REPORT NUMBER: CAL-07-16

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

FORD MOTOR COMPANY
2008 FORD FOCUS
FOUR-DOOR SEDAN

NHTSA NUMBER: M80204

CALSPAN TEST NUMBER: 8806-NCAP-16

CALSPAN CORPORATION
TRANSPORTATION SCIENCES CENTER
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November 20, 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
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7. Author(s) David J. Travale, Program Manager Vincent M. Paolini, Project Engineer		*8. Performing Organization Report No.* 8806-NCAP-16
9. Performing Organization Name and Address Calspan Corporation 4455 Genesee Street Buffalo, New York 14225		*10. Work Unit No.*
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12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards Mail Code: NVS-111 1200 New Jersey Ave SE, Room W43-410 Washington, DC 20590		*13. Type of Report and Period Covered* Final Report November 2007
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15. Supplementary Notes

16. Abstract

A frontal load cell barrier test of a 2008 Ford Focus Four-Door Sedan was performed at Calspan Corporation's crash test facility in Buffalo, New York, on November 20, 2007.

The impact velocity was 55.68 kph and the temperature at the barrier face was 21°C. The maximum post-test vehicle crush was 531 mm. The test vehicle was equipped with 3-point restraint systems with torso belt pretensioners and force limiters, knee bolsters, head restraints 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 (150)**	**Passenger (142)**
Head Injury Criteria (HIC - 36 ms)	-	1000	634.1	608.5‡
Maximum Thorax Acceleration (3 ms Clip)	g's	60 g's	43.4	39.8
Chest Displacement	mm	-76 mm	-39.6	-32.8
Left Femur Force	Newtons	-10000 N	-4914.9	-5817.0
Right Femur Force	Newtons	-10000 N	-4884.4	-3433.1

‡ Passenger HIC was calculated with the Head Ay data truncated at 150 ms.

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 55.68 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 55.68 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Indicant Test procedure.

1.2 TEST PROCEDURE

This 55.68 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 head, 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. 150) and the right-front passenger (position 2) ATD (Serial No.142) 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 129 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 Ford Focus Four-Door Sedan at a velocity of 55.68 kph. The test was performed at Calspan on November 20, 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	634.1	60.7	96.7	43.4	57.0	61.7	-39.6	-4914.9	-4884.4
Passenger	608.5‡	71.1	107.1	39.8	72.3	75.3	-32.8	-5817.0	-3433.1

‡ Passenger HIC was calculated with the Head Ay data truncated at 150 ms.

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

TEST NOTES	
Data Channel	Anomalies
V1P2 Head CG y	Data is not accurate after 158 ms
V1P2 Chest Red y	Data spike at 158 ms
V1P2 Chest Red z	Data spike at 158 ms
V1P2 Right Foot Fore z	Did not record
V1P2 Left Lower Tibia Mx	Data is Questionable
V1 Engine Bottom #4x	Cut wire at 38 ms
V1 Left Caliper #7x	Cut wire at 47 ms

SECTION 2
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
CRASH TEST SUMMARY

Vehicle NHTSA No.: M80204 Test Mode: 56.3 kph Frontal Barrier
Test Date: November 20, 2007 Time: 11:50 Temperature: 21 °C
Vehicle Make/Model/Body Style: 2008 Ford Focus Four-Door Sedan
Vehicle Test Weight: 1398.0 kg Impact Velocity: 55.68 kph (55.5 – 57.1 kph)
Vehicle/Barrier Impact Angle: 0 ° Max Static Crush: 531 mm

ATD INFORMATION AND VISIBLE CONTACT POINTS

	DRIVER	PASSENGER
ATD Type:	Part 572E	Part 572E
Restraint System:	Seatbelt with torso belt pretensioner and force limiter, Airbag, Knee Bolster, Head Restraint	Seatbelt with torso belt pretensioner and force limiter, Airbag, Knee Bolster, Head Restraint
Head Contact:	The face to the airbag, the back of the head to the head restraint	The face to the airbag, the back of the head to the head restraint
Abdomen Contact:	None	None
Chest Contact:	Airbag	Airbag
Left Knee Contact:	Knee Bolster	Knee Bolster/Glove Box Door
Right Knee Contact:	Knee Bolster	Knee Bolster/Glove Box 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	N/A	N/A
Front Seat Track Shift (mm)	0	0
Front Seat Back Failure	None	None
Glazing Damage	The windshield was cracked due to the passenger airbag deployment	

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Left Side (mm)	Center (mm)	Right Side (mm)	Average (mm)
Value	655	624	601	627

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	920	930
Lap belt length as measured on ATD	mm	790	800
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems	mm	1710	1730

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2008 Ford Focus Four-Door Sedan

NHTSA No. : M80204 ; VIN: 1FAHP34N38W124106 ; Color: Green

Engine Data: 4 cylinders; - CID; 2.0 Liters; - cc

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

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

Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - 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: 10/17/2007 ; Odometer Reading 35 km

Selling Dealer: West Herr Ford, Inc.

Dealer Address: 5025 Camp Road Hamburg, NY 14075

TEST VEHICLE OPTIONS:

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

X ABS; X Tilt Wheel; - Stability Control - Traction Control X 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:	X	-	-	-	X
Passenger:	X	-	-	-	X
Rear Passenger:	-	-	-	-	X

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured by: Ford Motor Company

Date of Manufacture 10/07

GVWR: 1685 kg; GAWR: 896 kg FRONT; 796 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) = 375.0 kg

No. of Occupants x 68.04 kg = 340.2 kg

Rated Cargo/Luggage Weight (RCLW) = 34.8 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 =	368.5	376.0	61.1	744.5
Rear =	241.5	231.5	38.9	473.0
			Total Delivered Weight (UDW) =	1217.5

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight (UDW)	=	1217.5	kg
Rated Cargo/Luggage Weight (RCLW)	=	34.8	kg
Weight of 2 p.572 Dummies @ 76 each	=	152	kg
TARGET TEST WEIGHT	=	1404.3	kg

WEIGHT OF TEST VEHICLE WITH TWO DUMMIES AND 28.5 KG OF CARGO WEIGHT:

	Left Side (kg)	Right Side (kg)	Ratio (%)	Total (kg)
Front =	410.5	407.0	58.5	817.5
Rear =	288.5	292.0	41.5	580.5
			Total Vehicle Test Weight (ATW) =	1398.0

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

Vehicle Components Removed for Weight Reduction: Wheel covers, rear side view mirrors, rear bumper

VEHICLE ATTITUDE (all dimension in millimeters):

	Left Front	Right Front	Left Rear	Right Rear	CG[2]
AS DELIVERED:	684	690	704	702	1014.0
FULLY LOADED:	668	674	680	677	-
AS TESTED:	672	674	681	682	1083.8

Vehicle's Wheel Base: 2610 mm

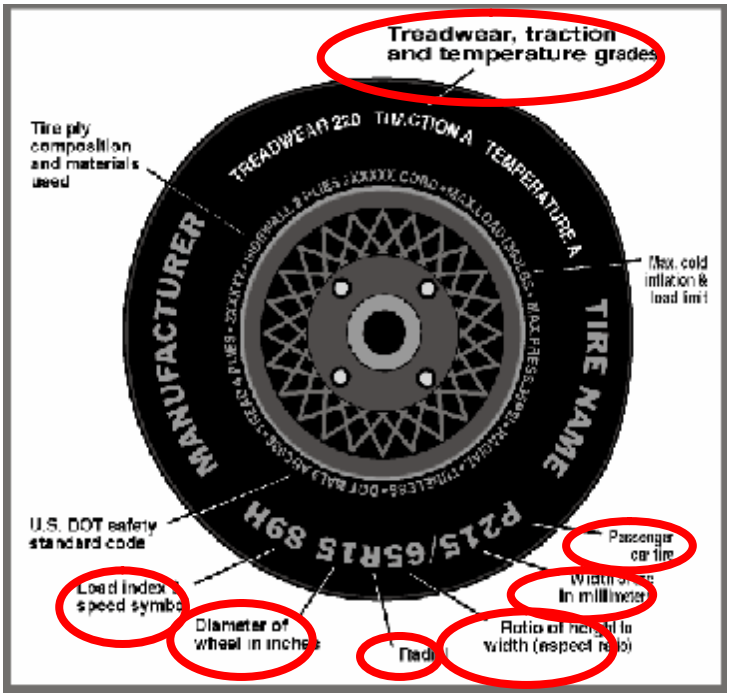
[1]Ballast weight does not include the weight of instrumentation, on-board cameras and data acquisition system

[2]Rearward of the front axle centerline.

DATA SHEET NO. 3
TEST VEHICLE TIRE INFORMATION

Vehicle Year/Make/Model/Body Style: 2008 Ford Focus Four-Door Sedan

NHTSA Test No.: M80204 Test Date: November 20, 2007



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)	195/60R15	195/60R15
Tire size on Vehicle	195/60R15	195/60R15
Tire Manufacturer	Hankook	Hankook
Tire Name	Optimo	Optimo
Tire Type	Passenger	Passenger
Tire Width (mm)	195	195
Ratio of Height to Width (aspect ratio)	60	60
Radial	Yes	Yes
Wheel Diameter	15	15
Load Index & Speed Symbol	87T	87T
Treadwear	620	620
Traction Grade	B	B
Temperature Grade	B	B

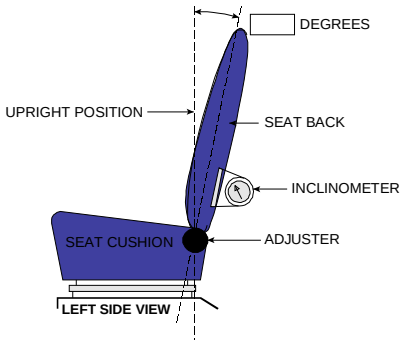
*Tire pressure used for test

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

VEHICLE IDENTIFICATION:

Model Year : 2008 Vehicle Model: Ford Focus Body Style : Four-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: 18.9º

Measurement instructions: Recline seat to measure 18.9º on the head restraint post.

Seat back angle for passenger's seat: 18.9º

Measurement instructions: The same as the driver's seat

2. SEAT FORE AND AFT POSITIONING:

Positioning of the driver's seat: There is 200 mm of total adjustment. The test position is 110 mm rearward of full-forward.

Positioning of the passenger's seat: The same as the driver's seat

3. FUEL TANK CAPACITY DATA:

3.1 A. "Usable Capacity" of the standard equipment fuel tank is 49.2 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 = 45.3 to 46.2 liters

3.2 Actual Amount of Stoddard solvent added to vehicle for test = 45.3 liters

3.3 One-Third of Useable Capacity = 16.4 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.

For two seconds after the ignition is turned to the 'ON' position and while the engine is running.

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 adjusts from 63.7º to 69.2º, the test position is 66.5º

5. SEAT BELT UPPER ANCHORAGE:

Nominal design riding position: There are four detents. The test detent is the 1st detent below the uppermost detent.

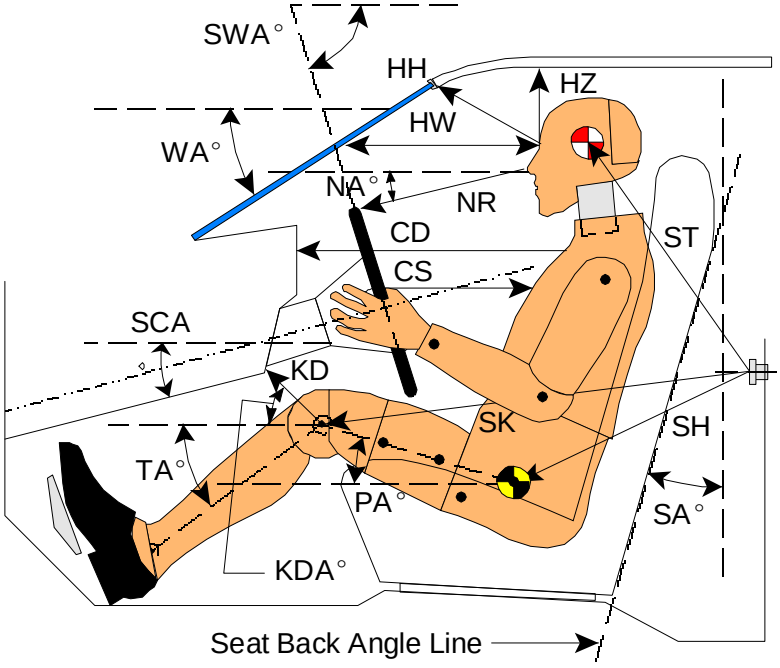
6. AUTOMATIC DOOR LOCKS: Is test vehicle equipped with ADLs? - Yes; X No;

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

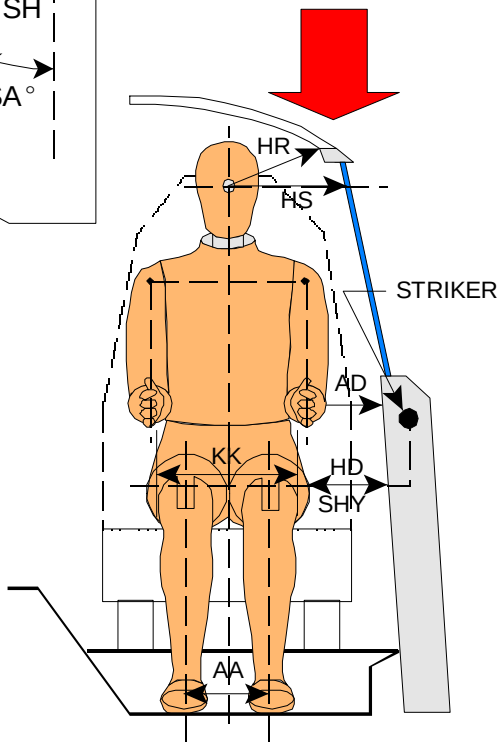
Comments: This vehicle was not equipped with automatic door locks

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

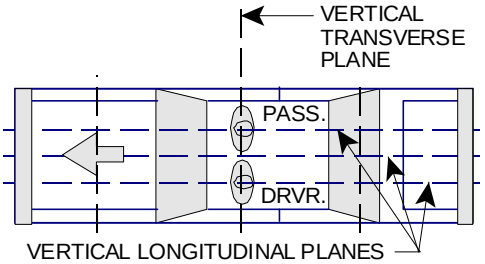
DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



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



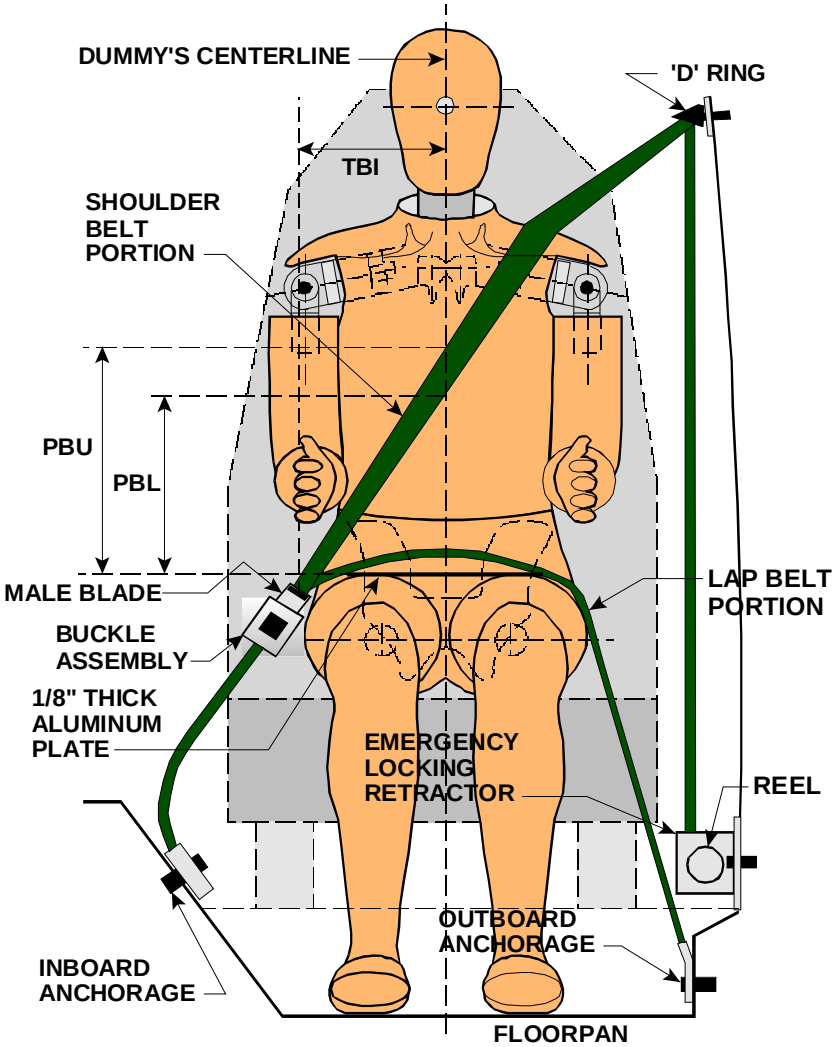
DATA SHEET NO. 5
FRONT SEAT DUMMY POSITIONING MEASUREMENTS IN VEHICLE (cont.)

	DRIVER (Serial #150)			PASS. (Serial #142)		
WA^O	28.5 deg.			N/A		
SWA^O	66.5 deg.			N/A		
SCA^O	23.5 deg.			N/A		
SA^O	18.9 deg.			18.2 deg.		
HZ	195			200		
HH	319			338		
HW	585			581		
HR	185			185		
NR	405	Angle	10.5 deg.	N/A		
CD	524			541		
CS	347			N/A		
RA	209			N/A		
KDL	116	Angle (KDA)	35 deg.	145		
KDR	130			165	Angle (KDA)	35 deg.
PA^O	22.8 deg.			22.2 deg.		
TA^O	51.7 deg.			45.3 deg.		
KK	325			270		
AA	340			210		
ST	508	Angle	3 deg.	505	Angle	4 deg.
SK	579	Angle	95 deg.	572	Angle	95 deg.
SH	205	Angle	132 deg.	192	Angle	131 deg.
SHY	230			235		
HS	320			314		
HD	103			107		
AD	81			91		

Dimensions in millimeters

DATA SHEET NO. 6
SEAT BELT POSITIONING DATA

SEAT BELT POSITIONING DATA

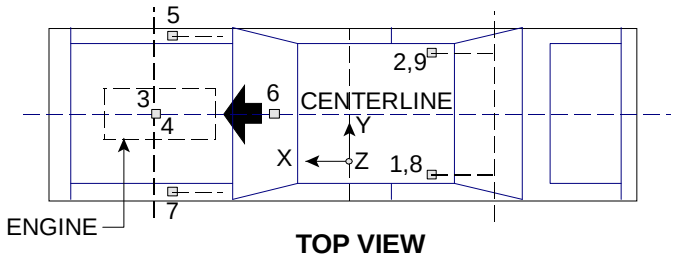


FRONT VIEW OF DUMMY

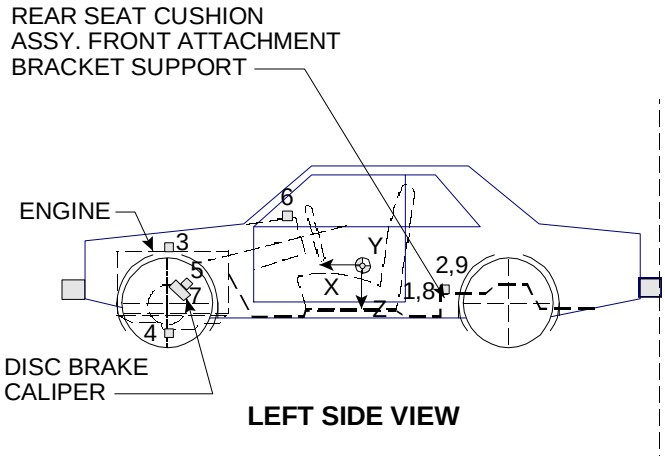
	DRIVER DUMMY (mm)	PASSENGER DUMMY (mm)
PBU -- Top surface of alum. plate to upper edge	310	315
PBL-- Top surface of alum. plate to belt lower edge	235	235
LAP BELT TENSION	10 N	10 N
SHOULDER BELT TENSION	Retractor	Retractor

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	1772	-552	-354
2	Right Rear Seat Cross Member X	1799	550	-352
3	Top of Engine Block	3698	246	-800
4	Bottom of Engine	3338	483	-183
5	Disc Brake Caliper @ Right Side	3421	818	-299
6	Instrument Panel**	-	-	-
7	Disc Brake Caliper @Left Side	3406	-807	-341
8	Left Rear Seat Cross Member Z	1772	-552	-354
9	Right Rear Seat Cross Member Z	1799	550	-352

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 30 mm molding.

