REPORT NUMBER: NCAP-CAL-12-002

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

Chrysler Group LLC
2012 Chrysler 200 LX
Four Door Sedan

NHTSA NUMBER: MC0307

CALSPAN CORPORATION
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11/17/2011

FINAL REPORT

PREPARED FOR:

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

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_____
Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

_____
COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

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16. Abstract

A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2012 Chrysler 200 LX Four Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The test was conducted at the Calspan Corporation's crash test facility in Buffalo, New York on 10/14/2011.

The impact velocity of the vehicle was 56.62 km/h, and the ambient temperature at the barrier face at the time of impact was 20°C. The target vehicle post-test maximum crush was 409 mm of Vehicle. The test vehicle's performance is as follows:

	Driver ATD			Pass. ATD		
Measurement Description	**Units**	**Threshold**	**Result**	**Units**	**Threshold**	**Result**
Head Injury Criteria (HIC_{15})	N/A	700	230.37	N/A	700	395.24
Maximum Chest Compression	mm	63	-26.32	mm	52	-23.19
Nij	n/a	1	0.23	n/a	1	0.44
Neck Tension	Newtons	4,170	921.36	Newtons	2,620	886.05
Neck Compression	Newtons	4,000	-123.2	Newtons	2,520	-299.14
Left Femur Force	Newtons	10,008	-2,812.97	Newtons	6,805	-1,975.44
Right Femur Force	Newtons	10,008	-3170.50	Newtons	6,805	-2201.17

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SECTION 1

PURPOSE AND SUMMARY OF TEST

This 56.3 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 consumer information purposes.

The 56.3 kph frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standard Frontal NCAP Laboratory Test procedure.

1.2 TEST PROCEDURE

A load cell barrier consisting of 36 load cells was impacted by a 2012 Chrysler 200 LX Four Door Sedan at a velocity of 56.62 kph. The test was performed at Calspan on 10/14/2011. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and 15 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.

One Part 572E, 50th percentile male anthropomorphic test device (ATDs), was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial 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. 064) and the right-front passenger (position 2) ATD (Serial No. 273) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 129 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 409 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows:

- Face and Upper Torso contacted the Frontal airbag with the back of the head hitting the head restraint.
- Both knees contacted the lower dash panel.

The passenger's visible contact points were as follows:

- Face and Upper Torso contacted the Frontal airbag with the back of the head hitting the head restraint.
- Both knees contacted the lower glovebox door.

The occupant data is summarized below:

ATD Position	HIC_{15}	Nij	Neck Tension (N)	Neck Compression (N)	3ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50th)	230.37	0 .23	921.36	-123.2	37.24	-26.32	-2,812.97	-3,170.50
Passenger (5th)	395.24	0.44	886.05	-299.14	42.39	-23.1	-1,975.44	-2,201.17

1.3 Data Anomalies

- Driver left redundant femur load cell channel failed.
- Right front passenger right upper tibia Mx channel questionableafter 63ms.
- Vehicle right front brake caliper accelerometer questionable after 40 ms, cable damaged.

SECTION 2
DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

NHTSA No.	MC0307
Model Year	2012
Make	Chrysler
Model	200 LX
Body Style	Four Door Sedan
VIN	1C3CCBAB1CN106243
Body Color	Red
Odometer Reading (km/mi)	8.0/5
Engine Displacement. (L)	2.4
Type/No. Cylinders	I4
Engine Placement	Lateral
Transmission Type	Automatic
Transmission Speeds	4-Speed
Overdrive	
Final Drive	Front Wheel Drive
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
All-Wheel Drive (AWD)	No

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	No
Other Optional Feature	-
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	Yes
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Pass. Front Airbag	Yes
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	Yes
Pass. Torso/Pelvis Airbag	No
Pass. Pelvis Airbag	No
Pass. Knee Airbag	No
Driver Seat Belt Pretensioner	Yes
Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Pass. Load Limiter	Yes
Other Safety Restraint	--

Does owner's manual provide instructions to turn off automatic door locks?	No

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group LLC
Date of Manufacture	8/11

GVWR (kg)	2,087
GAWR Front (kg)	1,180
GAWR Rear (kg)	1,007

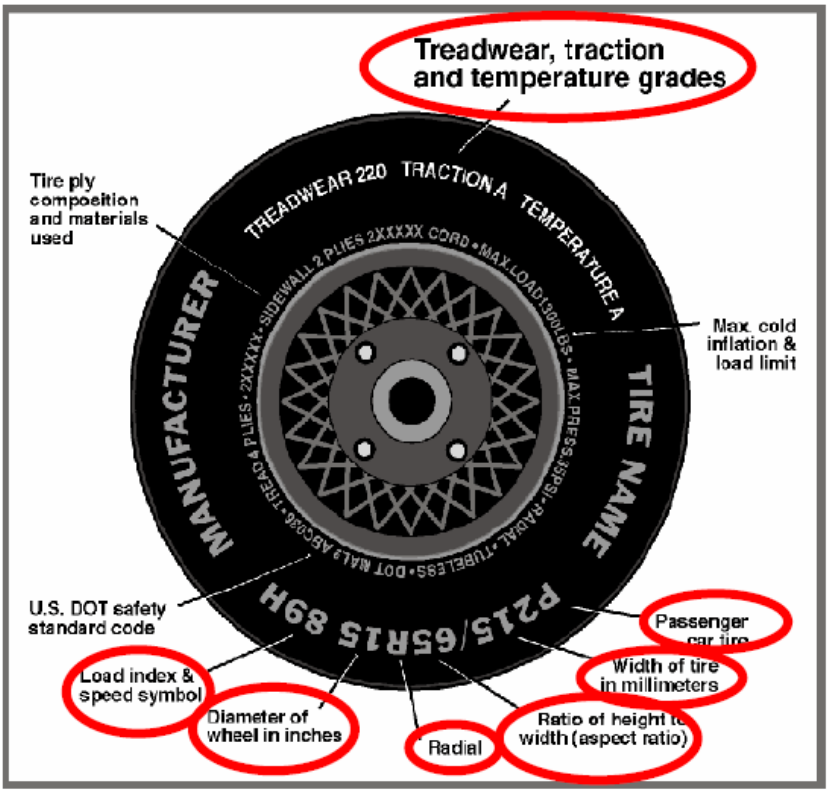
VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	NA	
Number of Occupants	2	3	-	5
Capacity Wt. (VCW) (kg)				392.0
Cargo Wt. (RCLW) (kg)				51.8

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

Collect items circled in red, tire manufacturer, and tire name.



Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P225/55R17	P225/55R17
Tire Size on Vehicle	P225/55R17	P225/55R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Primacy MXV4	Primacy MXV4
Treadwear	620	620
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Polyamide, 2 Steel	2 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	97V	97V
Tire Material	Rubber	Rubber
DOT Safety Code Right	M38K0W3X	M38K0W3X
DOT Safety Code Left	M38K0W3X	M38K0W3X

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	474.0	316.0		509.5	382.5	
Right	kg	454.0	301.5		472.5	367.5	
Ratio	%	60	40		57	43	
Totals	kg	928.0	617.5	1,545.5	982.0	750.0	1,732.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1,545.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.6
Rated Cargo/Luggage Weight (RCLW)	kg	51.8
Calculated Vehicle Target Weight (TVTW)	kg	1,737.9

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	748	753	767	775	1105
As Tested	mm	738	746	739	744	1198
Post Test	mm	771	744	785	716	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2,766
Total Vehicle Length at Left Side	mm	4,784
Total Vehicle Length at Centerline	mm	4,870
Total Vehicle Length at Right Side	mm	4,786
Weight of Ballast in Cargo Area	kg	30.0
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	59.4

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

None

DATA SHEET NO.1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4870
2	Total Width	1804
3	Bumper Top Height	-12
4	Bumper Bottom Height	152
5	Longitudinal Member Top Height	-93
6	Distance Between Longitudinal Members	1053
7	Longitudinal Member Width	68
8	Engine Top Height	-319
9	Engine Bottom Height	269
10	Engine and Gearbox Width	517
11	Front Bumper-Engine Distance	633
12	Front Shock Absorber Fixing Height	-404
13	Bonnet Leading Edge Height	-214
14	Front Shock Absorber Fixing Width	1123
15	Front Bumper – Front Axle Distance	1052
16	Front Axle – A Pillar Distance	543
17	A-Pillar – B-Pillar Distance	1077
18	B-Pillar – Rear Axle Distance	1145
19	B-Pillar – C-Pillar Distance	999
20	Roof Sill Bottom Height	-391
21	Roof Sill Top Height	-433
22	Floor Sill Bottom Height	695
23	Floor Sill Top Height	614

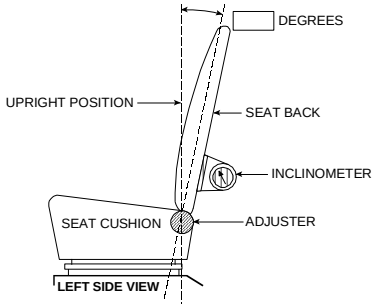
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

NORMAL DESIGN RIDING POSITION

Driver seat: The driver seat back was positioned according to the Nominal Design Riding position listed in FORM 1

Passenger Seat: The passenger seat back as positioned to allow for a zero head angle of the passenger SID-IIs dummy



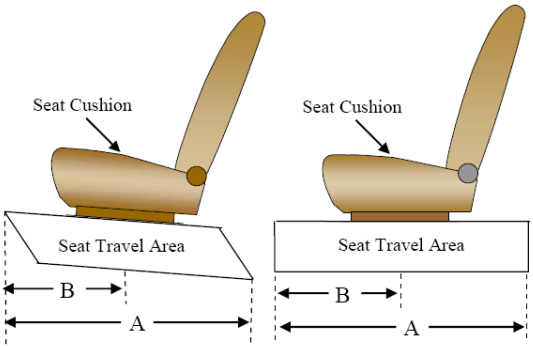
FRONT SEAT ASSEMBLY

	Deg
Driver Seat Back Angle	12.7
Passenger Seat Back Angle	8.2

SEAT FORE/AFT POSITIONS

The driver's seat was positioned at the mid-point of fore/aft travel.
The passenger's seat was positioned at the most forward position of fore/aft travel.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	285	14
Passenger Seat	260	0



SEAT BELT UPPER ANCHORAGES

The seat belt upper anchorages were set at the upper-most detent position, which is defined as zero.

	Total # of Positions	Placed in Position #
Driver Seat	4	0
Passenger Seat	4	0

DATA SHEET NO. 2 (CONTINUED)
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

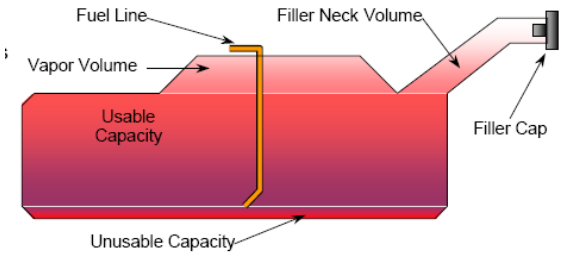
Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	64.0
Usable Capacity of "Optional Tank"	
92%-94% of Usable Capacity	58.8 - 60.1
Actual Amount of Solvent Used	59.4
1/3 of Usable Capacity	21.3

FUEL PUMP

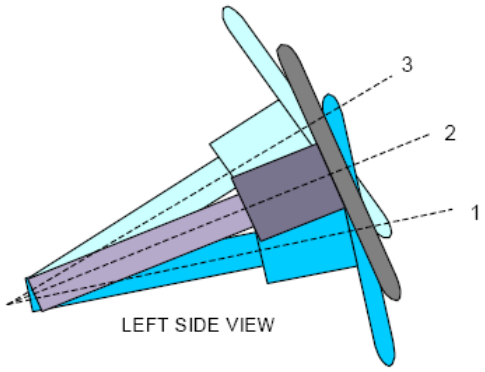
Fuel evacuated according to the specifications provided by the manufacturer in Form 1



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

The steering wheel was adjusted to the midpoint of Tilt angle range and the midpoint of the telescoping Travel (if applicable)



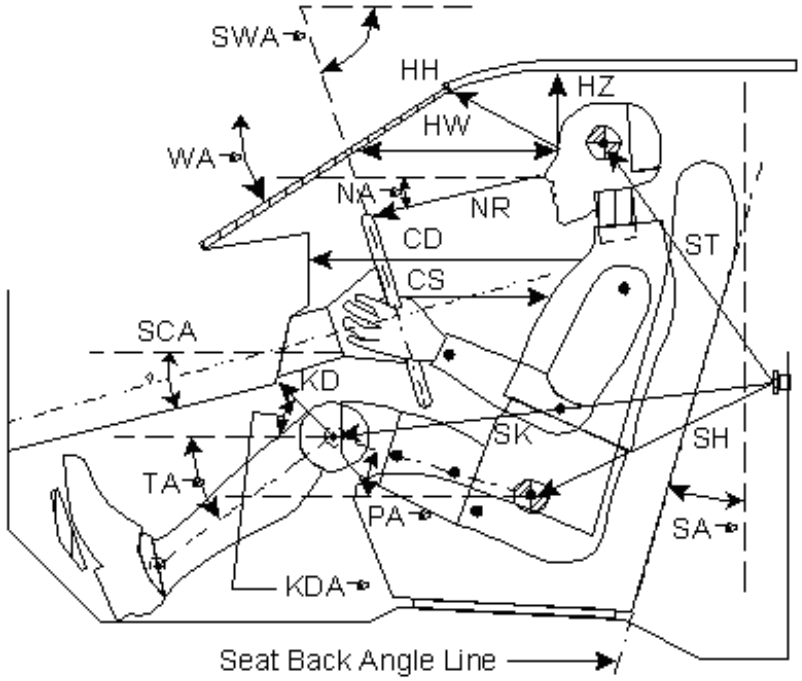
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1	73.3	
Geometric center position No. 2	70.5	
Uppermost position No. 3	67.7	
Telescoping Steering Wheel Travel		48
Test Position	70.5	24

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

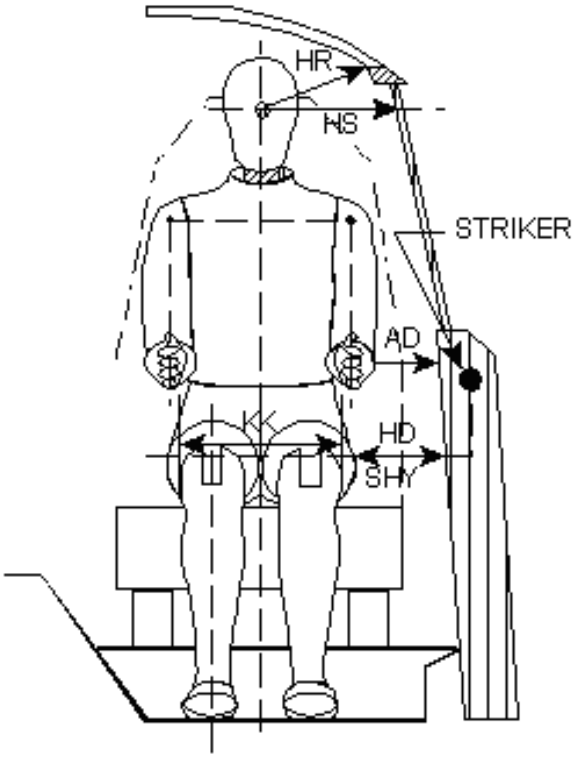
Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011



Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WAº	Windshield Angle		-27.9		
SWAº	Steering Wheel Angle		19.5		
SCAº	Steering Column Angle		-19.8		
SAº	Seat Back Angle (on headrest post)		12.7		8.6
HZ	Head to Roof (Z)	235	90.0	235	90.0
HH	Head to Header	435	21.5	353	41.2
HW	Head to Windshield	704	0.0	670	0.0
NR	Nose to Rim	391	-10.5		
CD	Chest to Dash	598		391	
CS	Chest to Steering Hub	383	-14.3		
RA	Rim to Abdomen	215	-5.7		
KDL	Left Knee to Dash	143	35.2	92	47.1
KDR	Right Knee to Dash	134	39.1	91	47.6
PAº	Pelvic Angle		24.3		21.4
TAº	Tibia Angle		-25.7		-33.9
SK	Striker to Knee	605	-8.3	736	-9.4
ST	Striker to Head	472	72.2	479	47.2
SH	Striker to H-Point	282	-48.0	403	-30.5

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

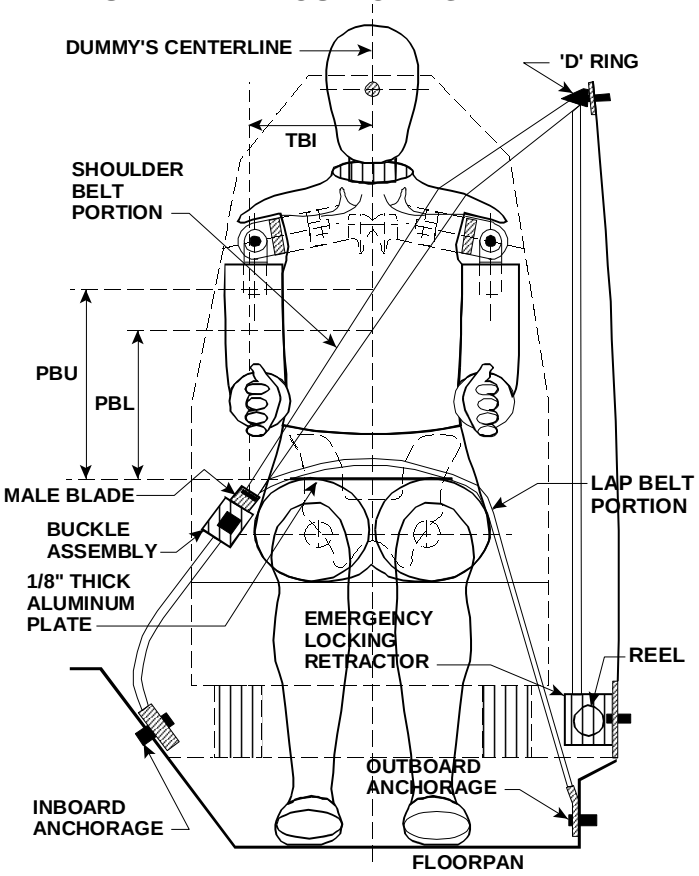


Code	Description	Driver	Passenger
AD	Arm to Door	113	44
HD	H-Point to Door	129	135
HR	Head to Side Header	224	241
HS	Head to Side Window	382	374
KK	Knee to Knee	220	167
SHY	Striker to H-Point (Y Direction)	250	265
AA	Ankle to Ankle	206	170

DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

SEAT BELT POSITIONING DATA



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

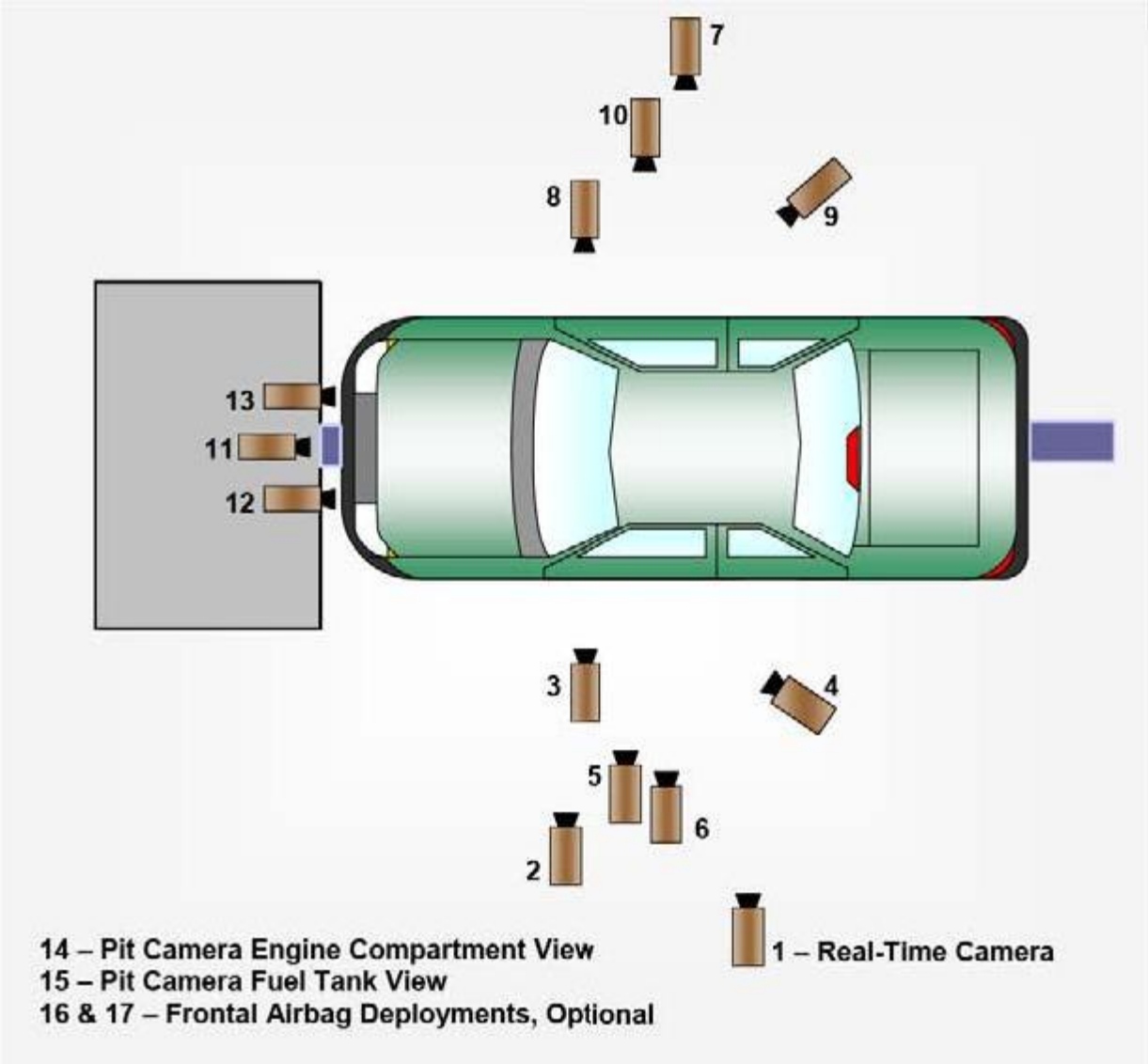
Measurement Description	Units	Driver	Passenger
PBU — Top surface of aluminum plate to belt upper edge	mm	335	325
PBL — Top surface of aluminum plate to belt lower edge	mm	270	230

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	850	942
Lap Belt Length as measured on ATD	mm	570	570
Remainder of belt on reel	mm	880	788
Total belt length for continuous webbing systems	mm	2,300	2,300

DATA SHEET NO. 6
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011



DATA SHEET NO. 6 (CONTINUED)
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

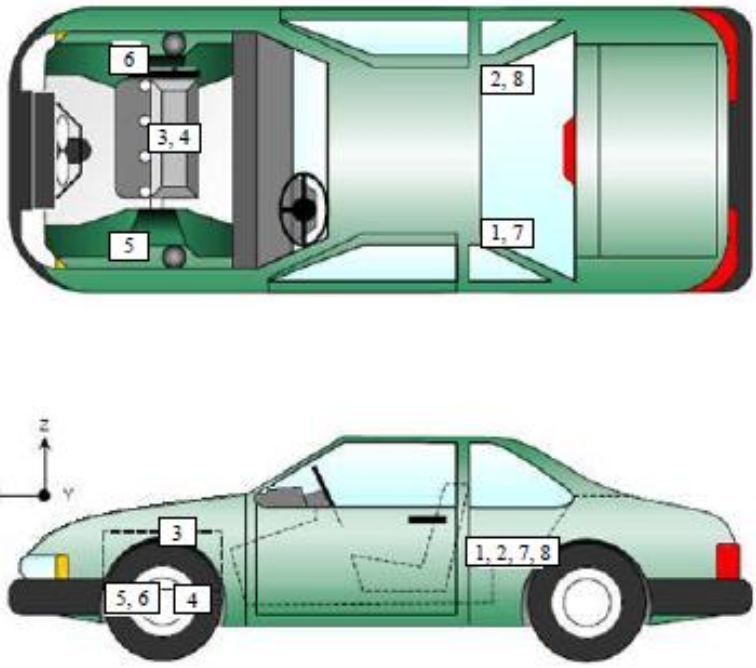
CAMERA LOCATIONS

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall	2074	-6815	1006	Zoom	30
2	Driver close-Up	2074	-6815	1006	50	1000
3	Left Front Half	1239	-8737	971	50	1000
4	Left Angle	3039	-2631	2257	24	1000
5	Steering Colum- Top	2155	-7239	1817	24 - 70	1000
6	Steering Colum – Bottom	2155	-7239	1216	28 - 70	1000
7	Right Overall	2128	7185	1085	28	1000
8	Passenger Close-Up	1896	7692	1317	50	1000
9	Right Front Half	1337	9447	1007	50	1000
10	Right Angle	3134	2980	2237	24	1000
11	Windshield	-530	0	3374	25	500
12	Driver Windshield	620	-92	1987	12.5	500
13	Passenger Windshield	620	-92	1987	12.5	500
14	Pit Front	809	0	-1595	12.5	500
15	Pit Rear	2580	0	-1595	12.5	500
16	Onboard Driver Side (Optional)					
17	Onboard Passenger Side (Optional)					

* COORDINATES:
+X = forward of impact plane
+Y = right of monorail center
+Z = into ground

DATA SHEET NO. 7
VEHICLE ACCELEROMETER DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Seat Crossmember (X,Z)	2059	-578	767
2	Right Rear Seat Crossmember (X,Z)	2054	593	755
3	Top of Engine (X)	4024	78	182
4	Bottom of Engine (X)	4233	106	803
5	Right Front Disc Brake Caliper (X)	3975	826	630
6	Center of Instrument Panel (X)	2963	-4	257
7	Left Front Disk Brake Caliber (X)	3969	-828	629

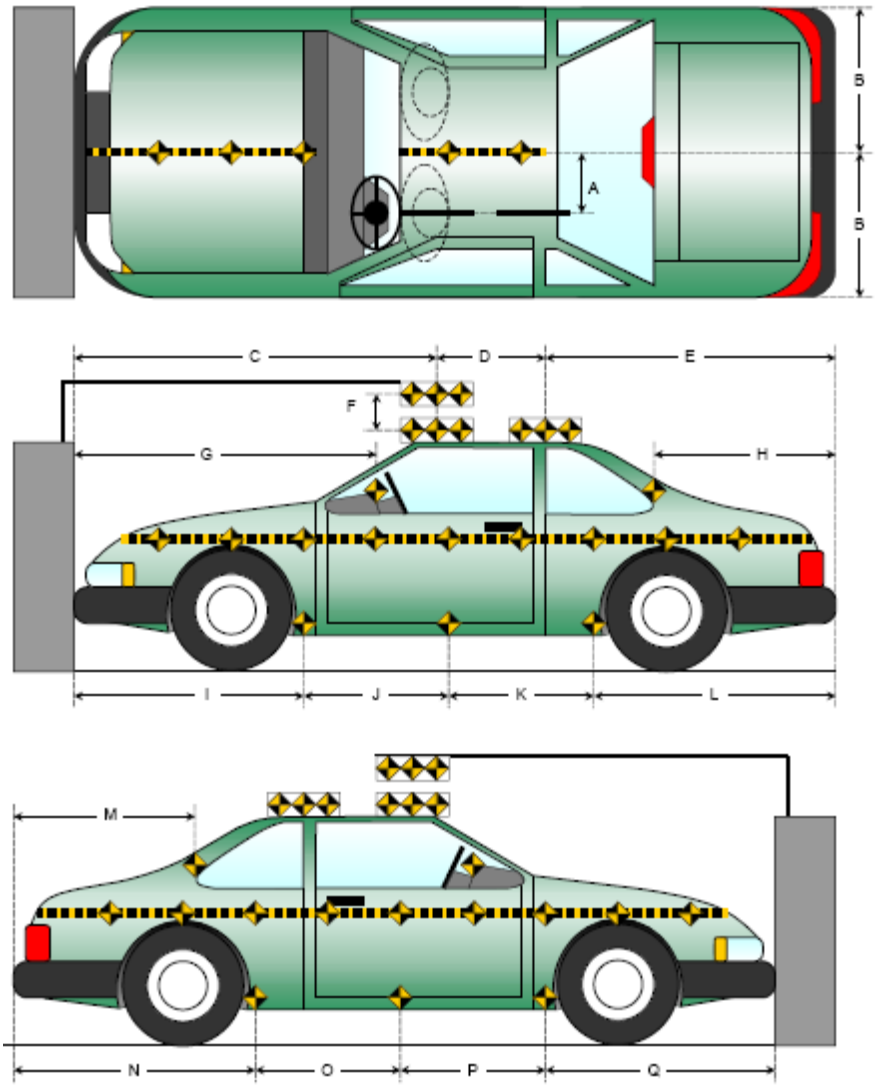
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

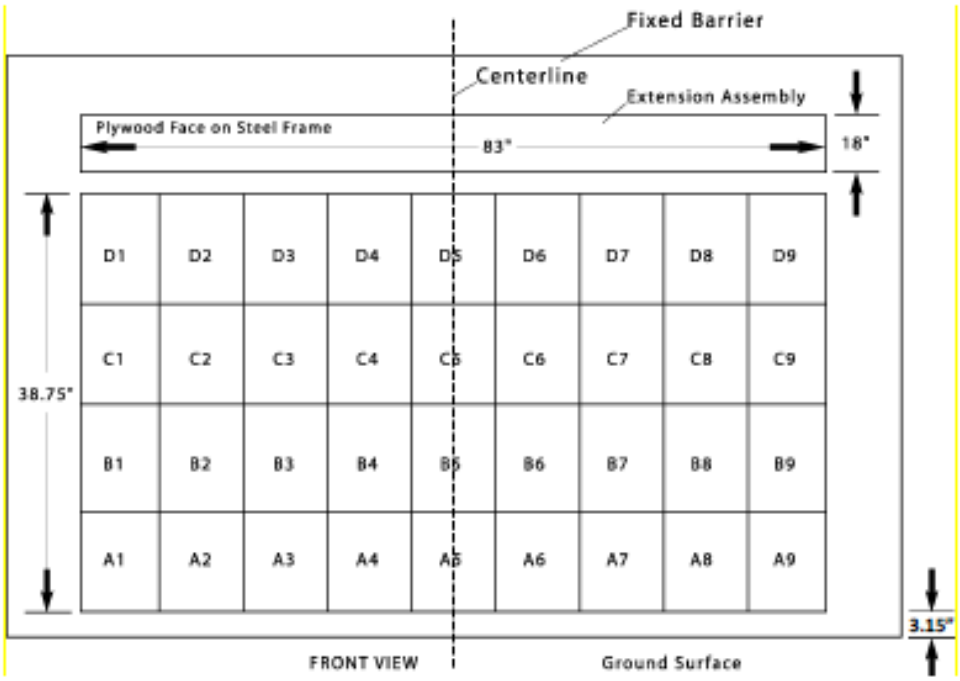
Item	Value
A	364
B	902
C	2,196
D	1,220
E	1,454
F	
G	1,862
H	1,160
I	1,607
J	864
K	871
L	1,528
M	1,157
N	1,535
O	867
P	861
Q	1,608

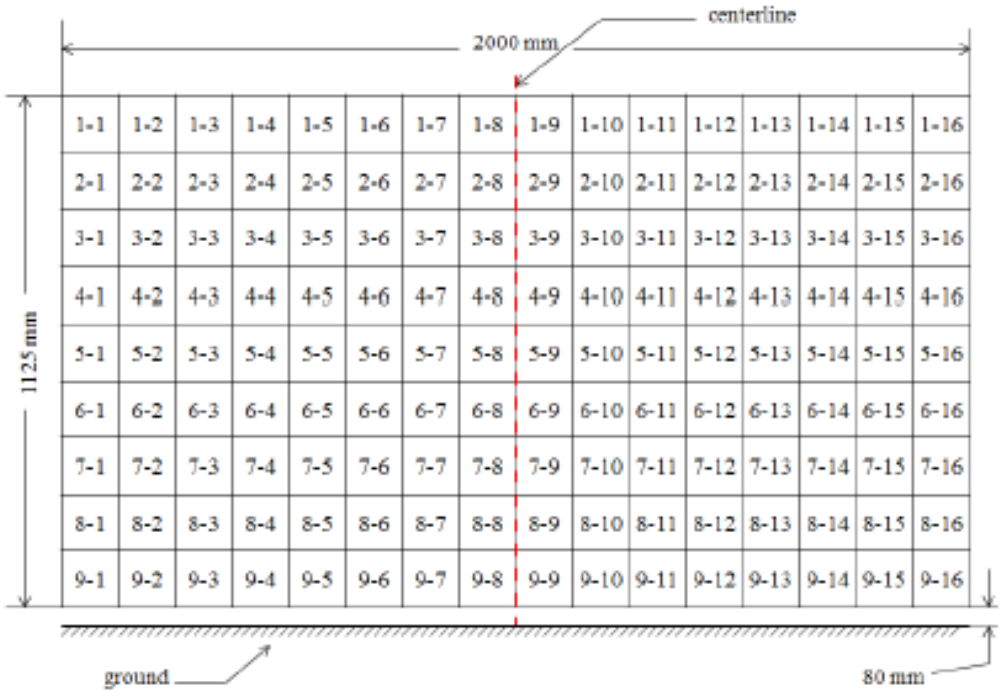
All units in millimeters



DATA SHEET NO. 9
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011





DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

INSTRUMENTATION

Driver Dummy Channels	42
Passenger Dummy Channels	42
Belt load cells	4
Vehicle Structure Accelerometers	8
Barrier load cells	36
Total	132

CAMERA COVERAGE

High-Speed Vehicle Onboard	0
High-Speed Offboard	14
Real-Time Panning	1
Total	15

Please Note:

- Camera No. 1 – Real-Time Left Overall did not record.

DATA SHEET NO. 11 - POST TEST OBSERVATIONS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	064	273
Head Contact	Front Airbag and Headrest	Front Airbag and Headrest
Upper Torso Contact	Front Airbag	Front Airbag
Lower Torso Contact	No Contact	No Contact
Left Knee Contact	Knee Bolster	Knee Bolster
Right Knee Contact	Knee Bolster	Knee Bolster

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Locked	Locked
Front Door Opening	None	None
Rear Door Opening	None	None
Seat Track Shift (mm)	None	None
Seat Back Failure	No Failure	No Failure
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	None
Window Damage	None
Other Notable Effects	

VEHICLE REBOUND FROM BARRIER

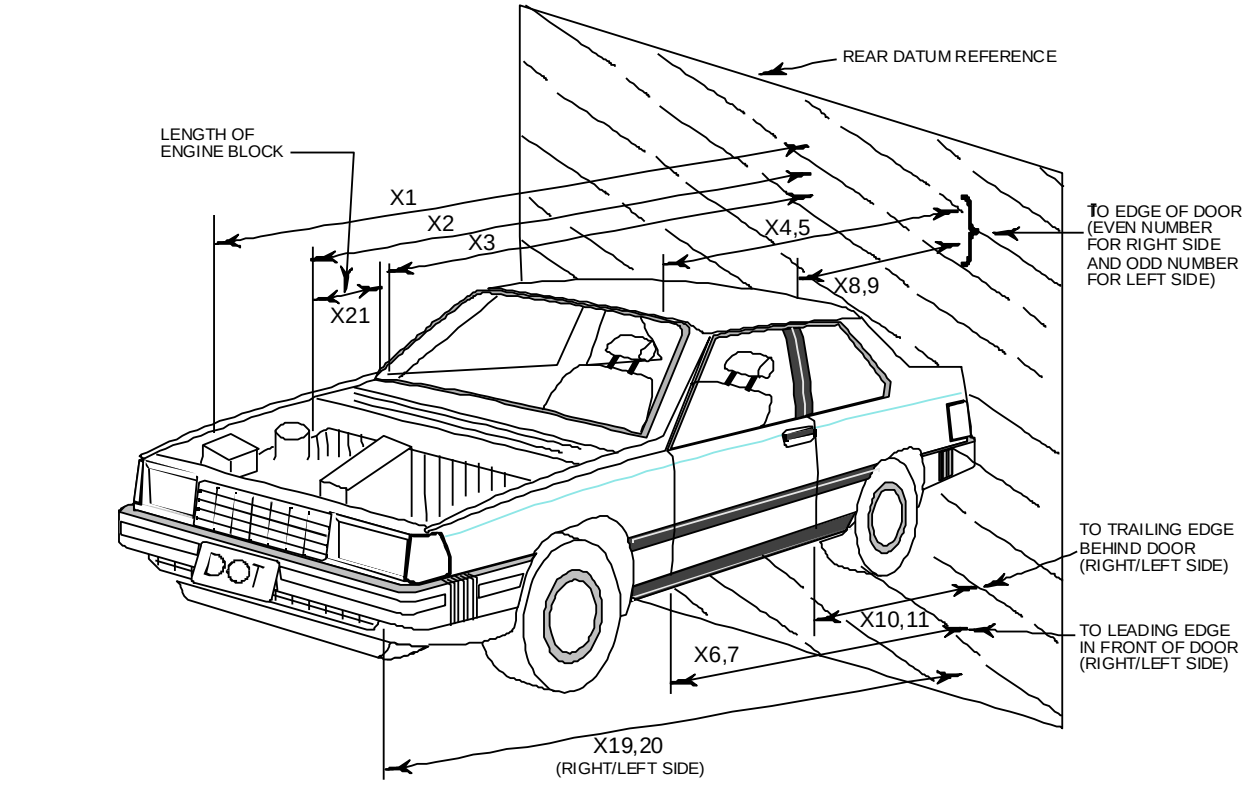
Measured Parameter	Units	Value
Left Side	mm	775
Center	mm	780
Right Side	mm	790
Average	mm	782

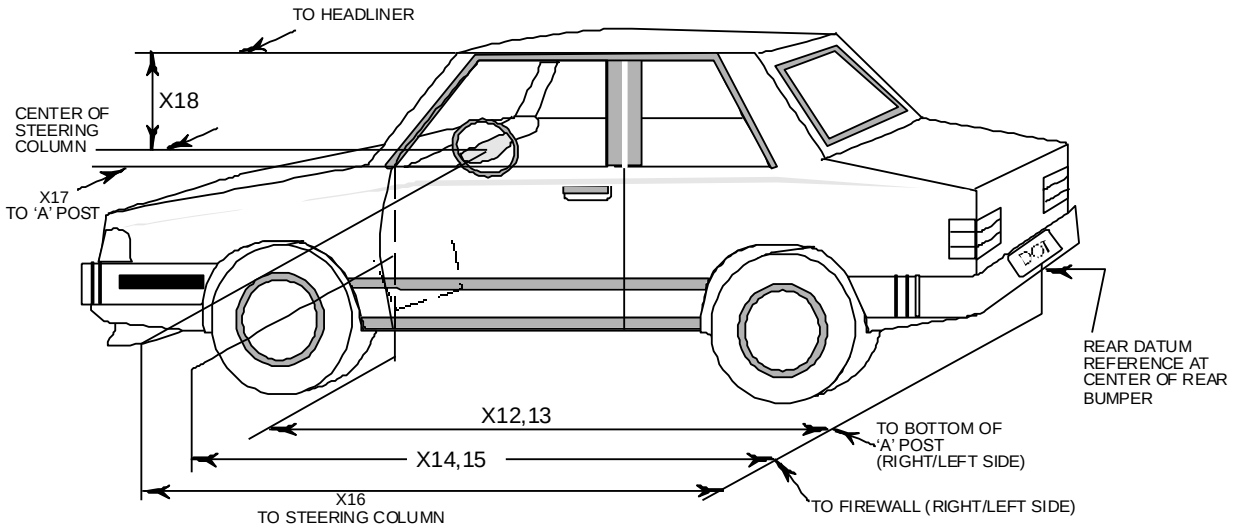
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Curtain	Yes	No	Yes	No
Torso	Yes	No	Yes	No
Knee Airbag	No		No	
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011





DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4870	4461	409
2	Rear Surface of Vehicle (RSOV) to Front of Engine	4237	4080	157
3	RSOV to Firewall	3745	3715	30
4	RSOV to Upper Leading Edge of Right Door	3334	3333	1
5	RSOV to Upper Leading Edge of Left Door	3333	3332	1
6	RSOV to Lower Leading Edge of Right Door	3302	3301	1
7	RSOV to Lower Leading Edge of Left Door	3296	3297	-1
8	RSOV to Upper Trailing Edge of Right Door	2196	2196	0
9	RSOV to Upper Trailing Edge of Left Door	2200	2197	3
10	RSOV to Lower Trailing Edge of Right Door	2214	2213	1
11	RSOV to Lower Trailing Edge of Left Door	2210	2213	-3
12	RSOV to Bottom of “A” Post of Right Side	3351	3348	3
13	RSOV to Bottom of “A” Post of Left Side	3349	3347	2
14	RSOV to Firewall, Right Side	3794	3742	52
15	RSOV to Firewall, Left Side	3792	3769	23
16	RSOV to Steering Column	2833	2820	13
17	Center of Steering Column to “A” Post	308	321	-13
18	Center of Steering Column to Headliner	404	431	-27
19	RSOV to Right Side of Front Bumper	4786	4457	329
20	RSOV to Left Side of Front Bumper	4784	4471	313
21	Length of Engine Block	360	359	1
RD	RSOV to Right Side of Dash Panel	3020	3017	3
CD	RSOV to Center of Dash Panel	3008	3009	-1
LD	RSOV to Left Side of Dash Panel	3020	3021	-1

All Dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

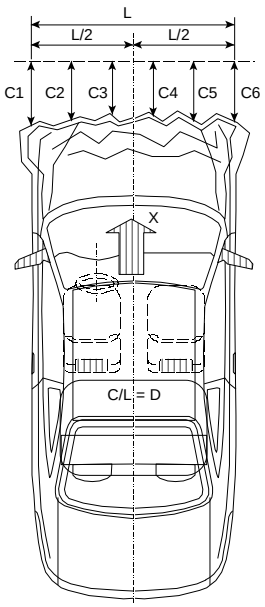
Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

VEHICLE INFORMATION

VIN	1C3CCBAB1CN106243	Wheelbase (mm)	2,766
Vehicle Size Category	Passenger	Test Weight (kg)	1732

ACCELEROMETER DATA

Accelerometer Locations:	Data Sheet No.7	Linearity:	> 99%
Cal. Procedure/Interval:	Calspan Procedure/6 Months		
Integration Algorithm:	Trapezoidal		
Impact Velocity (km/h):	56.62		
Velocity Change (km/h):			
Time of Separation (msec):			



CRUSH PROFILE

Collision Deformation Classification :	12FDEW2
Midpoint of Damage:	Vehicle Centerline
Damage Region Length (mm):	1418
Impact Mode:	Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	**Crush zone 1 at left side**	mm	4662	4516	146
C2	**Crush zone 2 at left side**	mm	4798	4438	360
C3	**Crush zone 3 at left side**	mm	4856	4447	409
C4	**Crush zone 4 at right side**	mm	4856	4447	409
C5	**Crush zone 5 at right side**	mm	4799	4449	350
C6	**Crush zone 6 at right side**	mm	4664	4477	187
L	**C1 to C6**	mm	1418	1477	-59

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

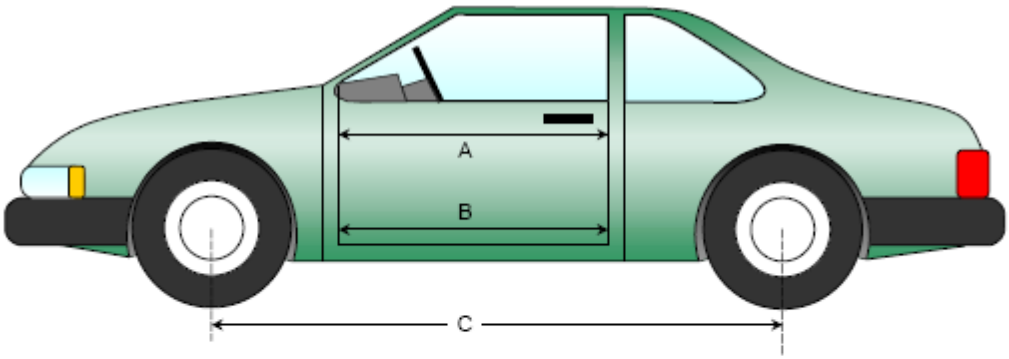
Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

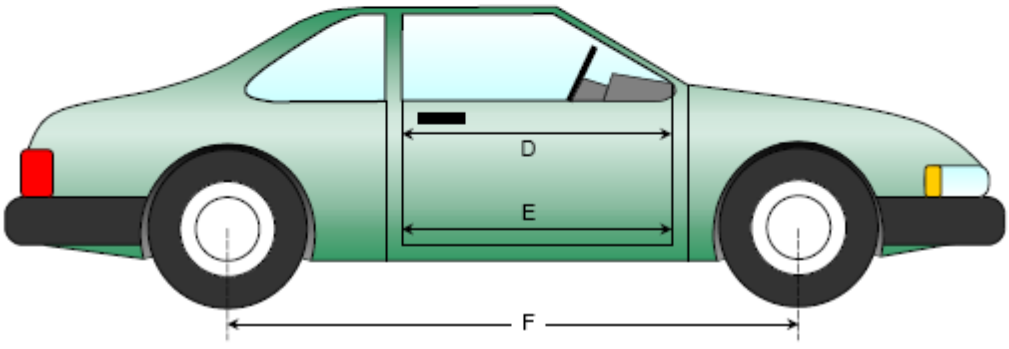
DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	**Left Side Upper**	mm	991	992	1
B	**Left Side Lower**	mm	894	904	10
D	**Right Side Upper**	mm	992	988	-4
E	**Right Side Lower**	mm	940	939	-1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	**Left Side Wheelbase**	mm	2,766	2,663	-103
F	**Right Side Wheelbase**	mm	2,766	2,714	-52





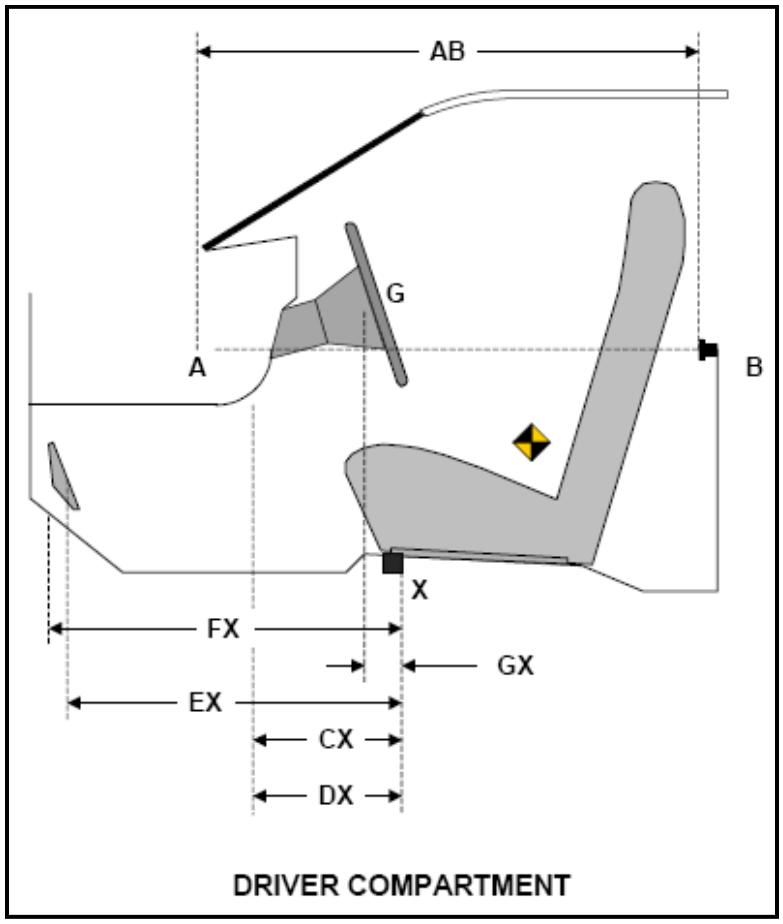
DATA SHEET NO.14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

DRIVER COMPARTMENT INTRUSION

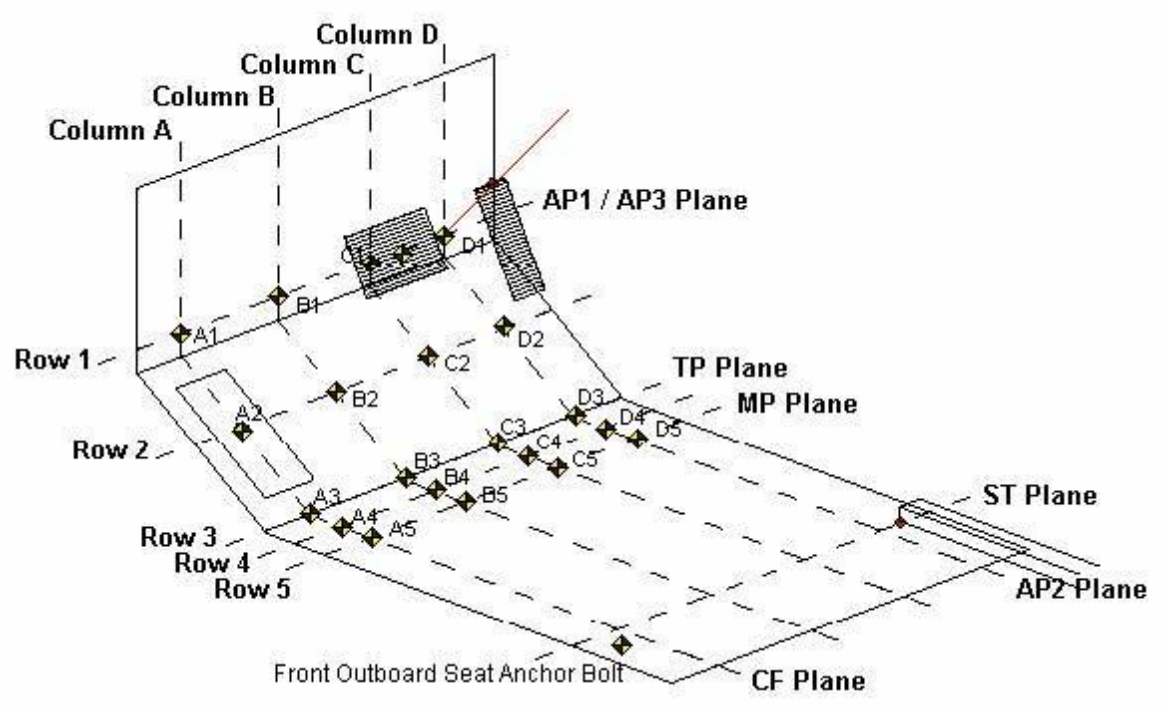
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	805	804	-1
CX	Left Knee Bolster to X	mm	213	214	1
DX	Right Knee Bolster to X	mm	197	199	2
EX	Brake Pedal to X	mm	519	482	-37
FX	Foot Rest to X	mm	537	509	-28
GX	Center of Steering Column Wheel Hub to X	mm	34	21	-13

X = Front of Seat Track (Stationary)



DATA SHEET NO.14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011



AP1: Y-Z Plane passing through D1
AP2: X-Z Plane passing through D1
AP3: X-Y plane passing through D1
MP: Y-Z plane, halfway between the ST plane and AP1 plane
CF Plane: X-Z plane passes through center of footrest.
BP Plane: X-Z plane passes through center of brake pedal
TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard
Column A: intersection of vehicle and CF plane
Column D: Intersection of vehicle and AP2 plane
Row 1: intersection of the vehicle and the AP3 Plane
Row 3: intersection of the vehicle and TP plane
Row 5: intersection of the vehicle and MP plane
Row 2: evenly spaced between row 1 and 3
Row 4: evenly spaced between row 3 and 5

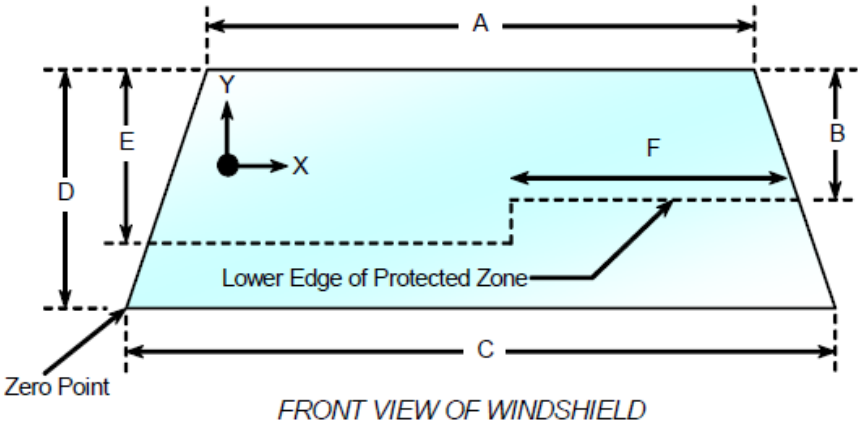
DATA SHEET NO. 15
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

Please provide windshield mounting details. A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.
The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.
Temperature of windshield molding during test: 21.3°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2125	2125	100%
Right Side	2125	2125	100%
Total	4250	4250	100%



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1240
B	mm	435
C	mm	1570
D	mm	720
E	mm	435
F	mm	475

AREAS OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than .25 inches by a vehicle component other than one that is normally in contact with the windshield.

