REPORT NUMBER: CAL-08-01

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

FUJI HEAVY INDUSTRIES, LTD.
2008 SUBARU IMPREZA
4-DOOR SEDAN

NHTSA NUMBER: M85500

CALSPAN TEST NUMBER: 8806-NCAP-13

CALSPAN CORPORATION
TRANSPORTATION SCIENCES CENTER
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September 11, 2007

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Rulemaking
Office of Crashworthiness Standards
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1200 New Jersey Ave SE, Room W43-410
Washington, DC 20590

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7. Author(s) Michael J. Kilgallon, Program Manager James Czarnecki, Project Engineer		*8. Performing Organization Report No.* 8806-NCAP-13
9. Performing Organization Name and Address Calspan Corporation 4455 Genesee Street Buffalo, New York 14225		*10. Work Unit No.*
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15. Supplementary Notes

16. Abstract

A frontal load cell barrier test of a 2008 Subaru Impreza 4-door Sedan was performed at Calspan Corporation's crash test facility in Buffalo, New York, on September 11, 2007.

The impact velocity was 55.84 kph and the temperature at the barrier face was 21.1°C. The maximum post-test vehicle crush was 548 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 (061)**	**Passenger (064)**
Head Injury Criteria (HIC - 36 ms)	-	1000	443.2	278.4
Maximum Thorax Acceleration (3 ms Clip)	g's	60 g's	41.5	43.2
Chest Displacement	mm	-76 mm	23.8	28.1
Left Femur Force	Newtons	-10000 N	-1484.3	-580.6
Right Femur Force	Newtons	-10000 N	-2023.4	-2327.6

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. 1200 New Jersey Ave SE Washington, DC 20590

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SECTION 1

PURPOSE AND SUMMARY OF TEST

1.1 PURPOSE

This 55.84 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. DTNH22-06-D-00024. 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 55.84 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 55.84 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 16 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 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 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. 061) and the right-front passenger (position 2) ATD (Serial No.064) 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 160 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 2008 Subaru Impreza 4-door Sedan at a velocity of 55.84 kph. The test was performed at Calspan on September 11, 2007. 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	443.2	52.4	88.3	41.5	55.3	58.3	23.8	-1484.3	-2023.4
Passenger	278.4	52.1	88.1	43.2	64.2	67.2	28.1	-580.6	-2327.6

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

TEST NOTES	
Data Channel	Anomalies
V1P1 Left Foot Aft z	Wire cut during impact
V1P1 Right Foot Aft x	Wire Cut during impact
V1P2 Left Lower Tibia Fz	Data inaccurate after 59 ms
V1P1 Head CG Red y	Data inaccurate
V1P1 Head CG Red z	Data inaccurate

SECTION 2
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
CRASH TEST SUMMARY

Vehicle NHTSA No.: M85500 Test Mode: 56.3 kph Frontal Barrier
Test Date: September 11, 2007 Time: 14:30 Temperature: 21.1 °C
Vehicle Make/Model/Body Style: 2008 Subaru Impreza 4-door Sedan
Vehicle Test Weight: 1585 kg Impact Velocity: 55.84 kph (55.5 – 57.1 kph)
Vehicle/Barrier Impact Angle: 0 ° Max Static Crush: 548 mm

ATD INFORMATION AND VISIBLE CONTACT POINTS

	DRIVER	PASSENGER
ATD Type:	Part 572E	Part 572E
Restraint System:	Seatbelt, Airbag, Knee Bolster	Seatbelt, Airbag, Knee Bolster
Head Contact:	Face into airbag and back of head to head restraint	Face into airbag and back of head to head restraint
Abdomen Contact:	Airbag	Airbag
Chest Contact:	None	None
Left Knee Contact:	Knee Bolster	Knee Bolster
Right Knee Contact:	Knee Bolster	Knee Bolster

DOOR OPENING, SEAT TRACK AND GLAZING INFORMATION

Description	Driver Side	Passenger Side
Door Lock Status	Unlocked	Unlocked
Front Door Opening	Closed / Operable – no tools required	Closed / Operable – no tools required
Rear Door Opening	Closed / Operable – no tools required	Closed / Operable – no tools required
Hatch/Other Door Opening	Removed for weight purposes	
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	541	504	549	531

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	890	880
Lap belt length as measured on ATD	mm	690	683
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems	mm	160	155

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2008 Subaru Impreza 4-door Sedan

NHTSA No. : M85500 ; VIN: JF1GE61698G501774 ; Color: Silver

Engine Data: 4 cylinders; - CID; 2.5 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: 8/22/07 ; Odometer Reading 34 km

Selling Dealer: West Herr Subaru

Dealer Address: 3565 Southwestern Blvd Orchard Park NY 14127

TEST VEHICLE OPTIONS:

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

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

SAFETY BELT FEATURES:

Driver: x Pretensioner (Torso); x Load Limiter; x Adjustable Anchorage

Passenger: x Pretensioner (Torso); x Load Limiter; x Adjustable Anchorage

AIRBAG FEATURES:

Position	Frontal	Knee Bolster	Side Torso	Side Head/Torso Combination	Side Curtain
Driver:	x	-	x	-	x
Passenger:	x	-	x	-	x
Rear Passenger:	-	-	-	-	x

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Fuji Heavy Industries, LTD.

Date of Manufacture 06/07

GVWR: 1950 kg; GAWR: 900 kg FRONT; 1000 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) = 385 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 44.8 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 =	407	379	56.3	786.0
Rear =	303	307	43.7	610.0
			Total Delivered Weight (UDW) =	1396.0

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW) =	1396.0	kg
Rated Cargo/Luggage Weight (RCLW) =	44.8	kg
Weight of 2 p.572 Dummies @ 76 each =	152	kg
TARGET TEST WEIGHT =	1592.8	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 37.0 KG OF CARGO WEIGHT:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	434	428	54.4	862.0
Rear =	366	357	45.6	723.0
			Total Vehicle Test Weight (ATW) =	1585.0

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

Vehicle Components Removed for Weight Reduction: Rear trunk lid, rear taillights, hub caps Rear bumper trim with metal crash absorber

VEHICLE ATTITUDE (all dimension in millimeters):

	Left Front	Right Front	Left Rear	Right Rear	CG[2]
AS DELIVERED:	699	706	698	704	709.2
FULLY LOADED:	686	693	672	679	-
AS TESTED:	689	693	673	679	740.3

Vehicle's Wheel Base: 1623 mm

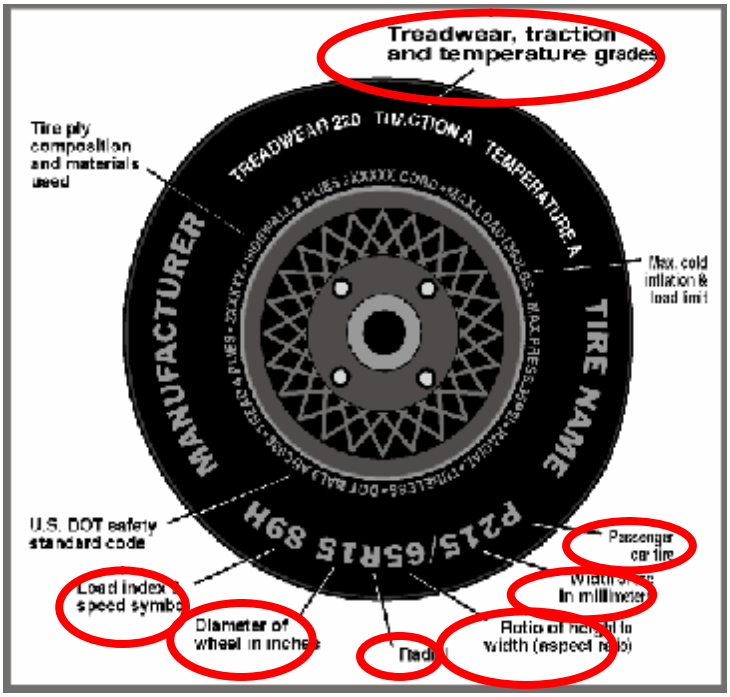
[1]Ballast weight does not include the weight of instrumentation, on-board cameras and data acquisition system

[2]Rearward of the front axle centerline.

DATA SHEET NO. 3
TEST VEHICLE TIRE INFORMATION

Vehicle Year/Make/Model/Body Style: 2008 Subaru Impreza 4-door Sedan

NHTSA Test No.: M85500 Test Date: September 11, 2007



Measured Parameter	Front	Rear
Maximum Tire Pressure (from sidewall - kPa)	250	250
Cold Pressure (from tire placard - kPa)*	230	220
Recommended Tire Size (from tire placard)	P205/55R16	P205/55R16
Tire size on Vehicle	P205/55R16	P205/55R16
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Potenza RE92A	Potenza RE92A
Tire Type	P	P
Tire Width (mm)	205	205
Ratio of Height to Width (aspect ratio)	55	55
Radial	Y	Y
Wheel Diameter	16	16
Load Index & Speed Symbol	89V	89V
Treadwear	260	260
Traction Grade	A	A
Temperature Grade	A	A

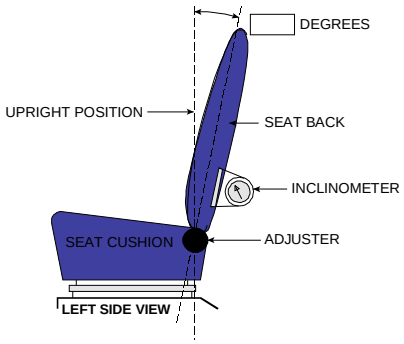
*Tire pressure used for test

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2008 Vehicle Model: Subaru Impreza Body Style : 4-door Sedan

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: 14 degrees

Measurement instructions: Recline 14 degrees from full upright

Detent #8 with #1 being most upright

Seat back angle for passenger's seat: 14 degrees

Measurement instructions: Recline 14 degrees from full upright

Detent #8 with #1 being most upright

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: 0-254 mm total travel

127 mm or detent #9 with #1 being forward most

Positioning of the passenger's seat: 0-216 mm total travel

108 mm or detent #8 with #1 being forward most

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 60 liters

B. "Usable Capacity" of the optional equipment fuel tank is 0 liters

C. "Usable Capacity" of the vehicle(s) used for certification

testing to requirements of FMVSS 301 = 55.2 to 56.4 liters

3.2 Actual Amount of Stoddard solvent added to vehicle for test = 55.3 liters

3.3 One-Third of Useable Capacity = 20.0 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.

With ignition turned “ON”

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: 20.5 to 23.5 degree range

Placed at 22 degrees with no telescoping feature

5. SEAT BELT UPPER ANCHORAGE:

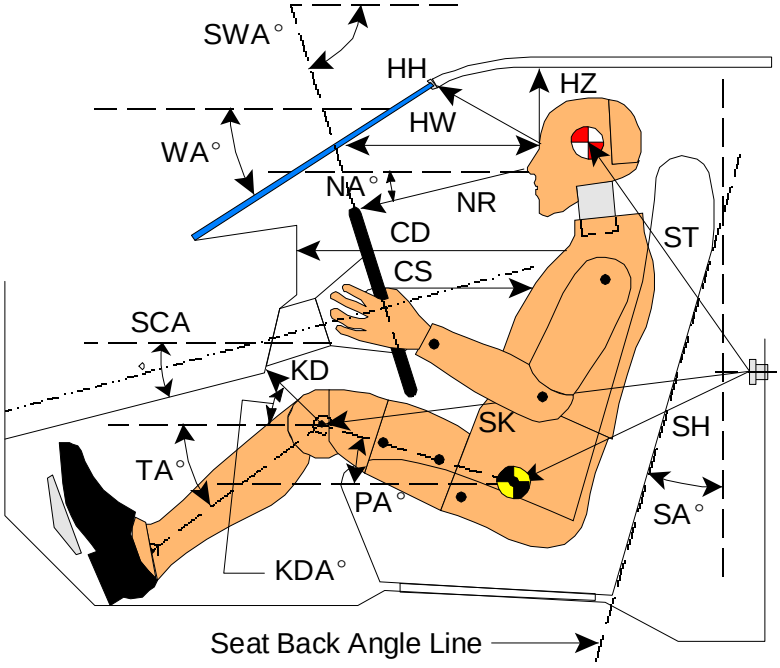
Nominal design riding position: 4 detents – placed in uppermost for test as per instructions

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

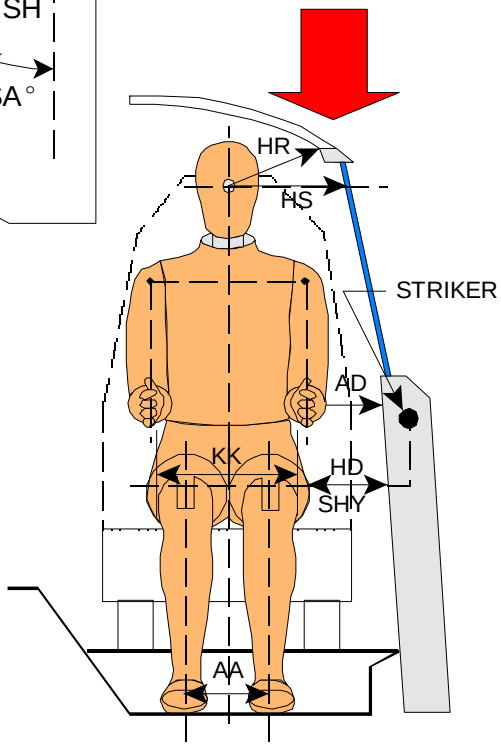
Does vehicle owner's manual describe how to deactivate ADLs? - Yes; - No; x N/A

Comments: None

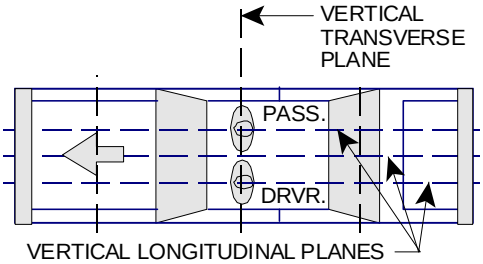
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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



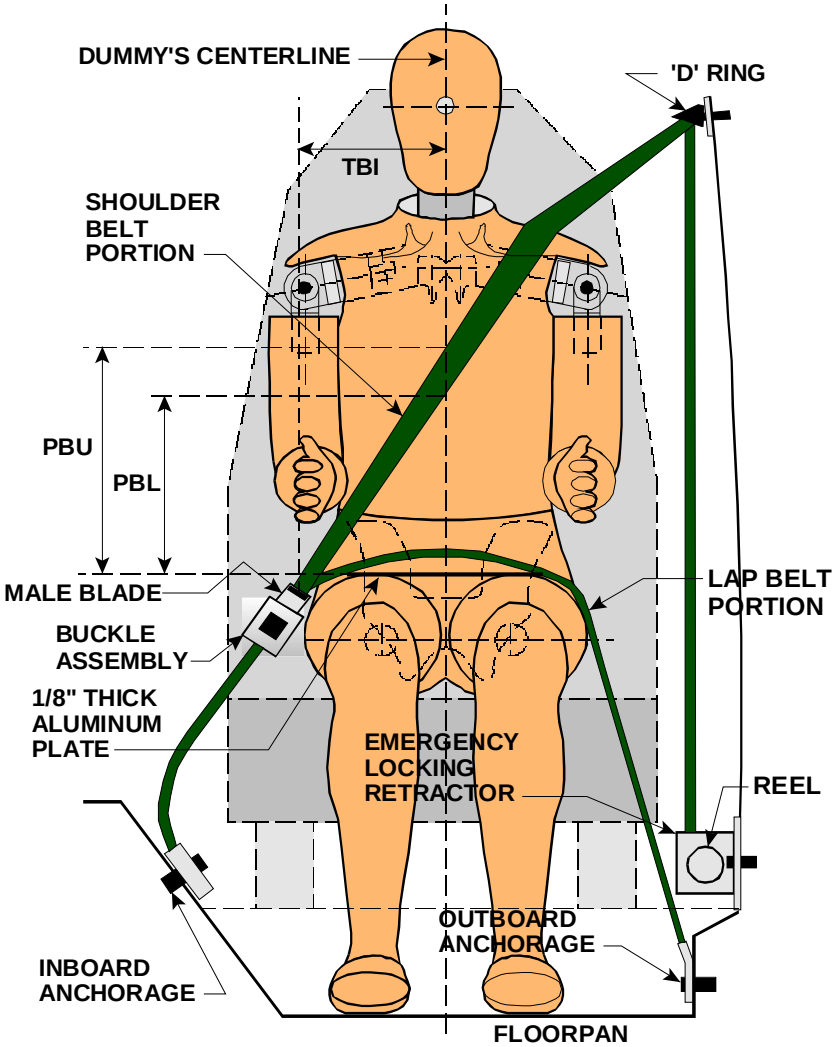
DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #061)			PASS. (Serial #064)		
WA^O	27.2 deg.			N/A		
SWA^O	68 deg.			N/A		
SCA^O	22 deg.			N/A		
SA^O	14 deg.			14 deg.		
HZ	234			224		
HH	333			329		
HW	641			639		
HR	231			227		
NR	385	Angle	11 deg.	N/A		
CD	537			561		
CS	302			N/A		
RA	205			N/A		
KDL	161	Angle (KDA)	27 deg.	189		
KDR	145			189	Angle (KDA)	29 deg.
PA^O	24.6 deg.			21.0 deg.		
TA^O	41.0 deg.			41.0 deg.		
KK	321			270		
AA	306			285		
ST	460	Angle	-83 deg.	464	Angle	-81 deg.
SK	550	Angle	-5 deg.	545	Angle	-5 deg.
SH	230	Angle	40 deg.	231	Angle	41 deg.
SHY	227			231		
HS	309			306		
HD	135			129		
AD	115			119		

Dimensions in millimeters

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

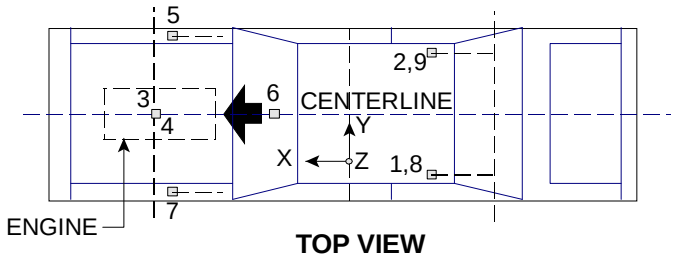


FRONT VIEW OF DUMMY

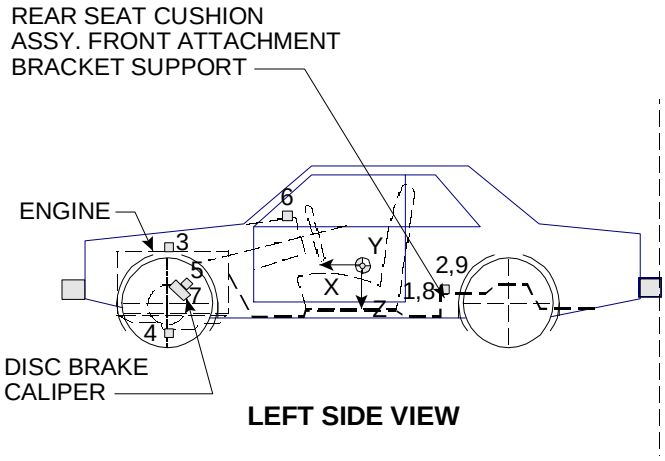
	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	345	345
PBL-- Top surface of alum. plate to belt lower edge	270	270
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

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	1690	-662	355
2	Right Rear Seat Cross Member X	1699	644	363
3	Top of Engine Block	3778	-6	818
4	Bottom of Engine	3257	517	223
5	Disc Brake Caliper @ Right Side	3488	771	383
6	Instrument Panel**	0	0	-
7	Disc Brake Caliper @Left Side	3464	-791	327
8	Left Rear Seat Cross Member Z	1690	-662	355
9	Right Rear Seat Cross Member Z	1699	644	363

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 15 mm molding.

