6.67	2.03
Rear Bumper to Rear Axle:	46	3.83	1.17
Rear Bumper to Rear of Rear Well:	29	2.42	0.74
Rear Bumper to Rear of Trunk:	5	0.42	0.13
Rear Bumper to Base of Rear Window:	7	0.58	0.18
Width Dimensions			
Maximum Width:	73	6.08	1.85
Front Track:	65	5.42	1.65
Rear Track:	65	5.42	1.65
Vertical Dimensions			
Height:	65	5.42	1.65
Ground to -			
Front Bumper (Top)	26	2.17	0.66
Headlight - center	30	2.50	0.76
Hood - top front:	36	3.00	0.91
Base of Windshield	43	3.58	1.09
Rear Bumper - top:	25	2.08	0.64
Trunk - top rear:	38	3.17	0.97
Base of Rear Window:	46	3.83	1.17

2006 FORD FREESTYLE 4 DOOR 4X2 UTILITY

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	59	4.92	1.50
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	41	3.42	1.04
Rear Seat Shoulder Width	58	4.83	1.47
Rear Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (min)	40	3.33	1.02

Seatbelts: 3pt - front and rear
Airbags: FRONT SEAT AIRBAGS

Steering Data

Turning Circle (Diameter)	480	40	12.19
Steering Ratio: 16.00:1			
Wheel Radius:	13	1.08	0.33
Tire Size (OEM): P215/65R17			

Acceleration & Braking Information

Brake Type: ALL DISC
ABS System: ALL WHEEL ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):
d = 132.0 ft t = 3.0 sec a = -29.3 ft/sec² G-force = -0.91

Acceleration:

0 to 30mph	t =	3.5	sec	a =	12.6	ft/sec²	G-force = 0.39
0 to 60mph	t =	9.2	sec	a =	9.6	ft/sec²	G-force = 0.30
45 to 65mph	t =	4.2	sec	a =	7.0	ft/sec²	G-force = 0.22

Transmission Type: AUTOMATIC

Notes:
Federal Bumper Standard Requirements: No Requirement

N.S.D.C = 2005 - 2007

2006 FORD FREESTYLE 4 DOOR 4X2 UTILITY

Other Information

Tip-Over Stability Ratio =	1.25	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	50.85
Inches in front of rear axle	=	62.15
Inches from side of vehicle	=	36.50
Inches from ground	=	25.94
Inches from front corner	=	98.84
Inches from rear corner	=	114.14
Inches from front bumper	=	91.85
Inches from rear bumper	=	108.15

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2734.77	lb*ft*sec²
Pitch Moment of Inertia	=	2777.08	lb*ft*sec²
Roll Moment of Inertia	=	635.98	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	48.0	deg
Angle Front of Hood to Windshield Base	=	9.7	deg
Angle Front of Hood to Windshield Top	=	20.8	deg
Angle of Windshield	=	33.7	deg
Angle of Steering Tires at Max Turn	=	27.0	deg

First Approximation Crush Factors:

Speed Equivalent (mph) of Kinetic Energy (KE) used in causing crush of indentation may be evaluated using the following formula, the appropriated Crush Factor (CF), and Maximum Indentation Depth (MID), in feet:

$$V(mph) = \sqrt{(30 * CF * MID)}$$

KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY (Tested for Rear/Side Impact only)	=	27 CF

These CF values are based upon analysis of NHTSA Barrier Crash data, and from over 1000 vehicle accidents where independent evaluation of speed was possible. (These are NOT 'A', 'B', 'C', or 'G' values)

The rear Impact data with more then 2-3 inches of crush damage should be looked at carefully, since some vehicles have very weak trunk & fender strength. Therefore, on some cars, especially GM, you estimate from the rear crush data may be high by as much as 4-5 mph (on a crush of 18 inches).

Stiffness Values and Test Data

Derived from

NHTSA Crash Test

#5541

2005 FORD FREESTYLE

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
17R-030201SC02301

4N6XPRT Systems | 8387 University Avenue | La Mesa, CA 91942 | USA
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Similar Vehicle database reader

You entered: **2006 FORD FREESTYLE**

The Similar Vehicle Year/Model list indicates the following are Similar Models

Year Range	Make	Model	Body Styles	Wheelbase
2009 - 2012	LINCOLN	MKT	SW	117.9
Remarks: Stretched Taurus X Chassis				
2005 - 2007	FORD	FREESTYLE	SW	112.9
Remarks: Basically a Five Hundred Wagon				
2003 - 2012	VOLVO	XC90	SW	112.5
Remarks: Freestyle?? - Chassis is based on Ford Freestyle. - Taurus X??				
2008 - 2009	FORD	TAURUS X	SW	112.9
Remarks: Was FREESTYLE				
2009 - 2012	FORD	FLEX	SW	117.9
Remarks: Stretched Taurus X Chassis				

If you have suggestions and/or corrections, we request and urge you to contact us - 4n6@4n6xprt.com.

Test Information

Test #	**5541**	NHTSA Test Reference Guide Version #	**V5**			
Test Date	**2005-03-30**	Contract #	**05-6008**			
Contract/Study Title	**RESEARCH COLLISION TEST**					
Test Objective(s)	**FRONTAL CRASH**					
Test Type	**RESEARCH SAFETY VEHICLE TEST**	Configuration	**VEHICLE INTO BARRIER**			
Impact Angle	**0**	Side Impact Point	**9999**	mm	**0.0**	inches
		Offset Distance	**9999**	mm	**0.0**	inches
		Closing Speed	**56.4**	Km/Hr	**35.05**	MPH
Test Performer	**TRANSPORT CANADA**					
Test Reference #	**TC05-226**					
Test Track Surface	**CONCRETE**	Condition	**DRY**			
Ambient Temperature	**21** C **69.8** F	Total Number of Curves	**184**			
Data Recorder Type	**OTHER**	Data Link	**OTHER**			
Test Commentary	**NO COMMENTS**					

Fixed Barrier Information

Barrier Type	**DEFORMABLE**	Pole Barrier Diameter	**9999**	mm	**9999**	inches
Barrier Shape	**FLAT BARRIER**					
Barrier Commentary	**NO COMMENTS**					

2005 FORD FREESTYLE LEFT FRONT SEAT OCCUPANT

Test #	5541						
Vehicle #	1			Sex	FEMALE		
Location	LEFT FRONT SEAT			Age	99		
Position	FORWARD OF CENTER POSITION			Height	999 mm	39.3	inches
Type	HYBRID III DUMMY WITH THOR LX LEGS			Weight	999.0 kg	2202	pounds
Size	5 PERCENTILE						

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 105
Occupant Commentary	LAST CALIBRATION DATE : MAY/04.

Head

Head to -

Windshielder Header	330	mm	13.0	inches	Head Injury Criteria (HIC)	203		
WindShield	675	mm	26.6	inches	HIC Lower Time Interval (ms)	55.8		
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	91.8		
Side Header	301	mm	11.9	inches				
Side Window	395	mm	15.6	inches				
Neck to Seatback	9999	mm	0.0	inches				

First Contact Region (Head)	AIR BAG
Second Contact Region (Head)	

Chest

Chest to -

Dash	9999	mm	0.0	inches	Arm to Door	145 mm	5.7	inches
Steering Wheel	205	mm	8.1	inches	Hip to Door	245 mm	9.6	inches
Seatback	9999	mm	0.0	inches				

Chest Severity Index	9999	Pelvic Peak Lateral Acceleration (g's)	99999
Thoracic Trauma Index	99999	Thorax Peak Acceleration (g's)	43.8

Lap Belt Peak Load	4464	Newtons	1003.6	pound Force
Shoulder Belt Peak Load	2994	Newtons	673.1	pound Force

First Contact Region (Chest/Abdomen)	AIR BAG
Second Contact Region (Chest/Abdomen)	NONE

Legs

Knees to Dash	5	mm	0.2	inches	Knees to Seatback	9999 mm	0.0	inches

Left Femur Peak Load	-2288	Newtons	-514.4	pounds Force
Right Femur Peak Load	-3306	Newtons	-743.2	pounds Force

First Contact Region (Legs)	DASHPANEL
Second Contact Region (Legs)	

2005 FORD FREESTYLE LEFT FRONT SEAT OCCUPANT

Test #	5541					
Vehicle #	1	Sex	FEMALE			
Location	LEFT FRONT SEAT	Age	99			
Position	FORWARD OF CENTER POSITION	Height	999	mm	39.3	inches
Type	HYBRID III DUMMY WITH THOR LX LEGS	Weight	999.0	kg	2202	pounds
Size	5 PERCENTILE					

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 105
Occupant Commentary	LAST CALIBRATION DATE : MAY/04.

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	AIR BAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2005 FORD FREESTYLE RIGHT FRONT SEAT OCCUPANT

Test #	5541						
Vehicle #	1			Sex	FEMALE		
Location	RIGHT FRONT SEAT			Age	99		
Position	FORWARD OF CENTER POSITION			Height	999 mm	39.3	inches
Type	HYBRID III DUMMY WITH THOR LX LEGS			Weight	999.0 kg	2202	pounds
Size	5 PERCENTILE						

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 104
Occupant Commentary	LAST CALIBRATION DATE : MAY/04.

Head

Head to -

Windshielder Header	352	mm	13.9	inches	Head Injury Criteria (HIC)	236	
WindShield	685	mm	27.0	inches	HIC Lower Time Interval (ms)	58.2	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	94.2	
Side Header	307	mm	12.1	inches			
Side Window	395	mm	15.6	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head)	AIR BAG
Second Contact Region (Head)	

Chest

Chest to -

Dash	340	mm	13.4	inches	Arm to Door	166	mm	6.5	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	233	mm	9.2	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	9999	Pelvic Peak Lateral Acceleration (g's)	99999
Thoracic Trauma Index	99999	Thorax Peak Acceleration (g's)	36.3

Lap Belt Peak Load	4865	Newtons	1093.7	pound Force
Shoulder Belt Peak Load	1274	Newtons	286.4	pound Force

First Contact Region (Chest/Abdomen)	AIR BAG
Second Contact Region (Chest/Abdomen)	NONE

Legs

Knees to Dash	25	mm	1.0	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	-2058	Newtons	-462.7	pounds Force
Right Femur Peak Load	-3662	Newtons	-823.3	pounds Force

First Contact Region (Legs)	DASHPANEL
Second Contact Region (Legs)	

2005 FORD FREESTYLE RIGHT FRONT SEAT OCCUPANT

Test #	5541					
Vehicle #	1	Sex	FEMALE			
Location	RIGHT FRONT SEAT	Age	99			
Position	FORWARD OF CENTER POSITION	Height	999	mm	39.3	inches
Type	HYBRID III DUMMY WITH THOR LX LEGS	Weight	999.0	kg	2202	pounds
Size	5 PERCENTILE					

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 104
Occupant Commentary	LAST CALIBRATION DATE : MAY/04.

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	AIR BAG
Mounted	DASH PANEL - TOP
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2005 FORD FREESTYLE RIGHT REAR SEAT OCCUPANT

Test #	5541		
Vehicle #	1	Sex	FEMALE
Location	RIGHT REAR SEAT	Age	99
Position	NOT APPLICABLE	Height	9999 mm 0.0 inches
Type	HYBRID III DUMMY	Weight	999.0 kg 2202 pounds
Size	5 PERCENTILE		
Calibration Method	OTHER		
Occupant Manufacturer	FIRST TECHNOLOGY		
Occupant Modification	UNMODIFIED		
Occupant Description	S/N : 103		
Occupant Commentary	LAST CALIBRATION DATE : JUN/04.		

Head

Head to -

Windshielder Header	330	mm	13.0	inches	Head Injury Criteria (HIC)	1169	
WindShield	675	mm	26.6	inches	HIC Lower Time Interval (ms)	77.5	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	113.5	
Side Header	301	mm	11.9	inches			
Side Window	395	mm	15.6	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head) OTHER

Second Contact Region (Head)

Chest

Chest to -

Dash	9999	mm	0.0	inches	Arm to Door	145	mm	5.7	inches
Steering Wheel	205	mm	8.1	inches	Hip to Door	245	mm	9.6	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	9999	Pelvic Peak Lateral Acceleration (g's)	99999
Thoracic Trauma Index	99999	Thorax Peak Acceleration (g's)	66.3

Lap Belt Peak Load	6831	Newtons	1535.7	pound Force
Shoulder Belt Peak Load	7030	Newtons	1580.4	pound Force

First Contact Region (Chest/Abdomen) NONE

Second Contact Region (Chest/Abdomen) NONE

Legs

Knees to Dash	25	mm	1.0	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	0	Newtons	0.0	pounds Force
Right Femur Peak Load	0	Newtons	0.0	pounds Force

First Contact Region (Legs) NONE

Second Contact Region (Legs)

2005 FORD FREESTYLE RIGHT REAR SEAT OCCUPANT

Test #	5541					
Vehicle #	1	Sex	FEMALE			
Location	RIGHT REAR SEAT	Age	99			
Position	NOT APPLICABLE	Height	9999	mm	0.0	inches
Type	HYBRID III DUMMY	Weight	999.0	kg	2202	pounds
Size	5 PERCENTILE					

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 103
Occupant Commentary	LAST CALIBRATION DATE : JUN/04.

