*** * * 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 43,000 different vehicles and 203 different manufacturers spanning more than 70 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
La Mesa, CA 91942-9342

(619) 464-3478 / (800) 266-9778 / FAX: (619) 464-2206
http://www.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 3.2.0.1

DeCoded VIN: JTDBT923371010005

Model:	2007 Toyota Yaris 4-Door Sedan
Engine Size:	1.5L / 91cu.in.
Engine Description:	In-line 4 Cylinder with Dual Overhead Cam
Horse Power:	108 @ 5999 rpm
Torque:	105 lb-ft @ 3999 rpm
Injection System:	Electronic Fuel Injection (EFI)
PSI:	44-50 psi
Ignition:	electronic
Manufacturer:	Toyota
Assembly Plant:	Toyota, Japan
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Dual Front Air Bags

The First through Third characters (JTD) indicate a Toyota Car made in Japan

The Fourth character (B) indicate a 4-Door Sedan

The Fifth character (T) indicate the OEM engine: 1.5L / 91cu.in., L4,DOHC

The Sixth and Eighth characters (93) indicate a Yaris

The Seventh character (2) indicate Dual Front Air Bags

The Ninth character (the check digit) is entered as 3.
The VIN appears Valid, the calculated value is 3.

The Tenth character (7) indicate the model year 2007

The Eleventh character (1) indicate the vehicle was made in the assembly plant in Toyota, Japan

The Twelfth through Seventeenth characters (010005) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

PROVIDED BY:

4N6XPRT Systems

8387 University Avenue

La Mesa CA 91941

5/14/2013

2007 TOYOTA YARIS 4 DOOR SEDAN

Curb Weight:	2309 lbs.		1047	kg.
Curb Weight Distribution - Front:	61 %	Rear:	39	%
Gross Vehicle Weight Rating:	3300 lbs.		1497	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	169	14.08	4.29
Wheelbase:	100	8.33	2.54
Front Bumper to Front Axle:	31	2.58	0.79
Front Bumper to Front of Front Well:	17	1.42	0.43
Front Bumper to Front of Hood:	7	0.58	0.18
Front Bumper to Base of Windshield:	36	3.00	0.91
Front Bumper to Top of Windshield:	66	5.50	1.68
Rear Bumper to Rear Axle:	38	3.17	0.97
Rear Bumper to Rear of Rear Well:	23	1.92	0.58
Rear Bumper to Rear of Trunk:	6	0.50	0.15
Rear Bumper to Base of Rear Window:	18	1.50	0.46
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:	57	4.75	1.45
Ground to -			
Front Bumper (Top)	22	1.83	0.56
Headlight - center	29	2.42	0.74
Hood - top front:	33	2.75	0.84
Base of Windshield	39	3.25	0.99
Rear Bumper - top:	24	2.00	0.61
Trunk - top rear:	42	3.50	1.07
Base of Rear Window:	44	3.67	1.12

2007 TOYOTA YARIS 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	52	4.33	1.32
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	42	3.50	1.07
Rear Seat Shoulder Width	50	4.17	1.27
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	36	3.00	0.91

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

Steering Data

Turning Circle (Diameter)	396	33.00	10.06
Steering Ratio:	19.70:1		
Wheel Radius:			
Tire Size (OEM):	P175/65R14		

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

Acceleration:

0 to 30mph	t =	3.3	sec	a =	13.3	ft/sec²	G-force = 0.41
0 to 60mph	t =	10.4	sec	a =	8.5	ft/sec²	G-force = 0.26
45 to 65mph	t =	5.6	sec	a =	5.2	ft/sec²	G-force = 0.16

Transmission Type: 5spd MANUAL

Notes:
Federal Bumper Standard Requirements: 2.5 mph
This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2007 - 2012

2007 TOYOTA YARIS 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.30	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	39.00
Inches in front of rear axle	=	61.00
Inches from side of vehicle	=	33.50
Inches from ground	=	22.37
Inches from front corner	=	77.60
Inches from rear corner	=	104.51
Inches from front bumper	=	70.00
Inches from rear bumper	=	99.00

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1172.27	lb*ft*sec²
Pitch Moment of Inertia	=	1136.91	lb*ft*sec²
Roll Moment of Inertia	=	265.62	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	57.5	deg
Angle Front of Hood to Windshield Base	=	11.7	deg
Angle Front of Hood to Windshield Top	=	20.4	deg
Angle of Windshield	=	28.1	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 independant 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

#5677

2007 TOYOTA YARIS

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **2007 TOYOTA YARIS 4D**

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

Year Range	Make	Model	Body Styles	Wheelbase
2006 - 2010	TOYOTA	YARIS 4D	4D	100.4

Remarks:

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@ssi.com.

Test Information

Test #	5677	NHTSA Test Reference Guide Version #	V5				
Test Date	2006-05-16	Contract #	DTNH22-01-D-12005				
Contract/Study Title	NCAP - 2007 TOYOTA YARIS						
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE DATA						
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	56.3	Km/Hr	34.98	MPH	
Test Performer	MGA RESEARCH						
Test Reference #	BT06051601						
Test Track Surface	CONCRETE	Condition	DRY				
Ambient Temperature	21 C	69.8 F	Total Number of Curves	102			
Data Recorder Type	OTHER	Data Link	OTHER				
Test Commentary	DTS TDAS PRO ON BOARD DAS						

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	0	mm	0	inches
Barrier Shape	LOAD CELL BARRIER					
Barrier Commentary						

2007 TOYOTA YARIS LEFT FRONT SEAT OCCUPANT

Test #	5677		
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	FIRST TECHNOLOGY S/N 066		
Occupant Modification			
Occupant Description			
Occupant Commentary	HEAD TO HEADREST; KNEES TO BOLSTER; RIGHT KNEE TO STEERING COLUMN		

Head

Head to -

Windshielder Header	397	mm	15.6	inches	Head Injury Criteria (HIC)	427	
WindShield	653	mm	25.7	inches	HIC Lower Time Interval (ms)	62.5	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	98.5	
Side Header	202	mm	8.0	inches			
Side Window	302	mm	11.9	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	681	mm	26.8	inches	Arm to Door	100	mm	3.9	inches
Steering Wheel	352	mm	13.9	inches	Hip to Door	143	mm	5.6	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)	45

Lap Belt Peak Load	6935	Newtons	1559.1	pound Force
Shoulder Belt Peak Load	3743	Newtons	841.5	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	139	mm	5.5	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-4893	Newtons	-1100.0	pounds Force
Right Femur Peak Load	-2829	Newtons	-636.0	pounds Force

First Contact Region (Legs): OTHER

Second Contact Region (Legs):

2007 TOYOTA YARIS LEFT FRONT SEAT OCCUPANT

Test #	5677					
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	FIRST TECHNOLOGY S/N 066
Occupant Modification	
Occupant Description	
Occupant Commentary	HEAD TO HEADREST; KNEES TO BOLSTER; RIGHT KNEE TO STEERING COLUMN

Restraints

Restraint # 1	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	PRIMARY
Restraint # 2	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECONDARY

2007 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	5677		
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	FIRST TECHNOLOGY S/N 065		
Occupant Modification			
Occupant Description			
Occupant Commentary	HEAD TO HEADREST; KNEES TO GLOVE BOX		

Head

Head to -

Windshielder Header	381	mm	15.0	inches	Head Injury Criteria (HIC)	485	
WindShield	625	mm	24.6	inches	HIC Lower Time Interval (ms)	62.2	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	91	
Side Header	190	mm	7.5	inches			
Side Window	284	mm	11.2	inches			

Neck to Seatback 0 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	84	mm	3.3	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	136	mm	5.4	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)	48

Lap Belt Peak Load	9815	Newtons	2206.5	pound Force
Shoulder Belt Peak Load	4125	Newtons	927.3	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	-1715	Newtons	-385.5	pounds Force
Right Femur Peak Load	-598	Newtons	-134.4	pounds Force

First Contact Region (Legs): OTHER

Second Contact Region (Legs):

2007 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	5677					
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	FIRST TECHNOLOGY S/N 065
Occupant Modification	
Occupant Description	
Occupant Commentary	HEAD TO HEADREST; KNEES TO GLOVE BOX

Restraints

Restraint # 1	FRONTAL AIRBAG
Mounted	DASH PANEL - TOP
Deployment	DEPLOYED PROPERLY
Restraint Commentary	PRIMARY
Restraint # 2	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECONDARY

Vehicle 1 2007 TOYOTA YARIS

Test #	5677		
VIN	JTDBT923471016797	NHTSA Test Vehicle Number	1
Year	2007	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	TOYOTA	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	YARIS	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	1.5 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary	VEHICLE MAKE: YARIS		

Vehicle Length	4265	mm	167.9	inches	CG behind Front Axle	1046	mm	41.2	inches
Vehicle Width	1695	mm	66.7	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2551	mm	100.4	inches	Total Length of Indentation	1518	mm	59.8	inches
Vehicle Test Weight	1271	KG	2801	pounds	Maximum Static Crush Depth	546	mm	21.5	inches
					Pre-Impact Speed	56	kph	35.0	mph

Vehicle Damage Index: 12FDEW6

Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	290	mm	11.4	inches
DPD 2	448	mm	17.6	inches
DPD 3	509	mm	20.0	inches
DPD 4	527	mm	20.7	inches
DPD 5	311	mm	12.2	inches
DPD 6	-12	mm	-0.5	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	158.9	inches	147.5	inches	11.4	inches
	4036	mm	3746	mm	290	mm
Centerline	167.9	inches	146.4	inches	21.5	inches
	4265	mm	3719	mm	546	mm
Right Bumper Corner	159.2	inches	146.9	inches	12.2	inches
	4043	mm	3732	mm	311	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 2007 TOYOTA YARIS

Test #	5677		
VIN	JTDBT923471016797	NHTSA Test Vehicle Number	1
Year	2007	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	TOYOTA	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	YARIS	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	1.5 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary	VEHICLE MAKE: YARIS		

Vehicle Length	4265	mm	167.9	inches	CG behind Front Axle	1046	mm	41.2	inches
Vehicle Width	1695	mm	66.7	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2551	mm	100.4	inches	Total Length of Indentation	1518	mm	59.8	inches
Vehicle Test Weight	1271	KG	2801	pounds	Maximum Static Crush Depth	546	mm	21.5	inches
					Pre-Impact Speed	56	kph	35.0	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 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	4265	167.9	3719	146.4				
				Engine Block	450	17.7	450	17.7				
4036	158.9	3746	147.5	Front Bumper Corner					4043	159.2	3732	146.9
				Front of Engine	3835	151.0	3464	136.4				
3275	128.9	3356	132.1	Firewall	3300	129.9	0	0.0	3317	130.6	3332	131.2
3054	120.2	3060	120.5	Upper Leading Edge of Door					3058	120.4	3064	120.6
3006	118.3	3011	118.5	Lower Leading Edge of Door					3015	118.7	3012	118.6
2973	117.0	2969	116.9	Bottom of 'A' Post					2968	116.9	2974	117.1
1979	77.9	1964	77.3	Upper Trailing Edge of Door					1982	78.0	1980	78.0
1951	76.8	1950	76.8	Lower Trailing Edge of Door					1954	76.9	1956	77.0
				Steering Column	2595	102.2	2657	104.6				
				Center of Seering Column to 'A' Post (Horizontal)	375	14.8	366	14.4				
				Center of Steering Column to Headliner (Vertical)	445	17.5	475	18.7				

2007 TOYOTA YARIS

NHTSA Crash Test - #5677 - Front Impact

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

Test Vehicle Weight = 2801 pounds
Vehicle Closing Speed = 35.0 mph
Test Crush Length = 66.7 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	11.4	21.5	12.2	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 11.4 inches					316.9
Using a Rated No Damage Speed of	2.5mph	239.7	273.2	105.2	
Using a Rated No Damage Speed of	5.0mph	442.6	232.8	420.7	
Using a Rated No Damage Speed of	7.5mph	608.5	195.6	946.5	
Using a Rated No Damage Speed of	10.0mph	737.5	161.6	1682.7	
Average Crush = 16.7 inches					147.7
Using a Rated No Damage Speed of	2.5mph	163.7	127.3	105.2	
Using a Rated No Damage Speed of	5.0mph	302.1	108.5	420.7	
Using a Rated No Damage Speed of	7.5mph	415.4	91.1	946.5	
Using a Rated No Damage Speed of	10.0mph	503.5	75.3	1682.7	
Maximum Crush = 21.5 inches					89.1
Using a Rated No Damage Speed of	2.5mph	127.1	76.8	105.2	
Using a Rated No Damage Speed of	5.0mph	234.7	65.5	420.7	
Using a Rated No Damage Speed of	7.5mph	322.7	55.0	946.5	
Using a Rated No Damage Speed of	10.0mph	391.1	45.4	1682.7	

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	21.5	33.6	-1.4	-4.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 22.8

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

2007 TOYOTA YARIS

NHTSA Crash Test - #5677 - Front Impact

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

Test Vehicle Weight = 2801 pounds
Vehicle Closing Speed = 35.0 mph
Test Crush Length = 59.8 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	11.4	21.5	12.2	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 11.4 inches					353.9
Using a Rated No Damage Speed of	2.5mph	267.7	305.1	117.4	
Using a Rated No Damage Speed of	5.0mph	494.2	259.9	469.7	
Using a Rated No Damage Speed of	7.5mph	679.5	218.4	1056.9	
Using a Rated No Damage Speed of	10.0mph	823.5	180.5	1878.9	
Average Crush = 16.7 inches					164.9
Using a Rated No Damage Speed of	2.5mph	182.7	142.2	117.4	
Using a Rated No Damage Speed of	5.0mph	337.3	121.1	469.7	
Using a Rated No Damage Speed of	7.5mph	463.8	101.8	1056.9	
Using a Rated No Damage Speed of	10.0mph	562.2	84.1	1878.9	
Maximum Crush = 21.5 inches					99.5
Using a Rated No Damage Speed of	2.5mph	141.9	85.8	117.4	
Using a Rated No Damage Speed of	5.0mph	262.0	73.1	469.7	
Using a Rated No Damage Speed of	7.5mph	360.3	61.4	1056.9	
Using a Rated No Damage Speed of	10.0mph	436.7	50.7	1878.9	

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	21.5	33.6	-1.4	-4.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 22.8

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

2007 TOYOTA YARIS

NHTSA Crash Test - #5677 - Front Impact

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

Test Vehicle Weight = 2801 pounds
Vehicle Closing Speed = 35.0 MPH
Test Crush Length = 66.7 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	11.4	17.6	20.0	20.7	12.2	-0.5	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 11.4 inches					316.9
Using a Rated No Damage Speed of	2.5mph	239.7	273.2	105.2	
Using a Rated No Damage Speed of	5.0mph	442.6	232.8	420.7	
Using a Rated No Damage Speed of	7.5mph	608.5	195.6	946.5	
Using a Rated No Damage Speed of	10.0mph	737.5	161.6	1682.7	
Average Crush = 15.3 inches					175.9
Using a Rated No Damage Speed of	2.5mph	178.6	151.7	105.2	
Using a Rated No Damage Speed of	5.0mph	329.8	129.2	420.7	
Using a Rated No Damage Speed of	7.5mph	453.4	108.6	946.5	
Using a Rated No Damage Speed of	10.0mph	549.5	89.7	1168.3	
Maximum Crush = 20.7 inches					96.1
Using a Rated No Damage Speed of	2.5mph	132.0	82.9	105.2	
Using a Rated No Damage Speed of	5.0mph	243.7	70.6	420.7	
Using a Rated No Damage Speed of	7.5mph	335.1	59.3	946.5	
Using a Rated No Damage Speed of	10.0mph	406.2	49.0	1682.7	

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	20.7	33.0	-2.0	-6.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.6

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

2007 TOYOTA YARIS

NHTSA Crash Test - #5677 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 2801 pounds
Vehicle Closing Speed = 35.0 MPH
Test Crush Length = 59.8 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	11.4	17.6	20.0	20.7	12.2	-0.5	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 11.4 inches					353.9
Using a Rated No Damage Speed of	2.5mph	267.7	305.1	117.4	
Using a Rated No Damage Speed of	5.0mph	494.2	259.9	469.7	
Using a Rated No Damage Speed of	7.5mph	679.5	218.4	1056.9	
Using a Rated No Damage Speed of	10.0mph	823.5	180.5	1878.9	
Average Crush = 15.3 inches					196.5
Using a Rated No Damage Speed of	2.5mph	199.5	169.4	117.4	
Using a Rated No Damage Speed of	5.0mph	368.2	144.3	469.7	
Using a Rated No Damage Speed of	7.5mph	506.3	121.3	1056.9	
Using a Rated No Damage Speed of	10.0mph	613.6	100.2	1304.5	
Maximum Crush = 20.7 inches					107.3
Using a Rated No Damage Speed of	2.5mph	147.4	92.5	117.4	
Using a Rated No Damage Speed of	5.0mph	272.2	78.8	469.7	
Using a Rated No Damage Speed of	7.5mph	374.2	66.2	1056.9	
Using a Rated No Damage Speed of	10.0mph	453.5	54.7	1878.9	

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	20.7	33.0	-2.0	-6.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.6

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: 2006 - 2010
Make: TOYOTA
Model: YARIS 4D

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
6069	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	11.7	24.7	255.4	86.4	377.3	135.8	21.0
6221	2008 TOYOTA YARIS THREE DOOR HATCHBACK	5.0	19.2	34.9	257.7	80.3	413.3	109.4	25.4
5677	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	15.3	35.0	330.3	129.7	420.7	176.5	32.0
	Average (AVG)				**281.1**	**98.8**	**403.8**	**140.6**	**26.1**
	Minimum (MIN)				**255.4**	**80.3**	**377.3**	**109.4**	**21.0**
	Maximum (MAX)				**330.3**	**129.7**	**420.7**	**176.5**	**32.0**
	Standard Deviation (STDev-sample)				**42.6**	**26.9**	**23.2**	**33.8**	**5.6**
	Number of Tests (n)			**3**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2006 - 2010
Make: TOYOTA
Model: YARIS 4D

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
6069	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	13.4	24.7	221.8	65.2	377.3	102.4	18.2
5677	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	21.5	35.0	234.7	65.5	420.7	89.1	22.8
6221	2008 TOYOTA YARIS THREE DOOR HATCHBACK	5.0	20.4	34.9	243.0	71.4	413.3	97.3	24.0
	Average (AVG)				**233.2**	**67.4**	**403.8**	**96.3**	**21.7**
	Minimum (MIN)				**221.8**	**65.2**	**377.3**	**89.1**	**18.2**
	Maximum (MAX)				**243.0**	**71.4**	**420.7**	**102.4**	**24.0**
	Standard Deviation (STDev-sample)				**10.7**	**3.5**	**23.2**	**6.7**	**3.0**
	Number of Tests (n)			**3**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: JTDBT923771047574

Model:	2007 Toyota Yaris 4-Door Sedan
Engine Size:	1.5L / 91cu.in.
Engine Description:	In-line 4 Cylinder with Dual Overhead Cam
Horse Power:	108 @ 5999 rpm
Torque:	105 lb-ft @ 3999 rpm
Injection System:	Electronic Fuel Injection (EFI)
PSI:	44-50 psi
Ignition:	electronic
Manufacturer:	Toyota
Assembly Plant:	Toyota, Japan
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Dual Front Air Bags

The First through Third characters (JTD) indicate a Toyota Car made in Japan

The Fourth character (B) indicate a 4-Door Sedan

The Fifth character (T) indicate the OEM engine: 1.5L / 91cu.in., L4,DOHC

The Sixth and Eighth characters (93) indicate a Yaris

The Seventh character (2) indicate Dual Front Air Bags

The Ninth character (the check digit) is entered as 7.
The VIN appears Valid, the calculated value is 7.

The Tenth character (7) indicate the model year 2007

The Eleventh character (1) indicate the vehicle was made in the assembly plant in Toyota, Japan

The Twelfth through Seventeenth characters (047574) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

PROVIDED BY:

4N6XPRT Systems

8387 University Avenue

La Mesa CA 91941

5/14/2013

2007 TOYOTA YARIS 4 DOOR SEDAN

Curb Weight:	2309 lbs.		1047	kg.
Curb Weight Distribution - Front:	61 %	Rear:	39	%
Gross Vehicle Weight Rating:	3300 lbs.		1497	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	169	14.08	4.29
Wheelbase:	100	8.33	2.54
Front Bumper to Front Axle:	31	2.58	0.79
Front Bumper to Front of Front Well:	17	1.42	0.43
Front Bumper to Front of Hood:	7	0.58	0.18
Front Bumper to Base of Windshield:	36	3.00	0.91
Front Bumper to Top of Windshield:	66	5.50	1.68
Rear Bumper to Rear Axle:	38	3.17	0.97
Rear Bumper to Rear of Rear Well:	23	1.92	0.58
Rear Bumper to Rear of Trunk:	6	0.50	0.15
Rear Bumper to Base of Rear Window:	18	1.50	0.46
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:	57	4.75	1.45
Ground to -			
Front Bumper (Top)	22	1.83	0.56
Headlight - center	29	2.42	0.74
Hood - top front:	33	2.75	0.84
Base of Windshield	39	3.25	0.99
Rear Bumper - top:	24	2.00	0.61
Trunk - top rear:	42	3.50	1.07
Base of Rear Window:	44	3.67	1.12

2007 TOYOTA YARIS 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	52	4.33	1.32
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	42	3.50	1.07
Rear Seat Shoulder Width	50	4.17	1.27
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	36	3.00	0.91

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

Steering Data

Turning Circle (Diameter)	396	33.00	10.06
Steering Ratio:	19.70:1		
Wheel Radius:			
Tire Size (OEM):	P175/65R14		

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

Acceleration:

0 to 30mph	t =	3.3	sec	a =	13.3	ft/sec²	G-force = 0.41
0 to 60mph	t =	10.4	sec	a =	8.5	ft/sec²	G-force = 0.26
45 to 65mph	t =	5.6	sec	a =	5.2	ft/sec²	G-force = 0.16

Transmission Type: 5spd MANUAL

Notes:
Federal Bumper Standard Requirements: 2.5 mph
This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2007 - 2012

2007 TOYOTA YARIS 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.30	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	39.00
Inches in front of rear axle	=	61.00
Inches from side of vehicle	=	33.50
Inches from ground	=	22.37
Inches from front corner	=	77.60
Inches from rear corner	=	104.51
Inches from front bumper	=	70.00
Inches from rear bumper	=	99.00

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1172.27	lb*ft*sec²
Pitch Moment of Inertia	=	1136.91	lb*ft*sec²
Roll Moment of Inertia	=	265.62	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	57.5	deg
Angle Front of Hood to Windshield Base	=	11.7	deg
Angle Front of Hood to Windshield Top	=	20.4	deg
Angle of Windshield	=	28.1	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 independant 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

#6221

2008 TOYOTA YARIS

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **2007 TOYOTA YARIS 4D**

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

Year Range	Make	Model	Body Styles	Wheelbase
2006 - 2010	TOYOTA	YARIS 4D	4D	100.4

Remarks:

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@ssi.com.

Test Information

Test #	6221	NHTSA Test Reference Guide Version #	V5			
Test Date	2007-10-10	Contract #	DTNH22-06-D-00028			
Contract/Study Title	NCAP - 2008 TOYOTA YARIS 3-DOOR LIFTBACK					
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE DATA					
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	56.2	Km/Hr	34.92	MPH
Test Performer	MGA RESEARCH					
Test Reference #	BT07101001					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	21 C	69.8 F	Total Number of Curves	132		
Data Recorder Type	OTHER	Data Link	OTHER			
Test Commentary	DTS TDAS PRO ON BOARD DAS					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	0	mm	0 inches
Barrier Shape	LOAD CELL BARRIER				
Barrier Commentary					

2008 TOYOTA YARIS LEFT FRONT SEAT OCCUPANT

Test #	6221		
Vehicle #	1	Sex	MALE
Location	LEFT FRONT SEAT	Age	0
Position	FORWARD OF 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	FIRST TECHNOLOGY S/N 065		
Occupant Modification			
Occupant Description			
Occupant Commentary	HEAD TO HEADREST		

Head

Head to -

Windshielder Header	355	mm	14.0	inches	Head Injury Criteria (HIC)	390	
WindShield	641	mm	25.2	inches	HIC Lower Time Interval (ms)	60.4	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	96.4	
Side Header	214	mm	8.4	inches			
Side Window	321	mm	12.6	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	644	mm	25.4	inches	Arm to Door	96	mm	3.8	inches
Steering Wheel	317	mm	12.5	inches	Hip to Door	138	mm	5.4	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)	43

Lap Belt Peak Load	6545	Newtons	1471.4	pound Force
Shoulder Belt Peak Load	4588	Newtons	1031.4	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	151	mm	5.9	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-6035	Newtons	-1356.7	pounds Force
Right Femur Peak Load	-5327	Newtons	-1197.6	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2008 TOYOTA YARIS LEFT FRONT SEAT OCCUPANT

Test #	6221					
Vehicle #	1	Sex	MALE			
Location	LEFT FRONT SEAT	Age	0			
Position	FORWARD OF 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	FIRST TECHNOLOGY S/N 065
Occupant Modification	
Occupant Description	
Occupant Commentary	HEAD TO HEADREST

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	PRIMARY
Restraint # 2	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECONDARY

2008 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	6221		
Vehicle #	1	Sex	MALE
Location	RIGHT FRONT SEAT	Age	0
Position	FORWARD OF 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	FIRST TECHNOLOGY S/N 066		
Occupant Modification			
Occupant Description			
Occupant Commentary	HEAD TO HEADREST; KNEES TO GLOVEBOX		

Head

Head to -

Windshielder Header	377	mm	14.8	inches	Head Injury Criteria (HIC)	559	
WindShield	651	mm	25.6	inches	HIC Lower Time Interval (ms)	61.6	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	86.3	
Side Header	211	mm	8.3	inches			
Side Window	322	mm	12.7	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	527	mm	20.7	inches	Arm to Door	136	mm	5.4	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	139	mm	5.5	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)	42

Lap Belt Peak Load	8111	Newtons	1823.4	pound Force
Shoulder Belt Peak Load	4525	Newtons	1017.3	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	151	mm	5.9	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-5222	Newtons	-1174.0	pounds Force
Right Femur Peak Load	-599	Newtons	-134.7	pounds Force

First Contact Region (Legs): OTHER

Second Contact Region (Legs):

2008 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	6221					
Vehicle #	1	Sex	MALE			
Location	RIGHT FRONT SEAT	Age	0			
Position	FORWARD OF 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	FIRST TECHNOLOGY S/N 066
Occupant Modification	
Occupant Description	
Occupant Commentary	HEAD TO HEADREST; KNEES TO GLOVEBOX

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	PRIMARY
Restraint # 2	FRONTAL AIRBAG
Mounted	DASH PANEL - TOP
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECONDARY

2008 TOYOTA YARIS RIGHT REAR SEAT OCCUPANT

Test #	6221		
Vehicle #	1	Sex	NOT APPLICABLE
Location	RIGHT REAR SEAT	Age	0
Position	NON-ADJUSTABLE SEAT	Height	0 mm 0.0 inches
Type	CRABI	Weight	0.0 kg 0 pounds
Size	12 MONTH OLD CHILD		
Calibration Method	PART 572		
Occupant Manufacturer	FIRST TECHNOLOGY S/N 093		
Occupant Modification			
Occupant Description			
Occupant Commentary	HEAD TO HEADREST		

Head

Head to -

Windshielder Header	0	mm	0.0	inches	Head Injury Criteria (HIC)	1391	
WindShield	0	mm	0.0	inches	HIC Lower Time Interval (ms)	54.3	
Seatback	507	mm	20.0	inches	HIC Upper Time Interval (ms)	90.3	
Side Header	0	mm	0.0	inches			
Side Window	357	mm	14.1	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	242	mm	9.5	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	281	mm	11.1	inches
Seatback	402	mm	15.8	inches					
Chest Severity Index	0				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	61			
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	172	mm	6.8	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)	SEAT BACK								
Second Contact Region (Legs)									

2008 TOYOTA YARIS RIGHT REAR SEAT OCCUPANT

Test #	6221					
Vehicle #	1	Sex	NOT APPLICABLE			
Location	RIGHT REAR SEAT	Age	0			
Position	NON-ADJUSTABLE SEAT	Height	0	mm	0.0	inches
Type	CRABI	Weight	0.0	kg	0	pounds
Size	12 MONTH OLD CHILD					

Calibration Method	PART 572
Occupant Manufacturer	FIRST TECHNOLOGY S/N 093
Occupant Modification	
Occupant Description	
Occupant Commentary	HEAD TO HEADREST

Restraints

Restraint # 1	INFANT SAFETY SEAT
Mounted	LATCH - LOWER ANCHORAGES NO TOP TETHER
Deployment	NOT APPLICABLE
Restraint Commentary	PRIMARY - GRACO SNUGRIDE
Restraint # 2	5 POINT BELT
Mounted	CHILD SEAT
Deployment	NOT APPLICABLE
Restraint Commentary	SECONDARY - GRACO SNUGRIDE

2008 TOYOTA YARIS LEFT REAR SEAT OCCUPANT

Test #	6221		
Vehicle #	1	Sex	NOT APPLICABLE
Location	LEFT REAR SEAT	Age	0
Position	NON-ADJUSTABLE SEAT	Height	0 mm 0.0 inches
Type	CRABI	Weight	0.0 kg 0 pounds
Size	12 MONTH OLD CHILD		
Calibration Method	PART 572		
Occupant Manufacturer	FIRST TECHNOLOGY S/N 090		
Occupant Modification			
Occupant Description			
Occupant Commentary			

Head

Head to -

Windshielder Header	0	mm	0.0	inches	Head Injury Criteria (HIC)	1487	
WindShield	0	mm	0.0	inches	HIC Lower Time Interval (ms)	49.9	
Seatback	451	mm	17.8	inches	HIC Upper Time Interval (ms)	85.9	
Side Header	0	mm	0.0	inches			
Side Window	333	mm	13.1	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	233	mm	9.2	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	287	mm	11.3	inches
Seatback	352	mm	13.9	inches					
Chest Severity Index	0				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	59			
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	163	mm	6.4	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)									

2008 TOYOTA YARIS LEFT REAR SEAT OCCUPANT

Test #	6221					
Vehicle #	1		Sex	NOT APPLICABLE		
Location	LEFT REAR SEAT		Age	0		
Position	NON-ADJUSTABLE SEAT		Height	0	mm 0.0	inches
Type	CRABI		Weight	0.0	kg 0	pounds
Size	12 MONTH OLD CHILD					

Calibration Method	PART 572
Occupant Manufacturer	FIRST TECHNOLOGY S/N 090
Occupant Modification	
Occupant Description	
Occupant Commentary	

Restraints

Restraint # 1	INFANT SAFETY SEAT
Mounted	LATCH - LOWER ANCHORAGES NO TOP TETHER
Deployment	NOT APPLICABLE
Restraint Commentary	PRIMARY - EVENFLO EMBRACE
Restraint # 2	5 POINT BELT
Mounted	CHILD SEAT
Deployment	NOT APPLICABLE
Restraint Commentary	SECONDARY - EVENFLO EMBRACE

Vehicle 1 2008 TOYOTA YARIS

Test #	6221		
VIN	JTDJT923285140508	NHTSA Test Vehicle Number	1
Year	2008	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	TOYOTA	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	YARIS	Steering Column Collapse Mechanism	UNKNOWN
Body	THREE DOOR HATCHBACK		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	1.5 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary	VEHICLE MODEL: YARIS		

Vehicle Length	3641	mm	143.3	inches	CG behind Front Axle	1009	mm	39.7	inches
Vehicle Width	1690	mm	66.5	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2463	mm	97.0	inches	Total Length of Indentation	1164	mm	45.8	inches
Vehicle Test Weight	1245	KG	2744	pounds	Maximum Static Crush Depth	517	mm	20.4	inches
					Pre-Impact Speed	56	kph	34.9	mph

Vehicle Damage Index: 12FDEW6

Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	431	mm	17.0	inches
DPD 2	491	mm	19.3	inches
DPD 3	517	mm	20.4	inches
DPD 4	507	mm	20.0	inches
DPD 5	497	mm	19.6	inches
DPD 6	421	mm	16.6	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	139.3	inches	122.3	inches	17.0	inches
	3538	mm	3107	mm	431	mm
Centerline	143.3	inches	123.1	inches	20.2	inches
	3641	mm	3128	mm	513	mm
Right Bumper Corner	138.9	inches	122.3	inches	16.6	inches
	3528	mm	3106	mm	422	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 2008 TOYOTA YARIS

Test #	6221		
VIN	JTDJT923285140508	NHTSA Test Vehicle Number	1
Year	2008	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	TOYOTA	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	YARIS	Steering Column Collapse Mechanism	UNKNOWN
Body	THREE DOOR HATCHBACK		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	1.5 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary	VEHICLE MODEL: YARIS		

Vehicle Length	3641	mm	143.3	inches	CG behind Front Axle	1009	mm	39.7	inches
Vehicle Width	1690	mm	66.5	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2463	mm	97.0	inches	Total Length of Indentation	1164	mm	45.8	inches
Vehicle Test Weight	1245	KG	2744	pounds	Maximum Static Crush Depth	517	mm	20.4	inches
					Pre-Impact Speed	56	kph	34.9	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 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	3641	143.3	3128	123.1				
				Engine Block	458	18.0	459	18.1				
3538	139.3	3107	122.3	Front Bumper Corner					3528	138.9	3106	122.3
				Front of Engine	3252	128.0	2980	117.3				
2926	115.2	2827	111.3	Firewall					2923	115.1	2854	112.4
					2847	112.1	0	0.0				
2488	98.0	2495	98.2	Upper Leading Edge of Door					2485	97.8	2474	97.4
2450	96.5	2443	96.2	Lower Leading Edge of Door					2453	96.6	2443	96.2
2449	96.4	2434	95.8	Bottom of 'A' Post					2446	96.3	2432	95.7
1252	49.3	1276	50.2	Upper Trailing Edge of Door					1249	49.2	1259	49.6
1314	51.7	1312	51.7	Lower Trailing Edge of Door					1304	51.3	1294	50.9
				Steering Column	2068	81.4	2161	85.1				
				Center of Seering Column to 'A' Post (Horizontal)	400	15.7	380	15.0				
				Center of Steering Column to Headliner (Vertical)	450	17.7	462	18.2				

2008 TOYOTA YARIS

NHTSA Crash Test - #6221 - Front Impact

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

Test Vehicle Weight = 2744 pounds
Vehicle Closing Speed = 34.9 mph
Test Crush Length = 66.5 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	17.0	20.2	16.6	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 16.6 inches					146.3
Using a Rated No Damage Speed of	2.5mph	161.4	126.1	103.3	
Using a Rated No Damage Speed of	5.0mph	298.0	107.4	413.3	
Using a Rated No Damage Speed of	7.5mph	409.6	90.2	929.9	
Using a Rated No Damage Speed of	10.0mph	496.4	74.5	1653.2	
Average Crush = 18.5 inches					117.8
Using a Rated No Damage Speed of	2.5mph	144.9	101.5	103.3	
Using a Rated No Damage Speed of	5.0mph	267.4	86.5	413.3	
Using a Rated No Damage Speed of	7.5mph	367.6	72.6	929.9	
Using a Rated No Damage Speed of	10.0mph	445.4	60.0	1653.2	
Maximum Crush = 20.2 inches					98.8
Using a Rated No Damage Speed of	2.5mph	132.7	85.2	103.3	
Using a Rated No Damage Speed of	5.0mph	244.9	72.5	413.3	
Using a Rated No Damage Speed of	7.5mph	336.6	60.9	929.9	
Using a Rated No Damage Speed of	10.0mph	407.9	50.3	1653.2	

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	20.2	32.6	-2.4	-7.2

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 24.1

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

2008 TOYOTA YARIS

NHTSA Crash Test - #6221 - Front Impact

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

Test Vehicle Weight = 2744 pounds
Vehicle Closing Speed = 34.9 mph
Test Crush Length = 45.8 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	17.0	20.2	16.6	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 16.6 inches					212.4
Using a Rated No Damage Speed of	2.5mph	234.4	183.1	150.0	
Using a Rated No Damage Speed of	5.0mph	432.6	156.0	600.1	
Using a Rated No Damage Speed of	7.5mph	594.7	131.0	1350.1	
Using a Rated No Damage Speed of	10.0mph	720.7	108.2	2400.2	
Average Crush = 18.5 inches					171.0
Using a Rated No Damage Speed of	2.5mph	210.3	147.4	150.0	
Using a Rated No Damage Speed of	5.0mph	388.2	125.6	600.1	
Using a Rated No Damage Speed of	7.5mph	533.6	105.5	1350.1	
Using a Rated No Damage Speed of	10.0mph	646.7	87.1	2400.2	
Maximum Crush = 20.2 inches					143.5
Using a Rated No Damage Speed of	2.5mph	192.6	123.7	150.0	
Using a Rated No Damage Speed of	5.0mph	355.5	105.3	600.1	
Using a Rated No Damage Speed of	7.5mph	488.7	88.5	1350.1	
Using a Rated No Damage Speed of	10.0mph	592.2	73.1	2400.2	

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	20.2	32.6	-2.4	-7.2

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 24.1

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

2008 TOYOTA YARIS

NHTSA Crash Test - #6221 - Front Impact

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

Test Vehicle Weight = 2744 pounds
Vehicle Closing Speed = 34.9 MPH
Test Crush Length = 66.5 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	17.0	19.3	20.4	20.0	19.6	16.6	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 16.6 inches					146.3
Using a Rated No Damage Speed of	2.5mph	161.4	126.1	103.3	
Using a Rated No Damage Speed of	5.0mph	298.0	107.4	413.3	
Using a Rated No Damage Speed of	7.5mph	409.6	90.2	929.9	
Using a Rated No Damage Speed of	10.0mph	496.4	74.5	1653.2	
Average Crush = 19.2 inches					109.4
Using a Rated No Damage Speed of	2.5mph	139.6	94.3	103.3	
Using a Rated No Damage Speed of	5.0mph	257.6	80.3	413.3	
Using a Rated No Damage Speed of	7.5mph	354.2	67.4	929.9	
Using a Rated No Damage Speed of	10.0mph	429.2	55.7	1146.8	
Maximum Crush = 20.4 inches					96.9
Using a Rated No Damage Speed of	2.5mph	131.4	83.5	103.3	
Using a Rated No Damage Speed of	5.0mph	242.5	71.1	413.3	
Using a Rated No Damage Speed of	7.5mph	333.3	59.7	929.9	
Using a Rated No Damage Speed of	10.0mph	403.9	49.3	1653.2	

