REPORT NUMBER: CAL-06-12

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

SUZUKI MOTOR CORPORATION
2006 SUZUKI GRAND VITARA
MPV

NHTSA NUMBER: M60517

CALSPAN TEST NUMBER: 8642-NCAP-71

CALSPAN CORPORATION
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February 9, 2006

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking
Office of Crashworthiness Standards
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400 Seventh Street, SW, Room No. 5311
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TECHNICAL REPORT STANDARD TITLE PAGE

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15. Supplementary Notes

16. Abstract

A frontal load cell barrier test of a 2006 Suzuki Grand Vitara MPV was performed at Calspan Corporation's crash test facility in Buffalo, New York, on February 9, 2006.

The impact velocity was 56.81 kph and the temperature at the barrier face was 21.4°C. The maximum post-test vehicle crush was 510 mm. The test vehicle was equipped with 3-point restraint systems, knee bolsters, and airbags at both the driver and right outboard passenger seating positions.

With respect to FMVSS 208 "Occupant Crash Protection - Injury Criteria" both the driver and passenger appeared to comply with head, chest, and femur requirements. The occupant injury criteria summary is as follows:

Measurement Description	**Units**	**Threshold**	**Driver (142)**	**Passenger (150)**
Head Injury Criteria (HIC - 36 ms)	-	1000	388.1	446.2
Maximum Thorax Acceleration (3 ms Clip)	g's	60 g's	48.9	51.9
Chest Displacement	mm	-76 mm	-32.3	-29.7
Left Femur Force	Newtons	-10000 N	-3372.2	-2226.3
Right Femur Force	Newtons	-10000 N	-2532.3	-2045.9

17. Key Words 56 kph Frontal Barrier Impact test New Car Assessment Program (NCAP)	*18. Distribution Statement* Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5111 Washington, DC 20590

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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 56.81 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-32005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.81 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 56.81 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated December 1999. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

One real-time camera and 14 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with nine accelerometer array heads, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also installed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 142) and the right-front passenger (position 2) ATD (Serial No.150) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. The 140 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Appendix C contains the dummy calibration data and Appendix D contains the transducer calibration dates.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier consisting of 36 load cells was impacted by a 2006 Suzuki Grand Vitara MPV at a velocity of 56.81 kph. The test was performed at Calspan on February 9, 2006. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The occupant data is summarized below.

ATD	HIC	T_1	T_2	Clip (g)	T_1	T_2	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver	388.1	57.7	93.7	48.9	62.1	65.1	-32.3	-3372.2	-2532.3
Passenger	446.2	67.7	103.1	51.9	66.4	69.4	-29.7	-2226.3	-2045.9

The test data can be found on the NHTSA website at www.nhtsa.dot.gov

TEST NOTES	
Data Channel	Anomalies
V1P1 Right Foot Fore Az	Questionable Data after 43 ms
V1P2 Left Lower Tibia Mx	Opened at 295 ms

SECTION 2
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
CRASH TEST SUMMARY

Vehicle NHTSA No.: M60517 Test Mode: 56.3 kph Frontal Barrier
Test Date: February 9, 2006 Time: 13:36 Temperature: 21.4 °C
Vehicle Make/Model/Body Style: 2006 Suzuki Grand Vitara MPV
Vehicle Test Weight: 1851.5 kg Impact Velocity: 56.81 kph (55.5 – 57.1 kph)
Vehicle/Barrier Impact Angle: 0 ° Max Static Crush: 510 mm

ATD INFORMATION AND VISIBLE CONTACT POINTS

	DRIVER	PASSENGER
ATD Type:	Part 572E	Part 572E
Restraint System:	3-point belt with shoulder pretensioner and force limiter, airbag, knee bolster and head restraint	3-point belt with shoulder pretensioner and force limiter, airbag, knee bolster and head restraint
Head Contact:	Face to upper half of airbag; Back of head to outboard half of head restraint	Face to center of airbag; Top of head to outboard half of sun visor
Abdomen Contact:	None	None
Chest Contact:	Airbag	Airbag
Left Knee Contact:	Knee bolster left of steering column	Left edge of glove compartment door
Right Knee Contact:	Knee bolster right of steering column	Right half of glove compartment door

DOOR OPENING, SEAT TRACK AND GLAZING INFORMATION

Description	Driver Side	Passenger Side
Door Lock Status	Unlocked	Unlocked
Front Door Opening	Closed, latched and operable without tools	Closed, latched and operable without tools
Rear Door Opening	Closed, latched and operable without tools	Closed, latched and operable without tools
Hatch/Other Door Opening	Closed, latched and operable without tools	
Front Seat Track Shift (mm)	0	0
Front Seat Back Failure	None	None
Glazing Damage	None	

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Left Side (mm)	Center (mm)	Right Side (mm)	Average (mm)
Value	715	722	649	695

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	818	825
Lap belt length as measured on ATD	mm	800	815
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems	mm	1788	1810

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2006 Suzuki Grand Vitara MPV

NHTSA No. : M60517 ; VIN: JS3TD941X64100554 ; Color: Gray

Engine Data: 6 cylinders; - CID; 2.7 Liters; - cc

Placement: X Longitudinal or In-Line; - Transverse or Lateral

Transmission Data: 5 speeds; X Manual; - Automatic; - Overdrive

Final Drive: - Rear Wheel Drive; - Front Wheel Drive; X Four Wheel Drive

AUTOMATIC DOOR LOCKS:

Is test vehicle equipped with Automatic Door Locks (ADLs)? - Yes; X No;

Does vehicle owner's manual describe how to deactivate ADLs? - Yes; - No; X N/A

DEALER AND DELIVERY INFORMATION:

Date Received: 01/31/2006 ; Odometer Reading 227 km

Selling Dealer: Irondequoit Suzuki

Dealer Address: 1733 Ridge Rd. East, Rochester, NY 14622

TEST VEHICLE OPTIONS:

X AC; X Power Steering; X Power Brakes; X Power Locks; - Power Seats

X ABS; X Tilt Wheel; X Stability Control X Traction Control - Anti-Theft

SAFETY BELT FEATURES:

Driver: X Pretensioner (Shoulder); X Load Limiter; X Adjustable Anchorage

Passenger: X Pretensioner (Shoulder); X Load Limiter; X Adjustable Anchorage

AIRBAG FEATURES:

Position	Frontal	Knee Bolster	Side Torso	Side Head/Torso Combination	Side Curtain
Driver:	Yes	No	Yes	No	Yes
Passenger:	Yes	No	Yes	No	Yes
Rear Passenger:	No	No	No	No	Yes

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Suzuki Motor Corporation

Date of Manufacture 07/05

GVWR: 2100 kg; GAWR: 1050 kg FRONT; 1210 kg REAR

VEHICLE CAPACITY DATA:

Type of Front Seats: - Bench; X Bucket; - Split Bench

Number of Occupants: 2 Front; 3 Rear; 5 Total

Vehicle Capacity Weight (VCW) = 410 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 69.8 kg

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with maximum fluids)= UDW:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	410.5	418.0	50.7	828.5
Rear =	408.0	399.0	49.3	807.0
			Total Delivered Weight (UDW) =	1635.5

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	1635.5	kg
Rated Cargo/Luggage Weight (RCLW) =	69.8	kg
Weight of 2 p.572 Dummies @ 76 each =	152	kg
TARGET TEST WEIGHT =	1857.3	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 64.0 KG OF CARGO WEIGHT:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	434.5	449.0	47.7	883.5
Rear =	487.5	480.5	52.3	968.0
			Total Vehicle Test Weight (ATW) =	1851.5

Weight of Ballast Secured in Vehicle Trunk Area[1] = 0 kg

Vehicle Components Removed for Weight Reduction: Rear seat head restraints, cargo compartment trim, and left rear tail light assembly.

VEHICLE ATTITUDE (all dimension in millimeters):

	Left Front	Right Front	Left Rear	Right Rear	CG[2]
AS DELIVERED:	825	828	817	816	0
FULLY LOADED:	814	817	789	794	-
AS TESTED:	825	817	793	794	0

Vehicle's Wheel Base: 2640 mm

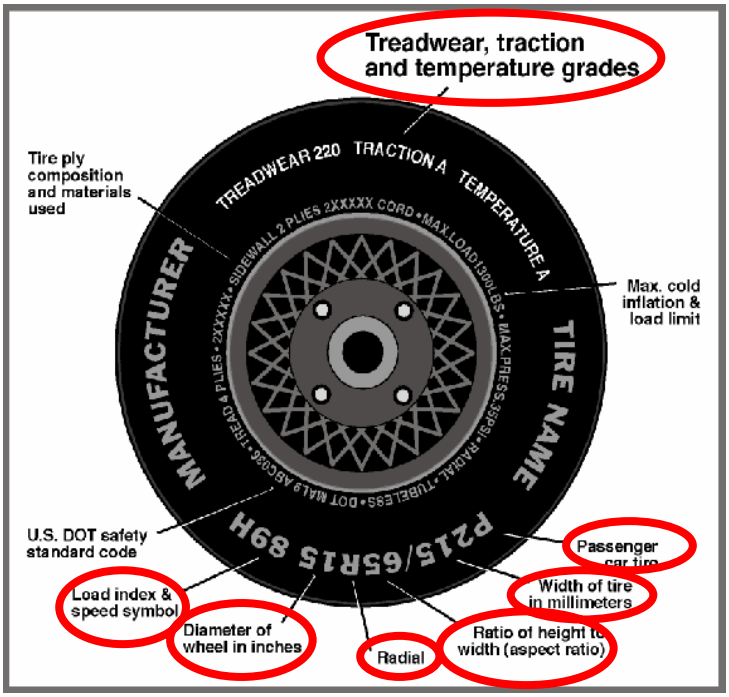
[1]Ballast weight does not include the weight of instrumentation, on-board cameras and data acquisition system

[2]Rearward of the front axle centerline.

DATA SHEET NO. 3
TEST VEHICLE TIRE INFORMATION

Vehicle Year/Make/Model/Body Style: 2006 Suzuki Grand Vitara MPV

NHTSA Test No.: M60517 Test Date: February 9, 2006



Measured Parameter	Front	Rear
Maximum Tire Pressure (from sidewall - kPa)	300	300
Cold Pressure (from tire placard - kPa)*	220	220
Recommended Tire Size (from tire placard)	P225/70R16	P225/70R16
Tire size on Vehicle	P225/70R16 101H	P225/70R16 101H
Tire Manufacturer	Yokohama	Yokohama
Tire Name	Geolander	Geolander
Tire Type	P	P
Tire Width (mm)	225	225
Ratio of Height to Width (aspect ratio)	70	70
Radial	R	R
Wheel Diameter	16	16
Load Index & Speed Symbol	101H	101H
Treadwear	280	280
Traction Grade	B	B
Temperature Grade	A	A

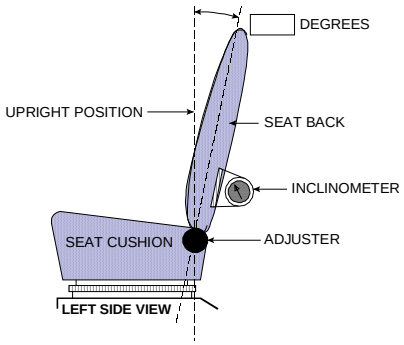
*Tire pressure used for test

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2006 Vehicle Model: Suzuki Grand Vitara Body Style : MPV

1. NOMINAL DESIGN RIDING POSITION:
for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT ASSEMBLY

Seat back angle for driver's seat: 22° (H-point machine torso angle)

Measurement instructions: The seat back was placed in detent 5, where the forward most locking position is defined as detent 0. In this position, the head restraint post is 10° back from vertical.

Seat back angle for passenger's seat: 22° (H-point machine torso angle)

Measurement instructions: The seat back was placed in detent 5, where the forward most locking position is defined as detent 0. In this position, the head restraint post is 10° back from vertical.

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: The absolute fore/aft seat travel was 256 mm. The seat was placed in detent 8, where the forward most locking position is defined as detent 0. (17 possible positions)

Positioning of the passenger's seat: The absolute fore/aft seat travel was 256 mm The seat was placed in detent 8, where the forward most locking position is defined as detent 0. (17 possible positions)

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 65.87 liters

B. "Usable Capacity" of the optional equipment fuel tank is - liters

C. "Usable Capacity" of the vehicle(s) used for certification testing to requirements of FMVSS 301 = 60.60 to 61.92 liters

3.2 Actual Amount of Stoddard solvent added to vehicle for test = 60.57 liters

3.3 One-Third of Useable Capacity = 21.96 liters

3.4 Is vehicle equipped with electric fuel pump? Yes- X ; No- -

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

The fuel pump operates briefly when the ignition is turned to the “ON” position and the engine is not started

The fuel pump operates continuously when the engine is started.

DATA SHEET NO. 4
TEST VEHICLE INFORMATION (cont.)

4. STEERING COLUMN ADJUSTMENTS:

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions: The steering column was placed at the middle of its tilt travel which was 2.3 degrees down from its upper most position. The total tilt range was 4.6 degrees.

5. SEAT BELT UPPER ANCHORAGE:

Nominal design riding position: The seat belt upper anchorage was placed in detent 1, where the upper most position is defined as detent 0. (3 possible positions)

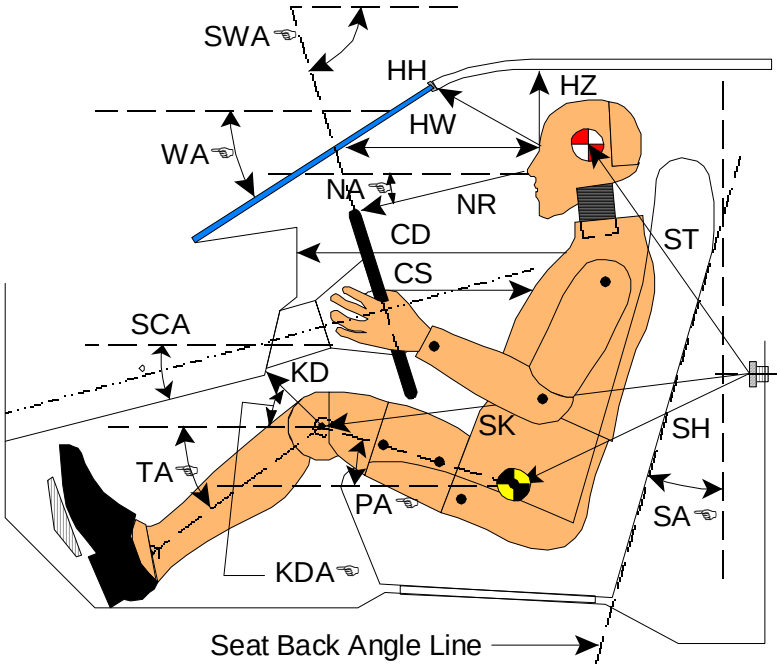
6. AUTOMATIC DOOR LOCKS: Is test vehicle equipped with ADLs? - Yes; X No;

Does vehicle owner's manual describe how to deactivate ADLs? - Yes; - No; X N/A

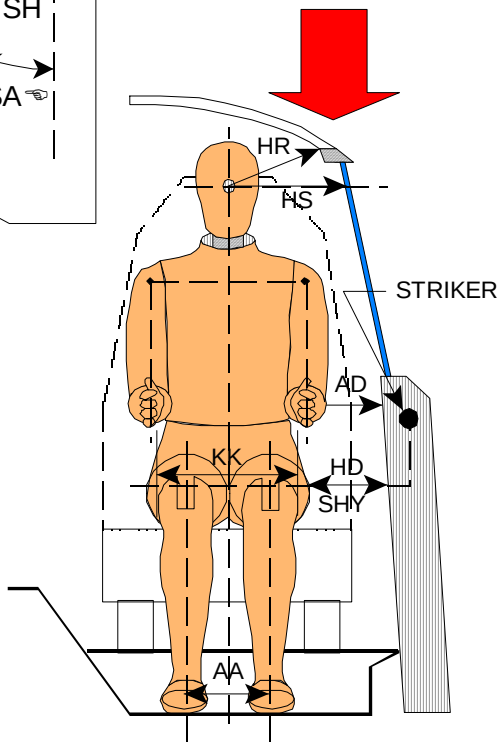
Comments: None

DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE

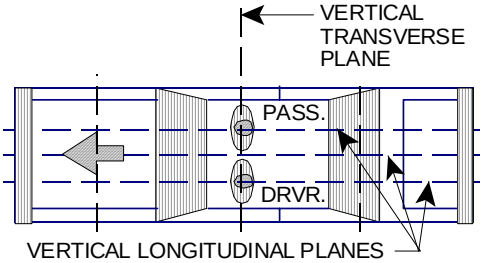
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



AD - Arm to Door
HD - H-Point to Door
HR - Head to Side Header
HS - Head to Side Window
KK - Knee to Knee
AA - Ankle to Ankle
SHY- Striker to H-Point (Y Direction)



CD - Chest to Dash
CS - Steering Wheel to Chest
HH - Head to Header
HW - Head to Windshield
HZ - Head to Roof
KDA - Knee to Dash Angle
KDL- Left Knee to Dash
KDR - Right Knee to Dash
NA - Nose to Rim Angle
NR - Nose to Rim
PA - Pelvic Angle
RA - Rim to Abdomen
SA - Seat Back Angle
SCA - Steering Column Angle
SH - Striker to H-Point
SK - Striker to Knee
ST - Striker to Head
SWA- Steering Wheel Angle
TA - Tibial Angle
WA - Windshield Angle



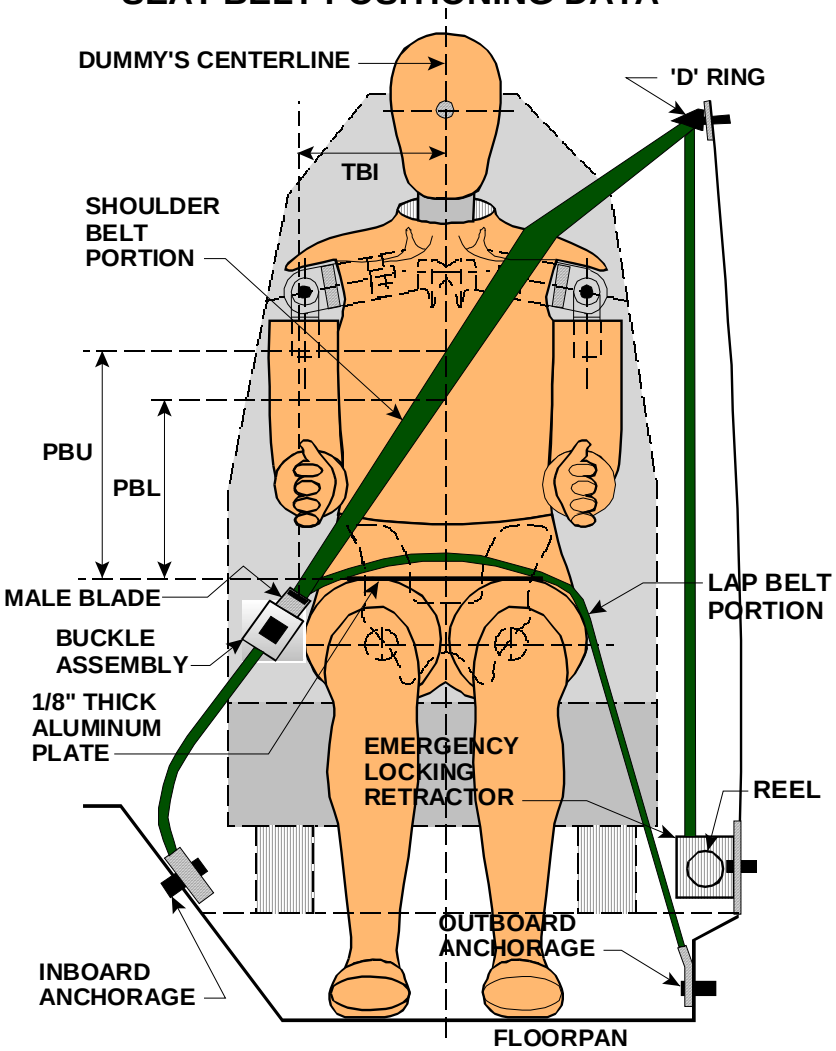
DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #142)			PASS. (Serial #150)		
WA^O	35.2 deg.			N/A		
SWA^O	64.9 deg.			N/A		
SCA^O	25.1 deg.			N/A		
SA^O	10 deg. As measured on the head restraint post			10 deg. As measured on the head restraint post		
HZ	222			211		
HH	455			446		
HW	698			680		
HR	228			224		
NR	445	Angle	12 deg.	N/A		
CD	578			568		
CS	339			N/A		
RA	228			N/A		
KDL	193	Angle (KDA)	20 deg.	166		
KDR	164			175	Angle (KDA)	22 deg.
PA^O	23.2 deg.			23.8 deg.		
TA^O	45.5 deg.			47.6 deg.		
KK	332			270		
AA	356			225		
ST	478	Angle	2 deg.	484	Angle	2 deg.
SK	529	Angle	98 deg.	538	Angle	97 deg.
SH	238	Angle	140 deg.	213	Angle	138 deg.
SHY	215			206		
HS	332			328		
HD	152			142		
AD	107			88		

Dimensions in millimeters

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

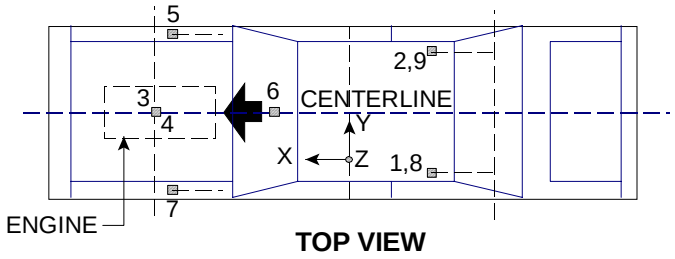


FRONT VIEW OF DUMMY

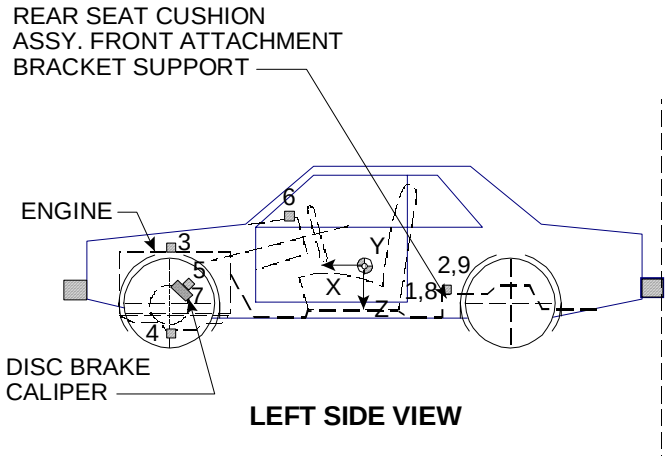
	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	340	340
PBL-- Top surface of alum. plate to belt lower edge	260	260
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS

VEHICLE ACCELEROMETER LOCATIONS



TOP VIEW



LEFT SIDE VIEW

		PRE-TEST LENGTH (mm)		
No.	LOCATION	X	Y	Z
1	Left Rear Seat Cross Member X	1744	-731	-437
2	Right Rear Seat Cross Member X	1745	731	-438
3	Top of Engine Block	3772	-208	-905
4	Bottom of Engine	3521	110	-250
5	Disc Brake Caliper @ Right Side	3550	765	-435
6	Instrument Panel**	-	-	-
7	Disc Brake Caliper @Left Side	3548	-767	-435
8	Left Rear Seat Cross Member Z	1744	-731	-437
9	Right Rear Seat Cross Member Z	1745	731	-438

X – From rear surface of vehicle (+ forward)
Y – From vehicle centerline (+ right)
Z – From ground plane (+ up)
** Accelerometer was not requested by the COTR

DATA SHEET NO.8
SUMMARY OF FMVSS 212 and FMVSS 219 (Partial) DATA

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Windshield is bonded in place and covered with a 10 mm molding.