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	NOT APPLICABLE
Restraint Commentary	NO COMMENTS
Restraint # 2	SEAT BACK
Mounted	OTHER
Deployment	NOT APPLICABLE
Restraint Commentary	NO COMMENTS

Vehicle 1 2005 FORD FREESTYLE

Test #	5541		
VIN	1FMDK011X5GA33584	NHTSA Test Vehicle Number	1
Year	2005	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	FORD	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	FREESTYLE	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	UTILITY VEHICLE		
Engine	V6 TRANSVERSE FRONT		
Displacement	3 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	05-226 FORD FREESTYLE		

Vehicle Length	5075	mm	199.8	inches	CG behind Front Axle	1306	mm	51.4	inches
Vehicle Width	1891	mm	74.4	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	2867	mm	112.9	inches	Total Length of Indentation	1600	mm	63.0	inches
Vehicle Test Weight	2033	KG	4481	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	56	kph	35.0	mph

Vehicle Damage Index: 9999999

Principal Direction of Force: 0

Damage Profile Distance Measurements

(Measured Left-to-Right, Rear-to-Front)

DPD 1	459	mm	18.1	inches
DPD 2	512	mm	20.2	inches
DPD 3	514	mm	20.2	inches
DPD 4	500	mm	19.7	inches
DPD 5	430	mm	16.9	inches
DPD 6	453	mm	17.8	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	197.8	inches	174.9	inches	23.0	inches
	5025	mm	4442	mm	583	mm
Centerline	199.8	inches	179.4	inches	20.4	inches
	5075	mm	4558	mm	517	mm
Right Bumper Corner	198.0	inches	178.7	inches	19.2	inches
	5028	mm	4540	mm	488	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
0.0	NOT APPLICABLE	0.0

Moving Test Cart Angle	Moving Test Cart/Vehicle Crabbed Angle	Vehicle Orientation on Cart Moving Test Cart
NOT APPLICABLE	0.0	NOT APPLICABLE
Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground	*Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle*	*Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion*

Vehicle 1 2005 FORD FREESTYLE

Test #	5541		
VIN	1FMDK011X5GA33584	NHTSA Test Vehicle Number	1
Year	2005	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	FORD	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	FREESTYLE	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	UTILITY VEHICLE		
Engine	V6 TRANSVERSE FRONT		
Displacement	3 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	05-226 FORD FREESTYLE		

Vehicle Length	5075	mm	199.8	inches	CG behind Front Axle	1306	mm	51.4	inches
Vehicle Width	1891	mm	74.4	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	2867	mm	112.9	inches	Total Length of Indentation	1600	mm	63.0	inches
Vehicle Test Weight	2033	KG	4481	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	56	kph	35.0	mph

Vehicle Damage Index	9999999	Principal Direction of Force	0

Pre & Post Test Damage Measurements

(Measurements are taken in a longitudinaldirection. Except for Engine Block, all measurements are take from the Rear Vehicle Surface forward.)

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Length of Vehicle at Centerline							
				5075	199.8	4558	179.4				
				Engine Block							
				405	15.9	415	16.3				
5025	197.8	4442	174.9	Front Bumper Corner				5028	198.0	4540	178.7
				Front of Engine							
				4535	178.5	4269	168.1				
3774	148.6	3690	145.3	Firewall				3620	142.5	3540	139.4
				3894	153.3	3790	149.2				
3460	136.2	3476	136.9	Upper Leading Edge of Door				3481	137.0	3471	136.7
3482	137.1	3471	136.7	Lower Leading Edge of Door				3479	137.0	3469	136.6
3431	135.1	3414	134.4	Bottom of 'A' Post				3431	135.1	3417	134.5
2413	95.0	2401	94.5	Upper Trailing Edge of Door				2415	95.1	2406	94.7
2440	96.1	2430	95.7	Lower Trailing Edge of Door				2441	96.1	2432	95.7
				Steering Column							
				3042	119.8	3081	121.3				
				Center of Seering Column to 'A' Post (Horizontal)							
				434	17.1	430	16.9				
				Center of Steering Column to Headliner (Vertical)							
				495	19.5	517	20.4				

2005 FORD FREESTYLE

NHTSA Crash Test - #5541 - Front Impact

Pre/Post Depths - Vehicle Width - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 4481 pounds
Vehicle Closing Speed = 35.0 mph
Test Crush Length = 74.4 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	23.0	20.4	19.2	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 19.2 inches					160.8
Using a Rated No Damage Speed of	2.5mph	204.5	138.6	150.8	
Using a Rated No Damage Speed of	5.0mph	377.5	118.2	603.1	
Using a Rated No Damage Speed of	7.5mph	519.2	99.3	1357.1	
Using a Rated No Damage Speed of	10.0mph	629.4	82.1	2412.6	
Average Crush = 20.7 inches					138.3
Using a Rated No Damage Speed of	2.5mph	189.7	119.3	150.8	
Using a Rated No Damage Speed of	5.0mph	350.2	101.7	603.1	
Using a Rated No Damage Speed of	7.5mph	481.6	85.4	1357.1	
Using a Rated No Damage Speed of	10.0mph	583.8	70.6	2412.6	
Maximum Crush = 23.0 inches					112.0
Using a Rated No Damage Speed of	2.5mph	170.7	96.6	150.8	
Using a Rated No Damage Speed of	5.0mph	315.2	82.3	603.1	
Using a Rated No Damage Speed of	7.5mph	433.4	69.2	1357.1	
Using a Rated No Damage Speed of	10.0mph	525.4	57.2	2412.6	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

****

4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	23.0	34.7	-0.3	-0.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.4

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

2005 FORD FREESTYLE

NHTSA Crash Test - #5541 - Front Impact

Pre/Post Depths - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 4481 pounds
Vehicle Closing Speed = 35.0 mph
Test Crush Length = 63.0 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	23.0	20.4	19.2	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 19.2 inches					190.0
Using a Rated No Damage Speed of	2.5mph	241.7	163.9	178.2	
Using a Rated No Damage Speed of	5.0mph	446.2	139.6	712.8	
Using a Rated No Damage Speed of	7.5mph	613.6	117.4	1603.9	
Using a Rated No Damage Speed of	10.0mph	743.9	97.0	2851.4	
Average Crush = 20.7 inches					163.5
Using a Rated No Damage Speed of	2.5mph	224.2	141.0	178.2	
Using a Rated No Damage Speed of	5.0mph	413.9	120.1	712.8	
Using a Rated No Damage Speed of	7.5mph	569.1	101.0	1603.9	
Using a Rated No Damage Speed of	10.0mph	690.0	83.5	2851.4	
Maximum Crush = 23.0 inches					132.4
Using a Rated No Damage Speed of	2.5mph	201.7	114.2	178.2	
Using a Rated No Damage Speed of	5.0mph	372.5	97.3	712.8	
Using a Rated No Damage Speed of	7.5mph	512.2	81.8	1603.9	
Using a Rated No Damage Speed of	10.0mph	621.0	67.6	2851.4	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

****

4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	23.0	34.7	-0.3	-0.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.4

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2005 - 2007
Make: FORD
Model: FREESTYLE

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
6854	2010 LINCOLN MKT UTILITY VEHICLE	5.0	22.2	35.1	384.0	104.0	708.9	141.4	22.2
5263	2005 FORD FREESTYLE UTILITY VEHICLE	5.0	19.3	35.1	402.3	125.8	643.1	171.1	25.6
5540	2005 FORD FREESTYLE UTILITY VEHICLE	5.0	11.8	25.1	410.5	139.8	602.6	218.0	21.4
5541	2005 FORD FREESTYLE UTILITY VEHICLE	5.0	17.3	35.0	418.7	145.3	603.1	197.7	28.4
6461	2009 FORD FLEX UTILITY VEHICLE	5.0	15.6	34.8	524.0	200.3	685.6	273.0	31.1
6611	2009 FORD FLEX OTHER	5.0	9.9	24.7	529.0	211.5	661.8	332.2	24.8
6219	2008 VOLVO XC90 UTILITY VEHICLE	5.0	13.7	34.7	614.1	265.4	710.3	362.3	35.0
6190	2007 VOLVO XC90 FOUR DOOR SEDAN	5.0	9.0	24.7	614.5	270.0	699.5	424.1	27.2
	Average (AVG)				**487.1**	**182.8**	**664.4**	**265.0**	**27.0**
	Minimum (MIN)				**384.0**	**104.0**	**602.6**	**141.4**	**21.4**
	Maximum (MAX)				**614.5**	**270.0**	**710.3**	**424.1**	**35.0**
	Standard Deviation (STDev-sample)				**95.5**	**63.5**	**44.4**	**100.2**	**4.6**
	Number of Tests (n)			**8**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2005 - 2007
Make: FORD
Model: FREESTYLE

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
5540	2005 FORD FREESTYLE UTILITY VEHICLE	5.0	16.9	25.1	287.6	68.6	602.6	107.0	15.0
6854	2010 LINCOLN MKT UTILITY VEHICLE	5.0	28.2	35.1	302.9	64.7	708.9	88.0	17.5
5541	2005 FORD FREESTYLE UTILITY VEHICLE	5.0	23.0	35.0	315.8	82.7	603.1	112.5	21.4
5263	2005 FORD FREESTYLE UTILITY VEHICLE	5.0	21.8	35.1	355.8	98.4	643.1	133.8	22.6
6611	2009 FORD FLEX OTHER	5.0	11.7	24.7	445.2	149.7	661.8	235.2	20.9
6219	2008 VOLVO XC90 UTILITY VEHICLE	5.0	18.7	34.7	451.2	143.3	710.3	195.6	25.8
6461	2009 FORD FLEX UTILITY VEHICLE	5.0	18.1	34.8	451.9	148.9	685.6	203.0	26.8
6190	2007 VOLVO XC90 FOUR DOOR SEDAN	5.0	11.7	24.7	472.1	159.3	699.5	250.3	20.9
	Average (AVG)				**385.3**	**114.5**	**664.4**	**165.7**	**21.4**
	Minimum (MIN)				**287.6**	**64.7**	**602.6**	**88.0**	**15.0**
	Maximum (MAX)				**472.1**	**159.3**	**710.3**	**250.3**	**26.8**
	Standard Deviation (STDev-sample)				**77.4**	**39.9**	**44.4**	**62.8**	**3.9**
	Number of Tests (n)			**8**					

4N6XPRT Systems
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The NHTSA Crash Test database contains ZERO REAR Impact tests for the 2005-2007 Ford Freestyle or its similar/same vehicles

To create a SIMILAR class of vehicle, we looked at the NHTSA database for UTILITY vehicles that have REAR IMPACT TESTS.

For the crush summary reports, all tests with a A value greater than 500 were removed from the summary.

The Test Summary Reports based on the Average and Maximum crush depths follow.

Available Test Results
Rear Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2017

Bodystyle: UTILITY VEHICLE

Test Number	Vehicle Info	No Damage Average Speed (mph)	Crush (inch)	KEES (mph)	Vehicle Width Values: Stiffness A	B	G	Kv	Crush Factor
3418	2000 ISUZU RODEO UTILITY VEHICLE	5.0	39.3	20.3	101.9	8.0	653.3	14.0	4.2
2432	1996 SUZUKI SIDEKICK UTILITY VEHICLE	5.0	20.2	35.7	286.8	87.2	471.5	118.0	25.2
4858	2003 INFINITI QX4 UTILITY VEHICLE	5.0	13.9	19.8	297.0	63.1	698.8	113.1	11.2
557	1984 JEEP CHEROKEE UTILITY VEHICLE	5.0	11.1	21.4	321.5	95.2	542.9	161.8	16.6
5091	2003 JEEP LIBERTY UTILITY VEHICLE	5.0	11.0	19.9	354.6	96.4	652.4	171.8	14.5
5214	2003 JEEP LIBERTY UTILITY VEHICLE	5.0	11.1	20.2	357.1	97.8	652.1	172.7	14.7
5243	2002 JEEP LIBERTY UTILITY VEHICLE	5.0	10.6	20.1	369.8	104.8	652.4	185.9	15.1
1434	1990 TOYOTA 4RUNNER UTILITY VEHICLE	5.0	9.7	20.5	409.3	131.2	638.4	229.2	17.4
1970	1993 CHEVROLET BLAZER UTILITY VEHICLE	5.0	9.2	20.6	414.9	141.0	610.5	246.0	18.5
641	1983 CHEVROLET BLAZER UTILITY VEHICLE	5.0	8.8	20.8	439.9	158.1	611.9	273.7	19.7
2438	1996 CHEVROLET BLAZER UTILITY VEHICLE	5.0	15.6	32.7	441.4	156.2	623.5	217.8	27.3
875	1985 CHEVROLET BLAZER UTILITY VEHICLE	5.0	7.7	21.1	467.2	196.6	555.0	337.5	23.3
	Average (AVG)				**355.1**	**111.3**	**613.6**	**186.8**	**17.3**
	Minimum (MIN)				**101.9**	**8.0**	**471.5**	**14.0**	**4.2**
	Maximum (MAX)				**467.2**	**196.6**	**698.8**	**337.5**	**27.3**
	Standard Deviation (STDev-sample)				**98.7**	**49.6**	**62.3**	**84.0**	**6.3**
	Number of Tests (n)			**12**					

Available Test Results
Rear Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2017

Bodystyle: UTILITY VEHICLE

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	KEES (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
3418	2000 ISUZU RODEO UTILITY VEHICLE	5.0	39.3	20.3	101.9	8.0	653.3	14.0	4.2
2432	1996 SUZUKI SIDEKICK UTILITY VEHICLE	5.0	33.2	35.7	174.1	32.1	471.5	43.5	15.3
2438	1996 CHEVROLET BLAZER UTILITY VEHICLE	5.0	27.4	32.7	252.3	51.0	623.5	71.1	15.6
4858	2003 INFINITI QX4 UTILITY VEHICLE	5.0	16.1	19.8	255.8	46.8	698.8	83.9	9.7
557	1984 JEEP CHEROKEE UTILITY VEHICLE	5.0	12.5	21.4	285.2	74.9	542.9	127.4	14.7
1434	1990 TOYOTA 4RUNNER UTILITY VEHICLE	5.0	11.6	20.5	341.7	91.5	638.4	159.8	14.5
5091	2003 JEEP LIBERTY UTILITY VEHICLE	5.0	11.0	19.9	354.6	96.4	652.4	171.8	14.5
5214	2003 JEEP LIBERTY UTILITY VEHICLE	5.0	11.1	20.2	357.1	97.8	652.1	172.7	14.7
1970	1993 CHEVROLET BLAZER UTILITY VEHICLE	5.0	10.5	20.6	361.9	107.3	610.5	187.2	16.1
5243	2002 JEEP LIBERTY UTILITY VEHICLE	5.0	10.6	20.1	369.8	104.8	652.4	185.9	15.1
1917	1993 ISUZU TROOPER II UTILITY VEHICLE	5.0	10.7	19.9	390.2	108.3	703.1	193.4	14.7
641	1983 CHEVROLET BLAZER UTILITY VEHICLE	5.0	9.9	20.8	392.4	125.8	611.9	217.8	17.6
875	1985 CHEVROLET BLAZER UTILITY VEHICLE	5.0	9.0	21.1	397.0	142.0	555.0	243.7	19.8
	Average (AVG)				**310.3**	**83.6**	**620.4**	**144.0**	**14.4**
	Minimum (MIN)				**101.9**	**8.0**	**471.5**	**14.0**	**4.2**
	Maximum (MAX)				**397.0**	**142.0**	**703.1**	**243.7**	**19.8**
	Standard Deviation (STDev-sample)				**91.7**	**38.8**	**64.6**	**70.4**	**3.8**
	Number of Tests (n)			**13**					

Expert VIN DeCoder®

Version Number 3.6.0.9

DeCoded VIN: 3C4FY4BB51T698585

Model:	2001 Chrysler PT Cruiser (Limited) 4 Door Wagon
Engine Size:	2.4L / 146 cu.in.
Engine Description:	In-Line 4 cylinder with Double Overhead Cam
Horse Power:	150 @ 5200 rpm
Torque:	164 lb-ft @ 4000 rpm
Injection System:	Sequential Multiport Fuel Injection (SMFI)
PSI:	49 psi
Ignition:	Electronic
Manufacturer:	Mitsubishi
Assembly Plant:	Toluca, Mexico
Drive Wheels:	This is a Front Wheel Drive vehicle

The First through Third characters (3C4) indicate a Chrysler Multi-purpose Vehicle (MPV) made in Mexico

The Fourth character (F) indicates GVWR: 4001-5000 lbs and BRAKE SYSTEM: Hydraulic

The Fifth through Sixth characters (Y4) indicate a PT Cruiser (Limited)

The Seventh character (B) indicates a 4 Door Wagon

The Eighth character (B) indicates the OEM engine: 2.4L / 146 cu.in., L4, DOHC

The Ninth character (the check digit) is entered as 5.
The VIN appears Valid, the calculated value is 5.