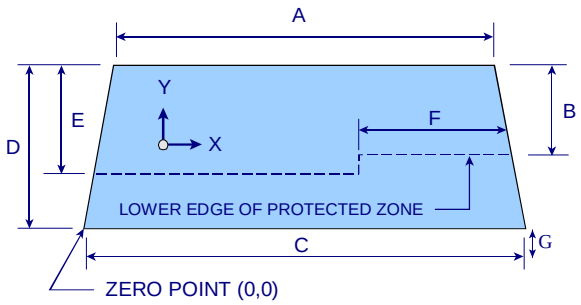
FMVSS 212 REQUIREMENTS:

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: 21.1°C.

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2070.0	2070.0	100.0%
LEFT SIDE	2070.0	2070.0	100.0%
TOTAL	4140	4140	100.0%



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1180
B	510
C	1440
D	760
E	485
F	485
G	15

FAILURE DETAILS: None

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 6 mm:

	COORDINATES	
	X	Y
1.		
2.		
3.		
4.		

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

NHTSA TEST No.: M85500 TEST DATE: September 11, 2007

VEHICLE MAKE/MODEL: 2008 Subaru Impreza 4-door Sedan

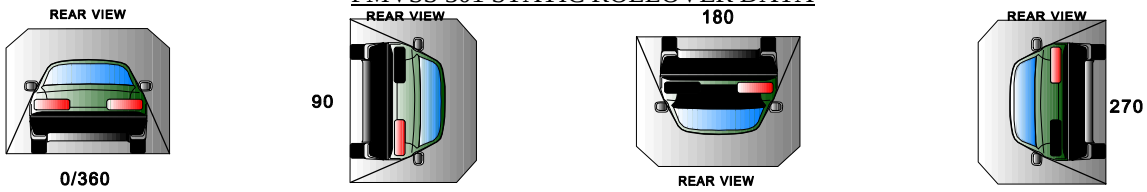
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

FUEL SPILLAGE MEASUREMENT:

Time Interval	Amount	Maximum Allowable Spillage
Impact Until Motion Ceases	0	**28 g**
First Five Minutes Following Impact	0	**142 g**
Next 25 Minutes	0	**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	03	seconds	5	minutes	6	minutes	3	seconds	7	minutes
90º - 180º	0	minutes	57	seconds	5	minutes	5	minutes	57	seconds	6	minutes
180º-270º	0	minutes	56	seconds	5	minutes	5	minutes	56	seconds	6	minutes
270º-360º	1	minutes	04	seconds	5	minutes	6	minutes	4	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:

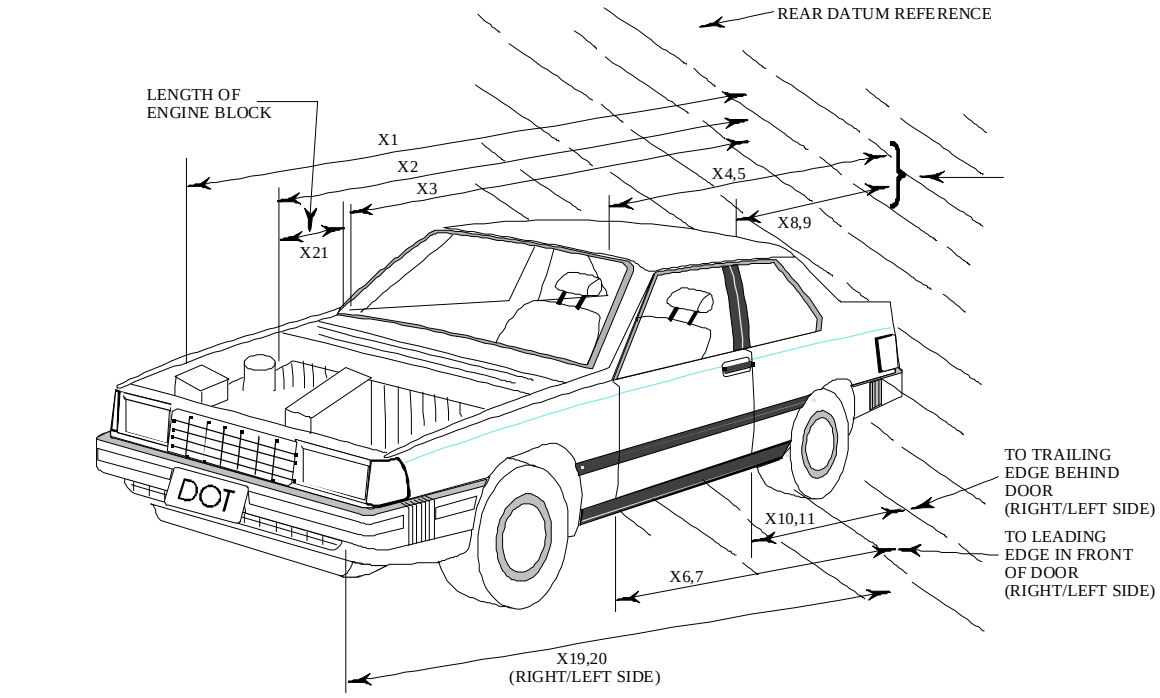
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0º - 90º	0	0	0	N/A
90º - 180º	0	0	0	N/A
180º-270º	0	0	0	N/A
270º-360º	0	0	0	N/A

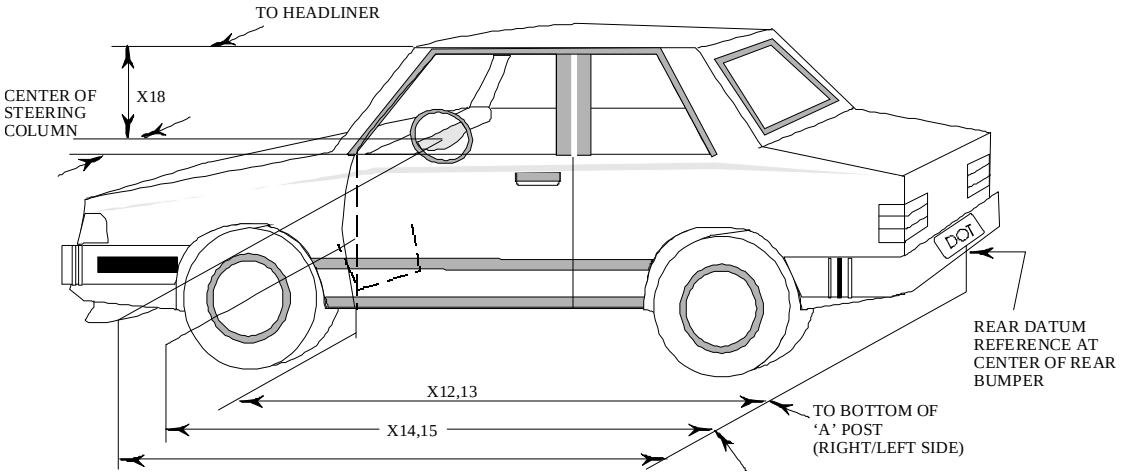
Note: Record spillage for whole minute intervals only as determined above.

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.: M85500 TEST DATE: September 11, 2007

VEHICLE MAKE/MODEL: 2008 Subaru Impreza 4-door Sedan

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4578	4030	548
X2	Rear Surface of Vehicle to Front of Engine	4134	3887	247
X3	Rear Surface of Vehicle to Firewall	3470	3450	20
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3076	3078	-2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3078	3079	-1
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3093	3092	1
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3093	3094	-1
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2040	2042	-2
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2043	2043	0
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2054	2055	-1
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2057	2059	-2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3085	3086	-1
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3089	3090	-1
X14	Rear Surface of Vehicle to Firewall, Right Side	3688	3635	53
X15	Rear Surface of Vehicle to Firewall, Left Side	3690	3677	13
X16	Rear Surface of Vehicle to Steering Column	2631	2656	-25
X17	Center of Steering Column to "A" Post	296	285	11
X18	Center of Steering Column to Headliner	452	419	33
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4502	4041	461
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4502	4076	426
X21	Length of Engine Block	301	301	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2813	2812	1
CD	Rear Surface of Vehicle to Center of Dash Panel	2856	2863	-7
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2817	2820	-3

All Dimensions in mm

DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

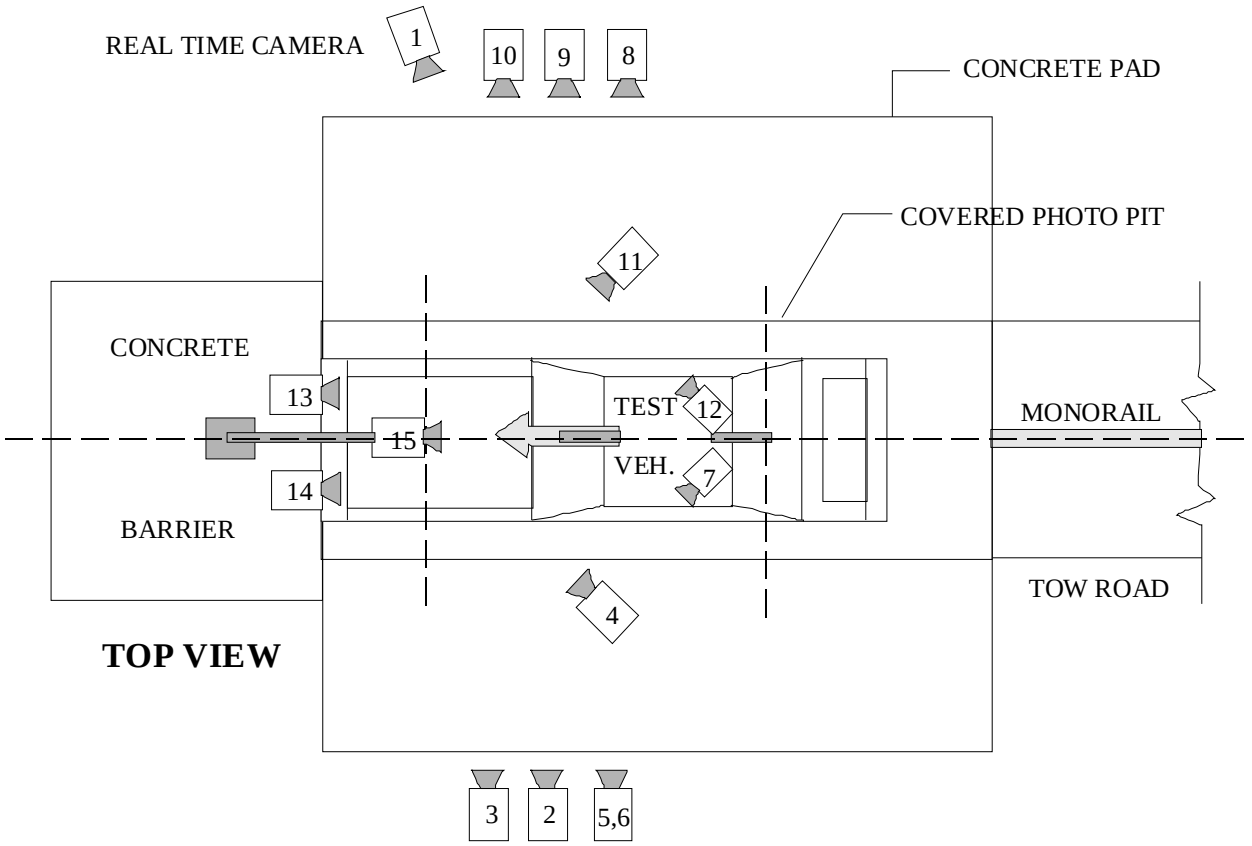
NHTSA TEST No.: M85500 TEST DATE: September 11, 2007

VEHICLE MAKE/MODEL: 2008 Subaru Impreza 4-door Sedan

TARGET VEHICLE STRUCTURAL MEASUREMENTS

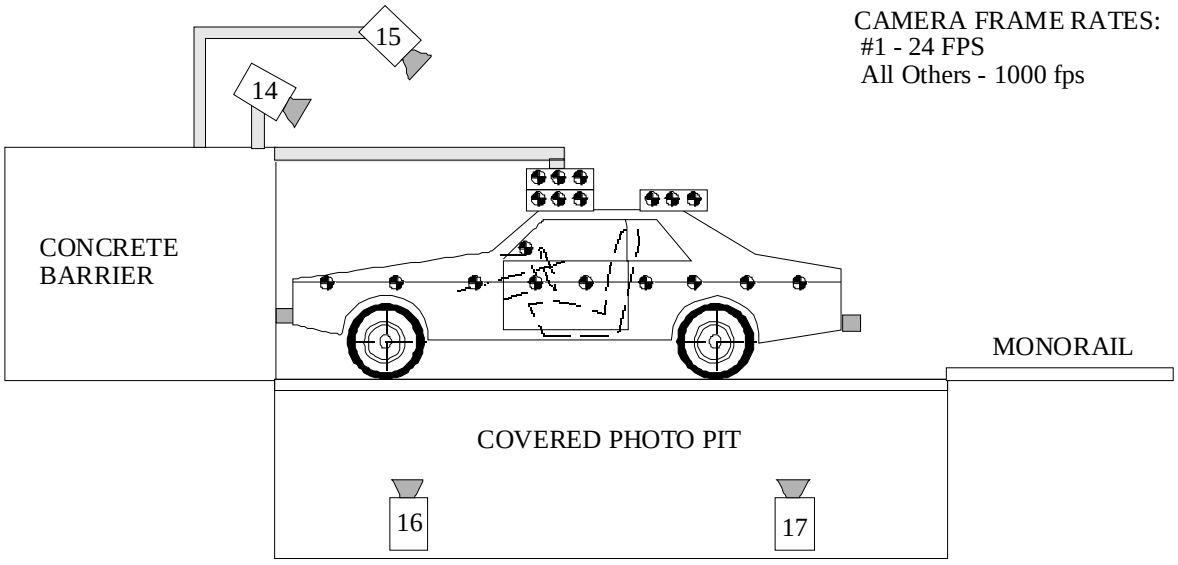
	Elements	Pre-Test (mm)
1	Total length	4578
2	Total Width	1729
3	Bumper Top Height	518
4	Bumper Bottom Height	390
5	Longitudinal Member Top Height	502
6	Distance Between Longitudinal Members	938
7	Longitudinal Member Width	62
8	Engine top height	831
9	Engine bottom height	271
10	Engine and gearbox width	719
11	Front bumper-engine distance	443
12	Front shock absorber fixing height	844
13	Bonnet leading edge height	706
14	Front shock absorber fixing width	1110
15	Front bumper – front axle distance	966
16	Front axle – A pillar distance	1129
17	A-pillar – B pillar distance	419
18	B-pillar – rear axle distance	1075
19	B-pillar – C Pillar distance	965
20	Roof sill bottom height	1380
21	Roof sill top height	1436
22	Floor sill bottom height	192
23	Floor sill top height	272

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.: M85500 Vehicle: 2008 Subaru Impreza 4-door Sedan

