

REPORT NUMBER KAR21128-01

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

**HYUNDAI MOTOR COMPANY
2002 HYUNDAI ACCENT GL
4 DOOR SEDAN**

NHTSA NUMBER: HY5000

**PREPARED BY:
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ADELANTO, CALIFORNIA 92301**



DECEMBER 11, 2001

FINAL REPORT

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2002 Hyundai Accent 4 Door Sedan at KARCO Engineering on 12/4/01. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 55.85 km/h. The ambient temperature at the barrier face at the time of impact is 8.8 degrees Celcius. The vehicle's maximum post test static crush is 453 mm to the right of the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:					
Measurement Description		Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC)		N/A	1000	370.8	617.3
Max. Thorax Accel. (3 msec Clip)		G's	60	45.9	41.3
Left Femur force		Newtons	10009	-3192.7	-2026.9
Right Femur Force		Newtons	10009	-5190.0	-1339.7
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SECTION 1

PURPOSE AND SUMMARY OF TEST HY5000

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-01-D-02005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph (48.3 km/h) requirements.

The 35 mph (56.3 km/h) frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Laboratory Test procedure.

1.2 SUMMARY

A load cell barrier consisting of 24 load cells was impacted by a 2002 Hyundai Accent GL 4 Door Sedan at a velocity of 55.85 km/h. The test was performed at Karco Engineering on December 4, 2001. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

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

Both ATDs were fully instrumented with a head, chest and pelvis triaxial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, left and right knee sliders, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 34) and the right-front passenger (position 2) ATD (Serial No. 35) were calibrated previous to this test.

The Ninety-seven (97) channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle and dummy response data traces. Appendix C contains Load Cell Barrier information. Appendix D contains the Instrumentation Data Channel assignments. Appendix E contains the Dummy Calibration data and Appendix F contains the owner's manual instructions for the occupant and restraint systems.

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 453 mm and both the driver and the passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag and seat belt, and both knees contacted the knee bolster.

The passenger's visible contact points were as follows. The passenger ATD head contacted the airbag and headrest. The chest and abdomen contacted the airbag and belt. Both knees contacted the glove box.

Occupant injury data contained in table below.

OCCUPANT DATA SUMMARY

ATD Position	HIC	Clip (g)	Chest Disp (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	370.3	45.9	-32.3	-3192.7	-5190.0	197.2
Passenger	617.3	41.3	-27.9	-2026.9	-1339.7	210.8

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
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: 2002 Hyundai Accent GL 4 Door Sedan

NHTSA No.: HY5000

Test Program: 2002 NHTSA 35mph NCAP

Test Date: 12/4/01

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	55.85
Test Weight	kg	1308
Impact Angle	degrees	0
Average Rebound	mm	1562
Maximum Static Crush	mm	453

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door Opening	Opened by Hand	Opened by Hand
Rear Door Opening	Opened by Hand	Opened by Hand
Seat Track Shift (mm)	None	None
Seat Back Failure	None	None

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type / Serial No.	50% Male Hybrid III / No. 34	50% Male Hybrid III / No. 35
Head Contact	Airbag/Headrest	Airbag/Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	None	Airbag
Left Knee Contact	Knee Bolster	Dash/Glove Box
Right Knee Contact	Knee Bolster	Glove Box

16mm MOVIE COVERAGE

High Speed	15
Real Time	1
Total	16

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	24
Total	121

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

NHTSA No.: HY5000

Test Program: 2002 NHTSA 35mph NCAP

Test Date: 12/4/01

TEST VEHICLE INFORMATION

Make	Hyundai
Model	Accent
Body Style	4 Door Sedan
NHTSA No.	HY5000
VIN	KMHCG45C32U284122
Color	Silver
Delivery Date	2001-11-28
Odometer Reading (mi.)	83
Dealer	Metro Nissan of Redlands
Transmission	4 Speed Automatic
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	1.6
Engine Placement	Transverse
Front Seat Side Airbag	No

TEST VEHICLE OPTIONS

Driver Front Airbag	Yes
Pass. Front Airbag	Yes
Power Windows	No
Power Steering	Yes
Power Door Locks	No
Tilt Wheel	No
Air Conditioning	Yes
Power Brakes	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	No
Anti-lock Brakes	No
Head Airbag	No
Anti-Theft System	No
Cruise Control	No
Bucket Seats	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Hyundai Motor Company
Date of Manufacture	August-01

GVWR (kg)	1501
GAWR Front (kg)	821
GAWR Rear (kg)	851

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	210	210
Cold Pressure (kPa)	210	210
Recommend Tire Size	P175/70R13	P175/70R13
Tire Size on Vehicle	P175/70R13	P175/70R13
Tire Manufacturer	Hankook	Hankook

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	None	
Number of Occupants	2	3	0	5
Capacity Wt. (VCW) (kg)				386
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	352	218		383	278	
Right	kg	339	206		375	273	
Ratio	%	62.0	38.0		57.9	42.1	
Totals	kg	691	424	1115	758	551	1308

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1115
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1312

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	625	627	626	630	927
As Tested	mm	605	611	594	598	1027

Vehicle Wheel base (mm): 2439

Weight of Ballast secured in cargo area (kg): 10

Vehicle Components Removed: No components removed.

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

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 45.0

Usable Capacity Figure Furnished by COTR (L): 45.0

Actual Test Volume with entire fuel System Filled (L): 41.9

Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.764

Kinematic Viscosity: as per ASTM Standard D484-71 ; Color: Red

Is Vehicle Fuel Pump Electric or Mechanical?: Electric

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

Fuel System Particulars: Driver side filler door, tank mounted at rear.

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

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.51 to 57.12	55.85
Trap No. 1 Entry Distance	mm	< 1524	1524
Trap No. 1 Exit Distance	mm	< 1524	305
Trap No. 2 Velocity (Redundant)	km/h	55.51 to 57.12	55.88
Trap No. 2 Entry Distance	mm	< 1524	1524
Trap No. 2 Exit Distance	mm	< 1524	305

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4082	3772	-310
Center	mm	4232	3801	-431
Right Side	mm	4082	3688	-394

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1609
Center	mm	1515
Right Side	mm	1561
Average	mm	1562

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

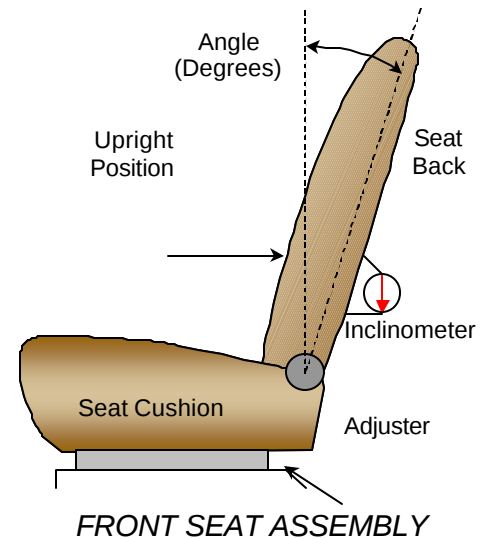
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
Test Date: 12/4/01

NOMINAL DESIGN RIDING POSITION

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

Driver seat back angle: 25.5° with a seated dummy
Passenger seat back angle: 25.5° with a seated dummy



SEAT FORE/AFT POSITIONS

Both driver and passenger seats have 19 positions or detents. The first or forward most position is counted as number one (1). The fore/aft position is set aft of the middle position for both driver and passenger.

Driver seat fore/aft total travel: 19 seating positions or detents
Driver seat fore/aft position: 10th detent from forward most
Passenger seat fore/aft total travel: 19 seating positions or detents
Passenger seat fore/aft position: 10th detent from forward most

SEAT BELT UPPER ANCHORAGE

The test vehicle is equipped with adjustable anchorages for both driver and passenger seat positions. There are 4 positions or detents. Both the driver and the passenger anchorages are placed in the 3rd position from the uppermost.

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

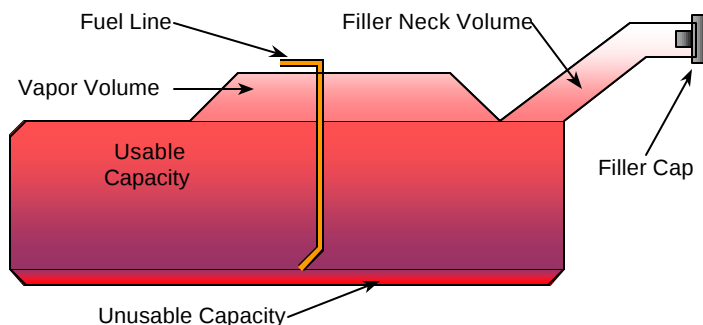
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

FUEL TANK CAPACITY DATA

The "Usable Capacity" of the standard equipment fuel tank is:	<u>45.0</u>	liters
The "Usable Capacity" of any optional equipment fuel tank is:	<u>45.0</u>	liters
"Usable Capacity" used for certification tests FMVSS 301 requirements:	<u>41.4 to 42.3</u>	liters
Actual amount of Stoddard solvent added to vehicle for certification test:	<u>41.9</u>	liters

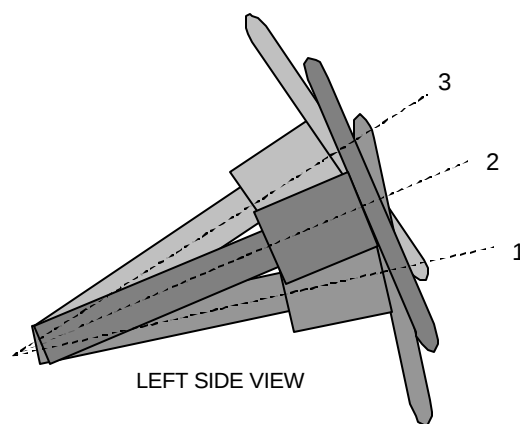
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel tank filler door is located on the left rear fender.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured. Steering column is fixed at 25 deg.



LEFT SIDE VIEW

STEERING COLUMN ASSEMBLY

Lowermost; position 1:	<u>N/A°</u>
Geometric center; position 2:	<u>N/A°</u>
Uppermost position 3:	<u>N/A°</u>

DATA SHEET NO. 5
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
Test Date: 12/4/01

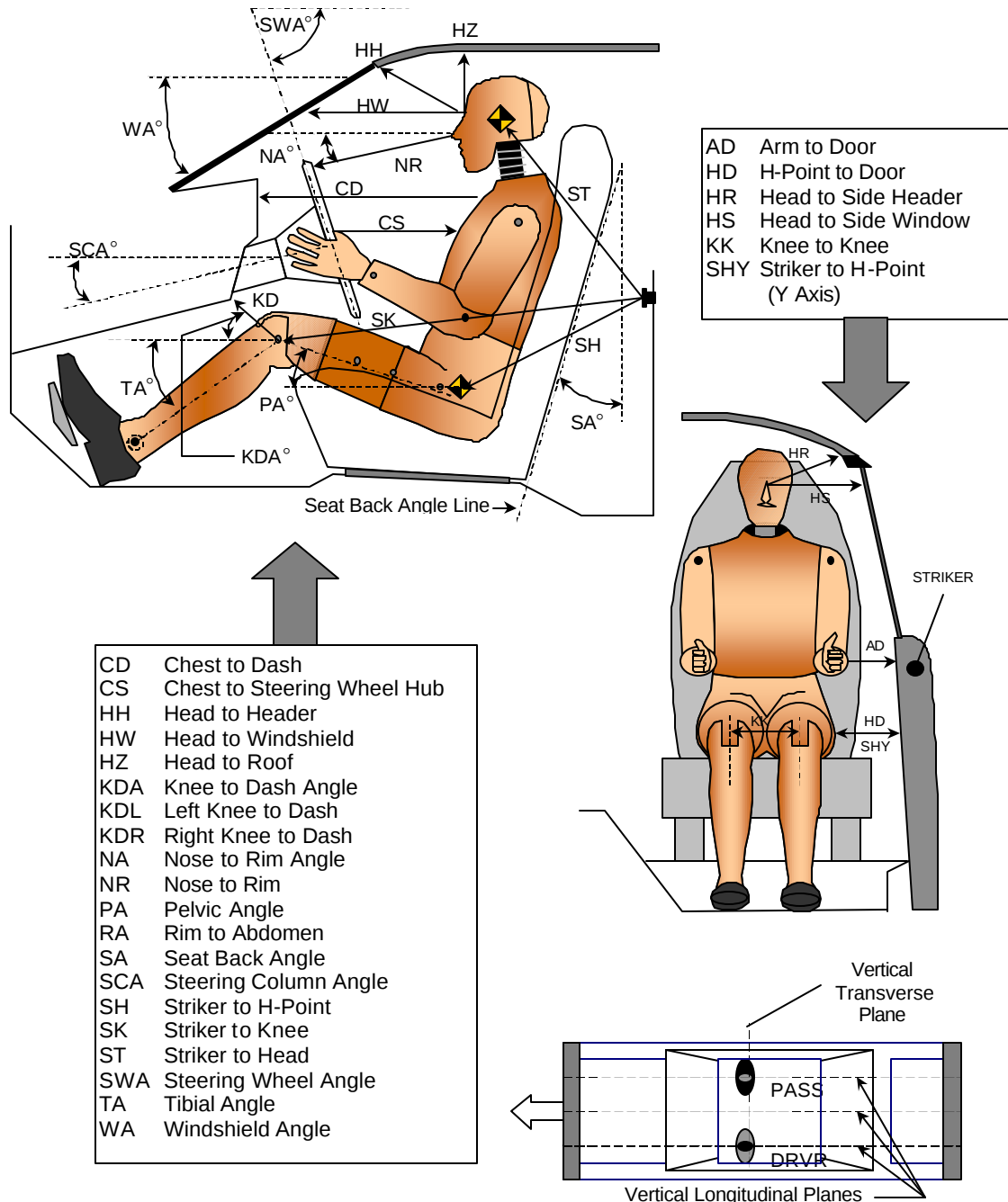
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		34		
SWA	Steering Wheel Angle		65		
SCA	Steering Column Angle		25		
SA	Seat Back Angle		25		25
HZ	Head to Roof (Z)	192	90	195	90
HH	Head to Header	356		360	
HW	Head to Windshield	542		549	
HR	Head to Side Header (Y)	263		250	
NR	Nose to Rim	436	11		
CD	Chest to Dash	538		572	
CS	Chest to Steering Hub	330			
RA	Rim to Abdomen	200			
KDL	Left Knee to Dash	175	28	145	
KDR	Right Knee to Dash	168		183	10
PA	Pelvic Angle		25		24
TA	Tibia Angle		43		38
KK	Knee to Knee (Y)	290		265	
ST	Striker to Head	558	2	570	3
SK	Striker to Knee	548	85	537	85
SH	Striker to H-Point	156	9	180	
SHY	Striker to H-Point (Y)	213		223	
HS	Head to Side Window	329		293	
HD	H-Point to Door (Y)	144		165	
AD	Arm to Door (Y)	115		40	

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

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

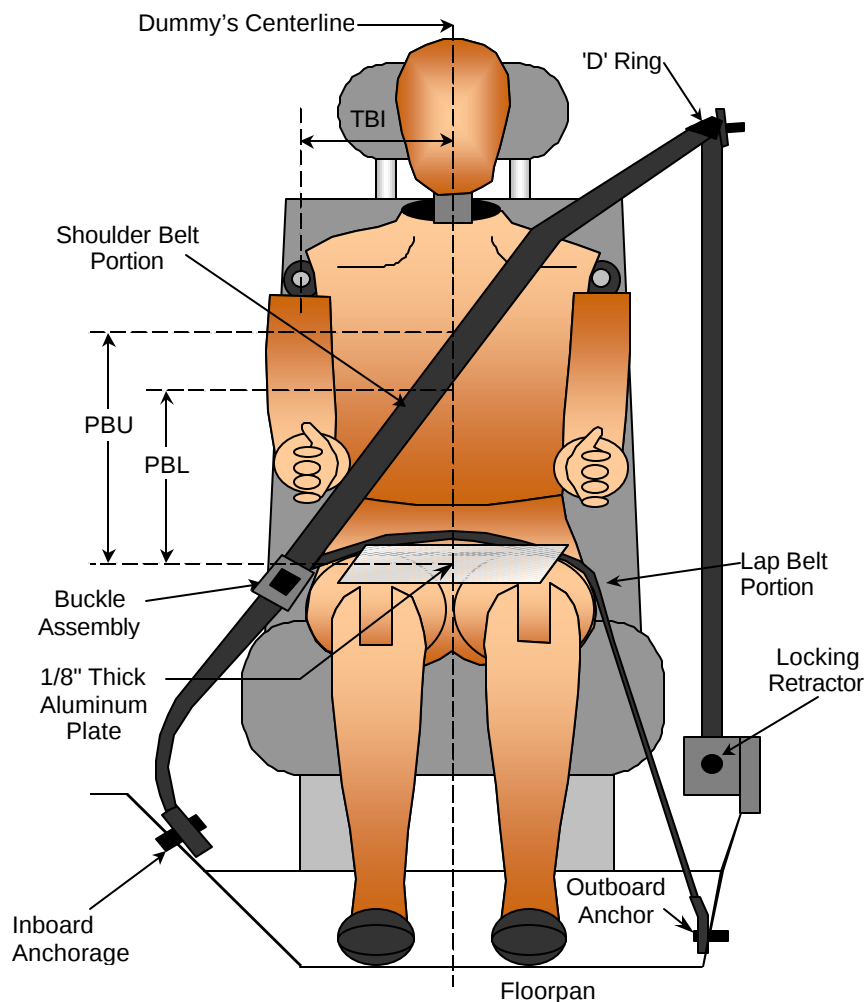


DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 6 **SEATBELT POSITIONING DATA**

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	270	245
PBU - Top surface of reference to belt upper edge	mm	364	315
PBL - Top surface of reference to belt lower edge	mm	279	240
Lap Belt tension	Newton's	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

DATA SHEET NO. 7 - VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

NHTSA No.: HY5000

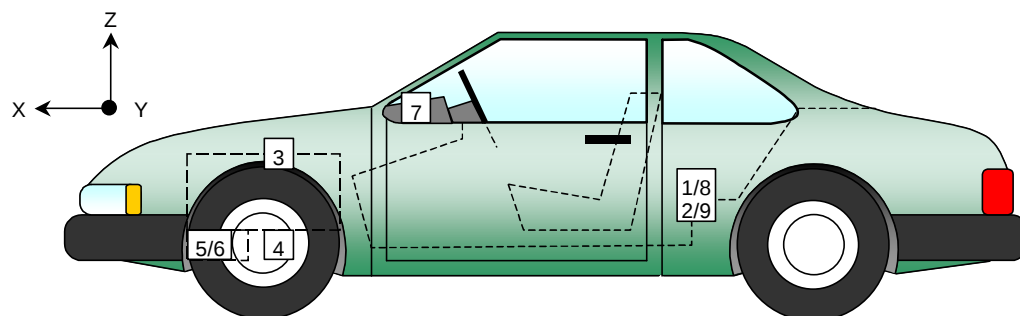
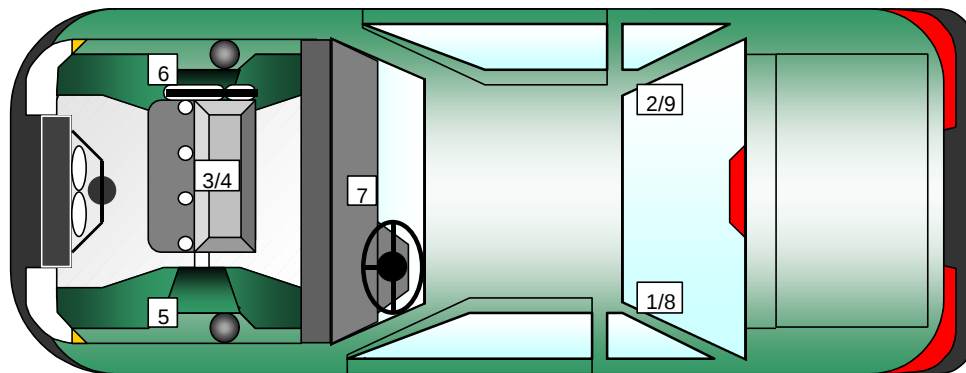
Test Program: 2002 NHTSA 35mph NCAP

Test Date: 12/4/01

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	1530	-610	330	G's	2.4	110.1	-40.3	31.2
2	Right Rear X-Member	1530	610	330	G's	2.5	113.4	-37.3	42.1
3	Engine Top	3600	0	770	G's	79.4	38.1	-141.6	26.5
4	Engine Bottom	3490	230	165	G's	28.0	38.1	-155.9	20.0
5	Left Brake Caliper	3520	-620	220	G's	18.0	63.4	-65.0	42.5
6	Right Brake Caliper	3520	620	220	G's	28.7	62.1	-83.1	47.7
7	Instrument Panel	2790	0	910	G's	44.4	30.1	-91.7	36.2
8	Left Rear X-Member (Z-Axis)	1320	-565	360	G's	11.5	36.2	-7.9	84.6
9	Right Rear X-Member (Z-Axis)	1320	565	360	G's	9.5	36.2	-3.9	101.8

Reference Points X - From Rear Surface of Vehicle Y - Vehicle Centerline Z - Ground Plane



DATA SHEET NO. 8 - HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

NHTSA No.: HY5000

Test Program: 2002 NHTSA 35mph NCAP

Test Date: 12/4/01

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	13.2	252.5	-58.6	69.3	15.8	210.5	-57.5	75.3
Head CG	Y	G's	10.0	66.2	-3.5	27.1	4.8	243.5	-20.6	81.4
Head CG	Z	G's	16.7	51.8	-9.7	79.1	20.4	62.7	-2.6	99.2
Head CG Resultant	N/A	G's	59.1	69.3			61.0	79.2		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	3.0	271.1	-46.0	71.6	4.8	236.4	-41.9	64.4
Chest CG	Y	G's	6.3	63.8	-2.9	33.6	1.1	129.4	-8.2	68.3
Chest CG	Z	G's	6.5	41.7	-4.1	63.0	6.9	42.1	-4.2	97.0
Chest CG Resultant	N/A	G's	46.2	71.6			42.6	64.6		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	812.5	42.6	-3192.7	49.0	454.2	26.1	-2026.9	58.8
Right Femur	Z	Newtons	460.3	35.6	-5190.0	51.2	673.2	42.1	-1339.7	56.0

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	7159.8	49.8	1.7	1.2	7303.5	55.4	3.3	0.0
Shoulder Belt Force	N/A	Newtons	4275.1	39.8	-60.2	11.7	4723.0	65.1	-38.2	123.7
Shoulder Belt Pullout	N/A	MM	197.2	84.7	-24.1	35.0	210.8	91.9	-20.1	31.8

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Primary	370.8	42.4	54.6	86.1	617.3	49.4	59.3	95.2

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	45.9	71.6	74.6	41.3	68.8	71.8

DATA SHEET NO. 8...(continued)

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

NHTSA No.: HY5000

Test Program: 2002 NHTSA 35mph NCAP

Test Date: 12/4/01

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	2.8	196.7	-74.5	49.0	3.2	113.4	-49.0	53.8
Pelvis	Y	G's	10.8	60.8	-11.7	39.8	0.8	101.3	-1.4	68.8
Pelvis	Z	G's	2.8	199.8	-31.0	64.5	5.5	235.0	-30.5	65.7

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	610.7	57.6	-393.3	125.5	370.8	75.5	-298.7	57.9
Neck Force	Y	Newtons	147.0	116.3	-189.0	278.6	498.0	77.5	-106.0	146.7
Neck Force	Z	Newtons	1397.5	66.6	-194.1	14.9	1139.4	59.8	-241.0	94.6
Neck Moment	X	N•m	11.5	111.3	-12.9	83.5	5.1	48.9	-32.1	76.9
Neck Moment	Y	N•m	41.9	56.5	-45.3	83.9	22.4	123.2	-22.4	59.6
Neck Moment	Z	N•m	7.7	128.6	-13.7	84.2	16.7	75.0	-8.5	124.8

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	7.0	88.0	-47.8	20.8	8.1	72.3	-43.6	37.4
Left Foot Aft	Z	G's	3.6	277.9	-46.5	44.2	29.5	69.5	-83.6	38.9
Left Foot Fore	Z	G's	6.8	21.7	-88.1	18.9	51.4	69.6	-81.7	38.7
Right Foot Aft	X	G's	20.3	84.2	-116.0	38.6	7.0	62.3	-60.0	35.6
Right Foot Aft	Z	G's	42.4	46.9	-162.0	42.3	11.0	64.8	-63.3	38.2
Right Foot Fore	Z	G's	61.5	47.1	-218.2	37.6	16.4	66.1	-79.3	31.2

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	74.1	46.6	-5.6	94.7	54.3	51.1	-22.6	39.7
Left Lower Moment	Y	N•m	26.8	84.6	-7.0	20.0	51.9	57.1	-18.4	34.7
Left Lower Force	Z	Newtons	62.9	153.1	-2747.1	23.9	125.5	144.1	-4523.2	39.5
Left Upper Moment	X	N•m	53.0	46.4	-17.9	95.3	19.1	86.7	-44.5	40.0
Left Upper Moment	Y	N•m	18.9	125.2	-92.5	48.2	95.4	59.1	-129.2	39.1
Right Lower Moment	X	N•m	39.8	38.8	-224.2	48.6	14.9	82.8	-6.5	50.2
Right Lower Moment	Y	N•m	38.7	77.8	-35.4	39.1	15.7	36.2	-24.8	42.5
Right Lower Force	Z	Newtons	171.8	155.0	-8208.4	42.6	79.1	226.1	-3784.7	37.1
Right Upper Moment	X	N•m	60.1	41.0	-101.1	48.3	41.1	83.5	-8.0	299.9
Right Upper Moment	Y	N•m	10.0	191.4	-220.0	47.4	52.2	48.0	-93.6	37.9

DATA SHEET NO. 8...(continued)Test Vehicle: 2002 Hyundai Accent GL 4 Door SedanNHTSA No.: HY5000Test Program: 2002 NHTSA 35mph NCAPTest Date: 12/4/01**CHEST PEAK DISPLACEMENTS**

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.2	3.3	-32.3	82.8	0.3	6.4	-27.9	62.8

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	11.7	254.3	-56.9	69.2	14.9	209.7	-56.6	77.6
Head CG	Y	G's	8.7	67.1	-3.8	25.1	4.6	242.7	-21.0	81.3
Head CG	Z	G's	16.5	52.1	-9.3	80.8	20.9	62.3	-1.8	97.2
Head CG Resultant	N/A	G's	57.4	69.2			60.4	79.4		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.5	273.0	-45.8	71.7	4.9	236.6	-42.7	64.3
Chest CG	Y	G's	6.9	64.1	-2.9	33.8	1.7	22.7	-6.9	66.4
Chest CG	Z	G's	6.5	41.7	-4.5	63.0	7.3	42.2	-3.8	96.9
Chest CG Resultant	N/A	G's	46.0	71.7			43.1	64.5		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G	T ¹	T ²	HIC	Avg G	T ¹	T ²
Head CG Redundant	366.7	42.0	54.6	86.6	601.6	48.9	59.3	95.2

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	45.7	71.5	74.5	41.7	68.7	71.7

DATA SHEET NO. 9
SEATBELT ASSESSMENT TEST DATA

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	270	245
PBU - Top surface of reference to belt upper edge	mm	364	315
PBL - Top surface of reference to belt lower edge	mm	279	240
Lap Belt tension	Newton's	10	10
Shoulder Belt tension	N/A	Retractor	Retractor

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	695	695
Shoulder belt length as measured on ATD	mm	821	845
Lap belt length as measured on ATD	mm	780	770
Remainder of belt on reel	mm	740	700
Total belt length for continuous webbing systems	mm	3036	3010

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	43.0	203.0
As determined electronically	mm	197.2	210.8

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically between shoulder belt load cell and "D" ring	mm/cm	*	*
Mechanically	mm/cm	*	*

*Not used with shoulder belt pre-tensioner systems.

DATA SHEET NO. 10
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

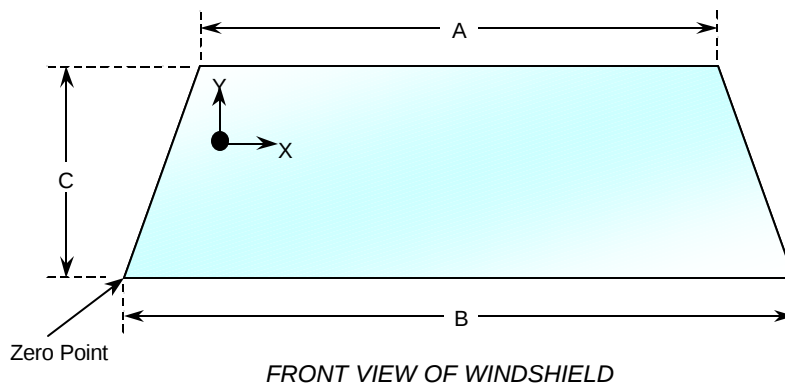
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

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

Temperature of windshield molding during test: 21.1 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test(mm)	Post-Test (mm)	% of Retention
Left Side	1961	1961	100
Right Side	1961	1961	100
Total	3922	3922	100



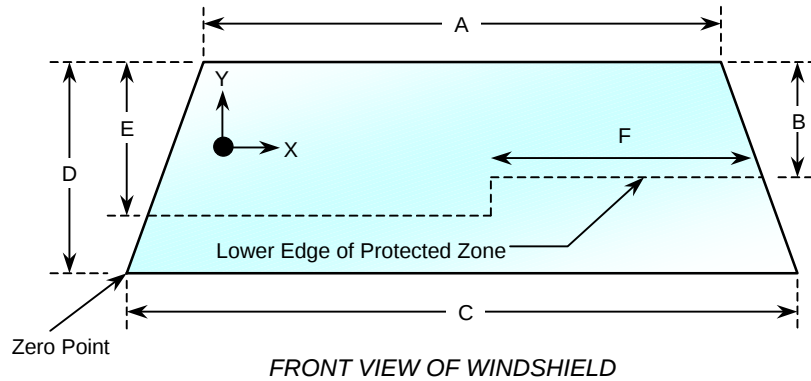
WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1081	8
B	mm	1413	N/A
C	mm	714	8

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

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01



**WINDSHIELD AND
PROTECTED ZONE**

Item	Units	Value
A	mm	1081
B	mm	496
C	mm	1413
D	mm	714
E	mm	435
F	mm	470

A OF PROTECTED ZONE FAILURES

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

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

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

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

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

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
Test Date: 12/4/01

Test Time: 1:36 PM

Temperature at Time of Impact 15.0Deg. C

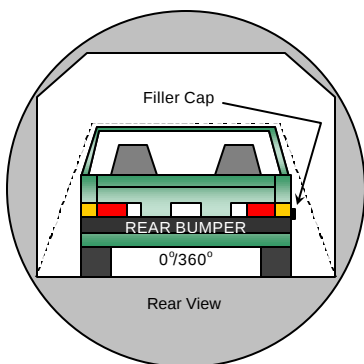
STODDARD SOLVENT SPILLAGE MEASUREMENTS

- A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)
- D. Spillage Location Details: No leakage occurred

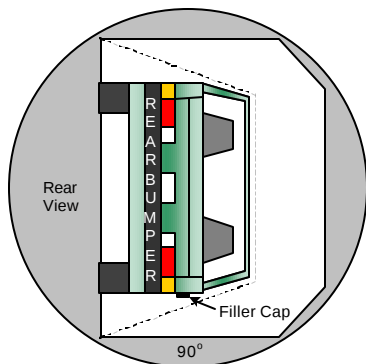
DATA SHEET NO. 13
FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

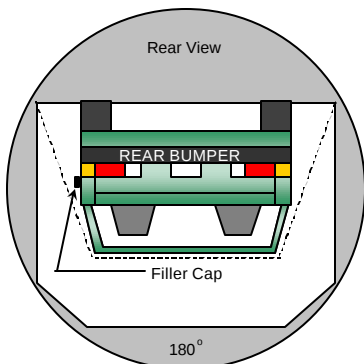
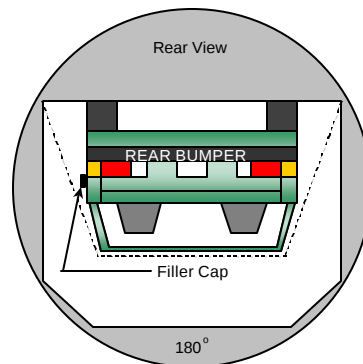
NHTSA No.: HY5000
 Test Date: 12/4/01



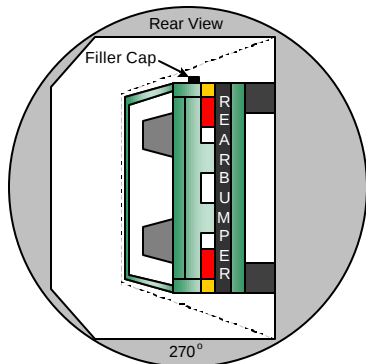
0° to 90°



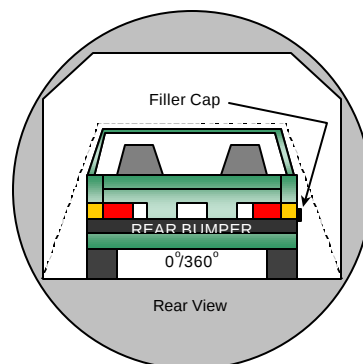
90° to 180°



180° to 270°



270° to 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. No solvent leakage occurred during rollover.

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° to 90°	84	300	0
90° to 180°	80	300	0
180° to 270°	78	300	0
270° to 360°	80	300	0

DATA SHEET NO. 14
VEHICLE MEASUREMENTS

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
Test Program: 2002 NHTSA 35mph NCAP

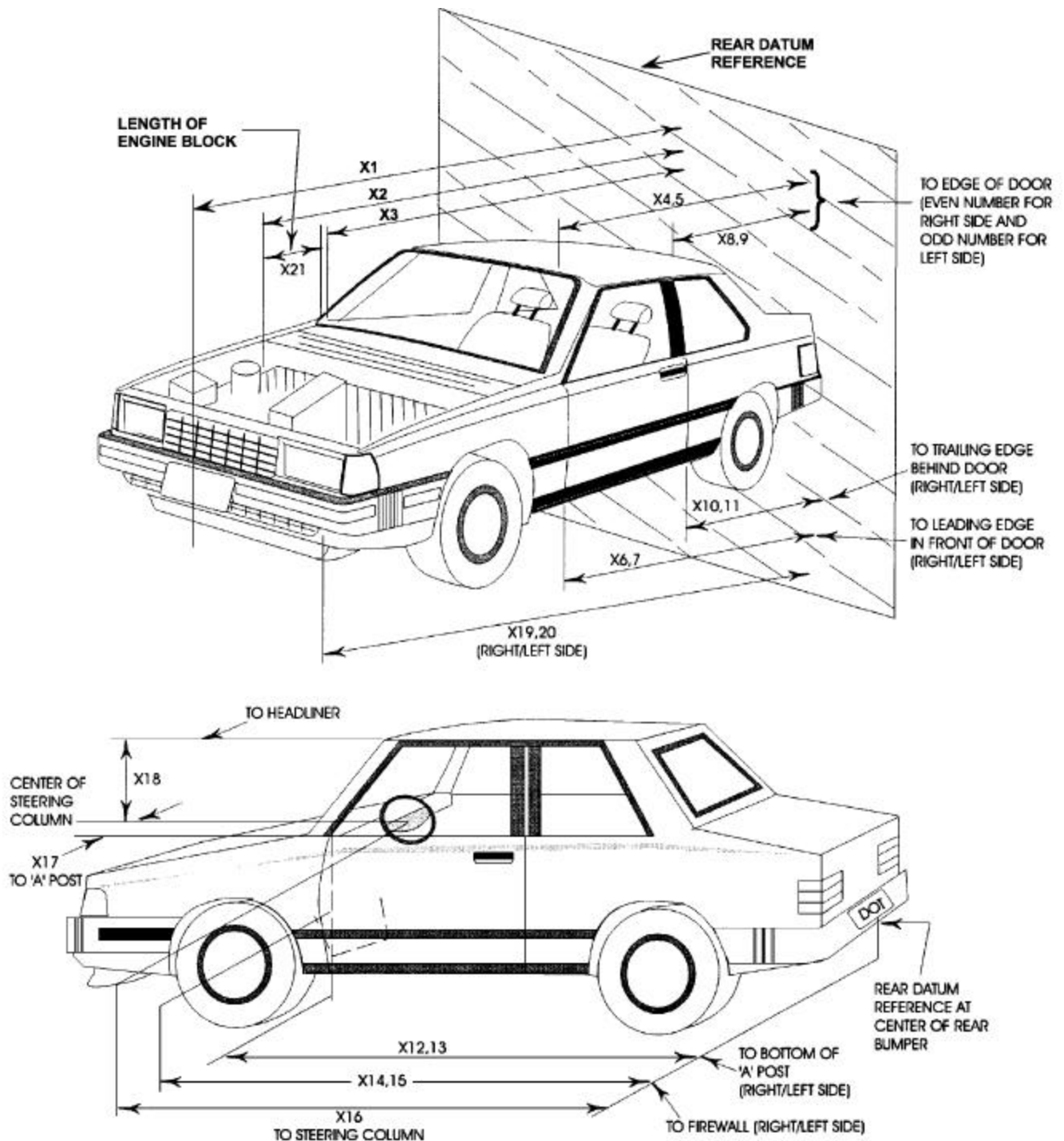
NHTSA No.: HY5000
Test Date: 12/4/01

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4232	3801	-431
2	RSOV to front of engine	mm	3716	3492	-224
3	RSOV to firewall centerline	mm	3222	3160	-62
4	RSOV to leading edge of right door	mm	2885	2882	-3
5	RSOV to leading edge of left door	mm	2885	2880	-5
6	RSOV to lower leading edge of right door	mm	2917	2909	-8
7	RSOV to lower leading edge of left door	mm	2918	2918	0
8	RSOV to upper trailing edge of right door	mm	1913	1911	-2
9	RSOV to upper trailing edge of left door	mm	1914	1906	-8
10	RSOV to lower trailing edge of right door	mm	1930	1921	-9
11	RSOV to lower trailing edge of left door	mm	1928	1921	-7
12	RSOV to bottom of right 'A' pillar	mm	2888	2898	10
13	RSOV to bottom of left 'A' pillar	mm	2906	2881	-25
14	RSOV to firewall on right side	mm	3223	3162	-61
15	RSOV to firewall of left side	mm	3223	3158	-65
16	RSOV to steering column	mm	2539	2463	-76
17	Center of steering column to left 'A' pillar	mm	378	397	19
18	Center of steering column to headlining	mm	424	420	-4
19	RSOV to right side of front bumper	mm	4082	3688	-394
20	RSOV to left side of front bumper	mm	4082	3772	-310
21	Length of engine block	mm	469	469	0
RD	RSOV to right side of dash panel	mm	2717	2715	-2
CD	RSOV to center of dash panel	mm	2664	2629	-35
LD	RSOV to left side of dash panel	mm	2710	2682	-28

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

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01



DATA SHEET NO. 15
CAMERA LOCATIONS

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
Test Date: 12/4/01

No.	Camera View	Location (mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Right Side, Real Time	3454	10973	1245	0	1651	Zoom	24
2	Left Side, No. 1	1960	-8250	880	-1	7938	13	1020
3	Left Side, No. 2	1060	-6210	1440	0	6012	25	210
4	Left Side, No. 3	6500	-10580	4640	-16	11661	65	1010
5	Left Side, No. 4	1460	-8250	3100	-16	8209	19	1010
6	Left Side, No. 5	1460	-8250	2700	-13	8122	19	990
7	Right Side, No. 1	1960	8150	730	-1	7844	19	1030
8	Right Side, No. 2	2280	8150	1450	-4	7837	35	1020
9	Right Side, No. 3	7860	8900	2800	-9	10404	80	930
10	Right Side, No. 4	2750	9600	1500	-2	9303	50	940
11	Overhead Overall	250	0	4460	-86	N/A	13	Failed
12	Front View, Driver	-530	-380	2590	-43	N/A	12	1090
13	Front View, Passenger	-530	380	2590	-55	N/A	13	970
14	Pit Camera, Engine	280	0	-1360	-90	N/A		1130
15	Pit Camera, Fuel Tank	3760	0	-1680	-55	N/A		1060
16	Driver Belt	2970	-230	1050	1	N/A	13	900
17	Passenger Belt	2970	230	1050	1	N/A	13	960
18	Left Side Extra	Not used						

X - Barrier Face Y - Monorail Centerline Z - Ground

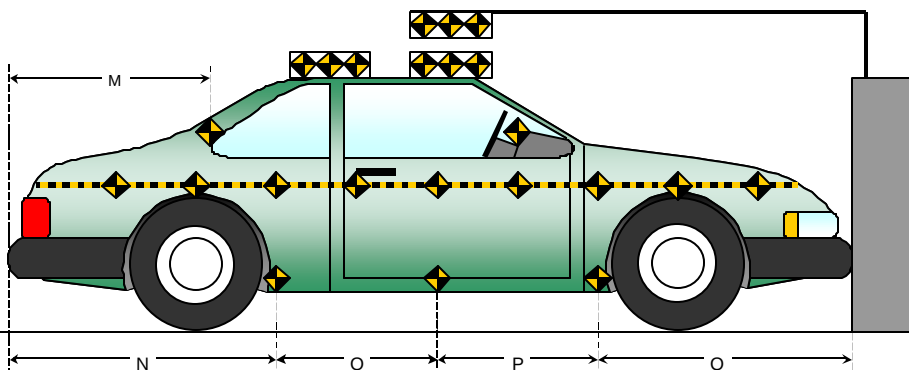
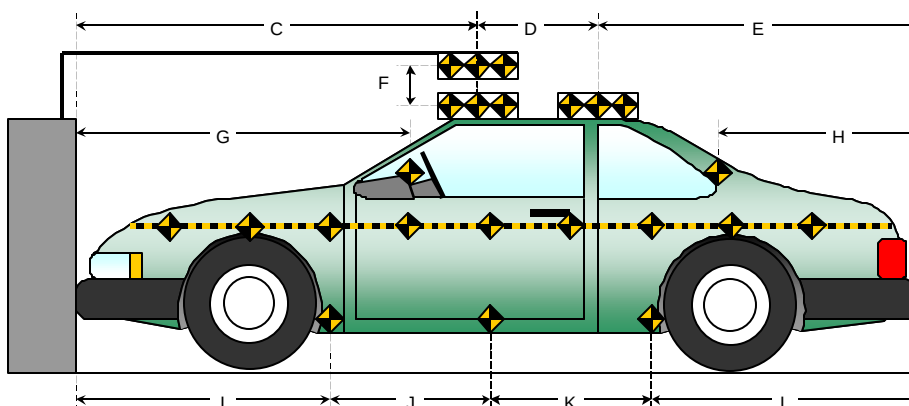
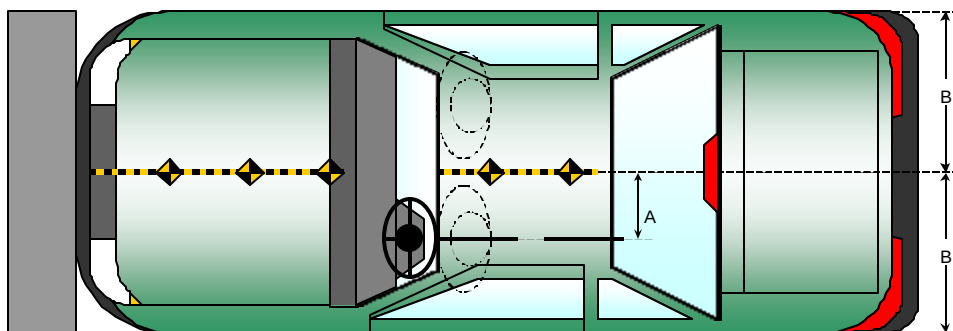
DATA SHEET NO. 16
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

in mm

Item	Value
A	374
B	845
C	2106
D	608
E	1531
F	155
G	1566
H	994
I	1226
J	825
K	825
L	1361
M	1011
N	1362
O	823
P	823
Q	1221



DATA SHEET NO. 17
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

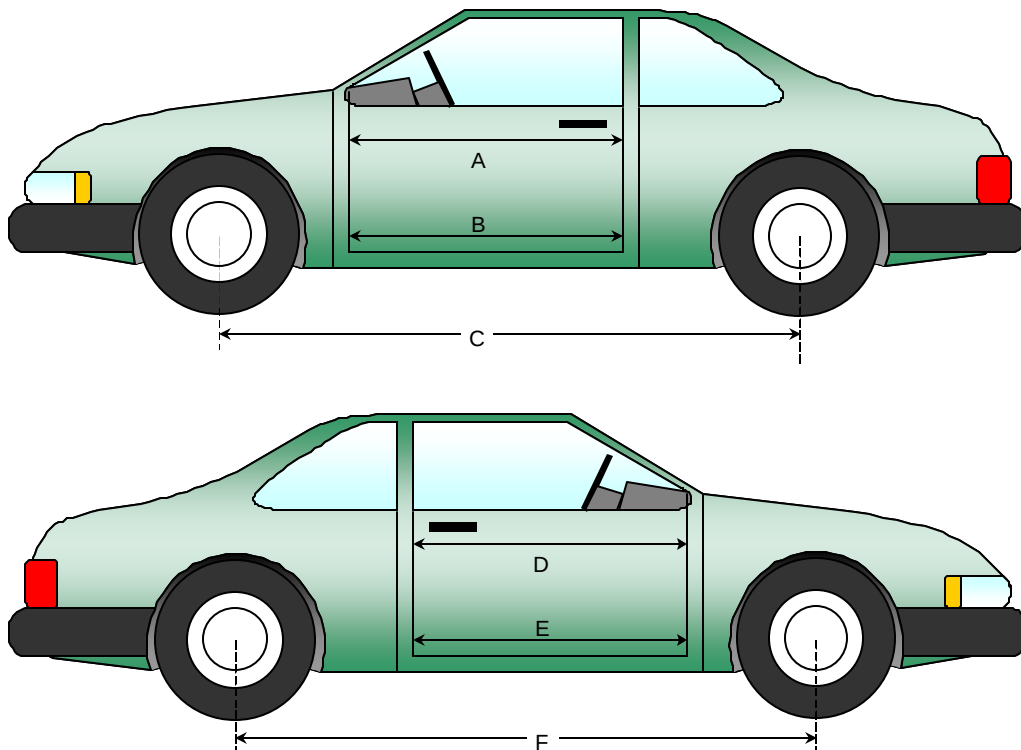
NHTSA No.: HY5000
 Test Date: 12/4/01

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	907	896	-11
B	Left Side Lower	mm	840	837	-3
D	Right Side Upper	mm	907	901	-6
E	Right Side Lower	mm	845	840	-5

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheel base	mm	2439	2567	128
F	Right Side Wheel base	mm	2439	2597	158



DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

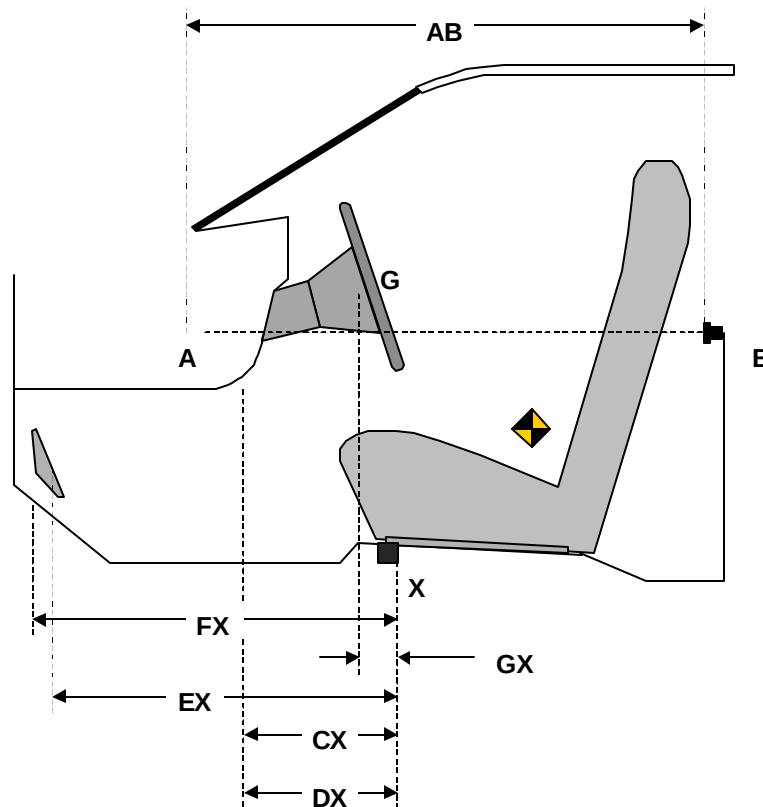
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	907	896	-11
CX	Left Knee Bolster to X	mm	319	230	-89
DX	Right Knee Bolster to X	mm	311	214	-97
EX	Brake Pedal to X	mm	569	525	-44
FX	Foot Rest to X	mm	621	525	-96
GX	Center of Steering Wheel Hub to X	mm	100	40	-60

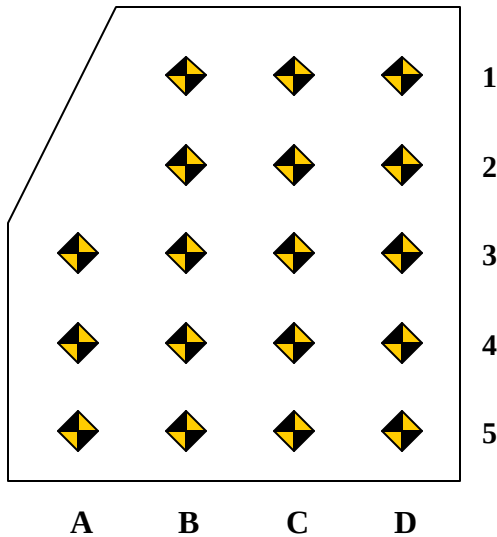
X = Left Front Seat Outboard Anchor Bolt Head



DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01



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		632	630	631		568	565	555		-64	-65	-76
2		530	529	528		493	485	468		-37	-44	-60
3	431	430	429	428	426	413	394	393	-5	-17	-35	-35
4	331	331	329	330	329	335	334	315	-2	4	5	-15
5	231	230	230	231	232	240	234	239	1	10	4	8

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-70	-77	-80		22	32	26		92	109	106
2		-113	-112	-115		95	89	86		208	201	201
3	-110	-113	-110	-120	130	127	124	100	240	240	234	220
4	-110	-119	-113	-108	110	156	167	110	220	275	280	218
5	-103	-113	-110	-110	108	137	167	170	211	250	277	280

DATA SHEET NO. 17...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

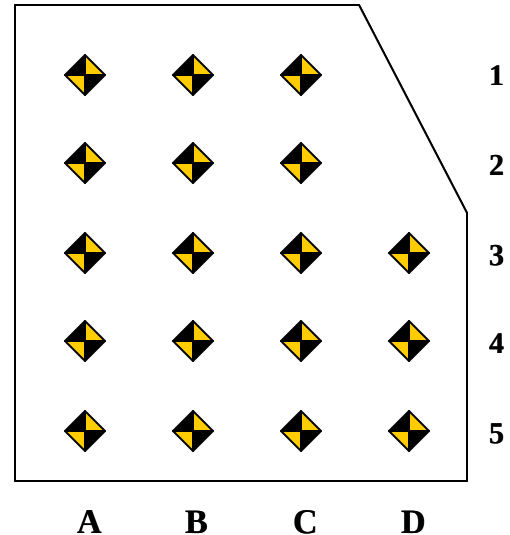
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

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.

PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	732	734	731		621	631	641		-111	-103	-90	
2	632	635	631		548	558	570		-84	-77	-61	
3	530	535	529	531	450	463	475	484	-80	-72	-54	-47
4	431	435	430	433	346	365	380	400	-85	-70	-50	-33
5	329	335	329	332	280	291	304	306	-49	-44	-25	-26

PASSENGER FLOOR PAN Z-AXIS

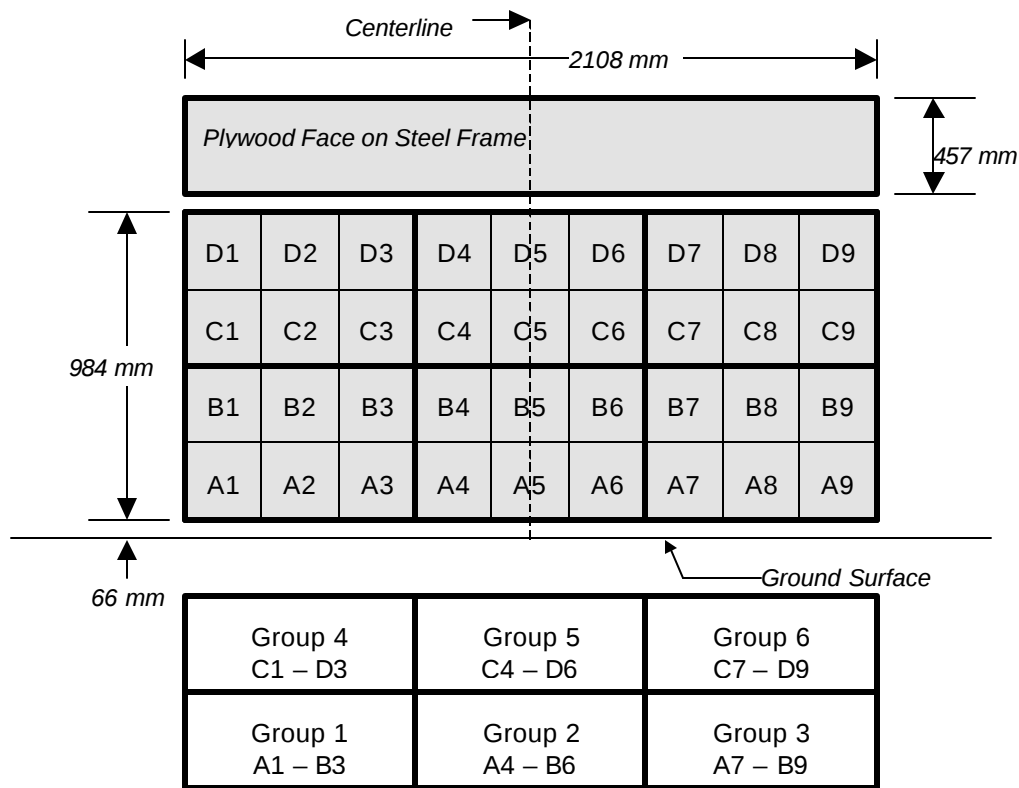
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-27	-24	-19		21	28	35		48	52	54	
2	-92	-80	-80		-49	-40	-39		43	40	41	
3	-104	-104	-102	-103	-74	-85	-87	-79	30	19	15	24
4	-120	-116	-105	-111	-80	-110	-120	-130	40	6	-15	-19
5	-100	-106	-104	-105	-120	-149	-138	-136	-20	-43	-34	-31

DATA SHEET NO. 18
FIXED BARRIER TYPE

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

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



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

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

DATA SHEET NO. 19
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
 Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
 Test Date: 12/4/01

VEHICLE INFORMATION

VIN: KMHCG45C32U284122
 Vehicle Size Category: 4 Door

Wheel base (mm): 2439
 Test Weight (kg): 1308

ACCELEROMETER DATA

Accelerometer Location: Left rear floor pan
 Cal. Procedure/Interval: 6 months / drop test
 Integration Algorithm: NHTSA Standard
 Impact Velocity (km/h): 55.85
 Velocity Change (km/h): 65.7

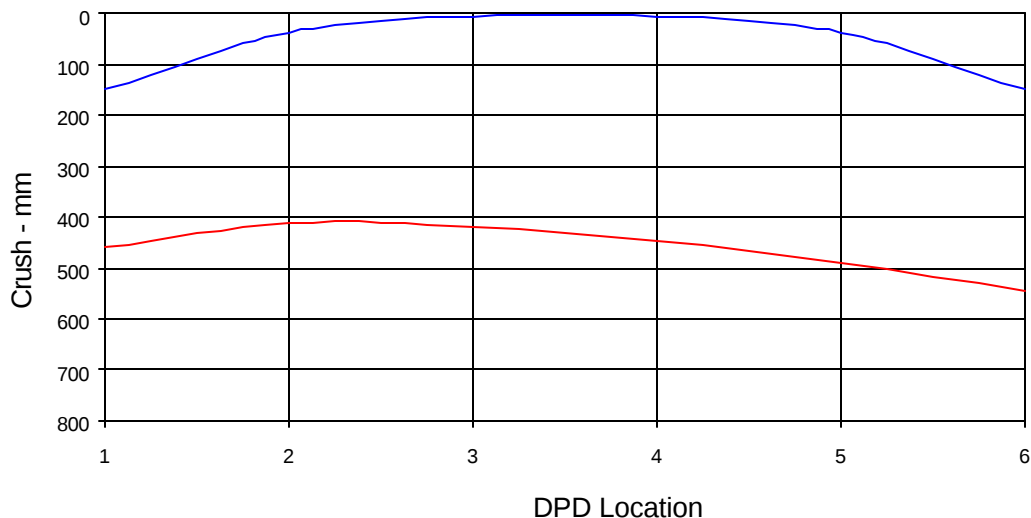
Linearity: Good

Time of Separation (msec): 65.5

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1310 Impact Mode: Full Frontal

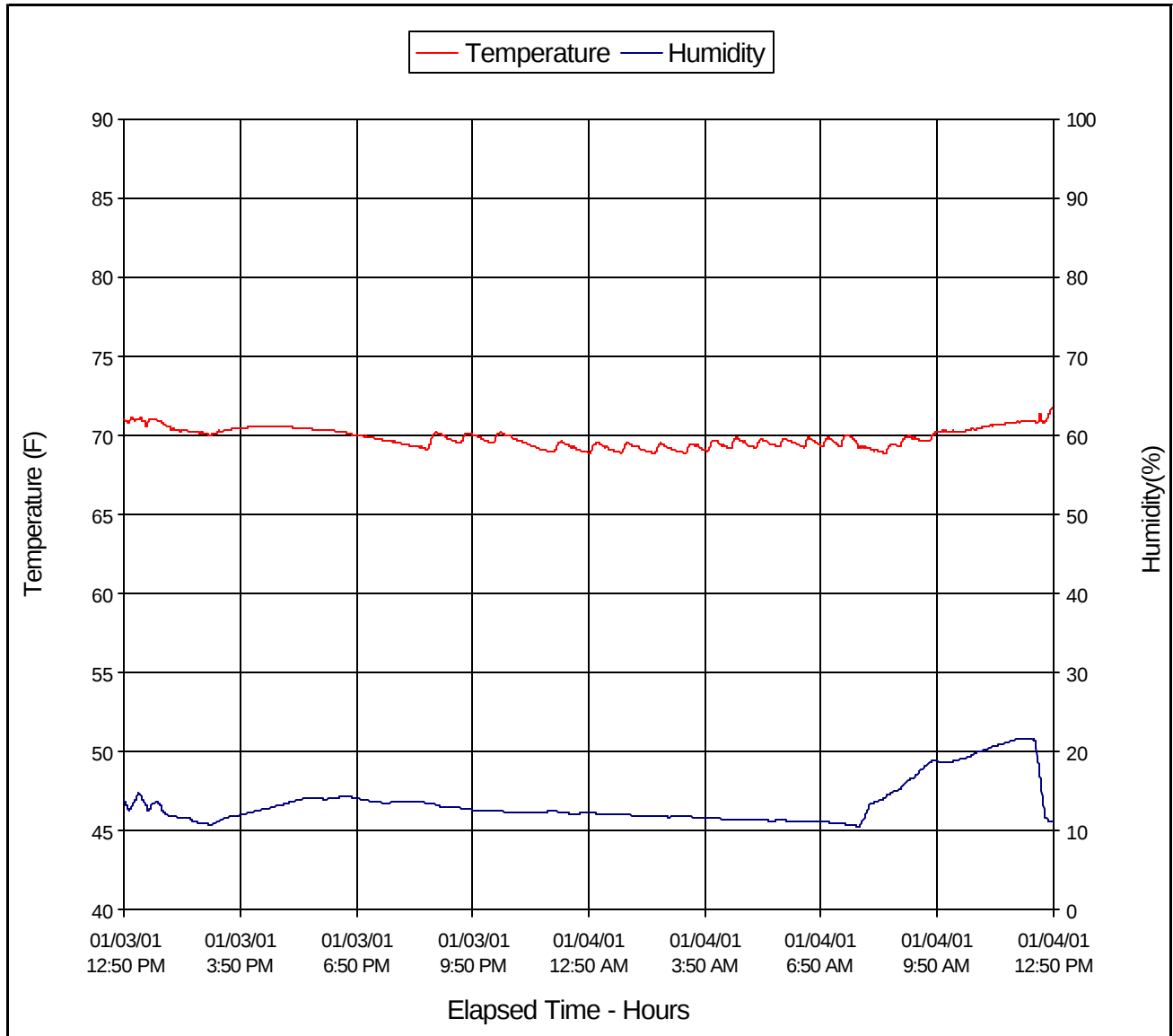
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	150	460	-310
C2	Crush zone 2 on left side	mm	36	412	-376
C3	Crush zone 3 on left side	mm	5	419	-414
C4	Crush zone 4 on right side	mm	5	446	-441
C5	Crush zone 5 on right side	mm	36	489	-453
C6	Crush zone 6 at right side	mm	150	544	-394



DATA SHEET NO. 20
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan
Test Program: 2002 NHTSA 35mph NCAP

NHTSA No.: HY5000
Test Date: 12/4/01



APPENDIX A

PHOTOGRAPHS

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Figure A-1: Right Front, as Received



Figure A-2: Left Rear, as Received



Figure A-3: Vehicle Certification Label

1				
TIRE INFLATION PRESSURE La Pression De Gonflage Des Pneus				
VEHICLE CAPACITY WEIGHT, LBS:850 Poids en lb de la capacite du vehicule. 850				
SEATING CAPACITY:TOTAL 5 FRONT 2 REAR 3 Capacite de transport:total 5;2 a l avant 3 a l arriere				
TIRE PRESSURES-COLD, KPA(PSI): Pression de gonflage a froid kPa(lb/po2)				
TIRE SIZE Dimension du pneu	UP TO 2 PERSONS Jusqu' a 2 Personnes		UP TO MAX. LOAD Pour charge maximum	
	FRONT Avant	REAR Arriere	FRONT Avant	REAR Arriere
P155/80 R13	207(30)	207(30)	230(33)	230(33)
P175/70 R13	207(30)	207(30)	230(33)	230(33)
P185/60 R14	207(30)	207(30)	230(33)	230(33)
T105/70 R14	414(60)	414(60)	414(60)	414(60)
T105/70 D14	414(60)	414(60)	414(60)	414(60)