The Tenth character (1) indicates the model year 2001

The Eleventh character (T) indicates the vehicle was made in the assembly plant in Toluca, Mexico

The Twelfth through Seventeenth characters (698585) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.7.1.2

PROVIDED BY:
4N6XPRT Systems
8387 University Avenue
La Mesa CA 91941

8/28/2017

2001 CHRYSLER PT CRUISER 4 DOOR WAGON

Curb Weight:		3112	lbs.	1412	kg.
Curb Weight Distribution -	Front:	58	% Rear:	42	%
Gross Vehicle Weight Rating:		4225	lbs.	1916	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	169	14.08	4.29
Wheelbase:	103	8.58	2.62
Front Bumper to Front Axle:	31	2.58	0.79
Front Bumper to Front of Front Well:	16	1.33	0.41
Front Bumper to Front of Hood:	10	0.83	0.25
Front Bumper to Base of Windshield:	43	3.58	1.09
Front Bumper to Top of Windshield:	67	5.58	1.70
Rear Bumper to Rear Axle:	35	2.92	0.89
Rear Bumper to Rear of Rear Well:	16	1.33	0.41
Rear Bumper to Rear of Trunk:	5	0.42	0.13
Rear Bumper to Base of Rear Window:	13	1.08	0.33
Width Dimensions			
Maximum Width:	67	5.58	1.70
Front Track:	58	4.83	1.47
Rear Track:	58	4.83	1.47
Vertical Dimensions			
Height:	63	5.25	1.60
Ground to -			
Front Bumper (Top)	21	1.75	0.53
Headlight - center	24	2.00	0.61
Hood - top front:	33	2.75	0.84
Base of Windshield	41	3.42	1.04
Rear Bumper - top:	23	1.92	0.58
Trunk - top rear:	24	2.00	0.61
Base of Rear Window:	45	3.75	1.14

2001 CHRYSLER PT CRUISER 4 DOOR WAGON

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	55	4.58	1.40
Front Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (max)	41	3.42	1.04
Rear Seat Shoulder Width	54	4.50	1.37
Rear Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (min)	41	3.42	1.04

Seatbelts: 3pt - front and rear

Airbags: FRONT SEAT AIRBAGS

Steering Data

Turning Circle (Diameter)	444	37	11.28
Steering Ratio:	:1		
Wheel Radius:	12	1.00	0.30
Tire Size (OEM):	P205/55R16		

Acceleration & Braking Information

Brake Type: FRONT DISC - REAR DRUM

ABS System: ALL WHEEL ABS - OPTIONAL

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):

d = 131.0 ft t = 3.0 sec a = -29.5 ft/sec² G-force = -0.92

Acceleration:

0 to 30mph	t =	3.0	sec	a =	14.7	ft/sec²	G-force = 0.46
0 to 60mph	t =	8.6	sec	a =	10.2	ft/sec²	G-force = 0.32
45 to 65mph	t =	4.8	sec	a =	6.1	ft/sec²	G-force = 0.19

Transmission Type: 5spd MANUAL

Notes:

Federal Bumper Standard Requirements: 2.5 mph

This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2001 - 2005

2001 CHRYSLER PT CRUISER 4 DOOR WAGON

Other Information

Tip-Over Stability Ratio =	1.17	Reasonably Stable
NHTSA Star Rating (calculated)		***

Center of Gravity (No Load):

Inches behind front axle	=	43.26
Inches in front of rear axle	=	59.74
Inches from side of vehicle	=	33.50
Inches from ground	=	24.85
Inches from front corner	=	81.47
Inches from rear corner	=	100.49
Inches from front bumper	=	74.26
Inches from rear bumper	=	94.74

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1999.36	lb*ft*sec²
Pitch Moment of Inertia	=	1931.88	lb*ft*sec²
Roll Moment of Inertia	=	410.16	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	50.2	deg
Angle Front of Hood to Windshield Base	=	13.6	deg
Angle Front of Hood to Windshield Top	=	26.2	deg
Angle of Windshield	=	39.8	deg
Angle of Steering Tires at Max Turn	=	26.6	deg

First Approximation Crush Factors:

Speed Equivalent (mph) of Kinetic Energy (KE) used in causing crush of indentation may be evaluated using the following formula, the appropriated Crush Factor (CF), and Maximum Indentation Depth (MID), in feet:

$$V(mph) = \sqrt{(30 * CF * MID)}$$

KE Equivalent Speed (Front/Rear/Side)	=	21	CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY (Tested for Rear/Side Impact only)	=	27	CF

These CF values are based upon analysis of NHTSA Barrier Crash data, and from over 1000 vehicle accidents where independent evaluation of speed was possible. (These are NOT 'A', 'B', 'C', or 'G' values)

The rear Impact data with more then 2-3 inches of crush damage should be looked at carefully, since some vehicles have very weak trunk & fender strength. Therefore, on some cars, especially GM, you estimate from the rear crush data may be high by as much as 4-5 mph (on a crush of 18 inches).

Stiffness Values and Test Data

Derived from

NHTSA Crash Test

#3354

2001 CHRYSLER PT CRUISER

Provided By

4N6XPRT StifCalcs®

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Similar Vehicle database reader

You entered: **2006 CHRYSLER PT CRUISER**

The Similar Vehicle Year/Model list indicates the following are Similar Models

Year Range	Make	Model	Body Styles	Wheelbase
2001 - 2009	CHRYSLER	PT CRUISER	4D, CONV	103

Remarks: BASED ON NEON CHASSIS. Convertible start 2005

Test Information

Test #	3354	NHTSA Test Reference Guide Version #	V5			
Test Date	2000-06-08	Contract #	DTNH22-96-D-02010			
Contract/Study Title	NEW CAR ASSESMENT PROGRAM FRONTAL BARRIER IMPACT TEST					
Test Objective(s)	TO OBTAIN VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE					
Test Type	NEW CAR ASSESSMENT TEST	Configuration	VEHICLE INTO BARRIER			
Impact Angle	0	Side Impact Point	0	mm	0.0	inches
		Offset Distance	0	mm	0.0	inches
		Closing Speed	56.5	Km/Hr	35.10	MPH
Test Performer	CALSPAN					
Test Reference #	RUN1879					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	21 C	69.8 F	Total Number of Curves	129		
Data Recorder Type	OTHER	Data Link	OTHER			
Test Commentary	FY 00 NCAP #18 - 2001 CHRYSLER PT CRUISER					

Fixed Barrier Information

Barrier Type		Pole Barrier Diameter	0	mm	0	inches
Barrier Shape						
Barrier Commentary	FRONTAL FLAT BARRIER WITH 36 LOADCELLS					

2001 CHRYSLER PT CRUISER LEFT FRONT SEAT OCCUPANT

Test #	3354		
Vehicle #	1	Sex	MALE
Location	LEFT FRONT SEAT	Age	99
Position	REARWARD OF CENTER POSITION	Height	999 mm 39.3 inches
Type	HYBRID III DUMMY	Weight	999.0 kg 2202 pounds
Size	50 PERCENTILE		
Calibration Method	HYBRID III		
Occupant Manufacturer	MFG: ARL, S/N 245		
Occupant Modification	NO COMMENTS		
Occupant Description	NO COMMENTS		
Occupant Commentary	CNTRH2: HEADREST		

Head

Head to -

Windshielder Header	415	mm	16.3	inches	Head Injury Criteria (HIC)	1079	
WindShield	617	mm	24.3	inches	HIC Lower Time Interval (ms)	65.4	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	93.3	
Side Header	226	mm	8.9	inches			
Side Window	305	mm	12.0	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	566	mm	22.3	inches	Arm to Door	99	mm	3.9	inches
Steering Wheel	292	mm	11.5	inches	Hip to Door	176	mm	6.9	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	627	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	58.2

Lap Belt Peak Load	8926	Newtons	2006.7	pound Force
Shoulder Belt Peak Load	9999	Newtons	2247.9	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	169	mm	6.7	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	-2130	Newtons	-478.8	pounds Force
Right Femur Peak Load	-6997	Newtons	-1573.0	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2001 CHRYSLER PT CRUISER LEFT FRONT SEAT OCCUPANT

Test #	3354					
Vehicle #	1	Sex	MALE			
Location	LEFT FRONT SEAT	Age	99			
Position	REARWARD OF CENTER POSITION	Height	999	mm	39.3	inches
Type	HYBRID III DUMMY	Weight	999.0	kg	2202	pounds
Size	50 PERCENTILE					

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: ARL, S/N 245
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	CNTRH2: HEADREST

Restraints

Restraint # 1	3 POINT BELT
Mounted	A PILLAR
Deployment	NOT APPLICABLE
Restraint Commentary	
Restraint # 2	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	

2001 CHRYSLER PT CRUISER RIGHT FRONT SEAT OCCUPANT

Test #	3354						
Vehicle #	1			Sex	MALE		
Location	RIGHT FRONT SEAT			Age	99		
Position	REARWARD OF CENTER POSITION			Height	999	mm	39.3 inches
Type	HYBRID III DUMMY			Weight	999.0	kg	2202 pounds
Size	50 PERCENTILE						
Calibration Method	HYBRID III						
Occupant Manufacturer	MFG: VECTOR, S/N: 064						
Occupant Modification	NO COMMENTS						
Occupant Description	NO COMMENTS						
Occupant Commentary	NO COMMENTS						

Head

Head to -

Windshielder Header	431	mm	17.0	inches	Head Injury Criteria (HIC)	466	
WindShield	622	mm	24.5	inches	HIC Lower Time Interval (ms)	65.5	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	101.5	
Side Header	222	mm	8.7	inches			
Side Window	326	mm	12.8	inches			
Neck to Seatback	9999	mm	0.0	inches			
First Contact Region (Head)	AIR BAG						
Second Contact Region (Head)							

Chest

Chest to -

Dash	554	mm	21.8	inches	Arm to Door	95	mm	3.7	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	174	mm	6.9	inches
Seatback	9999	mm	0.0	inches					
Chest Severity Index	513				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	49.3			
Lap Belt Peak Load	9687	Newtons	2177.7	pound Force					
Shoulder Belt Peak Load	9999	Newtons	2247.9	pound Force					
First Contact Region (Chest/Abdomen)	AIR BAG								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	170	mm	6.7	inches	Knees to Seatback	9999	mm	0.0	inches
Left Femur Peak Load	-8144	Newtons	-1830.9	pounds Force					
Right Femur Peak Load	-3695	Newtons	-830.7	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

2001 CHRYSLER PT CRUISER RIGHT FRONT SEAT OCCUPANT

Test #	3354					
Vehicle #	1	Sex	MALE			
Location	RIGHT FRONT SEAT	Age	99			
Position	REARWARD OF CENTER POSITION	Height	999	mm	39.3	inches
Type	HYBRID III DUMMY	Weight	999.0	kg	2202	pounds
Size	50 PERCENTILE					

Calibration Method	HYBRID III
Occupant Manufacturer	MFG: VECTOR, S/N: 064
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	3 POINT BELT
Mounted	OTHER
Deployment	NOT APPLICABLE
Restraint Commentary	
Restraint # 2	FRONTAL AIRBAG
Mounted	DASH PANEL - UNSPECIFIED
Deployment	DEPLOYED PROPERLY
Restraint Commentary	

Vehicle 1 2001 CHRYSLER PT CRUISER

Test #	3354		
VIN	3C4FY4BB71T283350	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CHRYSLER	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	PT CRUISER	Steering Column Collapse Mechanism	UNKNOWN
Body	UTILITY VEHICLE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NO COMMENTS		
Vehicle Commentary	2001 CHRYSLER PT CRUISER SPECIAL PURPOSE VEHICLE		

Vehicle Length	4253	mm	167.4	inches	CG behind Front Axle	1133	mm	44.6	inches
Vehicle Width	1704	mm	67.1	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2616	mm	103.0	inches	Total Length of Indentation	1400	mm	55.1	inches
Vehicle Test Weight	1652	KG	3641	pounds	Maximum Static Crush Depth	603	mm	23.7	inches
					Pre-Impact Speed	56	kph	35.1	mph

Vehicle Damage Index: 12FDEW2

Principal Direction of Force: 180

Damage Profile Distance Measurements

(Measured Left-to-Right, Rear-to-Front)

DPD 1	472	mm	18.6	inches
DPD 2	547	mm	21.5	inches
DPD 3	603	mm	23.7	inches
DPD 4	597	mm	23.5	inches
DPD 5	495	mm	19.5	inches
DPD 6	393	mm	15.5	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	163.3	inches	142.7	inches	20.6	inches
	4148	mm	3624	mm	524	mm
Centerline	167.4	inches	147.5	inches	19.9	inches
	4253	mm	3747	mm	506	mm
Right Bumper Corner	163.2	inches	144.7	inches	18.5	inches
	4146	mm	3675	mm	471	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
0.0	NOT APPLICABLE	0.0

Moving Test Cart Angle	Moving Test Cart/Vehicle Crabbed Angle	Vehicle Orientation on Cart Moving Test Cart
NOT APPLICABLE	0.0	NOT APPLICABLE
Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground	*Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle*	*Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion*

Vehicle 1 2001 CHRYSLER PT CRUISER

Test #	3354		
VIN	3C4FY4BB71T283350	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CHRYSLER	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	PT CRUISER	Steering Column Collapse Mechanism	UNKNOWN
Body	UTILITY VEHICLE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NO COMMENTS		
Vehicle Commentary	2001 CHRYSLER PT CRUISER SPECIAL PURPOSE VEHICLE		

Vehicle Length	4253	mm	167.4	inches	CG behind Front Axle	1133	mm	44.6	inches
Vehicle Width	1704	mm	67.1	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2616	mm	103.0	inches	Total Length of Indentation	1400	mm	55.1	inches
Vehicle Test Weight	1652	KG	3641	pounds	Maximum Static Crush Depth	603	mm	23.7	inches
					Pre-Impact Speed	56	kph	35.1	mph

Vehicle Damage Index	12FDEW2	Principal Direction of Force	180

Pre & Post Test Damage Measurements

(Measurements are taken in a longitudinaldirection. Except for Engine Block, all measurements are take from the Rear Vehicle Surface forward.)