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	20.4	32.7	-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

2008 TOYOTA YARIS

NHTSA Crash Test - #6221 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 2744 pounds
Vehicle Closing Speed = 34.9 MPH
Test Crush Length = 45.8 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	17.0	19.3	20.4	20.0	19.6	16.6	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 16.6 inches					212.4
Using a Rated No Damage Speed of	2.5mph	234.4	183.1	150.0	
Using a Rated No Damage Speed of	5.0mph	432.6	156.0	600.1	
Using a Rated No Damage Speed of	7.5mph	594.7	131.0	1350.1	
Using a Rated No Damage Speed of	10.0mph	720.7	108.2	2400.2	
Average Crush = 19.2 inches					158.8
Using a Rated No Damage Speed of	2.5mph	202.7	136.9	150.0	
Using a Rated No Damage Speed of	5.0mph	374.0	116.6	600.1	
Using a Rated No Damage Speed of	7.5mph	514.2	97.9	1350.1	
Using a Rated No Damage Speed of	10.0mph	623.1	80.9	1665.1	
Maximum Crush = 20.4 inches					140.7
Using a Rated No Damage Speed of	2.5mph	190.7	121.2	150.0	
Using a Rated No Damage Speed of	5.0mph	352.0	103.3	600.1	
Using a Rated No Damage Speed of	7.5mph	483.9	86.7	1350.1	
Using a Rated No Damage Speed of	10.0mph	586.4	71.6	2400.2	

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	20.4	32.7	-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: 2006 - 2010
Make: TOYOTA
Model: YARIS 4D

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
6069	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	11.7	24.7	255.4	86.4	377.3	135.8	21.0
6221	2008 TOYOTA YARIS THREE DOOR HATCHBACK	5.0	19.2	34.9	257.7	80.3	413.3	109.4	25.4
5677	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	15.3	35.0	330.3	129.7	420.7	176.5	32.0
	Average (AVG)				**281.1**	**98.8**	**403.8**	**140.6**	**26.1**
	Minimum (MIN)				**255.4**	**80.3**	**377.3**	**109.4**	**21.0**
	Maximum (MAX)				**330.3**	**129.7**	**420.7**	**176.5**	**32.0**
	Standard Deviation (STDev-sample)				**42.6**	**26.9**	**23.2**	**33.8**	**5.6**
	Number of Tests (n)			**3**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2006 - 2010
Make: TOYOTA
Model: YARIS 4D

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
6069	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	13.4	24.7	221.8	65.2	377.3	102.4	18.2
5677	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	21.5	35.0	234.7	65.5	420.7	89.1	22.8
6221	2008 TOYOTA YARIS THREE DOOR HATCHBACK	5.0	20.4	34.9	243.0	71.4	413.3	97.3	24.0
	Average (AVG)				**233.2**	**67.4**	**403.8**	**96.3**	**21.7**
	Minimum (MIN)				**221.8**	**65.2**	**377.3**	**89.1**	**18.2**
	Maximum (MAX)				**243.0**	**71.4**	**420.7**	**102.4**	**24.0**
	Standard Deviation (STDev-sample)				**10.7**	**3.5**	**23.2**	**6.7**	**3.0**
	Number of Tests (n)			**3**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 2FAFP72V17X147842

Model:	2007 Ford Crown Victoria 4 door Sedan
Engine Size:	4.6L / 281 cu.in.
Engine Description:	V8 Cylinder with Dual Overhead Cam
Horse Power:	275 @ 5750rpm
Torque:	275 lb-ft @ 4750rpm
Injection System:	Sequential Fuel Injection (SFI)
PSI:	N/A
Ignition:	electronic
Manufacturer:	Ford
Assembly Plant:	St. Thomas, Ontario
Drive Wheels:	This is a Rear Wheel Drive vehicle w/ Manual Seatbelts + Driver/Passenger Front Air Bags

The First through Third characters (2FA) indicate a Ford Passenger Car made in Canada

The Fourth character (F) indicate Manual Seatbelts + Driver/Passenger Front Air Bags

The Fifth through Seventh characters (P72) indicate a Crown Victoria and a Commercial series and a 4 door Sedan

The Eighth character (V) indicate the OEM engine: 4.6L / 281 cu.in., V8, DOHC

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

The Tenth character (7) indicate the model year 2007

The Eleventh character (X) indicate the vehicle was made in the assembly plant in St. Thomas, Ontario

The Twelfth through Seventeenth characters (147842) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/14/2013

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Curb Weight:	4057 lbs.		1840	kg.
Curb Weight Distribution - Front:	56 %	Rear:	44	%
Gross Vehicle Weight Rating:	5500 lbs.		2495	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	REAR			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	212	17.67	5.38
Wheelbase:	115	9.58	2.92
Front Bumper to Front Axle:	43	3.58	1.09
Front Bumper to Front of Front Well:	26	2.17	0.66
Front Bumper to Front of Hood:	8	0.67	0.20
Front Bumper to Base of Windshield:	65	5.42	1.65
Front Bumper to Top of Windshield:	91	7.58	2.31
Rear Bumper to Rear Axle:	54	4.50	1.37
Rear Bumper to Rear of Rear Well:	38	3.17	0.97
Rear Bumper to Rear of Trunk:	8	0.67	0.20
Rear Bumper to Base of Rear Window:	38	3.17	0.97
Width Dimensions			
Maximum Width:	78	6.50	1.98
Front Track:	63	5.25	1.60
Rear Track:	66	5.50	1.68
Vertical Dimensions			
Height:	57	4.75	1.45
Ground to -			
Front Bumper (Top)	23	1.92	0.58
Headlight - center	27	2.25	0.69
Hood - top front:	31	2.58	0.79
Base of Windshield	39	3.25	0.99
Rear Bumper - top:	25	2.08	0.64
Trunk - top rear:	39	3.25	0.99
Base of Rear Window:	40	3.33	1.02

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	61	5.08	1.55
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	60	5.00	1.52
Rear Seat to Headliner	38	3.17	0.97
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	40.00	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 = 140.0 ft t = 3.2 sec a = -27.6 ft/sec² G-force = -0.86

Acceleration:

0 to 30mph	t =	2.8	sec	a =	15.7	ft/sec²	G-force = 0.49
0 to 60mph	t =	8.0	sec	a =	11.0	ft/sec²	G-force = 0.34
45 to 65mph	t =	5.1	sec	a =	5.8	ft/sec²	G-force = 0.18

Transmission Type: 4spd AUTOMATIC

Notes:
Federal Bumper Standard Requirements: 2.5 mph
This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2003 - 2009

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.44	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	50.60
Inches in front of rear axle	=	64.40
Inches from side of vehicle	=	39.00
Inches from ground	=	22.37
Inches from front corner	=	101.40
Inches from rear corner	=	124.66
Inches from front bumper	=	93.60
Inches from rear bumper	=	118.40

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2972.71	lb*ft*sec²
Pitch Moment of Inertia	=	2867.43	lb*ft*sec²
Roll Moment of Inertia	=	580.26	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	45.0	deg
Angle Front of Hood to Windshield Base	=	8.0	deg
Angle Front of Hood to Windshield Top	=	16.1	deg
Angle of Windshield	=	31.6	deg
Angle of Steering Tires at Max Turn	=	27.5	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 independant 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

#3480

2001 LINCOLN TOWN CAR

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **2007 FORD CROWN VICTORIA**

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

Year Range	Make	Model	Body Styles	Wheelbase
1998 - 2011	LINCOLN	TOWN CAR	2D, 4D	117.4
Remarks: Could use Crown Victoria/Grand Marquis - same basic RWD Chassis, longer WB				
2003 - 2010	FORD	CROWN VICTORIA	4D	114.7, 133
Remarks: REVISED "STIFFER FRAME"				
2003 - 2010	MERCURY	GRAND MARQUIS	2D, 4D, SW	114.7
Remarks: ALSO MARAUDER				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	**3480**	NHTSA Test Reference Guide Version #	**V5**				
Test Date	**2000-11-09**	Contract #					
Contract/Study Title	**OPTIONAL NCAP - 2001 LINCOLN TOWNCAR 4 DOOR SEDAN**						
Test Objective(s)	**VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE 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	**56.5**	Km/Hr	**35.11**	MPH	
Test Performer	**MGA RESEARCH**						
Test Reference #	**BT00110901**						
Test Track Surface	**CONCRETE**	Condition	**WET**				
Ambient Temperature	**21** C	**69.8** F	Total Number of Curves	**97**			
Data Recorder Type	**OTHER**	Data Link	**OTHER**				
Test Commentary	**EME ON BOARD DAS 3200**						

Fixed Barrier Information

Barrier Type	**RIGID**	Pole Barrier Diameter	**0**	mm	**0**	inches
Barrier Shape	**LOAD CELL BARRIER**					
Barrier Commentary						

2001 LINCOLN TOWN CAR LEFT FRONT SEAT OCCUPANT

Test #	3480		
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	FIRST TECHNOLOGY S/N 66		
Occupant Modification			
Occupant Description			
Occupant Commentary	HEAD TO HEADREST		

Head

Head to -

Windshielder Header	343	mm	13.5	inches	Head Injury Criteria (HIC)	425	
WindShield	568	mm	22.4	inches	HIC Lower Time Interval (ms)	75	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	111	
Side Header	246	mm	9.7	inches			
Side Window	350	mm	13.8	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	532	mm	20.9	inches	Arm to Door	124	mm	4.9	inches
Steering Wheel	286	mm	11.3	inches	Hip to Door	156	mm	6.1	inches
Seatback	0	mm	0.0	inches					

Chest Severity Index	359	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	34.7

Lap Belt Peak Load	3302	Newtons	742.3	pound Force
Shoulder Belt Peak Load	4996	Newtons	1123.2	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): AIR BAG

Legs

Knees to Dash	151	mm	5.9	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-4319	Newtons	-971.0	pounds Force
Right Femur Peak Load	-2825	Newtons	-635.1	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2001 LINCOLN TOWN CAR LEFT FRONT SEAT OCCUPANT

Test #	3480					
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	FIRST TECHNOLOGY S/N 66
Occupant Modification	
Occupant Description	
Occupant Commentary	HEAD TO HEADREST

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	NOT APPLICABLE
Restraint Commentary	PRIMARY
Restraint # 2	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECONDARY

2001 LINCOLN TOWN CAR RIGHT FRONT SEAT OCCUPANT

Test #	3480		
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	FIRST TECHNOLOGY S/N 65		
Occupant Modification			
Occupant Description			
Occupant Commentary	HEAD TO HEADREST		

Head

Head to -

Windshielder Header	231	mm	9.1	inches	Head Injury Criteria (HIC)	472	
WindShield	551	mm	21.7	inches	HIC Lower Time Interval (ms)	72	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	108	
Side Header	206	mm	8.1	inches			
Side Window	350	mm	13.8	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	538	mm	21.2	inches	Arm to Door	129	mm	5.1	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	132	mm	5.2	inches
Seatback	0	mm	0.0	inches					

Chest Severity Index	359	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	35.6

Lap Belt Peak Load	4483	Newtons	1007.8	pound Force
Shoulder Belt Peak Load	4914	Newtons	1104.7	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): AIR BAG

Legs

Knees to Dash	117	mm	4.6	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-2107	Newtons	-473.7	pounds Force
Right Femur Peak Load	-1967	Newtons	-442.2	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2001 LINCOLN TOWN CAR RIGHT FRONT SEAT OCCUPANT

Test #	3480					
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	FIRST TECHNOLOGY S/N 65
Occupant Modification	
Occupant Description	
Occupant Commentary	HEAD TO HEADREST

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	NOT APPLICABLE
Restraint Commentary	PRIMARY
Restraint # 2	FRONTAL AIRBAG
Mounted	DASH PANEL - MID
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECONDARY

Vehicle 1 2001 LINCOLN TOWN CAR

Test #	3480		
VIN	1LNHM82W11Y633287	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	LINCOLN	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	TOWN CAR	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	V8 INLINE FRONT		
Displacement	4.6 Liter	Transmission	AUTOMATIC - REAR WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary			

Vehicle Length	5389	mm	212.2	inches	CG behind Front Axle	1409	mm	55.5	inches
Vehicle Width	1986	mm	78.2	inches	Center of Damage to CG Axis	135	mm	5.3	inches
Vehicle Wheelbase	2985	mm	117.5	inches	Total Length of Indentation	1620	mm	63.8	inches
Vehicle Test Weight	2111	KG	4653	pounds	Maximum Static Crush Depth	700	mm	27.6	inches
					Pre-Impact Speed	57	kph	35.1	mph

Vehicle Damage Index: 12FDEW6

Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	447	mm	17.6	inches
DPD 2	599	mm	23.6	inches
DPD 3	642	mm	25.3	inches
DPD 4	700	mm	27.6	inches
DPD 5	699	mm	27.5	inches
DPD 6	557	mm	21.9	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	205.7	inches	185.7	inches	20.0	inches
	5225	mm	4718	mm	507	mm
Centerline	212.2	inches	185.4	inches	26.7	inches
	5389	mm	4710	mm	679	mm
Right Bumper Corner	205.3	inches	183.4	inches	21.9	inches
	5215	mm	4658	mm	557	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 2001 LINCOLN TOWN CAR

Test #	3480		
VIN	1LNHM82W11Y633287	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	LINCOLN	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	TOWN CAR	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	V8 INLINE FRONT		
Displacement	4.6 Liter	Transmission	AUTOMATIC - REAR WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary			

Vehicle Length	5389	mm	212.2	inches	CG behind Front Axle	1409	mm	55.5	inches
Vehicle Width	1986	mm	78.2	inches	Center of Damage to CG Axis	135	mm	5.3	inches
Vehicle Wheelbase	2985	mm	117.5	inches	Total Length of Indentation	1620	mm	63.8	inches
Vehicle Test Weight	2111	KG	4653	pounds	Maximum Static Crush Depth	700	mm	27.6	inches
					Pre-Impact Speed	57	kph	35.1	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 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	5389	212.2	4710	185.4				
				Engine Block	530	20.9	530	20.9				
5225	205.7	4718	185.7	Front Bumper Corner					5215	205.3	4658	183.4
				Front of Engine	4539	178.7	4274	168.3				
3936	155.0	3886	153.0	Firewall	4069	160.2	4066	160.1	3909	153.9	3858	151.9
3612	142.2	3608	142.0	Upper Leading Edge of Door					3616	142.4	3600	141.7
3664	144.3	3658	144.0	Lower Leading Edge of Door					3657	144.0	3653	143.8
3582	141.0	3564	140.3	Bottom of 'A' Post					3587	141.2	3561	140.2
2554	100.6	2542	100.1	Upper Trailing Edge of Door					2553	100.5	2542	100.1
2575	101.4	2567	101.1	Lower Trailing Edge of Door					2571	101.2	2569	101.1
				Steering Column	3105	122.2	3154	124.2				
				Center of Seering Column to 'A' Post (Horizontal)	391	15.4	365	14.4				
				Center of Steering Column to Headliner (Vertical)	448	17.6	424	16.7				

2001 LINCOLN TOWN CAR

NHTSA Crash Test - #3480 - Front Impact

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

Test Vehicle Weight = 4653 pounds
Vehicle Closing Speed = 35.1 mph
Test Crush Length = 78.2 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	20.0	26.7	21.9	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 20.0 inches					147.0
Using a Rated No Damage Speed of	2.5mph	194.4	126.8	149.1	
Using a Rated No Damage Speed of	5.0mph	359.1	108.1	596.3	
Using a Rated No Damage Speed of	7.5mph	493.9	90.9	1341.7	
Using a Rated No Damage Speed of	10.0mph	598.9	75.2	2385.3	
Average Crush = 23.8 inches					103.8
Using a Rated No Damage Speed of	2.5mph	163.4	89.5	149.1	
Using a Rated No Damage Speed of	5.0mph	301.7	76.3	596.3	
Using a Rated No Damage Speed of	7.5mph	415.0	64.2	1341.7	
Using a Rated No Damage Speed of	10.0mph	503.3	53.1	2385.3	
Maximum Crush = 26.7 inches					82.5
Using a Rated No Damage Speed of	2.5mph	145.7	71.2	149.1	
Using a Rated No Damage Speed of	5.0mph	269.0	60.7	596.3	
Using a Rated No Damage Speed of	7.5mph	370.0	51.0	1341.7	
Using a Rated No Damage Speed of	10.0mph	448.6	42.2	2385.3	

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

****

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	26.7	37.4	2.3	6.2

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 18.5

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

2001 LINCOLN TOWN CAR

NHTSA Crash Test - #3480 - Front Impact

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

Test Vehicle Weight = 4653 pounds
Vehicle Closing Speed = 35.1 mph
Test Crush Length = 63.8 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	20.0	26.7	21.9	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 20.0 inches					180.2
Using a Rated No Damage Speed of	2.5mph	238.4	155.5	182.8	
Using a Rated No Damage Speed of	5.0mph	440.2	132.5	731.1	
Using a Rated No Damage Speed of	7.5mph	605.5	111.4	1644.9	
Using a Rated No Damage Speed of	10.0mph	734.2	92.2	2924.2	
Average Crush = 23.8 inches					127.3
Using a Rated No Damage Speed of	2.5mph	200.3	109.8	182.8	
Using a Rated No Damage Speed of	5.0mph	369.9	93.6	731.1	
Using a Rated No Damage Speed of	7.5mph	508.8	78.7	1644.9	
Using a Rated No Damage Speed of	10.0mph	617.0	65.1	2924.2	
Maximum Crush = 26.7 inches					101.1
Using a Rated No Damage Speed of	2.5mph	178.6	87.2	182.8	
Using a Rated No Damage Speed of	5.0mph	329.7	74.4	731.1	
Using a Rated No Damage Speed of	7.5mph	453.5	62.5	1644.9	
Using a Rated No Damage Speed of	10.0mph	550.0	51.7	2924.2	

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	26.7	37.4	2.3	6.2

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 18.5

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

2001 LINCOLN TOWN CAR

NHTSA Crash Test - #3480 - Front Impact

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

Test Vehicle Weight = 4653 pounds
Vehicle Closing Speed = 35.1 MPH
Test Crush Length = 78.2 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	17.6	23.6	25.3	27.6	27.5	21.9	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 17.6 inches					189.8
Using a Rated No Damage Speed of	2.5mph	221.0	163.8	149.1	
Using a Rated No Damage Speed of	5.0mph	408.0	139.6	596.3	
Using a Rated No Damage Speed of	7.5mph	561.2	117.4	1341.7	
Using a Rated No Damage Speed of	10.0mph	680.6	97.1	2385.3	
Average Crush = 24.7 inches					96.4
Using a Rated No Damage Speed of	2.5mph	157.4	83.1	149.1	
Using a Rated No Damage Speed of	5.0mph	290.8	70.9	596.3	
Using a Rated No Damage Speed of	7.5mph	399.9	59.6	1341.7	
Using a Rated No Damage Speed of	10.0mph	484.9	49.3	1658.8	
Maximum Crush = 27.6 inches					77.2
Using a Rated No Damage Speed of	2.5mph	140.9	66.6	149.1	
Using a Rated No Damage Speed of	5.0mph	260.2	56.8	596.3	
Using a Rated No Damage Speed of	7.5mph	357.9	47.7	1341.7	
Using a Rated No Damage Speed of	10.0mph	434.0	39.5	2385.3	

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

****

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	27.6	38.1	3.0	7.8

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 17.9

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 LINCOLN TOWN CAR

NHTSA Crash Test - #3480 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 4653 pounds
Vehicle Closing Speed = 35.1 MPH
Test Crush Length = 63.8 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	17.6	23.6	25.3	27.6	27.5	21.9	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 17.6 inches					232.7
Using a Rated No Damage Speed of	2.5mph	270.9	200.7	182.8	
Using a Rated No Damage Speed of	5.0mph	500.2	171.1	731.1	
Using a Rated No Damage Speed of	7.5mph	688.0	143.9	1644.9	
Using a Rated No Damage Speed of	10.0mph	834.3	119.0	2924.2	
Average Crush = 24.7 inches					118.2
Using a Rated No Damage Speed of	2.5mph	193.0	101.9	182.8	
Using a Rated No Damage Speed of	5.0mph	356.4	86.9	731.1	
Using a Rated No Damage Speed of	7.5mph	490.3	73.1	1644.9	
Using a Rated No Damage Speed of	10.0mph	594.5	60.4	2033.6	
Maximum Crush = 27.6 inches					94.6
Using a Rated No Damage Speed of	2.5mph	172.7	81.6	182.8	
Using a Rated No Damage Speed of	5.0mph	319.0	69.6	731.1	
Using a Rated No Damage Speed of	7.5mph	438.8	58.5	1644.9	
Using a Rated No Damage Speed of	10.0mph	532.0	48.4	2924.2	

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	27.6	38.1	3.0	7.8

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 17.9

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: 2003 - 2010
Make: FORD
Model: CROWN VICTORIA

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
3219	2000 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	26.8	35.1	263.7	59.2	587.0	80.5	18.4
3480	2001 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	24.7	35.1	290.3	70.7	596.3	96.1	19.9
5803	2006 FORD OTHER FOUR DOOR SEDAN	5.0	21.5	35.2	300.6	84.5	535.0	114.7	23.1
4476	2003 FORD CROWN VICTORIA FOUR DOOR SEDAN	5.0	23.0	35.3	318.1	83.9	603.6	113.8	21.7
	Average (AVG)				**293.2**	**74.6**	**580.5**	**101.3**	**20.8**
	Minimum (MIN)				**263.7**	**59.2**	**535.0**	**80.5**	**18.4**
	Maximum (MAX)				**318.1**	**84.5**	**603.6**	**114.7**	**23.1**
	Standard Deviation (STDev-sample)				**22.8**	**12.0**	**31.0**	**16.3**	**2.0**
	Number of Tests (n)			**4**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2010
Make: FORD
Model: CROWN VICTORIA

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
3219	2000 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	27.8	35.1	254.0	54.9	587.0	74.7	17.7
3480	2001 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	27.6	35.1	260.6	56.9	596.3	77.4	17.9
5803	2006 FORD OTHER FOUR DOOR SEDAN	5.0	24.4	35.2	265.4	65.8	535.0	89.4	20.4
4476	2003 FORD CROWN VICTORIA FOUR DOOR SEDAN	5.0	25.3	35.3	289.4	69.4	603.6	94.1	19.7
	Average (AVG)				**267.3**	**61.8**	**580.5**	**83.9**	**18.9**
	Minimum (MIN)				**254.0**	**54.9**	**535.0**	**74.7**	**17.7**
	Maximum (MAX)				**289.4**	**69.4**	**603.6**	**94.1**	**20.4**
	Standard Deviation (STDev-sample)				**15.4**	**6.9**	**31.0**	**9.3**	**1.3**
	Number of Tests (n)			**4**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 2FAFP72V67X147867

Model:	2007 Ford Crown Victoria 4 door Sedan
Engine Size:	4.6L / 281 cu.in.
Engine Description:	V8 Cylinder with Dual Overhead Cam
Horse Power:	275 @ 5750rpm
Torque:	275 lb-ft @ 4750rpm
Injection System:	Sequential Fuel Injection (SFI)
PSI:	N/A
Ignition:	electronic
Manufacturer:	Ford
Assembly Plant:	St. Thomas, Ontario
Drive Wheels:	This is a Rear Wheel Drive vehicle w/ Manual Seatbelts + Driver/Passenger Front Air Bags

The First through Third characters (2FA) indicate a Ford Passenger Car made in Canada

The Fourth character (F) indicate Manual Seatbelts + Driver/Passenger Front Air Bags

The Fifth through Seventh characters (P72) indicate a Crown Victoria and a Commercial series and a 4 door Sedan

The Eighth character (V) indicate the OEM engine: 4.6L / 281 cu.in., V8, DOHC

The Ninth character (the check digit) is entered as 6.
The VIN appears Valid, the calculated value is 6.

The Tenth character (7) indicate the model year 2007

The Eleventh character (X) indicate the vehicle was made in the assembly plant in St. Thomas, Ontario

The Twelfth through Seventeenth characters (147867) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/14/2013

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Curb Weight:	4057 lbs.		1840	kg.
Curb Weight Distribution - Front:	56 %	Rear:	44	%
Gross Vehicle Weight Rating:	5500 lbs.		2495	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	REAR			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	212	17.67	5.38
Wheelbase:	115	9.58	2.92
Front Bumper to Front Axle:	43	3.58	1.09
Front Bumper to Front of Front Well:	26	2.17	0.66
Front Bumper to Front of Hood:	8	0.67	0.20
Front Bumper to Base of Windshield:	65	5.42	1.65
Front Bumper to Top of Windshield:	91	7.58	2.31
Rear Bumper to Rear Axle:	54	4.50	1.37
Rear Bumper to Rear of Rear Well:	38	3.17	0.97
Rear Bumper to Rear of Trunk:	8	0.67	0.20
Rear Bumper to Base of Rear Window:	38	3.17	0.97
Width Dimensions			
Maximum Width:	78	6.50	1.98
Front Track:	63	5.25	1.60
Rear Track:	66	5.50	1.68
Vertical Dimensions			
Height:	57	4.75	1.45
Ground to -			
Front Bumper (Top)	23	1.92	0.58
Headlight - center	27	2.25	0.69
Hood - top front:	31	2.58	0.79
Base of Windshield	39	3.25	0.99
Rear Bumper - top:	25	2.08	0.64
Trunk - top rear:	39	3.25	0.99
Base of Rear Window:	40	3.33	1.02

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	61	5.08	1.55
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	60	5.00	1.52
Rear Seat to Headliner	38	3.17	0.97
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	40.00	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 = 140.0 ft t = 3.2 sec a = -27.6 ft/sec² G-force = -0.86

Acceleration:

0 to 30mph	t =	2.8	sec	a =	15.7	ft/sec²	G-force = 0.49
0 to 60mph	t =	8.0	sec	a =	11.0	ft/sec²	G-force = 0.34
45 to 65mph	t =	5.1	sec	a =	5.8	ft/sec²	G-force = 0.18

Transmission Type: 4spd AUTOMATIC

Notes:
Federal Bumper Standard Requirements: 2.5 mph
This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2003 - 2009

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.44	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	50.60
Inches in front of rear axle	=	64.40
Inches from side of vehicle	=	39.00
Inches from ground	=	22.37
Inches from front corner	=	101.40
Inches from rear corner	=	124.66
Inches from front bumper	=	93.60
Inches from rear bumper	=	118.40

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2972.71	lb*ft*sec²
Pitch Moment of Inertia	=	2867.43	lb*ft*sec²
Roll Moment of Inertia	=	580.26	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	45.0	deg
Angle Front of Hood to Windshield Base	=	8.0	deg
Angle Front of Hood to Windshield Top	=	16.1	deg
Angle of Windshield	=	31.6	deg
Angle of Steering Tires at Max Turn	=	27.5	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 independant 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

#5803

2006 FORD OTHER

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **2007 FORD CROWN VICTORIA**

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

Year Range	Make	Model	Body Styles	Wheelbase
1998 - 2011	LINCOLN	TOWN CAR	2D, 4D	117.4
Remarks: Could use Crown Victoria/Grand Marquis - same basic RWD Chassis, longer WB				
2003 - 2010	FORD	CROWN VICTORIA	4D	114.7, 133
Remarks: REVISED "STIFFER FRAME"				
2003 - 2010	MERCURY	GRAND MARQUIS	2D, 4D, SW	114.7
Remarks: ALSO MARAUDER				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	5803	NHTSA Test Reference Guide Version #	V5			
Test Date	2005-12-14	Contract #	06-6008			
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	56.7	Km/Hr	35.22	MPH
Test Performer	TRANSPORT CANADA					
Test Reference #	TC06-207					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	21 C	69.8 F	Total Number of Curves	347		
Data Recorder Type	OTHER	Data Link	OTHER			
Test Commentary	NO COMMENTS					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	9999	mm	9999 inches
Barrier Shape	LOAD CELL BARRIER				
Barrier Commentary	NO COMMENTS				

2006 FORD OTHER LEFT FRONT SEAT OCCUPANT

Test #	5803		
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	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 : 31/OCT/05		

Head

Head to -

Windshielder Header	268	mm	10.6	inches	Head Injury Criteria (HIC)	330	
WindShield	652	mm	25.7	inches	HIC Lower Time Interval (ms)	51	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	87	
Side Header	270	mm	10.6	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	9999	mm	0.0	inches	Arm to Door	133	mm	5.2	inches
Steering Wheel	238	mm	9.4	inches	Hip to Door	174	mm	6.9	inches
Seatback	9999	mm	0.0	inches					
Chest Severity Index	9999				Pelvic Peak Lateral Acceleration (g's)	9			
Thoracic Trauma Index	9				Thorax Peak Acceleration (g's)	55.4			
Lap Belt Peak Load	5370	Newtons	1207.2	pound Force					
Shoulder Belt Peak Load	3981	Newtons	895.0	pound Force					
First Contact Region (Chest/Abdomen)	AIR BAG								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	60	mm	2.4	inches	Knees to Seatback	9999	mm	0.0	inches
Left Femur Peak Load	-1257	Newtons	-282.6	pounds Force					
Right Femur Peak Load	-2124	Newtons	-477.5	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

2006 FORD OTHER LEFT FRONT SEAT OCCUPANT

Test #	5803					
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	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 : 31/OCT/05

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

2006 FORD OTHER RIGHT FRONT SEAT OCCUPANT

Test #	5803		
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	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 : 21/NOV/05		

Head

Head to -

Windshielder Header	284	mm	11.2	inches	Head Injury Criteria (HIC)	427	
WindShield	663	mm	26.1	inches	HIC Lower Time Interval (ms)	52.1	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	88.1	
Side Header	275	mm	10.8	inches			
Side Window	367	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	410	mm	16.1	inches	Arm to Door	184	mm	7.2	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	177	mm	7.0	inches
Seatback	9999	mm	0.0	inches					
Chest Severity Index	9999				Pelvic Peak Lateral Acceleration (g's)	9			
Thoracic Trauma Index	9				Thorax Peak Acceleration (g's)	51.6			
Lap Belt Peak Load	5358	Newtons	1204.5	pound Force					
Shoulder Belt Peak Load	3706	Newtons	833.1	pound Force					
First Contact Region (Chest/Abdomen)	AIR BAG								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	45	mm	1.8	inches	Knees to Seatback	9999	mm	0.0	inches
Left Femur Peak Load	-1582	Newtons	-355.6	pounds Force					
Right Femur Peak Load	-1986	Newtons	-446.5	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

2006 FORD OTHER RIGHT FRONT SEAT OCCUPANT

Test #	5803					
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	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 : 21/NOV/05

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

2006 FORD OTHER RIGHT REAR SEAT OCCUPANT

Test #	5803		
Vehicle #	1	Sex	FEMALE
Location	RIGHT REAR SEAT	Age	99
Position	NOT APPLICABLE	Height	999 mm 39.3 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 : 10/NOV/05		

Head

Head to -

Windshielder Header	9999	mm	0.0	inches	Head Injury Criteria (HIC)	919	
WindShield	9999	mm	0.0	inches	HIC Lower Time Interval (ms)	65	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	101	
Side Header	9999	mm	0.0	inches			
Side Window	9999	mm	0.0	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head) NONE

Second Contact Region (Head)

Chest

Chest to -

Dash	9999	mm	0.0	inches	Arm to Door	9999	mm	0.0	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	9999	mm	0.0	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	9999	Pelvic Peak Lateral Acceleration (g's)	9
Thoracic Trauma Index	9	Thorax Peak Acceleration (g's)	62.1

Lap Belt Peak Load	8630	Newtons	1940.1	pound Force
Shoulder Belt Peak Load	6281	Newtons	1412.0	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	9999	mm	0.0	inches

Left Femur Peak Load	-1764	Newtons	-396.6	pounds Force
Right Femur Peak Load	-2053	Newtons	-461.5	pounds Force

First Contact Region (Legs) NONE

Second Contact Region (Legs)

2006 FORD OTHER RIGHT REAR SEAT OCCUPANT

Test #	5803					
Vehicle #	1	Sex	FEMALE			
Location	RIGHT REAR SEAT	Age	99			
Position	NOT APPLICABLE	Height	999	mm	39.3	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 : 10/NOV/05

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	SEAT BACK
Mounted	OTHER
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2006 FORD OTHER LEFT REAR SEAT OCCUPANT

Test #	5803		
Vehicle #	1	Sex	FEMALE
Location	LEFT REAR SEAT	Age	99
Position	NOT APPLICABLE	Height	999 mm 39.3 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 : 111		
Occupant Commentary	LAST CALIBRATION DATE : 10/NOV/05		

Head

Head to -

Windshielder Header	9999 mm	0.0 inches	Head Injury Criteria (HIC)	731
WindShield	9999 mm	0.0 inches	HIC Lower Time Interval (ms)	66.2
Seatback	9999 mm	0.0 inches	HIC Upper Time Interval (ms)	102.2
Side Header	9999 mm	0.0 inches		
Side Window	9999 mm	0.0 inches		

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head) NONE

Second Contact Region (Head)

Chest

Chest to -

Dash	9999 mm	0.0 inches	Arm to Door	9999 mm 0.0 inches
Steering Wheel	9999 mm	0.0 inches	Hip to Door	9999 mm 0.0 inches
Seatback	9999 mm	0.0 inches		

Chest Severity Index	9999	Pelvic Peak Lateral Acceleration (g's)	9
Thoracic Trauma Index	9	Thorax Peak Acceleration (g's)	53.6

Lap Belt Peak Load 8503 Newtons 1911.6 pound Force

Shoulder Belt Peak Load 5747 Newtons 1292.0 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 9999 mm 0.0 inches

Left Femur Peak Load -2983 Newtons -670.6 pounds Force

Right Femur Peak Load -2958 Newtons -665.0 pounds Force

First Contact Region (Legs) NONE

Second Contact Region (Legs)

2006 FORD OTHER LEFT REAR SEAT OCCUPANT

Test #	5803					
Vehicle #	1	Sex	FEMALE			
Location	LEFT REAR SEAT	Age	99			
Position	NOT APPLICABLE	Height	999	mm	39.3	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 : 111
Occupant Commentary	LAST CALIBRATION DATE : 10/NOV/05

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	SEAT BACK
Mounted	OTHER
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

Vehicle 1 2006 FORD OTHER

Test #	5803		
VIN	3FAFP07ZX6R106402	NHTSA Test Vehicle Number	1
Year	2006	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	FORD	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	OTHER	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.3 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	06-207 FORD FUSION		

Vehicle Length	4832	mm	190.2	inches	CG behind Front Axle	1277	mm	50.3	inches
Vehicle Width	1835	mm	72.2	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	2727	mm	107.4	inches	Total Length of Indentation	1501	mm	59.1	inches
Vehicle Test Weight	1750	KG	3857	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	57	kph	35.2	mph

Vehicle Damage Index: 9999999 — Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	375	mm	14.8	inches
DPD 2	546	mm	21.5	inches
DPD 3	619	mm	24.4	inches
DPD 4	618	mm	24.3	inches
DPD 5	598	mm	23.5	inches
DPD 6	327	mm	12.9	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	186.5	inches	164.9	inches	21.7	inches
	4738	mm	4188	mm	550	mm
Centerline	190.2	inches	166.1	inches	24.1	inches
	4832	mm	4220	mm	612	mm
Right Bumper Corner	186.6	inches	164.3	inches	22.3	inches
	4739	mm	4173	mm	566	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	99.0	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 2006 FORD OTHER

Test #	5803		
VIN	3FAFP07ZX6R106402	NHTSA Test Vehicle Number	1
Year	2006	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	FORD	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	OTHER	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.3 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	06-207 FORD FUSION		

Vehicle Length	4832	mm	190.2	inches	CG behind Front Axle	1277	mm	50.3	inches
Vehicle Width	1835	mm	72.2	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	2727	mm	107.4	inches	Total Length of Indentation	1501	mm	59.1	inches
Vehicle Test Weight	1750	KG	3857	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	57	kph	35.2	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 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	4832	190.2	4220	166.1				
				Engine Block	212	8.3	1106	43.5				
4738	186.5	4188	164.9	Front Bumper Corner					4739	186.6	4173	164.3
				Front of Engine	4146	163.2	3726	146.7				
3524	138.7	3473	136.7	Firewall					3527	138.9	3427	134.9
					3723	146.6	0	0.0				
3335	131.3	3336	131.3	Upper Leading Edge of Door					3337	131.4	3334	131.3
3316	130.6	3316	130.6	Lower Leading Edge of Door					3329	131.1	3326	130.9
3291	129.6	3292	129.6	Bottom of 'A' Post					3297	129.8	3293	129.6
2276	89.6	2276	89.6	Upper Trailing Edge of Door					2282	89.8	2277	89.6
2317	91.2	2318	91.3	Lower Trailing Edge of Door					2322	91.4	2319	91.3
				Steering Column	2857	112.5	2893	113.9				
				Center of Seering Column to 'A' Post (Horizontal)	415	16.3	411	16.2				
				Center of Steering Column to Headliner (Vertical)	450	17.7	459	18.1				

2006 FORD OTHER

NHTSA Crash Test - #5803 - Front Impact

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

Test Vehicle Weight = 3857 pounds
Vehicle Closing Speed = 35.2 mph
Test Crush Length = 72.2 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	21.7	24.1	22.3	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 21.7 inches					112.7
Using a Rated No Damage Speed of	2.5mph	161.3	97.3	133.8	
Using a Rated No Damage Speed of	5.0mph	298.0	83.0	535.0	
Using a Rated No Damage Speed of	7.5mph	410.1	69.8	1203.8	
Using a Rated No Damage Speed of	10.0mph	497.4	57.8	2140.1	
Average Crush = 23.0 inches					100.4
Using a Rated No Damage Speed of	2.5mph	152.2	86.6	133.8	
Using a Rated No Damage Speed of	5.0mph	281.2	73.9	535.0	
Using a Rated No Damage Speed of	7.5mph	386.9	62.2	1203.8	
Using a Rated No Damage Speed of	10.0mph	469.3	51.5	2140.1	
Maximum Crush = 24.1 inches					91.4
Using a Rated No Damage Speed of	2.5mph	145.3	78.9	133.8	
Using a Rated No Damage Speed of	5.0mph	268.4	67.3	535.0	
Using a Rated No Damage Speed of	7.5mph	369.2	56.6	1203.8	
Using a Rated No Damage Speed of	10.0mph	447.9	46.9	2140.1	