- No Penetrations

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

- No Penetrations

X	Y

DATA SHEET NO. 15 (CONTINUED)
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

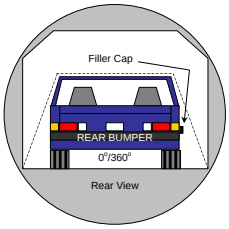
Temperature at Time of Impact: 20° C Test Time: 6:58PM

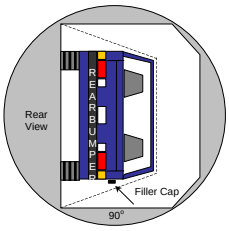
Stoddard Solvent Spillage Measurements

A.	From impact until vehicle motion ceases: (Maximum allowable = 1 oz.)	0	oz
B.	For the 5-minute period after motion ceases: (Maximum allowable = 5 oz.	0	oz
C.	For the following 25 minutes: (Maximum allowable = 1 oz./minute	0	oz
D.	Spillage	0	oz

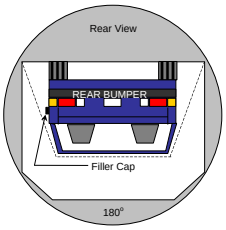
DATA SHEET NO. 16
FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011

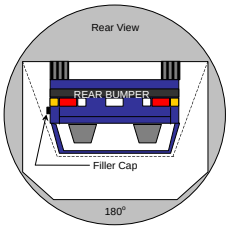




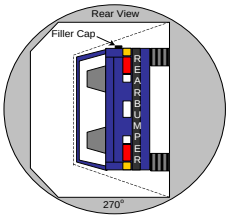
0° TO 90°

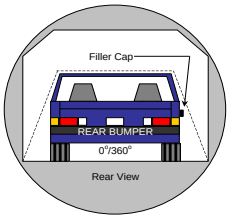


90° TO 180°



180° TO 270°





270° TO 360°

1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
2. Details of Stoddard Solvent spillage: None

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	70	300	370
90° to 180°	67	300	367
180° to 270°	61	300	361
270° to 360°	71	300	371

FMVSS 301 SPILLAGE TABLE

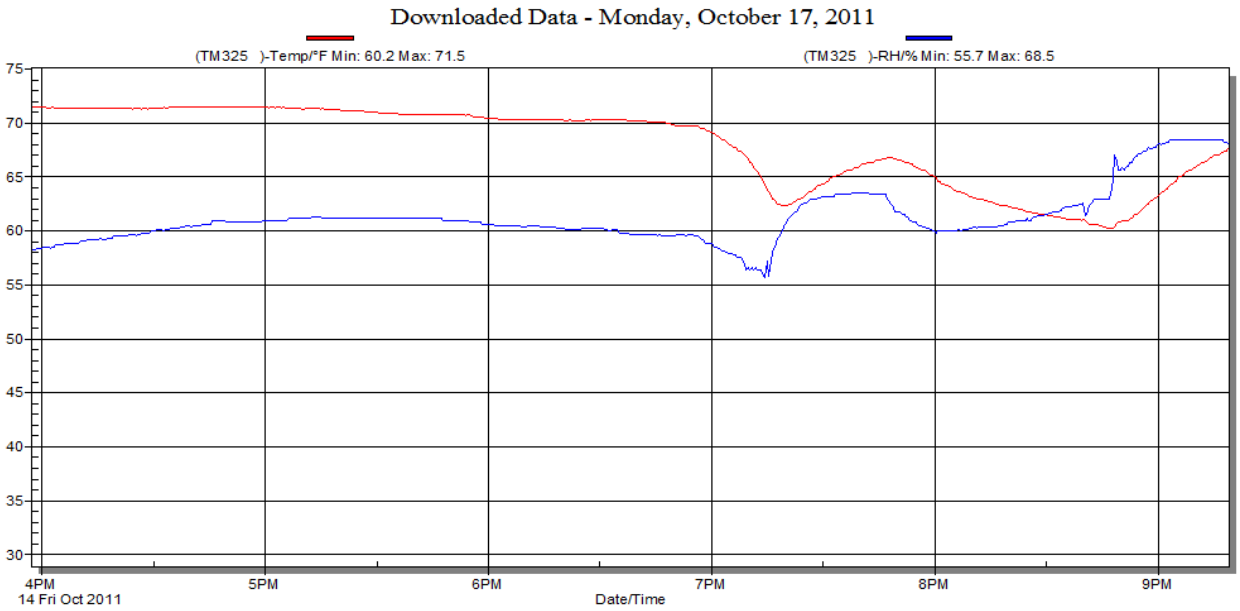
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0		
90° to 180°	0	0		
180° to 270°	0	0		
270° to 360°	0	0		

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 17
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle:	2012 Chrysler 200 LX	NHTSA No:	MC0307
Test Program:	Frontal NCAP	Test Date	10/14/2011



APPENDIX A
PHOTOGRAPHS

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56	Pre-test Passenger Dummy Feet	A-32
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60 60a	Pre-test Passenger's Side Floorpan	A-34
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71	2012 Chrysler 200 LX Frontal Impact Event	A-40
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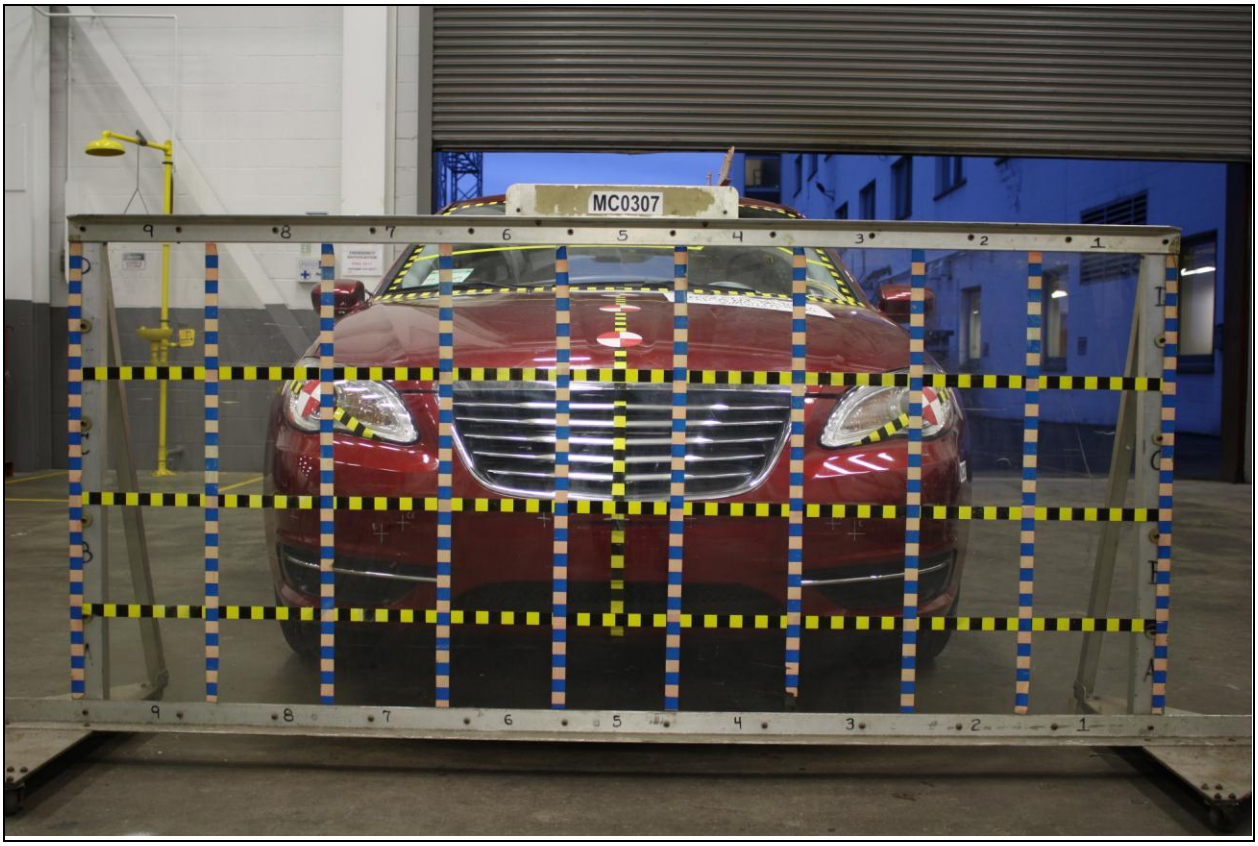