Figure A-4: Vehicle Tire Label



Figure A-5: Front View, Pre-Test

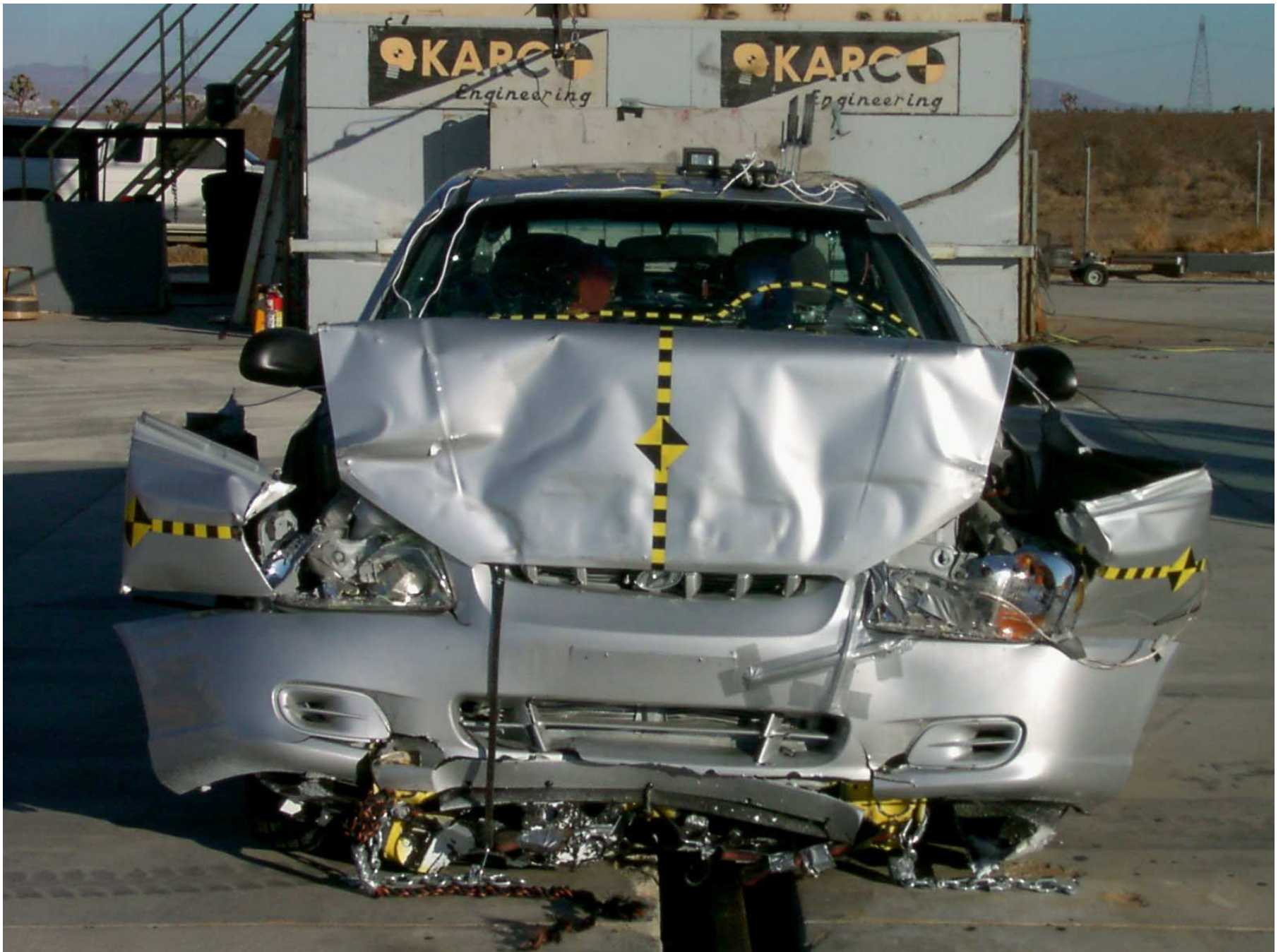


Figure A-6: Front View, Post-Test



Figure A-7: Left Side View, Pre-Test



Figure A-8: Left Side View, Post-Test



Figure A-9: Right Side View, Pre-Test



Figure A-10: Right Side View, Post-Test



Figure A-11: Right Front View, Pre-Test



Figure A-12: Right Front View, Post-Test



Figure A-13: Left Rear View, Pre-Test



Figure A-14: Left Rear View, Post-Test

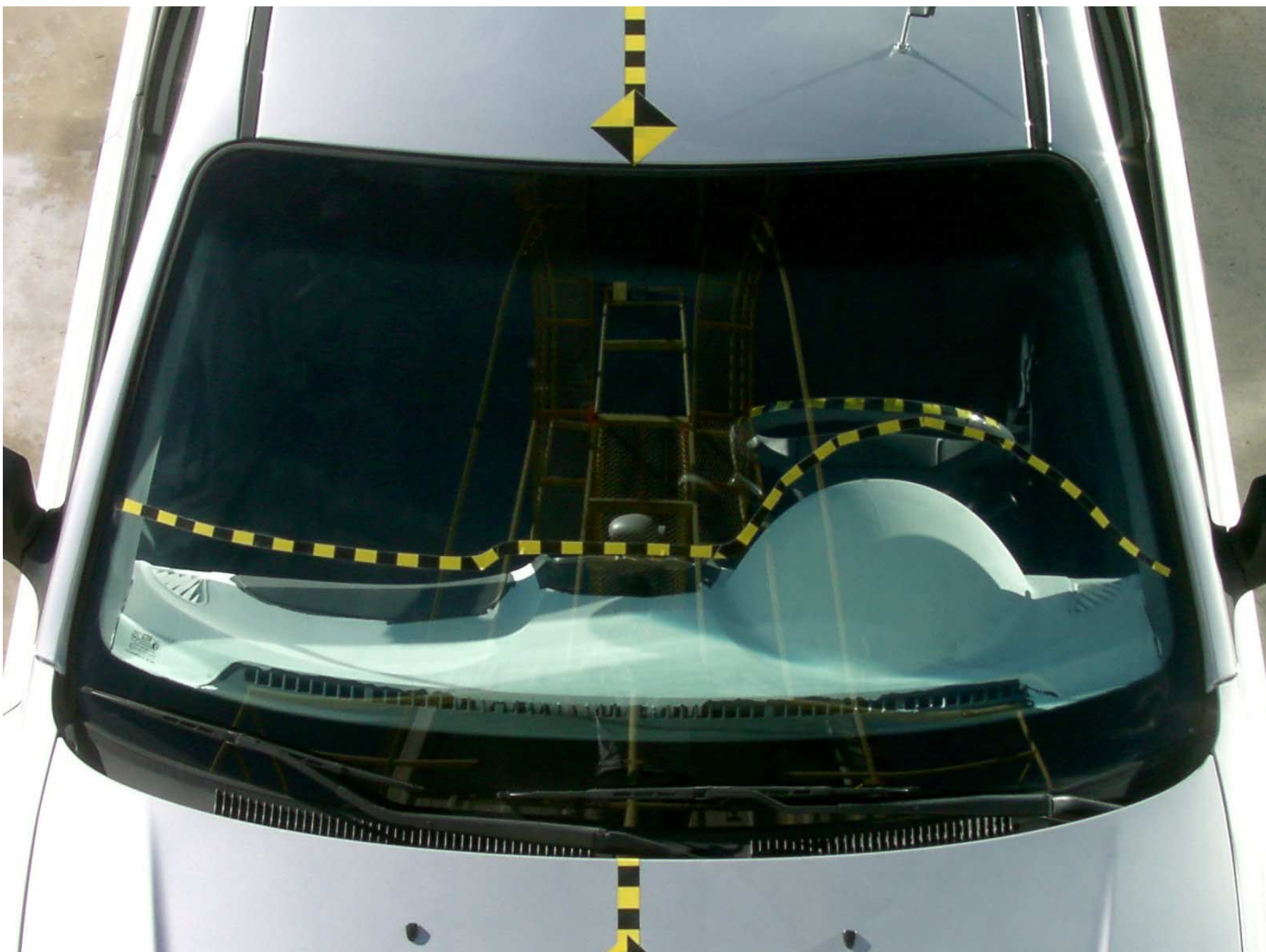


Figure A-15: Windshield, Pre-Test



Figure A-16: Windshield, Post-Test



Figure A-17: Engine Compartment, Pre-Test



Figure A-18: Engine Compartment, Post-Test



Figure A-19: Fuel Cap, Pre-test



Figure A-20: Fuel Cap, Post-Test

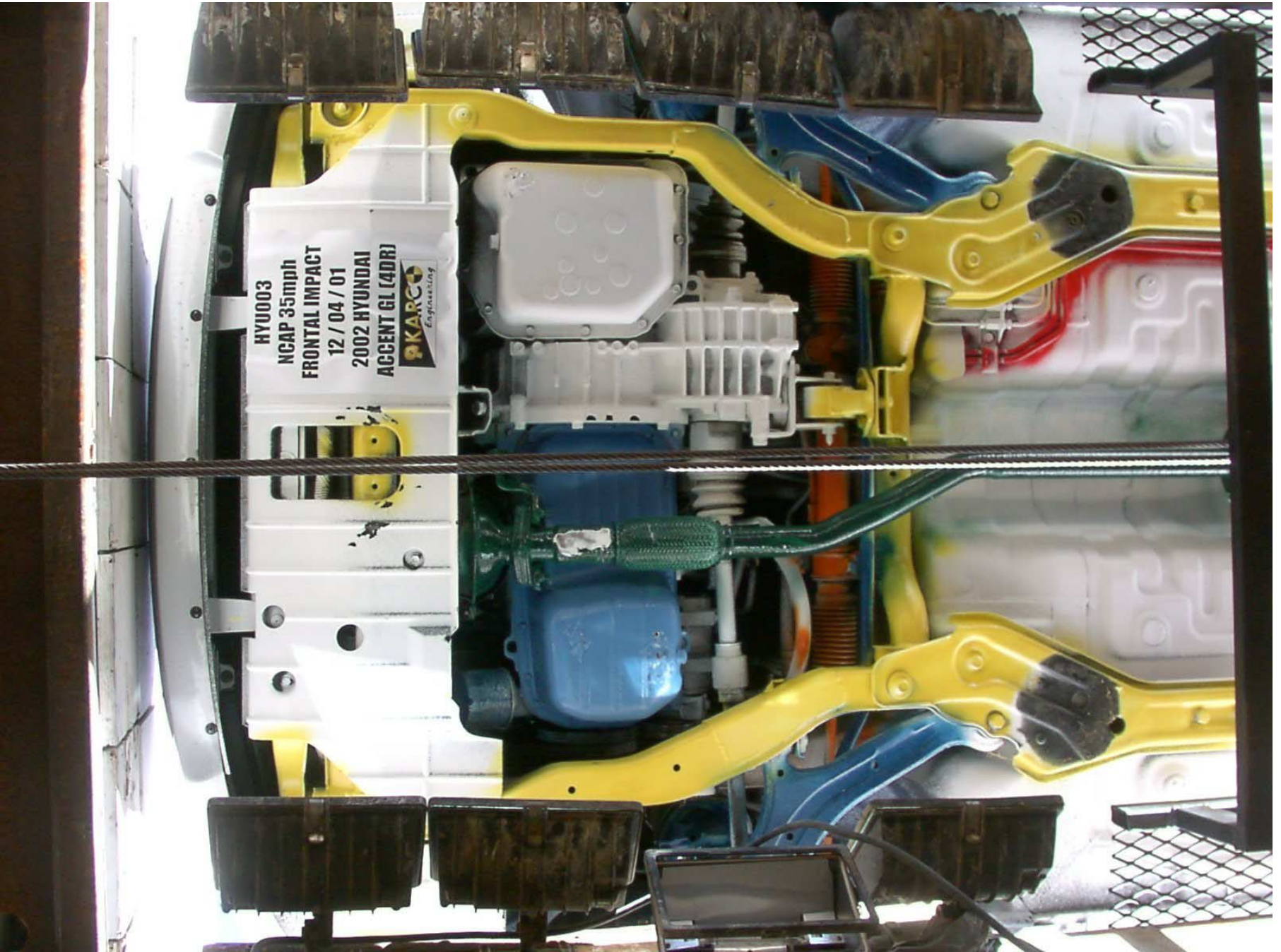


Figure A-21: Front Underside, Pre-Test

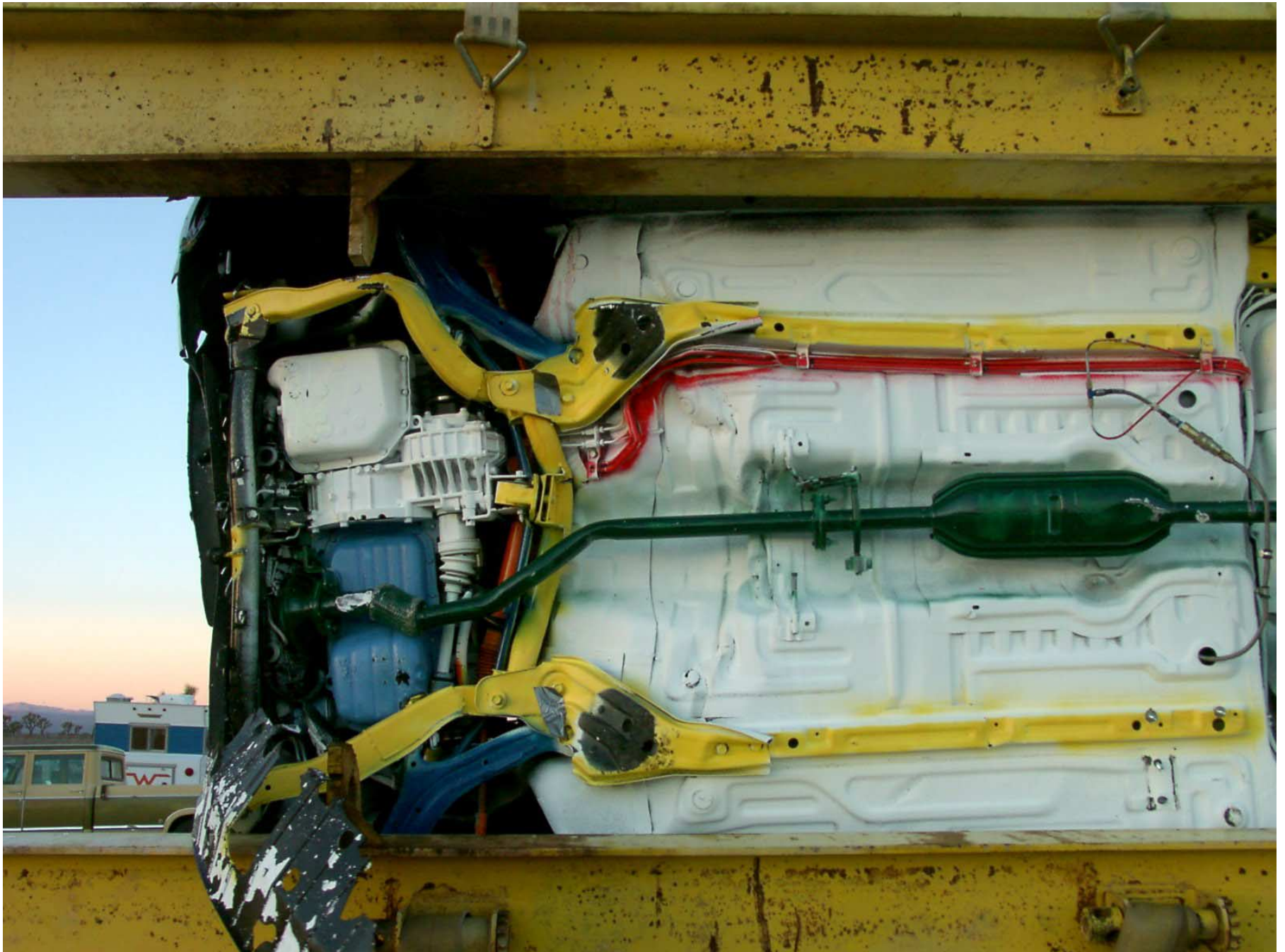


Figure A-22: Front Underside, Post-Test



Figure A-23: Rear Underside, Pre-Test

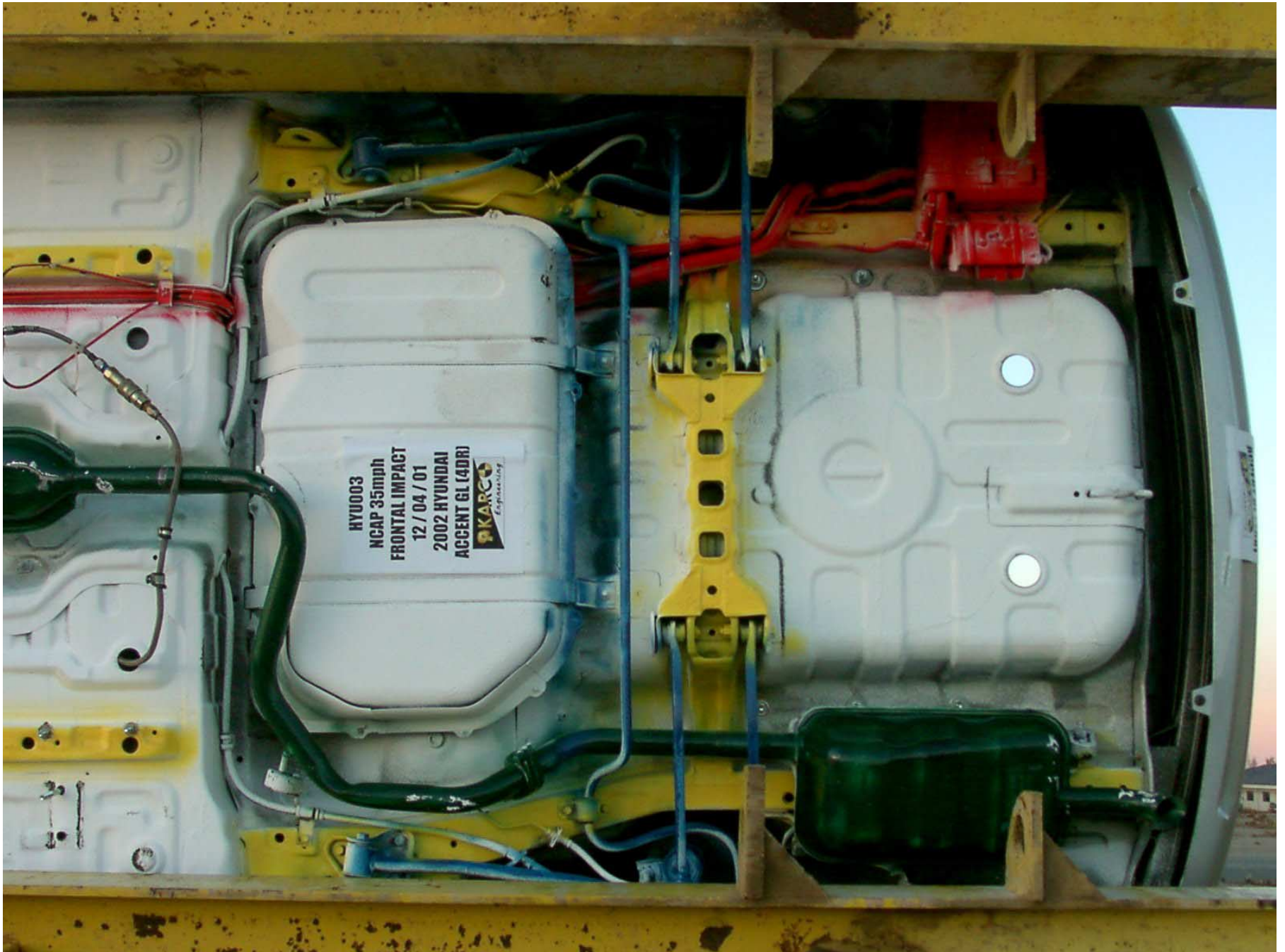


Figure A-24: Rear Underside, Post-Test

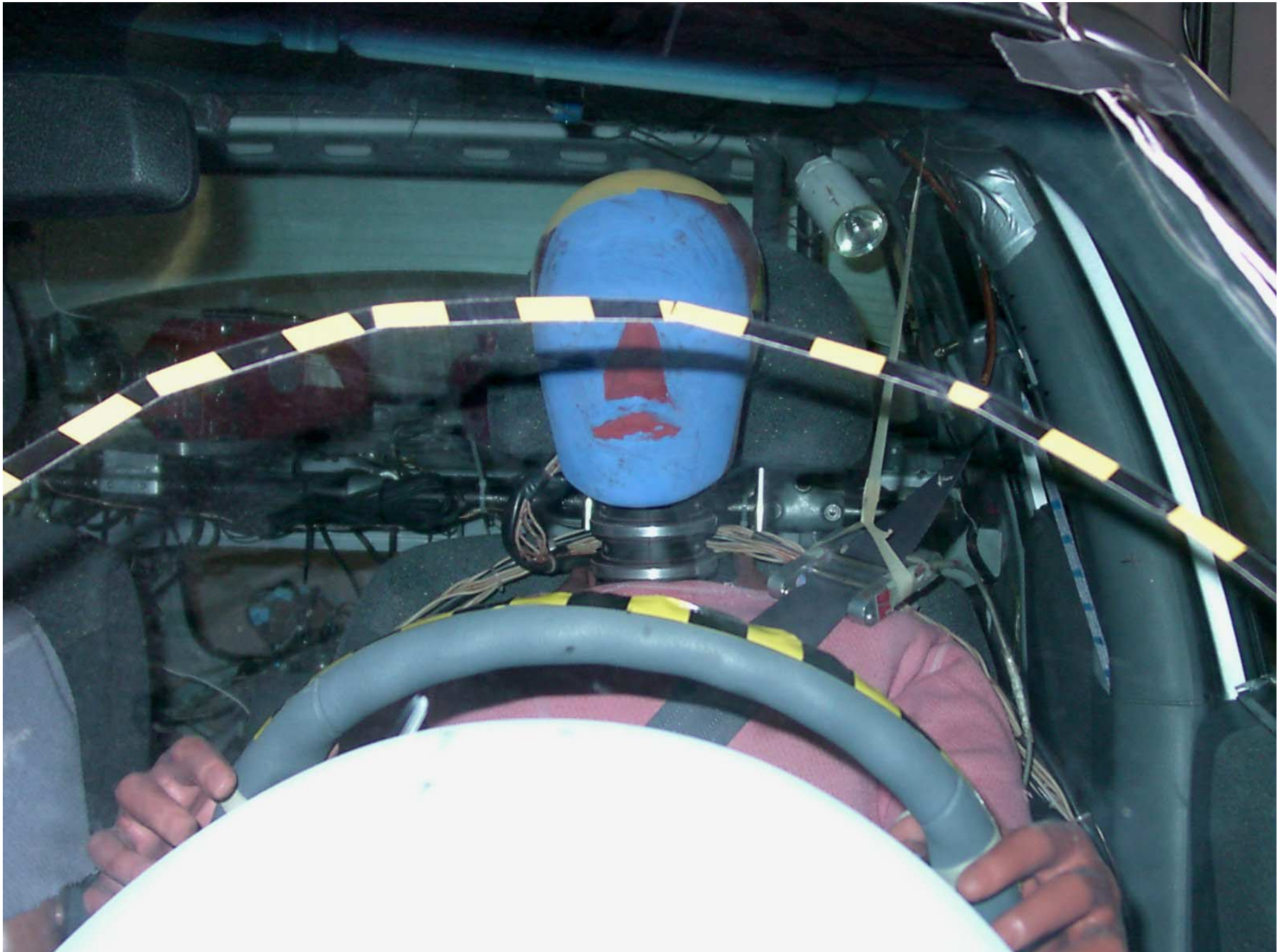


Figure A-25: Driver Dummy Front View, Pre-Test



Figure A-26: Driver Dummy Front View, Post-Test



Figure A-27: Driver Dummy Through Window, Pre-Test



Figure A-28: Driver Dummy Through Window, Post-Test



Figure A-29: Driver Dummy Door Open, Pre-Test



Figure A-30: Driver Dummy Door Open, Post-Test



Figure A-31: Driver Dummy 90° To Vehicle, Pre-Test



Figure A-32: Driver Dummy 90° To Vehicle, Post-Test



Figure A-33: Driver Dummy Feet, Pre-Test



Figure A-34: Driver Dummy Feet and Knee Contact, Post-Test



Figure A-35: Driver Side Knee Bolster, Pre-Test



Figure A-36: Driver Side Knee Bolster, Post-Test



Figure A-37: Driver Side Floor Pan, Pre-Test



Figure A-38: Driver Side Floor Pan, Post-Test



Figure A-39: Driver Dummy Head, Post-Test



Figure A-40: Driver Dummy Contact, Post-Test

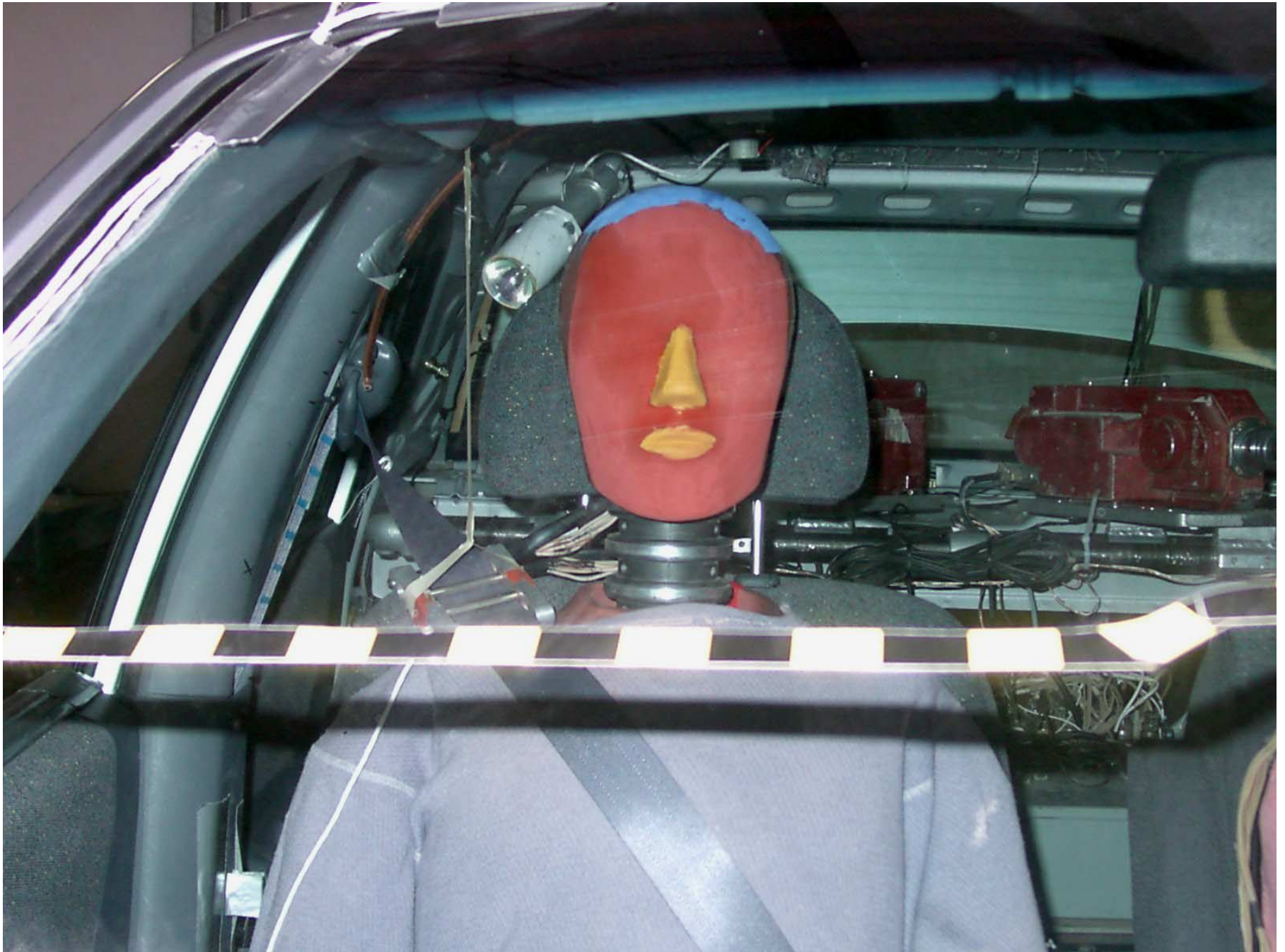


Figure A-41: Passenger Dummy Front View, Pre-Test



Figure A-42: Passenger Dummy Front View, Post-Test



Figure A-43: Passenger Dummy Through Window, Pre-Test



Figure A-44: Passenger Dummy Through Window, Post-Test



Figure A-45: Passenger Dummy Door Open, Pre-Test



Figure A-46: Passenger Dummy Door Open, Post-Test



Figure A-47: Passenger Dummy 90° To Vehicle, Pre-Test



Figure A-48: Passenger Dummy 90° To Vehicle, Post-Test



Figure A-49: Passenger Dummy Feet, Pre-Test



Figure A-50: Passenger Dummy Feet and Knee Contact, Post-Test



Figure A-51: Passenger Side Floor Pan, Pre-Test

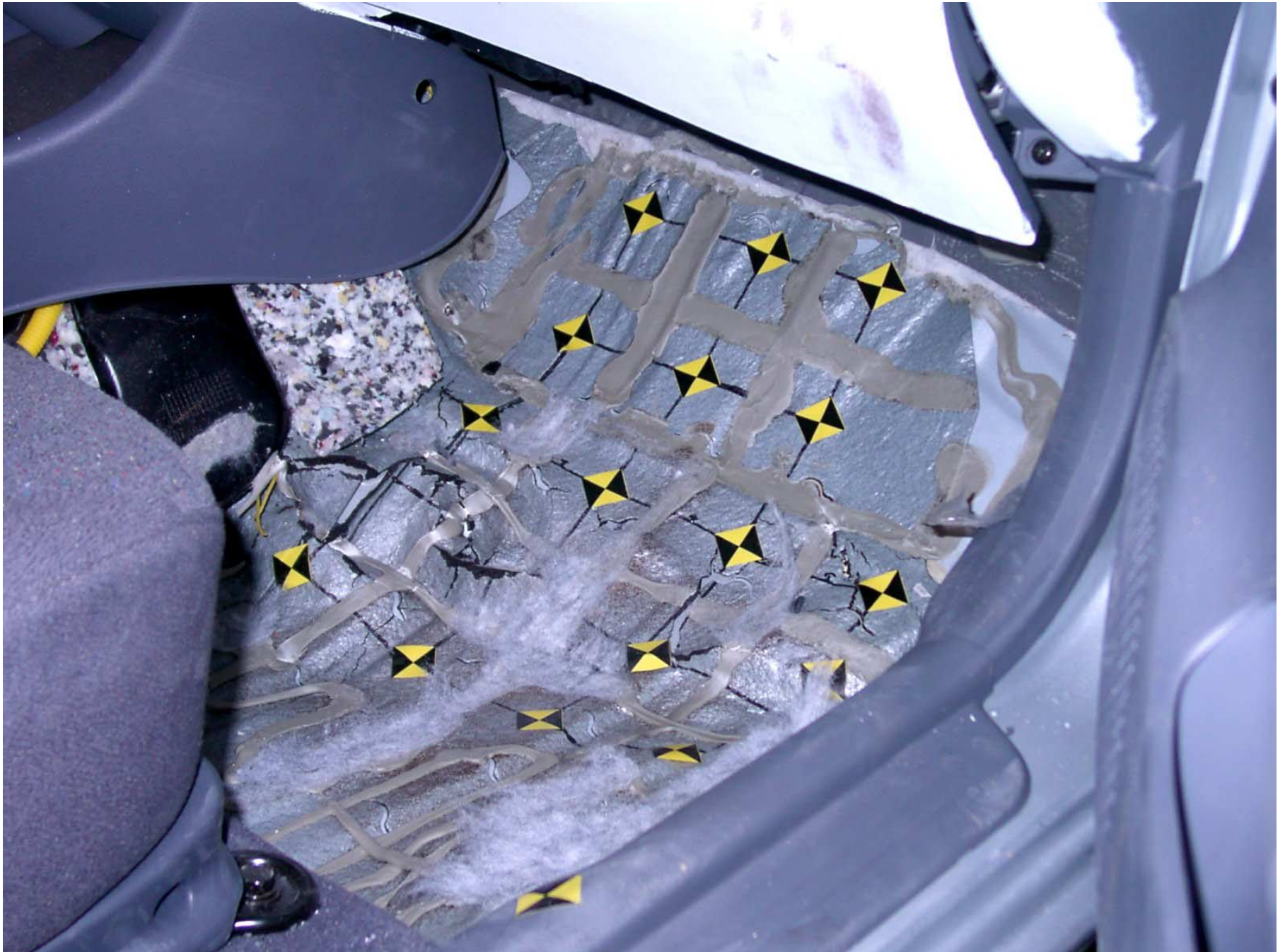


Figure A-52: Passenger Side Floor Pan, Post-Test



Figure A-53: Passenger Side Knee Bolster, Pre-Test



Figure A-54: Passenger Side Knee Bolster, Post-Test



Figure A-55: Passenger Head, Post-Test



Figure A-56: Passenger Dummy Contact, Post-Test



Figure A-57: Vehicle on Rollover Device



Figure A-58: Vehicle During Impact

APPENDIX B

DATA PLOTS

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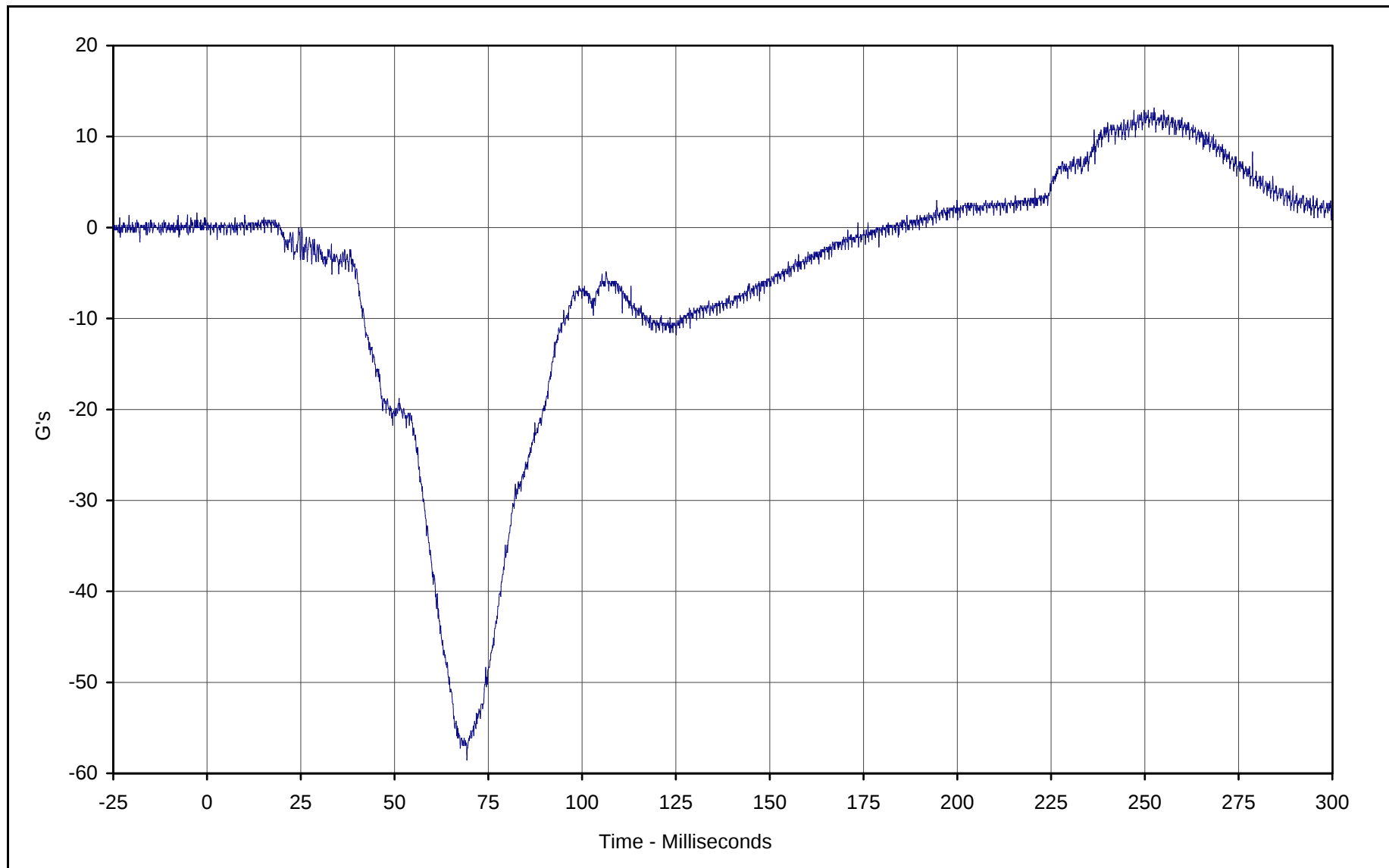
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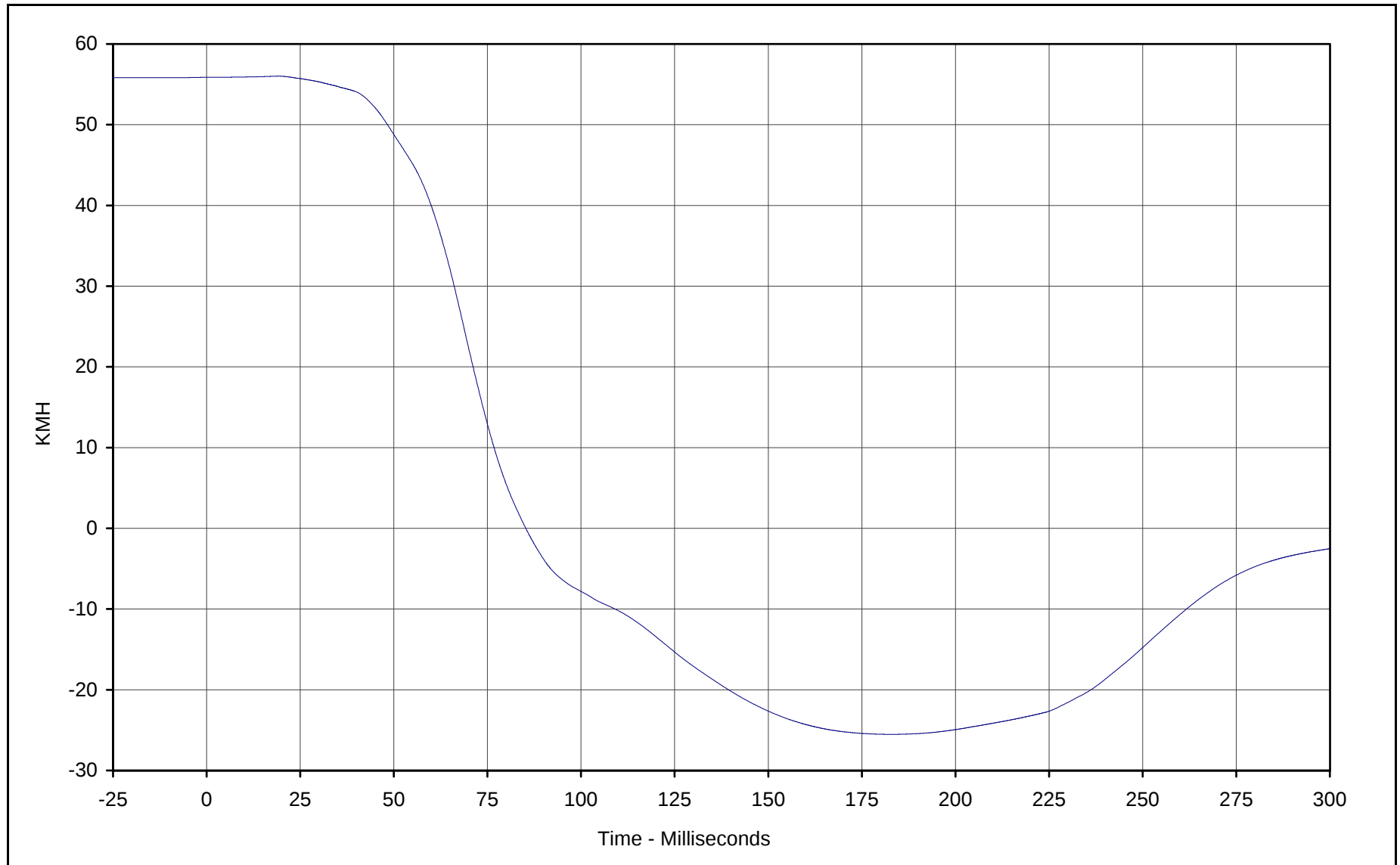


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Maximum Value: 13.2 at 252.5 Milliseconds
Minimum Value: -58.6 at 69.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-001

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



B-2

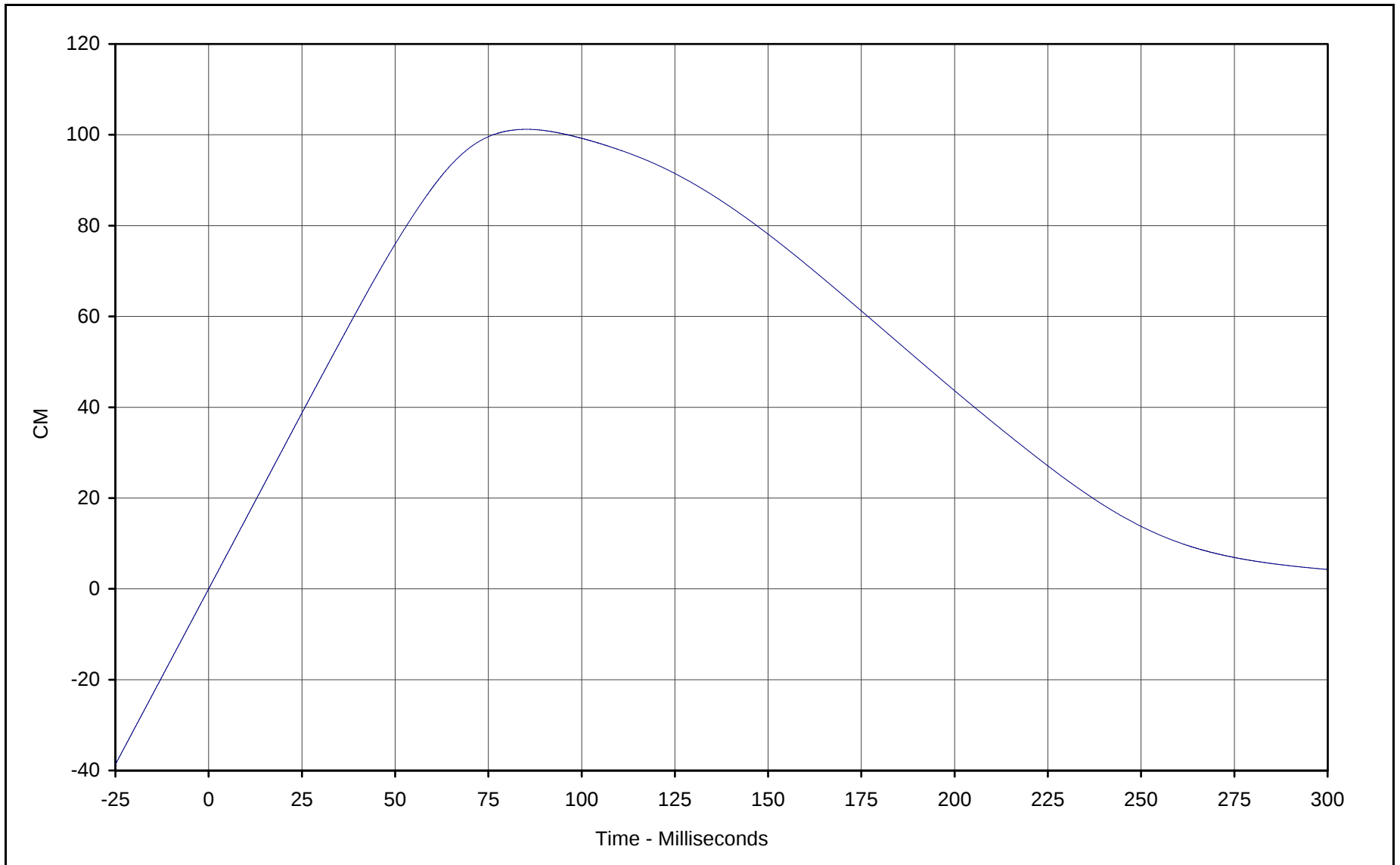


Curve Description: Driver Head Primary X Velocity
Maximum Value: 56.0 at 19.3 Milliseconds
Minimum Value: -25.5 at 182.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-001

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



KAR21128-01

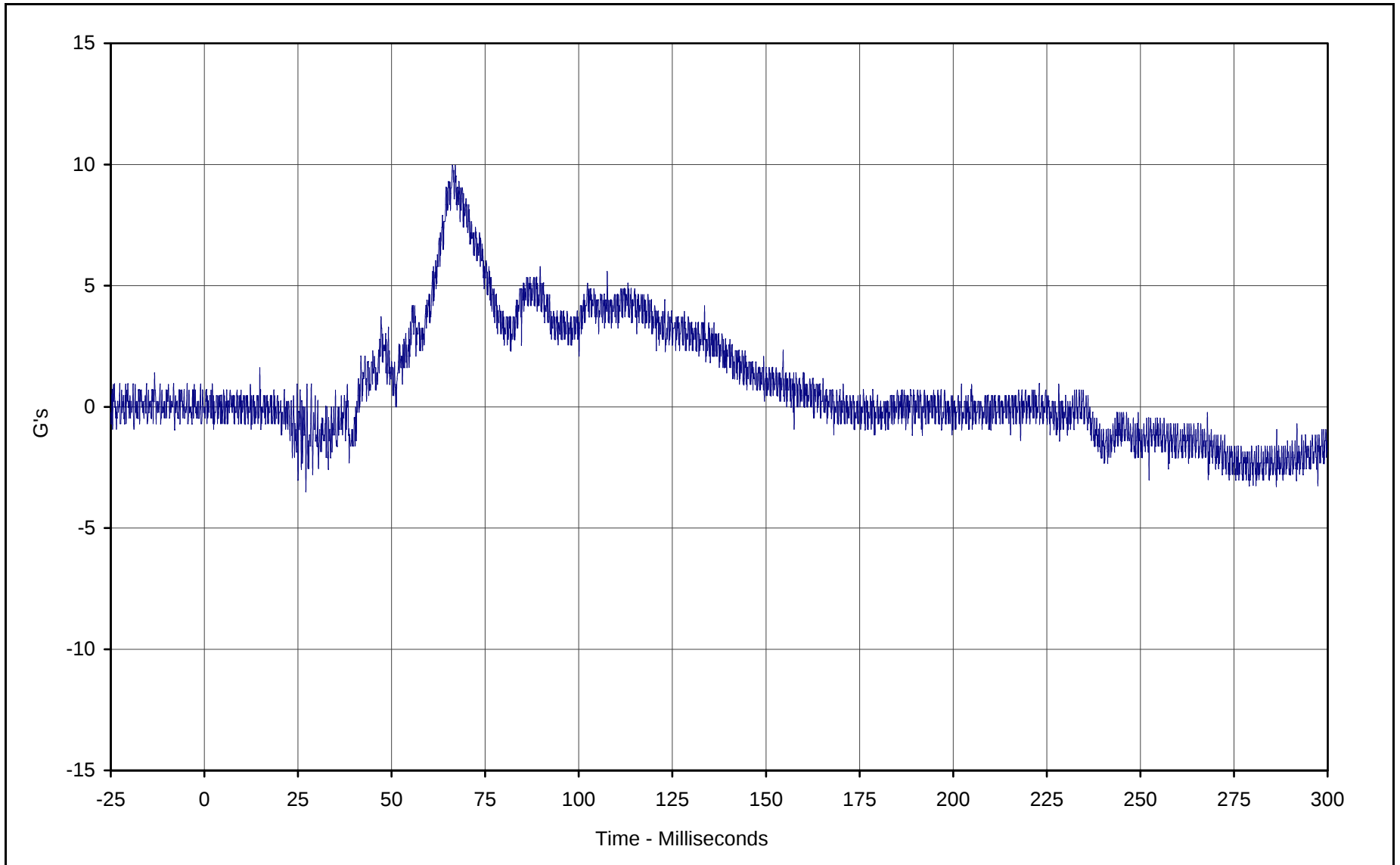


Curve Description: Driver Head Primary X Displ.
Maximum Value: 101.2 at 85.2 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-001

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



B-4

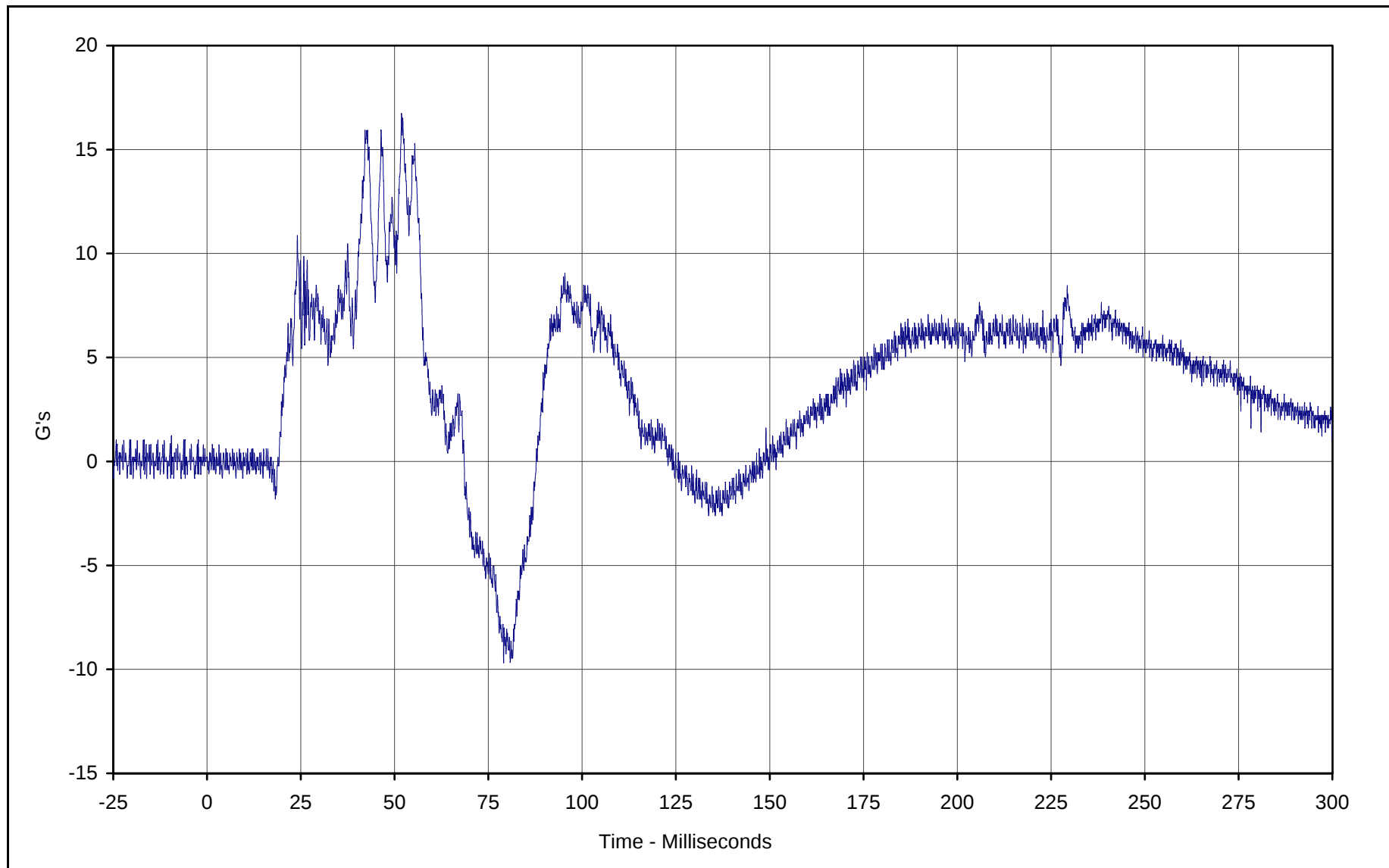


Curve Description: Driver Head Primary Y
Maximum Value: 10.0 at 66.2 Milliseconds
Minimum Value: -3.5 at 27.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-002

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



KAR21128-01

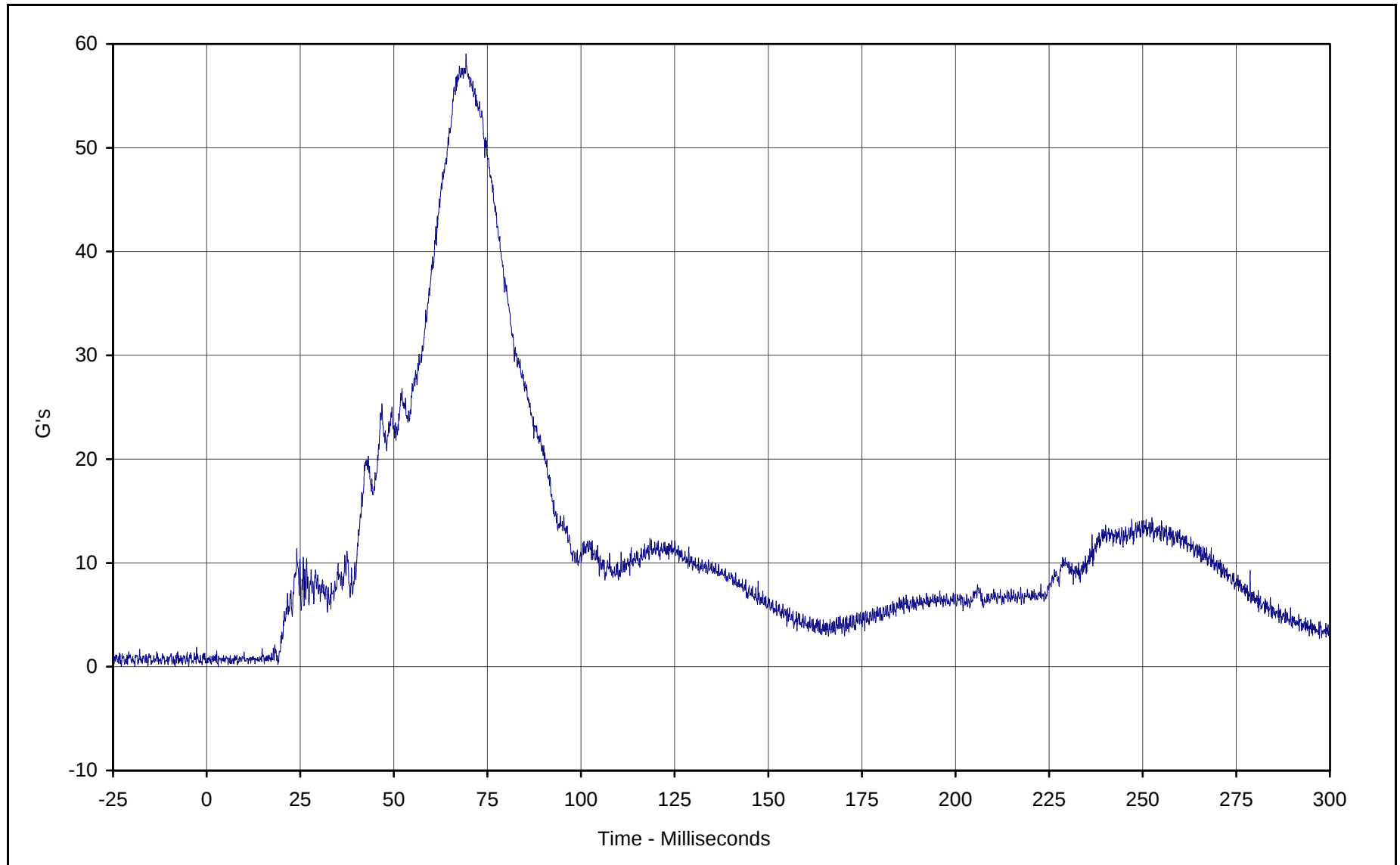


Curve Description: Driver Head Primary Z
Maximum Value: 16.7 at 51.8 Milliseconds
Minimum Value: -9.7 at 79.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-003

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



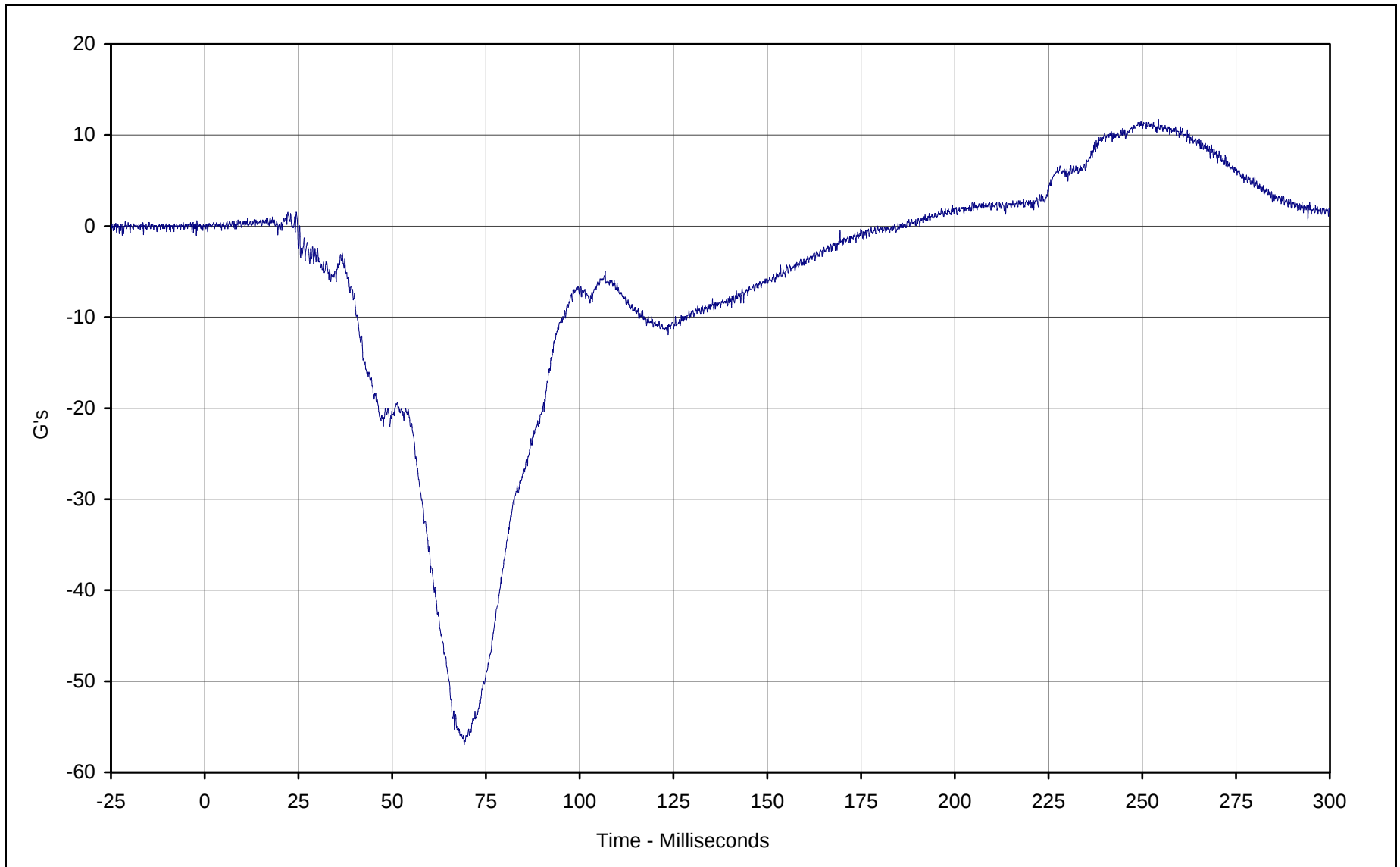


Curve Description: Driver Head Resultant Primary
Maximum Value: 59.1 at 69.3 Milliseconds
Minimum Value: 0.0 at 3.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: RES-001

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



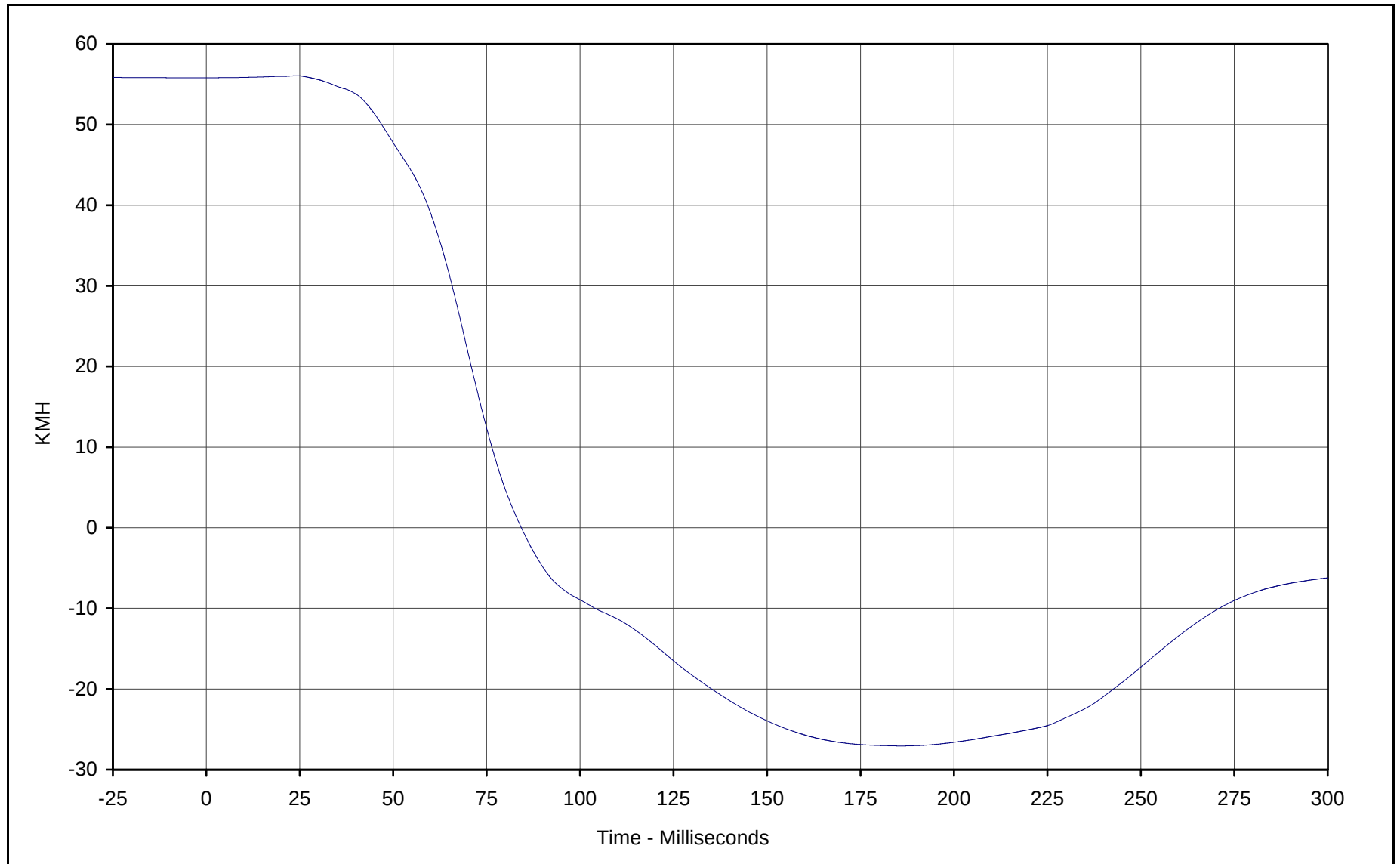


Curve Description: Driver Head Redundant X
Maximum Value: 11.7 at 254.3 Milliseconds
Minimum Value: -56.9 at 69.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-004