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	7676	1657	989	-1.9	7227	28	1000
3	Left Side View	9450	1067	1051	-2.2	9001	50	1000
4	Driver and Interior View	7681	2682	2030	-9.4	-	50	1000
5	Steering Column (Bottom)	7889	1875	1216	-2.9	7440	24	1000
6	Steering Column (Top)	7889	1875	1804	-8.2	7440	24	1000
7	Left CRS Lateral View	3109	2421	2281	-23.1	-	24	1000
8	Overall Right Side	8840	1812	966	-0.2	8391	24	1000
9	Right Side View	7121	1250	990	-2.2	6672	50	1000
10	Right Passenger View	8330	1705	1197	-2.5	7881	50	1000
11	Passenger and Interior View	7301	2892	1988	-11.9	-	50	1000
12	Right CRS Lateral View	2995	2485	2162	-23.1	-	24	1000
13	Passenger Front View	620	-92	1987	-34.5	-	24	1000
14	Driver Front View	620	-92	1987	-35.3	-	25	1000
15	Windshield View	0	-530	3374	51.0	-	25	1000
16	Pit View of Engine	0	615	-3048	90	-	12.5	1000
17	Pit View of Fuel Tank	0		-3048	90	-	12.5	1000

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

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

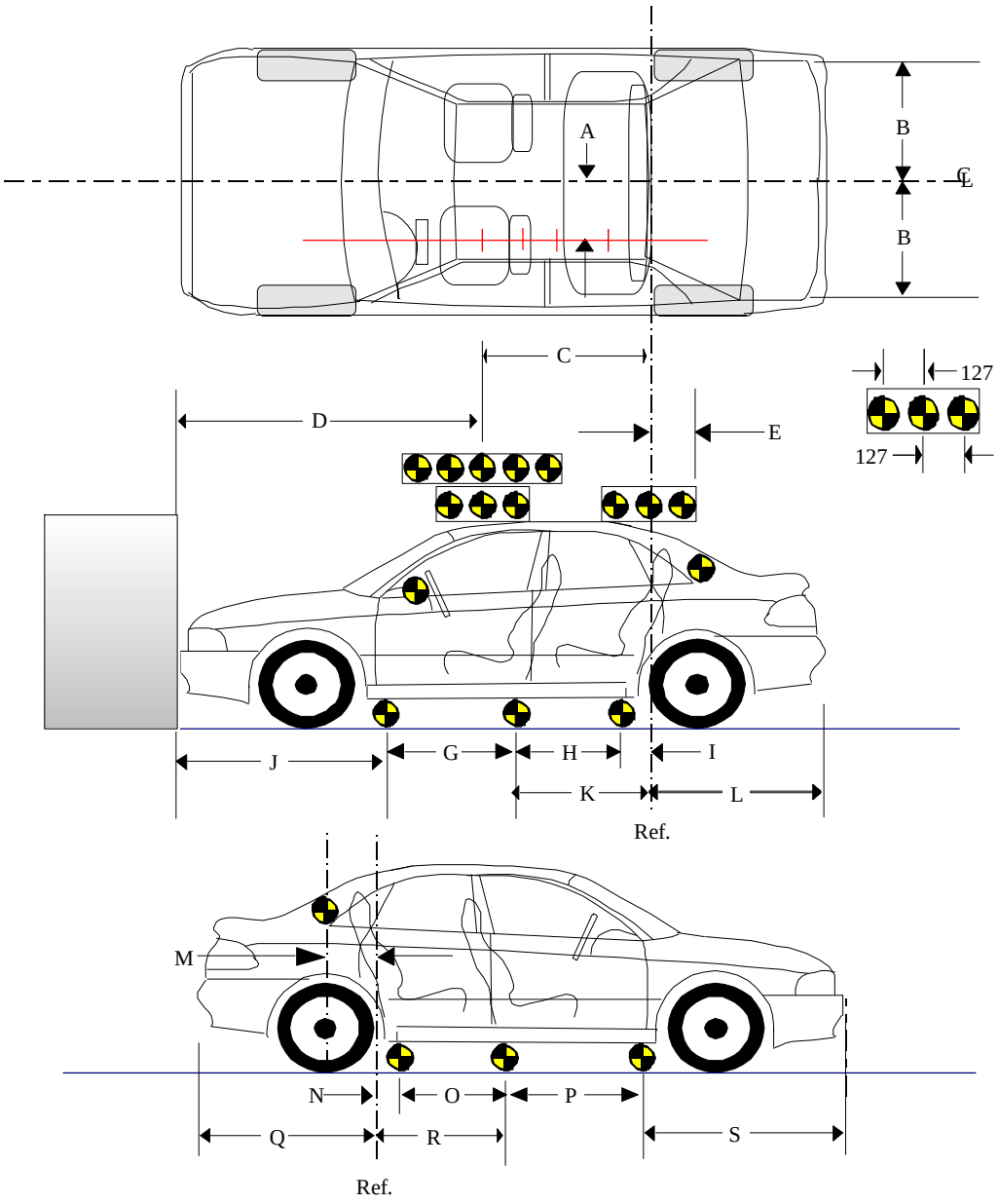
Z = film plane to ground

DATA SHEET NO. 12
VEHICLE REFERENCE PHOTO TARGET LOCATIONS

NHTSA Test No.: M85500 Vehicle: 2008 Subaru Impreza 4-door Sedan

(Dimensions in millimeters)

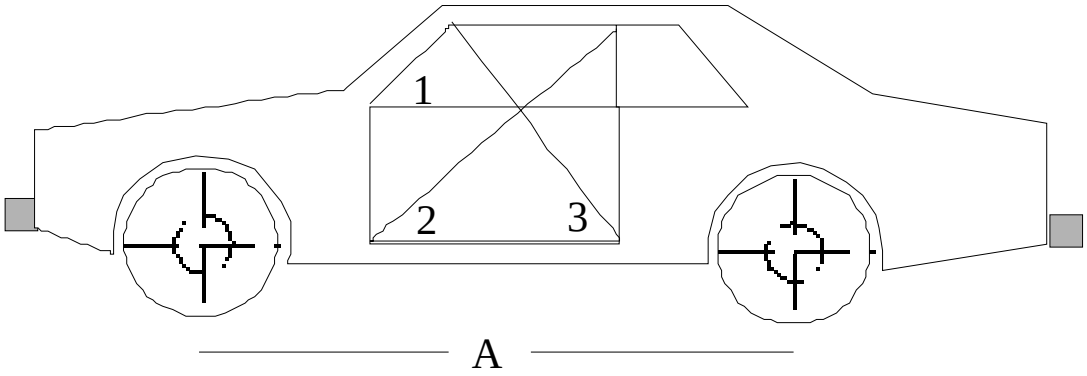
A	373
B	578
C	1221
D	2063
E	353
F	1505
G	889
H	903
I	82
J	1392
K	985
L	1312
M	1293
N	86
O	889
P	903
Q	1308
R	975
S	1391



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

NHTSA Test No.: M85500 Vehicle: 2008 Subaru Impreza 4-door Sedan

DOOR OPENING WIDTH AND WHEELBASE MEASUREMENTS



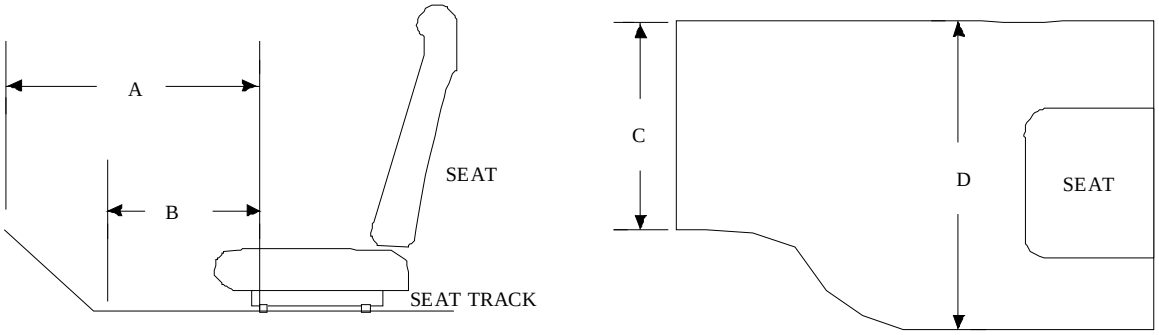
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	971	1449	963	970	1454	959
AFTER TEST	970	1451	965	969	1454	961
DIFFERENCE	1	-2	-2	1	0	-2

UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2623	2617
AFTER TEST	2625	2594
DIFFERENCE	-2	23

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont)

NHTSA Test No.: M85500 Vehicle: 2008 Subaru Impreza 4-door Sedan

STATIC FOOTWELL DEFORMATION



DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	715	702	13
B	512	512	0
C	395	382	13
D	395	400	-5

PASSENGER

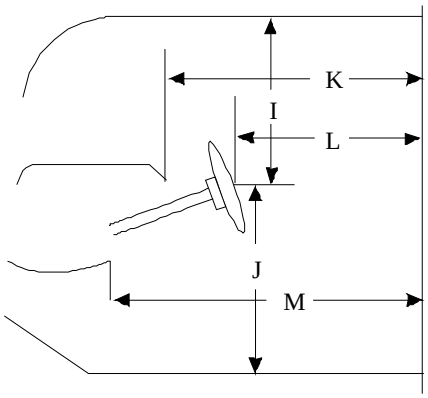
Measurement	Pre-Test	Post-Test	Difference
A	620	593	27
B	455	458	-3
C	397	393	4
D	418	416	2

Units = mm

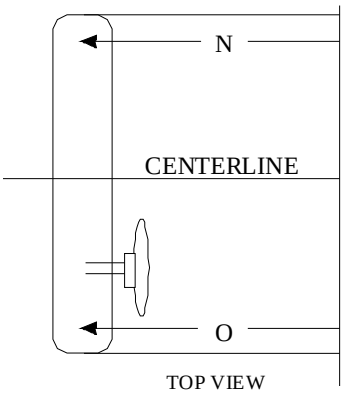
DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M85500 Vehicle: 2008 Subaru Impreza 4-door Sedan

STATIC PASSENGER COMPARTMENT INTRUSION

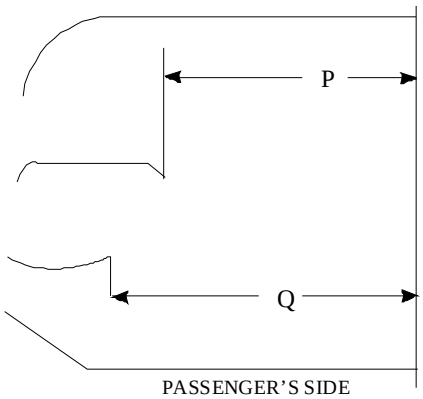


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



PASSENGER'S SIDE

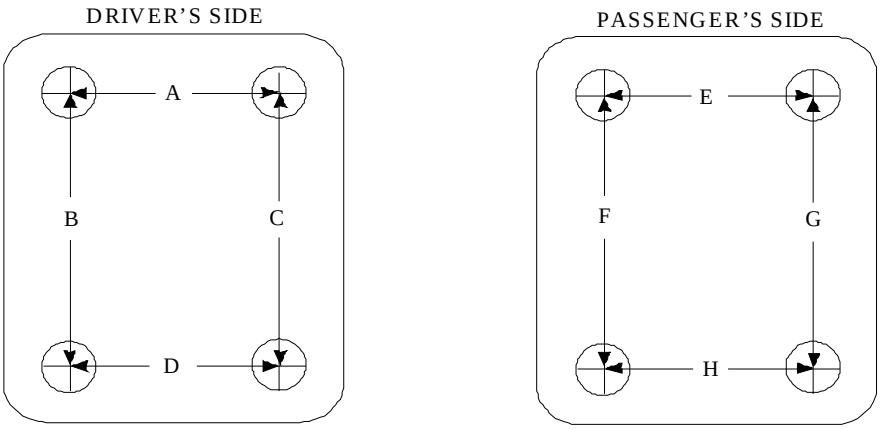
Measurement	Pre-Test	Post-Test	Difference
I	452	419	33
J	603	642	-39
K	721	726	-5
L	516	541	-25
M	771	773	-2
N	700	700	0
O	701	704	-3
P = K (PASS.)	815	821	-6
Q = M (PASS.)	791	788	3

Units = mm

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

NHTSA Test No.: M85500 Vehicle: 2008 Subaru Impreza 4-door Sedan

FLOORBOARD DEFORMATION



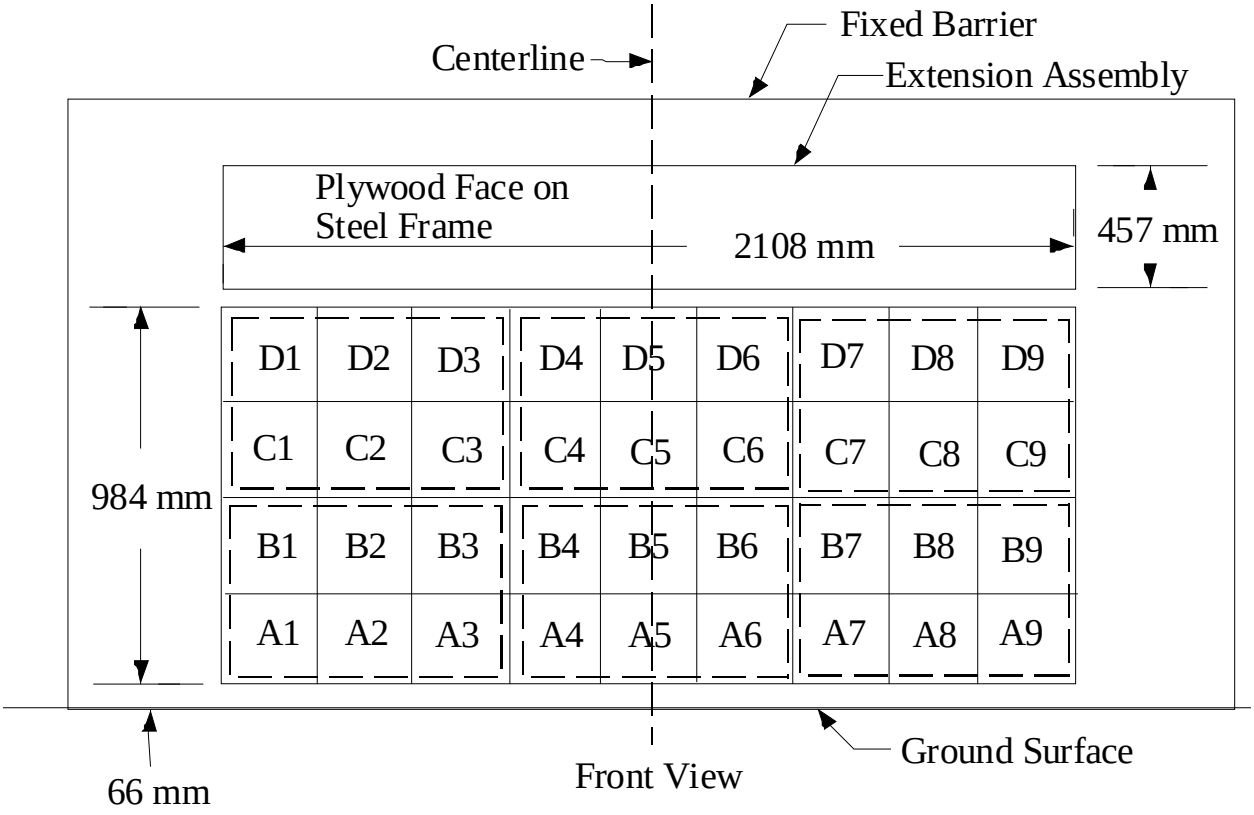
TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	395	382	13
B	261	261	0
C	263	249	14
D	395	400	-5
E	397	393	4
F	299	299	0
G	295	297	-2
H	418	416	2

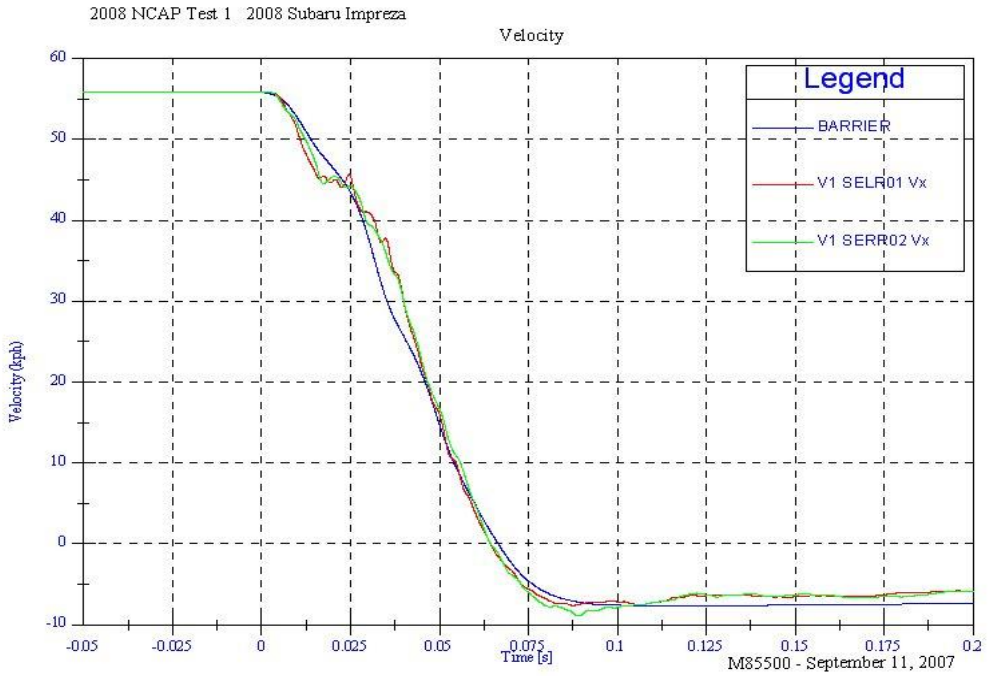
Units = mm

DATA SHEET NO.14
LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load Cells
4 Rows
9 Columns



