

REPORT NUMBER: NCAP-MGA-2004-002

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**DaimlerChrysler Corporation
2004 Dodge Intrepid SE
NHTSA NUMBER: M40301**

**PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105**



Test Date: November 4, 2003

Report Date: December 8, 2003

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
400 SEVENTH STREET, SW, ROOM 5311
WASHINGTON, D.C. 20590**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-01-D-12005.

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Prepared by: Shefalika Agarwal Date: 12/8/03
Shefalika Agarwal, Project Engineer

Reviewed by: David Winkelbauer Date: 12/8/03
David Winkelbauer, Facility Director

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

1. Report No. NCAP-MGA-2004-002		2. Government Accession No.		3. Recipient's Catalog No.																										
4. Title and Subtitle Final Report of New Car Assessment Program Testing of a 2004 Dodge Intrepid SE NHTSA No.: M40301		5. Report Date December 8, 2003		6. Performing Organization Code MGA																										
		8. Performing Organization Report No. NCAP-MGA-2004-002		10. Work Unit No.																										
7. Author(s) Shefalika Agarwal, Project Engineer		9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		11. Contract or Grant No. DTNH22-01-D-12005																										
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Rulemaking, Office of Crashworthiness Standards 400 Seventh Street, SW, Room 5311 Washington, D.C. 20590		13. Type of Report and Period Covered 11/04/03 to 12/08/03		14. Sponsoring Agency Code NVS-111																										
		15. Supplementary Notes																												
16. Abstract A 35.3 mph (56.8 km/h) frontal barrier impact was conducted on a 2004 Dodge Intrepid SE at MGA Research Corporation on November 4, 2003. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The impact velocity was 56.8 km/h. The ambient temperature at the barrier face at the time of impact was 21 degrees Celsius. The vehicle's maximum post test static crush is 687 mm located at the vehicle left side. The test vehicle is equipped with a 3-point continuous belt system and an airbag in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:																														
<table border="1"> <thead> <tr> <th><u>Measurement Description</u></th> <th><u>Units</u></th> <th><u>Threshold</u></th> <th><u>Driver ATD</u></th> <th><u>Pass. ATD</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>N/A</td> <td>1000</td> <td>685</td> <td>464</td> </tr> <tr> <td>Max. Thorax Accel. (3msec Clip)</td> <td>G's</td> <td>60</td> <td>48</td> <td>46</td> </tr> <tr> <td>Left Femur force</td> <td>Newton</td> <td>10009</td> <td>-6912</td> <td>-5352</td> </tr> <tr> <td>Right Femur force</td> <td>Newton</td> <td>10009</td> <td>-3783</td> <td>-3936</td> </tr> </tbody> </table>						<u>Measurement Description</u>	<u>Units</u>	<u>Threshold</u>	<u>Driver ATD</u>	<u>Pass. ATD</u>	Head Injury Criteria (HIC)	N/A	1000	685	464	Max. Thorax Accel. (3msec Clip)	G's	60	48	46	Left Femur force	Newton	10009	-6912	-5352	Right Femur force	Newton	10009	-3783	-3936
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19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Unclassified		21. No. of Pages 214	22. Price																									

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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.8 kph frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-01-D-12005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact in excess of the current 48.3 kph requirements.

SUMMARY

A load cell barrier consisting of 30 load cells was impacted by a 2004 Dodge Intrepid SE at a velocity of 56.8 kph. The test was performed at MGA Research Corporation on November 4, 2004. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

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

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

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometer, upper neck transducers, right/left femur load cells, and lower leg instrumentation. The driver (position 1) ATD (Serial No. 066) and right-front passenger (position 2) ATD (Serial No. 065) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 150 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

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

The maximum static crush of the vehicle was 687 mm and both the driver and passenger side doors remained closed and latched during the impact event and were operable after the impact.

The driver's head and chest contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the bolster. The driver's abdomen contacted the airbag. The passenger's head, chest and abdomen contacted the airbag. The passenger's head contacted the headrest. The passenger's knees contacted the glove box.

The occupant data is summarized below:

ATD position	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	685	48	-29.9	-6912	-3783	*
Passenger	464	46	-19.3	-5352	-3936	*

* Not recorded

SECTION 2

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	English 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 Pressure	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 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/hr	56.8
Test Weight	kg	1755.9
Average Rebound	mm	699
Maximum Static Crush	mm	687
Impact Angle	degrees	0

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Rear Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Seat Track Shift (mm)	0	3 mm (forward)
Seat Back Failure	None	None

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type / Serial No.	H III 50 th / 066	H III 50 th / 065
Head Contact	Airbag, Head Rest	Airbag, Head Rest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	Airbag
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

16mm MOVIE COVERAGE

High Speed	16
Real Time	1
Total	17

Driver ATD Sensors	42
Passenger ATD Sensors	42
Belt Assessment Sensors	4
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	6
Total	103

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

TEST VEHICLE INFORMATION

Manufacturer	Dodge
Model	Intrepid SE
Body Style	Sedan
NHTSA No.	M40301
VIN	2B3HD46R94H599911
Color	Charcoal Grey
Delivery Date	09/15/03
Odometer Reading (mile)	54
Dealer	Wilde Dodge
Transmission	Automatic
Final Drive	Front
Number of Cylinders	6
Engine Displacement (L)	2.7
Engine Placement	Longitudinal

TEST VEHICLE OPTIONS

Driver Airbag	Yes
Passenger Airbag	Yes
Force Limiter	Yes
Pretensioner	No
Power Windows	Yes
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Air Conditioning	Yes
Power Brakes	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	Yes
Anti-lock Brakes	No
AM/FM/Cassette	Yes
Anti-theft System	No
Cruise Control	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	DaimlerChrysler Corporation	GVWR (kg)	2062
Date of Manufacture	3/03	GAWR Front (kg)	1154
		GAWR Rear (kg)	931

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P225/60R16-97T	P225/60R16-97T
Tire Size on Vehicle	P225/60R16-97T	P225/60R16-97T
Tire Manufacturer	Goodyear	Goodyear

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	N/A	
Number Of Occupants	2	3	0	5
Capacity Wt. (VCW) (kg)				392
Cargo Wt. (RCLW) (kg)				51.8

DATA SHEET NO. 2... (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	488.1	290.3		552.5	339.3	
Right	kg	495.8	278.1		541.6	322.5	
Ratio	%	63.4	36.6		62.3	37.7	
Totals	kg	983.9	568.4	1552.3	1094.1	661.8	1755.9

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1552.3
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	52.2
Calculated Vehicle Target Weight (TVTW)	kg	1760.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	742	744	748	751	1053
As Tested	mm	727	728	729	731	1084
Post Test	mm	815	833	736	714	

Vehicle Wheelbase (mm): 2875

Weight of Ballast secured in cargo area (kg): 0

Vehicle Components Removed: Rear taillights, rear bumper cover, rear bumper truck lid, both outside mirrors, exhaust aft of fuel tank.

Ballast weight does not include cameras, instrumentation, and data acquisition system.

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 64.3

Usable Capacity Figure Furnished by COTR (L): N/A

Actual Test Volume (L): 61.3

Test Fluid Type: Stoddard Solvent; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical? Electric

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

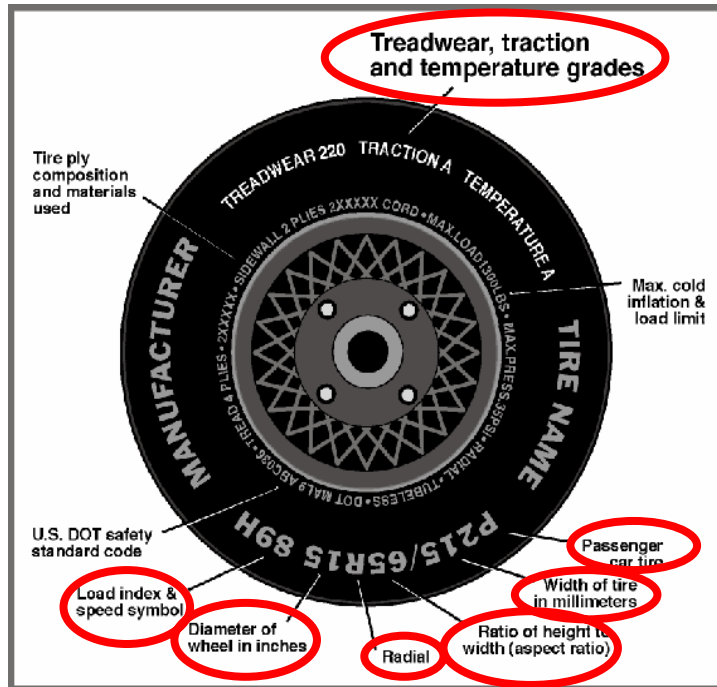
DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

Vehicle Year	2004	Vehicle Make	Dodge
VIN	2B3HD46R94H599911	Vehicle Model	Intrepid SE



	Front	Rear
Tire Manufacturer	Goodyear	Goodyear
Tire Name	Eagle GA	Eagle GA
Tire Type	Touring	Touring
Tire Width (mm)	225	225
Ratio of Height to Width (aspect ratio)	60	60
Radial	R	R
Wheel Diameter	16	16
Load Index & Speed Symbol	97T	97T
Treadwear	300	300
Traction Grade	A	A
Temperature Grade	B	B

**DATA SHEET NO. 4
POST IMPACT DATA**

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.5 – 57.1	56.8
Trap No. 1 Entry Distance	mm	<1524	1300
Trap No. 1 Exit Distance	mm	<1524	300
Trap No. 2 Velocity (Redundant)	km/h	55.5 – 57.1	56.8
Trap No. 2 Entry Distance	mm	<1524	1425
Trap No. 2 Exit Distance	mm	<1524	425

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4941	4348	593
Center	mm	5122	4435	687
Right Side	mm	4938	4382	556

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	746
Center	mm	669
Right Side	mm	682
Average	mm	699

DATA SHEET NO. 5
TEST VEHICLE INFORMATION

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

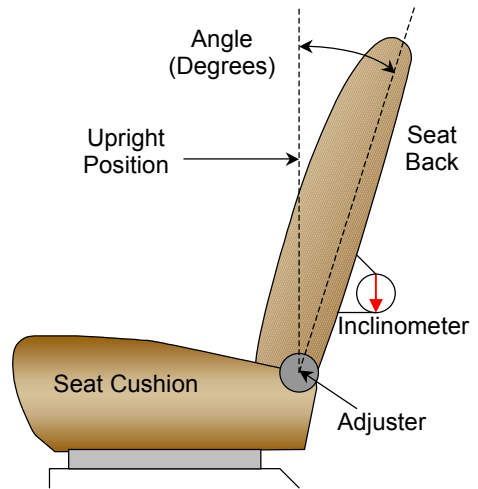
NHTSA No.: M40301
Test Date: 11/04/03

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: Adjust seatback rearward such that the head restraint post is positioned 77 degrees relative to the longitudinal axis: the lower surface of the front door opening at seat mid-track is parallel to the vehicle's longitudinal axis. The designated angle is 24°.

Driver seat back angle: 24°

Passenger seat back angle: 24°



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Position the seat in the mechanical mid position. The driver and passenger are manual adjustable seats.

Driver seat fore/aft total travel: 23 notches

Passenger seat fore/aft total travel: 23 notches

Driver seat fore/aft position: 12 of 23

Passenger seat fore/aft position: 12 of 23

SEAT BELT UPPER ANCHORAGE

The front outboard D-rings were adjusted to the mid track position.

DATA SHEET NO. 5... (continued)
TEST VEHICLE INFORMATION

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

FUEL TANK CAPACITY DATA

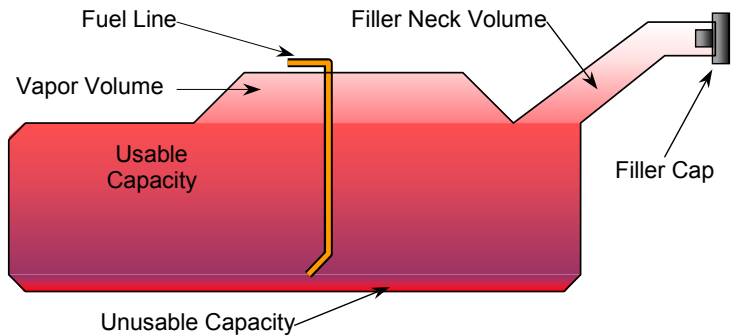
The "Usable Capacity" of the standard equipment fuel tank is: 64.3 liters

The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

The "Usable Capacity" used for certification to FMVSS 301 requirements: 64.3 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 61.3 liters

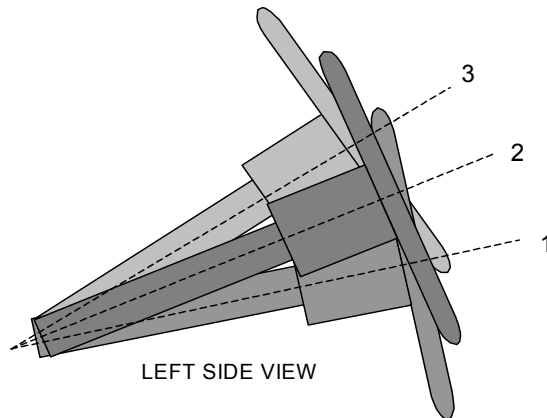
The fuel door is located on the left hand side (driver's side) of the car.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Position the column at the mid detent (5 detents total). Total tilt range = 22 degrees. The mid point is two notches down from the top position or two notches up from the bottom position. The steering column was placed in the mid detent.



STEERING COLUMN ASSEMBLY

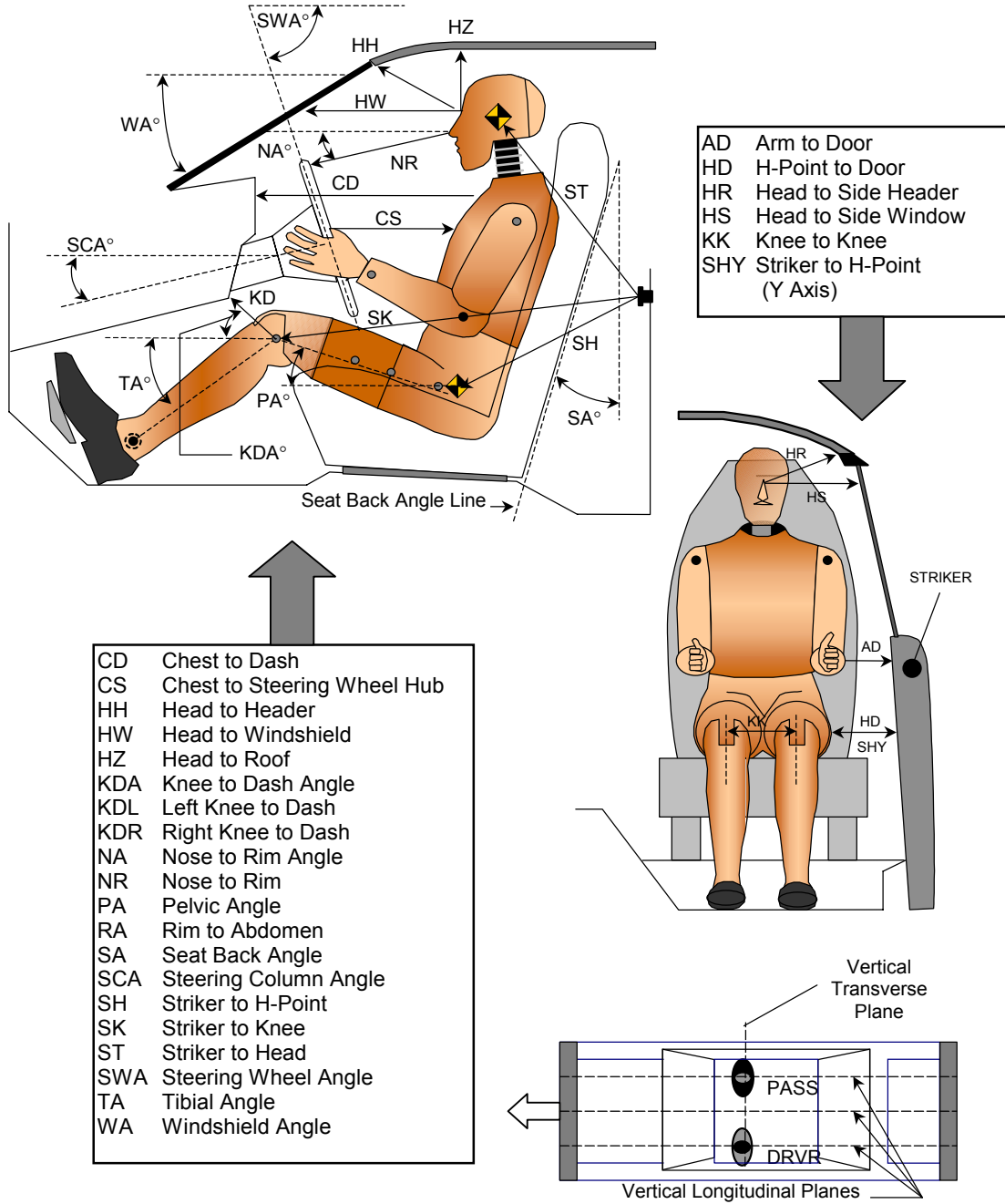
DATA SHEET NO. 6

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET NO. 6... (continued)
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

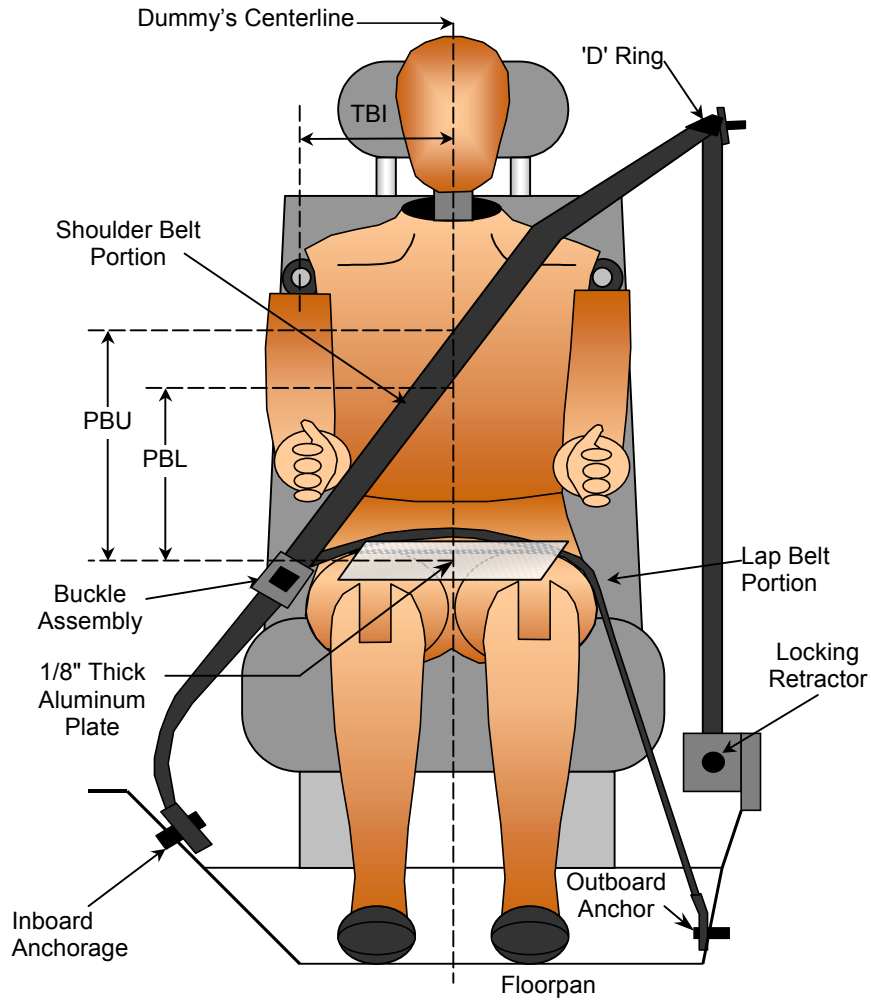
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		22.3		
SWA	Steering Wheel Angle		68.6		
SCA	Steering Column Angle		20.7		
SA	Seat Back Angle		24		24
HZ	Head to Roof (Z)	162	90	158	90
HH	Head to Header	320	18.8	322	18.8
HW	Head to Windshield	598	0	580	0
HR	Head to Side Header (Y)	178		181	
NR	Nose to Rim	363	11.2		
CD	Chest to Dash	513		531	
CS	Chest to Steering Hub	298	5.1		
RA	Rim to Abdomen	189	0		
KDL	Left Knee to Dash	150	20.9	178	
KDR	Right Knee to Dash	182		165	19.5
PA	Pelvic Angle		24.4		24.6
TA	Tibia Angle		44.2		45.2
KK	Knee to Knee (Y)	333		269	
SK	Striker to Knee	577	0.6	567	0.1
ST	Striker to Head	502	8.8	511	11.3
SH	Striker to H-Point	227	36.3	221	35.0
SHY	Striker to H-Point (Y)	280		283	
HS	Head to Side Window	321		317	
HD	H-Point to Door (Y)	155		150	
AD	Arm to Door (Y)	127		136	
AA	Ankle to Ankle	305		180	

DATA SHEET NO. 7
SEAT BELT POSITIONING DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	170	170
PBU - Top surface of reference to belt upper edge	mm	334	325
PBL - To surface of reference to belt lower edge	mm	260	244

DATA SHEET NO. 8

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

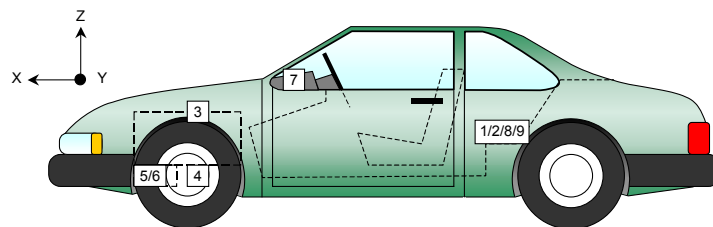
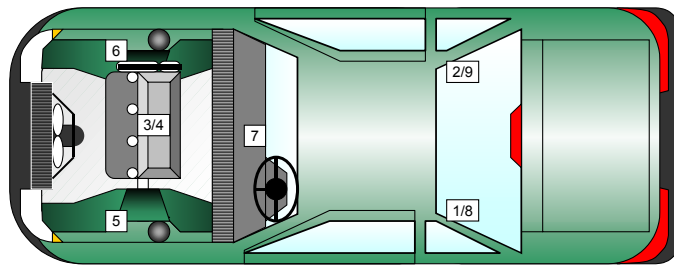
No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member X	2105	-575	360	G's	3.7	128	-31.8	62
2	Right Rear X-Member X	2105	565	350	G's	3.2	133	-35.2	66
3	Engine Top X	4152	10	860	G's	*	*	*	*
4	Engine Bottom X	4100	0	215	G's	**	**	**	**
5	Left Brake Caliper X	4240	-640	265	G's	15.9	79	-93.5	41
6	Right Brake Caliper X	4244	641	261	G's	***	***	***	***
7	Instrument Panel X	3385	0	980	G's	7.4	82	-49.0	49
8	Left Rear X-Member Z	2105	-575	360	G's	8.1	65	-6.6	54
9	Right Rear X-Member Z	2105	565	350	G's	16.1	67	-8.2	62

* - no valid data after 35 ms

** - no valid data after 65 ms

*** - no valid data after 70 ms

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



DATA SHEET NO. 9

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	2.3	30	-68.7	80	0.6	32	-50.1	88
Head CG	Y	G's	5.7	75	-2.5	43	10.5	88	-4.6	57
Head CG	Z	G's	21.6	75	-3.5	100	23.7	64	-1.0	147
Head CG Resultant	N/A	G's	70.9	80			51.9	88		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.5	143	-49.3	73	2.0	160	-47.2	73
Chest CG	Y	G's	5.2	53	-2.0	58	7.2	73	-2.1	120
Chest CG	Z	G's	12.0	48	-8.1	93	13.7	61	-2.5	109
Chest CG Resultant	N/A	G's	49.5	73			48.1	73		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	186	152	-6912	51	1185	44	-5352	59
Right Femur	Z	Newtons	940	48	-3783	57	922	44	-3936	56

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	3781	53			7023	61		
Shoulder Belt Force	N/A	Newtons	3328	68			4206	96		

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg. G's	T ¹	T ²	HIC	Avg. G's	T ¹	T ²
Head CG Primary	685	51.8	60	95	464	44.0	71	107

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	48	72	75	46	72	75

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	1.8	131	-63.1	51	1.8	193	-70.7	60
Pelvis	Y	G's	14.9	51	-11.6	63	16.5	59	-4.7	79
Pelvis	Z	G's	4.3	43	-23.9	69	6.6	42	-30.2	79

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	1127	73	-340	54	494	72	-542	136
Neck Force	Y	Newtons	193	73	-57	185	198	102	-76	153
Neck Force	Z	Newtons	1610	74	-35	103	968	82	-98	147
Neck Moment	X	N•m	6.8	131	-12.9	74	14.1	109	-8.0	91
Neck Moment	Y	N•m	97.0	71	-21.1	53	49.3	126	-40.4	103
Neck Moment	Z	N•m	4.9	150	-7.8	102	3.1	59	-2.3	125

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	36.7	56	-44.6	46	24.1	65	-162.8	41
Left Foot Aft	Z	G's	37.7	37	-81.0	45	22.9	52	-179.5	41
Left Foot Fore	Z	G's	150.1	49	-174.3	45	113.4	51	-319.1	40
Right Foot Aft	X	G's	37.7	73	-86.0	46	22.5	59	-103.8	42
Right Foot Aft	Z	G's	58.4	61	-196.1	45	22.2	75	-74.2	43
Right Foot Fore	Z	G's	242.3	61	-282.1	45	87.1	52	-148.6	41

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Moment	X	N•m	27.0	32	-218.2	58	38.4	53	-51.6	43
Left Lower Moment	Y	N•m	26.3	46	-398.7	61	38.9	55	-57.9	43
Left Lower Force	Z	Newtons	151	189	-2635	59	278	50	-6289	41
Left Upper Moment	X	N•m	89.6	58	-38.8	32	34.6	101	-110.6	81
Left Upper Moment	Y	N•m	31.1	85	-86.8	48	15.6	106	-201.3	41
Left Upper Force	Z	Newtons	76	129	-2784	63	325	50	-4985	41
Right Lower Moment	X	N•m	10.7	44	-31.9	41	102.5	82	-21.0	45
Right Lower Moment	Y	N•m	38.5	47	-158.9	62	55.0	43	-230.6	84
Right Lower Force	Z	Newtons	123	181	-9461	44	85	198	-1567	84
Right Upper Moment	X	N•m	24.9	52	-61.8	76	14.1	101.4	-154.7	76
Right Upper Moment	Y	N•m	129.5	56	-217.3	44	21.3	142	-95.4	43
Right Upper Force	Z	Newtons	87	181	-7357	44	99	49	-1565	84

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	mm			-29.9	83			-19.3	101

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	2.4	30	-68.3	80	2.3	35	-49.1	91
Head CG	Y	G's	8.2	71	-3.6	56	11.7	96	-6.2	71
Head CG	Z	G's	22.0	63	-3.2	99	24.2	64	-1.0	146
Head CG Resultant	N/A	G's	70.1	80			50.8	88		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.5	143	-49.6	66	2.2	164	-47.0	73
Chest CG	Y	G's	5.6	53	-1.1	74	7.4	73	-2.0	114
Chest CG	Z	G's	12.0	48	-7.8	93	13.8	62	-2.4	109
Chest CG Resultant	N/A	G's	49.7	66			47.7	73		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg.	T ¹	T ²	HIC	Avg.	T ¹	T ²
Head CG Primary Redundant	677	51.2	59	95	440	43.1	71	107

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary Redundant	49	64	67	46	72	75

DATA SHEET NO. 10

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	170	170
PBU - Top surface of reference to belt upper edge	mm	334	325
PBL - Top surface of reference to belt lower edge	mm	260	244

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to "D" ring	mm	543	543
Shoulder belt length as measured on ATD	mm	843	850
Lap belt length as measured on ATD	mm	848	795
Remainder of belt on reel	mm	660	729
Total belt length for continuous webbing systems	mm	2894	2917

SHOULDER BELT SPOOL-OUT DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	Not recorded	
As determined electronically	mm	Not recorded	

DATA SHEET NO. 11
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

Windshield Mounting Details:

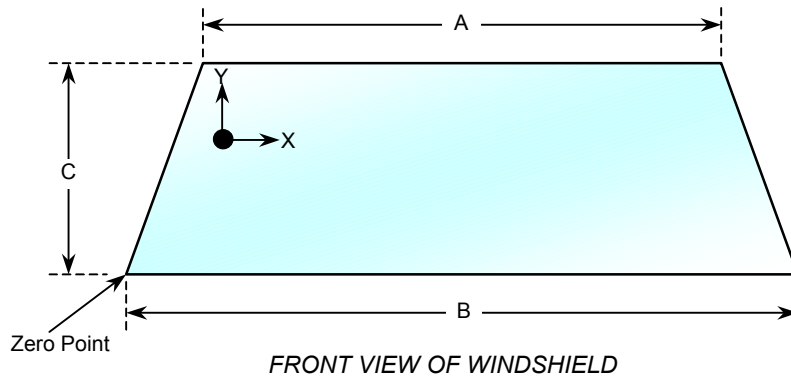
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test 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, which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2253	2253	100
Right Side	2253	2253	100
Total	4506	4506	100



WINDSHIELD DIMENSIONS

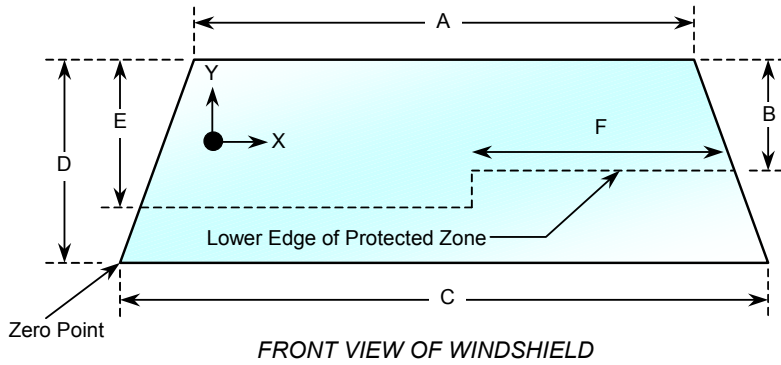
Item	Units	Segment Length	Molding Width
A	mm	1252	8
B	mm	1642	N/A (Plastic)
C	mm	806	20

DATA SHEET NO. 12

WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03



Item	Units	Value
A	mm	1252
B	mm	416
C	mm	1642
D	mm	806
E	mm	540
F	mm	780

AREA OF PROTECTED ZONE FAILURES - NONE

- A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

X	Y

- B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component. **None**

X	Y

DATA SHEET NO. 13

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

Temperature at Time of Impact: 21° C

Test Time: 12:16 pm

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0 oz.
(Maximum Allowable = 1 oz. /minute)
- D. Spillage: None

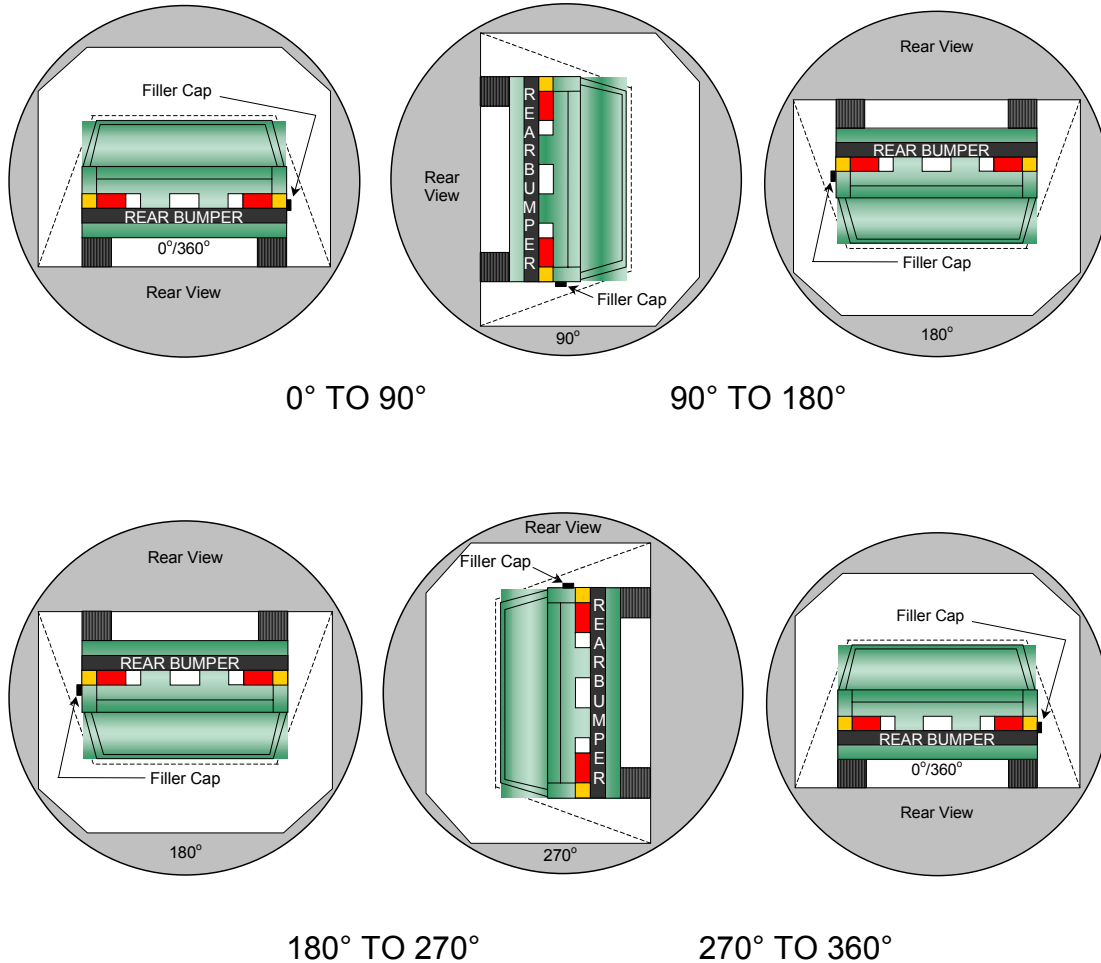
DATA SHEET NO. 14

FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

Test Time: 12:16 pm



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

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	174	300	0
90° TO 180°	152	300	0
180° TO 270°	140	300	0
270° TO 360°	159	300	0

DATA SHEET NO. 15
VEHICLE MEASUREMENTS

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

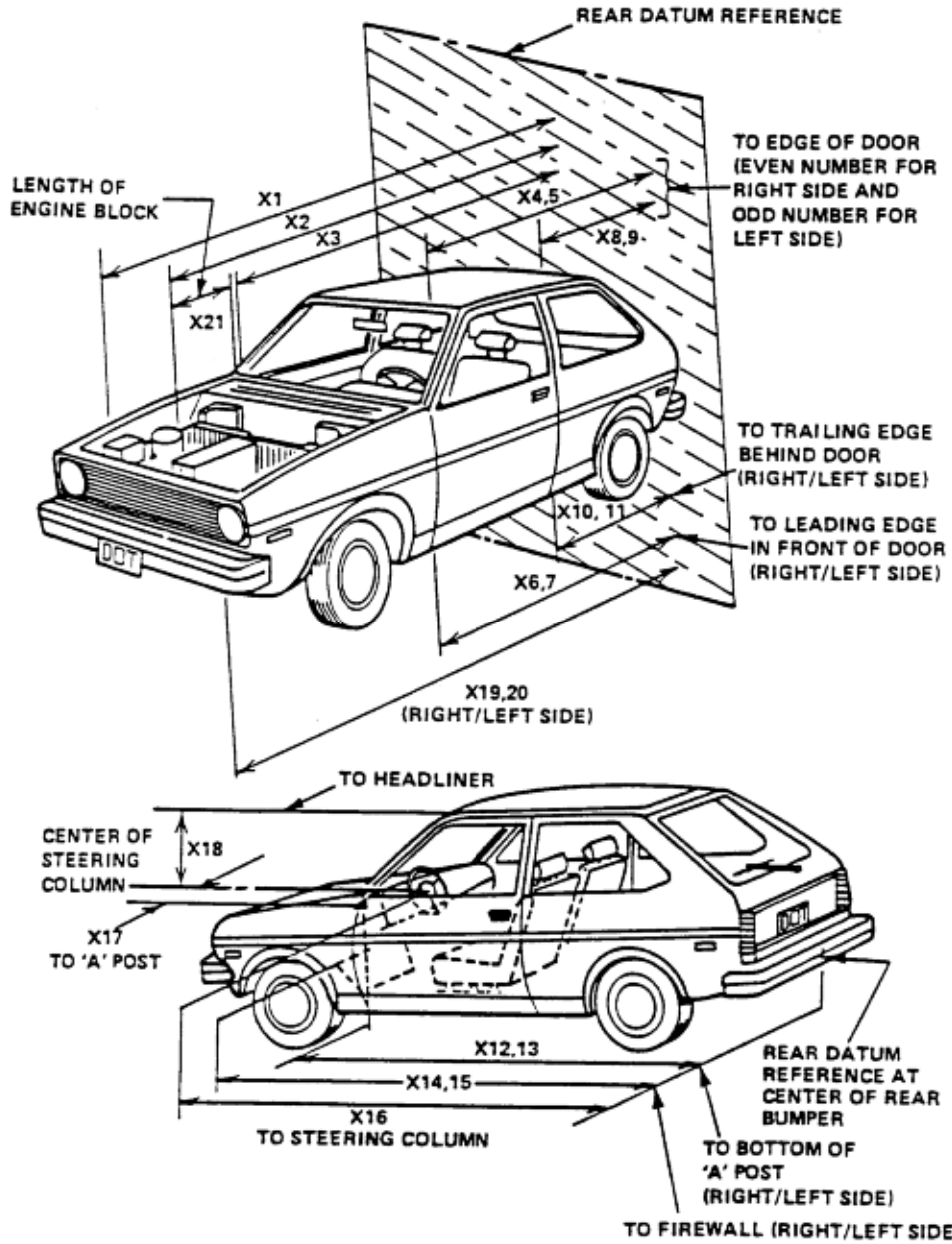
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	5122	4435	687
2	RSOV to front of engine	mm	4535	4293	242
3	RSOV to firewall centerline	mm	4158	3923	235
4	RSOV to leading edge of right door	mm	3596	3445	151
5	RSOV to leading edge of left door	mm	3597	3423	174
6	RSOV to lower leading edge of right door	mm	3528	3392	136
7	RSOV to lower leading edge of left door	mm	3531	3381	150
8	RSOV to upper leading edge of right door	mm	2457	2308	149
9	RSOV to upper leading edge of left door	mm	2455	2292	163
10	RSOV to lower trailing edge of right door	mm	2448	2306	142
11	RSOV to lower trailing edge of left door	mm	2452	2290	162
12	RSOV to bottom of right 'A' pillar	mm	3515	3375	140
13	RSOV to bottom of left 'A' pillar	mm	3512	3368	144
14	RSOV to firewall on right side	mm	4187	3980	207
15	RSOV to firewall on left side	mm	4183	3953	230
16	RSOV to steering column	mm	3035	2887	148
17	Center of steering column to left 'A' pillar	mm	369	291	78
18	Center of steering column to headlining	mm	383	302	81
19	RSOV to right side of front bumper	mm	4938	4382	556
20	RSOV to left side of front bumper	mm	4941	4348	593
21	Length of engine block	mm	430	355	75
RD	RSOV to right side of dash panel	mm	3139	3177	-38
CD	RSOV to center of dash panel	mm	3320	3160	160
LD	RSOV to left side of dash panel	mm	3158	3155	3

DATA SHEET NO. 15... (continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03



DATA SHEET NO. 15... (continued)**VEHICLE MEASUREMENTS**

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	5122
2	Total Width	1987
3	Bumper Top Height	610
4	Bumper Bottom Height	480
5	Longitudinal Member Top Height	225
6	Distance between Longitudinal Members	460
7	Longitudinal Member Width	100
8	Engine Top Height	875
9	Engine Bottom Height	188
10	Engine and gearbox width	590
11	Front bumper-engine distance	345
12	Front shock absorber fixing height	885
13	Bonnet leading edge height	610
14	Front shock absorber fixing width	1165
15	Front bumper – front axle distance	1092
16	Front axle – a pillar distance	493
17	A-pillar – B-pillar distance	1120
18	B-Pillar – rear axle distance	1260
19	B-pillar – C-pillar distance	780
20	Roof sill bottom height	1355
21	Roof sill top height	1385
22	Floor sill bottom height	225
23	Floor sill top height	270

DATA SHEET NO. 16
CAMERA LOCATIONS

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	1000	-8570	1460	25	1015
3	Steering Column Top	2000	-8470	1560	25	1010
4	Steering Column Bottom	2000	-8470	1010	25	1020
5	Driver Close-up	1430	-9240	1420	50	1015
6	Driver Angle	4730	-5060	2010	50	1176
7	Left Rear				13	510
8	Right Rear				13	526
9	Right Overall	1930	7490	1410	13	990
10	Right Passenger Half	990	8140	1480	25	1015
11	Right Close-up	1470	9920	1450	75	935
12	Right Angle	4950	5400	2110	50	1138
13	Windshield	320	0	2920	13	1020
14	Top Driver	-120	-485	2300	13	1015
15	Top Passenger	-120	510	2300	13	1015
16	Pit Front	1100	0	-3150	13	1010
17	Pit Rear	3000	0	-3150	13	1000

*COORDINATES:

- +X = film plane rearward of barrier
- +Y = film plane to right of monorail centerline
- +Z = film plane above ground level

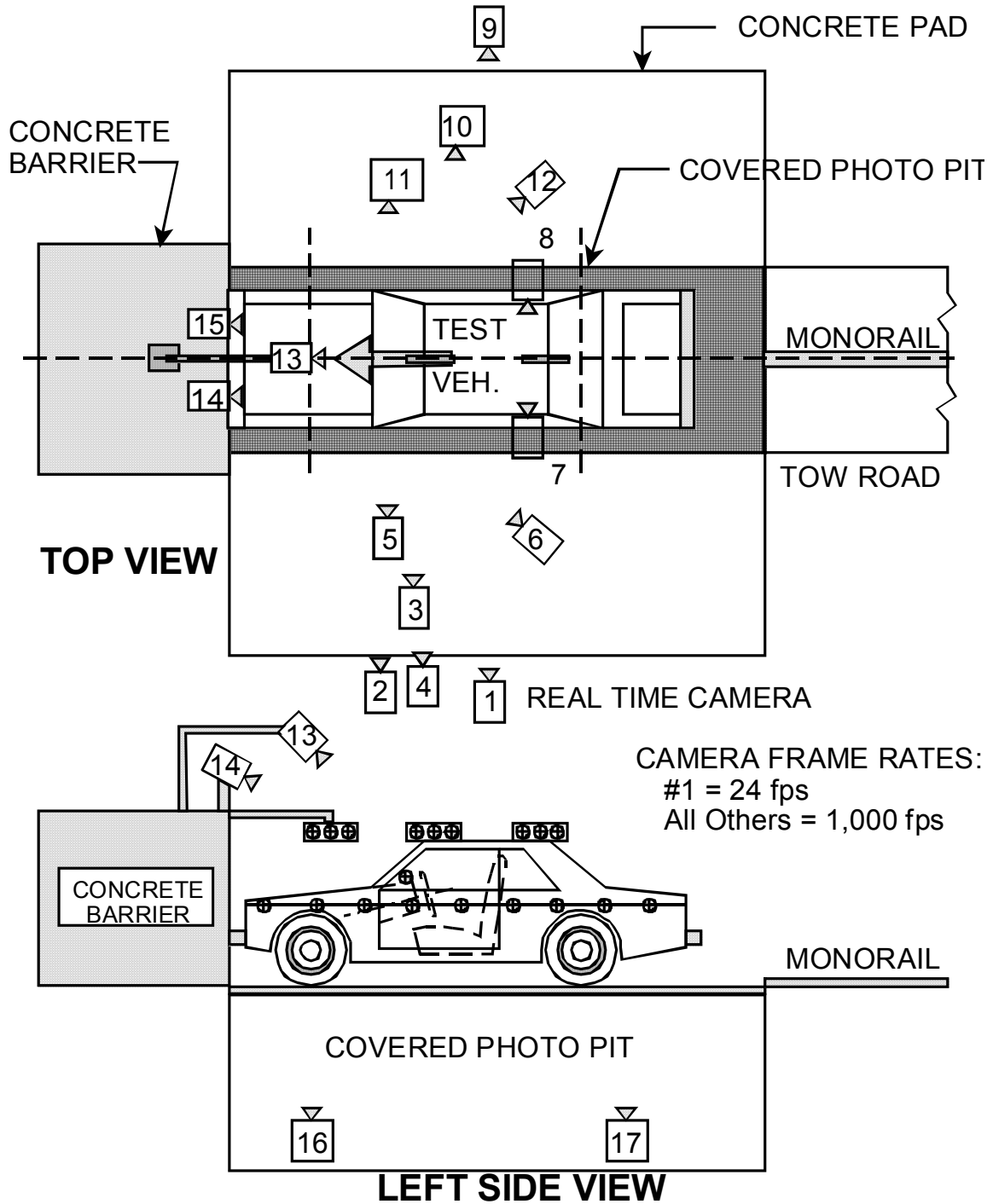
DATA SHEET NO. 16... (continued)

CAMERA LOCATIONS

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

CAMERA POSITIONS FOR FRONTAL IMPACTS



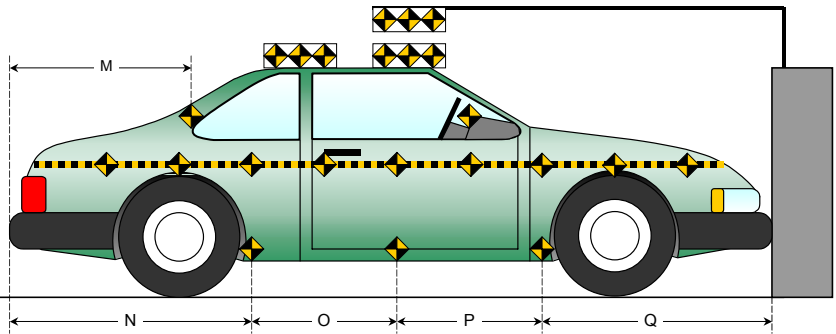
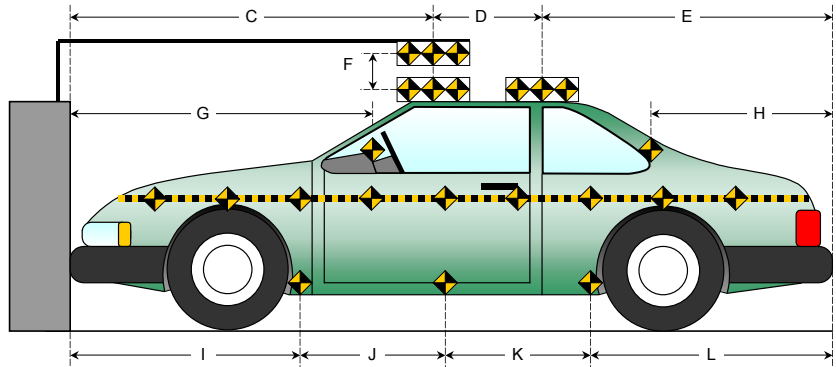
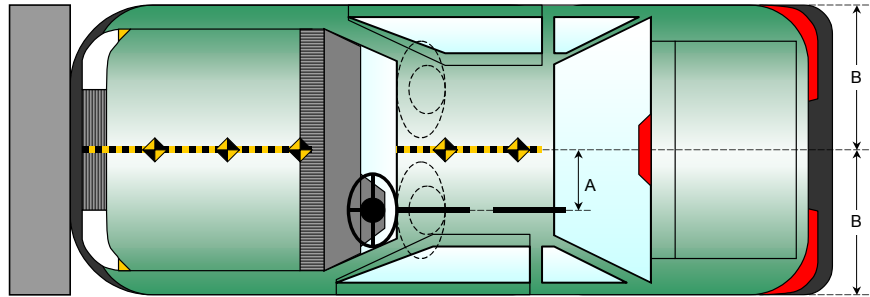
DATA SHEET NO. 17

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

Item	Value
A	398
B	951
C	2550
D	610
E	1982
F	
G	NA
H	1230
I	1631
J	944
K	944
L	1603
M	1233
N	1605
O	940
P	945
Q	1632



DATA SHEET NO. 18
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

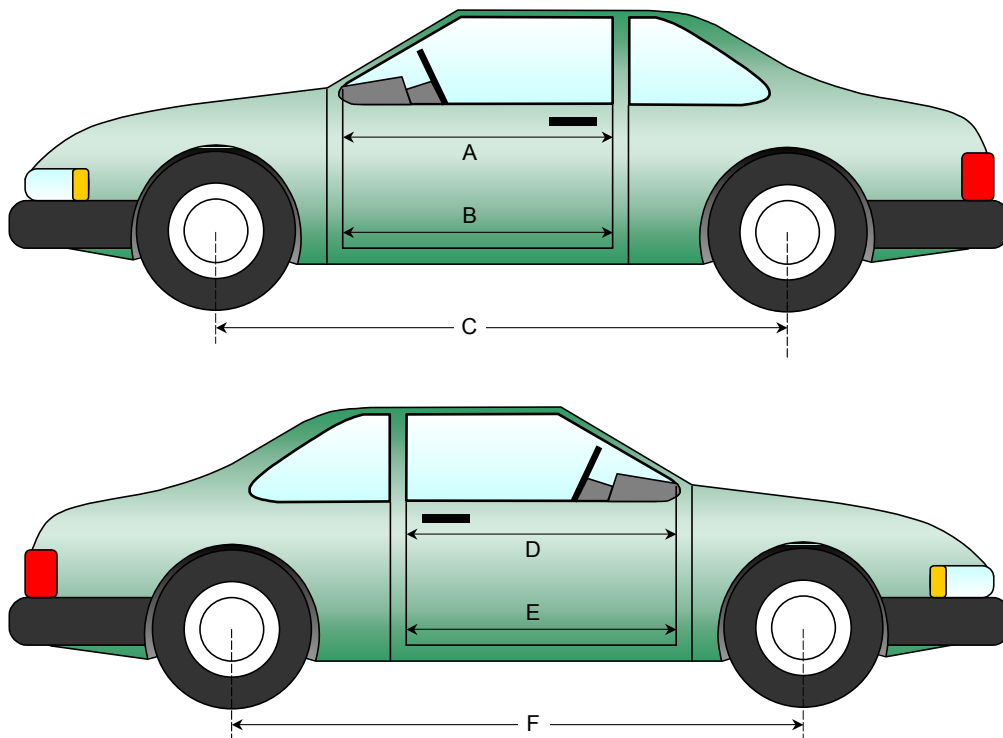
NHTSA No.: M40301
 Test Date: 11/04/03

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	971	961	10
B	Left Side Lower	mm	971	966	5
D	Right Side Upper	mm	972	962	10
E	Right Side Lower	mm	972	970	2

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2872	2784	88
F	Right Side Wheelbase	mm	2875	2760	115



DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

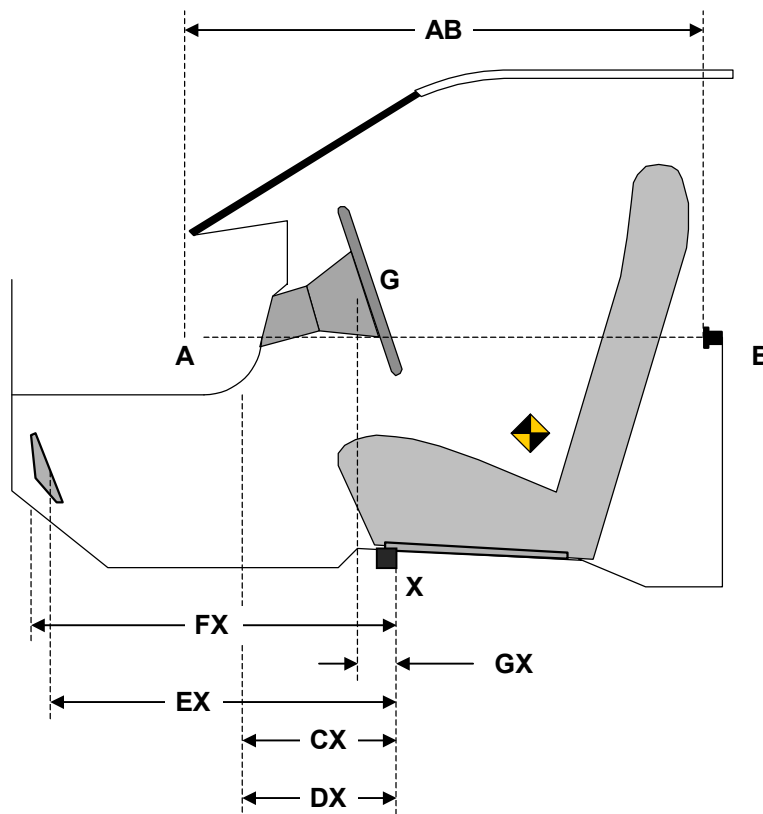
Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	982	970	12
CX	Left Knee Bolster to X	mm	256	233	23
DX	Right Knee Bolster to X	mm	301	280	21
EX	Brake Pedal to X	mm	600	485	115
FX	Foot Rest to X	mm	600	565	35
GX	Center of Steering Column Wheel Hub to X	mm	78	87	-9

X = Left Front Seat Front Outboard Anchor Bolt Head



DRIVER COMPARTMENT

DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

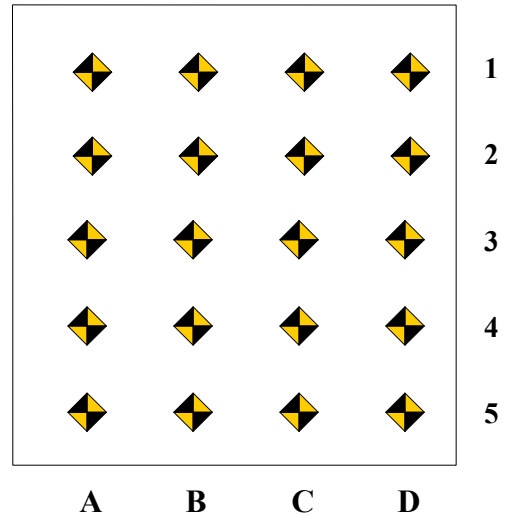
NHTSA No.: M40301
 Test Date: 11/04/03

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		760	765	760		627	577	610		133	188	150
2		685	680	680		587	528	556		98	152	124
3	540	575	575	575	537	567	533	490	3	8	42	85
4	375	375	375	375	373	372	374	375	2	3	1	0
5	180	180	180	180	180	184	180	180	0	-4	0	0

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		82	78	62		148	170	163		-66	-92	-101
2		-12	-10	-14		49	45	41		-61	-55	-55
3	-48	-62	-73	-70	-36	-70	-54	-66	-12	8	-19	-4
4	-48	-63	-61	-64	-39	-73	-83	-98	-9	10	22	34
5	-42	-57	-57	-55	-19	-57	-71	-79	-23	0	14	24

DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

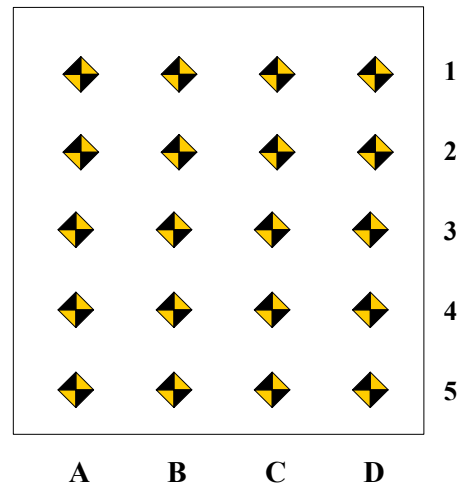
NHTSA No.: M40301
 Test Date: 11/04/03

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

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Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	704	710	707		513	533	559		191	177	148	
2	594	615	616		421	458	511		173	157	105	
3	464	456	455	450	371	423	446	445	93	33	9	5
4	328	324	325	327	315	313	314	313	13	11	11	14
5	187	186	185	164	176	175	178	177	11	11	7	-13

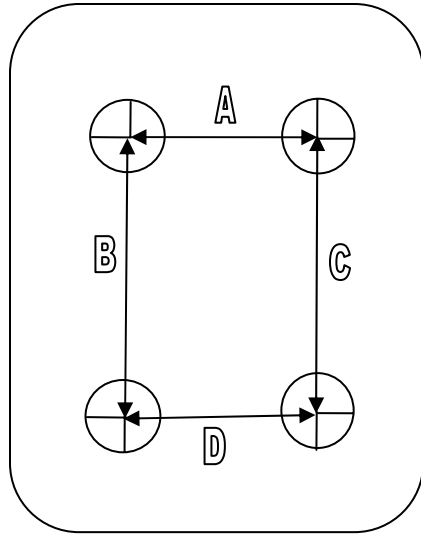
PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	94	85	68		168	158	153		-74	-73	-85	
2	12	-8	-23		88	62	44		-76	-70	-67	
3	-57	-72	-90	-69	-45	-90	-95	-53	-12	18	5	-16
4	-65	-65	-83	-66	-107	-99	-81	-60	42	34	-2	-6
5	-58	-58	-75	-58	-85	-69	-67	-41	27	11	-8	-17

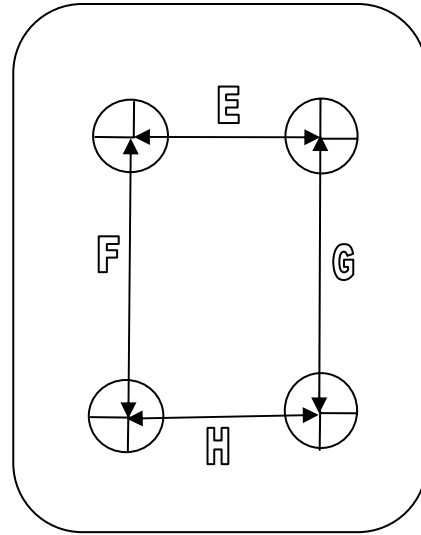
DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	487	461	26
B	209	210	-1
C	237	126	111
D	470	466	4
E	452	453	-1
F	185	46	139
G	243	241	2
H	457	461	-4

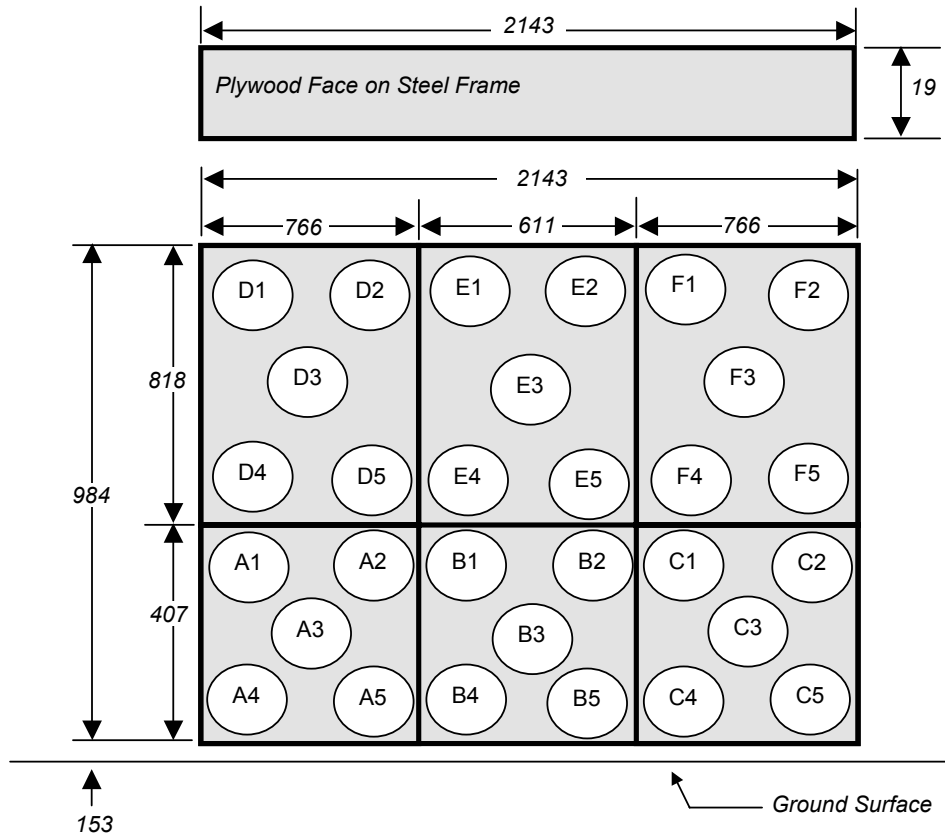
DATA SHEET NO. 19

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2004 Dodge Intrepid SE
 Test Program: 35mph Frontal Impact

NHTSA No.: M40301
 Test Date: 11/04/03

30 Load Cell Rigid Barrier Load Cell Locations on Fixed Barrier



Group 4 D1-D5	Group 5 E1-E5	Group 6 F1-F5
Group 1 A1-A5	Group 2 B1-B5	Group 3 C1-C5

6 Groups of 5 Load Cells Each

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

1. Sum data from 6 groupings shown above (5 cells/group)
2. Sum of left 2 groupings, center 2 groupings and right 2 groupings.
3. Total or sum of all 30 individual load cells.
4. Total versus average rear seat cross member displacement.

DATA SHEET NO. 20

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03

VEHICLE INFORMATION

VIN: 2B3HD46R94H599911 Wheelbase (mm): 2875
Vehicle Size Category: Sedan Test Weight (kg): 1755.9

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 13
Cal. Procedure/Interval: MGA procedure / 6 month
Integration Algorithm: Trapezoidal Linearity: > 99%
Impact Velocity (km/h): 56.8
Velocity Change (km/h): 65.1 Time of Separation (msec): 105

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
Damage Region Length (mm): 1374 Impact Mode: Frontal

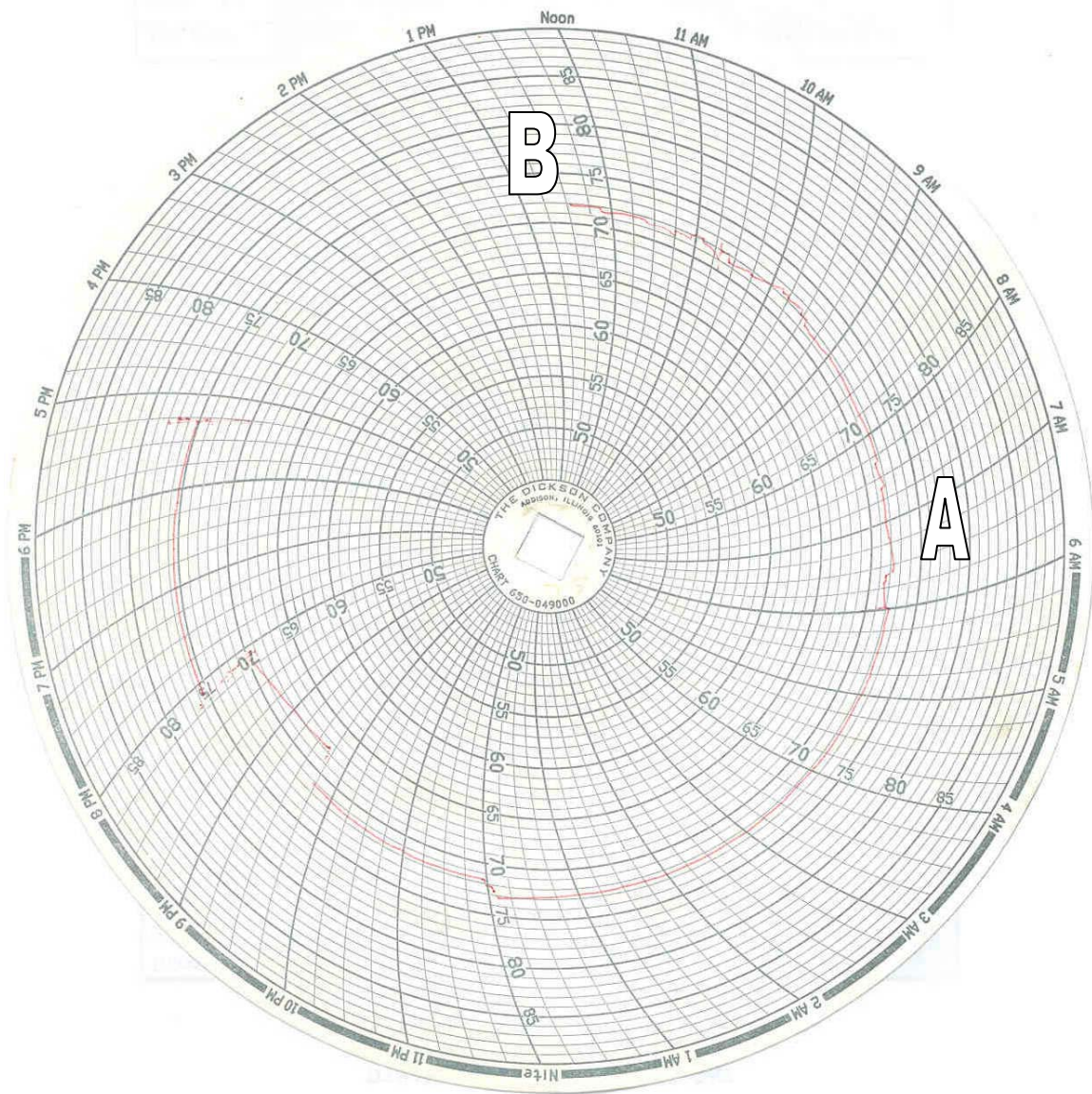
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4941	4348	593
C2	Crush zone 2 at left side	mm	5035	4375	660
C3	Crush zone 3 at left side	mm	5083	4396	687
C4	Crush zone 4 at right side	mm	5081	4435	646
C5	Crush zone 5 at right side	mm	5032	4433	599
C6	Crush zone 6 at right side	mm	4938	4382	556
L	C1 TO C6	mm	1374	1287	87

DATA SHEET NO. 21

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2004 Dodge Intrepid SE
Test Program: 35mph Frontal Impact

NHTSA No.: M40301
Test Date: 11/04/03



A = Dummies installed in vehicle at 7:00 a.m.

