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 42,000 different vehicles and 203 different manufacturers spanning more than 70 years.

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

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

Individual Vehicle Data Search Service (R)

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

(619) 464-3478 / (800) 266-9778 / FAX: (619) 464-2206 http://www.4n6xprt.com

Through the use of

EXPERT AUTOSTATS(R)

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DEVELOPED BY:

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

VEHICLE DATA RESEARCH BY:

Sheryl Cozby, Marion Vomhof, Muriel Vomhof, & Cindy Christensen

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: 1G2WK52J21F258199

Model: 2001 Pontiac Grand Prix SE1 4 Door Sedan

Engine Size: 3.1L/ 191 cu.in.

Engine Description: V6 cylinder with Overhead Valves (OHV)

Horse Power: 170 @ 5200 rpm

Torque: 190 lb-ft at 4000 rpm

Injection System: | Sequential Fuel Injection (SFI)

PSI: 41-47 psi Ignition: Electronic

Manufacturer: Buick, Olsmobile, Cadillac

Assembly Plant: Fairfax II, KS

Drive Wheels: This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags

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

The Fourth and Fifth characters (WK) indicate a Grand Prix SE1

The Sixth character (5) indicates a 4 Door Sedan

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

The Eighth character (J) indicates the OEM engine: 3.1L/ 191 cu.in., V6 OHV

The Ninth character (the check digit) is entered as 2.

The VIN appears Invalid, the calculated value is 7.

The Tenth character (1) indicates the model year 2001

The Eleventh character (F) indicates the vehicle was made in the assembly plant in Fairfax II, KS

The Twelfth through Seventeenth characters (258199) indicate the Serial Number and are unique to this vehicle.

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PROVIDED BY: 4N6XPRT Systems 8387 University Avenue La Mesa CA 91942

5/9/2012

2001 PONTIAC GRAND PRIX 4 DOOR SEDAN Curb Weight:	<u>3414</u> 1bs.	15	549 kg.
Curb Weight Distribution - Front: Gross Vehicle Weight Rating:	65 %		35 % 979 kg.
Number of Tires on Vehicle: Drive Wheels:	4 FRONT	<u> </u>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Horizontal Dimensions Total Length Wheelbase:	Inches 197 111	Feet 16.42 9.25	Meters 5.00 2.82
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	42 26 6 52 85	3.50 2.17 0.50 4.33 7.08	1.07 0.66 0.15 1.32 2.16
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	44 31 6 28	3.67 2.58 0.50 2.33	1.12 0.79 0.15 0.71
Width Dimensions Maximum Width: Front Track: Rear Track:	73 61 61	6.08 5.08 5.08	1.85 1.55 1.55
Vertical Dimensions Height:	55	4.58	1.40
Ground to - Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	21 25 26 36 26 37 41	1.75 2.08 2.17 3.00 2.17 3.08 3.42	0.53 0.64 0.66 0.91 0.66 0.94 1.04

2001 PONTIAC GRAND PRIX 4 DOOR SEDAN

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max) Rear Seat Shoulder Width Rear Seat to Headliner	59 38 43 57	Feet 4.92 3.17 3.58 4.75 3.08	Meters 1.50 0.97 1.09 1.45 0.94
Front Leg Room - seatback to floor (min) Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS	30	2.50	0.76
Steering Data Turning Circle (Diameter) Steering Ratio: :1	480	40.00	12.19
Wheel Radius: Tire Size (OEM): P205/70R15 Acceleration & Braking Information			
Brake Type: ALL DISC ABS System: ALL WHEEL ABS Braking, 60 mph to 0 (Hard pedal, no skid,	dry pavement):		
Acceleration:	a = -27.8 ft/ a = 18.3 ft/		$rce = \begin{bmatrix} -0.86 \end{bmatrix}$ $rce = \begin{bmatrix} 0.57 \end{bmatrix}$
	a = 12.8 ft/ a = 10.9 ft/		rce = 0.40 rce = 0.34
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mg		

N.S.D.C = 1997 - 2003

2001 PONTIAC GRAND PRIX 4 DOOR SEDAN

Other Information		
Tip-Over Stability Ratio =	1.41	Stable
NHTSA Star Rating (calculated)		***
Center of Gravity (No Load):		
Inches behind front axle	=	38.85
Inches in front of rear axle	=	72.15
Inches from side of vehicle	=	36.50
Inches from ground	=	21.59
Inches from front corner	=	88.71
Inches from rear corner	=	121.75
Inches from front bumper	=	80.85
Inches from rear bumper	=	116.15
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	2310.42 lb*ft*sec²
Pitch Moment of Inertia	=	2230.86 lb*ft*sec²
Roll Moment of Inertia	=	464.52 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	39.8 deg
Angle Front of Hood to Windshield Base	=	12.2
Angle Front of Hood to Windshield Top	=	10.0
Angle of Windshield	=	
Angle of Steering Tires at Max Turn	=	36.5
ring to or occorring three at Max Turn		acg

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:

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

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #4775

2004 PONTIAC GRAND PRIX

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Sister/Clone database reader

You entered: 2001 PONTIAC GRAND PRIX

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

Test Information

Test # 4775	٦		NILITO	^ Tos	+ Dofor		Guide Ver	sion #	V5			
	<u>-</u>		INHIS	sa res	t Keiere	ence				D 0000E		
Test Date 2003-10-07									DTNH22-01-			
							TIAC GRA	ND PR	IX GT 4 DOOR	SEDAN		
Test Objective(s)	OBTAIN A	ATD A	ND VE	EHICLI	E DATA	4						
Test Type	NEW CAR	ASSE	SSME	NT TE	ST				Configuration	VEHICLI	E INTO BARRI	ER
Impact Angle	0					S	ide 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 E	IGINE	ERING	ì								
Test Reference #	M40100											
Test Track Surface	CONCRET	E					Cor	dition	DRY			
Ambient Temperature	29	C 8	4.2	F	То	tal Nu	umber of	Curves	185			
Data Recorder Type	DIGITAL I	ATA	ACQU	ISITIC	N				Data Link	OTHER		
Test Commentary	DATALIN	K IS N	IONE,	ON-B	OARD	DAS						
					Fixed I	Barrie	er Informa	ation				
Barrier Type	RIGID					Pole	Barrier Dia	ameter	0	mm	0	inches
Barrier Shape	LOAD CEL	L BAF	RRIER									
Barrier Commentary	NO COMI	MENT	S									

2004 PONTIAC GRAND PRIX LEFT FRONT SEAT OCCUPANT

Test #	4775						
Vehicle #	1			Sex	MALE		
Location	LEFT FRONT SE	AT		Age	0		
Position	CENTER POSITION	ON] Height	0 r	mm 0.0	inches
Type	HYBRID III DUMN	ИΥ		Weight	0.0	kg 0	pounds
Size	50 PERCENTILE]			
Cali	ibration Method	HYBRID III					
Occupa	nt Manufacturer	VECTOR, S/	N:035				
Occupa	ant Modification	UNMODIFIE	D				
Occu	pant Description	NO COMMEN	NTS				
Occupa	ant Commentary	NO COMME	NTS				
Head to -			<u>Head</u>				
Windshie	elder Header 300	mm _1 1	inche	es Head Injury (Criteria (HIC	C) 596	
	WindShield 590	mm 2 3	inche	es HIC Lov	wer Time Ir	nterval (ms)	61.8
	Seatback 0	mm 0 .	0 inche	es HIC Up	per Time Ir	nterval (ms)	96.1
	Side Header 235	mm _9 .	3 inche	es			
5	Side Window 335	mm13	3.2 inche	es			
Neck to Se	atback 0 r	nm 0.0	inches				
	First Contact Re	egion (Head)	AIR BAG				
5	Second Contact Re	egion (Head)					
			<u>Chest</u>				
Chest to -				_			
	Dash 530 m	nm 20.9	inches	Arm to Door 3	0 mn	n 1.2 i	inches
Steering \	Wheel 285 m	nm <u>11.2</u>	inches	Hip to Door 1	85 mn	n 7.3 i	inches
		nm 0.0	inches				
	Severity Index 0] P	elvic Peak Lateral A		. ,	
Thoracic Tr	rauma Index 0		J	Thorax Peak			5
	•	Belt Peak Load			pound For		
		Belt Peak Load		Newtons 846.0	pound For	rce	
	ontact Region (Che						
Second Co	ontact Region (Che	est/Abdomen)	NONE				
			<u>Legs</u>				
Knees to	Dash 175 m	nm 6.9	inches K	nees to Seatback 0	mn	n 0.0 i	inches
Left Fem	ur Peak Load -67	795 N	lewtons [-1527.6 pound	ls Force		
Right Femu	ur Peak Load 🔀)24	lewtons [-1354.3 pound	ls Force		
	First Contact R	Region (Legs)	DASHPAN	EL			
	Second Contact R	egion (Legs)					

2004 PONTIAC GRAND PRIX LEFT FRONT SEAT OCCUPANT

Test #	4775							
Vehicle #	1			Sex	MALE			
Location	LEFT F	RONT SE	AT	Age	0			
Position	CENTE	R POSITION	ON	Height	0 n	nm 0.0	inches	
Туре	HYBRIC	O III DUMN	ΛY	Weight	0.0	кд 0	pounds	
Size	50 PER	CENTILE						
Cali	bration N	Method	HYBRID III					
Occupar	nt Manuf	acturer	VECTOR, S/N:035					
Occupa	ant Modi	fication	UNMODIFIED					
Occuj	pant Des	scription	NO COMMENTS					
Occupa	ant Comi	mentary	NO COMMENTS					
			Restraints	<u> </u>				
Restrai	nt # 1 [3 POINT E	BELT	_				
Mounte	ed [BELT - CO	ONVENTIONAL MOUNT					
Deploy	ment [DEPLOYE	D PROPERLY					
Restraii	nt Comm	nentary	NO COMMENTS					
Restraii	nt # 2 [FRONTAL	AIRBAG					
Mounte	=	STEERING						
Deploy	ment [<u>DEPLO</u> YE	D PROPERLY					
	nt Comm		NO COMMENTS					

2004 PONTIAC GRAND PRIX RIGHT FRONT SEAT OCCUPANT

Test # 4775	
Vehicle # 1	Sex MALE
Location RIGHT FRONT SEAT	Age 0
Position CENTER POSITION	Height 0 mm 0.0 inches
Type HYBRID III DUMMY	Weight 0.0 kg 0 pounds
Size 50 PERCENTILE	
Calibration Method HYBRID III	
Occupant Manufacturer VECTOR, S	/N:034
Occupant Modification UNMODIFIE	D
Occupant Description NO COMME	NTS
Occupant Commentary NO COMME	:NTS
Head to -	<u>Head</u>
	8.3 inches Head Injury Criteria (HIC) 509
	0.9 inches HIC Lower Time Interval (ms) 61.9
	.0 inches HIC Upper Time Interval (ms) 97.8
	1.4 inches
	4.0 inches
Neck to Seatback 0 mm 0.0	inches
First Contact Region (Head)	AIR BAG
Second Contact Region (Head)	AIN DAG
Cocona Comact Region (Noda)	
	Chest
Chest to -	
Dash 595 mm 23.4	inches Arm to Door 50 mm 2.0 inches
Steering Wheel 0 mm 0.0	inches Hip to Door 165 mm 6.5 inches
Seatback 0 mm 0.0	inches
Chest Severity Index 0	Pelvic Peak Lateral Acceleration (g's)
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 43.7
Lap Belt Peak Loa	nd 3955 Newtons 889.1 pound Force
Shoulder Belt Peak Loa	d 4090 Newtons 919.5 pound Force
First Contact Region (Chest/Abdomen	AIR BAG
Second Contact Region (Chest/Abdomen	NONE
	<u>Legs</u>
Knees to Dash 155 mm 6.1	inches Knees to Seatback mm 0.0 inches
	Newtons -1239.2 pounds Force
	Newtons -840.1 pounds Force
First Contact Region (Legs)	
Second Contact Region (Legs)	

2004 PONTIAC GRAND PRIX RIGHT FRONT SEAT OCCUPANT

Test #	4775							
Vehicle #	1			Sex	MALE			
Location	RIGHT	FRONT SI	EAT	Age	0			
Position	CENTE	R POSITION	ON	Height	0 mm	0.0	inches	
Type	HYBRIC	III DUMN	ΛΥ	Weight	0.0 kg	0	pounds	
Size	50 PER	CENTILE						
Cali	ibration N	<i>l</i> lethod	HYBRID III					
Occupa	nt Manuf	acturer	VECTOR, S/N:034					
Occupa	ant Modi	fication	UNMODIFIED					
Occu	pant Des	scription	NO COMMENTS					
Occupa	ant Comr	mentary	NO COMMENTS					
			Restraints	5				
Restrai	int # 1	3 POINT E		=				
Mounte	ed [BELT - CO	ONVENTIONAL MOUNT					
Deploy	ment	DEPLOYE	D PROPERLY					
Restrai	nt Comm	nentary	NO COMMENTS					
Restrai	int#2[FRONTAL	AIRBAG					
Mounte	=		NEL - TOP					
Deploy	=		D PROPERLY					
	int Comm		NO COMMENTS					

2004 PONTIAC GRAND PRIX RIGHT REAR SEAT OCCUPANT

Test # 4775	
Vehicle # 1	Sex NOT APPLICABLE
Location RIGHT REAR SEAT	Age 0
Position NOT APPLICABLE	Height 0 mm 0.0 inches
Type HYBRID III DUMMY	Weight 0.0 kg 0 pounds
Size 3 YEAR OLD CHILD	
Calibration Method HYBRID III	
Occupant Manufacturer FIRST TECHNOLOGY S	SAFETY SYSTEMS, S/N:139
Occupant Modification UNMODIFIED	
Occupant Description NO COMMENTS	
Occupant Commentary CNTRH1:CHIN CONTAC	TED RETAINING CLIP
Head	
Head to -	
Windshielder Header 0 mm 0.0 inch	es Head Injury Criteria (HIC) 533
WindShield 0 mm 0.0 inch	· · · · · · · · · · · · · · · · · · ·
Seatback 550 mm 21.7 inch	` '
Side Header 0 mm 0.0 inch	· · · · · · · · · · · · · · · · · · ·
Side Window 406 mm 16.0 inch	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) OTHER	
Second Contact Region (Head)	
Gecond Contact Region (Flead)	
<u>Chest</u>	
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	1 lip to 2001 300 11111 13.0 linoites
	Pelvic Peak Lateral Acceleration (g's)
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	Trowiene Div pound Force
Second Contact Region (Chest/Abdomen) NONE	
,	
Legs	(
	(nees to Seatback 374 mm 14.7 inches
	0.0 pounds Force
	0.0 pounds Force
First Contact Region (Legs) NONE	
Second Contact Region (Legs)	

2004 PONTIAC GRAND PRIX RIGHT REAR SEAT OCCUPANT

Test #	4775		
Vehicle #	1	Sex [NOT APPLICABLE
Location	RIGHT REAR	SEAT Age	0
Position	NOT APPLICA	ABLE Height	0 mm 0.0 inches
Type	HYBRID III DU	JMMY Weight	0.0 kg 0 pounds
Size	3 YEAR OLD	CHILD	
Cali	bration Method	HYBRID III	
Occupar	nt Manufacturer	FIRST TECHNOLOGY SAFETY SYSTEMS, S	/N:139
Occupa	ant Modification	UNMODIFIED	
Occu	pant Descriptior	n NO COMMENTS	
Occupa	ant Commentar	y CNTRH1:CHIN CONTACTED RETAINING CLI	P
		<u>Restraints</u>	
Restrai	nt # 1 CONVE	ERTIBLE CHILD SAFETY SEAT, FRONT FACING	
Mounte	ed LATCH	I - LOWER ANCHORAGES AND TOP TETHER	
Deploy	ment NOT A l	PPLICABLE	
Restrai	nt Commentary	MANUFACTURER:EVENFLO, MODEL:VANG	UARD 5, MODEL#
Restrai	nt # 2 5 POIN	NT BELT	
Mounte	ed CHILD	SEAT	-
Deploy	ment NOT AI	PPLICABLE	-

Restraint Commentary

NO COMMENTS

2004 PONTIAC GRAND PRIX LEFT REAR SEAT OCCUPANT

Test # 4775	
Vehicle # 1	Sex NOT APPLICABLE
Location LEFT REAR SEAT	Age 0
Position NOT APPLICABLE	Height 0 mm 0.0 inches
Type HYBRID III DUMMY	Weight 0.0 kg 0 pounds
Size 3 YEAR OLD CHILD	
Calibration Method HYBRID III	
Occupant Manufacturer FIRST TECHNOLOG	SY SAFETY SYSTEMS, S/N:082
Occupant Modification UNMODIFIED	
Occupant Description NO COMMENTS	
Occupant Commentary CNTRH1, CHIN CON	ITACTED RETAINING CLIP
Head to -	<u>1</u>
	nches Head Injury Criteria (HIC) 583
	nches HIC Lower Time Interval (ms) 76.4
	nches HIC Upper Time Interval (ms) 112.4
	nches
	nches
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) OTHE	3
Second Contact Region (Head)	
Ches	<u>t</u>
Chest to -	
Dash 0 mm 0.0 inches	Arm to Door 250 mm 9.8 inches
Steering Wheel 0 mm 0.0 inches	Hip to Door 275 mm 10.8 inches
Seatback 500 mm 19.7 inches	
Chest Severity Index 0	Pelvic Peak Lateral Acceleration (g's)
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 40.6
Lap Belt Peak Load 0	Newtons 0.0 pound Force
Shoulder Belt Peak Load 0	Newtons 0.0 pound Force
First Contact Region (Chest/Abdomen) NONE	
Second Contact Region (Chest/Abdomen) NONE	
<u>Le</u>	<u>gs</u>
Knees to Dash 0 mm 0.0 inches	Knees to Seatback 315 mm 12.4 inches
Left Femur Peak Load 0 Newtons	0.0 pounds Force
Right Femur Peak Load 0 Newtons	0.0 pounds Force
First Contact Region (Legs) NONE	
Second Contact Region (Legs)	

2004 PONTIAC GRAND PRIX LEFT REAR SEAT OCCUPANT

Test #	4775		
Vehicle #	1		Sex NOT APPLICABLE
Location	LEFT RE	AR SEA	T Age 0
Position	NOT API	PLICABL	E Height 0 mm 0.0 inches
Type	HYBRID	III DUMN	MY Weight 0.0 kg 0 pounds
Size	3 YEAR	OLD CH	LD
Cali	ibration Me	ethod	HYBRID III
Occupar	nt Manufa	cturer	FIRST TECHNOLOGY SAFETY SYSTEMS, S/N:082
Occupa	ant Modific	cation	UNMODIFIED
Occu	pant Desc	ription	NO COMMENTS
Occupa	ant Comm	entary	CNTRH1, CHIN CONTACTED RETAINING CLIP
			Restraints
Restrai	nt # 1 C	ONVER	TIBLE CHILD SAFETY SEAT, FRONT FACING
Mounte	ed L	ATCH - L	OWER ANCHORAGES AND TOP TETHER
Deploy	ment N	OT APP	LICABLE
Restrai	nt Comme	entary	MANUFACTURER:CENTURY, MODEL:STE, MODEL#
Restrai	nt # 2 5	POINT E	 BELT
Mounte	ed C	HILD SE	AT
Deploy	ment N	OT APP	LICABLE

Restraint Commentary

NO COMMENTS

Vehicle 1 2004 PONTIAC GRAND PRIX

Test #	4775										
VIN	2G2WP5	2294112166	60		NHTSA T	est Vehic	le Numbe	r 1			
Year	2004				Vehicle Mo	dification	Indicator	PROD	UCTION	VEHICL	.E
Make	PONTIAC	;	Post-test	Steering (Column Shear	Capsule	Seperation	n UNKN	OWN		
Model	GRAND F	PRIX		Stee	ring Column C	ollapse M	lechanism	UNKN	OWN		
Body	FOUR DO	OR SEDAN									
Engine V6 TRANSVERSE FRONT											
Displacement	3.8	Liter Tra	ansmissio	on AUTO	MATIC - FRON	NT WHEE	L DRIVE				
Vehicle Modific	cation(s) De	escription [UNMODI	FIED							
Vehicle Comm	entary N	COMMEN	TS								
Vehicle Ler	ngth 50	34 mm	198.2	inches	CG	behind	Front Axle	1131	mm	44.5	inches
Vehicle \	Width 18	800 mm	70.9	inches	Center of D	Damage t	o CG Axis	0	mm	0.0	inches
Vehicle Whee	elbase 28	15 mm	110.8	inches	Total Len	gth of Inc	dentation	1383	mm	54.4	inches
Vehicle Test W	/eight 17	'89 KG	3943	pounds	Maximum :	Static Cru	ish Depth	587	mm	23.1	inches
						Pre-Impa	act Speed	56	kph	34.7	mph
Ve	hicle Dama	age Index 1	2FDEW6		Princ	ipal Direc	tion of Fo	rce 0			
Damaga Dr	ofilo Diet	onoo Moo		- 4-	Crush from	Dra 0	Doot To	at Dama	. a a 1 / a		
Damage Pro					Crush fror				_		_
_		o-Right, Rea	_		_	Pre-Tes	1	Post-Te		Crush E	
DPD 1 -			」inches		Bumper Corner		inches	171.7	inches		inches
DPD 2 -			」inches			4834	mm	4362	mm	472] mm
DPD 3 [-			」inches		Centerline	198.2	inches	175.2	inches	23.0] inches
DPD 4 -			」inches			5034	mm	4450	mm	584] mm
DPD 5 [-			inches	Diaht B	umper Corner	190.2	inches	173.6	inches	16.7	inches
DPD 6 L	• 423 m	m <u>-16.7</u>	inches	rtigitt D	ampor comor	4832	mm	4409	mm	423] mm
						1032		1400	,	1 23	,
Bumper F	ngageme	nt		Sill F	ingagement			А	-nillar F	ngageme	ent
	pact Only				e Impact Only)	١			•	npact Onl	
<u> </u>	0.0	•			APPLICABLE			ſ	`	0.0	٠ <i>٫</i> ٫
	5.0		_	1101	AI I LIOABLE			L		0.0	_
Moving	Test Cart			Moving	Test Cart/Veh	icle		Veh	icle Orie	entation o	on Cart
Α	ngle			Cra	abbed Angle				Moving	Test Car	t
DIRECT	ENGAGEN	MENT			0.0			N	IOT API	PLICABL	E
Magnitude	of the Tilt Ang	le		Magniture	of the Crabbed Ang	le			Magnitude	e of the Angle	;
Measured be	etween surface	e of a		Meas	ure Clockwise from			Measured	between ti	he Vehicle O	rientation
Rollover Test	Cart and the G	Ground	Lor	naitudinal Vecto	or to Velocity Vector	of Vehicle		and [Direction o	f Test Cart M	Antion .

Vehicle 1 2004 PONTIAC GRAND PRIX

Test #	4775											
VIN	2G2W	P 52294 1	1216	60		NHTS	A Test Vehicle N	Number [1			
Year	2004					Vehicle	Modification Inc	dicator [PRODU	JCTIO	N VEHIC	LE
Make	PONTI	AC		Post-test S	Steering	Column Sh	ear Capsule Se	peration	UNKNO	OWN		
Model	GRAN	D PRIX			Stee	ering Colum	n Collapse Mecl	hanism [UNKNO	OWN		
Body	FOUR	DOOR S	EDAN									
Engine	V6 TR	ANSVER	SE FF	RONT]					
Displacement	3.8	Liter	Tra	ansmission	AUTO	OMATIC - FF	RONT WHEEL D	RIVE				
Vehicle Modific	cation(s)) Descrip	tion [UNMODIFI	ED							
Vehicle Comm	entary	NO COI	MMEN	ITS								
Vehicle Ler	ngth	5034	mm	198.2 ir	nches		CG behind Fro	nt Axle 1	131	mm	44.5	inches
Vehicle \	Width	1800	mm	70.9 ir	nches	Center	of Damage to C	CG Axis 0		mm	0.0	inches
Vehicle Whee	elbase	2815	mm	110.8 ir	nches	Total I	ength of Inden	tation 13	383	mm	54.4	inches
Vehicle Test W	√eight	1789	KG	3943 p	ounds	Maximu	ım Static Crush	Depth 58	87	mm	23.1	inches
							Pre-Impact	Speed 56	6	kph	34.7	mph
Ve	hicle Da	mage In	dex 1	2FDEW6		Р	rincipal Directior	n of Force	0			

Pre & Post Test Damage Measurements

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

Left Side				Right Side							
Pr	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	nterline				
				5034	198.2	4450	175.2				
					Engin	e Block					
				420	16.5	420	16.5				
4834	190.3	4362	171.7		Front Bur	mper Corı	ner	4832	190.2	4409	173.6
					Front o	of Engine					
				4400	173.2	4088	160.9				
3764	148.2	3699	145.6		Fire	ewall		3759	148.0	3714	146.2
				3816	150.2	3763	148.1				
3414	134.4	3401	133.9	Upp	oer Leadin	g Edge o	f Door	3414	134.4	3405	134.1
3372	132.8	3360	132.3	Low	ver Leadin	g Edge o	f Door	3371	132.7	3356	132.1
3371	132.7	3355	132.1		Bottom o	f 'A' Post		3359	132.2	3346	131.7
2315	91.1	2301	90.6	Up	per Trailin	g Edge o	f Door	2314	91.1	2304	90.7
2329	91.7	2317	91.2	Lo	wer Trailin	g Edge o	f Door	2322	91.4	2310	90.9
					Steerin	g Column	١				
				2932	115.4	2940	115.7				
	Center of Seering Column to 'A' Post (Horizontal)										
	405 15.9 415 16.3										
				Center of Ste	ering Colu	ımn to He	adliner (Ve	rtical)			
				415	16.3	373	14.7				

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

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 (Pass. Side)

(Driver Side) 18.6 23.0 16.7

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 16.7 inches 192.9 Using a Rated No Damage Speed of 215.2 166.1 139.4 2.5mph 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 97.8 2230.4 10.0mph 660.5 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 448.7 80.3 1254.6 7.5mph Using a Rated No Damage Speed of 10.0mph 543.4 66.2 2230.4 101.7 Maximum Crush = 23.0 inches 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 74.5 557.6 396.1 Using a Rated No Damage Speed of 7.5mph 62.5 1254.6 479.6 Using a Rated No Damage Speed of 2230.4 10.0mph 51.6

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

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

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 (Pass. Side)

(Driver Side) 18.6 23.0 16.7

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 16.7 inches 251.1 Using a Rated No Damage Speed of 280.1 216.2 181.4 2.5mph 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 859.7 127.3 2902.8 10.0mph 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 584.0 104.4 1632.9 7.5mph Using a Rated No Damage Speed of 10.0mph 707.2 86.2 2902.8 Maximum Crush = 23.0 inches 132.4 181.4 Using a Rated No Damage Speed of 2.5mph 114.0 203.4 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

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

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 resulting in no permanant vehicle deformation

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

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

G = Energy dissipated without permanent damage, Ib

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

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)

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

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 6.0 inches 1494.4 Using a Rated No Damage Speed of 599.0 1287.0 139.4 2.5mph 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 1254.6 918.6 Using a Rated No Damage Speed of 757.7 2230.4 10.0mph 1838.4 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 446.5 79.5 1254.6 7.5mph Using a Rated No Damage Speed of 10.0mph 540.7 65.5 1543.2 101.7 Maximum Crush = 23.0 inches 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 74.5 557.6 396.1 Using a Rated No Damage Speed of 7.5mph 62.5 1254.6 479.6 Using a Rated No Damage Speed of 2230.4 10.0mph 51.6

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

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 resulting in no permanant vehicle deformation

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

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

G = Energy dissipated without permanent damage, Ib

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

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	(Doog Cido)
(Driver Side)	-18.6	-22.9	-23.0	-22.4	-21.2	-16.7	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 6.0 inches 1945.0 Using a Rated No Damage Speed of 779.6 1675.1 181.4 2.5mph 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 2902.8 2392.8 986.2 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 423.0 5.0mph 123.3 725.7 Using a Rated No Damage Speed of 581.2 103.4 1632.9 7.5mph 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 114.0 203.4 181.4 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

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

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

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 resulting in no permanant vehicle deformation

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

G = Energy dissipated without permanent damage, Ib

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1997 - 2003

Make: PONTIAC Model: GRAND PRIX

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	•	•	ehicle iffness B		•	Crush Factor
4141	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	20.8	29.6	256.8	60.8	542.3	88.0	16.9
2831	1998 BUICK CENTURY FOUR DOOR SEDAN	5.0	19.7	29.9	268.6	67.9	531.3	97.9	18.1
3524	2001 CHEVROLET MONTE CARLO TWO DOOR C	5.0	23.2	35.5	277.3	73.0	526.8	98.9	21.7
3471	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	23.2	34.9	279.0	71.9	541.0	98.0	21.0
3053	1999 BUICK CENTURY FOUR DOOR SEDAN	5.0	22.4	34.9	283.7	75.7	531.5	103.1	21.8
2821	1998 OLDSMOBILE INTRIGUE FOUR DOOR SEDAN	5.0	21.0	34.9	302.3	86.0	531.5	117.2	23.1
5204	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	18.1	29.6	307.7	83.3	567.9	120.7	19.3
3843	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	16.9	29.8	321.5	94.3	548.3	136.2	21.0
4775	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	20.4	34.7	325.6	95.1	557.6	129.7	23.7
4317	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	12.1	24.9	351.3	115.8	532.7	181.2	20.6
3637	2001 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	16.9	34.7	373.4	131.4	530.8	179.4	28.5
2855	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	17.7	29.6	386.6	107.3	696.2	155.3	19.8
3786	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	12.9	30.0	413.5	160.1	534.0	230.8	27.8
2877	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	9.2	25.2	465.2	205.0	527.9	318.8	27.7
3798	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	11.3	24.8	465.8	162.6	667.3	255.1	21.7
		Average ((AVG)		338.6	106.0	557.8	154.0	22.2
	Minimum (M				256.8	60.8	526.8	88.0	16.9
	Maxii				465.8	205.0	696.2	318.8	28.5
	Standard Deviation ((STDev-sa	ample)		68.7	41.8	51.9	67.8	3.5
Number of Tests (n)				15					

Serial Number: 11R-030201SC02301

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1997 - 2003

Make: PONTIAC Model: GRAND PRIX

Test Numbe	Vehicle r Info	No Damage Speed (mph)	Max Crush (inch)	•	•	ehicle iffness B			Crush Factor
2877	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	19.9	25.2	214.4	43.5	527.9	67.7	12.8
4141	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	24.7	29.6	216.5	43.2	542.3	62.5	14.2
3524	2001 CHEVROLET MONTE CARLO TWO DOOR C	5.0	28.5	35.5	225.8	48.4	526.8	65.6	17.7
2831	1998 BUICK CENTURY FOUR DOOR SEDAN	5.0	23.2	29.9	227.7	48.8	531.3	70.4	15.4
3053	1999 BUICK CENTURY FOUR DOOR SEDAN	5.0	27.4	34.9	232.5	50.8	531.5	69.3	17.8
3471	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	27.1	34.9	238.5	52.6	541.0	71.6	18.0
2821	1998 OLDSMOBILE INTRIGUE FOUR DOOR SEDAN	5.0	24.1	34.9	263.4	65.3	531.5	89.0	20.2
3843	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	20.6	29.8	264.3	63.7	548.3	92.0	17.2
5204	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	20.7	29.6	269.6	64.0	567.9	92.7	16.9
2888	1998 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	15.2	24.7	272.9	70.8	525.7	111.4	16.1
4775	2004 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	23.1	34.7	286.9	73.8	557.6	100.7	20.9
4317	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	13.5	24.9	313.4	92.2	532.7	144.3	18.3
3798	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	16.7	24.8	317.3	75.4	667.3	118.3	14.8
3637	2001 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	19.1	34.7	330.0	102.6	530.8	140.0	25.2
2855	1997 PONTIAC GRAND PRIX FOUR DOOR SEDAN	5.0	19.5	29.6	351.4	88.7	696.2	128.3	18.0
3786	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	14.2	30.0	374.9	131.6	534.0	189.7	25.2
3648	2001 CHEVROLET IMPALA FOUR DOOR SEDAN	5.0	17.6	35.0	452.2	154.1	663.6	209.8	27.8
		Average (AVG)		285.4	74.7	562.1	107.3	18.6
	Minimum (214.4	43.2	525.7	62.5	12.8
	M	laximum ((MAX)		452.2	154.1	696.2	209.8	27.8
	Standard Deviation	(STDev-sa	mple)		64.7	31.2	55.7	43.7	4.1
	Num	sts (n)	17						

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: 1FDKE30F3VHA25172

Model:	1997 Ford Econoline E350 4x2 RV Cutaway Van
Engine Size:	7.3 L / 445 cu.in.
_	
Engine Description:	Turbocharged Diesel V-8 cylinder with Overhead Valves
-	
Horse Power:	210 @ 3000 rpm
Torque:	425 lb-ft at 2000 rpm
·	
Injection System:	Diesel
3	
PSI:	N/A Ignition: N/A
Manufacturer:	Navistar
Assembly Plant:	Lorain, OH.
,	
Drive Wheels:	
D. 170 m.ee131	This is a Rear Wheel Drive vehicle w/ Manual Belts

The First through Third characters (1FD) indicate a Ford Incomplete Vehicle made in the U.S.A.

The Fourth character (K) indicates a GVWR of 10001-14000 lbs.

The Fifth through Seventh characters (E30) indicate an Econoline E350 4x2 RV and a Cutaway Van

The Eighth character (F) indicates the OEM engine: 7.3 L / 445 cu.in., V8T Diesel, OHV

The Ninth character (the check digit) is entered as 3.

The VIN appears Valid, the calculated value is 3.

The Tenth character (V) indicates the model year 1997

The Eleventh character (H) indicates the vehicle was made in the assembly plant in Lorain, OH.

The Twelfth through Seventeenth characters (A25172) 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

05-29-2012

1997 FORD E350 138WB DRW RV CUTAW	AY DIESEL 2	DR CUTA	WAY VAN
CURB WEIGHT:	6164 lbs.	•	2796 kg.
	Front: 59 %		r: 41 %
Carb Morgile Diberibación	110110. 33 0	ı.ca.	
Gross Vehicle Weight Rating:	10500 lbs.	•	4763 kg.
Number of Tires on Vehicle:	6		
Drive Wheels:	REAR		
HORIZONTAL DIMENSIONS			
	Inches	Feet	Meters
Total Length	237	19.75	6.02
Wheelbase:	138	11.50	3.51
Front Bumper to Front Axle	30	2.50	0.76
Front Bumper to Front of Front Well	10	0.83	0.25
Front Bumper to Front of Hood	4	0.33	0.10
Front Bumper to Base of Windshield	33	2.75	0.84
Front Bumper to Top of Windshield	58	4.83	1.47
Rear Bumper to Rear Axle	69	5.75	1.75
Rear Bumper to Rear of Rear Well		•	_•
Rear Bumper to Rear of Trunk		•	_•
Rear Bumper to Base of Rear Window		•	_•
WIDTH DIMENSIONS			
Maximum Width	92	7.67	2.34
Front Track	69	5.75	1.75
Rear Track	73	6.08	1.85
VERTICAL DIMENSIONS			
	Inches	Feet	Meters
Height	83	6.92	2.11
Ground to:			
Front Bumper (Top)	24	2.00	0.61
Headlight - center	34	2.83	0.86
Hood - top front	43	3.58	1.09
Base of windshield	51	4.25	1.30
	-		
Rear Bumper - top		•	_•
Trunk - top rear		_•_	_•
Base of rear window		•	_•_

S/N:99R-930512AQ03201

Reg. To: 4N6XPRT Systems

1997 FORD E350 138WB DRW RV CUTAWAY DIESEL 2DR CUTAWAY VAN

INTERIOR DIMENSIONS

	Inches	Feet	Meters
Front Seat Shoulder Width		•	_•
Front Seat to Headliner	42	3.50	1.07
Front Leg - seatback to floor (max)	40	3.33	1.02
Rear Seat Shoulder Width		•	_•
Rear Seat to Headliner		•	_•
Rear Leg - seatback to floor (min)		•	_•

Seatbelts: 3pt LAP & SHOULDER - front, None or Unknown - rear

Airbags: DRIVER SIDE AIRBAGS

STEERING DATA

Turning Circle (Diameter	·)	600	50.00	15.24
Steering Ratio:	17.00:1			
Wheel Radius:		14	1.17	0.36
Tire Size (OEM):	LT225/75R16			

ACCELERATION & BRAKING INFORMATION

Brake Type: FRONT DISC - REAR DRUM

ABS System: REAR ABS STANDARD, ALL WHEEL ABS OPTIONAL

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

d = 190 ft t = 4.3 sec. a = -20.3 ft/sec/sec G-force = -0.63

ACCELERATION:

0->30 mph	t =	5.1 sec.	a =	8.6 ft/sec/sec	G-force =	0.27
0->60 mph	t =	14.6 sec.	a =	<pre>6.0 ft/sec/sec</pre>	G-force =	0.19
45->65 mph	t =	9.4 sec.	a =	3.1 ft/sec/sec	G-force =	0.10

Transmission Type: 4spd AUTOMATIC

NOTES:

Federal Bumper Standard Requirements = NO REQUIREMENT

N.s.d.c. = 1992 - 2009

Reg. To: 4N6XPRT Systems S/N:99R-930512AQ03201

1997 FORD E350 138WB DRW RV CUTAWAY DIESEL 2DR CUTAWAY VAN

OTHER INFORMATION

TIP-OVER STABILITY RATIO = 1.07 REASONABLY STABLE

CENTER OF GRAVITY (No Load):

Inches behind front axle = 56.58
Inches in front of rear axle = 81.42
Inches from side of vehicle = 46.00
Inches from ground = 33.20
Inches from front corner = 98.04
Inches from rear corner = 157.30
Inches from front bumper = 86.58
Inches from rear bumper = 150.42

MOMENTS OF INERTIA APPROXIMATIONS (No Load):

YAW MOMENT OF INERTIA = 5142.92 lb-ft-sec^2 PITCH MOMENT OF INERTIA = 4953.36 lb-ft-sec^2 ROLL MOMENT OF INERTIA = 959.52 lb-ft-sec^2

FRONT PROFILE INFORMATION

ANGLE FRONT BUMPER TO HOOD FRONT = 78.1 deg
ANGLE FRONT OF HOOD TO WINDSHIELD BASE = 15.4 deg
ANGLE FRONT OF HOOD TO WINDSHIELD TOP = 30.7 deg
ANGLE OF WINDSHIELD = 52.0 deg
ANGLE OF STEERING TIRES AT MAX TURN = 26.4 deg

FIRST APPROXIMATION CRUSH FACTORS:

Speed Equivalent (mph) of energy used in causing crush or indentation may be evaluated using the following formula and the appropriate Crush Factor (CF) and Maximum indentation depth, or MID, (in feet):

```
V(mph) = Sqr root of (30 * CF * MID)
```

Front Impact for a front engine vehicle = 21
Front Impact for a Rear engine vehicle = 27
Side Impact = 27
Rear Impact for a front engine vehicle = 27
Rear Impact for a rear engine vehicle = 21

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

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

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 No Impact tests for the Ambulances.

A FORCE-BALANCE approach for calculating stiffness values for the side of the E350 van body was used, with the Stiffness Values from the range of tests for the Pontiac Grand Prix as the "Known Good" values.

Complications in this instance arise since the majority of the collision force ffrom the Pontiac was concentrated upon the corner of the Ambulance body, which sustained little to no crush deformation. To be conservative, we have used a No Damage Speed for the Van of 5 mph and the crsh profile to the van body only, which is in front of the Ambulance Body. Therefore, the Force-Balance results should be conservative.

2001 PONTIAC GRAND PRIX - Front Impact

Curb Weight (pou	nds): 33 9	96	PDOF	_ever Arm Dista	nce (inches	s):	0.00
Occupant + Cargo Weight (pou		0		Noment of Iner	•		2291.88
Total Weight (pou	nds): 33 9	96]	T avv iv	MOTHER OF THE	tia (ib 1t 3ct	-	
Angle Coll Force to Normal (degr	ees): 0	0.0	"Known" S	Stifness Values			_
No Damage Speed (n	nph): 5	.0		Average [A 285.4		74.7
Energy Crush Depth (inc	hes): 14. 8	35		Minimum [214.4		43.2
Damage Length (inc		5.0		Maximum [452.2		154.1
<i>y</i> , ,	,		6.	_			
Crush Profile Measureme		3	St	td. Devation	64.7		31.2
	Unequal	7 4	Zone	Area	Zon		Area
	Spacing (inches)	Zone Area (inches²)	Depth(x) (inches)	Depth(x) (inches²)	Depth (inch	-	Depth(y) inches²)
C1 (inches) 11.00			_				
C2 (inches) 20.00	26.00	403.00				4.26	5746.00
C3 (inches) 8.00	20.00	280.00	7.43	2080.00	<u> </u>	28.57	8000.00
C4 (inches)				_	_	_	
C5 (inches)			<u> </u>		_		
C6 (inches)							
C7 (inches)							
C8 (inches)							
C9 (inches)							
C10 (inches)							
Average Crush (inches):	14.85						
Results			Average		KE		Closing
110001100	Α	В	Force (pounds)	Damage Energy (ft*lbs)	Speed (mph)	Delta V (mph)	Speed (MPH)
Minimum [214.4	43.2	19684.00	33289.98	17.1	17.9	24.6
Avg - 2 Std. Deviations	156.0	12.3	7788.45	18094.47	12.6	13.8	18.9
Avg - 1 Std. Deviations	220.7	43.5	19931.35	33887.54	17.3	18.1	24.7
Avg - 1 Std. Deviations	285.4	74.7	32074.25	51270.43	21.3	21.7	29.7
Avg + 1 Std. Deviations	350.1	105.9	44217.15	68837.97	24.7	24.8	33.9
Avg + 2 Std. Deviations	414.8	137.1	56360.05	86464.10	27.6	27.6	37.7
Avg + 2 Std. Deviations	452.2	154.1	63025.75	96226.32	29.2	29.0	39.6
_			03023.73	30220.32	<u>29.2</u> k ²	3129.2	
Damage Centroid Depth (x)		7.75		Γ££ Ν Β .:			
Damage Centroid Depth (y)		20.13		Eff. Mass Ratio	(gamma)	1.00	<u>U</u>
Area of Damage (ir	nches²):	683.00					

Curb Weight (po			PDOF	.ever Arm D	istance	e (inches	s):		0.00
ccupant + Cargo Weight (po				oment of l		•	_	81	.33.00
Total Weight (po	unds): 9200						- / L		
gle Coll Force to Normal (de	grees): 0.0								
No Damage Speed	(mph): 5.0								
Energy Crush Depth (in	nches): 3.09								
Damage Length (i	nches): 32.0								
Crush Profile Measurer	ments: 4								
	Unequal Spacing Zo	one Area	Zone Depth(x)	Area Depth		Zon Depth			rea oth(y)
		(inches²)	(inches)	(inche		(inch	•		ches²)
C1 (inches) 1.00	8.00	24.00	1.72		1.33		4.89	Ò	117.33
C2 (inches) 5.00	6.00	30.00	2.50		5.00		9.00		270.00
C3 (inches) 5.00	18.00	45.00	1.67		5.00		2.00	1	1890.00
C4 (inches) 0.00		15.00	2.07		5.00		2.00		
C5 (inches)]			_					
C6 (inches)]								
C7 (inches)]								
C8 (inches)]								
C9 (inches)	j			_					
C10 (inches)	- 								
Average Crush (inches):	3.09								
Results		,	Average			KE			
Results	А	В (Force (pounds)	Damage Energy (ft*l		Speed (mph)	Delta '		bsub1
Minimum		124.2	19684.00	16654		7.4	(mph	5.6	12.9
Minimum									
Avg - 2 Std. Deviations	400.7	27.8	7788.45	11440		6.1		.1	6.1
Avg - 1 Std. Deviations		126.6	19931.35	16758		7.4		5.7	13.0
Average		255.7	32074.25	21787		8.4		3.0	18.5
Avg + 1 Std. Deviations		401.7	44217.15	26654		9.3		.2	23.2
Avg + 2 Std. Deviations		558.9	56360.05	31414		10.1	10		27.4
Maximum	1934.4	648.8	63025.75	33993	.71	10.5	10).7	29.5
Damage Centroid Depth (x	(inches)	1.93				k²	409	9.03	
Damage Centroid Depth (y	y) (inches) 2	3.00		Eff. Mass Ra	itio (ga	mma)		1.00	

99.00

Registered Owner: 4N6XPRT SYSTEMS

Area of Damage (inches²):

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: 2A4RR5DG6BR500118

Model:	2011 Chrysler Town & Country Van
Engine Size:	3.6 L/ 220 cu.in.
ingino Docemintion.	W. G. G. Grandon with Double Overhead Cam
ing the Description:	V6 cylinder with Double Overhead Cam
Horse Power:	283 @ 6350 rpm
Torque:	260 lb-ft at 4300rpm
Injection System:	Electronic Fuel Injection (EFI)
DCT.	N/A mai
PS1:	N/A psi Ignition: Electronic
Manufacturer:	Chrysler
Assembly Plant:	Windsor, ONT
-	
Drive Wheels:	

The First through Third characters (2A4) indicate a Chrysler MPV made in Canada

The Fourth character (R) indicates a GVWR of 6001-7000 lbs.

The Fifth through Seventh characters (R5D) indicate a Town & Country

This is a Front Wheel Drive vehicle

The Eighth character (G) indicates the OEM engine: 3.6 L/ 220 cu.in., V6, DOHC

The Ninth character (the check digit) is entered as 6.

The VIN appears Valid, the calculated value is 6.

The Tenth character (B) indicates the model year 2011

The Eleventh character (R) indicates the vehicle was made in the assembly plant in Windsor, ONT

The Twelfth through Seventeenth characters (500118) indicate the Serial Number and are unique to this vehicle.

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PROVIDED BY: 4N6XPRT Systems 8387 University Avenue La Mesa CA 91942

5/9/2012

,	•		
2011 CHRYSLER TOWN & COUNTRY 4 DOOR PASSEN	GER VAN		
Curb Weight:	4652 lbs.		110 kg.
Curb Weight Distribution - Front:	56 %	Rear:	44 %
Gross Vehicle Weight Rating:	6050 lbs.	2	744 kg.
Number of Tires on Vehicle: Drive Wheels:	FRONT		
Horizontal Dimensions	Inches	Feet	Meters
Total Length	203	16.92	5.16
wheelbase:	121	10.08	3.07
Front Bumper to Front Axle:	38	3.17	0.97
Front Bumper to Front of Front Well: Front Bumper to Front of Hood:	7	0.58	0.56
Front Bumper to Base of Windshield:	41	3.42	1.04
Front Bumper to Top of Windshield:	75	6.25	1.91
Rear Bumper to Rear Axle:	44	3.67	1.12
Rear Bumper to Rear of Rear Well:	30	2.50	0.76
Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	8	0.42	0.13
Width Dimensions			
Maximum Width:	79	6.58	2.01
Front Track:	66	5.50	1.68
Rear Track:	65	5.42	1.65
Vertical Dimensions			
Height: Ground to -	68	5.67	1.73
Front Bumper (Top)	24	2.00	0.61
Headlight - center	33	2.75	0.84
Hood - top front:	38	3.17	0.97
Base of Windshield Rear Bumper - top:	21	1.75	0.53
Trunk - top rear:	41	3.42	1.04
Base of Rear Window:	47	3.92	1.19

2011 CHRYSLER TOWN & COUNTRY 4 DOOR PASSENGER VAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	64	5.33	1.63
Front Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (max)	41	3.42	1.04
Rear Seat Shoulder Width	64	5.33	1.63
Rear Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (min)	36	3.00	0.91
Seatbelts: 3pt - front and rear			
Airbags: FRONT SEAT AIRBAGS + SIDE AI	RBAGS		
Steering Data			
Turning Circle (Diameter)	468	39.00	11.89
Steering Ratio: :1			
Wheel Radius:			
Tire Size (OEM): 235/60R16			
Acceleration & Braking Information			
Brake Type: ALL DISC			
ABS System: ALL WHEEL ABS			
Braking, 60 mph to 0 (Hard pedal, no skid,	dry pavement):		
$d = \boxed{141.0} \text{ ft} \qquad t = \boxed{3.2} \text{ sec}$	$a = \boxed{-27.4} \text{ ft/}$	sec² G-fo	rce = -0.85
Acceleration:			
0 to 30mph $t = 2.9$ sec	$a = \boxed{15.2} ft/$	sec² G-fo	rce = 0.47
0 to 60mph $t = \overline{7.6}$ sec	$a = \boxed{11.6}$ ft/	sec² G-fo	rce = 0.36
45 to 65mph $t = 4.9$ sec	a = 6.0 ft/	sec² G-fo	rce = 0.19
Transmission Type: AUTOMATIC			
Notes:			
	No Boout	iromon+	
Federal Bumper Standard Requirements:	No Requ	i i ellleti t	

2011 - 2012 N.S.D.C =

2011 CHRYSLER TOWN & COUNTRY 4 DOOR PASSENGER VAN

Other Information Tip-Over Stability Ratio = NHTSA Star Rating (calculated)	1.23	Reasonably Stable
Center of Gravity (No Load): Inches behind front axle	=	53.24
Inches in front of rear axle	=	67.76
Inches from side of vehicle	=	39.50
Inches from ground	=	26.62
Inches from front corner	=	99.42
Inches from rear corner	=	118.54
Inches from front bumper	=	91.24
Inches from rear bumper	_	111.76
Theres from rear bumper	_	
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	3448.56 lb*ft*sec²
Pitch Moment of Inertia	=	3553.24 lb*ft*sec²
Roll Moment of Inertia	=	788.44 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	63.4 deg
Angle Front of Hood to Windshield Base	=	<u>11.6</u> deg
Angle Front of Hood to Windshield Top	=	22.4 deg
Angle of Windshield	=	31.7 deg
Angle of Steering Tires at Max Turn	=	29.6 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:

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

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #7068

2009 VOLKSWAGEN ROUTAN

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Sister/Clone database reader

You entered: 2011 CHRYSLER TOWN & COUNTRY

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

Year Range	Make	Model	Body Styles	Wheelbase
2008 - 2011 Remarks:	CHRYSLER	TOWN & COUNTRY	SW, VAN	121.2, 119.3
2008 - 2011 Remarks:	DODGE	GRAND CARAVAN		121.2
2009 - 2011 Remarks:	VOLKSWAGEN	ROUTAN		121.2

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

Test Information

Test # 7068	NHTSA Test Reference Guide Version #	V5			
Test Date 2009-05-27	Contract #	# DTNH22-08-D-00086			
Contract/Study Title	FMVSS 208 FRONTAL IMPACT - 2009 VOLKSWAGEN	ROUTAN			
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT REST	RAINT PERFOR	MANCE D	DATA	
Test Type	FMVSS 208 OCCUPANT CRASH PROTECTION	Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	O Side Impact Point	0	mm	0.0	inches
	Offset Distance	0	mm	0.0	inches
	Closing Speed	55.8	Km/Hr	34.67	MPH
Test Performer	MGA RESEARCH				
Test Reference #	BT09052701				
Test Track Surface	CONCRETE Condition	DRY			
Ambient Temperature	21 C 69.8 F Total Number of Curves	38			
Data Recorder Type	OTHER	Data Link	OTHER		
Test Commentary	DTS TDAS PRO				
	Fixed Barrier Information				
					1.
Barrier Type		0	mm	0	inches
	FLAT BARRIER				
Barrier Commentany	I .				