Left Side Pre-Test mm	Left Side Pre-Test inches	Left Side Post-Test mm	Left Side Post-Test inches	Centerline	Centerline Pre-Test mm	Centerline Pre-Test inches	Centerline Post-Test mm	Centerline Post-Test inches	Right Side Pre-Test mm	Right Side Pre-Test inches	Right Side Post-Test mm	Right Side Post-Test inches
				Length of Vehicle at Centerline	4253	167.4	3747	147.5				
				Engine Block	272	10.7	272	10.7				
4148	163.3	3624	142.7	Front Bumper Corner					4146	163.2	3675	144.7
				Front of Engine	3647	143.6	3412	134.3				
3295	129.7	3211	126.4	Firewall	3313	130.4	3207	126.3	3300	129.9	3173	124.9
2902	114.3	2901	114.2	Upper Leading Edge of Door					2901	114.2	2897	114.1
2910	114.6	2907	114.4	Lower Leading Edge of Door					2914	114.7	2905	114.4
3008	118.4	3004	118.3	Bottom of 'A' Post					3039	119.6	3050	120.1
1893	74.5	1894	74.6	Upper Trailing Edge of Door					1897	74.7	1891	74.4
1937	76.3	1935	76.2	Lower Trailing Edge of Door					1935	76.2	1929	75.9
				Steering Column	2488	98.0	2485	97.8				
				Center of Seering Column to 'A' Post (Horizontal)	294	11.6	272	10.7				
				Center of Steering Column to Headliner (Vertical)	412	16.2	373	14.7				

2001 CHRYSLER PT CRUISER

NHTSA Crash Test - #3354 - Front Impact

Pre/Post Depths - Vehicle Width - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3641 pounds
Vehicle Closing Speed = 35.1 mph
Test Crush Length = 67.1 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	20.6	19.9	18.5	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 18.5 inches					156.6
Using a Rated No Damage Speed of	2.5mph	191.7	135.1	136.0	
Using a Rated No Damage Speed of	5.0mph	354.0	115.2	543.9	
Using a Rated No Damage Speed of	7.5mph	486.9	96.9	1223.8	
Using a Rated No Damage Speed of	10.0mph	590.4	80.1	2175.6	
Average Crush = 19.8 inches					136.7
Using a Rated No Damage Speed of	2.5mph	179.1	118.0	136.0	
Using a Rated No Damage Speed of	5.0mph	330.7	100.6	543.9	
Using a Rated No Damage Speed of	7.5mph	454.9	84.6	1223.8	
Using a Rated No Damage Speed of	10.0mph	551.6	69.9	2175.6	
Maximum Crush = 20.6 inches					126.3
Using a Rated No Damage Speed of	2.5mph	172.2	109.0	136.0	
Using a Rated No Damage Speed of	5.0mph	317.9	92.9	543.9	
Using a Rated No Damage Speed of	7.5mph	437.2	78.1	1223.8	
Using a Rated No Damage Speed of	10.0mph	530.2	64.6	2175.6	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

****

4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	20.6	32.9	-2.2	-6.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.9

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

2001 CHRYSLER PT CRUISER

NHTSA Crash Test - #3354 - Front Impact

Pre/Post Depths - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3641 pounds
Vehicle Closing Speed = 35.1 mph
Test Crush Length = 55.1 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	20.6	19.9	18.5	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 18.5 inches					190.7
Using a Rated No Damage Speed of	2.5mph	233.3	164.5	165.5	
Using a Rated No Damage Speed of	5.0mph	430.9	140.2	662.0	
Using a Rated No Damage Speed of	7.5mph	592.6	117.9	1489.5	
Using a Rated No Damage Speed of	10.0mph	718.6	97.5	2648.0	
Average Crush = 19.8 inches					166.4
Using a Rated No Damage Speed of	2.5mph	218.0	143.6	165.5	
Using a Rated No Damage Speed of	5.0mph	402.6	122.4	662.0	
Using a Rated No Damage Speed of	7.5mph	553.7	102.9	1489.5	
Using a Rated No Damage Speed of	10.0mph	671.4	85.1	2648.0	
Maximum Crush = 20.6 inches					153.8
Using a Rated No Damage Speed of	2.5mph	209.5	132.6	165.5	
Using a Rated No Damage Speed of	5.0mph	386.9	113.1	662.0	
Using a Rated No Damage Speed of	7.5mph	532.2	95.1	1489.5	
Using a Rated No Damage Speed of	10.0mph	645.3	78.6	2648.0	

Rated No Damage Speed = Impact speed with a barrier resulting in no permanant vehicle deformation
Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific vehicles may, however, have a higher rating

A = Maximum force per inch of damage without permanent damage, lb/in
B = Crush resistance per inch of damage width (Crash), lb/in^2
G = Energy dissipated without permanent damage, lb
Kv = Crush resistance per inch of damage width (SMAC), lb/in^2

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4N6XPRT System's First Approximation Crush Factor (CF)

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats

KE Speed (mph) = SQRT(30 * CF * max crush in feet)

Crush Factor	Maximum Crush (inches)	Calculated KE Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	20.6	32.9	-2.2	-6.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.9

CF = (mph * mph) / (30 * max crush in feet), dimensionless

4N6XPRT Systems CF is calculated based upon the data reported and is specific to this vehicle and this test

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2001 - 2009
Make: CHRYSLER
Model: PT CRUISER

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
3354	2001 CHRYSLER PT CRUISER UTILITY VEHICLE	5.0	18.8	35.1	347.6	111.1	543.9	151.1	26.2
4230	2002 CHRYSLER PT CRUISER UTILITY VEHICLE	5.0	13.8	35.0	482.8	209.6	556.1	285.3	35.5
	Average (AVG)				**415.2**	**160.3**	**550.0**	**218.2**	**30.8**
	Minimum (MIN)				**347.6**	**111.1**	**543.9**	**151.1**	**26.2**
	Maximum (MAX)				**482.8**	**209.6**	**556.1**	**285.3**	**35.5**
	Standard Deviation (STDev-sample)				**95.6**	**69.6**	**8.6**	**94.9**	**6.6**
	Number of Tests (n)			**2**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2001 - 2009
Make: CHRYSLER
Model: PT CRUISER

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Width Values G	Width Values Kv	Crush Factor
3354	2001 CHRYSLER PT CRUISER UTILITY VEHICLE	5.0	23.7	35.1	275.9	70.0	543.9	95.1	20.8
4230	2002 CHRYSLER PT CRUISER UTILITY VEHICLE	5.0	20.9	35.0	319.2	91.6	556.1	124.7	23.4
	Average (AVG)				**297.5**	**80.8**	**550.0**	**109.9**	**22.1**
	Minimum (MIN)				**275.9**	**70.0**	**543.9**	**95.1**	**20.8**
	Maximum (MAX)				**319.2**	**91.6**	**556.1**	**124.7**	**23.4**
	Standard Deviation (STDev-sample)				**30.7**	**15.3**	**8.6**	**20.9**	**1.9**
	Number of Tests (n)			**2**					

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The NHTSA Crash Test database contains TWO FRONT Impact tests for the 2001-2009 Chrysler PT Cruiser and its same/similar vehicles.

To create a SIMILAR class of vehicle, we looked at the NHTSA database for All vehicles within +/- 20 pounds test weight of the test weight for the 2001 Chrysler PT Cruiser test in the database..

For the crush summary reports, all tests with a A value greater than 500 were removed from the summary.

The Test Summary Reports based on the Average and Maximum crush depths follow.

Available Test Results
Front Impact Test Summary
Report Filter Settings

Year Range: 2002 - 2010

Vehicle Weight Range: 3621-3661

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
6755	2010 FORD FUSION FOUR DOOR SEDAN	5.0	19.9	35.0	306.6	92.3	509.5	125.6	24.6
5145	2004 HONDA ACCORD FOUR DOOR SEDAN	5.0	19.6	35.1	310.9	95.3	507.1	129.6	25.1
5730	2006 HYUNDAI SONATA FOUR DOOR SEDAN	5.0	12.3	24.7	329.2	106.0	511.4	166.5	20.0
5602	2006 CHEVROLET HHR UTILITY VEHICLE	5.0	18.4	34.9	359.0	116.8	551.6	159.1	26.5
6720	2010 FORD MUSTANG TWO DOOR COUPE	5.0	7.7	19.7	383.8	146.6	502.5	263.3	20.2
6715	2009 BMW 128I TWO DOOR COUPE	5.0	10.5	24.7	405.9	152.3	541.0	239.2	23.3
5071	2004 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	9.6	24.6	422.0	171.7	518.5	270.5	25.1
5717	2006 MITSUBISHI GALANT FOUR DOOR SEDAN	5.0	14.0	34.7	428.7	182.2	504.3	248.8	34.4
5853	2006 KIA OPTIMA FOUR DOOR SEDAN	5.0	14.9	35.0	478.6	193.6	591.5	263.4	33.1
4559	2003 MITSUBISHI OUTLANDER UTILITY VEHICLE	5.0	12.9	35.0	494.1	229.4	532.0	312.3	37.9
	Average (AVG)				**391.9**	**148.6**	**526.9**	**217.8**	**27.0**
	Minimum (MIN)				**306.6**	**92.3**	**502.5**	**125.6**	**20.0**
	Maximum (MAX)				**494.1**	**229.4**	**591.5**	**312.3**	**37.9**
	Standard Deviation (STDev-sample)				**66.1**	**46.0**	**28.1**	**66.4**	**6.1**
	Number of Tests (n)			**10**					

Available Test Results
Front Impact Test Summary
Report Filter Settings

Year Range: 2002 - 2010

Vehicle Weight Range: 3621-3661

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width Values G	Vehicle Width Values Kv	Crush Factor
6720	2010 FORD MUSTANG TWO DOOR COUPE	5.0	17.2	19.7	171.3	29.2	502.5	52.5	9.0
5717	2006 MITSUBISHI GALANT FOUR DOOR SEDAN	5.0	26.5	34.7	226.2	50.7	504.3	69.3	18.2
5145	2004 HONDA ACCORD FOUR DOOR SEDAN	5.0	24.8	35.1	246.6	60.0	507.1	81.5	19.9
5602	2006 CHEVROLET HHR UTILITY VEHICLE	5.0	26.3	34.9	251.4	57.3	551.6	78.0	18.6
6755	2010 FORD FUSION FOUR DOOR SEDAN	5.0	23.8	35.0	256.5	64.6	509.5	87.9	20.6
5730	2006 HYUNDAI SONATA FOUR DOOR SEDAN	5.0	15.7	24.7	257.6	64.9	511.4	101.9	15.6
5666	2006 SUZUKI VERONA FOUR DOOR SEDAN	5.0	21.7	34.9	282.3	77.8	511.7	106.1	22.4
5071	2004 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	13.3	24.6	305.6	90.1	518.5	141.8	18.2
6715	2009 BMW 128I TWO DOOR COUPE	5.0	13.3	24.7	320.8	95.1	541.0	149.5	18.4
4559	2003 MITSUBISHI OUTLANDER UTILITY VEHICLE	5.0	16.9	35.0	377.0	133.6	532.0	181.8	28.9
5853	2006 KIA OPTIMA FOUR DOOR SEDAN	5.0	17.5	35.0	406.7	139.8	591.5	190.2	28.1
	Average (AVG)				**282.0**	**78.5**	**525.6**	**112.8**	**19.8**
	Minimum (MIN)				**171.3**	**29.2**	**502.5**	**52.5**	**9.0**
	Maximum (MAX)				**406.7**	**139.8**	**591.5**	**190.2**	**28.9**
	Standard Deviation (STDev-sample)				**67.4**	**34.0**	**27.1**	**46.3**	**5.5**
	Number of Tests (n)			**11**					

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E-Mail: 4n6@4n6xprt.com

Dear Conference Attendee,

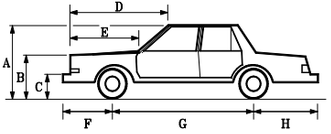
We at 4N6XPRT Systems were pleased to be able to provide you with the preceding data for the crash test vehicles.

Information regarding the Services available to you through our company, as well as the Programs used to create the data report follows this page.

We look forward to providing you similar information in the near future.

Sincerely,

Daniel W. Vomhof III
Daniel W. Vomhof, Ph.D.



Expert AutoStats®

Expert AutoStats® is a program that has over 42,000 cars, pick-ups, vans, and utility vehicles that range in years from the 1940's to the present. Expert AutoStats® has specifications that can assist in reconstructing accidents when the data for the vehicle is unavailable or the vehicle is too severely damaged to get correct measurements.

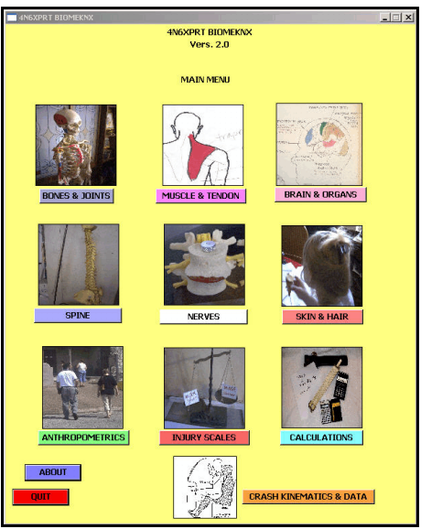
For many vehicles mid-1960's to present, data such as bumper height, front and rear overhang, hood height, etc., are also included.