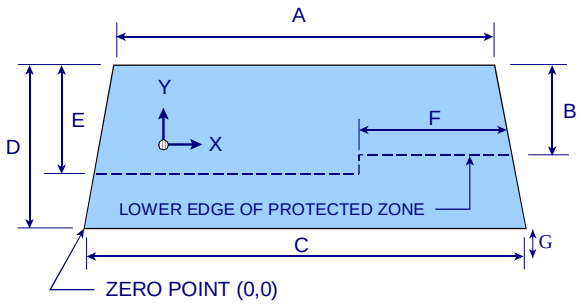
FMVSS 212 REQUIREMENTS:

The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants,

Temperature of windshield molding during test: 21.4ºC.

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2080.0	2080.0	100.0%
LEFT SIDE	2080.0	2080.0	100.0%
TOTAL	4160	4160	100.0%



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1200
B	590
C	1450
D	755
E	505
F	505
G	10

FAILURE DETAILS: None

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm: None

	COORDINATES	
	X	Y
1.	-	-
2.	-	-
3.	-	-
4.	-	-

DATA SHEET NO. 9
SUMMARY OF FMVSS NO. 301 DATA

NHTSA TEST No.: M60517 TEST DATE: February 9, 2006

VEHICLE MAKE/MODEL: 2006 Suzuki Grand Vitara MPV

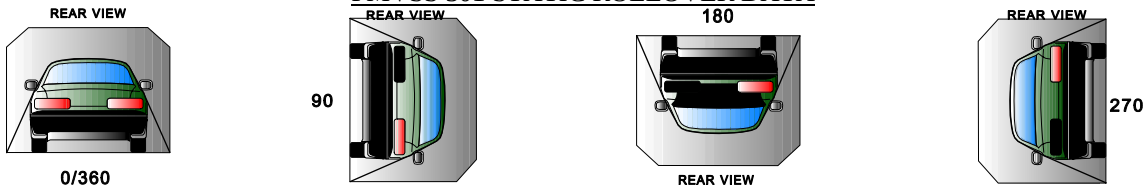
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

FUEL SPILLAGE MEASUREMENT:

Time Interval	Amount	Maximum Allowable Spillage
Impact Until Motion Ceases		**28 g**
First Five Minutes Following Impact		**142 g**
Next 25 Minutes		**28 g / 1 minute**

SOLVENT SPILLAGE DETAILS: None

FMVSS 301 STATIC ROLLOVER DATA



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1 -3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0º - 90º	1	minutes	6	seconds	5	minutes	6	minutes	6	seconds	7	minutes
90º - 180º	1	minutes	4	seconds	5	minutes	6	minutes	4	seconds	7	minutes
180º-270º	1	minutes	5	seconds	5	minutes	6	minutes	5	seconds	7	minutes
270º-360º	1	minutes	3	seconds	5	minutes	6	minutes	3	seconds	7	minutes

II. FMVSS 301 REQUIREMENTS: (Maximum allowable solvent spillage):

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
142 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

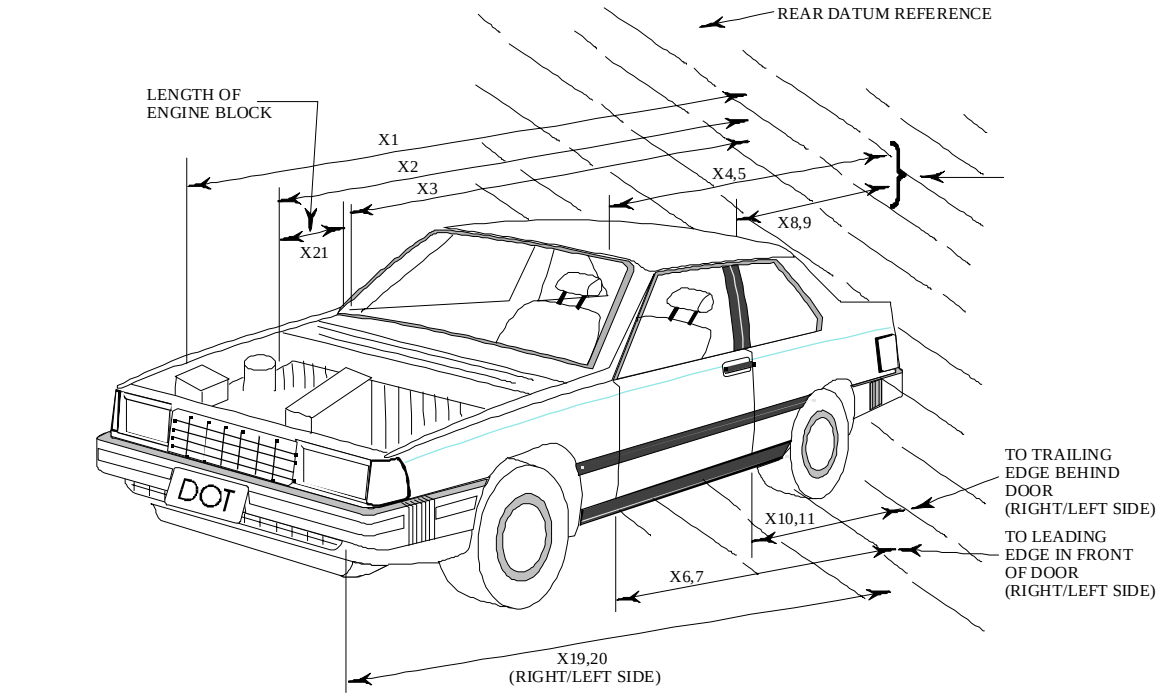
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0º - 90º	0	0	0	N/A
90º - 180º	0	0	0	N/A
180º-270º	0	0	0	N/A
270º-360º	0	0	0	N/A

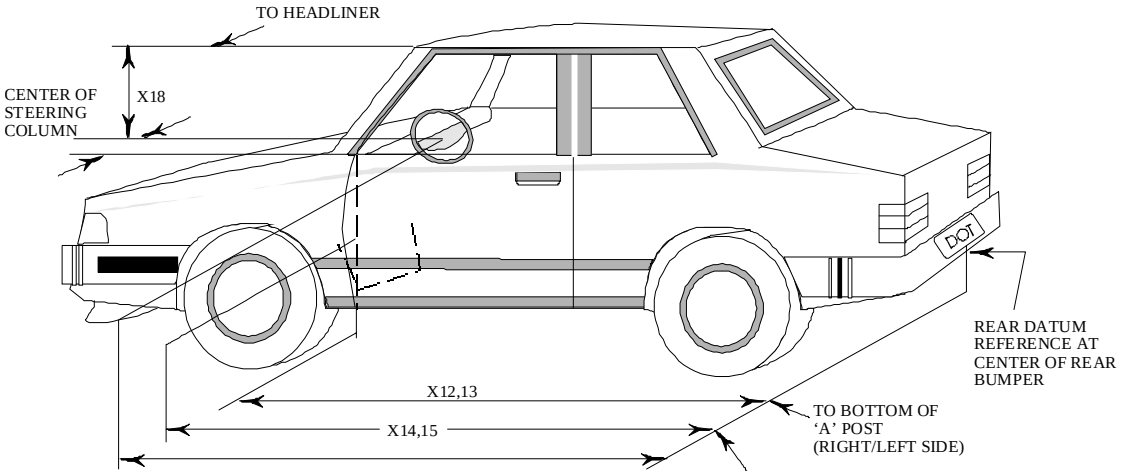
Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0º - 90º	None
90º - 180º	None
180º-270º	None
270º-360º	None

DATA SHEET NO. 10
TEST VEHICLE MEASUREMENTS





DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

NHTSA TEST No.: M60517 TEST DATE: February 9, 2006

VEHICLE MAKE/MODEL: 2006 Suzuki Grand Vitara MPV

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4441	3945	496
X2	Rear Surface of Vehicle to Front of Engine	3880	3742	138
X3	Rear Surface of Vehicle to Firewall	3374	3293	81
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3068	3070	-2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3066	3067	-1
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3138	3138	0
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3136	3136	0
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2040	2041	-1
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2039	2041	-2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2095	2095	0
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2090	2091	-1
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3158	3155	3
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3156	3156	0
X14	Rear Surface of Vehicle to Firewall, Right Side	3341	3332	9
X15	Rear Surface of Vehicle to Firewall, Left Side	3340	3327	13
X16	Rear Surface of Vehicle to Steering Column	2634	2636	-2
X17	Center of Steering Column to "A" Post	281	276	5
X18	Center of Steering Column to Headliner	451	504	-53
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4378	3947	431
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4380	3929	451
X21	Length of Engine Block	513	513	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2840	2832	8
CD	Rear Surface of Vehicle to Center of Dash Panel	2829	2823	6
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2839	2836	3

All Dimensions in mm

DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

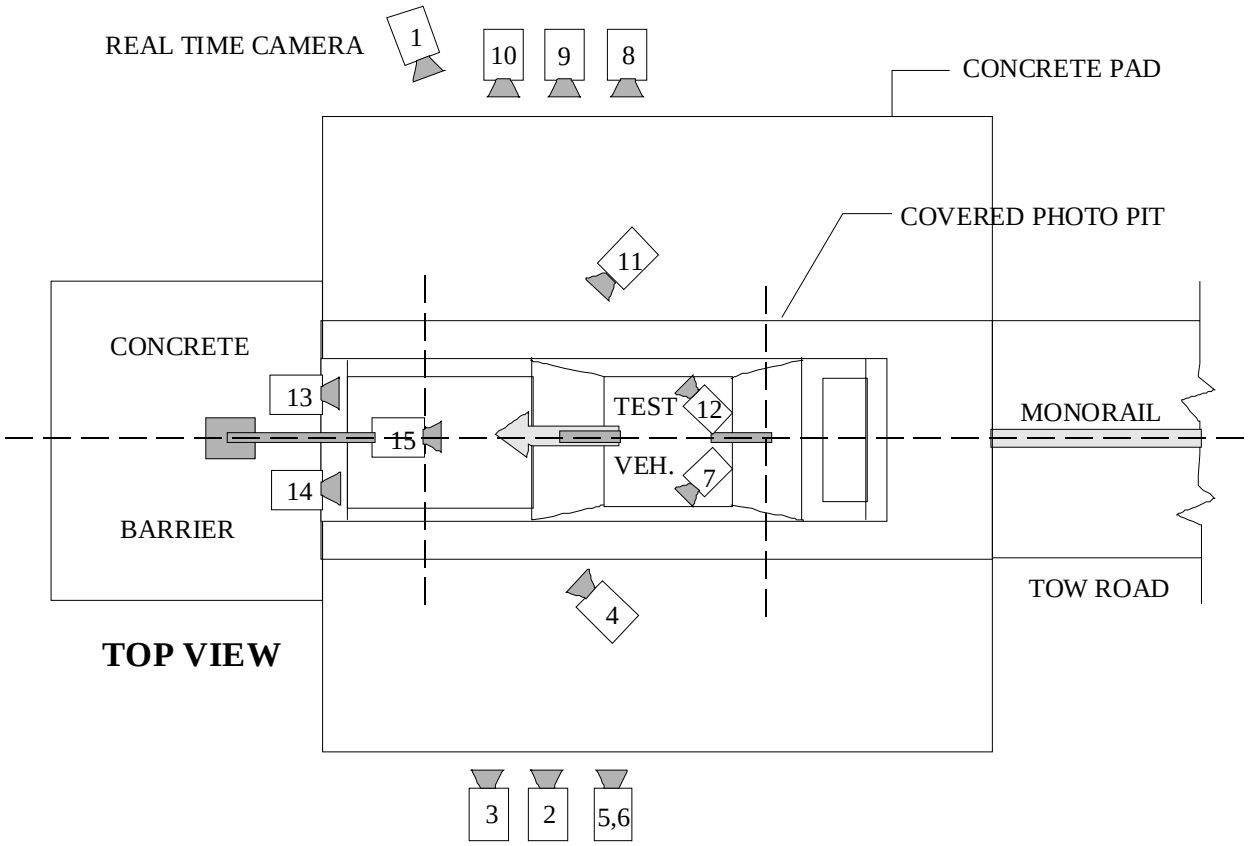
NHTSA TEST No.: M60517 TEST DATE: February 9, 2006

VEHICLE MAKE/MODEL: 2006 Suzuki Grand Vitara MPV

TARGET VEHICLE STRUCTURAL MEASUREMENTS

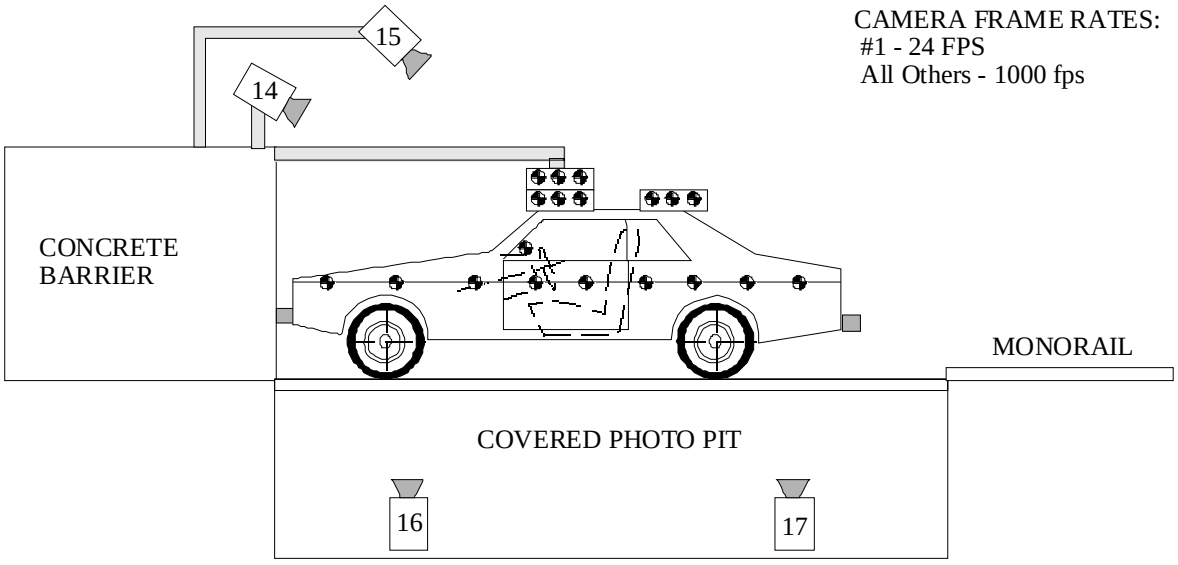
	Elements	Pre-Test (mm)
1	Total length	4441
2	Total Width	1788
3	Bumper Top Height	415
4	Bumper Bottom Height	320
5	Longitudinal Member Top Height	450
6	Distance Between Longitudinal Members	770
7	Longitudinal Member Width	70
8	Engine top height	1020
9	Engine bottom height	213
10	Engine and gearbox width	610
11	Front bumper-engine distance	550
12	Front shock absorber fixing height	975
13	Bonnet leading edge height	900
14	Front shock absorber fixing width	1080
15	Front bumper – front axle distance	752
16	Front axle – a pillar distance	540
17	A-pillar – B pillar distance	1060
18	B-pillar – rear axle distance	1035
19	B-pillar – C Pillar distance	630
20	Roof sill bottom height	1565
21	Roof sill top height	1650
22	Floor sill bottom height	315
23	Floor sill top height	445

DATA SHEET NO.11
HIGH-SPEED CAMERA LOCATIONS



TOP VIEW

CAMERA FRAME RATES:
#1 - 24 FPS
All Others - 1000 fps



LEFT SIDE VIEW

DATA SHEET NO.11
HIGH-SPEED CAMERA LOCATIONS (cont.)

NHTSA Test No.: M60517 Vehicle: 2006 Suzuki Grand Vitara MPV

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)* X	Y	Z	ANGLE (deg)**	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	30
2	Overall Left Side	7370	1808	1095	-3.5	7019	28	1000
3	Left Side View	9344	1080	1080	-2.0	8993	50	1000
4	Driver and Interior View	7420	2680	2065	-8.5	-	35	500
5	Steering Column (Bottom)	7755	1505	1175	-3.4	7404	25	1000
6	Steering Column (Top)	7755	1505	1795	-8.0	7404	28-70	1000
7	Left CRS Lateral View	-	-	-	-	-	-	-
8	Overall Right Side	7266	1705	1010	-1.6	7547	28	500
9	Right Side View	9319	1065	1095	-1.7	9600	50	1000
10	Right Passenger View	8725	1710	1415	-3.5	9006	35	1000
11	Passenger and Interior View	7760	2685	2020	-6.9	-	35	500
12	Right CRS Lateral View	-	-	-	-	-	-	-
13	Passenger Front View	620	-92	1987	-32.8	-	13	500
14	Driver Front View	620	-92	1987	-33.0	-	13	500
15	Windshield View	0	-530	3374	-51.0	-	20	500
16	Pit View of Engine	0	615	-3048	90	-	13	500
17	Pit View of Fuel Tank	0		-3048	90	-	13	500

*X = film plane to monorail centerline ** = referenced to horizontal plane

Y = film plane to impact location N.T. indicates No Timing

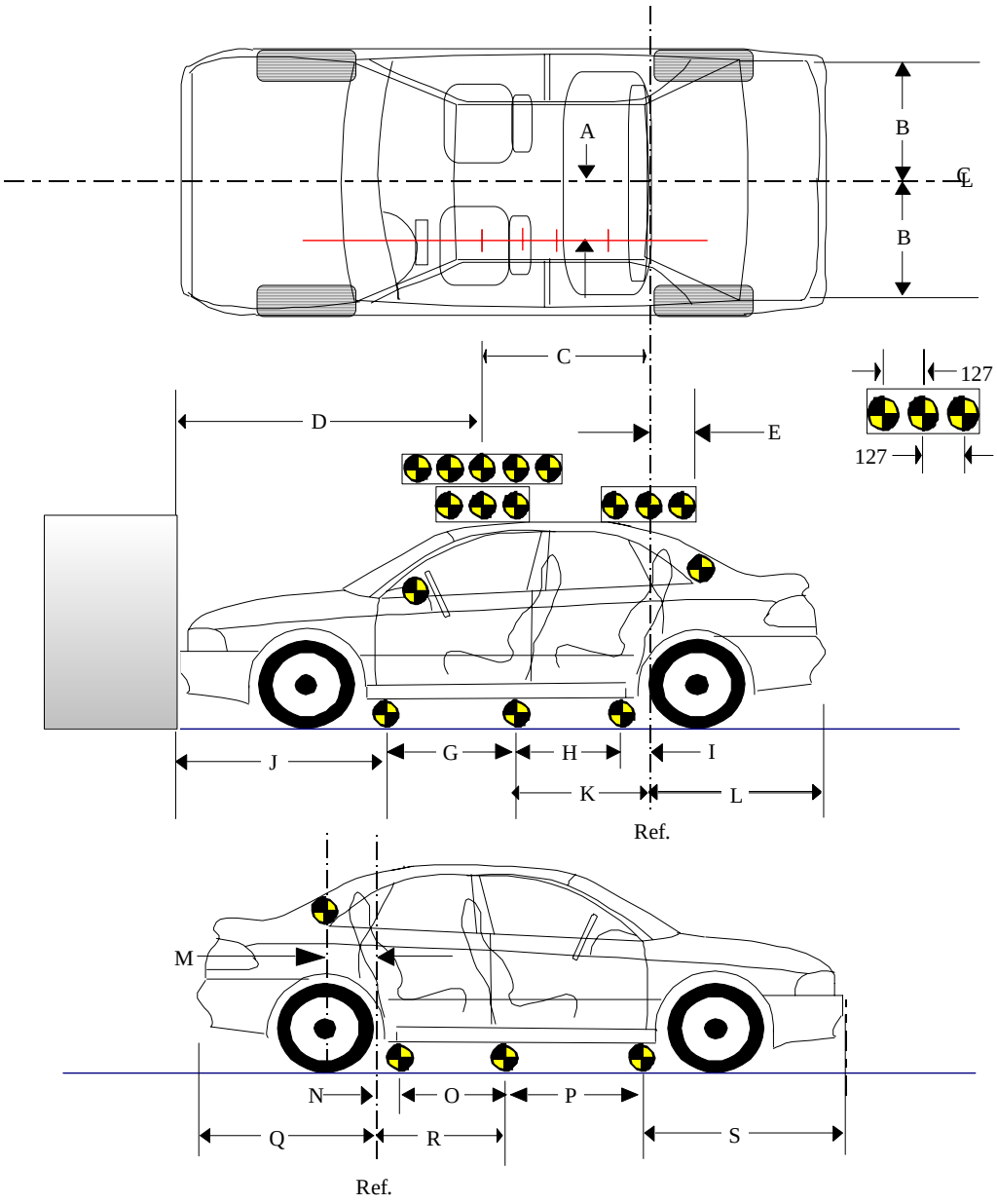
Z = film plane to ground

DATA SHEET NO. 12
VEHICLE REFERENCE PHOTO TARGET LOCATIONS

NHTSA Test No.: M60517 Vehicle: 2006 Suzuki Grand Vitara MPV

(Dimensions in millimeters)

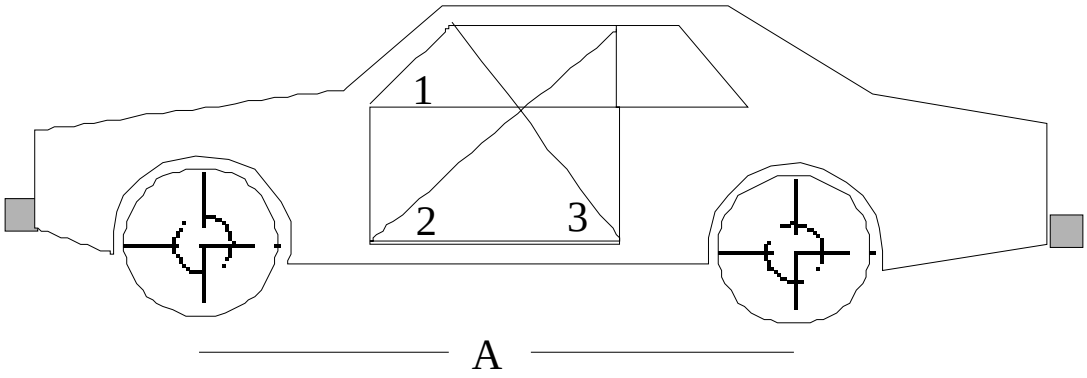
A	357
B	632
C	1218
D	2134
E	5
F	1706
G	853
H	850
I	102
J	1227
K	952
L	1409
M	12
N	103
O	853
P	848
Q	1410
R	956
S	1227



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

NHTSA Test No.: M60517 Vehicle: 2006 Suzuki Grand Vitara MPV

DOOR OPENING WIDTH AND WHEELBASE MEASUREMENTS



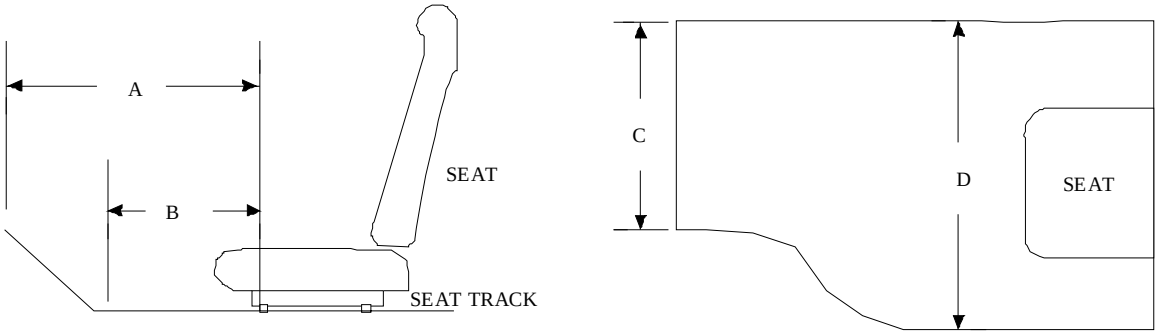
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	983	1534	1112	980	1533	1111
AFTER TEST	981	1532	1116	977	1530	1120
DIFFERENCE	2	2	-4	3	3	-9