Figure A-1: Load Cell Location



Figure A-2: Load Cell Wall



Figure A-3: Manufacturer's Label

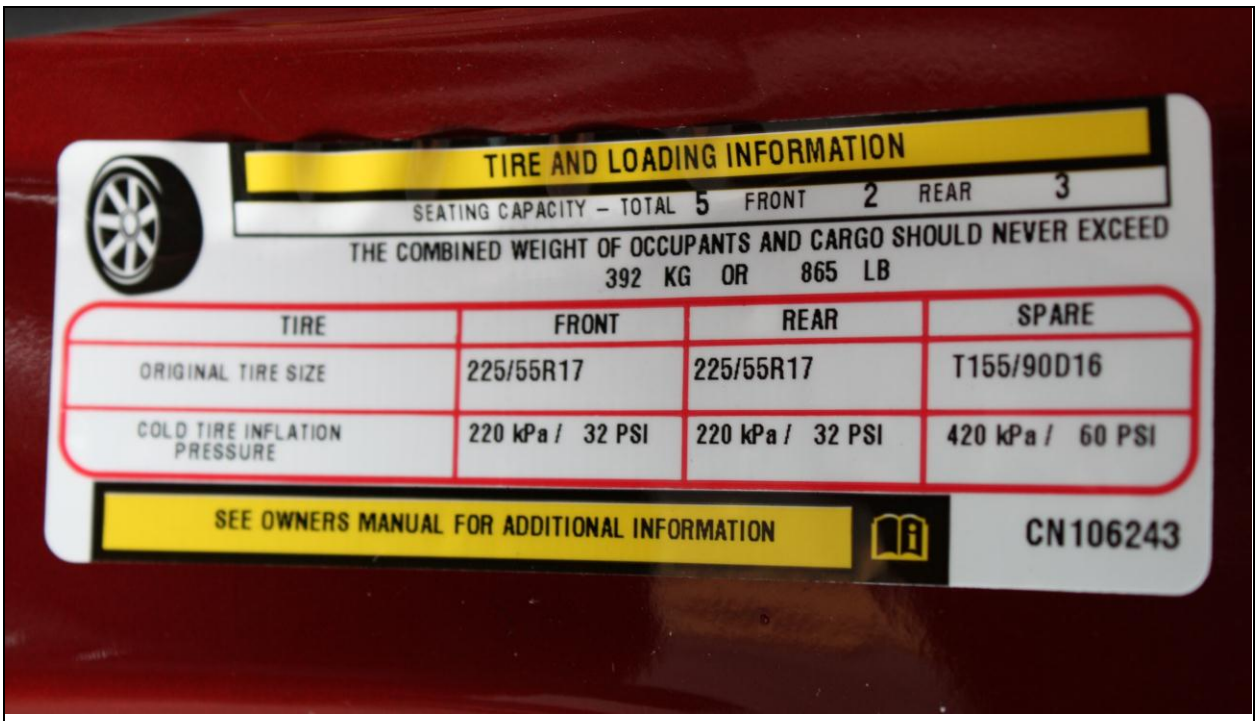


Figure A-4: Tire Placard



Figure A-5: 2012 Chrysler 200 LX Right Front ¾ View, As Received



Figure A-6: Left Rear ¾ View, as Received

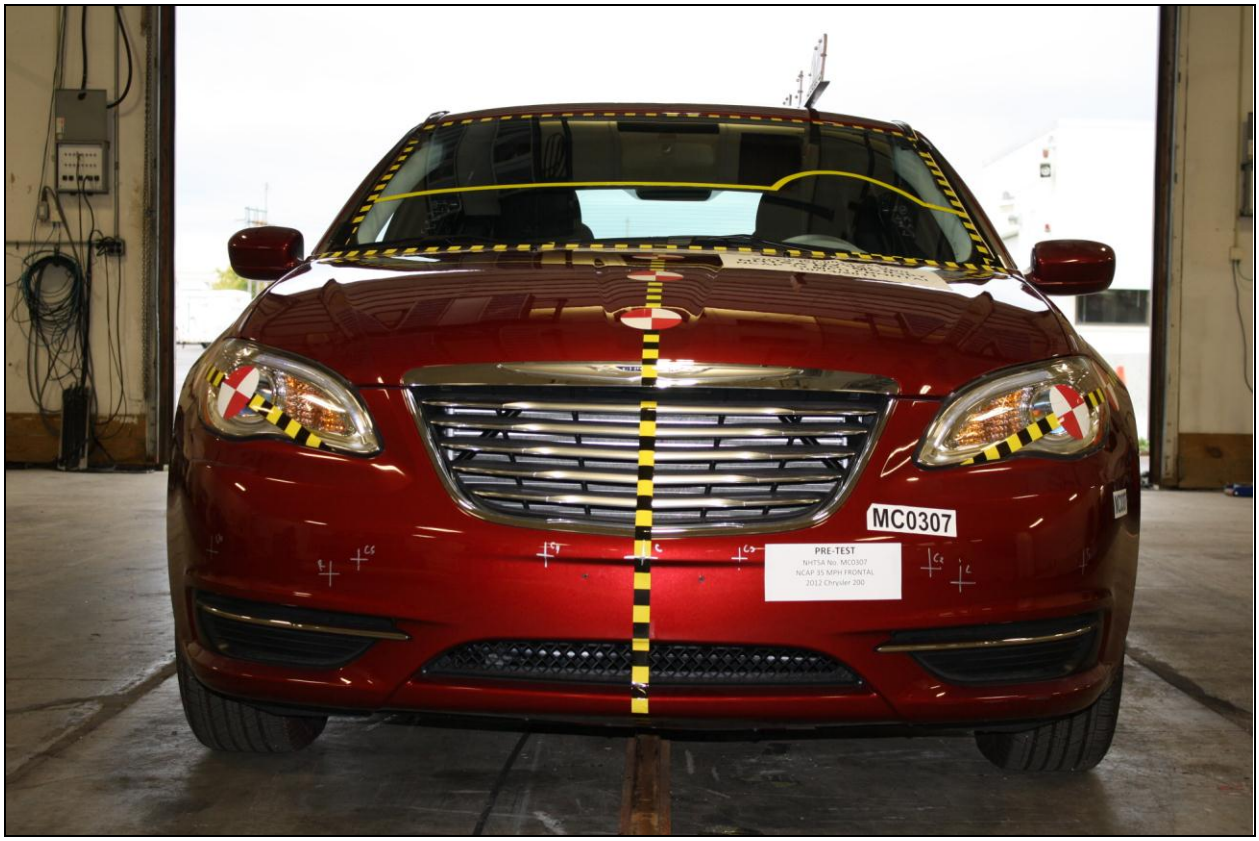


Figure A-7: Pre-Test Front View of Test Vehicle

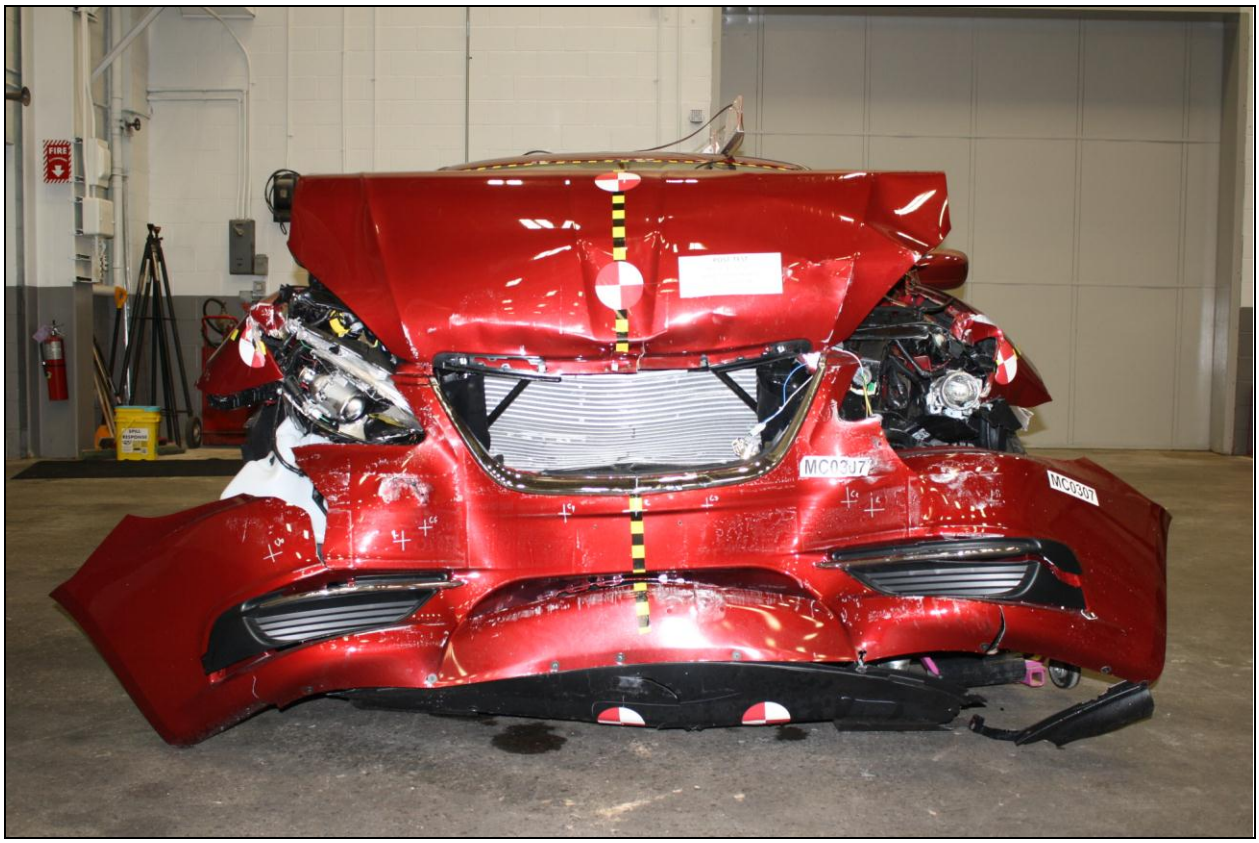


Figure A-8: Post-Test Front View of Test Vehicle



Figure A-9: Pre-Test Left View of Test Vehicle



Figure A-10 – Post-Test Left View of Vehicle



Figure A-11: Pre-Test Right View of Test Vehicle



Figure A-12: Post-Test Right View of Test Vehicle



Figure A-13: Pre-Test Right ¾ View



Figure A-14: Post-Test Right ¾ View



Figure A-15: Pre-Test Left Rear ¾ View



Figure A-16: Post-Test Left Rear ¾ View



Figure A-17: Pre-Test Windshield View



Figure A-18: Post-Test Windshield View

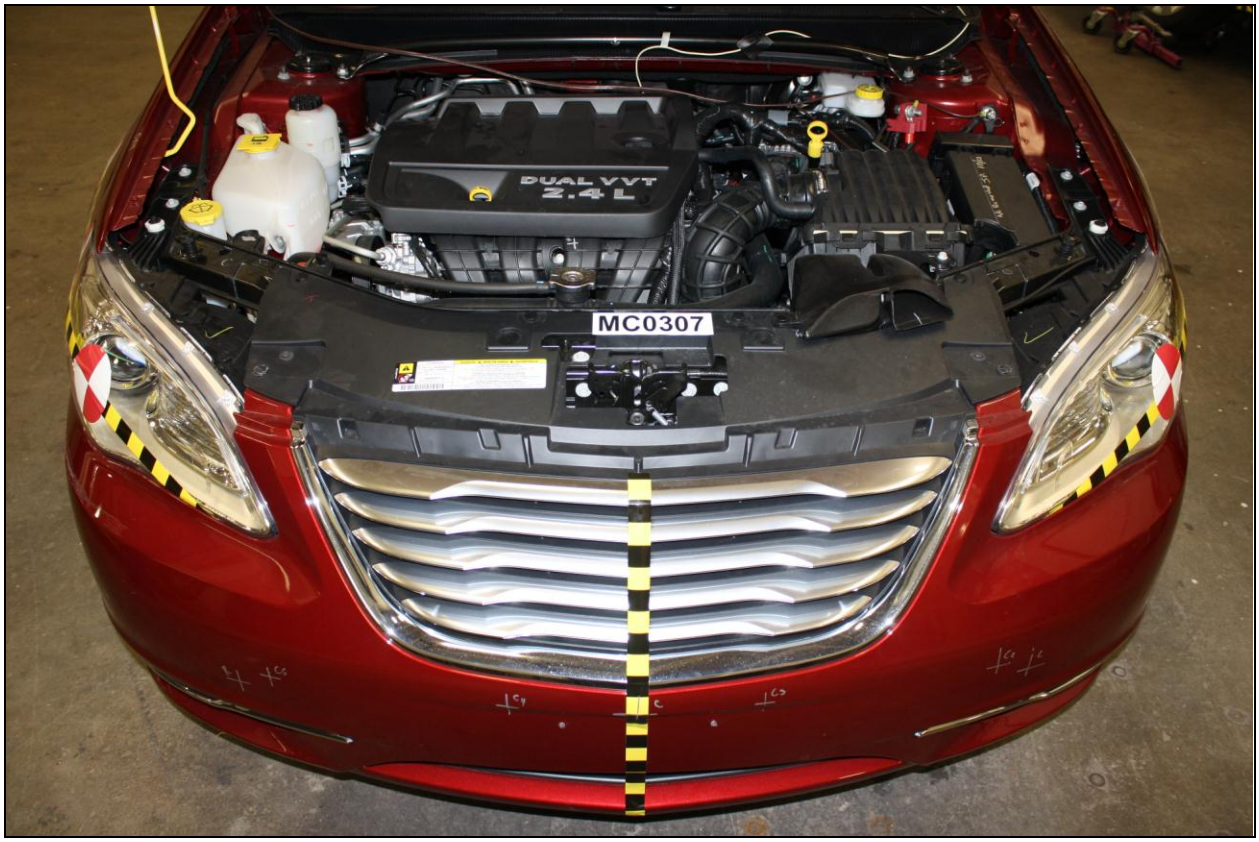


Figure A-19: Pre-Test Engine Compartment View



Figure A-20: Post-Test Engine Compartment View



Figure A-21: Pre-Test Fuel Filler Cap View



Figure A-22: Post-Test Fuel Filler Cap View

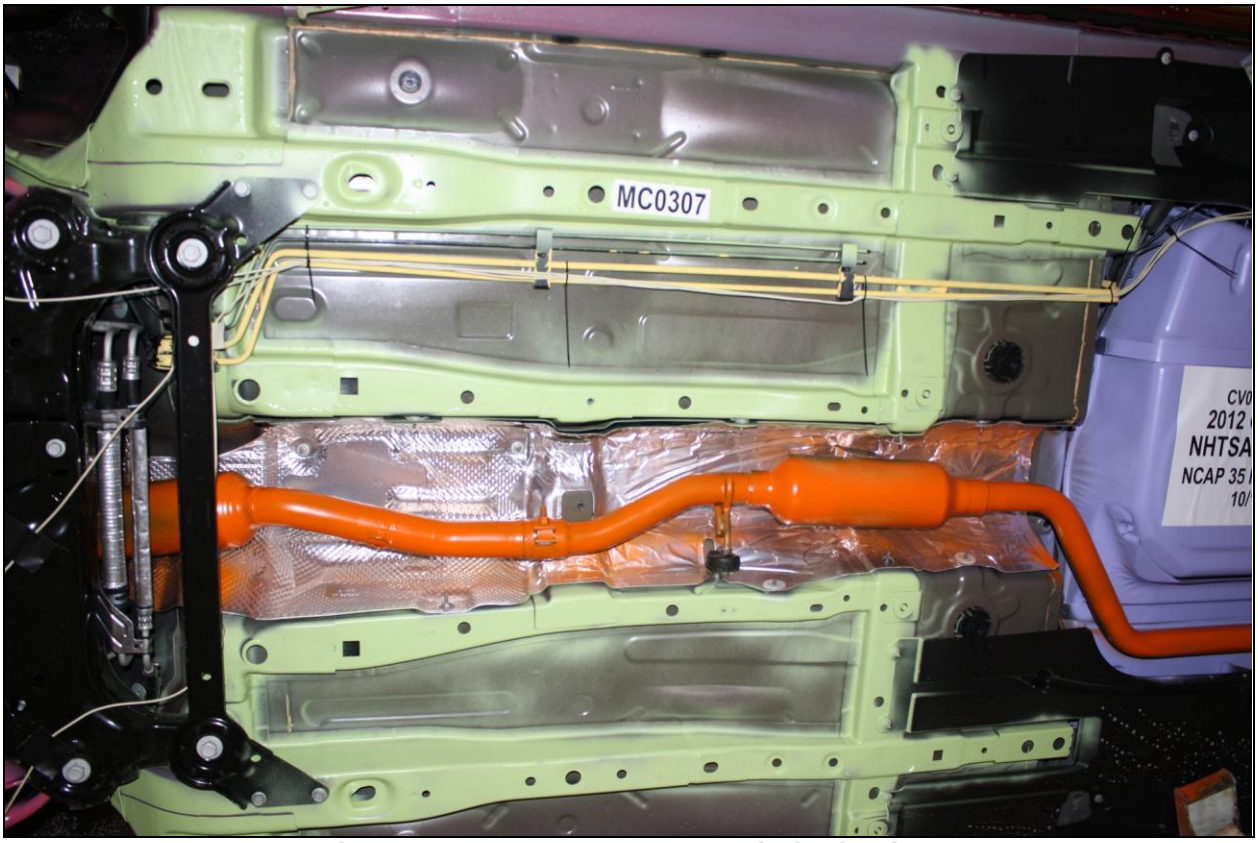


Figure A-23: Pre-Test Front Underbody View



Figure A-24: Post-Test Front Underbody View

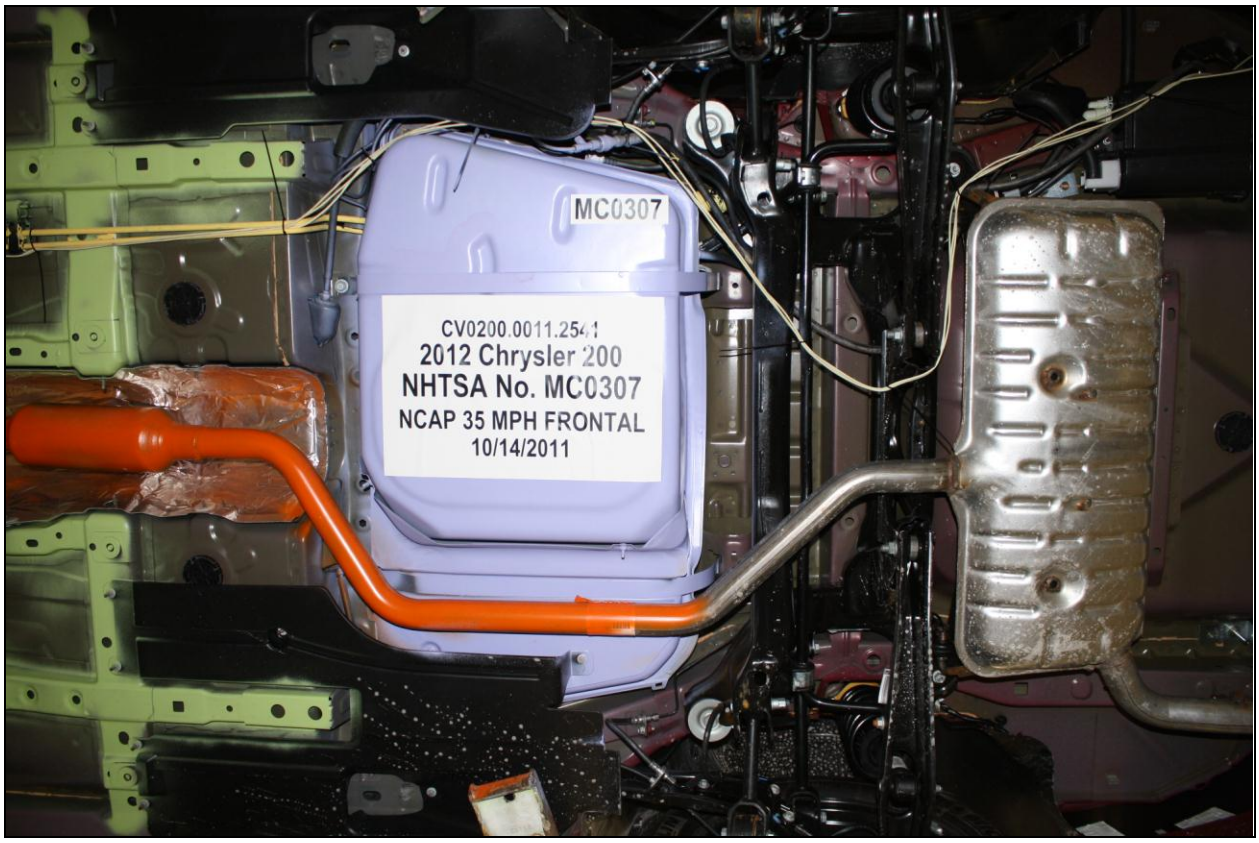


Figure A-25: Pre-Test Rear Underbody View



Figure A-26: Post-Test Rear Underbody View



Figure A-27: Pre-Test Dummy Cable Routing

Photo Not Available

Figure A-28: Post-Test Dummy Cable Routing

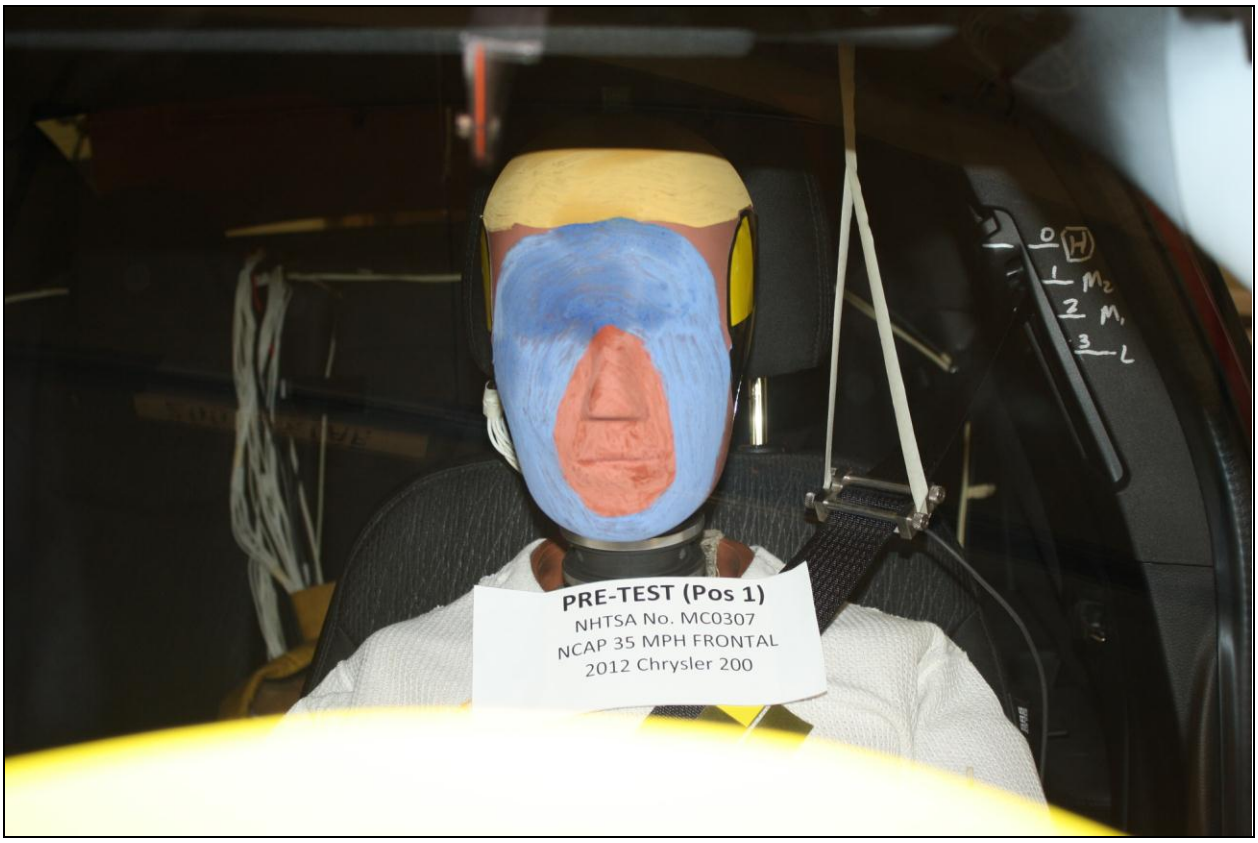


Figure A-29: Pre-Test Driver Dummy Front View

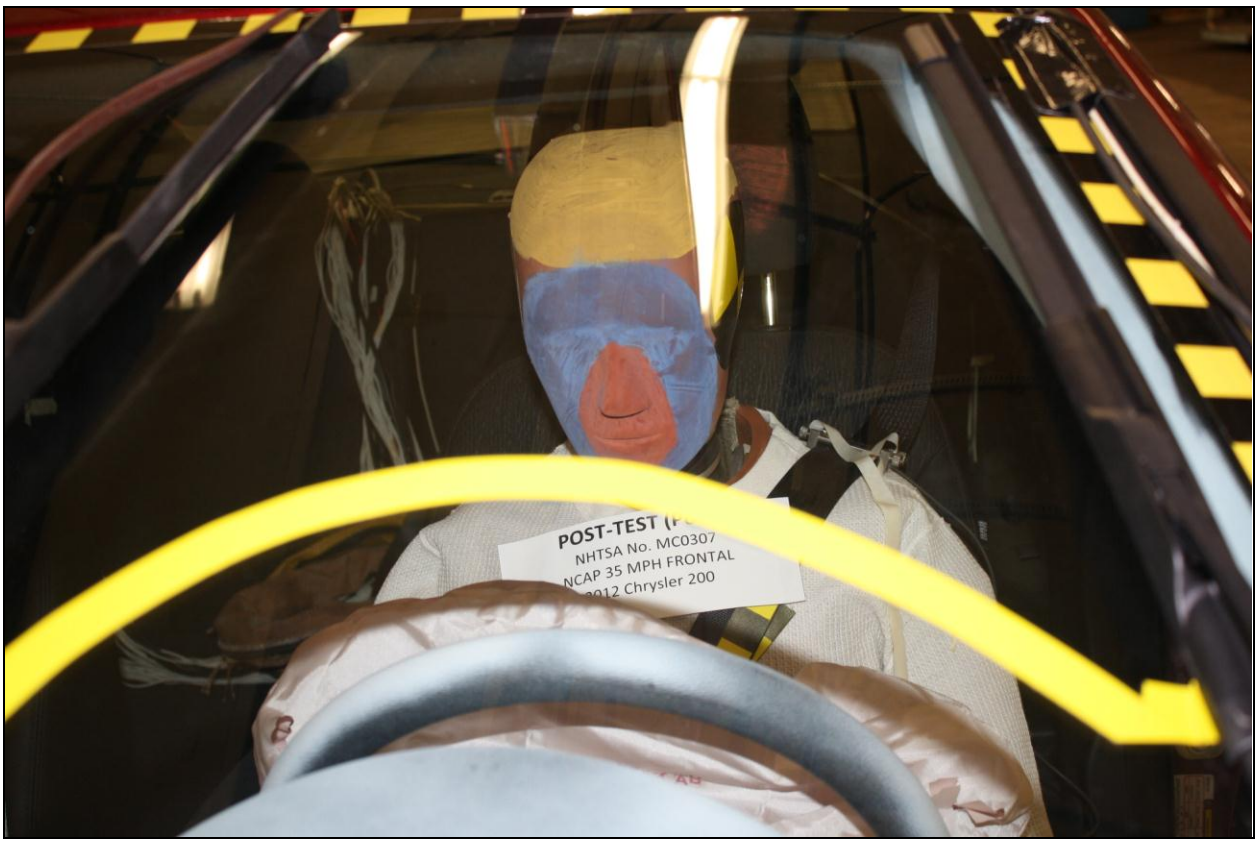


Figure A-30: Post-Test Driver Dummy Front View



Figure A-31: Pre-Test Driver Dummy Window View



Figure A-32: Post-Test Driver Dummy Window View



Figure A-33: Pre-Test Driver Dummy and Vehicle Interior View



Figure A-34: Post-Test Driver Dummy and Vehicle Interior View



Figure A-35: Pre-Test Driver's Seat Fore-Aft Markings



Figure A-36: Post-Test Driver's Seat Fore-Aft Markings

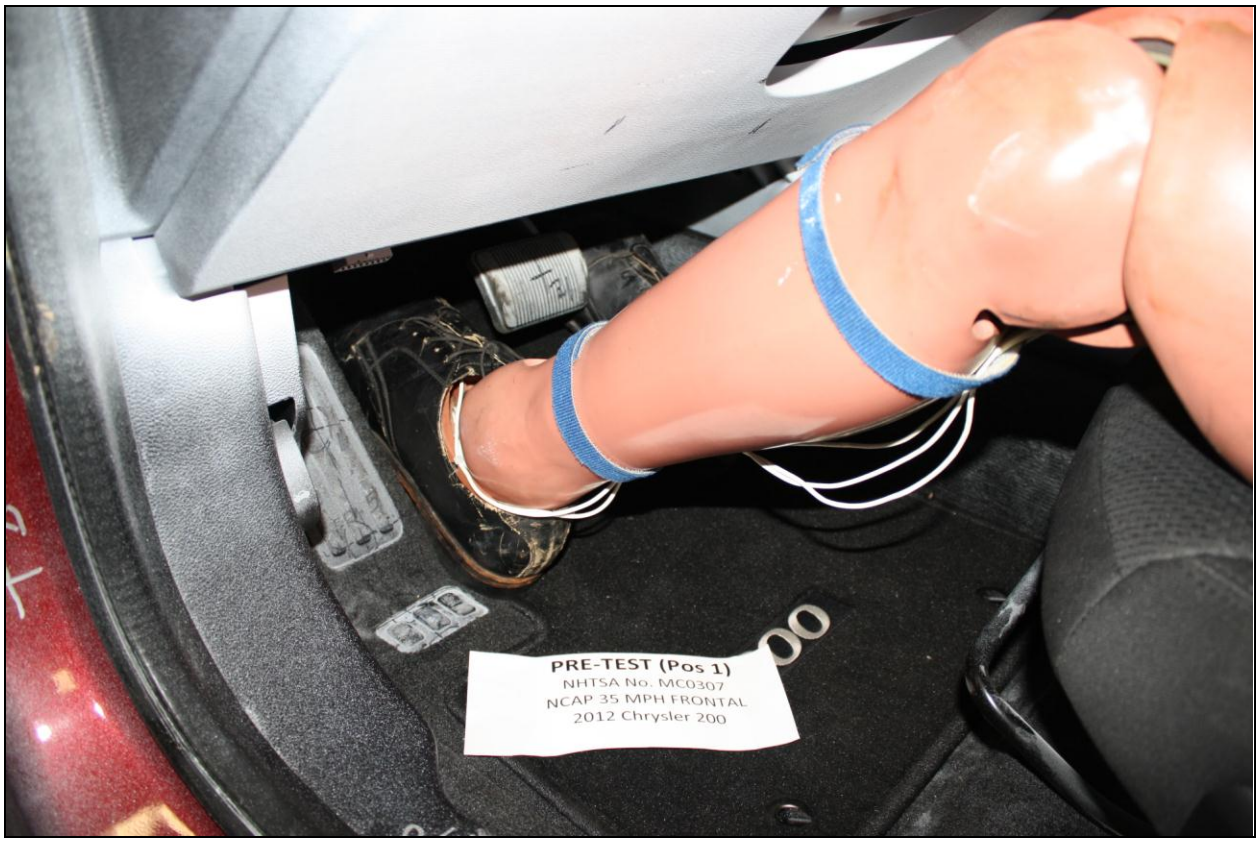


Figure A-37: Pre-Test Driver Dummy Feet

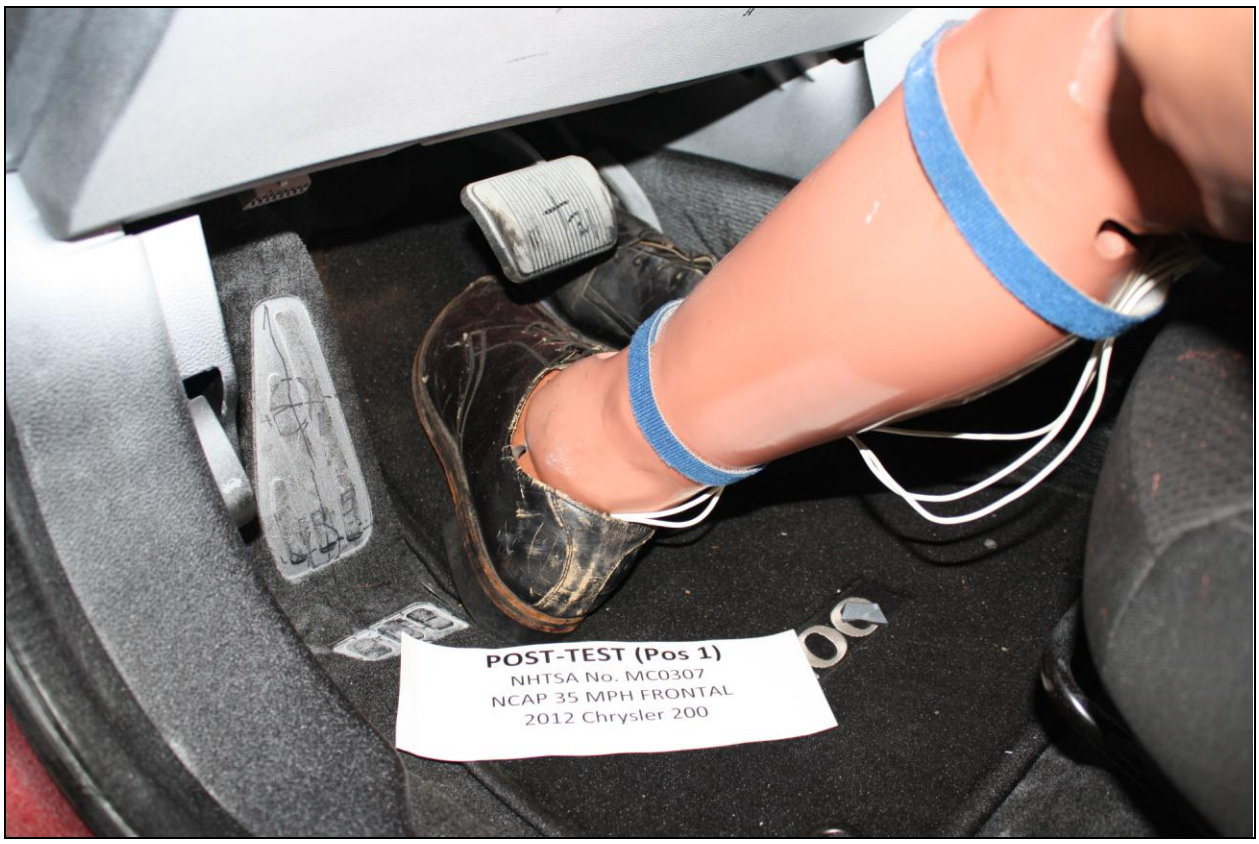


Figure A-38: Post-Test Driver Dummy Feet

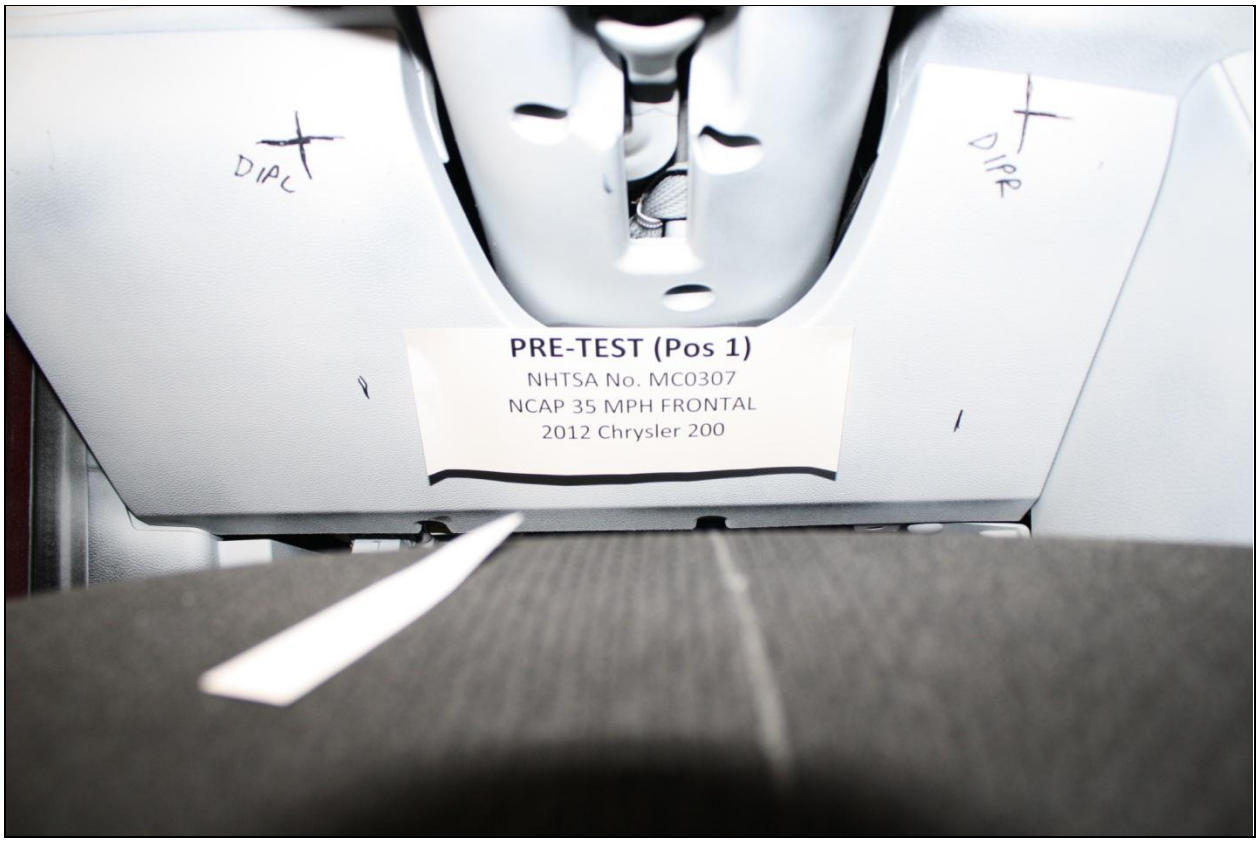


Figure A-39: Pre-Test Driver's Side Knee Bolster



Figure A-40: Post-Test Driver's Side Knee Bolster

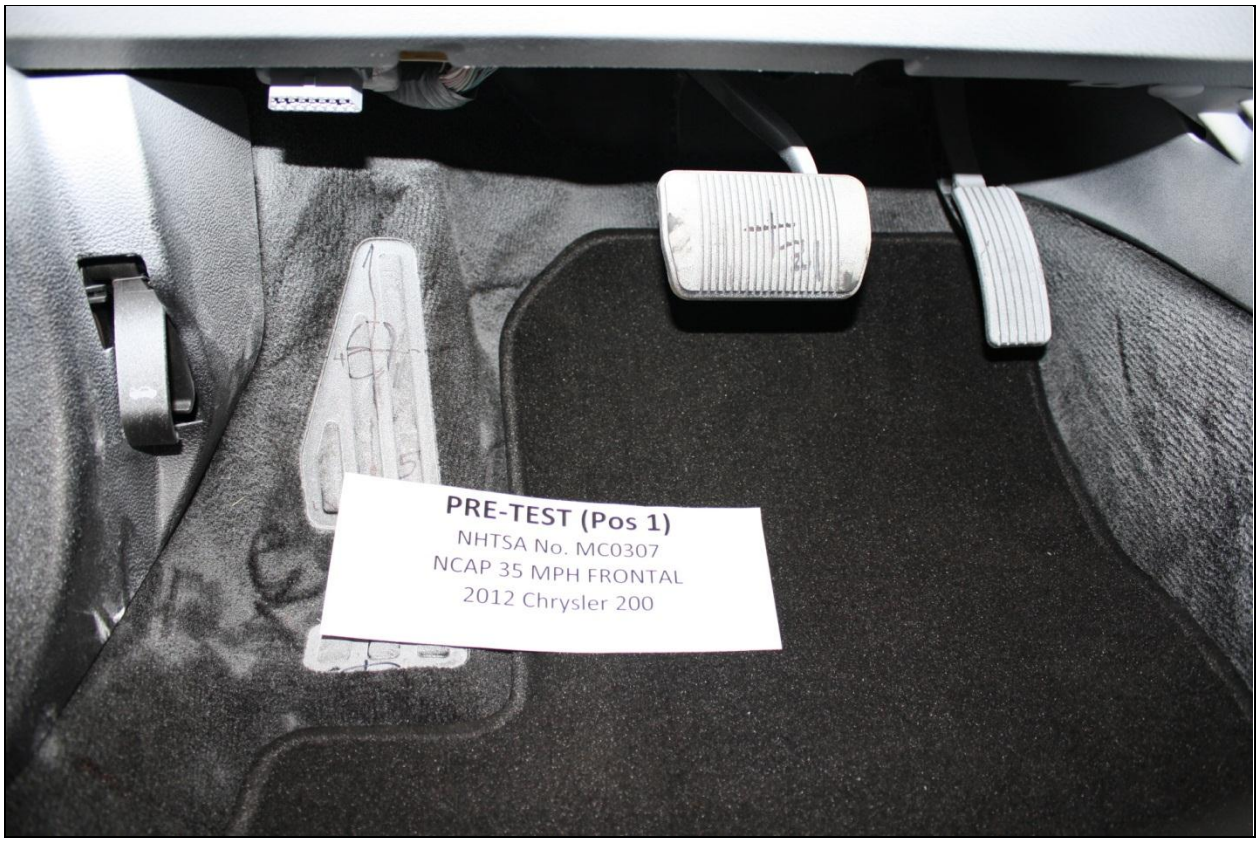


Figure A-41: Pre-Test Driver's Side Floorpan



Figure A-42: Post-Test Driver's Side Floorpan

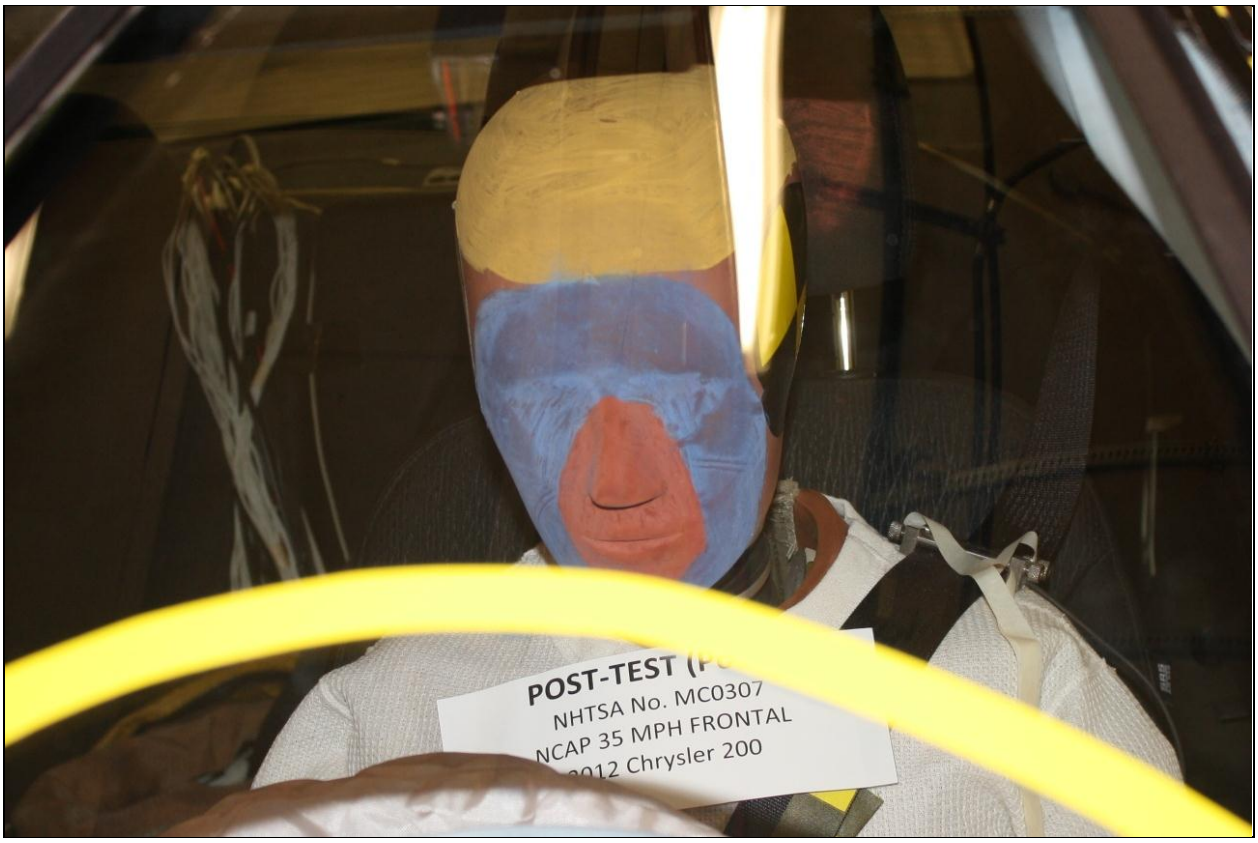


Figure A-43: Post-Test Diver Dummy Face



Figure A-44: Post-Test Driver Dummy Contact With Airbag



Figure A-45: Post-Test Driver Dummy Contact With Headrest

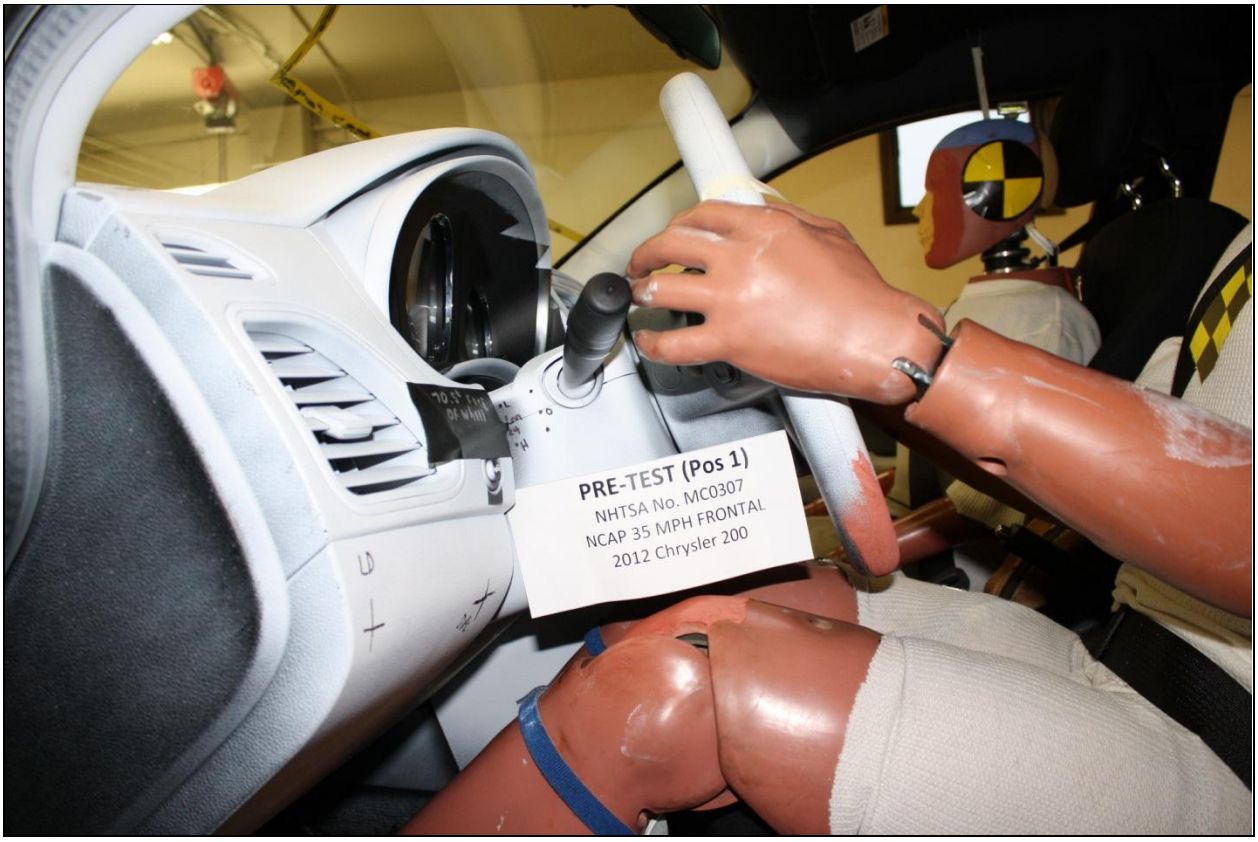


Figure A-46: Pre-Test View of the Steering Wheel



Figure A-47: Post-Test View of the Steering Wheel



Figure A-48: Pre-Test Passenger Dummy Front View

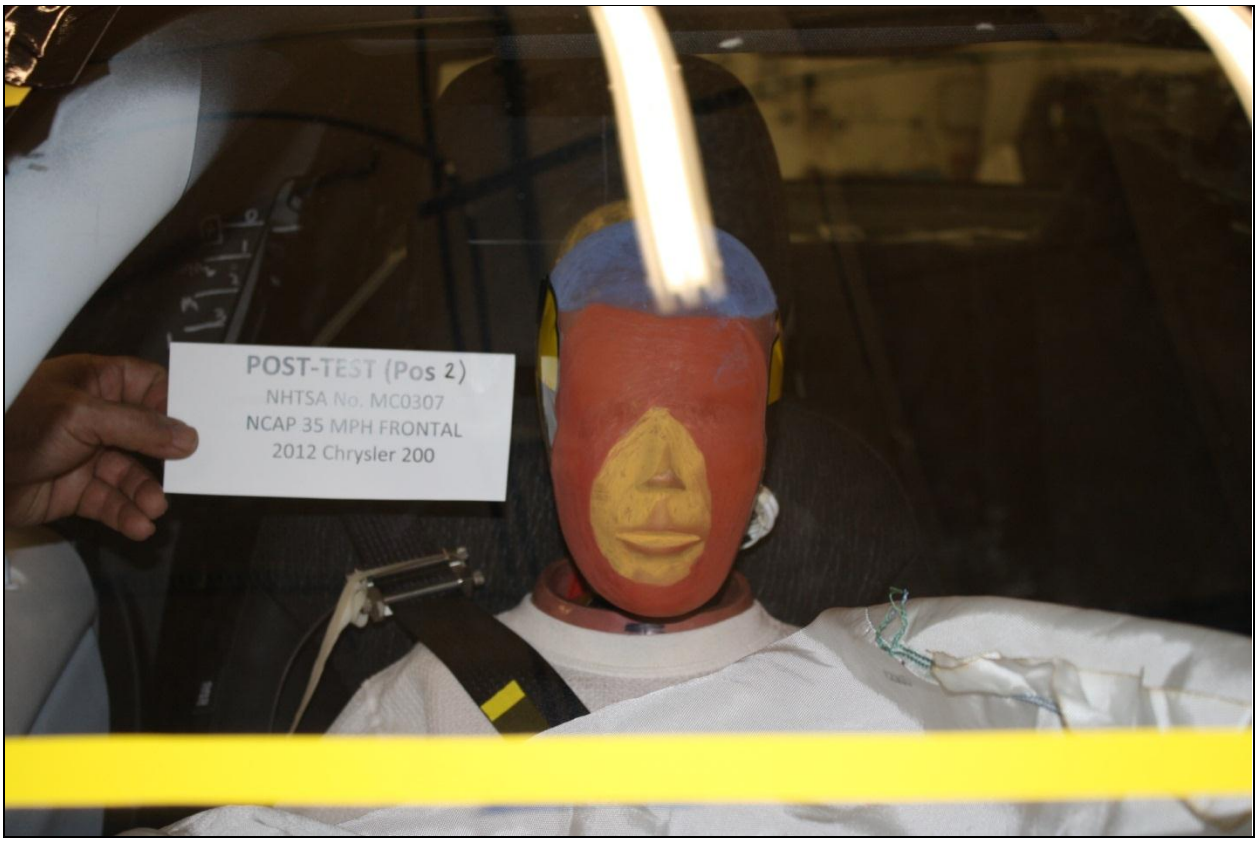


Figure A-49: Post-Test Passenger Dummy Front View



Figure A-50: Pre-Test Passenger Dummy Window View



Figure A-51: Post-Test Passenger Dummy Window View



Figure A-52: Pre-Test Passenger Dummy and Vehicle Interior View



Figure A-53: Post-Test Passenger Dummy and Vehicle Interior View



Figure A-54: Pre-Test Passenger's Seat Fore-Aft Markings



Figure A-55: Post-Test Passenger's Seat Fore-Aft Markings



Figure A-56: Pre-Test Passenger Dummy Feet



Figure A-57: Post-Test Passenger Dummy Feet

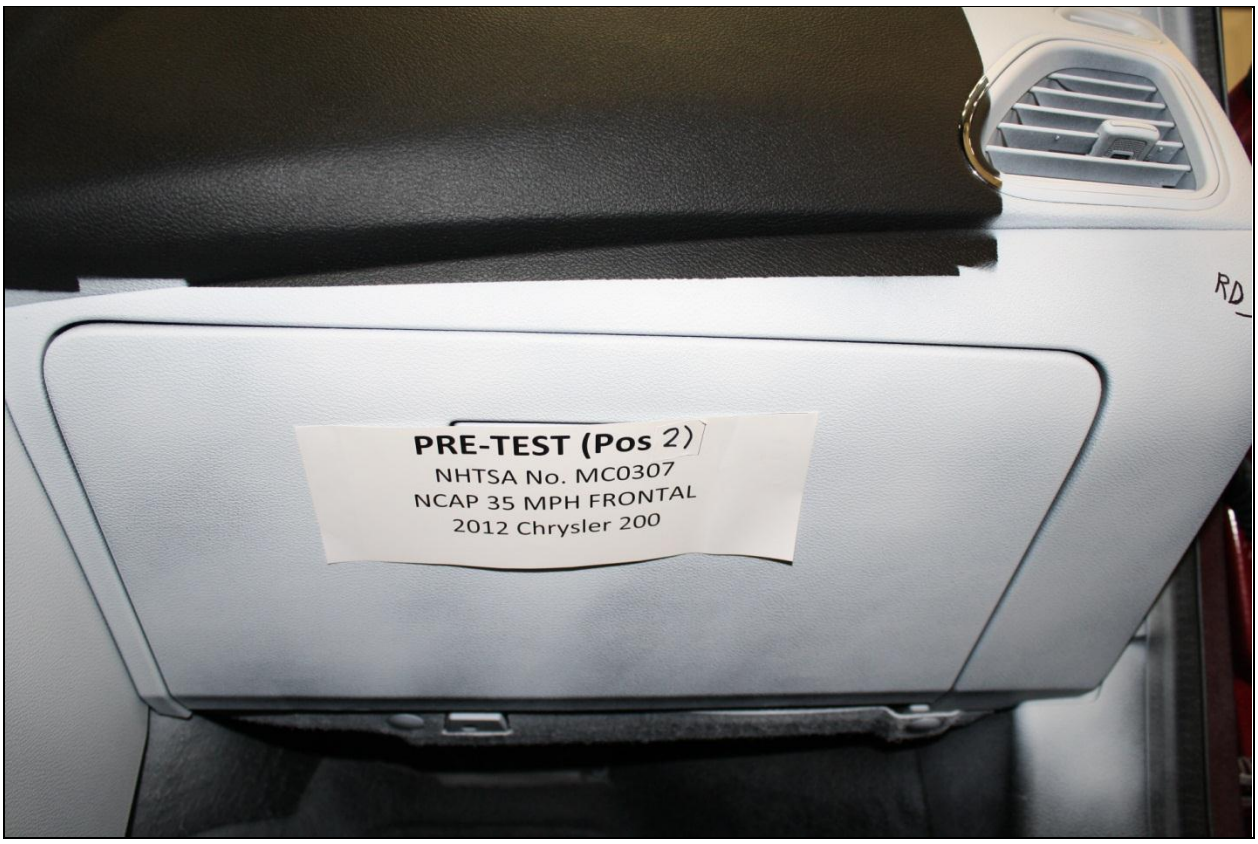


Figure A-58: Pre-Test Passenger's Side Knee Bolster



Figure A-59: Post-Test Passenger's Side Knee Bolster



Figure A-60: Pre-Test Passenger's Floorpan



Figure A-61: Post-Test Passenger's Floorpan



Figure A-62: Post-Test Passenger Dummy Contact with Airbag



Figure A-62a: Post-Test Passenger Dummy Contact with Head Restraint



Figure A-63: Photograph of Ballast Installed in Vehicle

Photo Not Applicable

Figure A-64: Post-Test Stoddard Solvent Spillage Location View



Figure A-65: Post-Test Speed Trap Read Out



Figure A-66: Vehicle at 0º on Static Rollover Device



Figure A-67: Vehicle at 90º on Static Rollover Device



Figure A-68: Vehicle at 180º on Static Rollover Device

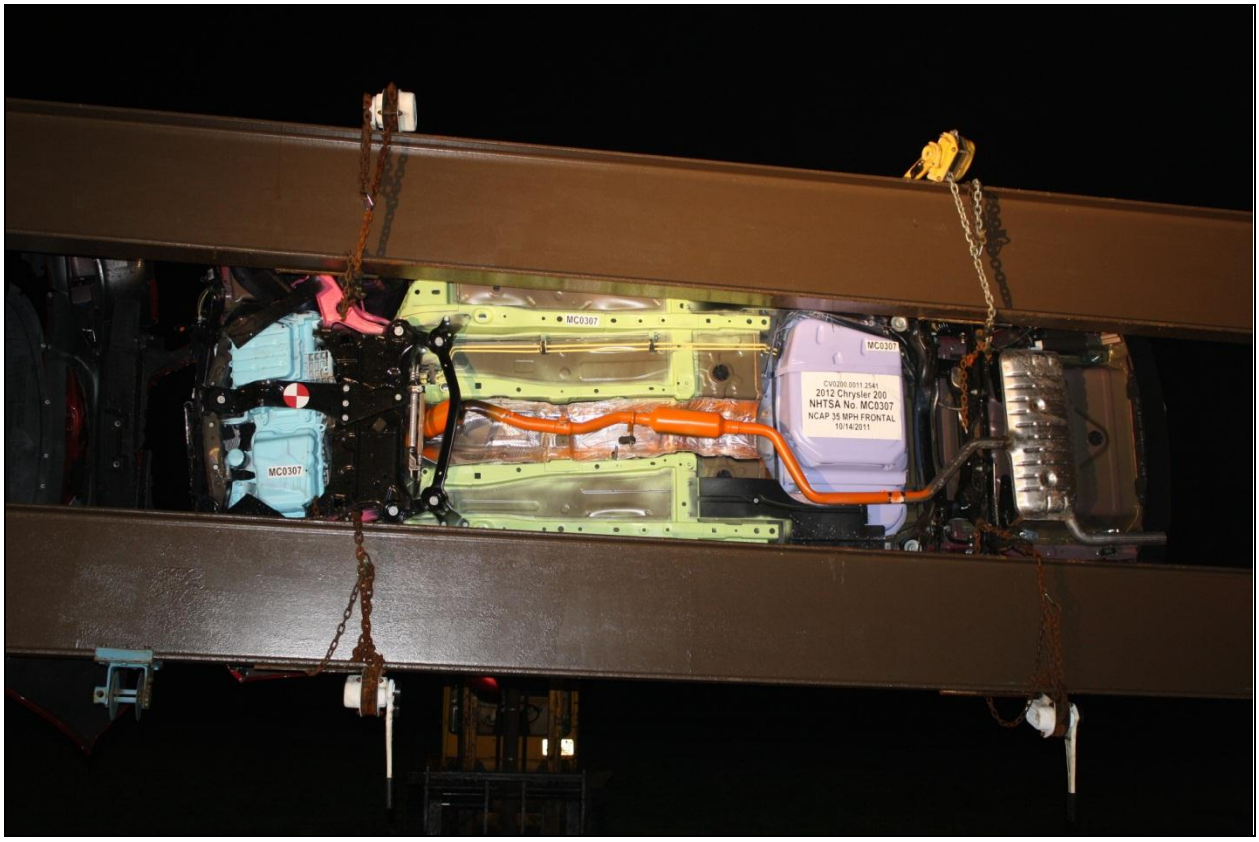


Figure A-69: Vehicle at 270º on Static Rollover Device



Figure A-70: Vehicle at 360º on Static Rollover Device



Figure A-71: 2012 Chrysler 200 LX Frontal Impact Event

Figure A-72: Monroney Label Photograph

APPENDIX B

DUMMY RESPONSE DATA TRACES

Fig. No.	List of Data Plots Provided In The Test Report	Page No.
1	Driver Head X Acceleration vs. Time Primary	B-5
2	Driver Head Y Acceleration vs. Time Primary	B-5
3	Driver Head Z Acceleration vs. Time Primary	B-6
4	Driver Head Resultant Acceleration vs. Time Primary	B-6
5	Driver Chest X Deflection vs. Time	B-7
6	Driver Chest X Acceleration vs. Time Primary	B-7
7	Driver Chest Y Acceleration vs. Time Primary	B-8
8	Driver Chest Z Acceleration vs. Time Primary	B-8
9	Driver Chest Resultant Acceleration vs. Time Primary	B-9
10	Driver Upper Neck Force X vs. Time Primary	B-9
11	Driver Upper Neck Force Z vs. Time Primary	B-10
12	Driver Upper Neck Moment Y vs. Time Primary	B-10
13	Driver Nij vs. Time Primary	B-11
14	Driver Left Femur Force vs. Time	B-11
15	Driver Right Femur Force vs. Time	B-12
16	Passenger Head X Acceleration vs. Time Primary	B-12
17	Passenger Head Y Acceleration vs. Time Primary	B-13
18	Passenger Head Z Acceleration vs. Time Primary	B-13
19	Passenger Head Resultant Acceleration vs. Time Primary	B-14
20	Passenger Chest X Deflection vs. Time	B-14
21	Passenger Chest X Acceleration vs. Time Primary	B-15
22	Passenger Chest Y Acceleration vs. Time Primary	B-15
23	Passenger Chest Z Acceleration vs. Time Primary	B-16
24	Passenger Chest Resultant Acceleration vs. Time Primary	B-16
25	Passenger Upper Neck Force X vs. Time Primary	B-17
26	Passenger Upper Neck Force Z vs. Time Primary	B-17
27	Passenger Upper Neck Moment Y vs. Time Primary	B-18
28	Passenger Nij vs. Time Primary	B-18
29	Passenger Left Femur Force vs. Time	B-19
30	Passenger Right Femur Force vs. Time	B-19

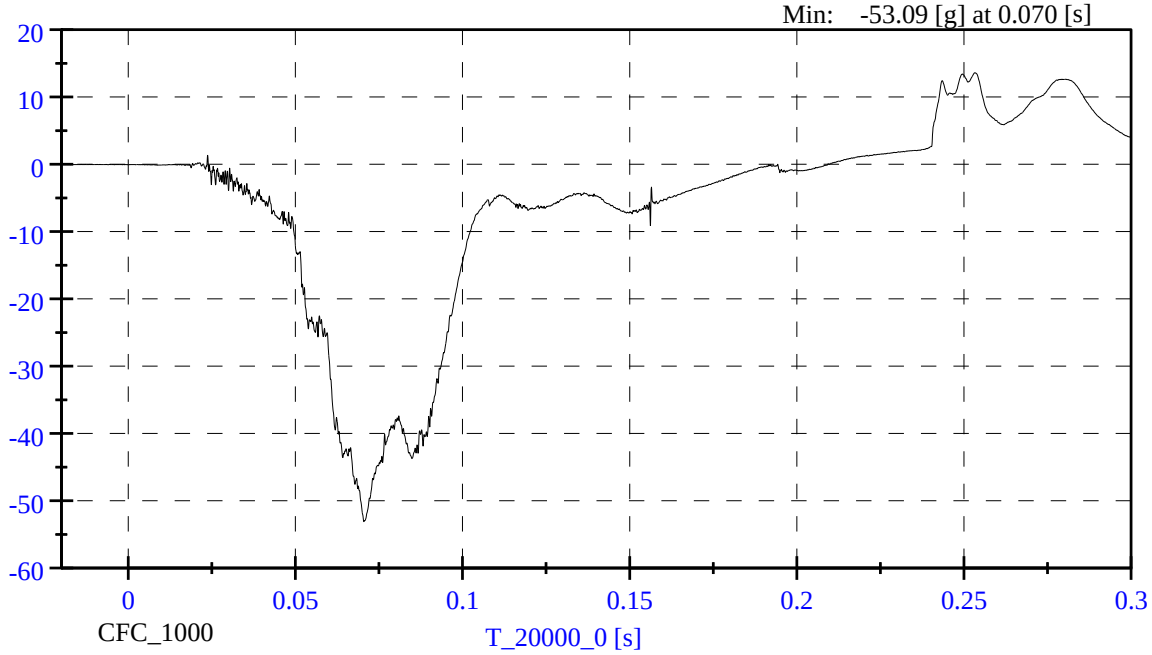
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA

Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Shoulder Belt Force
Driver Lap Belt Force
Driver Left Upper Tibia Moment X
Driver Left Upper Tibia Moment Y
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Shoulder Belt Force
Passenger Lap Belt Force
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z

Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Food Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Left Rear Seat Crossmember X
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9

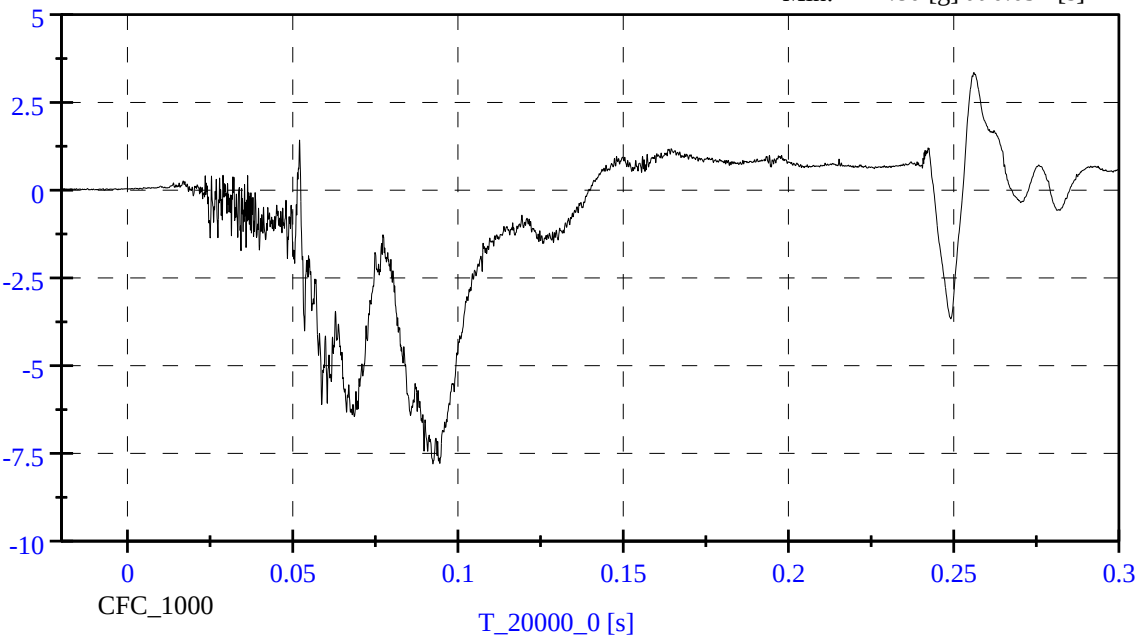
V1P1 Head CG x [g , CFC_1000]

Max: 13.60 [g] at 0.253 [s]
Min: -53.09 [g] at 0.070 [s]



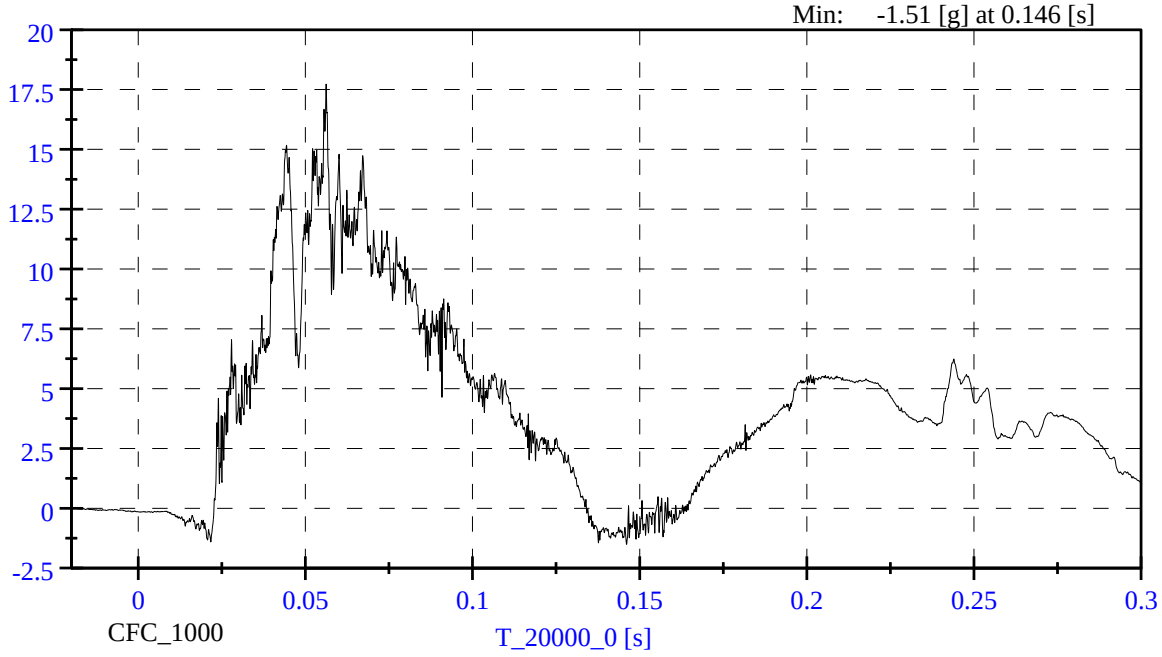
V1P1 Head CG y [g , CFC_1000]

Max: 3.35 [g] at 0.256 [s]
Min: -7.80 [g] at 0.092 [s]



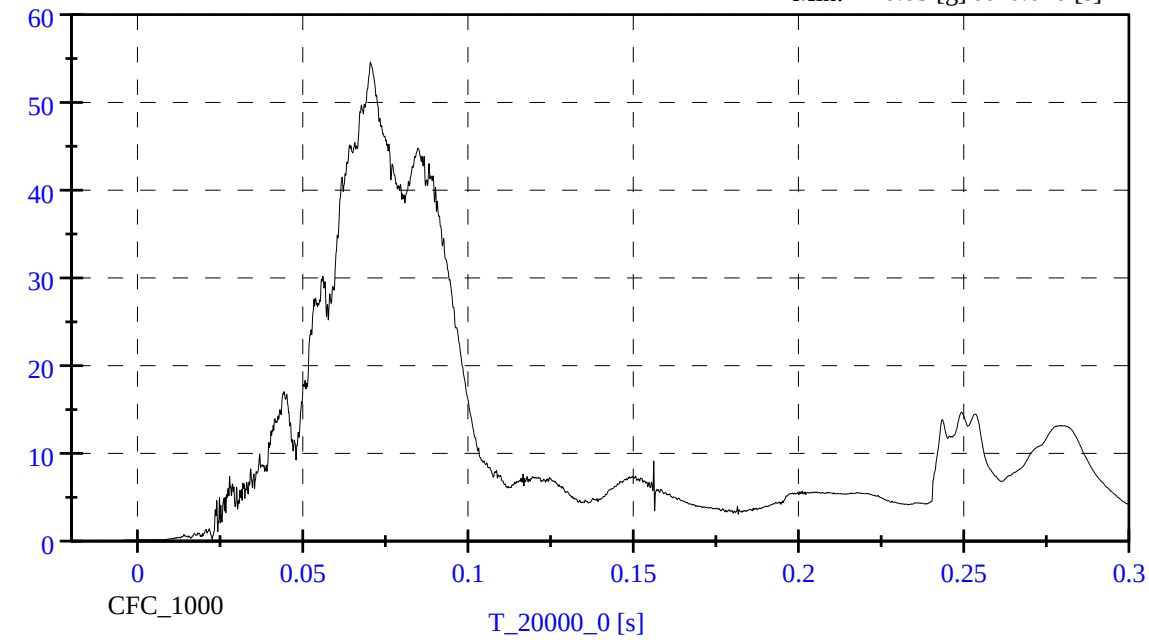
V1P1 Head CG z [g , CFC_1000]

Max: 17.73 [g] at 0.056 [s]
Min: -1.51 [g] at 0.146 [s]



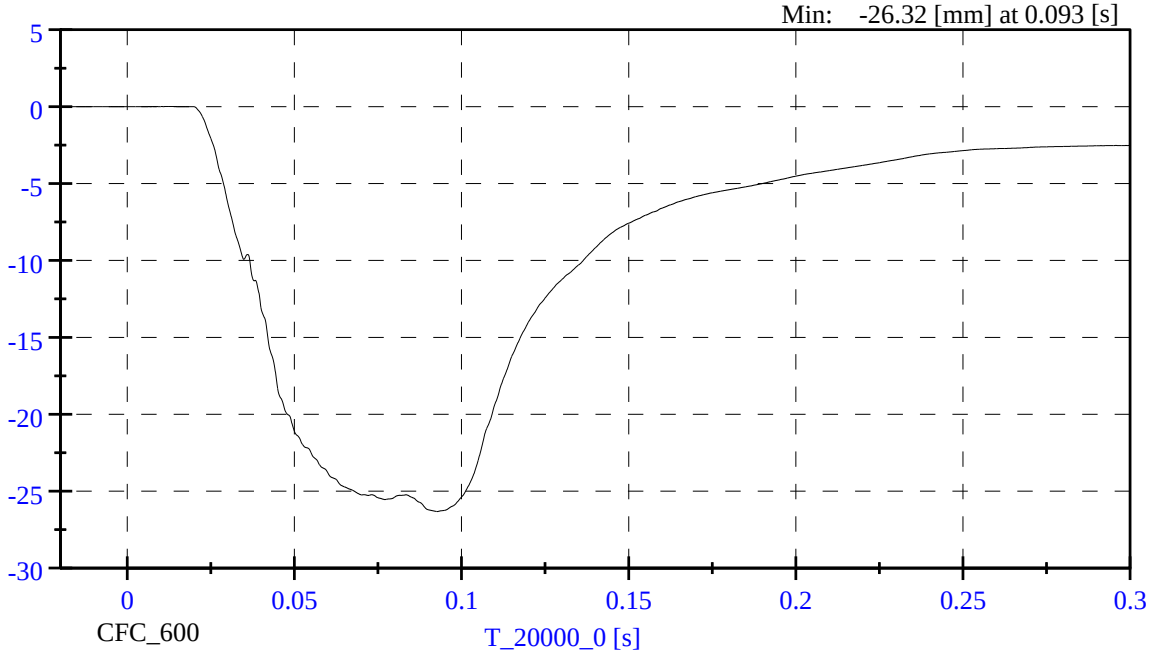
V1P1 Headform Resultant [g, CFC_1000]

Max: 54.58 [g] at 0.070 [s]
Min: 0.03 [g] at -0.020 [s]



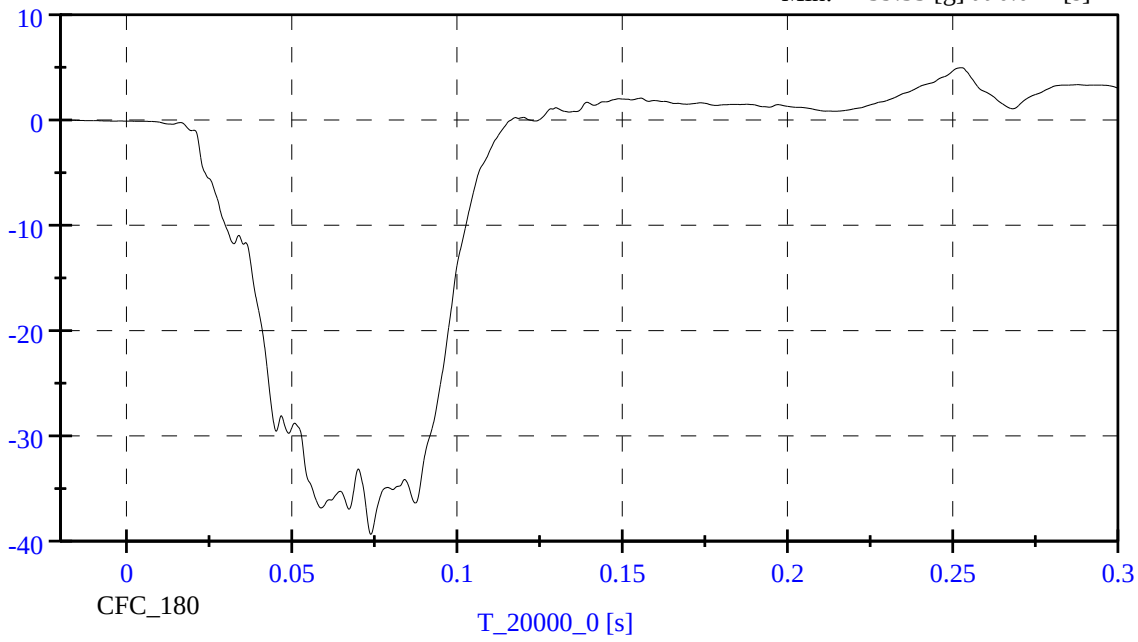
V1P1 Chest Displacement x [mm , CFC_600]

Max: 0.01 [mm] at 0.012 [s]
Min: -26.32 [mm] at 0.093 [s]



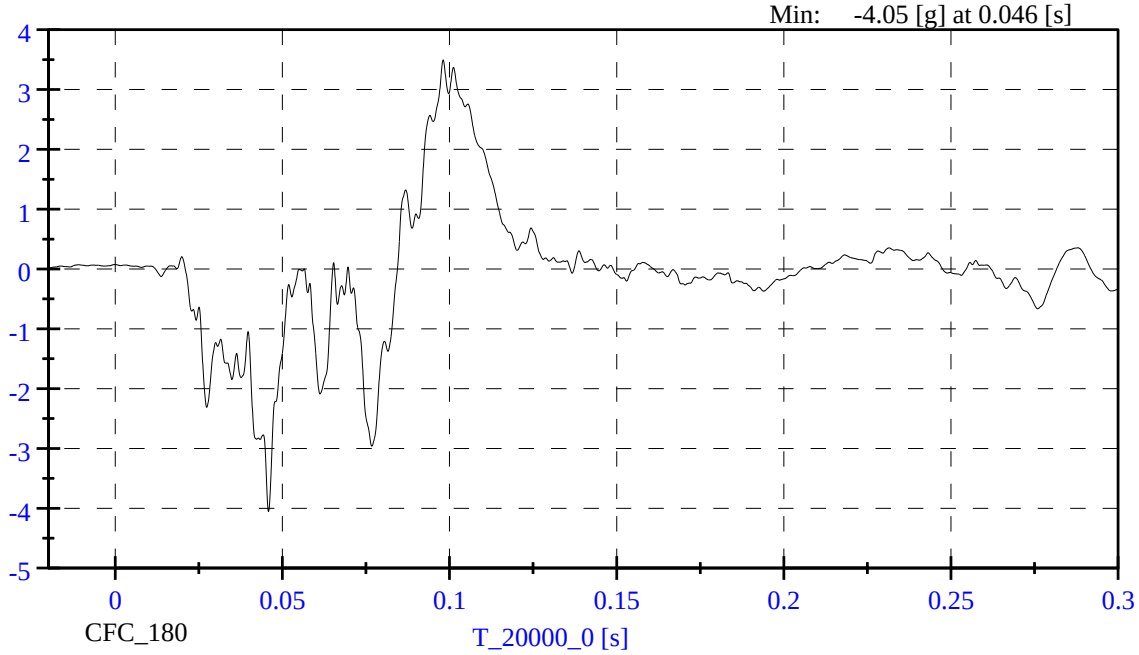
V1P1 Chest x [g , CFC_180]

Max: 4.96 [g] at 0.253 [s]
Min: -39.35 [g] at 0.074 [s]



