

Stiffness Values and Test Data

Derived from

NHTSA Crash Test

2809

Provided By

4N6XPRT StifCalcs™

Registered to:

4N6XPRT SYSTEMS

8387 UNIVERSITY AVENUE

LAMESA CA 91941-384

S/N: 03R-030201SC01301

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4N6XPRT StifCalcs™

Sister/Clone database reader

You entered: **1998 Chevrolet C-1500**

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

Year Range	Make	Model	Body Styles	Wheelbase
1988 - 1999	Chevrolet	C-1500	Pickup	117.5,131.5"
REMARKS :				
1988 - 1999	Chevrolet	C-2500	Pickup	117.5,131.5"
REMARKS :				
1988 - 1999	Chevrolet	C-3500	Pickup	117.5,131.5"
REMARKS :				
1988 - 1999	Chevrolet	K-1500	Pickup	117.5,131.5"
REMARKS :				
1988 - 1999	Chevrolet	K-2500	Pickup	117.5,131.5"
REMARKS :				
1988 - 1999	Chevrolet	K-3500	Pickup	117.5,131.5"
REMARKS :				

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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.

4N6XPRT StifCalcs™

Test Information

Test # NHTSA Version # Test Date Contract #

Contract/Study Title

Test Objective(s)

Test Type Configuration

Closing Speed Km/Hr MPH

Impact Angle Offset Distance mm inches Side Impact Point mm inches

Test Performer Test Reference #

Test Track Surface Condition Ambient Temperature C F

Data Recorder Type Data Link Total Number of Curves

Test Commentary

Fixed Barrier Information

Barrier Type Barrier Shape Pole Barrier Diameter mm inches

Barrier Commentary

LEFT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Head

Head To Head To

Windshield Header mm inches Side Header mm inches

Windshield mm inches Side Window mm inches

Seatback mm inches

Neck to Seatback mm inches

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

Head Injury Criteria (HIC) HIC Lower Time interval (ms) HIC Upper Time interval (ms)

Chest

Chest To

Dash mm inches Arm to Door mm inches

Steering Wheel mm inches Hip to Door mm inches

Seatback mm inches

First Contact Region (Chest/Abdomen) Second Contact Region (Chest/Abdomen)

Lap Belt Peak Load Newtons pounds Force Shoulder Belt Peak Load Newtons pounds Force

Chest Severity Index

Thorax Peak Acceleration (g's) Thoracic Trauma Index Pelvic Peak Lateral Acceleration (g's)

Legs

Knees to Dash mm inches Knees to Seatback mm inches

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

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

LEFT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Restraints

Restraint # 1 Mounted Deployment?

Restraint Commentary

Restraint # 2 Mounted Deployment?

Restraint Commentary

RIGHT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Head

Head To Head To

Windshield Header	<input type="text" value="411"/> mm	<input type="text" value="16.2"/> inches	Side Header	<input type="text" value="260"/> mm	<input type="text" value="10.2"/> inches
Windshield	<input type="text" value="628"/> mm	<input type="text" value="24.7"/> inches	Side Window	<input type="text" value="370"/> mm	<input type="text" value="14.6"/> inches
Seatback	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches			
Neck to Seatback	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches			

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

Head Injury Criteria (HIC) HIC Lower Time interval (ms) HIC Upper Time interval (ms)

Chest

Chest To

Dash	<input type="text" value="546"/> mm	<input type="text" value="21.5"/> inches	Arm to Door	<input type="text" value="126"/> mm	<input type="text" value="5"/> inches
Steering Wheel	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches	Hip to Door	<input type="text" value="128"/> mm	<input type="text" value="5"/> inches
Seatback	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches			

First Contact Region (Chest/Abdomen) Second Contact Region (Chest/Abdomen)

Lap Belt Peak Load Newtons pounds Force Shoulder Belt Peak Load Newtons pounds Force

Chest Severity Index

Thorax Peak Acceleration (g's) Thoracic Trauma Index Pelvic Peak Lateral Acceleration (g's)

Legs

Knees to Dash mm inches Knees to Seatback mm inches

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

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

RIGHT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Restraints

Restraint # 1 Mounted Deployment?

Restraint Commentary

Restraint # 2 Mounted Deployment?

Restraint Commentary

Vehicle 1 - 1998 CHEVROLET C-1500

Test # NHTSA Test Vehicle Number VIN

Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length	<input type="text" value="5785"/> mm	<input type="text" value="227.8"/> inches	Vehicle Test Weight	<input type="text" value="2328"/> KG	<input type="text" value="5132"/> pounds
Vehicle Wheelbase	<input type="text" value="3590"/> mm	<input type="text" value="141.3"/> inches	Vehicle Width	<input type="text" value="1950"/> mm	<input type="text" value="76.8"/> inches
CG behind front axle	<input type="text" value="1642"/> mm	<input type="text" value="64.6"/> inches	Total Length of Indentation	<input type="text" value="1524"/> mm	<input type="text" value="60"/> inches
Center of Damage to CG Axis	<input type="text" value="0"/> mm	<input type="text" value="0"/> inches	Maximum Static Crush Depth	<input type="text" value="750"/> mm	<input type="text" value="29.5"/> inches

Vehicle Damage Index Principal Direction of Force Pre-Impact Speed kph mph

Damage Profile Distance Measurements

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

DPD 1	<input type="text" value="657"/> mm	<input type="text" value="25.9"/> inches
DPD 2	<input type="text" value="684"/> mm	<input type="text" value="26.9"/> inches
DPD 3	<input type="text" value="745"/> mm	<input type="text" value="29.3"/> inches
DPD 4	<input type="text" value="750"/> mm	<input type="text" value="29.5"/> inches
DPD 5	<input type="text" value="676"/> mm	<input type="text" value="26.6"/> inches
DPD 6	<input type="text" value="628"/> mm	<input type="text" value="24.7"/> inches

Crush from Pre & Post Test Damage Measurements

	<u>Pre-Test</u>	<u>Post-Test</u>	<u>Crush-Depth</u>
Left Bumper Corner	<input type="text" value="222.7"/> inches	<input type="text" value="196.9"/> inches	<input type="text" value="25.9"/> inches
	<input type="text" value="5045"/> mm	<input type="text" value="5000"/> mm	<input type="text" value="657"/> mm
Centerline	<input type="text" value="227.8"/> inches	<input type="text" value="198.2"/> inches	<input type="text" value="29.6"/> inches
	<input type="text" value="5785"/> mm	<input type="text" value="5034"/> mm	<input type="text" value="751"/> mm
Right Bumper Corner	<input type="text" value="222.9"/> inches	<input type="text" value="198.2"/> inches	<input type="text" value="24.7"/> inches
	<input type="text" value="5662"/> mm	<input type="text" value="5034"/> mm	<input type="text" value="628"/> mm

Bumper Engagement
(Inline Impact Only)

Moving Test Cart
Angle

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

Still Engagement
(Side Impact Only)

Moving Test Cart / Vehicle
Crabbed Angle

*Magnitude of the Crabbed Angle Measured
Clockwise from Logitudial Vector to Velocity
Vector of Vehicle*

A-pillar Engagement
(Side Impact Only)