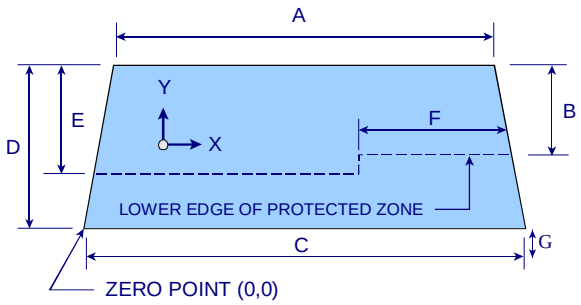
FMVSS 212 REQUIREMENTS:

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: 21ºC.

FMVSS 212 TEST DATA

	WINDSHIELD PERIPHERY		% OF RETENTION
	PRE-TEST (mm)	POST-TEST (mm)	
RIGHT SIDE	2200.0	2200.0	100.0%
LEFT SIDE	2200.0	2200.0	100.0%
TOTAL	4400	4400	100.0%



FRONT VIEW OF WINDSHIELD

DIMENSIONS (mm)	
A	1145
B	456
C	1535
D	860
E	497
F	865
G	30

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.: M80204 TEST DATE: November 20, 2007

VEHICLE MAKE/MODEL: 2008 Ford Focus Four-Door Sedan

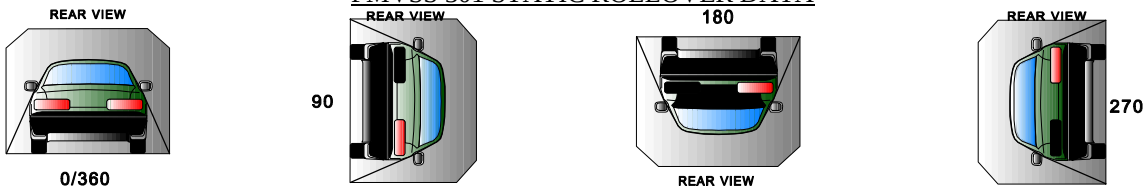
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

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	17	seconds	5	minutes	6	minutes	17	seconds	7	minutes
90º - 180º	1	minutes	07	seconds	5	minutes	6	minutes	7	seconds	7	minutes
180º-270º	1	minutes	02	seconds	5	minutes	6	minutes	2	seconds	7	minutes
270º-360º	1	minutes	06	seconds	5	minutes	6	minutes	6	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:

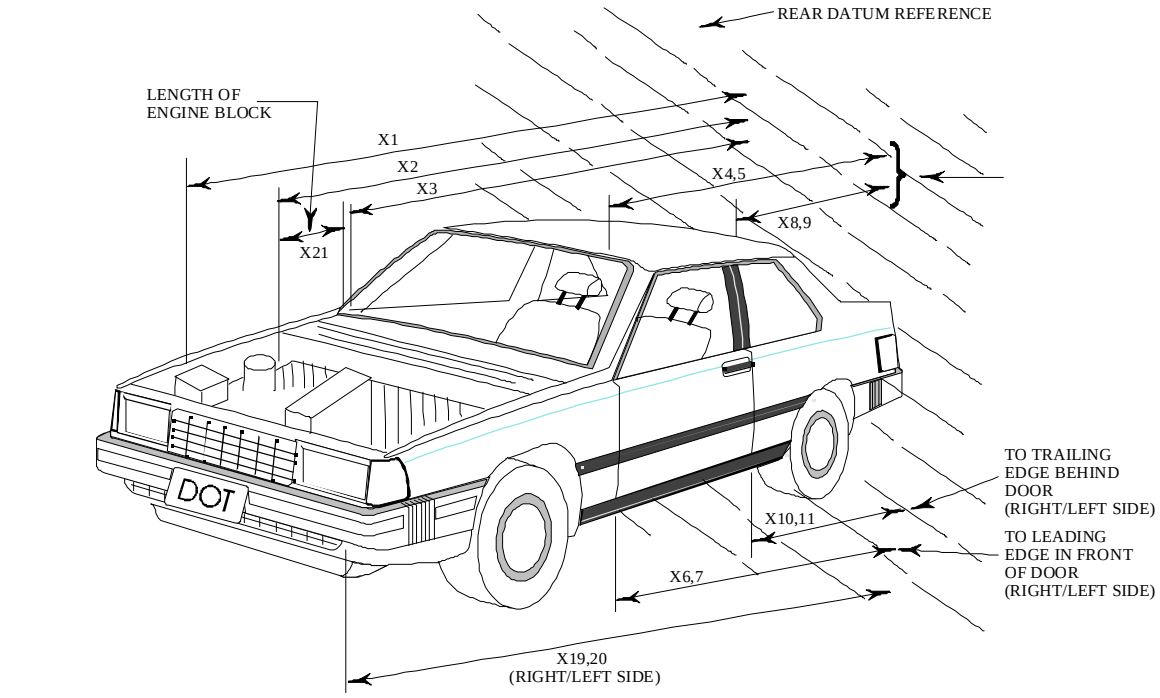
Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0º - 90º	0	0	0	N/A
90º - 180º	0	0	0	N/A
180º-270º	0	0	0	N/A
270º-360º	0	0	0	N/A

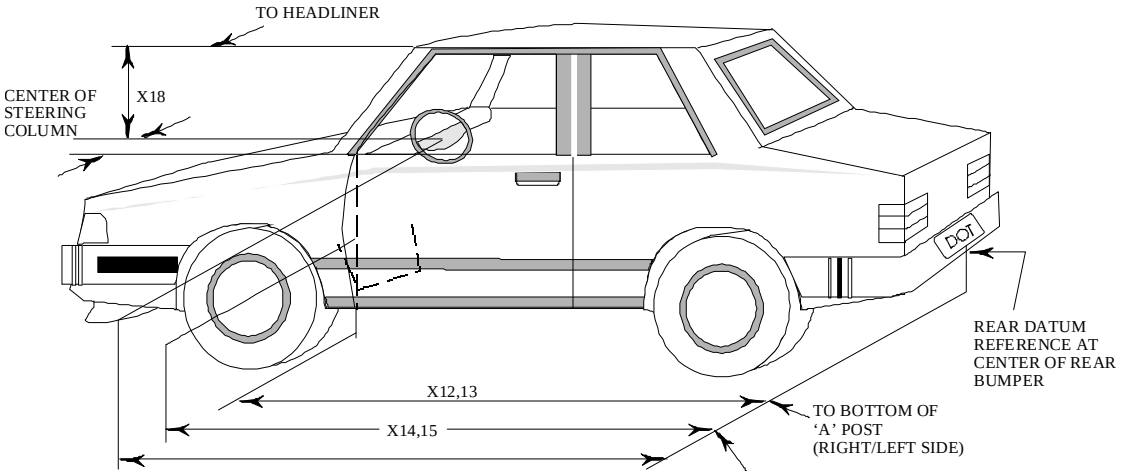
Note: Record spillage for whole minute intervals only as determined above.

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.: M80204 TEST DATE: November 20, 2007

VEHICLE MAKE/MODEL: 2008 Ford Focus Four-Door Sedan

No.		Pre-Test	Post-Test	Difference
X1	Total Length of Vehicle at Centerline	4438	3965	473
X2	Rear Surface of Vehicle to Front of Engine	4037	3720	317
X3	Rear Surface of Vehicle to Firewall	3467	3353	114
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3072	3070	2
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3070	3068	2
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3040	3039	1
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3040	3040	0
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2028	2024	4
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2026	2024	2
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2022	2015	7
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2019	2017	2
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3138	3136	2
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3150	3147	3
X14	Rear Surface of Vehicle to Firewall, Right Side	3636	3498	138
X15	Rear Surface of Vehicle to Firewall, Left Side	3642	3536	106
X16	Rear Surface of Vehicle to Steering Column	2619	2647	-28
X17	Center of Steering Column to "A" Post	273	264	9
X18	Center of Steering Column to Headliner	401	404	-3
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4404	3941	463
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4405	3899	506
X21	Length of Engine Block	394	394	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2789	2785	4
CD	Rear Surface of Vehicle to Center of Dash Panel	2802	2789	13
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2789	2781	8

All Dimensions in mm

DATA SHEET NO.10
VEHICLE MEASUREMENTS (cont.)

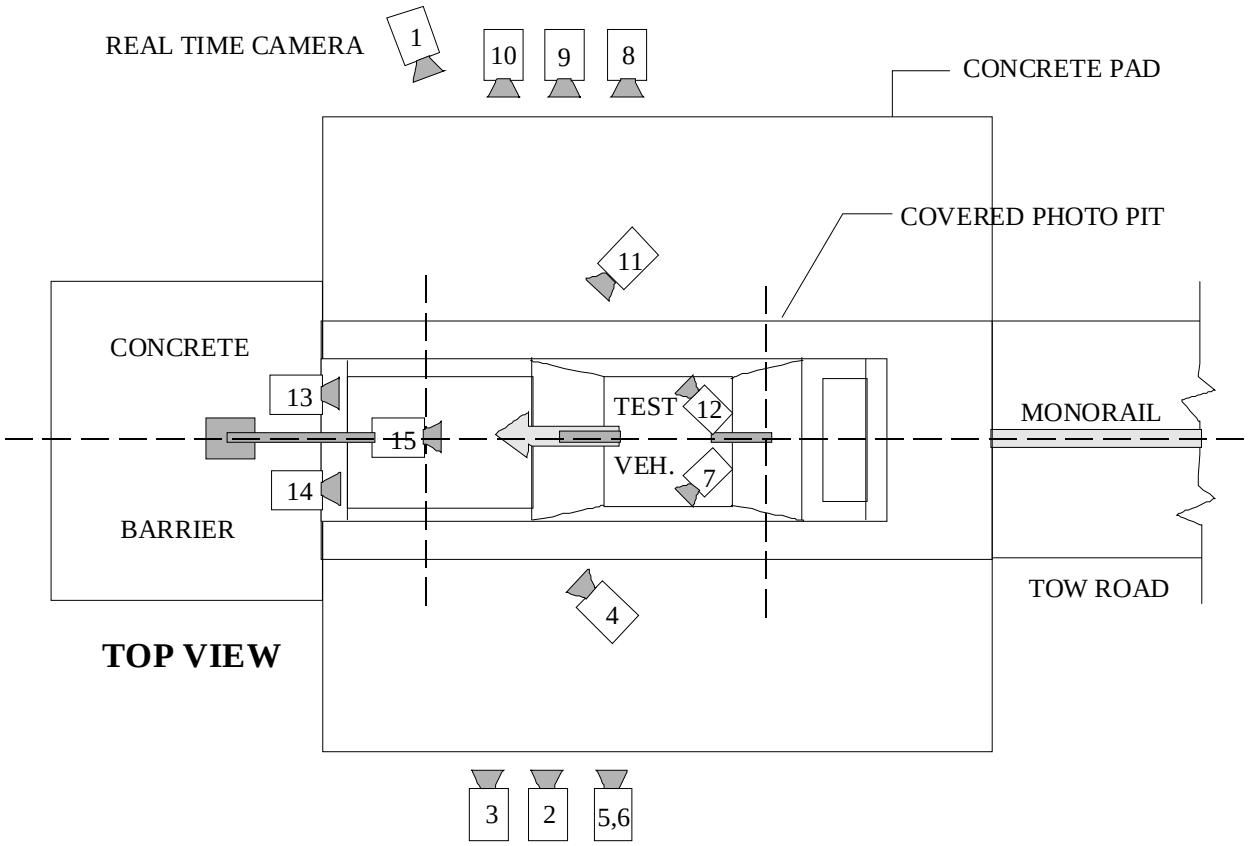
NHTSA TEST No.: M80204 TEST DATE: November 20, 2007

VEHICLE MAKE/MODEL: 2008 Ford Focus Four-Door Sedan

TARGET VEHICLE STRUCTURAL MEASUREMENTS

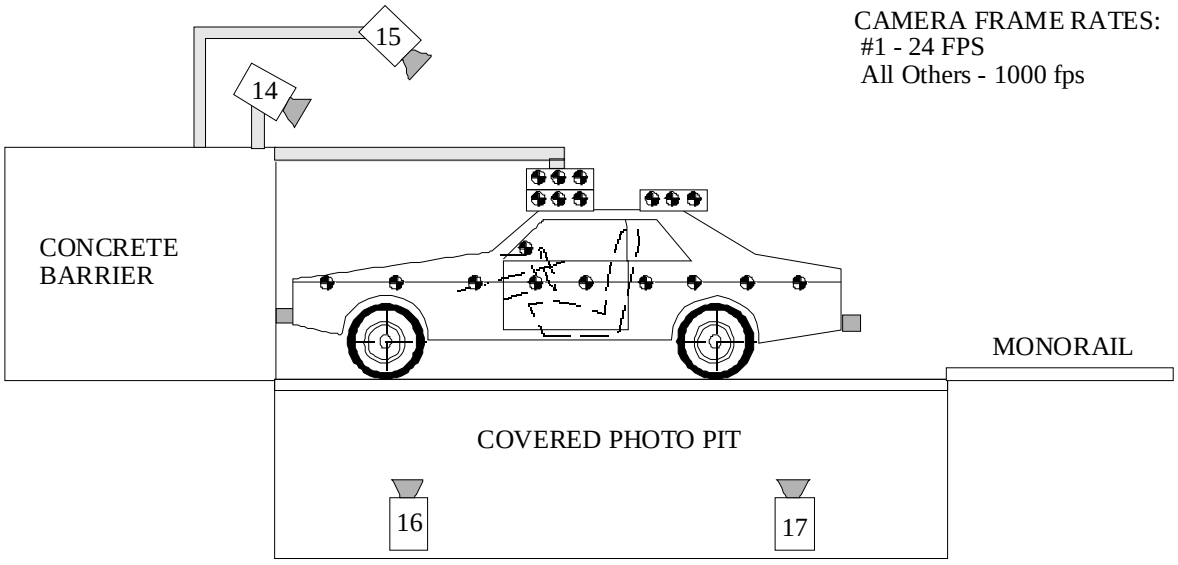
	Elements	Pre-Test (mm)
1	Total length	4438
2	Total Width	1681
3	Bumper Top Height	580
4	Bumper Bottom Height	405
5	Longitudinal Member Top Height	544
6	Distance Between Longitudinal Members	1038
7	Longitudinal Member Width	64
8	Engine top height	831
9	Engine bottom height	252
10	Engine and gearbox width	532
11	Front bumper-engine distance	401
12	Front shock absorber fixing height	873
13	Bonnet leading edge height	743
14	Front shock absorber fixing width	1092
15	Front bumper – front axle distance	883
16	Front axle – A pillar distance	1052
17	A-pillar – B pillar distance	468
18	B-pillar – rear axle distance	1091
19	B-pillar – C Pillar distance	970
20	Roof sill bottom height	1430
21	Roof sill top height	1466
22	Floor sill bottom height	222
23	Floor sill top height	301

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.: M80204 Vehicle: 2008 Ford Focus Four-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	4726	2110	920	-2	4292	28	1000
3	Left Side View	9040	1480	930	-2.5	8606	50	1000
4	Driver and Interior View	6686	3210	2010	-9	-	50	500
5	Steering Column (Bottom)	7770	2430	1210	-6	7336	24-70	1000
6	Steering Column (Top)	7770	2430	1820	-9	7336	28-70	1000
7	Left CRS Lateral View	-	-	-	-	-	-	-
8	Overall Right Side	6966	2540	910	-1.5	6532	24	500
9	Right Side View	9540	1790	1025	-0.5	9106	50	1000
10	Right Passenger View	7660	2190	1150	-2	7226	50	1000
11	Passenger and Interior View	7010	3410	2060	-9	-	50	500
12	Right CRS Lateral View	-	-	-	-	-	-	-
13	Passenger Front View	620	-92	1987	-35	-	24	500
14	Driver Front View	620	-92	1987	-35	-	24	500
15	Windshield View	0	-530	3374	-52	-	25	500
16	Pit View of Engine	0	615	-3048	90	-	12.5	500
17	Pit View of Fuel Tank	0	2610	-3048	90	-	12.5	500

