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.



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

Expert VIN DeCoder®

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Version Number 3.2.0.1



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.

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

5/14/2013

2007 TOYOTA YARIS 4 DOOR SEDAN

Curb Weight:	2309 1bs.		1047 kg.
Curb Weight Distribution - Front:	61 %	Rear:	39 %
Gross Vehicle Weight Rating:	3300 1bs.		1497 kg.
Number of Tires on Vehicle:			
Drive wheels:			
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 Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 52 39 42	Feet 4.33 3.25 3.50	Meters 1.32 0.99 1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	50 37 36	4.17 3.08 3.00	1.27 0.94 0.91
Seatbelts: <u>3pt - front and rear</u>			
Steering Data Turning Circle (Diameter) Steering Ratio: 19.70:1 Wheel Radius: Tire Size (OEM): P175/65R14	396	33.00	10.06
Acceleration & Braking InformationBrake Type:FRONT DISC - REAR DRUMABS System:ALL WHEEL ABS - OPTIONAL			
Braking, 60 mph to 0 (Hard pedal, no skid, d = 125.0 ft t = 2.8 sec Acceleration:	<pre>dry pavement): a = -30.9 ft/s</pre>	sec ² G-fo	rce = -0.96
0 to 30mpht = 3.3 sec0 to 60mpht = 10.4 sec45 to 65mpht = 5.6 sec	a = 13.3 ft/s a = 8.5 ft/s a = 5.2 ft/s	sec ² G-fo sec ² G-fo sec ² G-fo	rce = 0.41 rce = 0.26 rce = 0.16
Transmission Type: 5spd MANUAL			
Notes: Federal Bumper Standard Requirements:	2.5 mp	h	

Federal Bumper Standard Requirements: 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*sec ²
Pitch Moment of Inertia	=	1136.91 lb*ft*sec ²
Roll Moment of Inertia	=	265.62 lb*ft*sec ²
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) = √(30 * CF * MID)			
KE Equivalent Speed (Front/Rear/Side)	=	21	CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27	CF
(Tested for Rear/Side Impact only)			

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

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

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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	ΤΟΥΟΤΑ	YARIS 4D	4D	100.4
Remarks:				

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Test # 5677			oforon co G	uide Version :	# V5			
1est # 5077		NITISATESTIN	elelelice C		# V J			
Test Date 2006-05-1	6			Contract	# DTNH22-01-	D-12005		
Contract/Study Title	NCAP - 200	7 TOYOTA YARIS						
Test Objective(s)	VEHICLE CR	ASHWORTHINES	S AND OC	CUPANT RES	STRAINT PERFOR	RMANCE D	ОАТА	
Test Type	NEW CAR A	SSESSMENT TEST	•		Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		Sic	de Impact Poi	int 0	mm	0.0	inches
				Offset Distan	ce 0	mm	0.0	inches
				Closing Spe	ed 56.3	Km/Hr	34.98	MPH
Test Performer	MGA RESEA	RCH						
Test Reference #	BT0605160	1						
Test Track Surface	CONCRETE			Conditio	on DRY			
Ambient Temperature	21 C	69.8 F	Total Nu	mber of Curve	es 102			
Data Recorder Type	OTHER				Data Link	OTHER		
Test Commentary	DTS TDAS P	RO ON BOARD D	AS					

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 SE	AT Age 0
Position	CENTER POSITI	ON Height 0 mm 0.0 inches
Туре	HYBRID III DUMN	MY Weight 0.0 kg 0 pounds
Size	50 PERCENTILE	
Cali	bration Method	HYBRID III
Occupar	nt Manufacturer	FIRST TECHNOLOGY S/N 066
Occupa	ant Modification	
Occuj	pant Description	
Occupa	ant Commentary	HEAD TO HEADREST; KNEES TO BOLSTER; RIGHT KNEE TO STEERING COLUMN
Head to - Windshie S Neck to Se	elder Header 397 WindShield 653 Seatback 0 Side Header 202 Side Window 302 atback 0 r First Contact Resecond Contact Reserved	Head mm 15.6 inches Head Injury Criteria (HIC) 427 mm 25.7 inches HIC Lower Time Interval (ms) 62.5 mm 0.0 inches HIC Upper Time Interval (ms) 98.5 mm 8.0 inches mm 0.0 inches mm 0.0 inches mm 0.0 inches egion (Head) AIR BAG egion (Head)
Chastita		<u>Chest</u>
Chest to -	Dash <mark>681</mark> m Wheel <mark>352</mark> m tback 0 m	nm26.8inchesArm to Door100mm3.9inchesnm13.9inchesHip to Door143mm5.6inchesnm0.0inches
Chest S	everity Index	Pelvic Peak Lateral Acceleration (g's)
Thoracic Tr	auma Index [0	Ihorax Peak Acceleration (g's) [45]
		Belt Peak Load [6935] Newtons [1559.1] pound Force
F '(O	Shoulder E	Self Peak Load 3743 Newtons 841.5 pound Force
	ontact Region (Che	est/Abdomen)
Second Co	Che che che che	est/Abdomen)
Knees to Left Femi Right Femi	Dash 139 m ur Peak Load 48 ur Peak Load 28 First Contact R	Legs nm 5.5 inches Knees to Seatback mm 0.0 inches 893 Newtons -1100.0 pounds Force 829 Newtons -636.0 pounds Force Region (Legs) OTHER
	Second Contact R	(Legs)

2007 TOYOTA YARIS LEFT FRONT SEAT OCCUPANT

Test #	5677												
Vehicle #	1					Sex	MALE						
Location	LEFT FROM	NT SE/	AT			Age	0						
Position	CENTER P	OSITIC	N]	Height	0	mm	0.0	inche	es		
Туре	HYBRID III	DUMM	١Y]	Weight	0.0	kg	0] pour	nds		
Size	50 PERCE	NTILE]								
Cal	libration Meth	nod	HYBRID III										
Occupa	nt Manufactu	urer	FIRST TECHN	OLOGY S	/N 066								
Occup	ant Modificat	tion											
Occu	ipant Descrip	otion											
~													
Occup	ant Commen	ntary	HEAD TO HEA	ADREST; k	NEES TO	D BOLSTE	R; RIGH	T KNE	E TO S	TEER	ING C	OLUMN	
Occup	ant Commer	ntary	HEAD TO HEA	ADREST; H	(NEES TO	D BOLSTE	R; RIGH	T KNE	E TO S	TEER	ING C	OLUMN	
Occup	ant Commer	ntary	HEAD TO HEA	ADREST; F	KNEES TO	D BOLSTE	R; RIGH	T KNE	E TO S	TEER	ing C	OLUMN	
Occup	ant Commer	ntary	HEAD TO HEA	ADREST; P <u>Restraint</u>	(NEES TO	D BOLSTE	R; RIGH	T KNE	E TO S	TEER	ING C	OLUMN	
Occup Restra Mounte	ant Commer int # 1 FRC ed STE	DNTAL	HEAD TO HEA	ADREST; P	(NEES T(<u>s</u>	D BOLSTE	R; RIGH	T KNE	E TO S	TEER		OLUMN	
Occup Restra Mounte Deploy	ant Commer int # 1 FRC ed STE /ment DEF	DNTAL ERING PLOYE	HEAD TO HEA AIRBAG G WHEEL	ADREST; / <u>Restraint</u>	(NEES T(<u>s</u>	DBOLSTE	R; RIGH		E TO S	TEER		OLUMN	
Occup Restra Mounte Deploy Restra	ant Commer int # 1 FRC ed STE /ment DEF int Comment	DNTAL ERING PLOYE	HEAD TO HEA AIRBAG G WHEEL D PROPERLY PRIMARY	ADREST; P	(NEES TC <u>s</u>	DBOLSTE	R; RIGH		E TO S	TEER			
Occup Restra Mounte Deploy Restra	ant Commer int # 1 FRC ed STE vment DEF int Comment int # 2 3 PC	DNTAL EERING PLOYE tary OINT E	HEAD TO HEA AIRBAG G WHEEL D PROPERLY PRIMARY BELT	ADREST; P	(NEES T(<u>s</u>	DBOLSTE	R; RIGH		E TO S				
Restrai Mounte Deploy Restrai Restrai	ant Commer int # 1 FRC ed STE ment DEF int Comment int # 2 3 PC ed BEL	DNTAL ERING PLOYE tary OINT E -T - CC	HEAD TO HEA AIRBAG WHEEL D PROPERLY PRIMARY BELT DNVENTIONAL	ADREST; /	(NEES TC	DBOLSTE	R; RIGH						
Restrai Mounte Deploy Restrai Restrai Mounte Deploy	ant Commer int # 1 FRC ed STE /ment DEF int Comment int # 2 3 PC ed BEL /ment DEF	DNTAL ERING PLOYE tary OINT E T - CC PLOYE	HEAD TO HEA AIRBAG G WHEEL D PROPERLY PRIMARY BELT DNVENTIONAL D PROPERLY	ADREST; P	(NEES TO	DBOLSTE	R; RIGH		E TO S				

2007 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	5677	
Vehicle #	1	Sex MALE
Location	RIGHT FRONT S	EAT Age 0
Position	CENTER POSITI	DN Height 0 mm 0.0 inches
Туре	HYBRID III DUMI	MY Weight 0.0 kg 0 pounds
Size	50 PERCENTILE	
Cali	ibration Method	HYBRID III
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/N 065
Occupa	ant Modification	
Occu	pant Description	
Occupa	ant Commentary	HEAD TO HEADREST; KNEES TO GLOVE BOX
Head to - Windshie S Neck to Se	elder Header 381 WindShield 625 Seatback 0 Side Header 190 Side Window 284 atback 0 r First Contact Re	Head mm 15.0 inches Head Injury Criteria (HIC) 485 mm 24.6 inches HIC Lower Time Interval (ms) 62.2 mm 0.0 inches HIC Upper Time Interval (ms) 91 mm 7.5 inches mm 11.2 inches agion (Head) AIR BAG agion (Head)
Chest to - Steering V Sea Chest S Thoracic Tr First Co Second Co Knees to Left Fem Right Femu	Dash 573 n Wheel 0 n tback 0 n severity Index 0 rauma Index 0 Lap f Shoulder E Shoulder E ontact Region (Cho ontact Region (Cho ontact Region (Cho ontact Region (Cho for tact Region (Cho ontact Region (Cho for tact Region (Cho for	Chest nm 22.6 inches Arm to Door 84 mm 3.3 inches nm 0.0 inches Hip to Door 136 mm 5.4 inches nm 0.0 inches Pelvic Peak Lateral Acceleration (g's) 0
	Second Contact R	egion (Legs)

2007 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	5677				
Vehicle #	1		Sex	MALE	
Location	RIGHT FRONT	SEAT	Age	0	
Position	CENTER POS	TION	Height	0 mm 0.0] inches
Туре	HYBRID III DU	MMY	Weight	0.0 kg 0] pounds
Size	50 PERCENTI	E]		
Cal	ibration Method	HYBRID III			
Occupa	nt Manufacturer	FIRST TECHNOLOGY S	/N 065		
Occup	ant Modification				
Occu	pant Description				
Occupa	ant Commentar	HEAD TO HEADREST; H	NEES TO GLOVE	вох	
		Restraint	<u>6</u>		
Restrai	int # 1 FRONT	AL AIRBAG			
Mounte	ed DASH F	PANEL - TOP			
Deploy	ment DEPLO	YED PROPERLY			
Restrai	int Commentary	PRIMARY			
Restrai	int # 2 3 POIN	T BELT			
Mounte	ed BELT -	CONVENTIONAL MOUNT			
Deploy	ment DEPLO	YED PROPERLY			
Restrai	int Commentary	SECONDARY			

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Vehicle 1 2007 TOYOTA YARIS

Test #	5677									
VIN	JTDBT9234	7101679	7		NHTSA Te	est Vehic	le Numbe	er 1		
Year	2007				Vehicle Mo	dification	Indicato	r PRODUCTIO	ON VEHIC	LE
Make	ΤΟΥΟΤΑ		Post-test	t Steering C	olumn Shear	Capsule	Seperation	on UNKNOWN		
Model	YARIS			Steeri	ng Column Co	ollapse M	lechanisr	n UNKNOWN		
Body	FOUR DOO	R SEDAN								
Engine	4 CYLINDE	R TRANS	VERSE F	RONT						
Displacement	1.5 Li	ter Tr	ansmissio	on AUTON	ATIC - FRON	IT WHEE	L DRIVE]	
Vehicle Modific	ation(s) Des	cription								
Vehicle Comm	entary VEF	ICLE MA	KE: YAR	S						
Vehicle Len	igth 426	5 mm	167.9	inches	CG	behind I	Front Axle	e 1046 mm	41.2	inches
Vehicle V	Width 169	5 mm	66.7	inches	Center of E	Damage t	o CG Axi	s 0 mm	0.0	inches
Vehicle Whee	elbase 255	1 mm	100.4	inches	Total Leng	gth of Inc	lentation	1518 mm	59.8	inches
Vehicle Test W	/eight 127	1 KG	2801	pounds	Maximum \$	Static Cru	sh Depth	1 546 mm	21.5	inches
						Pre-Impa	ict Speed	d 56 kph	35.0	mph
Vel	hicle Damag	e Index 1	2FDEW6	;	Princi	ipal Direc	tion of Fo	orce 0		
	ofilo Diotor			a ta	Cruch from	n Dra 9		at Damaga N	lagouror	nonto
Damage Pro				<u>ns</u>	<u>Crush nor</u>		Postie	<u>si Damage N</u>	<u>leasurer</u>	nents
(Measu	ured Left-to-l	Right, Rea	r-to-⊢roni	t)	2	Pre-les	<u>t</u> 	Post-Test	Crush	Depth
	290 mm	11.4	_ inches	Left Bu	umper Corner	158.9	inches	147.5 inche	es <u>11.4</u>	
DPD 2 4	148 mm	17.6	_ inches			4036	mm	3746 mm	290	_ mm
	509 mm	20.0	_ inches		Centerline	167.9	inches	146.4 inche	es 21.5	inches
DPD 4 [527 mm	20.7	_ inches			4265	mm	3719 mm	546] mm
	<u>311</u> mm	12.2	_ inches	Right Bu	Imper Corner	159.2	inches	146.9 inche	es 12.2	linches
DPD 6 [-	<u>12</u> mm	-0.5	inches	ragin Da		4043	mm	3732 mm	311] mm
						4040		0702		
Bumper E	ngagement			Sill Er	ngagement			A-pillar	Engager	ient
(Inline Im	ipact Only)			(Side	Impact Only)			(Side	Impact Or	nlv)
	<u>).0</u>		Г	NOT A				(0.0	Π
Moving	Test Cart			Moving 1	Test Cart/Veh	icle		Vehicle C	rientation	on Cart
A	ngle			Cral	bbed Angle			Movir	ng Test Ca	irt
DIRECT	ENGAGEME	NT			0.0			NOT A	PPLICAB	E
Magnitude	of the Tilt Angle			Magniture o	of the Crabbed Ang	le		Magnite	ude of the Ang	le
Measured be	etween surface of	а		Measur	e Clockwise from			Measured betwee	n the Vehicle	<i>Orientation</i>
Rollover Test	Cart and the Gro	und	Lor	ngitudinal Vector	to Velocity Vector	of Vehicle		and Direction	of Test Cart	Motion

Vehicle 1 2007 TOYOTA YARIS

Test #	5677							
VIN	JTDBT92347101679	7	NHT	SA Test	Vehicle Nu	mber 1		
Year	2007		Vehic	cle Modif	ication Indic	cator PRODUC	TION VEHIC	CLE
Make	ΤΟΥΟΤΑ	Post-test Steerin	g Column S	Shear Ca	psule Sepe	eration UNKNOW	N	
Model	YARIS	St	eering Colu	mn Colla	apse Mecha	inism UNKNOW	N	
Body	FOUR DOOR SEDAN							
Engine	4 CYLINDER TRANS	VERSE FRONT						
Displacement	1.5 Liter Tr	ansmission AU	TOMATIC -	FRONT	WHEEL DR	IVE		
Vehicle Modific	cation(s) Description							
Vehicle Comm	entary VEHICLE MA	KE: YARIS						
Vehicle Ler	ngth 4265 mm	167.9 inches		CG be	ehind Front	Axle 1046 m	m 41.2	inches
Vehicle \	Width 1695 mm	66.7 inches	Cente	er of Dar	nage to CG	Axis 0 m	m 0.0	inches
Vehicle Whee	elbase 2551 mm	100.4 inches	Tota	al Length	of Indenta	tion 1518 m	m 59.8	inches
Vehicle Test W	/eight 1271 KG	2801 pounds	s Maxir	num Sta	tic Crush D	epth 546 m	m 21.5	inches
				Pro	e-Impact Sp	peed <mark>56 k</mark> p	h 35.0	mph
Ve	hicle Damage Index 1	2FDEW6		Principa	I Direction of	of Force 0		
	<u>P</u>	<u>re & Post Te</u>	st Dama	<u>ge Me</u>	asureme	<u>ents</u>		
(Measureme	ents are taken in a longitudinalo	lirection. Except for Eng	jine Block, all m	easuremen	ts are take from	the Rear Vehicle Surfa	ace forward.)	
L	eft Side		Center	line		R	iaht Side	
Pre-Test	Post-Test	Pre	Pre-Test Post-Test		-Test	Pre-Test	Pos	st-Test
mm inche	s mm inches	mm	inches	mm	inches	mm inche	es mm	inches
		Len	gth of Vehic	cle at Ce	nterline			
		4265	167.9	3719	146.4			
			Engine	Block				
		450	17.7	450	17.7			
4036 158.9	3746 147.5		Front Burr	nper Corr	ner	4043 159.2	3732	146.9
			Front of	f Engine				
		3835	151.0	3464	136.4			
3275 128.9	3356 132.1		Firev	wall		3317 130.6	3332	131.2
		3300	129.9	0	0.0			
3054 120.2	3060 120.5	Up	per Leading	Edge o	f Door	3058 120.4	3064	120.6
3006 118.3	3011 118.5	Lov	ver Leading	Edge of	f 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	Up	oper Trailing	Edge of	f Door	1982 78.0	1980	78.0
1951 76.8	1950 76.8	Lo	wer Trailing	Edge of	f Door	1954 76.9	1956	77.0
			Steering	Column	<u> </u>			
		2595	102.2	2657	104.6			
		Center of Se	ering Colun	nn to 'A'	Post (Horiz	ontal)		
		375	14.8	366	14.4			
		Center of Ste	ering Colur	nn to He	adliner (Ve	rtical)		
		445	17.5	475	18.7			

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	(Dece Side)
(Driver Side)	11.4	21.5	12.2	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u> </u>	В	G	<u> Kv </u>
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

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

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

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	(Dece Side)
(Driver Side)	11.4	21.5	12.2	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u>A</u>	В	G	<u> Kv </u>
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

A = Maximum force per inch of damage without permanent damage, Ib/in B = Crush resistance per inch of damage width (Crash), lb/in^2

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	<u> </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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	(Dece Cide)
(Driver Side)	11.4	17.6	20.0	20.7	12.2	-0.5	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u>A</u>	В	G	<u> </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	Info	Damage	Average	Closing	V	ehicle	Widt	h	
		Speed	Crush	Speed	S t	iffness	s Valu	u e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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 Deviatio	n (STDev-sa	mple)		42.6	26.9	23.2	33.8	5.6
	Nu	mber of Te	sts (n)	3					

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	Info	Damage	Max	Closing	V	ehicle	Widtl	า	
		Speed	Crush	Speed	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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 Deviatio	n (STDev-sa	mple)		10.7	3.5	23.2	6.7	3.0
	Nu	mber of Tes	sts (n)	3					

Expert VIN DeCoder®

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Version Number 3.2.0.1



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.

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5/14/2013

2007 TOYOTA YARIS 4 DOOR SEDAN

Curb Weight:	2309 1bs.		1047 kg.
Curb Weight Distribution - Front:	61 %	Rear:	39 %
Gross Vehicle Weight Rating:	3300 1bs.		1497 kg.
Number of Tires on Vehicle:			
Drive wheels:			
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 Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 52 39 42	Feet 4.33 3.25 3.50	Meters 1.32 0.99 1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	50 37 36	4.17 3.08 3.00	1.27 0.94 0.91
Seatbelts: <u>3pt - front and rear</u>			
Steering Data Turning Circle (Diameter) Steering Ratio: 19.70:1 Wheel Radius: Tire Size (OEM): P175/65R14	396	33.00	10.06
Acceleration & Braking InformationBrake Type:FRONT DISC - REAR DRUMABS System:ALL WHEEL ABS - OPTIONAL			
Braking, 60 mph to 0 (Hard pedal, no skid, d = 125.0 ft t = 2.8 sec Acceleration:	<pre>dry pavement): a = -30.9 ft/s</pre>	sec ² G-fo	rce = -0.96
0 to 30mpht = 3.3 sec0 to 60mpht = 10.4 sec45 to 65mpht = 5.6 sec	a = 13.3 ft/s a = 8.5 ft/s a = 5.2 ft/s	sec ² G-fo sec ² G-fo sec ² G-fo	rce = 0.41 rce = 0.26 rce = 0.16
Transmission Type: 5spd MANUAL			
Notes: Federal Bumper Standard Requirements:	2.5 mp	h	

Federal Bumper Standard Requirements: 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*sec ²
Pitch Moment of Inertia	=	1136.91 lb*ft*sec ²
Roll Moment of Inertia	=	265.62 lb*ft*sec ²
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) = √(30 * CF * MID)			
KE Equivalent Speed (Front/Rear/Side)	=	21	CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27	CF
(Tested for Rear/Side Impact only)			

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

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

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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	ΤΟΥΟΤΑ	YARIS 4D	4D	100.4
Remarks:				

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Test # 6221		NHTSA Test	Reference	Guide Versi	on #	V5					
Test Date 2007-10-1	0			Contra	act#	DTNH22-06-D-00028					
Contract/Study Title	NCAP - 200	8 TOYOTA YARI	IS 3-DOOF	R LIFTBACK							
Test Objective(s)	VEHICLE CR	ASHWORTHINE	SS AND O	CCUPANT	REST	RAINT PERFOR	RMANCE D	DATA			
Test Type	NEW CAR AS	SSESSMENT TES	ST			Configuration	VEHICLE	INTO BARRIE	R		
Impact Angle	0		S	Side Impact	Point	0	mm	0.0	inches		
				Offset Dis	stance	0	mm	0.0	inches		
				Closing S	Speed	56.2	Km/Hr	34.92	MPH		
Test Performer	MGA RESEA	RCH									
Test Reference #	BT07101001	1									
Test Track Surface	CONCRETE			Conc	dition	DRY					
Ambient Temperature	21 C	69.8 F	Total N	umber of C	urves	132					
Data Recorder Type	OTHER					Data Link	OTHER				
Test Commentary	DTS TDAS P	RO 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 Head to - Windshielder Header WindShield 641 mm 25.2 inches HIC Lower Time Interval (ms) 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 U mm U.O inches
First Contact Region (Head) AIR BAG
Chost
Chest to -
Dash644mm25.4inchesArm to Door96mm3.8inchesSteering Wheel317mm12.5inchesHip to Door138mm5.4inchesSeatback0mm0.0inchesHip to Door138mm5.4inches
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 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 SE	AT	Age	0			
Position	FORWARD OF C	ENTER POSITION	Height	0 mm	0.0	inches	
Туре	HYBRID III DUMI	ΥN	Weight	0.0 kg	0	pounds	
Size	50 PERCENTILE						
Cali	ibration Method	HYBRID III					
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/	N 065				
Occupa	ant Modification						
Occu	pant Description						
Occupa	ant Commentary	HEAD TO HEADREST					
		Restraints	<u>.</u>				
Restrai	int # 1 3 POINT	BELT					
Mounte	ed BELT - C	ONVENTIONAL MOUNT					
Deploy	yment DEPLOYED PROPERLY						
Restrai	int Commentary	PRIMARY					
Restrai	int # 2 FRONTAL	AIRBAG					
Mounte	ed STEERIN	G 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)	
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)	
<u>Chest</u>	
Chest to -	
Dash <u>527</u> mm <u>20.7</u> inches Arm to Door <u>136</u> mm <u>5.4</u> 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 Thorac 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)	
Second Contact Region (Chest/Abdomen)	
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)	
Second Contact Region (Legs)	

2008 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	6221		
Vehicle #	1		Sex MALE
Location	RIGHT FRONT S	EAT	Age 0
Position	FORWARD OF C	ENTER POSITION	Height 0 mm 0.0 inches
Туре	HYBRID III DUMI	MY	Weight 0.0 kg 0 pounds
Size	50 PERCENTILE]
Cal	ibration Method	HYBRID III	
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/	/N 066
Occup	ant Modification		
Occu	pant Description		
Occupa	ant Commentary	HEAD TO HEADREST; K	(NEES TO GLOVEBOX
		Restraints	<u>s</u>
Restrai	int # 1 3 POINT	BELT	
Mounte	ed BELT - C	ONVENTIONAL MOUNT	
Deploy	ment DEPLOY	ED PROPERLY	
Restrai	int Commentary	PRIMARY	
Restrai	int # 2 FRONTAL	AIRBAG	
Mounte	ed DASH PA	NEL - TOP	

Deployment **DEPLOYED PROPERLY**

SECONDARY

Restraint Commentary

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	
<u>Head</u>	
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)	
<u>Chest</u>	
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	
l eas	
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

6221					
1		Sex	NOT APPLIC	CABLE	
RIGHT REAR SE	AT	Age	0		
NON-ADJUSTAB	SLE SEAT	Height	0 mm	0.0 ind	ches
CRABI		Weight	0.0 kg	0 pc	ounds
12 MONTH OLD	CHILD				
ibration Method	PART 572				
nt Manufacturer	FIRST TECHNOLOGY S	/N 093			
ant Modification					
pant Description					
ant Commentary	HEAD TO HEADREST				
	Restraints	<u>8</u>			
int # 1 INFANT S	SAFETY SEAT				
ed LATCH - I	LOWER ANCHORAGES N	O TOP TETHER			
ment NOT APP	LICABLE				
int Commentary	PRIMARY - GRACO SNU	JGRIDE			
int # 2 5 POINT	BELT				
ed CHILD SE	EAT				
	6221 1 RIGHT REAR SE NON-ADJUSTAB CRABI 12 MONTH OLD ibration Method nt Manufacturer ant Modification pant Description ant Commentary int # 1 INFANT S ed LATCH 'ment NOT APP int # 2 5 POINT ed CHILD SE	6221 1 RIGHT REAR SEAT NON-ADJUSTABLE SEAT CRABI 12 MONTH OLD CHILD ibration Method PART 572 nt Manufacturer FIRST TECHNOLOGY S/ ant Modification	6221 Sex RIGHT REAR SEAT Age NON-ADJUSTABLE SEAT Height CRABI Weight 12 MONTH OLD CHILD Weight ibration Method PART 572 nt Manufacturer FIRST TECHNOLOGY S/N 093 ant Modification	6221 Sex NOT APPLIC RIGHT REAR SEAT Age 0 NON-ADJUSTABLE SEAT Height 0 NON-ADJUSTABLE SEAT Height 0 NON-ADJUSTABLE SEAT Height 0 Image: Non-ADJUSTABLE SEAT Height 0 mm Image: Non-ADJUSTABLE SEAT Height 0 mm Image: Non-ADJUSTABLE SEAT Height 0 mm Image: Non-ADJUSTABLE SEAT Weight 0.0 kg Image: Non-ADJUSTABLE SEAT Image: Non-ADJUSTABLE SEAT Image: Non-ADJUSTABLE SEAT Image: Non-ADJUSTABLE SEAT Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat Image: Non-ADJUSTABLE Seat	6221 1 Sex NOT APPLICABLE RIGHT REAR SEAT Age 0

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 SEA	Т	Age	0	
Position	NON-ADJUSTAB	LE SEAT	Height	0 mm 0.0	inches
Туре	CRABI		Weight	0.0 kg 0] pounds
Size	12 MONTH OLD	CHILD			
Cali	bration Method	PART 572			
Occupar	nt Manufacturer	FIRST TECHNOLOG	Y S/N 090		
Occupa	ant Modification				
Occu	pant Description				
Occupa	ant Commentary				
Head to - Windshie	elder Header	<u>Head</u>	nches Head Injury	Criteria (HIC) 1487]
	WindShield 0		nches HIC Lo	wer Time Interval (ms)	49.9
	Seatback 451		nches HIC Up	per Time Interval (ms)	85.9
	Side Header	mm 0.0 ir	iches	,	
S	Side Window 333	mm ir	nches		
Neck to Se	atback 0 n	nm 0.0 inches			
	First Contact Re	egion (Head) NONE			
S	Second Contact Re	gion (Head)			
		<u>Chest</u>			
Chest to -					
	Dash 0 m	nm 0.0 inches	Arm to Door 2	33 mm 9.2	inches
Steering V	Wheel 0 m	1m 0.0 inches	Hip to Door 2	.87 mm 11.3	inches
Sea	tback 352 m	ım 13.9 inches			
Chest S	everity Index 0		Pelvic Peak Lateral A	Acceleration (g's)	
Thoracic Tr	auma Index 0		Thorax Peak	Acceleration (g's) 59	
	Lap E	Belt Peak Load	Newtons 0.0	pound Force	
	Shoulder B	elt Peak Load 0	Newtons 0.0	pound Force	
First Co	ontact Region (Che	est/Abdomen)			
Second Co	ontact Region (Che	est/Abdomen) NONE			
Knees to Left Fem Right Femu	Dash 0 m ur Peak Load 0 ur Peak Load 0 First Contact R	Leg 1m 0.0 inches Newtons Newtons SEAT B	<u>s</u> Knees to Seatback 0.0 pound 0.0 pound	63 mm 6.4 ds Force ds Force	inches
	Second Contact R	egion (Legs)			

2008 TOYOTA YARIS LEFT REAR SEAT OCCUPANT

Test #	6221							
Vehicle #	1		Sex	NOT AF	PLIC	ABLE		
Location	LEFT REAR SEA	λ Τ	Age	0				
Position	NON-ADJUSTAB	LE SEAT	Height	0	mm	0.0	inches	
Туре	CRABI		Weight	0.0	kg	0	pounds	
Size	12 MONTH OLD	CHILD						
Cali	bration Method	PART 572						
Occupai	nt Manufacturer	FIRST TECHNOLOGY S/	N 090					
Occupa	ant Modification							
Occu	pant Description							
Occupa	ant Commentary							

	<u>Restraints</u>							
Restraint # 1	INFANT SAFETY SEAT							
Mounted	ATCH - LOWER ANCHORAGES NO TOP TETHER							
Deployment	NOT APPLICABLE							
Restraint Com	Restraint Commentary PRIMARY - EVENFLO EMBRACE							
Restraint # 2	5 POINT BELT							
Mounted	CHILD SEAT							
Deployment	loyment NOT APPLICABLE							
Restraint Com	mentary SECONDARY - EVENFLO EMBRACE							