Model | Data Page 1 | Data Page 2 | Data Page 3 | Printer | File Output | DXF Output

2011 FORD POLICE INTERCEPTOR (3.27) MSP POLICE PKG 4 DOOR SEDAN

Horizontal Dimensions			Vertical Dimensions		
Length	212	in.	Height	58	in.
Wheelbase	115	in.	Ground to:		
Front Bumper to Front Axle	43	in.	Front Bumper (Top)	23	in.
Front Bumper to Front of Hood	8	in.	Headlight - Center	27	in.
Front Bumper to Base of Windshield	65	in.	Hood - Top Front	31	in.
Front Bumper to Top of Windshield	91	in.	Base of Windshield	39	in.
Front Bumper to Front Wheel Well	26	in.	Rear Bumper (Top)	25	in.
Rear Bumper to Rear of Trunk	8	in.	Trunk - Top Rear	39	in.
Rear Bumper to Base of Rear Window	38	in.	Base of Rear Window	40	in.
Rear Bumper to Rear Well	38	in.	**Weight Dimensions**		
Rear Bumper to Rear Axle	54	in.	Curb Weight	4184	lbs.
Depth Dimensions			Curb Weight Distribution:		
Width	78	in.	Front =	56	%
Front Track	63	in.	Rear =	44	%
Rear Track	66	in.	Gross Vehicle Weight Rating	5500	lbs.

4N6XPRT BioMeknx®



Collecting the Biomechanical data of importance to the Accident Investigator into one easily accessible reference location

Biomechanics is the application of physics to describe, evaluate, or model living tissue and biological materials. Originally it was the application of the part of physics known as Mechanics to living systems. This is the same portion of physics which is used as the basis for much of accident reconstruction.

Biomechanics is important in many aspects of forensic work from vehicle accident reconstruction to slip-trip-stumble-fall cases. This particular program contains modules containing information on a variety of biomechanics and injury modalities, physical data found in the literature for failure of bone and tissue, calculation modules to evaluate individual specific parameters, and definitions and terminology used in the literature and found in medical reports.

4N6XPRT BioMeknx® is a program designed for the accident investigator. The BioMeknx program incorporates information from a number of different sources, as well as over 30 years of reconstruction experience. 4N6XPRT BioMeknx™ compiles into one source a number of items of information to assist in reconstructing accidents by tying in the human component more tightly without the need to be a BioMechanics expert. Identification of body location, body part illustrations, failure threshold limits, definitions of terms, calculation modules for body link lengths, weights, stride lengths, and formulas for other types of calculations are only some of the material included in the program.

To gather into your library the material included in the 4N6XPRT BioMeknx™, you would need a minimum of 10-15 Anatomy and Physiology, Human Factors, and Biomechanics books, as well as conduct over 50 hours of internet research.

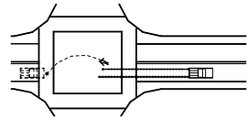
3FAPP1280MR117253

Expert VIN DeCoder®

Expert VIN DeCoder® is a program that "DeCodes" the 17 character VIN number for Cars, Vans, Pickups, and Utility vehicles manufactured from 1981 to the present.

Cars/Vans/Utility/Lt. Trucks Modules: 1981 to Present

Ford	Chevrolet/Geo
Mercury/Lincoln	Pontiac / Buick / Oldsmobile
Chrysler/AMC/Jeep	Cadillac/Saturn
European Import	Asian Import



4N6XPRT Ped & Bike Calcs®

The **4N6XPRT Ped & Bike Calcs®)** program is a program that provides FIRST ESTIMATE calculations to evaluate the speed of a vehicle involved in striking a pedestrian or bicyclist, IF Vehicle, scene, and pedestrian {or pedestrian and bicycle in a vehicle-bike accident} measurements are available. This program may also be used when skateboards or roller skates are involved.

>>>Calculate Time given D & V<<<
Enter Distance (in feet) : 45
Enter Velocity (in mph) : 6

Expert Qwic Calcs®

Expert Qwic Calcs® quickly provides answers to questions important in vehicle collision litigation. The user inputs data in response to relevant questions, Expert Qwic Clacs® performs the mathematical calculations required. Both the input data and the calculated result are then displayed, and may be "dumped" to a printer.

When the law enforcement accident report gives insufficient information to do a full - blown accident reconstruction, Expert Qwic Calcs® may be used to "scope out"the parameters of speeds, times, and distances to determine these relationships in a vehicle accident.

Expert TireStuf®

The Expert TireStuf® program is a Menu Driven program which has 19 modules explaining the various tire size designation systems, the information which MAY be in the DOT tire number, the DOT mandated Tire Grading system, Lug Nut Tightening and Tire Rotation schemes, Mix and Match precautions, a glossary of Tire Terms, and Addresses of a few of the sources of additional information on tires and rims.

Also included is a calculation of the number of revolutions in one mile given the tire dimensions.

4N6XPRT StifCalcs®

4N6XPRT StifCalcs®. Is a program which puts the NHTSA Crash Test database at your fingertips with no need to access the internet in order to obtain Stiffness Values!

In addition to the NHTSA Crash Test data, the program includes a "Similar Vehicle List Reader" which allows quick retrieval of the data for the desired and "similar" vehicle(s). This will drive the initial selection of the available tests. Alternatively, we have an ADVANCED SEARCH module which allows the creation of "Class" vehicles.

WITHOUT THE INTERNET the user can:

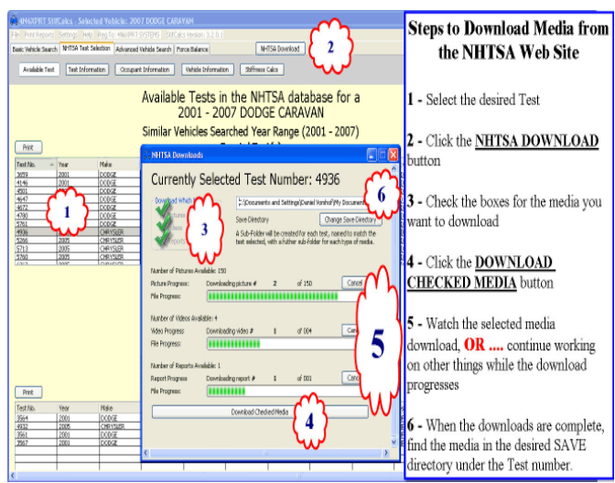
★ Lookup individual tests and get basic front, side, and rear **STIFFNESS VALUES** from these tests. The values are based on the reported crush depths and lengths within each test.
★ Obtain Similar Vehicle group summary STIFFNESS data with Statistical measures.
★ Create "CLASS" vehicles and get summary STIFFNESS data with Statistical measures.

FRONTAL STATISTICAL MEASURES EXAMPLE:

		Vehicle Width			
		Stiffness Values			
		A	B	G	Kv
Average (AVG)		305.7	93.5	523.6	143.1
Minimum (MIN)		115.0	13.2	465.2	23.5
Maximum (MAX)		461.6	200.0	614.1	387.3
Standard Deviation (STDev-sample)		73.4	38.4	36.2	72.8
Number of Tests (n)	53				

WITH THE INTERNET the user can:

★ **RESEARCH** and **easily download** the **PICTURES**, **VIDEOS**, and **REPORTS** available for individual tests



Steps to Download Media from the NHTSA Web Site

1 - Select the desired Test

2 - Click the NHTSA DOWNLOAD button

3 - Check the boxes for the media you want to download

4 - Click the DOWNLOAD CHECKED MEDIA button

5 - Watch the selected media download, **OR ....** continue working on other things while the download progresses

6 - When the downloads are complete, find the media in the desired SAVE directory under the Test number.

Please use this order form when ordering. Due to conditions and rising costs beyond our control, Shipping & Handling for program orders must be paid per the included schedule.

Contact Name:_____

Title:_____

Company/Organization:_____

Street:_____

City: _____ State: _____ Zip: _____

Phone: (_____)_____ FAX: (_____)_____

E-Mail: _____

PAYMENT BY: Check____ Money Order____ Govt. Purchase Order____

for Credit Card Orders, **please circle Credit Card type: Am. Express / Visa / MasterCard**, then complete the following:

Card Number: _____Expiration Date (MM/YY):____/____

Security code (card ID) on **back of** Visa/MasterCard card or **front of** American Express Card:

←Visa/MasterCard | Security | American Express →

Address for where the **credit card bill is sent**: _____

(This is the address that the credit card bill would go to, not where we would send the data or product to)

Zip for where the **credit card bill is sent**:_____

(This is the zip code that the credit card bill would go to, not where we would send the data or product to)

PROGRAM ORDER FORM:

(Pricing effective as of 8/30/12 - prices subject to change without notice)

Expert AutoStats®:	$ 625.00 *	$_____
4N6XPRT BioMeknx®:	$ 495.00 *	$_____
4N6XPRT Ped & Bike Calcs®:	$ 375.00 *	$_____
Expert Qwic Calcs®:	$ 275.00 *	$_____
Expert TireStuf®:	$ 85.00 *	$_____
4N6XPRT StifCalcs®:	$ 650.00 *	$_____
Expert VIN DeCoder®:	$ 550.00 *	$_____
		======
	SUB-TOTAL	$_____
Handling **:		$_____

(Cash or Check with order = $5.00, Credit Card = $10.00 , Govt. Purchase Order = $15.00)

Notarized Affidavit Filing Requirement $_____

($25.00 per required Notarized Signature)

Normal delivery is via electronic download

☐ - Deliver via electronic download link (e-mail address required) $ 0.00

☐ - Deliver on USB - **additional cost of $35.00 / disk / program** $_____

======

SUB-TOTAL $_____

California shipping addresses add **8.50%** sales tax $_____

(*California orders delivered electronically **DO NOT** owe sales tax*)

TOTAL $_____

Individual Vehicle Data FAX/Order Form

☐ **Expert VIN Decoder & Expert AutoStats**
☐ **NHTSA Crash Test Results**
☐ **BOTH**
Please circle ALL OPTIONS that apply

YEAR & MAKE:_____

MODEL:_____

If you are requesting **VIN DeCoder & AutoStats** please also provide:

Vehicle Type:Car - Pickup - Utility - Van
No. of Doors:2/3/4/5
Car Body Style:Coupe/Conv./Sedan/Wagon
DRIVE WHEELS: 4x2 / 4x4
PICKUPS:Dual Rear Wheel - Std. / Extra / Super / Crew Cab - Short Bed / Long Bed
VANS:Cargo / Passenger - Short / Long Wheelbase

VIN Information

___ ___ ___ ___ ___ ___ ___ ___ ___
1 2 3 4 5 6 7 8 9

___ ___ ___ ___ ___ ___ ___ ___
10 11 12 13 14 15 16 17

NHTSA Crash Test Information
Impact location - Front / Side / Rear
Impact Speed - Lower / Higher

Case Reference/Number:_____

Authorized signature: _____

Individual Vehicle Data Search Service®

Charges & Services

Individual Vehicle Specifications
$40.00-First vehicle*, $35.00/Additional Vehicles*,
$20.00/Additional Similar Model*

Medium/Heavy Truck Specifications
$40.00-First vehicle*, $35.00/Additional Vehicles*,
$20.00/Additional Similar Model*

Motorcycle Specifications (1970+)
$40.00-First cycle*, $35.00/Additional cycles*,
$20.00/Additional Similar Model*

NHTSA Crash Test Results
$40.00 per test - Includes A, B, & G values
Calculations are based on the test results

Individual Vehicle Specifications

Now you can get the Expert AutoStats® data for the vehicles in your case ***QUICKLY, EASILY***, and ***ECONOMICALLY***, instead of guessing, or begging a printout from a friend.

Our vehicle database includes dimensions on over 42,000 Cars, Vans, Lt. Pickups, and Utility Vehicles covering 1945 to the present.

Minimum Vehicle specifications include:

Overall Length	Curb Weight
Overall Width	Weight Distribution
Overall Height	Front/Rear Track
Wheelbase	CG Location

Model years with **N**o **S**ignificant **D**imensional **C**hanges VIN DeCoding when VIN is provided Information available

Mid-60's to present **also includes** (*when available*)

Front/Rear Overhang	Bumper Heights
Hood height	Turning Circle
Bumper-to-hood	Ground-to-hood

Dimensions are given in both Imperial and metric (SI) units. Motorcycle specifications will be similar to the Vehicle specifications with appropriate changes where applicable.

NHTSA Crash Test Results

Test results include: General Test information, Barrier Data when provided, Vehicle Data as reported by the testing organization, Occupant (Dummy) data when provided, and A-B-G Stiffness calculations based on the test results.

4N6XPRT Systems®

Providing Vehicle dimensional data, VIN DeCoding, and NHTSA Crash Test Results as a service to the Litigation community, in the form of:

Expert Systems Software Programs for Litigation

Expert AutoStats®
4N6XPRT StifCalcs®
4N6XPRT BioMeknx®
4N6XPRT Ped & Bike Calcs®
Expert Qwic Calcs®
Expert TireStuf®
Expert VIN DeCoder®

Vehicle Data Service

Individual Vehicle Data Search Service®

8387 University Avenue, Suite P
La Mesa, CA 91942-9342

Phone: 1-800-266-9778
Fax: **(619) 464-2206**
E-Mail: **4n6@4n6xprt.com**

Web: **http://www.4n6xprt.com**

Expert VIN DeCoder®

Expert VIN DeCoder® is a program that "DeCodes" the 17 character VIN number for vehicles manufactured from 1981 to the present.

Modules: 1981 to Present
Control Module - One Required per Set

Ford Cars (includes Festiva & Merkur)
Mercury/Lincoln Cars
Ford vans/Utility/Lt. Trucks

Chevrolet/Geo Cars
Pontiac/GM of Canada Cars
Oldsmobile Cars
Buick Cars
Cadillac/Saturn Cars
General Motors Vans/Utility/Lt. Trucks

Chrysler/AMC/Jeep Cars
Chrysler/Jeep Vans/Utility/Lt. Trucks

European Import Cars/Vans/Utility/Lt. Trucks
Asian Import Cars/Vans/Utility/Lt. Trucks

SYSTEM REQUIREMENTS

Expert VIN DeCoder® has been tested on a wide variety of IBM laptop and desktop clones ranging from 8088 through Pentium® chips. A math co-processor chip is NOT required. Expert VIN DeCoder® has also been tested under the various versions of MS-DOS 3.0 thru 7.0, DrDOS 6.0, and PC DOS 7.0. It also works as a DOS program under Windows 3.x, Windows, 95, Windows 98, Windows NT, OS/2 2.x, OS/2 Warp, and various versions of LINUX.

A variety of dot matrix printers emulating the EPSON series have been used with no difficulty. The output is also compatible with the Hewlett-Packard II, IIP, III and IIIP Laser printers. Expert VIN DeCoder® works with monochrome and color monitors.

As of April 1995 the 4N6XPRT Systems® programs Expert AutoStats®, Expert Qwic Calcs®, Expert TireStuf®, 4N6XPRT Ped & Bike Calcs®, and Expert VIN DeCoder® are accessible from within RECTEC.