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

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

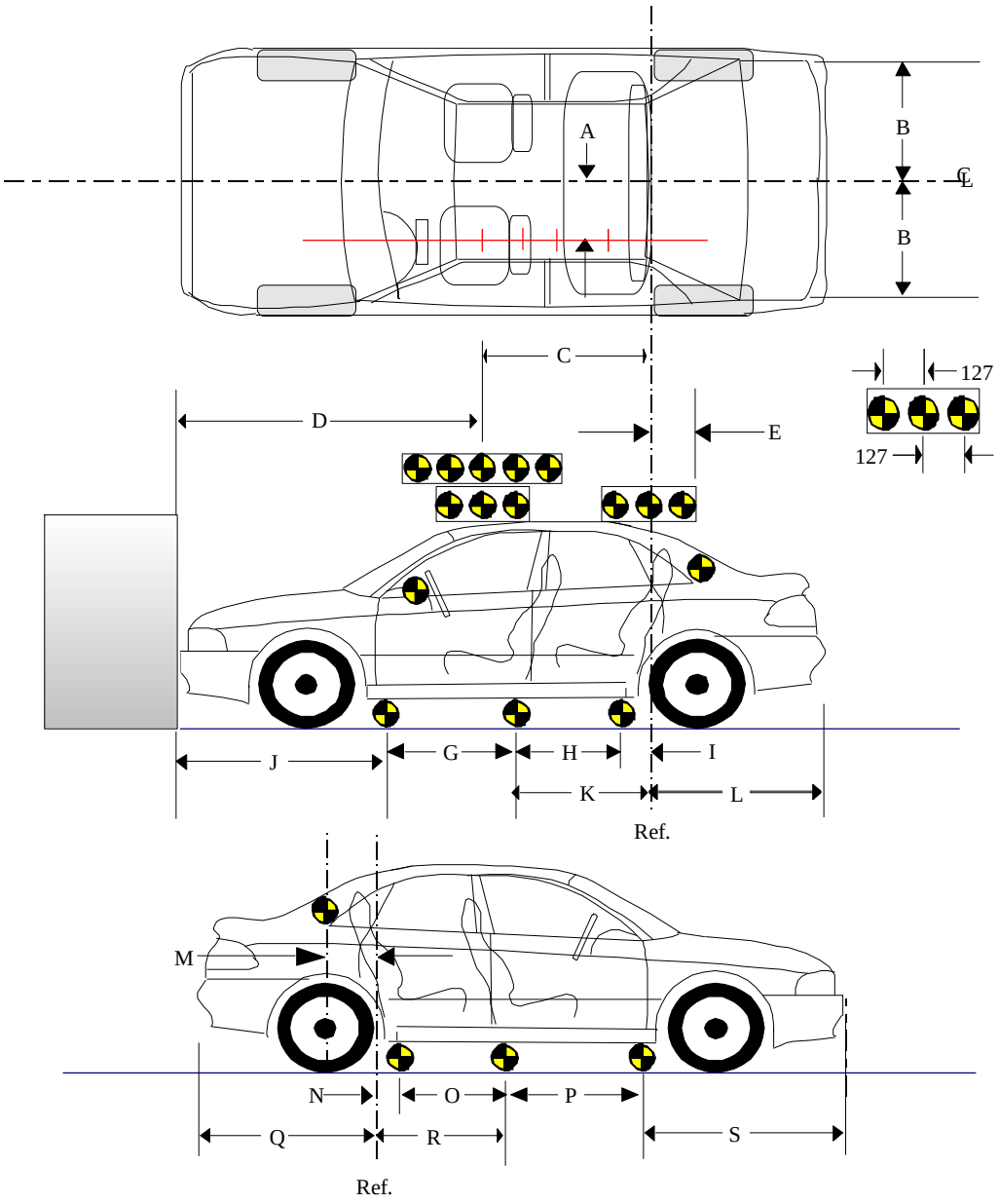
Z = film plane to ground

DATA SHEET NO. 12
VEHICLE REFERENCE PHOTO TARGET LOCATIONS

NHTSA Test No.: M80204 Vehicle: 2008 Ford Focus Four-Door Sedan

(Dimensions in millimeters)

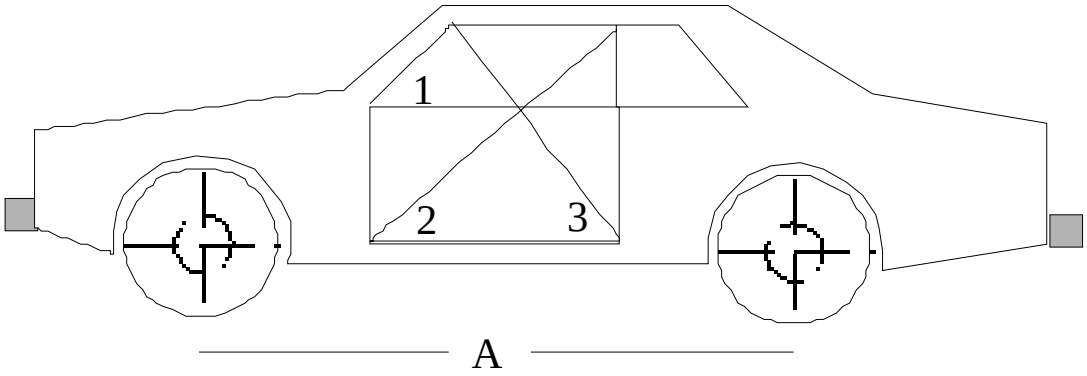
A	358
B	615
C	1220
D	1915
E	353
F	1455
G	896
H	895
I	95
J	1297
K	990
L	1255
M	353
N	95
O	899
P	895
Q	1258
R	994
S	1292



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

NHTSA Test No.: M80204 Vehicle: 2008 Ford Focus Four-Door Sedan

DOOR OPENING WIDTH AND WHEELBASE MEASUREMENTS



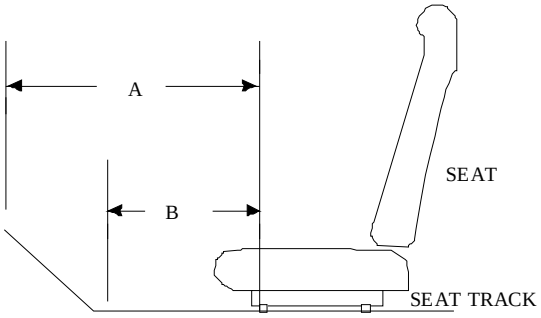
UNITS (mm)	LEFT			RIGHT		
MEASUREMENT	1	2	3	1	2	3
BEFORE TEST	887	1403	1002	887	1401	1006
AFTER TEST	883	1403	1008	885	1401	1008
DIFFERENCE	4	0	-6	2	0	-2

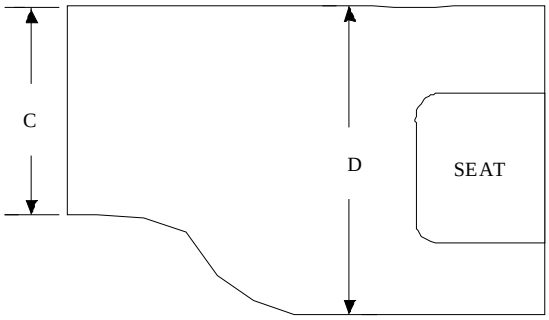
UNITS (mm)	A = WHEELBASE LEFT	A = WHEELBASE RIGHT
BEFORE TEST	2610	2610
AFTER TEST	2540	2540
DIFFERENCE	70	70

DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont)

NHTSA Test No.: M80204 Vehicle: 2008 Ford Focus Four-Door Sedan

STATIC FOOTWELL DEFORMATION





DRIVER

Measurement	Pre-Test	Post-Test	Difference
A	665	610	55
B	460	452	8
C	466	457	9
D	467	466	1

PASSENGER

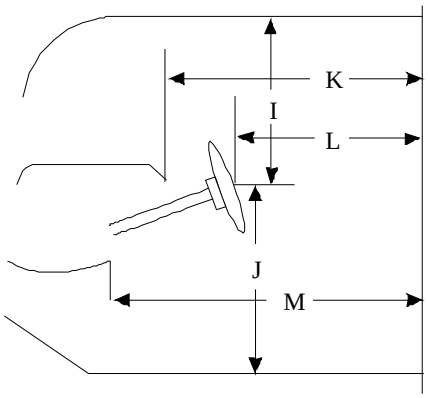
Measurement	Pre-Test	Post-Test	Difference
A	623	564	59
B	453	459	-6
C	435	427	8
D	471	462	9

Units = mm

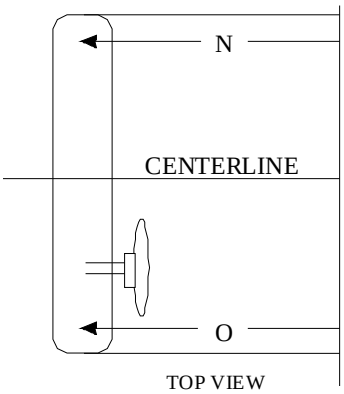
DATA SHEET NO.13
VEHICLE INTRUSION MEASUREMENTS (cont.)

NHTSA Test No.: M80204 Vehicle: 2008 Ford Focus Four-Door Sedan

STATIC PASSENGER COMPARTMENT INTRUSION

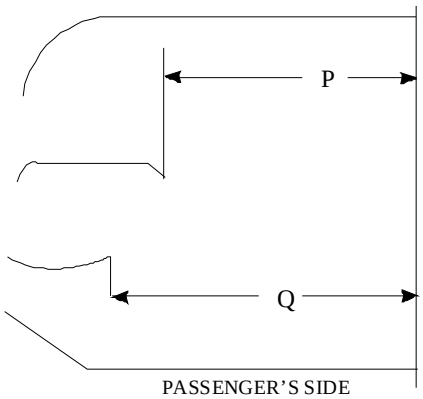


DRIVER'S SIDE



TOP VIEW

MEASUREMENTS
FROM C-PILLAR
BELT ANCHORAGE



PASSENGER'S SIDE

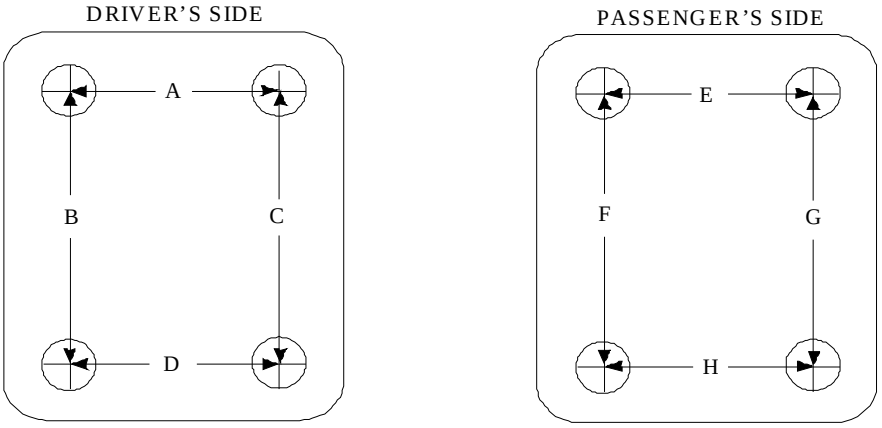
Measurement	Pre-Test	Post-Test	Difference
I	401	404	-3
J	688	718	-30
K	693	680	13
L	526	555	-29
M	757	737	20
N	697	692	5
O	696	689	7
P = K (PASS.)	715	698	17
Q = M (PASS.)	718	734	-16

Units = mm

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

NHTSA Test No.: M80204 Vehicle: 2008 Ford Focus Four-Door Sedan

FLOORBOARD DEFORMATION



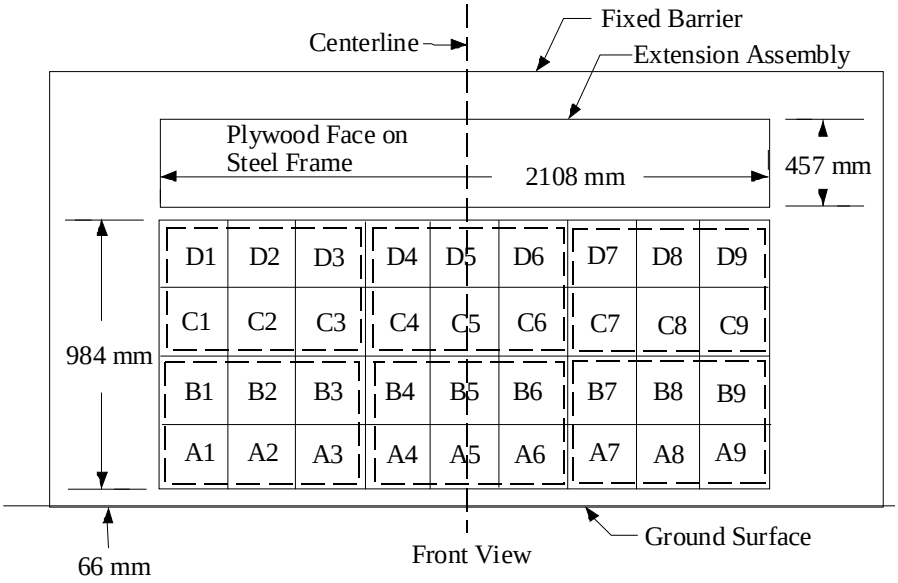
TOP VIEW THROUGH FLOOR PAN

Measurement	Pre-Test	Post-Test	Difference
A	466	457	9
B	325	305	20
C	303	293	10
D	467	466	0
E	435	427	7
F	385	380	6
G	380	359	20
H	471	462	9

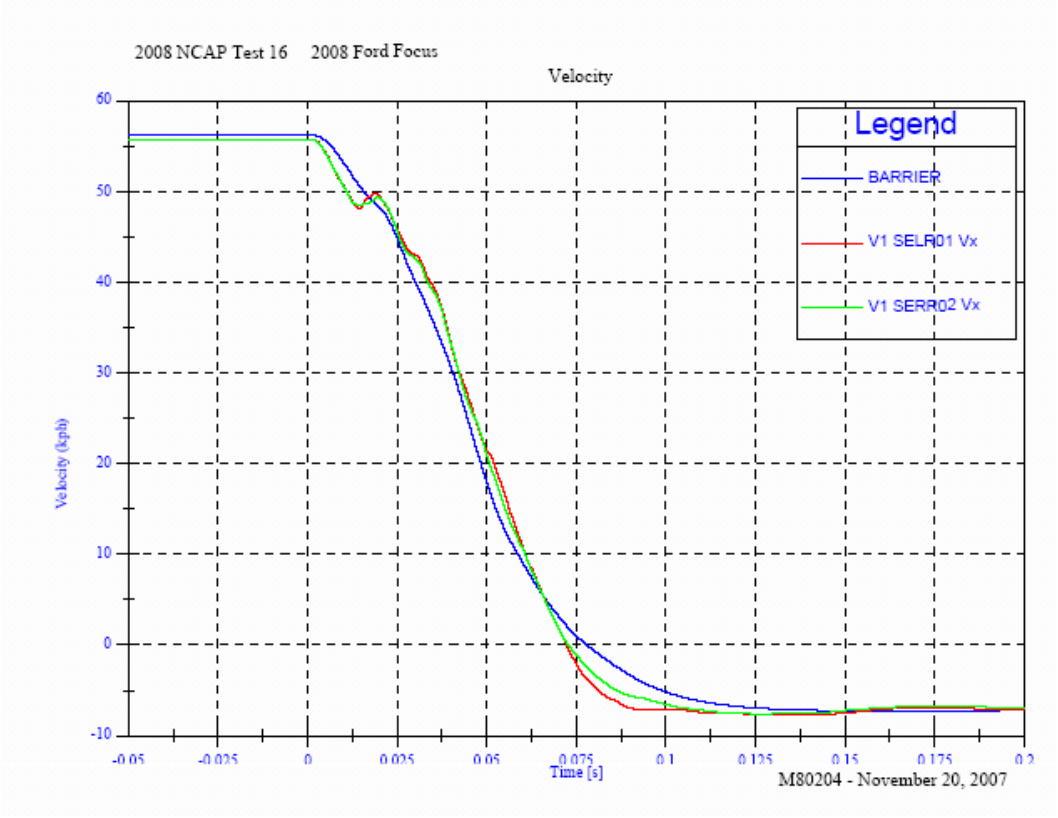
Units = mm

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: Ford Focus Four-Door Sedan

NHTSA Test No.: M80204 VIN: 1FAHP34N38W124106

Model Year: 2008 Build Date: 10/07 Test Date: November 20, 2007

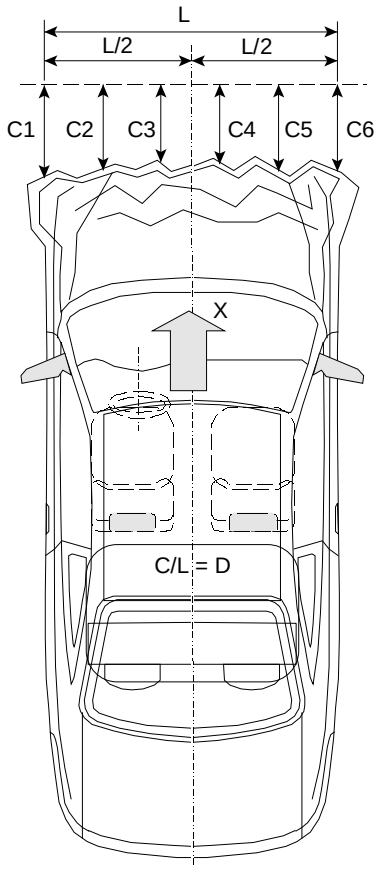
Vehicle Size Category: Compact Test Weight: 1398.0 kg

Vehicle Wheelbase: 2610 mm; Front Overhang: 882 mm; Overall Width: 1681 mm

Collision Deformation Classification (CDC) Code: 12FDEW3

Crush Depth Dimensions

	PRE (mm)	POST (mm)	DIFF (mm)
C1 =	4393	3870	523
C2 =	4427	3897	530
C3 =	4434	3903	531
C4 =	4433	3911	522
C5 =	4426	3914	512
C6 =	4393	3910	483



Midpoint of Damage: D = Vehicle Centerline (Longitudinal)