Momentum Plot



DATA SHEET NO. 15
ACCIDENT INVESTIGATION DIVISION DATA

FOR FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Subaru Impreza 4-door Sedan

NHTSA Test No.: M85500 VIN: JF1GE61698G501774

Model Year: 2008 Build Date: 06/07 Test Date: September 11, 2007

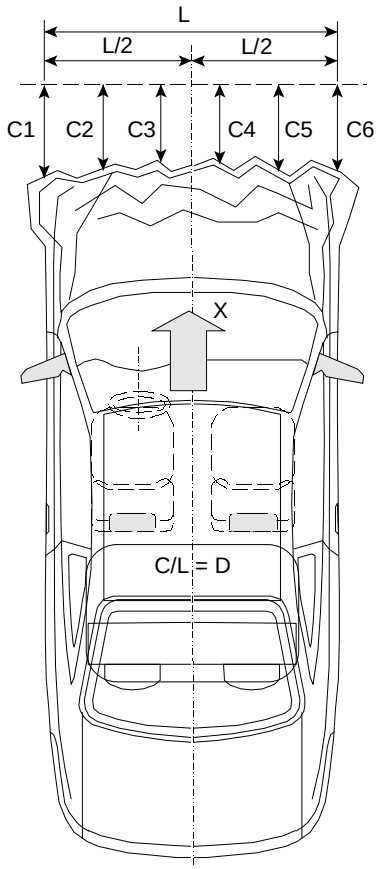
Vehicle Size Category: Sedan Test Weight: 1585 kg

Vehicle Wheelbase: 2623 mm; Front Overhang: 964 mm; Overall Width: 1729 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4413	4081	332
C2 =	4525	4070	455
C3 =	4575	4042	533
C4 =	4575	4035	540
C5 =	4526	4047	479
C6 =	4413	4027	386