B = Test conducted at 12:16 p.m.

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A-1.



Load Cell Location

MFD BY DAIMLERCHRYSLER CORPORATION

DATE OF MFR: 3-03

GWR 2062 KG
04544 LB

GWR 1154 KG
FRONT 2543 LB

GWR 0931 KG
REAR 2051 LB

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

VIN: 2B3HD46R94H599911


TYPE: PASSENGER CAR



MDH: 032506 400AA PNT:PDR

VEHICLE MADE IN CANADA TRM:B7DU

4648104

	VEHICLE CAPACITY OR LESS
1ST SEAT	2 PASS
2ND SEAT	3 PASS
LUGGAGE	115 LBS-52 kg
TOTAL	5 PASS
TOTAL WEIGHT	865 LBS-392 kg
TIRE PRESSURE COLD	32 PSI 220 kPa FRONT AND REAR
<p>MINIMUM TIRE SIZE</p> <p>P225/60R16 97T STANDARD LOAD</p> <p>SEE OWNERS MANUAL FOR ADDITIONAL DATA</p> <p>PRINTED IN USA 04782251AA</p>	

A-3.

Tire Placard

A-4.



Left Front View of Test Vehicle, as received

A-5.



Right Rear View of Test Vehicle, as received



Pre-Test Front View of Test Vehicle

A-7.



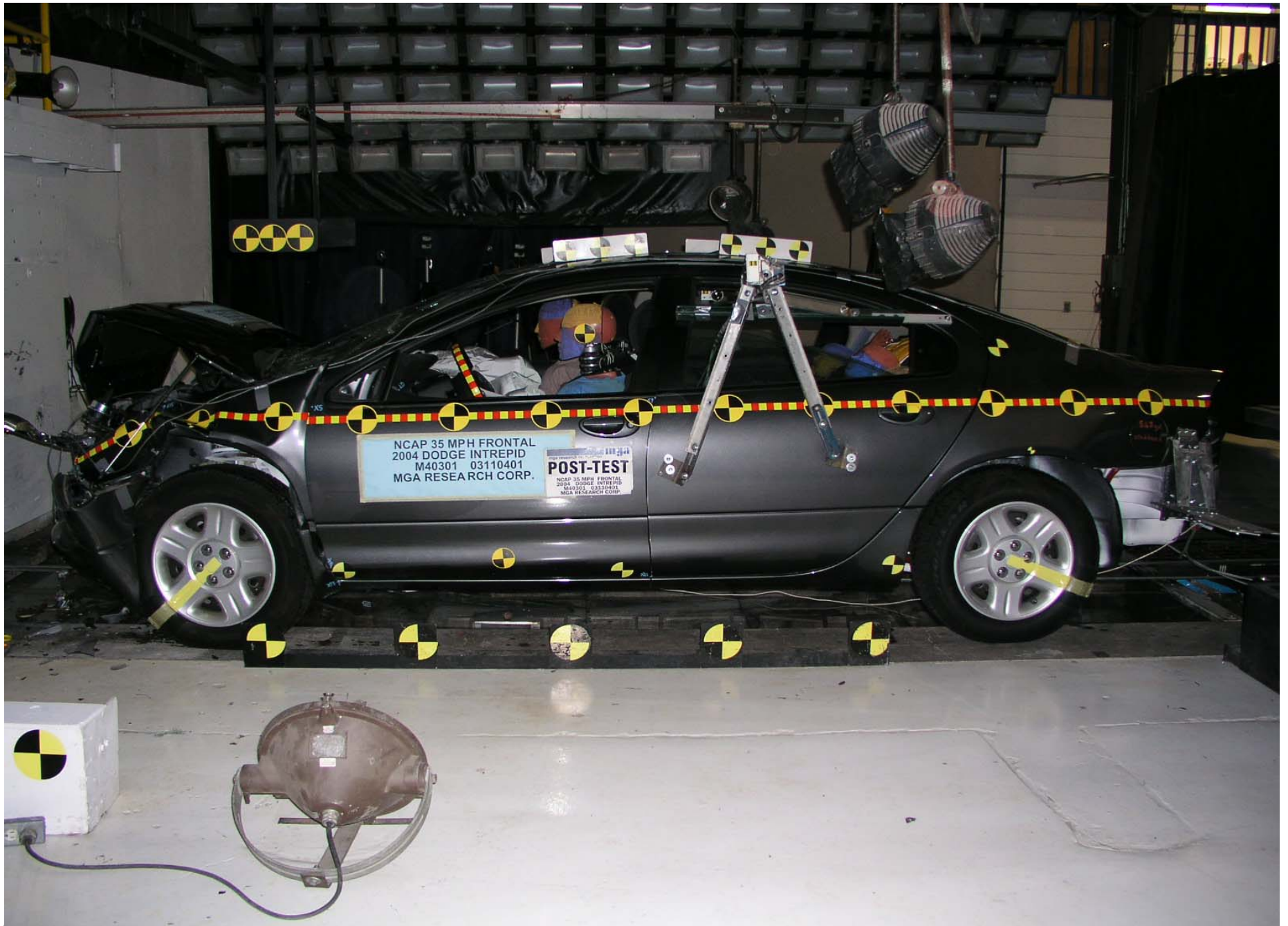
Post-Test Front View of Test Vehicle

A-8.



Pre-Test Left Side View of Test Vehicle

A-9.



Post-Test Left Side View of Test Vehicle

A-10.



Pre-Test Right Side View of Test Vehicle

A-11.



Post-Test Right Side View of Test Vehicle



A-12.

Pre-Test Right Front Three-Quarter View of Test Vehicle



Post-Test Right Front Three-Quarter View of Test Vehicle



A-14.

Pre-Test Left Rear Three-Quarter View of Test Vehicle



A-15.

Post-Test Left Rear Three-Quarter View of Test Vehicle



Post-Test Left Rear Three-Quarter View of Door After Impact



Post-Test Right Rear Three-Quarter View of Door After Impact



Pre-Test Windshield View



Post-Test Windshield View



Pre-Test Engine Compartment View



mga
mga research corporation
POST-TEST
NCAP 35 MPH FRONTAL
2004 DODGE INTREPID
M40301 03110401
MGA RESEARCH CORP.

NCAP 35 MPH
2004 DODGE
M40301
MGA RESEARCH CORP.

Post-Test Engine Compartment View

A-21.

mga
mga research corporation

PRE-TEST

NCAP 35 MPH FRONTAL
2004 DODGE INTREPID
M40301 03110401
MGA RESEARCH CORP.

A-22.



Pre-Test Fuel Filler Cap View

mga
mga research corporation

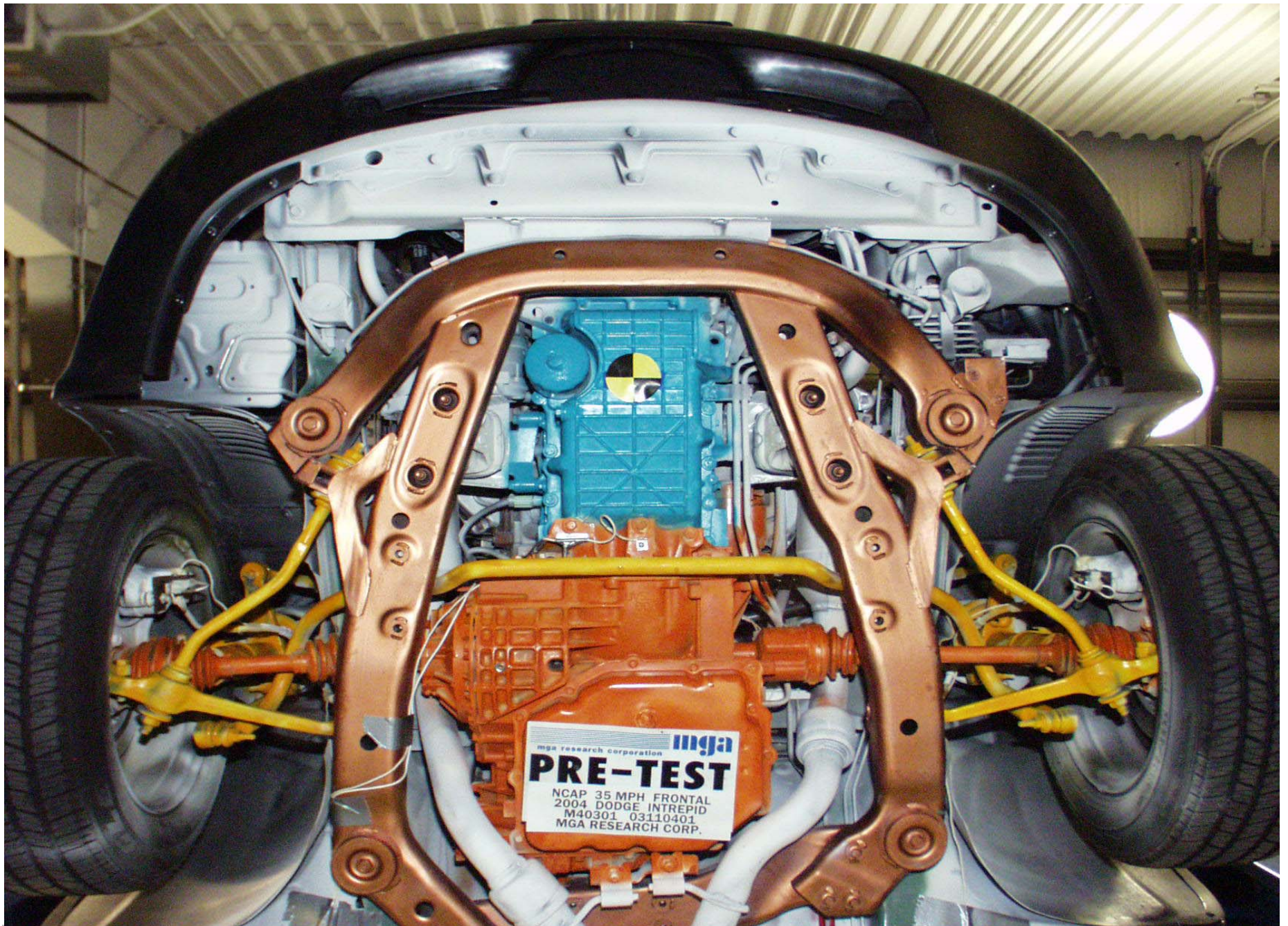
POST-TEST

NCAP 35 MPH FRONTAL
2004 DODGE INTREPID
M40301 03110401
MGA RESEARCH CORP.

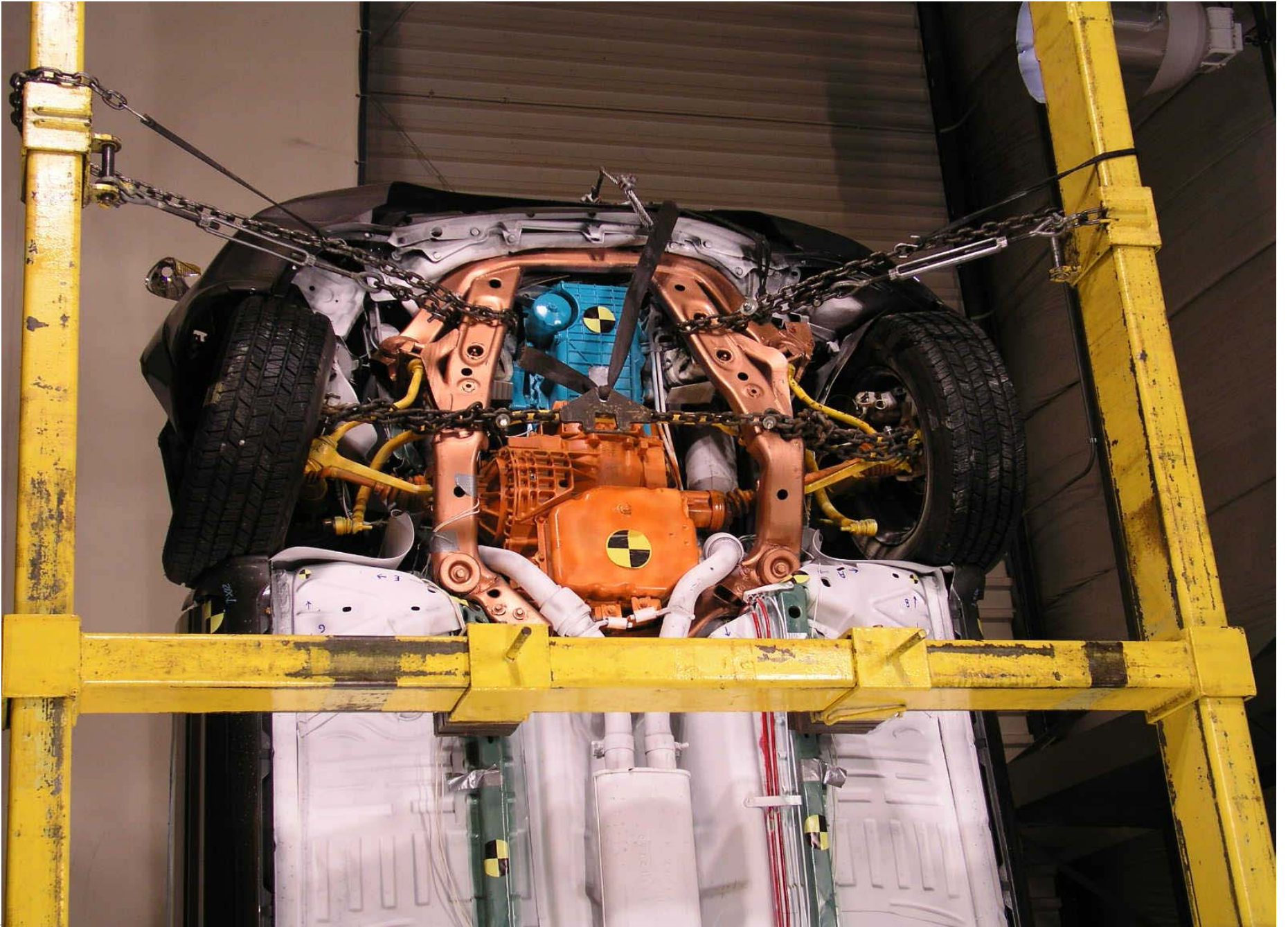


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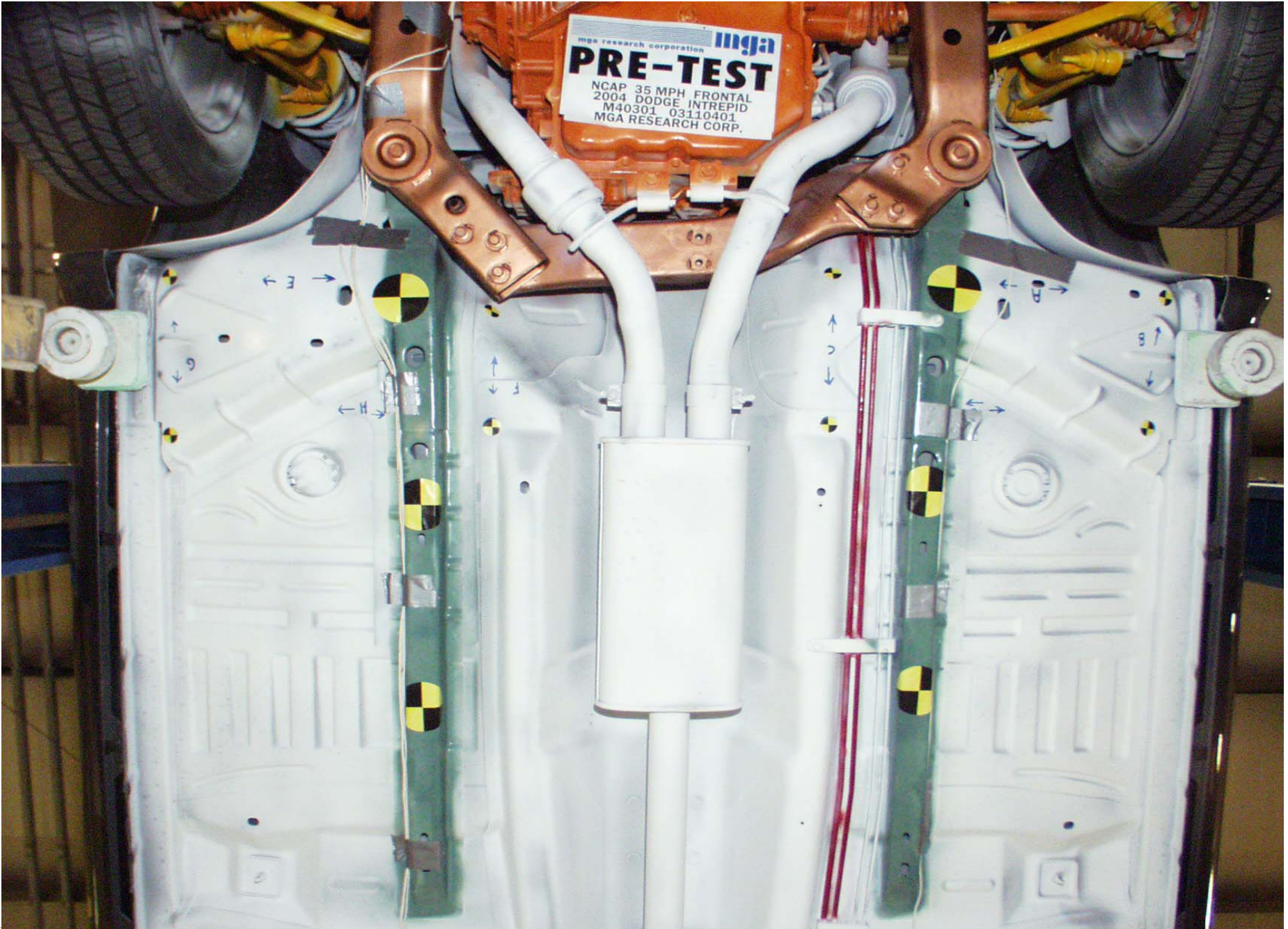
Post-Test Fuel Filler Cap View



Pre-Test Front Underbody View

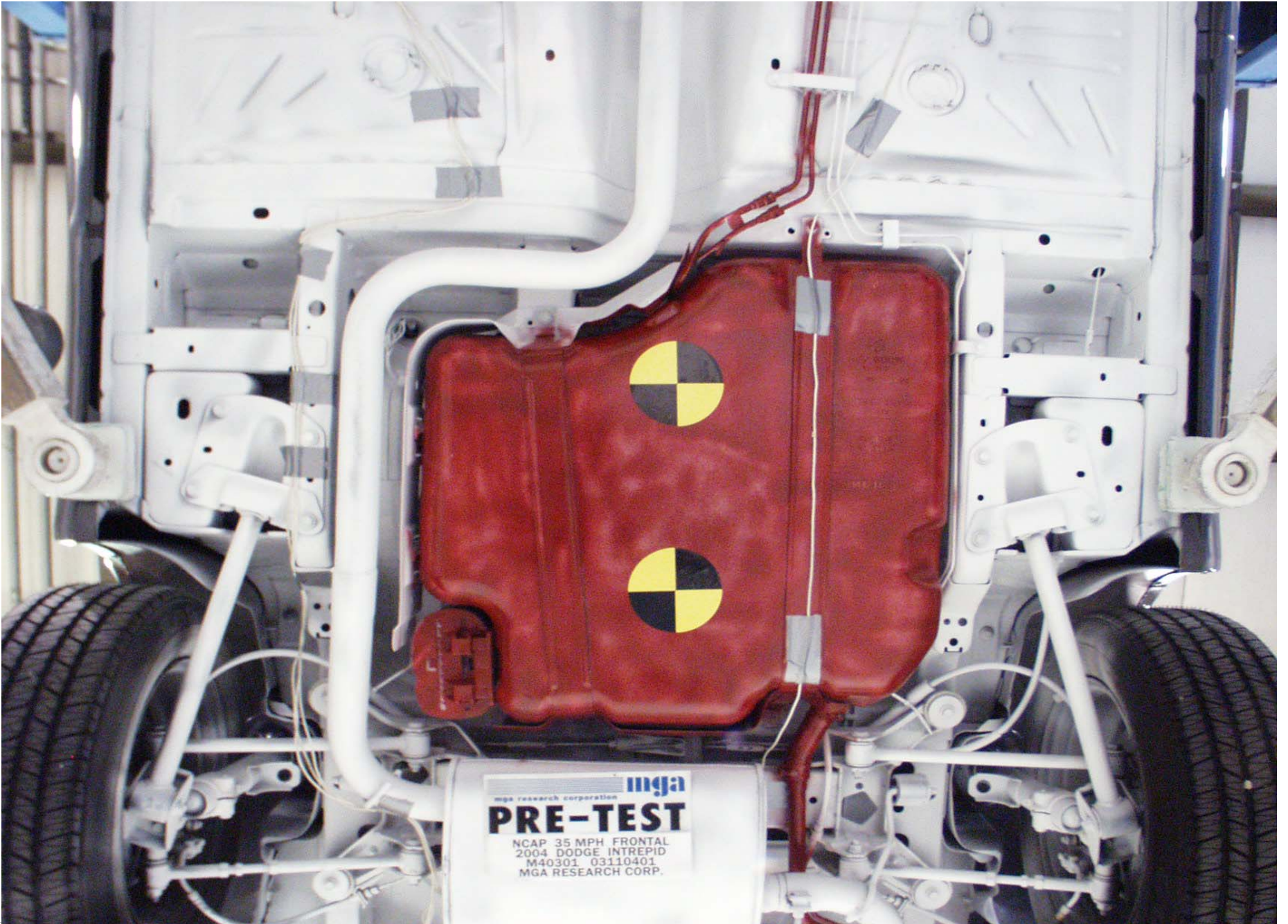


Post-Test Front Underbody View



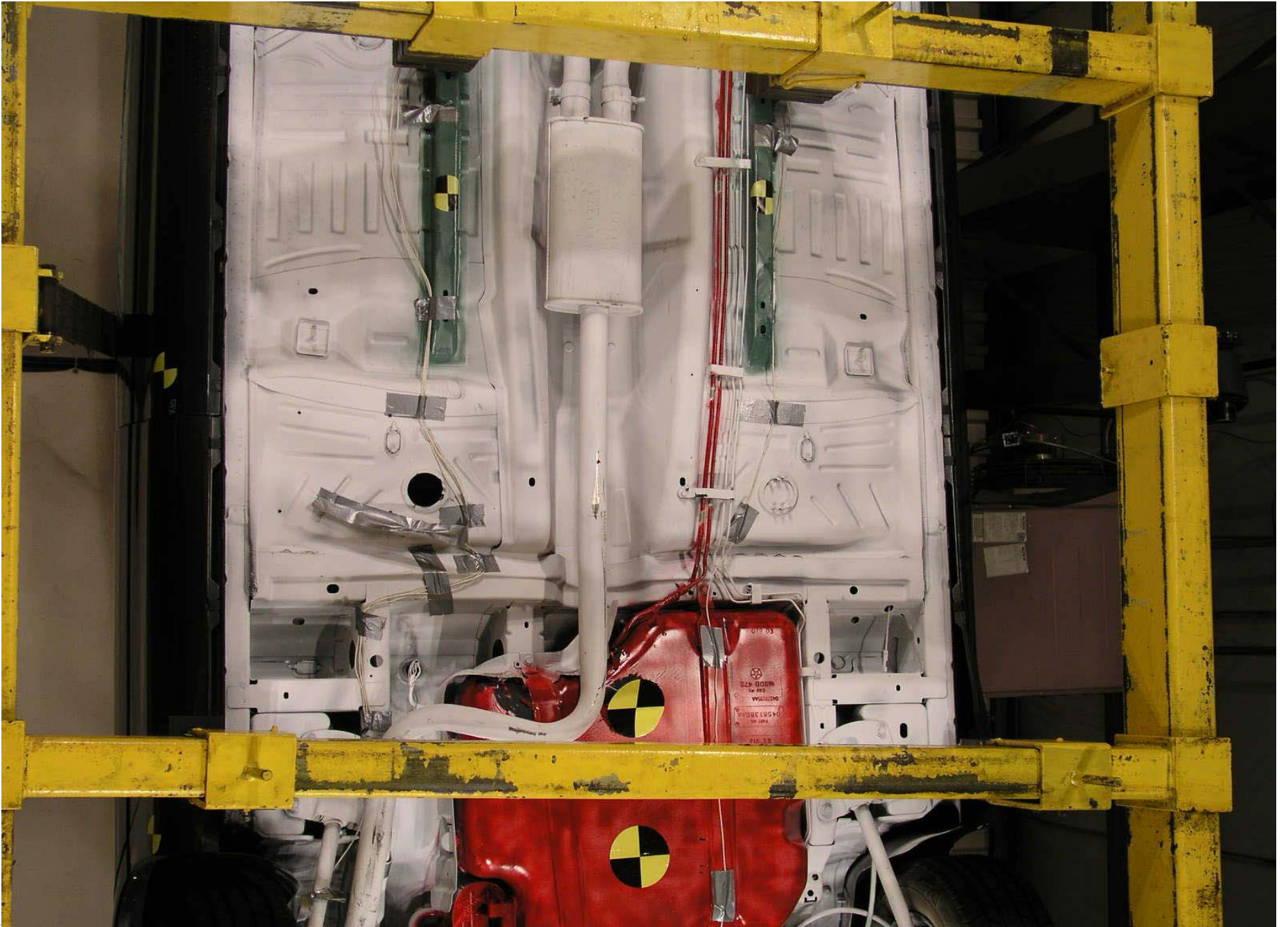
A-26.

Pre-Test Mid Underbody

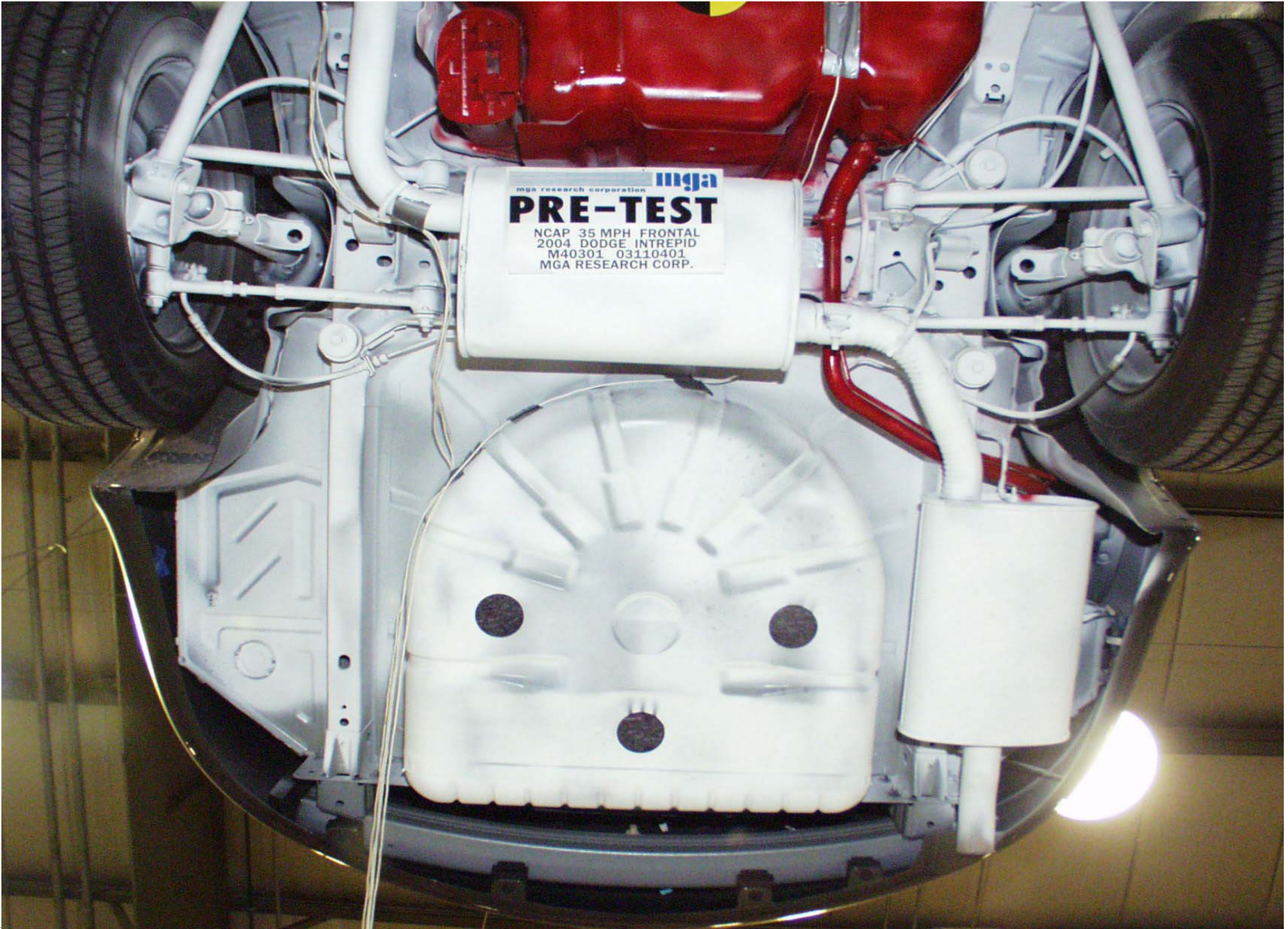


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Pre-Test Mid Underbody

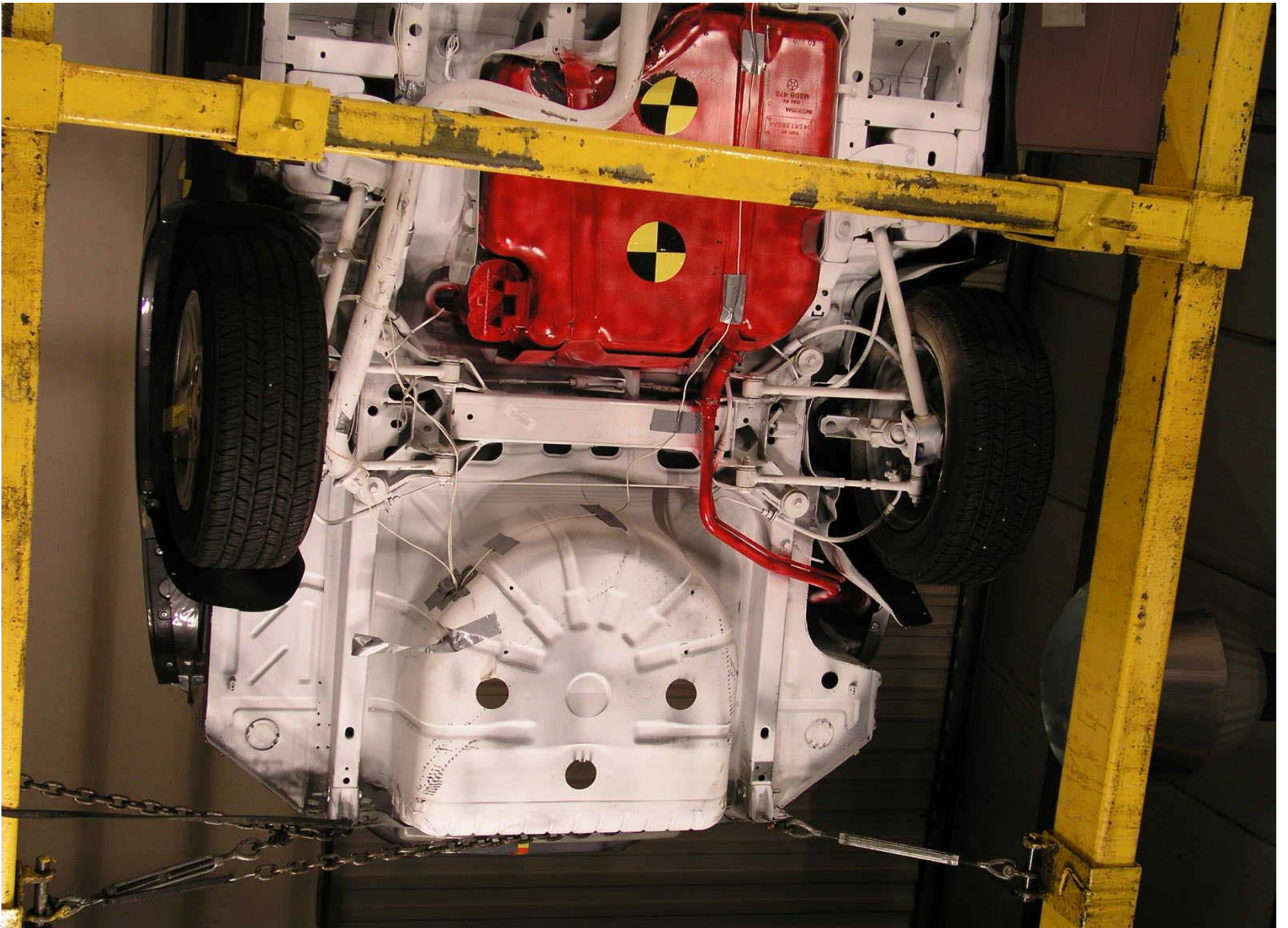


Post-Test Mid Underbody



A-29.

Pre-Test Rear Underbody View



Post-Test Rear Underbody View



Pre-Test Driver Dummy Front View (head position)

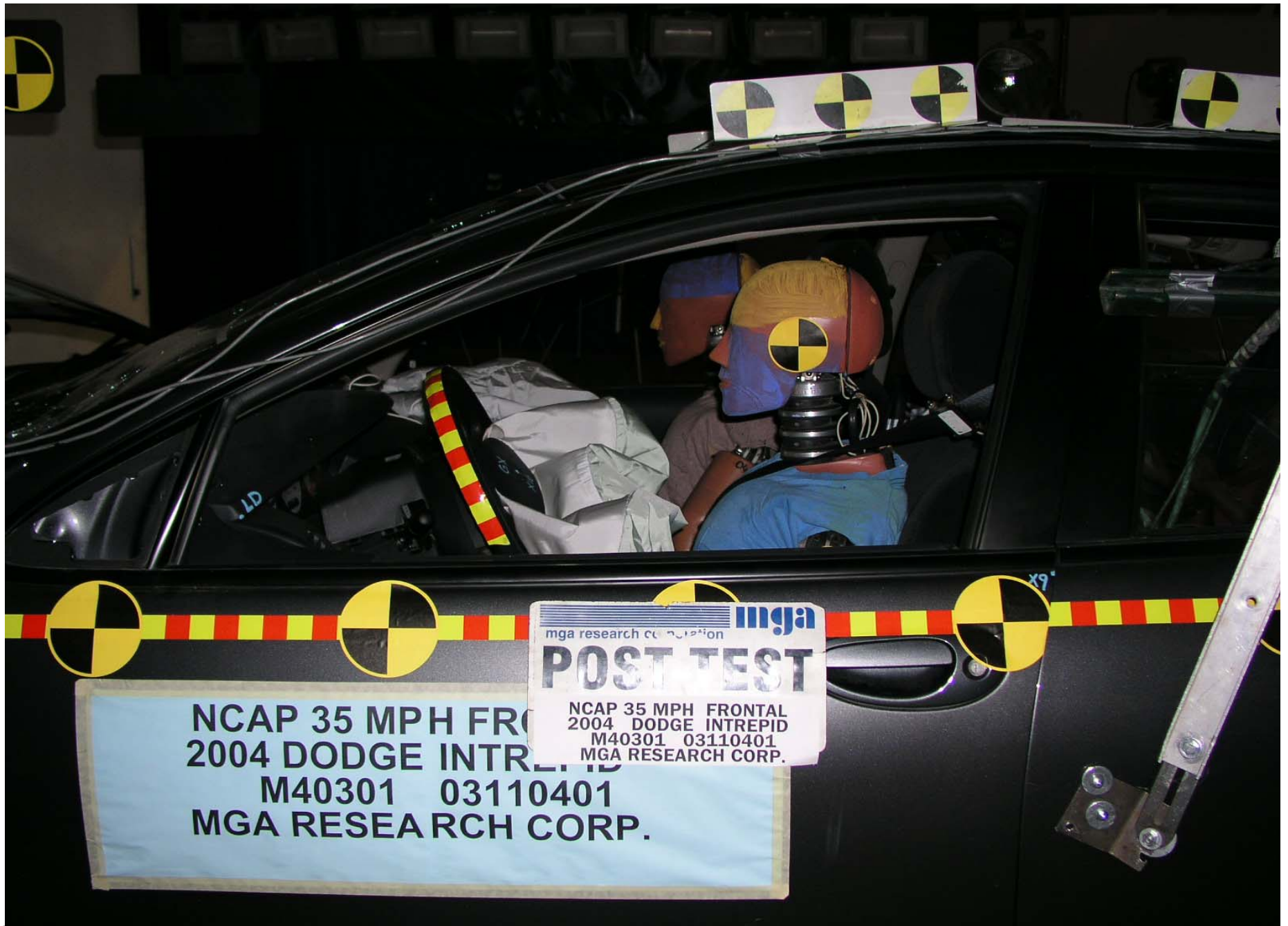
A-32.



Post-Test Driver Dummy Front View (head position)



Pre-Test Driver Dummy Position Left Side View



Post-Test Driver Dummy Position Left Side View



Pre-Test Driver Dummy Position Left Side View (Door Open)



Post-Test Driver Dummy Position Left Side View (Door Open)



Pre-Test Driver Dummy Feet Position



Post-Test Driver Dummy Feet Position



A-39.

Pre-Test Driver Side Knee Bolster View



Post-Test Driver Side Knee Bolster View



Pre-Test Driver Side Floor Pan View



Post-Test Driver Side Floor Pan View

A-43.



Post-Test Driver Dummy Head Contact

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Post-Test Driver Dummy Knee Contact



Post-Test Driver Dummy Airbag Contact



Pre-Test Passenger Dummy Front View (head position)

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Post-Test Passenger Dummy Front View (head position)



Pre-Test Passenger Dummy Position Right Side View



Post-Test Passenger Dummy Position Right Side View

A-50.



Pre-Test Passenger Dummy Position Right Side View (Door Open)

A-51.



Post-Test Passenger Dummy Position Right Side View (Door Open)



Pre-Test Passenger Dummy Feet Position



Post-Test Passenger Dummy Feet Position



Pre-Test Passenger Side Knee Bolster View



Pre-Test Passenger Side Knee Bolster View



Pre-Test Passenger Side Floor Pan View

A-57.



Post-Test Passenger Side Floor Pan View



Post-Test Passenger Dummy Head Contact



Post-Test Passenger Dummy Knee Contact

A-60.



Post-Test Passenger Dummy Airbag Contact



A-61.

Rollover 90 Degrees



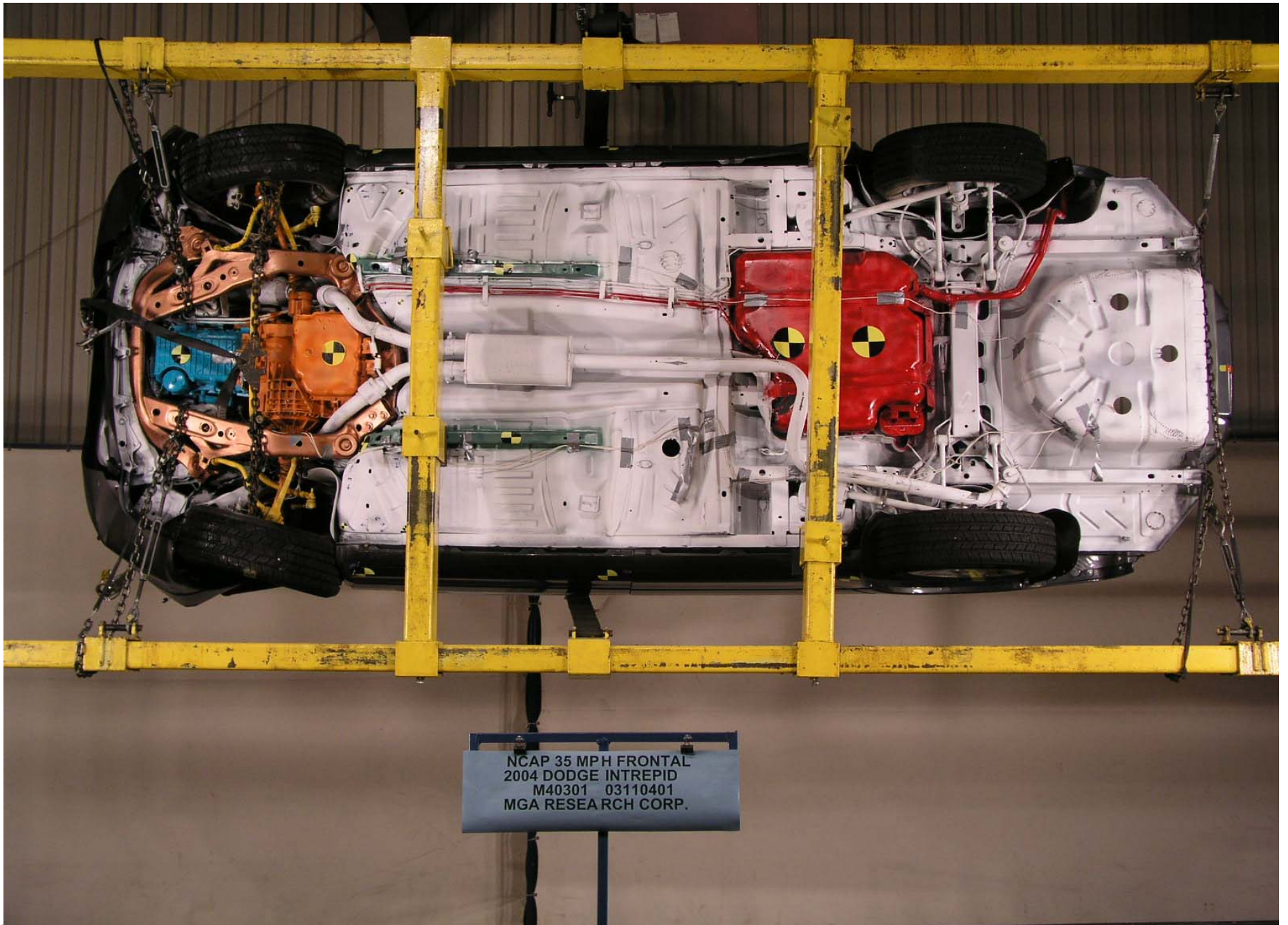
NCAP 35 MPH FRONTAL
2004 DODGE INTREPID
M40301 03110401
MGA RESEAR RCH CORP.

NCAP 35 MPH FRONTAL
2004 DODGE INTREPID
M40301 03110401
MGA RESEAR RCH CORP.

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Rollover 180 Degrees

A-63.



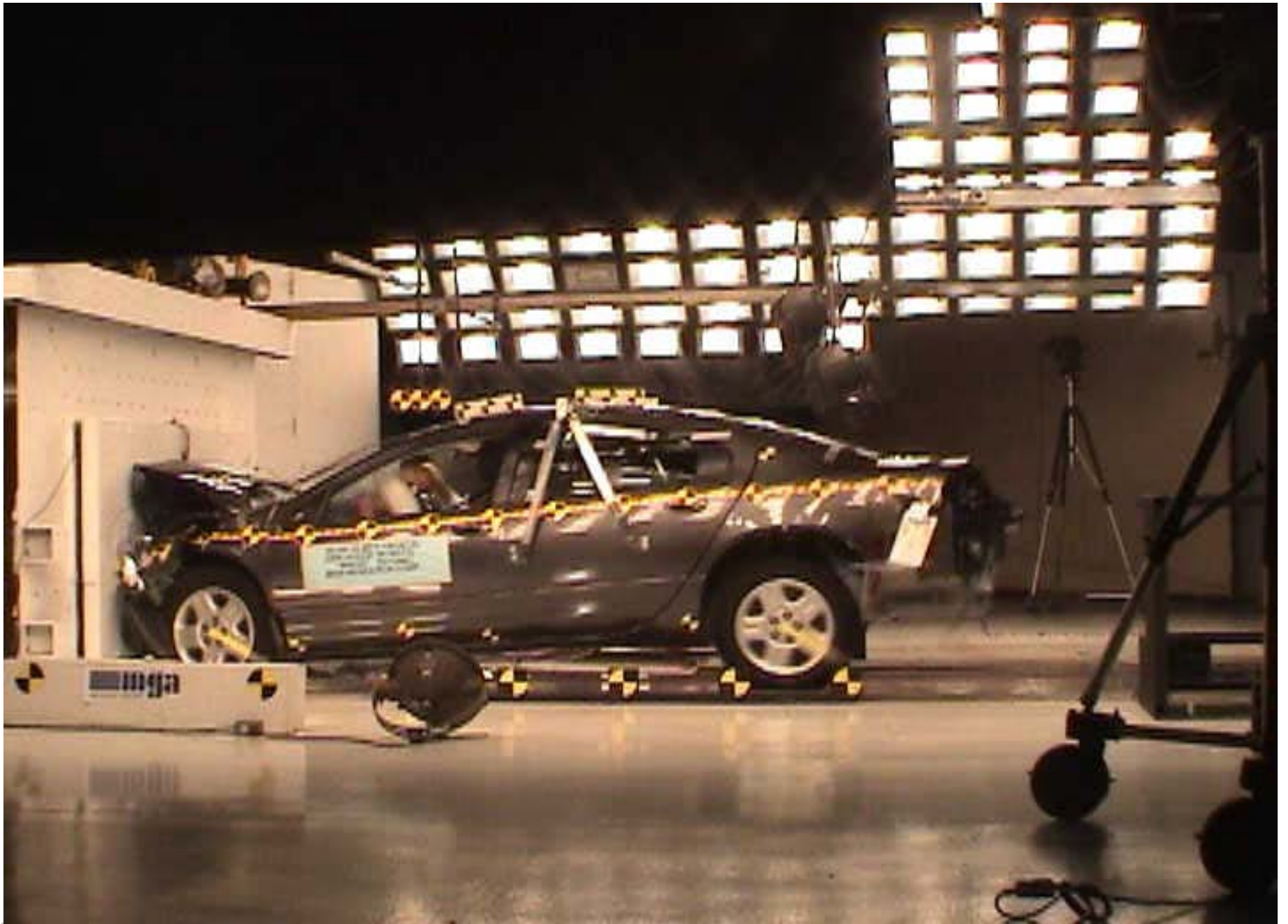
Rollover 270 Degrees

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Rollover 360 Degrees

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Vehicle Impact

APPENDIX B

DUMMY AND VEHICLE RESPONSE DATA TRACES

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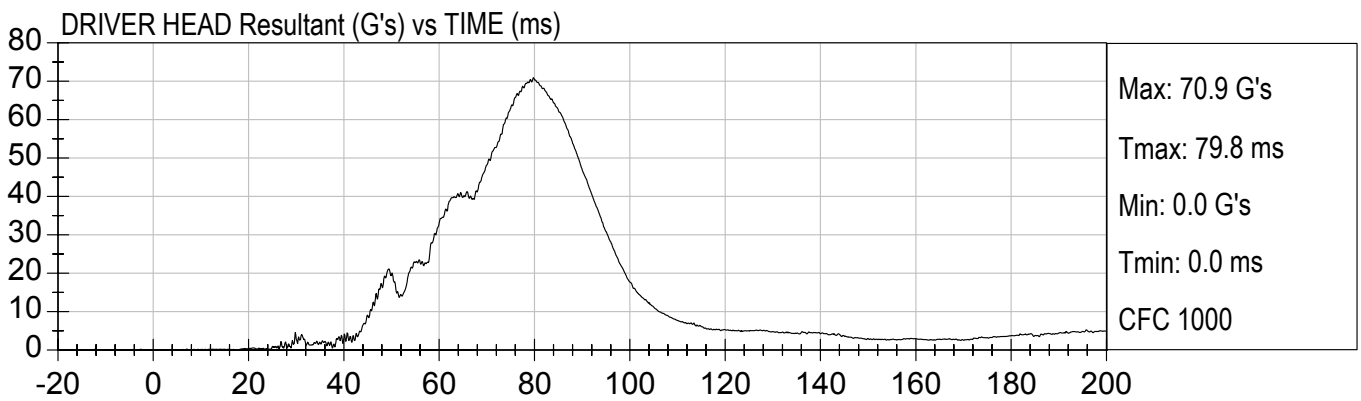
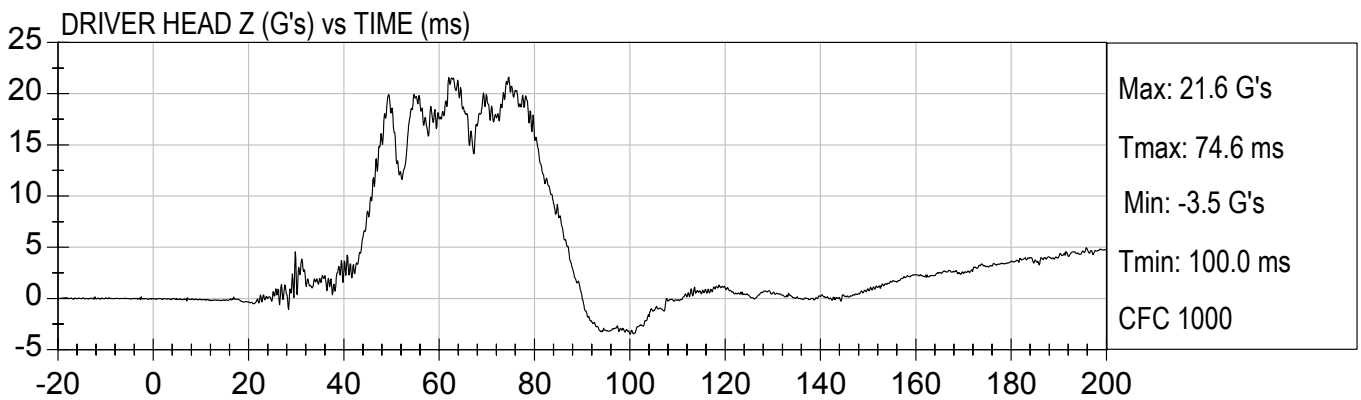
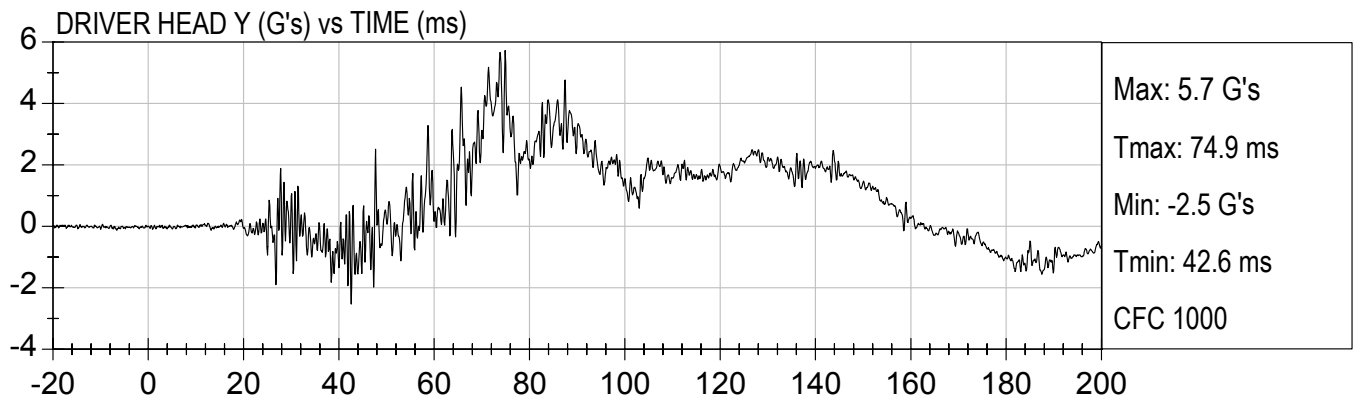
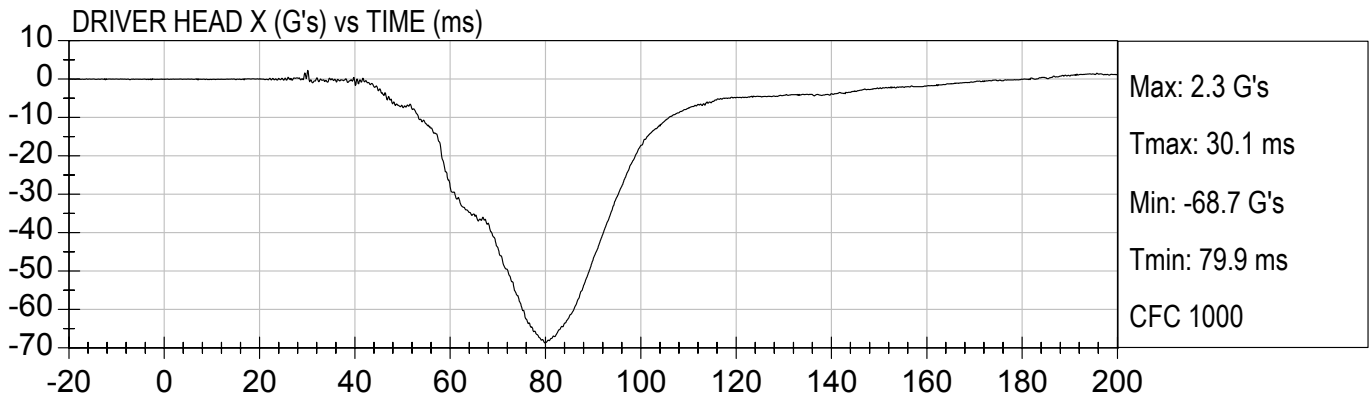
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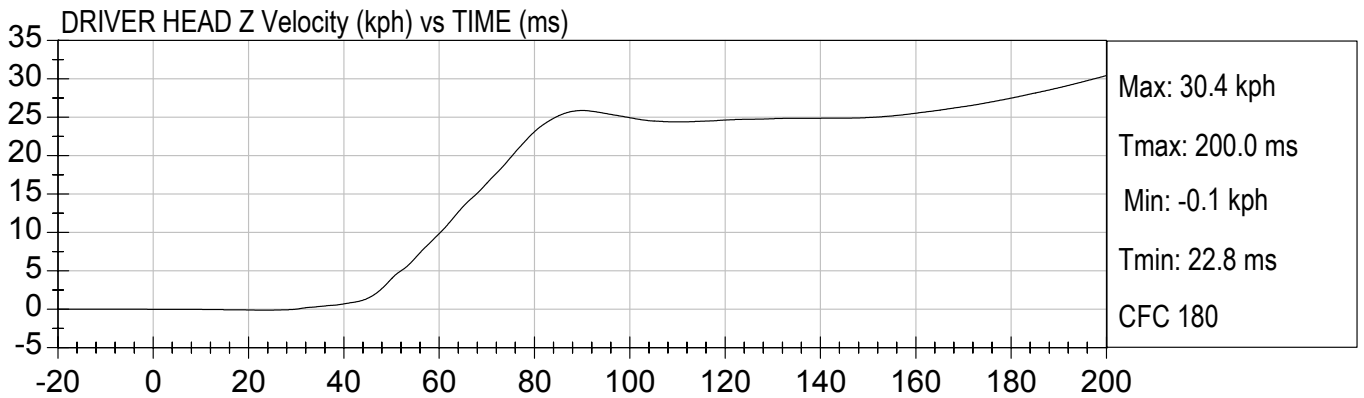
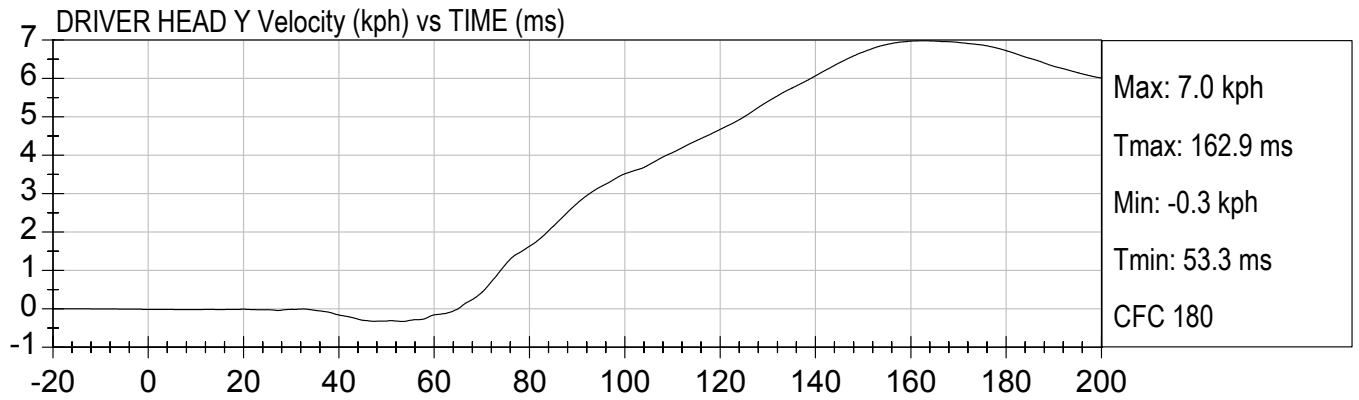
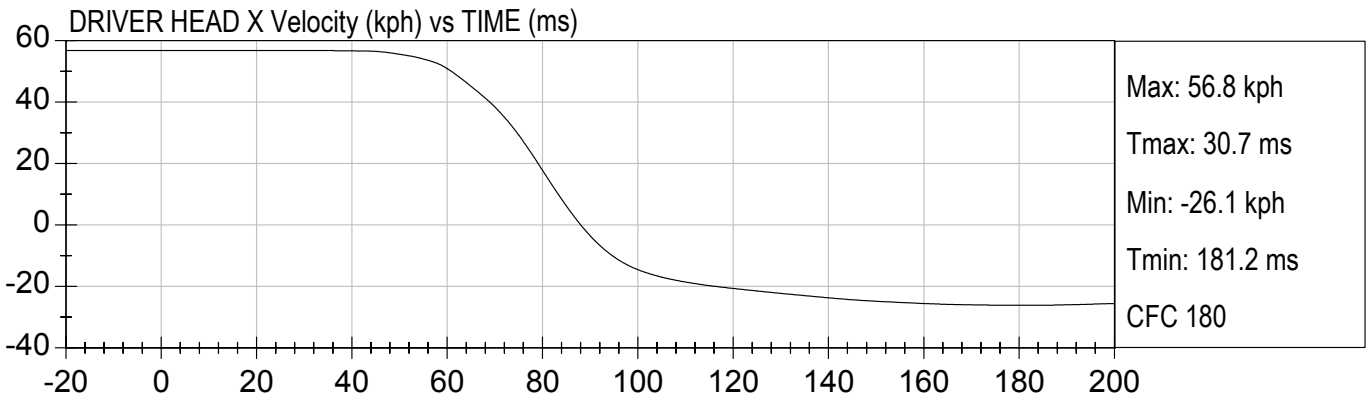
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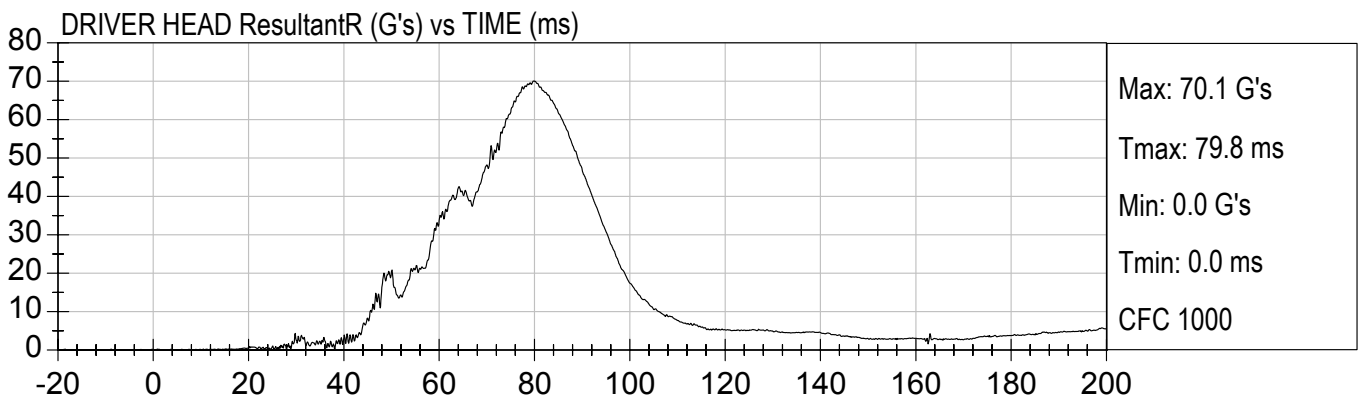
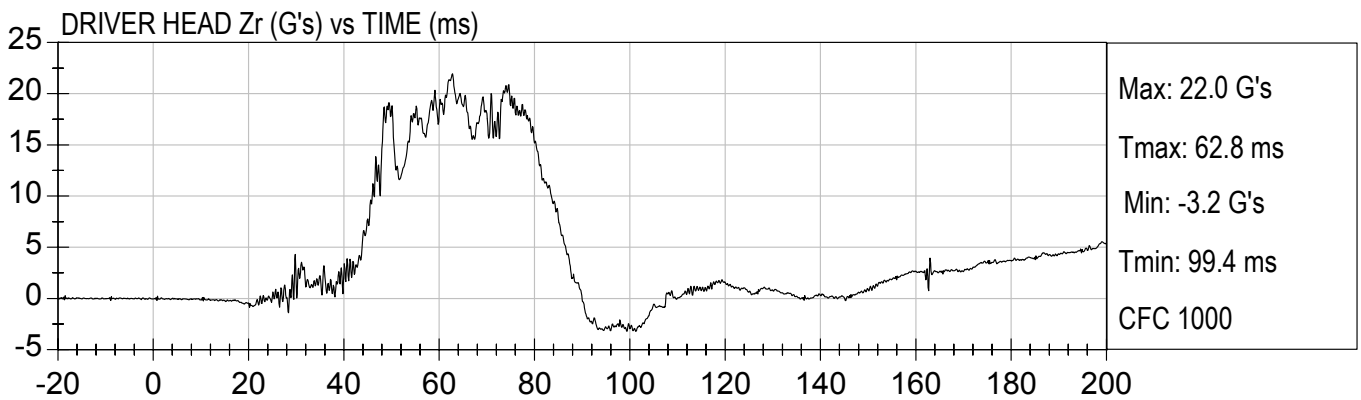
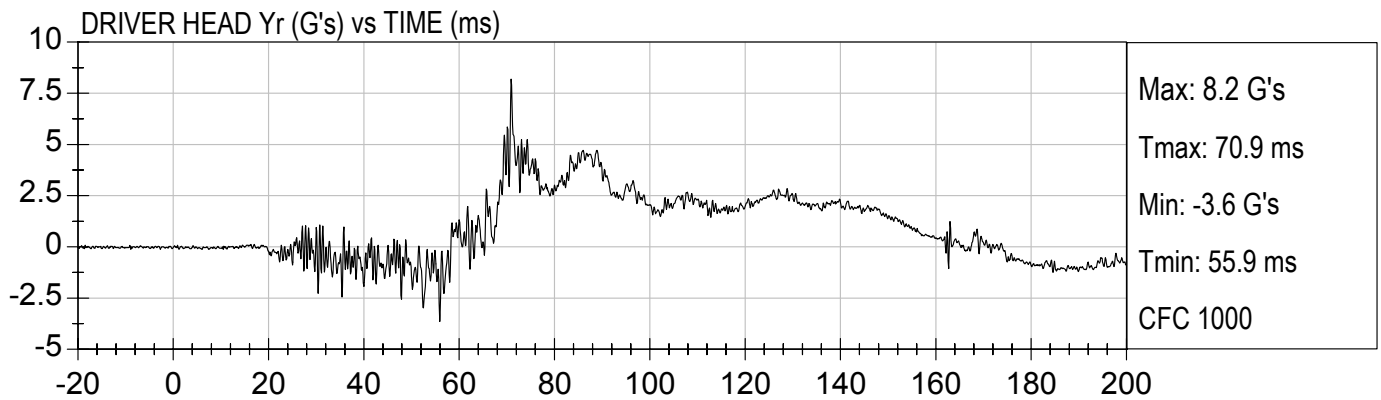
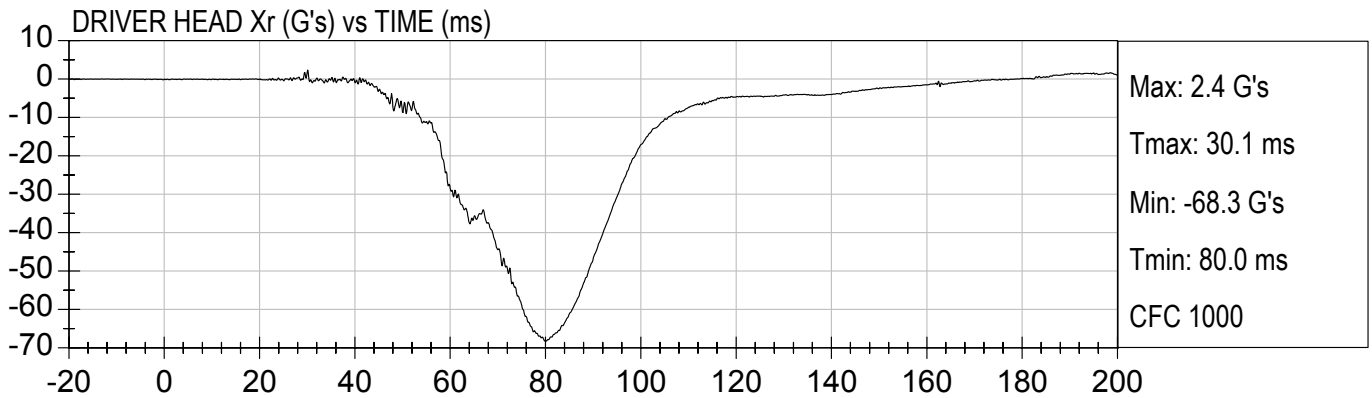
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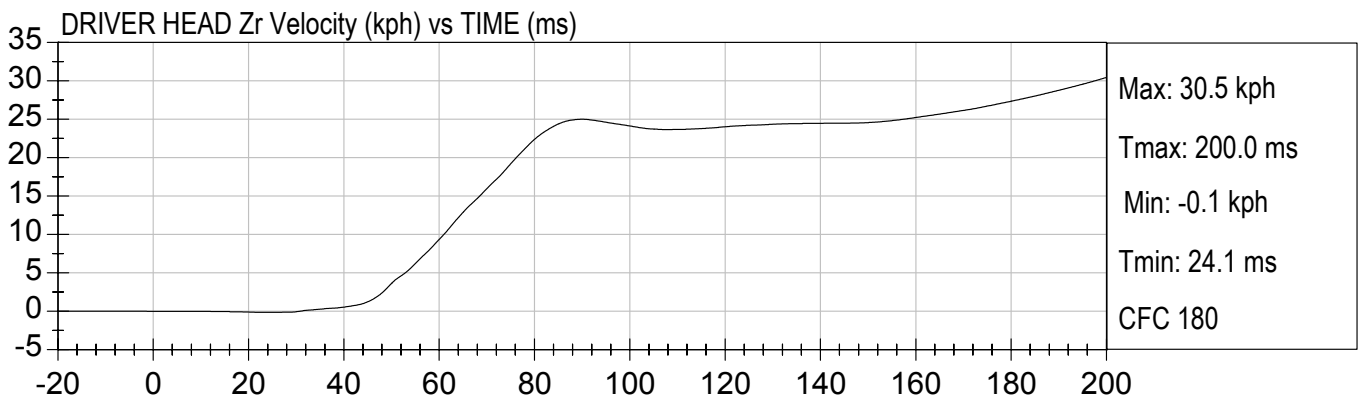
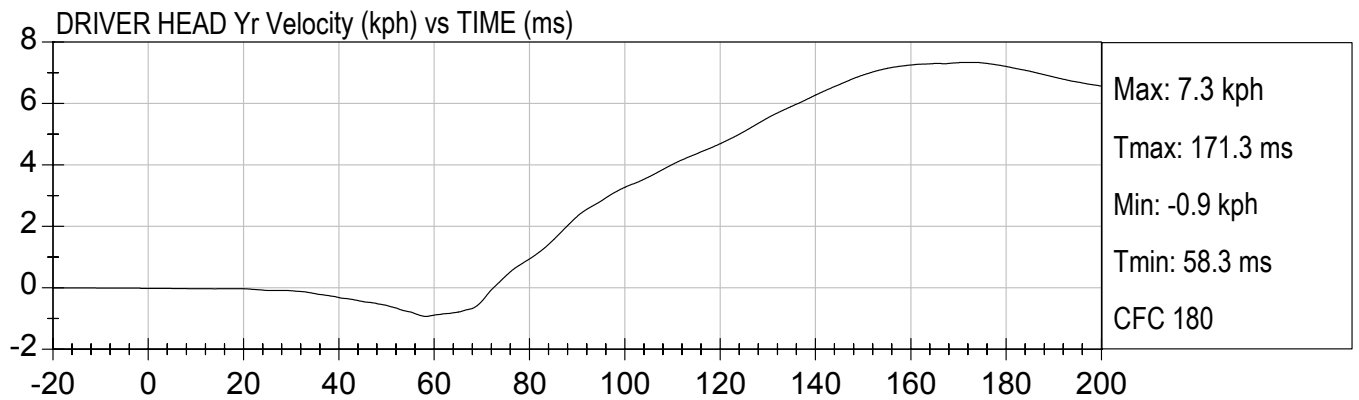
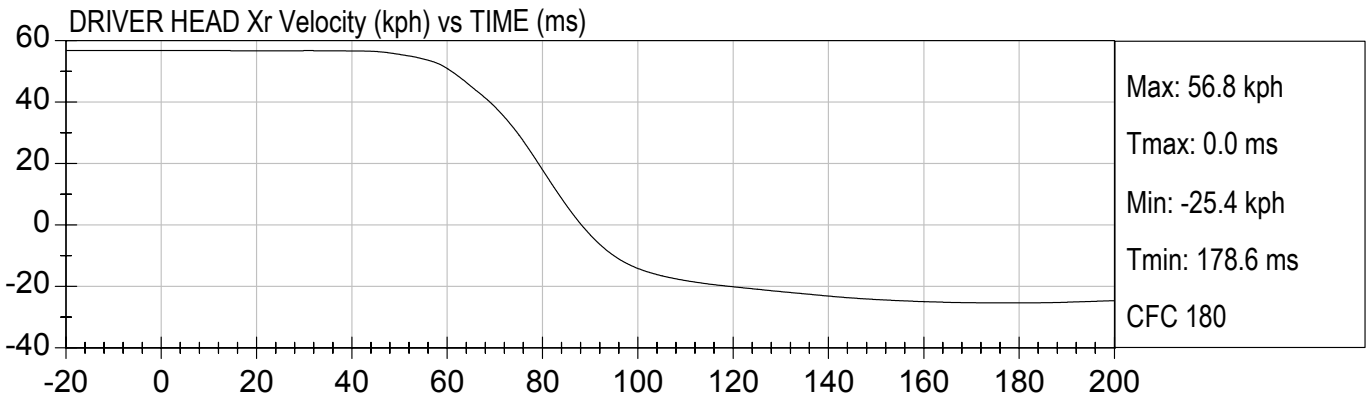
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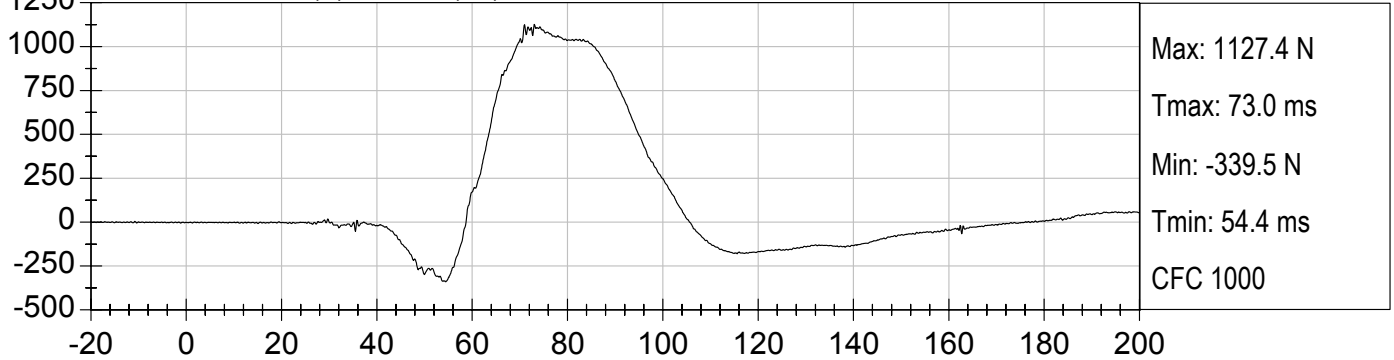