2009 VOLKSWAGEN ROUTAN LEFT FRONT SEAT OCCUPANT

Test # 7068	
Vehicle # Temperature Sex FEMALE	
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 5 PERCENTILE	
Calibration Method HYBRID III	
Occupant Manufacturer FIRST TECHNOLOGY S/N 516	
Occupant Modification	
Occupant Description	
Occupant Commentary HEAD TO HEADREST	
Used	
<u>Head</u> Head to -	
WindShield [712 mm [28.0] inches HIC Lower Time Interval (ms) [69.1] Seatback 0 mm 0.0 inches HIC Upper Time Interval (ms) [84.1]	
Side Header 306 mm 12.0 inches	
Side Window 411 mm 16.2 inches	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) AIR BAG	
Second Contact Region (Head)	
Occord Contact Region (Field)	
<u>Chest</u>	
Chest to -	
Dash 597 mm 23.5 inches Arm to Door 181 mm 7.1 inches	
Steering Wheel 244 mm 9.6 inches Hip to Door 153 mm 6.0 inches	
Seatback 0 mm 0.0 inches	
Chest Severity Index 0 Pelvic Peak Lateral Acceleration (g's) 0	
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 47	
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) AIR BAG	
Second Contact Region (Chest/Abdomen) NONE	
<u>Legs</u>	
Knees to Dash 89 mm 3.5 inches Knees to Seatback 0 mm 0.0 inches	
Left Femur Peak Load -2194 Newtons -493.2 pounds Force	
Right Femur Peak Load -1955 Newtons -439.5 pounds Force	
First Contact Region (Legs) DASHPANEL	
Second Contact Region (Legs)	

2009 VOLKSWAGEN ROUTAN LEFT FRONT SEAT OCCUPANT

Test #	7068			-		
Vehicle #	1		Sex	FEMALE		
Location	LEFT FRONT SE	EAT	Age	0		
Position	FORWARD OF C	CENTER POSITION	Height	0 mm	0.0 inches	
Туре	HYBRID III DUM	MY	Weight	0.0 kg	0 pounds	
Size	5 PERCENTILE					
Cal	ibration Method	HYBRID III				
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/	N 516			
Occup	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	HEAD TO HEADREST				
·	•					
		Restraints	<u>i</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 FRONTA	L AIRBAG				
Mounte	ed STEERIN	IG WHEEL				
Deploy	ment DEPLOY	ED PROPERLY				
Restrai	int Commentary	SECONDARY				

2009 VOLKSWAGEN ROUTAN RIGHT FRONT SEAT OCCUPANT

Test # 7068
Vehicle # 1 Sex FEMALE
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 5 PERCENTILE
Calibration Method HYBRID III
Occupant Manufacturer FIRST TECHNOLOGY S/N 511
Occupant Modification
Occupant Description
Occupant Commentary HEAD TO HEADREST
<u>Head</u> Head to -
Windshielder Header 372 mm 14.6 inches Head Injury Criteria (HIC) 402
WindShield 748 mm 29.4 inches HIC Lower Time Interval (ms) 70.4
Seatback 0 mm 0.0 inches HIC Upper Time Interval (ms) 85.4
Side Header 298 mm 11.7 inches
Side Window 409 mm 16.1 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 377 mm 14.8 inches Arm to Door 182 mm 7.2 inches
Steering Wheel 0 mm 0.0 inches Hip to Door 168 mm 6.6 inches
Seatback 0 mm 0.0 inches
Chest Severity Index Pelvic Peak Lateral Acceleration (g's) 0
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 43
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) AIR BAG
Second Contact Region (Chest/Abdomen) NONE
<u>Legs</u>
Knees to Dash 61 mm 2.4 inches Knees to Seatback mm 0.0 inches
Left Femur Peak Load -2984 Newtons -670.8 pounds Force
Right Femur Peak Load -2781 Newtons -625.2 pounds Force
First Contact Region (Legs) DASHPANEL
Second Contact Region (Legs)

2009 VOLKSWAGEN ROUTAN RIGHT FRONT SEAT OCCUPANT

Test #	7068			
Vehicle #	1		Sex	FEMALE
Location	RIGHT FRONT S	EAT	Age	0
Position	FORWARD OF C	ENTER POSITION	Height	0 mm 0.0 inches
Type	HYBRID III DUMI	MY	Weight	0.0 kg 0 pounds
Size	5 PERCENTILE			
Cali	ibration Method	HYBRID III		
Occupai	nt Manufacturer	FIRST TECHNOLOGY S/N 511		
Occupa	ant Modification			
Occu	pant Description			
Occupa	ant Commentary	HEAD TO HEADREST		
		Restraints		
Restrai	nt # 1 3 POINT	BELT		
Mounte	ed BELT - Co	ONVENTIONAL MOUNT		
Deploy	ment DEPLOY I	ED PROPERLY		
Restrai	nt Commentary	PRIMARY		
Restrai	nt # 2 FRONTAL	_ AIRBAG		
Mounte	ed DASH PA	NEL - TOP		
Deploy	ment DEPLOY I	ED PROPERLY		
Restrai	nt Commentary	SECONDARY		

Vehicle 1 2009 VOLKSWAGEN ROUTAN

_									
=	068								
VIN <u>2</u>	V8HW44199R5	43656		NHTSA Te	est Vehicl	e Numbe	r <u> </u> 1		
Year 2	009			Vehicle Mo	dification	Indicator	PRODUCTION	<u>ON VEHICI</u>	<u>_E</u>
Make V	OLKSWAGEN	Post-te	st Steering Co	olumn Shear	Capsule	Seperatio	n UNKNOWN		
Model R	OUTAN		Steerir	ng Column Co	ollapse M	echanism	UNKNOWN		
Body C	THER								
Engine V	6 TRANSVERS	E FRONT							
Displacement 3	.8 Liter	Transmiss	ion AUTOM	ATIC - FRON	IT WHEE	L DRIVE]	
Vehicle Modificat	tion(s) Description	n							
Vehicle Commer	ntary ROUTAN	MPV							
Vehicle Lengt	th 5127 r	nm 201.9	inches	CG	behind F	ront Axle	1393 mm	54.8	inches
Vehicle Wi	dth 2000 r	nm 78.7	inches	Center of D	Damage to	o CG Axis	0 mm	0.0	inches
Vehicle Wheelb	ase 3081 r	nm 121.3	inches	Total Leng	gth of Ind	entation	1140 mm	44.9	inches
Vehicle Test Wei	ight 2116 k	(G 4664	pounds	Maximum S	Static Cru	sh Depth	445 mm	17.5	inches
					Pre-Impa	ct Speed	56 kph	34.7	mph
Vehic	cle Damage Ind	ex 12FDEW	/6	Princi	ipal Direct	ion of Fo	rce 0		
D D (0 1 (D 0	D (T			
Damage Prof				Crush fron			st Damage N		
·	ed Left-to-Right,		•		Pre-Test	_	Post-Test	Crush I	
DPD 1 32		2.6 inche	es Left Bu	mper Corner		inches	185.1 inche		inches
DPD 2 38	=	inche	es		5022	mm	4701 mm	321	_ mm
DPD 3 44	0 mm <u>17</u>	'.3 inche	:S	Centerline	201.9	inches	184.9 inche	es 17.0	inches
DPD 4 44	5 mm <u>17</u>	'.5 inche	S		5127	mm	4696 mm	431	Īmm
DPD 5 32	8 mm 12	2.9 inche							_
DPD 6 26 9	9 mm 10).6 inche	s Right Bu	mper Corner		inches	187.1 inche		」inches ¬
					5021	mm	4752 mm	269	_l mm
			- · · · -					_	
Bumper Eng				gagement			•	Engagem	
(Inline Impa		,	•	Impact Only)			(Side	Impact On	ly) ¬
0.0)	l	NO DIREC	T ENGAGEM	ENT			0.0	_
Moving T	est Cart		Moving T	est Cart/Veh	icle		Vehicle C	rientation (on Cart
Ang			Crab	bed Angle			Movir	ng Test Car	rt
	NGAGEMENT	7		0.0			NO DIRECT		
Magnitude of t			Magniture o	f the Crabbed Angl	le			ude of the Angle	
=	veen surface of a		_	e Clockwise from			Measured betwee	_	
Rollover Test Ca	art and the Ground	L	ongitudinal Vector	to Velocity Vector	of Vehicle		and Direction	n of Test Cart N	Motion

Vehicle 1 2009 VOLKSWAGEN ROUTAN

Test #	7068						
	2V8HW44199R5436	56	NHTSA Tes	t Vehicle Numbe	2r 1		
-	2009	<u>50</u>]		fication Indicator		N VEHIC	I F
	VOLKSWAGEN	Post-test Steering				11 1211101	
	ROUTAN		ring Column Coll				
-	OTHER		9	apoo moonamen			
	V6 TRANSVERSE FF	RONT					
Displacement			MATIC - FRONT	WHEEL DRIVE]	
Vehicle Modifica	ation(s) Description						
Vehicle Comme	entary ROUTAN MP	/					
Vehicle Leng	gth 5127 mm	201.9 inches	CG b	ehind Front Axle	1393 mm	54.8	inches
Vehicle W	/idth 2000 mm	78.7 inches	Center of Da	mage to CG Axi	s 0 mm	0.0	inches
Vehicle Wheel	base 3081 mm	121.3 inches	Total Lengtl	h of Indentation	1140 mm	44.9	inches
Vehicle Test W	eight 2116 KG	4664 pounds	Maximum Sta	atic Crush Depth	445 mm	17.5	inches
			Pr	re-Impact Speed	56 kph	34.7	mph
Veh	icle Damage Index [1	2FDEW6	Principa	al Direction of Fo	orce 0		
	<u>P</u>	re & Post Test	Damage Me	easurements	<u>S</u>		
(Measureme	nts are taken in a longitudinal	direction. Except for Engine	Block, all measuremen	nts are take from the R	Rear Vehicle Surface	forward.)	
Le	eft Side		Centerline		Righ	t Side	
Pre-Test	Post-Test	Pre-Te	est Pos	t-Test	Pre-Test		t-Test
mm inches	s mm inches	mm	inches mm	inches	mm inches	mm	inches
		Length	n of Vehicle at Ce	enterline			
		5127	201.9 4696	184.9			
			Engine Block				
		0	0.0	0.0			
5022 197.7	4701 185.1	F	ront Bumper Cor	rner 50	197.7	4752	187.1
			Front of Engine)			
		0	0.0	0.0			
0.0	0.0		Firewall		0.0	0	0.0
			0.0				,
0.0	0.0		r Leading Edge o		0.0	0	0.0
0.0	0 0.0		Leading Edge o	_	0.0	0	0.0
0.0	0 0.0		ottom of 'A' Post	<u> </u>	0.0	0	0.0
0.0	0 0.0		er Trailing Edge o		0.0	0	0.0
0.0	0.0	Lowe	er Trailing Edge o		0.0	0	0.0
			Steering Columi				
			0.0	<u> 0.0</u>			
			ing Column to 'A'	<u></u> _	1)		
			0.0	0.0	n.		
			ing Column to He	<u>_</u>	1)		
		0 (0.0	0.0			

NHTSA Crash Test - #7068 - Front Impact

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

Test Vehicle Weight = 4664 pounds Vehicle Closing Speed = 34.7 mph Test Crush Length = 78.7 inches

Pre/Post Collision Crush Depths (inches)

Left Side Crush Centerline Crush Right Side Crush (Pass. Side)

(Driver Side) 12.6 17.0 10.6

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 10.6 inches 508.1 Using a Rated No Damage Speed of 360.3 437.4 148.4 2.5mph Using a Rated No Damage Speed of 5.0mph 664.6 372.1 593.6 Using a Rated No Damage Speed of 7.5mph 912.9 312.0 1335.5 Using a Rated No Damage Speed of 257.3 2374.2 10.0mph 1105.2 Average Crush = 14.3 inches 279.2 Using a Rated No Damage Speed of 2.5mph 267.1 240.4 148.4 Using a Rated No Damage Speed of 5.0mph 492.7 204.5 593.6 Using a Rated No Damage Speed of 676.7 171.5 1335.5 7.5mph Using a Rated No Damage Speed of 10.0mph 819.3 141.4 2374.2 Maximum Crush = 17.0 inches 197.5 Using a Rated No Damage Speed of 2.5mph 224.7 170.1 148.4 Using a Rated No Damage Speed of 5.0mph 414.4 144.7 593.6 Using a Rated No Damage Speed of 7.5mph 569.2 121.3 1335.5 100.0 Using a Rated No Damage Speed of 689.2 2374.2 10.0mph

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

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	17.0	29.9	-4.8	-16.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 28.3

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

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, lb/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

NHTSA Crash Test - #7068 - Front Impact

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

Test Vehicle Weight = 4664 pounds Vehicle Closing Speed = 34.7 mph Test Crush Length = 44.9 inches

Pre/Post Collision Crush Depths (inches)

Left Side Crush Centerline Crush Right Side Crush (Pass. Side)

(Driver Side) 12.6 17.0 10.6

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 10.6 inches 891.3 Using a Rated No Damage Speed of 632.1 767.4 260.3 2.5mph Using a Rated No Damage Speed of 5.0mph 1166.0 652.8 1041.3 Using a Rated No Damage Speed of 7.5mph 1601.6 547.4 2343.0 Using a Rated No Damage Speed of 10.0mph 1939.0 451.3 4165.3 Average Crush = 14.3 inches 489.8 Using a Rated No Damage Speed of 2.5mph 468.6 421.7 260.3 Using a Rated No Damage Speed of 5.0mph 864.3 358.7 1041.3 Using a Rated No Damage Speed of 1187.2 300.8 2343.0 7.5mph Using a Rated No Damage Speed of 10.0mph 1437.3 248.0 4165.3 Maximum Crush = 17.0 inches 346.5 Using a Rated No Damage Speed of 2.5mph 298.4 260.3 394.1 Using a Rated No Damage Speed of 5.0mph 727.0 253.8 1041.3 Using a Rated No Damage Speed of 7.5mph 998.7 212.8 2343.0 Using a Rated No Damage Speed of 175.5 4165.3 10.0mph 1209.0

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

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	17.0	29.9	-4.8	-16.1

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 28.3

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

NHTSA Crash Test - #7068 - Front Impact

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

Test Vehicle Weight = 4664 pounds Vehicle Closing Speed = 34.7 MPH Test Crush Length = 78.7 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Dana Cida)
(Driver Side)	12.6	15.2	17.3	17.5	12.9	10.6	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 10.6 inches 508.1 Using a Rated No Damage Speed of 360.3 437.4 148.4 2.5mph Using a Rated No Damage Speed of 5.0mph 664.6 372.1 593.6 Using a Rated No Damage Speed of 7.5mph 912.9 312.0 1335.5 Using a Rated No Damage Speed of 257.3 2374.2 10.0mph 1105.2 Average Crush = 14.9 inches 257.1 Using a Rated No Damage Speed of 2.5mph 256.3 221.4 148.4 Using a Rated No Damage Speed of 5.0mph 472.8 188.3 593.6 Using a Rated No Damage Speed of 649.5 157.9 1335.5 7.5mph Using a Rated No Damage Speed of 10.0mph 786.3 130.2 1641.5 Maximum Crush = 17.5 inches 186.4 Using a Rated No Damage Speed of 2.5mph 218.2 160.5 148.4 Using a Rated No Damage Speed of 5.0mph 402.6 593.6 136.5 Using a Rated No Damage Speed of 7.5mph 553.0 114.5 1335.5 Using a Rated No Damage Speed of 94.4 10.0mph 669.5 2374.2

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

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	17.5	30.3	-4.4	-14.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 27.5

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

NHTSA Crash Test - #7068 - Front Impact

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

Test Vehicle Weight = 4664 pounds Vehicle Closing Speed = 34.7 MPH Test Crush Length = 44.9 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Doos Cido)
(Driver Side)	12.6	15.2	17.3	17.5	12.9	10.6	(Pass Side)

		CRASH	3 Stiffness Co	efficents	SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 10.6 inches					891.3
Using a Rated No Damage Speed of	2.5mph	632.1	767.4	260.3	
Using a Rated No Damage Speed of	5.0mph	1166.0	652.8	1041.3	
Using a Rated No Damage Speed of	7.5mph	1601.6	547.4	2343.0	
Using a Rated No Damage Speed of	10.0mph	1939.0	451.3	4165.3	
Average Crush = 14.9 inches					451.1
Using a Rated No Damage Speed of	2.5mph	449.7	388.4	260.3	
Using a Rated No Damage Speed of	5.0mph	829.5	330.4	1041.3	
Using a Rated No Damage Speed of	7.5mph	1139.4	277.1	2343.0	
Using a Rated No Damage Speed of	10.0mph	1379.4	228.4	2879.8	
Maximum Crush = 17.5 inches					327.0
Using a Rated No Damage Speed of	2.5mph	382.9	281.6	260.3	
Using a Rated No Damage Speed of	5.0mph	706.3	239.5	1041.3	
Using a Rated No Damage Speed of	7.5mph	970.1	200.8	2343.0	
Using a Rated No Damage Speed of	10.0mph	1174.5	165.6	4165.3	

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

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

DACH 2 Ctiffness Coefficents

CM AC Ctiffnood

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	17.5	30.3	-4.4	-14.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 27.5

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

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

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

G = Energy dissipated without permanent damage, Ib

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

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 2008 - 2011 Make: CHRYSLER

Model: TOWN & COUNTRY

Test	Vehicle	No							
Number	r Info	Damage	Average	e Closing Vehicle Width					
		Speed	Crush	Speed	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
6172	2008 DODGE GRAND CARAVAN MINIVAN	5.0	22.2	35.0	340.3	91.9	630.0	125.1	22.0
6528	2008 DODGE GRAND CARAVAN OTHER	5.0	10.2	24.7	471.2	182.1	609.4	286.1	24.0
7068	2009 VOLKSWAGEN ROUTAN OTHER	5.0	14.9	34.7	472.1	187.8	593.6	256.4	32.2
	Average (AVG)				427.9	153.9	611.0	222.5	26.1
		Minimum	(MIN)		340.3	91.9	593.6	125.1	22.0
Maximum (MAX)					472.1	187.8	630.0	286.1	32.2
	Standard Deviation (STDev-sample)				75.8	53.8	18.3	85.7	5.4
Number of Tests (n)				3					

Serial Number: 11R-030201SC02301

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 2008 - 2011 Make: CHRYSLER

Model: TOWN & COUNTRY

Test	Vehicle	No							
Number	r Info	Damage	Max	Closing	V	ehicle	Widt	h	
		Speed	Crush	Speed	S t	iffness	Valu	u e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Κv	Factor
6172	2008 DODGE GRAND CARAVAN MINIVAN	5.0	24.2	35.0	312.1	77.3	630.0	105.2	20.2
7068	2009 VOLKSWAGEN ROUTAN OTHER	5.0	17.5	34.7	402.1	136.2	593.6	186.0	27.4
6528	2008 DODGE GRAND CARAVAN OTHER	5.0	11.9	24.7	404.5	134.3	609.4	210.9	20.6
		Average ((AVG)		372.9	115.9	611.0	167.4	22.7
		Minimum	(MIN)		312.1	77.3	593.6	105.2	20.2
		Maximum ((MAX)		404.5	136.2	630.0	210.9	27.4
	Standard Deviation	n (STDev-sa	mple)		52.7	33.5	18.3	55.3	4.0
	Nu	mber of Tes	sts (n)	3					

Serial Number: 11R-030201SC02301

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: KNJLT05H4R6107577

Model: 1994 Ford (Made by Kia) Aspire 2 door Hatchback

Engine Size: 1.3 L/81 cu.in.

Engine Description: Inline 4 cylinder

Horse Power: 63 @ 5000 rpm

Torque: 73 lb-ft at 3000 rpm

Injection System: | Sequential Fuel Injection

PSI: 30-38 psi Ignition: electronic

Manufacturer: Kia Motors

Assembly Plant: Mazda-Kia, Korea

Drive Wheels: This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver/Passgr Air Bag

The First through Third characters (KNJ) indicate a Ford (Made by Kia) Passenger car made in Korea

The Fourth character (L) indicates Manual Seatbelts + Driver/Passgr Air Bag

The Fifth through Seventh characters (TO5) indicate an Aspire and a 2 door Hatchback

The Eighth character (H) indicates the OEM engine: L4, 1.3 L/81 cu.in., SFI

The Ninth character (the check digit) is entered as 4.

The VIN appears Valid, the calculated value is 4.

The Tenth character (R) indicates the model year 1994

The Eleventh character (6) indicates the vehicle was made in the assembly plant in Mazda-Kia, Korea

The Twelfth through Seventeenth characters (107577) 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 91942

5/9/2012

1994 FORD ASPIRE 2 DOOR HATCHBACK			
Curb Weight: Curb Weight Distribution - Front:	2135 lbs. 62 %	96 Rear: 3	
Gross Vehicle Weight Rating:	lbs.		kg.
Number of Tires on Vehicle: Drive Wheels:	FRONT		
Horizontal Dimensions Total Length Wheelbase:	Inches 156 94	Feet 13.00 7.83	Meters 3.96 2.39
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	34 20 4 43 67	2.83 1.67 0.33 3.58 5.58	0.86 0.51 0.10 1.09 1.70
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	28 15 4 6	2.33 1.25 0.33 0.50	0.71 0.38 0.10 0.15
Width Dimensions Maximum Width: Front Track: Rear Track:	66 56 55	5.50 4.67 4.58	1.68 1.42 1.40
Vertical Dimensions Height: Ground to -	56	4.67	1.42
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	21 25 29 36 25 33 43	1.75 2.08 2.42 3.00 2.08 2.75 3.58	0.53 0.64 0.74 0.91 0.64 0.84 1.09

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

Expert AutoStats®

1994 FORD ASPIRE 2 DOOR HATCHBACK

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	Inches 50 38 42	Feet 4.17 3.17 3.50	Meters 1.27 0.97 1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	50 36 34	4.17 3.00 2.83	1.27 0.91 0.86
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: 22.00:1 Wheel Radius: Tire Size (OEM): 165-70R13	396 11	0.92	0.28
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ABS UNKNOWN			
Braking, 60 mph to 0 (Hard pedal, no skid, $d = \boxed{148.0}$ ft $t = \boxed{3.4}$ sec	dry pavement): $a = -26.1$ ft/	sec² G-fo	rce = -0.81
Acceleration: 0 to 30mph $t = 3.5$ sec 0 to 60mph $t = 12.7$ sec 45 to 65mph $t = 8.6$ sec Transmission Type: 5spd MANUAL	a = 12.6 ft/ a = 6.9 ft/ a = 3.4 ft/	sec² G-fo	rce = 0.39 rce = 0.22 rce = 0.11
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mg 5 mg		

N.S.D.C = 1994 - 1994

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

1994 FORD ASPIRE 2 DOOR HATCHBACK

Other Information		
Tip-Over Stability Ratio =	1.30	Stable
NHTSA Star Rating (calculated)		****
Center of Gravity (No Load):		
Inches behind front axle	=	35.72
Inches in front of rear axle	=	58.28
Inches from side of vehicle	=	33.00
Inches from ground	=	21.45
Inches from front corner	=	77.14
Inches from rear corner	=	92.38
Inches from front bumper	=	69.72
Inches from rear bumper	=	86.28
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	993.05 lb*ft*sec²
Pitch Moment of Inertia	=	964.65 lb*ft*sec²
Roll Moment of Inertia	=	234.30 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	63.4 deg
Angle Front of Hood to Windshield Base	=	10.3
Angle Front of Hood to Windshield Top	=	21.6
Angle of Windshield	=	200
Angle of Steering Tires at Max Turn	=	27.2

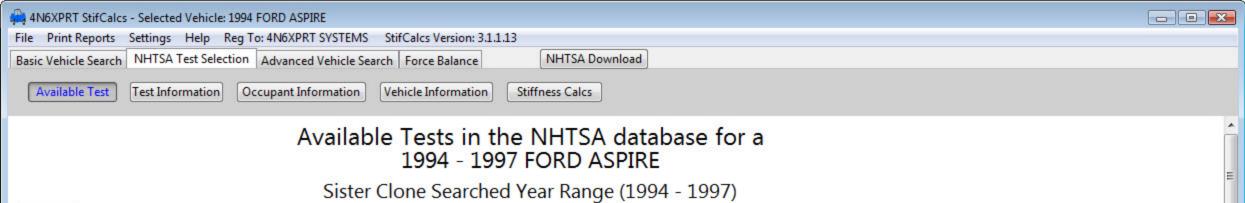
First Approximation Crush Factors:

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:

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).

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201



Print

Frontal Test(s)

Test No.	Year	Make	Model	Impact Speed	Max Crush	Crush Factor	VDI	PDOF	Test Config	VIN
2123	1994	FORD	ASPIRE	29.7	18.2	19.4	12FDEW2	180	VEHICLE INTO	. KNJLT05H9R610
2129	1995	FORD	ASPIRE	35.3	23.9	20.8	12FDEW3	180	VEHICLE INTO	. KNJLT06H6R613
	- 2	j.	- i	3	1	3	1.	1	8	
					-	4			3	1

Rear Test(s)

No Rear Tests: 1994 - 1997

Print

Side Test(s)

Test No.	Year	Make	Model	Impact Speed	Max Crush	Crush Factor	VDI	PDOF	Test Config	VIN
2500	1997	FORD	ASPIRE	33.0	1.2	368.7	03RPEW7	63	IMPACTOR IN	KNJLT05HXV62
	2		9	3		- 1	1		- 2	
	_ J			-		9.		4	L. L.	-
					1					

Other Test(s)

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 NO REAR Impact tests for the Ford Aspire.

To create a SIMILAR class of vehicle, we first looked at the Test Weight of one of the frontal impact tests for the ASPIRE, which was reported as 2389 pounds.

We then looked at the NHTSA database for Flat Rear Ends (Hatchback/Station Wagon) that have REAR IMPACT TESTS and had a TEST WEIGHT of 2289-2489 pounds (+/- 100 pounds).

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

Available Test Results Rear Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2012

Vehicle Weight Range: 2289-2489

Serial Number: 11R-030201SC02301

Test	Vehicle	No							
Numbe	r Info	Damage	Average		V	ehicle	Widtl	า	
		Speed	Crush	KEES	S t	iffness	: Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
294	1981 MAZDA GLC FIVE DOOR HATCHBACK	5.0	21.0	27.7	166.2	36.0	383.6	53.6	14.7
1047	1986 MAZDA 323 THREE DOOR HATCHBACK	5.0	13.7	23.2	202.6	53.8	381.7	87.4	15.7
389	1981 MERCURY LYNX THREE DOOR HATCHBACK	5.0	13.1	23.3	204.5	56.9	367.4	92.3	16.5
926	1984 SUBARU GLF STATION WAGON	5.0	13.5	23.4	205.6	55.9	377.9	90.6	16.2
1111	1986 YUGO GV THREE DOOR HATCHBACK	5.0	14.1	23.7	205.8	54.7	387.3	87.9	16.0
250	1979 MAZDA GLC THREE DOOR HATCHBACK	5.0	8.9	23.7	313.1	132.0	371.3	212.0	25.3
229	1979 NISSAN 310 THREE DOOR HATCHBACK	5.0	8.1	23.6	345.0	157.9	376.9	254.5	27.4
1957	1993 HONDA CIVIC THREE DOOR HATCHBACK	5.0	17.6	47.6	360.3	174.3	372.5	217.6	51.5
		Average	(AVG)		250.4	90.2	377.3	137.0	22.9
		Minimum	(MIN)		166.2	36.0	367.4	53.6	14.7
	1	(MAX)		360.3	174.3	387.3	254.5	51.5	
Standard Deviation (STDev-sample)					76.0	55.0	6.7	77.4	12.5
Number of Tests (n)									

Available Test Results Rear Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2012

Vehicle Weight Range: 2289-2489

Test	Vehicle	No							
Number	r Info	Damage	Max		V	ehicle	Width		
		Speed	Crush		•	iffness		•	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
146	1979 DODGE COLT THREE DOOR HATCHBACK	5.0	21.0	28.1	158.5	34.9	360.2	51.6	15.0
6	1979 VOLKSWAGEN RABBIT THREE DOOR HATC	5.0	21.4	27.4	163.5	34.3	390.3	51.2	14.1
926	1984 SUBARU GLF STATION WAGON	5.0	14.8	23.4	187.4	46.5	377.9	75.3	14.7
1047	1986 MAZDA 323 THREE DOOR HATCHBACK	5.0	14.1	23.2	196.7	50.7	381.7	82.4	15.2
1111	1986 YUGO GV THREE DOOR HATCHBACK	5.0	14.5	23.7	199.9	51.6	387.3	82.8	15.5
389	1981 MERCURY LYNX THREE DOOR HATCHBACK	5.0	13.4	23.3	200.4	54.7	367.4	88.7	16.2
250	1979 MAZDA GLC THREE DOOR HATCHBACK	5.0	13.5	23.7	205.8	57.0	371.3	91.6	16.7
229	1979 NISSAN 310 THREE DOOR HATCHBACK	5.0	13.0	23.6	215.3	61.5	376.9	99.1	17.1
1957	1993 HONDA CIVIC THREE DOOR HATCHBACK	5.0	21.7	47.6	292.6	114.9	372.5	143.5	41.8
1959	1993 HONDA CIVIC THREE DOOR HATCHBACK	5.0	18.3	47.6	344.8	160.2	371.0	200.0	49.4
		Average (AVG)		216.5	66.6	375.7	96.6	21.6
Minimum (MIN)					158.5	34.3	360.2	51.2	14.1
	Maximum (MAX)					160.2	390.3	200.0	49.4
Standard Deviation (STDev-sample)					58.0	39.8	9.1	44.6	12.8
Number of Tests (n)									

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: **1NXBR32E93Z040224**

Model: 2003 Toyota Corolla 4-Door Sedan

Engine Size: |1.8L / 109 cu.in.

Engine Description: |Inline 4 Cylinder with Dual Overhead Cam

Horse Power: 140 @ 6400 rpm

Torque: 125 1b-ft @ 4200 rpm

Injection System: Electronic Fuel Injection (EFI)

PSI: 44-50 psi Ignition: electronic

Manufacturer: Toyota

Assembly Plant: NUMMI, Fremont, CA

Drive Wheels:

This is a Front Wheel Drive vehicle w/ Dual Front Air Bags

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

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

The Fifth character (R) indicates the OEM engine: 1.8L / 109 cu.in., L4,DOHC

The Sixth and Eighth characters (3E) indicate a Corolla

The Seventh character (2) indicates Dual Front Air Bags

The Ninth character (the check digit) is entered as 9.

The VIN appears Valid, the calculated value is 9.

The Tenth character (3) indicates the model year 2003

The Eleventh character (Z) indicates the vehicle was made in the assembly plant in NUMMI, Fremont, CA

The Twelfth through Seventeenth characters (040224) 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

6/6/2012

2003 TOYOTA COROLLA 4 DOOR SEDAN llbs. Curb Weight: 2546 1155 kq. % Curb Weight Distribution -Front: 61 39 % Rear: Gross Vehicle Weight Rating: 3585 llbs. 1626 kg. Number of Tires on Vehicle: 4 Drive Wheels: FRONT **Horizontal Dimensions Inches** Feet Meters Total Length 178 14.83 4.52 wheelbase: 102 8.50 2.59 Front Bumper to Front Axle: 37 3.08 0.94 1.92 Front Bumper to Front of Front Well: 23 0.58 7 Front Bumper to Front of Hood: 0.58 0.18 Front Bumper to Base of Windshield: 44 3.67 1.12 Front Bumper to Top of Windshield: 75 6.25 1.91 39 3.25 0.99 Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: 2.08 25 0.64 0.50 0.15 Rear Bumper to Rear of Trunk: 6 20 0.51 Rear Bumper to Base of Rear Window: 1.67 Width Dimensions 67 5.58 1.70 Maximum Width: 58 4.83 1.47 Front Track: 57 4.75 Rear Track: **Vertical Dimensions** Height: 58 4.83 1.47 Ground to -23 1.92 0.58 Front Bumper (Top) Headlight - center 28 2.33 0.71 2.50 Hood - top front: 30 0.76 39 3.25 Base of Windshield 0.99 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 42 3.50 1.07

Base of Rear Window:

1.09

3.58

43

Expert AutoStats®

2003 TOYOTA COROLLA 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	53	4.42	1.35
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	41	3.42	1.04
Rear Seat Shoulder Width	54	4.50	1.37
Rear Seat to Headliner	37	3.08	0.94
Front Leg Room - seatback to floor (min)	35	2.92	0.89
Seatbelts: 3pt - front and rear			
Airbags: FRONT SEAT AIRBAGS			
Steering Data			
Turning Circle (Diameter)	420	35.00	10.67
Steering Ratio: :1			
Wheel Radius:			
Tire Size (OEM): P185/65R15			
Anna Tagastian (A. Bushian Bu Campatian			
Acceleration & Braking Information		1	
Brake Type: FRONT DISC - REAR DRUM			
ABS System: ALL WHEEL ABS - OPTIONAL			
Braking, 60 mph to 0 (Hard pedal, no skid,	dry pavement):		
d = 129.0 ft $t = 2.9$ sec	a = [-30.0] ft/	sec² G-fo	rce = -0.93
		300 0 10	rce = <u>-0.55</u>
Acceleration:		300 0 10	rce = [-0.33]
Acceleration: 0 to 30mph t = 2.9 sec	a = 15.2 ft/		rce = 0.47
		sec² G-fo	
0 to 30mph $t = 2.9$ sec	a = 15.2 ft/ a = 11.1 ft/	sec² G-fo	rce = 0.47
0 to 30mph $t = 2.9$ sec 0 to 60mph $t = 7.9$ sec	a = 15.2 ft/ a = 11.1 ft/	sec² G-fo	rce = 0.47 rce = 0.35
0 to 30mph	a = 15.2 ft/ a = 11.1 ft/	sec² G-fo	rce = 0.47 rce = 0.35
0 to 30mph $t = 2.9$ sec $t = 7.9$ sec $t = 5$ sec t	a = 15.2 ft/ a = 11.1 ft/ a = ft/	sec² G-fo	rce = 0.47 rce = 0.35

N.S.D.C = 2003 - 2004

2003 TOYOTA COROLLA 4 DOOR SEDAN

Other Information

Tip-Over Stability Ratio =	1.27	Stable
NHTSA Star Rating (calculated)		****

Center of Gravity (No Load):

=	39.78
=	62.22
=	33.50
=	22.77
=	83.77
=	106.62
=	76.78
=	101.22
	= = =

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	1416.38 11	o*ft*sec²
Pitch Moment of Inertia	=	1371.54 1	o*ft*sec²
Roll Moment of Inertia	=	308.28 18	o*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	45.0 deg
Angle Front of Hood to Windshield Base	=	13.7 deg
Angle Front of Hood to Windshield Top	=	20.9 deg
Angle of Windshield	=	28.7 deg
Angle of Steering Tires at Max Turn	=	27.8 deg

First Approximation Crush Factors:

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

$$V(mph) = \sqrt{(30 * CF * MID)}$$
KE Equivalent Speed (Front/Rear/Side) = 21 CF
Bullet vehicle IMPACT SPEED estimation
based on TARGET VEHICLE damage ONLY = 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 independent evaluation of speed was possible. (These are NOT 'A', 'B', 'C', or 'G' values)

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #4096

2003 TOYOTA COROLLA

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC01301

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Sister/Clone database reader

You entered: 2003 TOYOTA COROLLA

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

Year Range	Make	Model	Body Styles	Wheelbase
1998 - 2002 Remarks: RESTYLE	CHEVROLET E. WAS GEO	PRIZM	4D, 5D	97.1
1998 - 2003 Remarks: NOT NE	TOYOTA W '03 COROLLA	COROLLA	2D, 3D, 4D, SW	102.4

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

Test Information

Test # 4096	NHTSA Test Reference Guide Version #	V5			
Test Date 2002-03-06	Contract #	DTNH22-97-	C-11033		
Contract/Study Title	FMVSS 214 INDICANT - 2003 TOYOTA COROLLA				
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT REST	RAINT PERFOR	MANCE D	DATA	
Test Type	COMPLIANCE - INDICANT TEST	Configuration	IMPACT	OR INTO VEHI	ICLE
Impact Angle	270 Side Impact Poin	t N/A	mm	N/A	inches
		0	mm	0.0	inches
	Closing Speed	62.0	Km/Hr	38.52	MPH
Test Performer	MGA RESEARCH				
Test Reference #	BT02030601				
Test Track Surface	CONCRETE Condition	DRY			
Ambient Temperature	20 C 68.0 F Total Number of Curves	55			
Data Recorder Type	OTHER	Data Link	OTHER		
Test Commentary	EME ON BOARD DAS 3200				
	Fixed Barrier Information				
Barrier Type	Pole Barrier Diameter	·	mm		inches
Barrier Shape					
Barrier Commentary					- 1

2003 TOYOTA COROLLA LEFT FRONT SEAT OCCUPANT

Test # 4096	
Vehicle # 2 Sex MALE	
Location LEFT 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 037	
Occupant Modification	
Occupant Description	
Occupant Commentary HEAD TO WND SILL & SHOULDER; CHEST TO DOOR PANEL & ARMREST	
<u>Head</u>	
Head to -	
Windshielder Header 303 mm 11.9 inches Head Injury Criteria (HIC) 680	
WindShield 529 mm 20.8 inches HIC Lower Time Interval (ms) 49.4	
Seatback 0 mm 0.0 inches HIC Upper Time Interval (ms) 85.4	
Side Header 177 mm 7.0 inches	
Side Window 281 mm 11.1 inches	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) OTHER	
Second Contact Region (Head)	
<u>Chest</u>	
Chest to -	
Dash 504 mm 19.8 inches Arm to Door 90 mm 3.5 inches	
Steering Wheel 628 mm 24.7 inches Hip to Door 161 mm 6.3 inches	
Seatback 0 mm 0.0 inches	
Chest Severity Index 0 Pelvic Peak Lateral Acceleration (g's) 96.2 There is Trauma Index 72	
Thoracic Trauma Index 72 Thorax Peak Acceleration (g's) 0 Lap Belt Peak Load 0 Newtons 0.0 pound Force	
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) OTHER	
<u>Legs</u>	
Knees to Dash 147 mm 5.8 inches Knees to Seatback 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)	

2003 TOYOTA COROLLA LEFT FRONT SEAT OCCUPANT

Test #	4096				
			0.		
Vehicle #	2		Sex	MALE	
Location	LEFT FRONT SE	AT	Age	0	
Position	CENTER POSIT	ION	Height	0 mm 0.0	inches
Туре	NHTSA SIDE IM	PACT DUMMY	Weight	0.0 kg 0	pounds
Size	50 PERCENTILE				
Cal	libration Method	SIDE IMPACT DUMMY			
Occupa	nt Manufacturer	FIRST TECHNOLOGY S/	N 037		
Occup	ant Modification				
Occu	pant Description				
Occup	ant Commentary	HEAD TO WND SILL & S	HOULDER; CHEST	TO DOOR PANEL 8	& ARMREST
		Restraints			
Restra	int # 1 3 POINT	BELT			
Mount	ed BELT - C	ONVENTIONAL MOUNT			
Deploy	ment NOT APF	LICABLE			
Restra	int Commentary	PRIMARY			
Restra	int # 2 NONE				
Mounte	ed NOT APF	PLICABLE			
Deploy	ment NOT APF	PLICABLE			
Restra	int Commentary	SECONDARY			

2003 TOYOTA COROLLA LEFT REAR SEAT OCCUPANT

Test #	4096				
Vehicle #	2		Sex	MALE	
Location	LEFT REAR SEA	<u>\T</u>	_ Age	0	
Position	NON-ADJUSTAB	LE SEAT	Height	0 mm 0.0 inch	es
Type	NHTSA SIDE IMI	PACT DUMMY	Weight	0.0 kg 0 pou	nds
Size	50 PERCENTILE				
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 DOOR PANE	L & ARMREST; LEI	FT LEG TO DOOR PANEL;	RT TO LT LEG
		<u>Head</u>			
Head to -					
Windshie	elder Header 0	mm 0.0 inche	es Head Injury (Criteria (HIC) 988	
	WindShield 0	mm 0.0 inche	es HIC Lov	wer Time Interval (ms) 43.	6
	Seatback 635	mm 25.0 inche	es HIC Upp	per Time Interval (ms) 54.	8
	Side Header 190	7.5 inche	es		
(Side Window 323	mm 12.7 inche	es		
Neck to Se	eatback 0 r	mm 0.0 inches			
	First Contact Re	egion (Head) C PILLAR			
5	Second Contact Re	egion (Head)			
					_
		Chest			
Chest to -					
	Dash 0 n	nm 0.0 inches	Arm to Door 78	8 mm 3.1 inche	3
Steering '	Wheel 0 n	nm 0.0 inches	Hip to Door 1:		3
Sea	itback 570 n	nm 22.4 inches	_		
Chest S	Severity Index 0		elvic Peak Lateral A	cceleration (g's) 70.1	7
	rauma Index 71			Acceleration (g's) 0	Ī
				pound Force	_
	•			pound Force	
First Co	ontact Region (Che	est/Abdomen) OTHER	<u> </u>	<u>. </u>	7
	= '	est/Abdomen) OTHER			ī
	3 (1	· · · · · · · · · · · · · · · · · · ·			_
V	Dook 0	Legs	Sanaha Caathaal	05 mm 00 in ab a	_
Knees to			nees to Seatback 22		>
				s Force	
Right Femi	ur Peak Load 0		0.0 pound	s Force	\neg
		Region (Legs) OTHER			╡
	Second Contact R	kegion (Legs) [

2003 TOYOTA COROLLA LEFT REAR SEAT OCCUPANT

Test #	4096					
Vehicle #	2		Sex	MALE		
Location	LEFT REAR SE	AT	Age	0		
Position	NON-ADJUSTA	BLE SEAT	Height	0 mm (inches	
Type	NHTSA SIDE IN	IPACT DUMMY	Weight	0.0 kg (pounds	
Size	50 PERCENTIL	E				
Ca	libration Method	SIDE IMPACT DUMMY				
Occupa	nt Manufacturer	FIRST TECHNOLOGY S	N 036			
Occup	ant Modification					
Occu	pant Description					
Occup	ant Commentary	CHEST TO DOOR PANE	L & ARMREST; LE	FT LEG TO DOC	OR PANEL; RT TO L	T LEG
		Restraints	<u>.</u>			
Restra	int # 1 3 POINT	BELT				
Mount	ed BELT - C	CONVENTIONAL MOUNT				
Deploy	ment NOT AP	PLICABLE				
Restra	int Commentary	PRIMARY				
Restra	int # 2 NONE					
Mount	ed NOT AP	PLICABLE				
Deploy	ment NOT AP	PLICABLE	-			
Restra	int Commentary	SECONDARY	-			

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

T "	4000												
	4096			_						-			
VIN									le Numbe				
Year	0								Indicator			/EHICLE	
Make	NHTSA	1		Post-te	st Steerin	ng Columr	n Shear	Capsule	Seperation	n NOT	APPLIC	ABLE	
Model	DEFOR	MABL	E IMPA	CTOR	St	teering Co	olumn C	ollapse M	1echanism	NOT A	APPLIC	ABLE	
Body	NOT AF	PPLICA	ABLE										
Engine	NOT AF	PPLICA	ABLE										
Displacement	0	Liter	- Tra	ansmiss	ion NO	T APPLIC	CABLE						
Vehicle Modific	cation(s)	Descri	ption [
Vehicle Comm	entary [FMVS:	S 214 D	EFORM	ABLE B	ARRIER	AND IMI	PACTOR				-	
Vehicle Len	-	4115	mm	162.0	inches				Front Axle	1106	mm	43.5	inches
Vehicle V	Width	1252	mm	49.3	inches	Ce	nter of [Damage t	o CG Axis	s 0	mm	0.0	inches
Vehicle Whee	elbase	2591	mm	102.0	inches	To	otal Len	gth of Inc	dentation	0	mm	0.0	inches
Vehicle Test W		1362	Īκg	3002	pound			•	sh Depth] mm	0.0	inches
			_						act Speed		kph	38.5	mph
Vel	hicle Dai	mage I	ndex Γ				Princ		tion of Fo		- '		•
						l							
Damage Pro	ofile Di	stance	e Meas	sureme	<u>ents</u>	<u>Cru</u>	<u>ush fror</u>	n Pre &	Post Tes	st Dam	<u>age Me</u>	<u>asuren</u>	<u>nents</u>
(Measu	ured Left	t-to-Rig	ht, Rea	r-to-Froi	nt)			Pre-Tes	<u>it</u>	Post-Te	<u>est</u>	Crush I	<u>Depth</u>
DPD 1	0	mm	0.0	inche	s Le	ft Bumpe	r Corner	0.0	inches	0.0	inches	0.0	inches
DPD 2	0	mm	0.0	inche	es.			0	mm	0	mm	0	mm
DPD 3	0	mm	0.0	inche	s	Co	nterline	0.0	inches	0.0	inches	0.0	inches
DPD 4	0	mm	0.0	inche	S	Ce	nieiliie	0.0		0.0	₹	0.0	₹
DPD 5	<u> </u>	mm	0.0	inche	:S			U	mm	U] mm -	U	_ mm _
DPD 6		mm	0.0	inche	Diah	it Bumper	r Corner	0.0	inches	0.0	inches	0.0	inches
			0.0					0	mm	0	mm	0	mm
Bumper E	ngagen	nent			S	ill Engage	ement			,	A-pillar E	ngagem	ent
(Inline Im	npact On	ıly)			(8	Side Impa	ct Only))			(Side In	npact On	ıly)
	27.0	Ī		Γ	N	OT APPL	ICABLE					0.0	Ť
				-									_
Moving	g Test Ca	art			Mov	ing Test C	Cart/Veh	icle		Vel	hicle Ori	entation (on Cart
Α	ngle					Crabbed	Angle				Moving	Test Ca	rt
NOT A	APPLICA	BLE				27.0)				NOT AP	PLICABL	.E
Magnitude	of the Tilt A	\ngle			Magni	iture of the Cr	rabbed Ang	le			Magnitud	e of the Angle	э
Measured be	etween surf	face of a			М	leasure Clock	kwise from			Measure	d between t	the Vehicle C)rientation
Pollovor Tost	Cart and th	o Ground	ı	1	ongitudinal \	lactor to Valo	oity Voctor	of Vahiala		and	Direction	of Toot Cart N	Motion

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Front of Engine 0 0.0 0 0.0 0 0.0 0 0.0 Firewall 0 0.0 0 0.0 0 0.0 0 0.0 Upper Leading Edge of Door 0 0.0 0 0.0 0 0.0 Lower Leading Edge of Door 0 0.0 0 0.0 0 0.0 Bottom of 'A' Post 0 0.0 0 0.0 0 0.0 Upper Trailing Edge of Door 0 0.0 Upper Trailing Edge of Door 0 0.0 Steering Column 0 0.0 0 0.0 Center of Seering Column to 'A' Post (Horizontal) 0 0.0 0 0.0 Center of Steering Column to Headliner (Vertical)	T+ //	4000					,						
Vehicle Vehicle Make NHTSA		4096		_		NUITO A Table	. \ / a la ! a l a N la				1		
Make													
Mode													
Body NOT APPLICABLE Engine NOT APPLICABLE													
Engine NOT APPLICABLE Displacement 0													
Displacement O	, <u> </u>												
Vehicle Modification(s) Description													
Vehicle Length													
Vehicle Length													
Vehicle Weight 1252													
Vehicle Wheelbase 2591 mm 102.0 inches Total Length of Indentation 0 mm 0.0 inches Number 1362 KG 3002 pounds Maximum Static Crush Depth 0 mm 0.0 inches Pre-Impact Speed 62 kph 38.5 mph Number		~ F							=				
Vehicle Test Weight 1362 KG 3002 pounds Maximum Static Crush Depth 0 mm 0.0 inches Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Principal Surface forward Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed 62 kph 38.5 mph Principal Direction of Force 0 Pre-Impact Speed Pre-Impact		=					_		=				
Pre-Impact Speed 62 kph 38.5 mph		-				•			=				
Vehicle Damage Index	Vehicle Test W	eight [1362 KG	3002 po	unds l				_				
Pre & Post Test Damage Measurements Pre & Post Test Damage Measurements Pre Post Pre							•			38.5	mph		
Left Side	Vel	hicle Dar	nage Index [Principa	al Direction	of Force [)				
Left Side			_	0.5	T (D								
Left Side			<u> </u>	re & Post	Test Da	mage Me	easurem	<u>ents</u>					
Pre-Test mm inches Post-Test mm inches Pre-Test mm inches mm in	(Measureme	ents are take	en in a longitudinalo	direction. Except f	or Engine Block	, all measuremer	nts are take fron	n the Rear Veh	icle Surface	forward.)			
mm inches mm inches <th< td=""><td colspan="10">Left Side Centerline Right Side</td></th<>	Left Side Centerline Right Side												
Length of Vehicle at Centerline 0	Pre-Test Post-Test				Pre-Test Post-Test				Pre-Test Post-Test				
O O O O O O O O O O	mm inche	s m	m inches	r	nm inche	es mm	inches	mm	inches	mm	inches		
Engine Block 0 0.0 0 0.0 Front Bumper Corner Front of Engine 0 0.0 0 0.0 Firewall 0 0.0 0 0.0 Upper Leading Edge of Door 0 0.0 0 0.0 Engine Block 0 0.0 0 0.0 Front Bumper Corner 0 0.0 0.0 0 0.0 0 0.0 Upper Leading Edge of Door 0 0.0 0 0.0 Engine Block 0 0.0 0 0.0 Firewall 0 0.0 0 0.0 0 0.0 0 0.0 Upper Leading Edge of Door 0 0.0 0 0.0 Engine 0 0.0 0 0.0 Upper Leading Edge of Door 0 0.0 0 0.0 Engine Engine Block 0 0.0 0 0.0 O 0.0 0 0.0 Upper Leading Edge of Door 0 0.0 0 0.0 Engine Engine Double Front Bumper Corner O 0.0 0 0.0 O 0.0 0 0.0 Engine Engine O 0.0 0 0.0 O 0.0 0 0.0 Engine Engine O 0.0 0 0.0 Engine En					Length of \	Vehicle at Ce	enterline						
O O.O O O.O O.				0	0.0	0	0.0						
0 0.0 0 0.0 Front Bumper Corner 0 0.0 0 0.0 Front of Engine 0 0.0					Er	gine Block							
Front of Engine 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 Firewall 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 Upper Leading Edge of Door 0 0.0 0 0.0 0 0.0 0 0.0 Edwer Leading Edge of Door 0 0.0 0 0.0 0 0.0 0 0.0 Edwer Leading Edge of Door 0 0.0 0 0.0 0 0.0 0 0.0 Edwer Trailing Edge of Door 0 0.0 0 0.0 Steering Column 0 0.0 0 0.0 Center of Seering Column to 'A' Post (Horizontal) 0 0.0 0 0.0 Center of Steering Column to Headliner (Vertical)				0	0.0	0	0.0						
O O.O O O.O O O.O O O.O O	0.0	0	0.0		Front	Bumper Cor	ner	0	0.0	0	0.0		
O O.O O O.O O O.O O O.O O													
0 0.0				0									
0 0.0	0.0	0	0.0		·	Firewall		0	0.0	0	0.0		
0 0.0 0.0 Upper Leading Edge of Door 0 0.0 0 0 0.0 0 0 0.0 0 0 0.0 0 0 0 0 <td></td> <td></td> <td></td> <td>0</td> <td>0.0</td> <td>0</td> <td>0.0</td> <td></td> <td></td> <td></td> <td></td>				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		Upper Lea	iding Edge o	of Door	0	0.0	0	0.0		
0 0.0 0.0 Bottom of 'A' Post 0 0.0 0 0 0.0 0<		- O	0.0		Lower Lea	ding Edge o	f Door	0	=				
0 0.0 0.0 Upper Trailing Edge of Door 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 0 0.0 <			0.0			•			=	0			
Dower Trailing Edge of Door Steering Column Down D.0 Center of Seering Column to 'A' Post (Horizontal) Down D.0 Center of Steering Column to Headliner (Vertical)					Upper Tra	ailing Edge o	f Door	0	=				
Steering Column O O.O O.O Center of Seering Column to 'A' Post (Horizontal) O O.O O.O Center of Steering Column to Headliner (Vertical)													
O O.O O.O Center of Seering Column to 'A' Post (Horizontal) O O.O O O.O Center of Steering Column to Headliner (Vertical)						0 0							
Center of Seering Column to 'A' Post (Horizontal) O O.O O.O Center of Steering Column to Headliner (Vertical)				0		_ `							
O O.O O.O O.O Center of Steering Column to Headliner (Vertical)						_		ontal)					
Center of Steering Column to Headliner (Vertical)								,					
<u></u>								rtical)					
U U U U U U U U				0	0.0	0	0.0	,					

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

Vehicle 2 2003 TOYOTA COROLLA

Test #	4096											
VIN	1NXBR32	2E83Z00831	6		NHTSA 7	Test Vehic	le Numbe	r 2				
Year	2003				Vehicle M	UCTION	VEHICL	.E				
Make	TOYOTA		Post-tes	t Steering	Column Shea	r Capsule	Seperatio	n UNKN	OWN			
Model	COROLL	A		Ste	ering Column	Collapse M	1echanism	UNKN	OWN			
Body	FOUR DO	OOR SEDAN										
Engine	4 CYLINE	DER TRANS	/ERSE F	FRONT								
Displacement	1.8	Liter Tra	ansmissi	on AUT	OMATIC - FRO	NT WHEE	L DRIVE					
Vehicle Modific	cation(s) D	escription [
Vehicle Comm	entary 🗌											
Vehicle Len	igth 4	488 mm	176.7	inches	С	G behind	Front Axle	1133	mm	44.6	inches	
Vehicle V	Vidth 17	700 mm	66.9	inches	Center of	Damage t	to CG Axis	-52] mm	-2.0	inches	
Vehicle Whee	lbase 26	600 mm	102.4	inches	Total Le	ngth of Ind	dentation	3150] mm	124.0	inches	
Vehicle Test W	eight 13	367 KG	3013	pounds	Maximum	Static Cru	ısh Depth	338	mm	13.3	inches	
						Pre-Impa	act Speed	0	kph	0.0	mph	
Vel	hicle Dama	age Index 🛭 0	3LPAW2	2	Prin	cipal Direc	tion of Fo	ce 297	,			
Damage Pro	ofila Diet	ance Meas	urama	nte	Crush fro	m Dra &	Post Too	t Dama	ana Ma	acuram	onte	
					Clusii iic							
` _		o-Right, Rea	_	,	D	Pre-Tes	1	Post-Te	•	Crush E		
DPD 1 -		ım <u>-0.1</u>	inches		Bumper Corne		inches	141.1	inches		inches	
DPD 2 2		10.9	inches			3621	mm	3584	mm	37] mm -	
DPD 3 3		ım <u>13.4</u>	inches		Centerline	176.7	inches	177.8	inches	-1.1	inches	
DPD 4 2		m <u>8.7</u>	inches			4488	mm	4517	mm	-29	mm	
DPD 5 1		ım <u>0.5</u>	inches	Diaht	Bumper Corne	r 142.7	inches	143.1	inches	-0.4	inches	
DPD 6 [0) m	ım <u>0.0</u>	inches	5	,	3624	mm	3634	mm	-10	l lmm	
							•		•			
Bumper Engagement			Sill Engagement						A-pillar Engagement			
(Inline Impact Only)			(Side Impact Only)						(Side Impact Only)			
27.0		,	DIRECT ENGAGEMENT						0.0			
			_					ı		<u> </u>	_	
Moving Test Cart			Moving Test Cart/Vehicle						Vehicle Orientation on Cart			
Angle			Crabbed Angle						Moving Test Cart			
NOT APPLICABLE			0.0						DIRECT ENGAGEMENT			
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				
Pollovor Tost	Pround	Longitudinal Vector to Velocity Vector of Vehicle						and Direction of Test Cart Motion				

Vehicle 2 2003 TOYOTA COROLLA

=	096				
=	NXBR32E83Z0083		HTSA Test Vehicle Nur		
=	003		hicle Modification Indication		N VEHICLE
=	OYOTA	Post-test Steering Colum	·		
Model <u>C</u>	OROLLA	Steering Co	olumn Collapse Mechar	nism UNKNOWN	
Body F	OUR DOOR SEDAN	<u>l</u>			
Engine 4	CYLINDER TRANS	VERSE FRONT			_
Displacement 1	.8 Liter Ti	ansmission AUTOMATIO	C - FRONT WHEEL DRI	VE	
Vehicle Modification	tion(s) Description				
Vehicle Commer	ntary				
Vehicle Leng	th 4488 mm	176.7 inches	CG behind Front	Axle 1133 mm	44.6 inches
Vehicle Wi	dth 1700 mm	66.9 inches Ce	nter of Damage to CG	Axis -52 mm	-2.0 inches
Vehicle Wheelb	ase 2600 mm	102.4 inches	otal Length of Indentat	ion 3150 mm	124.0 inches
Vehicle Test We	ight 1367 KG	3013 pounds Ma	aximum Static Crush De	epth 338 mm	13.3 inches
			Pre-Impact Sp	eed 0 kph	0.0 mph
Vehic	cle Damage Index [03LPAW2	Principal Direction of	f Force 297	
	<u>P</u>	re & Post Test Dam	nage Measureme	<u>ents</u>	
(Measurement	s are taken in a longitudinal	direction. Except for Engine Block, a	II measurements are take from	the Rear Vehicle Surface	forward.)
l ef	t Side	Cen	terline	Righ	t Side
Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
mm inches	mm inches	mm inches	mm inches	mm inches	mm inches
		Length of Ve	ehicle at Centerline		
		4488 176.7	4517 177.8		
			ine Block		
		0 0.0	0 0.0		
3621 142.6	3584 141.1		umper Corner	3624 142.7	3634 143.1
			t of Engine		
		0 0.0	0 0.0		
0.0	0.0		rewall	0 0.0	0.0
[0.0	[0.0]	0.0	0 0.0	[0.0]	[5]
0.0	0.0		ing Edge of Door	0 0.0	0.0
0 0.0	0 0.0	• • •	ng Edge of Door	0 0.0	0 0.0
0.0	0 0.0		of 'A' Post	0 0.0	0 0.0
0.0	0 0.0		ng Edge of Door	0 0.0	0 0.0
0.0	0 0.0	• •	ng Edge of Door	0 0.0	0 0.0
0 0.0	0 0.0		ing Column	0 0.0	0 0.0
		0 0.0	0 0.0		
			lumn to 'A' Post (Horizo	ontal)	
		0 0.0	0.0		
		<u></u>	lumn to Headliner (Vert	tical)	
		0 0.0	0.0	<i></i> /	
		<u> </u>	للستنالسا ،		

2003 TOYOTA COROLLA

NHTSA Crash Test - #4096 - Side Impact

Damage Profile Distances - Indention Length - KE Equivalent Speed - Trapezoidal Average

Test Vehicle Weight = 3013 pounds

Impactor Weight = 3002

KE Equivalent Speed = 27.2 MPH

Impactor Test Speed = 38.5

Test Crush Length = 124.0 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(5 ()
(Rear)	-0.1	10.9	13.4	8.7	0.5	0.0	(Front)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 0.5 inches 57708.7 Using a Rated No Damage Speed of 1021.2 53545.9 9.7 1.0mph Using a Rated No Damage Speed of 2.0mph 1964.6 49538.9 39.0 Using a Rated No Damage Speed of 3.0mph 2830.0 87.6 45687.7 Using a Rated No Damage Speed of 4327.1 5.0mph 38452.7 243.5 Average Crush = 6.7 321.4 inches Using a Rated No Damage Speed of 1.0mph 76.2 298.2 9.7 Using a Rated No Damage Speed of 2.0mph 146.6 275.9 39.0 Using a Rated No Damage Speed of 211.2 254.4 87.6 3.0mph Using a Rated No Damage Speed of 5.0mph 322.9 214.1 189.0 Maximum Crush = 13.4 inches 80.3 Using a Rated No Damage Speed of 38.1 74.6 1.0mph 9.7 Using a Rated No Damage Speed of 2.0mph 73.3 69.0 39.0 Using a Rated No Damage Speed of 3.0mph 105.6 63.6 87.6

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

Using a Rated No Damage Speed of

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

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

243.5

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

53.5

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)

161.5

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

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

Crush	Maximum Crush	Calculated Impact Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
21	13.4	26.5	-0.7	-2.6

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 22.1

5.0mph

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC01301

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2008

Make: TOYOTA Model: COROLLA

Test Number	Vehicle r Info	No	Averege		ما ا	dontion	Long	a t b	
Nullibei	IIIIO	Damage Speed	Crush		S t	dention	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
3679	1999 CHEVROLET PRIZM FOUR DOOR SEDAN	2.0	8.0	25.3	90.5	131.5	31.1	155.0	32.0
4097	2003 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	7.4	27.0	111.2	188.9	32.7	220.2	39.7
4455	2003 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	6.9	26.9	122.9	221.7	34.1	258.7	41.9
2957	1999 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	6.2	27.1	125.4	253.1	31.1	295.0	47.2
2728	1998 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	8.0	27.3	129.3	203.6	41.0	237.1	37.2
4096	2003 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	6.7	27.2	146.6	275.8	39.0	321.3	44.2
3697	1999 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	9.4	23.7	148.4	171.1	64.3	204.1	23.9
3700	1999 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	9.8	23.9	151.8	169.3	68.0	201.6	23.3
2721	1998 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	6.4	23.8	152.5	257.8	45.1	307.3	35.1
		Average	(AVG)		131.0	208.1	42.9	244.5	36.1
		Minimum	(MIN)		90.5	131.5	31.1	155.0	23.3
		Maximum	(MAX)		152.5	275.8	68.0	321.3	47.2
	Standard Deviation	on (STDev-sa	ample)		21.1	48.0	14.0	55.6	8.4
	Nu	umber of Te	sts (n)	9					

Serial Number: 11R-030201SC01301

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2008

Make: TOYOTA Model: COROLLA

Test	Vehicle	No							
Numbe	r Info	Damage	Max		I n	dention	Leng	g t h	
		Speed	Crush	KEES	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Κv	Factor
3679	1999 CHEVROLET PRIZM FOUR DOOR SEDAN	2.0	19.6	25.3	37.0	21.9	31.1	25.9	13.1
2957	1999 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	14.4	27.1	54.0	46.9	31.1	54.6	20.3
4097	2003 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	14.1	27.0	58.1	51.6	32.7	60.2	20.8
4455	2003 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	13.5	26.9	63.0	58.3	34.1	68.0	21.5
2728	1998 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	15.4	27.3	67.7	55.9	41.0	65.1	19.5
4096	2003 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	13.4	27.2	73.2	68.7	39.0	80.0	22.1
2721	1998 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	11.1	23.8	88.2	86.2	45.1	102.7	20.3
3697	1999 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	12.3	23.7	113.8	100.6	64.3	120.0	18.3
3700	1999 TOYOTA COROLLA FOUR DOOR SEDAN	2.0	12.8	23.9	116.4	99.6	68.0	118.6	17.8
		Average (AVG)		74.6	65.5	42.9	77.2	19.3
		•							
		Minimum	(IVI IN)		37.0	21.9	31.1	25.9	13.1
		Maximum	(MAX)		116.4	100.6	68.0	120.0	22.1
	Standard Deviation	n (STDev-sa	imple)		26.8	26.0	14.0	31.4	2.7
	Nu	mber of Tes	sts (n)	9					

Serial Number: 11R-030201SC01301

Expert VIN DeCoder®

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Version Number 3.1.0.3

2FAFP72WX6X101353 DeCoded VIN:

Model: 2006 Ford Crown Victoria 4 door Sedan

Engine Size: 4.6 L/ 281 cu.in.