Vehicle 1 2008 TOYOTA YARIS

Test #	6221										
VIN	JTDJT	923285	5140508	3		NHTSA	Test Vehic	le Numbe	er 1		
Year	2008]				Vehicle M	lodificatior	n Indicato	r PRODUC	TION VEHIC	CLE
Make	ΤΟΥΟΤ	A		Post-tes	st Steering	g Column Shea	r Capsule	Seperati	on UNKNOW	/N	
Model	YARIS				Ste	ering Column	Collapse N	/lechanisr	n UNKNOW	/N	
Body	THREE	DOOF	R HATCH	HBACK							
Engine	4 CYLI	NDER	TRANS	VERSE	FRONT						
Displacement	1.5	Liter	r Tra	ansmiss	ion MAN	NUAL - FRONT	WHEEL D	RIVE			
Vehicle Modific	cation(s)	Descri	ption [
Vehicle Comm	entary	VEHIC	LE MO	DEL: YA	ARIS						
Vehicle Len	ngth [3641	mm	143.3	inches	C	G behind	Front Axl	e 1009 mi	m 39.7	inches
Vehicle V	Width	1690	mm	66.5	inches	Center of	Damage	to CG Ax	is 0 mr	m 0.0	inches
Vehicle Whee	elbase [2463	mm	97.0	inches	Total Le	ngth of Ind	dentation	1164 mi	m 45.8	inches
Vehicle Test W	Veight [1245] KG	2744	pounds	Maximum	Static Cru	ush Depth	n 517 mi	m 20.4	inches
							Pre-Impa	act Spee	d 56 kp	h 34.9] mph
Vel	hicle Dai	mage l	Index 1	2FDEW	6	Prin	cipal Direc	tion of Fo	orce 0		
Domogo Pr	ofilo Di	otono		nuromo	nto	Cruch fr	m Dro 8	Post To	et Domogo	Moocuro	monte
Damage Fi		<u>stance</u>			<u></u>	Clushin		FUSLIE	<u>si Damage</u>		
(Measu	urea Len	t-to-Rig	Int, Rea	r-to-⊢ror ⊐ · ·	nt)	D	Pre-Tes	<u>st</u> 1	Post-Test		
	431	mm	17.0	Jinche	s Left	Bumper Corn	er 139.3	j inches	122.3 inc	ches 17.0	
DPD 2 4	491	mm	19.3	Jinche	S		3538	Jmm	3107 mi	m [431	mm
	517	mm	20.4	Jinche	S	Centerline	e 143.3] inches	123.1 inc	ches 20.2	inches
	507	mm	20.0	Jinche	S		3641] mm	3128 mi	m 513	mm
	497	mm	19.6	Jinche	s Riaht	Bumper Corne	er 138.9	linches	122.3 inc	ches 16.6	linches
DPD 6 🛛	421	mm	16.6	inche	S	Damper come	3528] mm	3106 m	m 422	
							0020	1			
Bumper E	Ingagen	nent			Sill	Engagement			A-pil	llar Engager	ment
(Inline Im	npact On	ıly)			(Si	ide Impact Onl	V)		(Sic	de Impact C	Only)
Ì	0.0	Τ́		Г	NO		E		, T	0.0	Т́
				-							
Moving	g Test Ca	art			Movin	ig Test Cart/Ve	hicle		Vehicle	Orientation	ו on Cart
Α	ngle					Crabbed Angle	_		Мо	ving Test C	art
DIRECT	ENGAG	EMEN	Т			0.0	J		NOT	APPLICAE	3LE
Magnitude	of the Tilt A	ngle			Magnitu	ire of the Crabbed A	ngle		Mag	nitude of the An	gle
Measured be	etween surf	ace of a			Me	asure Clockwise fro	т		Measured betw	veen the Vehicle	Orientation
Rollover Test	Cart and th	e Ground	1	L	ongitudinal Ve	ctor to Velocity Vect	or of Vehicle		and Direc	tion of Test Car	't Motion
Vehicle 1 2008 TOYOTA YARIS

Test #	6221								
VIN	JTDJT92328514050	8	NHTS	3A Test Veh	nicle Number	1			
Year	2008		Vehicl	e Modificatio	on Indicator	PRODUCTIO	N VEHIC	LE	
Make	ΤΟΥΟΤΑ	Post-test Steerin	ig Column Sł	near Capsul	le Seperation	UNKNOWN			
Model	YARIS	St	eering Colur	nn Collapse	Mechanism	UNKNOWN			
Body THREE DOOR HATCHBACK									
Engine	4 CYLINDER TRANS	VERSE FRONT]					
Displacement	1.5 Liter Tr	ansmission MA	NUAL - FRO	NT WHEEL	DRIVE				
Vehicle Modifi	cation(s) Description								
Vehicle Comm	nentary VEHICLE MC	DEL: YARIS							
Vehicle Lei	ngth <u>3641</u> mm	143.3 inches		CG behind	d Front Axle	1009 mm	39.7	inches	
Vehicle	Width 1690 mm	66.5 inches	Cente	r of Damage	e to CG Axis	0 mm	0.0	inches	
Vehicle Whee	elbase 2463 mm	97.0 inches	Total	Length of I	ndentation	<u>1164</u> mm	45.8	inches	
Vehicle Test V	Veight 1245 KG	2744 pounds	s Maxim	um Static C	Crush Depth	517 mm	20.4	inches	
	_			Pre-Im	pact Speed	56kph	34.9	mph	
Ve	hicle Damage Index	12FDEW6	F	Principal Dire	ection of Ford	e 0			
	_								
	<u>P</u>	re & Post Te	<u>st Damag</u>	<u>e Measi</u>	<u>urements</u>				
(Measurem	ents are taken in a longitudinal	direction. Except for Eng	gine Block, all mea	asurements are	take from the Rea	ar Vehicle Surface f	orward.)		
L	.eft Side		Centerli	ne		Righ	t Side		
Pre-Test	Post-Test	Pre	-Test	Post-Tes	t	Pre-Test	Post	t-Test	
mm inche	es mm inches	mm	inches	mm ind	ches m	m inches	mm	inches	
		Len	gth of Vehicl	e at Center	line				
		3641	143.3	3128 12	3.1				
			Engine	Block					
		458	18.0	459 18	.1				
3538 139.3	3107 122.3		Front Bump	oer Corner	352	8 138.9	3106	122.3	
			Front of	Engine					
		3252	128.0	<u>2980 11</u>	7.3				
2926 115.2	2827 111.3		Firewa	all	292	3 115.1	2854	112.4	
		2847	112.1	0.0	<u> </u>			-,	
2488 98.0	2495 98.2	Up	per Leading	Edge of Do	or 248	97.8	2474	97.4	
2450 96.5	2443 96.2	Lov	ver Leading I	Edge of Doo	or 245	<u>3 96.6</u>	2443	96.2	
2449 96.4	243495.8		Bottom of '	A' Post	244	6 96.3	2432	95.7	
1252 49.3	1276 50.2	Up	oper Trailing I	Edge of Doo	or 124	9 49.2	1259	49.6	
1314 51.7	1312 51.7	Lc	wer Trailing I	Edge of Doo	or [130	4 51.3	1294	50.9	
		r	Steering	Column					
		2068		<u>2161 85</u>	.1				
		Center of Se	ering Colum	n to 'A' Post	t (Horizontal)				
		400		<u>380 15</u>	.0				
		Center of Ste	ering Colum	n to Headlir	ner (Vertical)				
		450	17.7	<u>462 18</u>	.2				

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 12R-030201SC02301

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	(Dece Side)
(Driver Side)	17.0	20.2	16.6	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u>A</u>	В	G	<u> </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	(Dece Side)
(Driver Side)	17.0	20.2	16.6	(Pass. Side)

		<u>A</u>	B	G	<u> Kv </u>
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	

CRASH 3 Stiffness Coefficents SMAC Stiffness

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

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

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific G = Energy dissipated without permanent damage, lb vehicles may, however, have a higher rating

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

Rated No Damage Speed = Impact speed with a barrier

resulting in no permanant vehicle deformation

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	(Dece Cide)
(Driver Side)	17.0	19.3	20.4	20.0	19.6	16.6	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u>A</u>	В	G	<u> Kv </u>
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

vehicles may, however, have a higher rating

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

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

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific 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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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	SMAC Stiffness		
		<u> </u>	В	G	<u> </u>
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

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

B = Crush resistance per inch of damage width (Crash), Ib/in^2 G = Energy dissipated without permanent damage, Ib

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

Registered Owner: 4N6XPRT SYSTEMS

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	Info	Damage	Average	Closing	V	ehicle	Widt	h	
		Speed	Crush	Speed	S t	iffness	s Valu	u e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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 Deviatio	n (STDev-sa	mple)		42.6	26.9	23.2	33.8	5.6
	Nu	mber of Te	sts (n)	3					

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	Info	Damage	Max	Closing	V	ehicle	Widtl	า	
		Speed	Crush	Speed	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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 Deviatio	n (STDev-sa	mple)		10.7	3.5	23.2	6.7	3.0
	Nu	mber of Tes	sts (n)	3					

Expert VIN DeCoder®

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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®

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

5/14/2013

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Curb Weight:	4057 1bs.		1840 kg.
Curb Weight Distribution - Front:	56 %	Rear:	44 %
Gross Vehicle Weight Rating:	5500 1bs.		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	
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

Expert AutoStats®

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 61 39 43	Feet 5.08 3.25 3.58	Meters 1.55 0.99 1.09
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	60 38 40	5.00 3.17 3.33	1.52 0.97 1.02
Seatbelts: <u>3pt - front and rear</u> Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): P225/60R16	480	40.00	0.30
Acceleration & Braking Information Brake Type: ALL DISC ABS System: ALL WHEEL ABS Braking, 60 mph to 0 (Hard pedal, no skid, d = 140.0 ft t = 3.2 sec	dry pavement): a = -27.6 ft/s	ec² G-for	rce = <u>-0.86</u>
Acceleration: $t = 2.8$ sec0 to 30mph $t = 2.8$ sec0 to 60mph $t = 8.0$ sec45 to 65mph $t = 5.1$ secTransmission Type: 4spd AUTOMATIC	a = 15.7 ft/s a = 11.0 ft/s a = 5.8 ft/s	ec ² G-for ec ² G-for ec ² G-for	rce = 0.49 rce = 0.34 rce = 0.18
Notes: Federal Bumper Standard Requirements:	2.5 mpl	h	

2.5 mph

N.S.D.C = 2003 - 2009

This vehicles Rated Bumper Strength:

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Other Information		
Tip-Over Stability Ratio =	1.44	Stable
NHTSA Star Rating (calculated)		****
Conton of Crowity (No Lood).		
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*sec ²
Pitch Moment of Inertia	=	2867.43 lb*ft*sec ²
Roll Moment of Inertia	=	580.26 1b*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

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

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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 Remarks: Could us	LINCOLN se Crown Victoria/C	TOWN CAR Grand Marquis - same basic RWD Cl	2D, 4D hassis, longer WB	117.4
2003 - 2010 Remarks: REVISED	Ford "Stiffer Frame"	CROWN VICTORIA	4D	114.7, 133
2003 - 2010 Remarks: ALSO M	MERCURY ARAUDER	GRAND MARQUIS	2D, 4D, SW	114.7

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Test # 3480		NHTSA Test R	eference Guide Versi	on #	V5			
Test Date 2000-11-09	9		Contra	act #				
Contract/Study Title	OPTIONAL	NCAP - 2001 LIN	COLN TOWNCAR 4	DOOF	R SEDAN			
Test Objective(s)	VEHICLE CR	ASHWORTHINES	S AND OCCUPANT	RESTR	RAINT PERFOR	MANCE D	АТА	
Test Type	OPTIONAL I	NEW CAR ASSESS	MENT TEST		Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		Side Impact	Point	0	mm	0.0	inches
			Offset Dis	stance	0	mm	0.0	inches
			Closing S	Speed	56.5	Km/Hr	35.11	MPH
Test Performer	MGA RESEA	RCH						
Test Reference #	BT00110901	1						
Test Track Surface	CONCRETE		Cond	lition	WET			
Ambient Temperature	21 C	69.8 F	Total Number of C	urves	97			
Data Recorder Type	OTHER				Data Link	OTHER		
Test Commentary	EME ON BO	ARD 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 to - Head Injury Criteria (HIC) 425 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) Inches
<u>Chest</u>
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 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)
Second Contact Region (Chest/Abdomen)
Legs Knees to Dash 151 mm 5.9 inches Knees to Seatback 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 SE	AT	Age	0			
Position	CENTER POSITI	ON	Height	0 mm	0.0	inches	
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0	pounds	
Size	50 PERCENTILE						
Calil	bration Method	HYBRID III					
Occupar	nt Manufacturer	FIRST TECHNOLOGY S/	N 66				
Occupa	ant Modification						
Occup	pant Description						
Occupa	Occupant Commentary HEAD TO HEADREST						
		Restraints	<u>5</u>				
Restrair	nt # 1 3 POINT	BELT					
Mounte	ed BELT - C	ONVENTIONAL MOUNT					
Deployr	ment NOT APP	LICABLE					
Restrair	nt Commentary	PRIMARY					
Restrair	nt # 2 FRONTAI	AIRBAG					
Mounte	d STEERIN	G WHEEL					
Deployr	ment DEPLOY	ED PROPERLY					

Restraint Commentary

SECONDARY

2001 LINCOLN TOWN CAR RIGHT FRONT SEAT OCCUPANT

Test #	3480	
Vehicle #	1	Sex MALE
Location	RIGHT FRONT S	EAT Age 0
Position	CENTER POSITI	ON Height 0 mm 0.0 inches
Туре	HYBRID III DUM	Weight 0.0 kg 0 pounds
Size	50 PERCENTILE	
Cal	ibration Method	HYBRID III
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/N 65
Occup	ant Modification	
Occu	pant Description	
Occup	ant Commentary	HEAD TO HEADREST
Head to - Windshie Neck to Se	elder Header 231 WindShield 551 Seatback 0 Side Header 206 Side Window 350 eatback 0 r First Contact Re	Head mm 9.1 inches Head Injury Criteria (HIC) 472 mm 21.7 inches HIC Lower Time Interval (ms) 72 mm 0.0 inches HIC Upper Time Interval (ms) 108 mm 8.1 inches mm 13.8 inches egion (Head) AIR BAG
Chest to - Steering Sea Chest S Thoracic T	Dash <u>538</u> n Wheel <u>0</u> n Itback <u>0</u> n Severity Index <u>35</u> rauma Index <u>0</u>	Chestnm21.2inchesArm to Door129mm5.1inchesnm0.0inchesHip to Door132mm5.2inches9Pelvic Peak Lateral Acceleration (g's)0Thorax Peak Acceleration (g's)35.6
	Lap E	Belt Peak Load 4483 Newtons 1007.8 pound Force
	Shoulder E	Belt Peak Load 4914 Newtons 1104.7 pound Force
First C	ontact Region (Che	est/Abdomen) AIR BAG
Second C	ontact Region (Che	est/Abdomen) AIR BAG
Knees to Left Fem Right Fem	Dash 117 n ur Peak Load -2 ur Peak Load -1 First Contact R Second Contact R	Legs nm 4.6 inches Knees to Seatback 0 mm 0.0 inches 107 Newtons -473.7 pounds Force 967 Newtons -442.2 pounds Force Region (Legs) DASHPANEL Region (Legs)

2001 LINCOLN TOWN CAR RIGHT FRONT SEAT OCCUPANT

Test #	3480						
Vehicle #	1		Sex	MALE			
Location	RIGHT FRONT S	EAT	Age	0			
Position	CENTER POSIT	ON	Height	0 mm	0.0	inches	
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0	pounds	
Size	50 PERCENTILE						
Cal	libration Method	HYBRID III					
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/N	65				
Occup	ant Modification						
Occu	pant Description						
Occup	ant Commentary	HEAD TO HEADREST					
		<u>Restraints</u>					
Restra	int # 1 3 POINT	BELT					
Mounte	ed BELT - C	ONVENTIONAL MOUNT					
Deploy	ment NOT APP	LICABLE					
Restra	int Commentary	PRIMARY					
Restra	int # 2 FRONTA	LAIRBAG					
Mounte	ed DASH PA	NEL - MID					

Deployment **DEPLOYED PROPERLY**

SECONDARY

Restraint Commentary

Vehicle 1 2001 LINCOLN TOWN CAR

Test #	3480									
VIN	1LNHM82W	11Y6332	87		NHTSA Te	est Vehic	le Numbe	er 1		
Year	2001				Vehicle Mo	dification	Indicato	r PRODUCI	ION VEHIC	;LE
Make	LINCOLN		Post-test	Steering Co	olumn Shear	Capsule	Seperatio	on UNKNOW	N	
Model	TOWN CAR			Steerir	ng Column C	ollapse M	lechanisn	N UNKNOW	N	
Body	FOUR DOOF	R SEDAN								
Engine	V8 INLINE F	RONT								
Displacement	4.6 Lite	er Tra	ansmissio	on AUTOM	ATIC - REAF	WHEEL	DRIVE			
Vehicle Modific	cation(s) Desc	ription [
Vehicle Comm	entary									
Vehicle Len	ngth 5389	mm	212.2	inches	CG	behind I	Front Axle	e 1409 mn	n 55.5] inches
Vehicle V	Width 1986	mm	78.2	inches	Center of E	Damage t	o CG Axi	s 135 mm	n 5.3	inches
Vehicle Whee	lbase 2985	mm	117.5	inches	Total Len	gth of Ind	lentation	1620 mm	n 63.8	inches
Vehicle Test W	/eight 2111	KG	4653	pounds	Maximum \$	Static Cru	sh Depth	700 mr	n 27.6	inches
						Pre-Impa	ict Speed	d 57 kpl	h 35.1	mph
Vel	hicle Damage	e Index 1	2FDEW6		Princ	ipal Direct	tion of Fo	orce 0		
	ofile Distan	14		4-	Owner from				Manager	
Damage Pro	one Distan			<u>ns</u>	<u>Crush iror</u>		Post le	<u>si Damage</u>	weasurer	nents
(Measu	ured Left-to-R	ight, Rea	r-to-Front)		Pre-Tes	<u>t</u> 	Post-Test	<u>Crush</u>	Depth
	147 mm	17.6	_ inches	Left Bu	mper Corner	205.7	inches	185.7 inc	hes 20.0	
DPD 2	599 mm	23.6	_ inches			5225	mm	[4718] mr	n 507	mm
	542 mm	25.3	_ inches		Centerline	212.2	inches	185.4 inc	hes 26.7	inches
DPD 4 7	7 <u>00</u> mm	27.6	_ inches			5389	mm	4710 mr	n 679	mm
	599 mm	27.5	_ inches	Right Bu	mper Corner	205.3	inches	183.4 inc	hes 21 9	Jinches
DPD 6	557 mm	21.9	_ inches	Right Du	inper comer	5215	mm	4658 mr	n 557	
						5215		4030	<u>1007</u>	
Bumper E	ngagement			Sill En	aaaement			A-pill	ar Engager	nent
(Inline Im	pact Only)			(Side	Impact Only)			, (Sid	e Impact O	nlv)
Ì	0.0		Г		PPLICABLE			, r	0.0	Т́
Moving	Test Cart			Moving T	est Cart/Veh	icle		Vehicle	Orientation	on Cart
A	ngle			Crab	bed Angle			Mov	ving Test Ca	art
DIRECT	ENGAGEME	NT			0.0			NOT	APPLICAB	LE
Magnitude	of the Tilt Angle			Magniture of	f the Crabbed Ang	le		Magi	nitude of the Ang	<i>l</i> le
Measured be	etween surface of a	а		Measure	e Clockwise from			Measured betw	een the Vehicle	Orientation
Rollover Test	Cart and the Grou	nd	Lor	gitudinal Vector	to Velocity Vector	of Vehicle		and Direct	tion of Test Cart	Motion

Vehicle 1 2001 LINCOLN TOWN CAR

Test #	3480							
VIN	1LNHN	/182W11	Y6332	87		NHTSA Test Vehicle Number 1		
Year	2001					Vehicle Modification Indicator PRODUCTION VEHICLE	Ξ	
Make	LINCO	LN		Post-tes	t Steering	g Column Shear Capsule Seperation UNKNOWN		
Model	TOWN	CAR			Ste	ering Column Collapse Mechanism UNKNOWN		
Body	FOUR	DOOR S	SEDAN					
Engine	V8 INL	INE FRO	ONT					
Displacement	4.6	Liter	Tra	ansmissio	on AUT	OMATIC - REAR WHEEL DRIVE		
Vehicle Modifie	cation(s)) Descrip	tion [
Vehicle Comm	entary							
Vehicle Ler	ngth	5389	mm	212.2	inches	CG behind Front Axle 1409 mm 55.5	inches	
Vehicle V	Width	1986] mm	78.2	inches	Center of Damage to CG Axis 135 mm 5.3	inches	
Vehicle Whee	elbase	2985] mm	117.5	inches	Total Length of Indentation 1620 mm 63.8	inches	
Vehicle Test W	Veight	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							
(Measurem)	(Measurements are taken in a longitudinal direction. Except for Engine Block, all measurements are take from the Rear Vehicle Surface forward.)							

	Left	Side			Cente	rline					
Pre	e-Test	Pos	st-Test	Pre	-Test	Post	-Test	Pre	-Test	Post	-Test
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Len	gth of Veh	icle at Ce	enterline				
				5389	212.2	4710	185.4				
					Engin	e Block					
				530	20.9	530	20.9				
5225	205.7	4718	185.7		Front Bur	mper Cor	ner	5215	205.3	4658	183.4
					Front c	of Engine					
				4539	178.7	4274	168.3				
3936	155.0	3886	153.0		Fire	wall		3909	153.9	3858	151.9
				4069	160.2	4066	160.1				
3612	142.2	3608	142.0	Upj	per Leadin	g Edge o	f Door	3616	142.4	3600	141.7
3664	144.3	3658	144.0	Lov	ver Leadin	g Edge o	f Door	3657	144.0	3653	143.8
3582	141.0	3564	140.3		Bottom o	f 'A' Post		3587	141.2	3561	140.2
2554	100.6	2542	100.1	Up	oper Trailin	g Edge o	f Door	2553	100.5	2542	100.1
2575	101.4	2567	101.1	Lo	wer Trailin	g Edge o	f Door	2571	101.2	2569	101.1
					Steerin	g Columr	ו				
				3105	122.2	3154	124.2				
				Center of Se	ering Colu	mn to 'A'	Post (Horiz	ontal)			
				391	15.4	365	14.4				
				Center of Ste	ering Colu	Imn to He	adliner (Ve	rtical)			
				448	17.6	424	16.7				

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

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	(Dece Side)
(Driver Side)	20.0	26.7	21.9	(Pass. Side)

		A	<u> </u>	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	r	A = Maximum force	per inch of damage w	ithout permanent dama	ige, lb/in

CRASH 3 Stiffness Coefficents SMAC Stiffness

A = Maximum force per inch of damage without permanent damage, Ib/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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

resulting in no permanant vehicle deformation

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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	(Dece Side)
(Driver Side)	20.0	26.7	21.9	(Pass. Side)

		<u>A</u>	B	G	<u> Kv </u>
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	

CRASH 3 Stiffness Coefficents S

SMAC Stiffness

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

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

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific 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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

Rated No Damage Speed = Impact speed with a barrier

resulting in no permanant vehicle deformation

vehicles may, however, have a higher rating

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	(Dece Cide)
(Driver Side)	17.6	23.6	25.3	27.6	27.5	21.9	(Pass Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u> </u>	В	G	<u>Kv</u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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	(Dece Cide)
(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	<u> </u>	
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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	Vehicle	No							
Numbe	r Info	Damage	Average	Closing	V	ehicle	Widtl	า	
		Speed	Crush	Speed	S t	iffness	s Valu	ı e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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-sa	ample)		22.8	12.0	31.0	16.3	2.0
	Numb	per of Te	sts (n)	4					

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	r Info	Damage	Max	Closing	V	ehicle	Width	ו	
		Speed	Crush	Speed	S t	iffness	Valu	e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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
	Ν	<i>l</i> inimum	(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-sa	mple)		15.4	6.9	31.0	9.3	1.3
	Numb	per of Tes	sts (n)	4					

Expert VIN DeCoder®

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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®

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

5/14/2013

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Curb Weight:	4057 1bs.		1840 kg.
Curb Weight Distribution - Front:	56 %	Rear:	44 %
Gross Vehicle Weight Rating:	5500 1bs.		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	
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

Expert AutoStats®

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 61 39 43	Feet 5.08 3.25 3.58	Meters 1.55 0.99 1.09
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	60 38 40	5.00 3.17 3.33	1.52 0.97 1.02
Seatbelts: <u>3pt - front and rear</u> Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): P225/60R16	480	40.00	0.30
Acceleration & Braking Information Brake Type: ALL DISC ABS System: ALL WHEEL ABS Braking, 60 mph to 0 (Hard pedal, no skid, d = 140.0 ft t = 3.2 sec	dry pavement): a = -27.6 ft/s	ec² G-for	rce = <u>-0.86</u>
Acceleration: $t = 2.8$ sec0 to 30mph $t = 2.8$ sec0 to 60mph $t = 8.0$ sec45 to 65mph $t = 5.1$ secTransmission Type: 4spd AUTOMATIC	a = 15.7 ft/s a = 11.0 ft/s a = 5.8 ft/s	ec ² G-for ec ² G-for ec ² G-for	rce = 0.49 rce = 0.34 rce = 0.18
Notes: Federal Bumper Standard Requirements:	2.5 mpl	h	

2.5 mph

N.S.D.C = 2003 - 2009

This vehicles Rated Bumper Strength:

2007 FORD CROWN VICTORIA 4 DOOR SEDAN

Other Information		
Tip-Over Stability Ratio =	1.44	Stable
NHTSA Star Rating (calculated)		****
Conton of Crowity (No Lood).		
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*sec ²
Pitch Moment of Inertia	=	2867.43 lb*ft*sec ²
Roll Moment of Inertia	=	580.26 1b*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

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

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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 Remarks: Could us	LINCOLN se Crown Victoria/C	TOWN CAR Grand Marquis - same basic RWD Cl	2D, 4D hassis, longer WB	117.4
2003 - 2010 Remarks: REVISED	Ford "Stiffer Frame"	CROWN VICTORIA	4D	114.7, 133
2003 - 2010 Remarks: ALSO M	MERCURY ARAUDER	GRAND MARQUIS	2D, 4D, SW	114.7

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

	_							
lest # 5803		NHISA Test Re	eference	Guide Version #	V5			
Test Date 2005-12-14	4			Contract #	06-6008			
Contract/Study Title	RESEARCH COL	LISION TEST						
Test Objective(s)	FRONTAL CRAS	SH						
Test Type	RESEARCH SAF	ETY VEHICLE T	EST		Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		S	ide 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 C	ANADA						
Test Reference #	TC06-207							
Test Track Surface	CONCRETE			Condition	DRY			
Ambient Temperature	21 C 6	9.8 F	Total N	umber of Curves	347			
Data Recorder Type	OTHER				Data Link	OTHER		
Test Commentary	NO COMMENT	S						

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 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)	
<u>Chest</u>	
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	FORWA	RD OF C	ENTER POSITION	Height	999 mm	39.3 inches			
Туре	HYBRID III DUMMY			Weight	999.0 kg	2202 pounds	i i		
Size	5 PERCENTILE								
Cali	ibration N	lethod	OTHER						
Occupant Manufacturer FIRS			FIRST TECHNOLOGY						
Occupant Modification			UNMODIFIED						
Occupant Description S/N:			S/N : 105						
Occupant Commentary LAST CALI			LAST CALIBRATION DA	TE:31/OCT/05					
Restraints									
Restrai	int # 1 [B POINT E	BELT						
Mounte	Mounted BELT - CONVENTIONAL MOUNT								
Deployment DEPLOYED PROPERLY									
Restrai	int Comm	entary	NO COMMENTS						
Restrai	int # 2 🖌	AIR BAG							
Mounte	ed 🛛	STEERIN	G WHEEL						
Deploy	ment [DEPLOYE							
Restrai	int Comm	entary	NO COMMENTS						

2006 FORD OTHER RIGHT FRONT SEAT OCCUPANT

Test #	5803			
Vehicle #	1		Sex FEMALE	
Location	RIGHT FRONT S	EAT	Age 99	
Position	FORWARD OF C	ENTER POSITION	Height 999 mm 39 .	.3 inches
Туре	HYBRID III DUMI	ΥN	Weight 999.0 kg 22	02 pounds
Size	5 PERCENTILE			
Calil	bration Method	OTHER		
Occupar	nt Manufacturer	FIRST TECHNOLOGY		
Occupa	ant Modification	UNMODIFIED		
Occup	pant Description	S/N : 104		
Occupa	ant Commentary	LAST CALIBRATION	DATE : 21/NOV/05	
Head to -	lder Header	Head		7
VIIIusiiie	WindShield 663	mm 11.2 m	hes HIC I ower Time Interval (ms) 52 1
	Seatback 999	9 mm 00 in	hes HIC Upper Time Interval (ms) 88.1
	Side Header 275	mm <u>10.8</u> in	hes	
S	Side Window 367	mm <u>14.4</u> in	hes	
Neck to Sea	atback 9999 r	nm 00 inches		
	First Contact R	egion (Head)		
S	Second Contact Re	agion (Head)		
0				
		Chest		
Chest to -				
[Dash 410 n	nm 16.1 inches	Arm to Door 184 mm 7.2	inches
Steerina V	Wheel 9999 n	nm 0.0 inches	Hip to Door 177 mm 7.0	inches
Seat	tback 9999 n	nm 0.0 inches		
Chest S	everity Index 99	99	Pelvic Peak Lateral Acceleration (g's)	9
Thoracic Tra	auma Index 9		Thorax Peak Acceleration (g's)	51.6
	Lap I	Belt Peak Load 5358	Newtons 1204.5 pound Force	
	Shoulder E	Belt Peak Load 3706	Newtons 833.1 pound Force	
First Co	ontact Region (Ch	est/Abdomen) AIR BAC		
Second Co	ontact Region (Ch	est/Abdomen) NONE		
Knees to	Dash 45 n	om 18 inches	Knees to Seatback	inches
Left Femi	ur Peak Load -1	582 Newtons	-355.6 pounds Force	
Right Femu	ur Peak Load	986 Newtons	-446.5 pounds Force	
. ugint i onitu	First Contact F	Region (Legs) DASHP/	NEL	
S	Second Contact R	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
Туре	HYBRID III DUI	MMY] Weight	999.0 kg 2202 pounds
Size	5 PERCENTILE]	
Cali	ibration Method	OTHER		
Occupai	nt Manufacturer	FIRST TECHNOLOGY		
Occupa	ant Modification	UNMODIFIED		
Occu	pant Description	S/N : 104		
Occupa	ant Commentary	LAST CALIBRATION DA	TE : 21/NOV/05	
		Restraint	<u>s</u>	
Restrai	nt # 1 3 POIN	Г BELT		
Mounte	ed BELT -	CONVENTIONAL MOUNT		
Deploy	ment DEPLO	YED PROPERLY		
Restrai	nt Commentary	NO COMMENTS		
Restrai		3		
Mounte	ad DASH P	ANFL - TOP		
Deploy	ment DFPLO			
====;;;;				

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 AP	PLICABLE Height 999 mm 39.3 inches
Type HYBRID	UII DUMMY Weight 999.0 kg 2202 pounds
Size 5 PERC	
Calibration M	lethod OTHER
Occupant Manufa	acturer FIRST TECHNOLOGY
Occupant Modif	ication UNMODIFIED
Occupant Des	cription S/N:103
Occupant Comr	nentary LAST CALIBRATION DATE : 10/NOV/05
Head to - Windshielder Hea WindSh	Head der 9999 mm 0.0 inches Head Injury Criteria (HIC) 919 ield 9999 mm 0.0 inches HIC Lower Time Interval (ms) 65
Seatb	ack [9999] mm [0.0] inches HIC Upper Time Interval (ms) [101
Side Hea	der <u>19999</u> mm <u>10.0</u> inches
Side wind	1000 = 1000 mm 0.0 inches
First C	2999 Mill U.U Inches
Filst C Second C	entest Region (Head)
Second C	
	Chest
Chest to -	
Dash g	1999 mm 0.0 inches Arm to Door 9999 mm 0.0 inches
Steering Wheel	1 999 mm 0.0 inches Hip to Door 9999 mm 0.0 inches
Seatback	1 999 mm 0.0 inches
Chest Severity Ir	Idex 9999 Pelvic Peak Lateral Acceleration (g's) 9
Thoracic Trauma Inc	dex 9 Thorax Peak Acceleration (g's) 62.1
	Lap Belt Peak Load 8630 Newtons 1940.1 pound Force
S	houlder Belt Peak Load 6281 Newtons 1412.0 pound Force
First Contact Re	gion (Chest/Abdomen) NONE
Second Contact Re	gion (Chest/Abdomen) NONE
	Legs
Knees to Dash	1999 mm 0.0 inches Knees to Seatback 9999 mm 0.0 inches
 Left Femur Peak l	_oad _1764 Newtons _396.6 pounds Force
Right Femur Peak L	oad -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 SE	AT	Age	99		
Position	NOT AP	PLICABL	E] Height	999 mm	39.3 inches	
Туре	HYBRID) III DUMN	ЛY] Weight	999.0 kg	2202 pounds	;
Size	5 PERC	ENTILE]			
Cali	ibration N	/lethod	OTHER				
Occupar	nt Manufa	acturer	FIRST TECHNOLOGY				
Occupa	ant Modif	fication	UNMODIFIED				
Occuj	pant Des	cription	S/N : 103				
Occupa	ant Comr	nentary	LAST CALIBRATION DA	TE : 10/NOV/05			
			Restraint	S			
Restrai	nt # 1 [3 POINT E	BELT				
Mounte	ed 🛛	BELT - CO	DNVENTIONAL MOUNT				
Deploy	Deployment DEPLOYED PROPERLY						
Restrai	nt Comm	entary	NO COMMENTS				
Restrai	nt # 2	SEAT BA	СК				
Mounte	ed [OTHER	-				
Deploy	ment 🛙	DEPLOYE	ED PROPERLY				
Restrai	nt Comm	entary	NO COMMENTS				