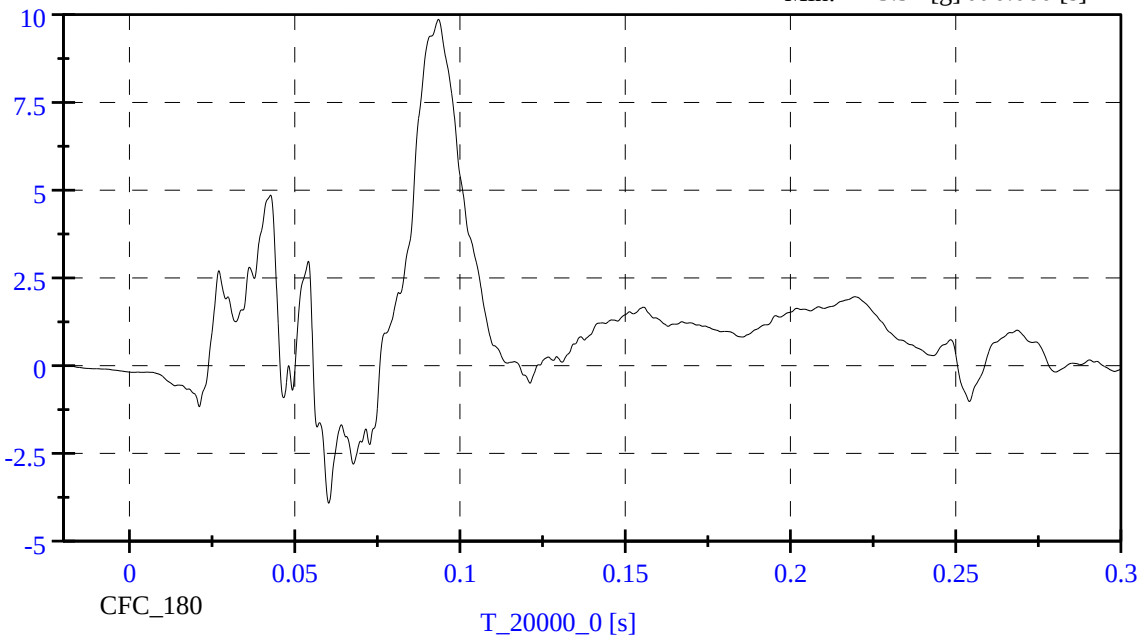
V1P1 Chest y [g , CFC_180]

Max: 3.50 [g] at 0.098 [s]
Min: -4.05 [g] at 0.046 [s]



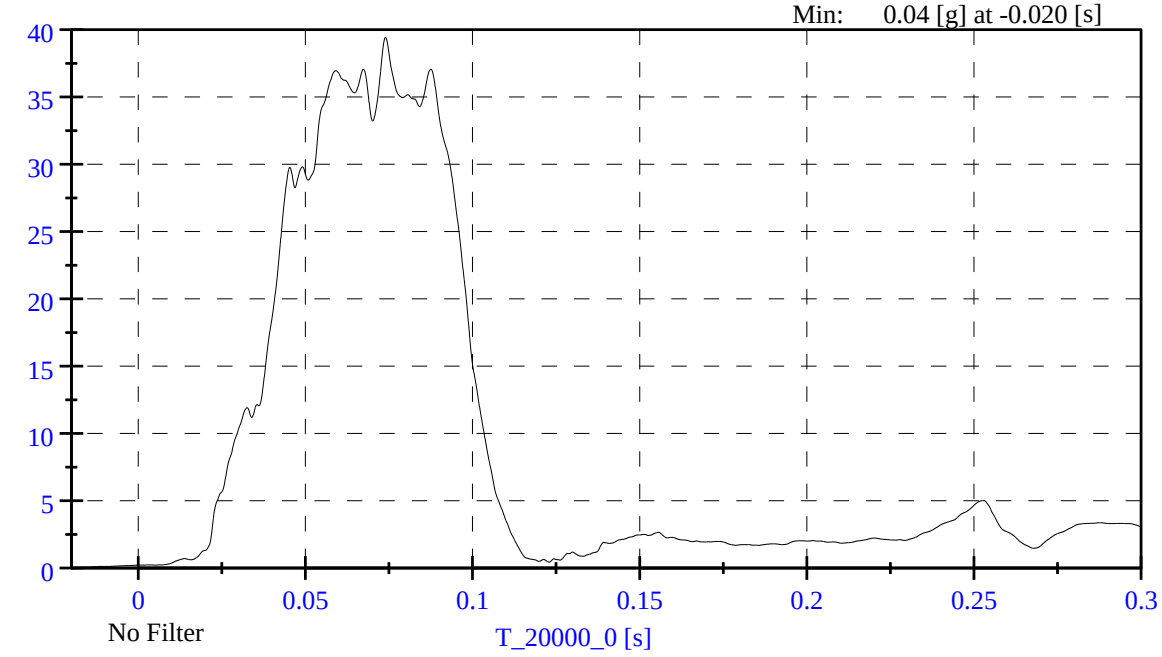
V1P1 Chest z [g , CFC_180]

Max: 9.86 [g] at 0.093 [s]
Min: -3.92 [g] at 0.060 [s]



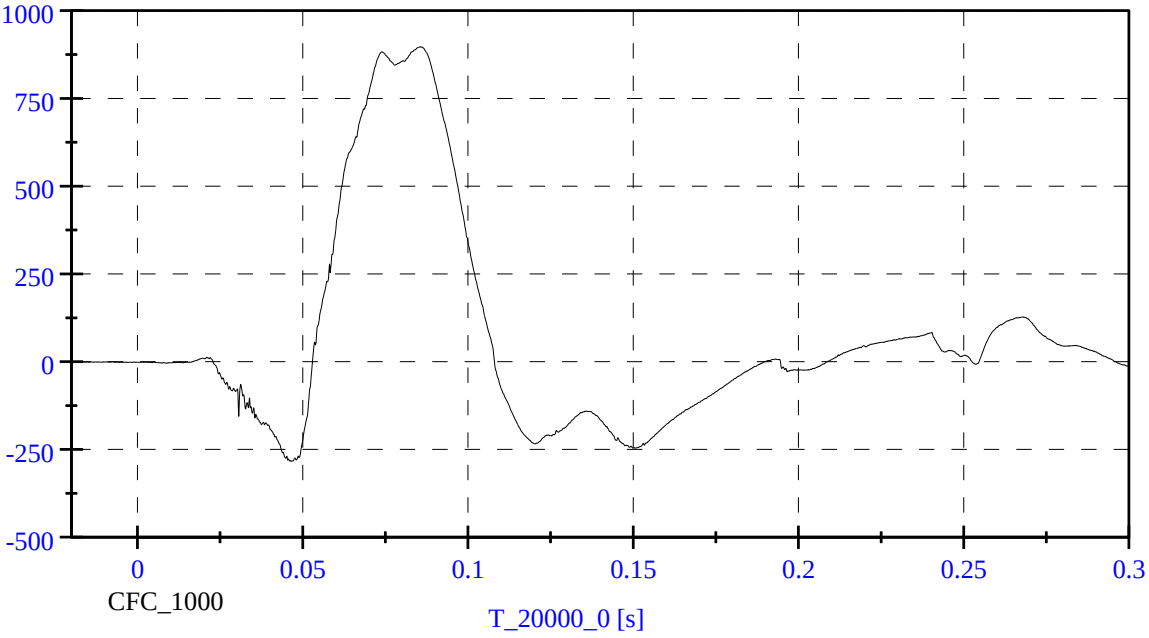
V1P1 Chest Resultant

Max: 39.42 [g] at 0.074 [s]
Min: 0.04 [g] at -0.020 [s]



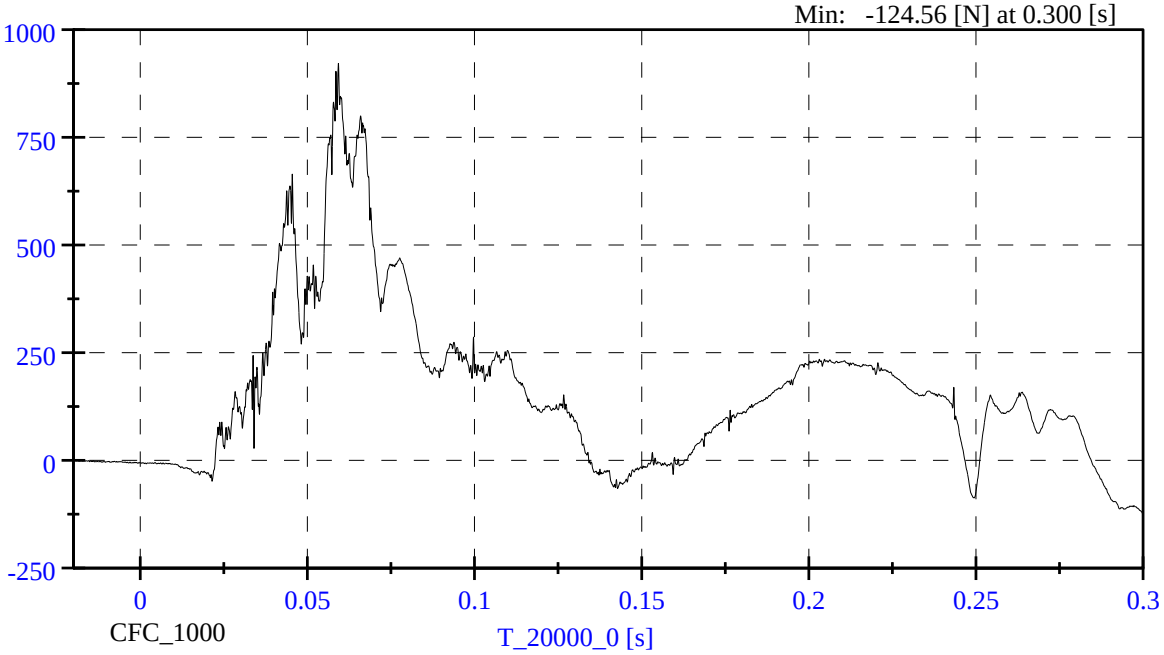
V1P1 Upper Neck Fx [N , CFC_1000]

Max: 897.20 [N] at 0.086 [s]
Min: -283.45 [N] at 0.046 [s]



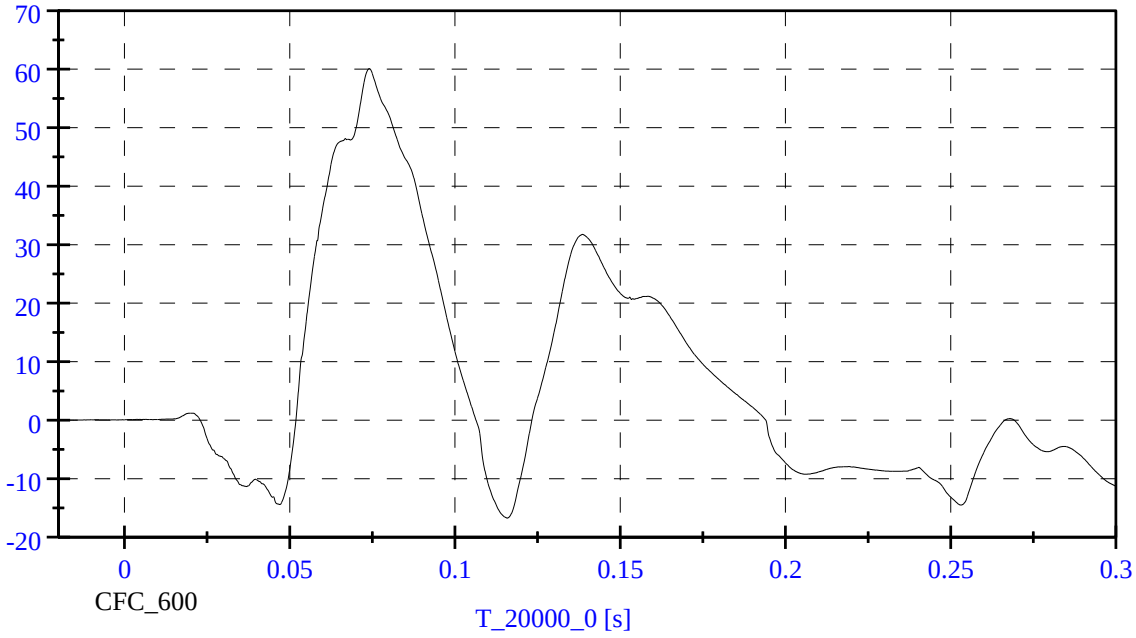
V1P1 Upper Neck Fz [N , CFC_1000]

Max: 921.36 [N] at 0.059 [s]
Min: -124.56 [N] at 0.300 [s]



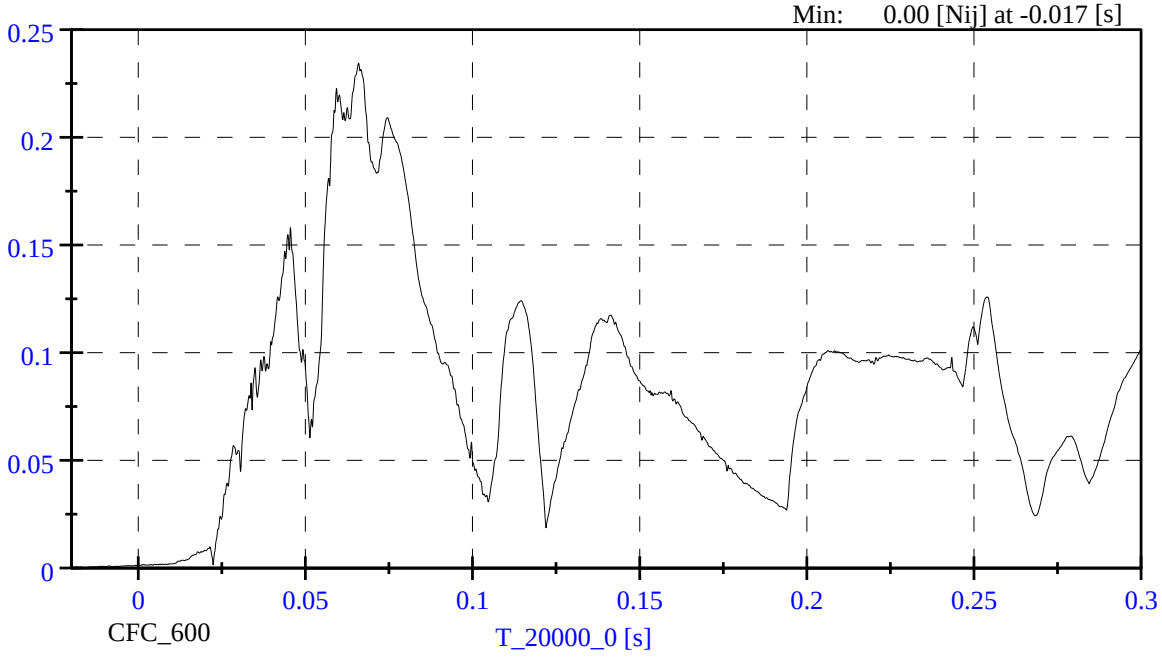
V1P1 Upper Neck My [N-m , CFC_600]

Max: 60.09 [N-m] at 0.074 [s]
Min: -16.73 [N-m] at 0.116 [s]



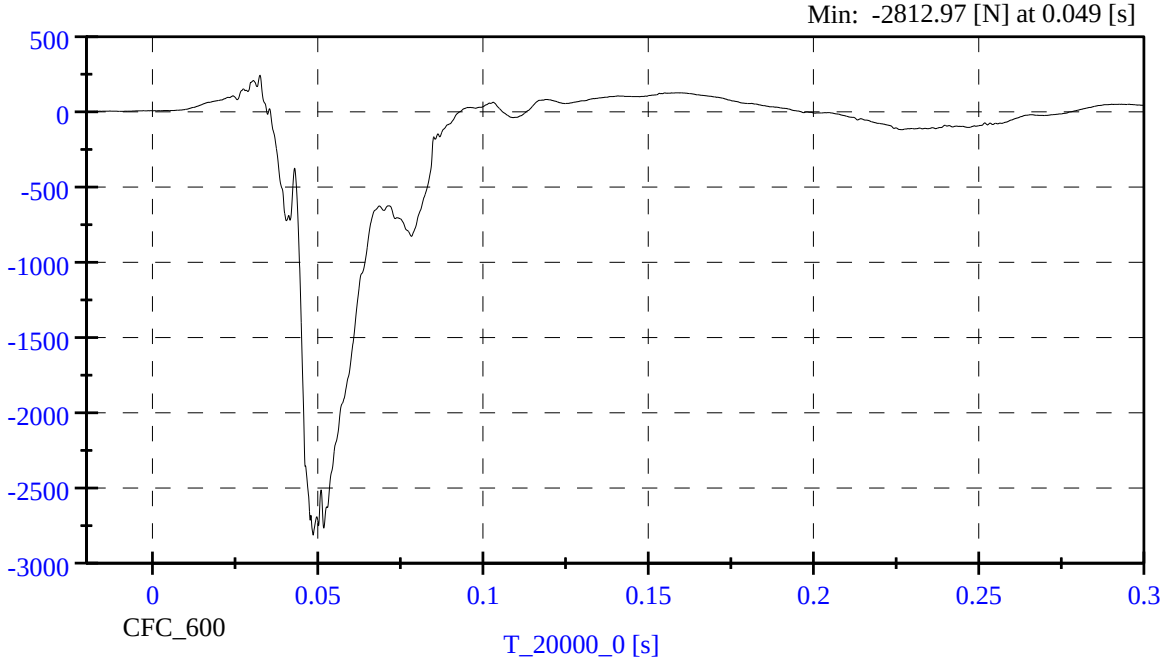
V1P1 Upper Neck Nij [Nij, CFC_600]

Max: 0.23 [Nij] at 0.066 [s]
Min: 0.00 [Nij] at -0.017 [s]



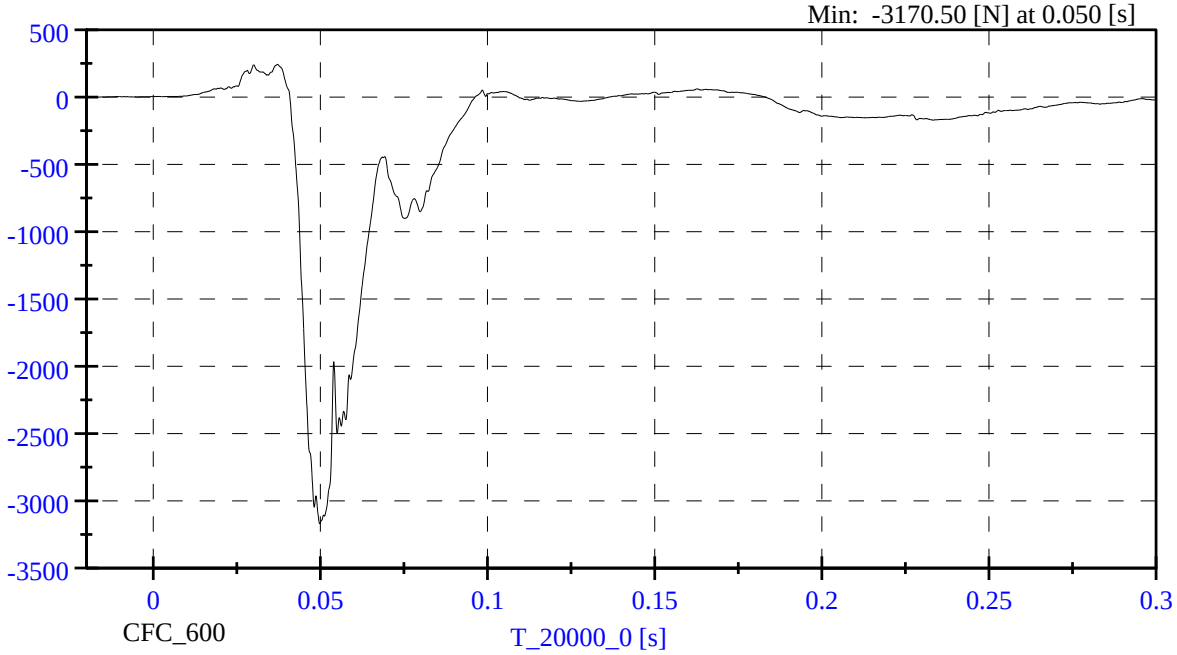
V1P1 Left Femur Fz [N , CFC_600]

Max: 243.64 [N] at 0.033 [s]
Min: -2812.97 [N] at 0.049 [s]



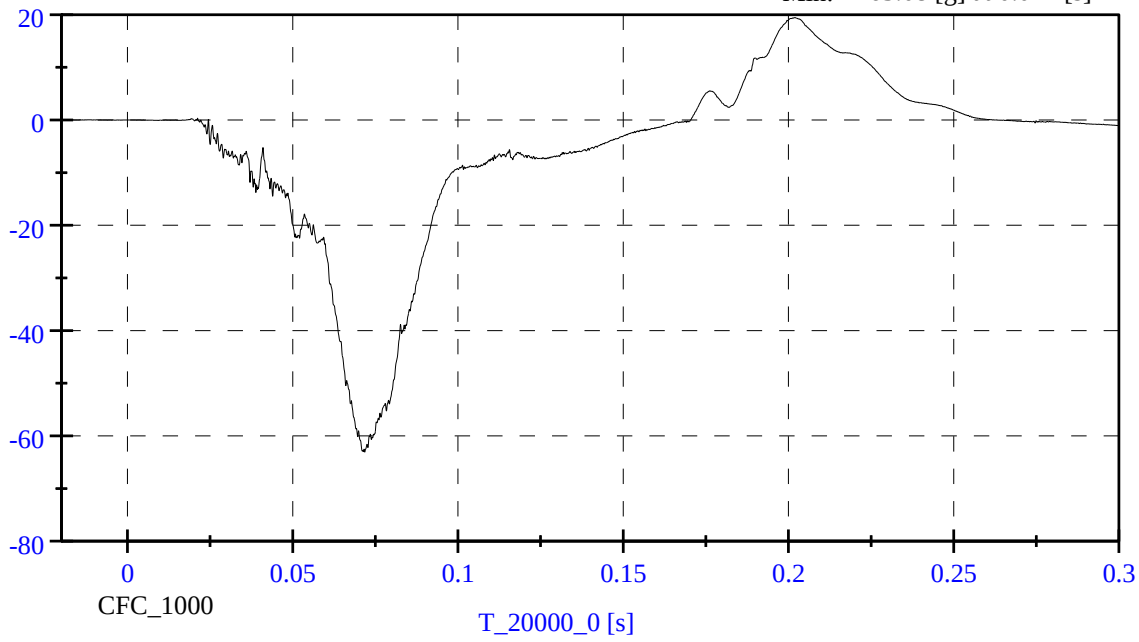
V1P1 Right Femur Fz [N , CFC_600]

Max: 242.41 [N] at 0.037 [s]
Min: -3170.50 [N] at 0.050 [s]



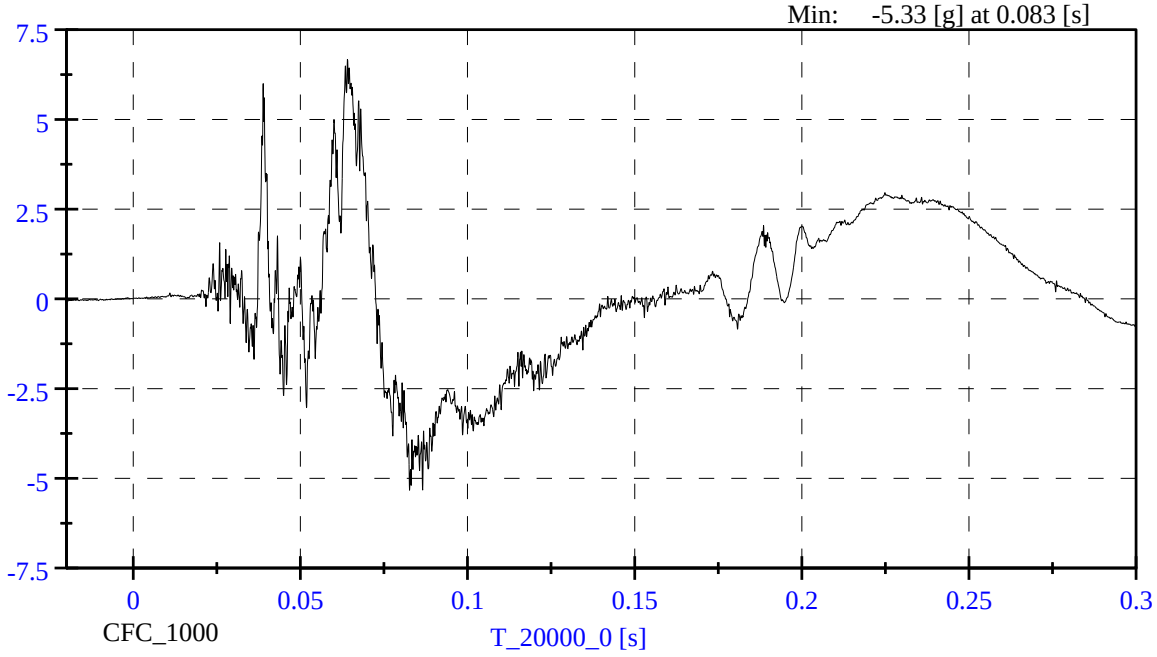
V1P2 Head x [g , CFC_1000]

Max: 19.44 [g] at 0.202 [s]
Min: -63.08 [g] at 0.072 [s]



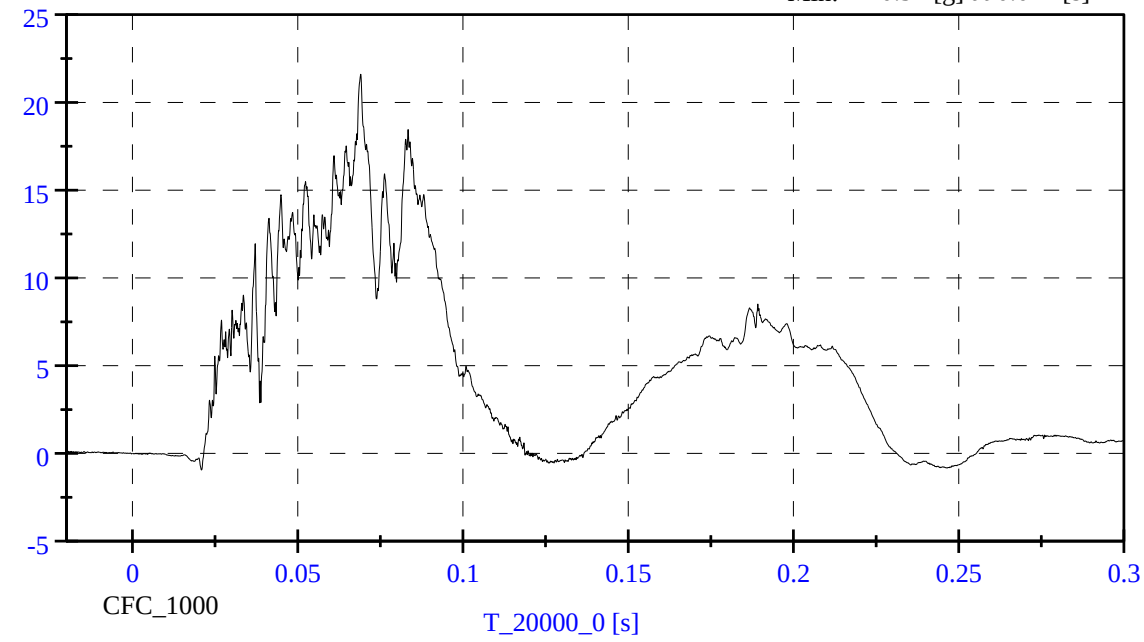
V1P2 Head y [g , CFC_1000]

Max: 6.67 [g] at 0.064 [s]
Min: -5.33 [g] at 0.083 [s]



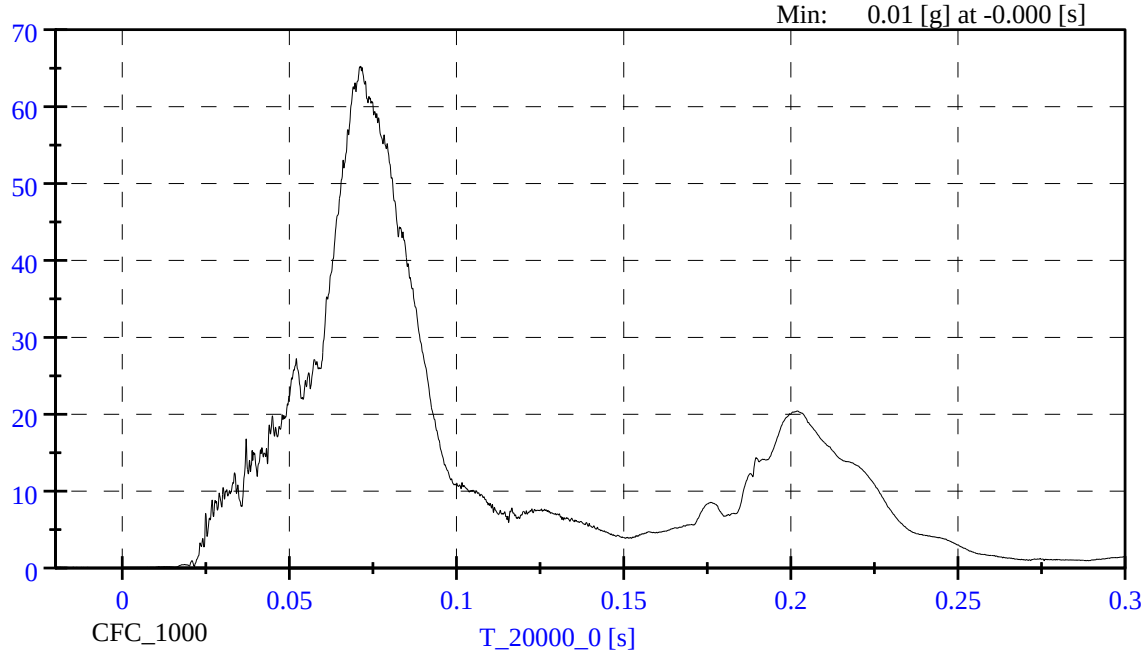
V1P2 Head z [g , CFC_1000]

Max: 21.60 [g] at 0.069 [s]
Min: -0.94 [g] at 0.021 [s]



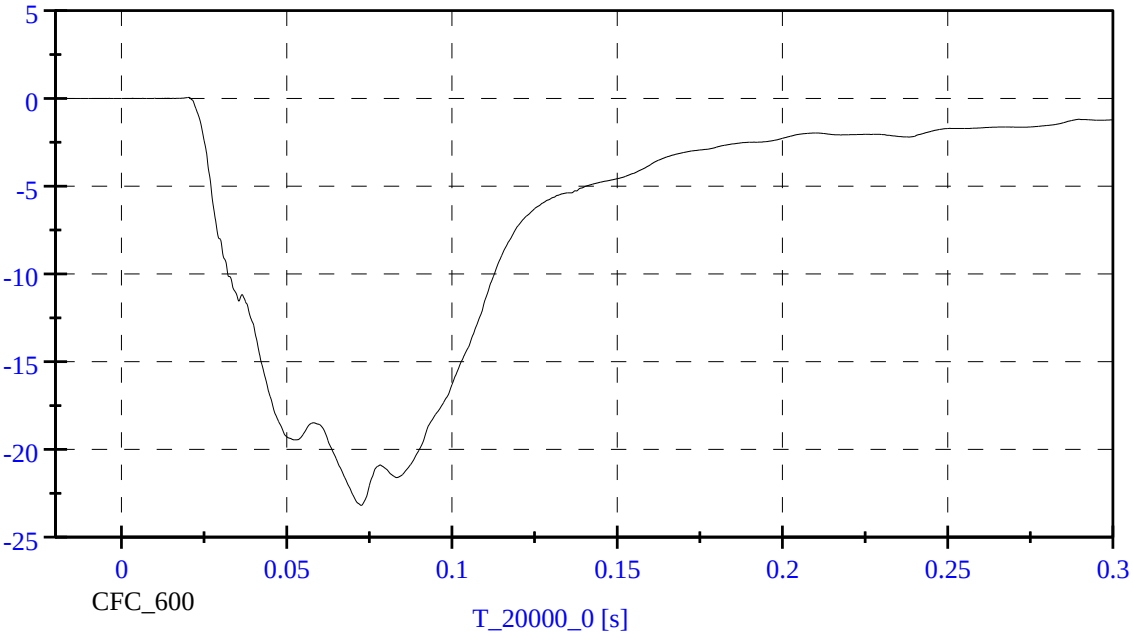
V1P2 Headform Resultant [g, CFC_1000]

Max: 65.24 [g] at 0.071 [s]
Min: 0.01 [g] at -0.000 [s]



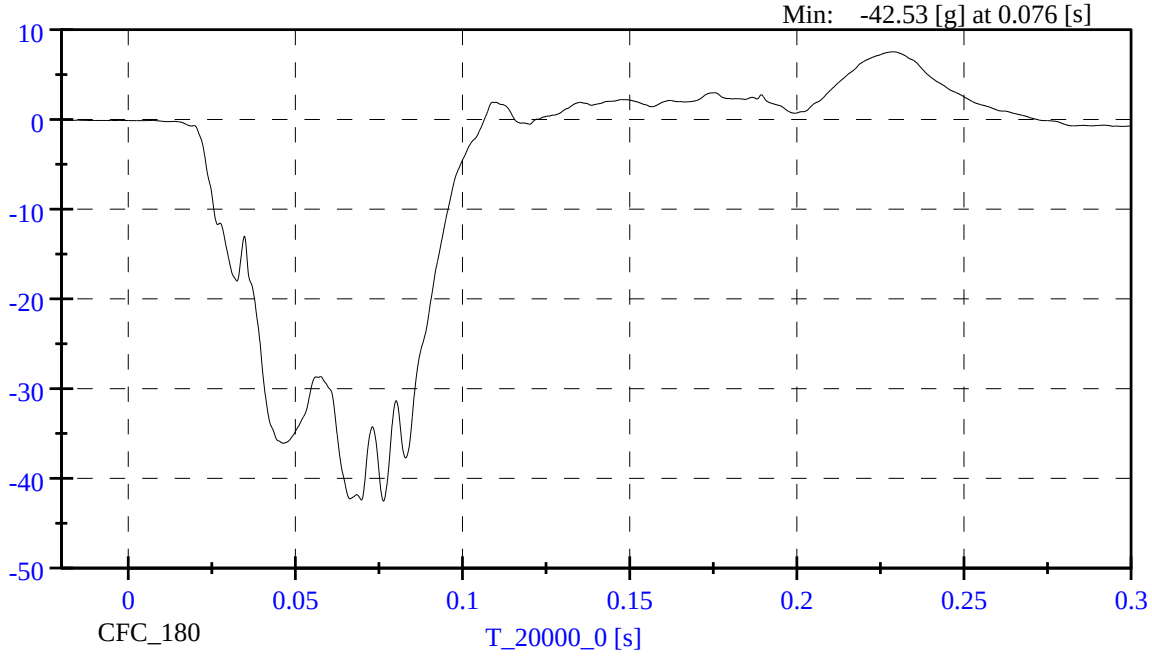
V1P2 Chest Displacement [mm , CFC_600]

Max: 0.06 [mm] at 0.020 [s]
Min: -23.19 [mm] at 0.073 [s]



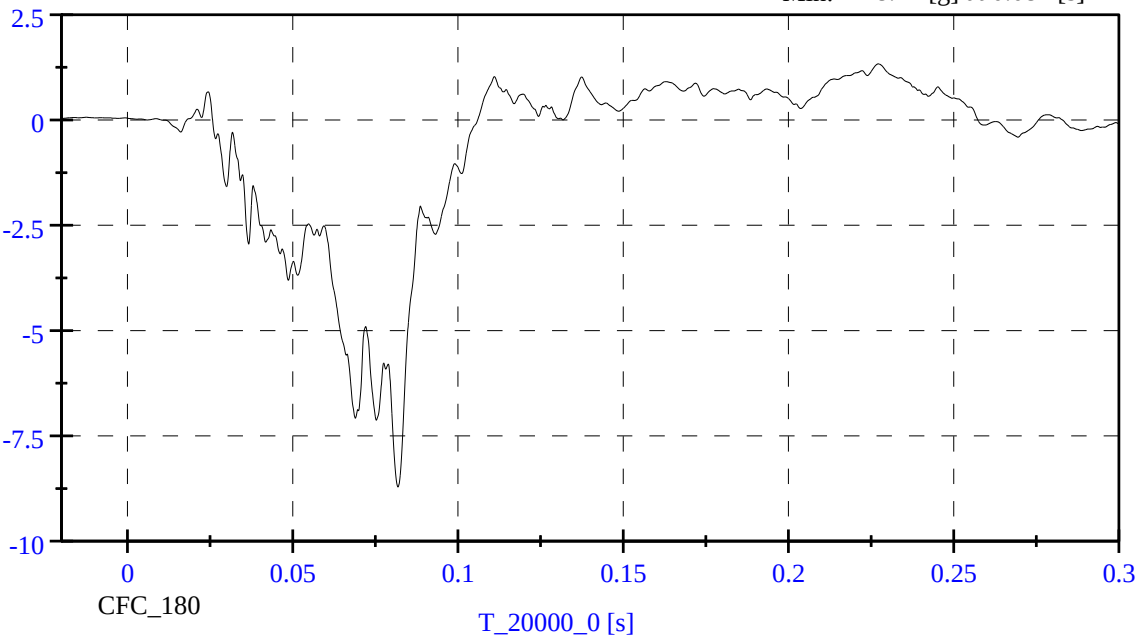
V1P2 Chest x [g , CFC_180]

Max: 7.54 [g] at 0.229 [s]
Min: -42.53 [g] at 0.076 [s]



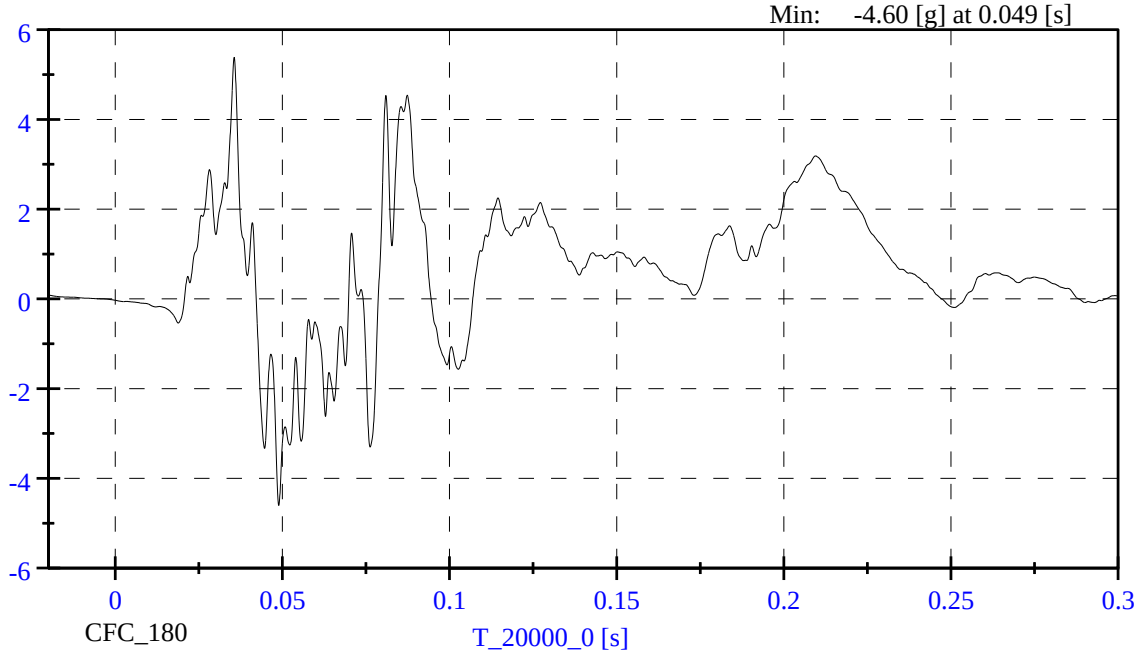
V1P2 Chest y [g , CFC_180]

Max: 1.33 [g] at 0.227 [s]
Min: -8.71 [g] at 0.082 [s]



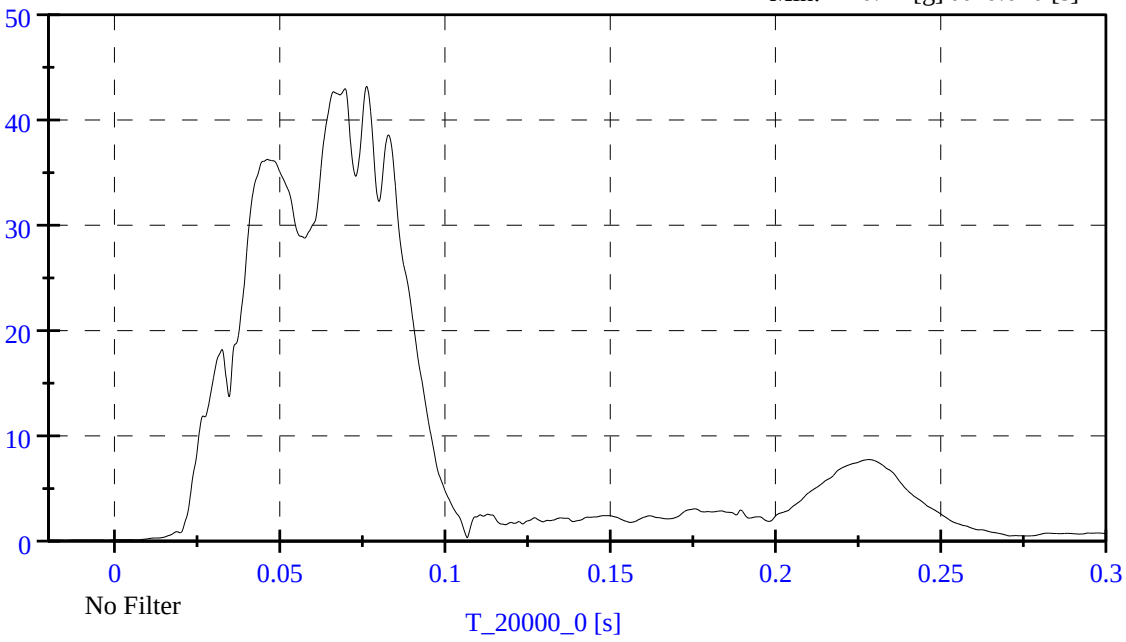
V1P2 Chest z [g , CFC_180]

Max: 5.39 [g] at 0.036 [s]
Min: -4.60 [g] at 0.049 [s]



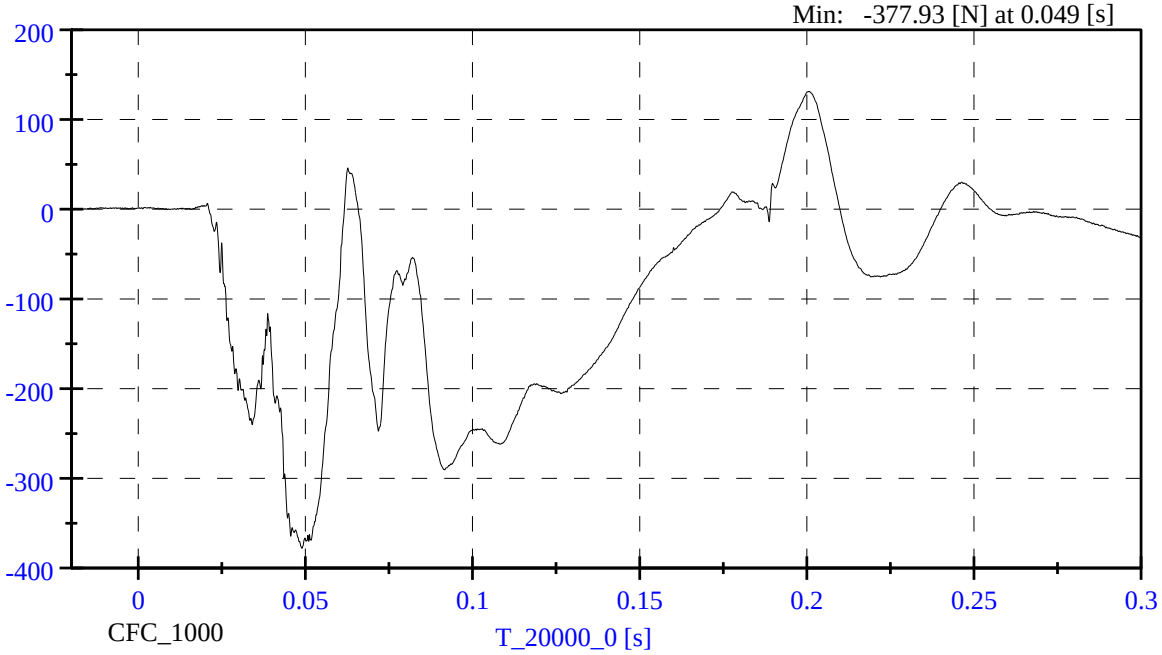
V1P2 Chest Resultant

Max: 43.19 [g] at 0.076 [s]
Min: 0.11 [g] at -0.020 [s]



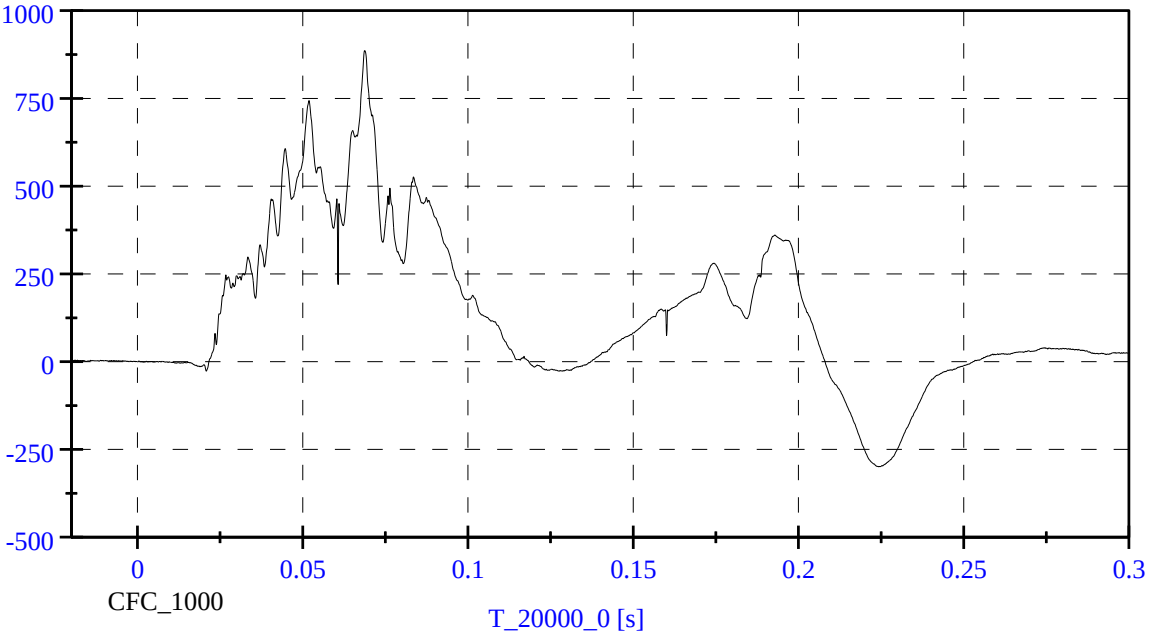
V1P2 Upper Neck Fx [N , CFC_1000]

Max: 131.17 [N] at 0.201 [s]
Min: -377.93 [N] at 0.049 [s]