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2640	2640
AFTER TEST	2519	2537
DIFFERENCE	121	103

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont)

NHTSA Test No.: M60517 Vehicle: 2006 Suzuki Grand Vitara MPV

STATIC FOOTWELL DEFORMATION



DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	712	617	95
B	486	482	4
C	476	471	5
D	465	466	-1

PASSENGER

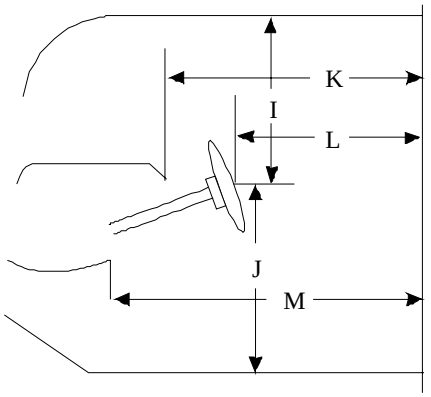
Measurement	Pre-Test	Post-Test	Difference
A	684	655	29
B	489	485	4
C	459	457	2
D	432	432	0

Units = mm

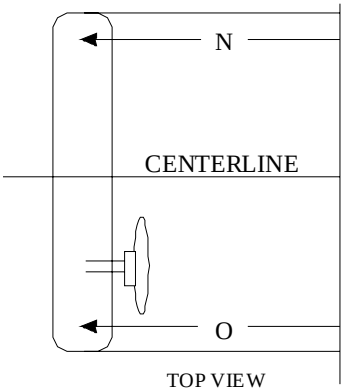
DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M60517 Vehicle: 2006 Suzuki Grand Vitara MPV

STATIC PASSENGER COMPARTMENT INTRUSION

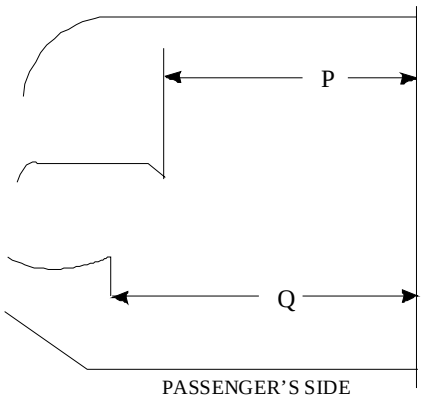


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



PASSENGER'S SIDE

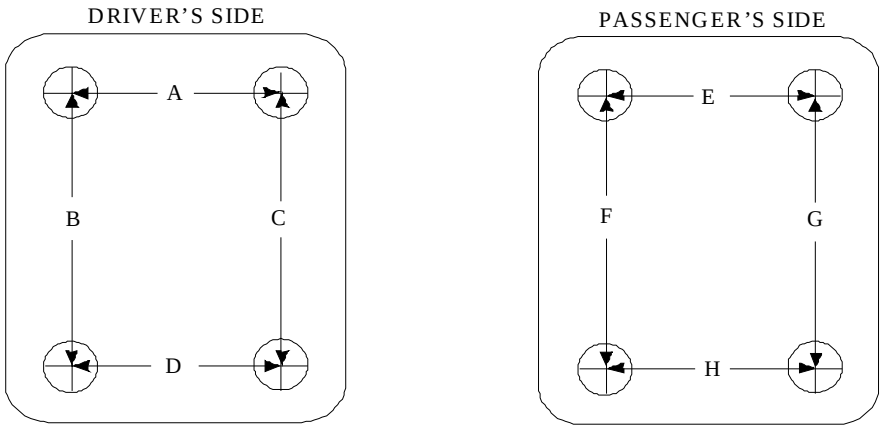
Measurement	Pre-Test	Post-Test	Difference
I	451	504	-53
J	665	626	39
K	1758	1750	8
L	1549	1552	-3
M	1831	1826	5
N	1765	1756	9
O	1754	1751	3
P = K (PASS.)	1941	1935	6
Q = M (PASS.)	1794	1803	-9

Units = mm

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M60517 Vehicle: 2006 Suzuki Grand Vitara MPV

FLOORBOARD DEFORMATION



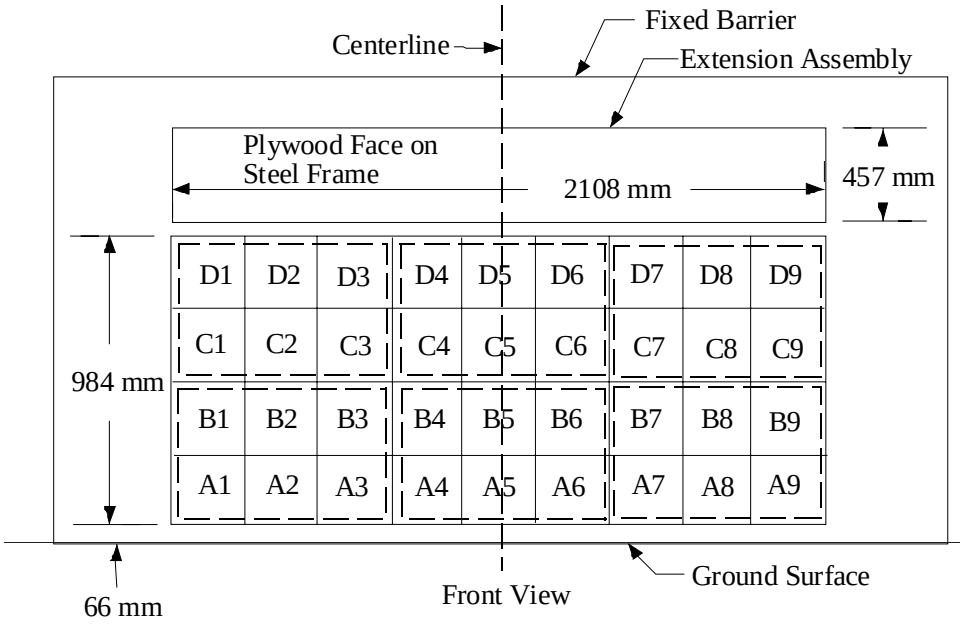
TOP VIEW THROUGH FLOOR PAN

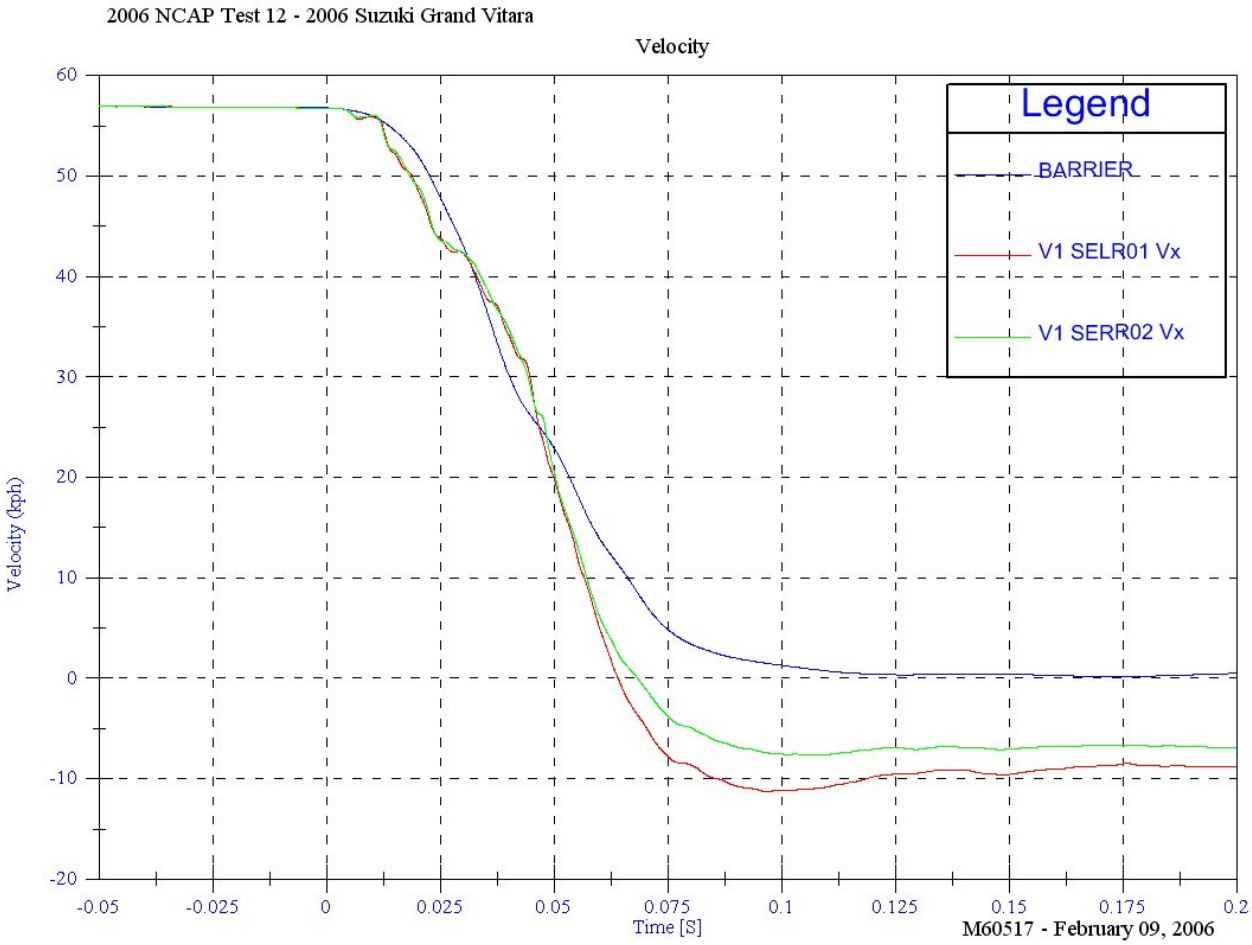
Measurement	Pre-Test	Post-Test	Difference
A	476	471	5
B	448	443	5
C	435	432	3
D	465	466	-1
E	459	457	2
F	444	443	1
G	446	446	0
H	432	432	0

Units = mm

DATA SHEET NO.14
LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load Cells
4 Rows
9 Columns





DATA SHEET NO. 15
ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Suzuki Grand Vitara MPV

NHTSA Test No.: M60517 VIN: JS3TD941X64100554

Model Year: 2006 Build Date: 07/05 Test Date: February 9, 2006

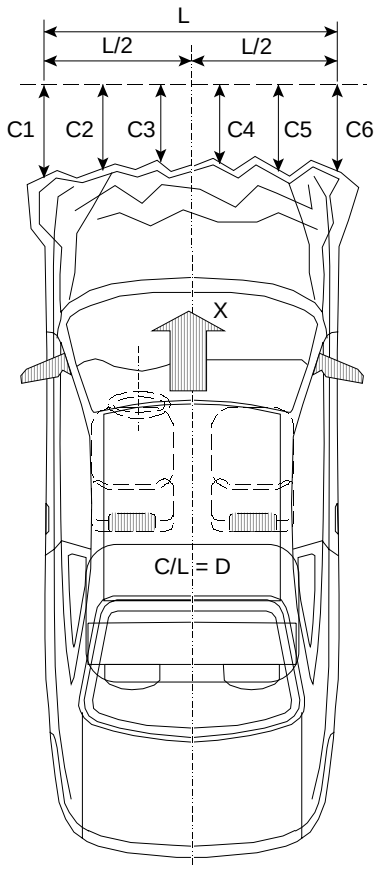
Vehicle Size Category: MPV Test Weight: 1851.5 kg

Vehicle Wheelbase: 2640 mm; Front Overhang: 753 mm; Overall Width: 1810 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4177	3962	215
C2 =	4371	3936	435
C3 =	4435	3925	510
C4 =	4433	3953	480
C5 =	4366	3943	423
C6 =	4170	3953	217