4N

Registered Owner: 4N6XPRT SYSTEMS

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 <u>5 PERCENTILE</u>
Calibration Method OTHER
Occupant Manufacturer FIRST TECHNOLOGY
Occupant Modification UNMODIFIED
Occupant Description S/N:111
Occupant Commentary LAST CALIBRATION DATE : 10/NOV/05
Head to -
Windshielder Header 19999 mm 0.0 inches Head Injury Criteria (HIC) 731
WindShield 99999 mm 0.0 inches HIC Lower Time Interval (ms) 66.2
Seatback 9999 mm 0.0 inches HIC Opper Time Interval (ms) 102.2
Side Mindow 9999 mm 0.0 inches
Neek to Sootbook (9999) mm (0.0 inches
First Contact Bagion (Head)
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
Leas
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
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
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 - - -

2006 FORD OTHER LEFT REAR SEAT OCCUPANT

5803				
1		Sex	FEMALE	
LEFT REAR SE	AT	Age	99	
NOT APPLICAE	ILE	Height	999 mm 39.3 inches	
HYBRID III DUN	IMY	Weight	999.0 kg 2202 pounds	
5 PERCENTILE]		
libration Method	OTHER			
int Manufacturer	FIRST TECHNOLOGY			
ant Modification	UNMODIFIED			
pant Description	S/N : 111			
ant Commentary	LAST CALIBRATION DA	TE : 10/NOV/05		
	Restraint	<u>8</u>		
int # 1 3 POINT	BELT			
ed BELT - C	CONVENTIONAL MOUNT			
ployment DEPLOYED PROPERLY				
int Commentary	NO COMMENTS			
int # 2 SEAT B	ACK			
ed OTHER				
	5803 1 LEFT REAR SE NOT APPLICAB HYBRID III DUM 5 PERCENTILE libration Method nt Manufacturer ant Modification ipant Description ant Commentary int # 1 3 POINT ed BELT - C /ment DEPLOY int Commentary 1	5803 1 LEFT REAR SEAT NOT APPLICABLE HYBRID III DUMMY 5 PERCENTILE libration Method OTHER nt Manufacturer FIRST TECHNOLOGY ant Modification UNMODIFIED ipant Description S/N : 111 ant Commentary LAST CALIBRATION DA Restraints int # 1 3 POINT BELT ed BELT - CONVENTIONAL MOUNT /ment DEPLOYED PROPERLY int Commentary NO COMMENTS int # 2	5803 1 Sex LEFT REAR SEAT Age NOT APPLICABLE Height HYBRID III DUMMY Weight 5 PERCENTILE Weight libration Method OTHER nt Manufacturer FIRST TECHNOLOGY ant Modification UNMODIFIED upant Description S/N : 111 ant Commentary LAST CALIBRATION DATE : 10/NOV/05 Restraints int # 1 3 POINT BELT ed BELT - CONVENTIONAL MOUNT /ment DEPLOYED PROPERLY int Commentary NO COMMENTS int # 2 SEAT BACK	5803 Sex FEMALE LEFT REAR SEAT Age 99 NOT APPLICABLE Height 999 mm 39.3 inches HYBRID III DUMMY Weight 999.0 kg 2202 pounds 5 PERCENTILE Iibration Method OTHER Image: Signature of the signatex signature of the sig

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 inche	s
Vehicle Width 1835 mm 72.2 inches Center of Damage to CG Axis 9999 mm 0.0 inche	s
Vehicle Wheelbase 2727 mm 107.4 inches Total Length of Indentation 1501 mm 59.1 inche	s
Vehicle Test Weight 1750 KG 3857 pounds Maximum Static Crush Depth 9999 mm 0.0 inche	s
Pre-Impact Speed 57 kph 35.2 mph	
Vehicle Damage Index 99999999 Principal Direction of Force 0	
Demons Drofile Distance Macoursmants	
<u>Damage Profile Distance Measurements</u> <u>Crush from Pre & Post Test Damage Measurements</u>	
(Measured Left-to-Right, Rear-to-Front) <u>Pre-Test</u> <u>Post-Test</u> <u>Crush Depth</u>	
DPD 1 375 mm 14.8 inches Left Bumper Corner 186.5 inches 164.9 inches 21.7 inche	S
DPD 2 546 mm 21.5 inches 4738 mm 4188 mm 550 mm	
DPD 3 619 mm 24.4 inches Centerline 190.2 inches 166.1 inches 24.1 inche	s
DPD 4 618 mm 24.3 inches 4832 mm 4220 mm 612 mm	
DPD 5 598 mm 23.5 inches Bight Bumper Corner 186.6 inches 164.3 inches 22.3 inches	e e
DPD 6 327 mm 12.9 inches Right Bumper comer 100.0 inches 104.5 inches 22.5 inches	3
Bumper Engagement Sill Engagement A-pillar Engagement	
(Inline Impact Only) (Side Impact Only) (Side Impact Only)	
Moving Test Cart Moving Test Cart/Vehicle Vehicle Orientation on Car	t
Angle Crabbed Angle Moving Test Cart	
NOT APPLICABLE99.0NOT APPLICABLE	
Magnitude of the Tilt Angle Magniture of the Crabbed Angle Magnitude of the Angle	
Measured between surface of a Measure Clockwise from Measured between the Vehicle Orientation	ı
Rollover Test Cart and the Ground Longitudinal Vector to Velocity Vector of Vehicle and Direction of Test Cart Motion	

Vehicle 1 2006 FORD OTHER

Te	est # 58	303										
	VIN 3F	AFP07Z	X6R1064	02		NH	TSA Test	Vehicle Nu	mber 1			
Ň	Year 20	006				Veh	icle Modif	ication Indic	cator PR	DUCTIC	N VEHIC	LE
Ν	Make FC	ORD		Post-tes	t Steerin	g Column	Shear Ca	apsule Sepe	eration NO		CABLE	
Μ	lodel <mark>O</mark>	THER			St	eering Col	umn Colla	apse Mecha	nism NO	T APPLIC	CABLE	
E	Body F	OUR DOC	OR SEDAM	1								
Er	ngine 4	CYLINDE	R TRANS	VERSE F	RONT							
Displace	ment 2.	3 L	iter Tr	ransmissi	on MA	NUAL - FR	ONT WH	EEL DRIVE]	
Vehicle M	Modificati	on(s) Des	scription	UNMOD	FIED							
Vehicle (Commen	tary 06-2	207 FORD	FUSION	-							
Vehic	le Length	ר 483	2 mm	190.2	inches		CG b	ehind Front	Axle 1277	mm	50.3	inches
Ve	hicle Wid	lth 183	5 mm	72.2	inches	Cen	ter of Dar	mage to CG	Axis 9999	mm	0.0	inches
Vehicle	Wheelba	ase 272	2 7 mm	107.4	inches	Tot	al Length	n of Indenta	tion 1501	mm	59.1	inches
Vehicle 7	Test Weig	ght 175	0 KG	3857	pounds	s Max	imum Sta	atic Crush D	epth 9999	mm	0.0	inches
			_				Pr	e-Impact Sp	beed 57	kph	35.2	mph
	Vehic	e Damag	je Index 🥊	9999999			Principa	al Direction o	of Force	1		
			<u>P</u>	re & Po	ost Te	st Dama	<u>age Me</u>	asureme	<u>ents</u>			
(Mea	asurements	are taken in	a longitudinal	direction. Ex	cept for Eng	ine Block, all r	neasuremen	nts are take from	the Rear Vehi	cle Surface f	forward.)	
	Left	Side				Cente	rline			Riah	t Side	
Pre-	Test	Po	st-Test		Pre	-Test	Post	-Test	Pre-	Test	Pos	t-Test
mm	inches	mm	inches		mm	inches	mm	inches	mm	inches	mm	inches
					Len	gth of Veh	icle at Ce	enterline				
					4832	190.2	4220	166.1				
						 Engin	e Block					
					212	8.3	1106	43.5				
4738	186.5	4188	164.9			Front Bur	nper Cor	ner	4739	186.6	4173	164.3
						Front o	of Engine					
					4146	163.2	3726	146.7				
3524	138.7	3473	136.7			Fire	wall		3527	138.9	3427	134.9
					3723	146.6	0	0.0				
3335	131.3	3336	131.3		Upp	oer Leadin	g Edge o	f Door	3337	131.4	3334	131.3
3316	130.6	3316	130.6		Low	ver Leading	g Edge o	f Door	3329	131.1	3326	130.9
3291	129.6	3292	129.6			Bottom o	f 'A' Post		3297	129.8	3293	129.6
2276	89.6	2276	89.6		Up	per Trailing	g Edge o	f Door	2282	89.8	2277	89.6
2317	91.2	2318	91.3		Lo	wer Trailing	g Edge o	f Door	2322	91.4	2319	91.3
						Steerin	g Columr	า				
					2857	112.5	2893	113.9				
				Cent	ter of Se	ering Colu	mn to 'A'	Post (Horizo	ontal)			
					415	16.3	411	16.2				
				Cent	er of Ste	ering Colu	mn to He	adliner (Vei	rtical)			
					450	17.7	459	18.1				

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	(Dece Side)
(Driver Side)	21.7	24.1	22.3	(Pass. Side)

					-
		A	В	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	

CRASH 3 Stiffness Coefficents SMAC Stiffness

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

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

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific 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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Erro
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

Rated No Damage Speed = Impact speed with a barrier

resulting in no permanant vehicle deformation

vehicles may, however, have a higher rating

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	(Dece Side)
(Driver Side)	21.7	24.1	22.3	(Pass. Side)

					-
		<u>A</u>	<u> </u>	G	<u> </u>
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

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

B = Crush resistance per inch of damage width (Crash), Ib/in^2 G = Energy dissipated without permanent damage, Ib

CRASH 3 Stiffness Coefficents

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

Registered Owner: 4N6XPRT SYSTEMS

SMAC Stiffness

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	
		<u> </u>	В	G	<u> </u>	
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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	
		<u> </u>	<u> </u>	G	<u> Kv </u>	
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Numbe	r Info	Damage	Average	Closing	V	ehicle	Widtl	า	
		Speed	Crush	Speed	S t	iffness	s Valu	ı e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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)			(MAX)		318.1	84.5	603.6	114.7	23.1
	Standard Deviation (STDev-sa	ample)		22.8	12.0	31.0	16.3	2.0
	Numb	per of Te	sts (n)	4					

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	r Info	Damage	Max	Closing	V	ehicle	Width	ו	
		Speed	Crush	Speed	S t	iffness	Valu	e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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)									

Expert VIN DeCoder®

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Version Number 3.2.0.1



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®

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

5/15/2013

2005 CHEVROLET IMPALA 4 DOOR SEDAN

Curb Weight:	3389 1bs.		1537 kg.
Curb Weight Distribution - Front:	62 %	Rear:	38 %
Gross Vehicle Weight Rating:	4565 1bs.		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	
Front Track:	62		
Rear Track:		5.08	1.33
Vertical Dimensions			
Height:	58	4.83	1.47
Ground to -			
Front Bumper (Top)	23	1.92	0.58
Headlight - center		2.25	
Hood - top front:	29		
Base of Windshield	39		
kear Bumper - top:			
Irunk - top rear:			
Base of Kear Window:	45	3./5	1.14

Expert AutoStats®

2005 CHEVROLET IMPALA 4 DOOR SEDAN

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 58 38 42	Feet 4.83 3.17 3.50	Meters 1.47 0.97 1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	58 37 36	4.83 3.08 3.00	1.47 0.94 0.91
Seatbelts: 3pt - front and rear			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OFM): P225/60816	<u>456</u> <u>12</u>	38.00	0.30
Acceleration & Braking Information Brake Type: ALL DISC ABS System: ALL WHEEL ABS - OPTIONAL			
Braking, 60 mph to 0 (Hard pedal, no skid, d d = 174.0 ft t = 4.0 sec a	<pre>lry pavement): a = -22.2 ft/s</pre>	ec² G-fo	rce = -0.69
Acceleration:0 to 30mph $t = 3.0$ sec0 to 60mph $t = 9.2$ sec45 to 65mph $t = $ sec	a = 14.7 ft/s a = 9.6 ft/s a = ft/s	ec ² G-for ec ² G-for ec ² G-for	rce = 0.46 rce = 0.30 rce =
Transmission Type: 4spd AUTOMATIC			
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mp	h h	

N.S.D.C = 2000 - 2005

Expert AutoStats®

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
	-	42.18
Inches in front of rear axie	=	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*sec ²
Pitch Moment of Inertia	=	2206.11 lb*ft*sec ²
Roll Moment of Inertia	=	460.02 lb*ft*sec ²
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	_	
Anyre of Steering Thes at max full	_	

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	=	27	CF
(Tested for Rear/Side Impact only)			

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

NHTSA Crash Test #4775

2004 PONTIAC GRAND PRIX

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: 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 Remarks:	CHEVROLET	IMPALA	2D, 4D, SW	110.5, 125
1997 - 2004 Remarks: Regal no	BUICK ow same as Century	REGAL	2D, 4D, SW	107.5
1997 - 2003 Remarks:	PONTIAC	grand prix	2D, 4D	110.5
1998 - 2002 Remarks:	OLDSMOBILE	INTRIGUE	4D	109
1997 - 2005 Remarks:	BUICK	CENTURY	2D, 4D, SW	109, 116
2000 - 2005 Remarks:	CHEVROLET	MONTE CARLO	2D	108
2004 - 2005 Remarks:	PONTIAC	GRAND PRIX	2D, 4D	110.5

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail: free hours on a scala

Test Information

T				• "				
lest # 4775		NHISA Test R	eference Guide Ve	rsion #	V 5			
Test Date 2003-10-07 Contract #				ntract #	DTNH22-01-	D-02005		
Contract/Study Title	35 MPH NC	AP FRONTAL - 20	04 PONTIAC GRA	AND PR	IX GT 4 DOOR	SEDAN		
Test Objective(s)	OBTAIN AT	D AND VEHICLE D	ATA					
Test Type	NEW CAR A	SSESSMENT TEST			Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		Side Impa	ct Point	0	mm	0.0	inches
			Offset I	Distance	0	mm	0.0	inches
			Closin	g Speed	55.9	Km/Hr	34.73	MPH
Test Performer	KARCO ENG	INEERING						
Test Reference #	M40100							
Test Track Surface	CONCRETE		Co	ndition	DRY			
Ambient Temperature	29 C	84.2 F	Total Number of	Curves	185			
Data Recorder Type	DIGITAL DA	TA ACQUISITION			Data Link	OTHER		
Test Commentary	DATALINK I	S NONE, ON-BOA	ARD 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	
Occupant Description NO COMMENTS	
Occupant Commentary NO COMMENTS	
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)	
Second Contact Region (Head)	
<u>Chest</u>	
Chest to -	_
Dash <u>530</u> mm <u>20.9</u> inches Arm to Door <u>30</u> mm <u>1.2</u> i	nches
Steering Wheel 285 mm 11.2 inches Hip to Door 185 mm 7.3	nches
Seatback 0 mm 0.0 inches	
Chest Severity Index 0 Pelvic Peak Lateral Acceleration (g's) 0	
Inoracic Trauma Index U Inorac Peak Acceleration (gs) 58.	<u>></u>
Lap Belt Peak Load 3935 Newtons 664.6 pound Force	
First Centest Degion (Chest/Abdomen)	
First Contact Region (Chest/Abdomen)	
Legs	
Knees to Dash [175] mm [6.9] inches Knees to Seatback[0] mm [0.0] i	nches
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 SE	AT	Age	0		
Position	CENTER POSIT	ON	Height	0 mm	0.0 inche	s
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0 poun	ds
Size	50 PERCENTILE					
Cali	bration Method	HYBRID III				
Occupar	nt Manufacturer	VECTOR, S/N:035				
Occupa	Occupant Modification UNMODIFIED					
Occu	pant Description	N0 COMMENTS				
Occupa	ant Commentary	NO COMMENTS				
		Restraints	<u>8</u>			
Restrai	nt # 1 3 POINT	BELT				
Mounte	nted BELT - CONVENTIONAL MOUNT					
Deploy	Deployment DEPLOYED PROPERLY					
Restrai	nt Commentary	NO COMMENTS				
Restrai	nt # 2 FRONTA	L AIRBAG				

Mounted

Restraint Commentary

STEERING WHEEL

NO COMMENTS

Deployment **DEPLOYED PROPERLY**

2004 PONTIAC GRAND PRIX RIGHT FRONT SEAT OCCUPANT

Test #	4775		
Vehicle #	1	Sex MALE	
Location	RIGHT FRONT S	SEAT Age 0	
Position	CENTER POSITI	TON Height 0 mm 0.0 inches	
Туре	HYBRID III DUMI	I MY Weight 0.0 kg 0 pounds	
Size	50 PERCENTILE	<u>E</u>	
Cali	ibration Method	HYBRID III	
Occupai	nt Manufacturer	VECTOR, S/N:034	
Occupa	ant Modification	UNMODIFIED	
Occu	pant Description	NO COMMENTS	
Occupa	ant Commentary	NO COMMENTS	
Head to -		Head	
Windshie	elder Header 465	5 mm 18.3 inches Head Injury Criteria (HIC) 509	
	WindShield 785	5 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	0 mm 11.4 inches	
5	Side Window 355	<u>5 mm 14.0</u> inches	
Neck to Se	atback 0 r	mm 0.0 inches	
	First Contact R	Region (Head)	
S	Second Contact Re	legion (Head)	
		<u>Chest</u>	
Chest to -	[]		
e	Dash 595 n	mm 23.4 inches Arm to Door 50 mm 2.0 inches	
Steering \	Wheel 0 n	mm 0.0 inches Hip to Door 165 mm 6.5 inches	
Sea	tback [0] n		
	everity index 0		
Inoracic Ir	auma index [U	Inorax Peak Acceleration (g s) [43.7	
	Lap i	Belt Peak Load 3955 Newtons 009.1 pound Force	
First Co	Shoulder E	Beit Peak Load [4090] Newtons [919.5] pound Force	
Filst Ct	ontact Region (Chi	nest/Abdomen/Air BAG	
Second Co	Sinaci Region (Chi	lest/Abdomen/	
		Legs	
Knees to	Dash [155] n	mm [<u>6.1</u>] inches Knees to Seatback[0] mm [<u>0.0</u>] inches	
Left Fem	ur Peak Load	5512 Newtons -1239.2 pounds Force	
Right Femu	ur Peak Load	3737 Newtons -840.1 pounds Force	
	First Contact F	Region (Legs) DASHPANEL	
	Second Contact R	Region (Legs)	

2004 PONTIAC GRAND PRIX RIGHT FRONT SEAT OCCUPANT

Test #	4775							
Vehicle #	1		Sex	MALE]		
Location	RIGHT FRONT S	EAT	Age	0				
Position	CENTER POSITI	ON	Height	0 mm	0.0 inches			
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0 pounds	S		
Size	50 PERCENTILE							
Cal	libration Method	HYBRID III						
Occupa	nt Manufacturer	VECTOR, S/N:034						
Occup	ant Modification	UNMODIFIED						
Occu	pant Description	N0 COMMENTS						
Occup	ant Commentary	NO COMMENTS						
	<u>Restraints</u>							
Restra	int # 1 3 POINT	BELT						
Mounte	ed BELT - C	ONVENTIONAL MOUNT						
Deploy	ment DEPLOY	ED PROPERLY						
Restra	int Commentary							

Restraint Commentary INC COMMENTS						
Restraint # 2	FRONTAL AIRBAG					
Mounted	DASH PANEL - TOP					
Deployment	DEPLOYED PROPERLY					
Restraint Com	nentary NO COMMENTS					

2004 PONTIAC GRAND PRIX RIGHT REAR SEAT OCCUPANT

Test # 4775	
Vehicle # 1 Sex	NOT APPLICABLE
Location RIGHT REAR SEAT Age	e 0
Position NOT APPLICABLE Heigh	t 0 mm 0.0 inches
Type HYBRID III DUMMY Weigh	t 0.0 kg 0 pounds
Size 3 YEAR OLD CHILD	
Calibration Method HYBRID III	
Occupant Manufacturer FIRST TECHNOLOGY SAFETY SYSTEMS	s, S/N:139
Occupant Modification UNMODIFIED	
Occupant Description NO COMMENTS	
Occupant Commentary CONTRH1:CHIN CONTACTED RETAINING C	CLIP
Head to -	
Windshielder Header 0 mm 0.0 inches Head Injury	Criteria (HIC) [533
WindShield 0 mm 0.0 inches HICLO	bwer Time Interval (ms) 76.9
Seatback 550 mm 21.7 inches HICU	pper lime interval (ms) [112.9
Side Window 406 mm 46.0 inches	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head)	
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 pour	nds Force
Right Femur Peak Load 0 Newtons 0.0 pour	ids 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
_ocation	RIGHT REAR	SEAT	Age 0
Position	NOT APPLIC	BLE	Height 0 mm 0.0 inches
Туре	HYBRID III DU	IMMY	Weight 0.0 kg 0 pounds
Size	3 YEAR OLD	CHILD]
Cal	ibration Method	HYBRID III	
Occupa	nt Manufacture	FIRST TECHNOLOGY S	AFETY SYSTEMS, S/N:139
Occup	ant Modificatior	UNMODIFIED	
Occu	pant Descriptio	n NO COMMENTS	
Occupa	ant Commenta	y CNTRH1:CHIN CONTAC	TED RETAINING CLIP
		Restraints	S
Restrai	int # 1 CONV	ERTIBLE CHILD SAFETY SE	AT, FRONT FACING
Mounte	ed LATCH	I - LOWER ANCHORAGES A	ND TOP TETHER
Deploy	ment NOT A	PPLICABLE	
Restrai	int Commentar	MANUFACTURER:EVEN	IFLO, MODEL:VANGUARD 5, MODEL#
Restrai	int # 2 5 POII	IT BELT	
Mounte	ed CHILD	SEAT	
Deploy	ment NOT A	PPLICABLE	
Restrai	int Commentar	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 S	SYSTEMS, S/N:082
Occupant Modification	
Occupant Description NO COMMENTS	
Occupant Commentary CNTRH1, CHIN CONTACTED RE	TAINING CLIP
Head to -	ead Injuny Criteria (HIC) 583
WindShield 0 mm 0.0 inches	HIC Lower Time Interval (ms) 76.4
Seatback 555 mm 21.9 inches	HIC Lover Time Interval (ms) 112.4
Side Header 0 mm 00 inches	
Side Window 385 mm 15.2 inches	
Neck to Seatback 0 mm 0 0 inches	
First Contact Region (Head)	
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 Pea	ak Lateral Acceleration (g's) 0
Thoracic Trauma Index 0 Th	orax 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	
Leas	
Knees to Dash 0 mm 0.0 inches Knees to S	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 S	EAT	Age 0
Position	NOT APPLICA	BLE	Height 0 mm 0.0 inches
Туре	HYBRID III DU	MMY	Weight 0.0 kg 0 pounds
Size	3 YEAR OLD	CHILD	
Cal	ibration Method	HYBRID III	
Occupa	nt Manufacture	FIRST TECHNOLOGY S	AFETY SYSTEMS, S/N:082
Occup	ant Modification	UNMODIFIED	
Occu	pant Description	NO COMMENTS	
Occup	ant Commentar	y CNTRH1, CHIN CONTAC	TED RETAINING CLIP
		Restraints	8
Restra	int # 1 CONVE	ERTIBLE CHILD SAFETY SE	AT, FRONT FACING
Mounte	ed LATCH	- LOWER ANCHORAGES A	ND TOP TETHER
Deploy	ment NOT A	PPLICABLE	
Restraint Commentary MANUFACTURER:CENTURY, MODEL:STE, MODEL#			
Restra	int # 2 5 POIN	IT BELT	
Mounte	ed CHILD	SEAT	
Deploy	ment NOT A	PPLICABLE	
Restra	int Commentary	NO COMMENTS	

Vehicle 1 2004 PONTIAC GRAND PRIX

Test #	4775										
VIN	2G2WP5229	4112166	0		NHTSA T	est Vehic	le Numbe	er 1			
Year	2004				Vehicle Mo	dification	Indicator	PRODU	CTION	VEHIC	LE
Make	PONTIAC		Post-tes	st Steering	Column Shear	Capsule	Seperatio	on UNKNO	WN		
Model	GRAND PRIX	(Stee	ering Column C	ollapse M	lechanism	N UNKNO	WN		
Body	FOUR DOOF	SEDAN									
Engine	V6 TRANSV	ERSE FR	ONT								
Displacement	3.8 Lite	er Tra	ansmissi	ion AUTC	DMATIC - FROM	IT WHEE	L DRIVE				
Vehicle Modifie	cation(s) Desc	ription	UNMOD	IFIED							
Vehicle Comm	entary NO C	OMMEN	TS								
Vehicle Ler	igth 5034	mm	198.2	inches	CG	behind I	Front Axle	e 1131 r	mm [44.5	inches
Vehicle \	Width 1800	mm	70.9	inches	Center of [Damage t	o CG Axi	s 0 r	mm [0.0	inches
Vehicle Whee	elbase 2815	mm	110.8	inches	Total Len	gth of Inc	lentation	1383 r	mm [54.4	inches
Vehicle Test W	/eight 1789	KG	3943	pounds	Maximum	Static Cru	ish Depth	587 r	mm [23.1	inches
						Pre-Impa	act Speed	56	kph [34.7	mph
Ve	hicle Damage	Index 1	2FDEW	6	Princ	ipal Direc	tion of Fo	rce 0			
	ofilo Dioton			n to	Cruch from				× • • • •		- t -
Damage Pr	one Distance			nis	<u>Crush Iror</u>		Postie	<u>si Damaç</u>	<u>je ivie</u>	asuren	<u>ients</u>
(Measu	ured Left-to-Ri	ght, Real	r-to-Fror	it)		Pre-Tes	<u>t</u>	Post-Tes	<u>t</u> .	Crush	Depth
DPD 1 [-	472 mm	-18.6	inche	s Left	Bumper Cornei	190.3	inches	171.7 i	nches	18.6	_ inches
DPD 2 [-	<u>582</u> mm	-22.9	inche	S		4834	mm	4362 r	mm	472] mm
DPD 3 [-	<u>584</u> mm	-23.0		S	Centerline	198.2	inches	175.2 i	inches	23.0] inches
DPD 4 [-	<u>569</u> mm	-22.4	inche	S		5034	mm	4450 r	mm	584] mm
DPD 5 [-	<u>539</u> mm	-21.2	inche	s Riaht I	Rumper Corner	190.2	inches	173 6 i	nches	16 7	linches
DPD 6 [-	423 mm	-16.7	j inche	S	Sumper comer	4832	mm	4409	mm	423	
						4002				420	⊥
Bumper E	ngagement			Sill	Engagement			A-r	oillar Ei	ngagem	ent
(Inline Im	pact Only)			(Sic	le Impact Only)			(5	Side Im	pact Or	nlv)
).0		Г	NOT					().0	۰ <i></i>
			L								_
Moving	Test Cart			Moving	g Test Cart/Veh	icle		Vehic	cle Orie	ntation	on Cart
A	ngle			_C	rabbed Angle			N	loving	Test Ca	rt
DIRECT	ENGAGEMEN	IT			0.0			NC	T APF	LICABL	.E
Magnitude	of the Tilt Angle			Magnitur	e of the Crabbed Ang	le		M	lagnitude	of the Angl	е
Measured b	etween surface of a	1		Mea	sure Clockwise from			Measured be	etween th	e Vehicle (<i>Drientation</i>
Rollover Test	Cart and the Grour	nd	Lo	ongitudinal Vec	tor to Velocity Vector	of Vehicle		and Dir	rection of	Test Cart I	Motion

Vehicle 1 2004 PONTIAC GRAND PRIX

Test #	4775		
VIN	2G2WP522941121660	NHTSA Test Vehicle I	Number 1
Year	2004	Vehicle Modification In	dicator PRODUCTION VEHICLE
Make	PONTIAC Po	ost-test Steering Column Shear Capsule Se	peration UNKNOWN
Model	GRAND PRIX	Steering Column Collapse Mec	hanism UNKNOWN
Body	FOUR DOOR SEDAN		
Engine	V6 TRANSVERSE FRO	NT	
Displacement	3.8 Liter Trans	smission AUTOMATIC - FRONT WHEEL D	DRIVE
Vehicle Modifie	cation(s) Description	MODIFIED	
Vehicle Comm	entary NO COMMENTS		
Vehicle Ler	ngth <u>5034</u> mm <u>1</u>	98.2 inches CG behind Fro	nt Axle 1131 mm 44.5 inches
Vehicle	Width 1800 mm 7	0.9 inches Center of Damage to C	CG Axis <mark>0 mm 0.0 </mark> inches
Vehicle Whee	elbase 2815 mm <u>1</u>	10.8 inches Total Length of Inden	tation 1383 mm 54.4 inches
Vehicle Test V	/eight 1789 KG 3	943 pounds Maximum Static Crush	Depth 587 mm 23.1 inches
		Pre-Impact	Speed <u>56</u> kph <u>34.7</u> mph
Ve	hicle Damage Index 12F	DEW6 Principal Direction	n of Force 0
	_		
	Pre	& Post Test Damage Measurer	<u>nents</u>
(Measurem	ents are taken in a longitudinaldired	ction. Except for Engine Block, all measurements are take fr	om the Rear Vehicle Surface forward.)
L	eft Side	Centerline	Right Side
Pre-Test	Post-Test	Pre-Test Post-Test	Pre-Test Post-Test
mm inche	es 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 (Ho	rizontal)
		405 15.9 415 16.3	
		Center of Steering Column to Headliner (\	/ertical)
		<u> 415 16.3 373 14.7</u>	

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	(Dece Side)
(Driver Side)	18.6	23.0	16.7	(Pass. Side)

		<u>A</u>	B	G	<u> Kv </u>
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	

CRASH 3 Stiffness Coefficents S

SMAC Stiffness

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

Rated No Damage Speed = Impact speed with a barrier

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

resulting in no permanant vehicle deformation

vehicles may, however, have a higher rating

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	(Dece Side)
(Driver Side)	18.6	23.0	16.7	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness	
		<u>A</u>	В	G	<u> Kv </u>	
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

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

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

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

Registered Owner: 4N6XPRT SYSTEMS

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		
		<u>A</u>	В	G	<u> </u>		
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	<u> </u>	
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

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

B = Crush resistance per inch of damage width (Crash), lb/in^2 G = Energy dissipated without permanent damage, Ib

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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	Vehicle	No							
Number	Info	Damage	Average	Closing	V e	ehicle	Width)	
		Speed	Crush	Speed	S t	iffness	Valı	ı e s	Crush
		(mph)	(inch)	(mph)	A	В	G	Kv	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
	N	laximum	(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	Vehicle	No Damage	Max	Closing	IV	ehicle	Widt	hl	
Multiber		Speed	Crush	Speed	S t	iffness	Valu	Jes	Crush
		(mph)	(inch)	(mph)	A	В	G	Kv	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) Maximum (MAX)				214.4	43.2	525.7	62.5	12.8
					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)								
Expert VIN DeCoder®

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Version Number 3.2.0.1



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.