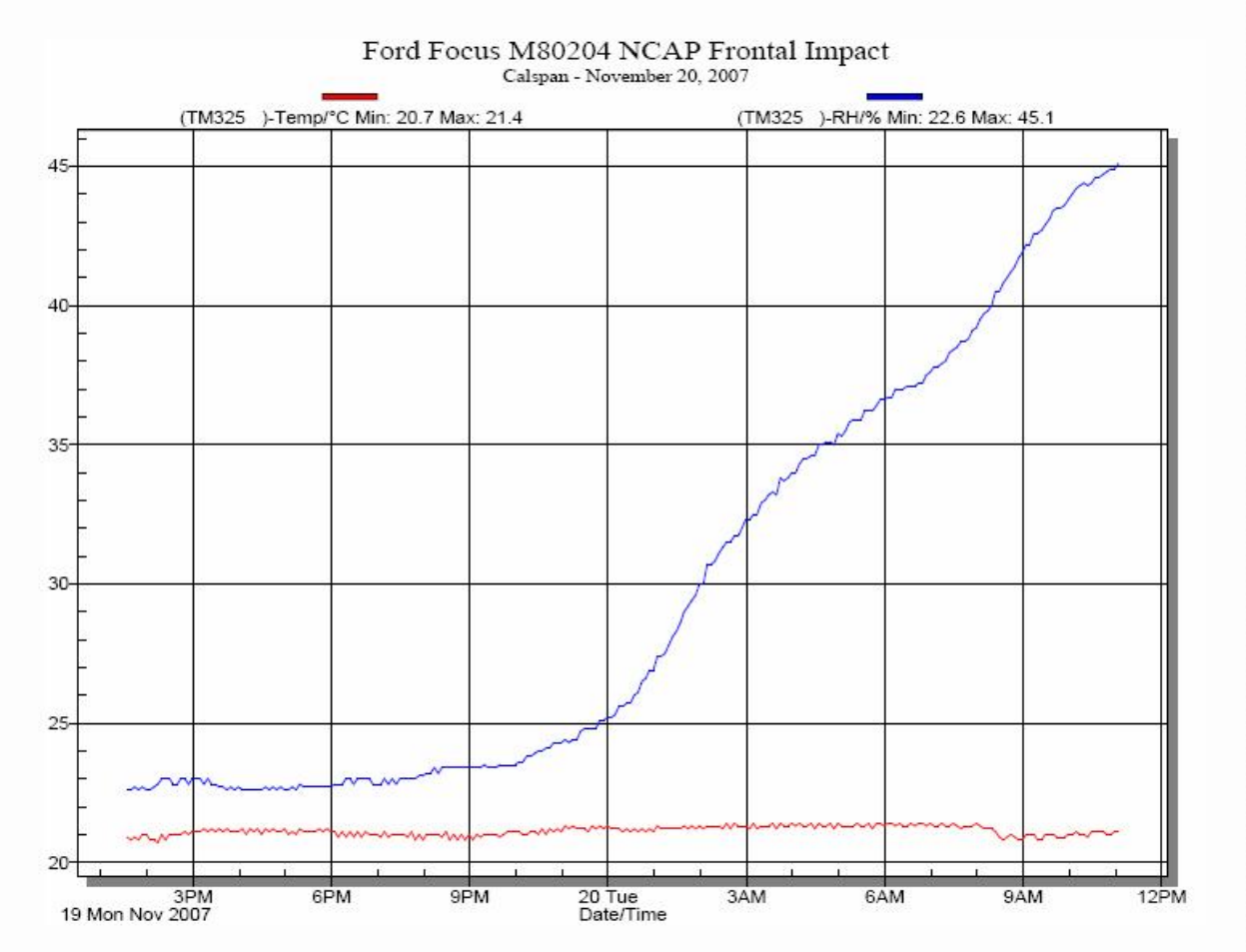
Length of Damaged Region: L1= 1075 mm

L2= 537.5 mm

L5= 215 mm

DATA SHEET NO.16
VEHICLE AND DUMMY TEMPERATURE STABILIZATION CHART

NHTSA Test No.: M80204 Vehicle: 2008 Ford Focus Four-Door Sedan



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

Figure A-1: Load Cell Locations

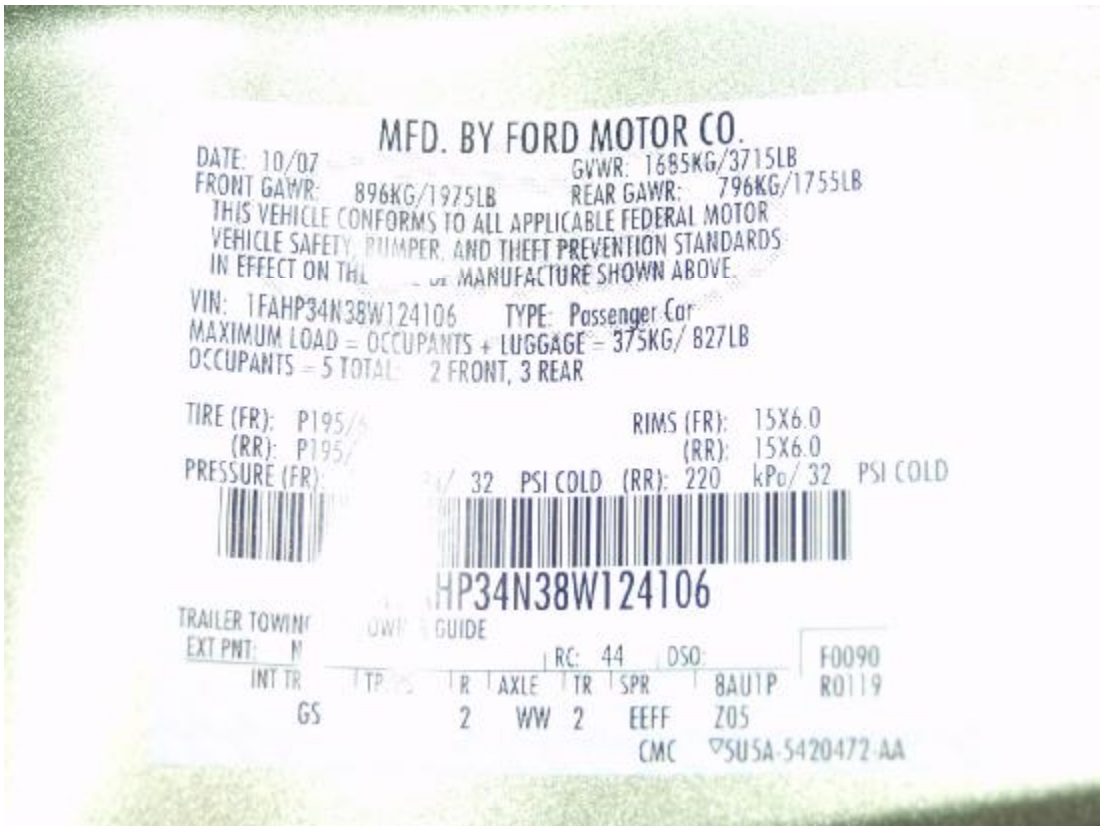


Figure A-2: Vehicle Certification Placard

Figure A-3: Vehicle Tire Placard

Figure A-4: Right Front, As Received

Figure A-5: Left Rear, As Received

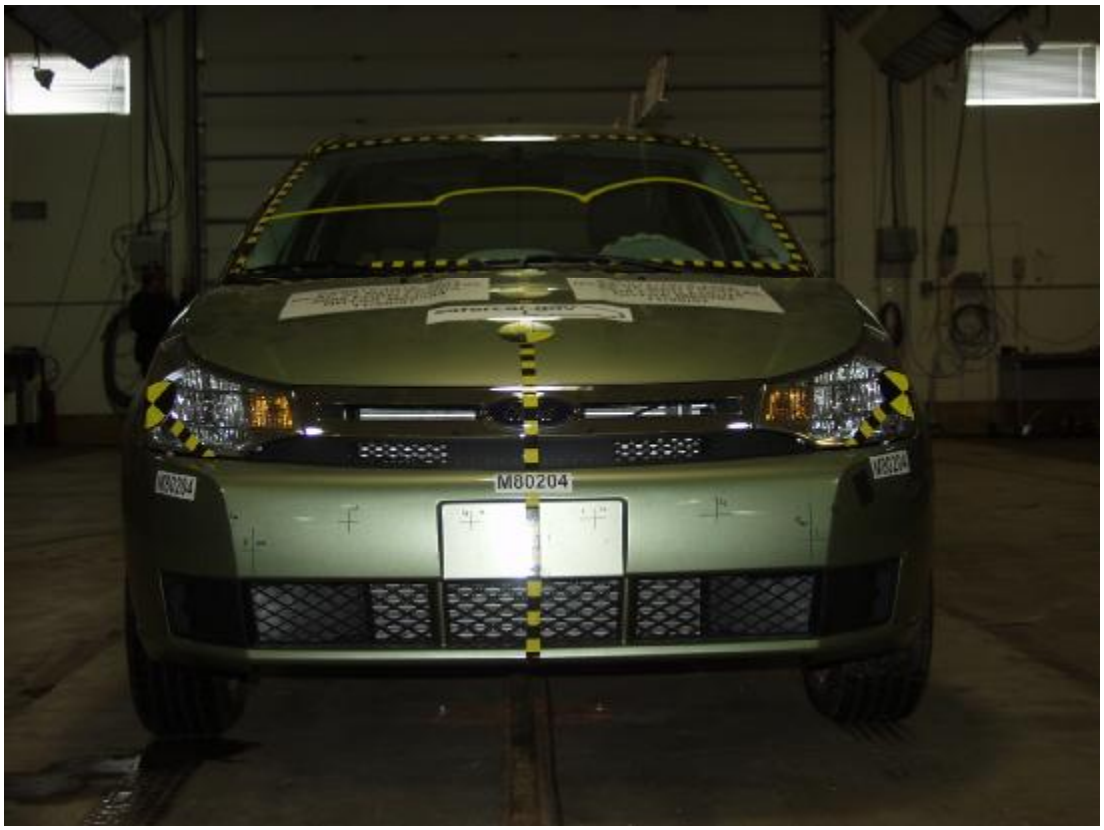


Figure A-6: Pre-Test Front View

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

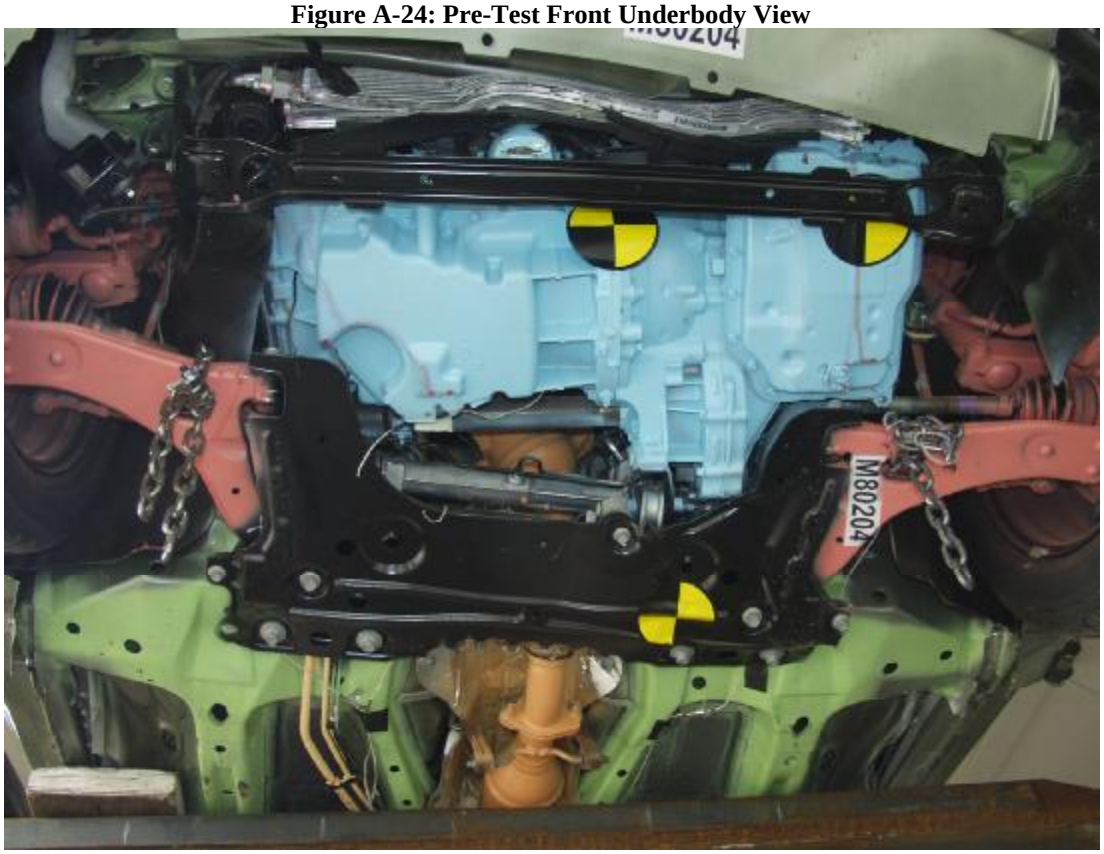


Figure A-25: Post-Test Front Underbody View

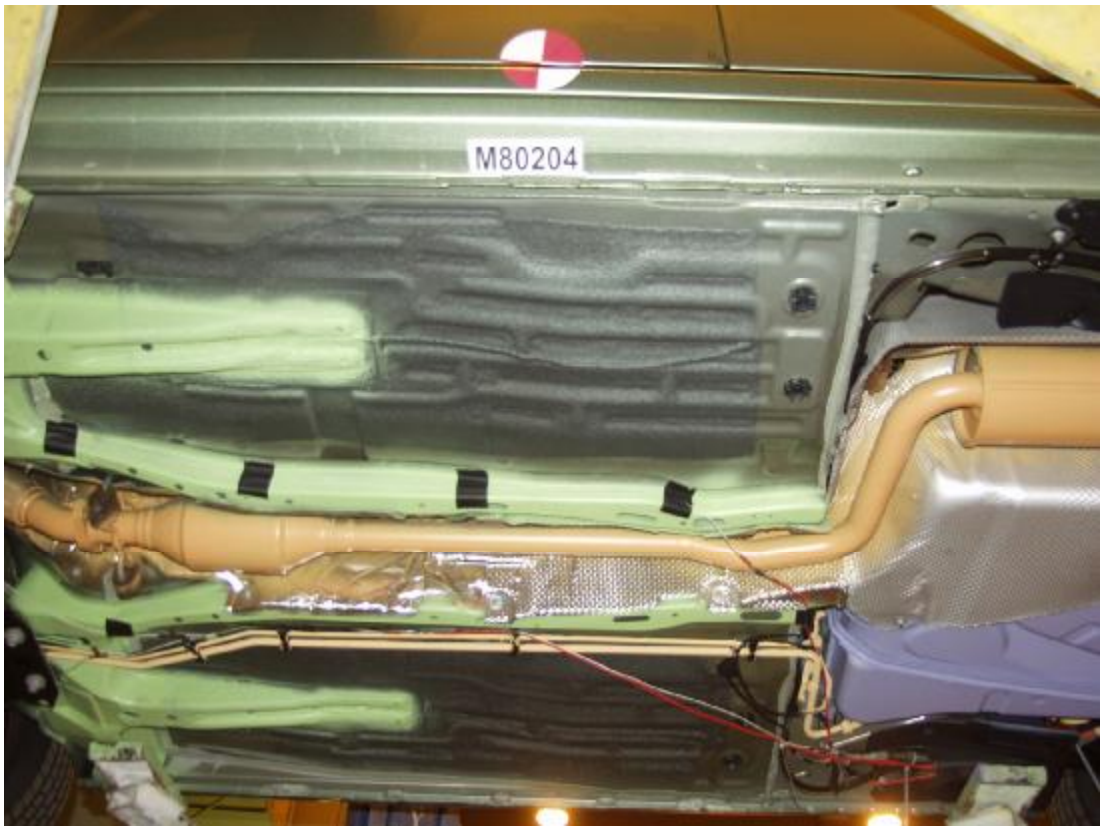


Figure A-26: Pre-Test Mid Underbody View

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

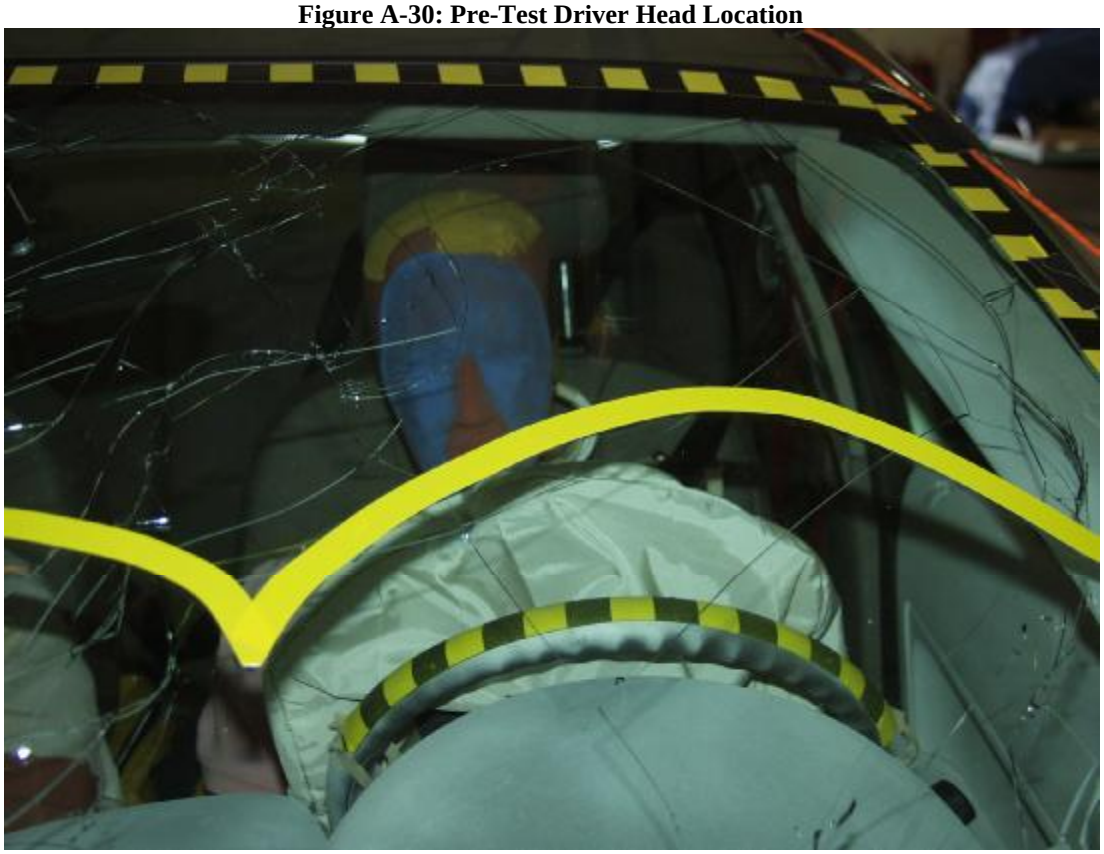


Figure A-31: Post-Test Driver Head Location

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

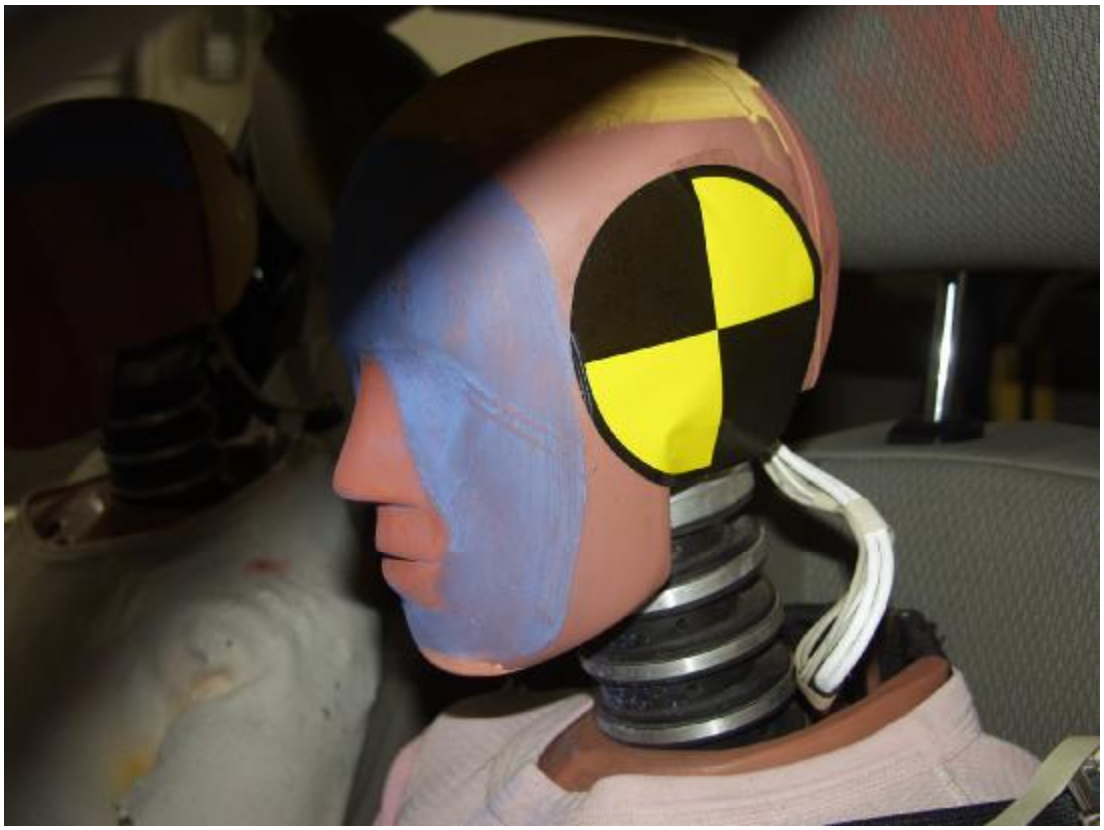


Figure A-42: Post-Test Driver Head View

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

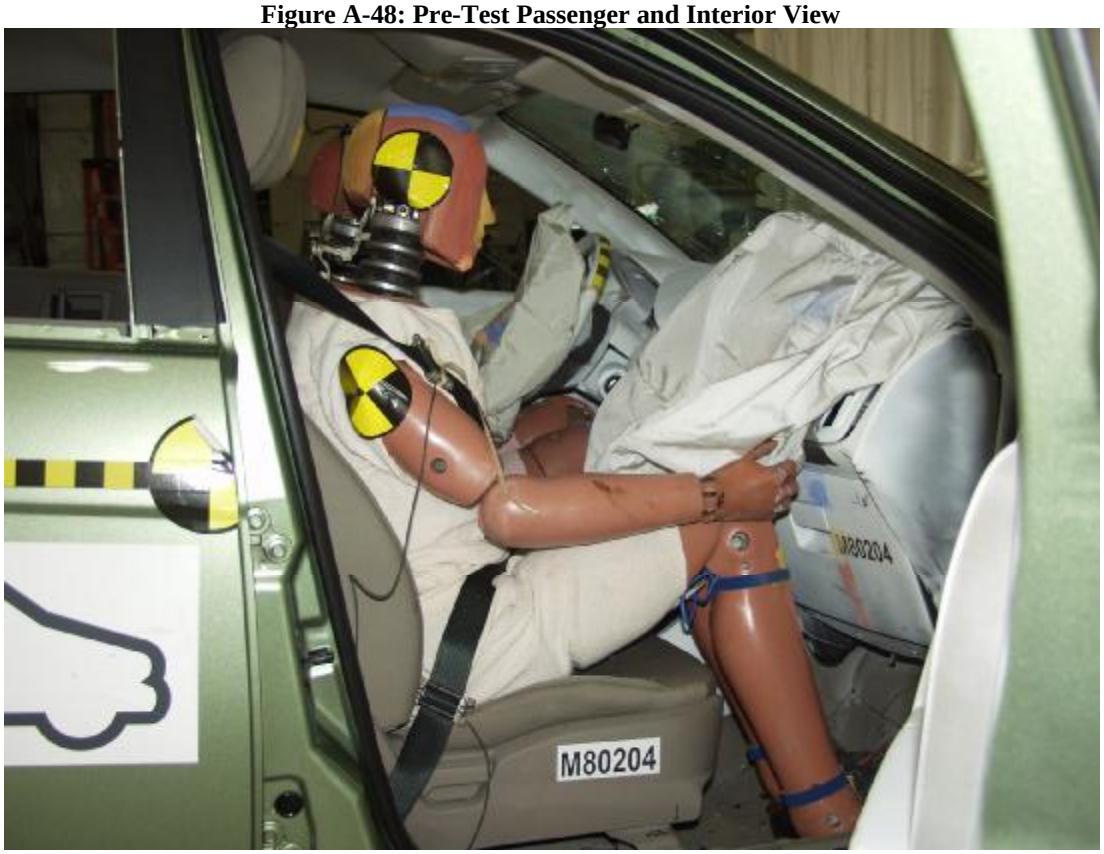


Figure A-49: Post-Test Passenger and Interior View

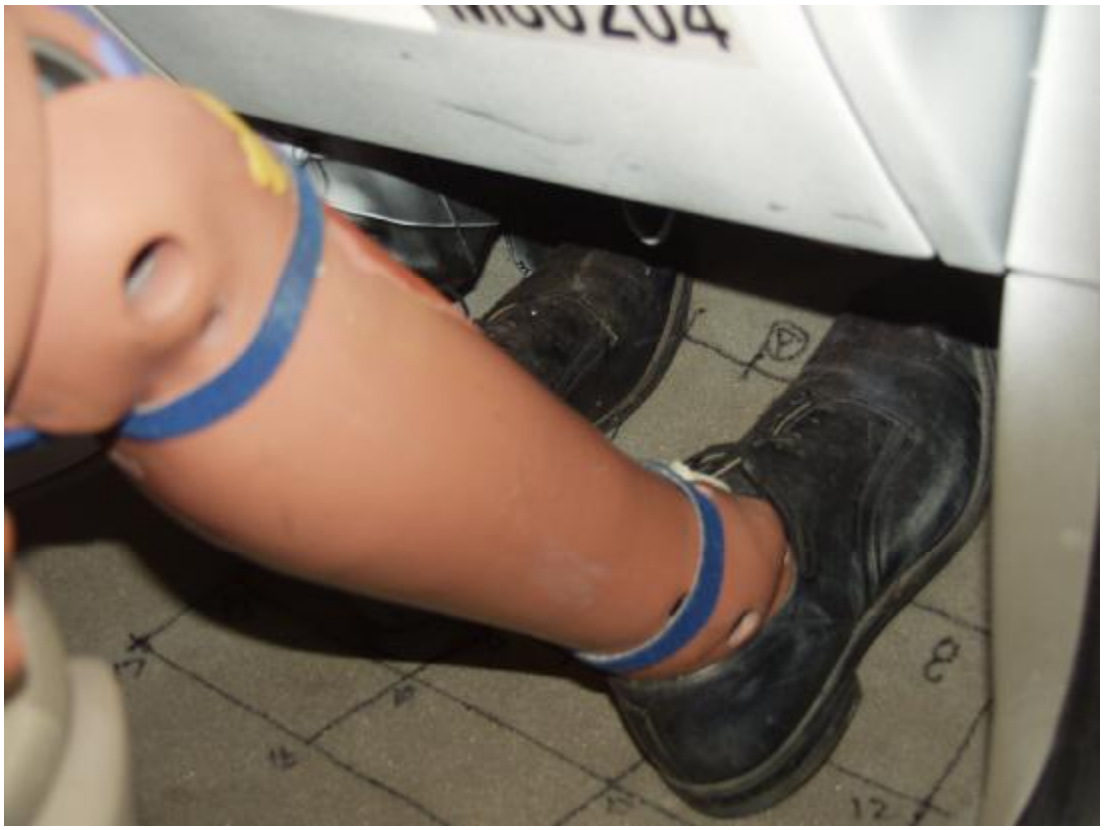


Figure A-50: Pre-Test Passenger Feet View

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

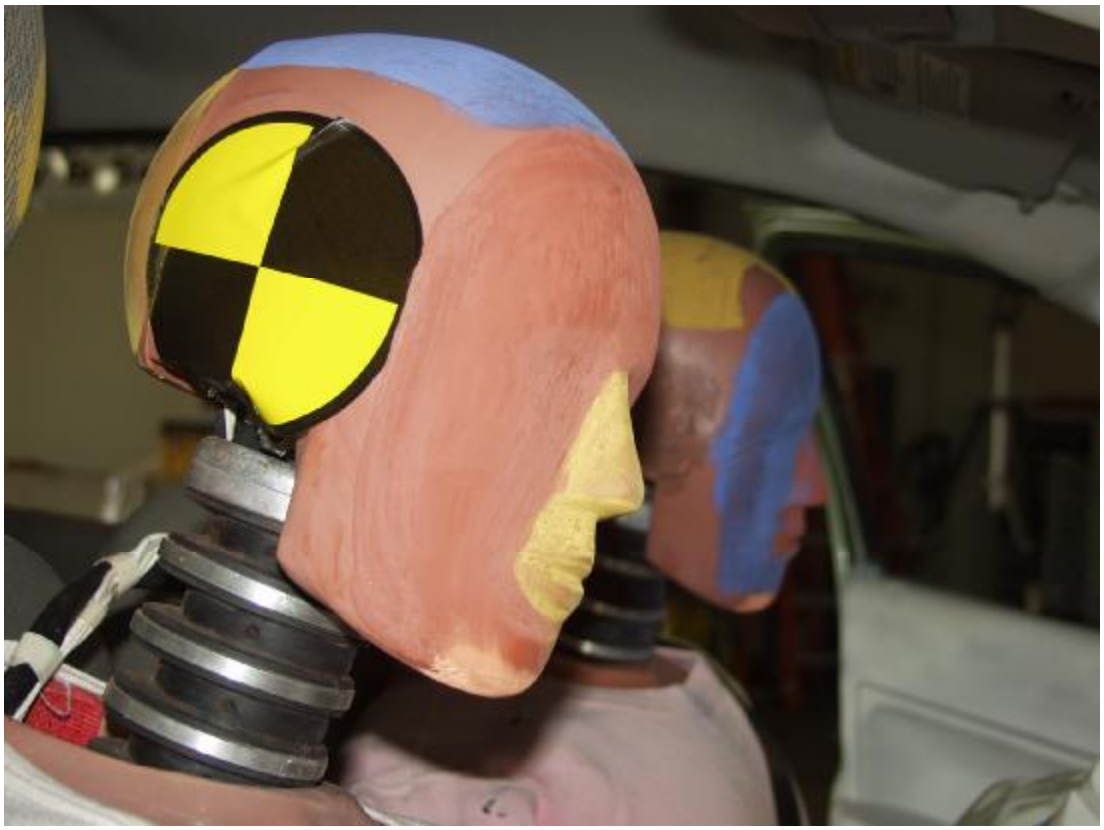


Figure A-56: Post-Test Passenger Head View