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



B-8

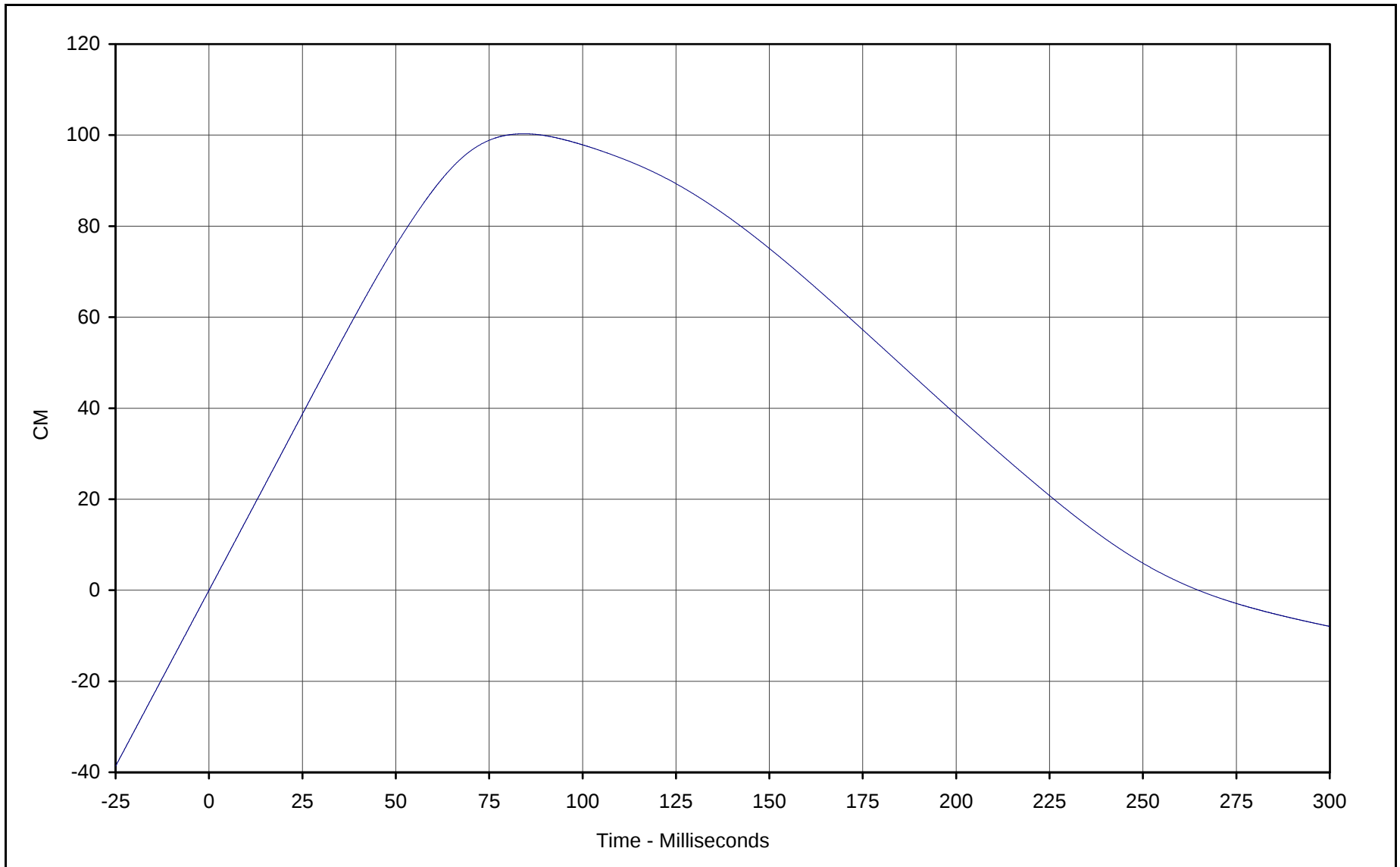


Curve Description: Driver Head Redundant X Velocity
Maximum Value: 56.1 at 24.5 Milliseconds
Minimum Value: -27.1 at 185.8 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-004

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



KAR21128-01

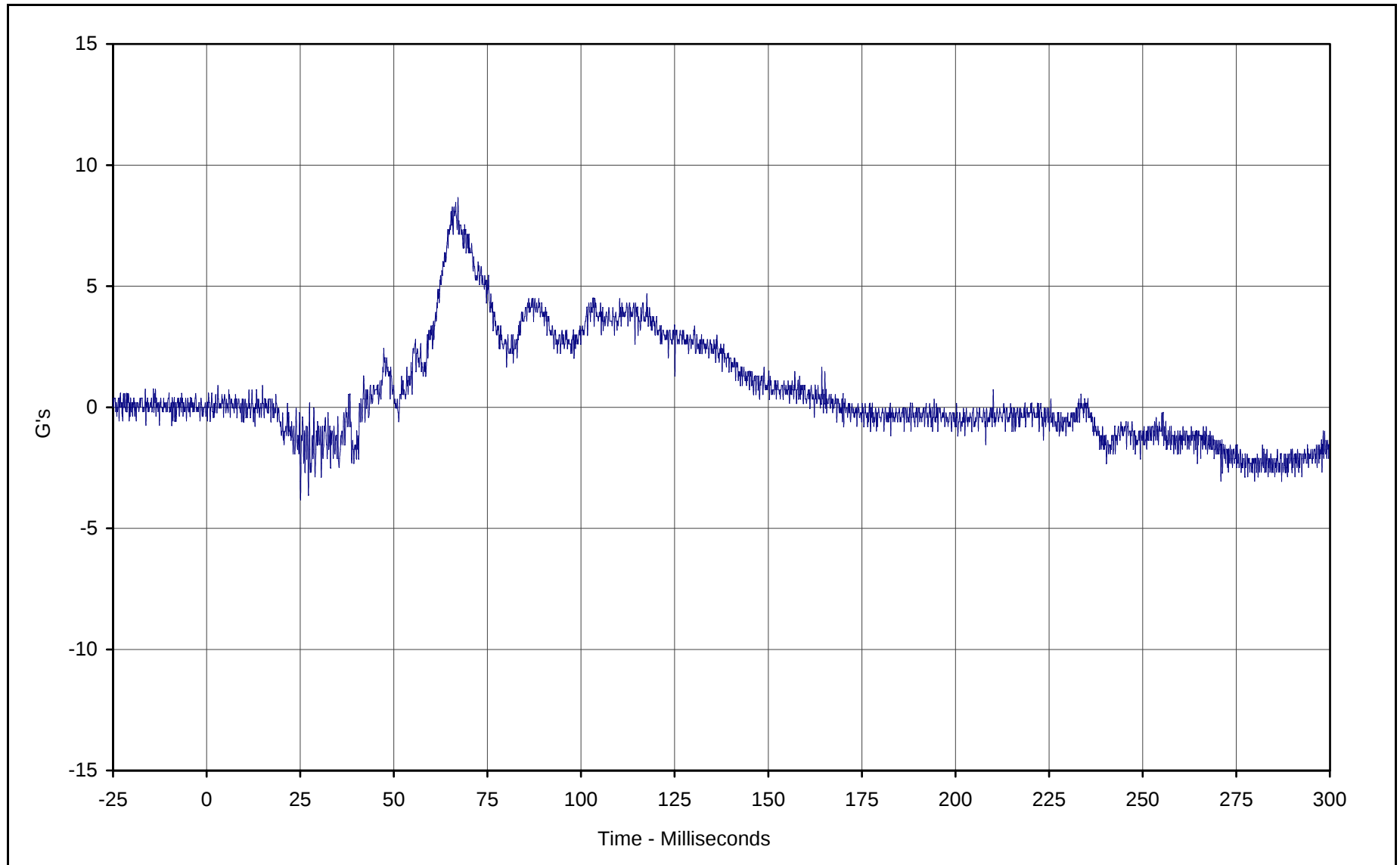


Curve Description: Driver Head Redundant X Displ.
Maximum Value: 100.3 at 84.3 Milliseconds
Minimum Value: -7.9 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-004

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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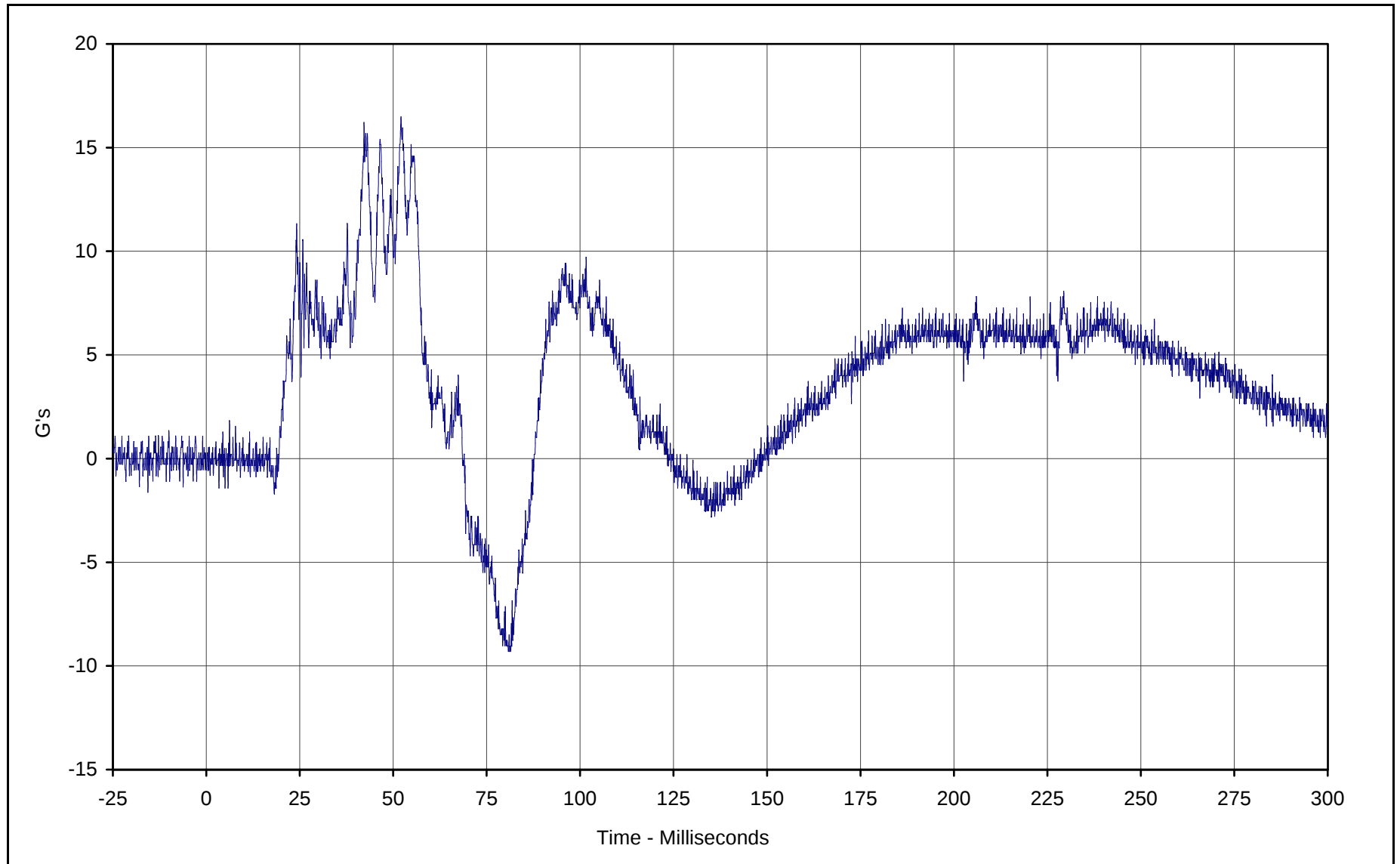
Curve Description: Driver Head Redundant Y
Maximum Value: 8.7 at 67.1 Milliseconds
Minimum Value: -3.8 at 25.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-005

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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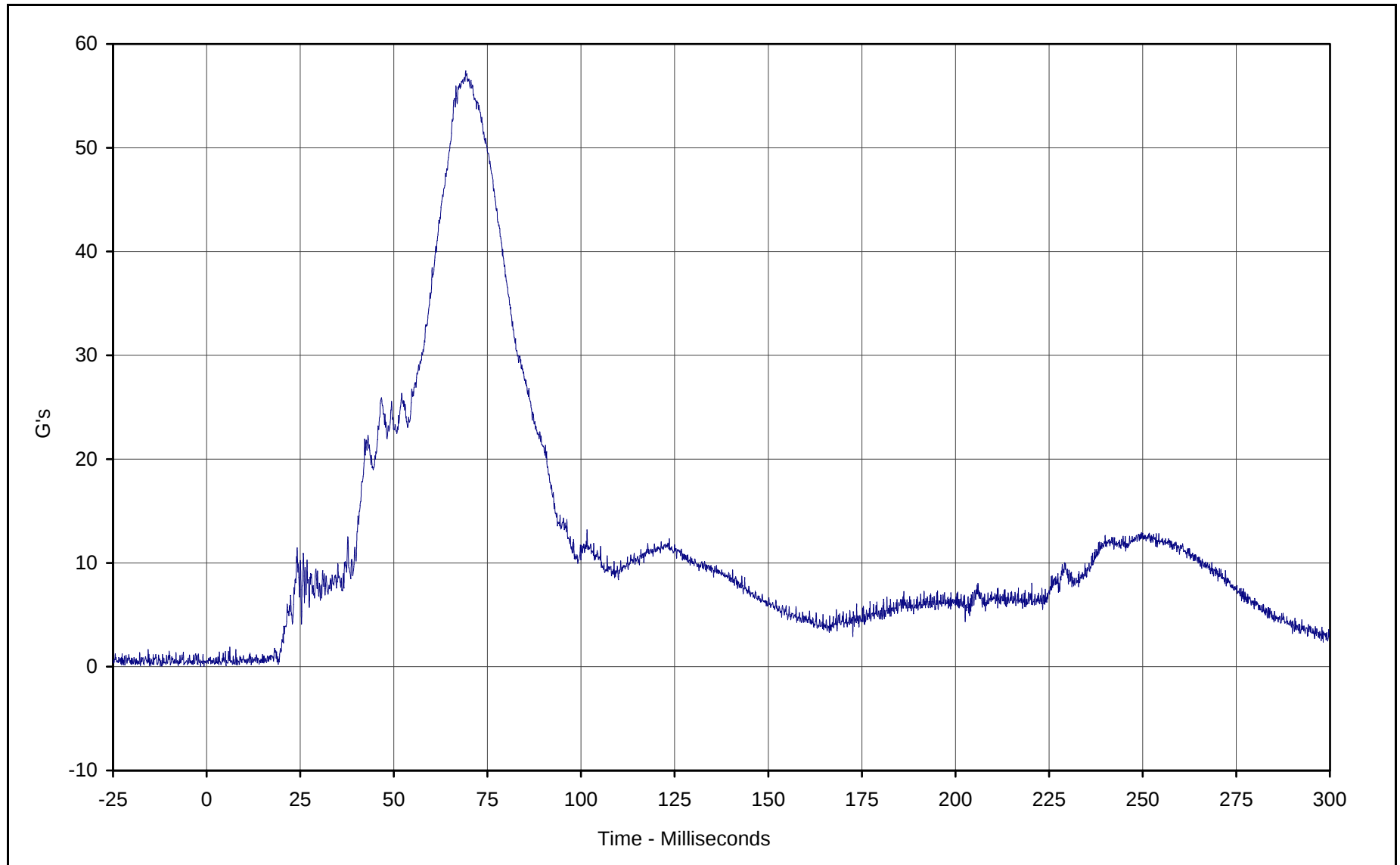
Curve Description: Driver Head Redundant Z
Maximum Value: 16.5 at 52.1 Milliseconds
Minimum Value: -9.3 at 80.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-006

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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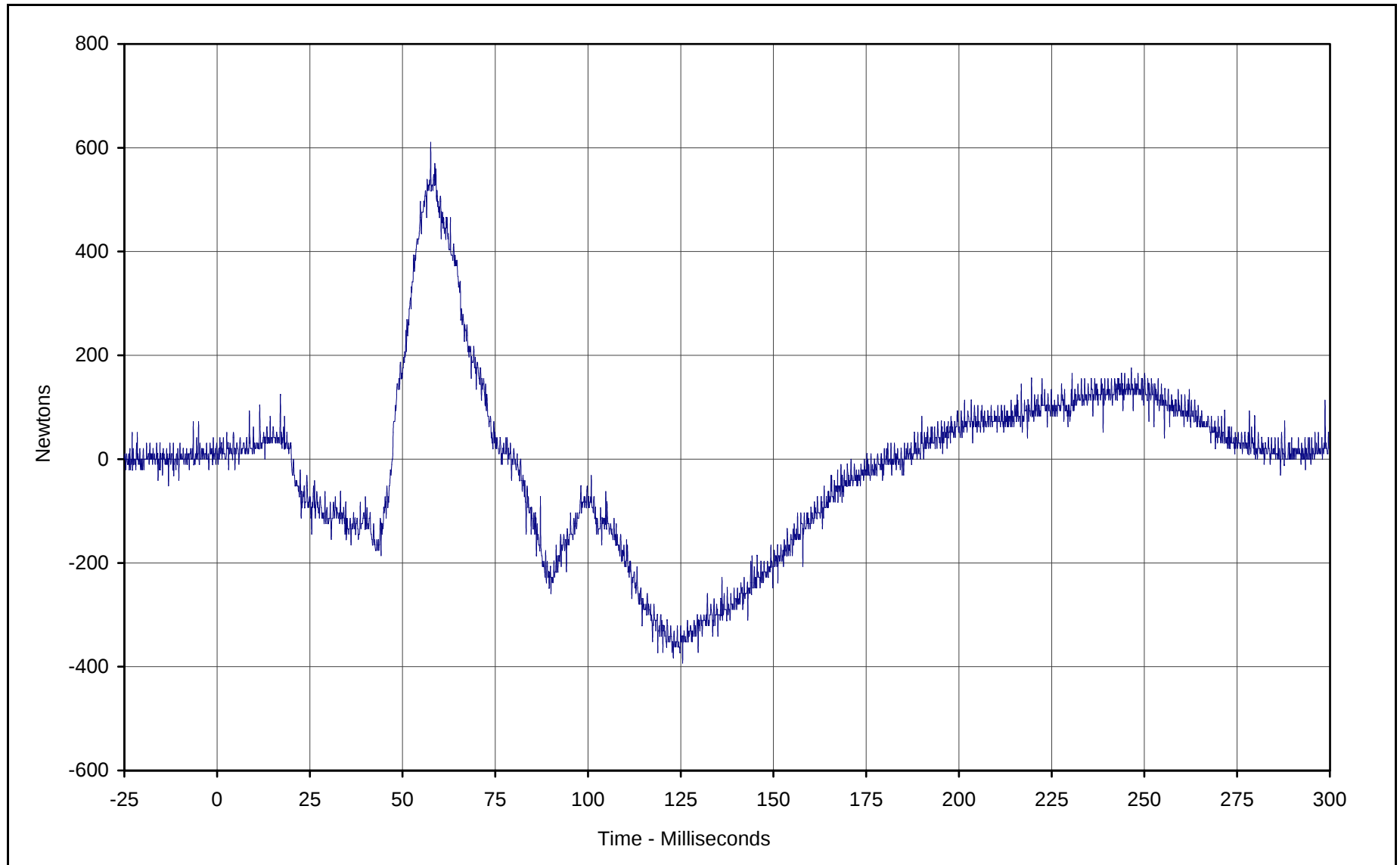


Curve Description: Driver Head Resultant Redundant
Maximum Value: 57.4 at 69.2 Milliseconds
Minimum Value: 0.1 at 5.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: RES-004

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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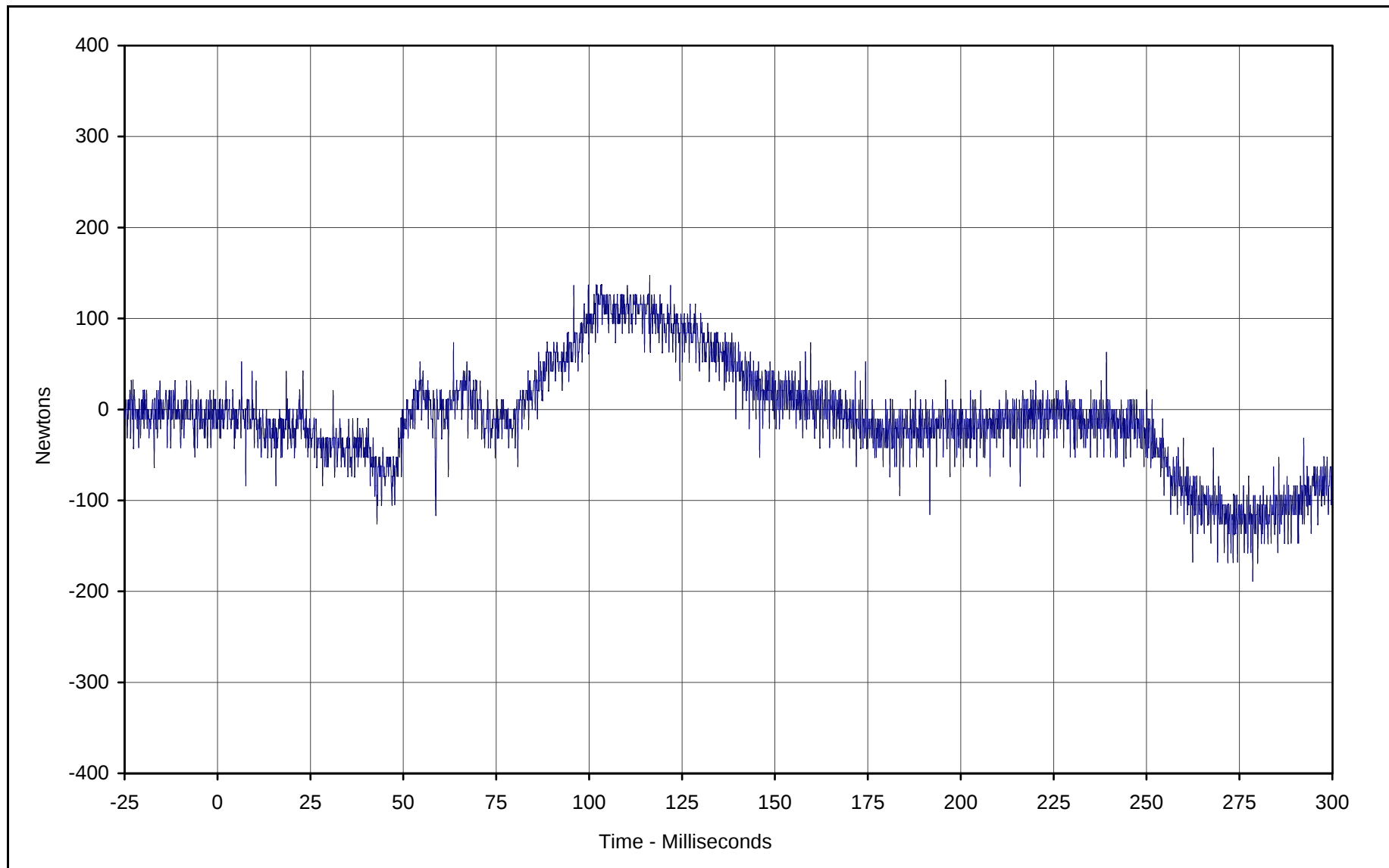


Curve Description: Driver Neck Force X
Maximum Value: 610.7 at 57.6 Milliseconds
Minimum Value: -393.3 at 125.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-007

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

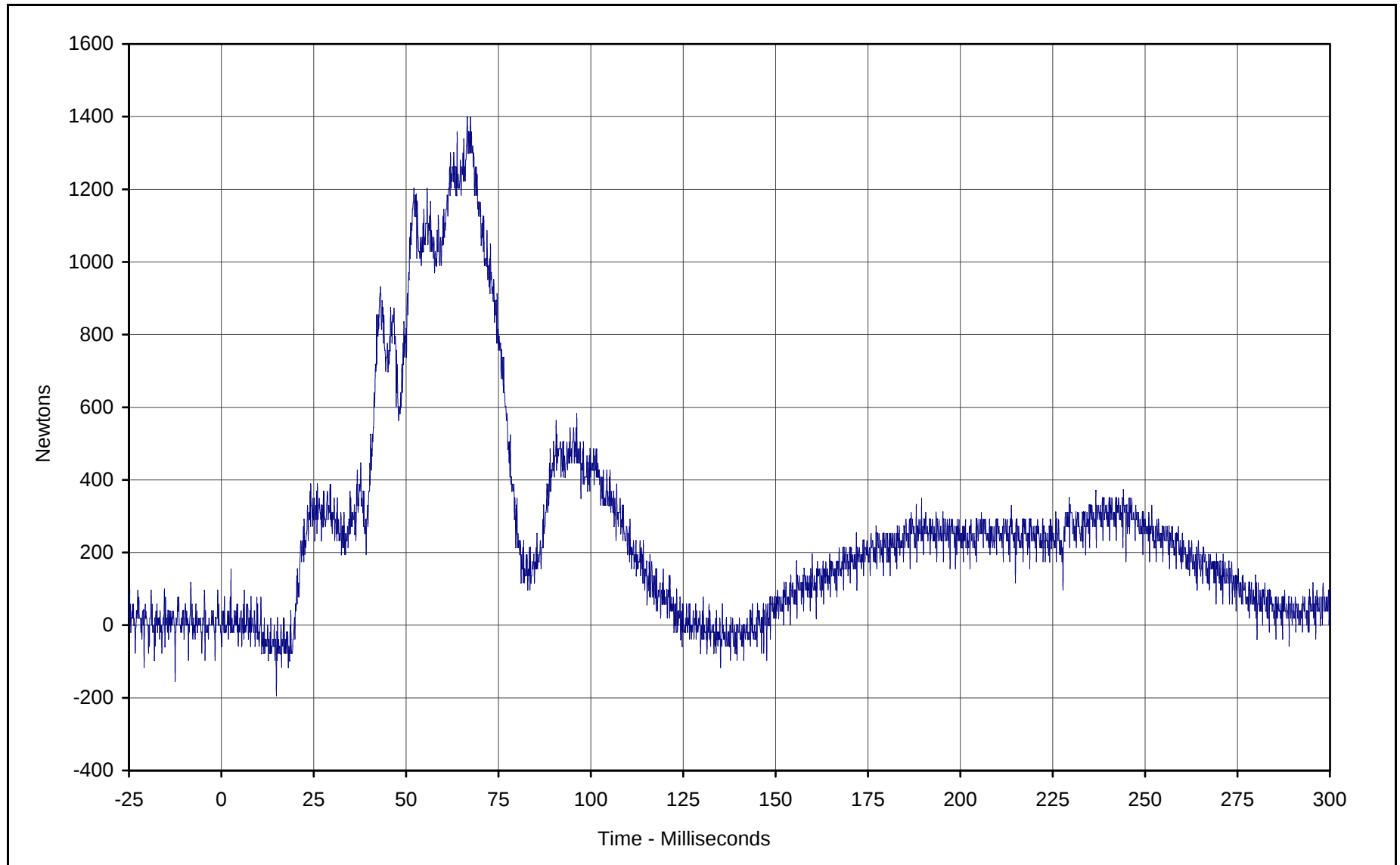




Curve Description: Driver Neck Force Y
Maximum Value: 147.0 at 116.3 Milliseconds
Minimum Value: -189.0 at 278.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-008

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

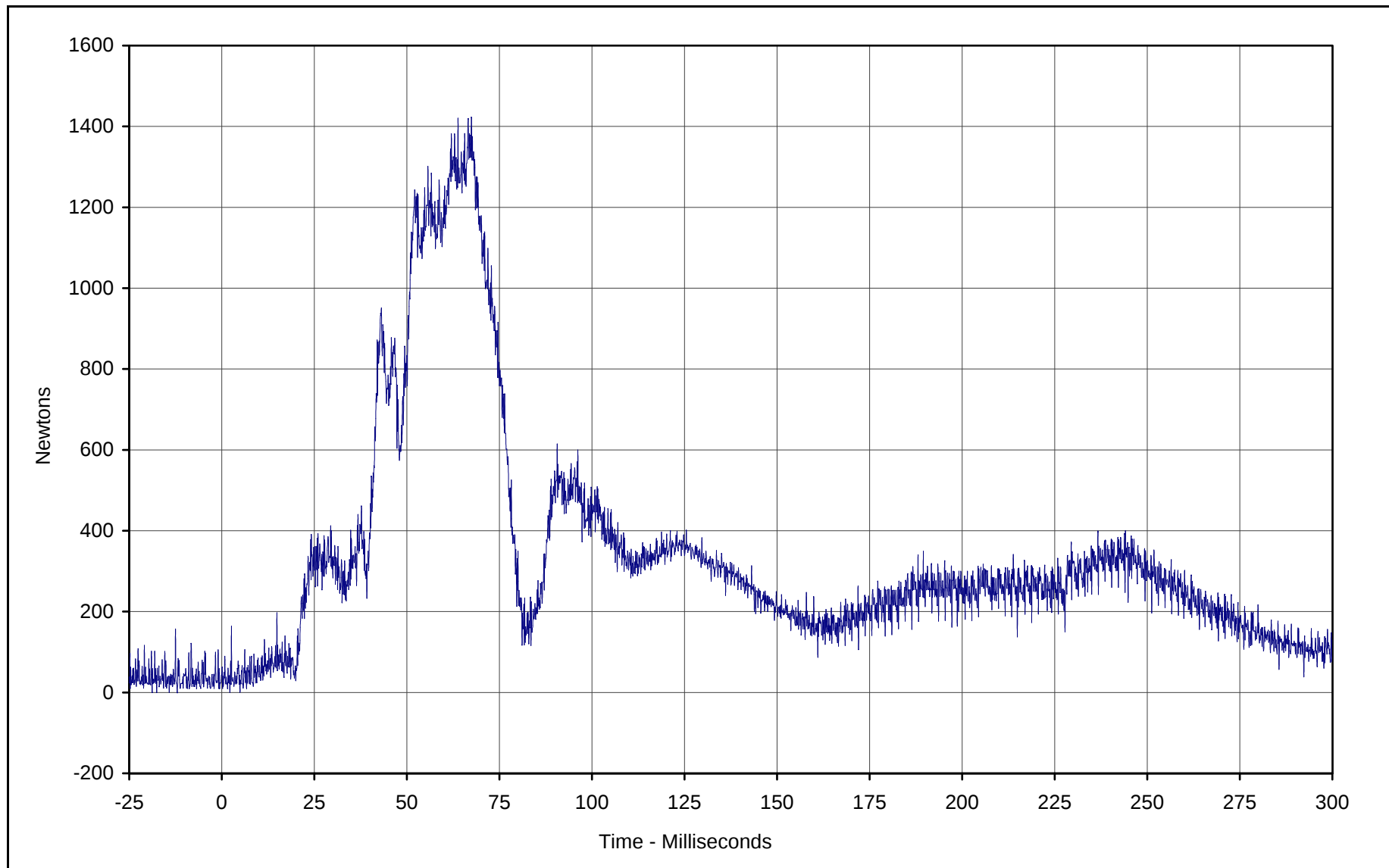




Curve Description: Driver Neck Force Z
Maximum Value: 1397.5 at 66.6 Milliseconds
Minimum Value: -194.1 at 14.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-009

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

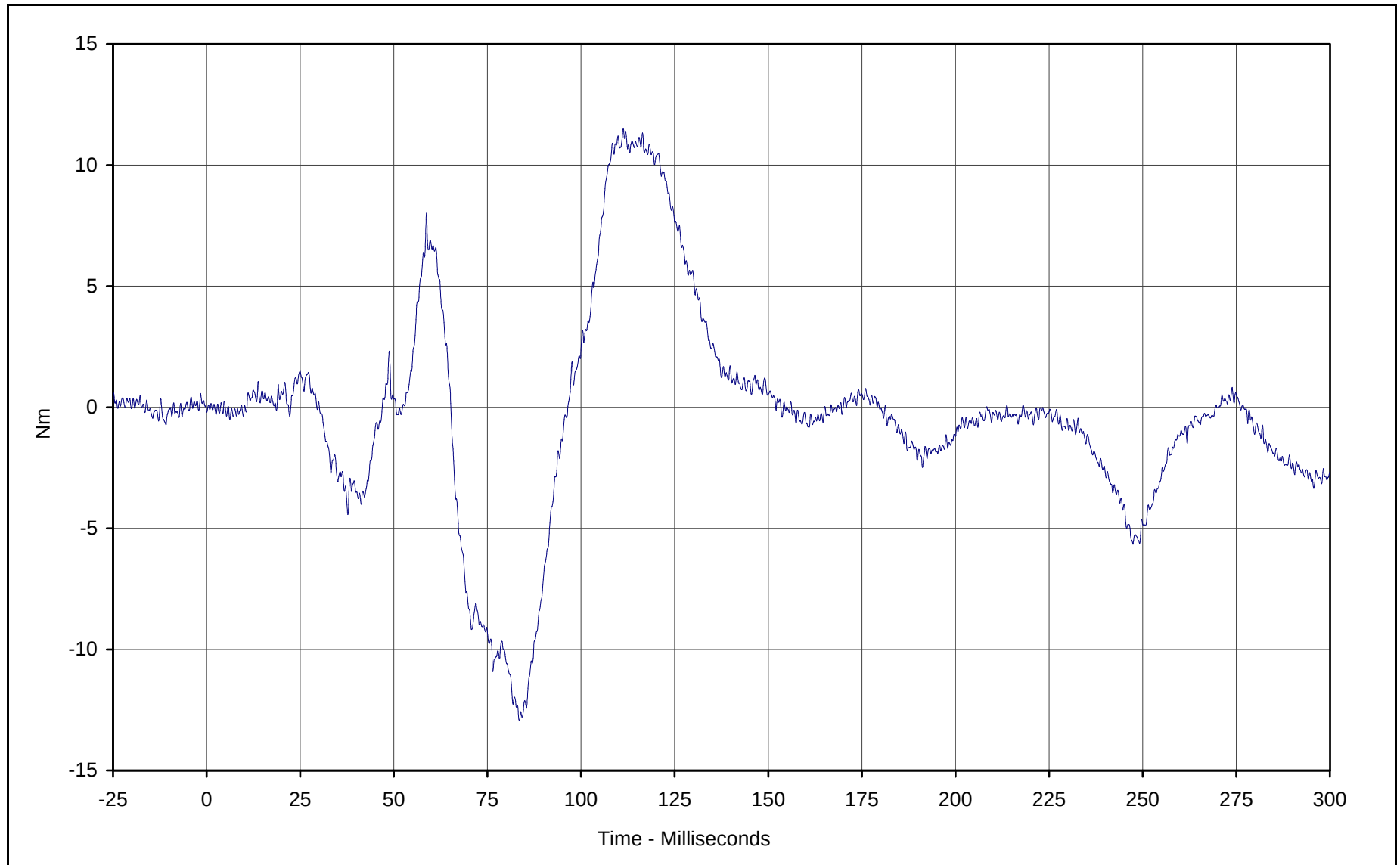




Curve Description: Driver Neck Force Resultant
Maximum Value: 1421.6 at 67.4 Milliseconds
Minimum Value: 0.0 at 2.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: RES-007

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

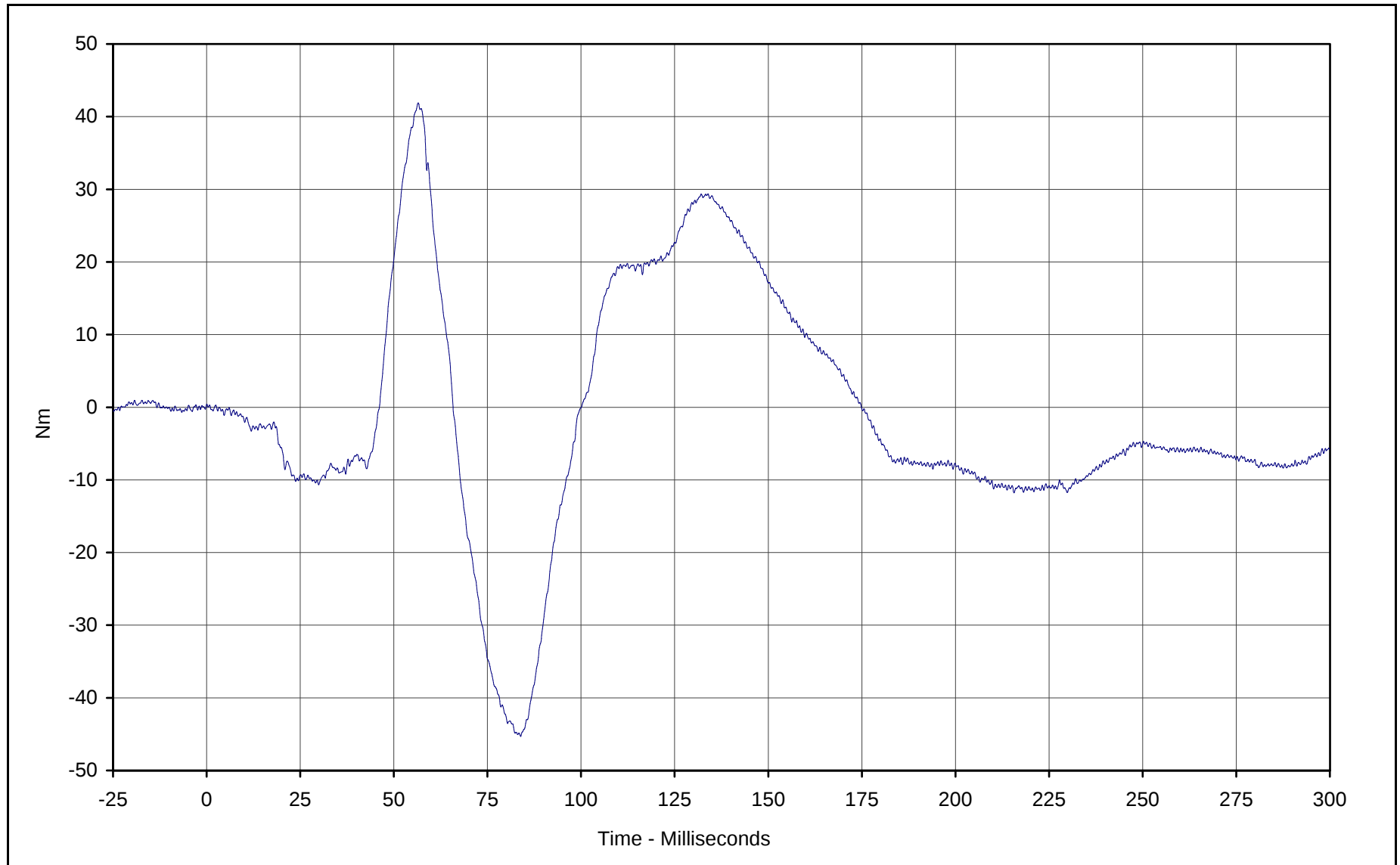




Curve Description: Driver Neck Moment X
Maximum Value: 11.5 at 111.3 Milliseconds
Minimum Value: -12.9 at 83.5 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-010

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan





Curve Description: Driver Neck Moment Y

Maximum Value: 41.9 at 56.5 Milliseconds

Minimum Value: -45.3 at 83.9 Milliseconds

SAE Filter Class: 600

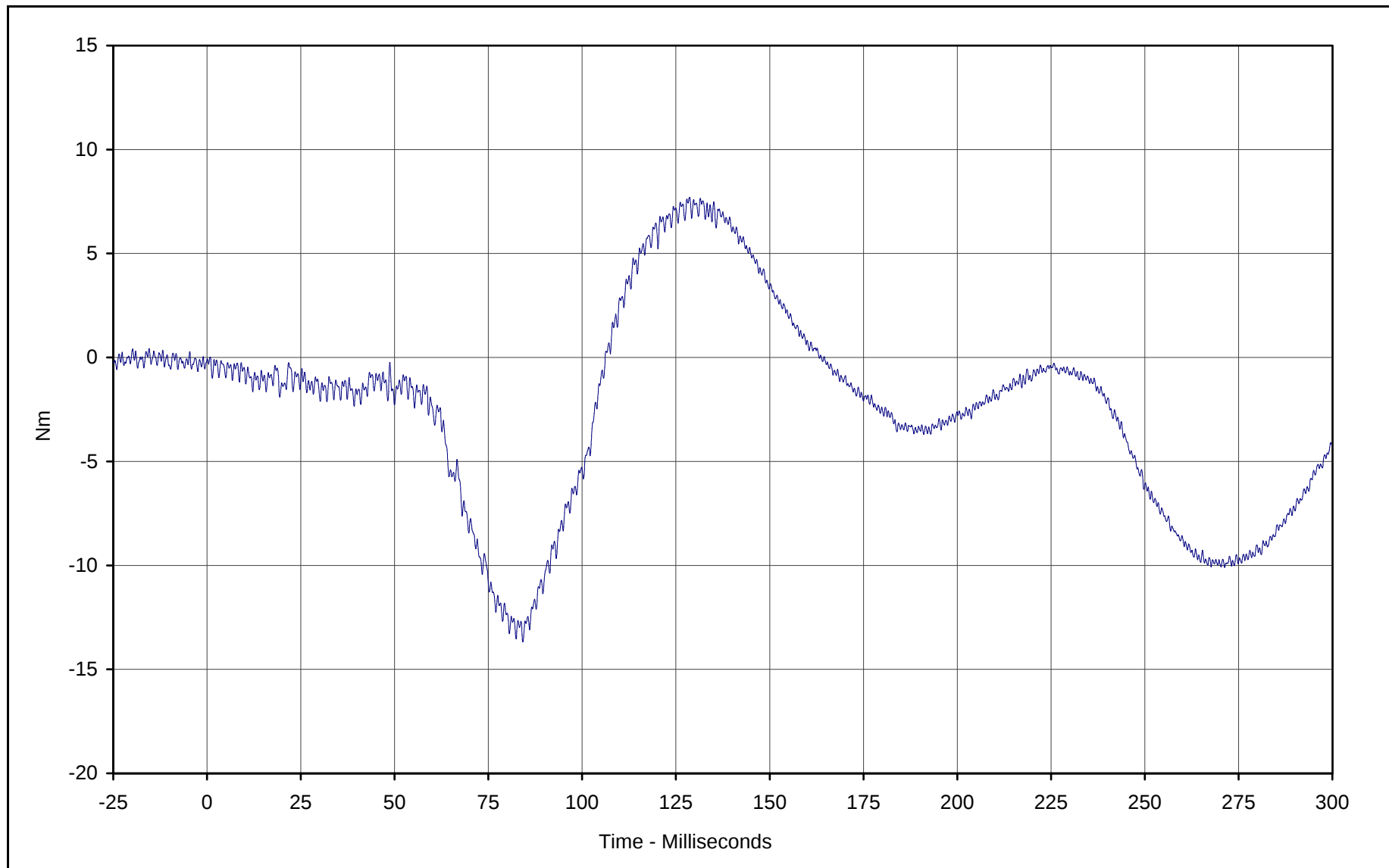
Date of Test: 12/4/01

Curve Number: FIL-011

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

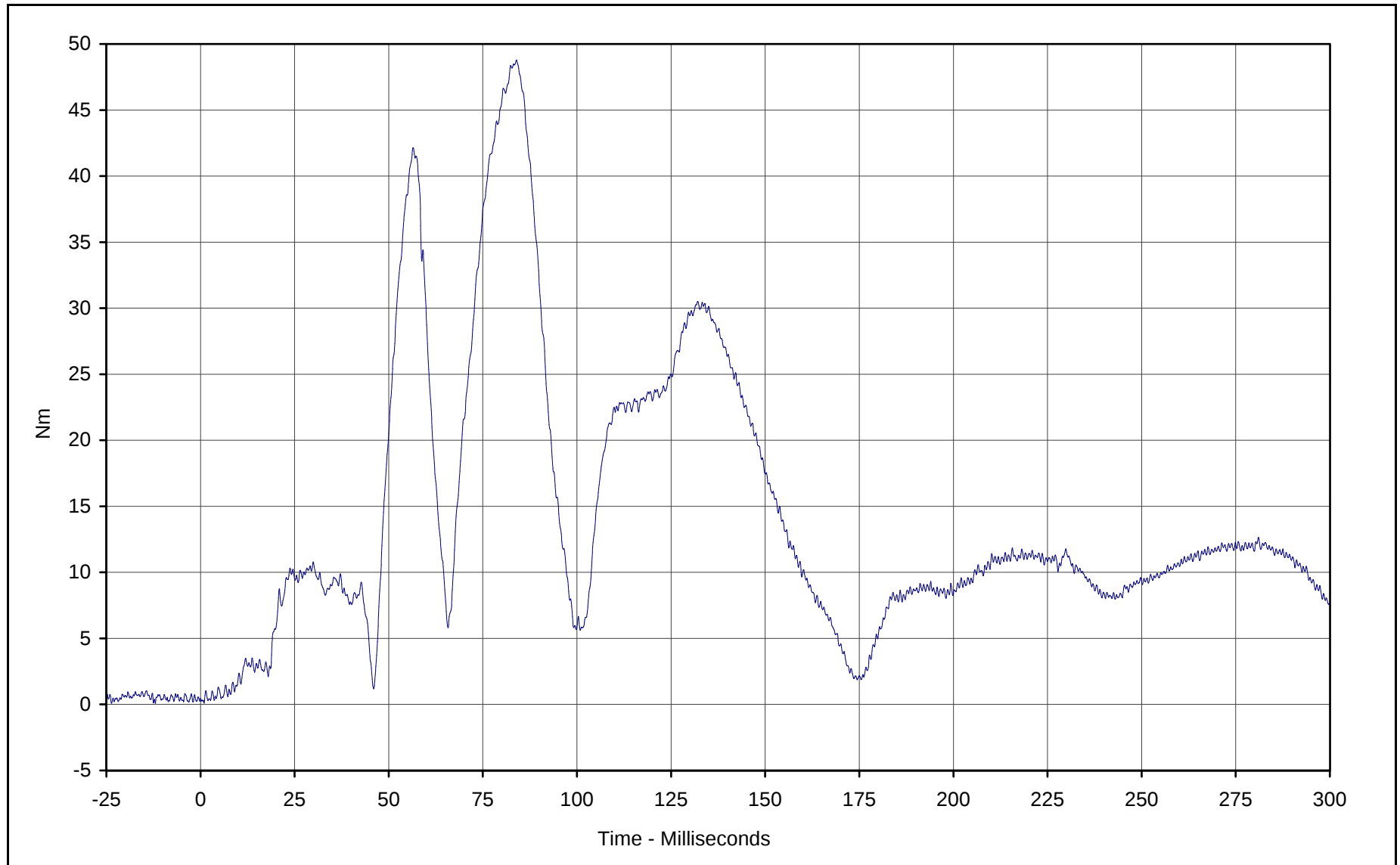




Curve Description: Driver Neck Moment Z
Maximum Value: 7.7 at 128.6 Milliseconds
Minimum Value: -13.7 at 84.2 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-012

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



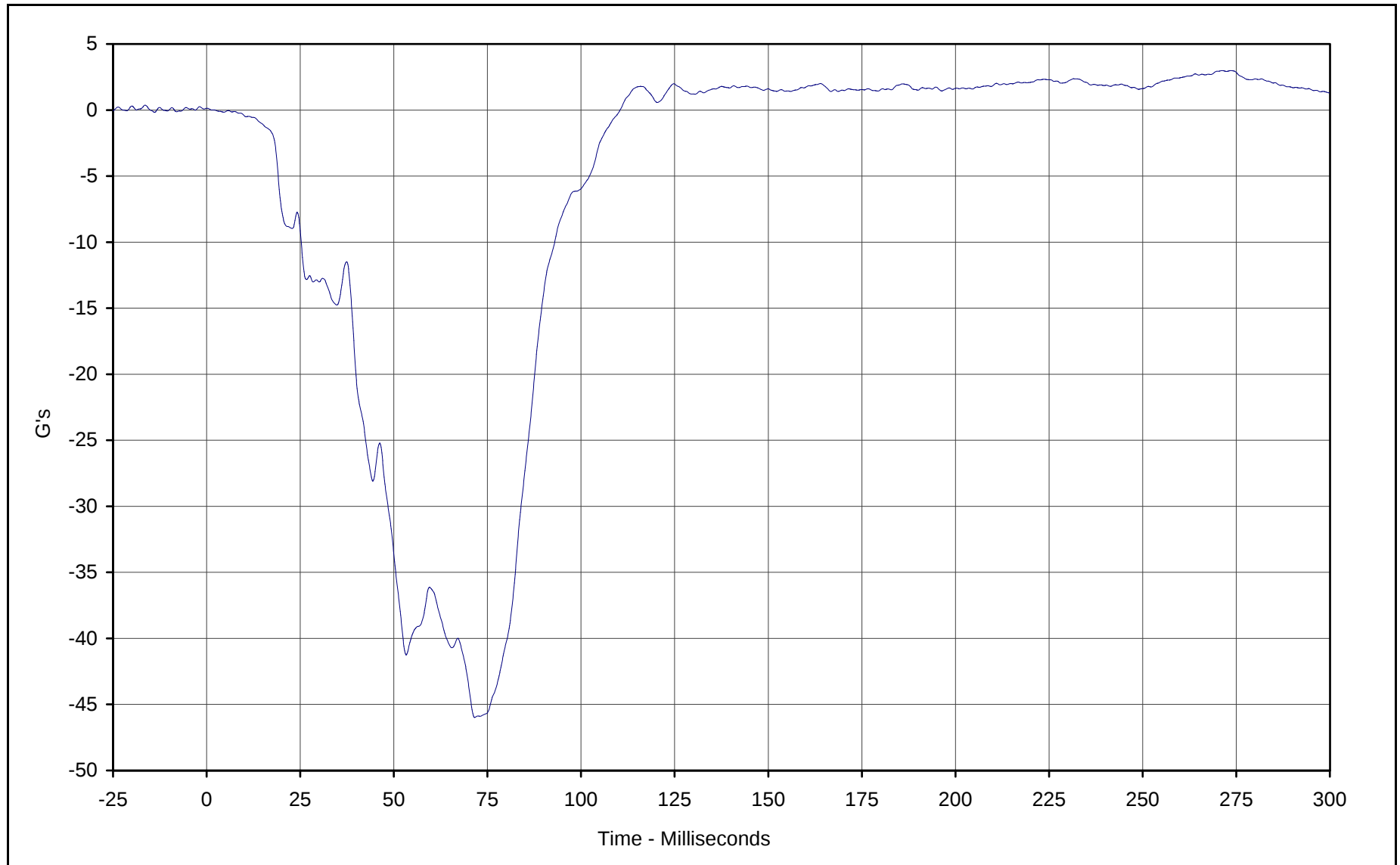


Curve Description: Driver Neck Moment Resultant
Maximum Value: 48.8 at 83.9 Milliseconds
Minimum Value: 0.1 at 1.0 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: RES-010

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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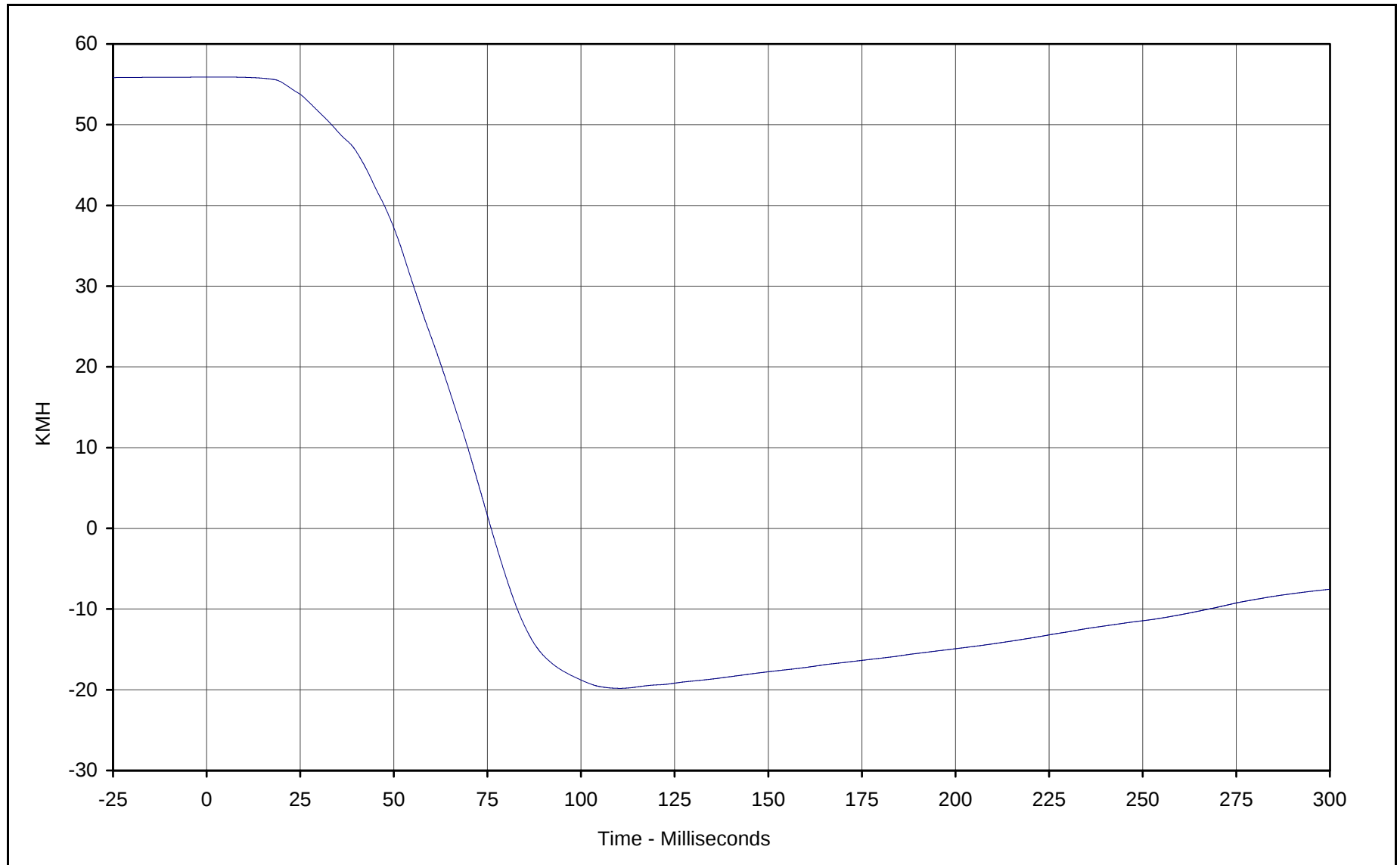
Curve Description: Driver Chest Primary X
Maximum Value: 3.0 at 271.1 Milliseconds
Minimum Value: -46.0 at 71.6 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-013

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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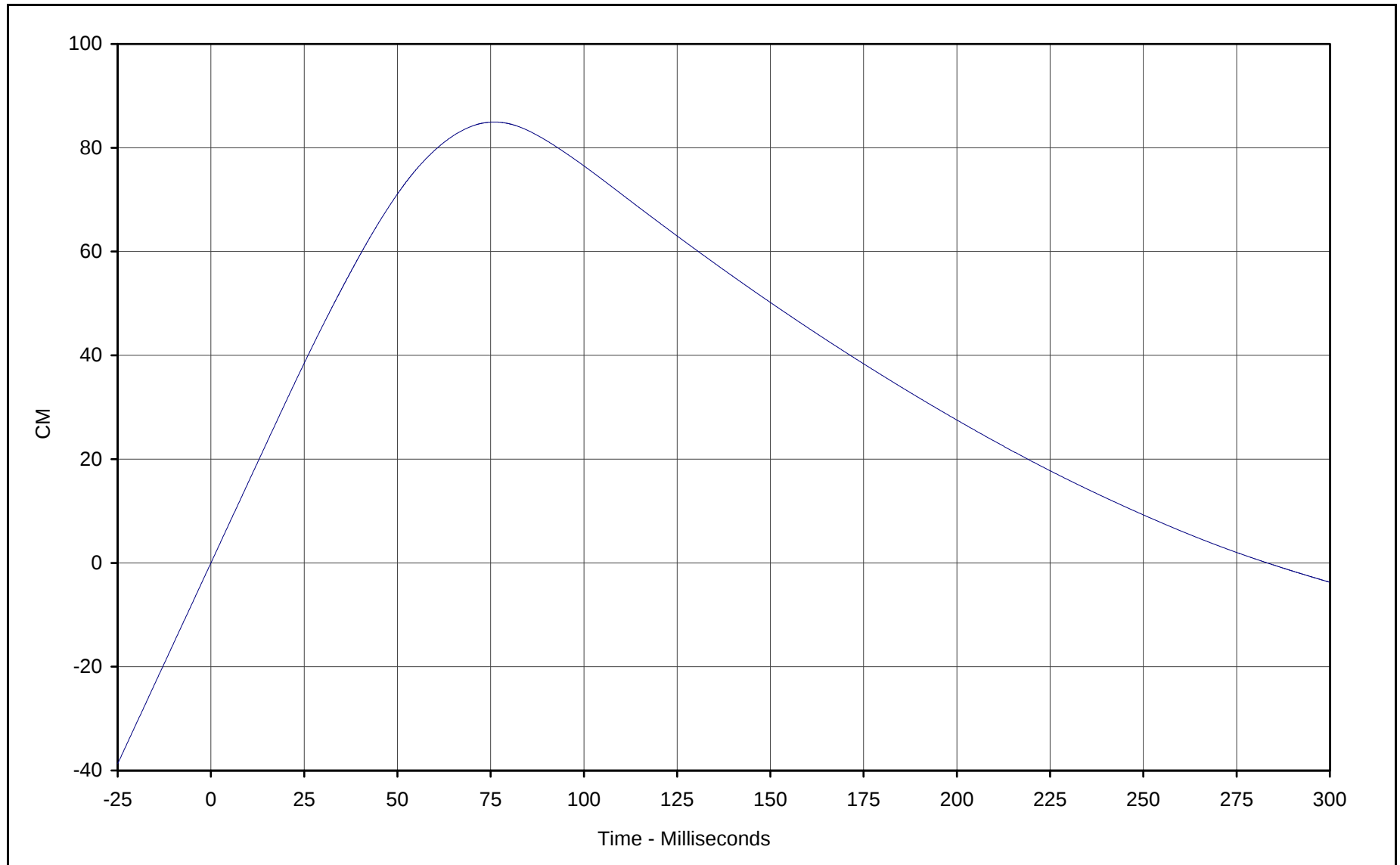
Curve Description: Driver Chest Primary X Velocity
Maximum Value: 55.9 at 2.2 Milliseconds
Minimum Value: -19.8 at 110.4 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-013

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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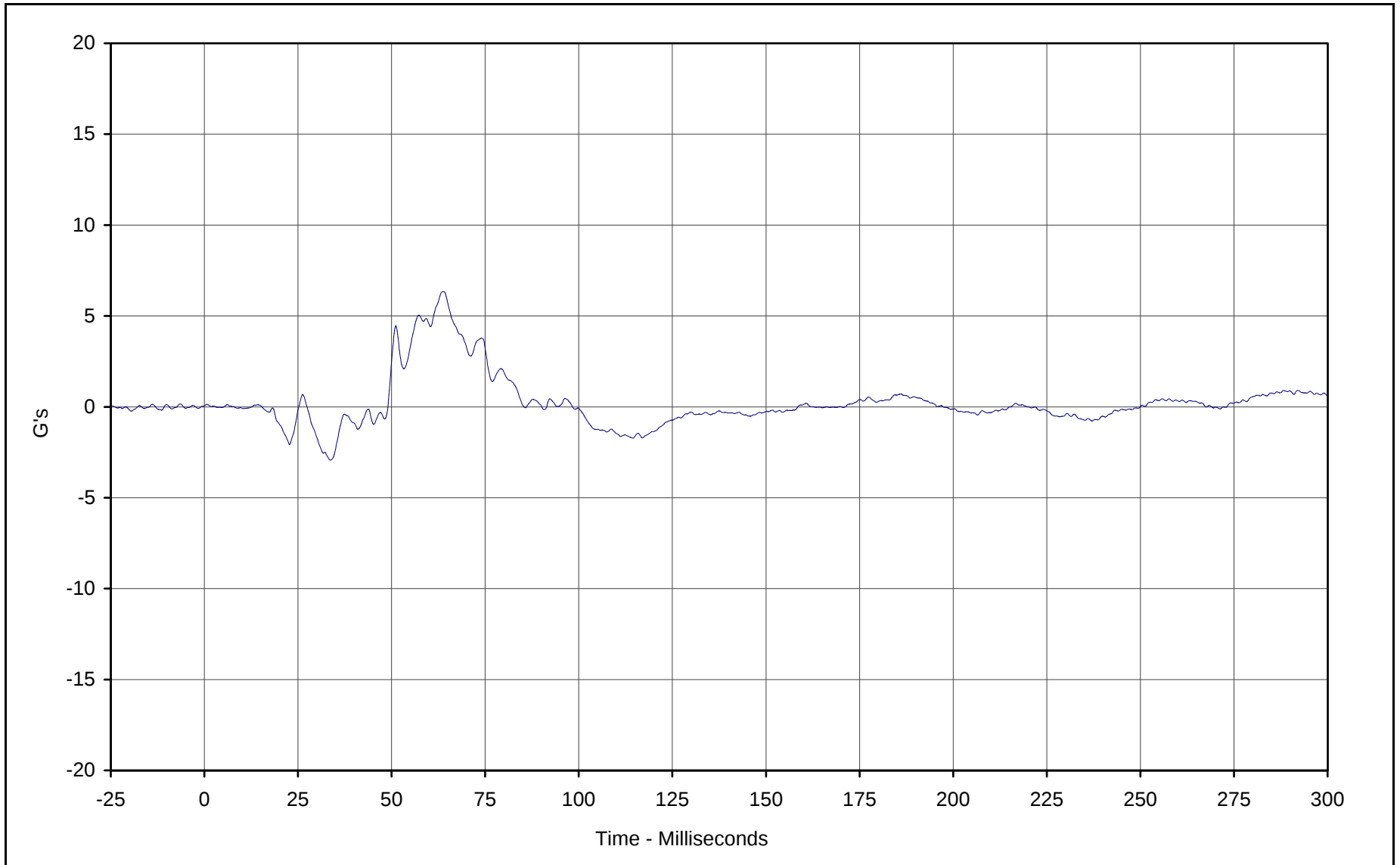
Curve Description: Driver Chest Primary X Displ.
Maximum Value: 85.0 at 76.0 Milliseconds
Minimum Value: -3.7 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-013