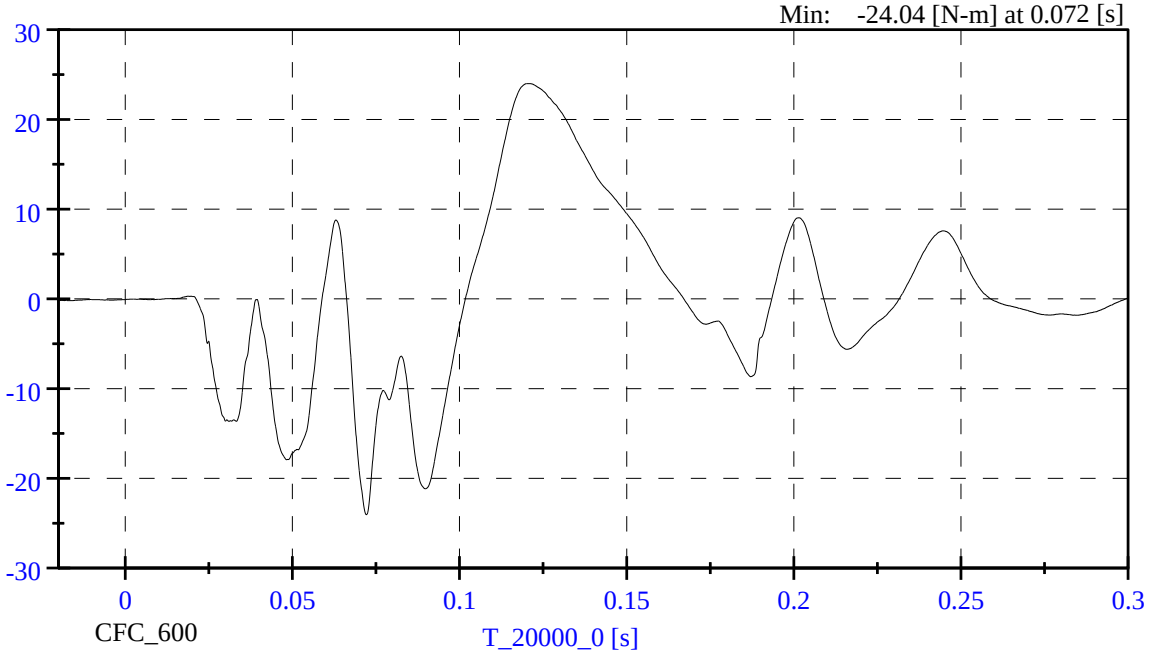
V1P2 Upper Neck Fz [N , CFC_1000]

Max: 886.05 [N] at 0.069 [s]
Min: -299.14 [N] at 0.224 [s]



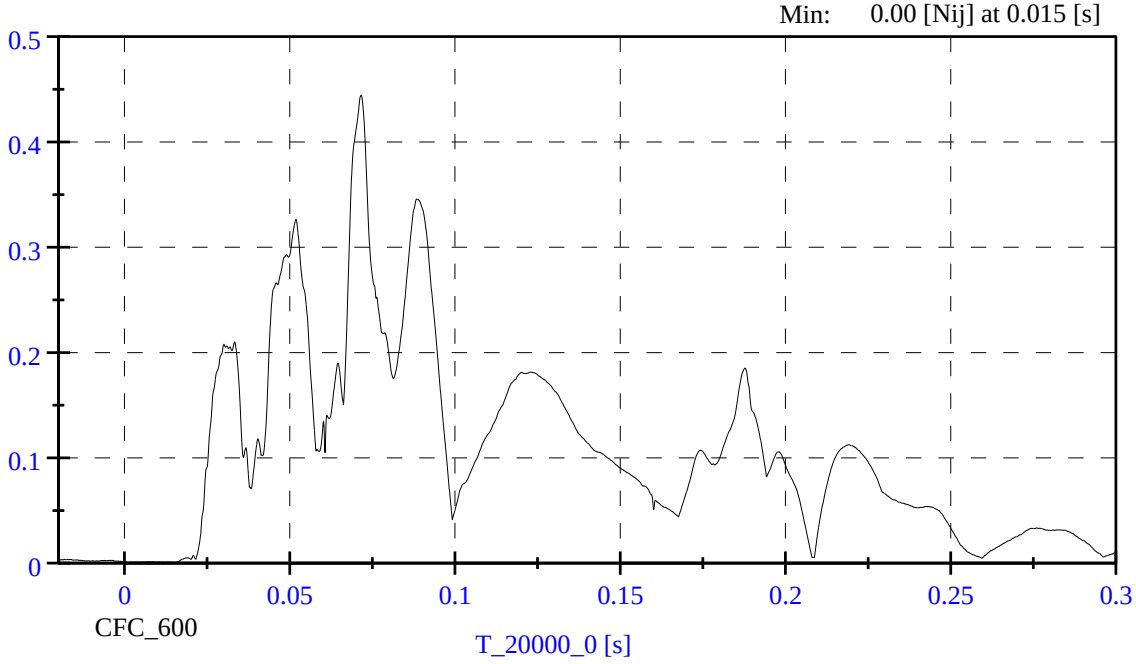
V1P2 Upper Neck My [N-m , CFC_600]

Max: 24.00 [N-m] at 0.120 [s]
Min: -24.04 [N-m] at 0.072 [s]



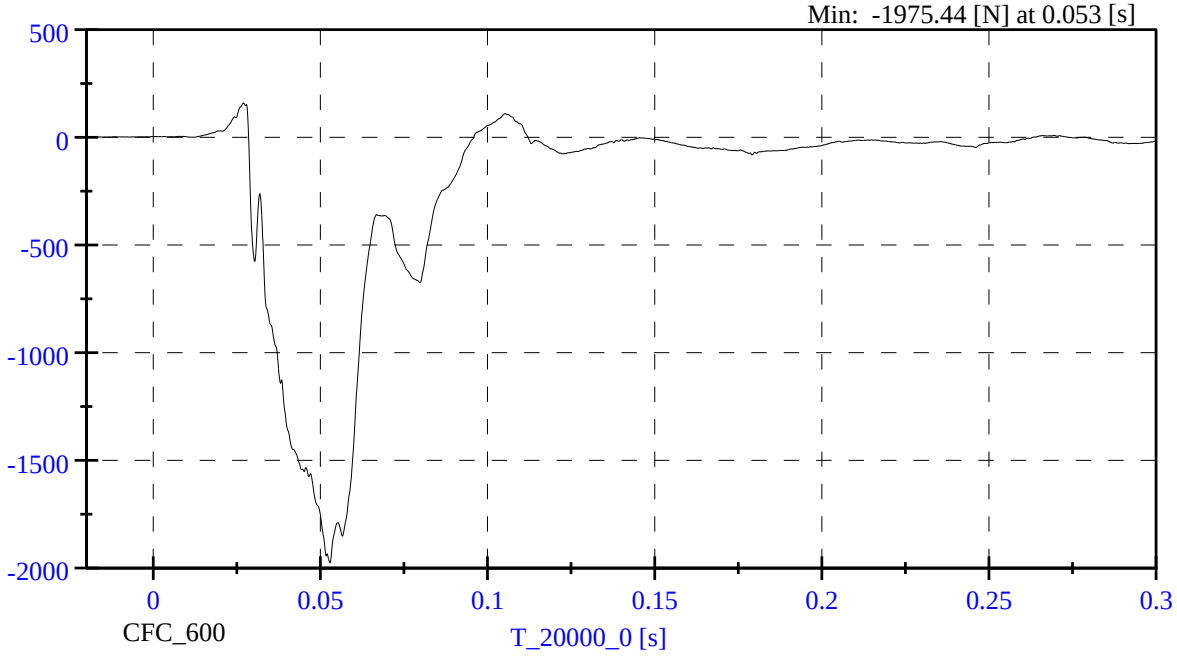
V1P2 Upper Neck Nij [Nij, CFC_600]

Max: 0.44 [Nij] at 0.072 [s]
Min: 0.00 [Nij] at 0.015 [s]



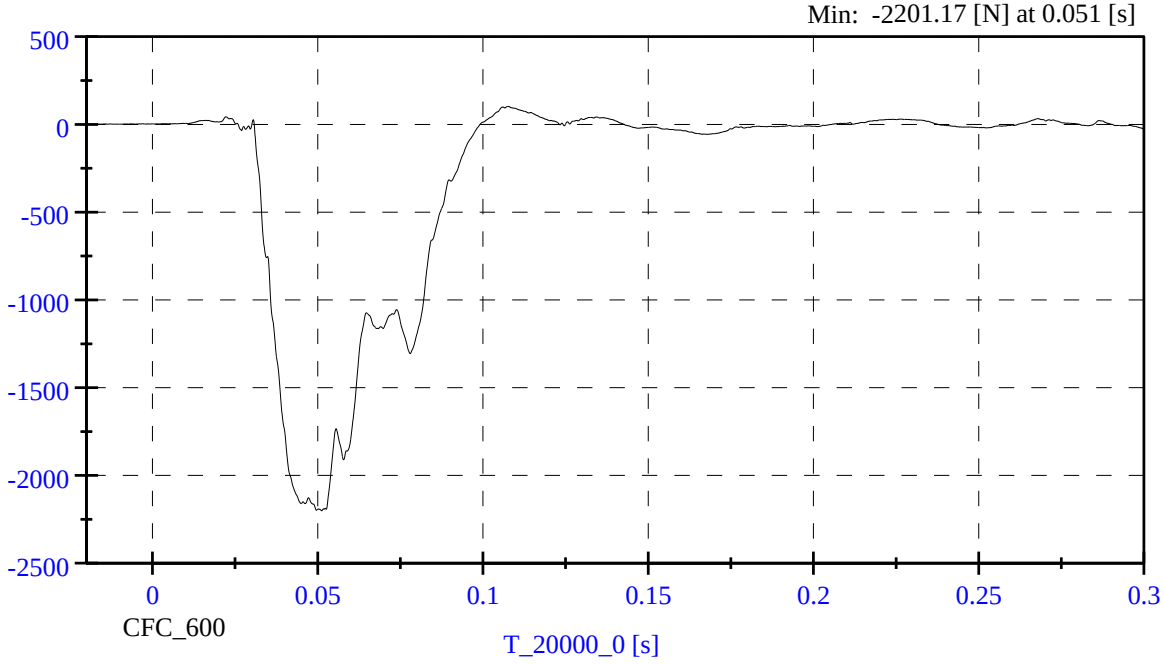
V1P2 Left Femur [N , CFC_600]

Max: 159.71 [N] at 0.027 [s]
Min: -1975.44 [N] at 0.053 [s]



V1P2 Right Femur [N , CFC_600]

Max: 102.62 [N] at 0.108 [s]
Min: -2201.17 [N] at 0.051 [s]



APPENDIX C

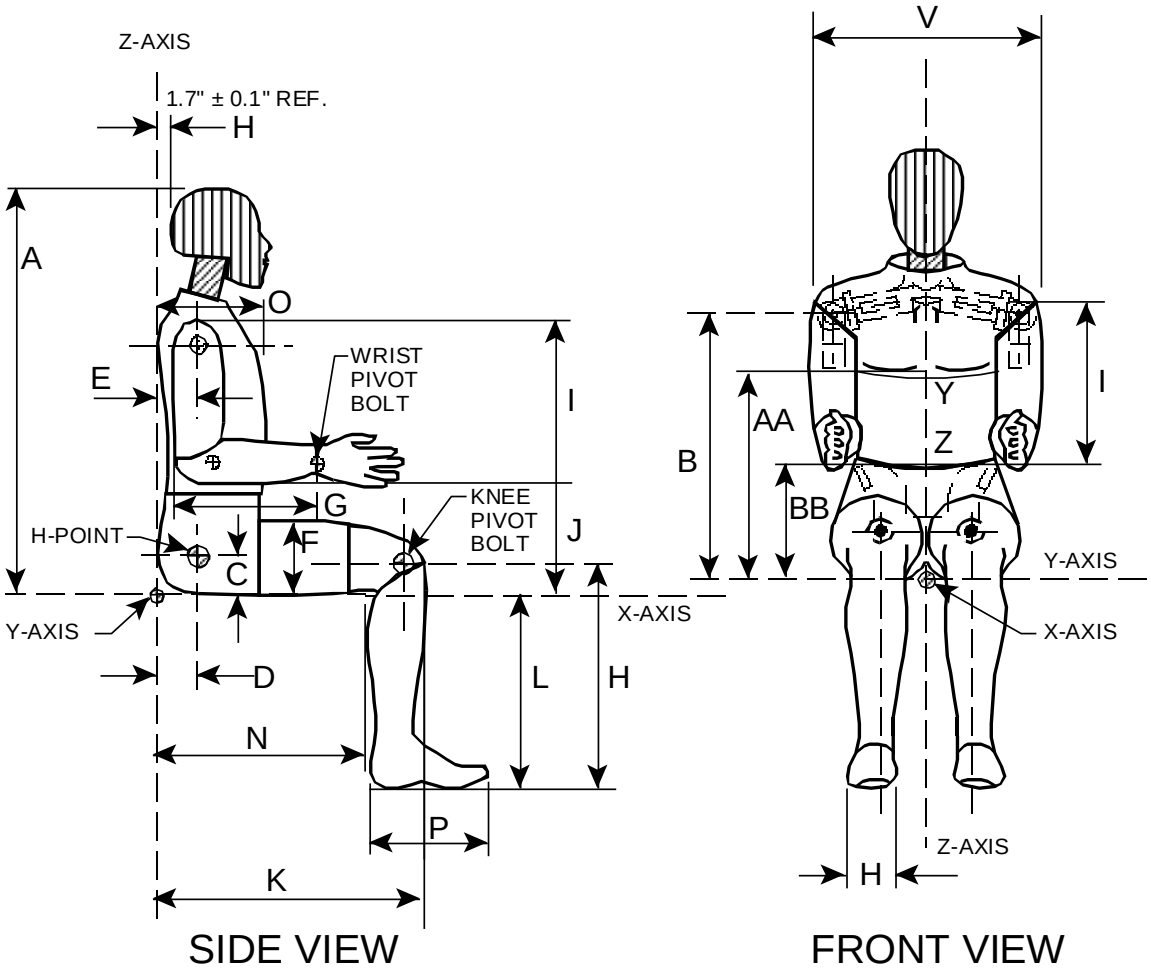
PART 572 E/O DUMMY CONFIGURATIONS
AND PERFORMANCE VERIFICATION DATA SHEETS

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	064	10-21-11
#2/Right Front Passenger	273	10-21-11

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))

CALIBRATION TEST RESULTS

PRE-TEST

DRIVER DUMMY

S/N: 064

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50th Male External Measurements

SN 064

Symbol	Description	Specification	Results	Pass
		in	in	
A	Sitting Height	34.6 - 35	35.0	Yes
B	Shoulder Pivot Height	19.9 - 20.5	20.4	Yes
C	H-Point Height	3.3 – 3.5	3.5	Yes
D	H-Point from Backline	5.3 – 5.5	5.5	Yes
E	Shoulder Pivot from Backline	3.3 – 3.7	3.5	Yes
F	Thigh Clearance	5.5 – 6.1	6.0	Yes
G	Back of Elbow to Wrist Pivot	11.4 – 12.0	11.5	Yes
H	Head Back to Backline	1.6 – 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 – 13.6	13.3	Yes
J	Elbow Rest Height	7.5 – 8.3	7.9	Yes
K	Buttock to Knee Length	22.8 – 23.8	23.5	Yes
L	Popliteal Height	16.9 – 17.9	17.2	Yes
M	Knee Pivot Height	19.1 – 19.7	19.1	Yes
N	Buttock Popliteal Length	17.8 – 18.8	18.5	Yes
O	Chest Depth without Jacket	8.4 – 9.0	8.5	Yes
P	Foot Length (right)	9.9 – 10.5	10.2	Yes
V	Shoulder Breadth	16.3 – 17.2	16.7	Yes
W	Foot Breadth	3.6 – 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 – 39.4	38.8	Yes
Z	Waist Circumference	32.9 – 34.1	33.3	Yes
AA	Reference Location (Chest Circumference)	16.9 – 17.1	17.0	Yes
BB	Reference Location (Waist Circumference)	8.9 – 9.1	9.0	Yes

Technician: DS

Date: 10/11/2011

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:		Test Date:	**10/12/2011**
Test Number:	**2**	Test Time:	**9:16:35 AM**

Component Part Number	Component Serial Number
Head Skin - 78051-228	**7997**

Test Parameters	Test Specifications	Test Results	
Temperature	18.9 -- 25.6	**21.1** deg C	P
Humidity	10 -- 70	**53** %RH	P
Resultant Acceleration	225 -- 275	**267** g	P
Oscillation	0.0 -- 10.0	**3.9** %	P
Lateral Acceleration	-15.00 -- 15.00	**9.25** g	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

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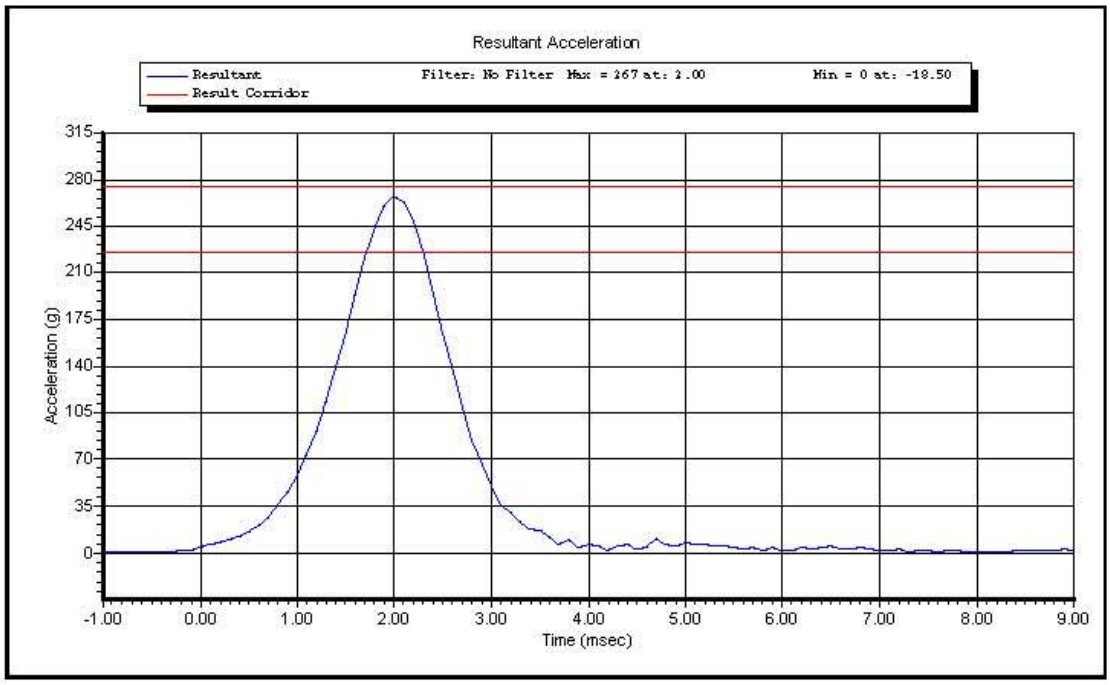
Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P66931**	**6/13/2011**
Endevco	**7264-2000**	**P66926**	**6/13/2011**
Endevco	**7264-2000**	**P66943**	**6/13/2011**

Test ID: Test Time: **9:16:35 AM** Test Date: **10/12/2011**

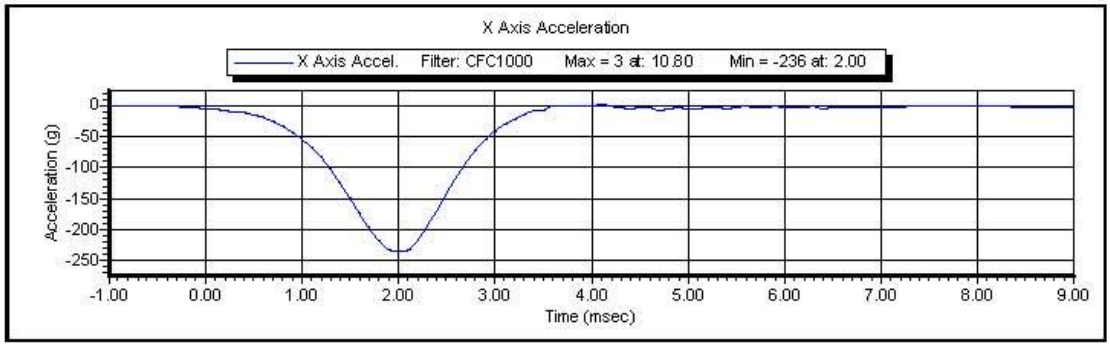
Copyright 2006 Denton ATD, Inc. LabPaq II Version: 1.8.5.0

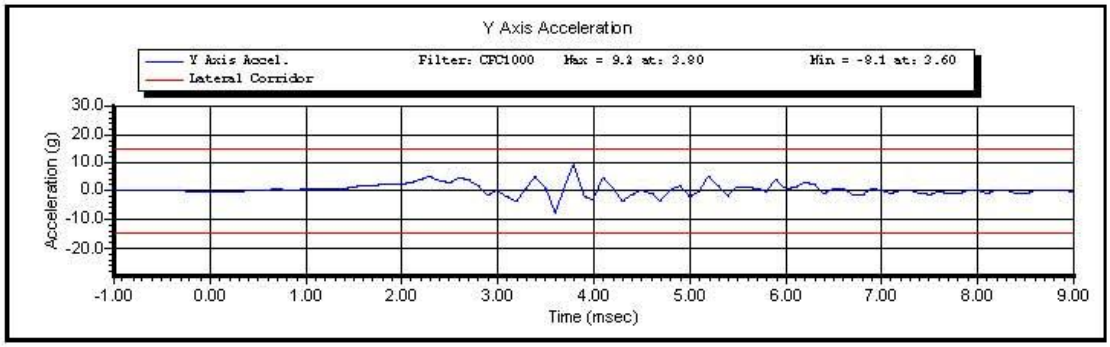
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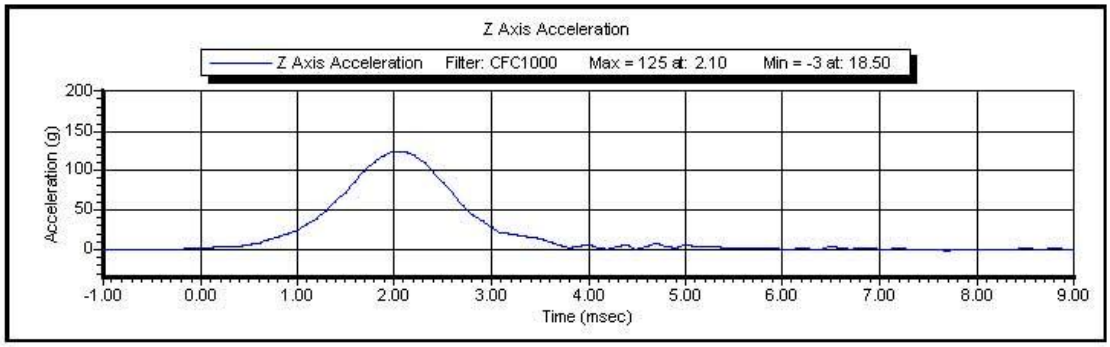
Test Name:	**Head Drop**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:		Test Date:	**10/12/2011**
Test Number:	**2**	Test Time:	**9:16:35 AM**



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Test ID: Test Time: **9:16:35 AM** Test Date: **10/12/2011**

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VERIFICATION REPORT

Test Name:	**Neck Extension**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Extension**	Test Date:	**10/11/2011**
Test Number:	**1**	Test Time:	**8:39:15 PM**

Component Part Number	Component Serial Number
Neck - 78051-336	**02-1692**

Test Parameters		Test Specifications		Test Results	
Temperature		20.6 -- 22.2		**22.0** deg C	P
Humidity		10 -- 70		**49** %RH	P
Velocity		5.94 -- 6.19		**6.13** m/s	P
Pendulum Deceleration at	10 ms	17.2 -- 21.2		**19.6** g	P
Pendulum Deceleration at	20 ms	14.0 -- 19.0		**15.3** g	P
Pendulum Deceleration at	30 ms	11.0 -- 16.0		**13.2** g	P
Max Pendulum Deceleration after	30 ms	0.0 -- 22.0		**14.6** g	P
Decel Time to	5 g	38.0 -- 46.0		**43.9** ms	P
D Plane Rotation		81.0 -- 106.0		**93.4** degrees	P
Time at Max Rotation		72.0 -- 82.0		**79.7** ms	P
Rotation Decay to Zero		147.0 -- 174.0		**159.2** ms	P
Moment About Occipital Condyle		-80.0 -- -52.9		**-62.6** Nm	P
Time at Max Moment		65.0 -- 79.0		**75.4** ms	P
Moment Decay to Zero		120.0 -- 148.0		**146.4** ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Extension** Test Time: **8:39:15 PM** Test Date: **10/11/2011**

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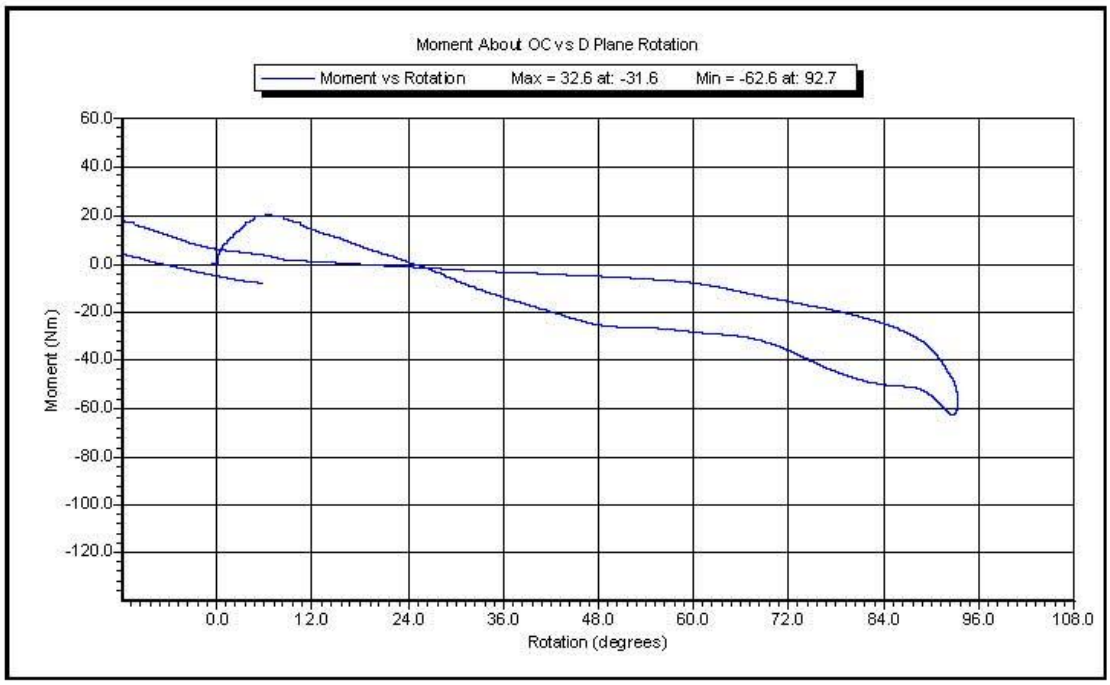
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2018My	6/3/2011
Denton	1716A	LC-2018Fx	6/3/2011

Test ID: **Extension** Test Time: **8:39:15 PM** Test Date: **10/11/2011**

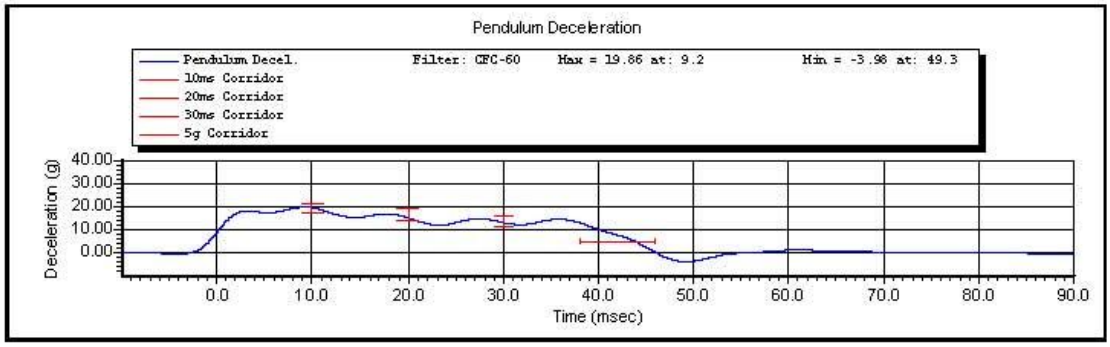
Copyright 2006 Denton ATD, Inc. LabPaq II Version: 1.8.5.0

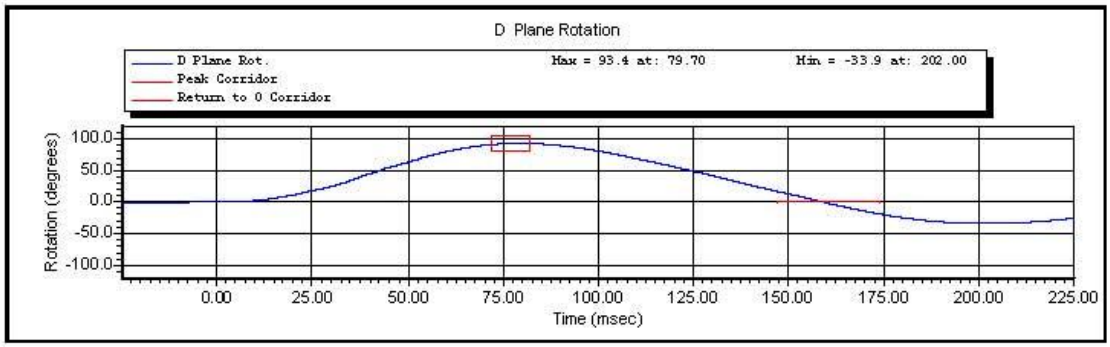
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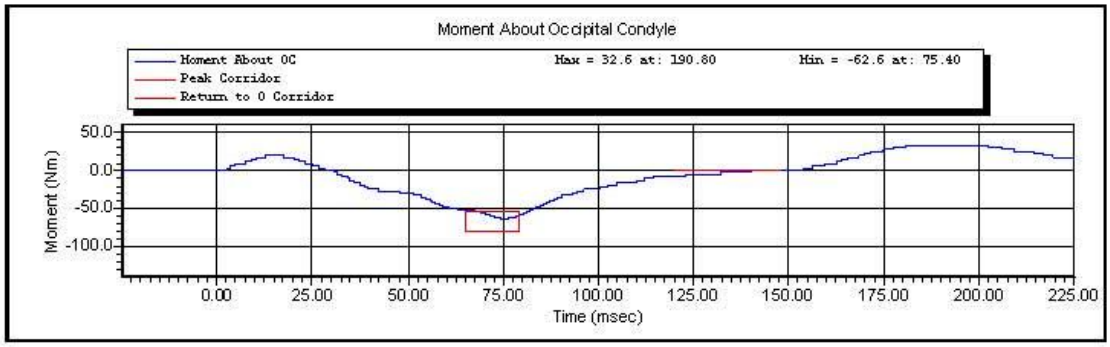
Name of Test:	**Neck Extension**	REVISION:	**10/1/2001**
Name of Sub Test:		Type of Spec:	**NHTSA**
Type of ATD:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
ID of Test:	**Extension**	Date:	**10/11/2011**
Number of Test:	**1**	Time of Test:	**8:39:15 PM**



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ID of Test: **Extension** Time of Test: **8:39:15 PM** Date of Test: **10/11/2011**

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VERIFICATION REPORT

Test Name:	**Neck Flexion**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
		Test Date:	**10/11/2011**
Test Number:	**2**	Test Time:	**8:00:26 PM**

Component Part Number	Component Serial Number
Neck - 78051-336	**02-1692**

Test Parameters			Test Specifications			Test Results		
Temperature			20.6	--	22.2	**22.0**	deg C	P
Humidity			10	--	70	**49**	%RH	P
Velocity			6.89	--	7.13	**7.09**	m/s	P
Pendulum Deceleration at	10	ms	22.5	--	27.5	**24.5**	g	P
Pendulum Deceleration at	20	ms	17.6	--	22.6	**20.7**	g	P
Pendulum Deceleration at	30	ms	12.5	--	18.5	**16.5**	g	P
Max Pendulum Deceleration After	30	ms	0.0	--	29.0	**16.5**	g	P
Deceleration time to	5	g	34.0	--	42.0	**38.0**	ms	P
D Plane Rotation			-78.0	--	-64.0	**-71.7**	degrees	P
Time at max rotation			57.0	--	64.0	**59.4**	ms	P
Rotation Decay to Zero			113.0	--	128.0	**113.5**	ms	P
Moment about OC			88.1	--	108.4	**89.7**	Nm	P
Time at Max Moment			47.0	--	58.0	**51.5**	ms	P
Moment Decay to Zero			97.0	--	107.0	**102.9**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Flexion** Test Time: **8:00:26 PM** Test Date: **10/11/2011**

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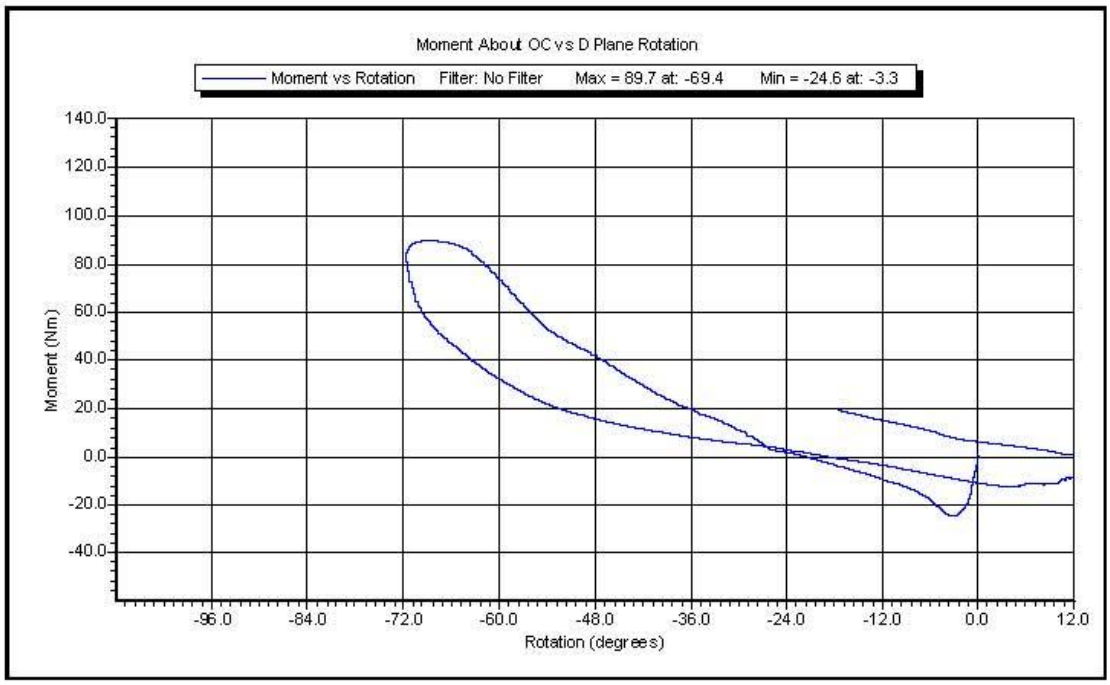
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2018My	6/3/2011
Denton	1716A	LC-2018Fx	6/3/2011

Test ID: **Flexion** Test Time: **8:00:26 PM** Test Date: **10/11/2011**

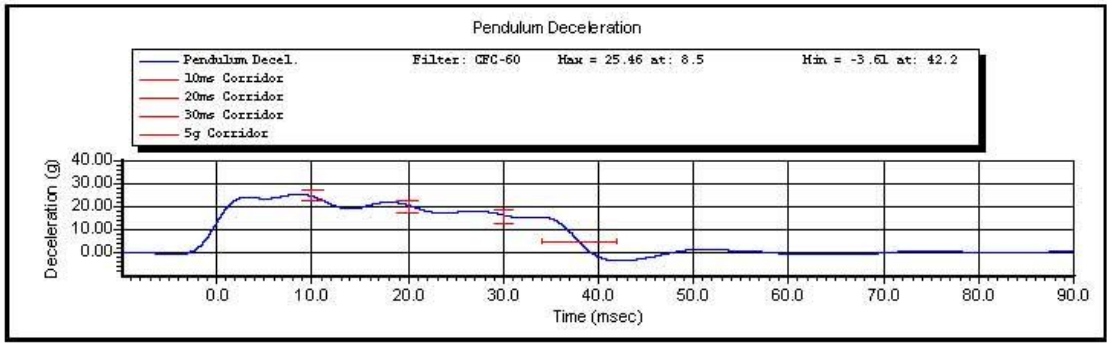
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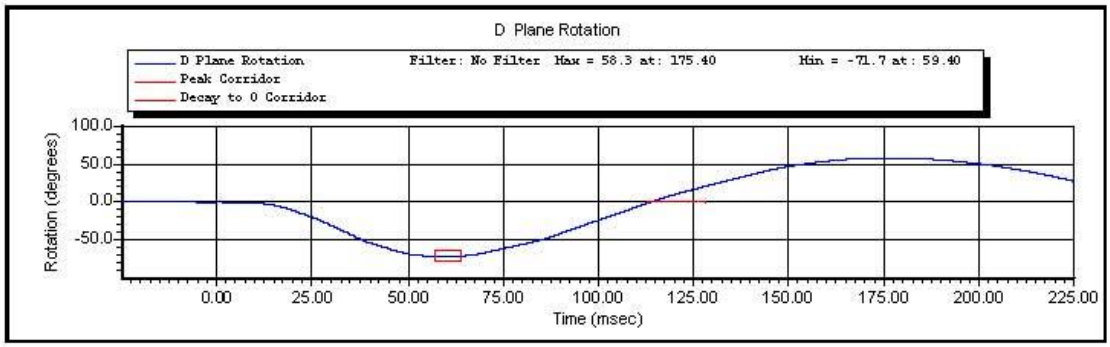
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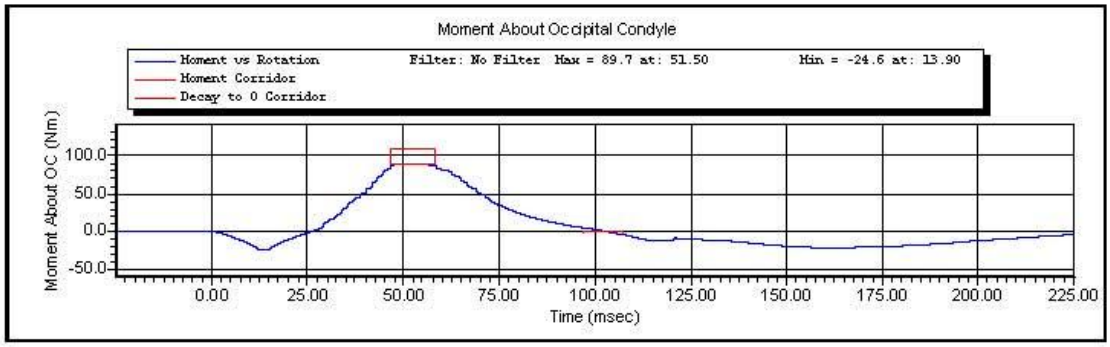
Name of Test:	**Neck Flexion**	REVISION:	**10/1/2001**
Name of Sub Test:		Type of Spec:	**NHTSA**
Type of ATD:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
ID of Test:	**Flexion**	Date:	**10/11/2011**
Number of Test:	**2**	Time of Test:	**8:00:26 PM**



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ID of Test: **Flexion** Time of Test: **8:00:26 PM** Date of Test: **10/11/2011**

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VERIFICATION REPORT

Test Name:	**Thorax Impact**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:		Test Date:	**10/13/2011**
Test Number:	**3**	Test Time:	**3:21:07 PM**

Component Part Number	Component Serial Number
Ribs 78051-RS **Chest Jacket - 78051-169** **Lumbar Spine - 78051-66**	**3964**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**22.2**	deg C	P
Humidity	10.0	--	70.0	**49.0**	%RH	P
Velocity	6.59	--	6.83	**6.72**	m/s	P
Resistive Force	-5.894	--	-5.160	**-5.519**	kN	P
Sternum Displacement	-72.6	--	-63.5	**-66.1**	mm	P
Hysteresis	69	--	85	**75**	%	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **3:21:07 PM** Test Date: **10/13/2011**

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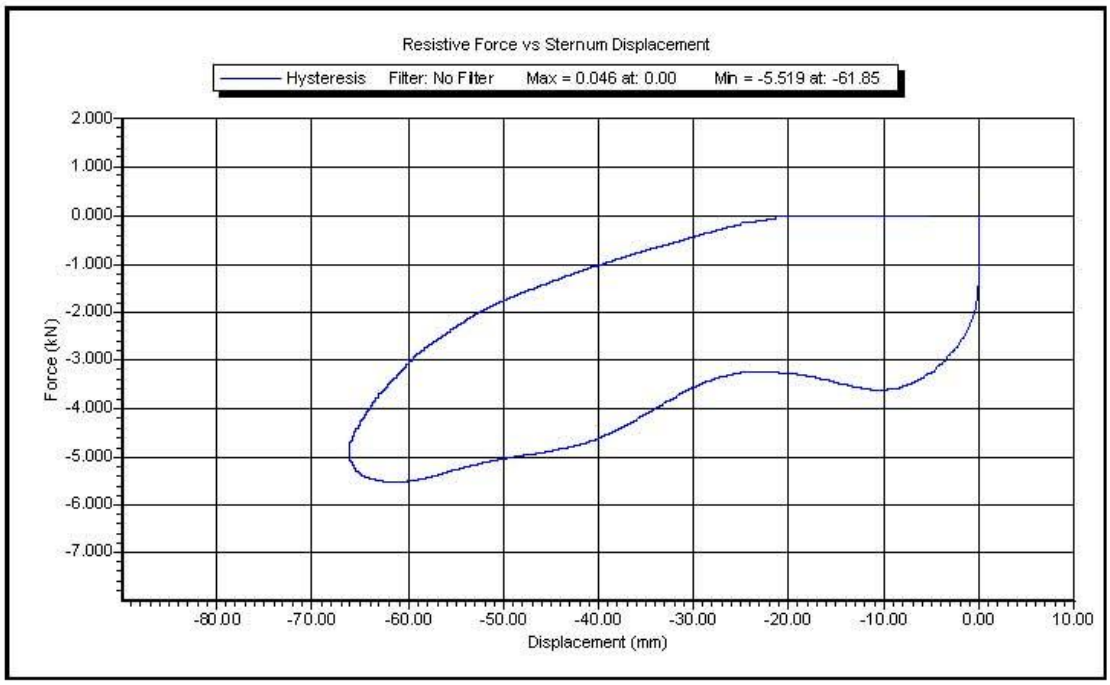
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**
DentonATD	**78051-342**	**DS-064**	**10/13/2011**

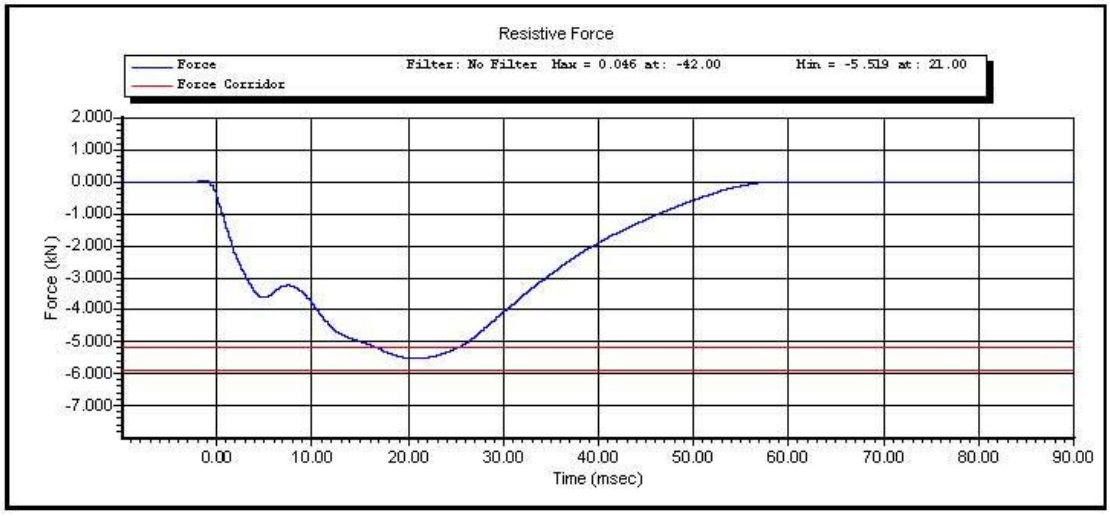
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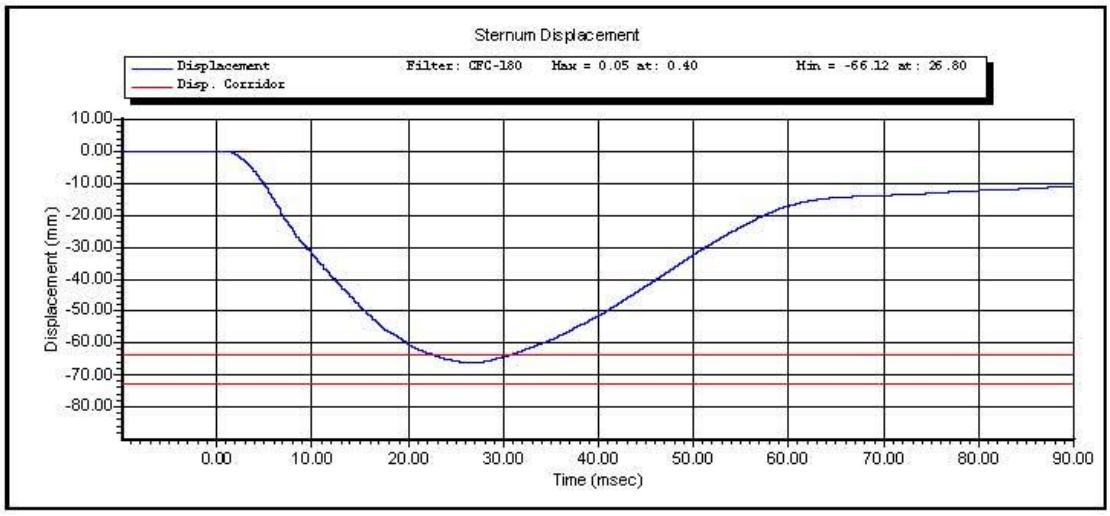
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Test Name:	**Thorax Impact**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:		Test Date:	**10/13/2011**
Test Number:	**3**	Test Time:	**3:21:07 PM**



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Test ID: Test Time: **3:21:07 PM** Test Date: **10/13/2011**

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Hybrid III Hip Range of Motion: Hybrid III 50th Male

