

REPORT NUMBER TR-P24104-10-NC

**2003 JEEP LIBERTY 4-DOOR MPV
FRONTAL VEHICLE CRASH TESTS
IN SUPPORT OF FMVSS 208 UPGRADE**

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AUGUST 12, 2004

FINAL REPORT

PREPARED FOR:

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VOLPE NATIONAL TRANSPORTATION SYSTEMS CENTER
OFFICE OF SAFETY AND SECURITY
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IN COOPERATION WITH:

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16. <i>Abstract</i> A 35 mph (56.3 km/h) frontal barrier impact test was conducted on a 2004 Jeep Liberty 4-Door MPV at Karco Engineering, LLC on 08/12/04. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.32 km/h. The ambient temperature at the barrier face at the time of impact was 41.1 degrees Celsius. The vehicle's maximum post-test static crush was 436 mm to the right of the vehicle centerline. The test vehicle was equipped with 3-point continuous loop belt systems and second-generation supplemental airbags in both front outboard seating positions. The rear center seat also was equipped with a 3-point belt continuous loop belt system. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:							
Measurement Description		Units	Threshold	Front ATDs		Rear ATDs	
				Driver (H3 95%)	Passenger (H3 95%)	Center	
Head Injury Criteria (HIC 36)		N/A	1000	725.7	832.3	1955.1	
Max. Chest Accel. (3 msec Clip)		G's	60	46.0	42.8	45.4	
Left Femur Force		Newtons	95% 12700 50% 10008	-4631.8	-6888.3	-805.2	
Right femur Force		Newtons	95%12700 50%10008	-3658.5	-5558.3	-1073.7	
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SECTION 1
PURPOSE AND SUMMARY OF TEST R40402

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test was conducted as a research study for frontal vehicle crash tests in support of the FMVSS 208 upgrade test program. It was sponsored by the Volpe National Transportation Systems Center (Volpe) in cooperation with the National Highway Traffic Safety Administration (NHTSA) under Contract DTRS57-04-D-30000. The purpose of this test program is to obtain vehicle crashworthiness and occupant restraint system performance data to evaluate and compare occupant responses with standard 50th percentile male dummies (unbelted tested at 30 mph) and the larger 95th percentile male dummies (belted tested at 35 mph) in the front outboard seating positions.

This 35 mph (56.3 km/h) frontal barrier impact test was conducted in accordance with The Laboratory Test Procedures for the Office of Vehicle Safety Compliance FMVSS 208 "Occupant Crash Protection" (TP208-10) and Office of Crashworthiness Standards New Car Assessment Program (NCAP) Frontal Impact testing.

1.2 SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2004 Jeep Liberty 4-Door MPV at a velocity of 56.32 km/h (35.00 mph). The test was performed at KARCO Engineering, LLC on August 12, 2004.

Two Part 572M 95th percentile male anthropomorphic test devices (ATDs or dummies) were placed in the driver and right-front passenger seating positions. A Part 572E 50th percentile male ATD was placed in the passenger center-rear seat.

The ATDs were fully instrumented with head (primary and redundant), chest (primary and redundant) accelerometers, chest displacement potentiometers, six-axis upper neck transducers, right and left femur load cells, right and left knee sliders, and lower leg instrumentation. Load cells were placed on the ATDs lap and shoulder belts to measure dummy torso and pelvic section loading. The Driver (H3 95% in position 1) ATD (Serial No. 159), right-front Passenger (H3 95% in position 2) ATD (Serial No. 058), and center-rear passenger (H3 50% in position 6) ATD (Serial No. 001) were calibrated prior to this test.

One hundred twenty-seven (127) channels of data were recorded using an on-board data acquisition system. Three real-time and eighteen (18) 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.

Appendix A contains Pre- and Post-Test Photographs; Appendix B contains the vehicle and dummy response data traces; Appendix C contains the Load Cell Barrier information; Appendix D contains the Instrumentation Data Channel Assignments; and Appendix E contains the Dummy Calibration data.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the impact 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 436 mm. All four doors remained closed during impact and opened without the aid of tools. All doors were operable after the impact.

The Driver's (H3 95%) visible contact points were as follows: On impact the head contacted the airbag, the chest contacted the airbag, both knees contacted the knee bolster and steering column, both tibias contacted the knee bolster.

The right-front Passenger's (H3 95%) visible contact points were as follows: The head contacted the airbag, the chest contacted the airbag, both knees contacted the glove box and both tibias contacted the glove box.

The center-rear passenger's (H3 50%) visible contact points were as follows: The head and chest had no contact, the left knee and tibia contacted the left-front seatback. The right knee and tibia contacted the right-front seatback. During the event, the dummy's head contacted the right knee.

Occupant injury data is contained in table below.

OCCUPANT DATA SUMMARY

ATD Position	HIC	Chest Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver (H3 95%)	725.7	-46.0	-29.3	-4631.8	-3658.5	310.2
Passenger (H3 95%)	832.3	-42.8	-27.0	-6888.3	-5558.3	335.9
Left Rear Passenger						
Center Rear Passenger	1955.1	-45.4	-35.0	-805.2	-5558.3	363.3
Right Rear Passenger						

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
Test Date: 08/12/04

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

**DATA SHEET NO. 1
CRASH TEST SUMMARY**

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.32
Test Weight	kg	2059
Impact Angle	degrees	0
Average Rebound	mm	770
Maximum Static Crush	mm	436

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver (H3 95%) Side	Passenger (H3 95%) Side
Front Door opening	Remained closed, opened w/o tools	Remained closed, opened w/o tools
Rear Door Opening	Remained closed, opened w/o tools	Remained closed, opened w/o tools
Front Seat Track Shift (mm)	0	0
Front Seat Back Failure	No	No
Rear Seat Track Shift (mm)	0	0
Rear Seat Back Failure	No	No

HYBRID III DUMMY CONTACT INFORMATION

Description	Driver (H3 95%)	Passenger (H3 95%)	Center Rear (H3 50%)	Other
Dummy Type	95% Male	95% Male	50% Male	N/A
Serial No	159	058	001	N/A
Head	AIRBAG	AIRBAG	N/C	N/A
Chest	AIRBAG	AIRBAG	N/C	N/A
Left Knee	BOLSTER	GLOVE BOX	FRONT SEATBACK	N/A
Right Knee	BOLSTER	GLOVE BOX	FRONT SEATBACK, HEAD	N/A
Left Tibia	BOLSTER	GLOVE BOX	FRONT SEATBACK	N/A
Right Tibia	BOLSTER	GLOVE BOX	FRONT SEATBACK	N/A

DATA SHEET NO. 1...(CONTINUED)
CRASH TEST SUMMARY

FILM & VIDEO COVERAGE

Real-Time Video	3
High-Speed 16mm Movie	14
High-Speed Video	4
Total	21

DATA CHANNELS

Driver (H3 95%) ATD Sensors	35
Right Front Passenger (H3 95%) ATD Sensors	35
Left Rear Passenger ATD Sensors	
Center Passenger (50%) ATD Sensors	29
Right Rear Passenger ATD Sensors	
Belt Assessment Sensors	9
Airbag Timing Sensors	6
Vehicle Structure Accelerometers	13
Rigid Barrier Load Cells	36
Total	163

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
Test Date: 08/12/04

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	R40402	Anti-Lock Brakes	Yes
Make	Jeep	All Wheel Drive	No
Model	Liberty	Power Steering	Yes
Body Style	4-Door MPV	Driver Front Airbag	Yes
VIN No.	1J4GK48K14W225983	Driver Side Airbag	No
Color	Red	Driver Head Airbag	No
Delivery Date	05/26/04	Driver Curtain Airbag	No
Odometer	16	Passenger Airbag	Yes
Dealer	Victorville-Chrysler-Jeep	Passenger Side Airbag	No
Transmission	4-Speed Automatic	Passenger Head Airbag	No
Final Drive	Rear	Passenger Curtain Airbag	No
Type/No. of Cylinders	V6	Pre-Tensioners	Yes
Engine Displacement (L)	3.7	Load Limiters	Yes
Engine Placement	Longitudinal	Bucket Seats	Yes
Roof Rack	Yes	Air Conditioner	Yes
Sunroof/T-Top	No	AM/FM Cassette	Yes
Tinted Glass	Yes	Tilt Steering	Yes
Traction Control	No	Automatic Door Locks	Yes
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	Yes
Rear Disc	Yes	Other	N/A
Does Owners Manual provide instructions to turn off automatic door locks?			N/A

DATA FROM CERTIFICATION LABEL

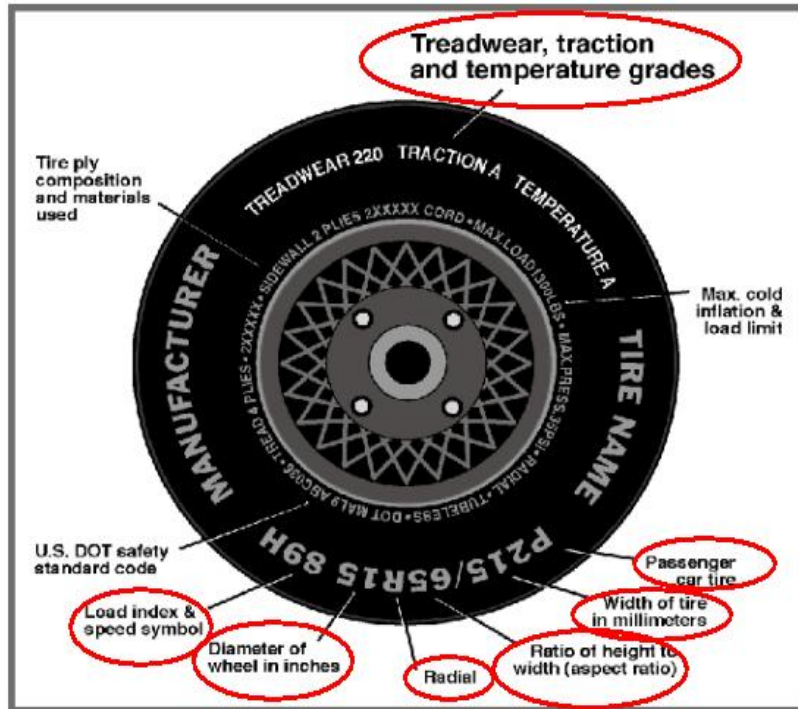
Manufactured By	Jeep Motor Manufacturing	GVWR (kg)	2427
		GAWR Front (kg)	1247
Date of Manufacture	02/04	GAWR Rear (kg)	1429

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3	N/A	5
Capacity Weight (VCW) (kg)				522
Cargo Weight (RCLW) (kg)				136

DATA SHEET NO. 2...(CONTINUED)
GENERAL TEST AND VEHICLE DATA

Collect year, make, model, VIN, items circled in red, and tire manufacturer and tire name.



TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	303	303
Cold Pressure (kpa)	230	230
Recommended Tire Size	P215/75R 16	P215/75R 16
Tire Size on Vehicle	P215/75R 16	P215/75R 16
Tire Manufacturer	Goodyear	Goodyear
Tread wear	340	340
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester	2 Polyester
Load Index/Speed Symbol	101S	101S
Tire Material	Polyester & Steel	Polyester & Steel
DOT Safety Code Right	M6Y4-EYER-0204	M6Y4-EYER-0204
DOT Safety Code Left	M6Y4-EYER-0204	M6Y4-EYER-0204

DATA SHEET NO. 2...(CONTINUED)
GENERAL TEST AND VEHICLE DATA

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	453	416		507	544	
Right	kg	445	397		490	518	
Ratio	%	52%	39%		48%	52%	
Totals	kg	898	813	1711	997	1062	2059

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1711
Weight of 2 P572 M ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	136
Calculated Vehicle Target Wt. (TVTW)	kg	1999

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	811	815	834	836	1034
As Tested	mm	788	800	790	800	1367

Vehicle Wheel Base (mm) 2650

Weight of Ballast Secured in cargo area (kg) N/A

Vehicle Components Removed Rear Windows, Trunk Lid, Rear Bumper,
Tail lights, Spare Tire and Tools.

* Ballast weight does not include cameras, instrumentation and brake abort system.

FUEL SYSTEM DATA

Fuel System Capacity From Owners Manual (L) 73.80

Usable Capacity Furnished by COTR (L) 67.9 to 69.4

Actual Test Volume with entire fuel System Filled (L) 68.60

Test Fluid Type: Stoddard Solvent

Kinematic Viscosity: as per ASTM Standard D484-71 Purple

Is Vehicle Fuel Pump Electric or Mechanical? Electric

If electric, does pump operate with ignition switch "On" & engine "OFF" Yes

Fuel System Particulars: Key operated with automatic shut-off when key is in 'OFF' position.

**DATA SHEET NO. 3
POST TEST IMPACT DATA**

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No.1 Velocity (Primary)	km/h	55.51 to 57.12	56.32
Trap No. 1 Entry Distance	mm	<1524	1524
Trap No.1 Exit Distance	mm	<1524	305
Trap No.2 Velocity (Redun.)	km/h	55.51 to 57.12	56.15
Trap No.2 Entry Distance	mm	<1524	1524
Trap No.2 Exit Distance	mm	<1524	305

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4036	3815	-221
Center	mm	4215	3840	-375
Right Side	mm	4035	3820	-215

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	800
Center	mm	770
Right Side	mm	740
Average	mm	770

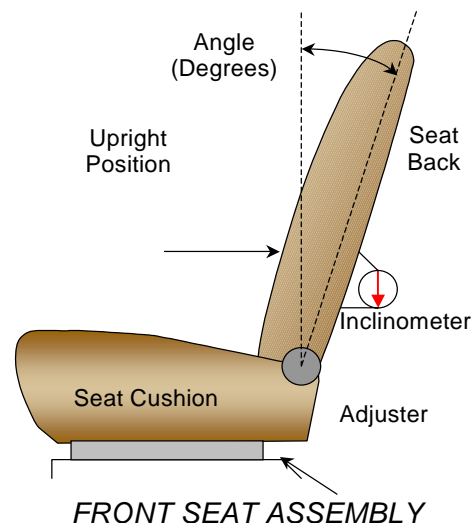
**DATA SHEET NO. 4
TEST VEHICLE INFORMATION**

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturers designated angle. The procedure is as follows: A special application tool with pointed probes is inserted through the fabric to make contact with the rigid portion of the lower seat frame assembly, approximately 13 inches above the pivot point of the seat back. An inclinometer is placed against the flat surface of the tool and the seat back angle is measured directly from the dial face.



SEAT BACK ANGLES

	Deg.
Front Driver Side	23.5
Front Passenger Side	23.5
Rear Driver Side	N/A
Rear Passenger Side	24.0
Rear Center Passenger	N/A

SEAT FORE/AFT POSITIONS

The first or forward most position is counted as number one (1). The fore/aft position is set aft of the middle position for both the driver and passenger.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Front Driver Side	18	Full Rearward
Front Passenger Side	18	Full Rearward
Rear Driver Side	N/A	N/A
Rear Passenger Side	N/A	N/A
Rear Center Passenger	1	1

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

SEAT BELT UPPER ANCHORAGE

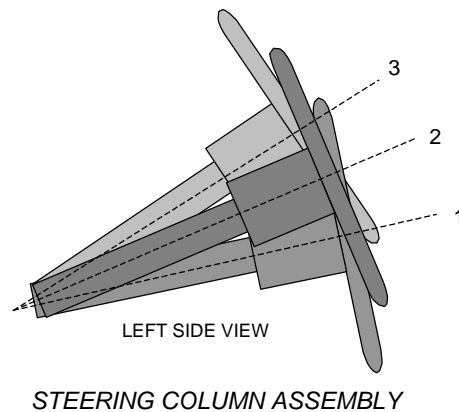
Position number one (1) is the uppermost position.

SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Front Driver Side	4	1
Front Pass. Side	4	1
Rear Driver Side	N/A	N/A
Rear Pass. Side	N/A	N/A
Rear Center Pass.	1	1

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN POSITIONS

	Degrees
Lowermost position No. 1	22.0
Geometric center position No. 2	25.0
Uppermost position No. 3	28.0

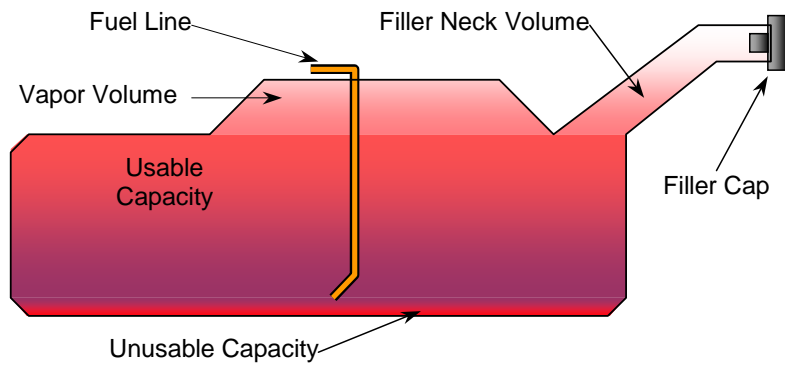
Steering column placed in uppermost position.

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

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	73.8
Usable Capacity of "Optional" Tank	N/A
Usable Capacity used for FMVSS 301	67.9 to 69.4
Actual Amount of Solvent used	68.60

The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the left rear seat forward of the rear axle.

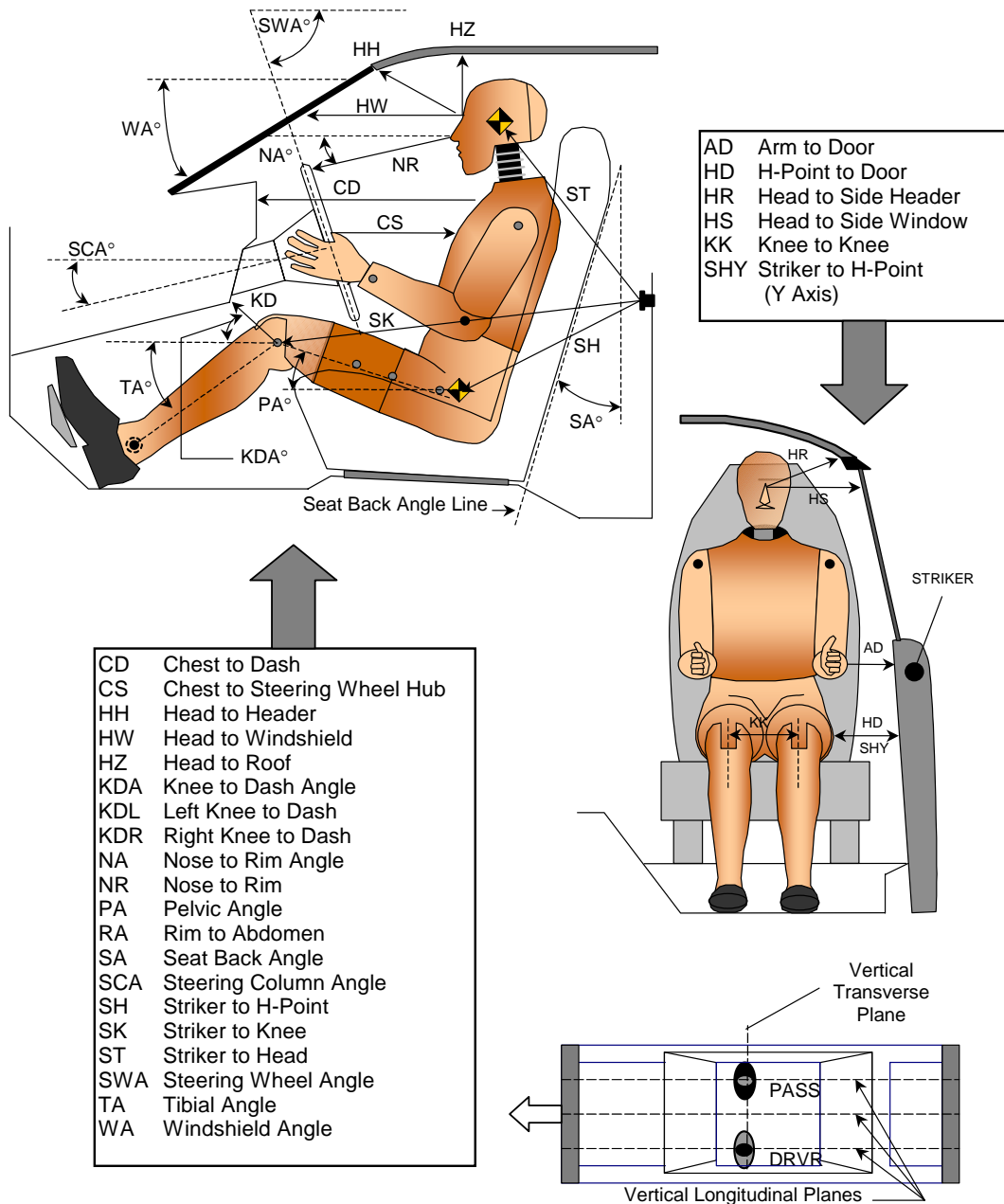


VEHICLE FUEL TANK ASSEMBLY

DATA SHEET NO. 5
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
Test Date: 08/12/04



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 5...(CONTINUED)
DUMMY POSITIONING IN VEHICLE

TEST DUMMY POSITION MEASUREMENTS - FRONT SEAT DUMMIES

Code	Measurement Description	Driver (H3 95%)		Passenger (H3 95%)	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
WA	Windshield Angle		59.0		
SWA	Steering Wheel Angle		62.7		
SCA	Steering Column Angle		28.6		
SA	Seat Back Angle		23.5		23.5
HZ	Head to Roof (Z)	235	90.0	230	90.0
HH	Head to Header	515		500	
HW	Head to Windshield	655		640	
HR	Head to Side Header (Y)	264		205	
NR	Nose to Rim	540	12.3		
CD	Chest to Dash	610		690	
CS	Chest to Steering Hub	360			
RA	Rim to Abdomen	240			
KDL	Left Knee to Dash	150	11.4	200	
KDR	Right Knee to Dash	170		195	11.7
PA	Pelvic Angle		22.7		24.5
TA	Tibia Angle		49.2		54.8
KK	Knee to Knee (Y)	290		288	
SK	Striker to Outboard Knee	578	4.8	555	7.2
ST	Striker to Head	623	88.1	635	88.4
SH	Striker to H-Point	160	22.6	150	19.0
SHY	Striker to H-Point (Y)	165		175	
HS	Head to Side Window	350		310	
HD	H-Point to Door (Y)	158		165	
AD	Arm to Door (Y)	60		10	

DATA SHEET NO. 5...(CONTINUED)
DUMMY POSITIONING IN VEHICLE

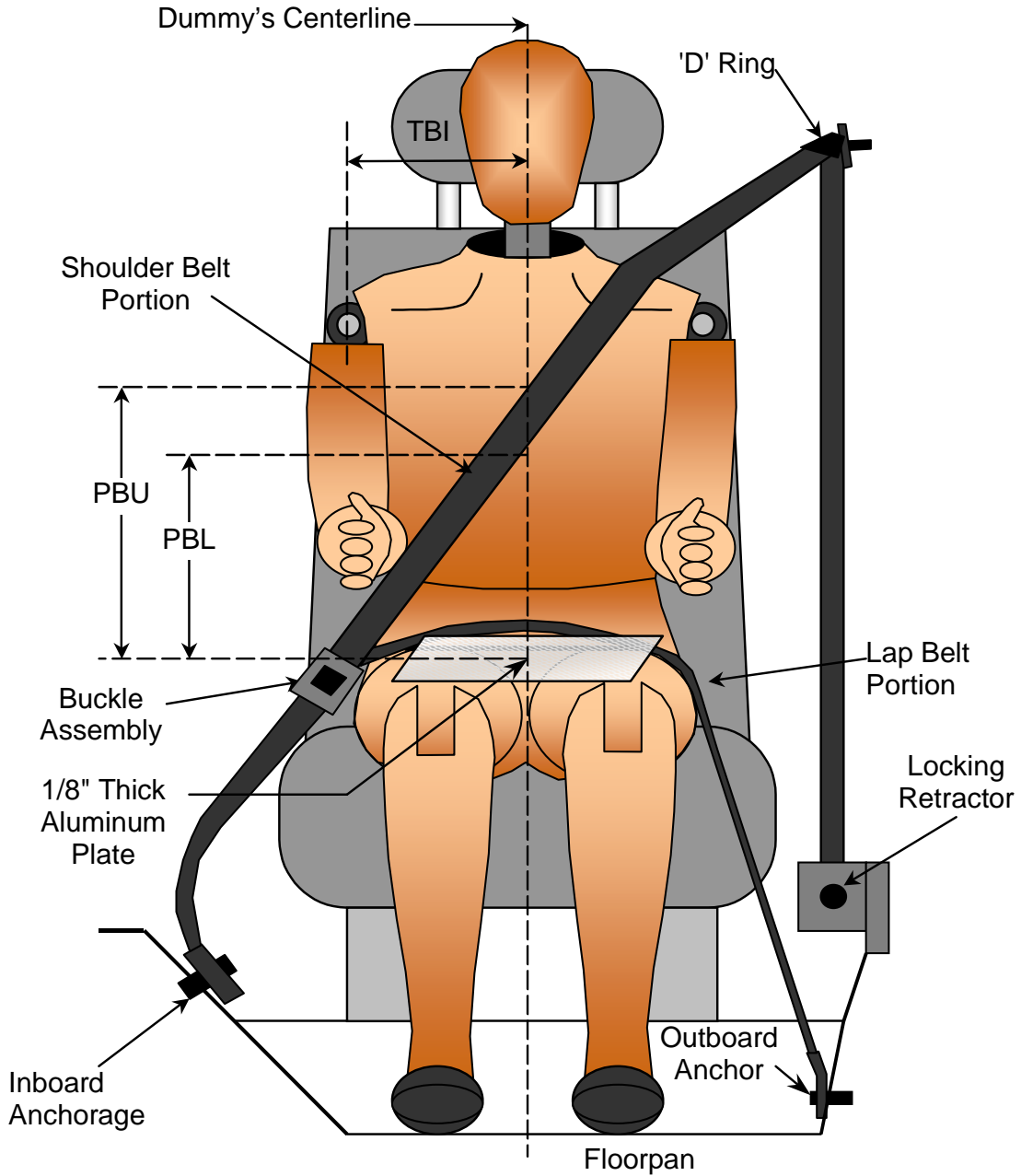
TEST DUMMY POSITION MEASUREMENTS - REAR SEAT DUMMIES

Code	Measurement Description	Center Seat (H3 50%)		Passenger	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
NR	Nose to Seat Back	455	23.0		
CD	Chest to Seat Back	385			
KDL	Left Knee to Seat Back	60			
KDR	Right Knee to Seat Back	45			
PA	Pelvic Angle		24.4		
TA	Tibia Angle		88.7		
KK	Knee to Knee (Y)	290			
SK	Striker to Outboard Knee	685	16.8		
HRW	Head to Rear Window	815			
SH	Striker to Head	450	82.5		
SHY	Striker to H-Point (Y)	320	51.2		

DATA SHEET NO. 6
SEATBELT ASSESSMENT TEST DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
Test Date: 08/12/04



DATA SHEET NO. 6...(CONTINUED)
SEATBELT ASSESSMENT TEST DATA

SEAT BELT POSITIONING MEASUREMENTS; FRONT DUMMIES

Measurement Description	Units	Driver (H3 95%)	Passenger (H3 95%)
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	260	235
PBU - Top Surface of reference to belt upper edge	mm	365	335
PBL - Top Surface of reference to belt lower edge	mm	300	270
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor
Retractor Reel to "D" ring	mm	756	756
Shoulder Belt length as measured on ATD	mm	820	810
Lap Belt length as measured on ATD	mm	790	760
Remainder of belt on reel	mm	700	745
Total belt length for continuous webbing systems	mm	3066	3071

SHOULDER BELT SPOOL-OFF; FRONT DUMMIES

Measurement Description	Units	Driver (H3 95%)	Passenger (H3 95%)
As determined mechanically	mm	245.0	220.0
As determined electronically	mm	310.2	335.9

SEAT BELT POSITIONING MEASUREMENTS; REAR DUMMIES

Measurement Description	Units	Center (H3 50%)	
TBI -Dummy C/L to Lap/Shoulder Belt Intersect	mm	180	
PBU - Top Surface of reference to belt upper edge	mm	260	
PBL - Top Surface of reference to belt lower edge	mm	190	
Lap Belt Tension	Newtons	10	
Shoulder Belt Tension	N/A	Retractor	
Retractor Reel to "D" ring	mm	N/A	
Shoulder Belt length as measured on ATD	mm	1010	
Lap Belt length as measured on ATD	mm	760	
Remainder of belt on reel	mm	605	
Total belt length for continuous webbing systems	mm	2375	

SHOULDER BELT SPOOL-OFF; REAR DUMMIES

Measurement Description	Units	Center	
As determined mechanically	mm	70.0	
As determined electronically	mm	363.3	

DATA SHEET NO. 7

VEHICLE ACCELEROMETER AND SQUIB SENSOR LOCATION AND DATA SUMMARY

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

VEHICLE ACCELEROMETER PEAK DATA

No.	Accelerometer Location	Peak Values				
		Units	Max	Time	Min	Time
1	Left Rear X	G's	2.3	126.8	-44.8	31.5
2	Right Rear X	G's	1.4	124.3	-39.7	32.2
3	Left Brake Caliper X	G's	65.9	56.7	-106.6	36.3
4	Right Brake Caliper X	G's	28.0	55.7	-83.5	41.4 ¹
5	Instrument Panel X	G's	40.6	72.1	-101.0	68.1
6	Engine Top X	G's	23.3	52.3	-89.1	37.0
7	Engine Bottom X	G's	29.6	54.5	-63.9	37.4
8	Toe Pan Accelerator X	G's	21.4	61.6	-61.8	47.0
9	Toe Pan Accelerator Z	G's	44.6	44.3	-64.1	55.5
10	Toe Pan Footrest X	G's	0.0	0.0	0.0	0.0 ²
11	Toe Pan Footrest Z	G's	13.4	6.1	-19.8	84.8
12	Rear Deck Z	G's	29.9	15.7	-26.8	9.1
13	Rear Center Compartment X	G's	7.9	12.4	-45.6	6.5

1.) Channel failed at 115.0 msec.

2.) Channel failed, no data

SQUIB FIRING TIME DATA

Loc. No.	Contact Switch Location	Units	Peak Values			
			Max	Time	Min	Time
1	Driver Squib 1st Stage	On/Off	3.5	9.1	-1.4	11.7
2	Driver Squib 2nd Stage	On/Off	0.1	19.2	0.0	19.6
3	Driver Pretensioner	On/Off	3.6	9.1	-2.2	9.7
4	Passenger Squib 1st Stage	On/Off	3.0	9.1	-2.9	9.9
5	Passenger Squib 2nd Stage	On/Off	3.7	29.5	-2.8	30.3
6	Passenger Pretensioner	On/Off	5.3	10.0	-3.9	12.1

DATA SHEET NO. 8
VEHICLE ACCELEROMETER PRE AND POST TEST LOCATIONS

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

VEHICLE ACCELEROMETER PRE AND POST TEST LOCATIONS

No.	Accelerometer Location	Pre Test (mm)			Post Test (mm)			Difference (mm)		
		X	Y	Z	X	Y	Z	X	Y	Z
1	Left Rear X	2050	-705	320	2067	-710	340	17	5	20
2	Right Rear X	2050	705	320	2067	710	340	17	5	20
3	Left Brake Caliper X	4000	-710	250	3855	-710	210	-145	0	-40
4	Right Brake Caliper X	4000	710	250	3860	710	210	-140	0	-40
5	Instrument Panel X	3140	0	960	3190	0	960	50	0	0
6	Engine Top X	4035	35	810	3735	30	785	-300	-5	-25
7	Engine Bottom X	4120	-300	135	3810	-305	130	-310	5	-5
8	Toe Pan Accelerator X	3390	-240	245	3325	-160	195	-65	-80	-50
9	Toe Pan Accelerator Z	3390	-240	245	3325	-160	195	-65	-80	-50
10	Toe Pan Footrest X	3350	-650	245	3295	-635	185	-55	-15	-60
11	Toe Pan Footrest Z	3350	-650	245	3295	-635	185	-55	-15	-60
12	Rear Deck Z	255	-235	635	230	-235	770	-25	0	135
13	Rear Center Comp. X	2180	0	330	2190	0	385	10	0	55

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane

DATA SHEET NO. 9
HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	4.4	199.9	-73.3	77.5	3.5	199.7	-59.3	80.9
Head CG	Y	G's	14.3	84.8	-4.0	18.0	2.9	46.4	-28.9	101.1
Head CG	Z	G's	24.1	68.9	-12.4	91.8	38.2	82.3	-1.1	12.6
Head CG Resultant	N/A	G's	74.5	76.9			70.8	80.8		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.3	134.3	-46.9	69.1	3.3	144.2	-42.4	74.0
Chest CG	Y	G's	12.5	71.5	-5.6	47.5	2.8	22.0	-12.0	88.1
Chest CG	Z	G's	10.1	42.2	-16.2	95.9	11.5	59.5	-9.0	104.1
Chest CG Resultant	N/A	G's	48.0	69.3			44.4	83.0		

FEMUR PEAK FORCES

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	437.0	25.4	-4631.8	53.5	987.2	36.6	-6888.3	57.2
Right Femur	Z	Newtons	681.8	30.3	-3658.5	59.4	578.7	29.5	-5558.3	56.2

KNEE PEAK DISPLACEMENTS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Knee	Z	MM	0.4	176.6	-12.8	54.2	0.8	31.5	-5.9	44.9
Right Knee	Z	MM	0.4	30.9	-11.5	53.2	0.0	0.0	0.0	0.0

1.) Channel failed, no data

PRIMARY HEAD INJURY CRITERIA (HIC15)

Location	Driver (95th)				Passenger (95th)			
	HIC	T ¹	T ²	Avg G	HIC	T ¹	T ²	Avg G
Head CG Primary	575.3	70.7	85.7	68.1	513.1	75.7	90.7	65.0

PRIMARY CHEST CLIP (3MSEC)

Location	Driver (95th)			Passenger (95th)		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	46.0	68.4	71.4	42.8	81.5	84.5

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest	X	MM	0.0	6.2	-32.5	92.7	0.0	3.1	-28.1	83.4

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	536.3	89.9	-497.0	132.3	149.8	200.0	-479.2	122.3
Neck Force	Y	Newtons	0.0	0.0	0.0	0.0	184.9	88.5	-396.3	118.2
Neck Force	Z	Newtons	2087.7	69.0	-349.5	97.5	1906.1	80.4	-161.2	91.3
Neck Force Resultant	N/A	Newtons	2092.2	69.0			1922.6	80.4		
Neck Moment	X	Nm	16.4	112.6	-20.1	96.3	5.2	50.3	-27.4	114.2
Neck Moment	Y	Nm	65.7	124.2	-33.0	105.1	41.1	115.6	-45.8	66.9
Neck Moment	Z	Nm	13.3	133.8	-21.8	93.6	48.9	101.4	-17.1	146.1
Neck Moment Resultant	N/A	Nm	68.0	124.2			59.8	100.1		

1.) Channel failed, no data

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	7093.8	52.2	-2.6	2.9	8803.6	54.8	-4.2	2.2
Shoulder Belt Force	N/A	Newtons	4972.2	45.9	-46.4	137.9	5158.1	41.3	-35.7	200.0
Shoulder Belt Pullout	N/A	MM	310.2	95.8	-0.1	4.2	335.9	95.7	-0.1	3.3

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Upper Moment	X	Nm	67.6	36.0	-51.8	85.8	41.4	83.4	-43.2	42.1
Left Upper Moment	Y	Nm	280.4	53.7	-5.9	16.0	146.4	44.9	-78.4	63.0
Left Lower Force	X	Newtons	977.6	54.1	-45.5	8.6	1276.0	53.4	-469.8	71.7
Left Lower Force	Z	Newtons	827.7	31.8	-1813.1	41.2	1058.8	47.2	-3704.3	79.2
Left Lower Moment	X	Nm	14.7	54.8	-23.5	44.5	4.4	73.5	-46.0	40.0
Left Lower Moment	Y	Nm	65.3	86.2	-10.4	26.3	27.8	34.6	-88.0	53.5
Right Upper Moment	X	Nm	53.7	44.5	-40.5	88.0	14.1	71.9	-62.1	38.7
Right Upper Moment	Y	Nm	267.8	51.9	-15.9	81.7	291.6	40.5	-50.7	76.6
Right Lower Force	X	Newtons	505.3	63.2	-2646.7	39.1	471.8	77.3	-1741.4	38.5
Right Lower Force	Z	Newtons	610.2	55.2	-2481.3	82.4	812.8	37.5	-2609.9	83.1
Right Lower Moment	X	Nm	9.597	44.4	-12.956	87.9	2.324	92.1	-31.56	77.6
Right Lower Moment	Y	Nm	40.698	84.1	-11.241	31.5	110.05	81.6	-6.378	30.5

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	4.4	200.0	-73.6	77.5	3.7	200.0	-59.3	81.0
Head CG	Y	G's	14.1	84.8	-4.0	18.0	2.5	46.5	-28.8	102.5
Head CG	Z	G's	24.7	68.7	-12.3	92.6	38.1	82.9	-1.0	13.0
Head CG Resultant	N/A	G's	74.9	76.9			70.7	82.8		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver (95th)				Passenger (95th)			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.4	135.8	-46.7	69.1	3.4	143.9	-42.9	72.7
Chest CG	Y	G's	12.3	71.6	-5.4	47.5	3.0	46.3	-11.9	88.3
Chest CG	Z	G's	9.7	42.2	-15.9	95.8	11.5	59.5	-9.1	104.0
Chest CG Resultant	N/A	G's	47.7	69.3			43.9	82.7		

REDUNDANT HEAD INJURY CRITERIA (HIC15)

Location	Driver (95th)				Passenger (95th)			
	HIC	T ¹	T ²	Avg G	HIC	T ¹	T ²	Avg G
Head CG Redundant	584.3	70.3	85.3	68.5	511.0	75.6	90.6	64.9

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver (95th)			Passenger (95th)		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	45.7	68.4	71.4	42.2	81.4	84.4

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Head CG	X	G's	0.8	30.6	-172.0	99.9
Head CG	Y	G's	6.4	106.9	-100.9	99.8
Head CG	Z	G's	83.9	81.9	-1.4	19.8
Head CG Resultant	N/A	G's	212.4	99.8		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Chest CG	X	G's	2.9	152.6	-48.9	64.1
Chest CG	Y	G's	3.3	73.8	-7.9	64.0
Chest CG	Z	G's	13.2	40.7	-5.6	111.5
Chest CG Resultant	N/A	G's	49.6	64.1		

FEMUR PEAK FORCES

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Left Femur	Z	Newtons	1620.9	68.6	-805.2	35.3
Right Femur	Z	Newtons	2290.2	59.0	-1073.7	99.1

KNEE PEAK DISPLACEMENTS

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Left Knee	Z	MM	0.0	0.0	0.0	0.0
Right Knee	Z	MM	0.7	74.0	-1.2	107.8

1.) Channel failed, no data

PRIMARY HEAD INJURY CRITERIA (HIC15)

Location	Center Rear Pass. (50th)			
	HIC	T ¹	T ²	Avg G
Head CG Primary	1095.6	98.5	101.5	165.8

PRIMARY CHEST CLIP (3MSEC)

Location	Center Rear Pass. (50th)		
	CLIP	T ¹	T ²
Chest CG Primary	45.4	62.3	65.3

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

NINE ACCELEROMETER ARRAY HEAD PEAK ACCELERATIONS

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
NAAH CG	X	G's	0.9	19.0	-173.5	99.9
NAAH CG	Y	G's	6.5	106.9	-101.9	99.8
NAAH CG	Z	G's	83.2	82.2	-1.4	10.6
NAAH CG Resultant	N/A	G's	214.0	99.9		
NAAH X-ARM	Y	G's	12.5	102.4	-98.8	99.8
NAAH X-ARM	Z	G's	83.9	79.6	-9.9	99.2
NAAH Y-ARM	X	G's	2.4	11.2	-174.1	99.8
NAAH Y-ARM	Z	G's	121.7	99.7	-2.1	11.2
NAAH Z-ARM	X	G's	6.2	63.1	-278.2	99.3
NAAH Z-ARM	Y	G's	23.7	102.3	-185.7	99.7

CHEST PEAK DISPLACEMENT

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Chest	X	MM	0.0	0.4	-33.5	86.6

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Neck Force	X	Newtons	61.7	10.9	-1724.9	101.3
Neck Force	Y	Newtons	433.4	100.2	-80.4	47.0
Neck Force	Z	Newtons	3549.3	82.2	-674.5	100.3
Neck Force Resultant	N/A	Newtons	3776.8	82.2		
Neck Moment	X	Nm	33.4	103.5	-10.5	57.2
Neck Moment	Y	Nm	83.6	98.5	-59.7	63.0
Neck Moment	Z	Nm	5.3	83.7	-9.4	109.8
Neck Moment Resultant	N/A	Nm	84.4	98.4		

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	10040.9	58.1	-11.3	108.9
Shoulder Belt Force	N/A	Newtons	5678.9	83.6	-27.2	141.8
Shoulder Belt Pullout	N/A	MM	363.3	89.3	-0.1	10.6

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Center Rear Pass. (50th)			
			Max	Time	Min	Time
Chest CG	X	G's	2.8	152.2	-49.4	64.1
Chest CG	Y	G's	3.5	73.9	-7.9	63.9
Chest CG	Z	G's	12.9	40.8	-5.7	111.6
Chest CG Resultant	N/A	G's	50.1	64.1		

REDUNDANT CHEST CLIP (3MSEC)

Location	Center Rear Pass. (50th)		
	CLIP	T ¹	T ²
Chest CG Redundant	45.7	62.4	65.4

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Toyota Camry LE 4-Door Sedan

NHTSA No.: R41527

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/10/04

DUMMY INJURY CRITERIA DATA

Parameter	Driver (95th)	
	Injury Criteria and Performance Limits	
	H3 95th w/ Denton Limit	Test Value
HIC (15 msec)	700	382
NIJ (Compression Flexion)	1	0.06
NIJ (Compression Extension)	1	0.14
NIJ (Tension Flexion)	1	0.12
NIJ (Tension Extension)	1	0.55
Peak Upper Neck Tension (N)	5030	1076
Peak Upper Neck Compression (N)	4830	259
3 ms Chest Acceleration (G)	55	38
Chest Deflection (MM)	70	29
Left Femur Load (N)	12700	-2259
Right Femur Load (N)	12700	-6042
Left Tibia to Femur Displacement (MM)	17	-1.2
Right Tibia to Femur Displacement (MM)	17	-4.7
Left Upper Tibia Index	1.00	0.44
Right Upper Tibia Index	1.00	0.63
Left Lower Tibia Index	1.00	0.51
Right Lower Tibia Index	1.00	0.55
Left Upper Tibia Compression FZ (N)	9840	N/A
Right Upper Tibia Compression FZ (N)	9840	N/A
Left Lower Tibia Compression FZ (N)	9840	4149
Right Lower Tibia Compression FZ (N)	9840	5245
Left Foot XL Rotation (Degrees)	N/A	N/A
Right Foot XL Rotation (Degrees)	N/A	N/A
Left Foot YL Rotation (Degrees)	N/A	N/A
Right Foot YL Rotation (Degrees)	N/A	N/A

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Toyota Camry LE 4-Door Sedan

NHTSA No.: R41527

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/10/04

DUMMY INJURY CRITERIA DATA

Parameter	Right Front Passenger (95th)	
	Injury Criteria and Performance Limits	
	H3 95th w/ Denton Limit	Test Values
HIC (15 msec)	700	242
NIJ (Compression Flexion)	1	0.01
NIJ (Compression Extension)	1	0.12
NIJ (Tension Flexion)	1	0.17
NIJ (Tension Extension)	1	0.24
Peak Upper Neck Tension (N)	5030	1191
Peak Upper Neck Compression (N)	4830	24
3 ms Chest Acceleration (G)	55	36
Chest Deflection (MM)	70	-27
Left Femur Load (N)	12700	-1596
Right Femur Load (N)	12700	-681
Left Tibia to Femur Displacement (MM)	17	-0.4
Right Tibia to Femur Displacement (MM)	17	0.0
Left Upper Tibia Index	1.00	1.38
Right Upper Tibia Index	1.00	0.59
Left Lower Tibia Index	1.00	0.62
Right Lower Tibia Index	1.00	0.34
Left Upper Tibia Compression FZ (N)	9840	N/A
Right Upper Tibia Compression FZ (N)	9840	N/A
Left Lower Tibia Compression FZ (N)	9840	8071
Right Lower Tibia Compression FZ (N)	9840	5182
Left Foot XL Rotation (Degrees)	N/A	N/A
Right Foot XL Rotation (Degrees)	N/A	N/A
Left Foot YL Rotation (Degrees)	N/A	N/A
Right Foot YL Rotation (Degrees)	N/A	N/A

DATA SHEET NO. 9...(CONTINUED)

Test Vehicle: 2004 Toyota Camry LE 4-Door Sedan

NHTSA No.: R41527

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/10/04

DUMMY INJURY CRITERIA DATA

Parameter	Center Rear Passenger (50th)	
	Injury Criteria and Performance Limits	
	H3 50th w/ Denton Limit	Test Values
HIC (15 msec)	700	631
NIJ (Compression Flexion)	1	0.01
NIJ (Compression Extension)	1	0.87
NIJ (Tension Flexion)	1	0.81
NIJ (Tension Extension)	1	0.45
Peak Upper Neck Tension (N)	4170	2859
Peak Upper Neck Compression (N)	4000	32
3 ms Chest Acceleration (G)	60	49
Chest Deflection (MM)	63	-35
Left Femur Load (N)	10008	-1376
Right Femur Load (N)	10008	-1314
Left Tibia to Femur Displacement (MM)	15	0.0
Right Tibia to Femur Displacement (MM)	15	0.0
Left Upper Tibia Index	0.91	N/A
Right Upper Tibia Index	0.91	N/A
Left Lower Tibia Index	0.91	N/A
Right Lower Tibia Index	0.91	N/A
Left Upper Tibia Compression FZ (N)	5600	N/A
Right Upper Tibia Compression FZ (N)	5600	N/A
Left Lower Tibia Compression FZ (N)	5200	N/A
Right Lower Tibia Compression FZ (N)	5200	N/A
Left Foot XL Rotation (Degrees)	N/A	N/A
Right Foot XL Rotation (Degrees)	N/A	N/A
Left Foot YL Rotation (Degrees)	N/A	N/A
Right Foot YL Rotation (Degrees)	N/A	N/A

1.) Channel failed at 80.4 msec.

2.) Channels failed, no data

**DATA SHEET NO. 10
SUMMARY OF FMVSS 212 DATA**

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

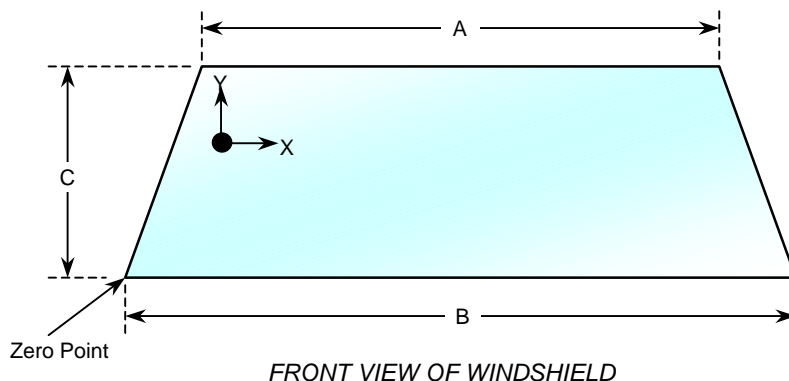
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive and plastic molding covers.

The standard requires that the posttest retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles that are equipped with occupant passive restraints.

Temperature of windshield molding during test: 41.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test(mm)	Post-Test(mm)	% of Retention
Left Side	608	608	100%
Right Side	608	608	100%
Total	1216	1216	100%



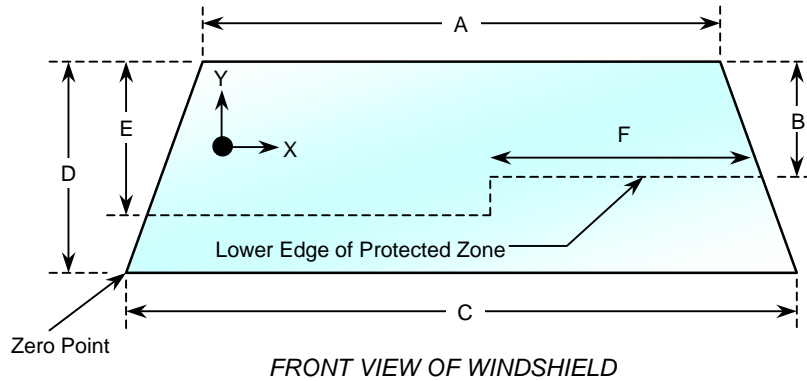
WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1200	8
B	mm	1500	8
C-Left	mm	810	21
C-Right	mm	810	21

DATA SHEET NO. 11
WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04



**WINDSHIELD AND
 PROTECTED ZONE**

Item	Units	Value
A	mm	1200
B	mm	430
C	mm	1500
D	mm	608
E	mm	435
F	mm	505

AREA OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 in. by a vehicle component other than one that is normally in contact with the windshield.

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

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

X	Y
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

DATA SHEET NO. 12
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: FMVSS 208 Upgrade

Test Date: 08/12/04

Test Time: 12:51 PM

Temperature: 41.1 Deg. C.

STODDARD SOLVENT SPILLAGE MEASUREMENTS

A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)

B. For the 5-minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)

C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)

D. Spillage Location Details: No leakage occurred

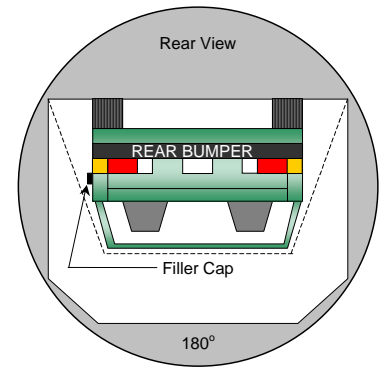
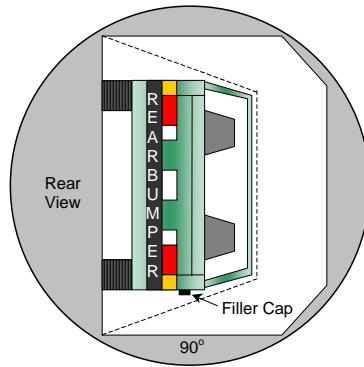
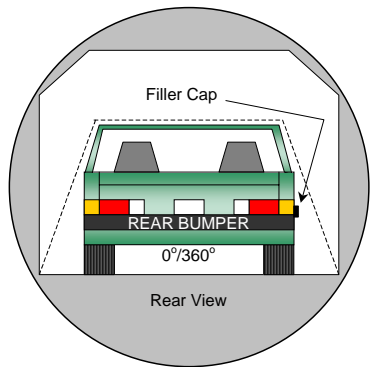
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

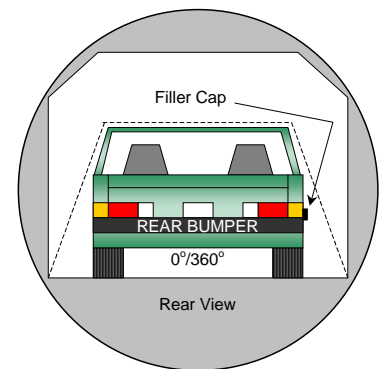
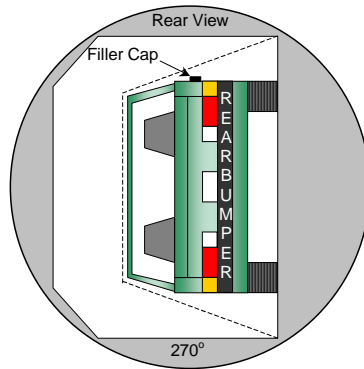
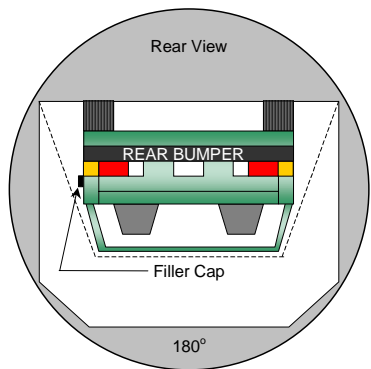
Test Program: FMVSS 208 UPGRADE

Test Date: 08/12/04



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 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. No solvent leakage occurred during rollover.

DATA SHEET NO. 13...(CONTINUED)
FMVSS 301 STATIC ROLLOVER DATA

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	81	300	381
90° to 180°	81	300	381
180° to 270°	81	300	381
270° to 360°	65	300	365

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

First 5 Minutes	5.0
Sixth Minute	1.0
Seventh Minute	1.0
Eighth Minute	1.0

ACTUAL TEST VEHICLE SOLVENT SPILLAGE TABLE (oz.)

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

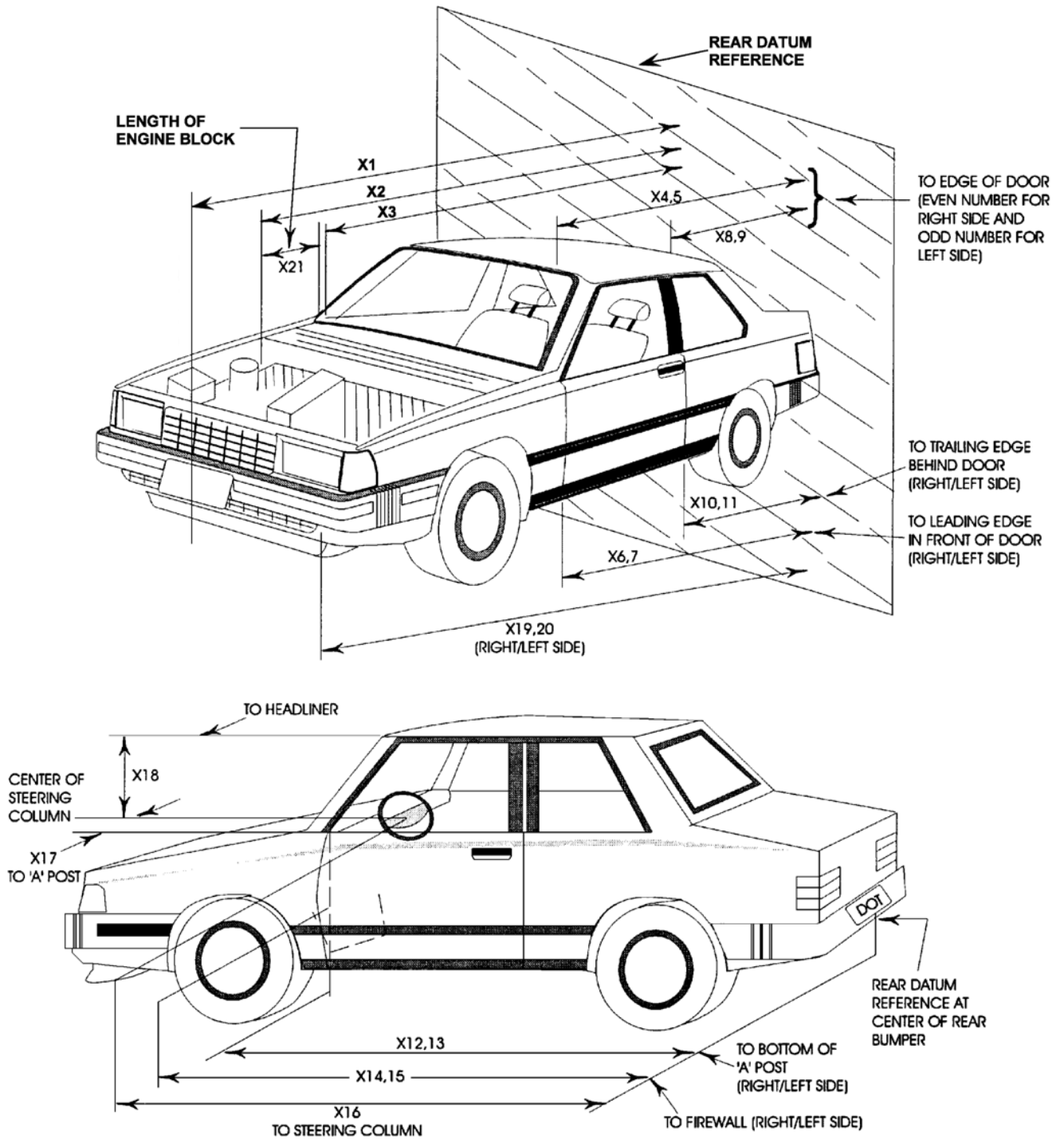
SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04



DATA SHEET NO. 14...(CONTINUED)
VEHICLE MEASUREMENTS

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length of vehicle at centerline	mm	4215	3840	-375
2	RSOV to front of engine	mm	3635	3420	-215
3	RSOV to firewall centerline	mm	3145	3090	-55
4	RSOV to leading edge of right door	mm	2872	2865	-7
5	RSOV to leading edge of left door	mm	2873	2870	-3
6	RSOV to lower leading edge of right door	mm	2850	2830	-20
7	RSOV to lower leading edge of left door	mm	2854	2830	-24
8	RSOV to upper trailing edge of right door	mm	1835	1825	-10
9	RSOV to upper trailing edge of left door	mm	1834	1830	-4
10	RSOV to lower trailing edge of right door	mm	1850	1826	-24
11	RSOV to lower trailing edge of left door	mm	1850	1825	-25
12	RSOV to bottom of right 'A' pillar	mm	2824	2801	-23
13	RSOV to bottom of left 'A' pillar	mm	2824	2801	-23
14	RSOV to firewall on right side	mm	3185	3140	-45
15	RSOV to firewall on left side	mm	3195	3160	-35
16	RSOV to steering column hub	mm	2395	2410	15
17	Center of steering column to left 'A' pillar	mm	335	354	19
18	Center of steering column to headlining	mm	495	540	45
19	RSOV to right side of front bumper	mm	4035	3820	-215
20	RSOV to left side of front bumper	mm	4036	3815	-221
21	Length of engine block	mm	575	575	0
RD	RSOV to right side of dash panel	mm	2639	2636	-3
CD	RSOV to center of dash panel	mm	2565	2542	-23
LD	RSOV to left side of dash panel	mm	2641	2646	5

All measurements in millimeters

DATA SHEET NO. 14...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

VEHICLE STRUCTURAL MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length	mm	4215	3840	-375
2	Total width	mm	1800	1800	0
3	Bumper top height	mm	710	765	55
4	Bumper bottom height	mm	352	400	48
5	Longitudinal member top height	mm	481	597	116
6	Longitudinal member bottom height	mm	419	446	27
7	Distance between longitudinal members	mm	853	735	-118
8	Longitudinal member width	mm	67	67	0
9	Engine top height	mm	1044	925	-119
10	Engine bottom height	mm	253	246	-7
11	Engine and gear box width	mm	650	650	0
12	Front bumper to engine distance	mm	570	480	-90
13	Front shock absorber fixing width	mm	735	790	55
14	Bonnet leading edge height	mm	921	1020	99
15	Front shock absorber fixing width	mm	893	810	-83
16	Front bumper to front axle distance	mm	723	415	-308
17	Front axle to 'A' pillar distance	mm	590	570	-20
18	'A' pillar to 'B' pillar distance	mm	1034	1035	1
19	'B' pillar to rear axle distance	mm	1001	985	-16
20	'B' pillar to 'C' pillar distance	mm	875	890	15
21	Roof sill bottom height	mm	1585	1550	-35
22	Roof sill top height	mm	1700	1705	5
23	Floor sill bottom height	mm	370	325	-45
24	Floor sill top height	mm	514	430	-84

All measurements in millimeters

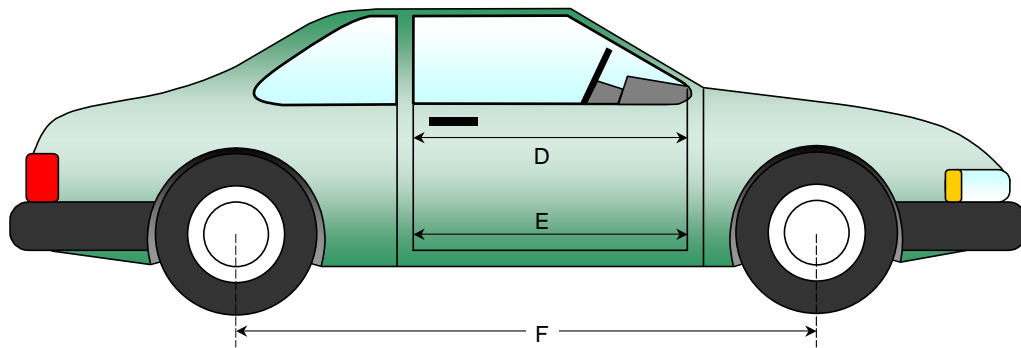
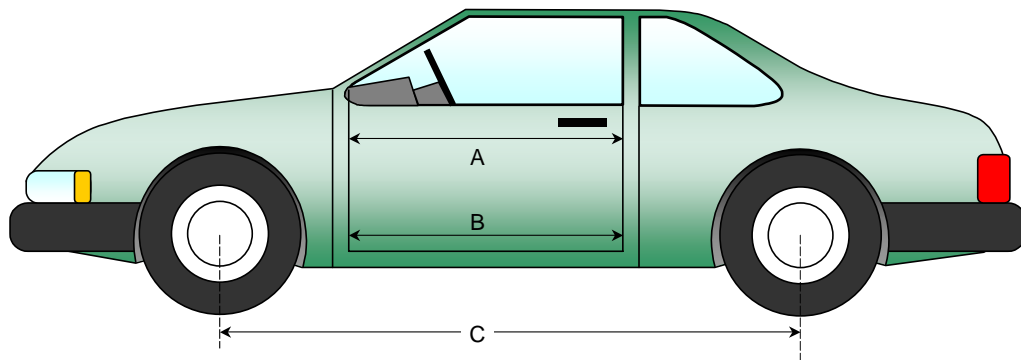
DATA SHEET NO. 14...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
A	Left Side Upper	mm	943	931	-12
B	Left Side Lower	mm	896	896	0
D	Right Side Upper	mm	926	936	10
E	Right Side Lower	mm	896	896	0

WHEELBASE MEASUREMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
C	Left Side Wheel Base	mm	2650	2590	-60
F	Right Side Wheel Base	mm	2650	2610	-40

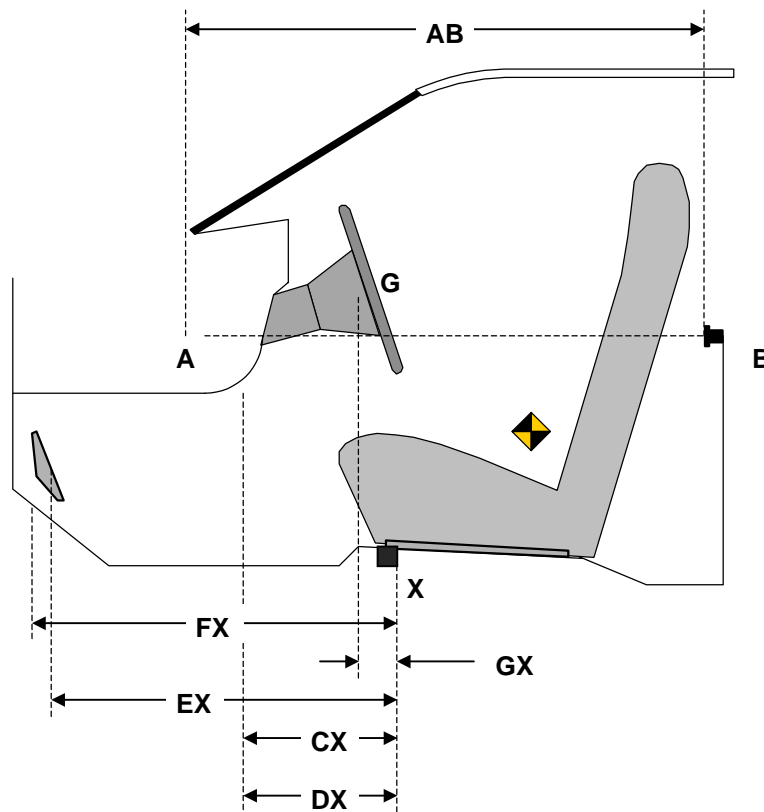


DATA SHEET NO. 14...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

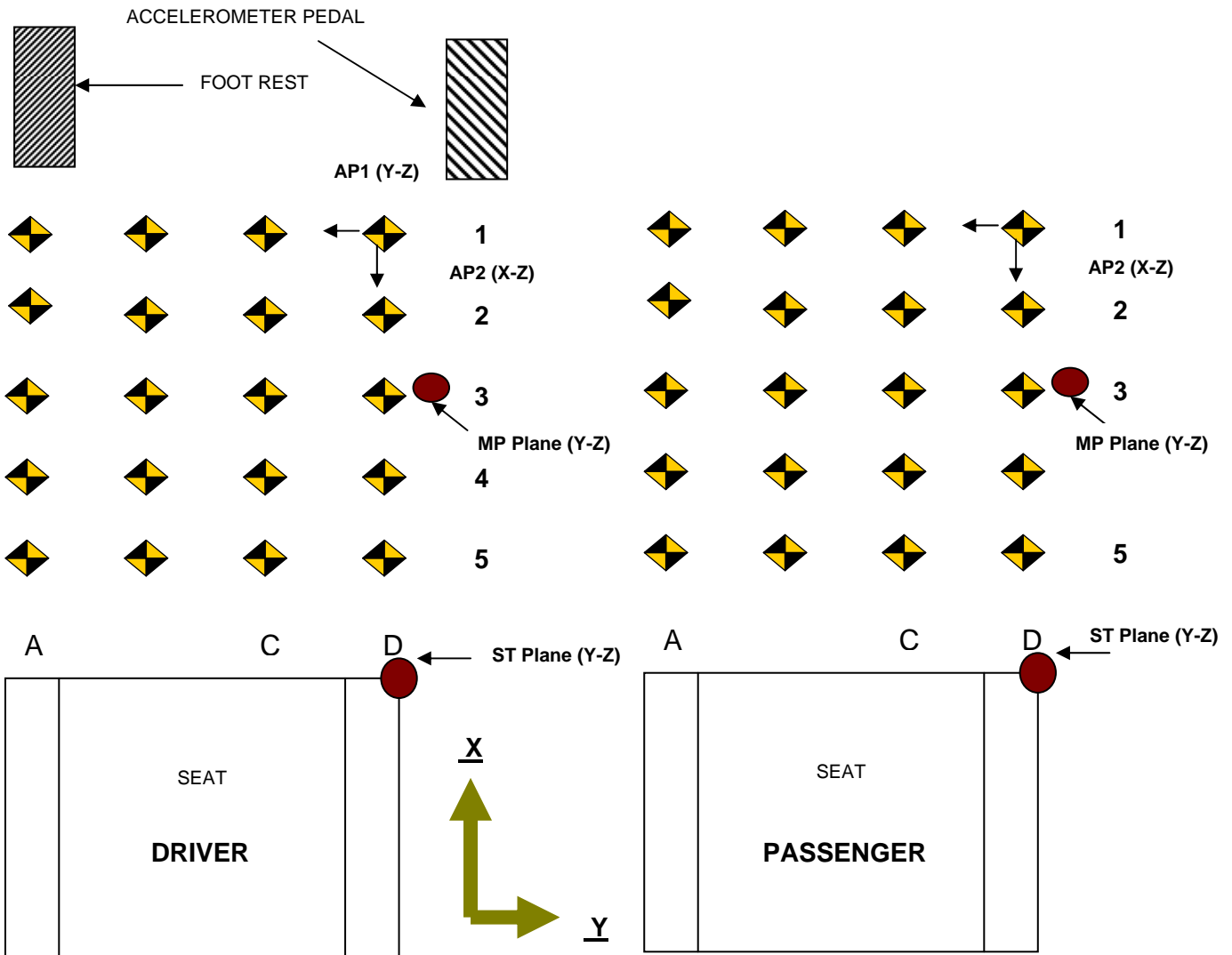
DRIVER COMPARTMENT INTRUSION TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
AB	Door Opening (Inside window jam)	mm	943	931	-12
CX	Left Knee Bolster to X	mm	305	310	5
DX	Right Knee Bolster to X	mm	280	270	-10
EX	Brake Pedal to X	mm	516	568	52
FX	Foot Rest to X	mm	634	601	-33
GX	Center of Steering Wheel Hub to X	mm	75	45	-30