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

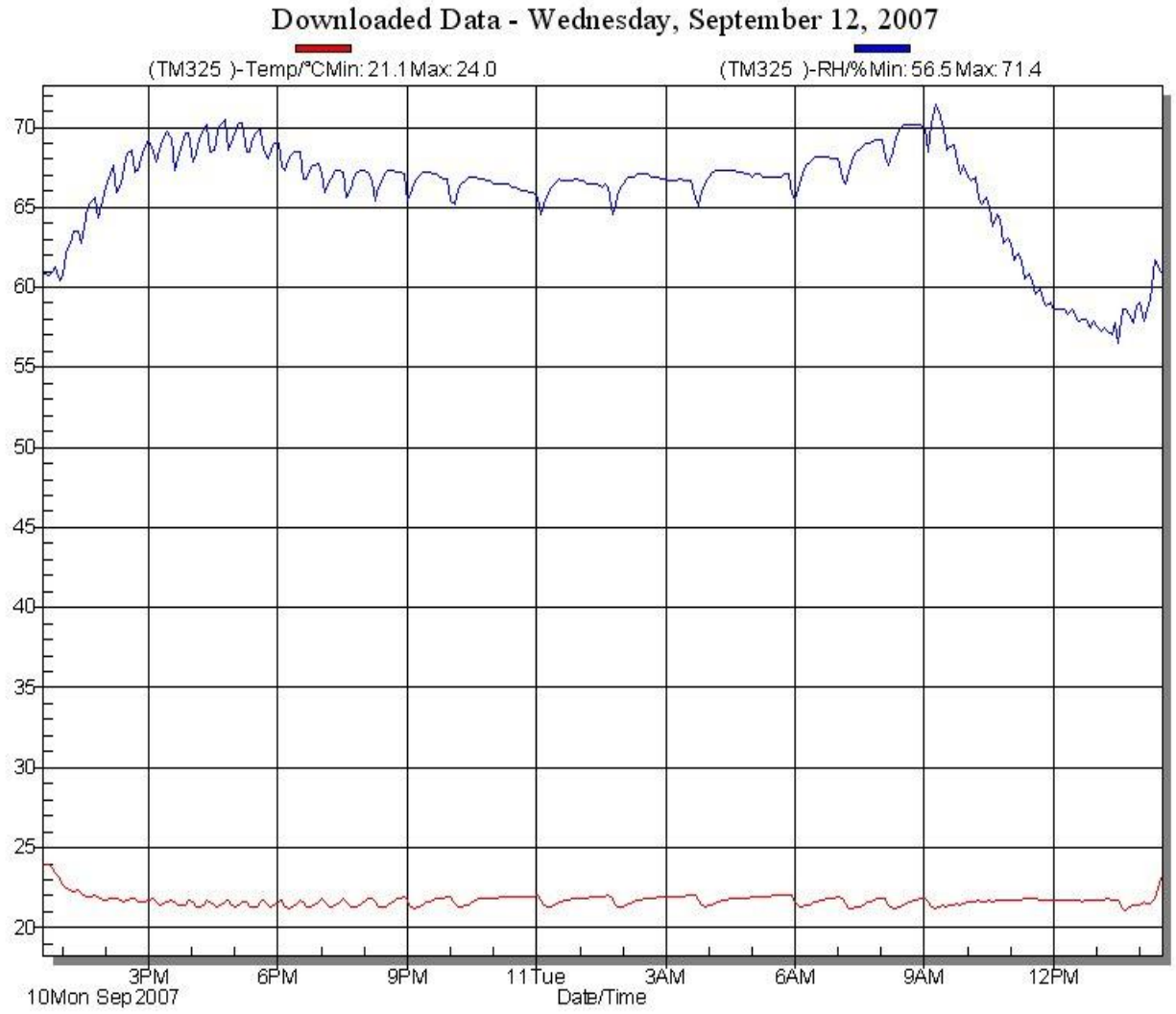
Length of Damaged Region: L1= 1330 mm

L2= 665.0 mm

L5= 266 mm

DATA SHEET NO.16
VEHICLE AND DUMMY TEMPERATURE STABILIZATION CHART

NHTSA Test No.: M85500 Vehicle: 2008 Subaru Impreza 4-door Sedan



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

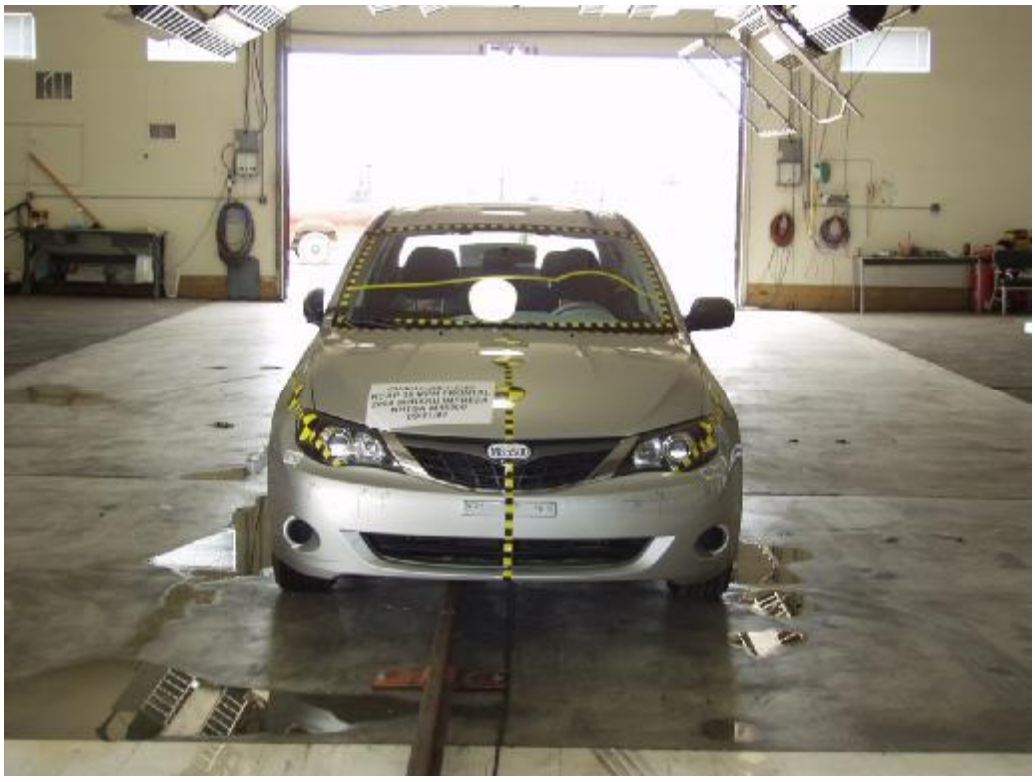


Figure A-6: Pre-Test Front View

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

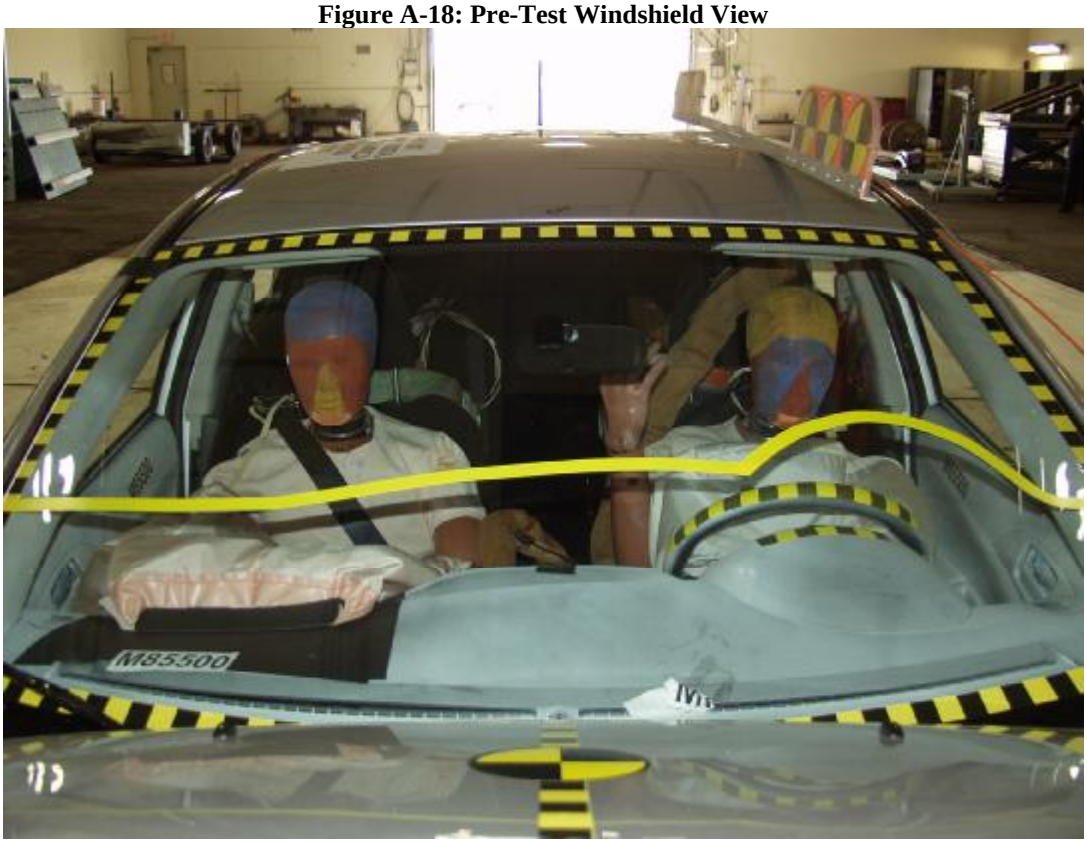


Figure A-19: Post-Test Windshield View

Figure A-20: Pre-Test Engine Compartment View

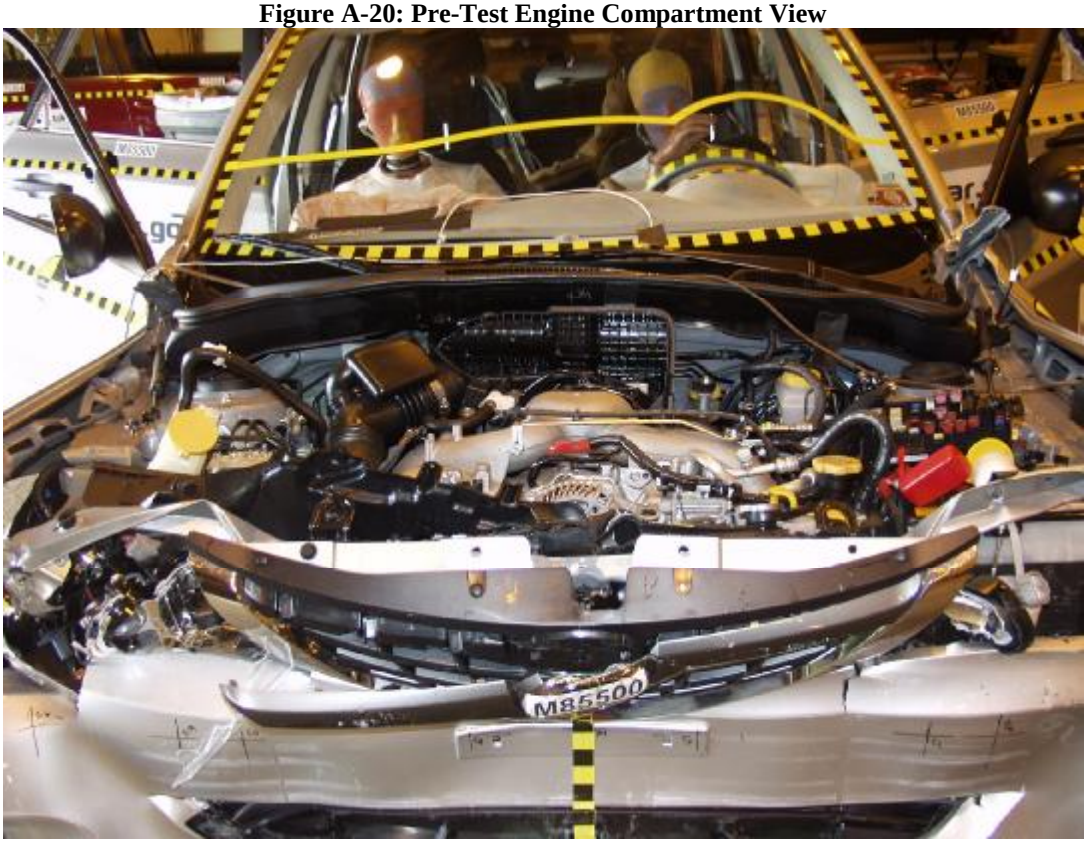


Figure A-21: Post-Test Engine Compartment View

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

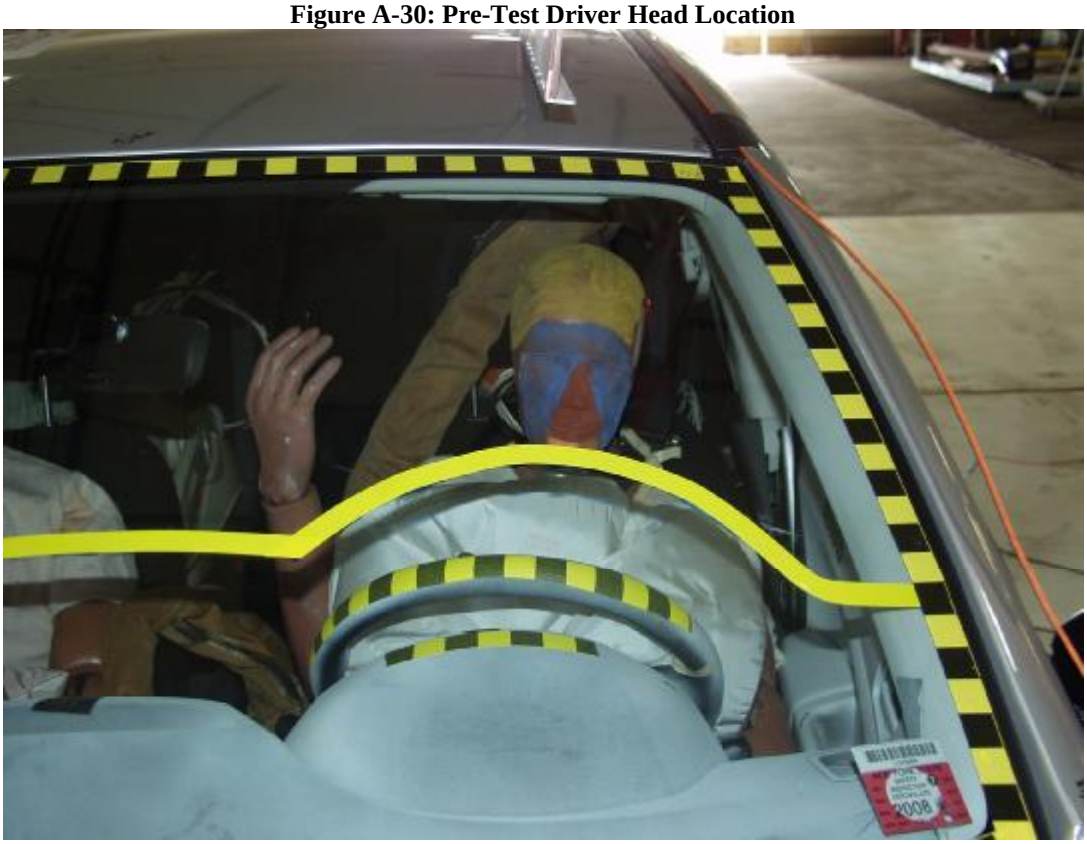


Figure A-31: Post-Test Driver Head Location

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°

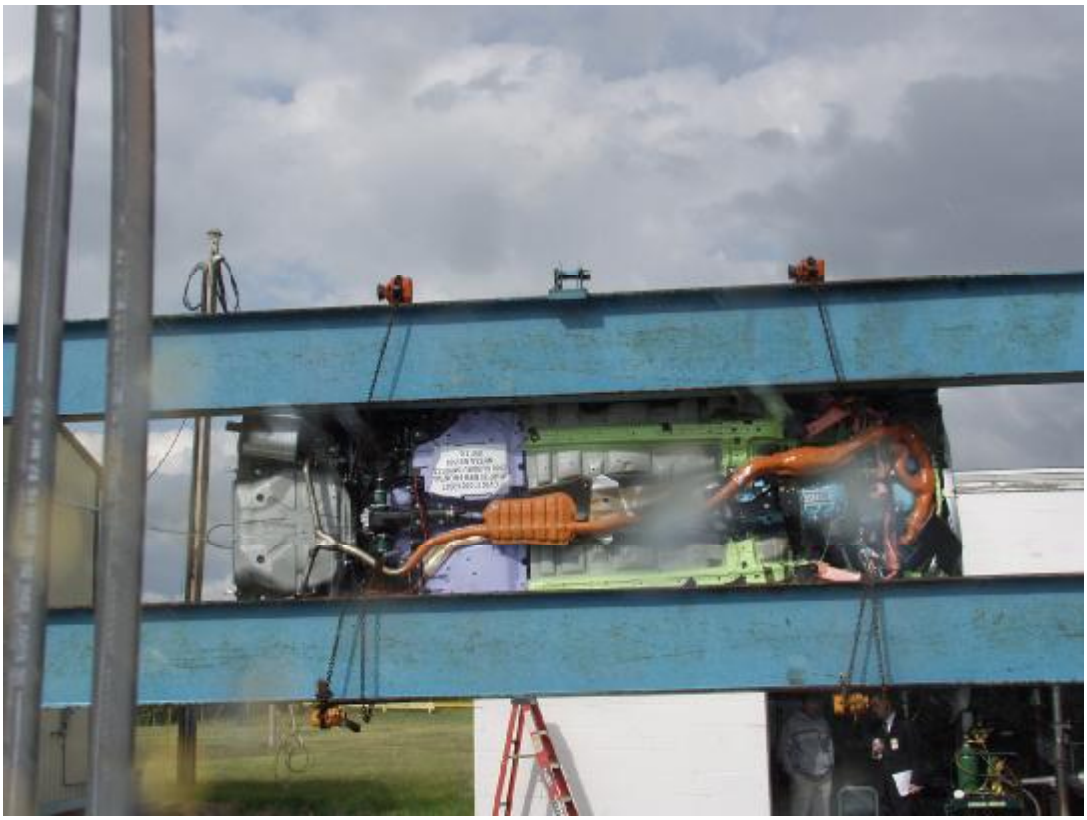


Figure A-60: Rollover View - 270°

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.: M85500

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 Lap Belt Load
V1P1 Head 9 Array X Arm Az	V1P1 Shoulder Belt Load
V1P1 Head 9 Array Y Arm Ax	V1P2 Lap Belt Load
V1P1 Head 9 Array Y Arm Az	V1P2 Shoulder Belt Load
V1P1 Head 9 Array Z Arm Ax	V1 Left Rear #1x
V1P1 Head 9 Array Z Arm Ay	V1 Right Rear #2x
V1P1 Head CG Ax	V1 Engine Top #3x
V1P1 Head CG Ay	V1 Engine Bottom #4x
V1P1 Head CG Az	V1 Right Caliper #5x
V1P1 Head CG Red Ax	V1 Left Caliper #7x
V1P1 Head CG Red Ay	V1 Left Rear #8z
V1P1 Head CG Red Az	V1 Right Rear #9z
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 Fz	
V1P1 Right Upper Tibia Mx	
V1P1 Right Upper Tibia My	
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 z	
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 Fz	
V1P2 Left Upper Tibia Mx	
V1P2 Left Upper Tibia My	
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	
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 Left Foot Aft z	Wire cut during impact
V1P1 Right Foot Aft x	Wire Cut during impact
V1P2 Left Lower Tibia Fz	Data inaccurate after 59 ms
V1P1 Head CG Red y	Data inaccurate
V1P1 Head CG Red z	Data inaccurate

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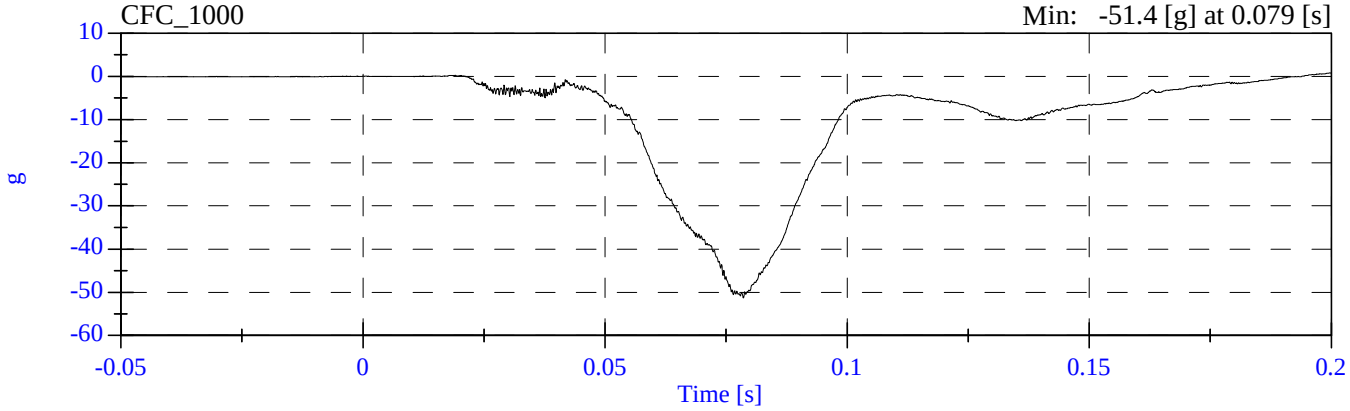
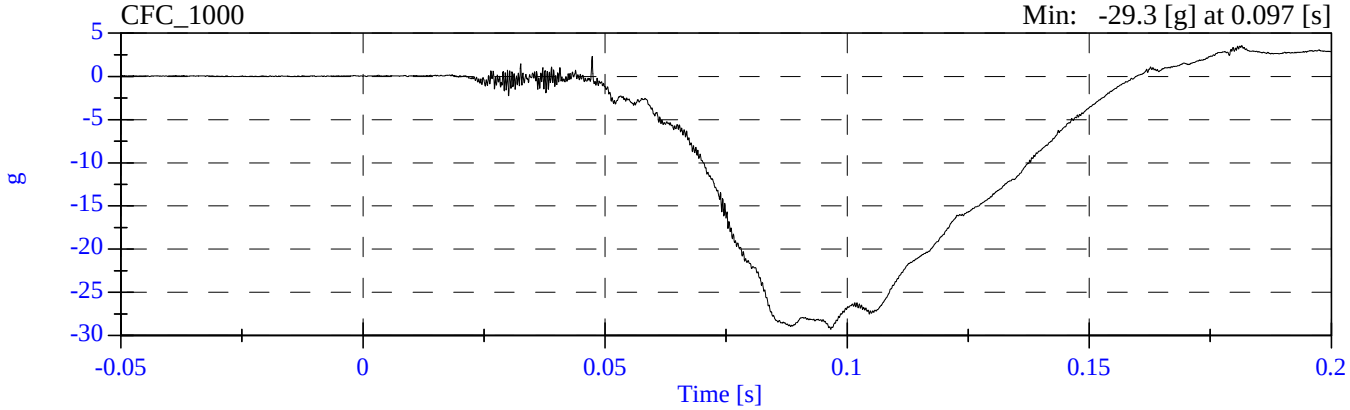
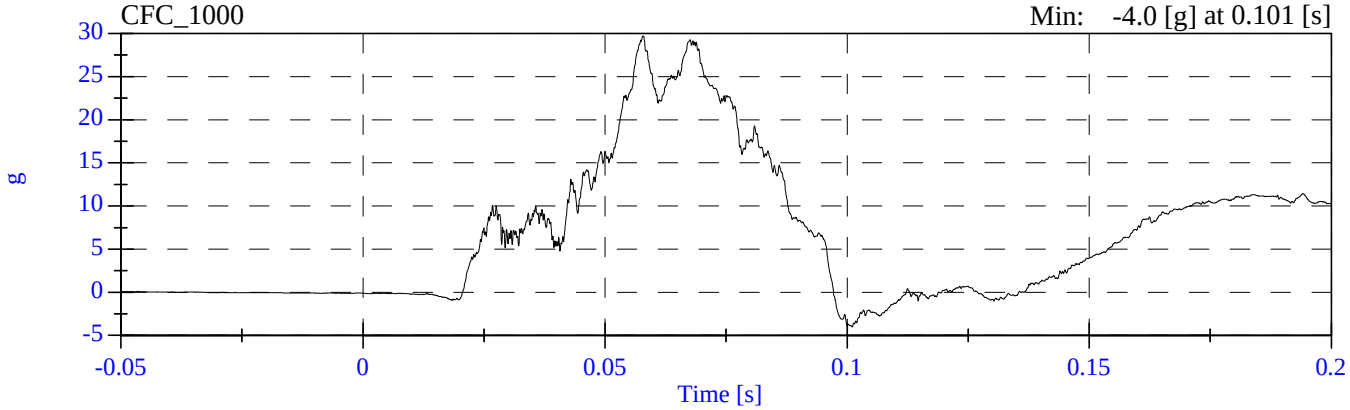
V1P1 Head CG x
CFC_1000
Max: 0.8 [g] at 0.200 [s]
Min: -51.4 [g] at 0.079 [s]



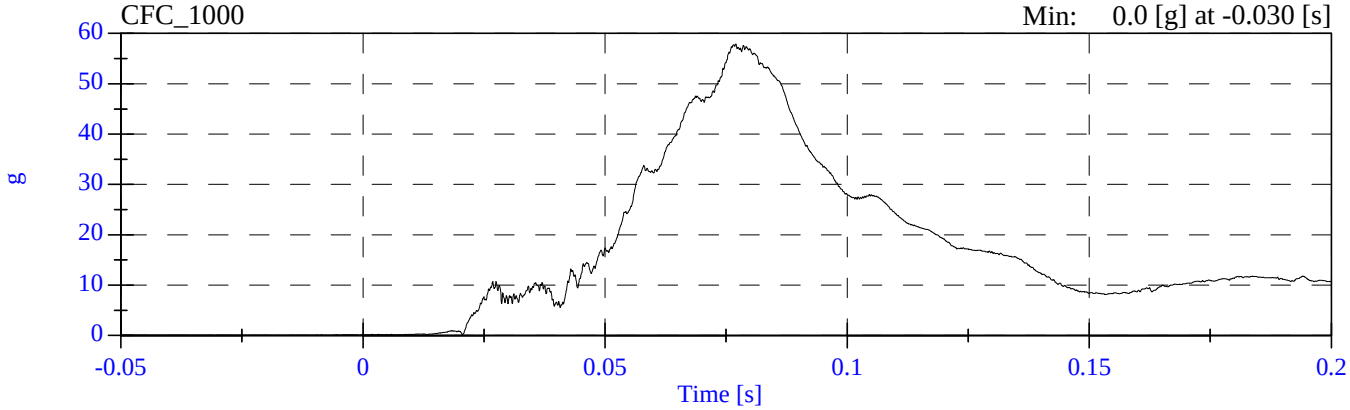
V1P1 Head CG y
CFC_1000
Max: 3.6 [g] at 0.181 [s]
Min: -29.3 [g] at 0.097 [s]



V1P1 Head CG z
CFC_1000
Max: 29.7 [g] at 0.058 [s]
Min: -4.0 [g] at 0.101 [s]



V1P1 Head CG Resultant
CFC_1000
Max: 57.9 [g] at 0.077 [s]
Min: 0.0 [g] at -0.030 [s]



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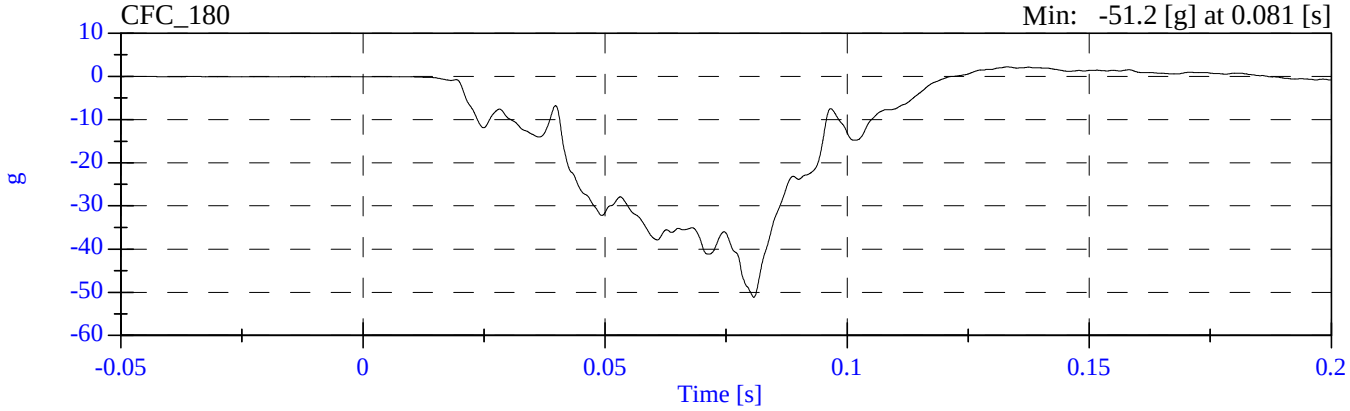
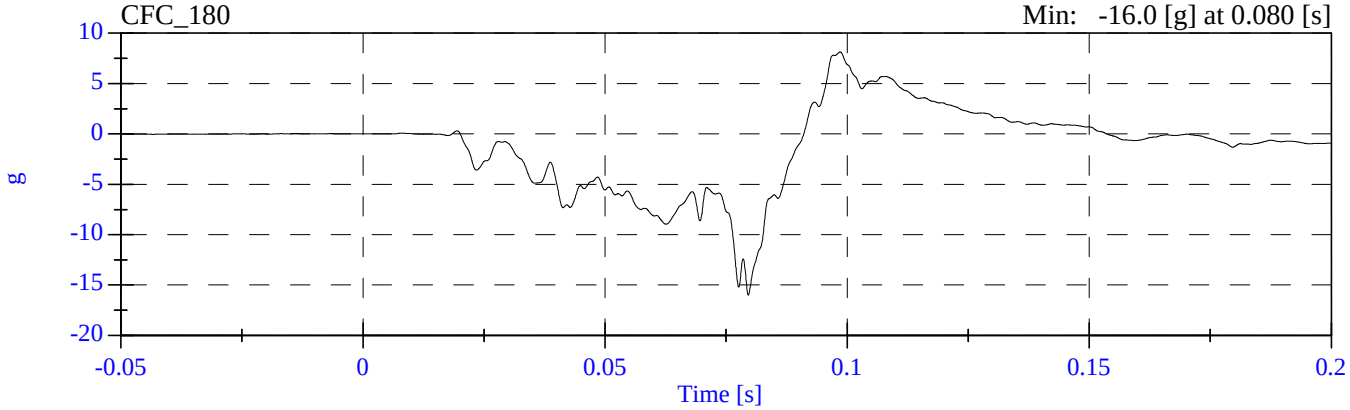
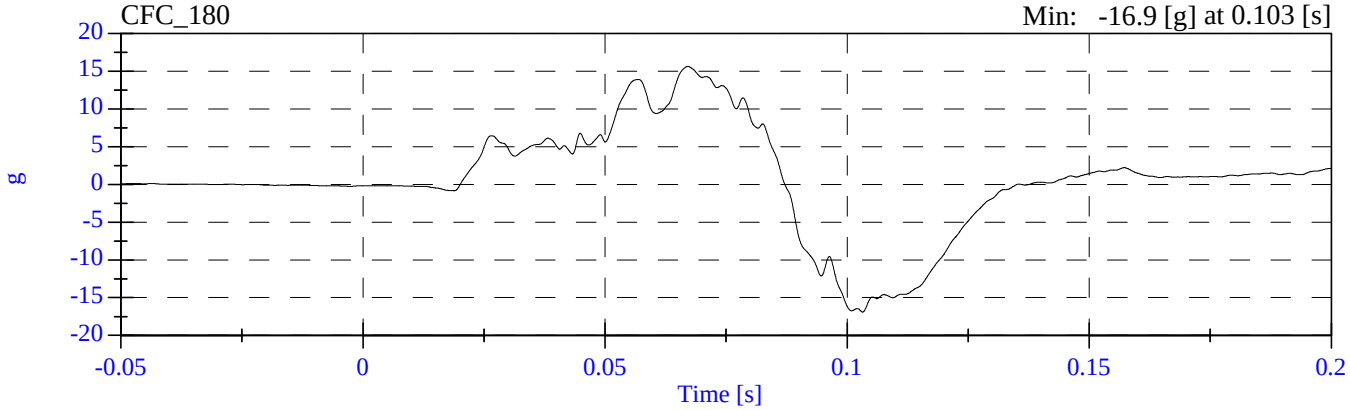
V1P1 Chest x
CFC_180
Max: 2.2 [g] at 0.133 [s]
Min: -51.2 [g] at 0.081 [s]