Moving Test Cart
Vehicle Orientation on Cart

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

Vehicle 1 - 1998 CHEVROLET C-1500

Test # NHTSA Test Vehicle Number VIN
 Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length mm inches Vehicle Test Weight KG pounds
 Vehicle Wheelbase mm inches Vehicle Width mm inches
 CG behind front axle mm inches Total Length of Indentation mm inches
 Center of Damage to CG Axis mm inches Maximum Static Crush Depth mm inches

Vehicle Damage Index Principal Direction of Force Pre-Impact Speed kph mph

Pre & Post Test Measurements

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

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
Length of Vehicle at Centerline											
		<input type="text" value="5785"/>	<input type="text" value="227.8"/>	<input type="text" value="5034"/>	<input type="text" value="198.2"/>						
Engine Block											
		<input type="text" value="5657"/>	<input type="text" value="222.7"/>	<input type="text" value="5000"/>	<input type="text" value="196.9"/>	<input type="text" value="580"/>	<input type="text" value="22.8"/>	<input type="text" value="580"/>	<input type="text" value="22.8"/>		
Front Bumper Corner											
								<input type="text" value="5662"/>	<input type="text" value="222.9"/>	<input type="text" value="5034"/>	<input type="text" value="198.2"/>
Front of Engine											
		<input type="text" value="4537"/>	<input type="text" value="178.6"/>	<input type="text" value="4451"/>	<input type="text" value="175.2"/>	<input type="text" value="5045"/>	<input type="text" value="198.6"/>	<input type="text" value="4789"/>	<input type="text" value="188.5"/>		
Firewall											
				<input type="text" value="4300"/>	<input type="text" value="169.3"/>	<input type="text" value="4230"/>	<input type="text" value="166.5"/>	<input type="text" value="4302"/>	<input type="text" value="169.4"/>	<input type="text" value="4236"/>	<input type="text" value="166.8"/>
		<input type="text" value="4242"/>	<input type="text" value="167"/>	<input type="text" value="4192"/>	<input type="text" value="165"/>			<input type="text" value="4253"/>	<input type="text" value="167.4"/>	<input type="text" value="4210"/>	<input type="text" value="165.7"/>
		<input type="text" value="4281"/>	<input type="text" value="168.5"/>	<input type="text" value="4205"/>	<input type="text" value="165.6"/>			<input type="text" value="4281"/>	<input type="text" value="168.5"/>	<input type="text" value="4220"/>	<input type="text" value="166.1"/>
		<input type="text" value="3136"/>	<input type="text" value="123.1"/>	<input type="text" value="3055"/>	<input type="text" value="120.3"/>			<input type="text" value="3136"/>	<input type="text" value="123.5"/>	<input type="text" value="3075"/>	<input type="text" value="121.1"/>
		<input type="text" value="3118"/>	<input type="text" value="122.8"/>	<input type="text" value="3071"/>	<input type="text" value="120.9"/>			<input type="text" value="3131"/>	<input type="text" value="123.3"/>	<input type="text" value="3086"/>	<input type="text" value="121.5"/>
Upper Leading Edge of Door											
Lower Leading Edge of Door											
Bottom of 'A' Post											
Upper Trailing Edge of Door											
Lower Trailing Edge of Door											
Steering Column											
		<input type="text" value="3760"/>	<input type="text" value="148"/>	<input type="text" value="3720"/>	<input type="text" value="146.5"/>						
Center of Steering Column to 'A' Post (Horizontal)											
		<input type="text" value="285"/>	<input type="text" value="11.2"/>	<input type="text" value="230"/>	<input type="text" value="9.1"/>						
Center of Steering Column to 'A' Post (Vertical)											
		<input type="text" value="480"/>	<input type="text" value="18.9"/>	<input type="text" value="450"/>	<input type="text" value="17.7"/>						

**4N6XPRT StifCalcs™
1998 CHEVROLET C-1500**

NHTSA Crash Test - # 2809 - Front Impact

{ Pre/Post Crush Depths - Vehicle Width - Closing Speed - Trapezoidal Average }

Given:

Impactor Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Test crush width = 76.8 inches

Pre/Post Collision Crush Depths (inches)

	Left Bumper Corner	Centerline	Right Bumper Corner	
(Driver Side)	25.9	29.6	24.7	(Pass. Side)

Calculated Stiffness Coefficients

Minimum Crush = 24.7 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = 27.5 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 29.6 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

A	B	G
175.5	92	167.5
323.9	78.3	669.9
445.2	65.8	1507.2
539.4	54.3	2679.5
157.7	74.2	167.5
290.9	63.2	669.9
399.9	53	1507.2
484.4	43.8	2679.5
146.5	64	167.5
270.3	54.5	669.9
371.5	45.8	1507.2
450.1	37.8	2679.5

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

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may 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

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

Calculated Impact

Crush Factor	Maximum Crush (inches)	Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	29.6	39.4	4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.4

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

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

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**4N6XPRT StifCalcs™
1998 CHEVROLET C-1500**

NHTSA Crash Test - # 2809 - Front Impact

{ Pre/Post Crush Depths - Vehicle Width - Closing Speed - Simple Average }

Given:

Impactor Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Test crush width = 76.8 inches

Pre/Post Collision Crush Depths (inches)

(Driver Side)	Left Bumper Corner 25.9	Centerline 29.6	Right Bumper Corner 24.7	(Pass. Side)
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Calculated Stiffness Coefficients

Minimum Crush = 24.7 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = 26.7 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 29.6 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

<u>A</u>	<u>B</u>	<u>G</u>
175.5	92	167.5
323.9	78.3	669.9
445.2	65.8	1507.2
539.4	54.3	2679.5
162.4	78.7	167.5
299.7	67	669.9
411.9	56.3	1507.2
499	46.5	2679.5
146.5	64	167.5
270.3	54.5	669.9
371.5	45.8	1507.2
450.1	37.8	2679.5

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

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Calculated Impact

Crush Factor	Maximum Crush (inches)	Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	29.6	39.4	4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.4

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

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

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4N6XPRT StifCalcs™
1998 CHEVROLET C-1500

NHTSA Crash Test - # 2809 - Front Impact

{ Pre/Post Crush Depths - Indentation Length - Closing Speed - Trapezoidal Average }

Given:

Impactor Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Test crush width = 60 inches

Pre/Post Collision Crush Depths (inches)

	Left Bumper Corner	Centerline	Right Bumper Corner	
(Driver Side)	25.9	29.6	24.7	(Pass. Side)

Calculated Stiffness Coefficients

Minimum Crush = 24.7 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = 27.5 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 29.6 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

A	B	G
224.6	117.7	214.3
414.5	100.2	857.1
569.7	84.1	1928.5
690.1	69.5	3428.5
201.7	94.9	214.3
372.3	80.8	857.1
511.6	67.9	1928.5
619.9	56	3428.5
187.4	82	214.3
345.9	69.8	857.1
475.4	58.6	1928.5
575.9	48.4	3428.5

A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb

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

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may 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

$Impact\ Speed\ (mph) = \sqrt{30 * CF * max\ crush\ in\ feet}$

Calculated Impact

Crush Factor	Maximum Crush (inches)	Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	29.6	39.4	4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.4

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

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**4N6XPRT StifCalcs™
1998 CHEVROLET C-1500**

NHTSA Crash Test - # 2809 - Front Impact

{ Pre/Post Crush Depths - Indentation Length - Closing Speed - Simple Average }

Given:

Impactor Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Test crush width = 60 inches

Pre/Post Collision Crush Depths (inches)