X = Left Front Seat Outboard Anchor Bolt Head



DATA SHEET NO. 14...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS



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. 14...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

All measurements in mm

DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-724	-778	-777	-738	683	705	685	641	1407	1483	1462	1379
2	-654	-687	-691	-682	642	630	626	608	1296	1317	1317	1290
3	-571	-580	-580	-577	556	551	545	535	1127	1131	1125	1112
4	-481	-483	-491	-484	422	416	412	404	903.2	899	902.6	888.2
5	-396	-397	-401	-405	289	284	276	274	685.3	680.8	676.7	678.9

DRIVER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	9.7	-93.6	-200	-296	20	147	280	418	10.3	240.6	480.4	714.4
2	17.6	-92	-202	-287	11	144	274	420	-6.6	236	475.6	706.8
3	21.8	-83.3	-187	-278	12	143	278	419	-9.8	226.3	465.4	696.6
4	19.6	-77.8	-182	-272	6	140	277	415	-13.6	217.8	459.4	687
5	22.7	-71.7	-175	-264	5	136	276	408	-17.7	207.7	450.9	671.6

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	49.4	88.1	87.9	62	-35	4	-5	-51	-84.4	-84.1	-92.9	-113
2	114.1	165.4	152.6	161.4	62	61	47	15	-52.1	-104	-106	-146
3	190.6	220.2	212.1	222.1	96	98	95	91	-94.6	-122	-117	-131
4	223.4	230.2	224.8	228	86	86	86	93	-137	-144	-139	-135
5	222.2	227.9	223.7	224	85	87	87	95	-137	-141	-137	-129

DATA SHEET NO. 14...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

All measurements in mm

PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-649	-671	-686	-696	572	593	619	651	1221	1264	1305	1347
2	-542	-561	-569	-578	513	558	567	573	1055	1119	1136	1151
3	-436	-450	-459	-468	445	484	489	493	880.5	934.4	948.2	961.3
4	-343	-353	-361	-367	337	358	371	381	679.5	710.9	732.1	747.9
5	-266	-272	-276	-284	218	237	238	242	484.1	508.5	514.4	526.1

PASSENGER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	346.6	200.4	115.7	-13.5	-359	-229	-103	41	-706	-429	-219	54.5
2	336.9	192.9	96.0	-22.1	-349	-231	-100	42	-686	-424	-196	64.1
3	326.2	175.3	73.1	-26.6	-352	-231	-94	43	-678	-406	-167	69.6
4	316.2	164.4	61.4	-34.4	-357	-227	-88	45	-673	-391	-149	79.4
5	305.4	153.0	55.3	-39.6	-358	-219	-78	48	-663	-372	-133	87.6

PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	135.1	160.5	161.9	160.2	-64	-18	-13	-13	-199	-179	-175	-173
2	192.6	214.4	225.4	221.9	-50	63	69	69	-243	-151	-156	-153
3	217.3	222.2	221.8	225.2	-27	96	94	94	-244	-126	-128	-131
4	210.4	220.8	223.3	223.1	26	94	95	95	-184	-127	-128	-128
5	185.7	220.8	222.0	222.0	51	90	89	89	-135	-131	-133	-133

**DATA SHEET NO. 15
CAMERA LOCATIONS**

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

VEHICLE CAMERA MEASUREMENT TABLE

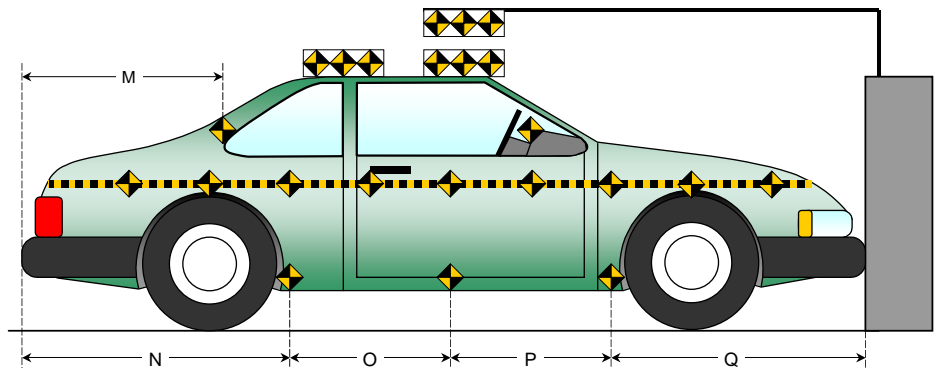
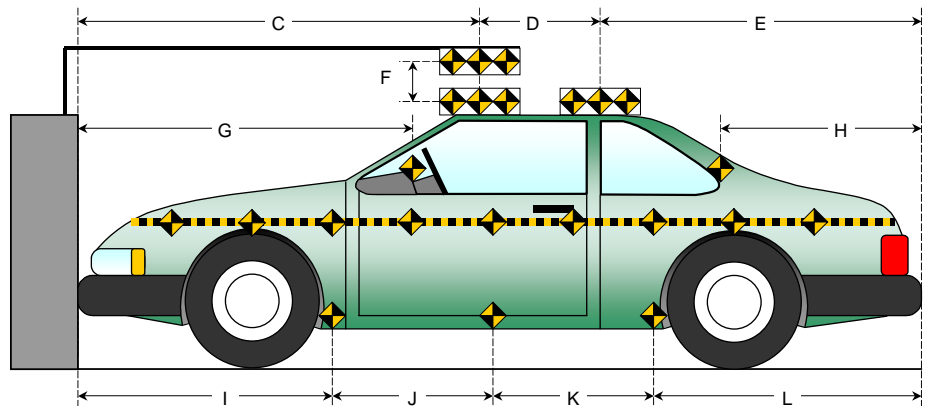
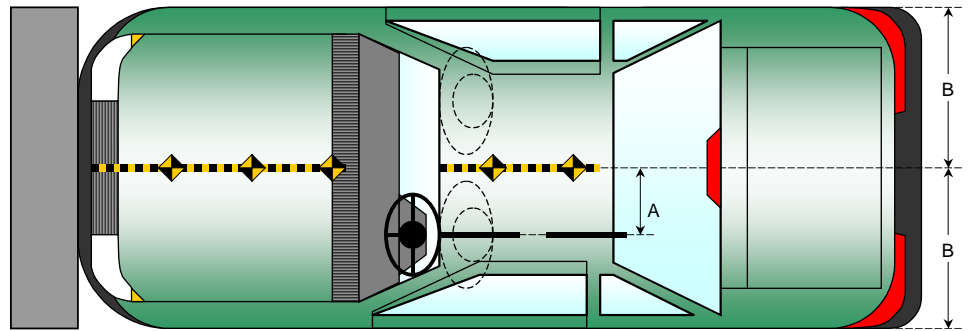
No.	Camera		Location (mm)			Angle (deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
	View	Type	X	Y	Z				
1	Real-time (Panning)	Video	-12192	-6096	-1651	-10	N/A	Zoom	30
1B	Real Time (Still)	Video	-1219	-8585	-1372	0	8188	Zoom	30
1C	Real Time (Still)	Video	-1067	7976	-991	0	7620	Zoom	30
2	Overall Left Side	16mm	-2489	8280	-1143	-4	7834	13	1030
2B	Overall Left Side	Video	-1883	-7671	-1143	-2	7228	10	1000
3	Left Side View	Video	-1677	-7773	-1270	-4	7338	50	1000
3B	Left Side View	16mm	-2134	-8230	-1449	-4	7773	35	1000
3C	Left Side View	16mm	-1880	-8230	-1449	-2	7780		890
4	Driver & Interior	16mm	-5257	-10897	-4648	-13	11329	75	1005
4B	Driver & Interior	Video	-5360	-10846	-4648	-13	11310	Zoom	1000
5	Steering Column (Bottom)	16mm	-2134	-8230	-2997	-16	7921	19	990
6	Steering Column (Top)	16mm	-2134	-8230	-3404	-20	8009	19	1010
7	Left Rear Dummy On-Board	Video	-2819	-635	-1626	-5	668	4.2	DNR
8	Overall Right Side	16mm	-2083	8230	-1270	-6	7776	13	1005
9	Right Side View	Video	-1880	8230	-1575	-4	7780	50	DNR
9B	Right Side View	16mm	-2083	8230	-1575	-4	7774	35	1020
10	Right Passenger View	16mm	-1677	10871	-1219	4	10430	80	980
11	Passenger & Interior View	16mm	-6781	9144	-2997	-9	9933	50	895
11B	Passenger & Interior View	Video	-6477	9068	-2946	-9	9722	Zoom	1000
12	Right Rear Dummy On-Board	Video	-2819	-635	-1626	-5	668	5.7	DNR
13	Passenger Front View	16mm	610	432	-2667	-40	N/A	13	730
14	Driver Front View	16mm	610	-432	-2667	-40	N/A	13	1030
15	Windshield View	16mm	-610	0	-5944	-90	N/A	13	NTM
16	Pit View of Engine	16mm	-914	0	1499	90	N/A	9	1010
17	Pit View of Fuel Tank	16mm	-2438	0	-1499	90	N/A	6	DNR

DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

All Dimensions in (mm)	
Item	Value
A	395
B	1800
C	2042
D	605
E	1565
F	150
G	1613
H	920
I	1240
J	817
K	817
L	1341
M	920
N	1341
O	817
P	817
Q	1240



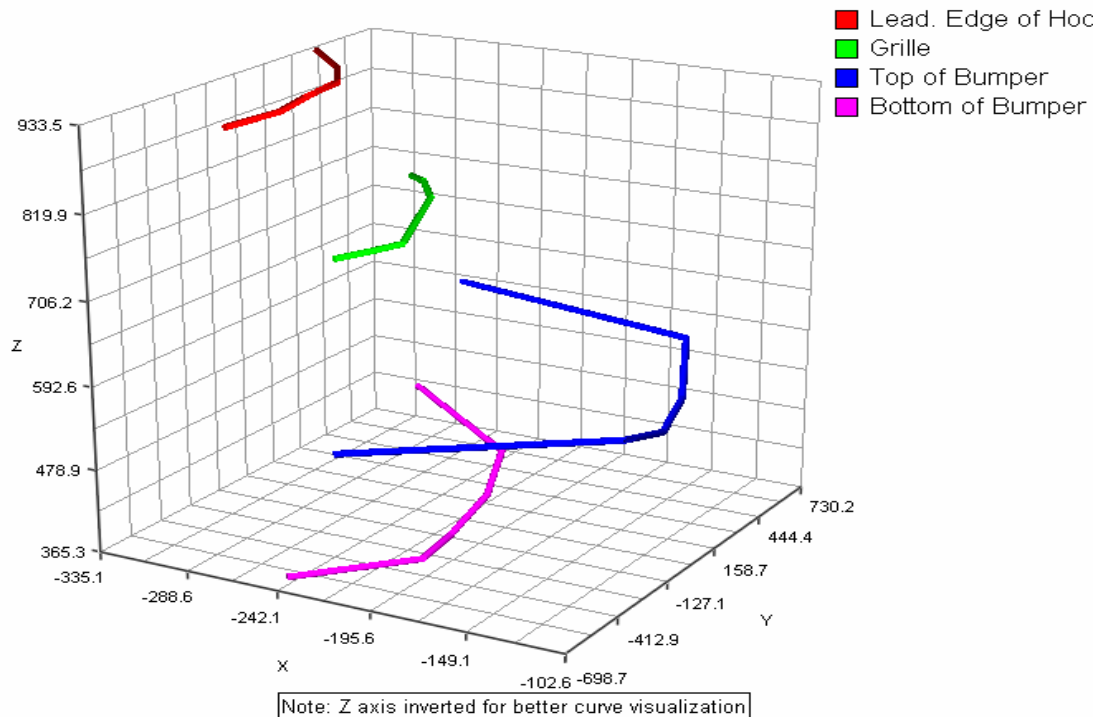
DATA SHEET NO. 17
TEST VEHICLE FRONTAL PROFILE DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

Pre-Test Measurements in mm.							
		Vehicle Left			Vehicle Right		
		C1	C2	C3	C4	C5	C6
Leading edge of Hood	X	-293	-283	-284	-289	-306	-335
	Y	-421	-253	-83	91	264	433
	Z	-919	-926	-933	-930	-928	-928
Grille	X	-244	-236	-232	-250	-264	-280
	Y	-374	-269	-155	179	288	394
	Z	-762	-764	-762	-780	-785	-776
Top of Bumper	X	-213	-103	-108	-120	-141	-285
	Y	-699	-399	-112	152	433	730
	Z	-565	-596	-563	-566	-602	-583
Bottom of Bumper	X	-241	-200	-212	-220	-234	-309
	Y	-662	-391	-119	174	419	716
	Z	-379	-384	-365	-374	-396	-415

Test Vehicle Pre-Crash Frontal Profile (Jeep Liberty)



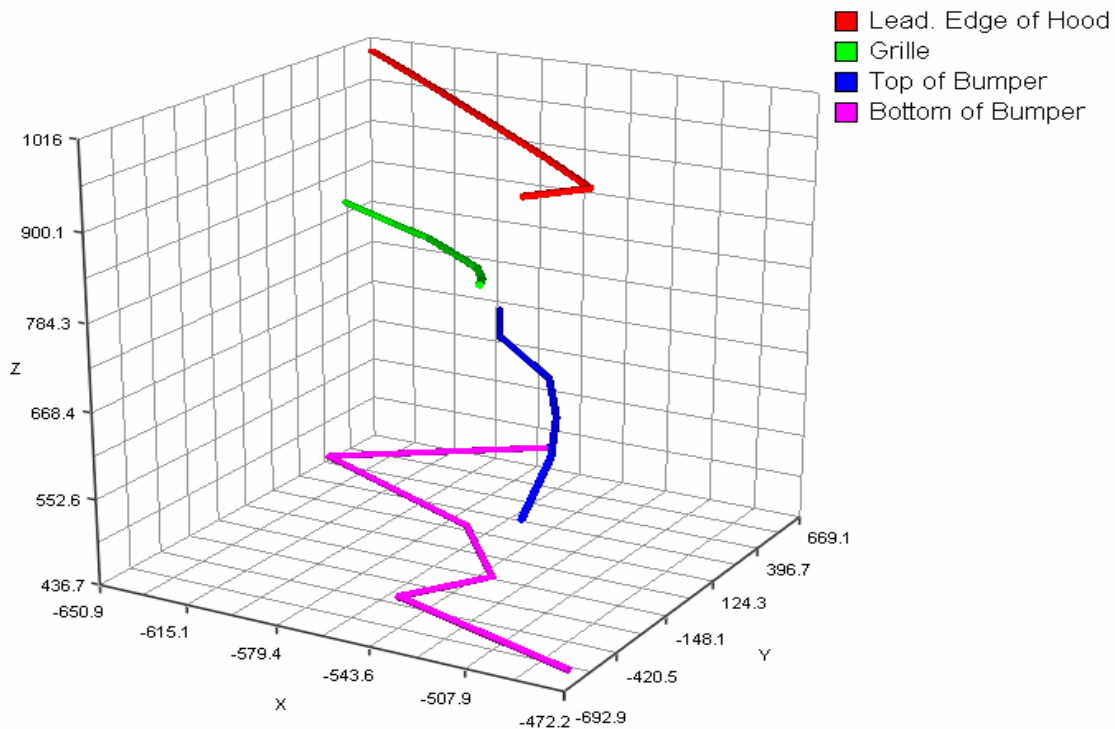
DATA SHEET NO. 17...(CONTINUED)
TEST VEHICLE FRONTAL PROFILE DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

Post Test Measurements in mm.							
		Vehicle Left			Vehicle Right		
		C1	C2	C3	C4	C5	C6
Leading edge of Hood	X	-517	-504	-532	-567	-600	-639
	Y	-301	-132	33	200	368	532
	Z	-967	-965	-972	-985	-996	-1016
Grille	X	-521	-528	-538	-582	-604	-634
	Y	-453	-343	-232	98	206	316
	Z	-876	-865	-860	-835	-830	-832
Top of Bumper	X	-488	-498	-516	-538	-577	-596
	Y	-693	-406	-130	144	421	669
	Z	-642	-668	-667	-666	-662	-658
Bottom of Bumper	X	-472	-555	-539	-570	-651	-574
	Y	-672	-408	-137	144	414	666
	Z	-460	-444	-437	-439	-443	-469

Test Vehicle Post Crash Frontal Profile (Jeep Liberty)



DATA SHEET NO. 17...(CONTINUED)
TEST VEHICLE FRONTAL PROFILE DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: FMVSS 208 Upgrade

Test Date: 08/12/04

Change (Post - Pre) Test Measurements in mm.							
		Vehicle Left			Vehicle Right		
		C1	C2	C3	C4	C5	C6
Leading edge of Hood							
	X	-224	-221	-249	-278	-294	-304
	Y	120	120	116	109	104	100
	Z	-49	-39	-38	-55	-68	-88
Grille							
	X	-277	-292	-306	-332	-341	-353
	Y	-79	-74	-77	-81	-82	-78
	Z	-114	-102	-98	-55	-44	-56
Top of Bumper							
	X	-275	-395	-408	-418	-437	-311
	Y	6	-7	-18	-7	-11	-61
	Z	-77	-72	-104	-100	-60	-74
Bottom of Bumper							
	X	-231	-356	-327	-351	-417	-265
	Y	-10	-17	-19	-30	-5	-50
	Z	-82	-60	-71	-65	-47	-54

**DATA SHEET NO. 18
POST-TEST AIRBAG DATA**

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

POST-TEST AIRBAG DATA

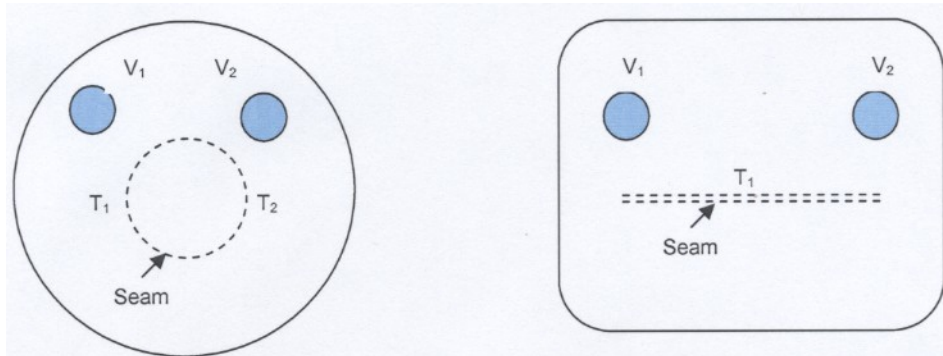
	DRIVER	PASSENGER
No. of vent holes	2	2
Size of vent holes (mm ²)	491	1963
Total vent area (mm ²)	982	3927

Deflated airbag length and width dimensions or, if round, diameter (mm)		
Length	580	530
Width	630	430
Depth/Diameter	320	460

Tethering information		
Is the airbag tethered?	YES	NO
Record length of tether (mm)	270	N/A

Airbag manufacturing information		
Manufacturer	AIRBAG LABEL WAS MELTED AFTER IMPACT. COULD NOT OBTAIN INFORMATION	AIRBAG LABEL WAS MELTED AFTER IMPACT. COULD NOT OBTAIN INFORMATION
Part No.	GA 120-05520 05523180349	GO 2605000D TJYR1U02AHJ
Gas Generator	AIRBAG LABEL WAS MELTED AFTER IMPACT. COULD NOT OBTAIN INFORMATION	AIRBAG LABEL WAS MELTED AFTER IMPACT. COULD NOT OBTAIN INFORMATION

The following sketch shows the airbag with location of the vent holes (v1 and v2), along with the tethers attachment points (T1 and T2). The tethers are sewed to the both bag and the steering wheel end.

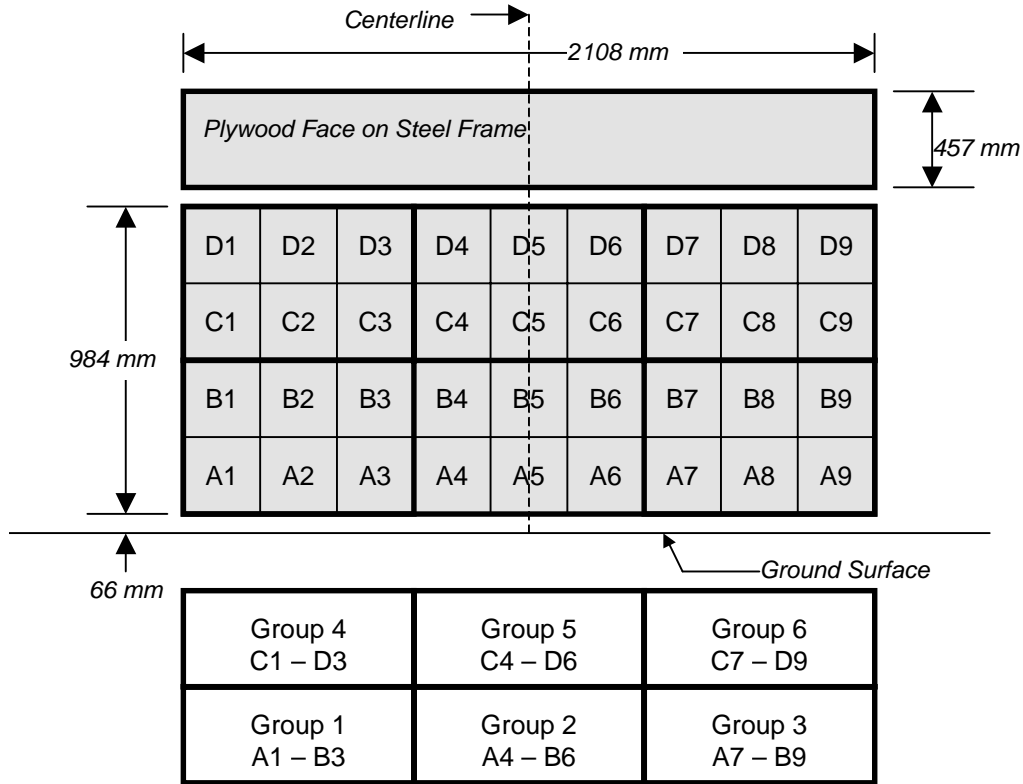


DATA SHEET NO. 19
FIXED BARRIER LOAD CELL LOCATIONS

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04

36 Load Cell Rigid Barrier (NHTSA Standard)
Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

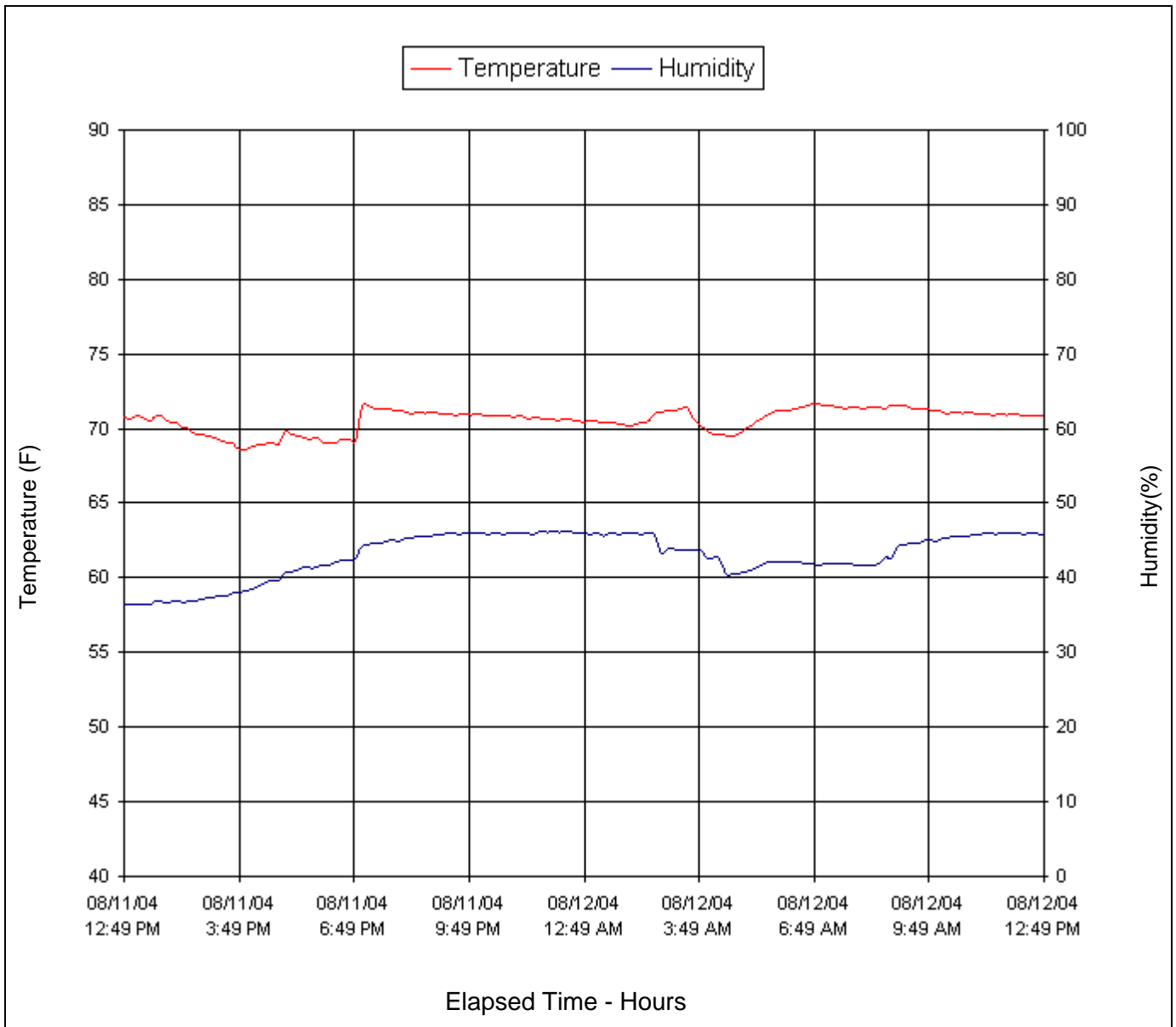
The Data is presented in Appendix C with the following requirements:

- 1.) Data from 36 individual load cells
- 2.) Sum data from 6 groupings shown above (6 cells/group)
- 3.) Total or sum of all 36 individual load cells
- 4.) Sum of all 36 individual load cells vs. vehicle dynamic crush

DATA SHEET NO. 20
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: FMVSS 208 Upgrade

NHTSA No.: R40402
 Test Date: 08/12/04



APPENDIX A
PHOTOGRAPHS

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Figure A-1: Load Cell Location

MFD BY	DAIMLERCHRYSLER CORPORATION	DATE OF MFR	1-04	GWR	2427 KG(05350 LB)
GAWR FRONT	WITH TIRES	RIMS AT	COLD		
1248 KG(2750 LB)	P215/75R16	16X7	227 KPA(33 PSI)		
GAWR REAR	WITH TIRES	RIMS AT	COLD		
1429 KG(3150 LB)	P215/75R16	16X7	227 KPA(33 PSI)		

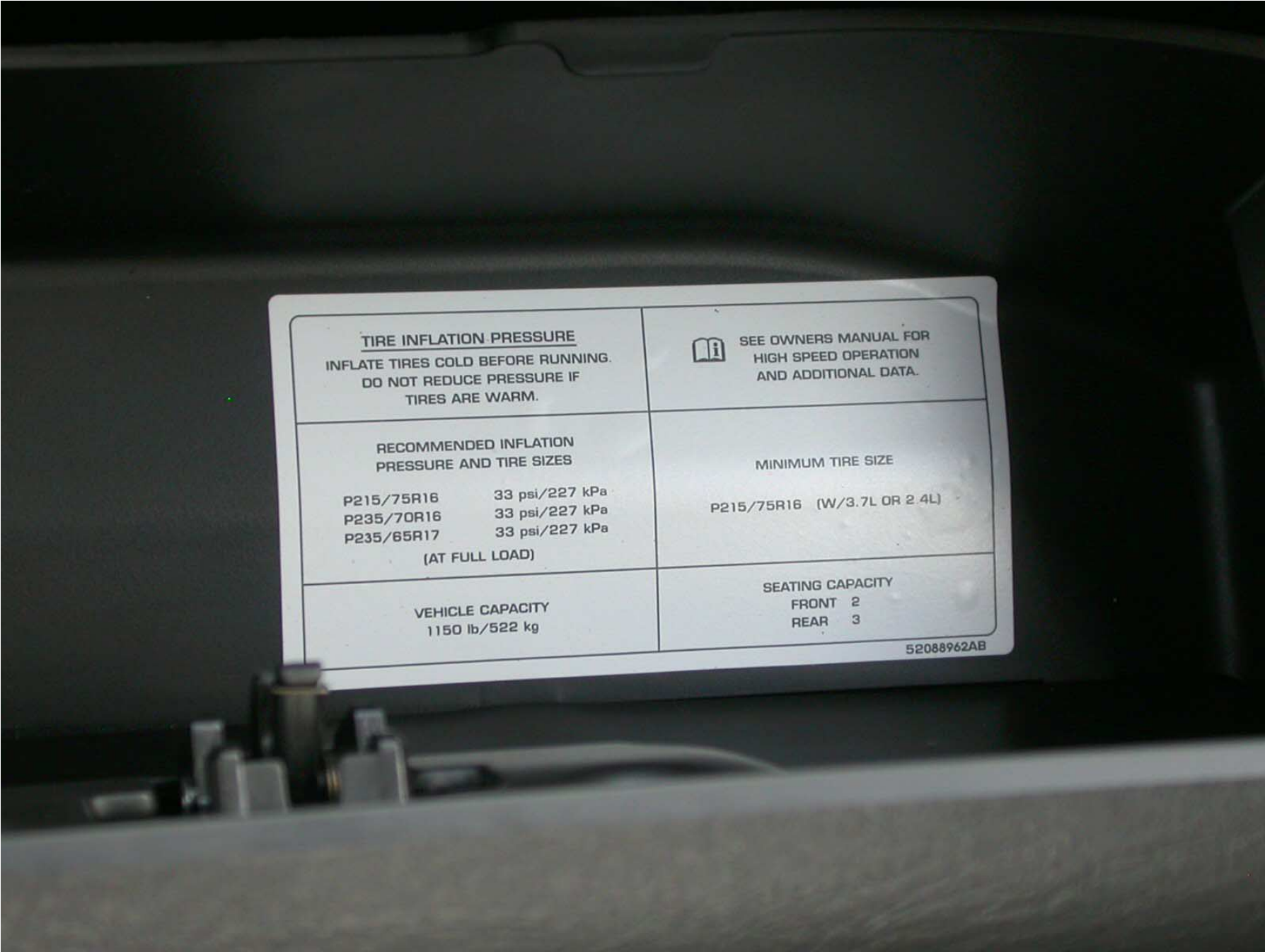
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 1J4GK48K14W225983 TYPE: MPV SINGLE X DUAL



MDH: 012201 080AA PNT:PR4 VEHICLE MADE IN U.S.A. TRM:MSDU 4648503

Figure A-2: Vehicle Certification Label



TIRE INFLATION PRESSURE
INFLATE TIRES COLD BEFORE RUNNING.
DO NOT REDUCE PRESSURE IF
TIRES ARE WARM.



SEE OWNERS MANUAL FOR
HIGH SPEED OPERATION
AND ADDITIONAL DATA.

**RECOMMENDED INFLATION
PRESSURE AND TIRE SIZES**

P215/75R16 33 psi/227 kPa
P235/70R16 33 psi/227 kPa
P235/65R17 33 psi/227 kPa

(AT FULL LOAD)

MINIMUM TIRE SIZE

P215/75R16 (W/3.7L OR 2.4L)

VEHICLE CAPACITY
1150 lb/522 kg

SEATING CAPACITY
FRONT 2
REAR 3

52088962AB

Figure A-3: Vehicle Tire Label



Figure A-4: Right Front $\frac{3}{4}$ View, As Received



Figure A-5: Left Rear $\frac{3}{4}$ View, as Received



Figure A-6: Pre-Test Front View



Figure A-7: Post-Test Front View (Vehicle Moved)



Figure A-8: Pre-Test Left Side View



Figure A-9: Post-Test Left Side View



Figure A-10: Pre-Test Right Side View



Figure A-11: Post-Test Right Side View



Figure A-12: Pre-Test Right Front $\frac{3}{4}$ View



Figure A-13: Post-Test Right Front $\frac{3}{4}$ View



Figure A-14: Pre-Test Left Rear $\frac{3}{4}$ View



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



Figure A-16: Post-Test Left Rear ¾ View of Doors After Impact

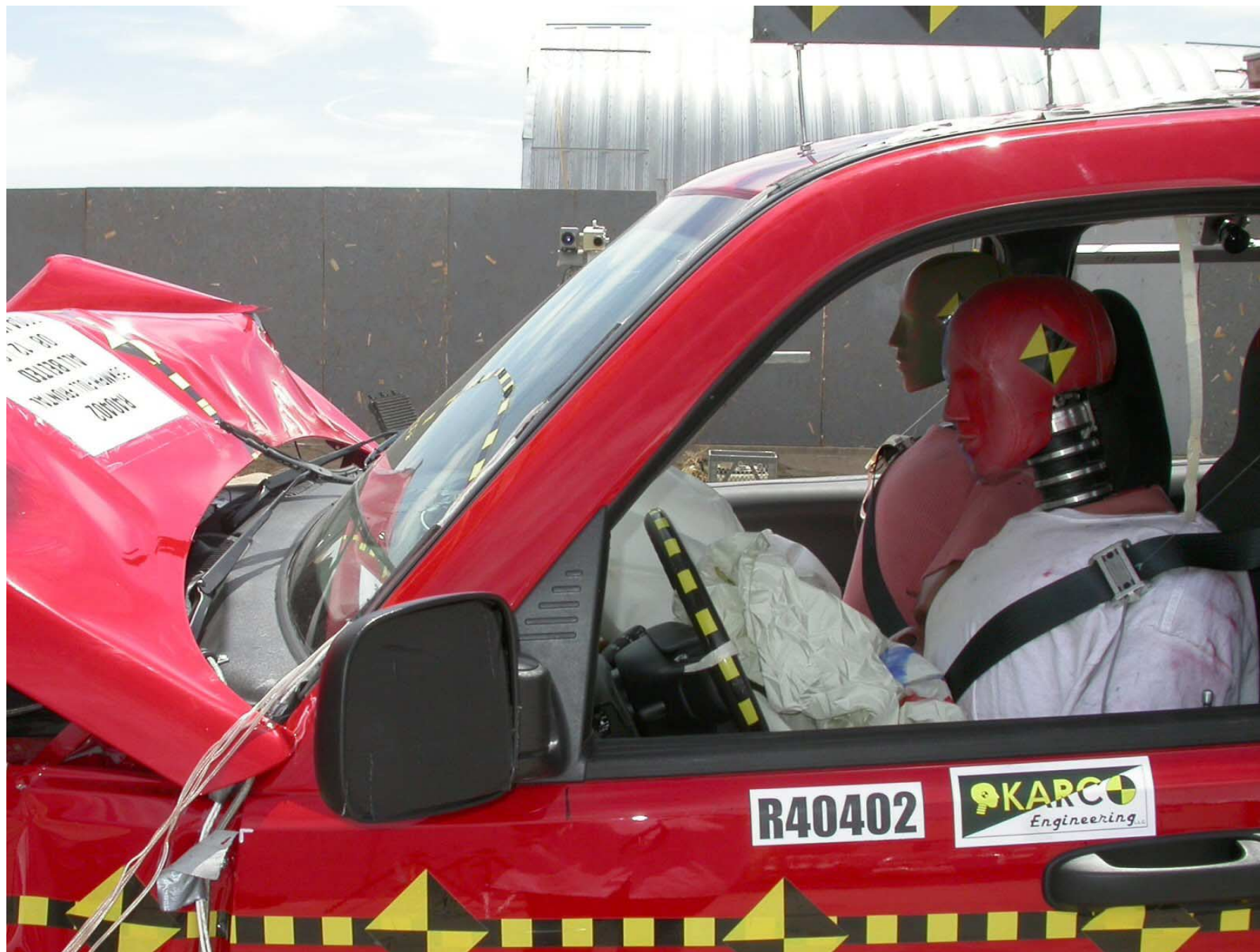


Figure A-17: Post-Test Driver Side A Pillar



Figure A-18: Post-Test Driver Side B Pillar



VOLPE TEST NO. 10
TASK NO. P24104-10
NHTSA NO. R40402
2004 JEEP LIBERTY
TEST DATE TBD

KARCO
Engineering

Figure A-19: Post-Test Driver Side C Pillar



Figure A-20: Post- Test Driver Side D Pillar



Figure A-21: Post-Test Driver Side Front Door Sill



Figure A-22: Post-Test Driver Side Rear Door Sill



Figure A-23: Post-Test Right Rear ¾ View of Doors After Impact



Figure A-24: Post-Test Passenger Side A Pillar



Figure A-25: Post-Test Passenger Side B Pillar



Figure A-26: Post-Test Passenger Side C Pillar



Figure A-27: Post- Test Passenger Side D Pillar



Figure A-28: Post-Test Passenger Side Front Door Sill

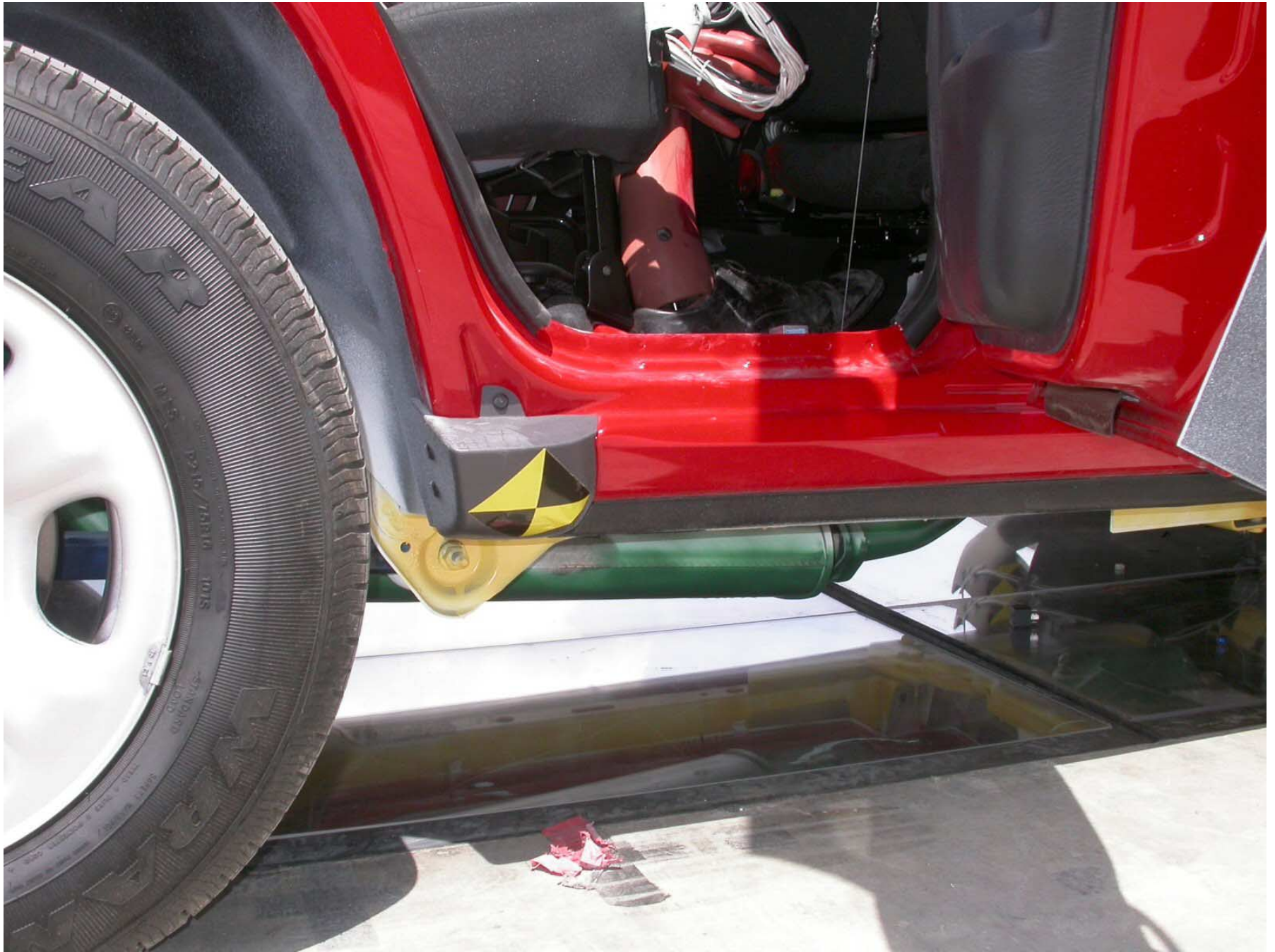
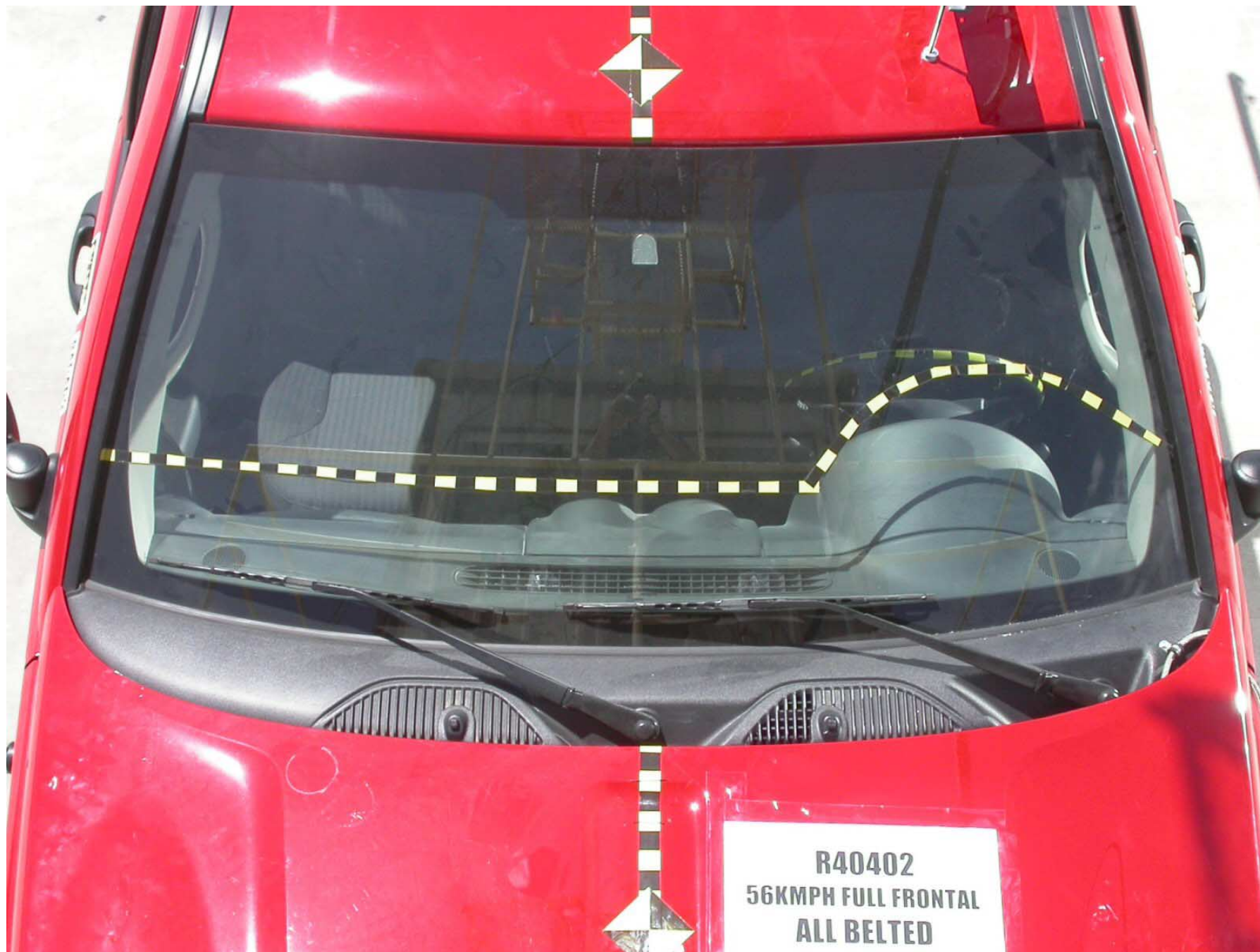


Figure A-29: Post-Test Passenger Side Rear Door Sill



A-30

TR-P24104-10-NC

Figure A-30: Pre-Test Windshield View



Figure A-31: Post-Test Windshield View



Figure A-32: Pre-Test Engine Compartment



Figure A-33: Post-Test Engine Compartment (Vehicle Moved)



Figure A-34: Pre-Test Fuel Cap

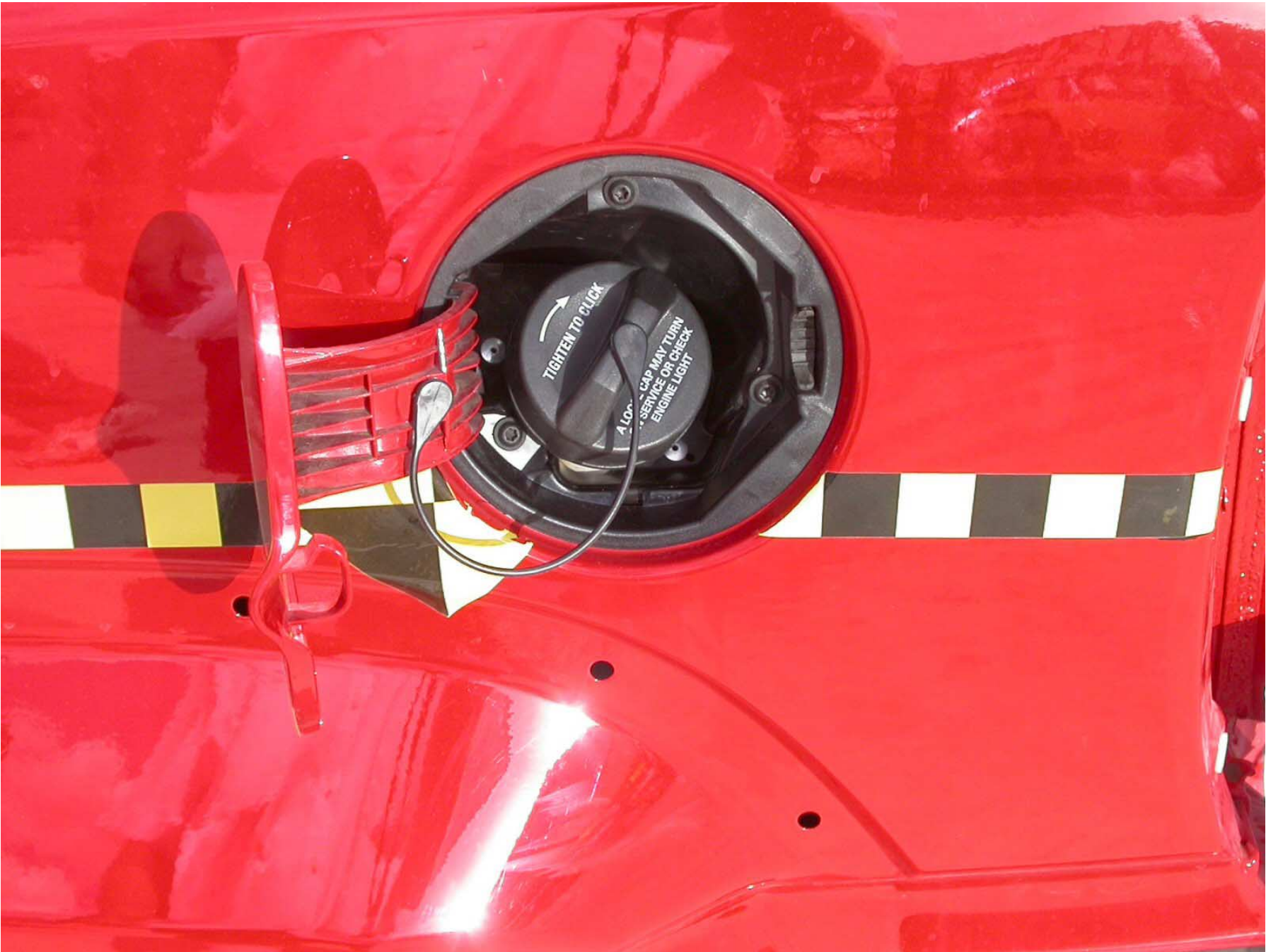


Figure A-35: Post-Test Fuel Cap

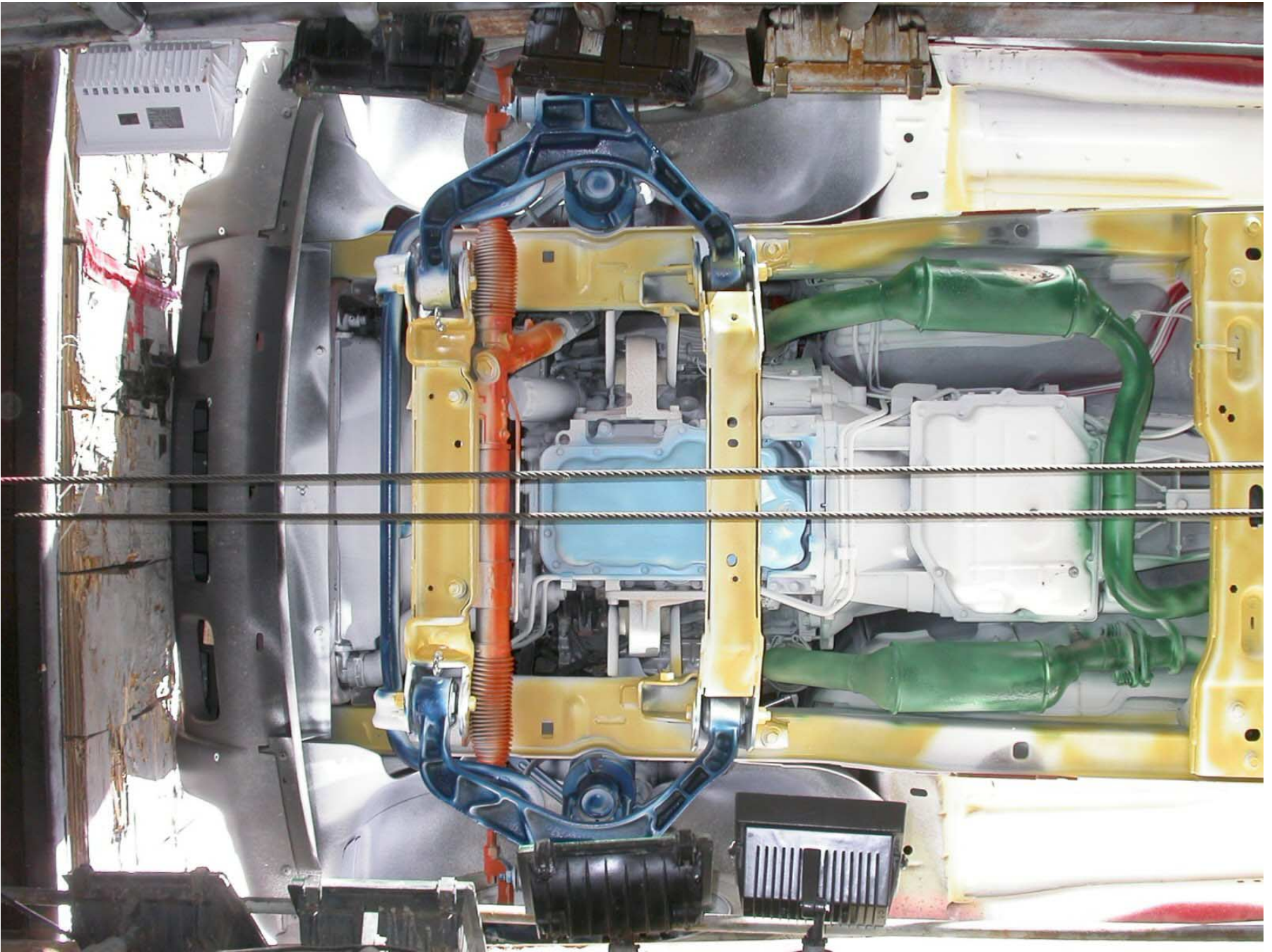


Figure A-36: Pre-Test Front Underbody View (Front of Test Vehicle is to the Left)



Figure A-37: Post-Test Front Underbody View (Front of Test Vehicle is to the Left)



Figure A-38: Pre-Test Mid Underbody View (Front of Test Vehicle is to the Left)



Figure A-39: Post-Test Mid Underbody View (Front of Test Vehicle is to the Left)

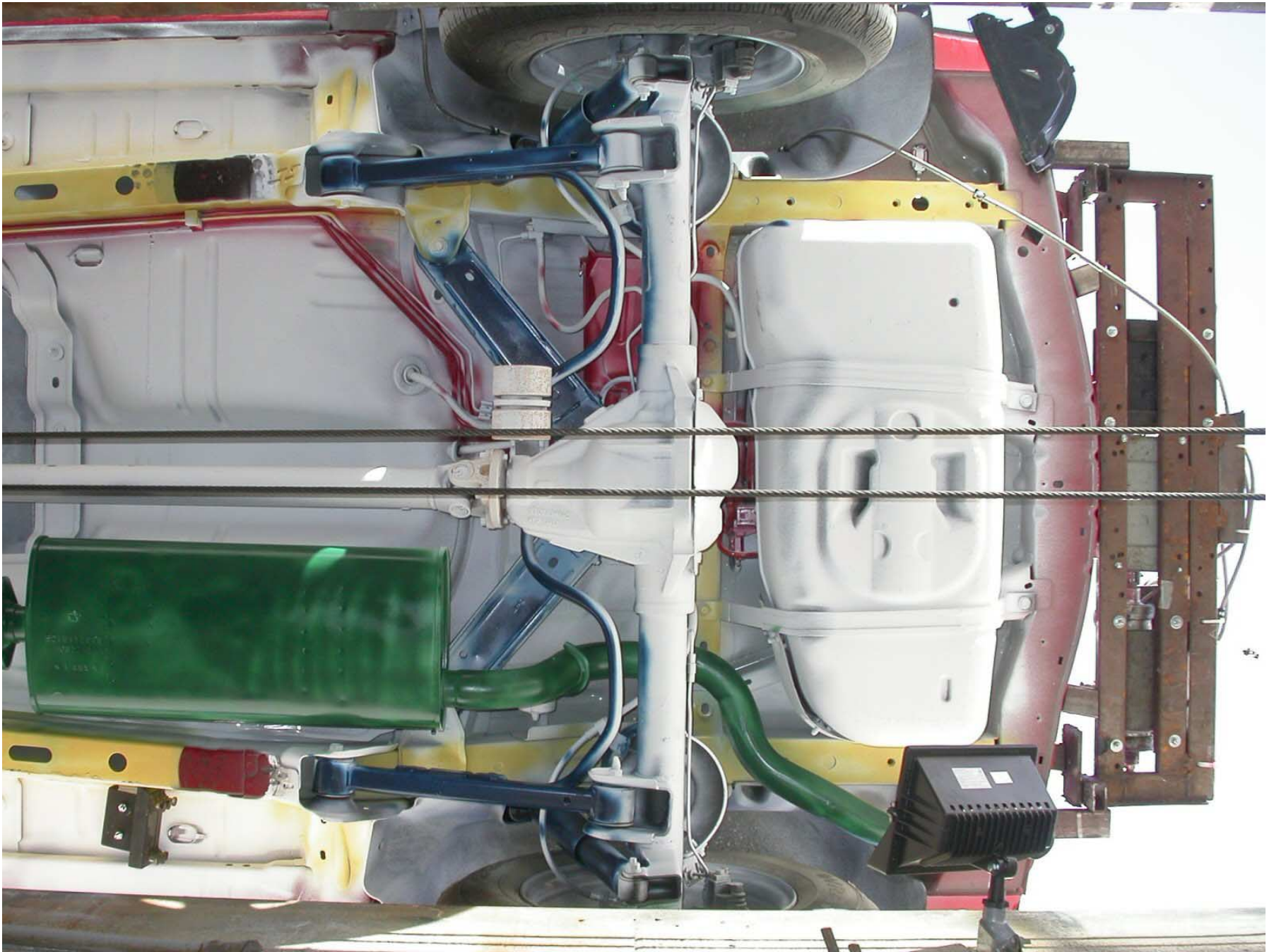


Figure A-40: Pre-Test Rear Underbody View (Front of Test Vehicle is to the Left)

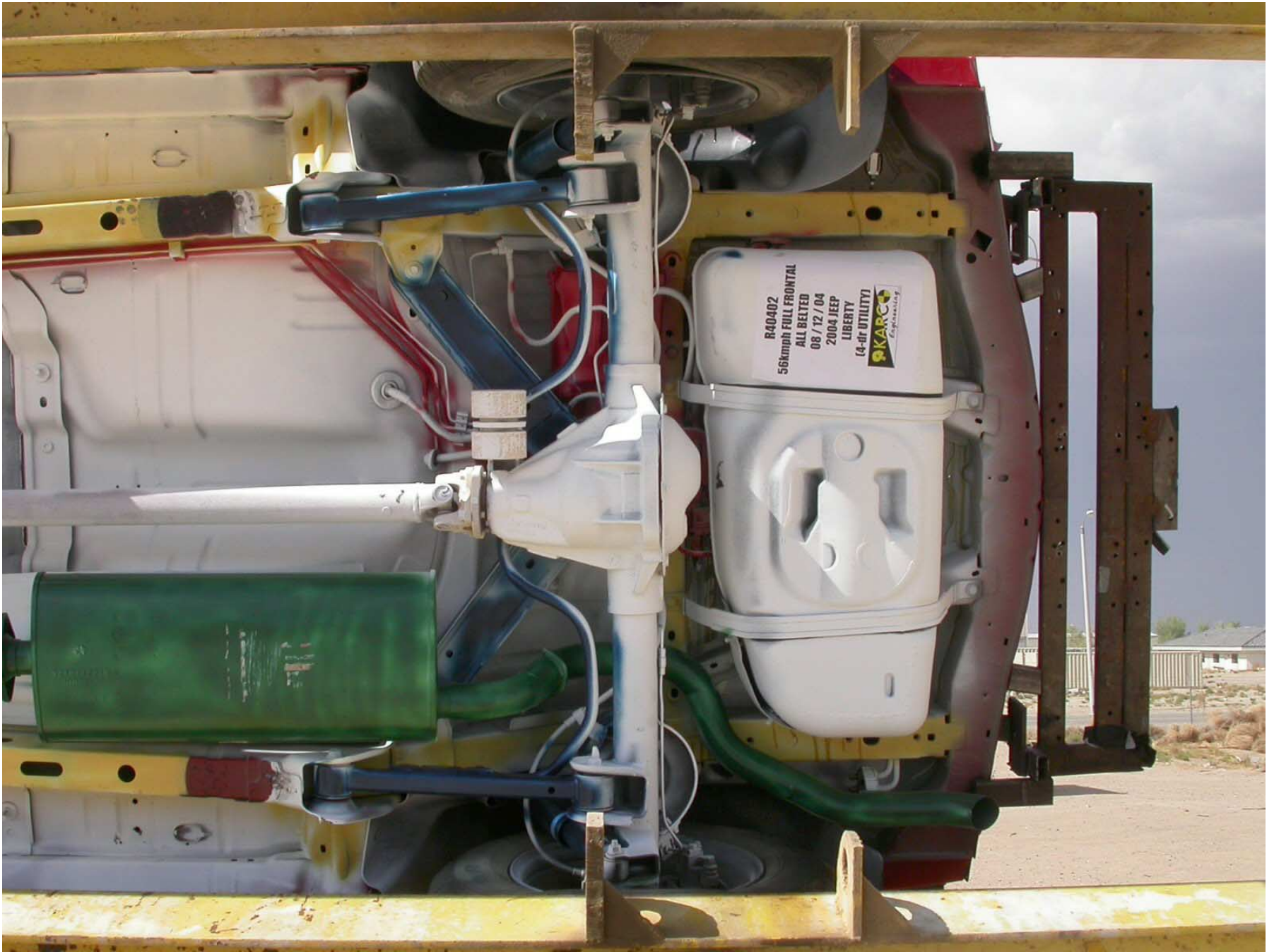


Figure A-41: Post-Test Rear Underbody View (Front of Test Vehicle is to the Left)



Figure A-42: Post-Test Left Front Wheel Well (Front of Test Vehicle is to the Left)



Figure A-43: Post-Test Left Front Wheel Well with Tire and Wheel Removed (Front of Test Vehicle is to the Left)

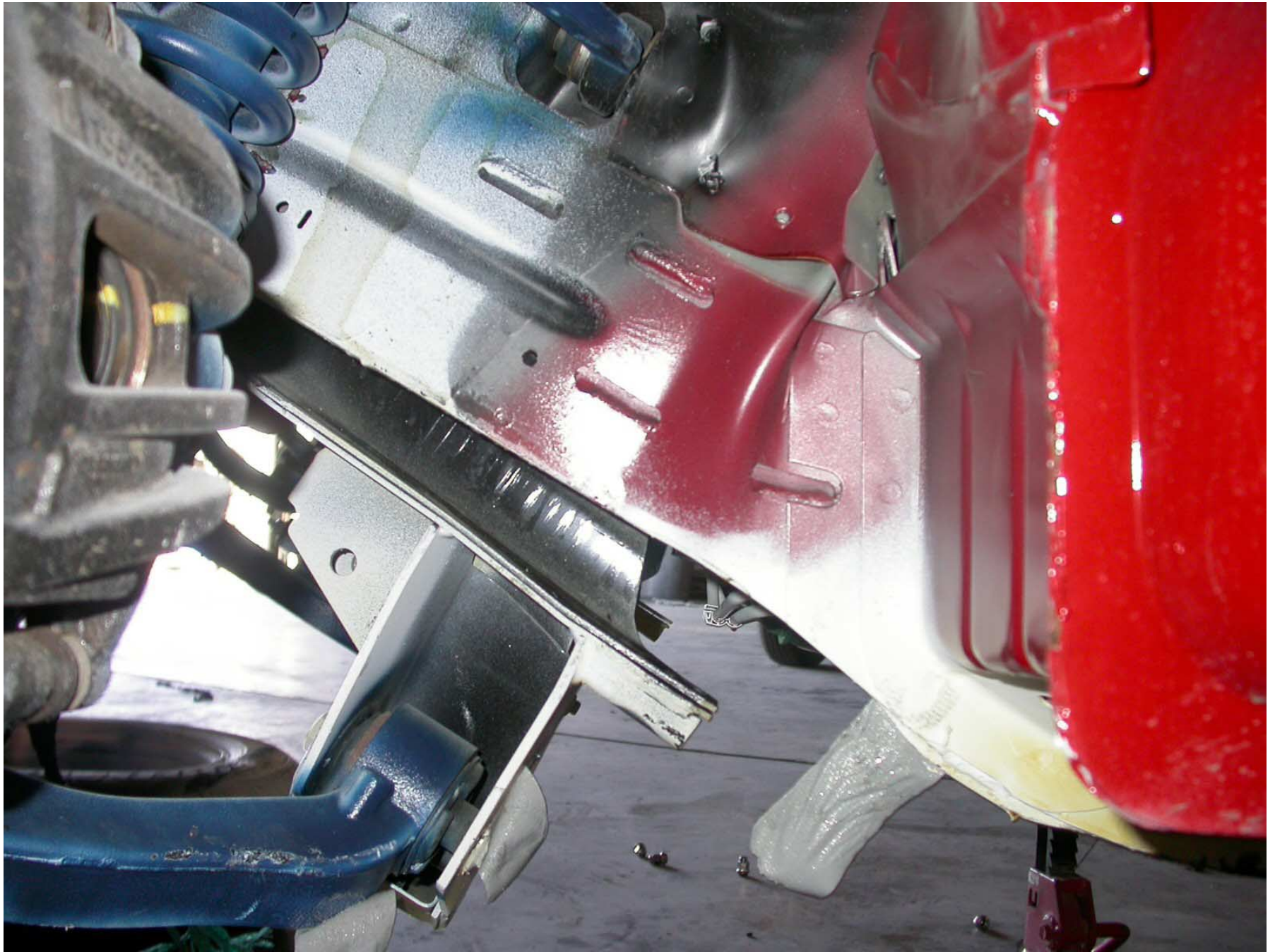


Figure A-44: Post-Test Left Front Wheel Well Close-up with Tire and Wheel Removed (Front of Test Vehicle is to the Left)