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

****

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	24.1	35.6	0.4	1.0

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 20.6

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

2006 FORD OTHER

NHTSA Crash Test - #5803 - Front Impact

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

Test Vehicle Weight = 3857 pounds
Vehicle Closing Speed = 35.2 mph
Test Crush Length = 59.1 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	21.7	24.1	22.3	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 21.7 inches					137.8
Using a Rated No Damage Speed of	2.5mph	197.2	119.0	163.5	
Using a Rated No Damage Speed of	5.0mph	364.3	101.5	654.1	
Using a Rated No Damage Speed of	7.5mph	501.3	85.4	1471.7	
Using a Rated No Damage Speed of	10.0mph	608.1	70.7	2616.3	
Average Crush = 23.0 inches					122.7
Using a Rated No Damage Speed of	2.5mph	186.1	105.9	163.5	
Using a Rated No Damage Speed of	5.0mph	343.8	90.3	654.1	
Using a Rated No Damage Speed of	7.5mph	473.0	76.0	1471.7	
Using a Rated No Damage Speed of	10.0mph	573.8	62.9	2616.3	
Maximum Crush = 24.1 inches					111.8
Using a Rated No Damage Speed of	2.5mph	177.6	96.4	163.5	
Using a Rated No Damage Speed of	5.0mph	328.1	82.3	654.1	
Using a Rated No Damage Speed of	7.5mph	451.4	69.2	1471.7	
Using a Rated No Damage Speed of	10.0mph	547.6	57.3	2616.3	

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

****

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	24.1	35.6	0.4	1.0

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 20.6

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

2006 FORD OTHER

NHTSA Crash Test - #5803 - Front Impact

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

Test Vehicle Weight = 3857 pounds
Vehicle Closing Speed = 35.2 MPH
Test Crush Length = 72.2 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	14.8	21.5	24.4	24.3	23.5	12.9	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.9 inches					319.0
Using a Rated No Damage Speed of	2.5mph	271.4	275.4	133.8	
Using a Rated No Damage Speed of	5.0mph	501.3	234.9	535.0	
Using a Rated No Damage Speed of	7.5mph	689.8	197.6	1203.8	
Using a Rated No Damage Speed of	10.0mph	836.8	163.6	2140.1	
Average Crush = 21.5 inches					114.9
Using a Rated No Damage Speed of	2.5mph	162.8	99.1	133.8	
Using a Rated No Damage Speed of	5.0mph	300.8	84.6	535.0	
Using a Rated No Damage Speed of	7.5mph	413.9	71.1	1203.8	
Using a Rated No Damage Speed of	10.0mph	502.1	58.9	1490.5	
Maximum Crush = 24.4 inches					89.2
Using a Rated No Damage Speed of	2.5mph	143.5	77.0	133.8	
Using a Rated No Damage Speed of	5.0mph	265.1	65.7	535.0	
Using a Rated No Damage Speed of	7.5mph	364.7	55.2	1203.8	
Using a Rated No Damage Speed of	10.0mph	442.4	45.7	2140.1	

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

****

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	24.4	35.8	0.6	1.6

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 20.3

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

2006 FORD OTHER

NHTSA Crash Test - #5803 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3857 pounds
Vehicle Closing Speed = 35.2 MPH
Test Crush Length = 59.1 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	14.8	21.5	24.4	24.3	23.5	12.9	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.9 inches					390.0
Using a Rated No Damage Speed of	2.5mph	331.8	336.6	163.5	
Using a Rated No Damage Speed of	5.0mph	612.9	287.2	654.1	
Using a Rated No Damage Speed of	7.5mph	843.3	241.6	1471.7	
Using a Rated No Damage Speed of	10.0mph	1023.0	200.0	2616.3	
Average Crush = 21.5 inches					140.4
Using a Rated No Damage Speed of	2.5mph	199.1	121.2	163.5	
Using a Rated No Damage Speed of	5.0mph	367.7	103.4	654.1	
Using a Rated No Damage Speed of	7.5mph	506.0	87.0	1471.7	
Using a Rated No Damage Speed of	10.0mph	613.8	72.0	1822.2	
Maximum Crush = 24.4 inches					109.0
Using a Rated No Damage Speed of	2.5mph	175.4	94.1	163.5	
Using a Rated No Damage Speed of	5.0mph	324.0	80.3	654.1	
Using a Rated No Damage Speed of	7.5mph	445.8	67.5	1471.7	
Using a Rated No Damage Speed of	10.0mph	540.8	55.9	2616.3	

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

****

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	24.4	35.8	0.6	1.6

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 20.3

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

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2010
Make: FORD
Model: CROWN VICTORIA

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
3219	2000 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	26.8	35.1	263.7	59.2	587.0	80.5	18.4
3480	2001 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	24.7	35.1	290.3	70.7	596.3	96.1	19.9
5803	2006 FORD OTHER FOUR DOOR SEDAN	5.0	21.5	35.2	300.6	84.5	535.0	114.7	23.1
4476	2003 FORD CROWN VICTORIA FOUR DOOR SEDAN	5.0	23.0	35.3	318.1	83.9	603.6	113.8	21.7
	Average (AVG)				**293.2**	**74.6**	**580.5**	**101.3**	**20.8**
	Minimum (MIN)				**263.7**	**59.2**	**535.0**	**80.5**	**18.4**
	Maximum (MAX)				**318.1**	**84.5**	**603.6**	**114.7**	**23.1**
	Standard Deviation (STDev-sample)				**22.8**	**12.0**	**31.0**	**16.3**	**2.0**
	Number of Tests (n)			**4**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2010
Make: FORD
Model: CROWN VICTORIA

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
3219	2000 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	27.8	35.1	254.0	54.9	587.0	74.7	17.7
3480	2001 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	27.6	35.1	260.6	56.9	596.3	77.4	17.9
5803	2006 FORD OTHER FOUR DOOR SEDAN	5.0	24.4	35.2	265.4	65.8	535.0	89.4	20.4
4476	2003 FORD CROWN VICTORIA FOUR DOOR SEDAN	5.0	25.3	35.3	289.4	69.4	603.6	94.1	19.7
	Average (AVG)				**267.3**	**61.8**	**580.5**	**83.9**	**18.9**
	Minimum (MIN)				**254.0**	**54.9**	**535.0**	**74.7**	**17.7**
	Maximum (MAX)				**289.4**	**69.4**	**603.6**	**94.1**	**20.4**
	Standard Deviation (STDev-sample)				**15.4**	**6.9**	**31.0**	**9.3**	**1.3**
	Number of Tests (n)			**4**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 2G1WF52E159162904

Model:	2005 Chevrolet Impala 4 Door Sedan
Engine Size:	3.4L / 207cu.in.
Engine Description:	V6 Cylinder Overhead Valves
Horse Power:	210 @ 5200 rpm
Torque:	215 lb-ft at 4000 rpm
Injection System:	Multi-Port Fuel Injection (MFI)
PSI:	41-47 psi
Ignition:	Electronic
Manufacturer:	Buick - Oldsmobile - Cadillac
Assembly Plant:	Oshawa #1, ON
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags

The First through Third characters (2G1) indicate a Chevrolet Car made in Canada

The Fourth and Fifth characters (WF) indicate an Impala

The Sixth character (5) indicate a 4 Door Sedan

The Seventh character (2) indicate Manual Seatbelts + Driver & Passenger Air Bags

The Eighth character (E) indicate the OEM engine: 3.4L / 207cu.in., V6 OHV

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

The Tenth character (5) indicate the model year 2005

The Eleventh character (9) indicate the vehicle was made in the assembly plant in Oshawa #1, ON

The Twelfth through Seventeenth characters (162904) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/15/2013

2005 CHEVROLET IMPALA 4 DOOR SEDAN

Curb Weight:	3389	lbs.	1537	kg.
Curb Weight Distribution - Front:	62	% Rear:	38	%
Gross Vehicle Weight Rating:	4565	lbs.	2071	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	200	16.67	5.08
Wheelbase:	111	9.25	2.82
Front Bumper to Front Axle:	41	3.42	1.04
Front Bumper to Front of Front Well:	26	2.17	0.66
Front Bumper to Front of Hood:	5	0.42	0.13
Front Bumper to Base of Windshield:	49	4.08	1.24
Front Bumper to Top of Windshield:	83	6.92	2.11
Rear Bumper to Rear Axle:	48	4.00	1.22
Rear Bumper to Rear of Rear Well:	31	2.58	0.79
Rear Bumper to Rear of Trunk:	7	0.58	0.18
Rear Bumper to Base of Rear Window:	29	2.42	0.74
Width Dimensions			
Maximum Width:	73	6.08	1.85
Front Track:	62	5.17	1.57
Rear Track:	61	5.08	1.55
Vertical Dimensions			
Height:	58	4.83	1.47
Ground to -			
Front Bumper (Top)	23	1.92	0.58
Headlight - center	27	2.25	0.69
Hood - top front:	29	2.42	0.74
Base of Windshield	39	3.25	0.99
Rear Bumper - top:	31	2.58	0.79
Trunk - top rear:	44	3.67	1.12
Base of Rear Window:	45	3.75	1.14

2005 CHEVROLET IMPALA 4 DOOR SEDAN

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	58	4.83	1.47
Front Seat to Headliner	38	3.17	0.97
Front Leg Room - seatback to floor (max)	42	3.50	1.07
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)	36	3.00	0.91

Seatbelts: 3pt - front and rear

Airbags: FRONT SEAT AIRBAGS

Steering Data

Turning Circle (Diameter)	456	38.00	11.58
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 - OPTIONAL

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

d = 174.0 ft t = 4.0 sec a = -22.2 ft/sec² G-force = -0.69

Acceleration:

0 to 30mph	t =	3.0	sec	a =	14.7	ft/sec²	G-force = 0.46
0 to 60mph	t =	9.2	sec	a =	9.6	ft/sec²	G-force = 0.30
45 to 65mph	t =		sec	a =		ft/sec²	G-force =

Transmission Type: 4spd AUTOMATIC

Notes:

Federal Bumper Standard Requirements: 2.5 mph

This vehicles Rated Bumper Strength: 2.5 mph

N.S.D.C = 2000 - 2005

2005 CHEVROLET IMPALA 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.35	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	42.18
Inches in front of rear axle	=	68.82
Inches from side of vehicle	=	36.50
Inches from ground	=	22.77
Inches from front corner	=	90.84
Inches from rear corner	=	122.39
Inches from front bumper	=	83.18
Inches from rear bumper	=	116.82

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2284.67	lb*ft*sec²
Pitch Moment of Inertia	=	2206.11	lb*ft*sec²
Roll Moment of Inertia	=	460.02	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	50.2	deg
Angle Front of Hood to Windshield Base	=	12.8	deg
Angle Front of Hood to Windshield Top	=	19.1	deg
Angle of Windshield	=	26.6	deg
Angle of Steering Tires at Max Turn	=	27.9	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 independant 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

#4775

2004 PONTIAC GRAND PRIX

Provided By

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Similar Vehicle database reader

You entered: **2005 CHEVROLET IMPALA**

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

Year Range	Make	Model	Body Styles	Wheelbase
2000 - 2005	CHEVROLET	IMPALA	2D, 4D, SW	110.5, 125
Remarks:				
1997 - 2004	BUICK	REGAL	2D, 4D, SW	107.5
Remarks: Regal now same as Century				
1997 - 2003	PONTIAC	GRAND PRIX	2D, 4D	110.5
Remarks:				
1998 - 2002	OLDSMOBILE	INTRIGUE	4D	109
Remarks:				
1997 - 2005	BUICK	CENTURY	2D, 4D, SW	109, 116
Remarks:				
2000 - 2005	CHEVROLET	MONTE CARLO	2D	108
Remarks:				
2004 - 2005	PONTIAC	GRAND PRIX	2D, 4D	110.5
Remarks:				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@ssi.com.

Test Information

Test #	4775	NHTSA Test Reference Guide Version #	V5			
Test Date	2003-10-07	Contract #	DTNH22-01-D-02005			
Contract/Study Title	35 MPH NCAP FRONTAL - 2004 PONTIAC GRAND PRIX GT 4 DOOR SEDAN					
Test Objective(s)	OBTAIN ATD AND VEHICLE DATA					
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	55.9	Km/Hr	34.73	MPH
Test Performer	KARCO ENGINEERING					
Test Reference #	M40100					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	29 C	84.2 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 PONTIAC GRAND PRIX LEFT FRONT SEAT OCCUPANT

Test #	4775		
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	300	mm	11.8	inches	Head Injury Criteria (HIC)	596	
WindShield	590	mm	23.2	inches	HIC Lower Time Interval (ms)	61.8	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	96.1	
Side Header	235	mm	9.3	inches			
Side Window	335	mm	13.2	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	530	mm	20.9	inches	Arm to Door	30	mm	1.2	inches
Steering Wheel	285	mm	11.2	inches	Hip to Door	185	mm	7.3	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)	58.5

Lap Belt Peak Load	3935	Newtons	884.6	pound Force
Shoulder Belt Peak Load	3763	Newtons	846.0	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	175	mm	6.9	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-6795	Newtons	-1527.6	pounds Force
Right Femur Peak Load	-6024	Newtons	-1354.3	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2004 PONTIAC GRAND PRIX LEFT FRONT SEAT OCCUPANT

Test #	4775					
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 PONTIAC GRAND PRIX RIGHT FRONT SEAT OCCUPANT

Test #	4775		
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	465	mm	18.3	inches	Head Injury Criteria (HIC)	509	
WindShield	785	mm	30.9	inches	HIC Lower Time Interval (ms)	61.9	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	97.8	
Side Header	290	mm	11.4	inches			
Side Window	355	mm	14.0	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	595	mm	23.4	inches	Arm to Door	50	mm	2.0	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	165	mm	6.5	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)	43.7

Lap Belt Peak Load	3955	Newtons	889.1	pound Force
Shoulder Belt Peak Load	4090	Newtons	919.5	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	-5512	Newtons	-1239.2	pounds Force
Right Femur Peak Load	-3737	Newtons	-840.1	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2004 PONTIAC GRAND PRIX RIGHT FRONT SEAT OCCUPANT

Test #	4775					
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 PONTIAC GRAND PRIX RIGHT REAR SEAT OCCUPANT

Test #	4775		
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	CNTRH1:CHIN CONTACTED RETAINING CLIP		

Head

Head to -

Windshielder Header	0	mm	0.0	inches	Head Injury Criteria (HIC)	533	
WindShield	0	mm	0.0	inches	HIC Lower Time Interval (ms)	76.9	
Seatback	550	mm	21.7	inches	HIC Upper Time Interval (ms)	112.9	
Side Header	0	mm	0.0	inches			
Side Window	406	mm	16.0	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	275	mm	10.8	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	330	mm	13.0	inches
Seatback	525	mm	20.7	inches					
Chest Severity Index	0				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	37.1			
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	374	mm	14.7	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)	NONE								
Second Contact Region (Legs)									

2004 PONTIAC GRAND PRIX RIGHT REAR SEAT OCCUPANT

Test #	4775					
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	CNTRH1:CHIN CONTACTED RETAINING CLIP

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#
Restraint # 2	5 POINT BELT
Mounted	CHILD SEAT
Deployment	NOT APPLICABLE
Restraint Commentary	NO COMMENTS

2004 PONTIAC GRAND PRIX LEFT REAR SEAT OCCUPANT

Test #	4775		
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, CHIN CONTACTED RETAINING CLIP		

Head

Head to -							
Windshielder Header	0	mm	0.0	inches	Head Injury Criteria (HIC)	583	
WindShield	0	mm	0.0	inches	HIC Lower Time Interval (ms)	76.4	
Seatback	555	mm	21.9	inches	HIC Upper Time Interval (ms)	112.4	
Side Header	0	mm	0.0	inches			
Side Window	385	mm	15.2	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	250	mm	9.8	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	275	mm	10.8	inches
Seatback	500	mm	19.7	inches					
Chest Severity Index	0				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	40.6			
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	315	mm	12.4	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 PONTIAC GRAND PRIX LEFT REAR SEAT OCCUPANT

Test #	4775					
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, CHIN CONTACTED RETAINING CLIP

Restraints

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

Vehicle 1 2004 PONTIAC GRAND PRIX

Test #	4775		
VIN	2G2WP522941121660	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	PONTIAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	GRAND PRIX	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	V6 TRANSVERSE FRONT		
Displacement	3.8 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	5034	mm	198.2	inches	CG behind Front Axle	1131	mm	44.5	inches
Vehicle Width	1800	mm	70.9	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2815	mm	110.8	inches	Total Length of Indentation	1383	mm	54.4	inches
Vehicle Test Weight	1789	KG	3943	pounds	Maximum Static Crush Depth	587	mm	23.1	inches
					Pre-Impact Speed	56	kph	34.7	mph

Vehicle Damage Index: 12FDEW6 — Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	-472	mm	-18.6	inches
DPD 2	-582	mm	-22.9	inches
DPD 3	-584	mm	-23.0	inches
DPD 4	-569	mm	-22.4	inches
DPD 5	-539	mm	-21.2	inches
DPD 6	-423	mm	-16.7	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	190.3	inches	171.7	inches	18.6	inches
	4834	mm	4362	mm	472	mm
Centerline	198.2	inches	175.2	inches	23.0	inches
	5034	mm	4450	mm	584	mm
Right Bumper Corner	190.2	inches	173.6	inches	16.7	inches
	4832	mm	4409	mm	423	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 PONTIAC GRAND PRIX

Test #	4775		
VIN	2G2WP522941121660	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	PONTIAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	GRAND PRIX	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	V6 TRANSVERSE FRONT		
Displacement	3.8 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	5034	mm	198.2	inches	CG behind Front Axle	1131	mm	44.5	inches
Vehicle Width	1800	mm	70.9	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2815	mm	110.8	inches	Total Length of Indentation	1383	mm	54.4	inches
Vehicle Test Weight	1789	KG	3943	pounds	Maximum Static Crush Depth	587	mm	23.1	inches
					Pre-Impact Speed	56	kph	34.7	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							
				5034	198.2	4450	175.2				
				Engine Block							
				420	16.5	420	16.5				
4834	190.3	4362	171.7	Front Bumper Corner				4832	190.2	4409	173.6
				Front of Engine							
				4400	173.2	4088	160.9				
3764	148.2	3699	145.6	Firewall				3759	148.0	3714	146.2
				3816	150.2	3763	148.1				
3414	134.4	3401	133.9	Upper Leading Edge of Door				3414	134.4	3405	134.1
3372	132.8	3360	132.3	Lower Leading Edge of Door				3371	132.7	3356	132.1
3371	132.7	3355	132.1	Bottom of 'A' Post				3359	132.2	3346	131.7
2315	91.1	2301	90.6	Upper Trailing Edge of Door				2314	91.1	2304	90.7
2329	91.7	2317	91.2	Lower Trailing Edge of Door				2322	91.4	2310	90.9
				Steering Column							
				2932	115.4	2940	115.7				
				Center of Seering Column to 'A' Post (Horizontal)							
				405	15.9	415	16.3				
				Center of Steering Column to Headliner (Vertical)							
				415	16.3	373	14.7				

2004 PONTIAC GRAND PRIX

NHTSA Crash Test - #4775 - Front Impact

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

Test Vehicle Weight = 3943 pounds
Vehicle Closing Speed = 34.7 mph
Test Crush Length = 70.9 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	18.6	23.0	16.7	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 16.7 inches					192.9
Using a Rated No Damage Speed of	2.5mph	215.2	166.1	139.4	
Using a Rated No Damage Speed of	5.0mph	397.0	141.4	557.6	
Using a Rated No Damage Speed of	7.5mph	545.5	118.6	1254.6	
Using a Rated No Damage Speed of	10.0mph	660.5	97.8	2230.4	
Average Crush = 20.3 inches					130.6
Using a Rated No Damage Speed of	2.5mph	177.0	112.4	139.4	
Using a Rated No Damage Speed of	5.0mph	326.6	95.7	557.6	
Using a Rated No Damage Speed of	7.5mph	448.7	80.3	1254.6	
Using a Rated No Damage Speed of	10.0mph	543.4	66.2	2230.4	
Maximum Crush = 23.0 inches					101.7
Using a Rated No Damage Speed of	2.5mph	156.3	87.6	139.4	
Using a Rated No Damage Speed of	5.0mph	288.3	74.5	557.6	
Using a Rated No Damage Speed of	7.5mph	396.1	62.5	1254.6	
Using a Rated No Damage Speed of	10.0mph	479.6	51.6	2230.4	

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

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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	23.0	34.7	0.0	0.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.0

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 PONTIAC GRAND PRIX

NHTSA Crash Test - #4775 - Front Impact

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

Test Vehicle Weight = 3943 pounds
Vehicle Closing Speed = 34.7 mph
Test Crush Length = 54.4 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	18.6	23.0	16.7	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 16.7 inches					251.1
Using a Rated No Damage Speed of	2.5mph	280.1	216.2	181.4	
Using a Rated No Damage Speed of	5.0mph	516.7	184.0	725.7	
Using a Rated No Damage Speed of	7.5mph	709.9	154.3	1632.9	
Using a Rated No Damage Speed of	10.0mph	859.7	127.3	2902.8	
Average Crush = 20.3 inches					169.9
Using a Rated No Damage Speed of	2.5mph	230.4	146.3	181.4	
Using a Rated No Damage Speed of	5.0mph	425.1	124.5	725.7	
Using a Rated No Damage Speed of	7.5mph	584.0	104.4	1632.9	
Using a Rated No Damage Speed of	10.0mph	707.2	86.2	2902.8	
Maximum Crush = 23.0 inches					132.4
Using a Rated No Damage Speed of	2.5mph	203.4	114.0	181.4	
Using a Rated No Damage Speed of	5.0mph	375.2	97.0	725.7	
Using a Rated No Damage Speed of	7.5mph	515.5	81.4	1632.9	
Using a Rated No Damage Speed of	10.0mph	624.2	67.1	2902.8	

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	23.0	34.7	0.0	0.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.0

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 PONTIAC GRAND PRIX

NHTSA Crash Test - #4775 - Front Impact

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

Test Vehicle Weight = 3943 pounds
Vehicle Closing Speed = 34.7 MPH
Test Crush Length = 70.9 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	-18.6	-22.9	-23.0	-22.4	-21.2	-16.7	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 6.0 inches					1494.4
Using a Rated No Damage Speed of	2.5mph	599.0	1287.0	139.4	
Using a Rated No Damage Speed of	5.0mph	1105.1	1095.1	557.6	
Using a Rated No Damage Speed of	7.5mph	1518.2	918.6	1254.6	
Using a Rated No Damage Speed of	10.0mph	1838.4	757.7	2230.4	
Average Crush = 20.4 inches					129.3
Using a Rated No Damage Speed of	2.5mph	176.2	111.3	139.4	
Using a Rated No Damage Speed of	5.0mph	325.0	94.7	557.6	
Using a Rated No Damage Speed of	7.5mph	446.5	79.5	1254.6	
Using a Rated No Damage Speed of	10.0mph	540.7	65.5	1543.2	
Maximum Crush = 23.0 inches					101.7
Using a Rated No Damage Speed of	2.5mph	156.3	87.6	139.4	
Using a Rated No Damage Speed of	5.0mph	288.3	74.5	557.6	
Using a Rated No Damage Speed of	7.5mph	396.1	62.5	1254.6	
Using a Rated No Damage Speed of	10.0mph	479.6	51.6	2230.4	

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	0.0	0.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.0

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 PONTIAC GRAND PRIX

NHTSA Crash Test - #4775 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3943 pounds
Vehicle Closing Speed = 34.7 MPH
Test Crush Length = 54.4 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	-18.6	-22.9	-23.0	-22.4	-21.2	-16.7	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 6.0 inches					1945.0
Using a Rated No Damage Speed of	2.5mph	779.6	1675.1	181.4	
Using a Rated No Damage Speed of	5.0mph	1438.3	1425.3	725.7	
Using a Rated No Damage Speed of	7.5mph	1976.0	1195.6	1632.9	
Using a Rated No Damage Speed of	10.0mph	2392.8	986.2	2902.8	
Average Crush = 20.4 inches					168.3
Using a Rated No Damage Speed of	2.5mph	229.3	144.9	181.4	
Using a Rated No Damage Speed of	5.0mph	423.0	123.3	725.7	
Using a Rated No Damage Speed of	7.5mph	581.2	103.4	1632.9	
Using a Rated No Damage Speed of	10.0mph	703.8	85.3	2008.5	
Maximum Crush = 23.0 inches					132.4
Using a Rated No Damage Speed of	2.5mph	203.4	114.0	181.4	
Using a Rated No Damage Speed of	5.0mph	375.2	97.0	725.7	
Using a Rated No Damage Speed of	7.5mph	515.5	81.4	1632.9	
Using a Rated No Damage Speed of	10.0mph	624.2	67.1	2902.8	

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	0.0	0.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.0

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: CHEVROLET
Model: IMPALA

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
4141	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	20.8	29.6	256.8	60.8	542.3	88.0	16.9
2831	1998 BUICK CENTURY FOUR DOOR SEDAN	5.0	19.7	29.9	268.6	67.9	531.3	97.9	18.1
3524	2001 CHEVROLET MONTE CARLO TWO DOOR C...	5.0	23.2	35.5	277.3	73.0	526.8	98.9	21.7
3471	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	23.2	34.9	279.0	71.9	541.0	98.0	21.0
3053	1999 BUICK CENTURY FOUR DOOR SEDAN	5.0	22.4	34.9	283.7	75.7	531.5	103.1	21.8
2821	1998 OLDSMOBILE INTRIGUE FOUR DOOR SEDAN	5.0	21.0	34.9	302.3	86.0	531.5	117.2	23.1
5204	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	18.1	29.6	307.7	83.3	567.9	120.7	19.3
3843	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	16.9	29.8	321.5	94.3	548.3	136.2	21.0
4775	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	20.4	34.7	325.6	95.1	557.6	129.7	23.7
4317	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	12.1	24.9	351.3	115.8	532.7	181.2	20.6
3637	2001 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	16.9	34.7	373.4	131.4	530.8	179.4	28.5
2855	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	17.7	29.6	386.6	107.3	696.2	155.3	19.8
3786	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	12.9	30.0	413.5	160.1	534.0	230.8	27.8
2877	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	9.2	25.2	465.2	205.0	527.9	318.8	27.7
3798	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	11.3	24.8	465.8	162.6	667.3	255.1	21.7
	Average (AVG)				**338.6**	**106.0**	**557.8**	**154.0**	**22.2**
	Minimum (MIN)				**256.8**	**60.8**	**526.8**	**88.0**	**16.9**
	Maximum (MAX)				**465.8**	**205.0**	**696.2**	**318.8**	**28.5**
	Standard Deviation (STDev-sample)				**68.7**	**41.8**	**51.9**	**67.8**	**3.5**
	Number of Tests (n)			**15**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 2000 - 2005
Make: CHEVROLET
Model: IMPALA

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
2877	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	19.9	25.2	214.4	43.5	527.9	67.7	12.8
4141	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	24.7	29.6	216.5	43.2	542.3	62.5	14.2
3524	2001 CHEVROLET MONTE CARLO TWO DOOR C...	5.0	28.5	35.5	225.8	48.4	526.8	65.6	17.7
2831	1998 BUICK CENTURY FOUR DOOR SEDAN	5.0	23.2	29.9	227.7	48.8	531.3	70.4	15.4
3053	1999 BUICK CENTURY FOUR DOOR SEDAN	5.0	27.4	34.9	232.5	50.8	531.5	69.3	17.8
3471	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	27.1	34.9	238.5	52.6	541.0	71.6	18.0
2821	1998 OLDSMOBILE INTRIGUE FOUR DOOR SEDAN	5.0	24.1	34.9	263.4	65.3	531.5	89.0	20.2
3843	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	20.6	29.8	264.3	63.7	548.3	92.0	17.2
5204	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	20.7	29.6	269.6	64.0	567.9	92.7	16.9
2888	1998 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	15.2	24.7	272.9	70.8	525.7	111.4	16.1
4775	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	23.1	34.7	286.9	73.8	557.6	100.7	20.9
4317	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	13.5	24.9	313.4	92.2	532.7	144.3	18.3
3798	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	16.7	24.8	317.3	75.4	667.3	118.3	14.8
3637	2001 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	19.1	34.7	330.0	102.6	530.8	140.0	25.2
2855	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	19.5	29.6	351.4	88.7	696.2	128.3	18.0
3786	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	14.2	30.0	374.9	131.6	534.0	189.7	25.2
3648	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	17.6	35.0	452.2	154.1	663.6	209.8	27.8
	Average (AVG)				**285.4**	**74.7**	**562.1**	**107.3**	**18.6**
	Minimum (MIN)				**214.4**	**43.2**	**525.7**	**62.5**	**12.8**
	Maximum (MAX)				**452.2**	**154.1**	**696.2**	**209.8**	**27.8**
	Standard Deviation (STDev-sample)				**64.7**	**31.2**	**55.7**	**43.7**	**4.1**
	Number of Tests (n)			**17**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: **1G8ZK5276WZ195741**

Model:	**1998 Saturn SL2 Sedan Auto 4 Door Sedan**
Engine Size:	**1.9 L/ 116 cu.in.**
Engine Description:	**In-line 4 cylinder with Double Overhead Cam**
Horse Power:	**124 @ 5600 rpm**
Torque:	**122 lb-ft at 4800 rpm**
Injection System:	**Multi-Port Fuel Injection (MFI)**
PSI:	**31-44 psi**
Ignition:	**Electronic**
Manufacturer:	**Saturn**
Assembly Plant:	**Spring Hill, TN.**
Drive Wheels:	**This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags**

The First through Third characters (1G8) indicate a Saturn Car made in the U.S.A.

The Fourth and Fifth characters (ZK) indicate a SL2 Sedan Auto

The Sixth character (5) indicate a 4 Door Sedan

The Seventh character (2) indicate Manual Seatbelts + Driver & Passenger Air Bags

The Eighth character (7) indicate the OEM engine: 1.9 L/ 116 cu.in., L4, DOHC

The Ninth character (the check digit) is entered as 6.
The VIN appears Valid, the calculated value is 6.

The Tenth character (W) indicate the model year 1998

The Eleventh character (Z) indicate the vehicle was made in the assembly plant in Spring Hill, TN.

The Twelfth through Seventeenth characters (195741) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

PROVIDED BY:

4N6XPRT Systems

8387 University Avenue

La Mesa CA 91941

5/15/2013

1998 SATURN SL2 4 DOOR SEDAN

Curb Weight:		2421	lbs.	1098	kg.
Curb Weight Distribution -	Front:	61	% Rear:	39	%
Gross Vehicle Weight Rating:		3344	lbs.	1517	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	177	14.75	4.50
Wheelbase:	102	8.50	2.59
Front Bumper to Front Axle:	37	3.08	0.94
Front Bumper to Front of Front Well:	23	1.92	0.58
Front Bumper to Front of Hood:	6	0.50	0.15
Front Bumper to Base of Windshield:	46	3.83	1.17
Front Bumper to Top of Windshield:	77	6.42	1.96
Rear Bumper to Rear Axle:	38	3.17	0.97
Rear Bumper to Rear of Rear Well:	20	1.67	0.51
Rear Bumper to Rear of Trunk:	5	0.42	0.13
Rear Bumper to Base of Rear Window:	19	1.58	0.48
Width Dimensions			
Maximum Width:	67	5.58	1.70
Front Track:	57	4.75	1.45
Rear Track:	56	4.67	1.42
Vertical Dimensions			
Height:	55	4.58	1.40
Ground to -			
Front Bumper (Top)	20	1.67	0.51
Headlight - center	23	1.92	0.58
Hood - top front:	26	2.17	0.66
Base of Windshield	35	2.92	0.89
Rear Bumper - top:	23	1.92	0.58
Trunk - top rear:	38	3.17	0.97
Base of Rear Window:	41	3.42	1.04

1998 SATURN SL2 4 DOOR SEDAN

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	53	4.42	1.35
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	53	4.42	1.35
Rear Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (min)	26	2.17	0.66

Seatbelts: 3pt - front and rear

Airbags: FRONT SEAT AIRBAGS

Steering Data

Turning Circle (Diameter)	480	40.00	12.19
Steering Ratio:	:1		
Wheel Radius:	12	1.00	0.30
Tire Size (OEM):	185/65R15		

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 = 142.0 ft t = 3.2 sec a = -27.2 ft/sec² G-force = -0.85

Acceleration:

0 to 30mph	t =	2.6	sec	a =	16.9	ft/sec²	G-force = 0.53
0 to 60mph	t =	7.6	sec	a =	11.6	ft/sec²	G-force = 0.36
45 to 65mph	t =		sec	a =		ft/sec²	G-force =

Transmission Type: 4spd AUTOMATIC

Notes:

Federal Bumper Standard Requirements: 2.5 mph

This vehicles Rated Bumper Strength: 5 mph

N.S.D.C = 1996 - 1999

1998 SATURN SL2 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.31	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	39.78
Inches in front of rear axle	=	62.22
Inches from side of vehicle	=	33.50
Inches from ground	=	21.59
Inches from front corner	=	83.77
Inches from rear corner	=	105.67
Inches from front bumper	=	76.78
Inches from rear bumper	=	100.22

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1287.63	lb*ft*sec²
Pitch Moment of Inertia	=	1247.79	lb*ft*sec²
Roll Moment of Inertia	=	285.78	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	45.0	deg
Angle Front of Hood to Windshield Base	=	12.7	deg
Angle Front of Hood to Windshield Top	=	20.8	deg
Angle of Windshield	=	30.1	deg
Angle of Steering Tires at Max Turn	=	24.4	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 independant 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

#2765

1998 SATURN SL2

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **1998 SATURN SL**

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

Year Range	Make	Model	Body Styles	Wheelbase
1996 - 2002	SATURN	SL		102.4
Remarks: SL, SL1, SL2 - new body panels in 97				
1996 - 2001	SATURN	SW		102.4
Remarks: SW1, SW2				
1997 - 2002	SATURN	SC	2D	102.4
Remarks: SC1, SC2				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	2765	NHTSA Test Reference Guide Version #	V4			
Test Date	1998-01-22	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	56.6	Km/Hr	35.17	MPH
Test Performer	CALSPAN					
Test Reference #	RUN 1746					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	21 C	69.8 F	Total Number of Curves	96		
Data Recorder Type	FM TAPE RECORDER	Data Link	UMBILICAL CABLE			
Test Commentary	FY 97 NCAP #18					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	999	mm	999	inches
Barrier Shape	FLAT BARRIER					
Barrier Commentary	10*12*5 FT. CONCRETE BARRIER WITHOUT LOAD CELL ASSEMBLY.					