Serial Number: 064
Test Number: 1
Comments: LEFT

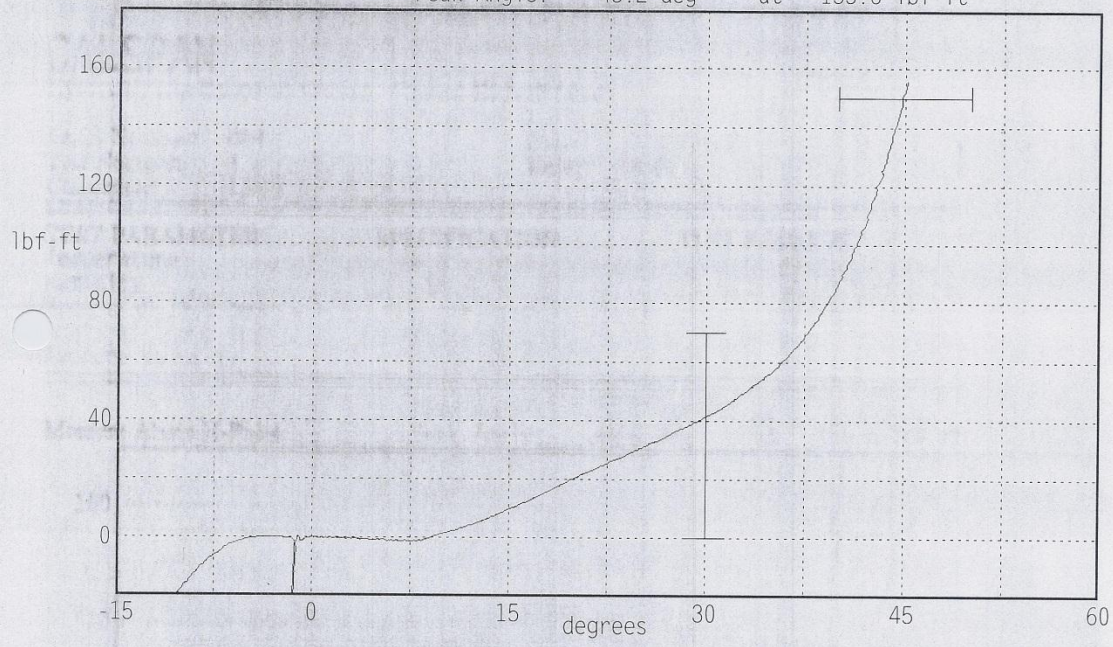
Date: 10/10/2011
Time: 16:16

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS		
Temperature	66.0 - 78.0	71.0	°F	Pass
Humidity	10 - 70	53	%	Pass
Moment at 30.0 deg	<= 70.0	41.7	lbf-ft	Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	44.8	deg	Pass
Average Velocity	5.0 - 10.0	7.3	deg/sec	Pass

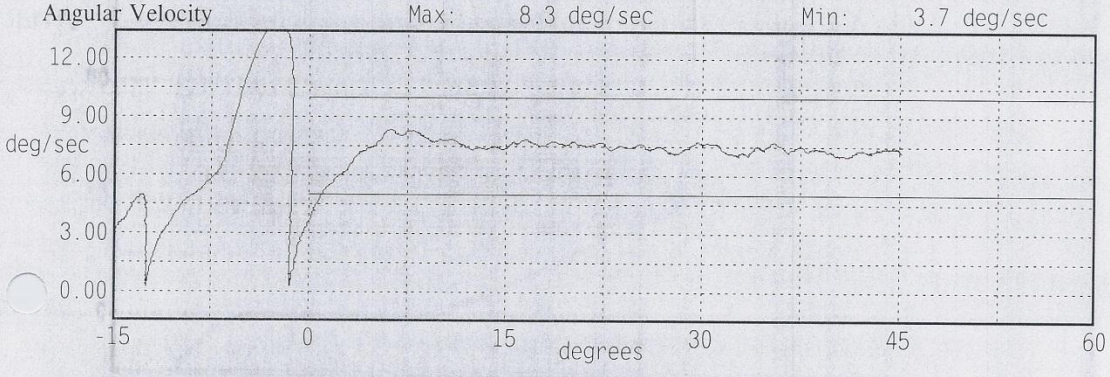
Moment About H-Point

Peak Moment: 155.6 lbf-ft at 45.2 deg
Peak Angle: 45.2 deg at 155.6 lbf-ft



Angular Velocity

Max: 8.3 deg/sec Min: 3.7 deg/sec



CALSPAN

Hybrid III Hip Range of Motion: Hybrid III 50th Male

Serial Number: 064
Test Number: 1
Comments: RIGHT

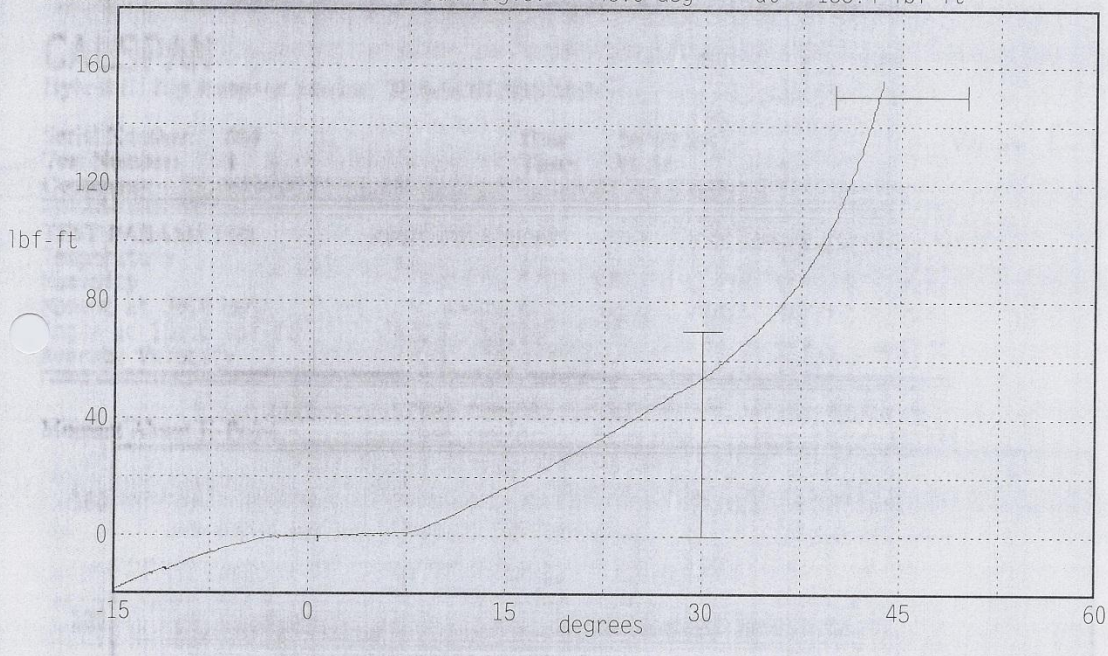
Date: 10/10/2011
Time: 16:24

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS		
Temperature	66.0 - 78.0	71.0	°F	Pass
Humidity	10 - 70	53	%	Pass
Moment at 30.0 deg	<= 70.0	54.5	lbf-ft	Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	43.3	deg	Pass
Average Velocity	5.0 - 10.0	6.9	deg/sec	Pass

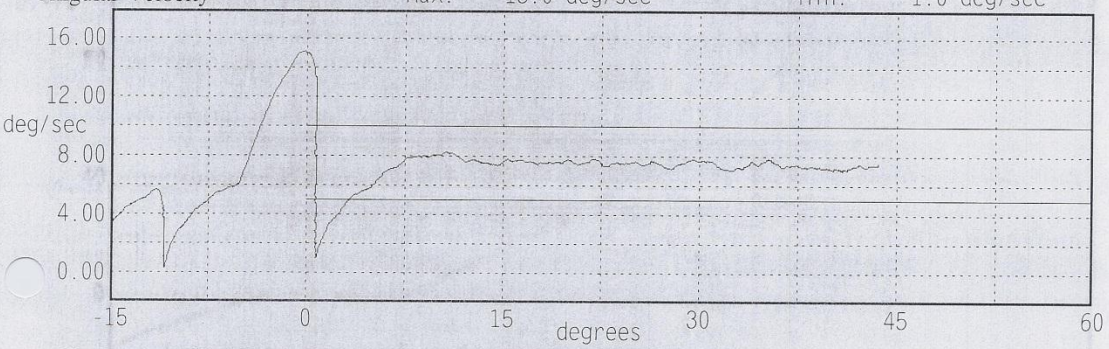
Moment About H-Point

Peak Moment: 155.6 lbf-ft at 43.6 deg
Peak Angle: 43.6 deg at 153.4 lbf-ft



Angular Velocity

Max: 15.0 deg/sec Min: 1.0 deg/sec



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VERIFICATION REPORT

Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Left Knee**	Test Date:	**10/6/2011**
Test Number:	**1**	Test Time:	**9:29:07 AM**

Component Part Number	Component Serial Number
Knee Skin - 78051 **Knee Insert - 78051-27** **Knee Cap - 79051-22**	**2792**

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.1**	deg C	P
Humidity	10.0	--	70.0	**37.0**	%RH	P
Velocity	2.07	--	2.13	**2.11**	m/s	P
Resistive Force	-5.78	--	-4.72	**-5.10**	kN	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Left Knee** Test Time: **9:29:07 AM** Test Date: **10/6/2011**

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VERIFICATION REPORT

REFERENCE EQUIPMENT

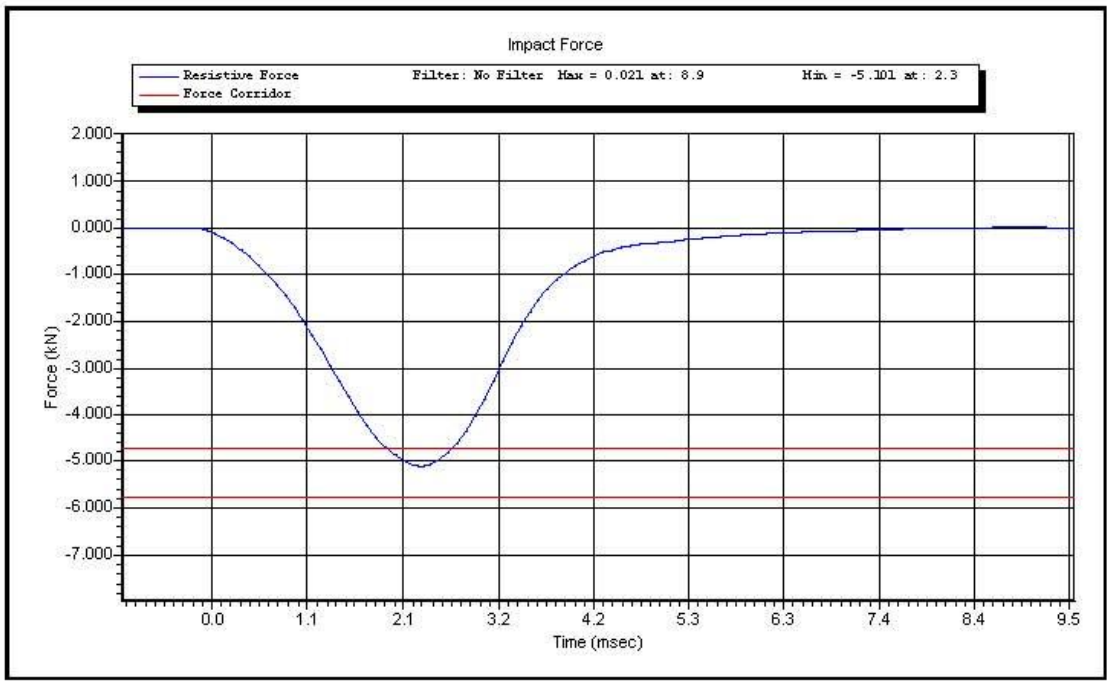
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Left Knee** Test Time: **9:29:07 AM** Test Date: **10/6/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Left Knee**	Test Date:	**10/6/2011**
Test Number:	**1**	Test Time:	**9:29:07 AM**



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VERIFICATION REPORT

Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Right Knee**	Test Date:	**10/6/2011**
Test Number:	**1**	Test Time:	**9:42:14 AM**

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R) **Knee Insert - 78051-27** **Knee Cap - 79051-22**	**2880**

Test Parameters	Test Specifications			Test Results	
Temperature	18.9	--	25.6	**21.1** deg C	P
Humidity	10.0	--	70.0	**37.0** %RH	P
Velocity	2.07	--	2.13	**2.11** m/s	P
Resistive Force	-5.78	--	-4.72	**-5.13** kN	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Right Knee** Test Time: **9:42:14 AM** Test Date: **10/6/2011**

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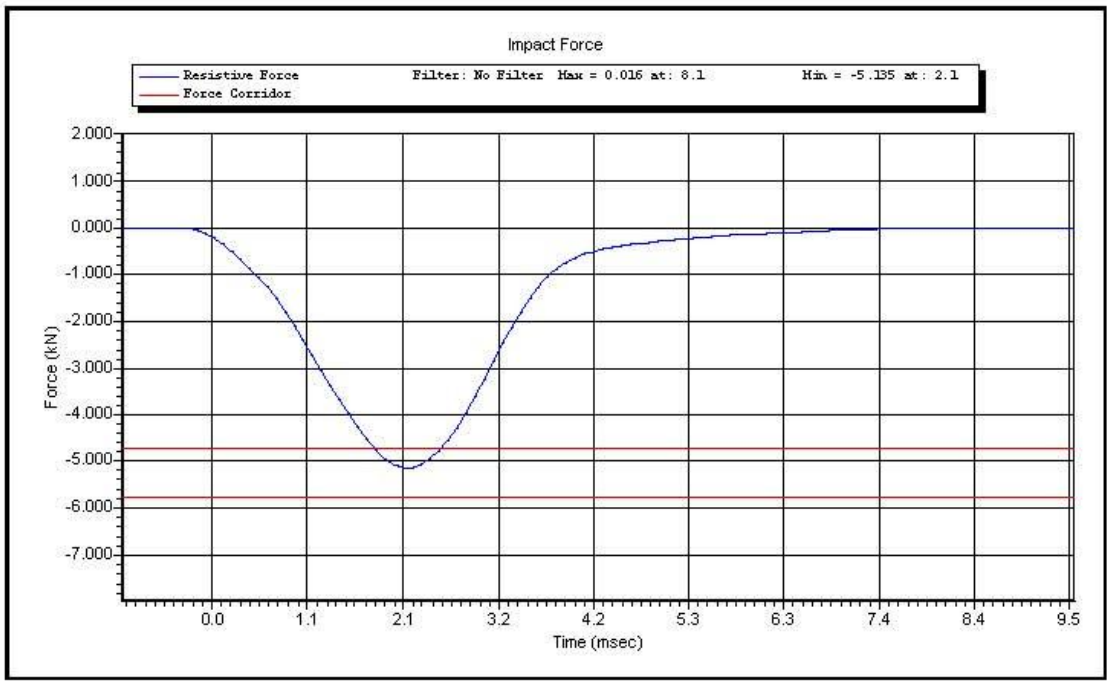
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Right Knee** Test Time: **9:42:14 AM** Test Date: **10/6/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Right Knee**	Test Date:	**10/6/2011**
Test Number:	**1**	Test Time:	**9:42:14 AM**



Test ID: **Right Knee** Test Time: **9:42:14 AM** Test Date: **10/6/2011**

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CALIBRATION TEST RESULTS

PRE-TEST

RIGHT-FRONT PASSENGER DUMMY

S/N: 273

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External Measurements

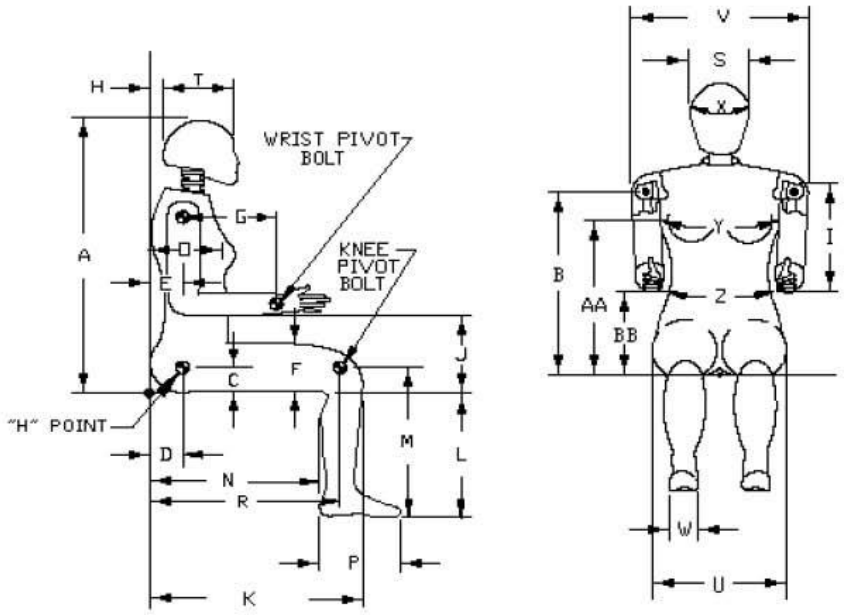
5th Female SN 273

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	784	Yes
B	Shoulder Pivot Height	431.8 – 457.2	450	Yes
C	H-Point Height	81.3 – 86.3	85	Yes
D	H-Point from Backline	144.8 – 149.8	146	Yes
E	Shoulder Pivot from Backline	68.6.83.8	77	Yes
F	Thigh Clearance	119.4 – 134.6	132	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	249	Yes
H	Head Back to Backline	43.2 – 48.2	46	Yes
I	Shoulder to Elbow Length	276.8 – 297.2	285	Yes
J	Elbow Rest Height	182.8 – 203.2	192	Yes
K	Buttock to Knee Length	520.7 – 546.1	530	Yes
L	Popliteal Height	355.6 - 376	360	Yes
M	Knee Pivot Height	393.7 – 419.1	397	Yes
N	Buttock Popliteal Length	414 – 439.4	422	Yes
O	Chest Depth without Jacket	175.3 – 190.5	185	Yes
P	Foot Length (right)	218.5 – 233.7	220	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	465	Yes
S	Head Breadth	137.1 – 147.3	143	Yes
T	Head Depth	177.8 - 188	183	Yes
U	Hip Breadth	299.7 – 314.9	310	Yes
V	Shoulder Breadth	350.5 – 365.7	357	Yes
W	Foot Breadth	78.8 - 94	82	Yes
X	Head Circumference	528.3 – 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	858	Yes
Z	Waist Circumference	759.5 – 789.9	770	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	345	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	165	Yes

Technician: DS Date: 10/12/2011

Hybrid III 5th Female External Measurements

Reference Diagram



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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/11/2011**
Test Number:	**1**	Test Time:	**5:37:44 PM**

Component Part Number	Component Serial Number
Head Skin - 78051-228	**780**

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**22.0**	deg C	P
Humidity	10	--	70	**49**	%RH	P
Resultant Acceleration	250	--	300	**277**	g	P
Oscillation	0.0	--	10.0	**1.8**	%	P
Lateral Acceleration	-15.00	--	15.00	**4.45**	g	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **5:37:44 PM** Test Date: **10/11/2011**

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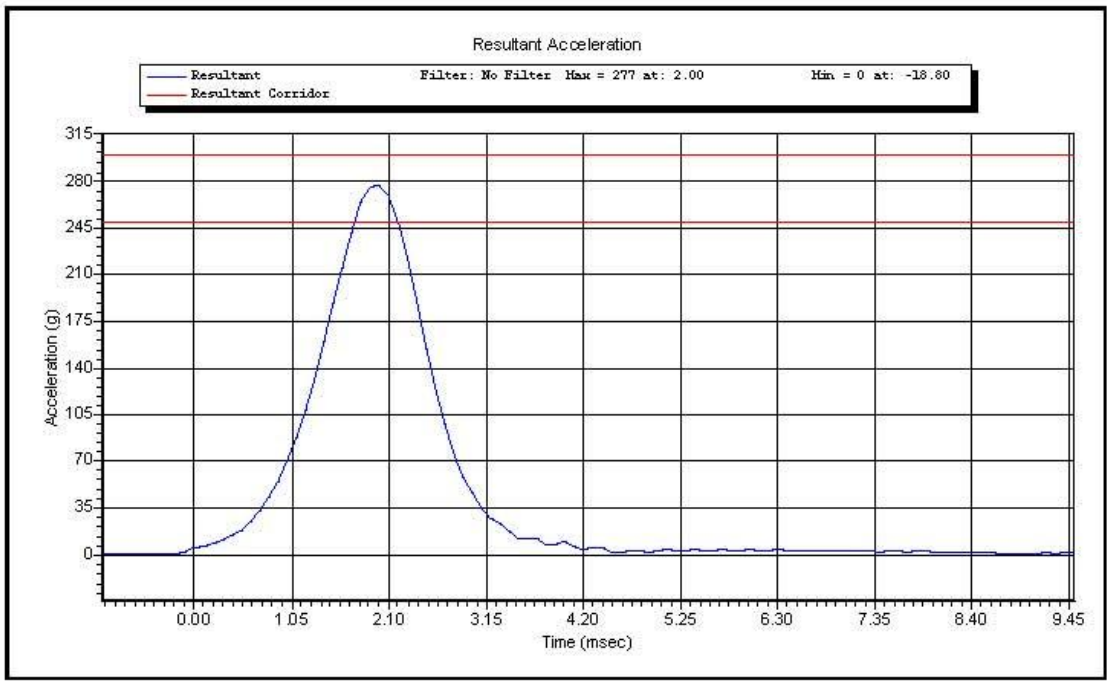
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P52054**	**9/22/2011**
Endevco	**7264-2000**	**P52007**	**9/22/2011**
Endevco	**7264-2000**	**P51298**	**10/7/2011**

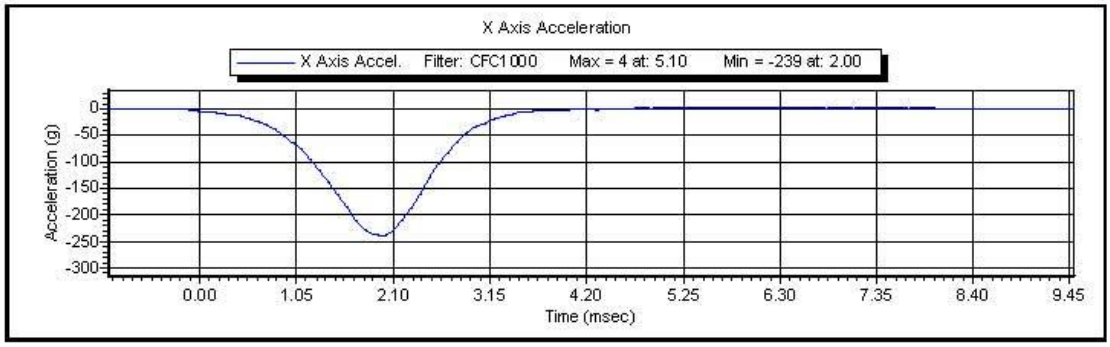
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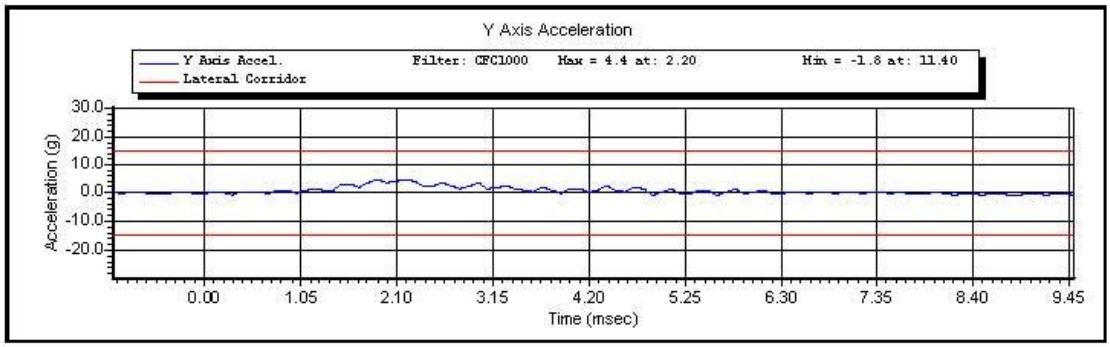
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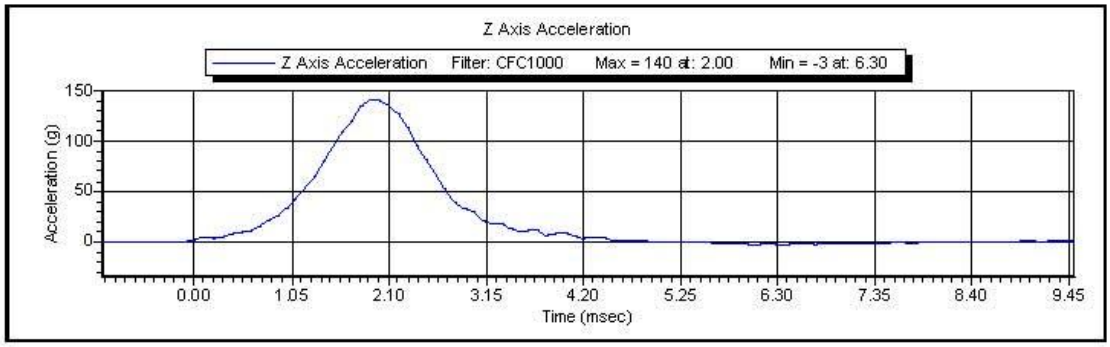
Test Name:	**Head Drop**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/11/2011**
Test Number:	**1**	Test Time:	**5:37:44 PM**



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Test ID: Test Time: **5:37:44 PM** Test Date: **10/11/2011**

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Test Name:	**Neck Extension**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/11/2011**
Test Number:	**2**	Test Time:	**4:38:21 PM**

Component Part Number	Component Serial Number
Neck - 880105-255	**2151**

Test Parameters		Test Specifications			Test Results		
Temperature		20.6	--	22.2	**22.0**	deg C	P
Humidity		10	--	70	**51**	%RH	P
Velocity		5.95	--	6.19	**6.15**	m/s	P
Pendulum Impulse at	10 ms	1.50	--	1.90	**1.87**	m/s	P
Pendulum Impulse at	20 ms	3.10	--	3.90	**3.61**	m/s	P
Pendulum Impulse at	30 ms	4.60	--	5.60	**5.11**	m/s	P
D Plane Rotation		99.0	--	114.0	**100.5**	degrees	P
Moment During Rotation Interval		-65.0	--	-53.0	**-58.3**	Nm	P
Moment Decay to -10.0 Nm		94.0	--	114.0	**100.3**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **4:38:21 PM** Test Date: **10/11/2011**

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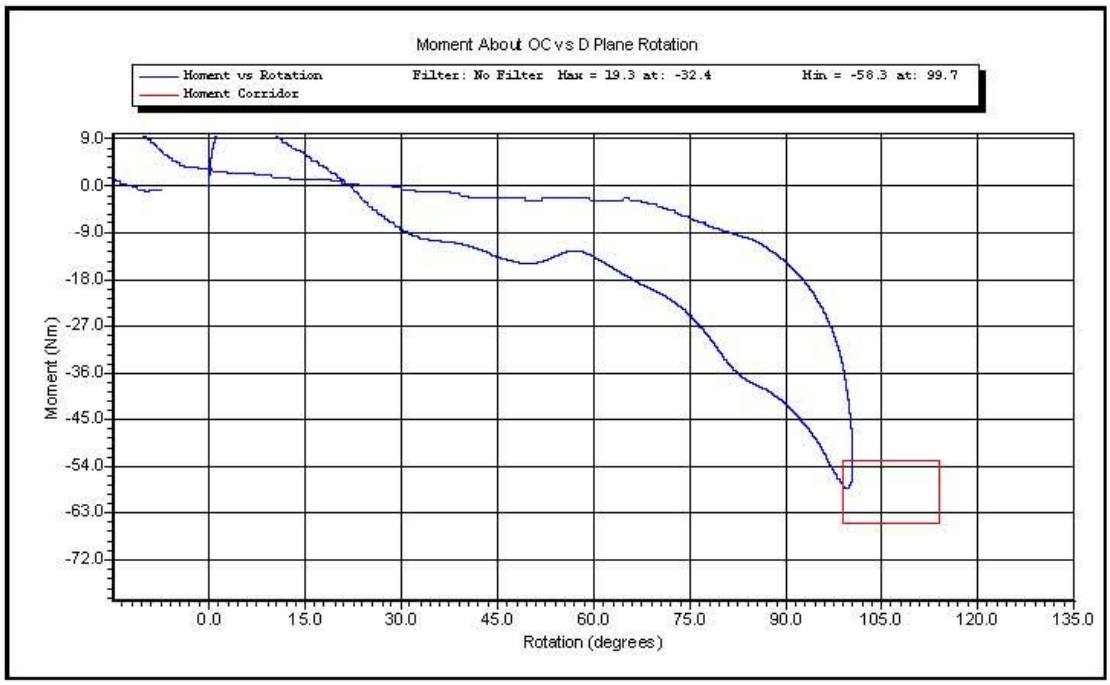
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2207My	8/31/2011
Denton	1716A	LC-2207Fx	8/31/2011

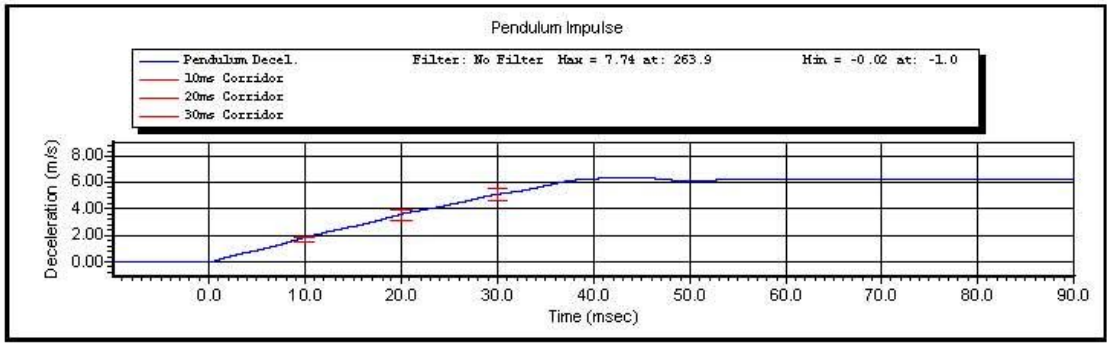
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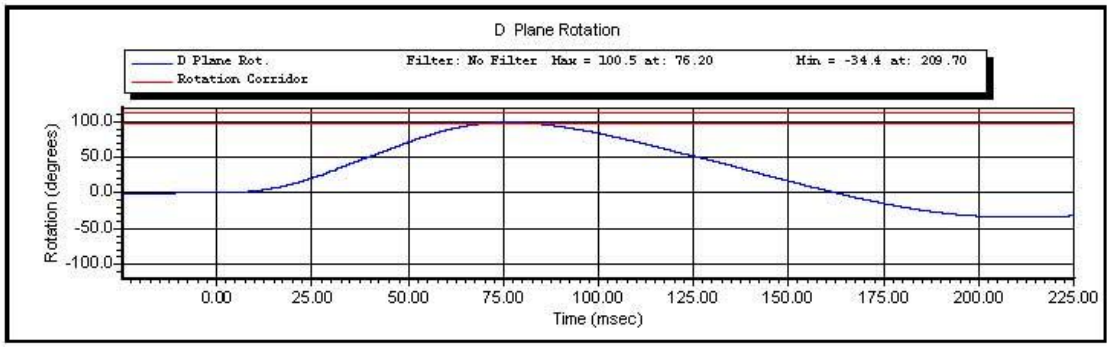
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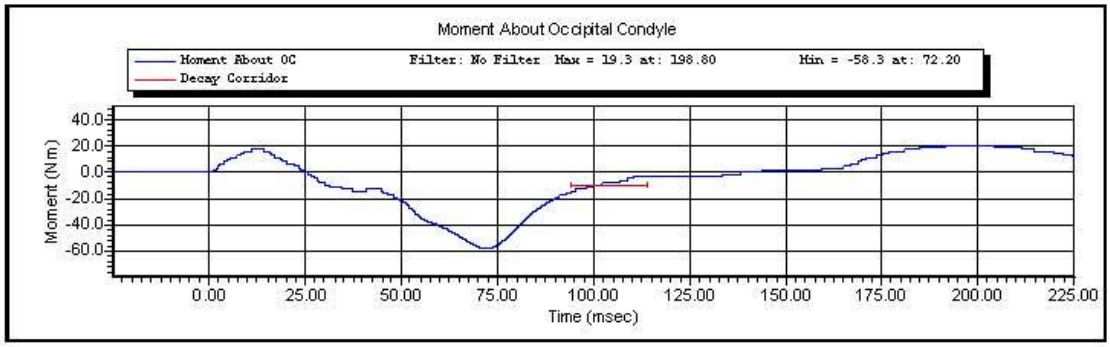
Test Name:	**Neck Extension**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/11/2011**
Test Number:	**2**	Test Time:	**4:38:21 PM**



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Test ID: Test Time: **4:38:21 PM** Test Date: **10/11/2011**

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Test Name:	**Neck Flexion**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/11/2011**
Test Number:	**2**	Test Time:	**12:47:08 PM**

Component Part Number	Component Serial Number
Neck - 880105-255	**2151**

Test Parameters	Test Specifications	Test Results	
Temperature	20.6 -- 22.2	**21.7** deg C	P
Humidity	10 -- 70	**53** %RH	P
Velocity	6.89 -- 7.13	**7.10** m/s	P
Pendulum Impulse at 10 ms	2.10 -- 2.50	**2.37** m/s	P
Pendulum Impulse at 20 ms	4.00 -- 5.00	**4.58** m/s	P
Pendulum Impulse at 30 ms	5.80 -- 7.00	**6.30** m/s	P
D Plane Rotation	-91.0 -- -77.0	**-80.1** degrees	P
Moment During Rotation Interval	69.0 -- 83.0	**70.0** Nm	P
Moment Decay to 10.0 Nm	80.0 -- 100.0	**87.8** ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **12:47:08 PM** Test Date: **10/11/2011**

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REFERENCE EQUIPMENT

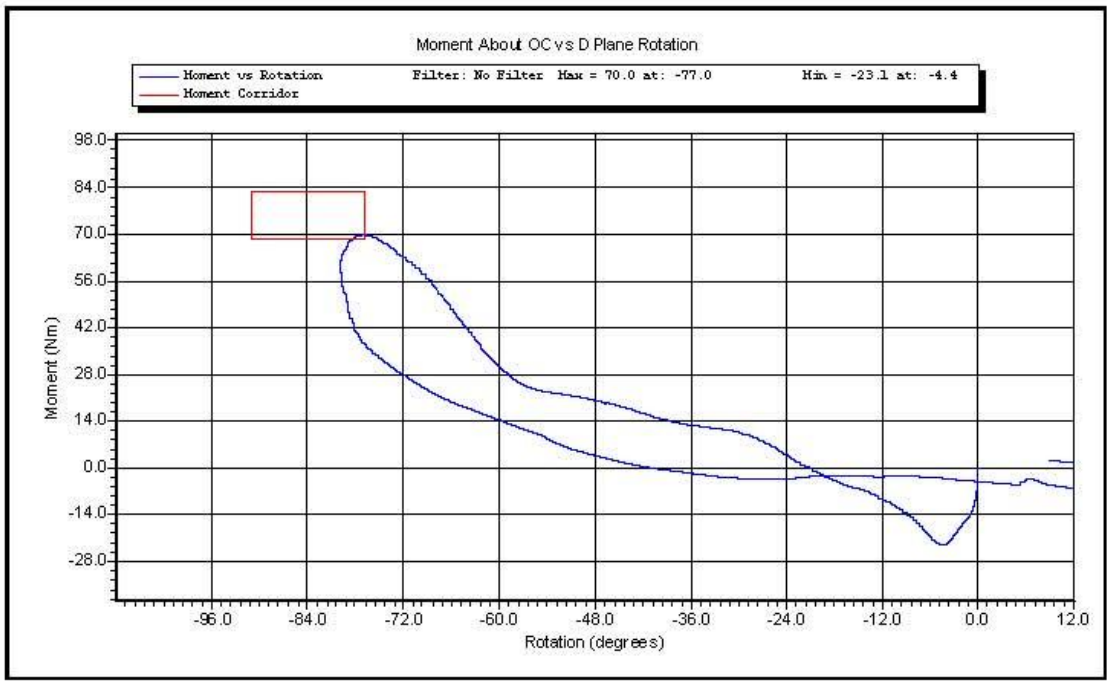
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2207My	8/31/2011
Denton	1716A	LC-2207Fx	8/31/2011

Test ID: Test Time: **12:47:08 PM** Test Date: **10/11/2011**

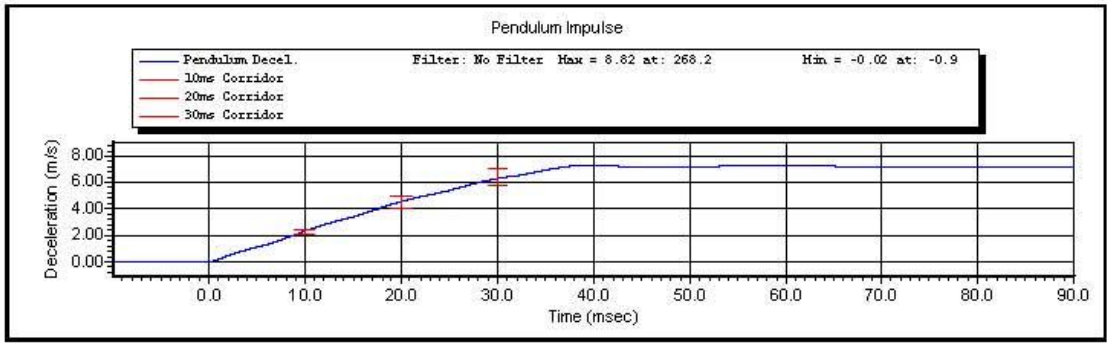
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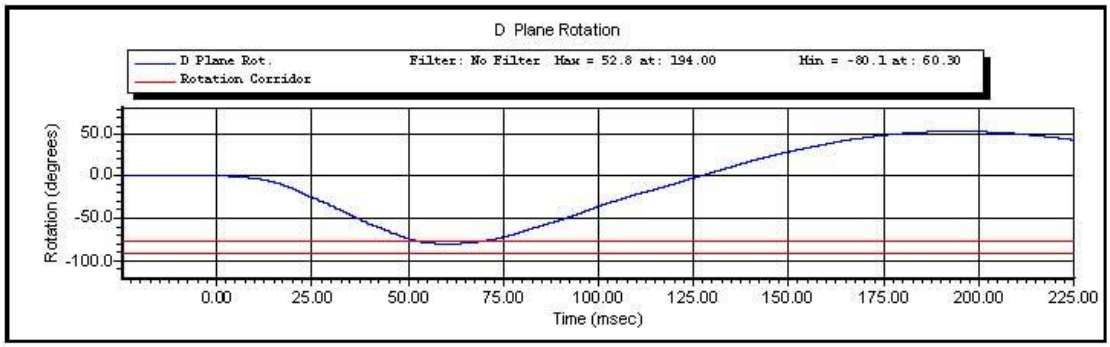
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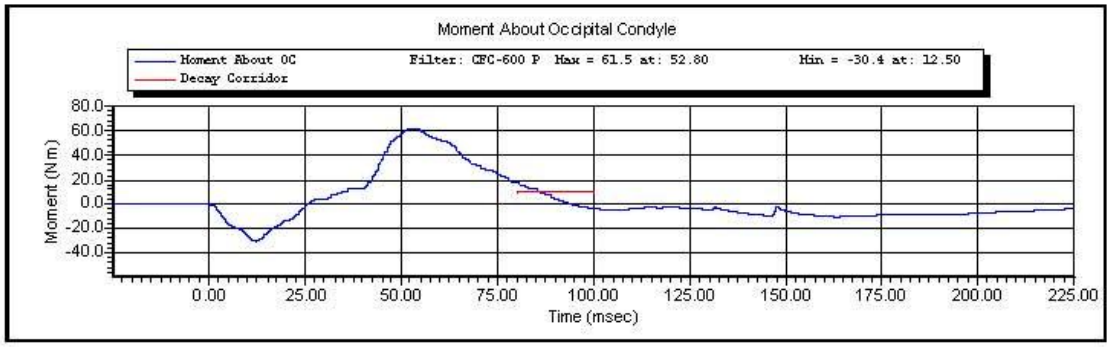
Test Name:	**Neck Flexion**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/11/2011**
Test Number:	**2**	Test Time:	**12:47:08 PM**



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Test ID: Test Time: **12:47:08 PM** Test Date: **10/11/2011**

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VERIFICATION REPORT

Test Name:	**Thorax Impact**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/12/2011**
Test Number:	**1**	Test Time:	**8:28:46 AM**

Component Part Number	Component Serial Number
Chest Jacket - 880105-355-E	**686**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.0**	deg C	P
Humidity	10.0	--	70.0	**54.0**	%RH	P
Velocity	6.59	--	6.83	**6.71**	m/s	P
Sternum Displacement	-58.0	--	-50.0	**-52.7**	mm	P
Force During Displacement Interval	-4400	--	-3900	**-4355**	N	P
Force -18.0 to -50.0 Displacement	-4600	--	0	**-4276**	N	P
Hysteresis	69	--	85	**71**	%	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **8:28:46 AM** Test Date: **10/12/2011**

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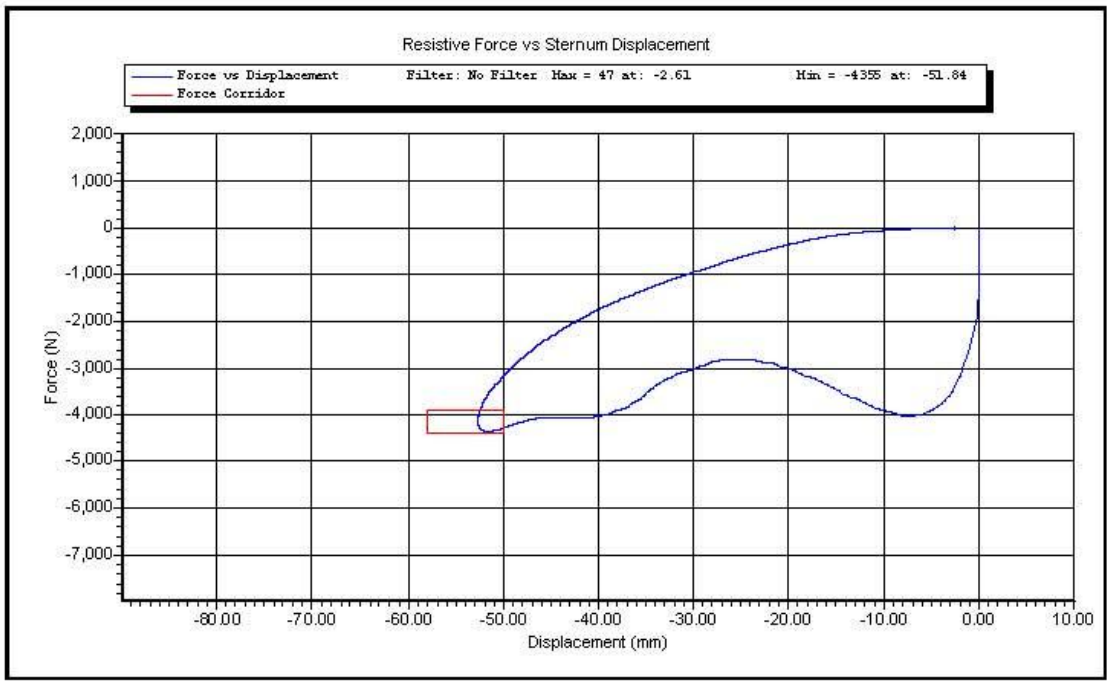
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**
DentonATD	**78051-342**	**DS-273**	**10/10/2011**

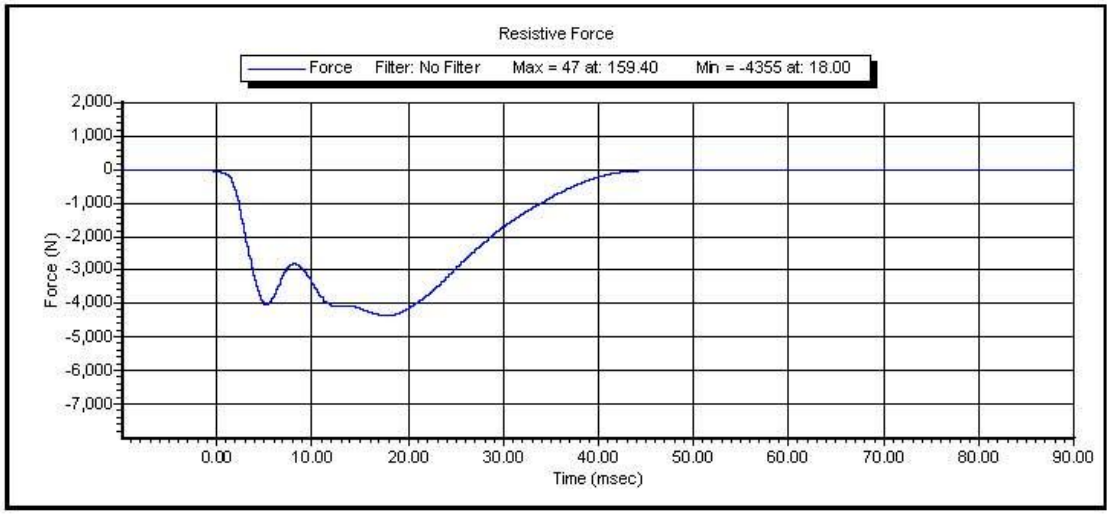
Test ID: Test Time: **8:28:46 AM** Test Date: **10/12/2011**

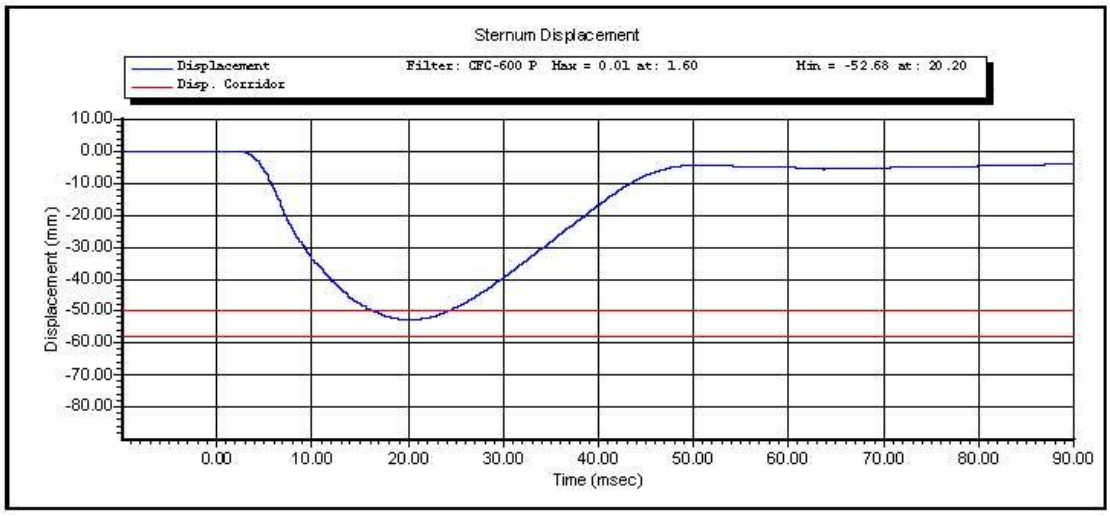
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Test Name:	**Thorax Impact**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/12/2011**
Test Number:	**1**	Test Time:	**8:28:46 AM**



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Test ID: Test Time: **8:28:46 AM** Test Date: **10/12/2011**

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Torso Flexion Test

Technician: AR
Calibration Date: 10/12/2011

ATD Serial Number: NHTSA 5th Female 273

Test Results

Test Condition	Parameters	Results	Status
Temperature	18.9-25.6° C	22.0° C	P
Lab Humidity	10-70%	51%	P
Max Force @ 45 deg	320 – 390N	372N	P
Torso Rotation Rate	0.5 °/s ≤ rate ≤ 1.5 °/s	1.0 °/s	P
Initial reference angle	≤20 deg	13°	P
Final ref plan angle	Initial ref plane ± 8 deg	18°	P

P = Pass
F= Fail

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VERIFICATION REPORT

Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:	**Left Knee**	Test Date:	**10/4/2011**
Test Number:	**1**	Test Time:	**11:45:01 AM**