Figure A-45: Post-Test Left Front Wheel Well Underside View (Front of Vehicle is to the Left)



Figure A-46: Post-Test Left Front Bumper to Rail Attachment (Front of Vehicle is to the Left)



Figure A-47: Post-Test Left Front Sub Frame Mount Damage (Front of Vehicle is to the Left)



Figure A-48: Post-Test Right Front Wheel Well (Front of Test Vehicle is to the Right)



Figure A-49: Post-Test Right Front Wheel Well with Tire and Wheel Removed (Front of Test Vehicle is to the Right)

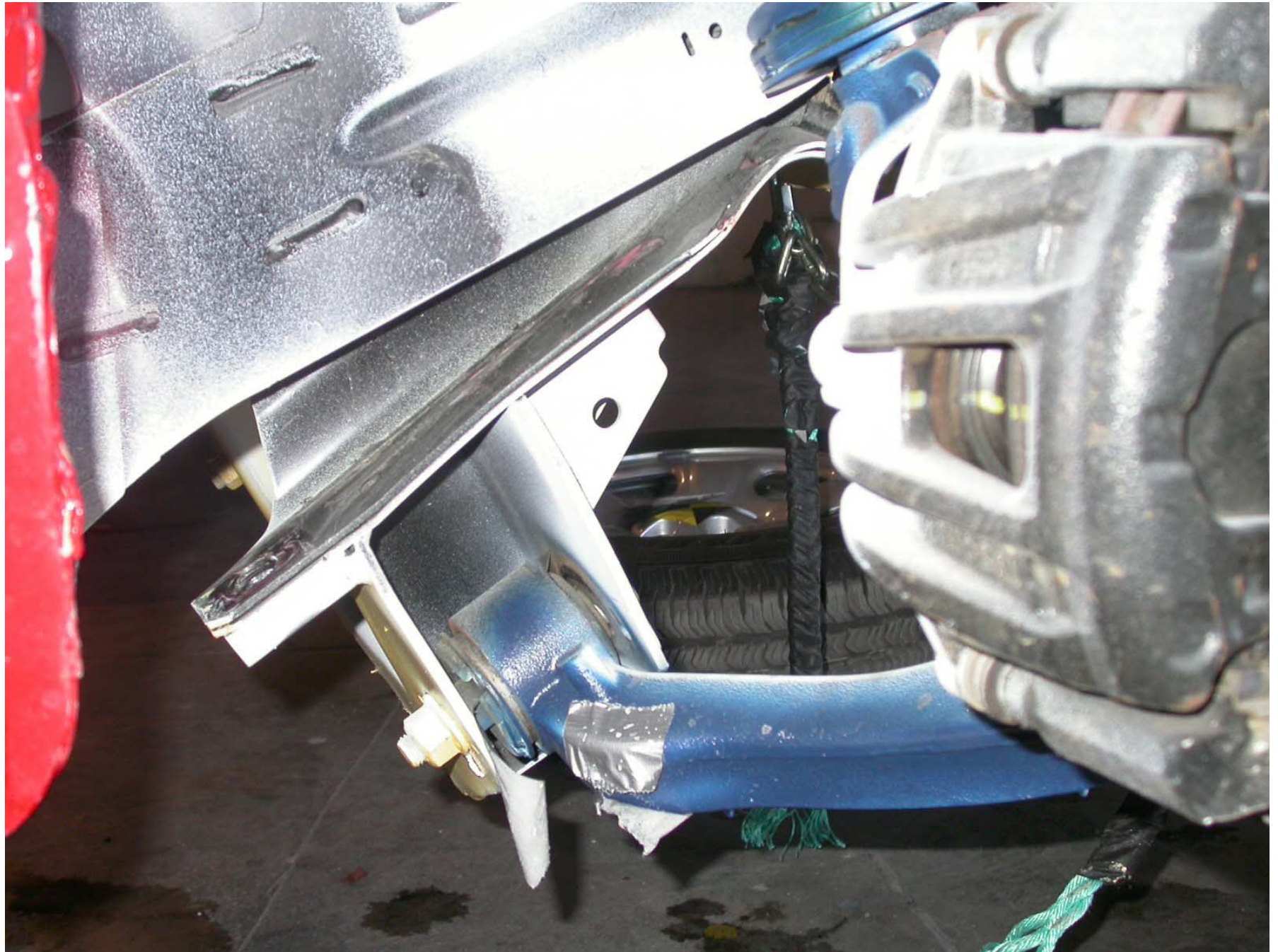


Figure A-50: Post-Test Right Front Wheel Well with Tire and Wheel Removed Close-up (Front of Test Vehicle is to the Right)

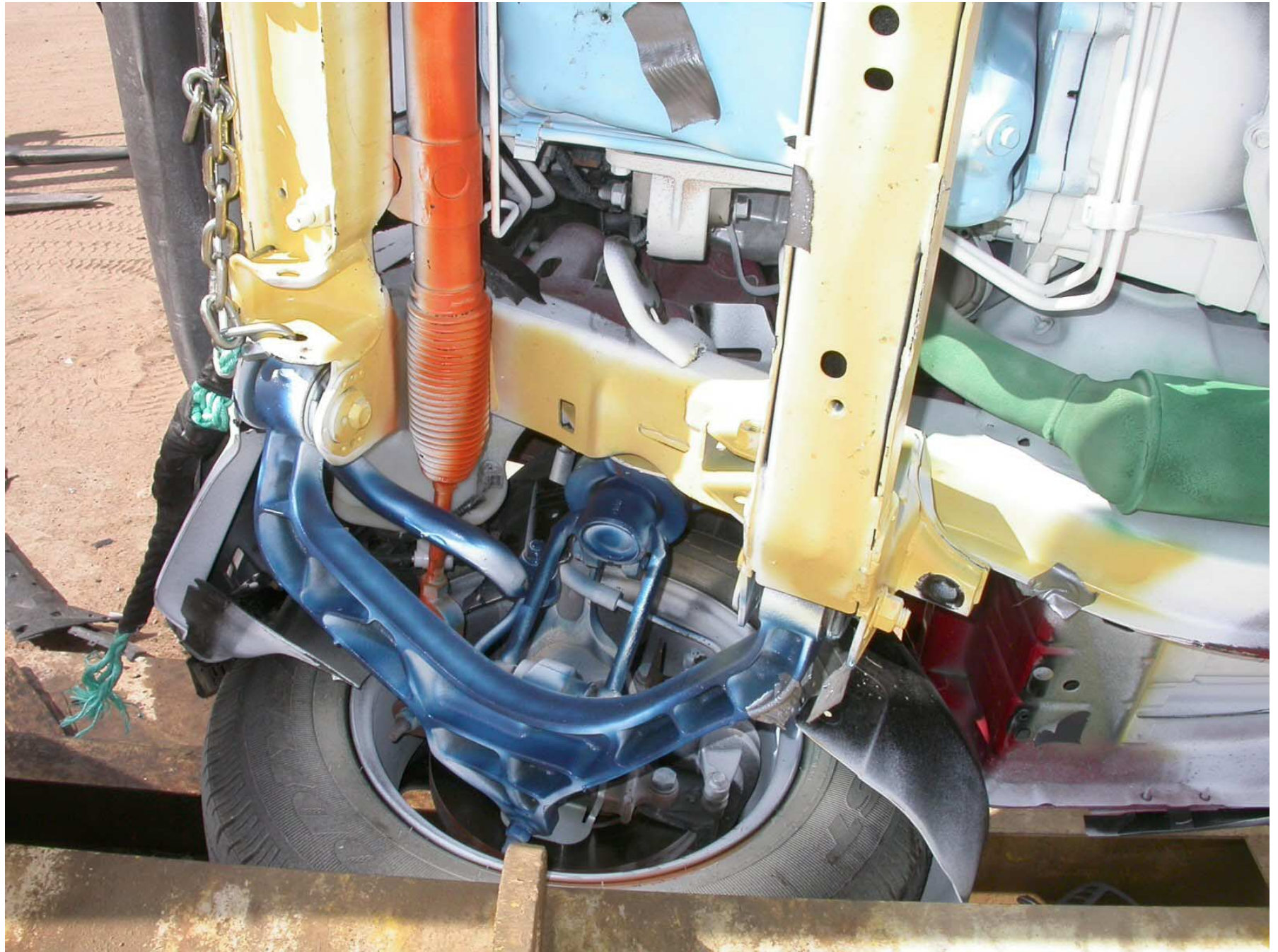


Figure A-51: Post-Test Right Front Wheel Well Underside View (Front of Test Vehicle is to the Left)



Figure A-52: Right Front Bumper to Rail Attachment (Front of Test Vehicle is to the Left)

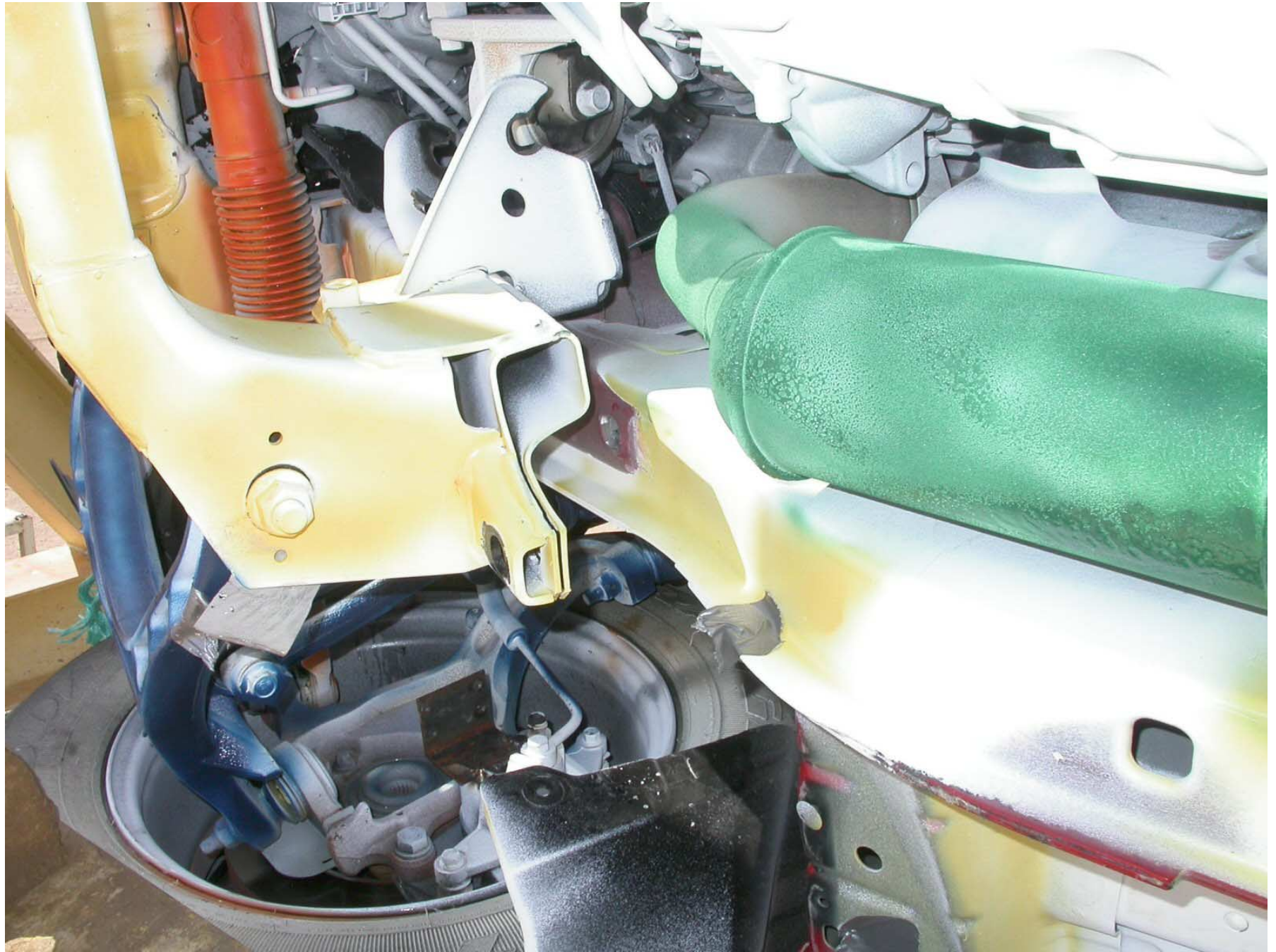


Figure A-53: Post-Test Right Front Right Sub Frame Mount Damage (Front of Test Vehicle is to the Left)



Figure A-54: Pre-Test Driver Dummy Front View (Head Position)



Figure A-55: Post-Test Driver Dummy Front View (Head Position)



Figure A-56: Pre-Test Driver Dummy Front Through Window



Figure A-57: Post-Test Driver Dummy Front Through Window



Figure A-58: Pre-Test Driver Dummy Door Open



Figure A-59: Post-Test Driver Dummy Door Open

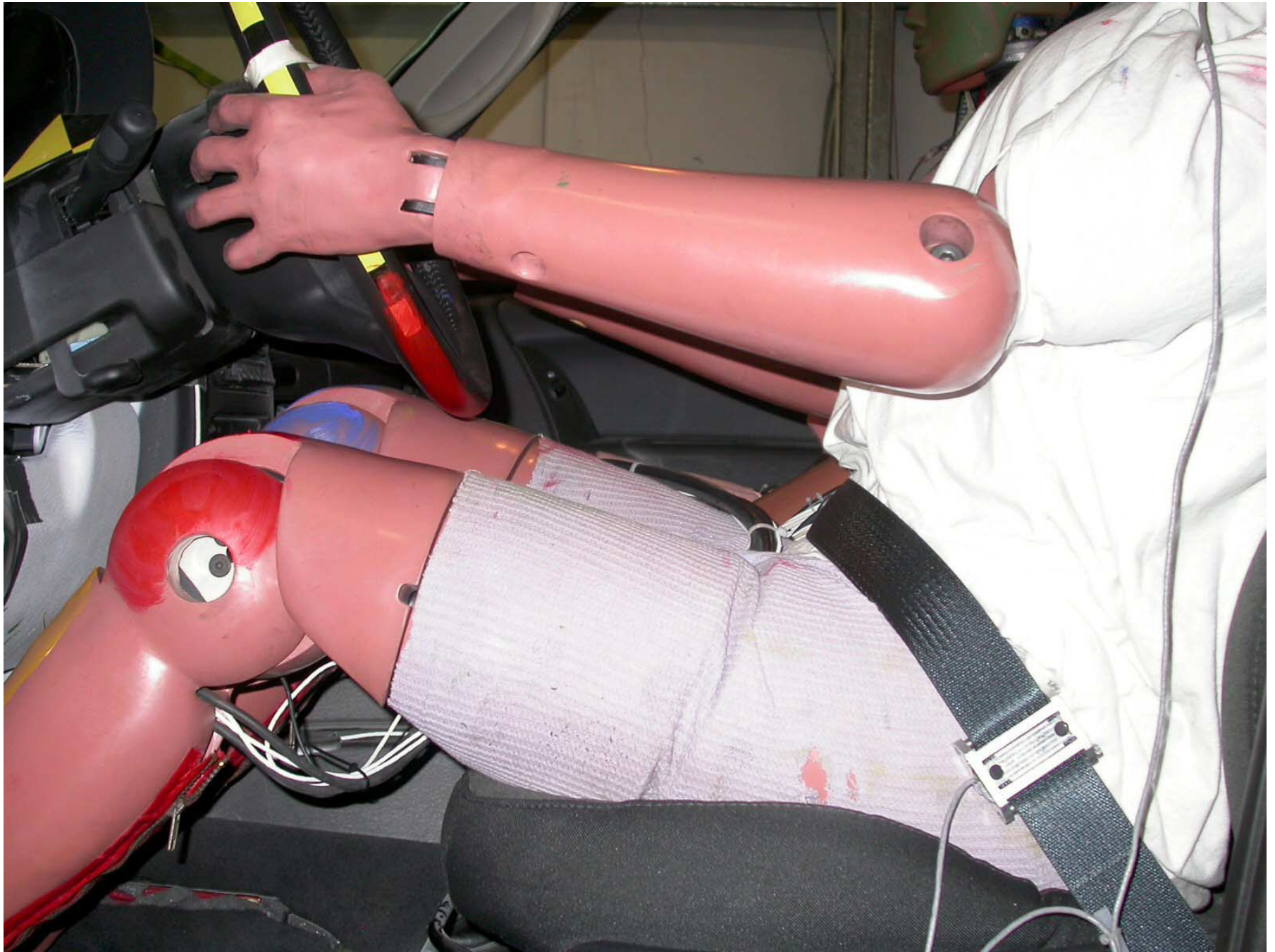


Figure A-60: Pre-Test Driver Dummy Abdomen



Figure A-61: Post-Test Driver Dummy Abdomen



Figure A-62: Pre-Test Driver Dummy Feet



Figure A-63: Post-Test Driver Dummy Feet



A-64

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Figure A-64: Pre-Test Driver Side Knee Bolster



Figure A-65: Post-Test Driver Side Knee Bolster



Figure A-66: Pre-Test Driver Side Floor Pan



Figure A-67: Post-Test Driver Side Floor Pan



Figure A-68: Pre-Test Driver Seat Track



Figure A-69: Post-Test Driver Seat Track



Figure A-70: Post-Test Driver Dummy Head



A-71

TR-P24104-10-NC

Figure A-71: Post-Test Driver Dummy Contact to Air Bag



A-72

TR-P24104-10-NC

Figure A-72: Post-Test Driver Dummy Contact With Seat Head Rest

A-73

TR-P24104-10-NC



Figure A-73: Post- Test Driver Dummy Contact With Door Panel

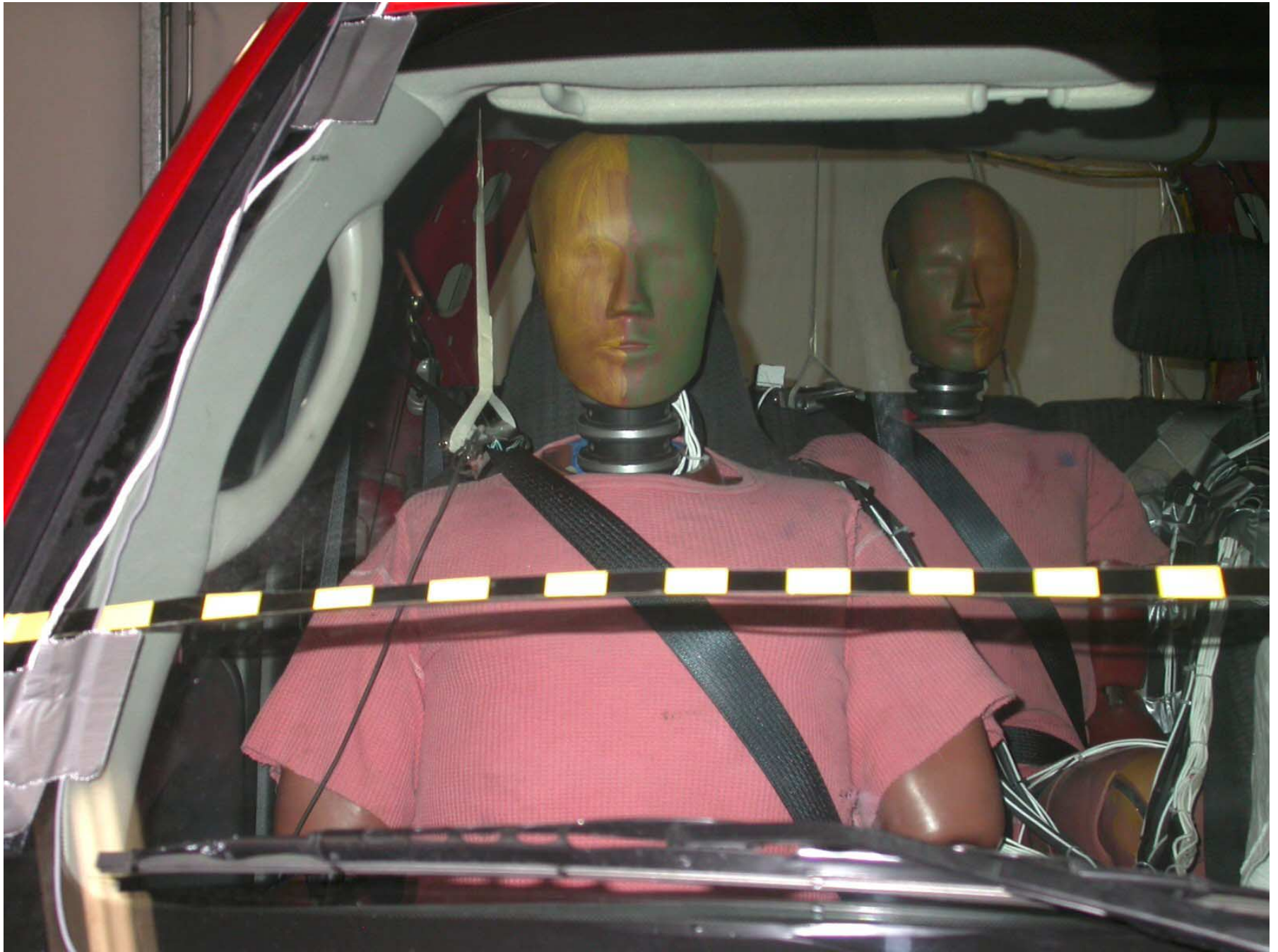


Figure A-74: Pre-Test Passenger Dummy Front View (Head Position)



Figure A-75: Post-Test Passenger Dummy Front View (Head Position)



Figure A-76: Pre-Test Passenger Dummy Front Through Window



Figure A-77: Post-Test Passenger Dummy Front Through Window



A-78

TR-P24104-10-NC

Figure A-78: Pre-Test Passenger Dummy Door Open



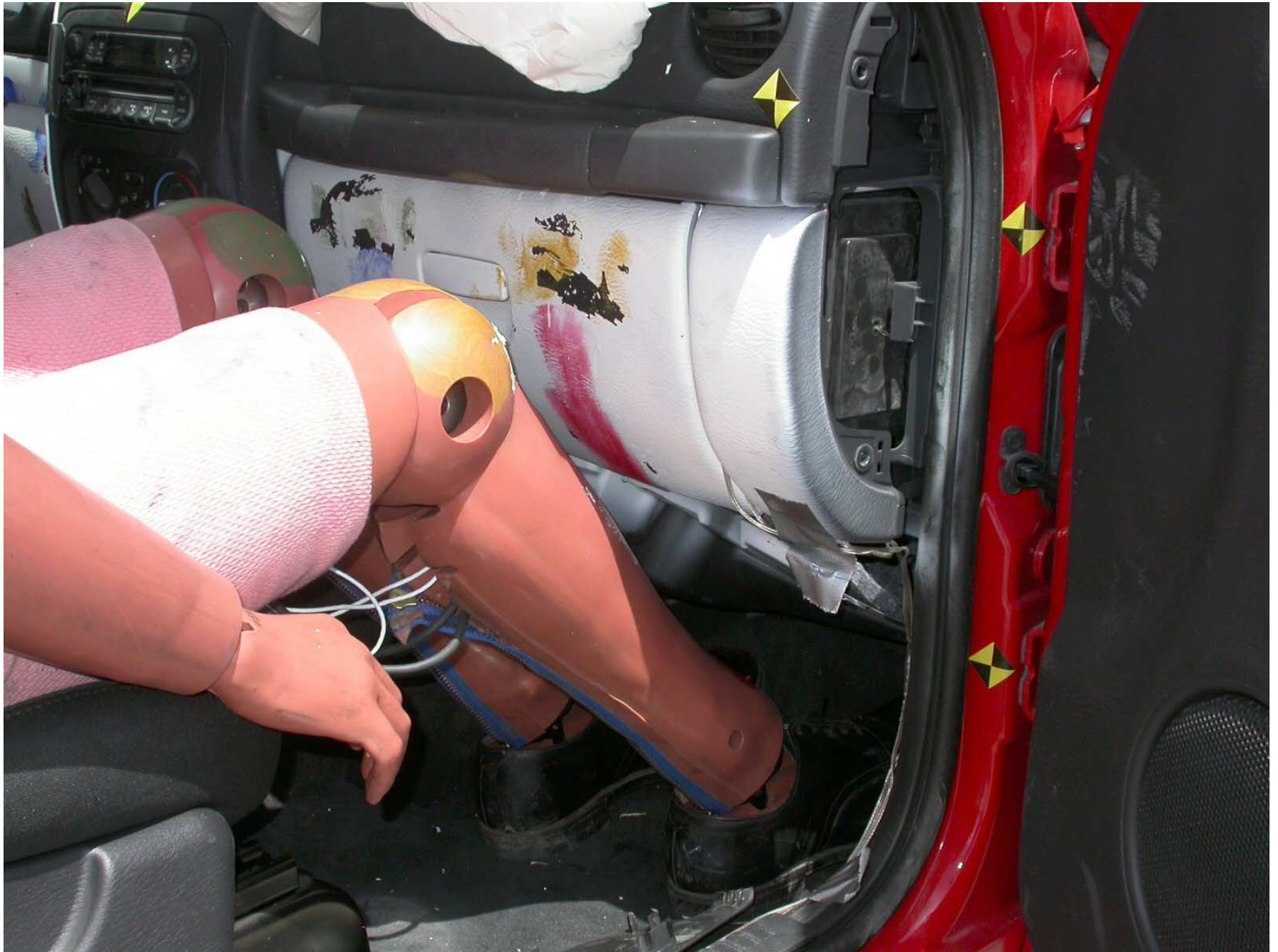
A-79

TR-P24104-10-NC

Figure A-79: Post-Test Passenger Dummy Door Open



Figure A-80: Pre-Test Passenger Dummy Feet



A-81

TR-P24104-10-NC

Figure A-81: Post-Test Passenger Dummy Feet



A-82

TR-P24104-10-NC

Figure A-82: Pre-Test Passenger Side Knee Bolster



A-83

TR-P24104-10-NC

Figure A-83: Post-Test Passenger Side Knee Bolster



Figure A-84: Pre-Test Passenger Side Floor Pan



A-85

TR-P24104-10-NC

Figure A-85: Post-Test Passenger Side Floor Pan



Figure A-86: Pre-Test Passenger Seat Track



Figure A-87: Post-Test Passenger Seat Track



Figure A-88: Post-Test Passenger Dummy Head



Figure A-89: Post-Test Passenger Dummy Contact to Air Bag



Figure A-90: Post-Test Passenger Dummy Contact With Seat Back



Figure A-91: Pre-Test Center Rear Dummy (Front View)



Figure A-92: Post-Test Center Rear Dummy (Front View)



Figure A-93: Pre-Test Rear Center Dummy Door Open (Left Side View)



Figure A-94: Post-Test Center Rear Dummy Door Open (Left Side View)



Figure A-95: Pre-Test Center Rear Dummy Left Leg



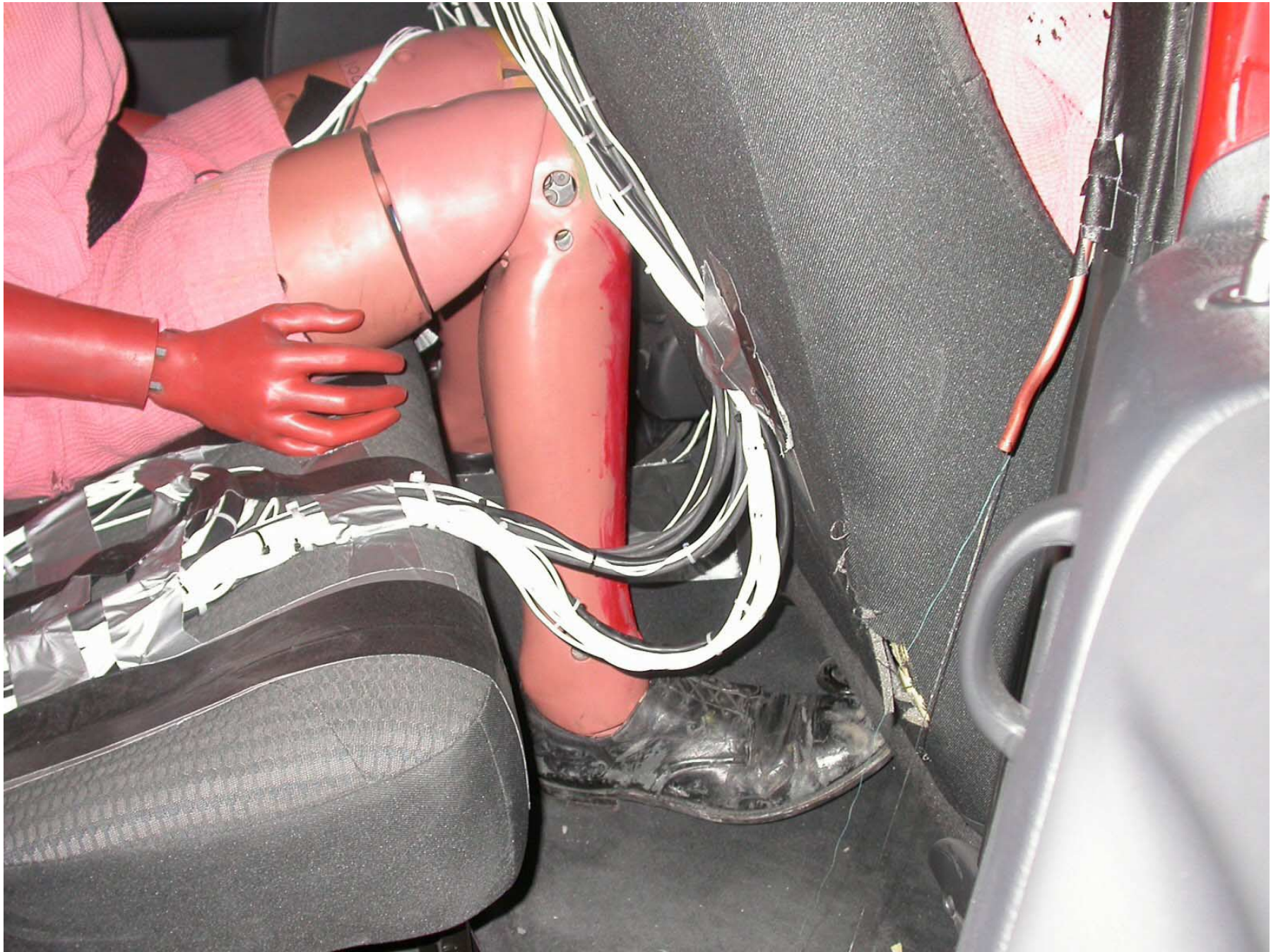
Figure A-96: Post-Test Center Rear Dummy Left Leg



Figure A-97: Pre-Test Center Rear Dummy Door Open (Right Side View)



Figure A-98: Post-Test Center Rear Dummy Door Open (Right Side View)



A-99

TR-P24104-10-NC

Figure A-99: Pre-Test Center Rear Dummy Right Leg

A-100

TR-P24104-10-NC



Figure A-100: Post-Test Center Rear Dummy Right Leg



Figure A-101: Pre-Test Center Rear Dummy Knees (Overhead View)



Figure A-102: Post-Test Center Rear Dummy Knees (Overhead View)

A-103

TR-P24104-10-NC



Figure A-103: Post-Test Center Rear Dummy Head to Knee Contact

A-104

TR-P24104-10-NC



Figure A-104: Post-Test Center Rear Dummy Contact Points

A-105

TR-P24104-10-NC



Figure A-105: Vehicle on Rollover Device (0°)

A-106

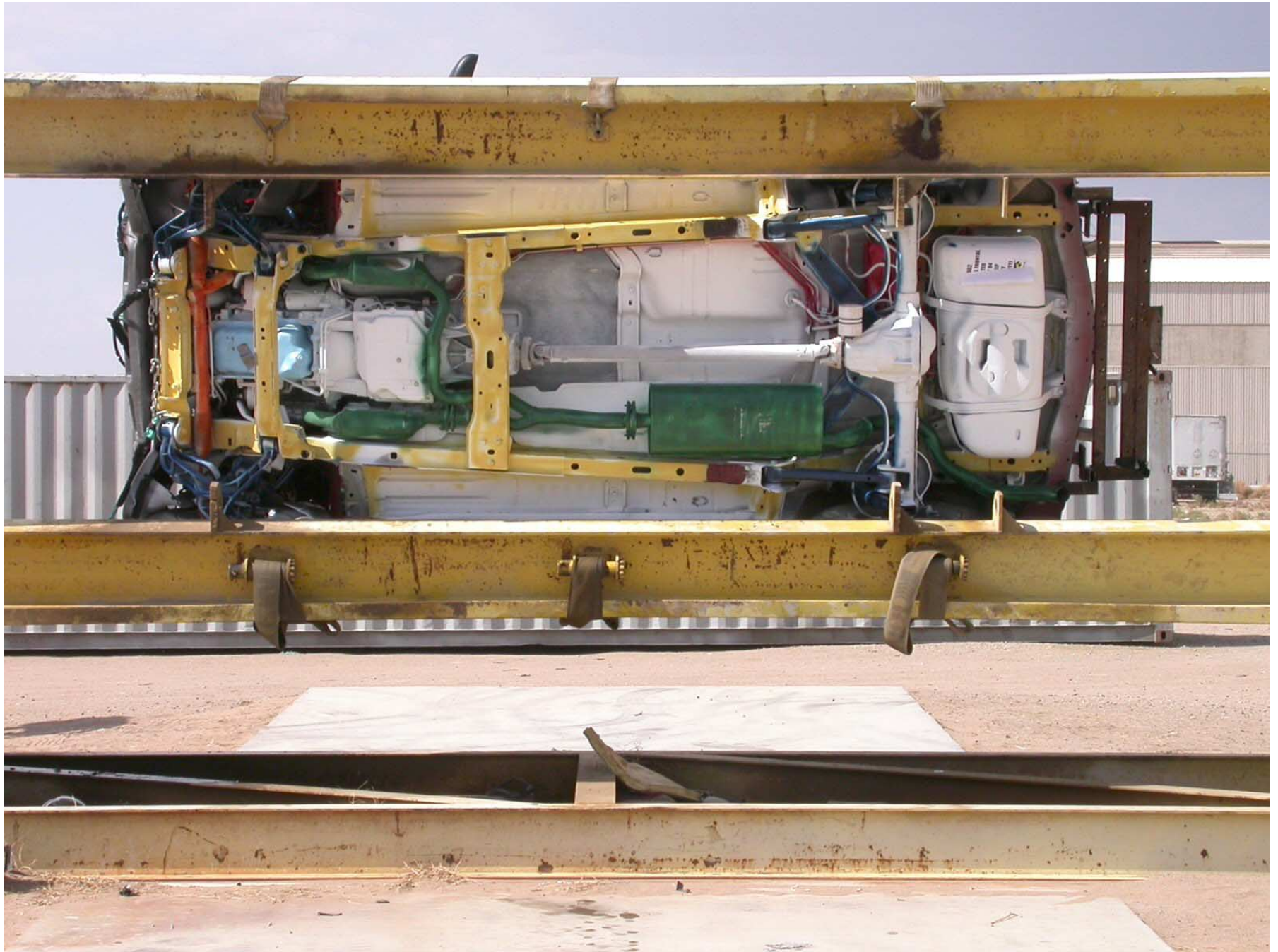
TR-P24104-10-NC



Figure A-106: Vehicle on Rollover Device (90°)



Figure A-107: Vehicle on Rollover Device (180°)



A-108

TR-P24104-10-NC

Figure A-108: Vehicle on Rollover Device (270°)



Figure A-109: Vehicle During Impact



Figure A-110: Driver's Airbag Label



TCEDT0094K0656



*P5JS05DX9AC

5JS05TRMAC

HERSTELLUNGSJHAR: 2004

528871

Figure A-111: Driver's Airbag Label

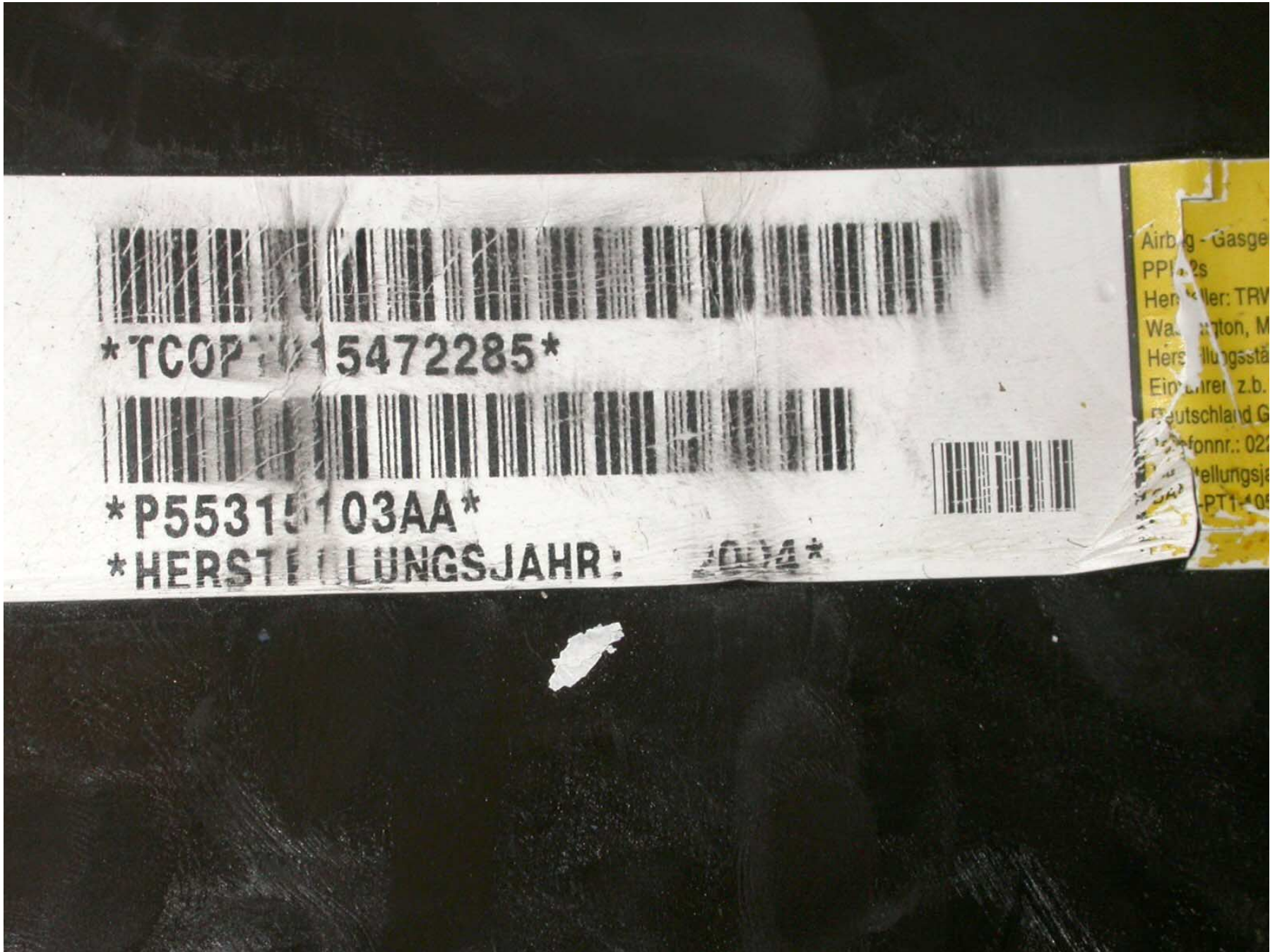


Figure A-112: Passenger's Airbag Label



Figure A-113: Passenger's Airbag Label

2004 MODEL YEAR Jeep® LIBERTY SPORT 2WD

PRICE INFORMATION

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL INCLUDING DEALER PREPARATION

Base Price: \$18,185

PRICE INFORMATION (cont'd)

OPTIONAL EQUIPMENT

Customer Preferred Package 288

\$2,285

JEEP LIBERTY SPORT 4X2
Exterior Color: Flame Red Clear Coat Exterior Paint
Interior Color: Dark Slate Gray
Interior - Cloth High-Back Bucket Seats
Rear 3.1L Power Tech V6
Transmission: 4-Speed Automatic Transmission
STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)

FUNCTIONAL / SAFETY FEATURES

Front Neck Generator Multistage Air Bags**
LATCH-Ready Child Seat Anchor System
Occupant Classification System
Enhanced Accident Response System
Four-Wheel Disc Brakes
IS43 Suspension
Power Rack-and-Pinion Steering
Rear Window Defroster
Variable Intermittent Windshield Wipers
19.3-Gallon Fuel Tank with Tethered Cap
Rear Window Wiper/Washer

INTERIOR FEATURES

Power Accessory Delay
Tilt Steering Column
Rear 65/35 Split Folding Bench Seat
AM/FM Stereo Radio with In-Car CD Player
Six Speakers
Full-Length Floor Console
Auxiliary 12V Power Outlet
Headlamp-Off Time Delay
Cargo Tie-Down Loops
Grocery Bag Hooks
EXTERIOR FEATURES
Fogger Swing-Gate Glass
Manual Foldaway Mirrors
Matching Spare Wheel
Full-Size Spare Tire
16" x 7" Drop Center Styled Steel Wheels
P215/75R16 BSW All-Season Tires

DESTINATION CHARGE \$810

TOTAL BEFORE DISCOUNT \$23,305

Customer Preferred Discount -\$1,670

TOTAL PRICE: * \$21,635

** Certified to the federal regulations for automatic passenger occupant classification.

WARRANTY COVERAGE

7-year or 70,000-mile Powertrain Limited Warranty+
Towing assistance during Warranty period+
3-year or 36,000-mile Basic Limited Warranty

Assembly Point/Part of factory: TOLEDO, OHIO, U.S.A.
VIN: 1L4 GK4BK14M1-2295833
L4-NEW 2935
0124
SPRINT, 4848S, 06
VICTORVILLE MOTORS INC
14330 SEVENM STREET
VICTORVILLE, CA 92392-4272
*MSRP. EXcludes tax, title, license, and dealer fees. **MSRP. Excludes tax, title, license, and dealer fees. +See dealer for details. †See dealer for details.

For more information visit: www.jeep.com
or call 1-800-925-JEEP

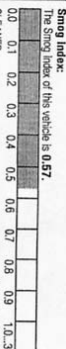
DaimlerChrysler
Motors Company LLC

THIS VEHICLE IS MANUFACTURED TO MEET SPECIFIC UNITED STATES REQUIREMENTS. THIS VEHICLE IS NOT MANUFACTURED FOR SALE OR REGISTRATION OUTSIDE OF THE UNITED STATES.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS COUNTRY:
U.S./CANADIAN PARTS CONTENT: 83 %
NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.
FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
TOLEDO, OHIO, U.S.A.
COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: UNITED STATES

Ask dealer for a copy of the limited warranty.
+A deductible applies to the 7-year/70,000-mile powertrain limited warranty. 7/70 Transferable to second owner with fee. Excludes normal maintenance and wear items.
+See dealer for details. †See dealer for details. Motor Club Inc., Boston, MA 02155. Vehicle # (800) 821-2779 for prior authorization to receive these benefits.



Ask Your Dealer About A DaimlerChrysler Service Contract On This Vehicle
Or Call 1-800-442-2666.

Compare this vehicle to others in the FREE FUEL ECONOMY GUIDE available at the dealer.

CITY MPG
17



HIGHWAY MPG
22

Actual Mileage will vary with
outdoors, driving conditions,
driving habits and vehicle's
load. EPA estimates reported to
EPA indicate that the mileage
of vehicles with these estimates
will achieve between
14 and 20 mpg in the city,
and between
18 and 26 mpg in the
highway.

2004 LIBERTY 2WD
6-CYL, 3.7 L (228 CID)
4-SPEED AUTOMATIC
LOCKUP TORQUE CONVERTER
EPA ESTIMATED CITY/HiWAY/COMBINE
MPG 17/22/18
Estimated Annual Fuel Cost:
\$ 1105

For Comparison Shopping,
all vehicles classified as
SPECIAL PURPOSE
have been issued an EPA
rating ranging from 10 to 14
mpg in the city,
and 14 to 30 mpg highway.

See www.fueleconomy.gov

Figure A-109: Window Sticker

APPENDIX B

DATA PLOTS

LIST OF DATA PLOTS

Data Plot	Page	
B-1	Driver (H3 95%) Head Primary X	B-1
	Driver (H3 95%) Head Primary Y	B-1
	Driver (H3 95%) Head Primary Z	B-1
	Driver (H3 95%) Head Resultant Primary	B-1
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B-18	Passenger (H3 95%) Head Primary X	B-18
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B-20	Passenger (H3 95%) Head Redundant X	B-20
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LIST OF DATA PLOTS...(Continued)

Data Plot	Page	
B-22	Passenger (H3 95%) Upper Neck Force X	B-22
	Passenger (H3 95%) Upper Neck Force Y	B-22
	Passenger (H3 95%) Upper Neck Force Z	B-22
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	Passenger (H3 95%) Upper Neck Moment Z	B-23
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B-24	Passenger (H3 95%) Chest Primary X	B-24
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	Passenger (H3 95%) Chest Primary Z	B-24
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B-25	Passenger (H3 95%) Chest Primary X Velocity	B-25
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B-26	Passenger (H3 95%) Chest Redundant X	B-26
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B-28	Passenger (H3 95%) Chest Displacement	B-28
B-29	Passenger (H3 95%) Left Femur Force	B-29
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B-30	Passenger (H3 95%) Left Upper Tibia Moment X	B-30
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B-32	Passenger (H3 95%) Right Upper Tibia Moment X	B-32
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Data Plot	Page	
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	Passenger (H3 95%) Right Lower Tibia Moment X	B-33
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B-34	Passenger (H3 95%) Lap Belt Force	B-34
	Passenger (H3 95%) Shoulder Belt Force	B-34
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B-35	Center Rear Passenger (H3 50%) Primary X	B-35
	Center Rear Passenger (H3 50%) Head Primary Y	B-35
	Center Rear Passenger (H3 50%) Head Primary Z	B-35
	Center Rear Passenger (H3 50%) Head Resultant Primary	B-35
B-36	Center Rear Passenger (H3 50%) Head Primary X Velocity	B-36
	Center Rear Passenger (H3 50%) Head Primary X Displacement	B-36
B-37	Center Rear Passenger (H3 50%) NAAH CG X	B-37
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	Center Rear Passenger (H3 50%) NAAH CG Resultant	B-37
B-38	Center Rear Passenger (H3 50%) NAAH CG X Velocity	B-38
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B-39	Center Rear Passenger (H3 50%) NAHA Xarm-X	B-39
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B-41	Center Rear Passenger (H3 50%) Upper Neck Force X	B-41
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	Center Rear Passenger (H3 50%) Upper Neck Force Z	B-41
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B-42	Center Rear Passenger (H3 50%) Upper Neck Moment X	B-42
	Center Rear Passenger (H3 50%) Upper Neck Moment Y	B-42
	Center Rear Passenger (H3 50%) Upper Neck Moment Z	B-42
	Center Rear Passenger (H3 50%) Upper Neck Moment Resultant	B-42

LIST OF DATA PLOTS...(Continued)

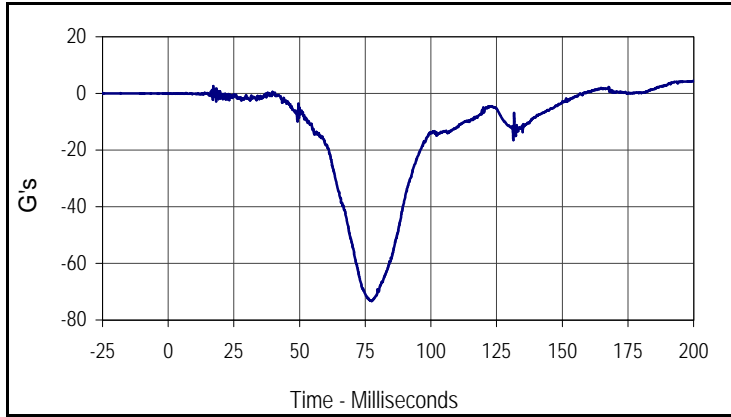
Data Plot	Page	
B-43	Center Rear Passenger (H3 50%) Chest Primary X	B-43
	Center Rear Passenger (H3 50%) Chest Primary Y	B-43
	Center Rear Passenger (H3 50%) Chest Primary Z	B-43
	Center Rear Passenger (H3 50%) Chest Resultant Primary	B-43
B-44	Center Rear Passenger (H3 50%) Chest Primary X Velocity	B-44
	Center Rear Passenger (H3 50%) Chest Primary X Displacement	B-44
B-45	Center Rear Passenger (H3 50%) Chest Redundant X	B-45
	Center Rear Passenger (H3 50%) Chest Redundant Y	B-45
	Center Rear Passenger (H3 50%) Chest Redundant Z	B-45
	Center Rear Passenger (H3 50%) Chest Resultant Redundant	B-45
B-46	Center Rear Passenger (H3 50%) Chest Redundant X Velocity	B-46
	Center Rear Passenger (H3 50%) Chest Redundant X Displacement	B-46
B-47	Center Rear Passenger (H3 50%) Chest Displacement	B-47
B-48	Center Rear Passenger (H3 50%) Left Femur Force	B-48
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	Center Rear Passenger (H3 50%) Left Knee Displacement	B-48
	Center Rear Passenger (H3 50%) Right Knee Displacement	B-48
B-49	Center Rear Passenger Lap Belt Force	B-49
	Center Rear Passenger Belt Force	B-49
	Center Rear Passenger Belt Pullout	B-49
B-50	Vehicle Left Rear X	B-50
	Vehicle Left Rear X Velocity	B-50
	Vehicle Left Rear X Displacement	B-50
B-51	Vehicle Right Rear X	B-51
	Vehicle Right Rear X Velocity	B-51
	Vehicle Right Rear X Displacement	B-51
B-52	Vehicle Left Brake Caliper	B-52
	Vehicle Left Brake Caliper Velocity	B-52
	Vehicle Left Brake Caliper Displacement	B-52
B-53	Vehicle Right Brake Caliper	B-53
	Vehicle Right Brake Caliper Velocity	B-53
	Vehicle Right Brake Caliper Displacement	B-53

LIST OF DATA PLOTS...(Continued)

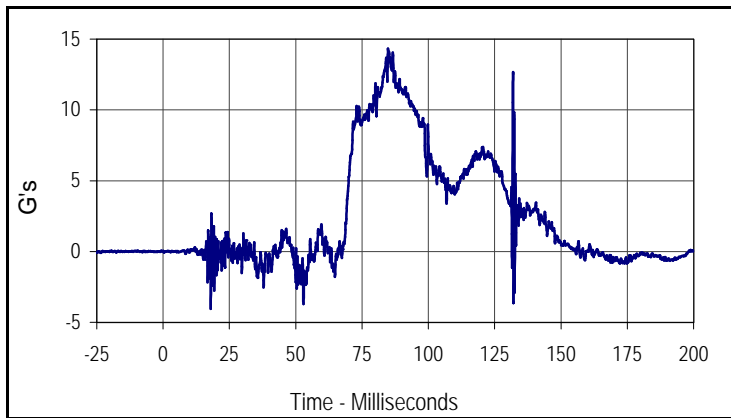
Data Plot	Page	
B-54	Vehicle Instrument Panel	B-54
	Vehicle Instrument Panel Velocity	B-54
	Vehicle Instrument Panel Displacement	B-54
B-55	Vehicle Engine Top	B-55
	Vehicle Engine Top Velocity	B-55
	Vehicle Engine Top Displacement	B-55
B-56	Vehicle Engine Bottom	B-56
	Vehicle Engine Bottom Velocity	B-56
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B-57	Vehicle Toe Pan Accelerator X	B-57
	Vehicle Toe Pan Accelerator X Velocity	B-57
	Vehicle Toe Pan Accelerator X Displacement	B-57
B-58	Vehicle Toe Pan Accelerator Z	B-58
	Vehicle Toe Pan Accelerator Z Velocity	B-58
	Vehicle Toe Pan Accelerator Z Displacement	B-58
B-59	Vehicle Toe Pan Foot Rest X	B-59
	Vehicle Toe Pan Foot Rest X Velocity	B-59
	Vehicle Toe Pan Foot Rest X Displacement	B-59
B-60	Vehicle Toe Pan Foot Rest Z	B-60
	Vehicle Toe Pan Foot Rest Z Velocity	B-60
	Vehicle Toe Pan Foot Rest Z Displacement	B-60
B-61	Vehicle Rear Deck Z	B-61
	Vehicle Rear Deck Z Velocity	B-61
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B-62	Vehicle Rear Center Compartment X	B-62
	Vehicle Rear Center Compartment X Velocity	B-62
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B-63	Driver Airbag Squib Stage 1	B-63
	Driver Airbag Squib Stage 2	B-63
	Driver Pre-Tensioner Squib	B-63
B-64	Passenger Airbag Squib Stage 1	B-64
	Passenger Airbag Squib Stage 2	B-64
	Passenger Pre-Tensioner Squib	B-64

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

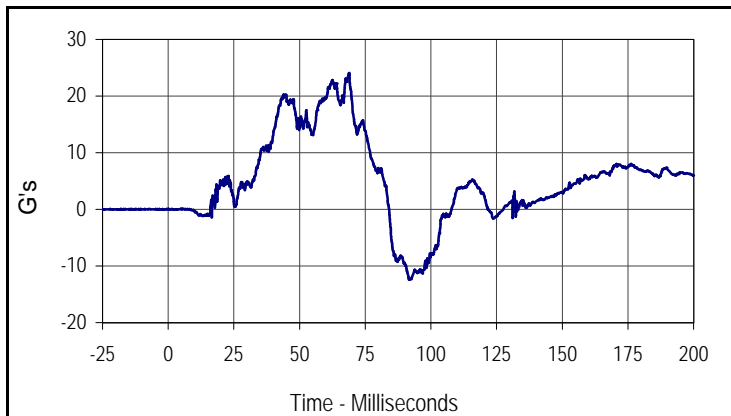
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 NHTSA No.: R40402



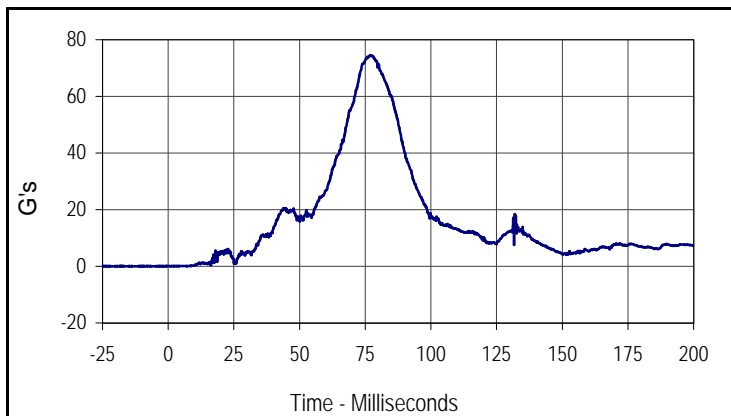
Curve Description			
Driver (95th) Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
4.4	199.9	-73.3	77.5



Curve Description			
Driver (95th) Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
14.3	84.8	-4.0	18.0



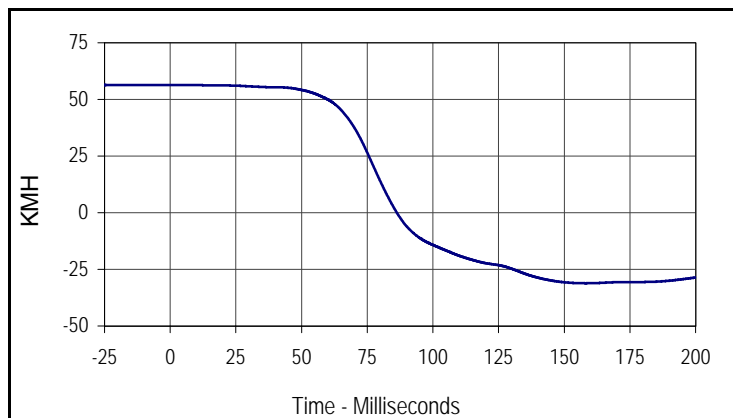
Curve Description			
Driver (95th) Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
24.1	68.9	-12.4	91.8



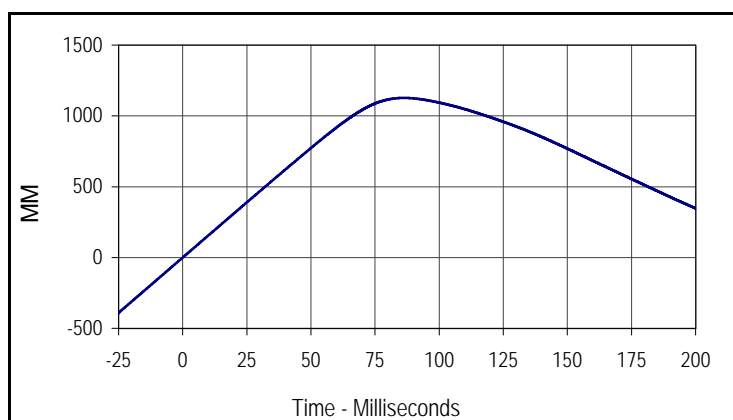
Curve Description			
Driver (95th) Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
74.5	76.9	0.0	0.8

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



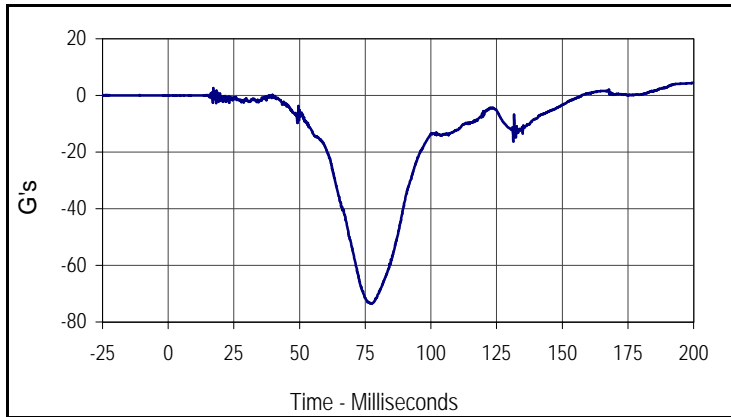
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Driver (95th) Head Primary X Velocity			
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001	IN1	180	KMH
Max	Time	Min	Time
56.3	0.0	-31.1	158.2



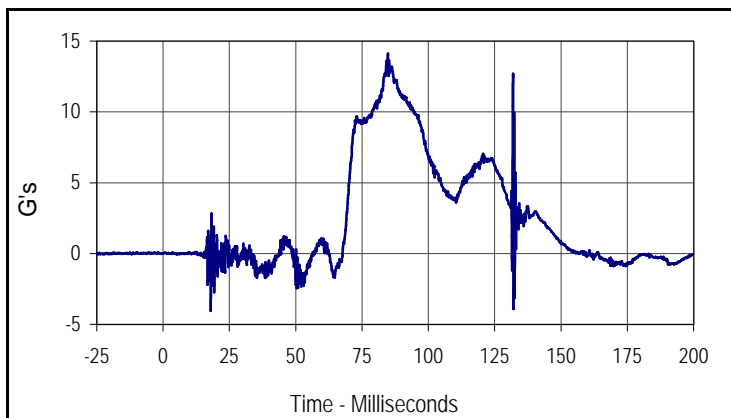
Curve Description			
Driver (95th) Head Primary X Displacement			
CURNO	Type	SAE Class	Units
001	IN2	180	MM
Max	Time	Min	Time
1127.1	86.3	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

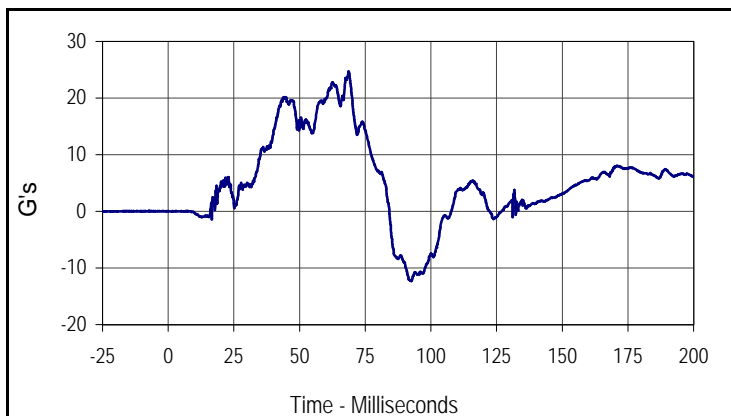
Test Date: 8/12/04
 NHTSA No.: R40402



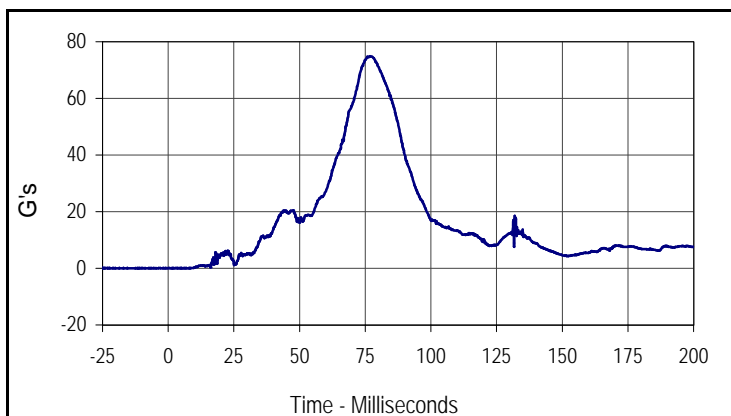
Curve Description			
Driver (95th) Head Redundant X			
CURNO	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
4.4	200.0	-73.6	77.5



Curve Description			
Driver (95th) Head Redundant Y			
CURNO	Type	SAE Class	Units
005	FIL	1000	G's
Max	Time	Min	Time
14.1	84.8	-4.0	18.0



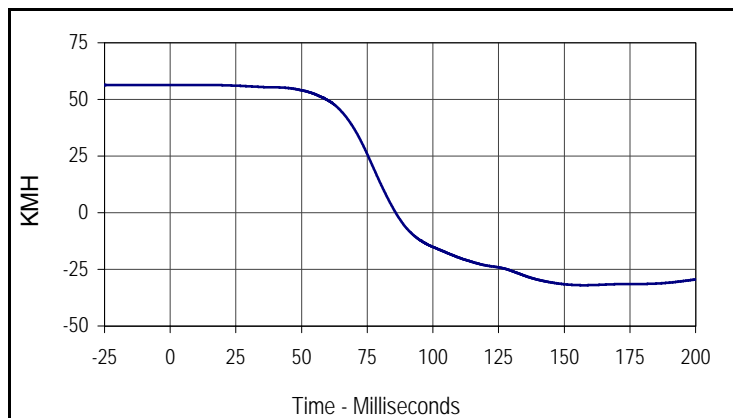
Curve Description			
Driver (95th) Head Redundant Z			
CURNO	Type	SAE Class	Units
006	FIL	1000	G's
Max	Time	Min	Time
24.7	68.7	-12.3	92.6



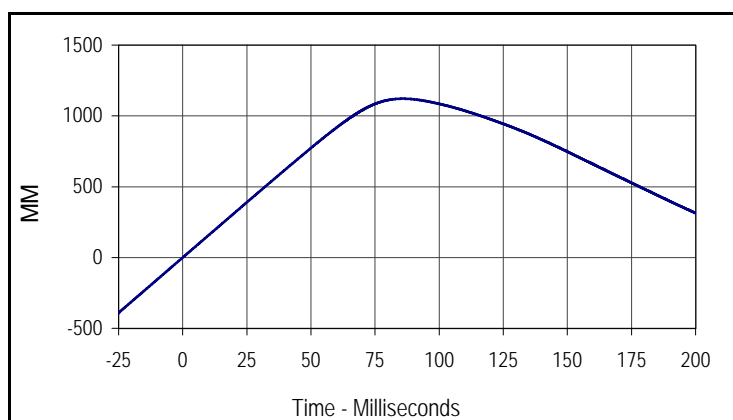
Curve Description			
Driver (95th) Head Resultant Redundant			
CURNO	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
74.9	76.9	0.0	5.7