(Driver Side)	Left Bumper Corner 25.9	Centerline 29.6	Right Bumper Corner 24.7	(Pass. Side)
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Calculated Stiffness Coefficients

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 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = 26.7 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 29.6 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

<u>A</u>	<u>B</u>	<u>G</u>
224.6	117.7	214.3
414.5	100.2	857.1
569.7	84.1	1928.5
690.1	69.5	3428.5
207.8	100.7	214.3
383.4	85.8	857.1
527	72	1928.5
638.4	59.4	3428.5
187.4	82	214.3
345.9	69.8	857.1
475.4	58.6	1928.5
575.9	48.4	3428.5

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

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may 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

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

Calculated Impact

Crush Factor	Maximum Crush (inches)	Speed (mph)	Calculated Error (mph)	Calculated Error (%)
21	29.6	39.4	4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.4

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

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

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

**4N6XPRT StifCalcs™
1998 CHEVROLET C-1500**

NHTSA Crash Test - # 2809 - Front Impact

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

Given: Vehicle Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Damage Width = 76.8 inches

		Damage Profile Distance Crush Depths (inches)							
		DPD1	DPD2	DPD3	DPD4	DPD5	DPD6		
(Driver Side)		25.9	26.9	29.3	29.5	26.6	24.7	(Pass. Side)	

Calculated Stiffness Coefficients

Minimum Crush = 24.7 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = 27.5 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 29.5 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

<u>A</u>	<u>B</u>	<u>G</u>
175.5	92	167.5
323.9	78.3	669.9
445.2	65.8	1507.2
539.4	54.3	2679.5
157.5	74.1	167.5
290.7	63.1	669.9
399.6	53	1507.2
484.1	43.7	2679.5
147	64.5	167.5
271.2	54.9	669.9
372.8	46.1	1507.2
451.6	38.1	2679.5

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

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

*A = Maximum force per inch of damage width without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

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

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

Crush Factor	Maximum Crush (inches)	Calculated Impact		Calculated Error (mph)	Calculated Error (%)
		Speed (mph)			
21	29.5	39.4		4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.5

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

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

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4N6XPRT StifCalcs™
1998 CHEVROLET C-1500

NHTSA Crash Test - # 2809 - Front Impact

{ Damage Profile Distances - Vehicle Width - Closing Speed - Simple Average }

Given: Vehicle Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Damage Width = 76.8 inches

		Damage Profile Distance Crush Depths (inches)							
		DPD1	DPD2	DPD3	DPD4	DPD5	DPD6		
(Driver Side)		25.9	26.9	29.3	29.5	26.6	24.7	(Pass. Side)	

Calculated Stiffness Coefficients

Minimum Crush = 24.7 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

Average Crush = 27.2 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

Maximum Crush = 29.5 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

<u>A</u>	<u>B</u>	<u>G</u>
175.5	92	167.5
323.9	78.3	669.9
445.2	65.8	1507.2
539.4	54.3	2679.5
159.7	76.1	167.5
294.7	64.8	669.9
405	54.4	1507.2
490.7	44.9	2679.5
147	64.5	167.5
271.2	54.9	669.9
372.8	46.1	1507.2
451.6	38.1	2679.5

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

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

*A = Maximum force per inch of damage width without permanent damage, lb/i
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

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

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

Crush Factor	Maximum Crush (inches)	Calculated Impact		Calculated Error (mph)	Calculated Error (%)
		Speed (mph)	Calculated Error (mph)		
21	29.5	39.4	4.5	13%	

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.5

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

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

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

4N6XPRT StifCalcs™
1998 CHEVROLET C-1500

NHTSA Crash Test - # 2809 - Front Impact

{ Damage Profile Distances - Indentation Length - Closing Speed - Trapezoidal Average }

Given: Vehicle Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Damage Width = 60 inches

		Damage Profile Distance Crush Depths (inches)							
		DPD1	DPD2	DPD3	DPD4	DPD5	DPD6		
(Driver Side)		25.9	26.9	29.3	29.5	26.6	24.7	(Pass. Side)	

Calculated Stiffness Coefficients

Minimum Crush = 24.7 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

Average Crush = 27.5 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

Maximum Crush = 29.5 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

<u>A</u>	<u>B</u>	<u>G</u>
224.6	117.7	214.3
414.5	100.2	857.1
569.7	84.1	1928.5
690.1	69.5	3428.5
201.6	94.8	214.3
372	80.7	857.1
511.3	67.8	1928.5
619.4	56	3428.5
188	82.5	214.3
347	70.3	857.1
477	59	1928.5
577.8	48.7	3428.5

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

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

*A = Maximum force per inch of damage width without permanent damage, lb/i
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

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

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

Crush Factor	Maximum Crush (inches)	Calculated Impact		Calculated Error (mph)	Calculated Error (%)
		Speed (mph)			
21	29.5	39.4		4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.5

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

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

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4N6XPRT StifCalcs™
1998 CHEVROLET C-1500

NHTSA Crash Test - # 2809 - Front Impact

{ Damage Profile Distances - Indentation Length - Closing Speed - Simple Average }

Given: Vehicle Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Damage Width = 60 inches

		Damage Profile Distance Crush Depths (inches)							
		DPD1	DPD2	DPD3	DPD4	DPD5	DPD6		
(Driver Side)		25.9	26.9	29.3	29.5	26.6	24.7	(Pass. Side)	

Calculated Stiffness Coefficients

Minimum Crush = 24.7 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

Average Crush = 27.2 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

Maximum Crush = 29.5 inches

Using a Rated No Damage Speed of	2.5 mph
Using a Rated No Damage Speed of	5 mph
Using a Rated No Damage Speed of	7.5 mph
Using a Rated No Damage Speed of	10 mph

<u>A</u>	<u>B</u>	<u>G</u>
224.6	117.7	214.3
414.5	100.2	857.1
569.7	84.1	1928.5
690.1	69.5	3428.5
204.3	97.4	214.3
377.1	82.9	857.1
518.2	69.6	1928.5
627.9	57.5	3428.5
188	82.5	214.3
347	70.3	857.1
477	59	1928.5
577.8	48.7	3428.5

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

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

*A = Maximum force per inch of damage width without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

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

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

Crush Factor	Maximum Crush (inches)	Calculated Impact		Calculated Error (%)
		Speed (mph)	Calculated Error (mph)	
21	29.5	39.4	4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.5

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

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

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

**4N6XPRT StifCalcs™
1998 CHEVROLET C-1500**

NHTSA Crash Test - # 2809 - Front Impact

{ Maximum Crush - Vehicle Width - Closing Speed - }

Given:

Vehicle Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Test Crush Length = 76.8 inches

Reported Maximum Crush Depth (inches)

(Driver Side) Maximum (Pass. Side)
29.5

Calculated Stiffness Coefficients

Minimum Crush = N/A inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = N/A inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 29.5 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

<u>A</u>	<u>B</u>	<u>G</u>
147	64.5	167.5
271.2	54.9	669.9
372.8	46.1	1507.2
451.6	38.1	2679.5

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

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may have a higher rating*

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats (version 4.1+)

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

	Maximum Crush (inches)	Calculated Impact Speed (mph)	Calculated Error (mph)	Calculated Error (%)
Crush Factor 21	29.5	39.4	4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.5

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

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

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

**4N6XPRT StifCalcs™
1998 CHEVROLET C-1500**

NHTSA Crash Test - # 2809 - Front Impact

{ Maximum Crush - Indentation Length - Closing Speed - }

Given:

Vehicle Test Weight = 5132 pounds
 Vehicle Test Speed = 34.9 mph
 Test Crush Length = 60 inches

Reported Maximum Crush Depth (inches)

(Driver Side) Maximum (Pass. Side)
29.5

Calculated Stiffness Coefficients

Minimum Crush = N/A inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = N/A inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 29.5 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

A	B	G
188	82.5	214.3
347	70.3	857.1
477	59	1928.5
577.8	48.7	3428.5

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

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may have a higher rating*

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in^2
 G = Energy dissipated without permanent damage, lb*

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

Speed from Crush calculation using a generic CF of 21 as suggested in Expert AutoStats (version 4.1+)

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

	Maximum Crush (inches)	Calculated Impact Speed (mph)	Calculated Error (mph)	Calculated Error (%)
Crush Factor 21	29.5	39.4	4.5	13%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 16.5

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

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

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Stiffness Values and Test Data

Derived from

NHTSA Crash Test

2926

Provided By

4N6XPRT StifCalcs™

Registered to:

4N6XPRT SYSTEMS

8387 UNIVERSITY AVENUE

LAMESA CA 91941-384

S/N: 03R-030201SC01301

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4N6XPRT StifCalcs™

Sister/Clone database reader

You entered: **1999 Mazda Miata**

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

Year Range	Make	Model	Body Styles	Wheelbase
1999 - 2003	Mazda	Miata	2d	89.2"

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 express 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.

4N6XPRT StifCalcs™

Test Information

Test # NHTSA Version # Test Date Contract #

Contract/Study Title

Test Objective(s)

Test Type Configuration

Closing Speed Km/Hr MPH

Impact Angle Offset Distance mm inches Side Impact Point mm inches

Test Performer Test Reference #

Test Track Surface Condition Ambient Temperature C F

Data Recorder Type Data Link Total Number of Curves

Test Commentary

No Fixed Barrier Data

LEFT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Head

Head To Head To

Windshield Header	<input type="text" value="377"/> mm	<input type="text" value="14.8"/> inches	Side Header	<input type="text" value="183"/> mm	<input type="text" value="7.2"/> inches
Windshield	<input type="text" value="493"/> mm	<input type="text" value="19.4"/> inches	Side Window	<input type="text" value="239"/> mm	<input type="text" value="9.4"/> inches
Seatback	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches			
Neck to Seatback	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches			

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

Head Injury Criteria (HIC) HIC Lower Time interval (ms) HIC Upper Time interval (ms)

Chest

Chest To

Dash	<input type="text" value="486"/> mm	<input type="text" value="19.1"/> inches	Arm to Door	<input type="text" value="47"/> mm	<input type="text" value="1.9"/> inches
Steering Wheel	<input type="text" value="281"/> mm	<input type="text" value="11.1"/> inches	Hip to Door	<input type="text" value="98"/> mm	<input type="text" value="3.9"/> inches
Seatback	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches			

First Contact Region (Chest/Abdomen) Second Contact Region (Chest/Abdomen)

Lap Belt Peak Load Newtons pounds Force Shoulder Belt Peak Load Newtons pounds Force

Chest Severity Index

Thorax Peak Acceleration (g's) Thoracic Trauma Index Pelvic Peak Lateral Acceleration (g's)

Legs

Knees to Dash mm inches Knees to Seatback mm inches

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

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

LEFT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Restraints

Restraint # 1 Mounted Deployment?

Restraint Commentary

Restraint # 2 Mounted Deployment?

Restraint Commentary

RIGHT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Head

Head To	Head To
Windshield Header <input type="text" value="341"/> mm <input type="text" value="13.4"/> inches	Side Header <input type="text" value="197"/> mm <input type="text" value="7.8"/> inches
Windshield <input type="text" value="455"/> mm <input type="text" value="17.9"/> inches	Side Window <input type="text" value="249"/> mm <input type="text" value="9.8"/> inches
Seatback <input type="text" value="9999"/> mm <input type="text" value="0"/> inches	
Neck to Seatback <input type="text" value="9999"/> mm <input type="text" value="0"/> inches	
First Contact Region (Head) <input type="text" value="OTHER"/>	Second Contact Region (Head) <input type="text" value="OTHER"/>
Head Injury Criteria (HIC) <input type="text" value="914"/> HIC Lower Time interval (ms) <input type="text" value="62"/>	HIC Upper Time interval (ms) <input type="text" value="92.40"/>

Chest

Chest To	Arm to Door <input type="text" value="79"/> mm <input type="text" value="3.1"/> inches
Dash <input type="text" value="463"/> mm <input type="text" value="18.2"/> inches	Hip to Door <input type="text" value="97"/> mm <input type="text" value="3.8"/> inches
Steering Wheel <input type="text" value="9999"/> mm <input type="text" value="0"/> inches	
Seatback <input type="text" value="9999"/> mm <input type="text" value="0"/> inches	
First Contact Region (Chest/Abdomen) <input type="text" value="OTHER"/>	Second Contact Region (Chest/Abdomen) <input type="text" value="NONE"/>
Lap Belt Peak Load <input type="text" value="9999"/> Newtons <input type="text" value="0"/> pounds Force	Shoulder Belt Peak Load <input type="text" value="9999"/> Newtons <input type="text" value="0"/> pounds Force
Chest Severity Index <input type="text" value="9999"/>	
Thorax Peak Acceleration (g's) <input type="text" value="999.9"/> Thoracic Trauma Index <input type="text" value="0"/>	Pelvic Peak Lateral Acceleration (g's) <input type="text" value="0"/>

Legs

Knees to Dash <input type="text" value="136"/> mm <input type="text" value="5.4"/> inches	Knees to Seatback <input type="text" value="9999"/> mm <input type="text" value="0"/> inches
First Contact Region (Legs) <input type="text" value="NONE"/>	Second Contact Region (Legs) <input type="text" value="NONE"/>
Left Femur Peak Load <input type="text" value="1174"/> Newtons <input type="text" value="263.9"/> pounds Force	Right Femur Peak Load <input type="text" value="1333"/> Newtons <input type="text" value="299.7"/> pounds Force

RIGHT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Restraints

Restraint # 1 Mounted Deployment?

Restraint Commentary

Restraint # 2 Mounted Deployment?