Component Part Number	Component Serial Number
Knee Skin - 880105-508	**1726**
Knee Insert - 880105-511	**1039**
Knee Cap - 880105-510	

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.9**	deg C	P
Humidity	10.0	--	70.0	**52.0**	%RH	P
Velocity	2.07	--	2.13	**2.10**	m/s	P
Resistive Force	-4060	--	-3450	**-3987**	N	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Left Knee** Test Time: **11:45:01 AM** Test Date: **10/4/2011**

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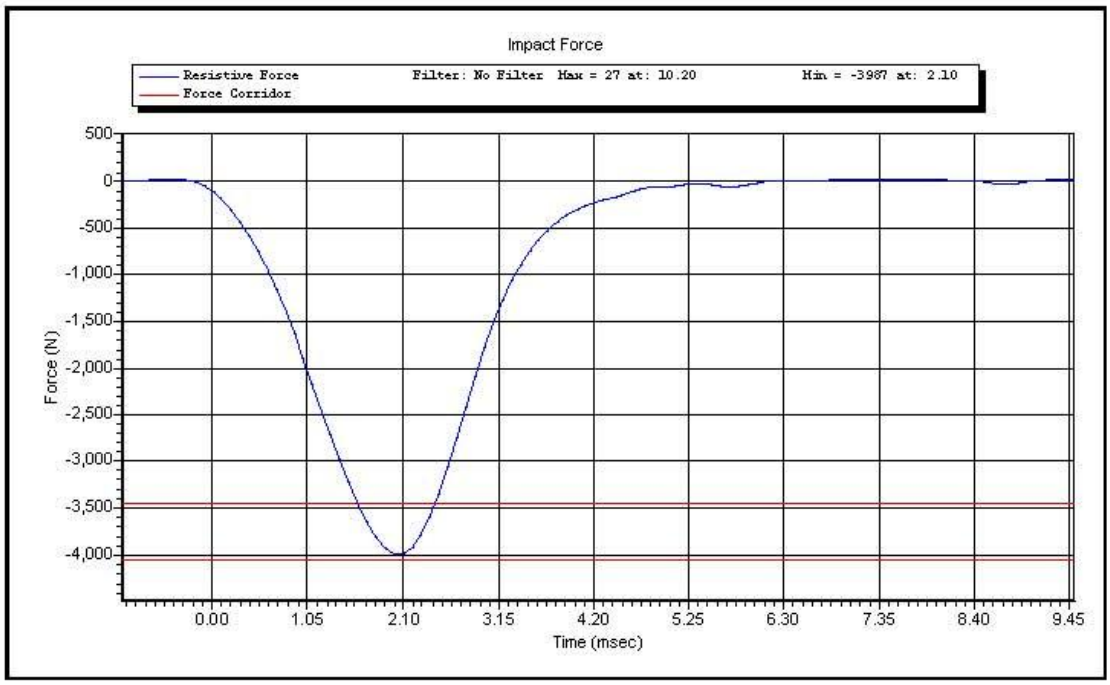
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Left Knee** Test Time: **11:45:01 AM** Test Date: **10/4/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:	**Left Knee**	Test Date:	**10/4/2011**
Test Number:	**1**	Test Time:	**11:45:01 AM**



Test ID: **Left Knee** Test Time: **11:45:01 AM** Test Date: **10/4/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**142**		
Test ID:	**Right Knee**	Test Date:	**10/4/2011**
Test Number:	**3**	Test Time:	**2:42:14 PM**

Component Part Number	Component Serial Number
Knee Skin - 880105-508	**1051**
Knee Insert - 880105-511	**1038**
Knee Cap - 880105-510	

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**22.0**	deg C	P
Humidity	10.0	--	70.0	**50.0**	%RH	P
Velocity	2.07	--	2.13	**2.09**	m/s	P
Resistive Force	-4060	--	-3450	**-3978**	N	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Right Knee** Test Time: **2:42:14 PM** Test Date: **10/4/2011**

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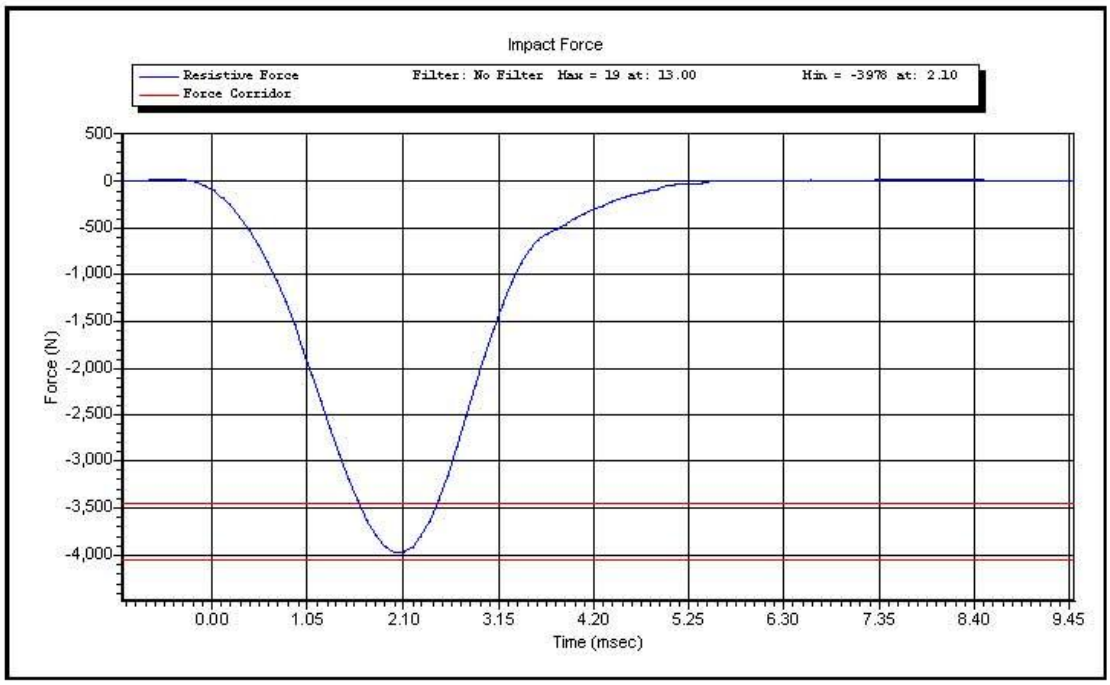
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Right Knee** Test Time: **2:42:14 PM** Test Date: **10/4/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**142**		
Test ID:	**Right Knee**	Test Date:	**10/4/2011**
Test Number:	**3**	Test Time:	**2:42:14 PM**



Test ID: **Right Knee** Test Time: **2:42:14 PM** Test Date: **10/4/2011**

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CALIBRATION TEST RESULTS

POST-TEST

DRIVER DUMMY

S/N: 064

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50th Male External Measurements

SN 064

Symbol	Description	Specification	Results	Pass
		in	in	
A	Sitting Height	34.6 – 35.0	35.0	Yes
B	Shoulder Pivot Height	19.9 - 20.5	20.4	Yes
C	H-Point Height	3.3 – 3.5	3.5	Yes
D	H-Point from Backline	5.3 – 5.5	5.5	Yes
E	Shoulder Pivot from Backline	3.3 – 3.7	3.5	Yes
F	Thigh Clearance	5.5 – 6.1	6.0	Yes
G	Back of Elbow to Wrist Pivot	11.4 – 12.0	11.5	Yes
H	Head Back to Backline	1.6 – 1.8	1.7	Yes
I	Shoulder to Elbow Length	13.0 – 13.6	13.3	Yes
J	Elbow Rest Height	7.5 – 8.3	7.9	Yes
K	Buttock to Knee Length	22.8 – 23.8	23.5	Yes
L	Popliteal Height	16.9 – 17.9	17.2	Yes
M	Knee Pivot Height	19.1 – 19.7	19.1	Yes
N	Buttock Popliteal Length	17.8 – 18.8	18.5	Yes
O	Chest Depth without Jacket	8.4 – 9.0	8.5	Yes
P	Foot Length (right)	9.9 – 10.5	10.2	Yes
V	Shoulder Breadth	16.3 – 17.2	16.7	Yes
W	Foot Breadth	3.6 – 4.2	3.9	Yes
Y	Chest Circumference with Jacket	38.2 – 39.4	38.8	Yes
Z	Waist Circumference	32.9 – 34.1	33.4	Yes
AA	Reference Location (Chest Circumference)	16.9 – 17.1	17.0	Yes
BB	Reference Location (Waist Circumference)	8.9 – 9.1	9.0	Yes

Technician: DS

Date: 11/20/2011

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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
		Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**2:37:13 PM**

Component Part Number	Component Serial Number
Head Skin - 78051-228	**7997**

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.4**	deg C	P
Humidity	10	--	70	**40**	%RH	P
Resultant Acceleration	225	--	275	**267**	g	P
Oscillation	0.0	--	10.0	**9.0**	%	P
Lateral Acceleration	-15.00	--	15.00	**9.27**	g	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **2:37:13 PM** Test Date: **10/21/2011**

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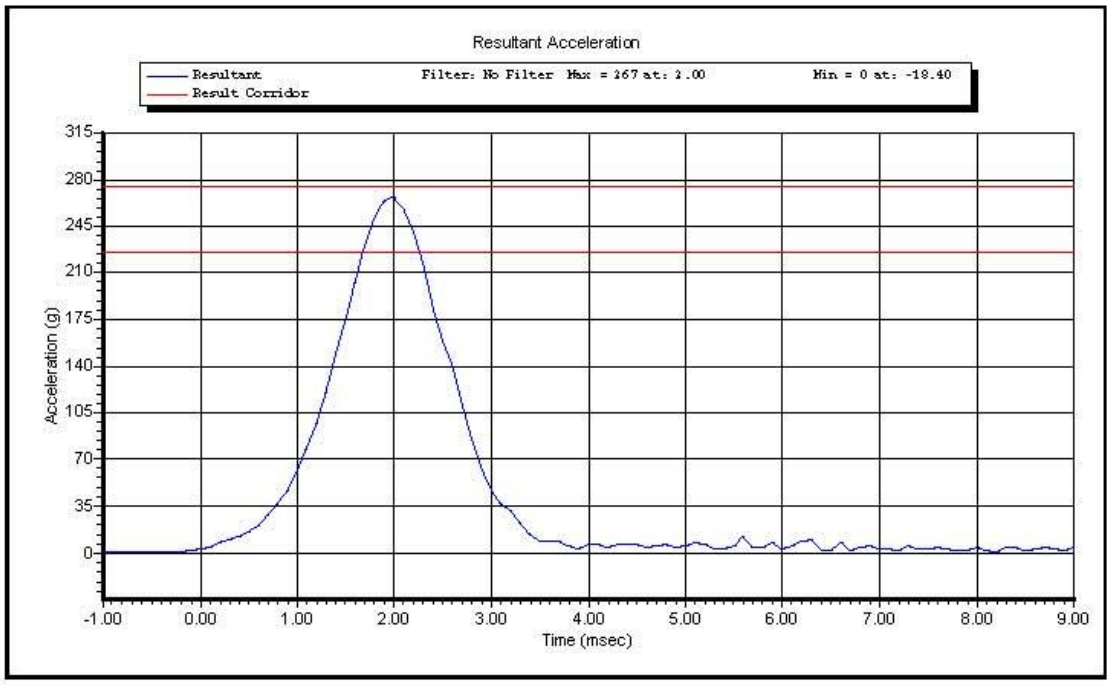
Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P66931**	**6/13/2011**
Endevco	**7264-2000**	**P66926**	**6/13/2011**
Endevco	**7264-2000**	**P66943**	**6/13/2011**

Test ID: Test Time: **2:37:13 PM** Test Date: **10/21/2011**

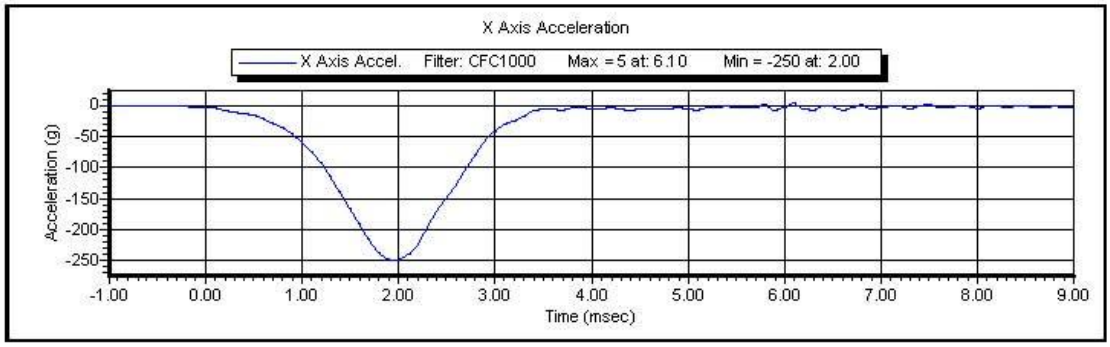
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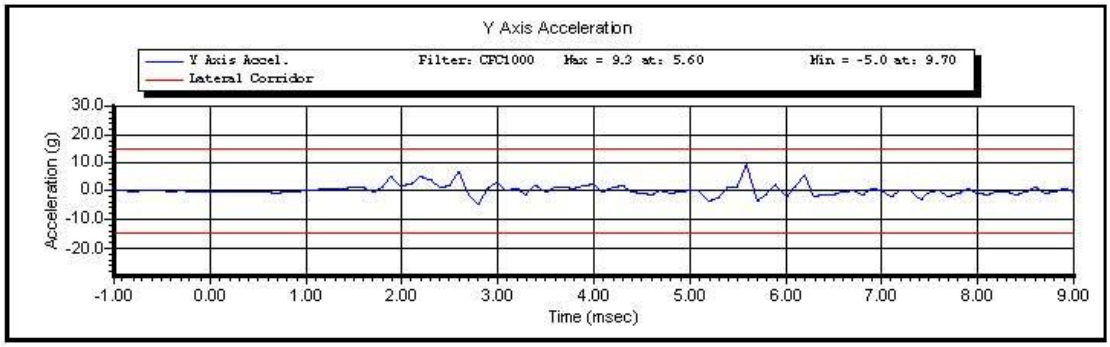
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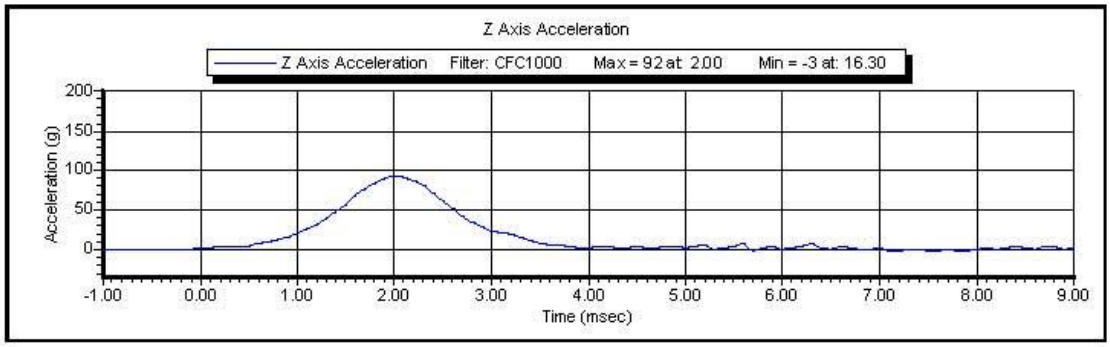
Test Name:	**Head Drop**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:		Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**2:37:13 PM**



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Test ID: Test Time: **2:37:13 PM** Test Date: **10/21/2011**

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VERIFICATION REPORT

Test Name:	**Neck Extension**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
		Test Date:	**10/20/2011**
Test Number:	**1**	Test Time:	**6:46:31 PM**

Component Part Number	Component Serial Number
Neck - 78051-336	**02-1692**

Test Parameters		Test Specifications		Test Results	
Temperature		20.6 -- 22.2		**21.4** deg C	P
Humidity		10 -- 70		**40** %RH	P
Velocity		5.94 -- 6.19		**6.13** m/s	P
Pendulum Deceleration at	10 ms	17.2 -- 21.2		**20.4** g	P
Pendulum Deceleration at	20 ms	14.0 -- 19.0		**15.6** g	P
Pendulum Deceleration at	30 ms	11.0 -- 16.0		**12.9** g	P
Max Pendulum Deceleration after	30 ms	0.0 -- 22.0		**12.9** g	P
Decel Time to	5 g	38.0 -- 46.0		**42.9** ms	P
D Plane Rotation		81.0 -- 106.0		**93.7** degrees	P
Time at Max Rotation		72.0 -- 82.0		**78.0** ms	P
Rotation Decay to Zero		147.0 -- 174.0		**158.8** ms	P
Moment About Occipital Condyle		-80.0 -- -52.9		**-63.3** Nm	P
Time at Max Moment		65.0 -- 79.0		**73.9** ms	P
Moment Decay to Zero		120.0 -- 148.0		**144.1** ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **6:46:31 PM** Test Date: **10/20/2011**

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VERIFICATION REPORT

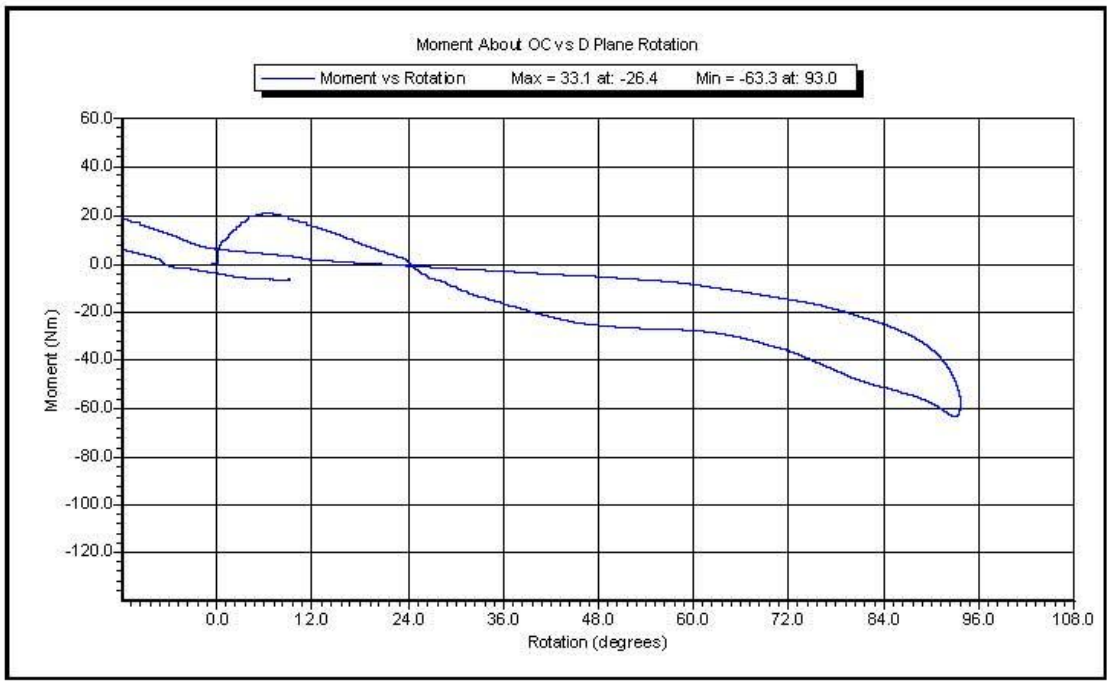
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2018My	6/3/2011
Denton	1716A	LC-2018Fx	6/3/2011

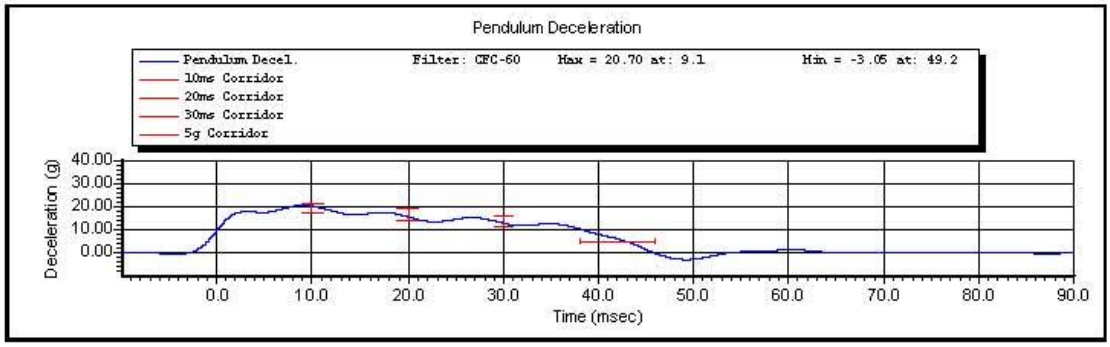
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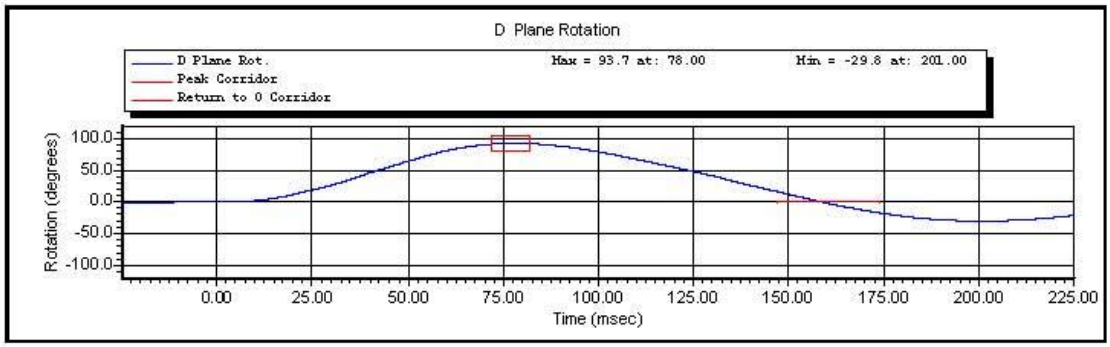
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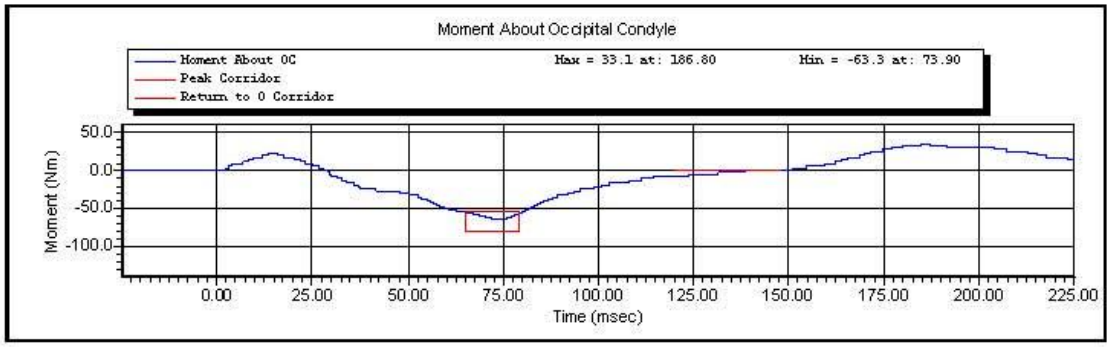
Name of Test:	**Neck Extension**	REVISION:	**10/1/2001**
Name of Sub Test:		Type of Spec:	**NHTSA**
Type of ATD:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
ID of Test:		Date:	**10/20/2011**
Number of Test:	**1**	Time of Test:	**6:46:31 PM**



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ID of Test:

Time of Test: **6:46:31 PM**

Date of Test: **10/20/2011**

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2 of 2

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VERIFICATION REPORT

Test Name:	**Neck Flexion**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
		Test Date:	**10/20/2011**
Test Number:	**1**	Test Time:	**6:02:59 PM**

Component Part Number	Component Serial Number
Neck - 78051-336	**02-1692**

Test Parameters			Test Specifications			Test Results		
Temperature			20.6	--	22.2	**21.4**	deg C	P
Humidity			10	--	70	**40**	%RH	P
Velocity			6.89	--	7.13	**7.09**	m/s	P
Pendulum Deceleration at	10	ms	22.5	--	27.5	**23.9**	g	P
Pendulum Deceleration at	20	ms	17.6	--	22.6	**19.9**	g	P
Pendulum Deceleration at	30	ms	12.5	--	18.5	**13.9**	g	P
Max Pendulum Deceleration After	30	ms	0.0	--	29.0	**14.1**	g	P
Deceleration time to	5	g	34.0	--	42.0	**39.3**	ms	P
D Plane Rotation			-78.0	--	-64.0	**-73.8**	degrees	P
Time at max rotation			57.0	--	64.0	**60.8**	ms	P
Rotation Decay to Zero			113.0	--	128.0	**116.9**	ms	P
Moment about OC			88.1	--	108.4	**93.5**	Nm	P
Time at Max Moment			47.0	--	58.0	**53.5**	ms	P
Moment Decay to Zero			97.0	--	107.0	**104.4**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **6:02:59 PM** Test Date: **10/20/2011**

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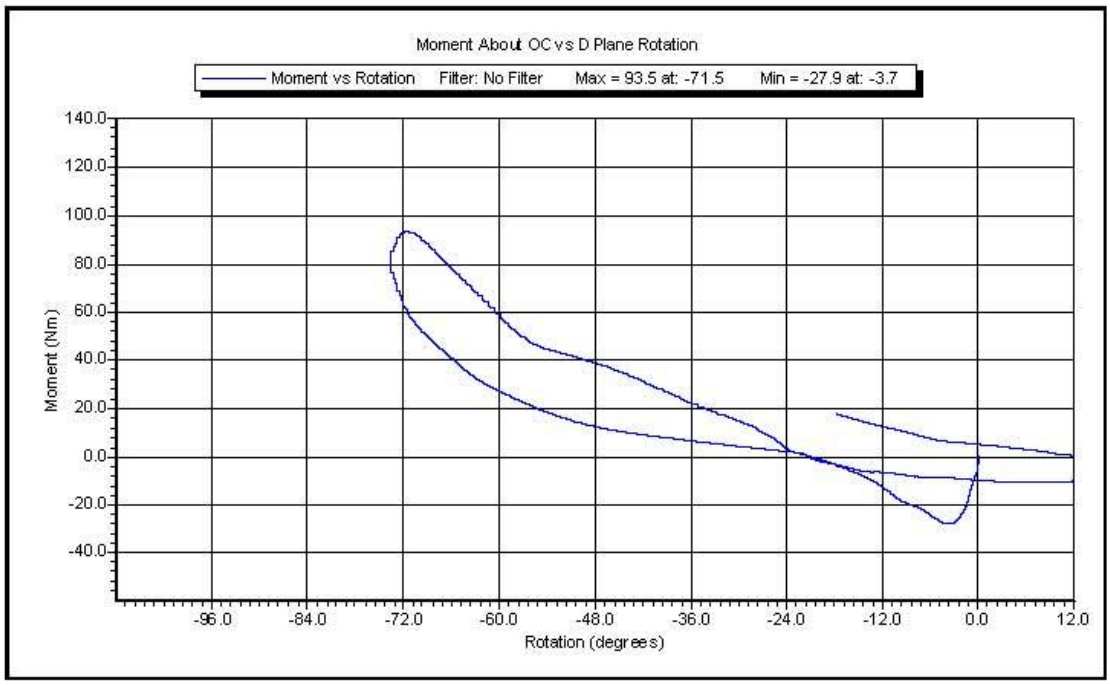
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2018My	6/3/2011
Denton	1716A	LC-2018Fx	6/3/2011

Test ID: Test Time: **6:02:59 PM** Test Date: **10/20/2011**

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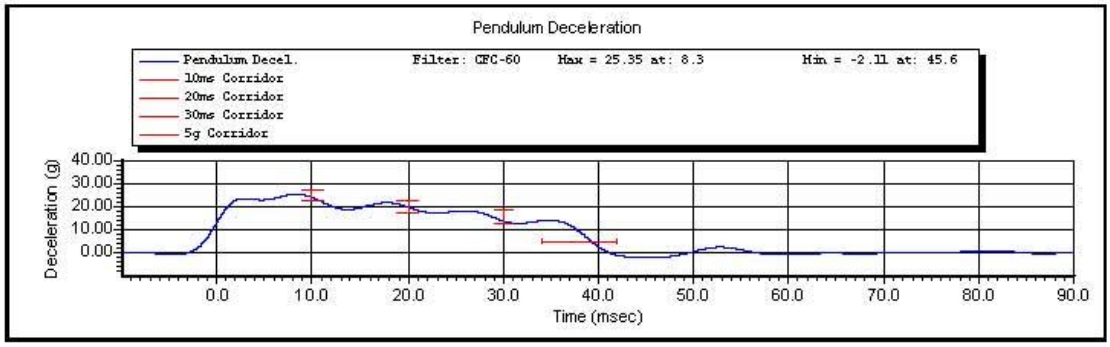
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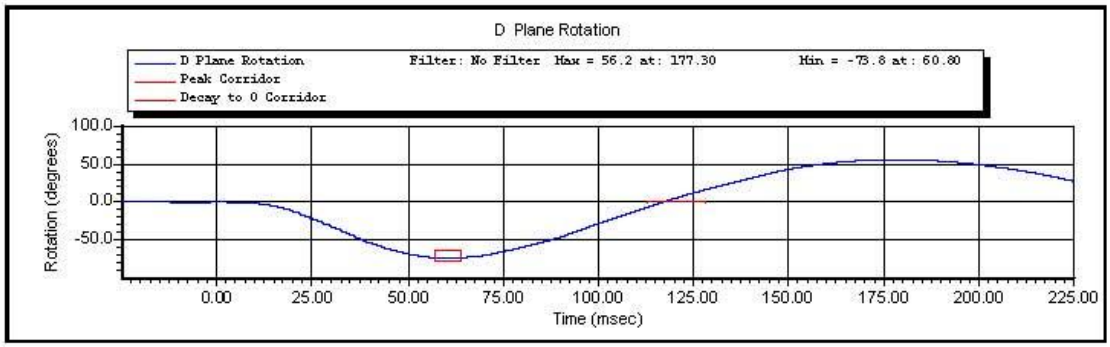
Name of Test:	**Neck Flexion**	REVISION:	**10/1/2001**
Name of Sub Test:		Type of Spec:	**NHTSA**
Type of ATD:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
ID of Test:		Date:	**10/20/2011**
Number of Test:	**1**	Time of Test:	**6:02:59 PM**

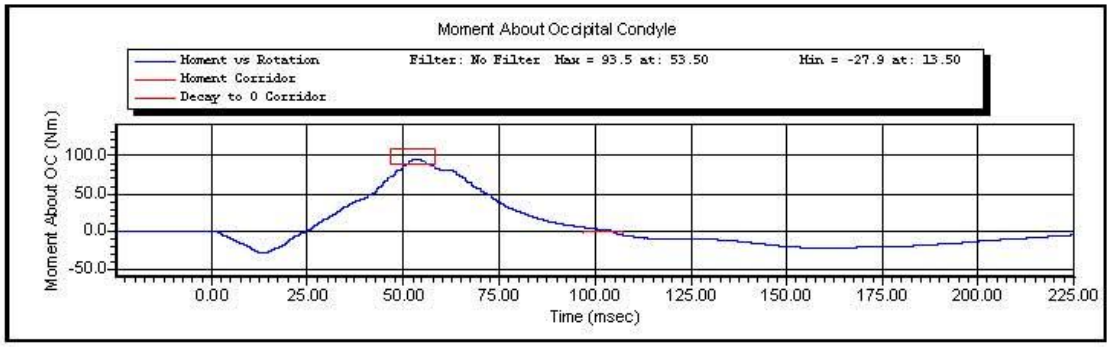


ID of Test: Time of Test: **6:02:59 PM** Date of Test: **10/20/2011**

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ID of Test:

Time of Test: **6:02:59 PM**

Date of Test: **10/20/2011**

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VERIFICATION REPORT

Test Name:	**Thorax Impact**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
		Test Date:	**10/20/2011**
Test Number:	**3**	Test Time:	**2:50:23 PM**

Component Part Number	Component Serial Number
Ribs 78051-RS **Chest Jacket - 78051-169** **Lumbar Spine - 78051-66**	**3964**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.5**	deg C	P
Humidity	10.0	--	70.0	**42.0**	%RH	P
Velocity	6.59	--	6.83	**6.74**	m/s	P
Resistive Force	-5.894	--	-5.160	**-5.694**	kN	P
Sternum Displacement	-72.6	--	-63.5	**-66.9**	mm	P
Hysteresis	69	--	85	**73**	%	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **2:50:23 PM** Test Date: **10/20/2011**

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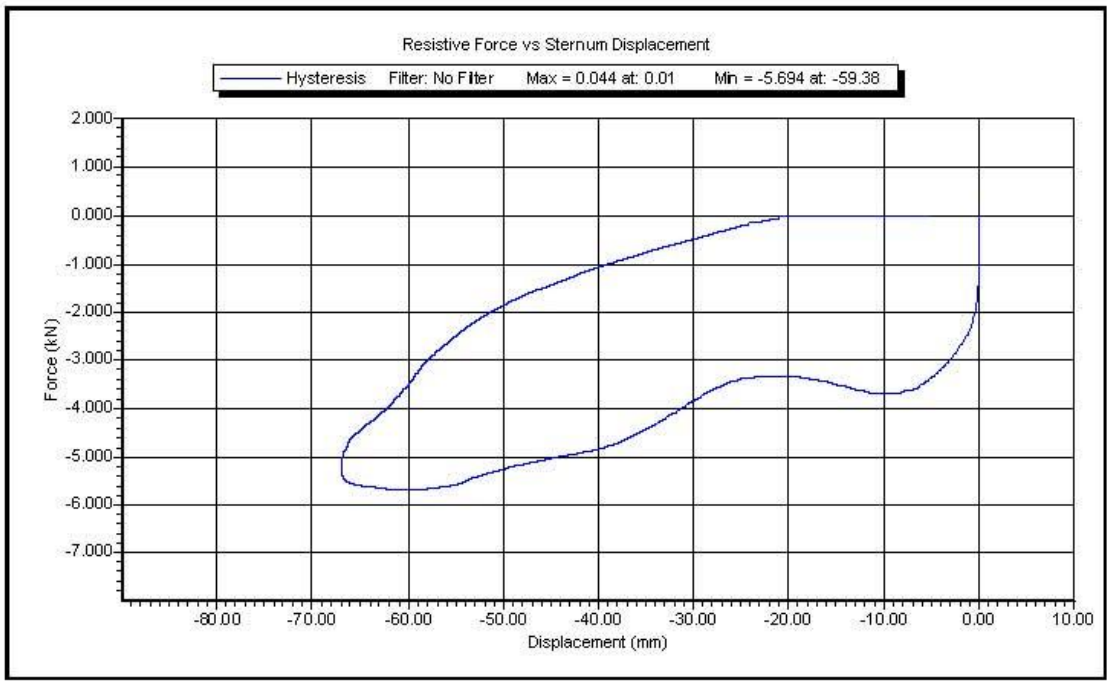
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**
DentonATD	**78051-342**	**DS-064**	**10/13/2011**

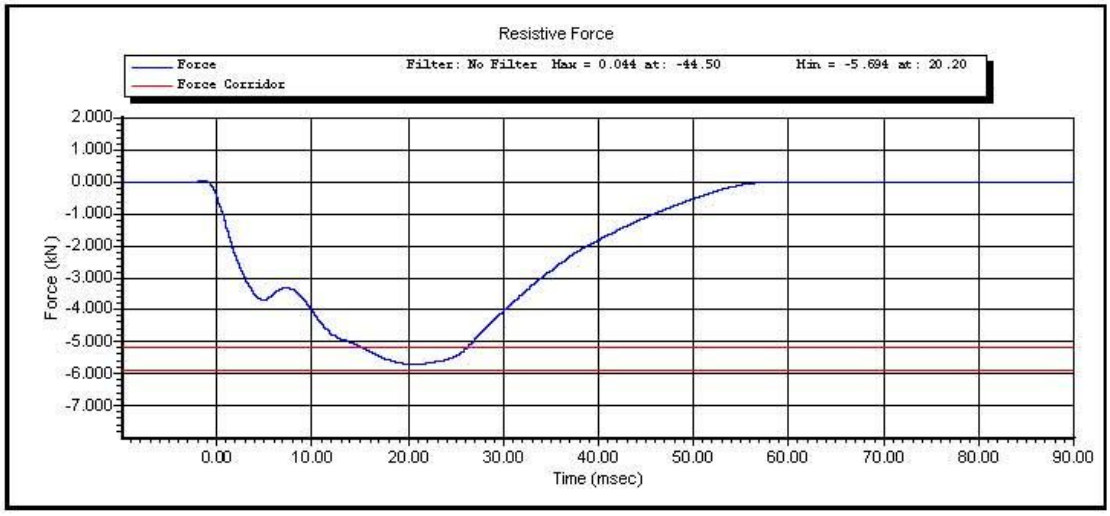
Test ID: Test Time: **2:50:23 PM** Test Date: **10/20/2011**

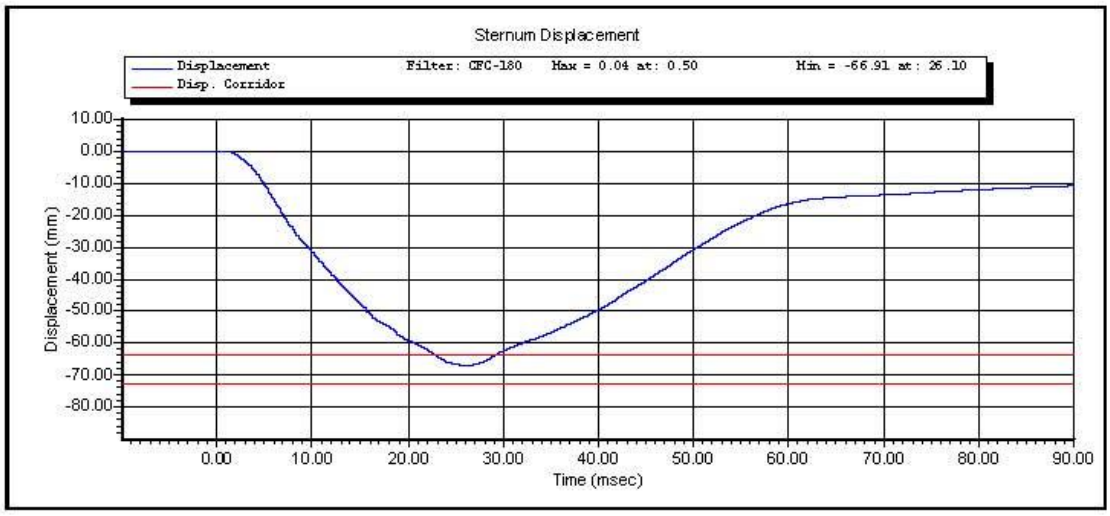
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Test Name:	**Thorax Impact**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:		Test Date:	**10/20/2011**
Test Number:	**3**	Test Time:	**2:50:23 PM**



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Test ID: Test Time: **2:50:23 PM** Test Date: **10/20/2011**

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Hybrid III Hip Range of Motion: Hybrid III 50th Male

Serial Number: 064
Test Number: 1
Comments: RIGHT

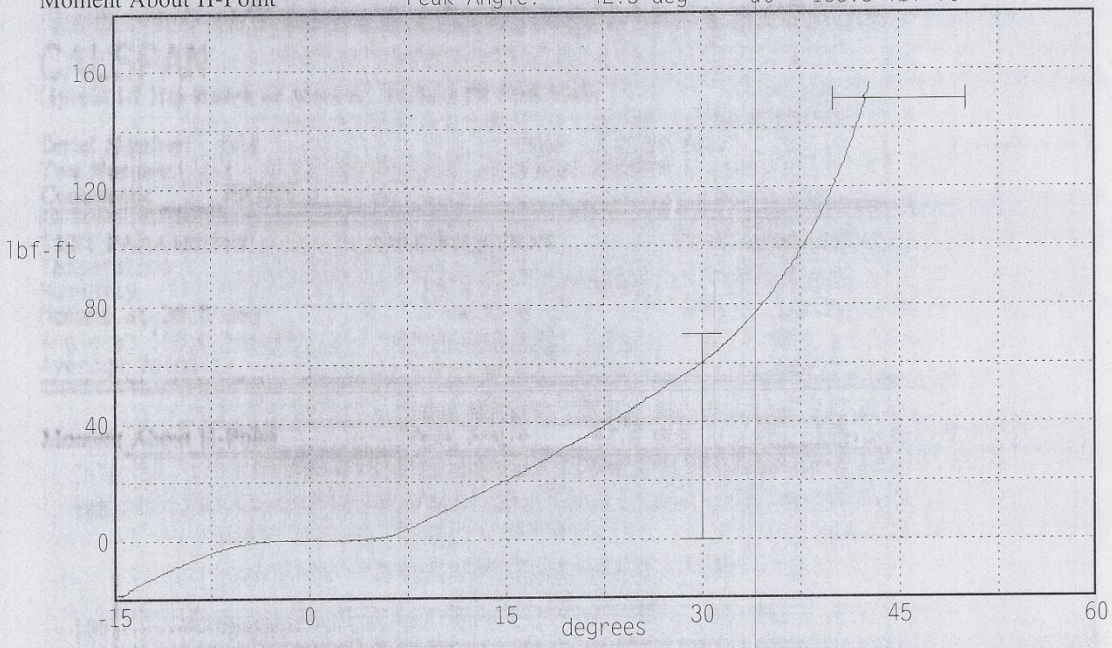
Date: 10/18/2011
Time: 10:34

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS		
Temperature	66.0 - 78.0	70.0	°F	Pass
Humidity	10 - 70	39	%	Pass
Moment at 30.0 deg	<= 70.0	60.7	lbf-ft	Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	42.4	deg	Pass
Average Velocity	5.0 - 10.0	7.5	deg/sec	Pass

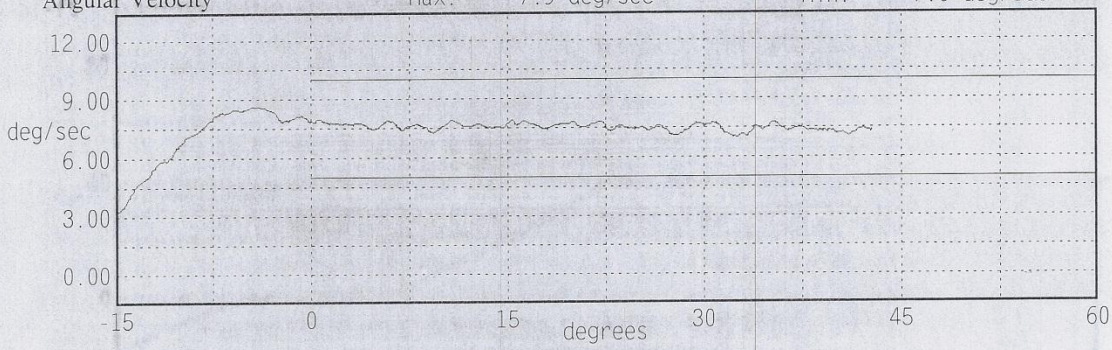
Moment About H-Point

Peak Moment: 155.3 lbf-ft at 42.8 deg
Peak Angle: 42.8 deg at 155.3 lbf-ft



Angular Velocity

Max: 7.9 deg/sec Min: 7.0 deg/sec



CALSPAN

Hybrid III Hip Range of Motion: Hybrid III 50th Male

Serial Number: 064
Test Number: 1
Comments: LEFT

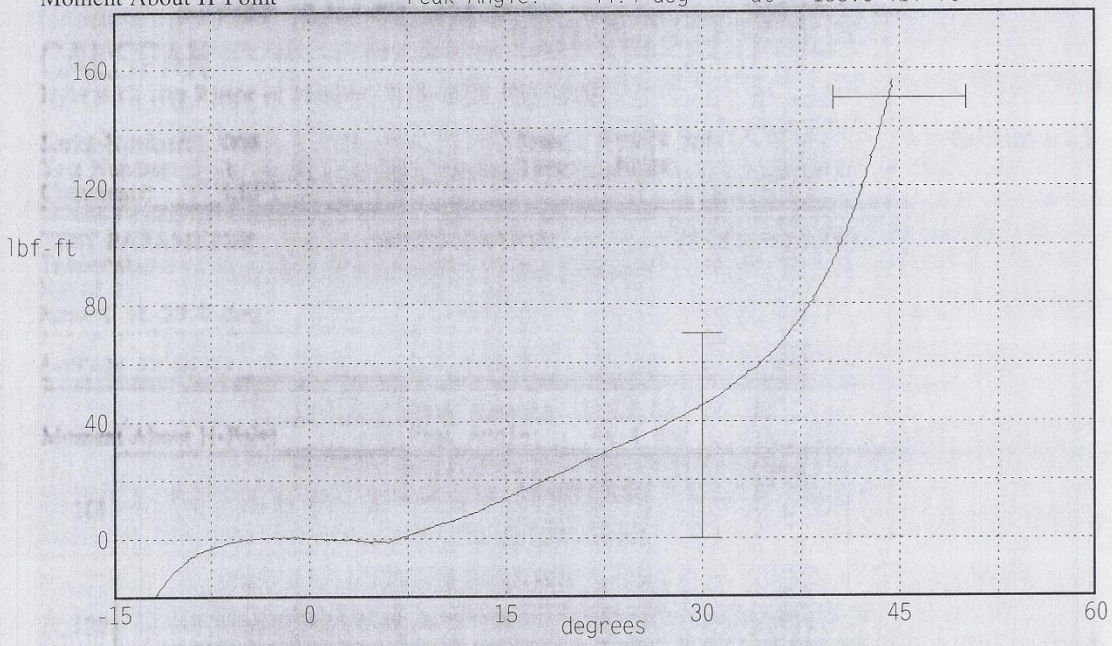
Date: 10/18/2011
Time: 10:28

Version: 1.6.3

TEST PARAMETER	SPECIFICATION	TEST RESULTS		
Temperature	66.0 - 78.0	70.0	°F	Pass
Humidity	10 - 70	39	%	Pass
Moment at 30.0 deg	<= 70.0	45.8	lbf-ft	Pass
Angle at 150.0 lbf-ft	40.0 - 50.0	44.2	deg	Pass
Average Velocity	5.0 - 10.0	7.5	deg/sec	Pass

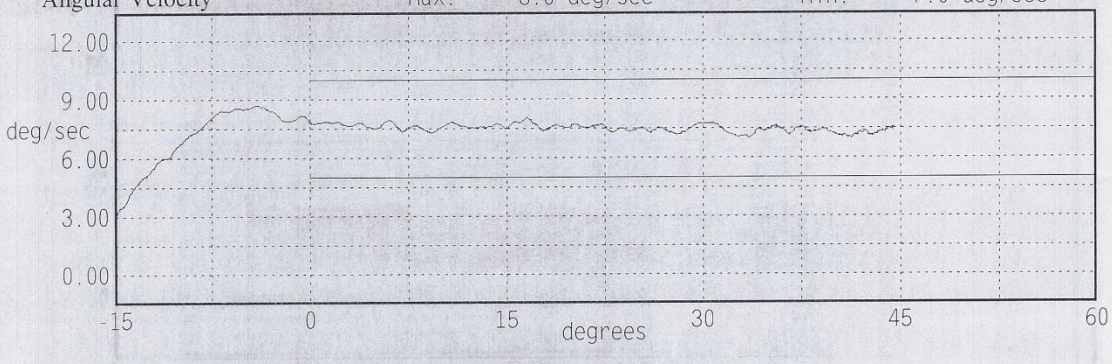
Moment About H-Point

Peak Moment: 156.0 lbf-ft at 44.4 deg
Peak Angle: 44.4 deg at 153.6 lbf-ft



Angular Velocity

Max: 8.0 deg/sec Min: 7.0 deg/sec



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VERIFICATION REPORT

Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Left Knee**	Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**3:54:52 PM**