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

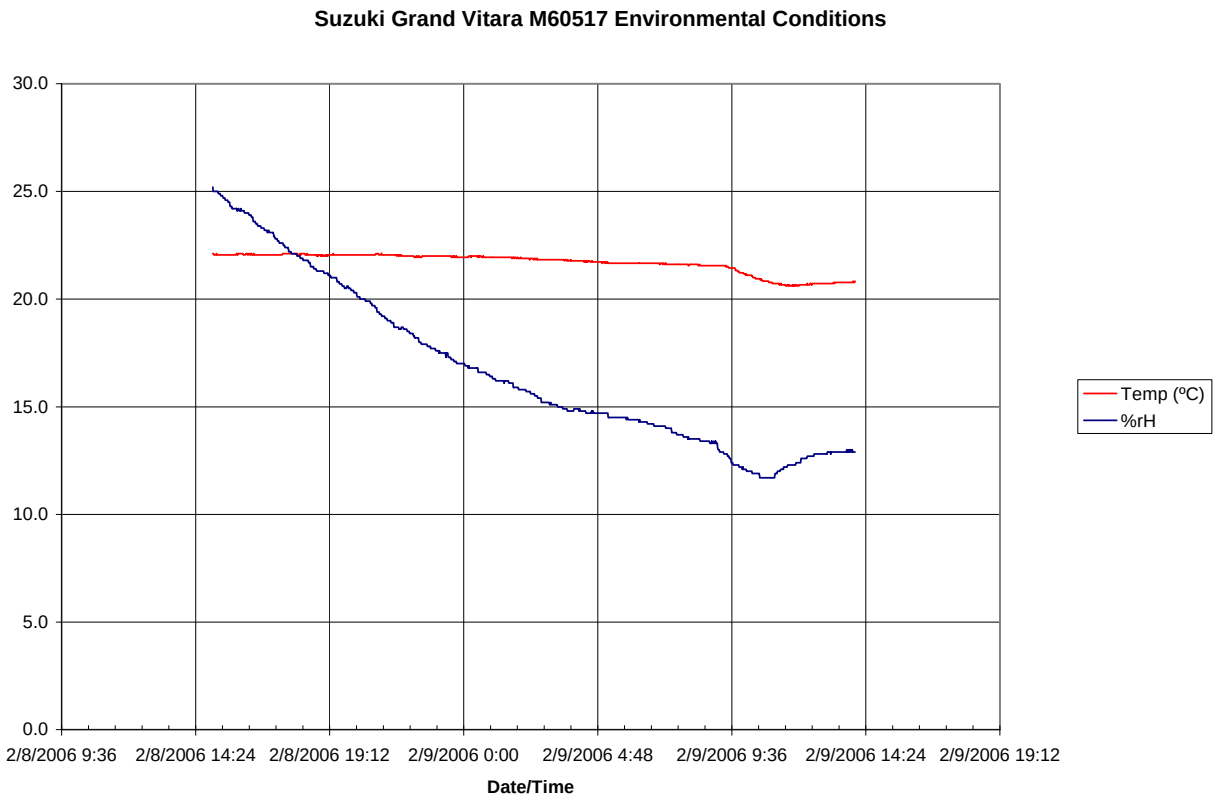
Length of Damaged Region: L1= 1625 mm

L2= 812.5 mm

L5= 325 mm

DATA SHEET NO.16
VEHICLE AND DUMMY TEMPERATURE STABILIZATION CHART

NHTSA Test No.: M60517 Vehicle: 2006 Suzuki Grand Vitara MPV



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

Figure A-1: Load Cell Locations

Figure A-2: Vehicle Certification Placard

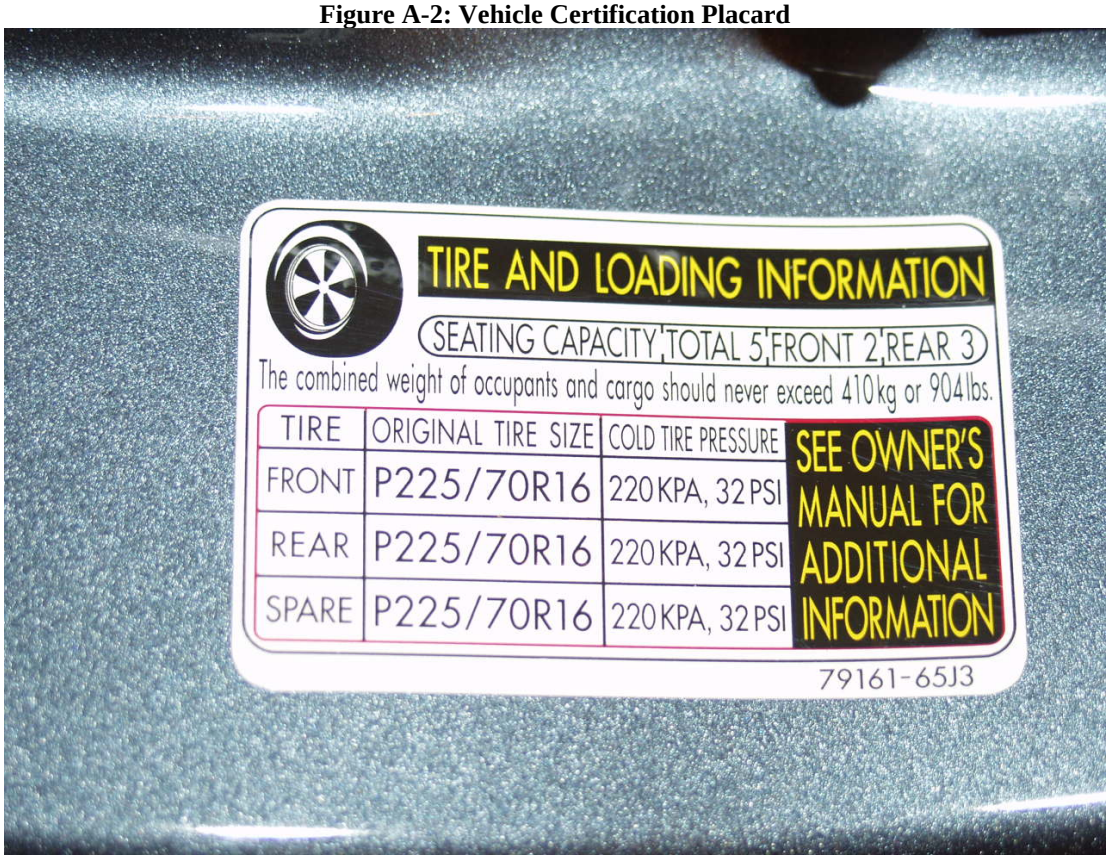


Figure A-3: Vehicle Tire Placard

Figure A-4: Right Front, As Received

Figure A-5: Left Rear, As Received

Figure A-6: Pre-Test Front View

Figure A-7: Post-Test Front View

Figure A-8: Pre-Test Left Side View

Figure A-9: Post-Test Left Side View

Figure A-10: Pre-Test Right Side View

Figure A-11: Post-Test Right Side View

Figure A-12: Pre-Test Right Front Three-Quarter View

Figure A-13: Post-Test Right Front Three-Quarter View

Figure A-14: Pre-Test Left Rear Three-Quarter View

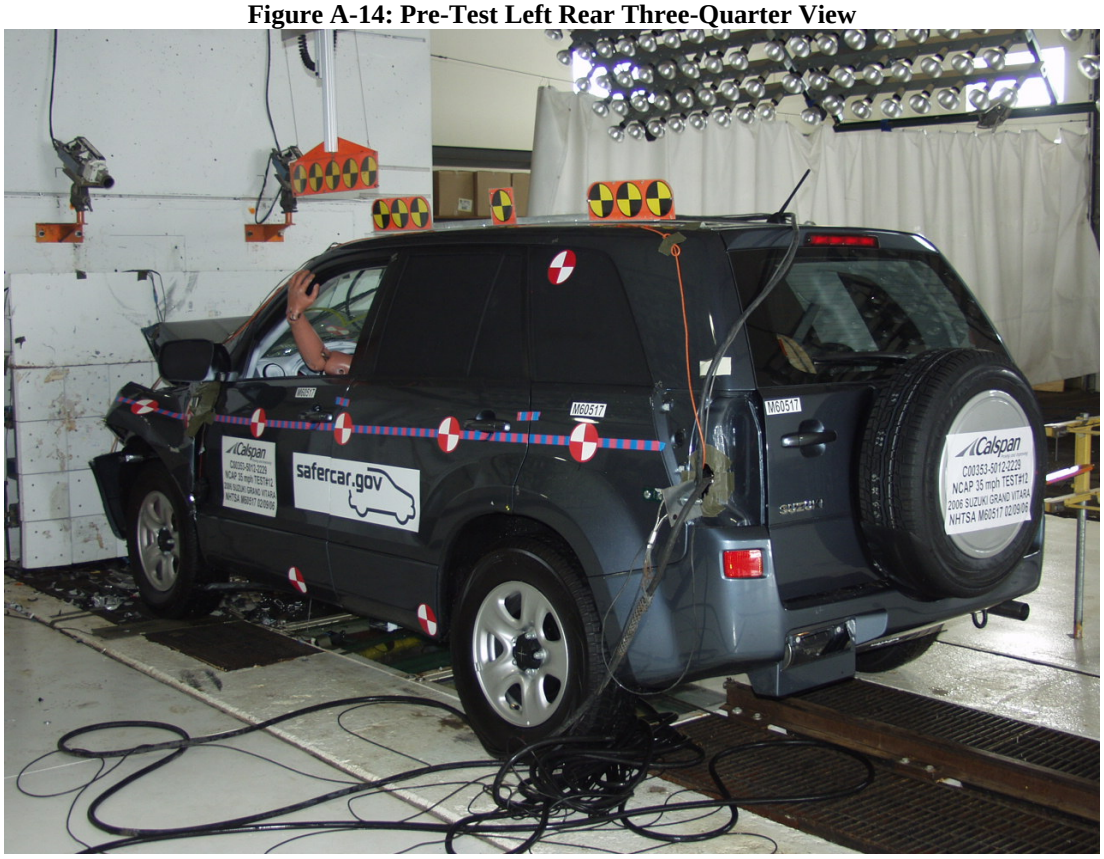


Figure A-15: Post-Test Left Rear Three-Quarter View

Figure A-16: Left Rear Three-Quarter View of Doors After Impact

Figure A-17: Right Rear Three-Quarter View of Doors After Impact

Figure A-18: Pre-Test Windshield View

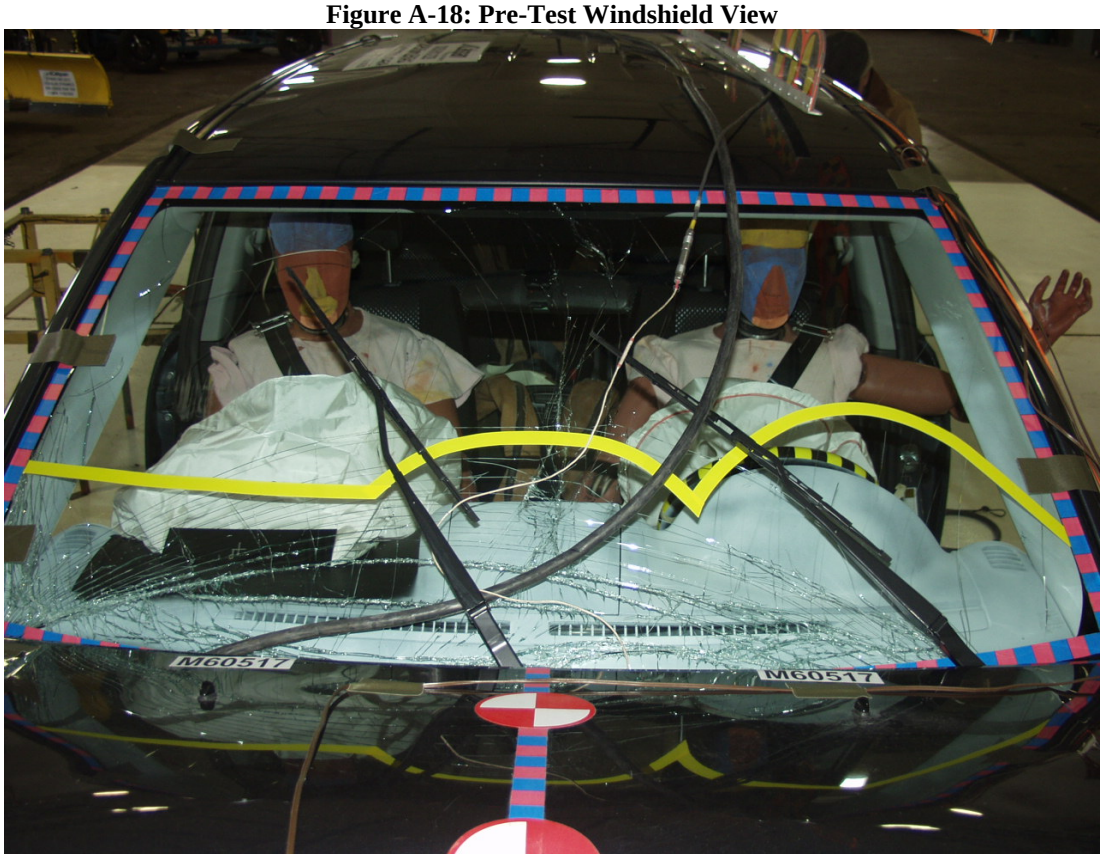


Figure A-19: Post-Test Windshield View

Figure A-20: Pre-Test Engine Compartment View

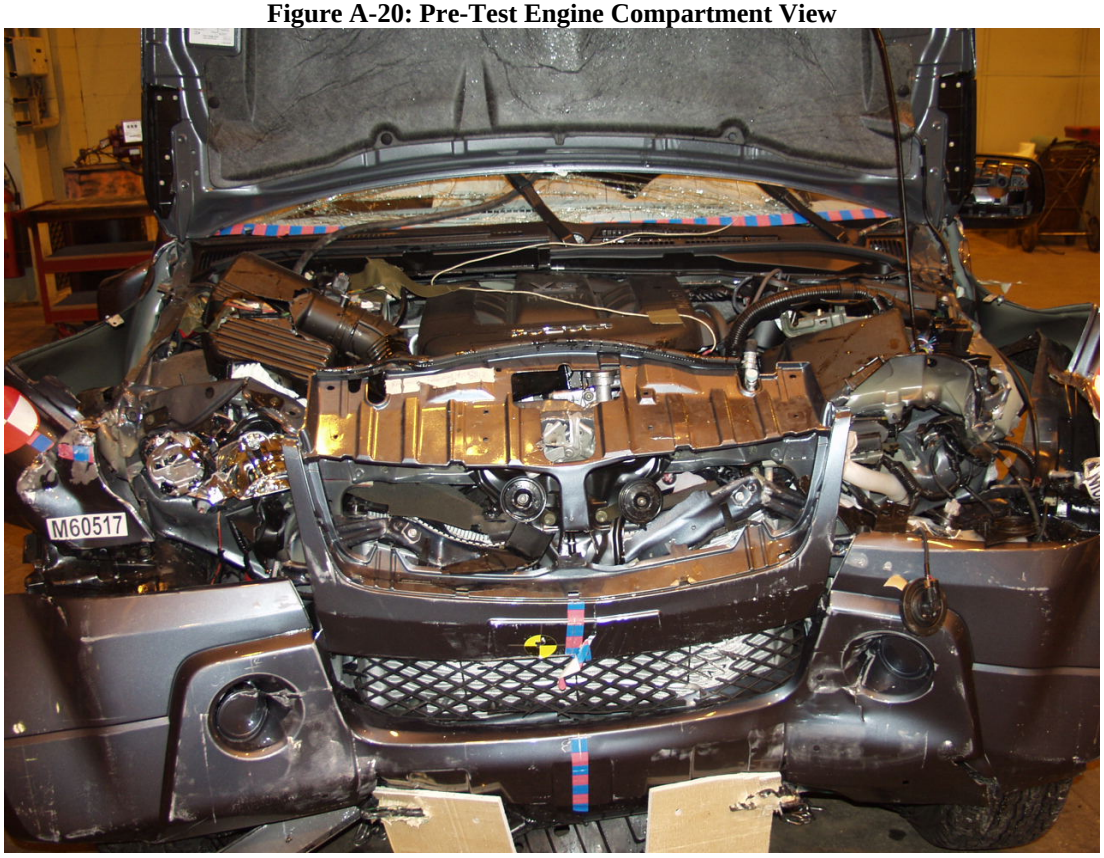


Figure A-21: Post-Test Engine Compartment View

Figure A-22: Pre-Test Fuel Cap View

Figure A-23: Post-Test Fuel Cap View

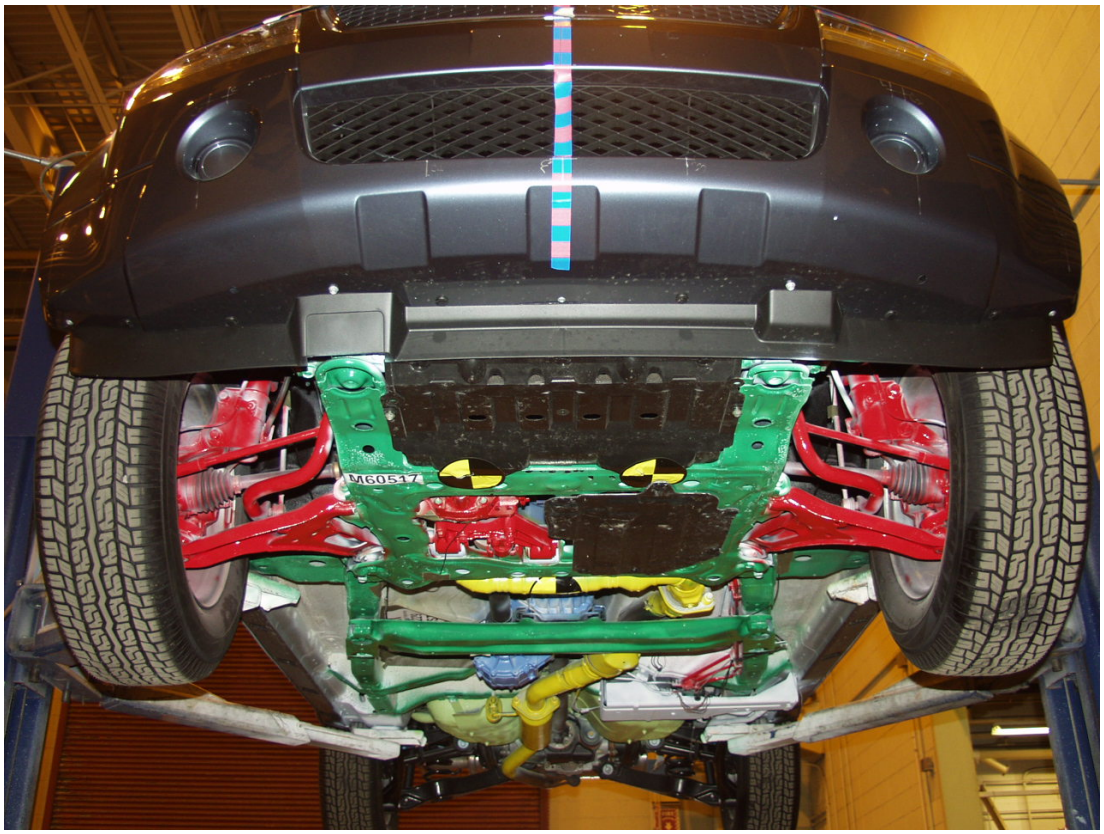


Figure A-24: Pre-Test Front Underbody View

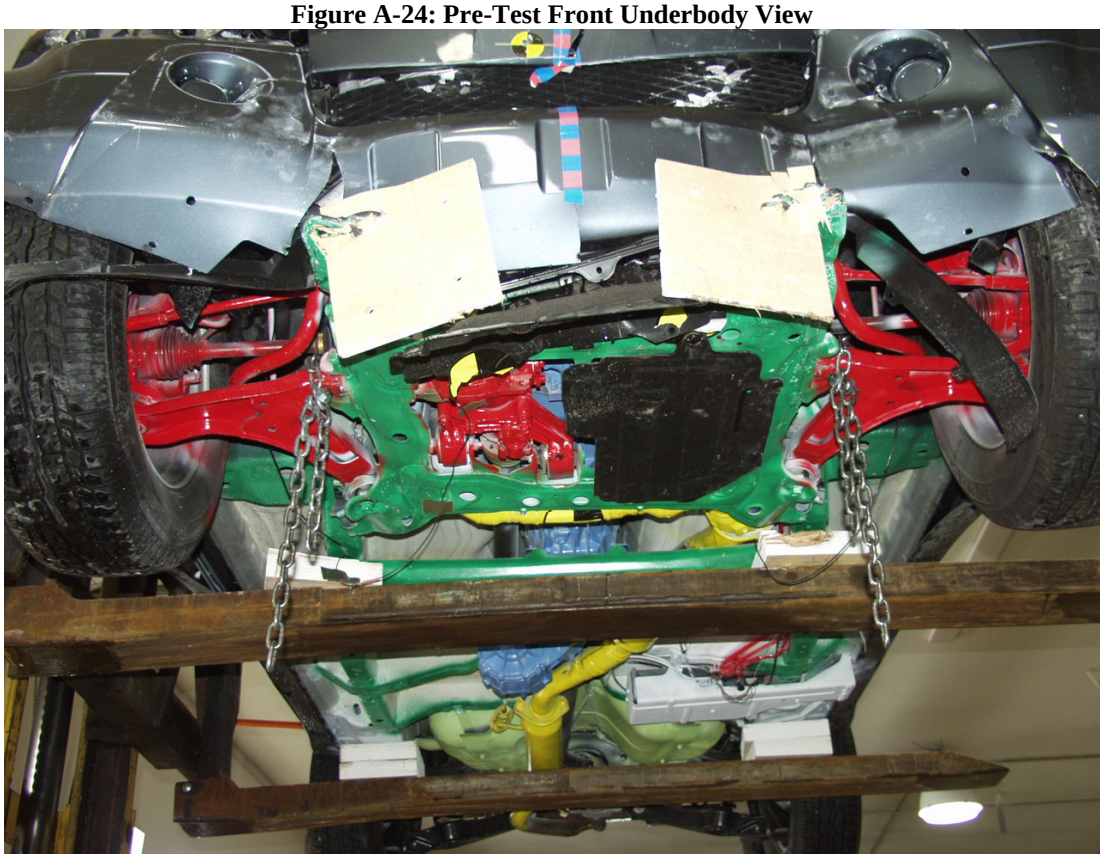


Figure A-25: Post-Test Front Underbody View

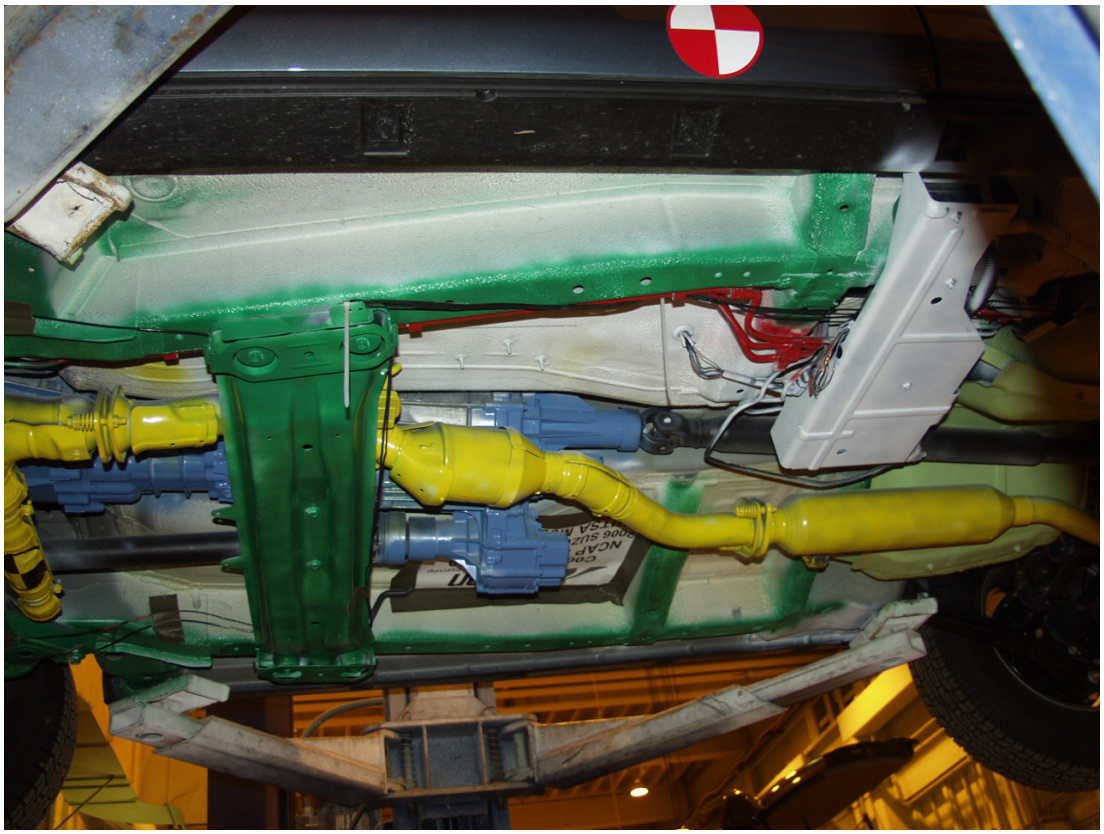


Figure A-26: Pre-Test Mid Underbody View

Figure A-27: Post-Test Mid Underbody View

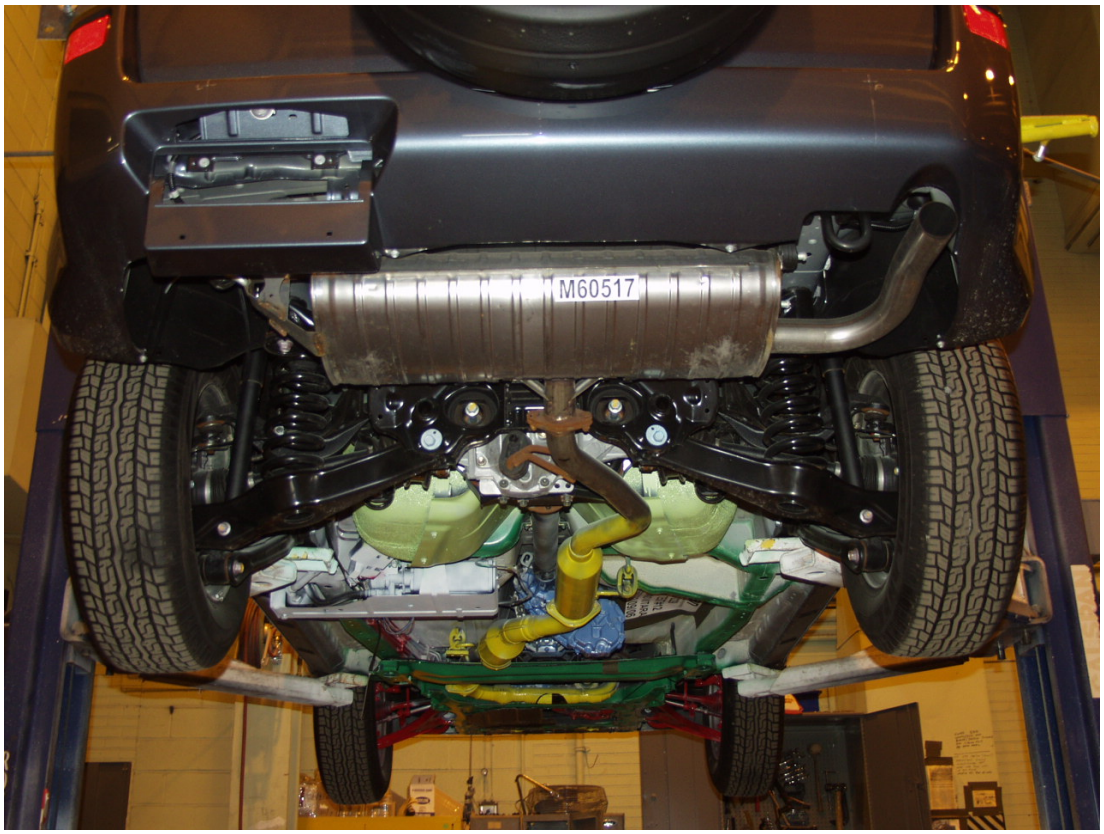


Figure A-28: Pre-Test Rear Underbody View

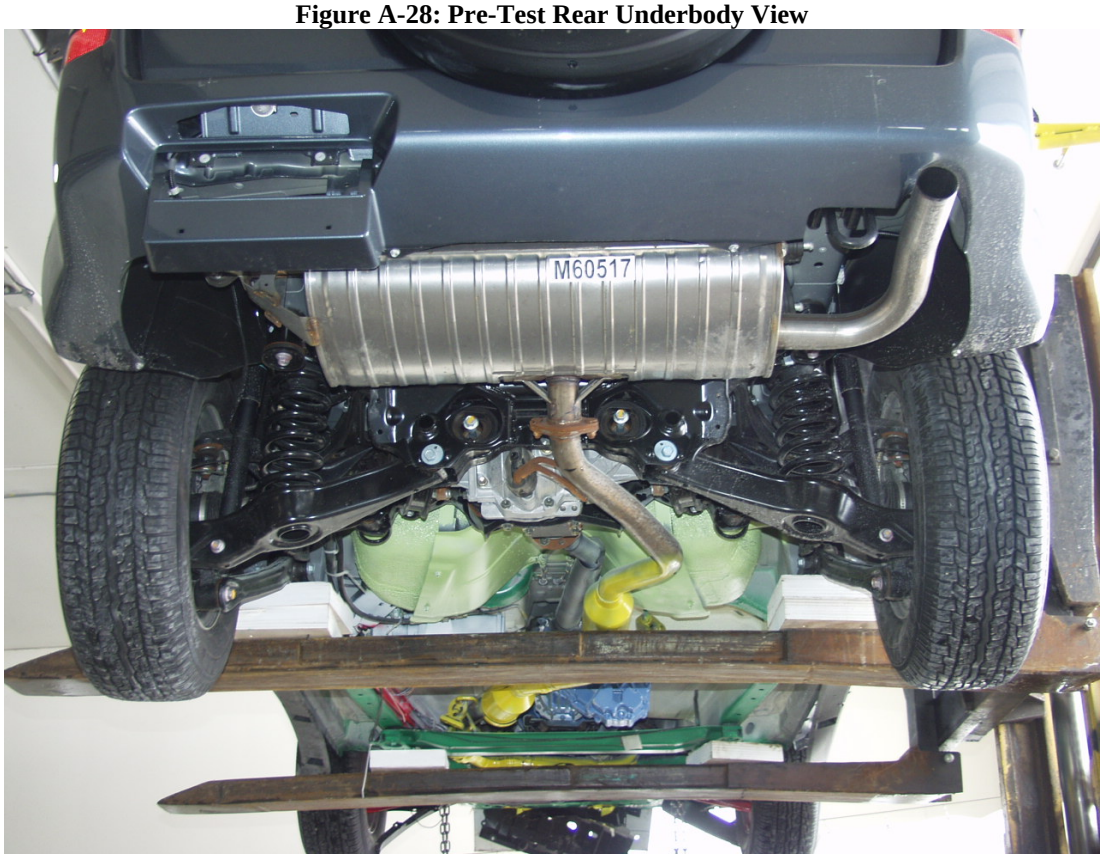


Figure A-29: Post-Test Rear Underbody View

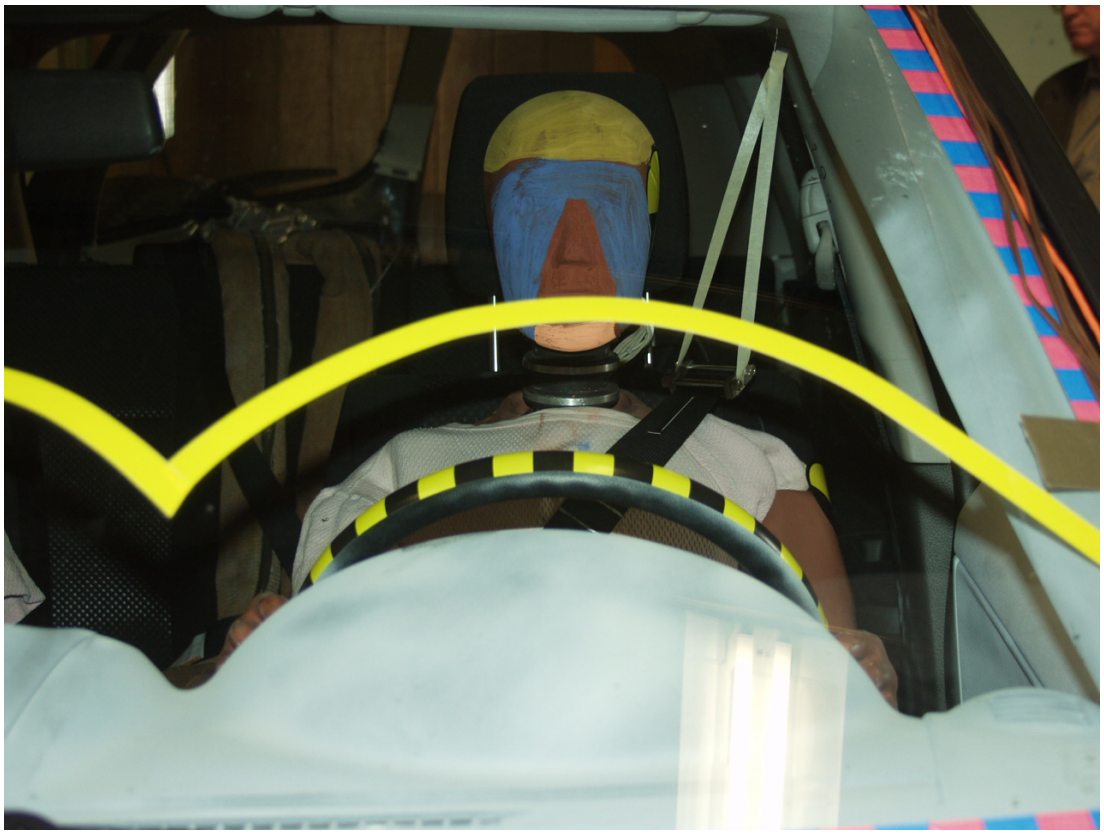


Figure A-30: Pre-Test Driver Head Location

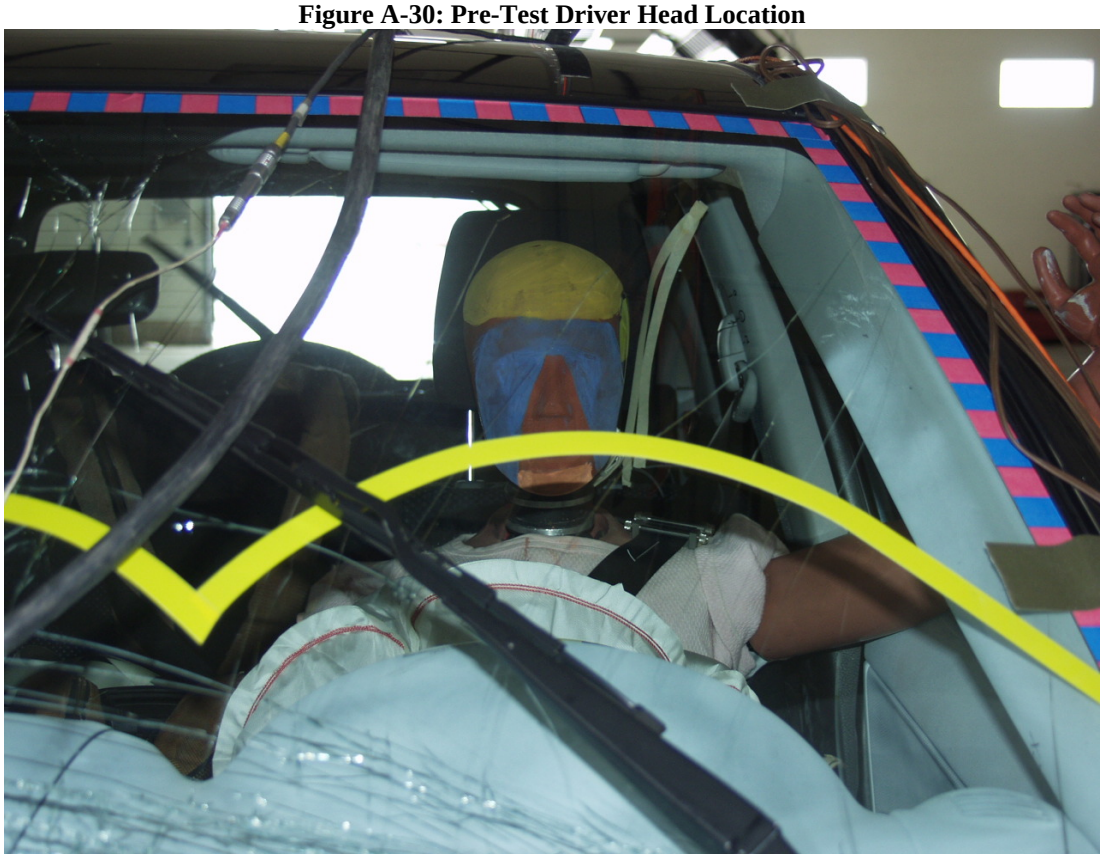


Figure A-31: Post-Test Driver Head Location

Figure A-32: Pre-Test Driver Position View

Figure A-33: Post-Test Driver Position View

Figure A-34: Pre-Test Driver and Interior View

Figure A-35: Post-Test Driver and Interior View

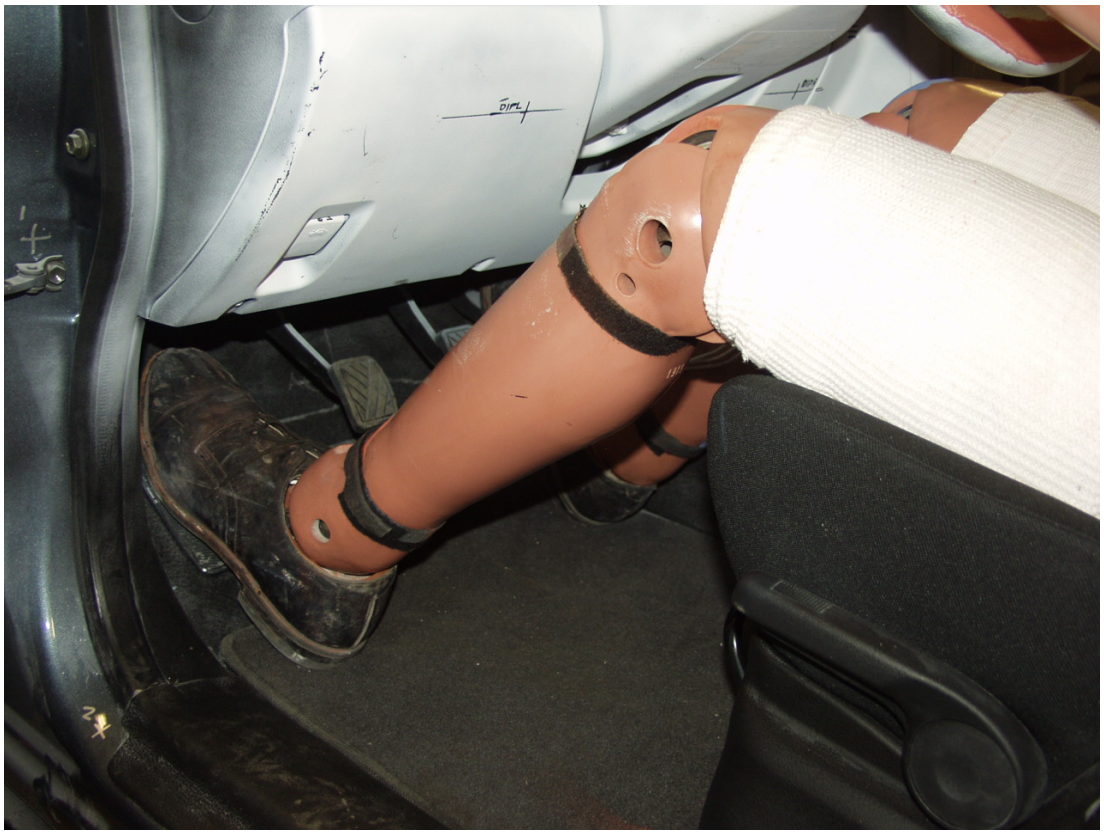


Figure A-36: Pre-Test Driver Feet View

Figure A-37: Post-Test Driver Feet View

Figure A-38: Pre-Test Driver Knee Bolster View

Figure A-39: Post-Test Driver Knee Bolster View

Figure A-40: Pre-Test Driver Floor Pan View

Figure A-41: Post-Test Driver Floor Pan View

Figure A-42: Post-Test Driver Head View

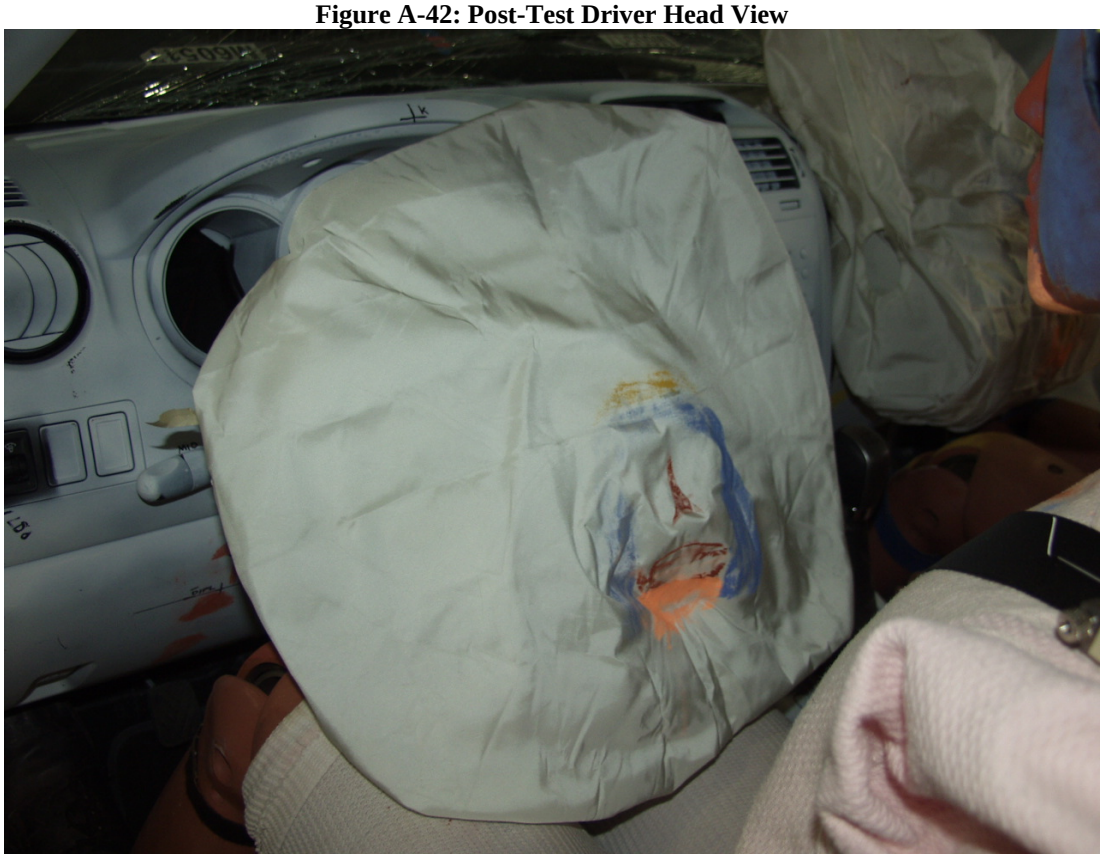


Figure A-43: Post-Test Driver Contact to Airbag

Figure A-44: Pre-Test Passenger Head Location

Figure A-45: Post-Test Passenger Head Location

Figure A-46: Pre-Test Passenger Position View

Figure A-47: Post-Test Passenger Position View

Figure A-48: Pre-Test Passenger and Interior View

Figure A-49: Post-Test Passenger and Interior View

Figure A-50: Pre-Test Passenger Feet View

Figure A-51: Post-Test Passenger Feet View

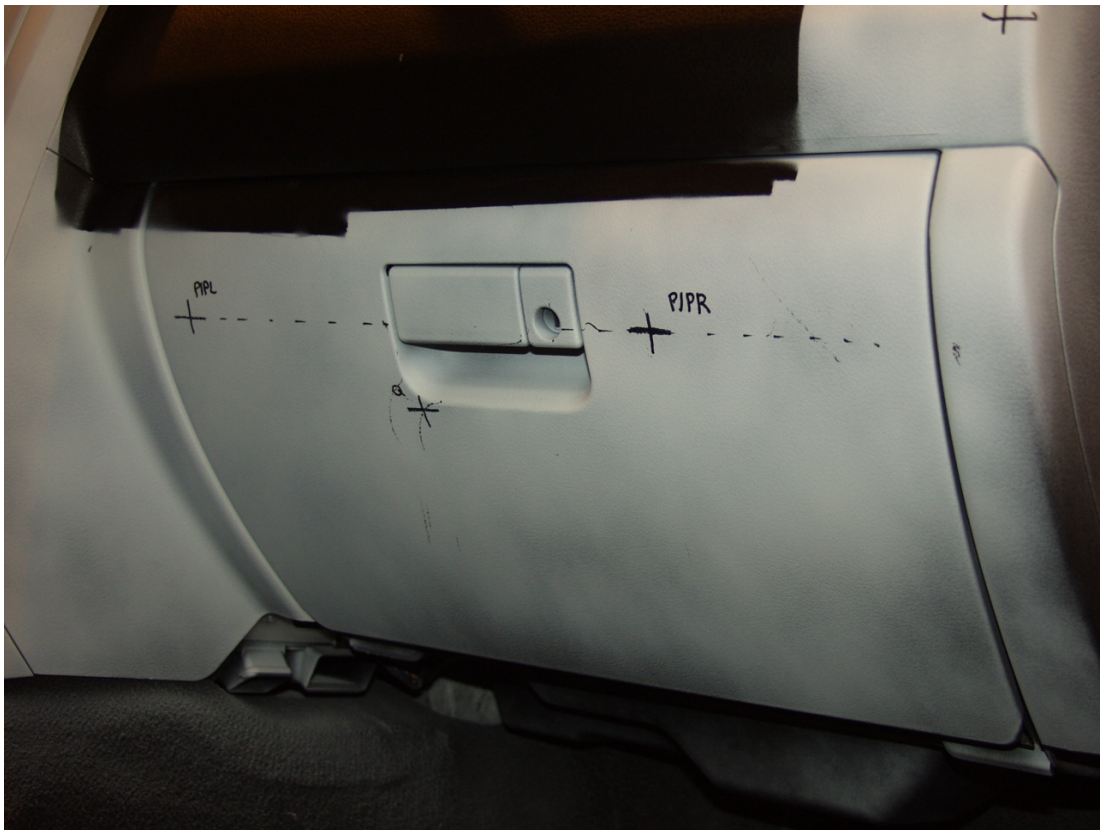


Figure A-52: Pre-Test Passenger Knee Bolster View

Figure A-53: Post-Test Passenger Knee Bolster View

Figure A-54: Pre-Test Passenger Floor Pan View

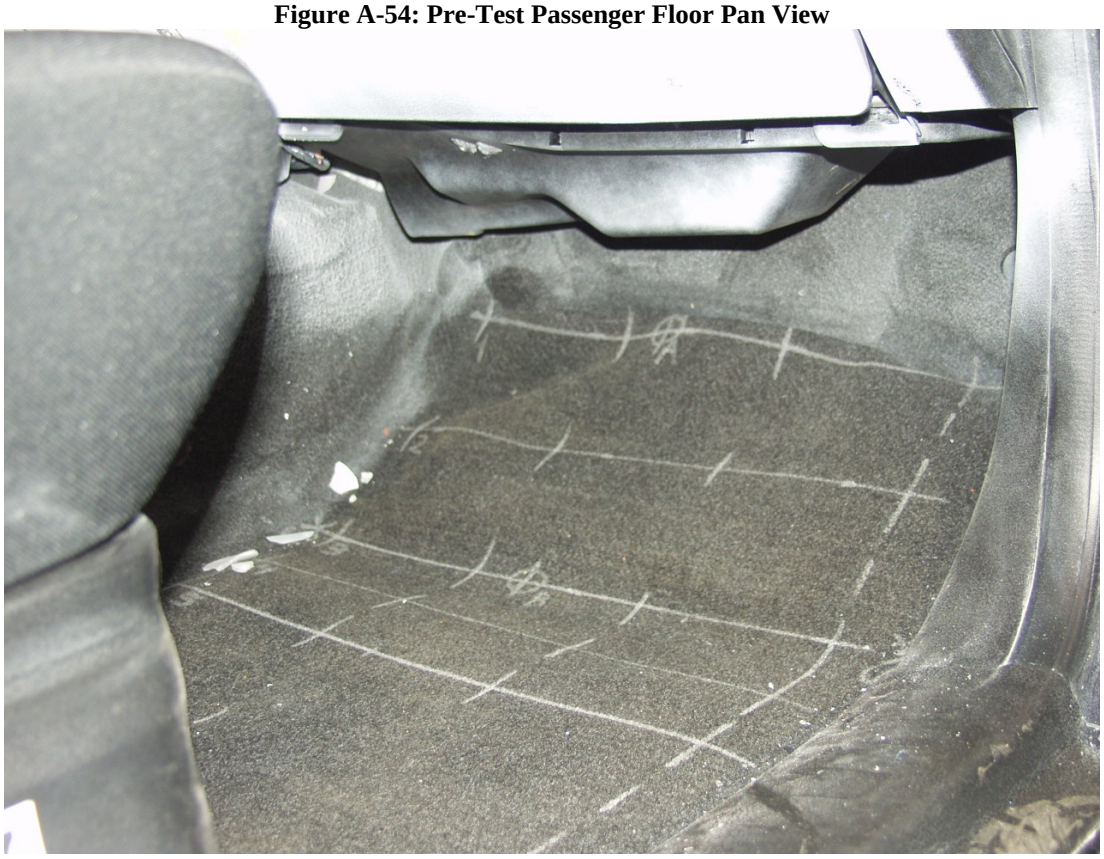


Figure A-55: Post-Test Passenger Floor Pan View

Figure A-56: Post-Test Passenger Head View

Figure A-57: Post-Test Passenger Contact to Airbag

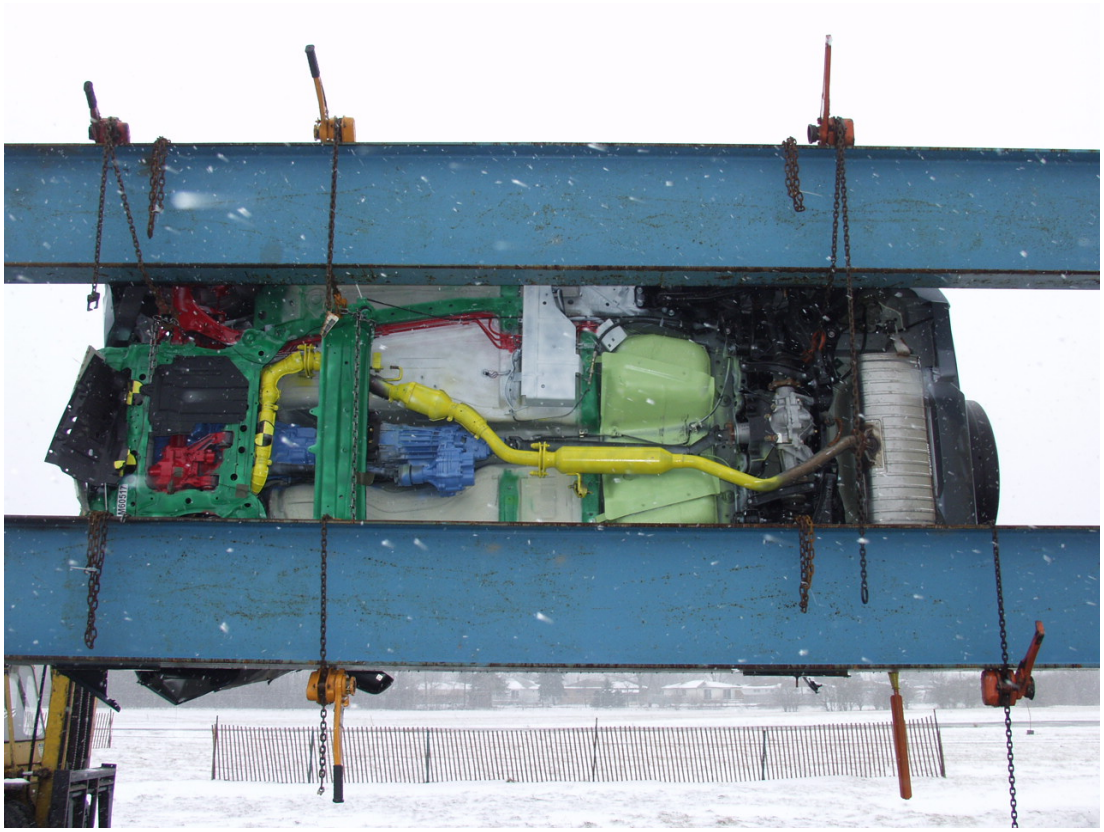


Figure A-58: Rollover View - 90°