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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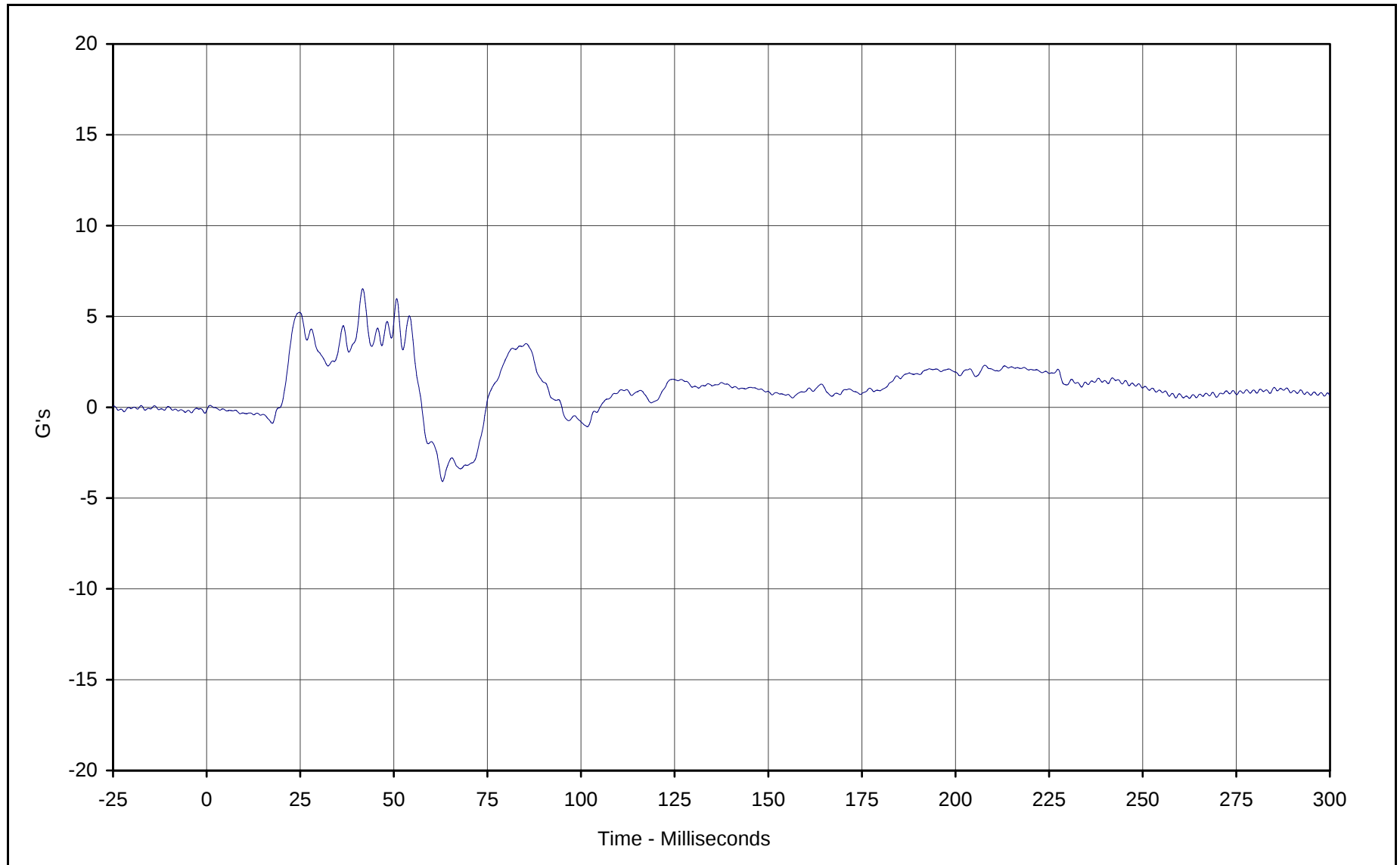
Curve Description: Driver Chest Primary Y
Maximum Value: 6.3 at 63.8 Milliseconds
Minimum Value: -2.9 at 33.6 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-014

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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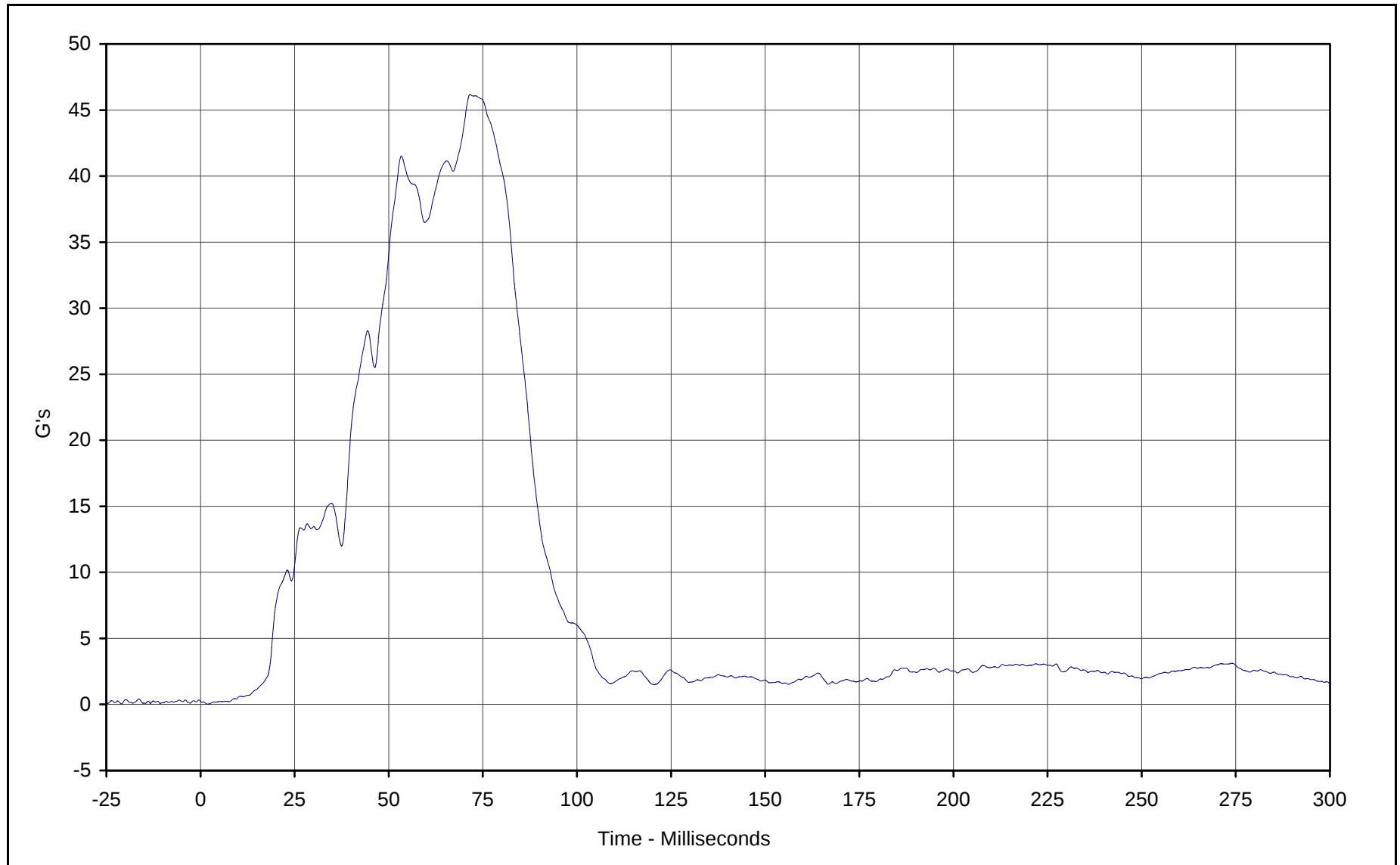


Curve Description: Driver Chest Primary Z
Maximum Value: 6.5 at 41.7 Milliseconds
Minimum Value: -4.1 at 63.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-015

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



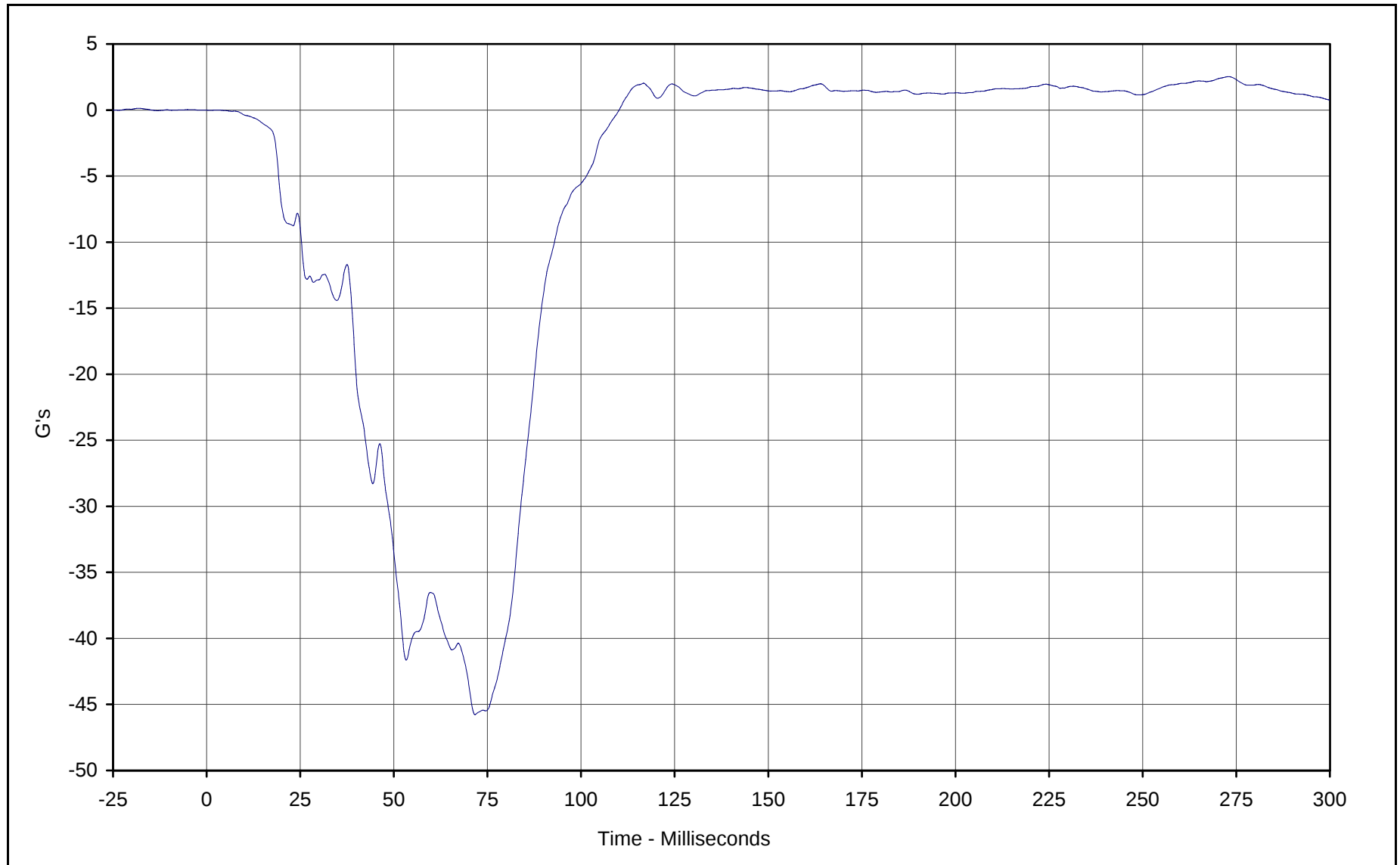
KAR21128-01



Curve Description: Driver Chest Resultant Primary
Maximum Value: 46.2 at 71.6 Milliseconds
Minimum Value: 0.0 at 2.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: RES-013

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



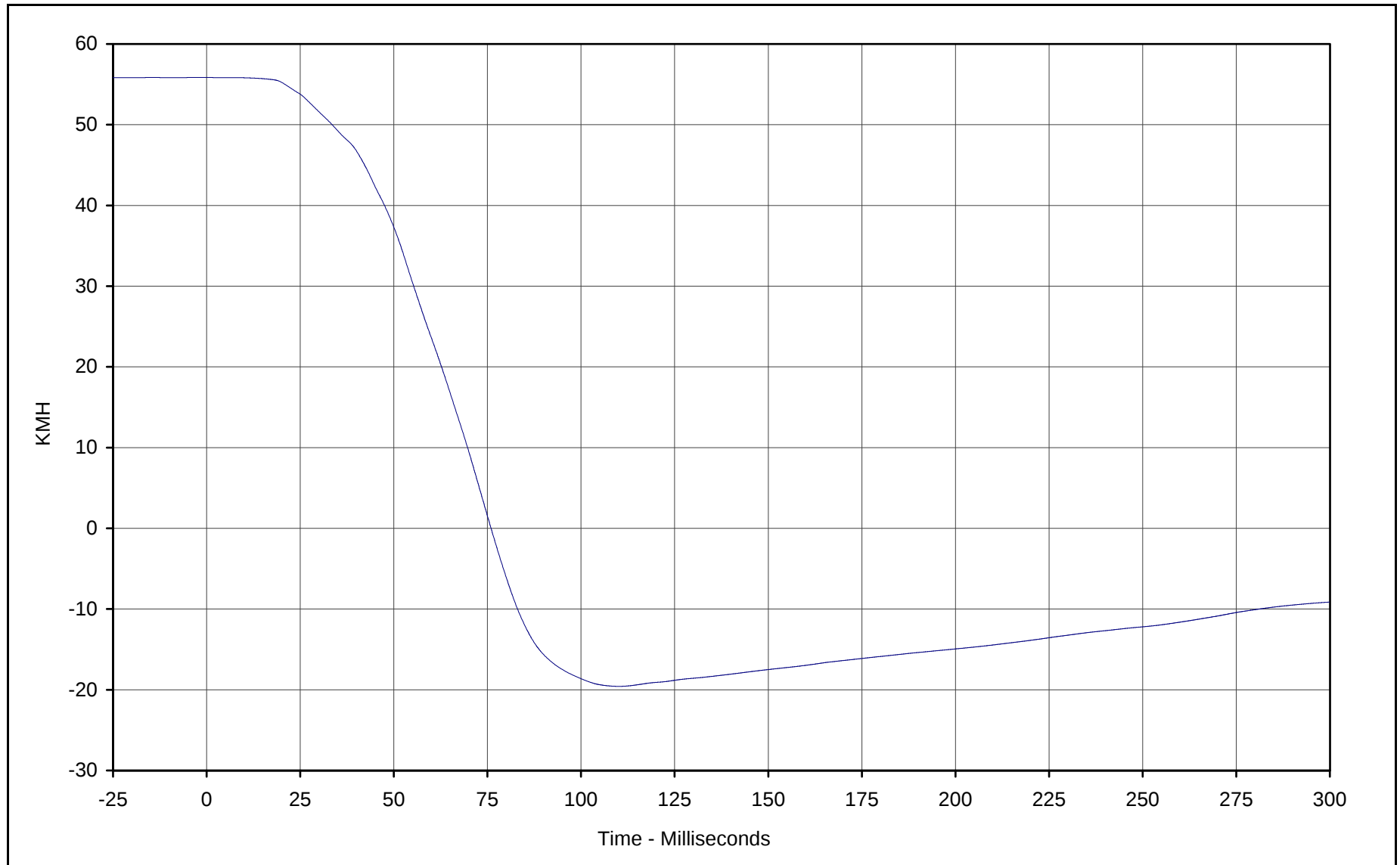


Curve Description: Driver Chest Redundant X
Maximum Value: 2.5 at 273.0 Milliseconds
Minimum Value: -45.8 at 71.7 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-016

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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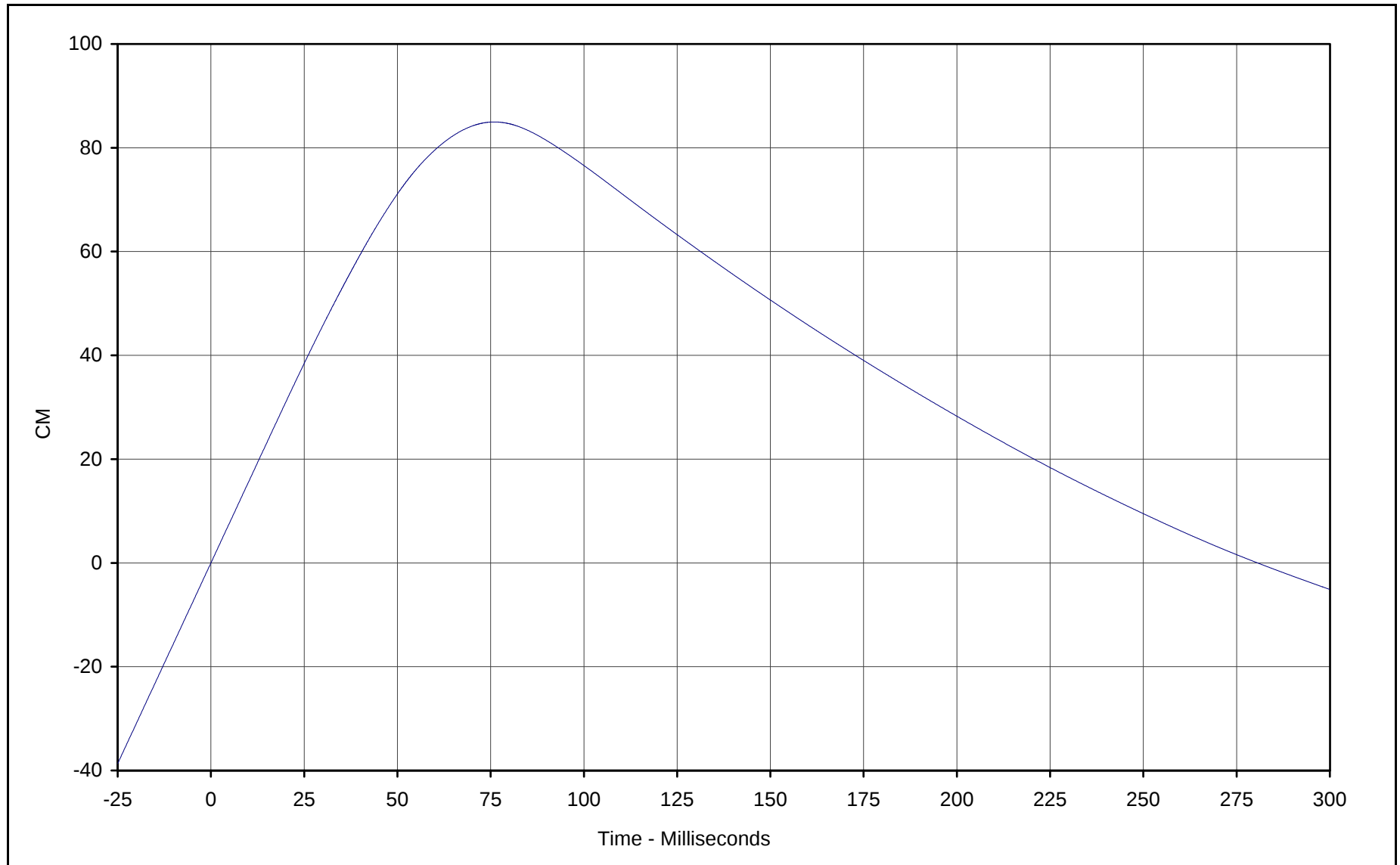


Curve Description: Driver Chest Redundant X Velocity
Maximum Value: 55.8 at 0.0 Milliseconds
Minimum Value: -19.6 at 110.2 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-016

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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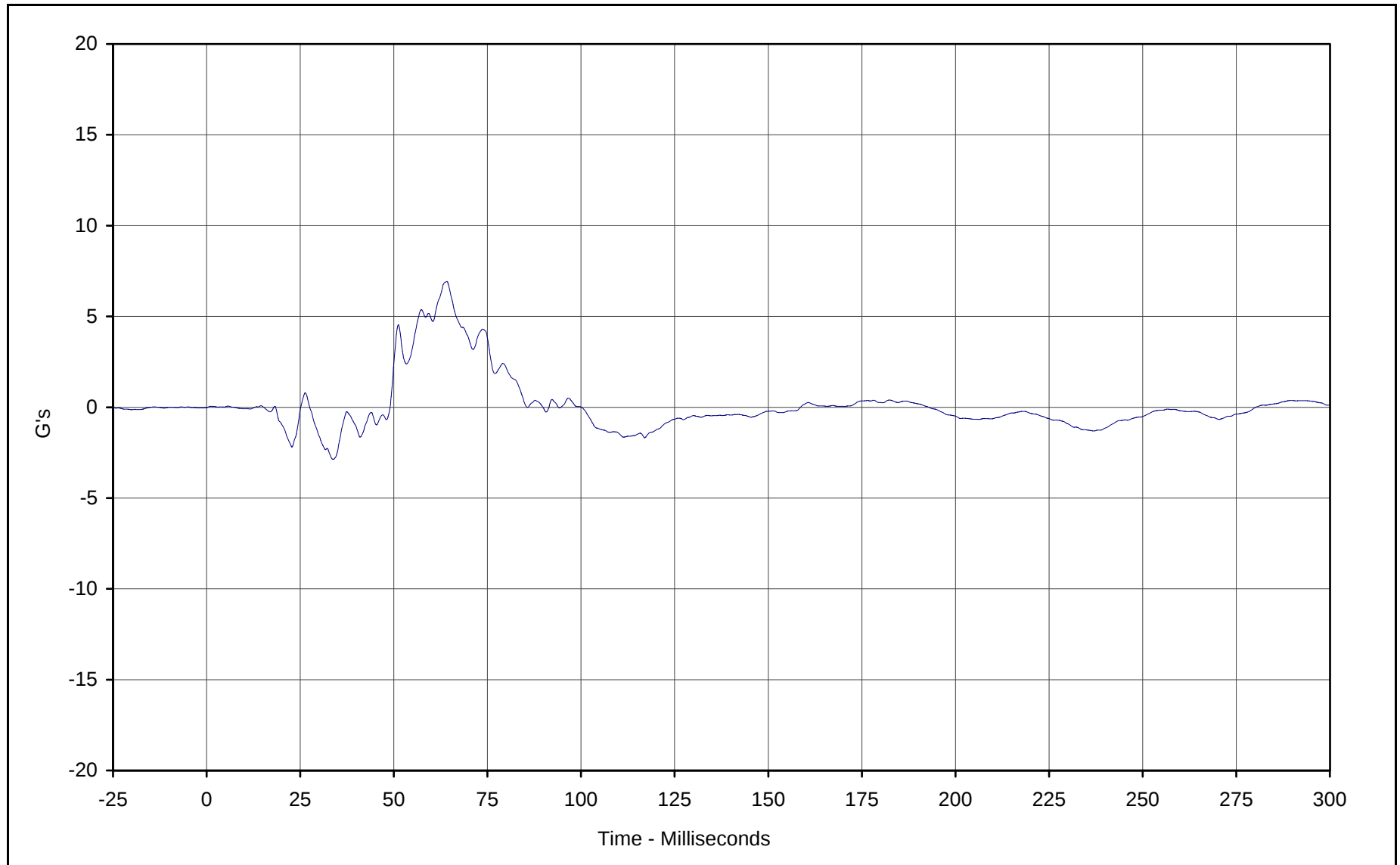


Curve Description: Driver Chest Redundant X Displ.
Maximum Value: 85.0 at 76.0 Milliseconds
Minimum Value: -5.1 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-016

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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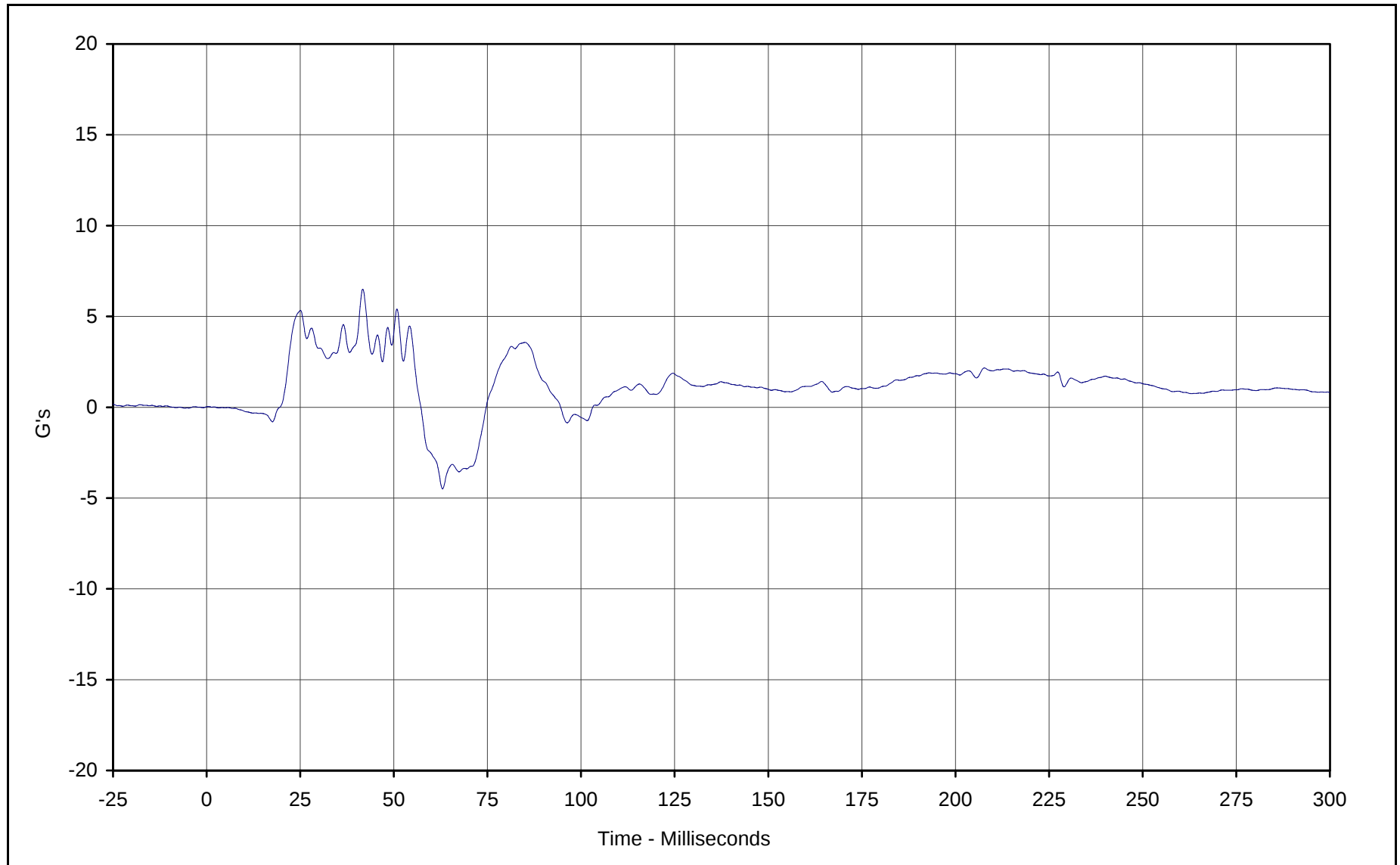
Curve Description: Driver Chest Redundant Y
Maximum Value: 6.9 at 64.1 Milliseconds
Minimum Value: -2.9 at 33.8 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-017

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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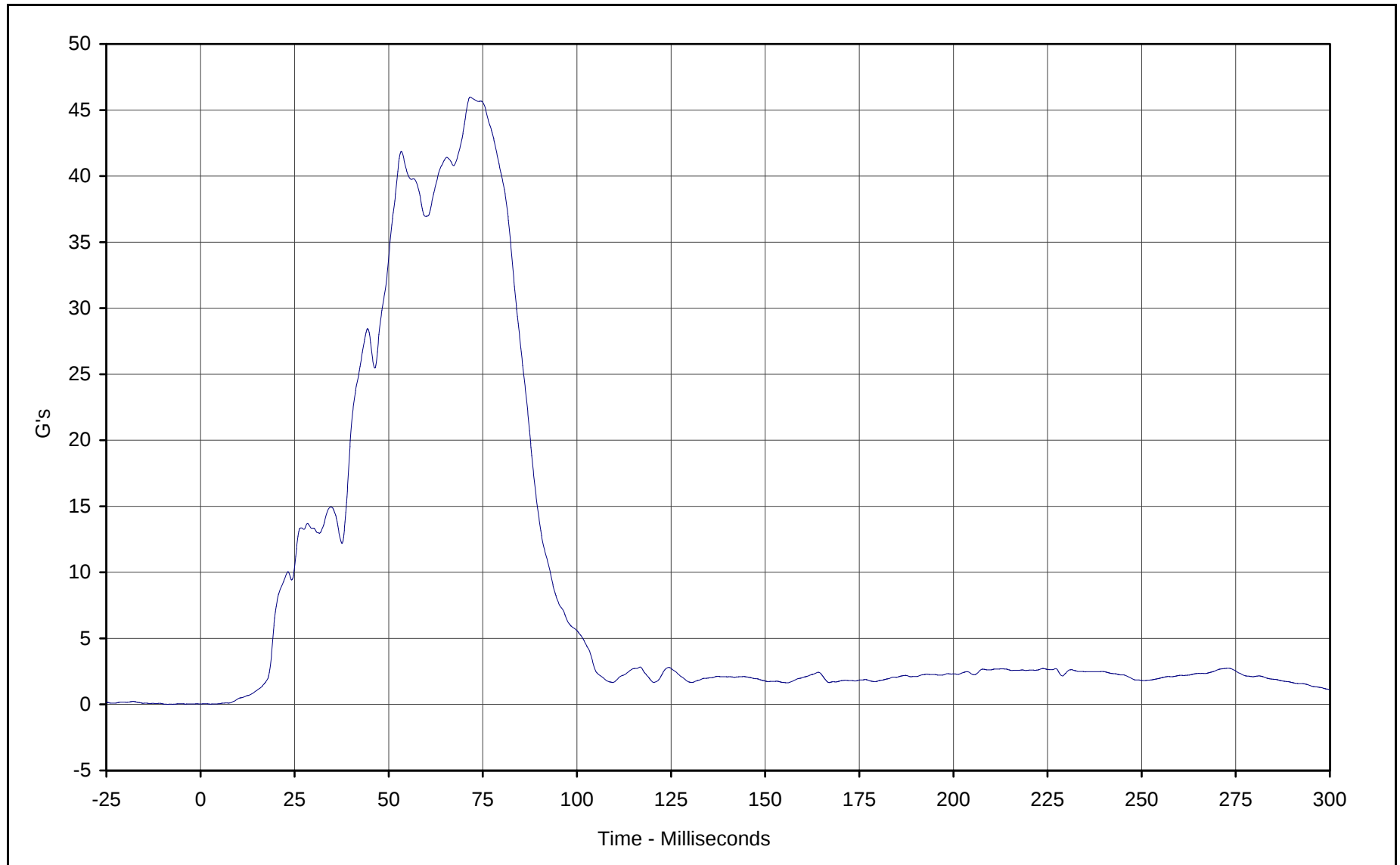
Curve Description: Driver Chest Redundant Z
Maximum Value: 6.5 at 41.7 Milliseconds
Minimum Value: -4.5 at 63.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-018

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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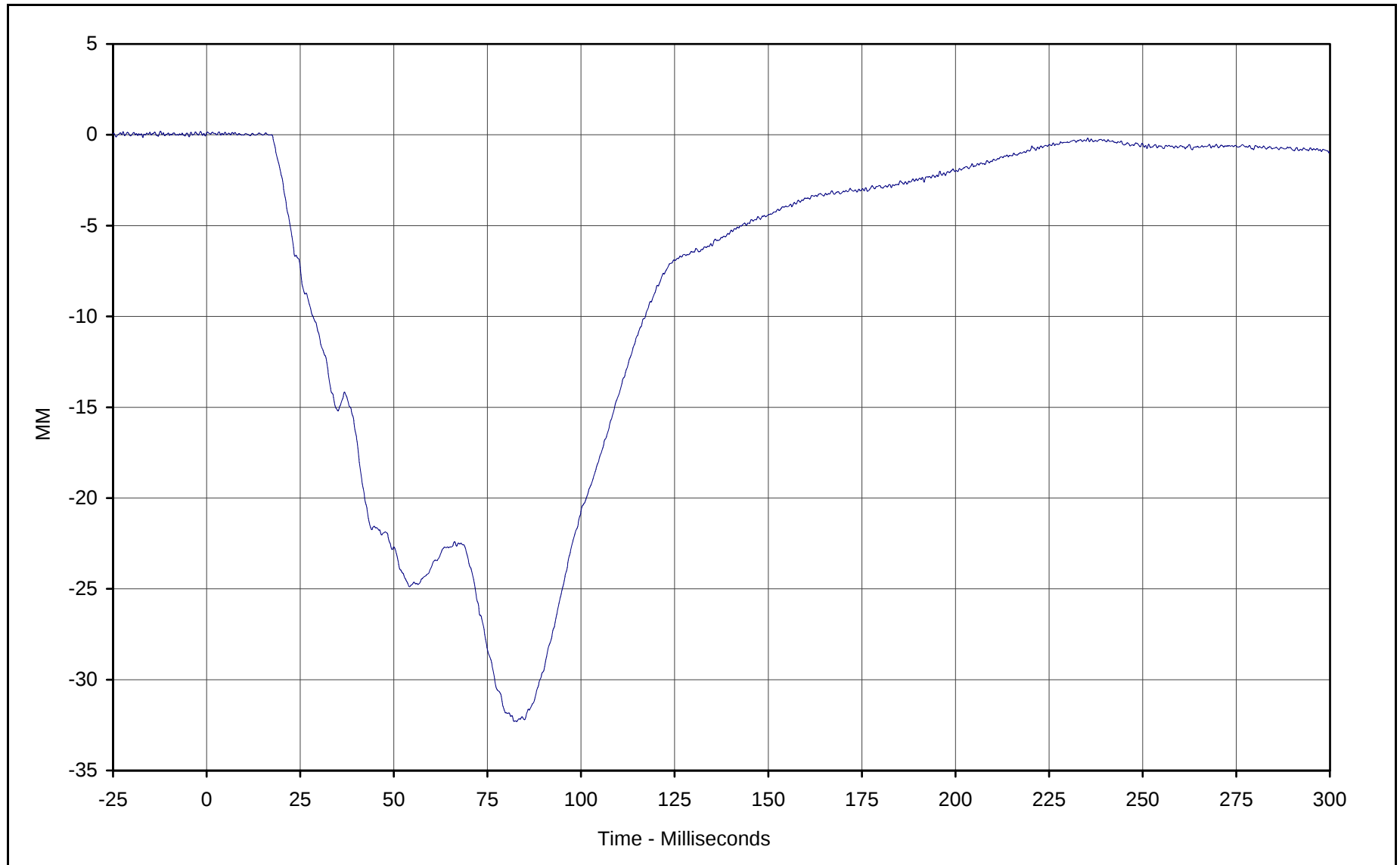


Curve Description: Driver Chest Resultant Redundant
Maximum Value: 46.0 at 71.7 Milliseconds
Minimum Value: 0.0 at 2.7 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: RES-016

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



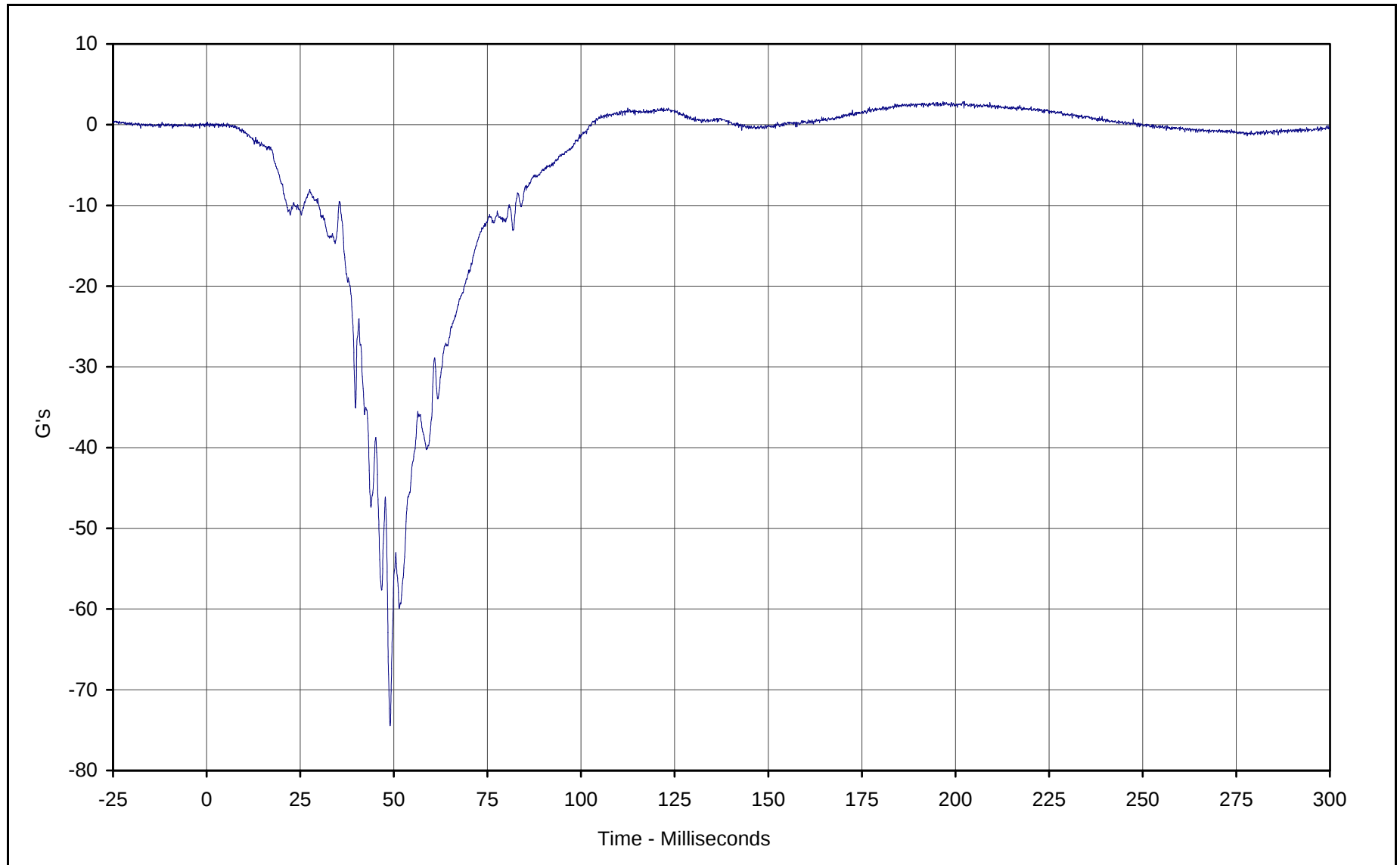
KAR21128-01



Curve Description: Driver Chest Displacement X
Maximum Value: 0.2 at 3.3 Milliseconds
Minimum Value: -32.3 at 82.8 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-019

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan





Curve Description: Driver Pelvis X

Maximum Value: 2.8 at 196.7 Milliseconds

Minimum Value: -74.5 at 49.0 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/4/01

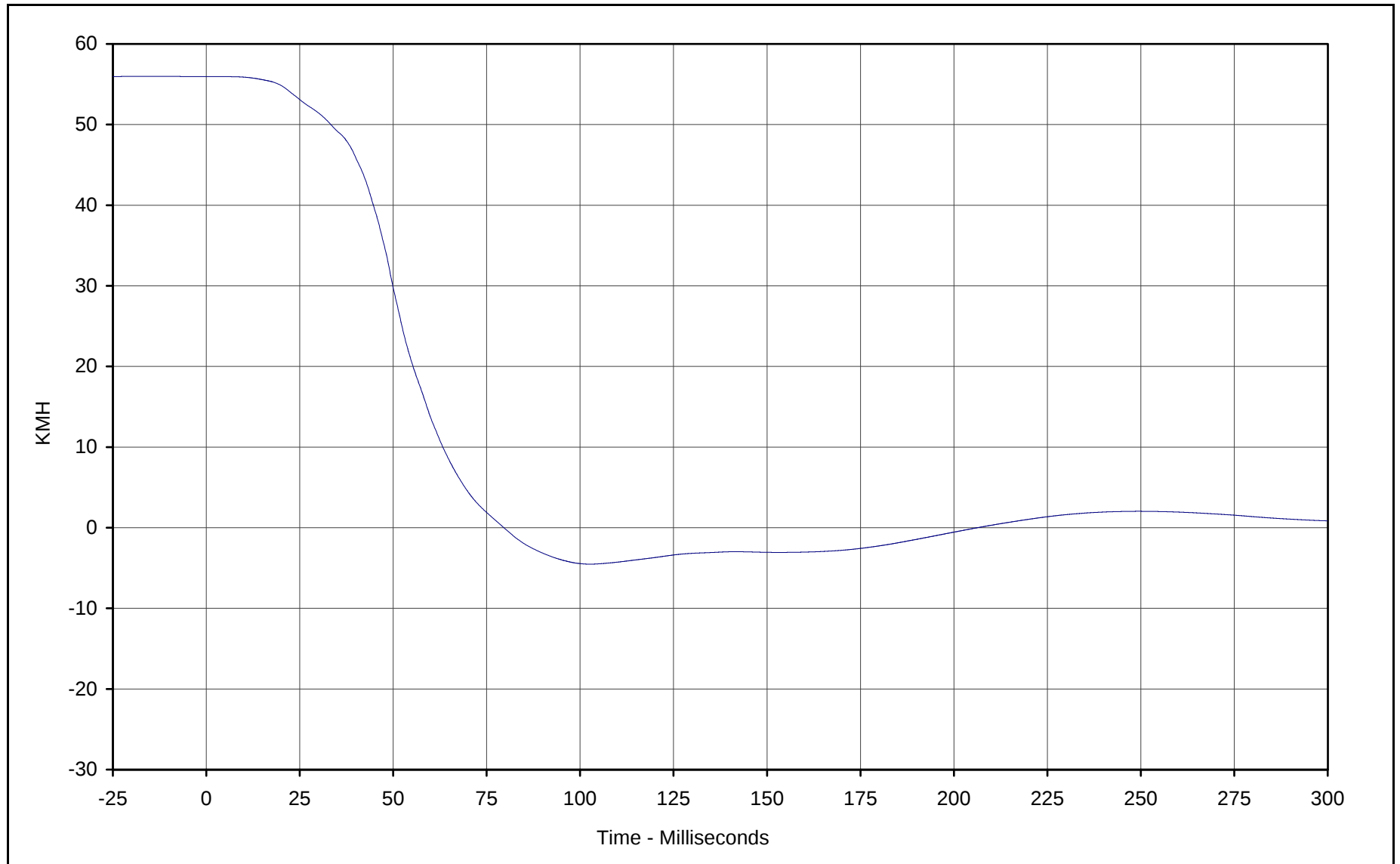
Curve Number: FIL-020

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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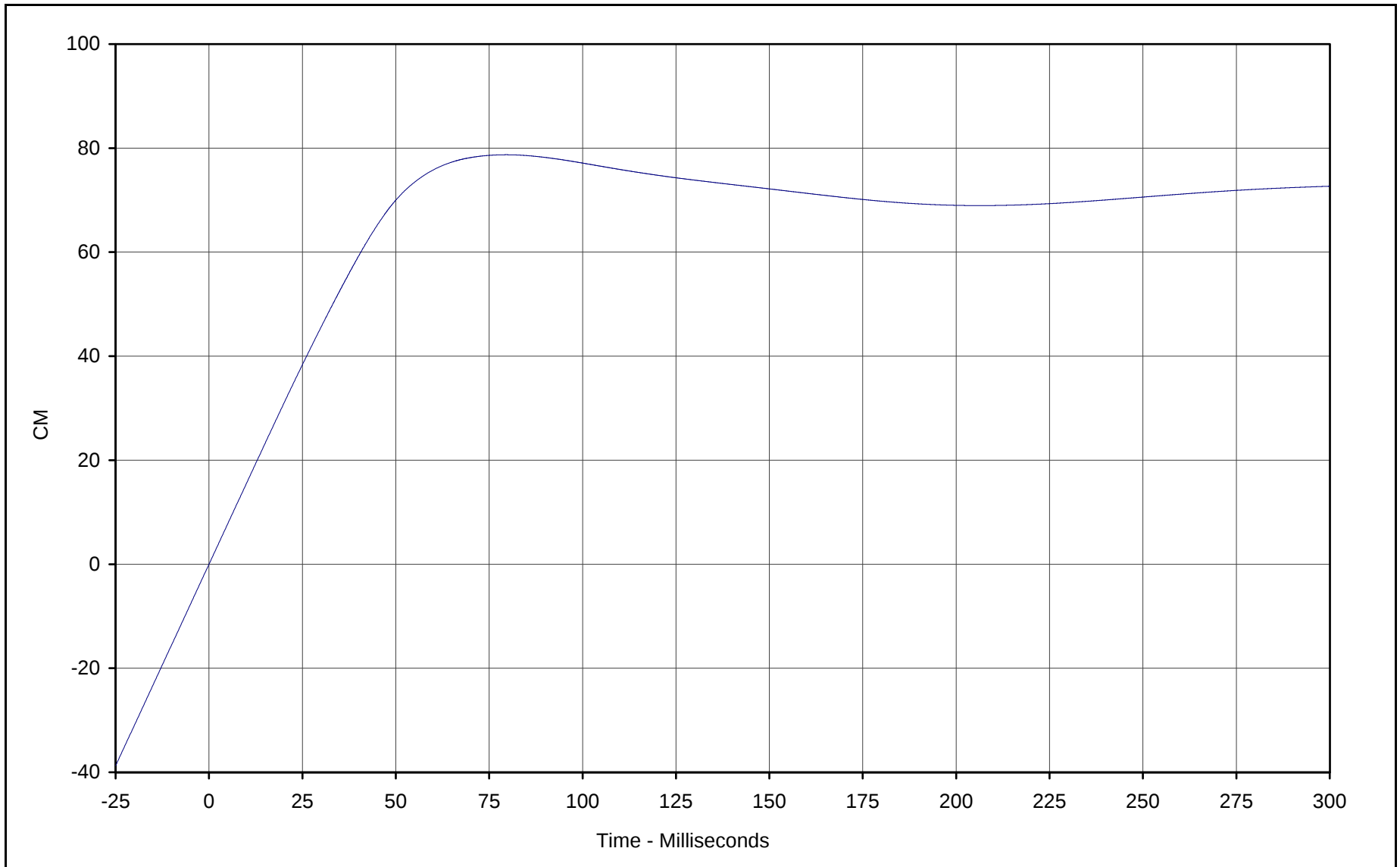


Curve Description: Driver Pelvis X Velocity
Maximum Value: 56.0 at 0.8 Milliseconds
Minimum Value: -4.5 at 102.6 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-020

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



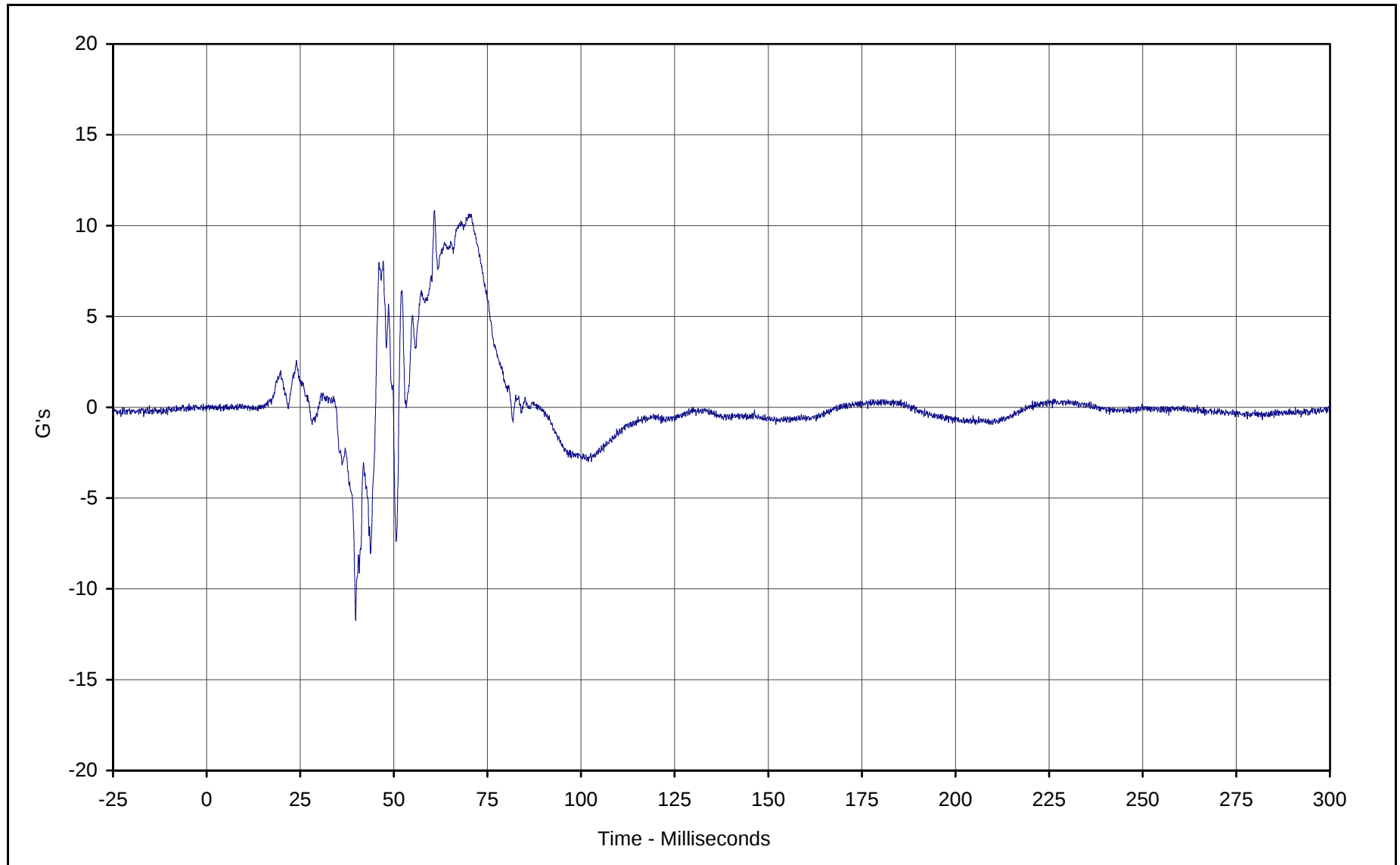
KAR21128-01



Curve Description: Driver Pelvis X Displ.
Maximum Value: 78.7 at 79.6 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-020

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan





Curve Description: Driver Pelvis Y

Maximum Value: 10.8 at 60.8 Milliseconds

Minimum Value: -11.7 at 39.8 Milliseconds

SAE Filter Class: 1000

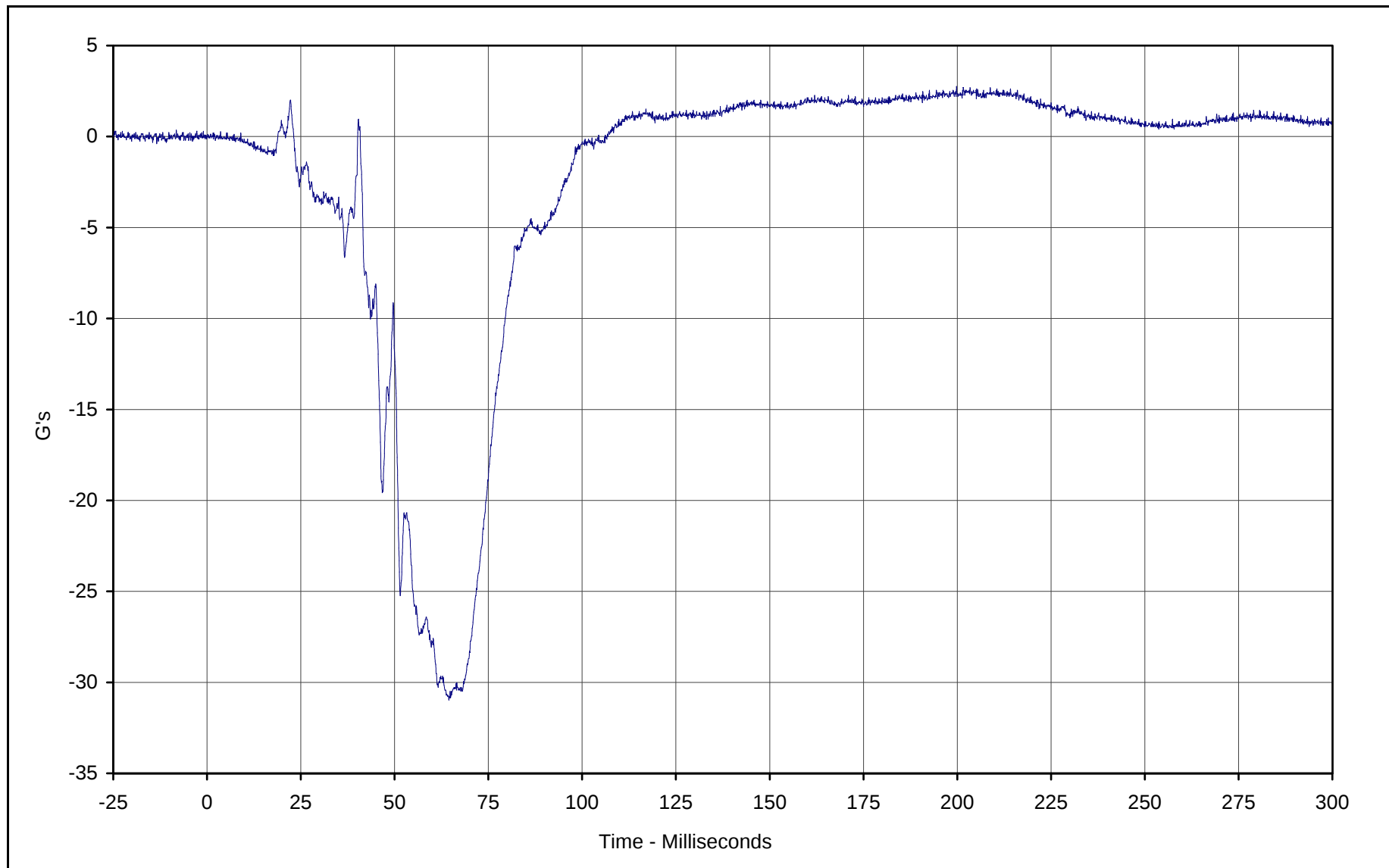
Date of Test: 12/4/01

Curve Number: FIL-021

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

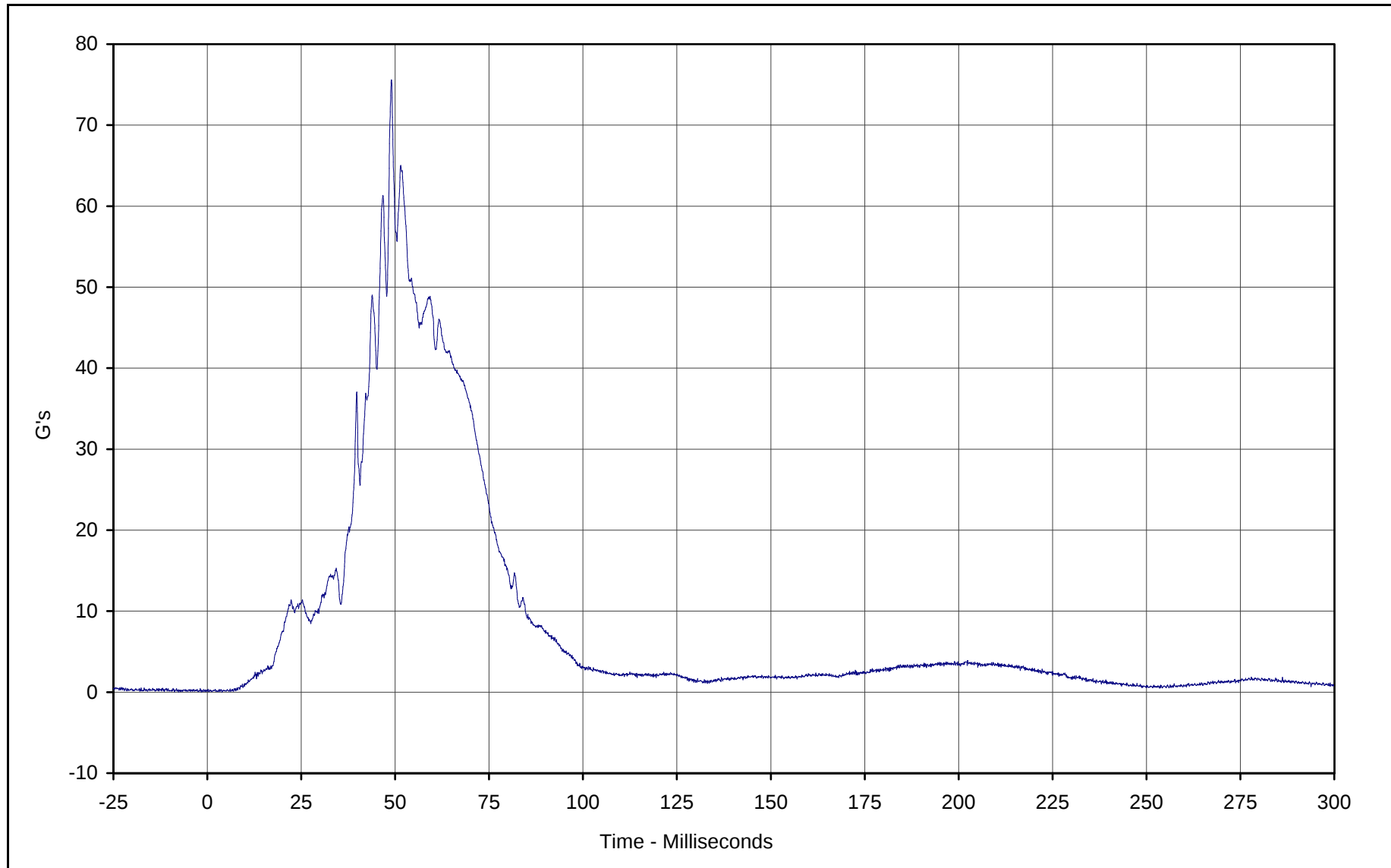




Curve Description: Driver Pelvis Z
Maximum Value: 2.8 at 199.8 Milliseconds
Minimum Value: -31.0 at 64.5 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-022

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



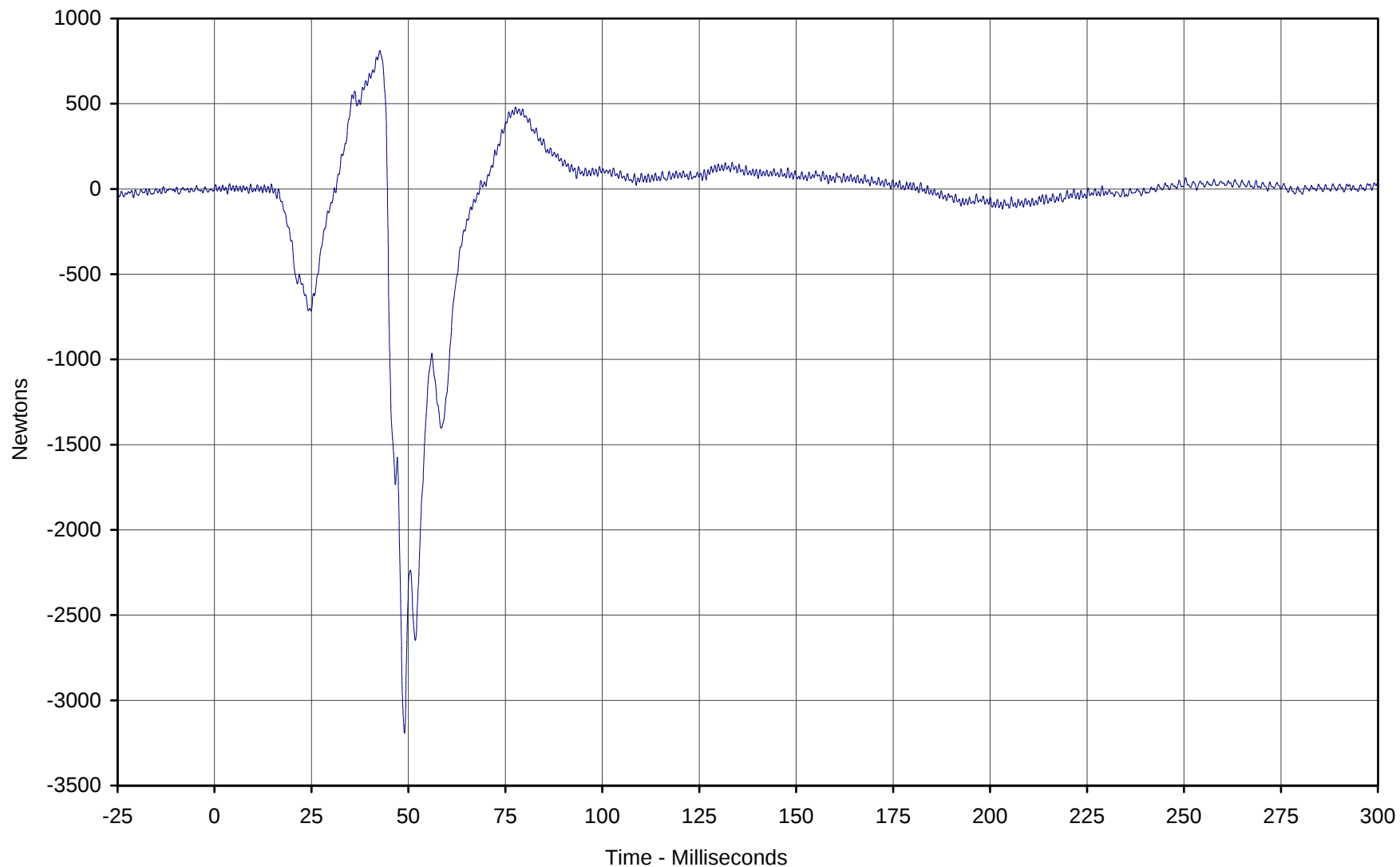


Curve Description: Driver Pelvis Resultant
Maximum Value: 75.6 at 49.0 Milliseconds
Minimum Value: 0.0 at 3.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: RES-020