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> 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 1bs.		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	
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 Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 53 39 41	Feet 4.42 3.25 3.42	Meters 1.35 0.99 1.04
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	53 39 26	4.42 3.25 2.17	1.35 0.99 0.66
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): 185/65R15	<u>480</u> 12	40.00	12.19 0.30
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 Acceleration: 0 to 30mph t = 2.6 \text{ sec} 0 to 60mph t = 7.6 sec 45 to 65mph t = sec	a = <u>-27.2</u> ft/ a = <u>16.9</u> ft/ a = <u>11.6</u> ft/ a = <u>ft/</u>	sec ² G-fo sec ² G-fo sec ² G-fo sec ² G-fo	rce = <u>-0.85</u> rce = <u>0.53</u> rce = <u>0.36</u> rce = <u></u>
Transmission Type: 4spd AUTOMATIC Notes: Federal Bumper Standard Requirements:	2.5 m	bh	
This vehicles Rated Bumper Strength:	5 m	bh	

N.S.D.C = 1996 - 1999

1998 s	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*sec ²
Pitch Moment of Inertia	=	1247.79 lb*ft*sec ²
Roll Moment of Inertia	=	285.78 lb*ft*sec ²
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	=	27 CF
(Tested for Rear/Side Impact only)		

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

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

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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, S	L2 - new bod	y panels in 97		
1996 - 2001	SATURN	SW		102.4
Remarks: SW1, SW	2			
1997 - 2002	SATURN	SC	2D	102.4
Remarks: SC1, SC2				

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

	_							
Test # 2765	NH	TSA Test Re	eference Gi	uide Version #	V4			
Test Date 1998-01-22	2			Contract #	DTNH22-96-	D-02010		
Contract/Study Title	NEW CAR ASSESME	NT PROGE	RAM FROM	ITAL BARRIER I	IMPACT TEST			
Test Objective(s)	TO OBTAIN VEHICL	E CRASHW	VORTHINE	SS AND OCCU	IPANT RESTRA	AINT PERF	ORMANCE	
Test Type	NEW CAR ASSESSM	IENT TEST			Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		Sid	e 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 Nur	nber of Curves	96			
Data Recorder Type	FM TAPE RECORDER	2			Data Link	UMBILIC	CAL 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 BAR	RIER WITHOUT LOAD CELL ASSEMBLY.			

1998 SATURN SL2 LEFT FRONT SEAT OCCUPANT

Test #	2765	
Vehicle #	1	Sex MALE
Location	LEFT FRONT SE	Age 99
Position	CENTER POSITI	ON Height 999 mm 39.3 inches
Туре	HYBRID III DUMI	MY Weight 999.0 kg 2202 pounds
Size	50 PERCENTILE	
Cal	ibration Method	
Occupa	nt Manufacturer	MFG:HUMANOID S/N:061
Occup	ant Modification	NO COMMENTS
Occu	pant Description	NO COMMENTS
Occupa	ant Commentary	NO COMMENTS
Head to -		Head
Windshie	elder Header 335	mm 13.2 inches Head Injury Criteria (HIC) 435
	WindShield 552	2 mm 21.7 inches HIC Lower Time Interval (ms) 64.4
	Seatback 999	99 mm 0.0 inches HIC Upper Time Interval (ms) 100.4
	Side Header 234	1 mm 9.2 inches
5	Side Window 319	mm <u>12.6</u> inches
Neck to Se	atback 9999 r	mm 0.0 inches
	First Contact Re	egion (Head)
5	Second Contact Re	egion (Head)
		<u>Chest</u>
Chest to -		
Q4	Dash 514 n	nm [20.2] inches Arm to Door [109] mm [4.3] inches
Steering	Wheel 314 n	nm <u>12.4</u> inches Hip to Door <u>124</u> mm <u>4.9</u> inches
Sea	траск <u>19999</u> n	nm [0.0] incres
Chest S	Severity Index 38	24 Pelvic Peak Lateral Acceleration (g's)
Thoracic Tr	rauma index [U	Inorax Peak Acceleration (g s) [40.2
	Lap i Shouldor [Belt Peak Load [2934] Newtons [039.0] pound Force
First C	Shouldel E	set/Abdemen
Filst Co	ontact Region (Chi	est/Abdomen)
Second Co	Unlact Region (Chi	
		Legs
Knees to	Dash 177 n	nm [7.0] inches Knees to Seatback[9999] mm [0.0] inches
Left Fem	ur Peak Load	999 Newtons -2247.9 pounds Force
Right Femu	ur Peak Load	047 Newtons -460.2 pounds Force
	First Contact F	Region (Legs) DASHPANEL
	Second Contact R	Region (Legs)

1998 SATURN SL2 LEFT FRONT SEAT OCCUPANT

Test #	2765					
Vehicle #	1		Sex	MALE		
Location	LEFT FRONT SE	AT	Age	99		_
Position	CENTER POSITI	ON	Height	999 mm	39.3 inche	S
Туре	HYBRID III DUM	MY	Weight	999.0 kg	2202 poun	ds
Size	50 PERCENTILE]			
Cal	ibration Method	HYBRID III				
Occupa	nt Manufacturer	MFG:HUMANOID S/N:06	51			
Occup	ant Modification	NO COMMENTS				
Occu	pant Description	NO COMMENTS				
Occupa	ant Commentary	NO COMMENTS				
		Restraints	<u>S</u>			
Restrai	int # 1 3 POINT	BELT				
Mounte	ed					
Deploy	ment NOT APP	LICABLE				
Poetroi	nt Commontany	SECOND GENERATION				

Restraint Commentary	SECOND GENERATION AIR BAG					
Restraint # 2 FRONTAL	AIRBAG					
Ma						
Mounted	Mounted					
Deployment DEPLOYE	D 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	2 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 to -	
Windshielder Header 314 mm 12.4 inches Head Injury Criteria (HIC) 585	
WindShield 529 mm 20.8 inches HIC Lower Time Interval (m	s) 67.6
Seatback 9999 mm 0.0 inches HIC Upper Time Interval (m	s) 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)	
<u>Chest</u>	
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)	
Inoracic Trauma Index 0 Inoracic Peak Acceleration (g's) 4	3.5
Lap Belt Peak Load [1/57] Newtons [395.0] pound Force	
Shoulder Beit Peak Load [7476] Newtons [1680.7] pound Force	
First Contact Region (Chest/Abdomen)	
Second Contact Region (Chest/Abdomen)[NONE	
<u>Legs</u>	_
Knees to Dash [163 mm [6.4 inches Knees to Seatback 9999 mm [0.0	_ inches
Left Femur Peak Load Newtons pounds Force	
Right Femur Peak Load -4038 Newtons -907.8 pounds Force	
First Contact Region (Legs)	
Second Contact Region (Legs)	

1998 SATURN SL2 RIGHT FRONT SEAT OCCUPANT

Test #	2765					
Vehicle #	1		Sex	MALE]
Location	RIGHT FRONT S	EAT	Age	99		
Position	CENTER POSITI	ON	Height	999 mm	39.3 inches	
Туре	HYBRID III DUM	MY	Weight	999.0 kg	2202 pounds	3
Size	50 PERCENTILE]			
Cal	ibration Method	HYBRID III				
Occupa	nt Manufacturer	MFG:HUMANOID S/N:15	0			
Occup	ant Modification	NO COMMENTS				
Occu	pant Description	NO COMMENTS				
Occupa	ant Commentary	NO COMMENTS				
		Restraints	<u> </u>			
Restrai	int # 1 3 POINT	BELT				
Mounte	ed 🗌					
Deploy	ment NOT APP	LICABLE				
Restrai	int Commentary	SECOND GENERATION	AIR BAG			

Restraint Commentary	SECOND GENERATION AIR BAG				
Restraint # 2 FRONTAL AIRBAG					
Mounted	Mounted				
Deployment DEPLOYED PROPERLY					
Restraint Commentary	SECOND GENERATION AIR BAG				

Vehicle 1 1998 SATURN SL2

Test # 2765		
VIN 1G8ZF5289WZ153	108 NHTSA Test Vehicle Numb	er 1
Year 1998	Vehicle Modification Indicato	PRODUCTION VEHICLE
Make SATURN	Post-test Steering Column Shear Capsule Seperati	ion UNKNOWN
Model SL2	Steering Column Collapse Mechanis	m UNKNOWN
Body FOUR DOOR SEDA	AN	
Engine 4 CYLINDER INLIN	E 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	n 176.6 inches CG behind Front Ax	le 1190 mm 46.9 inches
Vehicle Width 1694 mm	66.7 inches Center of Damage to CG Ax	is 0 mm 0.0 inches
Vehicle Wheelbase 2595 mm	n 102.2 inches Total Length of Indentation	1545 mm 60.8 inches
Vehicle Test Weight 1226 KG	2702 pounds Maximum Static Crush Dept	h 600 mm 23.6 inches
	Pre-Impact Spee	d 57 kph 35.2 mph
Vehicle Damage Index	12FDEW3 Principal Direction of Fo	orce 180
Damage Profile Distance Me	asurements Crush from Pre & Post Te	est Damage Measurements
(Measured Left-to-Right, R	ear-to-Front) <u>Pre-Test</u>	Post-Test Crush Depth
DPD 1 460 mm 18.1	inches Left Bumper Corner 174.8 inches	152.6 inches 22.2 inches
DPD 2 <u>560</u> mm <u>22.0</u>	inches 4440 mm	3875 mm 565 mm
DPD 3 590 mm 23.2	inches Centerline 176.6 inches	153.1 inches 23.4 inches
DPD 4 600 mm 23.6	inches 4485mm	
DPD 5 575 mm 22.6	inches	
DPD 6 550 mm 21.7	inches Right Bumper Corner 174.8 Inches	152.0 Inches 22.8 Inches
	4440 mm	[3860 mm [580 mm
Bumper Engagement	Sill Engagement	A-pillar Engagement
999.0		999.0
Moving Test Cart	Moving Test Cart/Vehicle	Vehicle Orientation on Cart
Angle	Crabbed Angle	Moving Test Cart
NOT APPLICABLE	0.0	NOT APPLICABLE
Magnitude of the Tilt Angle	Magniture of the Crabbed Angle	Magnitude of the Angle
Measured between surface of a	Measure Clockwise from	Measured between the Vehicle Orientation
Rollover Test Cart and the Ground	Longitudinal Vector to Velocity Vector of Vehicle	and Direction of Test Cart Motion

Vehicle 1 1998 SATURN SL2

Test # 2	765				_		
VIN 1	G8ZF5289WZ15310	8	NHTSA Tes	t Vehicle Nur	nber 1		
Year 1	998		Vehicle Modi	ification Indica	ator PRODUCTIO	N VEHIC	LE
Make S	ATURN	Post-test Steering	Column Shear C	apsule Sepe	ation UNKNOWN		
Model S	L2	Ste	ering Column Coll	lapse Mechar	nism UNKNOWN		
Body F	OUR DOOR SEDAN						
Engine 4	CYLINDER INLINE	FRONT					
Displacement 1	.8 Liter Tra	ansmission MAN	IUAL - FRONT WH	IEEL DRIVE			
Vehicle Modificat	ion(s) Description	NO COMMENTS					
Vehicle Commen	ntary 98 SATURN S	L 4-DOOR SEDA	N				
Vehicle Lengt	h <u>4485</u> mm	176.6 inches	CG b	pehind Front	Axle _1190 mm	46.9	inches
Vehicle Wi	dth <u>1694</u> mm	66.7 inches	Center of Da	mage to CG	Axis <mark>0</mark> mm	0.0	inches
Vehicle Wheelba	ase 2595 mm	102.2 inches	Total Lengt	h of Indentat	ion 1545 mm	60.8	inches
Vehicle Test Wei	ght 1226 KG	2702 pounds	Maximum St	atic Crush De	pth 600 mm	23.6	inches
	_		Р	re-Impact Sp	eed 57 kph	35.2	mph
Vehic	le Damage Index 1	2FDEW3	Principa	al Direction of	Force 180		
			_				
	<u>Pr</u>	<u>re & Post Tes</u>	<u>t Damage Me</u>	easureme	<u>nts</u>		
(Measurements	are taken in a longitudinaldi	irection. Except for Engir	ne Block, all measureme	nts are take from t	he Rear Vehicle Surface f	orward.)	
Left	t Side		Centerline		Righ	t Side	
Pre-Test	Post-Test	Pre-	Fest Pos	t-Test	Pre-Test	Test Post-Test	
mm inches	mm inches	mm	inches mm	inches	mm inches	mm	inches
		Leng	th of Vehicle at Co	enterline			
		4485	176.6 3890	153.1			
			Engine Block				
		420	16.5 420	16.5			
4440 174.8	3875 152.6		Front Bumper Co	mer	4440 174.8	3860	152.0
			Front of Engine	e			
		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	Uppe	er Leading Edge o	of Door	3012 118.6	2988	117.6
2989 117.7	2967 116.8	Lowe	er Leading Edge o	of Door	2984 117.5	2953	116.3
3072 120.9	3045 119.9		Bottom of 'A' Post	t	3065 120.7	3038	119.6
2010 79.1	1995 78.5	Upp	oer Trailing Edge o	of Door	2005 78.9	1992	78.4
2015 79.3	1996 78.6	Lov	ver Trailing Edge o	of Door	2012 79.2	1986	78.2
			Steering Colum	n			
		2595	102.2 2585	101.8			
		Center of See	ring Column to 'A	' Post (Horizo	ntal)		
		420	16.5 395	15.6			
		Center of Stee	ering Column to He	eadliner (Vert	ical)		
		420	16.5 390	15.4			

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	(Dece Side)
(Driver Side)	22.2	23.4	22.8	(Pass. Side)

					-
		<u>A</u>	В	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	

CRASH 3 Stiffness Coefficents SMAC

SMAC Stiffness

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

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

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific 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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

Rated No Damage Speed = Impact speed with a barrier

resulting in no permanant vehicle deformation

vehicles may, however, have a higher rating

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	(Dece Side)
(Driver Side)	22.2	23.4	22.8	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	<u> Kv </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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
		<u> </u>	В	G	<u> Kv </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

A = Maximum force per inch of damage without permanent damage, Ib/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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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	<u> </u>	
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	n Info	Damage	Average	Closing	V	ehicle	Widt	h	
		Speed	Crush	Speed	S t	iffness	Valu	u e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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	n (STDev-sa	ample)		90.9	77.7	25.1	120.9	8.9
	Nur	mber of Te	sts (n)	10					

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Numbe	n Info	Damage	Max	Closing	V (ehicle	Widtl	n	
		Speed	Crush	Speed	S t	iffness	Valı	ı e s	Crush
		(mph)	(inch)	(mph)	A	В	G	Kv	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 Deviati	on (STDev-sa	mple)		41.4	17.8	25.1	24.1	4.9
	Ν	lumber of Tes	sts (n)	10					

Expert VIN DeCoder®

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Version Number 3.2.0.1



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.

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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	
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 Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 53 38 42	Feet 4.42 3.17 3.50	Meters 1.35 0.97 1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	51 37 36	4.25 3.08 3.00	1.30 0.94 0.91
Seatbelts: <u>3pt - front and rear</u> Airbags: <u>FRONT SEAT AIRBAGS</u>			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): P215/60R15	<u>456</u> 12	38.00 1.00	<u>11.58</u> 0.30
Acceleration & Braking InformationBrake Type:FRONT DISC - REAR DRUMABS System:ALL WHEEL ABSBraking, 60 mph to 0 (Hard pedal, no skid, d = 140.0 ft t = 3.2 sec	dry pavement): a = -27.6 ft/s	sec² G-fo	rce = <u>-0.86</u>
Acceleration:0 to 30mph $t = 3.6$ sec0 to 60mph $t = 7.7$ sec45 to 65mph $t = 6.2$ secTransmission Type: 4spd AUTOMATIC	a = 12.2 ft/s a = 11.4 ft/s a = 4.7 ft/s	ec ² G-for sec ² G-for sec ² G-for	rce = 0.38 rce = 0.35 rce = 0.15
Notes: Federal Bumper Standard Requirements:	2.5 mp	h	

This vehicles Rated Bumper Strength:

2.5	mph
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 around	=	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*sec ²
Pitch Moment of Inertia	=	1935.84 lb*ft*sec ²
Roll Moment of Inertia	=	410.88 lb*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation		
based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

NHTSA Crash Test #3617

2001 PONTIAC GRAND AM

Provided By

4N6XPRT StifCalcs®

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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 Remarks:	OLDSMOBILE	ALERO	2D, 4D	107
1999 - 2005 Remarks:	PONTIAC	GRANDAM	2D, 4D	107, 116

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Tost # 2617	7		oforonco Guido Vor	ion #	1/5							
1est # 3017		NITSATEST	INFITSA Test Reference Guide Version #				V 3					
Test Date 2001-01-1	1		Cont	ract #	DTNH22-97-	D-02007						
Contract/Study Title	35 MPH NC	AP FRONTAL - 20	01 PONTIAC GRA	ND AN	12 DOOR COL	JPE - M10	115					
Test Objective(s)	OBTAIN AT	D AND VEHICLE D	ATA									
Test Type	NEW CAR A	SSESSMENT TEST	I		Configuration	VEHICLE	INTO BARRIE	R				
Impact Angle	0		Side Impac	t Point	0	mm	0.0	inches				
			Offset D	istance	0	mm	0.0	inches				
			Closing	Speed	55.9	Km/Hr	34.73	MPH				
Test Performer	KARCO ENG	INEERING										
Test Reference #	M10115											
Test Track Surface	CONCRETE		Con	dition	DRY							
Ambient Temperature	8 C	46.4 F	Total Number of (Curves	133							
Data Recorder Type	DIGITAL DA	TA ACQUISITION			Data Link	OTHER						
Test Commentary	NO DATA L	INK, ON-BOARD F	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 A	1,B1,C1,D1,D2,D3,D4,D5,D6,D7,D8,D9			

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617		
Vehicle #	1	Sex MA	LE
Location	LEFT FRONT SE	AT Age 0	
Position	CENTER POSITI	ON Height 0	mm 0.0 inches
Туре	HYBRID III DUM	MY Weight 0.0	kg 0 pounds
Size	50 PERCENTILE		
Cali	ibration Method	HYBRID III	
Occupa	nt Manufacturer	VECTOR, S/N:035	
Occupa	ant Modification	UNMODIFIED	
Occu	pant Description	N0 COMMENTS	
Occupa	ant Commentary	NO COMMENTS	
Head to -		Head	
Windshie	elder Header 274	mm 10.8 inches Head Injury Criter	ria (HIC) 575
	WindShield 530	mm 20.9 inches HIC Lower 1	ime Interval (ms) 52.7
	Seatback 0	mm 0.0 inches HIC Upper 1	ime Interval (ms) 88.6
	Side Header 202	2 mm8.0 inches	
S	Side Window 314	mm <u>12.4</u> inches	
Neck to Se	atback 0 r	mm [0.0] inches	
	First Contact Re	egion (Head)	
S	Second Contact Re	egion (Head)	
		<u>Chest</u>	
Chest to -	[]		
•	Dash 515 n	nm [20.3] inches Arm to Door [121	mm inches
Steering \	Wheel 320 n	nm [12.6] inches Hip to Door [132	mm 5.2 inches
Sea	tback [0] n	nm [0.0] inches	
	severity index 0	Pelvic Peak Lateral Accel	eration (g's) U
Inoracic Ir	rauma Index [0		leration (g's) [42.4
	Lap E	Belt Peak Load 5378 Newtons 1209.0 pou	
Eirot C	Shoulder E	set Peak Load [5087] Newtons [1143.6] pou	
	ontact Region (Che	est/Abdomen)	
Second Co	Sinaci Region (Chi		
		Legs	
Knees to	Dash 149 n	nm [5.9] inches Knees to Seatback	mm _ 0.0 inches
Left Fem	ur Peak Load	644 Newtons [-1044.0 pounds Fo	rce
Right Femu	ur Peak Load	873 Newtons -645.9 pounds Fo	rce
	First Contact R	Region (Legs)	
	Second Contact R	Region (Legs)	

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617						
Vehicle #	1		Sex	MALE]	
Location	LEFT FRONT SE	AT	Age	0			
Position	CENTER POSITI	ON	Height	0 mm	0.0 inches		
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0 pounds	3	
Size	50 PERCENTILE						
Cal	ibration Method	HYBRID III					
Occupa	nt Manufacturer	VECTOR, S/N:035					
Occup	ant Modification	UNMODIFIED					
Occu	pant Description	N0 COMMENTS					
Occupa	ant Commentary	NO COMMENTS					
		Restraints	<u>5</u>				
Restrai	nt # 1 3 POINT	BELT					
Mounte	ed BELT - C	ONVENTIONAL MOUNT					
Deploy	yment NOT APPLICABLE						
Restrai	nt Commentary	NO COMMENTS					
Restrai	nt # 2 FRONTAL	L AIRBAG					
Mounte	ed STEERIN	G WHEEL					

Deployment **DEPLOYED PROPERLY**

NO COMMENTS

Restraint Commentary

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617		
Vehicle #	1	Sex MALE	
Location	RIGHT FRONT S	SEAT Age 0	
Position	CENTER POSITI	ION Height 0 mm 0.0 inches	
Туре	HYBRID III DUM	MY Weight 0.0 kg 0 pounds	
Size	50 PERCENTILE		
Cal	ibration Method	HYBRID III	
Occupa	nt Manufacturer	VECTOR, S/N:034	
Occup	ant Modification	UNMODIFIED	
Occu	pant Description	NO COMMENTS	
Occupa	ant Commentary	NO COMMENTS	
Head to -	oldor Hoodor 275	Head	
vvirusine	WindShield 522	2 mm 20.6 inches HIC Lower Time Interval (ms) 56.2	=
	Seatback 0	2 mm 20.0 inches HIC Lower Time Interval (ms) 30.2	늭
	Side Header 205	5 mm 81 inches	
c	Side Window 309	9 mm 12.2 inches	
Neck to Se	athack 0 r	$mm \begin{bmatrix} 12.2 \end{bmatrix}$ inches	
NECK ID DE	First Contact R		
c	Plist Contact Re		
,			
		Chest	
Chest to -		<u>Chest</u>	
Onest to	Dash 470 n	mm 185 inches Arm to Door 38 mm 15 inches	
Steering	Wheel 0 n	mm 0.0 inches Hip to Door 130 mm 5.1 inches	
Sea	tback 0 n	mm 0.0 inches	
Chest S	Severity Index 0	Pelvic Peak Lateral Acceleration (g's)	
Thoracic Ti	rauma Index 0	Thorax Peak Acceleration (g's) 42	
	Lap E	Belt Peak Load 5469 Newtons 1229.5 pound Force	
	Shoulder E	Belt Peak Load 5362 Newtons 1205.4 pound Force	
First Co	ontact Region (Che	nest/Abdomen) AIR BAG	
Second Co	ontact Region (Che	nest/Abdomen) NONE	
	U		
Knees to	Dash 122 n	<u>reyo</u> mm 50 inches Knees to Seathack0 mm 00 inches	
L oft For			
Right Fam		220 Newtons -499.1 pounds Force	
Nynt i eini	First Contact F	Region (Leas) DASHPANEL	
	Second Contact R		
	contact the		

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617				
Vehicle #	1		Sex	MALE	
Location	RIGHT FRONT S	EAT	Age	0	
Position	CENTER POSITI	ON	Height	0 mm 0.0	inches
Туре	HYBRID III DUMI	MY	Weight	0.0 kg 0	pounds
Size	50 PERCENTILE				
Cali	bration Method	HYBRID III			
Occupar	nt Manufacturer	VECTOR, S/N:034			
Occupa	ant Modification	UNMODIFIED			
Occuj	pant Description	N0 COMMENTS			
Occupa	ant Commentary	NO COMMENTS			
		Restraints	<u>5</u>		
Restrai	nt # 1 3 POINT	BELT			
Mounte	ed BELT - CO	ONVENTIONAL MOUNT			
Deploy	ment NOT APP	LICABLE			
Restrai	nt Commentary	NO COMMENTS			

Restraint #	2	FRONTAL AIRBAG					
Mounted		DASH PANEL - TOP					
Deployment		DEPLOYED PROPERLY					
Restraint Co	mr	nentary NO COMMENTS					

Vehicle 1 2001 PONTIAC GRAND AM

Test #	3617										
VIN	1G2NE12T1	1M5237	11		NHTSA T	est Vehicl	e Numbe	r 1			
Year	2001				Vehicle Mo	dification	Indicator	PROD	UCTION	VEHICI	E
Make	PONTIAC		Post-test	t Steering C	olumn Shear	Capsule	Seperatic	n UNKN	OWN		
Model	GRAND AM			Steer	ing Column C	ollapse M	echanism	UNKN	OWN		
Body	TWO DOOR	COUPE									
Engine	4 CYLINDER		VERSE F	RONT							
Displacement	2.4 Lite	er Tr	ansmissio	on AUTO	ATIC - FROM	NT WHEE	L DRIVE				
Vehicle Modific	cation(s) Desc	ription	UNMOD	FIED							
Vehicle Comm	entary NO C	OMMEN	ITS								
Vehicle Ler	ngth 4723	mm	185.9	inches	CO	6 behind F	Front Axle	1068	mm	42.0	inches
Vehicle \	Width 1793	mm	70.6	inches	Center of I	Damage t	o CG Axis	s 0	mm	0.0	inches
Vehicle Whee	elbase 2718	mm	107.0	inches	Total Len	gth of Ind	entation	1576	mm	62.0	inches
Vehicle Test W	/eight 1582	KG	3487	pounds	Maximum	Static Cru	sh Depth	463	mm	18.2	inches
						Pre-Impa	ict Speed	56	kph	34.7	mph
Ve	hicle Damage	Index 1	2FDEW6	;	Princ	ipal Direct	tion of Fo	rce 0			
	ofile Distant			- 4							1 -
Damage Pr	ofile Distance	ce Meas	suremei	<u>nts</u>	Crush from	n Pre &	Post les	st Dama	age ivie	asurem	ients
(Measu	ured Left-to-R	ight, Rea	r-to-Fron	t)		Pre-Tes	<u>t</u>	Post-Te	<u>est</u>	<u>Crush I</u>	<u>Depth</u>
DPD 1 -	260 mm	-10.2	_ inches	Left B	umper Cornei	172.1	inches	161.8	inches	10.3	linches
DPD 2 -	<u>383</u> mm	-15.1	inches	i		4371	mm	4109] mm	262] mm
DPD 3	460 mm	-18.1	inches		Centerline	185.9	inches	168.2	inches	17.8	inches
DPD 4	463 mm	-18.2	inches			4723	mm	4272	mm	451	mm
DPD 5	461 mm	-18.1	inches	Diaht Di		472.4	inchoo	450.4	Linahaa	12.0	- Tinahaa
DPD 6	335 mm	-13.2	inches	кіўпі ы	imper Comer	4274	mm	139.1		13.0	
						4371	mm	4041	Luuu	330	Tuuu
Bumper F	ngagement			Sill F	naaaement			۵	A-nillar F	ngagem	ent
(Inline Im	ngagement			(Side	Impact Only			,	(Side In	ngagoin nnact On	lv)
			Г			, 					קי. ר
			L					1		0.0	_
Moving	g Test Cart			Moving	Test Cart/Veh	icle		Veh	nicle Orie	entation of	on Cart
Α	ngle			Cra	bbed Angle				Moving	Test Ca	rt
DIRECT	ENGAGEMEN	T			0.0			Ν	IOT API	PLICABL	.E
Magnitude	of the Tilt Angle			Magniture	of the Crabbed Ang	le			Magnitude	of the Angle	Э
Measured be	etween surface of a	a		Measu	re Clockwise from			Measured	between th	ne Vehicle C)rientation
Rollover Test	Cart and the Grou	nd	Lor	ngitudinal Vecto	r to Velocity Vector	of Vehicle		and l	Direction of	f Test Cart N	Notion

Vehicle 1 2001 PONTIAC GRAND AM

Test #	3617]									
VIN	1G2NE12T11M523711 NHTSA Test Vehicle Number										
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 DOOF	R COUPE									
Engine	4 CYLINDE	R TRANS	VERSE F	RONT							
Displacement	2.4 Li	iter Tr	ansmissio	n AU	FOMATIC ·	FRONT	WHEEL DR	IVE		j	
Vehicle Modifie	cation(s) Des	cription	UNMODI	FIED							
Vehicle Comm	entary NO	COMMEN	ITS								
Vehicle Ler	ngth 472	<u>3</u> mm	185.9	inches		CG b	ehind Front	Axle 1068	s mm	42.0	inches
Vehicle \	Nidth 179	<u>3</u> mm	70.6	inches	Cen	ter of Dar	mage to CG	i Axis <mark>0</mark>	mm	0.0	inches
Vehicle Whee	elbase 271	<u>8</u> mm	107.0	inches	Tot	al Length	n of Indenta	tion 1576	s mm	62.0	inches
Vehicle Test W	/eight 158	2 KG	3487	pounds	s Max	imum Sta	atic Crush D	epth 463	mm	18.2	inches
		_				Pr	e-Impact Sp	beed 56	kph	34.7	mph
Ve	hicle Damag	e Index 🖌	12FDEW6			Principa	al Direction of	of Force			
		<u>P</u>	<u>re & Po</u>	st Te	st Dama	<u>age Me</u>	easureme	<u>ents</u>			
(Measureme	ents are taken in a	a longitudinal	direction. Exce	ept for Eng	ine Block, all r	neasuremer	nts are take from	the Rear Veh	cle Surface f	orward.)	
L	eft Side				Cente	rline			Righ	t Side	
Pre-Test	Pos	st-Test		Pre-Test Post-Test			Pre-	Test	Pos	t-Test	
mm inche	s mm	inches		mm	inches	mm	inches	mm	inches	mm	inches
				Len	gth of Veh	icle at Ce	enterline				
				4723	185.9	4272	168.2				
					Engin	e Block					
				230	9.1	230	9.1				
4371 172.1	4109	161.8			Front Bur	nper Cor	ner	4371	172.1	4041	159.1
					Front c	of Engine					
				3873	152.5	3832	150.9				
3624 142.7	3569	140.5			Fire	wall		3593	141.5	3531	139.0
				3543	139.5	3480	137.0				
3205 126.2	3197	125.9		Upp	per Leadin	g Edge o	of Door	3196	125.8	3192	125.7
3177 125.1	3171	124.8		Low	ver Leading	g Edge o	f Door	3174	125.0	3177	125.1
3170 124.8	3162	124.5			Bottom o	f 'A' Post		3166	124.6	3181	125.2
1880 74.0	1876	73.9		Up	per Trailing	g Edge o	f Door	1875	73.8	1876	73.9
1849 72.8	1845	72.6		Lo	wer Trailing	g Edge o	f Door	1842	72.5	1855	73.0
					Steerin	g Columr	<u>ו</u>				
				2883	113.5	2815	110.8				
			Cente	er of Se	ering Colu	mn to 'A'	Post (Horiz	ontal)			
				400	15.7	386	15.2				
			Cente	er of Ste	ering Colu	mn to He	adliner (Ve	rtical)			
				418	16.5	395	15.6				

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Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 12R-030201SC02301

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	sh (Dees Side)
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u>A</u>	<u> </u>	G	<u> </u>
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

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

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

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	(Deee Side)
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		<u>A</u>	B	G	<u> Kv </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

CDASH 2 Stiffnass Coofficants

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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SMAC Stiffness

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	(Dece Cide)
(Driver Side)	-10.2	-15.1	-18.1	-18.2	-18.1	-13.2	(Pass Side)

		CIAON 5 Stimess Coencents C			
		<u> </u>	B	G	<u> </u>
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

vehicles may, however, have a higher rating

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

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

CDASH 2 Stiffnass Coofficants

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

SMAC Stiffness

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	
		<u> </u>	B	G	<u> Kv </u>	
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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
<u>4N6XPRT Systems</u>

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	Average	Closing	V e	hicle	Widt	n	
		Speed (mph)	Crush (inch)	Speed (mph)	S t i A	ffness B	Valu G	u e s 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

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4N6XPRT StifCalcs® Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

Tes Numbe	t Vehicle r Info	No Damage A Speed (mph)	verage Crush (inch)	Closing Speed (mph)	V S t A	e h i c l e i f f n e s	e Widt ss Val B	h ues G 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
	Standard Deviation	Average (/ Minimum Maximum (n (STDev-sa	AVG) (MIN) MAX) mple)		322.1 149.8 475.4 71.4	107.2 22.2 220.4 45.6	508.8 479.4 602.9 22.5	163.0 41.4 614.8 97.0	23.8 7.5 42.0 6.9
	Nu	mber of Tes	ts (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	Max	Closing	Ve	hicle	Widtl	ז ס ס	Cruch
		Speed (mph)	(inch)	Speed (mph)	A	B	G	Kv	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

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Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

36.2

5.8

Tes Numbe	t Vehicle r Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	V S t A	ehicle iffnes B	Width s Valu	n i e s 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 (A	AVG)		277.5	79.7	508.9	118.7	20.4
		Minimum	(MIN)		121.6	14.3	479.4	25.5	6.3

Average (AVG)	277.5	79.7	508.9	118.7
Minimum (MIN)	121.6	14.3	479.4	25.5
Maximum (MAX)	468.5	208.6	602.9	387.3
Standard Deviation (STDev-sample)	63.9	35.6	20.8	63.9
Number of Tests (n)	54			

Expert VIN DeCoder®

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Version Number 3.2.0.1



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.