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.: M80204

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 CG Ax	V1P1 Lap Belt Load
V1P1 Head CG Ay	V1P1 Shoulder Belt Load
V1P1 Head CG Az	V1P2 Lap Belt Load
V1P1 Head CG Red Ax	V1P2 Shoulder Belt Load
V1P1 Head CG Red Ay	V1 Left Rear #1x
V1P1 Head CG Red Az	V1 Right Rear #2x
V1P1 Upper Neck Fx	V1 Engine Top #3x
V1P1 Upper Neck Fy	V1 Engine Bottom #4x
V1P1 Upper Neck Fz	V1 Right Caliper #5x
V1P1 Upper Neck Mx	V1 Left Caliper #7x
V1P1 Upper Neck My	V1 Left Rear #8z
V1P1 Upper Neck Mz	V1 Right Rear #9z
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 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
V1P2 Head CG y	Data is not accurate after 158 ms
V1P2 Chest Red y	Data spike at 158 ms
V1P2 Chest Red z	Data spike at 158 ms
V1P2 Right Foot Fore z	Did not record
V1P2 Left Lower Tibia Mx	Data is Questionable
V1 Engine Bottom #4x	Cut wire at 38 ms
V1 Left Caliper #7x	Cut wire at 47 ms

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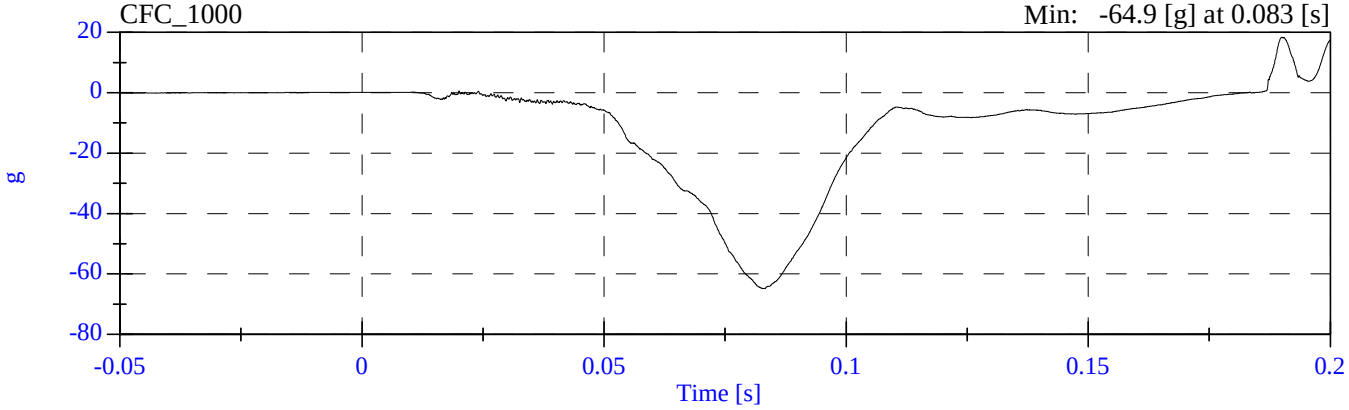
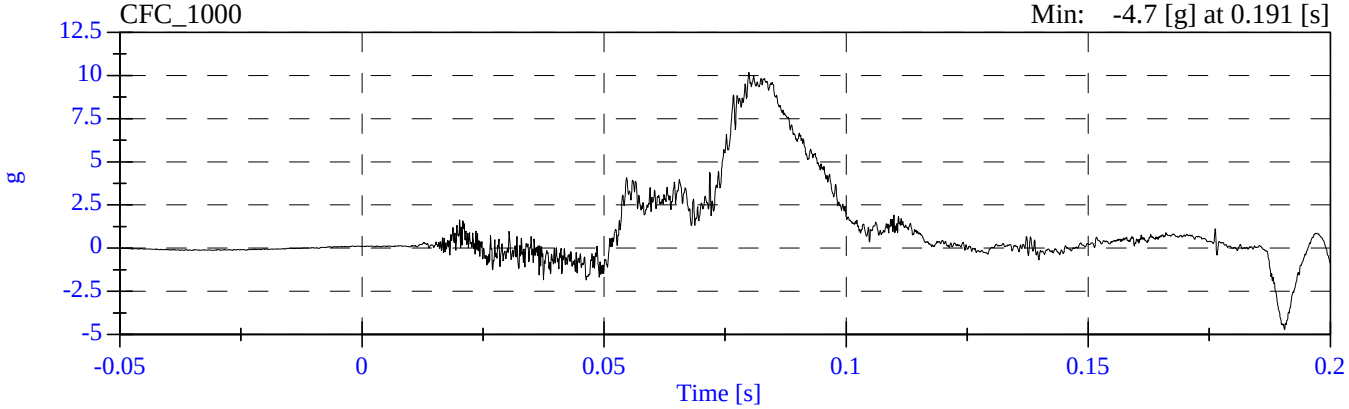
M80204 - November 20, 2007

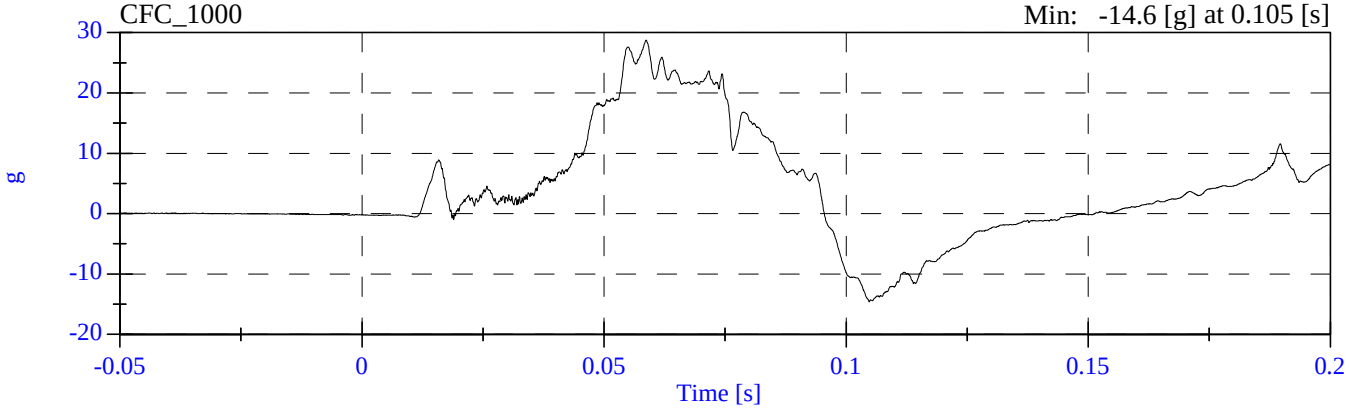
V1P1 Head CG x
CFC_1000
Max: 18.3 [g] at 0.190 [s]
Min: -64.9 [g] at 0.083 [s]



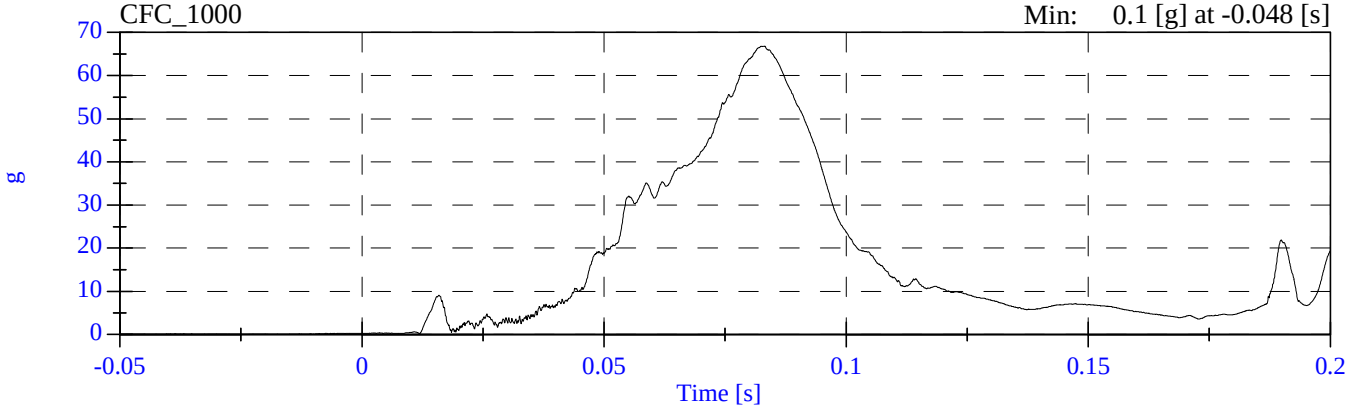
V1P1 Head CG y
CFC_1000
Max: 10.2 [g] at 0.080 [s]
Min: -4.7 [g] at 0.191 [s]



V1P1 Head CG z
CFC_1000
Max: 28.7 [g] at 0.059 [s]
Min: -14.6 [g] at 0.105 [s]



V1P1 Head CG Resultant
CFC_1000
Max: 66.8 [g] at 0.083 [s]
Min: 0.1 [g] at -0.048 [s]