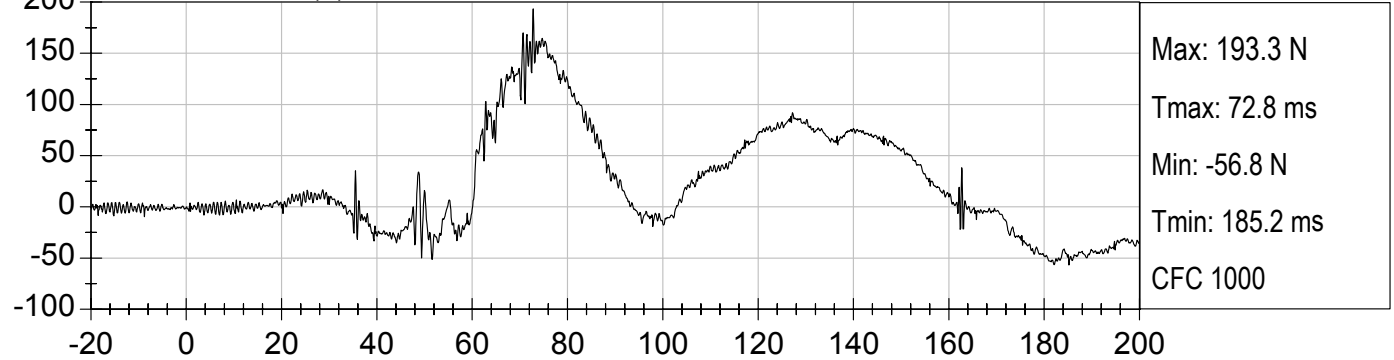




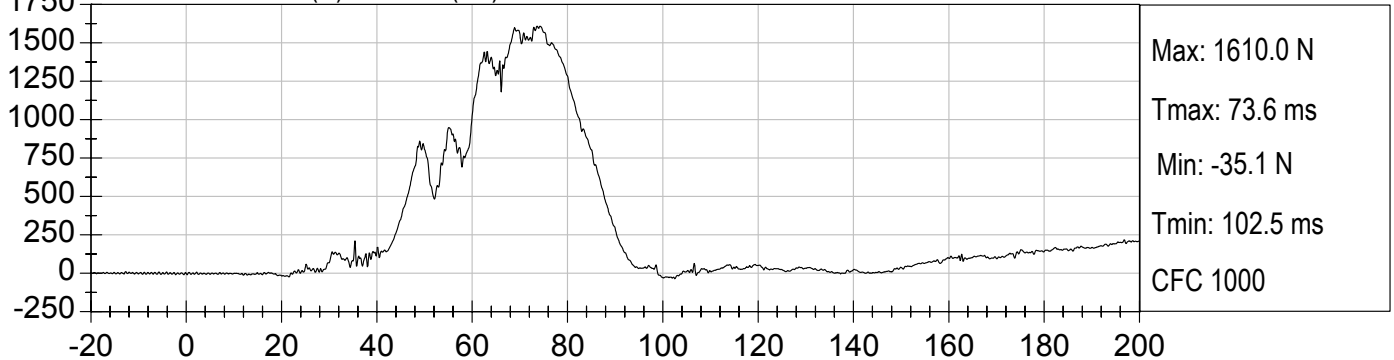
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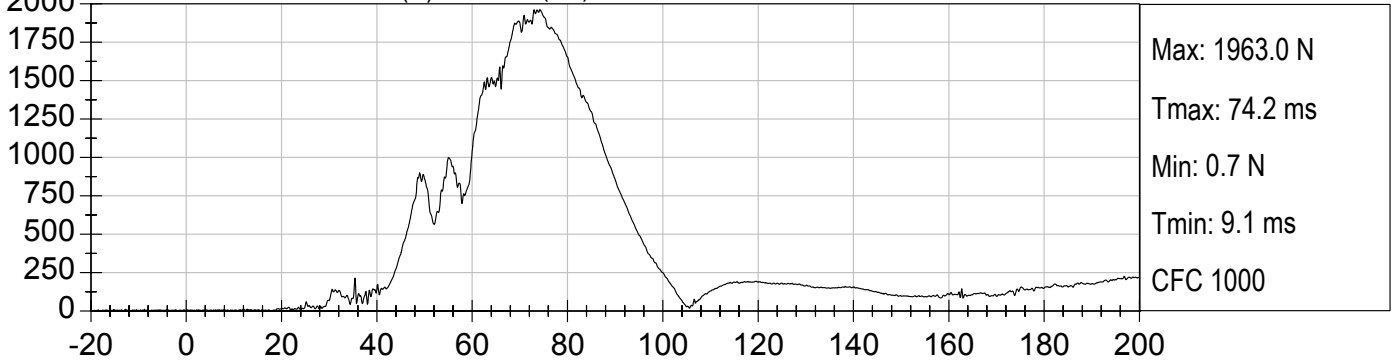
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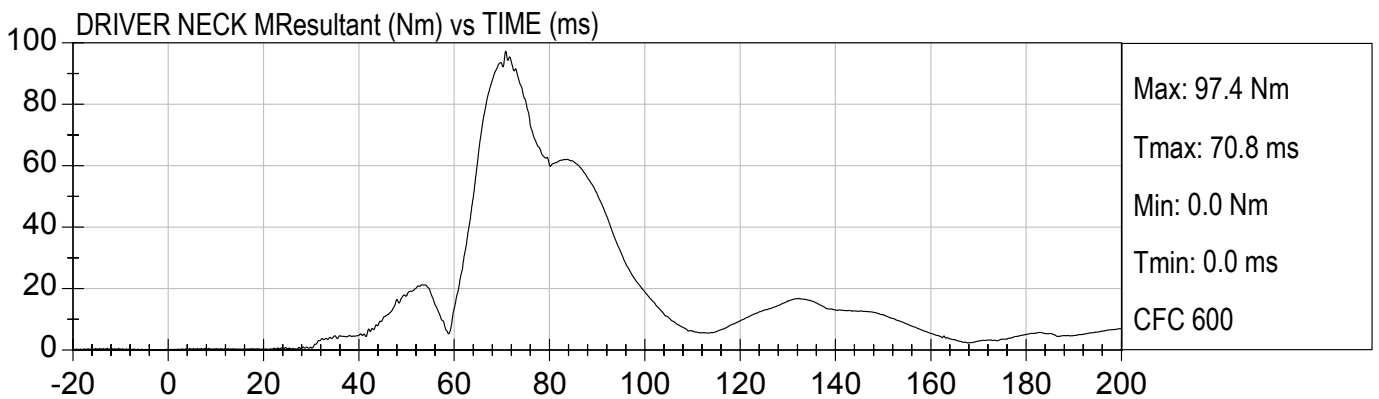
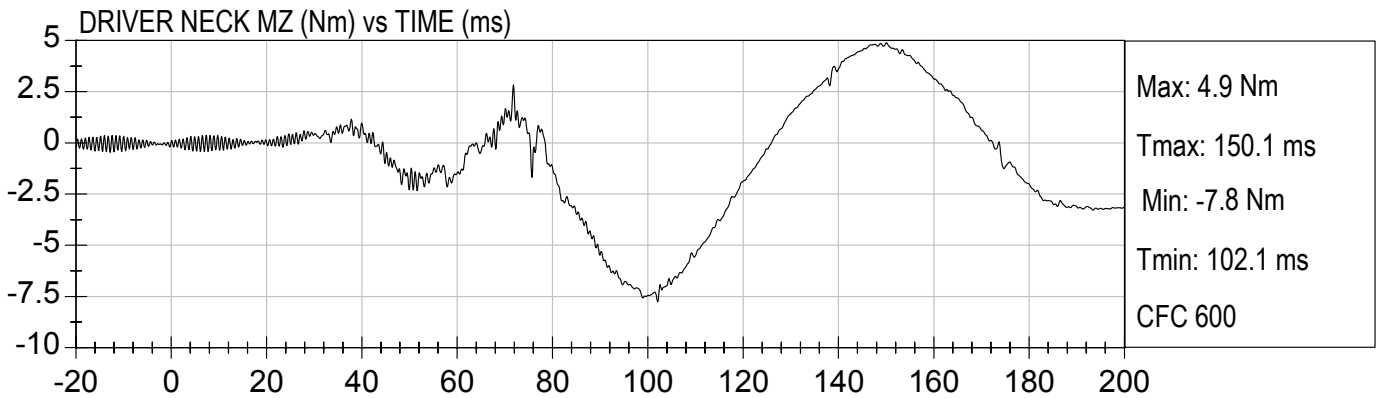
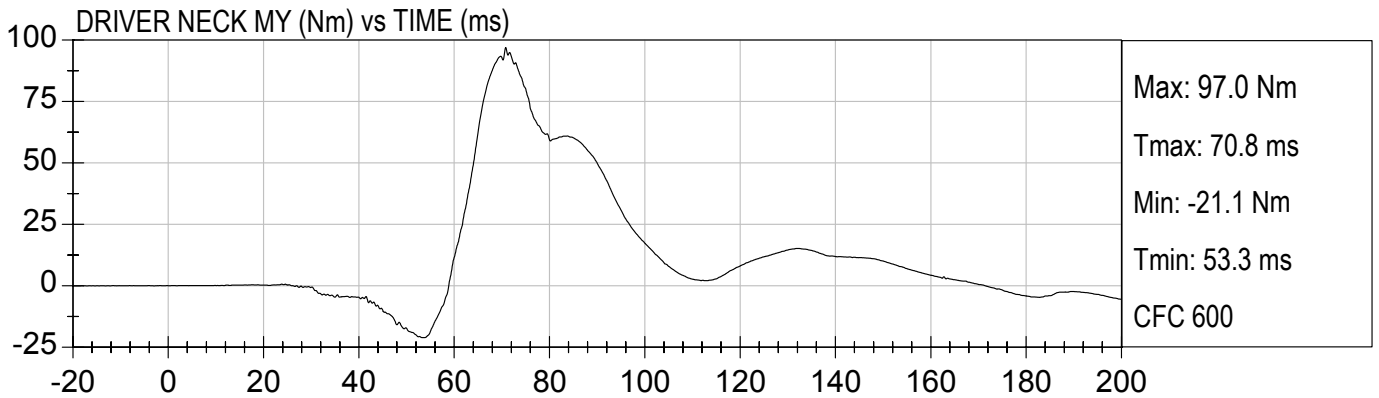
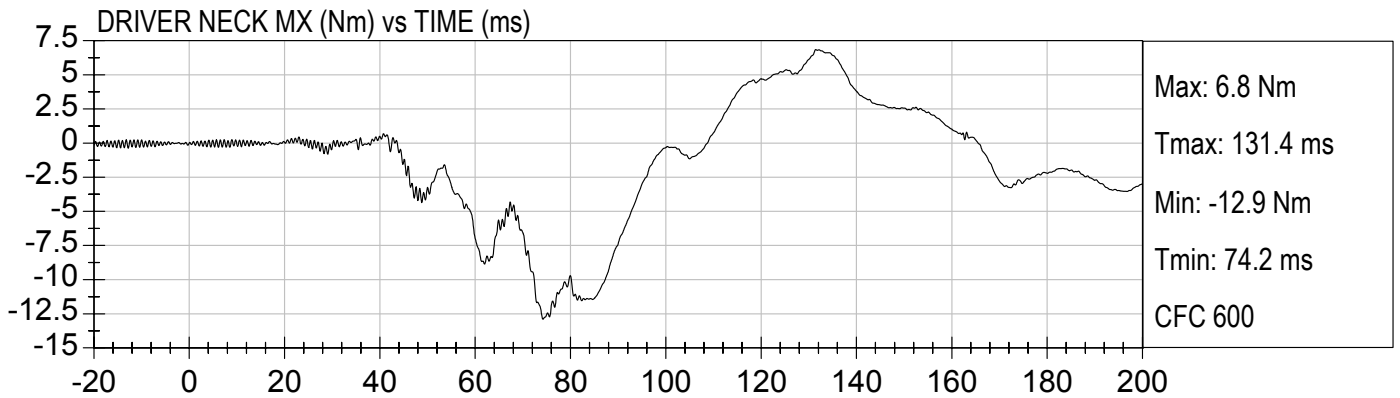


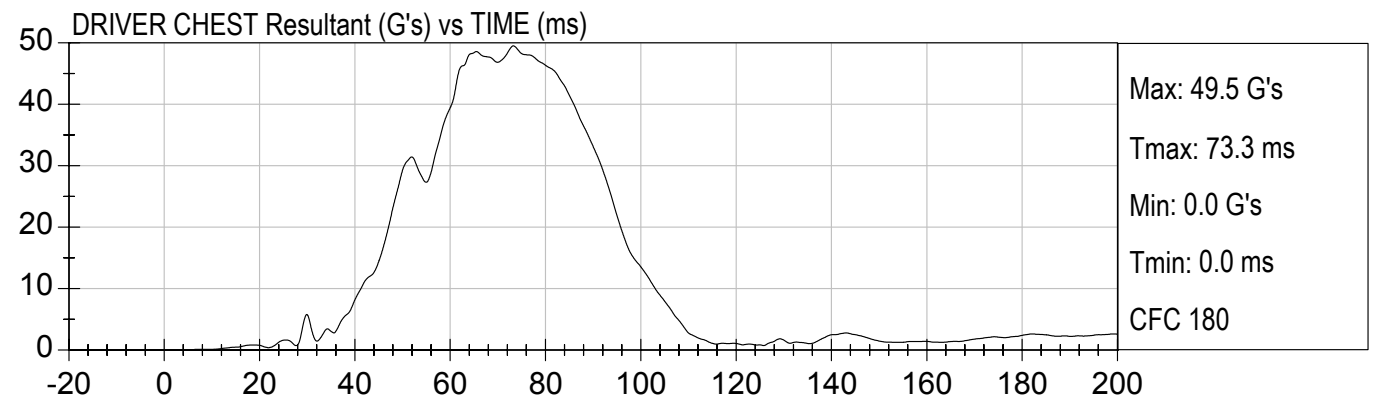
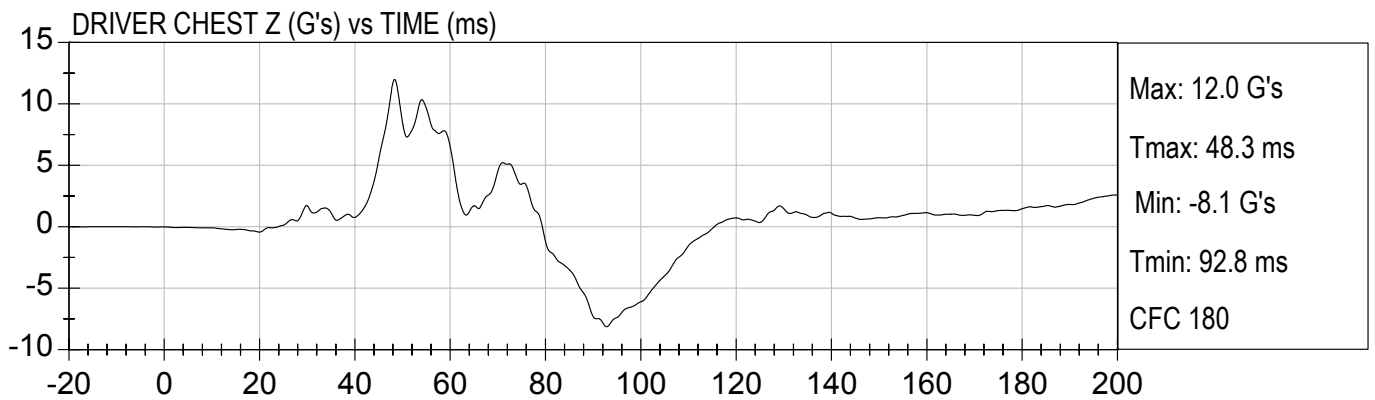
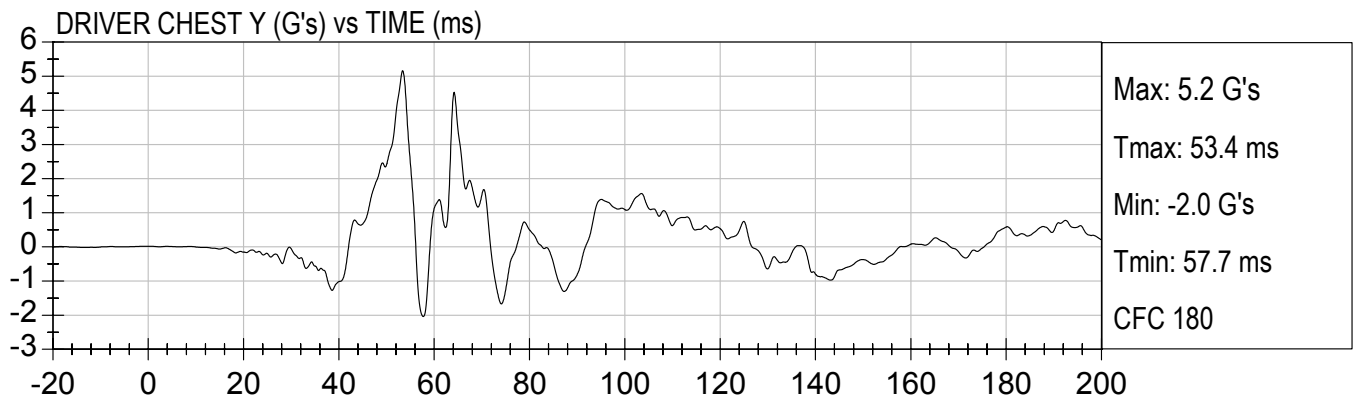
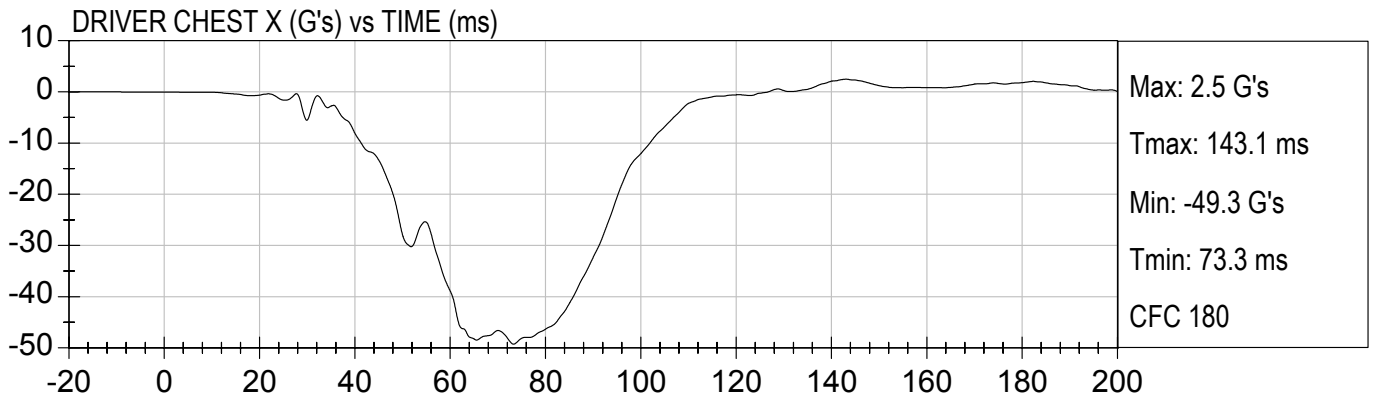
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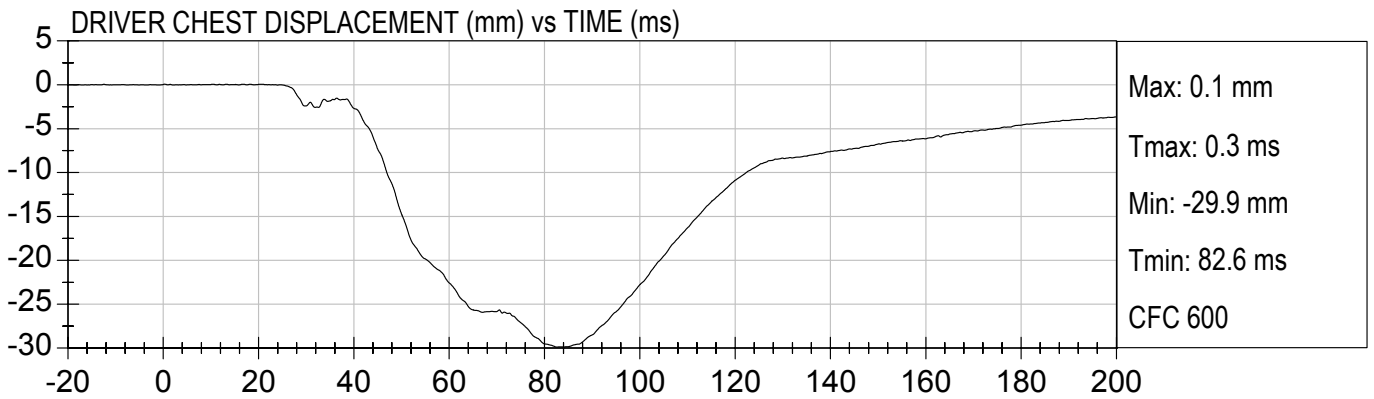
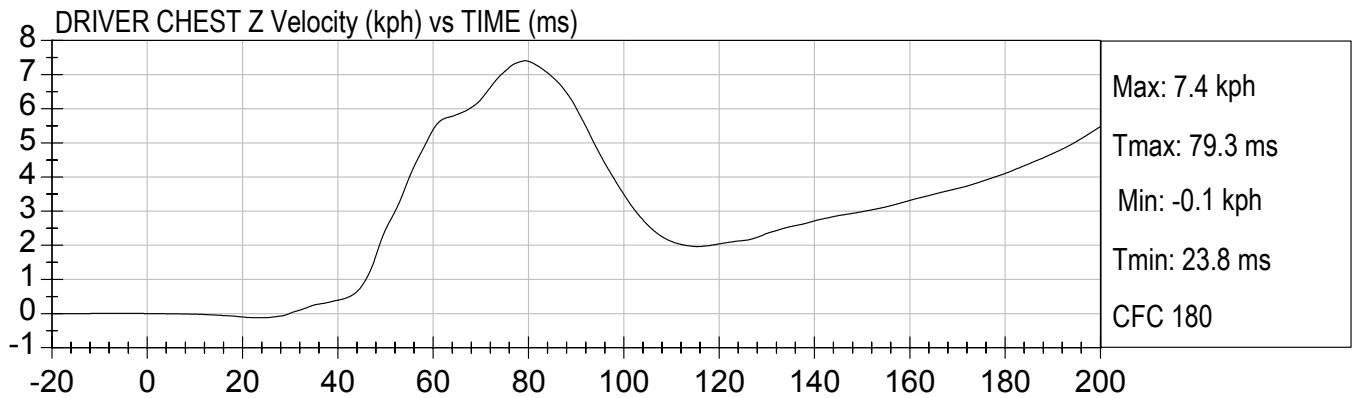
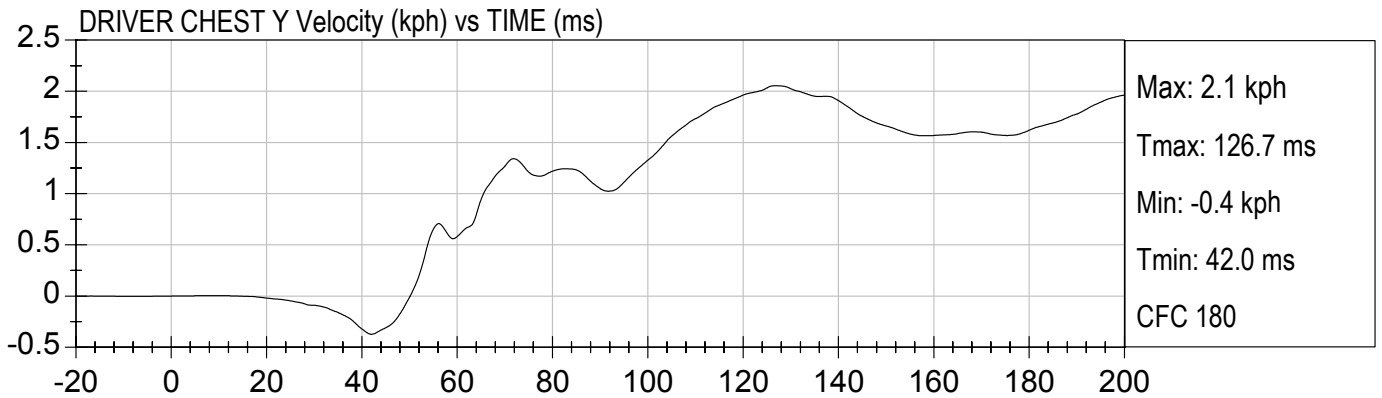
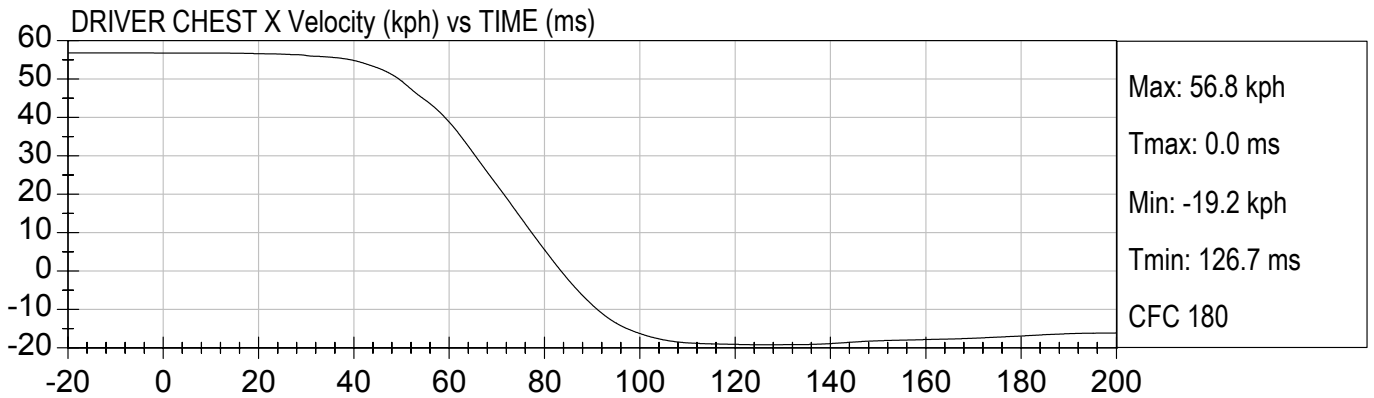


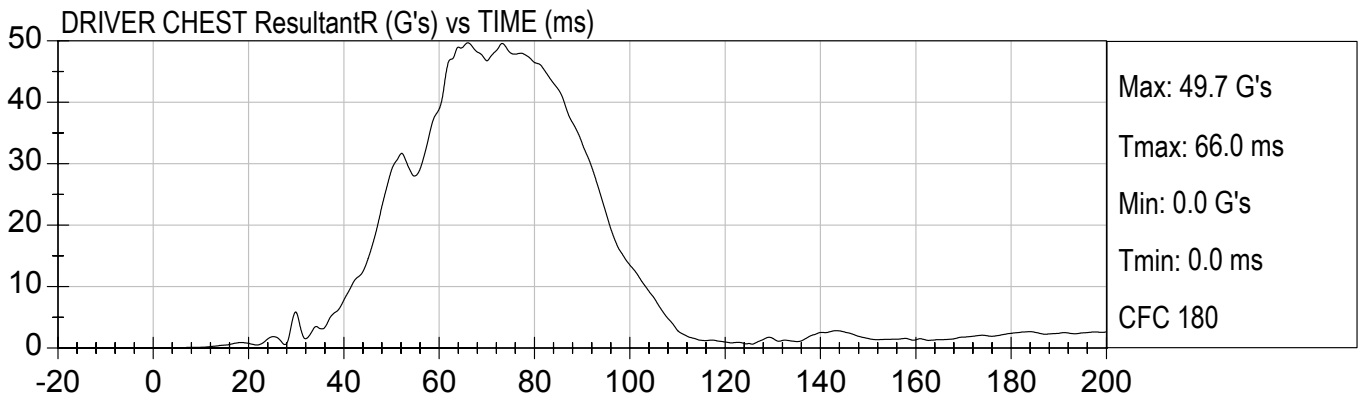
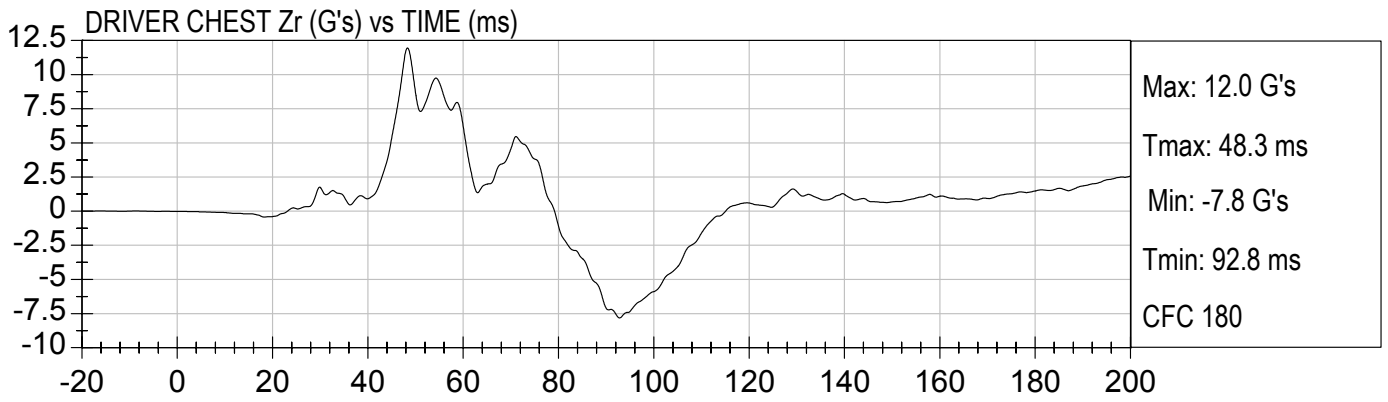
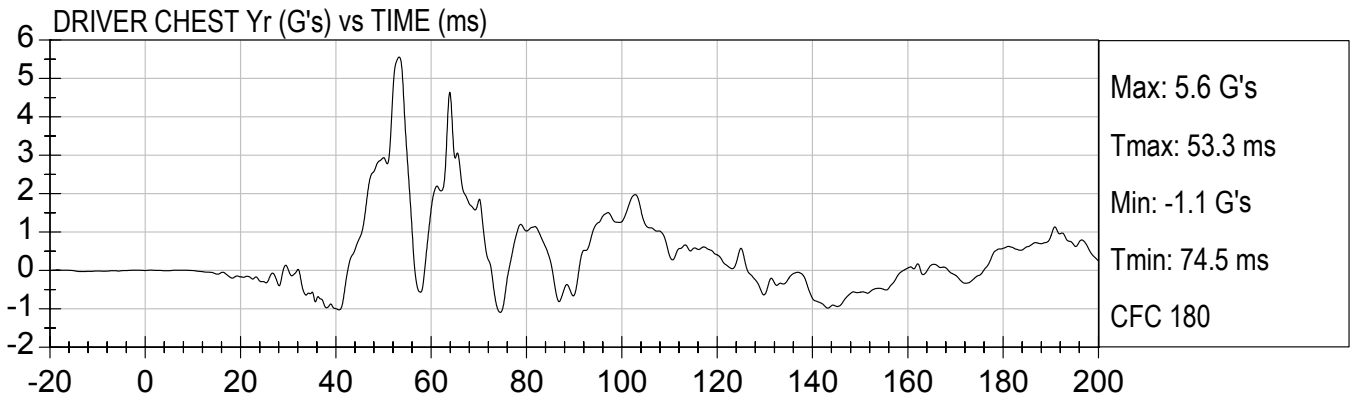
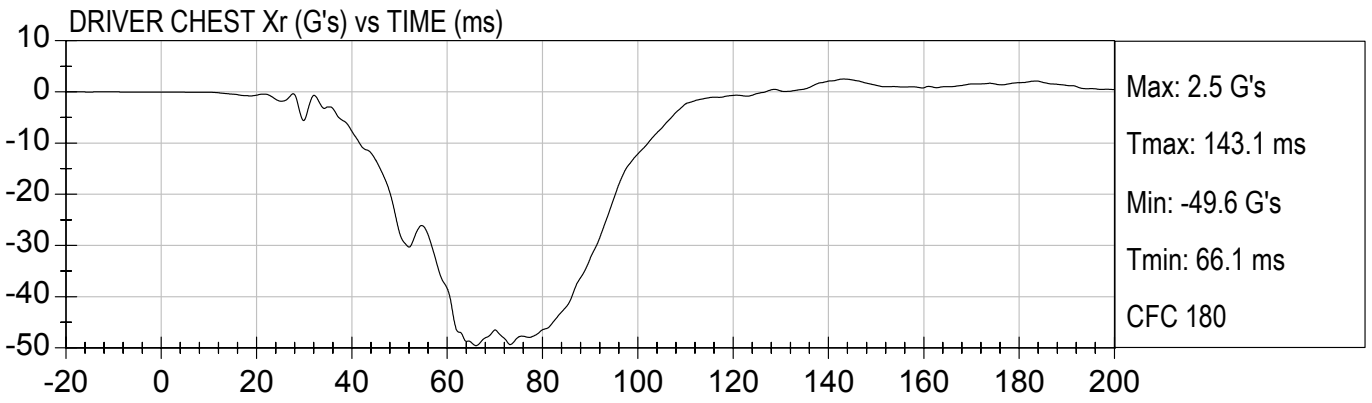
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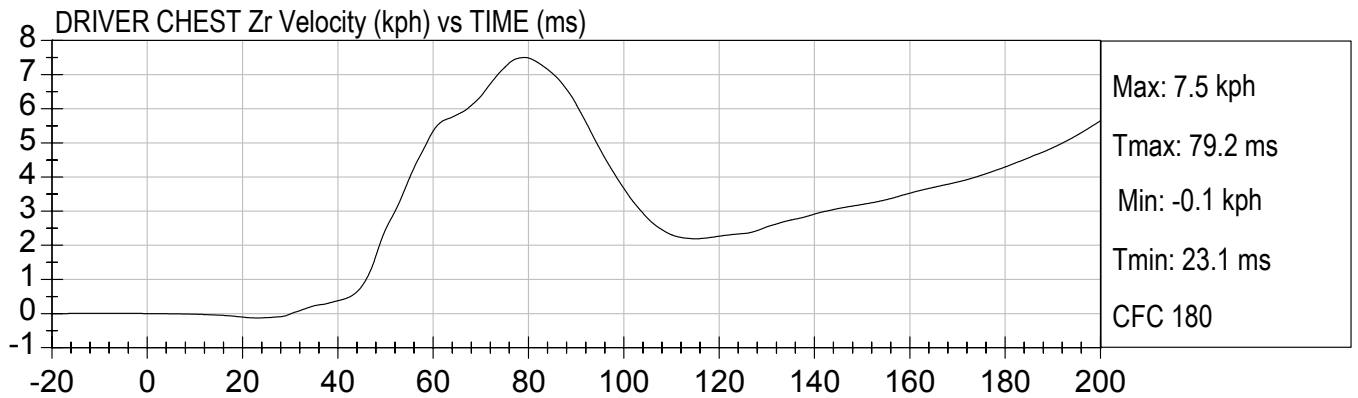
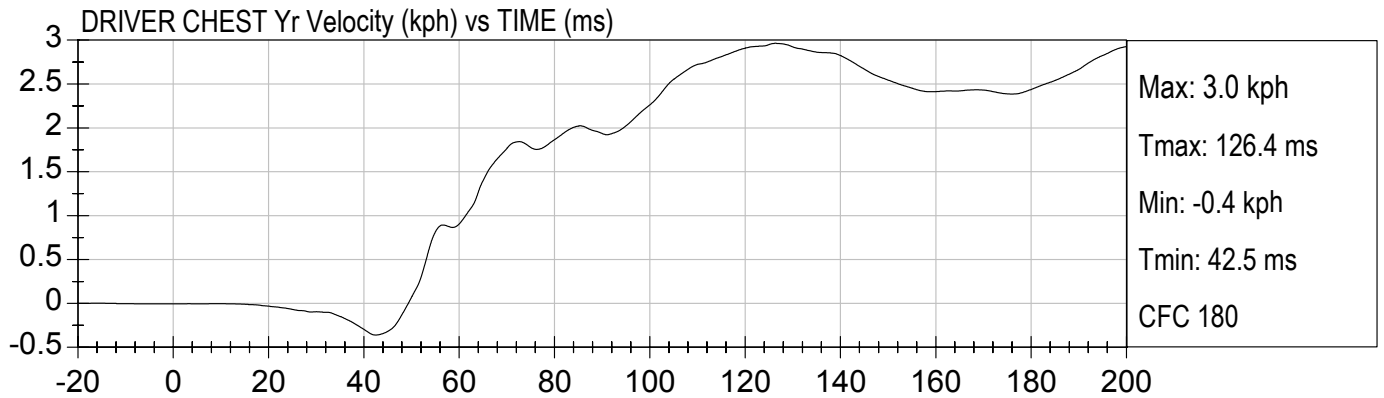
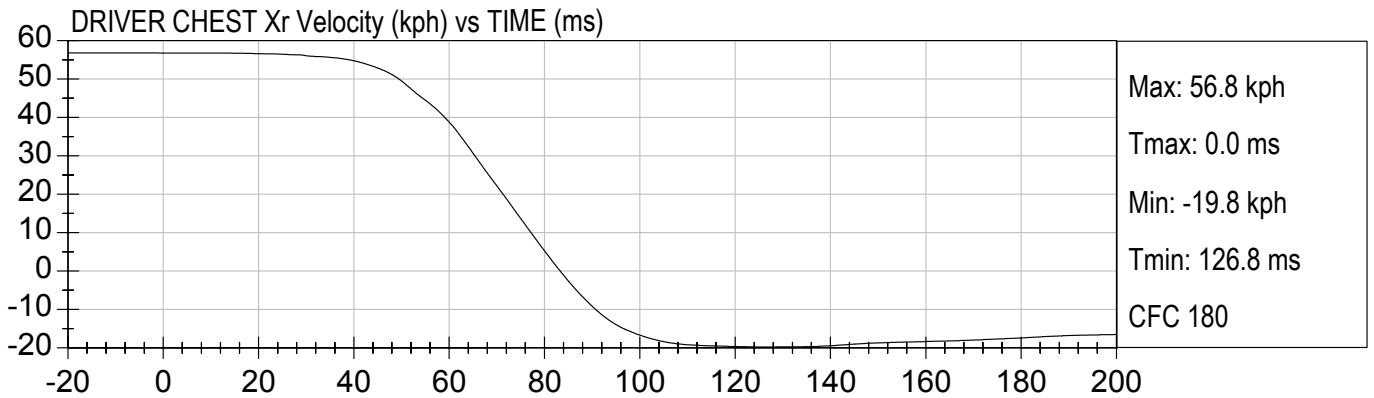


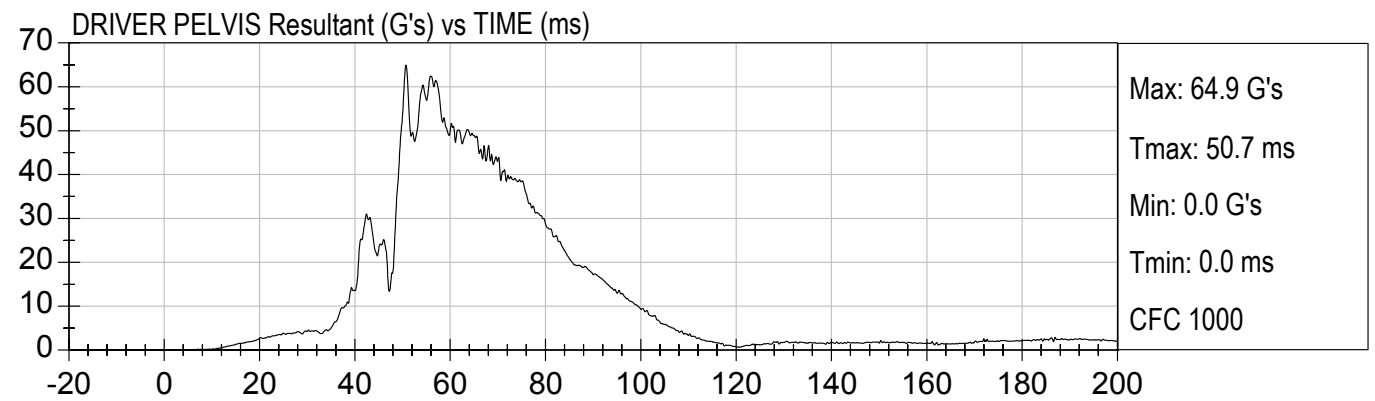
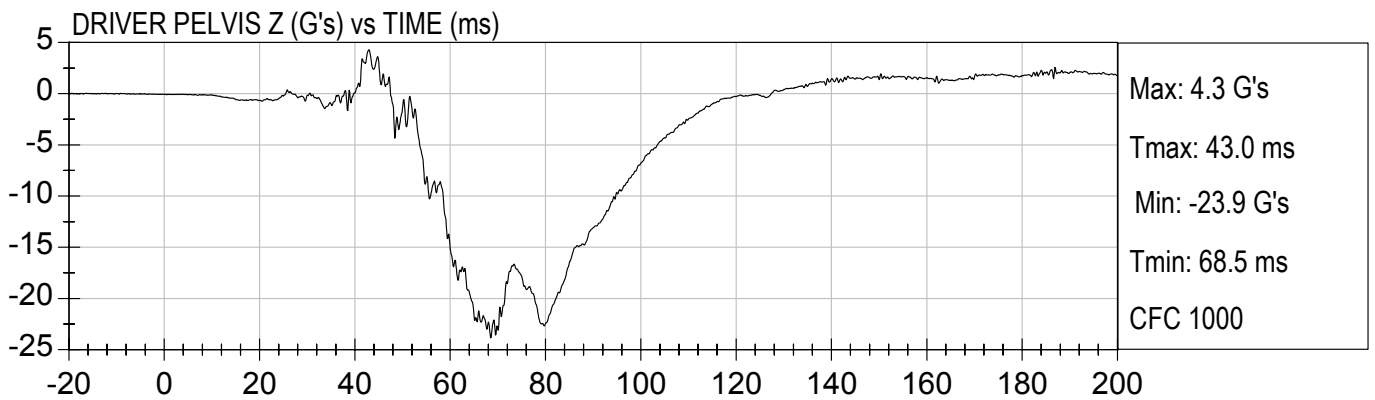
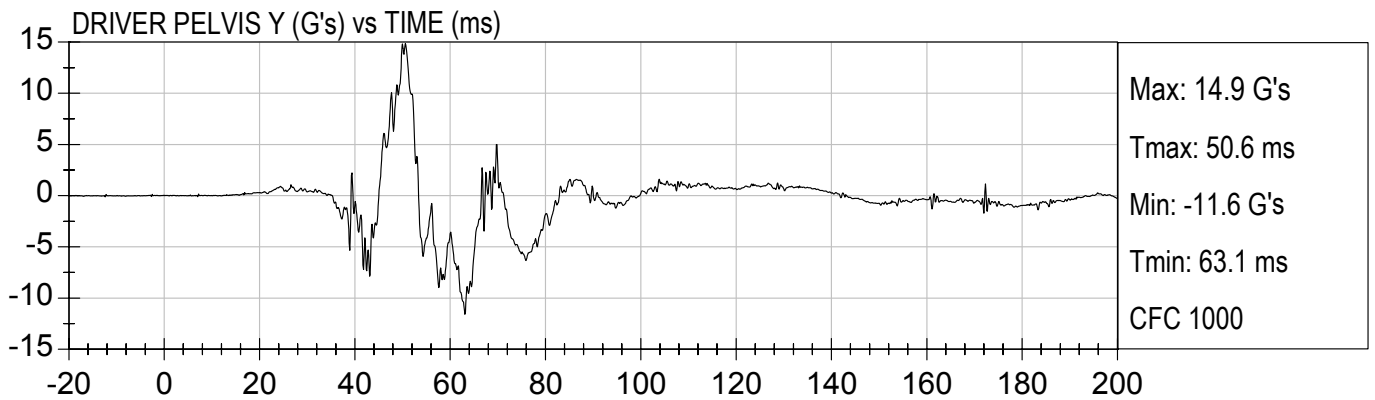
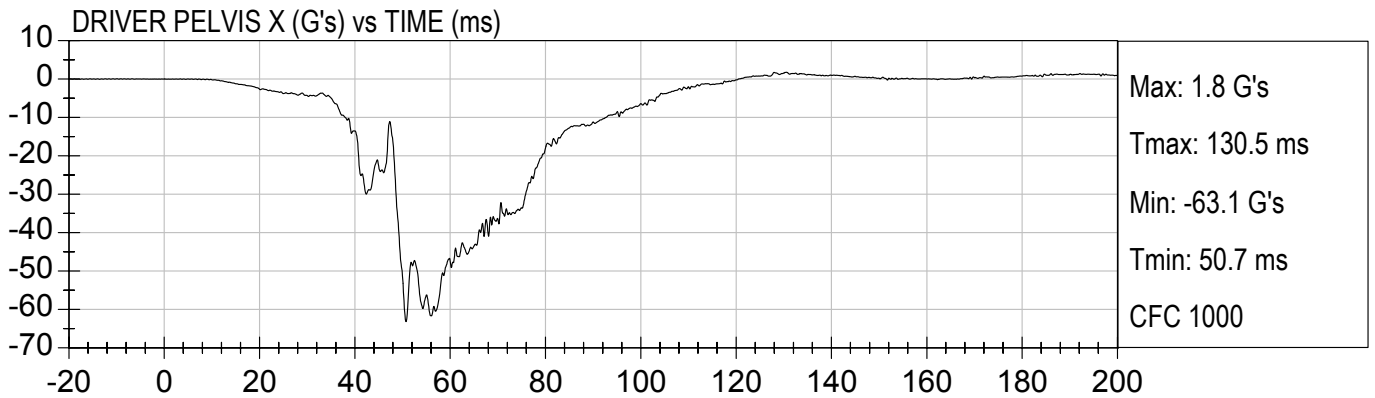


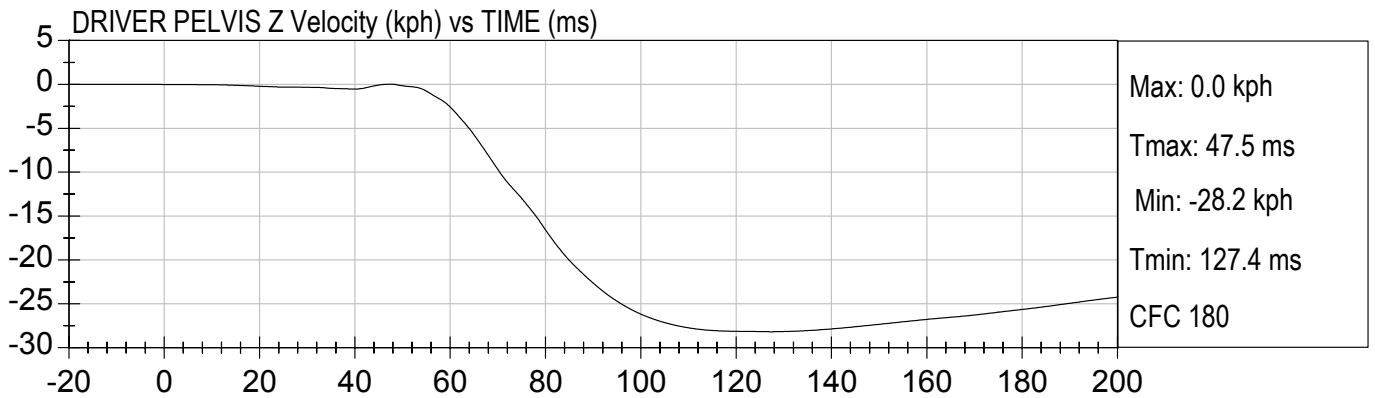
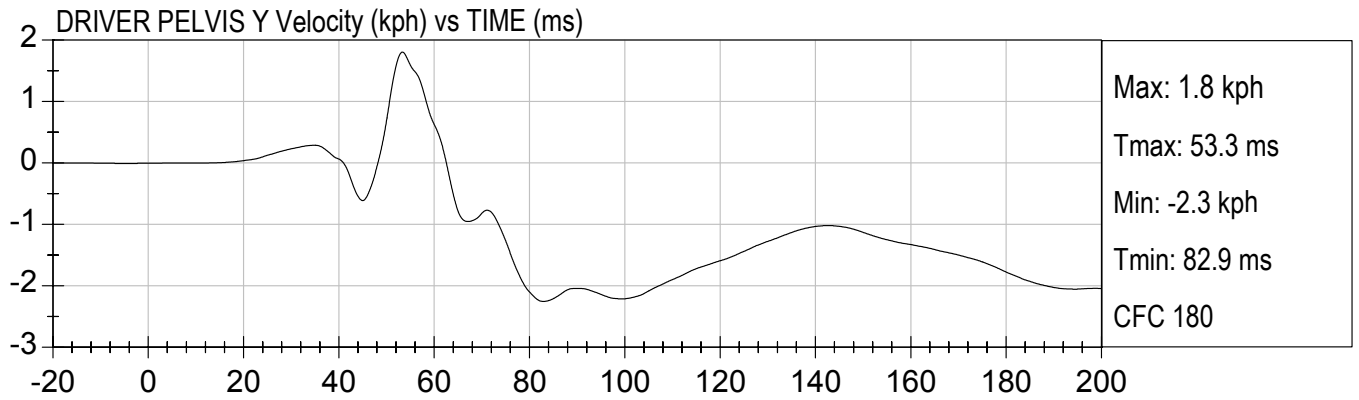
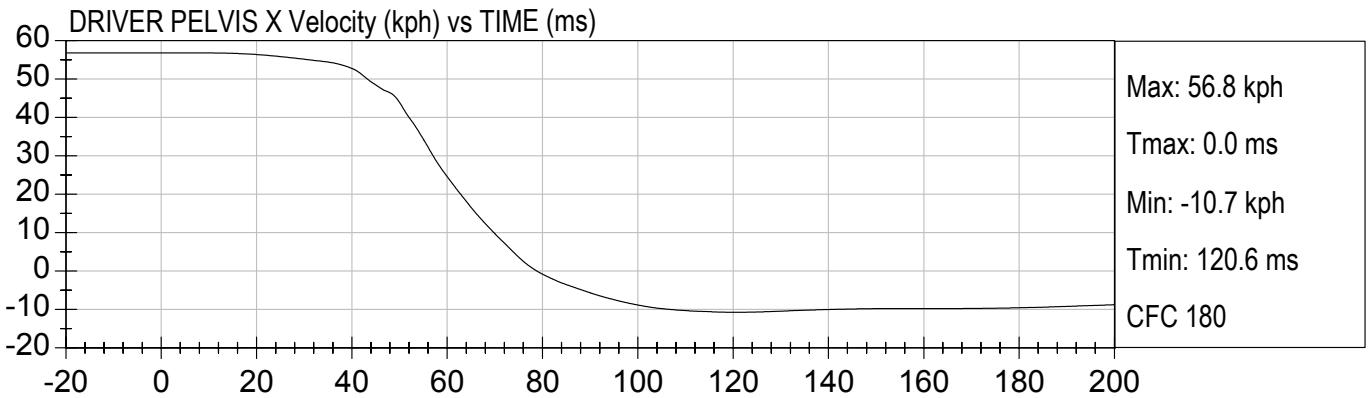


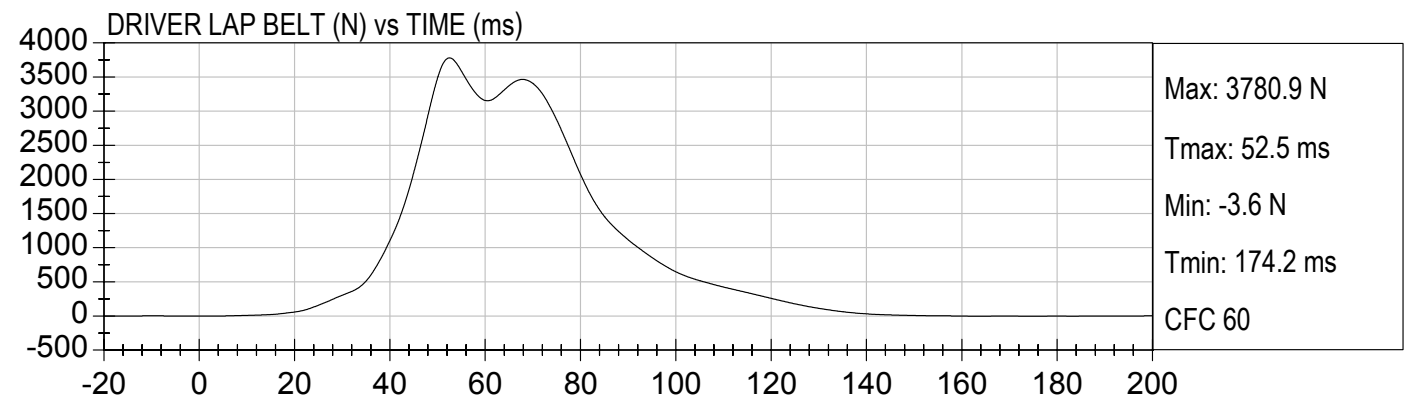
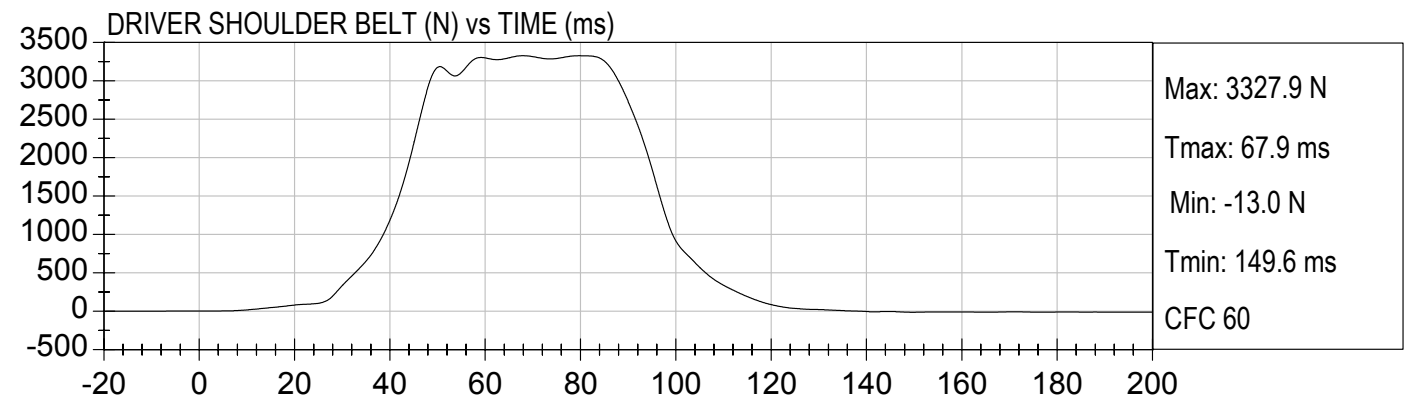
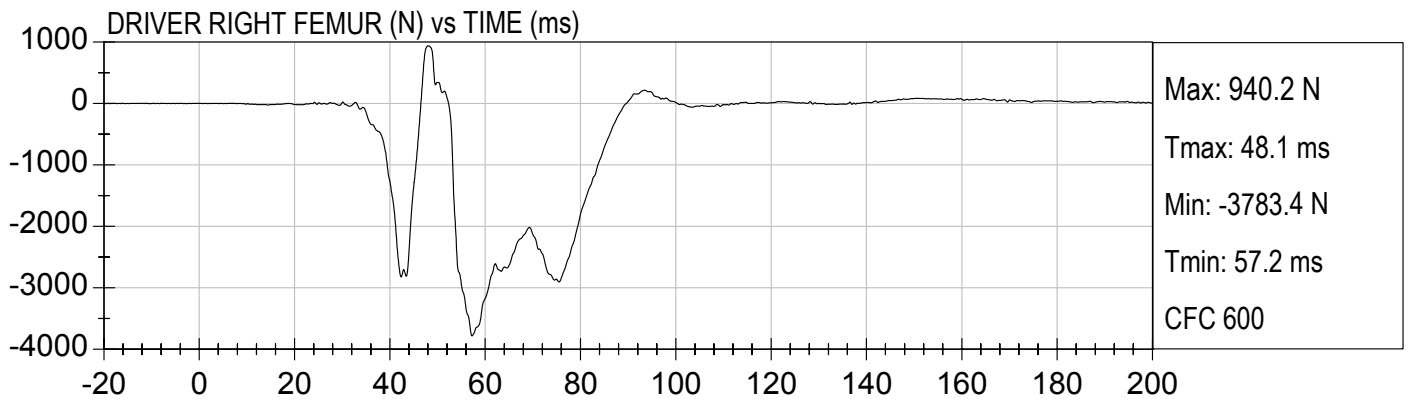
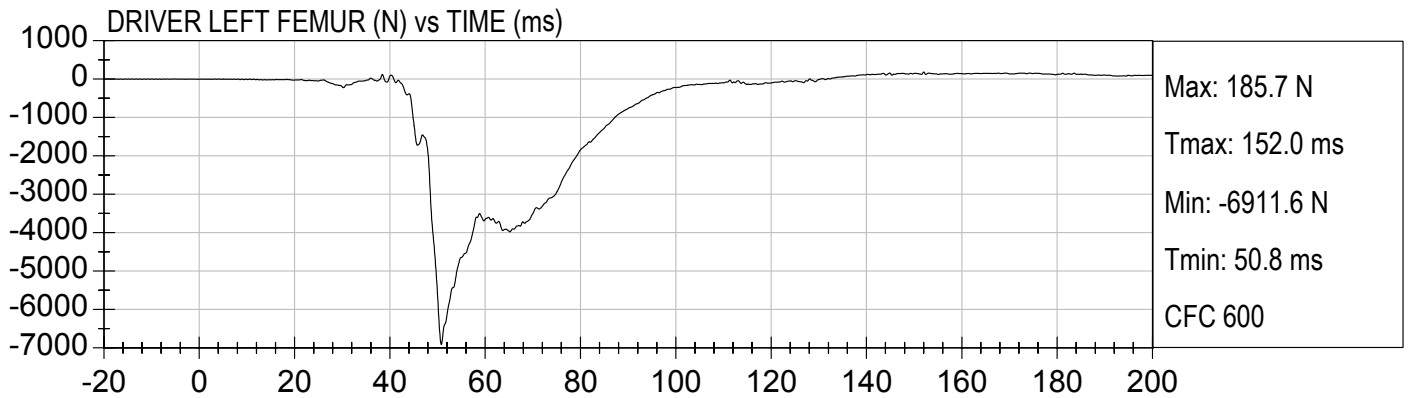