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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 1bs.		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	
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 Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max) Rear Seat Shoulder Width	Inches 53 38 42 51	Feet 4.42 3.17 3.50	Meters 1.35 0.97 1.07
Rear Seat to Headliner Front Leg Room - seatback to floor (min)	<u> </u>	3.08 3.00	0.94
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): P215/60R15	456 12	38.00	11.58 0.30
Acceleration & Braking InformationBrake Type:FRONT DISC - REAR DRUMABS System:ALL WHEEL ABSBraking, 60 mph to 0 (Hard pedal, no skid,d =140.0ftt =3.2sec	dry pavement): a = -27.6 ft/s	sec² G-fo	rce = <u>-0.86</u>
Acceleration:0 to 30mpht = 3.6 sec0 to 60mpht = 7.7 sec45 to 65mpht = 6.2 secTransmission Type: 4spd AUTOMATIC	a = 12.2 ft/s a = 11.4 ft/s a = 4.7 ft/s	sec ² G-fo sec ² G-fo sec ² G-fo	rce = 0.38 rce = 0.35 rce = 0.15
Notes: Federal Bumper Standard Requirements:	2.5 mp	h	

This vehicles Rated Bumper Strength:

2.5	mph
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 around	=	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*sec ²
Pitch Moment of Inertia	=	1935.84 1b*ft*sec ²
Roll Moment of Inertia	=	410.88 lb*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation		
based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

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 Remarks:	OLDSMOBILE	ALERO	2D, 4D	107
1999 - 2005 Remarks:	PONTIAC	GRANDAM	2D, 4D	107, 116

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Tost # 2617	7		oforonco Guido Vor	ion #	1/5			
1est # 3017		NITSATEST	elelence duide veis	π	V J			
Test Date 2001-01-1	1		Cont	ract #	DTNH22-97-	D-02007		
Contract/Study Title	35 MPH NC	AP FRONTAL - 20	01 PONTIAC GRA	ND AN	12 DOOR COL	JPE - M10	115	
Test Objective(s)	OBTAIN AT	D AND VEHICLE D	ATA					
Test Type	NEW CAR A	SSESSMENT TEST	I		Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		Side Impac	t Point	0	mm	0.0	inches
			Offset D	istance	0	mm	0.0	inches
			Closing	Speed	55.9	Km/Hr	34.73	MPH
Test Performer	KARCO ENG	INEERING						
Test Reference #	M10115							
Test Track Surface	CONCRETE		Con	dition	DRY			
Ambient Temperature	8 C	46.4 F	Total Number of (Curves	133			
Data Recorder Type	DIGITAL DA	TA ACQUISITION			Data Link	OTHER		
Test Commentary	NO DATA L	INK, ON-BOARD F	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 A	1,B1,C1,D1,D2,D3,D4,D5,D6,D7,D8,D9			

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617		
Vehicle #	1	Sex MA	LE
Location	LEFT FRONT SE	AT Age 0	
Position	CENTER POSITI	ON Height 0	mm 0.0 inches
Туре	HYBRID III DUM	MY Weight 0.0	kg 0 pounds
Size	50 PERCENTILE		
Cali	ibration Method	HYBRID III	
Occupa	nt Manufacturer	VECTOR, S/N:035	
Occupa	ant Modification	UNMODIFIED	
Occu	pant Description	N0 COMMENTS	
Occupa	ant Commentary	NO COMMENTS	
Head to -		Head	
Windshie	elder Header 274	mm 10.8 inches Head Injury Criter	ria (HIC) 575
	WindShield 530	mm 20.9 inches HIC Lower 1	ime Interval (ms) 52.7
	Seatback 0	mm 0.0 inches HIC Upper 1	ime Interval (ms) 88.6
	Side Header 202	2 mm8.0 inches	
S	Side Window 314	mm <u>12.4</u> inches	
Neck to Se	atback 0 r	mm [0.0] inches	
	First Contact Re	egion (Head)	
S	Second Contact Re	egion (Head)	
		<u>Chest</u>	
Chest to -	[]		
•	Dash 515 n	nm [20.3] inches Arm to Door [121	mm inches
Steering \	Wheel 320 n	nm [12.6] inches Hip to Door [132	mm 5.2 inches
Sea	tback [0] n	nm [0.0] inches	
	severity index 0	Pelvic Peak Lateral Accel	eration (g's) U
Inoracic Ir	rauma Index [0		leration (g's) [42.4
	Lap E	Belt Peak Load 5378 Newtons 1209.0 pou	
Eirot C	Shoulder E	set Peak Load [5087] Newtons [1143.6] pou	
	ontact Region (Che	est/Abdomen)	
Second Co	Sinaci Region (Chi		
		Legs	
Knees to	Dash 149 n	nm [5.9] inches Knees to Seatback	mm _ 0.0 inches
Left Fem	ur Peak Load	644 Newtons [-1044.0 pounds Fo	rce
Right Femu	ur Peak Load	873 Newtons -645.9 pounds Fo	rce
	First Contact R	Region (Legs)	
	Second Contact R	Region (Legs)	

2001 PONTIAC GRAND AM LEFT FRONT SEAT OCCUPANT

Test #	3617					
Vehicle #	1		Sex	MALE]
Location	LEFT FRONT SE	AT	Age	0		
Position	CENTER POSITI	ON	Height	0 mm	0.0 inches	
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0 pounds	3
Size	50 PERCENTILE					
Cal	ibration Method	HYBRID III				
Occupa	nt Manufacturer	VECTOR, S/N:035				
Occup	ant Modification	UNMODIFIED				
Occu	pant Description	N0 COMMENTS				
Occupa	ant Commentary	NO COMMENTS				
		Restraints	<u>5</u>			
Restrai	nt # 1 3 POINT	BELT				
Mounte	ed BELT - C	ONVENTIONAL MOUNT				
Deploy	Deployment NOT APPLICABLE					
Restrai	nt Commentary	NO COMMENTS				
Restrai	nt # 2 FRONTAL	L AIRBAG				
Mounte	ed STEERIN	G WHEEL				

Deployment **DEPLOYED PROPERLY**

NO COMMENTS

Restraint Commentary

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617		
Vehicle #	1	Sex MALE	
Location	RIGHT FRONT S	SEAT Age 0	
Position	CENTER POSITI	ION Height 0 mm 0.0 inches	
Туре	HYBRID III DUM	MY Weight 0.0 kg 0 pounds	
Size	50 PERCENTILE		
Cal	ibration Method	HYBRID III	
Occupa	nt Manufacturer	VECTOR, S/N:034	
Occup	ant Modification	UNMODIFIED	
Occu	pant Description	NO COMMENTS	
Occupa	ant Commentary	NO COMMENTS	
Head to -	oldor Hoodor 275	Head	
vvirusine	WindShield 522	2 mm 20.6 inches HIC Lower Time Interval (ms) 56.2	=
	Seatback 0	2 mm 20.0 inches HIC Lower Time Interval (ms) 30.2	늭
	Side Header 205	5 mm 81 inches	
c	Side Window 309	9 mm 12.2 inches	
Neck to Se	athack 0 r	$mm \begin{bmatrix} 12.2 \end{bmatrix}$ inches	
	First Contact R		
c	Plist Contact Re		
,			
		Chest	
Chest to -		<u>Chest</u>	
Onest to	Dash 470 n	mm 185 inches Arm to Door 38 mm 15 inches	
Steering	Wheel 0 n	mm 0.0 inches Hip to Door 130 mm 5.1 inches	
Sea	tback 0 n	mm 0.0 inches	
Chest S	Severity Index 0	Pelvic Peak Lateral Acceleration (g's)	
Thoracic Ti	rauma Index 0	Thorax Peak Acceleration (g's) 42	
	Lap E	Belt Peak Load 5469 Newtons 1229.5 pound Force	
	Shoulder E	Belt Peak Load 5362 Newtons 1205.4 pound Force	
First Co	ontact Region (Che	nest/Abdomen) AIR BAG	
Second Co	ontact Region (Che	nest/Abdomen) NONE	
	U		
Knees to	Dash 122 n	<u>reyo</u> mm 50 inches Knees to Seathack0 mm 00 inches	
L oft For			
Right Fam		220 Newtons -499.1 pounds Force	
Nynt i eini	First Contact F	Region (Leas) DASHPANEL	
	Second Contact R		
	contact the		

2001 PONTIAC GRAND AM RIGHT FRONT SEAT OCCUPANT

Test #	3617				
Vehicle #	1		Sex	MALE	
Location	RIGHT FRONT S	EAT	Age	0	
Position	CENTER POSITI	ON	Height	0 mm 0.0	inches
Туре	HYBRID III DUMI	MY	Weight	0.0 kg 0	pounds
Size	50 PERCENTILE				
Cali	bration Method	HYBRID III			
Occupar	nt Manufacturer	VECTOR, S/N:034			
Occupa	ant Modification	UNMODIFIED			
Occuj	pant Description	N0 COMMENTS			
Occupa	ant Commentary	NO COMMENTS			
		Restraints	<u>5</u>		
Restrai	nt # 1 3 POINT	BELT			
Mounte	ed BELT - CO	ONVENTIONAL MOUNT			
Deploy	ment NOT APP	LICABLE			
Restrai	nt Commentary	NO COMMENTS			

Restraint #	2	FRONTAL AIRBAG					
Mounted		DASH PANEL - TOP					
Deployment		DEPLOYED PROPERLY					
Restraint Co	mr	nentary NO COMMENTS					

Vehicle 1 2001 PONTIAC GRAND AM

Test #	3617										
VIN	1G2NE12T1	1M5237	11		NHTSA T	est Vehicl	e Numbe	r 1			
Year	2001				Vehicle Mo	dification	Indicator	PROD	UCTION	VEHICI	E
Make	PONTIAC		Post-test	t Steering C	olumn Shear	Capsule	Seperatic	n UNKN	OWN		
Model	GRAND AM			Steer	ing Column C	ollapse M	echanism	UNKN	OWN		
Body	TWO DOOR	COUPE									
Engine	4 CYLINDER		VERSE F	RONT							
Displacement	2.4 Lite	er Tr	ansmissio	on AUTO	ATIC - FROM	NT WHEE	L DRIVE				
Vehicle Modific	cation(s) Desc	ription	UNMOD	FIED							
Vehicle Comm	entary NO C	OMMEN	ITS								
Vehicle Ler	ngth 4723	mm	185.9	inches	CO	6 behind F	Front Axle	1068	mm	42.0	inches
Vehicle \	Width 1793	mm	70.6	inches	Center of I	Damage t	o CG Axis	s 0	mm	0.0	inches
Vehicle Whee	elbase 2718	mm	107.0	inches	Total Len	gth of Ind	entation	1576	mm	62.0	inches
Vehicle Test W	/eight 1582	KG	3487	pounds	Maximum	Static Cru	sh Depth	463	mm	18.2	inches
						Pre-Impa	ict Speed	56	kph	34.7	mph
Ve	hicle Damage	Index 1	2FDEW6	;	Princ	ipal Direct	tion of Fo	rce 0			
	ofile Distant			- 4				- 4 🖸 - 100			1 -
Damage Pr	ofile Distance	ce Meas	suremei	<u>nts</u>	Crush from	n Pre &	Post les	st Dama	age ivie	asurem	ients
(Measu	ured Left-to-R	ight, Rea	r-to-Fron	t)		Pre-Tes	<u>t</u>	Post-Te	<u>est</u>	<u>Crush I</u>	<u>Depth</u>
DPD 1 -	260 mm	-10.2	_ inches	Left B	umper Cornei	172.1	inches	161.8	inches	10.3	linches
DPD 2 -	<u>383</u> mm	-15.1	inches	i		4371	mm	4109] mm	262] mm
DPD 3	460 mm	-18.1	inches		Centerline	185.9	inches	168.2	inches	17.8	inches
DPD 4	463 mm	-18.2	inches			4723	mm	4272	mm	451	mm
DPD 5	461 mm	-18.1	inches	Diaht Di		472.4	inchoo	450.4	Linahaa	12.0	- Tinahaa
DPD 6	335 mm	-13.2	inches	кіўпі ы	imper Comer	4274	mm	139.1		13.0	
						4371	mm	4041	Luuu	330	Tuuu
Bumper F	ngagement			Sill F	naaaement			۵	A-nillar F	ngagem	ent
(Inline Im	ngagoment			(Side	Impact Only			,	(Side In	ngagoin nnact On	lv)
			Г			, 					י <u>י</u> י ר
			L					1		0.0	_
Moving	g Test Cart			Moving	Test Cart/Veh	icle		Veh	nicle Orie	entation of	on Cart
Α	ngle			Cra	bbed Angle				Moving	Test Ca	rt
DIRECT	ENGAGEMEN	T			0.0			Ν	IOT API	PLICABL	.E
Magnitude	of the Tilt Angle			Magniture	of the Crabbed Ang	le			Magnitude	of the Angle	Э
Measured be	etween surface of a	a		Measu	re Clockwise from			Measured	between th	ne Vehicle C)rientation
Rollover Test	Cart and the Grou	nd	Lor	ngitudinal Vecto	r to Velocity Vector	of Vehicle		and l	Direction of	f Test Cart N	Notion

Vehicle 1 2001 PONTIAC GRAND AM

Test #	3617]									
VIN	1G2NE12T	11M5237	11		NH	TSA Test	t Vehicle Nu	mber 1			
Year	2001 Vehicle Modification Indicator PRODUCTION VEHICLE										
Make	PONTIAC		Post-test	Steerin	g Column	Shear Ca	apsule Sepe	eration UN	KNOWN		
Model	GRAND AN	/		St	eering Colu	umn Colla	apse Mecha	inism UN	KNOWN		
Body	TWO DOOF	R COUPE									
Engine	4 CYLINDE	R TRANS	VERSE F	RONT							
Displacement	2.4 Li	iter Tr	ansmissio	n AU	FOMATIC ·	FRONT	WHEEL DR	IVE		j	
Vehicle Modifie	cation(s) Des	cription	UNMODI	FIED							
Vehicle Comm	entary NO	COMMEN	ITS								
Vehicle Ler	ngth 472	<u>3</u> mm	185.9	inches		CG b	ehind Front	Axle 1068	s mm	42.0	inches
Vehicle \	Nidth 179	<u>3</u> mm	70.6	inches	Cen	ter of Dar	mage to CG	i Axis <mark>0</mark>	mm	0.0	inches
Vehicle Whee	elbase 271	<u>8</u> mm	107.0	inches	Tot	al Length	n of Indenta	tion 1576	s mm	62.0	inches
Vehicle Test W	/eight 158	2 KG	3487	pounds	s Max	imum Sta	atic Crush D	epth 463	mm	18.2	inches
		_				Pr	e-Impact Sp	beed 56	kph	34.7	mph
Ve	hicle Damag	e Index 🖌	12FDEW6			Principa	al Direction of	of Force			
		<u>P</u>	<u>re & Po</u>	st Te	st Dama	<u>age Me</u>	easureme	<u>ents</u>			
(Measureme	ents are taken in a	a longitudinal	direction. Exce	ept for Eng	ine Block, all r	neasuremer	nts are take from	the Rear Veh	cle Surface f	orward.)	
L	eft Side				Cente	rline			Righ	t Side	
Pre-Test	Pos	st-Test		Pre	-Test	Post	t-Test	Pre-	Test	Pos	t-Test
mm inche	s mm	inches		mm	inches	mm	inches	mm	inches	mm	inches
				Len	gth of Veh	icle at Ce	enterline				
				4723	185.9	4272	168.2				
					Engin	e Block					
				230	9.1	230	9.1				
4371 172.1	4109	161.8			Front Bur	nper Cor	ner	4371	172.1	4041	159.1
					Front c	of Engine					
				3873	152.5	3832	150.9				
3624 142.7	3569	140.5			Fire	wall		3593	141.5	3531	139.0
				3543	139.5	3480	137.0				
3205 126.2	3197	125.9		Upp	per Leadin	g Edge o	of Door	3196	125.8	3192	125.7
3177 125.1	3171	124.8		Low	ver Leading	g Edge o	f Door	3174	125.0	3177	125.1
3170 124.8	3162	124.5			Bottom o	f 'A' Post		3166	124.6	3181	125.2
1880 74.0	1876	73.9		Up	per Trailing	g Edge o	f Door	1875	73.8	1876	73.9
1849 72.8	1845	72.6		Lo	wer Trailing	g Edge o	f Door	1842	72.5	1855	73.0
					Steerin	g Columr	<u>ו</u>				
				2883	113.5	2815	110.8				
			Cente	er of Se	ering Colu	mn to 'A'	Post (Horiz	ontal)			
				400	15.7	386	15.2				
			Cente	er of Ste	ering Colu	mn to He	adliner (Ve	rtical)			
				418	16.5	395	15.6				

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Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 12R-030201SC02301

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	(Dece Side)
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		CRASH	3 Stiffness Coe	efficents	SMAC Stiffness
		<u>A</u>	<u> </u>	G	<u> </u>
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

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

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

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	(Deee Side)
(Driver Side)	10.3	17.8	13.0	(Pass. Side)

		UNAUI	ONAON 9 Ounness Obenicents		
		<u>A</u>	B	G	<u> Kv </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

CDASH 2 Stiffnass Coofficants

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

SMAC Stiffness

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	(Dece Cide)
(Driver Side)	-10.2	-15.1	-18.1	-18.2	-18.1	-13.2	(Pass Side)

			CRASH 5 Stilless Obericents		
		<u> </u>	B	G	<u> </u>
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

vehicles may, however, have a higher rating

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

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

CDASH 2 Stiffnass Coofficants

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

SMAC Stiffness

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	<u> Kv </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

<u>4N6XPRT Systems</u>

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	Average	Closing	V e	hicle	Widtl	n	
		Speed (mph)	Crush (inch)	Speed (mph)	S t i A	ffness B	Valu G	u e s 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

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4N6XPRT StifCalcs® Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

Tes Numbe	t Vehicle r Info	No Damage A Speed (mph)	verage Crush (inch)	Closing Speed (mph)	V S t A	e h i c l e i f f n e s	e Widt ss Val B	h ues G 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
	Standard Deviation	Average (/ Minimum Maximum (n (STDev-sa	AVG) (MIN) MAX) mple)		322.1 149.8 475.4 71.4	107.2 22.2 220.4 45.6	508.8 479.4 602.9 22.5	163.0 41.4 614.8 97.0	23.8 7.5 42.0 6.9
	Nu	mber of Tes	ts (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	Max	Closing	Ve	hicle	Widtl	ז ס ס	Cruch
		Speed (mph)	(inch)	Speed (mph)	A	B	G	Kv	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

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4N6XPRT StifCalcs® Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2013

Vehicle Weight Range: 3486-3528

36.2

5.8

Tes Numbe	t Vehicle r Info	No Damage Speed (mph)	Max Crush (inch)	Closing Speed (mph)	V S t A	ehicle iffnes B	Width s Valu	n i e s 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 (A	AVG)		277.5	79.7	508.9	118.7	20.4
		Minimum	(MIN)		121.6	14.3	479.4	25.5	6.3

Average (AVG)	277.5	79.7	508.9	118.7
Minimum (MIN)	121.6	14.3	479.4	25.5
Maximum (MAX)	468.5	208.6	602.9	387.3
Standard Deviation (STDev-sample)	63.9	35.6	20.8	63.9
Number of Tests (n)	54			

Expert VIN DeCoder®

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Version Number 3.2.0.1



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.

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

5/15/2013

1997 CHEVROLET CAVALIER Z24 4 DOOR SEDAN

Curb Weight:	2809 1bs.		1274 kg.
Curb Weight Distribution - Front:	64 %	Rear:	36 %
Gross Vehicle Weight Rating:	3619 1bs.		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	
Rear Track:	58	4.83	<u> </u>
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 Front Seat Shoulder Width Front Seat to Headliner	Inches 55 39	Feet 4.58 3.25	Meters 1.40 0.99
Front Leg Room - seatback to floor (max)	42	3.50	1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	54 37 35	4.50 3.08 2.92	1.37 0.94 0.89
Seatbelts: 3pt - front and rear			
ATTDAGS: [FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: 15.22:1 Wheel Radius: Tire Size (OEM): 195-70R14	432 12	36.00	0.30
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ABS			
Braking, 60 mph to 0 (Hard pedal, no skid, d d = 158.0 ft t = 3.6 sec a	ry pavement): L = -24.5 ft/s	ec² G-for	rce = -0.76
Acceleration:0 to 30mph $t = 2.6$ sec0 to 60mph $t = 7.7$ sec45 to 65mph $t = 7.1$ sec	a = 16.9 ft/s a = 11.4 ft/s a = 4.1 ft/s	ec ² G-for ec ² G-for ec ² G-for	rce = 0.53 rce = 0.35 rce = 0.13
Transmission Type: 5spd MANUAL			
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mp 5 mp	h h	

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):		
Trobas habing front avia		27.44
Inches bening front axie	=	57.44
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*sec ²
Pitch Moment of Inertia	=	1631.91 lb*ft*sec ²
Roll Moment of Inertia	=	355.62 1b*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

NHTSA Crash Test #2528

1997 CHEVROLET CAVALIER

Provided By

4N6XPRT StifCalcs®

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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 Remarks: Mild rest	CHEVROLET tyle in 2003.	CAVALIER	2D, 4D, CONV, SW	104.1
1995 - 2005 Remarks:	PONTIAC	SUNFIRE	2D, 4D, SW	104.1
2003 - 2005 Remarks: Mild rest	CHEVROLET tyle in 2003.	CAVALIER	2D, 4D, CONV, SW	104.1

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Test # 2528		NHTSA Test	Reference	Guide Version #	V4					
Test Date 1997-02-0	5			Contract #	DTNH22-90-	D-12121				
Contract/Study Title	NCAP TEST	- 1997 CHEVRO	LET CAVA	LIER (NHTSA N	IO.: MV0111)					
Test Objective(s)	VEHICLE CR	EHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE DATA								
Test Type	NEW CAR A	SSESSMENT TES	т] Configuration	VEHICLE	E INTO BARRIE	R		
Impact Angle	0		S	ide Impact Poir	nt 0	mm	0.0	inches		
				Offset Distand	ce 0	mm	0.0	inches		
				Closing Spee	d 56.3	Km/Hr	34.98	MPH		
Test Performer	MGA RESEA	RCH								
Test Reference #	BT9702050	1								
Test Track Surface	CONCRETE			Conditior	DRY					
Ambient Temperature	22 C	71.6 F	Total N	umber of Curve	s 111					
Data Recorder Type	OTHER				Data Link	UMBILI	CAL CABLE			
Test Commentary	HIGH SPEED	O ANALOG TO D	IGITAL RE	CORDER						

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 SE	Age 0
Position CENTER POSIT	ION Height 0 mm 0.0 inches
Type HYBRID III DUM	MY 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 to - Windshielder Header 319	Head 9 mm 12.6 inches Head Iniury Criteria (HIC) 646
WindShield 56	3 mm 22.2 inches HIC Lower Time Interval (ms) 57.6
Seatback 99	99 mm 0.0 inches HIC Upper Time Interval (ms) 93.6
Side Header 20	9 mm 8.2 inches
Side Window 31	2 mm 12.3 inches
Neck to Seatback 9999	mm 0.0 inches
First Contact R	Region (Head) AIR BAG
Second Contact R	egion (Head)
Chest to -	<u>Chest</u>
Dash 512 I	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 47	78 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 (Ch	est/Abdomen) AIR BAG
Second Contact Region (Ch	est/Abdomen) NONE
	Leas
Knees to Dash 151	mm 5.9 inches Knees to Seatback 9999 mm 0.0 inches
Left Femur Peak Load - 3	225 Newtons -725.0 pounds Force
Left Femur Peak Load -3 Right Femur Peak Load -4	225 Newtons -725.0 pounds Force 267 Newtons -959.3 pounds Force
Left Femur Peak Load 3 Right Femur Peak Load 4 First Contact 1	225 Newtons -725.0 pounds Force 267 Newtons -959.3 pounds Force Region (Legs) KNEE RESTRAINT

1997 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	2528					
Vehicle #	1		Sex	MALE]
Location	LEFT FRONT SE	AT	Age	0		
Position	CENTER POSITION		Height	0 mm	0.0 inches	
Туре	HYBRID III DUMMY		Weight	0.0 kg	0 pounds	6
Size	50 PERCENTILE					
Cal	ibration Method	HYBRID III				
Occupa	nt Manufacturer	FIRST TECHNOLOGY: S	/N 036			
Occup	ant Modification	NO COMMENTS				
Occu	pant Description	NO COMMENTS				
Occupant Commentary		NO COMMENTS				
<u>Restraints</u>						
Restrai	int # 1 3 POINT	BELT				
Mounte	ed					
Deploy	Deployment NOT APPLICABLE					
Restrai	int Commentary	NO COMMENTS				

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 S	SEAT Age 0	
Position	CENTER POSITI	TON Height 0 mm 0.0 inches	
Туре	HYBRID III DUMI	IMY Weight 0.0 kg 0 pounds	
Size	50 PERCENTILE	E	
Cal	ibration Method		
Occupa	nt Manufacturer	FIRST TECHNOLOGY: S/N 037	
Occup	ant Modification	NO COMMENTS	
Occu	pant Description		
Occupa	ant Commentary	NO COMMENTS	
Head to -		Head	
Windshie	elder Header 322	2 mm 12.7 inches Head Injury Criteria (HIC) 885	
	WindShield 593	mm 23.3 inches HIC Lower Time Interval (ms) 64	
	Seatback 999	99 mm 0.0 inches HIC Upper Time Interval (ms) 95.7	
	Side Header 207	7 mm 8.1 inches	
	Side Window 317	7 mm <u>12.5</u> inches	
Neck to Se	eatback 9999 r	mm 0.0 inches	
	First Contact Re	Region (Head)	
ç	Second Contact Re	Region (Head)	
		<u>Chest</u>	
Chest to -			
	Dasn <u>493</u> n	mm <u>19.4</u> inches Arm to Door <u>111</u> mm <u>4.4</u> inches	
Steering	wneel 9999 n	mm 0.0 inches Hip to Door 109 mm 4.3 inches	
Choot C		The second secon	
Thoracia T	rauma Index	There y Reak Acceleration (g s)	
		Belt Beak Load 4692 Newtons 1052 8 pound Force	
	Shoulder F	Belt Peak Load 4830 Newtons 1085 9 pound Force	
Firet C	ontact Region (Ch	Der l'eak Load 4050 Newtons (1005.0) pound roice	
Second C	ontact Region (Ch	nest/Abdomen)	
	ontact region (on		
Knees to	Dash [<u>116</u>] n	mm [4.6] inches Knees to Seatback[9999] mm [0.0] inches	
Left Fem	ur Peak Load	3944 Newtons -886.7 pounds Force	
Right Fem	ur Peak Load	1207 Newtons -945.8 pounds Force	
	First Contact F	Region (Legs) [DASHPANEL	
	Second Contact R	Region (Legs)	

1997 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	2528							
Vehicle #	1		Sex	MALE				
Location	RIGHT FRONT S	EAT	Age	0				
Position	CENTER POSIT	ON	Height	0 mm	0.0 inc	hes		
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0 po	unds		
Size	50 PERCENTILE							
Cal	ibration Method	HYBRID III						
Occupa	nt Manufacturer	FIRST TECHNOLOGY: S	/N 037					
Occup	ant Modification	NO COMMENTS						
Occu	pant Description	NO COMMENTS						
Occupa	ant Commentary	NO COMMENTS						
	<u>Restraints</u>							
Restrai	int # 1 3 POINT	BELT						
Mounte	ed							
Deploy	ment NOT APF	LICABLE						
– , ,								

Restraint Comm	entary NO COMMENTS			
Restraint # 2	RONTAL AIRBAG			
Mounted				
Deployment DEPLOYED PROPERLY				
Restraint Comm	entary NO COMMENTS			

Vehicle 1 1997 CHEVROLET CAVALIER

Test #	2528										
VIN	1G1JC1244	V720552	24		NHTSA Te	est Vehic	le Numbe	r 1			
Year	1997				Vehicle Mo	dification	Indicator	PROD	UCTION	I VEHICI	LE
Make	CHEVROLE	Г	Post-test S	Steering Co	lumn Shear	Capsule	Seperatio	n UNKN	OWN		
Model	CAVALIER			Steerin	g Column Co	ollapse M	lechanism	UNKN	OWN		
Body	TWO DOOR	COUPE									
Engine	4 CYLINDER		VERSE FR	ONT							
Displacement	2.2 Lite	er Tr	ansmissior	MANUA	L - FRONT W	HEEL D	RIVE				
Vehicle Modifie	cation(s) Desc	ription	NO COMM	IENTS							
Vehicle Comm	entary NO C	OMMEN	ITS								
Vehicle Ler	ngth 4302	mm	169.4 i	nches	CG	behind	Front Axle	1024	mm [40.3	inches
Vehicle \	Width 1726	mm	68.0 i	nches	Center of D	amage t	o CG Axis	0	mm [0.0	inches
Vehicle Whee	elbase 2646	mm	104.2 i	nches	Total Leng	gth of Inc	entation	1396	mm [55.0	inches
Vehicle Test W	/eight 1414	KG	3117	ounds	Maximum S	Static Cru	ish Depth	519	mm [20.4	inches
						Pre-Impa	act Speed	56	kph [35.0	mph
Ve	hicle Damage	Index 1	2FDEW5		Princi	pal Direc	tion of Fo	rce 0			
Dama a Da				_	Omerale from						
Damage Pr	ofile Distan	ce Meas	surement	<u>S</u>	Crush fron	n Pre &	Post les	st Dama	ige ivie	asuren	<u>ients</u>
(Measu	ured Left-to-R	ight, Rea	r-to-Front)		_	Pre-Tes	<u>t</u>	Post-Te	<u>:st</u>	Crush	Depth
DPD 1	393 mm	15.5	_ inches	Left Bu	mper Corner	158.5	inches	145.0	inches	13.5	linches
DPD 2	466 mm	18.3	_ inches			4026	mm	3683	mm	343] mm
DPD 3	519 mm	20.4	inches		Centerline	169.4	inches	148.1	inches	21.2	inches
DPD 4	504 mm	19.8	inches			4302	mm	3763	mm	539]mm
DPD 5	376 mm	14.8	inches	Pight Bur	nner Corner	159 5	inches	150.0	inches	9.5	_] inches
DPD 6	215 mm	8.5	inches	Night Dui		1026	mm	2911		215	
						4020		3011		215	7
Bumper F	ngagement			Sill En	gagement			А	-pillar E	ngagem	ent
(Inline Im	npact Only)			(Side I	mpact Only)				(Side Im	npact Or	ulv)
								L			
Moving	g Test Cart			Moving T	est Cart/Vehi	icle		Veh	icle Orie	entation	on Cart
Angle				Crab	bed Angle				Moving	Test Ca	rt
NOT APPLICABLE					0.0			NOT APPLICABLE			.E
Magnitude	of the Tilt Angle			Magniture of	the Crabbed Angl	e			Magnitude	of the Angle	е
Measured b	etween surface of a	a		Measure	Clockwise from			Measured	between th	ie Vehicle C)rientation
Rollover Test	Cart and the Grou	nd	Longi	itudinal Vector t	o Velocity Vector	of Vehicle		and E	Direction of	[:] Test Cart I	Notion