Component Part Number	Component Serial Number
Knee Skin - 78051(L) or 6(R) **Knee Insert - 78051-27** **Knee Cap - 79051-22**	**2792**

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.4**	deg C	P
Humidity	10.0	--	70.0	**40.0**	%RH	P
Velocity	2.07	--	2.13	**2.10**	m/s	P
Resistive Force	-5.78	--	-4.72	**-5.22**	kN	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Left Knee** Test Time: **3:54:52 PM** Test Date: **10/21/2011**

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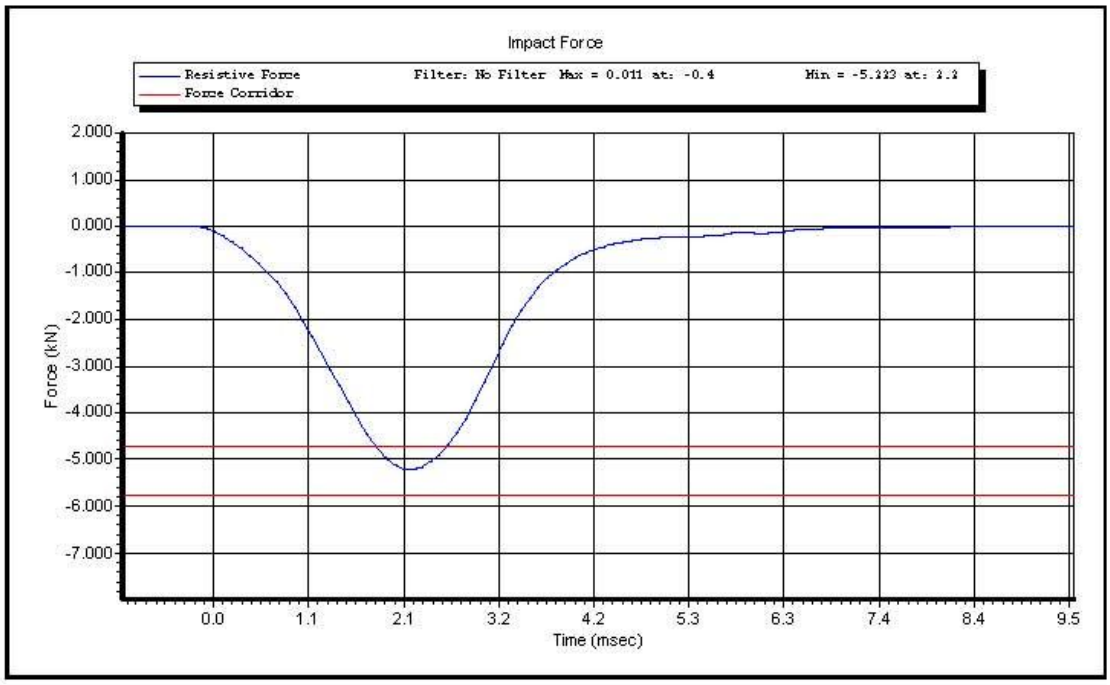
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Left Knee** Test Time: **3:54:52 PM** Test Date: **10/21/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Left Knee**	Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**3:54:52 PM**



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VERIFICATION REPORT

Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Right Knee**	Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**3:35:28 PM**

Component Part Number	Component Serial Number
Knee Skin - 78056 **Knee Insert - 78051-27** **Knee Cap - 79051-22**	**2880**

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.2**	deg C	P
Humidity	10.0	--	70.0	**41.0**	%RH	P
Velocity	2.07	--	2.13	**2.07**	m/s	P
Resistive Force	-5.78	--	-4.72	**-4.98**	kN	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Right Knee** Test Time: **3:35:28 PM** Test Date: **10/21/2011**

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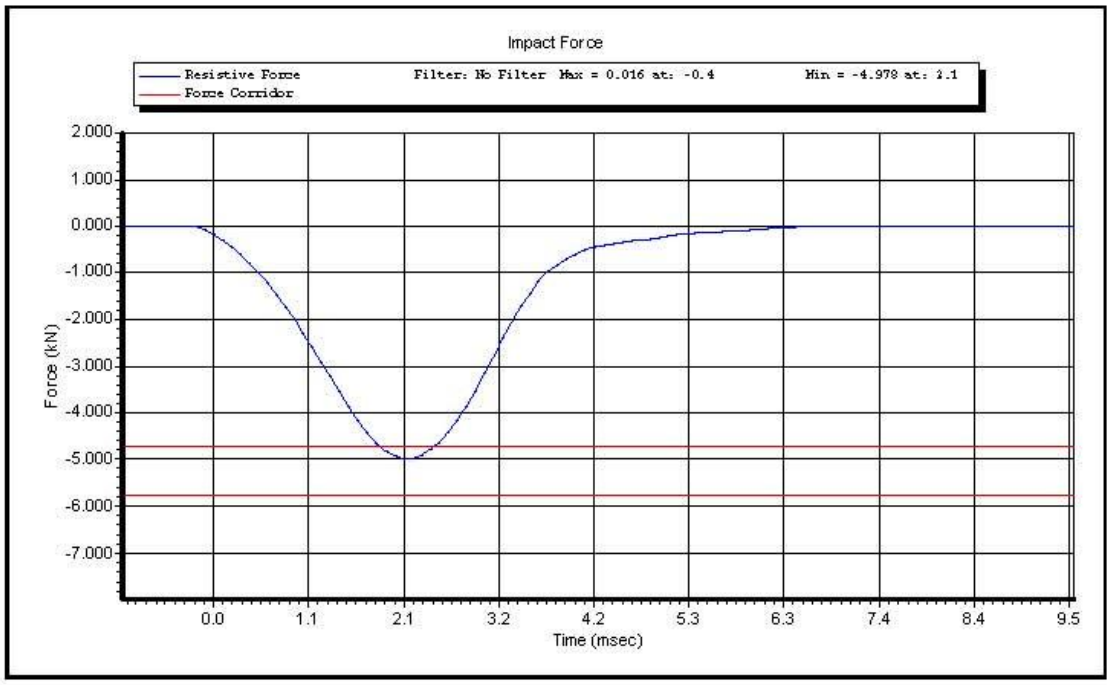
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Right Knee** Test Time: **3:35:28 PM** Test Date: **10/21/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**10/1/2001**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 50'th**		
ATD Serial Number:	**064**		
Test ID:	**Right Knee**	Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**3:35:28 PM**



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CALIBRATION TEST RESULTS

POST-TEST

RIGHT-FRONT PASSENGER DUMMY

S/N: 273

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External Measurements

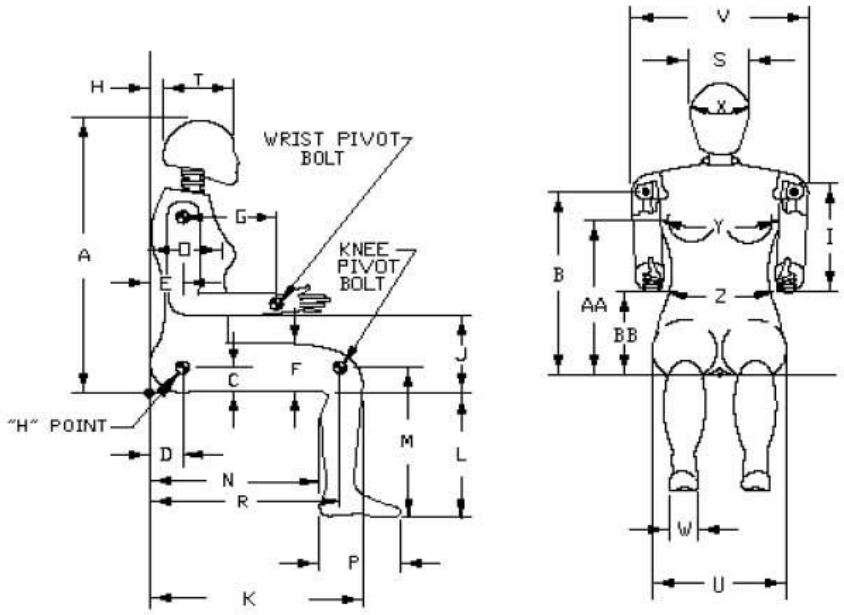
5th Female SN 273

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	774.7 – 800.1	784	Yes
B	Shoulder Pivot Height	431.8 – 457.2	450	Yes
C	H-Point Height	81.3 – 86.3	85	Yes
D	H-Point from Backline	144.8 – 149.8	146	Yes
E	Shoulder Pivot from Backline	68.6.83.8	77	Yes
F	Thigh Clearance	119.4 – 134.6	132	Yes
G	Back of Elbow to Wrist Pivot	243.9 – 259.1	249	Yes
H	Head Back to Backline	43.2 – 48.2	46	Yes
I	Shoulder to Elbow Length	276.8 – 297.2	285	Yes
J	Elbow Rest Height	182.8 – 203.2	192	Yes
K	Buttock to Knee Length	520.7 – 546.1	530	Yes
L	Popliteal Height	355.6 - 376	360	Yes
M	Knee Pivot Height	393.7 – 419.1	397	Yes
N	Buttock Popliteal Length	414 – 439.4	422	Yes
O	Chest Depth without Jacket	175.3 – 190.5	185	Yes
P	Foot Length (right)	218.5 – 233.7	220	Yes
R	Buttock To Knee Pivot Length	457.2 – 482.6	465	Yes
S	Head Breadth	137.1 – 147.3	143	Yes
T	Head Depth	177.8 - 188	183	Yes
U	Hip Breadth	299.7 – 314.9	310	Yes
V	Shoulder Breadth	350.5 – 365.7	357	Yes
W	Foot Breadth	78.8 - 94	82	Yes
X	Head Circumference	528.3 – 548.7	539	Yes
Y	Chest Circumference with Jacket	850.9 – 881.3	858	Yes
Z	Waist Circumference	759.5 – 789.9	770	Yes
AA	Reference Location (Chest Circumference)	332.7 – 358.1	345	Yes
BB	Reference Location (Waist Circumference)	160.1 – 170.2	165	Yes

Technician: DS Date: 10/18/2011

Hybrid III 5th Female External Measurements

Reference Diagram



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VERIFICATION REPORT

Test Name:	**Head Drop**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
		Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**3:13:09 PM**

Component Part Number	Component Serial Number
Head Skin - 78051-228	**780**

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.4**	deg C	P
Humidity	10	--	70	**40**	%RH	P
Resultant Acceleration	250	--	300	**293**	g	P
Oscillation	0.0	--	10.0	**1.3**	%	P
Lateral Acceleration	-15.00	--	15.00	**3.02**	g	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **3:13:09 PM** Test Date: **10/21/2011**

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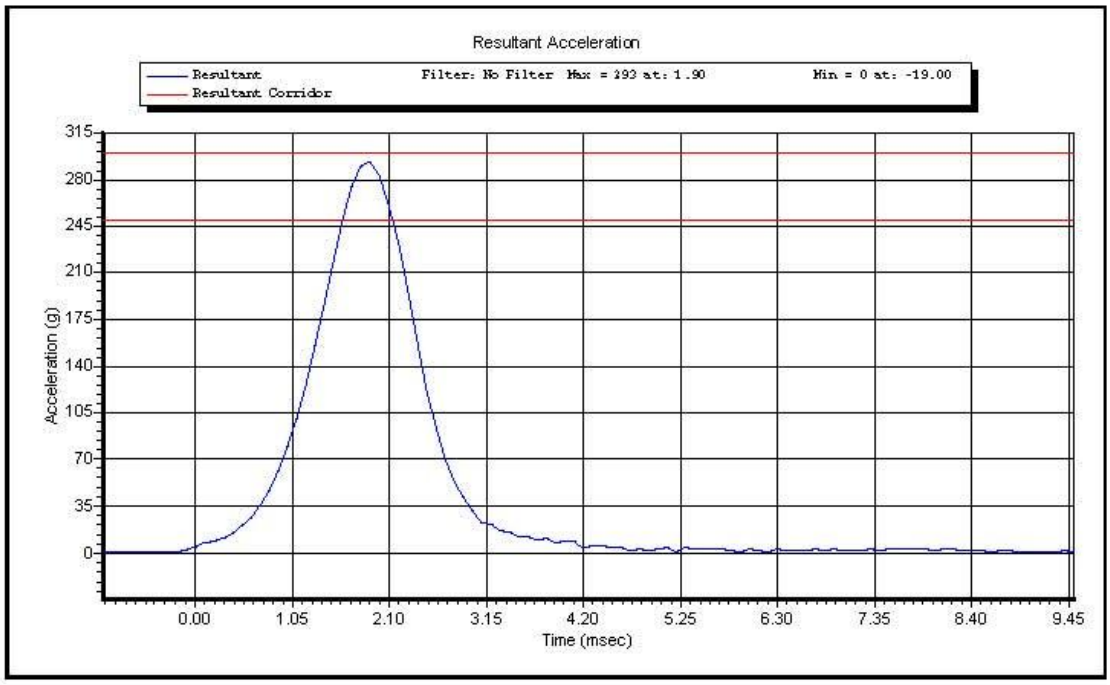
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
Endevco	**7264-2000**	**P52054**	**9/22/2011**
Endevco	**7264-2000**	**P52007**	**9/22/2011**
Endevco	**7264-2000**	**P51298**	**10/7/2011**

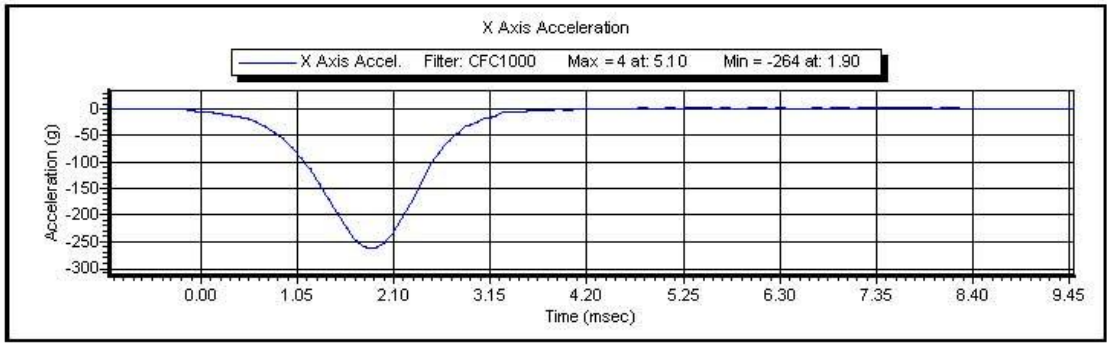
Test ID: Test Time: **3:13:09 PM** Test Date: **10/21/2011**

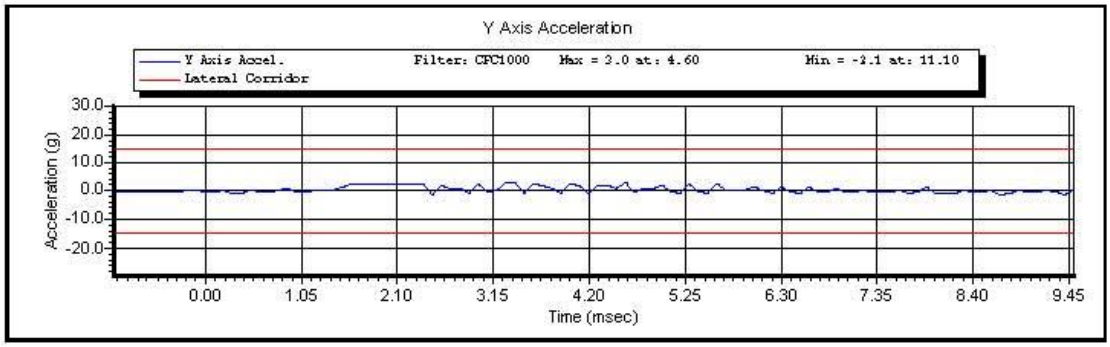
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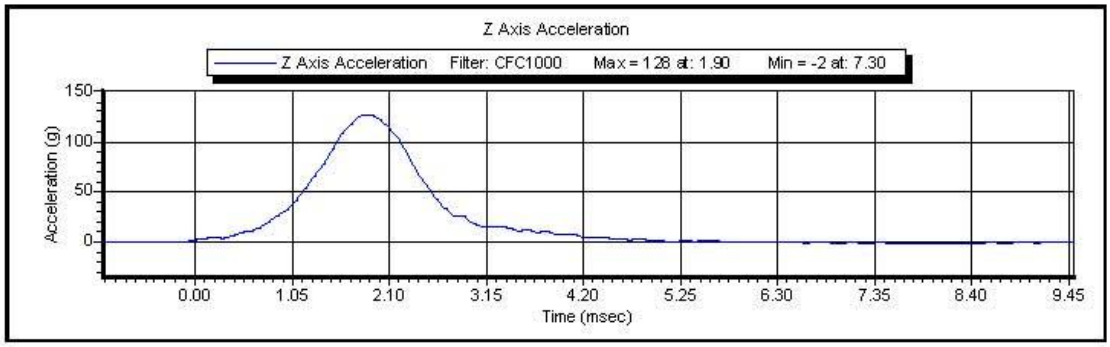
Test Name:	**Head Drop**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/21/2011**
Test Number:	**1**	Test Time:	**3:13:09 PM**



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Test ID: Test Time: **3:13:09 PM** Test Date: **10/21/2011**

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VERIFICATION REPORT

Test Name:	**Neck Extension**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
		Test Date:	**10/21/2011**
Test Number:	**2**	Test Time:	**2:27:52 PM**

Component Part Number	Component Serial Number
Neck - 880105-255	**2151**

Test Parameters		Test Specifications			Test Results		
Temperature		20.6	--	22.2	**21.2**	deg C	P
Humidity		10	--	70	**41**	%RH	P
Velocity		5.95	--	6.19	**6.15**	m/s	P
Pendulum Impulse at	10 ms	1.50	--	1.90	**1.77**	m/s	P
Pendulum Impulse at	20 ms	3.10	--	3.90	**3.39**	m/s	P
Pendulum Impulse at	30 ms	4.60	--	5.60	**4.89**	m/s	P
D Plane Rotation		99.0	--	114.0	**100.8**	degrees	P
Moment During Rotation Interval		-65.0	--	-53.0	**-55.0**	Nm	P
Moment Decay to -10.0 Nm		94.0	--	114.0	**98.7**	ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **2:27:52 PM** Test Date: **10/21/2011**

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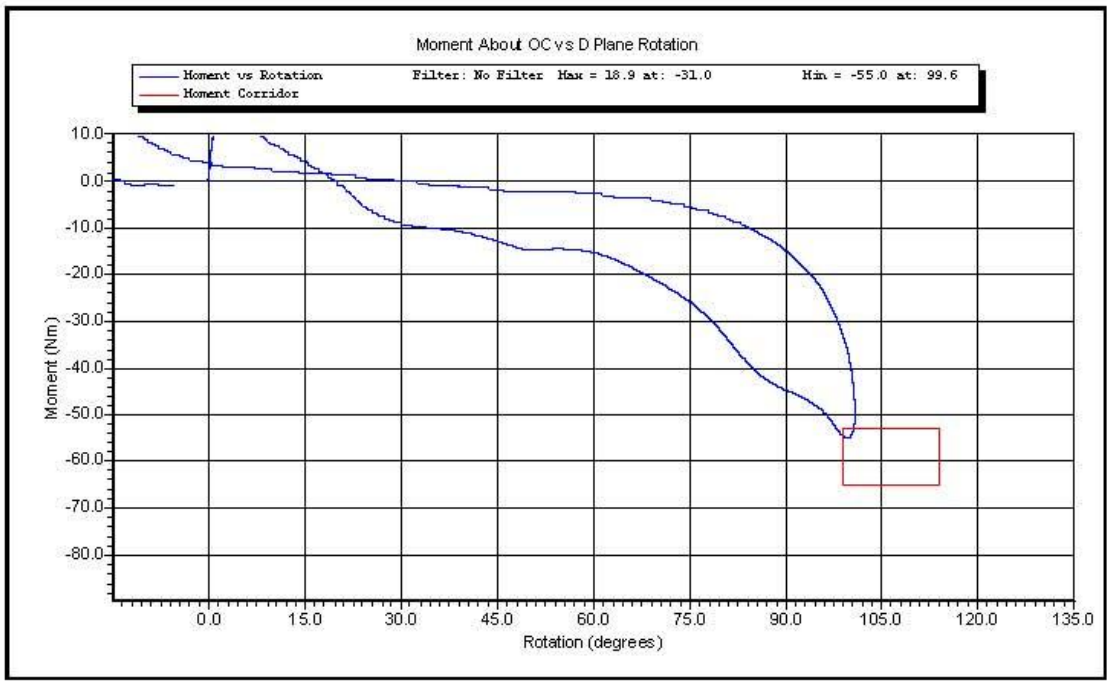
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2207My	8/31/2011
Denton	1716A	LC-2207Fx	8/31/2011

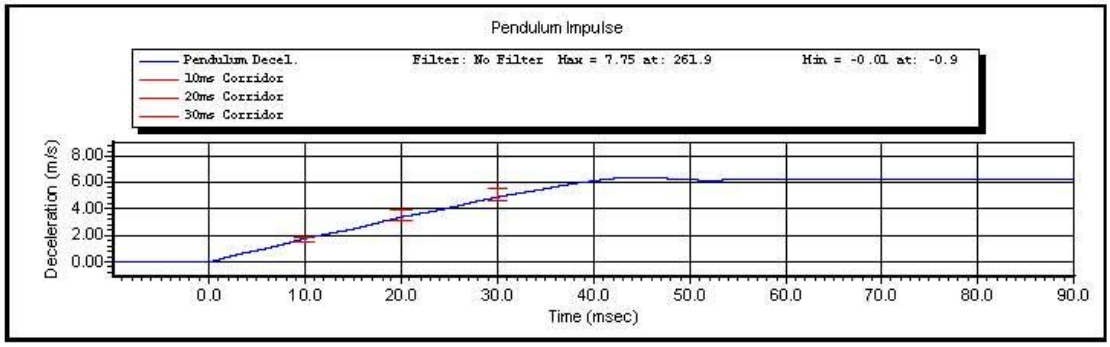
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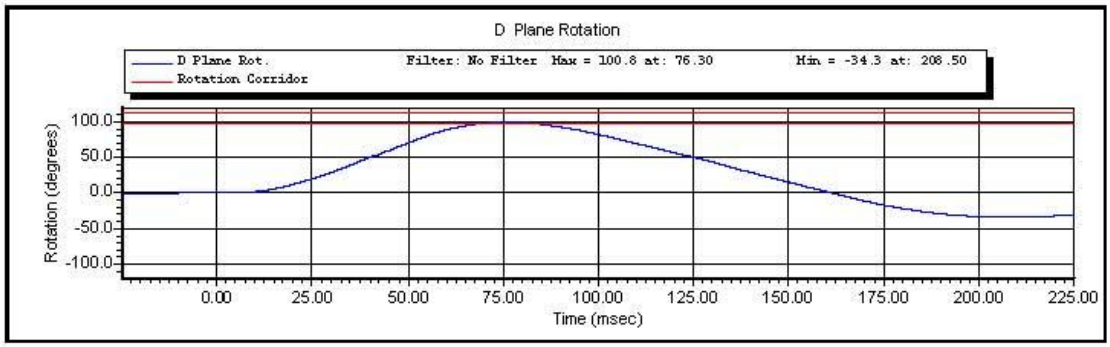
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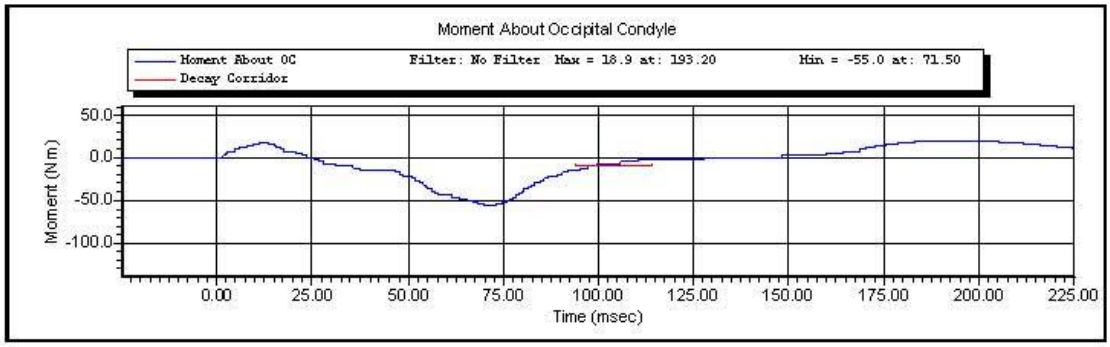
Test Name:	**Neck Extension**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/21/2011**
Test Number:	**2**	Test Time:	**2:27:52 PM**



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Test ID: Test Time: **2:27:52 PM** Test Date: **10/21/2011**

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Test Name:	**Neck Flexion**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
		Test Date:	**10/21/2011**
Test Number:	**3**	Test Time:	**12:49:23 PM**

Component Part Number	Component Serial Number
Neck - 880105-255	**2151**

Test Parameters	Test Specifications	Test Results	
Temperature	20.6 -- 22.2	**21.4** deg C	P
Humidity	10 -- 70	**42** %RH	P
Velocity	6.89 -- 7.13	**7.13** m/s	P
Pendulum Impulse at 10 ms	2.10 -- 2.50	**2.45** m/s	P
Pendulum Impulse at 20 ms	4.00 -- 5.00	**4.73** m/s	P
Pendulum Impulse at 30 ms	5.80 -- 7.00	**6.26** m/s	P
D Plane Rotation	-91.0 -- -77.0	**-80.5** degrees	P
Moment During Rotation Interval	69.0 -- 83.0	**73.5** Nm	P
Moment Decay to 10.0 Nm	80.0 -- 100.0	**88.8** ms	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **12:49:23 PM** Test Date: **10/21/2011**

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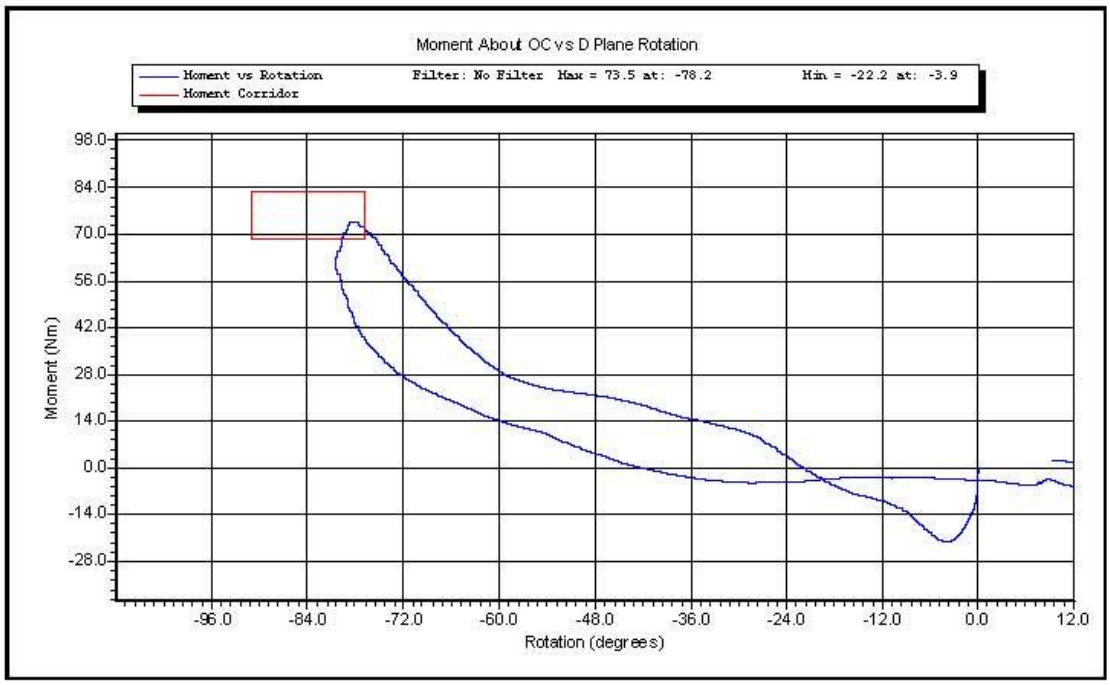
REFERENCE EQUIPMENT

Manufacturer	Model	Serial Number	Calibration Date
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
DentonATD	78051-342	PENDULUM POT	2/7/2011
DentonATD	78051-342	CONDYLE POT	2/7/2011
Denton	1716A	LC-2207My	8/31/2011
Denton	1716A	LC-2207Fx	8/31/2011

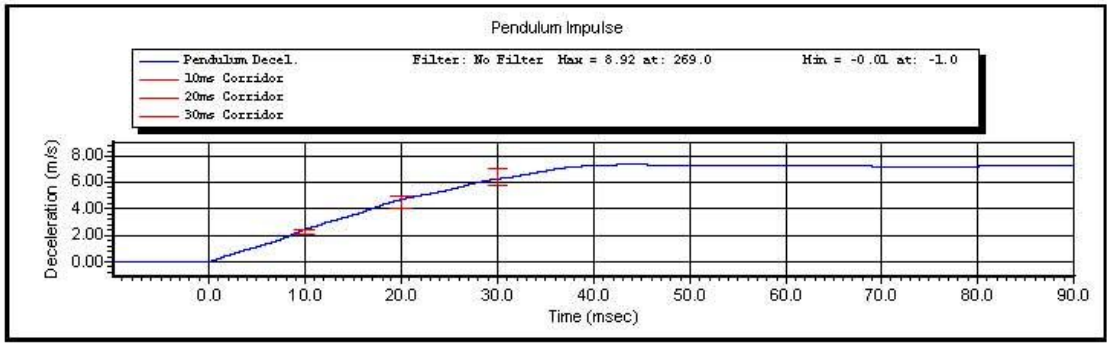
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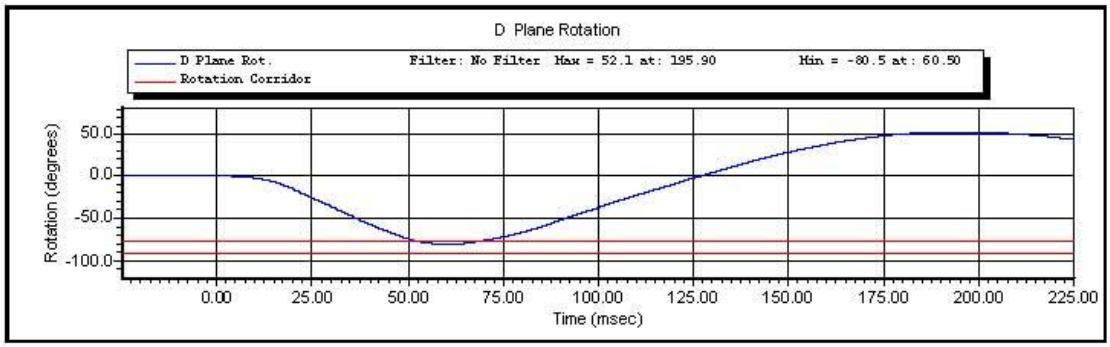
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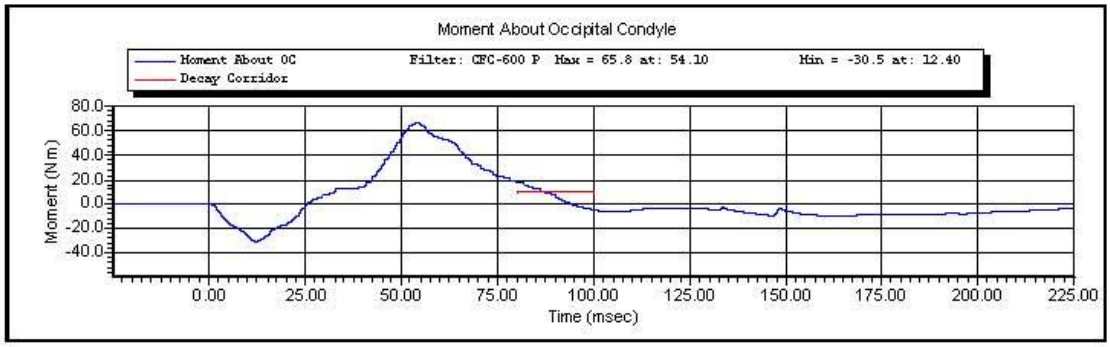
Test Name:	**Neck Flexion**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/21/2011**
Test Number:	**3**	Test Time:	**12:49:23 PM**



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Test ID: Test Time: **12:49:23 PM** Test Date: **10/21/2011**

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Torso Flexion Test

Technician: AR
Calibration Date: 10/19/2011

ATD Serial Number: NHTSA 5th Female 273

Test Results

Test Condition	Parameters	Results	Status
Temperature	18.9-25.6° C	21.8° C	P
Lab Humidity	10-70%	40%	P
Max Force @ 45 deg	320 – 390N	376N	P
Torso Rotation Rate	0.5 °/s ≤ rate ≤ 1.5 °/s	1.0 °/s	P
Initial reference angle	≤20 deg	12°	P
Final ref plan angle	Initial ref plane ± 8 deg	19°	P

P = Pass
F= Fail

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VERIFICATION REPORT

Test Name:	**Thorax Impact**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
		Test Date:	**10/18/2011**
Test Number:	**2**	Test Time:	**9:41:50 AM**

Component Part Number	Component Serial Number
Ribs 880105-RS	**670**
Chest Jacket - 880105-355-E	**686**

Test Parameters	Test Specifications			Test Results		
Temperature	20.6	--	22.2	**21.7**	deg C	P
Humidity	10.0	--	70.0	**39.0**	%RH	P
Velocity	6.59	--	6.83	**6.71**	m/s	P
Sternum Displacement	-58.0	--	-50.0	**-52.9**	mm	P
Force During Displacement Interval	-4400	--	-3900	**-4166**	N	P
Force -18.0 to -50.0 Displacement	-4600	--	0	**-4281**	N	P
Hysteresis	69	--	85	**69**	%	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: Test Time: **9:41:50 AM** Test Date: **10/18/2011**

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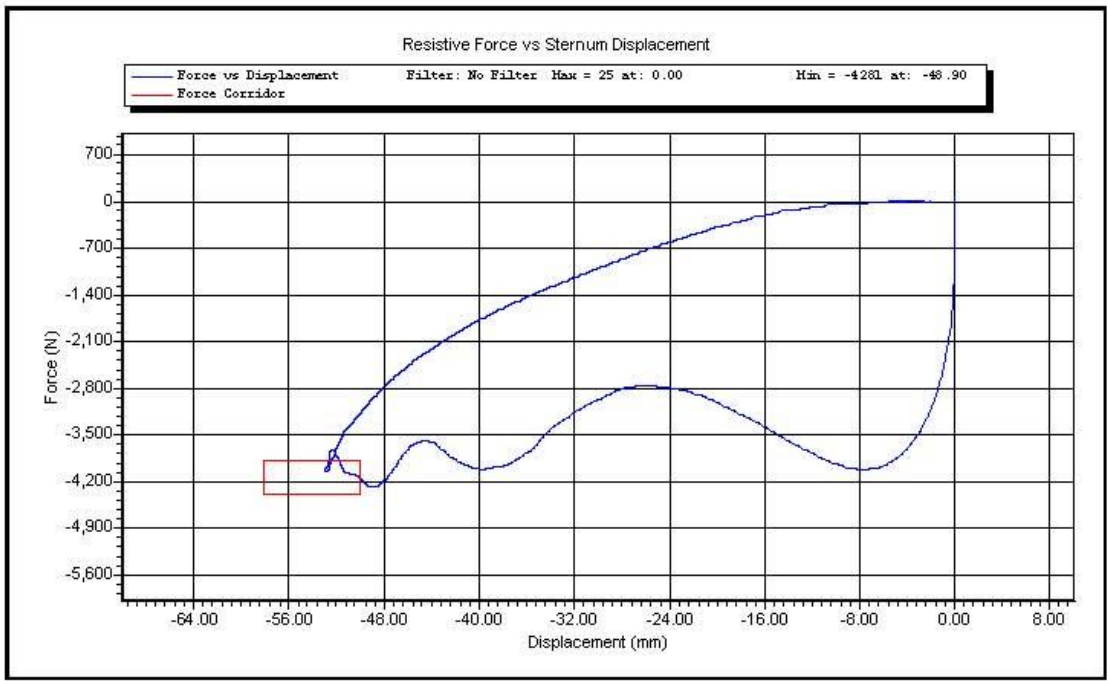
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**
DentonATD	**78051-342**	**DS-273**	**10/10/2011**

Test ID: Test Time: **9:41:50 AM** Test Date: **10/18/2011**

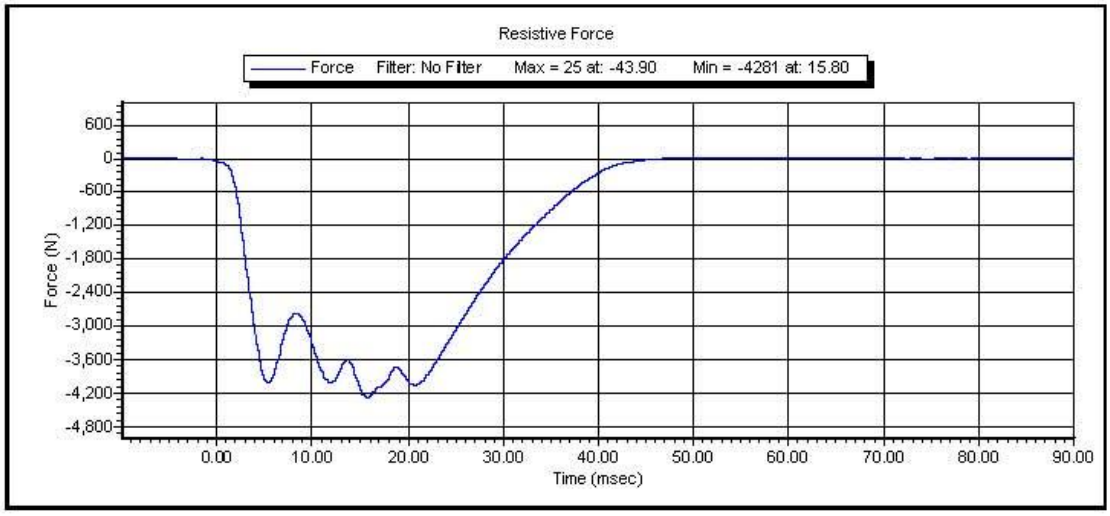
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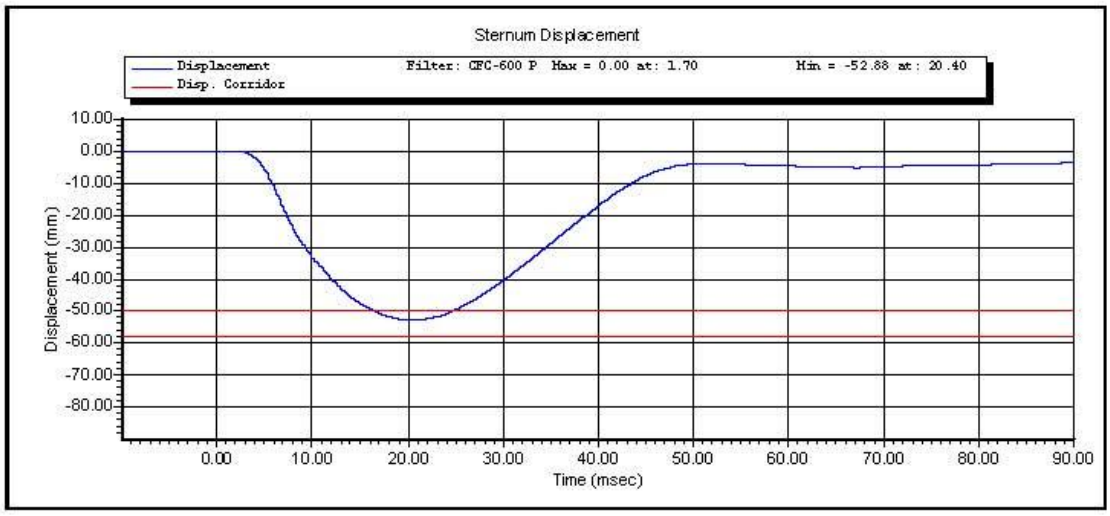
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Test Name:	**Thorax Impact**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:		Test Date:	**10/18/2011**
Test Number:	**2**	Test Time:	**9:41:50 AM**



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Test ID: Test Time: **9:41:50 AM** Test Date: **10/18/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:	**Left Knee**	Test Date:	**10/21/2011**
Test Number:	**2**	Test Time:	**4:51:04 PM**

Component Part Number	Component Serial Number
Knee Skin - 880105-508	**1726**
Knee Insert - 880105-511	**1039**
Knee Cap - 880105-510	

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.7**	deg C	P
Humidity	10.0	--	70.0	**42.0**	%RH	P
Velocity	2.07	--	2.13	**2.11**	m/s	P
Resistive Force	-4060	--	-3450	**-4045**	N	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Left Knee** Test Time: **4:51:04 PM** Test Date: **10/21/2011**

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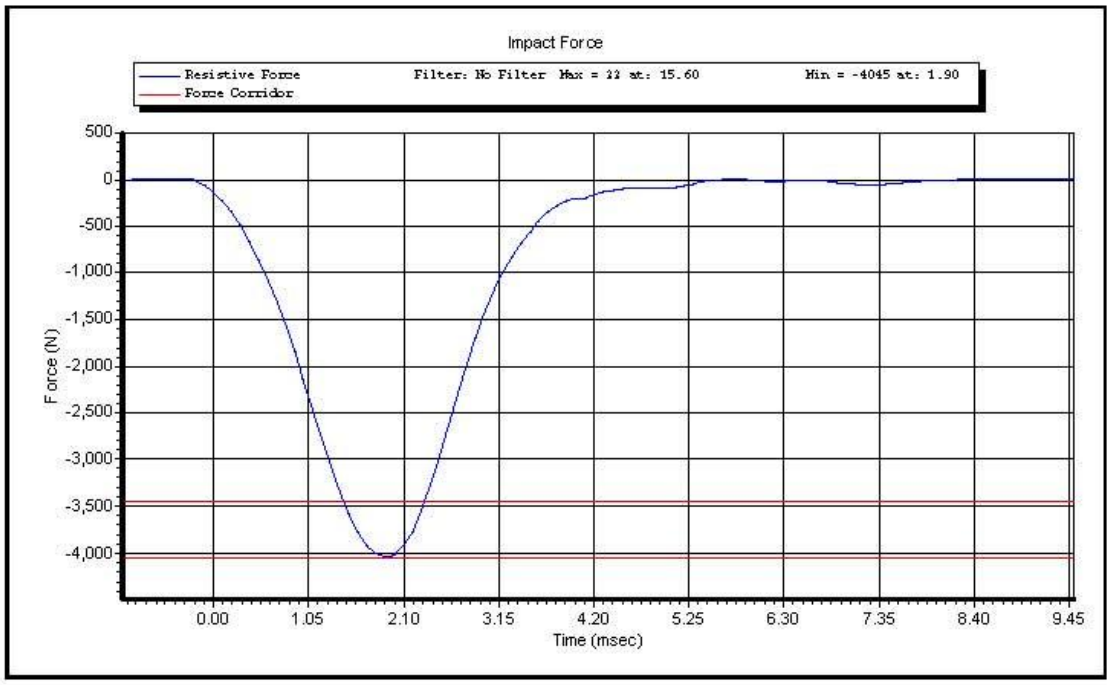
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Left Knee** Test Time: **4:51:04 PM** Test Date: **10/21/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:	**Left Knee**	Test Date:	**10/21/2011**
Test Number:	**2**	Test Time:	**4:51:04 PM**



Test ID: **Left Knee** Test Time: **4:51:04 PM** Test Date: **10/21/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:	**Right Knee**	Test Date:	**10/21/2011**
Test Number:	**2**	Test Time:	**4:41:11 PM**

Component Part Number	Component Serial Number
Knee Skin - 880105-508	**1051**
Knee Insert - 880105-511	**1038**
Knee Cap - 880105-510	

Test Parameters	Test Specifications			Test Results		
Temperature	18.9	--	25.6	**21.7**	deg C	P
Humidity	10.0	--	70.0	**42.0**	%RH	P
Velocity	2.07	--	2.13	**2.09**	m/s	P
Resistive Force	-4060	--	-3450	**-3947**	N	P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID: **Right Knee** Test Time: **4:41:11 PM** Test Date: **10/21/2011**

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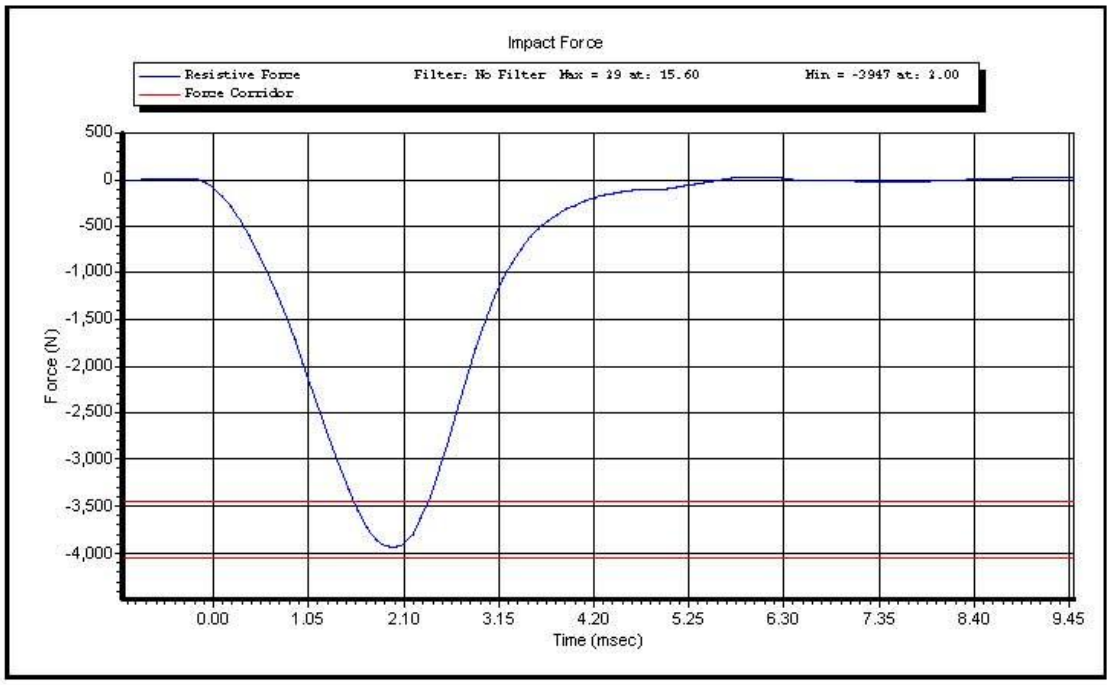
Manufacturer	Model	Serial Number	Calibration Date
DentonATD	**Velocity Trap**	**1**	**1/11/2011**
Endevco	**7264-2000**	**P18524**	**7/28/2011**

Test ID: **Right Knee** Test Time: **4:41:11 PM** Test Date: **10/21/2011**

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Test Name:	**Knee Impact PENDULUM**	Revision:	**7/15/2002**
Sub Test Name:		Spec Type:	**NHTSA**
ATD Type:	**Hybrid III 5'th**		
ATD Serial Number:	**273**		
Test ID:	**Right Knee**	Test Date:	**10/21/2011**
Test Number:	**2**	Test Time:	**4:41:11 PM**



Test ID: **Right Knee** Test Time: **4:41:11 PM** Test Date: **10/21/2011**

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