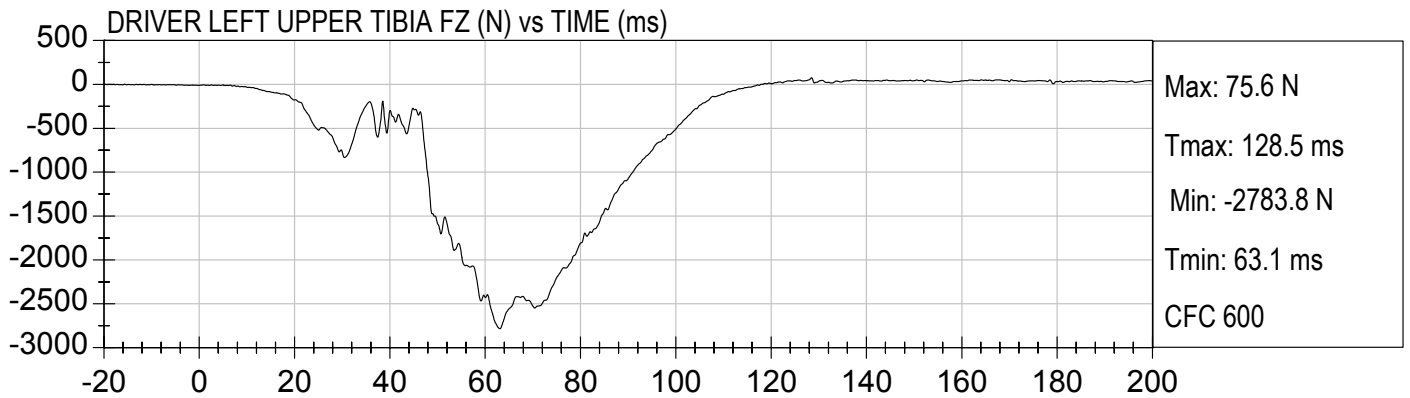
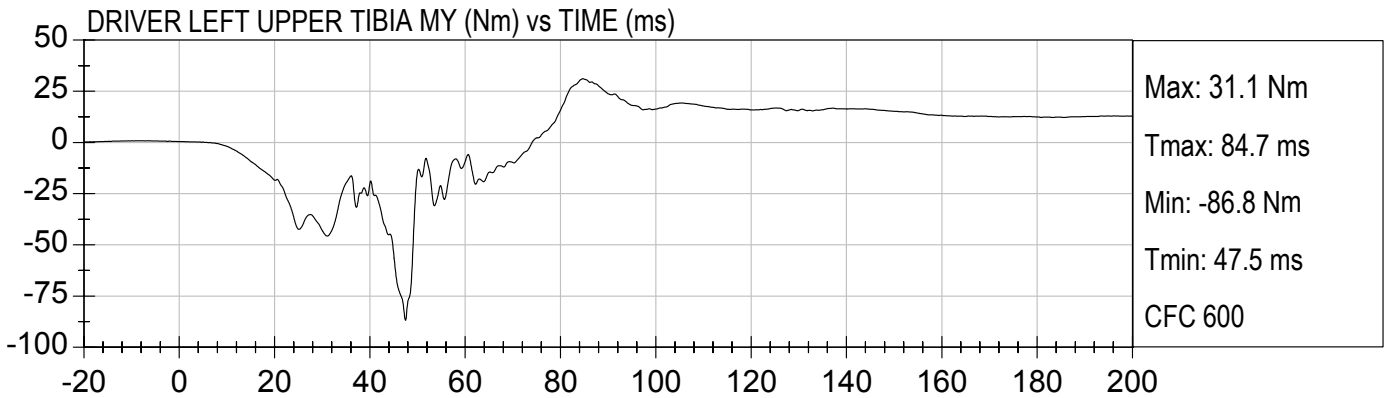
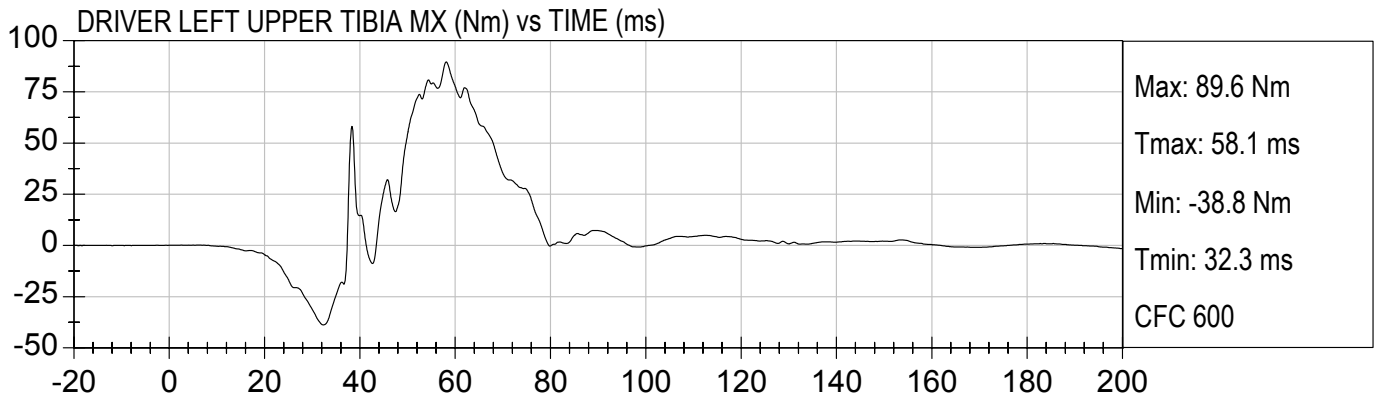


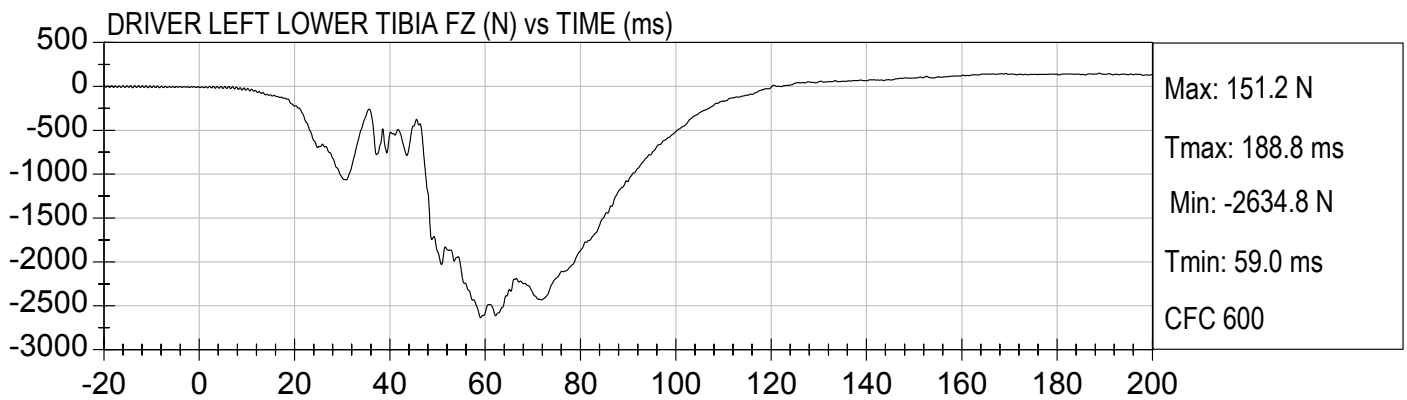
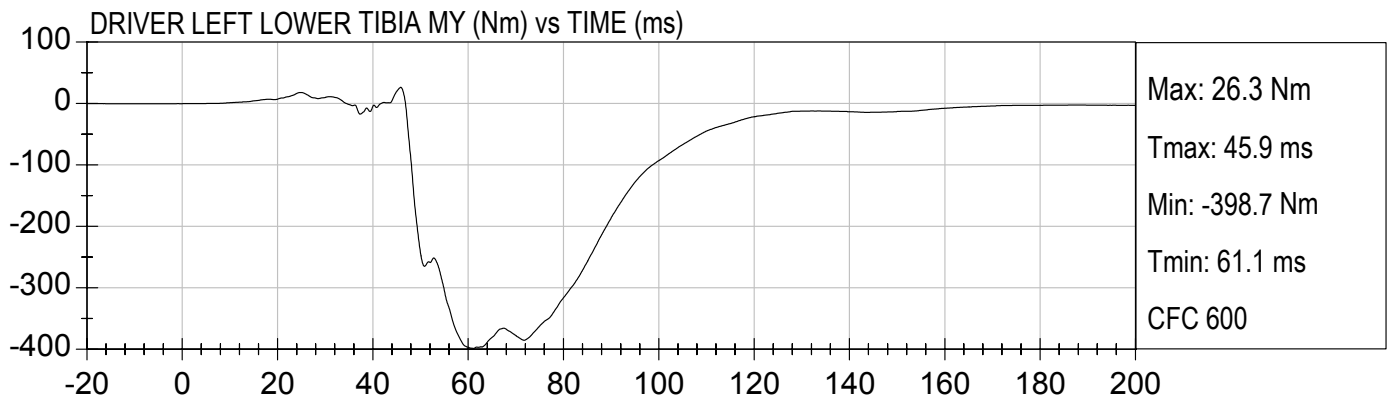
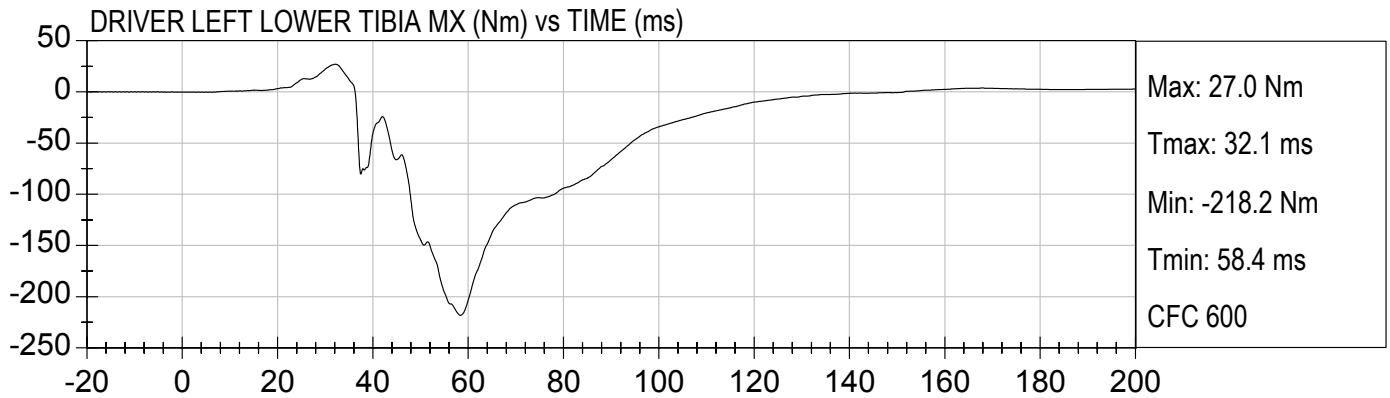






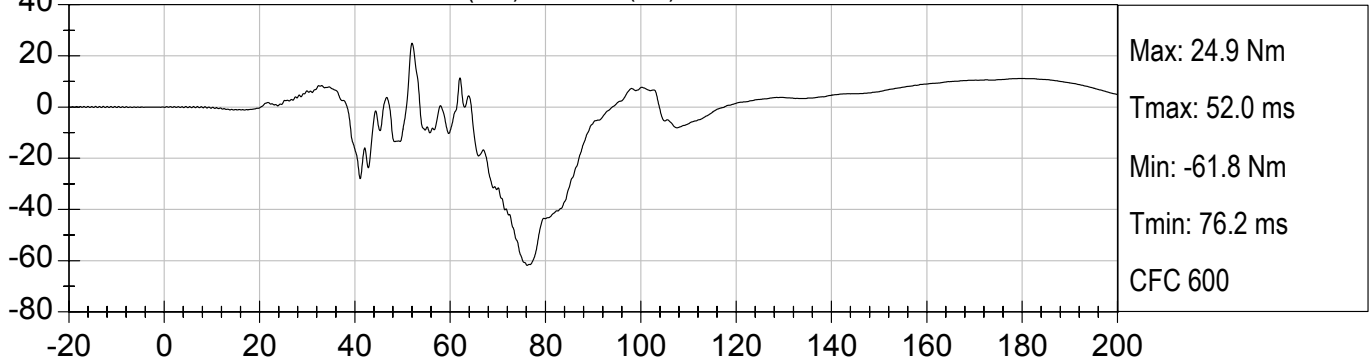




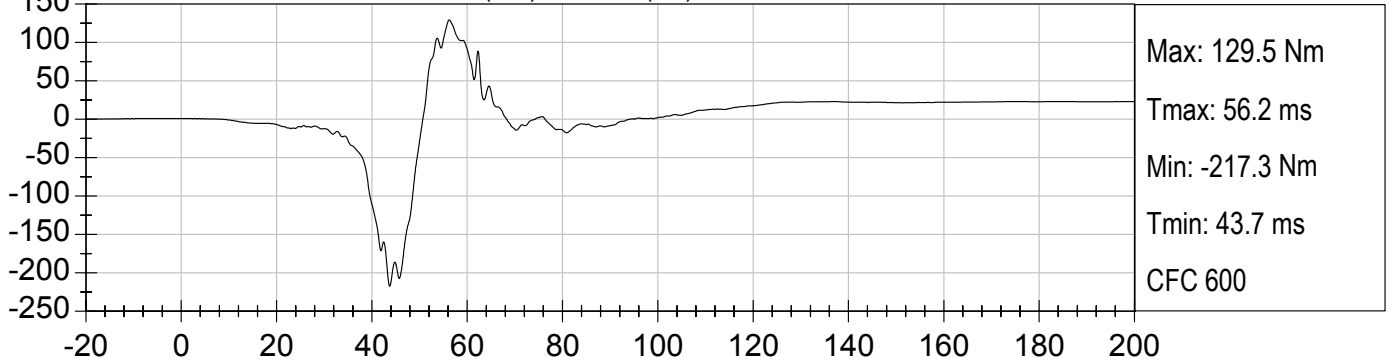




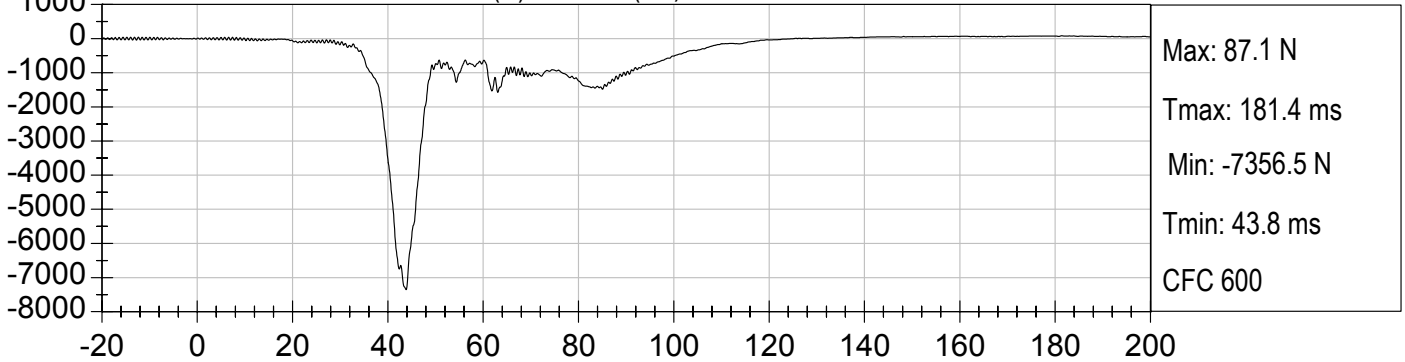
DRIVER RIGHT UPPER TIBIA MX (Nm) vs TIME (ms)



DRIVER RIGHT UPPER TIBIA MY (Nm) vs TIME (ms)

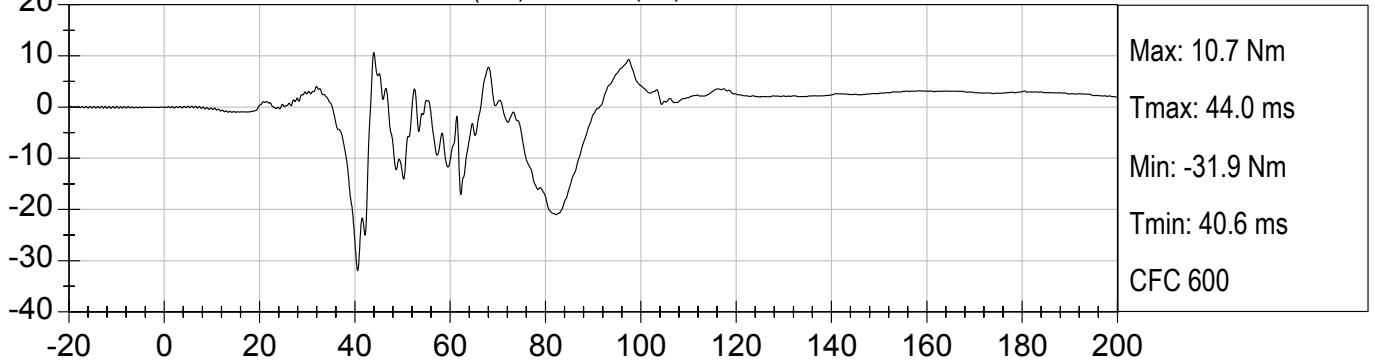


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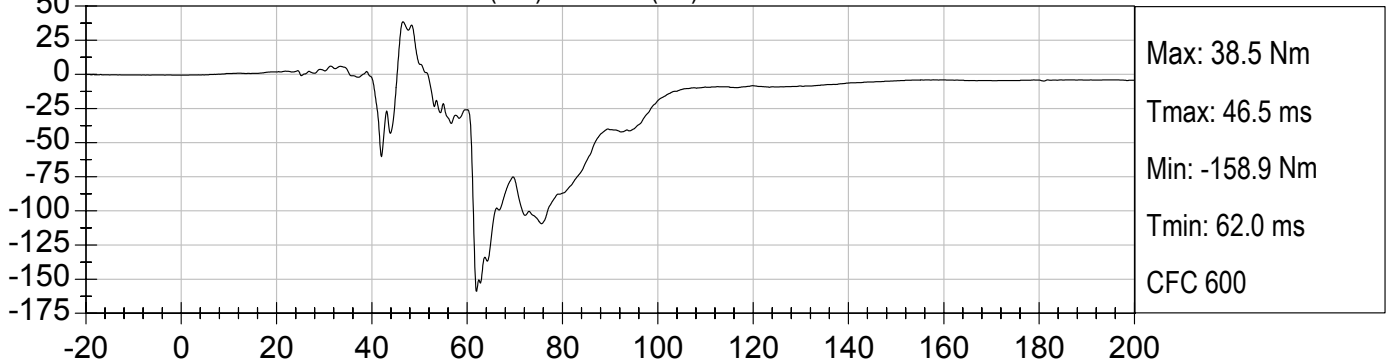




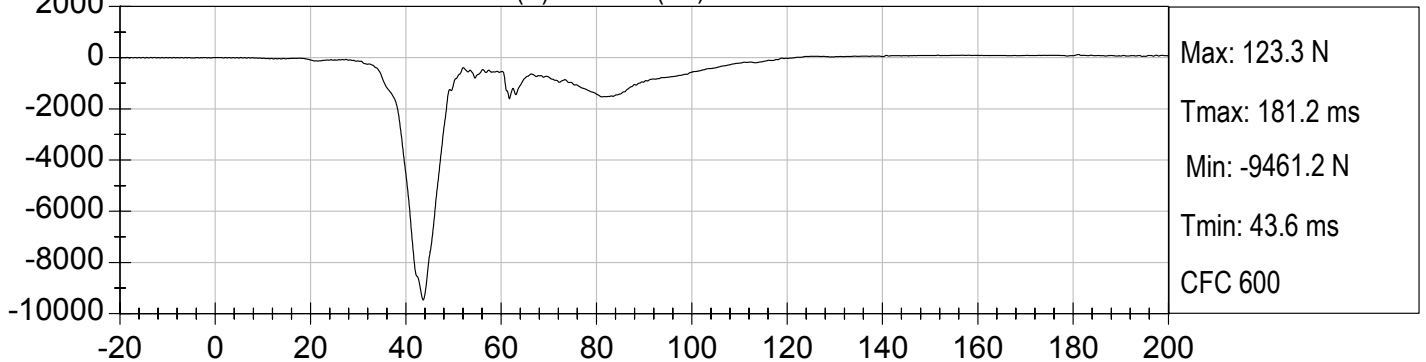
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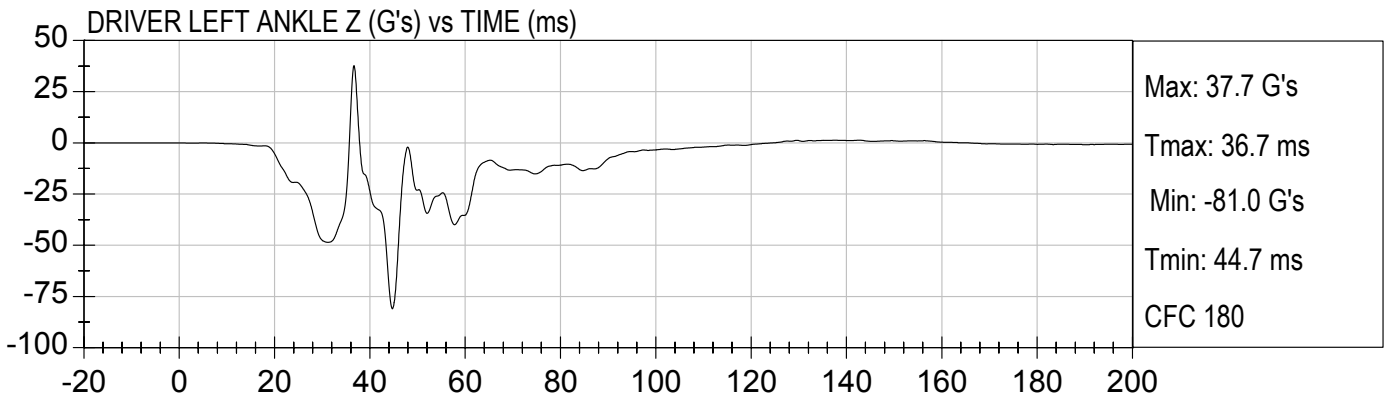
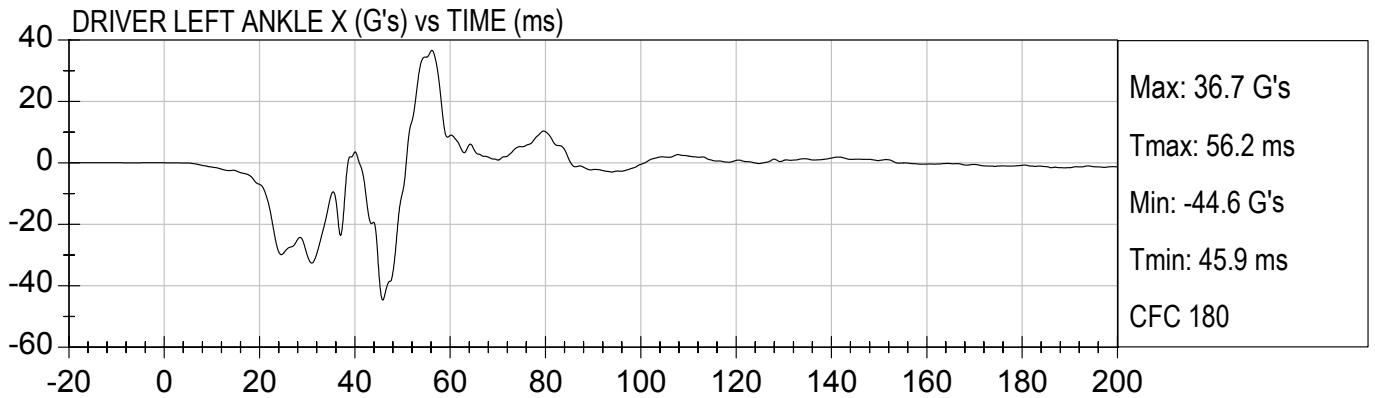
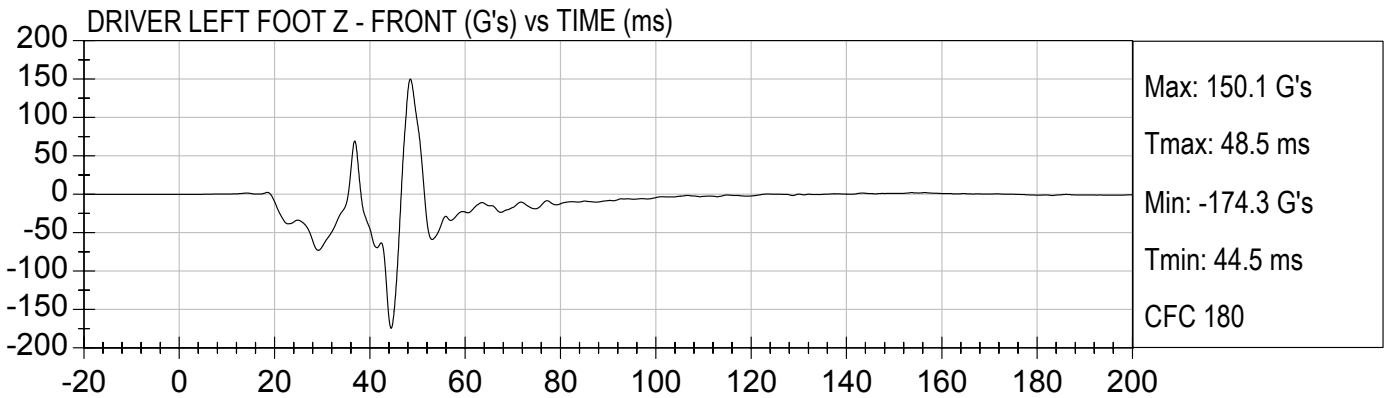


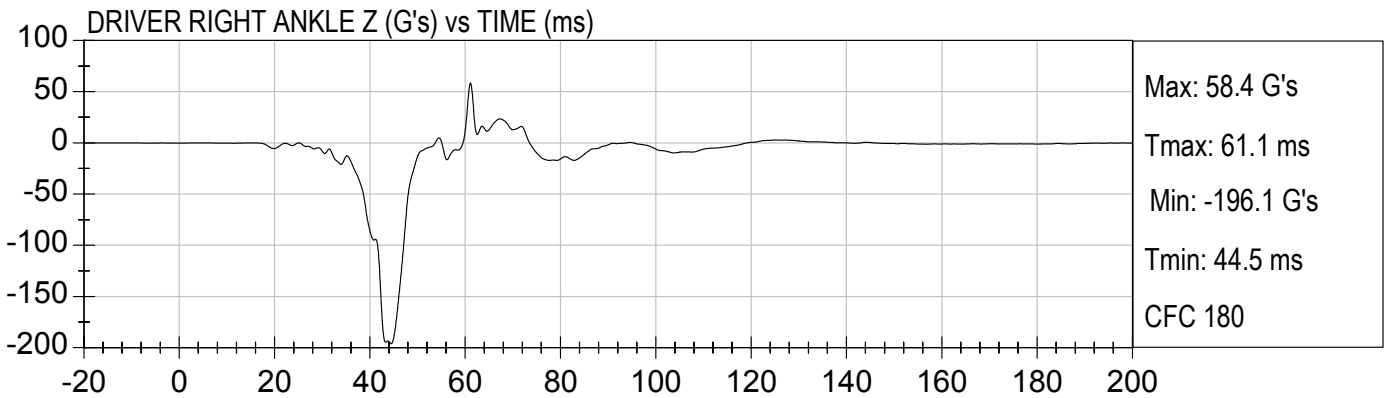
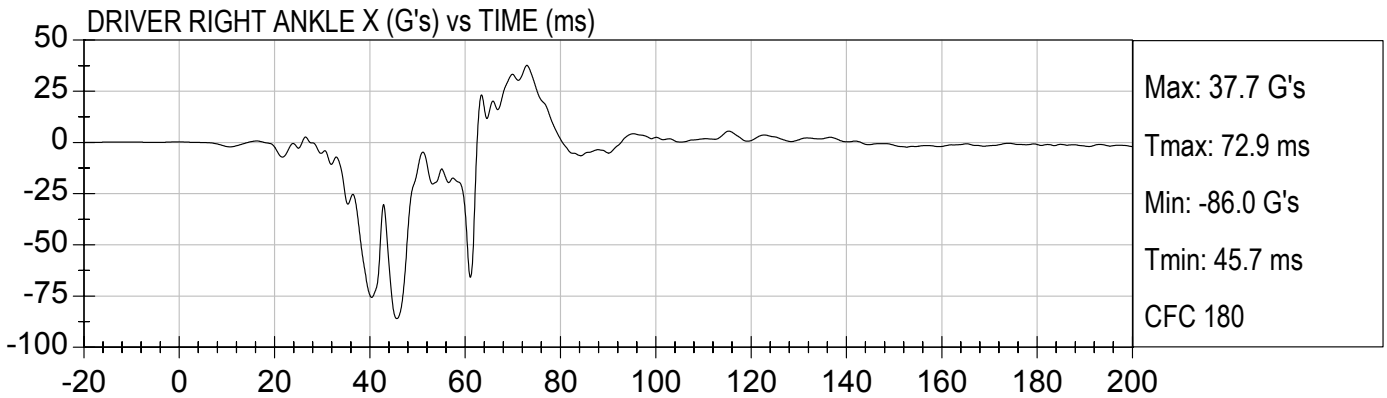
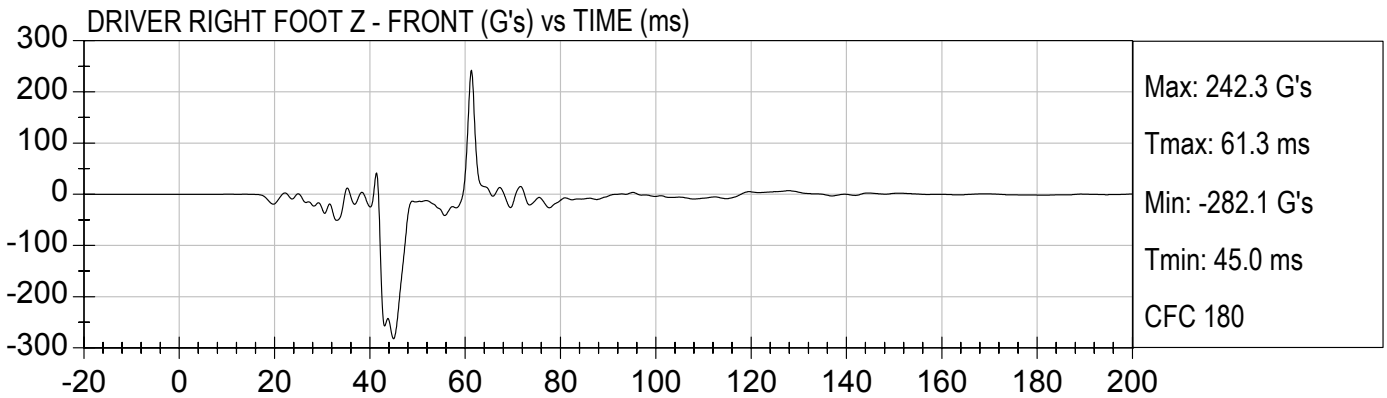
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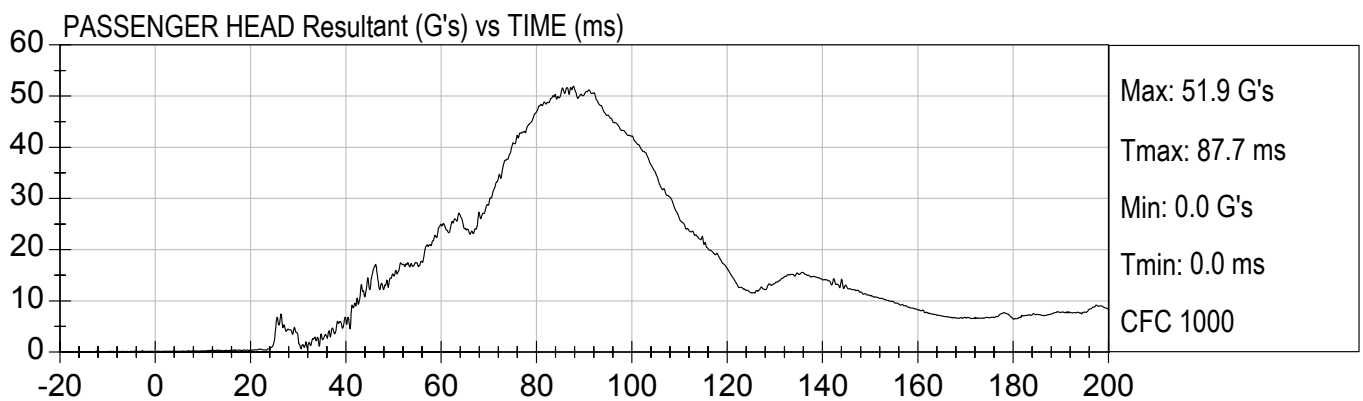
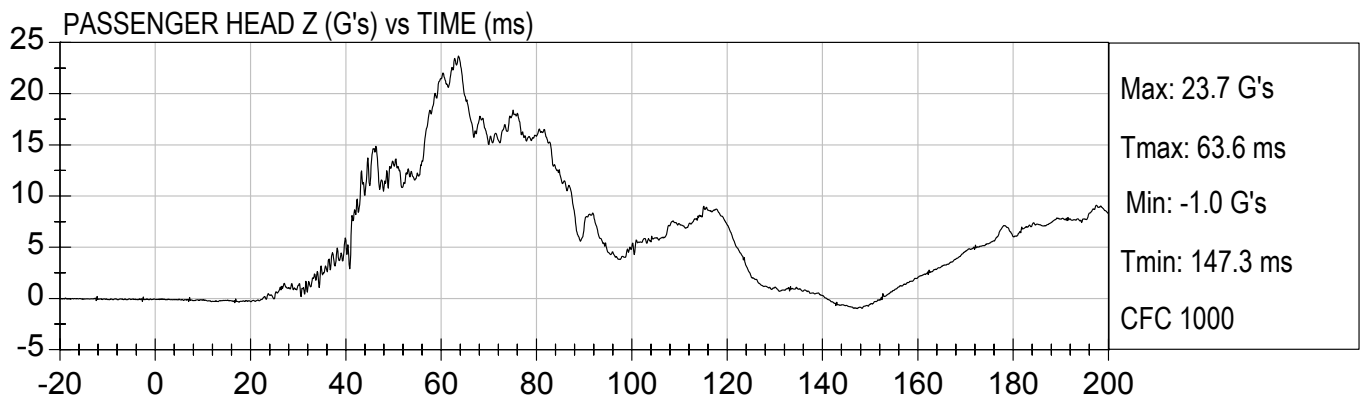
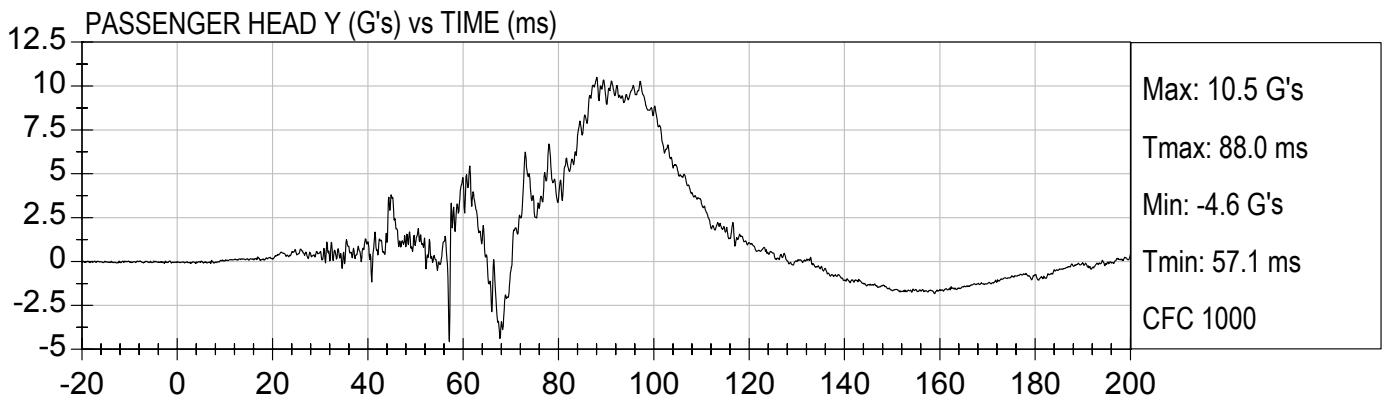
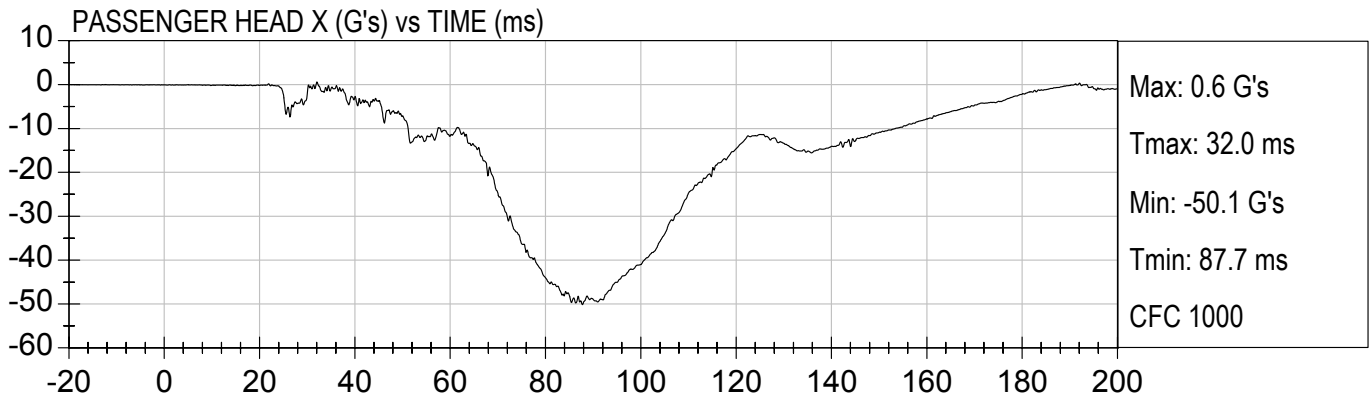


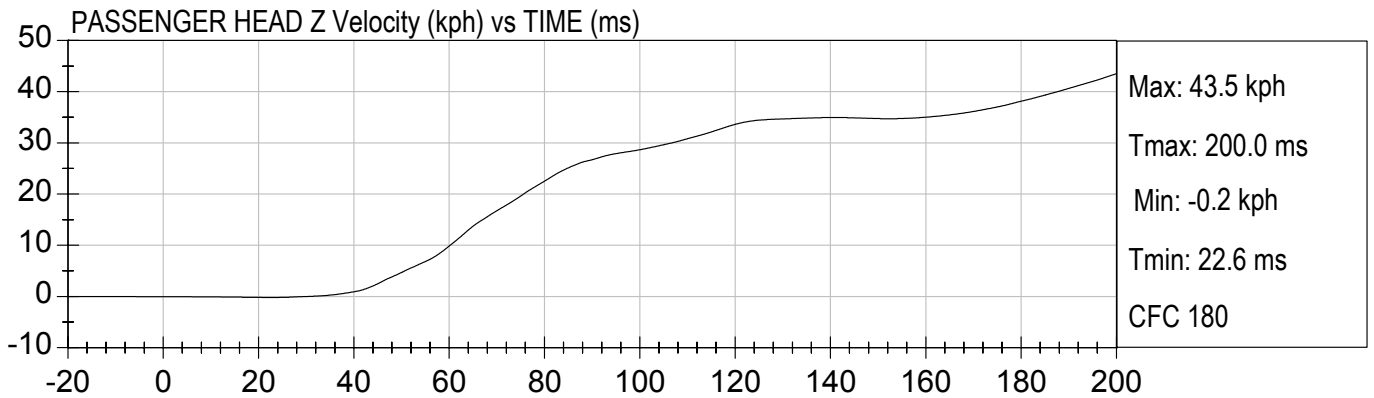
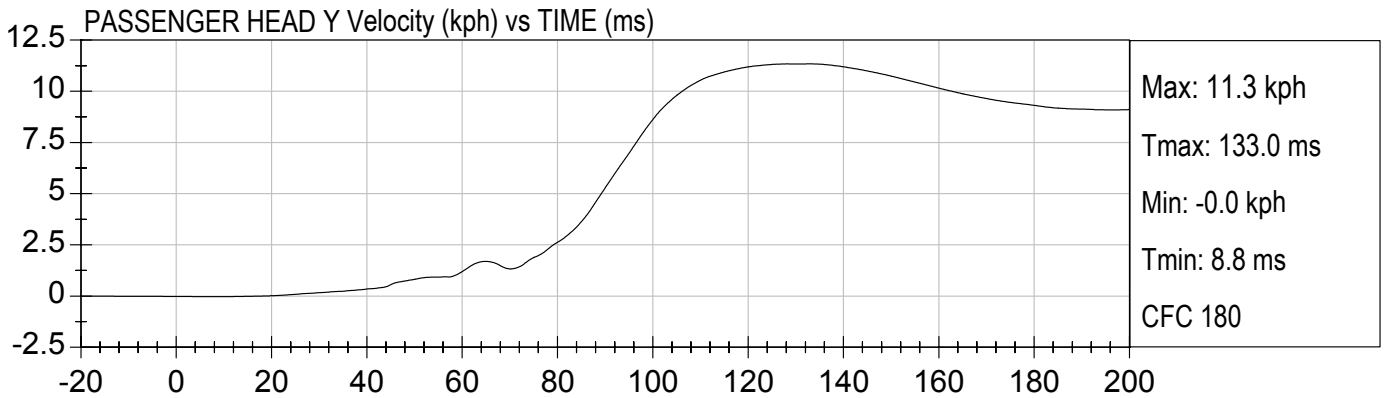
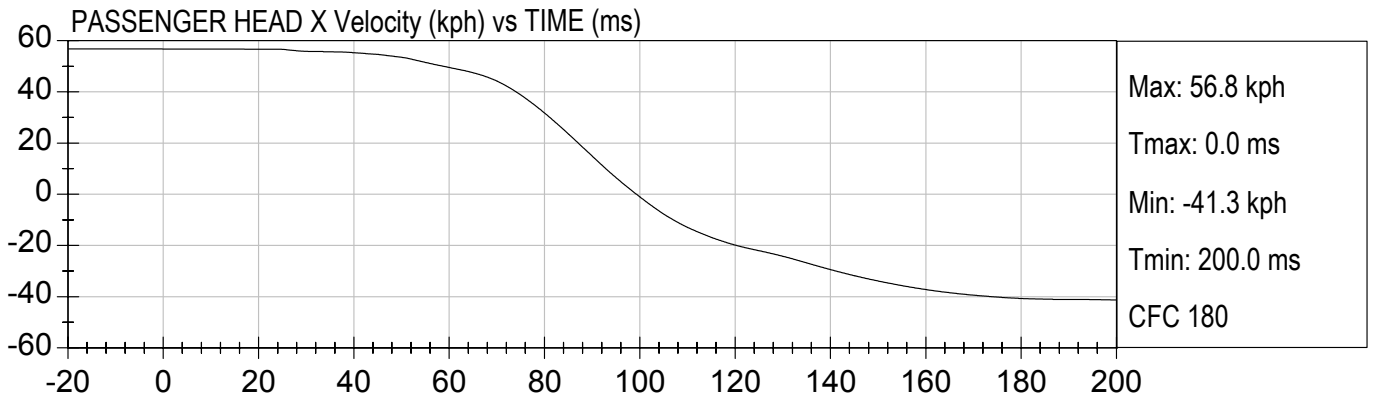
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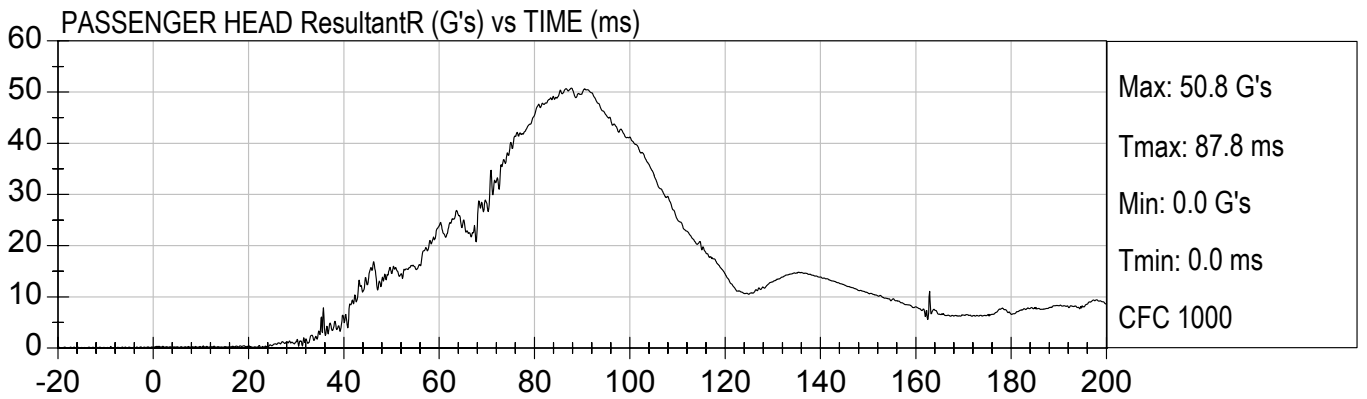
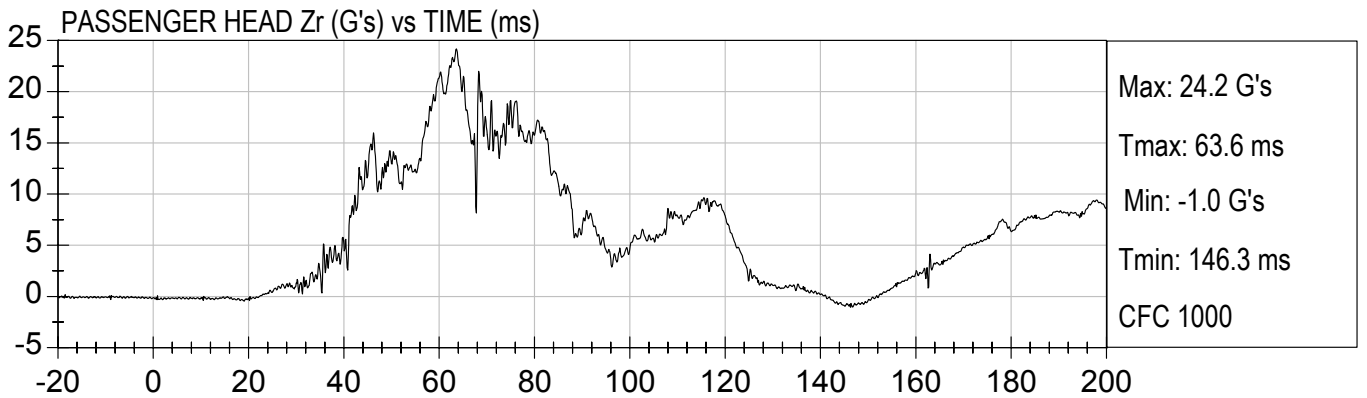
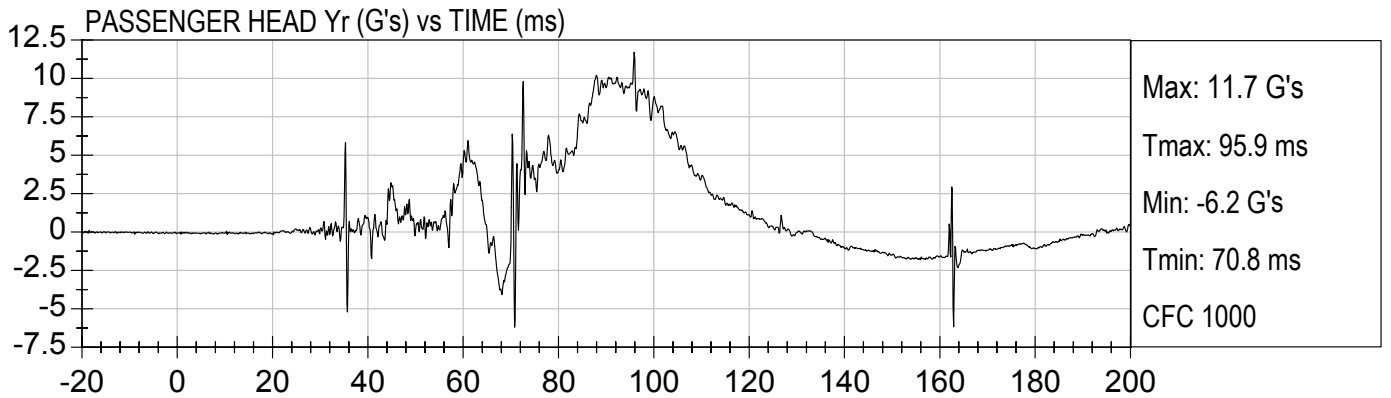
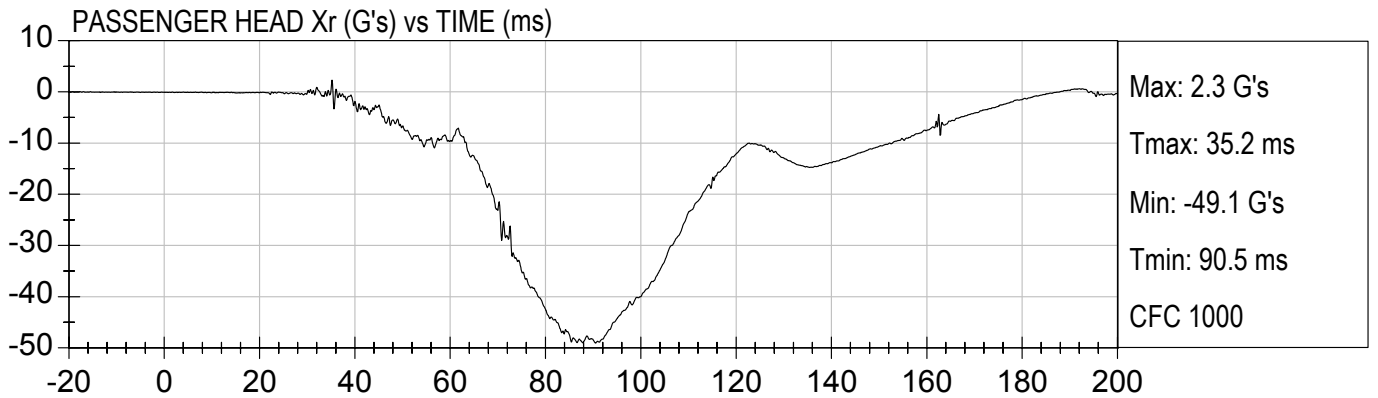


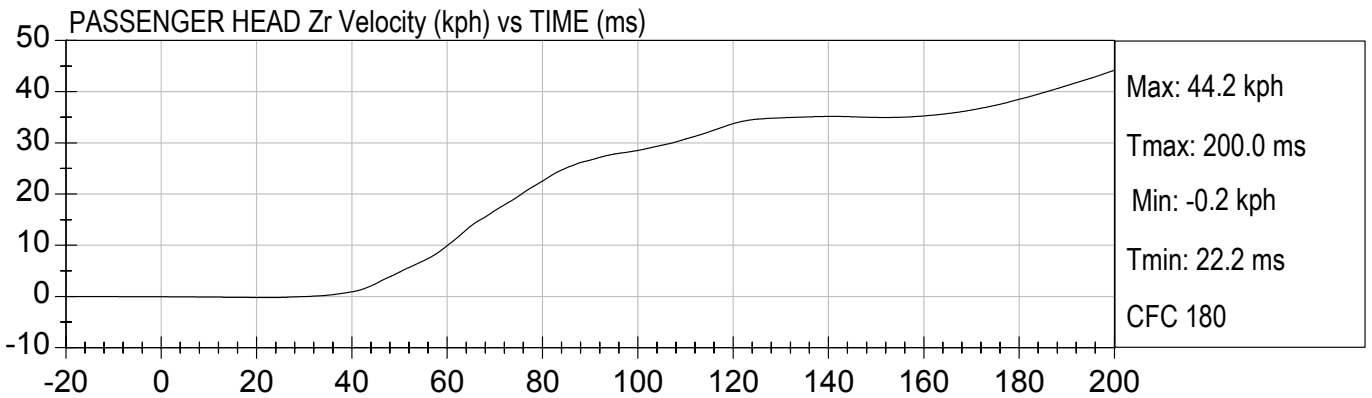
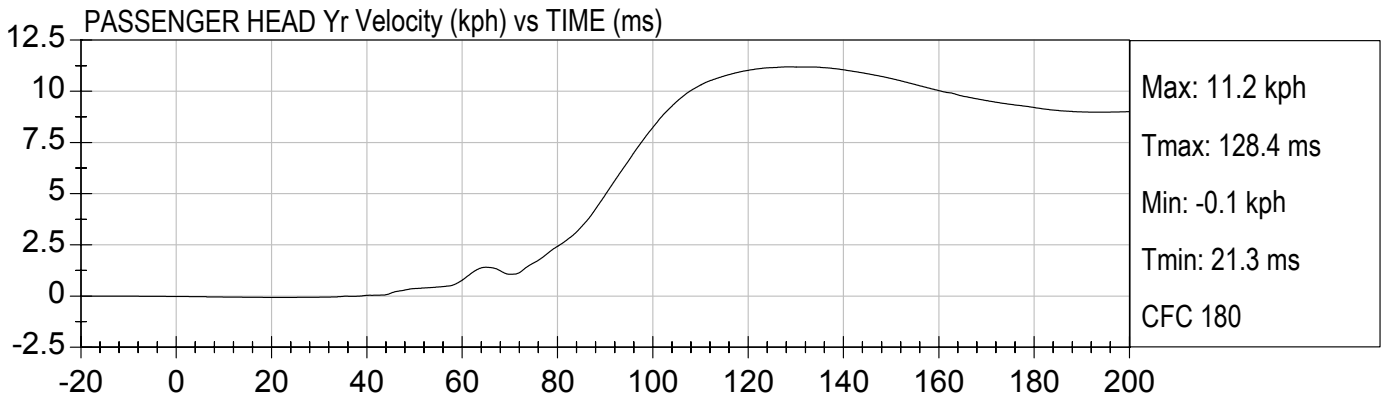
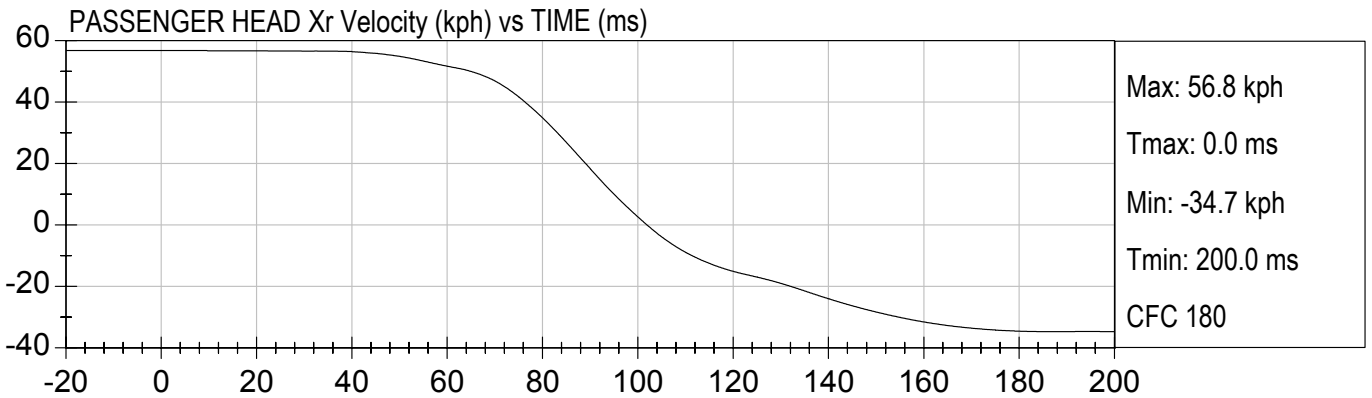








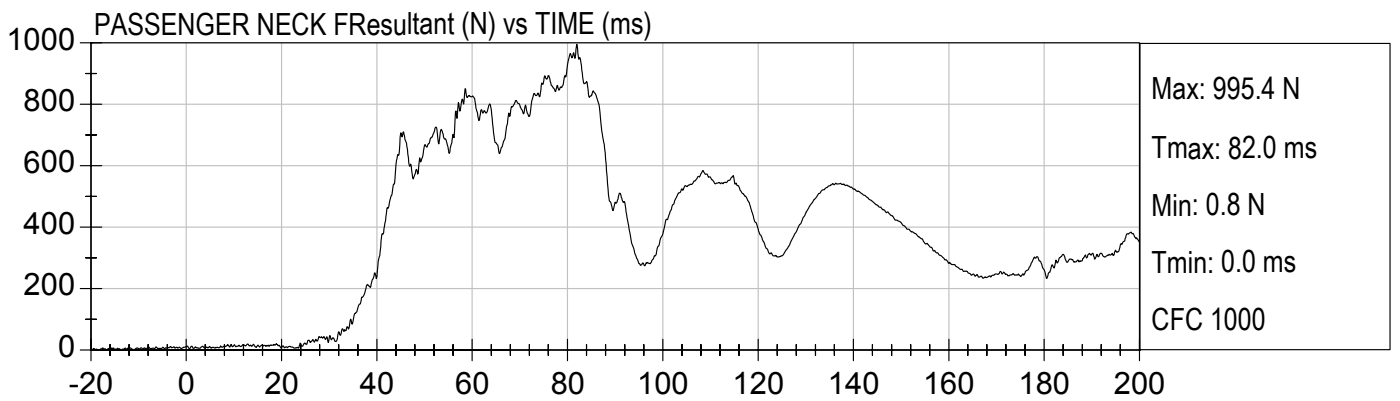
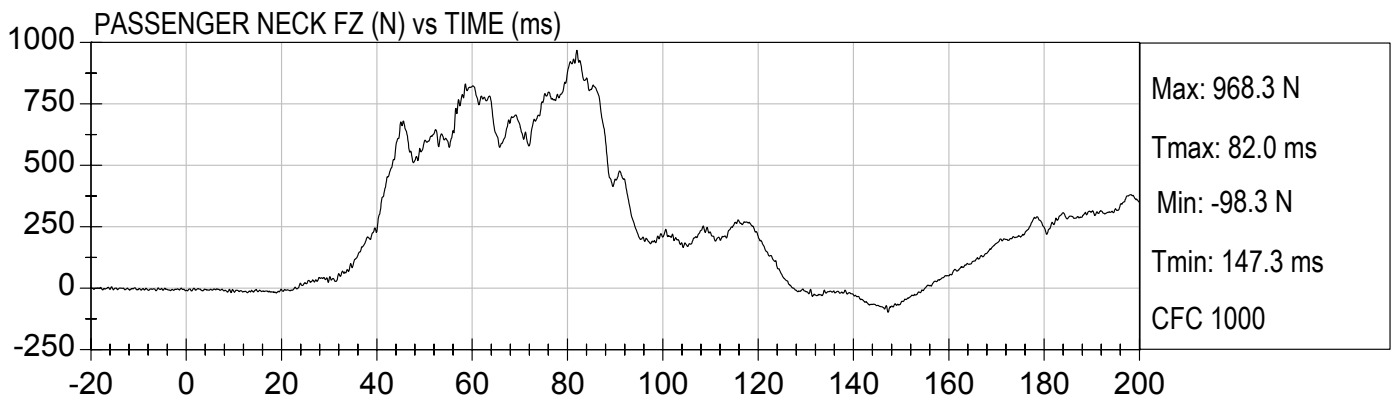
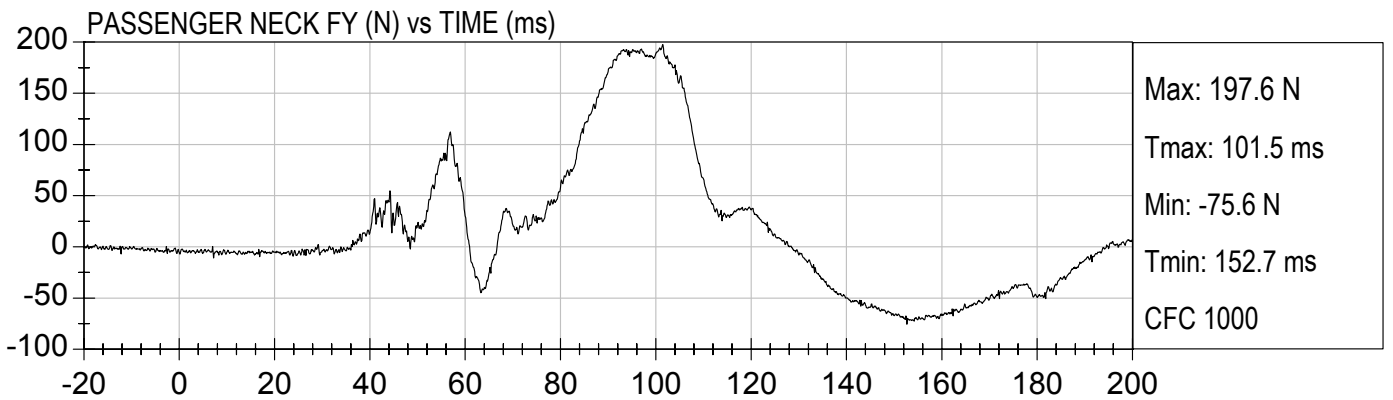
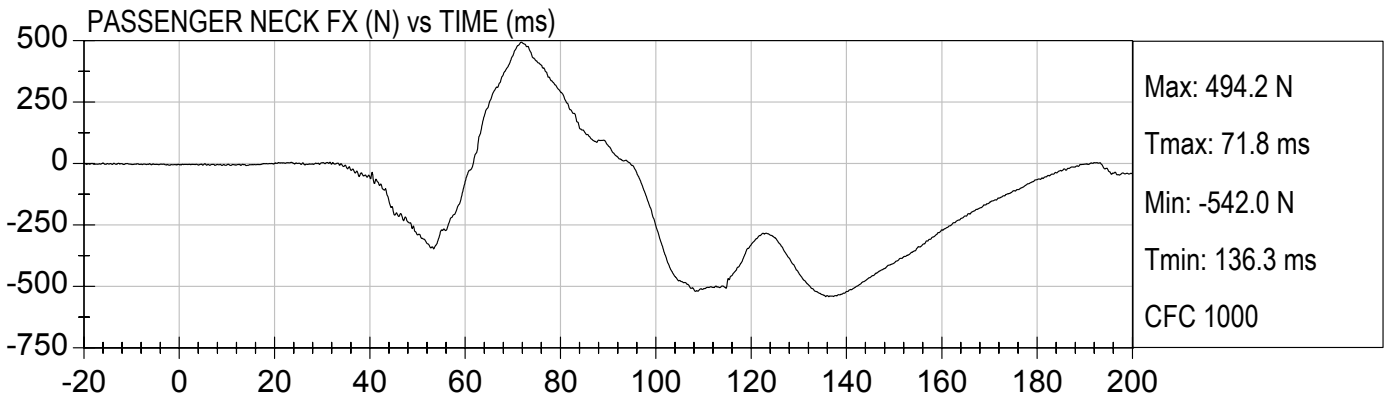