Engine Description: V-8 cylinder with Overhead Cam

Horse Power: 220 @ 4750 rpm

Torque: 265 lb-ft @ 3250 rpm

Injection System: | Sequential Port Fuel Injection (SEFI)

PSI: 35-45 psi 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) indicates Manual Seatbelts + Driver/Passenger Front Air Bags The Fifth through Seventh characters (P72) indicate a Crown Victoria and a 4 door Sedan The Eighth character (W) indicates the OEM engine: 4.6 L/ 281 cu.in., V8, OHC

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

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

The Tenth character (6) indicates the model year 2006

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

The Twelfth through Seventeenth characters (101353) indicate the Serial Number and are unique to this vehicle.

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: 2FAFP72W46X101395

Model: 2006 Ford Crown Victoria 4 door Sedan

Engine Size: 4.6 L/ 281 cu.in.

Engine Description: V-8 cylinder with Overhead Cam

Horse Power: 220 @ 4750 rpm

Torque: 265 lb-ft @ 3250 rpm

Injection System: | Sequential Port Fuel Injection (SEFI)

PSI: 35-45 psi Ignition: electronic

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

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

The Eighth character (W) indicates the OEM engine: 4.6 L/ 281 cu.in., V8, OHC

The Ninth character (the check digit) is entered as 4.

The VIN appears Valid, the calculated value is 4.

The Tenth character (6) indicates the model year 2006

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

The Twelfth through Seventeenth characters (101395) 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 91942

5/9/2012

5/9	9/2012		
2006 FORD CROWN VICTORIA 4 DOOR SEDAN			
Curb Weight: Curb Weight Distribution - Front:	4057 lbs.		40 kg. 4 %
Gross Vehicle Weight Rating:	5500 lbs.	24	95 kg.
Number of Tires on Vehicle: Drive Wheels:	REAR		
Horizontal Dimensions Total Length Wheelbase:	Inches 212 115	Feet 17.67 9.58	Meters 5.38 2.92
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	43 26 8 65 91	3.58 2.17 0.67 5.42 7.58	1.09 0.66 0.20 1.65 2.31
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	54 38 8 38	4.50 3.17 0.67 3.17	1.37 0.97 0.20 0.97
Width Dimensions Maximum Width: Front Track: Rear Track:	78 63 66	6.50 5.25 5.50	1.98 1.60 1.68
Vertical Dimensions Height: Ground to -	57	4.75	1.45
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top:	23 27 31 39 25	1.92 2.25 2.58 3.25 2.08	0.58 0.69 0.79 0.99
	20	2 25	0.00

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

Trunk - top rear: Base of Rear Window:

Expert AutoStats®

2006 FORD CROWN VICTORIA 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	61	5.08	1.55
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	43	3.58	1.09
Rear Seat Shoulder Width	60	5.00	1.52
Rear Seat to Headliner	38	3.17	0.97
Front Leg Room - seatback to floor (min)	40	3.33	1.02
Seatbelts: 3pt - front and rear			
Airbags: FRONT SEAT AIRBAGS			
Stooning Data			
Steering Data Turning Circle (Diameter)	480	40.00	12.19
Steering Ratio: :1	400	40.00	12.19
Wheel Radius:	12	1.00	0.30
Tire Size (OEM): P225/60R16		1.00	0.50
1116 3126 (OLM): 1223/ OOK10			
Acceleration & Braking Information			
Brake Type: ALL DISC			
ABS System: ALL WHEEL ABS			
Braking, 60 mph to 0 (Hard pedal, no skid,	dry navement):		
$d = \begin{bmatrix} 140.0 \\ \text{ft} \end{bmatrix} \text{ ft} \qquad t = \begin{bmatrix} 3.2 \\ \text{sec} \end{bmatrix} \text{ sec}$	$a = \begin{bmatrix} -27.6 \end{bmatrix} \text{ ft/sec}$	c² G-for	ce = -0.86
	27.10 . 6, 500		0.00
Acceleration:	- 15 7 £+/	.2	[0.40]
0 to 30mph $t = 2.8$ sec	a = 15.7 ft/sec a = 11.0 ft/sec		
0 to 60mph $t = 8.0$ sec 45 to 65mph $t = 5.1$ sec			
·	a = [5.8] ft/sec	G-101	ce = <u>0.18</u>
Transmission Type: 4spd AUTOMATIC			
Natara			
Notes:	2 5		
Federal Bumper Standard Requirements:	2.5 mph 2.5 mph		
This vehicles Rated Bumper Strength:	2.5 mph		

N.S.D.C = 2003 - 2009

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

2006 FORD CROWN VICTORIA 4 DOOR SEDAN

Other Information		
Tip-Over Stability Ratio =	1.44	Stable
NHTSA Star Rating (calculated)		****
Center of Gravity (No Load):		<u></u>
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*sec²
Roll Moment of Inertia	=	580.26 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	45.0 deg
Angle Front of Hood to Windshield Base	=	8.0 deg
Angle Front of Hood to Windshield Top	=	16.1 deg
Angle of Windshield	=	31.6 deg
Angle of Steering Tires at Max Turn	=	27.5 deg
g		

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:

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).

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #3480

2001 LINCOLN TOWN CAR

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

Copyright 2011 - All Rights Reserved 4N6XPRT Systems | 8387 University Avenue | La Mesa, CA 91942 | USA (800) 266-9778 | (619) 464-3478 | FAX: (619) 464-2206 | Email: 4n6@4n6xprt.com

Sister/Clone database reader

You entered: 2006 FORD CROWN VICTORIA

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

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

The data contained in the database has been provided free of charge as a courtesy to the traffic accident reconstruction community by Gregory C. Anderson of Scalia Safety Engineering. 4N6XPRT Systems® has made no changes to this data, and has only provided for distribution of this data free of charge. 4N6XPRT Systems® makes no warranties, either expressed or implied, with respect to this data, its quality, performance, merchantability, or fitness for any particular purpose. The entire risk as to its quality and performance is with the user. In no event will 4N6XPRT Systems® be liable for direct, indirect, incidental, or consequential damages resulting from any data presented here, even if 4N6XPRT Systems® has been advised of the possibility of such damages. The user must agree to assume full responsibility for any decisions which are based, in whole or in part, upon information obtained by using this data. As previously stated, the data has been provided free of charge as a courtesy to the traffic accident reconstruction community by Gregory C. Anderson of Scalia Safety Engineering. Mr. Anderson does not in any way guarantee the accuracy of the data. Some of the listed similarities are based on his own estimates or memory. Most of the data are pulled from specification tables which may contain inaccuracies of their own. Use common sense - if something seems wrong, check it (and if it is wrong, let him know!).

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

Test Information

Test # 3480	NHTSA Test F	Reference Guide Version #	V5			
Test Date 2000-11-09		Contract #				
Contract/Study Title	OPTIONAL NCAP - 2001 LIN	COLN TOWNCAR 4 DOO	R SEDAN			
Test Objective(s)	VEHICLE CRASHWORTHINES	S AND OCCUPANT REST	RAINT PERFOR	MANCE D	DATA	
Test Type	OPTIONAL NEW CAR ASSES	SMENT TEST	Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0	Side Impact Point	0	mm	0.0	inches
		Offset Distance	0	mm	0.0	inches
		Closing Speed	56.5	Km/Hr	35.11	MPH
Test Performer	MGA RESEARCH					
Test Reference #	BT00110901					
Test Track Surface	CONCRETE	Condition	WET			
Ambient Temperature	21 C 69.8 F	Total Number of Curves	97			
Data Recorder Type	OTHER		Data Link	OTHER		
Test Commentary	EME ON BOARD DAS 3200					
	Fi	xed Barrier Information				
						•
Barrier Type		Pole Barrier Diameter	0	mm	0	inches
Barrier Shape	LOAD CELL BARRIER					
Barrier Commentary		<u> </u>	<u> </u>			

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	
<u>Head</u>	
Head to -	
Windshielder Header 343 mm 13.5 inches Head Injury Criteria (HIC) 425	
WindShield 568 mm 22.4 inches HIC Lower Time Interval (ms) 75	
Seatback 0 mm 0.0 inches HIC Upper Time Interval (ms) 111	
Side Header 246 mm 9.7 inches	
Side Window 350 mm 13.8 inches	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head)	
Second Contact Region (Head)	
<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	
Chest Severity Index 359 Pelvic Peak Lateral Acceleration (g's) 0	
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 34.7	
Lap Belt Peak Load 3302 Newtons 742.3 pound Force	
Shoulder Belt Peak Load 4996 Newtons 1123.2 pound Force	
First Contact Region (Chest/Abdomen) AIR BAG	
Second Contact Region (Chest/Abdomen) AIR BAG	
<u>Legs</u>	
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 in	ches
Туре	HYBRID III DUMI	MY	Weight	0.0 kg	0 po	ounds
Size	50 PERCENTILE					
Cali	ibration Method	HYBRID III				
Occupai	nt Manufacturer	FIRST TECHNOLOGY S/	N 66			
Occupa	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	HEAD TO HEADREST				
		Restraints				
Restrai	nt # 1 3 POINT	BELT				
Mounte	ed BELT - Co	ONVENTIONAL MOUNT				
Deploy	ment NOT APP	LICABLE				
Restrai	nt Commentary	PRIMARY				
Restrai	nt # 2 FRONTAL	_ AIRBAG				
Mounte	ed STEERIN	G WHEEL				
Deploy	ment DEPLOYI	ED PROPERLY				
Restrai	nt Commentary	SECONDARY		·		

2001 LINCOLN TOWN CAR RIGHT FRONT SEAT OCCUPANT

Test # 3480	
Vehicle # 1 Sex MALE	
Location RIGHT FRONT SEAT Age 0	
Position CENTER POSITION Height 0 mm 0.0 inches	
Type HYBRID III DUMMY Weight 0.0 kg 0 pounds	
Size 50 PERCENTILE	
Calibration Method HYBRID III	
Occupant Manufacturer FIRST TECHNOLOGY S/N 65	
Occupant Modification	
Occupant Description	
Occupant Commentary HEAD TO HEADREST	
<u>Head</u>	
Head to -	
Windshielder Header 231 mm 9.1 inches Head Injury Criteria (HIC) 472	\Box
WindShield 551 mm 21.7 inches HIC Lower Time Interval (ms) 72	⊒
Seatback 0 mm 0.0 inches HIC Upper Time Interval (ms) 108	
Side Header 206 mm 8.1 inches	
Side Window 350 mm 13.8 inches	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) AIR BAG	
Second Contact Region (Head)	
<u>Chest</u>	
Chest to	
Dash 538 mm 21.2 inches Arm to Door 129 mm 5.1 inches	
Steering Wheel 0 mm 0.0 inches Hip to Door 132 mm 5.2 inches	
Seatback 0 mm 0.0 inches	
Chest Severity Index 359 Pelvic Peak Lateral Acceleration (g's) 0	
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 35.6	
Lap Belt Peak Load 4483 Newtons 1007.8 pound Force	
Shoulder Belt Peak Load 4914 Newtons 1104.7 pound Force	
First Contact Region (Chest/Abdomen) AIR BAG	
Second Contact Region (Chest/Abdomen) AIR BAG	
<u>Legs</u>	
Knees to Dash 117 mm 4.6 inches Knees to Seatback mm 0.0 inches	
Left Femur Peak Load -2107 Newtons -473.7 pounds Force	
Right Femur Peak Load -1967 Newtons -442.2 pounds Force	
First Contact Region (Legs) DASHPANEL	
Second Contact Region (Legs)	

2001 LINCOLN TOWN CAR RIGHT FRONT SEAT OCCUPANT

Test #	3480					
Vehicle #	1		Sex	MALE		
Location	RIGHT FRONT	SEAT	Age	0		
Position	CENTER POSIT	TION	Height	0 mm	0.0 inches	
Type	HYBRID III DUN	IMY	Weight	0.0 kg	0 pounds	
Size	50 PERCENTIL	E]			
Cali	ibration Method	HYBRID III				
Occupa	nt Manufacturer	FIRST TECHNOLOGY S	/N 65			
Occupa	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	HEAD TO HEADREST				
		Restraint	<u>s</u>			
Restrai	nt # 1 3 POINT	BELT				
Mounte	ed BELT - (CONVENTIONAL MOUNT				
Deploy	ment NOT AP	PLICABLE				
Restrai	nt Commentary	PRIMARY				
Restrai	nt # 2 FRONT	AL AIRBAG				
Mounte		ANEL - MID				
Deploy		ED PROPERLY				
	nt Commentary	SECONDARY				
Nestiai	in Commentary	SECONDAR I				

Vehicle 1 2001 LINCOLN TOWN CAR

Test # 34	80								
VIN 1L	NHM82W11Y633	287		NHTSA Te	est Vehic	le Numbe	er 1		
Year 20	01			Vehicle Mo	dification	Indicator	PRODUCTIO	N VEHIC	E
Make LIN	NCOLN	Post-test S	Steering Co	olumn Shear	Capsule	Seperation	on UNKNOWN		
Model TO	WN CAR		Steerir	ng Column Co	ollapse M	lechanism	UNKNOWN		
Body FO	UR DOOR SEDA	N							
Engine V8	INLINE FRONT								
Displacement 4.6	Liter T	ransmission	AUTOM	ATIC - REAR	WHEEL	DRIVE			
Vehicle Modification	on(s) Description								
Vehicle Comment	ary								
Vehicle Length	5389 mm	212.2 ir	nches	CG	behind l	Front Axle	1409 mm	55.5	inches
Vehicle Widt	th 1986 mm	78.2 ir	nches	Center of D	Damage t	o CG Axi	s 135 mm	5.3	inches
Vehicle Wheelba	se 2985 mm	117.5 ir	nches	Total Leng	gth of Inc	lentation	1620 mm	63.8	inches
Vehicle Test Weig	ht 2111 KG	4653 p	ounds	Maximum S	Static Cru	sh Depth	700 mm	27.6	inches
					Pre-Impa	ct Speed	l 57 kph	35.1	mph
Vehicle	e Damage Index	12FDEW6		Princi	pal Direc	tion of Fo	rce 0		
Domaga Brofil	o Diotopoo Mor	a uramant	_	Cruch from	n Dro 9	Doot To	ot Domogo M	00011505	o o n to
Damage Profile			<u>5</u>	Clush iron			st Damage M		
`	Left-to-Right, Re			_	Pre-Tes	_	Post-Test	Crush I	
DPD 1 447	mm <u>17.6</u>	inches	Left Bu	mper Corner		inches	185.7 inche		∐inches ¬
DPD 2 599	mm <u>23.6</u>	inches			5225	mm	4718 mm	507	_l mm
DPD 3 642	mm <u>25.3</u>	inches		Centerline	212.2	inches	185.4 inche	s 26.7	inches
DPD 4 700	mm <u>27.6</u>	inches			5389	mm	4710 mm	679] mm
DPD 5 699	mm 27.5	inches	Right Bu	mper Corner	205.3	inches	183.4 inche	s 21.9	inches
DPD 6 557	mm 21.9	inches	ragin Da	inpor como:	5215	mm	4658 mm	557	mm
					02.0		4000	001	٦
Bumper Enga	agement		Sill En	gagement			A-pillar	Engagem	ent
(Inline Impac	=			Impact Only)				mpact On	
0.0				PPLICABLE				0.0	Τ̈́
									_
Moving Te	st Cart		Moving T	est Cart/Vehi	icle		Vehicle O	rientation (on Cart
Angle)		Crab	bed Angle			Movin	g Test Ca	rt
DIRECT ENG	SAGEMENT			0.0			NOT AF	PPLICABL	.E
Magnitude of the	e Tilt Angle		Magniture of	the Crabbed Angl	le		Magnitud	de of the Angle	е
Measured between	en surface of a		Measure	e Clockwise from			Measured between	the Vehicle C)rientation
Rollover Test Cart	and the Ground	Longit	tudinal Vector	to Velocity Vector	of Vehicle		and Direction	of Test Cart I	Motion

Vehicle 1 2001 LINCOLN TOWN CAR

		VCITICIC I ZU	, Liitoolit	IOMIT OAK		
Test #	3480					
VIN	1LNHM82W11Y633	287	NHTSA T	est Vehicle Nu	mber 1	
Year	2001		Vehicle Mo	dification Indic	ator PRODUCTION	ON VEHICLE
Make	LINCOLN	Post-test Steering	Column Shear	Capsule Sepe	eration UNKNOWN	
Model	TOWN CAR	Ste	ering Column C	ollapse Mecha	nism UNKNOWN	
Body	FOUR DOOR SEDAN	N				
Engine	V8 INLINE FRONT					
Displacement	4.6 Liter T	ransmission AUTO	OMATIC - REAL	R WHEEL DRIV	/E]
Vehicle Modifie	cation(s) Description					
Vehicle Comm	nentary					
Vehicle Ler	ngth 5389 mm	212.2 inches	CC	behind Front	Axle 1409 mm	55.5 inches
Vehicle \	Width 1986 mm	78.2 inches	Center of	Damage to CG	Axis 135 mm	5.3 inches
Vehicle Whee	elbase 2985 mm	117.5 inches	Total Len	gth of Indenta	tion 1620 mm	63.8 inches
Vehicle Test V	Veight 2111 KG	4653 pounds	Maximum	Static Crush De	epth 700 mm	27.6 inches
				Pre-Impact Sp	peed 57 kph	35.1 mph
Ve	hicle Damage Index [12FDEW6	Princ	ipal Direction o	of Force 0	
	<u>P</u>	re & Post Tes	<u>t Damage N</u>	<u> Measureme</u>	<u>ents</u>	
(Measurem	ents are taken in a longitudinal	direction. Except for Engin	e Block, all measure	ments are take from	the Rear Vehicle Surface	forward.)
	eft Side		Centerline		Righ	nt Side
Pre-Test	Post-Test	Pre-1		ost-Test	Pre-Test	Post-Test
mm inche		mm	inches m		mm inches	mm inches
inone	70 111111 11101100		th of Vehicle at		111111	111111
			212.2 471			
			Engine Bloc			
		530	20.9 530			
5225 205.7	4718 185.7		Front Bumper (5215 205.3	4658 183.4
0==0 ==00			Front of Eng		[0=10][=0010]	
		4539	178.7 427			
3936 155.0	3886 153.0		Firewall		3909 153.9	3858 151.9
		4069	160.2 406	6 160.1		
3612 142.2	3608 142.0	 -	er Leading Edg		3616 142.4	3600 141.7
3664 144.3			er Leading Edge		3657 144.0	3653 143.8
3582 141.0		1	Bottom of 'A' Po	ost	3587 141.2	3561 140.2
2554 100.6		Upp	er Trailing Edg	e of Door	2553 100.5	2542 100.1
2575 101.4		Low	er Trailing Edg	e of Door	2571 101.2	2569 101.1
			Steering Colu			
		3105	122.2 315			
		 -	ring Column to		ontal)	
			15.4 365	<u>`</u>	•	
		 -	ring Column to	<u> </u>	tical)	

424

16.7

Registered Owner: 4N6XPRT SYSTEMS Serial Number: 11R-030201SC02301

17.6

448

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 (Pass. Side)

(Driver Side) 20.0 26.7 21.9

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 20.0 inches 147.0 Using a Rated No Damage Speed of 194.4 126.8 149.1 2.5mph 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 75.2 10.0mph 598.9 2385.3 Average Crush = 23.8 103.8 inches 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 415.0 64.2 1341.7 7.5mph Using a Rated No Damage Speed of 10.0mph 503.3 53.1 2385.3 82.5 Maximum Crush = 26.7 inches 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 42.2 10.0mph 448.6 2385.3

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

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

NHTSA Crash Test - #3480 - Front Impact

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

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

Pre/Post Collision Crush Depths (inches)

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

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 20.0 inches 180.2 Using a Rated No Damage Speed of 238.4 155.5 182.8 2.5mph 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 92.2 2924.2 10.0mph 734.2 Average Crush = 23.8 127.3 inches 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 508.8 78.7 1644.9 7.5mph 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 2924.2 10.0mph 550.0 51.7

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

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

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	(Dago Cida)
(Driver Side)	17.6	23.6	25.3	27.6	27.5	21.9	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G K۷ Minimum Crush = 17.6 inches 189.8 Using a Rated No Damage Speed of 221.0 163.8 149.1 2.5mph 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 680.6 97.1 10.0mph 2385.3 Average Crush = 24.7 96.4 inches 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 399.9 59.6 1341.7 7.5mph Using a Rated No Damage Speed of 10.0mph 484.9 49.3 1658.8 77.2 Maximum Crush = 27.6 inches Using a Rated No Damage Speed of 2.5mph 140.9 66.6 149.1 Using a Rated No Damage Speed of 5.0mph 260.2 596.3 56.8 Using a Rated No Damage Speed of 357.9 7.5mph 47.7 1341.7 Using a Rated No Damage Speed of 10.0mph 434.0 39.5 2385.3

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

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

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, lb/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

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	(Dago Cida)
(Driver Side)	17.6	23.6	25.3	27.6	27.5	21.9	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 17.6 inches 232.7 Using a Rated No Damage Speed of 270.9 200.7 182.8 2.5mph 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 2924.2 10.0mph 834.3 119.0 Average Crush = 24.7 118.2 inches 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 490.3 73.1 1644.9 7.5mph 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 1644.9 Using a Rated No Damage Speed of 7.5mph 438.8 58.5 Using a Rated No Damage Speed of 2924.2 10.0mph 532.0 48.4

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

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

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, lb/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

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2010

Make: FORD

Model: CROWN VICTORIA

Vehicle	No							
r Info	Damage	Average	Closing	V 6	ehicle	Width	า	
	Speed	Crush	Speed	S t i	iffness	Valu	ı e s	Crush
	(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
2000 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	26.8	35.1	263.7	59.2	587.0	80.5	18.4
2001 LINCOLN TOWN CAR FOUR DOOR SEDAN	5.0	24.7	35.1	290.3	70.7	596.3	96.1	19.9
2006 FORD OTHER FOUR DOOR SEDAN	5.0	21.5	35.2	300.6	84.5	535.0	114.7	23.1
2003 FORD CROWN VICTORIA FOUR DOOR SEDAN	5.0	23.0	35.3	318.1	83.9	603.6	113.8	21.7
A	Average ((AVG)		293.2	74.6	580.5	101.3	20.8
N	linimum	(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 (S	STDev-sa	ample)		22.8	12.1	31.1	16.3	2.1
Number of Tests (n)								
	2000 LINCOLN TOWN CAR FOUR DOOR SEDAN 2001 LINCOLN TOWN CAR FOUR DOOR SEDAN 2006 FORD OTHER FOUR DOOR SEDAN 2003 FORD CROWN VICTORIA FOUR DOOR SEDAN Machine	Info Damage Speed (mph) 2000 LINCOLN TOWN CAR FOUR DOOR SEDAN 5.0 2001 LINCOLN TOWN CAR FOUR DOOR SEDAN 5.0 2006 FORD OTHER FOUR DOOR SEDAN 5.0 2003 FORD CROWN VICTORIA FOUR DOOR SEDAN 5.0 Average (Minimum Maximum (Standard Deviation (STDev-sa)	Info Damage Average Speed Crush (mph) (inch) 2000 LINCOLN TOWN CAR FOUR DOOR SEDAN 2001 LINCOLN TOWN CAR FOUR DOOR SEDAN 2006 FORD OTHER FOUR DOOR SEDAN 2003 FORD CROWN VICTORIA FOUR DOOR SEDAN 5.0 21.5 2003 FORD CROWN VICTORIA FOUR DOOR SEDAN 5.0 23.0 Average (AVG) Minimum (MIN) Maximum (MAX) Standard Deviation (STDev-sample)	Info Damage Average Closing Speed (mph) Damage Average Speed (mph) Damage Average (mph) Damage	Info Damage Average Closing	Damage Average Closing	Damage Average Closing	Damage Average Closing

Serial Number: 11R-030201SC02301

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	Max	Closing	V e	ehicle	Width		
		Speed	Crush	Speed	S t i	iffness	: Valu	e s	Crush
		(mph)	(inch)	(mph)	Α	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
	A	Average (AVG)		267.4	61.8	580.5	83.9	18.9
	M	linimum	(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	7.0	31.1	9.3	1.3
	Numb	er of Tes	sts (n)	4					

Serial Number: 11R-030201SC02301

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #5803

2006 FORD OTHER

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Sister/Clone database reader

You entered: 2006 FORD CROWN VICTORIA

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

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

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

Test Information

Test # 5803	NHTSA Test Reference Guide Version # V5
Test Date 2005-12-1 4	Contract # 06-6008
Contract/Study Title	RESEARCH COLLISION TEST
Test Objective(s)	FRONTAL CRASH
Test Type	RESEARCH SAFETY VEHICLE TEST Configuration VEHICLE INTO BARRIER
Impact Angle	O Side Impact Point 9999 mm 0.0 inches
	Offset Distance 9999 mm 0.0 inches
	Closing Speed 56.7 Km/Hr 35.22 MPH
Test Performer	TRANSPORT CANADA
Test Reference #	TC06-207
Test Track Surface	CONCRETE Condition DRY
Ambient Temperature	21 C 69.8 F Total Number of Curves 347
Data Recorder Type	OTHER Data Link OTHER
Test Commentary	NO COMMENTS
	Fixed Barrier Information
Barrier Type	
· .	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	
Occupant Description S/N: 105	
Occupant Commentary LAST CALIBRATION DATE : 31/OCT/05	
<u>Head</u>	
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	
<u>Legs</u>	
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 SE	AT	Age	99	
Position	FORWARD OF C	ENTER POSITION	Height	999 mm 39.3 i	nches
Туре	HYBRID III DUM	MY	Weight	999.0 kg 2202 p	oounds
Size	5 PERCENTILE				
Cali	ibration Method	OTHER			
Occupar	nt Manufacturer	FIRST TECHNOLOGY			
Occupa	ant Modification	UNMODIFIED			
Occu	pant Description	S/N: 105			
Occupa	ant Commentary	LAST CALIBRATION DAT	ΓE: 31/OCT/05		
		Restraints	;		
Restrai	nt # 1 3 POINT		-		
Mounte	ed BELT - C	ONVENTIONAL MOUNT			
Deploy	ment DEPLOY	ED PROPERLY			
Restrai	nt Commentary	NO COMMENTS			
Da atua:					
Restrai	nt # 2 AIR BAG				
Mounte	ed STEERIN	IG WHEEL			
Deploy	ment DEPLOY	ED PROPERLY			
Restrai	nt Commentary	NO COMMENTS			

2006 FORD OTHER RIGHT FRONT SEAT OCCUPANT

Test # 5803
Vehicle # 1 Sex FEMALE
Location RIGHT FRONT SEAT Age 99
Position FORWARD OF CENTER POSITION Height 999 mm 39.3 inches
Type HYBRID III DUMMY Weight 999.0 kg 2202 pounds
Size 5 PERCENTILE
Calibration Method OTHER
Occupant Manufacturer FIRST TECHNOLOGY
Occupant Modification UNMODIFIED
Occupant Description S/N: 104
Occupant Commentary LAST CALIBRATION DATE : 21/NOV/05
<u>Head</u>
Head to -
Windshielder Header 284 mm 11.2 inches Head Injury Criteria (HIC) 427
WindShield 663 mm 26.1 inches HIC Lower Time Interval (ms) 52.1
Seatback 9999 mm 0.0 inches HIC Upper Time Interval (ms) 88.1
Side Header 275 mm 10.8 inches
Side Window 367 mm 14.4 inches
Neck to Seatback 9999 mm 0.0 inches
First Contact Region (Head) AIR BAG
Second Contact Region (Head)
<u>Chest</u>
Chest to -
Dash 410 mm 16.1 inches Arm to Door 184 mm 7.2 inches
Steering Wheel 9999 mm 0.0 inches Hip to Door 177 mm 7.0 inches
Seatback 9999 mm 0.0 inches
Chest Severity Index 9999 Pelvic Peak Lateral Acceleration (g's)
Thoracic Trauma Index 9 Thorax Peak Acceleration (g's) 51.6
Lap Belt Peak Load 5358 Newtons 1204.5 pound Force
Shoulder Belt Peak Load 3706 Newtons 833.1 pound Force
First Contact Region (Chest/Abdomen) AIR BAG
Second Contact Region (Chest/Abdomen) NONE
<u>Legs</u>
Knees to Dash 45 mm 1.8 inches Knees to Seatback 9999 mm 0.0 inches
Left Femur Peak Load -1582 Newtons -355.6 pounds Force
Right Femur Peak Load -1986 Newtons -446.5 pounds Force
First Contact Region (Legs) DASHPANEL
Second Contact Region (Legs)

2006 FORD OTHER RIGHT FRONT SEAT OCCUPANT

Test #	5803					
Vehicle #	1		Sex	FEMALE		
Location	RIGHT FRONT S	EAT	Age	99		
Position	FORWARD OF C	ENTER POSITION	Height	999 mm	39.3 inches	
Type	HYBRID III DUMI	MY	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			
		Restraints	<u>5</u>			
Restrai	nt # 1 3 POINT	BELT				
Mounte	ed BELT - C	ONVENTIONAL MOUNT				
Deploy	ment DEPLOY	ED PROPERLY				
Restrai	int Commentary	NO COMMENTS				
Restrai	int # 2 AIR BAG					
Mounte		NEL - TOP				
Deploy		ED PROPERLY				

Restraint Commentary

NO COMMENTS

2006 FORD OTHER RIGHT REAR SEAT OCCUPANT

Test # 5803	\neg		
Vehicle # 1		Sex FEI	MALE
Location RIGH	T REAR SE	Age 99	
Position NOT	APPLICABI		mm 39.3 inches
Type HYBR	RID III DUM	MY Weight 999	.0 kg 2202 pounds
Size 5 PEF	RCENTILE		
Calibration	n Method	OTHER	
Occupant Man	ufacturer	FIRST TECHNOLOGY	
Occupant Mo	dification	UNMODIFIED	
Occupant D	escription	S/N:103	
Occupant Cor	mmentary	LAST CALIBRATION DATE : 10/NOV/05	
Heed to		<u>Head</u>	
Head to -	eader 999	20 mm 0.0 inches Hood Injury Criter	in (LIIC) 040
Windshielder He Winds			ia (HIC) <u>919</u> ime Interval (ms) 65
	atback 999		ime Interval (ms) 101
	leader 999		inte interval (iiis)
	indow 999		
Neck to Seatback		mm 0.0 inches	
		egion (Head) NONE	
		egion (Head)	
		<u>Chest</u>	
Chest to -			
Dash	9999 r	mm 0.0 inches Arm to Door 9999	mm 0.0 inches
Steering Wheel	9999 r	mm 0.0 inches Hip to Door 9999	mm 0.0 inches
Seatback	9999 r	mm 0.0 inches	
Chest Severity	[,] Index 99	Pelvic Peak Lateral Accele	eration (g's) 9
Thoracic Trauma	Index 9		leration (g's) 62.1
	•	Belt Peak Load <u>8630</u> Newtons <u>1940.1</u> pour	
		Belt Peak Load <u>[6281</u>] Newtons <u>[1412.0]</u> pour	nd Force
		est/Abdomen) NONE	
Second Contact I	Region (Ch	est/Abdomen) NONE	
		<u>Legs</u>	
Knees to Dash	9999 r	mm 0.0 inches Knees to Seatback 9999	mm 0.0 inches
Left Femur Pea	k Load -1	764 Newtons -396.6 pounds Fo	rce
Right Femur Peak	k Load [-2	053 Newtons -461.5 pounds Fo	rce
Firs	st Contact F	Region (Legs) NONE	
Sacan	d Contact [Pagion (Logs)	

2006 FORD OTHER RIGHT REAR SEAT OCCUPANT

Test #	5803					
Vehicle #	1		Sex	FEMALE		
Location	RIGHT REAR SE	AT	Age	99		
Position	NOT APPLICABL	.E	Height	999 mm	39.3 inches	
Type	HYBRID III DUMI	MY	Weight	999.0 kg	2202 pounds	
Size	5 PERCENTILE					
Cal	ibration Method	OTHER				
Occupa	nt Manufacturer	FIRST TECHNOLOGY				
Occup	ant Modification	UNMODIFIED				
Occu	pant Description	S/N: 103				
Occupa	ant Commentary	LAST CALIBRATION DA	TE: 10/NOV/05			
		Restraints	<u>5</u>			
Restrai	int # 1 3 POINT	BELT				
Mounte	ed BELT - Co	ONVENTIONAL MOUNT				
Deploy	ment DEPLOY	D PROPERLY				
Restrai	int Commentary	NO COMMENTS				
Restrai	int # 2 SEAT BA	CK				
Mounte						
Deploy		ED PROPERLY				

Restraint Commentary

NO COMMENTS

2006 FORD OTHER LEFT REAR SEAT OCCUPANT

Test # 5803
Vehicle # 1 Sex FEMALE
Location LEFT REAR SEAT Age 99
Position NOT APPLICABLE Height 999 mm 39.3 inches
Type HYBRID III DUMMY Weight 999.0 kg 2202 pounds
Size 5 PERCENTILE
Calibration Method OTHER
Occupant Manufacturer FIRST TECHNOLOGY
Occupant Modification UNMODIFIED
Occupant Description S/N: 111
Occupant Commentary LAST CALIBRATION DATE : 10/NOV/05
<u>Head</u>
Head to -
Windshielder Header 9999 mm 0.0 inches Head Injury Criteria (HIC) 731
WindShield 9999 mm 0.0 inches HIC Lower Time Interval (ms) 66.2
Seatback 9999 mm 0.0 inches HIC Upper Time Interval (ms) 102.2
Side Header 9999 mm 0.0 inches
Side Window 9999 mm 0.0 inches
Neck to Seatback 9999 mm 0.0 inches
First Contact Region (Head) NONE
Second Contact Region (Head)
<u>Chest</u>
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)
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
<u>Legs</u>
Knees to Dash 9999 mm 0.0 inches Knees to Seatback 9999 mm 0.0 inches
Left Femur Peak Load -2983 Newtons -670.6 pounds Force
Right Femur Peak Load -2958 Newtons -665.0 pounds Force
First Contact Region (Legs) NONE
Second Contact Region (Legs)

2006 FORD OTHER LEFT REAR SEAT OCCUPANT

Test #	5803						
Vehicle #	1			Sex	FEMALE		
Location	LEFT R	EAR SEA	Т	Age	99		
Position	NOT AF	PLICABL	E	Height	999 mm	39.3 inches	
Type	HYBRIC	III DUMN	ΛY	Weight	999.0 kg	2202 pounds	
Size	5 PERC	ENTILE					
Cal	ibration N	/lethod	OTHER				
Occupa	nt Manuf	acturer	FIRST TECHNOLOGY				
Occup	ant Modif	fication	UNMODIFIED				
Occu	pant Des	cription	S/N: 111				
Occupa	ant Comr	mentary	LAST CALIBRATION DA	TE: 10/NOV/05			
			Restraints	<u>i</u>			
Restrai	int # 1	3 POINT I	BELT				
Mounte	ed [BELT - CO	ONVENTIONAL MOUNT				
Deploy	ment [DEPLOYE	D PROPERLY				
Restrai	int Comm	entary	NO COMMENTS				
Restrai	int # 2 [SEAT BA	~K				
Mounte	=	OTHER	<u>or </u>				
	=		D PROPERLY				
Deploy	_						
Restrai	int Comm	entary	NO COMMENTS				

Vehicle 1 2006 FORD OTHER

Test # 5803							
VIN 3FAFP07	7ZX6R106402		NHTSA Te	est Vehicle Numbe	er 1		
Year 2006			Vehicle Mo	dification Indicato	r PRODUCTIO	N VEHICL	E
Make FORD	Post	t-test Steering C	olumn Shear	Capsule Seperation	n NOT APPLIC	ABLE	
Model OTHER		Steeri	ng Column Co	ollapse Mechanisr	n NOT APPLIC	ABLE	-
Body FOUR DO	OOR SEDAN						
Engine 4 CYLINI	DER TRANSVER	SE FRONT					
Displacement 2.3	Liter Transm	nission MANU	AL - FRONT W	HEEL DRIVE			
Vehicle Modification(s) D	escription UNN	IODIFIED					
Vehicle Commentary 0	6-207 FORD FUS	ION					
Vehicle Length 48	832 mm 190	inches	CG	behind Front Axl	e 1277 mm	50.3	inches
Vehicle Width 18	835 mm 72.	2 inches	Center of D	Damage to CG Axi	s 9999 mm	0.0	inches
Vehicle Wheelbase 27	727 mm 107	'.4 inches	Total Leng	gth of Indentation	1501 mm	59.1	inches
Vehicle Test Weight 17	750 KG 385	pounds	Maximum S	Static Crush Depth	9999 mm	0.0	inches
				Pre-Impact Speed	d 57 kph	35.2	mph
Vehicle Dama	age Index 99999	999	Princi	pal Direction of Fo	orce 0		
Damara Drafila Diat	lawaa Maaayya		Oursala francis	D 0 D T.	-4 Daves ava M		4 .
Damage Profile Dist			Crush from	n Pre & Post Te			
· —	o-Right, Rear-to-F			Pre-Test	Post-Test	Crush [
			ımper Corner		164.9 inche		inches
		ches		4738 mm	4188 mm	550] mm
		ches	Centerline	190.2 inches	166.1 inche	s 24.1] inches
		ches		4832 mm	4220 mm	612] mm
		ches . Right Bu	ımper Corner	186.6 inches	164.3 inche	s 22.3	inches
DPD 6 327 m	nm 12.9 ind	ches Right Bu		4739 mm	4173 mm	566] mm
				4700	4170	000	J
Bumper Engageme	ent	Sill Er	ngagement		A-pillar l	Engageme	ent
(Inline Impact Only			Impact Only)		•	mpact On	
0.0	,	<u> </u>	APPLICABLE		,	0.0	Ť
							_
Moving Test Cart	t	Moving ⁻	Test Cart/Vehi	icle	Vehicle Or		
Angle		Cra	bbed Angle		Moving	g Test Car	t
NOT APPLICAB			99.0			PLICABL	
Magnitude of the Tilt Ang		_	of the Crabbed Angl	le	_	de of the Angle	
Measured between surface			re Clockwise from		Measured between		
Pollovor Tost Cart and the (Pround	Longitudinal Vactor	to Volocity Voctor	of Vohicle	and Direction	of Toot Cart A	10tion

Vehicle 1 2006 FORD OTHER

Test #	5803										
VIN	3FAFP	07ZX6R	10640	2		NHTSA	Test Vehicle Nu	ımber 1			
Year	2006					Vehicle	Modification Indi	cator PROD	UCTIO	N VEHICL	E
Make	FORD	Post-test Steering Column Shear Capsule Seperation NOT APPLICABLE									
Model	OTHER	₹			Ste	ering Columr	Collapse Mecha	anism NOT	APPLIC	ABLE	
Body	FOUR	DOOR S	EDAN								
Engine	4 CYLI	NDER T	RANS\	/ERSE F	RONT						
Displacement	2.3	Liter	Tra	ansmissio	on MAN	IUAL - FRON	T WHEEL DRIVE				
Vehicle Modific	cation(s)	Descrip	tion	UNMODI	FIED						
Vehicle Comm	entary	06-207	FORD	FUSION							
Vehicle Ler	ngth	4832	mm	190.2	inches		CG behind Fron	t Axle 1277] mm	50.3	inches
Vehicle \	Nidth	1835	mm	72.2	inches	Center	of Damage to CO	3 Axis 9999	mm	0.0	inches
Vehicle Whee	elbase	2727	mm	107.4	inches	Total L	ength of Indenta	ation 1501	mm	59.1	inches
Vehicle Test W	/eight	1750	KG	3857	pounds	Maximu	m Static Crush D	Depth 9999] mm	0.0	inches
							Pre-Impact S	peed 57	kph	35.2	mph
Ve	hicle Da	mage Ir	ndex 9	999999		Pr	incipal Direction	of Force 0			

Pre & Post Test Damage Measurements

(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		Right Side				
Pr	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	nterline					
				4832	190.2	4220	166.1					
					Engin	e Block						
				212	8.3	1106	43.5					
4738	186.5	4188	164.9		Front Bur	mper Corı	ner	4739	186.6	4173	164.3	
					Front o	of Engine						
				4146	163.2	3726	146.7					
3524	138.7	3473	136.7		Fire	ewall		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 Leadin	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 Trailin	g Edge o	f Door	2282	89.8	2277	89.6	
2317	91.2	2318	91.3	Lo	wer Trailin	g Edge o	f Door	2322	91.4	2319	91.3	
					Steerin	g Columr	١					
				2857	112.5	2893	113.9					
				Center of Se	ering Colu	mn to 'A'	Post (Horiz	ontal)				
				415	16.3	411	16.2					
				Center of Ste	ering Colu	ımn to He	adliner (Ve	rtical)				
				450	17.7	459	18.1					

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

NHTSA Crash Test - #5803 - Front Impact

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

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

Pre/Post Collision Crush Depths (inches)

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

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

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

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

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

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

G = Energy dissipated without permanent damage, lb

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

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

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

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

Crush	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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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 (Pass. Side)

(Driver Side) 21.7 24.1 22.3

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 21.7 inches 137.8 Using a Rated No Damage Speed of 197.2 119.0 163.5 2.5mph 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 1471.7 85.4 Using a Rated No Damage Speed of 608.1 70.7 10.0mph 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 473.0 76.0 1471.7 7.5mph 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 82.3 654.1 451.4 Using a Rated No Damage Speed of 7.5mph 69.2 1471.7 Using a Rated No Damage Speed of 10.0mph 547.6 57.3 2616.3

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

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

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

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

G = Energy dissipated without permanent damage, 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	24.1	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

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	(Dana Cida)
(Driver Side)	14.8	21.5	24.4	24.3	23.5	12.9	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 12.9 inches 319.0 Using a Rated No Damage Speed of 271.4 275.4 133.8 2.5mph 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 163.6 10.0mph 836.8 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 413.9 71.1 1203.8 7.5mph Using a Rated No Damage Speed of 10.0mph 502.1 58.9 1490.5 89.2 Maximum Crush = 24.4 inches Using a Rated No Damage Speed of 2.5mph 143.5 77.0 133.8 Using a Rated No Damage Speed of 5.0mph 265.1 535.0 65.7 Using a Rated No Damage Speed of 364.7 7.5mph 55.2 1203.8 Using a Rated No Damage Speed of 442.4 10.0mph 45.7 2140.1

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

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

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

G = Energy dissipated without permanent damage, 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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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

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	(Dago Cida)
(Driver Side)	14.8	21.5	24.4	24.3	23.5	12.9	(Pass Side)

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

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

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

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

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

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

G = Energy dissipated without permanent damage, lb

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

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2010

Make: FORD

Model: CROWN VICTORIA

Test	Vehicle	No							
Number	Info	Damage.	Average	Closing	V	ehicle '	Width	า	
		Speed	Crush	Speed	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	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
	N	/linimum	(MIN)		263.7	59.2	535.0	80.5	18.4
	Ma	aximum ((MAX)		318.1	84.5	603.6	114.7	23.1
	Standard Deviation (STDev-sa	mple)		22.8	12.1	31.1	16.3	2.1
Number of Tests (n)									

Serial Number: 11R-030201SC02301

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	Max	Closing	V €	ehicle	Width		
		Speed	Crush	Speed	S t i	ffness	: Valu	e s	Crush
		(mph)	(inch)	(mph)	Α	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
	A	Average (AVG)		267.4	61.8	580.5	83.9	18.9
	M	linimum	(MIN)		254.0	54.9	535.0	74.7	17.7
	Ma	aximum ((MAX)		289.4	69.4	603.6	94.1	20.4
	Standard Deviation (S	STDev-sa	mple)		15.4	7.0	31.1	9.3	1.3
	Number of Tests (n)								

Serial Number: 11R-030201SC02301

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: 1G8ZK5275VZ133777

Model: 1997 Saturn SL2 Sedan Auto 4 Door Sedan

Engine Size: 1.9 L/ 116 cu.in.

Engine Description: In-line 4 cylinder with Double Overhead Cam

Horse Power: 124 @ 5600 rpm

Torque: 122 lb-ft at 4800 rpm

Injection System: Multi-Port Fuel Injection (MFI)

PSI: 31-44 psi Ignition: Electronic

Manufacturer: Saturn

Assembly Plant: Spring Hill, TN.

Drive Wheels: This is a Front Wheel Drive vehicle w/ Manual Seatbelts + Driver & Passenger Air Bags

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

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

The Sixth character (5) indicates a 4 Door Sedan

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

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

The Ninth character (the check digit) is entered as 5.

The VIN appears Valid, the calculated value is 5.

The Tenth character (V) indicates the model year 1997

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

The Twelfth through Seventeenth characters (133777) 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 91942

5/9/2012

1997 SATURN SL2 4 DOOR SEDAN			
Curb Weight: Curb Weight Distribution - Front:	2421 lbs. 61 %		98 kg. 9 %
Gross Vehicle Weight Rating:	3344 lbs.	15	517 kg.
Number of Tires on Vehicle: Drive Wheels:	FRONT		
Horizontal Dimensions Total Length Wheelbase:	Inches 177 102	Feet 14.75 8.50	Meters 4.50 2.59
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	37 23 6 46 77	3.08 1.92 0.50 3.83 6.42	0.94 0.58 0.15 1.17 1.96
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	38 20 5 19	3.17 1.67 0.42 1.58	0.97 0.51 0.13 0.48
Width Dimensions Maximum Width: Front Track: Rear Track:	57 56	5.58 4.75 4.67	1.70 1.45 1.42
Vertical Dimensions Height: Ground to -	55	4.58	1.40
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	20 23 26 35 23 38 41	1.67 1.92 2.17 2.92 1.92 3.17 3.42	0.51 0.58 0.66 0.89 0.58 0.97 1.04

Expert AutoStats®

1997 SATURN SL2 4 DOOR SEDAN

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	53	4.42	1.35
Front Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (max)	41	3.42	1.04
Rear Seat Shoulder Width	53	4.42	1.35
Rear Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (min)	26	2.17	0.66
Seatbelts: 3pt - front and rear			
Airbags: FRONT SEAT AIRBAGS			
Steering Data			
Turning Circle (Diameter)	480	40.00	12.19
Steering Ratio: :1		[40.00]	12.15
Wheel Radius:	12	1.00	0.30
Tire Size (OEM): 185/65R15		1.00	0.30
1116 3126 (6211)1			
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 navement):		
$d = \begin{bmatrix} 142.0 \\ \text{ft} \end{bmatrix} \text{ ft} \qquad t = \begin{bmatrix} 3.2 \\ \text{sec} \end{bmatrix} \text{ sec}$	$a = \begin{bmatrix} -27.2 \\ ft/s \end{bmatrix}$	sec² G-fo	rce = -0.85
	u = <u>[2712</u>] 1 c/ s	, cc	0103
Acceleration:	- [16 0] ft /		0.53
0 to 30mph $t = 2.6$ sec 0 to 60mph $t = 7.6$ sec	a = 16.9 ft/s a = 11.6 ft/s		rce = 0.53 rce = 0.36
			rce = 0.36 rce =
	a = [ft/s	G-10	rce =
Transmission Type: 4spd AUTOMATIC			
Notoci			
Notes:	[2	h	
Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mp 5 mp		
inis venicies kateu bumper strength:	mp	11	

N.S.D.C = 1996 - 1999

1997 SATURN SL2 4 DOOR SEDAN

Other Information		
Tip-Over Stability Ratio =	1.31	Stable
NHTSA Star Rating (calculated)		***
Center of Gravity (No Load):		
Inches behind front axle	=	39.78
Inches in front of rear axle	=	62.22
Inches from side of vehicle	=	33.50
Inches from ground	=	21.59
Inches from front corner	=	83.77
Inches from rear corner	=	105.67
Inches from front bumper	=	76.78
Inches from rear bumper	=	100.22
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	1287.63 lb*ft*sec²
Pitch Moment of Inertia	=	1247.79 lb*ft*sec²
Roll Moment of Inertia	=	285.78 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	45.0 deg
Angle Front of Hood to Windshield Base	=	12.7 deg
Angle Front of Hood to Windshield Top	=	20.8 deg
Angle of Windshield	=	30.1 deg
Angle of Steering Tires at Max Turn	=	24.4 deg

First Approximation Crush Factors:

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

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

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #3446

2000 SATURN SL2

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Sister/Clone database reader

You entered: 1997 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 Remarks: SL, SL1,	SATURN SL2 - new body	SL panels in 97		102.4
1996 - 2001 Remarks: SW1, SV	SATURN V2	SW		102.4
1997 - 2002 Remarks: SC1, SC	SATURN 2	SC	2D	102.4

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

Test Information

Test # 3446		NH ⁻	TSA Test	Reference	Guide Version	n #	V5			
Test Date 2000-07-2 4	1				Contrac	ct#	9999999999	999999		
Contract/Study Title	NCAP SIDE	IMPACT	- 2000 9	SATURN S	SL2 4 DOOR					
Test Objective(s)	VEHICLE CR	ASHWO	RTHINE	S AND O	CCUPANT PR	OTE	CTION			
Test Type	OPTIONAL	NEW CA	R ASSES	SMENT T	EST		Configuration	IMPACT	OR INTO VE	HICLE
Impact Angle	270			9	Side Impact P	oint	N/A	mm	N/A	inches
					Offset Dista	ance	0	mm	0.0	inches
					Closing Sp	peed	62.6	Km/Hr	38.90	MPH
Test Performer	MGA RESEA	RCH								
Test Reference #	BT0007240	1								
Test Track Surface	CONCRETE] Condit	tion	DRY			
Ambient Temperature	22 C	71.6	F	Total N	lumber of Cui	rves	49			
Data Recorder Type	OTHER						Data Link	UMBILI	CAL CABLE	
Test Commentary	HIGH SPEED	ANALO	G TO D	IGITAL RE	CORDER					
			Fi	xed Barri	er Information	on				
										_
Barrier Type				Pole	e Barrier Diam	eter		mm		inches
Barrier Shape			_	_						
Barrier Commentary										

2000 SATURN SL2 LEFT FRONT SEAT OCCUPANT

Test # 3446								
Vehicle # 2				3	Sex MAL	.E		
Location LEFT I	FRONT SE	AT			Age 99			
Position CENTE	ER POSITI	ON] He	ight 999	mm	39.3 inch	es
Type NHTS/	A SIDE IMI	PACT DUMMY] We	eight 999.	0 kg	2202 poui	nds
Size 50 PE	RCENTILE]				
Calibration	Method	SIDE IMPAC	T DUMMY					
Occupant Manu	ufacturer	FIRST TECH	NOLOGIES	S/N: 269				
Occupant Mod	dification	NO COMME	NTS					
Occupant De	escription	NO COMME	NTS					
Occupant Com	nmentary	HEAD CONT	ACTED D R	ING				
Head to -			<u>Head</u>					
Windshielder He	eader 375	mm 14	1.8 inch	es Head In	jury Criteria	a (HIC)	440	
WindS			6.8 inch		C Lower Tir	` '		
	tback 999				C Upper Tir		` ' ===	
	eader 192				э оррог та	1110 1111011	ar (1110) <u>170:</u>	<u>, </u>
	ndow 335		3.2 inch					
Neck to Seatback		mm 0.0	inches					
		egion (Head)	SIDE WINI	DOW				7
		egion (Head)	<u> </u>					าี
2000114	oomao. m	ogion (noda)						_
			Chest					
Chest to -			<u> </u>					
Dash	495 n	nm 19.5	inches	Arm to Door	70	mm 2	.8 inches	;
		nm 13.1	inches	Hip to Doo		mm 5		;
<u>-</u>		nm 0.0	inches	·		_		
Chest Severity	Index 99] F	elvic Peak Late	eral Accele	ration (g's	s) O	7
Thoracic Trauma I	ndex 0]	Thorax P	eak Accele	eration (g'	s) 999.9	j
	Lap I	Belt Peak Load	9999	Newtons 224	7.9 poun	d Force		
	Shoulder F	Belt Peak Load	9999	Newtons 224	7.9 poun	d Force		
First Contact F	Region (Ch	est/Abdomen)	NONE]
Second Contact R	Region (Ch	est/Abdomen)	NONE]
			<u>Legs</u>					
Knees to Dash	229 n	nm 9.0		nees to Seatba	ack gaaa] mm [0	.0 inches	
Left Femur Peak			-		ounds For		1101100	
Right Femur Peak					ounds For			
=		_	OTHER					7
		Region (Legs)						าี
		J - (37)						_

2000 SATURN SL2 LEFT FRONT SEAT OCCUPANT

Test #	3446					
Vehicle #	2		Sex	MALE		
Location	LEFT FRONT SE	AT	Age	99		
Position	CENTER POSIT	ION	Height	999 mm	39.3 inches	
Type	NHTSA SIDE IM	PACT DUMMY	Weight	999.0 kg	2202 pounds	
Size	50 PERCENTILE					
Cali	ibration Method	SIDE IMPACT DUMMY				
Occupai	nt Manufacturer	FIRST TECHNOLOGIES S	S/N: 269			
Occupa	ant Modification	NO COMMENTS				
Occu	pant Description	NO COMMENTS				
Occupant Commentary HEAD CONTACTED		HEAD CONTACTED D RIN	NG			
		Restraints				
Restrai	nt # 1 3 POINT	BELT				
Mounte	ed OTHER					
Deploy	ment NOT APF	PLICABLE				
Restrai	nt Commentary					
Restrai	nt # 2 FRONTA	L AIRBAG				
Mounte	ed DASH PA	ANEL - UNSPECIFIED				
Deploy	ment DEPLOY	ED PROPERLY	_		_	