PLEASE PRINT

Contact Name:_____
Company/Dept: _____
Mailing Address:_____
City:_____State:____Zip:_____
Phone: _____
Fax: _____
E-Mail:_____

Expert VIN DeCoder®
_____ (copies) x $550.00 . . . . . = $_____
Handling **: $_____
(Check with order = $5.00, Credit Card = $10.00 , Govt. P.O.r = $15.00)
Notarized Affidavit Filing Requirement $_____
($25.00 per required Notarized Signature)

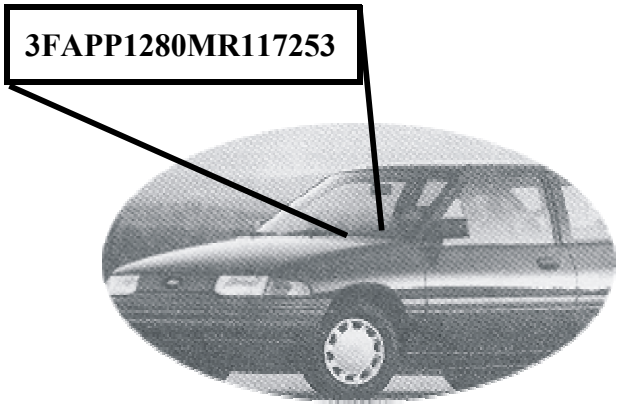
Normal delivery is via electronic download
☐ - Deliver via electronic download link (e-mail address required) $ 0.00
☐ Please deliver on USB at an
additional cost of $35.00 per disk $_____
SUB-TOTAL = $_____
CA Addresses add 8.75% sales tax . . . . = $_____
(*California orders delivered by e-mail attachment **DO NOT** owe sales tax*)
TOTAL = $_____

Enclosed is:
Check*/Money Order:___ Credit Card:___ P.O.:___
Please make check*/M.O./P.O. payable to:
4N6XPRT Systems®
Credit Card Orders:
MasterCard:___ Visa:___ Am.Ex.:___
Card #:_____
Expires: _____
Name on Card: _____
Signature: _____
Billing Add. #: _____
Billing Zip: _____

Mail to: 4N6XPRT Systems®
8387 University Avenue
La Mesa, CA 91942-9342
Telephone Orders:
Monday-Friday - 9:30am-5:00pm PST
Phone: (619) 464-3478 Fax: (619) 464-2206

Orders will be shipped Priority Mail within 10 working days of receipt of order.
Prices subject to change WITHOUT NOTICE.
** Checks MUST be drawn from a bank in the U.S.A.*

Expert VIN DeCoder®



User Friendly Software to provide interpretation of the 17 character VIN Number on Cars, Lt. Pickups, Utility Vehicles, and Vans.

4N6XPRT Systems®
Forensic Expert Software
8387 University Avenue
La Mesa, CA 91942-9342

Web: http://www.4n6xprt.com
E-Mail: VIN@4n6xprt.com

1-800-266-9778

Expert VIN DeCoder® example

INPUT:

1) Enter VIN Numbers to be DeCoded: 3FAPP1280MR117253

3FA PP128 0 MR 117253

2) Is this the VIN Number to be DeCoded (Y/N)? **Y**

OUTPUT:

EXPERT VIN DeCoder

The VIN Number is 3FA PP128 0 MR 117253

The vehicle should be a 1991 Ford
The model: Escort 2/3-door Hatchback GT
The assembly plant: Hermosillo, Mexico
The 4 passenger vehicle had : Passive (Automatic) Front Belts

The OEM engine was: In-line 4 cylinder with Double Overhead Cam
Engine Displacement/Type = 1.8 L/ 112 cu.in. L4, DOHC
Brake Horsepower (SAE) = 127 @ 6500 rpm
Torque (SAE) = 114 lb-ft at 4500 rpm
Engine manufacturer = Mazda

The fuel distribution system: Electronic Fuel Injection (EFI)
Fuel pump/line pressure = 35-45 psi
The ignition system = electronic

This is a Front Wheel Drive vehicle.

The first three characters {3, F, A} indicates that the vehicle
was a Ford made in Mexico

The fourth character {P} indicates the vehicle had
Passive (Automatic) Front Belts

The fifth character {P} indicates it was a Passenger Car

The sixth with the seventh character {12} indicates a
Escort 2/3-door Hatchback GT

The eighth character {8} indicates the OEM engine :
1.8 L/ 112 cu.in. L4, DOHC

The 9th Character { the Check Digit } is 0
The calculated Check Digit value is 0

The tenth character {M} indicates the Model Year was 1991

The eleventh character {R} indicates it was made
at the assembly plant in Hermosillo, Mexico

The twelveth through the seventeenth characters { 117253 } is
the Serial Number unique to this vehicle.

01-01-2001 S/N:930114VD01201 Reg. User: 4N6XPRT SYSTEMS

Expert AutoStats®

The Expert AutoStats® program contains data on more than 42,000 cars, pick-ups, vans, and utility vehicles that range in years from the 1940's to the present. The Expert AutoStats® base information can assist in reconstructing accidents when the data for the vehicle is unavailable or the vehicle is too severely damaged to get correct measurements. The program is currently relied upon by over 700 private and 300 Government entities within the United States for this very purpose. Additionally, for many vehicles mid-1960's to present, data such as bumper height, front and rear overhang, hood height, etc., are also included.

As of April 1995 the 4N6XPRT Systems® programs Expert AutoStats®, Expert Qwic Calcs®, Expert TireStuf®, and Expert VIN DeCoder® are accessible from within RECTEC.

SYSTEM REQUIREMENTS

Expert AutoStats® has been tested on a wide variety of IBM laptop and desktop clones ranging from 8088 through Pentium® chips. A math co-processor chip is NOT required. Expert AutoStats® has also been tested under the various versions of MS-DOS 3.0 thru 7.0, DrDOS 6.0, and PC DOS 7.0. It also works as a DOS program under Windows 3.x, Windows, 95, Windows 98, Windows NT, Windows Me, Windows 2000, Windows XP, Windows Vista, OS/2 2.x, OS/2 Warp, and various versions of LINUX.

A variety of dot matrix printers emulating the EPSON series have been used with no difficulty. The output is also compatible with the Hewlett-Packard II, IIP, III and IIIP Laser printers and Hewlett-Packard Desk Jet inkjet printers. Expert AutoStats® works with monochrome and color monitors.

PLEASE PRINT

Contact Name: _____
Company/Dept: _____
Mailing Address: _____
City:State:Zip: _____
Phone: _____
Fax: _____
E-Mail: _____

AutoStats® _____ (copies) x $625.00 . . = $_____
Handling **: $_____
(Check with order = $5.00, Credit Card = $10.00 , Govt. P.O.r = $15.00)
Notarized Affidavit Filing Requirement $_____
($25.00 per required Notarized Signature)

Normal delivery is via electronic download
☐ - Deliver via electronic download link (e-mail address required) $ 0.00
☐ Please deliver on USB at an
additional cost of $35.00 per disk $_____
SUB-TOTAL = $_____
CA Addresses add 8.50% sales tax . . . . = $_____
(*California orders delivered by e-mail attachment **DO NOT** owe sales tax*)

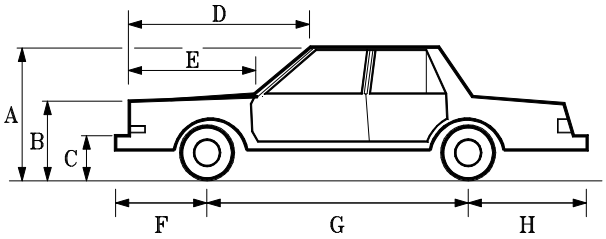
TOTAL = $_____

Enclosed is:
Check*/Money Order:___ Credit Card:___ P.O.:___
Please make check*/M.O./P.O. payable to:
4N6XPRT Systems®
Credit Card Orders:
MasterCard:___ Visa:___ Am.Ex.:___
Card #: _____
Expires: _____Sec.Code:_____
Name on Card: _____
Signature: _____
Billing Add. : _____
Billing Zip: _____

Mail to: 4N6XPRT Systems®
8387 University Avenue
La Mesa, CA 91942-9342
Telephone Orders:
Monday-Friday - 9:30am-5:00pm PST
Phone: (619) 464-3478 Fax: (619) 464-2206

Orders will be shipped Priority Mail within 10 working days of receipt of order.
Prices subject to change WITHOUT NOTICE.
** Checks MUST be drawn from a bank in the U.S.A.*

Expert AutoStats®



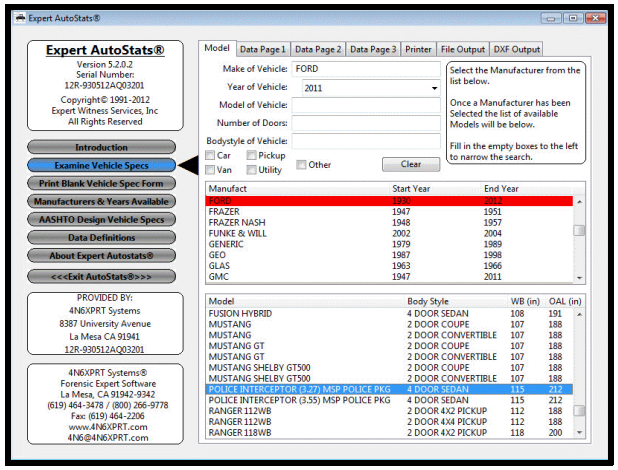
Over 42,000 cars, pick-ups, vans, and utility vehicles 1940's to the present are represented.

4N6XPRT Systems®
Forensic Expert Software
8387 University Avenue
La Mesa, CA 91942-9342

Web: http://www.4n6xprt.com
E-Mail: autostats@4n6xprt.com

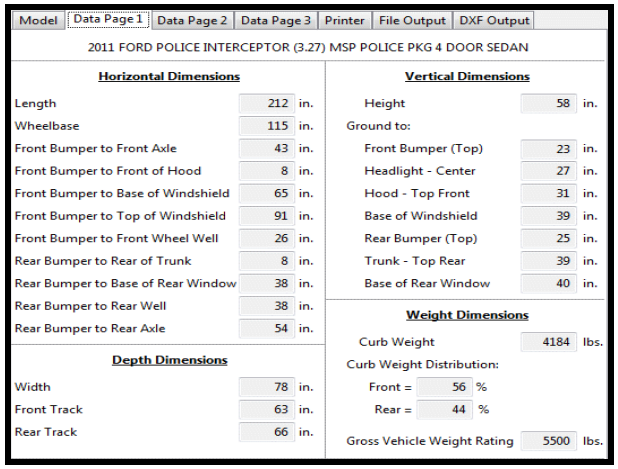
1-800-266-9778

Select Your Vehicle



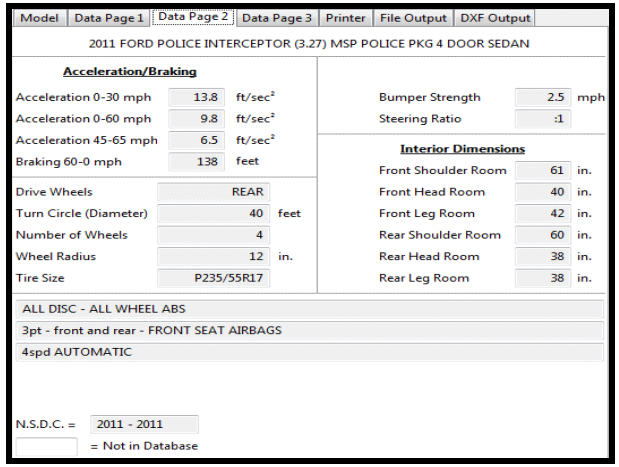
After typing in the Make, Year, and Type of vehicle, you are presented with the vehicles which are available for that year.

Screen 1



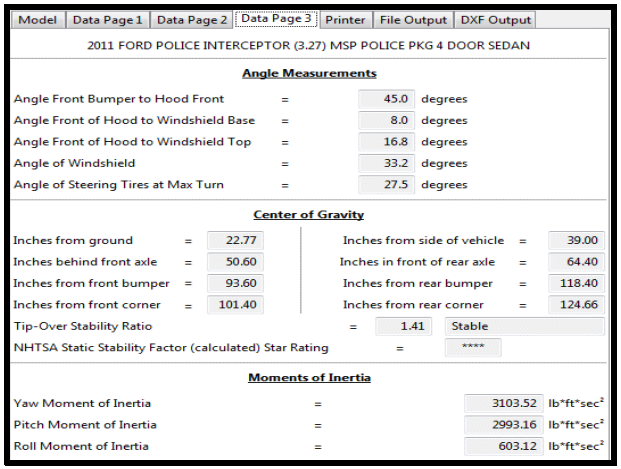
The first screen of data contains exterior dimensions and weight data. Length, Height, Wheelbase, Width, and Weight Distribution are published dimensions. Curb Weight is an average of published curb weights for the given vehicle. Detail dimensions such as the bumper heights and Front Bumper to Front of Hood are measurements obtained by our staff from actual vehicles.

Screen 2



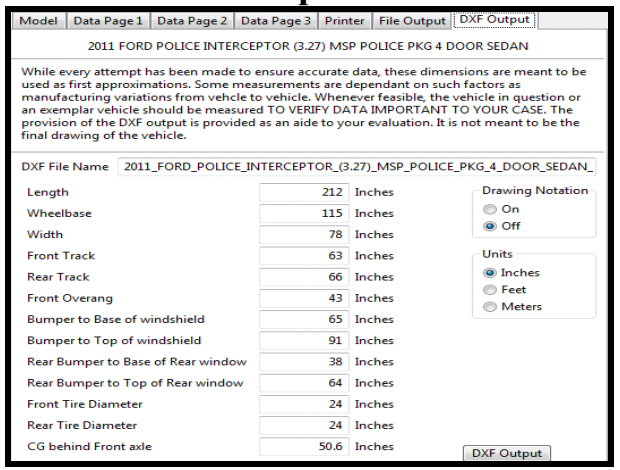
The second screen of data contains interior dimensions and various performance data. The data contained in the second screen comes from various published sources.