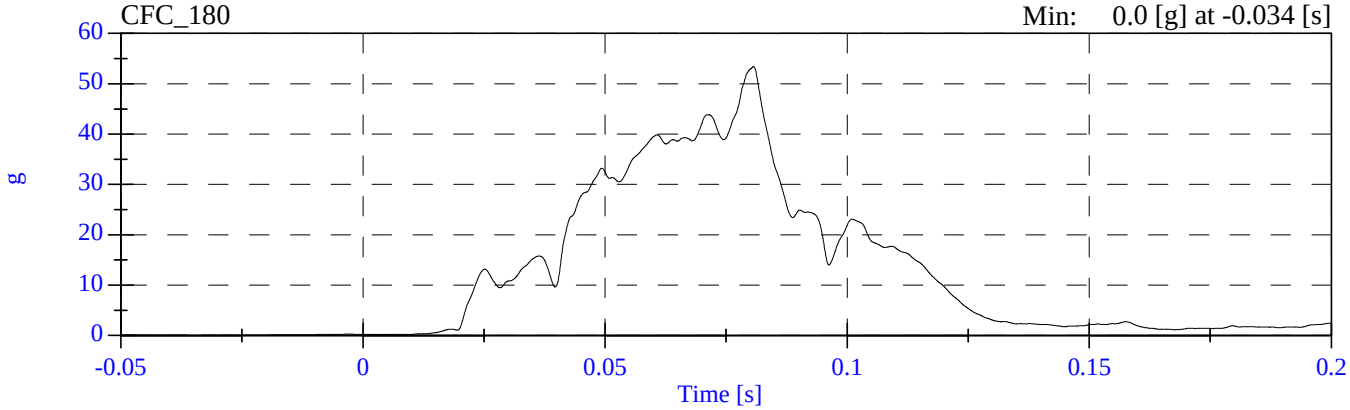
V1P1 Chest y
CFC_180
Max: 8.2 [g] at 0.099 [s]
Min: -16.0 [g] at 0.080 [s]



V1P1 Chest z
CFC_180
Max: 15.7 [g] at 0.067 [s]
Min: -16.9 [g] at 0.103 [s]



V1P1 Chest Resultant
CFC_180
Max: 53.5 [g] at 0.081 [s]
Min: 0.0 [g] at -0.034 [s]



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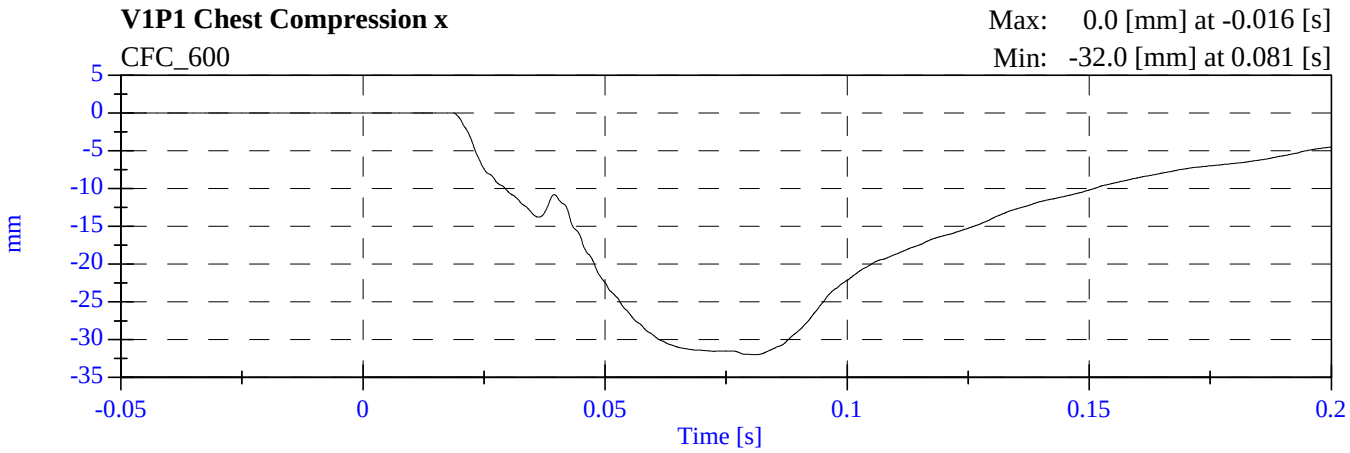

2007 NCAP Opt Test 1 2008 Ford Escape
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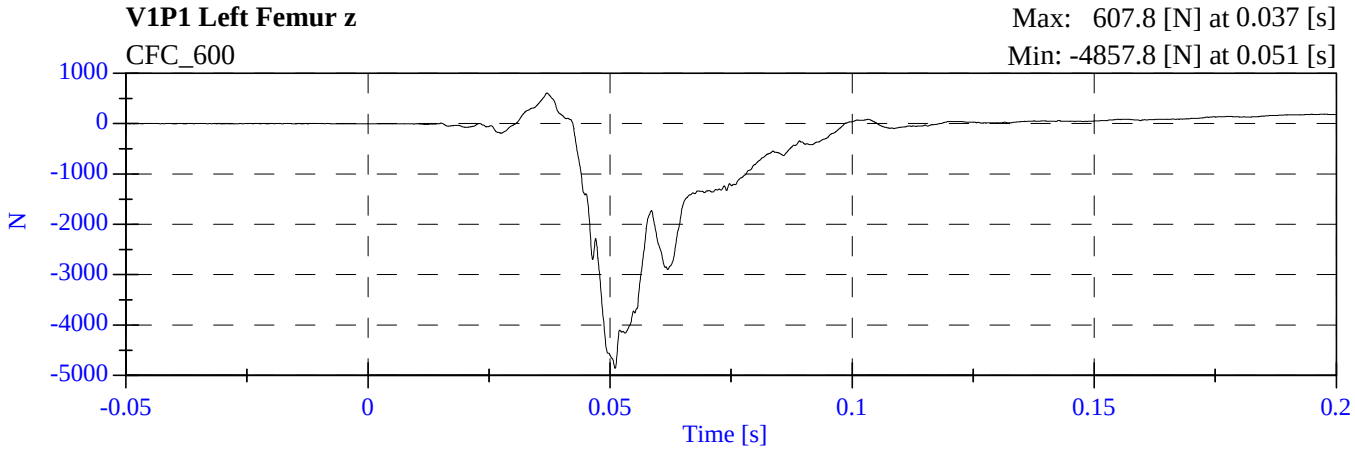

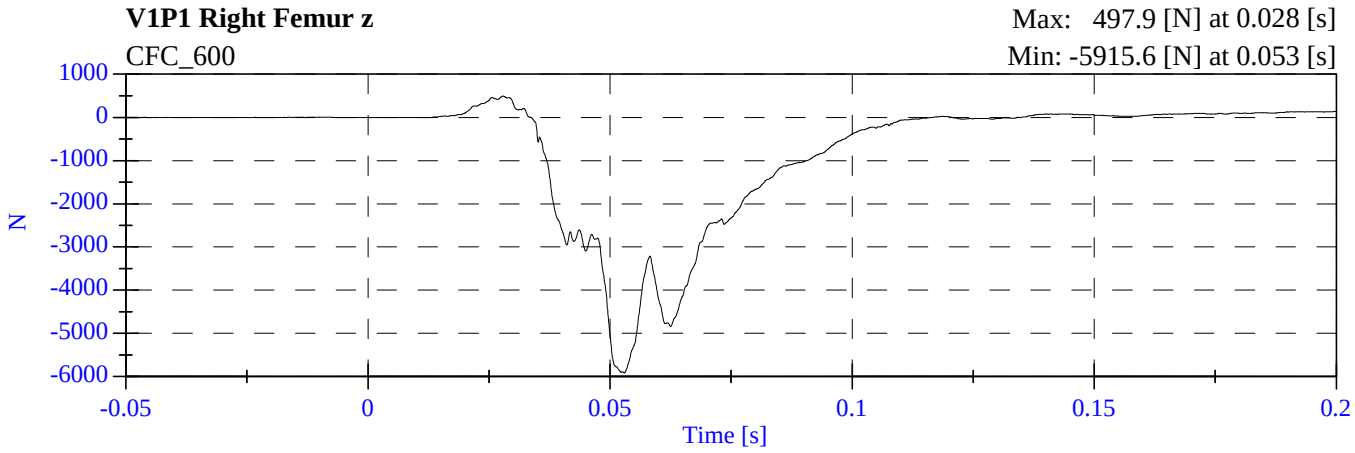

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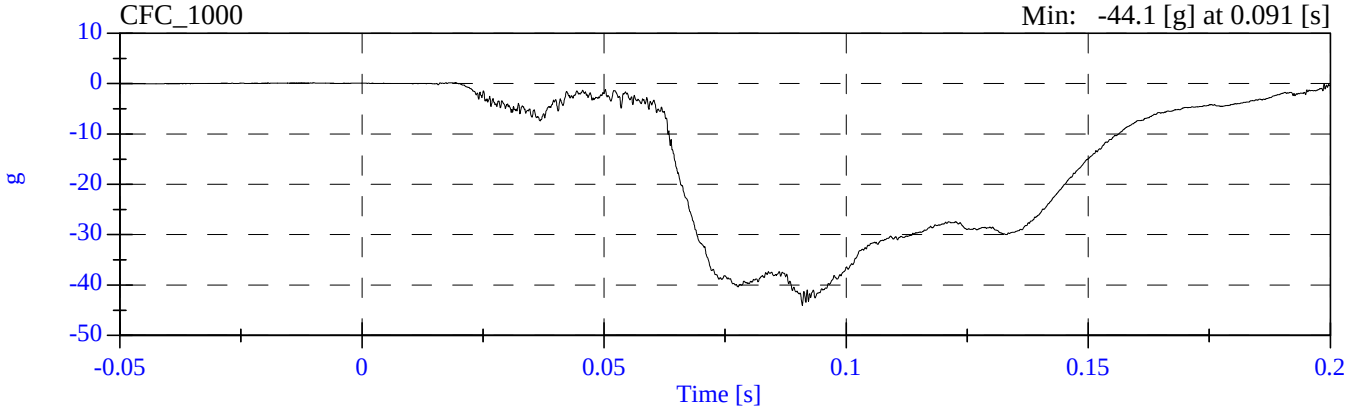
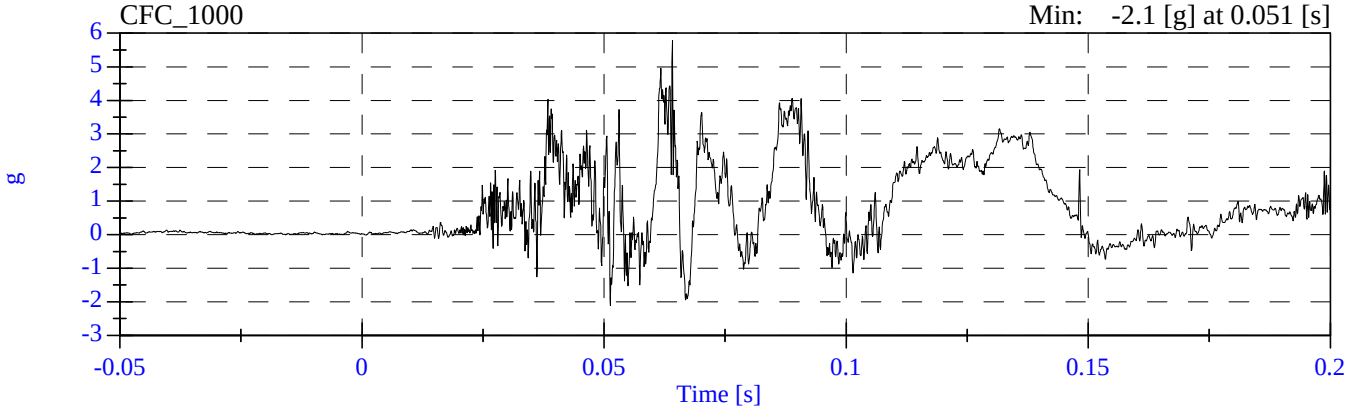
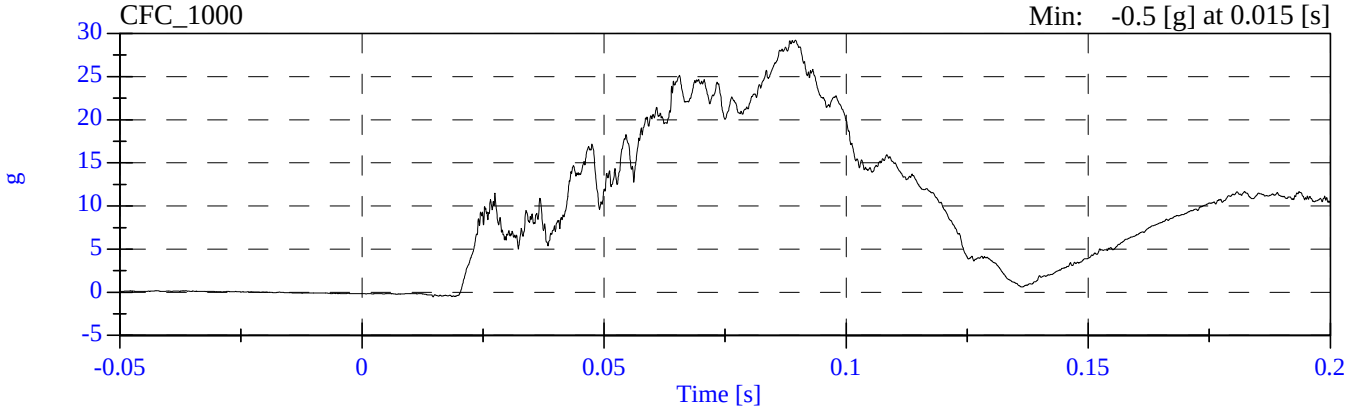
V1P2 Head CG x
CFC_1000
Max: 0.2 [g] at 0.019 [s]
Min: -44.1 [g] at 0.091 [s]



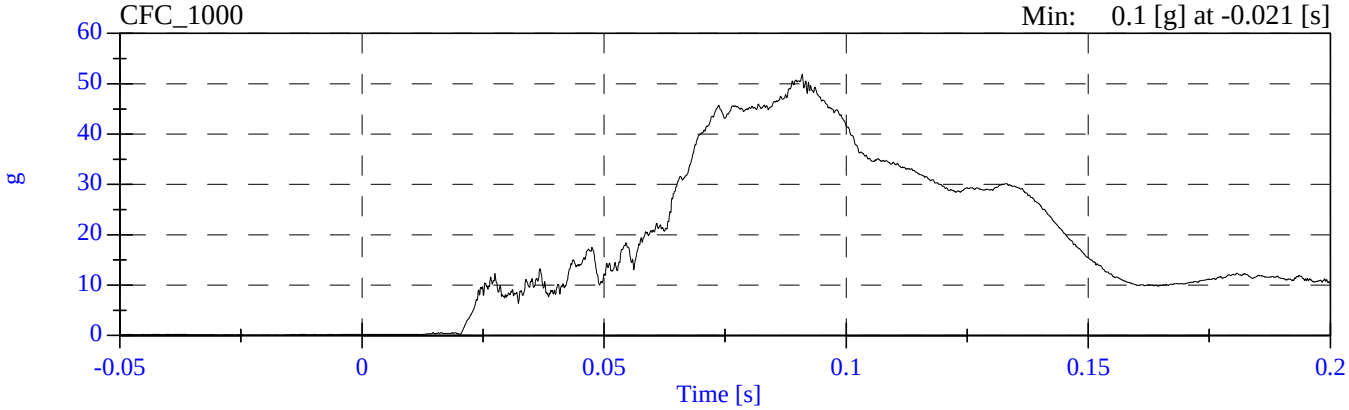
V1P2 Head CG y
CFC_1000
Max: 5.8 [g] at 0.064 [s]
Min: -2.1 [g] at 0.051 [s]



V1P2 Head CG z
CFC_1000
Max: 29.2 [g] at 0.090 [s]
Min: -0.5 [g] at 0.015 [s]



V1P2 Head CG Resultant
CFC_1000
Max: 51.9 [g] at 0.091 [s]
Min: 0.1 [g] at -0.021 [s]