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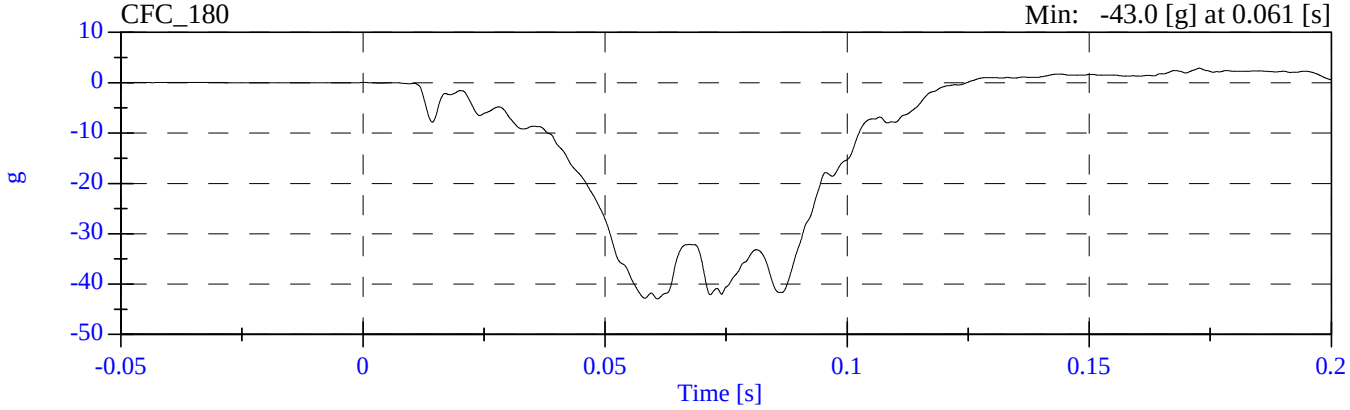
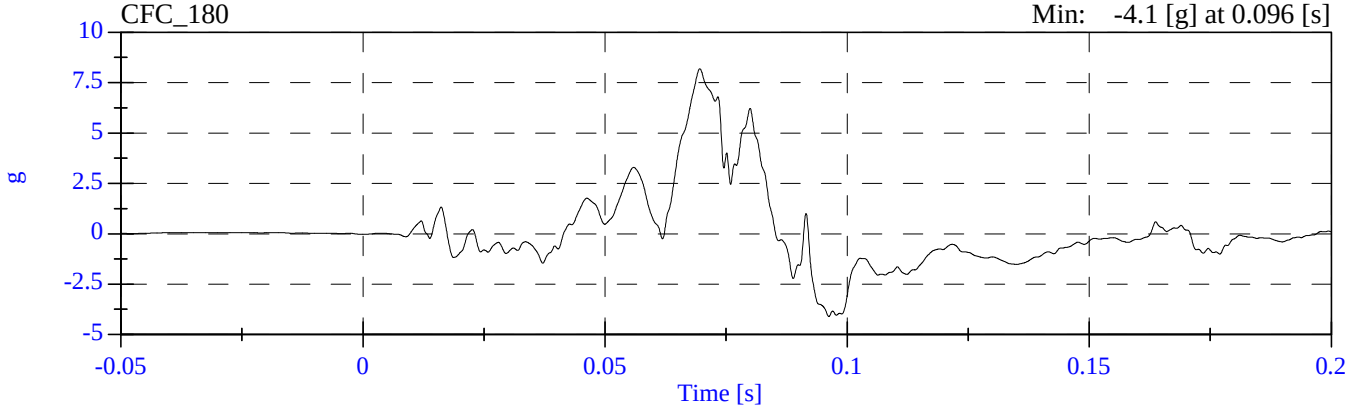
M80204 - November 20, 2007

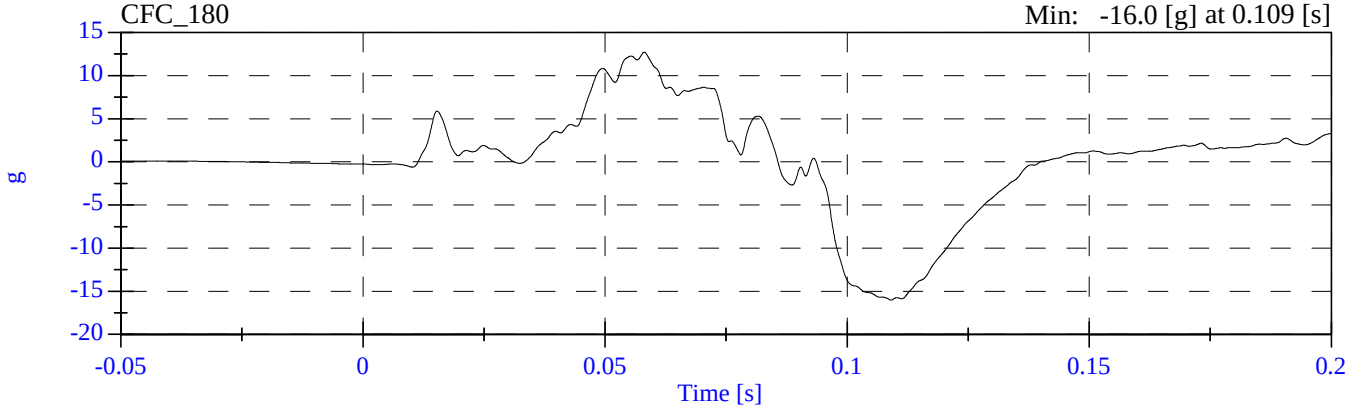
V1P1 Chest x Max: 2.9 [g] at 0.173 [s]
CFC_180 Min: -43.0 [g] at 0.061 [s]



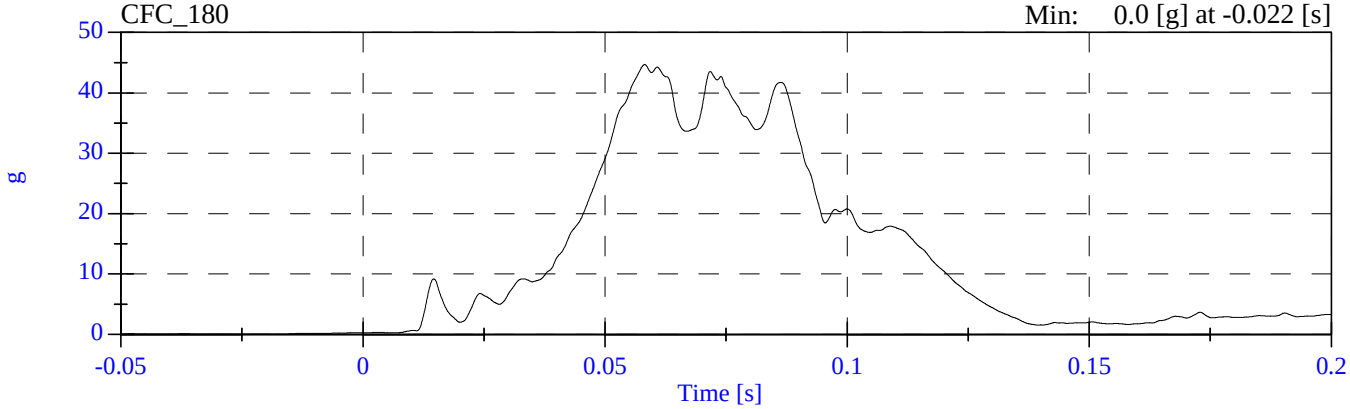
V1P1 Chest y Max: 8.2 [g] at 0.070 [s]
CFC_180 Min: -4.1 [g] at 0.096 [s]



V1P1 Chest z Max: 12.7 [g] at 0.058 [s]
CFC_180 Min: -16.0 [g] at 0.109 [s]



V1P1 Chest Resultant Max: 44.7 [g] at 0.058 [s]
CFC_180 Min: 0.0 [g] at -0.022 [s]



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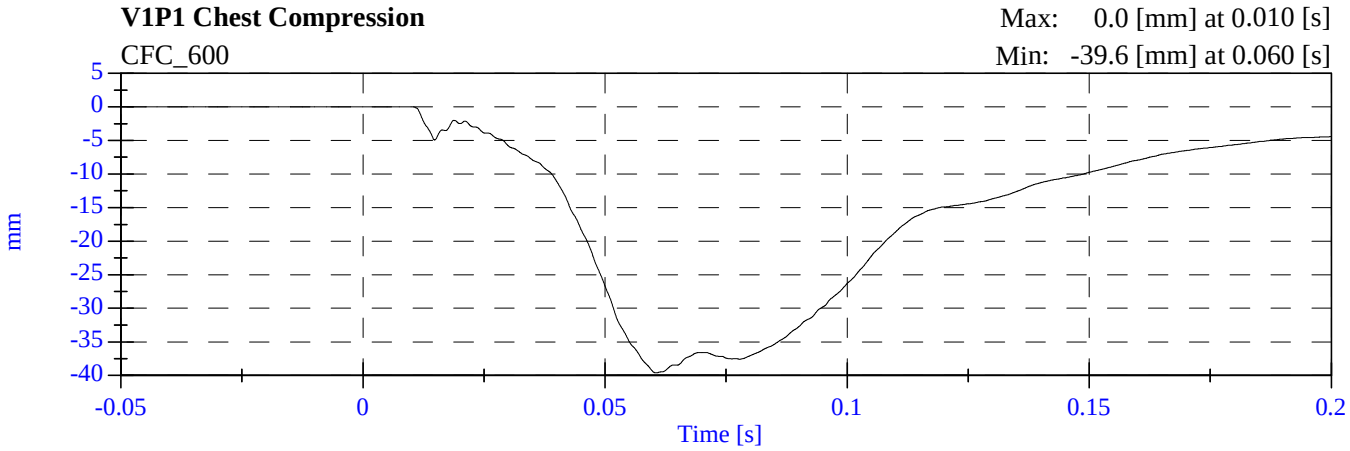

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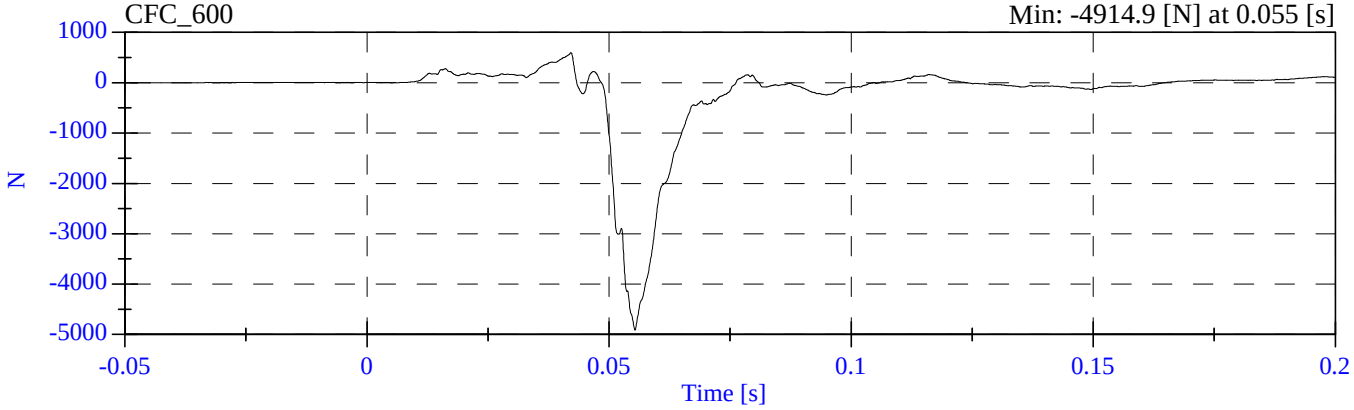
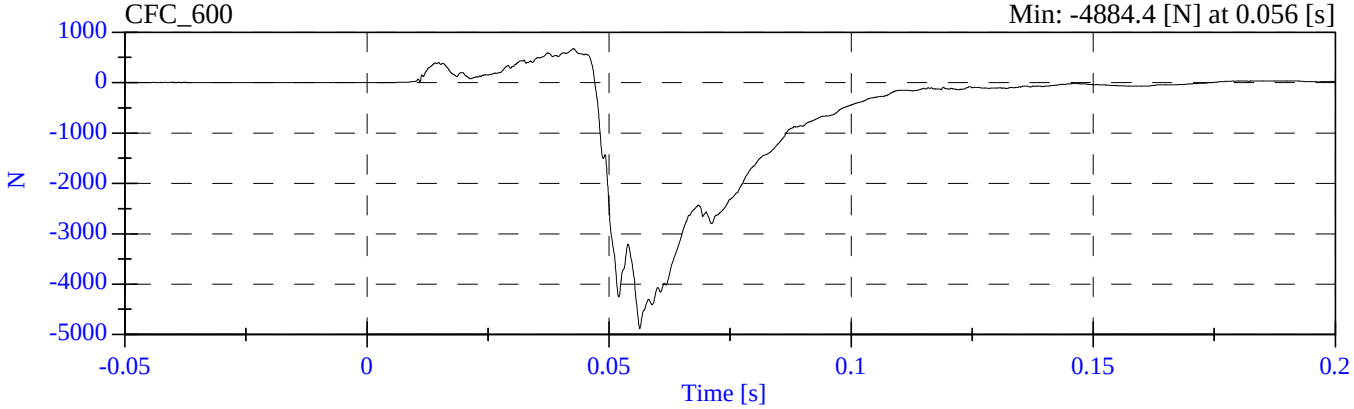
V1P1 Left Femur
CFC_600
Max: 592.5 [N] at 0.042 [s]
Min: -4914.9 [N] at 0.055 [s]



V1P1 Right Femur
CFC_600
Max: 674.3 [N] at 0.043 [s]
Min: -4884.4 [N] at 0.056 [s]



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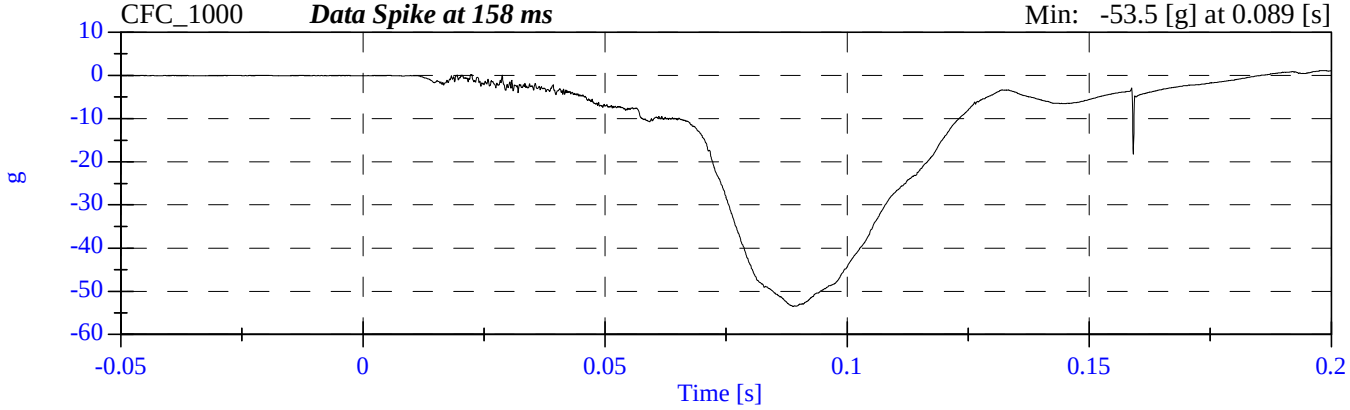
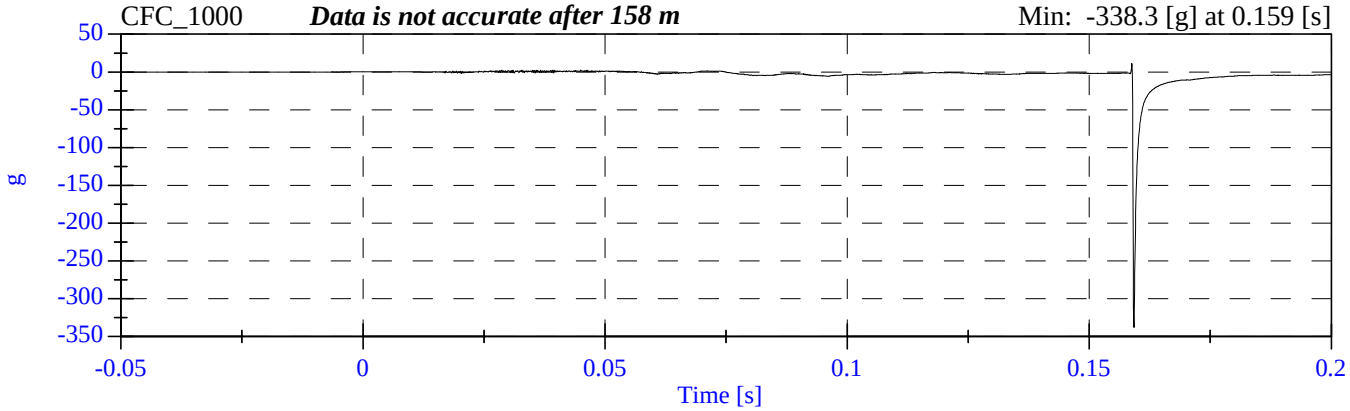
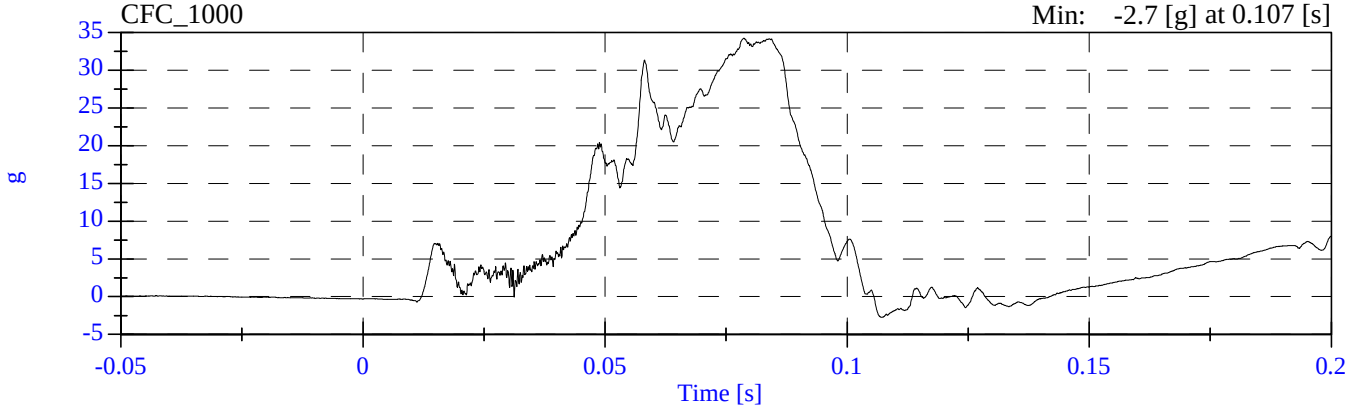
V1P2 Head CG x
CFC_1000 ***Data Spike at 158 ms***
Max: 1.2 [g] at 0.198 [s]
Min: -53.5 [g] at 0.089 [s]



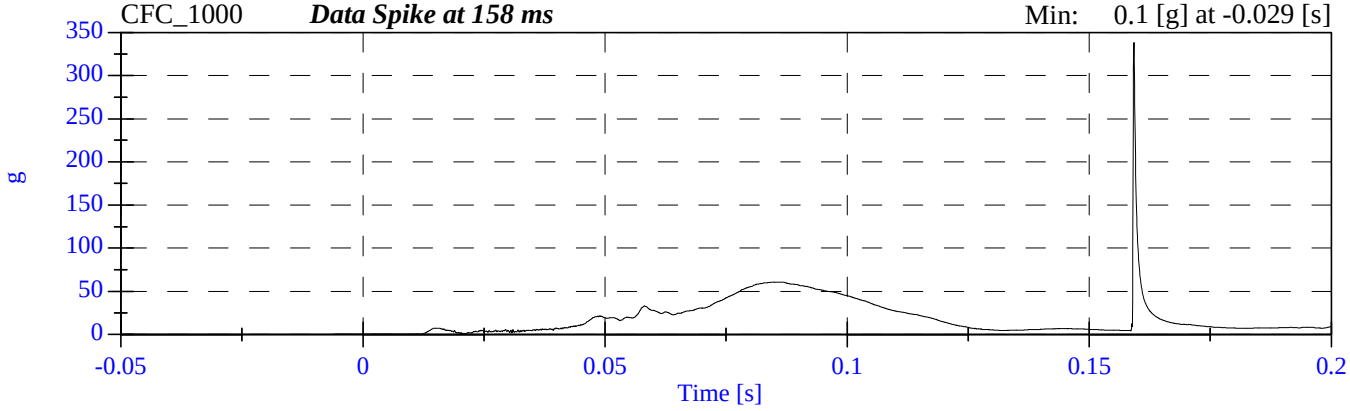
V1P2 Head CG y
CFC_1000 ***Data is not accurate after 158 m***
Max: 11.6 [g] at 0.159 [s]
Min: -338.3 [g] at 0.159 [s]