Figure A-59: Rollover View - 180°

Figure A-60: Rollover View - 270°

Figure A-61: Rollover View - 360°

Figure A-62: Impact View

APPENDIX B

DUMMY, VEHICLE AND LOAD CELL BARRIER RESPONSE DATA

Hybrid III Dummy Sign Conventions
Load Cells and Special Transducers

Transducer	**SAE Sign Convention (positive unless noted)**
Upper Neck Load Cell	Fx Head rearward Fy Head left Fz Neck in tension Mx Left ear to left shoulder My Chin to chest (flexion) Mz Chin to left shoulder (look left)
Chest Displacement Potentiometer	Compression is negative
Pelvic Load Cell (Lower Lumbar)	Fx Chest rearward Fy Chest left Fz Spine in tension
Femur Load Cell	Compression is negative
Upper Tibia Load Cell (right and left leg)	Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center
Lower Tibia Load Cell (right and left leg)	Fz Tibia in tension Mx Support tibia at ends, load left side center My Support tibia at ends, load front (shin) center

DATA CHANNEL FILTER CLASS SUMMARY

NHTSA TEST NO.: M60517

DATA TYPE	SAE FILTER CLASS (Hz)
Dummy Head Accelerations	1000
Dummy Chest Accelerations	180
Dummy Chest Displacements	600
Dummy Femur Forces	600
Dummy Belt Loads	60
Dummy Belt Displacements	180
Dummy Neck Forces	1000
Dummy Neck Moments	600
Vehicle Accelerations	60
Vehicle Velocity Integrations	180
Vehicle Displacement Integrations	180
Load Cell Barrier Forces	60

Table of Data Plots

The following dummy, vehicle and load cell response data can be found in the research and development section of the NHTSA website at: www.nhtsa.dot.gov

V1P1 Head 9 Array X Arm Ay	
V1P1 Head 9 Array X Arm Az	
V1P1 Head 9 Array Y Arm Ax	
V1P1 Head 9 Array Y Arm Az	
V1P1 Head 9 Array Z Arm Ax	
V1P1 Head 9 Array Z Arm Ay	
V1P1 Head CG Ax	
V1P1 Head CG Ay	
V1P1 Head CG Az	
V1P1 Head CG Red Ax	
V1P1 Head CG Red Ay	
V1P1 Head CG Red Az	
V1P1 Upper Neck Fx	
V1P1 Upper Neck Fy	
V1P1 Upper Neck Fz	
V1P1 Upper Neck Mx	
V1P1 Upper Neck My	
V1P1 Upper Neck Mz	
V1P1 Chest Ax	
V1P1 Chest Ay	
V1P1 Chest Az	
V1P1 Chest Red Ax	
V1P1 Chest Red Ay	
V1P1 Chest Red Az	
V1P1 Chest Compression	
V1P1 Pelvic Ax	
V1P1 Pelvic Ay	
V1P1 Pelvic Az	
V1P1 Left Femur Fz	
V1P1 Right Femur Fz	
V1P1 Left Upper Tibia Mx	
V1P1 Left Upper Tibia My	
V1P1 Left Lower Tibia Fz	
V1P1 Left Lower Tibia Mx	
V1P1 Left Lower Tibia My	
V1P1 Right Upper Tibia Mx	
V1P1 Right Upper Tibia My	
V1P1 Right Lower Tibia Fz	
V1P1 Right Lower Tibia Mx	
V1P1 Right Lower Tibia My	
V1P1 Left Foot Aft Ax	
V1P1 Left Foot Aft Az	
V1P1 Left Foot Fore Az	
V1P1 Right Foot Aft Ax	
V1P1 Right Foot Aft Az	
V1P1 Right Foot Fore Az	
V1 Driver Lap Belt F	

V1 Driver Torso Belt F	
V1P2 Head 9 Array X Arm Ay	
V1P2 Head 9 Array X Arm Az	
V1P2 Head 9 Array Y Arm Ax	
V1P2 Head 9 Array Y Arm Az	
V1P2 Head 9 Array Z Arm Ax	
V1P2 Head 9 Array Z Arm Ay	
V1P2 Head CG Ax	
V1P2 Head CG Ay	
V1P2 Head CG Az	
V1P2 Head CG Red Ax	
V1P2 Head CG Red Ay	
V1P2 Head CG Red Az	
V1P2 Upper Neck Fx	
V1P2 Upper Neck Fy	
V1P2 Upper Neck Fz	
V1P2 Upper Neck Mx	
V1P2 Upper Neck My	
V1P2 Upper Neck Mz	
V1P2 Chest Ax	
V1P2 Chest Ay	
V1P2 Chest Az	
V1P2 Chest Red Ax	
V1P2 Chest Red Ay	
V1P2 Chest Red Az	
V1P2 Chest Compression	
V1P2 Pelvic Ax	
V1P2 Pelvic Ay	
V1P2 Pelvic Az	
V1P2 Left Femur Fz	
V1P2 Right Femur Fz	
V1P2 Left Upper Tibia Mx	
V1P2 Left Upper Tibia My	
V1P2 Left Lower Tibia Fz	
V1P2 Left Lower Tibia Mx	
V1P2 Left Lower Tibia My	
V1P2 Right Upper Tibia Mx	
V1P2 Right Upper Tibia My	
V1P2 Right Lower Tibia Fz	
V1P2 Right Lower Tibia Mx	
V1P2 Right Lower Tibia My	
V1P2 Left Foot Aft Ax	
V1P2 Left Foot Aft Az	
V1P2 Left Foot Fore Az	
V1P2 Right Foot Aft Ax	
V1P2 Right Foot Aft Az	
V1P2 Right Foot Fore Az	
V1 RFP Lap Belt F	
V1 RFP Torso Belt F	