1998 SATURN SL2 LEFT FRONT SEAT OCCUPANT

Test #	2765						
Vehicle #	1		Sex	MALE			
Location	LEFT FRONT SEAT		Age	99			
Position	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:HUMANOID S/N:061
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	NO COMMENTS

Head

Head to -

Windshielder Header	335	mm	13.2	inches	Head Injury Criteria (HIC)	435		
WindShield	552	mm	21.7	inches	HIC Lower Time Interval (ms)	64.4		
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	100.4		
Side Header	234	mm	9.2	inches				
Side Window	319	mm	12.6	inches				
Neck to Seatback	9999	mm	0.0	inches				

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

Chest

Chest to -

Dash	514	mm	20.2	inches	Arm to Door	109	mm	4.3	inches
Steering Wheel	314	mm	12.4	inches	Hip to Door	124	mm	4.9	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	384	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	40.2

Lap Belt Peak Load	2934	Newtons	659.6	pound Force
Shoulder Belt Peak Load	5352	Newtons	1203.2	pound Force

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

Legs

Knees to Dash	177	mm	7.0	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	-9999	Newtons	-2247.9	pounds Force
Right Femur Peak Load	-2047	Newtons	-460.2	pounds Force

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

1998 SATURN SL2 LEFT FRONT SEAT OCCUPANT

Test #	2765					
Vehicle #	1	Sex	MALE			
Location	LEFT FRONT SEAT	Age	99			
Position	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:HUMANOID S/N:061
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	3 POINT BELT
Mounted	
Deployment	NOT APPLICABLE
Restraint Commentary	SECOND GENERATION AIR BAG
Restraint # 2	FRONTAL AIRBAG
Mounted	
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECOND GENERATION AIR BAG

1998 SATURN SL2 RIGHT FRONT SEAT OCCUPANT

Test #	2765						
Vehicle #	1			Sex	MALE		
Location	RIGHT FRONT SEAT			Age	99		
Position	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:HUMANOID S/N:150
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	NO COMMENTS

Head

Head to -

Windshielder Header	314	mm	12.4	inches	Head Injury Criteria (HIC)	585		
WindShield	529	mm	20.8	inches	HIC Lower Time Interval (ms)	67.6		
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	103.6		
Side Header	225	mm	8.9	inches				
Side Window	298	mm	11.7	inches				
Neck to Seatback	9999	mm	0.0	inches				

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

Chest

Chest to -

Dash	459	mm	18.1	inches	Arm to Door	91	mm	3.6 inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	119	mm	4.7 inches
Seatback	9999	mm	0.0	inches				

Chest Severity Index	434	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	43.5

Lap Belt Peak Load	1757	Newtons	395.0	pound Force
Shoulder Belt Peak Load	7476	Newtons	1680.7	pound Force

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

Legs

Knees to Dash	163	mm	6.4	inches	Knees to Seatback	9999	mm	0.0 inches

Left Femur Peak Load	-4908	Newtons	-1103.4	pounds Force
Right Femur Peak Load	-4038	Newtons	-907.8	pounds Force

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

1998 SATURN SL2 RIGHT FRONT SEAT OCCUPANT

Test #	2765					
Vehicle #	1	Sex	MALE			
Location	RIGHT FRONT SEAT	Age	99			
Position	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:HUMANOID S/N:150
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	3 POINT BELT
Mounted	
Deployment	NOT APPLICABLE
Restraint Commentary	SECOND GENERATION AIR BAG
Restraint # 2	FRONTAL AIRBAG
Mounted	
Deployment	DEPLOYED PROPERLY
Restraint Commentary	SECOND GENERATION AIR BAG

Vehicle 1 1998 SATURN SL2

Test #	2765		
VIN	1G8ZF5289WZ153108	NHTSA Test Vehicle Number	1
Year	1998	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	SATURN	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	SL2	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER INLINE FRONT		
Displacement	1.8 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NO COMMENTS		
Vehicle Commentary	98 SATURN SL 4-DOOR SEDAN		

Vehicle Length	4485	mm	176.6	inches	CG behind Front Axle	1190	mm	46.9	inches
Vehicle Width	1694	mm	66.7	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2595	mm	102.2	inches	Total Length of Indentation	1545	mm	60.8	inches
Vehicle Test Weight	1226	KG	2702	pounds	Maximum Static Crush Depth	600	mm	23.6	inches
					Pre-Impact Speed	57	kph	35.2	mph

Vehicle Damage Index: 12FDEW3

Principal Direction of Force: 180

Damage Profile Distance Measurements

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

DPD 1	460	mm	18.1	inches
DPD 2	560	mm	22.0	inches
DPD 3	590	mm	23.2	inches
DPD 4	600	mm	23.6	inches
DPD 5	575	mm	22.6	inches
DPD 6	550	mm	21.7	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	174.8	inches	152.6	inches	22.2	inches
	4440	mm	3875	mm	565	mm
Centerline	176.6	inches	153.1	inches	23.4	inches
	4485	mm	3890	mm	595	mm
Right Bumper Corner	174.8	inches	152.0	inches	22.8	inches
	4440	mm	3860	mm	580	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
999.0	NOT APPLICABLE	999.0

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 1998 SATURN SL2

Test #	2765		
VIN	1G8ZF5289WZ153108	NHTSA Test Vehicle Number	1
Year	1998	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	SATURN	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	SL2	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER INLINE FRONT		
Displacement	1.8 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NO COMMENTS		
Vehicle Commentary	98 SATURN SL 4-DOOR SEDAN		

Vehicle Length	4485	mm	176.6	inches	CG behind Front Axle	1190	mm	46.9	inches
Vehicle Width	1694	mm	66.7	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2595	mm	102.2	inches	Total Length of Indentation	1545	mm	60.8	inches
Vehicle Test Weight	1226	KG	2702	pounds	Maximum Static Crush Depth	600	mm	23.6	inches
					Pre-Impact Speed	57	kph	35.2	mph

Vehicle Damage Index: 12FDEW3 — 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	4485	176.6	3890	153.1				
				Engine Block	420	16.5	420	16.5				
4440	174.8	3875	152.6	Front Bumper Corner					4440	174.8	3860	152.0
				Front of Engine	3760	148.0	3505	138.0				
3390	133.5	3250	128.0	Firewall					3370	132.7	3239	127.5
					5950	234.3	0	0.0				
3023	119.0	3006	118.3	Upper Leading Edge of Door					3012	118.6	2988	117.6
2989	117.7	2967	116.8	Lower Leading Edge of Door					2984	117.5	2953	116.3
3072	120.9	3045	119.9	Bottom of 'A' Post					3065	120.7	3038	119.6
2010	79.1	1995	78.5	Upper Trailing Edge of Door					2005	78.9	1992	78.4
2015	79.3	1996	78.6	Lower Trailing Edge of Door					2012	79.2	1986	78.2
				Steering Column	2595	102.2	2585	101.8				
				Center of Seering Column to 'A' Post (Horizontal)	420	16.5	395	15.6				
				Center of Steering Column to Headliner (Vertical)	420	16.5	390	15.4				

1998 SATURN SL2

NHTSA Crash Test - #2765 - Front Impact

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

Test Vehicle Weight = 2702 pounds
Vehicle Closing Speed = 35.2 mph
Test Crush Length = 66.7 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	22.2	23.4	22.8	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 22.2 inches					81.5
Using a Rated No Damage Speed of	2.5mph	119.5	70.3	101.5	
Using a Rated No Damage Speed of	5.0mph	220.7	60.0	406.0	
Using a Rated No Damage Speed of	7.5mph	303.6	50.5	913.6	
Using a Rated No Damage Speed of	10.0mph	368.3	41.8	1624.1	
Average Crush = 23.0 inches					75.9
Using a Rated No Damage Speed of	2.5mph	115.3	65.5	101.5	
Using a Rated No Damage Speed of	5.0mph	213.0	55.9	406.0	
Using a Rated No Damage Speed of	7.5mph	293.1	47.0	913.6	
Using a Rated No Damage Speed of	10.0mph	355.5	38.9	1624.1	
Maximum Crush = 23.4 inches					73.4
Using a Rated No Damage Speed of	2.5mph	113.4	63.3	101.5	
Using a Rated No Damage Speed of	5.0mph	209.4	54.0	406.0	
Using a Rated No Damage Speed of	7.5mph	288.1	45.4	913.6	
Using a Rated No Damage Speed of	10.0mph	349.4	37.6	1624.1	

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	23.4	35.1	-0.1	-0.3

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.1

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

1998 SATURN SL2

NHTSA Crash Test - #2765 - Front Impact

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

Test Vehicle Weight = 2702 pounds
Vehicle Closing Speed = 35.2 mph
Test Crush Length = 60.8 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	22.2	23.4	22.8	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 22.2 inches					89.4
Using a Rated No Damage Speed of	2.5mph	131.0	77.1	111.3	
Using a Rated No Damage Speed of	5.0mph	242.0	65.8	445.2	
Using a Rated No Damage Speed of	7.5mph	332.9	55.3	1001.7	
Using a Rated No Damage Speed of	10.0mph	403.8	45.8	1780.7	
Average Crush = 23.0 inches					83.3
Using a Rated No Damage Speed of	2.5mph	126.5	71.9	111.3	
Using a Rated No Damage Speed of	5.0mph	233.6	61.3	445.2	
Using a Rated No Damage Speed of	7.5mph	321.3	51.5	1001.7	
Using a Rated No Damage Speed of	10.0mph	389.7	42.7	1780.7	
Maximum Crush = 23.4 inches					80.5
Using a Rated No Damage Speed of	2.5mph	124.3	69.4	111.3	
Using a Rated No Damage Speed of	5.0mph	229.6	59.2	445.2	
Using a Rated No Damage Speed of	7.5mph	315.8	49.8	1001.7	
Using a Rated No Damage Speed of	10.0mph	383.1	41.2	1780.7	

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	23.4	35.1	-0.1	-0.3

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.1

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

1998 SATURN SL2

NHTSA Crash Test - #2765 - Front Impact

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

Test Vehicle Weight = 2702 pounds
Vehicle Closing Speed = 35.2 MPH
Test Crush Length = 66.7 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	18.1	22.0	23.2	23.6	22.6	21.7	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 18.1 inches					122.6
Using a Rated No Damage Speed of	2.5mph	146.6	105.8	101.5	
Using a Rated No Damage Speed of	5.0mph	270.7	90.2	406.0	
Using a Rated No Damage Speed of	7.5mph	372.4	75.9	913.6	
Using a Rated No Damage Speed of	10.0mph	451.7	62.8	1624.1	
Average Crush = 22.3 inches					80.8
Using a Rated No Damage Speed of	2.5mph	119.0	69.7	101.5	
Using a Rated No Damage Speed of	5.0mph	219.7	59.5	406.0	
Using a Rated No Damage Speed of	7.5mph	302.3	50.0	913.6	
Using a Rated No Damage Speed of	10.0mph	366.6	41.4	1130.4	
Maximum Crush = 23.6 inches					72.1
Using a Rated No Damage Speed of	2.5mph	112.4	62.2	101.5	
Using a Rated No Damage Speed of	5.0mph	207.6	53.1	406.0	
Using a Rated No Damage Speed of	7.5mph	285.6	44.7	913.6	
Using a Rated No Damage Speed of	10.0mph	346.4	36.9	1624.1	

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	23.6	35.2	0.0	0.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.0

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

1998 SATURN SL2

NHTSA Crash Test - #2765 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 2702 pounds
Vehicle Closing Speed = 35.2 MPH
Test Crush Length = 60.8 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	18.1	22.0	23.2	23.6	22.6	21.7	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 18.1 inches					134.5
Using a Rated No Damage Speed of	2.5mph	160.7	116.0	111.3	
Using a Rated No Damage Speed of	5.0mph	296.8	98.9	445.2	
Using a Rated No Damage Speed of	7.5mph	408.3	83.2	1001.7	
Using a Rated No Damage Speed of	10.0mph	495.3	68.9	1780.7	
Average Crush = 22.3 inches					88.6
Using a Rated No Damage Speed of	2.5mph	130.4	76.4	111.3	
Using a Rated No Damage Speed of	5.0mph	240.9	65.2	445.2	
Using a Rated No Damage Speed of	7.5mph	331.4	54.8	1001.7	
Using a Rated No Damage Speed of	10.0mph	402.0	45.4	1239.4	
Maximum Crush = 23.6 inches					79.1
Using a Rated No Damage Speed of	2.5mph	123.3	68.2	111.3	
Using a Rated No Damage Speed of	5.0mph	227.6	58.2	445.2	
Using a Rated No Damage Speed of	7.5mph	313.2	49.0	1001.7	
Using a Rated No Damage Speed of	10.0mph	379.8	40.5	1780.7	

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	23.6	35.2	0.0	0.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.0

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: 1996 - 2002
Make: SATURN
Model: SL

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
3127	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	18.8	29.9	218.8	57.9	413.5	83.5	19.0
2765	1998 SATURN SL2 FOUR DOOR SEDAN	5.0	22.3	35.2	219.9	59.5	406.0	80.9	22.2
3250	2000 SATURN SL2 FOUR DOOR SEDAN	5.0	20.8	35.2	241.1	69.9	415.9	95.0	23.8
2468	1997 SATURN SL1 FOUR DOOR SEDAN	5.0	15.3	29.4	263.8	84.2	413.3	122.2	22.6
3113	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	14.3	30.0	274.7	95.8	393.9	137.9	25.1
3199	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	14.9	31.2	276.5	97.0	394.2	137.5	26.1
3109	1999 SATURN SC1 TWO DOOR COUPE	5.0	15.7	29.3	296.8	92.2	477.8	134.0	22.0
3195	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	11.5	35.0	410.1	213.2	394.3	290.3	42.5
3191	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	11.0	35.0	431.5	235.9	394.6	321.1	44.6
3082	1999 SATURN SC1 TWO DOOR COUPE	5.0	6.1	22.1	464.2	259.6	415.0	433.4	32.0
	Average (AVG)				**309.7**	**126.5**	**411.9**	**183.6**	**28.0**
	Minimum (MIN)				**218.8**	**57.9**	**393.9**	**80.9**	**19.0**
	Maximum (MAX)				**464.2**	**259.6**	**477.8**	**433.4**	**44.6**
	Standard Deviation (STDev-sample)				**90.9**	**77.7**	**25.1**	**120.9**	**8.9**
	Number of Tests (n)			**10**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 1996 - 2002
Make: SATURN
Model: SL

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
3082	1999 SATURN SC1 TWO DOOR COUPE	5.0	27.0	22.1	105.1	13.3	415.0	22.2	7.2
3127	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	20.7	29.9	199.2	48.0	413.5	69.2	17.3
3195	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	23.1	35.0	204.6	53.1	394.3	72.3	21.2
2765	1998 SATURN SL2 FOUR DOOR SEDAN	5.0	23.6	35.2	207.4	53.0	406.0	72.0	20.9
3199	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	19.2	31.2	215.0	58.6	394.2	83.1	20.3
3250	2000 SATURN SL2 FOUR DOOR SEDAN	5.0	23.3	35.2	215.4	55.8	415.9	75.8	21.2
3113	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	17.4	30.0	226.0	64.8	393.9	93.3	20.7
2468	1997 SATURN SL1 FOUR DOOR SEDAN	5.0	17.1	29.4	236.0	67.4	413.3	97.8	20.2
3109	1999 SATURN SC1 TWO DOOR COUPE	5.0	18.9	29.3	246.6	63.6	477.8	92.5	18.2
3191	1999 SATURN SL1 FOUR DOOR SEDAN	5.0	18.6	35.0	254.1	81.8	394.6	111.4	26.3
	Average (AVG)				**210.9**	**55.9**	**411.9**	**79.0**	**19.4**
	Minimum (MIN)				**105.1**	**13.3**	**393.9**	**22.2**	**7.2**
	Maximum (MAX)				**254.1**	**81.8**	**477.8**	**111.4**	**26.3**
	Standard Deviation (STDev-sample)				**41.4**	**17.8**	**25.1**	**24.1**	**4.9**
	Number of Tests (n)			**10**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 1G2NE52E7XM873250

Model:	1999 Pontiac Grand AM SE 4 Door Sedan
Engine Size:	3.4L / 207cu.in.
Engine Description:	V6 Cylinder Overhead Valves
Horse Power:	170 @ 4800 rpm
Torque:	200 lb-ft at 4000 rpm
Injection System:	Multi-Port Fuel Injection (MFI)
PSI:	41-47 psi
Ignition:	Electronic
Manufacturer:	Buick - Oldsmobile - Cadillac
Assembly Plant:	Lansing (A), MI
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags

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

The Fourth and Fifth characters (NE) indicate a Grand AM SE

The Sixth character (5) indicate a 4 Door Sedan

The Seventh character (2) indicate Manual Seatbelts + Driver & Passenger Air Bags

The Eighth character (E) indicate the OEM engine: 3.4L / 207cu.in., V6 OHV

The Ninth character (the check digit) is entered as 7.
The VIN appears Valid, the calculated value is 7.

The Tenth character (X) indicate the model year 1999

The Eleventh character (M) indicate the vehicle was made in the assembly plant in Lansing (A), MI

The Twelfth through Seventeenth characters (873250) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/15/2013

1999 PONTIAC GRAND AM 4 DOOR SEDAN

Curb Weight:	3116	lbs.	1413	kg.
Curb Weight Distribution - Front:	64	% Rear:	36	%
Gross Vehicle Weight Rating:	3981	lbs.	1806	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	186	15.50	4.72
Wheelbase:	107	8.92	2.72
Front Bumper to Front Axle:	40	3.33	1.02
Front Bumper to Front of Front Well:	25	2.08	0.64
Front Bumper to Front of Hood:	5	0.42	0.13
Front Bumper to Base of Windshield:	51	4.25	1.30
Front Bumper to Top of Windshield:	82	6.83	2.08
Rear Bumper to Rear Axle:	39	3.25	0.99
Rear Bumper to Rear of Rear Well:	25	2.08	0.64
Rear Bumper to Rear of Trunk:	8	0.67	0.20
Rear Bumper to Base of Rear Window:	27	2.25	0.69
Width Dimensions			
Maximum Width:	70	5.83	1.78
Front Track:	59	4.92	1.50
Rear Track:	59	4.92	1.50
Vertical Dimensions			
Height:	55	4.58	1.40
Ground to -			
Front Bumper (Top)	22	1.83	0.56
Headlight - center	26	2.17	0.66
Hood - top front:	28	2.33	0.71
Base of Windshield	37	3.08	0.94
Rear Bumper - top:	27	2.25	0.69
Trunk - top rear:	41	3.42	1.04
Base of Rear Window:	43	3.58	1.09

1999 PONTIAC GRAND AM 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	53	4.42	1.35
Front Seat to Headliner	38	3.17	0.97
Front Leg Room - seatback to floor (max)	42	3.50	1.07
Rear Seat Shoulder Width	51	4.25	1.30
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	36	3.00	0.91

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

Steering Data			
Turning Circle (Diameter)	456	38.00	11.58
Steering Ratio:	:1		
Wheel Radius:	12	1.00	0.30
Tire Size (OEM):	P215/60R15		

Acceleration & Braking Information

Brake Type: FRONT DISC - REAR DRUM
ABS System: ALL WHEEL ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):
d = 140.0 ft t = 3.2 sec a = -27.6 ft/sec² G-force = -0.86

Acceleration:

0 to 30mph	t =	3.6	sec	a =	12.2	ft/sec²	G-force = 0.38
0 to 60mph	t =	7.7	sec	a =	11.4	ft/sec²	G-force = 0.35
45 to 65mph	t =	6.2	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 = 1999 - 2005

1999 PONTIAC GRAND AM 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.37	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	38.52
Inches in front of rear axle	=	68.48
Inches from side of vehicle	=	35.00
Inches from ground	=	21.59
Inches from front corner	=	85.97
Inches from rear corner	=	113.04
Inches from front bumper	=	78.52
Inches from rear bumper	=	107.48

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2003.48	lb*ft*sec²
Pitch Moment of Inertia	=	1935.84	lb*ft*sec²
Roll Moment of Inertia	=	410.88	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	50.2	deg
Angle Front of Hood to Windshield Base	=	11.1	deg
Angle Front of Hood to Windshield Top	=	18.0	deg
Angle of Windshield	=	27.3	deg
Angle of Steering Tires at Max Turn	=	26.9	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 independant 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

#3617

2001 PONTIAC GRAND AM

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-030201SC02301

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Similar Vehicle database reader

You entered: **1999 PONTIAC GRANDAM**

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

Year Range	Make	Model	Body Styles	Wheelbase
1999 - 2004	OLDSMOBILE	ALERO	2D, 4D	107
Remarks:				
1999 - 2005	PONTIAC	GRANDAM	2D, 4D	107, 116
Remarks:				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	3617	NHTSA Test Reference Guide Version #	V5			
Test Date	2001-01-11	Contract #	DTNH22-97-D-02007			
Contract/Study Title	35 MPH NCAP FRONTAL - 2001 PONTIAC GRAND AM 2 DOOR COUPE - M10115					
Test Objective(s)	OBTAIN ATD AND VEHICLE DATA					
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	55.9	Km/Hr	34.73	MPH
Test Performer	KARCO ENGINEERING					
Test Reference #	M10115					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	8 C	46.4 F	Total Number of Curves	133		
Data Recorder Type	DIGITAL DATA ACQUISITION	Data Link	OTHER			
Test Commentary	NO DATA LINK, ON-BOARD RAM					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	0	mm	0 inches
Barrier Shape	LOAD CELL BARRIER				
Barrier Commentary	NO DATA COLLECTED ON A1,B1,C1,D1,D2,D3,D4,D5,D6,D7,D8,D9				

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617		
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	274	mm	10.8	inches	Head Injury Criteria (HIC)	575	
WindShield	530	mm	20.9	inches	HIC Lower Time Interval (ms)	52.7	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	88.6	
Side Header	202	mm	8.0	inches			
Side Window	314	mm	12.4	inches			
Neck to Seatback	0	mm	0.0	inches			
First Contact Region (Head)	AIR BAG						
Second Contact Region (Head)							

Chest

Chest to -

Dash	515	mm	20.3	inches	Arm to Door	121	mm	4.8	inches
Steering Wheel	320	mm	12.6	inches	Hip to Door	132	mm	5.2	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)	42.4			
Lap Belt Peak Load	5378	Newtons	1209.0	pound Force					
Shoulder Belt Peak Load	5087	Newtons	1143.6	pound Force					
First Contact Region (Chest/Abdomen)	AIR BAG								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	149	mm	5.9	inches	Knees to Seatback	0	mm	0.0	inches
Left Femur Peak Load	-4644	Newtons	-1044.0	pounds Force					
Right Femur Peak Load	-2873	Newtons	-645.9	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617					
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	NOT APPLICABLE
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617		
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	275	mm	10.8	inches	Head Injury Criteria (HIC)	493	
WindShield	522	mm	20.6	inches	HIC Lower Time Interval (ms)	56.2	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	92.1	
Side Header	205	mm	8.1	inches			
Side Window	309	mm	12.2	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	470	mm	18.5	inches	Arm to Door	38	mm	1.5	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	130	mm	5.1	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)	42

Lap Belt Peak Load	5469	Newtons	1229.5	pound Force
Shoulder Belt Peak Load	5362	Newtons	1205.4	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	128	mm	5.0	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-4316	Newtons	-970.3	pounds Force
Right Femur Peak Load	-2220	Newtons	-499.1	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617					
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	NOT APPLICABLE
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	DASH PANEL - TOP
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

Vehicle 1 2001 PONTIAC GRAND AM

Test #	3617		
VIN	1G2NE12T11M523711	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	PONTIAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	GRAND AM	Steering Column Collapse Mechanism	UNKNOWN
Body	TWO DOOR COUPE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4723	mm	185.9	inches	CG behind Front Axle	1068	mm	42.0	inches
Vehicle Width	1793	mm	70.6	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2718	mm	107.0	inches	Total Length of Indentation	1576	mm	62.0	inches
Vehicle Test Weight	1582	KG	3487	pounds	Maximum Static Crush Depth	463	mm	18.2	inches
					Pre-Impact Speed	56	kph	34.7	mph

Vehicle Damage Index 12FDEW6 — Principal Direction of Force 0

Damage Profile Distance Measurements

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

DPD 1	-260	mm	-10.2	inches
DPD 2	-383	mm	-15.1	inches
DPD 3	-460	mm	-18.1	inches
DPD 4	-463	mm	-18.2	inches
DPD 5	-461	mm	-18.1	inches
DPD 6	-335	mm	-13.2	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	172.1	inches	161.8	inches	10.3	inches
	4371	mm	4109	mm	262	mm
Centerline	185.9	inches	168.2	inches	17.8	inches
	4723	mm	4272	mm	451	mm
Right Bumper Corner	172.1	inches	159.1	inches	13.0	inches
	4371	mm	4041	mm	330	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 2001 PONTIAC GRAND AM

Test #	3617		
VIN	1G2NE12T11M523711	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	PONTIAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	GRAND AM	Steering Column Collapse Mechanism	UNKNOWN
Body	TWO DOOR COUPE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4723	mm	185.9	inches	CG behind Front Axle	1068	mm	42.0	inches
Vehicle Width	1793	mm	70.6	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2718	mm	107.0	inches	Total Length of Indentation	1576	mm	62.0	inches
Vehicle Test Weight	1582	KG	3487	pounds	Maximum Static Crush Depth	463	mm	18.2	inches
					Pre-Impact Speed	56	kph	34.7	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							
				4723	185.9	4272	168.2				
				Engine Block							
				230	9.1	230	9.1				
4371	172.1	4109	161.8	Front Bumper Corner				4371	172.1	4041	159.1
				Front of Engine							
				3873	152.5	3832	150.9				
3624	142.7	3569	140.5	Firewall				3593	141.5	3531	139.0
				3543	139.5	3480	137.0				
3205	126.2	3197	125.9	Upper Leading Edge of Door				3196	125.8	3192	125.7
3177	125.1	3171	124.8	Lower Leading Edge of Door				3174	125.0	3177	125.1
3170	124.8	3162	124.5	Bottom of 'A' Post				3166	124.6	3181	125.2
1880	74.0	1876	73.9	Upper Trailing Edge of Door				1875	73.8	1876	73.9
1849	72.8	1845	72.6	Lower Trailing Edge of Door				1842	72.5	1855	73.0
				Steering Column							
				2883	113.5	2815	110.8				
				Center of Seering Column to 'A' Post (Horizontal)							
				400	15.7	386	15.2				
				Center of Steering Column to Headliner (Vertical)							
				418	16.5	395	15.6				

2001 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

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

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 mph
Test Crush Length = 70.6 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 10.3 inches					450.3
Using a Rated No Damage Speed of	2.5mph	309.8	387.8	123.7	
Using a Rated No Damage Speed of	5.0mph	571.6	330.0	495.0	
Using a Rated No Damage Speed of	7.5mph	785.3	276.9	1113.7	
Using a Rated No Damage Speed of	10.0mph	951.0	228.4	1980.0	
Average Crush = 14.7 inches					221.1
Using a Rated No Damage Speed of	2.5mph	217.1	190.4	123.7	
Using a Rated No Damage Speed of	5.0mph	400.5	162.0	495.0	
Using a Rated No Damage Speed of	7.5mph	550.2	135.9	1113.7	
Using a Rated No Damage Speed of	10.0mph	666.3	112.1	1980.0	
Maximum Crush = 17.8 inches					150.8
Using a Rated No Damage Speed of	2.5mph	179.3	129.9	123.7	
Using a Rated No Damage Speed of	5.0mph	330.8	110.5	495.0	
Using a Rated No Damage Speed of	7.5mph	454.4	92.7	1113.7	
Using a Rated No Damage Speed of	10.0mph	550.3	76.5	1980.0	

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

****

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	17.8	30.6	-4.2	-13.6

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 27.1

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 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

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

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 mph
Test Crush Length = 62.0 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 10.3 inches					512.4
Using a Rated No Damage Speed of	2.5mph	352.5	441.3	140.8	
Using a Rated No Damage Speed of	5.0mph	650.3	375.5	563.2	
Using a Rated No Damage Speed of	7.5mph	893.4	315.0	1267.1	
Using a Rated No Damage Speed of	10.0mph	1081.9	259.8	2252.6	
Average Crush = 14.7 inches					251.5
Using a Rated No Damage Speed of	2.5mph	247.0	216.6	140.8	
Using a Rated No Damage Speed of	5.0mph	455.7	184.3	563.2	
Using a Rated No Damage Speed of	7.5mph	626.0	154.6	1267.1	
Using a Rated No Damage Speed of	10.0mph	758.1	127.6	2252.6	
Maximum Crush = 17.8 inches					171.6
Using a Rated No Damage Speed of	2.5mph	204.0	147.7	140.8	
Using a Rated No Damage Speed of	5.0mph	376.3	125.7	563.2	
Using a Rated No Damage Speed of	7.5mph	517.0	105.5	1267.1	
Using a Rated No Damage Speed of	10.0mph	626.0	87.0	2252.6	

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	17.8	30.6	-4.2	-13.6

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 27.1

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 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

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

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 MPH
Test Crush Length = 70.6 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	-10.2	-15.1	-18.1	-18.2	-18.1	-13.2	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 6.0 inches					1327.1
Using a Rated No Damage Speed of	2.5mph	531.9	1143.0	123.7	
Using a Rated No Damage Speed of	5.0mph	981.2	972.6	495.0	
Using a Rated No Damage Speed of	7.5mph	1348.1	815.9	1113.7	
Using a Rated No Damage Speed of	10.0mph	1632.5	673.0	1980.0	
Average Crush = 15.5 inches					198.9
Using a Rated No Damage Speed of	2.5mph	205.9	171.3	123.7	
Using a Rated No Damage Speed of	5.0mph	379.8	145.7	495.0	
Using a Rated No Damage Speed of	7.5mph	521.8	122.3	1113.7	
Using a Rated No Damage Speed of	10.0mph	631.9	100.8	1370.1	
Maximum Crush = 18.2 inches					144.2
Using a Rated No Damage Speed of	2.5mph	175.3	124.2	123.7	
Using a Rated No Damage Speed of	5.0mph	323.5	105.7	495.0	
Using a Rated No Damage Speed of	7.5mph	444.4	88.7	1113.7	
Using a Rated No Damage Speed of	10.0mph	538.2	73.1	1980.0	

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

****

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	18.2	30.9	-3.8	-12.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 26.5

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

2001 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 MPH
Test Crush Length = 62.0 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	-10.2	-15.1	-18.1	-18.2	-18.1	-13.2	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 6.0 inches					1509.9
Using a Rated No Damage Speed of	2.5mph	605.1	1300.3	140.8	
Using a Rated No Damage Speed of	5.0mph	1116.3	1106.5	563.2	
Using a Rated No Damage Speed of	7.5mph	1533.7	928.2	1267.1	
Using a Rated No Damage Speed of	10.0mph	1857.3	765.6	2252.6	
Average Crush = 15.5 inches					226.2
Using a Rated No Damage Speed of	2.5mph	234.2	194.8	140.8	
Using a Rated No Damage Speed of	5.0mph	432.1	165.8	563.2	
Using a Rated No Damage Speed of	7.5mph	593.7	139.1	1267.1	
Using a Rated No Damage Speed of	10.0mph	718.9	114.7	1558.7	
Maximum Crush = 18.2 inches					164.1
Using a Rated No Damage Speed of	2.5mph	199.5	141.3	140.8	
Using a Rated No Damage Speed of	5.0mph	368.0	120.3	563.2	
Using a Rated No Damage Speed of	7.5mph	505.6	100.9	1267.1	
Using a Rated No Damage Speed of	10.0mph	612.3	83.2	2252.6	

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	18.2	30.9	-3.8	-12.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 26.5

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

4N6XPRT Systems
Expert System Software for Litigation

8387 University Avenue
La Mesa, CA 91942

Phone: (619) 464-3478
Fax: (619) 464-2206
Toll Free: 1- 800-266-9778

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

E-Mail: 4n6@4n6xprt.com

The NHTSA Crash Test database contains only TWO FRONT Impact tests, based on Maximum Crush measurements, for the Pontiac Grand Am in the desired year range.

To create a SIMILAR class of vehicle, we used the reported test weights of the two vehicles, 3487 and 3527 pounds.

We then looked at the NHTSA database for CARS within the year range of 1965-2013 that have FRONT IMPACT TESTS and had a weight range of 3486-3528 pounds (+/- 1 pound of the range).

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: 1965 - 2013

Vehicle Weight Range: 3486-3528

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness Values A	B	Vehicle Width Values G	Kv	Crush Factor
1204	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	18.3	18.6	149.8	22.2	504.9	41.6	7.5
1205	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	29.6	30.0	170.4	28.8	504.9	41.4	12.2
3101	1999 FORD MUSTANG TWO DOOR COUPE	5.0	24.5	29.4	191.0	38.1	479.4	55.3	14.1
1203	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	14.1	20.1	216.3	46.3	504.9	82.0	11.5
1689	1992 VOLVO 240 FOUR DOOR SEDAN	5.0	27.9	35.2	225.2	48.7	520.4	66.2	17.8
994	1987 CHEVROLET CAMARO THREE DOOR HATC...	5.0	24.1	35.2	245.7	61.6	490.2	83.6	20.6
1193	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	20.8	29.3	247.6	58.0	528.0	84.3	16.6
219	1979 PEUGEOT 504 FOUR DOOR SEDAN	5.0	24.1	35.3	262.5	65.9	523.1	89.4	20.6
1209	1988 EAGLE PREMIER FOUR DOOR SEDAN	5.0	17.9	29.3	275.0	74.7	506.6	108.5	19.2
586	1983 BUICK CENTURY FOUR DOOR SEDAN	5.0	24.0	34.8	280.5	69.6	565.3	94.9	20.2
1734	1992 FORD MUSTANG CONVERTIBLE	5.0	17.1	29.5	290.5	83.4	506.1	120.9	20.4
1632	1991 FORD MUSTANG CONVERTIBLE	5.0	16.9	29.5	293.8	85.3	506.0	123.6	20.6
1966	1987 FORD TAURUS FOUR DOOR SEDAN	5.0	29.5	49.9	297.0	90.5	487.1	111.8	33.8
3110	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	16.3	29.1	298.0	88.5	501.8	128.9	20.9
3455	2001 HONDA ACCORD TWO DOOR COUPE	5.0	19.8	34.6	298.1	88.9	500.0	121.5	24.1
7189	2011 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	20.0	35.0	305.9	91.9	509.1	125.0	24.5
1040	1987 SAAB 9000 FIVE DOOR HATCHBACK	5.0	23.2	34.6	308.2	78.8	602.9	107.6	20.7
3457	2001 HONDA ACCORD FOUR DOOR SEDAN	5.0	18.8	34.6	315.4	99.3	500.8	135.7	25.5
1707	1992 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	15.5	29.5	316.6	100.2	500.1	145.2	22.5
1131	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	21.4	34.8	317.0	88.1	570.4	120.1	22.6
7720	2012 MITSUBISHI LANCER FOUR DOOR SEDAN	5.0	19.4	35.0	317.9	98.3	514.0	133.9	25.2
3074	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	15.4	29.7	322.1	103.2	502.4	149.3	22.9
3188	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	18.5	35.0	323.1	104.8	497.8	142.7	26.5
2712	1998 HONDA ACCORD FOUR DOOR SEDAN	5.0	18.7	35.2	325.0	105.1	502.7	142.8	26.5
4457	2003 HONDA ACCORD TWO DOOR COUPE	5.0	18.1	35.1	326.8	108.6	491.6	147.7	27.2
6181	2008 SUBARU IMPREZA FOUR DOOR SEDAN	5.0	18.6	34.7	327.9	104.5	514.3	142.7	25.8
2806	1998 FORD MUSTANG TWO DOOR COUPE	5.0	17.6	34.9	332.1	112.9	488.6	153.8	27.7
3643	2001 NISSAN MAXIMA FOUR DOOR SEDAN	5.0	17.6	34.8	340.1	115.0	502.9	156.9	27.5
5710	2001 HONDA CIVIC TWO DOOR COUPE	5.0	18.0	34.9	348.8	115.8	525.2	157.8	27.1
6763	2010 TOYOTA PRIUS FIVE DOOR HATCHBACK	5.0	17.5	35.0	349.4	119.7	509.9	162.9	28.0
6439	2004 HONDA ACCORD FOUR DOOR SEDAN	5.0	8.4	20.0	354.1	126.8	494.7	225.3	19.1
4724	2002 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	17.9	37.3	363.4	131.2	503.6	174.8	31.1
1202	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	8.1	19.8	368.9	134.8	504.9	241.0	19.4
3617	2001 PONTIAC GRAND AM TWO DOOR COUPE	5.0	15.5	34.7	378.9	145.0	495.0	197.9	31.1
1201	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	2.5	9.6	378.9	142.2	504.9	614.8	15.0
4182	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	12.5	29.6	395.8	156.1	501.6	225.9	28.1
4245	2001 SATURN L200 FOUR DOOR SEDAN	5.0	7.8	20.0	398.6	154.3	515.0	274.2	20.6
1899	1993 FORD TAURUS FOUR DOOR SEDAN	5.0	12.0	29.4	404.3	165.0	495.4	239.6	28.9
2031	1994 FORD MUSTANG TWO DOOR COUPE	5.0	11.6	29.3	411.4	173.3	488.3	251.8	29.8
5821	2006 FORD FUSION FOUR DOOR SEDAN	5.0	9.2	24.7	420.8	179.9	492.2	282.6	26.5
5661	2007 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	14.3	34.9	428.2	179.7	510.1	244.8	34.2
2678	1996 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	14.5	37.8	451.9	204.1	500.1	271.2	39.3

Available Test Results

Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width G	Vehicle Width Kv	Crush Factor
3460	2000 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	14.9	39.5	475.4	220.4	512.6	288.9	42.0
	Average (AVG)				**322.1**	**107.2**	**508.8**	**163.0**	**23.8**
	Minimum (MIN)				**149.8**	**22.2**	**479.4**	**41.4**	**7.5**
	Maximum (MAX)				**475.4**	**220.4**	**602.9**	**614.8**	**42.0**
	Standard Deviation (STDev-sample)				**71.4**	**45.6**	**22.5**	**97.0**	**6.9**
	Number of Tests (n)			**43**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

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
4245	2001 SATURN L200 FOUR DOOR SEDAN	5.0	25.4	20.0	121.6	14.3	515.0	25.5	6.3
1204	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	19.0	18.6	144.2	20.6	504.9	38.6	7.3
1205	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	31.0	30.0	163.0	26.3	504.9	37.9	11.6
6439	2004 HONDA ACCORD FOUR DOOR SEDAN	5.0	17.5	20.0	169.5	29.0	494.7	51.6	9.1
4145	2000 OLDSMOBILE ALERO TWO DOOR COUPE	5.0	23.1	24.9	174.1	30.1	504.3	47.1	10.8
3101	1999 FORD MUSTANG TWO DOOR COUPE	5.0	26.3	29.4	177.6	32.9	479.4	47.8	13.1
1203	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	14.9	20.1	205.3	41.8	504.9	73.9	10.9
1419	1990 CHRYSLER LE BARON CONVERTIBLE	5.0	27.8	34.6	218.6	46.6	512.9	63.6	17.2
1689	1992 VOLVO 240 FOUR DOOR SEDAN	5.0	28.5	35.2	220.8	46.8	520.4	63.6	17.4
4724	2002 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	28.9	37.3	225.1	50.3	503.6	67.1	19.3
994	1987 CHEVROLET CAMARO THREE DOOR HATC...	5.0	25.3	35.2	234.1	55.9	490.2	76.0	19.6
1193	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	21.8	29.3	235.6	52.6	528.0	76.4	15.8
219	1979 PEUGEOT 504 FOUR DOOR SEDAN	5.0	25.5	35.3	248.4	59.0	523.1	80.1	19.5
2678	1996 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	26.4	37.8	248.6	61.8	500.1	82.1	21.6
1613	1991 FORD MUSTANG CONVERTIBLE	5.0	19.5	29.2	254.3	63.2	511.9	92.0	17.5
1966	1987 FORD TAURUS FOUR DOOR SEDAN	5.0	34.4	49.9	254.5	66.5	487.1	82.1	29.0
3460	2000 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	27.6	39.5	256.8	64.3	512.6	84.3	22.7
3455	2001 HONDA ACCORD TWO DOOR COUPE	5.0	23.0	34.6	257.6	66.3	500.0	90.7	20.8
1209	1988 EAGLE PREMIER FOUR DOOR SEDAN	5.0	19.1	29.3	257.7	65.5	506.6	95.2	18.0
586	1983 BUICK CENTURY FOUR DOOR SEDAN	5.0	25.5	34.8	264.1	61.7	565.3	84.1	19.0
4176	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	14.8	25.0	269.1	72.4	499.7	113.2	16.8
3457	2001 HONDA ACCORD FOUR DOOR SEDAN	5.0	21.8	34.6	272.0	73.8	500.8	100.9	22.0
4797	2002 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	24.0	37.7	272.5	74.4	499.3	98.8	23.7
3110	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	17.6	29.1	276.0	75.9	501.8	110.6	19.3
1632	1991 FORD MUSTANG CONVERTIBLE	5.0	17.9	29.5	277.0	75.8	506.0	109.9	19.5
1734	1992 FORD MUSTANG CONVERTIBLE	5.0	17.9	29.5	277.1	75.8	506.1	109.9	19.5
1301	1989 CHRYSLER CONQUEST THREE DOOR HATC...	5.0	18.7	29.4	277.6	72.4	532.0	105.1	18.5
1327	1989 PEUGEOT 505 FOUR DOOR SEDAN	5.0	22.2	34.8	278.7	74.8	519.3	102.0	21.8
4457	2003 HONDA ACCORD TWO DOOR COUPE	5.0	21.0	35.1	281.5	80.6	491.6	109.6	23.4
1707	1992 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	17.4	29.5	281.8	79.4	500.1	115.1	20.0
6181	2008 SUBARU IMPREZA FOUR DOOR SEDAN	5.0	21.6	34.7	283.2	78.0	514.3	106.4	22.3
7189	2011 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	21.5	35.0	284.4	79.4	509.1	108.1	22.8
2712	1998 HONDA ACCORD FOUR DOOR SEDAN	5.0	21.3	35.2	284.8	80.7	502.7	109.7	23.2
3074	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	17.3	29.7	286.9	81.9	502.4	118.5	20.4
3188	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	20.6	35.0	290.5	84.8	497.8	115.4	23.8
1040	1987 SAAB 9000 FIVE DOOR HATCHBACK	5.0	24.2	34.6	295.4	72.4	602.9	98.9	19.8
7720	2012 MITSUBISHI LANCER FOUR DOOR SEDAN	5.0	20.8	35.0	296.0	85.2	514.0	116.0	23.5
1131	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	22.7	34.8	299.2	78.5	570.4	107.1	21.3
1201	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	3.1	9.6	300.7	89.5	504.9	387.3	11.9
2806	1998 FORD MUSTANG TWO DOOR COUPE	5.0	18.5	34.9	316.7	102.6	488.6	139.8	26.4
3643	2001 NISSAN MAXIMA FOUR DOOR SEDAN	5.0	18.9	34.8	317.2	100.0	502.9	136.4	25.6
5821	2006 FORD FUSION FOUR DOOR SEDAN	5.0	12.0	24.7	322.5	105.6	492.2	165.9	20.3

4N6XPRT StifCalcs®

Available Test Results

Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	Vehicle Stiffness Values A	B	G	Kv	Crush Factor
3617	2001 PONTIAC GRAND AM TWO DOOR COUPE	5.0	18.2	34.7	323.0	105.4	495.0	143.8	26.5
5880	2007 MAZDA MAZDA6 FOUR DOOR SEDAN	5.0	18.3	34.8	326.3	106.2	501.2	144.8	26.5
3081	1999 PLYMOUTH BREEZE FOUR DOOR SEDAN	5.0	10.0	22.1	332.0	113.1	487.2	188.9	19.5
1202	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	8.9	19.8	336.4	112.1	504.9	200.4	17.7
5710	2001 HONDA CIVIC TWO DOOR COUPE	5.0	18.7	34.9	336.8	108.0	525.2	147.1	26.1
6763	2010 TOYOTA PRIUS FIVE DOOR HATCHBACK	5.0	17.9	35.0	342.2	114.8	509.9	156.3	27.4
5661	2007 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	17.3	34.9	352.3	121.6	510.1	165.7	28.1
4182	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	13.7	29.6	360.8	129.8	501.6	187.8	25.6
1899	1993 FORD TAURUS FOUR DOOR SEDAN	5.0	13.4	29.4	361.0	131.6	495.4	191.1	25.8
2031	1994 FORD MUSTANG TWO DOOR COUPE	5.0	12.6	29.3	377.2	145.7	488.3	211.7	27.3
3181	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	10.0	24.7	397.9	156.4	506.0	245.8	24.4
1459	1990 MERCEDES 190 FOUR DOOR SEDAN	5.0	13.4	34.8	468.5	208.6	526.1	284.4	36.2
	Average (AVG)				**277.5**	**79.7**	**508.9**	**118.7**	**20.4**
	Minimum (MIN)				**121.6**	**14.3**	**479.4**	**25.5**	**6.3**
	Maximum (MAX)				**468.5**	**208.6**	**602.9**	**387.3**	**36.2**
	Standard Deviation (STDev-sample)				**63.9**	**35.6**	**20.8**	**63.9**	**5.8**
	Number of Tests (n)			**54**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 1G2NF52T4YM853079

Model:	2000 Pontiac Grand AM SE1 4 Door Sedan
Engine Size:	2.4 L/ 146 cu.in.
Engine Description:	In-Line 4 cylinder with Double Overhead Cam
Horse Power:	150 @ 6000 rpm
Torque:	155 lb-ft at 4400 rpm
Injection System:	Multi-Port Fuel Injection (MPFI)
PSI:	41-47 psi
Ignition:	Electronic
Manufacturer:	Pontiac
Assembly Plant:	Lansing (A), MI
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags

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

The Fourth and Fifth characters (NF) indicate a Grand AM SE1

The Sixth character (5) indicate a 4 Door Sedan

The Seventh character (2) indicate Manual Seatbelts + Driver & Passenger Air Bags

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

The Ninth character (the check digit) is entered as 4.
The VIN appears Valid, the calculated value is 4.