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



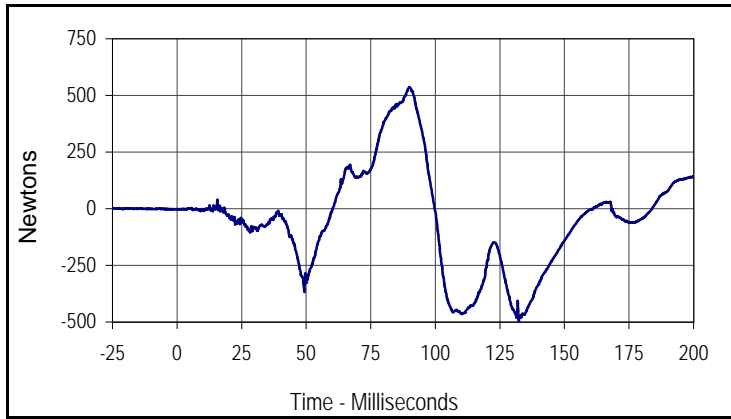
Curve Description			
Driver (95th) Head Redundant X Velocity			
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Max	Time	Min	Time
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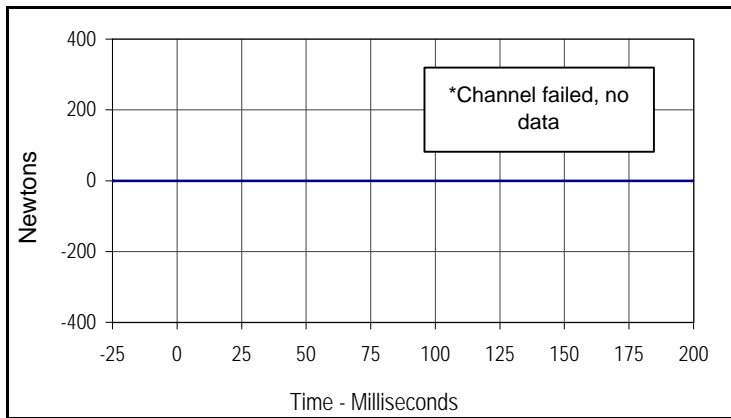
Curve Description			
Driver (95th) Head Redundant X Displacement			
CURNO	Type	SAE Class	Units
004	IN2	180	MM
Max	Time	Min	Time
1121.7	85.8	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402

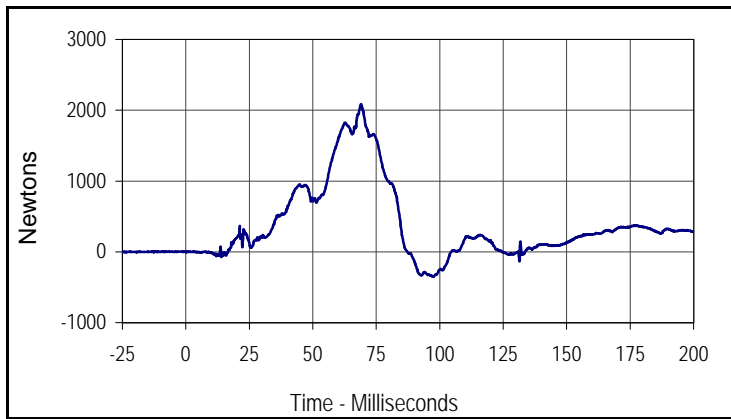


Curve Description			
Driver (95th) Upper Neck Force X			
CURNO	Type	SAE Class	Units
007	FIL	1000	Newtons
Max	Time	Min	Time
536.3	89.9	-497.0	132.3

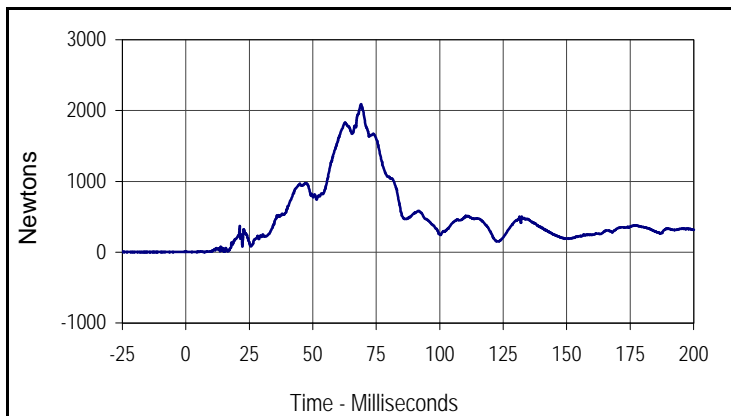


Curve Description			
Driver (95th) Upper Neck Force Y			
CURNO	Type	SAE Class	Units
008	FIL	1000	Newtons
Max	Time	Min	Time
0.0	0.0	0.0	0.0

*Channel failed, no data



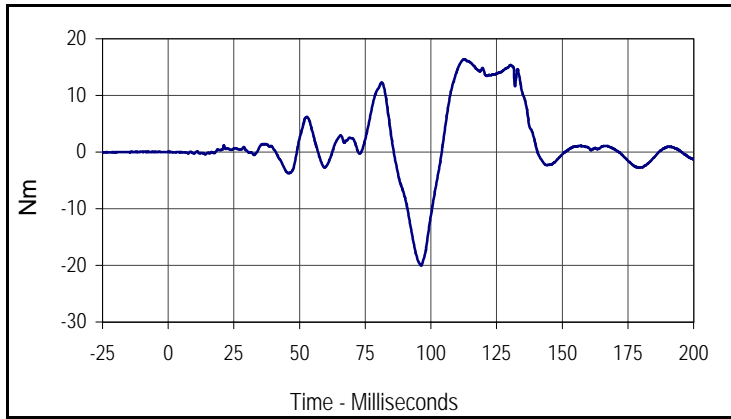
Curve Description			
Driver (95th) Upper Neck Force Z			
CURNO	Type	SAE Class	Units
009	FIL	1000	Newtons
Max	Time	Min	Time
2087.7	69.0	-349.5	97.5



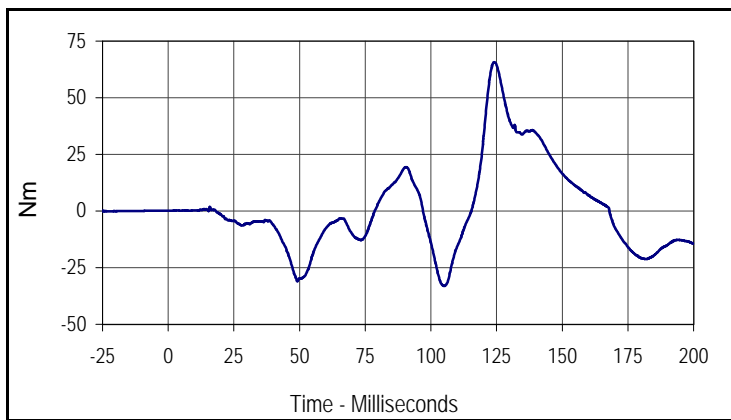
Curve Description			
Driver (95th) Upper Neck Force Resultant			
CURNO	Type	SAE Class	Units
007	RES	1000	Newtons
Max	Time	Min	Time
2092.2	69.0	0.6	7.3

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

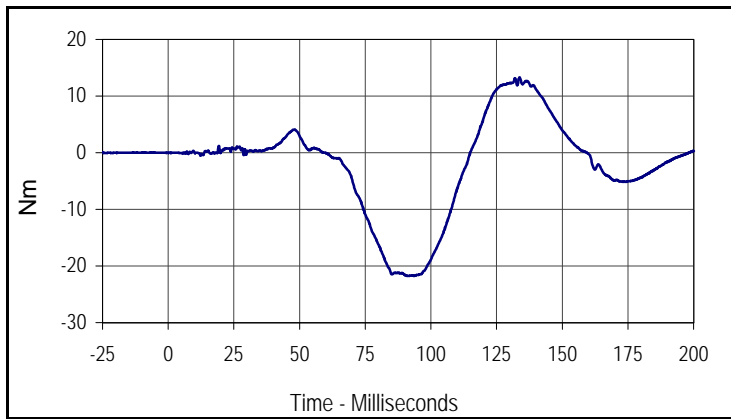
Test Date: 8/12/04
 NHTSA No.: R40402



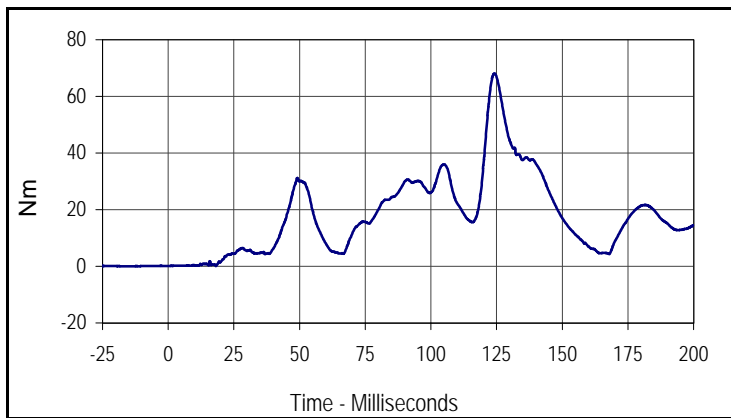
Curve Description			
Driver (95th) Upper Neck Moment X			
CURNO	Type	SAE Class	Units
010	FIL	600	Nm
Max	Time	Min	Time
16.4	112.6	-20.1	96.3



Curve Description			
Driver (95th) Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
011	FIL	600	Nm
Max	Time	Min	Time
65.7	124.2	-33.0	105.1



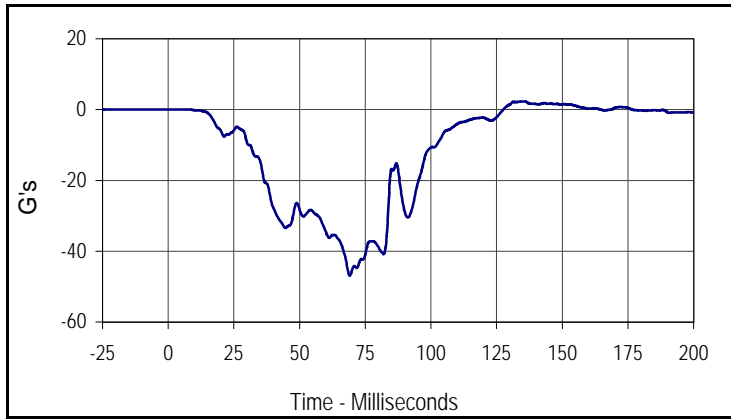
Curve Description			
Driver (95th) Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
012	FIL	600	Nm
Max	Time	Min	Time
13.3	133.8	-21.8	93.6



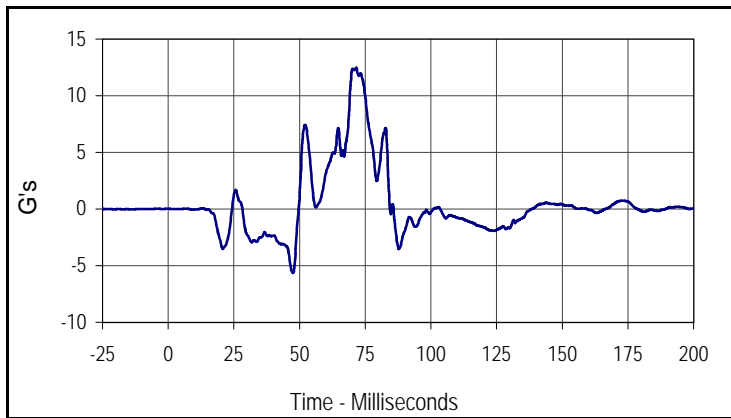
Curve Description			
Driver (95th) Upper Neck Moment Resultant			
CURNO	Type	SAE Class	Units
010	RES	600	Nm
Max	Time	Min	Time
68.0	124.2	0.1	18.1

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

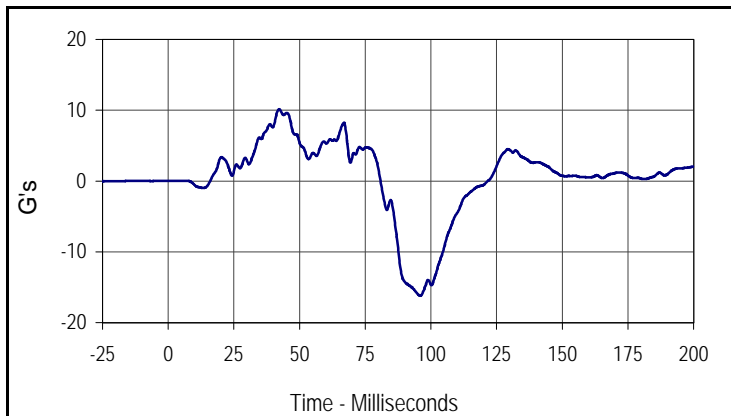
Test Date: 8/12/04
 NHTSA No.: R40402



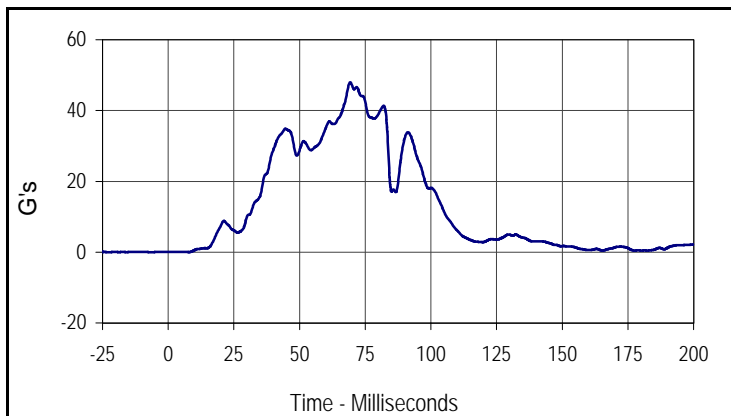
Curve Description			
Driver (95th) Chest Primary X			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.3	134.3	-46.9	69.1



Curve Description			
Driver (95th) Chest Primary Y			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
12.5	71.5	-5.6	47.5



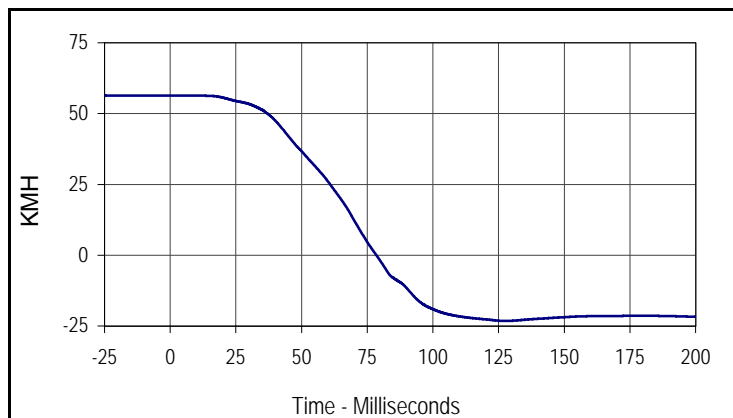
Curve Description			
Driver (95th) Chest Primary Z			
CURNO	Type	SAE Class	Units
015	FIL	180	G's
Max	Time	Min	Time
10.1	42.2	-16.2	95.9



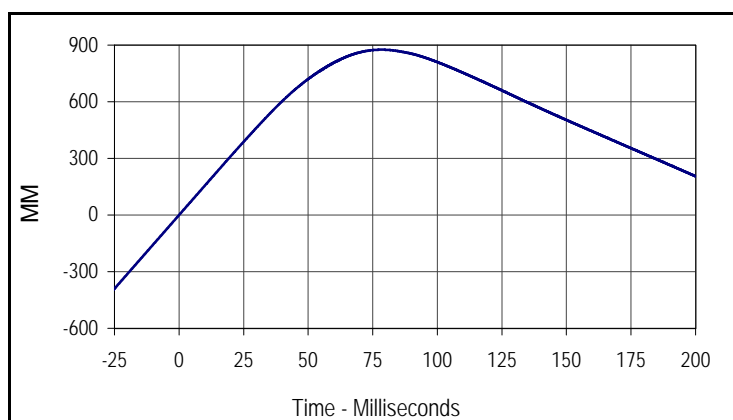
Curve Description			
Driver (95th) Chest Resultant Primary			
CURNO	Type	SAE Class	Units
013	RES	180	G's
Max	Time	Min	Time
48.0	69.3	0.0	7.9

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



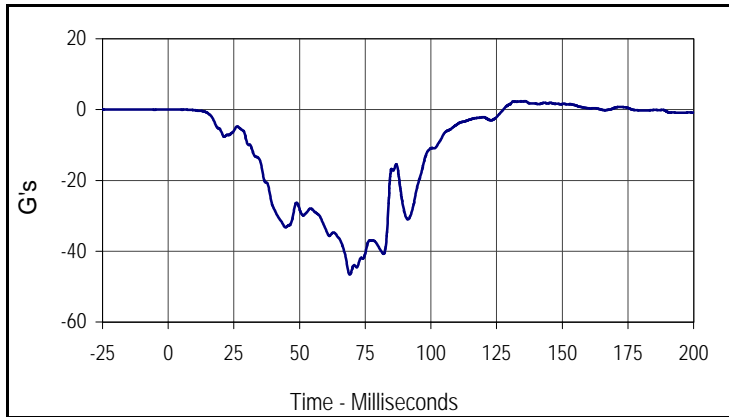
Curve Description			
Driver (95th) Chest Primary X Velocity			
CURNO	Type	SAE Class	Units
013	IN1	180	KMH
Max	Time	Min	Time
56.3	8.2	-23.2	127.6



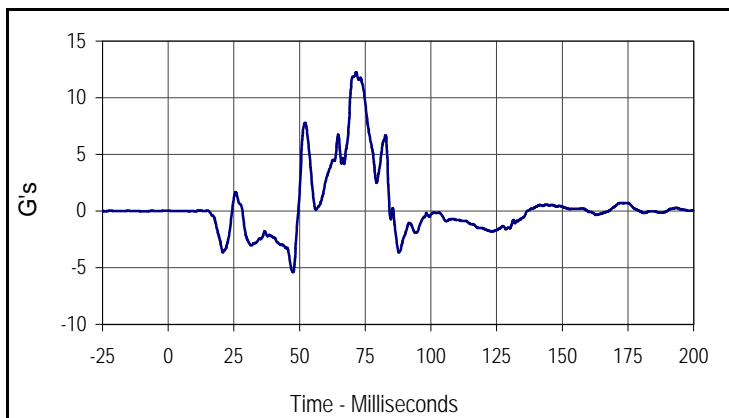
Curve Description			
Driver (95th) Chest Primary X Displacement			
CURNO	Type	SAE Class	Units
013	IN2	180	MM
Max	Time	Min	Time
875.7	78.5	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

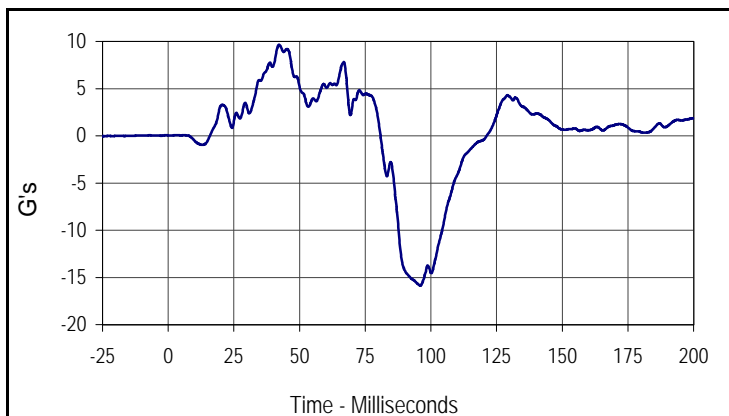
Test Date: 8/12/04
 NHTSA No.: R40402



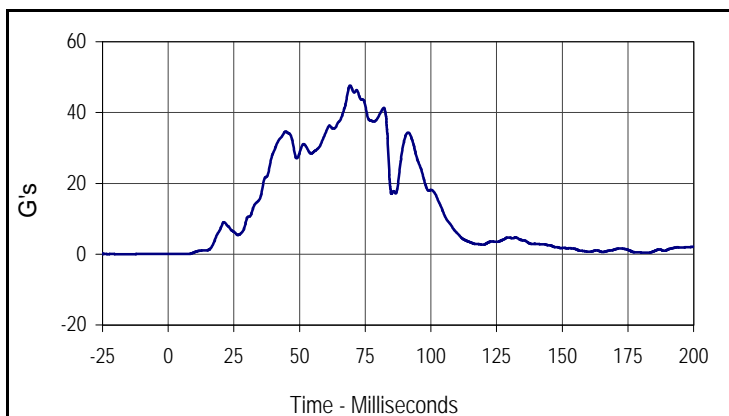
Curve Description			
Driver (95th) Chest Redundant X			
CURNO	Type	SAE Class	Units
016	FIL	180	G's
Max	Time	Min	Time
2.4	135.8	-46.7	69.1



Curve Description			
Driver (95th) Chest Redundant Y			
CURNO	Type	SAE Class	Units
017	FIL	180	G's
Max	Time	Min	Time
12.3	71.6	-5.4	47.5



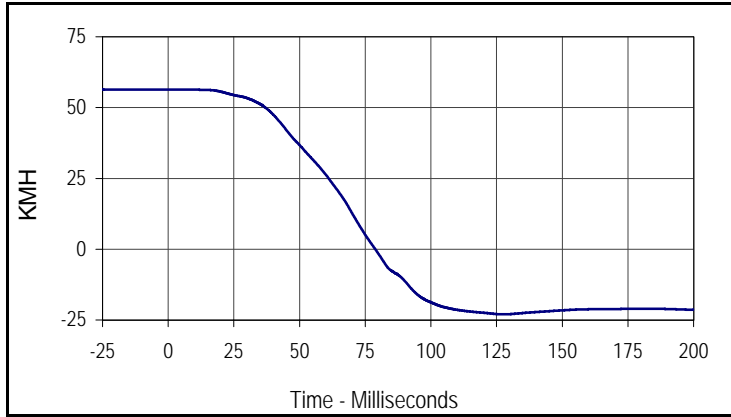
Curve Description			
Driver (95th) Chest Redundant Z			
CURNO	Type	SAE Class	Units
018	FIL	180	G's
Max	Time	Min	Time
9.7	42.2	-15.9	95.8



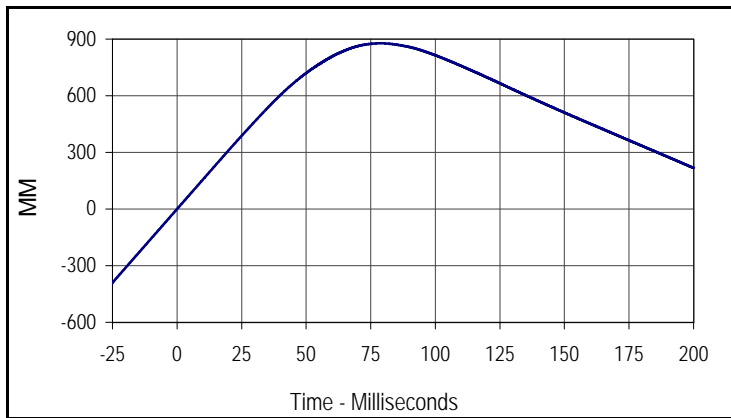
Curve Description			
Driver (95th) Chest Resultant Redundant			
CURNO	Type	SAE Class	Units
016	RES	180	G's
Max	Time	Min	Time
47.7	69.3	0.0	0.8

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



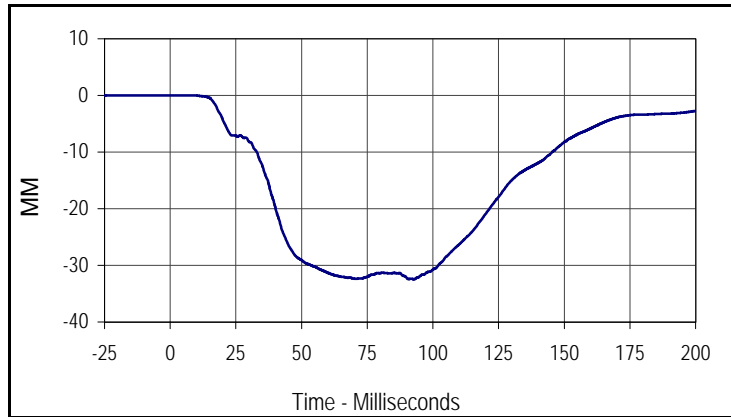
Curve Description			
Driver (95th) Chest Redundant X Velocity			
CURNO	Type	SAE Class	Units
016	IN1	180	KMH
Max	Time	Min	Time
56.3	4.3	-23.0	127.6



Curve Description			
Driver (95th) Chest Redundant X Displacement			
CURNO	Type	SAE Class	Units
016	IN2	180	MM
Max	Time	Min	Time
877.7	78.8	-0.1	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

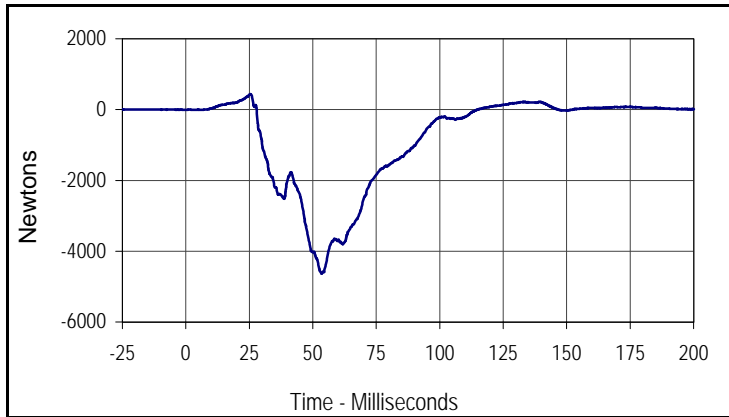
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 NHTSA No.: R40402



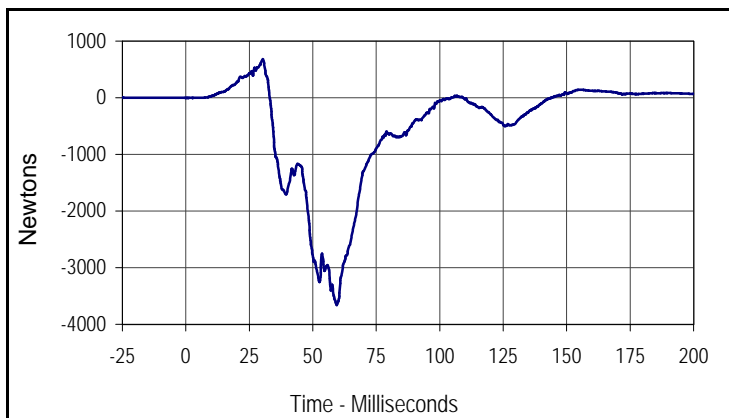
Curve Description			
Driver (95th) Chest Deflection			
CURNO	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
0.0	6.2	-32.5	92.7

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

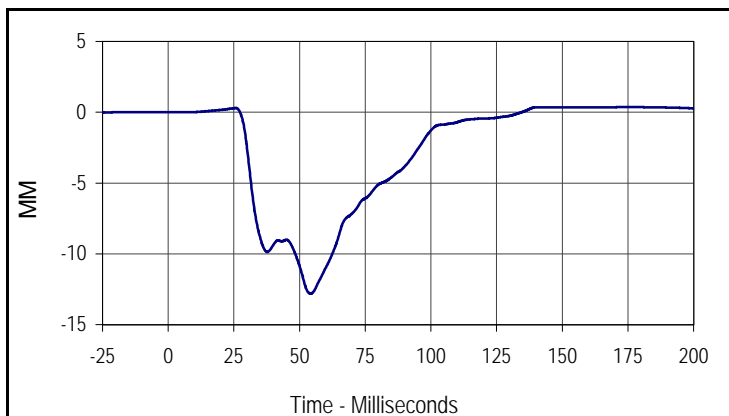
Test Date: 8/12/04
 NHTSA No.: R40402



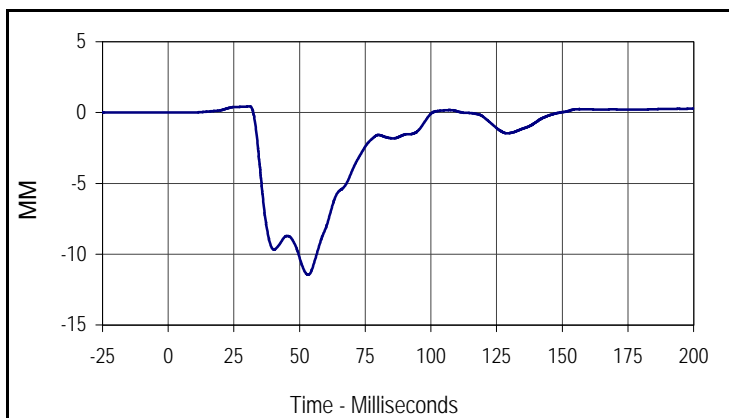
Curve Description			
Driver (95th) Left Femur Force			
CURNO	Type	SAE Class	Units
020	FIL	600	Newtons
Max	Time	Min	Time
437.0	25.4	-4631.8	53.5



Curve Description			
Driver (95th) Right Femur			
CURNO	Type	SAE Class	Units
021	FIL	600	Newtons
Max	Time	Min	Time
681.8	30.3	-3658.5	59.4



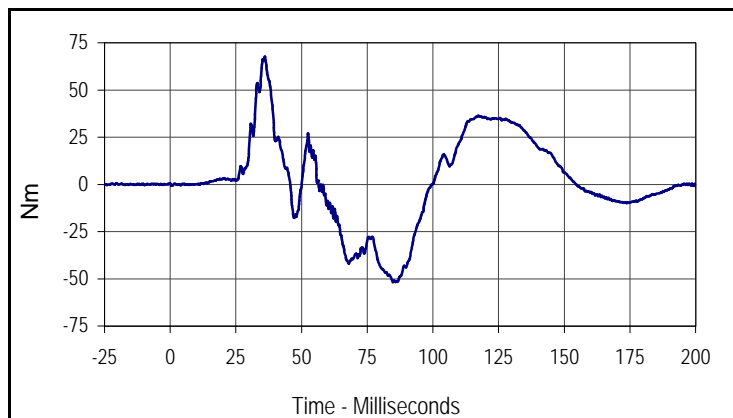
Curve Description			
Driver (95th) Left Knee Displacement			
CURNO	Type	SAE Class	Units
022	FIL	180	MM
Max	Time	Min	Time
0.4	176.6	-12.8	54.2



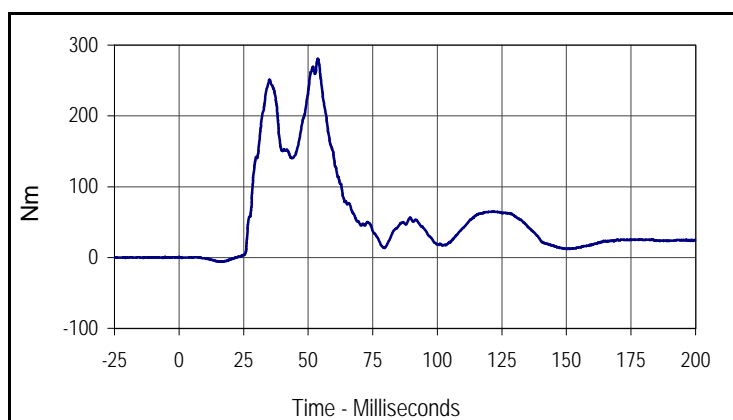
Curve Description			
Driver (95th) Right Knee Displacement			
CURNO	Type	SAE Class	Units
023	FIL	180	MM
Max	Time	Min	Time
0.4	30.9	-11.5	53.2

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



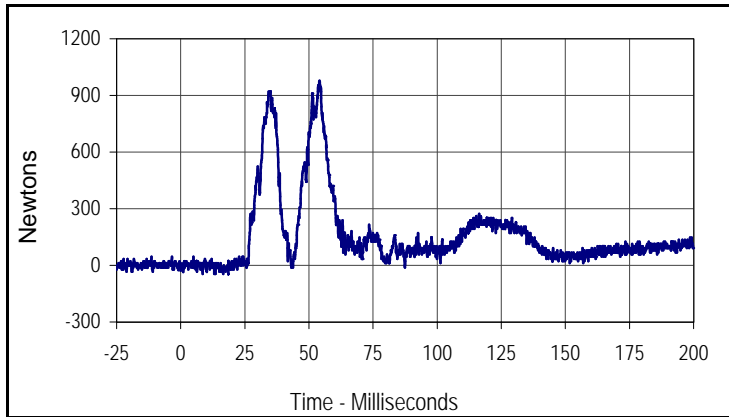
Curve Description			
Driver (95th) Left Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
024	FIL	600	Nm
Max	Time	Min	Time
67.6	36.0	-51.8	85.8



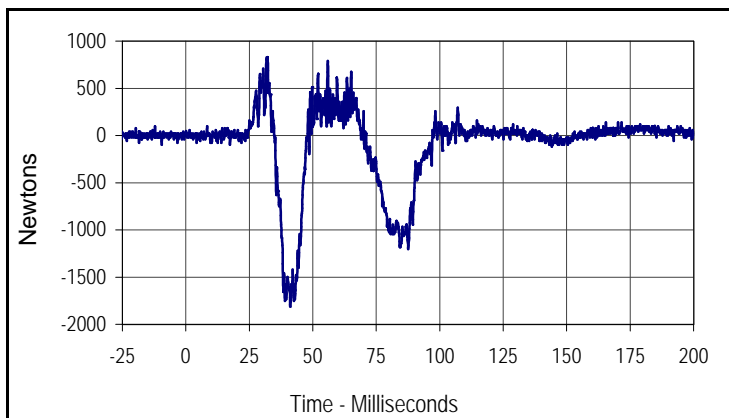
Curve Description			
Driver (95th) Left Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
025	FIL	600	Nm
Max	Time	Min	Time
280.4	53.7	-5.9	16.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

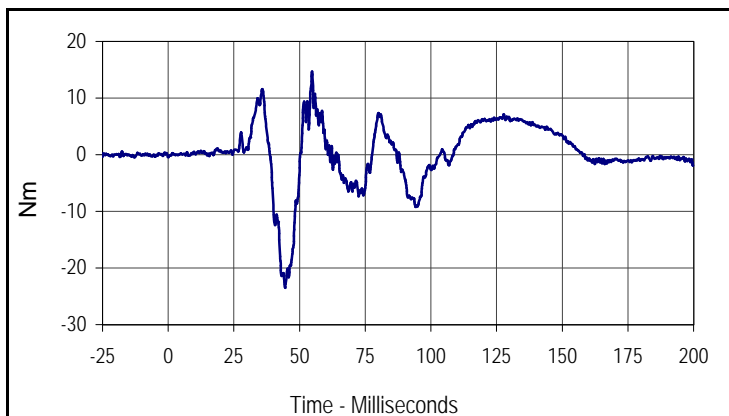
Test Date: 8/12/04
 NHTSA No.: R40402



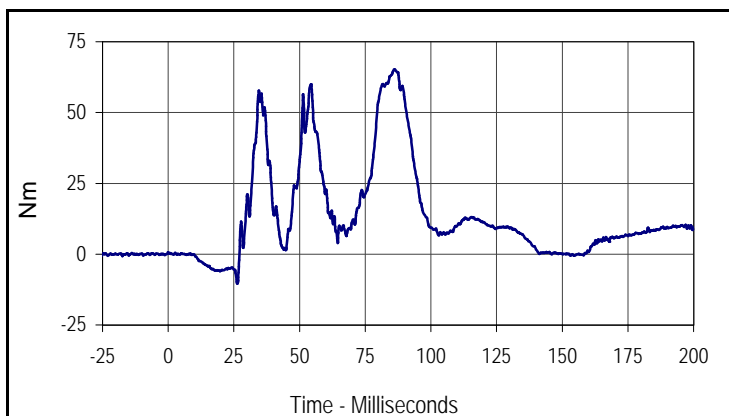
Curve Description			
Driver (95th) Left Lower Tibia Force X			
CURNO	Type	SAE Class	Units
026	FIL	1000	Newtons
Max	Time	Min	Time
977.6	54.1	-45.5	8.6



Curve Description			
Driver (95th) Left Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
027	FIL	1000	Newtons
Max	Time	Min	Time
827.7	31.8	-1813.1	41.2



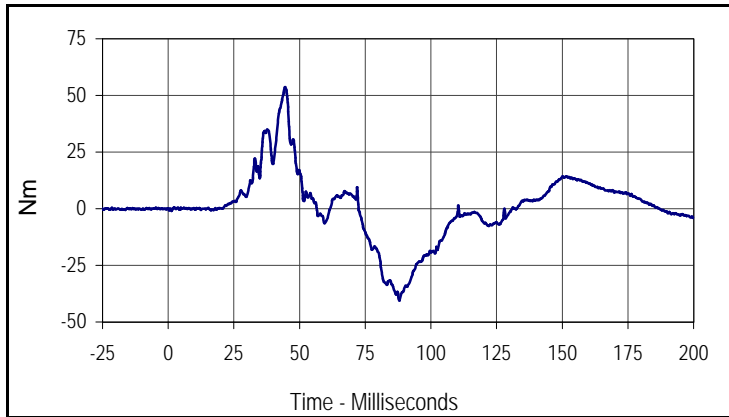
Curve Description			
Driver (95th) Left Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
028	FIL	600	Nm
Max	Time	Min	Time
14.7	54.8	-23.5	44.5



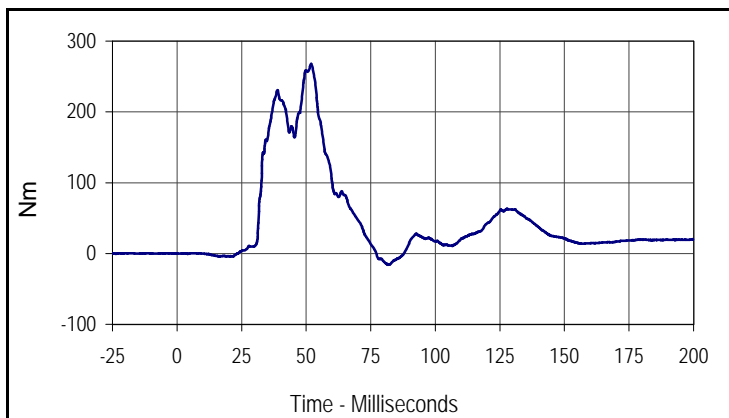
Curve Description			
Driver (95th) Left Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
029	FIL	600	Nm
Max	Time	Min	Time
65.3	86.2	-10.4	26.3

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
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Test Date: 8/12/04
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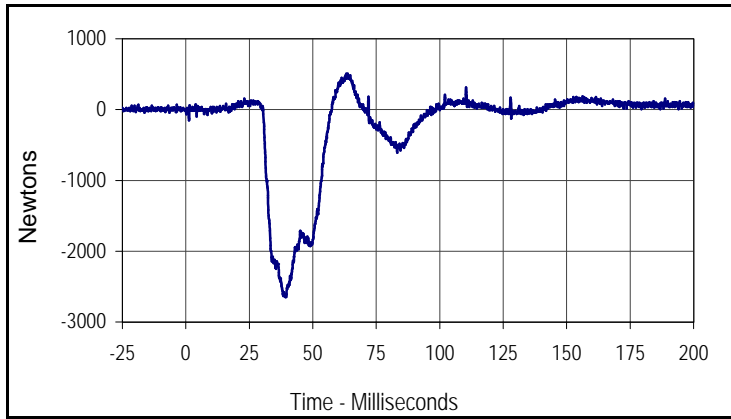
Curve Description			
Driver (95th) Right Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
030	FIL	600	Nm
Max	Time	Min	Time
53.7	44.5	-40.5	88.0



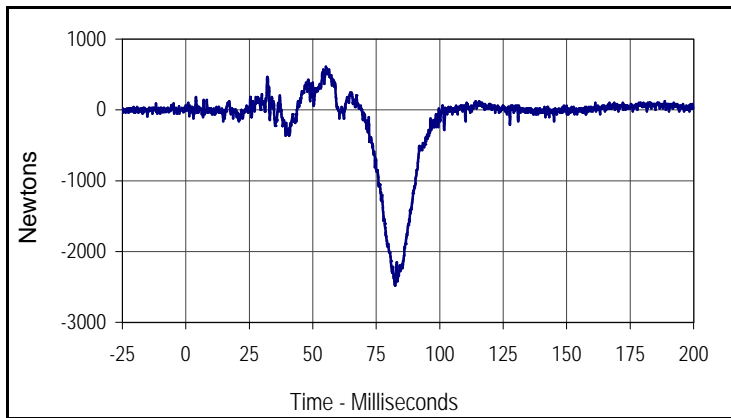
Curve Description			
Driver (95th) Right Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
031	FIL	600	Nm
Max	Time	Min	Time
267.8	51.9	-15.9	81.7

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

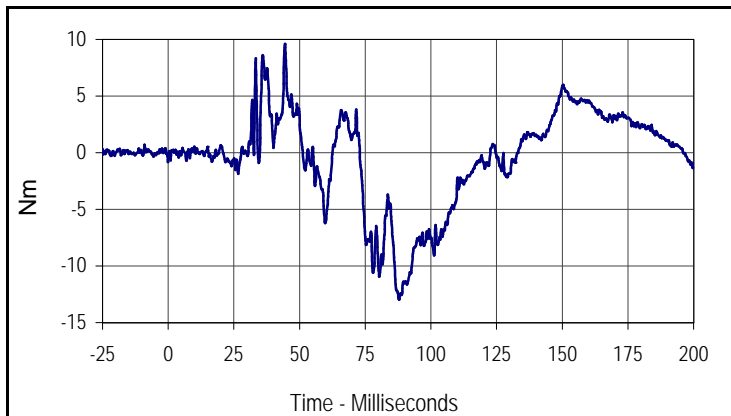
Test Date: 8/12/04
 NHTSA No.: R40402



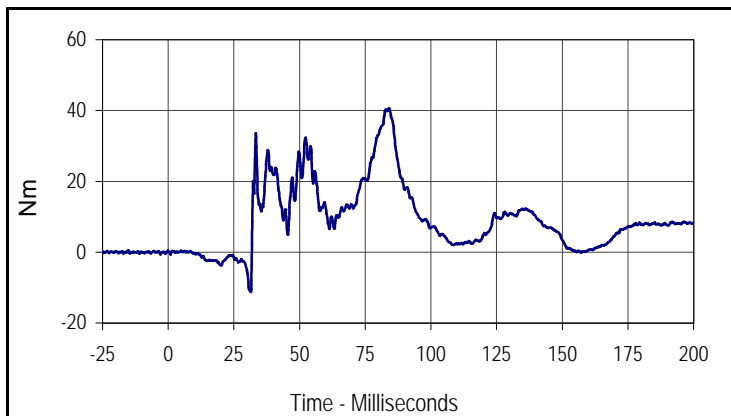
Curve Description			
Driver (95th) Right Lower Tibia Force X			
CURNO	Type	SAE Class	Units
032	FIL	1000	Newtons
Max	Time	Min	Time
505.3	63.2	-2646.7	39.1



Curve Description			
Driver (95th) Right Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
033	FIL	1000	Newtons
Max	Time	Min	Time
610.2	55.2	-2481.3	82.4



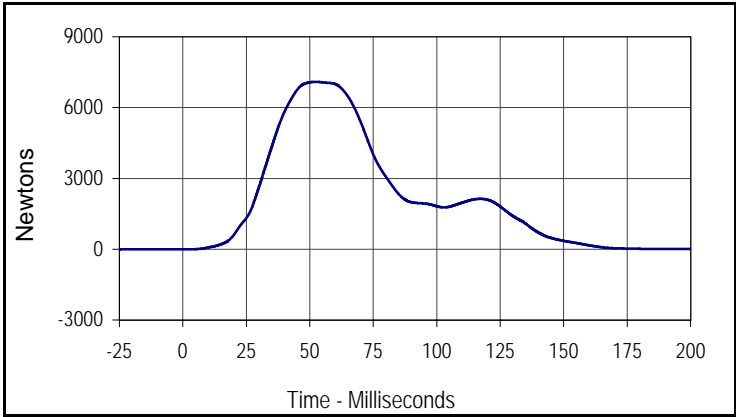
Curve Description			
Driver (95th) Right Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
034	FIL	600	Nm
Max	Time	Min	Time
9.6	44.4	-13.0	87.9



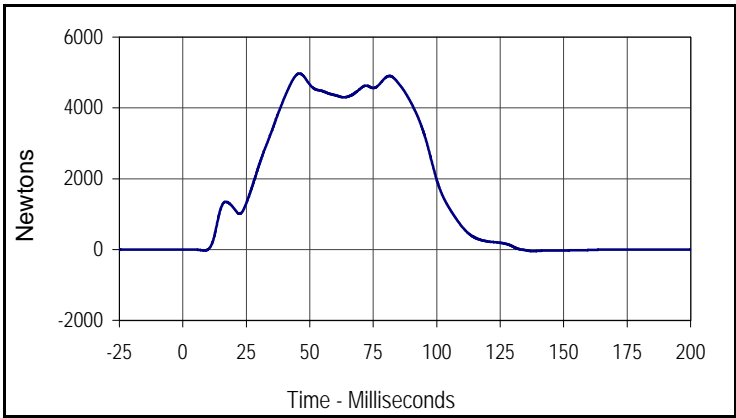
Curve Description			
Driver (95th) Right Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
035	FIL	600	Nm
Max	Time	Min	Time
40.7	84.1	-11.2	31.5

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

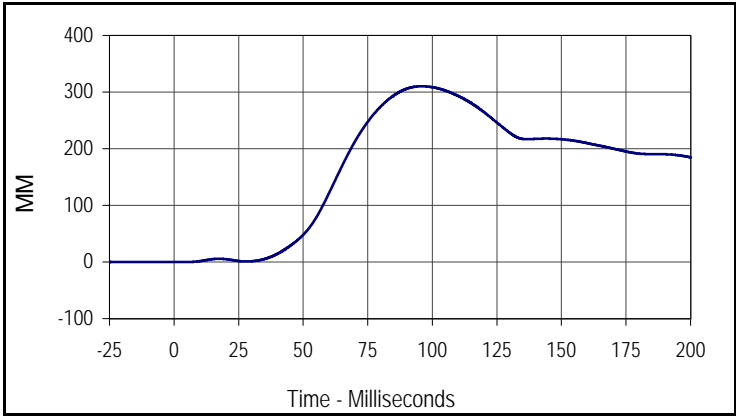
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Driver (95th) Lap Belt Force			
CURNO	Type	SAE Class	Units
036	FIL	60	Newtons
Max	Time	Min	Time
7093.8	52.2	-2.6	2.9



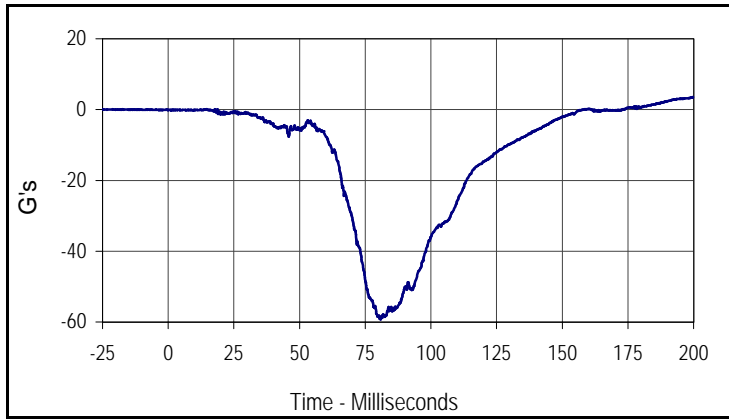
Curve Description			
Driver (95th) Shoulder Belt Force			
CURNO	Type	SAE Class	Units
037	FIL	60	Newtons
Max	Time	Min	Time
4972.2	45.9	-46.4	137.9



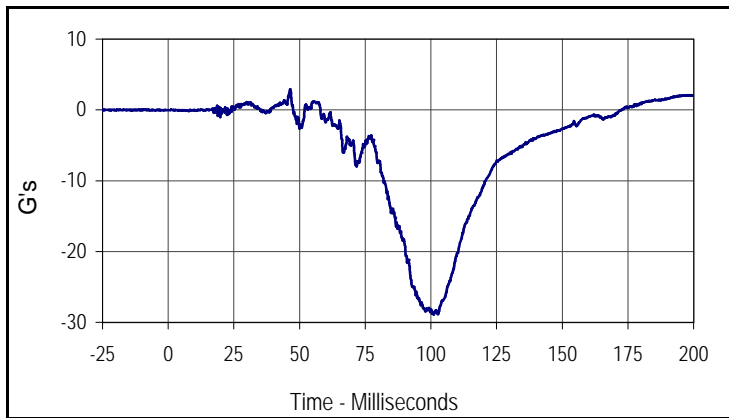
Curve Description			
Driver (95th) Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
038	FIL	60	MM
Max	Time	Min	Time
310.2	95.8	-0.1	4.2

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

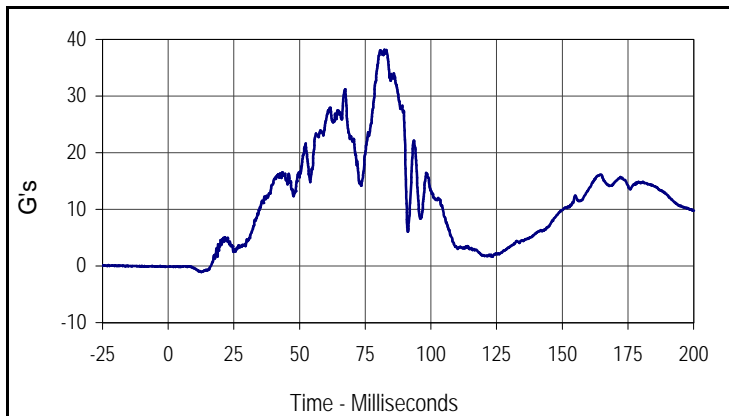
Test Date: 8/12/04
 NHTSA No.: R40402



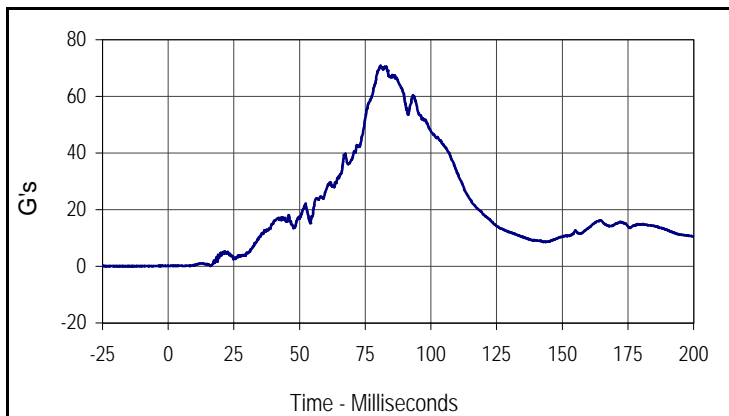
Curve Description			
Passenger (95th) Head Primary X			
CURNO	Type	SAE Class	Units
039	FIL	1000	G's
Max	Time	Min	Time
3.5	199.7	-59.3	80.9



Curve Description			
Passenger (95th) Head Primary Y			
CURNO	Type	SAE Class	Units
040	FIL	1000	G's
Max	Time	Min	Time
2.9	46.4	-28.9	101.1



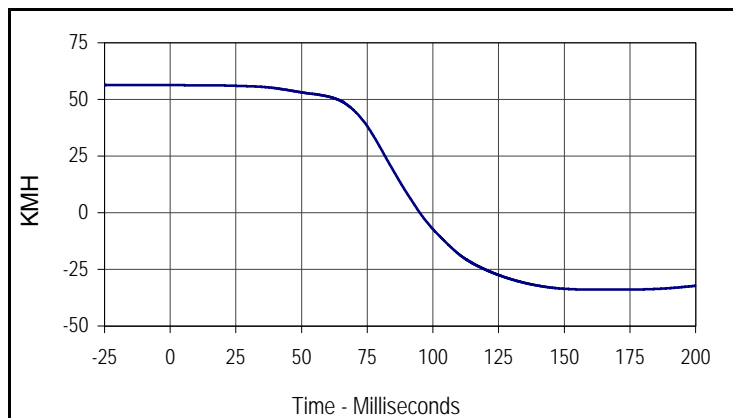
Curve Description			
Passenger (95th) Head Primary Z			
CURNO	Type	SAE Class	Units
041	FIL	1000	G's
Max	Time	Min	Time
38.2	82.3	-1.1	12.6



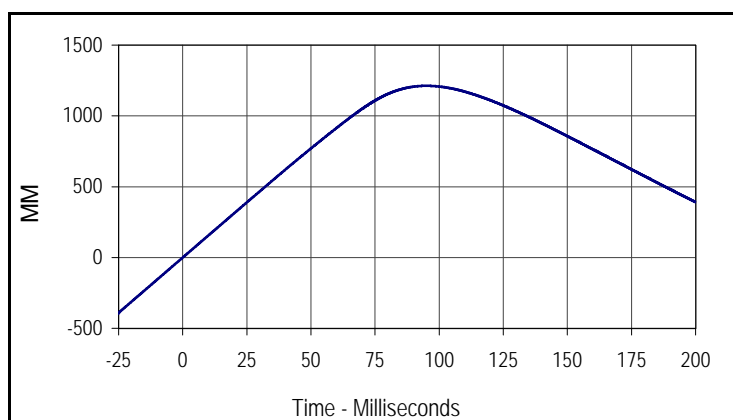
Curve Description			
Passenger (95th) Head Resultant Primary			
CURNO	Type	SAE Class	Units
039	RES	1000	G's
Max	Time	Min	Time
70.8	80.8	0.1	6.3

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



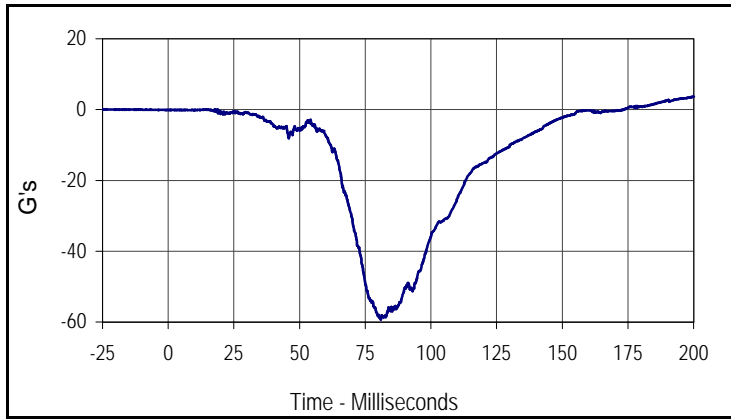
Curve Description			
Passenger (95th) Head Primary X Velocity			
CURNO	Type	SAE Class	Units
039	IN1	180	KMH
Max	Time	Min	Time
56.3	0.0	-34.0	173.0



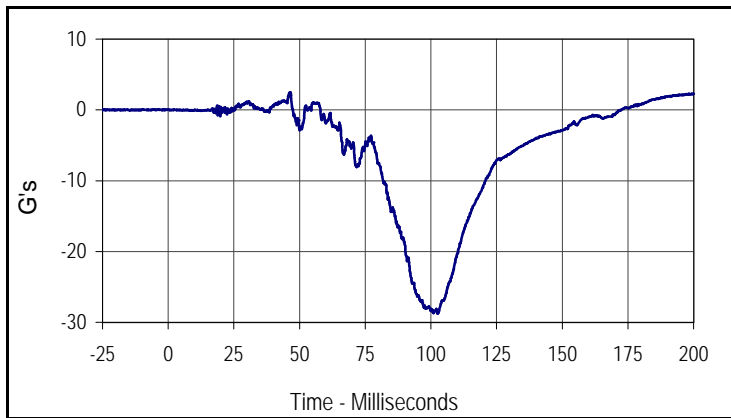
Curve Description			
Passenger (95th) Head Primary X Displacement			
CURNO	Type	SAE Class	Units
039	IN2	180	MM
Max	Time	Min	Time
1212.6	95.0	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

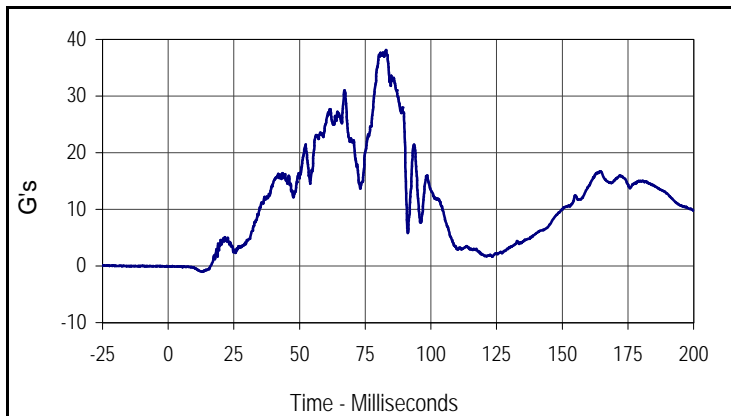
Test Date: 8/12/04
 NHTSA No.: R40402



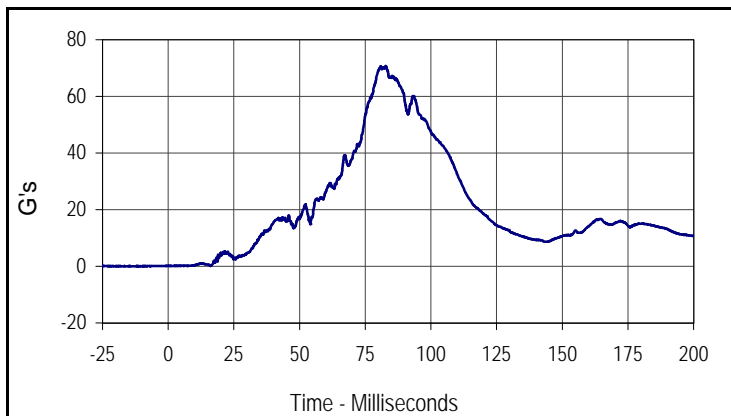
Curve Description			
Passenger (95th) Head Redundant X			
CURNO	Type	SAE Class	Units
042	FIL	1000	G's
Max	Time	Min	Time
3.7	200.0	-59.3	81.0



Curve Description			
Passenger (95th) Head Redundant Y			
CURNO	Type	SAE Class	Units
043	FIL	1000	G's
Max	Time	Min	Time
2.5	46.5	-28.8	102.5



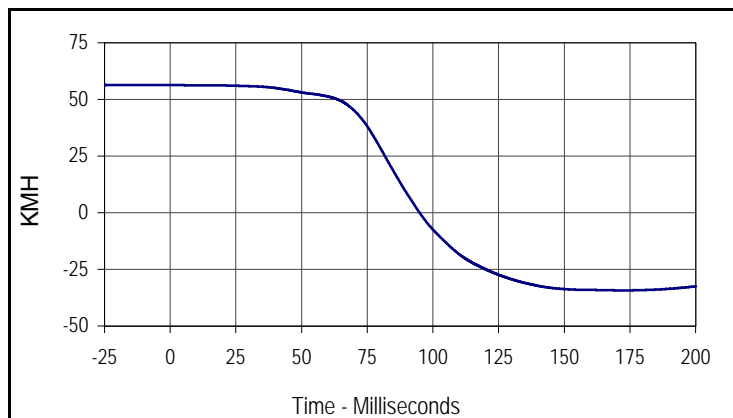
Curve Description			
Passenger (95th) Head Redundant Z			
CURNO	Type	SAE Class	Units
044	FIL	1000	G's
Max	Time	Min	Time
38.1	82.9	-1.0	13.0



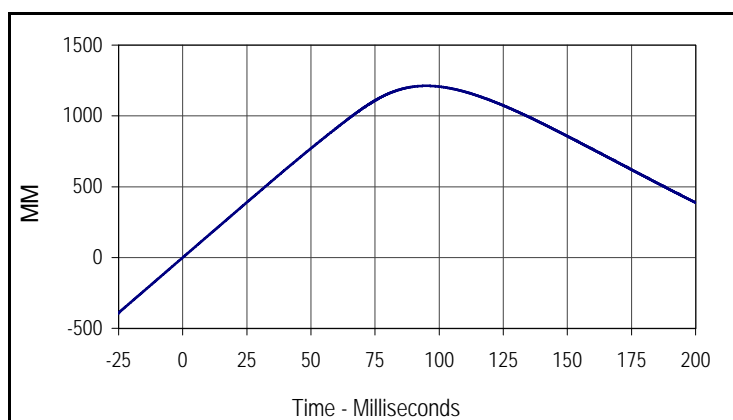
Curve Description			
Passenger (95th) Head Resultant Redundant			
CURNO	Type	SAE Class	Units
042	RES	1000	G's
Max	Time	Min	Time
70.7	82.8	0.1	1.4

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



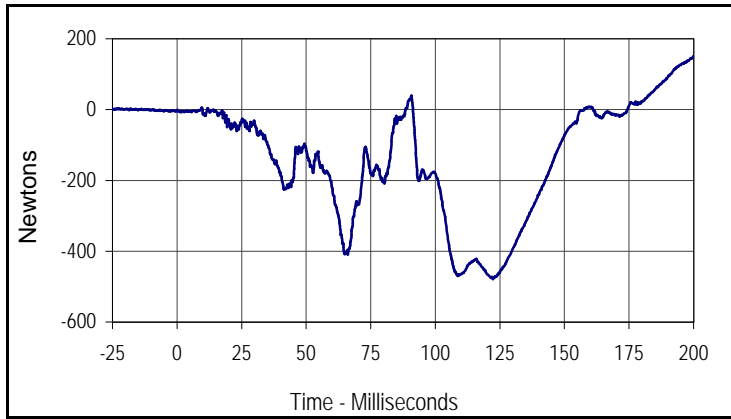
Curve Description			
Passenger (95th) Head Redundant X Velocity			
CURNO	Type	SAE Class	Units
042	IN1	180	KMH
Max	Time	Min	Time
56.3	0.0	-34.3	173.3



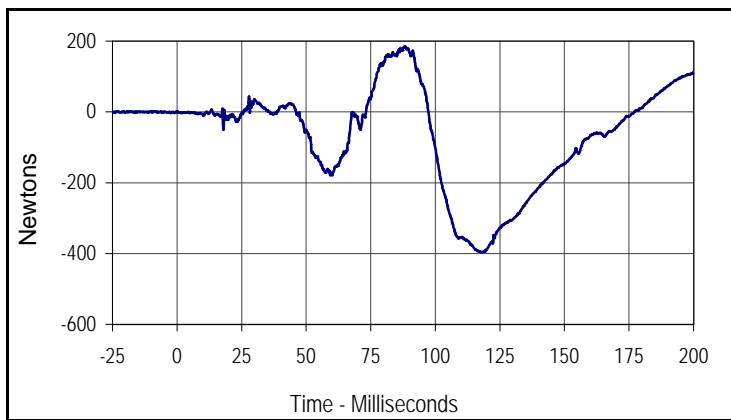
Curve Description			
Passenger (95th) Head Redundant X Displacement			
CURNO	Type	SAE Class	Units
042	IN2	180	MM
Max	Time	Min	Time
1212.4	94.9	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

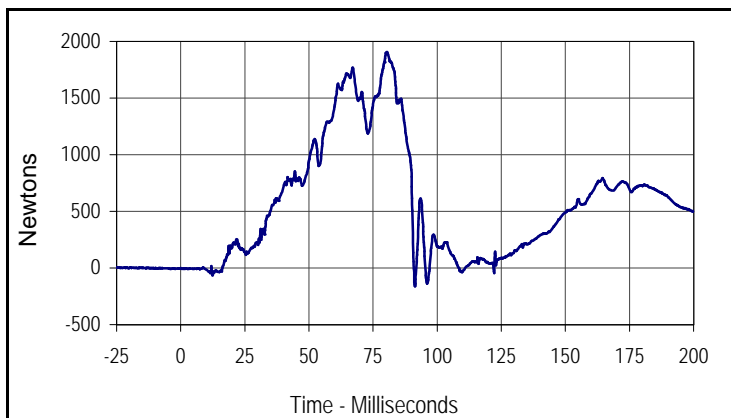
Test Date: 8/12/04
 NHTSA No.: R40402



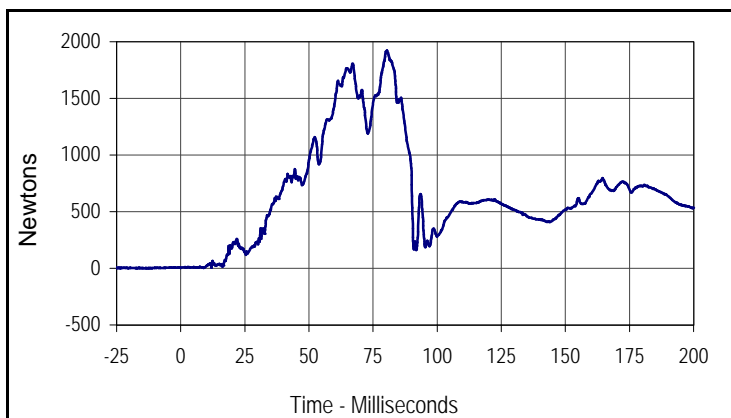
Curve Description			
Passenger (95th) Upper Neck Force X			
CURNO	Type	SAE Class	Units
045	FIL	1000	Newtons
Max	Time	Min	Time
149.8	200.0	-479.2	122.3



Curve Description			
Passenger (95th) Upper Neck Force Y			
CURNO	Type	SAE Class	Units
046	FIL	1000	Newtons
Max	Time	Min	Time
184.9	88.5	-396.3	118.2