V1 Left Rear #1 Ax	
V1 Right Rear #2 Ax	
V1 Engine Top #3 Ax	
V1 Engine Bottom #4 Ax	
V1 Right Caliper #5 Ax	
V1 Left Caliper #7 Ax	
V1 Left Rear #8 Az	
V1 Right Rear #9 Az	
Barrier Load Cell A1 Fx	
Barrier Load Cell A2 Fx	
Barrier Load Cell A3 Fx	
Barrier Load Cell A4 Fx	
Barrier Load Cell A5 Fx	
Barrier Load Cell A6 Fx	
Barrier Load Cell A7 Fx	
Barrier Load Cell A8 Fx	
Barrier Load Cell A9 Fx	
Barrier Load Cell B1 Fx	
Barrier Load Cell B2 Fx	
Barrier Load Cell B3 Fx	
Barrier Load Cell B4 Fx	
Barrier Load Cell B5 Fx	
Barrier Load Cell B6 Fx	
Barrier Load Cell B7 Fx	
Barrier Load Cell B8 Fx	
Barrier Load Cell B9 Fx	
Barrier Load Cell C1 Fx	
Barrier Load Cell C2 Fx	
Barrier Load Cell C3 Fx	
Barrier Load Cell C4 Fx	
Barrier Load Cell C5 Fx	
Barrier Load Cell C6 Fx	
Barrier Load Cell C7 Fx	
Barrier Load Cell C8 Fx	
Barrier Load Cell C9 Fx	
Barrier Load Cell D1 Fx	
Barrier Load Cell D2 Fx	
Barrier Load Cell D3 Fx	
Barrier Load Cell D4 Fx	
Barrier Load Cell D5 Fx	
Barrier Load Cell D6 Fx	
Barrier Load Cell D7 Fx	
Barrier Load Cell D8 Fx	
Barrier Load Cell D9 Fx	

TEST NOTES	
Data Channel	Anomalies
V1P1 Right Foot Fore Az	Questionable Data after 43 ms
V1P2 Left Lower Tibia Mx	Opened at 295 ms

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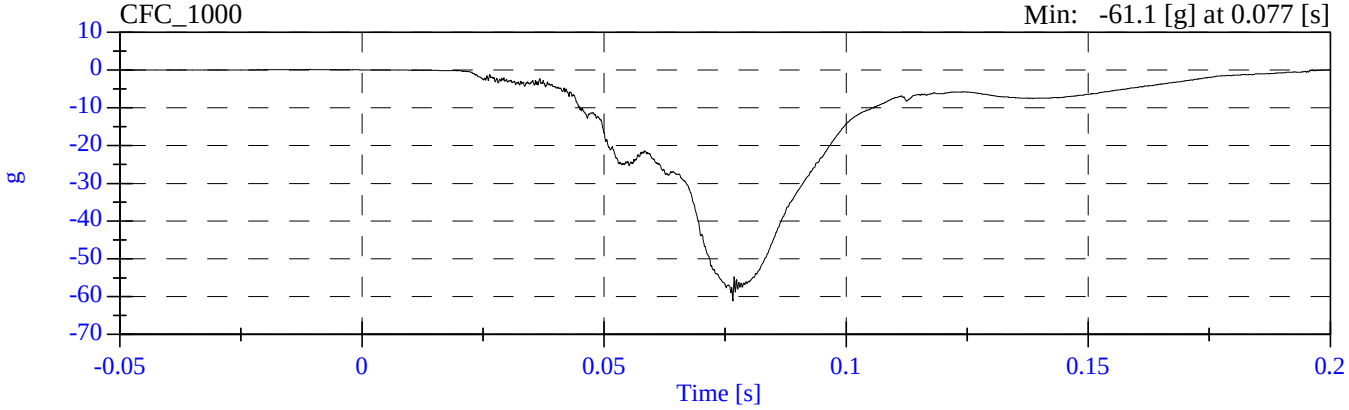
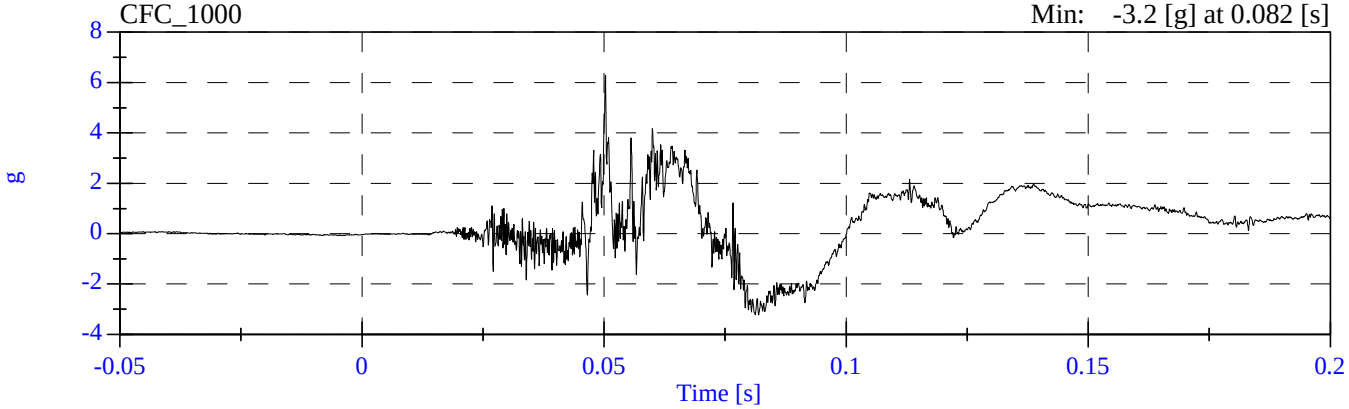
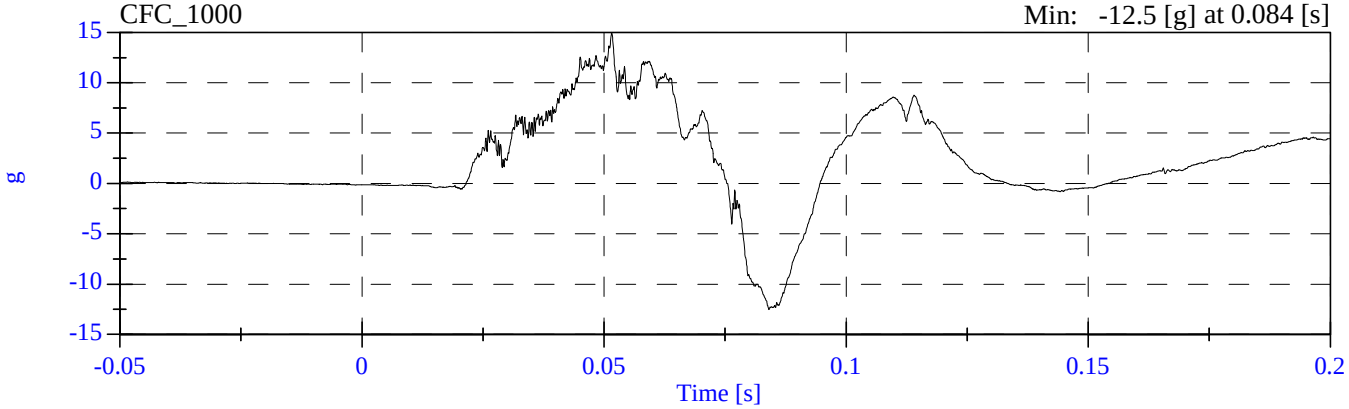
V1P1 Head CG x
CFC_1000
Max: 0.1 [g] at -0.011 [s]
Min: -61.1 [g] at 0.077 [s]



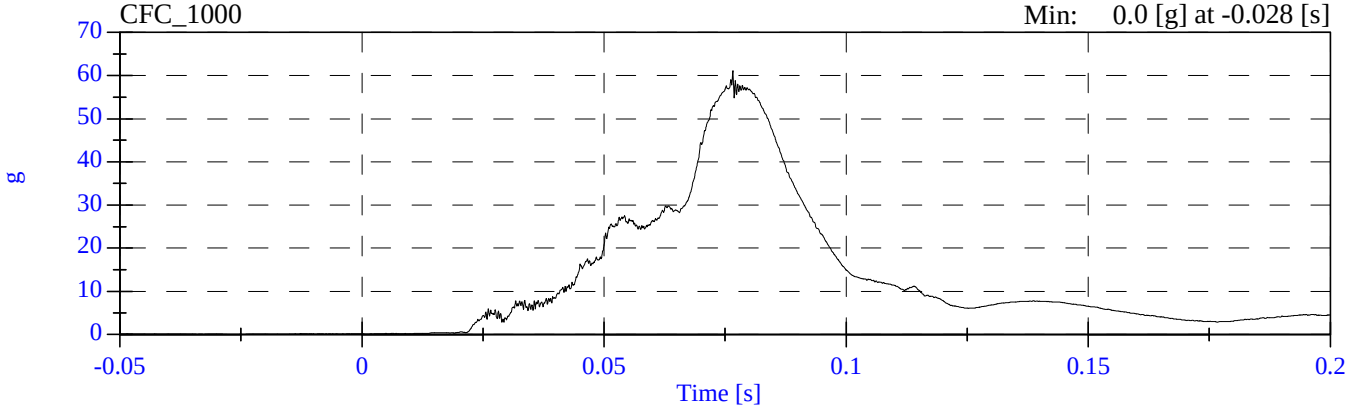
V1P1 Head CG y
CFC_1000
Max: 6.3 [g] at 0.050 [s]
Min: -3.2 [g] at 0.082 [s]



V1P1 Head CG z
CFC_1000
Max: 14.9 [g] at 0.052 [s]
Min: -12.5 [g] at 0.084 [s]



V1P1 Head CG Resultant
CFC_1000
Max: 61.1 [g] at 0.077 [s]
Min: 0.0 [g] at -0.028 [s]



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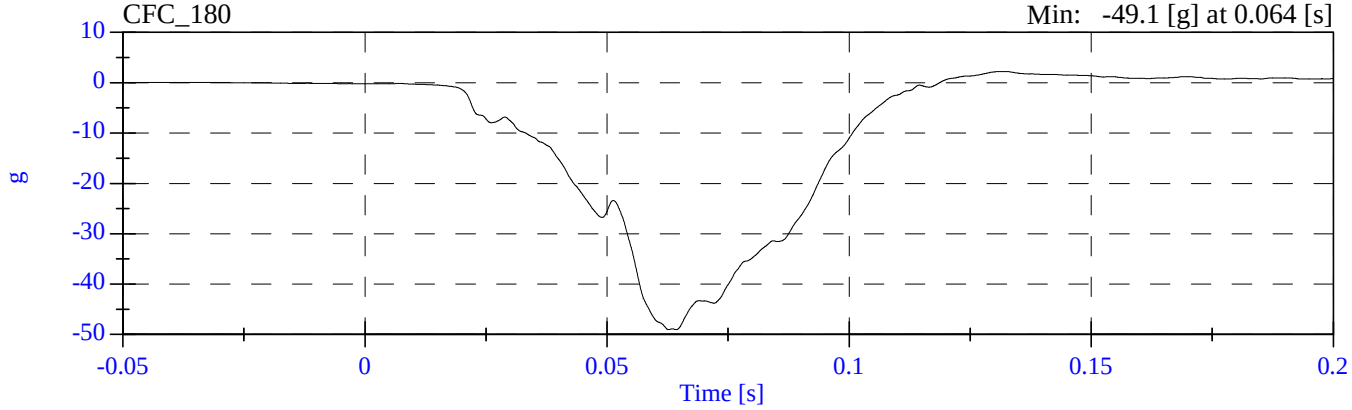
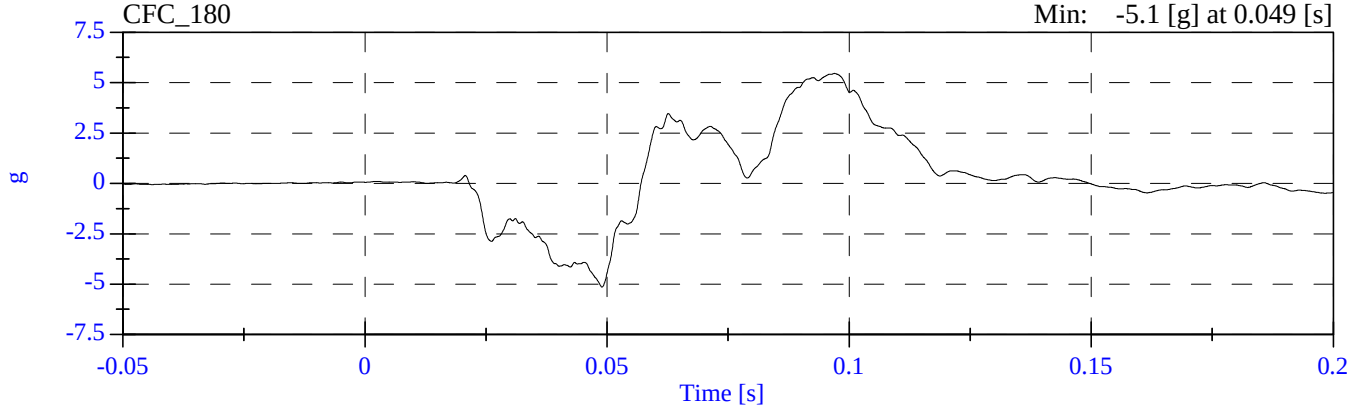
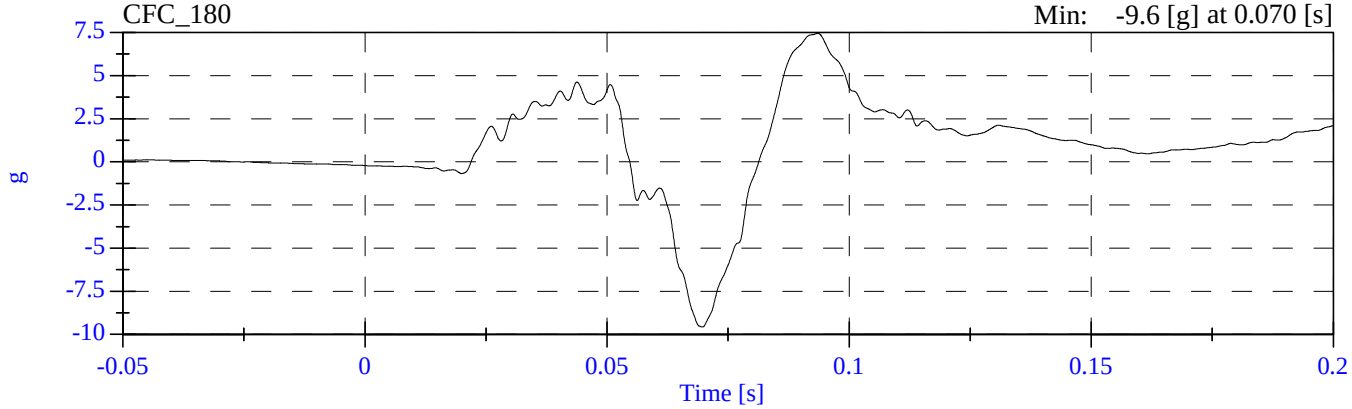
V1P1 Chest x
CFC_180
Max: 2.2 [g] at 0.132 [s]
Min: -49.1 [g] at 0.064 [s]



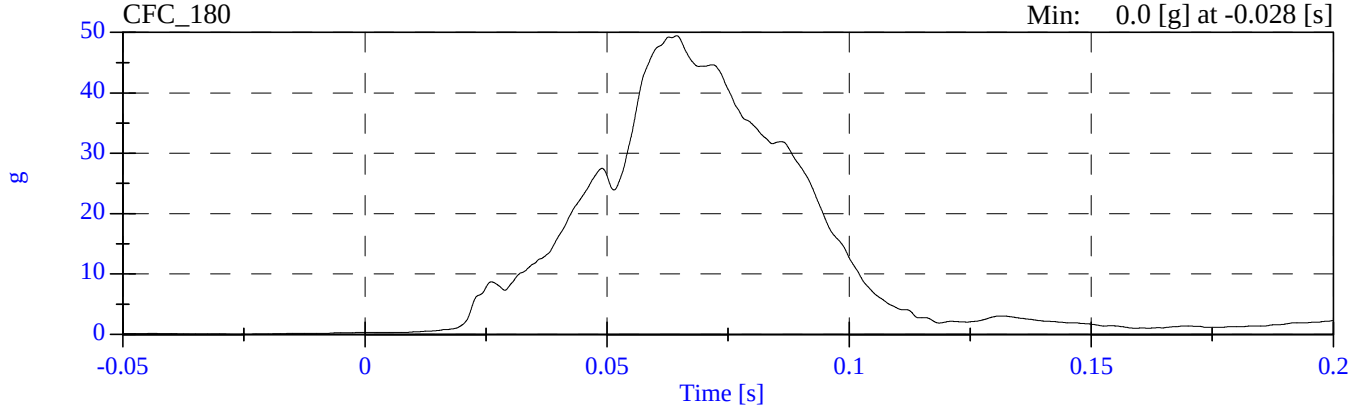
V1P1 Chest y
CFC_180
Max: 5.5 [g] at 0.097 [s]
Min: -5.1 [g] at 0.049 [s]



V1P1 Chest z
CFC_180
Max: 7.4 [g] at 0.093 [s]
Min: -9.6 [g] at 0.070 [s]



V1P1 Chest Resultant
CFC_180
Max: 49.5 [g] at 0.064 [s]
Min: 0.0 [g] at -0.028 [s]



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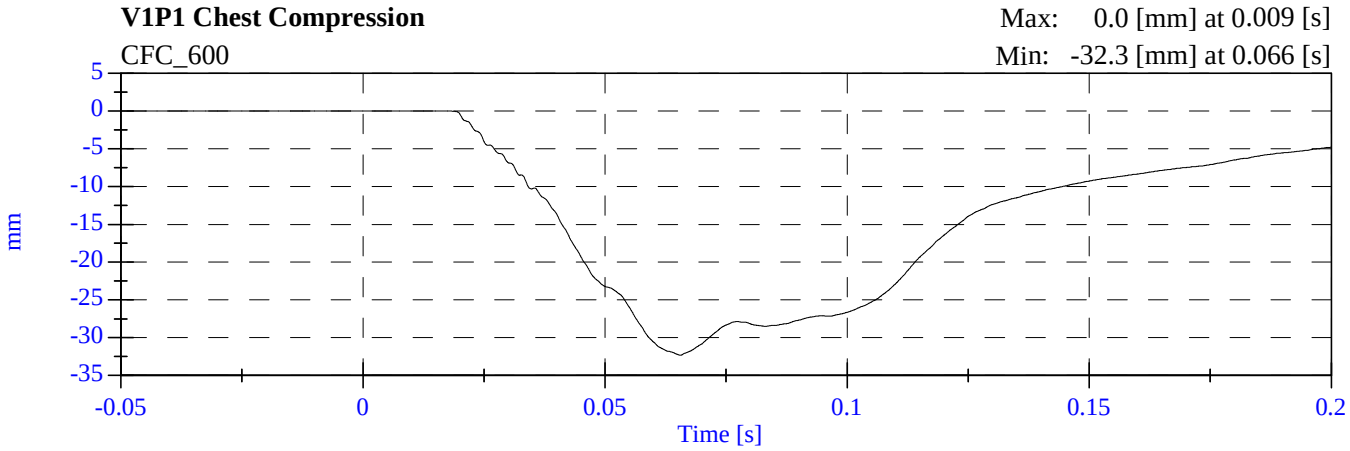

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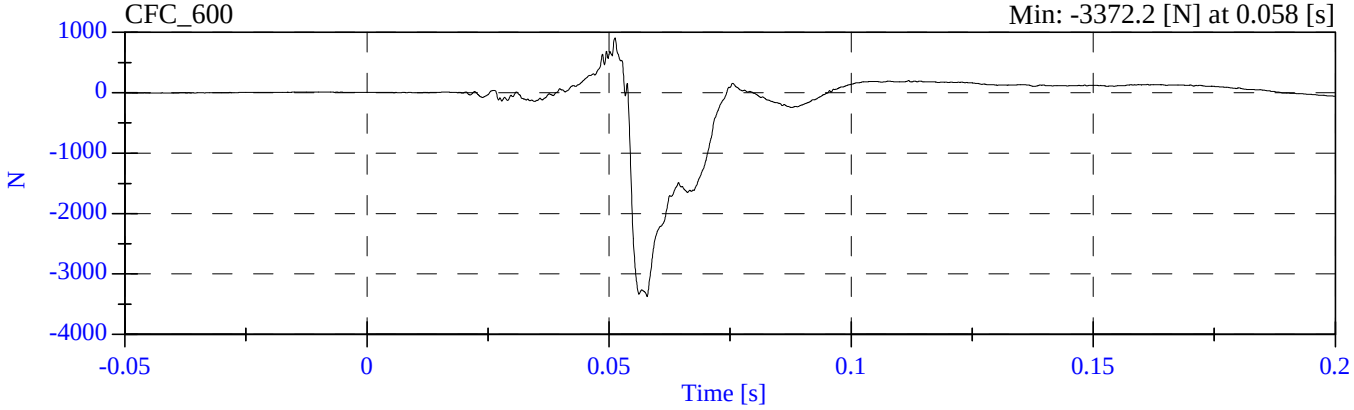
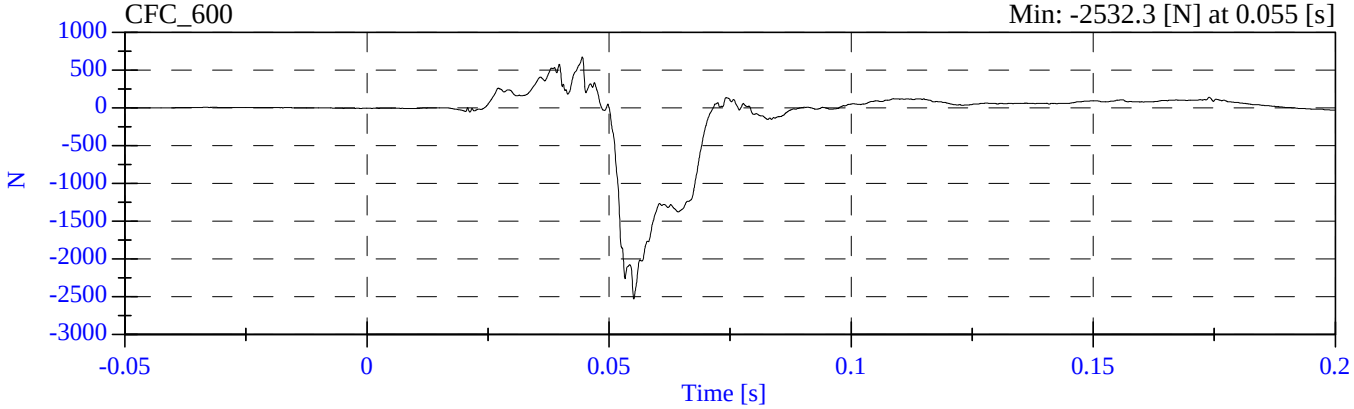
V1P1 Left Femur
CFC_600
Max: 907.4 [N] at 0.051 [s]
Min: -3372.2 [N] at 0.058 [s]



V1P1 Right Femur
CFC_600
Max: 674.5 [N] at 0.044 [s]
Min: -2532.3 [N] at 0.055 [s]