Restraint Commentary

Vehicle 1 - 1999 NHTSA DEFORMABLE IMPACTOR

Test # NHTSA Test Vehicle Number VIN

Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length mm inches Vehicle Test Weight KG pounds

Vehicle Wheelbase mm inches Vehicle Width mm inches

CG behind front axle mm inches Total Length of Indentation mm inches

Center of Damage to CG Axis mm inches Maximum Static Crush Depth mm inches

Vehicle Damage Index Principal Direction of Force Pre-Impact Speed kph mph

Damage Profile Distance Measurements

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

DPD 1 mm inches

DPD 2 mm inches

DPD 3 mm inches

DPD 4 mm inches

DPD 5 mm inches

DPD 6 mm inches

Bumper Engagement
(Inline Impact Only)

Moving Test Cart
Angle

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

Crush from Pre & Post Test Damage Measurements

Pre-Test Post-Test Crush-Depth

Left Bumper Corner inches inches inches
 mm mm mm

Centerline inches inches inches
 mm mm mm

Right Bumper Corner inches inches inches
 mm mm mm

Still Engagement
(Side Impact Only)

Moving Test Cart / Vehicle
Crabbed Angle

*Magnitude of the Crabbed Angle Measured
Clockwise from Logitudinal Vector to Velocity
Vector of Vehicle*

A-pillar Engagement
(Side Impact Only)

Moving Test Cart
Vehicle Orientation on Cart

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

Vehicle 1 - 1999 NHTSA DEFORMABLE IMPACTOR

Test # NHTSA Test Vehicle Number VIN
 Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length mm inches **Vehicle Test Weight** KG pounds
 Vehicle Wheelbase mm inches **Vehicle Width** mm inches
 CG behind front axle mm inches **Total Length of Indentation** mm inches
 Center of Damage to CG Axis mm inches **Maximum Static Crush Depth** mm inches

Vehicle Damage Index Principal Direction of Force **Pre-Impact Speed** kph mph

Pre & Post Test Measurements

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

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
Length of Vehicle at Centerline											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Engine Block											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front Bumper Corner											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front of Engine											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Firewall											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Bottom of 'A' Post				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Steering Column											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Center of Steering Column to 'A' Post (Horizontal)				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Center of Steering Column to 'A' Post (Vertical)											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>

4N6XPRT StifCalcs™

Vehicle 2 - 1999 MAZDA MIATA

Test # NHTSA Test Vehicle Number VIN

Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length	<input type="text" value="3947"/> mm	<input type="text" value="155.4"/> inches	Vehicle Test Weight	<input type="text" value="1226"/> KG	<input type="text" value="2703"/> pounds
Vehicle Wheelbase	<input type="text" value="2265"/> mm	<input type="text" value="89.2"/> inches	Vehicle Width	<input type="text" value="1678"/> mm	<input type="text" value="66.1"/> inches
CG behind front axle	<input type="text" value="1102"/> mm	<input type="text" value="43.4"/> inches	Total Length of Indentation	<input type="text" value="99999"/> mm	<input type="text" value="0"/> inches
Center of Damage to CG Axis	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches	Maximum Static Crush Depth	<input type="text" value="579"/> mm	<input type="text" value="22.8"/> inches

Vehicle Damage Index Principal Direction of Force Pre-Impact Speed kph mph

Damage Profile Distance Measurements

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

DPD 1	<input type="text"/>	mm	<input type="text" value="0"/>	inches
DPD 2	<input type="text"/>	mm	<input type="text" value="0"/>	inches
DPD 3	<input type="text"/>	mm	<input type="text" value="0"/>	inches
DPD 4	<input type="text"/>	mm	<input type="text" value="0"/>	inches
DPD 5	<input type="text"/>	mm	<input type="text" value="0"/>	inches
DPD 6	<input type="text"/>	mm	<input type="text" value="0"/>	inches

Crush from Pre & Post Test Damage Measurements

	<u>Pre-Test</u>	<u>Post-Test</u>	<u>Crush-Depth</u>
Left Bumper Corner	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm
Centerline	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm
Right Bumper Corner	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm

Bumper Engagement
(Inline Impact Only)

Still Engagement
(Side Impact Only)

A-pillar Engagement
(Side Impact Only)

Moving Test Cart
Angle

Moving Test Cart / Vehicle
Crabbed Angle

Moving Test Cart
Vehicle Orientation on Cart

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

Magnitude of the Crabbed Angle Measured Clockwise from Logitudinal Vector to Velocity Vector of Vehicle

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

Vehicle 2 - 1999 MAZDA MIATA

Test # NHTSA Test Vehicle Number VIN
 Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length	<input type="text" value="3947"/> mm	<input type="text" value="155.4"/> inches	Vehicle Test Weight	<input type="text" value="1226"/> KG	<input type="text" value="2703"/> pounds
Vehicle Wheelbase	<input type="text" value="2265"/> mm	<input type="text" value="89.2"/> inches	Vehicle Width	<input type="text" value="1678"/> mm	<input type="text" value="66.1"/> inches
CG behind front axle	<input type="text" value="1102"/> mm	<input type="text" value="43.4"/> inches	Total Length of Indentation	<input type="text" value="99999"/> mm	<input type="text" value="0"/> inches
Center of Damage to CG Axis	<input type="text" value="9999"/> mm	<input type="text" value="0"/> inches	Maximum Static Crush Depth	<input type="text" value="579"/> mm	<input type="text" value="22.8"/> inches
Vehicle Damage Index	<input type="text" value="9999999"/>	Principal Direction of Force	<input type="text" value="180"/>	Pre-Impact Speed	<input type="text" value="0"/> kph <input type="text" value="0"/> mph

Pre & Post Test Measurements

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

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
Length of Vehicle at Centerline											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Engine Block											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front Bumper Corner											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front of Engine											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Firewall											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Bottom of 'A' Post				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Steering Column											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Center of Steering Column to 'A' Post (Horizontal)				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Center of Steering Column to 'A' Post (Vertical)				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>

**4N6XPRT StifCalcs™
1999 MAZDA MIATA**

NHTSA Crash Test - # 2926 - Rear Impact

{ Maximum Crush - Vehicle Width - KE Equivalent Speed - }

Given:

Vehicle Test Weight = 2703 pounds	Impactor Test Weight = 2994 pounds
KE Equivalent Speed = 37.1 mph	Impactor Test Speed = 51.2 mph
Test Crush Length = 66.1 inches	

Reported Maximum Crush Depth (inches)

(Driver Side)	Maximum 22.8	(Pass. Side)
---------------	-----------------	--------------

Calculated Stiffness Coefficients

Minimum Crush = N/A inches
 Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = N/A inches
 Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 22.8 inches
 Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

A	B	G
124.5	75.6	102.5
231	65.1	410
319.5	55.3	922.4
390.1	46.4	1639.8

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

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in^2
 G = Energy dissipated without permanent damage, lb*

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may 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 (version 4.1+)

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

	Calculated KE Equivalent Speed (mph)	Calculated Error (mph)	Calculated Error (%)
Crush Factor 21	Maximum Crush (inches) 22.8	34.6	-2.5
		-2.5	-6.8%

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

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

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

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

**4N6XPRT StifCalcs™
1999 MAZDA MIATA**

NHTSA Crash Test - # 2926 - Rear Impact

{ Maximum Crush - Vehicle Width - Closing Speed - }

Given:

Vehicle Test Weight = 2703 pounds
 Impactor Test Speed = 51.2 mph
 Test Crush Length = 66.1 inches

Reported Maximum Crush Depth (inches)

(Driver Side) Maximum (Pass. Side)
22.8

Calculated Stiffness Coefficients

Minimum Crush = N/A inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Average Crush = N/A inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

Maximum Crush = 22.8 inches

Using a Rated No Damage Speed of 2.5 mph
 Using a Rated No Damage Speed of 5 mph
 Using a Rated No Damage Speed of 7.5 mph
 Using a Rated No Damage Speed of 10 mph

<u>A</u>	<u>B</u>	<u>G</u>
175.1	149.6	102.5
332.3	134.7	410
471.5	120.5	922.4
592.7	107.1	1639.8

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

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may have a higher rating*

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

Speed from Crush calculation using a generic CF of 27 as suggested in Expert AutoStats (version 4.1+)

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

	Maximum Crush (inches)	Calculated Impact Speed (mph)	Calculated Error (mph)	Calculated Error (%)
Crush Factor 27	22.8	39.2	-12	-23.4%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 46

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

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

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

Stiffness Values and Test Data

Derived from

NHTSA Crash Test

1272

Provided By

4N6XPRT StifCalcs™

Registered to:

4N6XPRT SYSTEMS

8387 UNIVERSITY AVENUE

LAMESA CA 91941-384

S/N: 03R-030201SC01301

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4N6XPRT StifCalcs™

Sister/Clone database reader

You entered: **1988 Volkswagen Golf**

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

Year Range	Make	Model	Body Styles	Wheelbase
1985 - 1992	Volkswagen	Golf	3d,5d	97.3"

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 express 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.