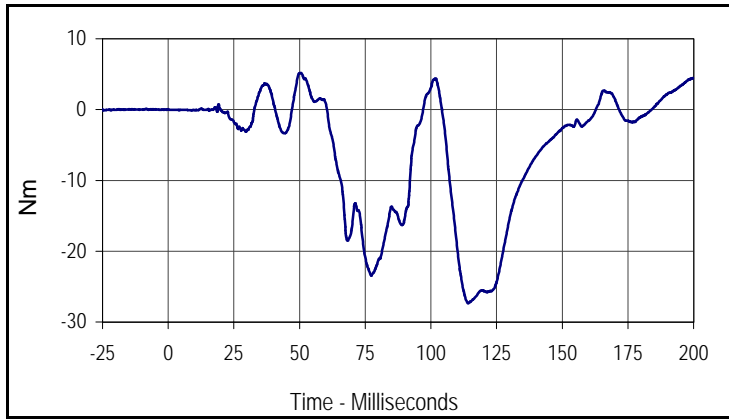
Curve Description			
Passenger (95th) Upper Neck Force Z			
CURNO	Type	SAE Class	Units
047	FIL	1000	Newtons
Max	Time	Min	Time
1906.1	80.4	-161.2	91.3



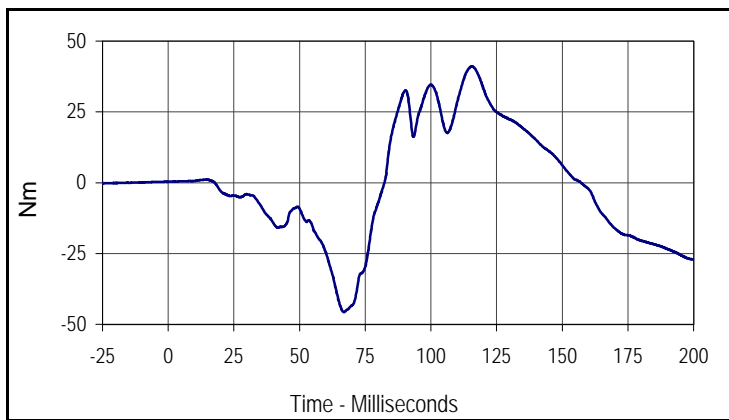
Curve Description			
Passenger (95th) Upper Neck Force Resultant			
CURNO	Type	SAE Class	Units
045	RES	1000	Newtons
Max	Time	Min	Time
1922.6	80.4	1.8	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

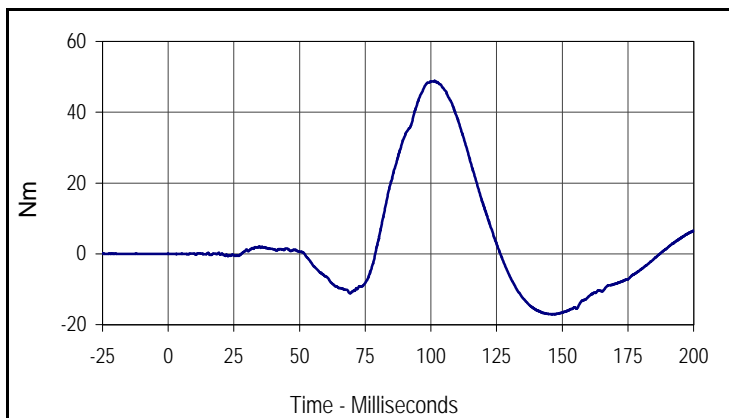
Test Date: 8/12/04
 NHTSA No.: R40402



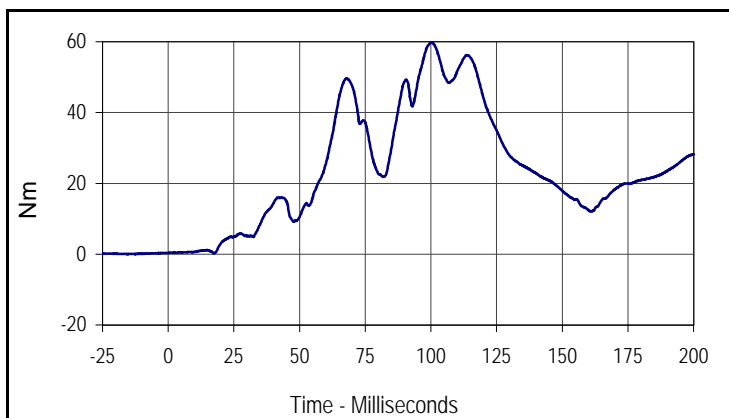
Curve Description			
Passenger (95th) Upper Neck Moment X			
CURNO	Type	SAE Class	Units
048	FIL	600	Nm
Max	Time	Min	Time
5.2	50.3	-27.4	114.2



Curve Description			
Passenger (95th) Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
049	FIL	600	Nm
Max	Time	Min	Time
41.1	115.6	-45.8	66.9



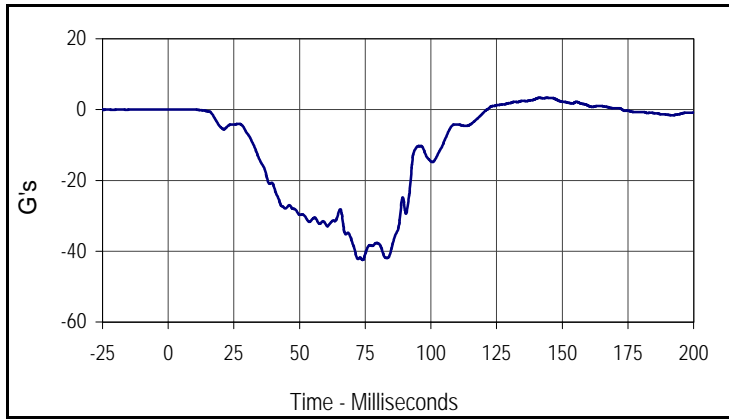
Curve Description			
Passenger (95th) Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
050	FIL	600	Nm
Max	Time	Min	Time
48.9	101.4	-17.1	146.1



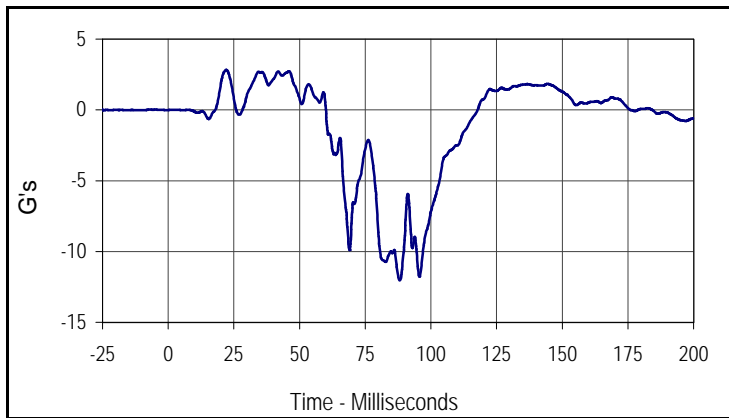
Curve Description			
Passenger (95th) Upper Neck Moment Resultant			
CURNO	Type	SAE Class	Units
048	RES	600	Nm
Max	Time	Min	Time
59.8	100.1	0.3	17.4

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

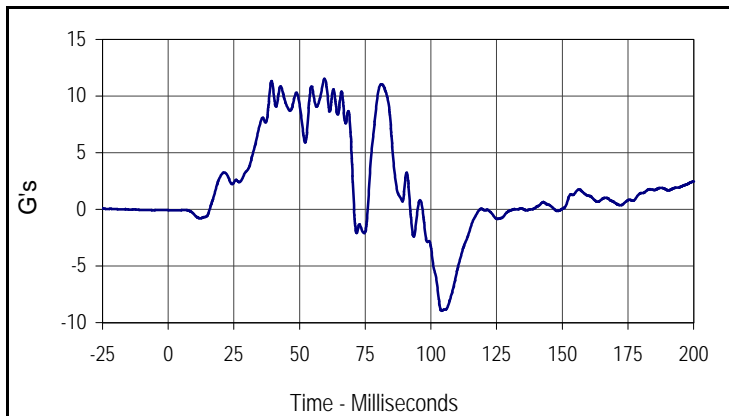
Test Date: 8/12/04
 NHTSA No.: R40402



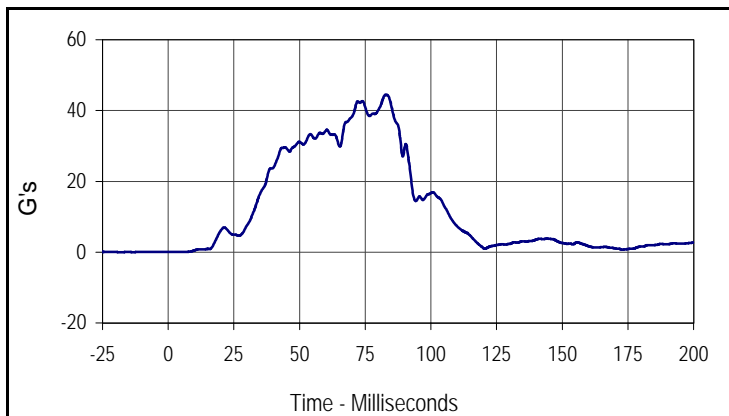
Curve Description			
Passenger (95th) Chest Primary X			
CURNO	Type	SAE Class	Units
051	FIL	180	G's
Max	Time	Min	Time
3.3	144.2	-42.4	74.0



Curve Description			
Passenger (95th) Chest Primary Y			
CURNO	Type	SAE Class	Units
052	FIL	180	G's
Max	Time	Min	Time
2.8	22.0	-12.0	88.1



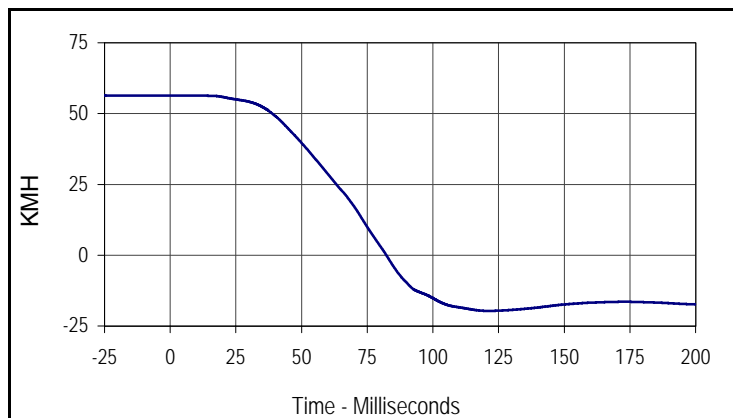
Curve Description			
Passenger (95th) Chest Primary Z			
CURNO	Type	SAE Class	Units
053	FIL	180	G's
Max	Time	Min	Time
11.5	59.5	-9.0	104.1



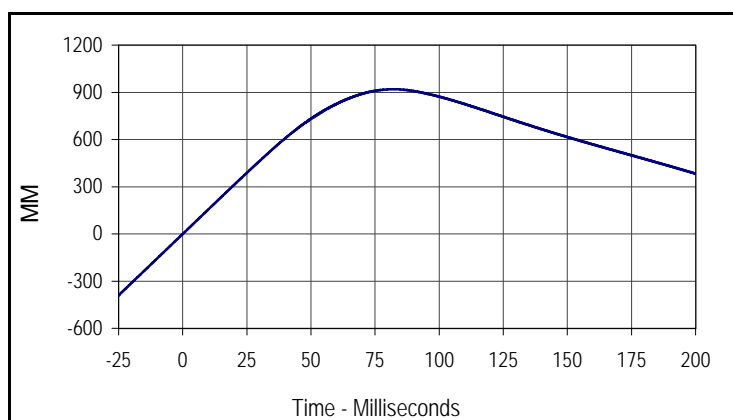
Curve Description			
Passenger (95th) Chest Resultant Primary			
CURNO	Type	SAE Class	Units
051	RES	180	G's
Max	Time	Min	Time
44.4	83.0	0.1	5.9

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
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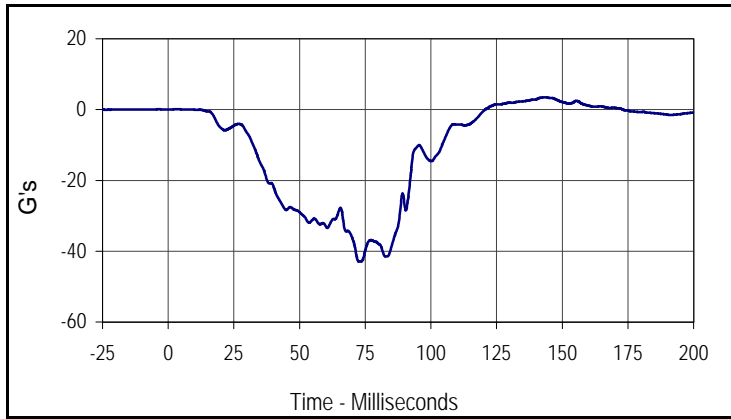
Curve Description			
Passenger (95th) Chest Primary X Velocity			
CURNO	Type	SAE Class	Units
051	IN1	180	KMH
Max	Time	Min	Time
56.3	10.4	-19.7	121.4



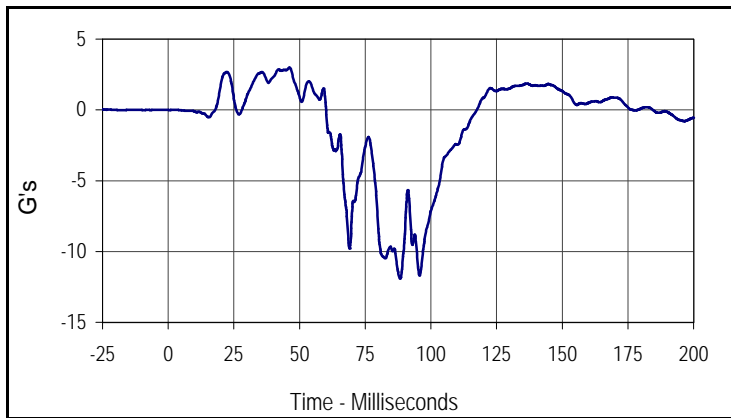
Curve Description			
Passenger (95th) Chest Primary X Displacement			
CURNO	Type	SAE Class	Units
051	IN2	180	MM
Max	Time	Min	Time
919.5	82.3	-0.2	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

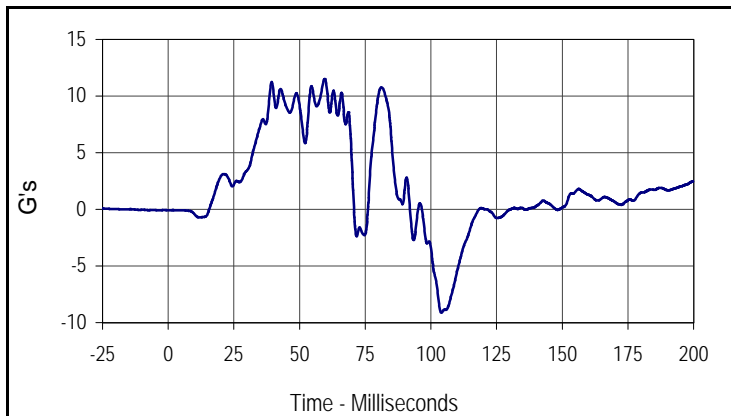
Test Date: 8/12/04
 NHTSA No.: R40402



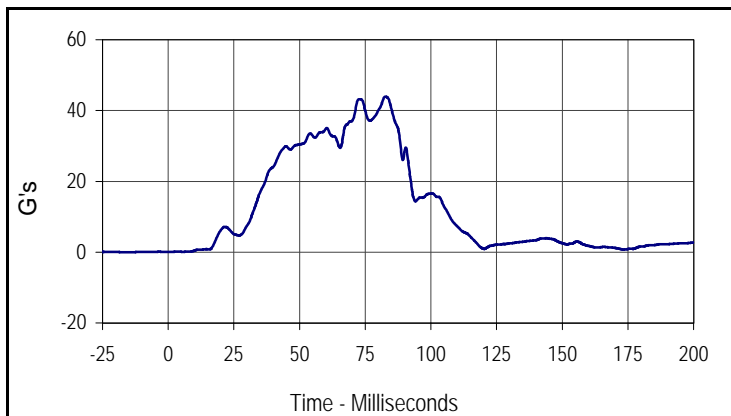
Curve Description			
Passenger (95th) Chest Redundant X			
CURNO	Type	SAE Class	Units
054	FIL	180	G's
Max	Time	Min	Time
3.4	143.9	-42.9	72.7



Curve Description			
Passenger (95th) Chest Redundant Y			
CURNO	Type	SAE Class	Units
055	FIL	180	G's
Max	Time	Min	Time
3.0	46.3	-11.9	88.3



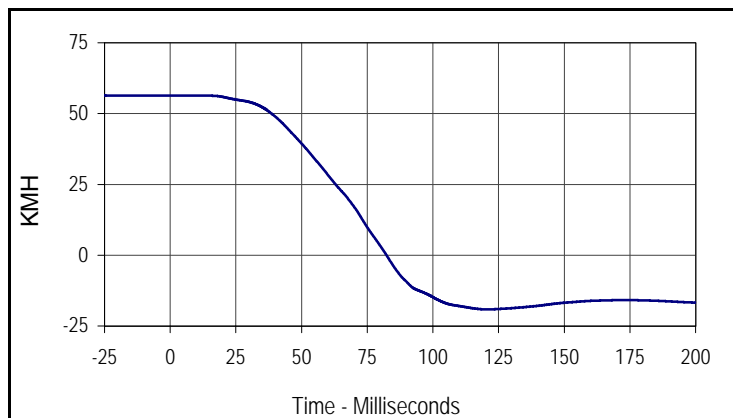
Curve Description			
Passenger (95th) Chest Redundant Z			
CURNO	Type	SAE Class	Units
056	FIL	180	G's
Max	Time	Min	Time
11.5	59.5	-9.1	104.0



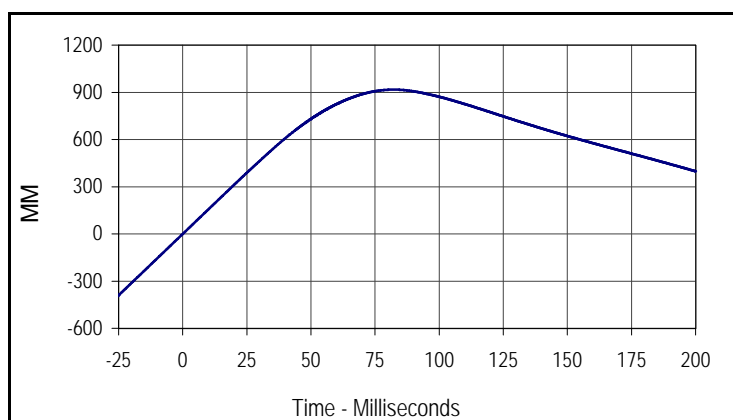
Curve Description			
Passenger (95th) Chest Resultant Redundant			
CURNO	Type	SAE Class	Units
054	RES	180	G's
Max	Time	Min	Time
43.9	82.7	0.1	1.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
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Test Date: 8/12/04
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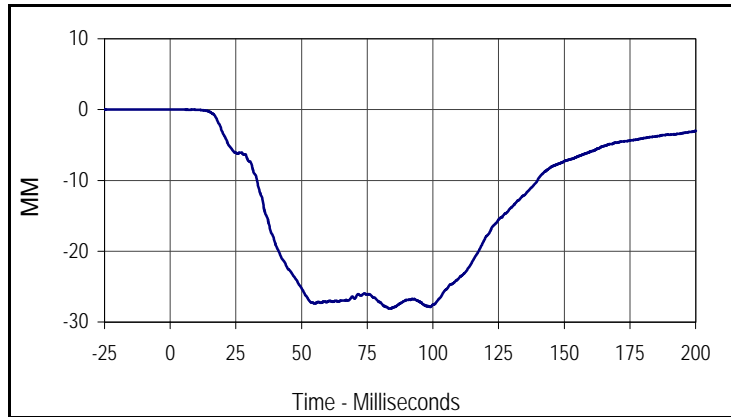
Curve Description			
Passenger (95th) Chest Redundant X Velocity			
CURNO	Type	SAE Class	Units
054	IN1	180	KMH
Max	Time	Min	Time
56.3	9.7	-19.1	120.6



Curve Description			
Passenger (95th) Chest Redundant X Displacement			
CURNO	Type	SAE Class	Units
054	IN2	180	MM
Max	Time	Min	Time
917.2	82.3	-0.1	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

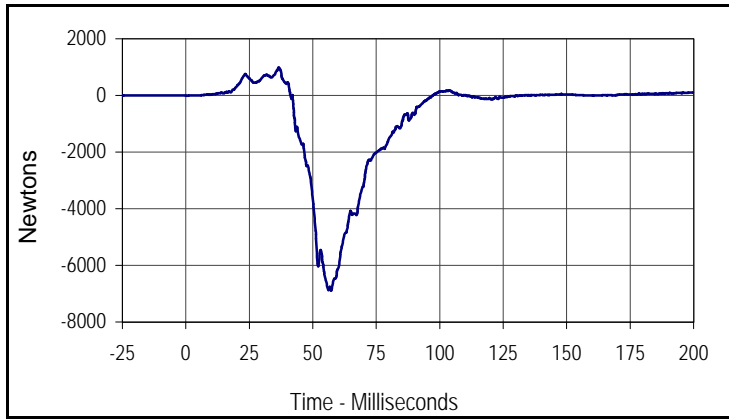
Test Date: 8/12/04
 NHTSA No.: R40402



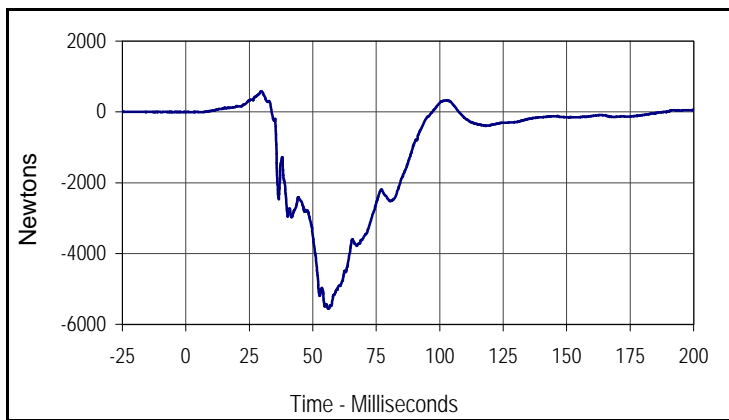
Curve Description			
Passenger (95th) Chest Deflection			
CURNO	Type	SAE Class	Units
057	FIL	600	MM
Max	Time	Min	Time
0.0	3.1	-28.1	83.4

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
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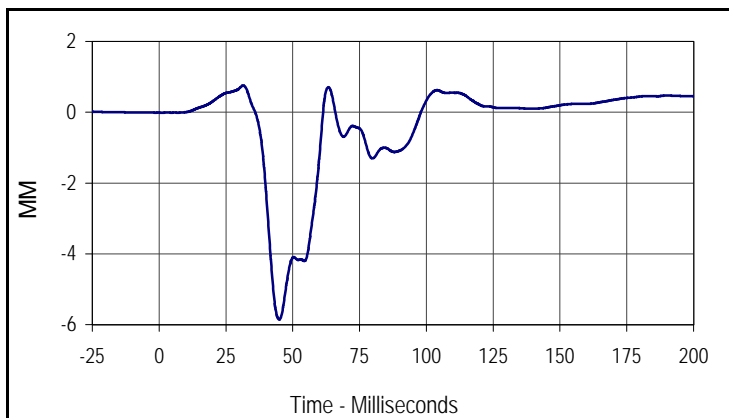
Test Date: 8/12/04
 NHTSA No.: R40402



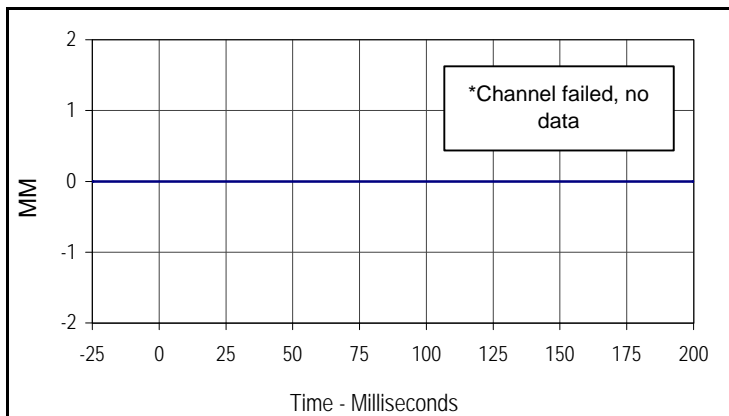
Curve Description			
Passenger (95th) Left Femur Force			
CURNO	Type	SAE Class	Units
058	FIL	600	Newtons
Max	Time	Min	Time
987.2	36.6	-6888.3	57.2



Curve Description			
Passenger (95th) Right Femur Force			
CURNO	Type	SAE Class	Units
059	FIL	600	Newtons
Max	Time	Min	Time
578.7	29.5	-5558.3	56.2



Curve Description			
Passenger (95th) Left Knee Displacement			
CURNO	Type	SAE Class	Units
060	FIL	180	MM
Max	Time	Min	Time
0.8	31.5	-5.9	44.9

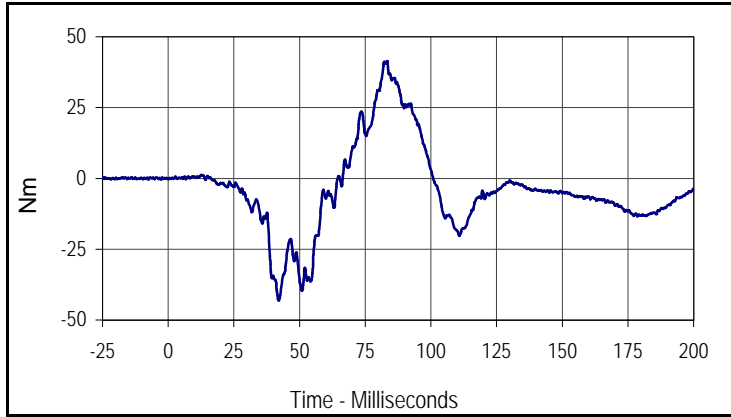


Curve Description			
Passenger (95th) Right Knee Displacement			
CURNO	Type	SAE Class	Units
061	FIL	180	MM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

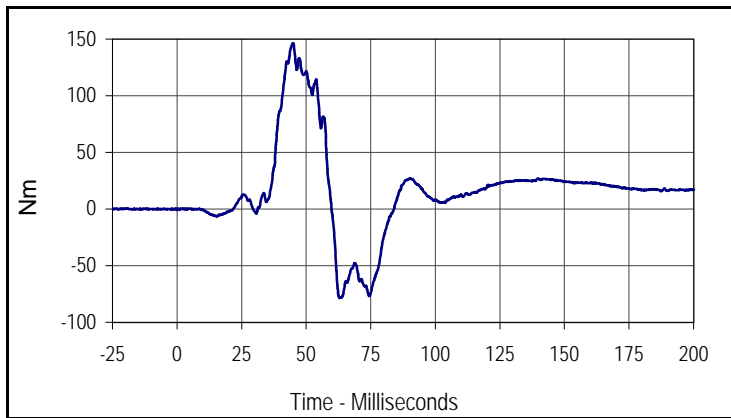
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Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



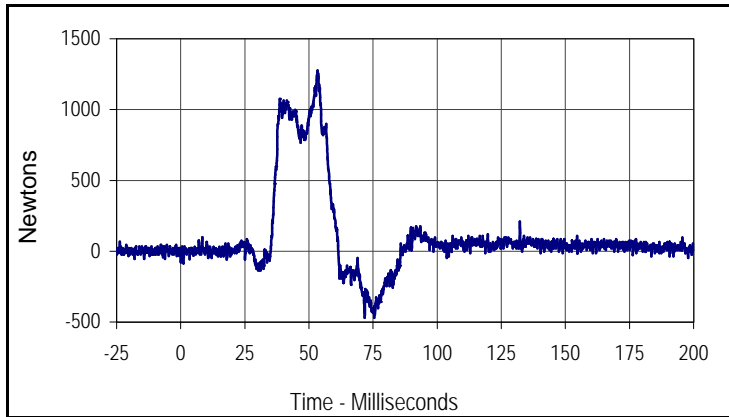
Curve Description			
Passenger (95th) Left Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
062	FIL	600	Nm
Max	Time	Min	Time
41.4	83.4	-43.2	42.1



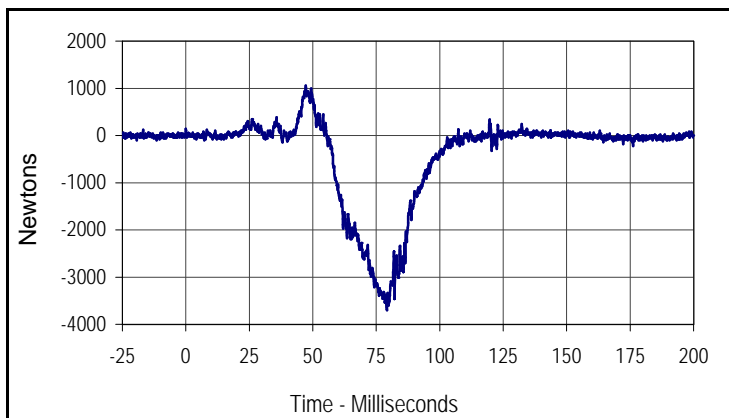
Curve Description			
Passenger (95th) Left Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
063	FIL	600	Nm
Max	Time	Min	Time
146.4	44.9	-78.4	63.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

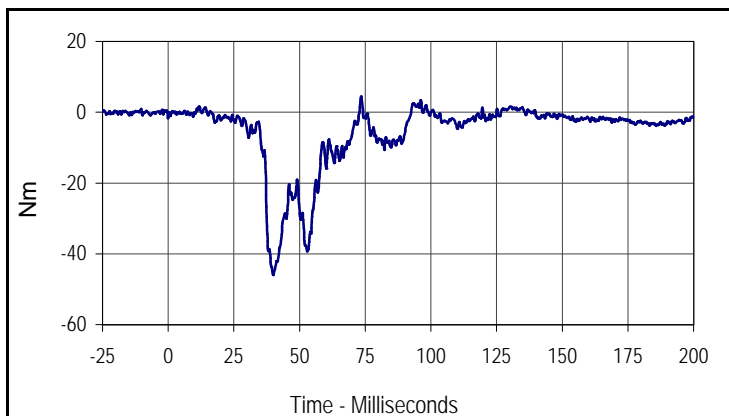
Test Date: 8/12/04
 NHTSA No.: R40402



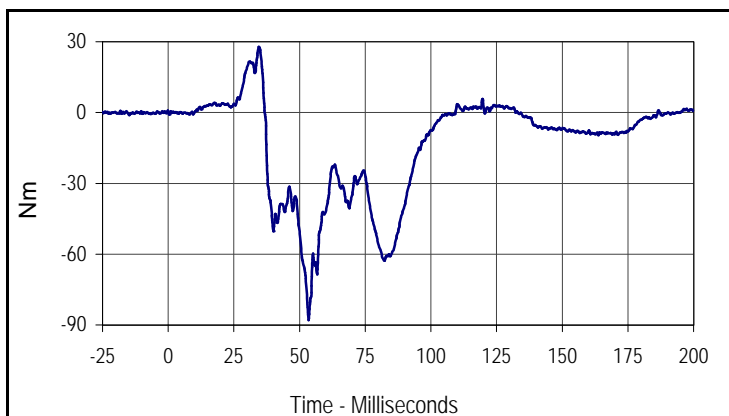
Curve Description			
Passenger (95th) Left Lower Tibia Force X			
CURNO	Type	SAE Class	Units
064	FIL	1000	Newtons
Max	Time	Min	Time
1276.0	53.4	-469.8	71.7



Curve Description			
Passenger (95th) Left Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
065	FIL	1000	Newtons
Max	Time	Min	Time
1058.8	47.2	-3704.3	79.2



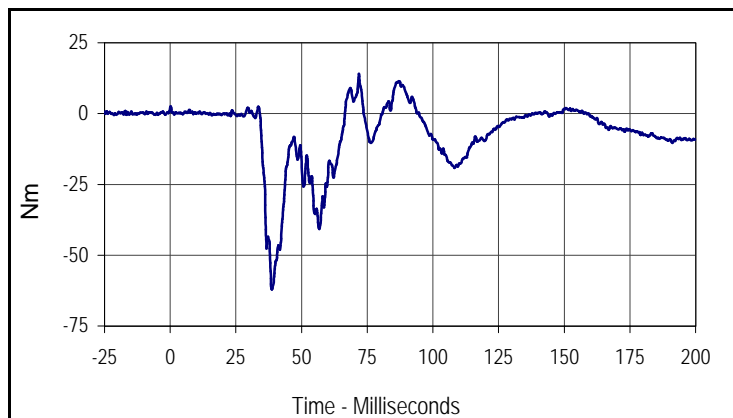
Curve Description			
Passenger (95th) Left Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
066	FIL	600	Nm
Max	Time	Min	Time
4.4	73.5	-46.0	40.0



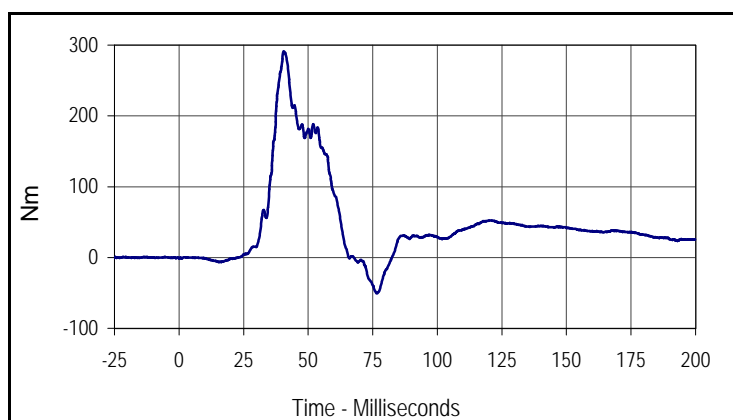
Curve Description			
Passenger (95th) Left Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
067	FIL	600	Nm
Max	Time	Min	Time
27.8	34.6	-88.0	53.5

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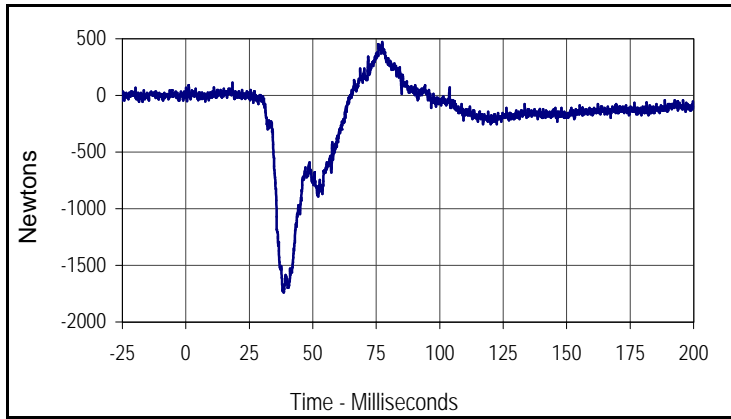
Curve Description			
Passenger (95th) Right Upper Tibia Moment X			
CURNO	Type	SAE Class	Units
068	FIL	600	Nm
Max	Time	Min	Time
14.1	71.9	-62.1	38.7



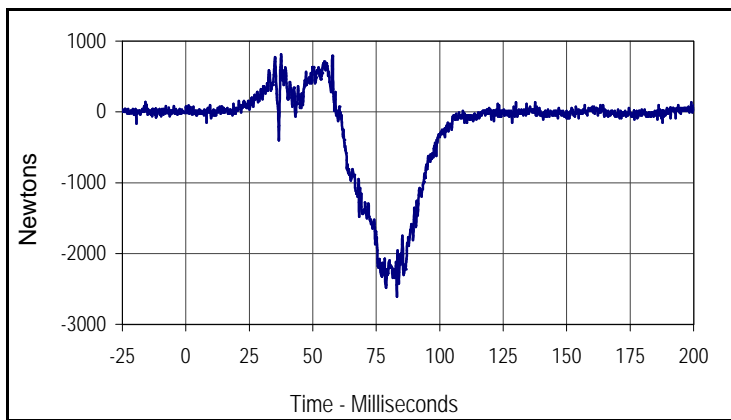
Curve Description			
Passenger (95th) Right Upper Tibia Moment Y			
CURNO	Type	SAE Class	Units
069	FIL	600	Nm
Max	Time	Min	Time
291.6	40.5	-50.7	76.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
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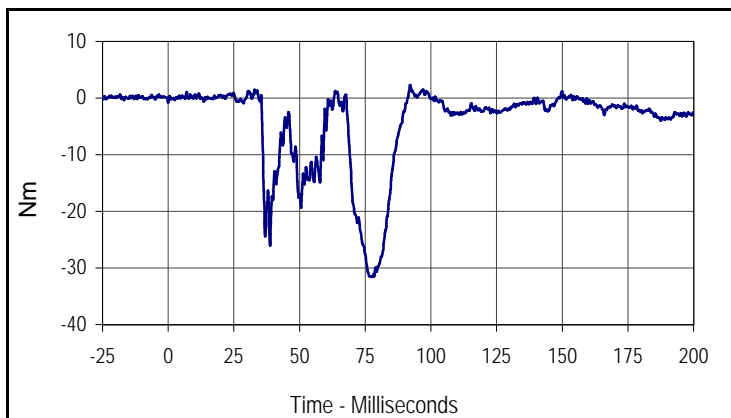
Test Date: 8/12/04
 NHTSA No.: R40402



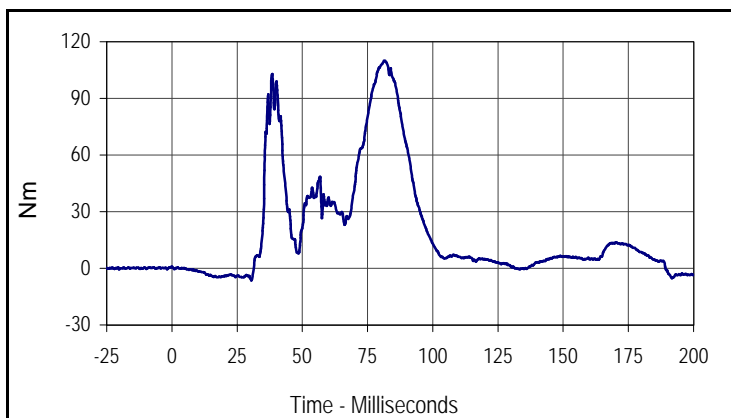
Curve Description			
Passenger (95th) Right Lower Tibia Force X			
CURNO	Type	SAE Class	Units
070	FIL	1000	Newtons
Max	Time	Min	Time
471.8	77.3	-1741.4	38.5



Curve Description			
Passenger (95th) Right Lower Tibia Force Z			
CURNO	Type	SAE Class	Units
071	FIL	1000	Newtons
Max	Time	Min	Time
812.8	37.5	-2609.9	83.1



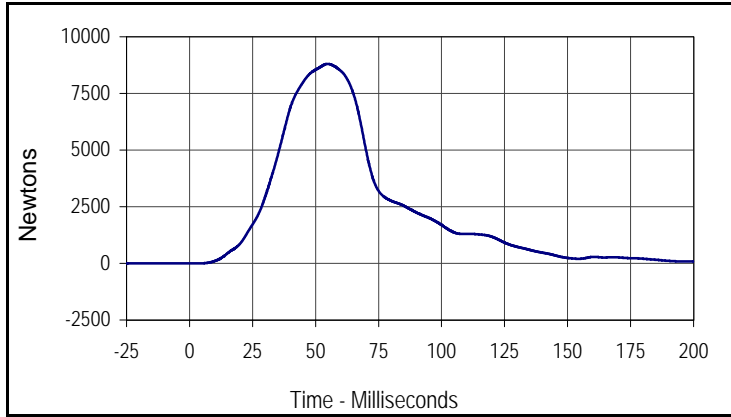
Curve Description			
Passenger (95th) Right Lower Tibia Moment X			
CURNO	Type	SAE Class	Units
072	FIL	600	Nm
Max	Time	Min	Time
2.3	92.1	-31.6	77.6



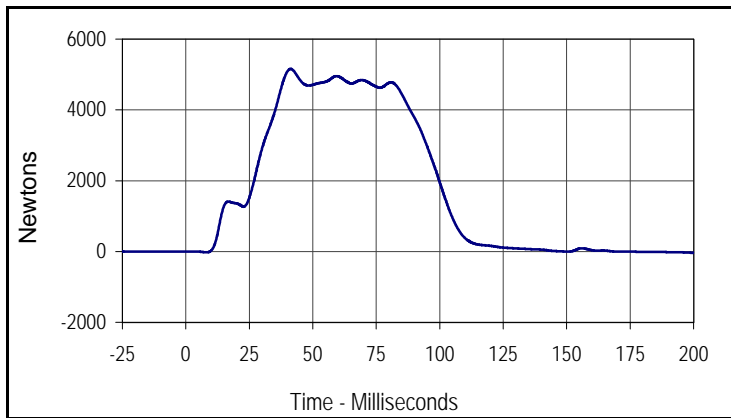
Curve Description			
Passenger (95th) Right Lower Tibia Moment Y			
CURNO	Type	SAE Class	Units
073	FIL	600	Nm
Max	Time	Min	Time
110.0	81.6	-6.4	30.5

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
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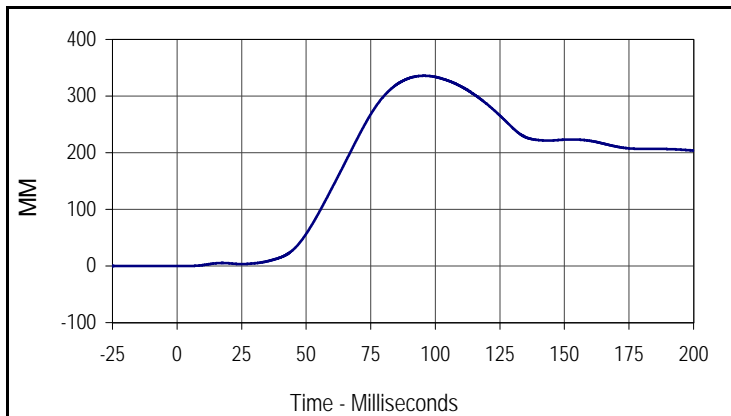
Test Date: 8/12/04
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Curve Description			
Passenger (95th) Lap Belt Force			
CURNO	Type	SAE Class	Units
074	FIL	60	Newtons
Max	Time	Min	Time
8803.6	54.8	-4.2	2.2



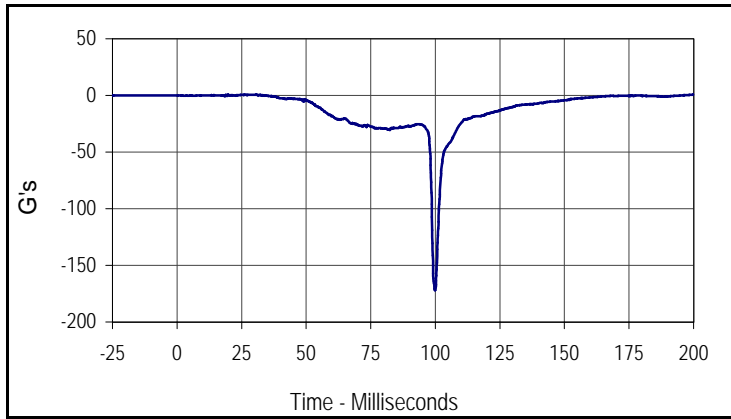
Curve Description			
Passenger (95th) Shoulder Belt Force			
CURNO	Type	SAE Class	Units
075	FIL	60	Newtons
Max	Time	Min	Time
5158.1	41.3	-35.7	200.0



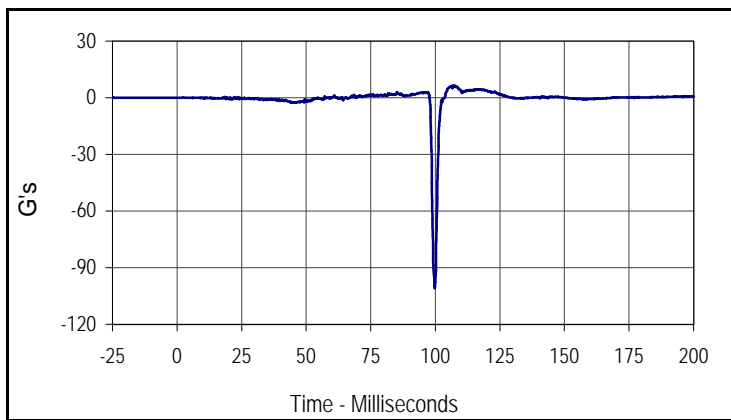
Curve Description			
Passenger (95th) Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
076	FIL	60	MM
Max	Time	Min	Time
335.9	95.7	-0.1	3.3

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
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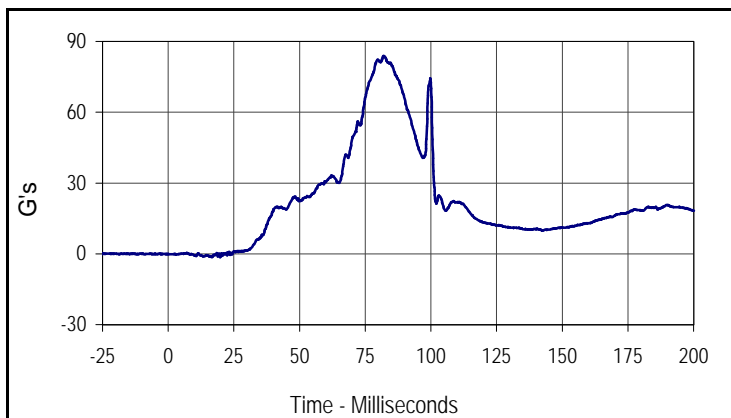
Test Date: 8/12/04
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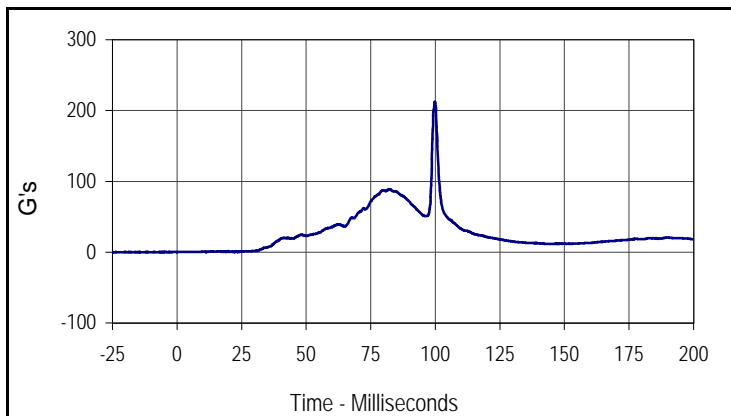
Curve Description			
Center Rear Pass. (50th) Head Primary X			
CURNO	Type	SAE Class	Units
077	FIL	1000	G's
Max	Time	Min	Time
0.8	30.6	-172.0	99.9



Curve Description			
Center Rear Pass. (50th) Head Primary Y			
CURNO	Type	SAE Class	Units
078	FIL	1000	G's
Max	Time	Min	Time
6.4	106.9	-100.9	99.8



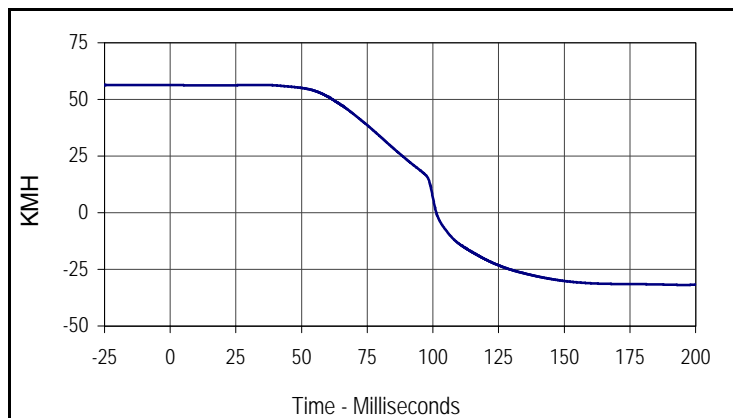
Curve Description			
Center Rear Pass. (50th) Head Primary Z			
CURNO	Type	SAE Class	Units
079	FIL	1000	G's
Max	Time	Min	Time
83.9	81.9	-1.4	19.8



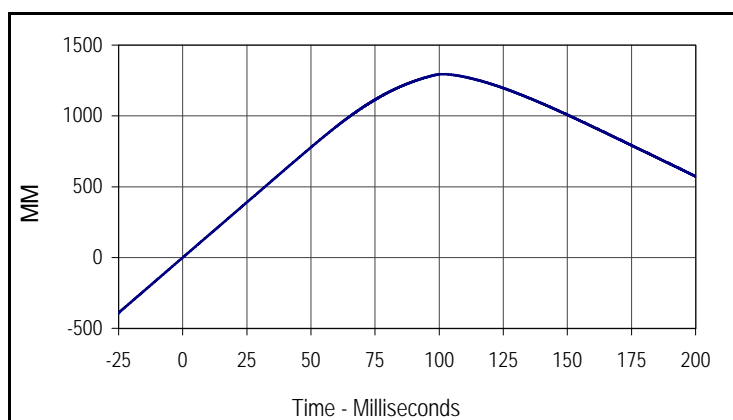
Curve Description			
Center Rear Pass. (50th) Head Resultant Primary			
CURNO	Type	SAE Class	Units
077	RES	1000	G's
Max	Time	Min	Time
212.4	99.8	0.1	22.3

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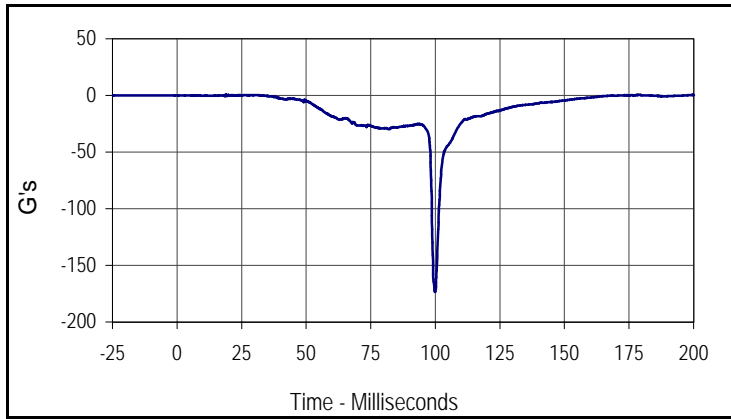
Curve Description			
Center Rear Pass. (50th) Head Primary X Velocity			
CURNO	Type	SAE Class	Units
077	IN1	180	KMH
Max	Time	Min	Time
56.4	33.3	-31.9	195.6



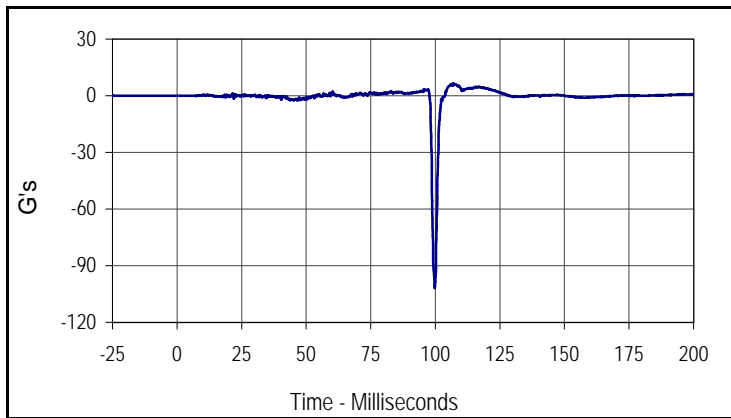
Curve Description			
Center Rear Pass. (50th) Head Primary X Displacement			
CURNO	Type	SAE Class	Units
077	IN2	180	MM
Max	Time	Min	Time
1294.9	101.3	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

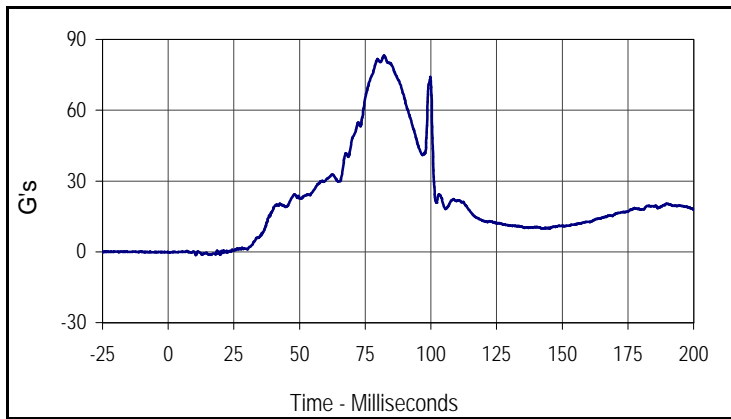
Test Date: 8/12/04
 NHTSA No.: R40402



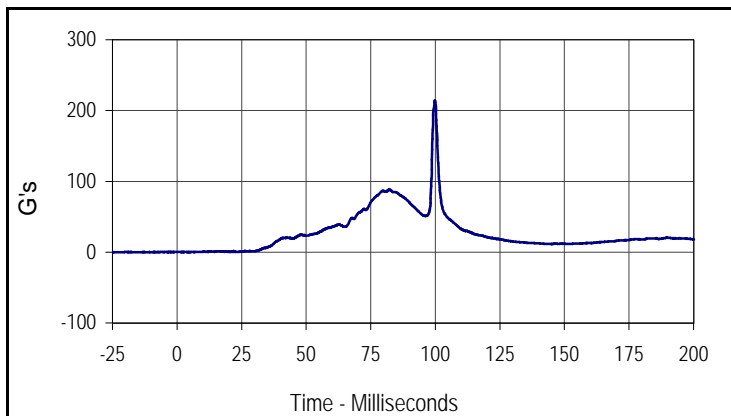
Curve Description			
Center Rear Pass. (50th) NAAH CG X			
CURNO	Type	SAE Class	Units
080	FIL	1000	G's
Max	Time	Min	Time
0.9	19.0	-173.5	99.9



Curve Description			
Center Rear Pass. (50th) NAAH CG Y			
CURNO	Type	SAE Class	Units
081	FIL	1000	G's
Max	Time	Min	Time
6.5	106.9	-101.9	99.8



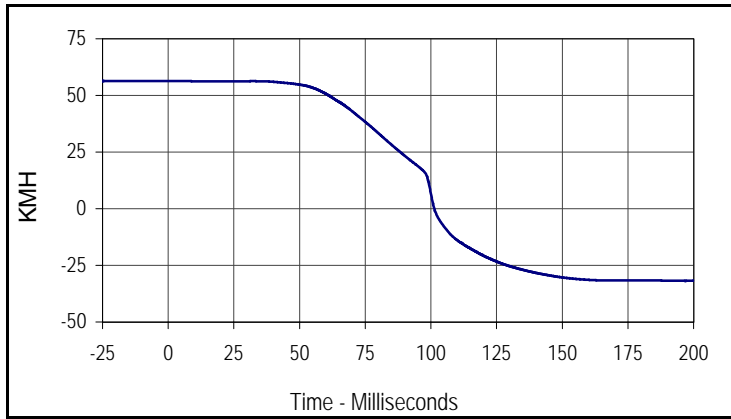
Curve Description			
Center Rear Pass. (50th) NAAH CG Z			
CURNO	Type	SAE Class	Units
082	FIL	1000	G's
Max	Time	Min	Time
83.2	82.2	-1.4	10.6



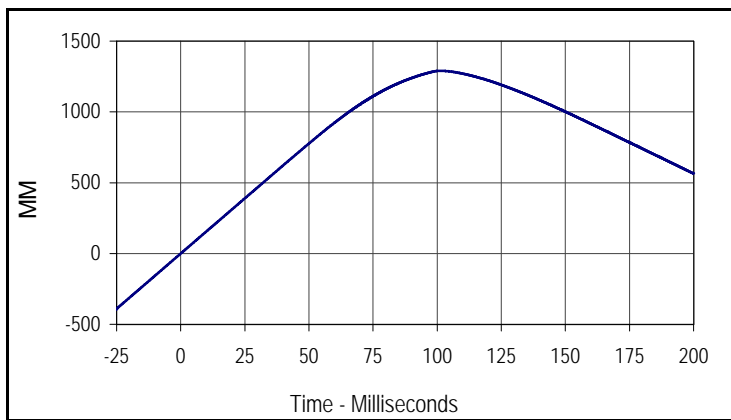
Curve Description			
Center Rear Pass. (50th) NAAH CG Resultant			
CURNO	Type	SAE Class	Units
080	RES	1000	G's
Max	Time	Min	Time
214.0	99.9	0.1	2.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



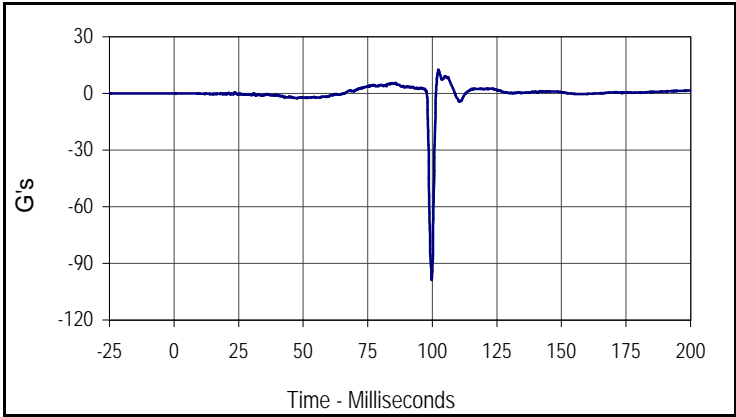
Curve Description			
Center Rear Pass. (50th) NAAH CG X Velocity			
CURNO	Type	SAE Class	Units
080	IN1	180	KMH
Max	Time	Min	Time
56.3	0.0	-31.9	196.9



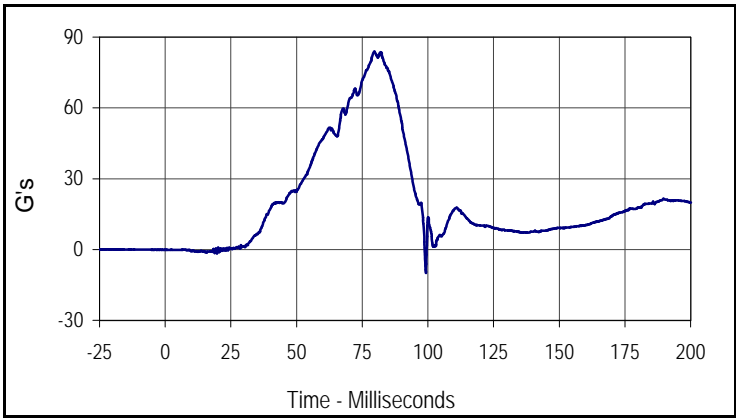
Curve Description			
Center Rear Pass. (50th) NAAH CG X Displacement			
CURNO	Type	SAE Class	Units
080	IN2	180	MM
Max	Time	Min	Time
1290.2	101.3	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

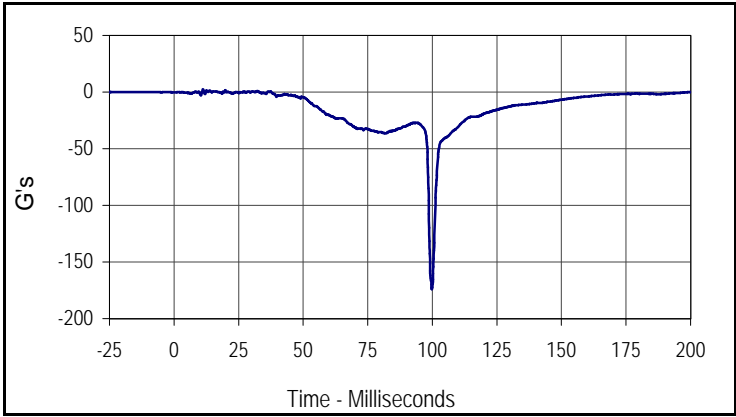
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Center Rear Pass. (50th) NAHA Xarm-Y			
CURNO	Type	SAE Class	Units
083	FIL	1000	G's
Max	Time	Min	Time
12.5	102.4	-98.8	99.8



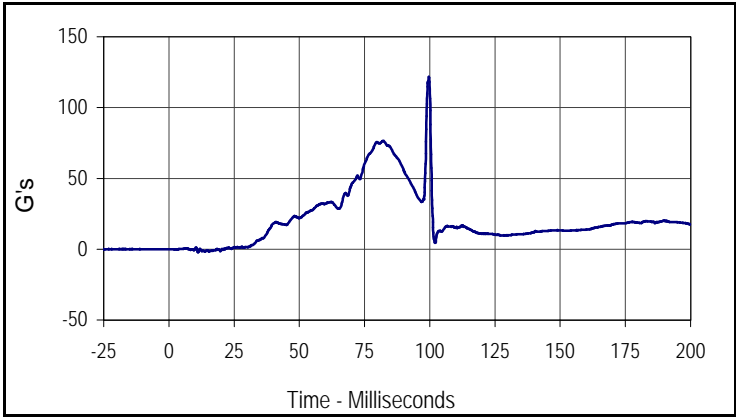
Curve Description			
Center Rear Pass. (50th) NAHA Xarm-Z			
CURNO	Type	SAE Class	Units
084	FIL	1000	G's
Max	Time	Min	Time
83.9	79.6	-9.9	99.2



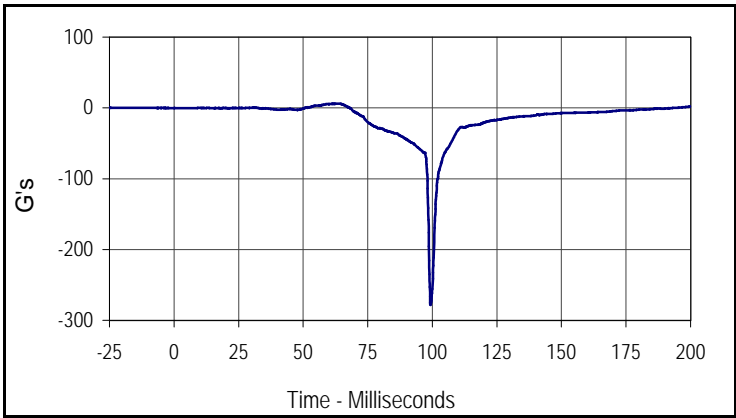
Curve Description			
Center Rear Pass. (50th) NAHA Yarm-X			
CURNO	Type	SAE Class	Units
085	FIL	1000	G's
Max	Time	Min	Time
2.4	11.2	-174.1	99.8

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

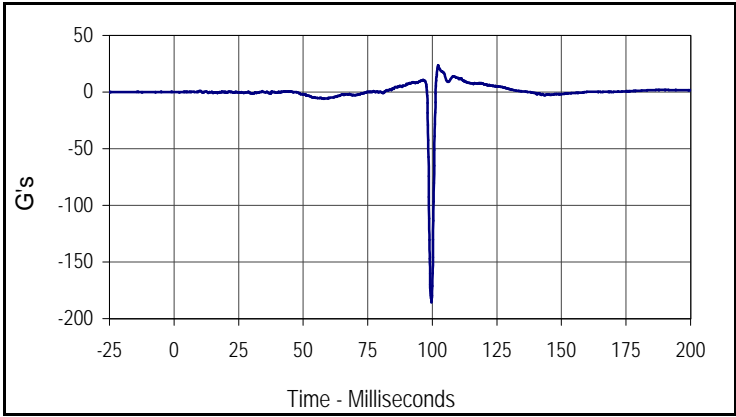
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Center Rear Pass. (50th) NAHA Yarm-Z			
CURNO	Type	SAE Class	Units
086	FIL	1000	G's
Max	Time	Min	Time
121.7	99.7	-2.1	11.2



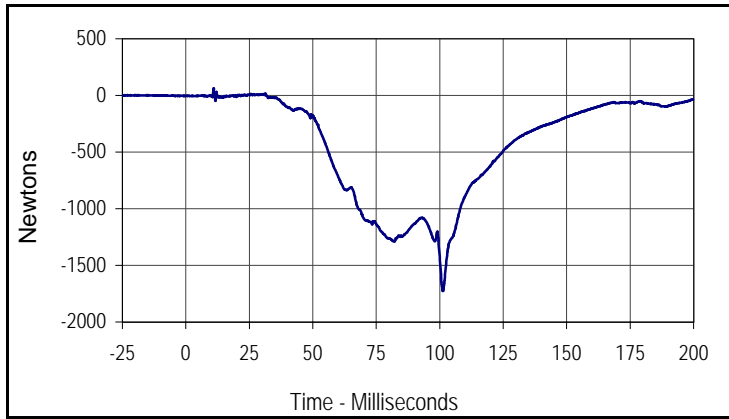
Curve Description			
Center Rear Pass. (50th) NAHA Zarm-X			
CURNO	Type	SAE Class	Units
087	FIL	1000	G's
Max	Time	Min	Time
6.2	63.1	-278.2	99.3



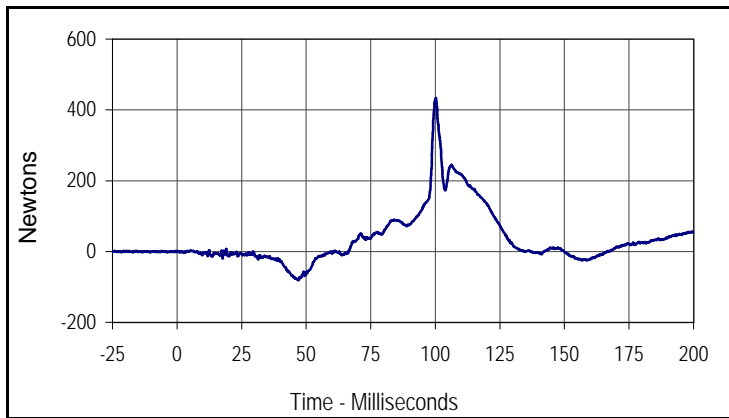
Curve Description			
Center Rear Pass. (50th) NAHA Zarm-Y			
CURNO	Type	SAE Class	Units
088	FIL	1000	G's
Max	Time	Min	Time
23.7	102.3	-185.7	99.7