Vehicle 1 1997 CHEVROLET CAVALIER

Test #	2528								
VIN	1G1JC1244V720552	24	NHTSA Tes	st Vehicle Nu	mber 1				
Year	1997 Vehicle Modification Indicator PRODUCTION VEHICLE								
Make	CHEVROLET	Post-test Steering	g Column Shear C	Capsule Sepe	eration UNKNOWN				
Model	CAVALIER	Ste	eering Column Col	llapse Mecha	nism UNKNOWN				
Body	TWO DOOR COUPE								
Engine	4 CYLINDER TRANS	VERSE FRONT				_			
Displacement	2.2 Liter Tr	ansmission MAI	NUAL - FRONT WH	HEEL DRIVE					
Vehicle Modific	cation(s) Description	NO COMMENTS							
Vehicle Comm	entary NO COMMEN								
Vehicle Len	ngth 4302 mm	169.4 inches	CG	behind Front	Axle 1024 mm	40.3	inches		
Vehicle V	Width 1726 mm	68.0 inches	Center of Da	amage to CG	Axis 0 mm	0.0	inches		
Vehicle Whee	elbase 2646 mm	104.2 inches	Total Lengt	th of Indenta	tion 1396 mm	55.0	inches		
Vehicle Test W	/eight 1414 KG	3117 pounds	Maximum St	tatic Crush D	epth 519 mm	20.4	inches		
	-		F	Pre-Impact Sp	peed 56 kph	35.0	mph		
Vel	hicle Damage Index 1	2FDEW5	Princip	al Direction o	of Force 0				
	_								
	<u>P</u>	re & Post Tes	st Damage M	easureme	<u>ents</u>				
(Measureme	ents are taken in a longitudinal	direction. Except for Engi	ne Block, all measureme	ents are take from	the Rear Vehicle Surface	forward.)			
L	eft Side		Centerline		Righ	nt Side			
Pre-Test	Post-Test	Pre-	Test Pos	Pre-Test	Pos	t-Test			
mm inche	s mm inches	mm	inches mm	inches	mm inches	mm	inches		
		Leng	gth of Vehicle at C	enterline					
		4302	169.4 3763	148.1					
			Engine Block						
		450	17.7 450	17.7					
4026 158.5	3683 145.0		Front Bumper Co	orner	4026 158.5	3811	150.0		
			Front of Engine	е					
		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	Upp	er Leading Edge	of Door	2754 108.4	2757	108.5		
2800 110.2	2783 109.6	Low	er Leading Edge	of Door	2798 110.2	2779	109.4		
2810 110.6	2792 109.9		Bottom of 'A' Pos	st	2810 110.6	2764	108.8		
1485 58.5	1488 58.6	Up	per Trailing Edge	of Door	1485 58.5	1486	58.5		
1464 57.6	1456 57.3	Lo	wer Trailing Edge	of Door	1463 57.6	1455	57.3		
			Steering Colum	in					
		2327	91.6 2331	91.8					
		Center of Se	ering Column to 'A	V Post (Horiz	ontal)				
		345	13.6 276	10.9					
		Center of Ste	ering Column to H	leadliner (Ve	rtical)				
		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	(Dece Side)
(Driver Side)	13.5	21.2	8.5	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u> </u>	<u> </u>	G	<u> </u>
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

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

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

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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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	(Dece Side)
(Driver Side)	13.5	21.2	8.5	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	<u> </u>
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

vehicles may, however, have a higher rating

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

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

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

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	
		<u>A</u>	B	G	<u> Kv </u>	
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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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
		<u>A</u>	В	G	<u> </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	Info	Damage	Average	Closing	V	ehicle	Widtl	ח	
		Speed	Crush	Speed	S t	iffness	Valı	ı e s	Crush
		(mph)	(inch)	(mph)	A	В	G	Kv	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
	Ν	laximum	(MAX)		429.3	198.3	571.9	282.1	38.0
	Standard Deviation	(STDev-sa	ample)		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	Max	Closing	V S t	ehicle	Width	۲ ۱	Crush
		(mph)	(inch)	(mph)	A	B	G	Kv	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
	Ν	laximum ((MAX)		404.4	172.9	571.9	250.4	31.5
	Standard Deviation	(STDev-sa	mple)		64.1	36.9	44.9	54.4	5.3
	Num	ber of Tes	sts (n)	17					

Expert VIN DeCoder®

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Version Number 3.2.0.1



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®

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

5/15/2013

2000 CHEVROLET CAVALIER 2 DOOR COUPE

Curb Weight: Curb Weight Distribution - Front:	2537]bs.	Rear:	1151 kg. 36 %
Gross Vehicle Weight Rating:	3642 1bs.		1652 kg.
Number of Tires on Vehicle: Drive Wheels:	4 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:		2.58	0.79
Base of Windshield	37	3.08	0.94
Rear Bumper - top:		2.00	
Trunk - top rear:	39	3.25	0.99
Base of Rear Window:	<u> </u>	3.42	1.04

Expert AutoStats®

2000 CHEVROLET CAVALIER 2 DOOR COUPE

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (ma	Inches 54 38 x) 43	Feet 4.50 3.17 3.58	Meters 1.37 0.97 1.09
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (mi	n) 33	4.58 3.08 2.75	1.40 0.94 0.84
Seatbelts: <u>3pt - front and rear</u> Airbags: <u>FRONT SEAT AIRBAGS</u>			
Steering Data Turning Circle (Diameter) Steering Ratio: 15.22:1 Wheel Radius: Tire Size (OEM): 195-70R14	408 12	34.00 1.00	10.36 0.30
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ABS	kid dry navement):		
d = 133.0 ft $t = 3.0$ sec	a = -29.1 ft/	′sec² G-for	rce = -0.90
0 to 30mph t = 3.8 sec 0 to 60mph t = 10.1 sec 45 to 65mph t = 7.1 sec	a = 11.6 ft/ a = 8.7 ft/ a = 4.1 ft/	sec ² G-for sec ² G-for sec ² G-for	rce = 0.36 rce = 0.27 rce = 0.13
Transmission Type: 5spd MANUAL			
Notes: Federal Bumper Standard Requirements This vehicles Rated Bumper Strengths	s: <u>2.5</u> m : <u>5</u> m	ph ph	

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*sec ²
Pitch Moment of Inertia	=	1362.63 lb*ft*sec ²
Roll Moment of Inertia	=	306.66 lb*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

NHTSA Crash Test #2546

1996 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 Remarks: Mild rest	CHEVROLET tyle in 2003.	CAVALIER	2D, 4D, CONV, SW	104.1
1995 - 2005 Remarks:	PONTIAC	SUNFIRE	2D, 4D, SW	104.1
2003 - 2005 Remarks: Mild rest	CHEVROLET tyle in 2003.	CAVALIER	2D, 4D, CONV, SW	104.1

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Test # 2546	7	NHTSA Test	Reference Guide Vers	ion # [V4			
Test Date 1996-09-3	0		Cont	ract # [DTR557-995-	C00011		
Contract/Study Title	1996 CHEVE	ROLET CAVALIER	INTO FRONTAL LO	AD CEL	L BARRIER			
Test Objective(s)	DETERMINE	PROTECTIVE CA	PABILITY OF DOWN	ILOADE	D INFLATOR	5 IN FROM	NT LCB	
Test Type	BASELINE T	EST			Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		Side Impact	t Point	0	mm	0.0	inches
			Offset Di	stance	0	mm	0.0	inches
			Closing	Speed [56.2	Km/Hr	34.92	MPH
Test Performer	TRC OF OHI	0						
Test Reference #	960930							
Test Track Surface	CONCRETE		Con	dition [DRY			
Ambient Temperature	22 C	71.6 F	Total Number of C	Curves	95			
Data Recorder Type	OTHER				Data Link	UMBILIC	CAL CABLE	
Test Commentary	RECTYP IS D	IGITAL ONBOAR	RD					

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 SE	Age 99	
Position	CENTER POSITI	ION Height 999 mm 39.3 inches	
Туре	HYBRID III DUM	MY Weight 999.0 kg 2202 pounds	
Size	50 PERCENTILE		
Cal	ibration Method	HYBRID III	
Occupa	nt Manufacturer	MFG: HUMANOID, S/N: 142	
Occup	ant Modification	NO COMMENTS	
Occu	pant Description	NO COMMENTS	
Occupa	ant Commentary	CNTRH2 IS HEAD RESTRAINT AND SUNVISOR	
Head to -		Head	
Windshie	elder Header 300	0 mm 11.8 inches Head Injury Criteria (HIC) 746	
	WindShield 537	7 mm 21.1 inches HIC Lower Time Interval (ms) 62.08	
	Seatback 999	99 mm 0.0 inches HIC Upper Time Interval (ms) 98.08	
	Side Header 191	1 mm _7.5 inches	
S	Side Window 308	<u>8 mm 12.1</u> inches	
Neck to Se	atback 9999	mm 0.0 inches	
	First Contact R	egion (Head)	
S	Second Contact Re	egion (Head)	
		<u>Chest</u>	
Chest to -			
Ctooring \	Dasn <u>508</u> n	mm <u>20.0</u> inches Arm to Door <u>127</u> mm <u>5.0</u> inches	
Steering	wneel 291 n	$\begin{array}{c} \text{find} \underline{11.5} \text{incres} \\ \text{mm} \underline{120} \text{mm} \underline{4.7} \text{incres} \\ \text{mm} \underline{120} 12$	
Choot S		Delvis Deek Lateral Appelaration (als)	
Thoracia Tr		There y Reak Acceleration (g s) 0	
		Belt Peak Load 9000 Newtons 2247 9 pound Force	
	Shoulder F	Belt Peak Load 9999 Newtons 2247.9 pound Force	
First Co	ontact Region (Ch	uest/Abdomen)	
Second Co	ontact Region (Ch	lest/Abdomen) NONE	
	e		
Knoos to	Deeb 400	Legs	
Knees to	ur Dook Lood	Inn [0.4] Inches Knees to Seatback[99999] mm [U.U] Inches	
Leit Fem		403 Newtons -1228.1 pounds Force	
RIGHT FEMI	LI Peak Load	T41 Newtons -1605.4 pounds Force	
	First Contact F		

1996 CHEVROLET CAVALIER LEFT FRONT SEAT OCCUPANT

Test #	2546						
Vehicle #	1			Sex	MALE		
Location	LEFT F	RONT SE	AT	Age	99		
Position	CENTE	R POSITI	ON	Height	999 mm	39.3 inch	es
Туре	HYBRIC	D III DUMN	ΛY	Weight	999.0 kg	2202 pour	nds
Size	50 PER	CENTILE					
Cali	ibration N	Nethod	HYBRID III				
Occupa	nt Manuf	acturer	MFG: HUMANOID, S/N: ²	142			
Occupa	ant Modi	fication	NO COMMENTS				
Occu	pant Des	scription	NO COMMENTS				
Occupa	ant Com	mentary	CNTRH2 IS HEAD REST	RAINT AND SUNVIS	SOR		
			Restraints	<u>5</u>			
Restrai	nt # 1 [FRONTAL	AIRBAG				
Mounte	ed [
Deploy	ment [DEPLOYE	D PROPERLY				
Restrai	nt Comm	nentary	DOWNLOAD AIRBAG IN	FLATORS			
Restrai	nt # 2 [DASHPAN	IEL				
Mounte	ed [
Deploy	ment		LICABLE				

Restraint Commentary DOWNLOAD AIRBAG INFLATORS

1996 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	2546		
Vehicle #	1	Sex MALE	
Location	RIGHT FRONT S	SEAT Age 99	
Position	CENTER POSITI	ION Height 999 mm	39.3 inches
Туре	HYBRID III DUM	MY Weight 999.0 kg	2 202 pounds
Size	50 PERCENTILE		
Cal	ibration Method		
Occupa	nt Manufacturer	MFG: ARL, S/N: 192	
Occup	ant Modification	NO COMMENTS	
Occu	pant Description	NO COMMENTS	
Occupa	ant Commentary	CNTRH2 IS HEAD RESTRAINT AND SUNVISOR	
Head to -		Head	
Windshie	elder Header	mm [11.5] inches Head Injury Criteria (HIC)	369
	WindShield 539	9 mm 21.2 inches HIC Lower Time Interva	ll (ms) 69.84
	Seatback 999	99 mm [0.0] inches HIC Upper Time Interva	ıl (ms) 105.84
	Side Header 171	1 mm 6.7 inches	
	Side Window 302	2 mm [11.9] inches	
Neck to Se	atback 9999	mm 0.0 inches	
	First Contact R	tegion (Head) [AIR BAG	
5	Second Contact Re	egion (Head)	
		Chaot	
Chect to -		Cliest	
	Dash 163 n	mm 18.2 inches Arm to Door 138 mm 5	1 inches
Steering	Wheel 9999 n	mm 0.0 inches Hip to Door 141 mm 5	6 inches
Sea	tback 9999 n	mm 0.0 inches	
Chest S	Severity Index 72	21 Pelvic Peak Lateral Acceleration (g's)	ο
Thoracic T	rauma Index 0	Thorax Peak Acceleration (g's	s) 77.1
	Lap I	Belt Peak Load 9999 Newtons 2247.9 pound Force	, <u> </u>
	Shoulder E	Belt Peak Load 9999 Newtons 2247.9 pound Force	
First Co	ontact Region (Ch	lest/Abdomen) AIR BAG	
Second Co	ontact Region (Ch	est/Abdomen) NONE	
Knees to	Dash 116	mm 4.6 inches Knees to Seatback 9999 mm 0	0 inches
Left Fem	ur Peak Load	509 Newtons -1463.3 pounds Force	
Right Fem	ur Peak Load	142 Newtons -1830 4 pounds Force	
	First Contact F	Region (Legs) DASHPANEL	
	Second Contact R	Region (Legs)	

1996 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	2546]				
Vehicle #	1			Sex	MALE	
Location	RIGHT FR	NONT SE	AT	Age	99	
Position	CENTER	POSITIC	DN	Height	999 mm 39.3 inch	ies
Туре	HYBRID I	II DUMN	IY	Weight	999.0 kg 2202 pou	nds
Size	50 PERC	ENTILE]		
Cal	ibration Me	thod	HYBRID III			
Occupa	nt Manufac	turer	MFG: ARL, S/N: 192			
Occup	ant Modific	ation	NO COMMENTS			
Occu	pant Descr	iption	NO COMMENTS			
Occupa	ant Comme	entary	CNTRH2 IS HEAD REST	RAINT AND SUNVIS	SOR	
			Restraints	<u>8</u>		
Restrai	int # 1 F F	ONTAL	AIRBAG			
Mounte	ed 🗌					
Deploy	ment DE	EPLOYE	D PROPERLY			
Restrai	int Comme	ntary	DOWNLOADED AIRBAG			
Restrai	int # 2 D	SHPAN	EL			
Mounte	ed 🗌					
Deploy	ment NC					

Restraint Commentary **DOWNLOADED AIRBAG INFLATOR**

Vehicle 1 1996 CHEVROLET CAVALIER

Test #	2546										
VIN	1G1JC5246T	7288815			NHTSA Te	est Vehicl	e Numbe	r 1			
Year	1996				Vehicle Mo	dification	Indicator	MODIF	FIED VE	HICLE	
Make	CHEVROLET	P	ost-test	Steering Co	olumn Shear	Capsule	Seperatio	n UNKN	OWN		
Model	CAVALIER			Steerir	ng Column Co	ollapse M	echanism	UNKN	OWN		
Body	FOUR DOOR	SEDAN]								
Engine	4 CYLINDER	TRANSVE	ERSE FI	RONT							
Displacement	2.2 Lite	r Trar	nsmissio	n AUTOM	ATIC - FRON	T WHEE	L DRIVE				
Vehicle Modifie	cation(s) Descri	iption D	OWNLO	ADED AIRE	BAG INFLATO	ORS					
Vehicle Comm	entary NO CO	OMMENT	S								
Vehicle Ler	ngth 4579	mm1	180.3	inches	CG	behind F	Front Axle	1063	mm	41.9	inches
Vehicle V	Width 1715	mm 🛛 🤂	67.5	inches	Center of D	Damage t	o CG Axis	0	mm	0.0	inches
Vehicle Whee	elbase 2642	mm1	104.0	inches	Total Leng	gth of Ind	entation	1525	mm	60.0	inches
Vehicle Test V	/eight 1457	KG [3211	pounds	Maximum S	Static Cru	sh Depth	525	mm	20.7	inches
						Pre-Impa	ct Speed	56	kph	34.9	mph
Ve	hicle Damage	Index 12	FDEW3		Princi	pal Direct	tion of Fo	rce 0			
	ofilo Distance			4-							1 -
Damage Pr	offie Distanc			<u>ts</u>	Crush from	n Pre &	Post les		ige ivie	asuren	<u>ients</u>
(Measi	ured Left-to-Rig	ght, Rear-f	to-Front)		-	Pre-Tes	<u>t</u>	Post-Te	<u>st</u>	Crush I	<u>Depth</u>
DPD 1	410 mm	16.1	inches	Left Bu	imper Corner	170.1	inches	153.9	inches	16.1] inches
DPD 2	491 mm	19.3	inches			4320	mm	3910	mm	410] mm
DPD 3	520 mm	20.5	inches		Centerline	180.3	inches	159.1	inches	21.2] inches
DPD 4	525 mm	20.7	inches			4579	mm	4040	mm	539]mm
DPD 5	483 mm	19.0	inches	Pight Bu	mper Corper	170.6	inches	157.0	inches	127	- Tinches
DPD 6	323 mm	12.7	inches	Right Du	inper comer	170.0	mm	101.9	mm	222	
						4333	11111	4010	11111	323]
Bumper F	ngagement			Sill En	agagement			Δ	-nillar E	nasaem	ont
(Inline In	ngagement			(Sida	Impact Only)				(Sido In	ngayem nact On	
								ſ			יע <i>י</i> , ר
9	99.0				FFLICABLE			L	9	99.0	
Moving	g Test Cart			Moving T	est Cart/Vehi	icle		Veh	icle Orie	entation	on Cart
А	ngle			Crab	bed Angle				Moving	Test Ca	rt
NOT A	PPLICABLE				0.0			N		LICABL	.E
Magnitude	of the Tilt Angle	-		Magniture o	f the Crabbed Angl	le			Magnitude	of the Angle	e
Measured b	etween surface of a			Measur	e Clockwise from			Measured	between th	ne Vehicle C)rientation
Rollover Test	Cart and the Ground	d	Long	gitudinal Vector	to Velocity Vector	of Vehicle		and D	Direction of	Test Cart N	Notion

Vehicle 1 1996 CHEVROLET CAVALIER

Test #	2546]									
VIN	1G1JC524	6T72888 [,]	15		NH	TSA Test	Vehicle Nur	mber 1			
Year	1996				Veh	icle Modif	ication Indic	ator MC	DIFIED V	EHICLE	
Make	CHEVROLI	ET	Post-test	Steerin	g Column	Shear Ca	apsule Sepe	ration UN	KNOWN		
Model	CAVALIER			St	eering Col	umn Colla	apse Mecha	nism UN	KNOWN		
Body	FOUR DOC	OR SEDAN	N								
Engine	4 CYLINDE	R TRANS	VERSE F	RONT						_	
Displacement	2.2 L	iter T	ransmissio	n AU	OMATIC	- FRONT	WHEEL DRI	VE			
Vehicle Modifie	cation(s) Des	scription	DOWNLO	ADED	AIRBAG IN	NFLATOR	S				
Vehicle Comm	entary NO	COMME	NTS								
Vehicle Ler	ngth 457	9 mm	180.3	inches		CG b	ehind Front	Axle 106	<u>3</u> mm	41.9	inches
Vehicle \	Nidth 171	<u>5</u> mm	67.5	inches	Cen	ter of Dar	mage to CG	Axis 0	mm	0.0	inches
Vehicle Whee	elbase 264	<u>2</u> mm	104.0	inches	Tot	tal Length	n of Indentat	ion 152	5mm	60.0	inches
Vehicle Test W	/eight 145	7 KG	3211	pounds	s Max	imum Sta	atic Crush De	epth 525	mm	20.7	inches
		_				Pr	e-Impact Sp	eed 56	kph	34.9	mph
Ve	hicle Damag	le Index	12FDEW3			Principa	I Direction o	f Force	0		
		_			_						
		<u>P</u>	re & Po	st Te	st Dama	age Me	asureme	ents			
(Measureme	ents are taken in	a longitudinal	direction. Exc	ept for Eng	ine Block, all i	measuremen	its are take from	the Rear Veh	nicle Surface f	forward.)	
L	eft Side				Cente	rline			Righ	t Side	
Pre-Test	Pos	st-Test		Pre	-Test	Post	-Test	Pre-	Test	Pos	t-Test
mm inche	s mm	inches		mm	inches	mm	inches	mm	inches	mm	inches
				Len	gth of Veh	icle at Ce	enterline				
				4579	180.3	4040	159.1				
					Engin	e Block					
				440	17.3	440	17.3				
4320 170.1	3910	153.9			Front Bu	mper Corr	ner	4333	170.6	4010	157.9
					Front	of Engine					
				3844	151.3	3629	142.9				
3442 135.5	3456	136.1			Fire	ewall		3434	135.2	3276	129.0
				3439	135.4	3306	130.2				
3084 121.4	3092	121.7		Upp	per Leadin	g Edge o	f Door	3094	121.8	3091	121.7
3090 121.7	3083	121.4		Low	er Leadin	g Edge of	f Door	3078	121.2	3065	120.7
3041 119.7	3064	120.6			Bottom o	f 'A' Post		3045	119.9	3054	120.2
2045 80.5	2058	81.0		Up	per Trailin	g Edge of	f Door	2052	80.8	2059	81.1
2050 80.7	2049	80.7		Lo	wer Trailin	g Edge of	f Door	2045	80.5	2033	80.0
					Steerin	g Column)]				
				2651	104.4	2719	107.0				
			Cente	er of Se	ering Colu	mn to 'A'	Post (Horizo	ontal)			
			-	287	11.3	288	<u> 11.3</u>				
			Cente	er of Ste	ering Colu	Imn to He	adliner (Ver	tical)			
				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	CRASH 3 Stiffness Coefficents		
		<u>A</u>	<u> </u>	G	<u> </u>
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

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

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

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific G = Energy dissipated without permanent damage, lb vehicles may, however, have a higher rating

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

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	(Deee Cide)
(Driver Side)	16.1	21.2	12.7	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		<u>A</u>	В	G	<u> Kv </u>
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

A = Maximum force per inch of damage without permanent damage, Ib/in P_{i} = Our has a period of the second difference of the second differenc

B = Crush resistance per inch of damage width (Crash), Ib/in^2 G = Energy dissipated without permanent damage, Ib

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

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	CRASH 3 Stiffness Coefficents		
		A	B	G	<u> </u>
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

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

B = Crush resistance per inch of damage width (Crash), lb/in^2 G = Energy dissipated without permanent damage, Ib

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	<u> </u>	G	<u> </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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	Vehicle	No							
Number	Info	Damage	Average	Closing	V	ehicle	Widtl	ח	
		Speed	Crush	Speed	S t	iffness	Valı	ı e s	Crush
		(mph)	(inch)	(mph)	A	В	G	Kv	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
	Ν	laximum	(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	Max	Closing	V S t	ehicle	Width	۲ ۱	Crush
		(mph)	(inch)	(mph)	A	B	G	Kv	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
	Ν	laximum ((MAX)		404.4	172.9	571.9	250.4	31.5
	Standard Deviation	(STDev-sa	mple)		64.1	36.9	44.9	54.4	5.3
	Number of Tests (n)								

Expert VIN DeCoder®

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Version Number 3.2.0.1



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®

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

5/15/2013

1996 CHEVROLET CAVALIER 2 DOOR COUPE

Curb Weight: Curb Weight Distribution - Front:	2537 lbs.	Rear:	1151 kg. 36 %
Gross Vehicle Weight Rating:	3642 1bs.		1652 kg.
Number of Tires on Vehicle: Drive Wheels:	4 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	
Rear Track:	57	4./5	<u> </u>
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:		2.58	0.79
Base of Windshield			
Rear Bumper - top:			
Trunk - top rear:	39	3.25	
Base of Rear Window:	41	3.42	1.04

Expert AutoStats®

1996 CHEVROLET CAVALIER 2 DOOR COUPE

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (ma	Inches 54 38 x) 43	Feet 4.50 3.17 3.58	Meters 1.37 0.97 1.09
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (mi	n) 33	4.58 3.08 2.75	1.40 0.94 0.84
Seatbelts: <u>3pt - front and rear</u> Airbags: <u>FRONT SEAT AIRBAGS</u>			
Steering Data Turning Circle (Diameter) Steering Ratio: 15.22:1 Wheel Radius: Tire Size (OEM): 195-70R14	408 12	34.00 1.00	10.36 0.30
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ABS	kid dry navement):		
d = 133.0 ft $t = 3.0$ sec	a = -29.1 ft/	′sec² G-for	rce = -0.90
0 to 30mph t = 3.8 sec 0 to 60mph t = 10.1 sec 45 to 65mph t = 7.1 sec	a = 11.6 ft/ a = 8.7 ft/ a = 4.1 ft/	sec ² G-for sec ² G-for sec ² G-for	rce = 0.36 rce = 0.27 rce = 0.13
Transmission Type: 5spd MANUAL			
Notes: Federal Bumper Standard Requirements This vehicles Rated Bumper Strengths	s: <u>2.5</u> m : <u>5</u> m	ph ph	

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*sec ²
Pitch Moment of Inertia	=	1362.63 lb*ft*sec ²
Roll Moment of Inertia	=	306.66 lb*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

NHTSA Crash Test #5206

2004 CHEVROLET CAVALIER

Provided By

4N6XPRT StifCalcs®

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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 Remarks: Mild rest	CHEVROLET tyle in 2003.	CAVALIER	2D, 4D, CONV, SW	104.1
1995 - 2005 Remarks:	PONTIAC	SUNFIRE	2D, 4D, SW	104.1
2003 - 2005 Remarks: Mild rest	CHEVROLET tyle in 2003.	CAVALIER	2D, 4D, CONV, SW	104.1

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

Tost # 5206	7		foranca	Guida Varcian #	VE			
Test # 3200		NHISA TEST NE	leience	Guide version #	<u>v</u> 5			
Test Date 2004-03-09	9			Contract #	04-6008			
Contract/Study Title	RESEARCH COL	LISION TEST						
Test Objective(s)	FRONTAL CRAS	SH						
Test Type	RESEARCH SAF	ETY VEHICLE T	EST		Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		S	ide 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 C	ANADA						
Test Reference #	TC04-118							
Test Track Surface	CONCRETE			Condition	DRY			
Ambient Temperature	21 C 6	9.8 F	Total N	umber of Curves	187			
Data Recorder Type	OTHER				Data Link	OTHER		
Test Commentary	NO COMMENT	S						

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 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)	
Second Contact Region (Head)	
<u>Chest</u>	
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	
There is Troume Index 9999 Pelvic Peak Lateral Acceleration (g s) 9	
Thoracic Trauma index 9 Thoracic Trauma index 9	
Lap Beil Peak Load 2883 Newtons 040.0 pound Force	
First Contact Pagion (Chast/Abdomon)	
Second Contact Region (Chest/Abdomen)	
Second Contact Region (Chest/Abdomen)	
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 SE	AT	Age	99				
Position	FORWARD OF C	ENTER POSITION	Height	999 mm	39.3 inches			
Туре	HYBRID III DUMI	MY WITH THOR LX LEGS	Weight	999.0 kg	2202 pounds	i		
Size	5 PERCENTILE							
Cal	ibration Method	OTHER						
Occupa	nt Manufacturer	FIRST TECHNOLOGY						
Occup	ant Modification	UNMODIFIED						
Occu	pant Description	S/N : 105						
Occupa	ant Commentary	LAST CALIBRATION DA	TE : APR/03					
		Restraints	<u>i</u>					
Restrai	nt # 1 3 POINT	BELT						
Mounte	Mounted BELT - CONVENTIONAL MOUNT							
Deploy	Deployment DEPLOYED PROPERLY							
Restrai	nt Commentary	NO COMMENTS						
Restrai	nt # 2 FRONTAL	AIRBAG						
Mounte	ed STEERIN	G 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 i	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 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)	
Second Contact Region (Head)	
<u>Chest</u>	
Doob 400 mm 45.7 inches Arm to Door 412 mm 4.4 inc	ahaa
Steering Wheel 2000 mm 0.0 inches Aim to Door 112 mm 4.4 inc	shee
Steeling wheel 3333 mm 0.0 inches Tip to Dool 220 mm 0.1 inches	1163
Chest Severity Index 9999	
Thoracic Trauma Index 9	
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	shac
Left Femur Peak Load 1244 Newtone 2024 Pounde Force	2162
Pight Femur Peak Load 1426 Newtons 222.9 Pounds Force	
First Contact Region (Legs)	
Second Contact Region (Legs)	

2004 CHEVROLET CAVALIER RIGHT FRONT SEAT OCCUPANT

Test #	5206						
Vehicle #	1		Sex	FEMALE			
Location	RIGHT FRONT S	EAT	Age	99			
Position	FORWARD OF C	ENTER POSITION	Height	999 mm	39.3	inches	
Туре	HYBRID III DUMI	MY WITH THOR LX LEGS	Weight	999.0 kg	2202	pounds	
Size	5 PERCENTILE						
Cali	ibration Method	OTHER					
Occupai	nt Manufacturer	FIRST TECHNOLOGY					
Occupa	ant Modification	UNMODIFIED					
Occu	pant Description	S/N : 104					
Occupa	ant Commentary	LAST CALIBRATION DAT	E : APR/03				
		<u>Restraints</u>					
Restrai	nt # 1 3 POINT	BELT					
Mounte	ed BELT - CO	ONVENTIONAL MOUNT					
Deploy	ment DEPLOYI	ED PROPERLY					
Restrai	nt Commentary	NO COMMENTS					
Restrai	nt # 2 FRONTAL	AIRBAG					