The Tenth character (Y) indicate the model year 2000

The Eleventh character (M) indicate the vehicle was made in the assembly plant in Lansing (A), MI

The Twelfth through Seventeenth characters (853079) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/15/2013

2000 PONTIAC GRAND AM 4 DOOR SEDAN

Curb Weight:	3116 lbs.		1413	kg.
Curb Weight Distribution - Front:	64 %	Rear:	36	%
Gross Vehicle Weight Rating:	3981 lbs.		1806	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	186	15.50	4.72
Wheelbase:	107	8.92	2.72
Front Bumper to Front Axle:	40	3.33	1.02
Front Bumper to Front of Front Well:	25	2.08	0.64
Front Bumper to Front of Hood:	5	0.42	0.13
Front Bumper to Base of Windshield:	51	4.25	1.30
Front Bumper to Top of Windshield:	82	6.83	2.08
Rear Bumper to Rear Axle:	39	3.25	0.99
Rear Bumper to Rear of Rear Well:	25	2.08	0.64
Rear Bumper to Rear of Trunk:	8	0.67	0.20
Rear Bumper to Base of Rear Window:	27	2.25	0.69
Width Dimensions			
Maximum Width:	70	5.83	1.78
Front Track:	59	4.92	1.50
Rear Track:	59	4.92	1.50
Vertical Dimensions			
Height:	55	4.58	1.40
Ground to -			
Front Bumper (Top)	22	1.83	0.56
Headlight - center	26	2.17	0.66
Hood - top front:	28	2.33	0.71
Base of Windshield	37	3.08	0.94
Rear Bumper - top:	27	2.25	0.69
Trunk - top rear:	41	3.42	1.04
Base of Rear Window:	43	3.58	1.09

2000 PONTIAC GRAND AM 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	53	4.42	1.35
Front Seat to Headliner	38	3.17	0.97
Front Leg Room - seatback to floor (max)	42	3.50	1.07
Rear Seat Shoulder Width	51	4.25	1.30
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	36	3.00	0.91

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

Steering Data			
Turning Circle (Diameter)	456	38.00	11.58
Steering Ratio:	:1		
Wheel Radius:	12	1.00	0.30
Tire Size (OEM):	P215/60R15		

Acceleration & Braking Information

Brake Type: FRONT DISC - REAR DRUM
ABS System: ALL WHEEL ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):
d = 140.0 ft t = 3.2 sec a = -27.6 ft/sec² G-force = -0.86

Acceleration:

0 to 30mph	t =	3.6	sec	a =	12.2	ft/sec²	G-force = 0.38
0 to 60mph	t =	7.7	sec	a =	11.4	ft/sec²	G-force = 0.35
45 to 65mph	t =	6.2	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 = 1999 - 2005

2000 PONTIAC GRAND AM 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.37	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	38.52
Inches in front of rear axle	=	68.48
Inches from side of vehicle	=	35.00
Inches from ground	=	21.59
Inches from front corner	=	85.97
Inches from rear corner	=	113.04
Inches from front bumper	=	78.52
Inches from rear bumper	=	107.48

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	2003.48	lb*ft*sec²
Pitch Moment of Inertia	=	1935.84	lb*ft*sec²
Roll Moment of Inertia	=	410.88	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	50.2	deg
Angle Front of Hood to Windshield Base	=	11.1	deg
Angle Front of Hood to Windshield Top	=	18.0	deg
Angle of Windshield	=	27.3	deg
Angle of Steering Tires at Max Turn	=	26.9	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 independant 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

#3617

2001 PONTIAC GRAND AM

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **1999 PONTIAC GRANDAM**

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

Year Range	Make	Model	Body Styles	Wheelbase
1999 - 2004	OLDSMOBILE	ALERO	2D, 4D	107
Remarks:				
1999 - 2005	PONTIAC	GRANDAM	2D, 4D	107, 116
Remarks:				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	3617	NHTSA Test Reference Guide Version #	V5			
Test Date	2001-01-11	Contract #	DTNH22-97-D-02007			
Contract/Study Title	35 MPH NCAP FRONTAL - 2001 PONTIAC GRAND AM 2 DOOR COUPE - M10115					
Test Objective(s)	OBTAIN ATD AND VEHICLE DATA					
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	55.9	Km/Hr	34.73	MPH
Test Performer	KARCO ENGINEERING					
Test Reference #	M10115					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	8 C	46.4 F	Total Number of Curves	133		
Data Recorder Type	DIGITAL DATA ACQUISITION	Data Link	OTHER			
Test Commentary	NO DATA LINK, ON-BOARD RAM					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	0	mm	0 inches
Barrier Shape	LOAD CELL BARRIER				
Barrier Commentary	NO DATA COLLECTED ON A1,B1,C1,D1,D2,D3,D4,D5,D6,D7,D8,D9				

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617		
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	274	mm	10.8	inches	Head Injury Criteria (HIC)	575	
WindShield	530	mm	20.9	inches	HIC Lower Time Interval (ms)	52.7	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	88.6	
Side Header	202	mm	8.0	inches			
Side Window	314	mm	12.4	inches			
Neck to Seatback	0	mm	0.0	inches			
First Contact Region (Head)	AIR BAG						
Second Contact Region (Head)							

Chest

Chest to -

Dash	515	mm	20.3	inches	Arm to Door	121	mm	4.8	inches
Steering Wheel	320	mm	12.6	inches	Hip to Door	132	mm	5.2	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)	42.4			
Lap Belt Peak Load	5378	Newtons	1209.0	pound Force					
Shoulder Belt Peak Load	5087	Newtons	1143.6	pound Force					
First Contact Region (Chest/Abdomen)	AIR BAG								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	149	mm	5.9	inches	Knees to Seatback	0	mm	0.0	inches
Left Femur Peak Load	-4644	Newtons	-1044.0	pounds Force					
Right Femur Peak Load	-2873	Newtons	-645.9	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617					
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	NOT APPLICABLE
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	STEERING WHEEL
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617		
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	275	mm	10.8	inches	Head Injury Criteria (HIC)	493	
WindShield	522	mm	20.6	inches	HIC Lower Time Interval (ms)	56.2	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	92.1	
Side Header	205	mm	8.1	inches			
Side Window	309	mm	12.2	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	470	mm	18.5	inches	Arm to Door	38	mm	1.5	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	130	mm	5.1	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)	42

Lap Belt Peak Load	5469	Newtons	1229.5	pound Force
Shoulder Belt Peak Load	5362	Newtons	1205.4	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	128	mm	5.0	inches	Knees to Seatback	0	mm	0.0	inches

Left Femur Peak Load	-4316	Newtons	-970.3	pounds Force
Right Femur Peak Load	-2220	Newtons	-499.1	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617					
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	NOT APPLICABLE
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	DASH PANEL - TOP
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

Vehicle 1 2001 PONTIAC GRAND AM

Test #	3617		
VIN	1G2NE12T11M523711	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	PONTIAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	GRAND AM	Steering Column Collapse Mechanism	UNKNOWN
Body	TWO DOOR COUPE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4723	mm	185.9	inches	CG behind Front Axle	1068	mm	42.0	inches
Vehicle Width	1793	mm	70.6	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2718	mm	107.0	inches	Total Length of Indentation	1576	mm	62.0	inches
Vehicle Test Weight	1582	KG	3487	pounds	Maximum Static Crush Depth	463	mm	18.2	inches
					Pre-Impact Speed	56	kph	34.7	mph

Vehicle Damage Index 12FDEW6 — Principal Direction of Force 0

Damage Profile Distance Measurements

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

DPD 1	-260	mm	-10.2	inches
DPD 2	-383	mm	-15.1	inches
DPD 3	-460	mm	-18.1	inches
DPD 4	-463	mm	-18.2	inches
DPD 5	-461	mm	-18.1	inches
DPD 6	-335	mm	-13.2	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	172.1	inches	161.8	inches	10.3	inches
	4371	mm	4109	mm	262	mm
Centerline	185.9	inches	168.2	inches	17.8	inches
	4723	mm	4272	mm	451	mm
Right Bumper Corner	172.1	inches	159.1	inches	13.0	inches
	4371	mm	4041	mm	330	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 2001 PONTIAC GRAND AM

Test #	3617		
VIN	1G2NE12T11M523711	NHTSA Test Vehicle Number	1
Year	2001	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	PONTIAC	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	GRAND AM	Steering Column Collapse Mechanism	UNKNOWN
Body	TWO DOOR COUPE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.4 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4723	mm	185.9	inches	CG behind Front Axle	1068	mm	42.0	inches
Vehicle Width	1793	mm	70.6	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2718	mm	107.0	inches	Total Length of Indentation	1576	mm	62.0	inches
Vehicle Test Weight	1582	KG	3487	pounds	Maximum Static Crush Depth	463	mm	18.2	inches
					Pre-Impact Speed	56	kph	34.7	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							
				4723	185.9	4272	168.2				
				Engine Block							
				230	9.1	230	9.1				
4371	172.1	4109	161.8	Front Bumper Corner				4371	172.1	4041	159.1
				Front of Engine							
				3873	152.5	3832	150.9				
3624	142.7	3569	140.5	Firewall				3593	141.5	3531	139.0
				3543	139.5	3480	137.0				
3205	126.2	3197	125.9	Upper Leading Edge of Door				3196	125.8	3192	125.7
3177	125.1	3171	124.8	Lower Leading Edge of Door				3174	125.0	3177	125.1
3170	124.8	3162	124.5	Bottom of 'A' Post				3166	124.6	3181	125.2
1880	74.0	1876	73.9	Upper Trailing Edge of Door				1875	73.8	1876	73.9
1849	72.8	1845	72.6	Lower Trailing Edge of Door				1842	72.5	1855	73.0
				Steering Column							
				2883	113.5	2815	110.8				
				Center of Seering Column to 'A' Post (Horizontal)							
				400	15.7	386	15.2				
				Center of Steering Column to Headliner (Vertical)							
				418	16.5	395	15.6				

2001 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

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

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 mph
Test Crush Length = 70.6 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 10.3 inches					450.3
Using a Rated No Damage Speed of	2.5mph	309.8	387.8	123.7	
Using a Rated No Damage Speed of	5.0mph	571.6	330.0	495.0	
Using a Rated No Damage Speed of	7.5mph	785.3	276.9	1113.7	
Using a Rated No Damage Speed of	10.0mph	951.0	228.4	1980.0	
Average Crush = 14.7 inches					221.1
Using a Rated No Damage Speed of	2.5mph	217.1	190.4	123.7	
Using a Rated No Damage Speed of	5.0mph	400.5	162.0	495.0	
Using a Rated No Damage Speed of	7.5mph	550.2	135.9	1113.7	
Using a Rated No Damage Speed of	10.0mph	666.3	112.1	1980.0	
Maximum Crush = 17.8 inches					150.8
Using a Rated No Damage Speed of	2.5mph	179.3	129.9	123.7	
Using a Rated No Damage Speed of	5.0mph	330.8	110.5	495.0	
Using a Rated No Damage Speed of	7.5mph	454.4	92.7	1113.7	
Using a Rated No Damage Speed of	10.0mph	550.3	76.5	1980.0	

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

****

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	17.8	30.6	-4.2	-13.6

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 27.1

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 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

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

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 mph
Test Crush Length = 62.0 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 10.3 inches					512.4
Using a Rated No Damage Speed of	2.5mph	352.5	441.3	140.8	
Using a Rated No Damage Speed of	5.0mph	650.3	375.5	563.2	
Using a Rated No Damage Speed of	7.5mph	893.4	315.0	1267.1	
Using a Rated No Damage Speed of	10.0mph	1081.9	259.8	2252.6	
Average Crush = 14.7 inches					251.5
Using a Rated No Damage Speed of	2.5mph	247.0	216.6	140.8	
Using a Rated No Damage Speed of	5.0mph	455.7	184.3	563.2	
Using a Rated No Damage Speed of	7.5mph	626.0	154.6	1267.1	
Using a Rated No Damage Speed of	10.0mph	758.1	127.6	2252.6	
Maximum Crush = 17.8 inches					171.6
Using a Rated No Damage Speed of	2.5mph	204.0	147.7	140.8	
Using a Rated No Damage Speed of	5.0mph	376.3	125.7	563.2	
Using a Rated No Damage Speed of	7.5mph	517.0	105.5	1267.1	
Using a Rated No Damage Speed of	10.0mph	626.0	87.0	2252.6	

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

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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	17.8	30.6	-4.2	-13.6

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 27.1

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 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

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

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 MPH
Test Crush Length = 70.6 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	-10.2	-15.1	-18.1	-18.2	-18.1	-13.2	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 6.0 inches					1327.1
Using a Rated No Damage Speed of	2.5mph	531.9	1143.0	123.7	
Using a Rated No Damage Speed of	5.0mph	981.2	972.6	495.0	
Using a Rated No Damage Speed of	7.5mph	1348.1	815.9	1113.7	
Using a Rated No Damage Speed of	10.0mph	1632.5	673.0	1980.0	
Average Crush = 15.5 inches					198.9
Using a Rated No Damage Speed of	2.5mph	205.9	171.3	123.7	
Using a Rated No Damage Speed of	5.0mph	379.8	145.7	495.0	
Using a Rated No Damage Speed of	7.5mph	521.8	122.3	1113.7	
Using a Rated No Damage Speed of	10.0mph	631.9	100.8	1370.1	
Maximum Crush = 18.2 inches					144.2
Using a Rated No Damage Speed of	2.5mph	175.3	124.2	123.7	
Using a Rated No Damage Speed of	5.0mph	323.5	105.7	495.0	
Using a Rated No Damage Speed of	7.5mph	444.4	88.7	1113.7	
Using a Rated No Damage Speed of	10.0mph	538.2	73.1	1980.0	

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

****

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	18.2	30.9	-3.8	-12.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 26.5

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

2001 PONTIAC GRAND AM

NHTSA Crash Test - #3617 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3487 pounds
Vehicle Closing Speed = 34.7 MPH
Test Crush Length = 62.0 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	-10.2	-15.1	-18.1	-18.2	-18.1	-13.2	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 6.0 inches					1509.9
Using a Rated No Damage Speed of	2.5mph	605.1	1300.3	140.8	
Using a Rated No Damage Speed of	5.0mph	1116.3	1106.5	563.2	
Using a Rated No Damage Speed of	7.5mph	1533.7	928.2	1267.1	
Using a Rated No Damage Speed of	10.0mph	1857.3	765.6	2252.6	
Average Crush = 15.5 inches					226.2
Using a Rated No Damage Speed of	2.5mph	234.2	194.8	140.8	
Using a Rated No Damage Speed of	5.0mph	432.1	165.8	563.2	
Using a Rated No Damage Speed of	7.5mph	593.7	139.1	1267.1	
Using a Rated No Damage Speed of	10.0mph	718.9	114.7	1558.7	
Maximum Crush = 18.2 inches					164.1
Using a Rated No Damage Speed of	2.5mph	199.5	141.3	140.8	
Using a Rated No Damage Speed of	5.0mph	368.0	120.3	563.2	
Using a Rated No Damage Speed of	7.5mph	505.6	100.9	1267.1	
Using a Rated No Damage Speed of	10.0mph	612.3	83.2	2252.6	

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	18.2	30.9	-3.8	-12.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 26.5

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

4N6XPRT Systems
Expert System Software for Litigation

8387 University Avenue
La Mesa, CA 91942

Phone: (619) 464-3478
Fax: (619) 464-2206
Toll Free: 1- 800-266-9778

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

E-Mail: 4n6@4n6xprt.com

The NHTSA Crash Test database contains only TWO FRONT Impact tests, based on Maximum Crush measurements, for the Pontiac Grand Am in the desired year range.

To create a SIMILAR class of vehicle, we used the reported test weights of the two vehicles, 3487 and 3527 pounds.

We then looked at the NHTSA database for CARS within the year range of 1965-2013 that have FRONT IMPACT TESTS and had a weight range of 3486-3528 pounds (+/- 1 pound of the range).

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: 1965 - 2013

Vehicle Weight Range: 3486-3528

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness Values A	B	Vehicle Width Values G	Kv	Crush Factor
1204	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	18.3	18.6	149.8	22.2	504.9	41.6	7.5
1205	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	29.6	30.0	170.4	28.8	504.9	41.4	12.2
3101	1999 FORD MUSTANG TWO DOOR COUPE	5.0	24.5	29.4	191.0	38.1	479.4	55.3	14.1
1203	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	14.1	20.1	216.3	46.3	504.9	82.0	11.5
1689	1992 VOLVO 240 FOUR DOOR SEDAN	5.0	27.9	35.2	225.2	48.7	520.4	66.2	17.8
994	1987 CHEVROLET CAMARO THREE DOOR HATC...	5.0	24.1	35.2	245.7	61.6	490.2	83.6	20.6
1193	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	20.8	29.3	247.6	58.0	528.0	84.3	16.6
219	1979 PEUGEOT 504 FOUR DOOR SEDAN	5.0	24.1	35.3	262.5	65.9	523.1	89.4	20.6
1209	1988 EAGLE PREMIER FOUR DOOR SEDAN	5.0	17.9	29.3	275.0	74.7	506.6	108.5	19.2
586	1983 BUICK CENTURY FOUR DOOR SEDAN	5.0	24.0	34.8	280.5	69.6	565.3	94.9	20.2
1734	1992 FORD MUSTANG CONVERTIBLE	5.0	17.1	29.5	290.5	83.4	506.1	120.9	20.4
1632	1991 FORD MUSTANG CONVERTIBLE	5.0	16.9	29.5	293.8	85.3	506.0	123.6	20.6
1966	1987 FORD TAURUS FOUR DOOR SEDAN	5.0	29.5	49.9	297.0	90.5	487.1	111.8	33.8
3110	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	16.3	29.1	298.0	88.5	501.8	128.9	20.9
3455	2001 HONDA ACCORD TWO DOOR COUPE	5.0	19.8	34.6	298.1	88.9	500.0	121.5	24.1
7189	2011 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	20.0	35.0	305.9	91.9	509.1	125.0	24.5
1040	1987 SAAB 9000 FIVE DOOR HATCHBACK	5.0	23.2	34.6	308.2	78.8	602.9	107.6	20.7
3457	2001 HONDA ACCORD FOUR DOOR SEDAN	5.0	18.8	34.6	315.4	99.3	500.8	135.7	25.5
1707	1992 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	15.5	29.5	316.6	100.2	500.1	145.2	22.5
1131	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	21.4	34.8	317.0	88.1	570.4	120.1	22.6
7720	2012 MITSUBISHI LANCER FOUR DOOR SEDAN	5.0	19.4	35.0	317.9	98.3	514.0	133.9	25.2
3074	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	15.4	29.7	322.1	103.2	502.4	149.3	22.9
3188	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	18.5	35.0	323.1	104.8	497.8	142.7	26.5
2712	1998 HONDA ACCORD FOUR DOOR SEDAN	5.0	18.7	35.2	325.0	105.1	502.7	142.8	26.5
4457	2003 HONDA ACCORD TWO DOOR COUPE	5.0	18.1	35.1	326.8	108.6	491.6	147.7	27.2
6181	2008 SUBARU IMPREZA FOUR DOOR SEDAN	5.0	18.6	34.7	327.9	104.5	514.3	142.7	25.8
2806	1998 FORD MUSTANG TWO DOOR COUPE	5.0	17.6	34.9	332.1	112.9	488.6	153.8	27.7
3643	2001 NISSAN MAXIMA FOUR DOOR SEDAN	5.0	17.6	34.8	340.1	115.0	502.9	156.9	27.5
5710	2001 HONDA CIVIC TWO DOOR COUPE	5.0	18.0	34.9	348.8	115.8	525.2	157.8	27.1
6763	2010 TOYOTA PRIUS FIVE DOOR HATCHBACK	5.0	17.5	35.0	349.4	119.7	509.9	162.9	28.0
6439	2004 HONDA ACCORD FOUR DOOR SEDAN	5.0	8.4	20.0	354.1	126.8	494.7	225.3	19.1
4724	2002 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	17.9	37.3	363.4	131.2	503.6	174.8	31.1
1202	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	8.1	19.8	368.9	134.8	504.9	241.0	19.4
3617	2001 PONTIAC GRAND AM TWO DOOR COUPE	5.0	15.5	34.7	378.9	145.0	495.0	197.9	31.1
1201	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	2.5	9.6	378.9	142.2	504.9	614.8	15.0
4182	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	12.5	29.6	395.8	156.1	501.6	225.9	28.1
4245	2001 SATURN L200 FOUR DOOR SEDAN	5.0	7.8	20.0	398.6	154.3	515.0	274.2	20.6
1899	1993 FORD TAURUS FOUR DOOR SEDAN	5.0	12.0	29.4	404.3	165.0	495.4	239.6	28.9
2031	1994 FORD MUSTANG TWO DOOR COUPE	5.0	11.6	29.3	411.4	173.3	488.3	251.8	29.8
5821	2006 FORD FUSION FOUR DOOR SEDAN	5.0	9.2	24.7	420.8	179.9	492.2	282.6	26.5
5661	2007 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	14.3	34.9	428.2	179.7	510.1	244.8	34.2
2678	1996 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	14.5	37.8	451.9	204.1	500.1	271.2	39.3

Available Test Results

Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	Closing Speed (mph)	Vehicle Stiffness A	Vehicle Stiffness B	Vehicle Width G	Vehicle Width Kv	Crush Factor
3460	2000 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	14.9	39.5	475.4	220.4	512.6	288.9	42.0
	Average (AVG)				**322.1**	**107.2**	**508.8**	**163.0**	**23.8**
	Minimum (MIN)				**149.8**	**22.2**	**479.4**	**41.4**	**7.5**
	Maximum (MAX)				**475.4**	**220.4**	**602.9**	**614.8**	**42.0**
	Standard Deviation (STDev-sample)				**71.4**	**45.6**	**22.5**	**97.0**	**6.9**
	Number of Tests (n)			**43**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

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
4245	2001 SATURN L200 FOUR DOOR SEDAN	5.0	25.4	20.0	121.6	14.3	515.0	25.5	6.3
1204	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	19.0	18.6	144.2	20.6	504.9	38.6	7.3
1205	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	31.0	30.0	163.0	26.3	504.9	37.9	11.6
6439	2004 HONDA ACCORD FOUR DOOR SEDAN	5.0	17.5	20.0	169.5	29.0	494.7	51.6	9.1
4145	2000 OLDSMOBILE ALERO TWO DOOR COUPE	5.0	23.1	24.9	174.1	30.1	504.3	47.1	10.8
3101	1999 FORD MUSTANG TWO DOOR COUPE	5.0	26.3	29.4	177.6	32.9	479.4	47.8	13.1
1203	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	14.9	20.1	205.3	41.8	504.9	73.9	10.9
1419	1990 CHRYSLER LE BARON CONVERTIBLE	5.0	27.8	34.6	218.6	46.6	512.9	63.6	17.2
1689	1992 VOLVO 240 FOUR DOOR SEDAN	5.0	28.5	35.2	220.8	46.8	520.4	63.6	17.4
4724	2002 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	28.9	37.3	225.1	50.3	503.6	67.1	19.3
994	1987 CHEVROLET CAMARO THREE DOOR HATC...	5.0	25.3	35.2	234.1	55.9	490.2	76.0	19.6
1193	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	21.8	29.3	235.6	52.6	528.0	76.4	15.8
219	1979 PEUGEOT 504 FOUR DOOR SEDAN	5.0	25.5	35.3	248.4	59.0	523.1	80.1	19.5
2678	1996 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	26.4	37.8	248.6	61.8	500.1	82.1	21.6
1613	1991 FORD MUSTANG CONVERTIBLE	5.0	19.5	29.2	254.3	63.2	511.9	92.0	17.5
1966	1987 FORD TAURUS FOUR DOOR SEDAN	5.0	34.4	49.9	254.5	66.5	487.1	82.1	29.0
3460	2000 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	27.6	39.5	256.8	64.3	512.6	84.3	22.7
3455	2001 HONDA ACCORD TWO DOOR COUPE	5.0	23.0	34.6	257.6	66.3	500.0	90.7	20.8
1209	1988 EAGLE PREMIER FOUR DOOR SEDAN	5.0	19.1	29.3	257.7	65.5	506.6	95.2	18.0
586	1983 BUICK CENTURY FOUR DOOR SEDAN	5.0	25.5	34.8	264.1	61.7	565.3	84.1	19.0
4176	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	14.8	25.0	269.1	72.4	499.7	113.2	16.8
3457	2001 HONDA ACCORD FOUR DOOR SEDAN	5.0	21.8	34.6	272.0	73.8	500.8	100.9	22.0
4797	2002 NISSAN ALTIMA FOUR DOOR SEDAN	5.0	24.0	37.7	272.5	74.4	499.3	98.8	23.7
3110	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	17.6	29.1	276.0	75.9	501.8	110.6	19.3
1632	1991 FORD MUSTANG CONVERTIBLE	5.0	17.9	29.5	277.0	75.8	506.0	109.9	19.5
1734	1992 FORD MUSTANG CONVERTIBLE	5.0	17.9	29.5	277.1	75.8	506.1	109.9	19.5
1301	1989 CHRYSLER CONQUEST THREE DOOR HATC...	5.0	18.7	29.4	277.6	72.4	532.0	105.1	18.5
1327	1989 PEUGEOT 505 FOUR DOOR SEDAN	5.0	22.2	34.8	278.7	74.8	519.3	102.0	21.8
4457	2003 HONDA ACCORD TWO DOOR COUPE	5.0	21.0	35.1	281.5	80.6	491.6	109.6	23.4
1707	1992 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	17.4	29.5	281.8	79.4	500.1	115.1	20.0
6181	2008 SUBARU IMPREZA FOUR DOOR SEDAN	5.0	21.6	34.7	283.2	78.0	514.3	106.4	22.3
7189	2011 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	21.5	35.0	284.4	79.4	509.1	108.1	22.8
2712	1998 HONDA ACCORD FOUR DOOR SEDAN	5.0	21.3	35.2	284.8	80.7	502.7	109.7	23.2
3074	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	17.3	29.7	286.9	81.9	502.4	118.5	20.4
3188	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	20.6	35.0	290.5	84.8	497.8	115.4	23.8
1040	1987 SAAB 9000 FIVE DOOR HATCHBACK	5.0	24.2	34.6	295.4	72.4	602.9	98.9	19.8
7720	2012 MITSUBISHI LANCER FOUR DOOR SEDAN	5.0	20.8	35.0	296.0	85.2	514.0	116.0	23.5
1131	1988 PEUGEOT 505 FOUR DOOR SEDAN	5.0	22.7	34.8	299.2	78.5	570.4	107.1	21.3
1201	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	3.1	9.6	300.7	89.5	504.9	387.3	11.9
2806	1998 FORD MUSTANG TWO DOOR COUPE	5.0	18.5	34.9	316.7	102.6	488.6	139.8	26.4
3643	2001 NISSAN MAXIMA FOUR DOOR SEDAN	5.0	18.9	34.8	317.2	100.0	502.9	136.4	25.6
5821	2006 FORD FUSION FOUR DOOR SEDAN	5.0	12.0	24.7	322.5	105.6	492.2	165.9	20.3

4N6XPRT StifCalcs®

Available Test Results

Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	Vehicle Stiffness Values A	B	G	Kv	Crush Factor
3617	2001 PONTIAC GRAND AM TWO DOOR COUPE	5.0	18.2	34.7	323.0	105.4	495.0	143.8	26.5
5880	2007 MAZDA MAZDA6 FOUR DOOR SEDAN	5.0	18.3	34.8	326.3	106.2	501.2	144.8	26.5
3081	1999 PLYMOUTH BREEZE FOUR DOOR SEDAN	5.0	10.0	22.1	332.0	113.1	487.2	188.9	19.5
1202	1986 FORD TAURUS FOUR DOOR SEDAN	5.0	8.9	19.8	336.4	112.1	504.9	200.4	17.7
5710	2001 HONDA CIVIC TWO DOOR COUPE	5.0	18.7	34.9	336.8	108.0	525.2	147.1	26.1
6763	2010 TOYOTA PRIUS FIVE DOOR HATCHBACK	5.0	17.9	35.0	342.2	114.8	509.9	156.3	27.4
5661	2007 DODGE CALIBER FIVE DOOR HATCHBACK	5.0	17.3	34.9	352.3	121.6	510.1	165.7	28.1
4182	2000 HONDA ACCORD FOUR DOOR SEDAN	5.0	13.7	29.6	360.8	129.8	501.6	187.8	25.6
1899	1993 FORD TAURUS FOUR DOOR SEDAN	5.0	13.4	29.4	361.0	131.6	495.4	191.1	25.8
2031	1994 FORD MUSTANG TWO DOOR COUPE	5.0	12.6	29.3	377.2	145.7	488.3	211.7	27.3
3181	1999 TOYOTA CAMRY FOUR DOOR SEDAN	5.0	10.0	24.7	397.9	156.4	506.0	245.8	24.4
1459	1990 MERCEDES 190 FOUR DOOR SEDAN	5.0	13.4	34.8	468.5	208.6	526.1	284.4	36.2
	Average (AVG)				**277.5**	**79.7**	**508.9**	**118.7**	**20.4**
	Minimum (MIN)				**121.6**	**14.3**	**479.4**	**25.5**	**6.3**
	Maximum (MAX)				**468.5**	**208.6**	**602.9**	**387.3**	**36.2**
	Standard Deviation (STDev-sample)				**63.9**	**35.6**	**20.8**	**63.9**	**5.8**
	Number of Tests (n)			**54**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 1G1JF5249V7258282

Model:	1997 Chevrolet Cavalier Z24 LS 4 Door Sedan
Engine Size:	2.2L/ 133 cu.in.
Engine Description:	In-Line 4 cylinder with Overhead Valves (OHV)
Horse Power:	115 @ 5000 rpm
Torque:	136 lb-ft at 3600 rpm
Injection System:	Multi-Port Fuel Injection (MFI)
PSI:	41-47 psi
Ignition:	Electronic
Manufacturer:	Chevrolet - United States
Assembly Plant:	Lordstown, OH.
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags

The First through Third characters (1G1) indicate a Chevrolet Car made in the U.S.A.

The Fourth and Fifth characters (JF) indicate a Cavalier Z24 LS and Convertible

The Sixth character (5) indicate a 4 Door Sedan

The Seventh character (2) indicate Manual Seatbelts + Driver & Passenger Air Bags

The Eighth character (4) indicate the OEM engine: 2.2L/ 133 cu.in., L4 OHV

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

The Tenth character (V) indicate the model year 1997

The Eleventh character (7) indicate the vehicle was made in the assembly plant in Lordstown, OH.