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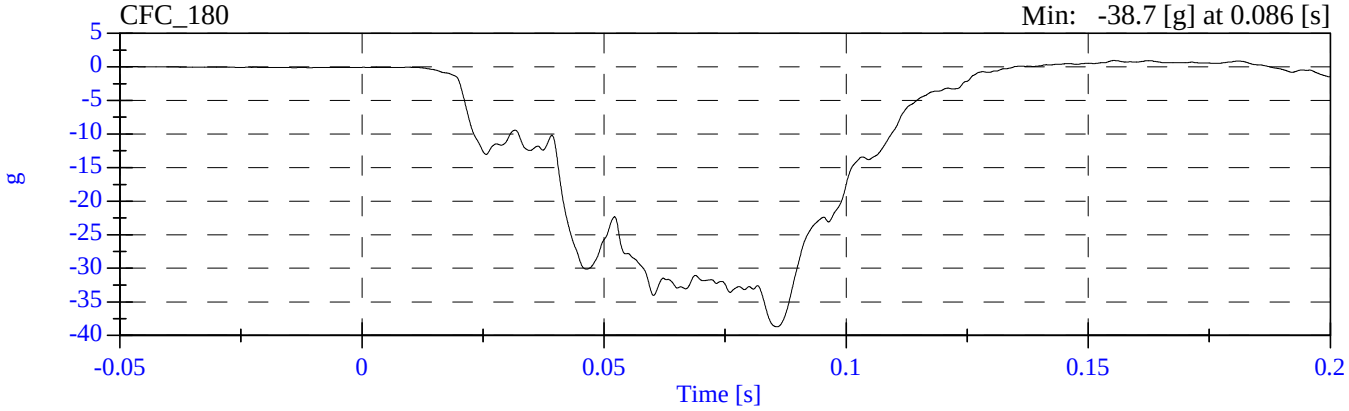
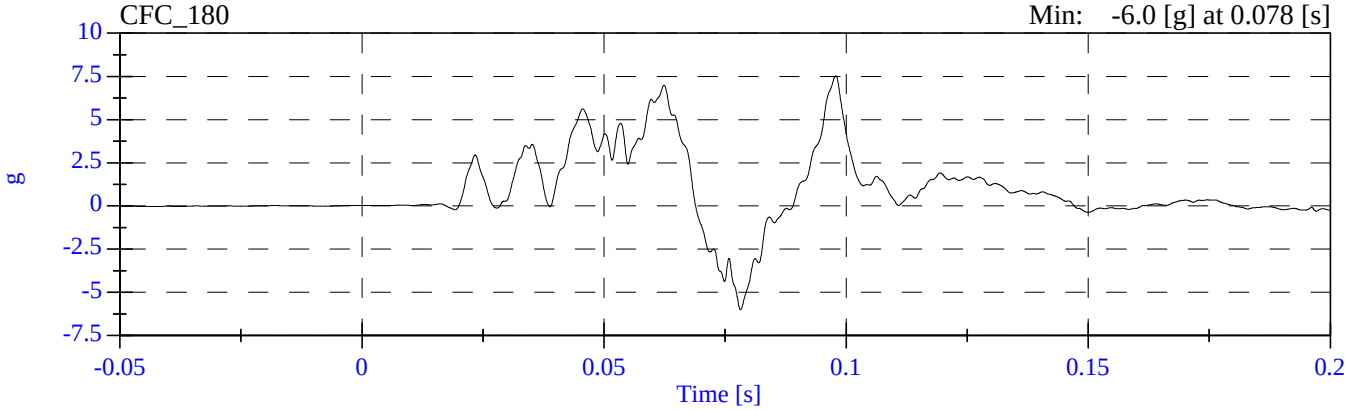
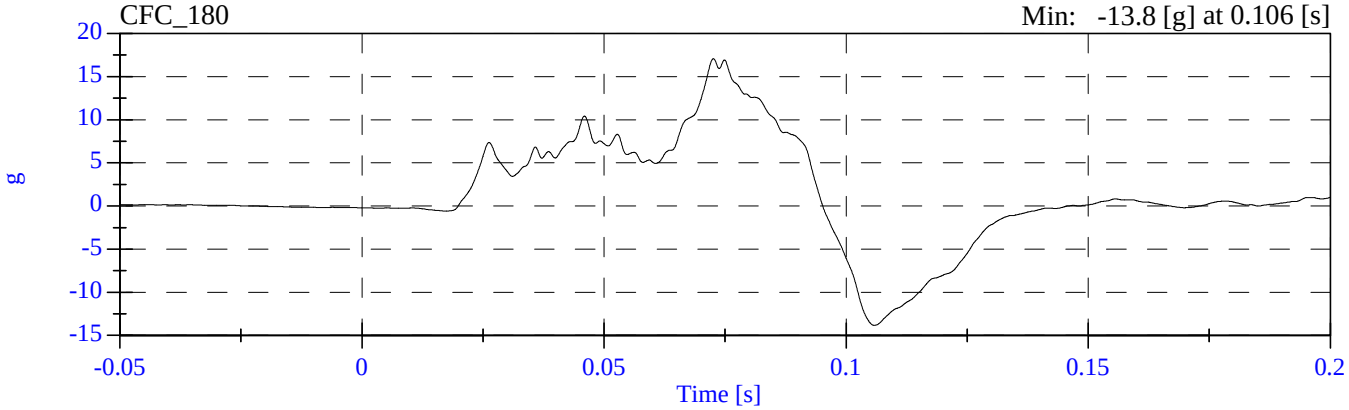
V1P2 Chest x
CFC_180
Max: 0.9 [g] at 0.155 [s]
Min: -38.7 [g] at 0.086 [s]



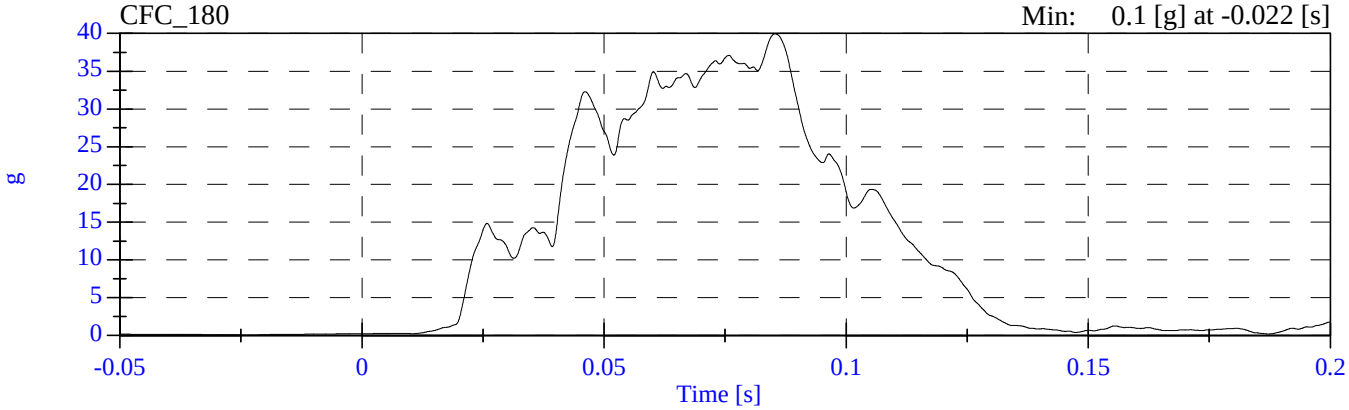
V1P2 Chest y
CFC_180
Max: 7.5 [g] at 0.098 [s]
Min: -6.0 [g] at 0.078 [s]



V1P2 Chest z
CFC_180
Max: 17.1 [g] at 0.073 [s]
Min: -13.8 [g] at 0.106 [s]



V1P2 Chest Resultant
CFC_180
Max: 40.0 [g] at 0.085 [s]
Min: 0.1 [g] at -0.022 [s]



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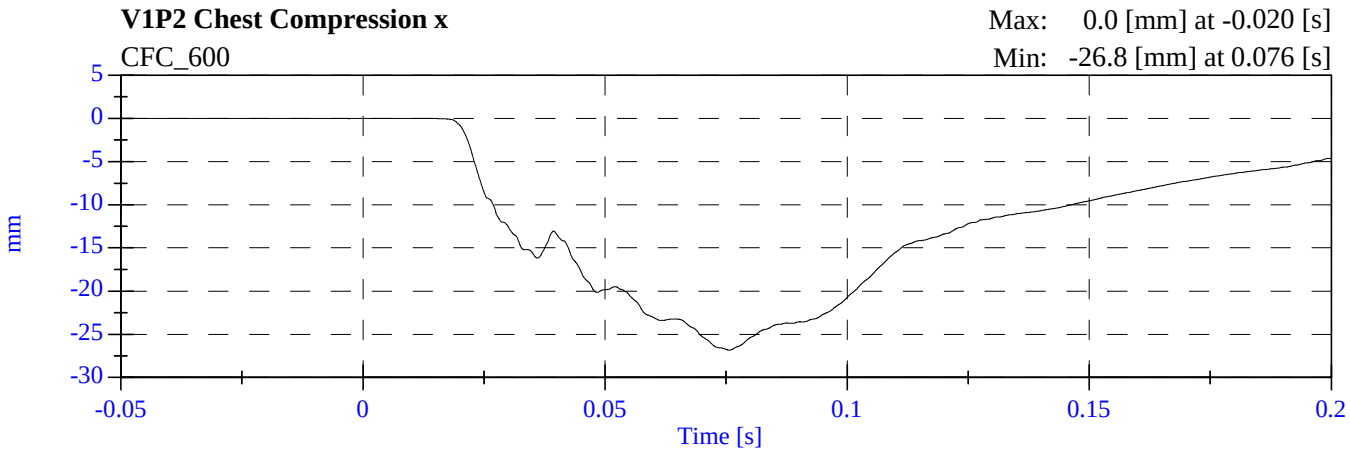
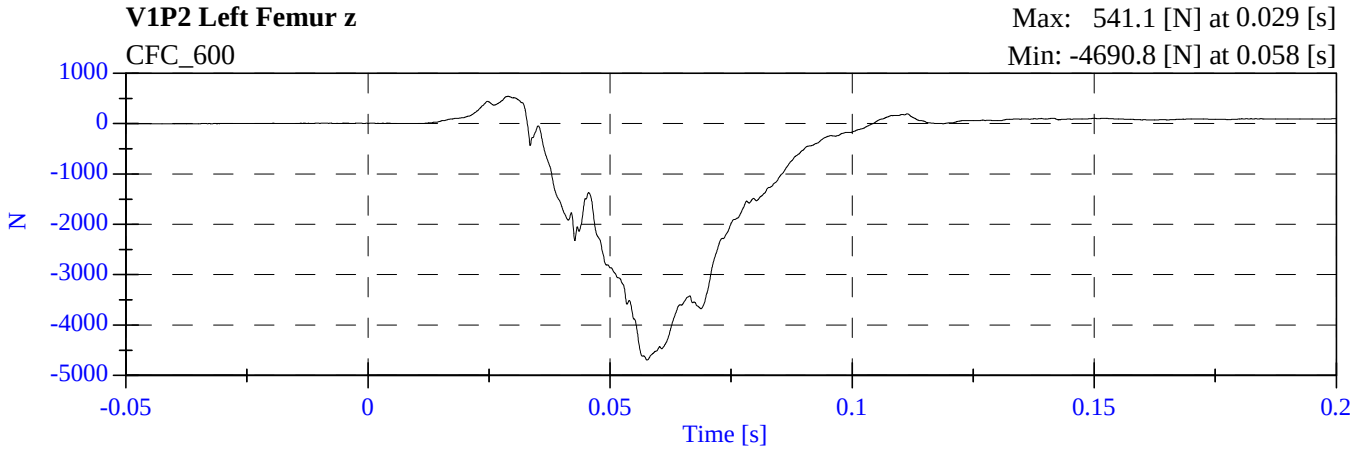
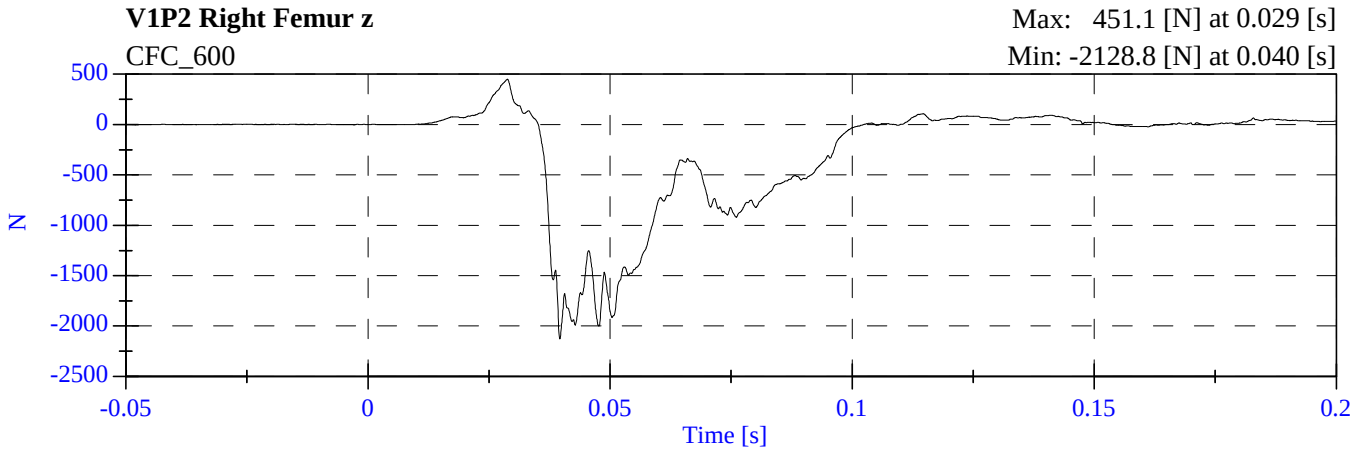


2007 NCAP Opt Test 1 2008 Ford Escape
F80201 - June 28, 2007





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.

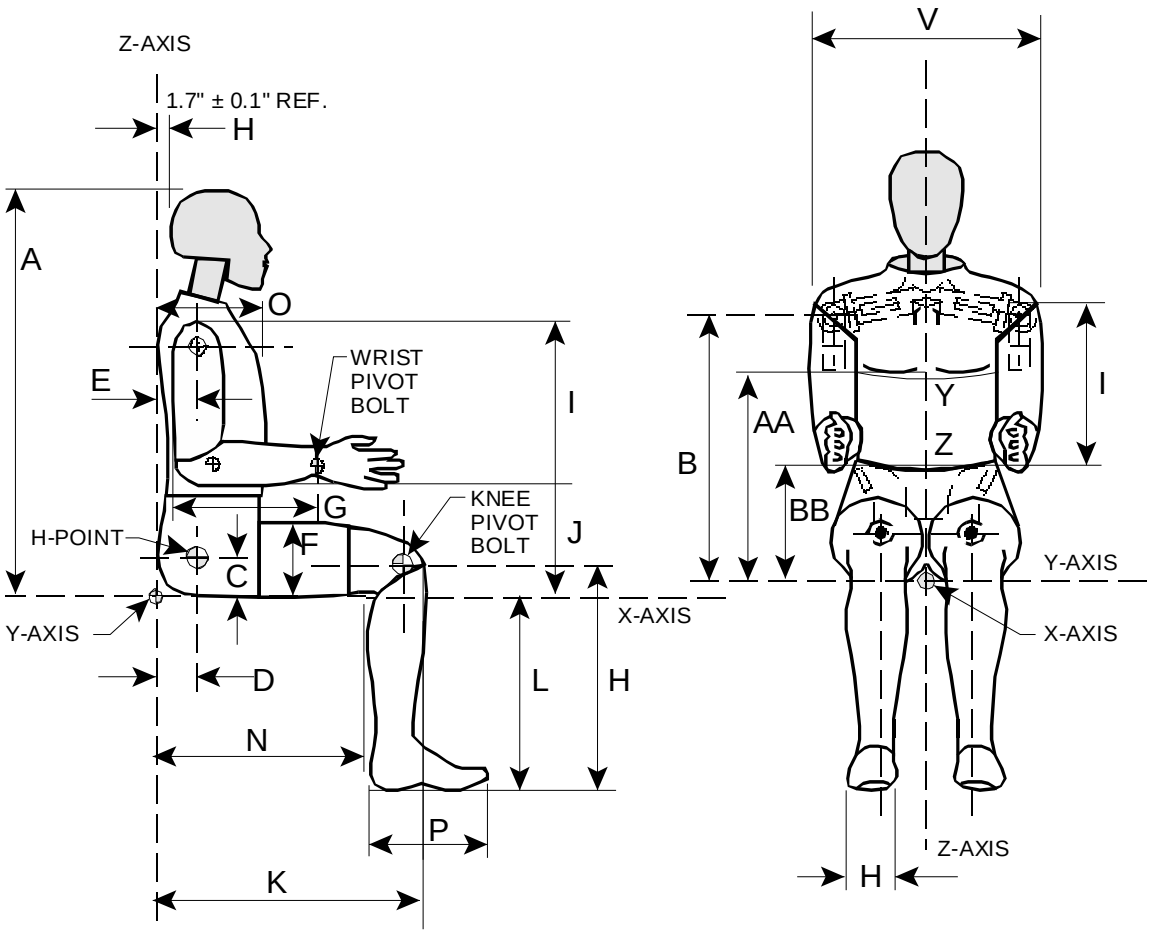
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	061	8/16/07
#2/Right Front Passenger	064	8/16/07

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	061
Sequential Test Number	1
Date	8/6/07
Workfile	061H 08/06/07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	39.0
Peak Resultant Acceleration	225-275 G's	270.53
Peak Lateral Acceleration	15 G's Max	14.86
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	8/15/07	6 Axis Neck Transducer
Workfile	061NF1 08/15/07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	35.0
Impact Velocity		6.89 – 7.13 m/s	6.98
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.77
	20 ms	17.60 - 22.60 G's	22.31
	30 ms	12.50 - 18.50 G's	18.43
Max Pendulum G's Above 30 ms		29 G's Max	18.43
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	36.70
D Plane Rotation	Max	64 - 78 Deg	69.72
	Time	57 - 64 ms	57.30
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	102.99
	Time	47 - 58 ms	48.60
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	116.20
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	98.40

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	061	
Sequential Test Number	1	
Date	8/15/07	6 Axis Neck Transducer
Workfile	061NE1 08/15/07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	35.0
Impact Velocity		5.94 – 6.19 m/s	6.07
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.86
	20 ms	14.00 - 19.00 G's	17.83
	30 ms	11.00 - 16.00 G's	14.67
Max Pendulum G's Above 30 ms		22 G's Max	14.67
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.70
D Plane Rotation	Max	81 - 106 Deg	95.39
	Time	72 - 82 ms	76.90
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-66.37
	Time	65 - 79 ms	73.20
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	157.70
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	138.20

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	061
Sequential Test Number	1
Date	08/09/07
Workfile	061T 08/9/07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.1
Relative Humidity	10% - 70%	39.0
Pendulum Velocity	6.58 – 6.83 m/s	6.72
Maximum Deflection	63.50 – 72.64 mm	67.19
Maximum Resistive Force	5159.9 – 5893.9 N	5797.87
Internal Hysteresis	69 - 85 %	73.53