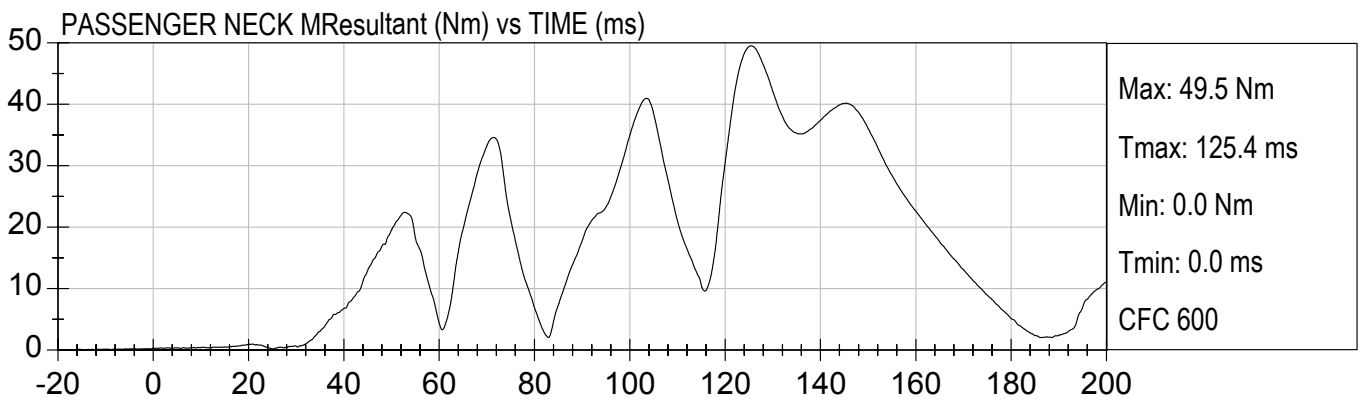
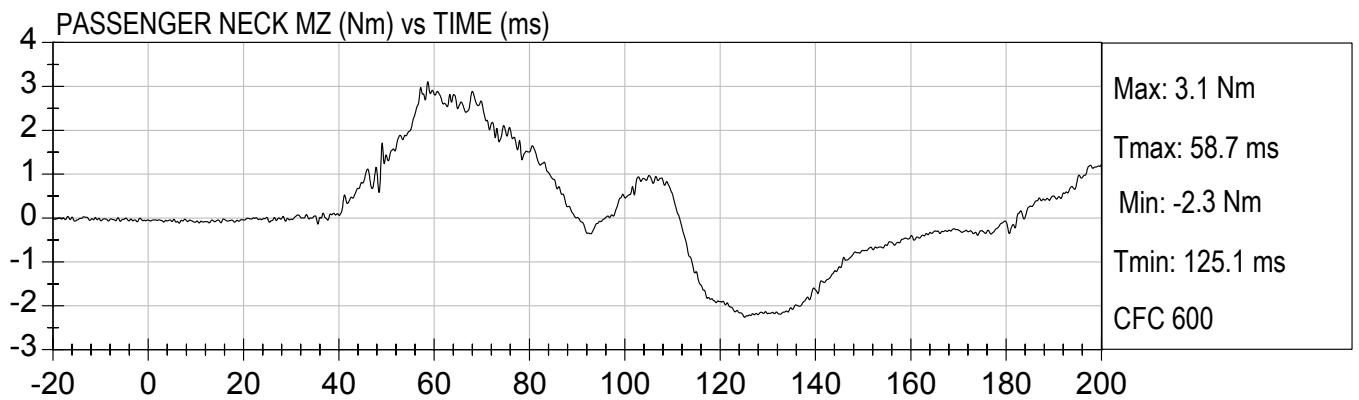
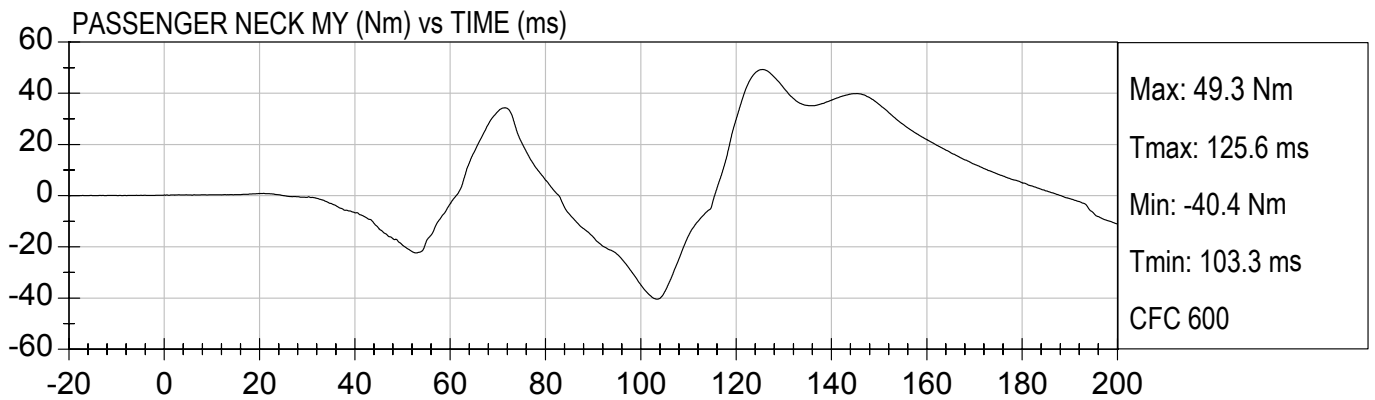
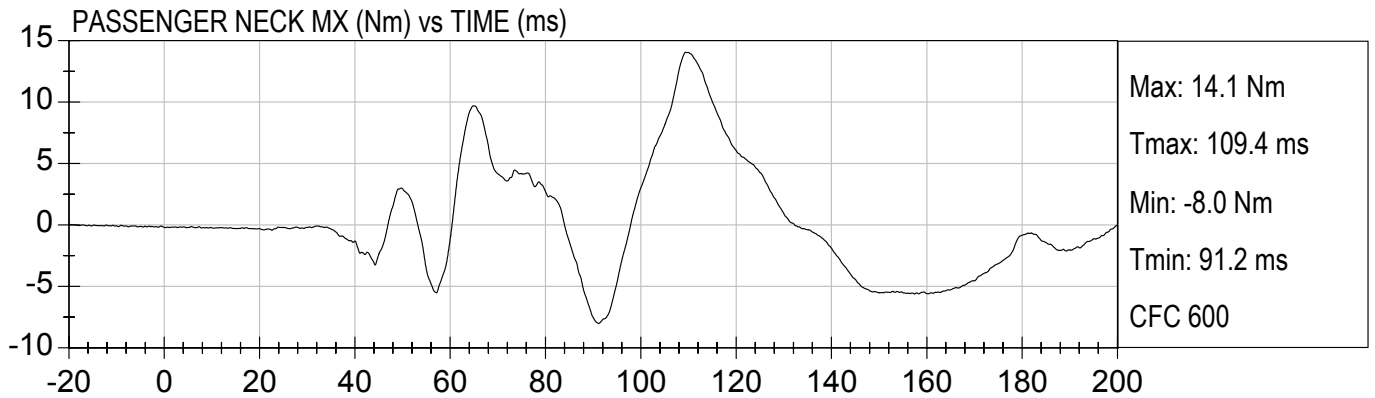


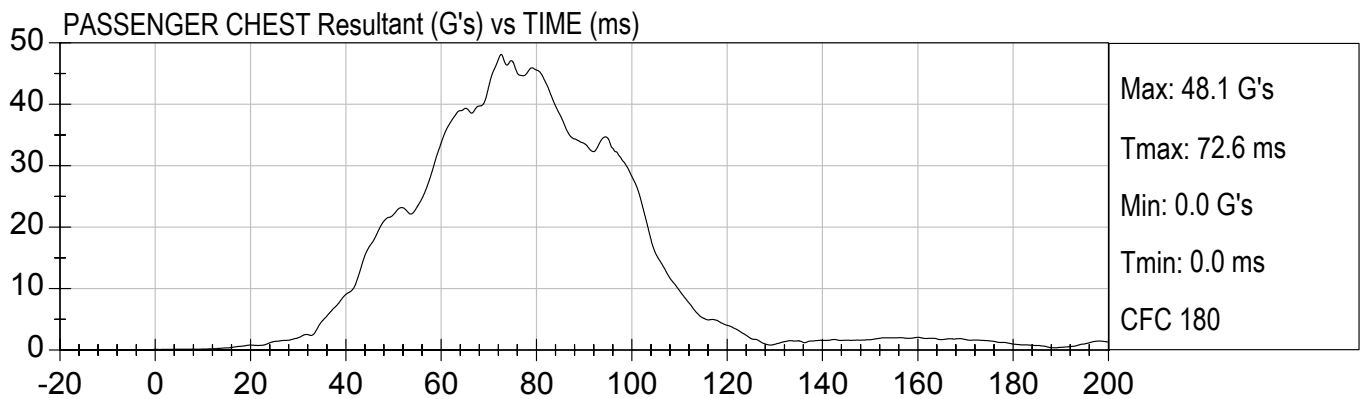
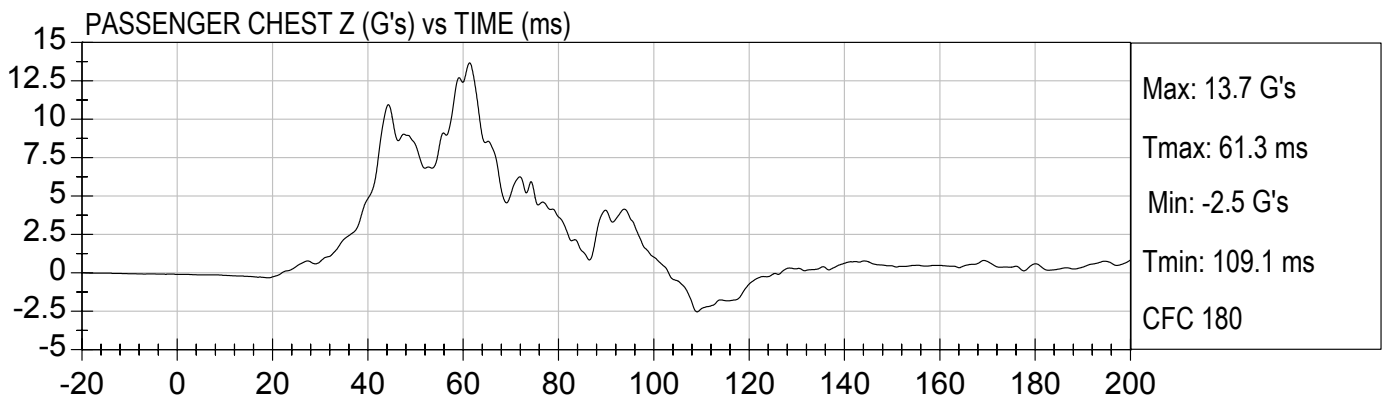
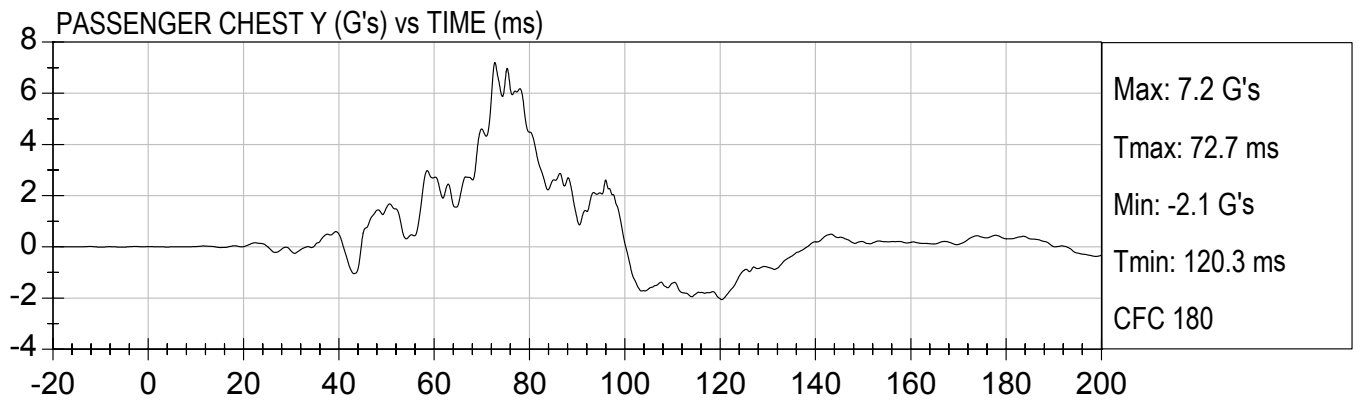
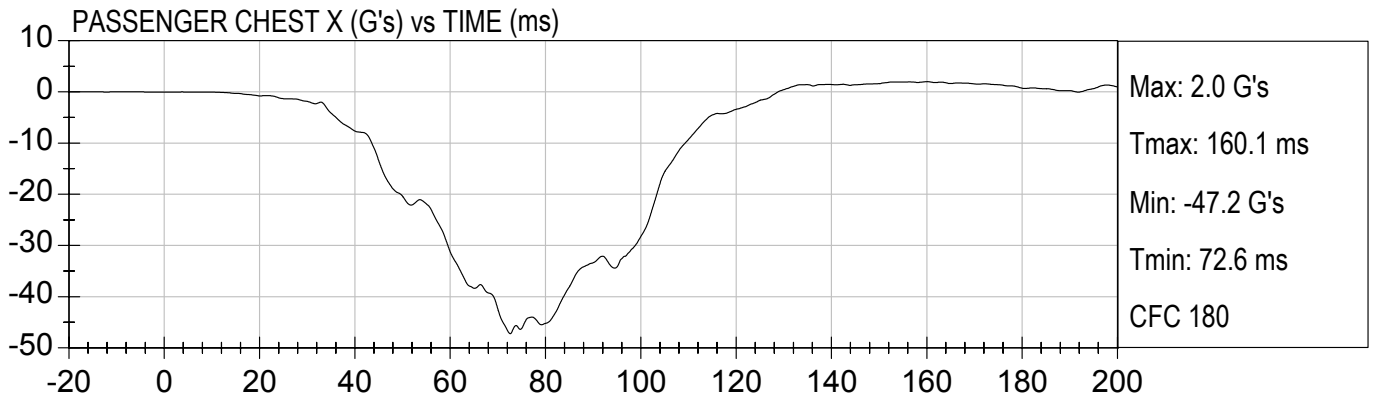


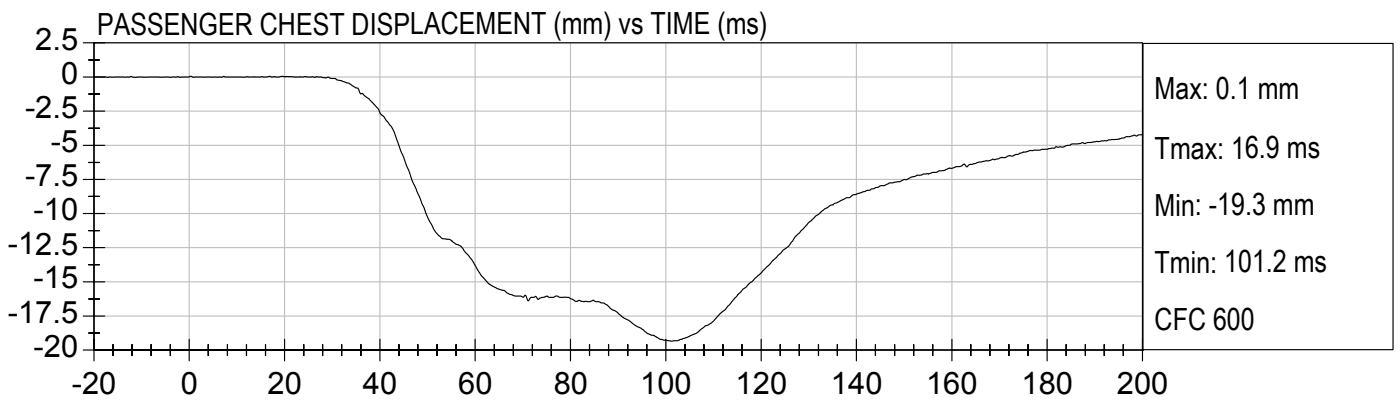
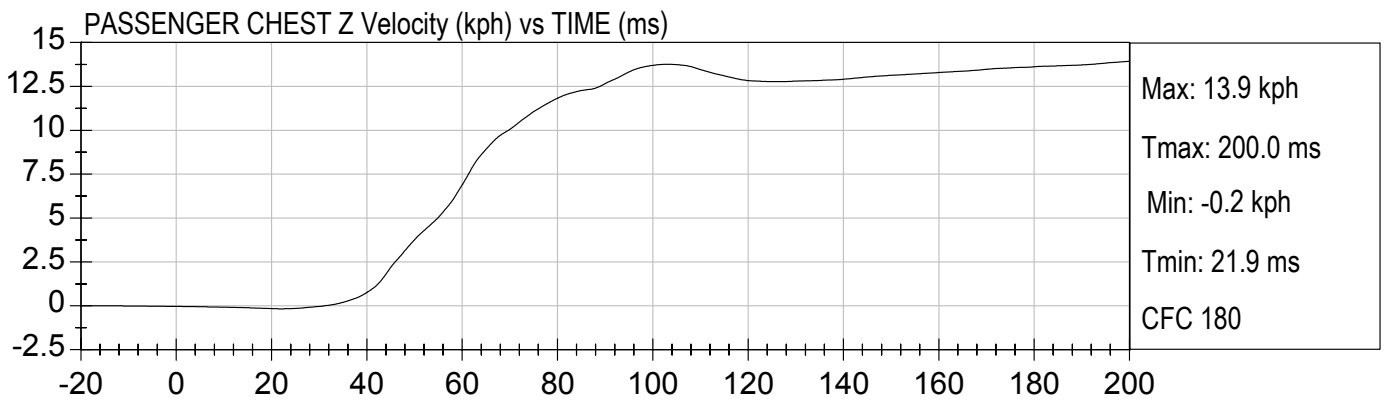
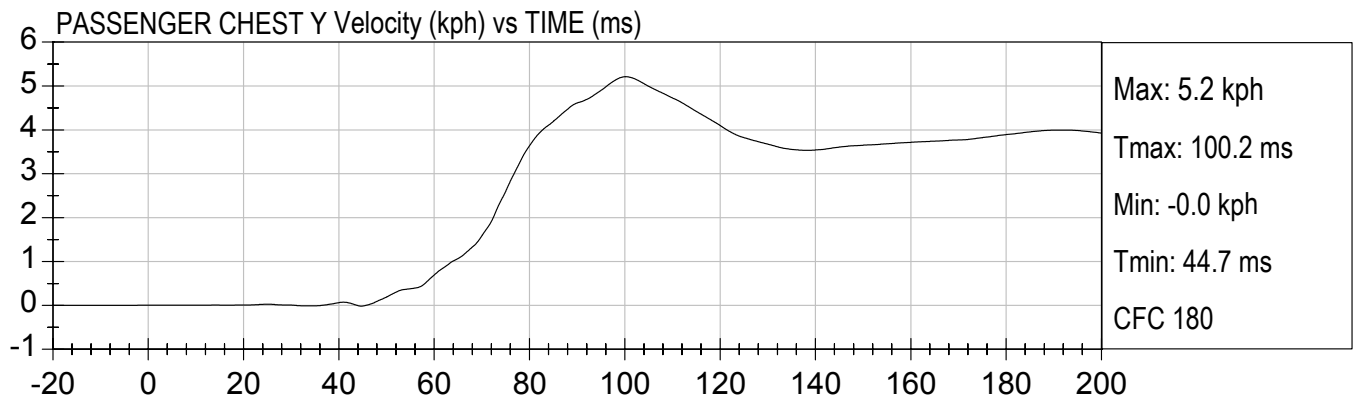
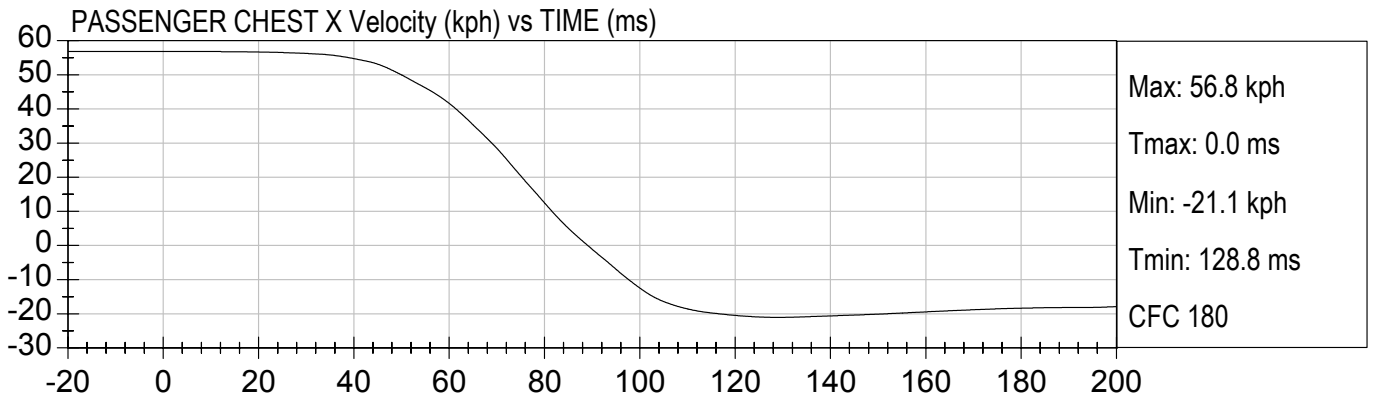
35MPH FRONTAL IMPACT
2004 DODGE INTREPID SE

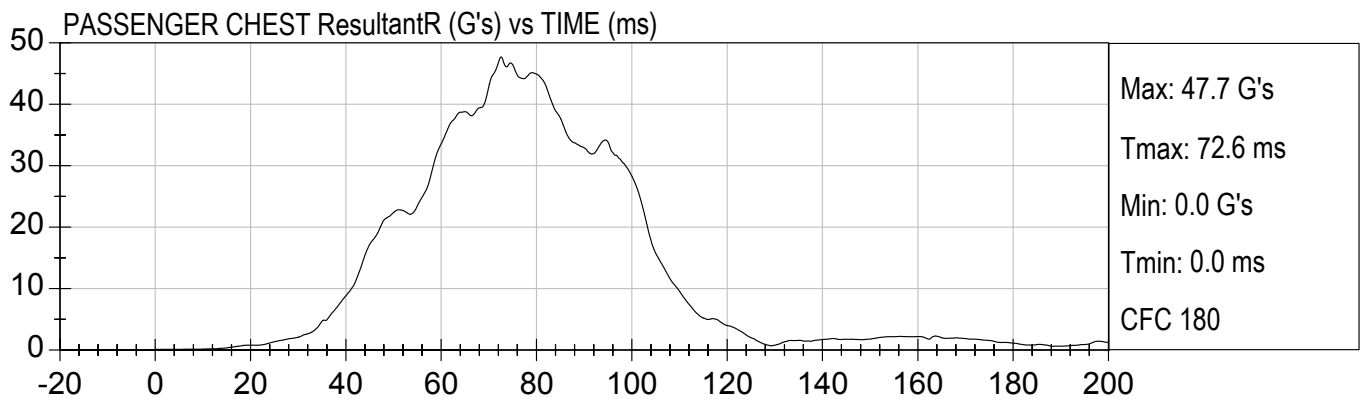
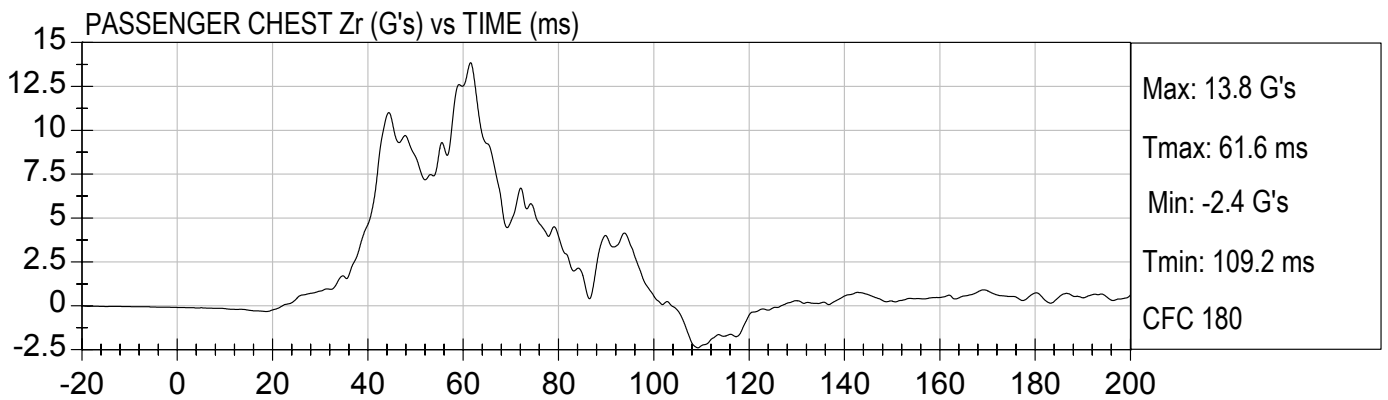
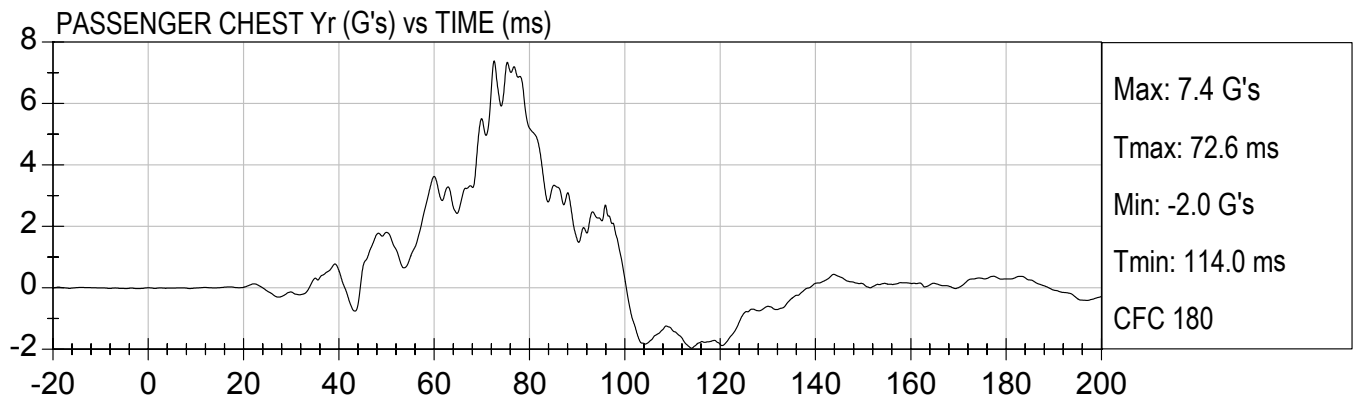
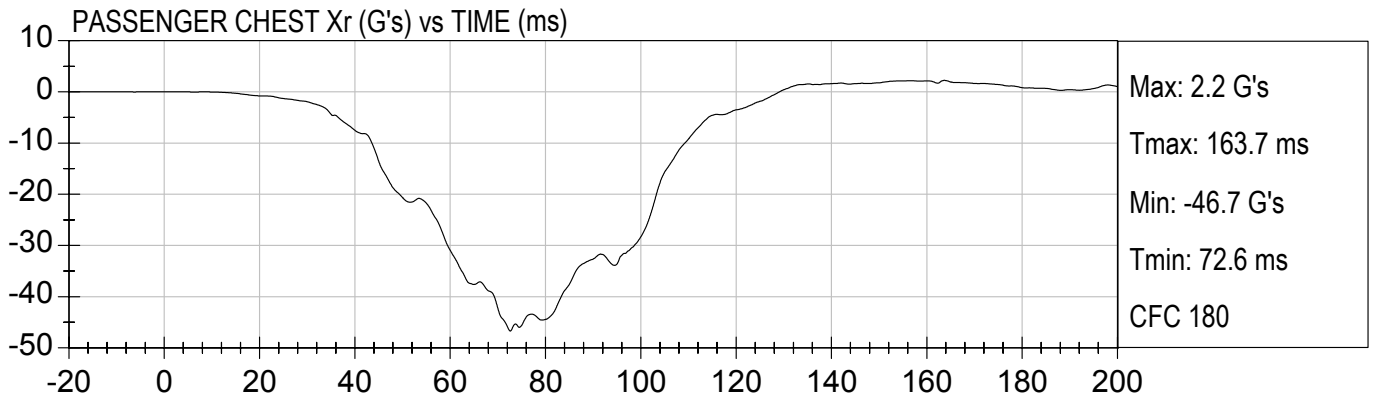
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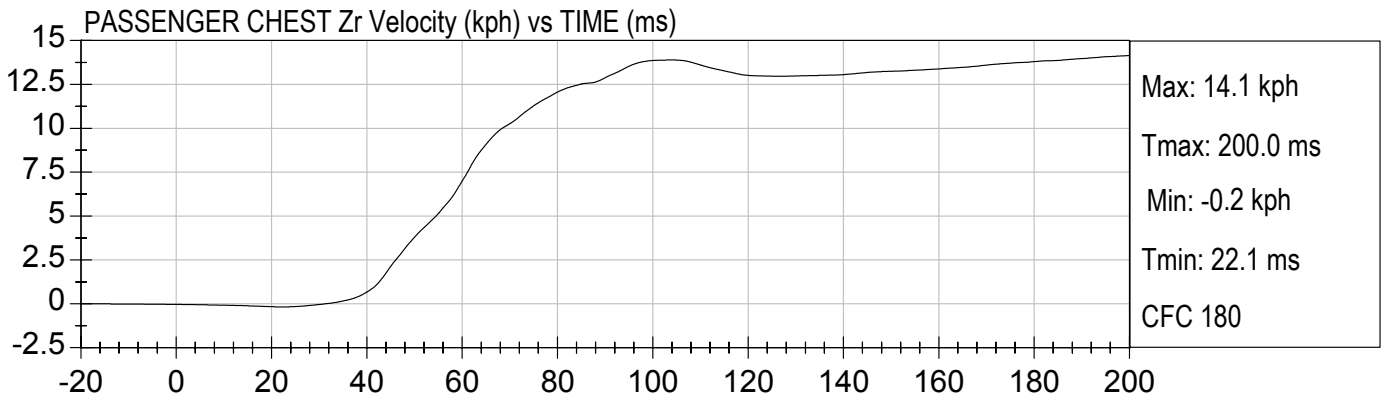
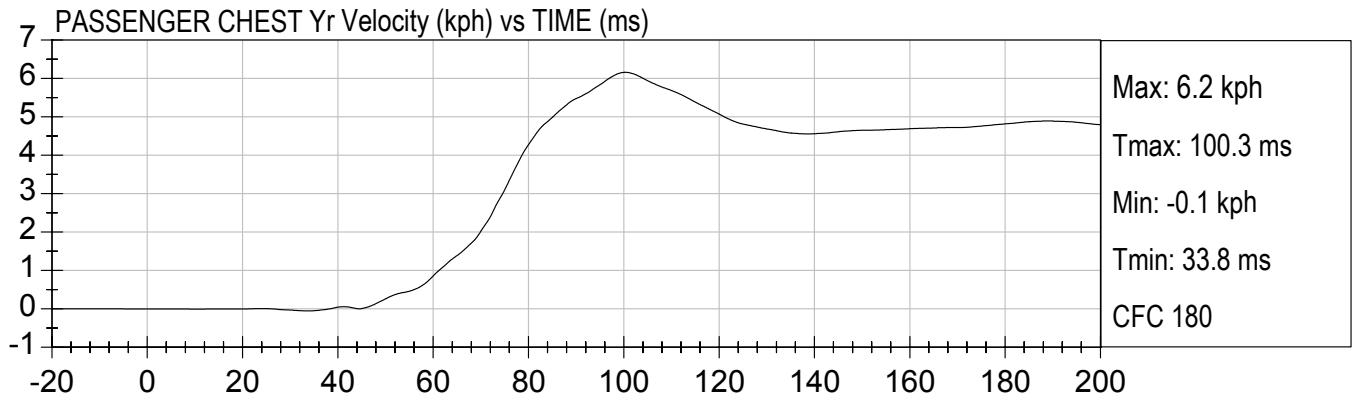
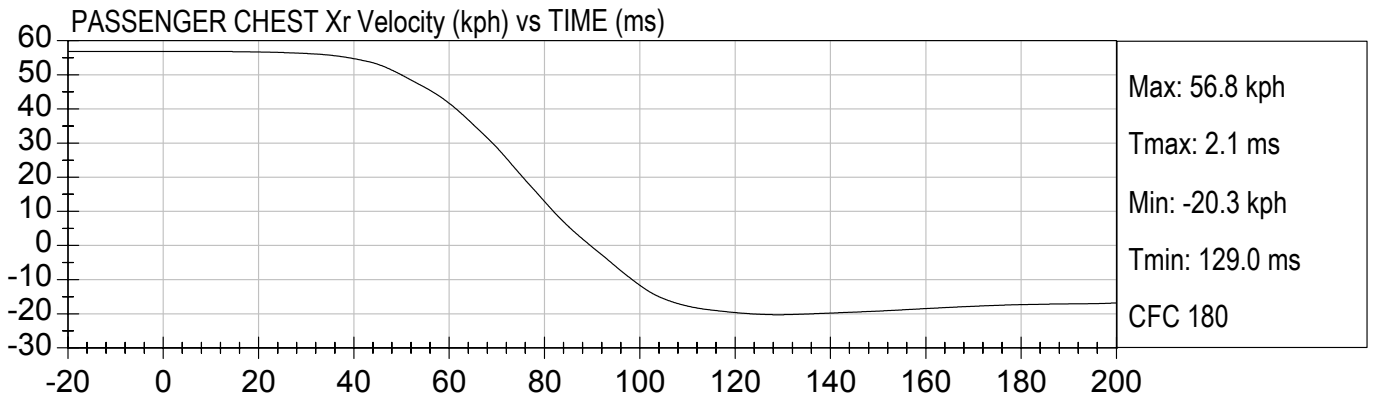


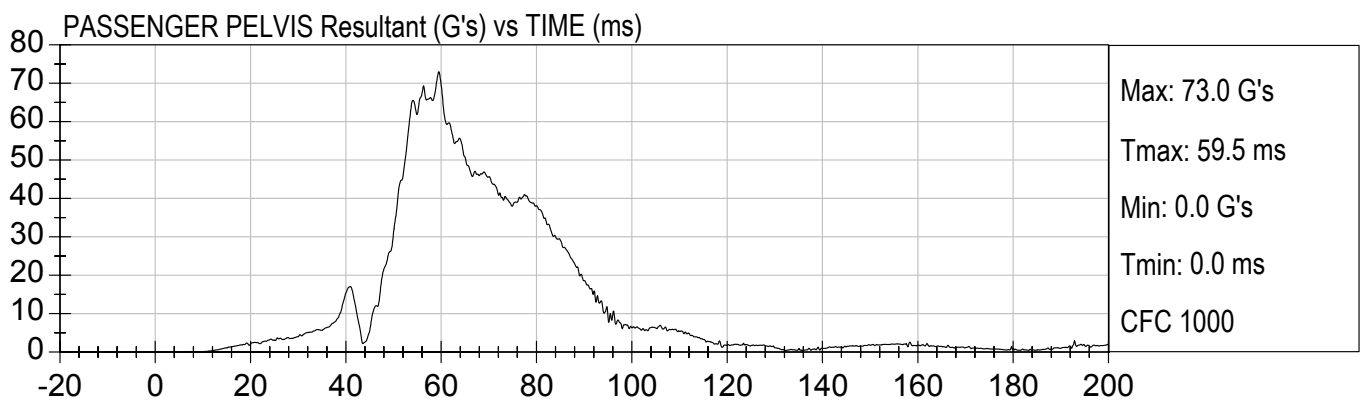
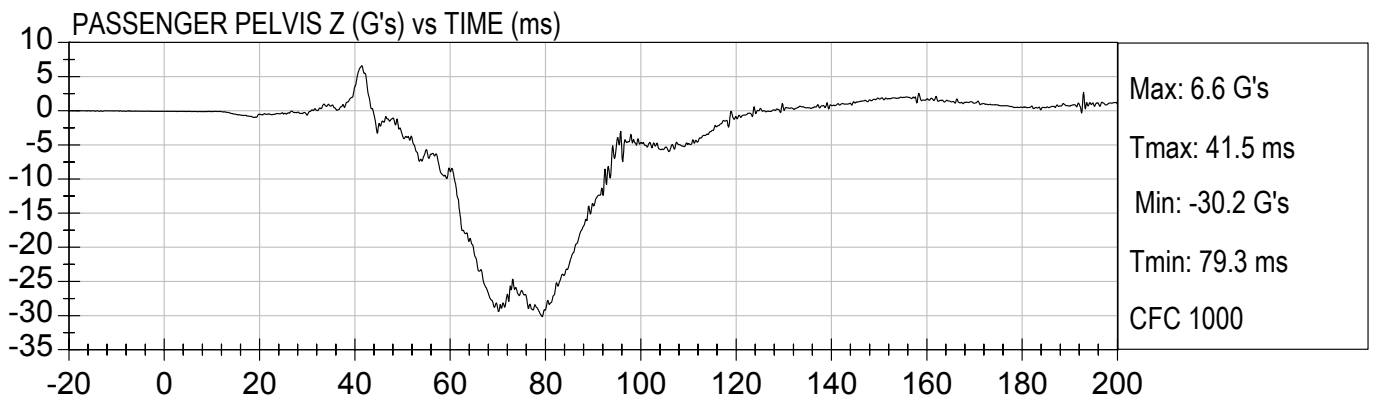
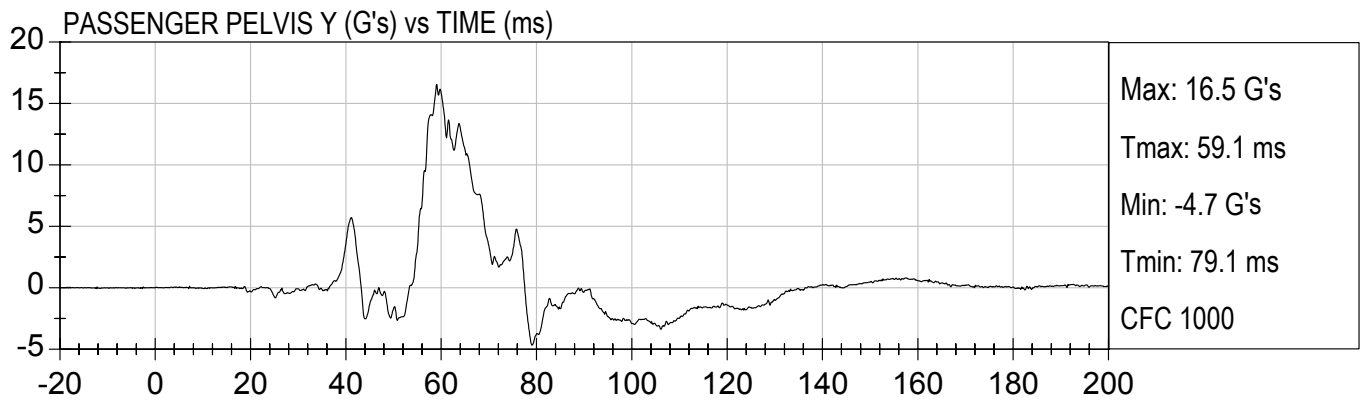
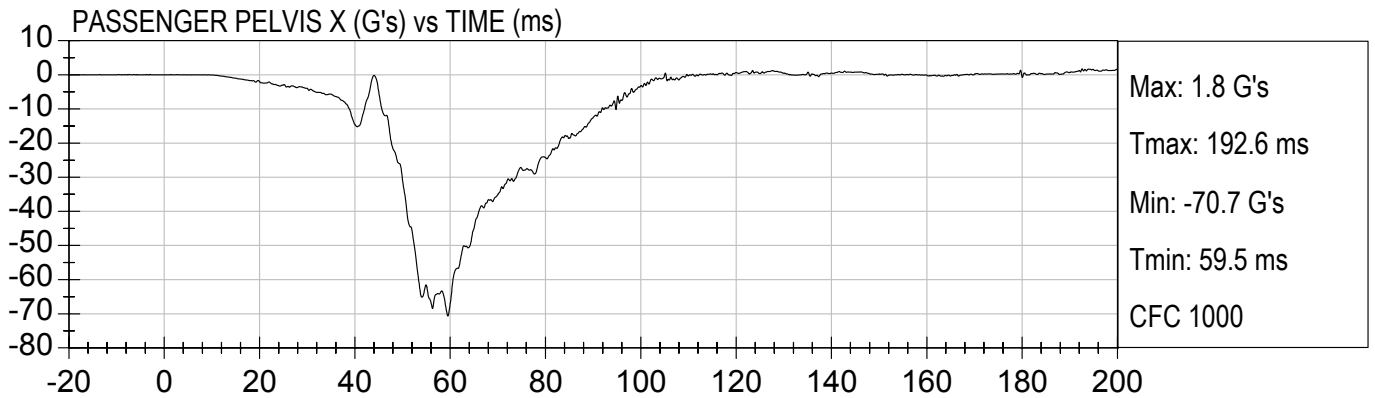


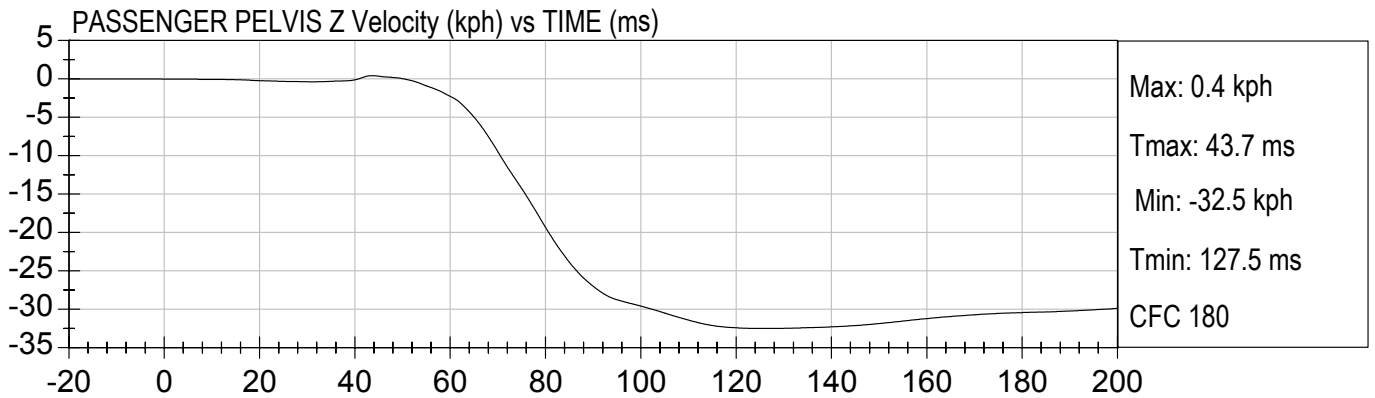
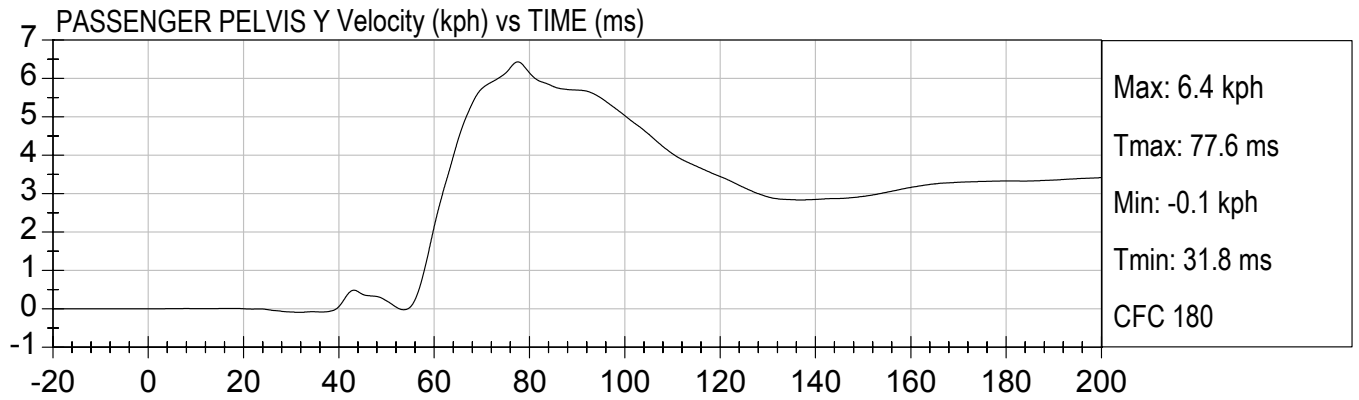
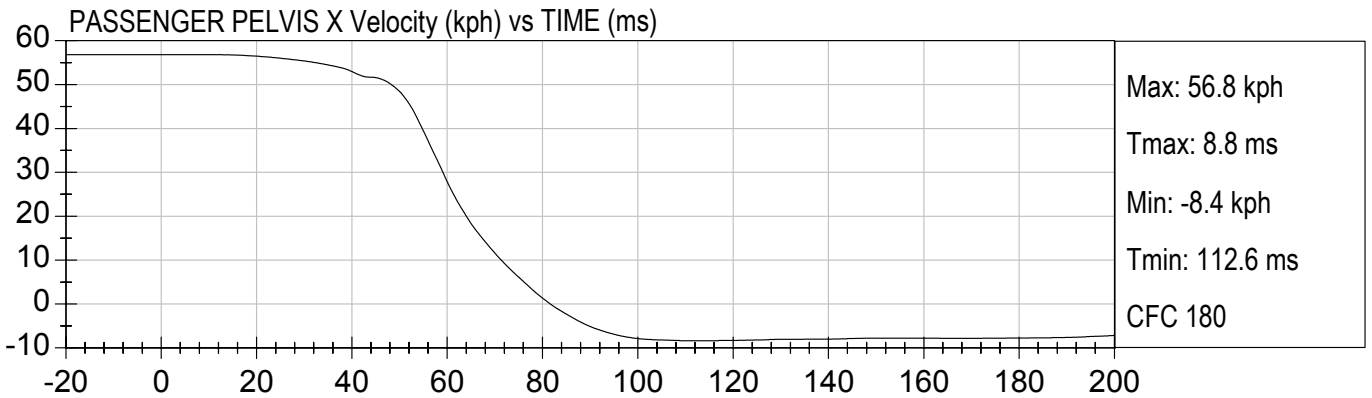


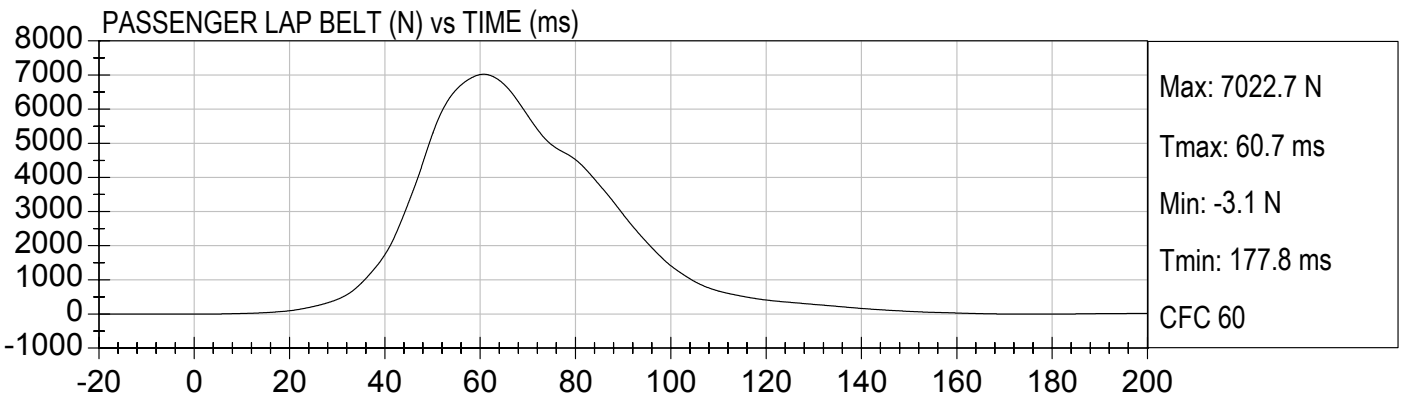
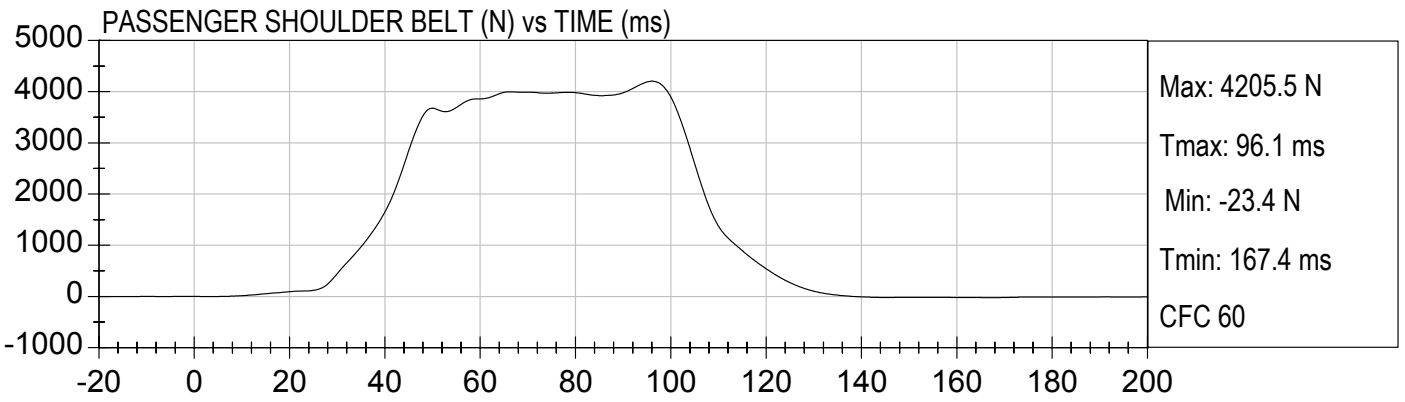
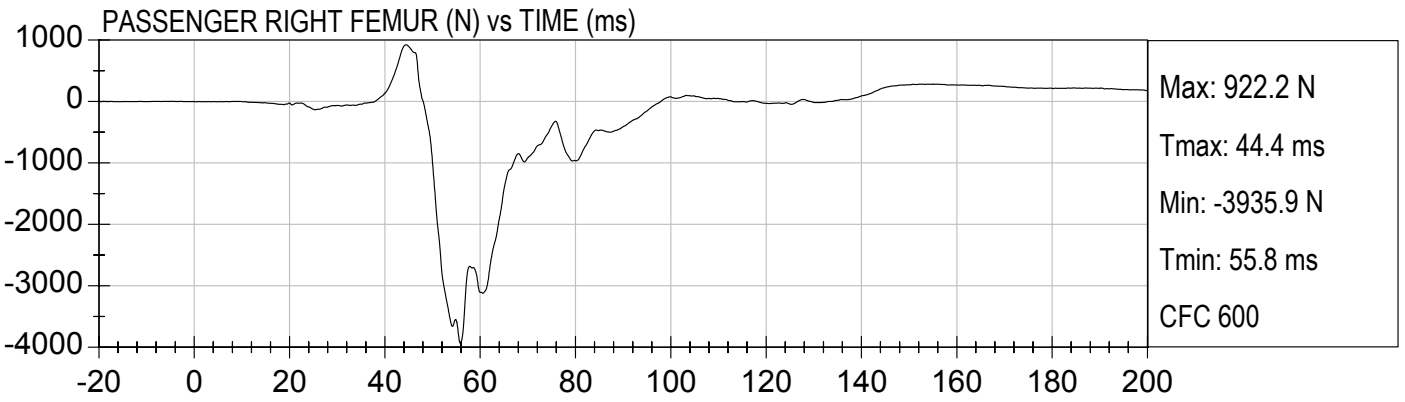
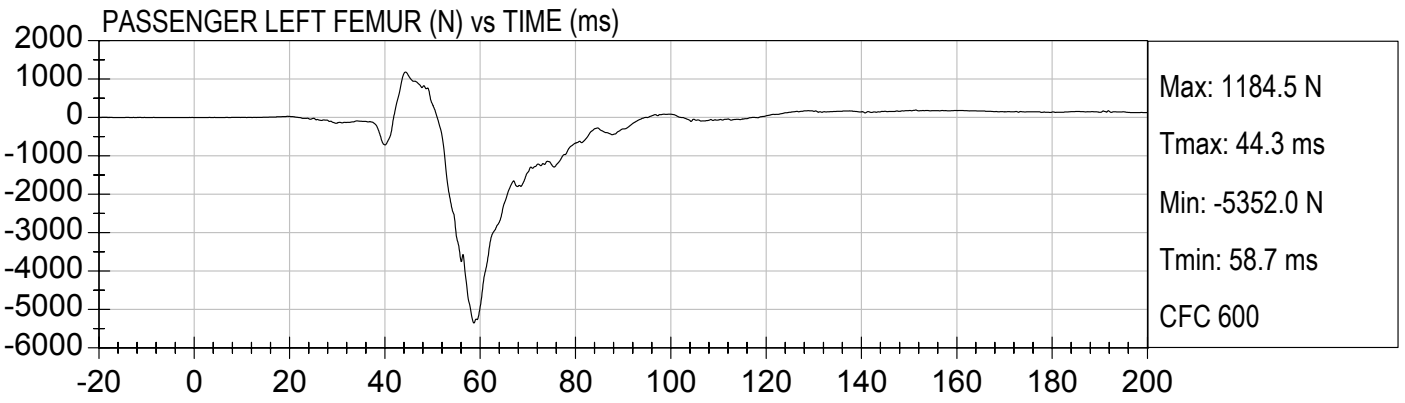


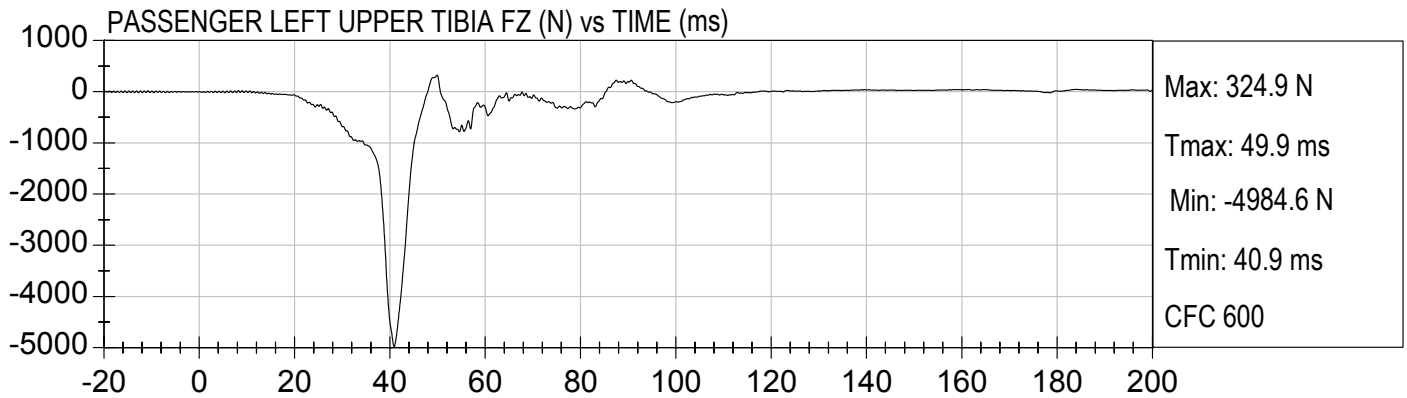
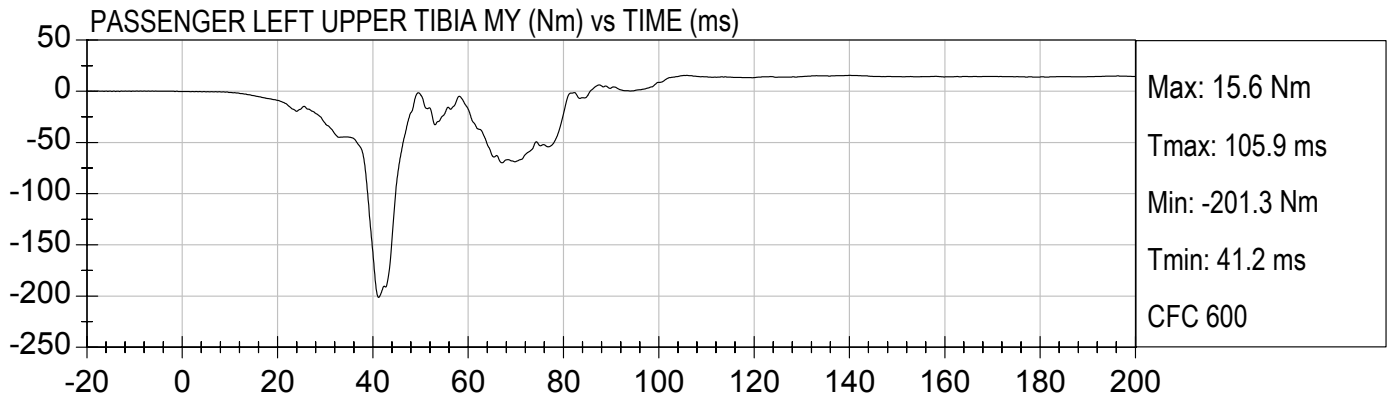
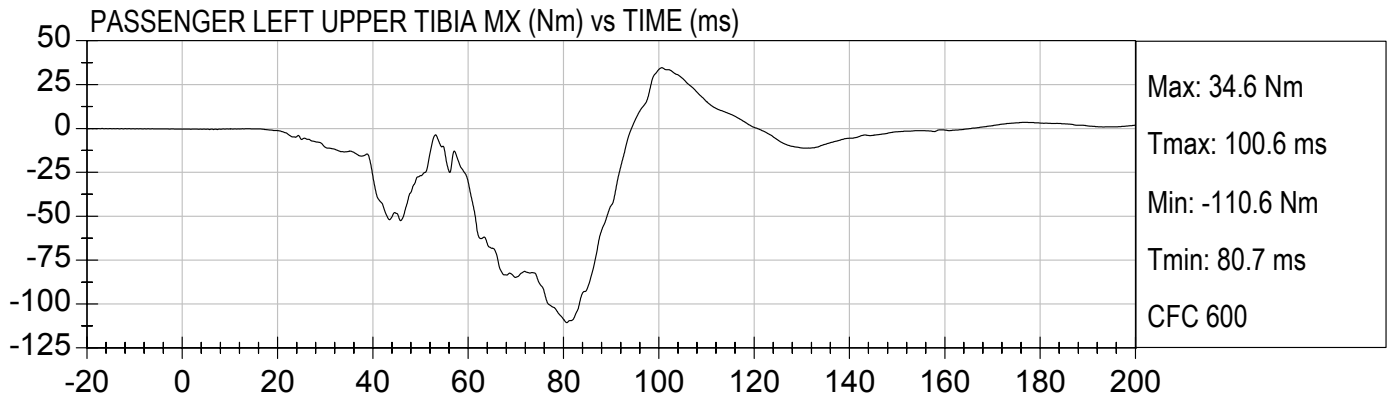


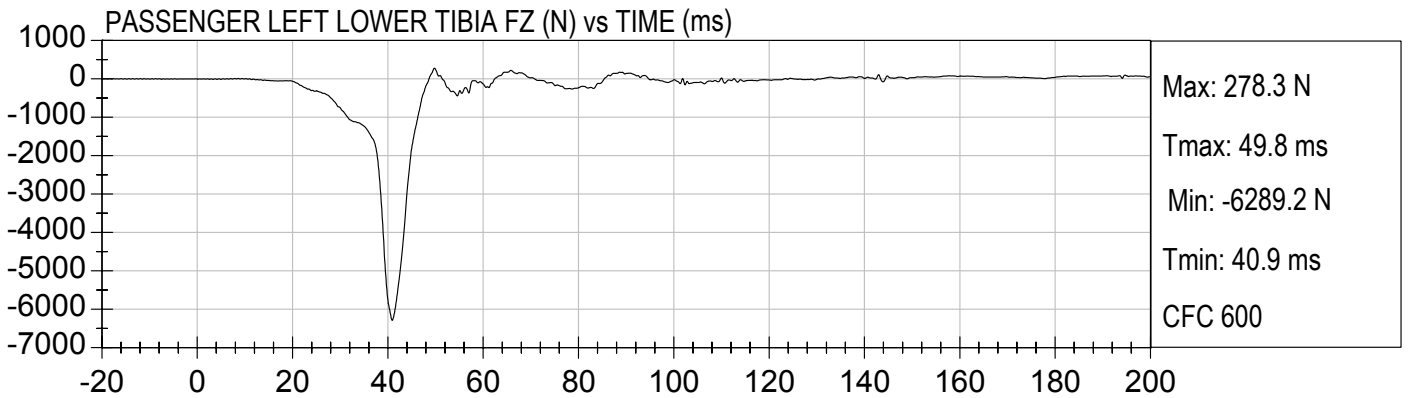
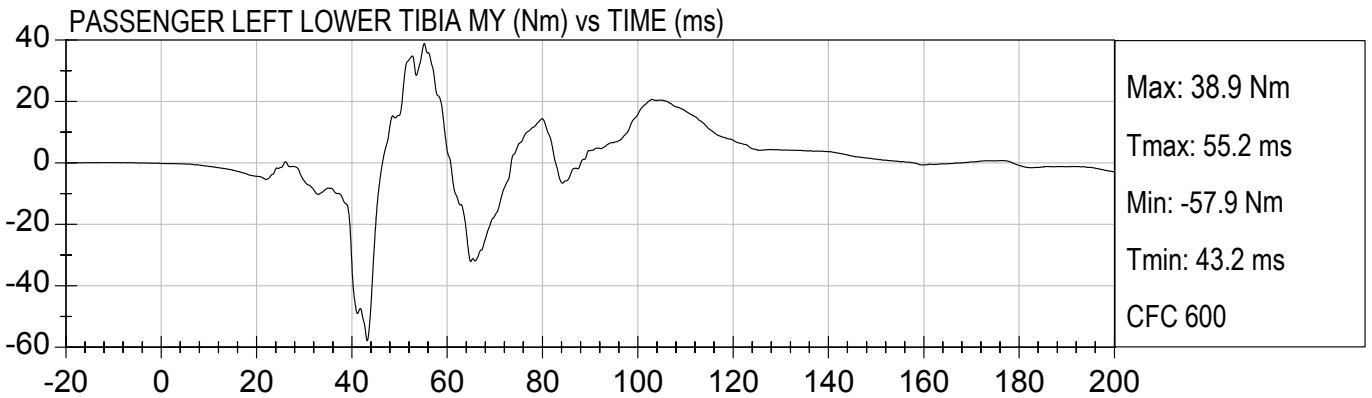
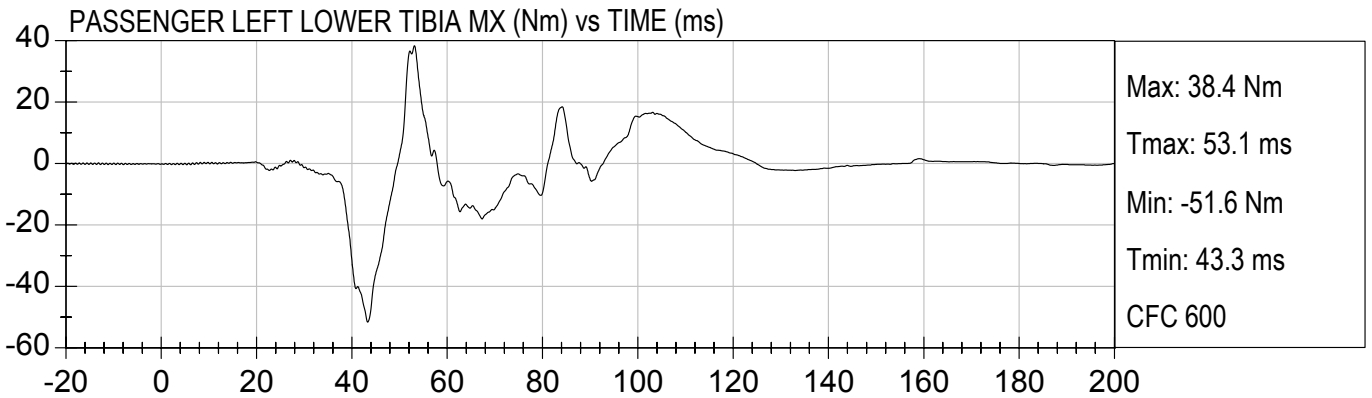