4N6XPRT StifCalcs™

Test Information

Test # NHTSA Version # Test Date Contract #

Contract/Study Title

Test Objective(s)

Test Type Configuration

Closing Speed Km/Hr MPH

Impact Angle Offset Distance mm inches Side Impact Point mm inches

Test Performer Test Reference #

Test Track Surface Condition Ambient Temperature C F

Data Recorder Type Data Link Total Number of Curves

Test Commentary

No Fixed Barrier Data

LEFT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Head

Head To	Head To
Windshield Header <input type="text" value="422"/> mm <input type="text" value="16.6"/> inches	Side Header <input type="text" value="140"/> mm <input type="text" value="5.5"/> inches
Windshield <input type="text" value="531"/> mm <input type="text" value="20.9"/> inches	Side Window <input type="text" value="216"/> mm <input type="text" value="8.5"/> inches
Seatback <input type="text" value=""/> mm <input type="text" value="0"/> inches	
Neck to Seatback <input type="text" value=""/> mm <input type="text" value="0"/> inches	
First Contact Region (Head) <input type="text" value="OTHER"/>	Second Contact Region (Head) <input type="text" value="OTHER"/>
Head Injury Criteria (HIC) <input type="text" value="324"/> HIC Lower Time interval (ms) <input type="text" value="46.95"/>	HIC Upper Time interval (ms) <input type="text" value="67.65"/>

Chest

Chest To	Arm to Door <input type="text" value="97"/> mm <input type="text" value="3.8"/> inches
Dash <input type="text" value="546"/> mm <input type="text" value="21.5"/> inches	Hip to Door <input type="text" value="145"/> mm <input type="text" value="5.7"/> inches
Steering Wheel <input type="text" value="356"/> mm <input type="text" value="14"/> inches	
Seatback <input type="text" value=""/> mm <input type="text" value="0"/> inches	
First Contact Region (Chest/Abdomen) <input type="text" value="OTHER"/>	Second Contact Region (Chest/Abdomen) <input type="text" value="NONE"/>
Lap Belt Peak Load <input type="text" value=""/> Newtons <input type="text" value="0"/> pounds Force	Shoulder Belt Peak Load <input type="text" value=""/> Newtons <input type="text" value="0"/> pounds Force
Chest Severity Index <input type="text" value=""/>	
Thorax Peak Acceleration (g's) <input type="text" value=""/>	Thoracic Trauma Index <input type="text" value=""/>
	Pelvic Peak Lateral Acceleration (g's) <input type="text" value=""/>

Legs

Knees to Dash <input type="text" value="107"/> mm <input type="text" value="4.2"/> inches	Knees to Seatback <input type="text" value=""/> mm <input type="text" value="0"/> inches
First Contact Region (Legs) <input type="text" value="OTHER"/>	Second Contact Region (Legs) <input type="text" value="NONE"/>
Left Femur Peak Load <input type="text" value=""/> Newtons <input type="text" value="0"/> pounds Force	Right Femur Peak Load <input type="text" value=""/> Newtons <input type="text" value="0"/> pounds Force

LEFT FRONT SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Restraints

Restraint # 1 Mounted Deployment?

Restraint Commentary

Restraint # 2 Mounted Deployment?

Restraint Commentary

LEFT REAR SEAT OCCUPANT

Test # 1272 Vehicle # 2 Location LEFT REAR SEAT Seat Position NONADJUSTABLE SEAT

Type NHTSA SIDE IMPACT DUMMY Size Percentile 50 PERCENTILE Calibration Method HSRI

Sex M Age Occupant Height mm 0 inches Occupant Weight kg 0 pounds

Occupant Manufacturer HUMANOID S/N: 904

Occupant Modification NO COMMENTS

Occupant Description SIDE IMPACT DUMMY

Occupant Commentary CNTRH1 IS LEFT REAR ROOF RAIL; CNTRC1 IS LEFT REAR SIDE PANEL.

Head

Head To Head To
Windshield Header mm 0 inches Side Header 168 mm 6.6 inches
Windshield mm 0 inches Side Window 241 mm 9.5 inches
Seatback 577 mm 22.7 inches
Neck to Seatback mm 0 inches

First Contact Region (Head) OTHER Second Contact Region (Head) NONE

Head Injury Criteria (HIC) 350 HIC Lower Time interval (ms) 48.97 HIC Upper Time interval (ms) 62.92

Chest

Chest To
Dash mm 0 inches Arm to Door 119 mm 4.7 inches
Steering Wheel mm 0 inches Hip to Door 157 mm 6.2 inches
Seatback 450 mm 17.7 inches

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

Lap Belt Peak Load Newtons 0 pounds Force Shoulder Belt Peak Load Newtons 0 pounds Force

Chest Severity Index

Thorax Peak Acceleration (g's) Thoracic Trauma Index Pelvic Peak Lateral Acceleration (g's)

Legs

Knees to Dash mm 0 inches Knees to Seatback 127 mm 5 inches

First Contact Region (Legs) NONE Second Contact Region (Legs) NONE

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

LEFT REAR SEAT OCCUPANT

Test # Vehicle # Location Seat Position

Type Size Percentile Calibration Method

Sex Age Occupant Height mm inches Occupant Weight kg pounds

Occupant Manufacturer

Occupant Modification

Occupant Description

Occupant Commentary

Restraints

Restraint # 1 Mounted Deployment?

Restraint Commentary

Restraint # 2 Mounted Deployment?

Restraint Commentary

Vehicle 1 - NHTSA DEFORMABLE IMPACTOR

Test # NHTSA Test Vehicle Number VIN

Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length	<input type="text" value="4206"/> mm	<input type="text" value="165.6"/> inches	Vehicle Test Weight	<input type="text" value="1315"/> KG	<input type="text" value="2899"/> pounds
Vehicle Wheelbase	<input type="text" value="2591"/> mm	<input type="text" value="102"/> inches	Vehicle Width	<input type="text" value="1676"/> mm	<input type="text" value="66"/> inches
CG behind front axle	<input type="text" value="777"/> mm	<input type="text" value="30.6"/> inches	Total Length of Indentation	<input type="text"/> mm	<input type="text" value="0"/> inches
Center of Damage to CG Axis	<input type="text"/> mm	<input type="text" value="0"/> inches	Maximum Static Crush Depth	<input type="text"/> mm	<input type="text" value="0"/> inches

Vehicle Damage Index Principal Direction of Force Pre-Impact Speed kph mph

Damage Profile Distance Measurements

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

DPD 1	<input type="text" value="38"/> mm	<input type="text" value="1.5"/> inches
DPD 2	<input type="text" value="8"/> mm	<input type="text" value="0.3"/> inches
DPD 3	<input type="text" value="8"/> mm	<input type="text" value="0.3"/> inches
DPD 4	<input type="text" value="13"/> mm	<input type="text" value="0.5"/> inches
DPD 5	<input type="text" value="38"/> mm	<input type="text" value="1.5"/> inches
DPD 6	<input type="text" value="102"/> mm	<input type="text" value="4"/> inches