Restraint Commentary

2000 SATURN SL2 LEFT REAR SEAT OCCUPANT

Test # 3446	
Vehicle # 2	Sex MALE
Location LEFT REAR SEAT	Age 99
Position CENTER POSITION	Height 999 mm 39.3 inches
Type NHTSA SIDE IMPACT DUMMY	Weight 999.0 kg 2202 pounds
Size 50 PERCENTILE	
Calibration Method SIDE IMPACT DUMMY	
Occupant Manufacturer FIRST TECHNOLOGIES	S/N: 270
Occupant Modification NO COMMENTS	
Occupant Description NO COMMENTS	
Occupant Commentary NO COMMENTS	
<u>Head</u>	
Head to -	
Windshielder Header 9999 mm 0.0 inche	. ,
WindShield 9999 mm 0.0 inch	(/
Seatback 547 mm 21.5 inche	· · · · · · · · · · · · · · · · · · ·
Side Header 204 mm 8.0 inche	
Side Window 311 mm 12.2 inche	es
Neck to Seatback 9999 mm 0.0 inches	
First Contact Region (Head) C PILLAR	
Second Contact Region (Head)	
Chast	
Chest to -	
	Arm to Door 98 mm 3.9 inches
Steering Wheel 9999 mm 0.0 inches Seatback 472 mm 18.6 inches	Hip to Door [152] mm [6.0] inches
	Pelvic Peak Lateral Acceleration (g's)
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 999.9
	Newtons 2247.9 pound Force
· <u> </u>	Newtons 2247.9 pound Force
First Contact Region (Chest/Abdomen) NONE	
Second Contact Region (Chest/Abdomen) NONE	
<u>Legs</u>	
	nees to Seatback 160 mm 6.3 inches
	-224.6 pounds Force
	-224.6 pounds Force
First Contact Region (Legs) OTHER	
Second Contact Region (Legs)	
S \ S /	

2000 SATURN SL2 LEFT REAR SEAT OCCUPANT

Test #	3446					
Vehicle #	2		Sex	MALE		
Location	LEFT REAR SEA	T .	Age	99		
Position	CENTER POSITION	ON	Height	999 mm 3	9.3 inches	
Туре	NHTSA SIDE IMF	PACT DUMMY	Weight	999.0 kg 2	202 pounds	
Size	50 PERCENTILE					
Cali	bration Method	SIDE IMPACT DUMMY				
Occupar	nt Manufacturer	FIRST TECHNOLOGIES	S/N: 270			
Occupa	ant Modification	NO COMMENTS				
Occu	pant Description	NO COMMENTS				
Occupa	Occupant Commentary NO COMMENTS					
		Postrainte				
		Restraints	<u> </u>			
Restrai	nt # 1 3 POINT I	BELT				
Mounte	ed OTHER					
Deploy	ment NOT APP	LICABLE				
Restrai	nt Commentary					
D ('	O NONE					
Restrail	nt # 2 NONE					
Mounte	ed NOT APP	LICABLE				
Deploy	ment NOT APP	LICABLE				
Restrai	nt Commentary					

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	3446										
VIN					NHTSA Te	est Vehicl	le Numbe	r 1			
Year	0				Vehicle Mo	dification	Indicator	RESE/	ARCH V	EHICLE	
Make	NHTSA		Post-test S	Steering C	olumn Shear	Capsule	Seperatio	n NOT A	PPLICA	BLE	-
Model	DEFORM	MABLE IMPA	CTOR	Steeri	ng Column Co	ollapse M	lechanism	NOT A	PPLICA	BLE	
Body	NOT AP	PLICABLE									
Engine	NOT AP	PLICABLE									
Displacement	99	Liter Tr	ansmission	NOT AF	PPLICABLE						
Vehicle Modific	cation(s) [Description	FMVSS 21	4 DEFOR	MABLE BAR	RIER ANI	D IMPACT	OR			
Vehicle Comm	entary F	MVSS 214 N	MOVING B	ARRIER							
Vehicle Ler	ngth 4	1115 mm	162.0 i	nches	CG	behind F	ront Axle	1098	mm [43.2	inches
Vehicle \	Width 1	252 mm	49.3 i	nches	Center of D	Damage t	o CG Axis	9999	mm [0.0	inches
Vehicle Whee	elbase 2	2591 mm	102.0 i	nches	Total Lenç	gth of Ind	lentation	99999	mm [0.0	inches
Vehicle Test W	Veight 1	364 KG	3006 p	ounds	Maximum S	Static Cru	sh Depth	9999	mm [0.0	inches
						Pre-Impa	ct Speed	63	kph [38.9	mph
Ve	hicle Dam	nage Index 🛭	999999		Princi	ipal Direct	tion of Fo	ce 0			
Damaga Pr	ofilo Dic	etanco Maa	curomont		Crush fron	n Dro 8	Post Tod	st Dama	ao Ma	acuram	onto
Damage Pro				<u> </u>	Clushillon				_		
_		to-Right, Rea	_	1 - (1 D		Pre-Tes	_	Post-Tes		Crush I	
DPD 1		mm <u>0.0</u>	inches	Left Bu	ımper Corner	=	inches		inches		inches
DPD 2 9		mm <u>0.0</u>	inches			99999	mm	99999	mm	0] mm
DPD 3 [9		nm <u>0.0</u>	inches		Centerline	0.0	inches	0.0	inches	0.0	inches
DPD 4 [9		mm <u>0.0</u>	inches			99999	mm	99999	mm	0] mm
DPD 5		mm <u>0.0</u>	inches	Right Bu	mper Corner	0.0	inches	0.0	inches	0.0	inches
DPD 6	9999 r	mm <u>0.0</u>	inches	rtigitt Du	imper comer	99999	mm	99999	mm	0.0] mm
						33333		33333		<u> </u>]
Bumper E	ngageme	ent		Sill Fr	ngagement			Α.	-nillar Fı	ngagem	ent
	pact Only				Impact Only)				•	pact On	
·	9.0	, 1		-	APPLICABLE			Ĺ		9.0	.,,
	70.0	J		11017	NI LIOABLE			L	`).0	_
Moving	g Test Cai	rt		Moving 7	Test Cart/Vehi	icle		Vehi	icle Orie	entation o	on Cart
Α	ngle			Cral	obed Angle				Moving	Test Car	rt
NOT A	APPLICAE	BLE			27.0			N	OT APF	LICABL	.E
Magnitude	of the Tilt An	ngle		Magniture o	f the Crabbed Angl	le			Magnitude	of the Angle	÷
Measured be	etween surfa	ce of a		Measur	e Clockwise from			Measured l	between th	e Vehicle C	rientation
Rollover Test	Cart and the	Ground	Longi	tudinal Vector	to Velocity Vector	of Vehicle		and D	irection of	Test Cart N	∆otion

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	3446										
VIN						NHTSA	Test Vehicle N	lumber 1			
Year	0					Vehicle	Modification Ind	licator RES	EARCH	VEHICLE	ı I
Make	NHTS	4		Post-test S	Steering	Column She	ear Capsule Sep	eration NO	[APPLIC	CABLE	
Model	DEFO	RMABLE	IMP <i>A</i>	ACTOR] Ste	ering Columr	n Collapse Mech	anism NO	(APPLIC	CABLE	
Body	NOT A	PPLICA	BLE								
Engine	NOT A	PPLICA	BLE								
Displacement	99	Liter	Tr	ansmission	NOT	APPLICABL	E]	
Vehicle Modific	cation(s)) Descrip	tion	FMVSS 21	4 DEF	ORMABLE B	ARRIER AND IN	IPACTOR			
Vehicle Comm	entary	FMVSS	214 N	MOVING BA	ARRIER	?					
Vehicle Ler	ngth	4115	mm	162.0 ir	nches		CG behind Fron	nt Axle 1098	mm	43.2	inches
Vehicle \	Nidth	1252	mm	49.3 ir	nches	Center	of Damage to C	G Axis 9999	mm	0.0	inches
Vehicle Whee	elbase	2591	mm	102.0 ir	nches	Total L	ength of Indent	ation 9999	9 mm	0.0	inches
Vehicle Test W	/eight	1364	KG	3006 p	ounds	Maximu	m Static Crush I	Depth 9999	mm	0.0	inches
							Pre-Impact S	Speed 63	kph	38.9	mph
Ve	hicle Da	ımage Ir	ndex 🛭	999999		Pr	incipal Direction	of Force 0			
			_	٥. ٦	. —						

Pre & Post Test Damage Measurements

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

L	eft Side	Cente	erline	e Right Side						
Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-	Test	Post-	-Test			
mm inche	s mm inches	mm inches	mm inches	mm	inches	mm	inches			
		Length of Veh	nicle at Centerline							
		99999 0.0	99999 0.0							
		Engin	e Block							
		99999 0.0	99999 0.0							
99999 0.0	99999 0.0	Front Bu	mper Corner	99999	0.0	99999	0.0			
Front of Engine										
		99999 0.0	99999 0.0							
99999 0.0	99999 0.0		ewall	99999	0.0	99999	0.0			
		99999 0.0	99999 0.0							
99999 0.0	99999 0.0	• •	g Edge of Door	99999		99999				
99999 0.0	99999 0.0	Lower Leadin	g Edge of Door	99999	0.0	99999	0.0			
99999 0.0	99999 0.0		of 'A' Post		0.0		0.0			
99999 0.0	99999 0.0	• •	g Edge of Door		0.0		0.0			
99999 0.0	99999 0.0		g Edge of Door	99999	0.0	99999	0.0			
			g Column							
99999 0.0 99999 0.0										
Center of Seering Column to 'A' Post (Horizontal)										
		99999 0.0	99999 0.0							
		Center of Steering Colu		rtical)						
		99999 0.0	99999 0.0							

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Vehicle 2 2000 SATURN SL2

Test # 3446					
VIN 1G8ZJ5273	YZ239393	NHTS <i>A</i>	Test Vehicle Numb	per 2	
Year 2000		Vehicle	Modification Indicate	or PRODUCTIO	N VEHICLE
Make SATURN	Post-test	Steering Column She	ar Capsule Seperat	tion NOT APPLIC	ABLE
Model SL2		Steering Columr	Collapse Mechanis	sm UNKNOWN	
Body FOUR DOOF	RSEDAN				
Engine 4 CYLINDER	TRANSVERSE F	RONT			
Displacement 1.9 Lite	er Transmissio	on MANUAL - FRON	WHEEL DRIVE		
Vehicle Modification(s) Desc	ription NO COM	MENTS			
Vehicle Commentary NO C	OMMENTS				
Vehicle Length 4542	mm 178.8	inches	CG behind Front Ax	kle 1138 mm	44.8 inches
Vehicle Width 1674	mm 65.9	inches Center of	of Damage to CG Ax	xis 163 mm	6.4 inches
Vehicle Wheelbase 2596	mm 102.2	inches Total L	ength of Indentation	n 3710 mm	146.1 inches
Vehicle Test Weight 1292	KG 2848	pounds Maximu	m Static Crush Dept	th 381 mm	15.0 inches
			Pre-Impact Spee	ed 0 kph	0.0 mph
Vehicle Damage	Index 03LPAW2	Pr	ncipal Direction of F	orce 297	
Damage Profile Distance	ce Measuremer	nts Crush f	om Pre & Post To	est Damage M	easurements
(Measured Left-to-Ri		<u> </u>	Pre-Test	Post-Test	Crush Depth
DPD 1 0 mm	0.0 inches				
DPD 2 -21 mm	-0.8 inches	•	4129 mm	4065 mm	64 mm
DPD 3 370 mm	14.6 inches				
DPD 4 380 mm	15.0 inches	Centeni			===
DPD 5 -4 mm	-0.2 inches		4542 mm	4506 mm	36 mm
DPD 6 0 mm	0.0 inches	Dight Bumper Corr	er 162.5 inches	158.7 inche	s 3.9 inches
51 5 0 0			4128 mm	4030 mm	98 mm
Bumper Engagement		Sill Engagemen	t	A-pillar	Engagement
(Inline Impact Only)		(Side Impact Or	ıly)	(Side I	mpact Only)
27.0		DIRECT ENGAGE	MENT		90.0
Moving Test Cart		Moving Test Cart/V	ehicle	Vehicle O	rientation on Cart
Angle		Crabbed Angle			g Test Cart
NOT APPLICABLE		0.0	, 		NGAGEMENT
Magnitude of the Tilt Angle		Magniture of the Crabbed	∟ Angle		de of the Angle
Measured between surface of a	3	Measure Clockwise f	-	•	the Vehicle Orientation
Rollover Test Cart and the Groun	nd Lor	ngitudinal Vector to Velocity Ve	ctor of Vehicle	and Direction	of Test Cart Motion

Vehicle 2 2000 SATURN SL2

Test #	3446							
VIN	1G8ZJ	5273YZ	23939	3		NHTSA Test Vehicle Number 2		
Year	2000					Vehicle Modification Indicator PRODUCTION	VEHIC	LE
Make	SATUR	RN		Post-tes	t Steering	Column Shear Capsule Seperation NOT APPLIC	ABLE	
Model	SL2				Ste	ering Column Collapse Mechanism UNKNOWN		
Body FOUR DOOR SEDAN								
Engine	4 CYL	INDER T	RANS	VERSE F	RONT			
Displacement	1.9	Liter	Tra	ansmissi	on MAN	UAL - FRONT WHEEL DRIVE		
Vehicle Modific	cation(s)) Descrip	tion [NO COM	IMENTS			
Vehicle Comm	entary	NO CO	MMEN	TS				
Vehicle Ler	ngth	4542	mm	178.8	inches	CG behind Front Axle 1138 mm	44.8	inches
Vehicle \	Width	1674	mm	65.9	inches	Center of Damage to CG Axis 163 mm	6.4	inches
Vehicle Whee	elbase	2596	mm	102.2	inches	Total Length of Indentation 3710 mm	146.1	inches
Vehicle Test W	Veight	1292	KG	2848	pounds	Maximum Static Crush Depth 381 mm	15.0	inches
						Pre-Impact Speed 0 kph	0.0	mph
Ve	hicle Da	ımage Ir	ndex 0	3LPAW2	2	Principal Direction of Force 297		
			Di	ra & Da	act Tac	t Damaga Maacuramants		

Pre & Post Test Damage Measurements

(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			Righ	t Side	
Pre	e-Test	Pos	t-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	nterline				
				4542	178.8	4506	177.4				
					Engin	e Block					
				99999	0.0	99999	0.0				
4129	162.6	4065	160.0		Front Bur	mper Corr	ner	4128	162.5	4030	158.7
					Front c	of Engine					
				99999	0.0	99999	0.0				
99999	0.0	99999	0.0		Fire	ewall		99999	0.0	99999	0.0
				99999	0.0	99999	0.0				
99999	0.0	99999	0.0	Upp	oer Leadin	g Edge o	f Door	99999	0.0	99999	0.0
99999	0.0	99999	0.0	Low	ver Leadin	g Edge of	Door	99999	0.0	99999	0.0
99999	0.0	99999	0.0		Bottom of	f 'A' Post		99999	0.0	99999	0.0
99999	0.0	99999	0.0	Up	per Trailing	g Edge of	Door	99999	0.0	99999	0.0
99999	0.0	99999	0.0	Lo	wer Trailing	g Edge of	Door	99999	0.0	99999	0.0
					Steering	g Column	<u> </u>				
				99999	0.0	99999	0.0				
				Center of Se	ering Colu	mn to 'A'	Post (Horiz	ontal)			
				99999	0.0	99999	0.0				
				Center of Ste	ering Colu	mn to He	adliner (Ve	rtical)			
				99999	0.0	99999	0.0				

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2000 SATURN SL2

NHTSA Crash Test - #3446 - Side Impact

Damage Profile Distances - Indention Length - KE Equivalent Speed - Trapezoidal Average

Test Vehicle Weight = 2848 pounds

Impactor Weight = 3006

KE Equivalent Speed = 27.9 MPH

Impactor Test Speed = 38.9

Test Crush Length = 146.1 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Fro. 0.4)
(Rear)	0.0	-0.8	14.6	15.0	-0.2	0.0	(Front)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G K۷ Minimum Crush = 14.6 57.0 inches Using a Rated No Damage Speed of 28.8 1.0mph 53.0 7.8 Using a Rated No Damage Speed of 2.0mph 55.4 49.1 31.3 Using a Rated No Damage Speed of 3.0mph 79.9 45.4 70.3 Using a Rated No Damage Speed of 122.4 5.0mph 38.4 195.4 Average Crush = 9.8 126.5 inches Using a Rated No Damage Speed of 1.0mph 42.9 117.5 7.8 Using a Rated No Damage Speed of 2.0mph 82.5 109.0 31.3 Using a Rated No Damage Speed of 119.0 100.7 70.3 3.0mph Using a Rated No Damage Speed of 5.0mph 182.4 85.2 152.7 Maximum Crush = 15.0 inches 54.0 Using a Rated No Damage Speed of 28.0 50.2 1.0mph 7.8 Using a Rated No Damage Speed of 2.0mph 53.9 46.5 31.3 Using a Rated No Damage Speed of 3.0mph 77.8 43.0 70.3 Using a Rated No Damage Speed of 5.0mph 119.2 36.3 195.4

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

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	15.0	28.1	0.2	0.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 20.7

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 1996 - 2002

Make: SATURN Model: SL

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)		•	dention iffness B	,		Crush Factor
2506	1997 SATURN SL2 FOUR DOOR SEDAN	2.0	15.6	27.5	51.6	42.3	31.5	49.2	19.5
3446	2000 SATURN SL2 FOUR DOOR SEDAN	2.0	9.8	27.9	82.2	108.0	31.3	125.4	31.6
3307	2000 SATURN SL1 FOUR DOOR SEDAN	2.0	3.3	20.7	170.9	489.2	29.9	599.3	52.5
		Average	(AVG)		101.6	213.2	30.9	258.0	34.5
		Minimum	(MIN)		51.6	42.3	29.9	49.2	19.5
		Maximum	(MAX)		170.9	489.2	31.5	599.3	52.5
	Standard Deviat	ion (STDev-sa	ample)		62.0	241.3	0.9	298.0	16.7
	1	Number of Te	sts (n)	3					

Serial Number: 11R-030201SC02301

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 1996 - 2002

Make: SATURN Model: SL

Test Numbe	Vehicle r Info	No Damage Speed (mph)	Max Crush (inch)			lention iffness B	J		Crush Factor
2506	1997 SATURN SL2 FOUR DOOR SEDAN	2.0	15.6	27.5	51.6	42.3	31.5	49.2	19.5
3446	2000 SATURN SL2 FOUR DOOR SEDAN	2.0	15.0	27.9	53.9	46.5	31.3	54.0	20.7
3307	2000 SATURN SL1 FOUR DOOR SEDAN	2.0	10.1	20.7	55.5	51.6	29.9	63.1	17.1
		Average ((AVG)		53.7	46.8	30.9	55.4	19.1
		Minimum	(MIN)		51.6	42.3	29.9	49.2	17.1
		Maximum	(MAX)		55.5	51.6	31.5	63.1	20.7
	Standard Deviation	on (STDev-sa	ımple)		2.0	4.7	0.9	7.1	1.8
	Nu	umber of Tes	sts (n)	3					

Serial Number: 11R-030201SC02301

Expert VIN DeCoder®

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DeCoded VIN: KNADC125236241385

Model: 2003 Kia Rio 4-Door Sedan

Engine Size: 1.6L / 97 cu.in.

Engine Description: Inline 4 cylinder with Dual Overhear Cams

Horse Power: 104 @ 5800 rpm

Torque: 104 lb-ft at 4700 rpm

Injection System: Electronic Gasoline Injection (EGI)

PSI: 65-94 psi Ignition: electronic

Manufacturer: Kia

Assembly Plant: Sohari, Korea

Drive Wheels:

This is a Front Wheel Drive vehicle w/ Dual Air Bags

The First through Third characters (KNA) indicate a Kia Car made in Korea

The Fourth and Fifth characters (DC) indicate a Rio

The Sixth and Seventh characters (12) indicate a 4-Door Sedan

The Eighth character (5) indicates the OEM engine: 1.6L / 97 cu.in., L4, DOHC

The Ninth character (the check digit) is entered as 2.

The VIN appears Valid, the calculated value is 2.

The Tenth character (3) indicates the model year 2003

The Eleventh character (6) indicates the vehicle was made in the assembly plant in Sohari, Korea

The Twelfth through Seventeenth characters (241385) 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 91942

5/29/2012

2003 KIA RIO 4 DOOR SEDAN			
Curb Weight: Curb Weight Distribution - Front:	2403 lbs. 56 %	Rear: 44	
Gross Vehicle Weight Rating:	3379 lbs.	15	33 kg.
Number of Tires on Vehicle: Drive Wheels:	FRONT		
Horizontal Dimensions Total Length Wheelbase:	Inches 167 95	Feet 13.92 7.92	Meters 4.24 2.41
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	33 19 5 42 70	2.75 1.58 0.42 3.50 5.83	0.84 0.48 0.13 1.07 1.78
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	39 24 4 20	3.25 2.00 0.33 1.67	0.99 0.61 0.10 0.51
Width Dimensions Maximum Width: Front Track: Rear Track:	66 56 57	5.50 4.67 4.75	1.68 1.42 1.45
Vertical Dimensions Height: Ground to -	57	4.75	1.45
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	22 26 30 37 24 39	1.83 2.17 2.50 3.08 2.00 3.25 3.50	0.56 0.66 0.76 0.94 0.61 0.99 1.07

Expert AutoStats®

2003 KIA RIO 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 39 43	Feet 4.42 3.25 3.58	Meters 1.35 0.99 1.09
Rear Seat to Headliner Front Leg Room - seatback to floor (min)	38	3.17	0.97
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): P175/65R14	372 11	0.92	9.45
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ALL WHEEL ABS - OPTIONAL Braking, 60 mph to 0 (Hard pedal, no skid,	<u> </u>		
$d = \boxed{129.0} \text{ ft} \qquad t = \boxed{2.9} \text{ sec}$ $Acceleration:$ $0 \text{ to } 30\text{mph} \qquad t = \boxed{3.1} \text{ sec}$ $0 \text{ to } 60\text{mph} \qquad t = \boxed{9.8} \text{ sec}$ $45 \text{ to } 65\text{mph} \qquad t = \boxed{5.5} \text{ sec}$	a = \begin{aligned} -30.0 & ft/se \\ a = \begin{aligned} 14.2 & ft/se \\ a = \begin{aligned} 9.0 & ft/se \\ a = \begin{aligned} 5.3 & ft/se \end{aligned}	c² G-fo	rce =
Transmission Type: 5spd MANUAL Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mph 2.5 mph		

N.S.D.C = 2003 - 2005

2003 KIA RIO 4 DOOR SEDAN

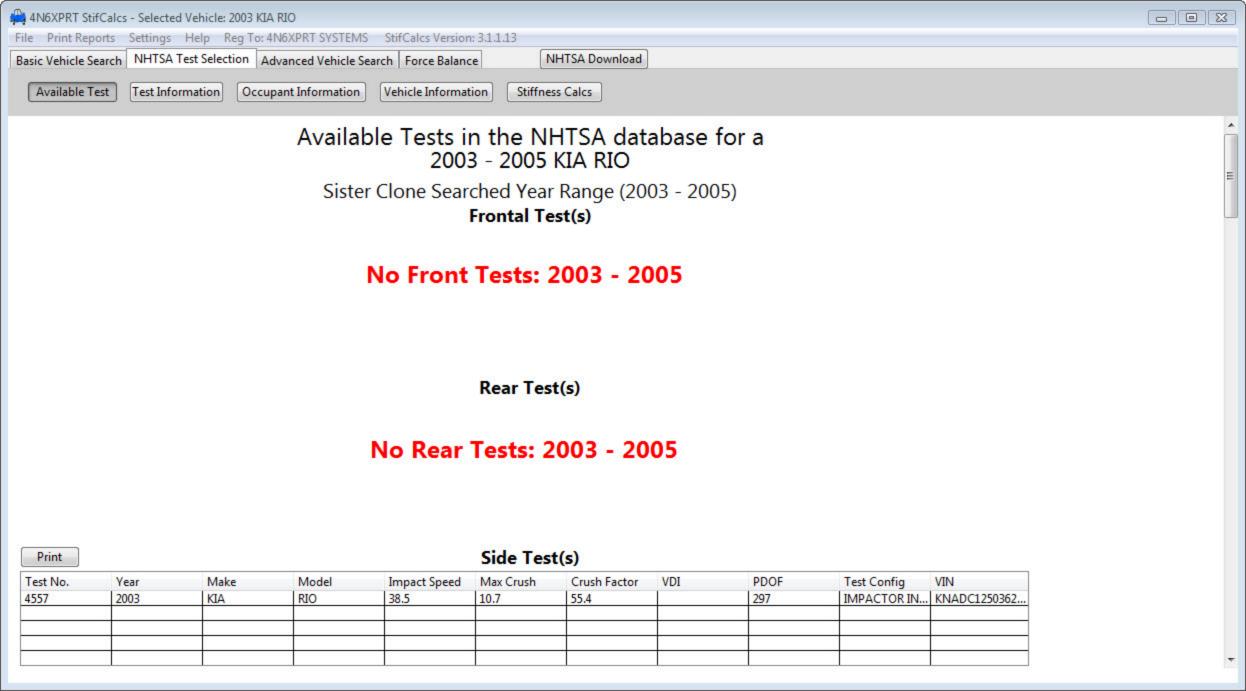
Other Information Tip-Over Stability Ratio = NHTSA Star Rating (calculated)	1.26	Stable ***
Center of Gravity (No Load):		
Inches behind front axle	=	41.80
Inches in front of rear axle	=	53.20
Inches from side of vehicle	=	33.00
Inches from ground	=	22.37
Inches from front corner	=	81.76
Inches from rear corner	=	97.93
Inches from front bumper	=	74.80
Inches from rear bumper	=	92.20
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	1269.09 lb*ft*sec²
Pitch Moment of Inertia	=	1229.97 lb*ft*sec²
Roll Moment of Inertia	=	282.54 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	58.0 deg
Angle Front of Hood to Windshield Base	=	10.7 deg
Angle Front of Hood to Windshield Top	=	<u>21.0</u> deg
Angle of Windshield	=	32.7 deg
Angle of Steering Tires at Max Turn	=	29.3 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:

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).



Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2012

Model: RIO

Test	Vehicle	No							
Numbe	r Info	Damage	Average	Closing	V	ehicle	Widtl	h	
		Speed	Crush	Speed	S t	iffnes	s Valu	u e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
3905	2002 KIA RIO FOUR DOOR SEDAN	5.0	17.1	34.6	305.6	105.9	440.8	144.8	28.0
7751	2012 KIA RIO FOUR DOOR SEDAN	5.0	17.4	34.9	309.8	106.2	452.0	144.7	27.9
5912	2007 KIA RIO FOUR DOOR SEDAN	5.0	13.8	34.8	386.4	166.9	447.2	227.6	35.1
5495	2006 KIA RIO FOUR DOOR SEDAN	5.0	12.3	35.1	437.2	213.9	446.8	290.8	40.1
		Average	(AVG)		359.8	148.2	446.7	202.0	32.8
		Minimum	(MIN)		305.6	105.9	440.8	144.7	27.9
		Maximum	(MAX)		437.2	213.9	452.0	290.8	40.1
	Standard Deviation	on (STDev-sa	ample)		63.6	52.3	4.6	70.9	5.9
	N	umber of Te	sts (n)	4					

Serial Number: 11R-030201SC02301

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Web Site: http://www.4n6xprt.com E-Mail: 4n6@4n6xprt.com

To compare stiffness values between a Force-Balance approach and calculation from NHTSA Crash Tests, Force Balance calculations have been made on this crash test.

A FORCE-BALANCE approach for calculating stiffness values for the front of the Yaris was used, with the Stiffness Values from the range of tests for the Kia Rio as the "Known Good" values.

In this set of tests, the Kis Rio stiffness values based on AVERAGE crush were used.

2003 KIA RIO - Front Impact

Curb Weight (pou	nds): 237	' 5	PDOF	_ever Arm	Distan	ce (inches	s):	0.00
Occupant + Cargo Weight (pou		Yaw Moment of Inertia (lb-ft-sec²) 1240.25						
Total Weight (pou	nds): 237	<u>'5</u>				a (15 11 50)		
Angle Coll Force to Normal (degr	ees): 0 .	.0	"Known"	Stifness Va	alues	А		В
No Damage Speed (n	nph): 5 .	.0		Averag	e 🗀	359.8	3 🗆	148.2
Energy Crush Depth (inc	thes): 7.2	24		Minimu	m [305.6	5	105.9
Damage Length (inches): 66.0			Maximum 437.2 213.9					
Crush Profile Measurements: 6		St	Std. Devation 63.6 52.3					
	Equal		Zone	Are	а	Zon	е	Area
	Spacing	Zone Area	' ' '	Deptl		Depth	-	Depth(y)
C1 (inches) 15.72	(inches)	(inches²)		(inch		(inch		(inches²)
C2 (inches) 11.04	13.20	176.62			93.61		6.22	1097.71
C3 (inches) 11.88	13.20	151.27	_		67.18		.9.88	3007.38
C4 (inches) 4.20	13.20	106.13			59.07		1.95	3390.71
C5 (inches) 1.20	13.20	35.64			53.06		4.98	1603.01
C6 (inches) 0.00	13.20	7.92	0.40	<u> </u>	3.17	5	7.20	453.02
C7 (inches)				_				
C8 (inches)			_	_				
C9 (inches)				_				
C10 (inches)							L	
Average Crush (inches):	7.24							
Results			Average			KE		Closing
1/634113	٨	D	Force	Damag		Speed (mph)	Delta V	•
, at: t	A 305.6	B 105.9	(pounds)	Energy (ft		(mph)	(mph)	
Minimum L	232.6	43.6	35372.45 18086.96	3732: 2202:		21.7 16.7	19.8	
Avg - 2 Std. Deviations	296.2	95.9	32674.37	3489		21.0	25.5	
Avg - 1 Std. Deviations L Average	359.8	148.2	47261.78	4853		24.8	30.1	
Avg + 1 Std. Deviations	423.4	200.5	61849.19	6235		28.1	34.2	
Avg + 2 Std. Deviations	487.0	252.8	76436.61	7623		31.0	37.7	
Avg + 2 Std. Deviations	437.2	213.9	65504.35	6577		28.8	35.1	
_		5.39	03304.33	<u> </u>	J.J4	k ²	2421	
Damage Centroid Depth (x)		20.00		Eff Mass D	atio (-			.00
Damage Centroid Depth (y)	(IIICIIES)	477.50		Eff. Mass R	auo (g	jaiiiiia)		.00

2007 TOYOTA YARIS - Front Impact

PDOF 2275 Curb Weight (pounds): 0.00 Lever Arm Distance (inches): Occupant + Cargo Weight (pounds): 0 1137.25 Yaw Moment of Inertia (lb-ft-sec²) 2275 Total Weight (pounds): 0.0 Angle Coll Force to Normal (degrees): No Damage Speed (mph): 5.0 21.35 Energy Crush Depth (inches): 66.0 Damage Length (inches): 6 Crush Profile Measurements: Equal Zone Area Zone Area Spacing Zone Area Depth(x) Depth(x) Depth(y) Depth(y) (inches) (inches²) (inches) (inches²) (inches) (inches²) C1 (inches) 19.20 13.20 253.44 9.60 2433.02 6.60 1672.70 19.20 C2 (inches) 13.20 261.36 9.90 2588.26 19.87 5192.35 20.40 C3 (inches) 13.20 269.28 10.20 2746.66 33.00 8886.24 C4 (inches) 20.40 13.20 285.12 10.81 3082.46 46.32 13207.39 22.80 C5 (inches) 13.20 339.90 12.93 4395.36 59.65 20275.73 C6 (inches) 28.70 C7 (inches) C8 (inches) C9 (inches) C10 (inches) Average Crush (inches): 21.35

Results			Average		KE		
Results			Force	Damage	Speed	Delta V	
	Α	В	(pounds)	Energy (ft*lbs)	(mph)	(mph)	bsub1
Minimum	170.8	42.2	35372.45	75581.65	31.6	27.5	21.7
Avg - 2 Std. Deviations	118.0	20.1	18086.96	41352.80	23.4	20.6	15.0
Avg - 1 Std. Deviations	163.6	38.7	32674.37	70298.23	30.4	26.6	20.8
Average	199.8	57.7	47261.78	98698.13	36.1	31.5	25.4
Avg + 1 Std. Deviations	230.7	77.0	61849.19	126794.31	40.9	35.7	29.4
Avg + 2 Std. Deviations	258.2	96.4	76436.61	154689.81	45.2	39.4	32.9
Maximum	237.9	81.8	65504.35	133800.22	42.0	36.6	30.3
Damage Centroid Depth (x) (inches)	10.82			k^2	2317.89	
Damage Centroid Depth (y) (inches)	34.94		Eff. Mass Ratio (gamma)	1.00	
Area of Damage ((inches²):	1409.10					

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1965 - 2012

Model: RIO

Test	Vehicle	No							
Number	r Info	Damage	Max	Closing Vehicle Width					
		Speed	Crush	Speed Stiffness V				ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
7751	2012 KIA RIO FOUR DOOR SEDAN	5.0	20.0	34.9	270.5	80.9	452.0	110.3	24.4
3905	2002 KIA RIO FOUR DOOR SEDAN	5.0	18.9	34.6	275.7	86.2	440.8	117.8	25.3
5912	2007 KIA RIO FOUR DOOR SEDAN	5.0	14.8	34.8	359.2	144.3	447.2	196.7	32.6
5495	2006 KIA RIO FOUR DOOR SEDAN	5.0	14.5	35.1	370.4	153.5	446.8	208.7	33.9
Average (AVG)				319.0	116.2	446.7	158.4	29.1	
	Minimum (MIN)				270.5	80.9	440.8	110.3	24.4
Maximum (MAX)					370.4	153.5	452.0	208.7	33.9
Standard Deviation (STDev-sample)					53.2	38.0	4.6	51.5	4.9
Number of Tests (n)									

Serial Number: 11R-030201SC02301

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Web Site: http://www.4n6xprt.com E-Mail: 4n6@4n6xprt.com

To compare stiffness values between a Force-Balance approach and calculation from NHTSA Crash Tests, Force Balance calculations have been made on this crash test.

A FORCE-BALANCE approach for calculating stiffness values for the front of the Yaris was used, with the Stiffness Values from the range of tests for the Kia Rio as the "Known Good" values.

In this set of tests, the Kis Rio stiffness values based on MAXIMUM crush were used.

2003 KIA RIO - Front Impact

Yaw Moment of Inertia (lb-ft-sec²) 124025	Curb Weight (pour	nds): 237 !	5	PDOF	ever Arm Dista	nce (inches):	0.00	
gle Coll Force to Normal (degrees):								1240.25	
No Damage Speed (mph):	Total Weight (pour	nds): [<u>237</u> !	5	T dw Iv	Toment of Inch	tia (ib 1t 3cc	·		
No Damage Speed (mph): 5.0	Angle Coll Force to Normal (degre	ees): 0. 0	0	"Known" S	Stifness Values			_	
Energy Crush Depth (inches):	No Damage Speed (m	nph): 5. 0	0		A.v.a.ra.g.a. [<u> </u>		
Damage Length (inches): 66.0 Crush Profile Measurements: 6 Equal Spacing (inches)	•		 4						
Crush Profile Measurements: 6 Std. Devation S3.2 38.0	3,		_		Minimum L				
Cluster Profile Measurements:	Damage Length (inc	nes): [66.	<u>, , , , , , , , , , , , , , , , , , , </u>		Maximum _	370.4		153.5	
Sparing Zone Area Depth(x) Depth(x) Depth(y) (inches) Depth(y) (inches) Depth(y) (inches) Depth(y) (inches) Depth(y) (inches) Depth(y) (inches) Depth(y)	Crush Profile Measureme	ents:	6	St	d. Devation	53.2		38.0	
C1 (inches)		Equal		Zone	Area	Zon	e	Area	ı
C1 (inches) 15.72		Spacing	Zone Area	Depth(x)	Depth(x)	Depth	(y)		
C2 (inches)	C1 (inches) 15.72	(inches)	(inches²)	(inches)	(inches²)	(inche	es)	(inches²)	
C3 (inches) 11.88 13.20 151.27 5.73 867.18 19.88 3007.38 13.20 106.13 4.33 459.07 31.95 3390.71 C4 (inches) 4.20 13.20 35.64 1.49 53.06 44.98 1603.01 C5 (inches) 0.00 13.20 7.92 0.40 3.17 57.20 453.02 C6 (inches) 0.00 C7 (inches) C9 (inches) C10 (inches) Average Crush (inches): 7.24	, ,	13.20	176.62	2 6.76	1193.61	.] [6.22	1097.71]
C4 (inches) 4.20	` ,	13.20	151.27	5.73	867.18	1	9.88	3007.38	
C5 (inches) 1.20 13.20 35.64 1.49 53.06 44.98 1603.01 C6 (inches) 0.00 13.20 7.92 0.40 3.17 57.20 453.02 C7 (inches)	C3 (inches) 11.88	13.20	106.13	3 4.33	459.07	3	1.95	3390.71	
C5 (inches) 1.20	C4 (inches) 4.20	13.20	35.64	1.49	53.06	5 4	4.98	1603.01]
C6 (inches) 0.00 C7 (inches) C8 (inches) C9 (inches) C10 (inches) Average Crush (inches): 7.24 Results	C5 (inches) 1.20								']
C8 (inches)	C6 (inches) 0.00	15.20	7.52	-		<u>_</u>	<u>/.20</u>	133.02)
C9 (inches) C10 (inches) Average Crush (inches): Average Force A B (pounds) Energy (ft*lbs) Average Force (pounds) Energy (ft*lbs) Force (pounds) Energy (ft*lbs) Force (pounds) Energy (ft*lbs) Force (pounds) Energy (ft*lbs) (pounds) (pounds) Energy (ft*lbs) (pounds) (p	C7 (inches)					_] 1
C9 (inches) C10 (inches) Average Crush (inches): Average Force A B (pounds) Energy (ft*lbs) Average Force (pounds) Energy (ft*lbs) Force (pounds) Energy (ft*lbs) Force (pounds) Energy (ft*lbs) Force (pounds) Energy (ft*lbs) (pounds) (pounds) Energy (ft*lbs) (pounds) (p	C8 (inches)					_]
Average Crush (inches): 7.24 Results									
Average Crush (inches): 7.24 Results									
Average Force (pounds) Damage Energy (ft*lbs) KE (mph) Closing Speed (mph) Avg - 2 Std. Deviations 212.6 40.2 16615.08 20182.91 16.0 19.0 38.8 Avg - 1 Std. Deviations 265.8 78.2 27444.62 29850.32 19.4 23.5 48.1 Avg + 1 Std. Deviations 319.0 116.2 38274.17 40048.99 22.5 27.4 55.9 Avg + 2 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6									
A B Force (pounds) Damage Energy (ft*lbs) Speed (mph) Delta V (mph) Speed (MPH) Avg - 2 Std. Deviations 212.6 40.2 16615.08 20182.91 16.0 19.0 38.8 Avg - 1 Std. Deviations 265.8 78.2 27444.62 29850.32 19.4 23.5 48.1 Average 319.0 116.2 38274.17 40048.99 22.5 27.4 55.9 Avg + 1 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6	Average Crush (inches): [7.24							
A B (pounds) Energy (ft*lbs) (mph) (mph) (MPH) Minimum 270.5 80.9 28244.45 30619.75 19.7 23.8 48.7 Avg - 2 Std. Deviations 212.6 40.2 16615.08 20182.91 16.0 19.0 38.8 Avg - 1 Std. Deviations 265.8 78.2 27444.62 29850.32 19.4 23.5 48.1 Average 319.0 116.2 38274.17 40048.99 22.5 27.4 55.9 Avg + 1 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6	Results			_	D		D = + = \ \	•	
Minimum 270.5 80.9 28244.45 30619.75 19.7 23.8 48.7 Avg - 2 Std. Deviations 212.6 40.2 16615.08 20182.91 16.0 19.0 38.8 Avg - 1 Std. Deviations 265.8 78.2 27444.62 29850.32 19.4 23.5 48.1 Average 319.0 116.2 38274.17 40048.99 22.5 27.4 55.9 Avg + 1 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6		Δ	R		•	•		•	
Avg - 2 Std. Deviations 212.6 40.2 16615.08 20182.91 16.0 19.0 38.8 Avg - 1 Std. Deviations 265.8 78.2 27444.62 29850.32 19.4 23.5 48.1 Average 319.0 116.2 38274.17 40048.99 22.5 27.4 55.9 Avg + 1 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6	Minimum								l
Avg - 1 Std. Deviations 265.8 78.2 27444.62 29850.32 19.4 23.5 48.1 Average 319.0 116.2 38274.17 40048.99 22.5 27.4 55.9 Avg + 1 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6)]
Average 319.0 116.2 38274.17 40048.99 22.5 27.4 55.9 Avg + 1 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6									l 1
Avg + 1 Std. Deviations 372.2 154.2 49103.71 50386.18 25.2 30.7 62.7 Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6] 1
Avg + 2 Std. Deviations 425.4 192.2 59933.25 60779.71 27.7 33.7 68.8 Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6	Average	319.0	116.2	38274.17	40048.99	22.5	27.4	4 55.9 	
Maximum 370.4 153.5 48877.16 50151.59 25.2 30.6 62.6	Avg + 1 Std. Deviations	372.2	154.2	49103.71	50386.18	25.2	30.7	62.7	
	Avg + 2 Std. Deviations	425.4	192.2	59933.25	60779.71	27.7	33.7	7 68.8]
	Maximum	370.4	153.5	48877.16	50151.59	25.2	30.0	62.6]
Damage Centroid Depth (x) (inches) 5.39 k ² 2421.39	Damage Centroid Depth (x)	(inches)	5.39			k²	2421	39	

Eff. Mass Ratio (gamma)

1.00

Serial Number: 11R-030201SC02301

20.00

477.58

Damage Centroid Depth (y) (inches)

Area of Damage (inches²):

2007 TOYOTA YARIS - Front Impact

PDOF 2275 Curb Weight (pounds): 0.00 Lever Arm Distance (inches): Occupant + Cargo Weight (pounds): 0 1137.25 Yaw Moment of Inertia (lb-ft-sec²) 2275 Total Weight (pounds): 0.0 Angle Coll Force to Normal (degrees): 5.0 No Damage Speed (mph): 21.35 Energy Crush Depth (inches): 66.0 Damage Length (inches): 6 Crush Profile Measurements: Equal Zone Area Zone Area Spacing Zone Area Depth(x) Depth(x) Depth(y) Depth(y) (inches) (inches²) (inches) (inches²) (inches) (inches²) C1 (inches) 19.20 13.20 253.44 9.60 2433.02 6.60 1672.70 19.20 C2 (inches) 13.20 261.36 9.90 2588.26 19.87 5192.35 20.40 C3 (inches) 13.20 269.28 10.20 2746.66 33.00 8886.24 C4 (inches) 20.40 13.20 285.12 10.81 3082.46 46.32 13207.39 22.80 C5 (inches) 13.20 339.90 12.93 4395.36 59.65 20275.73 28.70 C6 (inches) C7 (inches) C8 (inches) C9 (inches) C10 (inches) Average Crush (inches): 21.35

Doculto			Average		KE			
Results			Force	Damage	Speed	Delta V		
	Α	В	(pounds)	Energy (ft*lbs)	(mph)	(mph)	bsub1	
Minimum	151.1	33.0	28244.45	61584.45	28.5	24.9	19.2	
Avg - 2 Std. Deviations	112.5	18.3	16615.08	38380.42	22.5	19.8	14.3	
Avg - 1 Std. Deviations	148.7	32.0	27444.62	60005.29	28.1	24.6	18.9	
Average	178.3	46.0	38274.17	81246.52	32.7	28.6	22.7	
Avg + 1 Std. Deviations	203.9	60.1	49103.71	102259.68	36.7	32.0	26.0	
Avg + 2 Std. Deviations	226.9	74.4	59933.25	123117.11	40.3	35.2	28.9	
Maximum	203.4	59.8	48877.16	101821.86	36.6	32.0	25.9	
Damage Centroid Depth (x	i) (inches)	10.82			k^2	2317.89	•	
Damage Centroid Depth (y) (inches)	34.94		Eff. Mass Ratio (gamma)	1.00)	
Area of Damage	(inches²):	1409.10						

Expert VIN DeCoder®

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DeCoded VIN: JTDBT923071053555

Model: 2007 Toyota Yaris 4-Door Sedan

Engine Size: 1.5L / 91cu.in.

Engine Description: In-line 4 Cylinder with Dual Overhead Cam

Horse Power: 108 @ 5999 rpm

Torque: 105 lb-ft @ 3999 rpm

Injection System: Electronic Fuel Injection (EFI)

PSI: 44-50 psi Ignition: electronic

Manufacturer: Toyota

Assembly Plant: Toyota, Japan

Drive Wheels:

This is a Front Wheel Drive vehicle w/ Dual Front Air Bags

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

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

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

The Sixth and Eighth characters (93) indicate a Yaris

The Seventh character (2) indicates Dual Front Air Bags

The Ninth character (the check digit) is entered as 0.

The VIN appears Valid, the calculated value is 0.

The Tenth character (7) indicates the model year 2007

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

The Twelfth through Seventeenth characters (053555) 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 91942

5/29/2012

2007 TOYOTA YARIS 4 DOOR SEDAN			
Curb Weight: Curb Weight Distribution - Front:	2309 lbs.		kg.
Gross Vehicle Weight Rating:	3300 lbs.	14	97 kg.
Number of Tires on Vehicle: Drive Wheels:	FRONT		
Horizontal Dimensions Total Length Wheelbase:	Inches 169 100	Feet 14.08 8.33	Meters 4.29 2.54
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	31 17 7 36 66	2.58 1.42 0.58 3.00 5.50	0.79 0.43 0.18 0.91 1.68
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	38 23 6 18	3.17 1.92 0.50 1.50	0.97 0.58 0.15 0.46
Width Dimensions Maximum Width: Front Track: Rear Track:	58 58	5.58 4.83 4.83	1.70 1.47 1.47
Vertical Dimensions Height: Ground to -	57	4.75	1.45
Front Bumper (Top) Headlight - center Hood - top front: Base of windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	22 29 33 39 24 42 44	1.83 2.42 2.75 3.25 2.00 3.50 3.67	0.56 0.74 0.84 0.99 0.61 1.07 1.12

Expert AutoStats®

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: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: 19.70:1 Wheel Radius: Tire Size (OEM): P175/65R14	396	33.00	10.06
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ALL WHEEL ABS - OPTIONAL			
Braking, 60 mph to 0 (Hard pedal, no skid, $d = \boxed{125.0}$ ft $t = \boxed{2.8}$ sec	dry pavement): $a = \boxed{-30.9}$ ft/s	sec² G-fo	rce = -0.96
Acceleration: 0 to 30mph $t = 3.3$ sec 0 to 60mph $t = 10.4$ sec 45 to 65mph $t = 5.6$ sec Transmission Type: 5spd MANUAL	a = 13.3 ft/s $a = 8.5 ft/s$ $a = 5.2 ft/s$	sec² G-fo	rce = 0.41 rce = 0.26 rce = 0.16
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mp		

N.S.D.C = 2007 - 2012

2007 TOYOTA YARIS 4 DOOR SEDAN

Other Information		
Tip-Over Stability Ratio =	1.30	Stable
NHTSA Star Rating (calculated)		***
Center of Gravity (No Load):		
Inches behind front axle	=	39.00
Inches in front of rear axle	=	61.00
Inches from side of vehicle	=	33.50
Inches from ground	=	22.37
Inches from front corner	=	77.60
Inches from rear corner	=	104.51
Inches from front bumper	=	70.00
Inches from rear bumper	=	99.00
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	1172.27 lb*ft*sec²
Pitch Moment of Inertia	=	1136.91 lb*ft*sec²
Roll Moment of Inertia	=	265.62 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	57.5 deg
Angle Front of Hood to Windshield Base	=	11.7 deg
Angle Front of Hood to Windshield Top	=	20.4 deg
Angle of Windshield	=	28.1 deg
Angle of Steering Tires at Max Turn	=	

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:

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

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #5677

2007 TOYOTA YARIS

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

Copyright 2011 - All Rights Reserved 4N6XPRT Systems | 8387 University Avenue | La Mesa, CA 91942 | USA (800) 266-9778 | (619) 464-3478 | FAX: (619) 464-2206 | Email: 4n6@4n6xprt.com

Sister/Clone database reader

You entered: 2007 TOYOTA YARIS 4D

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

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

The data contained in the database has been provided free of charge as a courtesy to the traffic accident reconstruction community by Gregory C. Anderson of Scalia Safety Engineering. 4N6XPRT Systems® has made no changes to this data, and has only provided for distribution of this data free of charge. 4N6XPRT Systems® makes no warranties, either expressed or implied, with respect to this data, its quality, performance, merchantability, or fitness for any particular purpose. The entire risk as to its quality and performance is with the user. In no event will 4N6XPRT Systems® be liable for direct, indirect, incidental, or consequential damages resulting from any data presented here, even if 4N6XPRT Systems® has been advised of the possibility of such damages. The user must agree to assume full responsibility for any decisions which are based, in whole or in part, upon information obtained by using this data. As previously stated, the data has been provided free of charge as a courtesy to the traffic accident reconstruction community by Gregory C. Anderson of Scalia Safety Engineering. Mr. Anderson does not in any way guarantee the accuracy of the data. Some of the listed similarities are based on his own estimates or memory. Most of the data are pulled from specification tables which may contain inaccuracies of their own. Use common sense - if something seems wrong, check it (and if it is wrong, let him know!).