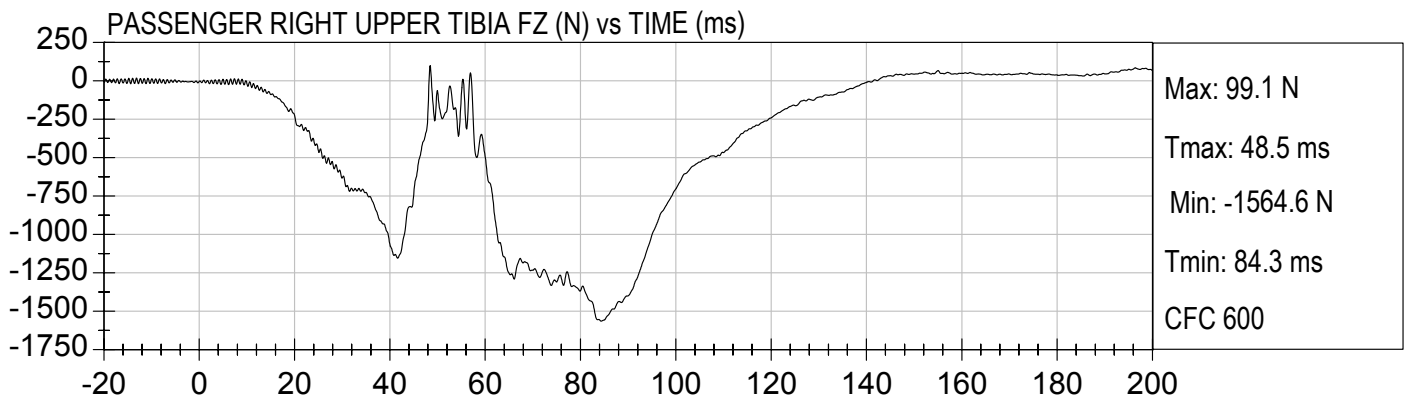
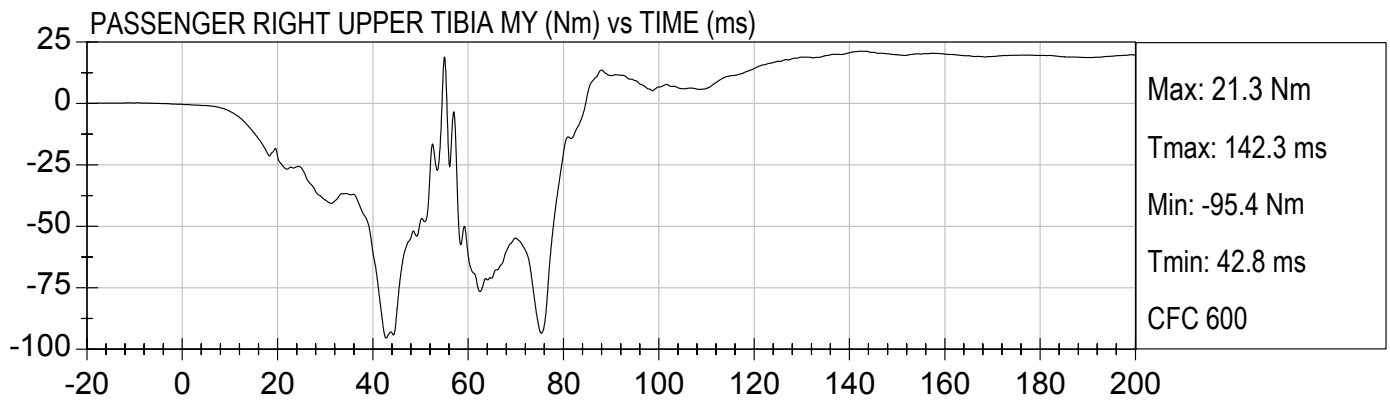
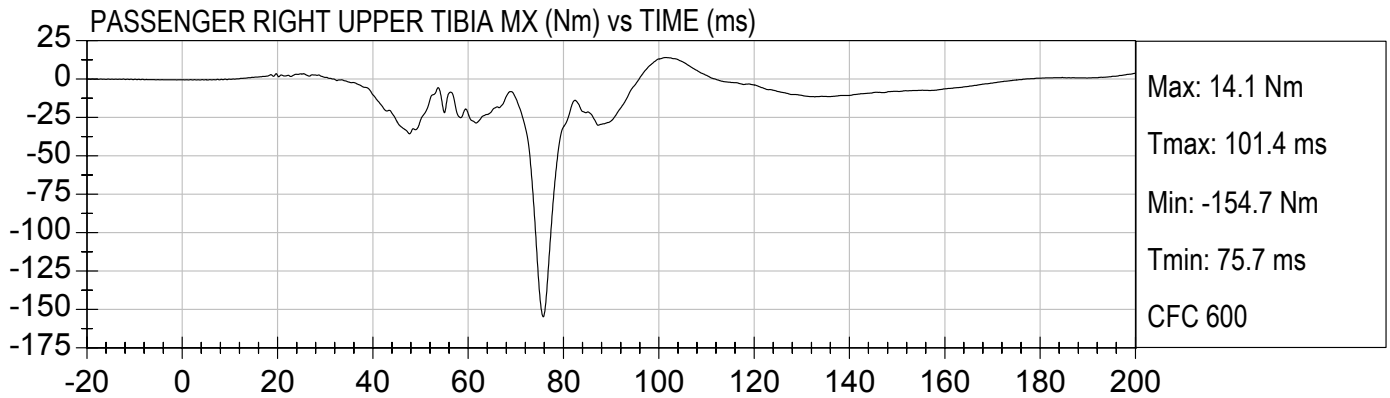






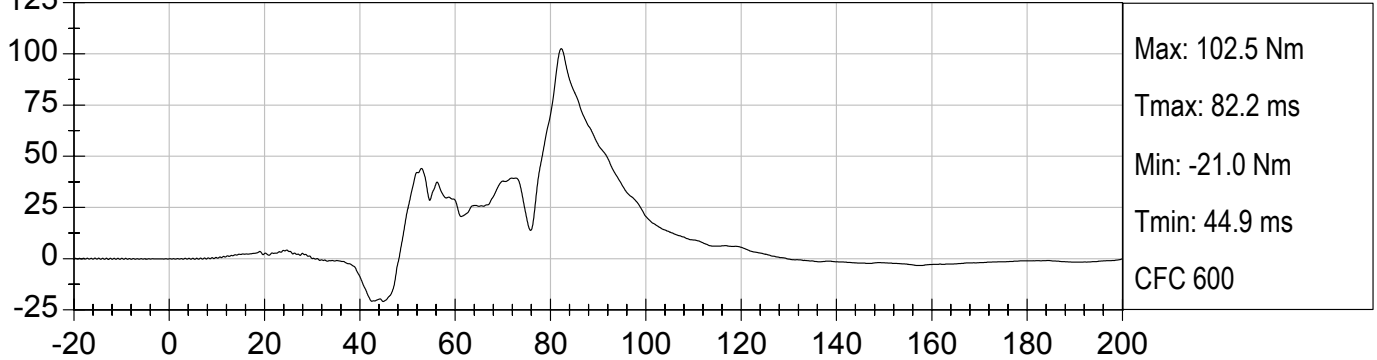




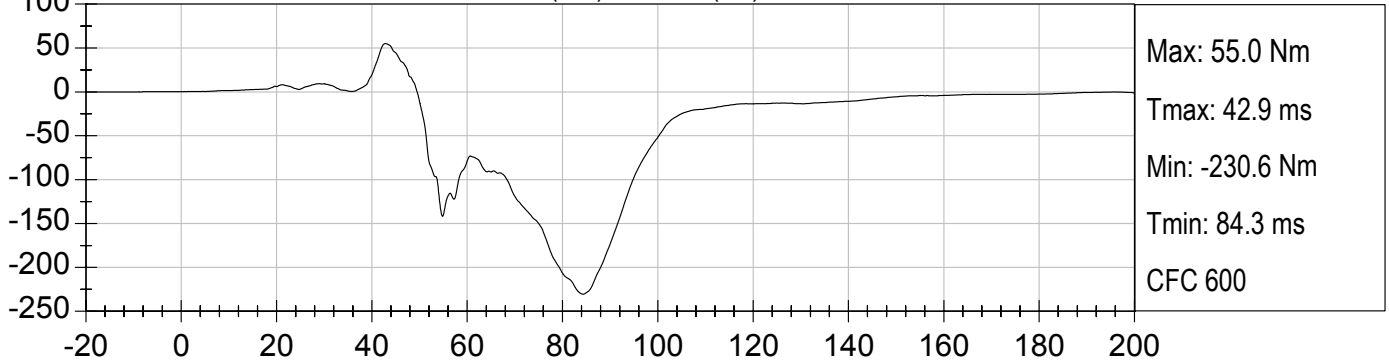




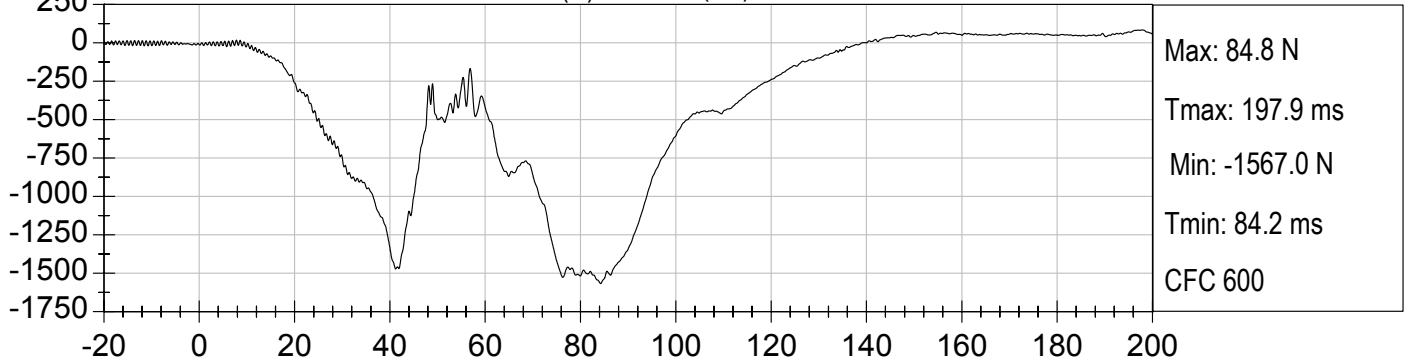
PASSENGER RIGHT LOWER TIBIA MX (Nm) vs TIME (ms)

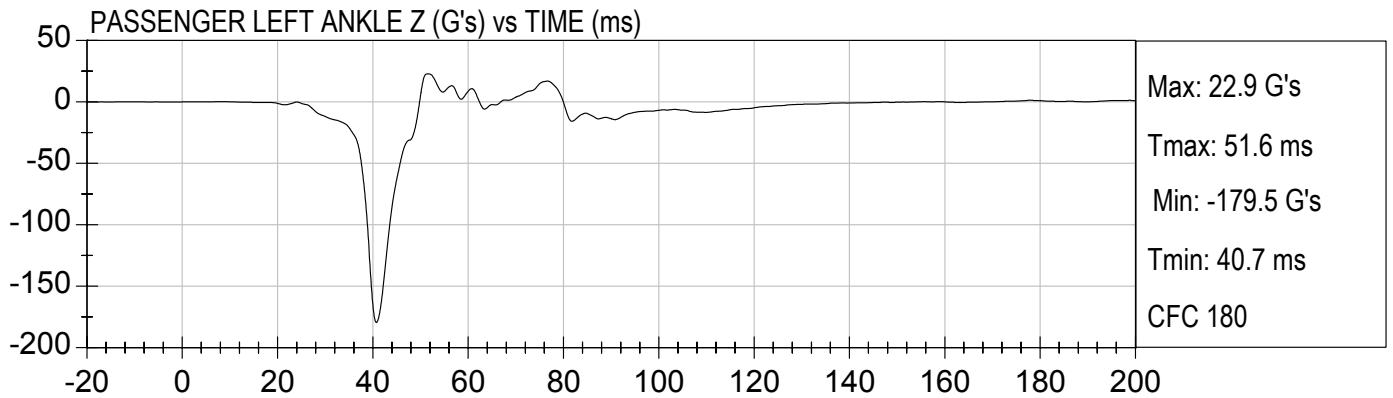
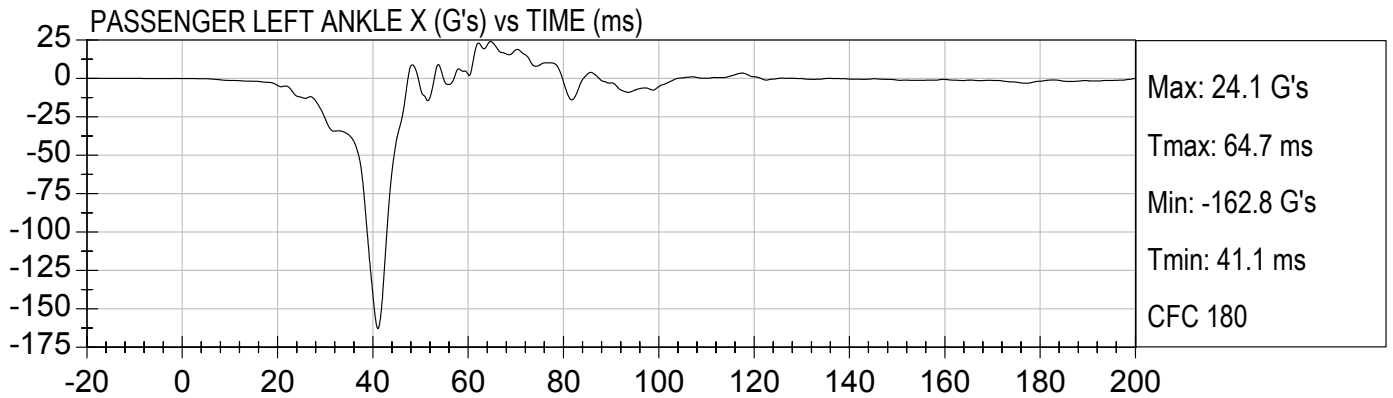
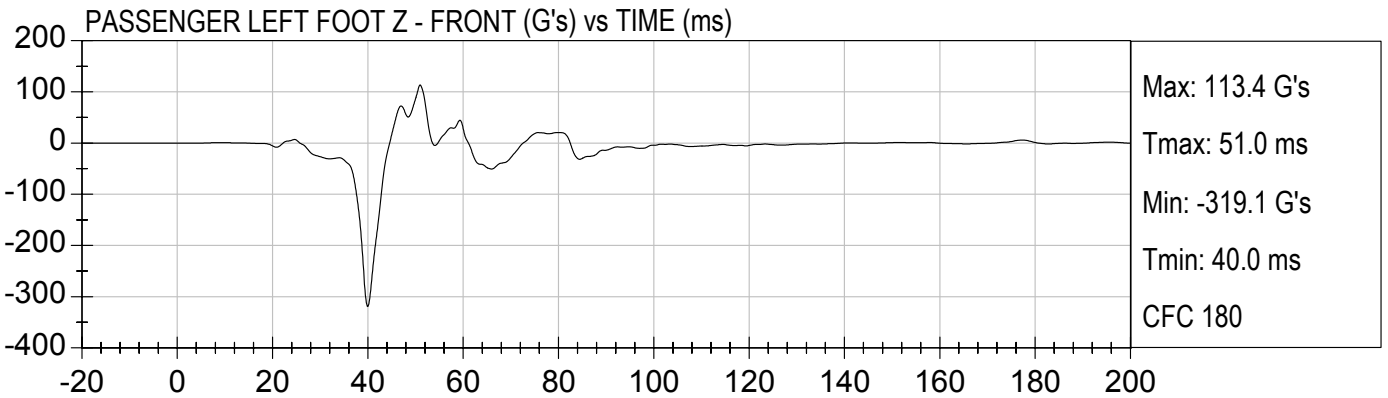


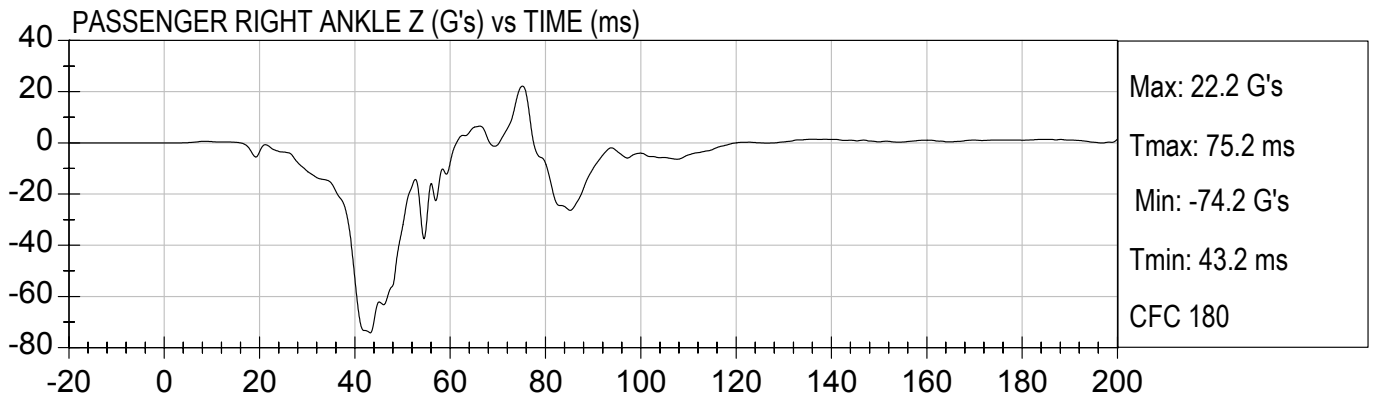
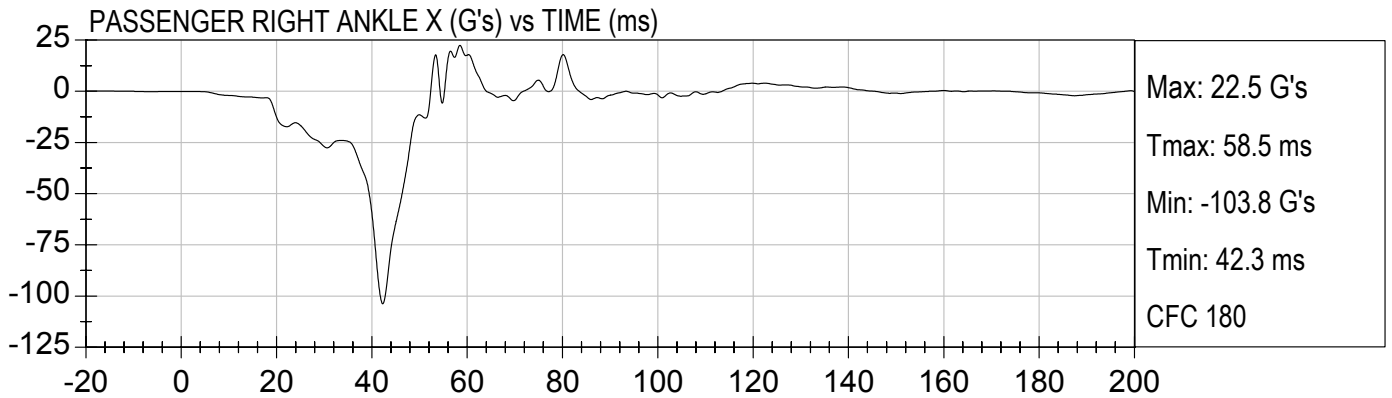
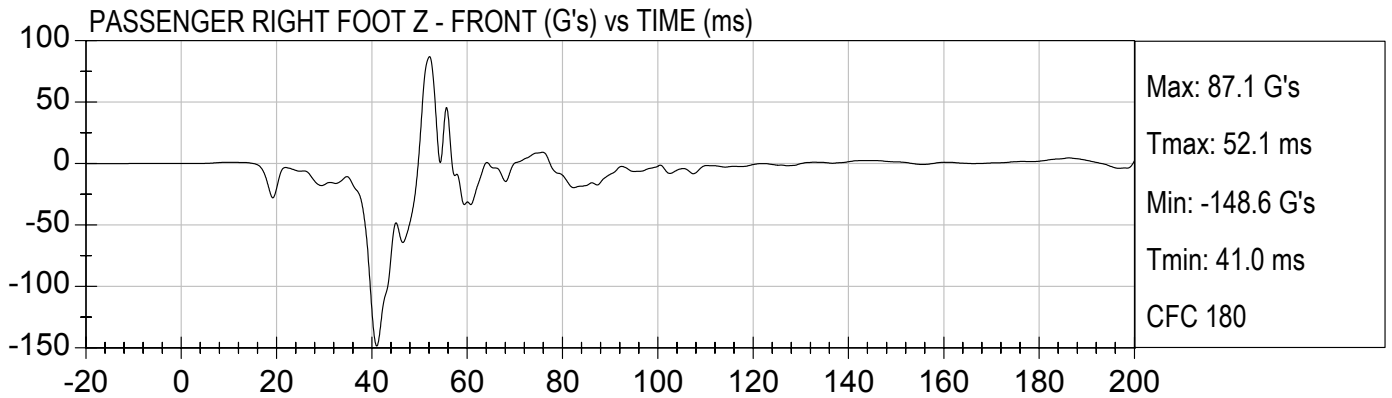
PASSENGER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)

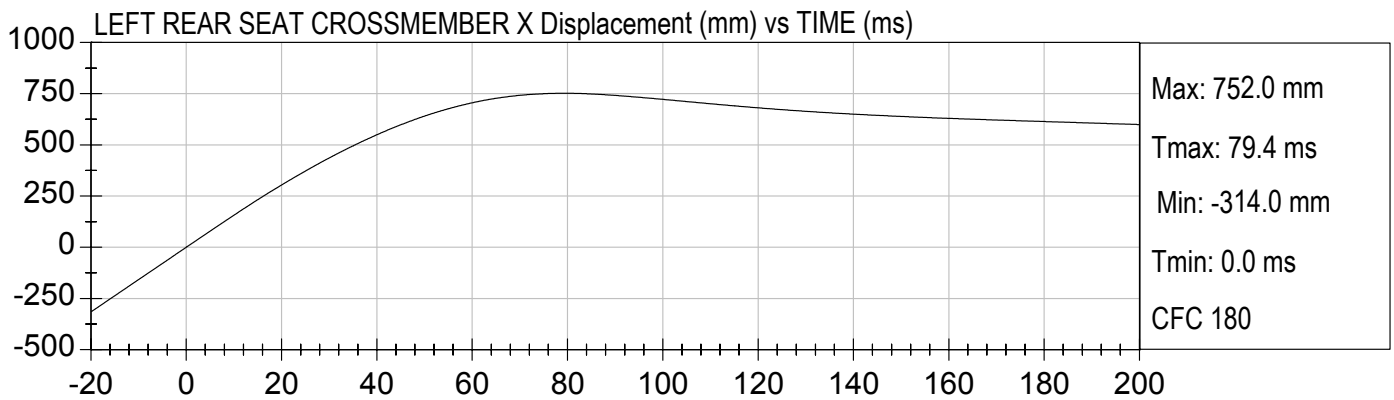
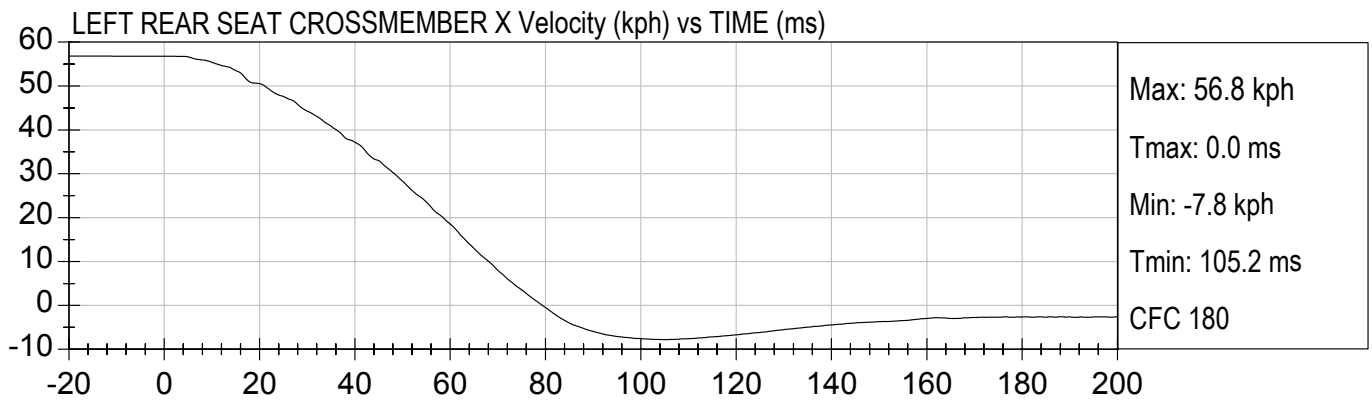
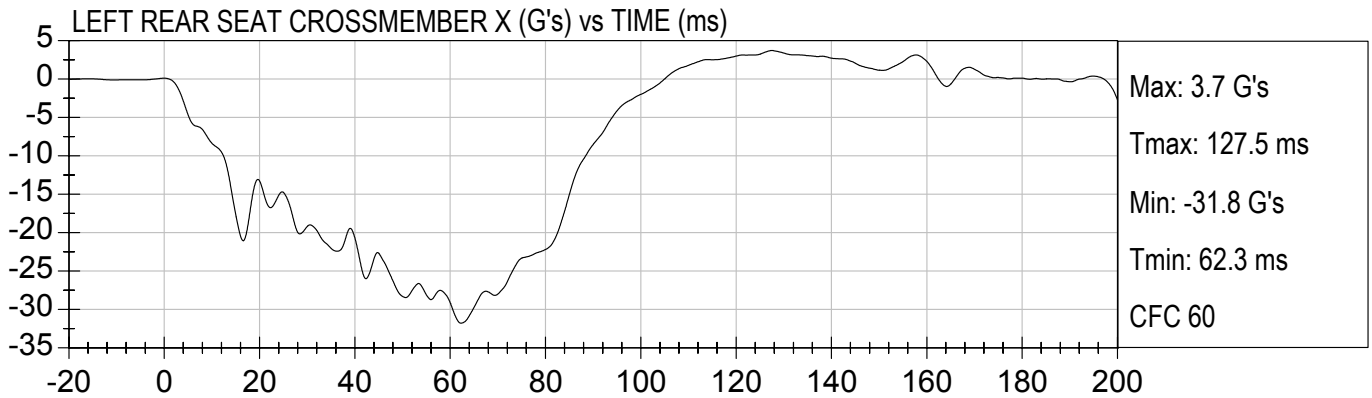


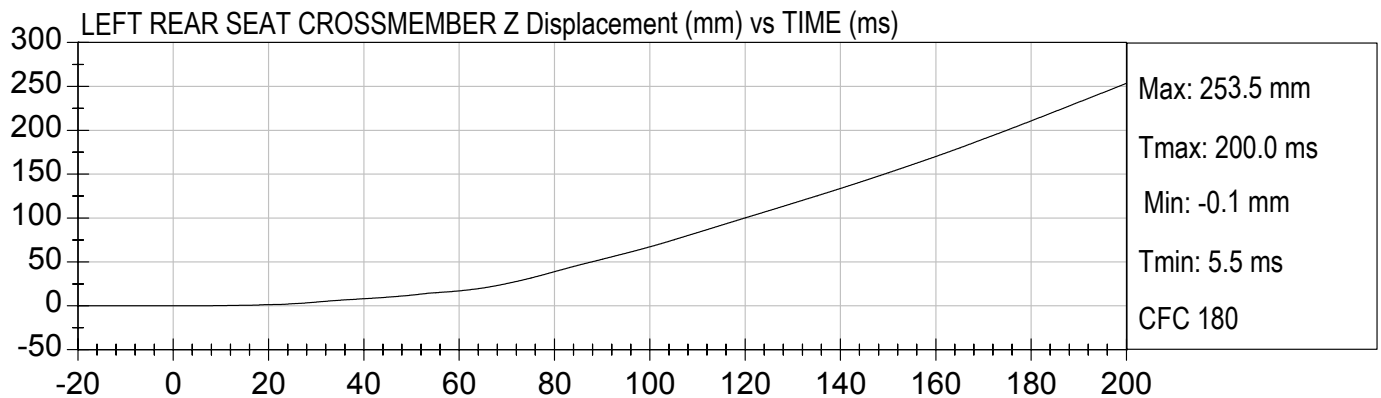
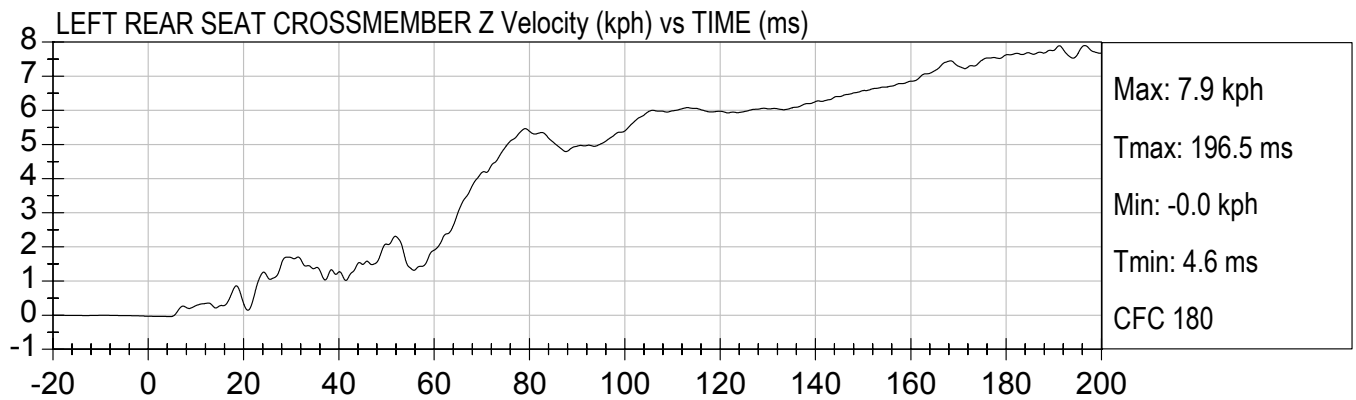
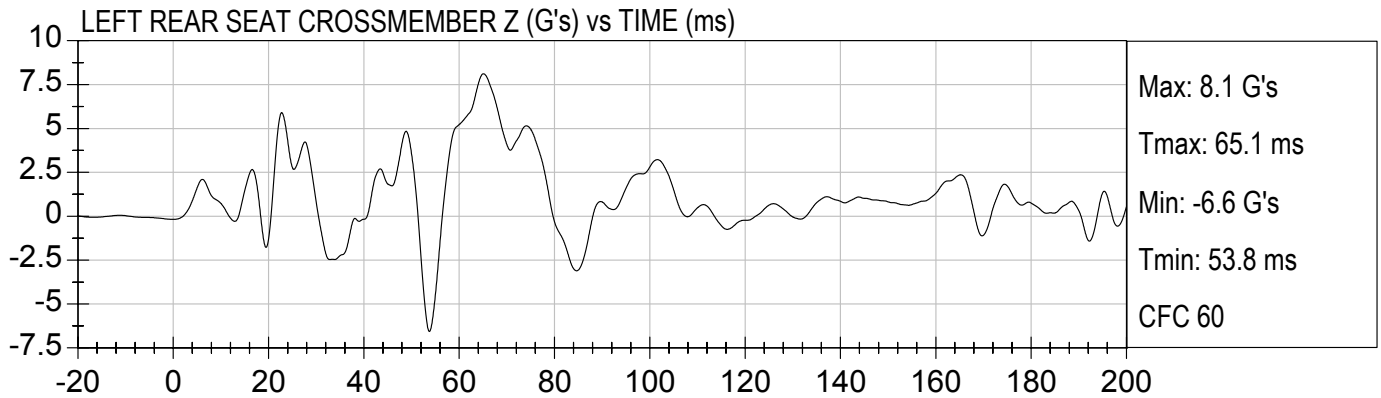
PASSENGER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)

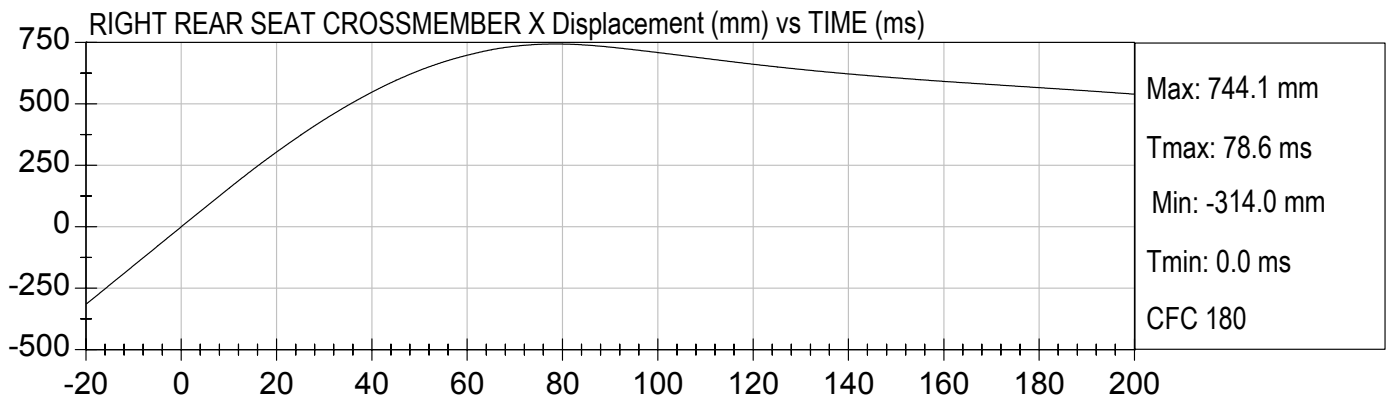
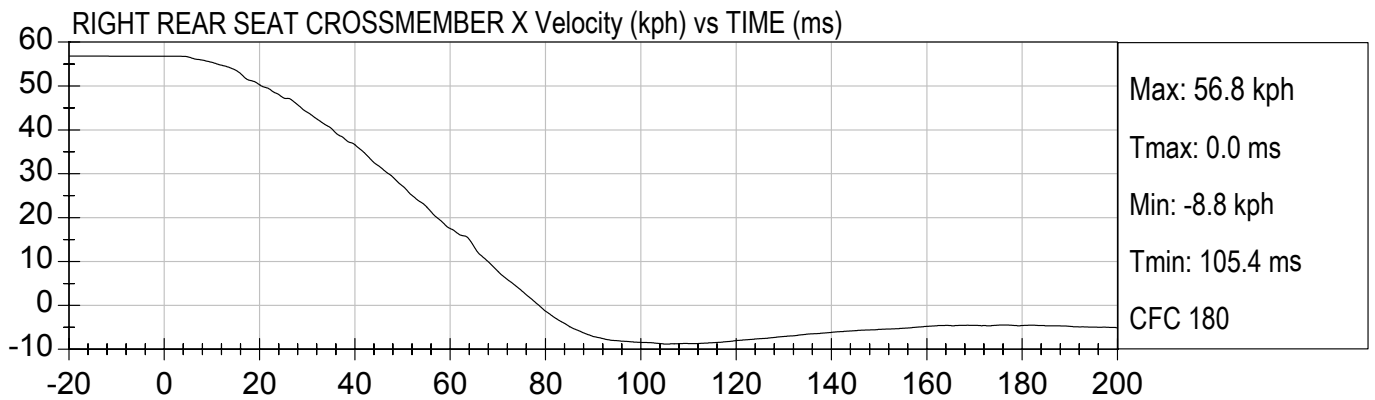
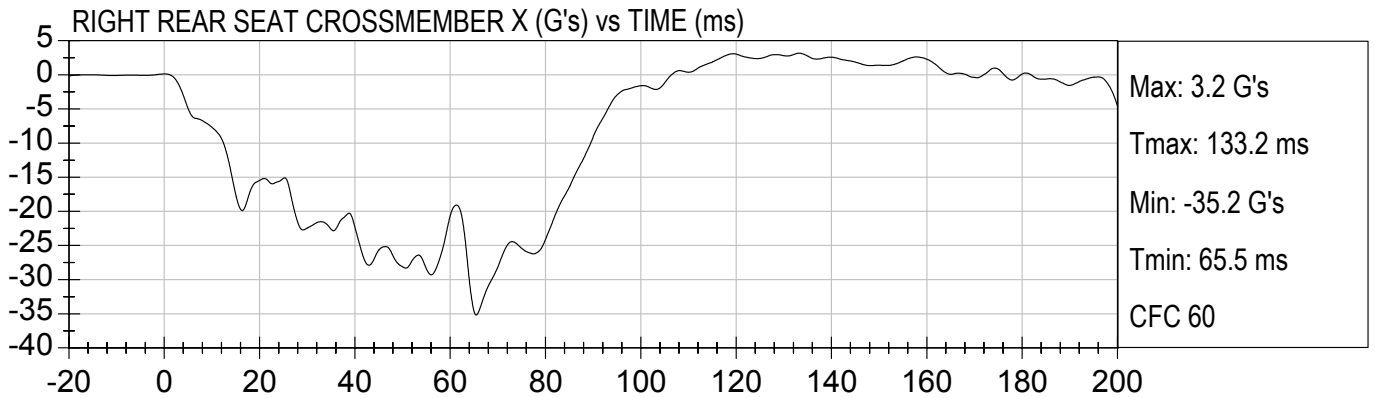


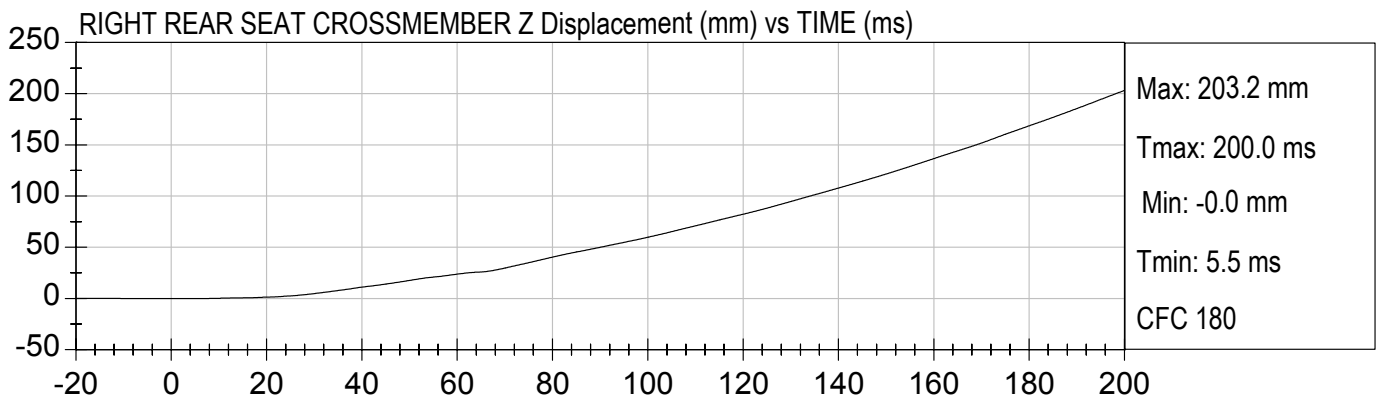
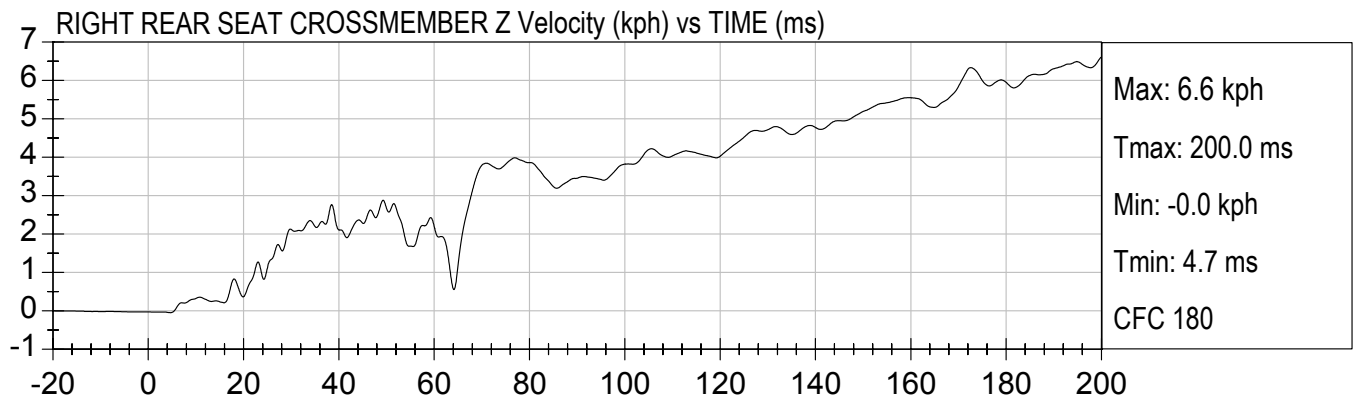
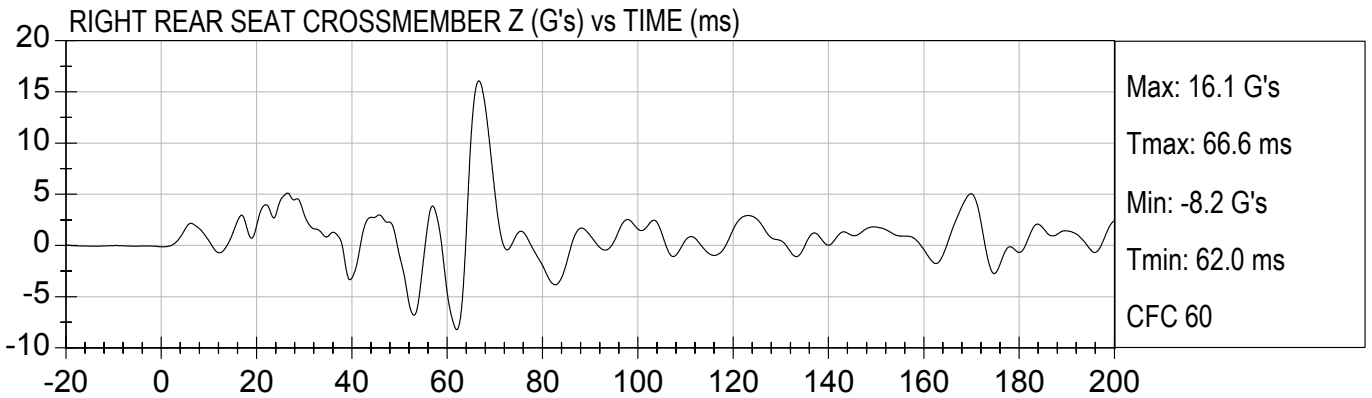


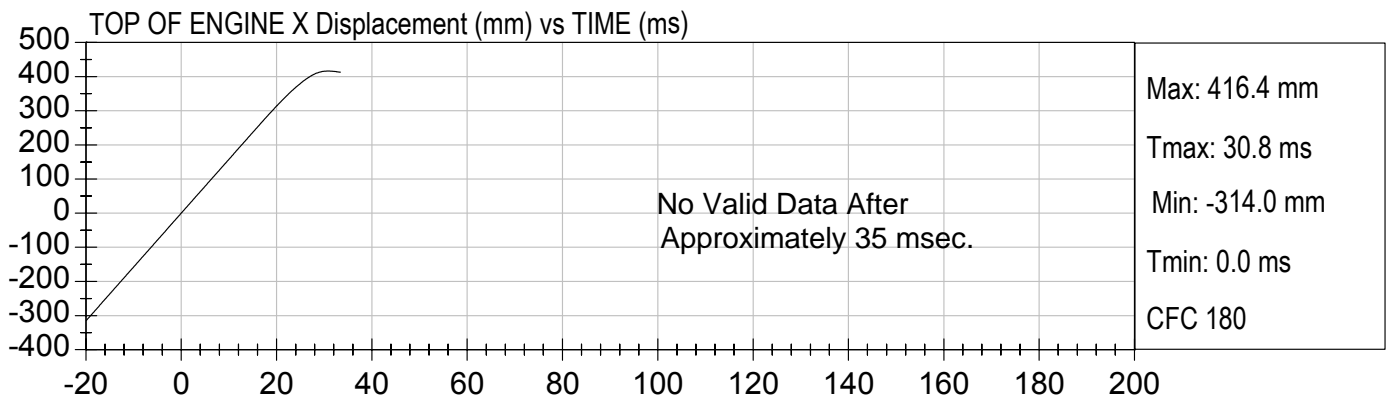
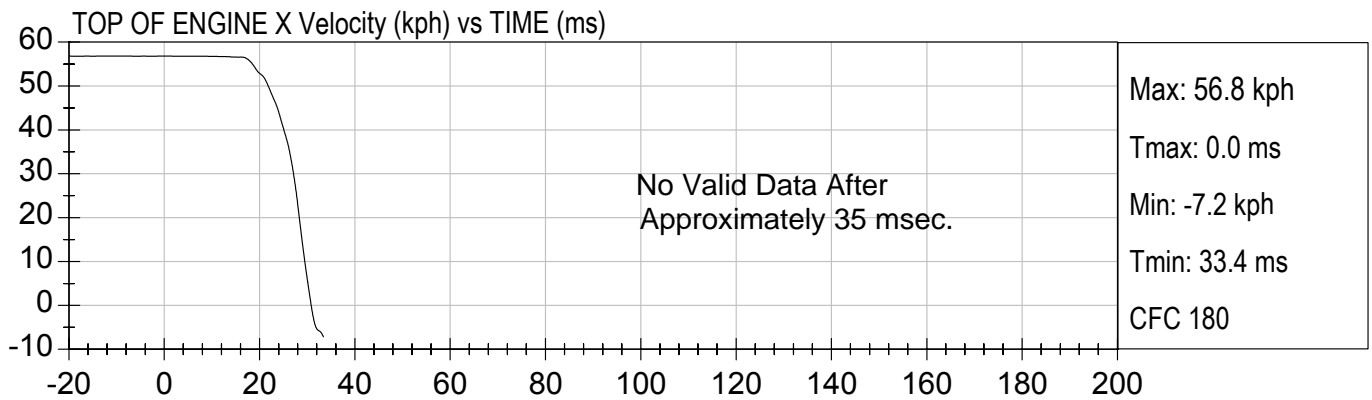
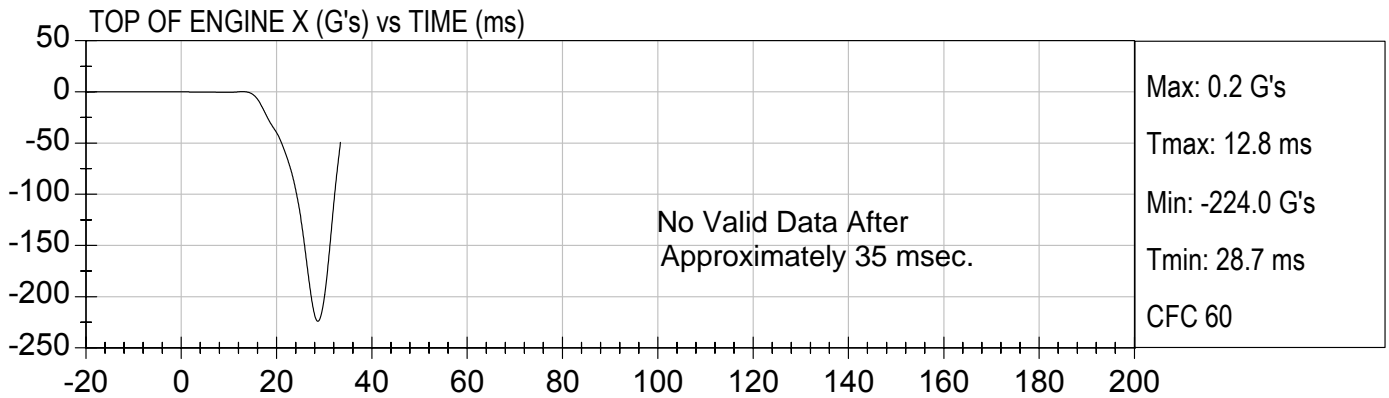


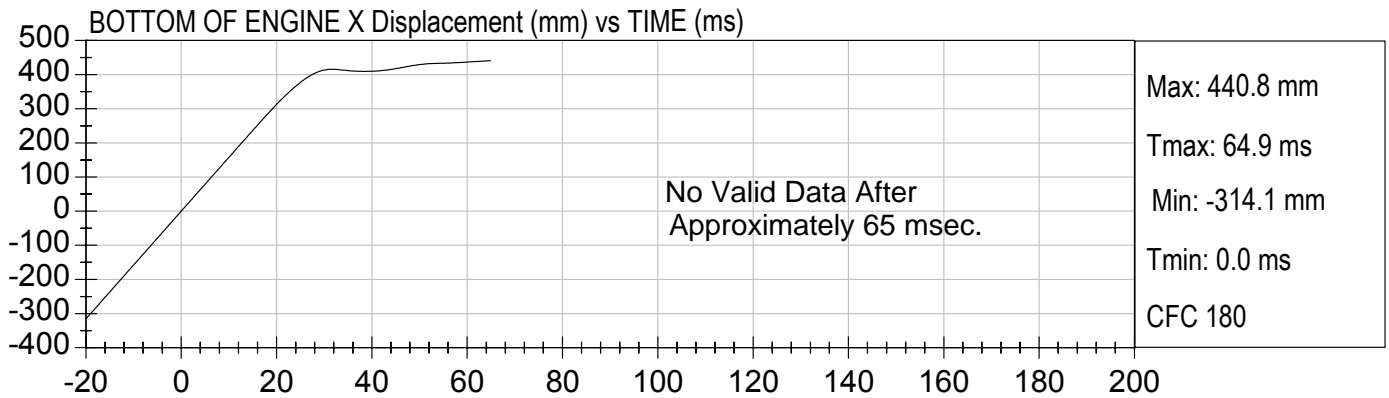
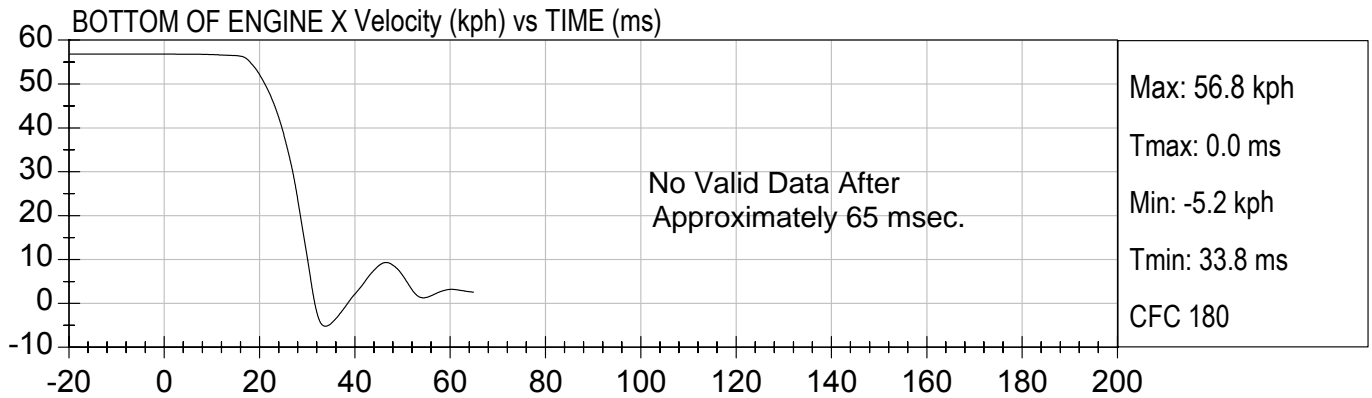
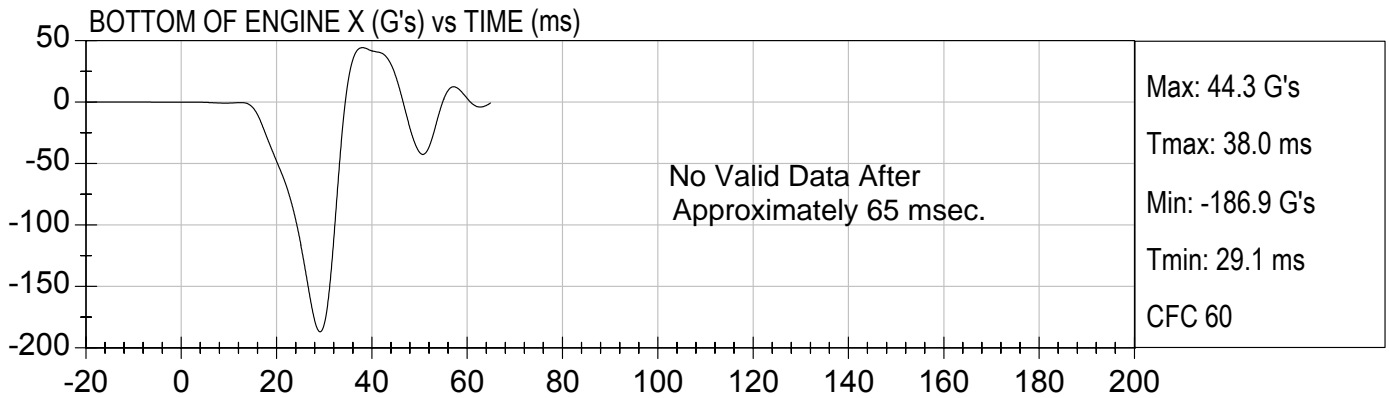


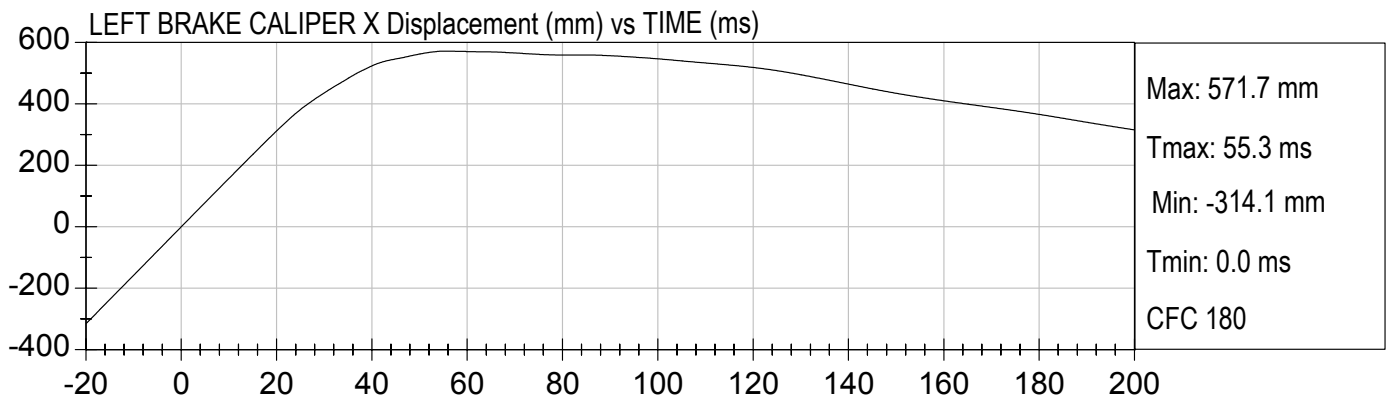
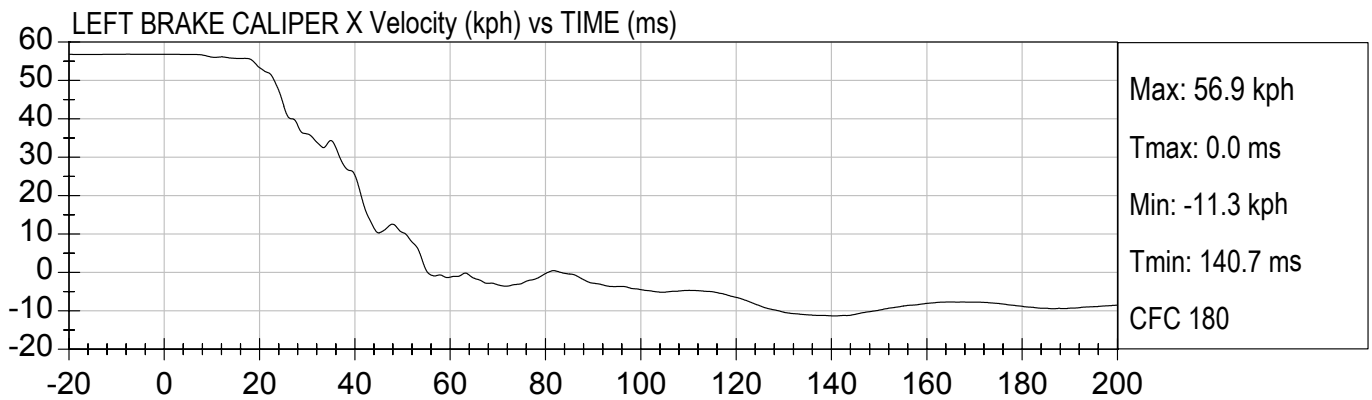
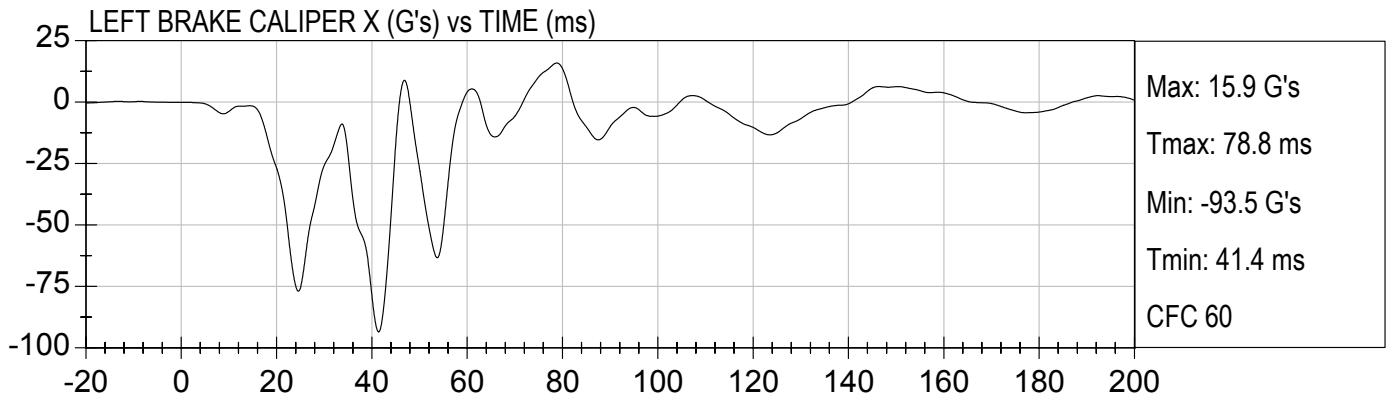


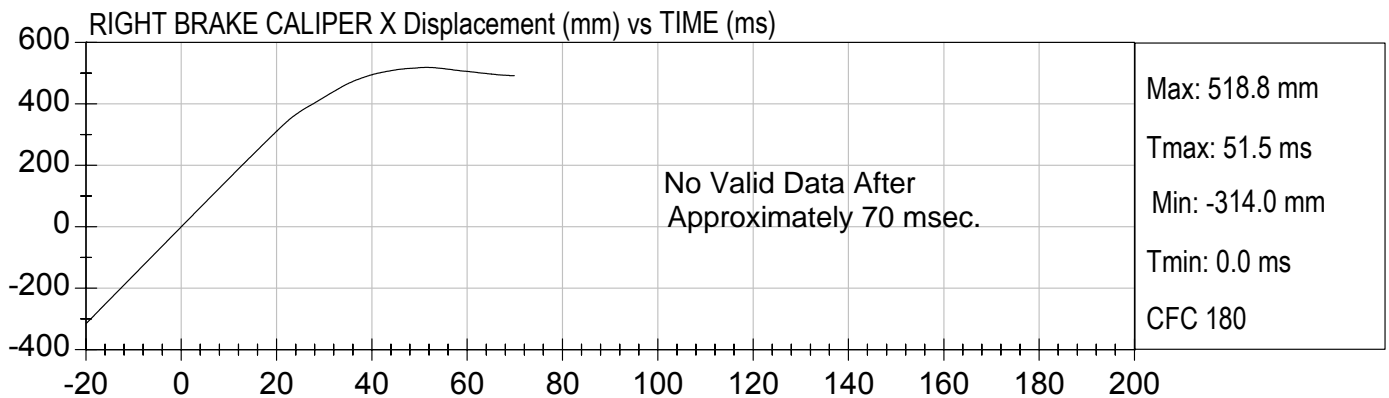
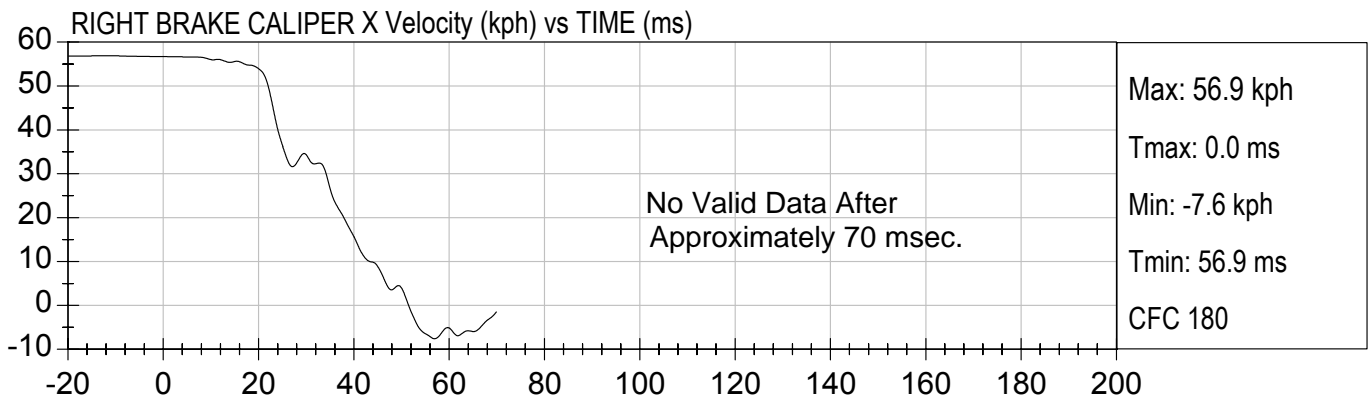
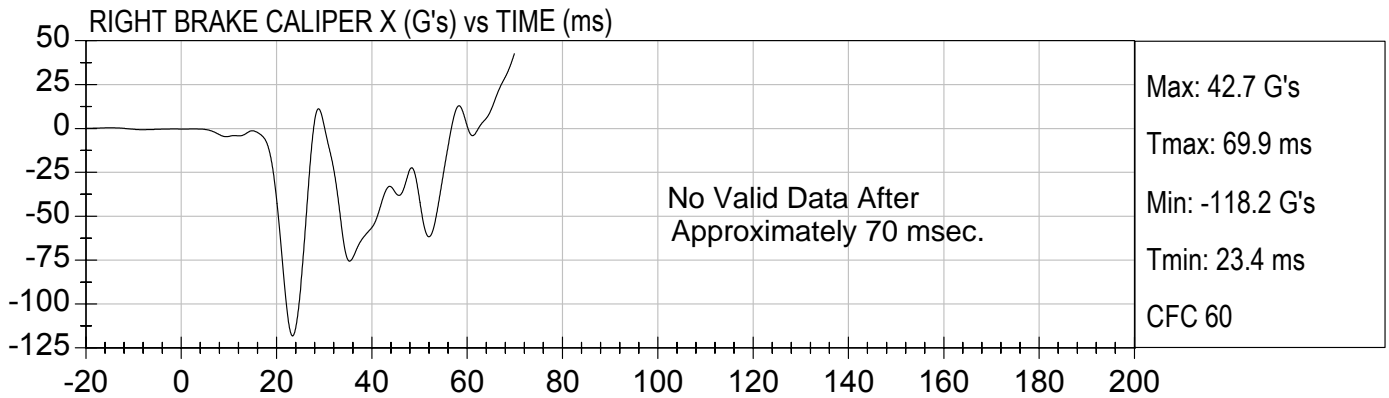