The Twelfth through Seventeenth characters (258282) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/15/2013

1997 CHEVROLET CAVALIER Z24 4 DOOR SEDAN

Curb Weight:	2809 lbs.		1274	kg.
Curb Weight Distribution - Front:	64 %	Rear:	36	%
Gross Vehicle Weight Rating:	3619 lbs.		1642	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	180	15.00	4.57
Wheelbase:	104	8.67	2.64
Front Bumper to Front Axle:	38	3.17	0.97
Front Bumper to Front of Front Well:	24	2.00	0.61
Front Bumper to Front of Hood:	5	0.42	0.13
Front Bumper to Base of Windshield:	50	4.17	1.27
Front Bumper to Top of Windshield:	77	6.42	1.96
Rear Bumper to Rear Axle:	38	3.17	0.97
Rear Bumper to Rear of Rear Well:	24	2.00	0.61
Rear Bumper to Rear of Trunk:	5	0.42	0.13
Rear Bumper to Base of Rear Window:	20	1.67	0.51
Width Dimensions			
Maximum Width:	68	5.67	1.73
Front Track:	57	4.75	1.45
Rear Track:	58	4.83	1.47
Vertical Dimensions			
Height:	55	4.58	1.40
Ground to -			
Front Bumper (Top)	23	1.92	0.58
Headlight - center	26	2.17	0.66
Hood - top front:	31	2.58	0.79
Base of Windshield	37	3.08	0.94
Rear Bumper - top:	24	2.00	0.61
Trunk - top rear:	39	3.25	0.99
Base of Rear Window:	41	3.42	1.04

1997 CHEVROLET CAVALIER Z24 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	55	4.58	1.40
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	42	3.50	1.07
Rear Seat Shoulder Width	54	4.50	1.37
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	35	2.92	0.89

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

Steering Data

Turning Circle (Diameter)	432	36.00	10.97
Steering Ratio:	15.22:1		
Wheel Radius:	12	1.00	0.30
Tire Size (OEM):	195-70R14		

Acceleration & Braking Information

Brake Type: FRONT DISC - REAR DRUM
ABS System: ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):
d = 158.0 ft t = 3.6 sec a = -24.5 ft/sec² G-force = -0.76

Acceleration:

0 to 30mph	t =	2.6	sec	a =	16.9	ft/sec²	G-force = 0.53
0 to 60mph	t =	7.7	sec	a =	11.4	ft/sec²	G-force = 0.35
45 to 65mph	t =	7.1	sec	a =	4.1	ft/sec²	G-force = 0.13

Transmission Type: 5spd MANUAL

Notes:
Federal Bumper Standard Requirements: 2.5 mph
This vehicles Rated Bumper Strength: 5 mph

N.S.D.C = 1995 - 2002

1997 CHEVROLET CAVALIER Z24 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.33	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	37.44
Inches in front of rear axle	=	66.56
Inches from side of vehicle	=	34.00
Inches from ground	=	21.59
Inches from front corner	=	82.75
Inches from rear corner	=	109.95
Inches from front bumper	=	75.44
Inches from rear bumper	=	104.56

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1687.27	lb*ft*sec²
Pitch Moment of Inertia	=	1631.91	lb*ft*sec²
Roll Moment of Inertia	=	355.62	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	58.0	deg
Angle Front of Hood to Windshield Base	=	7.6	deg
Angle Front of Hood to Windshield Top	=	17.0	deg
Angle of Windshield	=	30.7	deg
Angle of Steering Tires at Max Turn	=	27.6	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 independant 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

#2528

1997 CHEVROLET CAVALIER

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-030201SC02301

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Similar Vehicle database reader

You entered: **1997 CHEVROLET CAVALIER**

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

Year Range	Make	Model	Body Styles	Wheelbase
1995 - 2003	CHEVROLET	CAVALIER	2D, 4D, CONV, SW	104.1
Remarks: Mild restyle in 2003.				
1995 - 2005	PONTIAC	SUNFIRE	2D, 4D, SW	104.1
Remarks:				
2003 - 2005	CHEVROLET	CAVALIER	2D, 4D, CONV, SW	104.1
Remarks: Mild restyle in 2003.				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	2528	NHTSA Test Reference Guide Version #	V4			
Test Date	1997-02-05	Contract #	DTNH22-90-D-12121			
Contract/Study Title	NCAP TEST - 1997 CHEVROLET CAVALIER (NHTSA NO.: MV0111)					
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE DATA					
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	56.3	Km/Hr	34.98	MPH
Test Performer	MGA RESEARCH					
Test Reference #	BT97020501					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	22 C	71.6 F	Total Number of Curves	111		
Data Recorder Type	OTHER	Data Link	UMBILICAL CABLE			
Test Commentary	HIGH SPEED ANALOG TO DIGITAL RECORDER					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	9999	mm	9999	inches
Barrier Shape	LOAD CELL BARRIER					
Barrier Commentary	NO COMMENTS					

1997 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	2528		
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	FIRST TECHNOLOGY: S/N 036		
Occupant Modification	NO COMMENTS		
Occupant Description	NO COMMENTS		
Occupant Commentary	NO COMMENTS		

Head

Head to -

Windshielder Header	319	mm	12.6	inches	Head Injury Criteria (HIC)	646	
WindShield	563	mm	22.2	inches	HIC Lower Time Interval (ms)	57.6	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	93.6	
Side Header	209	mm	8.2	inches			
Side Window	312	mm	12.3	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	512	mm	20.2	inches	Arm to Door	94	mm	3.7	inches
Steering Wheel	319	mm	12.6	inches	Hip to Door	110	mm	4.3	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	478	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	50.3

Lap Belt Peak Load	5835	Newtons	1311.8	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	151	mm	5.9	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	-3225	Newtons	-725.0	pounds Force
Right Femur Peak Load	-4267	Newtons	-959.3	pounds Force

First Contact Region (Legs): KNEE RESTRAINT

Second Contact Region (Legs):

1997 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	2528					
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	FIRST TECHNOLOGY: S/N 036
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	3 POINT BELT
Mounted	
Deployment	NOT APPLICABLE
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

1997 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	2528		
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	FIRST TECHNOLOGY: S/N 037		
Occupant Modification	NO COMMENTS		
Occupant Description	NO COMMENTS		
Occupant Commentary	NO COMMENTS		

Head

Head to -

Windshielder Header	322	mm	12.7	inches	Head Injury Criteria (HIC)	885	
WindShield	593	mm	23.3	inches	HIC Lower Time Interval (ms)	64	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	95.7	
Side Header	207	mm	8.1	inches			
Side Window	317	mm	12.5	inches			

Neck to Seatback 9999 mm 0.0 inches

First Contact Region (Head): AIR BAG

Second Contact Region (Head):

Chest

Chest to -

Dash	493	mm	19.4	inches	Arm to Door	111	mm	4.4	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	109	mm	4.3	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	473	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	44.5

Lap Belt Peak Load	4683	Newtons	1052.8	pound Force
Shoulder Belt Peak Load	4830	Newtons	1085.8	pound Force

First Contact Region (Chest/Abdomen): AIR BAG

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash	116	mm	4.6	inches	Knees to Seatback	9999	mm	0.0	inches

Left Femur Peak Load	-3944	Newtons	-886.7	pounds Force
Right Femur Peak Load	-4207	Newtons	-945.8	pounds Force

First Contact Region (Legs): DASHPANEL

Second Contact Region (Legs):

1997 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	2528					
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	FIRST TECHNOLOGY: S/N 037
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	NO COMMENTS

Restraints

Restraint # 1	3 POINT BELT
Mounted	
Deployment	NOT APPLICABLE
Restraint Commentary	NO COMMENTS
Restraint # 2	FRONTAL AIRBAG
Mounted	
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

Vehicle 1 1997 CHEVROLET CAVALIER

Test #	2528		
VIN	1G1JC1244V7205524	NHTSA Test Vehicle Number	1
Year	1997	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CHEVROLET	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	CAVALIER	Steering Column Collapse Mechanism	UNKNOWN
Body	TWO DOOR COUPE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.2 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NO COMMENTS		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4302	mm	169.4	inches	CG behind Front Axle	1024	mm	40.3	inches
Vehicle Width	1726	mm	68.0	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2646	mm	104.2	inches	Total Length of Indentation	1396	mm	55.0	inches
Vehicle Test Weight	1414	KG	3117	pounds	Maximum Static Crush Depth	519	mm	20.4	inches
					Pre-Impact Speed	56	kph	35.0	mph

Vehicle Damage Index: 12FDEW5

Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	393	mm	15.5	inches
DPD 2	466	mm	18.3	inches
DPD 3	519	mm	20.4	inches
DPD 4	504	mm	19.8	inches
DPD 5	376	mm	14.8	inches
DPD 6	215	mm	8.5	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	158.5	inches	145.0	inches	13.5	inches
	4026	mm	3683	mm	343	mm
Centerline	169.4	inches	148.1	inches	21.2	inches
	4302	mm	3763	mm	539	mm
Right Bumper Corner	158.5	inches	150.0	inches	8.5	inches
	4026	mm	3811	mm	215	mm

Bumper Engagement (Inline Impact Only)	Sill Engagement (Side Impact Only)	A-pillar Engagement (Side Impact Only)
999.0	NOT APPLICABLE	999.0

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 1997 CHEVROLET CAVALIER

Test #	2528		
VIN	1G1JC1244V7205524	NHTSA Test Vehicle Number	1
Year	1997	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CHEVROLET	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	CAVALIER	Steering Column Collapse Mechanism	UNKNOWN
Body	TWO DOOR COUPE		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.2 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	NO COMMENTS		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4302	mm	169.4	inches	CG behind Front Axle	1024	mm	40.3	inches
Vehicle Width	1726	mm	68.0	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2646	mm	104.2	inches	Total Length of Indentation	1396	mm	55.0	inches
Vehicle Test Weight	1414	KG	3117	pounds	Maximum Static Crush Depth	519	mm	20.4	inches
					Pre-Impact Speed	56	kph	35.0	mph

Vehicle Damage Index	12FDEW5	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							
				4302	169.4	3763	148.1				
				Engine Block							
				450	17.7	450	17.7				
4026	158.5	3683	145.0	Front Bumper Corner				4026	158.5	3811	150.0
				Front of Engine							
				3558	140.1	3337	131.4				
3198	125.9	3144	123.8	Firewall				3198	125.9	2978	117.2
				3186	125.4	3044	119.8				
2750	108.3	2762	108.7	Upper Leading Edge of Door				2754	108.4	2757	108.5
2800	110.2	2783	109.6	Lower Leading Edge of Door				2798	110.2	2779	109.4
2810	110.6	2792	109.9	Bottom of 'A' Post				2810	110.6	2764	108.8
1485	58.5	1488	58.6	Upper Trailing Edge of Door				1485	58.5	1486	58.5
1464	57.6	1456	57.3	Lower Trailing Edge of Door				1463	57.6	1455	57.3
				Steering Column							
				2327	91.6	2331	91.8				
				Center of Seering Column to 'A' Post (Horizontal)							
				345	13.6	276	10.9				
				Center of Steering Column to Headliner (Vertical)							
				422	16.6	332	13.1				

1997 CHEVROLET CAVALIER

NHTSA Crash Test - #2528 - Front Impact

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

Test Vehicle Weight = 3117 pounds
Vehicle Closing Speed = 35.0 mph
Test Crush Length = 68.0 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	13.5	21.2	8.5	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 8.5 inches					622.8
Using a Rated No Damage Speed of	2.5mph	351.3	537.0	114.9	
Using a Rated No Damage Speed of	5.0mph	648.5	457.5	459.6	
Using a Rated No Damage Speed of	7.5mph	891.6	384.4	1034.1	
Using a Rated No Damage Speed of	10.0mph	1080.7	317.6	1838.4	
Average Crush = 16.1 inches					173.6
Using a Rated No Damage Speed of	2.5mph	185.5	149.7	114.9	
Using a Rated No Damage Speed of	5.0mph	342.4	127.5	459.6	
Using a Rated No Damage Speed of	7.5mph	470.7	107.1	1034.1	
Using a Rated No Damage Speed of	10.0mph	570.6	88.5	1838.4	
Maximum Crush = 21.2 inches					100.1
Using a Rated No Damage Speed of	2.5mph	140.8	86.3	114.9	
Using a Rated No Damage Speed of	5.0mph	260.0	73.5	459.6	
Using a Rated No Damage Speed of	7.5mph	357.5	61.8	1034.1	
Using a Rated No Damage Speed of	10.0mph	433.3	51.1	1838.4	

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

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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	21.2	33.4	-1.6	-4.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.1

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

1997 CHEVROLET CAVALIER

NHTSA Crash Test - #2528 - Front Impact

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

Test Vehicle Weight = 3117 pounds
Vehicle Closing Speed = 35.0 mph
Test Crush Length = 55.0 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	13.5	21.2	8.5	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 8.5 inches					770.0
Using a Rated No Damage Speed of	2.5mph	434.3	663.9	142.1	
Using a Rated No Damage Speed of	5.0mph	801.8	565.7	568.3	
Using a Rated No Damage Speed of	7.5mph	1102.4	475.3	1278.6	
Using a Rated No Damage Speed of	10.0mph	1336.2	392.7	2273.0	
Average Crush = 16.1 inches					214.6
Using a Rated No Damage Speed of	2.5mph	229.3	185.1	142.1	
Using a Rated No Damage Speed of	5.0mph	423.3	157.7	568.3	
Using a Rated No Damage Speed of	7.5mph	582.0	132.5	1278.6	
Using a Rated No Damage Speed of	10.0mph	705.4	109.5	2273.0	
Maximum Crush = 21.2 inches					123.8
Using a Rated No Damage Speed of	2.5mph	174.1	106.7	142.1	
Using a Rated No Damage Speed of	5.0mph	321.5	90.9	568.3	
Using a Rated No Damage Speed of	7.5mph	442.0	76.4	1278.6	
Using a Rated No Damage Speed of	10.0mph	535.7	63.1	2273.0	

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	21.2	33.4	-1.6	-4.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.1

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

1997 CHEVROLET CAVALIER

NHTSA Crash Test - #2528 - Front Impact

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

Test Vehicle Weight = 3117 pounds
Vehicle Closing Speed = 35.0 MPH
Test Crush Length = 68.0 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	15.5	18.3	20.4	19.8	14.8	8.5	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 8.5 inches					622.8
Using a Rated No Damage Speed of	2.5mph	351.3	537.0	114.9	
Using a Rated No Damage Speed of	5.0mph	648.5	457.5	459.6	
Using a Rated No Damage Speed of	7.5mph	891.6	384.4	1034.1	
Using a Rated No Damage Speed of	10.0mph	1080.7	317.6	1838.4	
Average Crush = 17.1 inches					153.9
Using a Rated No Damage Speed of	2.5mph	174.6	132.7	114.9	
Using a Rated No Damage Speed of	5.0mph	322.3	113.0	459.6	
Using a Rated No Damage Speed of	7.5mph	443.2	95.0	1034.1	
Using a Rated No Damage Speed of	10.0mph	537.2	78.5	1276.4	
Maximum Crush = 20.4 inches					108.1
Using a Rated No Damage Speed of	2.5mph	146.4	93.2	114.9	
Using a Rated No Damage Speed of	5.0mph	270.2	79.4	459.6	
Using a Rated No Damage Speed of	7.5mph	371.5	66.7	1034.1	
Using a Rated No Damage Speed of	10.0mph	450.3	55.1	1838.4	

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

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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	20.4	32.7	-2.3	-6.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 24.0

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

1997 CHEVROLET CAVALIER

NHTSA Crash Test - #2528 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3117 pounds
Vehicle Closing Speed = 35.0 MPH
Test Crush Length = 55.0 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	15.5	18.3	20.4	19.8	14.8	8.5	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 8.5 inches					770.0
Using a Rated No Damage Speed of	2.5mph	434.3	663.9	142.1	
Using a Rated No Damage Speed of	5.0mph	801.8	565.7	568.3	
Using a Rated No Damage Speed of	7.5mph	1102.4	475.3	1278.6	
Using a Rated No Damage Speed of	10.0mph	1336.2	392.7	2273.0	
Average Crush = 17.1 inches					190.3
Using a Rated No Damage Speed of	2.5mph	215.9	164.0	142.1	
Using a Rated No Damage Speed of	5.0mph	398.5	139.8	568.3	
Using a Rated No Damage Speed of	7.5mph	548.0	117.4	1278.6	
Using a Rated No Damage Speed of	10.0mph	664.2	97.0	1578.1	
Maximum Crush = 20.4 inches					133.7
Using a Rated No Damage Speed of	2.5mph	181.0	115.3	142.1	
Using a Rated No Damage Speed of	5.0mph	334.1	98.2	568.3	
Using a Rated No Damage Speed of	7.5mph	459.3	82.5	1278.6	
Using a Rated No Damage Speed of	10.0mph	556.7	68.2	2273.0	

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	20.4	32.7	-2.3	-6.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 24.0

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: 1995 - 2003
Make: CHEVROLET
Model: CAVALIER

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
3180	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.0	29.2	262.7	84.9	406.3	123.5	22.8
2688	1998 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	18.8	35.2	270.3	86.9	420.2	118.1	26.4
3096	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	13.5	29.0	290.3	103.7	406.6	151.2	25.1
3179	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	13.4	29.2	292.4	105.5	405.2	153.7	25.4
2546	1996 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	18.8	34.9	303.7	96.8	476.6	131.8	26.0
5206	2004 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.3	29.6	318.0	102.7	492.2	148.6	23.0
2253	1995 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.7	35.1	318.9	97.7	520.3	132.8	25.1
2528	1997 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	17.1	35.0	322.8	113.3	459.6	154.3	28.7
2850	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	16.5	30.1	347.2	105.4	571.9	151.6	21.9
2689	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	14.2	35.1	361.0	152.9	426.0	208.0	34.7
3178	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	9.7	25.1	371.0	152.9	450.1	238.6	25.8
2754	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.5	34.9	380.0	146.5	492.9	199.6	31.4
3112	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	9.0	24.9	399.2	176.4	451.7	276.1	27.5
4445	2003 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	12.7	34.8	424.3	198.3	453.9	270.6	38.0
2214	1995 PONTIAC SUNFIRE FOUR DOOR SEDAN	5.0	10.8	29.6	429.3	194.8	472.9	282.1	32.3
	Average (AVG)				**339.4**	**127.9**	**460.4**	**182.7**	**27.6**
	Minimum (MIN)				**262.7**	**84.9**	**405.2**	**118.1**	**21.9**
	Maximum (MAX)				**429.3**	**198.3**	**571.9**	**282.1**	**38.0**
	Standard Deviation (STDev-sample)				**53.3**	**38.9**	**46.6**	**58.5**	**4.6**
	Number of Tests (n)			**15**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 1995 - 2003
Make: CHEVROLET
Model: CAVALIER

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
3178	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	23.3	25.1	155.2	26.8	450.1	41.8	10.8
3112	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	21.5	24.9	167.7	31.1	451.7	48.7	11.6
3180	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.8	29.2	221.0	60.1	406.3	87.4	19.2
2688	1998 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	22.6	35.2	224.0	59.7	420.2	81.1	21.9
3179	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.3	29.2	226.6	63.4	405.2	92.3	19.7
3096	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.9	29.0	245.3	74.0	406.6	108.0	21.2
2528	1997 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	21.2	35.0	259.8	73.4	459.6	99.9	23.1
2689	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.3	35.1	266.0	83.0	426.0	112.9	25.6
2546	1996 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	21.2	34.9	268.8	75.8	476.6	103.3	23.0
5206	2004 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.8	29.6	273.2	75.8	492.2	109.7	19.8
2253	1995 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	22.3	35.1	281.2	76.0	520.3	103.3	22.1
2754	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.7	34.9	299.7	91.1	492.9	124.1	24.8
2873	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	11.3	25.4	301.3	108.9	417.0	168.7	22.9
2850	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	18.1	30.1	317.4	88.1	571.9	126.7	20.0
3177	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	10.4	25.0	346.9	133.1	452.2	207.9	24.0
4445	2003 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	15.4	34.8	351.9	136.4	453.9	186.1	31.5
2214	1995 PONTIAC SUNFIRE FOUR DOOR SEDAN	5.0	11.5	29.6	404.4	172.9	472.9	250.4	30.4
	Average (AVG)				**271.2**	**84.1**	**457.4**	**120.7**	**21.8**
	Minimum (MIN)				**155.2**	**26.8**	**405.2**	**41.8**	**10.8**
	Maximum (MAX)				**404.4**	**172.9**	**571.9**	**250.4**	**31.5**
	Standard Deviation (STDev-sample)				**64.1**	**36.9**	**44.9**	**54.4**	**5.3**
	Number of Tests (n)			**17**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 1G1JC1249Y7376967

Model:	2000 Chevrolet Cavalier 2 Door Coupe
Engine Size:	2.2L/ 133 cu.in.
Engine Description:	In-Line 4 cylinder with Overhead Valves (OHV)
Horse Power:	115 @ 5000 rpm
Torque:	136 lb-ft at 3600 rpm
Injection System:	Multi-Port Fuel Injection (MFI)
PSI:	41-47 psi
Ignition:	Electronic
Manufacturer:	Chevrolet - United States
Assembly Plant:	Lordstown, OH
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags

The First through Third characters (1G1) indicate a Chevrolet Car made in the U.S.A.

The Fourth and Fifth characters (JC) indicate a Cavalier

The Sixth character (1) indicate a 2 Door Coupe

The Seventh character (2) indicate Manual Seatbelts + Driver & Passenger Air Bags

The Eighth character (4) indicate the OEM engine: 2.2L/ 133 cu.in., L4 OHV

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

The Tenth character (Y) indicate the model year 2000

The Eleventh character (7) indicate the vehicle was made in the assembly plant in Lordstown, OH

The Twelfth through Seventeenth characters (376967) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/15/2013

2000 CHEVROLET CAVALIER 2 DOOR COUPE

Curb Weight:	2537 lbs.		1151	kg.
Curb Weight Distribution - Front:	64 %	Rear:	36	%
Gross Vehicle Weight Rating:	3642 lbs.		1652	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	180	15.00	4.57
Wheelbase:	104	8.67	2.64
Front Bumper to Front Axle:	38	3.17	0.97
Front Bumper to Front of Front Well:	24	2.00	0.61
Front Bumper to Front of Hood:	5	0.42	0.13
Front Bumper to Base of Windshield:	50	4.17	1.27
Front Bumper to Top of Windshield:	77	6.42	1.96
Rear Bumper to Rear Axle:	38	3.17	0.97
Rear Bumper to Rear of Rear Well:	24	2.00	0.61
Rear Bumper to Rear of Trunk:	5	0.42	0.13
Rear Bumper to Base of Rear Window:	20	1.67	0.51
Width Dimensions			
Maximum Width:	69	5.75	1.75
Front Track:	58	4.83	1.47
Rear Track:	57	4.75	1.45
Vertical Dimensions			
Height:	53	4.42	1.35
Ground to -			
Front Bumper (Top)	23	1.92	0.58
Headlight - center	26	2.17	0.66
Hood - top front:	31	2.58	0.79
Base of Windshield	37	3.08	0.94
Rear Bumper - top:	24	2.00	0.61
Trunk - top rear:	39	3.25	0.99
Base of Rear Window:	41	3.42	1.04

2000 CHEVROLET CAVALIER 2 DOOR COUPE

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	54	4.50	1.37
Front Seat to Headliner	38	3.17	0.97
Front Leg Room - seatback to floor (max)	43	3.58	1.09
Rear Seat Shoulder Width	55	4.58	1.40
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	33	2.75	0.84

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

Steering Data

Turning Circle (Diameter)	408	34.00	10.36
Steering Ratio: 15.22:1			
Wheel Radius:	12	1.00	0.30
Tire Size (OEM): 195-70R14			

Acceleration & Braking Information

Brake Type: FRONT DISC - REAR DRUM
ABS System: ABS

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):
d = 133.0 ft t = 3.0 sec a = -29.1 ft/sec² G-force = -0.90

Acceleration:

0 to 30mph	t =	3.8	sec	a =	11.6	ft/sec²	G-force = 0.36
0 to 60mph	t =	10.1	sec	a =	8.7	ft/sec²	G-force = 0.27
45 to 65mph	t =	7.1	sec	a =	4.1	ft/sec²	G-force = 0.13

Transmission Type: 5spd MANUAL

Notes:
Federal Bumper Standard Requirements: 2.5 mph
This vehicles Rated Bumper Strength: 5 mph

N.S.D.C = 1995 - 2002

2000 CHEVROLET CAVALIER 2 DOOR COUPE

Other Information

Tip-Over Stability Ratio =	1.33	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	37.44
Inches in front of rear axle	=	66.56
Inches from side of vehicle	=	34.50
Inches from ground	=	21.65
Inches from front corner	=	82.95
Inches from rear corner	=	110.10
Inches from front bumper	=	75.44
Inches from rear bumper	=	104.56

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1407.11	lb*ft*sec²
Pitch Moment of Inertia	=	1362.63	lb*ft*sec²
Roll Moment of Inertia	=	306.66	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	58.0	deg
Angle Front of Hood to Windshield Base	=	7.6	deg
Angle Front of Hood to Windshield Top	=	15.5	deg
Angle of Windshield	=	27.4	deg
Angle of Steering Tires at Max Turn	=	29.2	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 independant 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

#2546

1996 CHEVROLET CAVALIER

Provided By

4N6XPRT StifCalcs®

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4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **1997 CHEVROLET CAVALIER**

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

Year Range	Make	Model	Body Styles	Wheelbase
1995 - 2003	CHEVROLET	CAVALIER	2D, 4D, CONV, SW	104.1
Remarks: Mild restyle in 2003.				
1995 - 2005	PONTIAC	SUNFIRE	2D, 4D, SW	104.1
Remarks:				
2003 - 2005	CHEVROLET	CAVALIER	2D, 4D, CONV, SW	104.1
Remarks: Mild restyle in 2003.				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	2546	NHTSA Test Reference Guide Version #	V4			
Test Date	1996-09-30	Contract #	DTR557-995-C00011			
Contract/Study Title	1996 CHEVROLET CAVALIER INTO FRONTAL LOAD CELL BARRIER					
Test Objective(s)	DETERMINE PROTECTIVE CAPABILITY OF DOWNLOADED INFLATORS IN FRONT LCB					
Test Type	BASELINE 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	56.2	Km/Hr	34.92	MPH
Test Performer	TRC OF OHIO					
Test Reference #	960930					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	22 C	71.6 F	Total Number of Curves	95		
Data Recorder Type	OTHER	Data Link	UMBILICAL CABLE			
Test Commentary	RECTYP IS DIGITAL ONBOARD					

Fixed Barrier Information

Barrier Type	RIGID	Pole Barrier Diameter	99999	mm	99999	inches
Barrier Shape	LOAD CELL BARRIER					
Barrier Commentary	NO COMMENTS					

1996 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	2546						
Vehicle #	1			Sex	MALE		
Location	LEFT FRONT SEAT			Age	99		
Position	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: HUMANOID, S/N: 142
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	CNTRH2 IS HEAD RESTRAINT AND SUNVISOR

Head

Head to -

Windshielder Header	300	mm	11.8	inches	Head Injury Criteria (HIC)	746		
WindShield	537	mm	21.1	inches	HIC Lower Time Interval (ms)	62.08		
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	98.08		
Side Header	191	mm	7.5	inches				
Side Window	308	mm	12.1	inches				

Neck to Seatback 9999 mm 0.0 inches

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

Chest

Chest to -

Dash	508	mm	20.0	inches	Arm to Door	127	mm	5.0	inches
Steering Wheel	291	mm	11.5	inches	Hip to Door	120	mm	4.7	inches
Seatback	9999	mm	0.0	inches					

Chest Severity Index	599	Pelvic Peak Lateral Acceleration (g's)	0
Thoracic Trauma Index	0	Thorax Peak Acceleration (g's)	58.7

Lap Belt Peak Load	9999	Newtons	2247.9	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	163	mm	6.4	inches	Knees to Seatback	9999	mm	0.0	inches
Left Femur Peak Load	-5463	Newtons	-1228.1	pounds Force					
Right Femur Peak Load	-7141	Newtons	-1605.4	pounds Force					

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

1996 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	2546					
Vehicle #	1	Sex	MALE			
Location	LEFT FRONT SEAT	Age	99			
Position	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: HUMANOID, S/N: 142
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	CNTRH2 IS HEAD RESTRAINT AND SUNVISOR

Restraints

Restraint # 1	FRONTAL AIRBAG
Mounted	
Deployment	DEPLOYED PROPERLY
Restraint Commentary	DOWNLOAD AIRBAG INFLATORS
Restraint # 2	DASHPANEL
Mounted	
Deployment	NOT APPLICABLE
Restraint Commentary	DOWNLOAD AIRBAG INFLATORS

1996 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	2546		
Vehicle #	1	Sex	MALE
Location	RIGHT FRONT SEAT	Age	99
Position	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: 192		
Occupant Modification	NO COMMENTS		
Occupant Description	NO COMMENTS		
Occupant Commentary	CNTRH2 IS HEAD RESTRAINT AND SUNVISOR		

Head

Head to -

Windshielder Header	293	mm	11.5	inches	Head Injury Criteria (HIC)	669	
WindShield	539	mm	21.2	inches	HIC Lower Time Interval (ms)	69.84	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	105.84	
Side Header	171	mm	6.7	inches			
Side Window	302	mm	11.9	inches			
Neck to Seatback	9999	mm	0.0	inches			
First Contact Region (Head)	AIR BAG						
Second Contact Region (Head)							

Chest

Chest to -

Dash	463	mm	18.2	inches	Arm to Door	138	mm	5.4	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	141	mm	5.6	inches
Seatback	9999	mm	0.0	inches					
Chest Severity Index	721				Pelvic Peak Lateral Acceleration (g's)	0			
Thoracic Trauma Index	0				Thorax Peak Acceleration (g's)	77.1			
Lap Belt Peak Load	9999	Newtons	2247.9	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	116	mm	4.6	inches	Knees to Seatback	9999	mm	0.0	inches
Left Femur Peak Load	-6509	Newtons	-1463.3	pounds Force					
Right Femur Peak Load	-8142	Newtons	-1830.4	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

1996 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	2546					
Vehicle #	1	Sex	MALE			
Location	RIGHT FRONT SEAT	Age	99			
Position	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: 192
Occupant Modification	NO COMMENTS
Occupant Description	NO COMMENTS
Occupant Commentary	CNTRH2 IS HEAD RESTRAINT AND SUNVISOR

Restraints

Restraint # 1	FRONTAL AIRBAG
Mounted	
Deployment	DEPLOYED PROPERLY
Restraint Commentary	DOWNLOADED AIRBAG INFLATOR
Restraint # 2	DASHPANEL
Mounted	
Deployment	NOT APPLICABLE
Restraint Commentary	DOWNLOADED AIRBAG INFLATOR

Vehicle 1 1996 CHEVROLET CAVALIER

Test #	2546		
VIN	1G1JC5246T7288815	NHTSA Test Vehicle Number	1
Year	1996	Vehicle Modification Indicator	MODIFIED VEHICLE
Make	CHEVROLET	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	CAVALIER	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.2 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	DOWNLOADED AIRBAG INFLATORS		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4579	mm	180.3	inches	CG behind Front Axle	1063	mm	41.9	inches
Vehicle Width	1715	mm	67.5	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2642	mm	104.0	inches	Total Length of Indentation	1525	mm	60.0	inches
Vehicle Test Weight	1457	KG	3211	pounds	Maximum Static Crush Depth	525	mm	20.7	inches
					Pre-Impact Speed	56	kph	34.9	mph

Vehicle Damage Index: 12FDEW3

Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	410	mm	16.1	inches
DPD 2	491	mm	19.3	inches
DPD 3	520	mm	20.5	inches
DPD 4	525	mm	20.7	inches
DPD 5	483	mm	19.0	inches
DPD 6	323	mm	12.7	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	170.1	inches	153.9	inches	16.1	inches
	4320	mm	3910	mm	410	mm
Centerline	180.3	inches	159.1	inches	21.2	inches
	4579	mm	4040	mm	539	mm
Right Bumper Corner	170.6	inches	157.9	inches	12.7	inches
	4333	mm	4010	mm	323	mm

Bumper Engagement (Inline Impact Only): 999.0

Sill Engagement (Side Impact Only): NOT APPLICABLE

A-pillar Engagement (Side Impact Only): 999.0

Moving Test Cart Angle: NOT APPLICABLE

Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground

Moving Test Cart/Vehicle Crabbed Angle: 0.0

Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle

Vehicle Orientation on Cart Moving Test Cart: NOT APPLICABLE

Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion

Vehicle 1 1996 CHEVROLET CAVALIER

Test #	2546		
VIN	1G1JC5246T7288815	NHTSA Test Vehicle Number	1
Year	1996	Vehicle Modification Indicator	MODIFIED VEHICLE
Make	CHEVROLET	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	CAVALIER	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.2 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	DOWNLOADED AIRBAG INFLATORS		
Vehicle Commentary	NO COMMENTS		

Vehicle Length	4579	mm	180.3	inches	CG behind Front Axle	1063	mm	41.9	inches
Vehicle Width	1715	mm	67.5	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2642	mm	104.0	inches	Total Length of Indentation	1525	mm	60.0	inches
Vehicle Test Weight	1457	KG	3211	pounds	Maximum Static Crush Depth	525	mm	20.7	inches
					Pre-Impact Speed	56	kph	34.9	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 Pre-Test		Left Side Post-Test		Centerline Pre-Test		Centerline Post-Test		Right Side Pre-Test		Right Side Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Length of Vehicle at Centerline							
				4579	180.3	4040	159.1				
				Engine Block							
				440	17.3	440	17.3				
4320	170.1	3910	153.9	Front Bumper Corner				4333	170.6	4010	157.9
				Front of Engine							
				3844	151.3	3629	142.9				
3442	135.5	3456	136.1	Firewall				3434	135.2	3276	129.0
				3439	135.4	3306	130.2				
3084	121.4	3092	121.7	Upper Leading Edge of Door				3094	121.8	3091	121.7
3090	121.7	3083	121.4	Lower Leading Edge of Door				3078	121.2	3065	120.7
3041	119.7	3064	120.6	Bottom of 'A' Post				3045	119.9	3054	120.2
2045	80.5	2058	81.0	Upper Trailing Edge of Door				2052	80.8	2059	81.1
2050	80.7	2049	80.7	Lower Trailing Edge of Door				2045	80.5	2033	80.0
				Steering Column							
				2651	104.4	2719	107.0				
				Center of Seering Column to 'A' Post (Horizontal)							
				287	11.3	288	11.3				
				Center of Steering Column to Headliner (Vertical)							
				440	17.3	375	14.8				

1996 CHEVROLET CAVALIER

NHTSA Crash Test - #2546 - Front Impact

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

Test Vehicle Weight = 3211 pounds
Vehicle Closing Speed = 34.9 mph
Test Crush Length = 67.5 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	16.1	21.2	12.7	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.7 inches					288.3
Using a Rated No Damage Speed of	2.5mph	243.3	248.5	119.2	
Using a Rated No Damage Speed of	5.0mph	449.2	211.6	476.6	
Using a Rated No Damage Speed of	7.5mph	617.5	177.8	1072.4	
Using a Rated No Damage Speed of	10.0mph	748.2	146.8	1906.5	
Average Crush = 17.8 inches					146.8
Using a Rated No Damage Speed of	2.5mph	173.6	126.5	119.2	
Using a Rated No Damage Speed of	5.0mph	320.5	107.7	476.6	
Using a Rated No Damage Speed of	7.5mph	440.5	90.5	1072.4	
Using a Rated No Damage Speed of	10.0mph	533.8	74.7	1906.5	
Maximum Crush = 21.2 inches					103.5
Using a Rated No Damage Speed of	2.5mph	145.8	89.2	119.2	
Using a Rated No Damage Speed of	5.0mph	269.1	76.0	476.6	
Using a Rated No Damage Speed of	7.5mph	369.9	63.8	1072.4	
Using a Rated No Damage Speed of	10.0mph	448.2	52.7	1906.5	

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

****

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	21.2	33.4	-1.6	-4.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.0

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

1996 CHEVROLET CAVALIER

NHTSA Crash Test - #2546 - Front Impact

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

Test Vehicle Weight = 3211 pounds
Vehicle Closing Speed = 34.9 mph
Test Crush Length = 60.0 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	16.1	21.2	12.7	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.7 inches					324.2
Using a Rated No Damage Speed of	2.5mph	273.7	279.4	134.0	
Using a Rated No Damage Speed of	5.0mph	505.1	238.0	536.0	
Using a Rated No Damage Speed of	7.5mph	694.4	199.9	1206.0	
Using a Rated No Damage Speed of	10.0mph	841.4	165.1	2144.0	
Average Crush = 17.8 inches					165.0
Using a Rated No Damage Speed of	2.5mph	195.3	142.3	134.0	
Using a Rated No Damage Speed of	5.0mph	360.4	121.2	536.0	
Using a Rated No Damage Speed of	7.5mph	495.4	101.8	1206.0	
Using a Rated No Damage Speed of	10.0mph	600.3	84.1	2144.0	
Maximum Crush = 21.2 inches					116.3
Using a Rated No Damage Speed of	2.5mph	163.9	100.3	134.0	
Using a Rated No Damage Speed of	5.0mph	302.6	85.4	536.0	
Using a Rated No Damage Speed of	7.5mph	416.0	71.7	1206.0	
Using a Rated No Damage Speed of	10.0mph	504.1	59.3	2144.0	

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

****

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	21.2	33.4	-1.6	-4.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.0

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

1996 CHEVROLET CAVALIER

NHTSA Crash Test - #2546 - Front Impact

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

Test Vehicle Weight = 3211 pounds
Vehicle Closing Speed = 34.9 MPH
Test Crush Length = 67.5 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	16.1	19.3	20.5	20.7	19.0	12.7	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.7 inches					288.3
Using a Rated No Damage Speed of	2.5mph	243.3	248.5	119.2	
Using a Rated No Damage Speed of	5.0mph	449.2	211.6	476.6	
Using a Rated No Damage Speed of	7.5mph	617.5	177.8	1072.4	
Using a Rated No Damage Speed of	10.0mph	748.2	146.8	1906.5	
Average Crush = 18.8 inches					131.6
Using a Rated No Damage Speed of	2.5mph	164.4	113.4	119.2	
Using a Rated No Damage Speed of	5.0mph	303.4	96.6	476.6	
Using a Rated No Damage Speed of	7.5mph	417.1	81.1	1072.4	
Using a Rated No Damage Speed of	10.0mph	505.4	67.0	1322.5	
Maximum Crush = 20.7 inches					108.5
Using a Rated No Damage Speed of	2.5mph	149.3	93.5	119.2	
Using a Rated No Damage Speed of	5.0mph	275.6	79.7	476.6	
Using a Rated No Damage Speed of	7.5mph	378.8	66.9	1072.4	
Using a Rated No Damage Speed of	10.0mph	459.0	55.3	1906.5	

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

****

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	20.7	33.0	-2.0	-5.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.6

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

1996 CHEVROLET CAVALIER

NHTSA Crash Test - #2546 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3211 pounds
Vehicle Closing Speed = 34.9 MPH
Test Crush Length = 60.0 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	16.1	19.3	20.5	20.7	19.0	12.7	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.7 inches					324.2
Using a Rated No Damage Speed of	2.5mph	273.7	279.4	134.0	
Using a Rated No Damage Speed of	5.0mph	505.1	238.0	536.0	
Using a Rated No Damage Speed of	7.5mph	694.4	199.9	1206.0	
Using a Rated No Damage Speed of	10.0mph	841.4	165.1	2144.0	
Average Crush = 18.8 inches					148.0
Using a Rated No Damage Speed of	2.5mph	184.9	127.5	134.0	
Using a Rated No Damage Speed of	5.0mph	341.2	108.6	536.0	
Using a Rated No Damage Speed of	7.5mph	469.1	91.2	1206.0	
Using a Rated No Damage Speed of	10.0mph	568.4	75.3	1487.3	
Maximum Crush = 20.7 inches					122.0
Using a Rated No Damage Speed of	2.5mph	167.9	105.2	134.0	
Using a Rated No Damage Speed of	5.0mph	309.9	89.6	536.0	
Using a Rated No Damage Speed of	7.5mph	426.0	75.2	1206.0	
Using a Rated No Damage Speed of	10.0mph	516.2	62.2	2144.0	

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

****

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	20.7	33.0	-2.0	-5.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 23.6

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: 1995 - 2003
Make: CHEVROLET
Model: CAVALIER

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
3180	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.0	29.2	262.7	84.9	406.3	123.5	22.8
2688	1998 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	18.8	35.2	270.3	86.9	420.2	118.1	26.4
3096	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	13.5	29.0	290.3	103.7	406.6	151.2	25.1
3179	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	13.4	29.2	292.4	105.5	405.2	153.7	25.4
2546	1996 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	18.8	34.9	303.7	96.8	476.6	131.8	26.0
5206	2004 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.3	29.6	318.0	102.7	492.2	148.6	23.0
2253	1995 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.7	35.1	318.9	97.7	520.3	132.8	25.1
2528	1997 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	17.1	35.0	322.8	113.3	459.6	154.3	28.7
2850	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	16.5	30.1	347.2	105.4	571.9	151.6	21.9
2689	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	14.2	35.1	361.0	152.9	426.0	208.0	34.7
3178	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	9.7	25.1	371.0	152.9	450.1	238.6	25.8
2754	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.5	34.9	380.0	146.5	492.9	199.6	31.4
3112	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	9.0	24.9	399.2	176.4	451.7	276.1	27.5
4445	2003 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	12.7	34.8	424.3	198.3	453.9	270.6	38.0
2214	1995 PONTIAC SUNFIRE FOUR DOOR SEDAN	5.0	10.8	29.6	429.3	194.8	472.9	282.1	32.3
	Average (AVG)				**339.4**	**127.9**	**460.4**	**182.7**	**27.6**
	Minimum (MIN)				**262.7**	**84.9**	**405.2**	**118.1**	**21.9**
	Maximum (MAX)				**429.3**	**198.3**	**571.9**	**282.1**	**38.0**
	Standard Deviation (STDev-sample)				**53.3**	**38.9**	**46.6**	**58.5**	**4.6**
	Number of Tests (n)			**15**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 1995 - 2003
Make: CHEVROLET
Model: CAVALIER

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
3178	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	23.3	25.1	155.2	26.8	450.1	41.8	10.8
3112	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	21.5	24.9	167.7	31.1	451.7	48.7	11.6
3180	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.8	29.2	221.0	60.1	406.3	87.4	19.2
2688	1998 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	22.6	35.2	224.0	59.7	420.2	81.1	21.9
3179	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.3	29.2	226.6	63.4	405.2	92.3	19.7
3096	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.9	29.0	245.3	74.0	406.6	108.0	21.2
2528	1997 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	21.2	35.0	259.8	73.4	459.6	99.9	23.1
2689	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.3	35.1	266.0	83.0	426.0	112.9	25.6
2546	1996 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	21.2	34.9	268.8	75.8	476.6	103.3	23.0
5206	2004 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.8	29.6	273.2	75.8	492.2	109.7	19.8
2253	1995 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	22.3	35.1	281.2	76.0	520.3	103.3	22.1
2754	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.7	34.9	299.7	91.1	492.9	124.1	24.8
2873	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	11.3	25.4	301.3	108.9	417.0	168.7	22.9
2850	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	18.1	30.1	317.4	88.1	571.9	126.7	20.0
3177	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	10.4	25.0	346.9	133.1	452.2	207.9	24.0
4445	2003 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	15.4	34.8	351.9	136.4	453.9	186.1	31.5
2214	1995 PONTIAC SUNFIRE FOUR DOOR SEDAN	5.0	11.5	29.6	404.4	172.9	472.9	250.4	30.4
	Average (AVG)				**271.2**	**84.1**	**457.4**	**120.7**	**21.8**
	Minimum (MIN)				**155.2**	**26.8**	**405.2**	**41.8**	**10.8**
	Maximum (MAX)				**404.4**	**172.9**	**571.9**	**250.4**	**31.5**
	Standard Deviation (STDev-sample)				**64.1**	**36.9**	**44.9**	**54.4**	**5.3**
	Number of Tests (n)			**17**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 1G1JC1244TM117362

Model:	1996 Chevrolet Cavalier 2 Door Coupe
Engine Size:	2.2L/ 133 cu.in.
Engine Description:	In-Line 4 cylinder with Overhead Valves (OHV)
Horse Power:	115 @ 5000 rpm
Torque:	136 lb-ft at 3600 rpm
Injection System:	Multi-Port Fuel Injection (MFI)
PSI:	41-47 psi
Ignition:	Electronic
Manufacturer:	Chevrolet - United States
Assembly Plant:	Lansing, MI
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Active (Manual) Seatbelts + Driver & Passenger Air Bags

The First through Third characters (1G1) indicate a Chevrolet Car made in the U.S.A.