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

Test Information

Test # 5677	NHTSA Test Reference Guide Version #	V5
Test Date 2006-05-16	Contract #	DTNH22-01-D-12005
Contract/Study Title	NCAP - 2007 TOYOTA YARIS	
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT REST	FRAINT PERFORMANCE DATA
Test Type	NEW CAR ASSESSMENT TEST	Configuration VEHICLE INTO BARRIER
Impact Angle	0 Side Impact Poin	t 0 mm 0.0 inches
	Offset Distance	e 0 mm 0.0 inches
	Closing Speed	d 56.3 Km/Hr 34.98 MPH
Test Performer	MGA RESEARCH	
Test Reference #	BT06051601	
Test Track Surface	CONCRETE Condition	DRY
Ambient Temperature	21 C 69.8 F Total Number of Curves	102
Data Recorder Type	OTHER	Data Link OTHER
Test Commentary	DTS TDAS PRO ON BOARD DAS	
•		
	Fixed Barrier Information	
Barrier Type	RIGID Pole Barrier Diameter	r 0 mm 0 inches
Barrier Shape	LOAD CELL BARRIER	
Barrier Commentary		

2007 TOYOTA YARIS LEFT FRONT SEAT OCCUPANT

Test # 5677	
Vehicle # 1	Sex MALE
Location LEFT FRONT SEAT	Age 0
Position CENTER POSITION	Height 0 mm 0.0 inches
Type HYBRID III DUMMY	Weight 0.0 kg 0 pounds
Size 50 PERCENTILE	
Calibration Method HYBRID III	
Occupant Manufacturer FIRST TECHNOLOGY	/ S/N 066
Occupant Modification	
Occupant Description	
Occupant Commentary HEAD TO HEADRES	T; KNEES TO BOLSTER; RIGHT KNEE TO STEERING COLUMN
Head to -	
Windshielder Header 397 mm 15.6 in	ches Head Injury Criteria (HIC) 427
WindShield 653 mm 25.7 in	ches HIC Lower Time Interval (ms) 62.5
Seatback 0 mm 0.0 in	ches HIC Upper Time Interval (ms) 98.5
Side Header 202 mm 8.0 in	ches
Side Window 302 mm 11.9 in	ches
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) AIR BAG	3
Second Contact Region (Head)	
Chest	
Chest to	
Dash 681 mm 26.8 inches	Arm to Door 100 mm 3.9 inches
Steering Wheel 352 mm 13.9 inches	Hip to Door 143 mm 5.6 inches
Seatback 0 mm 0.0 inches	
Chest Severity Index 0	Pelvic Peak Lateral Acceleration (g's)
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 45
Lap Belt Peak Load 6935	Newtons 1559.1 pound Force
Shoulder Belt Peak Load 3743	Newtons 841.5 pound Force
First Contact Region (Chest/Abdomen) AIR BAC	
Second Contact Region (Chest/Abdomen) NONE	
<u>Leg</u> :	<u>s</u>
Knees to Dash 139 mm 5.5 inches	Knees to Seatback mm 0.0 inches
Left Femur Peak Load -4893 Newtons	-1100.0 pounds Force
Right Femur Peak Load -2829 Newtons	-636.0 pounds Force
First Contact Region (Legs) OTHER	
Second Contact Region (Legs)	

2007 TOYOTA YARIS LEFT FRONT SEAT OCCUPANT

Test #	5677					
Vehicle #	1		Sex	MALE		
Location	LEFT FRONT SE	AT	Age	9 0		
Position	CENTER POSIT	ON	Height	t 0 mn	n 0.0	inches
Туре	HYBRID III DUM	MY	Weigh	t 0.0 kg	0	pounds
Size	50 PERCENTILE					
Cali	ibration Method	HYBRID III				
Occupai	nt Manufacturer	FIRST TECHNOLOGY	/ S/N 066			
Occupa	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	HEAD TO HEADRES	Γ; KNEES TO BOLST	ER; RIGHT KN	IEE TO S	TEERING COLUMN
		Restra	<u>ints</u>			
Restrai	nt # 1 FRONTA	L AIRBAG				
Mounte	ed STEERIN	IG WHEEL				
Deploy	ment DEPLOY	ED PROPERLY				
Restrai	nt Commentary	PRIMARY				
Restrai	nt # 2 3 POINT	BELT				
Mounte		ONVENTIONAL MOUN	Τ			
Deploy	ment DEPLOY	ED PROPERLY				
Restrai	nt Commentary	SECONDARY				

2007 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test # 5677	
Vehicle # 1 Sex MALE	
Location RIGHT FRONT SEAT Age 0	
Position CENTER POSITION Height 0 mm 0.0 inches	
Type HYBRID III DUMMY Weight 0.0 kg 0 pounds	
Size 50 PERCENTILE	
Calibration Method HYBRID III	
Occupant Manufacturer FIRST TECHNOLOGY S/N 065	
Occupant Modification	
Occupant Description	
Occupant Commentary HEAD TO HEADREST; KNEES TO GLOVE BOX	
<u>Head</u>	
Head to -	
Windshielder Header 381 mm 15.0 inches Head Injury Criteria (HIC) 485	
WindShield 625 mm 24.6 inches HIC Lower Time Interval (ms) 62.2	
Seatback 0 mm 0.0 inches HIC Upper Time Interval (ms) 91	
Side Header 190 mm 7.5 inches	
Side Window 284 mm 11.2 inches	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) AIR BAG	
Second Contact Region (Head)	
<u>Chest</u>	
Chest to	
Dash 573 mm 22.6 inches Arm to Door 84 mm 3.3 inches	
Steering Wheel 0 mm 0.0 inches Hip to Door 136 mm 5.4 inches	
Seatback 0 mm 0.0 inches	
Chest Severity Index Pelvic Peak Lateral Acceleration (g's)	
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 48	
Lap Belt Peak Load <u>9815</u> Newtons <u>2206.5</u> pound Force	
Shoulder Belt Peak Load 4125 Newtons 927.3 pound Force	
First Contact Region (Chest/Abdomen) AIR BAG	
Second Contact Region (Chest/Abdomen) NONE	
<u>Legs</u>	
Knees to Dash 170 mm 6.7 inches Knees to Seatback mm 0.0 inches	
Left Femur Peak Load -1715 Newtons -385.5 pounds Force	
Right Femur Peak Load -598 Newtons -134.4 pounds Force	
First Contact Region (Legs) OTHER	
Second Contact Pegion (Logs)	

2007 TOYOTA YARIS RIGHT FRONT SEAT OCCUPANT

Test #	5677					
Vehicle #	1		Sex	MALE		
Location	RIGHT FRONT S	EAT	Age	0		
Position	CENTER POSITI	ON	Height	0 mm	0.0 inc	hes
Туре	HYBRID III DUMI	MY	Weight	0.0 kg	0 po	unds
Size	50 PERCENTILE					
Cali	ibration Method	HYBRID III				
Occupai	nt Manufacturer	FIRST TECHNOLOGY S/	N 065			
Occupa	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	HEAD TO HEADREST; K	NEES TO GLOVE	вох		
		Restraints	;			
Restrai	nt # 1 FRONTAL		-			
Mounte	ed DASH PA	NEL - TOP				
Deploy	ment DEPLOY	ED PROPERLY				
Restrai	nt Commentary	PRIMARY				
Poetrai	nt # 2 3 POINT I	DELT				
Mounte		ONVENTIONAL MOUNT				
Deploy	ment DEPLOY	ED PROPERLY				
Restrai	nt Commentary	SECONDARY	<u> </u>			

Vehicle 1 2007 TOYOTA YARIS

Test #	5677]									
VIN	JTDBT9234	<u>47101679</u>	7		NHTSA T	est Vehic	le Numbe	r 1			
Year	2007				Vehicle Mo	dification	Indicator	PRODU	JCTION	I VEHICL	-E
Make	TOYOTA		Post-tes	st Steering C	olumn Shear	Capsule	Seperation	n UNKNO	WN		2
Model	YARIS			Steeri	ing Column C	ollapse N	/lechanism	UNKNO	WN		
Body	FOUR DOO	R SEDAN									
Engine	4 CYLINDE	R TRANS	VERSE	FRONT							
Displacement	1.5 Li	iter Tr	ansmiss	ion AUTON	MATIC - FRON	NT WHEE	L DRIVE				
Vehicle Modific	ation(s) Des	cription									
Vehicle Comm	entary VE	IICLE MA	KE: YAR	RIS							
Vehicle Len	gth 426	5 mm	167.9	inches	CG	behind	Front Axle	1046	mm [41.2	inches
Vehicle V	Vidth 169	5 mm	66.7	inches	Center of E	Damage 1	to CG Axis	0	mm [0.0	inches
Vehicle Whee	lbase 255	1 mm	100.4	inches	Total Len	gth of Ind	dentation	1518	mm [59.8	inches
Vehicle Test W	/eight 127	1 KG	2801	pounds	Maximum \$	Static Cru	ısh Depth	546	mm [21.5	inches
						Pre-Impa	act Speed	56	kph [35.0	mph
Vel	hicle Damag	e Index 1	2FDEW	6	Princ	ipal Direc	tion of Fo	rce 0			
Domogo Dr	ofilo Diotor	Maa	nuromo	nto	Cruch from	m Dro 9	Doot To	at Dama	ao Ma	oourom	onto
Damage Pro					Crush fror				_		
· <u> </u>	red Left-to-l	·	_	•		Pre-Tes	_	Post-Tes		Crush [
DPD 1 2			」inche: □ · ·		umper Corner		inches	=	inches		∫inches ¬
DPD 2 4			inche			4036] mm	3746	mm	290] mm
DPD 3 5			」inche: □ :		Centerline	167.9	inches	146.4	inches	21.5	inches
DPD 4 5			」inche: □ :=====			4265	mm	3719	mm	546	mm
DPD 5 3			」inche: □ :=====	Diaht Br	ımper Corner	159.2	inches	146.9	inches	12.2	inches
DPD 6 <u>-</u>	12 mm	-0.5	inche	S	·	4043	mm	=	mm	311] mm
							•				-
Bumper E	ingagement			Sill Eı	ngagement			A-	pillar E	ngageme	ent
-	pact Only)				Impact Only))			•	pact On	
	0.0		Γ		APPLICABLE			È		0.0	Τ̈́
			_					_			_
Moving	Test Cart			Moving ⁻	Test Cart/Veh	icle		Vehic	cle Orie	entation o	on Cart
A	ngle			Cra	bbed Angle			N	Moving	Test Car	t
DIRECT	ENGAGEME	NT			0.0			NC	OT APF	PLICABL	E.
Magnitude	of the Tilt Angle			Magniture o	of the Crabbed Ang	ıle			•	of the Angle	
Measured be	etween surface o	fa		Measu	re Clockwise from			Measured b	etween th	ne Vehicle O	rientation
Rollover Test	Cart and the Gro	nund	10	ongitudinal Vector	to Velocity Vector	of Vehicle		and Di	rection of	Test Cart N	Action

Vehicle 1 2007 TOYOTA YARIS

Toot # [5/	277						
=	677	- 1	NUTC A Too	t Vehicle Numbe			
	TDBT92347101679	<i>I</i>				NI VELUOI	
	007	Deat to at Ota anima		fication Indicato		NVEHICL	<u>.E</u>
=		Post-test Steering		•			
	ARIS		ering Column Coll	apse Mechanish	n <u> UNKNOWN</u>		
· · · · · · · · · · · · · · · · · · ·	OUR DOOR SEDAN						
	CYLINDER TRANS			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Ī	
Displacement 1.		ansmission AUTC	MATIC - FRONT	WHEEL DRIVE			
Vehicle Modificati	` '	VE VADIO					
	tary VEHICLE MAI		00.1	-1-1-1-F(A-1	. [1010]	44.0	
Vehicle Lengtl		167.9 inches		ehind Front Axl		41.2	inches
Vehicle Wid		66.7 inches		mage to CG Axi		0.0	inches
Vehicle Wheelba		100.4 inches	_	h of Indentation		59.8	inches
Vehicle Test Weig	ght 1271 KG	2801 pounds		atic Crush Depth		21.5	inches
				re-Impact Speed		35.0	mph
Vehic	le Damage Index <u>1</u>	2FDEW6	Principa	al Direction of Fo	orce 0		
	5	0 D . T .	D 14				
	<u>Pr</u>	<u>re & Post Test</u>	Damage Me	easurement	<u>S</u>		
(Measurements	are taken in a longitudinald	irection. Except for Engine	Block, all measuremer	nts are take from the F	Rear Vehicle Surface f	orward.)	
Left	Side		Centerline		Righ	t Side	
Pre-Test	Post-Test	Pre-T	est Pos	t-Test	Pre-Test	Post-	Test
mm inches	mm inches	mm	inches mm	inches	mm inches	mm	inches
		Lengt	h of Vehicle at Ce	enterline			
		4265	167.9 3719	146.4			
			Engine Block				
		450	17.7 450	17.7			
4036 158.9	3746 147.5	F	ront Bumper Cor	mer 4	043 159.2	3732	146.9
			Front of Engine				
		3835	151.0 3464	136.4			
3275 128.9	3356 132.1		Firewall	3:	317 130.6	3332	131.2
		3300	129.9	0.0			
3054 120.2	3060 120.5	Uppe	r Leading Edge o	of Door 30	058 120.4	3064	120.6
3006 118.3	3011 118.5	Lowe	r Leading Edge o	of Door 30	015 118.7	3012	118.6
2973 117.0	2969 116.9	Е	Bottom of 'A' Post	2	968 116.9	2974	117.1
1979 77.9	1964 77.3	Uppe	er Trailing Edge o	of Door 19	982 78.0	1980	78.0
1951 76.8	1950 76.8	Low	er Trailing Edge o	of Door 19	954 76.9	1956	77.0
			Steering Column	n			
		2595	102.2 2657	104.6			
		Center of Seer	ing Column to 'A'	Post (Horizonta	ıl)		
		375	14.8 366	14.4			
		Center of Stee	ring Column to He		l)		
		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 (Pass. Side)

(Driver Side) 11.4 21.5 12.2

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

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

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

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

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

G = Energy dissipated without permanent damage, lb

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

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

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

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

Crush	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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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 (Pass. Side)

(Driver Side) 11.4 21.5 12.2

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

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

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

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

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

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	(Dago Sido)
(Driver Side)	11.4	17.6	20.0	20.7	12.2	-0.5	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G K۷ Minimum Crush = 11.4 inches 316.9 Using a Rated No Damage Speed of 239.7 273.2 105.2 2.5mph 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 161.6 1682.7 10.0mph 737.5 Average Crush = 15.3 175.9 inches 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 108.6 946.5 7.5mph 453.4 Using a Rated No Damage Speed of 10.0mph 549.5 89.7 1168.3 96.1 Maximum Crush = 20.7 inches 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 70.6 420.7 335.1 Using a Rated No Damage Speed of 7.5mph 59.3 946.5 49.0 Using a Rated No Damage Speed of 406.2 1682.7 10.0mph

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

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

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

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

G = Energy dissipated without permanent damage, 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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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	(Dago Sido)
(Driver Side)	11.4	17.6	20.0	20.7	12.2	-0.5	(Pass Side)

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

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

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

DACH 2 Ctiffness Coefficents

CM AC Ctiffnage

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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

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

G = Energy dissipated without permanent damage, Ib

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

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 2006 - 2010

Make: TOYOTA Model: YARIS 4D

Test Numbe	Vehicle r Info	No Damage Speed (mph)	Average Crush (inch)	5	•	ehicle iffness B			Crush Factor
6069	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	11.7	24.7	255.4	86.4	377.3	135.8	21.0
6221	2008 TOYOTA YARIS THREE DOOR HATCHBACK	5.0	19.2	34.9	257.7	80.3	413.3	109.4	25.4
5677	2007 TOYOTA YARIS FOUR DOOR SEDAN	5.0	15.3	35.0	330.3	129.7	420.7	176.5	32.0
		Average ((AVG)		281.1	98.8	403.8	140.6	26.1
		Minimum	(MIN)		255.4	80.3	377.3	109.4	21.0
		Maximum	(MAX)		330.3	129.7	420.7	176.5	32.0
	Standard Deviation	(STDev-sa	ample)		42.6	26.9	23.2	33.8	5.5
	Nur	mber of Tes	sts (n)	3					

Serial Number: 11R-030201SC02301

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

To compare stiffness values between a Force-Balance approach and calculation from NHTSA Crash Tests, Force Balance calculations have been made on this crash test.

A FORCE-BALANCE approach for calculating stiffness values for the front of the Rio was used, with the Stiffness Values from the range of tests for the Toyota Yaris as the "Known Good" values.

In this set of tests, the Kis Rio stiffness values based on AVERAGE crush were used.

2007 TOYOTA YARIS - Front Impact

Curb Weight (pounds): 2275	PDOF	er Arm Distance	e (inches): F	0.00
Occupant + Cargo Weight (pounds):			`	
Total Weight (pounds): 2275	Yaw Mom	nent of Inertia	(lb-ft-sec²) L	1137.25
Angle Coll Force to Normal (degrees): 0.0	"Known" Stifr	ness Values	A	В
No Damage Speed (mph): 5.0		Average	281.1	98.8
Energy Crush Depth (inches): 21.35		· -		
3, , , ,	M	1inimum	255.4	80.3
Damage Length (inches): 66.0	M	aximum	330.3	129.7
Crush Profile Measurements: 6	Std. D	Devation	42.6	26.9
Equal	Zone	Area	Zone	Area
Spacing Zone Area	1 , ,	Depth(x)	Depth(y)	Depth(y)
C1 (inches) 19.20 (inches) (inches²	<u> </u>	(inches²)	(inches)	(inches²)
C2 (inches) 19.20 253.4	9.60	2433.02	6.60	1672.70
C3 (inches) 20.40 13.20 261.30	9.90	2588.26	19.87	5192.35
13.20 269.20	10.20	2746.66	33.00	8886.24
C4 (inches) 20.40 13.20 285.12	10.81	3082.46	46.32	13207.39
C5 (inches) 22.80 13.20 339.9	12.93	4395.36	59.65	20275.73
C6 (inches) 28.70	7 [[
C7 (inches)				
C8 (inches)				
C9 (inches)	_			
C10 (inches)	[
Average Crush (inches): 21.35				
Average Clush (inches).	Average		KE	Clasina
Results	Average Force D	Damage :	NE Speed Delta	Closing V Speed
A B		J	(mph) (mpl	•
Minimum 255.4 80.3		134243.75		6.5 71.5
Avg - 2 Std. Deviations 195.9 45.0	38169.45	82520.40		8.6 56.0
Avg - 1 Std. Deviations 238.5 71.9		121528.97		4.8 68.1
Average 281.1 98.8	78885.84	160730.94	46.0 40	0.0 78.3
Avg + 1 Std. Deviations 323.7 125.7	99244.04	200002.15	51.4	4.6 87.4
Avg + 2 Std. Deviations 366.3 152.6	119602.23	239305.98	56.2 48	95.6
Maximum 330.3 129.7	102280.04	205879.89	52.1 4	5.3 88.6
Damage Centroid Depth (x) (inches) 10.82			k ² 231	17.89
Damage Centroid Depth (y) (inches) 34.94	Eff. N	Mass Ratio (ga	nmma)	1.00
Area of Damage (inches²): 1409.10				

2003 KIA RIO - Front Impact

C M : L /	. 2275	PDOF			
Curb Weight (pour ccupant + Cargo Weight (pou		FDOR	Lever Arm Distance	ce (inches):	0.00
Total Weight (pour		Yaw	Moment of Inertia	(lb-ft-sec²)	1240.25
gle Coll Force to Normal (degre	ees): 0.0				
No Damage Speed (m	nph): 5.0				
Energy Crush Depth (inc	hes): 7.24				
Damage Length (inc	hes): 66.0				
Crush Profile Measureme	ents: 6				
	Equal	Zone	Area	Zone	Area
	Spacing Zone	, ,	•	Depth(y)	Depth(y)
C1 (inches) 15.72	(inches) (inc	hes²) (inches	s) (inches²)	(inches)	(inches²)
	13.20	76.62 6	.76 1193.61	6.22	1097.71
C2 (inches) 11.04	13.20 1	51.27 5	.73 867.18	19.88	3007.38
C3 (inches) 11.88	13.20 1	06.13 4	.33 459.07	31.95	3390.71
C4 (inches) 4.20			.49 53.06	44.98	1603.01
C5 (inches) 1.20					
C6 (inches) 0.00	13.20	7.92 0	.40 3.17	57.20	453.02
C7 (inches)					
C8 (inches)					
C9 (inches)					
C10 (inches)					
Average Crush (inches):	7.24				
Results		Average		KE	
VESUITS		Force	Damage	Speed Delta	V

Dogulta			Average		KE		
Results			Force	Damage	Speed	Delta V	
	Α	В	(pounds)	Energy (ft*lbs)	(mph)	(mph)	bsub1
Minimum	396.1	217.4	65003.57	64411.75	28.5	35.0	48.3
Avg - 2 Std. Deviations	293.4	119.2	38169.45	39258.33	22.3	27.4	35.8
Avg - 1 Std. Deviations	373.6	193.4	58527.65	58364.65	27.2	33.3	45.5
Average	440.9	269.3	78885.84	77339.62	31.3	38.3	53.7
Avg + 1 Std. Deviations	500.0	346.3	99244.04	96231.66	34.9	42.7	61.0
Avg + 2 Std. Deviations	553.4	424.2	119602.23	115065.20	38.1	46.7	67.5
Maximum	508.3	357.9	102280.04	99043.57	35.4	43.4	62.0
Damage Centroid Depth (x) (inches)	5.39			k^2	2421.39	
Damage Centroid Depth (y) (inches)	20.00		Eff. Mass Ratio (gamma)	1.00	
Area of Damage ((inches²):	477.58					

Serial Number: 11R-030201SC02301

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 2006 - 2010

Make: TOYOTA Model: YARIS 4D

Test	Vehicle	No							
Numbe	r Info	Damage	Max	Closing	V	ehicle	Widtl	า	
		Speed	Crush	Speed	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	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 Deviation	n (STDev-sa	ample)		10.7	3.5	23.2	6.7	3.1
	Nui	mber of Tes	sts (n)	3					

Serial Number: 11R-030201SC02301

4N6XPRT Systems

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Web Site: http://www.4n6xprt.com E-Mail: 4n6@4n6xprt.com

To compare stiffness values between a Force-Balance approach and calculation from NHTSA Crash Tests, Force Balance calculations have been made on this crash test.

A FORCE-BALANCE approach for calculating stiffness values for the front of the Rio was used, with the Stiffness Values from the range of tests for the Toyota Yaris as the "Known Good" values.

In this set of tests, the Kis Rio stiffness values based on MAXIMUM crush were used.

2007 TOYOTA YARIS 4D - Front Impact

Curb Weight (pounds):	227	5	PDOF	ever Arm Dista	nce (inches	s):	0.00	
Occupant + Cargo Weight (pounds)	_	0		oment of Iner	·		1137.25	
Total Weight (pounds):	227	5	T GVV IV	TOTTICITE OF THE				
Angle Coll Force to Normal (degrees):	0.	0	"Known" S	Stifness Values			ь	
No Damage Speed (mph):	5.	0		Average [A 233.2	2	B 67.4	
Energy Crush Depth (inches):	21.3	5		Minimum [221.8		65.2	
Damage Length (inches)	: 66.	0		Maximum [243.0		71.4	
Crush Profile Measurements:		6	St	d. Devation	10.7	7	3.5	
E	iqual		Zone	Area	Zon	е	Area	
·	acing	Zone Area	Depth(x)	Depth(x)	Depth	-	Depth(y)	
C1 (inches) 19.20 (ir	nches)	(inches²)	(inches)	(inches²)	(inch		(inches²)	
C2 (inches) 19.20	13.20	253.44	9.60			6.60	1672.70	
C3 (inches) 20.40	13.20	261.36	9.90			.9.87	5192.35	
C4 (inches) 20.40	13.20	269.28	10.20	2746.66	<u> </u>	33.00	8886.24	
C5 (inches) 22.80	13.20	285.12	10.81	3082.46	5 4	16.32	13207.39	
C6 (inches) 28.70	13.20	339.90	12.93	4395.36	5 5	9.65	20275.73	
C7 (inches)								
C8 (inches)								
C9 (inches)								
C10 (inches)								
Average Crush (inches):	21.35							
Results			Average Force	Damage	KE Speed	Delta V	Closing Speed	
,	4	В		Energy (ft*lbs)	(mph)	(mph)	(MPH)	
Minimum 2	221.8	65.2	53256.06	110955.10	38.3	33.2	65.1	
Avg - 2 Std. Deviations	211.8	60.4	49544.22	103650.03	37.0	32.1	62.9	
Avg - 1 Std. Deviations	222.5	63.9	52363.25	109441.27	38.0	33.0	64.6	
Average	233.2	67.4	55182.27	115232.71	39.0	33.8	66.3	
Avg + 1 Std. Deviations	243.9	70.9	58001.30	121024.31	39.9	34.7	67.9	
Avg + 2 Std. Deviations	254.6	74.4	60820.32	126816.05	40.9	35.5	69.5	
Maximum 2	243.0	71.4	58323.87	121520.83	40.0	34.8	68.0	
Damage Centroid Depth (x) (inch	ies)	10.82			k ²	2317.8	39	
Damage Centroid Depth (y) (inch	ies)	34.94	E	Eff. Mass Ratio	(gamma)	1.0	00	
Area of Damage (inche	s²): 1	409.10						

2003 KIA RIO - Front Impact

	Weight (po	· · =	375	PDOF	Lever Arm Distan	ce (inches):	: [0.00	
ccupant + Cargo Total	Weight (po Weight (po		0 375		Yaw Moment of Inertia (lb-ft-sec²)				
gle Coll Force to No Dam Energy Cru	3 1	grees): [0.0 5.0 7.24 66.0						
Crush Prof	ile Measuren	nents:	6						
		Equal Spacing	Zone Are	' ' '	Area Depth(x)	Zone Depth(y	y) D	Area Pepth(y)	
C1 (inches	15.72		(inches		(inches²)	(inche	<u> </u>	inches²)	
C2 (inches) 11.04	13.20				-	5.22	1097.71	
C3 (inches	11.88	13.20	_	27 5.7	867.18	<u> </u>	.88	3007.38	
C4 (inches		13.20	106.1	13 4.3	3 459.07	31	95	3390.71	
C5 (inches		13.20	35.6	54 1.4	9 53.06	44	1.98	1603.01	
C6 (inches	, <u> </u>	13.20	7.9	0.4	3.17	57	7.20	453.02	
C7 (inches)]	」	_		J [
C8 (inches)]		_		J	-		
C9 (inches)]	J	_	_	J	-		
C10 (inche	es)]]			
Average Crush	(inches):	7.24							
D ! !				Average		KE			
Results				Force	Damage	Speed	Delta V		
		Α	В	(pounds)	Energy (ft*lbs)	(mph)	(mph)	bsub1	
	Minimum	354.4	174.0	53256.06	53432.76	26.0	31.8	43.2	

Dogulto			Average		KE			
Results			Force	Damage	Speed	Delta V		
	Α	В	(pounds)	Energy (ft*lbs)	(mph)	(mph)	bsub1	
Minimum	354.4	174.0	53256.06	53432.76	26.0	31.8	43.2	
Avg - 2 Std. Deviations	340.3	160.4	49544.22	49954.33	25.1	30.8	41.5	
Avg - 1 Std. Deviations	351.0	170.7	52363.25	52596.55	25.8	31.6	42.8	
Average	361.5	181.0	55182.27	55235.90	26.4	32.4	44.1	
Avg + 1 Std. Deviations	371.7	191.4	58001.30	57872.62	27.0	33.2	45.3	
Avg + 2 Std. Deviations	381.7	201.8	60820.32	60506.87	27.6	34.0	46.5	
Maximum	372.9	192.6	58323.87	58174.17	27.1	33.3	45.5	
Damage Centroid Depth (x	i) (inches)	5.39			k ²	2421.39		
Damage Centroid Depth (y) (inches)	20.00		Eff. Mass Ratio (gamma)	1.00		
Area of Damage	(inches²):	477.58						

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN:	1J4RR6GTXBC500016
Decouca (III)	

Model: 2011 Jeep Grand Cherokee 4x4 4-Door Sport Utility

Engine Size: 4.2 L/ 258 cu.in.

Engine Description: In-line 6 cylinder with Overhead Valves

Horse Power: 112 @ 3000 rpm

Torque: 210 lb-ft @ 2000 rpm

Injection System: 2 Bbl Carburetor

PSI: 4-5 psi Ignition: Electronic

Manufacturer: Chrysler

Assembly Plant: Jefferson (Detroit, MI)

The First through Third characters (1J4) indicate a Jeep Multi-purpose Vehicle (MPV) made in the U.S.A.

The Fourth character (R) indicates a GVWR of 6001 - 7000 lbs.

This is a 4 Wheel Drive vehicle

Drive Wheels:

The Fifth and Sixth characters (R6) indicate a Grand Cherokee 4x4 and a Overland series

The Seventh character (G) indicates a 4-Door Sport Utility

The Eighth character (T) indicates the OEM engine: 4.2 L/ 258 cu.in., L6, OHV

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

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

The Tenth character (B) indicates the model year 2011

The Eleventh character (C) indicates the vehicle was made in the assembly plant in Jefferson (Detroit, MI)

The Twelfth through Seventeenth characters (500016) 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 91942

5/9/2012

3/ -	J/ 2012		
2011 JEEP GRAND CHEROKEE 4 DOOR 4X4 UTILITY Curb Weight: Curb Weight Distribution - Front:	4755 1bs.		157 kg. 48 %
Gross Vehicle Weight Rating:	6500 lbs.	2	948 kg.
Number of Tires on Vehicle: Drive Wheels:	4 Wheel Drive		
Horizontal Dimensions Total Length Wheelbase:	Inches 190 115	Feet 15.83 9.58	Meters 4.83 2.92
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	33 15 7 49 78	2.75 1.25 0.58 4.08 6.50	0.84 0.38 0.18 1.24 1.98
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	42 21 3 5	3.50 1.75 0.25 0.42	1.07 0.53 0.08 0.13
Width Dimensions Maximum Width: Front Track: Rear Track:	76 64 64	6.33 5.33 5.33	1.93 1.63 1.63
Vertical Dimensions Height: Ground to -	69	5.75	1.75
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear:	27 36 41 47 30 48	2.25 3.00 3.42 3.92 2.50 4.00	0.69 0.91 1.04 1.19 0.76 1.22

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

Base of Rear Window:

Expert AutoStats®

2011 JEEP GRAND CHEROKEE 4 DOOR 4X4 UTILITY

Interior Dimensions	Inches	Feet	Meters
Front Seat Shoulder Width	59	4.92	1.50
Front Seat to Headliner	40	3.33	1.02
Front Leg Room - seatback to floor (max)	40	3.33	1.02
Rear Seat Shoulder Width	58	4.83	1.47
Rear Seat to Headliner	39	3.25	0.99
Front Leg Room - seatback to floor (min)	39	3.25	0.99
Seatbelts: 3pt - front and rear			
Airbags: FRONT SEAT AIRBAGS + SIDE AI	[RBAGS		
Steering Data			
Turning Circle (Diameter)	444	37.00	11.28
Steering Ratio: 17.29:1			
Wheel Radius:			
Tire Size (OEM): 245/70R17			
Acceleration & Braking Information			
Brake Type: ALL DISC			
ABS System: ALL WHEEL ABS			
Braking, 60 mph to 0 (Hard pedal, no skid,	dry pavement):		
d = 128.0 ft $t = 2.9$ sec	a = -30.2 ft/	sec² G-fo	$rce = \boxed{-0.94}$
Acceleration:			
0 to 30mph $t = 3.1$ sec	$a = \boxed{14.2} ft/$	sec² G-fo	rce = 0.44
0 to 60mph $t = 8.4$ sec	$a = \boxed{10.5} ft/$	sec² G-fo	rce = 0.33
45 to 65mph $t = \boxed{4.4}$ sec	a = 6.7 ft/	sec² G-fo	rce = 0.21
Transmission Type: 5spd AUTOMATIC			
Notes:			
Federal Bumper Standard Requirements:	No Requ	irement	
. cac. a. zampe. camaara negari emerica	equ		

N.S.D.C = 2011 - 2012

2011 JEEP GRAND CHEROKEE 4 DOOR 4X4 UTILITY

Other Information		
Tip-Over Stability Ratio =	1.16	Reasonably Stable
NHTSA Star Rating (calculated)		***
Center of Gravity (No Load):		
Inches behind front axle	=	55.20
Inches in front of rear axle	=	59.80
Inches from side of vehicle	=	38.00
Inches from ground	=	27.53
Inches from front corner	=	96.04
Inches from rear corner	=	108.66
Inches from front bumper	=	88.20
Inches from rear bumper	=	101.80
Moments of Inertia Approximations (No Load)	•	
Yaw Moment of Inertia	=	3554.65 lb*ft*sec ²
Pitch Moment of Inertia	=	3668.60 lb*ft*sec²
Roll Moment of Inertia	=	811.10 lb*ft*sec²
Front Duofile Information		
Front Profile Information		62.4
Angle Front Bumper to Hood Front	=	63.4 deg
Angle Front of Hood to Windshield Base	=	<u>8.1</u> deg
Angle Front of Hood to Windshield Top	=	20.1 deg
Angle of Windshield	=	34.6 deg
Angle of Steering Tires at Max Turn	=	29.7 deg

First Approximation Crush Factors:

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

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).

Expert VIN DeCoder®

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DeCoded VIN: ZBBBS00A4H7160873

Model:	1987 Bertone X 1/9 Convertible
Engine Size:	1.5 L/ 92 cu.in.
Ingine Description:	Inline 4 cylinder with Overhead Cams
Horse Power:	75 @ 5500 rpm
Torque:	79 lb-ft at 3000 rpm
Iniection System:	electronic Fuel Injection (EFI)
	[28-37 psi] Ignition: Electronic
Manufacturer:	Fiat
Assembly Plant:	Lordstown, OH.

The First through Third characters (ZBB) indicate a Bertone product made in Italy

The Fourth character (B) indicates the model: X 1/9

Drive Wheels:

The Fifth and Sixth characters (SO) indicate a Convertible, Basic Version

This is a Rear Wheel Drive vehicle

The Seventh character (0) indicates the Restraints: Manual Belts

The Eighth character (A) indicates the OEM engine: L4, 1.5 L/ 92 cu.in., OHC

The Ninth character (the check digit) is entered as 4.

The VIN appears Valid, the calculated value is 4.

The Tenth character (H) indicates the model year 1987

The Eleventh character (7) indicates the vehicle was made in the assembly plant in Turin, Italy

The Twelfth through Seventeenth characters (160873) 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

6/6/2012

1987 BERTONE X 1/9 2 DOOR COUPE			
Curb Weight: Curb Weight Distribution - Front:	2130 lbs. 56 %	Rear:	966 kg.
Gross Vehicle Weight Rating:	2640 lbs.	1	.197 kg.
Number of Tires on Vehicle: Drive Wheels:	REAR		
Horizontal Dimensions Total Length Wheelbase:	Inches	Feet 13.00 7.25	Meters 3.96 2.21
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	41 19 7 55 75	3.42 1.58 0.58 4.58 6.25	1.04 0.48 0.18 1.40 1.91
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	28 18 6 49	2.33 1.50 0.50 4.08	0.71 0.46 0.15 1.24
Width Dimensions Maximum Width: Front Track: Rear Track:	62 53 54	5.17 4.42 4.50	1.57 1.35 1.37
Vertical Dimensions Height: Ground to -	47	3.92	1.19
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	19 24 23 30 19 27	1.58 2.00 1.92 2.50 1.58 2.25 3.00	0.48 0.61 0.58 0.76 0.48 0.69 0.91

$\textbf{Expert AutoStats} \\ \\ \textbf{@}$

1987 BERTONE X 1/9 2 DOOR COUPE

Interior Dimensions	Inches Fee	t Meters
Front Seat Shoulder Width		
Front Seat to Headliner		
Front Leg Room - seatback to floor (max)		
Rear Seat Shoulder Width		
Rear Seat to Headliner		
Front Leg Room - seatback to floor (min)		
Seatbelts: 3pt LAP & SHOULDER - front, Nor	ne or Unknown - rear	
Airbags: NO AIRBAGS		
Steering Data		
Turning Circle (Diameter)		
Steering Ratio: :1		
Wheel Radius:	10 0.8	0.25
Tire Size (OEM): P165/70SR13		_
Acceleration & Braking Information		
Brake Туре: ALL DISC		
ABS System: ABS UNKNOWN		
Braking, 60 mph to 0 (Hard pedal, no skid, dr	rv navement):	
	= ft/sec²	G-force =
Acceleration:		
0 to 30mph t = sec a	= ft/sec²	G-force =
0 to 60mph t = sec a	= ft/sec²	G-force =
45 to 65mph t = sec a	= ft/sec²	G-force =
Transmission Type: 5spd MANUAL		
Notes:		
Federal Bumper Standard Requirements:	2.5 mph	
This vehicles Rated Bumper Strength:	2.5 mph	

N.S.D.C = 1984 - 1990

1987 BERTONE X 1/9 2 DOOR COUPE

Other Information

Stable

L

Center of Gravity (No Load):

Ir	nches behind front axle	=	38.28	
Ir	nches in front of rear axle	=	48.72	
Ir	nches from side of vehicle	=	31.00	
Ir	nches from ground	=	19.20	
Ir	nches from front corner	=	85.13	
Ir	nches from rear corner	=	82.75	
Ir	nches from front bumper	=	79.28	
Ir	nches from rear bumper	=	76.72	
Ir Ir Ir Ir	nches from side of vehicle nches from ground nches from front corner nches from rear corner nches from front bumper	= = = = = =	31.00 19.20 85.13 82.75 79.28	

Moments of Inertia Approximations (No Load):

Yaw Moment of Inertia	=	987.90 lb*ft*sec²
Pitch Moment of Inertia	=	959.70 lb*ft*sec²
Roll Moment of Inertia	=	233.40 lb*ft*sec²

Front Profile Information

Angle Front Bumper to Hood Front	=	29.7	deg
Angle Front of Hood to Windshield Base	=	8.3	deg
Angle Front of Hood to Windshield Top	=	17.9	deg
Angle of Windshield	=	36.9	deg
Angle of Steering Tires at Max Turn	=		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:

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).

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: KNAFB1214X5804909

Model: 1999 Kia Sephia 4-Door Sedan

Engine Size: 1.8L / 109 cu.in.

Engine Description: Inline 4 cylinder with Dual Overhead Cam

Horse Power: 125 @ 6000 rpm

Torque: 120 lb-ft at 4500 rpm

Injection System: Electronic Gasoline Injection (EGI)

PSI: 47-48 psi Ignition: electronic

Manufacturer: Kia

Assembly Plant: Asan, Korea

Drive Wheels:

This is a Front Wheel Drive vehicle w/ Dual Air Bags

The First through Third characters (KNA) indicate a Kia Car made in Korea

The Fourth and Fifth characters (FB) indicate a Sephia

The Sixth and Seventh characters (12) indicate a 4-Door Sedan

The Eighth character (1) indicates the OEM engine: 1.8L / 109 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 (X) indicates the model year 1999

The Eleventh character (5) indicates the vehicle was made in the assembly plant in Asan, Korea

The Twelfth through Seventeenth characters (804909) 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 91942

5/9/2012

1999 KIA SEPHIA 4 DOOR SEDAN			
Curb Weight: Curb Weight Distribution - Front:	2542 1bs.		53 kg. 7 %
Gross Vehicle Weight Rating:	3549 lbs.	16	<u>10</u> kg.
Number of Tires on Vehicle: Drive Wheels:	FRONT		
Horizontal Dimensions Total Length Wheelbase:	Inches 174 101	Feet 14.50 8.42	Meters 4.42 2.57
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	36 22 5 46 74	3.00 1.83 0.42 3.83 6.17	0.91 0.56 0.13 1.17 1.88
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	37 24 4 23	3.08 2.00 0.33 1.92	0.94 0.61 0.10 0.58
Width Dimensions Maximum Width: Front Track: Rear Track:	67 56 56	5.58 4.67 4.67	1.70 1.42 1.42
Vertical Dimensions Height: Ground to -	56	4.67	1.42
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	22 26 28 37 25 39	1.83 2.17 2.33 3.08 2.08 3.25 3.42	0.56 0.66 0.71 0.94 0.64 0.99 1.04

Expert AutoStats®

1999 KIA SEPHIA 4 DOOR SEDAN

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	1nches 55 40 42	Feet 4.58 3.33 3.50	1.40 1.02 1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	54 38 29	4.50 3.17 2.42	1.37 0.97 0.74
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): P185/65R14	11	0.92	0.28
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ALL WHEEL ABS - OPTIONAL			
Braking, 60 mph to 0 (Hard pedal, no skid, $d = \boxed{135.0}$ ft $t = \boxed{3.1}$ sec	dry pavement): a = -28.6 ft/	sec² G-fo	rce = -0.89
Acceleration: 0 to 30mph $t = 2.8$ sec 0 to 60mph $t = 9.6$ sec 45 to 65mph $t = 5.5$ sec Transmission Type: 5spd MANUAL	a = 15.7 ft/ a = 9.2 ft/ a = 5.3 ft/	sec² G-fo	rce = 0.49 rce = 0.28 rce = 0.17
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mg		

N.S.D.C = 1999 - 2001

1999 KIA SEPHIA 4 DOOR SEDAN

Other Information		
Tip-Over Stability Ratio =	1.27	Stable
NHTSA Star Rating (calculated)		***
Center of Gravity (No Load):		
Inches behind front axle	=	37.37
Inches in front of rear axle	=	63.63
Inches from side of vehicle	=	33.50
Inches from ground	=	21.98
Inches from front corner	=	80.66
Inches from rear corner	=	106.06
Inches from front bumper	=	73.37
Inches from rear bumper	=	100.63
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	1412.26 lb*ft*sec²
Pitch Moment of Inertia	=	1367.58 lb*ft*sec²
Roll Moment of Inertia	=	307.56 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	50.2 deg
Angle Front of Hood to Windshield Base	=	12.4 deg
Angle Front of Hood to Windshield Top	=	20.6 deg
Angle of Windshield	=	31.3 deg
Angle of Steering Tires at Max Turn	=	

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:

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).

Expert VIN DeCoder®

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Version Number 3.1.0.3

|--|

Model: 1997 Ford Escort 4 door Sedan

Engine Size: 2.0 L/ 121 cu.in.

Engine Description: In-Line 4 cylinder with Single Overhead Cam

Horse Power: 110 @ 5000 rpm

Torque: 125 lb-ft at 3800 rpm

Injection System: | Sequential Port Fuel Injection (SEFI)

PSI: 35-40 psi Ignition: electronic

Manufacturer: Ford

Assembly Plant: Wayne, MI

Drive Wheels: This is a Front Wheel Drive vehicle w/ Manual Seatbelts +

Driver/Passgr Air Bag

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

The Fourth character (L) indicates Manual Seatbelts + Driver/Passgr Air Bag

The Fifth through Seventh characters (P10) indicate an Escort and a 4 door Sedan

The Eighth character (P) indicates the OEM engine: 2.0 L/ 121 cu.in., L4, SOHC

The Ninth character (the check digit) is entered as 3.

The VIN appears Valid, the calculated value is 3.

The Tenth character (V) indicates the model year 1997

The Eleventh character (W) indicates the vehicle was made in the assembly plant in Wayne, MI

The Twelfth through Seventeenth characters (131607) 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 91942

5/9/2012

1997 FORD ESCORT 4 DOOR SEDAN			
Curb Weight: Curb Weight Distribution - Front:	2450 1bs.	Rear: 3	11 kg.
Gross Vehicle Weight Rating:	3485 lbs.	15	81 kg.
Number of Tires on Vehicle: Drive Wheels:	FRONT		
Horizontal Dimensions Total Length Wheelbase:	Inches 175 98	Feet 14.58 8.17	Meters 4.44 2.49
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	34 19 5 47	2.83 1.58 0.42 3.92 6.08	0.86 0.48 0.13 1.19 1.85
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	43 25 6 23	3.58 2.08 0.50 1.92	1.09 0.64 0.15 0.58
Width Dimensions Maximum Width: Front Track: Rear Track:	67 56 56	5.58 4.67 4.67	1.70 1.42 1.42
Vertical Dimensions Height: Ground to -	53	4.42	1.35
Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	22 26 27 36 23 37 40	1.83 2.17 2.25 3.00 1.92 3.08 3.33	0.56 0.66 0.69 0.91 0.58 0.94 1.02

Expert AutoStats®

1997 FORD ESCORT 4 DOOR SEDAN

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	1nches 52 39 43	Feet 4.33 3.25 3.58	Meters 1.32 0.99 1.09
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	52 37 34	4.33 3.08 2.83	1.32 0.94 0.86
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS			
Steering Data Turning Circle (Diameter) Steering Ratio: :1 Wheel Radius: Tire Size (OEM): P185/65R14	372	31.00	9.45
Acceleration & Braking Information Brake Type: FRONT DISC - REAR DRUM ABS System: ALL WHEEL ABS - OPTIONAL			
Braking, 60 mph to 0 (Hard pedal, no skid, $d = \boxed{148.0}$ ft $t = \boxed{3.4}$ sec	dry pavement): $a = \boxed{-26.1}$ ft/	sec² G-fo	rce = <u>-0.81</u>
Acceleration: 0 to 30mph $t = 2.9$ sec 0 to 60mph $t = 9.2$ sec 45 to 65mph $t = 5.3$ sec Transmission Type: 5spd MANUAL	a = 15.2 ft/ a = 9.6 ft/ a = 5.5 ft/	sec² G-fo	rce = 0.47 rce = 0.30 rce = 0.17
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mg		

N.S.D.C = 1997 - 2003

1997 FORD ESCORT 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	=	35.28
Inches in front of rear axle	=	62.72
Inches from side of vehicle	=	33.50
Inches from ground	=	20.80
Inches from front corner	=	76.95
Inches from rear corner	=	110.90
Inches from front bumper	=	69.28
Inches from rear bumper	=	105.72
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	1317.50 lb*ft*sec²
Pitch Moment of Inertia	=	1276 50 71 46.4
Roll Moment of Inertia	=	201 00 75 % (1 % - 1 - 2
Front Profile Information		
Angle Front Bumper to Hood Front	=	45.0 deg
Angle Front of Hood to Windshield Base	=	12.1 deg
Angle Front of Hood to Windshield Top	=	<u>19.4</u> deg
Angle of Windshield	=	30.0 deg
Angle of Steering Tires at Max Turn	=	30.2 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:

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

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #2501

1997 FORD ESCORT

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Serial Number: 11R-030201SC02301

Sister/Clone database reader

You entered: 1997 FORD ESCORT

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

Year Range	Make	Model	Body Styles	Wheelbase
1997 - 2000 Remarks: Wagon	FORD discontinued	ESCORT after 1999	3D, 4D, 5D, SW	98.4
2001 - 2003 Remarks: Fleet us	FORD e only	ESCORT	3D, 4D, 5D, SW	98.4

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

Test Information

Test # 2501		NH	TSA Test I	Reference (Guide Version #	V4			
Test Date 1996-11-26	5				Contract #	DTNH22-93-	C-02047		
Contract/Study Title	FMVSS 214	COMPLI	ANCE (R	IGHT SID	E) 1997 FORD	ESCORT 4 DOO	R (CV020	5)	
Test Objective(s)	VEHICLE CR	ASHWO	RTHINES	S AND O	CCUPANT PRO	TECTION			
Test Type	FMVSS 214	SIDE IM	PACT PR	OTECTIO	V] Configuration	IMPACT	OR INTO VE	HICLE
Impact Angle	90			S	ide Impact Poin	t N/A	mm	N/A	inches
					Offset Distanc	e 0	mm	0.0	inches
					Closing Spee	d 53.3	Km/Hr	33.12	MPH
Test Performer	MGA RESEA	RCH							
Test Reference #	BT9611260	1							
Test Track Surface	CONCRETE				Condition	DRY			
Ambient Temperature	21 C	69.8	F	Total No	umber of Curve	54			
Data Recorder Type	OTHER					Data Link	UMBILI	CAL CABLE	
Test Commentary	ANALOG TO	DIGITA	L RECOF	RDING WIT	TH DAS 16F M	ETRABYTE CAR)		
			Fi	xed Barrie	r Information				
Barrier Type				Pole	Barrier Diamete	r	mm		inches
Barrier Shape				. 5.0					
Barrier Commentary									

1997 FORD ESCORT RIGHT FRONT SEAT OCCUPANT

Test # 2501	
Vehicle # 2	Sex MALE
Location RIGHT FRONT SEAT	Age 99
Position CENTER POSITION	Height 999 mm 39.3 inches
Type APR SIDE IMPACT DUMMY	Weight 999.0 kg 2202 pounds
Size 50 PERCENTILE	
Calibration Method HSRI	
Occupant Manufacturer FIRST TECHNOLOGY: S	/N 271
Occupant Modification NO COMMENTS	
Occupant Description NO COMMENTS	
Occupant Commentary HEAD TO HEADREST AN	ND SHOULDER; RIGHT LEG TO DOOR; LT LEG TO RT LEG
<u>Head</u>	
Head to -	
Windshielder Header 354 mm 13.9 inche	s Head Injury Criteria (HIC) 120
WindShield 587 mm 23.1 inche	HIC Lower Time Interval (ms) 47.3
Seatback 9999 mm 0.0 inche	HIC Upper Time Interval (ms) 83.3
Side Header 199 mm 7.8 inche	es s
Side Window 278 mm 10.9 inche	es s
Neck to Seatback 9999 mm 0.0 inches	
First Contact Region (Head) OTHER	
Second Contact Region (Head)	
Chest	
Chest to	
Dash 543 mm 21.4 inches	Arm to Door 103 mm 4.1 inches
Steering Wheel 9999 mm 0.0 inches	Hip to Door 157 mm 6.2 inches
Seatback 9999 mm 0.0 inches	
	elvic Peak Lateral Acceleration (g's)
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 999.9
· <u> </u>	Newtons 2247.9 pound Force
	Newtons 2247.9 pound Force
First Contact Region (Chest/Abdomen) NONE	
Second Contact Region (Chest/Abdomen) NONE	
<u>Legs</u>	
	nees to Seatback 9999 mm 0.0 inches
	2247.9 pounds Force
	2247.9 pounds Force
First Contact Region (Legs) OTHER	
Second Contact Region (Legs)	

1997 FORD ESCORT RIGHT FRONT SEAT OCCUPANT

Test #	2501	
Vehicle #	2	Sex MALE
Location	RIGHT FRONT S	SEAT Age 99
Position	CENTER POSIT	Height 999 mm 39.3 inches
Type	APR SIDE IMPA	ACT DUMMY Weight 999.0 kg 2202 pounds
Size	50 PERCENTILI	
Cali	bration Method	HSRI
Occupar	nt Manufacturer	FIRST TECHNOLOGY: S/N 271
Occupa	ant Modification	NO COMMENTS
Occu	pant Description	NO COMMENTS
Occupa	ant Commentary	HEAD TO HEADREST AND SHOULDER; RIGHT LEG TO DOOR; LT LEG TO RT LEG
		<u>Restraints</u>
Restrai	nt # 1 3 POINT	BELT
Mounte	ed	
Deploy	ment UNKNOV	VN
Restrai	nt Commentary	NO COMMENTS
Restrai	nt # 2 FRONTA	L AIRBAG
Mounte		
Deploy		VN

Restraint Commentary

NO COMMENTS

1997 FORD ESCORT RIGHT REAR SEAT OCCUPANT

Test # 2501	
Vehicle # 2	Sex MALE
Location RIGHT REAR SEAT	Age 99
Position NONADJUSTABLE SEAT	Height 999 mm 39.3 inches
Type APR SIDE IMPACT DUMMY	Weight 999.0 kg 2202 pounds
Size 50 PERCENTILE	
Calibration Method HSRI	
Occupant Manufacturer FIRST TECHNOLOG	IES: S/N 272
Occupant Modification NO COMMENTS	
Occupant Description NO COMMENTS	
Occupant Commentary RIGHT LEG TO DOC	R PANEL; LEFT LEG TO RIGHT LEG
Head Head to -	
	nches Head Injury Criteria (HIC) 1040
	nches HIC Lower Time Interval (ms) 53.1
	nches HIC Upper Time Interval (ms) 61.5
	nches
	nches
Neck to Seatback 9999 mm 0.0 inches	
First Contact Region (Head) C PILL	AR
Second Contact Region (Head)	
Chest	
Chest to -	
Dash 9999 mm 0.0 inches	Arm to Door 115 mm 4.5 inches
Steering Wheel 9999 mm 0.0 inches	Hip to Door 136 mm 5.4 inches
Seatback 471 mm 18.5 inches	
Chest Severity Index 9999	Pelvic Peak Lateral Acceleration (g's)
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 999.9
Lap Belt Peak Load 9999	Newtons 2247.9 pound Force
Shoulder Belt Peak Load 9999	Newtons 2247.9 pound Force
First Contact Region (Chest/Abdomen) NONE	
Second Contact Region (Chest/Abdomen) NONE	
<u>Lec</u>	ie
Knees to Dash 9999 mm 0.0 inches	Knees to Seatback 174 mm 6.9 inches
Left Femur Peak Load -9999 Newtons	-2247.9 pounds Force
Right Femur Peak Load -9999 Newtons	-2247.9 pounds Force
First Contact Region (Legs) OTHER	
Second Contact Region (Legs)	

1997 FORD ESCORT RIGHT REAR SEAT OCCUPANT

Test #	2501				
Vehicle #	2		Sex [MALE	
Location	RIGHT REA	AR SEAT	Age [99	
Position	NONADJUS	STABLE SEAT	Height [999 mm 39.3 inches	
Type	APR SIDE	MPACT DUMMY	Weight [999.0 kg 2202 pounds	
Size	50 PERCE	NTILE			
Cali	bration Meth	od HSRI			
Occupar	nt Manufactu	rer FIRST TECHNOLOGIES:	S/N 272		
Occupa	ant Modificat	ion NO COMMENTS			
Occu	pant Descrip	tion NO COMMENTS			
Occupa	ant Commen	tary RIGHT LEG TO DOOR P.	ANEL; LEFT LEG TO	O RIGHT LEG	
		Restraints	<u>i</u>		
Restrai	nt # 1 3 PC	DINT BELT			
Mounte	ed				
Deploy	ment NO	T APPLICABLE			
Restrai	nt Comment	ary NO COMMENTS			
Restrai	nt # 2 NO	NE			
Mounte	ed				
Deploy	ment NOT	APPLICABLE			
	nt Comment	ary NO COMMENTS			

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	2501										
VIN					NHTSA T	est Vehic	le Numbe	er 1			
Year	0				Vehicle Mo	dification	Indicator	RESEA	RCH V	EHICLE	
Make	NHTSA		Post-test S	Steering Co	olumn Shear	Capsule	Seperation	n NOT AP	PLICA	ABLE	
Model	DEFORMAB	LE IMPA	CTOR] Steerii	ng Column C	ollapse M	lechanism	NOT AP	PLICA	BLE	
Body	NOT APPLIC	CABLE									
Engine	NOT APPLIC	CABLE									
Displacement	0 Lite	er Tra	ansmission	NOT AF	PLICABLE						
Vehicle Modific	cation(s) Desc	ription [FMVSS 21	4 DEFOR	MABLE BAR	RIER AN	D IMPAC	TOR			
Vehicle Comm	entary FMV	SS 214 N	OVING B	ARRIER							
Vehicle Ler	ngth 4115	mm	162.0 in	nches	CC	behind	Front Axle	1106 r	mm [43.5	inches
Vehicle \	Width 2014	mm	79.3 in	nches	Center of I	Damage t	o CG Axis	s 9999 r	mm [0.0	inches
Vehicle Whee	elbase 2591	mm	102.0 in	nches	Total Len	gth of Inc	dentation	99999 r	mm [0.0	inches
Vehicle Test W	Veight 1357	KG	2991 p	ounds	Maximum	Static Cru	ish Depth	0 r	mm [0.0	inches
						Pre-Impa	act Speed	1 53	kph [33.1	mph
Ve	hicle Damage	Index 9	999999		Princ	ipal Direc	tion of Fo	rce 27			
Domogo Dr	ofilo Dieton	00 1/100/	nuromont	0	Crush from	m Dro 9	Doot To	ot Domos	no Ma	oourom	onto
Damage Pr				<u> </u>	Clusii iioi			-			
` _	ured Left-to-R	Ĭ	-	1 -4 D.		Pre-Tes	1	Post-Test	_	Crush D	1
DPD 1 (0.0	inches	Lett Bu	ımper Corne		inches		nches		inches
DPD 2		0.0	inches			0	mm	r	mm	0] mm
DPD 3 (0.0	inches		Centerline	0.0	inches	0.0 i	nches	0.0	inches
DPD 4 (0.0	inches			0	mm	1 0	mm	0] mm
DPD 5		0.0	inches	Riaht Bu	mper Corner	0.0	inches	0.0 i	nches	0.0	inches
DPD 6) mm	0.0	inches			0	mm	=	mm	0	mm
											1
Bumper E	ngagement			Sill Er	gagement			A-p	oillar E	ngageme	ent
(Inline Im	npact Only)			(Side	Impact Only)		(5	ide Im	npact Onl	ly)
	27.0			DIRECT	ENGAGEME	NT		È	9	99.0	Ĩ
								_			_
Moving	g Test Cart			Moving T	est Cart/Veh	ricle				entation o	
A	ngle			Crab	bed Angle					Test Car	
	PPLICABLE				27.0					IGAGEM!	
_	of the Tilt Angle			•	f the Crabbed And				-	e of the Angle	
	etween surface of a				e Clockwise from			Measured be			
Rollover Test	Cart and the Grou	nd	Longi	tudinal Vector	to Velocity Vector	r of Vehicle		and Dir	ection of	f Test Cart M	1otion

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	2501						
VIN			NHTSA Test	t Vehicle Number	1		
Year	0		Vehicle Modif	fication Indicator	RESEARCH	VEHICLE	
Make	NHTSA	Post-test Steering	Column Shear Ca	apsule Seperatior	NOT APPLIC	ABLE	
Model	DEFORMABLE IMP	ACTOR Stee	ering Column Colla	apse Mechanism	NOT APPLIC	ABLE	
Body	NOT APPLICABLE						
Engine	NOT APPLICABLE						
Displacement	0 Liter T	ransmission NOT	APPLICABLE				
Vehicle Modific	cation(s) Description	FMVSS 214 DEFC	RMABLE BARRII	ER AND IMPACT	OR		
Vehicle Comm	entary FMVSS 214	MOVING BARRIER					
Vehicle Len	gth 4115 mm	162.0 inches	CG b	ehind Front Axle	1106 mm	43.5	inches
Vehicle V	Width 2014 mm	79.3 inches	Center of Dar	mage to CG Axis	9999 mm	0.0	inches
Vehicle Whee		102.0 inches	Total Length	n of Indentation	99999 mm	0.0	inches
Vehicle Test W	/eight 1357 KG	2991 pounds		atic Crush Depth		0.0	inches
	-			e-Impact Speed		33.1	mph
Vel	hicle Damage Index [9999999	Principa	al Direction of For	ce 27		
	_						
	<u> </u>	re & Post Test	<u>Damage Me</u>	<u>easurements</u>			
(Measureme	ents are taken in a longitudina	direction. Except for Engine	e Block, all measuremen	nts are take from the Re	ar Vehicle Surface f	orward.)	
L	eft Side		Centerline		Righ	t Side	
Pre-Test	Post-Test	Pre-T	est Post	t-Test	Pre-Test	Post	-Test
mm inche	s mm inches	mm	inches mm	inches m	ım inches	mm	inches
		Lengt	h of Vehicle at Ce	enterline			
		0	0.0	0.0			
			Engine Block				
			0.0	0.0			
0.0	0.0	I	Front Bumper Cor	ner <u>0</u>	0.0	0	0.0
			Front of Engine				
		0	0.0				,
0.0	0.0		Firewall		0.0	0	0.0
			0.0	<u> </u>			,
0.0	0 0.0	• •	er Leading Edge o		0.0	0	0.0
0.0	0 0.0		r Leading Edge o		0.0	0	0.0
0.0	0 0.0		Bottom of 'A' Post	<u>=</u>	0.0	0	0.0
0.0	0 0.0	• •	er Trailing Edge o		0.0	0	0.0
0.0	0.0	Low	er Trailing Edge o		0.0	0	0.0
		[<u></u>][Steering Column				
			0.0	0.0			
			ring Column to 'A'				
			0.0 0	0.0			
			ring Column to He	0.0			
		IU II	ט.ט ן ן ט.ט	110.0			

Vehicle 2 1997 FORD ESCORT

Test # 2501	
VIN 1FALP13P0VW136646 NHTSA Test	Vehicle Number 2
Year 1997 Vehicle Modifie	cation Indicator PRODUCTION VEHICLE
Make FORD Post-test Steering Column Shear Cap	psule Seperation NOT APPLICABLE
Model ESCORT Steering Column Colla	pse Mechanism UNKNOWN
Body FOUR DOOR SEDAN	
Engine 4 CYLINDER TRANSVERSE FRONT	
Displacement 2 Liter Transmission MANUAL - FRONT WHE	EL DRIVE
Vehicle Modification(s) Description NO COMMENTS	
Vehicle Commentary NO COMMENTS	
Vehicle Length 4312 mm 169.8 inches CG be	ehind Front Axle 1015 mm 40.0 inches
Vehicle Width 1709 mm 67.3 inches Center of Dam	nage to CG Axis mm inches
Vehicle Wheelbase 2496 mm 98.3 inches Total Length	of Indentation 3600 mm 141.7 inches
Vehicle Test Weight 1314 KG 2896 pounds Maximum Stat	tic Crush Depth 355 mm 14.0 inches
Pre	e-Impact Speed 0 kph 0.0 mph
Vehicle Damage Index 09LPAW7 Principal	Direction of Force 63
<u>Damage Profile Distance Measurements</u> <u>Crush from P</u>	Pre & Post Test Damage Measurements
	re-Test Post-Test Crush Depth
DPD 1 0 mm 0.0 inches Left Bumper Corner 15	
	924 mm 3953 mm -29 mm
DDD 2 200 mm 44.4 inches	
DDD 4 240 mm 42.2 inches	69.8 inches 170.7 inches -0.9 inches
DPD 5 63 mm 2.5 inches	312 mm 4336 mm -24 mm
DPD 6 0 mm 0.0 inches Right Bumper Corner 15	54.5 inches 154.4 inches 0.1 inches
	924 mm 3921 mm 3 mm
Bumper Engagement Sill Engagement	A-pillar Engagement
(Inline Impact Only) (Side Impact Only)	(Side Impact Only)
27.0 DIRECT ENGAGEMENT	90.0
Moving Toot Cort	Vahiala Orientation on Cart
Moving Test Cart Moving Test Cart/Vehicle	Vehicle Orientation on Cart Moving Test Cart
Angle Crabbed Angle	Moving rest Cart
NOT APPLICABLE 0.0	
Magnitude of the Tilt Angle Magniture of the Crabbod Angle	DIRECT ENGAGEMENT
Magnitude of the Tilt Angle Magniture of the Crabbed Angle Measured between surface of a Measure Clockwise from	