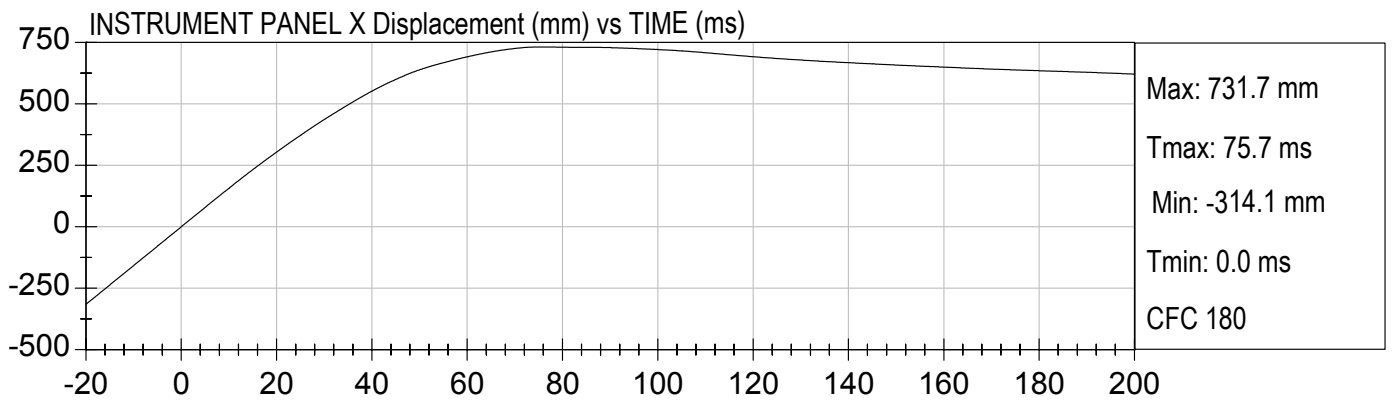
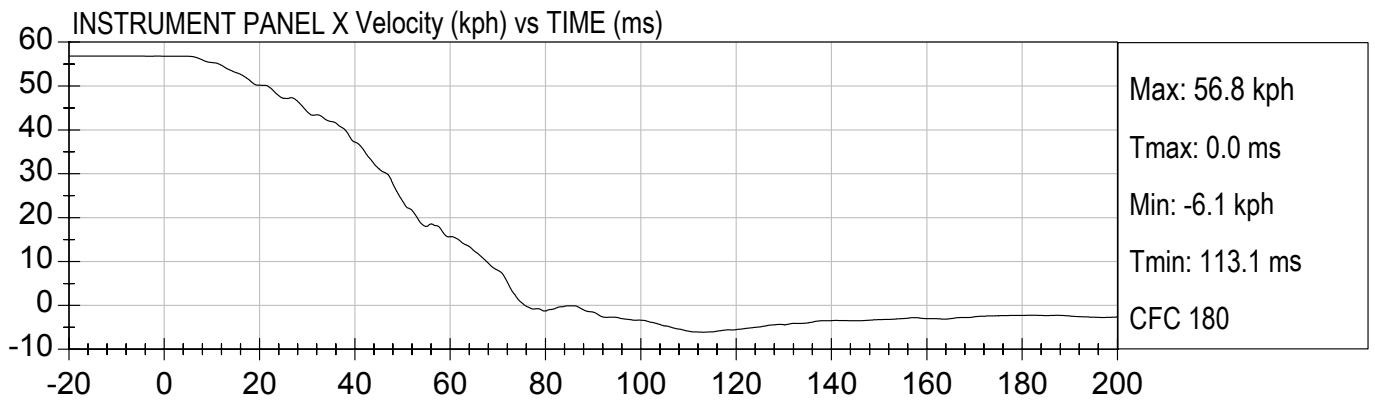
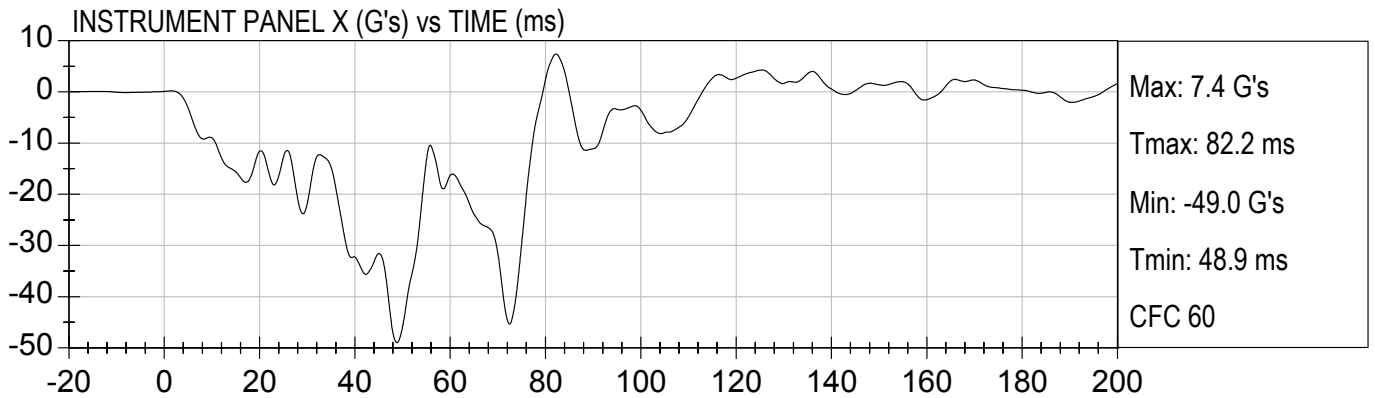


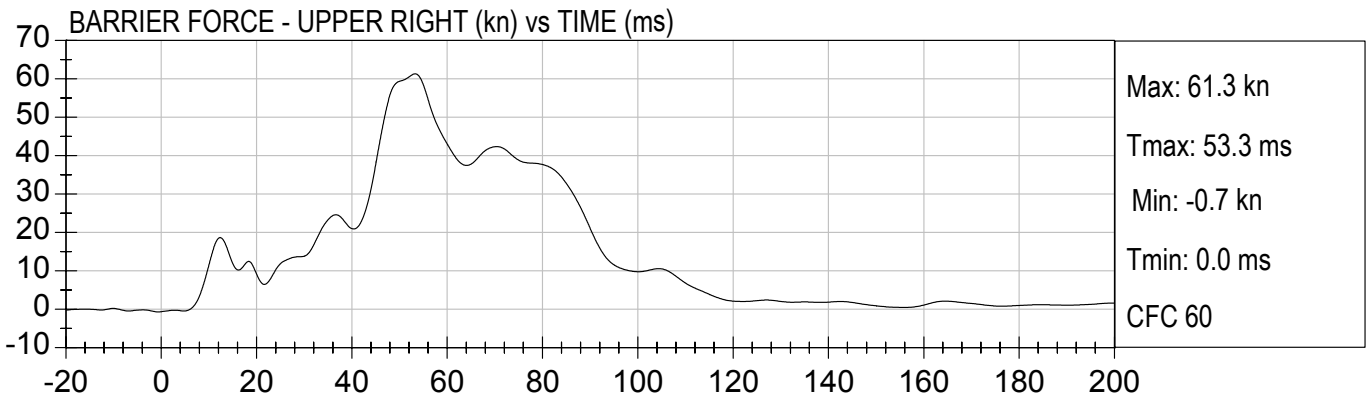
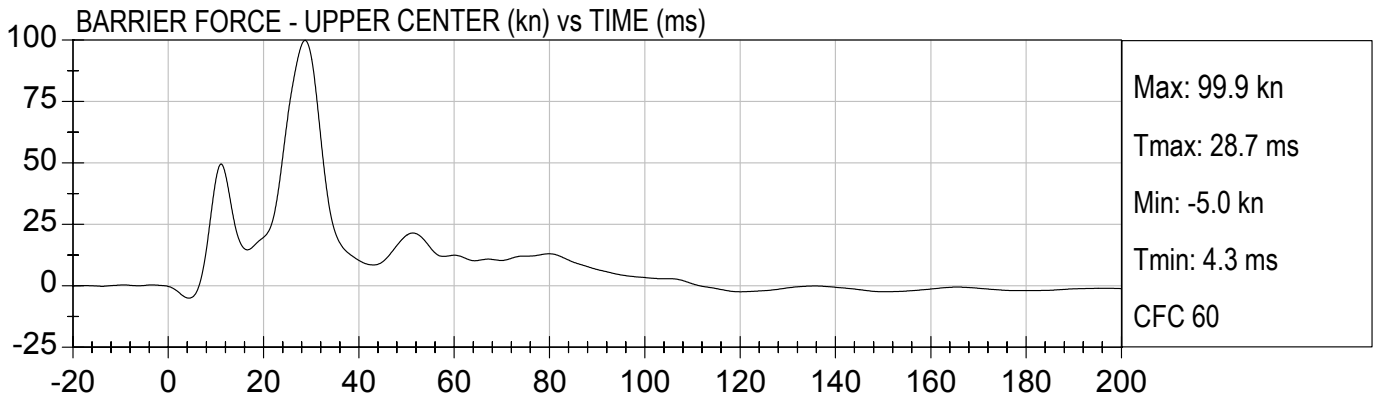
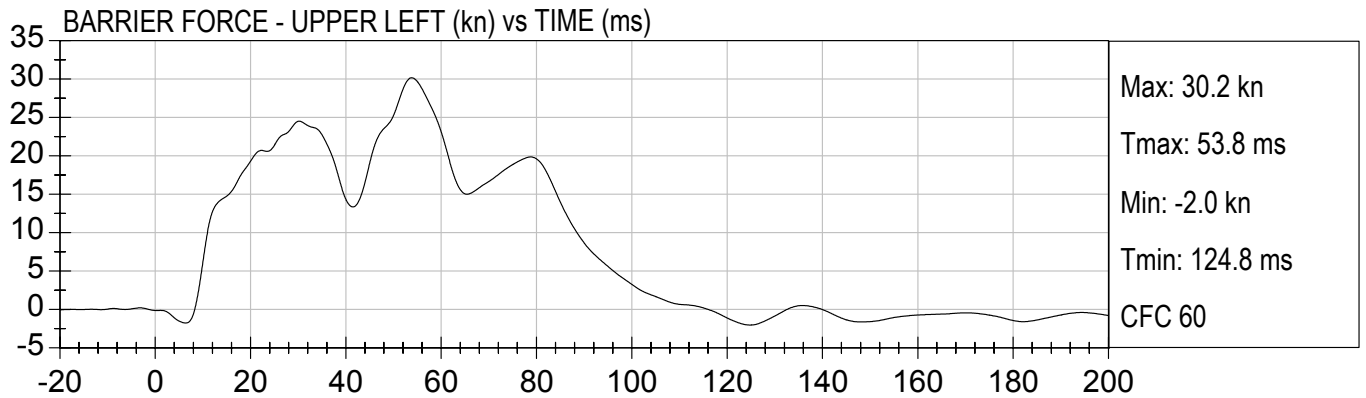






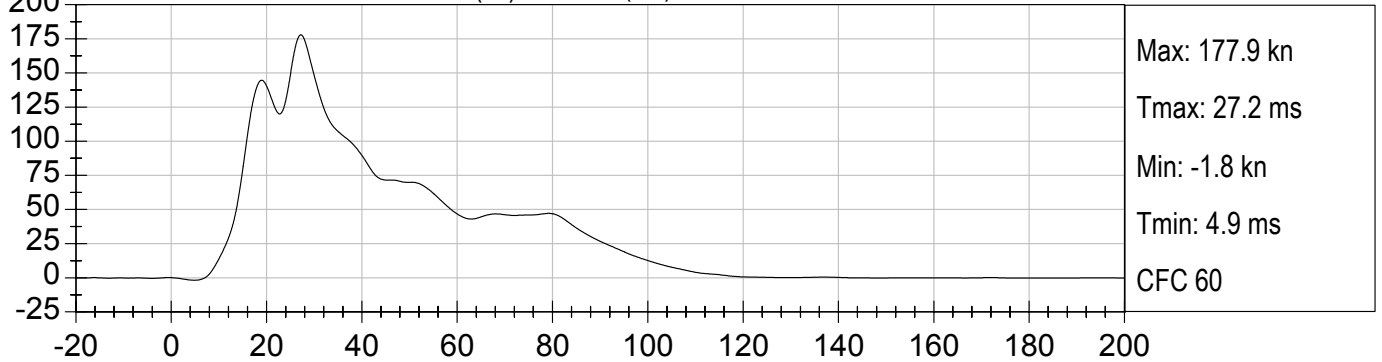




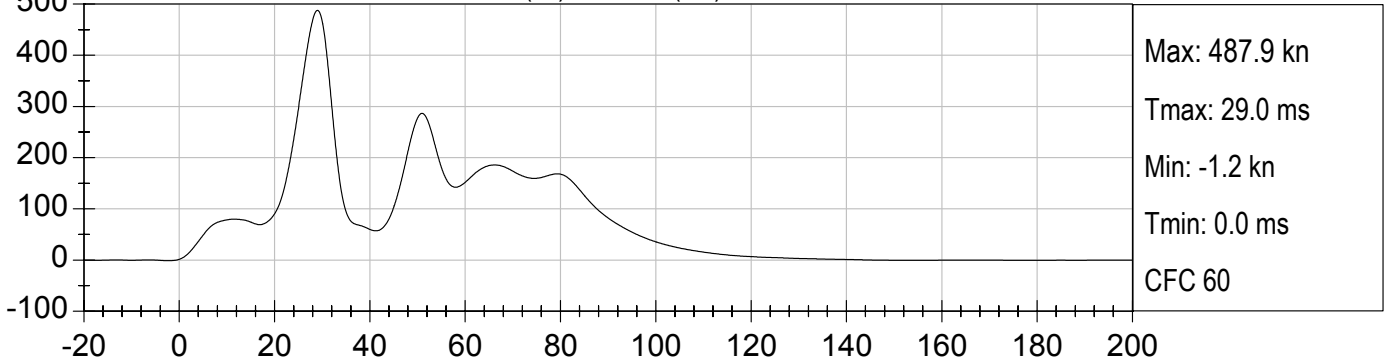




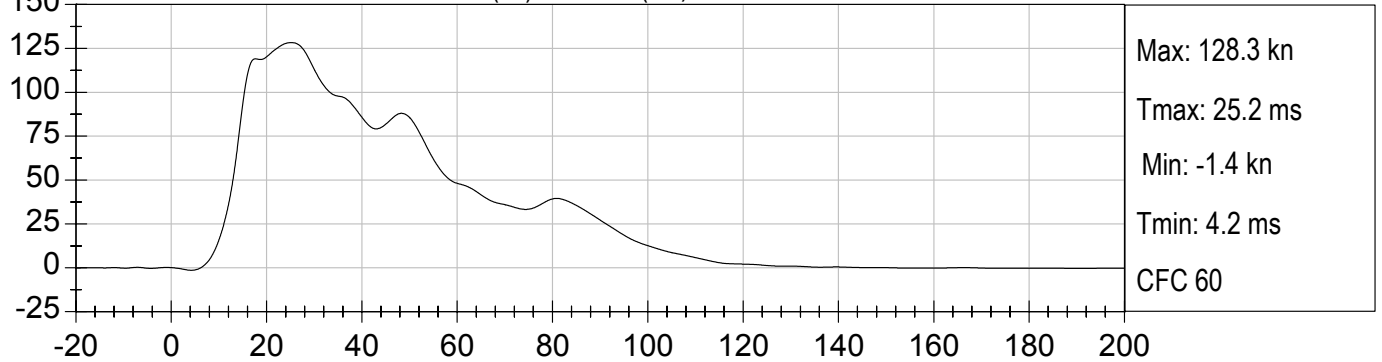
BARRIER FORCE - LOWER LEFT (kn) vs TIME (ms)



BARRIER FORCE - LOWER CENTER (kn) vs TIME (ms)

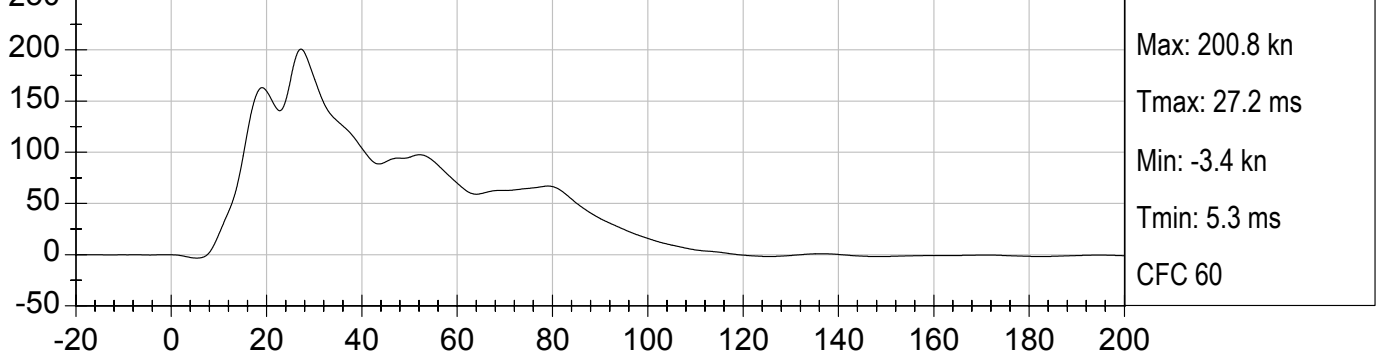


BARRIER FORCE - LOWER RIGHT (kn) vs TIME (ms)

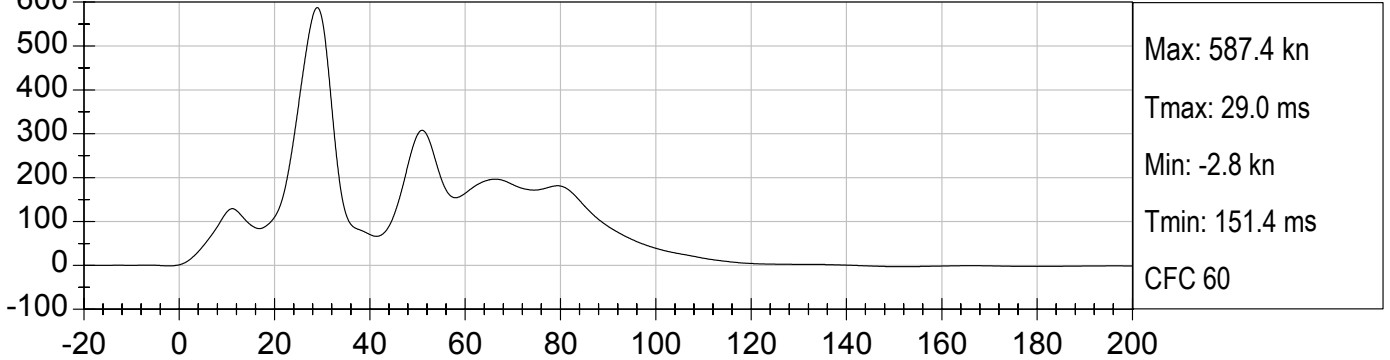




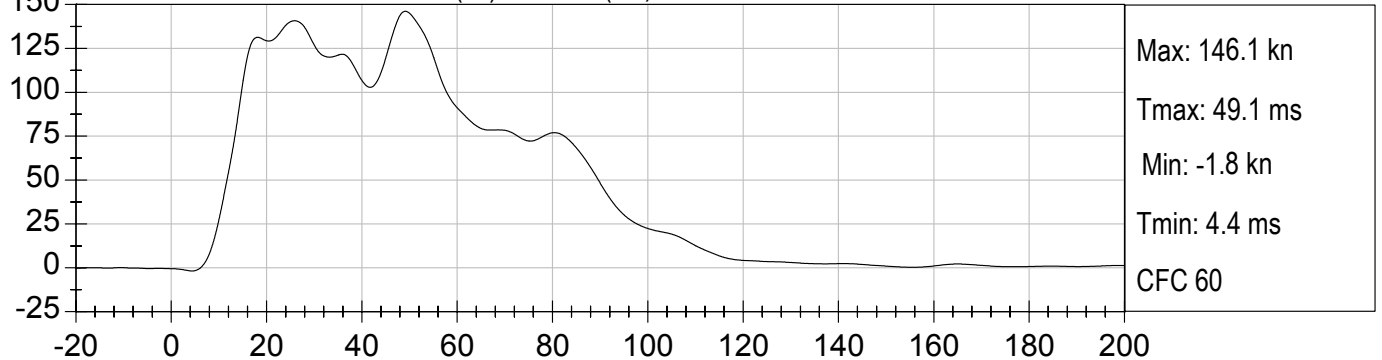
BARRIER FORCE - SUM LEFT (kn) vs TIME (ms)



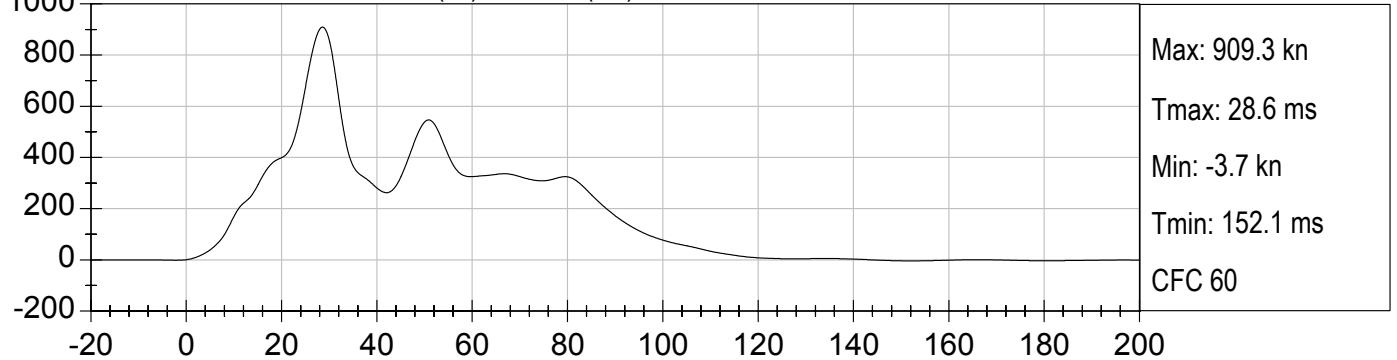
BARRIER FORCE - SUM CENTER (kn) vs TIME (ms)



BARRIER FORCE - SUM RIGHT (kn) vs TIME (ms)



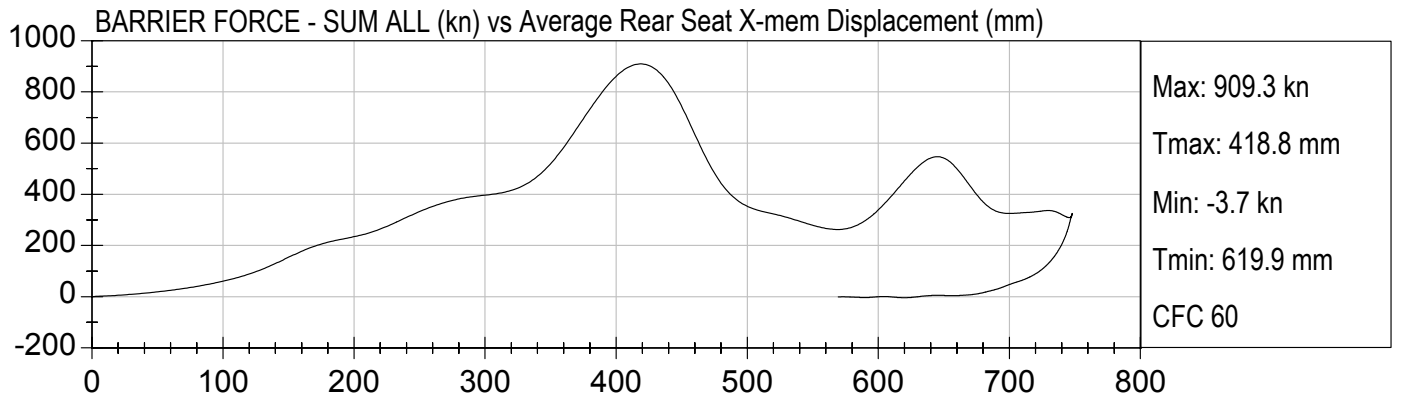
BARRIER FORCE - SUM ALL (kn) vs TIME (ms)





35MPH FRONTAL IMPACT
2004 DODGE INTREPID SE

Test Date: 11/04/03
Speed: 35.3 mph (56.8 km/h)



APPENDIX C

DUMMY CALIBRATION DATA TRACES AND TABLES

CERTIFICATION DATA

Dummy Serial Number: 066

Calibration Test Results Summary

Dummy Serial Number: 066

Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Flexion Test:	The neck passed all flexion test requirements.
Neck Extension Test:	The neck passed all extension test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Knee Impact Tests:	Both knees passed all impact test requirements.
Hip-Femur Flexion Tests:	Both femurs passed all flexion test requirements.

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Dummy Serial Number: 066

Date of Verification: 9/29/03

Test Number: D03168

DESCRIPTION	SPECIFICATION	TEST RESULTS
Temperature (°F)	20.6 – 22.2	21.7
Relative Humidity	10 – 70 %	29
AA - Location for Chest Circumference	429.3 – 434.3 mm	431.8
BB - Location for Waist Circumference	226.1 – 231.1 mm	228.6
A - Total Sitting Height	878.8 – 889.0 mm	879.5
B – Shoulder Pivot Height	505.5 – 520.7 mm	514.4
C – H Point Height	82.9 – 88.9 mm	88.9
D – H Point from Seat Back	134.7 – 139.7 mm	136.5
E – Shoulder Pivot From Backline	84.8 – 94.0 mm	94.0
F – Thigh Clearance	139.7 – 154.9 mm	146.1
G – Back of Elbow to Wrist Pivot	289.6 – 304.8 mm	292.1
H – Skull Cap Skin to Backline	40.7 – 45.7 mm	44.5
I – Shoulder Elbow Length	330.2 – 345.4 mm	330.2
J – Elbow Rest Height	190.5 – 210.9 mm	205.7
K – Buttock Knee Length	579.1 – 604.5 mm	596.9
L – Popliteal Height	429.3 – 454.7 mm	438.2
M – Knee Pivot Height	485.2 – 500.4 mm	495.3
N – Buttock Popliteal Length	452.1 – 477.5 mm	463.6
O – Chest Depth at 3 rd Rib	213.4 – 228.6 mm	215.9
P – Foot Length	251.5 – 266.7 mm	260.4
V – Shoulder Breadth	421.7 – 436.9 mm	436.9
W – Foot Breadth	91.5 – 106.7 mm	101.6
Y – Chest Circumference	970.3 – 1000.7 mm	984.3
Z – Waist Circumference	835.7 – 866.1 mm	866.1

Technician: Jessica Hall

Approved By: Shefalika Gaurwal

Hybrid III Calibration Data Sheet

50th Percentile Male
Head Drop Calibration

ATD Serial No: 066

Test I.D.: D031681

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	253.1	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	12.7	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

09/29/2003
Test Date

Shetalika Jaiswal
Approved By

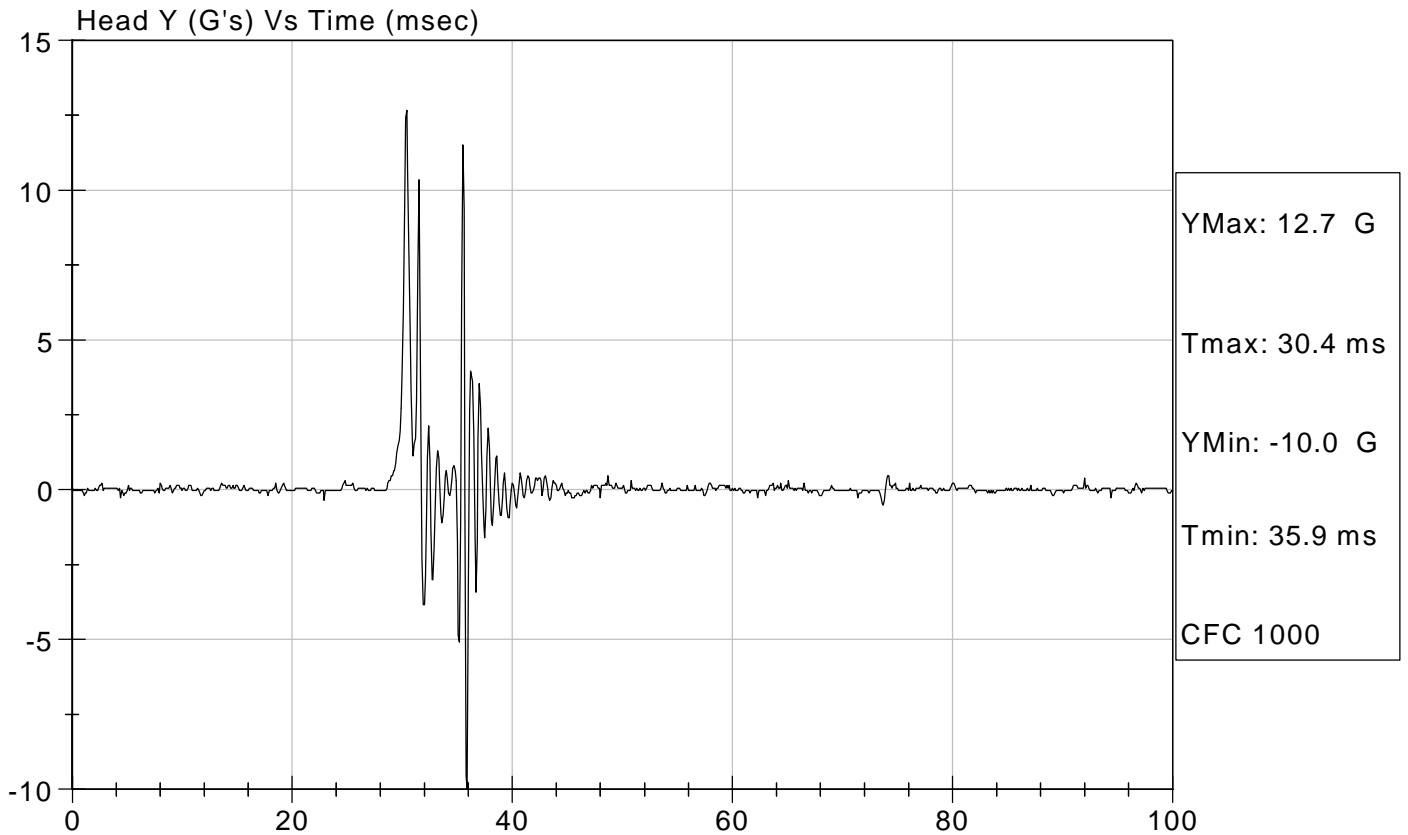
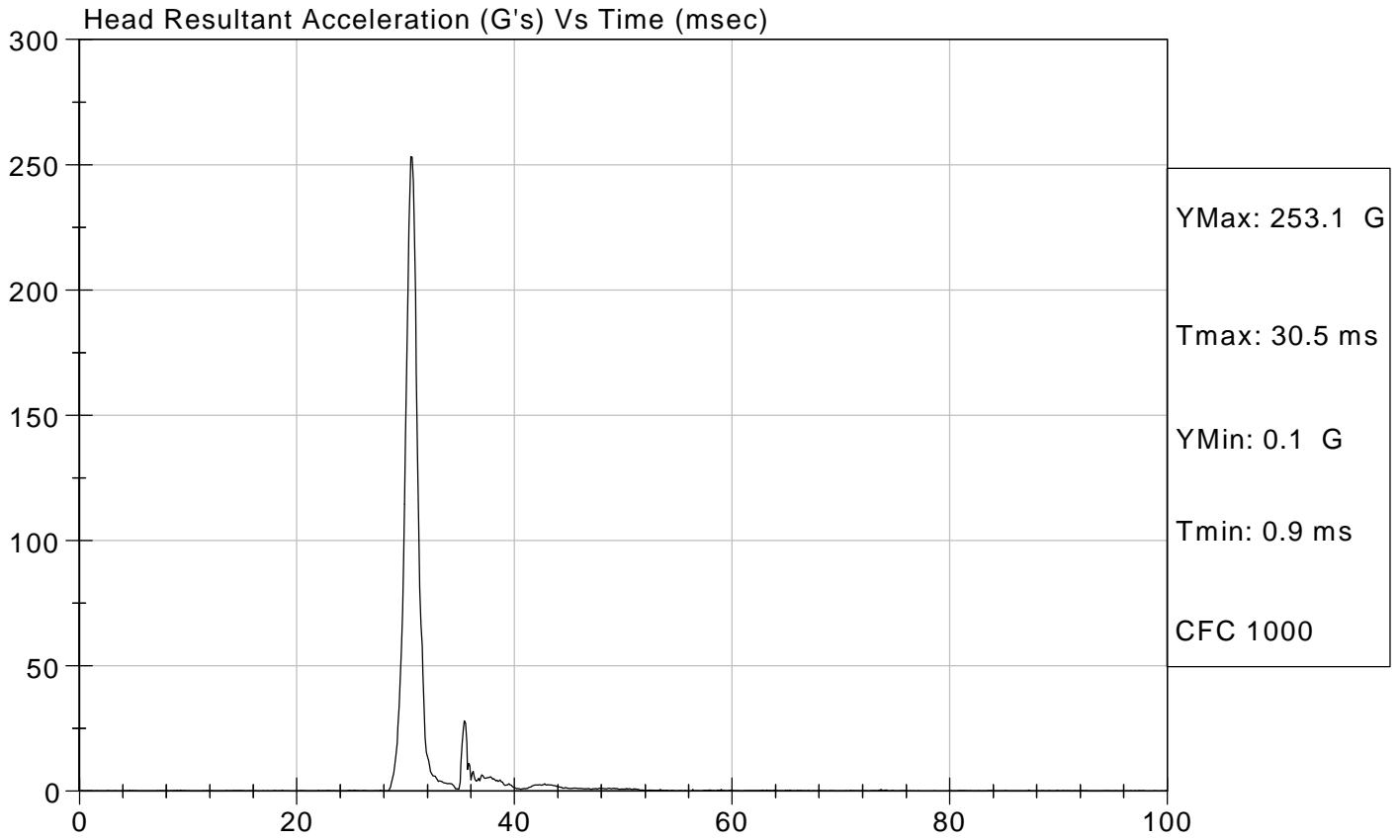


Test Description: Head Drop

Test Date: 09/29/2003

Component: D031681

Speed: 0 ft/s, 0.00 m/s



Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Flexion Test

ATD Serial No: 066

Test I.D.: D031682

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	27	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.03	Pass
	20 msec	G's	17.60 to 22.60	20.05	Pass
	30 msec	G's	12.50 to 18.50	15.09	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	15.09	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	37.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.3	Pass
	Time	msec	57.0 to 64.0	58.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	115.2	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	94.5	Pass
	Time	msec	47.0 to 58.0	49.2	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	100.7	Pass

Overall Test Results	Pass
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Jessica Hall

 Laboratory Technician

09/30/2003

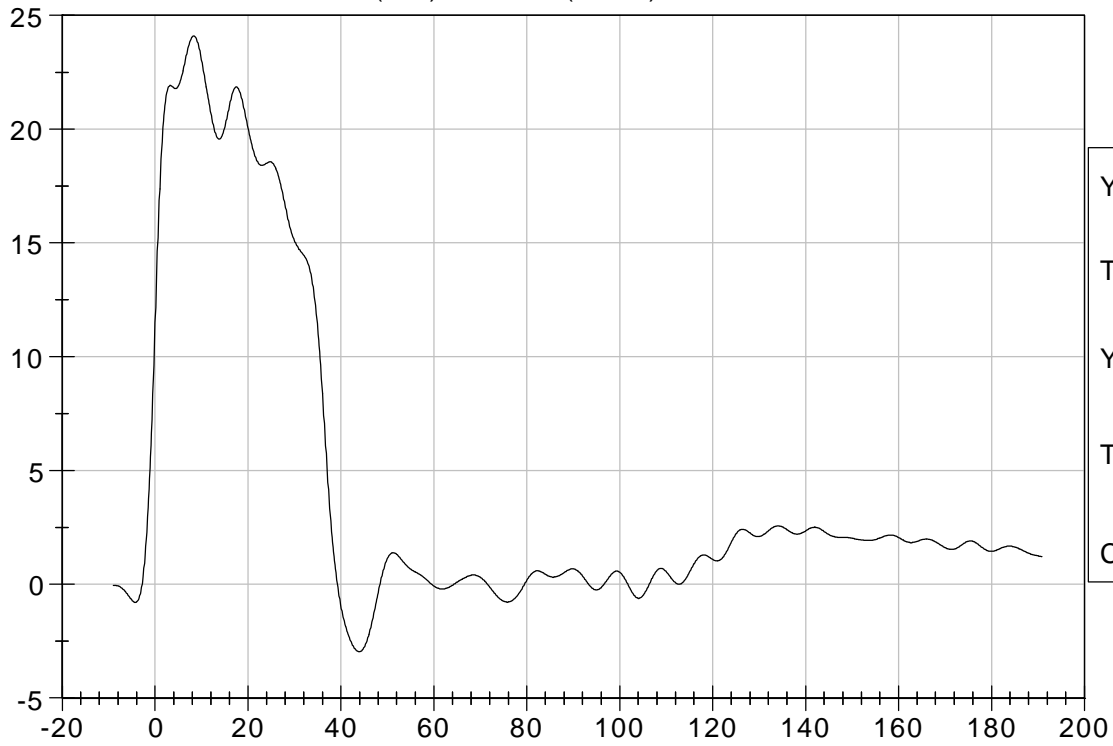
 Test Date

Shefalika Jgawal

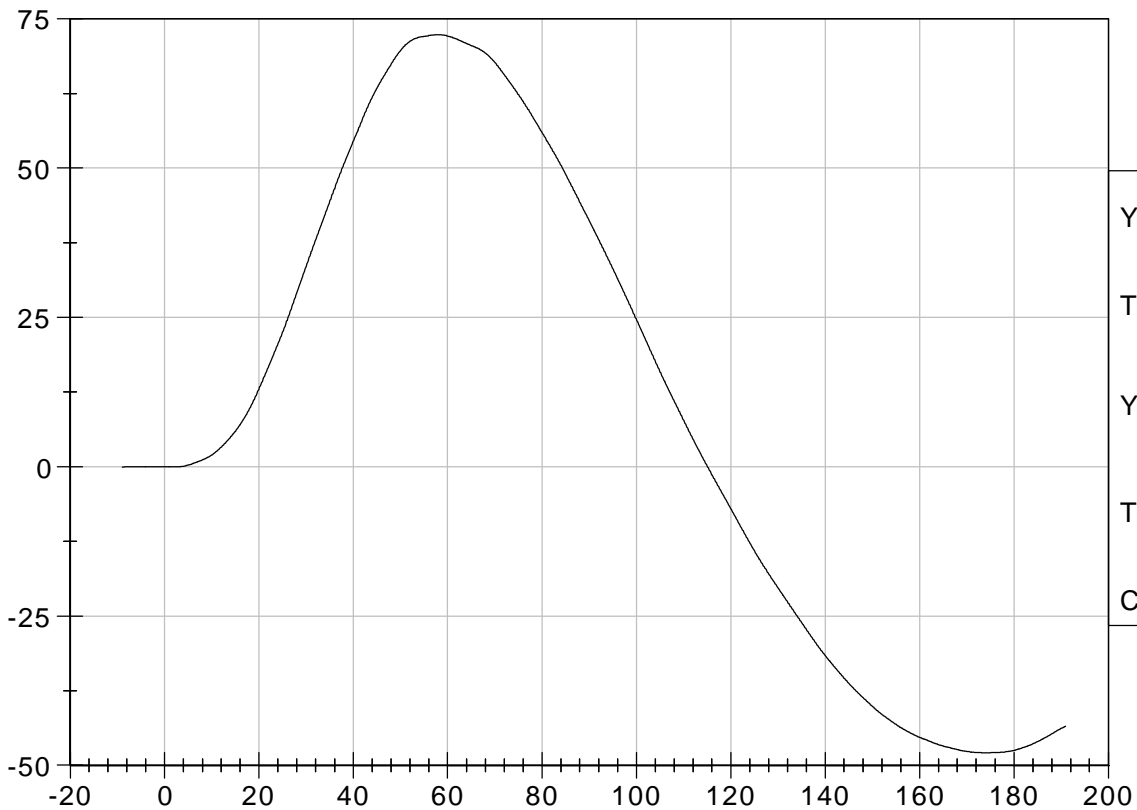
 Approved By

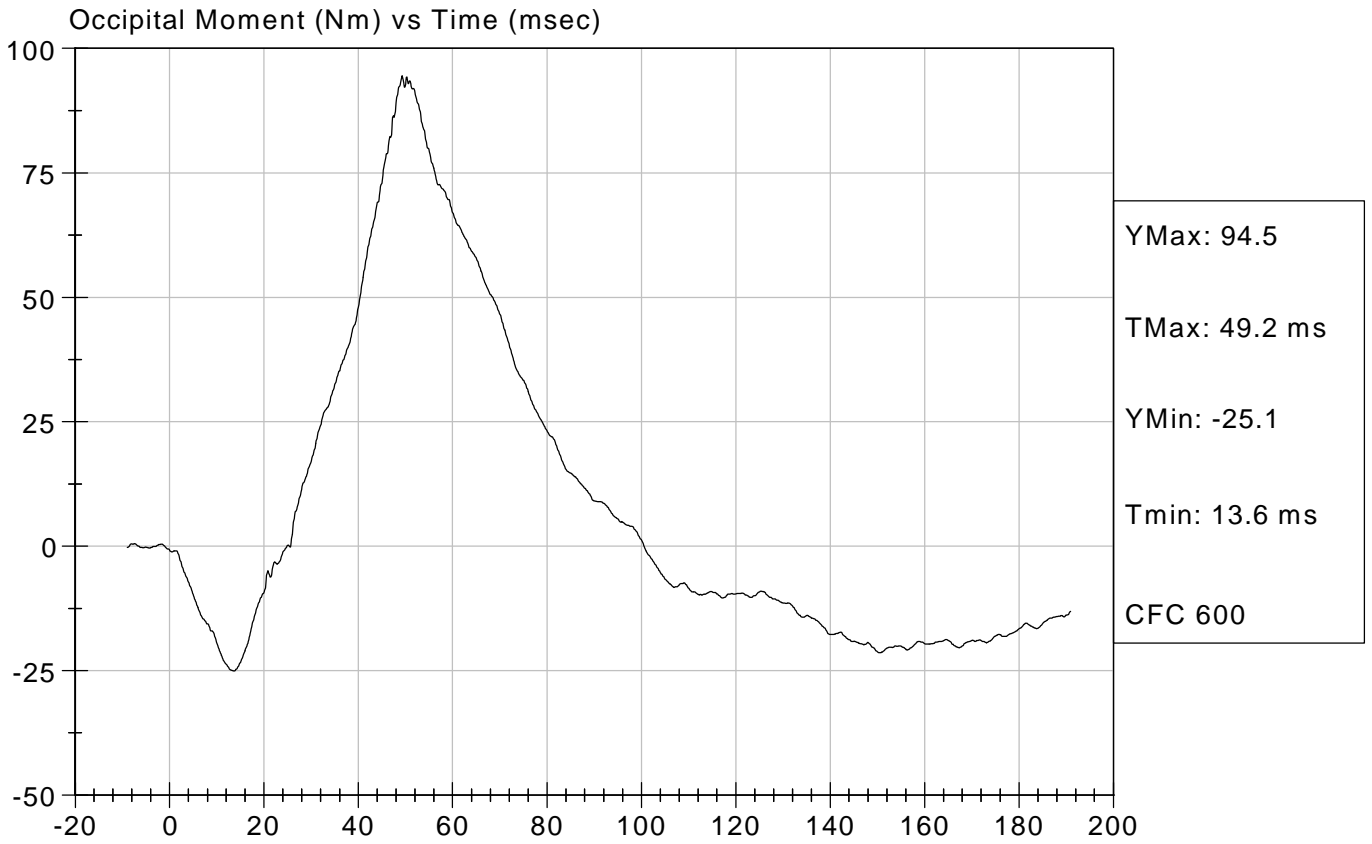


Pendulum Deceleration (G's) vs Time (msec)



Neck Rotation (DEG) vs Time (msec)





Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Extension Test

ATD Serial No: 066

Test I.D.: D031683

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity		%	10 to 70	24	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	17.85	Pass
	20 msec	G's	14.00 to 19.00	15.19	Pass
	30 msec	G's	11.00 to 16.00	12.45	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.1	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	43.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.2	Pass
	Time	msec	72.0 to 82.0	78.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	155.4	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-64.1	Pass
	Time	msec	65.0 to 79.0	73.4	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	143.5	Pass

Overall Test Results	Pass
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Jessica Hall

 Laboratory Technician

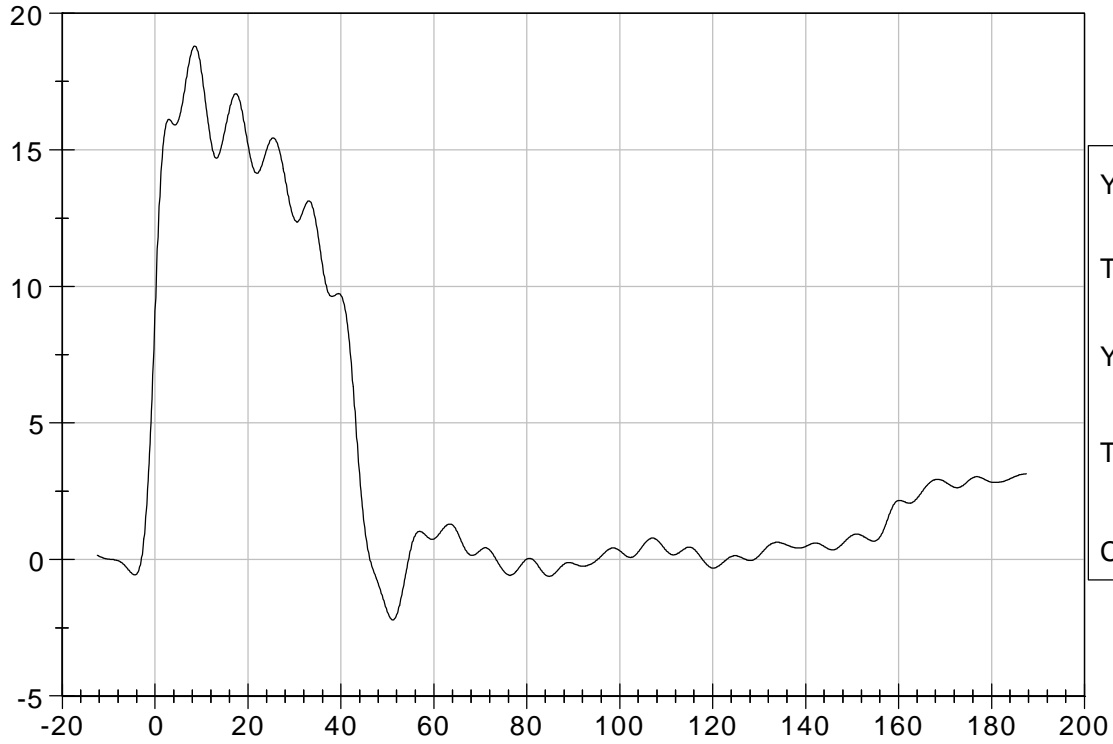
10/01/2003
 Test Date

Shefalika Jauwal

 Approved By

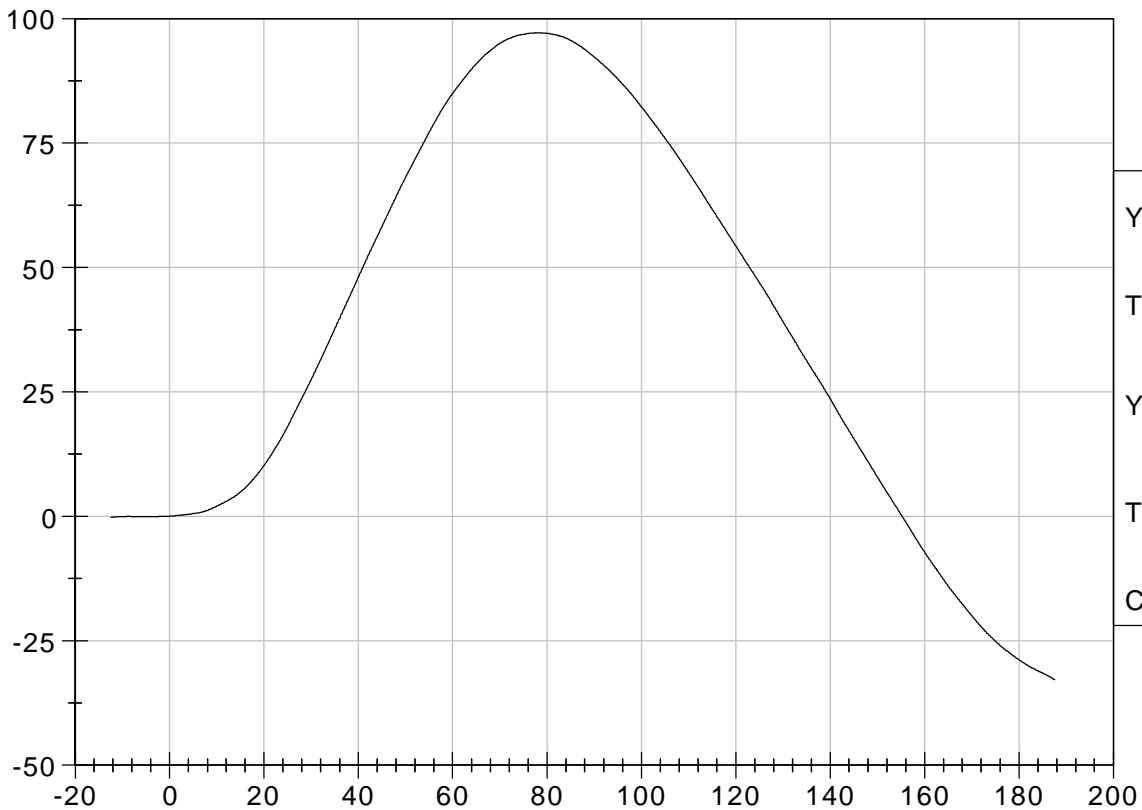


Pendulum Deceleration (G's) vs Time (msec)

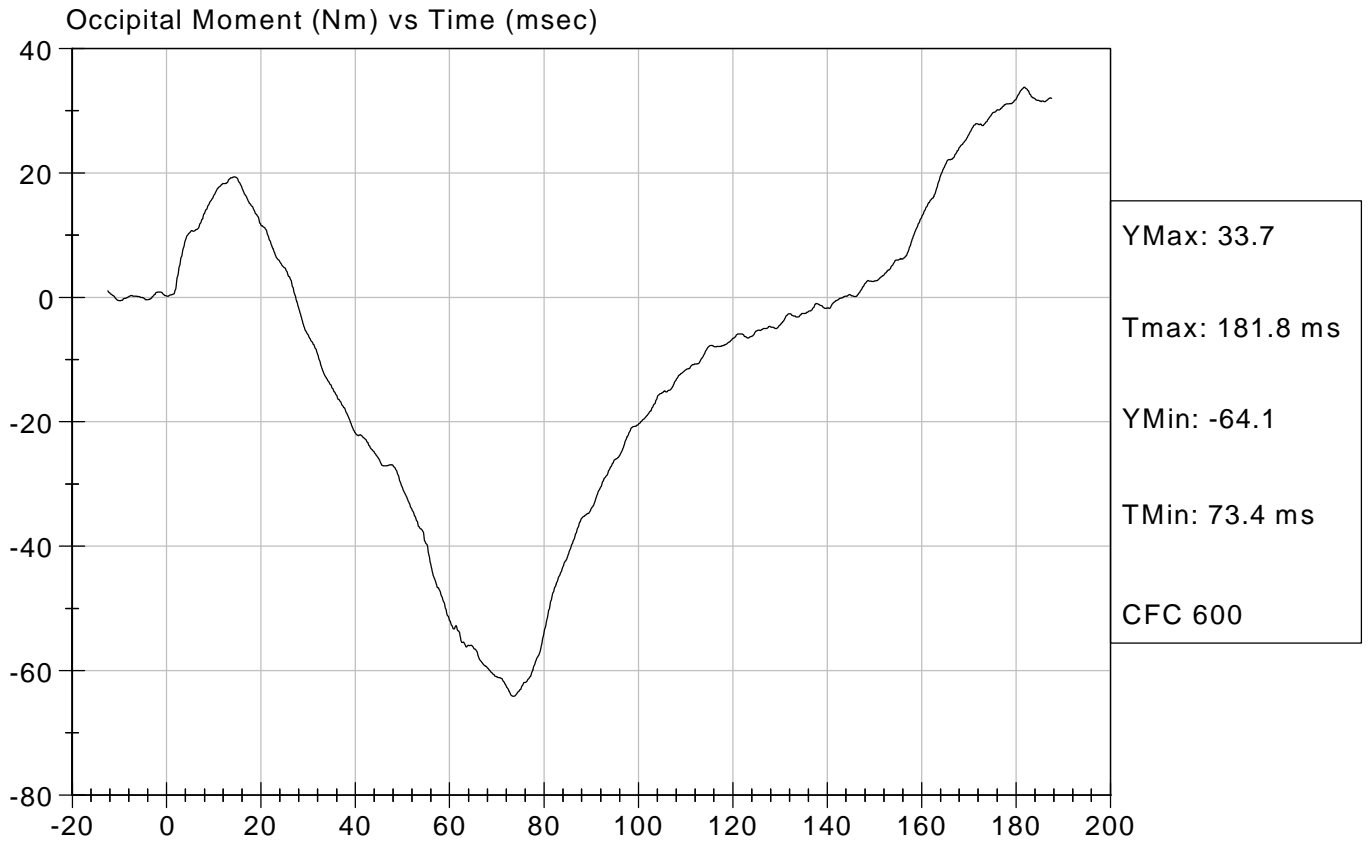


YMax: 18.8 G'S
Tmax: 8.5 ms
YMin: -2.2 G'S
Tmin: 51.2 ms
CFC 60

Neck Rotation (DEG) vs Time (msec)



YMax: 97.2
TMax: 78.0 ms
YMin: -32.8
Tmin: 187.5 ms
CFC 60



Hybrid III Calibration Data Sheet

50th Percentile Male

Thorax Impact Test

ATD Serial No: 066

Test I.D: D031684

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force	Newtons	5159 to 5893	5,471	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.42	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

10/02/2003

Test Date

Shefalika Jaiswal
Approved By

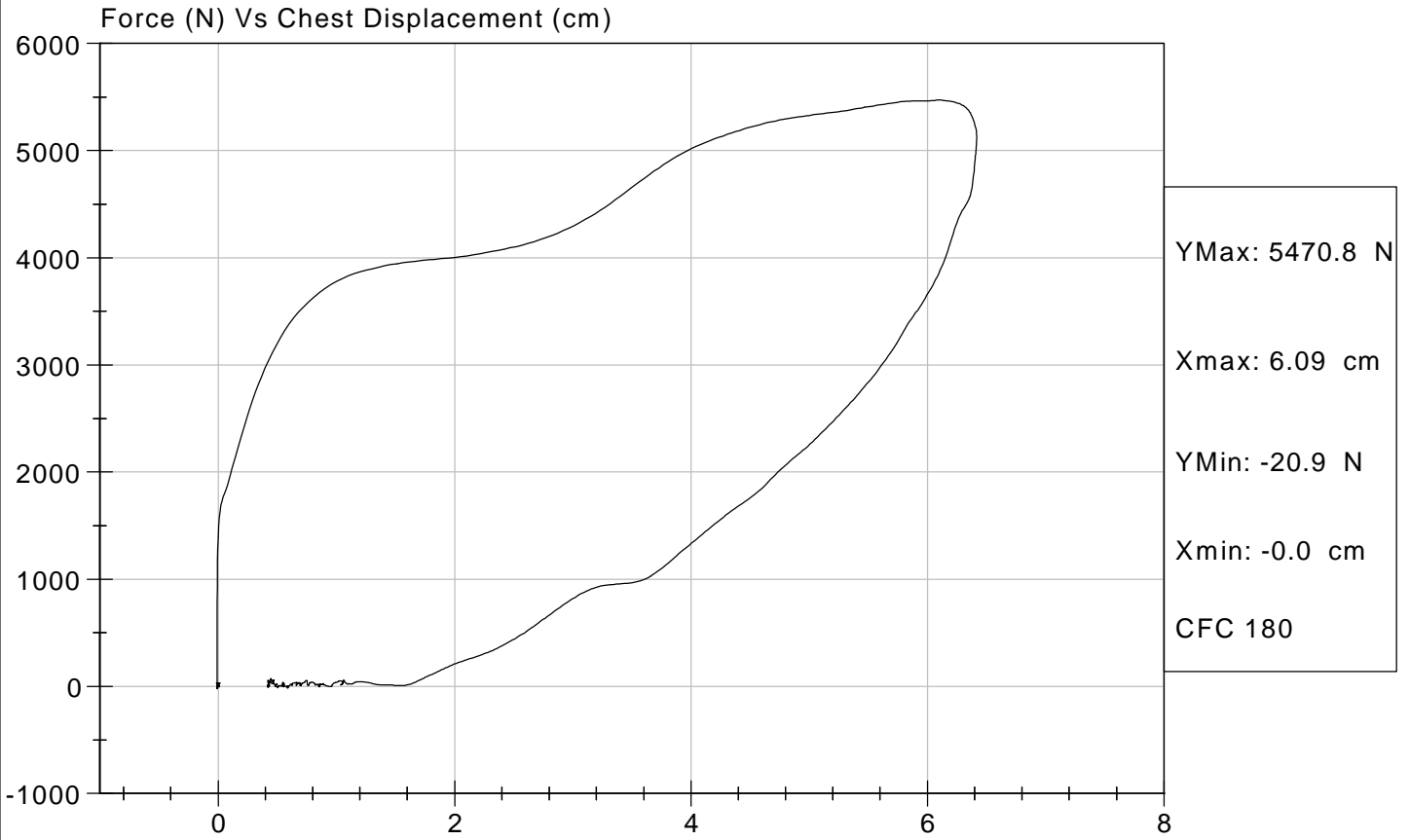


Test Description: Thorax Impact

Test Date: 10/02/2003

Component: D031684

Speed: 22.07 ft/sec, 6.73 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Right Knee Impact Test

ATD Serial No: 066

Test I.D: D031685

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	4,832	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

09/30/2003
Test Date

Shetalika Jaganwal
Approved By

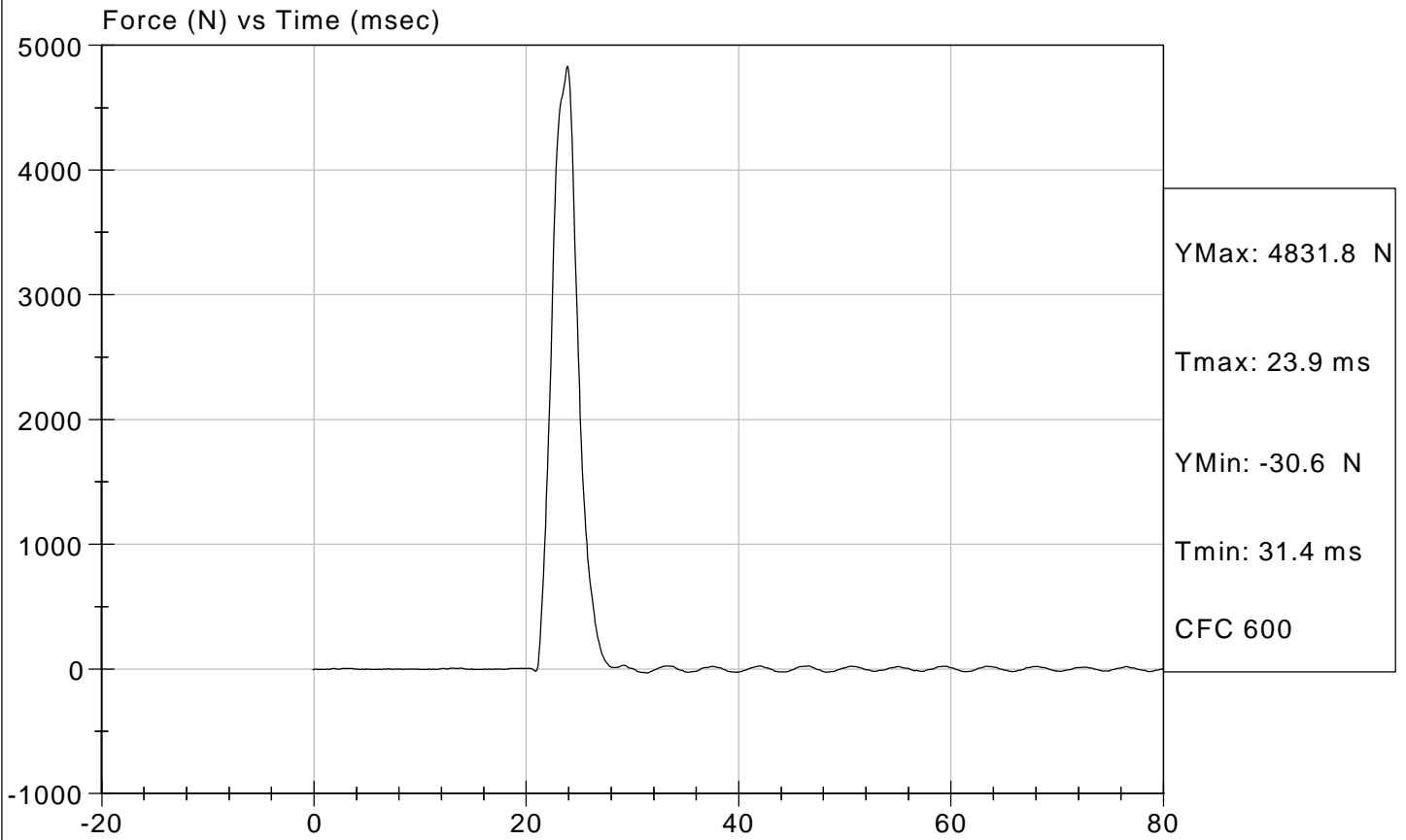


Test Description: Right Knee

Test Date: 09/30/2003

Component: D031685

Speed: 6.89 ft/sec, 2.100 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Left Knee Impact Test

ATD Serial No: 066

Test I.D: D031686

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,740	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

09/30/2003
Test Date

Shetalika Gaural
Approved By

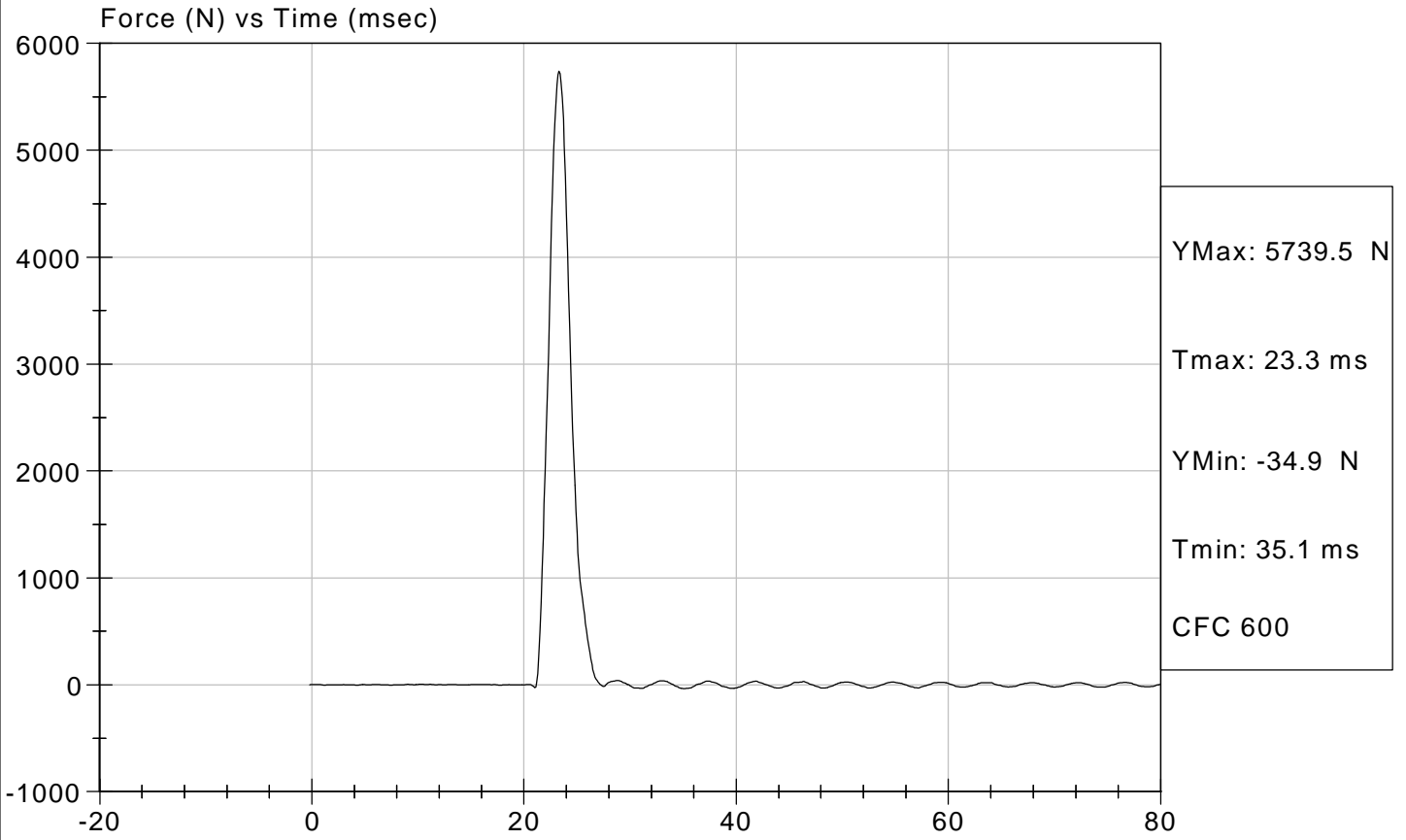


Test Description: Left Knee

Test Date: 09/30/2003

Component: D031686

Speed: 6.91 ft/sec, 2.106 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Hip-Femur Flexion Test

ATD Serial No: 066

Test I.D: D031680

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	26	26	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	84.8	82.6	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	43	40	Pass
Overall Test Results					Pass

Jessica Gall
Laboratory Technician

09/30/2003
Test Date

Shetalika Jaiswal
Approved By

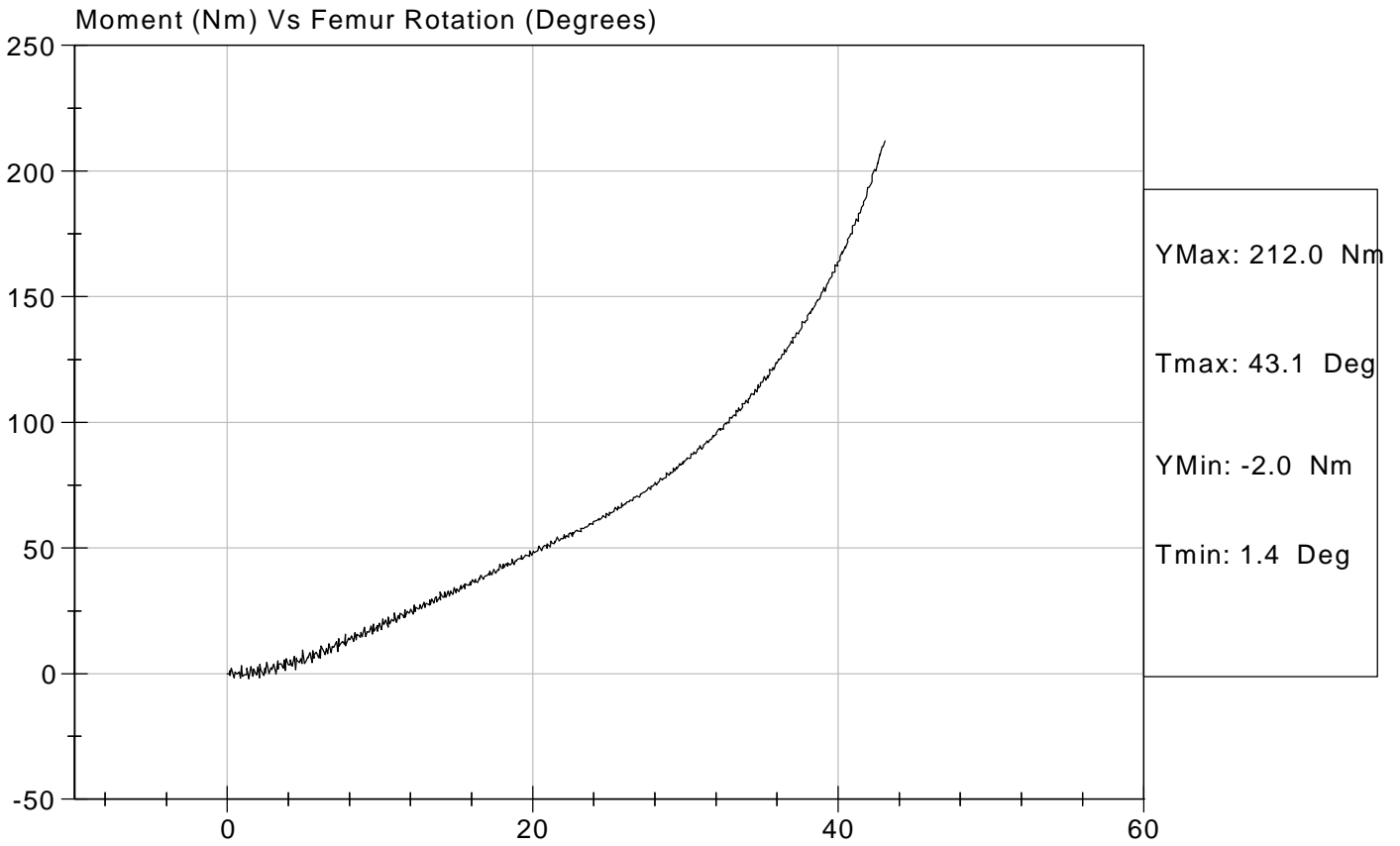


Test Description: Hip Femur Flexion

Test Date: 09/30/2003

Component: D031689

Speed: 0 ft/sec, 0.00 m/sec



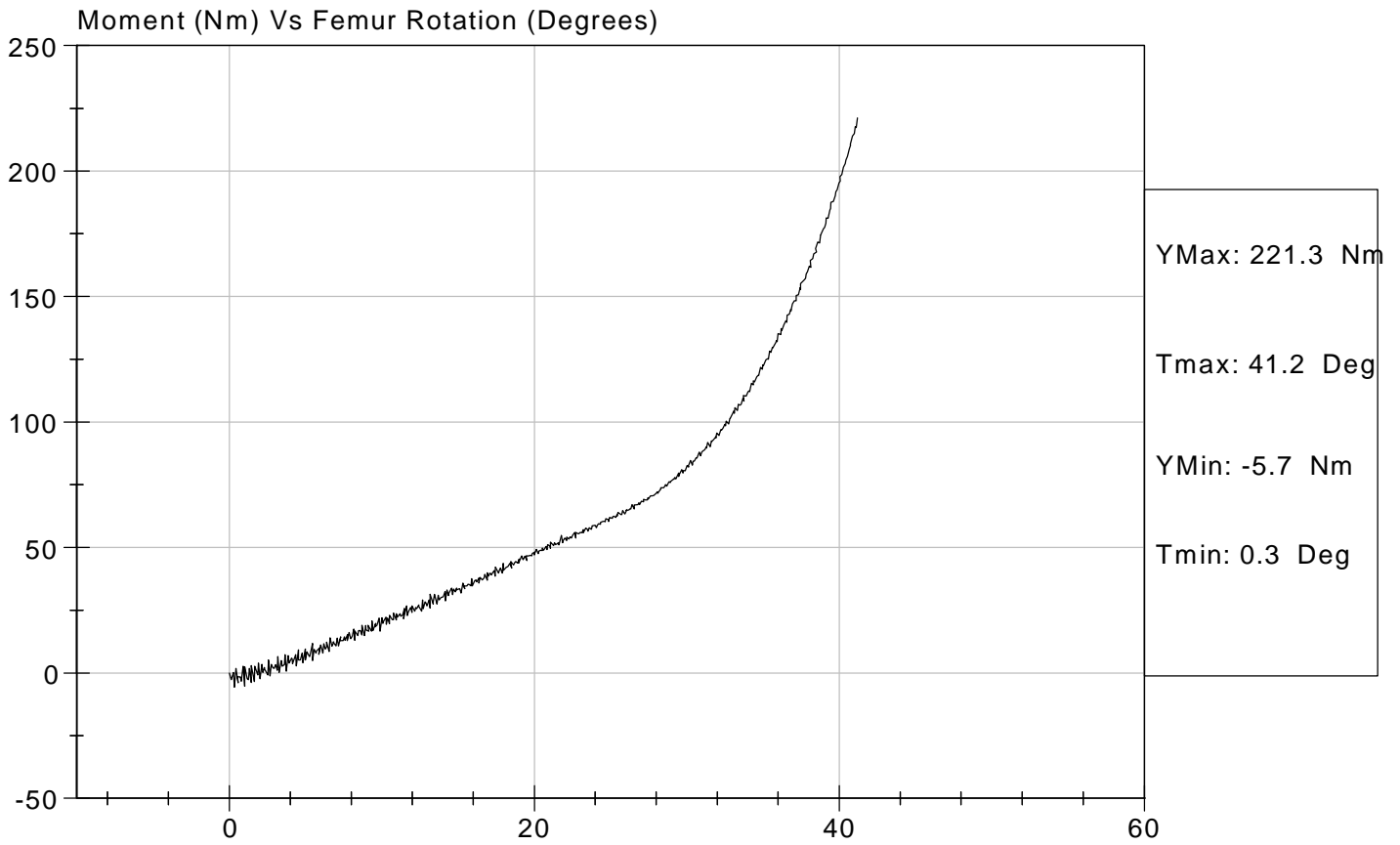


Test Description: Hip Femur Flexion

Test Date: 09/30/2003

Component: D031680

Speed: 0 ft/sec, 0.00 m/sec



DUMMY INSPECTION CHECKLIST

Type: Hybrid III

Dummy Serial Number: 066

Inspected By: Tim Michnay

Date: 10/2/03

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual, cable torque, nodding blocks	OK
Clavicles	visual, bumpers, range of motion	OK
Arms/Hands	visual, bumpers, range of motion	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure, stiffeners	OK
Sternum	visual, bumpers	OK
Lumbar spine	visual, cable torque	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual, load cell bolts	OK
Knees	visual, stops, inserts, sliders	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

Notes (include component/problem/action/reason):

CERTIFICATION DATA

Dummy Serial Number: 065

Calibration Test Results Summary

Dummy Serial Number: 065

Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Head Drop Test:	The head passed all drop test requirements.
Neck Flexion Test:	The neck passed all flexion test requirements.
Neck Extension Test:	The neck passed all extension test requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Knee Impact Tests:	Both knees passed all impact test requirements.
Hip-Femur Flexion Tests:	Both femurs passed all flexion test requirements.