Deployment DEPLOYED PROPERLY Restraint Commentary NO COMMENTS

DASH PANEL - TOP

Mounted

2004 CHEVROLET CAVALIER RIGHT REAR SEAT OCCUPANT

Test #	5206				
Vehicle #	1		Sex	NOT APPLICABLE	
Location	RIGHT REAR SE	AT	Age	6	
Position	NOT APPLICABL	E	Height	999 mm 39.3] inches
Туре	CHILD DUMMY		Weight	999.0 kg 2202] pounds
Size	6 YEAR OLD CH	ILD]		
Cali	ibration Method	OTHER			
Occupai	nt Manufacturer	FIRST TECHNOLOGY			
Occupa	ant Modification	UNMODIFIED			
Occu	pant Description	S/N : 001			
Occupa	ant Commentary	LAST CALIBRATION D	ATE : MAR/02		
Head to -	older Header	Head	boo Hood Iniuny		
vvirusine	WindShield 000			$\frac{233}{233}$	01.6
	Seatback 000	9 mm 0.0 inch		ner Time Interval (ms)	126.7
	Side Header 600			per fille interval (ins)	120.7
c	Side Window 999				
Nock to So	atback 0000 r		163		
	First Contact R	edion (Head)			<u> </u>
ç	Second Contact Re	egion (Head)			
		Chest			
Chest to -		<u>onest</u>			
	Dash 9999 n	nm 0.0 inches	Arm to Door	999 mm 0.0 i	nches
Steering \	Wheel 9999 n	nm 0.0 inches	Hip to Door 9	999 mm 0.0 i	inches
Sea	tback 9999 n	nm 0.0 inches			
Chest S	Severity Index 99	99 F	Pelvic Peak Lateral A	Acceleration (g's) 9	
Thoracic Tr	rauma Index 9		Thorax Peak	Acceleration (g's) 40.	6
	Lap E	Belt Peak Load 0	Newtons 0.0	pound Force	
	Shoulder E	Belt Peak Load 1613	Newtons 362.6	pound Force	
First Co	ontact Region (Che	est/Abdomen) NONE			
Second Co	ontact Region (Che	est/Abdomen) NONE			
Knees to	Dash 9999 n	nm 0.0 inches k	Knees to Seatback	999 mm 0.0 i	inches
Left Fem	ur Peak Load 0	Newtons		ds Force	
Right Fem	ur Peak Load	Newtons	0.0 pound	ds Force	
	First Contact F	Region (Legs) NONE			
	Second Contact R	tegion (Legs)			
		· - · ·			

2004 CHEVROLET CAVALIER RIGHT REAR SEAT OCCUPANT

Test #	5206						
Vehicle #	1			Sex	NOT APPLIC	ABLE	
Location	RIGHT F	REAR SE	AT	Age	6		
Position	NOT AP	PLICABL	E	Height	999 mm	39.3 inches	
Туре	CHILD D	DUMMY		Weight	999.0 kg	2202 pounds	6
Size	6 YEAR	OLD CHI	LD				
Cali	ibration M	lethod	OTHER				
Occupar	nt Manufa	acturer	FIRST TECHNOLOGY				
Occupa	ant Modifi	ication	UNMODIFIED				
Occu	pant Des	cription	S/N : 001				
Occupa	ant Comm	nentary	LAST CALIBRATION DA	TE : MAR/02			
			Restraints	<u>5</u>			
Restrai	nt # 1 🖪	B POINT E	BELT				
Mounte	ed E	BELT - CO	ONVENTIONAL MOUNT				
Deploy	ment [DEPLOYE	D PROPERLY				
Restrai	nt Comm	entary	NO COMMENTS				
Restrai	nt # 2 💽	SEAT BAG	СК				
Mounte	ed 🖸	DTHER					
Deploy	ment [DEPLOYE	D 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 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	
Neek to Seetback 0000 mm 0.0 inches	
First Contact Pagion (Head)	
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 REAP	R SEAT	Age	6
Position	NOT APPL	ICABLE	Height	999 mm 39.3 inches
Туре	HYBRID III	DUMMY	Weight	999.0 kg 2202 pounds
Size	6 YEAR OL	_D CHILD		
Cali	ibration Meth	od OTHER		
Occupa	nt Manufactu	urer FIRST TECHNOLO	GY	
Occupa	ant Modificat	tion UNMODIFIED		
Occu	pant Descrip	otion S/N : 103		
Occupa	ant Commer	ntary LAST CALIBRATIO	N DATE : APR/03	
		Rest	<u>raints</u>	
Restrai	nt # 1 3 P	OINT BELT		
Mounte	ed BEL	T - CONVENTIONAL MOU	NT	
Deploy	ment DEF	PROPERLY		
Restrai	nt Comment	tary NO COMMENTS		
Restrai	nt # 2 SEA	AT BACK		
Mounte	ed OTH	IER		
Deploy	ment DEF	PLOYED PROPERLY		

Restraint Commentary NO COMMENTS

Vehicle 1 2004 CHEVROLET CAVALIER

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Vehicle 1 2004 CHEVROLET CAVALIER

Test # 5206									
VIN 1G1J	C52F647	17940	4		NHTSA Test Vehicle Number 1				
Year 2004	Year 2004 Vehicle Modification Indicator PRODUCTION VEHICLE								
Make CHE	Make CHEVROLET Post-test Steering Column Shear Capsule Seperation NOT APPLICABLE								
Model CAVA	LIER			Stee	ering Column Collapse Mechanism NOT APPLICABLE				
Body FOUF	DOOR S	SEDAN							
Engine 4 CY	INDER T	RANS	VERSE F	RONT					
Displacement 2.2	Liter	Tra	ansmissio	on MAN	IUAL - FRONT WHEEL DRIVE				
Vehicle Modification(s) Descrip	otion [UNMOD	FIED					
Vehicle Commentary	04-118								
Vehicle Length	4640] mm	182.7	inches	CG behind Front Axle 1224 mm 48.2 inch	ies			
Vehicle Width	1745] mm	68.7	inches	Center of Damage to CG Axis 9999 mm 0.0 incl	nes			
Vehicle Wheelbase	2644] mm	104.1	inches	Total Length of Indentation 1400 mm 55.1 incl	nes			
Vehicle Test Weight	1531] KG	3375	pounds	Maximum Static Crush Depth 9999 mm 0.0 incl	nes			
					Pre-Impact Speed 48 kph 29.6 mp	h			
Vehicle Damage Index 99999999 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					Righ	t Side				
Pre	e-Test	Pos	st-Test	Pre	-Test	Post	-Test	Pre	Pre-Test		-Test
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
				Len	gth of Veh	icle at Ce	enterline				
				4640	182.7	4189	164.9				
					Engin	e Block					
				241	9.5	234	9.2				
4524	178.1	4130	162.6		Front Bui	mper Cor	ner	4516	177.8	4132	162.7
					Front of	of Engine					
				3892	153.2	3668	144.4				
3380	133.1	3262	128.4		Fire	wall		3370	132.7	3292	129.6
				3549	139.7	3489	137.4				
3084	121.4	3082	121.3	Up	per Leadin	g Edge o	f Door	3097	121.9	3097	121.9
3092	121.7	3091	121.7	Lov	ver Leading	g Edge o	f Door	3092	121.7	3090	121.7
3040	119.7	3035	119.5		Bottom o	f 'A' Post		3026	119.1	3019	118.9
2085	82.1	2083	82.0	Up	per Trailin	g Edge o	f Door	2088	82.2	2086	82.1
2087	82.2	2089	82.2	Lo	wer Trailin	g Edge o	f Door	2091	82.3	2091	82.3
					Steerin	g Columr	า				
				2633	103.7	2626	103.4				
				Center of Seering Column to 'A' Post (Horiz			zontal)				
				365 14.4 348 13.7							
				Center of Ste	ering Colu	imn to He	adliner (Ve	ertical)			
				445	17.5	421	16.6				

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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	(Dece Side)
(Driver Side)	15.5	17.8	15.1	(Pass. Side)

		CRASH	3 Stiffness Coe	efficents	SMAC Stiffness
		<u> </u>	B	G	<u> </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Registered Owner: 4N6XPRT SYSTEMS

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	(Dece Side)
(Driver Side)	15.5	17.8	15.1	(Pass. Side)

		CRASH 3 Stiffness Coefficents		SMAC Stiffness	
		<u> </u>	В	G	<u> </u>
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

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

 $B = Crush resistance per inch of damage width (Crash), Ib/in^2 G = Energy dissipated without permanent damage, Ib$

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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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 Coe	efficents	SMAC Stiffness
		A	B	G	<u> </u>
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

vehicles may, however, have a higher rating

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

4N6XPRT StifCalcs® licensed by 4N6XPRT Systems (www.4N6XPRT.com) to:

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	
		<u>A</u>	В	G	<u> </u>	
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

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

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

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

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

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Available Test Results Front Impact Test Summary

Report Filter Settings

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

Test	Vehicle	No							
Number	Info	Damage	Average	Closing	V	ehicle	Widtl	ח	
		Speed	Crush	Speed	S t	iffness	Valı	ı e s	Crush
		(mph)	(inch)	(mph)	A	В	G	Kv	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
	Ν	laximum	(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	Max	Closing	V S t	ehicle	Width	۲ ۱	Crush
		(mph)	(inch)	(mph)	A	B	G	Kv	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
	Ν	laximum ((MAX)		404.4	172.9	571.9	250.4	31.5
	Standard Deviation	(STDev-sa	mple)		64.1	36.9	44.9	54.4	5.3
	Number of Tests (n)								

Expert VIN DeCoder®

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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®

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

5/15/2013

1995 HONDA CIVIC 4 DOOR SEDAN

Curb Weight:	2560 1bs.		1161 kg.
Curb Weight Distribution - Front:	61 %	Rear:	39 %
Gross Vehicle Weight Rating:	3490 1bs.		1583 kg.
Number of Tires on Vehicle: Drive wheels:	4 FRONT		
Horizontal Dimensions	Inches	Feet	Meters
Total Length	173	14.42	4.39
Wheelbase:	<u> 103 </u>	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

Expert AutoStats®

1995 HONDA CIVIC 4 DOOR SEDAN			
Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 54 37 45	Feet 4.50 3.08 3.75	Meters 1.37 0.94 1.14
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	53 36 33	4.42 3.00 2.75	1.35 0.91 0.84
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: 19.00:1 Wheel Radius: Tire Size (OEM): 175+65R14	<u> </u>	33.00	0.28
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 Acceleration: 0 to 30mph t = 3.2 sec 0 to 60mph t = 8.8 sec 45 to 65mph t = sec	a = <u>-23.4</u> ft/s a = <u>13.8</u> ft/s a = <u>10.0</u> ft/s a = <u>ft/s</u>	sec ² G-for sec ² G-for sec ² G-for sec ² G-for	rce = 0.43 rce = 0.43 rce = 0.31 rce =
Transmission Type: <u>5spd MANUAL</u> Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mp	h h	

N.S.D.C = 1995 - 1995

Expert AutoStats®

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*sec ²
Pitch Moment of Inertia	=	1385.40 lb*ft*sec ²
Roll Moment of Inertia	=	310.80 lb*ft*sec ²
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) = √(30 * CF * MID)		
KE Equivalent Speed (Front/Rear/Side)	=	21 CF
Bullet vehicle IMPACT SPEED estimation based on TARGET VEHICLE damage ONLY	=	27 CF
(Tested for Rear/Side Impact only)		

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

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

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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: NFW CO	OUPF in 93			

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Safety Engineering, 521 East Washington Avenue, Suite 200, Madison, WI 53703-2914, (608) 256-0820, FAX (608) 256-0212, E-mail:

Test Information

	-							
lest # 5986		NHISA lest F	leference Guide Versio	on #	V5			
Test Date 2001-05-08	8		Contra	act #	DTNH22-97-	C-11033		
Contract/Study Title	FMVSS 214	- 1995 HONDA (CIVIC 4 DOOR					
Test Objective(s)	VEHICLE CR	ASHWORTHINES	S AND OCCUPANT	REST	RAINT PERFOR		ОАТА	
Test Type	FMVSS 214	SIDE IMPACT PR	OTECTION		Configuration	IMPACT	OR INTO VEH	ICLE
Impact Angle	90		Side Impact	Point	N/A	mm	N/A	inches
			Offset Dis	stance	0	mm	0.0	inches
			Closing S	Speed	52.5	Km/Hr	32.62	MPH
Test Performer	MGA RESEA	RCH						
Test Reference #	BT01050801	1						
Test Track Surface	CONCRETE		Cond	lition	DRY			
Ambient Temperature	22 C	71.6 F	Total Number of Cu	urves	49			
Data Recorder Type	OTHER				Data Link	OTHER		
Test Commentary	EME ON BO	ARD 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 LE	G
Head to - Windshielder Header 370 mm 14.6 inches Head Iniury 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)	
<u>Chest</u>	
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	
<u>Legs</u> Knees to Dash 176 mm 6.9 inches Knees to Seatback <mark>0</mark> 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 POSI	ΓΙΟΝ	Height	0 mm	0.0 inches	
Туре	NHTSA SIDE IN	IPACT DUMMY	Weight	0.0 kg	0 pounds	i
Size	50 PERCENTIL	E				
Cal	ibration Method	SIDE IMPACT DUMMY				
Occupa	nt Manufacturer	FIRST TECHNOLOGY S	′N 036			
Occup	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	CHEST TO DOOOR PAN	EL; RIGHT LEG TO	DOOR PANE	EL; LEFT LEG TO	RIGHT LEG
		<u>Restraint</u>	<u>)</u>			
Restrai	int # 1 FRONT	Restraints	<u>8</u>			
Restrai Mounte	int # 1 FRONT/ ed DASH P	Restraints	<u>S</u>			
Restrai Mounte Deploy	int # 1 FRONT/ ed DASH P /ment NOT DE	<u>Restraints</u> AL AIRBAG ANEL - UNSPECIFIED PLOYED	<u>3</u>			
Restrai Mounte Deploy Restrai	int # 1 FRONT/ ed DASH P ment NOT DE int Commentary	Restraints	<u>}</u>			
Restrai Mounte Deploy Restrai Restrai	int # 1 FRONT/ ed DASH P ment NOT DE int Commentary int # 2 3 POIN	<u>Restraints</u> AL AIRBAG ANEL - UNSPECIFIED PLOYED PRIMARY	<u>}</u>			
Restrai Mounte Deploy Restrai Restrai	int # 1 FRONT/ ed DASH P ment NOT DE int Commentary int # 2 3 POINT ed BELT - 0	Restraints	<u>}</u>			
Restrai Mounte Deploy Restrai Restrai Mounte Deploy	int # 1 FRONT/ ed DASH P ment NOT DE int Commentary int # 2 3 POINT ed BELT - 0 ment NOT AP	Restraints	<u>}</u>			

1995 HONDA CIVIC RIGHT REAR SEAT OCCUPANT

Test #	5986	
Vehicle #	2	Sex MALE
Location	RIGHT REAR SE	AT Age 0
Position	NON-ADJUSTAB	LE SEAT Height 0 mm 0.0 inches
Туре	NHTSA SIDE IMI	PACT DUMMY Weight 0.0 kg 0 pounds
Size	50 PERCENTILE	
Cal	ibration Method	SIDE IMPACT DUMMY
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/N 037
Occup	ant Modification	
Occu	pant Description	
Occupa	ant Commentary	CHEST TO DOOR PANEL; RIGHT LEG TO DOOR PANEL; LEFT LEG TO RIGHT LEG
Head to - Windshie Neck to Se	elder Header 0 WindShield 0 Seatback 611 Side Header 195 Side Window 353 eatback 0 r First Contact Re	Head mm 0.0 inches Head Injury Criteria (HIC) 504 mm 0.0 inches HIC Lower Time Interval (ms) 50.4 mm 24.1 inches HIC Upper Time Interval (ms) 70 mm 7.7 inches mm 13.9 inches egion (Head) C PILLAR
Chaotta		<u>Chest</u>
Steering Sea	Dash 0 n Wheel 0 n tback 527 n Severity Index 0	nm0.0inchesArm to Door121mm4.8inchesnm0.0inchesHip to Door163mm6.4inchesnm20.7inchesPelvic Peak Lateral Acceleration (g's)60
Thoracic T	rauma Index 68	Thorax Peak Acceleration (g's) 0
	Lap I	3elt Peak Load 0 Newtons 0.0 pound Force
	Shoulder E	3elt Peak Load 0 Newtons 0.0 pound Force
First Co	ontact Region (Ch	est/Abdomen) OTHER
Second Co	ontact Region (Ch	est/Abdomen) NONE
Knees to Left Fem Right Fem	Dash 0 n ur Peak Load 0 ur Peak Load 0 First Contact R Second Contact R	Legs nm 0.0 inches Knees to Seatback 190 mm 7.5 inches Newtons 0.0 pounds Force Newtons 0.0 pounds Force Region (Legs) OTHER

1995 HONDA CIVIC RIGHT REAR SEAT OCCUPANT

Test #	5986					
Vehicle #	2		Sex	MALE		
Location	RIGHT REAR SE	AT	Age	0		
Position	NON-ADJUSTAB	LE SEAT	Height	0 mm	0.0	inches
Туре	NHTSA SIDE IMI	PACT DUMMY	Weight	0.0 kg	0	pounds
Size	50 PERCENTILE]			
Cal	ibration Method	SIDE IMPACT DUMMY				
Occupa	nt Manufacturer	FIRST TECHNOLOGY S	/N 037			
Occup	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	CHEST TO DOOR PANE	L; RIGHT LEG TO I	DOOR PANEL	.; LEFT LE	EG TO RIGHT LEG
		Restraints	8			
Restrai	nt # 1 3 POINT	<u>Restraints</u> BELT	<u>8</u>			
Restrai Mounte	int # 1 3 POINT ed BELT - C	<u>Restraints</u> BELT ONVENTIONAL MOUNT	<u> </u>			
Restrai Mounte Deploy	int # 1 3 POINT ed BELT - Co ment NOT APP	Restraints BELT ONVENTIONAL MOUNT LICABLE	<u>5</u>			
Restrai Mounte Deploy Restrai	int # 1 3 POINT ed BELT - Co ment NOT APP int Commentary	Restraints BELT ONVENTIONAL MOUNT LICABLE PRIMARY	<u>}</u>			
Restrai Mounte Deploy Restrai Restrai	int # 1 3 POINT ed BELT - Co ment NOT APP int Commentary int # 2 NONE	Restraints BELT ONVENTIONAL MOUNT LICABLE PRIMARY	<u>}</u>			
Restrai Mounte Deploy Restrai Restrai Mounte	int # 1 3 POINT ed BELT - Co ment NOT APP int Commentary int # 2 NONE ed NOT APP	Restraints	<u></u>			
Restrai Mounte Deploy Restrai Restrai Mounte Deploy	int # 1 3 POINT ed BELT - Co ment NOT APP int Commentary int # 2 NONE ed NOT APP ment NOT APP	Restraints	<u>}</u>			

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	5986										
VIN						NHTS	A Test Vehic	cle Numbe	er 1		
Year	0					Vehicle	Modification	n Indicato	r RESEARC	HVEHICL	E
Make	NHTSA			Post-tes	t Steering	g Column Sh	ear Capsule	Seperati	on NOT APPI	LICABLE	
Model	DEFORM	/IABLE	IMPA	CTOR	Ste	ering Colum	n Collapse N	<i>l</i> echanisr	m NOT APPI	LICABLE	
Body	NOT AP	PLICAI	BLE								
Engine	NOT AP	PLICA	BLE								
Displacement	0	Liter	Tra	nsmissi	on NOT	APPLICABL	E				
Vehicle Modific	cation(s) D	Descript	tion [
Vehicle Comm	entary F	MVSS	214 D	EFORM	ABLE BA	RRIER AND	IMPACTOR				
Vehicle Len	igth 4	115	mm	162.0	inches		CG behind	Front Axle	e 1098 mn	n 43.2] inches
Vehicle V	Width 1	252	mm	49.3	inches	Center	of Damage	to CG Axi	is 0 mn	n 0.0] inches
Vehicle Whee	elbase 2	591	mm	102.0	inches	Total I	ength of In	dentation	0 mn	n 0.0	inches
Vehicle Test W	/eight 1	361	KG	3000] pounds	Maximu	m Static Cr	ush Depth	n 0 mn	n 0.0] inches
							Pre-Imp	act Speed	d 53 kpł	ו 32.6] mph
Vel	hicle Dam	age In	dex 🗌			Р	incipal Direc	ction of Fo	orce 0		
	ofilo Dio	tonoo	Maga	uromo	nto	Cruch	rom Dro 0		at Damaga	Magaura	monto
			<u>ivieas</u>		<u>nis</u>	Clush		FUSLIE	<u>St Damage</u>	<u>ivieasure</u>	
(Measu	ured Left-	to-Righ	it, Real	r-to-⊢ron 1 · ·	t)	D	Pre-Tes	<u>st</u> T	Post-Test	<u>Crush</u>	<u>i Depth</u>
) n	nm [(0.0] inches	s Left	Bumper Co	ner 0.0] inches	0.0 inc	nes 0.0	
) n	nm [(0.0] inches	5		0] mm	0 mn	n [0	mm
) n	nm [(0.0] inches	5	Centerl	ne 0.0] inches	0.0 inc	hes 0.0	inches
) n	nm [(0.0] inches	5		0] mm	0 mn	n 0	mm
) n	nm [(0.0] inches	8 Riaht	Bumper Cor	ner 00	linches	00 inc	hes 00	linches
DPD 6 [() n	nm [[0.0	Inches	S	p	0] mm	0 mn	n 0	
							U]			
Bumper E	ngageme	ent			Sill	Engagemer	t		A-pilla	ar Engager	ment
(Inline Im	pact Only	/)			(Si	ide Impact O	nlv)		(Sid	e Impact C)nlv)
2	7.0			Г	NO		LE			0.0	\neg
		1		L							
Moving	rest Car	t			Movin	g Test Cart/	/ehicle		Vehicle	Orientation	n on Cart
A	ngle				C	Crabbed Ang	е		Mov	ving Test C	art
NOT A	PPLICAE	BLE				27.0			NOT	APPLICAE	BLE
Magnitude	of the Tilt An	gle			Magnitu	ire of the Crabbed	Angle		Magr	nitude of the Ang	gle
Measured be	etween surfac	ce of a			Mea	asure Clockwise	from		Measured betwo	een the Vehicle	Orientation
Rollover Test	Cart and the	Ground		La	ngitudinal Ve	ctor to Velocity V	ector of Vehicle		and Direct	ion of Test Car	t Motion

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	5986											
VIN		<u> </u>				NH	TSA Test	Vehicle Nu	mber F	1		
Year	0	7				Vehi	cle Modifi	ication Indi	cator [H VEHICL	E
Make	NHTS	 A		Post-test S	teering	n Column	Shear Ca	psule Sepe	eration		ICABLE	
Model	DEFO	RMABLE		CTOR	Ste	erina Colu	umn Colla	apse Mecha	nism [
Body		PPLICAB	LE			J						
Engine		PPLICAB	LE									
Displacement	0	Liter	Tra	ansmission	NOT		BLE					
Vehicle Modific	cation(s) Descripti	on [
Vehicle Comm	entary	FMVSS 2	214 D	DEFORMAE	BLE BA	RRIER AI		CTOR				
Vehicle Ler	ngth	4115	mm	162.0 ir	ches		CG be	ehind Front	Axle 1	098 mm	43.2	inches
Vehicle \	Width	1252	mm	49.3 ir	ches	Cent	er of Dan	nage to CG	Axis	mm	0.0	inches
Vehicle Whee	elbase	2591	mm	102.0 ir	ches	Tot	al Length	of Indenta	tion 0	mm	0.0	inches
Vehicle Test W	Veight	1361	KG	3000 p	ounds	Maxi	mum Sta	tic Crush D	epth 0	mm	0.0	inches
							Pre	e-Impact S	beed 5	3 kph	32.6	mph
Ve	hicle Da	amage Ind	lex 🗌				Principa	I Direction of	of Force	0		
			<u>Pr</u>	re & Pos	t Tes	st Dama	<u>ige Me</u>	asureme	<u>ents</u>			
(Measureme	ents are ta	ken in a longit	udinald	lirection. Excep	for Engi	ne Block, all n	neasurement	ts are take from	the Rear	Vehicle Surfac	e forward.)	
L	eft Side	e				Cente	rline			Rio	uht Side	
Pre-Test		Post-Tes	st		Pre-	Test	Post	-Test	Р	re-Test	Pos	st-Test
mm inche	es i	mm inc	hes		mm	inches	mm	inches	mm	n inches	mm	inches
					Leng	th of Veh	icle at Ce	nterline				
				0		0.0	0	0.0				
						Engin	e Block					
				0		0.0	0	0.0				
0.0	0	0.0				Front Bur	nper Corr	ner	0	0.0	0	0.0
						Front o	f Engine					
				0		0.0	0	0.0				
0.0	0	0.0				Fire	wall		0	0.0	0	0.0
				0		0.0	0	0.0				
0.0	0	0.0			Upp	er Leading	g Edge of	f Door	0	0.0	0	0.0
0.0	0	0.0			Low	er Leading	g Edge of	f Door	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			Up	per Trailing	g Edge of	f Door	0	0.0	0	0.0
0.0	0	0.0			L٥١	ver Trailing	g Edge of	f Door	0	0.0	0	0.0
						Steering	g Column	<u> </u>				
				0		0.0	0	0.0				
				Center	of See	ering Colu	mn to 'A'	Post (Horiz	ontal)			
				0		0.0	0	0.0				
				Center	of Stee	ering Colu	mn to He	adliner (Ve	rtical)			
				0		0.0	0	0.0				

Vehicle 2 1995 HONDA CIVIC

Test #	5986										
VIN	1HGEG854	1SL0344	63		NHTSA Te	est Vehic	le Numbe	er 2			
Year	1995				Vehicle Mo	dification	Indicator	PROD	UCTION	VEHIC	LE
Make	HONDA		Post-tes	t Steering C	olumn Shear	Capsule	Seperatio	on UNKNO	NWC		
Model	CIVIC			Steer	ing Column Co	ollapse M	lechanisn	N UNKNO	OWN		
Body	FOUR DOO	R SEDAN	I I								
Engine	4 CYLINDER	R TRANS	VERSE F	RONT							
Displacement	1.5 Lit	er Tr	ansmissio	on AUTON	ATIC - FRON	IT WHEE	L DRIVE				
Vehicle Modifie	cation(s) Desc	ription									
Vehicle Comm	entary										
Vehicle Ler	ngth 4374	mm	172.2	inches	CG	i behind l	Front Axle	e 1117	mm	44.0	inches
Vehicle \	Nidth 1695	i mm	66.7	inches	Center of E	Damage t	o CG Axi	s 67	mm	2.6	inches
Vehicle Whee	elbase 2616	mm	103.0	inches	Total Leng	gth of Inc	lentation	3900	mm	153.5	inches
Vehicle Test W	/eight 1249	KG	2753	pounds	Maximum S	Static Cru	sh Depth	331	mm	13.0	inches
						Pre-Impa	ict Speed	0	kph 🛛	0.0	mph
Vehicle Damage Index 03LPAW2 Principal Direction of Force 63											
Damage Pr	ofile Distan	ce Mea	suremei	nts	Crush from	n Pro &	Post Te	st Dama	ine Me	asuren	nents
<u>Damagerr</u>	urad Laft to P	ight Por	our to Eron	+)			+	Post To	r <u>ge me</u>	Cruch	Donth
				l) Loft D			inchoo		<u>sı</u> inchas		<u>Depin</u> Tinohoo
	2				umper Comer	144.0	mm	143.1	mm	-0.3	
	22	0.9)		30/0	11111	3005	[[]]]	-7	
		12.0)	Centerline	172.2	inches	169.7	inches	2.5	inches
		12.9)		4374	mm	4310	mm	64	mm
		3.5		Right Bu	umper Corner	144.8	inches	143.0	inches	1.8	linches
	<u>z</u> 1000	-0.1		, -	·	3678	mm	3633	mm	45	-] mm
											-
Bumper E	Engagement			Sill E	ngagement			А	-pillar E	ngagem	ent
(Inline Im	npact Only)			(Side	Impact Only)			((Side Im	npact Or	ıly)
2	27.0			DIRECT	ENGAGEME	NT		[(0.0	
Moving	g Test Cart			Moving	Test Cart/Veh	icle		Veh	icle Orie	entation	on Cart
A	ngle			Cra	bbed Angle				Moving	Test Ca	rt
	PPLICABLE				0.0			DIRI	ECT EN	IGAGEN	ENT
Magnitude	of the Tilt Angle			Magniture	of the Crabbed Ang	le			Magnitude	of the Angl	e
Measured b	etween surface of	a		Measu	re Clockwise from	-614-1:1		Measured	between th	ne Vehicle (Prientation
Rollover Test	Cart and the Grou	nd	LOI	ngituainal Vectol	to velocity Vector	or venicle		and D	nrection of	i est Cart l	VIOTION

Vehicle 2 1995 HONDA CIVIC

Test #	5986											
VIN [HGEG8541S	L03446	63		NH	TSA Test	Vehicle Nur	mber 2				
Year [1995				Vehi	icle Modif	ication Indic	ator PR	ODUCTIO	N VEHIC	LE	
Make	HONDA		Post-test \$	Steering	Column	Shear Ca	apsule Sepe	ration UN	KNOWN			
Model				Stee	ering Colu	umn Colla	apse Mecha	nism UN	KNOWN			
Body	OUR DOOR	SEDAN										
Engine	4 CYLINDER 1	TRANS	/ERSE FF	RONT								
Displacement	I.5 Liter	Tra	ansmissior	η Αυτα	OMATIC -	FRONT	WHEEL DRI	VE				
Vehicle Modifica	tion(s) Descrip	otion [
Vehicle Comme	ntary											
Vehicle Leng	th 4374] mm	172.2 i	inches		CG b	ehind Front	Axle 111	7 mm	44.0	inches	
Vehicle W	idth 1695] mm	66.7 i	inches	Cent	ter of Dar	nage to CG	Axis 67	mm	2.6	inches	
Vehicle Wheel	base 2616] mm	103.0 i	inches	Tot	al Length	of Indentat	ion 390	0 mm	153.5	inches	
Vehicle Test We	eight 1249] KG	2753	pounds	Maxi	imum Sta	atic Crush De	epth 331	mm	13.0	inches	
						Pr	e-Impact Sp	eed 0	kph	0.0	mph	
Veh	cle Damage I	ndex 0	3LPAW2			Principa	I Direction o	f Force	63			
		<u>Pr</u>	<u>e & Pos</u>	st Test	<u>t Dama</u>	<u>age Me</u>	asureme	<u>ents</u>				
(Measuremen	ts are taken in a lor	ngitudinaldi	irection. Exce	pt for Engin	e Block, all n	neasuremen	ts are take from	the Rear Vel	nicle Surface fo	orward.)		
Le	ft Side				Cente	rline			Right	uht Side		
Pre-Test	Post-T	est		Pre-T	est	Post	-Test	Pre	-Test	Post-Test		
mm inches	mm ii	nches		mm	inches	mm	inches	mm	inches	mm	inches	
				Lenat	h of Veh	icle at Ce	enterline					
			[4374	172.2	4310	169.7					
			E		Engin	e Block						
			Γ	0	0.0	0	0.0					
3678 144.8	3685 1	45.1	-		Front Bur	nper Corr	ner	3678	144.8	3633	143.0	
					Front c	of Engine						
			Γ	0	0.0	0	0.0					
0.0	0 0	.0	-		Fire	wall		0	0.0	0	0.0	
				0	0.0	0	0.0					
0 0.0		.0	_	Uppe	er Leadin	a Edae o	f Door	0	0.0	0	0.0	

			0 0	
0.0	L	ower Leadi	ng Edge	of Door
0.0		Bottom	of 'A' Po	st
0.0		Upper Traili	ng Edge	of Door
0.0		Lower Traili	ng Edge	of Door
		Steeri	ng Colur	mn
	0	0.0	0	0.0
	Center of	Seering Col	umn to '	A' Post (



0	0.0
0	0.0
0	0.0
0	0.0
0	0.0

0

0

0

0

0.0

0.0

0.0

0.0

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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 = 3	32.6
Test Crush Length =	153.5 inches		

Damage Profile Distance Collision Crush Depths (inches)

DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(F ace at)
0.1	0.9	12.8	12.9	3.5	-0.1	(Front)

		<u>A</u>	В	G	<u> </u>
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	

CRASH 3 Stiffness Coefficents

SMAC Stiffness

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

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

G = Energy dissipated without permanent damage, Ib

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	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
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

Rated No Damage Speed = Impact speed with a barrier

Normal "Rated No Damage Speed" is 2.5 or 5 mph. Some Specific

resulting in no permanant vehicle deformation

vehicles may, however, have a higher rating

(Rear)

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 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

Bodystyle: FOUR DOOR SEDAN

Wheelbase Range: 102-104 Vehicle Weight Range: 2653-2853

Test	Vehicle	No							
Number	Info	Damage Average			Indention		Length		
		Speed	Crush	KEES	S t	iffness	Valı	ı e s	Crush
		(mph)	(inch)	(mph)	А	В	G	Kv	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) Maximum (MAX)				36.3	17.5	28.7	21.6	8.7
					122.6	206.7	37.6	240.4	40.0
Standard Deviation (STDev-sample)			ample)		29.1	67.6	3.3	79.4	11.0
Number of Tests (n)			sts (n)	6					

Year Range: 1965 - 2013

Available Test Results Side Impact Test Summary

Report Filter Settings

Bodystyle: FOUR DOOR SEDAN

Year Range: 1965 - 2013

Wheelbase Range: 102-104 Vehicle Weight Range: 2653-2853

Test	Vehicle	No							
Number	- Info	Damage	Max		l n (dention	Leng	g t h	- ·
		Speed	Crush	KEES	S t	iffness	Valu	I e s	Crush
		(mph)	(inch)	(mph)	A	В	G	Kv	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) Standard Deviation (STDev-sample)				117.2	103.8	66.1	123.4	24.0
					25.5	27.2	12.0	32.1	4.5
Number of Tests (n)				8					

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

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.