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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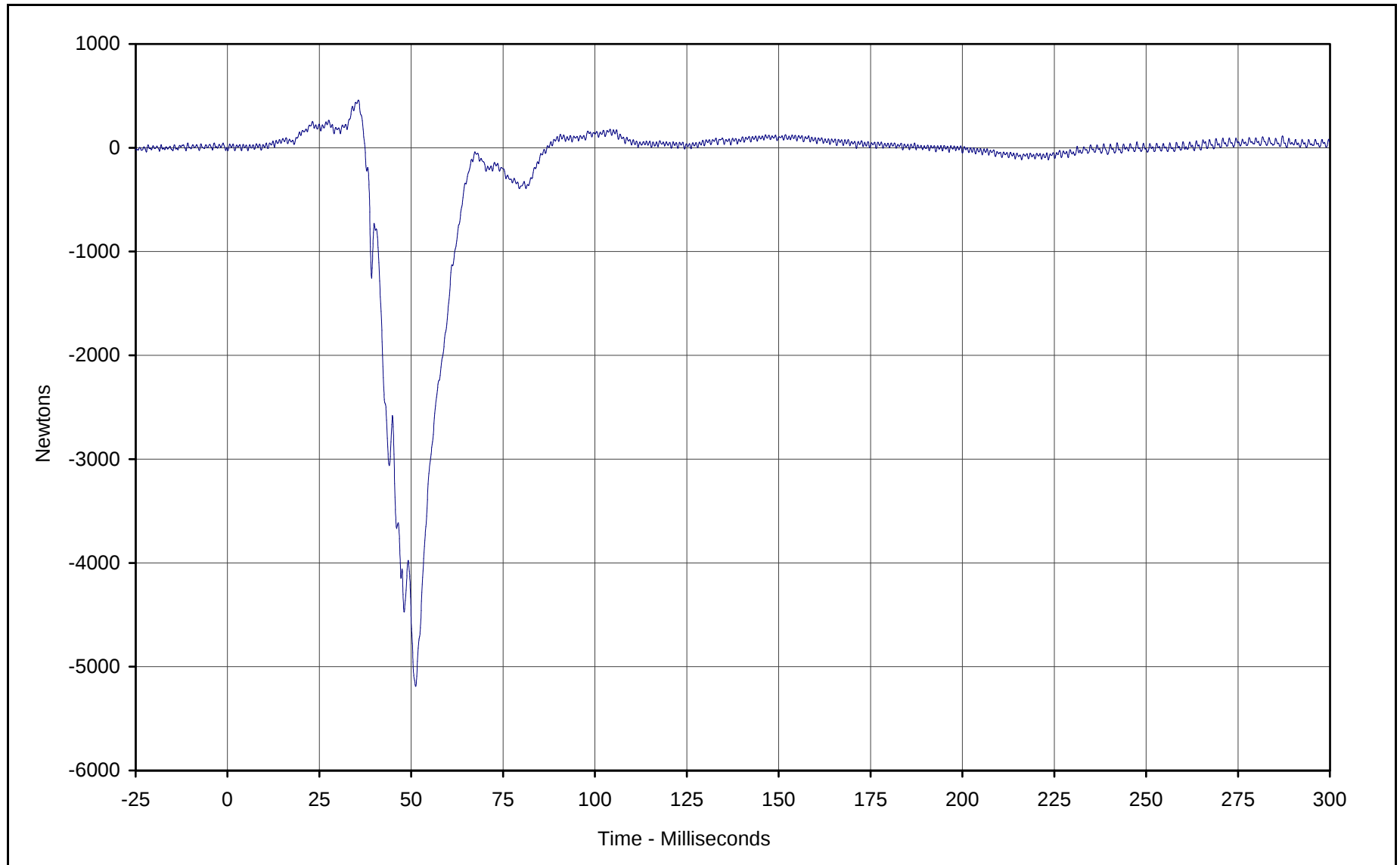
Curve Description: Driver Left Femur Force
Maximum Value: 812.5 at 42.6 Milliseconds
Minimum Value: -3192.7 at 49.0 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-023

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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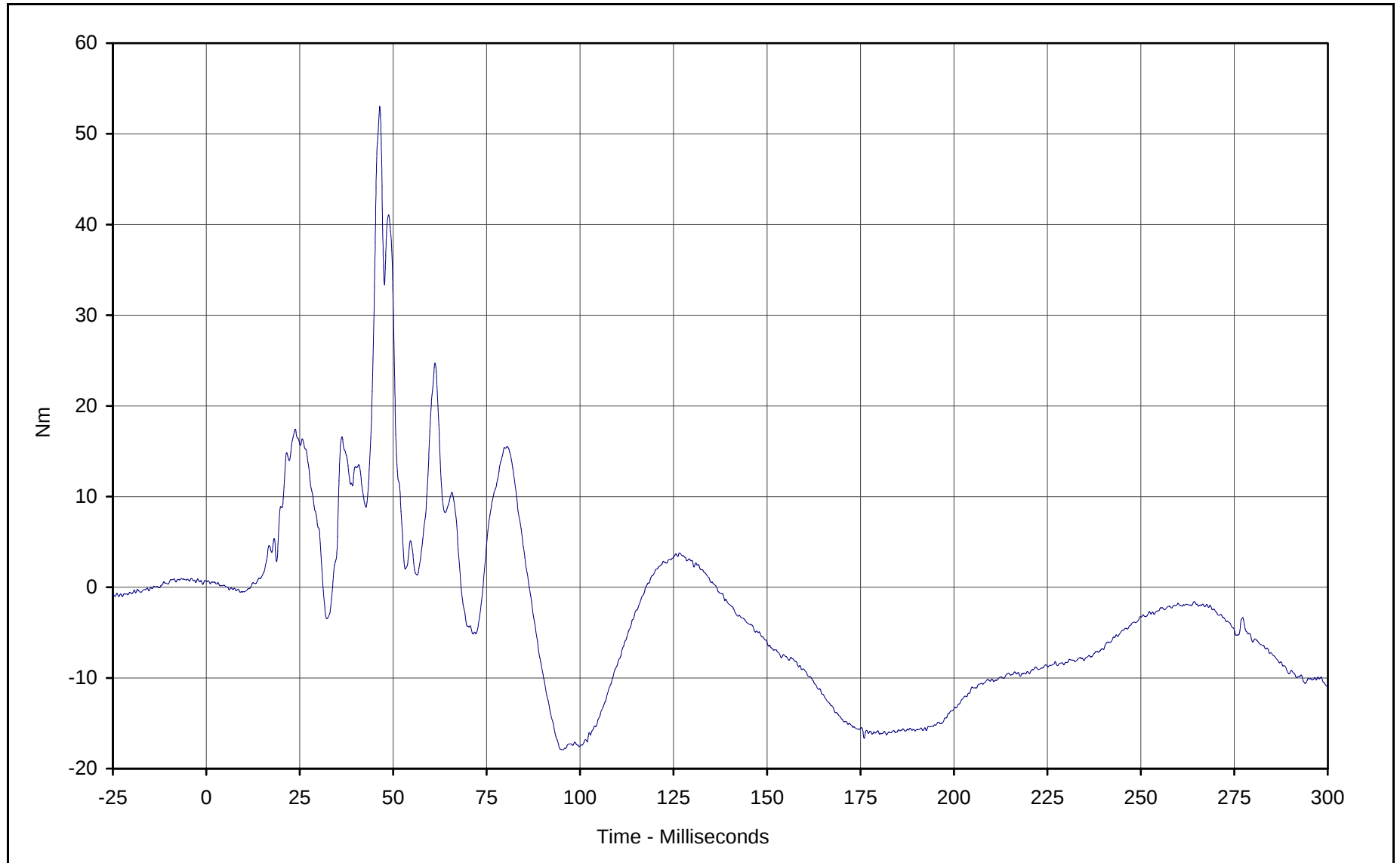
Curve Description: Driver Right Femur Force
Maximum Value: 460.3 at 35.6 Milliseconds
Minimum Value: -5190.0 at 51.2 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-024

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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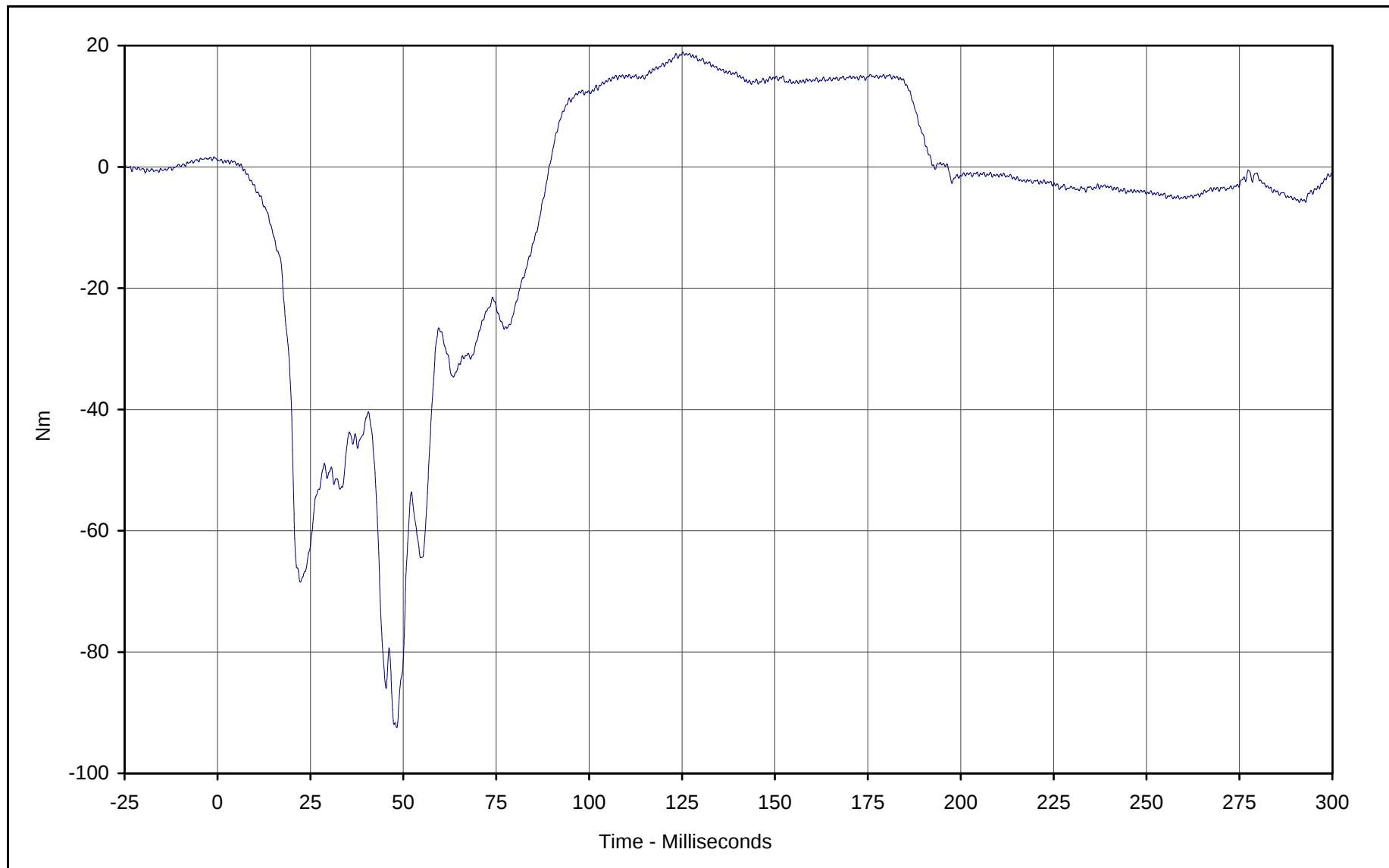
Curve Description: Driver Left Upper Tibia Moment X
Maximum Value: 53.0 at 46.4 Milliseconds
Minimum Value: -17.9 at 95.3 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-025

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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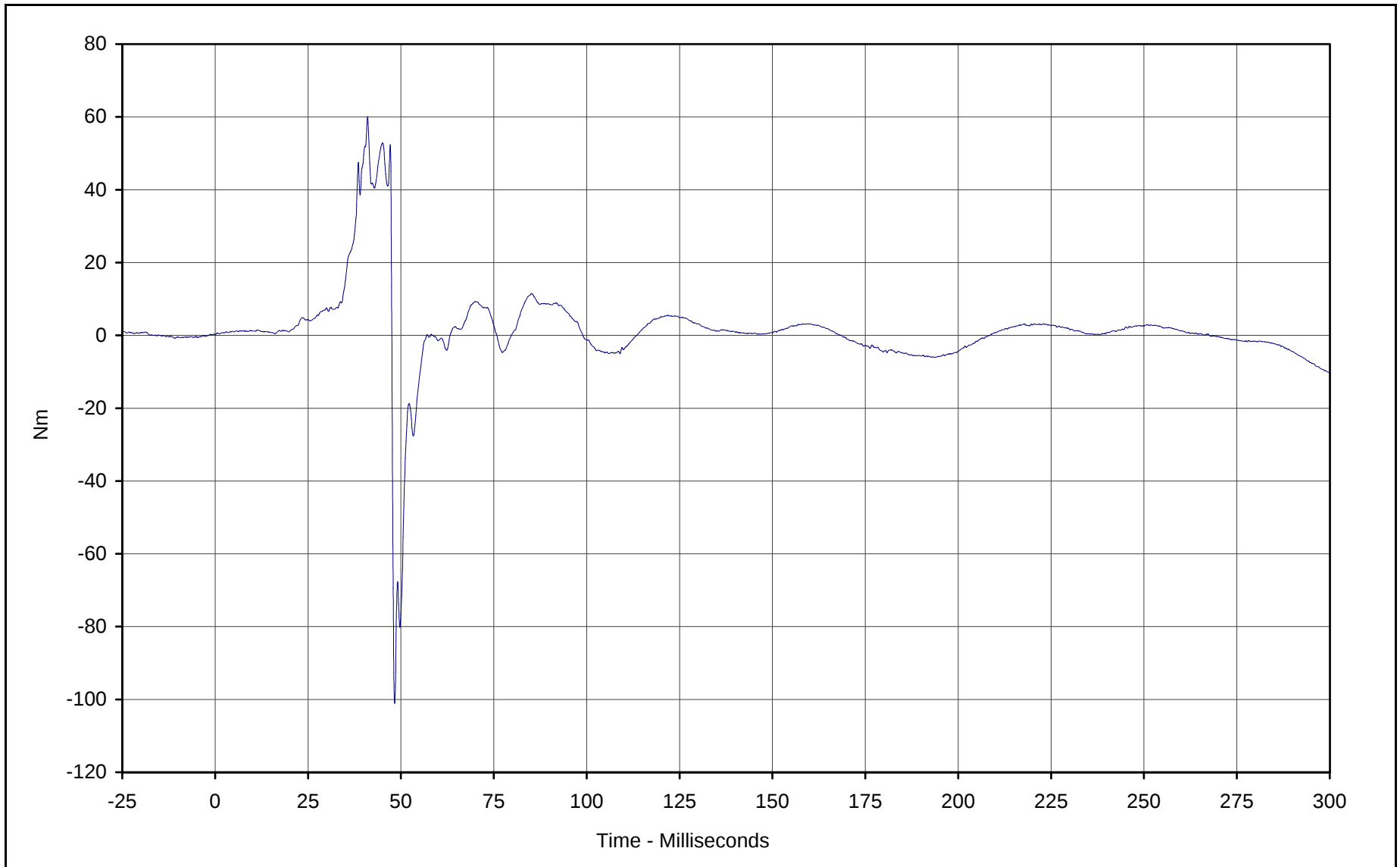


Curve Description: Driver Left Upper Tibia Moment Y
Maximum Value: 18.9 at 125.2 Milliseconds
Minimum Value: -92.5 at 48.2 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-026

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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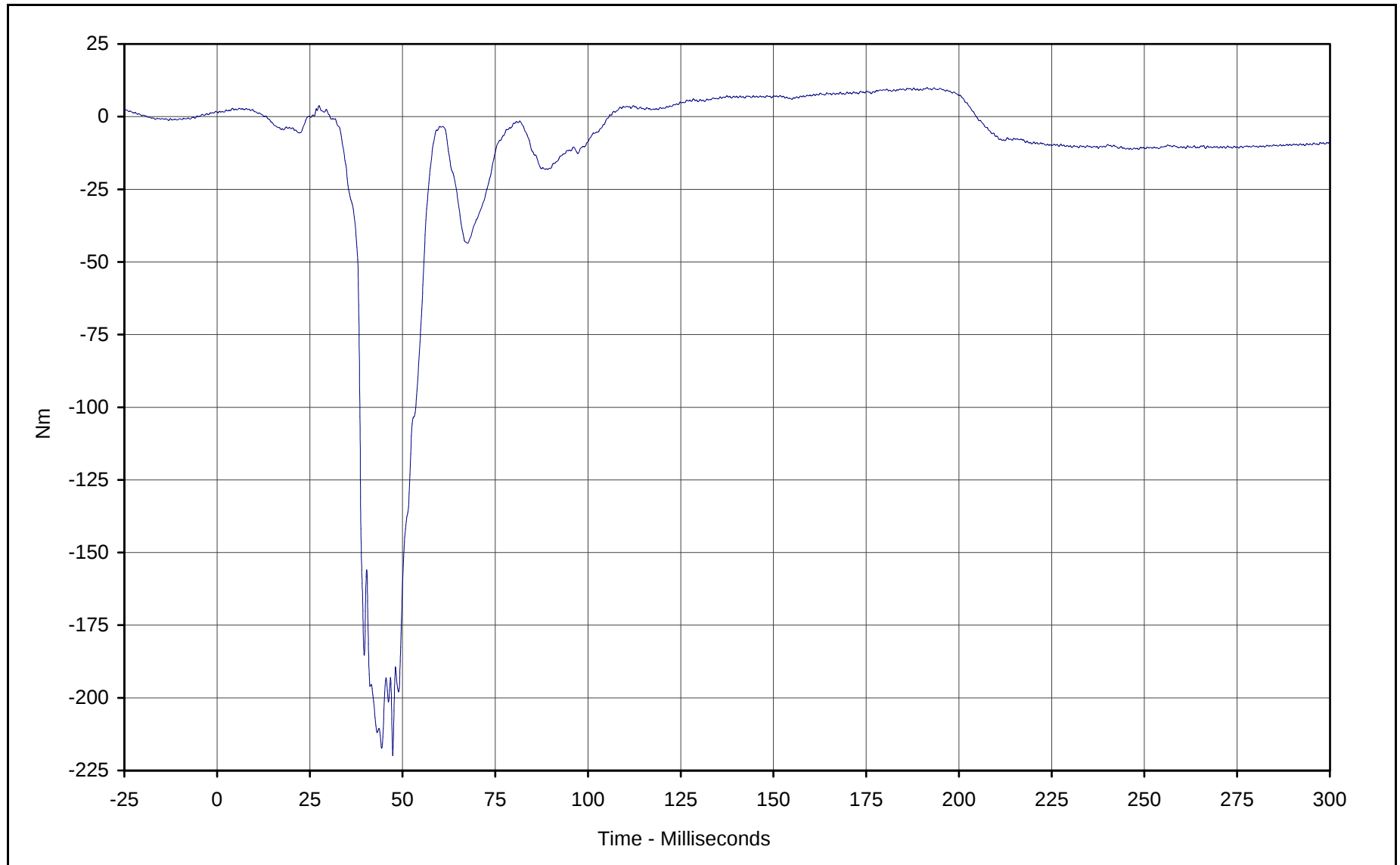
Curve Description: Driver Right Upper Tibia Moment X
Maximum Value: 60.1 at 41.0 Milliseconds
Minimum Value: -101.1 at 48.3 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-027

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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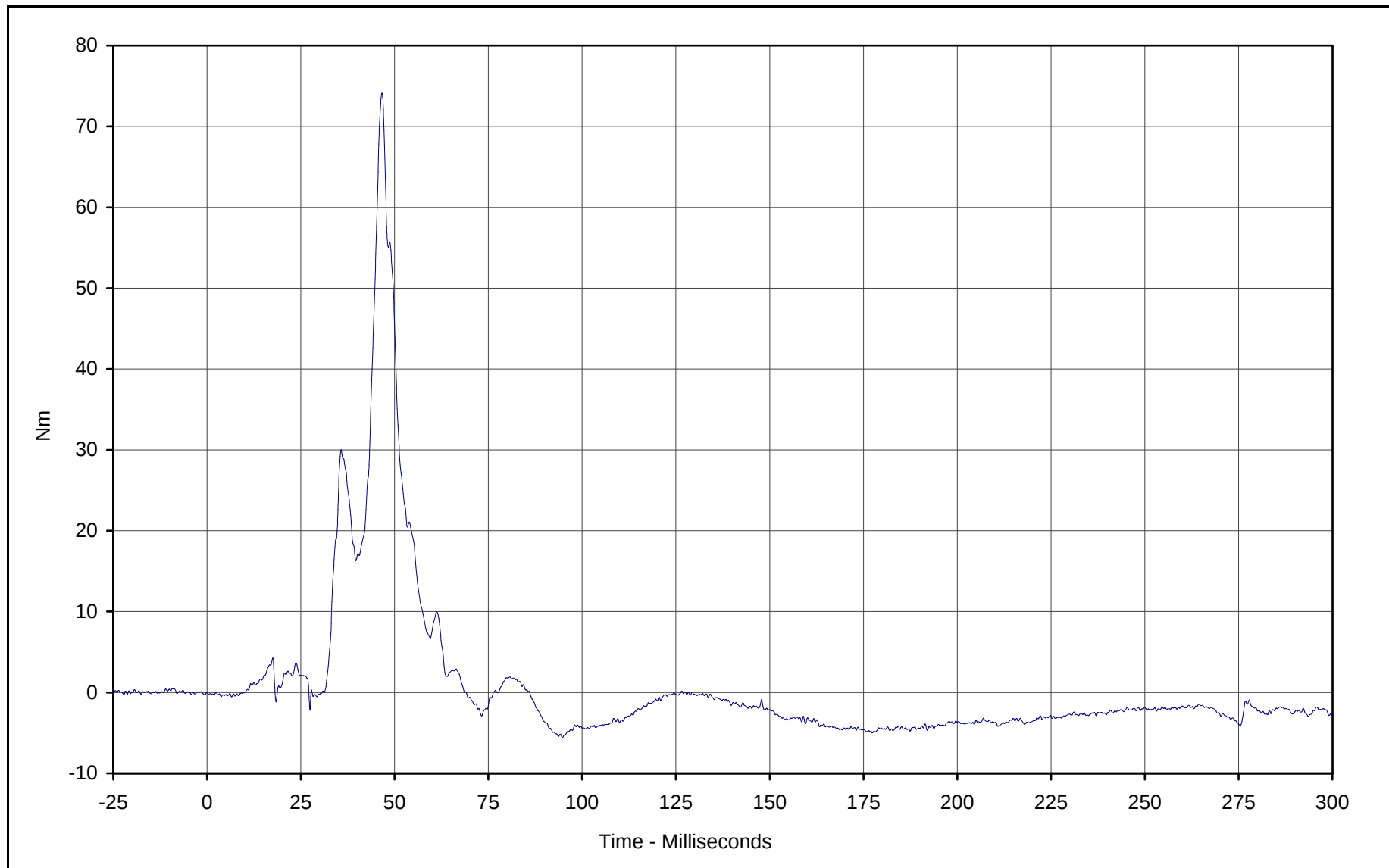


Curve Description: Driver Right Upper Tibia Moment Y
Maximum Value: 10.0 at 191.4 Milliseconds
Minimum Value: -220.0 at 47.4 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-028

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



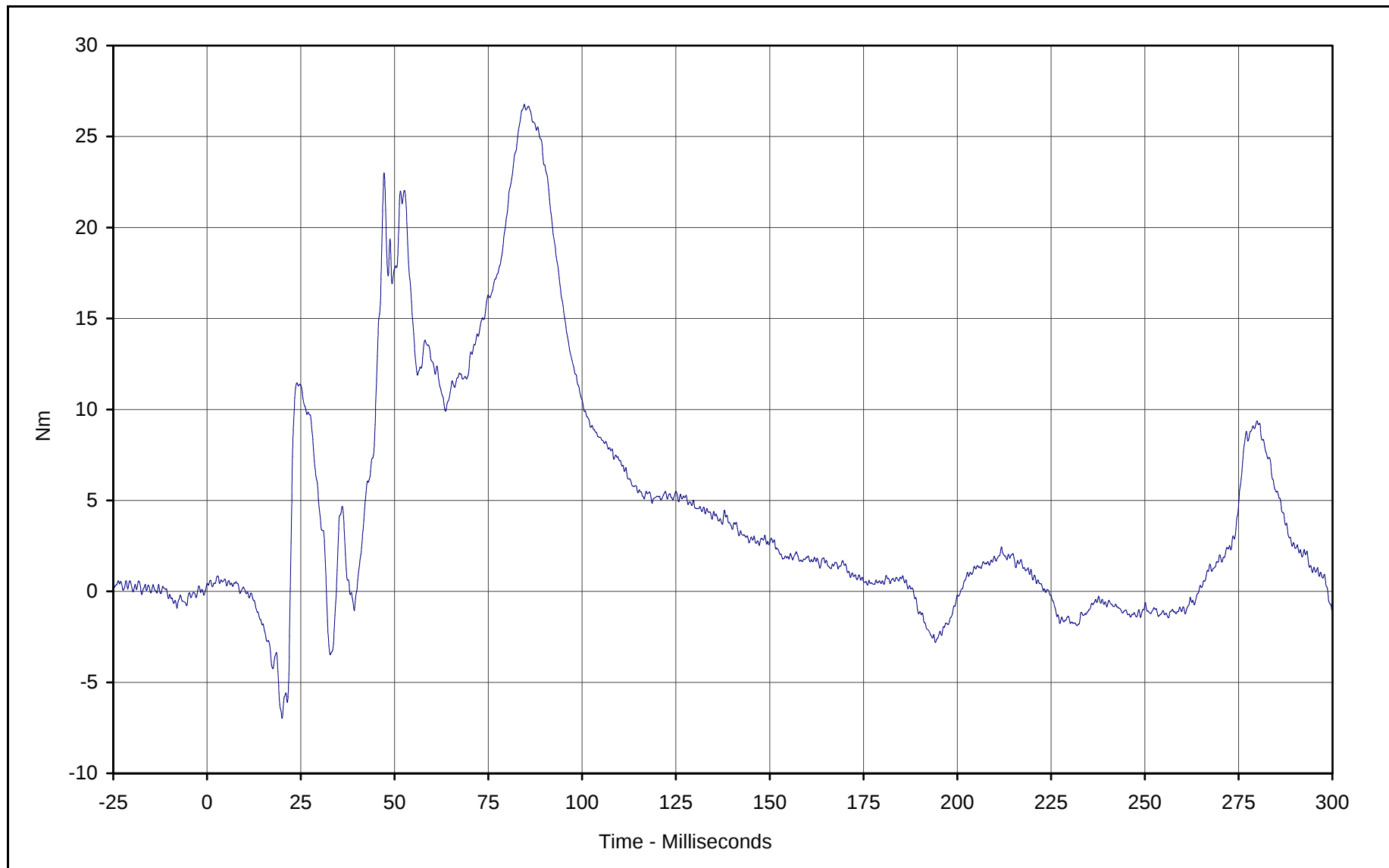
KAR21128-01



Curve Description: Driver Left Lower Tibia Moment X
Maximum Value: 74.1 at 46.6 Milliseconds
Minimum Value: -5.6 at 94.7 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-029

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

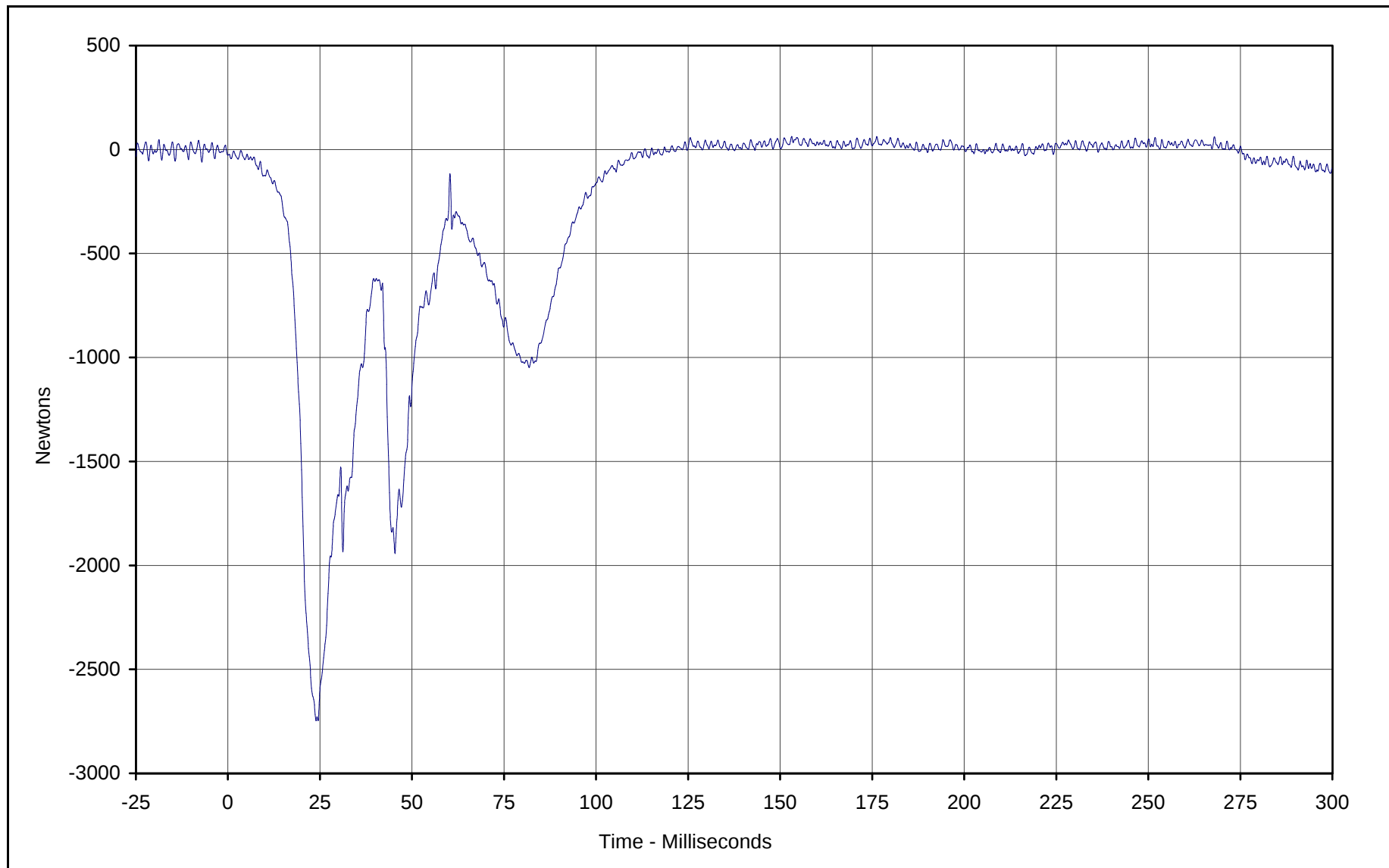




Curve Description: Driver Left Lower Tibia Moment Y
Maximum Value: 26.8 at 84.6 Milliseconds
Minimum Value: -7.0 at 20.0 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-030

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

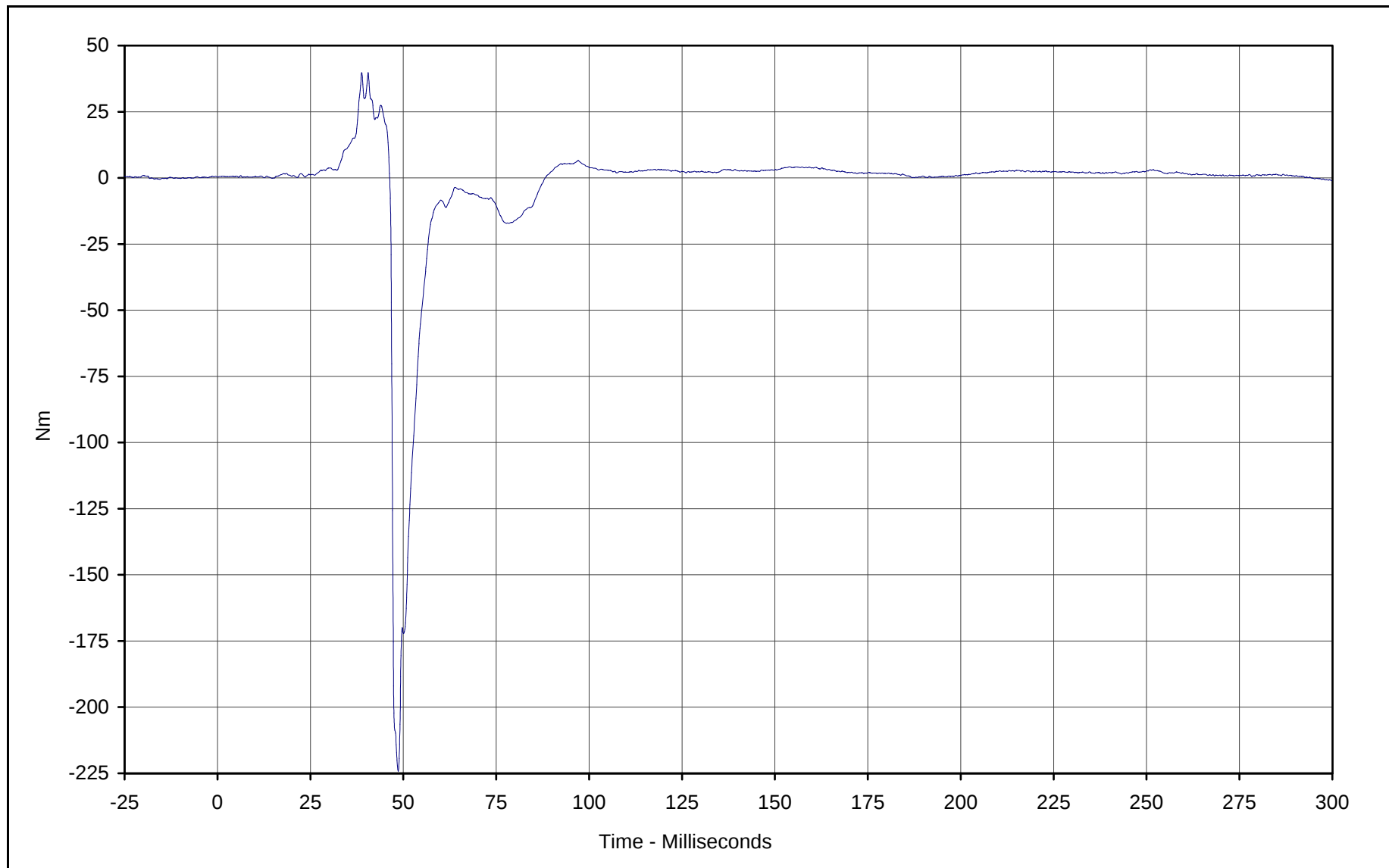




Curve Description: Driver Left Lower Tibia Force Z
Maximum Value: 62.9 at 153.1 Milliseconds
Minimum Value: -2747.1 at 23.9 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-031

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan





Curve Description: Driver Right Lower Tibia Moment X

Maximum Value: 39.8 at 38.8 Milliseconds

Minimum Value: -224.2 at 48.6 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

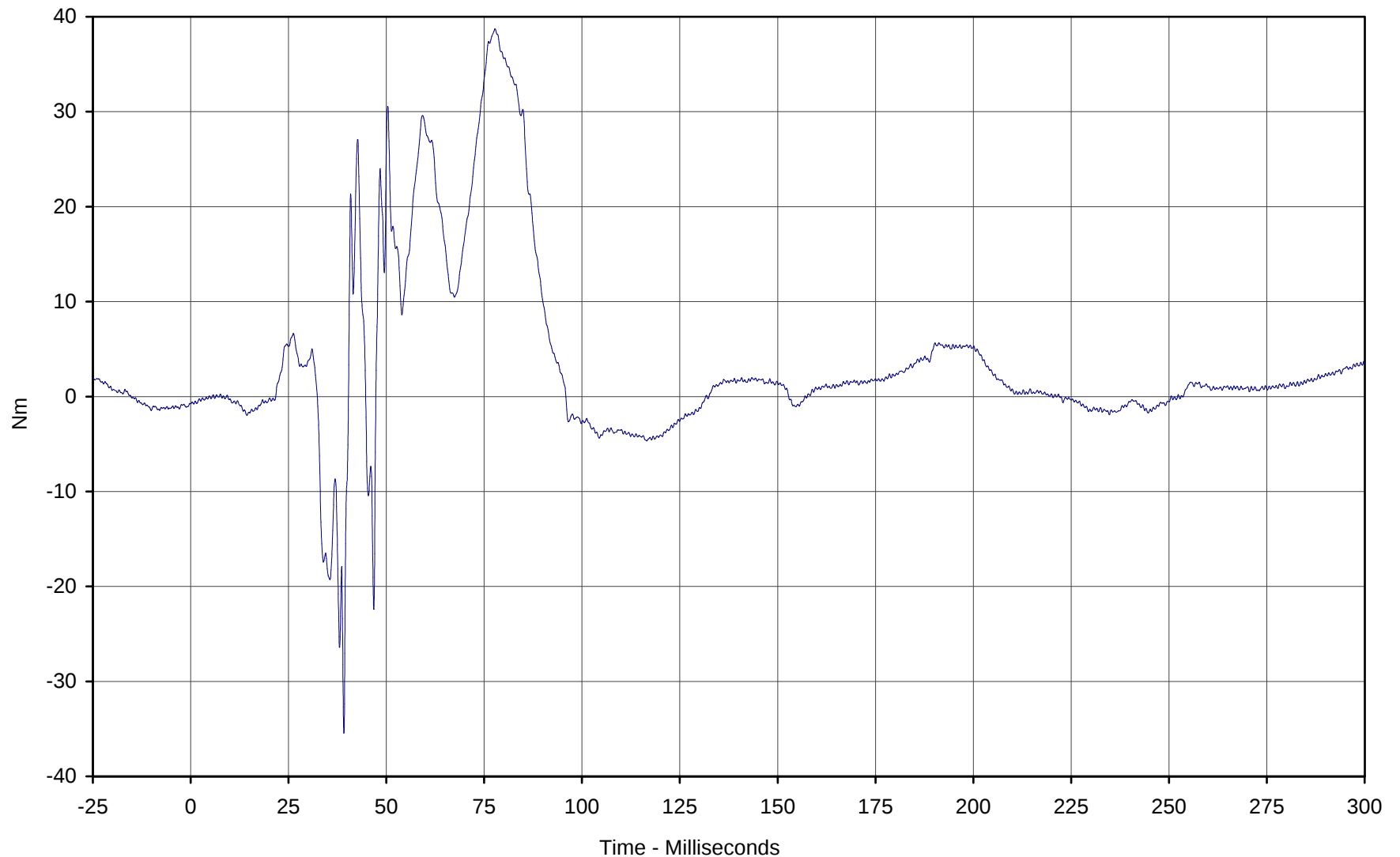
Curve Number: FIL-032

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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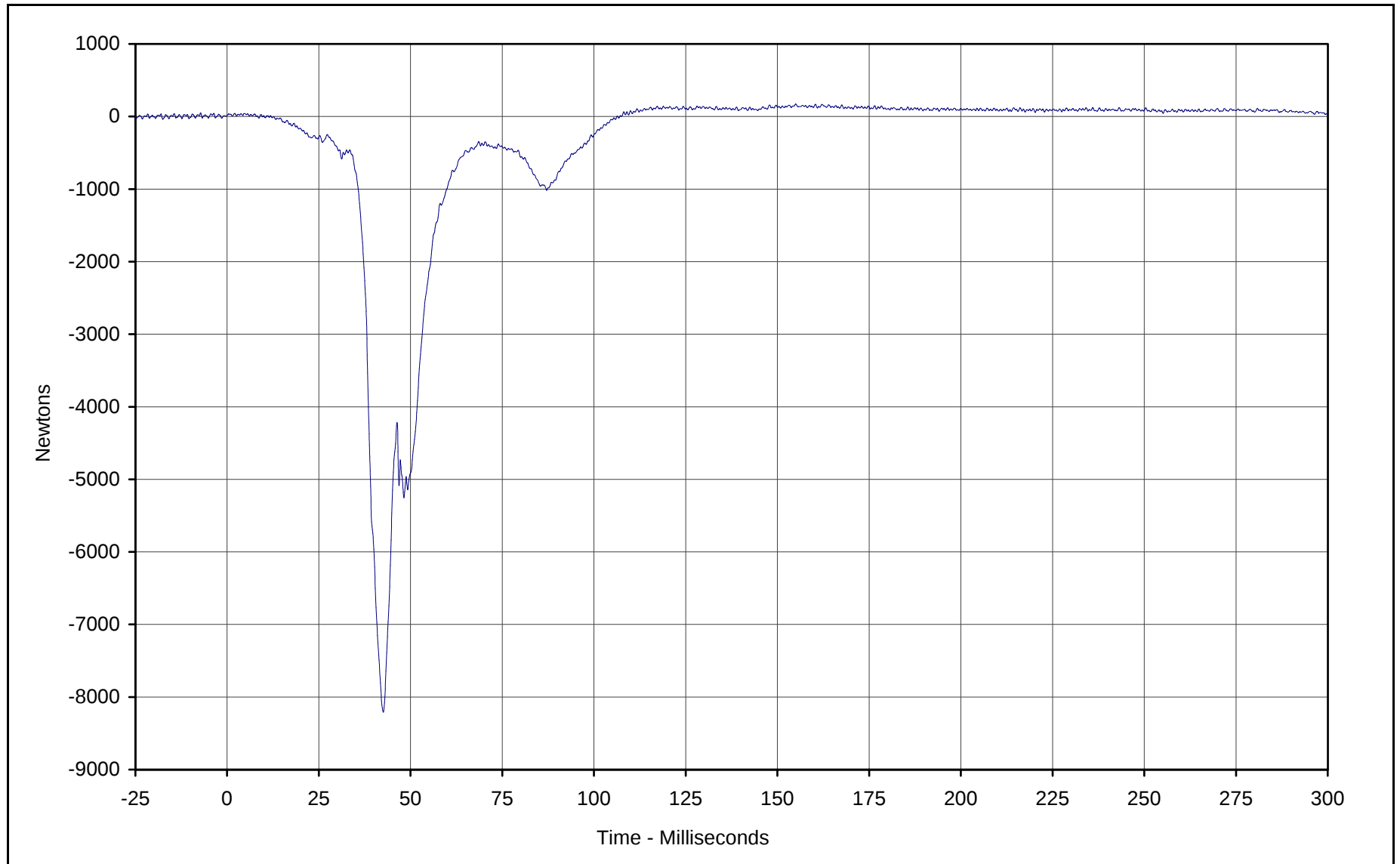
Curve Description: Driver Right Lower Tibia Moment Y
Maximum Value: 38.7 at 77.8 Milliseconds
Minimum Value: -35.4 at 39.1 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-033

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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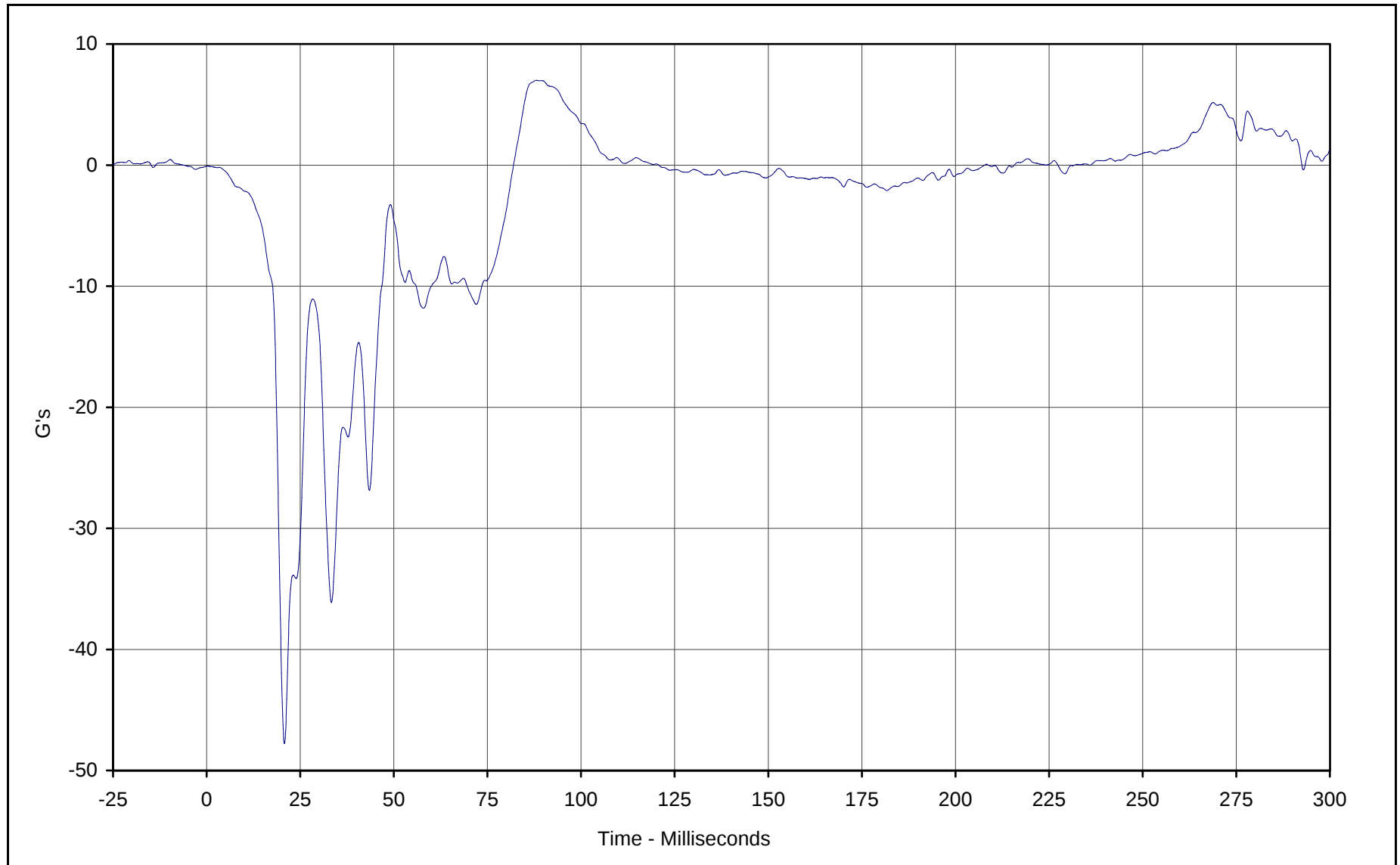
Curve Description: Driver Right Lower Tibia Force Z
Maximum Value: 171.8 at 155.0 Milliseconds
Minimum Value: -8208.4 at 42.6 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-034

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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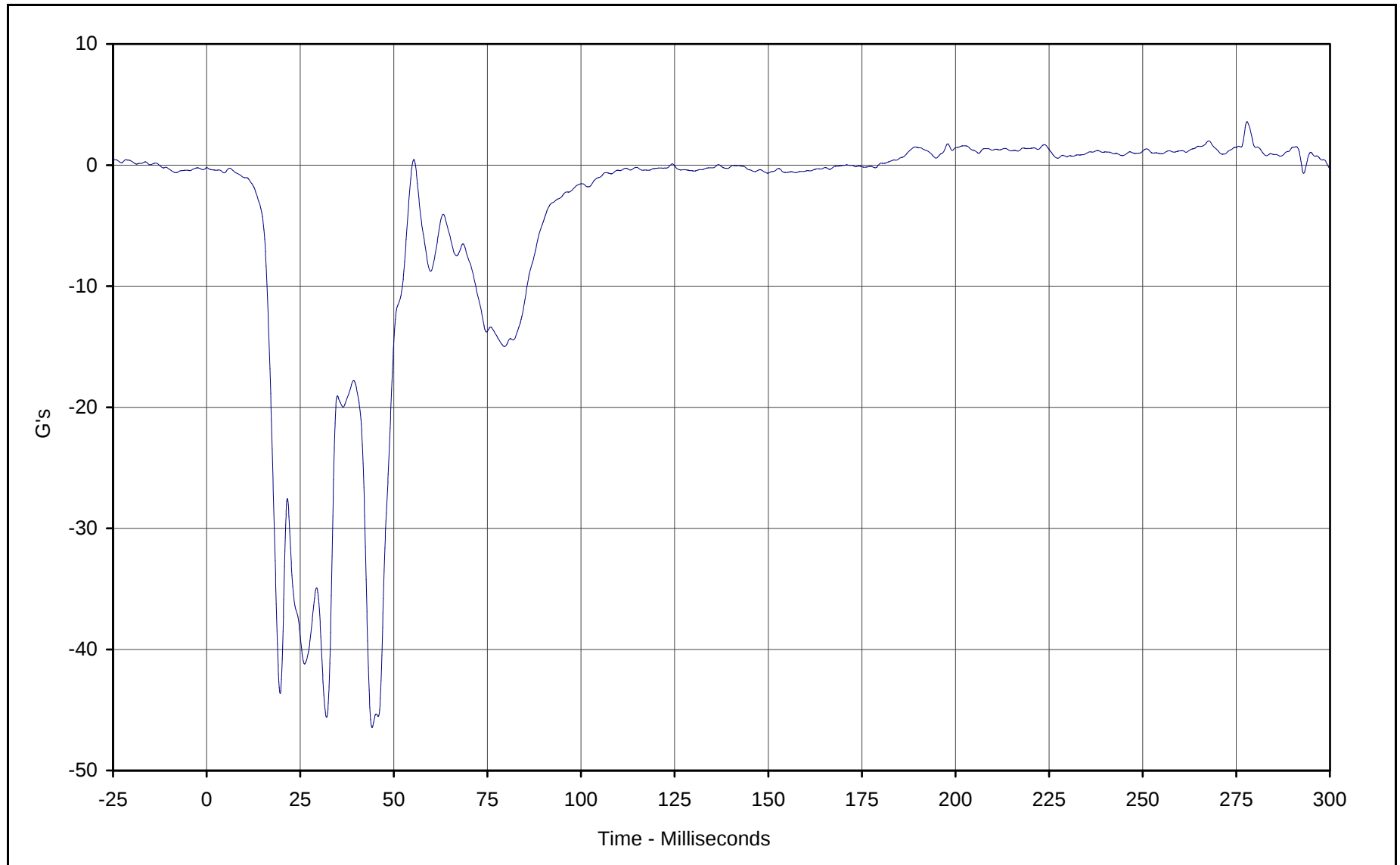
Curve Description: Driver Left Foot Aft X
Maximum Value: 7.0 at 88.0 Milliseconds
Minimum Value: -47.8 at 20.8 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-035

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Driver Left Foot Aft Z

Maximum Value: 3.6 at 277.9 Milliseconds

Minimum Value: -46.5 at 44.2 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

Curve Number: FIL-036

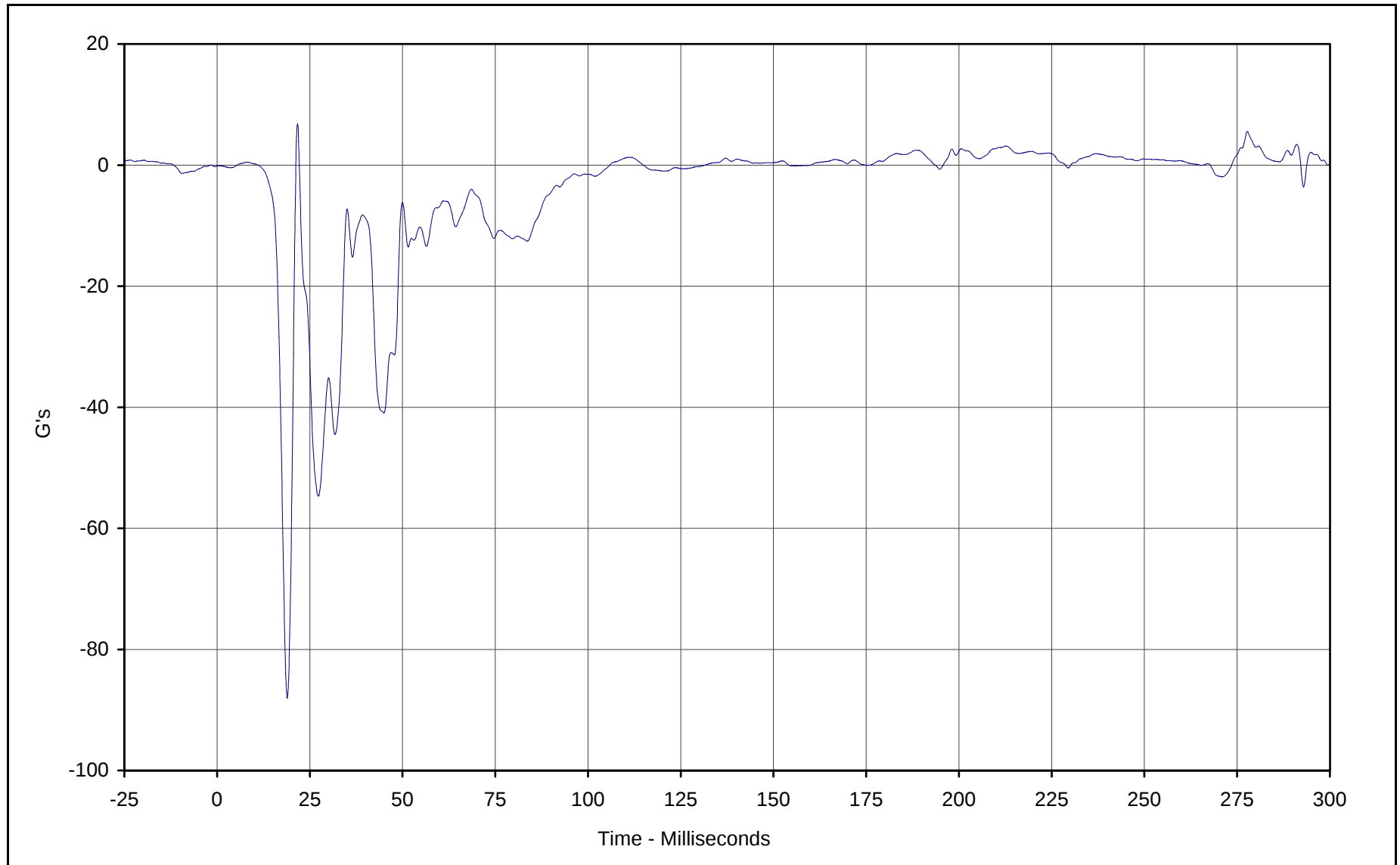
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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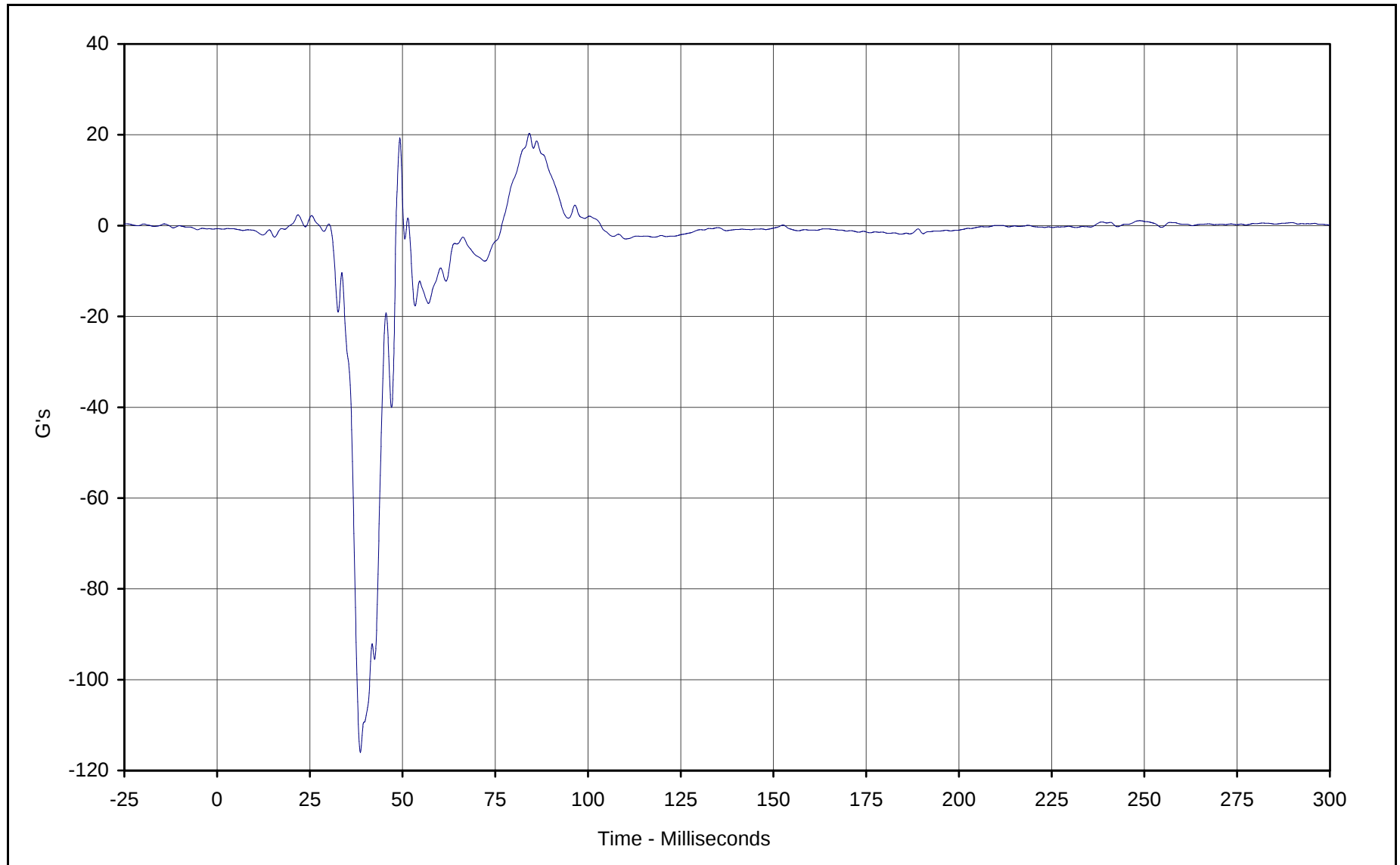
Curve Description: Driver Left Foot Fore Z
Maximum Value: 6.8 at 21.7 Milliseconds
Minimum Value: -88.1 at 18.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-037

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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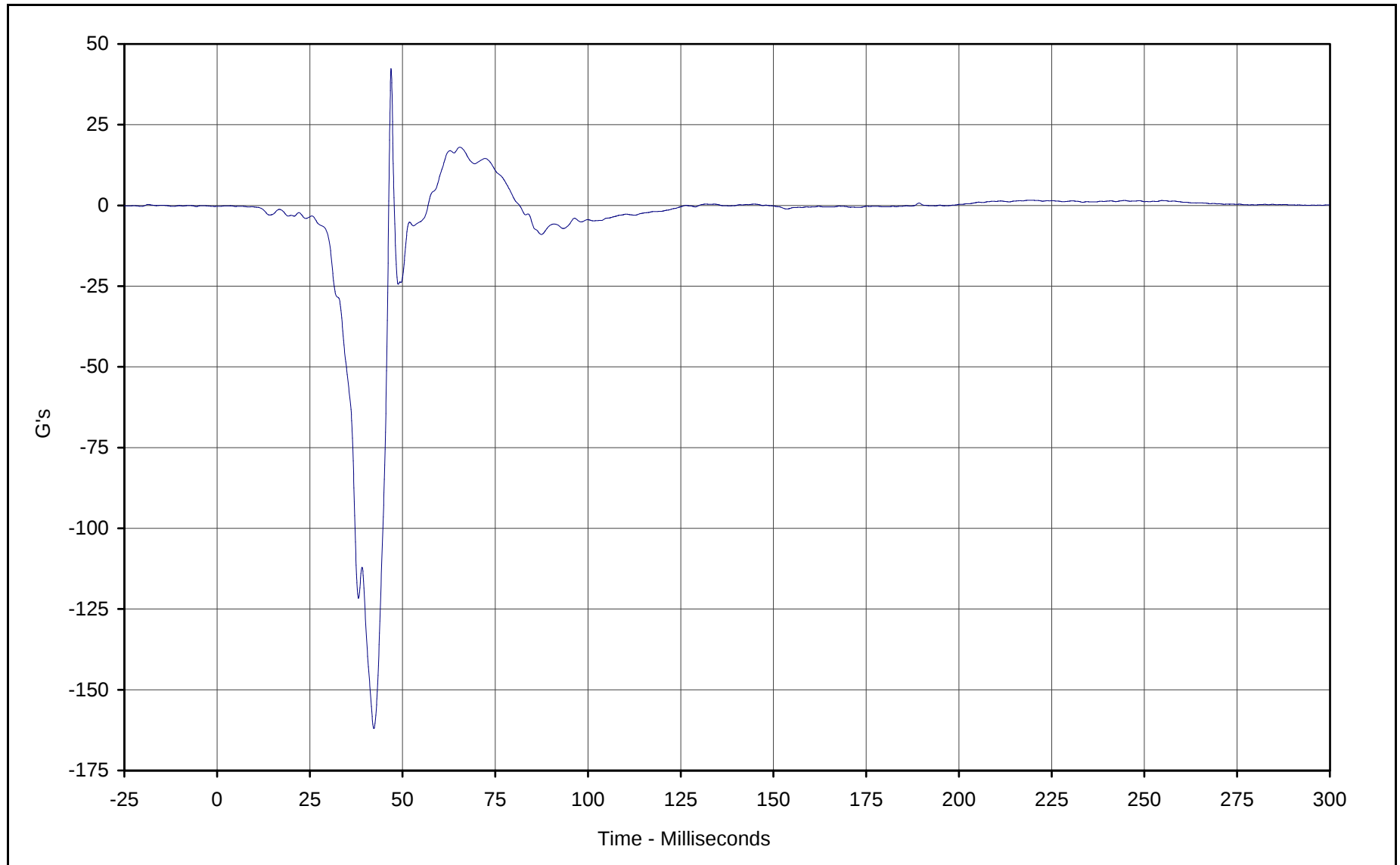
Curve Description: Driver Right Foot Aft X
Maximum Value: 20.3 at 84.2 Milliseconds
Minimum Value: -116.0 at 38.6 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-038