Bumper Engagement
(Inline Impact Only)

Moving Test Cart
Angle

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

Crush from Pre & Post Test Damage Measurements

	<u>Pre-Test</u>	<u>Post-Test</u>	<u>Crush-Depth</u>
Left Bumper Corner	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm
Centerline	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm
Right Bumper Corner	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm

Still Engagement
(Side Impact Only)

Moving Test Cart / Vehicle
Crabbed Angle

*Magnitude of the Crabbed Angle Measured
Clockwise from Logitudinal Vector to Velocity
Vector of Vehicle*

A-pillar Engagement
(Side Impact Only)

Moving Test Cart
Vehicle Orientation on Cart

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

Vehicle 1 - NHTSA DEFORMABLE IMPACTOR

Test # NHTSA Test Vehicle Number VIN

Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length mm inches **Vehicle Test Weight** KG pounds

Vehicle Wheelbase mm inches **Vehicle Width** mm inches

CG behind front axle mm inches **Total Length of Indentation** mm inches

Center of Damage to CG Axis mm inches **Maximum Static Crush Depth** mm inches

Vehicle Damage Index Principal Direction of Force **Pre-Impact Speed** kph mph

Pre & Post Test Measurements

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

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
Length of Vehicle at Centerline											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Engine Block											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front Bumper Corner											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front of Engine											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Firewall											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Bottom of 'A' Post				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Steering Column											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Center of Steering Column to 'A' Post (Horizontal)				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Center of Steering Column to 'A' Post (Vertical)				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>

Vehicle 2 - 1988 VOLKSWAGEN GOLF

Test # NHTSA Test Vehicle Number VIN

Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length	<input type="text" value="4011"/> mm	<input type="text" value="157.9"/> inches	Vehicle Test Weight	<input type="text" value="1207"/> KG	<input type="text" value="2661"/> pounds
Vehicle Wheelbase	<input type="text" value="2479"/> mm	<input type="text" value="97.6"/> inches	Vehicle Width	<input type="text" value="1651"/> mm	<input type="text" value="65"/> inches
CG behind front axle	<input type="text" value="1034"/> mm	<input type="text" value="40.7"/> inches	Total Length of Indentation	<input type="text" value="1676"/> mm	<input type="text" value="66"/> inches
Center of Damage to CG Axis	<input type="text" value="-180"/> mm	<input type="text" value="-7.1"/> inches	Maximum Static Crush Depth	<input type="text" value="353"/> mm	<input type="text" value="13.9"/> inches

Vehicle Damage Index Principal Direction of Force Pre-Impact Speed kph mph

Damage Profile Distance Measurements

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

DPD 1	<input type="text" value="173"/> mm	<input type="text" value="6.8"/> inches
DPD 2	<input type="text" value="353"/> mm	<input type="text" value="13.9"/> inches
DPD 3	<input type="text" value="351"/> mm	<input type="text" value="13.8"/> inches
DPD 4	<input type="text" value="351"/> mm	<input type="text" value="13.8"/> inches
DPD 5	<input type="text" value="353"/> mm	<input type="text" value="13.9"/> inches
DPD 6	<input type="text" value="221"/> mm	<input type="text" value="8.7"/> inches

Bumper Engagement
(Inline Impact Only)

Moving Test Cart
Angle

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

Crush from Pre & Post Test Damage Measurements

	Pre-Test	Post-Test	Crush-Depth
Left Bumper Corner	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm
Centerline	<input type="text" value="157.9"/> inches	<input type="text" value="157.9"/> inches	<input type="text" value="0"/> inches
	<input type="text" value="4011"/> mm	<input type="text" value="4011"/> mm	<input type="text" value="0"/> mm
Right Bumper Corner	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches	<input type="text" value="0"/> inches
	<input type="text"/> mm	<input type="text"/> mm	<input type="text" value="0"/> mm

Still Engagement
(Side Impact Only)

Moving Test Cart / Vehicle
Crabbed Angle

*Magnitude of the Crabbed Angle Measured
Clockwise from Logitudinal Vector to Velocity
Vector of Vehicle*

A-pillar Engagement
(Side Impact Only)

Moving Test Cart
Vehicle Orientation on Cart

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

Vehicle 2 - 1988 VOLKSWAGEN GOLF

Test # NHTSA Test Vehicle Number VIN
 Year Make Model Body

Vehicle Modification Indicator Vehicle Modification(s) Description

Post-test Steering Column Shear Capsule Separation Steering Column Collapse Mechanism

Vehicle Commentary

Vehicle Length	<input type="text" value="4011"/> mm	<input type="text" value="157.9"/> inches	Vehicle Test Weight	<input type="text" value="1207"/> KG	<input type="text" value="2661"/> pounds
Vehicle Wheelbase	<input type="text" value="2479"/> mm	<input type="text" value="97.6"/> inches	Vehicle Width	<input type="text" value="1651"/> mm	<input type="text" value="65"/> inches
CG behind front axle	<input type="text" value="1034"/> mm	<input type="text" value="40.7"/> inches	Total Length of Indentation	<input type="text" value="1676"/> mm	<input type="text" value="66"/> inches
Center of Damage to CG Axis	<input type="text" value="-180"/> mm	<input type="text" value="-7.1"/> inches	Maximum Static Crush Depth	<input type="text" value="353"/> mm	<input type="text" value="13.9"/> inches

Vehicle Damage Index Principal Direction of Force Pre-Impact Speed kph mph

Pre & Post Test Measurements

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

Left Side				Centerline				Right Side			
Pre-Test		Post-Test		Pre-Test		Post-Test		Pre-Test		Post-Test	
mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches
Length of Vehicle at Centerline											
		<input type="text" value="4011"/>	<input type="text" value="157.9"/>	<input type="text" value="4011"/>	<input type="text" value="157.9"/>						
Engine Block											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front Bumper Corner											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Front of Engine											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Firewall											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Leading Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Bottom of 'A' Post				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Upper Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Lower Trailing Edge of Door				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
Steering Column											
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Center of Steering Column to 'A' Post (Horizontal)				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>
<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	Center of Steering Column to 'A' Post (Vertical)				<input type="text"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>

4N6XPRT StifCalcs™
1988 VOLKSWAGEN GOLF

NHTSA Crash Test - # 1272 - Side Impact

{ Damage Profile Distances - Indentation Length - Closing Speed - Trapezoidal Average }

Given: Vehicle Test Weight = 2899 pounds
 Impactor Test Speed = 33.8 mph
 Damage Width = 66 inches

		Damage Profile Distance Crush Depths (inches)							
		DPD1	DPD2	DPD3	DPD4	DPD5	DPD6		
(Driver Side)		6.8	13.9	13.8	13.8	13.9	8.7	(Pass. Side)	

Calculated Stiffness Coefficients

Minimum Crush = 6.8 inches

Using a Rated No Damage Speed of	1 mph
Using a Rated No Damage Speed of	2 mph
Using a Rated No Damage Speed of	3 mph
Using a Rated No Damage Speed of	5 mph

Average Crush = 12.6 inches

Using a Rated No Damage Speed of	1 mph
Using a Rated No Damage Speed of	2 mph
Using a Rated No Damage Speed of	3 mph
Using a Rated No Damage Speed of	5 mph