Vehicle 2 1997 FORD ESCORT

Test #	2501						
VIN	1FALP13P0VW1366	46	NHTSA Test Vehicle N	umber 2			
Year	1997		Vehicle Modification Ind	icator PR	ODUCTIO	N VEHIC	LE
Make	FORD	Post-test Steering Col	ımn Shear Capsule Sep	eration NO	T APPLIC	ABLE	
Model	ESCORT	Steering	Column Collapse Mech	anism UN	KNOWN		
Body	FOUR DOOR SEDAN	١					
Engine	4 CYLINDER TRANS	VERSE FRONT					
Displacement	2 Liter Tr	ransmission MANUAL	- FRONT WHEEL DRIV	E			
Vehicle Modifi	cation(s) Description	NO COMMENTS					
Vehicle Comn	nentary NO COMMEN	NTS					
Vehicle Le	ngth 4312 mm	169.8 inches	CG behind Fror	nt Axle 101	5 mm	40.0	inches
Vehicle	Width 1709 mm	67.3 inches	Center of Damage to C	G Axis <u>-35</u>	mm	-1.4	inches
Vehicle Whe	elbase 2496 mm	98.3 inches	Total Length of Indent	ation 360 0) mm	141.7	inches
Vehicle Test V	Veight 1314 KG	2896 pounds	Maximum Static Crush I	• ==	mm	14.0	inches
	_		Pre-Impact S	Speed 0	kph	0.0	mph
Ve	hicle Damage Index [09LPAW7	Principal Direction	of Force	63		
	_						
	<u>P</u>	re & Post Test Da	<u>amage Measurem</u>	<u>ients</u>			
(Measurem	ents are taken in a longitudinal	direction. Except for Engine Bloo	k, all measurements are take fro	m the Rear Veh	icle Surface f	orward.)	
ı	eft Side	C	enterline		Righ	t Side	
Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-	Test		t-Test
	Post-Test		Post-Test	Pre- mm	_		t-Test inches
Pre-Test	Post-Test	Pre-Test mm inch	Post-Test		Test	Post	
Pre-Test	Post-Test	Pre-Test mm inch	Post-Test nes mm inches Vehicle at Centerline		Test	Post	
Pre-Test	Post-Test	Pre-Test mm inch Length of 4312 169	Post-Test nes mm inches Vehicle at Centerline		Test	Post	
Pre-Test	Post-Test	Pre-Test mm inch Length of 4312 169	Post-Test mm inches Vehicle at Centerline 4336 170.7		Test	Post	
Pre-Test	Post-Test es mm inches	Pre-Test mm inch Length of 4312 169 E	Post-Test nes mm inches Vehicle at Centerline 18 4336 170.7 ngine Block		Test	Post	
Pre-Test mm inche	Post-Test es mm inches	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron	Post-Test nes mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0	mm	Test inches	Posi mm	inches
Pre-Test mm inche	Post-Test es mm inches	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron	Post-Test nes mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner	mm	Test inches	Posi mm	inches
Pre-Test mm inche	Post-Test es mm inches	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron	Post-Test nes mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine	mm	Test inches	Posi mm	inches
Pre-Test mm inche	Post-Test mm inches	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron	Post-Test nes mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0	mm	Test inches	Posi mm	inches
Pre-Test mm inche	Post-Test mm inches 3953 155.6 0 0.0 0 0.0	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron Fro 0 0.0 0 0.0	Post-Test mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0 Firewall	mm	Test inches	Posi mm	inches
Pre-Test mm inche	Post-Test mm inches 3953 155.6	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron Fr 0 0.0 Upper Le	Post-Test nes mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0 Firewall 0 0.0	3924 0	Test inches	90si mm 3921	inches
Pre-Test mm inche	Post-Test mm inches 3953 155.6 0 0.0 0 0.0 0 0.0 0 0.0	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron Fr 0 0.0 Upper Le Lower Le Botto	Post-Test nes mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0 Firewall 0 0.0 ading Edge of Door ading Edge of Door om of 'A' Post	3924 0	Test inches 154.5 0.0	Posimm 3921 0	inches
Pre-Test mm inche	Post-Test mm inches 3953 155.6 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron Fr 0 0.0 Upper Le Lower Le Botto Upper T	Post-Test mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0 Firewall 0 0.0 ading Edge of Door ading Edge of Door om of 'A' Post railing Edge of Door	3924 0 0 0 0	Test inches 154.5 0.0 0.0 0.0	9051 0 0	inches 154.4 0.0 0.0 0.0
Pre-Test mm inches inch	Post-Test mm inches 3953 155.6 0 0.0 0 0.0 0 0.0 0 0.0	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron Fr 0 0.0 Upper Le Lower Le Botto Upper T Lower T	Post-Test mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0 Firewall 0 0.0 ading Edge of Door ading Edge of Door om of 'A' Post railing Edge of Door railing Edge of Door	3924 0 0	Test inches 154.5 0.0 0.0 0.0 0.0	905 mm 3921 0 0 0	0.0 0.0 0.0 0.0
Pre-Test mm inches inch	Post-Test mm inches 3953 155.6 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron Fr 0 0.0 Upper Le Lower Le Botto Upper T Lower T	Post-Test mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0 Firewall 0 0.0 ading Edge of Door ading Edge of Door om of 'A' Post railing Edge of Door railing Edge of Door eering Column	3924 0 0 0 0	154.5 0.0 0.0 0.0 0.0 0.0	9050 mm 3921 0 0 0 0 0	0.0 0.0 0.0 0.0 0.0
Pre-Test mm inches inch	Post-Test mm inches 3953 155.6 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	Pre-Test mm inch Length of 4312 169 E 0 0.0 Fron Fr 0 0.0 Upper Le Lower Le Botto Upper T Lower T St 0 0.0	Post-Test mm inches Vehicle at Centerline 8 4336 170.7 ngine Block 0 0.0 t Bumper Corner ont of Engine 0 0.0 Firewall 0 0.0 ading Edge of Door ading Edge of Door om of 'A' Post railing Edge of Door railing Edge of Door	0 0 0 0 0	154.5 0.0 0.0 0.0 0.0 0.0	9050 mm 3921 0 0 0 0 0	0.0 0.0 0.0 0.0 0.0

0 0.0 0 0.0

Center of Steering Column to Headliner (Vertical)

0 0.0 0.0

1997 FORD ESCORT

NHTSA Crash Test - #2501 - Side Impact

Damage Profile Distances - Indention Length - KE Equivalent Speed - Trapezoidal Average

Test Vehicle Weight = 2896 pounds

Impactor Weight = 2991

KE Equivalent Speed = 23.6 MPH

Impactor Test Speed = 33.1

Test Crush Length = 141.7 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(F===+)
(Rear)	0.0	5.5	11.4	12.2	2.5	0.0	(Front)

CRASH 3 Stiffness Coefficents SMAC Stiffness

		A	B	<u>G</u>	Kv
Minimum Crush = 2.5 inches					1460.6
Using a Rated No Damage Speed of	1.0mph	148.1	1339.5	8.2	
Using a Rated No Damage Speed of	2.0mph	283.2	1223.6	32.8	
Using a Rated No Damage Speed of	3.0mph	405.1	1113.0	73.7	
Using a Rated No Damage Speed of	5.0mph	609.6	907.4	204.8	
Average Crush = 6.3 inches					230.0
Using a Rated No Damage Speed of	1.0mph	58.8	210.9	8.2	
Using a Rated No Damage Speed of	2.0mph	112.4	192.7	32.8	
Using a Rated No Damage Speed of	3.0mph	160.7	175.3	73.7	
Using a Rated No Damage Speed of	5.0mph	241.9	142.9	151.9	
Maximum Crush = 12.2 inches					61.3
Using a Rated No Damage Speed of	1.0mph	30.4	56.2	8.2	
Using a Rated No Damage Speed of	2.0mph	58.0	51.4	32.8	
Using a Rated No Damage Speed of	3.0mph	83.0	46.7	73.7	
Using a Rated No Damage Speed of	5.0mph	124.9	38.1	204.8	

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

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

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

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

G = Energy dissipated without permanent damage, 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	12.2	25.3	1.7	6.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 18.3

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 1997 - 2000

Make: FORD Model: ESCORT

Test	Vehicle	No							
Number	r Info	Damage	Average		I n	dention	Leng	g t h	
		Speed	Crush	KEES	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
2501	1997 FORD ESCORT FOUR DOOR SEDAN	2.0	6.3	23.6	112.0	191.3	32.8	228.3	35.3
2482	1997 FORD ESCORT FOUR DOOR SEDAN	2.0	6.2	26.9	288.1	583.5	71.1	680.8	47.2
		Average	(AVG)		200.1	387.4	52.0	454.6	41.3
		Minimum	(MIN)		112.0	191.3	32.8	228.3	35.3
		Maximum	(MAX)		288.1	583.5	71.1	680.8	47.2
	Standard Deviation	on (STDev-sa	ample)		124.5	277.3	27.1	320.0	8.4
	Nu	umber of Te	sts (n)	2					

Serial Number: 11R-030201SC02301

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 1997 - 2000

Make: FORD Model: ESCORT

Vehicle	No							
r Info	Damage	Max		I n c	lention	Leng	g t h	
	Speed	Crush	KEES	S t	iffness	Valu	ı e s	Crush
	(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
1997 FORD ESCORT FOUR DOOR SEDAN	2.0	14.0	23.6	50.6	39.2	32.8	46.7	15.9
1997 FORD ESCORT FOUR DOOR SEDAN	2.0	15.5	26.9	114.4	91.9	71.1	107.3	18.7
	Average ((AVG)		82.5	65.6	52.0	77.0	17.3
	Minimum	(MIN)		50.6	39.2	32.8	46.7	15.9
	Maximum ((MAX)		114.4	91.9	71.1	107.3	18.7
Standard Deviatio	n (STDev-sa	ımple)		45.1	37.3	27.1	42.9	2.0
Nu	mber of Tes	sts (n)	2					
	1997 FORD ESCORT FOUR DOOR SEDAN 1997 FORD ESCORT FOUR DOOR SEDAN Standard Deviation	Info Damage Speed (mph) 1997 FORD ESCORT FOUR DOOR SEDAN 2.0 1997 FORD ESCORT FOUR DOOR SEDAN 2.0 Average (Minimum Maximum (Standard Deviation (STDev-sa	r Info Damage Max Speed Crush (mph) (inch) 1997 FORD ESCORT FOUR DOOR SEDAN 2.0 14.0	Info Damage Max Speed Crush KEES (mph) (inch) (mph) 1997 FORD ESCORT FOUR DOOR SEDAN 2.0 14.0 23.6 1997 FORD ESCORT FOUR DOOR SEDAN 2.0 15.5 26.9 Average (AVG) Minimum (MIN) Maximum (MAX) Standard Deviation (STDev-sample)	Info Damage Max n or Speed Crush (mph) (inch) (mph) A 1997 FORD ESCORT FOUR DOOR SEDAN 2.0 14.0 23.6 50.6 1997 FORD ESCORT FOUR DOOR SEDAN 2.0 15.5 26.9 114.4 Average (AVG) 82.5 Minimum (MIN) 50.6 Maximum (MAX) 114.4 Standard Deviation (STDev-sample) 45.1	To Damage Max In dention Speed Crush KEES Stiffness Name Speed Crush KEES Stiffness Name N	Damage Max In dention Length Speed Crush KEES Stiffness Value (mph) (inch) (mph) A B G Stiffness Value G (mph) G G (mph) A B G G In dention Length Length Crush KEES Stiffness Value G G G G G G G G G	To Damage Max n d e n t i o n L e n g t h Speed Crush KEES Crush KEES Crush KEES Crush KEES Crush Crush KEES Crush KEES Crush KEES Crush KEES Crush Crush

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: 3VWSA81H8VM067343

Model: 1997 Volkswagen Jetta 4 Door

Engine Size: 1.8 L/ 109 cu.in.

Engine Description: Inline 4 cylinder with Dual Overhead Cam

Horse Power: 150 @ 5700 rpm

Torque: 155 lb-ft at 3200 rpm

Injection System: Motronic

PSI: 52 psi Ignition: electronic

Manufacturer: | Volkswagen

Assembly Plant: Puebla, Mexico

Drive Wheels:

This is a Front Wheel Drive vehicle w/ Manual Belts, Dual Front Airbags

The First through Third characters (3VW) indicate a Volkswagen Car made in Mexico

The Fourth character (S) indicates a 4 Door

The Fifth character (A) indicates the OEM engine: 1.8 L/ 109 cu.in., L4, DOHC

The Sixth character (8) indicates Manual Belts, Dual Front Airbags

The Seventh and Eighth characters (1H) indicate a Jetta

The Ninth character (the check digit) is entered as 8.

The VIN appears Valid, the calculated value is 8.

The Tenth character (V) indicates the model year 1997

The Eleventh character (M) indicates the vehicle was made in the assembly plant in Puebla, Mexico

The Twelfth through Seventeenth characters (067343) 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 91942

5/9/2012

1997 VOLKSWAGEN JETTA III 4 DOOR SEDAN Curb Weight: Curb Weight Distribution - Front:	2647 1bs.		201 kg. 38 %
Gross Vehicle Weight Rating: Number of Tires on Vehicle: Drive Wheels:	3682 1bs. 4 FRONT	16	670 kg.
Horizontal Dimensions Total Length Wheelbase:	Inches 173 97	Feet 14.42 8.08	Meters 4.39 2.46
Front Bumper to Front Axle: Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield: Front Bumper to Top of Windshield:	33 19 4 44 67	2.75 1.58 0.33 3.67 5.58	0.84 0.48 0.10 1.12 1.70
Rear Bumper to Rear Axle: Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk: Rear Bumper to Base of Rear Window:	43 29 5 24	3.58 2.42 0.42 2.00	1.09 0.74 0.13 0.61
Width Dimensions Maximum Width: Front Track: Rear Track:	58 57	5.58 4.83 4.75	1.70 1.47 1.45
Vertical Dimensions Height:	56	4.67	1.42
Ground to - Front Bumper (Top) Headlight - center Hood - top front: Base of Windshield Rear Bumper - top: Trunk - top rear: Base of Rear Window:	19 25 29 37 22 39 41	1.58 2.08 2.42 3.08 1.83 3.25 3.42	0.48 0.64 0.74 0.94 0.56 0.99 1.04

Expert AutoStats®

1997 VOLKSWAGEN JETTA III 4 DOOR SEDAN

Interior Dimensions Front Seat Shoulder Width Front Seat to Headliner Front Leg Room - seatback to floor (max)	1nches 54 39 42	Feet Meters 4.50 1.37 3.25 0.99 3.50 1.07
Rear Seat Shoulder Width Rear Seat to Headliner Front Leg Room - seatback to floor (min)	53 37 27	4.42 1.35 3.08 0.94 2.25 0.69
Seatbelts: 3pt - front and rear Airbags: FRONT SEAT AIRBAGS		
Steering Data Turning Circle (Diameter) Steering Ratio: 17.79:1 Wheel Radius: Tire Size (OEM): P205/50HR15	396	33.00 [10.06]
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 d = ft t = sec a =		G-force =
Acceleration: 0 to 30mph	ft/sec	G-force =
Notes: Federal Bumper Standard Requirements: This vehicles Rated Bumper Strength:	2.5 mph 2.5 mph	

N.S.D.C = 1995 - 1998

1997 VOLKSWAGEN JETTA III 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	=	36.86
Inches in front of rear axle	=	60.14
Inches from side of vehicle	=	33.50
Inches from ground	=	21.98
Inches from front corner	=	77.48
Inches from rear corner	=	108.44
Inches from front bumper	=	69.86
Inches from rear bumper	=	103.14
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	1520.41 lb*ft*sec²
Pitch Moment of Inertia	=	1471 52 71 4 6 4 2
Roll Moment of Inertia	=	226.46. 75.46.45.23
Front Profile Information		
Angle Front Bumper to Hood Front	=	68.2 deg
Angle Front of Hood to Windshield Base	=	11.3 deg
Angle Front of Hood to Windshield Top	=	21.6 deg
Angle of Windshield	=	36.5 deg
Angle of Steering Tires at Max Turn	=	

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:

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

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #2856

1997 VOLKSWAGEN JETTA

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Sister/Clone database reader

You entered: 1997 VOLKSWAGEN JETTA III

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

Year Range	Make	Model	Body Styles	Wheelbase
1993 - 1998	VOLKSWAGEN	JETTA III	4D	97.4
Remarks:				

The data contained in the database has been provided free of charge as a courtesy to the traffic accident reconstruction community by Gregory C. Anderson of Scalia Safety Engineering. 4N6XPRT Systems® has made no changes to this data, and has only provided for distribution of this data free of charge. 4N6XPRT Systems® makes no warranties, either expressed or implied, with respect to this data, its quality, performance, merchantability, or fitness for any particular purpose. The entire risk as to its quality and performance is with the user. In no event will 4N6XPRT Systems® be liable for direct, indirect, incidental, or consequential damages resulting from any data presented here, even if 4N6XPRT Systems® has been advised of the possibility of such damages. The user must agree to assume full responsibility for any decisions which are based, in whole or in part, upon information obtained by using this data. As previously stated, the data has been provided free of charge as a courtesy to the traffic accident reconstruction community by Gregory C. Anderson of Scalia Safety Engineering. Mr. Anderson does not in any way guarantee the accuracy of the data. Some of the listed similarities are based on his own estimates or memory. Most of the data are pulled from specification tables which may contain inaccuracies of their own. Use common sense - if something seems wrong, check it (and if it is wrong, let him know!).

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

Test Information

Test # 2856		NHT	SA Test	Reference	Guide Versio	n#	V4				
Test Date 1997-11-0 4	1				Contra	ct#	98-5003				
Contract/Study Title	CMVSS 212	2-301 - ST	UDY O	F OCCUP	ANT						
Test Objective(s)	Windshield	mounting	g - Fue	l system ir	ntegrity						
Test Type	OTHER						Configuration	VEHICLE	/EHICLE INTO BARRIER		
Impact Angle	0			:	Side Impact I	Point	0	mm	0.0	inches	
					Offset Dist	tance	0	mm	0.0	inches	
					Closing S	peed	47.7	Km/Hr	29.64	MPH	
Test Performer	TRANSPOR	T CANAD	Α								
Test Reference #	TC97-164										
Test Track Surface	CONCRETE				Cond	ition	DRY				
Ambient Temperature	10 C	50.0	F	Total N	lumber of Cu	ırves	48				
Data Recorder Type	OTHER						Data Link	OTHER			
Test Commentary	CANADIAN	MVSS CC	MPLIA	NCE TEST							
			F	ixed Barri	er Informati	ion					
				-						_	
Barrier Type				Pole	e Barrier Dian	neter	9999	mm	9999	inches	
Barrier Shape	FLAT BARRI	IER									
Barrier Commentary	NO COMMI	ENTS									

1997 VOLKSWAGEN JETTA LEFT FRONT SEAT OCCUPANT

Test # 2856	
Vehicle # 1 Sex FEMALE	
Location LEFT FRONT SEAT Age 99	
Position FORWARD OF CENTER POSITION Height 999 mm 39.3 inche	:S
Type HYBRID III DUMMY Weight 999.0 kg 2202 poun	ds
Size 5 PERCENTILE	
Calibration Method OTHER	
Occupant Manufacturer FIRST TECHNOLOGY	
Occupant Modification UNMODIFIED	
Occupant Description S/N:261	
Occupant Commentary LAST CALIBRATION DATE: 20/MAY/97 POSITION: NEAR	
<u>Head</u> Head to -	
Windshielder Header 272 mm 10.7 inches Head Injury Criteria (HIC) 188	
WindShield 488 mm 19.2 inches HIC Lower Time Interval (ms) 41.8	
Seatback 9999 mm 0.0 inches HIC Upper Time Interval (ms) 77.8	
Side Header 264 mm 10.4 inches	
Side Window 340 mm 13.4 inches	
Neck to Seatback 9999 mm 0.0 inches	
First Contact Region (Head) AIR BAG	1
Second Contact Region (Head)	j
	ı
<u>Chest</u>	
Chest to -	
Dash 9999 mm 0.0 inches Arm to Door 184 mm 7.2 inches	
Steering Wheel 205 mm 8.1 inches Hip to Door 251 mm 9.9 inches	
Seatback 9999 mm 0.0 inches	
Chest Severity Index 99999 Pelvic Peak Lateral Acceleration (g's) 0	1
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 52.9	j
Lap Belt Peak Load 3162 Newtons 710.8 pound Force	
Shoulder Belt Peak Load 4738 Newtons 1065.1 pound Force	
First Contact Region (Chest/Abdomen) AIR BAG]
Second Contact Region (Chest/Abdomen) UNKNOWN	
<u>Legs</u>	
Knees to Dash 66 mm 2.6 inches Knees to Seatback 9999 mm 0.0 inches	
Left Femur Peak Load -4137 Newtons -930.0 pounds Force	
Right Femur Peak Load -3895 Newtons -875.6 pounds Force	
First Contact Region (Legs) DASHPANEL	1
Second Contact Region (Legs))
233 23	j

1997 VOLKSWAGEN JETTA LEFT FRONT SEAT OCCUPANT

Test #	2856			
Vehicle #	1		Sex FI	EMALE
Location	LEFT FRO	NT SEAT	Age 9 9	9
Position	FORWARD	OF CENTER POSITION	Height 99	99 mm 39.3 inches
Type	HYBRID III	DUMMY	Weight 99	99.0 kg 2202 pounds
Size	5 PERCEN	ITILE]	
Cali	bration Meth	hod OTHER		
Occupar	nt Manufact	urer FIRST TECHNOLOGY		
Occupa	ant Modifica	tion UNMODIFIED		
Occup	pant Descrip	otion S/N:261		
Occupa	ant Commer	ntary LAST CALIBRATION DA	TE: 20/MAY/97 PO	SITION : NEAR
		Restraint	<u>s</u>	
Restrai	nt # 1 3 P	OINT BELT		
Mounte	ed			
Deploy	ment NO	T APPLICABLE		
Restraii	nt Commen	tary NO COMMENTS		
Restrai	nt # 2 FR 0	ONTAL AIRBAG		
Mounte				
Deploy	ment DEI	PLOYED PROPERLY		
Restrai	nt Commen	tary NO COMMENTS		

1997 VOLKSWAGEN JETTA RIGHT FRONT SEAT OCCUPANT

Test # 2856
Vehicle # 1 Sex FEMALE
Location RIGHT FRONT SEAT Age 99
Position FORWARD OF CENTER POSITION Height 999 mm 39.3 inches
Type HYBRID III DUMMY Weight 999.0 kg 2202 pounds
Size 5 PERCENTILE
Calibration Method OTHER
Occupant Manufacturer FIRST TECHNOLOGY
Occupant Modification UNMODIFIED
Occupant Description S/N:197
Occupant Commentary LAST CALIBRATION DATE: 20/MAY/97 POSITION: NEAR
<u>Head</u>
Head to
Windshielder Header 239 mm 9.4 inches Head Injury Criteria (HIC) 198
WindShield 441 mm 17.4 inches HIC Lower Time Interval (ms) 33.9
Seatback 9999 mm 0.0 inches HIC Upper Time Interval (ms) 62.8
Side Header 248 mm 9.8 inches
Side Window 342 mm 13.5 inches
Neck to Seatback 9999 mm 0.0 inches
First Contact Region (Head)
Second Contact Region (Head)
<u>Chest</u>
Chest to -
Dash 326 mm 12.8 inches Arm to Door 193 mm 7.6 inches
Steering Wheel 9999 mm 0.0 inches Hip to Door 212 mm 8.3 inches
Seatback 9999 mm 0.0 inches
Chest Severity Index 99999 Pelvic Peak Lateral Acceleration (g's) 0
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 49.7
Lap Belt Peak Load 1685 Newtons 378.8 pound Force
Shoulder Belt Peak Load 3033 Newtons 681.8 pound Force
First Contact Region (Chest/Abdomen) AIR BAG
Second Contact Region (Chest/Abdomen) UNKNOWN
<u>Legs</u>
Knees to Dash 14 mm 0.6 inches Knees to Seatback 9999 mm 0.0 inches
Left Femur Peak Load -2800 Newtons -629.5 pounds Force
Right Femur Peak Load -2265 Newtons -509.2 pounds Force
First Contact Region (Legs) DASHPANEL
Second Contact Pegion (Legs)

1997 VOLKSWAGEN JETTA RIGHT FRONT SEAT OCCUPANT

Test #	2856		
Vehicle #	1	Sex FEMALE	
Location	RIGHT FRO	ONT SEAT Age 99	
Position	FORWARD	OF CENTER POSITION Height 999 mm 39.3 inches	
Type	HYBRID III	IDUMMY Weight 999.0 kg 2202 pounds	
Size	5 PERCEN	ITILE	
Cali	ibration Meth	hod OTHER	
Occupar	nt Manufact	rurer FIRST TECHNOLOGY	
Occupa	ant Modifica	ution UNMODIFIED	
Occu	pant Descrip	ption S/N:197	
Occupa	ant Commer	ntary LAST CALIBRATION DATE : 20/MAY/97 POSITION : NEAR	
		Restraints	
Restrai	nt # 1 3 P	POINT BELT	
Mounte			
Deploy	ment NO	T APPLICABLE	
Restrai	nt Commen	ntary NO COMMENTS	
		ONTAL AIRBAG	
Mounte	ed <u> </u>		
Deploy	ment DE I	PLOYED PROPERLY	
Restrai	nt Commen	ntary NO COMMENTS	

Vehicle 1 1997 VOLKSWAGEN JETTA

Test #	2856										
VIN	3VWRL81	19VM0328	53		NHTSA Te	est Vehic	le Numbe	r 1			
Year	1997				Vehicle Mo	dification	Indicator	PRODU	JCTION	VEHICL	.E
Make	VOLKSWA	GEN	Post-test \$	Steering Co	olumn Shear	Capsule	Seperatio	n NOT AF	PPLICA	BLE	
Model	JETTA			Steerir	ng Column Co	ollapse M	lechanism	NOT AF	PPLICA	BLE	
Body	FOUR DOO	OR SEDAN									
Engine	4 CYLINDE	R TRANS	VERSE FR	RONT							
Displacement	2 L	iter Tra	ansmissior	AUTOM	ATIC - FRON	IT WHEE	L DRIVE				
Vehicle Modific	cation(s) Des	scription [UNMODIF	IED							
Vehicle Comm	nentary NO	COMMEN	TS								
Vehicle Ler	ngth 440	10 mm	173.2 i	nches	CG	behind I	Front Axle	1081	mm [42.6	inches
Vehicle \	Width 142	!5 mm	56.1 i	nches	Center of D	Damage t	o CG Axis	737	mm [29.0	inches
Vehicle Whee	elbase 247	'5 mm	97.4 i	nches	Total Lenç	gth of Inc	lentation	1475	mm [58.1	inches
Vehicle Test W	Veight 145	3 KG	3203	oounds	Maximum S	Static Cru	sh Depth	0	mm [0.0	inches
						Pre-Impa	ct Speed	48	kph [29.6	mph
Ve	hicle Damaç	ge Index 9	999999		Princi	pal Direc	tion of Fo	ce 0			
Damage Pr	ofilo Dieto	nco Moas	curomont	to	Crush fron	n Dro &	Doct Toc	t Dama	ao Mo	acuram	onte
				<u>13</u>	<u>Crusii iioii</u>				_		_
` _	ured Left-to-	·	-	Loft Du		Pre-Tes	_	Post-Tes	_	Crush [
DPD 1			inches	Leit Bu	ımper Corner				inches		inches
DPD 2			inches inches			4335	mm		mm	369] mm
DPD 3 3			=		Centerline	173.1	inches	159.1	inches	14.1	inches
DPD 4			inches			4397	mm	4040	mm	357	mm
DPD 5			inches	Right Bu	mper Corner	170.9	inches	157.3	inches	13.6	inches
DPD 6	305 mm	12.0	inches	Ü	•	4340	mm		mm	345] mm
											•
Bumper E	Engagemen	t		Sill En	gagement			A-	pillar Ei	ngageme	ent
	npact Only)			(Side	Impact Only)			(\$	Side Im	pact On	ly)
	0.0				PPLICABLE			È).0	ĺ
								_			_
Moving	g Test Cart			Moving T	est Cart/Vehi	icle		Vehi	cle Orie	ntation o	on Cart
A	ingle			Crab	bed Angle			N	Moving	Test Car	t
	APPLICABLI	E			0.0					PLICABL	
_	of the Tilt Angle			_	f the Crabbed Angl	le			-	of the Angle	
	etween surface o				e Clockwise from			Measured b			
Rollover Test	Cart and the Gro	ound	Long	itudinal Vector	to Velocity Vector	of Vehicle		and Di	rection of	Test Cart N	1otion

Vehicle 1 1997 VOLKSWAGEN JETTA

				venic	IE 1 13	97 VOL	COVAGE	IN JETTA	`			
Test	2856											
1IV	V 3VWR	RL81H9V	/M0328	8 53		NH	ITSA Test	Vehicle Nu	ımber 1			
Yea	r 1997					Veh	icle Modif	ication Indi	cator PR	ODUCTIO	N VEHICI	LE
Mak	e VOLK	SWAGE	:N	Post-tes	t Steerin	g Column	Shear Ca	apsule Sepe	eration NO	T APPLIC	CABLE	
Mode	el JETT	Α			Ste	eering Col	umn Coll	apse Mecha	anism NO	T APPLIC	CABLE	
Boo	y FOUR	DOOR	SEDAN	ı								
Engir	ne 4 CYL	INDER	TRANS	VERSE F	RONT							
Displaceme	nt 2	Liter	r Tr	ransmissio	on AU	COMATIC	- FRONT	WHEEL DR	RIVE]	
Vehicle Mod	dification(s	s) Descri	ption	UNMOD	FIED							
Vehicle Con	nmentary	NO CC	MMEN	NTS								
Vehicle L	ength	4400	mm	173.2	inches		CG b	ehind Front	t Axle 108 1	l mm	42.6	inches
Vehicl	e Width	1425	mm	56.1	inches	Cen	iter of Dai	mage to CG	3 Axis 737	mm	29.0	inches
Vehicle Wh	reelbase	2475	mm	97.4	inches	To	tal Length	n of Indenta	ation 147 5	m m	58.1	inches
Vehicle Tes	t Weight	1453] KG	3203	pounds	s Max	imum Sta	atic Crush D	Depth 0	mm	0.0	inches
							Pr	e-Impact S	peed 48	kph	29.6	mph
,	Vehicle Da	amage I	ndex [9999999			Principa	I Direction o	of Force)		
			<u>P</u>	re & Po	ost Tes	st Dama	<u>age Me</u>	asurem	<u>ents</u>			
(Measur	ements are ta	aken in a lo	ngitudinal	direction. Exc	cept for Eng	ine Block, all	measuremer	nts are take from	n the Rear Veh	icle Surface	forward.)	
	Left Sid	е				Cente	erline			Righ	nt Side	
Pre-Tes	st	Post-T	est		Pre-	-Test	Post	t-Test	Pre-	Test	Post	-Test
mm inc	hes	mm i	inches		mm	inches	mm	inches	mm	inches	mm	inches
					Len	gth of Veh	nicle at Ce	enterline				
					4397	173.1	4040	159.1				
						Engin	e Block					
					370	14.6	200	7.9				
4335 170	0.7	966 1	56.1			Front Bu	mper Cor	ner	4340	170.9	3995	157.3

Pre-Test	Post-I	lest	Pre-	-Test	Post	-Test	Pre	-Test	Post	:-Test
mm inches	mm i	inches	mm	inches	mm	inches	mm	inches	mm	inches
			Len	gth of Veh	nicle at Ce	nterline				
			4397	173.1	4040	159.1				
				Engin	e Block					
			370	14.6	200	7.9				
4335 170.7	3966	56.1		Front Bu	mper Corr	ner	4340	170.9	3995	157.3
				Front	of Engine					
			4208	165.7	3890	153.1				
3362 132.4	3236	27.4		Fire	ewall		3357	132.2	3214	126.5
			3338	131.4	3316	130.6				
3085 121.5	3075	21.1	Upp	er Leadin	ig Edge o	f Door	3101	122.1	4397	173.1
3076 121.1	3067	20.7	Low	er Leadin	g Edge of	f Door	3085	121.5	4397	173.1
3069 120.8	3055 1	20.3		Bottom o	of 'A' Post		3065	120.7	3051	120.1
2127 83.7	2117	33.3	Up	per Trailin	g Edge of	f Door	2114	83.2	4397	173.1
2141 84.3	2132	33.9	Lo	wer Trailin	g Edge of	f Door	2127	83.7	4397	173.1
				Steerin	ig Column	1				
			2673	105.2	2670	105.1				
			Center of Se	ering Colu	ımn to 'A'	Post (Horiz	ontal)			
			406	16.0	456	18.0				
			Center of Ste	ering Colu	ımn to He	adliner (Ve	rtical)			
			471	18.5	519	20.4				

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

1997 VOLKSWAGEN JETTA

NHTSA Crash Test - #2856 - Front Impact

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

Test Vehicle Weight = 3203 pounds Vehicle Closing Speed = 29.6 mph Test Crush Length = 56.1 inches

Pre/Post Collision Crush Depths (inches)

Left Side Crush Centerline Crush Right Side Crush (Pass. Side)

(Driver Side) 14.5 14.1 13.6

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 13.6 inches 217.4 Using a Rated No Damage Speed of 228.3 182.2 143.0 2.5mph Using a Rated No Damage Speed of 5.0mph 414.6 150.2 572.0 Using a Rated No Damage Speed of 7.5mph 558.7 121.3 1287.1 Using a Rated No Damage Speed of 2288.2 10.0mph 660.9 95.4 Average Crush = 14.1 202.2 inches Using a Rated No Damage Speed of 2.5mph 220.2 169.5 143.0 Using a Rated No Damage Speed of 5.0mph 399.9 139.7 572.0 Using a Rated No Damage Speed of 538.9 112.8 1287.1 7.5mph Using a Rated No Damage Speed of 10.0mph 637.4 88.8 2288.2 Maximum Crush = 14.5 inches 191.2 Using a Rated No Damage Speed of 2.5mph 214.1 160.3 143.0 Using a Rated No Damage Speed of 5.0mph 388.8 132.1 572.0 Using a Rated No Damage Speed of 7.5mph 524.1 106.7 1287.1 Using a Rated No Damage Speed of 10.0mph 619.8 84.0 2288.2

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

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	14.5	27.6	-2.0	-7.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 24.2

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

1997 VOLKSWAGEN JETTA

NHTSA Crash Test - #2856 - Front Impact

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

Test Vehicle Weight = 3203 pounds Vehicle Closing Speed = 29.6 mph Test Crush Length = 58.1 inches

Pre/Post Collision Crush Depths (inches)

	Left Side Crush	Centerline Crush	Right Side Crush	(Doog Side)
(Driver Side)	14.5	14.1	13.6	(Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	<u>B</u>	G	Kv
Minimum Crush = 13.6 inches					210.0
Using a Rated No Damage Speed of	2.5mph	220.6	176.1	138.2	
Using a Rated No Damage Speed of	5.0mph	400.5	145.1	552.6	
Using a Rated No Damage Speed of	7.5mph	539.8	117.2	1243.5	
Using a Rated No Damage Speed of	10.0mph	638.5	92.2	2210.6	
Average Crush = 14.1 inches					195.4
Using a Rated No Damage Speed of	2.5mph	212.7	163.8	138.2	
Using a Rated No Damage Speed of	5.0mph	386.3	135.0	552.6	
Using a Rated No Damage Speed of	7.5mph	520.7	109.0	1243.5	
Using a Rated No Damage Speed of	10.0mph	615.8	85.8	2210.6	
Maximum Crush = 14.5 inches					184.7
Using a Rated No Damage Speed of	2.5mph	206.9	154.9	138.2	
Using a Rated No Damage Speed of	5.0mph	375.6	127.7	552.6	
Using a Rated No Damage Speed of	7.5mph	506.3	103.1	1243.5	
Using a Rated No Damage Speed of	10.0mph	598.8	81.1	2210.6	

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

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

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	14.5	27.6	-2.0	-7.4

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 24.2

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

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

1997 VOLKSWAGEN JETTA

NHTSA Crash Test - #2856 - Front Impact

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

Test Vehicle Weight = 3203 pounds Vehicle Closing Speed = 29.6 MPH Test Crush Length = 56.1 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Dogo Cido)
(Driver Side)	13.4	15.0	15.7	15.1	13.9	12.0	(Pass Side)

		CRASH	3 Stiffness Coe	efficents	SMAC Stiffness
		A	<u>B</u>	G	Kv
Minimum Crush = 12.0 inches					279.2
Using a Rated No Damage Speed of	2.5mph	258.7	234.1	143.0	
Using a Rated No Damage Speed of	5.0mph	469.8	192.9	572.0	
Using a Rated No Damage Speed of	7.5mph	633.2	155.8	1287.1	
Using a Rated No Damage Speed of	10.0mph	749.0	122.6	2288.2	
Average Crush = 14.5 inches					191.2
Using a Rated No Damage Speed of	2.5mph	214.1	160.3	143.0	
Using a Rated No Damage Speed of	5.0mph	388.8	132.1	572.0	
Using a Rated No Damage Speed of	7.5mph	524.1	106.7	1287.1	
Using a Rated No Damage Speed of	10.0mph	619.8	84.0	1453.7	
Maximum Crush = 15.7 inches					163.1
Using a Rated No Damage Speed of	2.5mph	197.8	136.7	143.0	
Using a Rated No Damage Speed of	5.0mph	359.1	112.7	572.0	
Using a Rated No Damage Speed of	7.5mph	484.0	91.0	1287.1	
Using a Rated No Damage Speed of	10.0mph	572.5	71.6	2288.2	

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

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

A = Maximum force per inch of damage without permanent damage, 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	15.7	28.7	-0.9	-3.2

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 22.4

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

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

1997 VOLKSWAGEN JETTA

NHTSA Crash Test - #2856 - Front Impact

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

Test Vehicle Weight = 3203 pounds Vehicle Closing Speed = 29.6 MPH Test Crush Length = 58.1 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Dago Cida)
(Driver Side)	13.4	15.0	15.7	15.1	13.9	12.0	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 12.0 inches 269.7 Using a Rated No Damage Speed of 250.0 226.1 138.2 2.5mph Using a Rated No Damage Speed of 5.0mph 453.9 186.4 552.6 Using a Rated No Damage Speed of 7.5mph 611.8 150.5 1243.5 Using a Rated No Damage Speed of 723.6 118.4 10.0mph 2210.6 Average Crush = 14.5 inches 184.7 Using a Rated No Damage Speed of 2.5mph 206.9 154.9 138.2 Using a Rated No Damage Speed of 5.0mph 375.6 127.7 552.6 506.3 Using a Rated No Damage Speed of 103.1 1243.5 7.5mph Using a Rated No Damage Speed of 10.0mph 598.8 81.1 1404.4 Maximum Crush = 15.7 inches 157.6 Using a Rated No Damage Speed of 2.5mph 191.1 132.1 138.2 Using a Rated No Damage Speed of 5.0mph 346.9 108.9 552.6 Using a Rated No Damage Speed of 7.5mph 467.6 87.9 1243.5 Using a Rated No Damage Speed of 10.0mph 553.1 69.2 2210.6

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

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	15.7	28.7	-0.9	-3.2

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 22.4

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

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

Registered Owner: 4N6XPRT SYSTEMS

Registered Owner: 4N6XPRT SYSTEMS

Serial Number: 11R-030201SC02301

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, lb/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

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1993 - 1998 Make: VOLKSWAGEN Model: JETTA III

Test Number	Vehicle Info	No Damage Speed (mph)	Average Crush (inch)	J	•	ehicle iffness B			Crush Factor
2139	1994 VOLKSWAGEN JETTA FOUR DOOR SEDAN	5.0	21.4	34.9	273.4	76.5	488.4	104.3	22.8
2856	1997 VOLKSWAGEN JETTA FOUR DOOR SEDAN	5.0	14.5	29.6	389.0	132.3	572.0	191.4	24.2
2878	1997 VOLKSWAGEN JETTA FOUR DOOR SEDAN	5.0	7.8	25.2	487.1	251.0	472.6	390.9	32.4
		Average ((AVG)		383.2	153.3	511.0	228.9	26.5
		Minimum	(MIN)		273.4	76.5	472.6	104.3	22.8
		Maximum	(MAX)		487.1	251.0	572.0	390.9	32.4
	Standard Deviation	n (STDev-sa	ample)		107.0	89.1	53.4	146.9	5.2
	Nu	mber of Te	sts (n)	3					

Serial Number: 11R-030201SC02301

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1993 - 1998 Make: VOLKSWAGEN Model: JETTA III

Test Number	Vehicle Info	No Damage Speed (mph)	Max Crush (inch)	0		ehicle iffness B			Crush Factor
2878	1997 VOLKSWAGEN JETTA FOUR DOOR SEDAN	5.0	16.0	25.2	237.9	59.9	472.6	93.3	15.8
2139	1994 VOLKSWAGEN JETTA FOUR DOOR SEDAN	5.0	22.3	34.9	262.3	70.5	488.4	96.0	21.9
2856	1997 VOLKSWAGEN JETTA FOUR DOOR SEDAN	5.0	15.7	29.6	359.8	113.2	572.0	163.7	22.4
		Average (AVG)		286.7	81.2	511.0	117.7	20.0
		Minimum	(MIN)		237.9	59.9	472.6	93.3	15.8
		Maximum ((MAX)		359.8	113.2	572.0	163.7	22.4
	Standard Deviation	n (STDev-sa	mple)		64.5	28.2	53.4	39.9	3.7
	Nui	mber of Tes	sts (n)	3					

Serial Number: 11R-030201SC02301

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #6274

2008 DODGE GRAND CARAVAN

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Sister/Clone database reader

You entered: 2011 CHRYSLER TOWN & COUNTRY

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

Year Range	Make	Model	Body Styles	Wheelbase
2008 - 2011 Remarks:	CHRYSLER	TOWN & COUNTRY	SW, VAN	121.2, 119.3
2008 - 2011 Remarks:	DODGE	GRAND CARAVAN		121.2
2009 - 2011 Remarks:	VOLKSWAGEN	ROUTAN		121.2

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

Test Information

Test # 6274	NHTSA Test Reference Guide Version # V5
Test Date 2007-12-2 1	
Contract/Study Title	NCAP SIDE - 2008 DODGE GRAND CARAVAN SE
Test Objective(s)	VEHICLE CRASHWORTHINESS AND OCCUPANT RESTRAINT PERFORMANCE DATA
Test Type	EXPERIMENTAL NEW CAR ASSESSMENT TEST Configuration IMPACTOR INTO VEHICLE
Impact Angle	270 Side Impact Point N/A mm N/A inches
	Offset Distance 0 mm 0.0 inches
	Closing Speed 62.3 Km/Hr 38.71 MPH
Test Performer	MGA RESEARCH
Test Reference #	BT07122101
Test Track Surface	CONCRETE Condition DRY
Ambient Temperature	21 C 69.8 F Total Number of Curves 134
Data Recorder Type	OTHER Data Link OTHER
• • •	DTS TDAS PRO ON BOARD DAS
	Fixed Barrier Information
	TIACA BATTEL ATTOTTACTOR
Barrier Type	Pole Barrier Diameter mm inches
	Tole bullet blatteter thin inches
Barrier Shape	
Barrier Commentary	

2008 DODGE GRAND CARAVAN LEFT FRONT SEAT OCCUPANT

Test # 6274
Vehicle # 2 Sex MALE
Location LEFT FRONT SEAT Age 0
Position CENTER POSITION Height 0 mm 0.0 inches
Type EUROSID 2 (ES-2RE) SIDE IMPACT DUMM Y Weight 0.0 kg 0 pounds
Size 50 PERCENTILE
Calibration Method SIDE IMPACT DUMMY
Occupant Manufacturer FIRST TECHNOLOGY S/N 030
Occupant Modification
Occupant Description
Occupant Commentary HEAD TO CURTAIN AIRBAG AND HEADLINER
<u>Head</u>
Head to -
Windshielder Header 284 mm 11.2 inches Head Injury Criteria (HIC) 122
WindShield 568 mm 22.4 inches HIC Lower Time Interval (ms) 58
Seatback 0 mm 0.0 inches HIC Upper Time Interval (ms) 79.2
Side Header 239 mm 9.4 inches
Side Window 382 mm 15.0 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 506 mm 19.9 inches Arm to Door 133 mm 5.2 inches
Steering Wheel 315 mm 12.4 inches Hip to Door 160 mm 6.3 inches
Seatback 0 mm 0.0 inches
Chest Severity Index 0 Pelvic Peak Lateral Acceleration (g's) 0
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 40.7
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
<u>Legs</u>
Knees to Dash 150 mm 5.9 inches Knees to Seatback 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) DOOR
Second Contact Region (Legs)

2008 DODGE GRAND CARAVAN LEFT FRONT SEAT OCCUPANT

Test #	6274					
Vehicle #	2		Sex [MALE		
Location	LEFT FRONT SE	AT	Age [0		
Position	CENTER POSITI	ON	Height	0 mm 0	.0 inches	
Туре	EUROSID 2 (ES-	2RE) SIDE IMPACT DUMINY	Weight [0.0 kg 0	pounds	
Size	50 PERCENTILE					
Cali	ibration Method	SIDE IMPACT DUMMY				
Occupai	nt Manufacturer	FIRST TECHNOLOGY S/N 030				
Occupa	ant Modification					
Occu	pant Description					
Occupa	ant Commentary	HEAD TO CURTAIN AIRBAG AN	ID HEADLINE	R		
		Restraints				
Restrai	nt # 1 3 POINT	BELT				
Mounte	ed BELT - Co	ONVENTIONAL MOUNT				
Deploy	ment NOT APP	LICABLE				
Restrai	nt Commentary	PRIMARY				
Restrai	nt # 2 CURTAIN	AIRBAG				
Mounte						
Deploy		ED PROPERLY				
Kestrai	nt Commentary	SECONDARY				

2008 DODGE GRAND CARAVAN RIGHT REAR SEAT OCCUPANT

Test # 6274
Vehicle # 2 Sex NOT APPLICABLE
Location RIGHT REAR SEAT Age 0
Position FORWARD OF CENTER POSITION Height 0 mm 0.0 inches
Type CRABI Weight 0.0 kg 0 pounds
Size 12 MONTH OLD CHILD
Calibration Method PART 572
Occupant Manufacturer FIRST TECHNOLOGY S/N 090
Occupant Modification
Occupant Description
Occupant Commentary HEAD TO DOOR PANEL
<u>Head</u>
Head to -
Windshielder Header 0 mm 0.0 inches Head Injury Criteria (HIC) 23
WindShield 0 mm 0.0 inches HIC Lower Time Interval (ms) 62.1
Seatback 536 mm 21.1 inches HIC Upper Time Interval (ms) 98.1
Side Header <u>0</u> mm <u>0.0</u> inches
Side Window 470 mm 18.5 inches
Neck to Seatback 0 mm 0.0 inches
First Contact Region (Head)
Second Contact Region (Head)
<u>Chest</u>
Chest to -
Dash 0 mm 0.0 inches Arm to Door 288 mm 11.3 inches
Steering Wheel 0 mm 0.0 inches Hip to Door 303 mm 11.9 inches
Seatback 409 mm 16.1 inches
Chest Severity Index
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 15.9
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
<u>Legs</u>
Knees to Dash 0 mm 0.0 inches Knees to Seatback 175 mm 6.9 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 DODGE GRAND CARAVAN RIGHT REAR SEAT OCCUPANT

Test #	6274							
Vehicle #	2			Sex	NOT APPLICAE	BLE		
Location	RIGHT R	EAR SE	AT	Age	0			
Position	FORWAR	RD OF CE	ENTER POSITION	Height	0 mm 0.	.0 inches		
Type	CRABI			Weight	0.0 kg 0	pounds		
Size	12 MONTH OLD CHILD							
Cali	ibration Me	ethod	PART 572					
Occupai	nt Manufa	cturer	FIRST TECHNOLOGY S/	N 090				
Occupant Modification								
Occupant Description								
Occupant Commentary HEAD TO DOOR PANEL								
			Restraints	<u>5</u>				
Restrai	int # 1 🚺	NFANT S	AFETY SEAT					
Mounte	ed L	AP/SHO	JLDER BELT, NO TOP TE	THER				
Deploy	ment N	OT APPI	LICABLE					
Restrai	int Comme	entary	PRIMARY - EVENFLO D	ISCOVERY WITH B	ASE			
Restrai	int # 2 5	POINT E	BELT					
Mounte	ed C	HILD SE	AT					
Deploy	ment N	OT APPI	LICABLE					

SECONDARY - EVENFLO DISCOVERY WITH BASE

Restraint Commentary

2008 DODGE GRAND CARAVAN LEFT REAR SEAT OCCUPANT

Test # 6274	
Vehicle # 2	Sex NOT APPLICABLE
Location LEFT REAR SEAT	Age 0
Position FORWARD OF CENTER PO	
Type HYBRID III DUMMY	Weight 0.0 kg 0 pounds
Size 3 YEAR OLD CHILD	
Calibration Method PART 57	2
Occupant Manufacturer FIRST TE	ECHNOLOGY S/N 031
Occupant Modification	
Occupant Description	
Occupant Commentary	
Head to -	<u>Head</u>
Windshielder Header 0 mm	0.0 inches Head Injury Criteria (HIC) 123
WindShield 0 mm	0.0 inches HIC Lower Time Interval (ms) 58.1
Seatback 628 mm	24.7 inches HIC Upper Time Interval (ms) 87.3
Side Header 0 mm	0.0 inches
Side Window 445 mm	17.5 inches
Neck to Seatback 0 mm 0.0	inches
First Contact Region (Hea	id) AIR BAG
Second Contact Region (Hea	
•	
	Chest
Chest to -	
Dash 0 mm 0.0	inches Arm to Door 280 mm 11.0 inches
Steering Wheel 0 mm 0.0	inches Hip to Door 325 mm 12.8 inches
Seatback 578 mm 22.8	inches
Chest Severity Index 0	Pelvic Peak Lateral Acceleration (g's) 0
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 46.6
Lap Belt Peak I	·
Shoulder Belt Peak L	Load 0 Newtons 0.0 pound Force
First Contact Region (Chest/Abdom	en) NONE
Second Contact Region (Chest/Abdom	en) NONE
	<u>Legs</u>
Knees to Dash 0 mm 0.0	inches Knees to Seatback 343 mm 13.5 inches
Left Femur Peak Load 0	Newtons 0.0 pounds Force
Right Femur Peak Load 0	Newtons 0.0 pounds Force
First Contact Region (Le	gs) SEAT BACK
Second Contact Region (Leg	gs)

2008 DODGE GRAND CARAVAN LEFT REAR SEAT OCCUPANT

Test #	6274					
Vehicle #	2		Sex	NOT APPLIC	ABLE	
Location	LEFT REAR SEA	.Τ	Age	0		
Position	FORWARD OF C	ENTER POSITION	Height	0 mm	0.0 ind	hes
Туре	HYBRID III DUMI	MY	Weight	0.0 kg	0 po	unds
Size	3 YEAR OLD CH	ILD				
Cali	ibration Method	PART 572				
Occupai	nt Manufacturer	FIRST TECHNOLOGY S/	N 031			
Occupa	ant Modification					
Occu	pant Description					
Occupa	ant Commentary					
		Restraints	<u>5</u>			
Restrai	int # 1 CONVER	TIBLE CHILD SAFETY SE	AT, FRONT FACING	;		
Mounte	ed LATCH - I	OWER ANCHORAGES A	ND TOP TETHER			
Deploy	ment NOT APP	LICABLE				
Restrai	int Commentary	PRIMARY - GRACO SAF	E SEAT			
Restrai	int # 2 5 POINT I	BELT				
Mounte	ed CHILD SE	AT				
Deploy	ment NOT APP	LICABLE				

SECONDARY - GRACO SAFE SEAT

Restraint Commentary

2008 DODGE GRAND CARAVAN LEFT THIRD SEAT OCCUPANT

Test #	6274				
Vehicle #	2		Sex	NOT APPLICABLE	
Location	LEFT THIRD SEA	\T	Age		
Position	NON-ADJUSTAB		Height		es es
Туре	HYBRID III DUMN		Weight		nds
Size	3 YEAR OLD CHI	ILD			
Cal	ibration Method	PART 572			
Occupa	nt Manufacturer	FIRST TECHNOLOG	SY S/N 032		
Occup	ant Modification				
Occu	pant Description				
Occupa	ant Commentary				
		<u>Head</u>	<u>d</u>		
Head to -					
Windshie	elder Header 0	mm 0.0	inches Head Injury	Criteria (HIC) 160	
	WindShield 0	mm 0.0	inches HIC Lo	wer Time Interval (ms) 61.9	
	Seatback 436	mm 17.2	inches HIC Up	pper Time Interval (ms) 94.2	
	Side Header 0	mm <u>0.0</u> i	inches		
	Side Window 585	mm _23.0 i	inches		
Neck to Se	eatback 0 n	nm 0.0 inches			_
	First Contact Re	· · · / ===	AG		<u> </u>
5	Second Contact Re	gion (Head)			_
.		Ches	<u>t</u>		
Chest to -		<u> </u>			
		nm 0.0 inches	-	96 mm 7.7 inches	
Steering		nm 0.0 inches	· -	93 mm 7.6 inches	
		nm <u>14.6</u> inches		A la (. la) [a	7
	Severity Index 0		Pelvic Peak Lateral	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	J 1
Thoracic Ti	rauma Index [0	Polt Dook Lood 0	_	Acceleration (g's) 32.7	J
	•	Belt Peak Load 0	Newtons 0.0	pound Force	
First C		Belt Peak Load 0	Newtons 0.0	pound Force	7
		est/Abdomen) NONE est/Abdomen) NONE			
Second Co	ontact Region (Che	350/Abdomen)[NONE			J
		<u>Le</u>			
		nm 0.0 inches			
	ur Peak Load 0	Newtons		ds Force	
Right Fem	ur Peak Load 0	Newtons		ds Force	٦
		Region (Legs) SEAT	BACK		<u></u>
	Second Contact R	egion (Legs) [

2008 DODGE GRAND CARAVAN LEFT THIRD SEAT OCCUPANT

Test #	6274					
Vehicle #	2		Sex	NOT APPLIC	ABLE]
Location	LEFT THIRD SEA	ΛT	Age	0		
Position	NON-ADJUSTAB	LE SEAT	Height	0 mm	0.0 inches	i
Туре	HYBRID III DUMI	MY	Weight	0.0 kg	0 pound	S
Size	3 YEAR OLD CH	ILD				
Cali	bration Method	PART 572				
Occupai	nt Manufacturer	FIRST TECHNOLOGY S/	N 032			
Occupa	ant Modification					
Occupant Description						
Occupa	ant Commentary					
		Restraints	<u>s</u>			
Restrai	nt # 1 CONVER	TIBLE CHILD SAFETY SE	AT, FRONT FACING	}		
Mounte	ed LATCH - I	OWER ANCHORAGES A	ND TOP TETHER			
Deploy	ment NOT APP	LICABLE				
Restrai	nt Commentary	PRIMARY - GRACO SAF	E SEAT			
Restrai	nt # 2 5 POINT I	BELT				
Mounte	ed CHILD SE	AT				
Deploy	ment NOT APP	LICABLE				

SECONDARY - GRACO SAFE SEAT

Restraint Commentary

2008 DODGE GRAND CARAVAN RIGHT THIRD SEAT OCCUPANT

Test # 6274	_
Vehicle # 2	Sex NOT APPLICABLE
Location RIGHT THIRD 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	3
Occupant Modification	
Occupant Description	
Occupant Commentary	
<u>Head</u>	
Head to -	
Windshielder Header 0 mm 0.0 inches	Head Injury Criteria (HIC) 66
WindShield 0 mm 0.0 inches	HIC Lower Time Interval (ms) 80.2
Seatback 579 mm 22.8 inches	HIC Upper Time Interval (ms) 116.2
Side Header 0 mm 0.0 inches	
Side Window 497 mm 19.6 inches	
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) NONE	
Second Contact Region (Head)	
<u>Chest</u>	
Chest to -	
Dash 0 mm 0.0 inches Arm	n to Door 302 mm 11.9 inches
Steering Wheel 0 mm 0.0 inches	lip to Door 336 mm 13.2 inches
Seatback 483 mm 19.0 inches	
<u> </u>	Peak Lateral Acceleration (g's)
Thoracic Trauma Index 0	Thorax Peak Acceleration (g's) 17
Lap Belt Peak Load 0 Newto	ons 0.0 pound Force
Shoulder Belt Peak Load 0 Newto	ons 0.0 pound Force
First Contact Region (Chest/Abdomen) NONE	
Second Contact Region (Chest/Abdomen) NONE	
<u>Legs</u>	
	to Seatback 232 mm 9.1 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)	