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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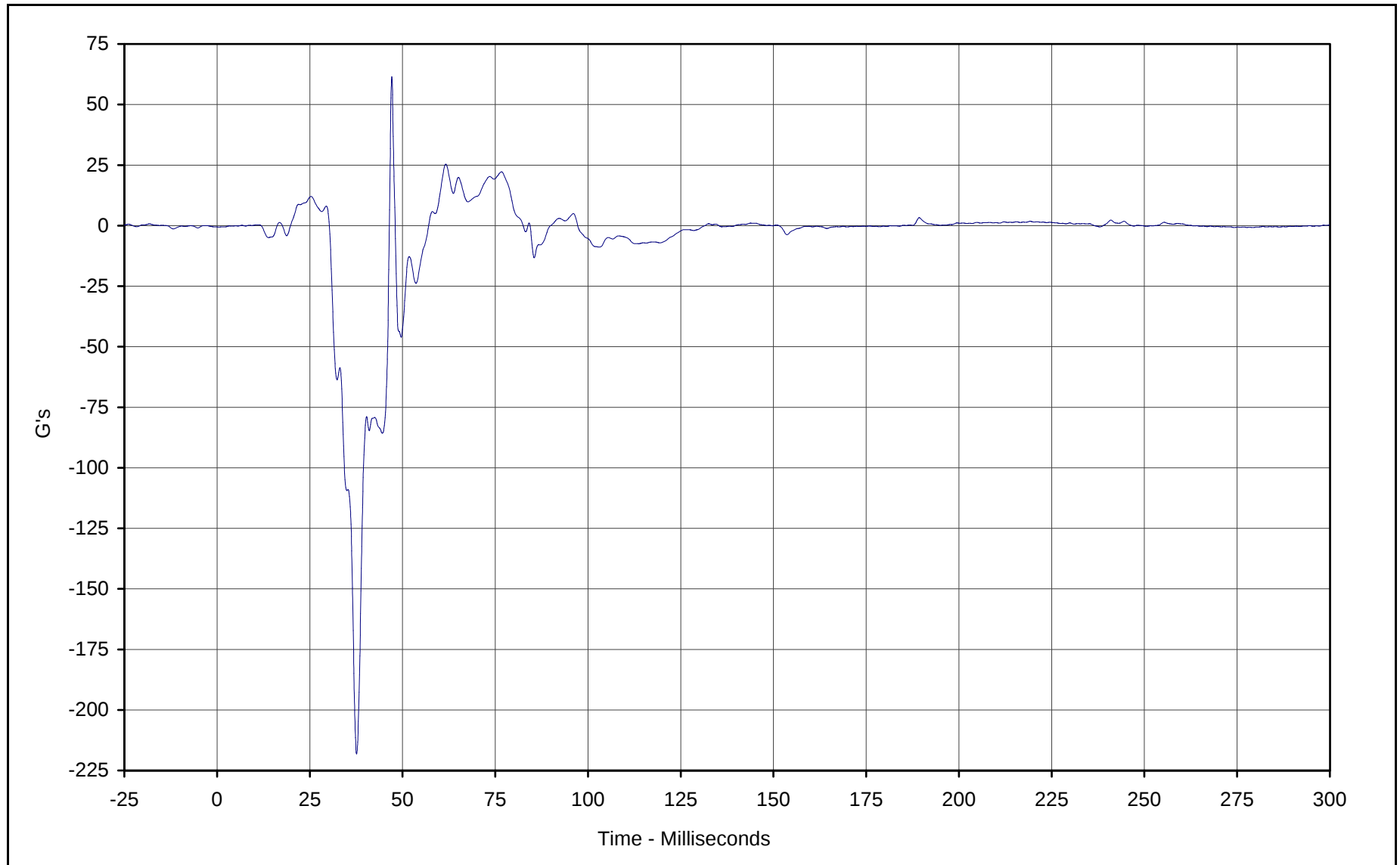


Curve Description: Driver Right Foot Aft Z
Maximum Value: 42.4 at 46.9 Milliseconds
Minimum Value: -162.0 at 42.3 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-039

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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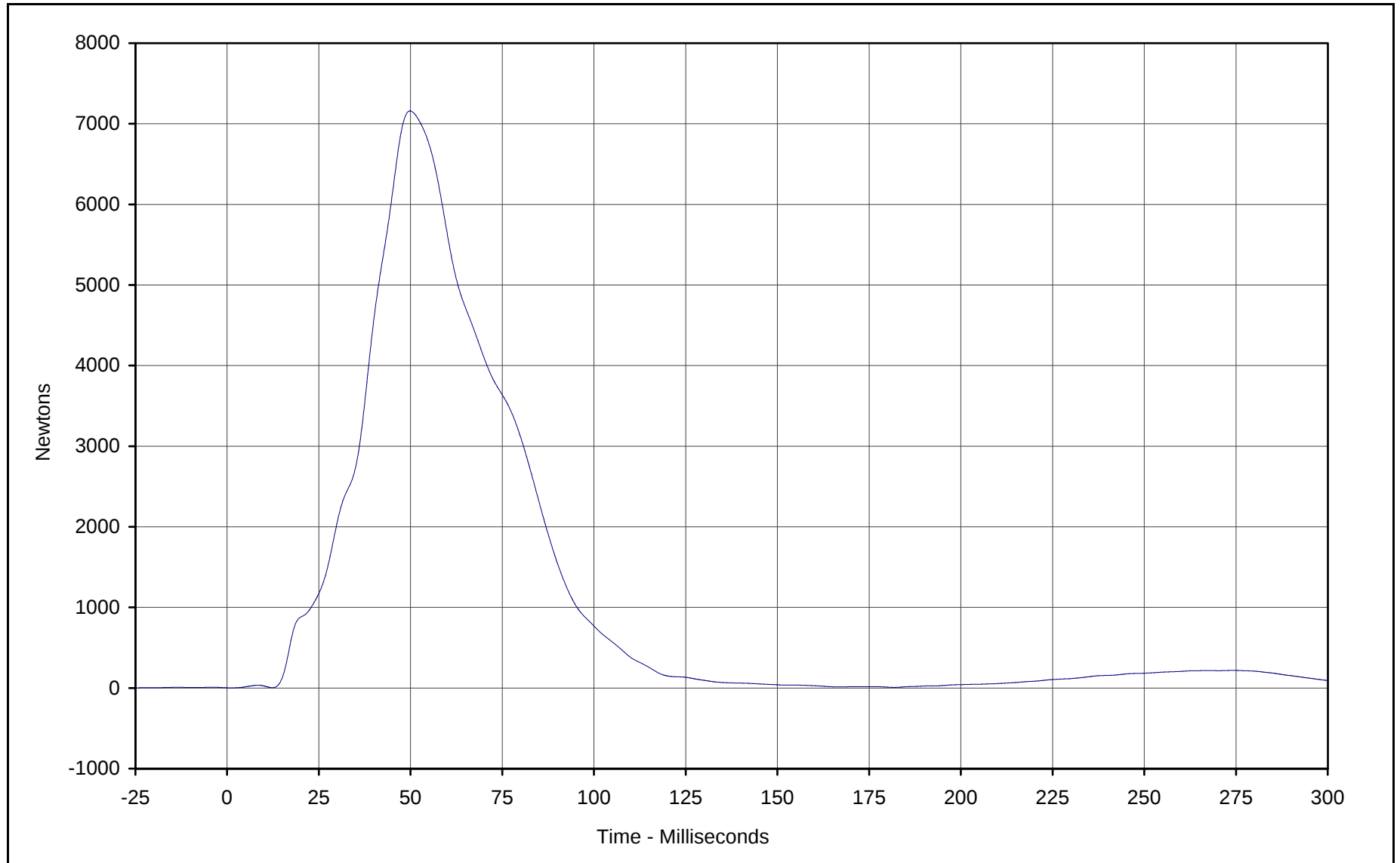


Curve Description: Driver Right Foot Fore Z
Maximum Value: 61.5 at 47.1 Milliseconds
Minimum Value: -218.2 at 37.6 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-040

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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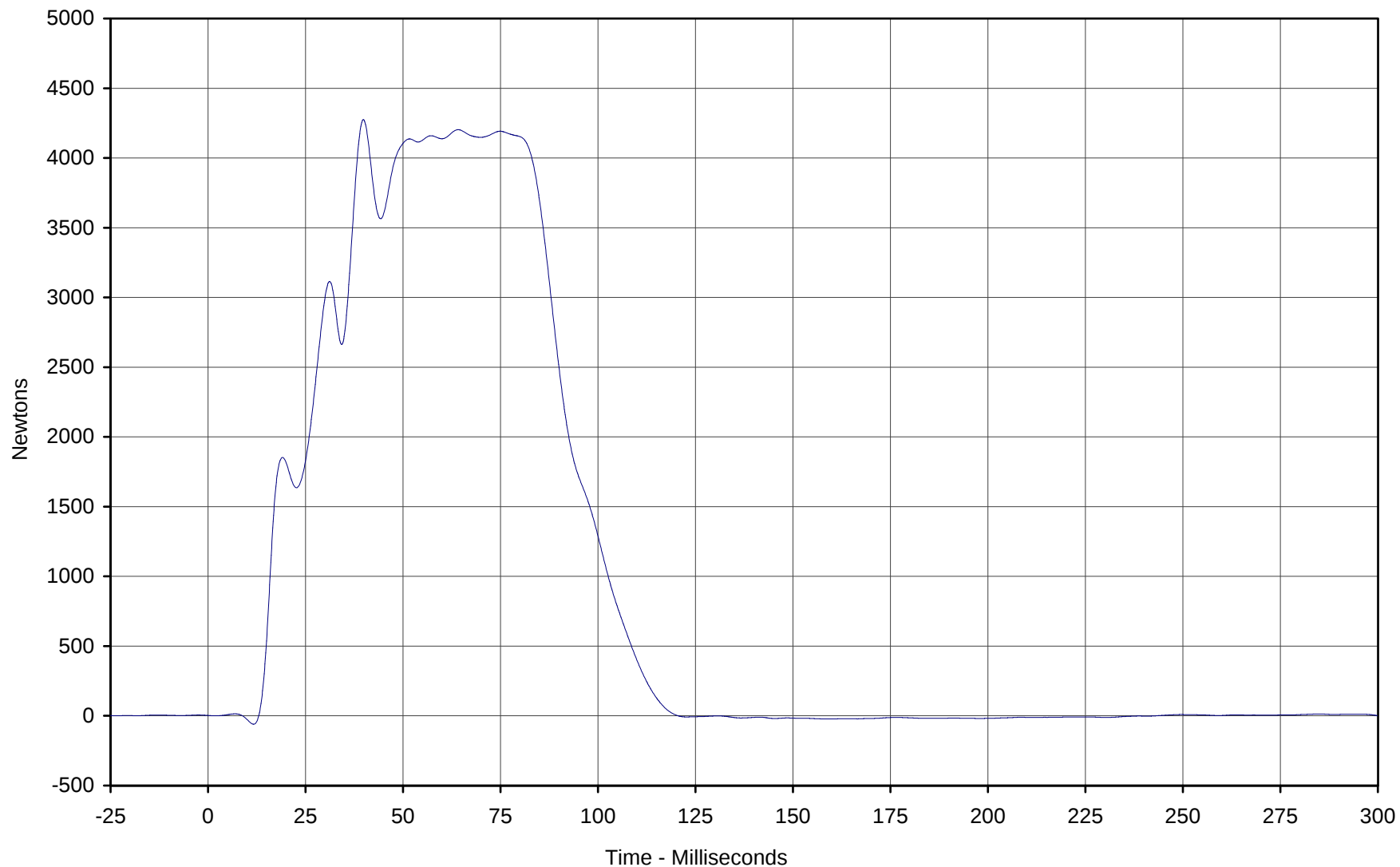
Curve Description: Driver Lap Belt Force
Maximum Value: 7159.8 at 49.8 Milliseconds
Minimum Value: 1.7 at 1.2 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-041

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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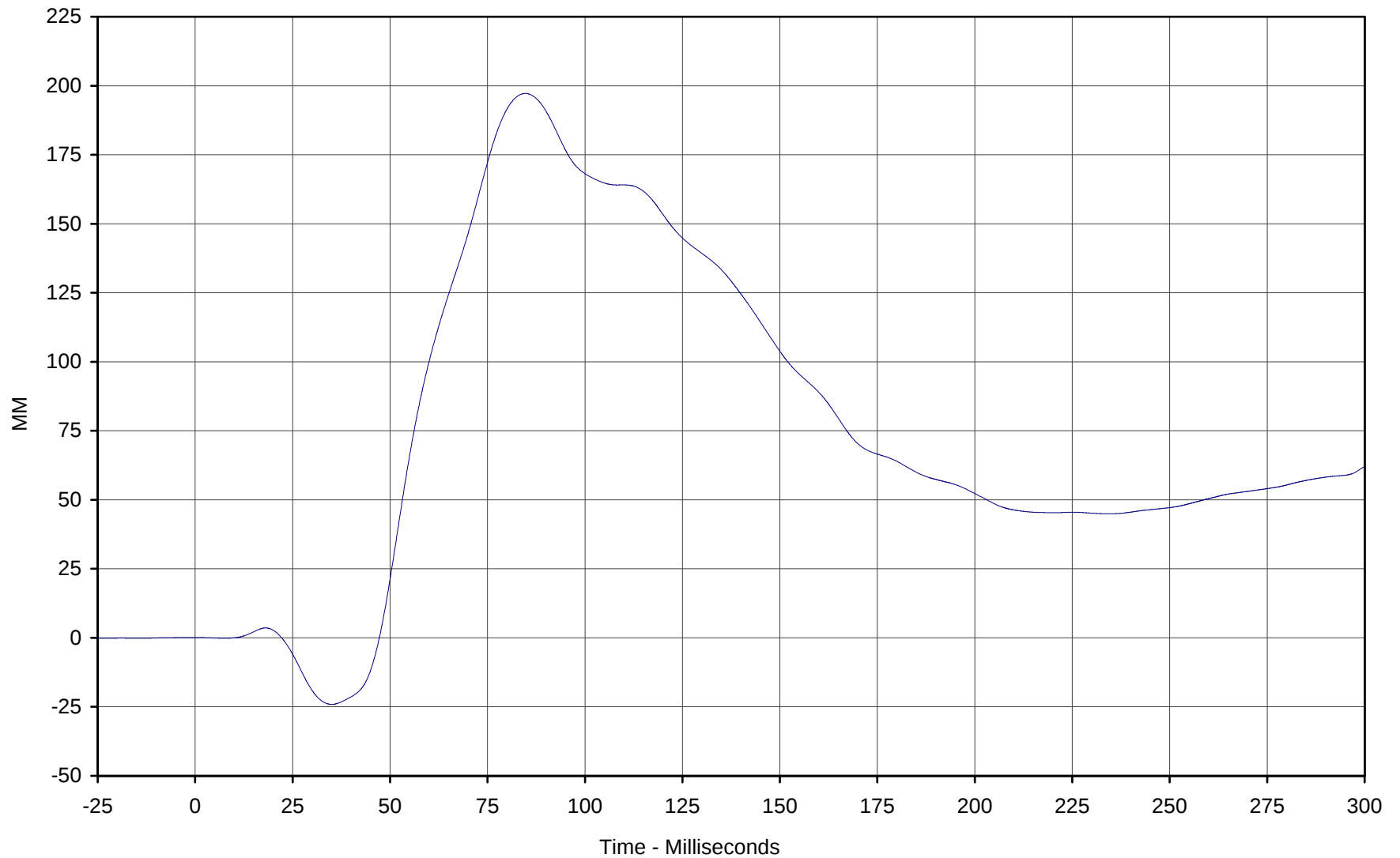
Curve Description: Driver Shoulder Belt Force
Maximum Value: 4275.1 at 39.8 Milliseconds
Minimum Value: -60.2 at 11.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-042

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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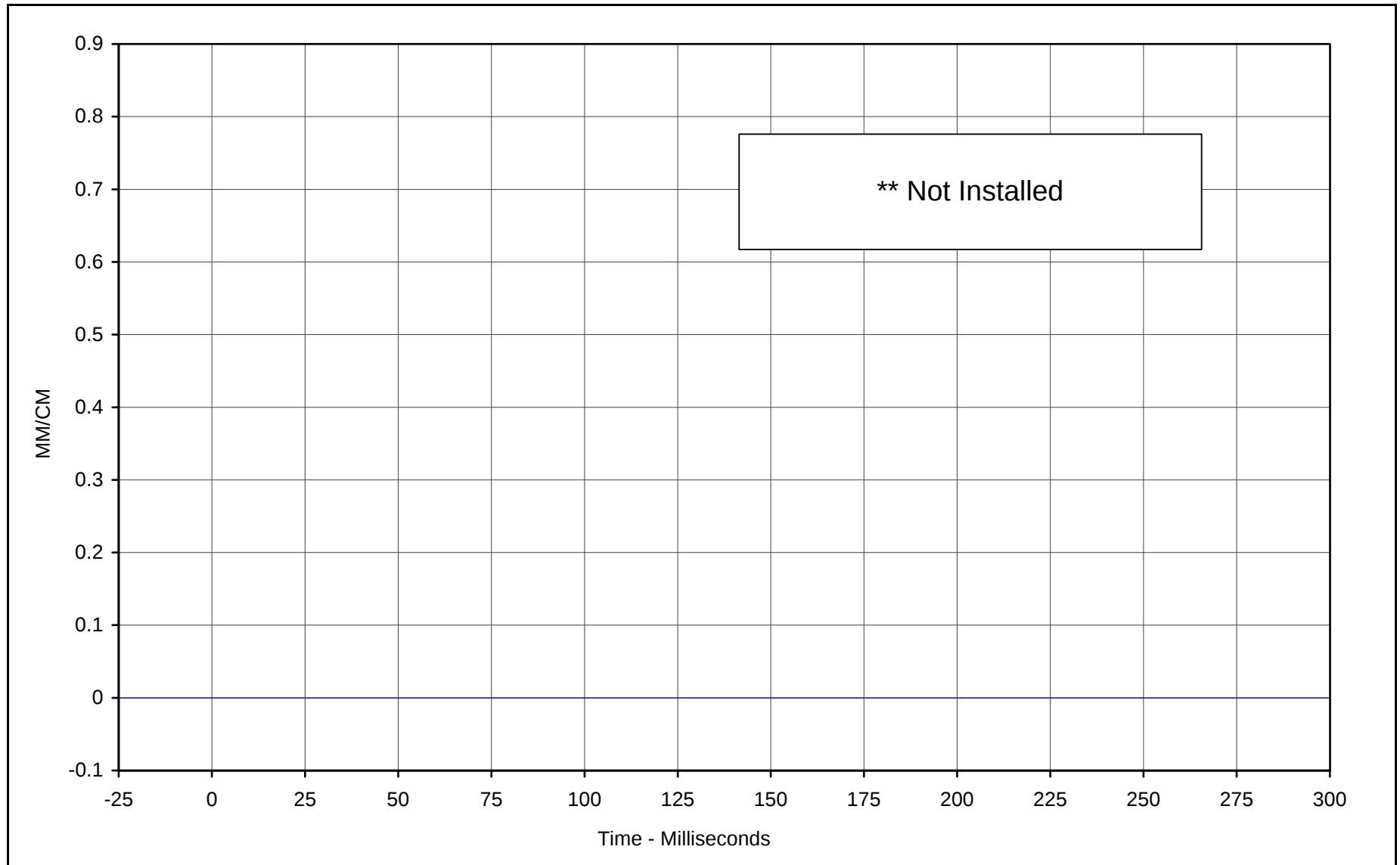


Curve Description: Driver Shoulder Belt Pullout
Maximum Value: 197.2 at 84.7 Milliseconds
Minimum Value: -24.1 at 35.0 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-043

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Driver Shoulder Belt Elongation **

Maximum Value: 0.0 at 0.0 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 12/4/01

Curve Number: FIL-044

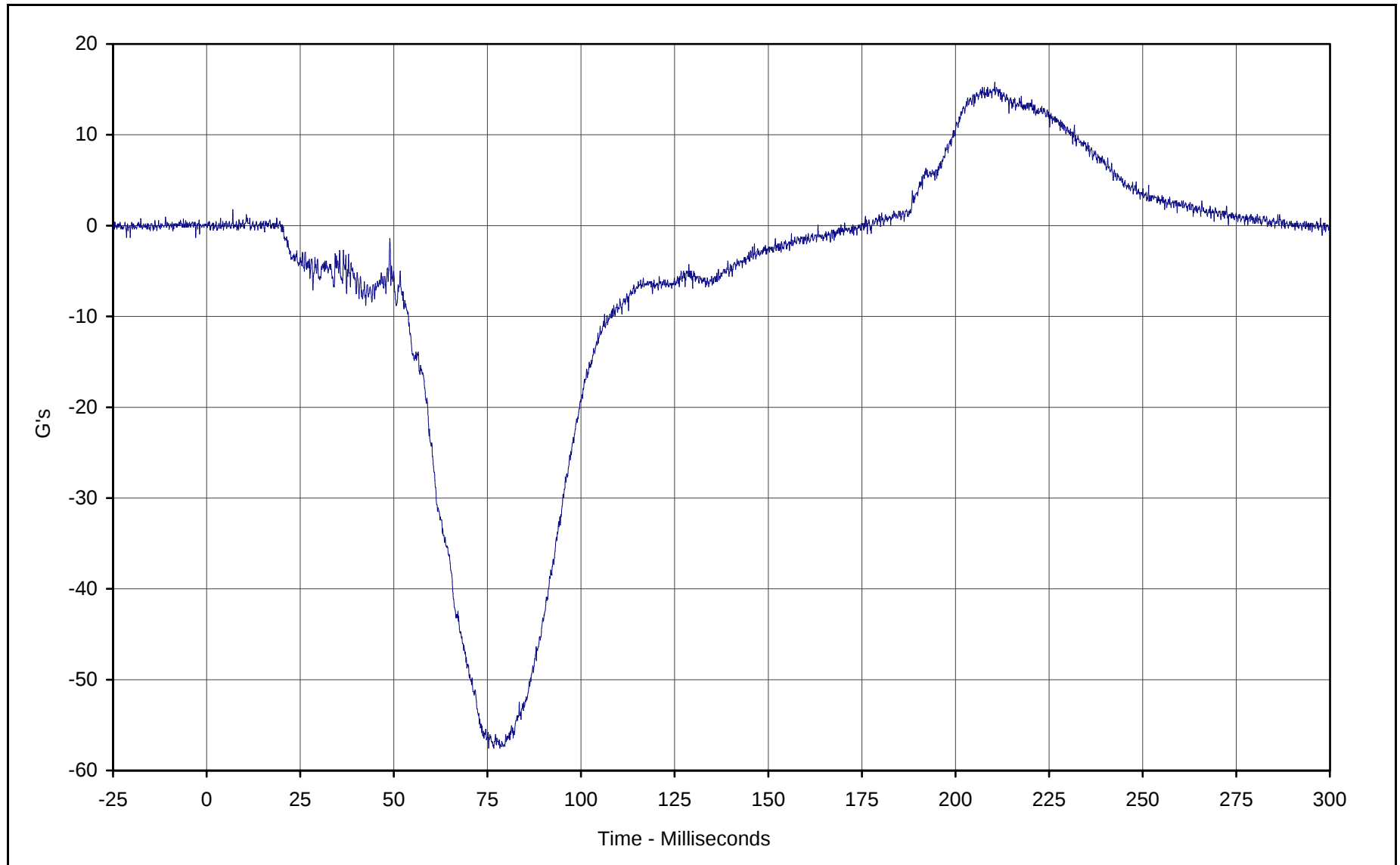
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

** Not installed



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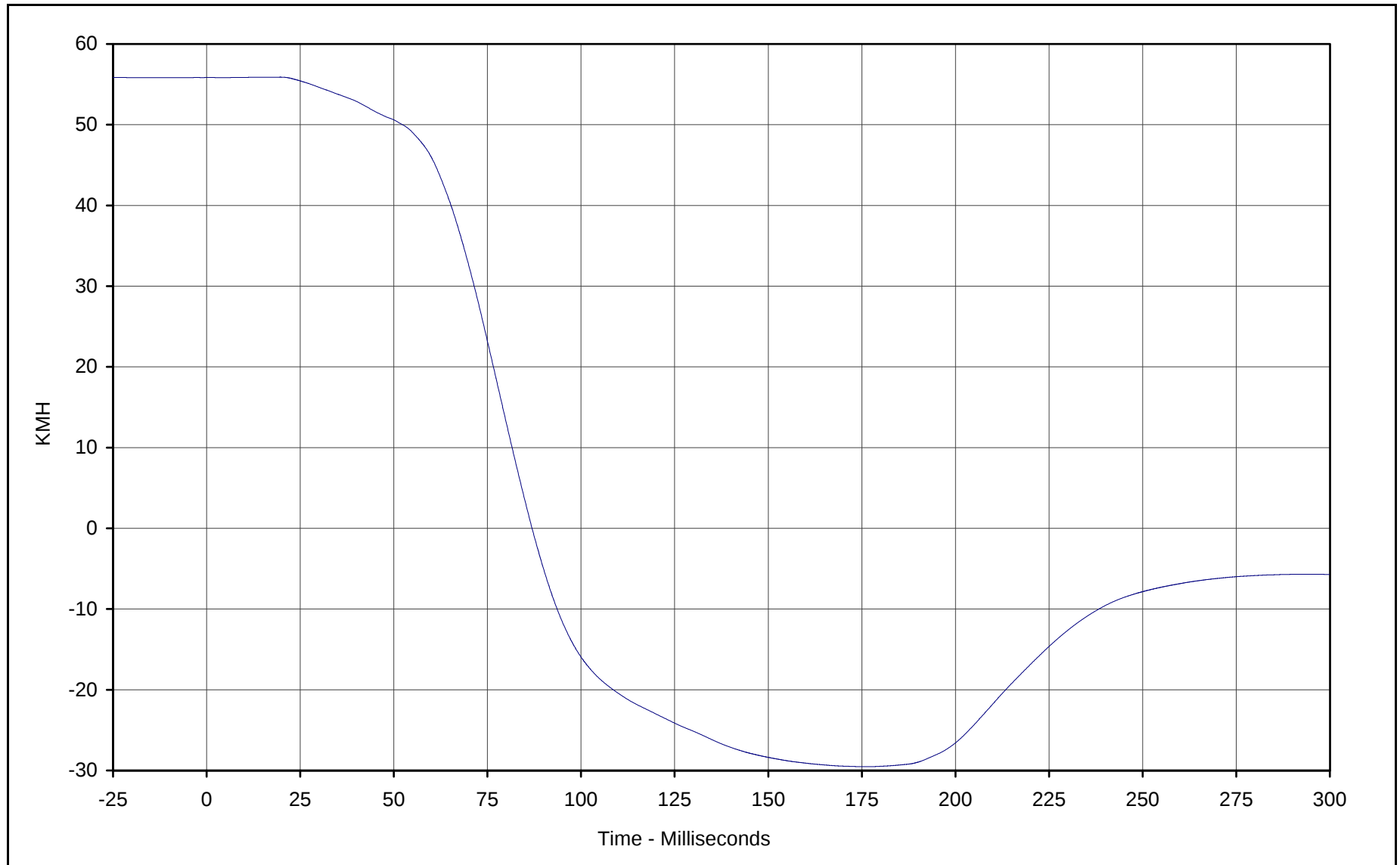
Curve Description: Passenger Head Primary X
Maximum Value: 15.8 at 210.5 Milliseconds
Minimum Value: -57.5 at 75.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-045

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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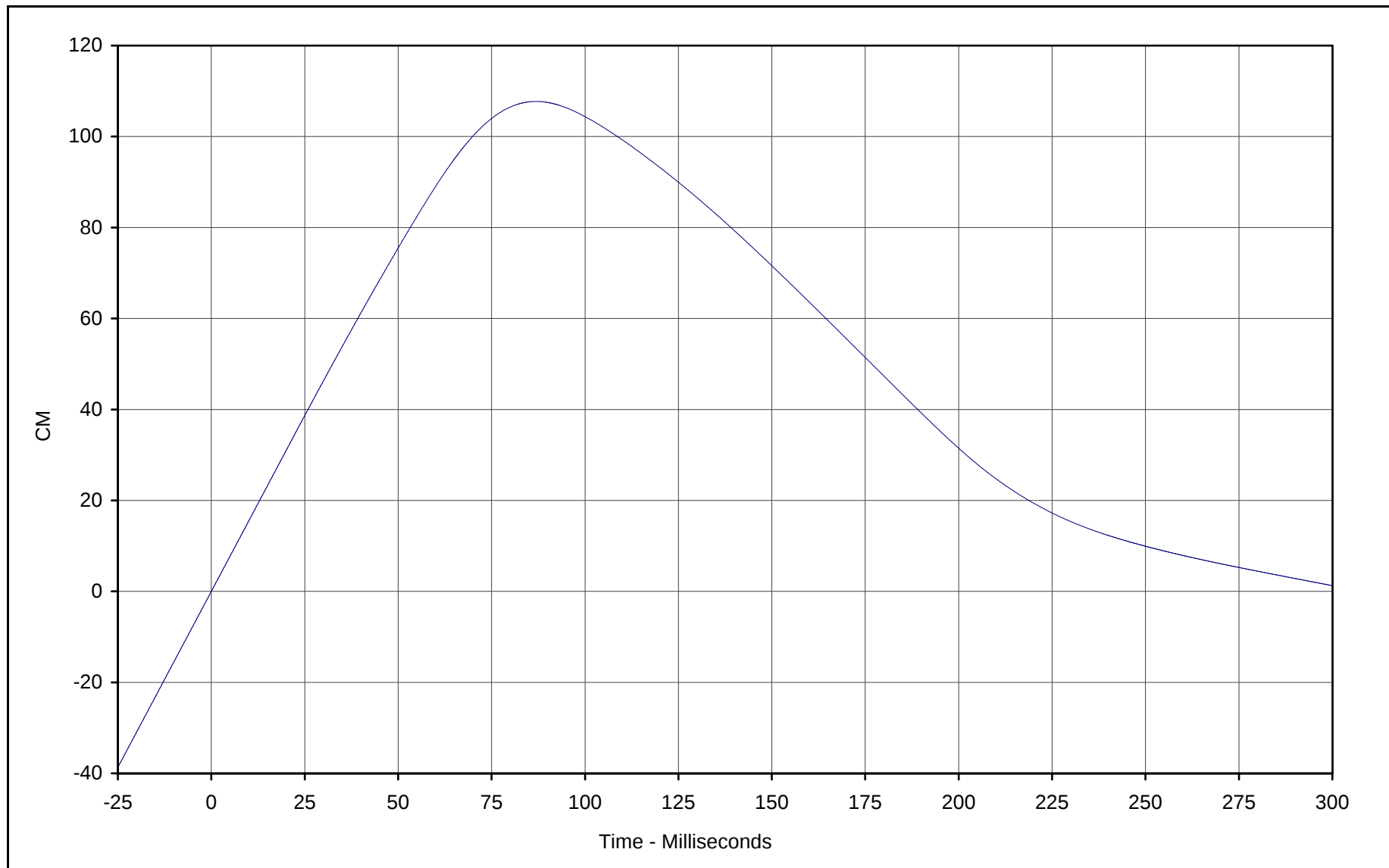
Curve Description: Passenger Head Primary X Velocity
Maximum Value: 55.9 at 19.7 Milliseconds
Minimum Value: -29.5 at 175.2 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-045

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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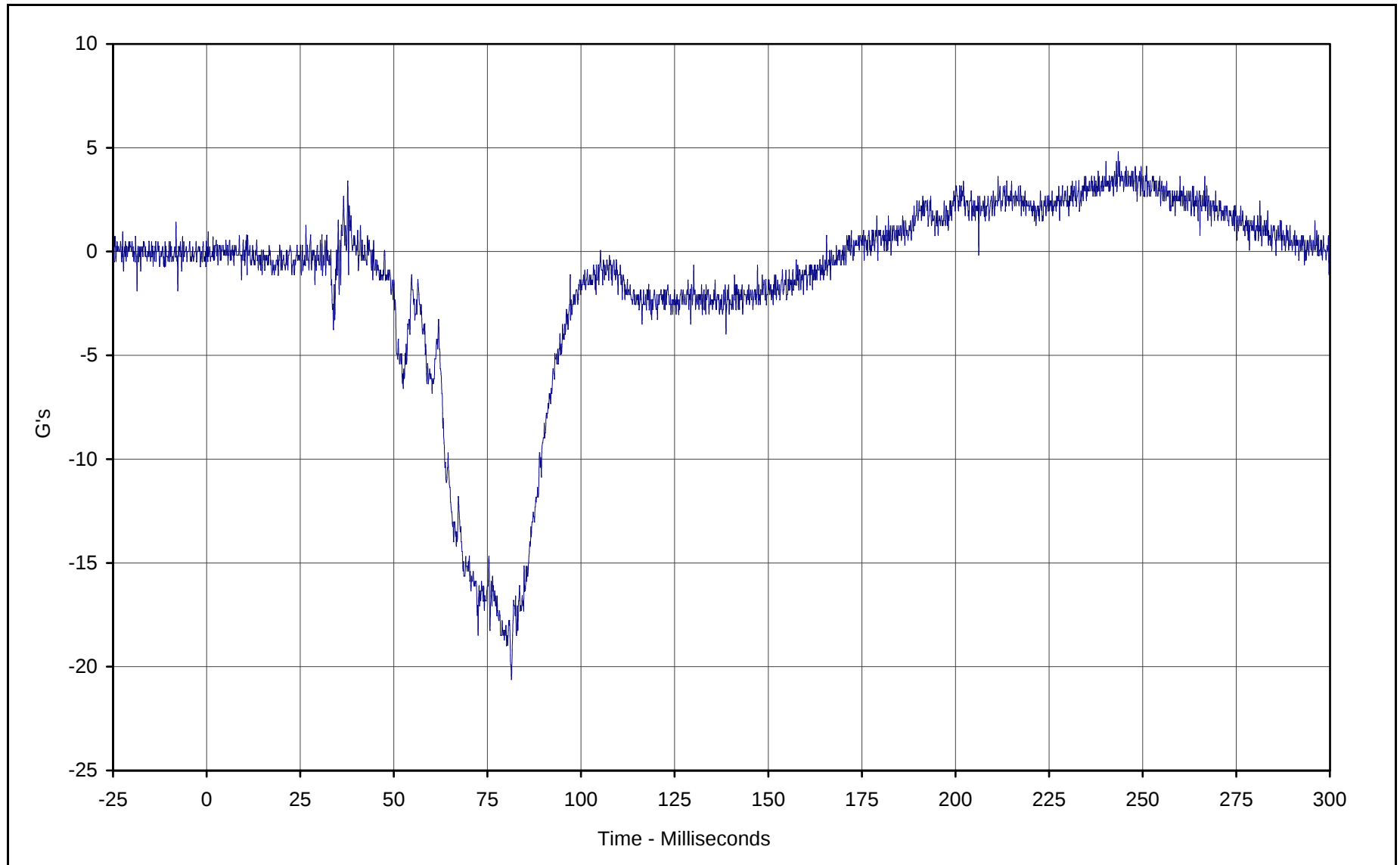
Curve Description: Passenger Head Primary X Displ.
Maximum Value: 107.7 at 86.9 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-045

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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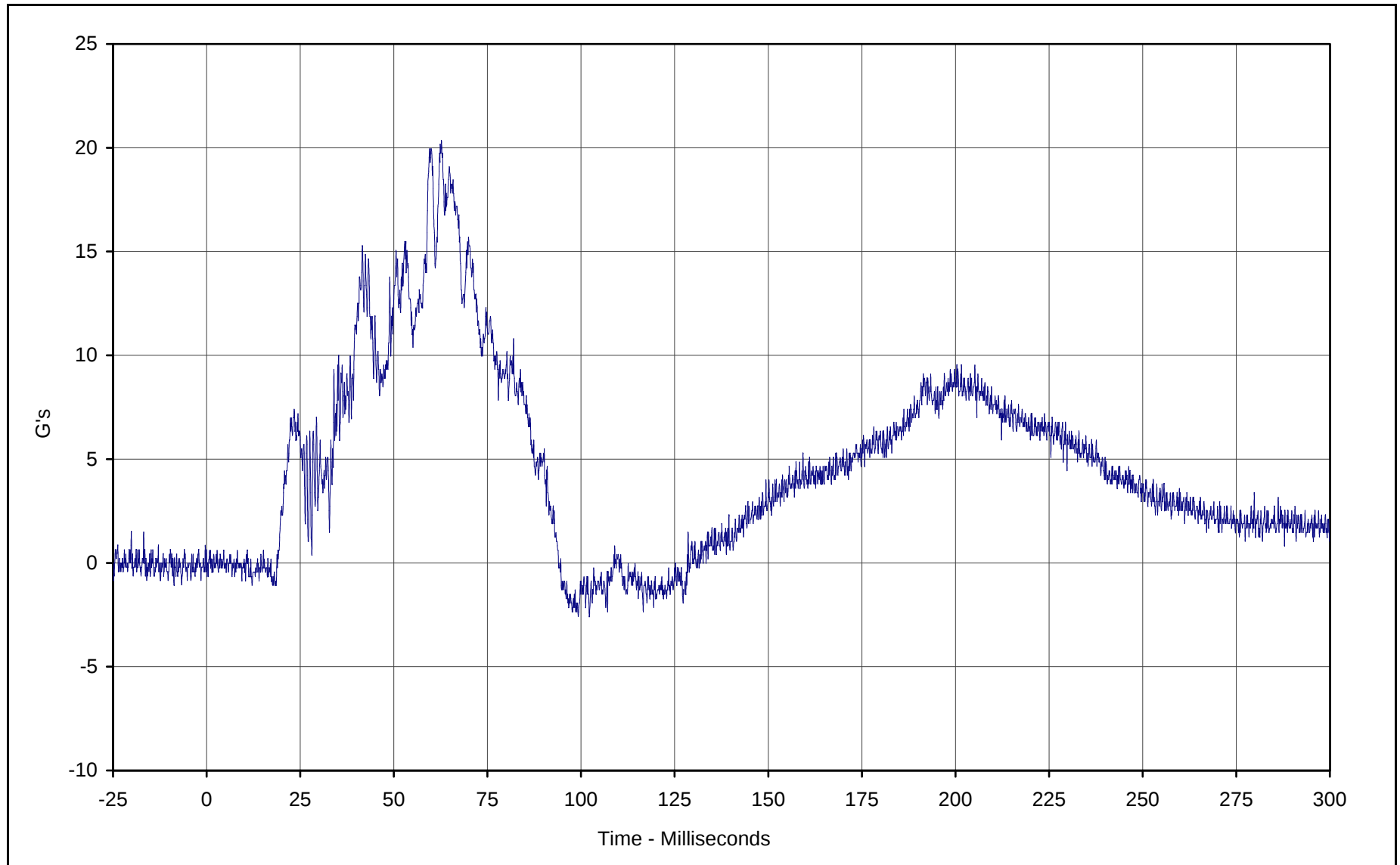


Curve Description: Passenger Head Primary Y
Maximum Value: 4.8 at 243.5 Milliseconds
Minimum Value: -20.6 at 81.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-046

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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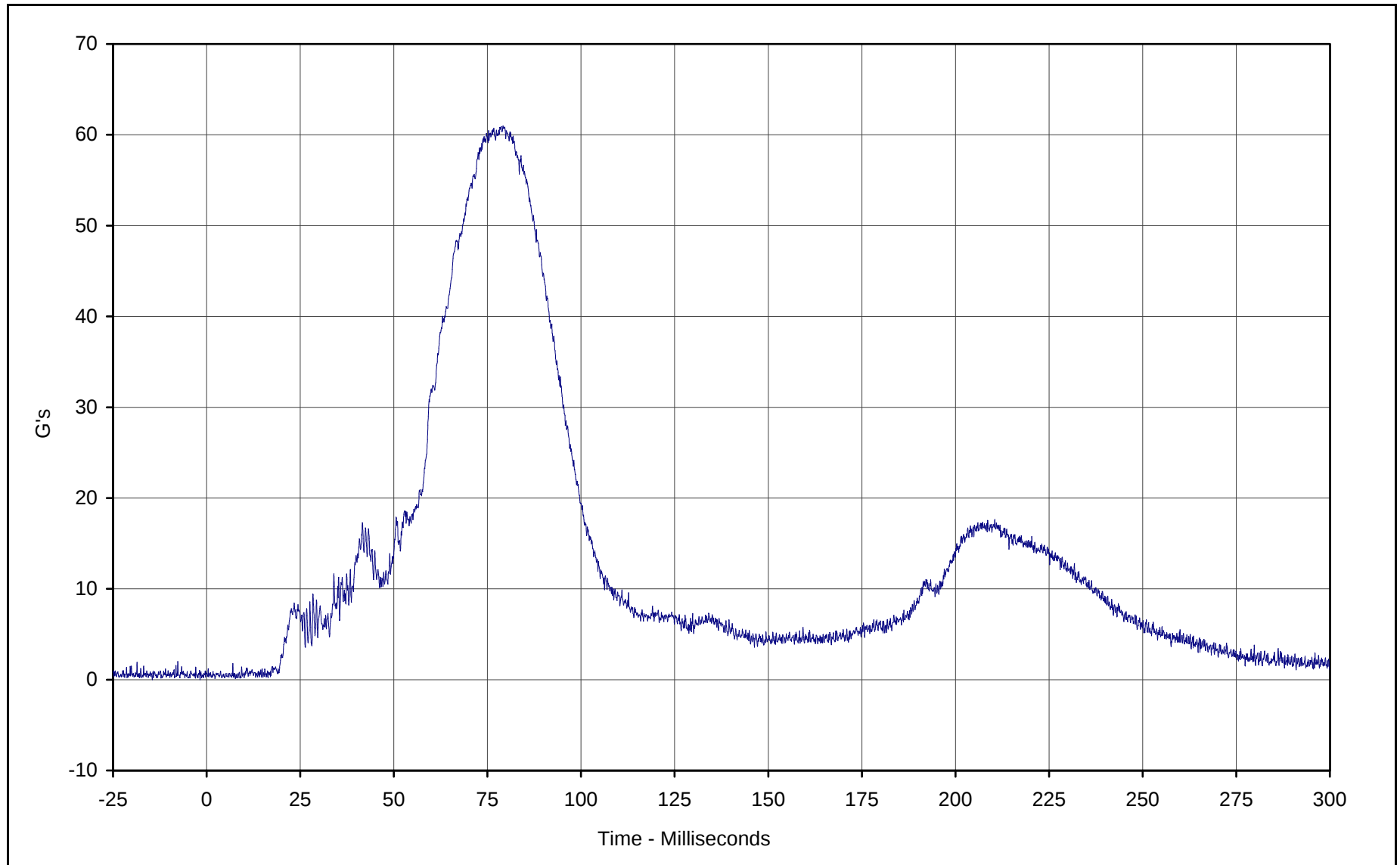
Curve Description: Passenger Head Primary Z
Maximum Value: 20.4 at 62.7 Milliseconds
Minimum Value: -2.6 at 99.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-047

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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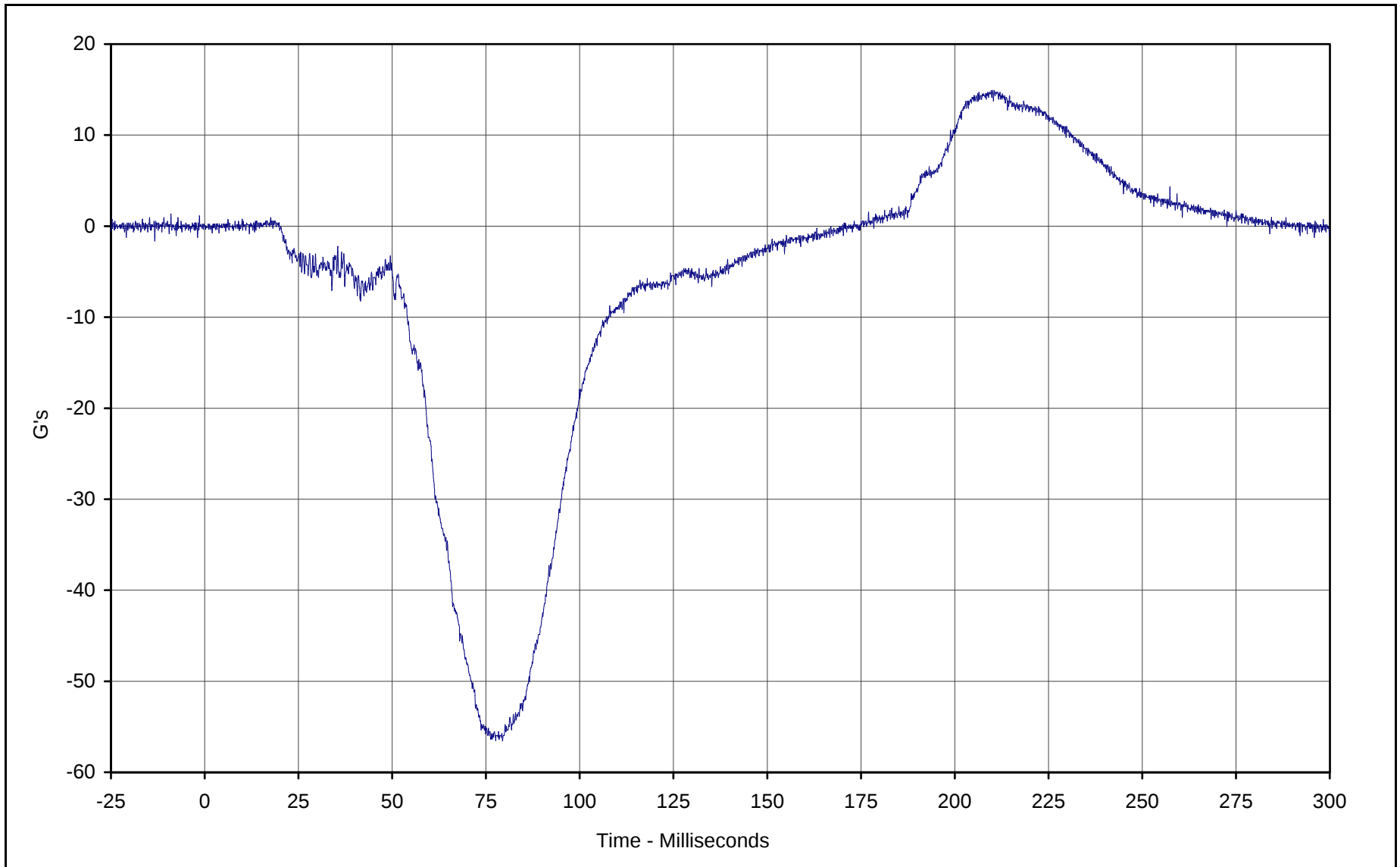
Curve Description: Passenger Head Resultant Primary
Maximum Value: 61.0 at 79.2 Milliseconds
Minimum Value: 0.1 at 7.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: RES-045

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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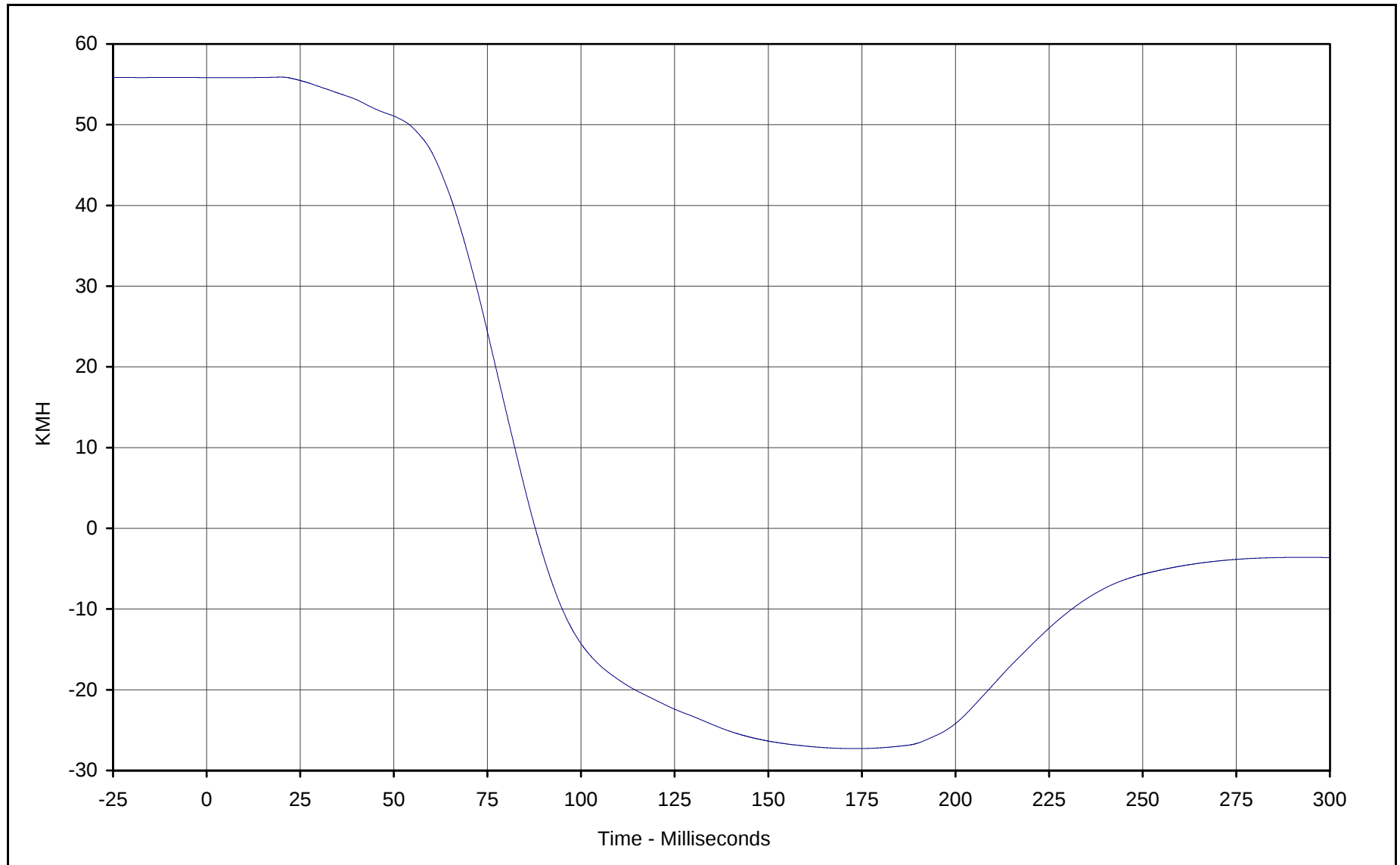
Curve Description: Passenger Head Redundant X
Maximum Value: 14.9 at 209.7 Milliseconds
Minimum Value: -56.6 at 77.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-048

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 55.9 at 19.8 Milliseconds

Minimum Value: -27.3 at 174.6 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

Curve Number: IN1-048

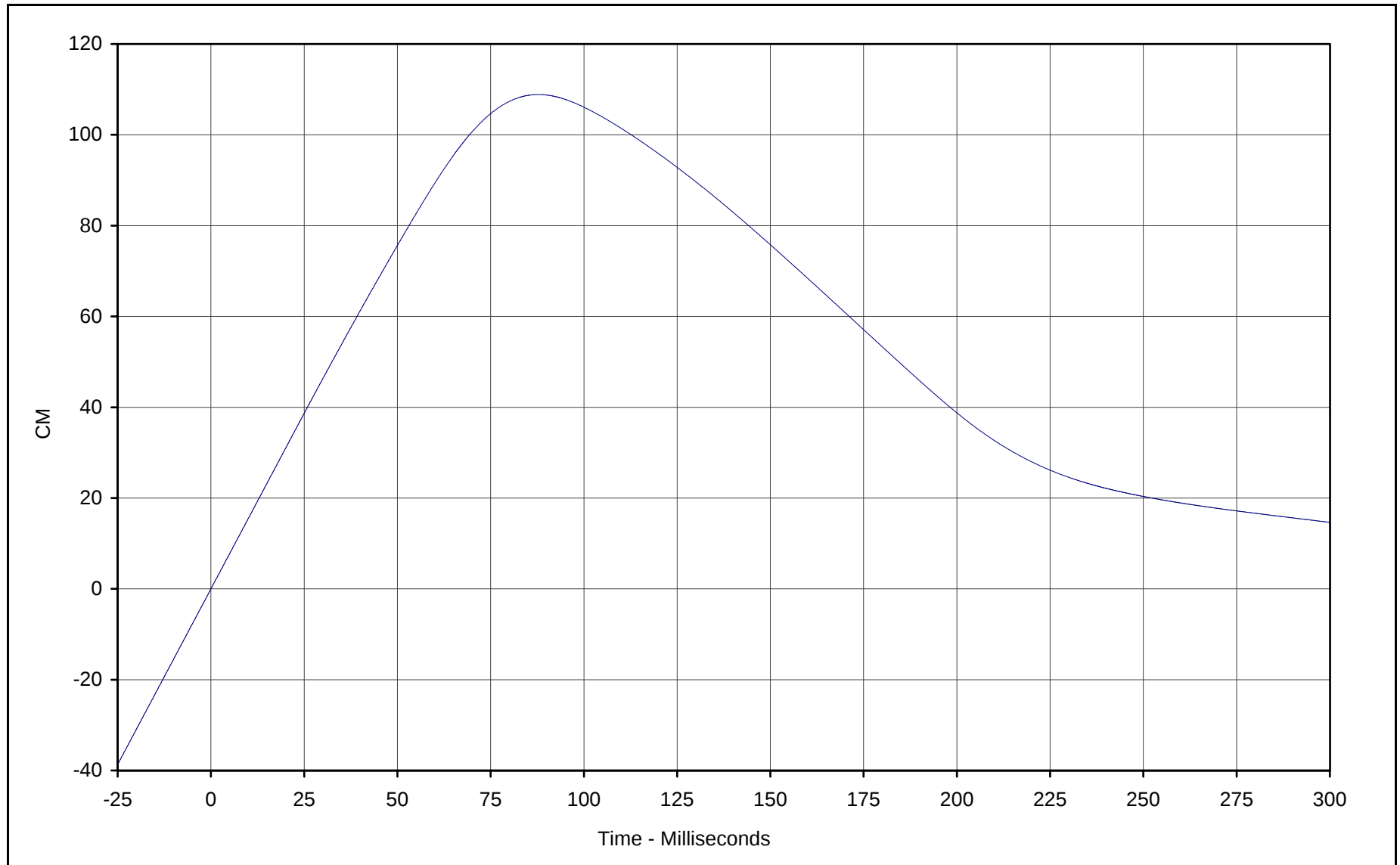
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 108.9 at 87.8 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

Curve Number: IN2-048

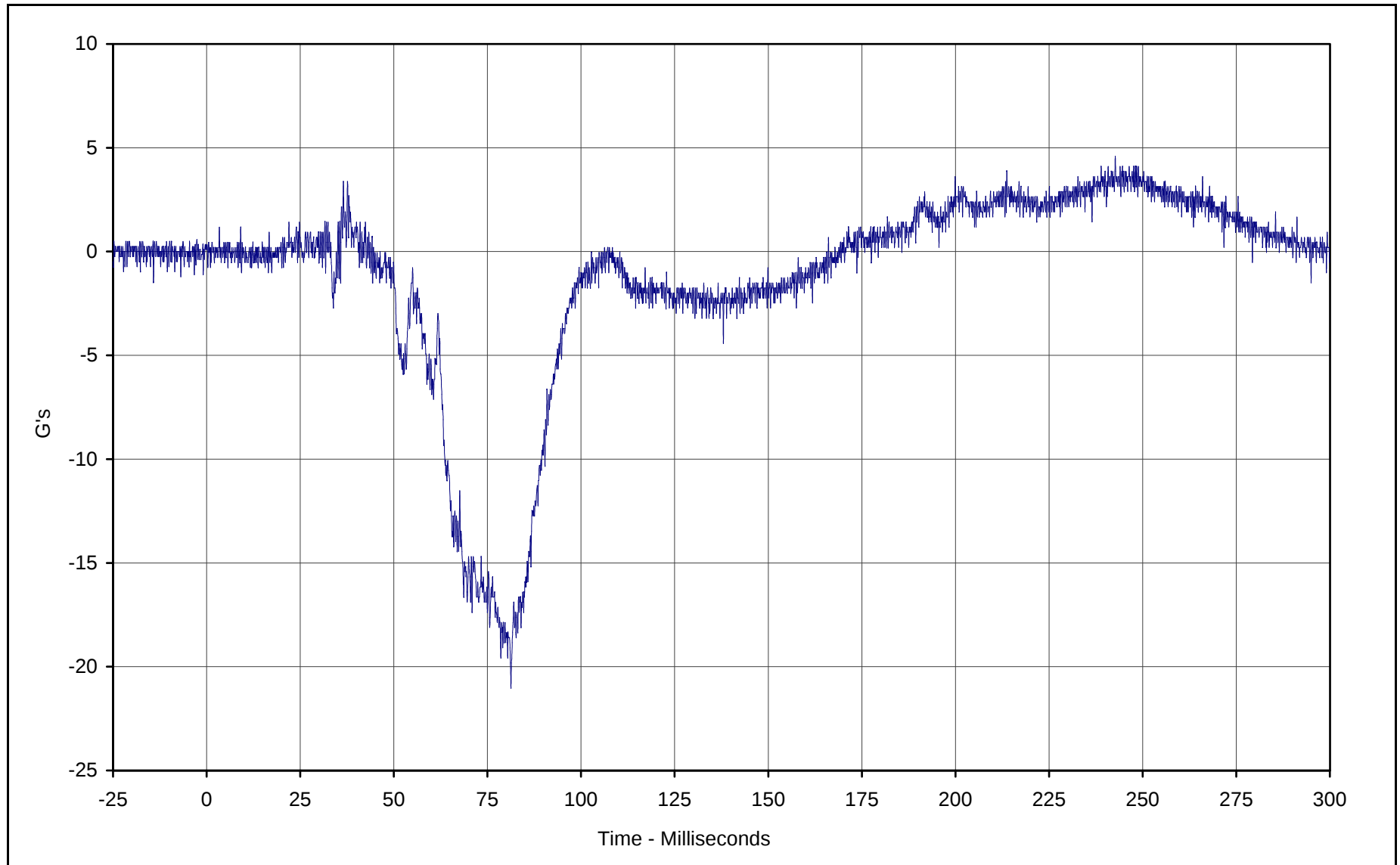
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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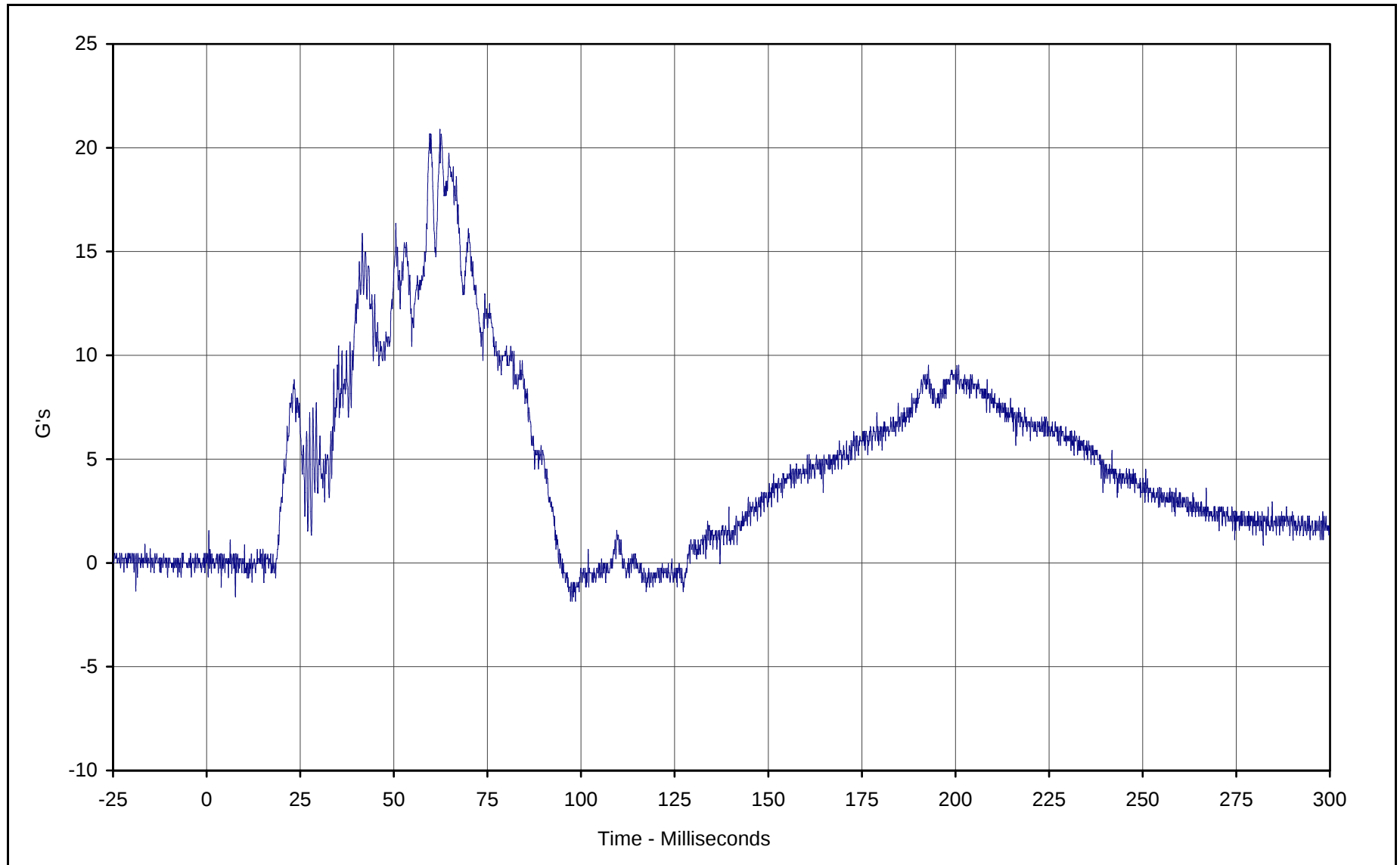


Curve Description: Passenger Head Redundant Y
Maximum Value: 4.6 at 242.7 Milliseconds
Minimum Value: -21.0 at 81.3 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-049

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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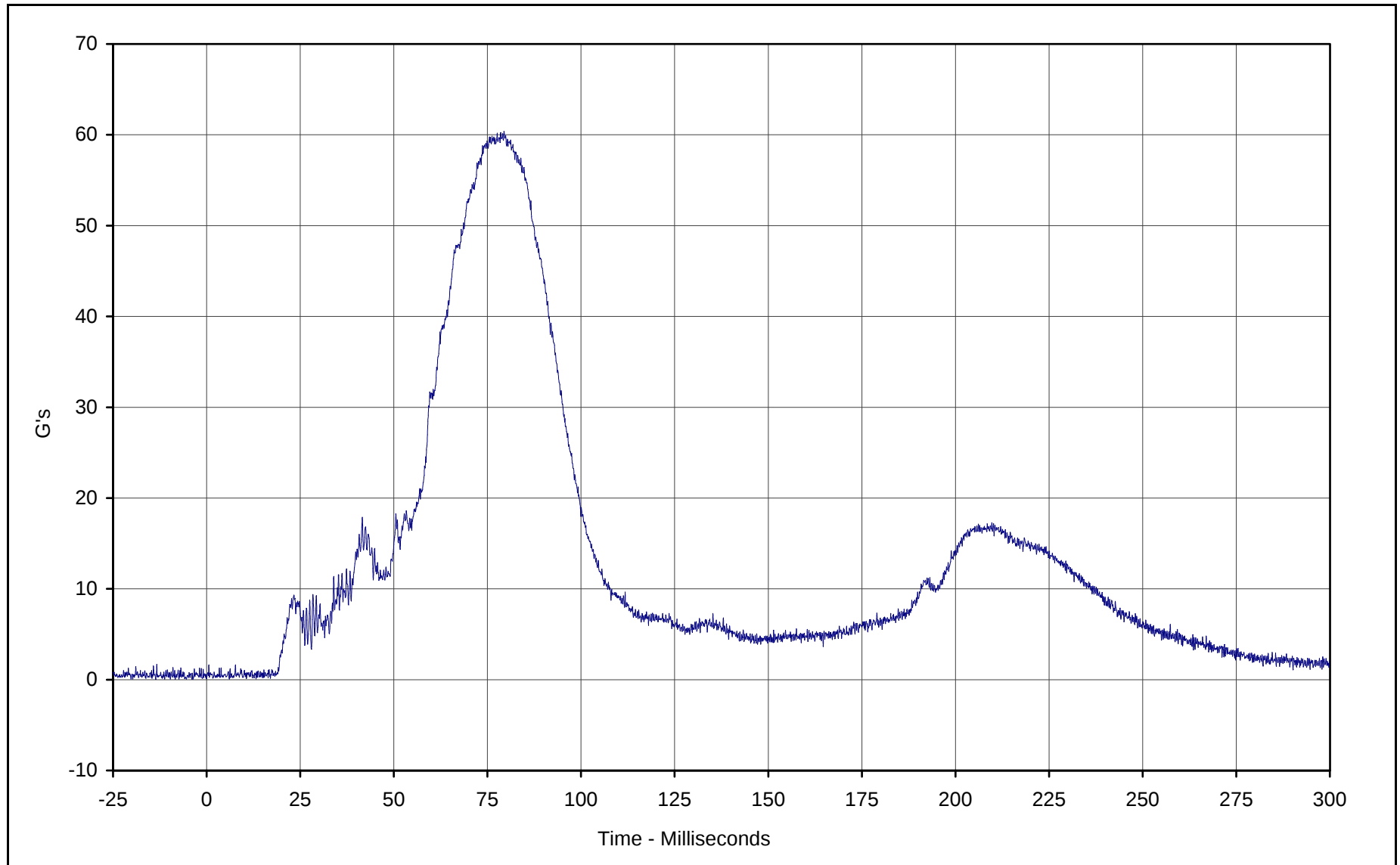