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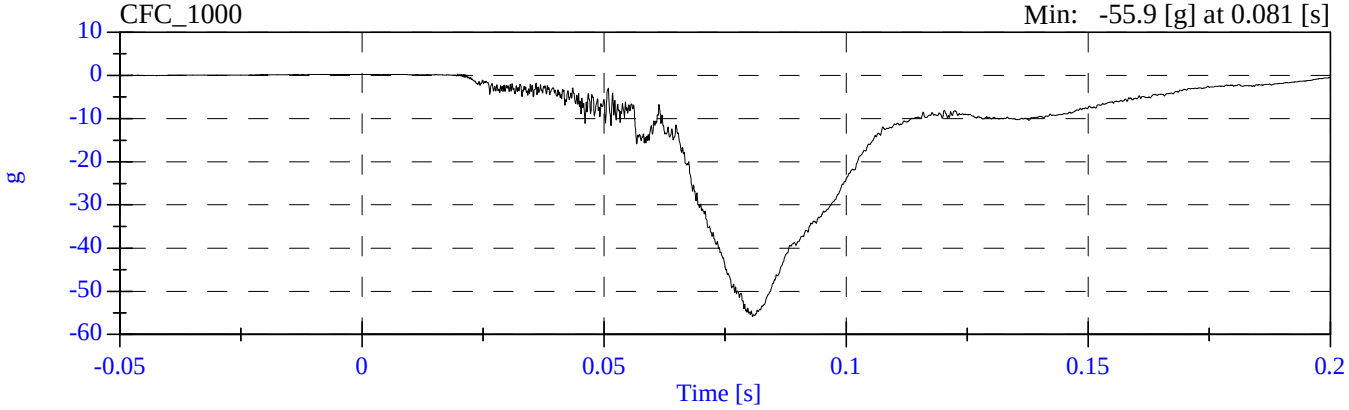
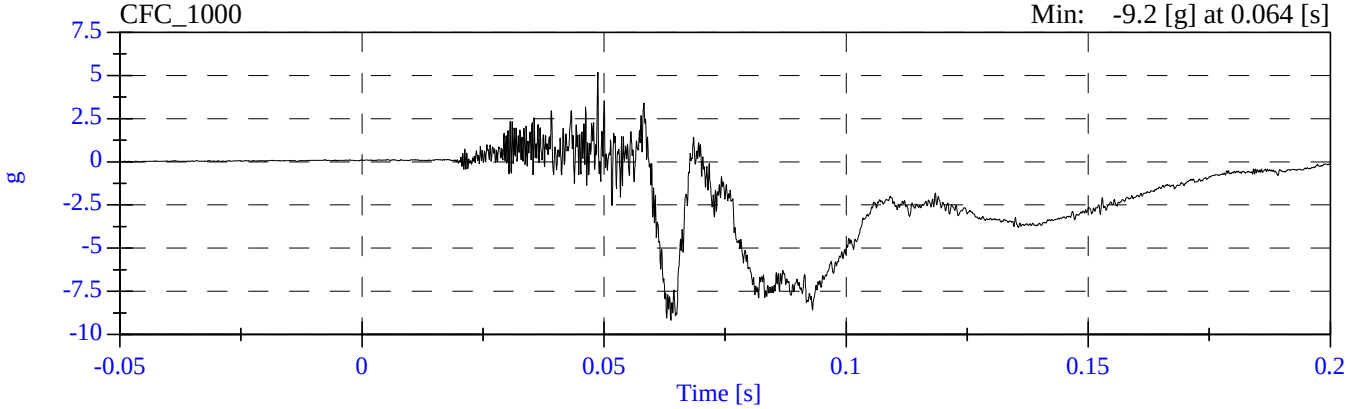
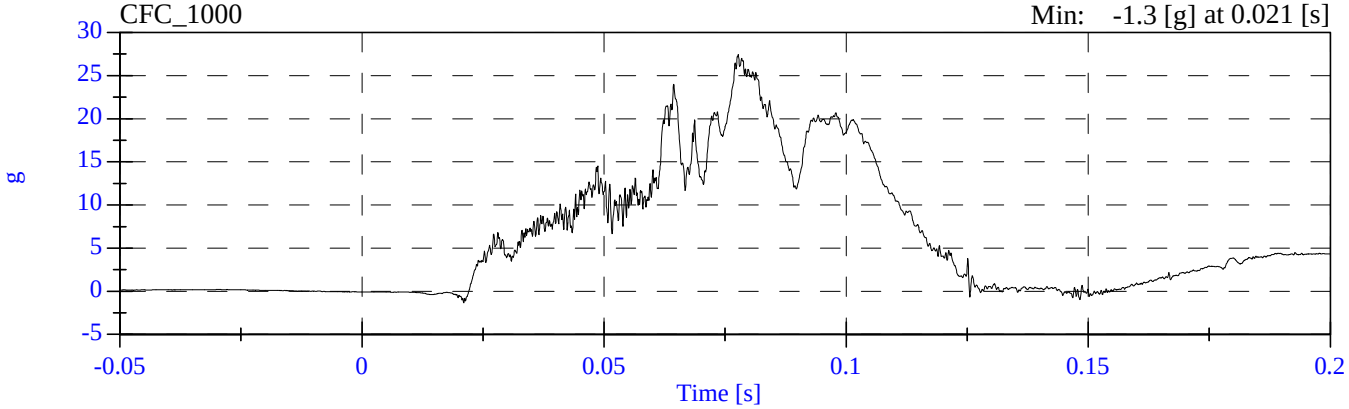
V1P2 Head CG x
CFC_1000
Max: 0.3 [g] at 0.020 [s]
Min: -55.9 [g] at 0.081 [s]



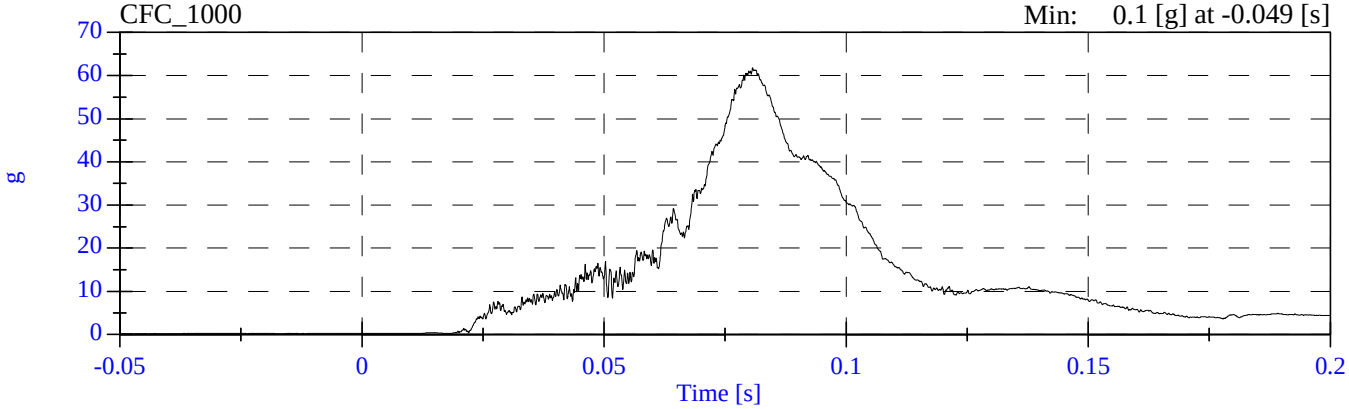
V1P2 Head CG y
CFC_1000
Max: 5.2 [g] at 0.049 [s]
Min: -9.2 [g] at 0.064 [s]



V1P2 Head CG z
CFC_1000
Max: 27.4 [g] at 0.078 [s]
Min: -1.3 [g] at 0.021 [s]



V1P2 Head CG Resultant
CFC_1000
Max: 61.8 [g] at 0.081 [s]
Min: 0.1 [g] at -0.049 [s]



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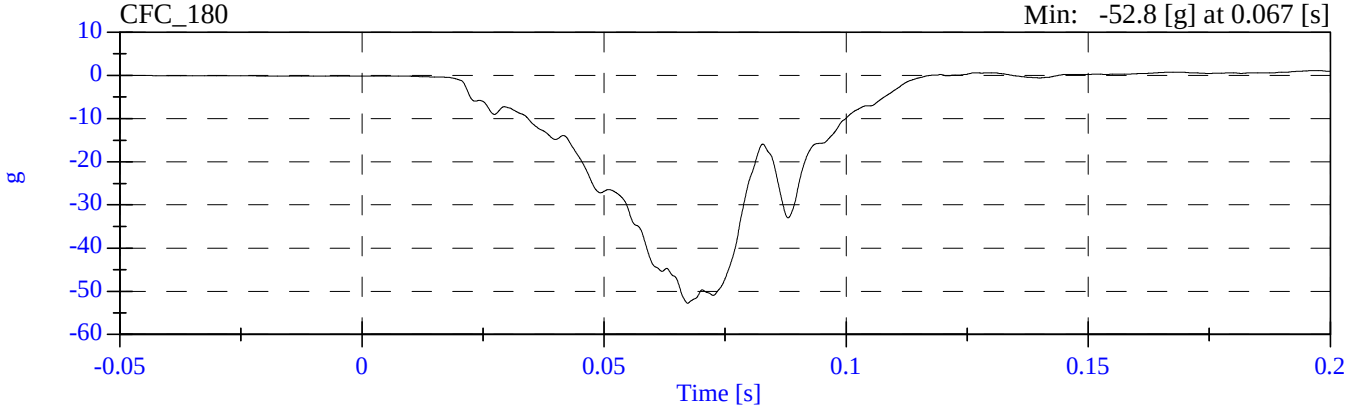
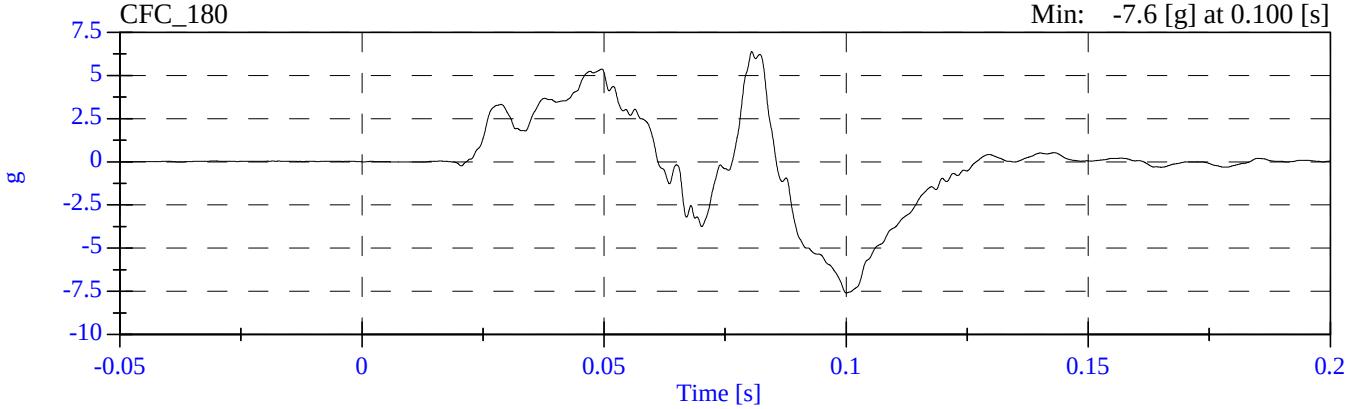
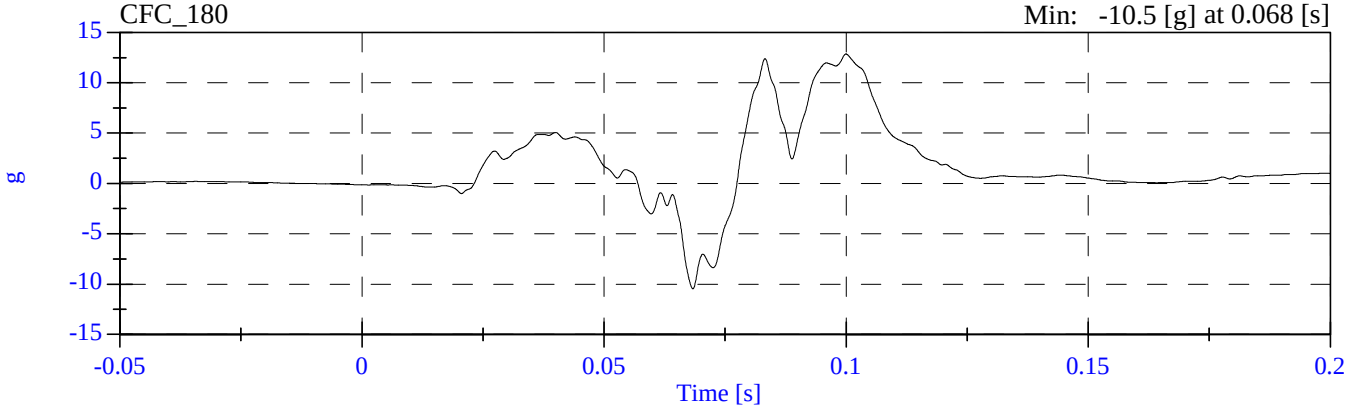
V1P2 Chest x
CFC_180
Max: 1.1 [g] at 0.197 [s]
Min: -52.8 [g] at 0.067 [s]



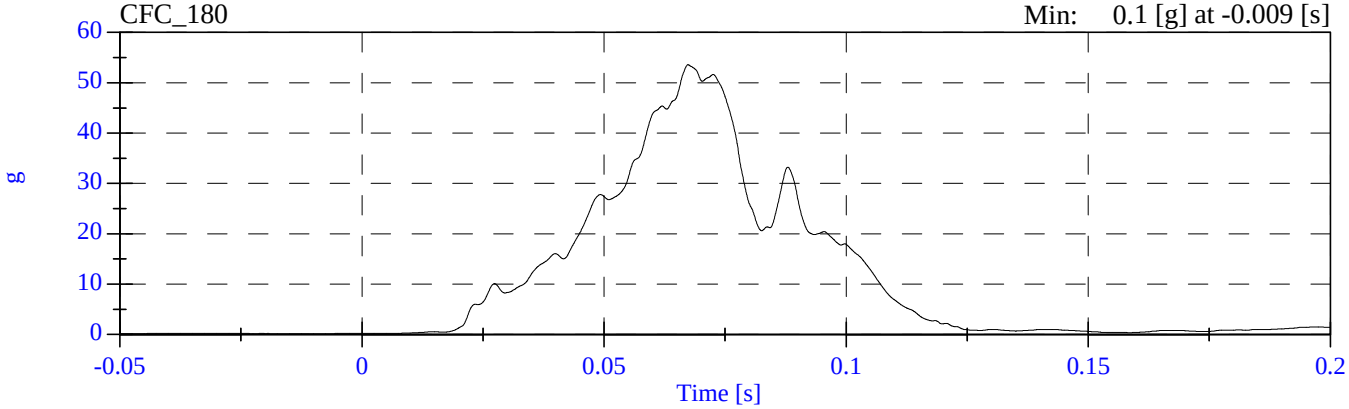
V1P2 Chest y
CFC_180
Max: 6.4 [g] at 0.080 [s]
Min: -7.6 [g] at 0.100 [s]



V1P2 Chest z
CFC_180
Max: 12.9 [g] at 0.100 [s]
Min: -10.5 [g] at 0.068 [s]



V1P2 Chest Resultant
CFC_180
Max: 53.6 [g] at 0.067 [s]
Min: 0.1 [g] at -0.009 [s]



2006 NCAP Test 12 - 2006 Suzuki Grand Vitara
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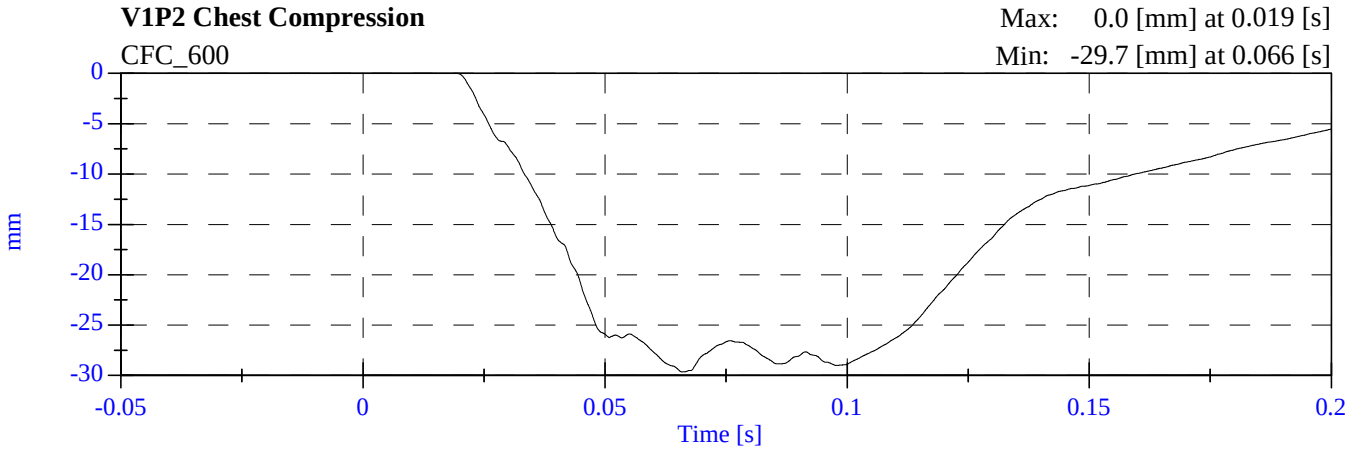

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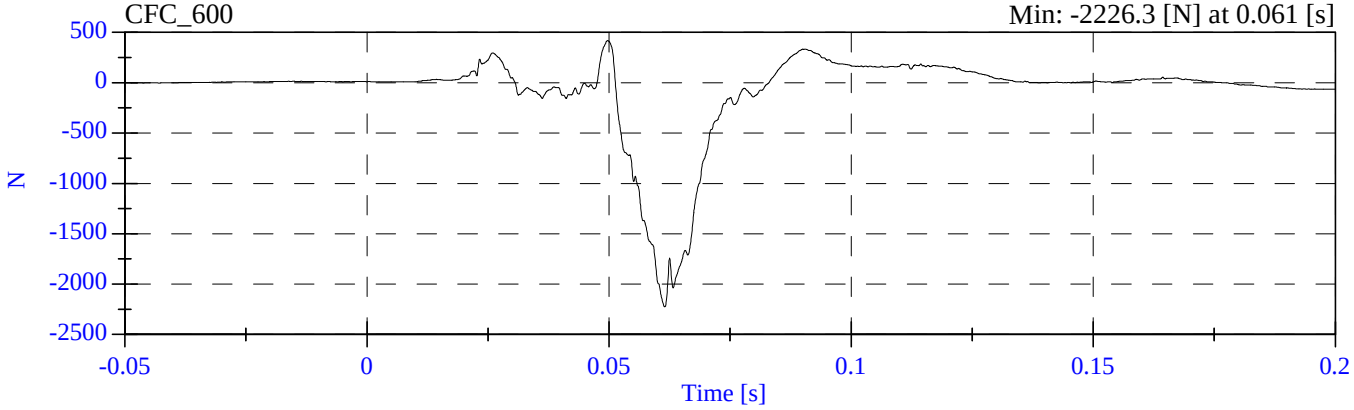
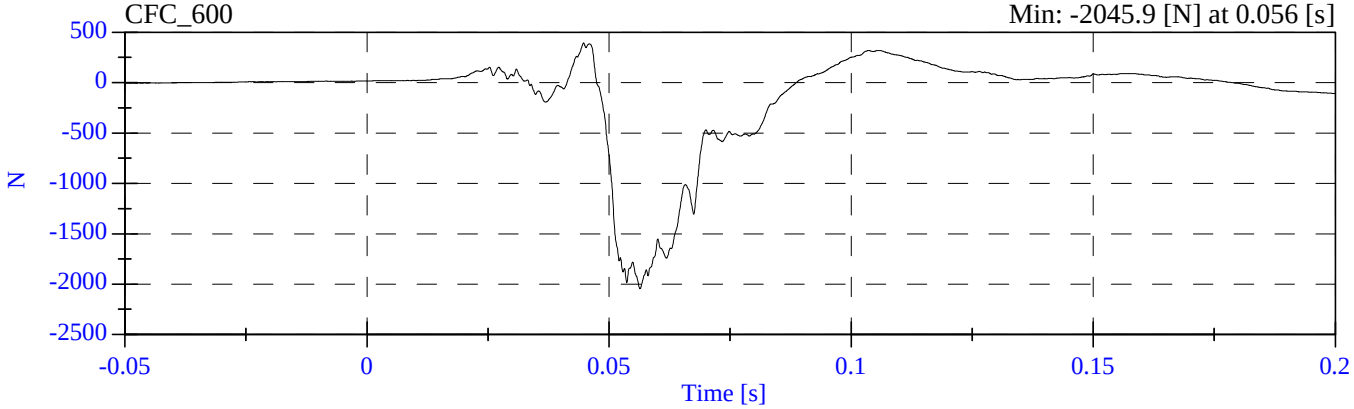
V1P2 Left Femur
CFC_600
Max: 419.0 [N] at 0.050 [s]
Min: -2226.3 [N] at 0.061 [s]



V1P2 Right Femur
CFC_600
Max: 393.9 [N] at 0.045 [s]
Min: -2045.9 [N] at 0.056 [s]



APPENDIX C

PART 572B/E DUMMY CONFIGURATION
AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan. A summary of the test results, and Part 572 specifications are included in this Appendix.

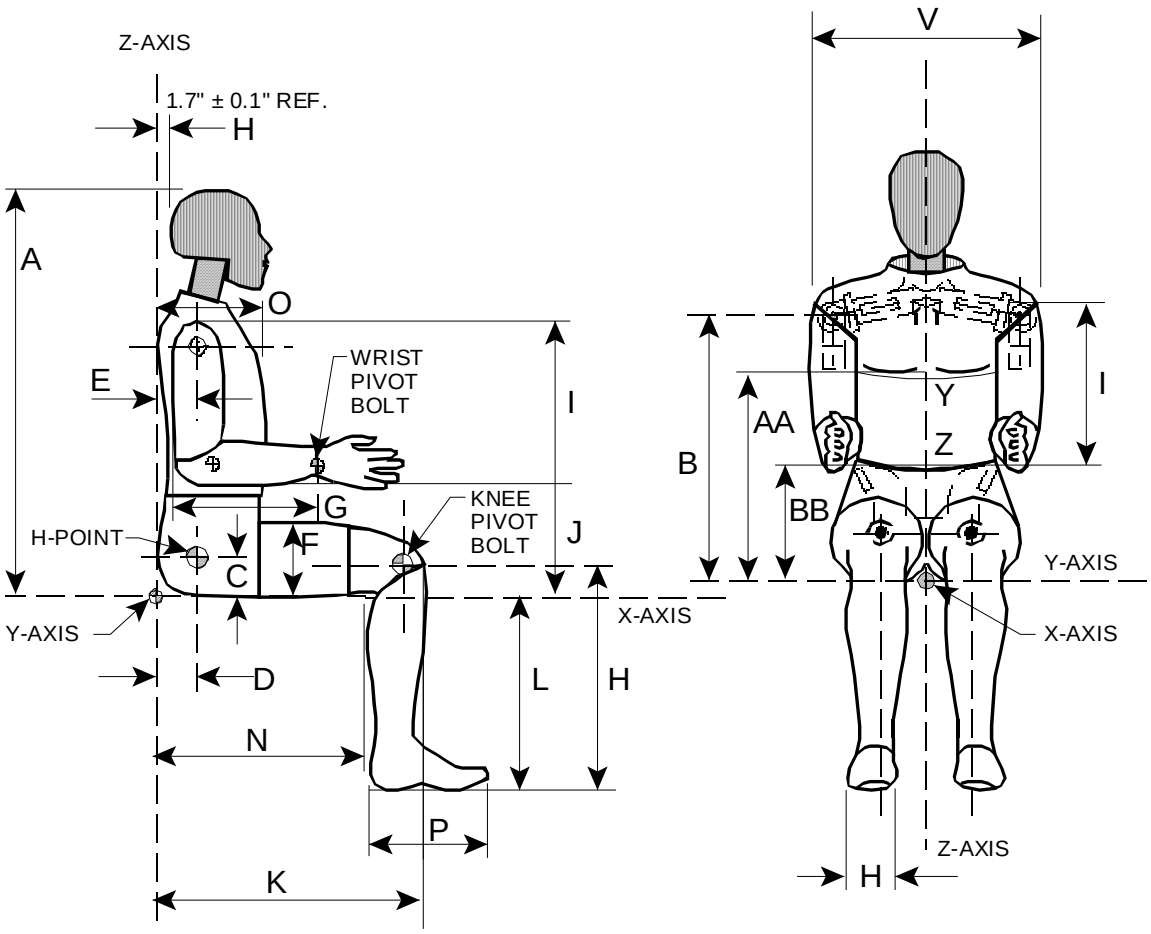
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	142	January 26, 2006
#2/Right Front Passenger	150	January 26, 2006

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Indicant Testing Final Report No. 6525-V-1.