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

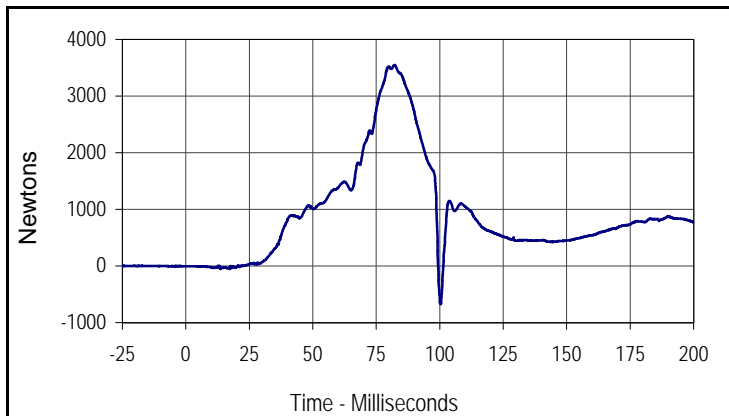
Test Date: 8/12/04
 NHTSA No.: R40402



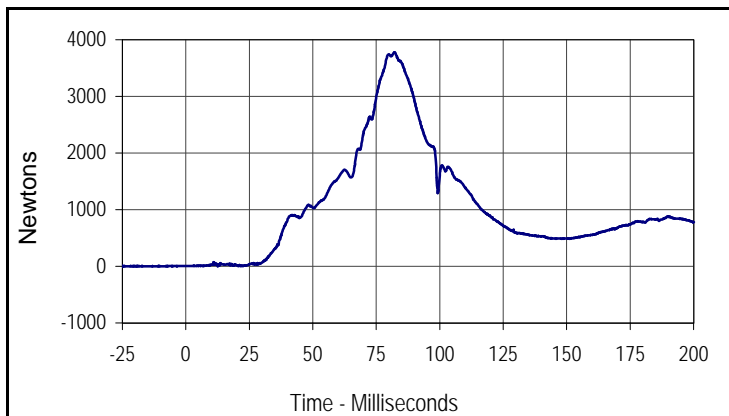
Curve Description			
Center Rear Pass. (50th) Upper Neck Force X			
CURNO	Type	SAE Class	Units
089	FIL	1000	Newtons
Max	Time	Min	Time
61.7	10.9	-1724.9	101.3



Curve Description			
Center Rear Pass. (50th) Upper Neck Force Y			
CURNO	Type	SAE Class	Units
090	FIL	1000	Newtons
Max	Time	Min	Time
433.4	100.2	-80.4	47.0



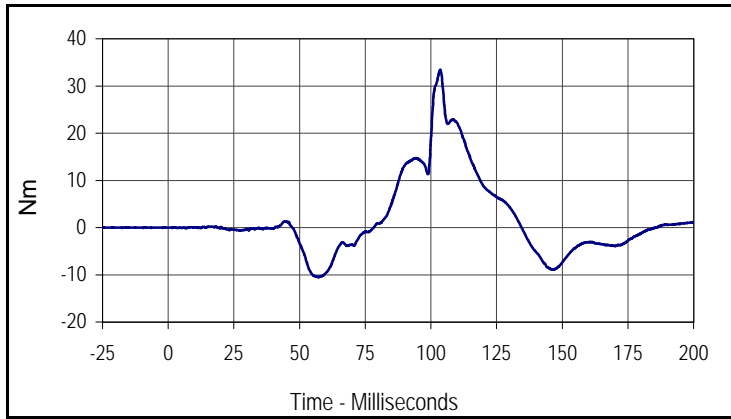
Curve Description			
Center Rear Pass. (50th) Upper Neck Force Z			
CURNO	Type	SAE Class	Units
091	FIL	1000	Newtons
Max	Time	Min	Time
3549.3	82.2	-674.5	100.3



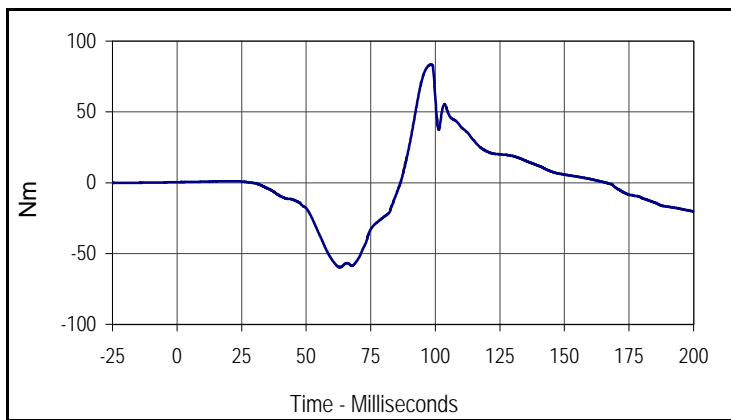
Curve Description			
Center Rear Pass. (50th) Upper Neck Force Resultant			
CURNO	Type	SAE Class	Units
089	RES	1000	Newtons
Max	Time	Min	Time
3776.8	82.2	2.3	12.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

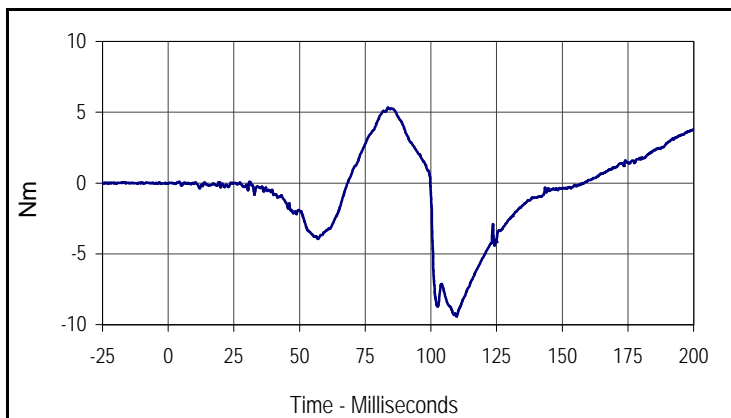
Test Date: 8/12/04
 NHTSA No.: R40402



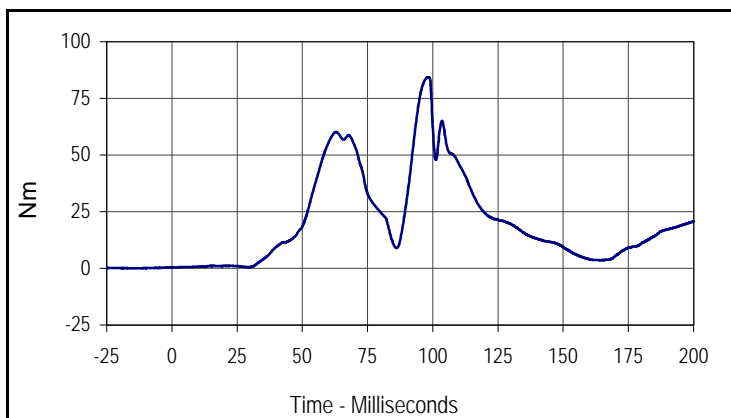
Curve Description			
Center Rear Pass. (50th) Upper Neck Moment X			
CURNO	Type	SAE Class	Units
092	FIL	600	Nm
Max	Time	Min	Time
33.4	103.5	-10.5	57.2



Curve Description			
Center Rear Pass. (50th) Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
093	FIL	600	Nm
Max	Time	Min	Time
83.6	98.5	-59.7	63.0



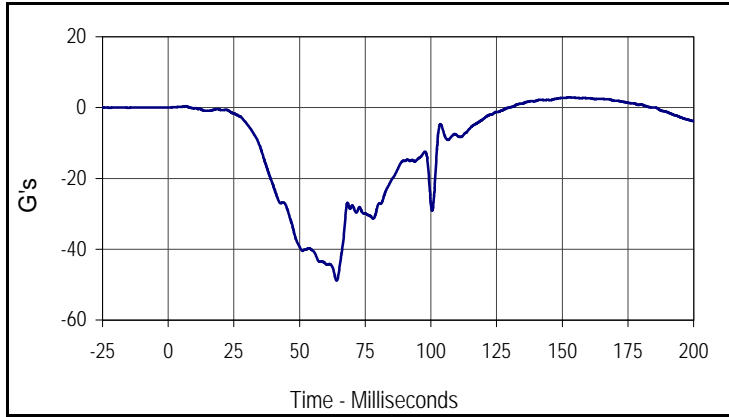
Curve Description			
Center Rear Pass. (50th) Upper Neck Moment Z			
CURNO	Type	SAE Class	Units
094	FIL	600	Nm
Max	Time	Min	Time
5.3	83.7	-9.4	109.8



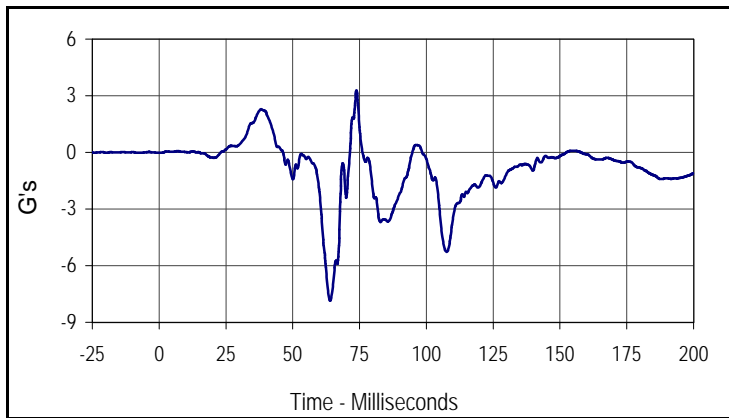
Curve Description			
Center Rear Pass. (50th) Upper Neck Moment Resultant			
CURNO	Type	SAE Class	Units
092	RES	600	Nm
Max	Time	Min	Time
84.4	98.4	0.4	0.3

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

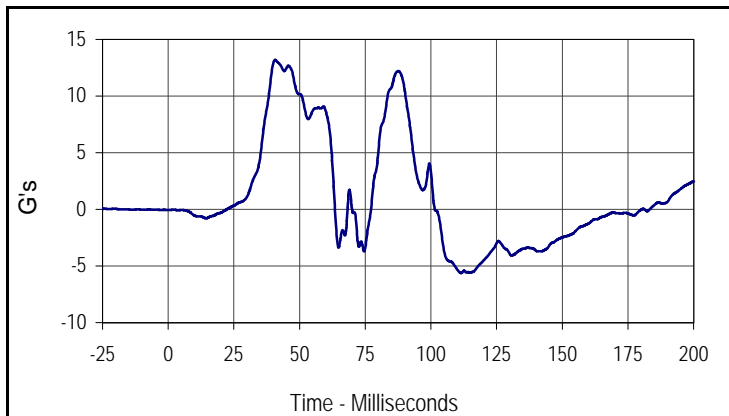
Test Date: 8/12/04
 NHTSA No.: R40402



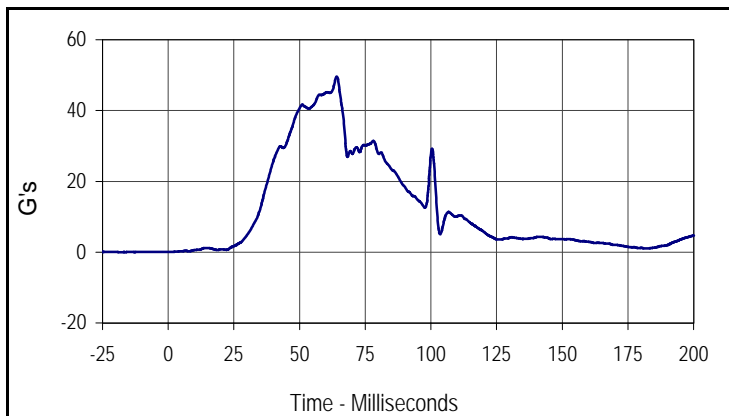
Curve Description			
Center Rear Pass. (50th) Chest Primary X			
CURNO	Type	SAE Class	Units
095	FIL	180	G's
Max	Time	Min	Time
2.9	152.6	-48.9	64.1



Curve Description			
Center Rear Pass. (50th) Chest Primary Y			
CURNO	Type	SAE Class	Units
096	FIL	180	G's
Max	Time	Min	Time
3.3	73.8	-7.9	64.0



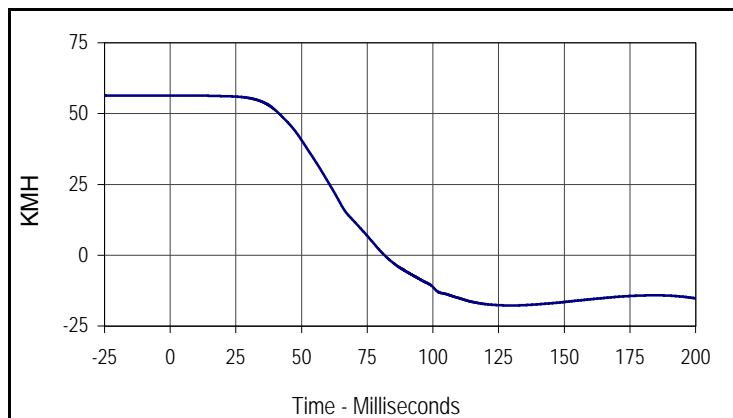
Curve Description			
Center Rear Pass. (50th) Chest Primary Z			
CURNO	Type	SAE Class	Units
097	FIL	180	G's
Max	Time	Min	Time
13.2	40.7	-5.6	111.5



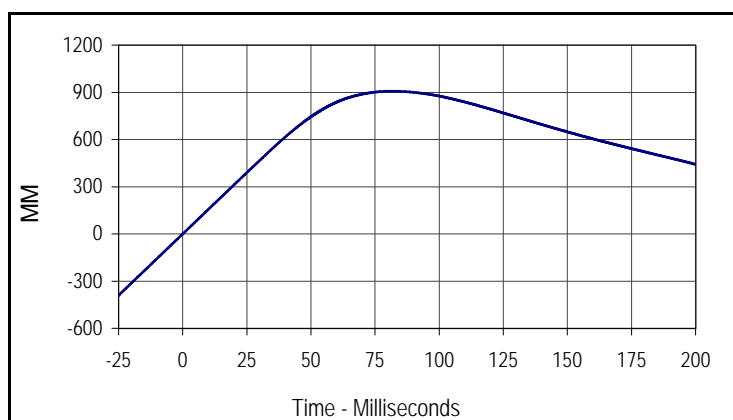
Curve Description			
Center Rear Pass. (50th) Chest Resultant Primary			
CURNO	Type	SAE Class	Units
095	RES	180	G's
Max	Time	Min	Time
49.6	64.1	0.1	1.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



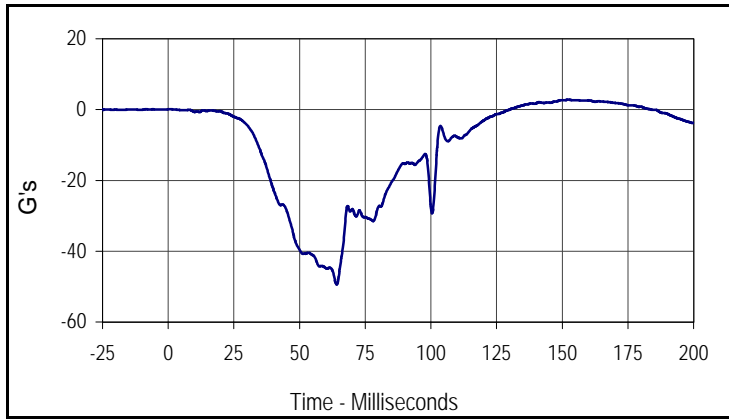
Curve Description			
Center Rear Pass. (50th) Chest Primary X Velocity			
CURNO	Type	SAE Class	Units
095	IN1	180	KMH
Max	Time	Min	Time
56.4	8.2	-17.8	129.8



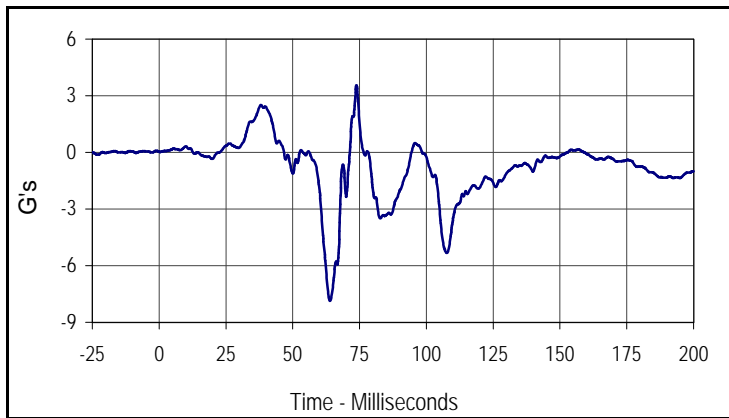
Curve Description			
Center Rear Pass. (50th) Chest Primary X Displ.			
CURNO	Type	SAE Class	Units
095	IN2	180	MM
Max	Time	Min	Time
907.3	81.6	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

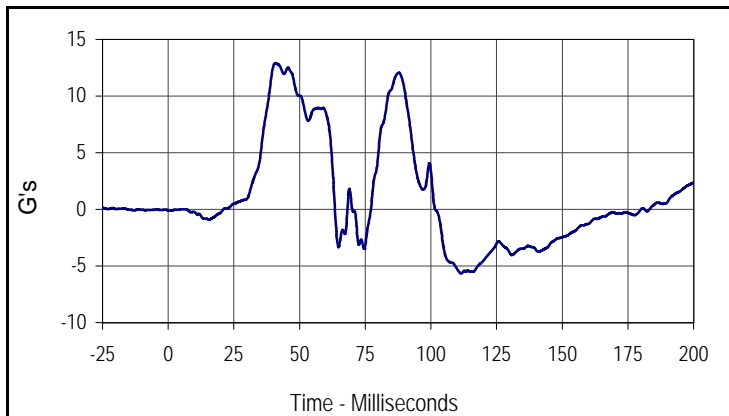
Test Date: 8/12/04
 NHTSA No.: R40402



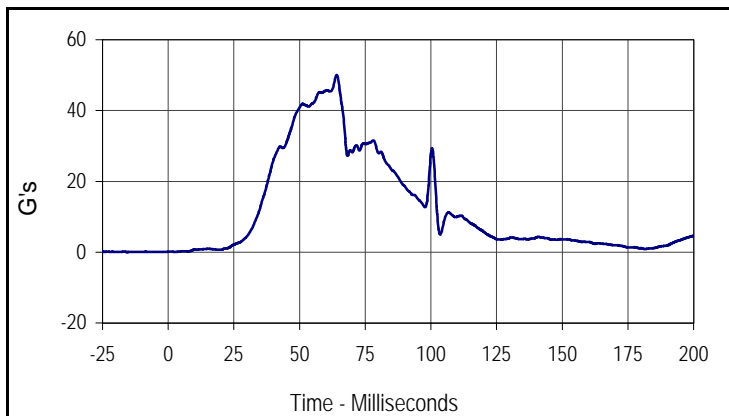
Curve Description			
Center Rear Pass. (50th) Chest Redundant X			
CURNO	Type	SAE Class	Units
098	FIL	180	G's
Max	Time	Min	Time
2.8	152.2	-49.4	64.1



Curve Description			
Center Rear Pass. (50th) Chest Redundant Y			
CURNO	Type	SAE Class	Units
099	FIL	180	G's
Max	Time	Min	Time
3.5	73.9	-7.9	63.9



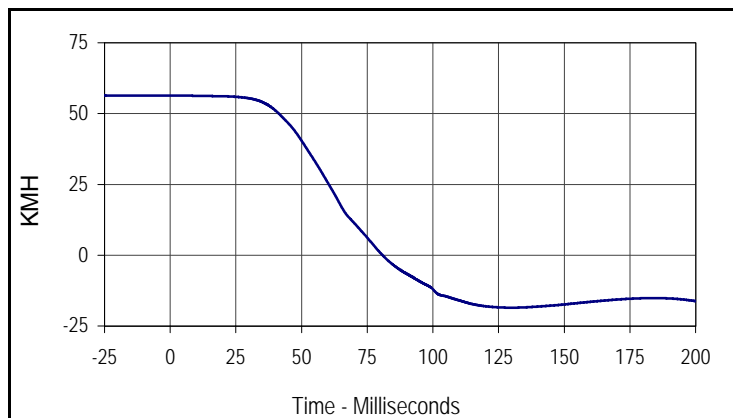
Curve Description			
Center Rear Pass. (50th) Chest Redundant Z			
CURNO	Type	SAE Class	Units
100	FIL	180	G's
Max	Time	Min	Time
12.9	40.8	-5.7	111.6



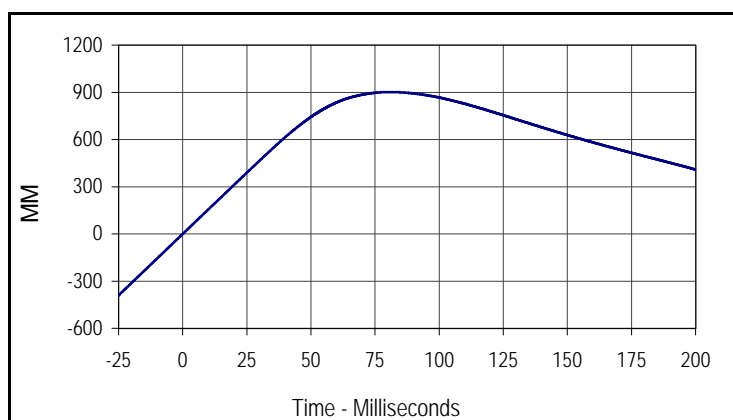
Curve Description			
Center Rear Pass. (50th) Chest Resultant Red.			
CURNO	Type	SAE Class	Units
098	RES	180	G's
Max	Time	Min	Time
50.1	64.1	0.1	2.8

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



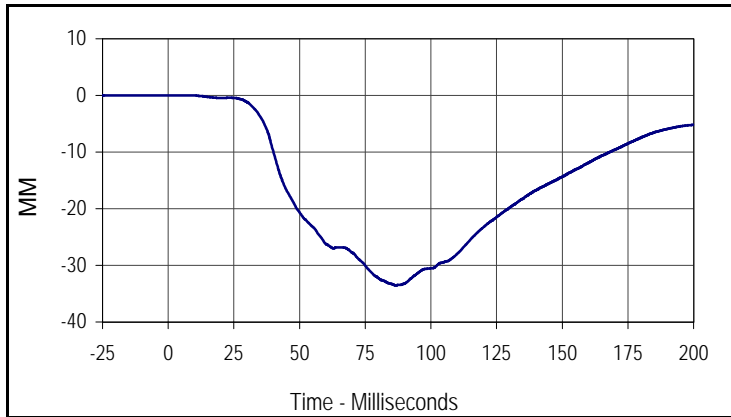
Curve Description			
Center Rear Pass. (50th) Chest Red. X Velocity			
CURNO	Type	SAE Class	Units
098	IN1	180	KMH
Max	Time	Min	Time
56.3	2.9	-18.5	129.9



Curve Description			
Center Rear Pass. (50th) Chest Red. X Displ.			
CURNO	Type	SAE Class	Units
098	IN2	180	MM
Max	Time	Min	Time
901.9	80.8	-0.2	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

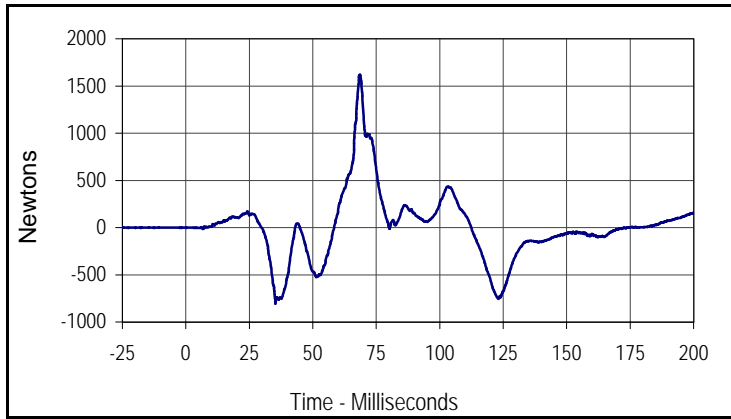
Test Date: 8/12/04
 NHTSA No.: R40402



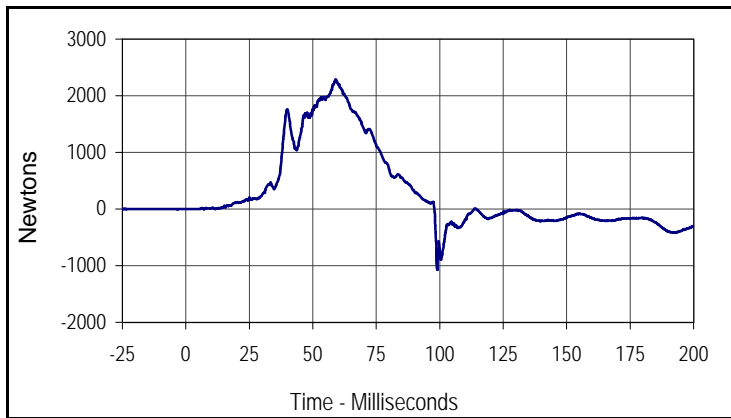
Curve Description			
Center Rear Pass. (50th) Chest Displacement			
CURNO	Type	SAE Class	Units
101	FIL	600	MM
Max	Time	Min	Time
0.0	0.4	-33.5	86.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

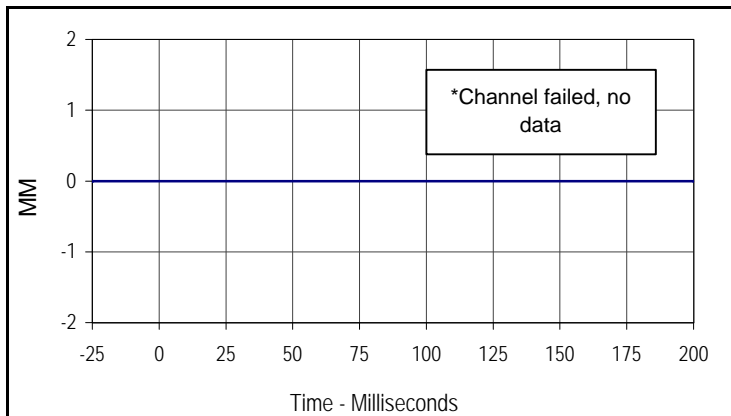
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Center Rear Pass. (50th) Left Femur Force			
CURNO	Type	SAE Class	Units
102	FIL	600	Newtons
Max	Time	Min	Time
1620.9	68.6	-805.2	35.3

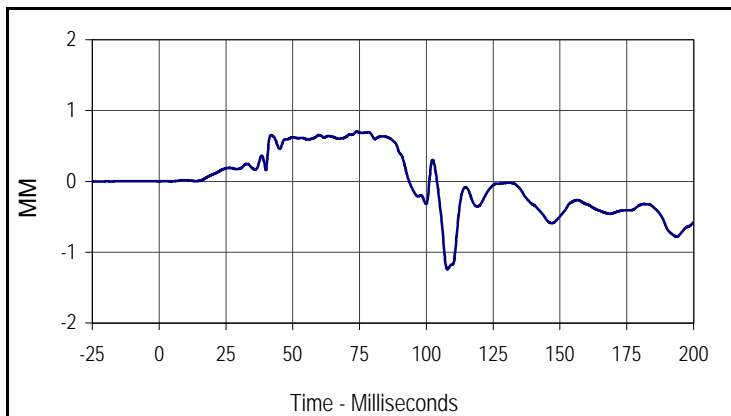


Curve Description			
Center Rear Pass. (50th) Right Femur Force			
CURNO	Type	SAE Class	Units
103	FIL	600	Newtons
Max	Time	Min	Time
2290.2	59.0	-1073.7	99.1



Curve Description			
Center Rear Pass. (50th) Left Knee Displacement			
CURNO	Type	SAE Class	Units
104	FIL	180	MM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

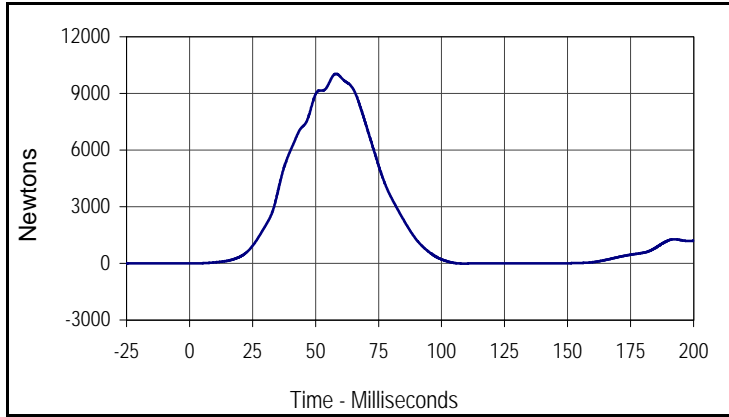
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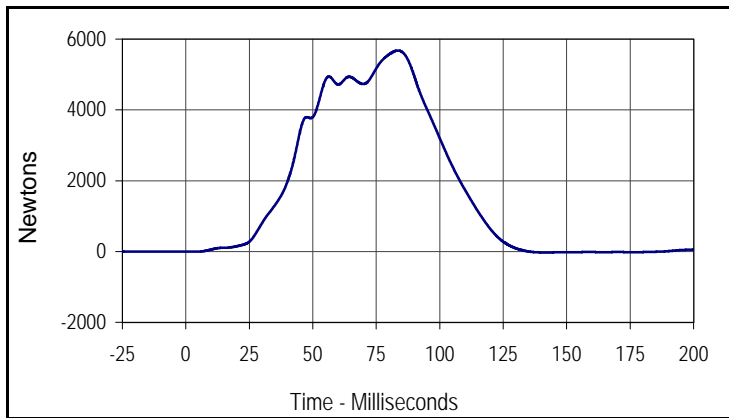
Curve Description			
Center Rear Pass. (50th) Right Knee Displacement			
CURNO	Type	SAE Class	Units
105	FIL	180	MM
Max	Time	Min	Time
0.7	74.0	-1.2	107.8

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

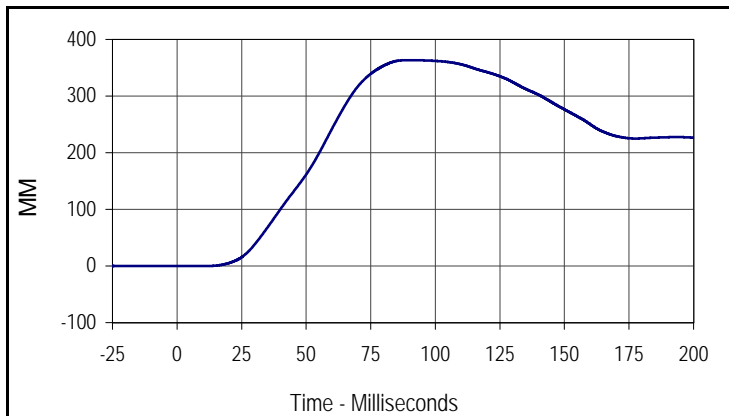
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Center Rear Pass. (50th) Lap Belt Force			
CURNO	Type	SAE Class	Units
106	FIL	60	Newtons
Max	Time	Min	Time
10040.9	58.1	-11.3	108.9



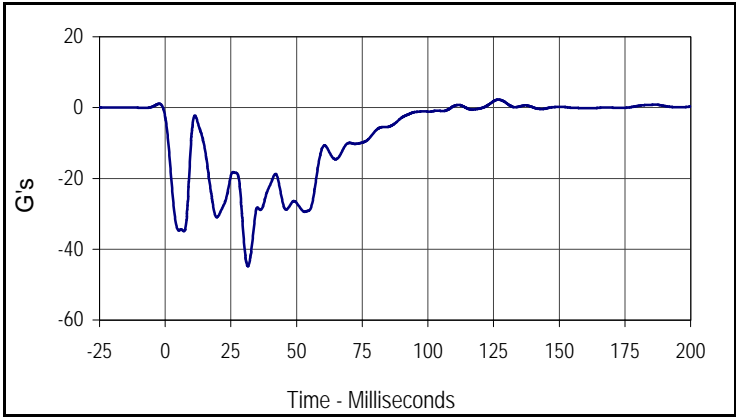
Curve Description			
Center Rear Pass. (50th) Shoulder Belt Force			
CURNO	Type	SAE Class	Units
107	FIL	60	Newtons
Max	Time	Min	Time
5678.9	83.6	-27.2	141.8



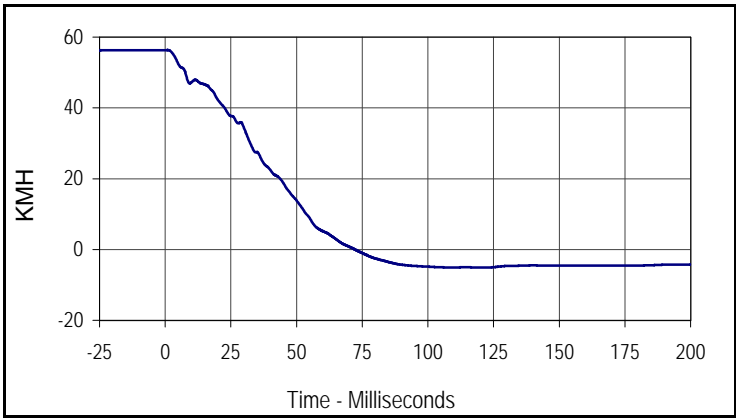
Curve Description			
Center Rear Pass. (50th) Shoulder Belt Pullout			
CURNO	Type	SAE Class	Units
108	FIL	60	MM
Max	Time	Min	Time
363.3	89.3	-0.1	10.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

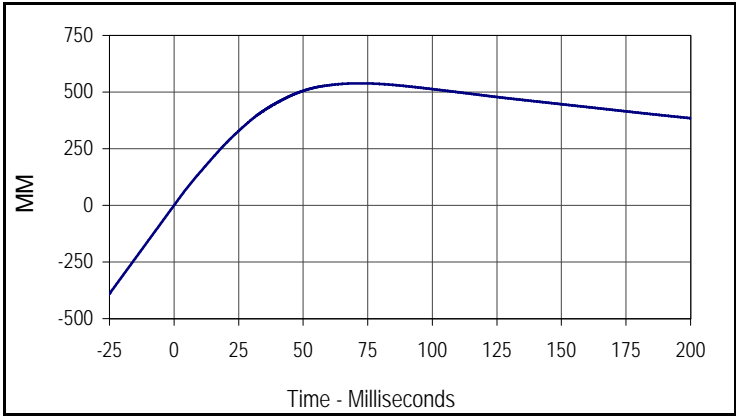
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Left Rear X			
CURNO	Type	SAE Class	Units
109	FIL	60	G's
Max	Time	Min	Time
2.3	126.8	-44.8	31.5



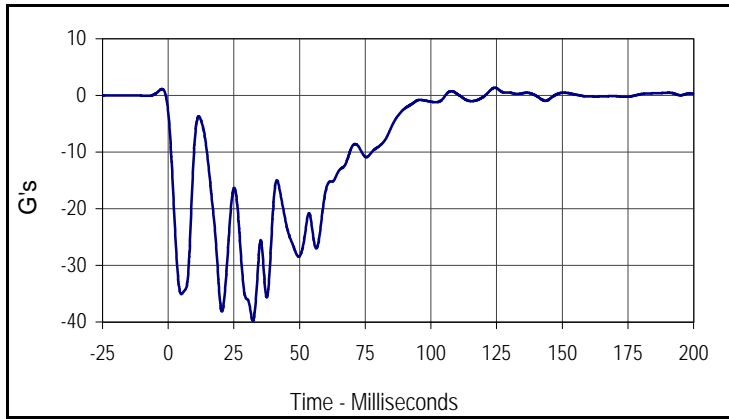
Curve Description			
Vehicle Left Rear X Velocity			
CURNO	Type	SAE Class	Units
109	IN1	180	KMH
Max	Time	Min	Time
56.3	0.9	-5.1	108.5



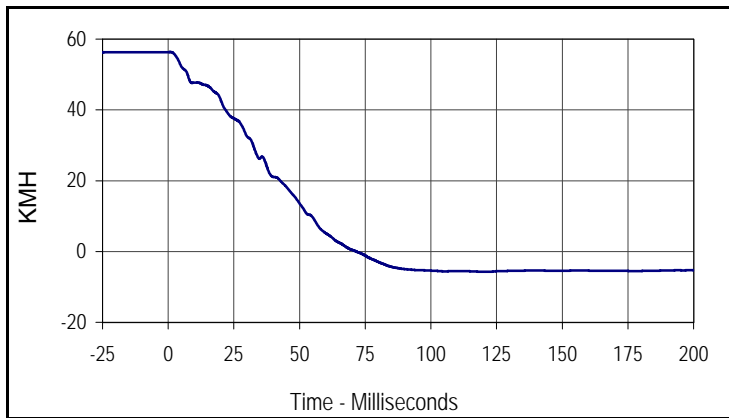
Curve Description			
Vehicle Left Rear X Displacement			
CURNO	Type	SAE Class	Units
109	IN2	180	MM
Max	Time	Min	Time
538.6	72.2	-0.1	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

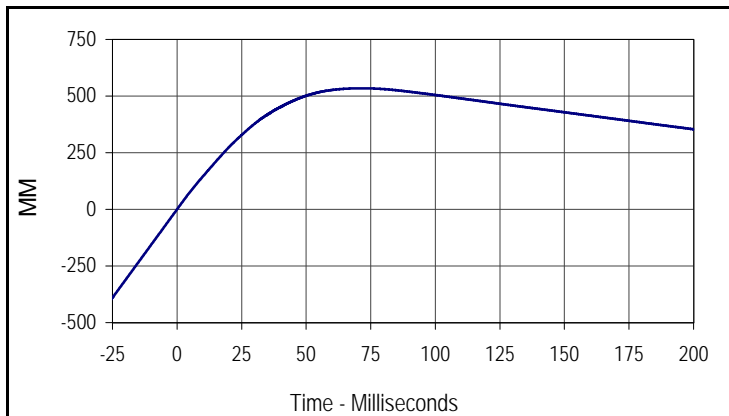
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Right Rear X			
CURNO	Type	SAE Class	Units
110	FIL	60	G's
Max	Time	Min	Time
1.4	124.3	-39.7	32.2



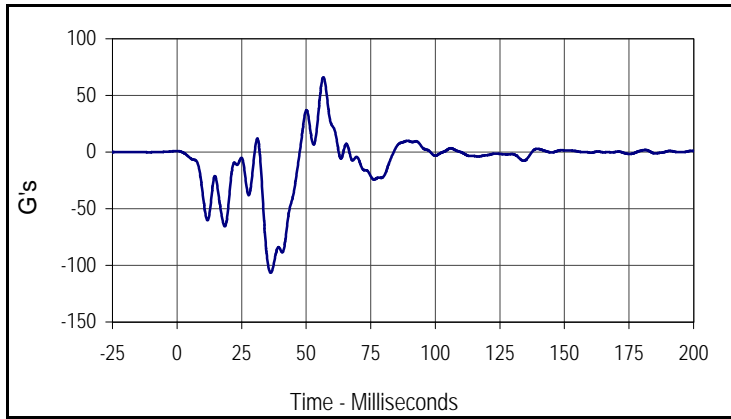
Curve Description			
Vehicle Right Rear X Velocity			
CURNO	Type	SAE Class	Units
110	IN1	180	KMH
Max	Time	Min	Time
56.3	0.8	-5.7	121.2



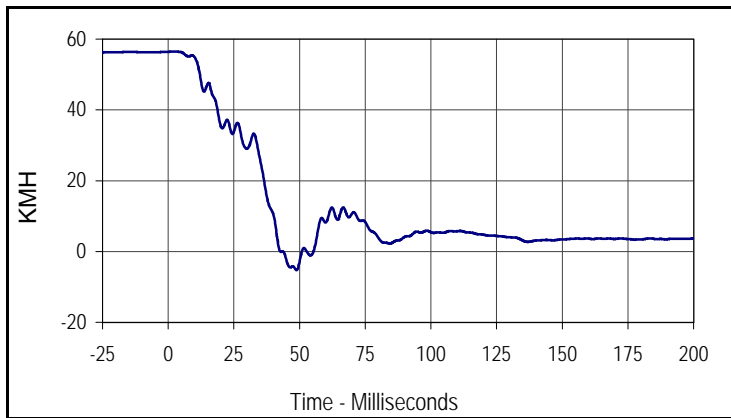
Curve Description			
Vehicle Right Rear X Displacement			
CURNO	Type	SAE Class	Units
110	IN2	180	MM
Max	Time	Min	Time
534.2	71.5	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

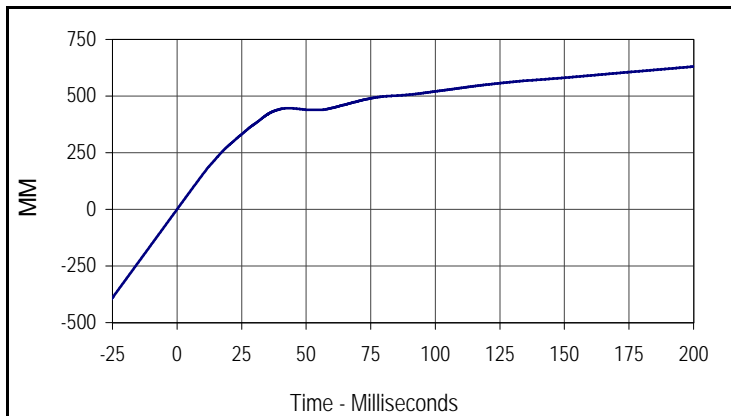
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Left Brake Caliper X			
CURNO	Type	SAE Class	Units
111	FIL	60	G's
Max	Time	Min	Time
65.9	56.7	-106.6	36.3



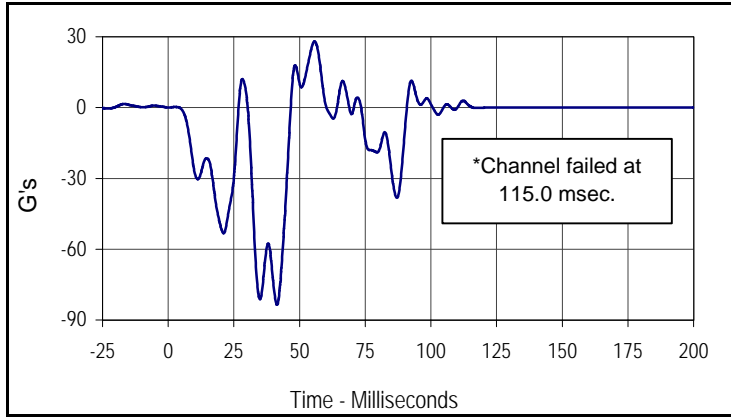
Curve Description			
Vehicle Left Brake Caliper X Velocity			
CURNO	Type	SAE Class	Units
111	IN1	180	KMH
Max	Time	Min	Time
56.4	1.7	-5.3	48.8



Curve Description			
Vehicle Left Brake Caliper X Displacement			
CURNO	Type	SAE Class	Units
111	IN2	180	MM
Max	Time	Min	Time
630.3	200.0	0.0	0.0

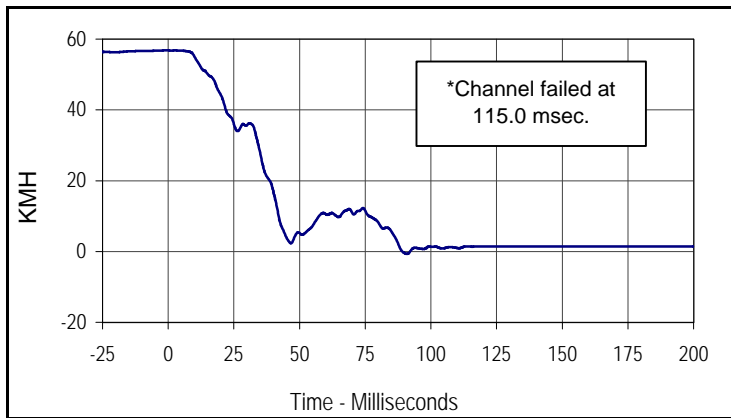
Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



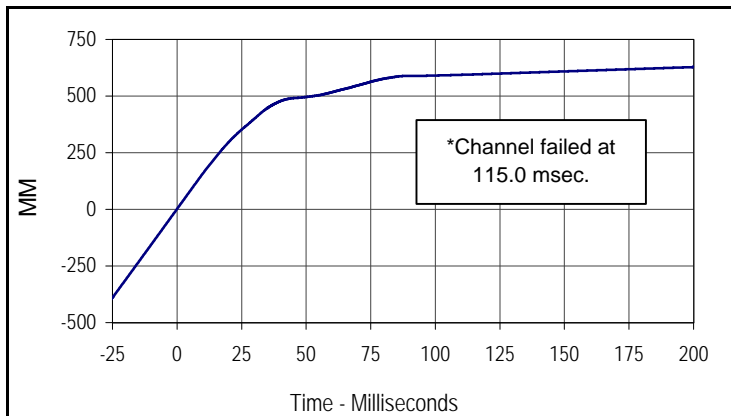
Curve Description			
Vehicle Right Brake Caliper X			
CURNO	Type	SAE Class	Units
112	FIL	60	G's
Max	Time	Min	Time
28.0	55.7	-83.5	41.4

*Channel failed at 115.0 msec.



Curve Description			
Vehicle Right Brake Caliper X Velocity			
CURNO	Type	SAE Class	Units
112	IN1	180	KMH
Max	Time	Min	Time
56.8	2.6	-0.7	90.9

*Channel failed at 115.0 msec.

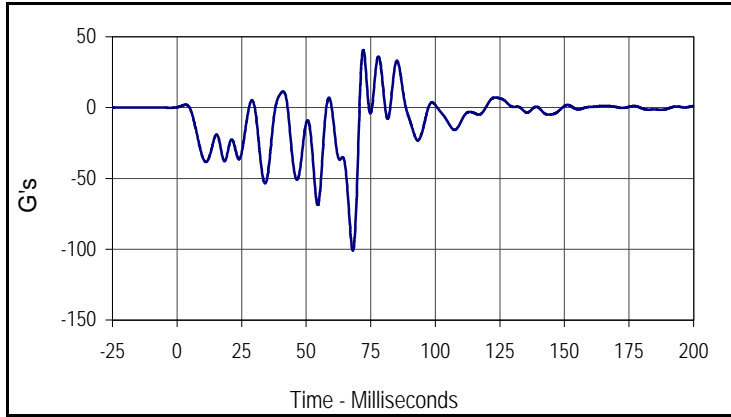


Curve Description			
Vehicle Right Brake Caliper X Displacement			
CURNO	Type	SAE Class	Units
112	IN2	180	MM
Max	Time	Min	Time
628.0	200.0	1.7	0.0

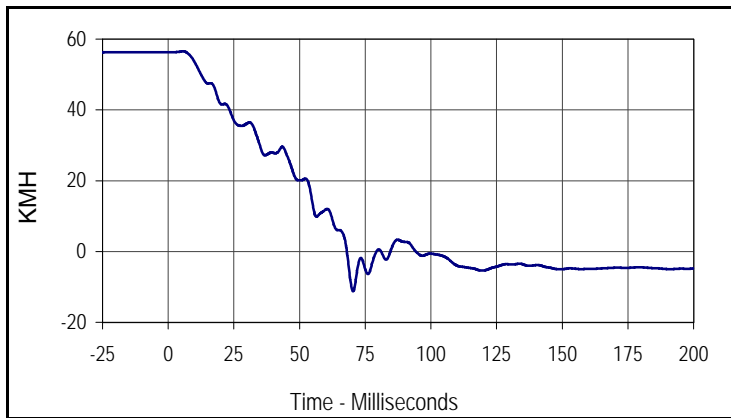
*Channel failed at 115.0 msec.

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

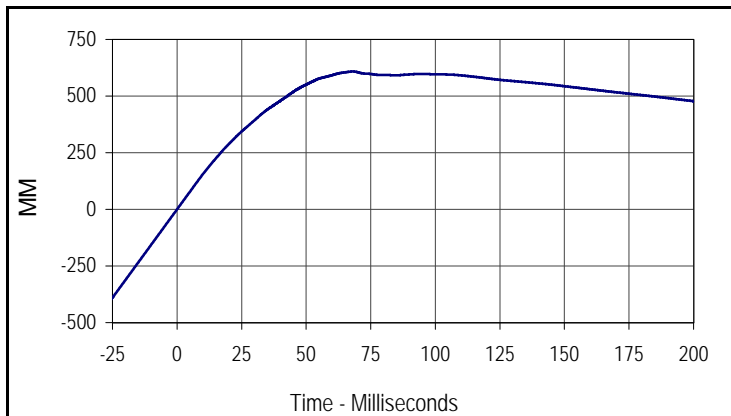
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Instrument Panel X			
CURNO	Type	SAE Class	Units
113	FIL	60	G's
Max	Time	Min	Time
40.6	72.1	-101.0	68.1



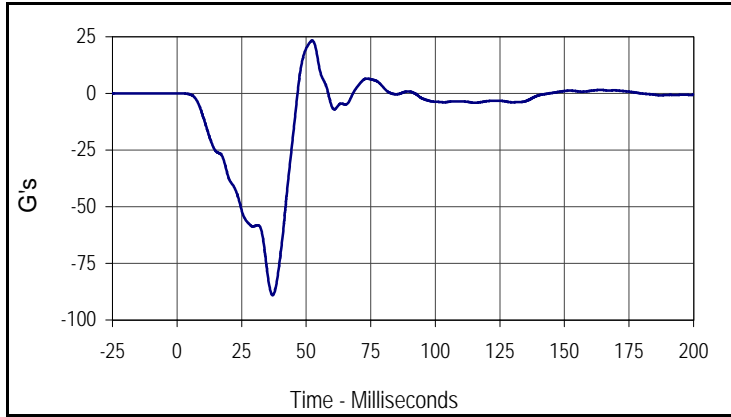
Curve Description			
Vehicle Instrument Panel X Velocity			
CURNO	Type	SAE Class	Units
113	IN1	180	KMH
Max	Time	Min	Time
56.6	5.6	-11.2	70.4



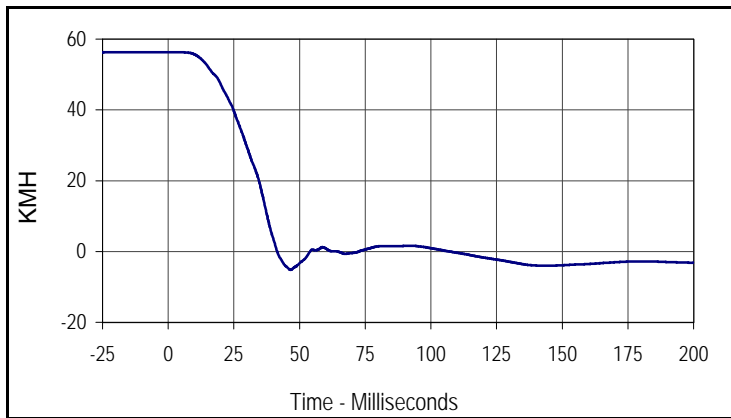
Curve Description			
Vehicle Instrument Panel X Displacement			
CURNO	Type	SAE Class	Units
113	IN2	180	MM
Max	Time	Min	Time
608.3	68.0	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

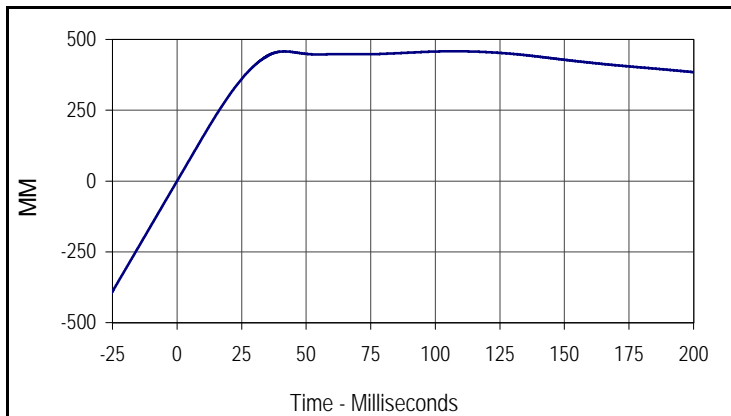
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Engine Top X			
CURNO	Type	SAE Class	Units
114	FIL	60	G's
Max	Time	Min	Time
23.3	52.3	-89.1	37.0



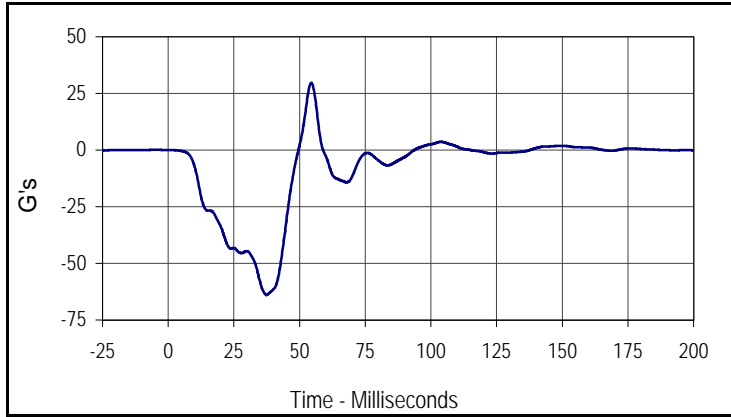
Curve Description			
Vehicle Engine Top X Velocity			
CURNO	Type	SAE Class	Units
114	IN1	180	KMH
Max	Time	Min	Time
56.3	1.9	-5.2	46.6



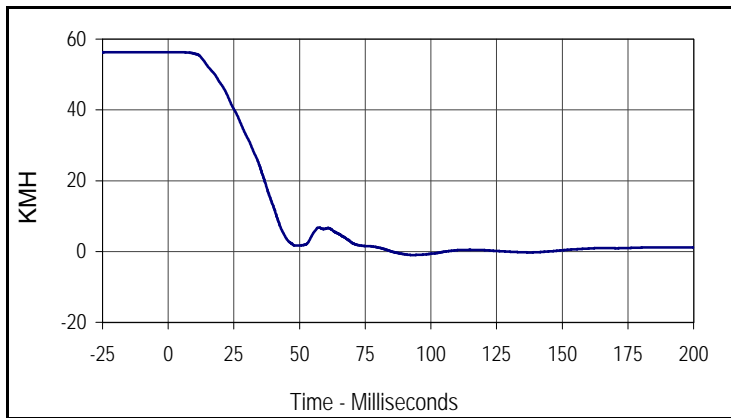
Curve Description			
Vehicle Engine Top X Displacement			
CURNO	Type	SAE Class	Units
114	IN2	180	MM
Max	Time	Min	Time
458.2	107.2	-0.1	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

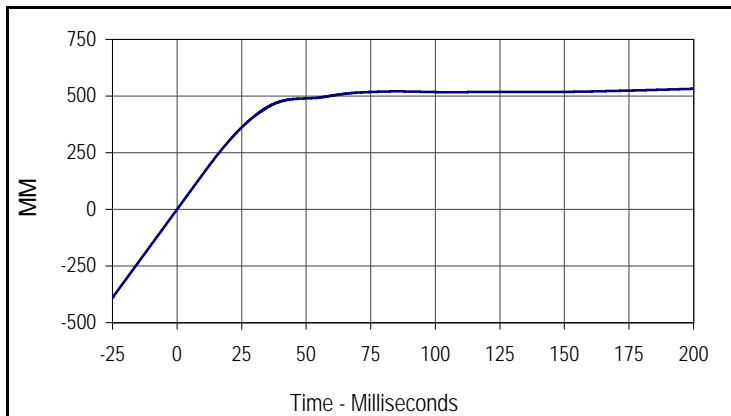
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Engine Bottom X			
CURNO	Type	SAE Class	Units
115	FIL	60	G's
Max	Time	Min	Time
29.6	54.5	-63.9	37.4



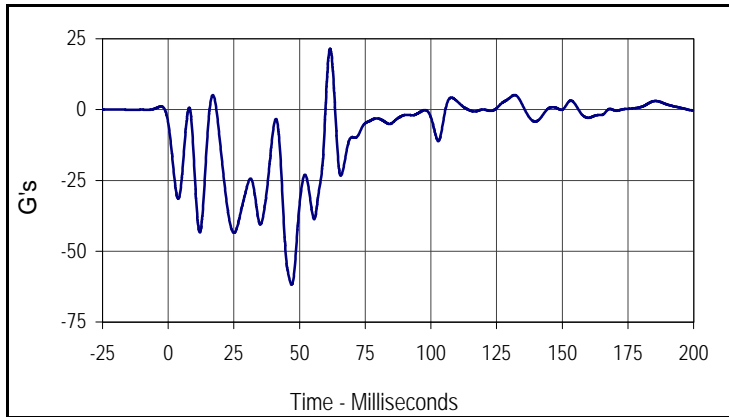
Curve Description			
Vehicle Engine Bottom X Velocity			
CURNO	Type	SAE Class	Units
115	IN1	180	KMH
Max	Time	Min	Time
56.3	0.0	-1.0	93.2



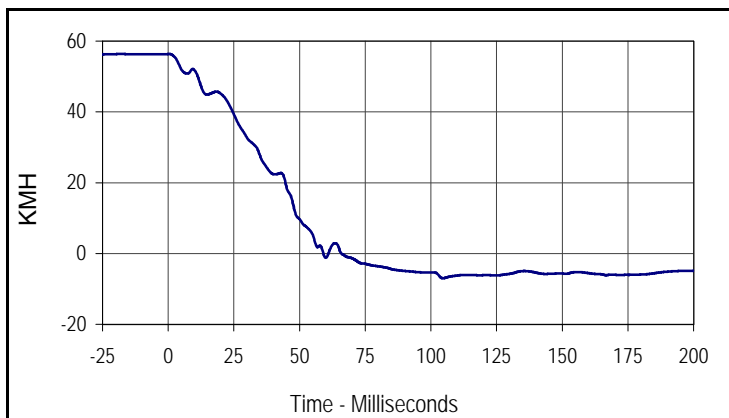
Curve Description			
Vehicle Engine Bottom X Displacement			
CURNO	Type	SAE Class	Units
115	IN2	180	MM
Max	Time	Min	Time
532.1	200.0	-0.2	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

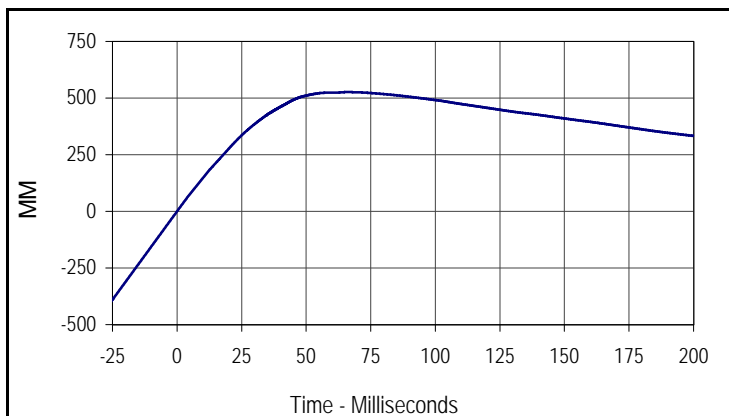
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Toe Pan Accelerator X			
CURNO	Type	SAE Class	Units
116	FIL	60	G's
Max	Time	Min	Time
21.4	61.6	-61.8	47.0



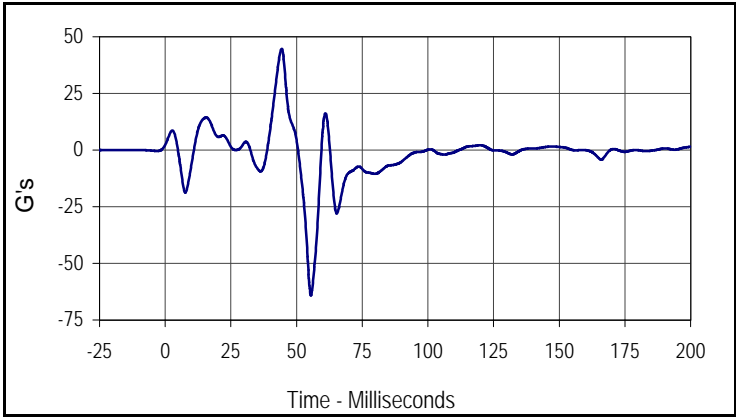
Curve Description			
Vehicle Toe Pan Accelerator X Velocity			
CURNO	Type	SAE Class	Units
116	IN1	180	KMH
Max	Time	Min	Time
56.4	0.4	-7.0	104.6



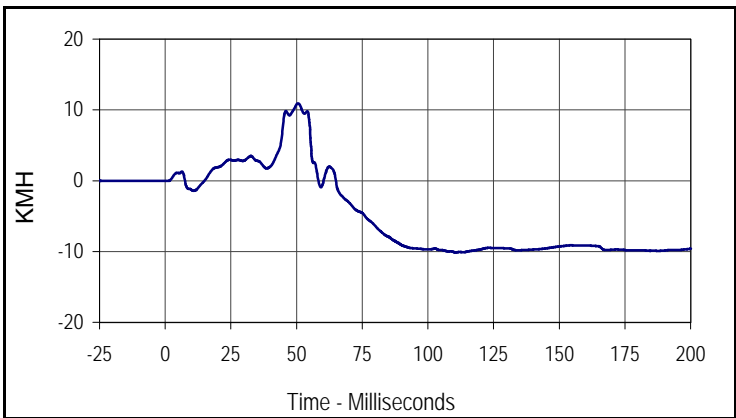
Curve Description			
Vehicle Toe Pan Accelerator X Displacement			
CURNO	Type	SAE Class	Units
116	IN2	180	MM
Max	Time	Min	Time
526.4	65.9	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

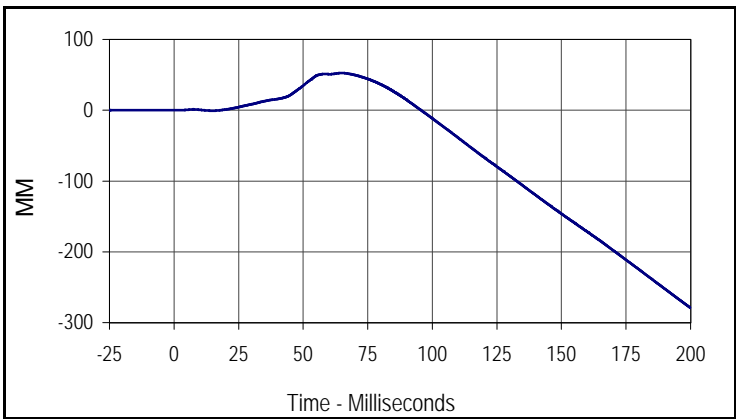
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Toe Pan Accelerator Z			
CURNO	Type	SAE Class	Units
117	FIL	60	G's
Max	Time	Min	Time
44.6	44.3	-64.1	55.5



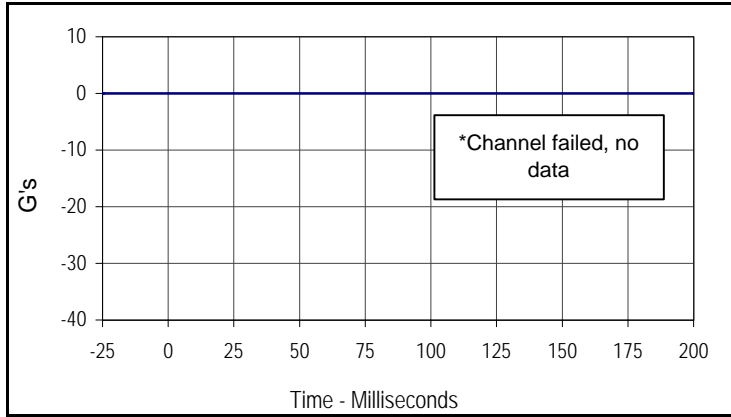
Curve Description			
Vehicle Toe Pan Accelerator Z Velocity			
CURNO	Type	SAE Class	Units
117	IN1	180	KMH
Max	Time	Min	Time
10.9	50.6	-10.1	110.6



Curve Description			
Vehicle Toe Pan Accelerator Z Displacement			
CURNO	Type	SAE Class	Units
117	IN2	180	MM
Max	Time	Min	Time
52.7	65.0	-279.3	200.0

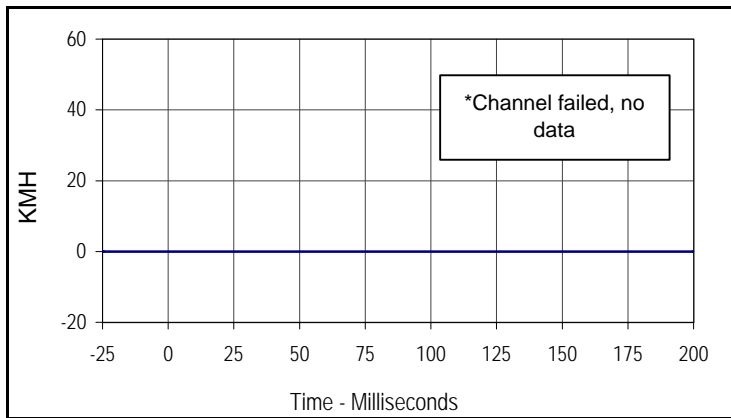
Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