Curve Description: Passenger Head Redundant Z
Maximum Value: 20.9 at 62.3 Milliseconds
Minimum Value: -1.8 at 97.2 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-050

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Head Resultant Redundant

Maximum Value: 60.4 at 79.4 Milliseconds

Minimum Value: 0.1 at 6.1 Milliseconds

SAE Filter Class: 1000

Date of Test: 12/4/01

Curve Number: RES-048

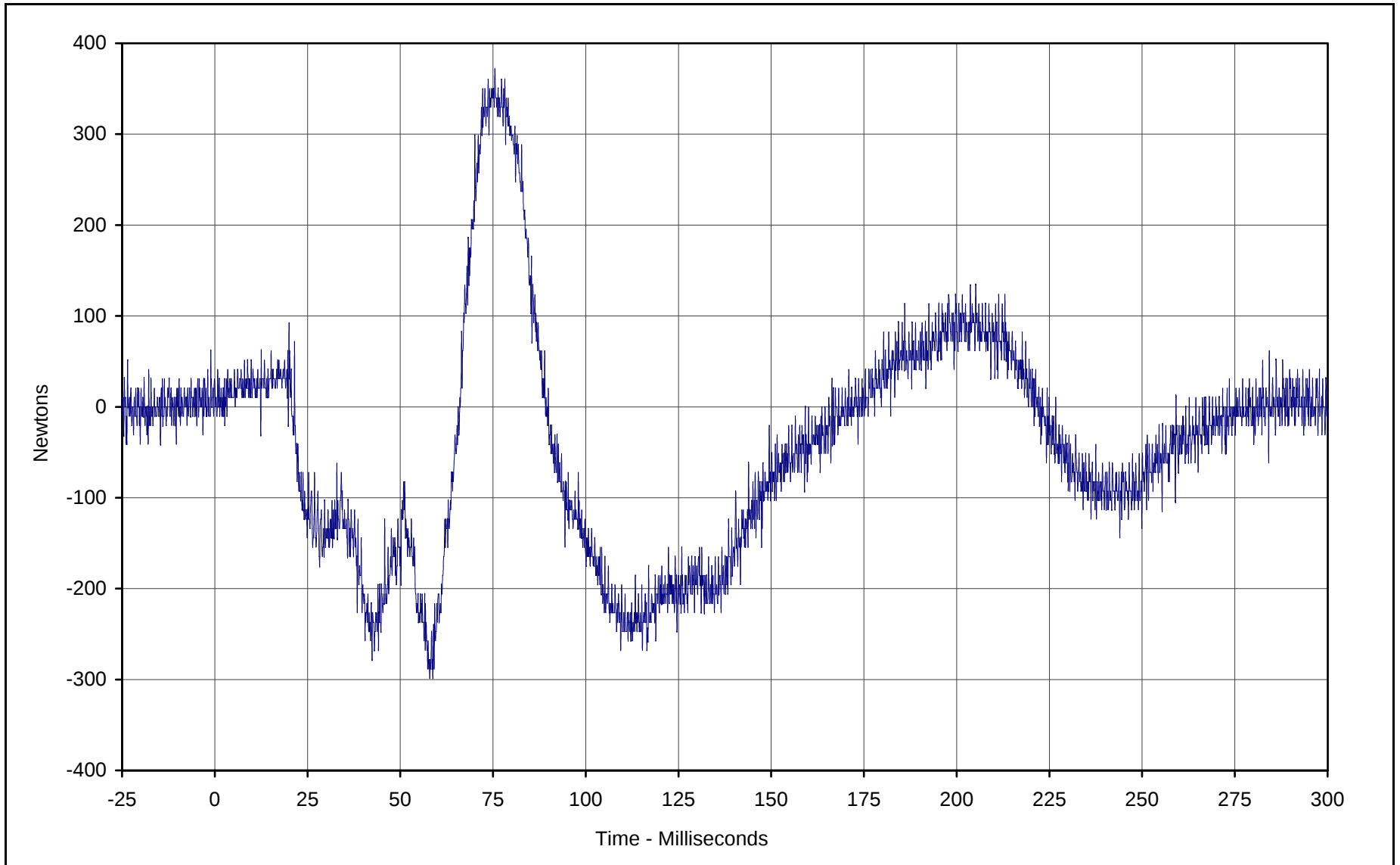
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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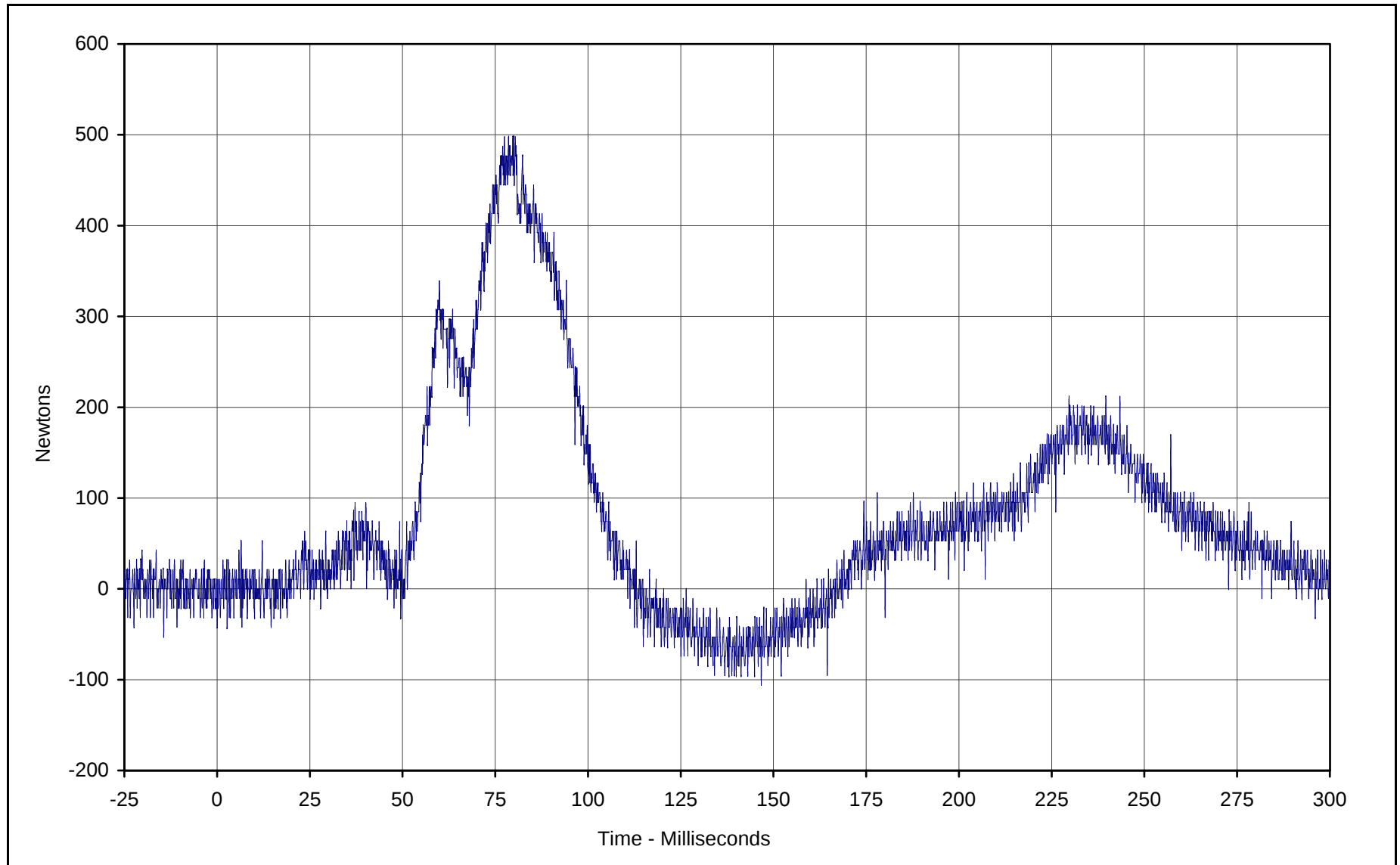
Curve Description: Passenger Neck Force X
Maximum Value: 370.8 at 75.5 Milliseconds
Minimum Value: -298.7 at 57.9 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-051

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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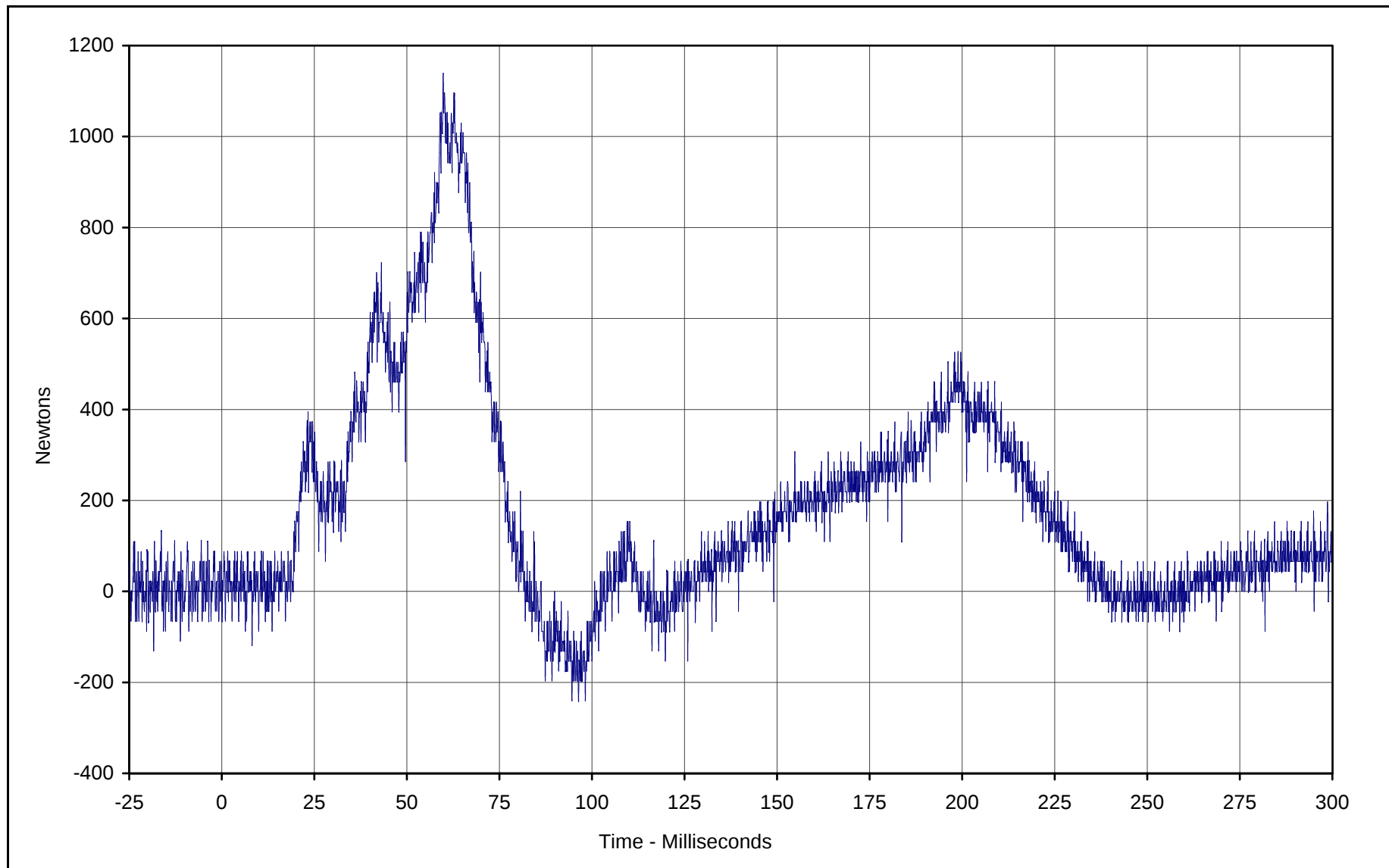


Curve Description: Passenger Neck Force Y
Maximum Value: 498.0 at 77.5 Milliseconds
Minimum Value: -106.0 at 146.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-052

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



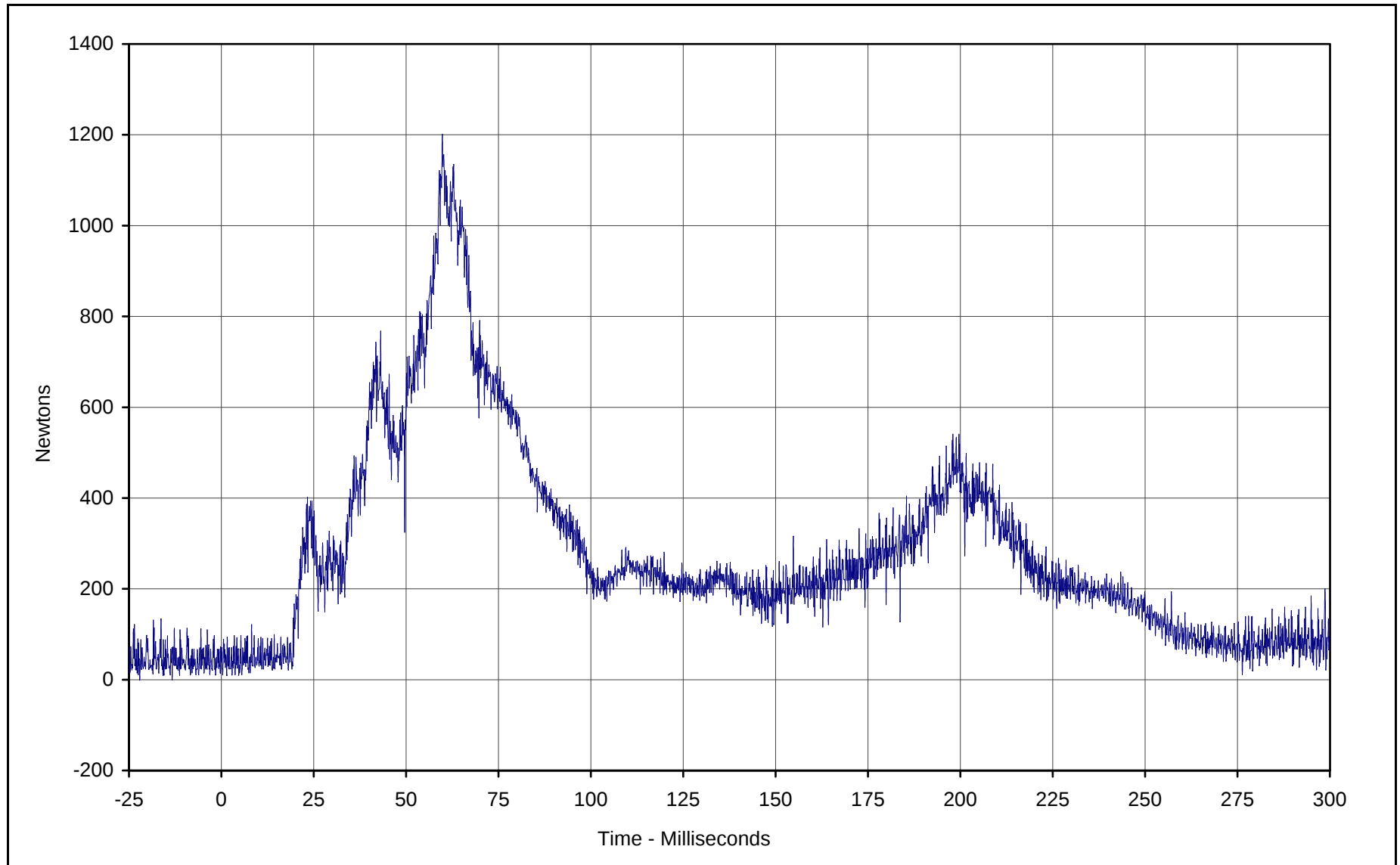
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Curve Description: Passenger Neck Force Z
Maximum Value: 1139.4 at 59.8 Milliseconds
Minimum Value: -241.0 at 94.6 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-053

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



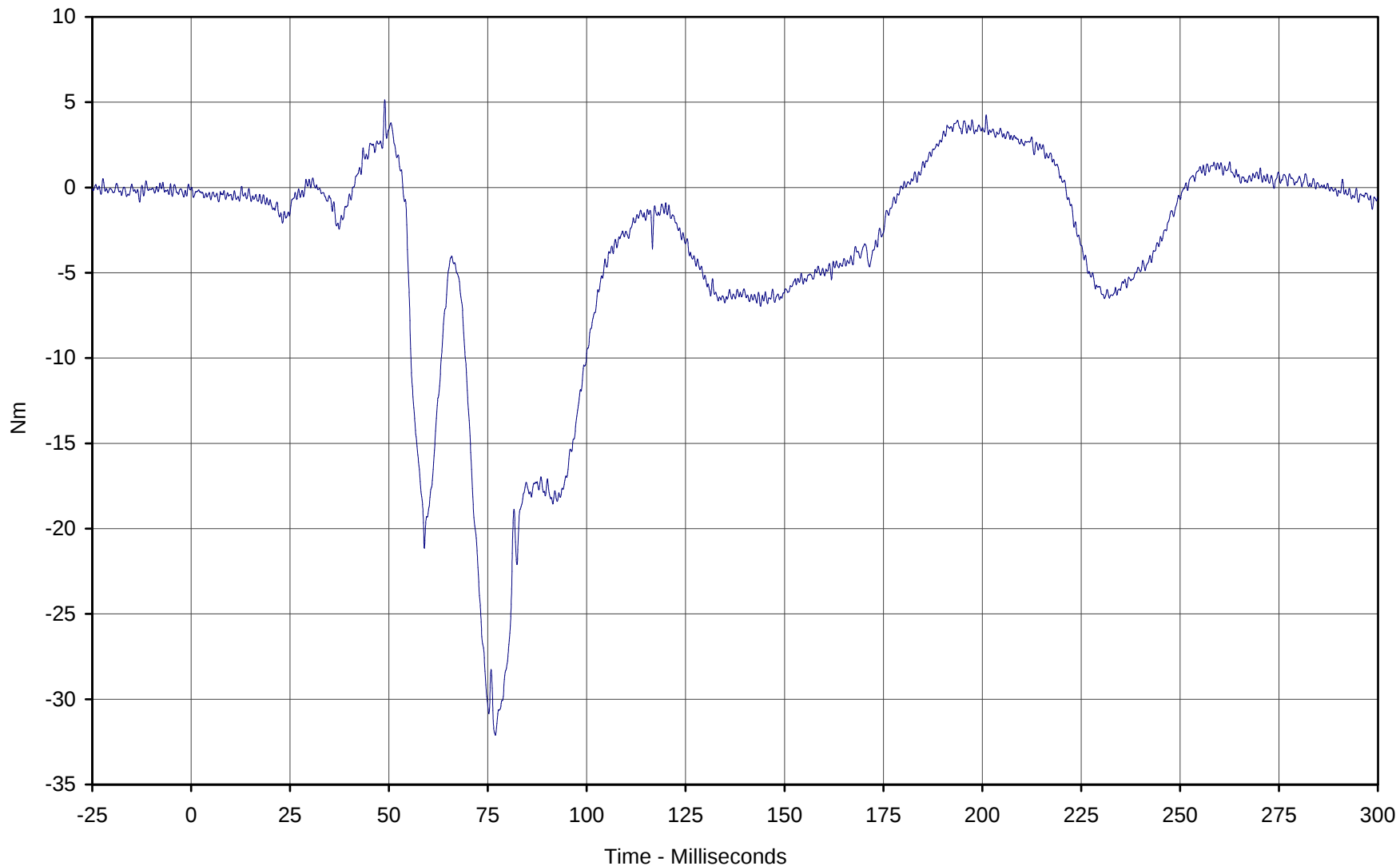


Curve Description: Passenger Neck Force Resultant
Maximum Value: 1201.7 at 59.8 Milliseconds
Minimum Value: 10.3 at 0.4 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: RES-051

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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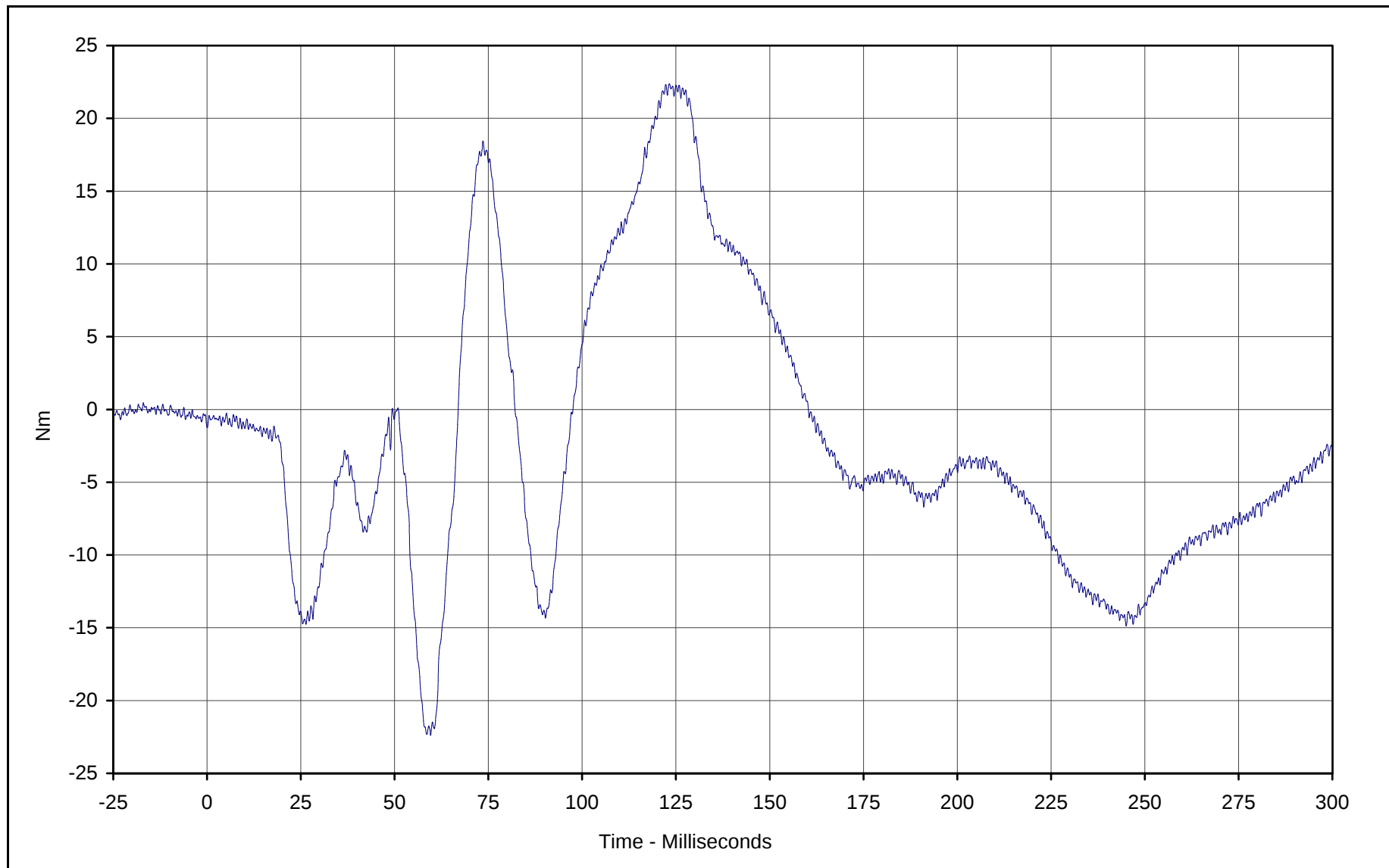


Curve Description: Passenger Neck Moment X
Maximum Value: 5.1 at 48.9 Milliseconds
Minimum Value: -32.1 at 76.9 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-054

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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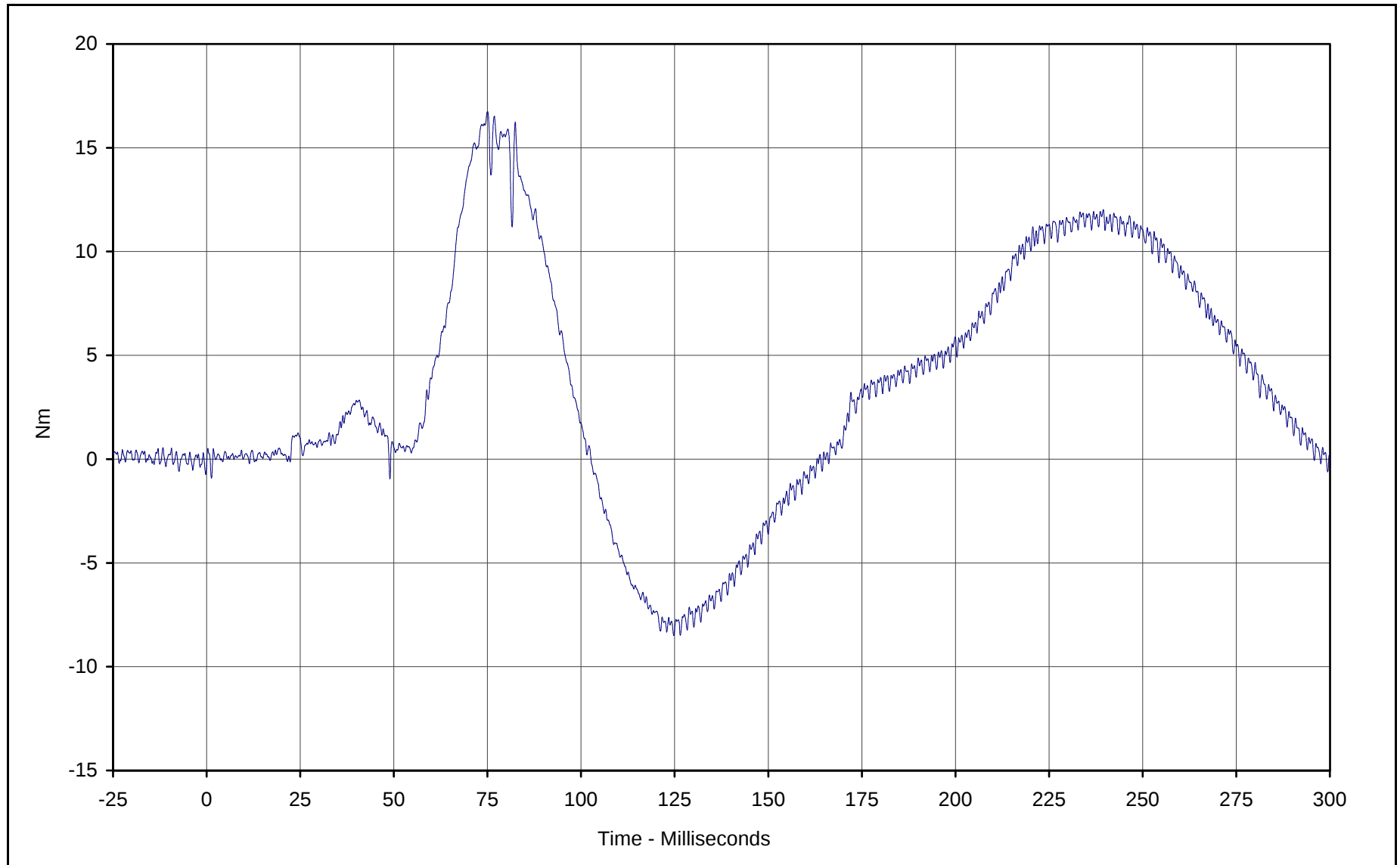
Curve Description: Passenger Neck Moment Y
Maximum Value: 22.4 at 123.2 Milliseconds
Minimum Value: -22.4 at 59.6 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-055

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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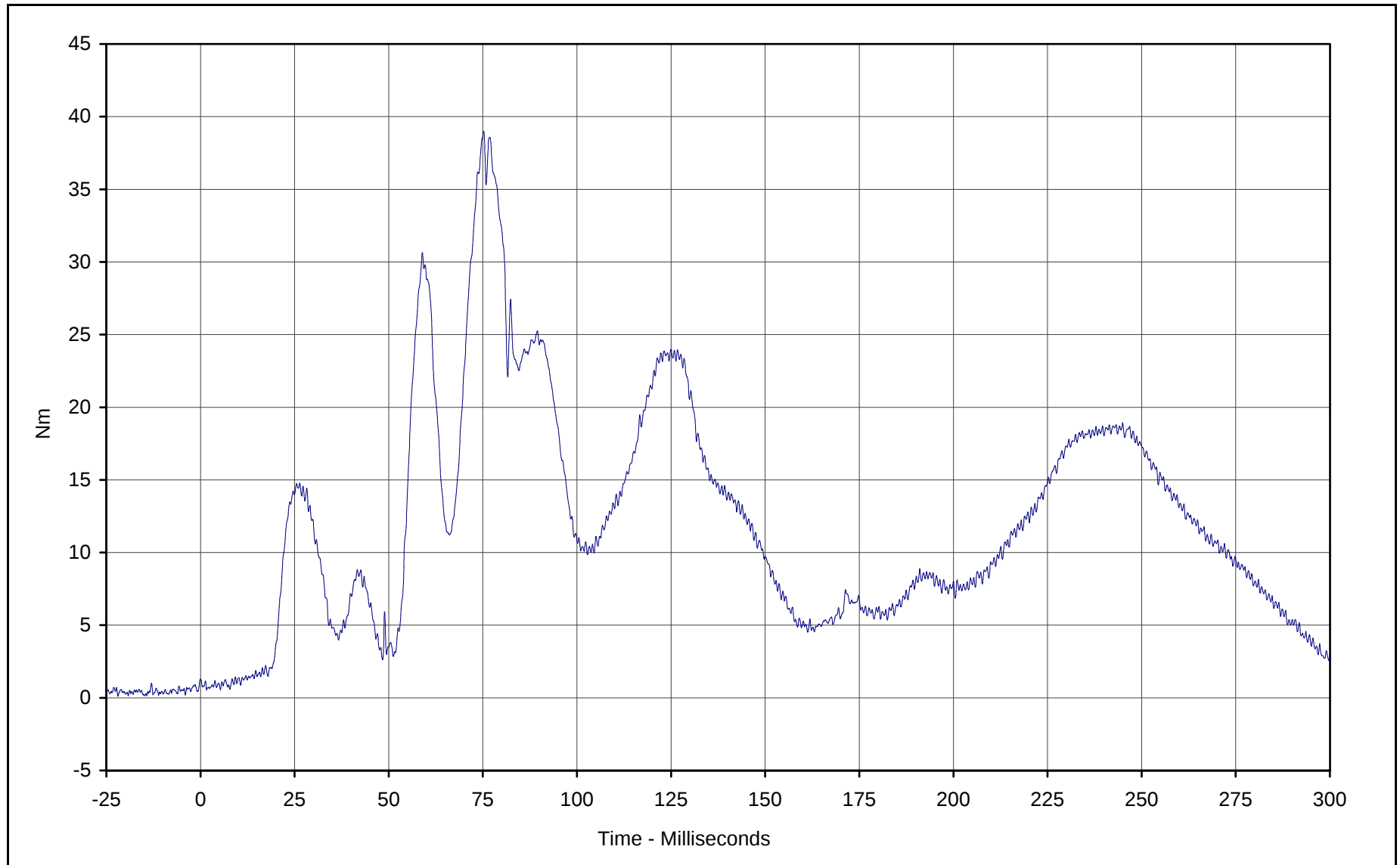
KAR21128-01



Curve Description: Passenger Neck Moment Z
Maximum Value: 16.7 at 75.0 Milliseconds
Minimum Value: -8.5 at 124.8 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-056

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



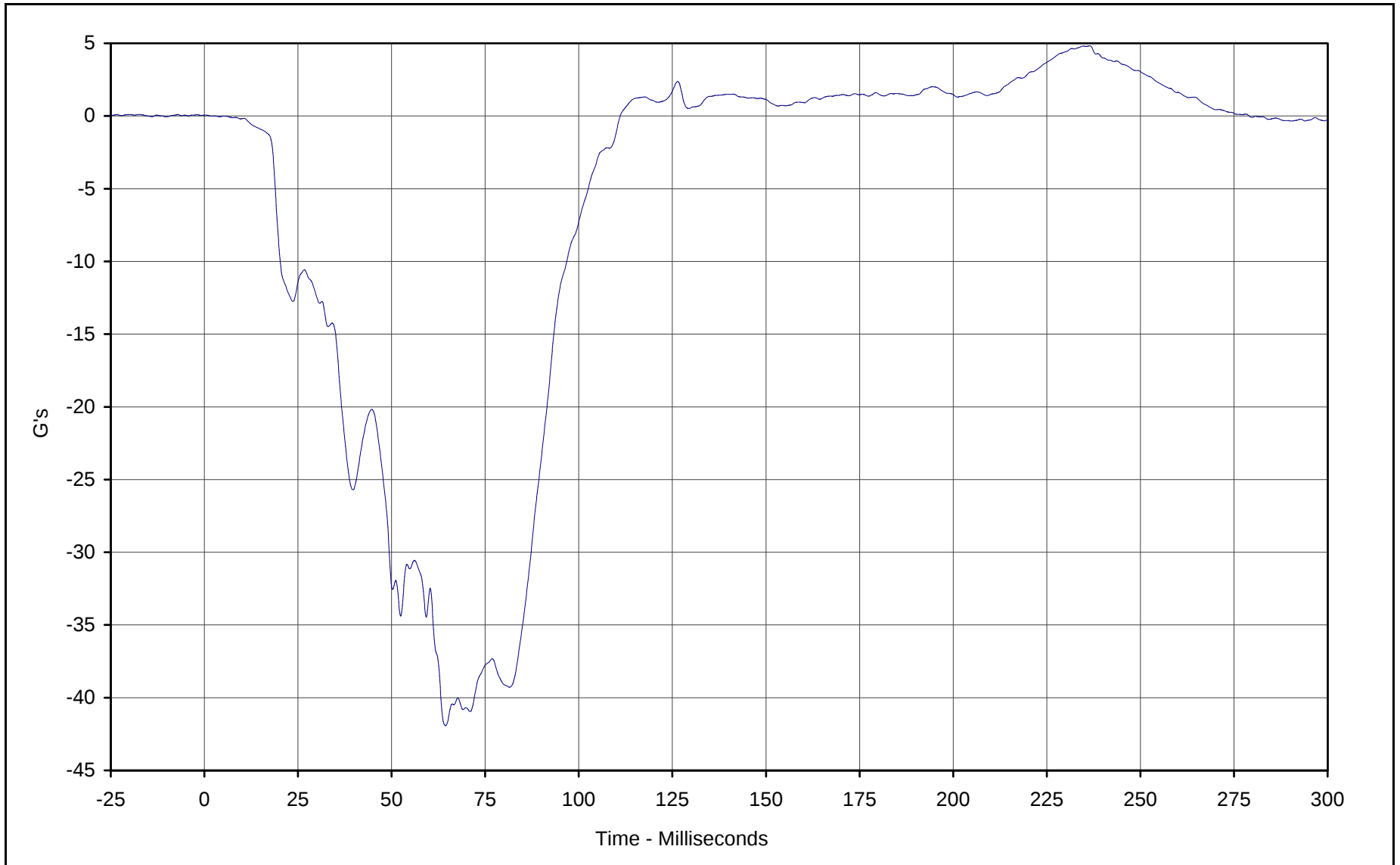


Curve Description: Passenger Neck Moment Resultant
Maximum Value: 39.0 at 75.2 Milliseconds
Minimum Value: 0.5 at 1.6 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: RES-054

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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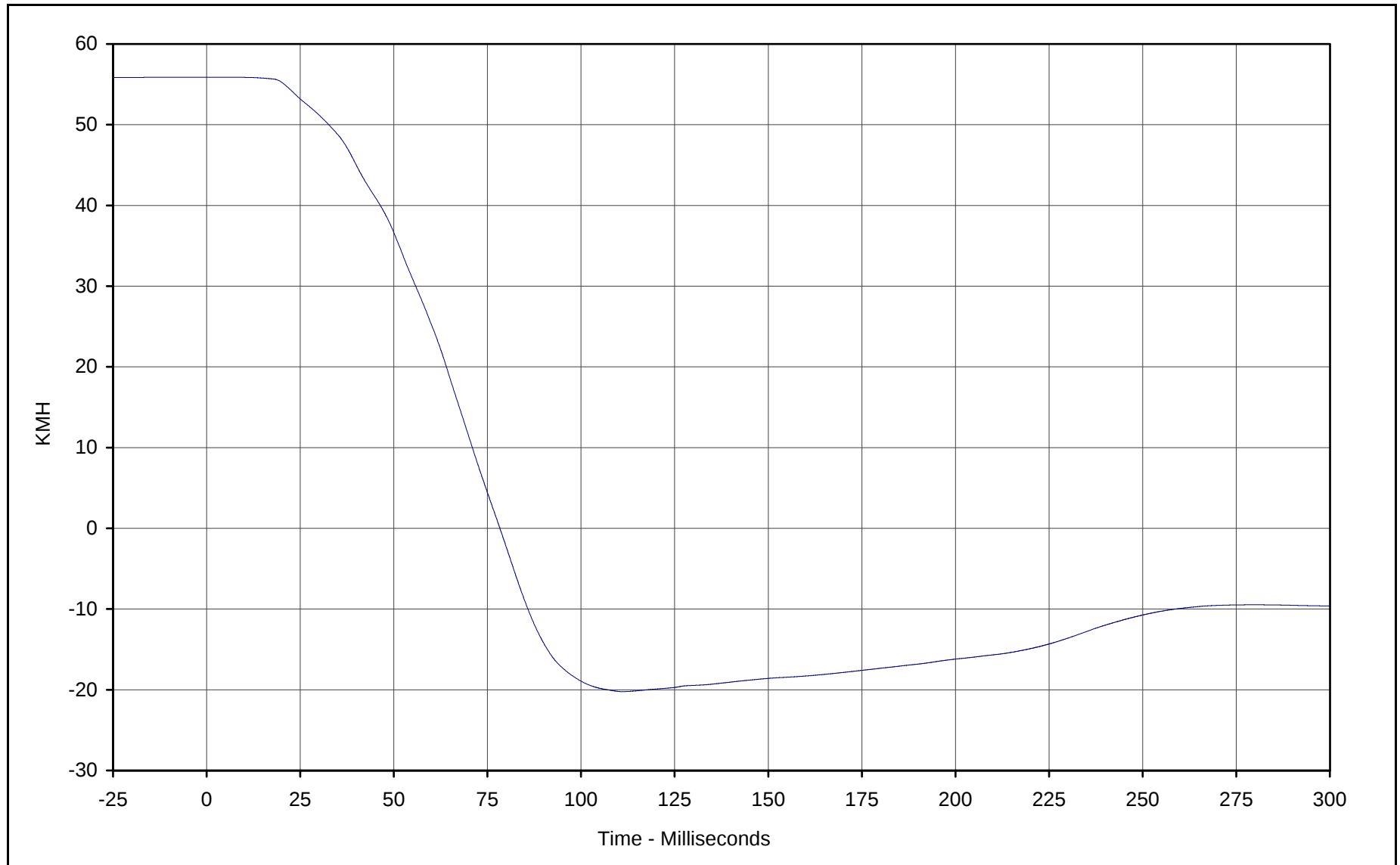
Curve Description: Passenger Chest Primary X
Maximum Value: 4.8 at 236.4 Milliseconds
Minimum Value: -41.9 at 64.4 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-057

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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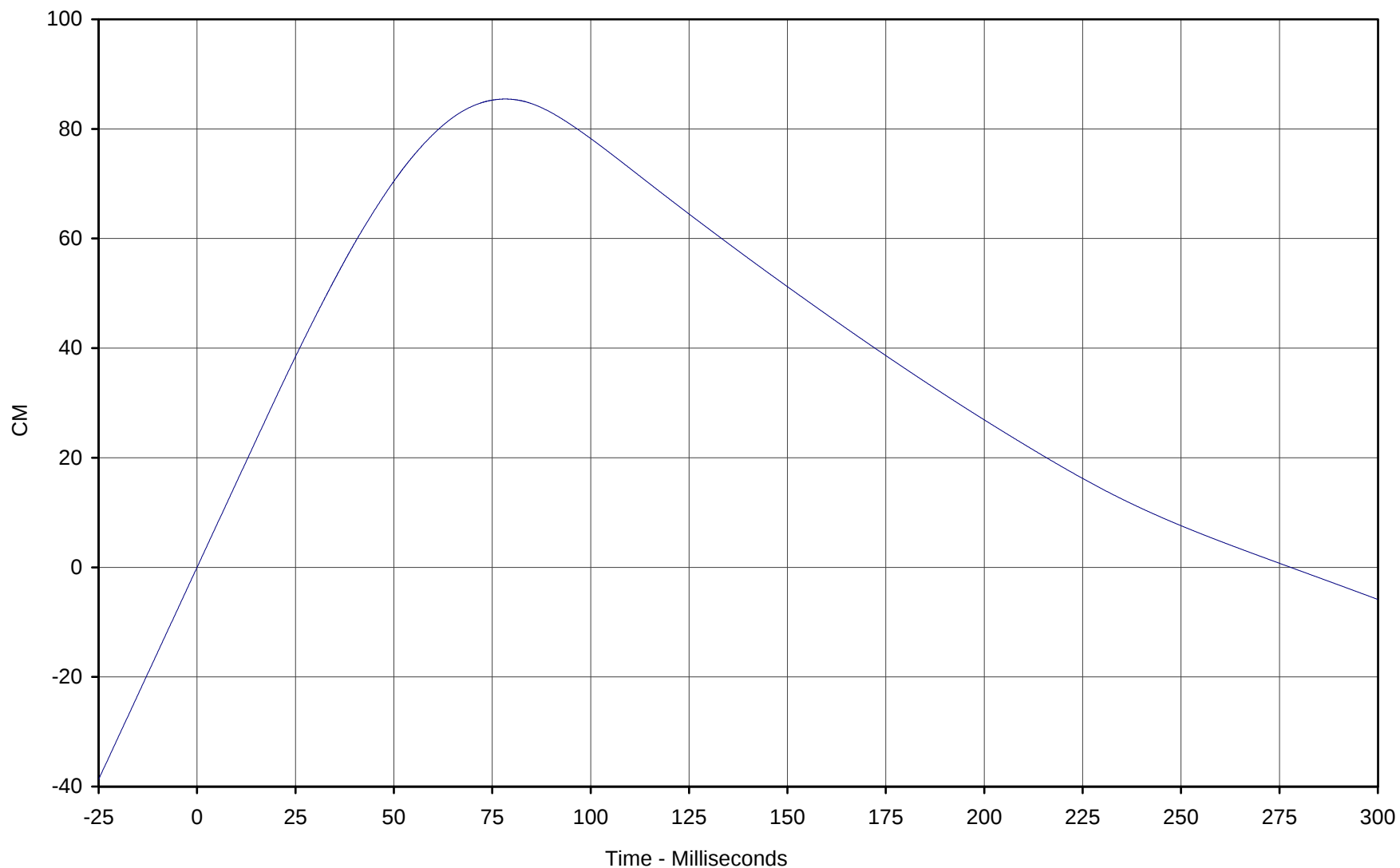
Curve Description: Passenger Chest Primary X Velocity
Maximum Value: 55.9 at 2.9 Milliseconds
Minimum Value: -20.2 at 111.1 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-057

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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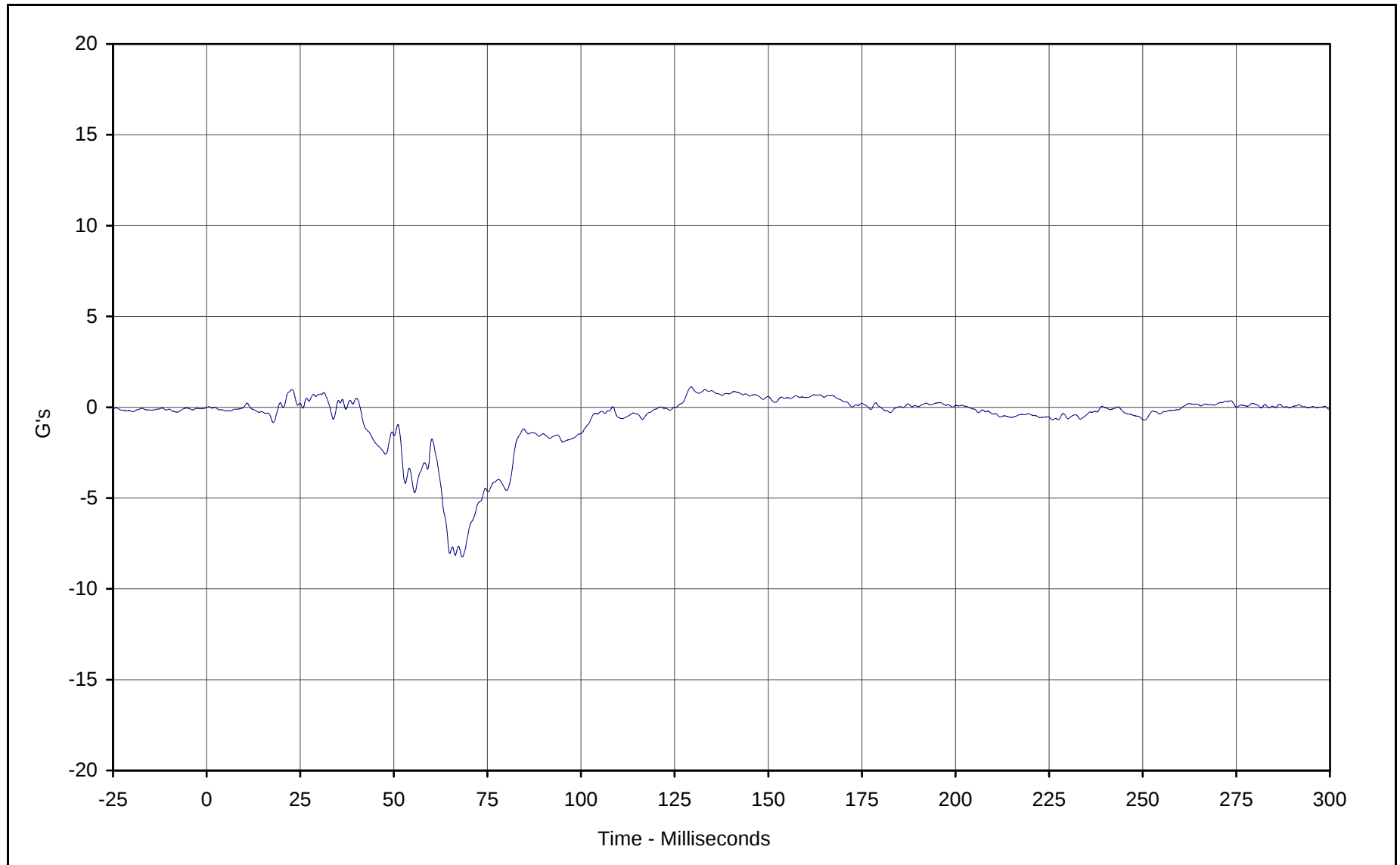
Curve Description: Passenger Chest Primary X Displ.
Maximum Value: 85.5 at 78.3 Milliseconds
Minimum Value: -5.8 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-057

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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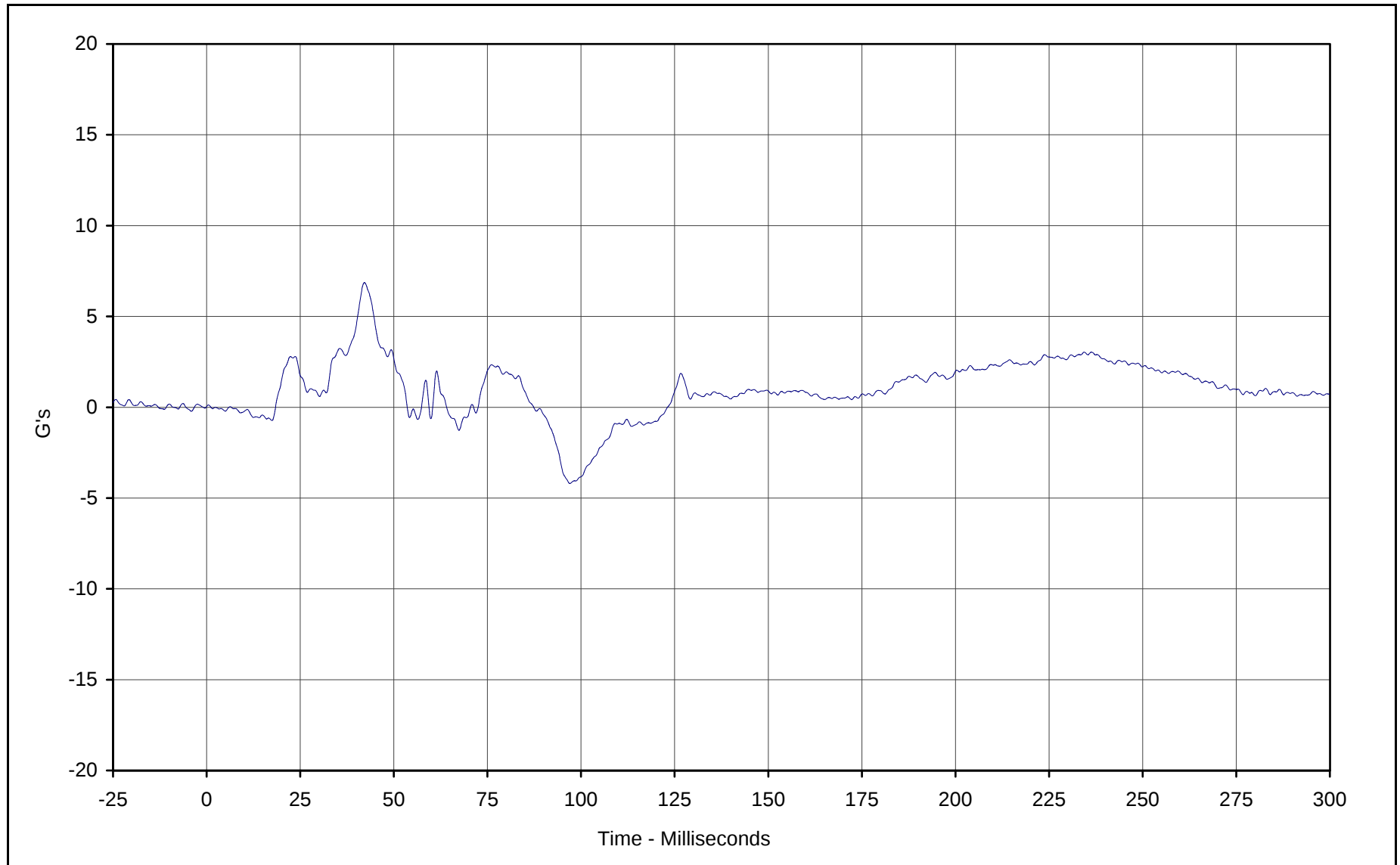


Curve Description: Passenger Chest Primary Y
Maximum Value: 1.1 at 129.4 Milliseconds
Minimum Value: -8.2 at 68.3 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-058

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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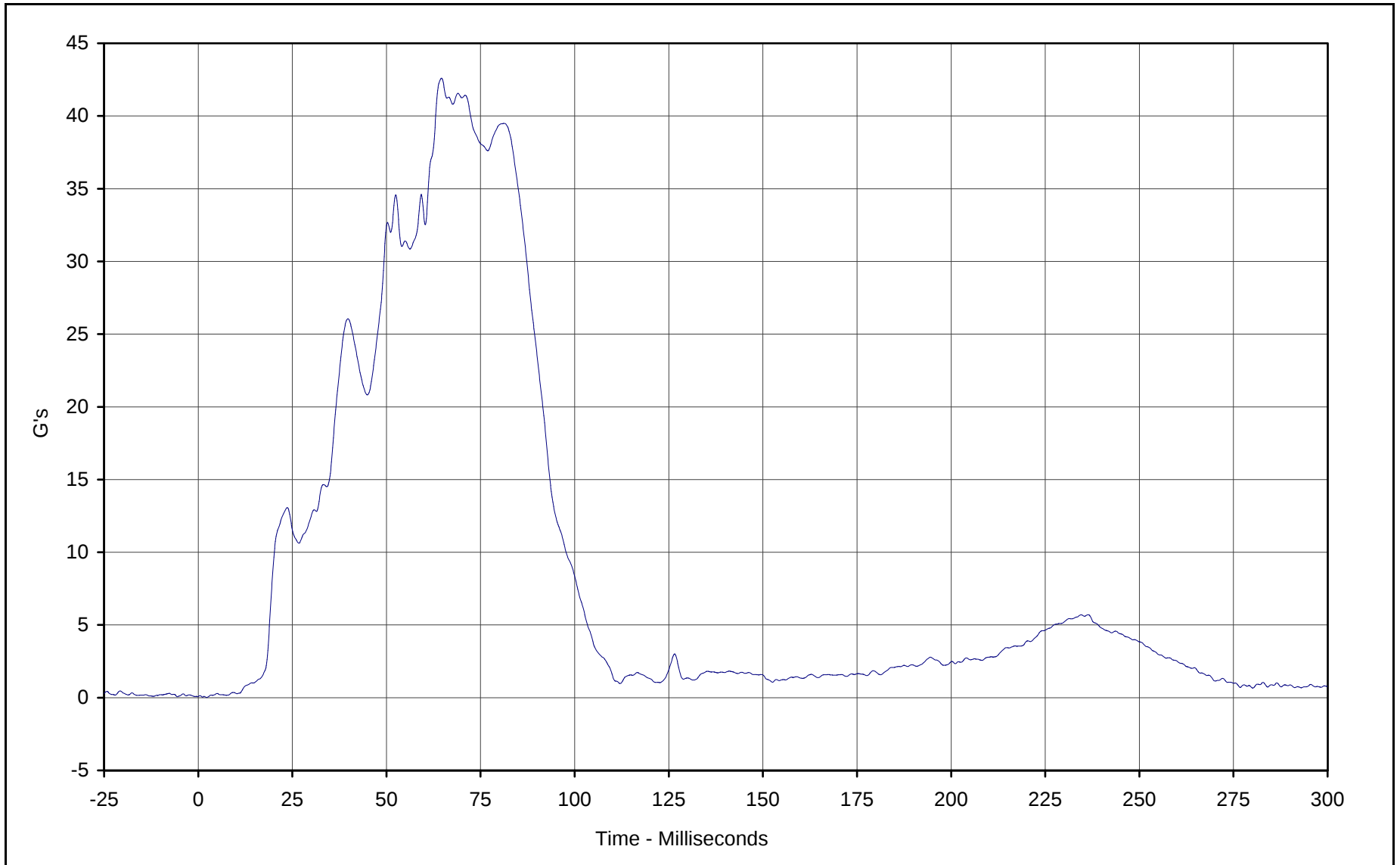
Curve Description: Passenger Chest Primary Z
Maximum Value: 6.9 at 42.1 Milliseconds
Minimum Value: -4.2 at 97.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-059

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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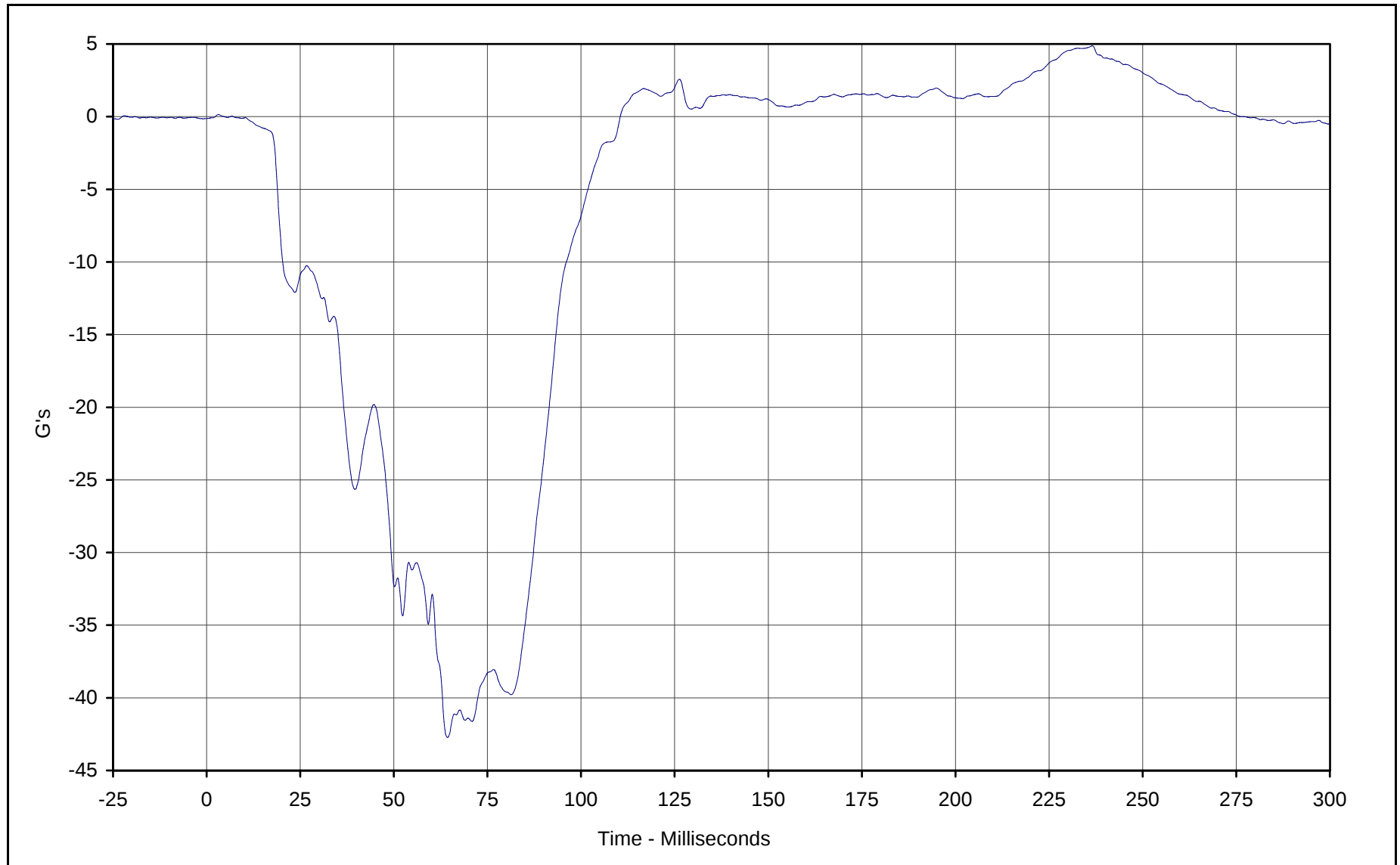
Curve Description: Passenger Chest Resultant Primary
Maximum Value: 42.6 at 64.6 Milliseconds
Minimum Value: 0.0 at 2.2 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: RES-057

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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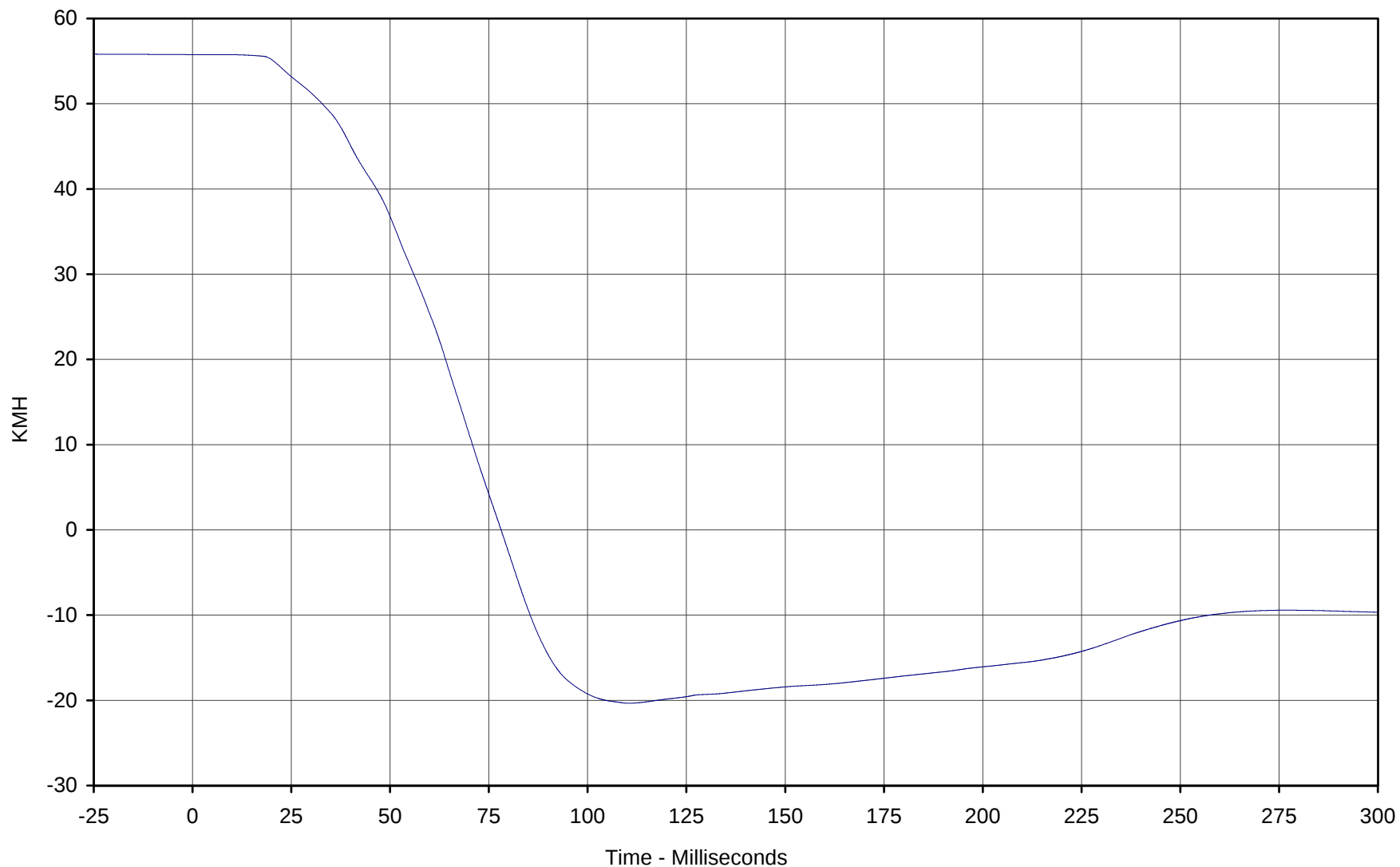
Curve Description: Passenger Chest Redundant X
Maximum Value: 4.9 at 236.6 Milliseconds
Minimum Value: -42.7 at 64.3 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-060