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	061
Sequential Test Number	1
Date	8/16/07
Workfile	061LF 061RF 8/16/07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	36.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5202.55
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	36.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5393.02

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 061
Sequential Test Number 1
Date 8/16/07

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.1
Relative Humidity			36.0
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	34.70
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	6.1
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	8.0
Buttock Knee Length	K	22.8 - 23.8 in	23.4
Popliteal Height	L	16.9 - 17.9 in	17.5
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	8.4
Foot Length	P	9.9 - 10.5 in	10.1
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Foot Breadth	W	3.6 - 4.2 in	3.9
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.5
Waist Circumference	Z	32.9 - 34.1 in	33.4

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
HEAD DROP TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	8/6/07
Workfile	064H 8/6/07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	39
Peak Resultant Acceleration	225-275 G's	258.34
Peak Lateral Acceleration	15 G's Max	4.63
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	8/7/07	6 Axis Neck Transducer
Workfile	064NF 8/7/07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	44.0
Impact Velocity		6.89 – 7.13 m/s	7.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	24.26
	20 ms	17.60 - 22.60 G's	21.57
	30 ms	12.50 - 18.50 G's	16.93
Max Pendulum G's Above 30 ms		29 G's Max	16.93
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	38.00
D Plane Rotation	Max	64 - 78 Deg	68.68
	Time	57 - 64 ms	59.60
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	94.31
	Time	47 - 58 ms	52.00
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	115.10
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	99.70

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	064	
Sequential Test Number	1	
Date	8/7/07	6 Axis Neck Transducer
Workfile	064NE 8/7/07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.1
Relative Humidity		10% - 70%	44.0
Impact Velocity		5.94 – 6.19 m/s	6.08
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.34
	20 ms	14.00 - 19.00 G's	16.51
	30 ms	11.00 - 16.00 G's	13.99
Max Pendulum G's Above 30 ms		22 G's Max	13.99
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	45.00
D Plane Rotation	Max	81 - 106 Deg	95.06
	Time	72 - 82 ms	78.10
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-67.83
	Time	65 - 79 ms	72.70
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	158.50
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	141.50

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	8/9/07
Workfile	064T 8/9/07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.1
Relative Humidity	10% - 70%	40.0
Pendulum Velocity	6.58 – 6.83 m/s	6.78
Maximum Deflection	63.50 – 72.64 mm	67.27
Maximum Resistive Force	5159.9 – 5893.9 N	5849.23
Internal Hysteresis	69 - 85 %	73.02

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	064
Sequential Test Number	1
Date	8/16/07
Workfile	064LF 064RF 8/16/07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	36.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5555.56
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	36.0
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5447.63

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 064
Sequential Test Number 1
Date 8/16/07

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			21.1
Relative Humidity			36.0
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	34.6
Shoulder Pivot Height	B	19.9 - 20.5 in	20.5
H-Point Height	C	3.3 - 3.5 in	3.5
H-Point from Backline	D	5.3 - 5.5 in	5.5
Shoulder Pivot from Backline	E	3.3 - 3.7 in	3.5
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	7.8
Buttock Knee Length	K	22.8 - 23.8 in	23.5
Popliteal Height	L	16.9 - 17.9 in	17.5
Knee Pivot Height	M	19.1 - 19.7 in	19.1
Buttock Popliteal Length	N	17.8 - 18.8 in	18.7
Chest Depth	O	8.4 - 9.0 in	8.5
Foot Length	P	9.9 - 10.5 in	10.2
Shoulder Breadth	V	16.6 - 17.2 in	16.8
Foot Breadth	W	3.6 - 4.2 in	3.8
Chest Circumference (With Jacket)	Y	38.2 - 39.4 in	38.5
Waist Circumference	Z	32.9 - 34.1 in	33.4

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 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	AC-J20018	22-Jun-07	21-Dec-07
	Y	ENDEVCO	AC-P16755	22-Jun-07	21-Dec-07
	Z	ENDEVCO	AC-J14667	22-Jun-07	21-Dec-07
Head	X (R)	ENDEVCO	AC-J38127	22-Jun-07	21-Dec-07
	Y (R)	ENDEVCO	AC-J20569	22-Jun-07	21-Dec-07
	Z (R)	ENDEVCO	AC-J21963	22-Jun-07	21-Dec-07
Neck Load Cell	X	DENTON	LC-1916Fx	22-Jun-07	21-Dec-07
	Y	DENTON	LC-1916Fy	22-Jun-07	21-Dec-07
	Z	DENTON	LC-1916Fz	22-Jun-07	21-Dec-07
Neck Moment	X	DENTON	LC-1916Mx	22-Jun-07	21-Dec-07
	Y	DENTON	LC-1916My	22-Jun-07	21-Dec-07
	Z	DENTON	LC-1916Mz	22-Jun-07	21-Dec-07
Chest	X	ENDEVCO	AC-AAKC6	22-Jun-07	21-Dec-07
	Y	ENDEVCO	AC-AAKD0	22-Jun-07	21-Dec-07
	Z	ENDEVCO	AC-J27470	22-Jun-07	21-Dec-07
Chest	X (R)	ENDEVCO	AC-J21988	22-Jun-07	21-Dec-07
	Y (R)	ENDEVCO	AC-J20027	22-Jun-07	21-Dec-07
	Z (R)	ENDEVCO	AC-J36741	22-Jun-07	21-Dec-07
Chest Deflection	X	SERVO	DS-061	25-Jun-07	24-Dec-07
Pelvic	X	ENTRAN	AC-99H30-Z13	21-Jun-07	20-Dec-07
	Y	ENTRAN	AC-01G18-F14	21-Jun-07	20-Dec-07
	Z	ENTRAN	AC-02I02I05-F06	21-Jun-07	20-Dec-07

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 061)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-1532	25-Jun-07	24-Dec-07
Right Femur Load Cell	Fz	DENTON	LC-1533	25-Jun-07	24-Dec-07
Left Upper Tibia	Mx	DENTON	LC-93Mx	26-Jun-07	25-Dec-07
	My	DENTON	LC-93My	26-Jun-07	25-Dec-07
Left Lower Tibia	Fz	DENTON	LC-093Fz	25-Jun-07	24-Dec-07
	Mx	DENTON	LC-093Mx	25-Jun-07	24-Dec-07
	My	DENTON	LC-093My	25-Jun-07	24-Dec-07
Right Upper Tibia	Mx	DENTON	LC-115Mx	25-Jun-07	24-Dec-07
	My	DENTON	LC-115My	25-Jun-07	24-Dec-07
Right Lower Tibia	Fz	DENTON	LC-116Fz	25-Jun-07	24-Dec-07
	Mx	DENTON	LC-116Mx	25-Jun-07	24-Dec-07
	My	DENTON	LC-116My	25-Jun-07	24-Dec-07
Left Foot Rear	X	ENDEVCO	AC-J18662	25-Jun-07	24-Dec-07
	Z	ENDEVCO	AC-J19927	25-Jun-07	24-Dec-07
Left Foot Front	Z	ENDEVCO	AC-J20030	25-Jun-07	24-Dec-07
Right Foot Rear	X	ENDEVCO	AC-DE54J	25-Jun-07	24-Dec-07
	Z	ENDEVCO	AC-J19440	25-Jun-07	24-Dec-07
Right Foot Front	Z	ENDEVCO	AC-J20382	25-Jun-07	24-Dec-07
Lap Belt Load Cell		First Technology	LC-156	11-Jul-06	11-Jul-07
Shoulder Belt Load Cell		First Technology	LC-159	11-Jul-06	11-Jul-07

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	20-Jun-07	AC-J27517	19-Dec-07
	Y	ENDEVCO	20-Jun-07	AC-AAKB1	19-Dec-07
	Z	ENDEVCO	20-Jun-07	AC-AAK48	19-Dec-07
Head	X (R)	ENDEVCO	20-Jun-07	AC-P16194	19-Dec-07
	Y (R)	ENDEVCO	20-Jun-07	AC-J14688	19-Dec-07
	Z (R)	ENDEVCO	20-Jun-07	AC-P21399	19-Dec-07
Neck Load Cell	X	DENTON	22-Jun-07	LC-1912Fx	21-Dec-07
	Y	DENTON	22-Jun-07	LC-1912Fy	21-Dec-07
	Z	DENTON	22-Jun-07	LC-1912Fz	21-Dec-07
Neck Moment	X	DENTON	22-Jun-07	LC-1912Mx	21-Dec-07
	Y	DENTON	22-Jun-07	LC-1912My	21-Dec-07
	Z	DENTON	22-Jun-07	LC-1912Mz	21-Dec-07
Chest	X	ENDEVCO	21-Jun-07	AC-J23946	20-Dec-07
	Y	ENDEVCO	21-Jun-07	AC-AGAC4	20-Dec-07
	Z	ENDEVCO	21-Jun-07	AC-P16225	20-Dec-07
Chest	X (R)	ENTRAN	21-Jun-07	AC-03E03E21-M20	20-Dec-07
	Y (R)	ENDEVCO	21-Jun-07	AC-P15638	20-Dec-07
	Z (R)	ENDEVCO	21-Jun-07	AC-P16517	20-Dec-07
Chest Deflection	X	SERVO	25-Jun-07	DS-064	24-Dec-07
Pelvic	X	ENDEVCO	21-Jun-07	AC-AJ5R0	20-Dec-07
	Y	ENDEVCO	21-Jun-07	AC-J22036	20-Dec-07
	Z	ENDEVCO	20-Jun-07	AC-P32204	19-Dec-07

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

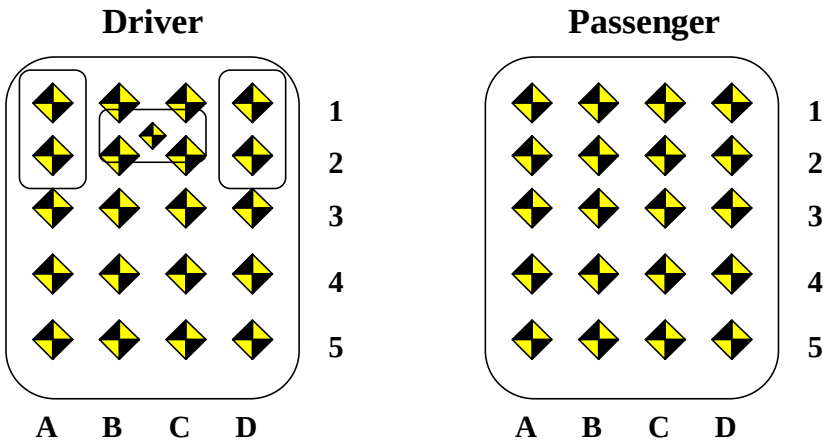
PASSENGER DUMMY (S/N 064)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-1525	25-Jun-07	24-Dec-07
Right Femur Load Cell	Fz	DENTON	LC-1526	25-Jun-07	24-Dec-07
Left Upper Tibia	Mx	DENTON	LC-404Mx	25-Jun-07	24-Dec-07
	My	DENTON	LC-404My	25-Jun-07	24-Dec-07
Left Lower Tibia	Fz	DENTON	LC-396Fz	25-Jun-07	24-Dec-07
	Mx	DENTON	LC-396Mx	25-Jun-07	24-Dec-07
	My	DENTON	LC-396My	25-Jun-07	24-Dec-07
Right Upper Tibia	Mx	DENTON	LC-374Mx	02-Dec-06	02-Jun-07
	My	DENTON	LC-374My	02-Dec-06	02-Jun-07
Right Lower Tibia	Fz	DENTON	LC-372Fz	14-Nov-06	15-May-07
	Mx	DENTON	LC-372Mx	14-Nov-06	15-May-07
	My	DENTON	LC-372My	14-Nov-06	15-May-07
Left Foot Rear	X	ENDEVCO	AC-J33376	25-Jun-07	24-Dec-07
	Z	ENDEVCO	AC-P16899	25-Jun-07	24-Dec-07
Left Foot Front	Z	ENDEVCO	AC-P17912	25-Jun-07	24-Dec-07
Right Foot Rear	X	ENDEVCO	AC-J20209	25-Jun-07	24-Dec-07
	Z	ENDEVCO	AC-J14234	25-Jun-07	24-Dec-07
Right Foot Front	Z	ENDEVCO	AC-J14669	25-Jun-07	24-Dec-07
Lap Belt Load Cell		First Technology	LC-173	11-Jul-06	11-Jul-07
Shoulder Belt Load Cell		First Technology	LC-178	11-Jul-06	11-Jul-07

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	ICS	FA2471	3/21/2007	9/21/07
Right Rear Seat Crossmember X	ICS	FA2490	3/21/2007	9/21/07
Top of Engine	ICS	FA2485	8/8/2007	2/8/08
Bottom of Engine	ICS	FA2481	4/21/2007	10/21/07
Right Disc Brake Caliper	ICS	FA2488	3/21/2007	9/21/07
Left Disc Brake Caliper	ICS	FA2477	8/8/2007	2/8/08
Left Seat Rear Crossmember Z	ICS	FA2493	4/25/2007	10/25/07
Right Seat Rear Crossmember Z	ICS	FA2491	3/21/2007	9/21/07

APPENDIX E

VEHICLE INTERIOR INTRUSION MEASUREMENTS

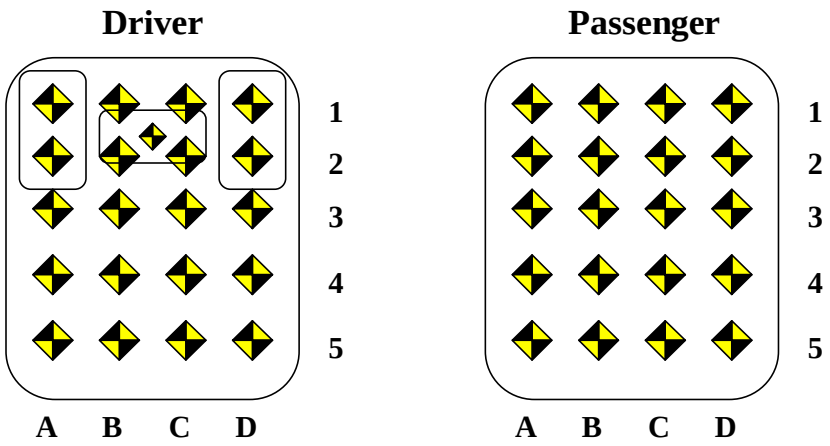


Driver Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3200	-553	-408	3190	-554	-415	10	1	7
B1	3306	-443	-394	3296	-432	-426	10	-11	32
C1	3319	-333	-408	3300	-325	-423	19	-8	15
D1	3293	-204	-409	3280	-193	-421	13	-11	12
A2	3148	-551	-337	3146	-552	-344	2	1	7
B2	3218	-442	-335	3210	-434	-348	8	-8	13
C2	3217	-330	-333	3209	-324	-341	8	-6	8
D2	3219	-210	-333	3216	-201	-337	3	-9	4
A3	3094	-553	-260	3092	-549	-258	2	-4	-2
B3	3116	-442	-264	3116	-434	-265	0	-8	1
C3	3112	-333	-266	3113	-325	-262	-1	-8	-4
D3	3111	-224	-262	3111	-219	-260	0	-5	-2
A4	3041	-552	-260	3041	-547	-255	0	-5	-5
B4	3035	-440	-263	3035	-433	-259	0	-7	-4
C4	3027	-324	-258	3025	-323	-254	2	-1	-4
D4	3016	-228	-267	3018	-222	-262	-2	-6	-5
A5	2954	-552	-261	2956	-549	-259	-2	-3	-2
B5	2950	-434	-265	2950	-434	-261	0	0	-4
C5	2945	-328	-263	2942	-324	-259	3	-4	-4
D5	2940	-226	-278	2939	-222	-269	1	-4	-9
BP	3167	-311	-461	3164	-322	-466	3	11	5
G	2857	-504	-697	2860	-507	-698	-3	3	1
H	2874	-205	-713	2871	-212	-692	3	7	-21
L	2631	-335	-874	2656	-351	-906	-25	16	32
AB	2602	-572	-294	2601	-569	-292	1	-3	-2

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	3215	250	-427	3194	247	-434	21	3	7
B1	3214	357	-423	3193	356	-437	21	1	14
C1	3216	468	-423	3194	465	-440	22	3	17
D1	3213	571	-427	3195	568	-438	18	3	11
A2	3136	251	-341	3132	250	-341	4	1	0
B2	3140	358	-345	3131	357	-344	9	1	-1
C2	3140	466	-343	3131	464	-343	9	2	0
D2	3136	573	-342	3135	573	-340	1	0	-2
A3	3044	250	-265	3047	250	-259	-3	0	-6
B3	3050	359	-263	3051	358	-259	-1	1	-4
C3	3053	469	-264	3054	467	-262	-1	2	-2
D3	3054	574	-264	3055	577	-261	-1	-3	-3
A4	2991	249	-262	2988	250	-255	3	-1	-7
B4	2998	358	-262	2994	359	-260	4	-1	-2
C4	2999	472	-266	2997	470	-264	2	2	-2
D4	3001	575	-264	2999	578	-264	2	-3	0
A5	2939	252	-263	2938	249	-259	1	3	-4
B5	2946	357	-265	2944	359	-264	2	-2	-1
C5	2948	466	-267	2947	466	-267	1	0	0
D5	2956	579	-265	2951	577	-268	5	2	3
R	2860	213	-687	2860	219	-691	0	-6	4
S	2852	504	-703	2850	508	-709	2	-4	6
AB	2600	575	-297	2596	573	-298	4	2	1

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