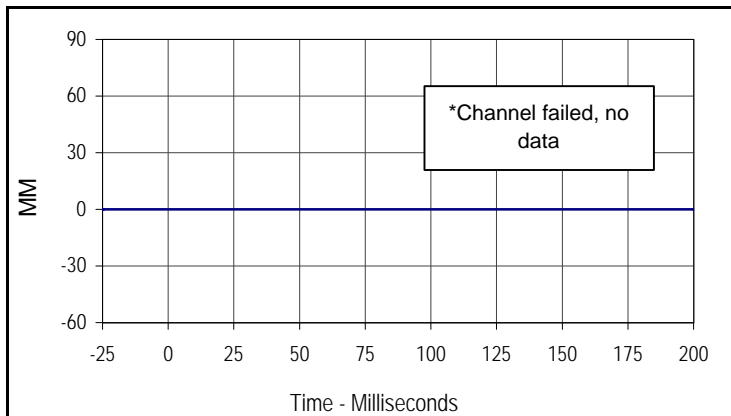
Curve Description			
Vehicle Toe Pan Foot Rest X			
CURNO	Type	SAE Class	Units
118	FIL	60	G's
Max	Time	Min	Time
0.0	0.0	0.0	0.0

*Cannel failed, no data



Curve Description			
Vehicle Toe Pan Foot Rest X Velocity			
CURNO	Type	SAE Class	Units
118	IN1	180	KMH
Max	Time	Min	Time
0.0	0.0	0.0	0.0

*Cannel failed, no data

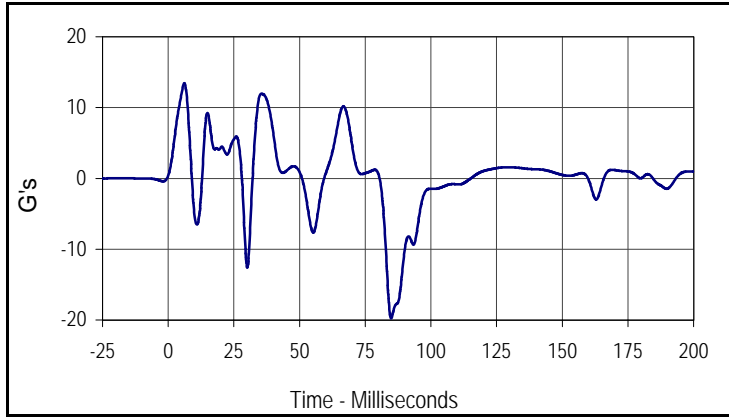


Curve Description			
Vehicle Toe Pan Foot Rest X Displacement			
CURNO	Type	SAE Class	Units
118	IN2	180	MM
Max	Time	Min	Time
0.0	0.0	0.0	0.0

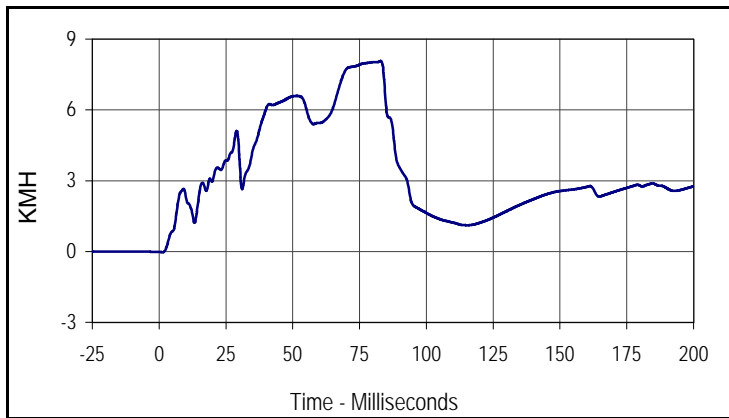
*Cannel failed, no data

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

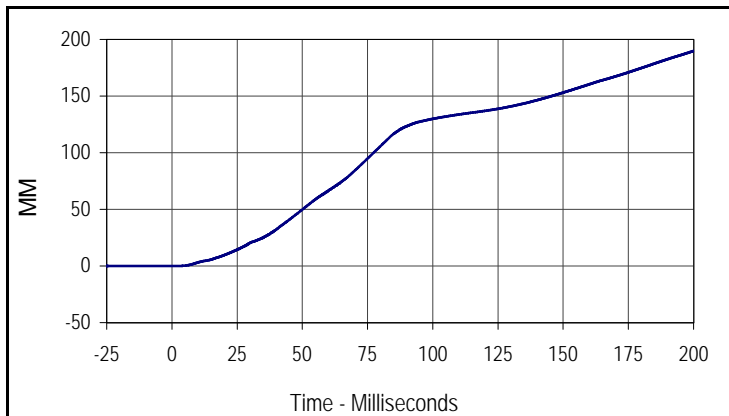
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Toe Pan Foot Rest Z			
CURNO	Type	SAE Class	Units
119	FIL	60	G's
Max	Time	Min	Time
13.4	6.1	-19.8	84.8



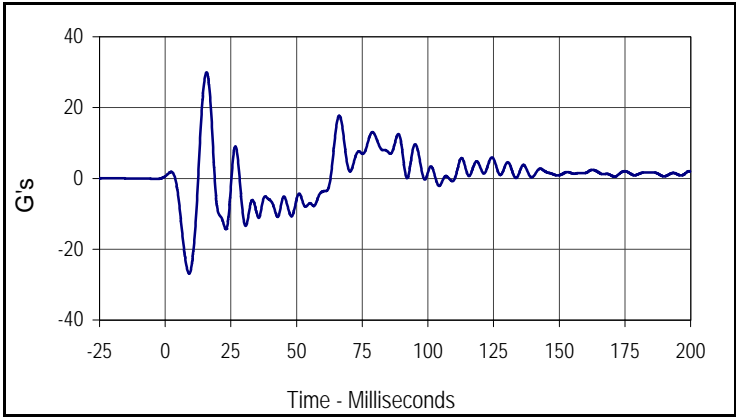
Curve Description			
Vehicle Toe Pan Foot Rest Z Velocity			
CURNO	Type	SAE Class	Units
119	IN1	180	KMH
Max	Time	Min	Time
8.1	82.9	0.0	1.3



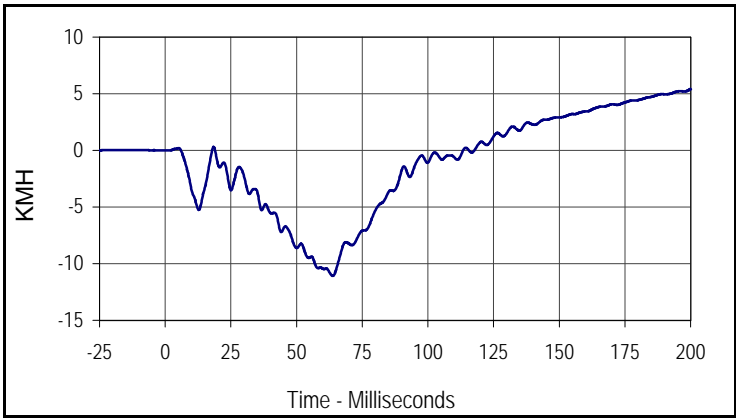
Curve Description			
Vehicle Toe Pan Foot Rest Z Displacement			
CURNO	Type	SAE Class	Units
119	IN2	180	MM
Max	Time	Min	Time
189.8	200.0	0.0	1.9

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

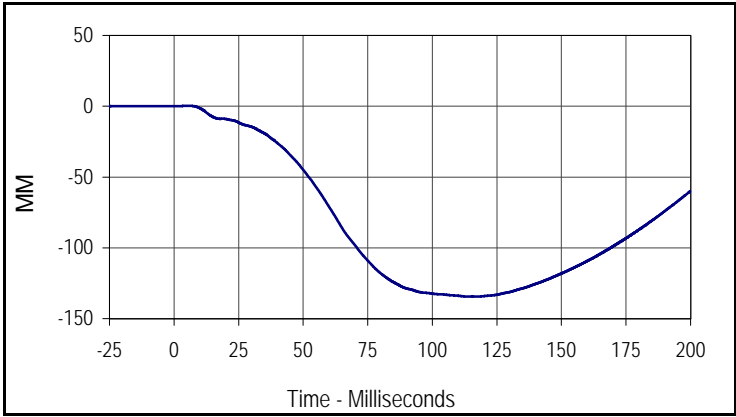
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Right Rear Z			
CURNO	Type	SAE Class	Units
120	FIL	60	G's
Max	Time	Min	Time
29.9	15.7	-26.8	9.1



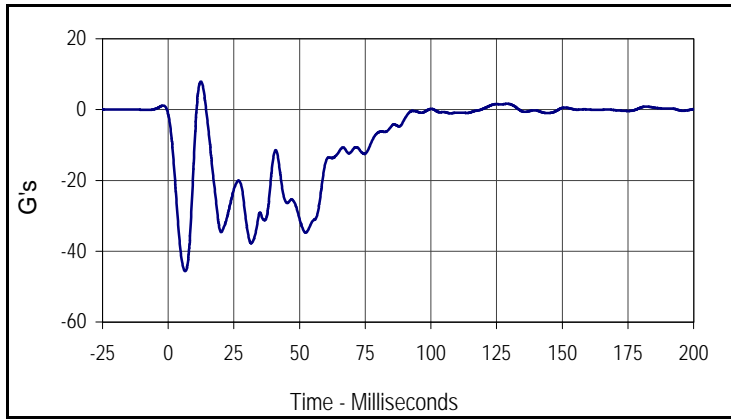
Curve Description			
Vehicle Rear Deck Z Velocity			
CURNO	Type	SAE Class	Units
120	IN1	180	KMH
Max	Time	Min	Time
5.4	200.0	-11.1	63.7



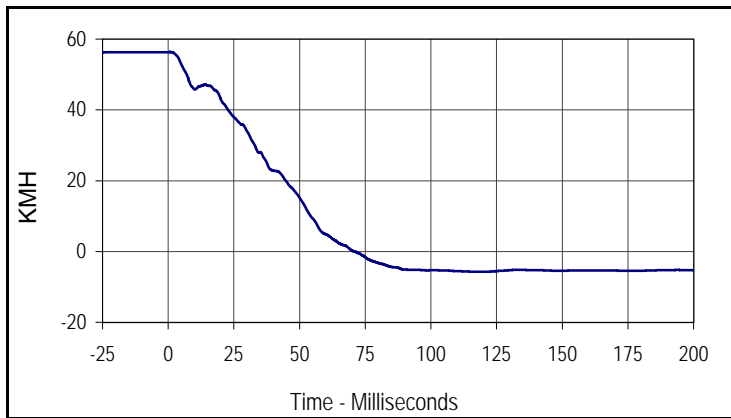
Curve Description			
Vehicle Rear Deck Z Displacement			
CURNO	Type	SAE Class	Units
120	IN2	180	MM
Max	Time	Min	Time
0.3	6.0	-134.4	113.4

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

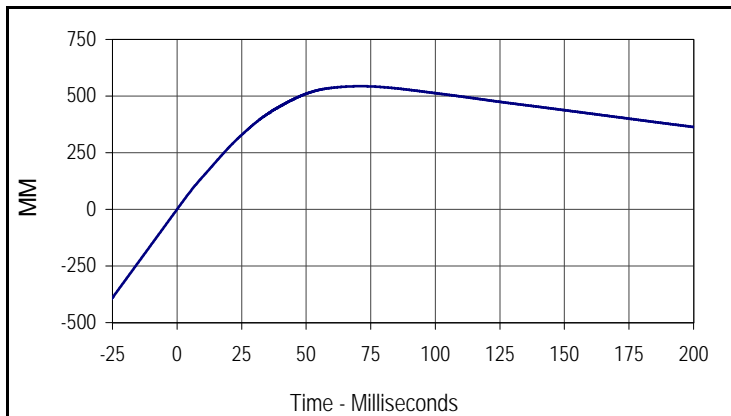
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Vehicle Rear Center Compartment X			
CURNO	Type	SAE Class	Units
121	FIL	60	G's
Max	Time	Min	Time
7.9	12.4	-45.6	6.5



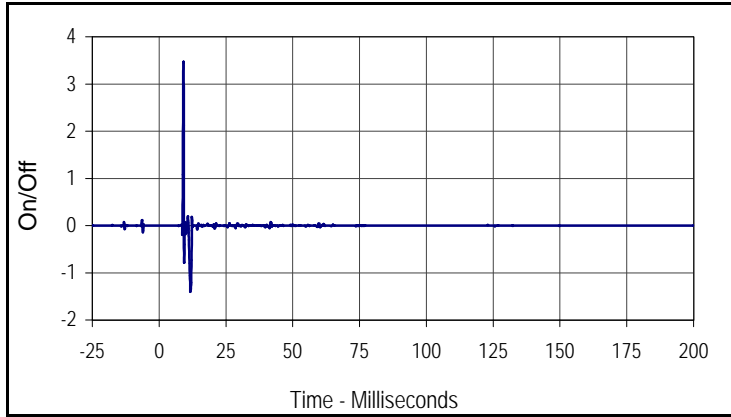
Curve Description			
Vehicle Rear Center Compartment X Velocity			
CURNO	Type	SAE Class	Units
121	IN1	180	KMH
Max	Time	Min	Time
56.3	0.8	-5.7	119.2



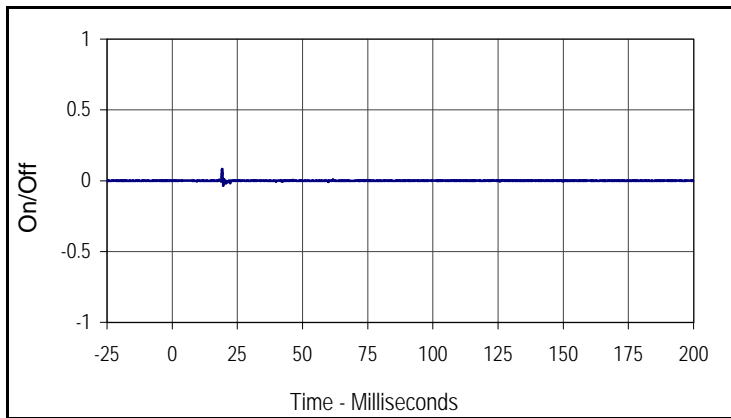
Curve Description			
Vehicle Rear Center Compartment X Displacement			
CURNO	Type	SAE Class	Units
121	IN2	180	MM
Max	Time	Min	Time
543.4	71.0	0.0	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

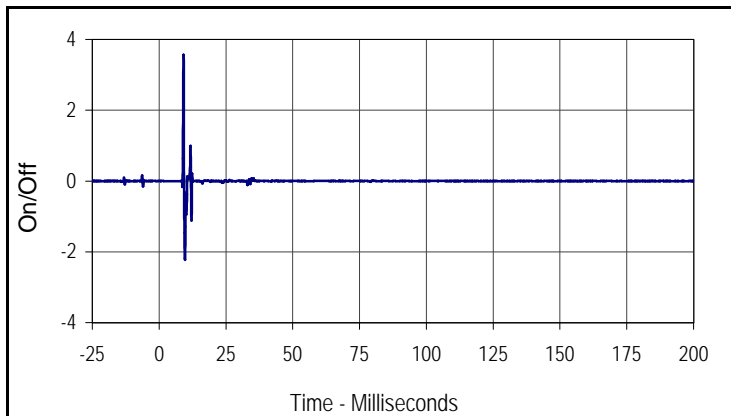
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Driver Airbag Squib Stage 1			
CURNO	Type	SAE Class	Units
122	FIL	1000	On/Off
Max	Time	Min	Time
3.5	9.1	-1.4	11.7



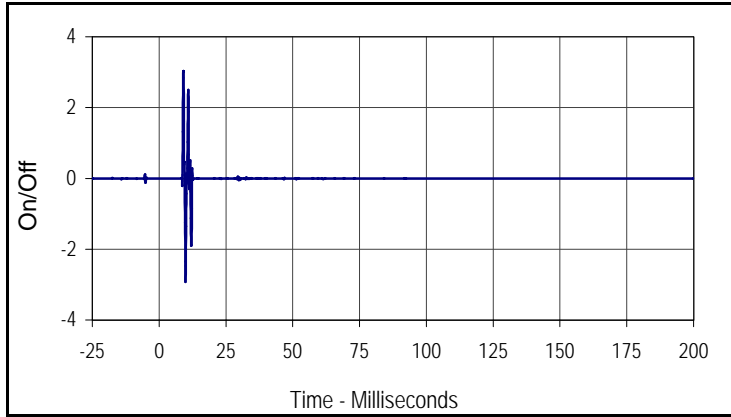
Curve Description			
Driver Airbag Squib Stage 2			
CURNO	Type	SAE Class	Units
123	FIL	1000	On/Off
Max	Time	Min	Time
0.1	19.2	0.0	19.6



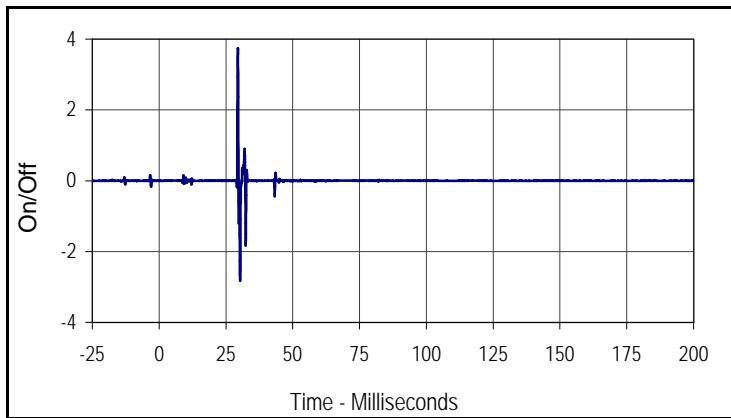
Curve Description			
Driver Pre-Tensioner Squib			
CURNO	Type	SAE Class	Units
124	FIL	1000	On/Off
Max	Time	Min	Time
3.6	9.1	-2.2	9.7

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

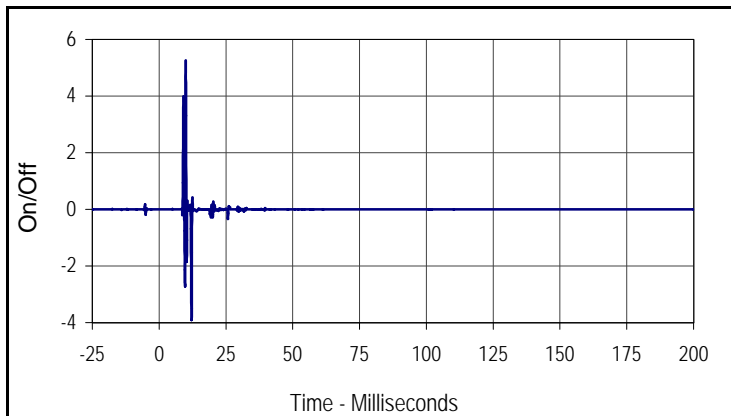
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Pass. Airbag Squib Stage 1			
CURNO	Type	SAE Class	Units
125	FIL	1000	On/Off
Max	Time	Min	Time
3.0	9.1	-2.9	9.9



Curve Description			
Pass. Airbag Squib Stage 2			
CURNO	Type	SAE Class	Units
126	FIL	1000	On/Off
Max	Time	Min	Time
3.7	29.5	-2.8	30.3



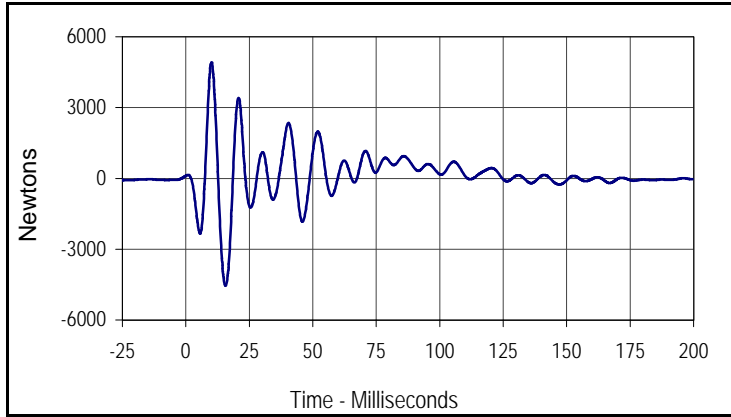
Curve Description			
Pass. Pre-Tensioner Squib			
CURNO	Type	SAE Class	Units
127	FIL	1000	On/Off
Max	Time	Min	Time
5.3	10.0	-3.9	12.1

APPENDIX C

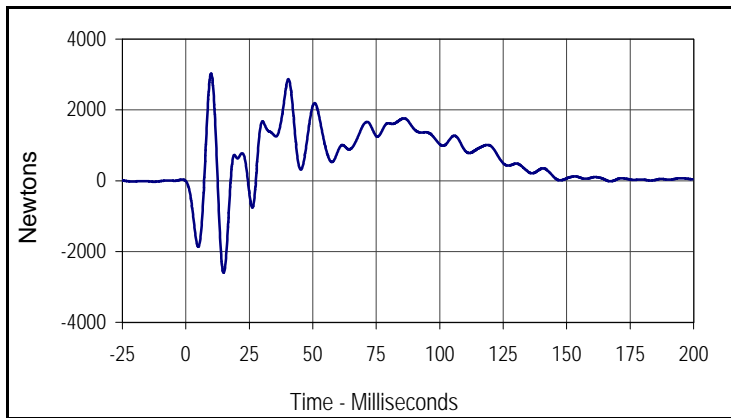
LOAD CELL BARRIER DATA PLOTS

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

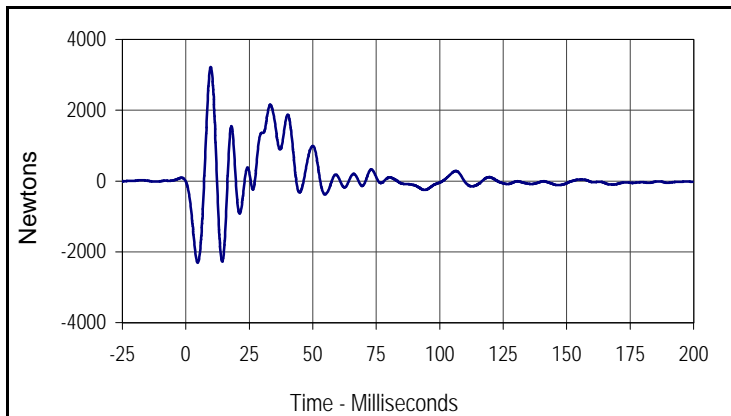
Test Date: 8/12/04
 NHTSA No.: R40402



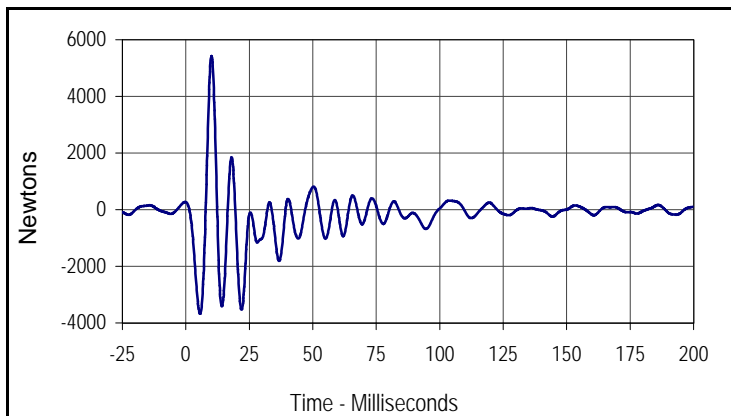
Curve Description			
Barrier Force A1			
CURNO	Type	SAE Class	Units
128	FIL	60	Newtons
Max	Time	Min	Time
4906.8	10.1	-4553.4	15.6



Curve Description			
Barrier Force B1			
CURNO	Type	SAE Class	Units
137	FIL	60	Newtons
Max	Time	Min	Time
3020.8	9.9	-2597.1	14.9



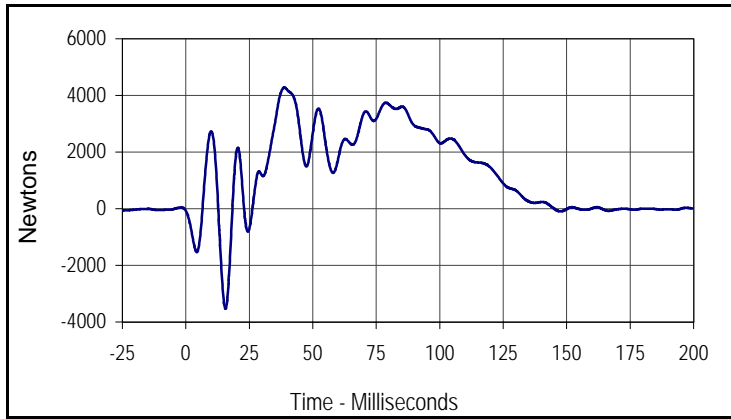
Curve Description			
Barrier Force C1			
CURNO	Type	SAE Class	Units
146	FIL	60	Newtons
Max	Time	Min	Time
3222.1	9.8	-2307.3	4.7



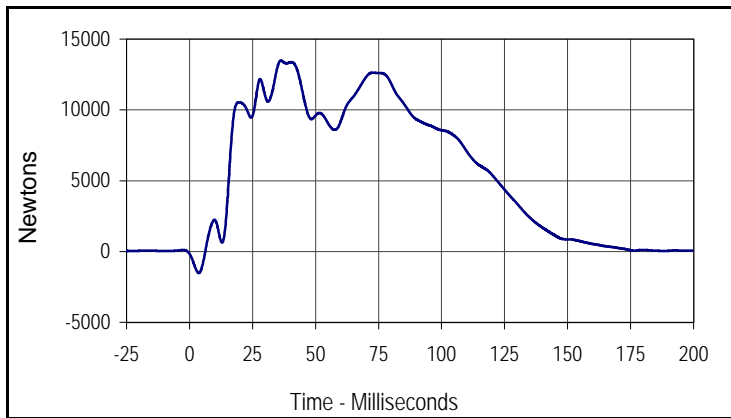
Curve Description			
Barrier Force D1			
CURNO	Type	SAE Class	Units
155	FIL	60	Newtons
Max	Time	Min	Time
5428.1	10.1	-3675.7	5.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

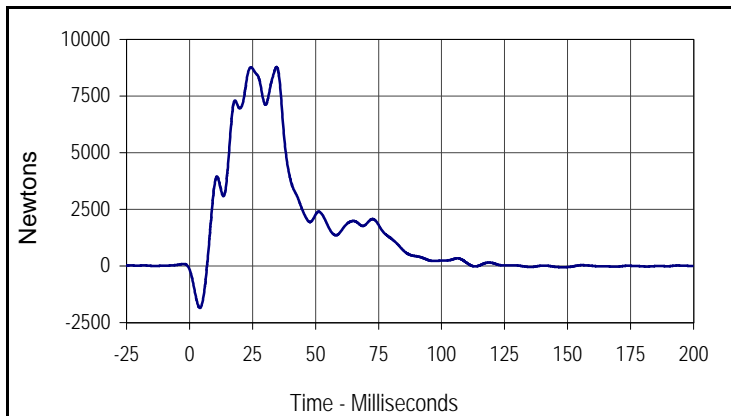
Test Date: 8/12/04
 NHTSA No.: R40402



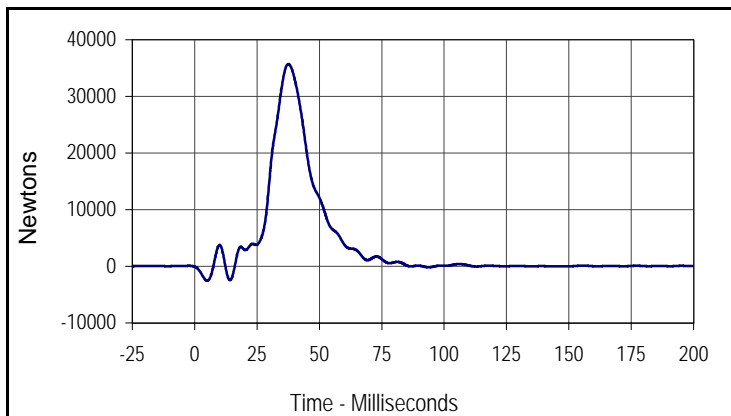
Curve Description			
Barrier Force A2			
CURNO	Type	SAE Class	Units
129	FIL	60	Newtons
Max	Time	Min	Time
4277.1	38.8	-3529.6	15.6



Curve Description			
Barrier Force B2			
CURNO	Type	SAE Class	Units
138	FIL	60	Newtons
Max	Time	Min	Time
13492.5	36.3	-1515.0	3.7



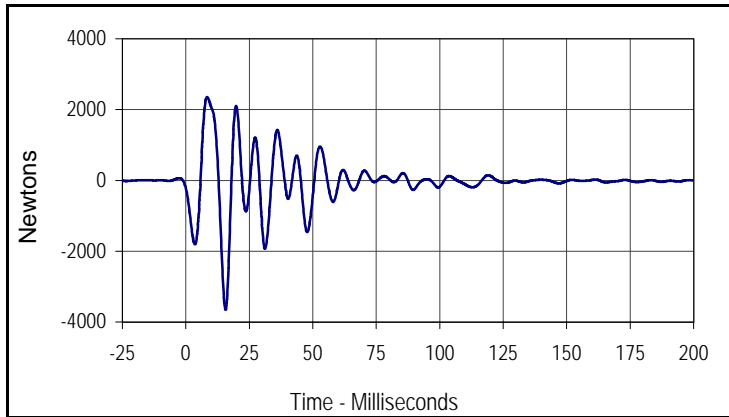
Curve Description			
Barrier Force C2			
CURNO	Type	SAE Class	Units
147	FIL	60	Newtons
Max	Time	Min	Time
8778.9	34.5	-1856.1	4.1



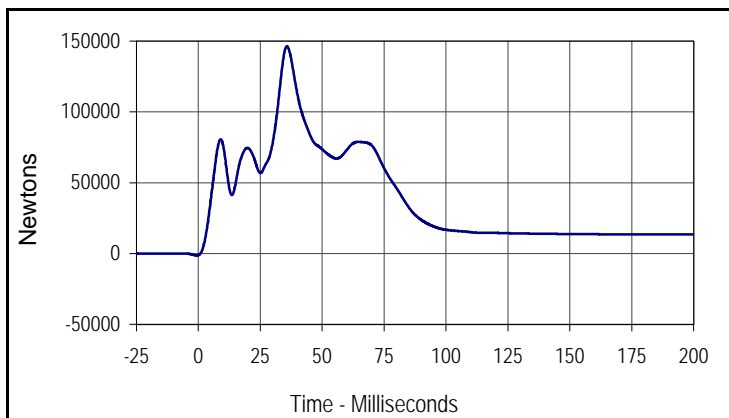
Curve Description			
Barrier Force D2			
CURNO	Type	SAE Class	Units
156	FIL	60	Newtons
Max	Time	Min	Time
35716.7	37.6	-2554.4	5.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

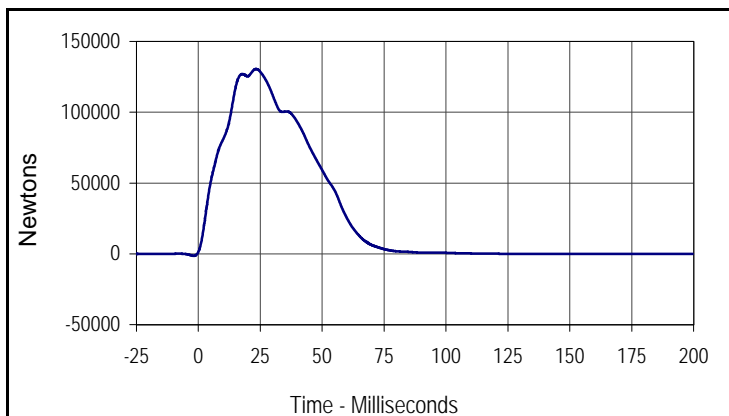
Test Date: 8/12/04
 NHTSA No.: R40402



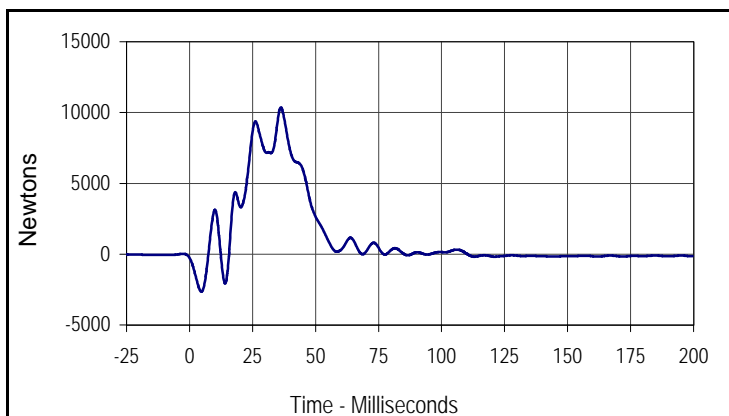
Curve Description			
Barrier Force A3			
CURNO	Type	SAE Class	Units
130	FIL	60	Newtons
Max	Time	Min	Time
2354.1	8.3	-3647.0	15.6



Curve Description			
Barrier Force B3			
CURNO	Type	SAE Class	Units
139	FIL	60	Newtons
Max	Time	Min	Time
146282.8	35.8	-1175.3	0.0



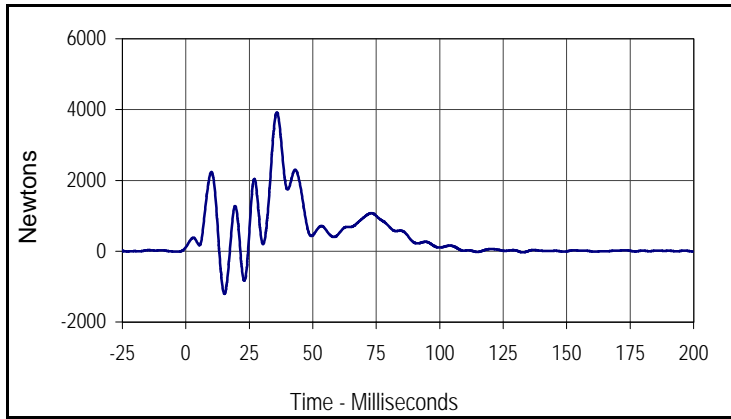
Curve Description			
Barrier Force C3			
CURNO	Type	SAE Class	Units
148	FIL	60	Newtons
Max	Time	Min	Time
130502.5	23.3	-63.4	157.9



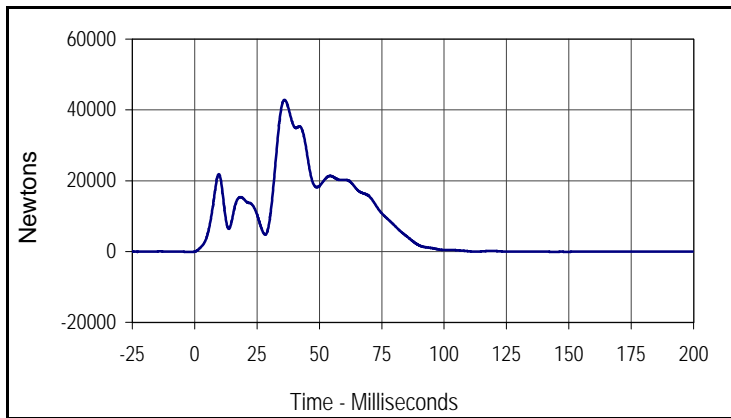
Curve Description			
Barrier Force D3			
CURNO	Type	SAE Class	Units
157	FIL	60	Newtons
Max	Time	Min	Time
10352.2	36.2	-2655.0	4.7

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

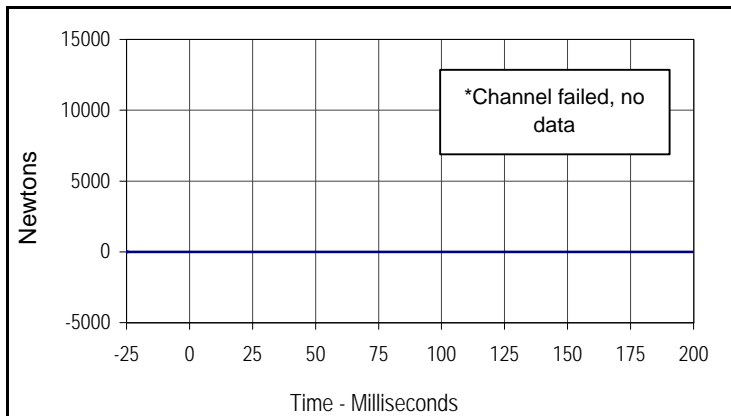
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Barrier Force A4			
CURNO	Type	SAE Class	Units
131	FIL	60	Newtons
Max	Time	Min	Time
3921.6	35.8	-1204.7	15.2

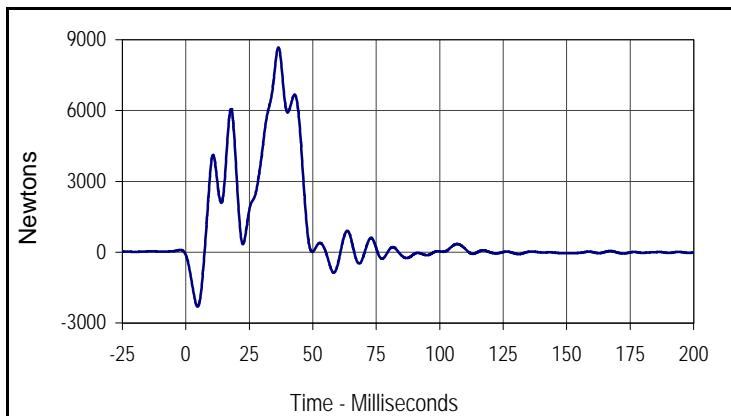


Curve Description			
Barrier Force B4			
CURNO	Type	SAE Class	Units
140	FIL	60	Newtons
Max	Time	Min	Time
42837.2	36.0	-82.8	149.6



Curve Description			
Barrier Force C4			
CURNO	Type	SAE Class	Units
149	FIL	60	Newtons
Max	Time	Min	Time
0.0	0.0	0.0	0.0

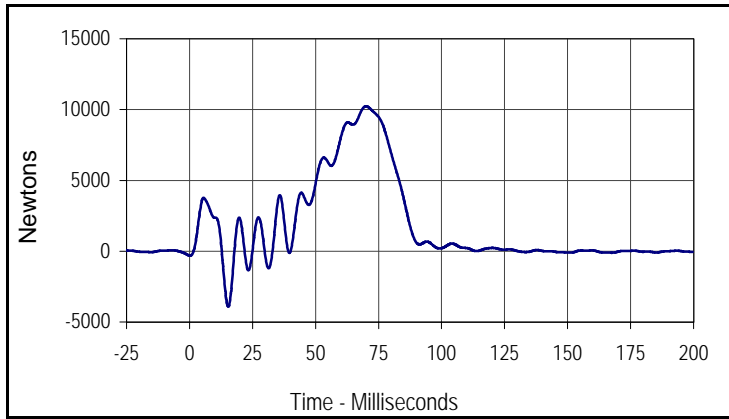
*Channel failed, no data



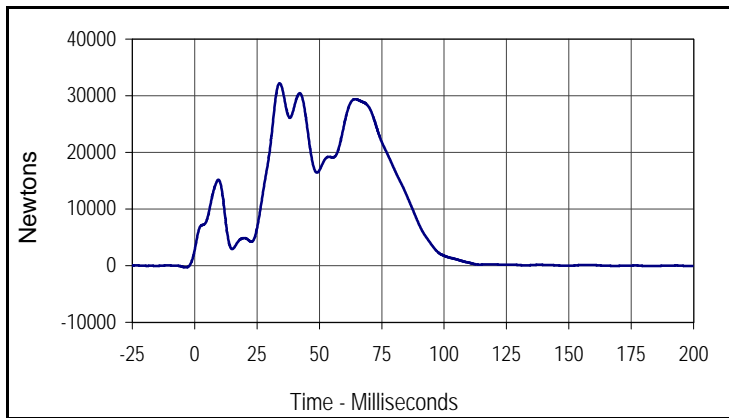
Curve Description			
Barrier Force D4			
CURNO	Type	SAE Class	Units
158	FIL	60	Newtons
Max	Time	Min	Time
8677.0	36.5	-2310.3	4.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

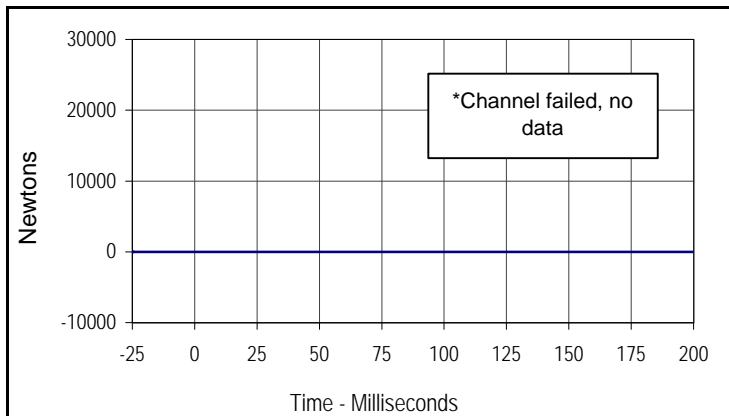
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Barrier Force A5			
CURNO	Type	SAE Class	Units
132	FIL	60	Newtons
Max	Time	Min	Time
10233.9	70.0	-3919.8	15.4

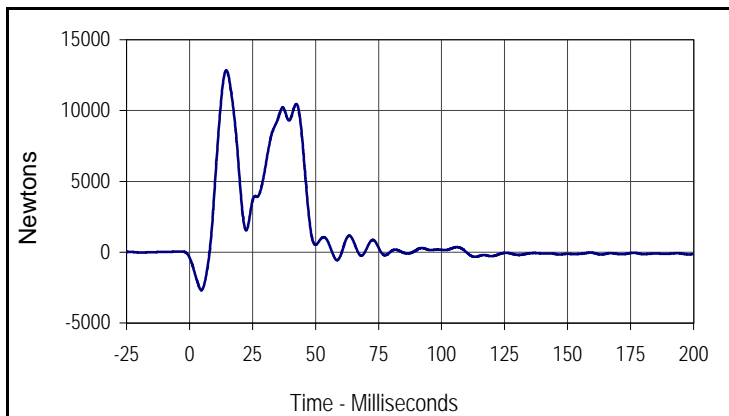


Curve Description			
Barrier Force B5			
CURNO	Type	SAE Class	Units
141	FIL	60	Newtons
Max	Time	Min	Time
32198.0	34.1	-61.5	200.0



Curve Description			
Barrier Force C5			
CURNO	Type	SAE Class	Units
150	FIL	60	Newtons
Max	Time	Min	Time
0.0	0.0	0.0	0.0

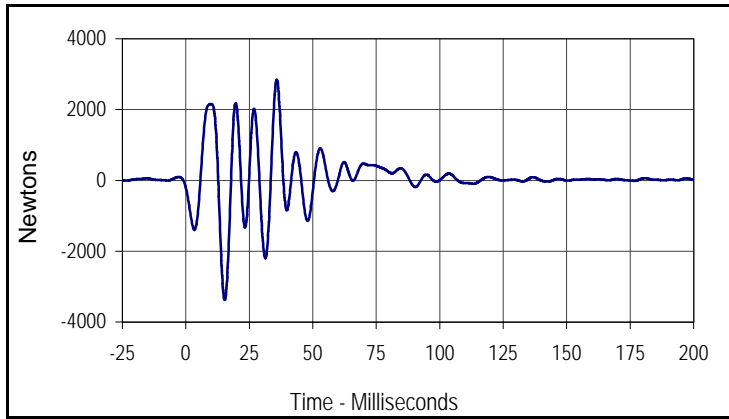
*Channel failed, no data



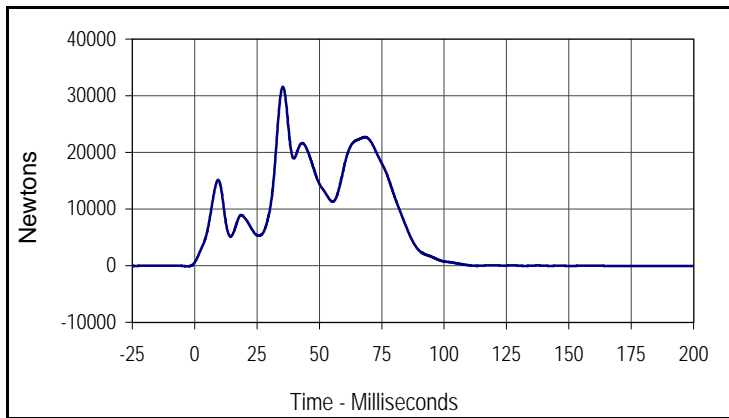
Curve Description			
Barrier Force D5			
CURNO	Type	SAE Class	Units
159	FIL	60	Newtons
Max	Time	Min	Time
12843.4	14.5	-2683.8	4.7

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

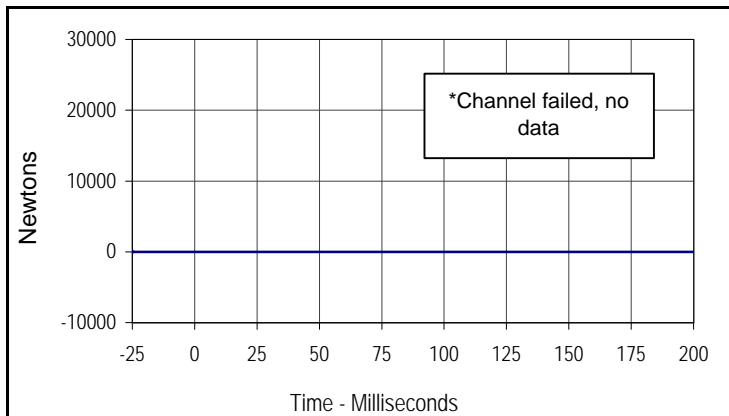
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Barrier Force A6			
CURNO	Type	SAE Class	Units
133	FIL	60	Newtons
Max	Time	Min	Time
2844.0	35.8	-3371.9	15.3

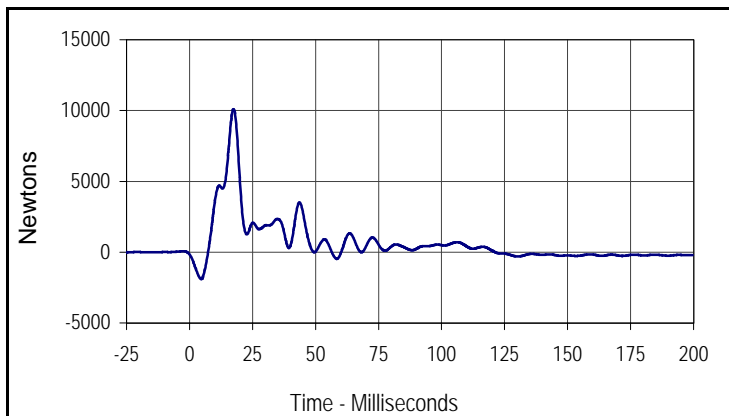


Curve Description			
Barrier Force B6			
CURNO	Type	SAE Class	Units
142	FIL	60	Newtons
Max	Time	Min	Time
31576.9	35.3	-62.1	166.6



Curve Description			
Barrier Force C6			
CURNO	Type	SAE Class	Units
151	FIL	60	Newtons
Max	Time	Min	Time
0.0	0.0	0.0	0.0

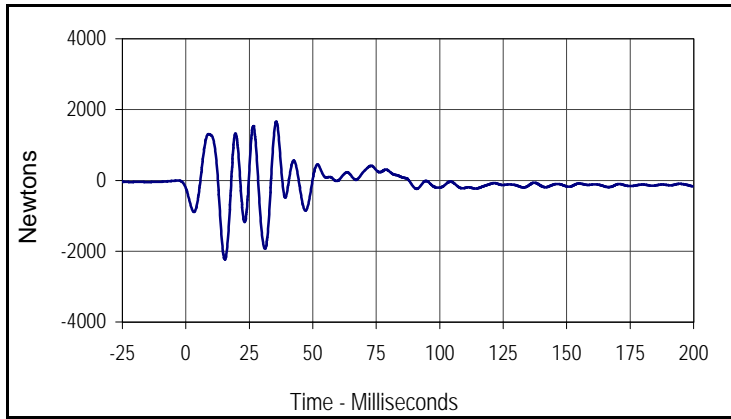
*Channel failed, no data



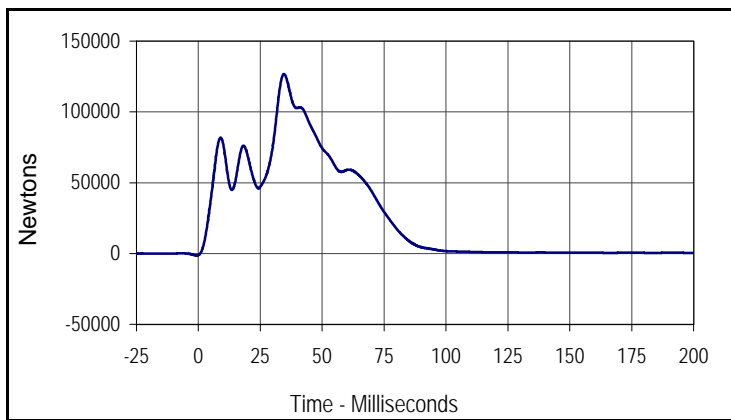
Curve Description			
Barrier Force D6			
CURNO	Type	SAE Class	Units
160	FIL	60	Newtons
Max	Time	Min	Time
10103.0	17.5	-1902.8	4.6

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

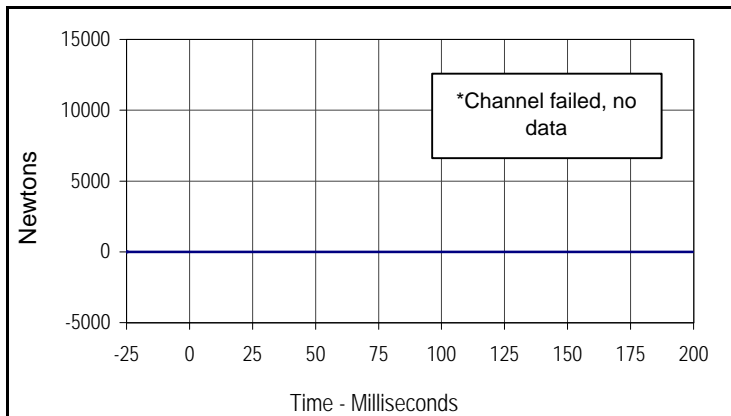
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Barrier Force A7			
CURNO	Type	SAE Class	Units
134	FIL	60	Newtons
Max	Time	Min	Time
1658.3	35.6	-2233.1	15.4

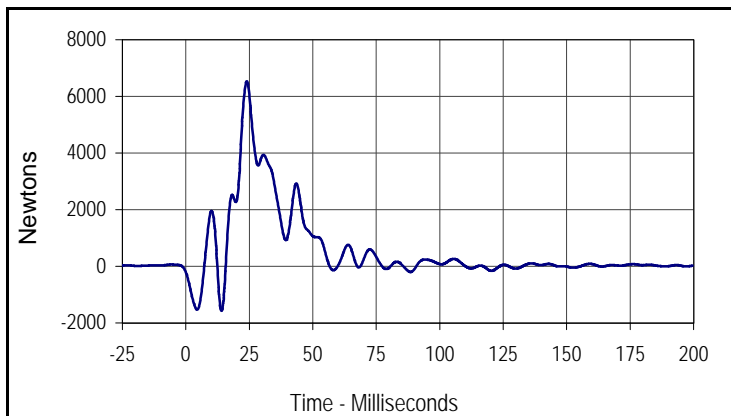


Curve Description			
Barrier Force B7			
CURNO	Type	SAE Class	Units
143	FIL	60	Newtons
Max	Time	Min	Time
126666.6	34.6	-1107.3	0.0



Curve Description			
Barrier Force C7			
CURNO	Type	SAE Class	Units
152	FIL	60	Newtons
Max	Time	Min	Time
0.0	0.0	0.0	0.0

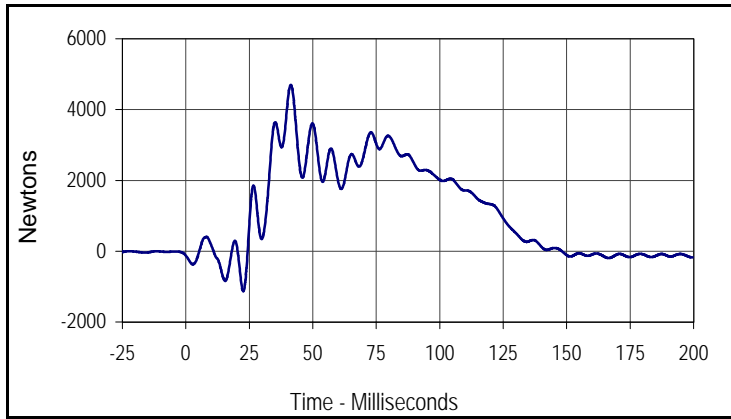
*Channel failed, no data



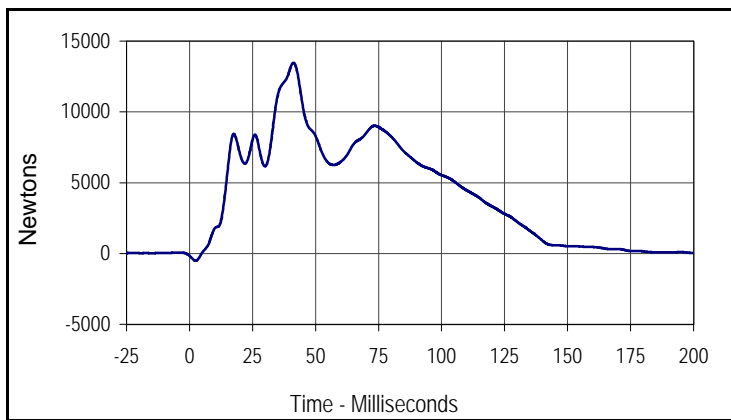
Curve Description			
Barrier Force D7			
CURNO	Type	SAE Class	Units
161	FIL	60	Newtons
Max	Time	Min	Time
6530.1	24.0	-1569.6	14.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

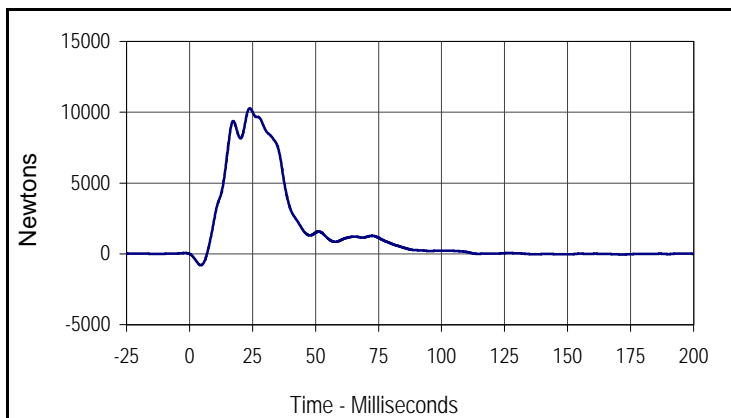
Test Date: 8/12/04
 NHTSA No.: R40402



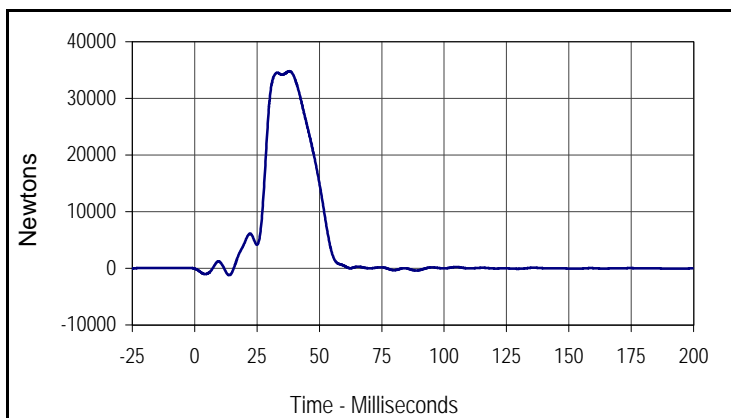
Curve Description			
Barrier Force A8			
CURNO	Type	SAE Class	Units
135	FIL	60	Newtons
Max	Time	Min	Time
4695.5	41.3	-1129.3	22.6



Curve Description			
Barrier Force B8			
CURNO	Type	SAE Class	Units
144	FIL	60	Newtons
Max	Time	Min	Time
13472.4	41.2	-509.9	2.4



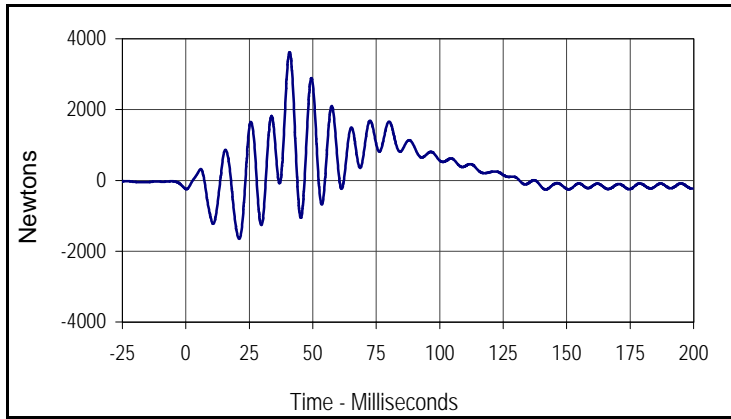
Curve Description			
Barrier Force C8			
CURNO	Type	SAE Class	Units
153	FIL	60	Newtons
Max	Time	Min	Time
10284.1	23.9	-803.7	4.5



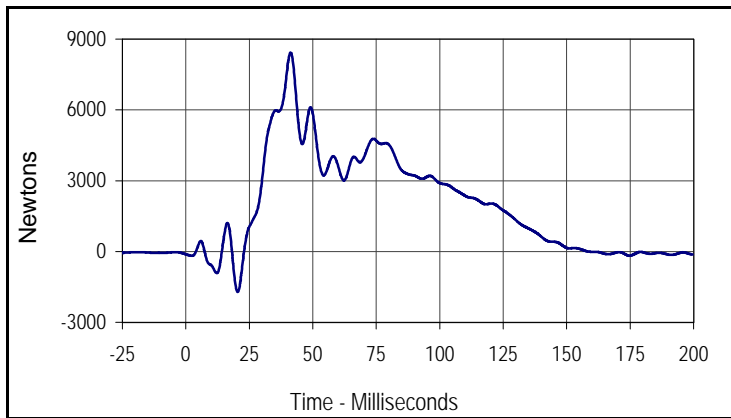
Curve Description			
Barrier Force D8			
CURNO	Type	SAE Class	Units
162	FIL	60	Newtons
Max	Time	Min	Time
34778.1	38.0	-1213.7	13.9

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

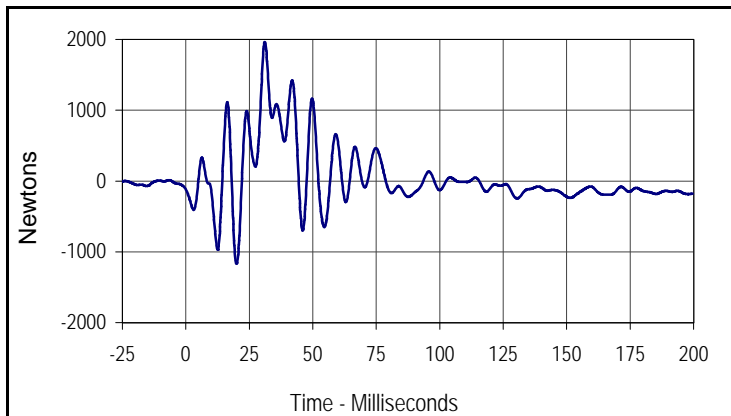
Test Date: 8/12/04
 NHTSA No.: R40402



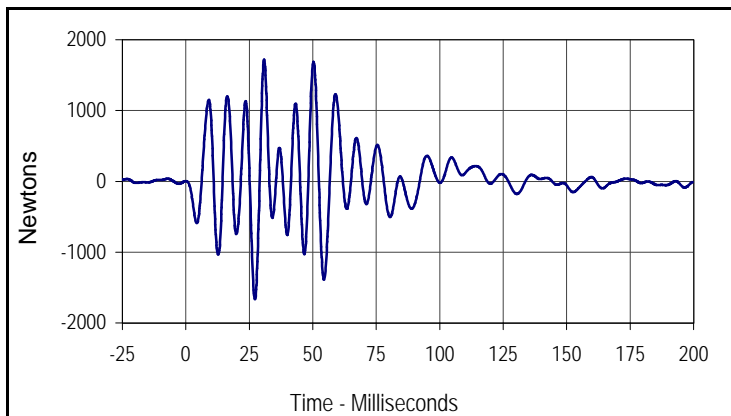
Curve Description			
Barrier Force A9			
CURNO	Type	SAE Class	Units
136	FIL	60	Newtons
Max	Time	Min	Time
3621.3	40.9	-1653.1	21.0



Curve Description			
Barrier Force B9			
CURNO	Type	SAE Class	Units
145	FIL	60	Newtons
Max	Time	Min	Time
8423.3	41.3	-1712.4	20.4



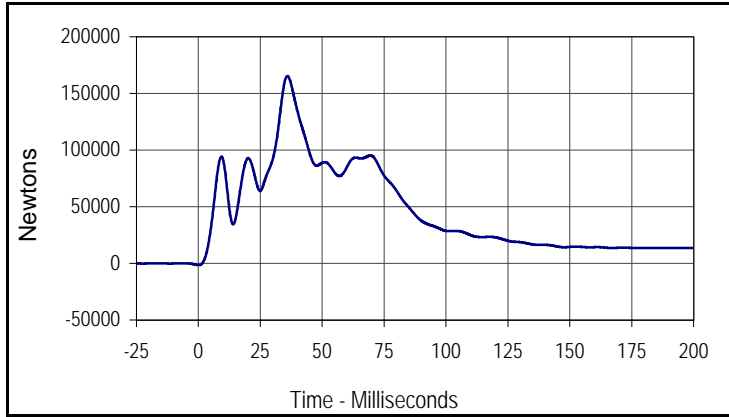
Curve Description			
Barrier Force C9			
CURNO	Type	SAE Class	Units
154	FIL	60	Newtons
Max	Time	Min	Time
1964.3	31.1	-1169.9	19.9



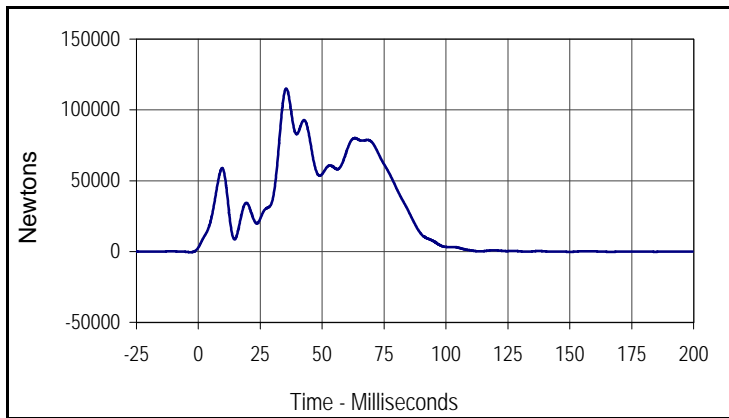
Curve Description			
Barrier Force D9			
CURNO	Type	SAE Class	Units
163	FIL	60	Newtons
Max	Time	Min	Time
1719.1	30.8	-1667.8	27.2

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

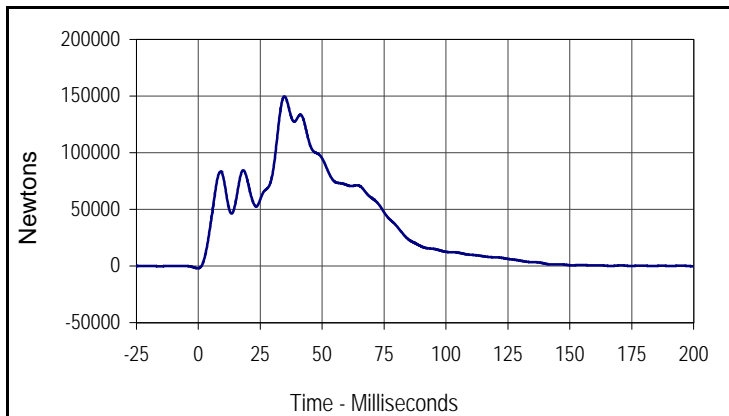
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Barrier Force Sum Group 1			
CURNO	Type	SAE Class	Units
001	SUM	60	Newtons
Max	Time	Min	Time
165352.4	35.9	-1539.9	0.1



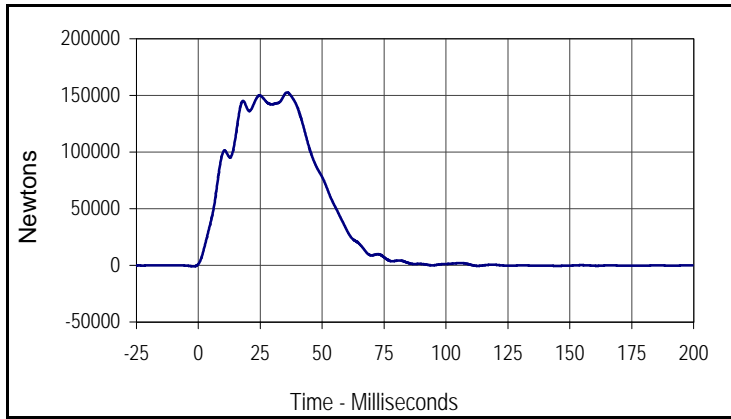
Curve Description			
Barrier Force Sum Group 2			
CURNO	Type	SAE Class	Units
002	SUM	60	Newtons
Max	Time	Min	Time
115062.3	35.5	-218.6	166.7