The Fourth and Fifth characters (JC) indicate a Cavalier

The Sixth character (1) indicate a 2 Door Coupe

The Seventh character (2) indicate Active (Manual) Seatbelts + Driver & Passenger Air Bags

The Eighth character (4) indicate the OEM engine: 2.2L/ 133 cu.in., L4 OHV

The Ninth character (the check digit) is entered as 4.
The VIN appears Valid, the calculated value is 4.

The Tenth character (T) indicate the model year 1996

The Eleventh character (M) indicate the vehicle was made in the assembly plant in Lansing, MI

The Twelfth through Seventeenth characters (117362) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

PROVIDED BY:

4N6XPRT Systems

8387 University Avenue

La Mesa CA 91941

5/15/2013

1996 CHEVROLET CAVALIER 2 DOOR COUPE

Curb Weight:		2537	lbs.	1151	kg.
Curb Weight Distribution -	Front:	64	% Rear:	36	%
Gross Vehicle Weight Rating:		3642	lbs.	1652	kg.
Number of Tires on Vehicle:		4			
Drive Wheels:		FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	180	15.00	4.57
Wheelbase:	104	8.67	2.64
Front Bumper to Front Axle:	38	3.17	0.97
Front Bumper to Front of Front Well:	24	2.00	0.61
Front Bumper to Front of Hood:	5	0.42	0.13
Front Bumper to Base of Windshield:	50	4.17	1.27
Front Bumper to Top of Windshield:	77	6.42	1.96
Rear Bumper to Rear Axle:	38	3.17	0.97
Rear Bumper to Rear of Rear Well:	24	2.00	0.61
Rear Bumper to Rear of Trunk:	5	0.42	0.13
Rear Bumper to Base of Rear Window:	20	1.67	0.51
Width Dimensions			
Maximum Width:	69	5.75	1.75
Front Track:	58	4.83	1.47
Rear Track:	57	4.75	1.45
Vertical Dimensions			
Height:	53	4.42	1.35
Ground to -			
Front Bumper (Top)	23	1.92	0.58
Headlight - center	26	2.17	0.66
Hood - top front:	31	2.58	0.79
Base of Windshield	37	3.08	0.94
Rear Bumper - top:	24	2.00	0.61
Trunk - top rear:	39	3.25	0.99
Base of Rear Window:	41	3.42	1.04

1996 CHEVROLET CAVALIER 2 DOOR COUPE

Interior Dimensions

	Inches	Feet	Meters
Front Seat Shoulder Width	54	4.50	1.37
Front Seat to Headliner	38	3.17	0.97
Front Leg Room - seatback to floor (max)	43	3.58	1.09
Rear Seat Shoulder Width	55	4.58	1.40
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	33	2.75	0.84

Seatbelts: 3pt - front and rear

Airbags: FRONT SEAT AIRBAGS

Steering Data

Turning Circle (Diameter)	408	34.00	10.36
Steering Ratio: 15.22:1			
Wheel Radius:	12	1.00	0.30
Tire Size (OEM): 195-70R14			

Acceleration & Braking Information

Brake Type: FRONT DISC - REAR DRUM

ABS System: ABS

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

d = 133.0 ft t = 3.0 sec a = -29.1 ft/sec² G-force = -0.90

Acceleration:

0 to 30mph	t =	3.8	sec	a =	11.6	ft/sec²	G-force = 0.36
0 to 60mph	t =	10.1	sec	a =	8.7	ft/sec²	G-force = 0.27
45 to 65mph	t =	7.1	sec	a =	4.1	ft/sec²	G-force = 0.13

Transmission Type: 5spd MANUAL

Notes:

Federal Bumper Standard Requirements: 2.5 mph

This vehicles Rated Bumper Strength: 5 mph

N.S.D.C = 1995 - 2002

1996 CHEVROLET CAVALIER 2 DOOR COUPE

Other Information

Tip-Over Stability Ratio =	1.33	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	37.44
Inches in front of rear axle	=	66.56
Inches from side of vehicle	=	34.50
Inches from ground	=	21.65
Inches from front corner	=	82.95
Inches from rear corner	=	110.10
Inches from front bumper	=	75.44
Inches from rear bumper	=	104.56

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1407.11	lb*ft*sec²
Pitch Moment of Inertia	=	1362.63	lb*ft*sec²
Roll Moment of Inertia	=	306.66	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	58.0	deg
Angle Front of Hood to Windshield Base	=	7.6	deg
Angle Front of Hood to Windshield Top	=	15.5	deg
Angle of Windshield	=	27.4	deg
Angle of Steering Tires at Max Turn	=	29.2	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 independant 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

#5206

2004 CHEVROLET CAVALIER

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-030201SC02301

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Similar Vehicle database reader

You entered: **1997 CHEVROLET CAVALIER**

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

Year Range	Make	Model	Body Styles	Wheelbase
1995 - 2003	CHEVROLET	CAVALIER	2D, 4D, CONV, SW	104.1
Remarks: Mild restyle in 2003.				
1995 - 2005	PONTIAC	SUNFIRE	2D, 4D, SW	104.1
Remarks:				
2003 - 2005	CHEVROLET	CAVALIER	2D, 4D, CONV, SW	104.1
Remarks: Mild restyle in 2003.				

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	5206	NHTSA Test Reference Guide Version #	V5			
Test Date	2004-03-09	Contract #	04-6008			
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	0	mm	0.0	inches
		Closing Speed	47.7	Km/Hr	29.64	MPH
Test Performer	TRANSPORT CANADA					
Test Reference #	TC04-118					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	21 C	69.8 F	Total Number of Curves	187		
Data Recorder Type	OTHER	Data Link	OTHER			
Test Commentary	NO COMMENTS					

Fixed Barrier Information

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

2004 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	5206		
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 : APR/03		

Head

Head to -

Windshielder Header	260	mm	10.2	inches	Head Injury Criteria (HIC)	145	
WindShield	653	mm	25.7	inches	HIC Lower Time Interval (ms)	42.6	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	78.6	
Side Header	220	mm	8.7	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	9999	mm	0.0	inches	Arm to Door	170	mm	6.7	inches
Steering Wheel	225	mm	8.9	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)	9			
Thoracic Trauma Index	9				Thorax Peak Acceleration (g's)	67.6			
Lap Belt Peak Load	2885	Newtons	648.6	pound Force					
Shoulder Belt Peak Load	3430	Newtons	771.1	pound Force					
First Contact Region (Chest/Abdomen)	AIR BAG								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	60	mm	2.4	inches	Knees to Seatback	9999	mm	0.0	inches
Left Femur Peak Load	-3659	Newtons	-822.6	pounds Force					
Right Femur Peak Load	-3504	Newtons	-787.7	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

2004 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	5206					
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 : APR/03

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 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	5206		
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 : APR/03		

Head

Head to -

Windshielder Header	295	mm	11.6	inches	Head Injury Criteria (HIC)	335	
WindShield	657	mm	25.9	inches	HIC Lower Time Interval (ms)	66.9	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	102.9	
Side Header	240	mm	9.4	inches			
Side Window	350	mm	13.8	inches			
Neck to Seatback	9999	mm	0.0	inches			
First Contact Region (Head)	AIR BAG						
Second Contact Region (Head)							

Chest

Chest to -

Dash	400	mm	15.7	inches	Arm to Door	112	mm	4.4	inches
Steering Wheel	9999	mm	0.0	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)	9			
Thoracic Trauma Index	9				Thorax Peak Acceleration (g's)	40.8			
Lap Belt Peak Load	4255	Newtons	956.6	pound Force					
Shoulder Belt Peak Load	4306	Newtons	968.0	pound Force					
First Contact Region (Chest/Abdomen)	AIR BAG								
Second Contact Region (Chest/Abdomen)	NONE								

Legs

Knees to Dash	65	mm	2.6	inches	Knees to Seatback	9999	mm	0.0	inches
Left Femur Peak Load	-1344	Newtons	-302.1	pounds Force					
Right Femur Peak Load	-1436	Newtons	-322.8	pounds Force					
First Contact Region (Legs)	DASHPANEL								
Second Contact Region (Legs)									

2004 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	5206					
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 : APR/03

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 CHEVROLET CAVALIER RIGHT REAR SEAT OCCUPANT

Test #	5206		
Vehicle #	1	Sex	NOT APPLICABLE
Location	RIGHT REAR SEAT	Age	6
Position	NOT APPLICABLE	Height	999 mm 39.3 inches
Type	CHILD DUMMY	Weight	999.0 kg 2202 pounds
Size	6 YEAR OLD CHILD		
Calibration Method	OTHER		
Occupant Manufacturer	FIRST TECHNOLOGY		
Occupant Modification	UNMODIFIED		
Occupant Description	S/N : 001		
Occupant Commentary	LAST CALIBRATION DATE : MAR/02		

Head

Head to -

Windshielder Header	9999	mm	0.0	inches	Head Injury Criteria (HIC)	255	
WindShield	9999	mm	0.0	inches	HIC Lower Time Interval (ms)	91.6	
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	126.7	
Side Header	9999	mm	0.0	inches			
Side Window	9999	mm	0.0	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	9999	mm	0.0	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	9999	mm	0.0	inches
Seatback	9999	mm	0.0	inches					
Chest Severity Index	9999				Pelvic Peak Lateral Acceleration (g's)	9			
Thoracic Trauma Index	9				Thorax Peak Acceleration (g's)	40.6			
Lap Belt Peak Load	0	Newtons	0.0	pound Force					
Shoulder Belt Peak Load	1613	Newtons	362.6	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	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)									

2004 CHEVROLET CAVALIER RIGHT REAR SEAT OCCUPANT

Test #	5206					
Vehicle #	1	Sex	NOT APPLICABLE			
Location	RIGHT REAR SEAT	Age	6			
Position	NOT APPLICABLE	Height	999	mm	39.3	inches
Type	CHILD DUMMY	Weight	999.0	kg	2202	pounds
Size	6 YEAR OLD CHILD					

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 001
Occupant Commentary	LAST CALIBRATION DATE : MAR/02

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	SEAT BACK
Mounted	OTHER
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

2004 CHEVROLET CAVALIER LEFT REAR SEAT OCCUPANT

Test #	5206						
Vehicle #	1			Sex	NOT APPLICABLE		
Location	LEFT REAR SEAT			Age	6		
Position	NOT APPLICABLE			Height	999	mm	39.3 inches
Type	HYBRID III DUMMY			Weight	999.0	kg	2202 pounds
Size	6 YEAR OLD CHILD						

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 103
Occupant Commentary	LAST CALIBRATION DATE : APR/03

Head

Head to -

Windshielder Header	9999	mm	0.0	inches	Head Injury Criteria (HIC)	583			
WindShield	9999	mm	0.0	inches	HIC Lower Time Interval (ms)	80.7			
Seatback	9999	mm	0.0	inches	HIC Upper Time Interval (ms)	116.7			
Side Header	9999	mm	0.0	inches					
Side Window	9999	mm	0.0	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	9999	mm	0.0	inches
Steering Wheel	9999	mm	0.0	inches	Hip to Door	9999	mm	0.0	inches
Seatback	9999	mm	0.0	inches					
Chest Severity Index	9999				Pelvic Peak Lateral Acceleration (g's)	9			
Thoracic Trauma Index	9				Thorax Peak Acceleration (g's)	49.4			
Lap Belt Peak Load	0	Newtons	0.0	pound Force					
Shoulder Belt Peak Load	2493	Newtons	560.5	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	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)									

2004 CHEVROLET CAVALIER LEFT REAR SEAT OCCUPANT

Test #	5206					
Vehicle #	1	Sex	NOT APPLICABLE			
Location	LEFT REAR SEAT	Age	6			
Position	NOT APPLICABLE	Height	999	mm	39.3	inches
Type	HYBRID III DUMMY	Weight	999.0	kg	2202	pounds
Size	6 YEAR OLD CHILD					

Calibration Method	OTHER
Occupant Manufacturer	FIRST TECHNOLOGY
Occupant Modification	UNMODIFIED
Occupant Description	S/N : 103
Occupant Commentary	LAST CALIBRATION DATE : APR/03

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS
Restraint # 2	SEAT BACK
Mounted	OTHER
Deployment	DEPLOYED PROPERLY
Restraint Commentary	NO COMMENTS

Vehicle 1 2004 CHEVROLET CAVALIER

Test #	5206		
VIN	1G1JC52F647179404	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CHEVROLET	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	CAVALIER	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.2 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	04-118		

Vehicle Length	4640	mm	182.7	inches	CG behind Front Axle	1224	mm	48.2	inches
Vehicle Width	1745	mm	68.7	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	2644	mm	104.1	inches	Total Length of Indentation	1400	mm	55.1	inches
Vehicle Test Weight	1531	KG	3375	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	48	kph	29.6	mph

Vehicle Damage Index: 9999999 | Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	313	mm	12.3	inches
DPD 2	388	mm	15.3	inches
DPD 3	408	mm	16.1	inches
DPD 4	408	mm	16.1	inches
DPD 5	396	mm	15.6	inches
DPD 6	362	mm	14.3	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	178.1	inches	162.6	inches	15.5	inches
	4524	mm	4130	mm	394	mm
Centerline	182.7	inches	164.9	inches	17.8	inches
	4640	mm	4189	mm	451	mm
Right Bumper Corner	177.8	inches	162.7	inches	15.1	inches
	4516	mm	4132	mm	384	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 2004 CHEVROLET CAVALIER

Test #	5206		
VIN	1G1JC52F647179404	NHTSA Test Vehicle Number	1
Year	2004	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	CHEVROLET	Post-test Steering Column Shear Capsule Seperation	NOT APPLICABLE
Model	CAVALIER	Steering Column Collapse Mechanism	NOT APPLICABLE
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	2.2 Liter	Transmission	MANUAL - FRONT WHEEL DRIVE
Vehicle Modification(s) Description	UNMODIFIED		
Vehicle Commentary	04-118		

Vehicle Length	4640	mm	182.7	inches	CG behind Front Axle	1224	mm	48.2	inches
Vehicle Width	1745	mm	68.7	inches	Center of Damage to CG Axis	9999	mm	0.0	inches
Vehicle Wheelbase	2644	mm	104.1	inches	Total Length of Indentation	1400	mm	55.1	inches
Vehicle Test Weight	1531	KG	3375	pounds	Maximum Static Crush Depth	9999	mm	0.0	inches
					Pre-Impact Speed	48	kph	29.6	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							
				4640	182.7	4189	164.9				
				Engine Block							
				241	9.5	234	9.2				
4524	178.1	4130	162.6	Front Bumper Corner				4516	177.8	4132	162.7
				Front of Engine							
				3892	153.2	3668	144.4				
3380	133.1	3262	128.4	Firewall				3370	132.7	3292	129.6
				3549	139.7	3489	137.4				
3084	121.4	3082	121.3	Upper Leading Edge of Door				3097	121.9	3097	121.9
3092	121.7	3091	121.7	Lower Leading Edge of Door				3092	121.7	3090	121.7
3040	119.7	3035	119.5	Bottom of 'A' Post				3026	119.1	3019	118.9
2085	82.1	2083	82.0	Upper Trailing Edge of Door				2088	82.2	2086	82.1
2087	82.2	2089	82.2	Lower Trailing Edge of Door				2091	82.3	2091	82.3
				Steering Column							
				2633	103.7	2626	103.4				
				Center of Seering Column to 'A' Post (Horizontal)							
				365	14.4	348	13.7				
				Center of Steering Column to Headliner (Vertical)							
				445	17.5	421	16.6				

2004 CHEVROLET CAVALIER

NHTSA Crash Test - #5206 - Front Impact

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

Test Vehicle Weight = 3375 pounds
Vehicle Closing Speed = 29.6 mph
Test Crush Length = 68.7 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	15.5	17.8	15.1	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 15.1 inches					151.7
Using a Rated No Damage Speed of	2.5mph	176.9	127.2	123.1	
Using a Rated No Damage Speed of	5.0mph	321.3	104.8	492.2	
Using a Rated No Damage Speed of	7.5mph	433.0	84.6	1107.5	
Using a Rated No Damage Speed of	10.0mph	512.2	66.6	1968.9	
Average Crush = 16.5 inches					127.1
Using a Rated No Damage Speed of	2.5mph	161.9	106.5	123.1	
Using a Rated No Damage Speed of	5.0mph	294.0	87.8	492.2	
Using a Rated No Damage Speed of	7.5mph	396.3	70.9	1107.5	
Using a Rated No Damage Speed of	10.0mph	468.7	55.8	1968.9	
Maximum Crush = 17.8 inches					109.2
Using a Rated No Damage Speed of	2.5mph	150.1	91.5	123.1	
Using a Rated No Damage Speed of	5.0mph	272.5	75.5	492.2	
Using a Rated No Damage Speed of	7.5mph	367.3	60.9	1107.5	
Using a Rated No Damage Speed of	10.0mph	434.5	47.9	1968.9	

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	17.8	30.6	0.9	3.0

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 19.7

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 CHEVROLET CAVALIER

NHTSA Crash Test - #5206 - Front Impact

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

Test Vehicle Weight = 3375 pounds
Vehicle Closing Speed = 29.6 mph
Test Crush Length = 55.1 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	
(Driver Side)	15.5	17.8	15.1	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 15.1 inches					189.1
Using a Rated No Damage Speed of	2.5mph	220.5	158.5	153.4	
Using a Rated No Damage Speed of	5.0mph	400.4	130.7	613.5	
Using a Rated No Damage Speed of	7.5mph	539.7	105.5	1380.4	
Using a Rated No Damage Speed of	10.0mph	638.4	83.0	2454.0	
Average Crush = 16.5 inches					158.4
Using a Rated No Damage Speed of	2.5mph	201.8	132.8	153.4	
Using a Rated No Damage Speed of	5.0mph	366.5	109.4	613.5	
Using a Rated No Damage Speed of	7.5mph	493.9	88.4	1380.4	
Using a Rated No Damage Speed of	10.0mph	584.2	69.5	2454.0	
Maximum Crush = 17.8 inches					136.1
Using a Rated No Damage Speed of	2.5mph	187.1	114.1	153.4	
Using a Rated No Damage Speed of	5.0mph	339.7	94.0	613.5	
Using a Rated No Damage Speed of	7.5mph	457.8	75.9	1380.4	
Using a Rated No Damage Speed of	10.0mph	541.5	59.7	2454.0	

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	17.8	30.6	0.9	3.0

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 19.7

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 CHEVROLET CAVALIER

NHTSA Crash Test - #5206 - Front Impact

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

Test Vehicle Weight = 3375 pounds
Vehicle Closing Speed = 29.6 MPH
Test Crush Length = 68.7 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	12.3	15.3	16.1	16.1	15.6	14.3	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.3 inches					228.7
Using a Rated No Damage Speed of	2.5mph	217.2	191.7	123.1	
Using a Rated No Damage Speed of	5.0mph	394.4	158.0	492.2	
Using a Rated No Damage Speed of	7.5mph	531.6	127.6	1107.5	
Using a Rated No Damage Speed of	10.0mph	628.7	100.4	1968.9	
Average Crush = 15.3 inches					147.8
Using a Rated No Damage Speed of	2.5mph	174.6	123.9	123.1	
Using a Rated No Damage Speed of	5.0mph	317.1	102.1	492.2	
Using a Rated No Damage Speed of	7.5mph	427.3	82.5	1107.5	
Using a Rated No Damage Speed of	10.0mph	505.5	64.9	1250.9	
Maximum Crush = 16.1 inches					133.5
Using a Rated No Damage Speed of	2.5mph	165.9	111.9	123.1	
Using a Rated No Damage Speed of	5.0mph	301.3	92.2	492.2	
Using a Rated No Damage Speed of	7.5mph	406.1	74.5	1107.5	
Using a Rated No Damage Speed of	10.0mph	480.3	58.6	1968.9	

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	16.1	29.1	-0.6	-1.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.8

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 CHEVROLET CAVALIER

NHTSA Crash Test - #5206 - Front Impact

Damage Profile Distances - Indention Length - Closing Speed - Trapezoidal Average

Test Vehicle Weight = 3375 pounds
Vehicle Closing Speed = 29.6 MPH
Test Crush Length = 55.1 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	12.3	15.3	16.1	16.1	15.6	14.3	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 12.3 inches					285.0
Using a Rated No Damage Speed of	2.5mph	270.7	238.9	153.4	
Using a Rated No Damage Speed of	5.0mph	491.6	197.0	613.5	
Using a Rated No Damage Speed of	7.5mph	662.6	159.0	1380.4	
Using a Rated No Damage Speed of	10.0mph	783.7	125.1	2454.0	
Average Crush = 15.3 inches					184.2
Using a Rated No Damage Speed of	2.5mph	217.7	154.4	153.4	
Using a Rated No Damage Speed of	5.0mph	395.2	127.3	613.5	
Using a Rated No Damage Speed of	7.5mph	532.7	102.8	1380.4	
Using a Rated No Damage Speed of	10.0mph	630.0	80.9	1559.1	
Maximum Crush = 16.1 inches					166.3
Using a Rated No Damage Speed of	2.5mph	206.8	139.5	153.4	
Using a Rated No Damage Speed of	5.0mph	375.6	115.0	613.5	
Using a Rated No Damage Speed of	7.5mph	506.2	92.8	1380.4	
Using a Rated No Damage Speed of	10.0mph	598.7	73.0	2454.0	

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

****

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	16.1	29.1	-0.6	-1.9

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.8

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: 1995 - 2003
Make: CHEVROLET
Model: CAVALIER

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
3180	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.0	29.2	262.7	84.9	406.3	123.5	22.8
2688	1998 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	18.8	35.2	270.3	86.9	420.2	118.1	26.4
3096	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	13.5	29.0	290.3	103.7	406.6	151.2	25.1
3179	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	13.4	29.2	292.4	105.5	405.2	153.7	25.4
2546	1996 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	18.8	34.9	303.7	96.8	476.6	131.8	26.0
5206	2004 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.3	29.6	318.0	102.7	492.2	148.6	23.0
2253	1995 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.7	35.1	318.9	97.7	520.3	132.8	25.1
2528	1997 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	17.1	35.0	322.8	113.3	459.6	154.3	28.7
2850	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	16.5	30.1	347.2	105.4	571.9	151.6	21.9
2689	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	14.2	35.1	361.0	152.9	426.0	208.0	34.7
3178	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	9.7	25.1	371.0	152.9	450.1	238.6	25.8
2754	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.5	34.9	380.0	146.5	492.9	199.6	31.4
3112	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	9.0	24.9	399.2	176.4	451.7	276.1	27.5
4445	2003 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	12.7	34.8	424.3	198.3	453.9	270.6	38.0
2214	1995 PONTIAC SUNFIRE FOUR DOOR SEDAN	5.0	10.8	29.6	429.3	194.8	472.9	282.1	32.3
	Average (AVG)				**339.4**	**127.9**	**460.4**	**182.7**	**27.6**
	Minimum (MIN)				**262.7**	**84.9**	**405.2**	**118.1**	**21.9**
	Maximum (MAX)				**429.3**	**198.3**	**571.9**	**282.1**	**38.0**
	Standard Deviation (STDev-sample)				**53.3**	**38.9**	**46.6**	**58.5**	**4.6**
	Number of Tests (n)			**15**					

Available Test Results
Front Impact Test Summary

Report Filter Settings

Year Range: 1995 - 2003
Make: CHEVROLET
Model: CAVALIER

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
3178	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	23.3	25.1	155.2	26.8	450.1	41.8	10.8
3112	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	21.5	24.9	167.7	31.1	451.7	48.7	11.6
3180	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.8	29.2	221.0	60.1	406.3	87.4	19.2
2688	1998 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	22.6	35.2	224.0	59.7	420.2	81.1	21.9
3179	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.3	29.2	226.6	63.4	405.2	92.3	19.7
3096	1999 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	15.9	29.0	245.3	74.0	406.6	108.0	21.2
2528	1997 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	21.2	35.0	259.8	73.4	459.6	99.9	23.1
2689	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.3	35.1	266.0	83.0	426.0	112.9	25.6
2546	1996 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	21.2	34.9	268.8	75.8	476.6	103.3	23.0
5206	2004 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	17.8	29.6	273.2	75.8	492.2	109.7	19.8
2253	1995 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	22.3	35.1	281.2	76.0	520.3	103.3	22.1
2754	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	19.7	34.9	299.7	91.1	492.9	124.1	24.8
2873	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	11.3	25.4	301.3	108.9	417.0	168.7	22.9
2850	1997 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	18.1	30.1	317.4	88.1	571.9	126.7	20.0
3177	1998 CHEVROLET CAVALIER FOUR DOOR SEDAN	5.0	10.4	25.0	346.9	133.1	452.2	207.9	24.0
4445	2003 CHEVROLET CAVALIER TWO DOOR COUPE	5.0	15.4	34.8	351.9	136.4	453.9	186.1	31.5
2214	1995 PONTIAC SUNFIRE FOUR DOOR SEDAN	5.0	11.5	29.6	404.4	172.9	472.9	250.4	30.4
	Average (AVG)				**271.2**	**84.1**	**457.4**	**120.7**	**21.8**
	Minimum (MIN)				**155.2**	**26.8**	**405.2**	**41.8**	**10.8**
	Maximum (MAX)				**404.4**	**172.9**	**571.9**	**250.4**	**31.5**
	Standard Deviation (STDev-sample)				**64.1**	**36.9**	**44.9**	**54.4**	**5.3**
	Number of Tests (n)			**17**					

Expert VIN DeCoder®

Version Number 3.2.0.1

DeCoded VIN: 2HGEJ1230SH512020

Model:	1995 Honda CIVIC 4 Door Sedan
Engine Size:	1.6 L/ 97 cu.in.
Engine Description:	In-Line 4 cylinder with Overhead Cam
Horse Power:	125 @ 6600 rpm
Torque:	106 lb-ft at 5200 rpm
Injection System:	MultiPoint Fuel Injection (MP-FI)
PSI:	35 psi
Ignition:	electronic
Manufacturer:	Honda
Assembly Plant:	Alliston, Ontario
Drive Wheels:	This is a Front Wheel Drive vehicle w/ Manual Belts

The First through Third characters (2HG) indicate a Honda Passenger Car made in Canada

The Fourth through Sixth characters (EJ1) indicate a CIVIC and the OEM engine: 1.6 L/ 97 cu.in., L4, OHC

The Seventh character (2) indicate a 4 Door Sedan

The Eighth character (3) indicate a GL series and Manual Belts

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

The Tenth character (S) indicate the model year 1995

The Eleventh character (H) indicate the vehicle was made in the assembly plant in Alliston, Ontario

The Twelfth through Seventeenth characters (512020) indicate the Serial Number and are unique to this vehicle.

Expert AutoStats®

Version 5.3.0.1

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

5/15/2013

1995 HONDA CIVIC 4 DOOR SEDAN

Curb Weight:	2560 lbs.		1161	kg.
Curb Weight Distribution - Front:	61 %	Rear:	39	%
Gross Vehicle Weight Rating:	3490 lbs.		1583	kg.
Number of Tires on Vehicle:	4			
Drive Wheels:	FRONT			

Horizontal Dimensions	Inches	Feet	Meters
Total Length	173	14.42	4.39
Wheelbase:	103	8.58	2.62
Front Bumper to Front Axle:	33	2.75	0.84
Front Bumper to Front of Front Well:	19	1.58	0.48
Front Bumper to Front of Hood:	3	0.25	0.08
Front Bumper to Base of Windshield:	45	3.75	1.14
Front Bumper to Top of Windshield:	73	6.08	1.85
Rear Bumper to Rear Axle:	37	3.08	0.94
Rear Bumper to Rear of Rear Well:	24	2.00	0.61
Rear Bumper to Rear of Trunk:	4	0.33	0.10
Rear Bumper to Base of Rear Window:	20	1.67	0.51
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:	52	4.33	1.32
Ground to -			
Front Bumper (Top)	21	1.75	0.53
Headlight - center	23	1.92	0.58
Hood - top front:	27	2.25	0.69
Base of Windshield	34	2.83	0.86
Rear Bumper - top:	23	1.92	0.58
Trunk - top rear:	40	3.33	1.02
Base of Rear Window:	41	3.42	1.04

1995 HONDA CIVIC 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	54	4.50	1.37
Front Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (max)	45	3.75	1.14
Rear Seat Shoulder Width	53	4.42	1.35
Rear Seat to Headliner	36	3.00	0.91
Front Leg Room - seatback to floor (min)	33	2.75	0.84

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

Steering Data

Turning Circle (Diameter)	396	33.00	10.06
Steering Ratio:	19.00:1		
Wheel Radius:	11	0.92	0.28
Tire Size (OEM):	175+65R14		

Acceleration & Braking Information

Brake Type: ALL DISC
ABS System: ABS UNKNOWN

Braking, 60 mph to 0 (Hard pedal, no skid, dry pavement):
d = 165.0 ft t = 3.8 sec a = -23.4 ft/sec² G-force = -0.73

Acceleration:

0 to 30mph	t =	3.2	sec	a =	13.8	ft/sec²	G-force = 0.43
0 to 60mph	t =	8.8	sec	a =	10.0	ft/sec²	G-force = 0.31
45 to 65mph	t =		sec	a =		ft/sec²	G-force =

Transmission Type: 5spd MANUAL

Notes:
Federal Bumper Standard Requirements: 2.5 mph
This vehicles Rated Bumper Strength: 5 mph

N.S.D.C = 1995 - 1995

1995 HONDA CIVIC 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.42	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

Inches behind front axle	=	40.17
Inches in front of rear axle	=	62.83
Inches from side of vehicle	=	33.50
Inches from ground	=	20.41
Inches from front corner	=	80.47
Inches from rear corner	=	105.30
Inches from front bumper	=	73.17
Inches from rear bumper	=	99.83

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1430.80	lb*ft*sec²
Pitch Moment of Inertia	=	1385.40	lb*ft*sec²
Roll Moment of Inertia	=	310.80	lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	63.4	deg
Angle Front of Hood to Windshield Base	=	9.5	deg
Angle Front of Hood to Windshield Top	=	18.2	deg
Angle of Windshield	=	29.7	deg
Angle of Steering Tires at Max Turn	=	29.8	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 independant 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

#5986

1995 HONDA CIVIC

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS
8387 UNIVERSITY AVENUE
LA MESA CA 91941-3842
12R-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: **1995 HONDA CIVIC**

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

Year Range	Make	Model	Body Styles	Wheelbase
1992 - 1995	HONDA	CIVIC	2D, 3D, 4D, SW	104.3, 106.3

Remarks: NEW COUPE in 93

If you have suggestions, corrections, etc., you should contact Greg Anderson at Scalia Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: greganderson@scs.com.