Screen 3



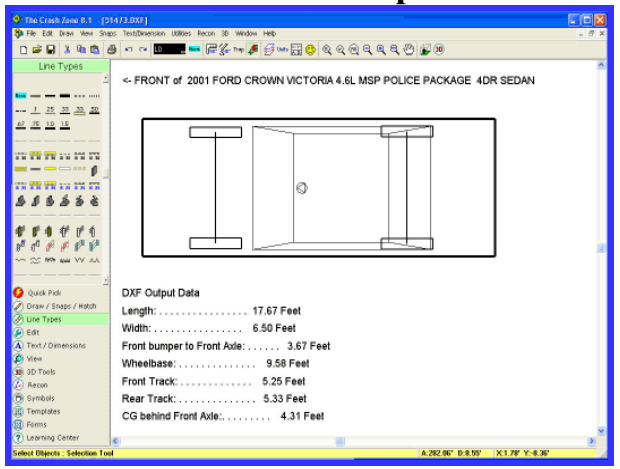
The third and last screen contains a number of calculated items of information which may be of use depending upon the type of case, the other software that you use, and the questions which need to be answered.

DXF Output Screen



From within the Expert AutoStats program you have the ability to output the data to a 2-D DXF file for importation into your CAD Scene Drawings. The screen below shows an import of the DXF file with Text into the CAD Zone program.

CADZONE Import



4N6XPRT StifCalcs®

Introducing ..... 4N6XPRT StifCalcs®. A program which puts the NHTSA Crash Test database at your fingertips with no need to access the internet in order to obtain Stiffness Values!

In addition to the NHTSA Crash Test data, the program includes a "Similar Vehicle Reader". Initially developed in cooperation with Greg Anderson and maintained by 4N6XPRT Systems starting with the 2013 version, the reader allows quick retrieval of vehicles similar to the desired vehicle. The Reader drives the initial selection of the available tests. Alternatively, we have an ADVANCED SEARCH module which allows the creation of "CLASS" vehicles.

STIFFNESS DATA, based on the selected test or test grouping is automatically calculated based on the reported crush depths and widths for front, side, and rear tests.

The User can - **WITHOUT the need for the internet:**

★ Lookup individual tests and get basic front, side, or rear (as appropriate to the test) **STIFFNESS VALUES** from the selected test. The values are based on the reported crush depths and lengths within each test.

SYSTEM REQUIREMENTS

4N6XPRT StifCalcs® is a MS-Windows program designed to work under a 32 **or** 64-bit (2000/XP/Vista/7) Windows System.

★ Obtain Similar Vehicle group summary **STIFFNESS VALUES** with Statistical measures.
★ Create "CLASS" vehicles and get summary **STIFFNESS VALUES** with Statistical measures.

FRONTAL STATISTICAL MEASURES EXAMPLE:

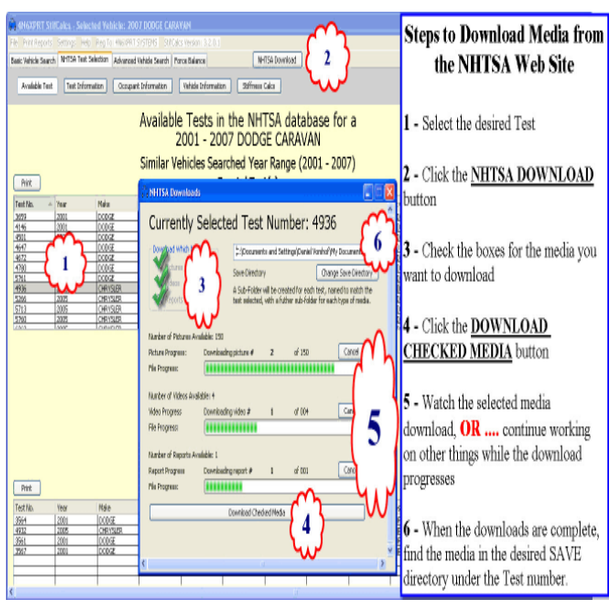
		Vehicle Width		Stiffness Values	
		A	B	G	Kv
Average (AVG)		305.7	93.5	523.6	143.1
Minimum (MIN)		115.0	13.2	465.2	23.5
Maximum (MAX)		461.6	200.0	614.1	387.3
Standard Deviation (STDev-sample)		73.4	38.4	36.2	72.8
Number of Tests (n)	53				

WITH an internet connection the User will also be able to -

★ **RESEARCH** and **easily download** the

PICTURES,
VIDEOS,
and
REPORTS

that are available for the individual tests



PLEASE PRINT

Contact Name: _____
Company/Dept: _____
Mailing Address: _____
City:State:Zip: _____
Phone: _____
Fax: _____
E-Mail: _____
(E-mail address required for electronic delivery)

StifCalcs®_____ (copies) x $650.00 . . = $_____
Handling **: $_____
(Check with order = $5.00, Credit Card = $10.00 , Govt. P.O. = $15.00)
Notarized Affidavit Filing Requirement $_____
($25.00 per required Notarized Signature)

Normal delivery is via electronic download
☐ - Deliver via electronic download link (e-mail address required) $ 0.00
☐ Please deliver on USB at an
additional cost of $35.00 per disk $_____
SUB-TOTAL = $_____
CA Addresses add 8.50% sales tax . . . = $_____
(*California orders delivered by e-mail attachment **DO NOT** owe sales tax*)

TOTAL = $_____

Enclosed is:
Check/M. O. :___ Credit Card:___ P.O.:___

Please make check/M.O./P.O. payable to:
4N6XPRT Systems®
Credit Card Orders:
MasterCard:___ Visa:___ Am.Ex.:___
Card #: _____
Expires: _____
Name on Card: _____
Signature: _____
Billing Add. #: _____
Billing Zip: _____

Mail to: 4N6XPRT Systems®
8387 University Avenue
La Mesa, CA 91942-9342
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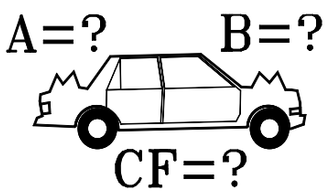
Monday-Friday - 9:30am-5:00pm PST
Phone: (619) 464-3478 Fax: (619) 464-2206

Orders within the U.S. will be shipped Priority Mail or via E-mail attachment within 10 working days of receipt of order.
*All prices are in U.S. Dollars, and subject to change **WITHOUT NOTICE.***
*Orders outside of U.S.A. shipped via E-Mail attachment **ONLY**.*

4N6XPRT StifCalcs®



Quick, Convenient, Easy access to the NHTSA Crash Test data on your own MS-Windows computer without the need for an internet connection.

4N6XPRT Systems®
Forensic Expert Software
8387 University Avenue
La Mesa, CA 91942-9342

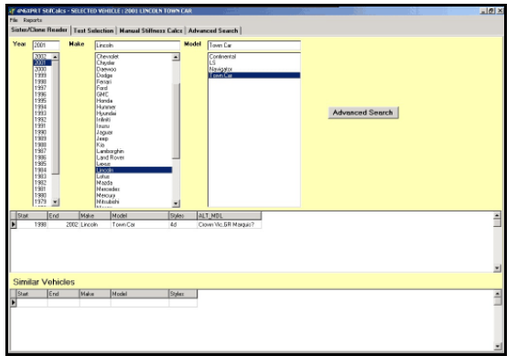
Web: http://www.4n6xprt.com
E-Mail: stifcalcs@4n6xprt.com

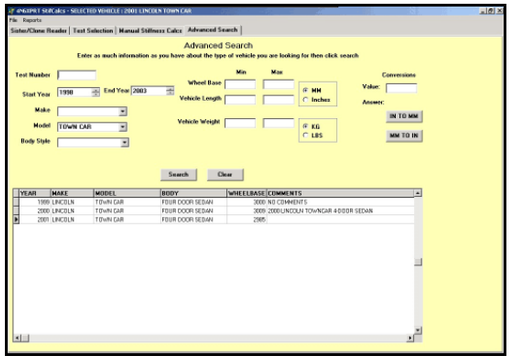
1-800-266-9778

BASIC VEHICLE CRASH TEST SEARCH

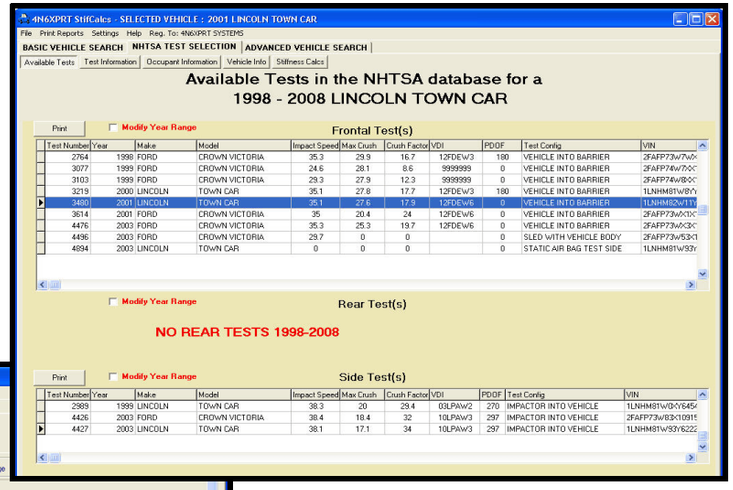
Select the desired vehicle through our **SIMILAR VEHICLE READER**

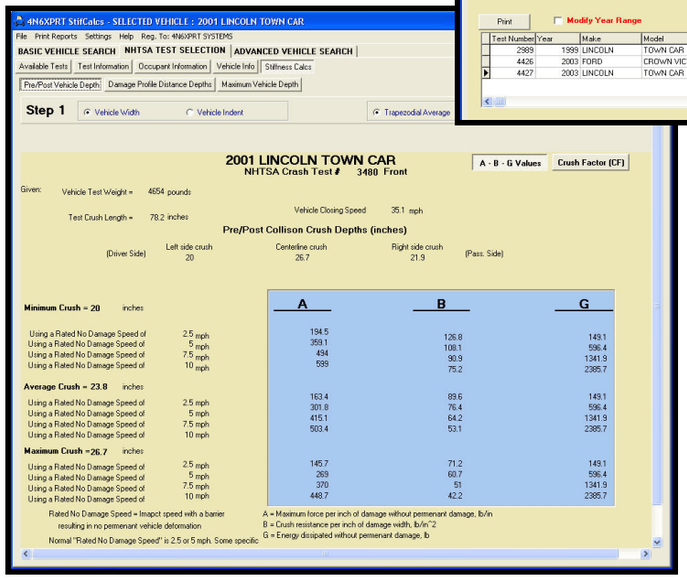
.





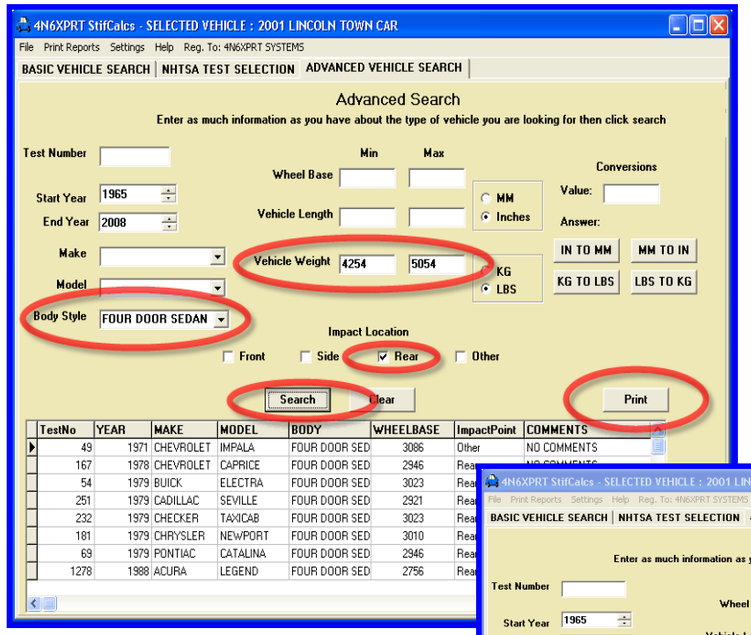
Once the desired vehicle is found/selected, click on the Test Selection tab. From here, select the test to be viewed



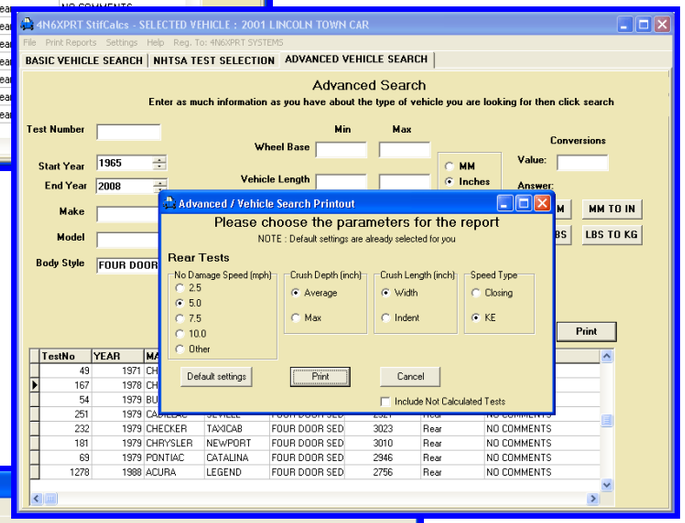


Once a test is selected, the available data for the Test, Occupant(s), Vehicle(s), and Stiffness data can be viewed. The stiffness values are automatically generated from the available test data.

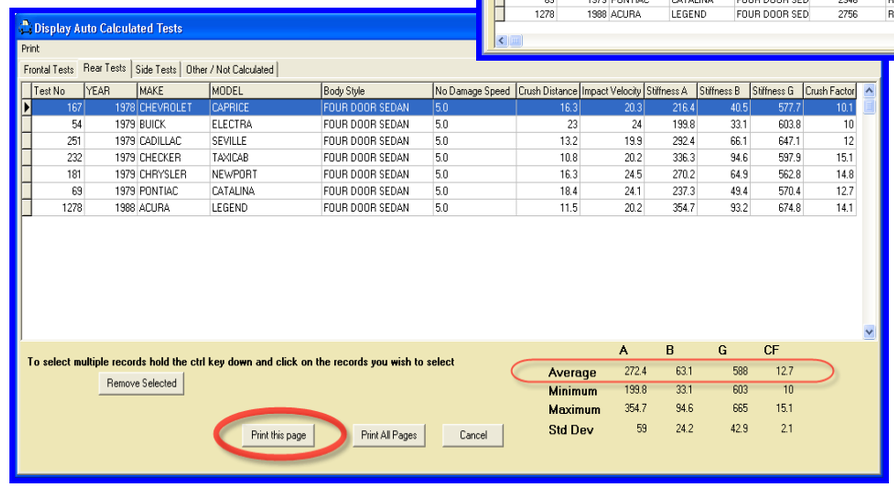
"CLASS" VEHICLE CRASH TEST SEARCH



Using the **ADVANCED SEARCH** tab, you can also create a **CLASS** of vehicle for when there are no tests available for the specific vehicle and test type. To create a class of REAR IMPACT stiffness values for the Lincoln, first set the **weight range**, **body style**, and **test type**, then **search** the database, when you have a sufficient number of tests (that is, more than one or two) that have been found, click the PRINT button:



Now Set your calculation parameters - **No Damage Speed - Crush Depth - Indentation (Crush) Length** - and **Speed**, then view your results, and if desired, print them to hard copy



The program will calculate the **AVERAGE, MINIMUM, MAXIMUM,** and **Standard Deviation** of the Stiffness Values calculated based upon the parameters you set in the preceding step.