Serial Number: 11R-030201SC02301

Registered Owner: 4N6XPRT SYSTEMS

2008 DODGE GRAND CARAVAN RIGHT THIRD SEAT OCCUPANT

Test #	6274				
Vehicle #	2		Sex	NOT APPLICABLE	
Location	RIGHT THIRD	SEAT	Age	0	
Position	NON-ADJUST	ABLE SEAT	Height	0 mm 0.0	inches
Туре	CRABI		Weight	0.0 kg 0	pounds
Size	12 MONTH O	D CHILD]		
Cali	bration Method	PART 572			
Occupai	nt Manufacture	FIRST TECHNOLOGY S	/N 093		
Occupa	ant Modification				
Occu	pant Description	n			
Occupa	ant Commentai	у			
		Restraint	<u>:s</u>		
Restrai	nt # 1 INFAN	T SAFETY SEAT			
Mounte	ed LAP/S	HOULDER BELT, NO TOP T	ETHER		
Deploy	ment NOT A	PPLICABLE			
Restrai	nt Commentary	PRIMARY - EVENFLO	DISCOVERY WITHO	UT BASE	
Restrai	nt # 2 5 POIN	IT RFI T			
Mounte					
Deploy		PPLICABLE			
			0 DI000\/ED\/ \\	THOUT DAGE	
Kestrai	nt Commentary	SECONDARY - EVENFL	<u>.O DISCOVERY WII</u>	HOUI BASE	

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	6274												
VIN	0214			\neg		NIL	4T Q A T/	aet Vahio	le Numbe	r 1			
	0	7							Indicator		VDCH /	/EHICLE	
	NHTSA	J		Doct to	ot Staarin	ver ig Column							
						ū		•	•				
	DEFOR			CIOR	51	eering Co	lumn C	oliapse iv	iecnanism	I NOI	APPLIC	ABLE	
	NOT AF												
_	NOT AF	_											
Displacement		Liter	_	ansmiss	ion NO	T APPLIC	ABLE						
Vehicle Modific	· · · · · -												
Vehicle Comm	_		<u>S 214 D</u>		ABLE B	ARRIER A							
Vehicle Len	ngth [<u>4115</u>	_l mm	162.0	inches		CG	behind	Front Axle	1101	mm	43.3	inches
Vehicle V	Nidth [1252	mm	49.3	inches	Cer	nter of D	Damage t	o CG Axis	S 0	mm	0.0	inches
Vehicle Whee	elbase [2588	mm	101.9	inches	To	tal Len	gth of Inc	dentation	0] mm	0.0	inches
Vehicle Test W	/eight [1361	KG	3000	pound	s Max	ximum \$	Static Cru	ish Depth	0] mm	0.0	inches
								Pre-Impa	act Speed	62	kph	38.7	mph
Vel	hicle Dar	mage I	ndex				Princi	ipal Direc	tion of Fo	rce 0			
_													
Damage Pro	ofile Di	stance	e Meas	sureme	<u>ents</u>	<u>Cru</u>	sh fror	n Pre &	Post Te	st Dam	age Me	<u>asuren</u>	<u>nents</u>
(Meası	ured Left	t-to-Rig	ht, Rea	r-to-Froi	nt)			Pre-Tes	<u>t</u>	Post-Te	<u>est</u>	Crush I	<u>Depth</u>
DPD 1)	mm	0.0	inche	s Le	ft Bumper	Corner	0.0	inches	0.0	inches	0.0	inches
DPD 2 ()	mm	0.0] inche	s			0	mm	0] mm	0	mm
DPD 3)	mm	0.0	inche	S	Cer	nterline	0.0	inches	0.0	inches	0.0	inches
DPD 4)	mm	0.0	inche	s	001	itoimio	0.0	mm	0.0	mm	0	
DPD 5)	mm	0.0	inche					· !		_		-
DPD 6	<u> </u>	mm	0.0	inche	s Righ	t Bumper	Corner	0.0	inches	0.0	inches		inches
_				-				0	mm	0	mm	0	mm
Bumper E	ngagem	nent			S	ill Engage	ment			A	A-pillar E	ngagem	ent
(Inline Im	pact On	ıly)			(8	Side Impa	ct Only)	1			(Side In	npact On	ıly)
2	7.0			[N	OT APPLI	CABLE					0.0	
		_		_									_
Moving	g Test Ca	art			Mov	ing Test C	art/Veh	icle		Vel	hicle Ori	entation (on Cart
Α	ngle					Crabbed A	Angle				Moving	Test Ca	rt
NOT A	PPLICA	BLE				27.0					NOT AP	PLICABL	.E
Magnitude	of the Tilt A	Ingle			Magni	ture of the Cra	abbed Ang	le			Magnitud	e of the Angle	е
Measured be	etween surf	face of a			М	easure Clock	wise from			Measured	d between t	the Vehicle C)rientation
Pollovor Tost	Cart and th	o Ground	1	1.	ongitudinal \	lactor to Valor	nity Voctor	of Vahiala		and	Direction	of Tost Cart N	Motion

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

	VCINCIC I O	MITTOR DEI OI	WINDLE IIII AU	· Oit			
Test # 6274							
VIN		NHT	SA Test Vehicle Nu	mber 1			
Year 0		Vehic	cle Modification Indic	ator RES	EARCH \	/EHICLE	
Make NHTSA	Post-test 5	Steering Column S	Shear Capsule Sepe	ration NOT	APPLIC	ABLE	
Model DEFORMAB	LE IMPACTOR	Steering Colu	mn Collapse Mecha	nism NOT	APPLIC	ABLE	
Body NOT APPLIC	ABLE						
Engine NOT APPLIC	ABLE						
Displacement 0 Lite	er Transmissior	NOT APPLICA	BLE				
Vehicle Modification(s) Descri	ription						
Vehicle Commentary FMVS	SS 214 DEFORMA	BLE BARRIER AN	D IMPACTOR				
Vehicle Length 4115	mm 162.0 i	nches	CG behind Front	Axle 1101	mm	43.3	inches
Vehicle Width 1252	mm _49.3 i	nches Cente	er of Damage to CG	Axis 0	mm	0.0	inches
Vehicle Wheelbase 2588	mm101.9 i	nches Tota	I Length of Indenta	tion 0	mm	0.0	inches
Vehicle Test Weight 1361	KG 3000	oounds Maxir	num Static Crush Do	• ====	mm	0.0	inches
			Pre-Impact Sp		kph	38.7	mph
Vehicle Damage	Index		Principal Direction of	of Force 0			
	Pre & Pos	st Test Dama	<u>ge Measureme</u>	<u>ents</u>			
(Measurements are taken in a lo	ongitudinaldirection. Exce	pt for Engine Block, all m	easurements are take from	the Rear Vehic	le Surface fo	orward.)	
Left Side		Center	line		Right	Side	
Pre-Test Post-	Test	Pre-Test	Post-Test	Pre-T	_	Post-	Test
mm inches mm	inches	mm inches	mm inches	mm	inches	mm	inches
		Length of Vehic	cle at Centerline				
		0.0	0.0				
		Engine	Block				
		0.0	0.0				
0 0.0 0	0.0	Front Bum	per Corner	0	0.0	0	0.0
		Front of	Engine				
		0.0	0.0				
0 0.0	0.0	Firev	vall	0	0.0	0	0.0
		0.0	0.0				
0 0.0 0	0.0	Upper Leading	Edge of Door	0	0.0	0	0.0
0 0.0 0	0.0	Lower Leading	Edge of Door	0	0.0	0	0.0
0 0.0 0	0.0	Bottom of	'A' Post	0	0.0	0	0.0
0 0.0 0	0.0		Edge of Door	0	0.0	0	0.0
0 0.0	0.0	Lower Trailing	Edge of Door	0	0.0	0	0.0
	_		Column				
	_	0.0	0.0				
	_		n to 'A' Post (Horizo	ontal)			
	_	0.0	0.0				
			nn to Headliner (Vei	tical)			
		0.0	0.0				

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Vehicle 2 2008 DODGE GRAND CARAVAN

Test # 6274]					
VIN 2D8HN44 H	I08R104776	NHTSA Te	est Vehicle Numbe	er 2		
Year 2008		Vehicle Mo	dification Indicato	PRODUCTION	VEHICLE	
Make DODGE	Post-test	Steering Column Shear	Capsule Seperation	on UNKNOWN		
Model GRAND CA	RAVAN	Steering Column Co	ollapse Mechanisn	n UNKNOWN		
Body MINIVAN						
Engine V6 TRANS	VERSE FRONT					
Displacement 3.3 L	iter Transmissio	on AUTOMATIC - FROM	IT WHEEL DRIVE			
Vehicle Modification(s) Des	scription					
Vehicle Commentary						
Vehicle Length 529	7 mm 208.5	inches CG	behind Front Axle	1432 mm	56.4 ir	nches
Vehicle Width 195	9 mm 77.1	inches Center of D	Damage to CG Axi	s -279 mm	-11.0 ir	nches
Vehicle Wheelbase 308	121.3 mm	inches Total Leng	gth of Indentation	3900 mm	153.5 ir	nches
Vehicle Test Weight 221	4 KG 4880	pounds Maximum S	Static Crush Depth	270 mm	10.6 ir	nches
			Pre-Impact Speed	d 0 kph	0.0 n	mph
Vehicle Damag	ge Index 03LPAW2	Princi	ipal Direction of Fo	rce 297		
Domogo Profilo Dieto	naa Maaauramar	oto Cruch fron	n Dro 9 Doot To	ot Domogo Ma	. a cura ma	nto
Damage Profile Distar			n Pre & Post Te	_		
·	Right, Rear-to-Front		Pre-Test	Post-Test	Crush De	
DPD 1 2 mm	==	•		165.8 inches		nches
DPD 2 7 mm			4219 mm	4212 mm	7 n	mm
DPD 3 270 mm	===	Centerline	208.5 inches	201.3 inches	7.2 ir	nches
DPD 4 252 mm			5297 mm	5114 mm	183 n	mm
DPD 5 85 mm	==	Right Bumper Corner	166.1 inches	166.5 inches	- 0.4 ir	nches
DPD 6 0 mm	n 0.0 inches		4219 mm	4228 mm		nm
			4210	1220		
Bumper Engagement	t	Sill Engagement		A-pillar E	ngagemen	nt
(Inline Impact Only)		(Side Impact Only)			npact Only)	
27.0	Г	NOT APPLICABLE		<u>`</u>	0.0	
Moving Test Cart		Moving Test Cart/Veh	icle	Vehicle Ori	entation on	Cart
Angle		Crabbed Angle		Moving	Test Cart	
NOT APPLICABLE	<u> </u>	0.0		NOT AP	PLICABLE	
Magnitude of the Tilt Angle		Magniture of the Crabbed Angi	le	_	e of the Angle	
Measured between surface of		Measure Clockwise from		Measured between t		
Rollover Test Cart and the Gro	ound Lon	gitudinal Vector to Velocity Vector	of Vehicle	and Direction o	of Test Cart Mot	tion

Vehicle 2 2008 DODGE GRAND CARAVAN

Test #	6274						
	<u>0274 </u>	76	NHTSA Test Vehicle N	lumber 2			
	2008		ehicle Modification Inc	=	RODUCTIO	N VEHIC	
	DODGE	Post-test Steering Colum		=		IN VEITIC	
	GRAND CARAVAN		Column Collapse Mech	=			
	MINIVAN		Joidini Collapse Meci	iailisiii <u>[U</u>	INCOVIN		
	V6 TRANSVERSE F	<u> </u>					
Displacement			C - FRONT WHEEL D	RIVE		I	
	ation(s) Description		<u> </u>			1	
Vehicle Comme	` ′						
Vehicle Len	· 	208.5 inches	CG behind Fror	nt Axle 14	32 mm	56.4	inches
Vehicle W			enter of Damage to C			-11.0	inches
Vehicle Wheel	base 3080 mm		Fotal Length of Indent	=		153.5	inches
Vehicle Test W	eight 2214 KG	4880 pounds M	aximum Static Crush	Depth 27	0 mm	10.6	inches
			Pre-Impact S	Speed 0	kph	0.0	mph
Veh	icle Damage Index	03LPAW2	Principal Direction	of Force	297		
	<u>P</u>	re & Post Test Dar	<u>nage Measurem</u>	<u>nents</u>			
(Measureme	nts are taken in a longitudinal	direction. Except for Engine Block,	all measurements are take fro	om the Rear V	ehicle Surface f	forward.)	
Le	ft Side	Cer	nterline		Righ	t Side	
Pre-Test	Post-Test	Pre-Test	Post-Test	Pr	e-Test		t-Test
mm inches	s mm inches	mm inche	s mm inches	mm	inches	mm	inches
		Length of V	ehicle at Centerline				
		5297 208.5	5114 201.3				
		Enç	gine Block				
		0.0	0.0				
4219 166.1	4212 165.8	Front E	Bumper Corner	4219	166.1	4228	166.5
		Fror	nt of Engine				
		0.0	0.0				
0.0	0.0	F	Firewall	0	0.0	0	0.0
		0.0	0.0				
0.0	0.0	• • •	ding Edge of Door	0	0.0	0	0.0
0.0	0.0		ling Edge of Door	0	0.0	0	0.0
0.0	0 0.0		of 'A' Post	0	0.0	0	0.0
0.0	0 0.0		ling Edge of Door	0	0.0	0	0.0
0.0	0.0		ling Edge of Door	0	0.0	0	0.0
			ring Column				
		0 0.0	0 0.0				
			olumn to 'A' Post (Hori	izontal)			
		0 0.0	0 0.0	1\			
		Center of Steering Co	olumn to Headliner (V	ertical)			
		10 110.0	ı 10 110.0 l				

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2008 DODGE GRAND CARAVAN

NHTSA Crash Test - #6274 - Side Impact

Damage Profile Distances - Indention Length - KE Equivalent Speed - Trapezoidal Average

Test Vehicle Weight = 4880 pounds

Impactor Weight = 3000

KE Equivalent Speed = 23.9 MPH

Impactor Test Speed = 38.7

Test Crush Length = 153.5 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Fac at)
(Rear)	0.1	0.3	10.6	9.9	3.3	0.0	(Front)

CRASH 3 Stiffness Coefficents SMAC Stiffness

					1
		A	<u> </u>	<u> </u>	<u> </u>
Minimum Crush = 0.1 inches					1453576.1
Using a Rated No Damage Speed of	1.0mph	5830.9	1334410.6	12.7	
Using a Rated No Damage Speed of	2.0mph	11152.2	1220340.8	51.0	
Using a Rated No Damage Speed of	3.0mph	15963.9	1111366.8	114.7	
Using a Rated No Damage Speed of	5.0mph	24058.6	908706.1	318.5	
Average Crush = 4.8 inches					630.9
Using a Rated No Damage Speed of	1.0mph	121.5	579.2	12.7	
Using a Rated No Damage Speed of	2.0mph	232.3	529.7	51.0	
Using a Rated No Damage Speed of	3.0mph	332.6	482.4	114.7	
Using a Rated No Damage Speed of	5.0mph	501.2	394.4	237.2	
Maximum Crush = 10.6 inches					129.4
Using a Rated No Damage Speed of	1.0mph	55.0	118.8	12.7	
Using a Rated No Damage Speed of	2.0mph	105.2	108.6	51.0	
Using a Rated No Damage Speed of	3.0mph	150.6	98.9	114.7	
Using a Rated No Damage Speed of	5.0mph	227.0	80.9	318.5	

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

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

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

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

G = Energy dissipated without permanent damage, lb

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

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

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

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

Crush	Maximum Crush	Calculated KE Speed	Calculated Error	Calculated Error
Factor	(inches)	(mph)	(mph)	(%)
21	10.6	23.6	-0.3	-1.3

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 21.5

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

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

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 2008 - 2011 Make: CHRYSLER

Model: TOWN & COUNTRY

Test	Vehicle	No							
Number Info		Damage	Average		I n d e n t i o n			g t h	
		Speed	Crush	KEES	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
6274	2008 DODGE GRAND CARAVAN MINIVAN	2.0	4.8	23.9	230.3	520.4	51.0	619.9	47.1
6175	2008 DODGE GRAND CARAVAN MINIVAN	2.0	6.7	23.9	238.9	389.0	73.4	463.1	34.0
		Average	(AVG)		234.6	454.7	62.2	541.5	40.6
		Minimum	(MIN)		230.3	389.0	51.0	463.1	34.0
		Maximum	(MAX)		238.9	520.4	73.4	619.9	47.1
	Standard Deviation	on (STDev-sa	ample)		6.1	92.9	15.8	110.9	9.3
	Nu	umber of Te	sts (n)	2					

Serial Number: 11R-030201SC02301

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 2008 - 2011 Make: CHRYSLER

Model: TOWN & COUNTRY

Test Numbe	Vehicle r Info	No Damage Speed (mph)	Max Crush (inch)		•	dention iffness B	•	,	Crush Factor
6274	2008 DODGE GRAND CARAVAN MINIVAN	2.0	10.6	23.9	104.9	108.0	51.0	128.6	21.5
6175	2008 DODGE GRAND CARAVAN MINIVAN	2.0	10.9	23.9	148.2	149.7	73.4	178.2	21.1
		Average ((AVG)		126.6	128.9	62.2	153.4	21.3
		Minimum	(MIN)		104.9	108.0	51.0	128.6	21.1
		Maximum	(MAX)		148.2	149.7	73.4	178.2	21.5
	Standard Deviation	n (STDev-sa	ample)		30.6	29.5	15.8	35.1	0.3
	Nui	mber of Tes	sts (n)	2					

Expert VIN DeCoder®

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Version Number 3.1.0.3

DeCoded VIN: 1FAFP6530XK174277

Model: 1999 Ford Contour 4 door Sedan

Engine Size: 2.0L/ 122 cu.in.

Engine Description: Inline 4 cylinder with Dual Overhead Cam (DOHC)

Horse Power: 130 @ 5500 rpm

Torque: 1351b-ft at 4500 rpm

Injection System: | Sequential Fuel Injection (SFI)

PSI: 37-41 psi Ignition: Electronic

Manufacturer: Ford

.

Assembly Plant: Kansas City, MO

Drive Wheels: This is a Front Wheel Drive vehicle w/ Manual Seatbelts +

Driver/Passenger Front Air Bags

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

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

The Fifth through Seventh characters (P65) indicate a Contour and a 4 door Sedan

The Eighth character (3) indicates the OEM engine: 2.0L/ 122 cu.in., L4 DOHC

The Ninth character (the check digit) is entered as 0.

The VIN appears Valid, the calculated value is 0.

The Tenth character (X) indicates the model year 1999

The Eleventh character (K) indicates the vehicle was made in the assembly plant in Kansas City, MO

The Twelfth through Seventeenth characters (174277) 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 91942

5/9/2012

Curb weight: 2840 lbs. 1288 kg. Curb weight Distribution - Front: 64 % Rear: 36 % Gross Vehicle weight Rating: 4079 lbs. 1850 kg. Number of Tires on Vehicle: 4 <td< th=""><th>1999 FORD CONTOUR 4 DOOR SEDAN</th><th></th><th></th><th></th></td<>	1999 FORD CONTOUR 4 DOOR SEDAN			
Curb weight Distribution - Front:	Curb Weight:	2840 lbs.	1	288 kg.
Number of Tires on Vehicle: 4		64 %	Rear:	
Drive Wheels: FRONT FRONT FRONT FRONT Horizontal Dimensions Inches Feet Meters Total Length 185 15.42 4.70 Wheelbase: 107 8.92 2.72 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: 7 0.58 0.18 Front Bumper to Base of windshield: 50 4.17 1.27 Front Bumper to Top of windshield: 81 6.75 2.06 Front Bumper to Rear Axle: 40 3.33 1.02 Rear Bumper to Rear of Rear well: 27 2.25 0.69 Rear Bumper to Rear of Trunk: 6 0.50 0.15 Rear Bumper to Base of Rear Window: 24 2.00 0.61 Width Dimensions Maximum Width: 69 5.75 1.75 Front Track: 59 4.92 1.50	Gross Vehicle Weight Rating:	4079 lbs.	1	850 kg.
Total Length wheelbase:				
Total Length wheelbase:	Horizontal Dimensions	Inches	Feet	Meters
wheelbase: 107 8.92 2.72 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: 7 0.58 0.18 Front Bumper to Base of Windshield: 50 4.17 1.27 Front Bumper to Top of Windshield: 81 6.75 2.06 Rear Bumper to Rear Axle: 40 3.33 1.02 Rear Bumper to Rear of Rear Well: 27 2.25 0.69 Rear Bumper to Rear of Trunk: 6 0.50 0.15 Rear Bumper to Base of Rear Window: 24 2.00 0.61 Width Dimensions 4.92 1.50 Maximum Width: 69 5.75 1.75 Front Track: 59 4.92 1.50 Vertical Dimensions 59 4.92 1.50 Vertical Dimensions 55 4.58 1.40 Height: 55 4.58 1.40 Ground to - 55 <t< td=""><td></td><td></td><td></td><td></td></t<>				
Front Bumper to Front of Front Well:	_			
Rear Bumper to Rear of Rear well: 27 2.25 0.69 Rear Bumper to Rear of Trunk: 6 0.50 0.15 Rear Bumper to Base of Rear Window: 24 2.00 0.61 Width Dimensions 24 2.00 0.61 Width Dimensions 69 5.75 1.75 Front Track: 59 4.92 1.50 Rear Track: 59 4.92 1.50 Vertical Dimensions 55 4.58 1.40 Ground to - 55 4.58 1.40 Ground to - 21 1.75 0.53 Headlight - center 26 2.17 0.66 Hood - top front: 26 2.17 0.66 Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99	Front Bumper to Front of Front Well: Front Bumper to Front of Hood: Front Bumper to Base of Windshield:	24 7 50	2.00 0.58 4.17	0.61 0.18 1.27
Maximum Width: 69 5.75 1.75 Front Track: 59 4.92 1.50 Rear Track: 59 4.92 1.50 Vertical Dimensions Height: Ground to - Front Bumper (Top) Headlight - center Headlight - center Hood - top front: Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99	Rear Bumper to Rear of Rear Well: Rear Bumper to Rear of Trunk:	27 6	2.25	0.69
Height: 55 4.58 1.40 Ground to - Front Bumper (Top) 21 1.75 0.53 Headlight - center 26 2.17 0.66 Hood - top front: 26 2.17 0.66 Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99	Maximum Width: Front Track:	59	4.92	1.50
Ground to - Front Bumper (Top) 21 1.75 0.53 Headlight - center 26 2.17 0.66 Hood - top front: 26 2.17 0.66 Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99	Vertical Dimensions			
Front Bumper (Top) 21 1.75 0.53 Headlight - center 26 2.17 0.66 Hood - top front: 26 2.17 0.66 Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99	Height:	55	4.58	1.40
Headlight - center 26 2.17 0.66 Hood - top front: 26 2.17 0.66 Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99				
Hood - top front: 26 2.17 0.66 Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99				
Base of Windshield 36 3.00 0.91 Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99	_		===	
Rear Bumper - top: 26 2.17 0.66 Trunk - top rear: 39 3.25 0.99	·			
Trunk - top rear: 39 3.25 0.99		===		===
	·	===		
	Base of Rear Window:	41	3.42	1.04

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

Expert AutoStats®

1999 FORD CONTOUR 4 DOOR SEDAN

Interior Dimensions	Inches Fe	et Meters
Front Seat Shoulder Width	54 4	.50 1.37
Front Seat to Headliner	39 3	.25 0.99
Front Leg Room - seatback to floor (max)	42 3	.50 1.07
Rear Seat Shoulder Width	53 4	.42 1.35
Rear Seat to Headliner	37 3	.08 0.94
Front Leg Room - seatback to floor (min)		.83 0.86
Seatbelts: 3pt - front and rear		
Airbags: FRONT SEAT AIRBAGS		
Steering Data		
Turning Circle (Diameter)	432 36	.00 [10.97]
Steering Ratio: 14.50:1	- 1 32 <u>- 30</u>	.00
Wheel Radius:		
Tire Size (OEM): P185/70SR14		
1116 5126 (621).		
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 navement):	
$d = \boxed{138.0} \text{ ft} \qquad t = \boxed{3.1} \text{ sec}$	$a = \boxed{-28.0} \text{ ft/sec}^2$	G-force = $\boxed{-0.87}$
Acceleration:		
0 to 30mph t = sec	a = ft/sec²	G-force =
0 to 60mph $t = \boxed{9.2}$ sec	a = 9.6 ft/sec ²	G-force = 0.30
45 to 65mph t = sec	a = ft/sec ²	G-force =
Transmission Type: 5spd MANUAL		
Natara		
Notes:	7 Fk	
Federal Bumper Standard Requirements:	2.5 mph	
This vehicles Rated Bumper Strength:	<u>5</u> mph	

N.S.D.C = 1998 - 2000

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

1999 FORD CONTOUR 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	=	34.50
Inches from ground	=	21.59
Inches from front corner	=	83.94
Inches from rear corner	=	113.83
Inches from front bumper	=	76.52
Inches from rear bumper	=	108.48
Moments of Inertia Approximations (No Load):		
Yaw Moment of Inertia	=	1719.20 lb*ft*sec²
Pitch Moment of Inertia	=	1662.60 lb*ft*sec²
Roll Moment of Inertia	=	361.20 lb*ft*sec²
Front Profile Information		
Angle Front Bumper to Hood Front	=	35.5 deg
Angle Front of Hood to Windshield Base	=	
Angle Front of Hood to Windshield Top	=	20.0 deg
Angle of Windshield	=	28.7 deg
Angle of Steering Tires at Max Turn	=	28.4 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:

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).

Registered Owner: 4N6XPRT Systems Serial Number: 12R-930512AQ03201

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #2871

1997 MERCURY MYSTIQUE

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Registered Owner: 4N6XPRT SYSTEMS

Sister/Clone database reader

You entered: 1999 FORD CONTOUR

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

Year Range	Make	Model	Body Styles	Wheelbase
1995 - 1997 Remarks:	FORD	CONTOUR	4D	106.5
1995 - 1997 Remarks:	MERCURY	MYSTIQUE	4D	106.5
1998 - 2000 Remarks:	FORD	CONTOUR	4D	106.5
1998 - 2000 Remarks:	MERCURY	MYSTIQUE	4D	106.5

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

Test Information

Test # 2871	7	NHTSA Tes	st Reference	Guide Version #	V4			
Test Date 1997-09-0				Contract #	98-5001			
Contract/Study Title	AIR BAG AGG	RESSIVENESS	S STUDY					
Test Objective(s)	OFFSET FROM	NTAL CRASH	56 KM/H - 4	10%				
Test Type	MODIFIED VE	HICLE TEST			Configuration	VEHICLE	INTO BARRIE	R
Impact Angle	0		S	ide Impact Point	0	mm	0.0	inches
				Offset Distance	N/A	mm	N/A	inches
				Closing Speed	56.5	Km/Hr	35.11	MPH
Test Performer	TRANSPORT	CANADA						
Test Reference #	TC97-163							
Test Track Surface	CONCRETE			Condition	DRY			
Ambient Temperature	18 C	64.4 F	Total N	umber of Curves	49			
Data Recorder Type	OTHER				Data Link	OTHER		
Test Commentary	AIR BAGS DE	ACTIVATED						
			Fixed Barrie	er Information				
i			_					•
, ,	DEFORMABLE		Pole	Barrier Diameter	9999	mm	9999	inches
Barrier Shape								
Barrier Commentary	EEVC BARRIE	R (WG11-ECE	R94/01) PL	ASCORE PART #	20670			

1997 MERCURY MYSTIQUE LEFT FRONT SEAT OCCUPANT

Test # 2871
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:261
Occupant Commentary LAST CALIBRATION DATE: 15/OCT/97 POSITION: NEAR
<u>Head</u>
Head to -
Windshielder Header 204 mm 8.0 inches Head Injury Criteria (HIC) 240
WindShield 414 mm 16.3 inches HIC Lower Time Interval (ms) 65.8
Seatback 9999 mm 0.0 inches HIC Upper Time Interval (ms) 101.8
Side Header 253 mm 10.0 inches
Side Window 345 mm 13.6 inches
Neck to Seatback 9999 mm 0.0 inches
First Contact Region (Head) STEERING WHEEL
Second Contact Region (Head)
<u>Chest</u>
Chest to
Dash 9999 mm 0.0 inches Arm to Door 125 mm 4.9 inches
Steering Wheel 118 mm 4.6 inches Hip to Door 153 mm 6.0 inches
Seatback 9999 mm 0.0 inches
Chest Severity Index 99999 Pelvic Peak Lateral Acceleration (g's) 0
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 31.2
Lap Belt Peak Load 1523 Newtons 342.4 pound Force
Shoulder Belt Peak Load 1353 Newtons 304.2 pound Force
First Contact Region (Chest/Abdomen) UNKNOWN
Second Contact Region (Chest/Abdomen) UNKNOWN
<u>Legs</u>
Knees to Dash 61 mm 2.4 inches Knees to Seatback 9999 mm 0.0 inches
Left Femur Peak Load -3520 Newtons -791.3 pounds Force
Right Femur Peak Load -1645 Newtons -369.8 pounds Force
First Contact Region (Legs) DASHPANEL
Second Contact Region (Legs)

1997 MERCURY MYSTIQUE LEFT FRONT SEAT OCCUPANT

Test #	2871				
Vehicle #	1		Sex	FEMALE	
Location	LEFT FRONT S	EAT	Age	99	
Position	FORWARD OF	CENTER POSITION	Height	999 mm 39.3	inches
Type	HYBRID III DUM	IMY	Weight	999.0 kg 2202	pounds
Size	5 PERCENTILE				
Cali	bration Method	OTHER			
Occupar	nt Manufacturer	FIRST TECHNOLOGY			
Occupa	ant Modification	UNMODIFIED			
Occu	pant Description	S/N:261			
Occupa	ant Commentary	LAST CALIBRATION DA	TE: 15/OCT/97	POSITION : NEAR	
		Restraints	6		
Restrai	nt # 1 3 POINT				
Mounte	ed				
Deploy	ment NOT AP	PLICABLE			
Restrai	nt Commentary	NO COMMENTS			
Restrai	nt # 2 UNKNO	A/NI			
Mounte		VIN			
		DLICADI E			
Deploy		PLICABLE			
Restrai	nt Commentary	NO COMMENTS			

Serial Number: 11R-030201SC02301

1997 MERCURY MYSTIQUE RIGHT FRONT SEAT OCCUPANT

Test # 2871	
Vehicle # 1 Sex FEMALE	
Location RIGHT FRONT SEAT Age 99	
Position FORWARD OF CENTER POSITION Height 999 mm 39.3 inches	
Type HYBRID III DUMMY Weight 999.0 kg 2202 pounds	
Size 5 PERCENTILE	
Calibration Method OTHER	
Occupant Manufacturer FIRST TECHNOLOGY	
Occupant Modification UNMODIFIED	
Occupant Description S/N:197	
Occupant Commentary LAST CALIBRATION DATE: 15/OCT/97 POSITION: NEAR	
<u>Head</u>	
Head to -	
Windshielder Header 188 mm 7.4 inches Head Injury Criteria (HIC) 357	
WindShield 397 mm 15.6 inches HIC Lower Time Interval (ms) 92.4	
Seatback 9999 mm 0.0 inches HIC Upper Time Interval (ms) 128.4	
Side Header 243 mm 9.6 inches	
Side Window 338 mm 13.3 inches	
Neck to Seatback 9999 mm 0.0 inches	
First Contact Region (Head) STEERING WHEEL	
Second Contact Region (Head)	
<u>Chest</u>	
Chest to -	
Dash 306 mm 12.0 inches Arm to Door 125 mm 4.9 inches	
Steering Wheel 9999 mm 0.0 inches Hip to Door 173 mm 6.8 inches	
Seatback 9999 mm 0.0 inches	
Chest Severity Index 99999 Pelvic Peak Lateral Acceleration (g's) 0	
Thoracic Trauma Index 0 Thorax Peak Acceleration (g's) 31.9	
Lap Belt Peak Load 2804 Newtons 630.4 pound Force	
Shoulder Belt Peak Load 3002 Newtons 674.9 pound Force	
First Contact Region (Chest/Abdomen) UNKNOWN	
Second Contact Region (Chest/Abdomen) UNKNOWN	
<u>Legs</u>	
Knees to Dash 69 mm 2.7 inches Knees to Seatback 9999 mm 0.0 inches	
Left Femur Peak Load -1950 Newtons -438.4 pounds Force	
Right Femur Peak Load -823 Newtons -185.0 pounds Force	
First Contact Region (Legs) DASHPANEL	
Second Contact Region (Logs)	

Registered Owner: 4N6XPRT SYSTEMS

1997 MERCURY MYSTIQUE RIGHT FRONT SEAT OCCUPANT

Test #	2871										
Vehicle #	1	Sex FEMALE									
Location	RIGHT FRO	NT 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 PERCENT	TILE									
Cali	bration Meth	od OTHER									
Occupar	nt Manufactu	rer FIRST TECHNOLOGY									
Occupa	ant Modificati	ion UNMODIFIED									
Occu	pant Descrip	tion S/N:197									
Occupa	ant Commen	tary LAST CALIBRATION DATE : 15/OCT/97 POSITION : NEAR									
	<u>Restraints</u>										
Restrai	nt # 1 3 PC	DINT BELT									
Mounte	ed										
Deploy	ment NOT	APPLICABLE									
Restrai	nt Comment	ary NO COMMENTS									
Poetroi	nt # 2 UNK	(NOMA)									
		INOVIN									
Mounte	ed <u> </u>										
Deploy	ment NOT	APPLICABLE									
Restrai	nt Comment	ary NO COMMENTS									

Vehicle 1 1997 MERCURY MYSTIQUE

Test #	2871	1									
VIN] 22VV6077	·63		NILITO A TA	act Vahio	la Numba	r [4			
					NHTSA Test Vehicle Number 1						
Year	Vehicle Modification Indicator MERCURY Post-test Steering Column Shear Capsule Seperation										
Make	MERCURY		Post-test	—		•	•				
	MYSTIQUE			Steer	ing Column Co	ollapse M	lechanism	NOT APPL	CABLE		
	FOUR DOC										
Engine 4 CYLINDER TRANSVERSE FRONT											
Displacement 2 Liter Transmission AUTOMATIC - FRONT WHEEL DRIVE											
Vehicle Modific	cation(s) Des	scription	AIR BAG	S DEACTIV	/ATED						
Vehicle Comm	entary NO	COMMEN	ITS								
Vehicle Ler	ngth 467	′ 1 mm	183.9	inches	CG	behind I	Front Axle	1086 mm	42.8	inches	
Vehicle \	Width 178	3 mm	70.2	inches	Center of D	Damage t	o CG Axis	657 mm	25.9	inches	
Vehicle Whee	elbase 270	0 mm	106.3	inches	Total Leng	gth of Inc	lentation	1314 mm	51.7	inches	
Vehicle Test W	/eight 151	1 KG	3330	pounds	Maximum S	Static Cru	sh Depth	0 mm	0.0	inches	
						Pre-Impa	act Speed	57 kph	35.1	mph	
Ve	hicle Damag	e Index 9	999999			•	tion of Fo			•	
		,									
Damage Pr	<u>ofile Dista</u>	nce Meas	<u>suremer</u>	<u>nts</u>	Crush fron	<u>n Pre &</u>	Post Tes	<u>st Damage I</u>	<u>Measurer</u>	<u>nents</u>	
(Meası	ured Left-to-	Right, Rea	r-to-Front	t)		Pre-Tes	<u>t</u>	Post-Test	Crush	Depth	
DPD 1	164 mm	18.3	inches	Left B	umper Corner	179.6	inches	181.3 inch	es -1.7	inches	
DPD 2	370 mm	14.6	inches			4563	mm	4605 mm	-42	mm	
DPD 3	287 mm	11.3	inches		Centerline	183.9	inches	176.1 inch	es 7.7	_ inches	
DPD 4	145 mm		inches		Centenine					=	
DPD 5			inches			4670	mm	4474 mm	196	mm	
DPD 6			inches	Diaht Br	ımper Corner	179.4	inches	162.4 inch	es 17.0	inches	
5.50	<u> </u>	0.2				4558	mm	4125 mm	433	mm	
Bumper E	ngagement	t		Sill E	ngagement			A-pilla	r Engagem	nent	
(Inline Impact Only)			(Side Impact Only)				(Side Impact Only)				
0.0			NOT APPLICABLE					0.0			
			_		-					_	
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	ound	Longitudinal Vector to Velocity Vector of Vehicle					and Direction of Test Cart Motion				

Vehicle 1 1997 MERCURY MYSTIQUE

Test #	2871									
VIN	1MEL	M6532VK607	762	NHT	ΓSA Test V	ehicle Number	1			
Year	1997			Vehi	cle Modifica	ation Indicator	MODI	FIED V	EHICLE	
Make	MERC	URY	Post-test Steering	Column S	Shear Caps	sule Seperation	NOT A	APPLIC	ABLE	
Model	MYST	IQUE	Ste	ering Colu	ımn Collap:	se Mechanism	NOT A	APPLIC	ABLE	
Body	FOUR	DOOR SEDA	N							
Engine	4 CYL	INDER TRANS	SVERSE FRONT							
Displacement	2	Liter T	ransmission AUT	OMATIC -	FRONT W	HEEL DRIVE				
Vehicle Modifi	cation(s) Description	AIR BAGS DEACT	TIVATED						
Vehicle Comm	nentary	NO COMME	NTS					_		
Vehicle Lei	ngth	4671 mm	183.9 inches		CG beh	ind Front Axle	1086	mm	42.8	inches
Vehicle	Width	1783 mm	70.2 inches	Cent	er of Dama	age to CG Axis	657	mm	25.9	inches
Vehicle Whee	elbase	2700 mm	106.3 inches	Tota	al Length o	f Indentation	1314	mm	51.7	inches
Vehicle Test V	Veight	1511 KG	3330 pounds	Maxii		Crush Depth		mm	0.0	inches
						Impact Speed		kph	35.1	mph
Ve	hicle Da	amage Index	9999999		Principal D	Direction of For	ce <u>0</u>			
		_		. 5						
		<u> </u>	Pre & Post Tes	t Dama	ige Mea	<u>surements</u>				
(Measurem	ents are ta	ken in a longitudina	Idirection. Except for Engir	ne Block, all m	neasurements a	are take from the Re	ar Vehicle	Surface f	orward.)	
	- 44 (0: -1									
	eft Side	9		Center	rline			Right	t Side	
Pre-Test	.en Sia	e Post-Test	Pre-1		rline Post-To	est	Pre-Te	•		-Test
			Pre- ⁻ mm		Post-To			•		-Test inches
Pre-Test		Post-Test	mm	Test inches	Post-To	inches m		st	Post	
Pre-Test		Post-Test	mm Leng	Test inches	Post-To mm icle at Cent	inches m		st	Post	
Pre-Test		Post-Test	mm Leng	Test inches th of Vehi 183.9	Post-To mm icle at Cent	inches m		st	Post	
Pre-Test		Post-Test mm inches	mm Leng 4670	inches th of Vehi 183.9 Engine	Post-Tomm icle at Cent 4474 1 e Block	inches merline 176.1		st	Post	
Pre-Test	es i	Post-Test	mm Leng 4670	inches th of Vehi 183.9 Engine	Post-Tomm icle at Cent 4474 Block	inches merline 176.1	im ir	st	Post	
Pre-Test mm inche	es i	Post-Test mm inches	mm Leng 4670	inches th of Vehi 183.9 Engine 7.1 Front Bun	Post-Tomm icle at Cent 4474 1 e Block 177 7 nper Come f Engine	inches merline 176.1 7.0 r 459	im ir	st nches	Post mm	inches
Pre-Test mm inche	es 1	Post-Test mm inches	mm Leng 4670 181	inches th of Vehi 183.9 Engine 7.1 Front Bun	Post-Tomm icle at Cent 4474 1 e Block 177 7 nper Come f Engine	inches merline 176.1 7.0 r 459	im ir	st nches	Post mm	inches
Pre-Test mm inche	es 1	Post-Test mm inches	mm Leng 4670 181	inches th of Vehi 183.9 Engine 7.1 Front Bun Front o 160.9 Fire	Post-Tomm icle at Cent 4474 1 e Block 177 7 nper Corne f Engine 3920 1	inches markerline 176.1 7.0 r 459	im ir	st nches	Post mm	inches
Pre-Test mm inche 179.6	3 32	Post-Test mm inches	mm Leng 4670 181 4088	inches th of Vehi 183.9 Engine 7.1 Front Bun Front o 160.9 Fire	Post-Tomm icle at Cent 4474 1 e Block 177 7 nper Come f Engine 3920 1 wall 3513 1	inches merine 176.1 7.0 r 459 154.3 349	58 13	79.4 36.1	Post mm	inches
Pre-Test mm inche 14563 179.6 3474 136.8	3 32 31 31	Post-Test mm inches	mm Leng 4670 181 4088 Uppe	inches th of Vehi 183.9 Engine 7.1 Front Bum Front o 160.9 Fire 142.8 er Leading	Post-Tomm icle at Cent 4474 1 e Block 177 7 nper Come f Engine 3920 1 wall 3513 1	inches markerline 176.1 7.0 r 459 154.3 138.3 Door 320	58 13 58 13	79.4 36.1	Post mm 4125 3444 3209	162.4 135.6
Pre-Test mm inches 179.6 4563 179.6 3474 136.8 3201 126.0 3211 126.4	3 32 3 31 3 31	Post-Test mm inches 181.3 127.8 125.0 189 125.6	mm Leng 4670 181 4088 Uppe	inches th of Vehi 183.9 Engine 7.1 Front Bum Front o 160.9 Fire 142.8 er Leading	Post-Tomm Icle at Cent 4474 Block 177 Inper Come f Engine 3920 wall 3513 Edge of Edg	inches meterline 176.1 7.0 r 459 154.3 349 138.3 Door 320 Door 320	58 13 58 13 24 12 23 12	79.4 36.1 26.1	Post mm 4125 3444 3209 3226	162.4 135.6 126.3 127.0
Pre-Test mm inches 179.6 4563 179.6 3474 136.8 3201 126.0 3211 126.4 3227 127.0	3 32 3 31 3 31 3 31	Post-Test mm inches 305 181.3 245 127.8 74 125.0 89 125.6 95 125.8	mm Leng 4670 181 4088 Uppe Lowe	inches th of Vehi 183.9 Engine 7.1 Front Bum Front o 160.9 Fire 142.8 er Leading Bottom of	Post-Tomm icle at Cent 4474 1 e Block 177 7 nper Corne f Engine 3920 1 wall 3513 1 g Edge of D g Edge of D	inches markerline 176.1 7.0 r 459 154.3 349 138.3 Door 320 Door 320 322	58 13 58 13 58 13 58 13	79.4 36.1 26.9 27.0	Post mm 4125 3444 3209 3226 3230	162.4 135.6 126.3 127.0
Pre-Test mm inches 179.6 3474 136.8 3201 126.0 3211 126.4 3227 127.0 2180 85.8	31 31 31 31 31 31 31 31	Post-Test mm inches 305 181.3 245 127.8 74 125.0 89 125.6 95 125.8 56 84.9	### Leng 4670 181 4088 Uppe Lower Upp	inches th of Vehi 183.9 Engine 7.1 Front Bun Front o 160.9 Fire 142.8 er Leading er Leading Bottom of per Trailing	Post-Tomm ficle at Cent 4474 1 Block 177 7 nper Come f Engine 3920 1 wall 3513 1 g Edge of E g Edge of E g Edge of E g Edge of E	inches meterline 176.1 7.0 r 459 154.3 138.3 Door 320 Door 321	58 13 58 13 54 14 23 14 25 14 54 84	79.4 36.1 26.1 26.9 27.0	Post mm 4125 3444 3209 3226 3230 2158	162.4 135.6 126.3 127.0 127.2 85.0
Pre-Test mm inches 179.6 4563 179.6 3474 136.8 3201 126.0 3211 126.4 3227 127.0	31 31 31 31 31 31 31 31	Post-Test mm inches 305 181.3 245 127.8 74 125.0 89 125.6 95 125.8	### Leng 4670 181 4088 Uppe Lower Upp	inches th of Vehi 183.9 Engine 7.1 Front Bum Front o 160.9 Fire 142.8 er Leading er Leading Bottom of oer Trailing ver Trailing	Post-Tomm icle at Cent 4474 1 Block 177 7 nper Corne f Engine 3920 1 wall 3513 1 g Edge of D	inches metaline 176.1 7.0 r 459 154.3 138.3 Door 329 Door 329 Door 219	58 13 58 13 54 14 23 14 25 14 54 84	79.4 36.1 26.9 27.0	Post mm 4125 3444 3209 3226 3230	162.4 135.6 126.3 127.0
Pre-Test mm inches 179.6 3474 136.8 3201 126.0 3211 126.4 3227 127.0 2180 85.8	31 31 31 31 31 31 31 31	Post-Test mm inches 305 181.3 245 127.8 74 125.0 89 125.6 95 125.8 56 84.9	### Leng 4670 181 4088 Upper Lower Lower	inches th of Vehi 183.9 Engine 7.1 Front Bum Front o 160.9 Fire 142.8 er Leading er Leading Bottom of oer Trailing ver Trailing	Post-Tomm ficle at Cent 4474 1 Block 177 7 nper Come f Engine 3920 1 wall 3513 1 g Edge of E g Edge of E g Edge of E g Edge of E	inches markerline 176.1 7.0 r 459 138.3 Door 329 Door 329 Door 219 Door 219	58 13 58 13 54 14 23 14 25 14 54 84	79.4 36.1 26.1 26.9 27.0	Post mm 4125 3444 3209 3226 3230 2158	162.4 135.6 126.3 127.0 127.2 85.0

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

Center of Seering Column to 'A' Post (Horizontal)

436 17.2 395 15.6

Center of Steering Column to Headliner (Vertical)

524 20.6

Registered Owner: 4N6XPRT SYSTEMS Serial Number: 11R-030201SC02301

18.9

481

NHTSA Crash Test - #2871 - Front Impact

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

Test Vehicle Weight = 3330 pounds Vehicle Closing Speed = 35.1 mph Test Crush Length = 70.2 inches

Pre/Post Collision Crush Depths (inches)

Left Side Crush Centerline Crush Right Side Crush (Driver Side) -1.7 7.7 17.0 (Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 0.0 inches					0.0
Using a Rated No Damage Speed of	2.5mph	0.0	0.0	0.0	
Using a Rated No Damage Speed of	5.0mph	0.0	0.0	0.0	
Using a Rated No Damage Speed of	7.5mph	0.0	0.0	0.0	
Using a Rated No Damage Speed of	10.0mph	0.0	0.0	0.0	
Average Crush = 8.1 inches					714.5
Using a Rated No Damage Speed of	2.5mph	382.8	616.4	118.9	
Using a Rated No Damage Speed of	5.0mph	706.9	525.5	475.4	
Using a Rated No Damage Speed of	7.5mph	972.3	441.8	1069.7	
Using a Rated No Damage Speed of	10.0mph	1179.0	365.4	1901.7	
Maximum Crush = 17.0 inches					162.2
Using a Rated No Damage Speed of	2.5mph	182.4	139.9	118.9	
Using a Rated No Damage Speed of	5.0mph	336.8	119.3	475.4	
Using a Rated No Damage Speed of	7.5mph	463.3	100.3	1069.7	
Using a Rated No Damage Speed of	10.0mph	561.7	83.0	1901.7	

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

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

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

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

G = Energy dissipated without permanent damage, 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	17.0	29.9	-5.2	-17.5

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 29.0

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 - #2871 - Front Impact

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

Test Vehicle Weight = 3330 pounds Vehicle Closing Speed = 35.1 mph Test Crush Length = 51.7 inches

Pre/Post Collision Crush Depths (inches)

Left Side Crush Centerline Crush Right Side Crush (Driver Side) -1.7 7.7 17.0 (Pass. Side)

		CRASH 3 Stiffness Coefficents			SMAC Stiffness
		A	B	G	Kv
Minimum Crush = 0.0 inches					0.0
Using a Rated No Damage Speed of	2.5mph	0.0	0.0	0.0	
Using a Rated No Damage Speed of	5.0mph	0.0	0.0	0.0	
Using a Rated No Damage Speed of	7.5mph	0.0	0.0	0.0	
Using a Rated No Damage Speed of	10.0mph	0.0	0.0	0.0	
Average Crush = 8.1 inches					969.5
Using a Rated No Damage Speed of	2.5mph	519.4	836.4	161.3	
Using a Rated No Damage Speed of	5.0mph	959.2	713.0	645.1	
Using a Rated No Damage Speed of	7.5mph	1319.3	599.5	1451.5	
Using a Rated No Damage Speed of	10.0mph	1599.8	495.9	2580.5	
Maximum Crush = 17.0 inches					220.1
Using a Rated No Damage Speed of	2.5mph	247.5	189.9	161.3	
Using a Rated No Damage Speed of	5.0mph	457.0	161.9	645.1	
Using a Rated No Damage Speed of	7.5mph	628.6	136.1	1451.5	
Using a Rated No Damage Speed of	10.0mph	762.2	112.6	2580.5	

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

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

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

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

G = Energy dissipated without permanent damage, 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	17.0	29.9	-5.2	-17.5

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 29.0

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 - #2871 - Front Impact

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

Test Vehicle Weight = 3330 pounds Vehicle Closing Speed = 35.1 MPH Test Crush Length = 70.2 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Dago Cida)
(Driver Side)	18.3	14.6	11.3	5.7	1.3	-3.2	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 1.3 inches 27739.0 Using a Rated No Damage Speed of 2385.0 23929.1 118.9 2.5mph Using a Rated No Damage Speed of 5.0mph 4404.3 20400.5 475.4 Using a Rated No Damage Speed of 7.5mph 6057.9 1069.7 17153.2 Using a Rated No Damage Speed of 1901.7 10.0mph 7345.8 14187.3 Average Crush = 8.4 664.4 inches Using a Rated No Damage Speed of 2.5mph 369.1 573.1 118.9 Using a Rated No Damage Speed of 5.0mph 681.6 488.6 475.4 Using a Rated No Damage Speed of 937.5 410.8 1069.7 7.5mph Using a Rated No Damage Speed of 10.0mph 1136.8 339.8 1322.5 Maximum Crush = 18.3 inches 140.0 Using a Rated No Damage Speed of 2.5mph 169.4 120.8 118.9 Using a Rated No Damage Speed of 5.0mph 312.9 102.9 475.4 Using a Rated No Damage Speed of 7.5mph 430.3 86.6 1069.7 Using a Rated No Damage Speed of 71.6 10.0mph 521.8 1901.7

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

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	18.3	31.0	-4.1	-13.3

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 26.9

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

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, lb/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

NHTSA Crash Test - #2871 - Front Impact

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

Test Vehicle Weight = 3330 pounds Vehicle Closing Speed = 35.1 MPH Test Crush Length = 51.7 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(Dago Cida)
(Driver Side)	18.3	14.6	11.3	5.7	1.3	-3.2	(Pass Side)

CRASH 3 Stiffness Coefficents SMAC Stiffness Α В G Κv Minimum Crush = 1.3 inches 37639.8 Using a Rated No Damage Speed of 3236.3 32470.0 161.3 2.5mph Using a Rated No Damage Speed of 5.0mph 5976.4 27682.0 645.1 Using a Rated No Damage Speed of 7.5mph 8220.1 1451.5 23275.6 Using a Rated No Damage Speed of 10.0mph 9967.7 19251.0 2580.5 Average Crush = 8.4 901.5 inches Using a Rated No Damage Speed of 2.5mph 500.9 777.7 161.3 Using a Rated No Damage Speed of 5.0mph 924.9 663.0 645.1 Using a Rated No Damage Speed of 557.5 1451.5 7.5mph 1272.2 Using a Rated No Damage Speed of 10.0mph 461.1 1794.6 1542.6 Maximum Crush = 18.3 inches 189.9 Using a Rated No Damage Speed of 2.5mph 229.9 163.9 161.3 Using a Rated No Damage Speed of 5.0mph 424.5 645.1 139.7 Using a Rated No Damage Speed of 7.5mph 583.9 117.5 1451.5 Using a Rated No Damage Speed of 10.0mph 708.1 97.1 2580.5

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

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

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	18.3	31.0	-4.1	-13.3

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 26.9

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

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

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

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1998 - 2000

Make: FORD Model: CONTOUR

Test	Vehicle	No							
Number	Info	Damage	Damage Average Closing Vehicle Width			า			
		Speed	Crush	Speed	S t	iffness		ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
2921	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	17.9	30.4	266.1	75.6	468.6	108.2	20.7
2903	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	16.4	30.4	306.1	94.7	494.8	135.7	22.5
2852	1997 MERCURY MYSTIQUE FOUR DOOR SEDAN	5.0	13.3	29.5	369.0	136.0	500.6	197.4	26.2
2242	1995 FORD CONTOUR FOUR DOOR SEDAN	5.0	12.2	29.8	378.7	154.0	465.4	222.3	29.2
2154	1995 FORD CONTOUR FOUR DOOR SEDAN	5.0	14.9	34.9	403.8	161.9	503.4	220.6	32.7
2853	1997 MERCURY MYSTIQUE FOUR DOOR SEDAN	5.0	12.0	29.5	411.5	168.8	501.6	244.7	29.2
2708	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	13.9	35.0	413.8	178.1	480.9	242.4	35.1
2912	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	14.9	37.8	418.1	184.0	475.0	244.4	38.3
2906	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	13.3	37.0	476.6	229.7	494.5	307.2	41.2
		Average	(AVG)		382.6	153.6	487.2	213.7	30.6
	Minimum (MIN)		(MIN)		266.1	75.6	465.4	108.2	20.7
	Maximum (MAX)				476.6	229.7	503.4	307.2	41.2
	Standard Deviation	(STDev-sa	ample)		63.2	46.7	14.9	60.3	6.9
	Nur	nber of Te	sts (n)	9					

Available Test Results Front Impact Test Summary

Report Filter Settings

Year Range: 1998 - 2000

Make: FORD Model: CONTOUR

Test	Vehicle	No		. .					
Numbe	r Info				cle Width ness Values				
		Speed	Crush	-		iffnes: B	s valt G		
		(mph)	(inch)	(mph)	Α	Ь	G	Kv	Factor
2921	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	21.3	30.4	223.5	53.3	468.6	76.3	17.4
2903	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	18.3	30.4	274.5	76.1	494.8	109.1	20.2
2912	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	22.0	37.8	282.5	84.0	475.0	111.6	25.9
2906	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	20.5	37.0	308.3	96.1	494.5	128.5	26.7
2871	1997 MERCURY MYSTIQUE FOUR DOOR SEDAN	5.0	18.3	35.1	313.4	103.3	475.4	140.5	27.0
2852	1997 MERCURY MYSTIQUE FOUR DOOR SEDAN	5.0	14.4	29.5	338.9	114.7	500.6	166.4	24.0
2242	1995 FORD CONTOUR FOUR DOOR SEDAN	5.0	13.1	29.8	352.5	133.5	465.4	192.7	27.1
2853	1997 MERCURY MYSTIQUE FOUR DOOR SEDAN	5.0	13.1	29.5	376.3	141.2	501.6	204.6	26.7
2154	1995 FORD CONTOUR FOUR DOOR SEDAN	5.0	16.0	34.9	376.9	141.1	503.4	192.2	30.5
2708	1998 FORD CONTOUR FOUR DOOR SEDAN	5.0	15.2	35.0	380.5	150.5	480.9	204.9	32.3
		Average ((AVG)		322.7	109.4	486.0	152.7	25.8
		_	-						
		Minimum	(MIN)		223.5	53.3	465.4	76.3	17.4
		Maximum	(MAX)		380.5	150.5	503.4	204.9	32.3
	Standard Deviation	n (STDev-sa	ample)		52.0	32.4	14.5	45.9	4.4
	Nu	mber of Te	sts (n)	10					

Stiffness Values and Test Data

Derived from

NHTSA Crash Test #4426

2003 FORD CROWN VICTORIA

Provided By

4N6XPRT StifCalcs®

Registered to:

4N6XPRT SYSTEMS 8387 UNIVERSITY AVENUE LA MESA CA 91941-3842 11R-030201SC02301

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Sister/Clone database reader