Test Information

Test #	5986	NHTSA Test Reference Guide Version #	V5			
Test Date	2001-05-08	Contract #	DTNH22-97-C-11033			
Contract/Study Title	FMVSS 214 - 1995 HONDA CIVIC 4 DOOR					
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE DATA					
Test Type	FMVSS 214 SIDE IMPACT PROTECTION	Configuration	IMPACTOR INTO VEHICLE			
Impact Angle	90	Side Impact Point	N/A	mm	N/A	inches
		Offset Distance	0	mm	0.0	inches
		Closing Speed	52.5	Km/Hr	32.62	MPH
Test Performer	MGA RESEARCH					
Test Reference #	BT01050801					
Test Track Surface	CONCRETE	Condition	DRY			
Ambient Temperature	22 C	71.6 F	Total Number of Curves	49		
Data Recorder Type	OTHER	Data Link	OTHER			
Test Commentary	EME ON BOARD DAS 3200					

Fixed Barrier Information

Barrier Type		Pole Barrier Diameter		mm	inches
Barrier Shape					
Barrier Commentary					

1995 HONDA CIVIC RIGHT FRONT SEAT OCCUPANT

Test #	5986		
Vehicle #	2	Sex	MALE
Location	RIGHT FRONT SEAT	Age	0
Position	CENTER POSITION	Height	0 mm 0.0 inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	0.0 kg 0 pounds
Size	50 PERCENTILE		
Calibration Method	SIDE IMPACT DUMMY		
Occupant Manufacturer	FIRST TECHNOLOGY S/N 036		
Occupant Modification			
Occupant Description			
Occupant Commentary	CHEST TO DOOOR PANEL; RIGHT LEG TO DOOR PANEL; LEFT LEG TO RIGHT LEG		

Head

Head to -

Windshielder Header	370	mm	14.6	inches	Head Injury Criteria (HIC)	179	
WindShield	607	mm	23.9	inches	HIC Lower Time Interval (ms)	49.4	
Seatback	0	mm	0.0	inches	HIC Upper Time Interval (ms)	85.4	
Side Header	192	mm	7.6	inches			
Side Window	330	mm	13.0	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): NONE

Second Contact Region (Head):

Chest

Chest to -

Dash	600	mm	23.6	inches	Arm to Door	111	mm	4.4	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	155	mm	6.1	inches
Seatback	0	mm	0.0	inches					

Chest Severity Index	0	Pelvic Peak Lateral Acceleration (g's)	80
Thoracic Trauma Index	52	Thorax Peak Acceleration (g's)	0

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): OTHER

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash 176 mm 6.9 inches Knees to Seatback 0 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):

1995 HONDA CIVIC RIGHT FRONT SEAT OCCUPANT

Test #	5986					
Vehicle #	2	Sex	MALE			
Location	RIGHT FRONT SEAT	Age	0			
Position	CENTER POSITION	Height	0	mm	0.0	inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	0.0	kg	0	pounds
Size	50 PERCENTILE					

Calibration Method	SIDE IMPACT DUMMY
Occupant Manufacturer	FIRST TECHNOLOGY S/N 036
Occupant Modification	
Occupant Description	
Occupant Commentary	CHEST TO DOOOR PANEL; RIGHT LEG TO DOOR PANEL; LEFT LEG TO RIGHT LEG

Restraints

Restraint # 1	FRONTAL AIRBAG
Mounted	DASH PANEL - UNSPECIFIED
Deployment	NOT DEPLOYED
Restraint Commentary	PRIMARY
Restraint # 2	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	NOT APPLICABLE
Restraint Commentary	SECONDARY

1995 HONDA CIVIC RIGHT REAR SEAT OCCUPANT

Test #	5986		
Vehicle #	2	Sex	MALE
Location	RIGHT REAR SEAT	Age	0
Position	NON-ADJUSTABLE SEAT	Height	0 mm 0.0 inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	0.0 kg 0 pounds
Size	50 PERCENTILE		
Calibration Method	SIDE IMPACT DUMMY		
Occupant Manufacturer	FIRST TECHNOLOGY S/N 037		
Occupant Modification			
Occupant Description			
Occupant Commentary	CHEST TO DOOR PANEL; RIGHT LEG TO DOOR PANEL; LEFT LEG TO RIGHT LEG		

Head

Head to -

Windshielder Header	0	mm	0.0	inches	Head Injury Criteria (HIC)	504	
WindShield	0	mm	0.0	inches	HIC Lower Time Interval (ms)	50.4	
Seatback	611	mm	24.1	inches	HIC Upper Time Interval (ms)	70	
Side Header	195	mm	7.7	inches			
Side Window	353	mm	13.9	inches			

Neck to Seatback 0 mm 0.0 inches

First Contact Region (Head): C PILLAR

Second Contact Region (Head):

Chest

Chest to -

Dash	0	mm	0.0	inches	Arm to Door	121	mm	4.8	inches
Steering Wheel	0	mm	0.0	inches	Hip to Door	163	mm	6.4	inches
Seatback	527	mm	20.7	inches					

Chest Severity Index	0	Pelvic Peak Lateral Acceleration (g's)	60
Thoracic Trauma Index	68	Thorax Peak Acceleration (g's)	0

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): OTHER

Second Contact Region (Chest/Abdomen): NONE

Legs

Knees to Dash 0 mm 0.0 inches Knees to Seatback 190 mm 7.5 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): OTHER

Second Contact Region (Legs):

1995 HONDA CIVIC RIGHT REAR SEAT OCCUPANT

Test #	5986					
Vehicle #	2	Sex	MALE			
Location	RIGHT REAR SEAT	Age	0			
Position	NON-ADJUSTABLE SEAT	Height	0	mm	0.0	inches
Type	NHTSA SIDE IMPACT DUMMY	Weight	0.0	kg	0	pounds
Size	50 PERCENTILE					

Calibration Method	SIDE IMPACT DUMMY
Occupant Manufacturer	FIRST TECHNOLOGY S/N 037
Occupant Modification	
Occupant Description	
Occupant Commentary	CHEST TO DOOR PANEL; RIGHT LEG TO DOOR PANEL; LEFT LEG TO RIGHT LEG

Restraints

Restraint # 1	3 POINT BELT
Mounted	BELT - CONVENTIONAL MOUNT
Deployment	NOT APPLICABLE
Restraint Commentary	PRIMARY
Restraint # 2	NONE
Mounted	NOT APPLICABLE
Deployment	NOT APPLICABLE
Restraint Commentary	SECONDARY

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	5986		
VIN		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	0 Liter	Transmission	NOT APPLICABLE
Vehicle Modification(s) Description			
Vehicle Commentary	FMVSS 214 DEFORMABLE BARRIER AND IMPACTOR		

Vehicle Length	4115	mm	162.0	inches	CG behind Front Axle	1098	mm	43.2	inches
Vehicle Width	1252	mm	49.3	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2591	mm	102.0	inches	Total Length of Indentation	0	mm	0.0	inches
Vehicle Test Weight	1361	KG	3000	pounds	Maximum Static Crush Depth	0	mm	0.0	inches
					Pre-Impact Speed	53	kph	32.6	mph

Vehicle Damage Index: | Principal Direction of Force: 0

Damage Profile Distance Measurements

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

DPD 1	0	mm	0.0	inches
DPD 2	0	mm	0.0	inches
DPD 3	0	mm	0.0	inches
DPD 4	0	mm	0.0	inches
DPD 5	0	mm	0.0	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	0.0	inches
	0	mm	0	mm	0	mm
Centerline	0.0	inches	0.0	inches	0.0	inches
	0	mm	0	mm	0	mm
Right Bumper Corner	0.0	inches	0.0	inches	0.0	inches
	0	mm	0	mm	0	mm

Bumper Engagement (Inline Impact Only): 27.0

Sill Engagement (Side Impact Only): NOT APPLICABLE

A-pillar Engagement (Side Impact Only): 0.0

Moving Test Cart Angle: NOT APPLICABLE

Magnitude of the Tilt Angle Measured between surface of a Rollover Test Cart and the Ground

Moving Test Cart/Vehicle Crabbed Angle: 27.0

Magniture of the Crabbed Angle Measure Clockwise from Longitudinal Vector to Velocity Vector of Vehicle

Vehicle Orientation on Cart Moving Test Cart: NOT APPLICABLE

Magnitude of the Angle Measured between the Vehicle Orientation and Direction of Test Cart Motion

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	5986		
VIN		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	0 Liter	Transmission	NOT APPLICABLE
Vehicle Modification(s) Description			
Vehicle Commentary	FMVSS 214 DEFORMABLE BARRIER AND IMPACTOR		

Vehicle Length	4115	mm	162.0	inches	CG behind Front Axle	1098	mm	43.2	inches
Vehicle Width	1252	mm	49.3	inches	Center of Damage to CG Axis	0	mm	0.0	inches
Vehicle Wheelbase	2591	mm	102.0	inches	Total Length of Indentation	0	mm	0.0	inches
Vehicle Test Weight	1361	KG	3000	pounds	Maximum Static Crush Depth	0	mm	0.0	inches
					Pre-Impact Speed	53	kph	32.6	mph

Vehicle Damage Index		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							
				0	0.0	0	0.0				
				Engine Block							
				0	0.0	0	0.0				
0	0.0	0	0.0	Front Bumper Corner				0	0.0	0	0.0
				Front of Engine							
				0	0.0	0	0.0				
0	0.0	0	0.0	Firewall				0	0.0	0	0.0
				0	0.0	0	0.0				
0	0.0	0	0.0	Upper Leading Edge of Door				0	0.0	0	0.0
0	0.0	0	0.0	Lower Leading Edge of Door				0	0.0	0	0.0
0	0.0	0	0.0	Bottom of 'A' Post				0	0.0	0	0.0
0	0.0	0	0.0	Upper Trailing Edge of Door				0	0.0	0	0.0
0	0.0	0	0.0	Lower Trailing Edge of Door				0	0.0	0	0.0
				Steering Column							
				0	0.0	0	0.0				
				Center of Seering Column to 'A' Post (Horizontal)							
				0	0.0	0	0.0				
				Center of Steering Column to Headliner (Vertical)							
				0	0.0	0	0.0				

Vehicle 2 1995 HONDA CIVIC

Test #	5986		
VIN	1HGEG8541SL034463	NHTSA Test Vehicle Number	2
Year	1995	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	HONDA	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	CIVIC	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	1.5 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary			

Vehicle Length	4374	mm	172.2	inches	CG behind Front Axle	1117	mm	44.0	inches
Vehicle Width	1695	mm	66.7	inches	Center of Damage to CG Axis	67	mm	2.6	inches
Vehicle Wheelbase	2616	mm	103.0	inches	Total Length of Indentation	3900	mm	153.5	inches
Vehicle Test Weight	1249	KG	2753	pounds	Maximum Static Crush Depth	331	mm	13.0	inches
					Pre-Impact Speed	0	kph	0.0	mph

Vehicle Damage Index: 03LPAW2

Principal Direction of Force: 63

Damage Profile Distance Measurements

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

DPD 1	2	mm	0.1	inches
DPD 2	22	mm	0.9	inches
DPD 3	325	mm	12.8	inches
DPD 4	328	mm	12.9	inches
DPD 5	88	mm	3.5	inches
DPD 6	-2	mm	-0.1	inches

Crush from Pre & Post Test Damage Measurements

	Pre-Test		Post-Test		Crush Depth	
Left Bumper Corner	144.8	inches	145.1	inches	-0.3	inches
	3678	mm	3685	mm	-7	mm
Centerline	172.2	inches	169.7	inches	2.5	inches
	4374	mm	4310	mm	64	mm
Right Bumper Corner	144.8	inches	143.0	inches	1.8	inches
	3678	mm	3633	mm	45	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 1995 HONDA CIVIC

Test #	5986		
VIN	1HGEG8541SL034463	NHTSA Test Vehicle Number	2
Year	1995	Vehicle Modification Indicator	PRODUCTION VEHICLE
Make	HONDA	Post-test Steering Column Shear Capsule Seperation	UNKNOWN
Model	CIVIC	Steering Column Collapse Mechanism	UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	4 CYLINDER TRANSVERSE FRONT		
Displacement	1.5 Liter	Transmission	AUTOMATIC - FRONT WHEEL DRIVE
Vehicle Modification(s) Description			
Vehicle Commentary			

Vehicle Length	4374	mm	172.2	inches	CG behind Front Axle	1117	mm	44.0	inches
Vehicle Width	1695	mm	66.7	inches	Center of Damage to CG Axis	67	mm	2.6	inches
Vehicle Wheelbase	2616	mm	103.0	inches	Total Length of Indentation	3900	mm	153.5	inches
Vehicle Test Weight	1249	KG	2753	pounds	Maximum Static Crush Depth	331	mm	13.0	inches
					Pre-Impact Speed	0	kph	0.0	mph

Vehicle Damage Index: 03LPAW2 — Principal Direction of Force: 63

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	4374	172.2	4310	169.7				
				Engine Block	0	0.0	0	0.0				
3678	144.8	3685	145.1	Front Bumper Corner					3678	144.8	3633	143.0
				Front of Engine	0	0.0	0	0.0				
0	0.0	0	0.0	Firewall					0	0.0	0	0.0
					0	0.0	0	0.0				
0	0.0	0	0.0	Upper Leading Edge of Door					0	0.0	0	0.0
0	0.0	0	0.0	Lower Leading Edge of Door					0	0.0	0	0.0
0	0.0	0	0.0	Bottom of 'A' Post					0	0.0	0	0.0
0	0.0	0	0.0	Upper Trailing Edge of Door					0	0.0	0	0.0
0	0.0	0	0.0	Lower Trailing Edge of Door					0	0.0	0	0.0
				Steering Column	0	0.0	0	0.0				
				Center of Seering Column to 'A' Post (Horizontal)	0	0.0	0	0.0				
				Center of Steering Column to Headliner (Vertical)	0	0.0	0	0.0				

1995 HONDA CIVIC

NHTSA Crash Test - #5986 - Side Impact

Damage Profile Distances - Indention Length - KE Equivalent Speed - Trapezoidal Average

Test Vehicle Weight =	2753 pounds	Impactor Weight =	3000
KE Equivalent Speed =	23.6 MPH	Impactor Test Speed =	32.6
Test Crush Length =	153.5 inches		

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Rear)	0.1	0.9	12.8	12.9	3.5	-0.1	(Front)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 0.1 inches					797628.5
Using a Rated No Damage Speed of	1.0mph	3242.2	731346.6	7.2	
Using a Rated No Damage Speed of	2.0mph	6197.0	667939.4	28.7	
Using a Rated No Damage Speed of	3.0mph	8864.3	607406.9	64.7	
Using a Rated No Damage Speed of	5.0mph	13336.4	494966.0	179.7	
Average Crush = 6.0 inches					221.6
Using a Rated No Damage Speed of	1.0mph	54.0	203.2	7.2	
Using a Rated No Damage Speed of	2.0mph	103.3	185.5	28.7	
Using a Rated No Damage Speed of	3.0mph	147.7	168.7	64.7	
Using a Rated No Damage Speed of	5.0mph	222.3	137.5	133.1	
Maximum Crush = 12.9 inches					47.9
Using a Rated No Damage Speed of	1.0mph	25.1	43.9	7.2	
Using a Rated No Damage Speed of	2.0mph	48.0	40.1	28.7	
Using a Rated No Damage Speed of	3.0mph	68.7	36.5	64.7	
Using a Rated No Damage Speed of	5.0mph	103.4	29.7	179.7	

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	12.9	26.0	2.5	9.5

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 17.2

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

4N6XPRT Systems
Expert System Software for Litigation

8387 University Avenue
La Mesa, CA 91942

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 ONE SIDE Impact test for the Honda Civic with sufficient information to calculate Stiffness Values within the desired year range.

To create a SIMILAR class of vehicle, we looked at the NHTSA database for FOUR DOOR SEDANS with a wheelbase of 102-104 inches (+/- 1 inch) and a weight Range of 2653-2853 pounds (+/- 100 pounds) of that one test and have SIDE IMPACT TESTS.

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: 1965 - 2013

Bodystyle: FOUR DOOR SEDAN

Wheelbase Range: 102-104

Vehicle Weight Range: 2653-2853

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
6995	2011 NISSAN VERSA FOUR DOOR SEDAN	2.0	18.9	20.2	36.3	17.5	37.6	21.6	8.7
2477	1997 HONDA CIVIC FOUR DOOR SEDAN	2.0	10.3	27.3	79.5	97.8	32.3	113.9	29.0
3446	2000 SATURN SL2 FOUR DOOR SEDAN	2.0	9.8	27.9	82.2	108.0	31.3	125.4	31.6
2538	1997 HONDA CIVIC FOUR DOOR SEDAN	2.0	7.8	23.7	95.5	132.5	34.4	158.0	28.7
5986	1995 HONDA CIVIC FOUR DOOR SEDAN	2.0	6.0	23.6	103.0	184.6	28.7	220.4	36.9
7636	2012 NISSAN VERSA FOUR DOOR SEDAN	2.0	7.6	27.5	122.6	206.7	36.3	240.4	40.0
	Average (AVG)				**86.5**	**124.5**	**33.4**	**146.6**	**29.1**
	Minimum (MIN)				**36.3**	**17.5**	**28.7**	**21.6**	**8.7**
	Maximum (MAX)				**122.6**	**206.7**	**37.6**	**240.4**	**40.0**
	Standard Deviation (STDev-sample)				**29.1**	**67.6**	**3.3**	**79.4**	**11.0**
	Number of Tests (n)			**6**					

4N6XPRT StifCalcs®

Available Test Results
Side Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Bodystyle: FOUR DOOR SEDAN

Wheelbase Range: 102-104

Vehicle Weight Range: 2653-2853

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
6995	2011 NISSAN VERSA FOUR DOOR SEDAN	2.0	18.9	20.2	36.3	17.5	37.6	21.6	8.7
2477	1997 HONDA CIVIC FOUR DOOR SEDAN	2.0	18.1	27.3	45.1	31.5	32.3	36.7	16.4
5986	1995 HONDA CIVIC FOUR DOOR SEDAN	2.0	13.0	23.6	47.6	39.3	28.7	47.0	17.0
2506	1997 SATURN SL2 FOUR DOOR SEDAN	2.0	15.6	27.5	51.6	42.3	31.5	49.2	19.5
2538	1997 HONDA CIVIC FOUR DOOR SEDAN	2.0	14.3	23.7	52.4	39.8	34.4	47.5	15.8
3446	2000 SATURN SL2 FOUR DOOR SEDAN	2.0	15.0	27.9	53.9	46.5	31.3	54.0	20.7
7636	2012 NISSAN VERSA FOUR DOOR SEDAN	2.0	12.6	27.5	73.6	74.5	36.3	86.6	24.0
2249	1995 MAZDA 323-PROTEGE FOUR DOOR SEDAN	2.0	12.5	24.2	117.2	103.8	66.1	123.4	18.7
	Average (AVG)				**59.7**	**49.4**	**37.3**	**58.2**	**17.6**
	Minimum (MIN)				**36.3**	**17.5**	**28.7**	**21.6**	**8.7**
	Maximum (MAX)				**117.2**	**103.8**	**66.1**	**123.4**	**24.0**
	Standard Deviation (STDev-sample)				**25.5**	**27.2**	**12.0**	**32.1**	**4.5**
	Number of Tests (n)			**8**					

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

E-Mail: 4n6@4n6xprt.com

Dear Conference Attendee,

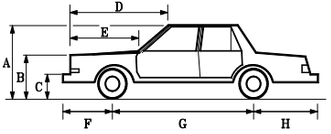
We at 4N6XPRT Systems were pleased to be able to provide you with the preceding data for the crash test vehicles.

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.

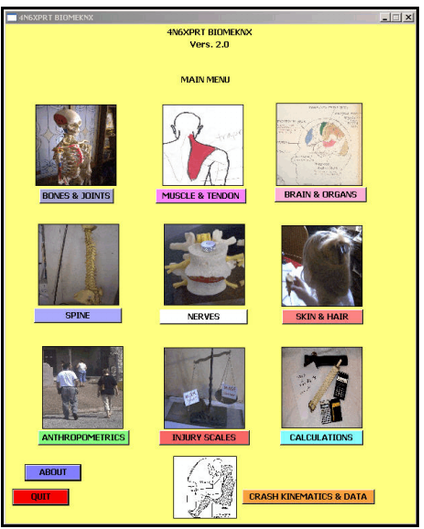
For many vehicles mid-1960's to present, data such as bumper height, front and rear overhang, hood height, etc., are also included.

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.

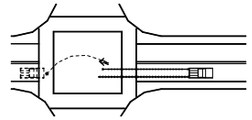
3FAPP1280MR117253

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:

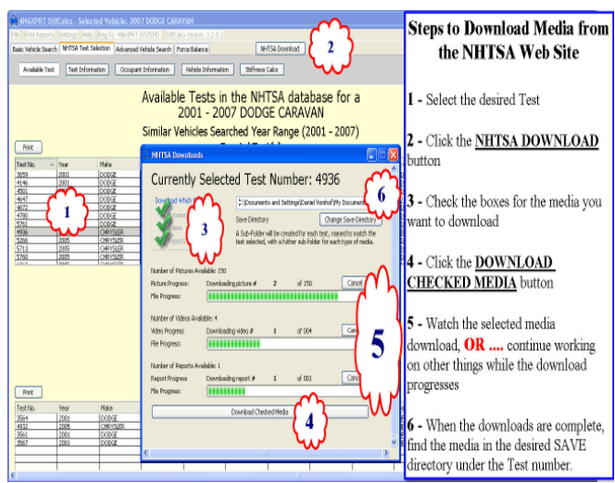
★ Lookup individual tests and get basic front, side, and rear **STIFFNESS VALUES** from these tests. The values are based on the reported crush depths and lengths within each test.
★ Obtain Similar Vehicle group summary STIFFNESS data with Statistical measures.
★ Create "CLASS" vehicles and get summary 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 1/11/13 - 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 **8.75%** 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)

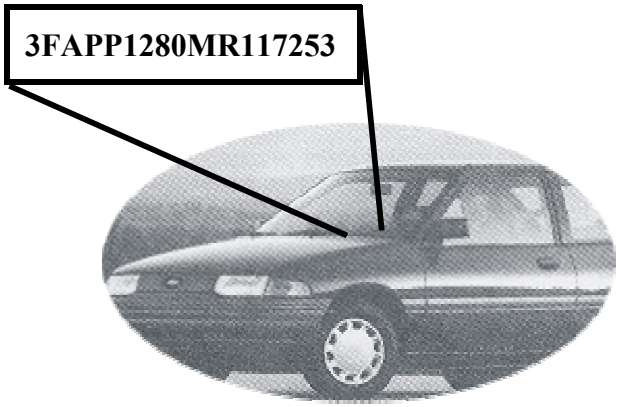
Normal delivery is via electronic download
☐ - Deliver via electronic download link (e-mail address required) $ 0.00
☐ Please deliver on USB at an
additional cost of $35.00 per disk $_____
SUB-TOTAL = $_____
CA Addresses add 8.75% sales tax . . . . = $_____
(*California orders delivered by e-mail attachment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

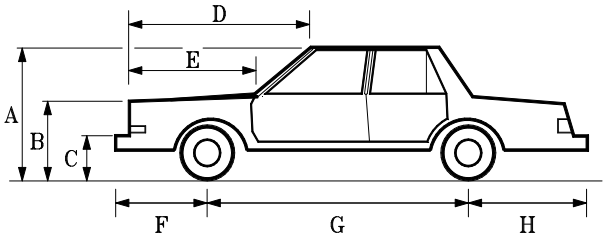
TOTAL = $_____

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: _____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®



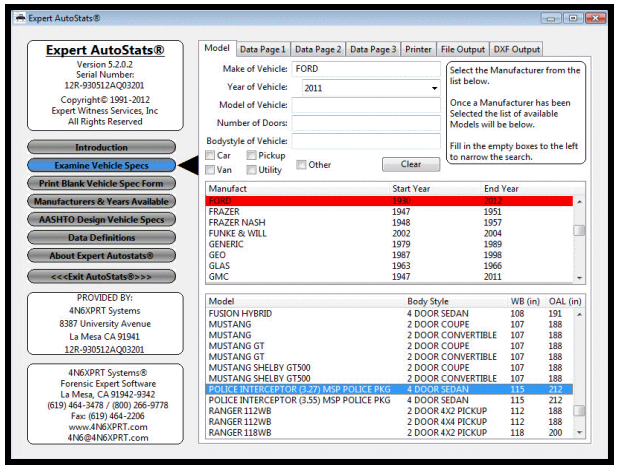
Over 42,000 cars, pick-ups, vans, and utility vehicles 1940's to the present are represented.

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

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

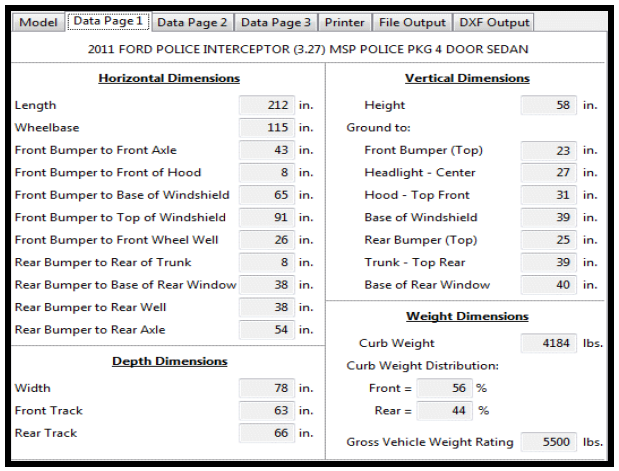
1-800-266-9778

Select Your Vehicle



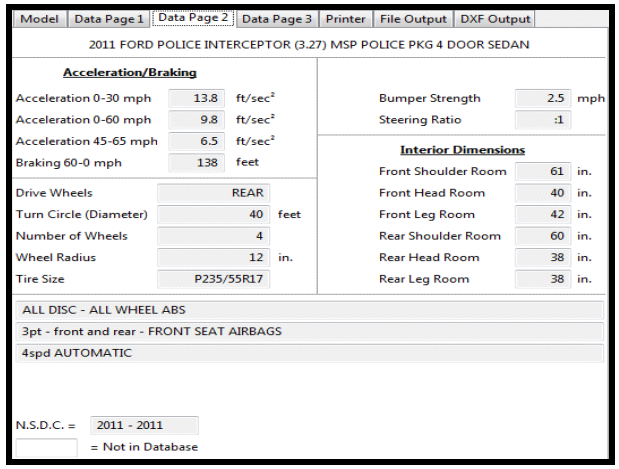
After typing in the Make, Year, and Type of vehicle, you are presented with the vehicles which are available for that year.

Screen 1



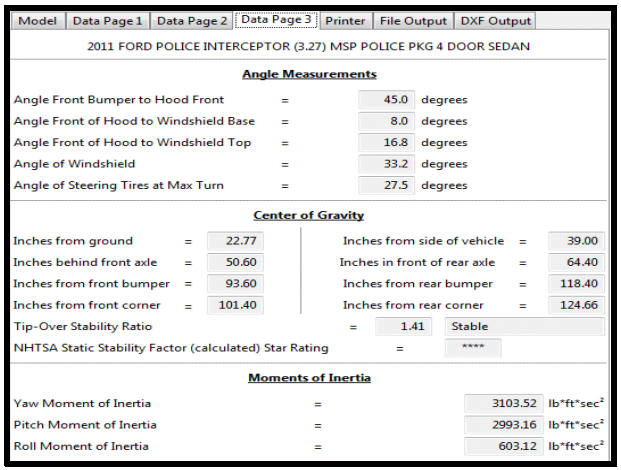
The first screen of data contains exterior dimensions and weight data. Length, Height, Wheelbase, Width, and Weight Distribution are published dimensions. Curb Weight is an average of published curb weights for the given vehicle. Detail dimensions such as the bumper heights and Front Bumper to Front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

Screen 2



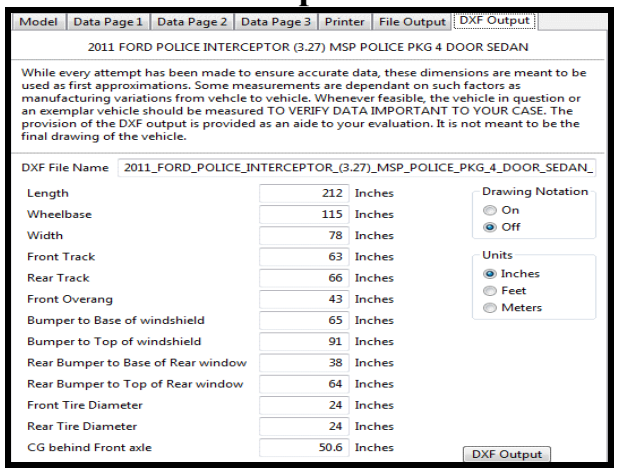
The second screen of data contains interior dimensions and various performance data. The data contained in the second screen comes from various published sources.

Screen 3



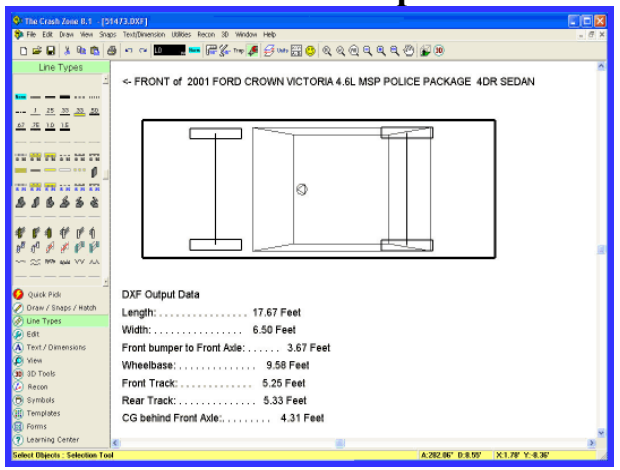
The third and last screen contains a number of calculated items of information which may be of use depending upon the type of case, the other software that you use, and the questions which need to be answered.

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:

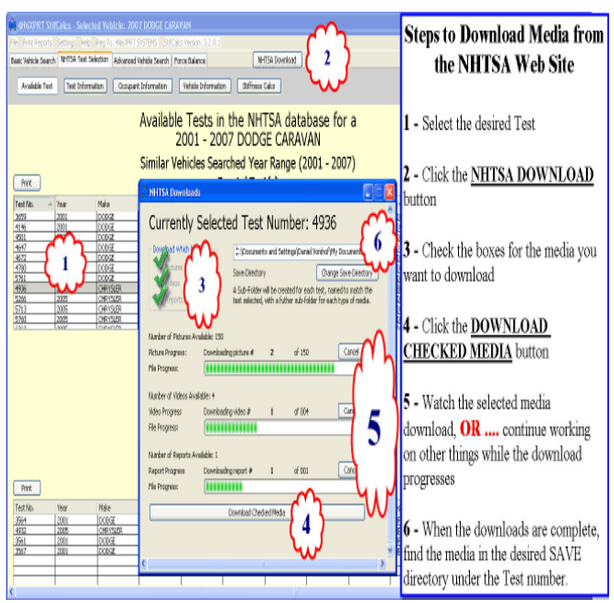
		Vehicle Width	Stiffness Values		
			A	B	G	Kv
Average (AVG)			305.7	93.5	523.6	143.1
Minimum (MIN)			115.0	13.2	465.2	23.5
Maximum (MAX)			461.6	200.0	614.1	387.3
Standard Deviation (STDev-sample)			73.4	38.4	36.2	72.8
Number of Tests (n)	53					

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 8.75% 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
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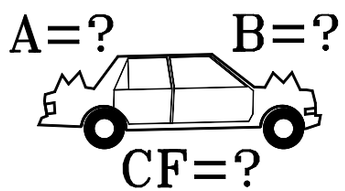
Telephone Orders:
Monday-Friday - 9:30am-5:00pm PST
Phone: (619) 464-3478 Fax: (619) 464-2206

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

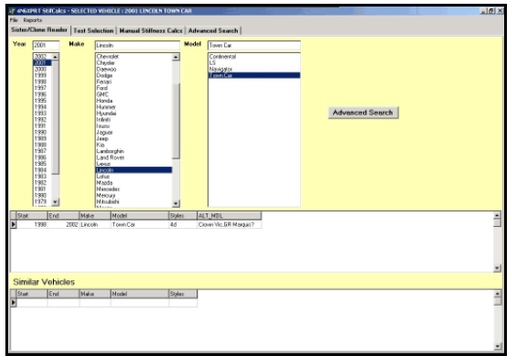
Web: http://www.4n6xprt.com
E-Mail: stifcalcs@4n6xprt.com

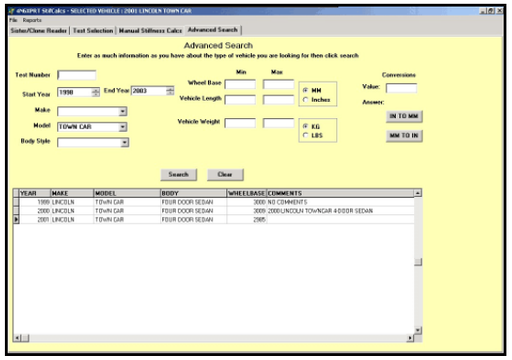
1-800-266-9778

BASIC VEHICLE CRASH TEST SEARCH

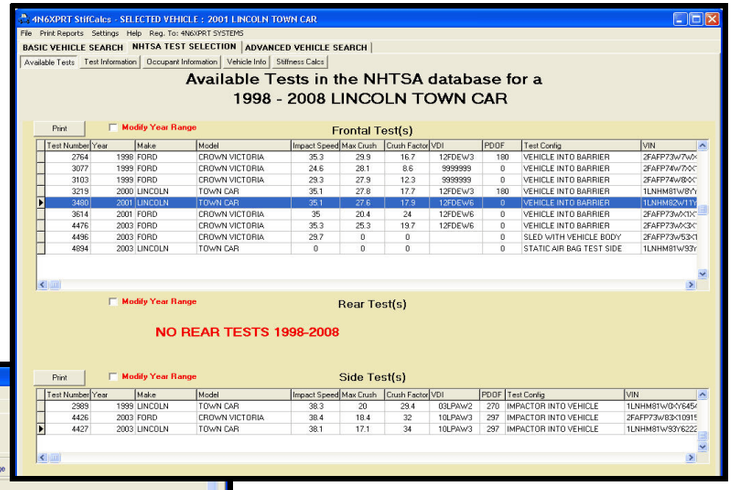
Select the desired vehicle through our **SIMILAR VEHICLE READER**

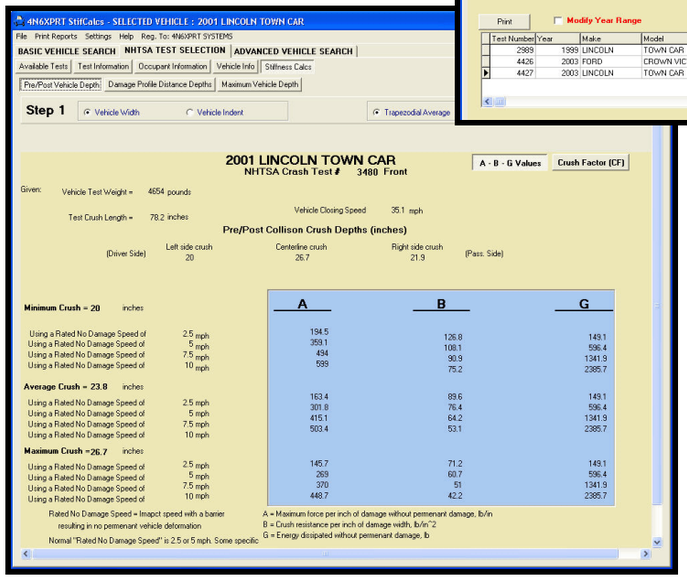
.





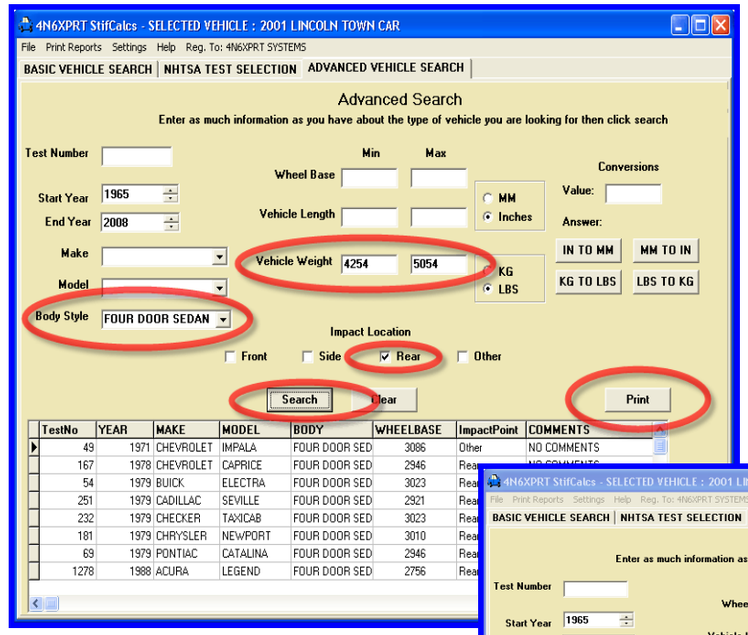
Once the desired vehicle is found/selected, click on the Test Selection tab. From here, select the test to be viewed



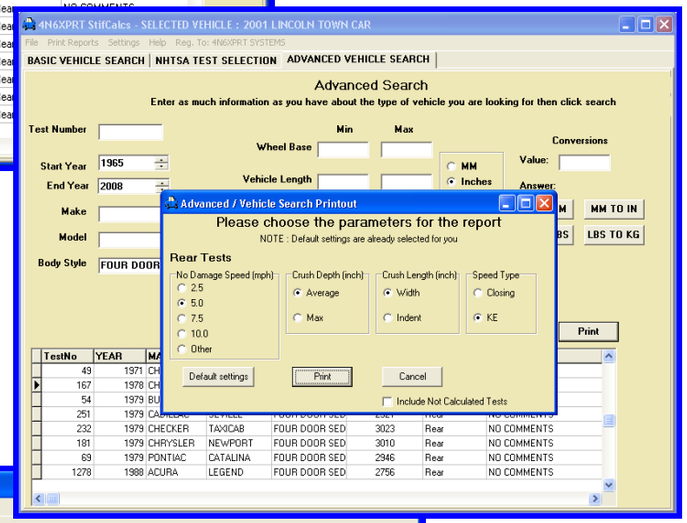


Once a test is selected, the available data for the Test, Occupant(s), Vehicle(s), and Stiffness data can be viewed. The stiffness values are automatically generated from the available test data.

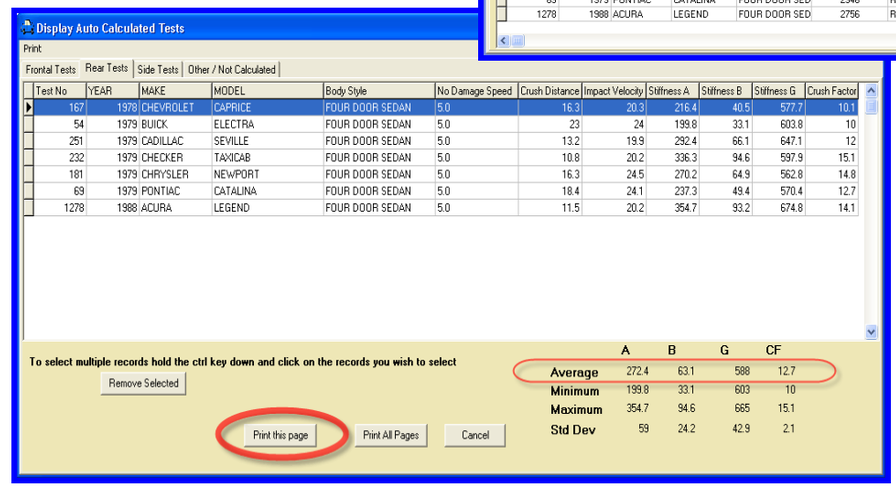
"CLASS" VEHICLE CRASH TEST SEARCH



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.

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 be made by e-mail, however, BE AWARE that we DO NOT check our e-mail every day.

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 information on the following page 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.

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 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

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

PAYMENT INFORMATION
Visa/MasterCard / American Express:

_____

Expires: _____ / _____

Name & Address:

_____

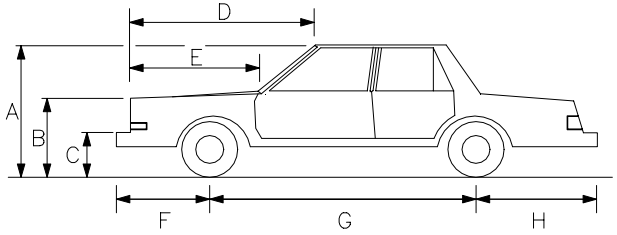
_____

_____

_____

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.

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

FAX: (619) 464-2206

4N6XPRT Systems®
Forensic Expert Software
8387 University Avenue, Suite P
La Mesa, CA 91941-3842

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

VIN DeCoding Information

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 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

Individual Vehicle Data Search Service® Charges & Services

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

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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 ALL OPTIONS 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 ALL OPTIONS that apply

YEAR & MAKE:
_____
MODEL: _____

If you are requesting
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No. of Doors:	2/3/4/5
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	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:_____

4N6XPRT Systems

Expert System Software for Litigation

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***

2012 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®:	$ 595.00 *	$_____
4N6XPRT BioMeknx™:	$ 495.00 *	$_____
4N6XPRT Ped & Bike Calcs®:	$ 375.00 *	$_____
Expert Qwic Calcs®:	$ 275.00 *	$_____
Expert TireStuf®:	$ 85.00 *	$_____
4N6XPRT StifCalcs®**:**	$ 600.00 *	$_____
Expert VIN DeCoder®:	$ 525.00 *	$_____
		======
	SUB-TOTAL	$_____

California shipping addresses add **8.50%** sales tax $_____
(*California orders delivered by e-mail attachment **DO NOT** owe sales tax*)

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** $_____

======

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

Expert System Software for Litigation

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