V1P2 Head CG z
CFC_1000
Max: 34.3 [g] at 0.079 [s]
Min: -2.7 [g] at 0.107 [s]



V1P2 Head CG Resultant
CFC_1000 ***Data Spike at 158 ms***
Max: 338.6 [g] at 0.159 [s]
Min: 0.1 [g] at -0.029 [s]



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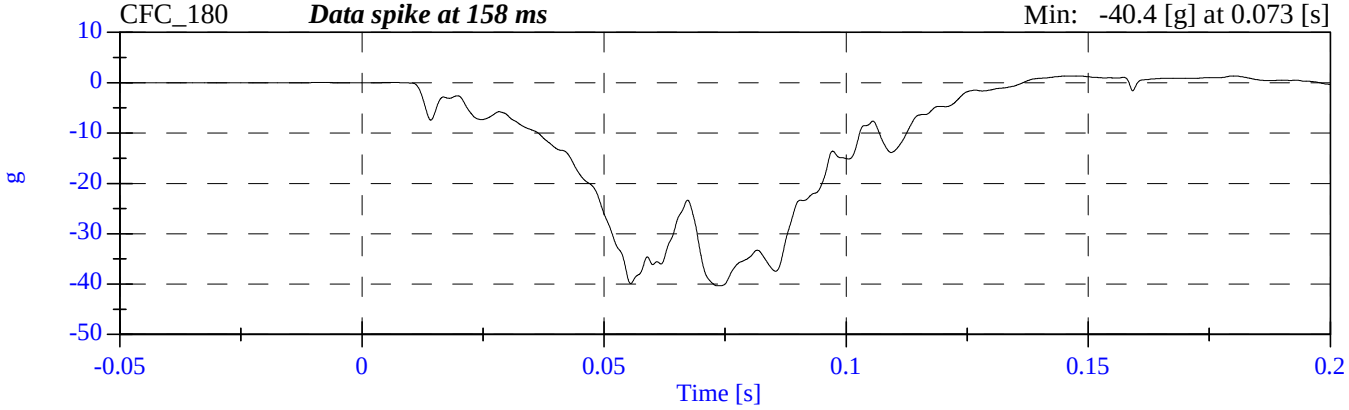
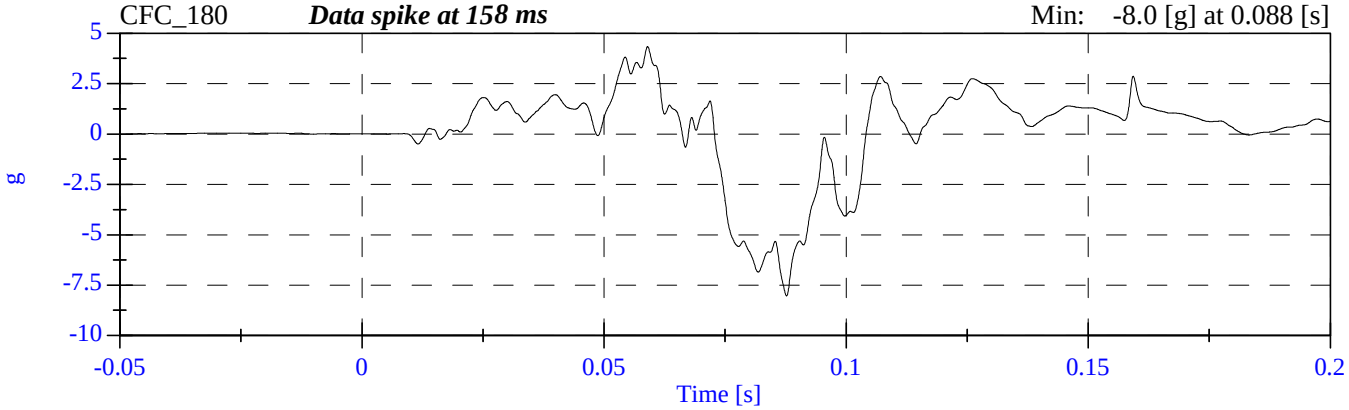
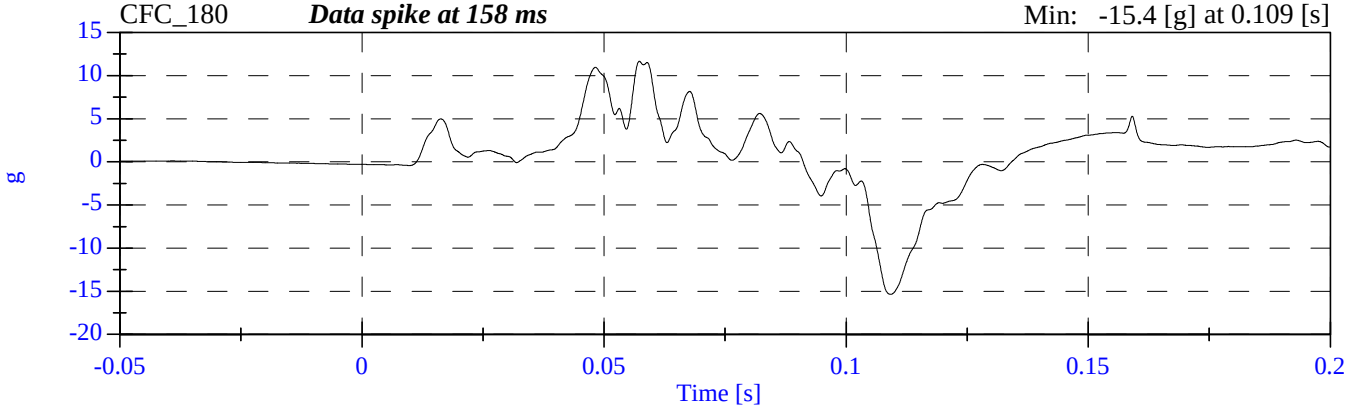
V1P2 Chest x Max: 1.3 [g] at 0.146 [s]
CFC_180 ***Data spike at 158 ms*** Min: -40.4 [g] at 0.073 [s]



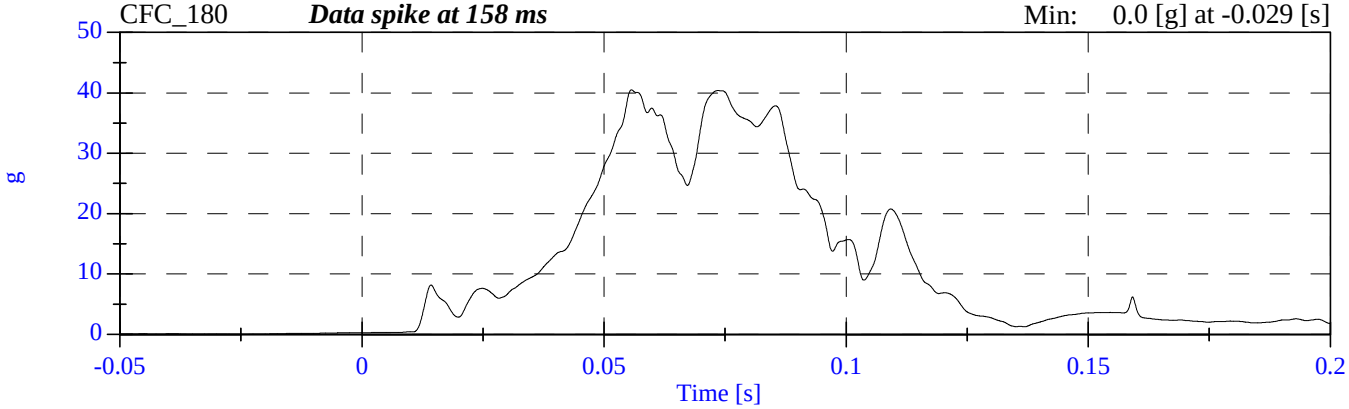
V1P2 Chest y Max: 4.3 [g] at 0.059 [s]
CFC_180 ***Data spike at 158 ms*** Min: -8.0 [g] at 0.088 [s]



V1P2 Chest z Max: 11.7 [g] at 0.057 [s]
CFC_180 ***Data spike at 158 ms*** Min: -15.4 [g] at 0.109 [s]



V1P2 Chest Resultant Max: 40.5 [g] at 0.056 [s]
CFC_180 ***Data spike at 158 ms*** Min: 0.0 [g] at -0.029 [s]



2008 NCAP Test 16 2008 Ford Focus
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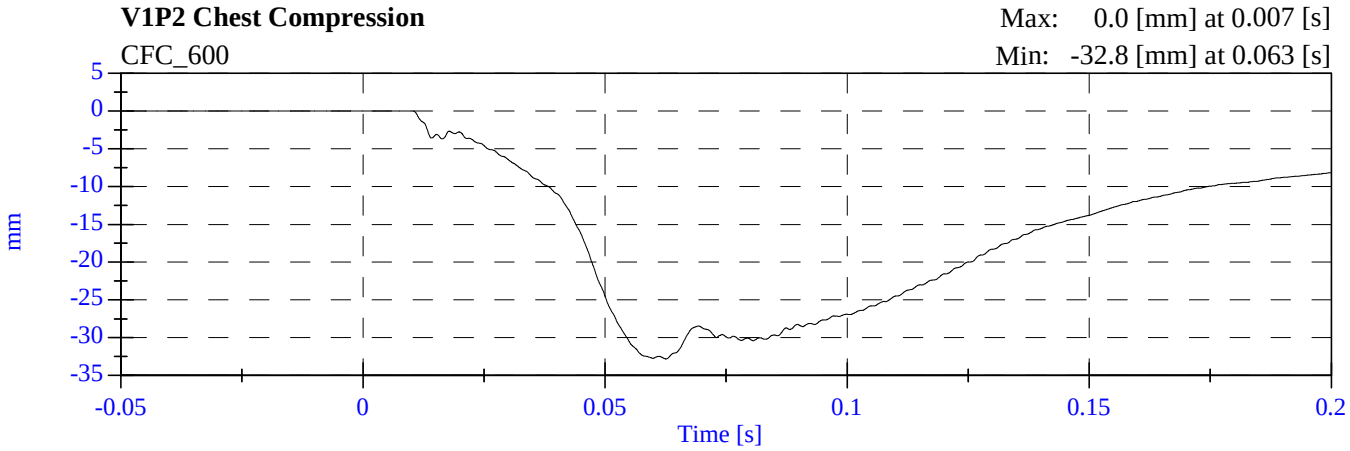
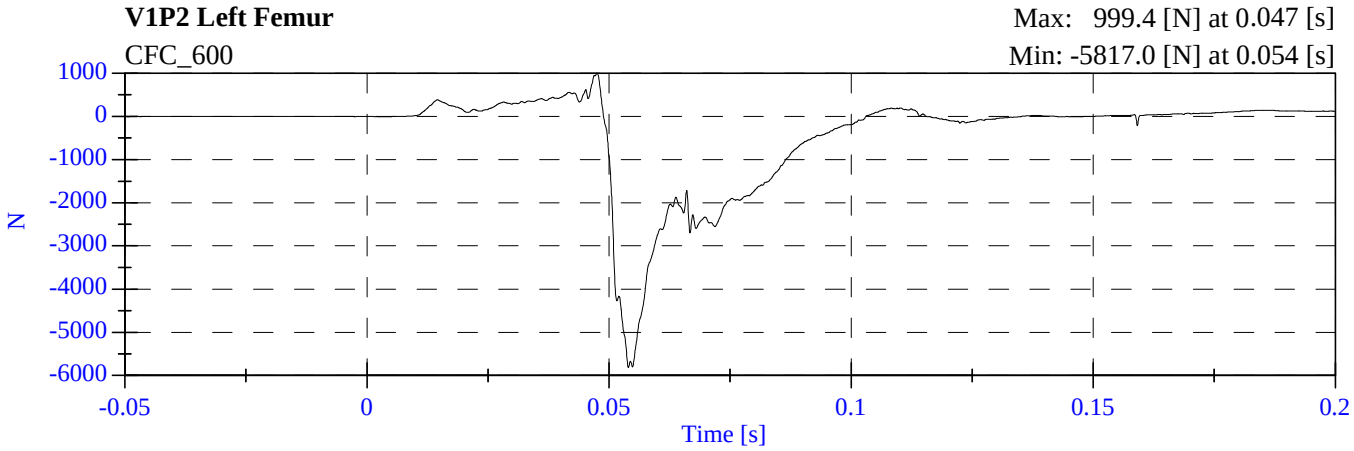
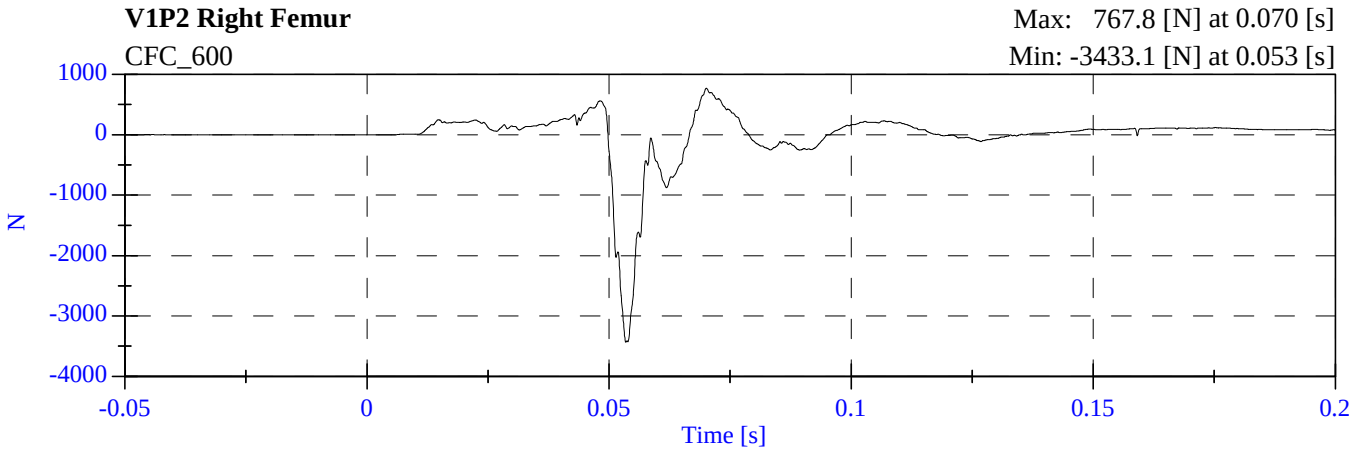


2008 NCAP Test 16 2008 Ford Focus
M80204 - November 20, 2007





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.

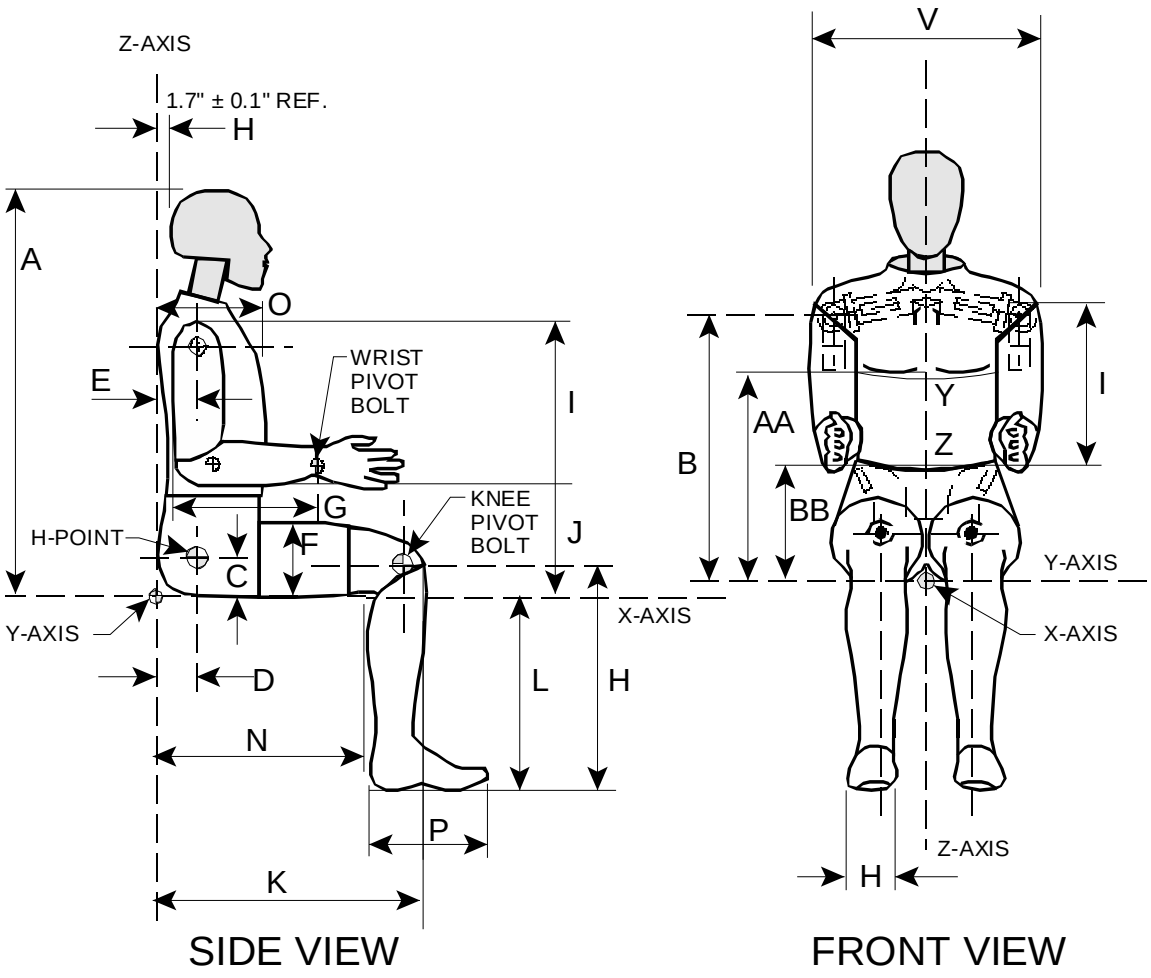
Dummy serial numbers and certification dates are:

Position No./Location	Serial No.	Completion Date
#1/Driver	150	8-23-2007
#2/Right Front Passenger	142	8-23-2007

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	150
Sequential Test Number	1
Date	08-17-2007
Workfile	150hd 08-17-07

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	259.59
Peak Lateral Acceleration	15 G's Max	10.92
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	150	
Sequential Test Number	1	
Date	08-20-2007	6 Axis Neck Transducer
Workfile	150NF 08-20-07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	33.00
Impact Velocity		6.89 – 7.13 m/s	7.00
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.90
	20 ms	17.60 - 22.60 G's	22.12
	30 ms	12.50 - 18.50 G's	17.57
Max Pendulum G's Above 30 ms		29 G's Max	17.57
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	37.50
D Plane Rotation	Max	64 - 78 Deg	66.47
	Time	57 - 64 ms	57.60
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	96.77
	Time	47 - 58 ms	48.80
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	114.50
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	150	
Sequential Test Number	1	
Date	08-20-2007	6 Axis Neck Transducer
Workfile	150NE1 08-20-07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	33.00
Impact Velocity		5.94 – 6.19 m/s	6.08
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.82
	20 ms	14.00 - 19.00 G's	18.32
	30 ms	11.00 - 16.00 G's	14.24
Max Pendulum G's Above 30 ms		22 G's Max	14.24
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	41.00
D Plane Rotation	Max	81 - 106 Deg	85.74
	Time	72 - 82 ms	74.70
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-66.76
	Time	65 - 79 ms	69.60
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	153.40
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	134.00