You entered: 2006 FORD CROWN VICTORIA

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

Year Range	Make	Model	Body Styles	Wheelbase
1998 - 2011	LINCOLN	TOWN CAR	2D, 4D	117.4
Remarks: Could us				
2003 - 2010	FORD	CROWN VICTORIA	4D	114.7, 133
Remarks: REVISED	"STIFFER FRAME	n		
2003 - 2010	MERCURY	GRAND MARQUIS	2D, 4D, SW	114.7
Remarks: ALSO M.	ARAUDER			

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

Test Information

Test # 4426	NHTSA Test Reference Guide Version # V5
Test Date 2002-11-1 2	Contract # DTNH22-99-D-02041
Contract/Study Title	NCAP SIDE IMPACT - 2003 FORD CROWN VICTORIA 4 DOOR SEDAN - M30201
Test Objective(s)	TO GENERATE SIDE IMPACT PERFORMANCE INFORMATION WITH H3 HEAD AND NECK
Test Type	NEW CAR ASSESSMENT TEST Configuration IMPACTOR INTO VEHICLE
Impact Angle	270 Side Impact Point 75 mm 3.0 inches
	Offset Distance 0 mm 0.0 inches
	Closing Speed 61.8 Km/Hr 38.38 MPH
Test Performer	KARCO ENGINEERING
Test Reference #	M30201
Test Track Surface	CONCRETE Condition DRY
Ambient Temperature	Total Number of Curves 76
Data Recorder Type	DIGITAL DATA ACQUISITION Data Link OTHER
Test Commentary	NO COMMENTS
	Fixed Barrier Information
ı	
Barrier Type	Pole Barrier Diameter mm inches
Barrier Shape	
Barrier Commentary	

2003 FORD CROWN VICTORIA LEFT FRONT SEAT OCCUPANT

Test # 4426					
Vehicle # 2		Sex	MALE		
Location LEFT FRONT SEAT	Т	Age	0		
Position CENTER POSITION	N	Height	0 mm 0	inche	s
Type SID WITH HYBRID	III HEAD/NECK	Weight	0.0 kg 0	poun	ds
Size 50 PERCENTILE					
Calibration Method	SIDE IMPACT DUMMY				
Occupant Manufacturer	MFG: FTSS, MODEL: SA	A-SID-M001, S/N: 27	' 4		
Occupant Modification	NO COMMENTS				
Occupant Description	SID WITH HIII HEAD AND	NECK			
Occupant Commentary	CNTRC1: DOOR PANEL,	CNTRL1: DOOR PA	NEL		
Head to -	<u>Head</u>				
Windshielder Header 400	mm 15.7 inches	s Head Injury C	Criteria (HIC)	89	
WindShield 615	mm 24.2 inches	, ,	ver Time Interva		
Seatback 0	mm 0.0 inches		er Time Interva	• • ==	
Side Header 200	mm			()	
Side Window 330	mm 13.0 inches	S			
Neck to Seatback 0 mn					
First Contact Reg					l
Second Contact Regi					
9	,				
	Chest				
Chest to -					
Dash 570 mm	n 22.4 inches	Arm to Door 10	06 mm 4.2	inches	
Steering Wheel 275 mm	n 10.8 inches	Hip to Door 18	7. 36 mm 7. 3	inches	
Seatback 0 mm	n 0.0 inches				
Chest Severity Index 0	Pe	elvic Peak Lateral A	cceleration (g's)	72	l
Thoracic Trauma Index 67		Thorax Peak A	Acceleration (g's	0	ı
Lap Be	elt Peak Load 0 N	Newtons 0.0	pound Force		
Shoulder Bel	It Peak Load 0 N	Newtons 0.0	pound Force		
First Contact Region (Chest	t/Abdomen) OTHER				
Second Contact Region (Chest	t/Abdomen) NONE				
	<u>Legs</u>				
Knees to Dash 185 mm		nees to Seatback 0	mm 0. 0	inches	
Left Femur Peak Load 0			s Force	, , , , , , , , , , , , , , , , , , , ,	
Right Femur Peak Load 0			s Force		
First Contact Reg		pound	0 1 0100		
Second Contact Reg					
SSSSIIG SSIIGST ING	g.v. (=vgv/				

2003 FORD CROWN VICTORIA LEFT FRONT SEAT OCCUPANT

Test #	4426				
Vehicle #	2		Sex N	MALE	
Location	LEFT FRONT S	SEAT	Age 0		
Position	CENTER POSI	TION	Height 0	mm 0.0 inches	
Туре	SID WITH HYB	RID III HEAD/NECK	Weight 0	0.0 kg 0 pounds	
Size	50 PERCENTIL	.E			
Cali	bration Method	SIDE IMPACT DUMMY			
Occupai	nt Manufacturer	MFG: FTSS, MODEL: SA	-SID-M001, S/N: 274		
Occupa	ant Modification	NO COMMENTS			
Occu	pant Description	SID WITH HIII HEAD AND	NECK		
Occupa	ant Commentary	CNTRC1: DOOR PANEL,	CNTRL1: DOOR PAN	EL	
		Restraints	<u>i</u>		
Restrai	nt # 1 3 POIN	T BELT			
Mounte	ed BELT -	CONVENTIONAL MOUNT			
Deploy	ment NOT AF	PLICABLE			
Restrai	nt Commentary	NO COMMENTS			

2003 FORD CROWN VICTORIA LEFT REAR SEAT OCCUPANT

Test # 4426	
Vehicle # 2	Sex MALE
Location LEFT REAR SEAT	Age 0
Position NON-ADJUSTABLE SEAT	Height 0 mm 0.0 inches
Type SID WITH HYBRID III HEAD/NECK	Weight 0.0 kg 0 pounds
Size 50 PERCENTILE	
Calibration Method SIDE IMPACT DUMMY	
Occupant Manufacturer MFG: FTSS, MODEL: S	A-SID-M001, S/N: 275
Occupant Modification NO COMMENTS	
Occupant Description SID WITH HIII HEAD AN	D NECK
Occupant Commentary CNTRC1: DOOR PANEL	., CNTRL1: DOOR PANEL
<u>Head</u>	
Head to -	
Windshielder Header 0 mm 0.0 inch	· · · · · · · · · · · · · · · · · · ·
WindShield 0 mm 0.0 inch	()
Seatback 620 mm 24.4 inch	· · · · · · · · · · · · · · · · · · ·
Side Header 202 mm 8.0 inch	es
Side Window 323 mm 12.7 inch	es
Neck to Seatback 0 mm 0.0 inches	
First Contact Region (Head) C PILLAR	
Second Contact Region (Head)	
Chest	
Chest to -	
Dash 0 mm 0.0 inches	Arm to Door 106 mm 4.2 inches
Steering Wheel 0 mm 0.0 inches	Hip to Door 175 mm 6.9 inches
Seatback 537 mm 21.1 inches	
	Pelvic Peak Lateral Acceleration (g's) 81
Thoracic Trauma Index 56	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 0 mm 0.0 inches k	nees to Seatback 239 mm 9.4 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) OTHER	
Second Contact Pagion (Logs)	

2003 FORD CROWN VICTORIA LEFT REAR SEAT OCCUPANT

Test #	4426			
Vehicle #	2		Sex	MALE
Location	LEFT REAR SEA	ΔT	Age	0
Position	NON-ADJUSTAB	LE SEAT	Height	$\boxed{0}$ mm $\boxed{0.0}$ inches
Туре	SID WITH HYBRI	D III HEAD/NECK	Weight	0.0 kg 0 pounds
Size	50 PERCENTILE			
Cali	ibration Method	SIDE IMPACT DUMMY		
Occupai	nt Manufacturer	MFG: FTSS, MODEL: SA	A-SID-M001, S/N: 2	75
Occupa	ant Modification	NO COMMENTS		
Occu	pant Description	SID WITH HIII HEAD AND	NECK	
Occupa	ant Commentary	CNTRC1: DOOR PANEL,	CNTRL1: DOOR P	PANEL
		Restraints	<u>s</u>	
Restrai	nt # 1 3 POINT	BELT		
Mounte	ed BELT - Co	ONVENTIONAL MOUNT		
Deploy	ment NOT APP	LICABLE		
Restrai	nt Commentary	NO COMMENTS		

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test #	4426										
VIN					NHTSA T	est Vehic	le Numbe	r 1			
Year	0				Vehicle Mo	dification	Indicator	RESEA	ARCH V	EHICLE	
Make	NHTSA		Post-test	Steering (Column Shear	Capsule	Seperation	n NOT A	PPLICA	BLE	
Model	DEFORMAI	BLE IMPA	CTOR	Stee	ring Column C	ollapse M	lechanism	NOT A	PPLICA	BLE	
Body	NOT APPLI	CABLE									
Engine											
Displacement	0 Li	ter Tr	ansmissio	n NOT A	PPLICABLE						
Vehicle Modific	ation(s) Des	cription	NO COM	MENTS							
Vehicle Comm	entary NHT	SA SIDE	IMPACT	MOVING [DEFORMABLE	BARRIE	R (MDB)	27 DEG.	CRAB A	NGLE	
Vehicle Len	igth 412 0	0 mm	162.2	inches	CG	B behind I	Front Axle	1104	mm [43.5	inches
Vehicle V	Vidth 167 0	6 mm	66.0	inches	Center of I	Damage t	o CG Axis	0	mm [0.0	inches
Vehicle Whee	lbase 259	0 mm	102.0	inches	Total Len	gth of Ind	dentation	0	mm [0.0	inches
Vehicle Test W	/eight 136	1 KG	3000	pounds	Maximum	Static Cru	ish Depth	0	mm [0.0	inches
						Pre-Impa	act Speed	62	kph [38.4	mph
Vel	hicle Damag	e Index 🗌			Princ	ipal Direct	tion of Fo	rce 0			
Damage Pro	ofile Distar	nce Meas	suremen	ıts	Crush from	m Pre &	Post Te	st Dama	ne Me	asurem	ents
	red Left-to-F				<u>Orabir iroi</u>	Pre-Tes		Post-Te:	_	Crush [
DPD 1		·	inches	•	Sumper Cornei	-	inches	0.0	inches		inches
DPD 2 0			inches	Len L	diliper come	0.0	mm	0.0	mm	0.0] mm
DPD 3 0		0.0	inches		_						-
DPD 4 0			inches		Centerline		inches	0.0	inches] inches
DPD 5 0			inches			0	mm	0	mm	0] mm
DPD 6 0		0.0	inches	Right B	umper Corner	0.0	inches	0.0	inches	0.0	inches
D1 D 0 [6		0.0	oco			0	mm	0	mm	0] mm
Bumper E	ngagement			Sill E	ngagement			Α	-pillar E	ngageme	ent
(Inline Im	pact Only)			(Side	e Impact Only))		(Side Im	pact On	ly)
C	0.0			NOT	APPLICABLE					0.0	
	-										•
_	Test Cart			•	Test Cart/Veh	ııcle				entation o	
	ngle			Cra	abbed Angle					Test Car	
	ENGAGEME	:NT			27.0					PLICABL	
_	of the Tilt Angle	: -		-	of the Crabbed Ang				-	of the Angle	
	etween surface of Cart and the Gro		1 00		ure Clockwise from or to Velocity Vector					ne Vehicle O f Test Cart M	
r onover rest	cananome (170)	III II I	ion	umumai vecto	n no venochy vector	or veriicie		andl	an ⇔caron Of		// CHICH I

Vehicle 1 0 NHTSA DEFORMABLE IMPACTOR

Test # 4426					
VIN 4426		NIL	TSA Test Vehicle Nu	mbor 4	
Year 0			icle Modification Indic		CH VEHICLE
Make NHTS	Doct to:		Shear Capsule Sepe		
	RMABLE IMPACTOR		umn Collapse Mecha		
	PPLICABLE	Steeling Col	umm Collapse Mecha	IIIISIII INOT APP	LICABLE
Engine	FFLICABLE				
Displacement 0	Liter Transmissi	ion NOT APPLICA			\neg
Vehicle Modification(s)		MENTS			
` '	NHTSA SIDE IMPACT	MOVING DEFORM	MABLE BARRIER (M	DB) 27 DEG. CR	AB ANGLE
Vehicle Length	4120 mm 162.2	inches	CG behind Front		
Vehicle Width	1676 mm 66.0	inches Cen	ter of Damage to CG	Axis 0 m	m 0.0 inches
Vehicle Wheelbase	2590 mm 102.0	inches Tot	al Length of Indenta	tion 0 m	m 0.0 inches
Vehicle Test Weight	1361 KG 3000] pounds Max	imum Static Crush D	epth 0 mi	m 0.0 inches
			Pre-Impact Sp	peed 62 kp	h 38.4 mph
Vehicle Da	ımage Index		Principal Direction of	of Force 0	
	<u> Pre & P</u>	ost Test Dama	<u>age Measureme</u>	<u>ents</u>	
(Measurements are tal	ken in a longitudinaldirection. Ex	cept for Engine Block, all	measurements are take from	the Rear Vehicle Surfa	ace forward.)
Left Side)	Cente	rline	R	ight Side
Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
mm inches r	nm inches	mm inches	mm inches	mm inche	es mm inches
		Length of Veh	icle at Centerline		
		0.0	0.0		
		Engin	e Block		
		0.0	0.0		
0.0 0	0.0	Front Bu	mper Corner	0.0	0.0
		Front	of Engine		
		0.0	0.0		
0.0	0.0	Fire	ew <u>all</u>	0.0	0.0
		0.0	0.0		
0.0 0.0	0.0		g Edge of Door	0.0	0 0.0
0 0.0 0	0.0		g Edge of Door	0.0	0 0.0
0 0.0 0	0.0	Bottom o		0.0	0 0.0
0 0.0 0	0.0		g Edge of Door	0.0	0 0.0
0.0	0.0		g Edge of Door	0.0	0.0
			g Column		
		0.0	0.0		
	Cen		mn to 'A' Post (Horiz	ontal)	
	_	0 0.0	0 0.0		
	Cen	_	mn to Headliner (Ve	rtical)	
		0.0	0.0		

Vehicle 2 2003 FORD CROWN VICTORIA

Test #	4426										
VIN	2FAFP73W83	3X10915	4		NHTSA 7	Test Vehicl	e Numbe	r 2			
Year	2003				Vehicle M	odification	Indicator	PROD	UCTION	I VEHICL	.E
Make	FORD		Post-test	Steering C	Column Shea	r Capsule	Seperatio	n UNKN	OWN		
Model	CROWN VICT	ORIA		Steer	ing Column (Collapse M	echanism	UNKN	OWN		
Body	FOUR DOOR	SEDAN									
Engine	V8 INLINE FR	RONT									
Displacement	4.6 Lite	r Tra	ınsmissioı	AUTO!	MATIC - REA	R WHEEL	DRIVE				
Vehicle Modific	cation(s) Descri	iption [NO COM	MENTS							
Vehicle Comm	entary NO CO	OMMEN	TS								
Vehicle Len	igth 5427	mm	213.7	inches	C	G behind F	ront Axle	1409] mm [55.5	inches
Vehicle V	Width 1976	mm	77.8	inches	Center of	Damage t	o CG Axis	-449] mm [-17.7	inches
Vehicle Whee	lbase 2909	mm	114.5	inches	Total Ler	ngth of Ind	entation	3300] mm [129.9	inches
Vehicle Test W	/eight 2105	KG	4640	pounds	Maximum	Static Cru	sh Depth	468] mm [18.4	inches
						Pre-Impa	ct Speed	0] kph [0.0	mph
Vel	hicle Damage	Index 1	0LPAW3		Prin	cipal Direct	tion of Fo	rce 297	7		
Domogo Dr	ofilo Diotono	o Mooo	uromon	to.	Cruch fro	m Dro 9	Doot To	ot Domo	. a a Ma	00118080	onto
	ofile Distanc				Crush fro				_		
` _	ured Left-to-Rig	<u> </u>	- ′			Pre-Tes	_	Post-Te	_	Crush [1
DPD 1 8		3.1	inches	Left B	umper Corne		inches	0.0	inches		inches
DPD 2 3		11.9	inches			0	mm	0] mm	0] mm
DPD 3 3		14.7	inches		Centerline	0.0	inches	0.0	inches	0.0] inches
DPD 4 4		17.1	inches			0	mm	0] mm	0] mm
DPD 5 1		7.2	inches	Right Br	umper Corne	r 0.0	inches	0.0	inches	0.0	inches
DPD 6	2 <u>5</u> mm	1.0	inches	ragin D	ampor como	0.0	mm	0.0	mm	0.0	mm
						<u> </u>		<u> </u>	1	<u> </u>	1
Bumper E	ngagement			Sill E	ngagement			Δ	A-pillar E	ngageme	ent
	pact Only)				Impact Only	()			•	pact On	
	7.0				ENGAGEME	-				0.0	j'
				<u> </u>				!			_
Moving	Test Cart			Moving	Test Cart/Vel	hicle		Veh	nicle Orie	entation o	on Cart
Α	ngle			Cra	bbed Angle				Moving	Test Car	t
NOT A	PPLICABLE				0.0			DIR	ECT EN	GAGEM	ENT
Magnitude	of the Tilt Angle			Magniture	of the Crabbed An	gle			Magnitude	of the Angle	ļ
Measured be	etween surface of a			Measu	re Clockwise from	n		Measured	l between th	ne Vehicle O	rientation
Rollover Test	Cart and the Ground	d	Long	gitudinal Vecto	r to Velocity Vecto	or of Vehicle		and L	Direction of	Test Cart N	1otion

Vehicle 2 2003 FORD CROWN VICTORIA

Test # 44	126						
VIN 2	AFP73W83X1091	54	NHTSA Test Vehicle N	umber 2			
Year 20	003		Vehicle Modification Ind	licator PRO	ODUCTIO	N VEHIC	LE
Make F (ORD	Post-test Steering Co	lumn Shear Capsule Sep	eration UNI	KNOWN		
Model C	ROWN VICTORIA	Steerin	g Column Collapse Mech	anism UNI	KNOWN		
Body F (OUR DOOR SEDAN	N .					
Engine V	INLINE FRONT					_	
Displacement 4.	6 Liter Ti	ransmission AUTOM	ATIC - REAR WHEEL DR	IVE			
Vehicle Modificati	` '	NO COMMENTS					
Vehicle Commen	tary NO COMMEN	NTS					
Vehicle Lengtl		213.7 inches	CG behind Fror			55.5	inches
Vehicle Wid		77.8 inches	Center of Damage to C		=	-17.7	inches
Vehicle Wheelba		114.5 inches	Total Length of Indent) mm	129.9	inches
Vehicle Test Wei	ght 2105 KG	4640 pounds	Maximum Static Crush	· ===	mm	18.4	inches
	_		Pre-Impact S	· —	kph	0.0	mph
Vehic	le Damage Index [10LPAW3	Principal Direction	of Force 2	297		
	_						
	<u>P</u>	re & Post Test D	amage Measurem	<u>ients</u>			
(Measurements	are taken in a longitudinal	direction. Except for Engine Blo	ock, all measurements are take fro	m the Rear Vehi	icle Surface f	forward.)	
Left	Side	(Centerline		Righ	t Side	
Dec T4							
Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-	Test	Post	:-Test
mm inches	Post-Test mm inches		Post-Test ches mm inches	Pre-	Test inches	Post mm	:-Test inches
		mm inc					
		mm inc	ches mm inches				
		mm ind Length o	ches mm inches				
		mm ind Length o	thes mm inches If Vehicle at Centerline I 0 0.0 Engine Block				
		mm ind Length o 0 0.0	thes mm inches If Vehicle at Centerline I 0 0.0 Engine Block	mm			
mm inches	mm inches	mm ind Length o 0 0.0 0 From	thes mm inches of Vehicle at Centerline 0 0.0 Engine Block 0 0.0	mm	inches	mm	inches
mm inches	mm inches	mm ind Length o 0 0.0 0 From	ches mm inches of Vehicle at Centerline 0 0.0 Engine Block 0 0.0 Int Bumper Corner Front of Engine	mm	inches	mm	inches
mm inches	mm inches	mm ind Length o 0 0.0 From	ches mm inches of Vehicle at Centerline 0 0.0 Engine Block 0 0.0 Int Bumper Corner Front of Engine	mm	inches	mm	inches
mm inches	mm inches	mm ind Length o 0 0.0 From	ches mm inches of Vehicle at Centerline O 0.0 Engine Block O 0.0 Int Bumper Corner Front of Engine O 0.0 Firewall	mm	inches	mm 0	inches
mm inches	mm inches	mm ind Length o 0 0.0 From From 0 0.0 0 0.0	ches mm inches of Vehicle at Centerline O 0.0 Engine Block O 0.0 Int Bumper Corner Front of Engine O 0.0 Firewall	o	inches	mm 0	inches
mm inches 0 0.0 0 0.0 0 0.0 0 0.0	mm inches 0 0.0 0 0.0	mm ind Length c 0 0.0 Fro Fro 0 0.0 Upper L	thes mm inches of Vehicle at Centerline O 0.0 Engine Block O 0.0 Int Bumper Corner Front of Engine O 0.0 Firewall O 0.0	o	0.0 0.0	o	inches
mm inches 0 0.0 0 0.0 0 0.0	mm inches 0 0.0 0 0.0	mm ind Length o 0 0.0 From F 0 0.0 Upper L Lower Length o	ches mm inches of Vehicle at Centerline O 0.0 Engine Block O 0.0 It Bumper Corner Front of Engine O 0.0 Firewall O 0.0 eading Edge of Door	0 O	0.0 0.0	0 0	0.0 0.0
mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm ind Length of 0 0.0 From F 0 0.0 Upper L Lower	ches mm inches of Vehicle at Centerline O O.0 Engine Block O O.0 It Bumper Corner Front of Engine O O.0 Firewall O O.0 eading Edge of Door tom of 'A' Post Trailing Edge of Door	0 0 0 0	0.0 0.0 0.0 0.0	0 0 0 0	0.0 0.0 0.0 0.0
mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm ind Length of 0 0.0 From From 0 0.0 Upper L Lower Lower L Bott Upper L Lower L	ches mm inches of Vehicle at Centerline O O.0 Engine Block O O.0 It Bumper Corner Front of Engine O O.0 Firewall O O.0 eading Edge of Door tom of 'A' Post Trailing Edge of Door Trailing Edge of Door	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 0.0
mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm ind Length of 0 0.0 From From 0 0.0 Upper L Lower Lower Lower Lower S	ches mm inches of Vehicle at Centerline O O.0 Engine Block O O.0 Int Bumper Corner Front of Engine O O.0 Firewall O O.0 eading Edge of Door tom of 'A' Post Trailing Edge of Door teering Column	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 0.0 0.0
mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm inches 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0 0 0.0	mm ind Length of 0 0.0 From From 0 0.0 Upper L Lower Lower L Bott Upper L Lower S 0 0.0	ches mm inches of Vehicle at Centerline O O.0 Engine Block O O.0 Int Bumper Corner Front of Engine O O.0 Firewall O O.0 eading Edge of Door tom of 'A' Post Trailing Edge of Door teering Column	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 0.0 0.0

0

0

Center of Steering Column to Headliner (Vertical)

0.0

0.0

Registered Owner: 4N6XPRT SYSTEMS Serial Number: 11R-030201SC02301

0.0

0.0

2003 FORD CROWN VICTORIA

NHTSA Crash Test - #4426 - Side Impact

Damage Profile Distances - Indention Length - KE Equivalent Speed - Trapezoidal Average

Test Vehicle Weight = 4640 pounds

Impactor Weight = 3000

KE Equivalent Speed = 24.1 MPH

Impactor Test Speed = 38.4

Test Crush Length = 129.9 inches

Damage Profile Distance Collision Crush Depths (inches)

	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	(F===+)
(Rear)	3.1	11.9	14.7	17.1	7.2	1.0	(Front)

CRASH 3 Stiffness Coefficents SMAC Stiffness

	A	B	<u></u>	Kv
				16561.1
1.0mph	659.9	15212.6	14.3	
2.0mph	1262.6	13921.4	57.3	
3.0mph	1808.0	12687.4	128.8	
5.0mph	2727.1	10391.2	357.9	
				147.4
1.0mph	62.3	135.4	14.3	
2.0mph	119.1	123.9	57.3	
3.0mph	170.6	112.9	128.8	
5.0mph	257.3	92.5	267.1	
				56.6
1.0mph	38.6	52.0	14.3	
2.0mph	73.8	47.6	57.3	
3.0mph	105.7	43.4	128.8	
5.0mph	159.5	35.5	357.9	
	2.0mph 3.0mph 5.0mph 1.0mph 2.0mph 3.0mph 5.0mph 5.0mph 3.0mph	1.0mph 659.9 2.0mph 1262.6 3.0mph 1808.0 5.0mph 2727.1 1.0mph 62.3 2.0mph 119.1 3.0mph 170.6 5.0mph 257.3 1.0mph 38.6 2.0mph 73.8 3.0mph 105.7	1.0mph 659.9 15212.6 2.0mph 1262.6 13921.4 3.0mph 1808.0 12687.4 5.0mph 2727.1 10391.2 1.0mph 62.3 135.4 2.0mph 119.1 123.9 3.0mph 170.6 112.9 5.0mph 257.3 92.5 1.0mph 38.6 52.0 2.0mph 73.8 47.6 3.0mph 105.7 43.4	1.0mph 659.9 15212.6 14.3 2.0mph 1262.6 13921.4 57.3 3.0mph 1808.0 12687.4 128.8 5.0mph 2727.1 10391.2 357.9 1.0mph 62.3 135.4 14.3 2.0mph 119.1 123.9 57.3 3.0mph 170.6 112.9 128.8 5.0mph 257.3 92.5 267.1 1.0mph 38.6 52.0 14.3 2.0mph 73.8 47.6 57.3 3.0mph 105.7 43.4 128.8

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

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

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

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

G = Energy dissipated without permanent damage, 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	17.1	30.0	5.9	19.7

4N6XPRT Systems Specific Crush Factor (CF Specific to this test) = 13.5

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

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

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2010

Make: FORD

Model: CROWN VICTORIA

Test	Vehicle	No							
Number	r Info	Damage	Average		I n	dention	Leng	g t h	
		Speed	Crush	KEES	S t	iffness	Valu	ı e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Kv	Factor
4426	2003 FORD CROWN VICTORIA FOUR DOOR SEDAN	2.0	10.6	24.1	119.2	124.0	57.3	147.5	21.8
4427	2003 LINCOLN TOWN CAR FOUR DOOR SEDAN	2.0	10.1	23.6	128.5	137.7	59.9	164.5	22.1
2989	1999 LINCOLN TOWN CAR FOUR DOOR SEDAN	2.0	8.7	24.0	150.6	189.8	59.8	225.8	26.4
		Average ((AVG)		132.8	150.5	59.0	179.3	23.4
	ı	Minimum	(MIN)		119.2	124.0	57.3	147.5	21.8
	М	aximum	(MAX)		150.6	189.8	59.9	225.8	26.4
	Standard Deviation (STDev-sa	ample)		16.1	34.7	1.5	41.2	2.6
	Numb	er of Te	sts (n)	3					

Available Test Results Side Impact Test Summary

Report Filter Settings

Year Range: 2003 - 2010

Make: FORD

Model: CROWN VICTORIA

Test	Vehicle	No							
Number	Info	Damage	Max		I n c	lention	Leng	t h	
		Speed	Crush	KEES	S t	iffness	Valu	e s	Crush
		(mph)	(inch)	(mph)	Α	В	G	Κv	Factor
2989	1999 LINCOLN TOWN CAR FOUR DOOR SEDAN	2.0	20.0	24.0	65.9	36.4	59.8	43.3	11.6
4426	2003 FORD CROWN VICTORIA FOUR DOOR SEDAN	2.0	18.4	24.1	68.5	41.0	57.3	48.8	12.6
4427	2003 LINCOLN TOWN CAR FOUR DOOR SEDAN	2.0	17.1	23.6	75.6	47.7	59.9	57.0	13.0
	,	Average (AVG)		70.0	41.7	59.0	49.7	12.4
	N	linimum	(MIN)		65.9	36.4	57.3	43.3	11.6
	Ma	aximum ((MAX)		75.6	47.7	59.9	57.0	13.0
	Standard Deviation (STDev-sa	ımple)		5.0	5.7	1.5	6.9	0.7
	Numb	er of Tes	sts (n)	3					

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,

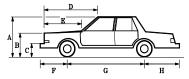
We at 4N6XPRT Systems were pleased to be able to provide you with the preceding data for the crash test vehicles.

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.



Expert AutoStats®

Expert AutoStats® is a program that has over

40,000 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.

ND TO: NOT BUMBER (Top) ADLIGHT - Center OD - Top Front SE OF WINDSHIELD AR BUMBER (Top) UNK - Top Real SE OF REAR WINDOW -[WEIGHT DIMENSIONS BWEIGHT DIMENSIONS BWEIGHT DIStribution FRONT = 55% REAR FRANT = 55% REAR	57 in. 23 in. 27 in. 28 in. 28 in. 26 in. 40 in. 40 in.
S/N:01R-930512	70 lbs
SEDAN	
STRENGTH:	5 mph .40:1] 1 in. 9 in. 3 in. 0 in. 8 in. 0 in.

4N6XPRT BioMeknx[™]



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

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

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

4N6XPRT BioMeknxTM 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 BioMeknxTM 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 BioMeknxTM, you would need a minimum of 10-15 Anatomy and Physiology, Human Factors, and Biomechanics books, as well as conduct over 50 hours of internet research.

3FAPP1280MR117253

Expert VIN **DeCoder**®



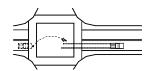
Expert VIN DeCoder® is a program that "DeCodes" the 17 character VIN number for Cars. Vans, Pickups, and

Utility vehicles manufactured from 1981 to the present.

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

Ford Mercury/Lincoln Chrysler/AMC/Jeep European Import

Chevrolet/Geo Pontiac / Buick / Oldsmobile Cadillac/Saturn Asian Import



4N6XPRT Ped & Bike Calcs®

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

Enter Distance (in feet):

Enter Velocity (in mph):

>>>Calculate Time given D & V<<

Expert Owic 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.

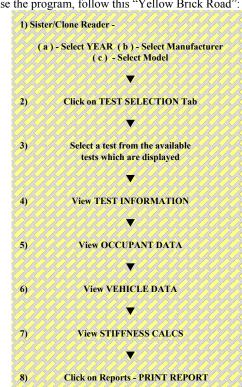


4N6XPRT StifCalcs®. Is a program which puts the NHTSA Crash Test database at your fingertips with no need to access the internet!

In addition to the NHTSA Crash Test data, the program includes a "Sister/Clone List Reader" developed in cooperation with Greg Anderson. This allows quick retrieval of the "Sister/Clone" data for the desired vehicle. This will drive the initial selection of the available tests. Alternatively, we have an ADVANCED SEARCH module for the initial vehicle selection.

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

To use the program, follow this "Yellow Brick Road":



IT'S THAT SIMPLE REALLY!!

	ioi program oruc	ers must be parc	d per the included schedule.
Contact Name:			
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for Credit Card Orders,	please circle Credit C	ard type: Am. E	Express / Visa / MasterCard, then complete the following
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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 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 years with No Significant Dimensional Changes VIN DeCoding when VIN is provided Information available

Mid-60's to present **also includes** (when available)
Front/Rear Overhang
Hood height
Bumper-to-hood
Turning Circle
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 BioMeknxTM
4N6XPRT Ped & Bike Calcs®
Expert Qwic Calcs®
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Expert VIN DeCoder®

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

Modules: 1981 to Present

Control Module - One Required per Set

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

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

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

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

SYSTEM REQUIREMENTS

Expert VIN DeCoder® has been tested on a wide variety of IBM laptop and desktop clones ranging from 8088 through Pentium® chips. A math coprocessor chip is NOT required. Expert VIN DeCoder® has also been tested under the various versions of MSDOS 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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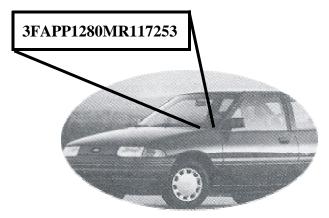
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CA Addresse	s add 9.50% sales tax = \$
(California orders del	ivered by e-mail attachment DO NOT owe sales tax) TOTAL = \$
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	8387 University Avenue
T.11	La Mesa, CA 91942-9342
Telephone O	nday-Friday - 9:30am-5:00pm PST

Orders will be shipped Priority Mail within 10 working days of receipt of order.

Prices subject to change WITHOUT NOTICE.

* Checks MUST be drawn from a bank in the U.S.A.

Expert VIN DeCoder®



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

4N6XPRT Systems®

Forensic Expert Software 8387 University Avenue La Mesa, CA 91942-9342

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

E-Mail: VIN@4n6xprt.com

1-800-266-9778

Expert VIN DeCoder® example

INPUT:

Enter VIN Numbers to be DeCoded: 3FAPP1280MR117253 1)

3FA PP128 0 MR 117253

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

OUTPUT:

EXPERT VIN DeCoder

The VIN Number is 3FA PP128 0 MR 117253

The vehicle should be a 1991 Ford

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

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

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

This is a Front Wheel Drive vehicle.

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

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

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

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

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

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

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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Normal delivery is via electronic download □ - Deliver via electronic download link (e-mail address required) \$ 0.00 □ Please deliver on USB at an additional cost of \$35.00 per disk SUB-TOTAL = \$ CA Addresses add 8.50% sales tax = \$ (California orders delivered by e-mail attachment DO NOT owe sales tax)
TOTAL = \$
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Name on Card:
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La Mesa, CA 91942-9342
Telephone Orders: Monday-Friday - 9:30am-5:00pm PST
Monday Unday 0.20am 5.00mm DCT

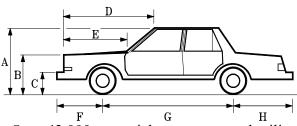
Orders will be shipped Priority Mail within 10 working days of receipt of order.

Prices subject to change WITHOUT NOTICE.

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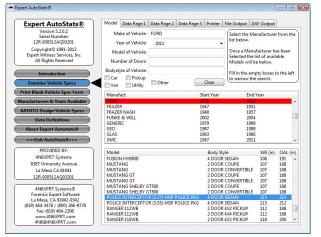
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Forensic Expert Software 8387 University Avenue La Mesa, CA 91942-9342

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

1-800-266-9778

Select Your Vehicle



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

Screen 1

Model Data Page 1 Data Page 2	Data Pag	e 3	Printer	File Output	DXF Outpu	ıt	
2011 FORD POLICE INTER	RCEPTOR	(3.27) MSP PO	DLICE PKG 4 E	OOR SEDAI	N	
Horizontal Dimensions				Vertica	Dimension	<u>15</u>	
Length	212	in.	Height		58	in.	
Wheelbase	115	in.	Grou	ınd to:			
Front Bumper to Front Axle	43	in.	F	ront Bumper	(Тор)	23	in.
Front Bumper to Front of Hood	8	in.	н	leadlight - Ce	nter	27	in.
Front Bumper to Base of Windshield	65	in.	н	lood - Top Fr	ont	31	in.
Front Bumper to Top of Windshield	91	in.	В	ase of Windsh	nield	39	in.
Front Bumper to Front Wheel Well	26	in.	R	Rear Bumper (Top)		25	in.
Rear Bumper to Rear of Trunk	8	in.	Т	runk - Top Re	ear	39	in.
Rear Bumper to Base of Rear Window	38	in.	В	ase of Rear W	indow	40	in.
Rear Bumper to Rear Well	38	in.		Woight	Dimension	-	
Rear Bumper to Rear Axle	54	in.			Differsion		,
Depth Dimensions				ırb Weight Weight Distr	ibution:	4184	lbs.
Width	78	in.	F	ront =	56 %		
Front Track	63	in.		Rear =	44 %		
Rear Track	66	in.	Gros	s Vehicle Wei	ght Rating	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

tu i uge i	Data	Page 3	Printer	File Output	DXF Output		
LICE INT	ERCEPT	FOR (3.2	7) MSP P	OLICE PKG 4 D	OOR SEDAN		
cing							
13.8	ft/sec	2		Bumper Stre	ngth	2.5	mpl
9.8	ft/sec	2		Steering Rati	0	:1	
6.5	ft/sec	2		Interior	Dimensions		
138	feet					61	in.
	REAR			Front Head F	Room	40	in.
	40	feet		Front Leg Ro	om	42	in.
	4			Rear Shoulde	er Room	60	in.
	12	in.		Rear Head R	oom	38	in.
P235/	/55R17			Rear Leg Roo	om	38	in.
35							
NT SEAT	AIRBA	GS					
pase							
	13.8 9.8 6.5 138 P235,	13.8 ft/sec 9.8 ft/sec 6.5 ft/sec 138 feet REAR 40 4 122 P235/55R17	13.8 ft/sec² 9.8 ft/sec² 6.5 ft/sec² 138 feet REAR 40 feet 4 12 in. P235/55R17 BS NT SEAT AIRBAGS	13.8 ft/sec ² 9.8 ft/sec ² 6.5 ft/sec ² 138 feet REAR 40 feet 4 12 in. P235/55R17 3S	13.8	interior Dimensions REAR 40 feet 4 feet 4 p235/55R17 REAT AIRBAGS	13.8 ft/sec ¹ Bumper Strength 2.5 9.8 ft/sec ² Steering Ratio :1 6.5 ft/sec ² Interior Dimensions REAR 40 feet 4 Front Leg Room 42 Rear Shoulder Room 60 12 in. P235/55R17 Rear Leg Room 38 SS SS SS SS SS SS SS

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 Pa	ge 2	Data Page 3	Printer	File O	utput	DXF O	utput	
	2011 FORD	POLICE	INTERC	EPTOR (3.27) MSP P	OLICE P	KG 4 D	OOR SE	DAN	
			A	Angle Measu	ırement	<u>s</u>				
Angle Fr	ont Bumper to	Hood Fr	ont	=		45.0	degre	ees		
Angle Fr	ont of Hood to	Windshi	ield Bas	e =		8.0	degre	es		
Angle Fr	ont of Hood to	Windshi	ield Top	=		16.8	degre	es		
Angle of	Windshield			=		33.2	degre	es		
Angle of	Steering Tires	at Max T	urn	=		27.5	degre	es		
				Center of	Gravity					
Inches fr	om ground	=	22.7	77	Inch	es from	side o	f vehicl	e =	39.00
Inches b	ehind front axle	=	50.6	50	Inche	s in fro	nt of re	ear axle	=	64.40
Inches fr	om front bump	oer =	93.6	50	Inch	es from	rear b	umper	=	118.40
Inches fr	om front corne	r =	101.4	10	Inch	es from	rear c	orner	=	124.66
Tip-Ove	r Stability Ratio				=	1.4	41	Stable		
NHTSA S	Static Stability F	actor (ca	alculate	d) Star Ratin	ıg	=		***		
				Moments o	f Inertia					
Yaw Mo	ment of Inertia			=	=			3	103.52	lb*ft*sec²
Pitch Mo	ment of Inertia			=	=			2	993.16	lb*ft*sec²
Roll Mor	ment of Inertia			-	=				603.12	lb*ft*sec²

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	e 1 Data Page 2	Data Page 3	Print	er File O	utput	DXF	Output
	2011 F	ORD POLICE INTE	RCEPTOR (3.2	7) MSF	POLICE P	KG 4 D	OOR	SEDAN
used as manufa an exen provisio	first appro ecturing va nplar vehic	pt has been made eximations. Some riations from veho le should be meas XF output is provi ne vehicle.	measurement: :le to vehicle. \sured TO VERI	s are d Whene FY DA	lependant (ever feasibl TA IMPOR	on sucl le, the TANT	h fact vehicl TO YO	ors as e in question or OUR CASE. The
DXF File	e Name 2	011_FORD_POLIC	E_INTERCEPT	OR_(3.	.27)_MSP_P	OLICE	_PKG_	4_DOOR_SEDAN_
Length	1			212	Inches		_0	Prawing Notation
Wheel	base			115	Inches		1 1	[⊙] On
Width				78	Inches		(Off
Front	Track			63	Inches		ام	Jnits
Rear T	rack			66	Inches		1 1	Inches
Front (Overang			43	Inches		1	○ Feet ○ Meters
Bump	er to Base o	of windshield		65	Inches			Vieters
Bump	er to Top o	f windshield		91	Inches			
Rear B	umper to B	Base of Rear windo	ow	38	Inches			
Rear B	umper to T	op of Rear windo	w	64	Inches			
Front 7	Tire Diamet	ter		24	Inches			
Rear T	ire Diamete	er		24	Inches			
CG bel	hind Front	axle		50.6	Inches		DY	F 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

The Crash Zone 8.1 - [5	1473.DXF]	
n File Edit Draw West Sne	ps Text/Dimension Utilities Recon 3D Window Help	- 6
DELXBR	ର ଜ 🚾 🚾 🚾 🏀 🏀 🎏 🎒 🕙 ପ୍ର୍ଲ୍କ୍ର୍ମ୍ 💋 💋 🔞	
Line Types		
1	FRONT of 2001 FORD CROWN VICTORIA 4.6L MSP POLICE PACKAGE 4D	OR SEDAN
5×1 — — — ···		
67 75 10 15		7
TTT 200 101 100		
TO THE THE THE		
818888		
# 19 19 19 19 10		
08 00 8 8 P P		
25 PPP 4NL VV AA		_
Ouidk Pick	DXF Output Data	
Draw / Snaps / Hatch		
Dine Types	Length:	
€ Edit	Width: 6.50 Feet	
A Text / Dimensions	Front bumper to Front Axle: 3.67 Feet	
(D) View	Wheelbase: 9.58 Feet	
30 3D Tools		
Recon	Front Track: 5.25 Feet	
(B) Symbols	Rear Track: 5.33 Feet	
Templates	CG behind Front Axle: 4.31 Feet	
Forms		
? Learning Center	C 2	0
Select Objects : Selection To	A:282.06° D:8.55°	X:1.78" Y:-8.36"

Introducing 4N6XPRT StifCalcs[®]. A program which puts the NHTSA Crash Test database at your fingertips with no need to access the internet!

In addition to the NHTSA Crash Test data. the program includes a "Sister/Clone List Reader" developed in cooperation with Greg Anderson. This allows quick retrieval of the "Sister/Clone" data for the desired vehicle. This will drive the initial selection of the available tests. Alternatively, we have an ADVANCED SEARCH module for the initial vehicle selection.

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

SYSTEM REQUIREMENTS

4N6XPRT StifCalcs[®] is a MS-Windows program designed to work under a 32 bit (95/98/Me/NT/2000/XP/Vista) Windows System

#MGEPR I StillCales - SELECTED WEH Reports		Marie Control		
ister/Clone Reader Test Selection				
walable Testo Test Information Doc	part Information Vehicle In	da Stilfress Calcs		
Ve	hicle 2 - 1988 F	PLYMOUTH VOYA	GER VAN	
	Veh	ricle 1 Vehicle 2		
Test \$ 1362	NHTSA Test Vehic	cle Number (CJ0904	99	3P4FH21K6JR598919
Yes 1999 Make PLYNOUTI	Nodel WOYAGE	R VAN Body	IVAN	** Control of the Con
Engine (4 CYLINDER TRANSVERSE	Displace	conert 25 Liver Transmission	MANUAL FRONT WH	CD 000F
Vehicle Modification Indicator		Liter	Theramer, summar was	EELUWYE
PRODUCTION VEHICLE	Vehicle Modification(s) De [UNMODIFIED	Josephon		
Posities Steering Column Shear Capi	- Charles and a single part of the same of	ARE powers now	e Mechanion NOT APPLI	CABLE
		pieceng Louven Longo	e Meditalism I	
Vehicle Commentary (NO CONMENT	S .			
Vehicle Length 44	33 nn 176 inche	Vehicle To	est Weight 1559 K	5 3437 pounds
	32 nm 112 inche		cle Width 1929	
	75 nm 45 inche			
Center of Danage to CS Auto	0 nm 0 inche	Manimum Static Cr	ush Depth 249	rs 10 inches
	Principal Direction of Force	n [19] Pro-ling	act Speed D	ph 0 mph
Vehicle Danage Index 0980EW2				
Vehicle Derege Index	nce Measurement	s Crush from Pre 8	Post Test Dam	age Measurements
		Pre-Test	Post-Test	Crush Depth
Damage Profile Dista	ReartoFront)		inches Post-Tost	inches Grush Depth

To use the program, follow this "Yellow Brick Road":

1) Sister/Clone Reader -(a) - Select YEAR (b) - Select Manufacturer (c) - Select Model

2) Click on TEST SELECTION Tab

Select a test from the available tests which are displayed

View TEST INFORMATION

View OCCUPANT DATA 5)

View VEHICLE DATA

View STIFFNESS CALCS

8) Click on Reports - PRINT REPORT

IT'S THAT SIMPLE **REALLY!!**

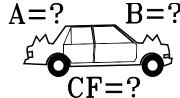
PLEASE PRINT	
Contact Name:	
Company/Dept:	
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City:State:Zip:	
Phone:	
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(Check with order = \$5.00, Credit Card = \$10.00, Govt. P.O.r = \$15.00 Notarized Affidavit Filing Requirement \$,
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Quick, Convenient, Easy access to the NHTSA Crash Test data on your own MS-Windows computer without the need for an internet connection.

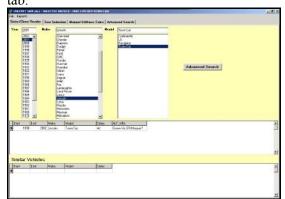
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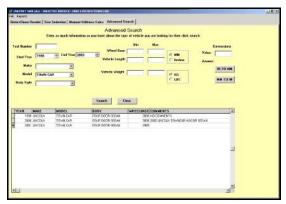
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Select the desired vehicle through either our SISTER/CLONE READER or our ADVANCED SEARCH





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

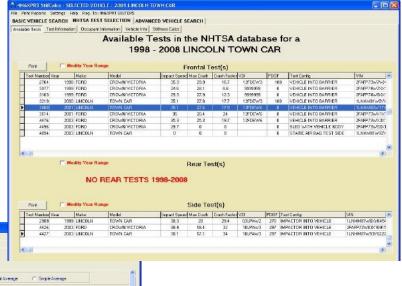
4H6XPRT SHICAICS - SELECTED VEHICLE: 2001 LINCOLN TOWN CAR

Available Tests | Test information | Occupant Information | Vehicle Info | Stituces Eales

Pse/Post Vehicle Depth | Dansage Profile Distance Depths | Masseure Vehicle Depth |

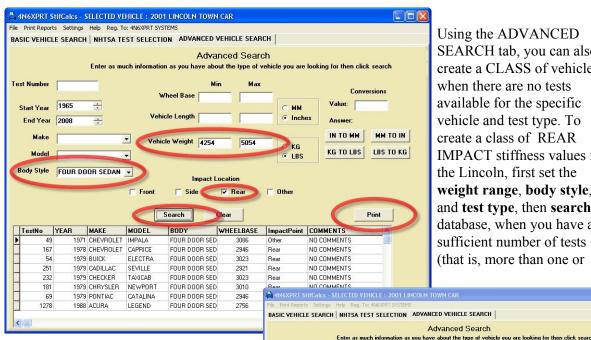
Step 1 a version

BASIC VEHICLE SEARCH INITSA TEST SELECTION ADVANCED VEHICLE SEARCH



2001 LINCOLN TOWN CAR A - B - 6 Values Crush Factor (CF) G Using a Rated No Damage Speed of I sing a Bated No Damage Speed of resulting in no permenant vehicle deformation 6 - Energy dissipated without permenant clamage, b Normal *Rated No Damage Speed" is 2.5 or 5 riph. Some specific

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.



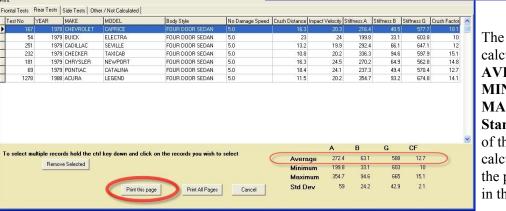
Using the ADVANCED SEARCH tab, you can also create a CLASS of vehicle for when there are no tests available for the specific vehicle and test type. To create a class of REAR IMPACT stiffness values for the Lincoln, first set the weight range, body style, and test type, then search the database, when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

two) that have been found, click the PRINT button:

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

Display Auto Calculated Tests





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

Expert System Software for Litigation

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

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Expert VIN DeCoder®:	\$ 525.00 *	\$
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	% sales tax elivered by e-mail attachment DO NOT owe sales tax) 5.00, Credit Card = \$10.00, Govt. Purchase Order = \$15.00)	\$ \$
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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.

Card type: Am. Express / Visa / MasterCard	
Card Number: Expiration Date (MM/YY):/	
←Visa/MasterCard American Ex	cpress → 3712 375 95005 CID
Security code (card ID) on back of Visa/MasterCard card or fron	t 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 - 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 contains the contains the desired of the desired or product to the contains the desired or product to the contains the	
Authorized signature:	
We appreciate your cooperation in supplying us with this informs is being required of us to obtain the information.	rmation and understanding that it

Sincerely,

Daniel W. Vomhof III General Manager/Technical Support

SERVICE

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

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

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

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

FAX/Order Form

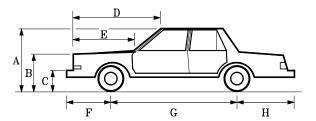
□ Expert VIN Decoder & Expert AutoStats □ NHTSA Crash Test Results □ BOTH

Please circle ALL OPTIONS that apply

YEAR & MAKI	E:
MODEL:	
If you are reques	sting N DeCoder & AutoStats
	ide the following information:
No. of Doors: Body Style: SUV & P/U: PICKUPS: VANS:	2/3/4/5 Coupe/Conv./Sedan/Wagon 4x2 / 4x4 / Dual Rear Wheel Std. / Extra / Super / Crew Cab Short Bed / Long Bed Cargo / Passenger Short / Long Wheelbase
	VIN Information
1 2 3	4 5 6 7 8 9
10 11	12 13 14 15 16 17
Impact Impa	SA Crash Test Information location - Front / Side / Rear ct Speed - Lower / Higher
	YMENT INFORMATION d / American Express:
Expires:/	·
Name & Addres	s:

Case Reference Name/Number:

Individual Vehicle Data Search Service®



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

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How often have you been confronted with the

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

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

Information generally includes:

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

Also (when provided by VIN)

Gross Vehicle Weight Safety Equipment

Transmission

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

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

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

Individual Vehicle Specifications

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

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

Minimum Vehicle specifications include:

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

Model yeasr with No Significant Dimensional Changes VIN DeCoding when VIN is provided Information available

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

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

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

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

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

Individual Vehicle Data Search Service[®] Charges & Services

Individual Vehicle Specifications

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

Medium/Heavy Truck Specifications

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

Motorcycle Specifications (1970+)

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

NHTSA Crash Test Results

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

NHTSA Crash Test Results

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

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

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Individual Vehicle Data Search Service® Charges & Services

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\$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

	-
	-
	-
Phone: ()	-
Fax: ()	
PAYMENT INFORMATION	
Visa/MasterCard / American Express:	
Visu/Musici Cara / Milerican Express.	
	
Expires: /	
Credit Card billing address and Zip:	
Address:	
Zip:	
•	
Security Code #	
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FAX/Order Form

□ Expert VIN Decoder & Expert AutoStats □ NHTSA Crash Test Results □ BOTH

Please circle ALL OPTIONS that apply

YEAR & MAKE:

MODEI ·

MODEL.	
If you are reque VIN DeCoder	& AutoStats
please also prov	/ide:
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
10 11	12 13 14 13 10 17
NHTS	A Crash Test Information
YEAR & MAK	
I LAK & WAK	L.
MODEL:	
Impact location	- Front / Side / Rear
Impact Speed -	
	-
Case Reference	/Number:

FAX/Order Form

□ Expert VIN Decoder & Expert AutoStats □ NHTSA Crash Test Results □ BOTH

Please circle <u>ALL OPTIONS</u>	that	apply
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VEAD & MAKE.

If you a VIN D please	e	Code	r & .	Autos	Stats	3				
No. of Body S SUV - PICKU VANS	P.	yle: /U:		4x2 /	e/Co: 4x4 / Extr Bed o / Pa	/ Dua a / S / Lo assen	al Re uper ng E ger	ear / C Bed	Vagon Whee Crew (el
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Expert System Software for Litigation

8387 University Avenue La Mesa, CA 91942-9342

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

FED Tax ID No.: 95-3121248

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

E-Mail: 4n6@4n6xprt.com

Dear Customer,

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

Card type: Am. Express / Visa / MasterCard	
Card Number: Expiration Date (MM/YY):/	
←Visa/MasterCard American Ex	cpress → 3712 375 95005 CID
Security code (card ID) on back of Visa/MasterCard card or fron	t 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 - 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 contains the contains the desired of the desired or product to the contains the desired or product to the contains the	
Authorized signature:	
We appreciate your cooperation in supplying us with this informs is being required of us to obtain the information.	rmation and understanding that it

Sincerely,

Daniel W. Vomhof III General Manager/Technical Support

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The 2011 version of 4N6XPRT StifCalcs® contains a Force Balance module -

The Force Balance approach to Stiffness values is based on the concept of "Equal and Opposite Forces" in combination with the assumption that one of the vehicles involved has a good set of Stiffness values based on testing.

There are essentially only TWO requirements in order to use a Force Balance approach, and they are:

You must have A-B values for one of the vehicles for the surface that was hit Both vehicles must have SOME damage

Beyond these two requirements, the QUALITY of your calculation results will be impacted by :

- The quality of the information you have on each vehicle (weight, pass/cargo load, etc.)
- ☐ The quality/accuracy of your crush measurements
- ☐ The quality of your A-B stiffness values

while the Force Balance analysis CAN be run with degraded information in the above three areas, the quality of the results will also be degraded, sometimes significantly so.

As an extension of our Individual Vehicle Data Search Service, we have now added Force Balance Analysis runs to our services. An order form with pricing follows on the next page.

With respect to the Order Form -

- A) Please be SPECIFIC on the vehicle make and model, including drive wheels, bed length, etc.
- B) The Curb Weight used will come from Expert AutoStats unless you specify some other weight
- C) The PDOF Lever Arm default length is 0 inches
- D) The Angle of Collision Force to Normal Force default value is 0 degrees
- E) If no Crush Spacing is indicated, equal spacing will be used.

If you have any specific questions, please be sure to call.

Sincerely,

Daniel W. Vomhof III

General Manager/Technical Support

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FORCE BALANCE ORDER FORM

Vehicle 1 (KNOWN Stiffness) -	Year/Make/Model	Vehicle 2 - Year/Make/Model	
Curb Weight (pounds) = Occupant + Cargo Weight (pounds) = Total Weight (pounds) =		Curb Weight (pounds) Occupant + Cargo Weight (pounds) Total Weight (pounds)	=
Angle of Collision Force to Force Collision Face (degre PDOF Lever Arm Distance (inch	ees) =	Angle of Collision Force to Fo Collision Face (de PDOF Lever Arm Distance (in	grees) =
Damage Length	(inches) =	Damage Leng	gth (inches) =
If Crush Depth measurements are need to fill in the distance between		If Crush Depth measurements an need to fill in the distance betw	
Crush Depth	Crush Spacing EQUAL?? Yes / No	Crush Depth	<u>Crush Spacing</u> EQUAL?? Yes / No
C2 (inches) =	to C2 (inches) = to C3 (inches) =	C2 (inches) =	C1 to C2 (inches) = C2 to C3 (inches) =
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C7 (inches) = Distance C7	to C7 (inches) = to C8 (inches) =	C7 (inches) = Distance	C6 to C7 (inches) = C7 to C8 (inches) =
C9 (inches) = Distance C8	to C9 (inches) = to C10 (inches) =	C9 (inches) = Distance Distance	C8 to C9 (inches) = C9 to C10 (inches) =
Jama		Visa/MasterCard/Ameri	can Express
\ ddragg		Security Code	
PhoneCase Reference		_ Card Billing Address	

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	* -
piration Date (MM/YY):/	Card Number:Expiration Date (MM/YY):
←Visa/MasterCard American Express →	Current gream desens (preum lensens greams berens (preum lensens greams greams lensens greams lensens greams lensens greams greams greams greams lensens greams
Security code (card ID) on back of Visa/MasterCard card or front of American Express Card:	
dress 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)	(This is the dadress number -
y/State/Zip for where the credit card bill is sent :	City/State/Zip for where the
(- 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)	(- for instance
chorized signature:	Authorized signature:
We appreciate your cooperation in supplying us with this information and understanding that it eing required of us to obtain the information.	

Sincerely,

Daniel W. Vomhof III

General Manager/Technical Support