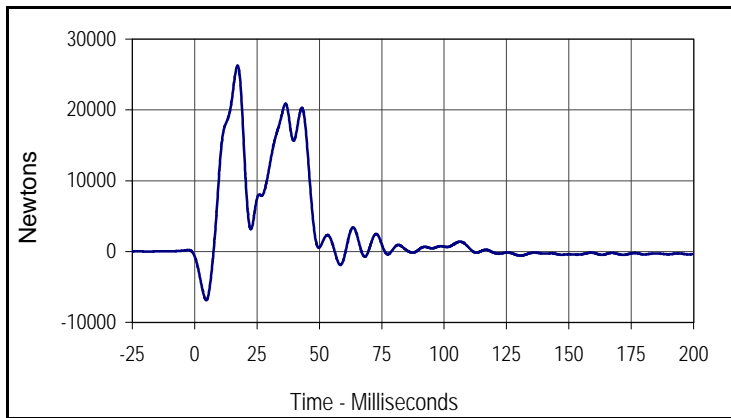
Curve Description			
Barrier Force Sum Group 3			
CURNO	Type	SAE Class	Units
003	SUM	60	Newtons
Max	Time	Min	Time
149745.7	34.8	-1975.8	0.0

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

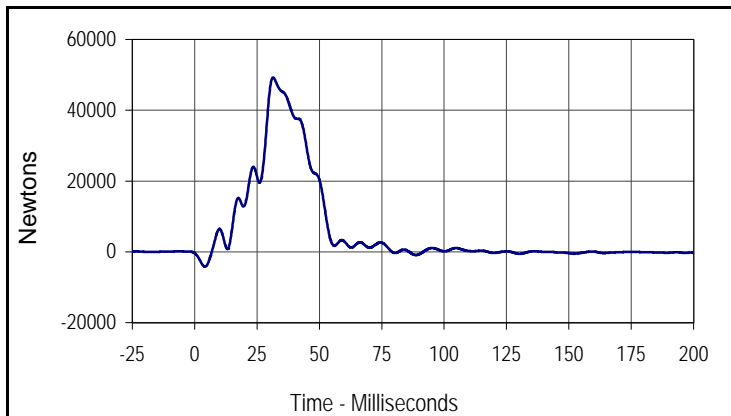
Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Barrier Force Sum Group 4			
CURNO	Type	SAE Class	Units
004	SUM	60	Newtons
Max	Time	Min	Time
152625.1	35.9	-530.5	144.8



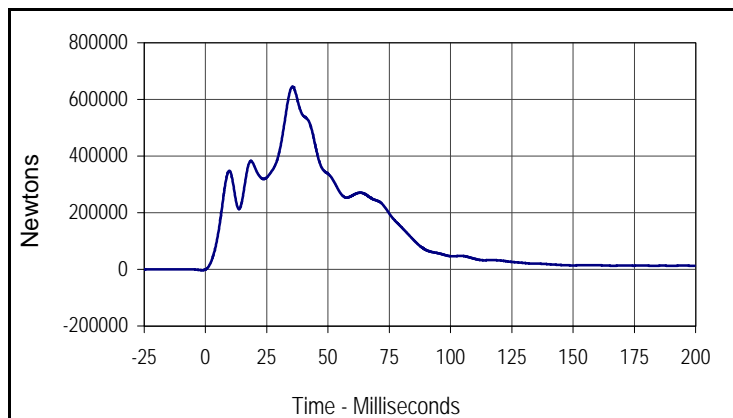
Curve Description			
Barrier Force Sum Group 5			
CURNO	Type	SAE Class	Units
005	SUM	60	Newtons
Max	Time	Min	Time
26231.3	17.2	-6893.8	4.6



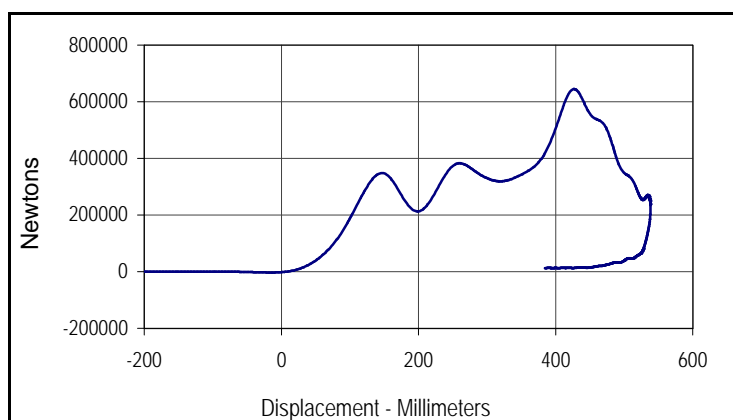
Curve Description			
Barrier Force Sum Group 6			
CURNO	Type	SAE Class	Units
006	SUM	60	Newtons
Max	Time	Min	Time
49281.7	31.4	-4190.7	4.1

Test Vehicle: 2004 Jeep Liberty 4-Door MPV
 Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04
 NHTSA No.: R40402



Curve Description			
Barrier Force Total Sum			
CURNO	Type	SAE Class	Units
007	SUM	60	Newtons
Max	Time	Min	Time
644780.1	35.5	-561.5	0.0



Curve Description			
Barrier Force Total Sum vs. Displ.			
CURNO	Type	SAE Class	Units
001	XVY	60	Newtons
Max	MM	Min	MM
644780.1	427.0	-561.5	6.2

BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2004 Jeep Liberty 4-Door MPV

NHTSA No.: R40402

Test Program: 2004 FMVSS 208 Upgrade

Test Date: 8/12/04

Location	Units	Max	Time	Min	Time
Barrier Force A1	Newtons	4906.8	10.1	-4553.4	15.6
Barrier Force A2	Newtons	4277.1	38.8	-3529.6	15.6
Barrier Force A3	Newtons	2354.1	8.3	-3647.0	15.6
Barrier Force A4	Newtons	3921.6	35.8	-1204.7	15.2
Barrier Force A5	Newtons	10233.9	70.0	-3919.8	15.4
Barrier Force A6	Newtons	2844.0	35.8	-3371.9	15.3
Barrier Force A7	Newtons	1658.3	35.6	-2233.1	15.4
Barrier Force A8	Newtons	4695.5	41.3	-1129.3	22.6
Barrier Force A9	Newtons	3621.3	40.9	-1653.1	21.0
Barrier Force B1	Newtons	3020.8	9.9	-2597.1	14.9
Barrier Force B2	Newtons	13492.5	36.3	-1515.0	3.7
Barrier Force B3	Newtons	146282.8	35.8	-1175.3	0.0
Barrier Force B4	Newtons	42837.2	36.0	-82.8	149.6
Barrier Force B5	Newtons	32198.0	34.1	-61.5	200.0
Barrier Force B6	Newtons	31576.9	35.3	-62.1	166.6
Barrier Force B7	Newtons	126666.6	34.6	-1107.3	0.0
Barrier Force B8	Newtons	13472.4	41.2	-509.9	2.4
Barrier Force B9	Newtons	8423.3	41.3	-1712.4	20.4
Barrier Force C1	Newtons	3222.1	9.8	-2307.3	4.7
Barrier Force C2	Newtons	8778.9	34.5	-1856.1	4.1
Barrier Force C3	Newtons	130502.5	23.3	-63.4	157.9
Barrier Force C4	Newtons	0.0	0.0	0.0	0.0
Barrier Force C5	Newtons	0.0	0.0	0.0	0.0
Barrier Force C6	Newtons	0.0	0.0	0.0	0.0
Barrier Force C7	Newtons	0.0	0.0	0.0	0.0
Barrier Force C8	Newtons	10284.1	23.9	-803.7	4.5
Barrier Force C9	Newtons	1964.3	31.1	-1169.9	19.9
Barrier Force D1	Newtons	5428.1	10.1	-3675.7	5.6
Barrier Force D2	Newtons	35716.7	37.6	-2554.4	5.0
Barrier Force D3	Newtons	10352.2	36.2	-2655.0	4.7
Barrier Force D4	Newtons	8677.0	36.5	-2310.3	4.6
Barrier Force D5	Newtons	12843.4	14.5	-2683.8	4.7
Barrier Force D6	Newtons	10103.0	17.5	-1902.8	4.6
Barrier Force D7	Newtons	6530.1	24.0	-1569.6	14.0
Barrier Force D8	Newtons	34778.1	38.0	-1213.7	13.9
Barrier Force D9	Newtons	1719.1	30.8	-1667.8	27.2
Barrier Force Sum Group 1	Newtons	165352.4	35.9	-1539.9	0.1
Barrier Force Sum Group 2	Newtons	115062.3	35.5	-218.6	166.7
Barrier Force Sum Group 3	Newtons	149745.7	34.8	-1975.8	0.0
Barrier Force Sum Group 4	Newtons	152625.1	35.9	-530.5	144.8
Barrier Force Sum Group 5	Newtons	26231.3	17.2	-6893.8	4.6
Barrier Force Sum Group 6	Newtons	49281.7	31.4	-4190.7	4.1
Barrier Force Total Sum	Newtons	644780.1	35.5	-561.5	0.0

1.) Channels failed, no data

APPENDIX D

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 159
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	VPL159HDX	Accel., Full bridge	Entran	EGEB6Q-2K	G
2	HEAD, PRIMARY	Y	VPL159HDY	Accel., Full bridge	Entran	EGEB6Q-2K	G
3	HEAD, PRIMARY	Z	VPL159HDZ	Accel., Full bridge	Entran	EGEB6Q-2K	G
4	HEAD, REDUNDANT	X	VPL159HDXR	Accel., Full bridge	Entran	EGEB6Q-2K	G
5	HEAD, REDUNDANT	Y	VPL159HDYR	Accel., Full bridge	Entran	EGEB6Q-2K	G
6	HEAD, REDUNDANT	Z	VPL159HDZR	Accel., Full bridge	Entran	EGEB6Q-2K	G
7	NECK FORCE	X	VPL159NFX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	VPL159NFY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	VPL159NFZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	VPL159NMX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	VPL159NMY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	VPL159NMZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST, PRIMARY	X	VPL159CHX	Accel., Full bridge	Entran	EGEB6Q-2K	G
14	CHEST, PRIMARY	Y	VPL159CHY	Accel., Full bridge	Entran	EGEB6Q-2K	G
15	CHEST, PRIMARY	Z	VPL159CHZ	Accel., Full bridge	Entran	EGEB6Q-2K	G
16	CHEST, REDUNDANT	X	VPL159CHXR	Accel., Full bridge	Entran	EGEB6Q-2K	G
17	CHEST, REDUNDANT	Y	VPL159CHYR	Accel., Full bridge	Entran	EGEB6Q-2K	G
18	CHEST, REDUNDANT	Z	VPL159CHZR	Accel., Full bridge	Entran	EGEB6Q-2K	G
19	CHEST DISPLACEMENT	X	VPL159CD	Rotary Pot Chest	JDK	CST058	MM
20	LEFT FEMUR FORCE	Z	VPL159LF	Load cell, Femur	R.A. Denton	2121	N
21	RIGHT FEMUR FORCE	Z	VPL159RF	Load cell, Femur	R.A. Denton	2121	N
22	LEFT KNEE DISPLACEMENT	Z	VPL159LK	Displacement pot, Knee	Space Age	150-0121	MM
23	RIGHT KNEE DISPLACEMENT	Z	VPL159RK	Displacement pot, Knee	Space Age	150-0121	MM

D-1

TR-P24104-10-NC

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 159
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
24	LEFT UPPER TIBIA MOMENT	X	VTBLMX159	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
25	LEFT UPPER TIBIA MOMENT	Y	VTBLMY159	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
26	LEFT LOWER TIBIA FORCE	X	VANLFY159	3 ch., Lower tibia gage	R. A. Denton	3643	N
27	LEFT LOWER TIBIA FORCE	Z	VANLFZ159	3 ch., Lower tibia gage	R. A. Denton	3643	N
28	LEFT LOWER TIBIA MOMENT	X	VANLMX159	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
29	LEFT LOWER TIBIA MOMENT	Y	VANLMY159	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
30	RIGHT UPPER TIBIA MOMENT	X	VTBRMX159	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
31	RIGHT UPPER TIBIA MOMENT	Y	VTBRMY159	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
32	RIGHT LOWER TIBIA FORCE	X	VANRFY159	3 ch., Lower tibia gage	R. A. Denton	3643	N
33	RIGHT LOWER TIBIA FORCE	Z	VANRFZ159	3 ch., Lower tibia gage	R. A. Denton	3643	N
34	RIGHT LOWER TIBIA MOMENT	X	VANRMX159	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
35	RIGHT LOWER TIBIA MOMENT	Y	VANRMY159	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
36	LAP BELT FORCE	X	BL168	Load cell, Seat belt	First Tech	IF-964	N
37	SHOULDER BELT FORCE	X	BL169	Load cell, Seat belt	First Tech	IF-964	N
38	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM

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TR-P24104-10-NC

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 058
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
39	HEAD, PRIMARY	X	VPL058HDX	Accel., Full bridge	Entran	EGEB6Q-2K	G
40	HEAD, PRIMARY	Y	VPL058HDY	Accel., Full bridge	Entran	EGEB6Q-2K	G
41	HEAD, PRIMARY	Z	VPL058HDZ	Accel., Full bridge	Entran	EGEB6Q-2K	G
42	HEAD, REDUNDANT	X	VPL058HDXR	Accel., Full bridge	Entran	EGEB6Q-2K	G
43	HEAD, REDUNDANT	Y	VPL058HDYR	Accel., Full bridge	Entran	EGEB6Q-2K	G
44	HEAD, REDUNDANT	Z	VPL058HDZR	Accel., Full bridge	Entran	EGEB6Q-2K	G
45	NECK FORCE	X	VPL058NFX	Load cell, six axis neck	R. A. Denton	1716A	N
46	NECK FORCE	Y	VPL058NFY	Load cell, six axis neck	R. A. Denton	1716A	N
47	NECK FORCE	Z	VPL058NFZ	Load cell, six axis neck	R. A. Denton	1716A	N
48	NECK MOMENT	X	VPL058NMX	Load cell, six axis neck	R. A. Denton	1716A	Nm
49	NECK MOMENT	Y	VPL058NMY	Load cell, six axis neck	R. A. Denton	1716A	Nm
50	NECK MOMENT	Z	VPL058NMZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
51	CHEST, PRIMARY	X	VPL058CHX	Accel., Full bridge	Entran	EGEB6Q-2K	G
52	CHEST, PRIMARY	Y	VPL058CHY	Accel., Full bridge	Entran	EGEB6Q-2K	G
53	CHEST, PRIMARY	Z	VPL058CHZ	Accel., Full bridge	Entran	EGEB6Q-2K	G
54	CHEST, REDUNDANT	X	VPL058CHXR	Accel., Full bridge	Entran	EGEB6Q-2K	G
55	CHEST, REDUNDANT	Y	VPL058CHYR	Accel., Full bridge	Entran	EGEB6Q-2K	G
56	CHEST, REDUNDANT	Z	VPL058CHZR	Accel., Full bridge	Entran	EGEB6Q-2K	G
57	CHEST DISPLACEMENT	X	VPL058CD	Rotary Pot Chest	JDK	CST058	MM
58	LEFT FEMUR FORCE	Z	VPL058LF	Load cell, Femur	R.A. Denton	2121	N
59	RIGHT FEMUR FORCE	Z	VPL058RF	Load cell, Femur	R.A. Denton	2121	N
60	LEFT KNEE DISPLACEMENT	Z	VPL058LK	Displacement pot, Knee	Space Age	150-0121	MM
61	RIGHT KNEE DISPLACEMENT	Z	VPL058RK	Displacement pot, Knee	Space Age	150-0121	MM

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 058
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
62	LEFT UPPER TIBIA MOMENT	X	VTBLMX058	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
63	LEFT UPPER TIBIA MOMENT	Y	VTBLMY058	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
64	LEFT LOWER TIBIA FORCE	X	VANLFY058	3 ch., Lower tibia gage	R. A. Denton	3643	N
65	LEFT LOWER TIBIA FORCE	Z	VANLFZ058	3 ch., Lower tibia gage	R. A. Denton	3643	N
66	LEFT LOWER TIBIA MOMENT	X	VANLMX058	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
67	LEFT LOWER TIBIA MOMENT	Y	VANLMY058	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
68	RIGHT UPPER TIBIA MOMENT	X	VTBRMX058	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
69	RIGHT UPPER TIBIA MOMENT	Y	VTBRMY058	2 ch., Upper tibia gage	R. A. Denton	3644	Nm
70	RIGHT LOWER TIBIA FORCE	X	VANRFY058	3 ch., Lower tibia gage	R. A. Denton	3643	N
71	RIGHT LOWER TIBIA FORCE	Z	VANRFZ058	3 ch., Lower tibia gage	R. A. Denton	3643	N
72	RIGHT LOWER TIBIA MOMENT	X	VANRMX058	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
73	RIGHT LOWER TIBIA MOMENT	Y	VANRMY058	2 ch., Lower tibia gage	R. A. Denton	3644	Nm
74	LAP BELT FORCE	X	BL134	Load cell, Seat belt	First Tech	IF-964	N
75	SHOULDER BELT FORCE	X	BL135	Load cell, Seat belt	First Tech	IF-964	N
76	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM

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TR-P24104-10-NC

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Center Rear Passenger A.T.D. Serial Number 001
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
77	HEAD, PRIMARY	X	KEAC083	Accel., 1/2 bridge	Endevco	7264-2000	G
78	HEAD, PRIMARY	Y	KEAC084	Accel., 1/2 bridge	Endevco	7264-2000	G
79	HEAD, PRIMARY	Z	KEAC085	Accel., 1/2 bridge	Endevco	7264-2000	G
80	NAAH CG	X	GPAC044	Accel., 1/2 bridge	Endevco	7264-2000	G
81	NAAH CG	Y	GPAC045	Accel., 1/2 bridge	Endevco	7264-2000	G
82	NAAH CG	Z	GPAC046	Accel., 1/2 bridge	Endevco	7264-2000	G
83	NAAH X-ARM	Y	GPAC014	Accel., 1/2 bridge	Endevco	7264-2000	G
84	NAAH X-ARM	Z	GPAC036	Accel., 1/2 bridge	Endevco	7264-2000	G
85	NAAH Y-ARM	X	GPAC001	Accel., 1/2 bridge	Endevco	7264-2000	G
86	NAAH Y-ARM	Z	GPAC012	Accel., 1/2 bridge	Endevco	7264-2000	G
87	NAAH Z-ARM	X	GPAC030	Accel., 1/2 bridge	Endevco	7264-2000	G
88	NAAH Z-ARM	Y	GPAC037	Accel., 1/2 bridge	Endevco	7264-2000	G
89	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
90	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
91	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
92	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
93	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
94	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Center Rear Passenger A.T.D. Serial Number 001
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
95	CHEST, PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
96	CHEST, PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
97	CHEST, PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
98	CHEST, REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-200	G
99	CHEST, REDUNDANT	Y	GPAC027	Accel., 1/2 bridge	Endevco	7264-200	G
100	CHEST, REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-200	G
101	CHEST DISPLACEMENT	X	VPL001CD	Rotary Pot Chest	Maurey	81422	MM
102	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
103	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N
104	LEFT KNEE DISPLACEMENT	Z	VPL001LK	Displacement pot, Knee	Space age	150-0121	MM
105	RIGHT KNEE DISPLACEMENT	Z	VPL001RK	Displacement pot, Knee	Space Age	150-0121	MM
106	LAP BELT FORCE	X	BL172	Load cell, Seat belt	First Tech	IF-964	N
107	SHOULDER BELT FORCE	X	BL173	Load cell, Seat belt	First Tech	IF-964	N
108	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Vehicle Accelerometers and Firing Circuits
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
109	LEFT REAR	X	KEVA002	Accel., Vehicle block	I.C. Sensor	3031-500	G
110	RIGHT REAR	X	KEVA004	Accel., Vehicle block	I.C. Sensor	3031-200	G
111	LEFT BRAKE CALIPER	X	KEVA005	Accel., Vehicle block	I.C. Sensor	3031-500	G
112	RIGHT BRAKE CALIPER	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-500	G
113	INSTRUMENT PANEL	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-500	G
114	ENGINE TOP	X	KEVA018	Accel., Vehicle block	I.C. Sensor	3031-500	G
115	ENGINE BOTTOM	X	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-200	G
116	TOE PAN ACCELERATOR	X	KETX006	Accel., Vehicle block	I.C. Sensor	3031-500	G
117	TOE PAN ACCELERATOR	Z	KETX006	Accel., Vehicle block	I.C. Sensor	3031-200	G
118	TOE PAN FOOTREST	X	KETX005	Accel., Vehicle block	I.C. Sensor	3031-500	G
119	TOE PAN FOOTREST	Z	KETX005	Accel., Vehicle block	I.C. Sensor	3031-200	G
120	REAR DECK	Z	KEVA020	Accel., Vehicle block	I.C. Sensor	3031-500	G
121	REAR CENTER COMPARTMENT	X	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
122	DRVR ABG SQUIB 1st Stage	N/A	SQUIB1	Squib Firing Sensor	EEURD	CTL-6-S32-8F	On/Off
123	DRVR ABG SQUIB 2nd Stage	N/A	SQUIB2	Squib Firing Sensor	EEURD	CTL-6-S32-8F	On/Off
124	DRVR PRETENSIONER	N/A	SQUIB3	Squib Firing Sensor	EEURD	CTL-6-S32-8F	On/Off
125	PASS ABG SQUIB 1st Stage	N/A	SQUIB4	Squib Firing Sensor	EEURD	CTL-6-S32-8F	On/Off
126	PASS ABG SQUIB 2nd Stage	N/A	SQUIB5	Squib Firing Sensor	EEURD	CTL-6-S32-8F	On/Off
127	PASS PRETENSIONER	N/A	SQUIB6	Squib Firing Sensor	EEURD	CTL-6-S32-8F	On/Off

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
128	BARRIER FORCE A1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
129	BARRIER FORCE A2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
130	BARRIER FORCE A3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
131	BARRIER FORCE A4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
132	BARRIER FORCE A5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
133	BARRIER FORCE A6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
134	BARRIER FORCE A7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
135	BARRIER FORCE A8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
136	BARRIER FORCE A9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
137	BARRIER FORCE B1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
138	BARRIER FORCE B2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
139	BARRIER FORCE B3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
140	BARRIER FORCE B4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
141	BARRIER FORCE B5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
142	BARRIER FORCE B6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
143	BARRIER FORCE B7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
144	BARRIER FORCE B8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
145	BARRIER FORCE B9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

**2004 FMVSS 208 Upgrade
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
8/12/04
2004 Jeep Liberty 4-Door MPV**

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
146	BARRIER FORCE C1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
147	BARRIER FORCE C2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
148	BARRIER FORCE C3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
149	BARRIER FORCE C4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
150	BARRIER FORCE C5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
151	BARRIER FORCE C6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
152	BARRIER FORCE C7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
153	BARRIER FORCE C8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
154	BARRIER FORCE C9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
155	BARRIER FORCE D1	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
156	BARRIER FORCE D2	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
157	BARRIER FORCE D3	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
158	BARRIER FORCE D4	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
159	BARRIER FORCE D5	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
160	BARRIER FORCE D6	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
161	BARRIER FORCE D7	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
162	BARRIER FORCE D8	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N
163	BARRIER FORCE D9	X	BARRIER	Load Cell, LCB	Interface	1220-FS	N

APPENDIX E
DUMMY CALIBRATION DATA

Test Program: Hybrid III Large Male Head Drop Test

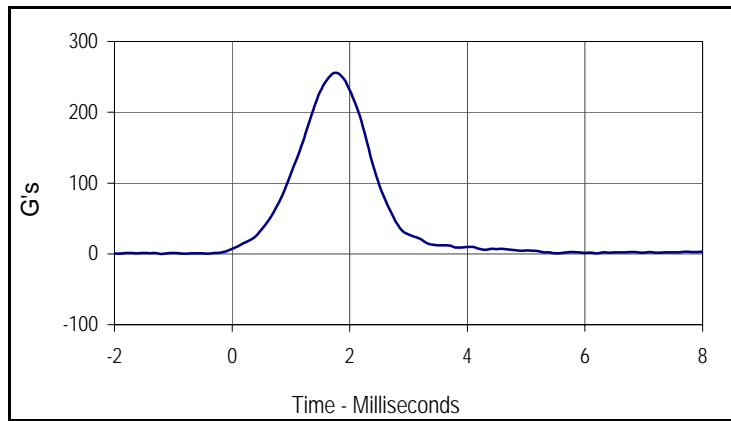
Test Date: 8/10/04

ATD Serial No.: 058

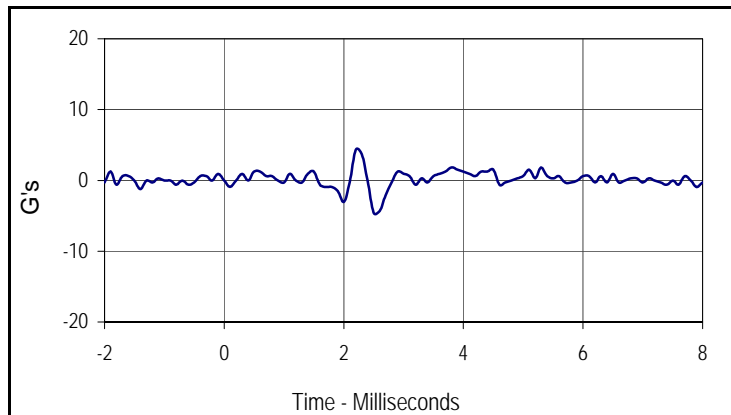
Test I.D.: HD09A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	220.0 to 265.0	255.4	Pass
Peak Lateral Acceleration	G's	≤15.0	4.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	1.9	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
255.4	1.8	0.0	-1.2



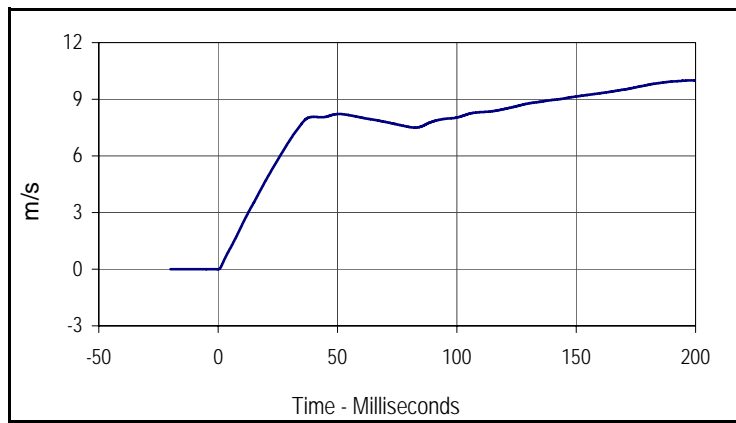
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.3	2.2	-4.6	2.5

Test Program: Hybrid III Large Male Neck Flexion Test
 ATD Serial No.: 058

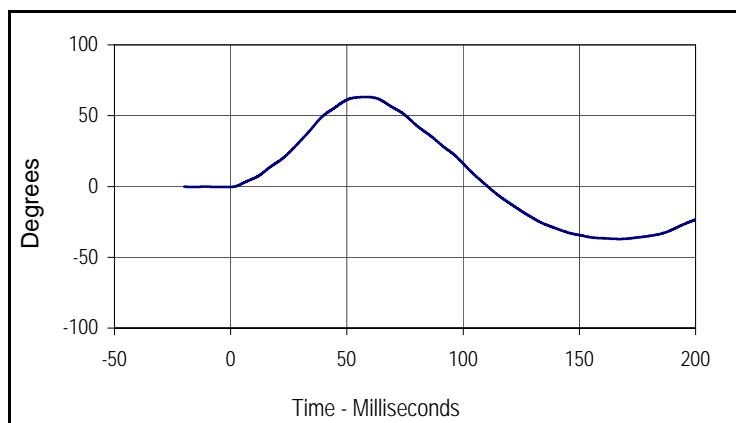
Test Date: 8/10/04
 Test I.D.: NF09A



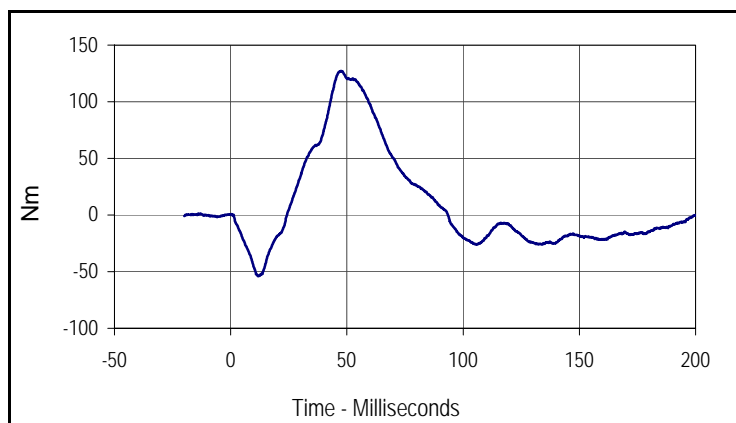
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	6.98	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.2 to 2.7	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.7	Pass
	30 Msec.	m/s	5.7 to 6.9	6.8	Pass
"D" Plane Rotation	Max	Degrees	61.0 to 75.0	63.2	Pass
Peak Moment in Rotation	Max	Nm	110.0 to 130.0	127.1	Pass
Positive Moment Decay, Time To 10 Nm	Msec.		77.0 to 97.0	89.0	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
10.0	198.8	0.0	-0.2



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
63.2	58.3	-37.1	167.2



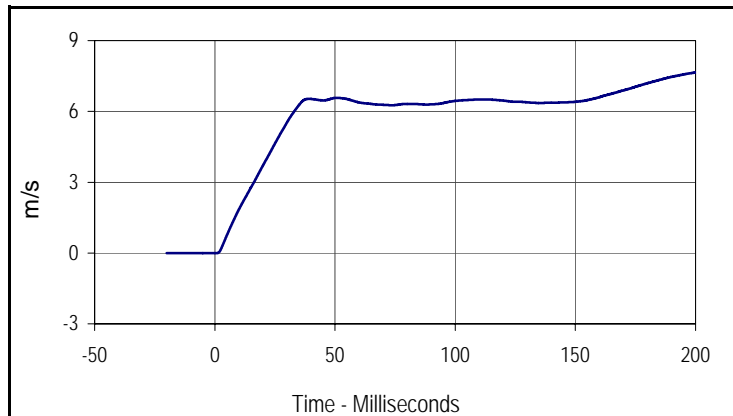
Curve Description			
Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
127.1	47.4	-54.1	11.8

Test Program: Hybrid III Large Male Neck Extension Test
 ATD Serial No.: 058

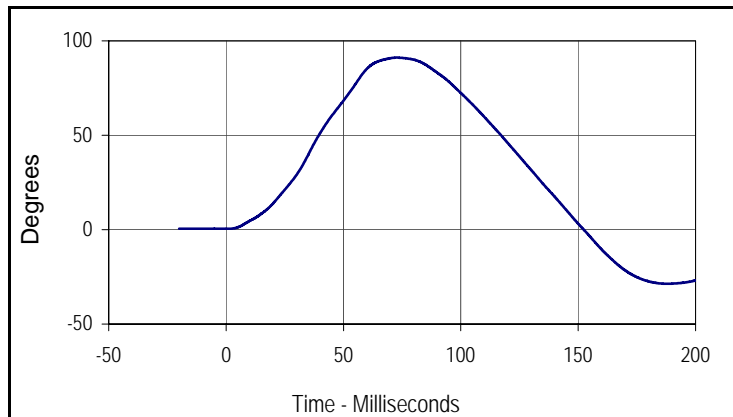
Test Date: 8/10/04
 Test I.D.: NE09A



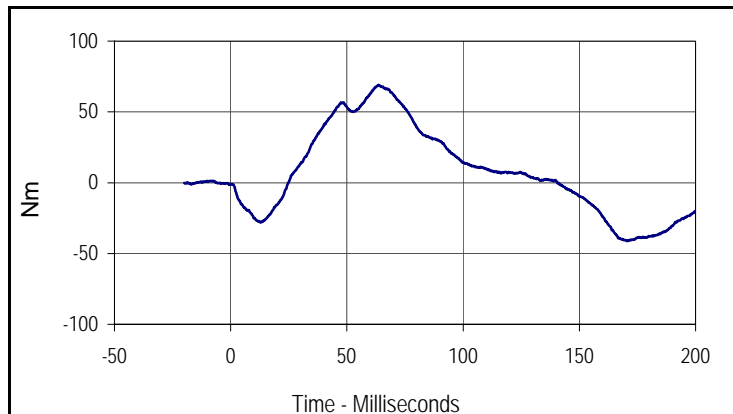
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.10	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.8 to 2.2	1.8	Pass
	20 Msec.	m/s	3.4 to 4.2	3.7	Pass
	30 Msec.	m/s	4.8 to 5.8	5.5	Pass
"D" Plane Rotation	Max	Degrees	81.0 to 98.0	91.1	Pass
Peak Moment in Rotation	Max	Nm	66.0 to 84.0	69.1	Pass
Positive Moment Decay, Time To 10 Nm	Msec.	100.0 to 120.0	109.6	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.8	220.0	0.0	0.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
91.1	72.7	-28.6	188.0



Curve Description			
Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
69.1	63.6	-41.2	170.5

Test Program: Hybrid III Large Male Thorax Impact Test

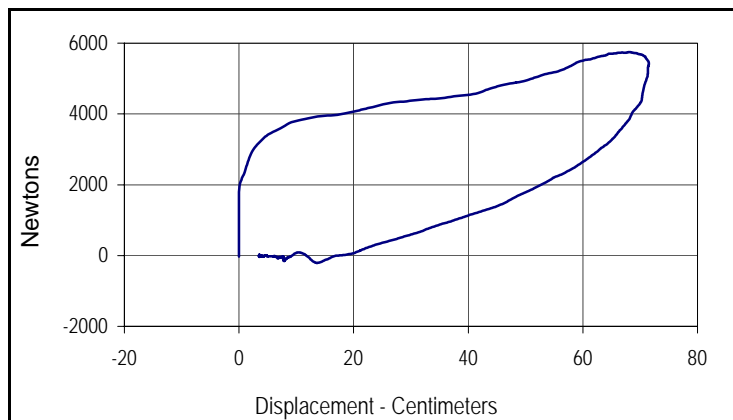
Test Date: 8/10/04

ATD Serial No.: 058

Test I.D.: CH09A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.64	Pass
Peak Probe Force	Newtons	5100 to 5900	5745	Pass
Peak Sternum Displacement	CM	66.0 to 76.0	71.5	Pass
Internal Hysteresis	%	69 to 85	72.2	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Displacement			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	72.2
Peak Probe Force		Peak Chest Displ.	
5745.2		71.5	

Test Program: Hybrid III Large Male Knee Impact Test
 ATD Serial No.: 058

Test Date: 8/10/04
 Test I.D.: LK09A , RK09A



Left Knee

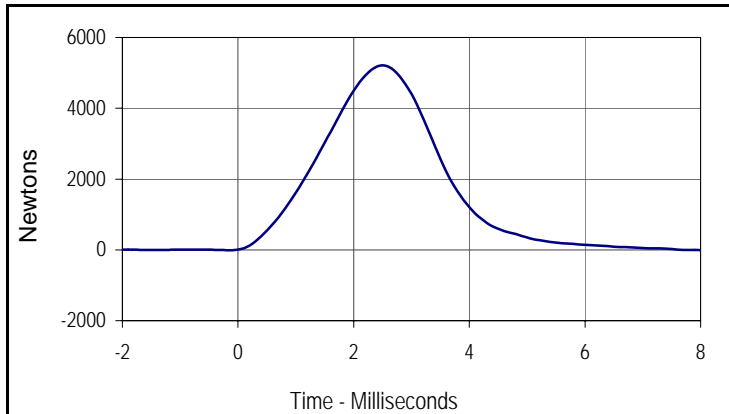
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4900 to 7300	5363	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5210	Pass
Overall Test Results				Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5362.5	2.4	-14.6	9.0



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5210.2	2.5	-22.6	8.7

Test Program: Hybrid III Large Male External Measurements

Test Date: 8/11/04

ATD Serial No.: 058

Test I.D.: N/A



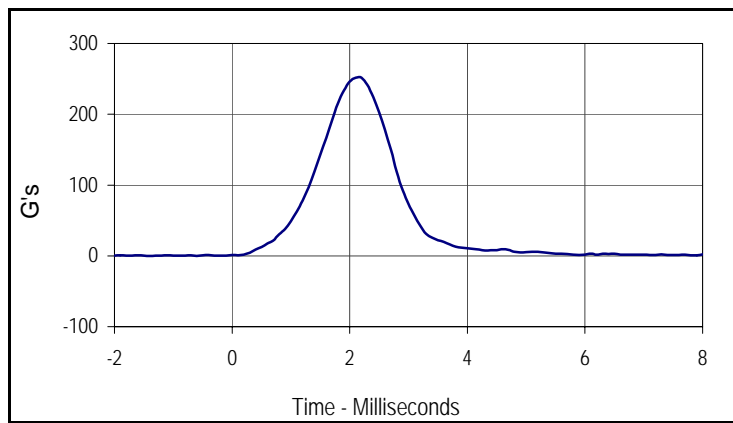
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	927 to 942	940	Pass
B - Shoulder pivot height	mm	541 to 556	547	Pass
C - "H" point height	mm	102 to 112	108	Pass
D - "H" point from seat back	mm	137 to 147	144	Pass
E - Shoulder pivot from back	mm	109 to 119	111	Pass
F - Thigh clearance	mm	160 to 175	168	Pass
G - Elbow back to wrist pivot	mm	307 to 318	315	Pass
H - Skull cap to back line	mm	86 to 91	90	Pass
I - Shoulder to elbow length	mm	348 to 363	360	Pass
J - Elbow rest height	mm	208 to 224	215	Pass
K - Buttock to knee length	mm	625 to 650	637	Pass
L - Popliteal length	mm	457 to 482	477	Pass
M - Knee pivot height	mm	521 to 546	540	Pass
N - Buttock popliteal length	mm	490 to 516	515	Pass
O - Chest depth	mm	239 to 254	252	Pass
P - Foot length	mm	252 to 267	262	Pass
V - Shoulder breadth	mm	468 to 483	470	Pass
W - Foot breadth	mm	92 to 107	100	Pass
Y - Chest circumference	mm	1120 to 1151	1141	Pass
Z - Waist circumference	mm	988 to 1019	1005	Pass
AA - Location for chest circumference	mm	478 to 488	483	Pass
BB - Location for waist circumference	mm	274 to 285	280	Pass
Overall Test Results				Pass

Test Program: Hybrid III Large Male Head Drop Test
 ATD Serial No.: 159

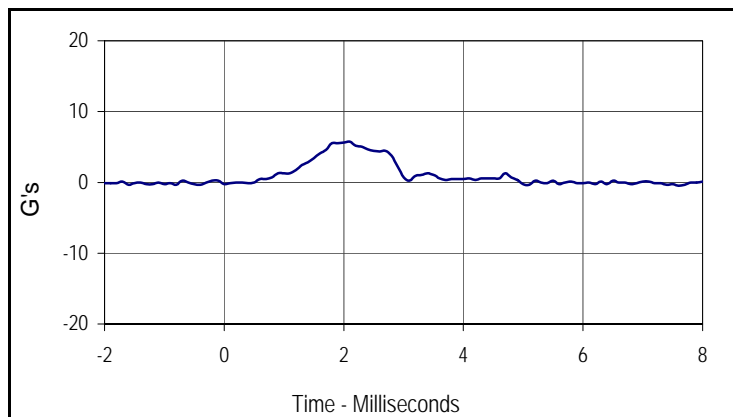
Test Date: 8/10/04
 Test I.D.: HD09B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	220.0 to 265.0	251.9	Pass
Peak Lateral Acceleration	G's	≤15.0	5.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<10	2.3	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
251.9	2.2	0.0	-1.4



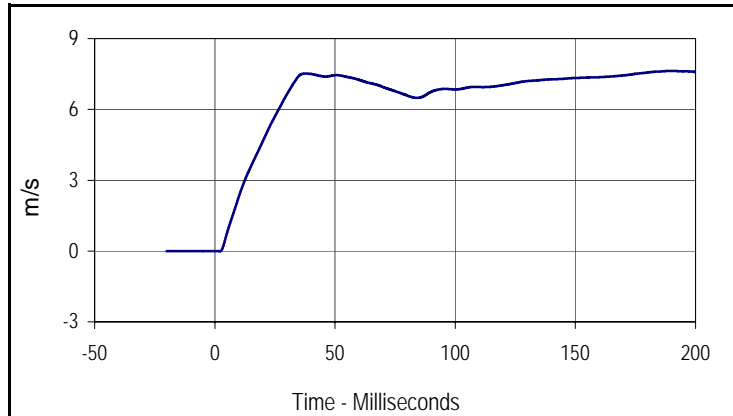
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.8	2.1	-0.5	7.6

Test Program: Hybrid III Large Male Neck Flexion Test
 ATD Serial No.: 159

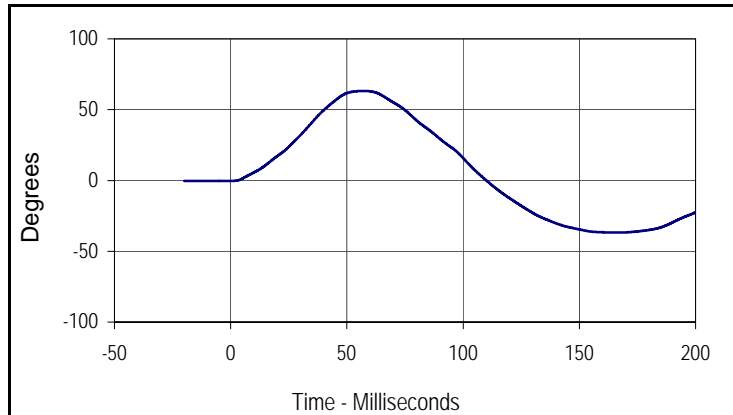
Test Date: 8/10/04
 Test I.D.: NF09B



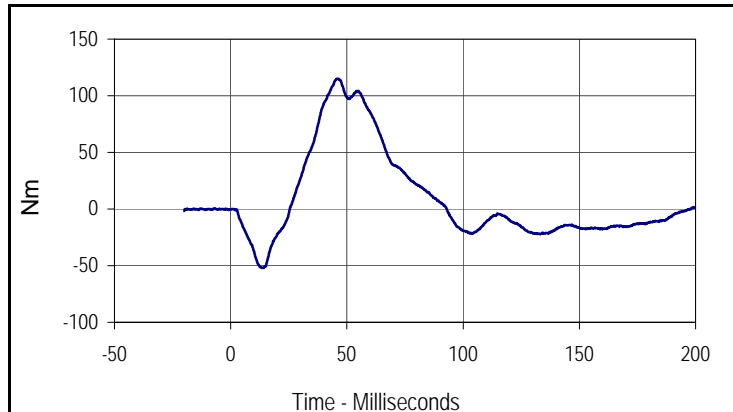
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.05	Pass	
Pendulum Deceleration	10 Msec.	m/s	2.2 to 2.7	2.3	Pass
	20 Msec.	m/s	4.0 to 5.0	4.7	Pass
	30 Msec.	m/s	5.7 to 6.9	6.6	Pass
"D" Plane Rotation	Max	Degrees	61.0 to 75.0	63.3	Pass
Peak Moment in Rotation	Max	Nm	110.0 to 130.0	115.0	Pass
Positive Moment Decay, Time To 10 Nm	Msec.		77.0 to 97.0	87.3	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
7.6	189.4	0.0	2.0



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
63.3	56.9	-36.8	166.3



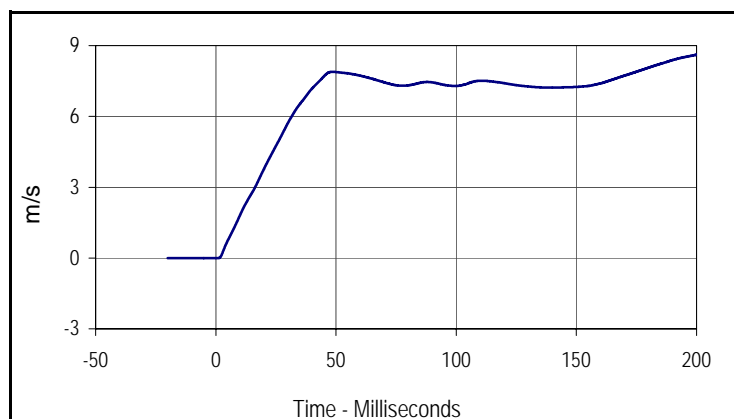
Curve Description			
Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
115.0	46.1	-52.1	14.1

Test Program: Hybrid III Large Male Neck Extension Test
 ATD Serial No.: 159

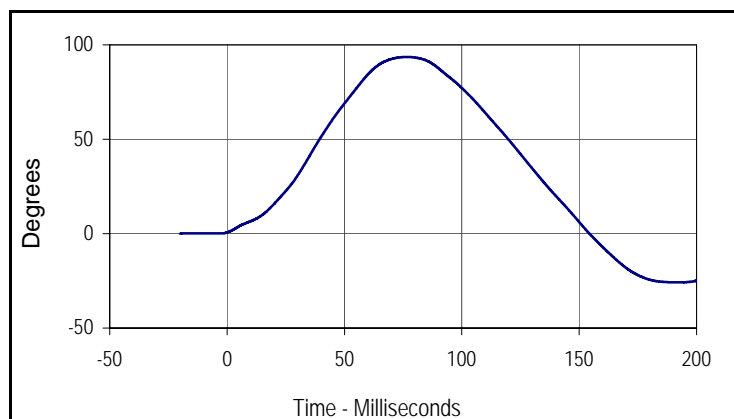
Test Date: 8/10/04
 Test I.D.: NE09B



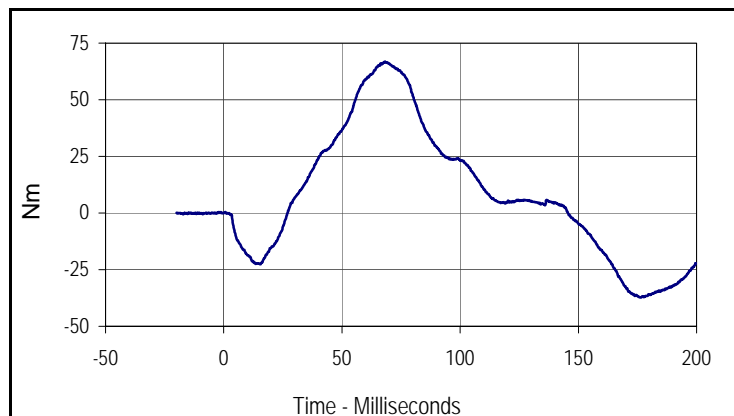
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/s	5.95 to 6.19	6.10	Pass	
Pendulum Deceleration	10 Msec.	m/s	1.8 to 2.2	1.8	Pass
	20 Msec.	m/s	3.4 to 4.2	3.8	Pass
	30 Msec.	m/s	4.8 to 5.8	5.7	Pass
"D" Plane Rotation	Max	Degrees	81.0 to 98.0	93.6	Pass
Peak Moment in Rotation	Max	Nm	66.0 to 84.0	66.8	Pass
Positive Moment Decay, Time To 10 Nm	Msec.		100.0 to 120.0	110.5	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
8.8	217.5	0.0	0.9



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
93.6	76.6	-25.8	192.4



Curve Description			
Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
66.8	68.1	-37.3	176.4

Test Program: Hybrid III Large Male Thorax Impact Test

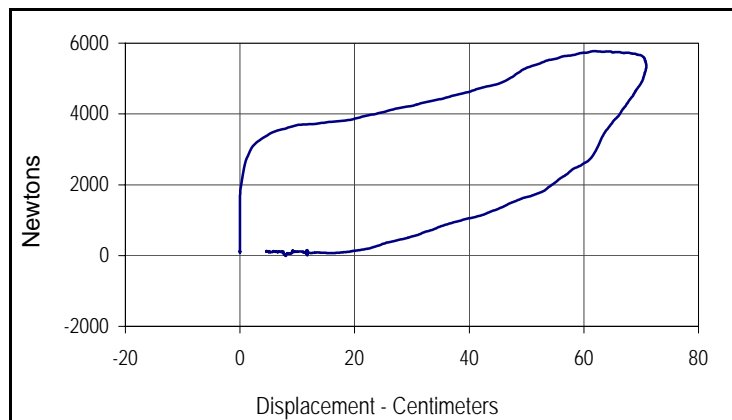
Test Date: 8/10/04

ATD Serial No.: 159

Test I.D.: CH09B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5100 to 5900	5775	Pass
Peak Sternum Displacement	CM	66.0 to 76.0	70.9	Pass
Internal Hysteresis	%	69 to 85	72.4	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Displacement			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	72.4
Peak Probe Force		Peak Chest Displ.	
5775.1		70.9	

Test Program: Hybrid III Large Male Knee Impact Test
 ATD Serial No.: 159

Test Date: 8/10/04
 Test I.D.: LK09B , RK09B

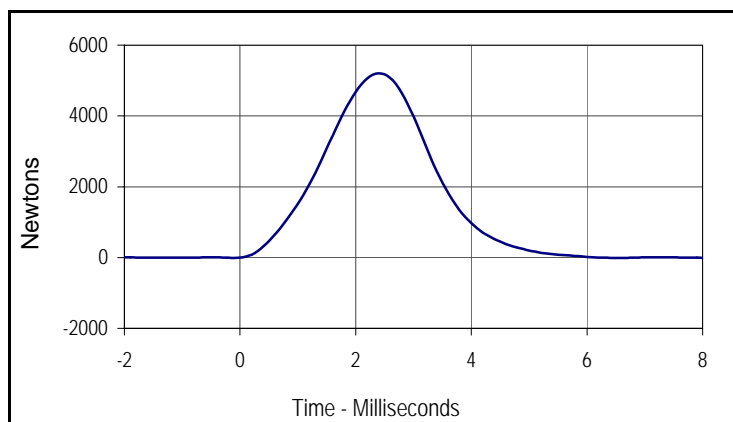


Left Knee

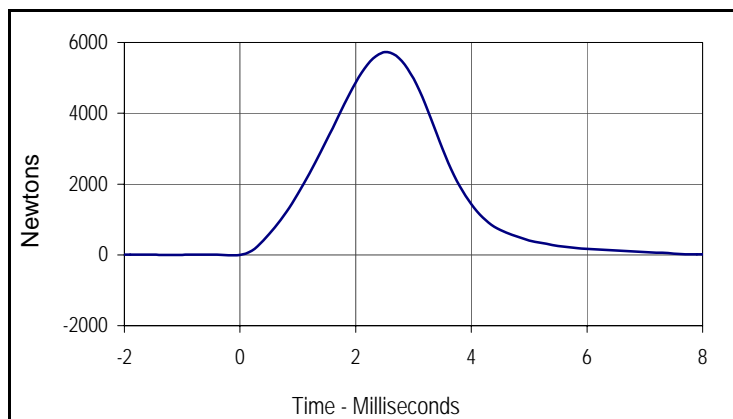
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4900 to 7300	5208	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.13	Pass
Peak Probe Force	Newtons	4715 to 5782	5726	Pass
Overall Test Results				Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5208.0	2.4	-15.5	6.6



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5726.3	2.5	-14.6	8.8

Test Program: Hybrid III Large Male External Measurements

Test Date: 8/11/04

ATD Serial No.: 159

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	927 to 942	939	Pass
B - Shoulder pivot height	mm	541 to 556	550	Pass
C - "H" point height	mm	102 to 112	110	Pass
D - "H" point from seat back	mm	137 to 147	145	Pass
E - Shoulder pivot from back	mm	109 to 119	110	Pass
F - Thigh clearance	mm	160 to 175	170	Pass
G - Elbow back to wrist pivot	mm	307 to 318	312	Pass
H - Skull cap to back line	mm	86 to 91	88	Pass
I - Shoulder to elbow length	mm	348 to 363	355	Pass
J - Elbow rest height	mm	208 to 224	220	Pass
K - Buttock to knee length	mm	625 to 650	640	Pass
L - Popliteal length	mm	457 to 482	480	Pass
M - Knee pivot height	mm	521 to 546	535	Pass
N - Buttock popliteal length	mm	490 to 516	495	Pass
O - Chest depth	mm	239 to 254	245	Pass
P - Foot length	mm	252 to 267	260	Pass
V - Shoulder breadth	mm	468 to 483	477	Pass
W - Foot breadth	mm	92 to 107	105	Pass
Y - Chest circumference	mm	1120 to 1151	1145	Pass
Z - Waist circumference	mm	988 to 1019	1015	Pass
AA - Location for chest circumference	mm	478 to 488	480	Pass
BB - Location for waist circumference	mm	274 to 285	278	Pass
Overall Test Results				Pass

Test Program: Hybrid III 50th Percentile Male Head Drop Test

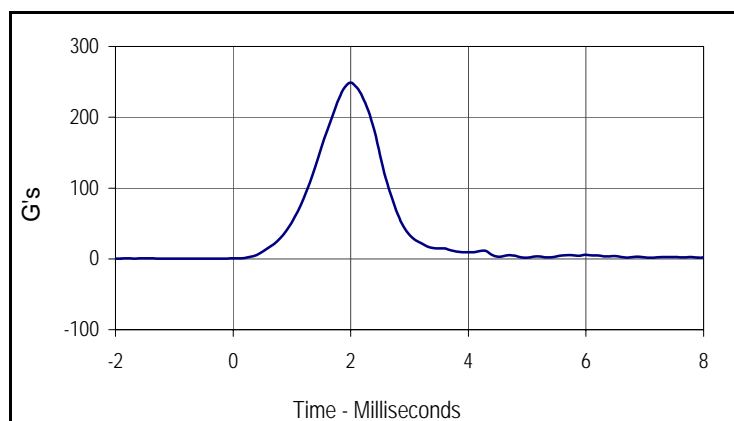
Test Date: 8/11/04

ATD Serial No.: 001

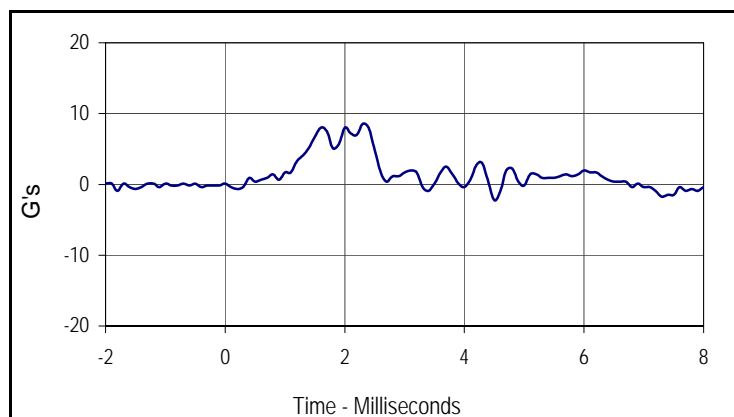
Test I.D.: HD09C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	248.8	Pass
Peak Lateral Acceleration	G's	≤15.0	8.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



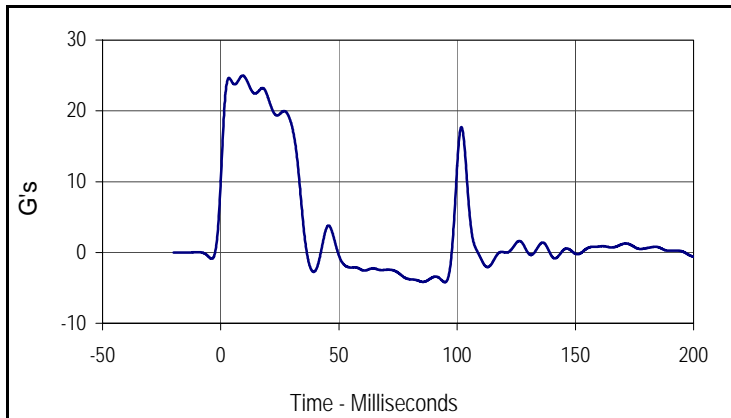
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
248.8	2.0	0.2	-1.7



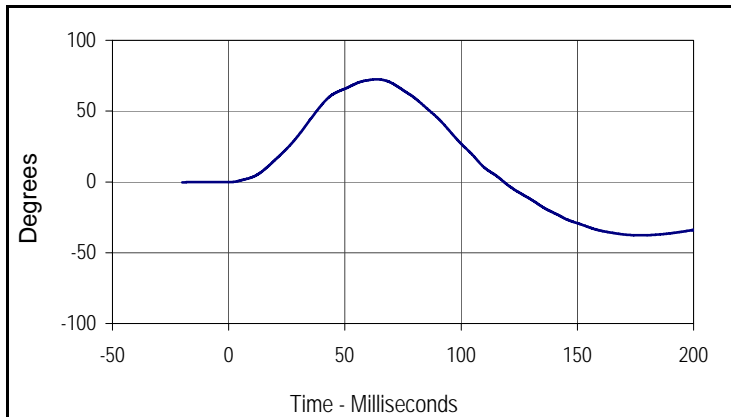
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.5	2.3	-2.3	4.5



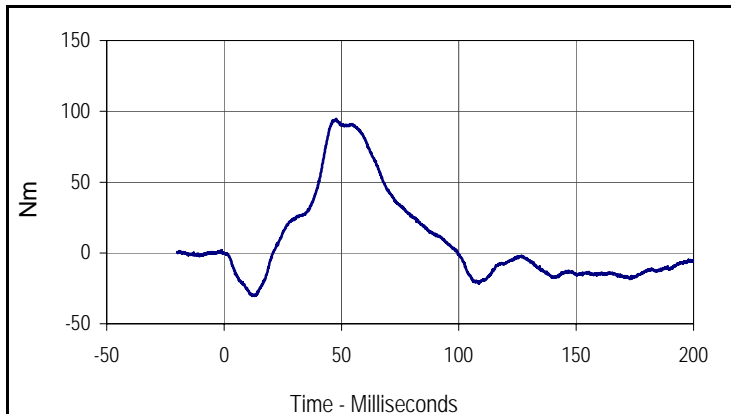
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/s	6.89 to 7.13	7.11	Pass	
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	24.9	Pass
	20 Msec.	G's	17.6 to 22.6	21.9	Pass
	30 Msec.	G's	12.5 to 18.5	18.0	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 29.0	18.0	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	34.0 to 42.0	34.7	Pass	
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	72.5	Pass
	Time	Msec.	57.0 to 64.0	63.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	113.0 to 128.0	118.4	Pass	
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	94.7	Pass
	Time	Msec.	47.0 to 58.0	47.8	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	97.0 to 107.0	99.5	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
25.0	9.3	-4.2	94.8



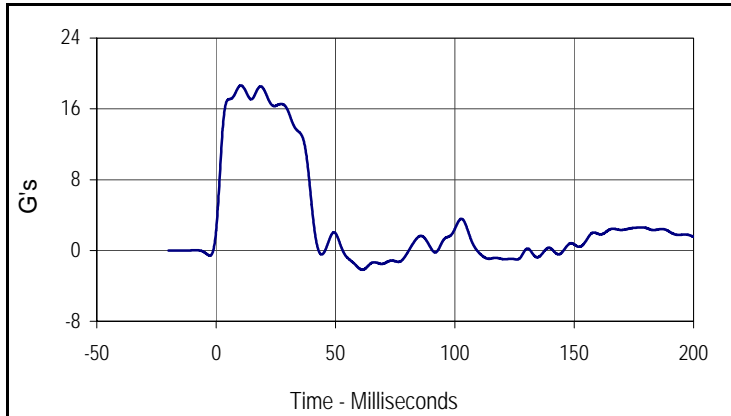
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
72.5	63.7	-37.6	178.8



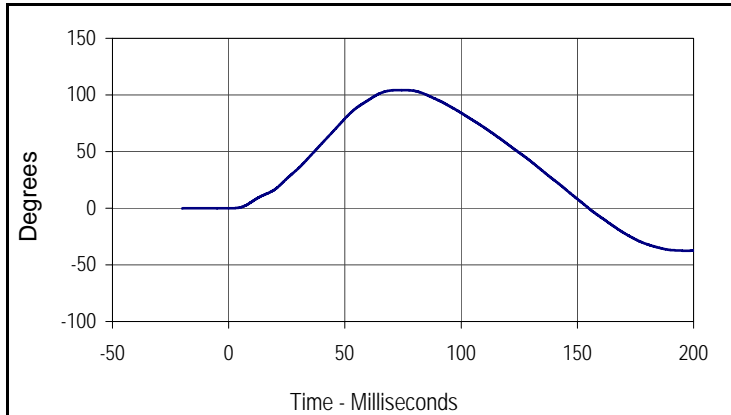
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
94.7	47.8	-30.4	11.9



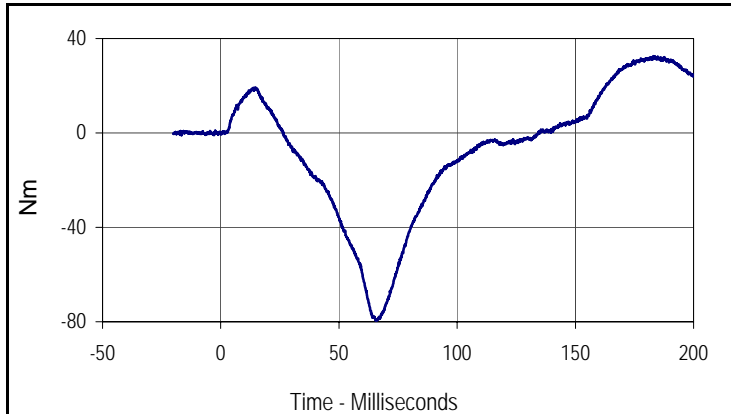
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/s	5.94 to 6.19	6.11	Pass	
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.6	Pass
	20 Msec.	G's	14.0 to 19.0	18.2	Pass
	30 Msec.	G's	11.0 to 16.0	15.8	Pass
Peak Pendulum Decel. after 30 Msec.	G's	≤ 22.0	15.8	Pass	
Deceleration Decay, Time to Cross 5 G's	Msec.	38.0 to 46.0	40.1	Pass	
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	104.4	Pass
	Time	Msec.	72.0 to 82.0	73.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing	Msec.	147.0 to 174.0	154.9	Pass	
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-79.5	Pass
	Time	Msec.	65.0 to 79.0	66.0	Pass
Positive Moment Decay, Time To Zero Crossing	Msec.	120.0 to 148.0	134.4	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
18.6	10.3	-2.2	61.2



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
104.4	73.7	-37.6	197.2



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
32.5	183.1	-79.5	66.0

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

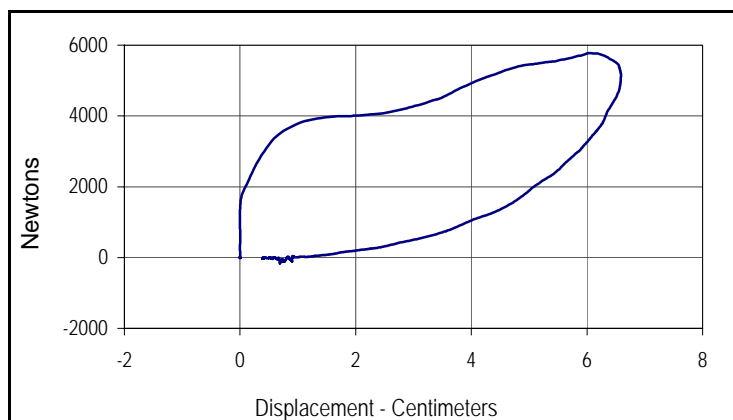
Test Date: 8/11/04

ATD Serial No.: 001

Test I.D.: CH09C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5773	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.59	Pass
Internal Hysteresis	%	69 to 85	75.1	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Displacement			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180/600	75.1
Peak Probe Force		Peak Chest Displ.	
5773		6.59	

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 8/11/04

ATD Serial No.: 001

Test I.D.: LK09C , RK09C



Left Knee

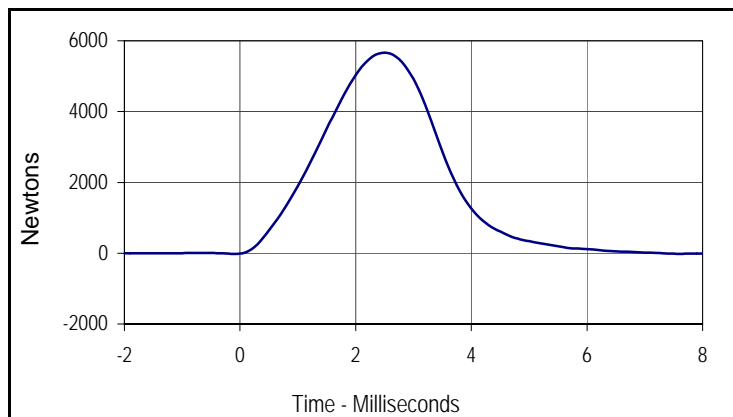
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5701	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5667	Pass
Overall Test Results				Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5701.1	2.7	-82.0	8.8



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5666.7	2.5	-22.9	9.9

Test Program: Hybrid III 50th Percentile Male External Measurements Test Date: 8/11/04
 ATD Serial No.: 001 Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	883	Pass
B - Shoulder pivot height	mm	505 to 521	518	Pass
C - "H" point height	mm	84 to 89	87	Pass
D - "H" point from seat back	mm	135 to 140	137	Pass
E - Shoulder pivot from back	mm	84 to 94	88	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	297	Pass
H - Skull cap to back line	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	338	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	597	Pass
L - Popliteal length	mm	429 to 455	445	Pass
M - Knee pivot height	mm	485 to 500	487	Pass
N - Buttock popliteal length	mm	452 to 477	473	Pass
O - Chest depth	mm	213 to 229	228	Pass
P - Foot length	mm	251 to 267	256	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	104	Pass
Y - Chest circumference	mm	970 to 1001	990	Pass
Z - Waist circumference	mm	836 to 866	860	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
Overall Test Results				Pass