EXTERNAL DIMENSIONS SPECIFICATIONS



NOTE: Figure is referenced to the erect seated position. The curved lumbar does not allow the Hybrid III to be positioned in a perfect erect attitude. (REF: S572.31(A)(6))

PART 572E
HEAD DROP TEST

Dummy Serial Number	142
Sequential Test Number	3
Date	January 23, 2006
Workfile	142H 01-23-06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.11
Relative Humidity	10% - 70%	33.00
Peak Resultant Acceleration	225-275 G's	253.11
Peak Lateral Acceleration	15 G's Max	4.43
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	142	
Sequential Test Number	3	
Date	January 24, 2006	6 Axis Neck Transducer
Workfile	142NF1 01-24-06	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	28.00
Impact Velocity		6.89 – 7.13 m/s	7.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.50
	20 ms	17.60 - 22.60 G's	22.51
	30 ms	12.50 - 18.50 G's	15.53
Max Pendulum G's Above 30 ms		29 G's Max	15.53
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.50
D Plane Rotation	Max	64 - 78 Deg	64.56
	Time	57 - 64 ms	57.50
Moment About Occipital	Max	88.13 – 108.47 N-m	98.70
Condyle	Time	47 - 58 ms	49.90
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	113.20
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.10

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	142	
Sequential Test Number	3	
Date	January 24, 2006	6 Axis Neck Transducer
Workfile	142NE 01-24-06	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	28.00
Impact Velocity		5.94 – 6.19 m/s	6.07
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.47
	20 ms	14.00 - 19.00 G's	17.09
	30 ms	11.00 - 16.00 G's	13.95
Max Pendulum G's Above 30 ms		22 G's Max	13.95
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	44.60
D Plane Rotation	Max	81 - 106 Deg	92.37
	Time	72 - 82 ms	75.90
Moment About Occipital	Max	-79.99 - -52.88 N-m	-70.26
Condyle	Time	65 - 79 ms	70.40
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	159.10
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	134.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	142
Sequential Test Number	3
Date	January 25, 2006
Workfile	142T 01-25-06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.11
Relative Humidity	10% - 70%	37.00
Pendulum Velocity	6.58 – 6.83 m/s	6.65
Maximum Deflection	63.50 – 72.64 mm	65.28
Maximum Resistive Force	5159.9 – 5893.9 N	5535.10
Internal Hysteresis	69 - 85 %	76.11

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	142
Sequential Test Number	3
Date	January 26, 2006
Workfile	142LF 01-26-06/142RF 01-26-06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.11
Relative Humidity	10% - 70%	29.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	4951.23
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.11
Relative Humidity	10% - 70%	29.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	4754.30

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 142
Sequential Test Number 3
Date January 26, 2006

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			38
Location for Chest Circumference	AA	16.9 -17.1 in	17.1
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Total Sitting Height	A	34.6 - 35.0 in	35.0
Shoulder Pivot Height	B	19.9 - 20.5 in	20.4
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.3
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Thigh Clearance	F	5.5 - 6.1 in	6.0
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.5
Elbow Rest Height	J	7.5 - 8.3 in	8.2
Buttock Knee Length	K	22.8 - 23.8 in	23.5
Popliteal Height	L	16.9 - 17.9 in	17.7
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Buttock Popliteal Length	N	17.8 - 18.8 in	18.7
Chest Depth	O	8.4 - 9.0 in	9.0
Foot Length	P	9.9 - 10.5 in	10.3
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Foot Breadth	W	3.6 - 4.2 in	4.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.8
Waist Circumference	Z	32.9 - 34.1 in	33.0

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number	150
Sequential Test Number	3
Date	January 23, 2006
Workfile	150H 01-23-06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	35.00
Peak Resultant Acceleration	225-275 G's	259.21
Peak Lateral Acceleration	15 G's Max	1.13
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	150	
Sequential Test Number	3	
Date	January 24, 2006	6 Axis Neck Transducer
Workfile	150NF 01-24-06	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	28.00
Impact Velocity		6.89 – 7.13 m/s	6.99
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	22.82
	20 ms	17.60 - 22.60 G's	22.33
	30 ms	12.50 - 18.50 G's	16.02
Max Pendulum G's Above 30 ms		29 G's Max	16.02
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	41.60
D Plane Rotation	Max	64 - 78 Deg	67.10
	Time	57 - 64 ms	59.00
Moment About Occipital	Max	88.13 – 108.47 N-m	92.43
Condyle	Time	47 - 58 ms	54.30
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	117.90
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	99.60

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	150	
Sequential Test Number	3	
Date	January 24, 2006	6 Axis Neck Transducer
Workfile	150NE 01-24-06	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	28.00
Impact Velocity		5.94 – 6.19 m/s	6.13
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	19.37
	20 ms	14.00 - 19.00 G's	18.96
	30 ms	11.00 - 16.00 G's	15.28
Max Pendulum G's Above 30 ms		22 G's Max	15.28
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	38.50
D Plane Rotation	Max	81 - 106 Deg	92.16
	Time	72 - 82 ms	72.00
Moment About Occipital	Max	-79.99 - -52.88 N-m	-69.84
Condyle	Time	65 - 79 ms	66.90
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	153.90
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	130.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	150
Sequential Test Number	3
Date	January 25, 2006
Workfile	150T 01-25-06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.11
Relative Humidity	10% - 70%	37.00
Pendulum Velocity	6.58 – 6.83 m/s	6.66
Maximum Deflection	63.50 – 72.64 mm	64.77
Maximum Resistive Force	5159.9 – 5893.9 N	5565.93
Internal Hysteresis	69 - 85 %	74.36

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	150
Sequential Test Number	3
Date	January 26, 2006
Workfile	150LF 01-26-06/150RF 01-26-06

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.11
Relative Humidity	10% - 70%	29.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5192.00
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.11
Relative Humidity	10% - 70%	29.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5194.54

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 150
Sequential Test Number 3
Date January 26, 2006

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			38
Location for Chest Circumference	AA	16.9 -17.1 in	17.0
Location for Waist Circumference	BB	8.9 - 9.1 in	9.0
Total Sitting Height	A	34.6 - 35.0 in	34.8
Shoulder Pivot Height	B	19.9 - 20.5 in	20.1
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.5
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.7
Thigh Clearance	F	5.5 - 6.1 in	6.0
Back of Elbow to Wrist Pivot	G	11.4 - 12.0 in	11.5
Skull Cap to Backline	H	1.6 - 1.8 in	1.7
Shoulder - Elbow Length	I	13.0 - 13.6 in	13.2
Elbow Rest Height	J	7.5 - 8.3 in	8.2
Buttock Knee Length	K	22.8 - 23.8 in	23.5
Popliteal Height	L	16.9 - 17.9 in	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.5
Buttock Popliteal Length	N	17.8 - 18.8 in	18.5
Chest Depth	O	8.4 - 9.0 in	9.0
Foot Length	P	9.9 - 10.5 in	10.2
Shoulder Breadth	V	16.6 - 17.2 in	16.9
Foot Breadth	W	3.6 - 4.2 in	4.0
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	39.1
Waist Circumference	Z	32.9 - 34.1 in	34.0

Remarks:

Laboratory Technician: B. Swiecicki

APPENDIX D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 142)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-J35933	31-Jan-06	1-Aug-06
	X Arm Z	ENDEVCO	AC-J36038	31-Jan-06	1-Aug-06
	Y Arm X	ENDEVCO	AC-J36605	31-Jan-06	1-Aug-06
	Y Arm Z	ENDEVCO	AC-J21907	31-Jan-06	1-Aug-06
	Z Arm X	ENDEVCO	AC-J19843	31-Jan-06	1-Aug-06
	Z Arm Y	ENDEVCO	AC-AJ507	31-Jan-06	1-Aug-06
Head	X	ENDEVCO	AC-J14189	31-Jan-06	1-Aug-06
	Y	ENDEVCO	AC-J20125	31-Jan-06	1-Aug-06
	Z	ENDEVCO	AC-J36744	31-Jan-06	1-Aug-06
Head	X (R)	ENDEVCO	AC-J21989	31-Jan-06	1-Aug-06
	Y (R)	ENDEVCO	AC-J35921	31-Jan-06	1-Aug-06
	Z (R)	ENDEVCO	AC-ACCY2	31-Jan-06	1-Aug-06
Neck Load Cell	X	DENTON	LC-297FX	13-Jul-05	11-Jan-06
	Y	DENTON	LC-297FY	13-Jul-05	11-Jan-06
	Z	DENTON	LC-297FZ	13-Jul-05	11-Jan-06
Neck Moment	X	DENTON	LC-297MX	13-Jul-05	11-Jan-06
	Y	DENTON	LC-297MY	13-Jul-05	11-Jan-06
	Z	DENTON	LC-297MZ	13-Jul-05	11-Jan-06
Chest	X	ENDEVCO	AC-AC9F9	31-Jan-06	1-Aug-06
	Y	ENDEVCO	AC-P16194	31-Jan-06	1-Aug-06
	Z	ENDEVCO	AC-J14688	31-Jan-06	1-Aug-06
Chest	X (R)	ENDEVCO	AC-AAK48	31-Jan-06	1-Aug-06
	Y (R)	ENDEVCO	AC-AAKB1	31-Jan-06	1-Aug-06
	Z (R)	ENDEVCO	AC-J27517	31-Jan-06	1-Aug-06
Chest Deflection	X	SERVO	DS-142	28-Jun-05	27-Dec-05
Pelvic	X	ENDEVCO	AC-AJ5R0	31-Jan-06	1-Aug-06
	Y	ENDEVCO	AC-J22036	31-Jan-06	1-Aug-06
	Z	ENDEVCO	AC-J17649	31-Jan-06	1-Aug-06

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 142)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-729	20-Feb-05	21-Aug-05
Right Femur Load Cell	Fz	GSE	LC-631	16-Feb-05	17-Aug-05
Left Upper Tibia	Mx	DENTON	LC-266MX	24-Jun-05	23-Dec-05
	My	DENTON	LC-266MY	24-Jun-05	23-Dec-05
Left Lower Tibia	Fz	DENTON	LC-179FZ	22-Jun-05	21-Dec-05
	Mx	DENTON	LC-179MX	22-Jun-05	21-Dec-05
	My	DENTON	LC-179MY	22-Jun-05	21-Dec-05
Right Upper Tibia	Mx	DENTON	LC-265MX	28-Jun-05	27-Dec-05
	My	DENTON	LC-265MY	28-Jun-05	27-Dec-05
Right Lower Tibia	Fz	DENTON	LC-178FZ	28-Jun-05	27-Dec-05
	Mx	DENTON	LC-178MX	28-Jun-05	27-Dec-05
	My	DENTON	LC-178MY	28-Jun-05	27-Dec-05
Left Foot Rear	X	ENTRAN	AC-02I02I05-F06	1-Feb-06	2-Aug-06
	Z	ENTRAN	AC-01G18-F14	1-Feb-06	2-Aug-06
Left Foot Front	Z	ENTRAN	AC-99H30-Z13	1-Feb-06	2-Aug-06
Right Foot Rear	X	ENTRAN	AC-02I20I16-A13	1-Feb-06	2-Aug-06
	Z	ENTRAN	AC-03D03D16-F01	1-Feb-06	2-Aug-06
Right Foot Front	Z	ENTRAN	AC-00L20-A15	31-Jan-06	1-Aug-06
Lap Belt Load Cell		FIRST TECHNOLOGY	LC-168	1-Oct-05	1-Apr-06
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-178	1-Oct-05	1-Apr-06

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Head 9 Array	X Arm Y	ENDEVCO	AC-J27470	30-Jan-06	31-Jul-06
	X Arm Z	ENDEVCO	AC-J36741	30-Jan-06	31-Jul-06
	Y Arm X	ENDEVCO	AC-J20027	27-Jan-06	28-Jul-06
	Y Arm Z	ENDEVCO	AC-J21988	30-Jan-06	31-Jul-06
	Z Arm X	ENDEVCO	AC-AAKC6	27-Jan-06	28-Jul-06
	Z Arm Y	ENDEVCO	AC-AAKD0	30-Jan-06	31-Jul-06
Head	X	ENDEVCO	AC-J20061	30-Jan-06	31-Jul-06
	Y	ENDEVCO	AC-AJ4F8	30-Jan-06	31-Jul-06
	Z	ENDEVCO	AC-AHRW5	30-Jan-06	31-Jul-06
Head	X (R)	ENDEVCO	AC-AJ7Y4	30-Jan-06	31-Jul-06
	Y (R)	ENDEVCO	AC-AJ454	30-Jan-06	31-Jul-06
	Z (R)	ENDEVCO	AC-J19563	30-Jan-06	31-Jul-06
Neck Load Cell	X	DENTON	LC-157FX	14-Jul-05	12-Jan-06
	Y	DENTON	LC-157FY	14-Jul-05	12-Jan-06
	Z	DENTON	LC-157FZ	14-Jul-05	12-Jan-06
Neck Moment	X	DENTON	LC-157MX	14-Jul-05	12-Jan-06
	Y	DENTON	LC-157MY	14-Jul-05	12-Jan-06
	Z	DENTON	LC-157MZ	14-Jul-05	12-Jan-06
Chest	X	ENDEVCO	AC-J20580	30-Jan-06	31-Jul-06
	Y	ENDEVCO	AC-J20018	30-Jan-06	31-Jul-06
	Z	ENDEVCO	AC-J20569	30-Jan-06	31-Jul-06
Chest	X (R)	ENDEVCO	AC-J21963	30-Jan-06	31-Jul-06
	Y (R)	ENDEVCO	AC-P16755	30-Jan-06	31-Jul-06
	Z (R)	ENDEVCO	AC-J14667	30-Jan-06	31-Jul-06
Chest Deflection	X	SERVO	DS-150	23-Jun-05	22-Dec-05
Pelvic	X	ENDEVCO	AC-J34378	27-Jan-06	28-Jul-06
	Y	ENDEVCO	AC-J23757	27-Jan-06	28-Jul-06
	Z	ENDEVCO	AC-J27513	27-Jan-06	28-Jul-06

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

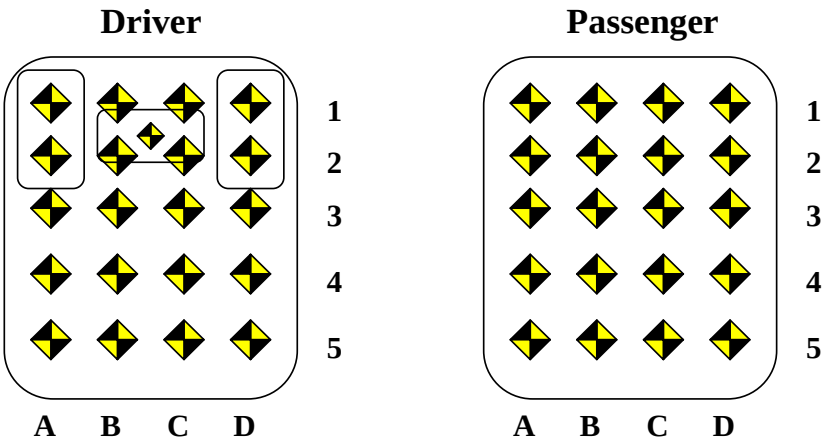
PASSENGER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-261	2-Jul-05	31-Dec-05
Right Femur Load Cell	Fz	DENTON	LC-264	2-Jul-05	31-Dec-05
Left Upper Tibia	Mx	DENTON	LC-263MX	29-Jun-05	28-Dec-05
	My	DENTON	LC-263MY	29-Jun-05	28-Dec-05
Left Lower Tibia	Fz	DENTON	LC-174FZ	28-Jun-05	27-Dec-05
	Mx	DENTON	LC-174MX	28-Jun-05	27-Dec-05
	My	DENTON	LC-174MY	28-Jun-05	27-Dec-05
Right Upper Tibia	Mx	DENTON	LC-268MX	27-Jun-05	26-Dec-05
	My	DENTON	LC-268MY	27-Jun-05	26-Dec-05
Right Lower Tibia	Fz	DENTON	LC-196FZ	27-Jun-05	26-Dec-05
	Mx	DENTON	LC-196MX	27-Jun-05	26-Dec-05
	My	DENTON	LC-196MY	27-Jun-05	26-Dec-05
Left Foot Rear	X	ENDEVCO	AC-J19223	30-Jan-06	31-Jul-06
	Z	ENDEVCO	AC-J20083	30-Jan-06	31-Jul-06
Left Foot Front	Z	ENTRAN	AC-04J04J07-M02	30-Jan-06	31-Jul-06
Right Foot Rear	X	ENDEVCO	AC-J35747	30-Jan-06	31-Jul-06
	Z	ENDEVCO	AC-J27496	30-Jan-06	31-Jul-06
Right Foot Front	Z	ENDEVCO	AC-J36723	30-Jan-06	31-Jul-06
Lap Belt Load Cell		FIRST TECHNOLOGY	LC-159	1-Oct-05	1-Apr-06
Shoulder Belt Load Cell		FIRST TECHNOLOGY	LC-173	1-Oct-05	1-Apr-06

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	GS SENSORS	AC-9440-046	17-Oct-05	17-Apr-06
Right Rear Seat Crossmember X	ICS	AC-FGP19	17-Oct-05	17-Apr-06
Top of Engine	ICS	AC-8062-003	17-Oct-05	17-Apr-06
Bottom of Engine	GS SENSORS	AC-9440-045	17-Oct-05	17-Apr-06
Right Disc Brake Caliper	ICS	AC-FGP22	12-Oct-05	12-Apr-06
Instrument Panel	-	-	-	-
Left Disc Brake Caliper	ICS	AC-FGP26	17-Oct-05	17-Apr-06
Left Seat Rear Crossmember Z	GS SENSORS	AC-9440-023	17-Oct-05	17-Apr-06
Right Seat Rear Crossmember Z	ICS	AC-FGP29	17-Oct-05	17-Apr-06

APPENDIX E

VEHICLE INTERIOR INTRUSION MEASUREMENTS

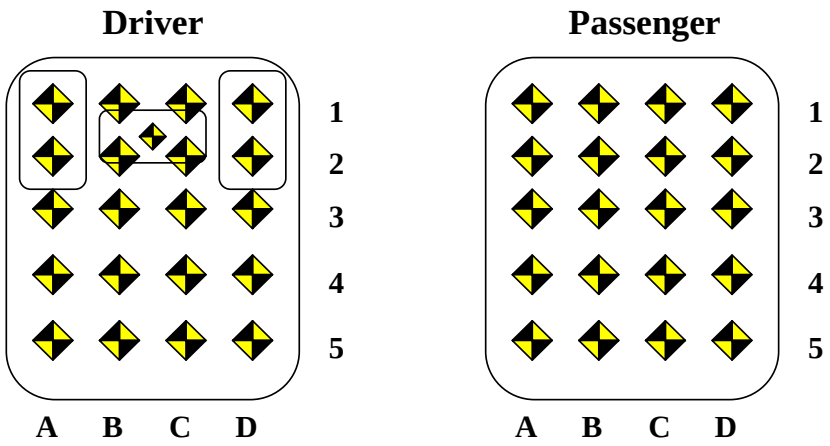


Driver Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3126	-620	-518	3111	-625	-519	15	5	1
B1	3213	-487	-514	3148	-489	-557	65	2	43
C1	3247	-359	-518	3147	-361	-566	100	2	48
D1	3221	-223	-518	3110	-237	-564	111	14	46
A2	3073	-620	-476	3061	-626	-474	12	6	-2
B2	3123	-488	-465	3110	-492	-468	13	4	3
C2	3133	-357	-471	3107	-362	-485	26	5	14
D2	3125	-224	-466	3082	-231	-480	43	7	14
A3	3028	-620	-418	3023	-623	-413	5	3	-5
B3	3026	-487	-418	3021	-493	-412	5	6	-6
C3	3024	-357	-417	3021	-361	-407	3	4	-10
D3	3023	-225	-422	3021	-229	-412	2	4	-10
A4	2961	-619	-416	2957	-623	-409	4	4	-7
B4	2960	-487	-416	2955	-492	-406	5	5	-10
C4	2957	-357	-415	2953	-359	-406	4	2	-9
D4	2955	-224	-419	2956	-230	-415	-1	6	-4
A5	2891	-620	-414	2887	-622	-409	4	2	-5
B5	2889	-488	-415	2885	-492	-407	4	4	-8
C5	2886	-356	-415	2884	-360	-408	2	4	-7
D5	2886	-226	-420	2885	-229	-417	1	3	-3
BP	3097	-332	-590	3019	-338	-611	78	6	21
G	2852	-528	-865	2849	-527	-866	3	-1	1
H	2838	-228	-867	2838	-228	-871	0	0	4
L	2634	-376	-1094	2636	-380	-1046	-2	4	-48
AB	2540	-595	-469	2539	-596	-453	1	1	-16

BP=Brake Pedal, G=Left side of bolster, H=Right side of bolster, L=Steering wheel center;
AB = Front outboard seat anchor bolt

PASSENGER SIDE INTRUSION MEASUREMENTS



Passenger Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3223	224	-521	3183	236	-551	40	-12	30
B1	3227	353	-525	3194	356	-546	33	-3	21
C1	3228	486	-525	3201	486	-544	27	0	19
D1	3227	615	-526	3217	615	-537	10	0	11
A2	3126	224	-469	3119	226	-470	7	-2	1
B2	3128	354	-470	3118	354	-473	10	0	3
C2	3129	485	-474	3120	485	-477	9	0	3
D2	3130	617	-475	3119	617	-483	11	0	8
A3	3028	225	-421	3022	226	-417	6	-1	-4
B3	3030	355	-421	3027	355	-417	3	0	-4
C3	3031	487	-422	3026	488	-419	5	-1	-3
D3	3030	619	-422	3026	619	-422	4	0	0
A4	2959	225	-419	2954	226	-415	5	-1	-4
B4	2960	355	-417	2956	356	-411	4	-1	-6
C4	2961	488	-417	2957	489	-411	4	-1	-6
D4	2961	619	-417	2957	621	-414	4	-2	-3
A5	2889	225	-419	2885	225	-416	4	0	-3
B5	2892	356	-417	2887	355	-411	5	1	-6
C5	2892	488	-417	2888	488	-410	4	0	-7
D5	2894	621	-416	2890	623	-413	4	-2	-3
R	2841	233	-868	2852	235	-887	-11	-2	19
S	2855	534	-867	2862	533	-888	-7	1	21
AB	2541	596	-471	2541	599	-454	0	-3	-17

R=Left side of bolster, S=Right side of bolster, L=Steering wheel center;
AB = Front outboard seat anchor bolt