Maximum Crush = 13.9 inches

Using a Rated No Damage Speed of	1 mph
Using a Rated No Damage Speed of	2 mph
Using a Rated No Damage Speed of	3 mph
Using a Rated No Damage Speed of	5 mph

<u>A</u>	<u>B</u>	<u>G</u>
155.9	752.3	16.2
302.4	707.1	64.7
439.3	663.4	145.5
684.7	580	404.1
84	218.1	16.2
162.8	205	64.7
236.5	192.3	145.5
368.6	168.1	404.1
76.3	180	16.2
147.9	169.2	64.7
214.9	158.8	145.5
334.9	138.8	404.1

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

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

*A = Maximum force per inch of damage width without permanent damage, lb/i
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

Speed from Crush calculation using a generic CF of 27 as suggested in Expert AutoStats

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

Crush Factor	Maximum Crush (inches)	Calculated Impact		Calculated Error (mph)	Calculated Error (%)
		Speed (mph)			
27	13.9	30.6		-3.2	-9.5%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 32.9

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

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

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**4N6XPRT StifCalcs™
1988 VOLKSWAGEN GOLF**

NHTSA Crash Test - # 1272 - Side Impact

{ Damage Profile Distances - Indentation Length - Closing Speed - Simple Average }

Given: Vehicle Test Weight = 2899 pounds
 Impactor Test Speed = 33.8 mph
 Damage Width = 66 inches

	Damage Profile Distance Crush Depths (inches)						
	DPD1	DPD2	DPD3	DPD4	DPD5	DPD6	
(Driver Side)	6.8	13.9	13.8	13.8	13.9	8.7	(Pass. Side)

Calculated Stiffness Coefficients

Minimum Crush = 6.8 inches

Using a Rated No Damage Speed of	1 mph
Using a Rated No Damage Speed of	2 mph
Using a Rated No Damage Speed of	3 mph
Using a Rated No Damage Speed of	5 mph

Average Crush = 11.8 inches

Using a Rated No Damage Speed of	1 mph
Using a Rated No Damage Speed of	2 mph
Using a Rated No Damage Speed of	3 mph
Using a Rated No Damage Speed of	5 mph

Maximum Crush = 13.9 inches

Using a Rated No Damage Speed of	1 mph
Using a Rated No Damage Speed of	2 mph
Using a Rated No Damage Speed of	3 mph
Using a Rated No Damage Speed of	5 mph

<u>A</u>	<u>B</u>	<u>G</u>
155.9	752.3	16.2
302.4	707.1	64.7
439.3	663.4	145.5
684.7	580	404.1
89.7	249.1	16.2
174	234.2	64.7
252.8	219.7	145.5
394	192.1	404.1
76.3	180	16.2
147.9	169.2	64.7
214.9	158.8	145.5
334.9	138.8	404.1

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

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

*A = Maximum force per inch of damage width without permanent damage, lb/i
 B = Crush resistance per inch of damage width, lb/in²
 G = Energy dissipated without permanent damage, lb*

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

Speed from Crush calculation using a generic CF of 27 as suggested in Expert AutoStats

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

Crush Factor	Maximum Crush (inches)	Calculated Impact Speed (mph)	Calculated Error (mph)	Calculated Error (%)
27	13.9	30.6	-3.2	-9.5%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 32.9

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

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

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**4N6XPRT StifCalcs™
1988 VOLKSWAGEN GOLF**

NHTSA Crash Test - # 1272 - Side Impact

{ Maximum Crush - Indentation Length - KE Equivalent Speed - }

Given:

Vehicle Test Weight = 2661 pounds	Impactor Test Weight = 2899 pounds
KE Equivalent Speed = 24.4 mph	Impactor Test Speed = 33.8 mph
Test Crush Length = 66 inches	

Reported Maximum Crush Depth (inches)

(Driver Side)	Maximum 13.9	(Pass. Side)
---------------	-----------------	--------------

Calculated Stiffness Coefficients

Minimum Crush = N/A inches

Using a Rated No Damage Speed of 1 mph
 Using a Rated No Damage Speed of 2 mph
 Using a Rated No Damage Speed of 3 mph
 Using a Rated No Damage Speed of 5 mph

Average Crush = N/A inches

Using a Rated No Damage Speed of 1 mph
 Using a Rated No Damage Speed of 2 mph
 Using a Rated No Damage Speed of 3 mph
 Using a Rated No Damage Speed of 5 mph

Maximum Crush = 13.9 inches

Using a Rated No Damage Speed of 1 mph
 Using a Rated No Damage Speed of 2 mph
 Using a Rated No Damage Speed of 3 mph
 Using a Rated No Damage Speed of 5 mph

A	B	G
76.3	180	16.2
147.9	169.2	64.7
214.9	158.8	145.5
334.9	138.8	404.1

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

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may have a higher rating*

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in^2
 G = Energy dissipated without permanent damage, lb*

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

Speed from Crush calculation using a generic CF of 27 as suggested in Expert AutoStats (version 4.1+)

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

	Calculated KE Equivalent Speed			
Crush Factor	Maximum Crush (inches)	(mph)	Calculated Error (mph)	Calculated Error (%)
27	13.9	30.6	-3.2	-9.5%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 32.9

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

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

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**4N6XPRT StifCalcs™
1988 VOLKSWAGEN GOLF**

NHTSA Crash Test - # 1272 - Side Impact

{ Maximum Crush - Indentation Length - Closing Speed - }

Given:

Vehicle Test Weight = 2661 pounds
 Impactor Test Speed = 33.8 mph
 Test Crush Length = 66 inches

Reported Maximum Crush Depth (inches)

(Driver Side) Maximum (Pass. Side)
13.9

Calculated Stiffness Coefficients

Minimum Crush = N/A inches

Using a Rated No Damage Speed of 1 mph
 Using a Rated No Damage Speed of 2 mph
 Using a Rated No Damage Speed of 3 mph
 Using a Rated No Damage Speed of 5 mph

Average Crush = N/A inches

Using a Rated No Damage Speed of 1 mph
 Using a Rated No Damage Speed of 2 mph
 Using a Rated No Damage Speed of 3 mph
 Using a Rated No Damage Speed of 5 mph

Maximum Crush = 13.9 inches

Using a Rated No Damage Speed of 1 mph
 Using a Rated No Damage Speed of 2 mph
 Using a Rated No Damage Speed of 3 mph
 Using a Rated No Damage Speed of 5 mph

<u>A</u>	<u>B</u>	<u>G</u>
76.3	180	16.2
147.9	169.2	64.7
214.9	158.8	145.5
334.9	138.8	404.1

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

*Normal "Rated No Damage Speed" is 2.5 or 5 mph.
 Some specific vehicles may have a higher rating*

*A = Maximum force per inch of damage without permanent damage, lb/in
 B = Crush resistance per inch of damage width, lb/in^2
 G = Energy dissipated without permanent damage, lb*

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

Speed from Crush calculation using a generic CF of 27 as suggested in Expert AutoStats (version 4.1+)

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

	Maximum Crush (inches)	Calculated Impact Speed (mph)	Calculated Error (mph)	Calculated Error (%)
Crush Factor 27	13.9	30.6	-3.2	-9.5%

4N6XPRT Systems Specific Crush Factor (CF specific to this test) = 32.9

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

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

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