HYBRID III DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Dummy Serial Number: 065

Date of Verification: 9/29/03

Test Number: D03167

DESCRIPTION	SPECIFICATION	TEST RESULTS
Temperature (°F)	20.6 – 22.2	21.1
Relative Humidity	10 – 70 %	30
AA - Location for Chest Circumference	429.3 – 434.3 mm	431.8
BB - Location for Waist Circumference	226.1 – 231.1 mm	228.6
A - Total Sitting Height	878.8 – 889.0 mm	882.7
B – Shoulder Pivot Height	505.5 – 520.7 mm	508.0
C – H Point Height	82.9 – 88.9 mm	88.9
D – H Point from Seat Back	134.7 – 139.7 mm	139.7
E – Shoulder Pivot From Backline	84.8 – 94.0 mm	94.0
F – Thigh Clearance	139.7 – 154.9 mm	146.1
G – Back of Elbow to Wrist Pivot	289.6 – 304.8 mm	292.1
H – Skull Cap Skin to Backline	40.7 – 45.7 mm	44.5
I – Shoulder Elbow Length	330.2 – 345.4 mm	330.2
J – Elbow Rest Height	190.5 – 210.9 mm	196.9
K – Buttock Knee Length	579.1 – 604.5 mm	603.3
L – Popliteal Height	429.3 – 454.7 mm	444.5
M – Knee Pivot Height	485.2 – 500.4 mm	488.2
N – Buttock Popliteal Length	452.1 – 477.5 mm	469.9
O – Chest Depth at 3 rd Rib	213.4 – 228.6 mm	215.9
P – Foot Length	251.5 – 266.7 mm	254.0
V – Shoulder Breadth	421.7 – 436.9 mm	434.3
W – Foot Breadth	91.5 – 106.7 mm	98.4
Y – Chest Circumference	970.3 – 1000.7 mm	977.9
Z – Waist Circumference	835.7 – 866.1 mm	844.6

Technician: Jessica Gall

Approved By: Shetalika Gansal

Hybrid III Calibration Data Sheet

50th Percentile Male
Head Drop Calibration

ATD Serial No: 065

Test I.D.: D031671

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	234.9	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	10.9	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

09/29/2003
Test Date

Shetalika Gansal
Approved By



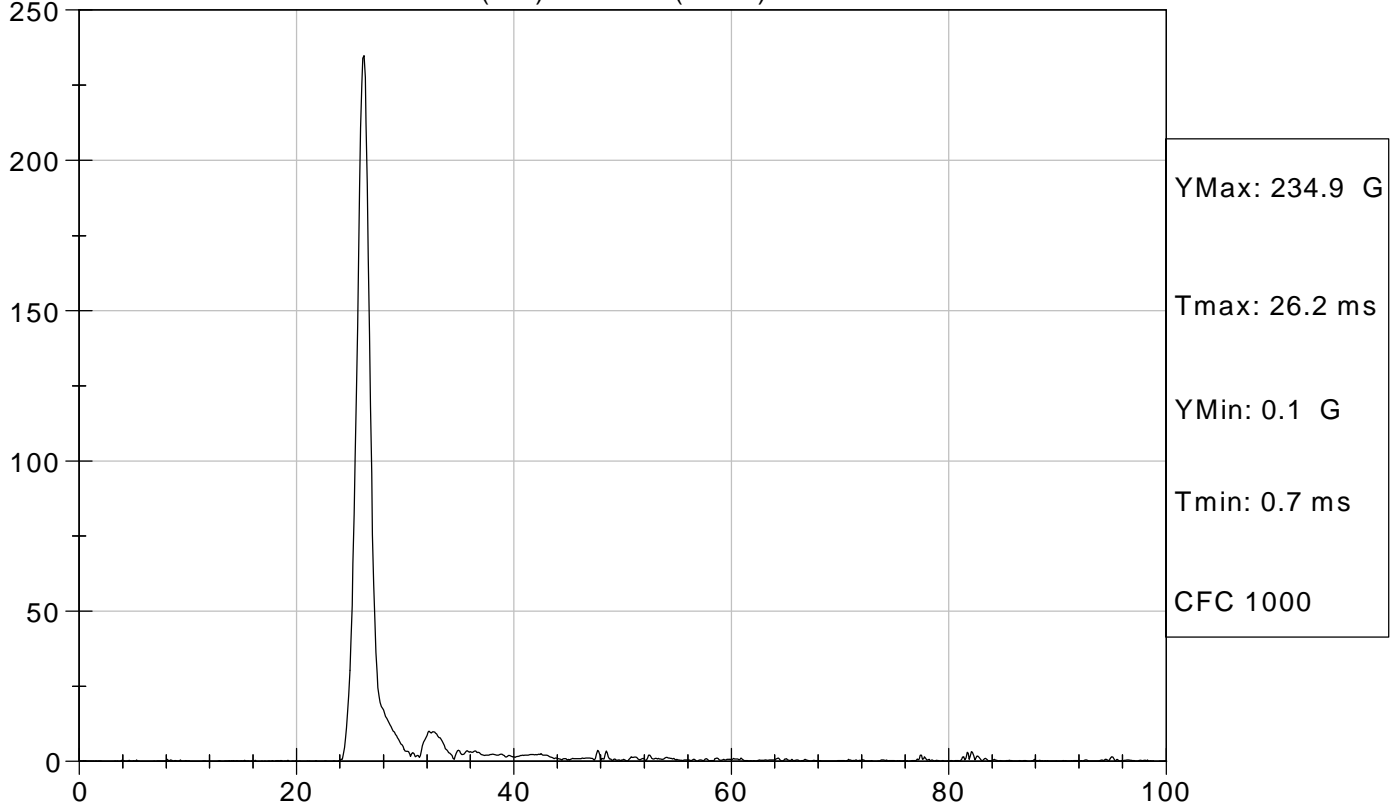
Test Description: Head Drop

Test Date: 09/29/2003

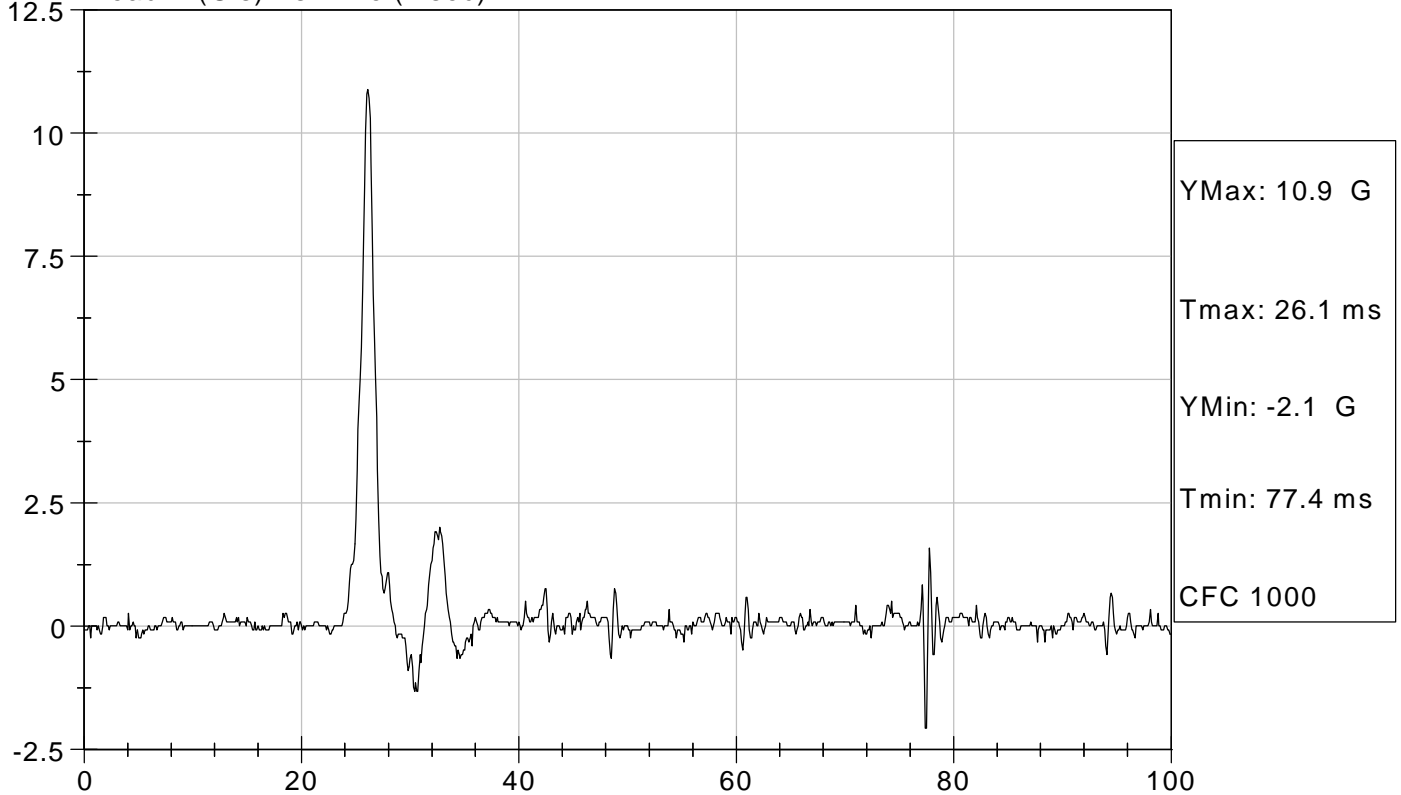
Component: D031671

Speed: 0 ft/s, 0.00 m/s

Head Resultant Acceleration (G's) Vs Time (msec)



Head Y (G's) Vs Time (msec)



Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Flexion Test

ATD Serial No: 065

Test I.D.: D031672

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.94	Pass
	20 msec	G's	17.60 to 22.60	20.02	Pass
	30 msec	G's	12.50 to 18.50	13.89	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	13.89	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	36.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	74.3	Pass
	Time	msec	57.0 to 64.0	58.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.4	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	95.6	Pass
	Time	msec	47.0 to 58.0	49.4	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	102.2	Pass
Overall Test Results					Pass

Jessica Hall

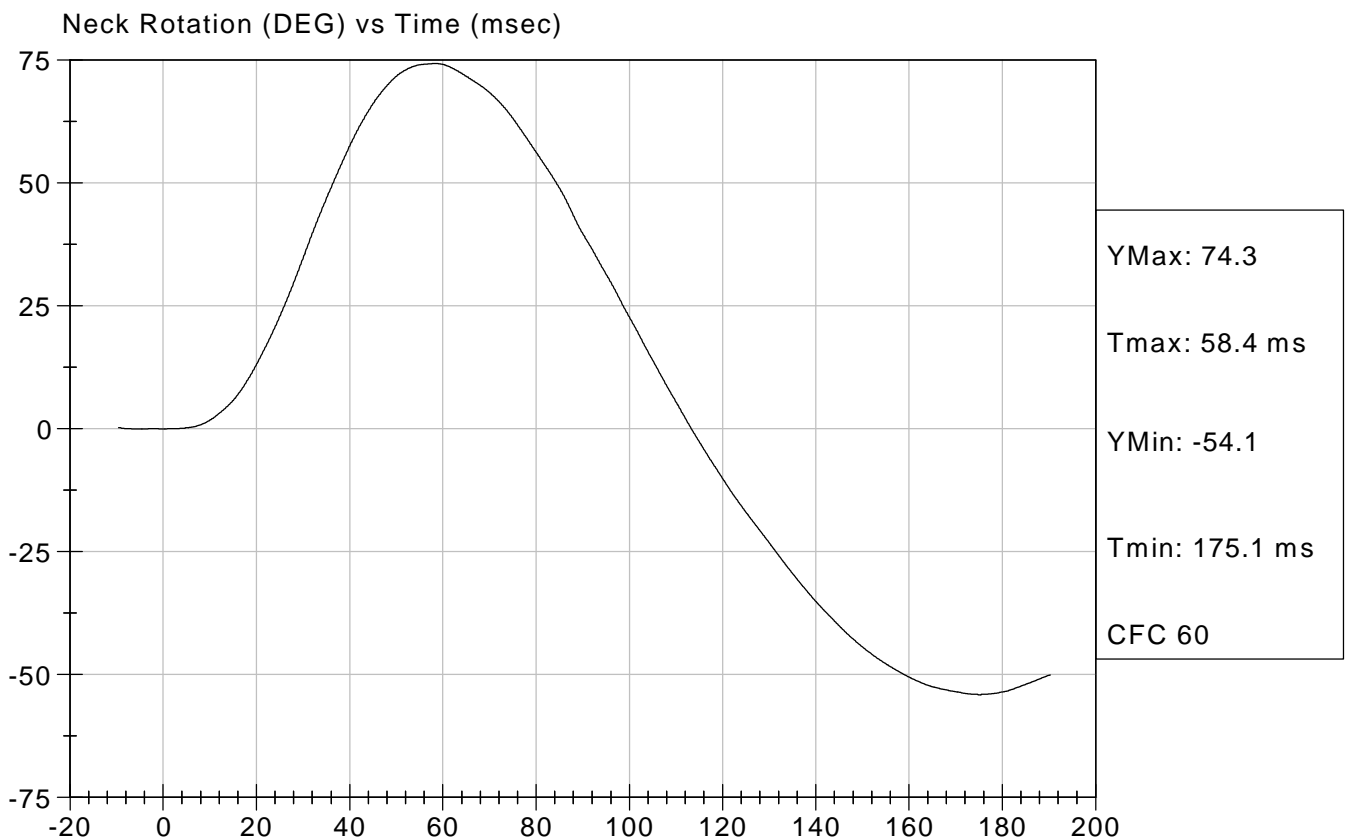
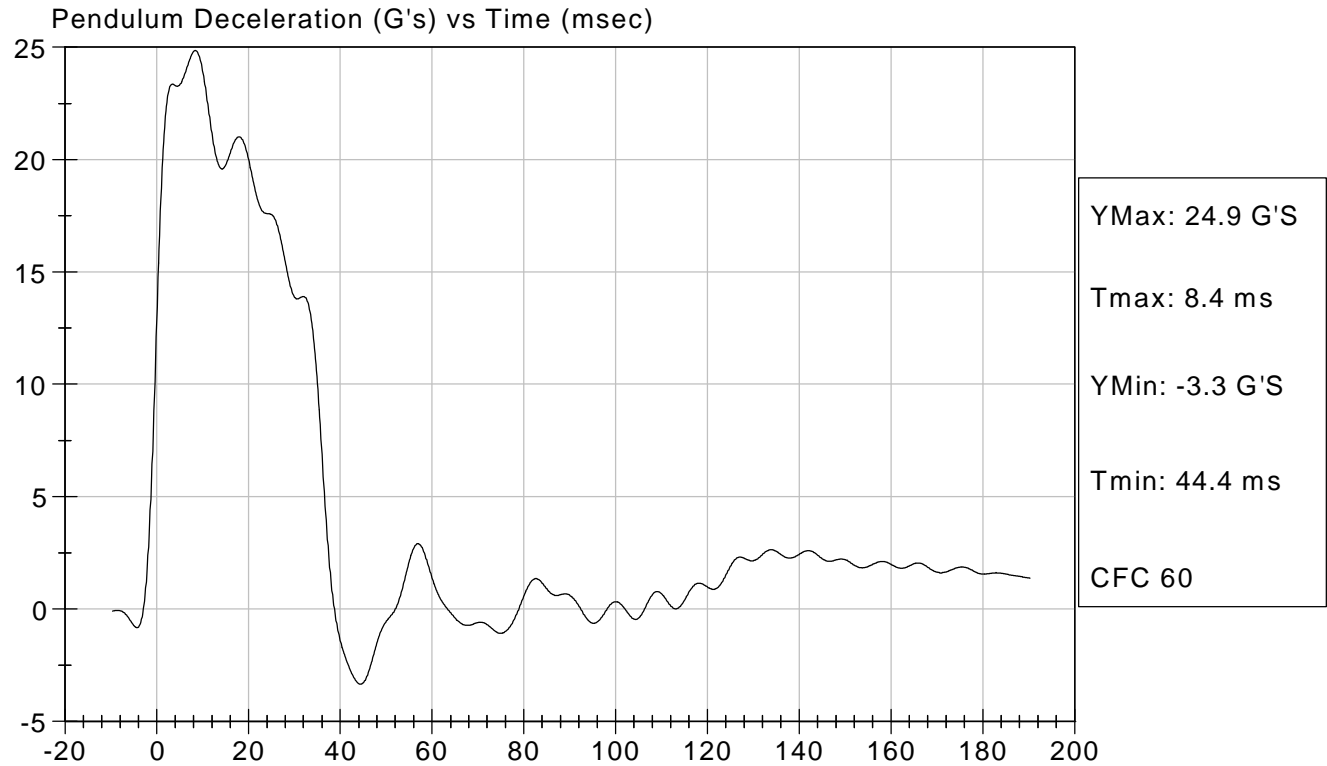
 Laboratory Technician

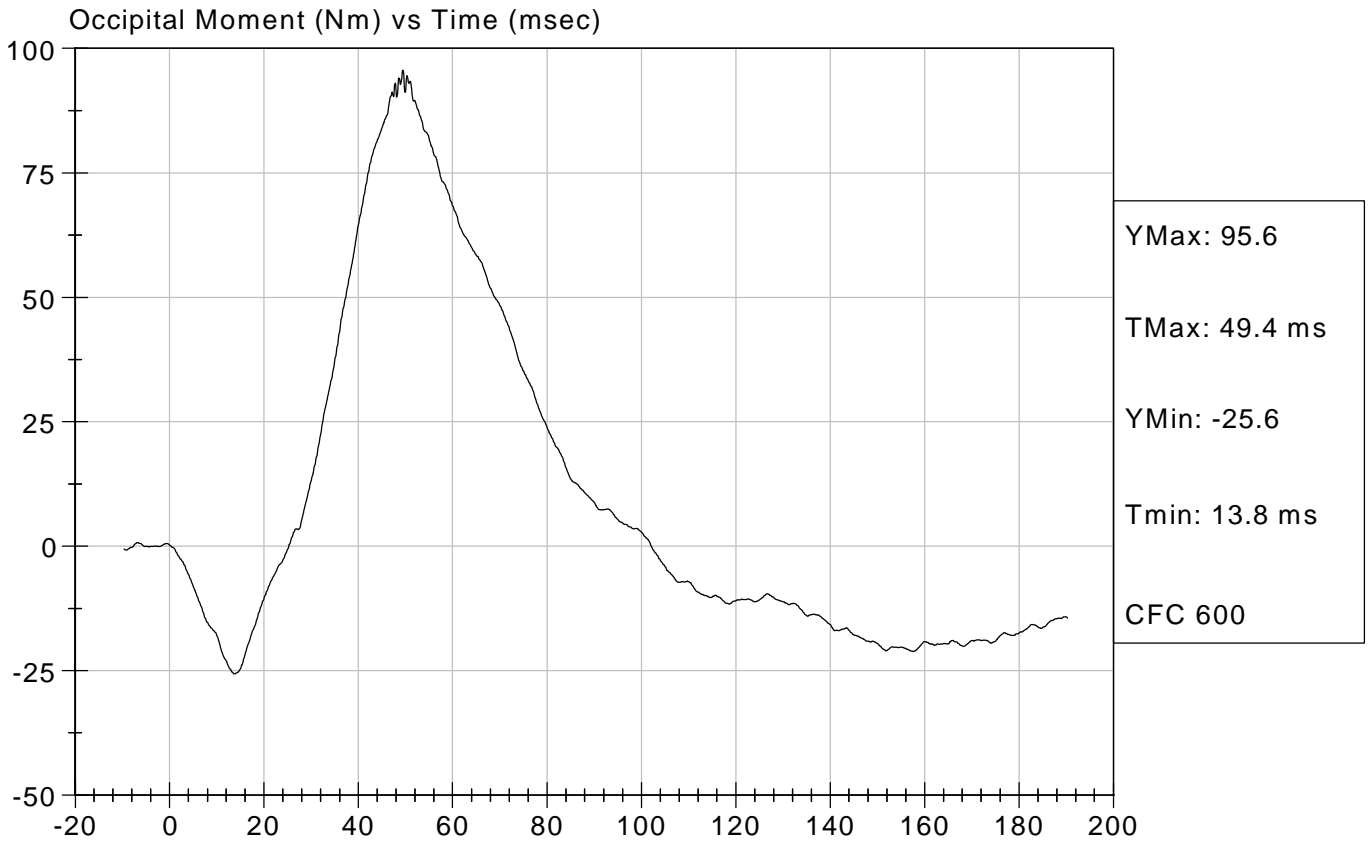
09/30/2003

Test Date

Shefalika Jaiswal

 Approved By





Hybrid III Calibration Data Sheet

50th Percentile Male

Neck Extension Test

ATD Serial No: 065

Test I.D.: D031673

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	26	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.01	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	18.87	Pass
	20 msec	G's	14.00 to 19.00	17.13	Pass
	30 msec	G's	11.00 to 16.00	12.61	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.1	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	39.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.0	Pass
	Time	msec	72.0 to 82.0	75.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	155.4	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-65.5	Pass
	Time	msec	65.0 to 79.0	72.1	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	141.1	Pass

Overall Test Results	Pass
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Jessica Hall

 Laboratory Technician

09/30/2003

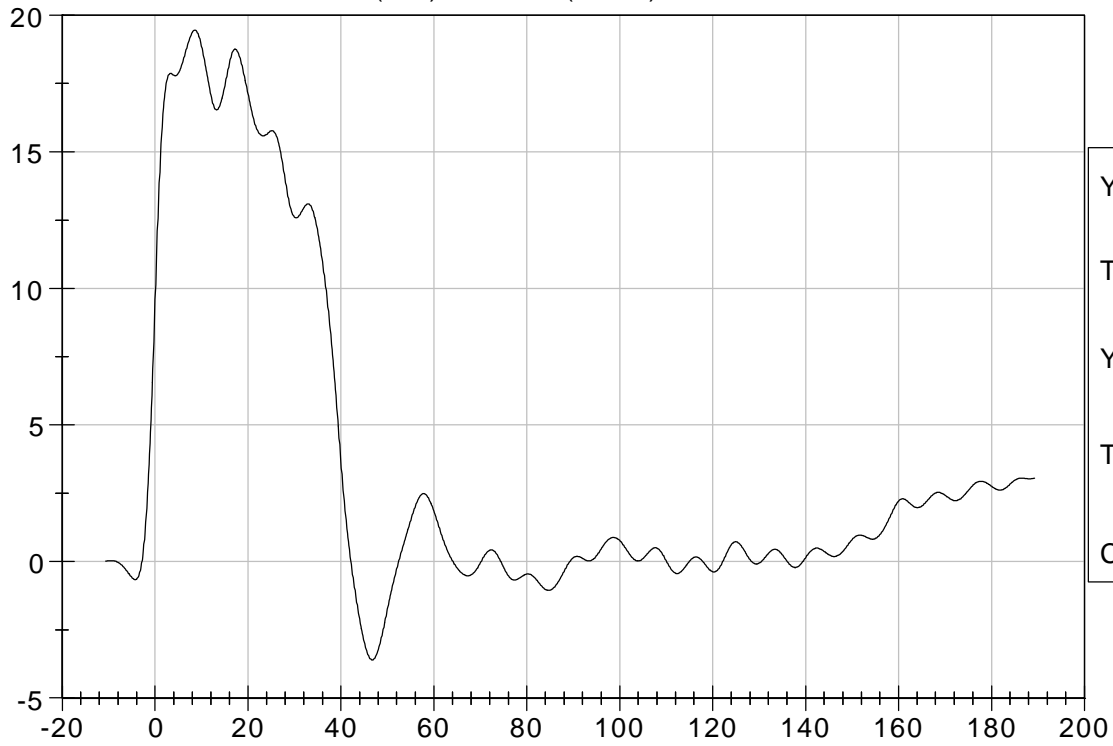
 Test Date

Shetalika Jauwal

 Approved By

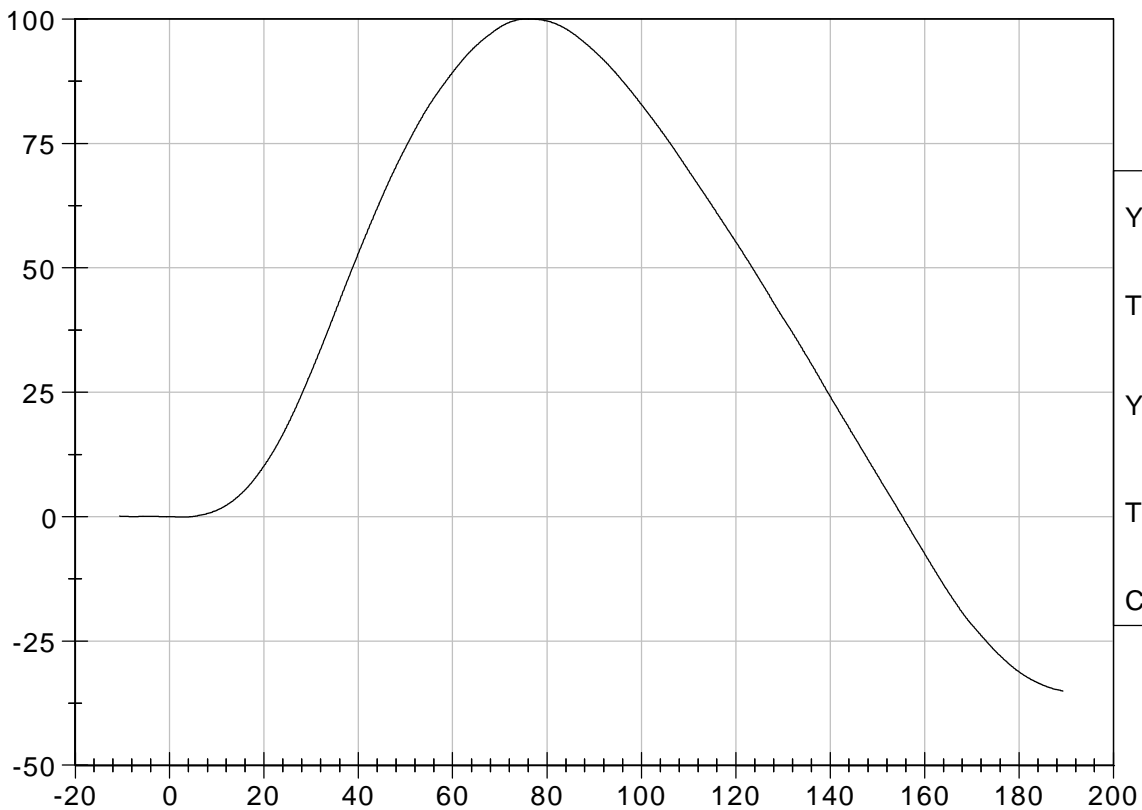


Pendulum Deceleration (G's) vs Time (msec)

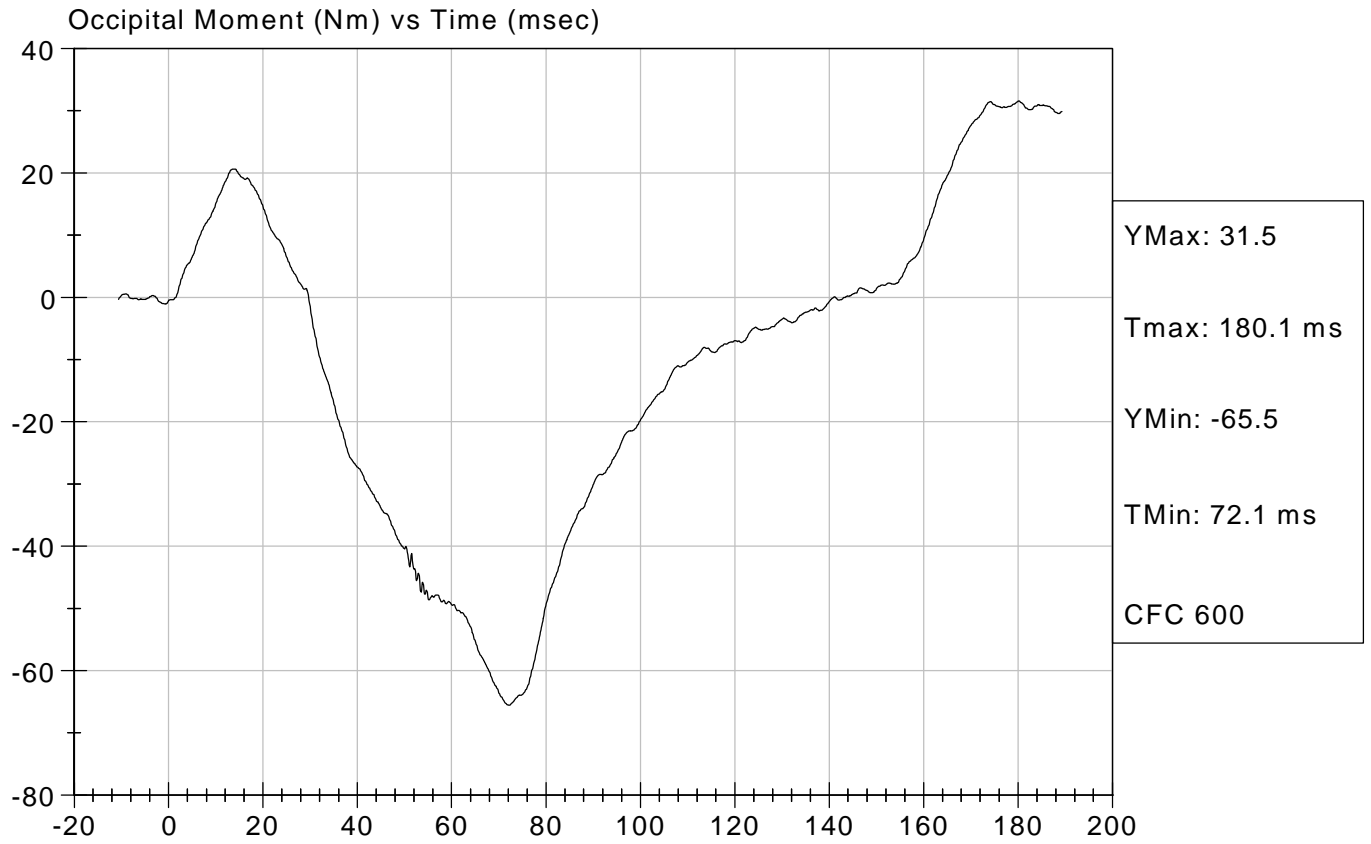


YMax: 19.5 G'S
Tmax: 8.5 ms
YMin: -3.6 G'S
Tmin: 46.7 ms
CFC 60

Neck Rotation (DEG) vs Time (msec)



YMax: 100.0
TMax: 75.9 ms
YMin: -35.1
Tmin: 189.3 ms
CFC 60



Hybrid III Calibration Data Sheet

50th Percentile Male

Thorax Impact Test

ATD Serial No: 065

Test I.D.: D031674

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force	Newtons	5159 to 5893	5,536	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.85	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

10/02/2003
Test Date

Shitalika Jaiswal
Approved By

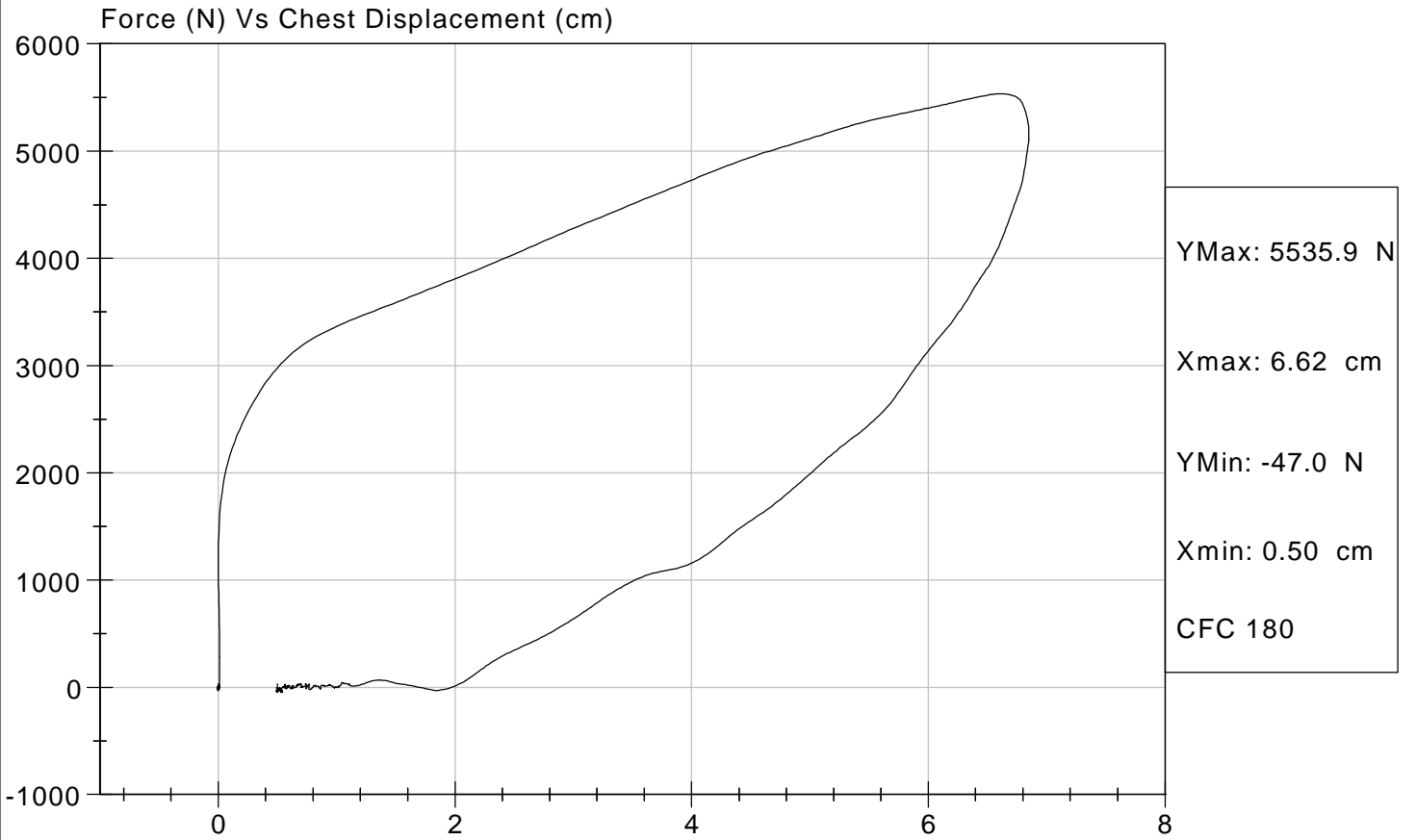


Test Description: Thorax Impact

Test Date: 10/02/2003

Component: D031674

Speed: 22.07 ft/sec, 6.73 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Right Knee Impact Test

ATD Serial No: 065

Test I.D: D031675

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,401	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

09/30/2003
Test Date

Shetalika Jauwal
Approved By

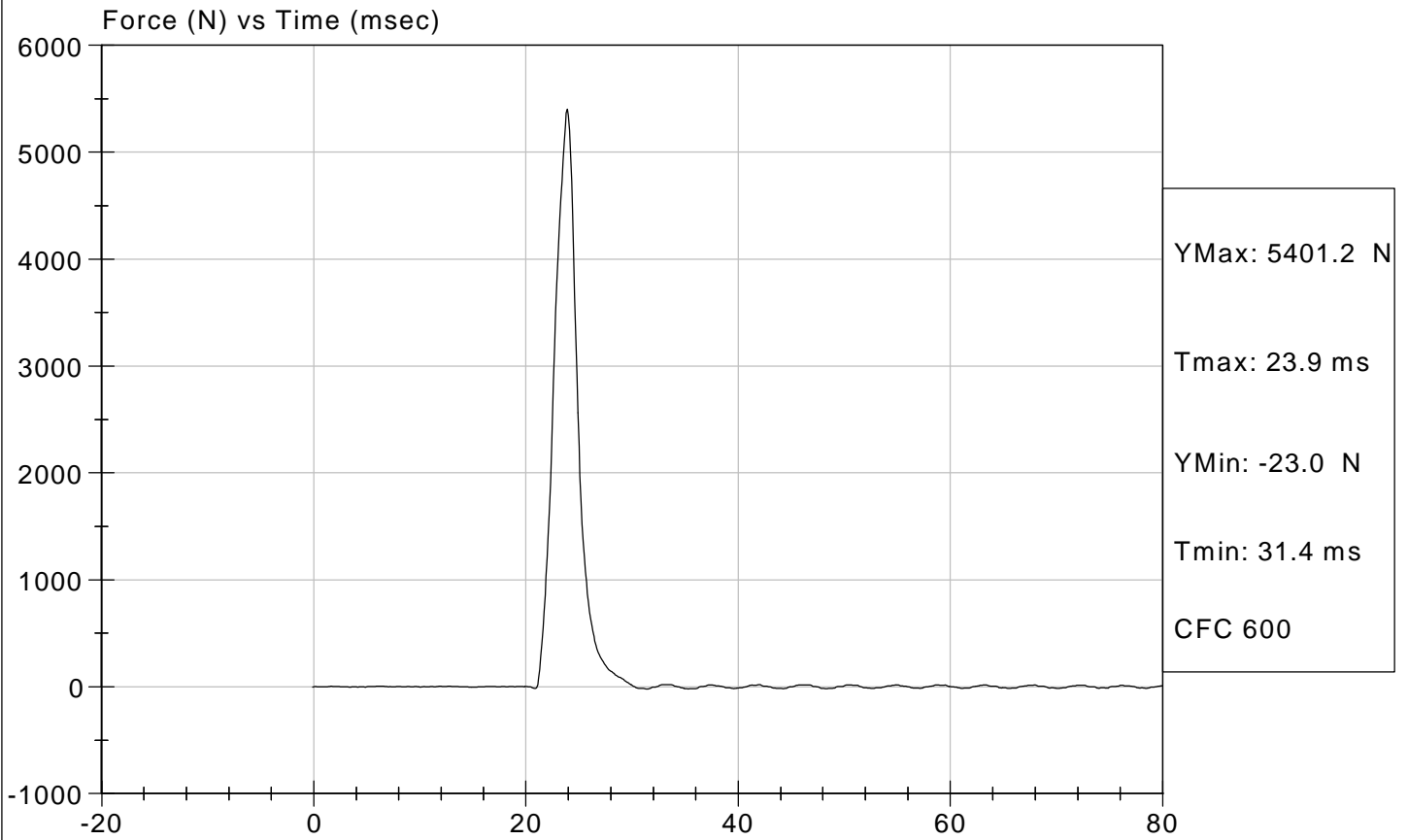


Test Description: Right Knee

Test Date: 09/30/2003

Component: D031675

Speed: 6.96 ft/sec, 2.121 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Left Knee Impact Test

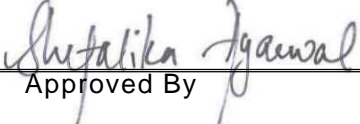
ATD Serial No: 065

Test I.D.: D031676

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5,234	Pass
Overall Test Results				Pass


Laboratory Technician

09/30/2003
Test Date


Approved By

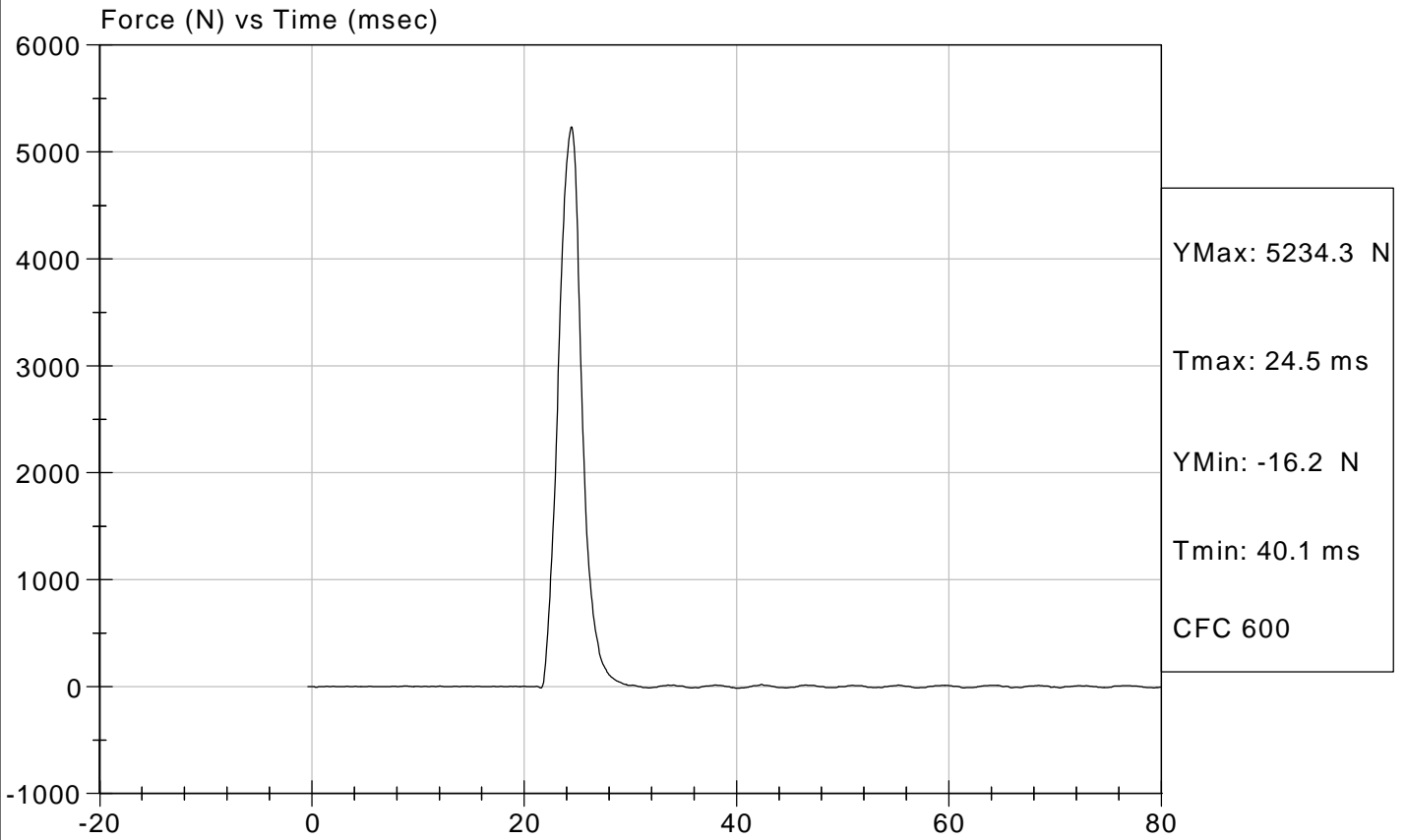


Test Description: Left Knee

Test Date: 09/30/2003

Component: D031676

Speed: 6.83 ft/sec, 2.082 m/sec



Hybrid III Calibration Data Sheet

50th Percentile Male

Hip-Femur Flexion Test

ATD Serial No: 065

Test I.D: D031670

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.1	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	26	26	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	69.2	68.5	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	44	44	Pass
Overall Test Results					Pass

Jessica Hall
Laboratory Technician

09/30/2003
Test Date

Shetalika Jauwal
Approved By

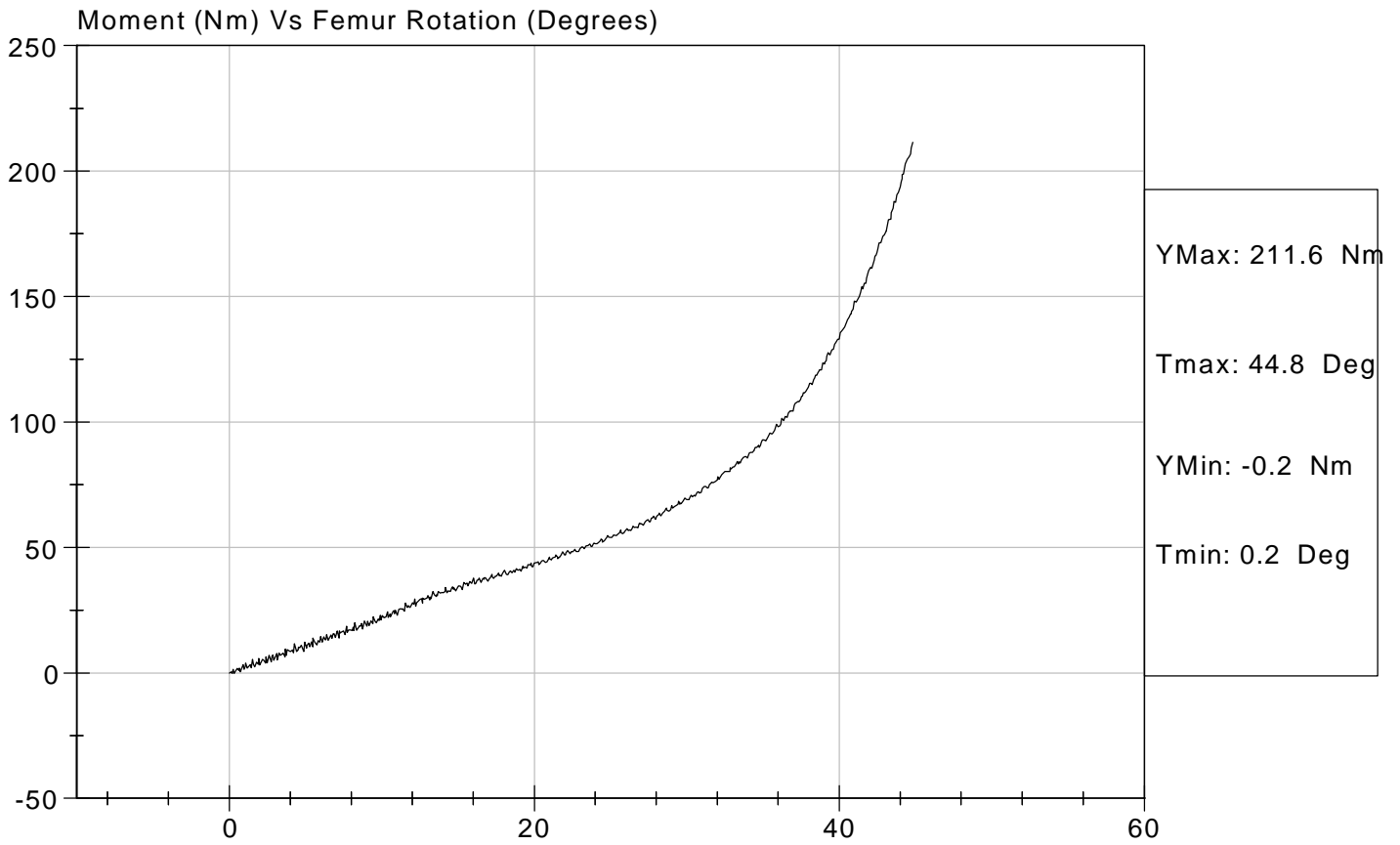


Test Description: Hip Femur Flexion

Test Date: 09/30/2003

Component: D031679

Speed: 0 ft/sec, 0.00 m/sec



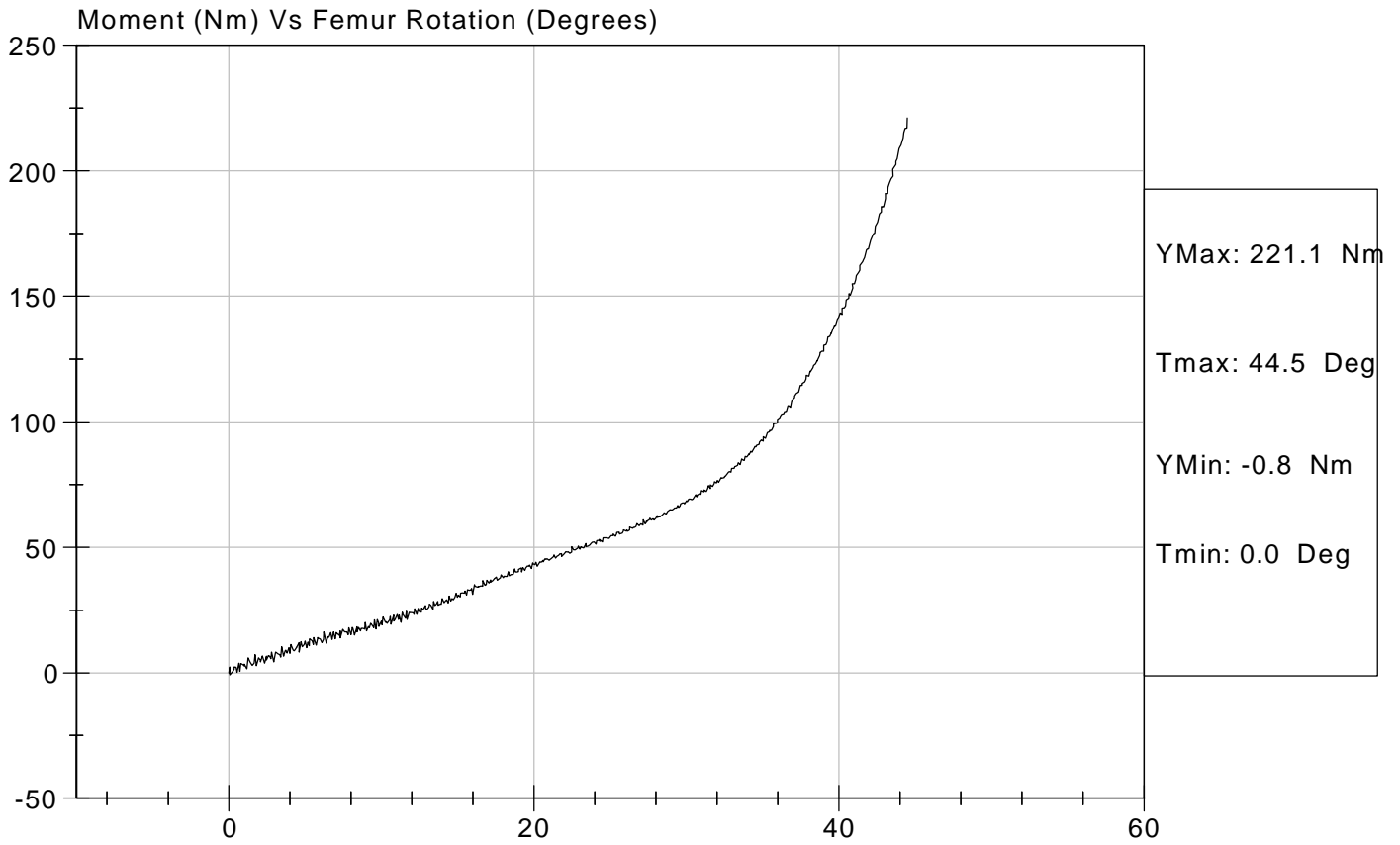


Test Description: Hip Femur Flexion

Test Date: 09/30/2003

Component: D031670

Speed: 0 ft/sec, 0.00 m/sec



DUMMY INSPECTION CHECKLIST

Type: Hybrid III

Dummy Serial Number: 065

Inspected By: Tim Michnay

Date: 10/2/03

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual, cable torque, nodding blocks	OK
Clavicles	visual, bumpers, range of motion	OK
Arms/Hands	visual, bumpers, range of motion	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure, stiffeners	OK
Sternum	visual, bumpers	OK
Lumbar spine	visual, cable torque	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual, load cell bolts	OK
Knees	visual, stops, inserts, sliders	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

Notes (include component/problem/action/reason):

APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

INSTRUMENTS FOR DRIVER DUMMY NO. 065

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AAMN8	Endevco	10/3/03
Head Y	ACC61	Endevco	10/3/03
Head Z	ACCW9	Endevco	10/3/03
Head X Redundant	J19884	Endevco	10/3/03
Head Y Redundant	J21988	Endevco	10/3/03
Head Z Redundant	J28986	Endevco	10/3/03
Neck Load Cell	443	Denton	8/20/03
Chest X	ACCY1	Endevco	10/6/03
Chest Y	ACCC8	Endevco	10/6/03
Chest Z	ACCT7	Endevco	10/6/03
Chest Deflection Gauge	066	Servo	9/30/03
Chest X Redundant	J13541	Endevco	10/6/03
Chest Y Redundant	J20093	Endevco	10/6/03
Chest Z Redundant	J19440	Endevco	10/6/03
Pelvis X	J22033	Endevco	10/3/03
Pelvis Y	J21691	Endevco	10/3/03
Pelvis Z	J21970	Endevco	10/3/03
Left Femur Load Cell	262	Denton	8/20/03
Right Femur Load Cell	261	Denton	8/20/03
Left Upper Tibia Load Cell	109	Denton	8/19/03
Left Lower Tibia Load Cell	138	Denton	8/19/03
Right Upper Tibia Load Cell	106	Denton	8/20/03
Right Lower Tibia Load Cell	135	Denton	8/20/03
Left Foot Z – Front	J28988	Endevco	10/3/03
Left Ankle X	J22036	Endevco	10/3/03
Left Ankle Z	J20569	Endevco	10/3/03
Right Foot Z – Front	J20382	Endevco	8/7/03
Right Ankle X	J20165	Endevco	8/7/03
Right Ankle Z	J28708	Endevco	8/7/03
Lap Belt Load Cell	190	Denton	7/8/03
Shoulder Belt Load Cell	104	Denton	11/4/03

INSTRUMENTS FOR PASSENGER DUMMY NO. 066

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACCY6	Endevco	10/3/03
Head Y	J13941	Endevco	10/6/03
Head Z	AAMW5	Endevco	10/3/03
Head X Redundant	J18724	Endevco	10/6/03
Head Y Redundant	J14235	Endevco	10/8/03
Head Z Redundant	AJ5R0	Endevco	10/3/03
Neck Load Cell	442	Denton	8/20/03
Chest X	ACC78	Endevco	10/3/03
Chest Y	ACCE6	Endevco	10/3/03
Chest Z	ACCY3	Endevco	10/3/03
Chest Deflection Gauge	065	Servo	9/30/03
Chest X Redundant	J19927	Endevco	10/3/03
Chest Y Redundant	J20580	Endevco	10/3/03
Chest Z Redundant	J23914	Endevco	10/3/03
Pelvis X	AHTN3	Endevco	10/3/03
Pelvis Y	AH0C3	Endevco	10/3/03
Pelvis Z	AHT12	Endevco	10/3/03
Left Femur Load Cell	259	Denton	8/20/03
Right Femur Load Cell	256	Denton	8/20/03
Left Upper Tibia Load Cell	105	Denton	8/20/03
Left Lower Tibia Load Cell	133	Denton	8/19/03
Right Upper Tibia Load Cell	103	Denton	8/19/03
Right Lower Tibia Load Cell	134	Denton	8/20/03
Left Foot Z – Front	J14120	Endevco	10/8/03
Left Ankle X	J23774	Endevco	10/6/03
Left Ankle Z	APYY3	Endevco	10/8/03
Right Foot Z – Front	J18736	Endevco	10/6/03
Right Ankle X	J23946	Endevco	10/6/03
Right Ankle Z	J27513	Endevco	10/6/03
Lap Belt Load Cell	197	Denton	7/8/03
Shoulder Belt Load Cell	160	Denton	9/18/03

INSTRUMENTS FOR VEHICLE AND LABORATORY

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	D07-N13	Entran	9/11/03
Left Rear Seat Crossmember Z	K11-J07	Entran	9/11/03
Right Rear Seat Crossmember X	C12-M11	Entran	10/9/03
Right Rear Seat Crossmember Z	K16-X08	Entran	9/11/03
Top of Engine X	D07-N04	Entran	9/11/03
Bottom of Engine X	K21-N31	Entran	9/11/03
Left Brake Caliper X	A08-M05	Entran	9/11/03
Right Brake Caliper X	A08-M09	Entran	9/11/03
Instrument Panel X	H01-N18	Entran	6/2/03

Note: All Endevco accelerometers are Model No. 7264-2000
All Entran accelerometers are Model No. EGE-72