4N6XPRT Systems

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8387 University Avenue
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FED Tax ID No.: 95-3121248

Phone: 1- 800-266-9778
Fax: (619) 464-2206

Web Site: ***http://www.4n6xprt.com***

E-Mail: ***4n6@4n6xprt.com***

2014 ORDER FORM

Expert AutoStats® - Expert VIN DeCoder® - 4N6XPRT StifCalcs® - 4N6XPRT BioMeknx™
Expert Qwic Calcs® - Expert TireStuf® - 4N6XPRT Ped & Bike Calcs®

Please use this order form when ordering your programs. Due to conditions and rising costs beyond our control, Shipping & Handling must be paid per the included schedule.

Contact Name: _____
Title: _____
Company/Organization: _____
Street: _____
City: _____ State: _____ Zip: _____
Phone: (_____)_____ FAX: (_____)_____
E-Mail: _____

Expert AutoStats®:	$ 625.00 *	$_____
4N6XPRT BioMeknx™:	$ 495.00 *	$_____
4N6XPRT Ped & Bike Calcs®:	$ 375.00 *	$_____
Expert Qwic Calcs®:	$ 275.00 *	$_____
Expert TireStuf®:	$ 85.00 *	$_____
4N6XPRT StifCalcs®**:**	$ 650.00 *	$_____
Expert VIN DeCoder®:	$ 550.00 *	$_____
		======
	SUB-TOTAL	$_____

Handling **: *(Cash or Check with order = **$5.00**, Credit Card = **$10.00** , Govt. Purchase Order = **$15.00**)* $_____
Notarized Affidavit filing requirement - **$25.00 per required notarized signature**: $_____

Normal delivery will be via email of a download link to a self extracting zip file

☐ - Deliver via electronic download link (e-mail address required) $ 0.00
☐ - Please deliver on USB at an **additional cost of $35.00 per program** $_____

	======
SUB-TOTAL	$_____
California shipping addresses add **8.75%** sales tax	$_____
(*California orders delivered by e-mail attachment **DO NOT** owe sales tax*)	
	======
TOTAL	$_____

Enclosed is:
Check____ Money Order____ Purchase Order____ Credit Card: Visa_____ Master Card_____ American Express_____

Card #_____ Expires_____ SecCode _____
Billing Add. :_____ Billing Zip: _____
Name on Card:_____ Signature: _____

PLEASE NOTE

-- Orders cannot be shipped without correct Shipping & Handling included.
-- California orders cannot be shipped without sales tax included.
-- Written Purchase Orders must be received in office before shipping.

* *Prices are subject to change without notice. Call for Multi-program and package purchase discounts.*
** *Orders will be shipped within 10 working days. Other shipping methods may cost extra. The Handling charge listed is for the first program,* ***add $5.00 per additional program*** *ordered at the same time and shipped to the same address.*

Please make checks, money orders or Purchase Orders Payable to: **4N6XPRT Systems®**
You may call or fax your order to us if paying by credit card.

4N6XPRT Systems

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8387 University Avenue
La Mesa, CA 91942-9342

FED Tax ID No.: 95-3121248

Phone: 1- 800-266-9778
Fax: (619) 464-2206

Web Site: http://www.4n6xprt.com

E-Mail: 4n6@4n6xprt.com

Dear Customer,

Due to the governments desire (both U.S. & California) to "protect us" we will need the following information from you in order to process your credit card(s). Please complete this form and return it with your order.

Card type: Am. Express / Visa / MasterCard
Card Number: _____
Expiration Date (MM/YY): ____/____

←Visa/MasterCard American Express →

Security code (card ID) on back of Visa/MasterCard card or front of American Express Card:

Address for where the **credit card bill is sent**:

_____

*(This is the address number - for instance, ours would be **8387 University Avenue** - that the credit card bill would go to, not where we would send the data or product to)*

City/State/Zip for where the **credit card bill is sent**:

_____

*(- for instance, ours would be **La Mesa, CA 91941** - that the credit card bill would go to, not where we would send the data or product to)*

Authorized signature: _____

We appreciate your cooperation in supplying us with this information and understanding that it is being required of us to obtain the information.

Sincerely,

Daniel W. Vomhof III
General Manager/Technical Support

SERVICE

You may make your request by phone or fax. Our fax machine is on 24 hours, 7 days a week, and can be reached at (619) 464-2206. A request may also be made by e-mail, which reaches us when we are "on the road" as well as in the office..

Upon receiving your request, we will research you request and **fax the information to you at NO ADDITIONAL CHARGE!** Normal response time is one working day or less. Your hard copy will follow in the mail.

Please include the vehicle information on the sample order form when requesting your Individual Vehicle Data Search. Please also be sure to provide a Visa, MasterCard, or American Express number, name as it appears on the card, Expiration date, and the billing address # and Zip.

*Pricing is for multiple vehicles on same Order/Request. Similar Vehicles may be required when it is not possible to determine the exact model of vehicle requested, based upon the information provided.

VIN DeCoding Information

FAX/Order Form

☐ **Expert VIN Decoder & Expert AutoStats**
☐ **NHTSA Crash Test Results**
☐ **BOTH**

Please circle ALL OPTIONS that apply

YEAR & MAKE:

_____

MODEL:_____

If you are requesting
VIN DeCoder & AutoStats
please also provide the following information:

No. of Doors:	2/3/4/5
Body Style:	Coupe/Conv./Sedan/Wagon
SUV & P/U:	4x2 / 4x4 / Dual Rear Wheel
PICKUPS:	Std. / Extra / Super / Crew Cab
	Short Bed / Long Bed
VANS:	Cargo / Passenger
	Short / Long Wheelbase

VIN Information

___	___	___		___	___	___	___	___		___							
1	2	3		4	5	6	7	8		9							
											___	___		___	___	___	___	___	___	___
											10	11		12	13	14	15	16	17

NHTSA Crash Test Information
Impact location - Front / Side / Rear
Impact Speed - Lower / Higher

PAYMENT INFORMATION
Visa/MasterCard / American Express:

_____

Expires: _____ / _____

Name & Address:

_____

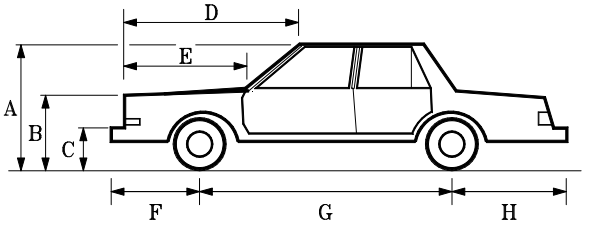
_____

_____

_____

Case Reference Name/Number:_____

Individual Vehicle Data Search Service®



Providing Vehicle dimensional data, VIN DeCoding, and NHTSA Crash Test Results as a service to the Litigation community.

E-Mail: **ivdss@4n6xprt.com**

FAX: (619) 464-2206
Phone: (619) 464-3478 / 1-800-266-9778

4N6XPRT Systems®
Forensic Expert Software
8387 University Avenue, Suite P
La Mesa, CA 91942-9342

Web: http://www.4n6xprt.com

How often have you been confronted with the

following on a Traffic Collision Report - "87 Ford, 4 door, Blue"? We have the answer to the problem of determining WHICH Ford 4 door model this was!

We will DeCode the VIN number and provide you with the information contained within that VIN number

Information generally includes:

Year	OEM Engine
Make	Displacement/Type
Model	Rated Horsepower
Drive Wheels	Rated Torque
Rated Pass. Load	Iginition System
Plant of Manufacture	Fuel Line Pressure

Also (*when provided by VIN*)

Gross Vehicle Weight	Safety Equipment
Transmission	

A DMV search for a vehicle identification from the registration will typically cost less than $10.00 and will give the VIN number, Make, and Year of vehicle. However, to also obtain the vehicle Model requires a "Manual Search" which will typically cost $30.00/vehicle/year searched.

With our service, you will be able to find out the model of vehicle as well as all of the other information mentioned above. This information will be faxed to you, typically in less than one working day, and the hard copy will follow in the mail.

Allow us to help you have all the information you require in your next Accident, Personal Injury, Criminal, Domestic, or Product Liability case.

Individual Vehicle Specifications

Now you can get the Expert AutoStats® data for the vehicles in your case ***QUICKLY, EASILY***, and ***ECONOMICALLY***, instead of guessing, or begging a printout from a friend.

Our vehicle database includes dimensions on over 35,000 Cars, Vans, Lt. Pickups, and Utility Vehicles covering 1945 to the present.

Minimum Vehicle specifications include:

Overall Length	Curb Weight
Overall Width	Weight Distribution
Overall Height	Front/Rear Track
Wheelbase	CG Location

Model yeasr with **N**o **S**ignificant **D**imensional **C**hanges
VIN DeCoding when VIN is provided Information available

Mid-60's to present **also includes** (*when available*)

Fron/Reart Overhang	Bumper Heights
Hood height	Turning Circle
Bumper-to-hood	Ground-to-hood

Dimensions are given in both Imperial and metric (SI) units. Motorcycle specifications will be similar to the Vehicle specifications with appropriate changes where applicable.

While the VIN number contains much information, it does not contain everything needed to identify a particular vehicle in every situation. Therefore, we would appreciate you providing as much of the information on the order form as possible.

If you are not sure of the specific model, we will provide dimensions on the similar model vehicles matching the provided data for a small additional cost per model*.

Individual Vehicle Data Search Service® Charges & Services

Individual Vehicle Specifications

$40.00-First vehicle*, $35.00/Additional Vehicles*,
$20.00/Additional Similar Model*

Medium/Heavy Truck Specifications

$40.00-First vehicle*, $35.00/Additional Vehicles*,
$20.00/Additional Similar Model*

Motorcycle Specifications (1970+)

$40.00-First cycle*, $35.00/Additional cycles*,
$20.00/Additional Similar Model*

NHTSA Crash Test Results

$40.00 per test - Includes A, B, & G values
Calculations are based on the test results

NHTSA Crash Test Results

Test results include: General Test information, Barrier Data when provided, Vehicle Data as reported by the testing organization, Occupant (Dummy) data when provided, and A-B-G Stiffness calculations based on the test results.

You may make your request by phone or fax. Our fax machine is on 24 hours/day and can be reached at:

(619) 464-2206

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Individual Vehicle Specifications

$40.00-First vehicle*, $35.00/Additional Vehicles*, $20.00/Additional Similar Model*

Medium/Heavy Truck Specifications

$40.00-First vehicle*, $35.00/Additional Vehicles*, $20.00/Additional Similar Model*

Motorcycle Specifications (1970+)

$40.00-First cycle*, $35.00/Additional cycles*, $20.00/Additional Similar Model*

NHTSA Crash Test Results

$40.00 per test - Includes A, B, & G values
Calculations are based on the test results

Contact Name & Address:

_____
_____
_____
_____

Phone: (_____) _____
Fax: (_____) _____

PAYMENT INFORMATION
Visa/MasterCard / American Express:

_____
Expires: _____ / _____
Credit Card billing address and Zip:
Address:_____
Zip: _____
Security Code # _____

FAX/Order Form

☐ **Expert VIN Decoder & Expert AutoStats**
☐ **NHTSA Crash Test Results**
☐ **BOTH**

Please circle <u>ALL OPTIONS</u> that apply

YEAR & MAKE:

_____
MODEL: _____

If you are requesting
VIN DeCoder & AutoStats
please also provide:

No. of Doors:	2/3/4/5
Body Style:	Coupe/Conv./Sedan/Wagon
SUV - P/U:	4x2 / 4x4 / Dual Rear Wheel
PICKUPS:	Std. / Extra / Super / Crew Cab Short Bed / Long Bed
VANS:	Cargo / Passenger Short / Long Wheelbase

VIN Information

__	__	__		__	__	__	__	__	__		__		__	__		__	__	__	__	__	__
1	2	3		4	5	6	7	8		9		10	11		12	13	14	15	16	17

NHTSA Crash Test Information

YEAR & MAKE:

_____
MODEL: _____

Impact location - Front / Side / Rear
Impact Speed - Lower / Higher

Case Reference/Number:_____

FAX/Order Form

☐ **Expert VIN Decoder & Expert AutoStats**
☐ **NHTSA Crash Test Results**
☐ **BOTH**

Please circle <u>ALL OPTIONS</u> that apply

YEAR & MAKE:

_____
MODEL: _____

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PICKUPS:	Std. / Extra / Super / Crew Cab Short Bed / Long Bed
VANS:	Cargo / Passenger Short / Long Wheelbase

VIN Information

__	__	__		__	__	__	__	__	__		__		__	__		__	__	__	__	__	__
1	2	3		4	5	6	7	8		9		10	11		12	13	14	15	16	17

NHTSA Crash Test Information

YEAR & MAKE:

_____
MODEL: _____

Impact location - Front / Side / Rear
Impact Speed - Lower / Higher

Case Reference/Number:_____

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Card type: Am. Express / Visa / MasterCard
Card Number: _____
Expiration Date (MM/YY): ____/____

←Visa/MasterCard American Express →

Security code (card ID) on back of Visa/MasterCard card or front of American Express Card:

Address for where the **credit card bill is sent**:

_____

*(This is the address number - for instance, ours would be **8387 University Avenue** - that the credit card bill would go to, not where we would send the data or product to)*

City/State/Zip for where the **credit card bill is sent**:

_____

*(- for instance, ours would be **La Mesa, CA 91941** - that the credit card bill would go to, not where we would send the data or product to)*

Authorized signature: _____

We appreciate your cooperation in supplying us with this information and understanding that it is being required of us to obtain the information.

Sincerely,

Daniel W. Vomhof III
General Manager/Technical Support