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	150
Sequential Test Number	1
Date	08-22-2007
Workfile	150T2 08-22-07

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	6.70
Maximum Deflection	63.50 – 72.64 mm	65.79
Maximum Resistive Force	5159.9 – 5893.9 N	5635.8
Internal Hysteresis	69 - 85 %	71.70

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	150
Sequential Test Number	1
Date	08-23-2007
Workfile	150LF 08-23-07/150RF 08-23-07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	44.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5416.49
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	44.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5167.27

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 150
Sequential Test Number 1
Date 08-23-2007

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			33
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	34.9
Shoulder Pivot Height	B	19.9 - 20.5 in	20.0
H-Point Height	C	3.3 - 3.5 in	3.4
H-Point from Backline	D	5.3 - 5.5 in	5.4
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

PART 572E
HEAD DROP TEST

Dummy Serial Number	142
Sequential Test Number	1
Date	8-17-2007
Workfile	142hd 8-17-07

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	233.87
Peak Lateral Acceleration	15 G's Max	4.42
Is Acceleration Curve Unimodal?	YES	YES

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK FLEXION TEST

Dummy Serial Number	142	
Sequential Test Number	1	
Date	8-20-2007	6 Axis Neck Transducer
Workfile	142NF 8-20-07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	33.00
Impact Velocity		6.89 – 7.13 m/s	6.99
Pendulum Deceleration	10 ms	22.50 - 27.50 G's	23.72
	20 ms	17.60 - 22.60 G's	22.50
	30 ms	12.50 - 18.50 G's	16.80
Max Pendulum G's Above 30 ms		29 G's Max	16.80
Deceleration - Time Curve Decay Time to 5 G's		34 - 42 ms	37.60
D Plane Rotation	Max	64 - 78 Deg	66.37
	Time	57 - 64 ms	58.00
Moment About Occipital Condyle	Max	88.13 – 108.47 N-m	105.05
	Time	47 - 58 ms	50.40
Rotation Angle - Time Curve Decay Time to Zero		113 - 128 ms	114.90
Positive Moment - Time Curve Decay Time to Zero		97 - 107 ms	97.30

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
NECK EXTENSION TEST

Dummy Serial Number	142	
Sequential Test Number	1	
Date	8-20-2007	6 Axis Neck Transducer
Workfile	142NE 08-20-07	

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature		20.6 – 22.2 Deg C	21.11
Relative Humidity		10% - 70%	33.00
Impact Velocity		5.94 – 6.19 m/s	6.07
Pendulum Deceleration	10 ms	17.20 - 21.20 G's	18.60
	20 ms	14.00 - 19.00 G's	18.41
	30 ms	11.00 - 16.00 G's	14.55
Max Pendulum G's Above 30 ms		22 G's Max	14.55
Deceleration - Time Curve Decay Time to 5 G's		38 - 46 ms	40.40
D Plane Rotation	Max	81 - 106 Deg	94.34
	Time	72 - 82 ms	74.40
Moment About Occipital Condyle	Max	-79.99 - -52.88 N-m	-76.47
	Time	65 - 79 ms	70.10
Rotation Angle - Time Curve Decay Time to Zero		147 - 174 ms	153.00
Positive Moment - Time Curve Decay Time to Zero		120 - 148 ms	136.90

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
THORAX IMPACT TEST

Dummy Serial Number	142
Sequential Test Number	1
Date	8-22.07
Workfile	142T 08-22-07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	20.6 – 22.2 Deg C	21.11
Relative Humidity	10% - 70%	36.00
Pendulum Velocity	6.58 – 6.83 m/s	6.68
Maximum Deflection	63.50 – 72.64 mm	65.79
Maximum Resistive Force	5159.9 – 5893.9 N	5698.2
Internal Hysteresis	69 - 85 %	75.45

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
KNEE IMPACT TEST

Dummy Serial Number	142
Sequential Test Number	1
Date	08-23-2007
Workfile	142LF 08-23-07/142RF 08-23-07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
LEFT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	44.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5572.58
RIGHT KNEE		
Temperature	18.9 – 25.6 Deg C	21.1
Relative Humidity	10% - 70%	44.00
Probe Velocity	2.07 – 2.13 m/s	2.13
Peak Knee Impact Force	4715.1 – 5782.7 N	5390.68

Remarks:

Laboratory Technician: B. Swiecicki

PART 572E
EXTERNAL DIMENSIONS

Dummy Serial Number 142
Sequential Test Number 1
Date 08-23-2007

TEST PARAMETER		SPECIFICATION	TEST RESULTS
Temperature			70
Relative Humidity			34
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	17.8
Knee Pivot Height	M	19.1 - 19.7 in	19.2
Buttock Popliteal Length	N	17.8 - 18.8 in	18.6
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	39.0
Waist Circumference	Z	32.9 - 34.1 in	33.2

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 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENDEVCO	AC-J19996	7/16/2007	1/14/2008
	Y	ENDEVCO	AC-J14381	7/16/2007	1/14/2008
	Z	ENDEVCO	AC-P15856	7/16/2007	1/14/2008
Head	X (R)	ENDEVCO	AC-AJ4P7	7/16/2007	1/14/2008
	Y (R)	ENDEVCO	AC-J27366	7/16/2007	1/14/2008
	Z (R)	ENDEVCO	AC-P35788	8/9/2007	2/7/2008
Neck Load Cell	X	DENTON	LC-157FX	7/17/2007	1/15/2008
	Y	DENTON	LC-157FY	7/17/2007	1/15/2008
	Z	DENTON	LC-157FZ	7/17/2007	1/15/2008
Neck Moment	X	DENTON	LC-157MX	7/17/2007	1/15/2008
	Y	DENTON	LC-157MY	7/17/2007	1/15/2008
	Z	DENTON	LC-157MZ	7/17/2007	1/15/2008
Chest	X	ENDEVCO	AC-J20083	7/16/2007	1/14/2008
	Y	ENDEVCO	AC-P17848	7/16/2007	1/14/2008
	Z	ENDEVCO	AC-J19223	7/16/2007	1/14/2008
Chest	X (R)	ENDEVCO	AC-P35817	7/16/2007	1/14/2008
	Y (R)	ENDEVCO	AC-P35790	7/16/2007	1/14/2008
	Z (R)	ENDEVCO	AC-P39574	7/16/2007	1/14/2008
Chest Deflection	X	SERVO	DS-150	8/22/2007	2/20/2008
Pelvic	X	ENDEVCO	AC-J21985	7/16/2007	1/14/2008
	Y	ENDEVCO	AC-AAMW5	7/16/2007	1/14/2008
	Z	ENDEVCO	AC-AJ5P9	7/16/2007	1/14/2008

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(Six Month Calibration Minimum)

DRIVER DUMMY (S/N 150)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-1528	7/18/2007	1/16/2008
Right Femur Load Cell	Fz	DENTON	LC-1527	7/18/2007	1/16/2008
Left Upper Tibia	Mx	DENTON	LC-263Mx	7/19/2007	1/17/2008
	My	DENTON	LC-263My	7/19/2007	1/17/2008
Left Lower Tibia	Fz	DENTON	LC-174Fz	7/19/2007	1/17/2008
	Mx	DENTON	LC-174Mx	7/19/2007	1/17/2008
	My	DENTON	LC-174My	7/19/2007	1/17/2008
Right Upper Tibia	Mx	DENTON	LC-274Mx	7/19/2007	1/17/2008
	My	DENTON	LC-274My	7/19/2007	1/17/2008
Right Lower Tibia	Fz	DENTON	LC-185Fz	10/8/2007	4/7/2008
	Mx	DENTON	LC-185Mx	10/8/2007	4/7/2008
	My	DENTON	LC-185My	10/8/2007	4/7/2008
Left Foot Rear	X	ENDEVCO	AC-AJ4G1	7/18/2007	1/16/2008
	Z	ENDEVCO	AC-P14914	7/18/2007	1/16/2008
Left Foot Front	Z	ENDEVCO	AC-AGRP4	7/18/2007	1/16/2008
Right Foot Rear	X	ENDEVCO	AC-J35747	7/18/2007	1/16/2008
	Z	ENDEVCO	AC-J36723	7/18/2007	1/16/2008
Right Foot Front	Z	ENDEVCO	AC-J27496	7/18/2007	1/16/2008
Lap Belt Load Cell		First Technology	LC-156	9/7/2007	3/7/2008
Shoulder Belt Load Cell		First Technology	LC-159	9/7/2007	3/7/2008

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

PASSENGER DUMMY (S/N 142)		Manufacturer	Serial #	Calibration	
				Last	Next
Head	X	ENTRAN	AC-02A16-A09	7/30/2007	1/28/2008
	Y	ENTRAN	AC-02I0210-N20	7/30/2007	1/28/2008
	Z	ENDEVCO	AC-J19244	7/30/2007	1/28/2008
Head	X (R)	ENDEVCO	AC-P16591	7/30/2007	1/28/2008
	Y (R)	ENDEVCO	AC-P16286	7/30/2007	1/28/2008
	Z (R)	ENDEVCO	AC-J23996	7/30/2007	1/28/2008
Neck Load Cell	X	DENTON	LC-280Fx	7/31/2007	1/29/2008
	Y	DENTON	LC-280Fy	7/31/2007	1/29/2008
	Z	DENTON	LC-280Fz	7/31/2007	1/29/2008
Neck Moment	X	DENTON	LC-280Mx	7/31/2007	1/29/2008
	Y	DENTON	LC-280My	7/31/2007	1/29/2008
	Z	DENTON	LC-280MZ	7/31/2007	1/29/2008
Chest	X	ENTRAN	AC-03E03D16-F16	7/30/2007	1/28/2008
	Y	ENTRAN	AC-05H31-Z04	7/30/2007	1/28/2008
	Z	ENTRAN	AC-04J04I20-Z04	7/30/2007	1/28/2008
Chest	X (R)	ENTRAN	AC-03E03E21-M02	7/30/2007	1/28/2008
	Y (R)	ENTRAN	AC-01G18-F08	7/30/2007	1/28/2008
	Z (R)	ENTRAN	AC-03F03E29-N04	7/30/2007	1/28/2008
Chest Deflection	X	SERVO	DS-142	8/22/2007	2/20/2008
Pelvic	X	ENDEVCO	AC-00L13-F10	7/31/2007	1/29/2008
	Y	ENTRAN	AC-03F03F09-N06	7/31/2007	1/29/2008
	Z	ENTRAN	AC-03E03E21-M06	7/31/2007	1/29/2008

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(Six Month Calibration Minimum)

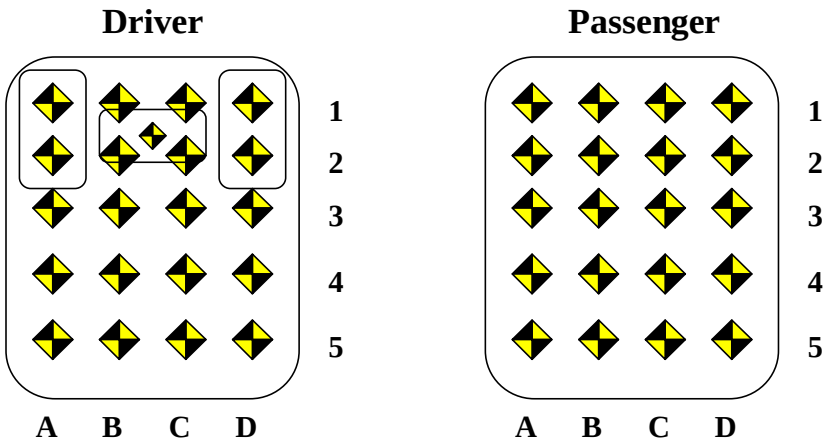
PASSENGER DUMMY (S/N 142)		Manufacturer	Serial #	Calibration	
				Last	Next
Left Femur Load Cell	Fz	DENTON	LC-1523	8/2/2007	1/31/2008
Right Femur Load Cell	Fz	DENTON	LC-1524	8/2/2007	1/31/2008
Left Upper Tibia	Mx	DENTON	LC-265Mx	8/2/2007	1/31/2008
	My	DENTON	LC-265My	8/2/2007	1/31/2008
Left Lower Tibia	Fz	DENTON	LC-178Fz	8/2/2007	1/31/2008
	Mx	DENTON	LC-178Mx	8/2/2007	1/31/2008
	My	DENTON	LC-178My	8/2/2007	1/31/2008
Right Upper Tibia	Mx	DENTON	LC-200Mx	8/2/2007	1/31/2008
	My	DENTON	LC-200My	8/2/2007	1/31/2008
Right Lower Tibia	Fz	DENTON	LC-128Fz	8/2/2007	1/31/2008
	Mx	DENTON	LC-128Mx	8/2/2007	1/31/2008
	My	DENTON	LC-128My	8/2/2007	1/31/2008
Left Foot Rear	X	ENDEVCO	AC-J20004	7/31/2007	1/29/2008
	Z	ENDEVCO	AC-AJ7G1	7/31/2007	1/29/2008
Left Foot Front	Z	ENDEVCO	AC-J20084	7/31/2007	1/29/2008
Right Foot Rear	X	ENDEVCO	AC-J20580	7/31/2007	1/29/2008
	Z	ENDEVCO	AC-J27079	7/31/2007	1/29/2008
Right Foot Front	Z	ENDEVCO	AC-ACCE6	7/31/2007	1/29/2008
Lap Belt Load Cell		First Technology	LC-173	9/7/2007	3/7/2008
Shoulder Belt Load Cell		First Technology	LC_178	9/7/2007	3/7/2008

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(Six Month Calibration Minimum)

	Manufacturer	Serial #	Calibration	
			Last	Next
Left Seat Rear Crossmember X	ENDEVCO	AC-P32455	8/7/2007	2/5/2008
Right Rear Seat Crossmember X	ENDEVCO	AC-P23993	8/9/2007	2/7/2008
Top of Engine	ENDEVCO	AC-FA2493	5/25/2007	11/23/2007
Bottom of Engine	ICS	AC-FA2490	9/21/2007	3/21/2008
Right Disc Brake Caliper	ICS	AC-FA2489	9/21/2007	3/21/2008
Left Disc Brake Caliper	ICS	AC-FA2471	6/21/2007	12/20/2007
Left Seat Rear Crossmember Z	ENDEVCO	AC-P32139	8/7/2007	2/5/2008
Right Seat Rear Crossmember Z	ENDEVCO	AC-P23999	8/9/2007	2/7/2008

APPENDIX E

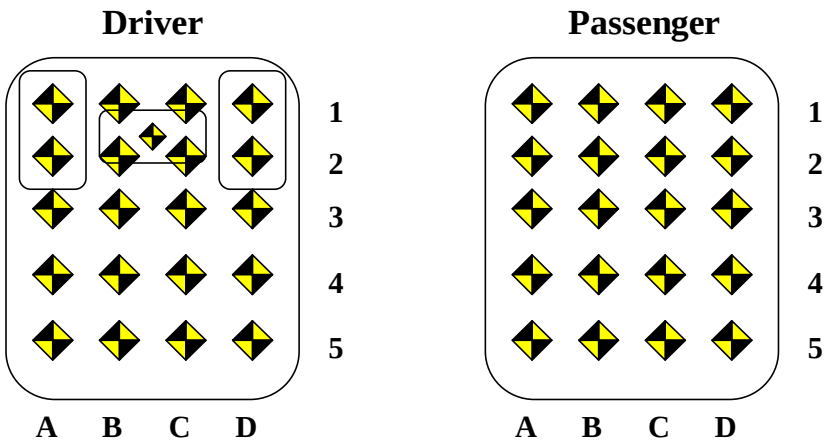
VEHICLE INTERIOR INTRUSION MEASUREMENTS



Driver Side Intrusion Measurements

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3131	-560	-407	3082	-556	-448	49	-4	41
B1	3232	-451	-411	3164	-438	-473	68	-13	62
C1	3231	-319	-409	3149	-306	-461	82	-13	52
D1	3226	-181	-404	3120	-168	-452	106	-13	48
A2	3048	-570	-334	3006	-565	-367	42	-5	33
B2	3132	-446	-338	3086	-443	-377	46	-3	39
C2	3133	-311	-336	3098	-311	-356	35	0	20
D2	3134	-177	-336	3098	-180	-346	36	3	10
A3	2984	-577	-274	2947	-571	-301	37	-6	27
B3	3027	-449	-269	2991	-447	-290	36	-2	21
C3	3021	-304	-266	3002	-311	-269	19	7	3
D3	3025	-174	-268	3003	-182	-267	22	8	-1
A4	2952	-575	-268	2922	-575	-279	30	0	11
B4	2954	-439	-263	2933	-444	-250	21	5	-13
C4	2953	-306	-261	2934	-311	-245	19	5	-16
D4	2950	-170	-267	2931	-176	-247	19	6	-20
A5	2879	-574	-262	2866	-576	-250	13	2	-12
B5	2881	-439	-259	2865	-445	-228	16	6	-31
C5	2883	-306	-261	2867	-312	-228	16	6	-33
D5	2884	-170	-266	2865	-174	-229	19	4	-37
BP	3077	-323	-450	2950	-320	-525	127	-3	75
G	2845	-491	-709	2833	-495	-705	12	4	-4
H	2819	-190	-719	2795	-197	-706	24	7	-13
L	2619	-344	-952	2647	-358	-947	-28	14	-5
AB	2567	-141	-359	2547	-137	-268	20	-4	-91

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

Intrusion Location	PRE-TEST (mm)			POST-TEST (mm)			CHANGE (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3219	179	-378	3135	188	-420	84	-9	42
B1	3194	325	-380	3128	318	-412	66	7	32
C1	3188	459	-381	3116	454	-415	72	5	34
D1	3124	587	-380	3062	597	-407	62	-10	27
A2	3101	181	-326	3066	179	-340	35	2	14
B2	3103	319	-324	3045	317	-349	58	2	25
C2	3109	457	-328	3043	454	-354	66	3	26
D2	3104	593	-327	3056	592	-349	48	1	22
A3	3025	184	-282	3004	183	-277	21	1	-5
B3	3024	317	-276	3011	317	-259	13	0	-17
C3	3024	458	-276	3012	454	-264	12	4	-12
D3	3028	591	-277	3029	585	-271	-1	6	-6
A4	2954	182	-279	2940	182	-253	14	0	-26
B4	2951	318	-274	2948	319	-255	3	-1	-19
C4	2954	456	-272	2951	457	-264	3	-1	-8
D4	2955	585	-273	2959	588	-279	-4	-3	6
A5	2872	181	-277	2873	187	-232	-1	-6	-45
B5	2880	319	-272	2875	318	-262	5	1	-10
C5	2882	455	-269	2879	456	-272	3	-1	3
D5	2878	589	-265	2886	592	-271	-8	-3	6
R	2809	231	-736	2785	236	-746	24	-5	10
S	2826	537	-743	2800	531	-756	26	6	13
AB	2568	146	-358	2553	153	-272	15	-7	-86

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