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 Pag	e3	Printer	File Ou	utput	D>	(F Outp	ut	
2011 FORD POLICE INTERCEPTOR (3.27) MSP POLICE PKG 4 DOOR SEDA					N						
	Horizon	tal Dimension	5			Ve	ertical	Di	mensio	ns	
Length			212	in.	н	leight				58	in.
Wheelbas	e		115	in.	Grou	und to:					
Front Burr	nper to Front	Axle	43	in.	F	ront Bu	mper ((Toj	p)	23	in.
Front Bur	nper to Front	of Hood	8	in.	H	leadligh	nt - Ce	ntei	r	27	in.
Front Burr	nper to Base o	of Windshield	65	in.	H	lood - T	op Fro	ont		31	in.
Front Burr	nper to Top o	f Windshield	91	in.	В	ase of V	Vindsh	nielo	Н	39	in.
Front Burr	nper to Front	Wheel Well	26	in.	R	ear Bun	nper (1	Гор)	25	in.
Rear Bump	per to Rear of	f Trunk	8	in.	Т	runk - T	Fop Re	ar		39	in.
Rear Bump	per to Base of	f Rear Window	38	in.	В	ase of R	Rear W	ind	ow	40	in.
Rear Bump	per to Rear W	/ell	38	in.		W	/eiaht	Dir	mensior	ns	
Rear Bump	per to Rear A:	xle	54	in.					inchisio.	4104	.
Depth Dimensions			Curk	urb Weigh b Weigh	ght It Distr	ibut	tion:	4184	lbs.		
Width			78	in.	F	Front =		56	%		
Front Trac	ck		63	in.		Rear =		44	%		
Rear Track	k		66	in.	Gros	s Vehicl	le Wei	ght	Rating	5500	lbs.

N6XPRT BIOMEKN Vers. 2.0 MAIN MENU BRAIN & ORGANS MUSCLE & TENDON NERVES SKIN & HAIR reference CALCULATION CRASH KINEMATICS & DATA

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.



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<<<

45

Enter Distance (in feet) :

Enter Velocity (in mph) :

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[®]. 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:

		\ S	/ehicle tiffnes	Width s Valu	 e s
		1	4	В	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



4N6XPRT BioMeknx®



location

Ford Mercury/Lincoln Chrysler/AMC/Jeep European Import

3FAPP1280MR117253

and Utility vehicles manufactured from 1981 to the present. Cars/Vans/Utility/Lt. Trucks Modules: 1981 to Present Chevrolet/Geo Pontiac / Buick / Oldsmobile

Expert VIN DeCoder® is a program that "DeCodes" the 17 character VIN number for Cars, Vans, Pickups,

Cadillac/Saturn

Asian Import

Expert

VIN

DeCoder[®]

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/MasterCar	d card or front of American Express Card:
t224 5676 5012 344 (13) with the one of th	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)

PROGRAI	M ORDER FORM:		
(Pricing effective as of 1/11/13 -	prices subject to change without	notice)	Individual Vel
Expert AutoStats [®] : 4N6XPRT BioMeknx [®] :	\$ 625.00 [*] \$ 495.00 [*]	\$ \$	□ Expert VIN □ NH7
4N6XPRT Ped & Bike Calcs [®] :	\$ 375.00 * \$ 275.00 *	\$	Please circ
Expert TireStuf [®] :	\$ 273.00 \$ 85.00 *	\$ \$	YEAR & MAKE:
4N6XPRT StifCalcs [®] : Expert VIN DeCoder [®] :	\$ 650.00 * \$ 550.00 *	\$ \$	MODEL:
-			If you are requesting VIN I
Handling **:	SUB-TOTAL	\$ \$	Vehicle T
(Cash or Check with order Govt. Purcha	r = \$5.00, Credit Card = se Order = \$15.00)	\$10.00,	Car Body S DRIV
Notarized Affidavit Filing Require (\$25.00 per require	ement red Notarized Signature)	\$	PICKUPS:Dual Rear Wheel - St VANS:Cargo /
<i>Normal delivery is</i> - Deliver via electronic download lin - Deliver on USB - additional cost	r via electronic download ak (e-mail address required) of \$35.00 / disk / program	\$ 0.00 \$	
	SUB-TOTAL	\$	10 11
California shipping addresses add (California orders delivered electronica	8.75% sales tax ally <u>DO NOT</u> owe sales tax)	\$	NHTS Impact Impac
	TOTAL	\$	Case Reference/

hicle Data FAX/Order Form

N Decoder & Expert AutoStats TSA Crash Test Results BOTH le ALL OPTIONS that apply

DeCoder & AutoStats please also provide:

ype:Car - Pickup - Utility - Van No. of Doors:2/3/4/5 Style:Coupe/Conv./Sedan/Wagon VE WHEELS: 4x2/4x4 td. / Extra / Super / Crew Cab - Short Bed / Long Bed Passenger - Short / Long Wheelbase

VIN Information

9 4 5 6 7 8 12 13 14 15 16 17 SA Crash Test Information

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

Number:

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 No Signif	icant Dimensional Changes
VIN DeCoding when VIN	N is provided Information
avail	able
Mid-60's to present also i	ncludes (<i>when available</i>)
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.

> <u>Modules: 1981 to Present</u> 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 coprocessor 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.

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Expert VIN DeCoder®

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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: <u>VIN@4n6xprt.com</u>

1-800-266-9778

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 $\{ \text{ the Check Digit } \}$ 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. S/N:930114VD01201 01-01-2001 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 coprocessor 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.

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

4N6XPRT Systems®

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

1-800-266-9778

Select Your Vehicle

Expert AutoStats®	Model	Data Page 1	Data Page 2	Data Page 3	Printer	File Output D	(F Output		
Version 5.2.0.2 Serial Number	Ma	ke of Vehicle:	FORD			Select the Ma	nufacturer	from	the
R-930512AQ03201	Y	ear of Vehicle:	2011		-	list below.			
yright© 1991-2012	Mo	del of Vehicle:				Once a Manu	facturer ha	s beer	n
Rights Reserved	Nun	ber of Doors:				Selected the I Models will b	ist of availa e below.	able	
	Bodyst	yle of Vehicle:				City in all of the			
ntroduction	Car	Pickup		_		to narrow the	search.	o the l	en
ine Vehicle Specs	🔄 Van	Utility	C Other		Clear				
lank Vehicle Spec Form	Manuf	act		5	tart Year	End	Year		
turers & Years Available	FORD	-			930	2012			
Design Vehicle Specs	FRAZE	R			947	1951			
	FUNKE	& WILL			940	2004			
ta Definitions	GENER	IC		ĵ	979	1989			
Expert Autostats®	GEO			1	987	1998			
	GLAS			1	963	1966			
it AutoStats®>>>	GMC			1	947	2011	-		ŀ
PROVIDED BY:	Model				Body St	yle	WB (in)	OAL	(in
N6XPRT Systems	FUSIO	N HYBRID			4 DOOF	SEDAN	108	191	
University Avenue	MUST	ANG			2 DOOF	COUPE	107	188	
Mesa CA 91941	MUST	ANG			2 DOOF	CONVERTIBLE	107	188	
930512AQ03201	MUST	ANG GT			2 DOOF	COUPE	107	188	
	MUST	ANG GI	7500		2 0001	COUNTERTIBLE	107	100	
6XPRT Systems®	MUST	ANG SHELBY (51500		2 0000	CONVERTIBLE	107	188	
sic Expert Software	POLIC	EINTERCEPTO	0R (3.27) MSP I	POLICE PKG	4 DOO	SEDAN	115	212	1
esa, CA 91942-9342	POLIC	E INTERCEPTO	R (3.55) MSP	POLICE PKG	4 DOOF	SEDAN	115	212	
04-5478 / (800) 266-9778	RANG	ER 112WB	Contraction (Contraction (Contraction)		2 DOOF	4X2 PICKUP	112	188	
ax: (019) 404-2206	RANG	ER 112WB			2 DOOF	4X4 PICKUP	112	188	1
N6@4N6Y0PT.com	RANG	ER 118WB			2 DOOF	4X2 PICKUP	118	200	

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

Screen 1

2011 FORD POLICE INTERCEPTOR (3.27) MSP POLICE PKG 4 DOOR SEDAN Horizontal Dimensions Length 212 in. Wheelbase 115 in. Front Bumper to Front Axle 43 in. Front Bumper to Front of Hood 8 in. Front Bumper to Front of Hood 65 in. Front Bumper to Top of Windshield 91 in. Base of Windshield 91 in. Rear Bumper to Rear of Trunk 8 in. Rear Bumper to Rear of Trunk 8 in. Rear Bumper to Rear Window 38 in. Rear Bumper to Rear Window 38 in. Rear Bumper to Rear Well 25 in. Width 78 in. Front Track 63 in.	Model Data Page 1 Data Page 2	Data Pag	je 3	Printer	File Out	tput	DXF	Outpu	t				
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 Axle 43 in. Front Bumper (Top) 23 in. Height 58 in. Front Bumper to Front Of Hood 8 in. Headlight - Center 27 in. Front Bumper to Top of Windshield 91 in. Hoad - Top Front 31 in. Front Bumper to Top of Windshield 91 in. Base of Windshield 39 in. Rear Bumper to Rear of Trunk 8 in. Trunk - Top Rear 39 in. Rear Bumper to Rear Well 38 in. Base of Rear Window 40 in. Rear Bumper to Rear Axle 54 in. Curb Weight Distribution: Curb Weight Distribution: Width 78 in. Front = 56 % S Kear Track 66 in. Grous Veidel Weight Rating 500 lbs.	2011 FORD POLICE INTERCEPTOR (3.27) MSP POLICE PKG 4 DOOR SEDAN												
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 Top 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 Top of Windshield 26 in. Rear Bumper (Top) 25 in. Rear Bumper to Rear of Trunk 8 in. Trunk - Top Rear 39 in. Rear Bumper to Rear of Trunk 8 in. Base of Rear Window 40 in. Rear Bumper to Rear Well 38 in. Weight Distribution: Rear Bumper to Rear Axle 54 in. Curb Weight 4184 lbs. Curb Weight Distribution: Front = 56 % 56 % Width 78 in. Rear = 44 % Rear = 44 %	Horizontal Dimension	15			Ve	rtical	Dim	ension	5				
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 Top of Windshield 65 in. Base of Windshield 39 in. Front Bumper to Top of Windshield 91 in. Base of Windshield 39 in. Front Bumper to Top of Windshield 91 in. Base of Windshield 39 in. Rear 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 Rear Well 38 in. Base of Rear Window 40 in. Rear Bumper to Rear Axle 54 in. Weight Distribution: Curb Weight Distribution: Width 78 in. Front = 56 5 Front Track 63 in. Rear = 44 %	Length	212	in.	F	leight				58	in.			
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 Top 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 Rear Well 38 in. Base of Rear Window 40 in. Rear Bumper to Rear Axle 54 in. Curb Weight Distribution: Curb Weight Distribution: Width 78 in. Front = 56 % Front Track 65 in. Rear = 44 %	Wheelbase	115	in.	Grou	und to:								
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 Axle 54 in. Curb Weight 1184 lbs. Curb Weight Dimensions Width 78 in. Front = 56 % Front Track 63 in. Rear = 44 %	Front Bumper to Front Axle	43	in.	F	ront Bun	nper (Тор)	1	23	in.			
Front Bumper to Base of Windshield 65 in. Front Bumper to Top of Windshield 91 in. Base of Windshield 91 in. Front Bumper to Top of Windshield 91 in. Base of Windshield 39 in. Rear Bumper to Top tom Wheel Well 26 in. Rear Bumper to Rear of Trunk 8 in. Rear Bumper to Base of Rear Window 38 in. Rear Bumper to Rear Vell 38 in. Rear Bumper to Rear Axle 54 in. Weight Dimensions Width 78 in. Front Track 63 in. Rear Track 66 in.	Front Bumper to Front of Hood	8	in.	E F	leadlight	- Cen	ter		27	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 Axle 54 in. Weight Dimensions Curb Weight Distribution: Width 78 in. Front = 56 % Front Track 63 in. Rear = 44 %	Front Bumper to Base of Windshield	65	in.	F	lood - To	op Fro	nt		31	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 Curb Weight 4184 Ibs. Vidth 78 in. Front Track 63 in. Rear 44 % Rear Track 66 in. Gross Vehicle Weight Bating 5500 Ibs.	Front Bumper to Top of Windshield	91	in.	В	ase of W	indshi	ield		39	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. Base of Rear Window 40 in. Rear Bumper to Rear Axle 54 in. Weight Dimensions Curb Weight Distribution: Width 78 in. Front Track 63 in. Rear Track 66 in. Gross Vehicle Weight Bating 5500	Front Bumper to Front Wheel Well	26	in.	R	Rear Bumper (Top)					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 0 Rear Bumper to Rear Axle 54 in. Curb Weight 4184 lbs. Curb Weight Dimensions Width 78 in. Front = 56 % Front Track 63 in. Rear = 44 %	Rear Bumper to Rear of Trunk	8	in.	Т	Trunk - Top Rear					in.			
Bear Bumper to Rear Well 38 in. Rear Bumper to Rear Axle 54 in. Depth Dimensions Curb Weight Width 78 in. Front Track 63 in. Rear Track 66 in.	Rear Bumper to Base of Rear Windov	v 38	in.	B	Base of Rear Window					in.			
Depth Dimensions Curb Weight 4184 lbs. Width 78 in. Front Track 63 in. Rear = 44 % Rear Track 66 in. Gross Vehicle Weight Rating 5500 lbs.	Rear Bumper to Rear Well	38	in.		w	aiabt	Dim	ention					
Depth Dimensions Curb Weight 4184 Ibs. Width 78 in. Front = 56 % Front Track 63 in. Rear = 44 % Rear Track 66 in. Gross Vehicle Weight Rating 5500 lbs.	Rear Bumper to Rear Axle	54	in.			2	1						
Width 78 in. Front = 56 % Front Track 63 in. Rear = 44 % Rear Track 66 in. Gross Vehicle Weight Rating 5500 lbs.	Depth Dimensions				urb Weight	ht Dictril	huti	0.02	4184	lbs.			
Front Track 63 in. Rear = 44 % Rear Track 66 in. Gross Vehicle Weight Rating 5500 lbs.	Midth	70			Front -	c istin	6 9	/					
Rear Track 66 in. Gross Vehicle Weight Rating 5500 lbs.	Front Track	62		1 1	Pear -	4	4 9	~					
rear track do in. Gross Vehicle Weight Rating 5500 lbs.	Deer Treek	05	11.		Near =	4	4	10					
cross venicle regimentating store inst	Rear Track	m.	Gros	is Vehicle	e Weig	ht R	lating	5500	lbs.				

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												
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												
Acceleration/Braking													
Accelera	tion 0-30 mph	13.8	ft/sec	2		Bumper Stre	ngth	2.5	mph				
Accelera	tion 0-60 mph	9.8	ft/sec	2		Steering Rati	io	:1					
Accelera	tion 45-65 mph	6.5	ft/sec	2		Interior	Dimensions						
Braking	50-0 mph	138	feet			Front Should	ler Room	61	in.				
Drive Wł	neels		REAR			Front Head I	Room	40	in.				
Turn Cire	cle (Diameter)		40	feet		Front Leg Room							
Number	of Wheels		4			60	in.						
Wheel R	adius		12	in.	Rear Head Room 38								
Tire Size		P235/	55R17			Rear Leg Roo	om	38	in.				
ALL DIS	C - ALL WHEEL	ABS											
3pt - fre	ont and rear - F	RONT SEAT	AIRBAG	GS									
4spd Al	4spd AUTOMATIC												
N.S.D.C.	= 2011 - 201 = Not in Da	1 atabase											

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												
Model	Data Page 1	Data I	Page 2	Data I	Page 3	Printer	File O	utput	DXF O	utput			
	2011 FORD POLICE INTERCEPTOR (3.27) MSP POLICE PKG 4 DOOR SEDAN												
	Angle Measurements												
Angle Fr	Angle Front Bumper to Hood Front = 45.0 degrees												
Angle Fr	ont of Hood to	Wind	shield E	Base	=		8.0	degre	es				
Angle Fr	ont of Hood to	Wind	shield 1	Гор	=		16.8	degre	es				
Angle of	Windshield				=		33.2	degre	es				
Angle of	Angle of Steering Tires at Max Turn = 27.5 degrees												
	Center of Gravity												
Inches fr	om ground	=	2	2.77		Inch	es from	side o	f vehicl	e =	39.00		
Inches b	ehind front axl	e =	5	0.60		Inche	s in fro	nt of r	ear axle	=	64.40		
Inches fr	om front bum	per =	9	3.60		Inch	ches from rear bumper = 118.40						
Inches fr	om front corn	er =	10	1.40		Inch	es from	rear c	orner	=	124.66		
Tip-Over	Stability Ratio	•				=	1.4	41	Stable				
NHTSA S	Static Stability	Factor	(calcul	ated) St	ar Ratin	g	=		****				
Moments of Inertia													
Yaw Mor	ment of Inertia				=				З	103.52	lb*ft*sec ²		
Pitch Moment of Inertia =								2993.16 II					
Roll Moment of Inertia =										603.12	lb*ft*sec ²		

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

Model Data Page 1 Data Page 2 Data	ta Page 3 Prin	ter File Output	DXF Output									
2011 FORD POLICE INTERCEPTOR (3.27) MSP POLICE PKG 4 DOOR SEDAN												
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 manufacturing variations from vehcle to vehicle. Whenever feasible, the vehicle in question or an exemplar vehicle should be measured TO VERIFY DATA IMPORTANT TO YOUR CASE. The provision of the DXF output is provided as an aide to your evaluation. It is not meant to be the final drawing of the vehicle.												
DXF File Name 2011_FORD_POLICE_INTERCEPTOR_(3.27)_MSP_POLICE_PKG_4_DOOR_SEDAN_												
Length	212	Inches	Drawing Notation									
Wheelbase	115	Inches	On									
Width	78	Inches	Off									
Front Track	63	Inches	Units									
Rear Track	66	Inches	Inches									
Front Overang	43	Inches	Feet									
Bumper to Base of windshield	65	Inches	Meters									
Bumper to Top of windshield	91	Inches										
Rear Bumper to Base of Rear window	38	Inches										
Rear Bumper to Top of Rear window	64	Inches										
Front Tire Diameter	24	Inches										
Rear Tire Diameter	24	Inches										
CG behind Front axle	50.6	Inches	DXF Output									

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

St The Crash Zone B.1 - (51	473,DXF]	
💱 File Edit Draw View Snap	s Text/Dimension Utilities Recon 30 Window Help	. 8 ×
0 📽 🖬 🙏 🔍 🚳) ∽ ∼ ◘	
Line Types		-
	FRONT of 2001 FORD CROWN VICTORIA 4.6L MSP POLICE PACKAGE 4DH	SEDAN
67 35 10 15		1
TT 10 10 10 10 10		
= 0 j		
	Q	
# # 4 # # 1		
8 5° 8 8 8 8° 8°		
~~ 25 MP 404 VV AA		
🤪 Quick Pick	DXF Output Data	
Unaw / Shaps / Haton	Length:	
🛞 Edit	Width: 6.50 Feet	
Text / Dimensions	Front bumper to Front Axle: 3.67 Feet	
View JD Tools	Wheelbase:	
Aecon	Front Track: 5.25 Feet	
🖱 Symbols	Rear Track:	
III) Templates	CG behind Front Axle: 4.31 Feet	
() Learning Center		
Select Objects : Selection Tool	A:282.06" D:8.09"	X1.78 Y-4.36

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 <u>or</u> 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:

		\ S	/ehicle tiffness A E	Width s Valu 3	 e s 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 <u>easily download</u> the



that are available for the individual tests



PLEASE PRINT

Contact Name:
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City:State:Zip:
Phone:
Fax:
E-Mail:
(E-mail address required for electronic delivery)
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	*
landling **:	\$
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Web: http://www.4n6xprt.com E-Mail: <u>stifcalcs@4n6xprt.com</u>

1-800-266-9778

BASIC VEHICLE CRASH TEST SEARCH

PRT StifCalcs - SELECTED VEHICLE : 2001 LINCOLN TOWN CA

A - B - G Values Crush Factor (CF)

G

149.1 596.4 1341.9 2385.7

149.1 596.4 1341.9 2385.7

149.1 596.4 1341.9 2385.7

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

SELECTED VEHICLE + 2004 LINCOLN TOWN CA

2001 LINCOLN TOWN CAR

Pre/Post Collison Crush Depths (inches)

Centerline crush

Α

194.5 359.1 494 599

163.4 301.8 415.1 503.4

145.7 269 370 448.7

A - Maximum force per inch of damage without permenant damage, Ib/in

B = Crush resistance per inch of damage width, b/in~2

G = Energy dissipated without permenant damage, Ib

Vehicle Closing Speed

Right side crush

В

126.8 108.1 90.9 75.2

89.6 76.4 64.2 53.1

71.2 60.7

51 42.2

(Pass. Side)

ASIC VEHICLE SEARCH NHTSA TEST SELECTION ADVANCED VEHICLE SEAR lable Tests Test Information Occupant Information Vehicle Info Stiffness Calc Pre/Post Vehicle Depth Damage Profile Distance Depths Maximum Vehicle Depth

4654 pound

78.2 inche

2.5 mph 5 mph 7.5 mph 10 mph

2.5 mph 5 mph 7.5 mph 10 mph

2.5 mph 5 mph 7.5 mph 10 mph

int Reports Settings Help Reg. To: 4N6XPRT SYSTEMS

G Makida Mid

Vehicle Test Weight =

Test Crush Length -

sing a Rated No Damage Speed o Jsing a Rated No Damage Speed of Ising a Rated No Damage Speed of

ush = 23.8

sing a Rated No Damage Speed o Ising a Rated No Damage Speed of

Ising a Rated No Damage Speed of

imum Crush =26.7 inches

ig a Rated No Damage Speed of

Ising a Rated No Damage Speed of

Ising a Rated No Damage Speed of

Damage Speed o

Rated No Damage Speed = Imapct speed with a barrier

Normal "Bated No Damage Speed" is 2.5 or 5 mph. Some specific

resulting in no permenant vehicle deformation

Step 1

	BAS	IC VEHICLE	SEARCH M	NHTSA TE	ST SELECTION ADVANC	ED VEHICLE S	SEARCH						
	Ava	ilable Tests Te	est Information	Occupan	t Information Vehicle Info S	Stiffness Calos							
					Available Te	ests in t	the NI	HTSA	databa	ase	for a		
					1000	2000 1	INCO			DAF			
					1990 -	- 2008 L			JAMIN (JAP			
		1											
	_	Print Modify Year Range Frontal Test(s)											
	Ĩ	Test Number	Year	Make	Model	Impact Speed	Max Crush	Crush Factor	VDI	PDOF	Test Config	VIN	
		2764	1998	FORD	CROWN VICTORIA	35.3	29.9	16.7	12FDEW3	18	0 VEHICLE INTO BARRIER	2FAFP73W7WX	
	1	3077	1999	FORD	CROWN VICTORIA	24.6	28.1	8.6	9999999	0	VEHICLE INTO BARRIER	2FAFP74W7XX	
		3103	1999	FORD	CROWN VICTORIA	29.3	27.9	12.3	9999999	0	VEHICLE INTO BARRIER	2FAFP74W8VX	
		3219	2000	LINCOLN	TOWN CAR	35.1	27.8	17.7	12FDEW3	18	0 VEHICLE INTO BARRIER	1LNHM81W8m	
		3480	2001	LINCOLN	TOWN CAR	35.1	27.6	17.9	12FDEW6	0	VEHICLE INTO BARRIER	1LNHM82W11Y	
		3614	2001	FORD	CROWN VICTORIA	35	20.4	24	12FDEW6	0	VEHICLE INTO BARRIER	2FAFP73wX1X	
		4476	2003	FORD	CROWN VICTORIA	35.3	25.3	19.7	12FDEW6	0	VEHICLE INTO BARRIER	2FAFP73wX3X	
		4496	2003	FORD	CROWN VICTORIA	29.7	0	0		0	SLED WITH VEHICLE BODY	2FAFP73W53K*	
		4894	2003	LINCOLN	TOWN CAR	0	0	0		0	STATIC AIR BAG TEST SIDE	1LNHM81W93Y	
		<										>	
			∏ Mo	dify Year R	ange		Rear Te	st(s)					
				NO	DEAD TESTS 1	000 2000							
				NO	REAR TESTS 1	1998-2008	\$						
		Print	Mo	dify Year R	ange		Side Te	st(s)					
		Test Number	Year	Make	Model	Impact Speed	Max Crush	Crush Factor	VDI	PDOF	Test Config	VIN	
		2989	1999	LINCOLN	TOWN CAR	38.3	20	29.4	03LPAW2	270	IMPACTOR INTO VEHICLE	1LNHM81W0KY6454	
		4426	2003	FORD	CROWN VICTORIA	38.4	18.4	32	10LPAW3	297	IMPACTOR INTO VEHICLE	2FAFP73W83K10915	
		▶ 4427	2003	LINCOLN	TOWN CAR	38.1	17.1	34	10LPAW3	297	IMPACTOR INTO VEHICLE	1LNHM81W93Y6222	
		e										5	
												<u>×</u>	
2													

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



Now Set your calculation parameters -

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:

									- 6
ile Print Report	s Settings	Help Reg. T	b: 4N6XPRT SYSTER	45					
BASIC VEHICL	E SEARCH	NHTSA TE	ST SELECTION	ADVANCED VE	HICLE SEARCH				
				Advan	ad Saarah				
		Enter as m	ak information a	Auyan	the lune of ush		aching for ther	. oliok sostak	
		Enter as int	ich moniauon a	is you nave about	the type of ver	iicie you are i	ooking tot ther	i click search	
Fest Number		_		Min	Max				
	1		Whe	el Base		-	(Conversions	
Start Year	1965	÷		1		C MM	Value:		
F-4V	2000		Vehicle	Length		Inche	s		
chù rear	2008	T.n.s.					Answei		
Make		s Advo	inced / Vehicle	Search Printout				м ммто	IN
			Please ch	loose the pai	ameters fo	r the repo	ort		
Model			NOT	E : Default settings a	re already selected	l for you		BS LBS TU	КШ
Body Style		Rear	Tests						
	1001100	-No Da	mage Speed (mph)	Crush Depth (incl	n) Crush Lengt	h (inch) Spe	ed Type		
		0 2.5		Average	 Width 	0	Closing		
		● 5.0		~					
		0 7.5		C Max	 Indent 	•	KE .	Print	
		0.10	U						
TestNo	YEAR	M/	IEI					~	
49	1971	CH Def	ault settings	Print	Cancel				
▶ 167	1978	СН							
251	19/9	BU CA			Include	Not Calculated	Tests		
231	1979	CHECKER		OUB DOOR SED	3023	Rear	NO COMMENTS		
181	1979	CHRYSLER	NEWPORT F	OUR DOOR SED	3010 F	Rear	NO COMMENTS		
69	1979	PONTIAC	CATALINA F	OUR DOOR SED	2946 F	lear	NO COMMENTS		
1278	1988	ACURA	LEGEND F	OUR DOOR SED	2756 F	Rear	NO COMMENTS		
								~	

G CF

588

603

665 15.1

42.9 21

12.7

B

631

94.6

272.4

354.7

Std Dev

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

🗅 Displa	y Auto Ca	lculated	Tests	

Prin

	Test No	YEAR	MAKE	MODEL	Body Style	No Damage Speed	Crush Distance	Impact Velocity	Stiffness A	Stiffness B	Stiffness G	Crush Fact
·	167	1978	CHEVROLET	CAPRICE	FOUR DOOR SEDAN	5.0	16.3	20.3	216.4	40.5	577.7	10.
	54	1979	BUICK	ELECTRA	FOUR DOOR SEDAN	5.0	23	24	199.8	33.1	603.8	1
	251	1979	CADILLAC	SEVILLE	FOUR DOOR SEDAN	5.0	13.2	19.9	292.4	66.1	647.1	1
	232	1979	CHECKER	TAXICAB	FOUR DOOR SEDAN	5.0	10.8	20.2	336.3	94.6	597.9	15.
	181	1979	CHRYSLER	NEWPORT	FOUR DOOR SEDAN	5.0	16.3	24.5	270.2	64.9	562.8	14.
	69	1979	PONTIAC	CATALINA	FOUR DOOR SEDAN	5.0	18.4	24.1	237.3	49.4	570.4	12.
1	1278	1988	ACURA	LEGEND	FOUR DOOR SEDAN	5.0	11.5	20.2	354.7	93.2	674.8	14.1

To select multiple records hold the ctrl key down and click on the records you wish to selec

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

The program will

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	-

NHTSA Crash Test Information

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

PAYMENT INFORMATION Visa/MasterCard / American Express:

Expires: _____ / _____

Name & Address:

Individual Vehicle Data Search Service[®]

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

G

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: <u>ivdss@4n6xprt.com</u>

Case Reference Name/Number:

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 (<i>when provided</i> Gross Vehicle Weight	<i>by VIN</i>) 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 Overall Width Overall Height Wheelbase	Curb Weight Weight Distribution Front/Rear Track CG Location
Model yeasr with No Sign VIN DeCoding when VIN is	ificant Dimensional Changes provided Information available
Mid-60's to present also	includes (when available)
Fron/Reart Overhang	Bumper Heights
Hood height	Turning Circle
Bumper-to-hood	Ground-to-hood

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

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

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

Individual Vehicle Data Search Service[®] Charges & Services

Individual Vehicle Specifications

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

Medium/Heavy Truck Specifications

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

Motorcycle Specifications (1970+)

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

NHTSA Crash Test Results

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

NHTSA Crash Test Results

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

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

(619) 464-2206

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Individual Vehicle Specifications

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

Medium/Heavy Truck Specifications

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

Motorcycle Specifications (1970+)

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

NHTSA Crash Test Results

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

Contact Name & Address:

Phone:	()	
Fax:	()	

PAYMENT INFORMATION
Visa/MasterCard / American Express

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

FAX/Order Form

Expert VIN Decoder & Expert AutoStats
 NHTSA Crash Test Results
 BOTH

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

YEAR & MAKE:

MODEL:

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

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

VIN Information

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

NHTSA Crash Test Information

YEAR & MAKE:

MODEL: _____

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

Case Reference/Number:_____

FAX/Order Form

Expert VIN Decoder & Expert AutoStats NHTSA Crash Test Results BOTH

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

YEAR & MAKE:

MODEL:	
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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:

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

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

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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.

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,

O'Umfaf DE

Daniel W. Vomhof III General Manager/Technical Support

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