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 55.8 at 0.0 Milliseconds

Minimum Value: -20.3 at 110.5 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

Curve Number: IN1-060

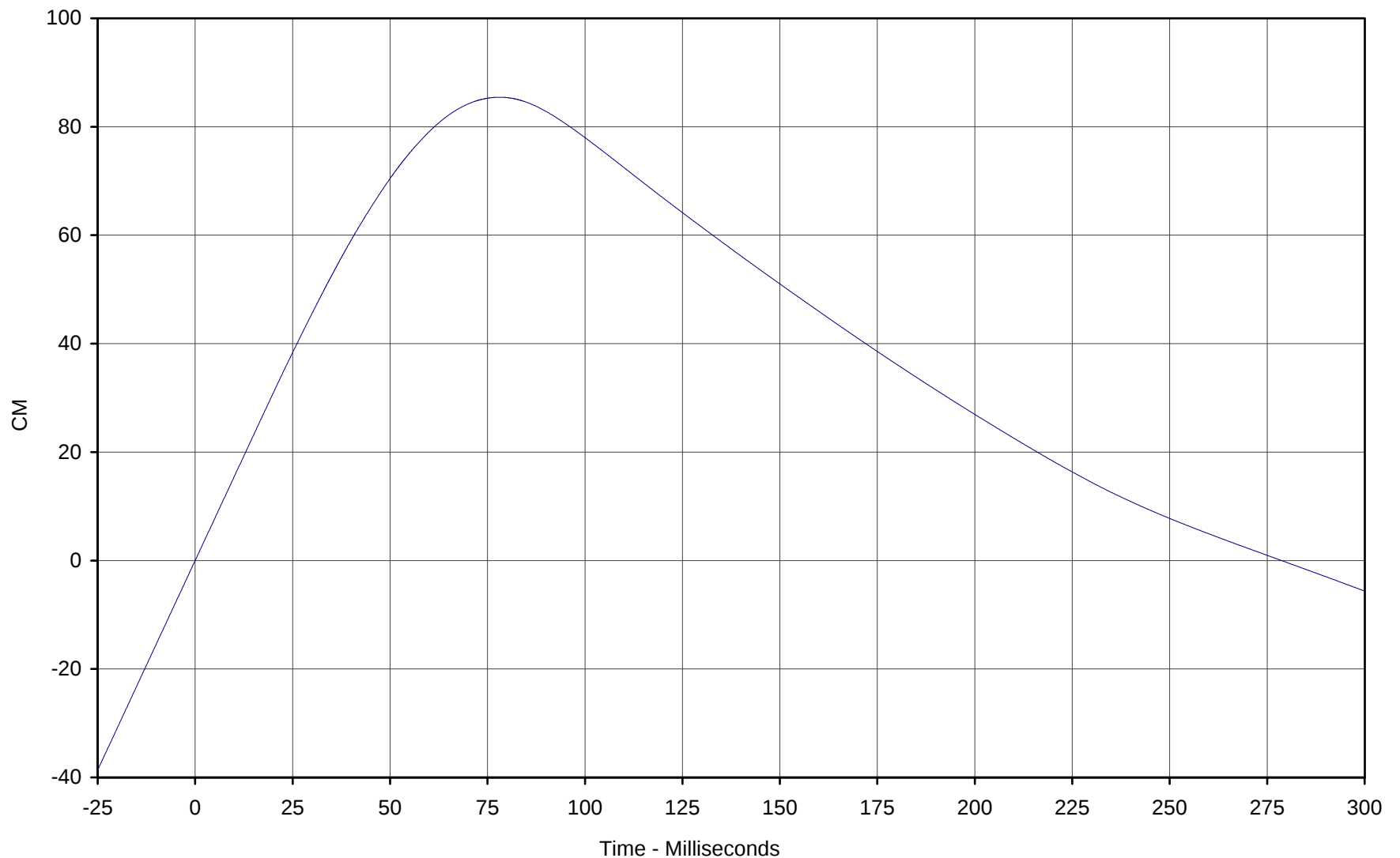
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 85.4 at 78.1 Milliseconds

Minimum Value: -5.6 at 299.9 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

Curve Number: IN2-060

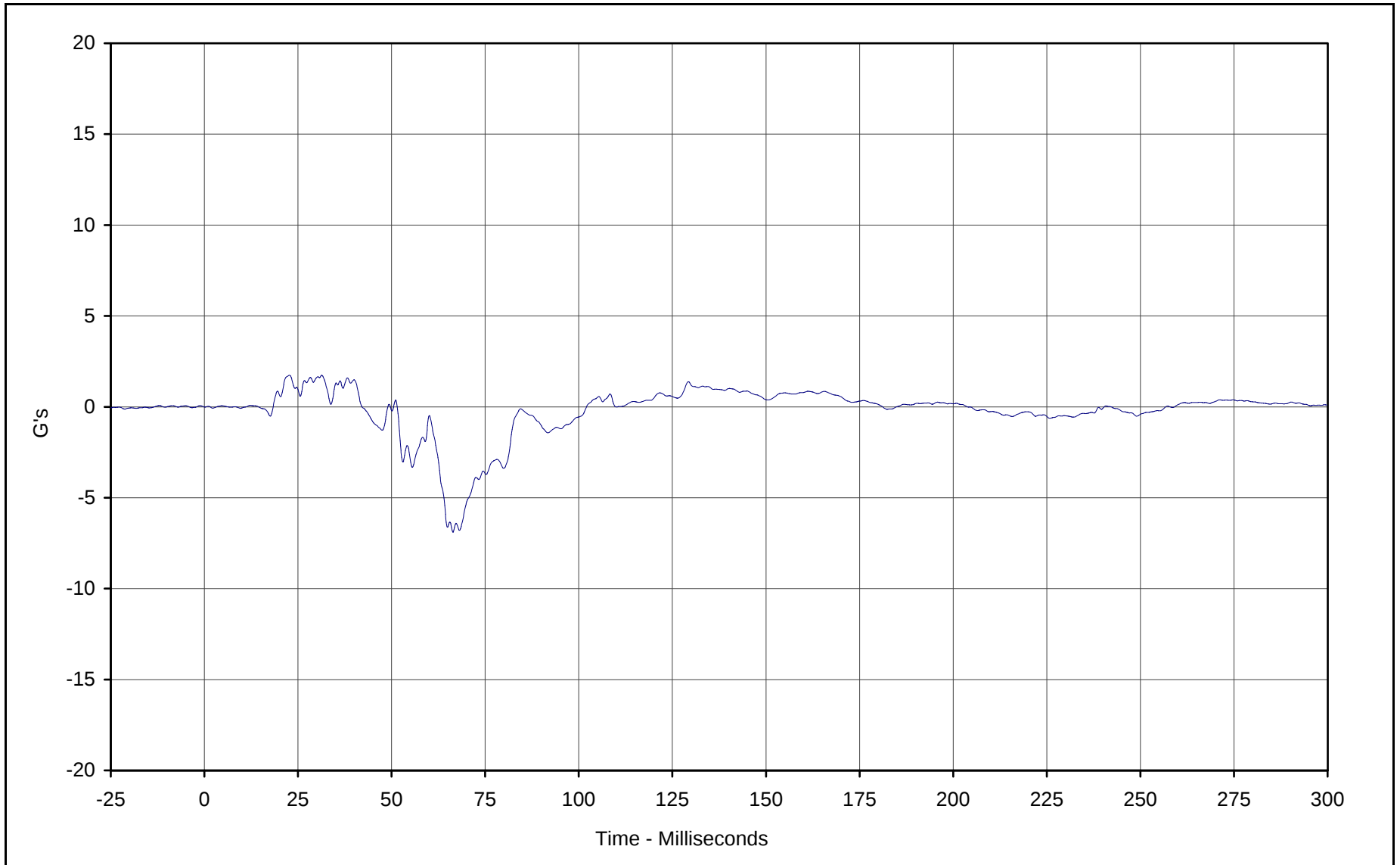
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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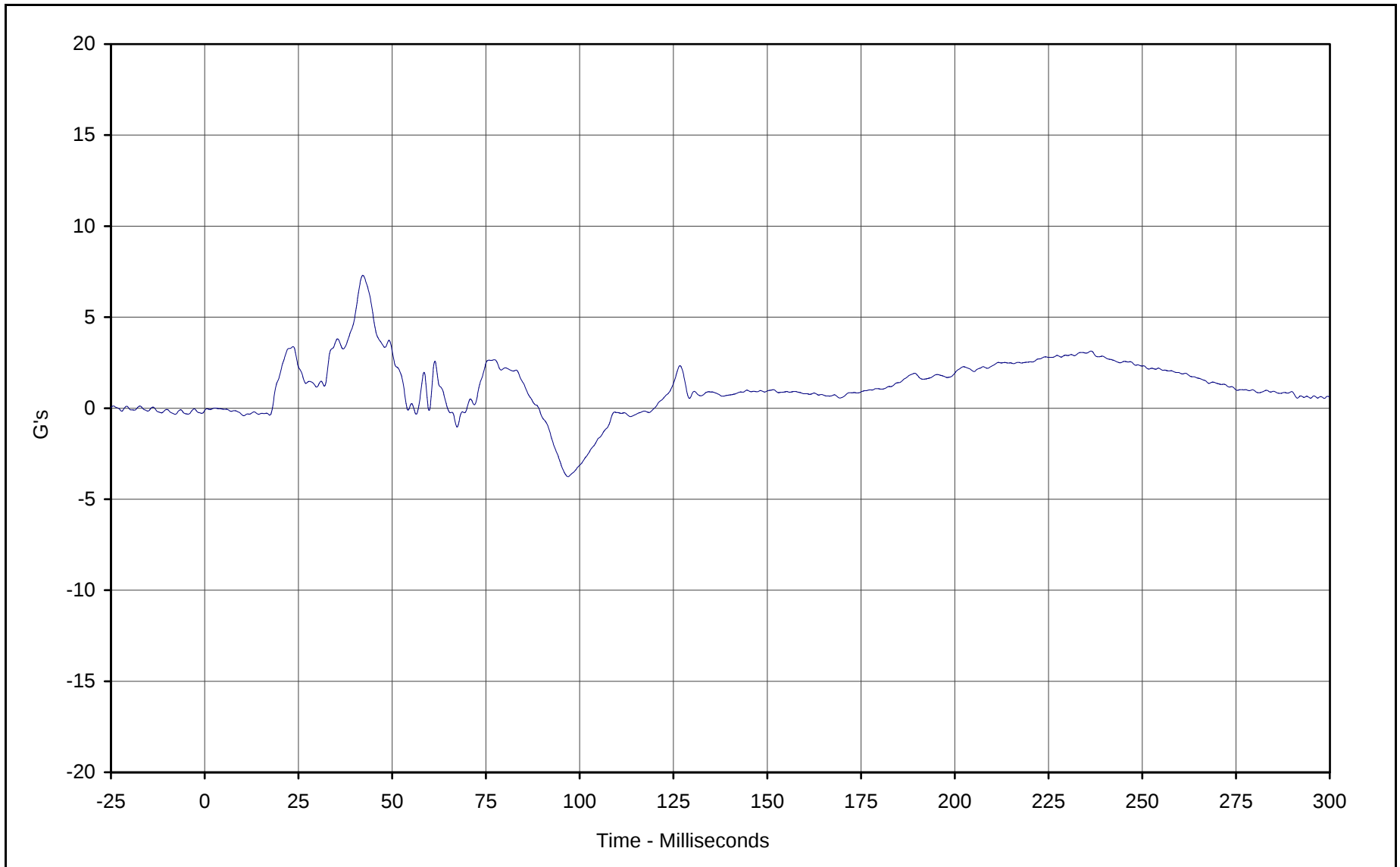
Curve Description: Passenger Chest Redundant Y
Maximum Value: 1.7 at 22.7 Milliseconds
Minimum Value: -6.9 at 66.4 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-061

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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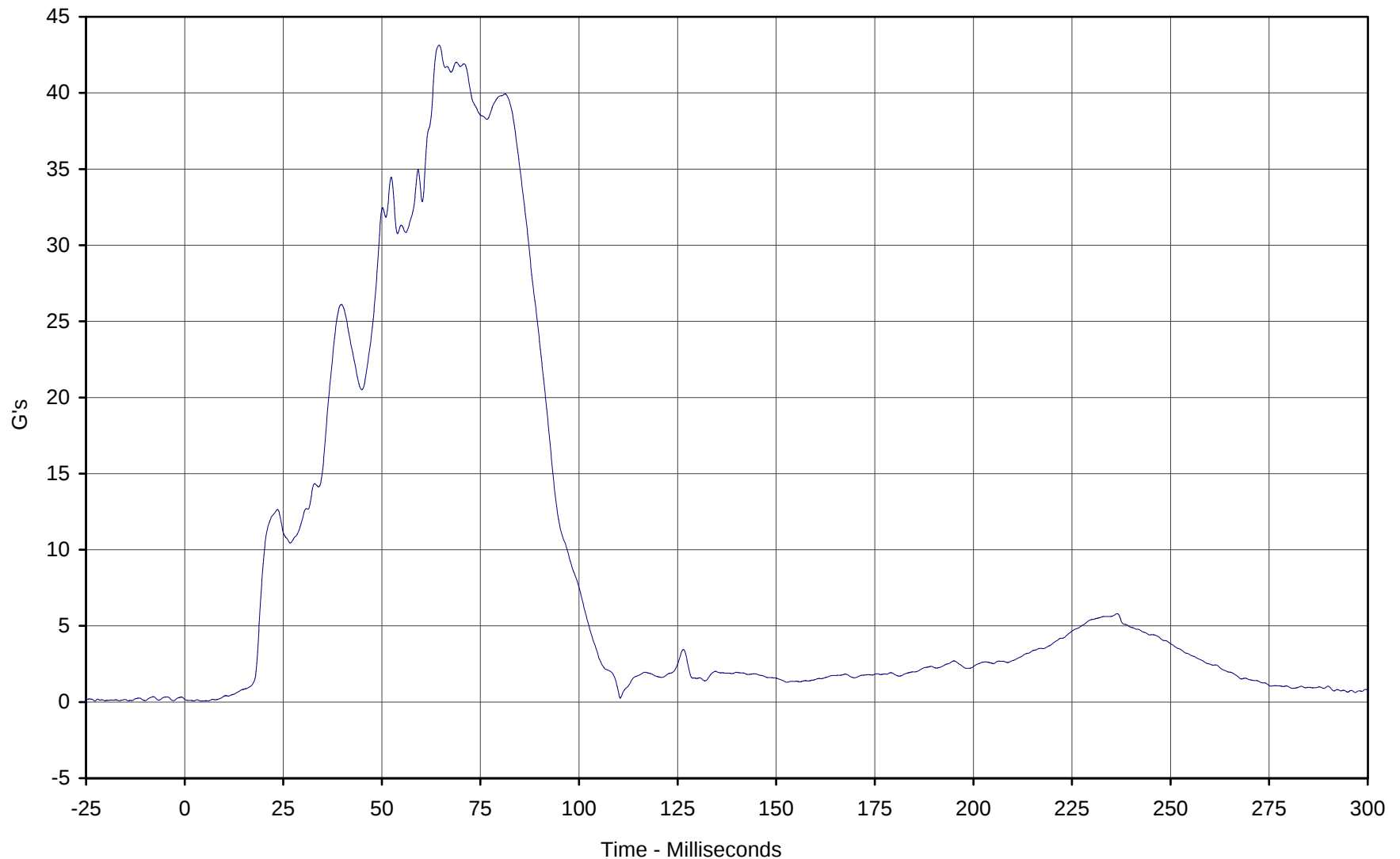
Curve Description: Passenger Chest Redundant Z
Maximum Value: 7.3 at 42.2 Milliseconds
Minimum Value: -3.8 at 96.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-062

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 43.1 at 64.5 Milliseconds

Minimum Value: 0.1 at 4.2 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

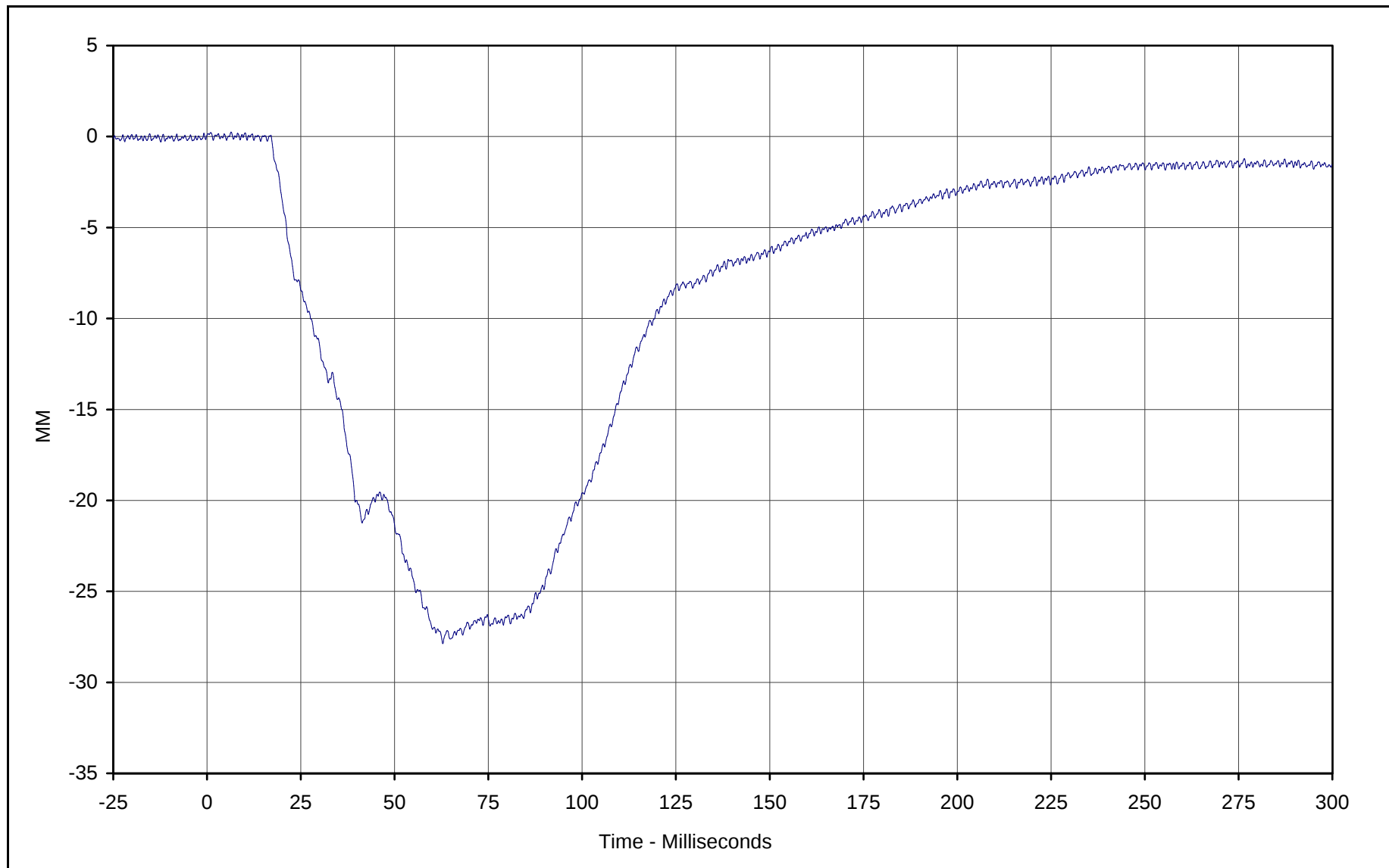
Curve Number: RES-060

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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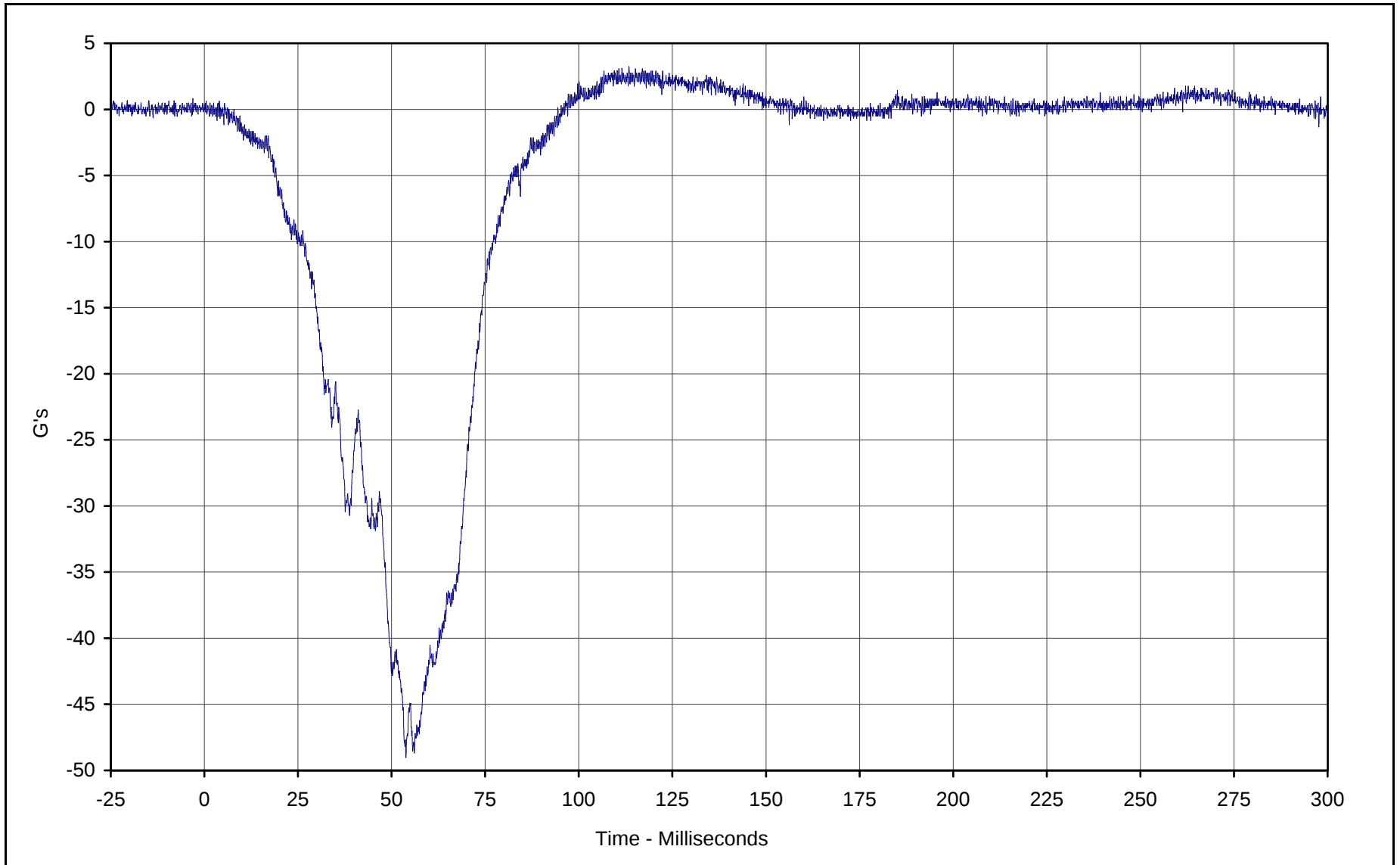


Curve Description: Passenger Chest Displacement X
Maximum Value: 0.3 at 6.4 Milliseconds
Minimum Value: -27.9 at 62.8 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-063

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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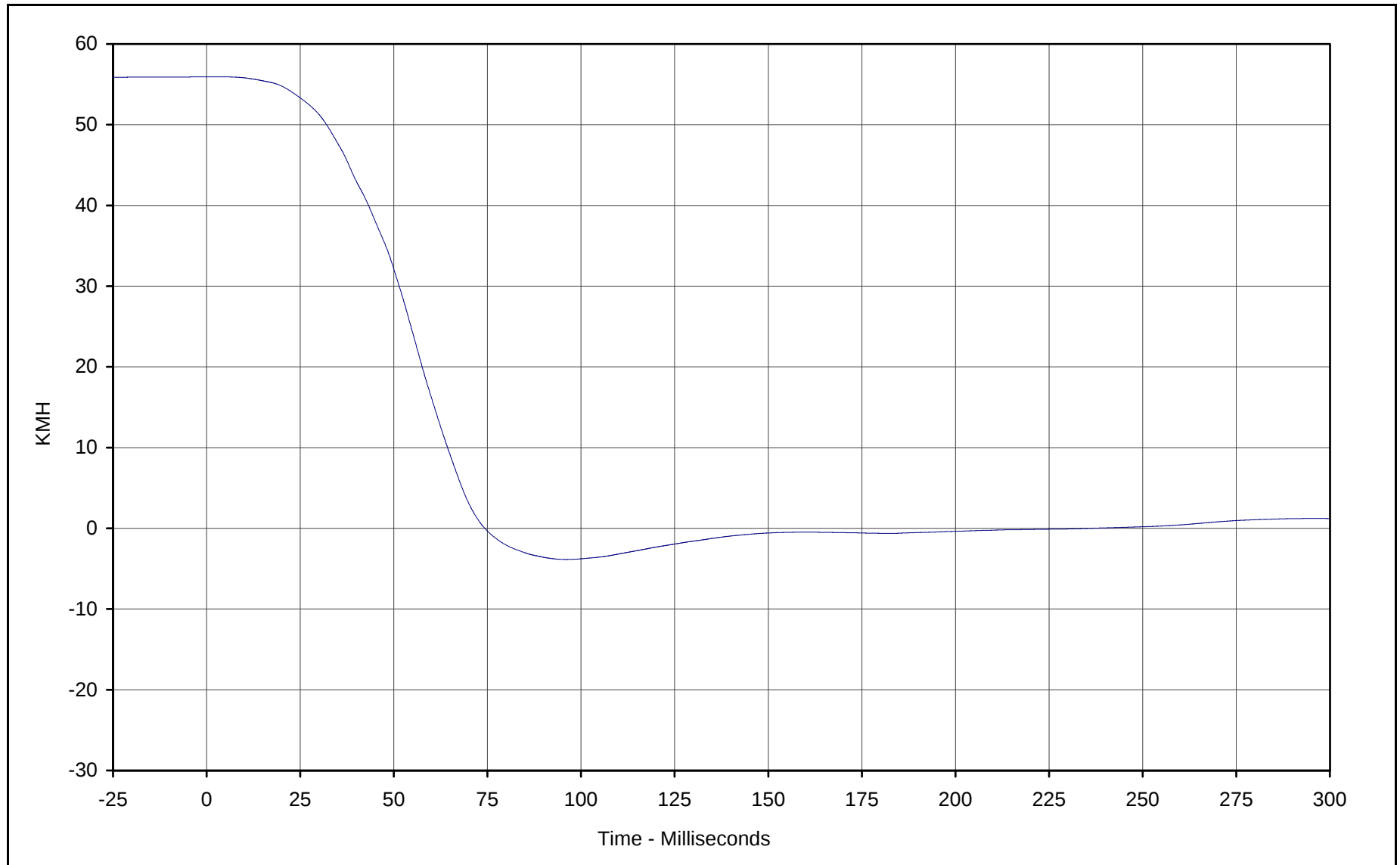
Curve Description: Passenger Pelvis X
Maximum Value: 3.2 at 113.4 Milliseconds
Minimum Value: -49.0 at 53.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-064

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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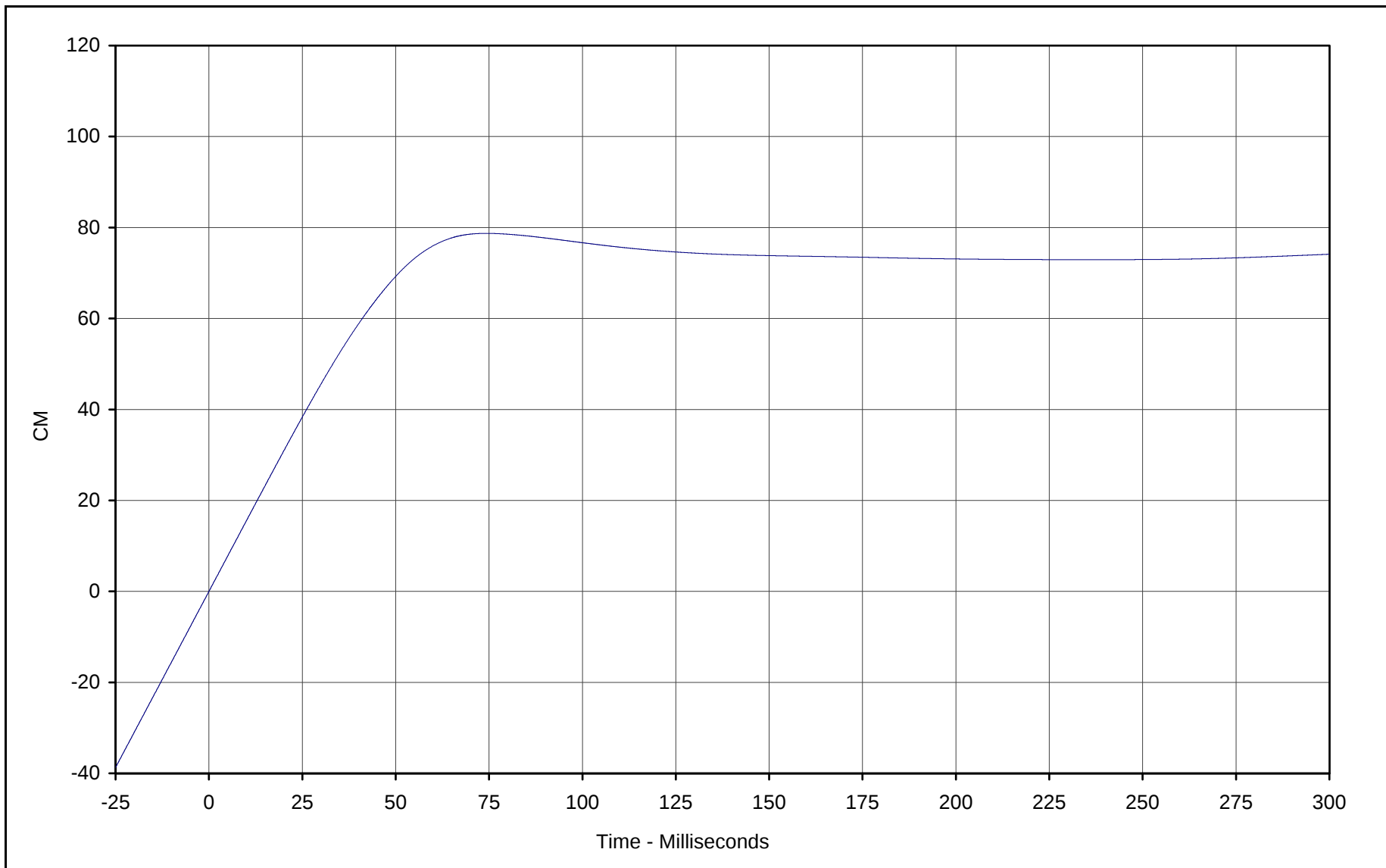
Curve Description: Passenger Pelvis X Velocity
Maximum Value: 55.9 at 1.1 Milliseconds
Minimum Value: -3.9 at 96.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-064

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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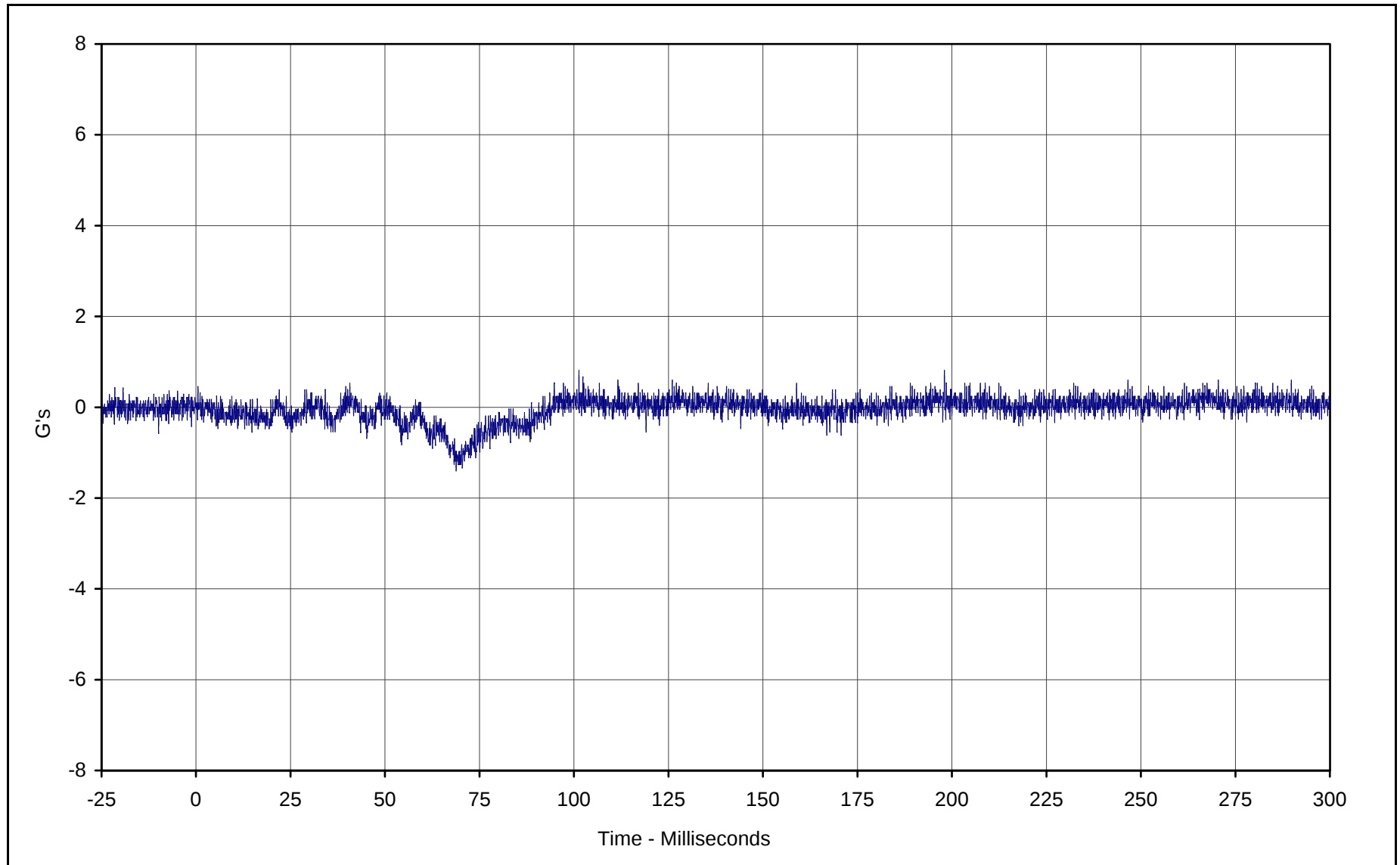
Curve Description: Passenger Pelvis X Displ.
Maximum Value: 78.7 at 74.3 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-064

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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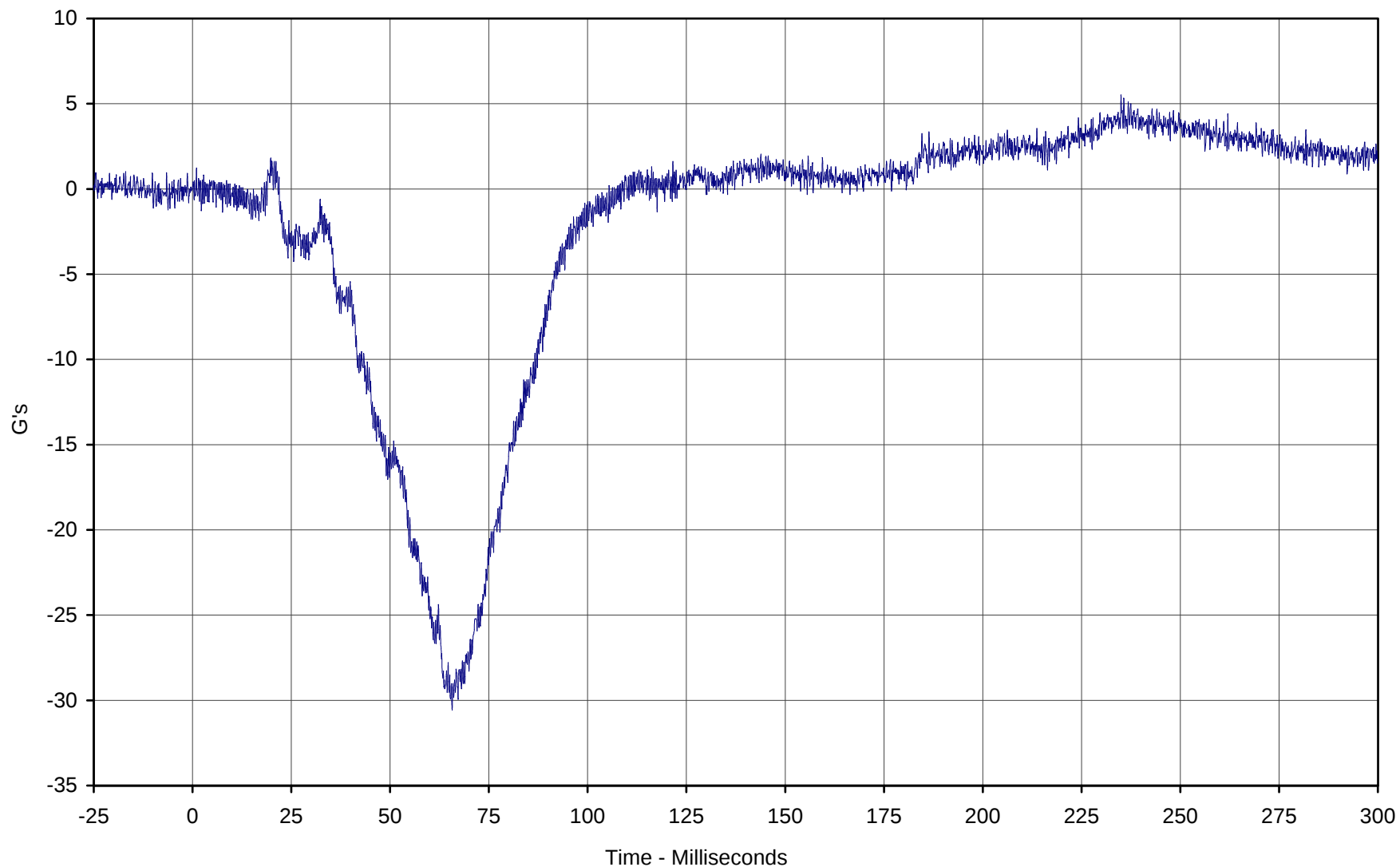
Curve Description: Passenger Pelvis Y
Maximum Value: 0.8 at 101.3 Milliseconds
Minimum Value: -1.4 at 68.8 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-065

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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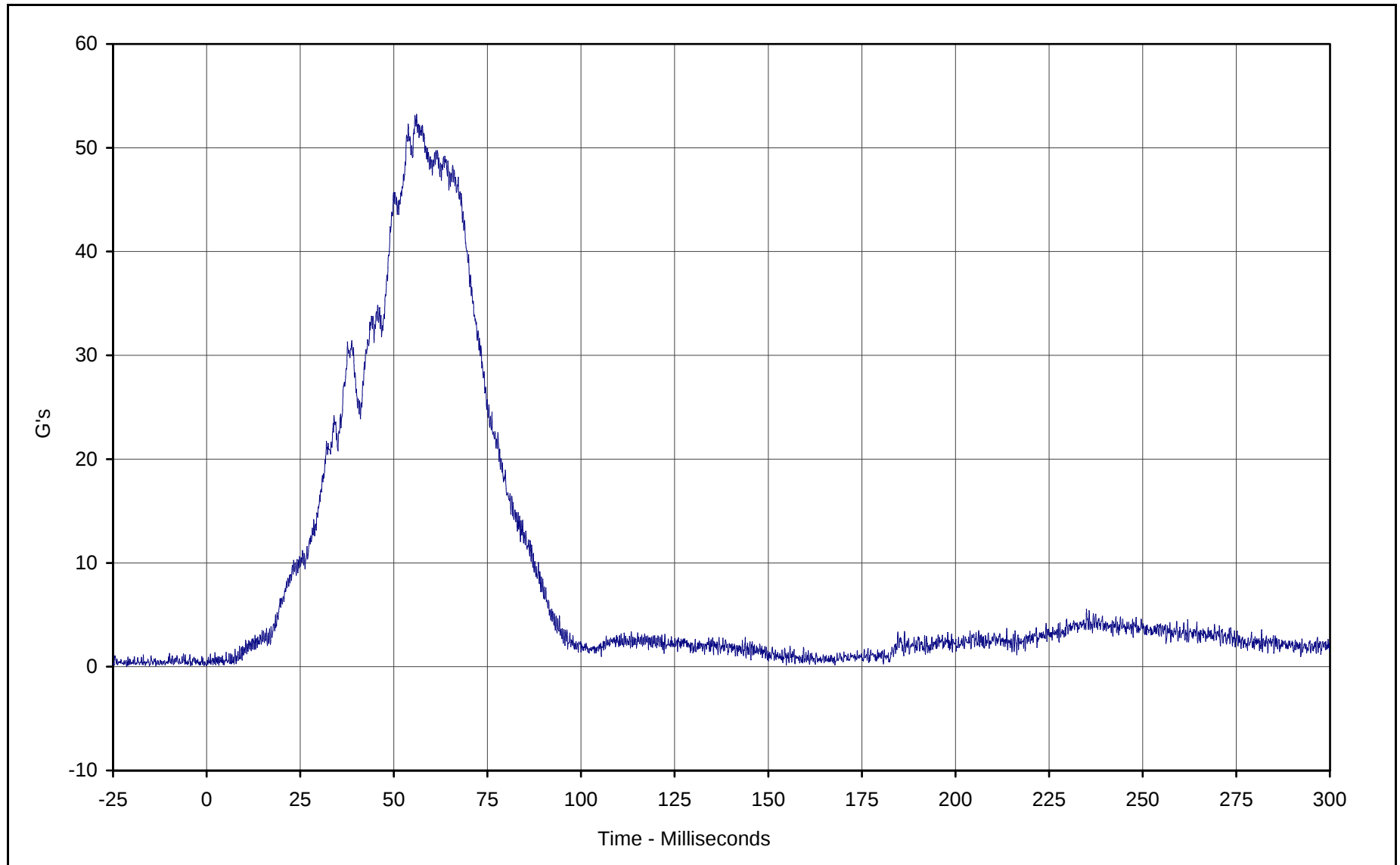
Curve Description: Passenger Pelvis Z
Maximum Value: 5.5 at 235.0 Milliseconds
Minimum Value: -30.5 at 65.7 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: FIL-066

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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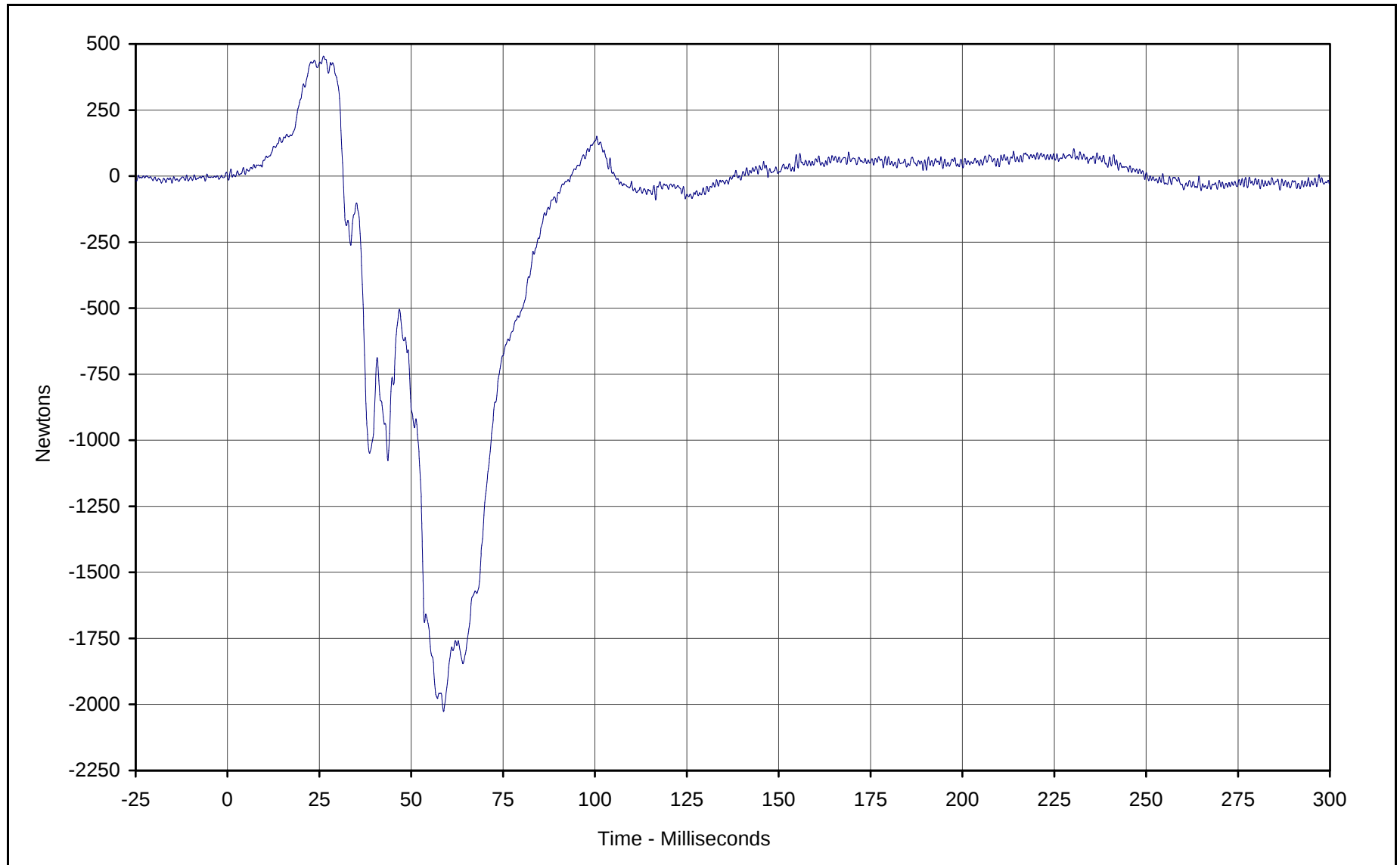
Curve Description: Passenger Pelvis Resultant
Maximum Value: 53.2 at 56.1 Milliseconds
Minimum Value: 0.1 at 0.0 Milliseconds
SAE Filter Class: 1000
Date of Test: 12/4/01
Curve Number: RES-064

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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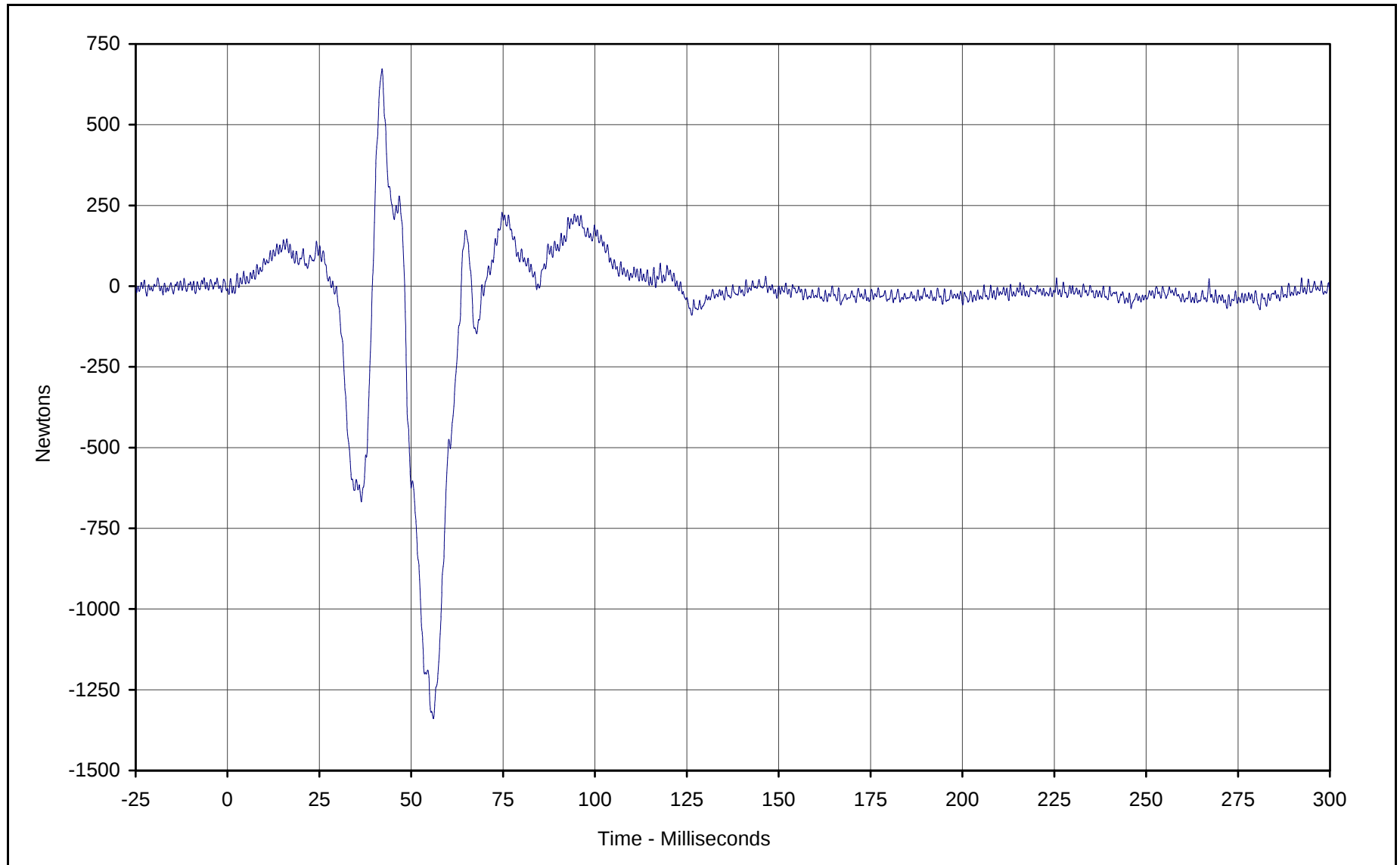
Curve Description: Passenger Left Femur Force
Maximum Value: 454.2 at 26.1 Milliseconds
Minimum Value: -2026.9 at 58.8 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-067

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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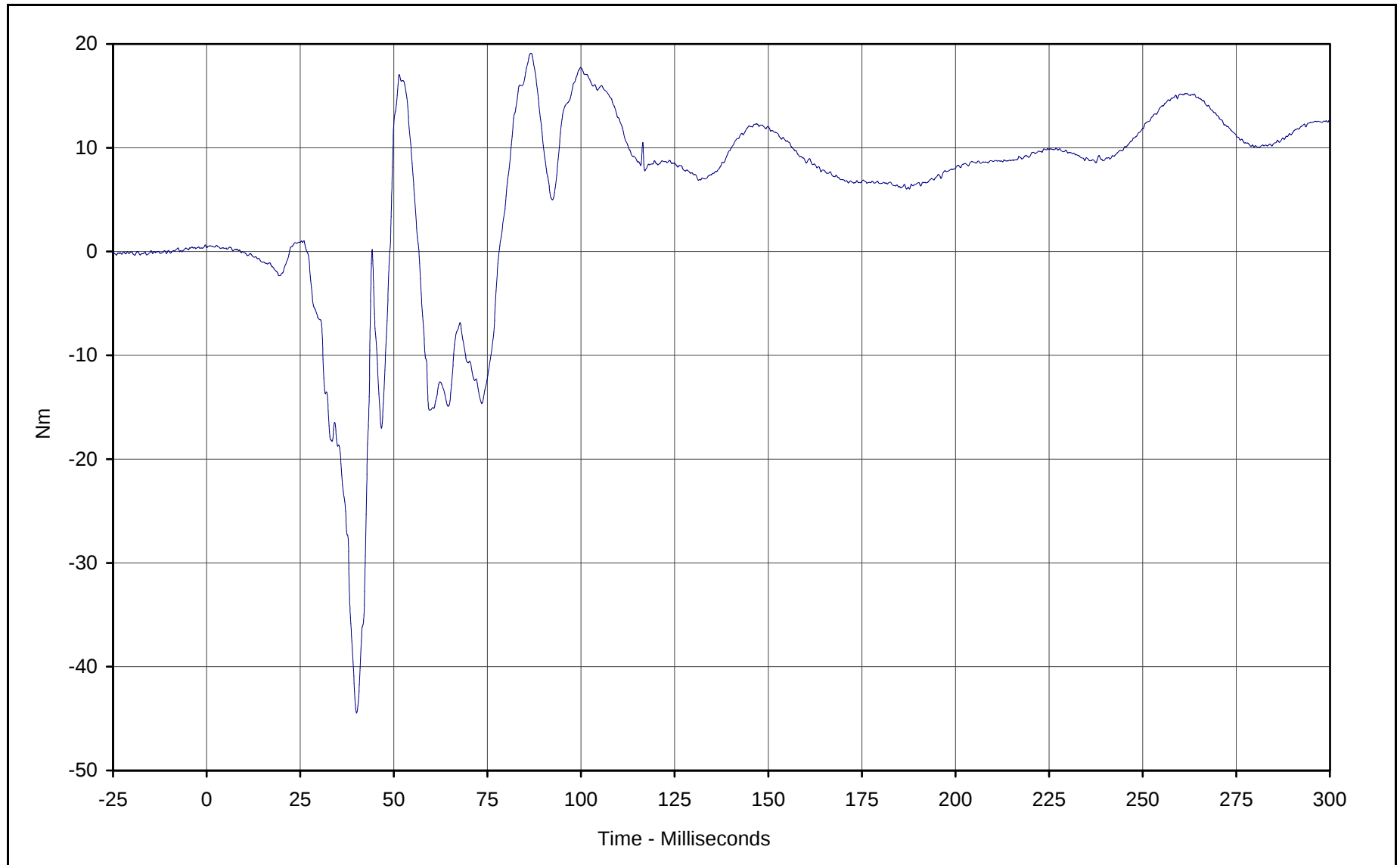
Curve Description: Passenger Right Femur Force
Maximum Value: 673.2 at 42.1 Milliseconds
Minimum Value: -1339.7 at 56.0 Milliseconds
SAE Filter Class: 600
Date of Test: 12/4/01
Curve Number: FIL-068

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 19.1 at 86.7 Milliseconds

Minimum Value: -44.5 at 40.0 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

Curve Number: FIL-069

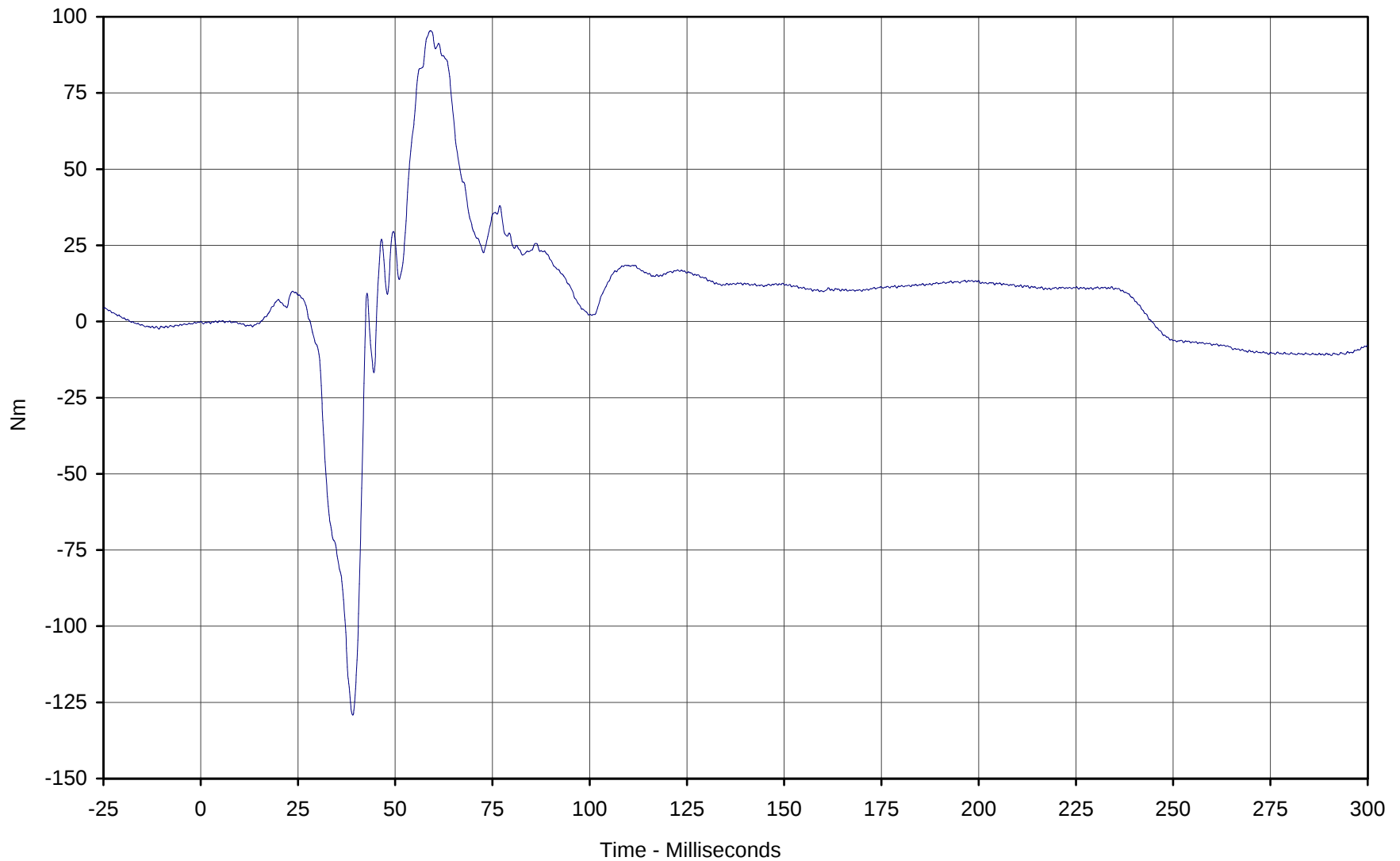
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 95.4 at 59.1 Milliseconds

Minimum Value: -129.2 at 39.1 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

Curve Number: FIL-070

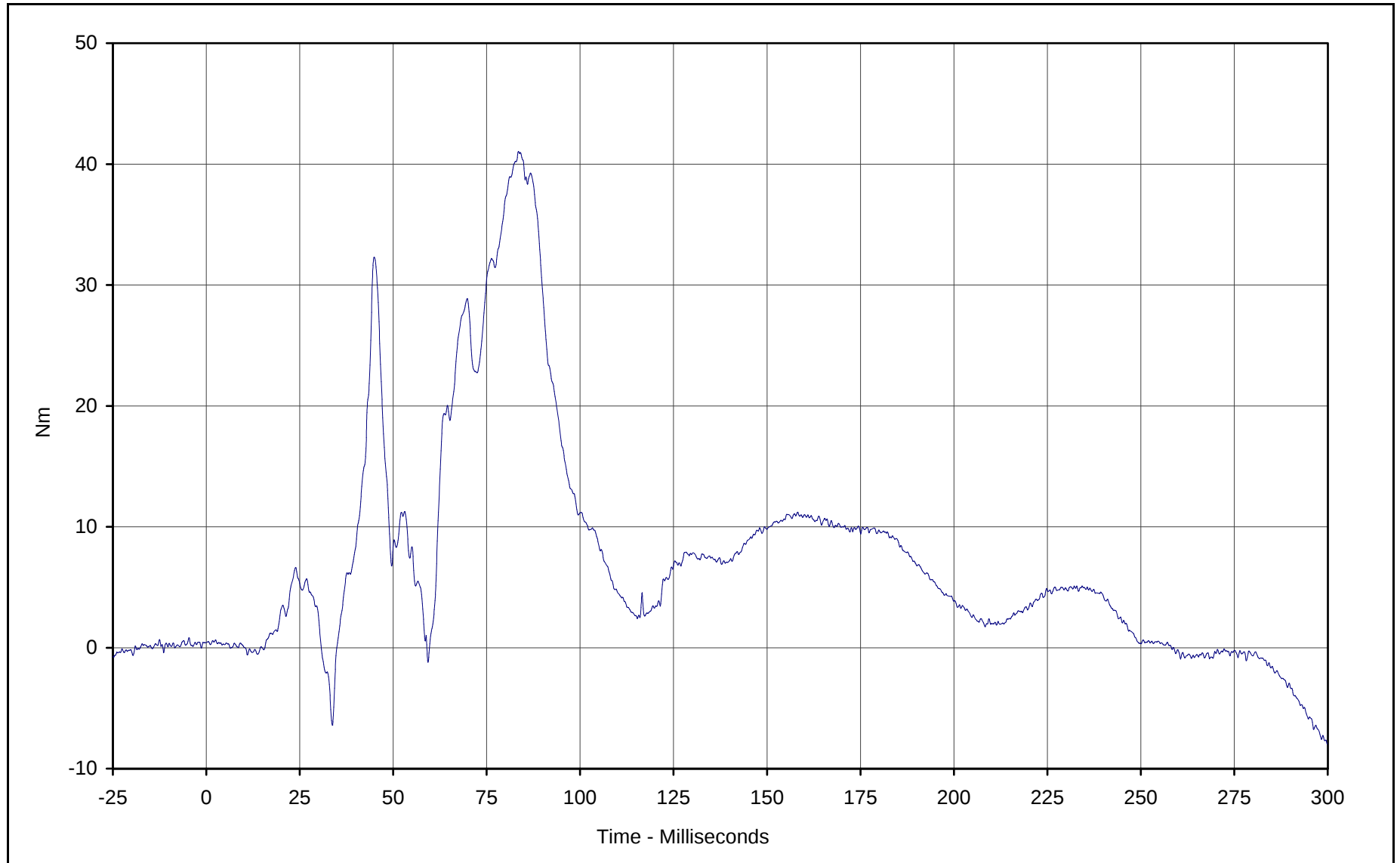
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 41.1 at 83.5 Milliseconds

Minimum Value: -8.0 at 299.9 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

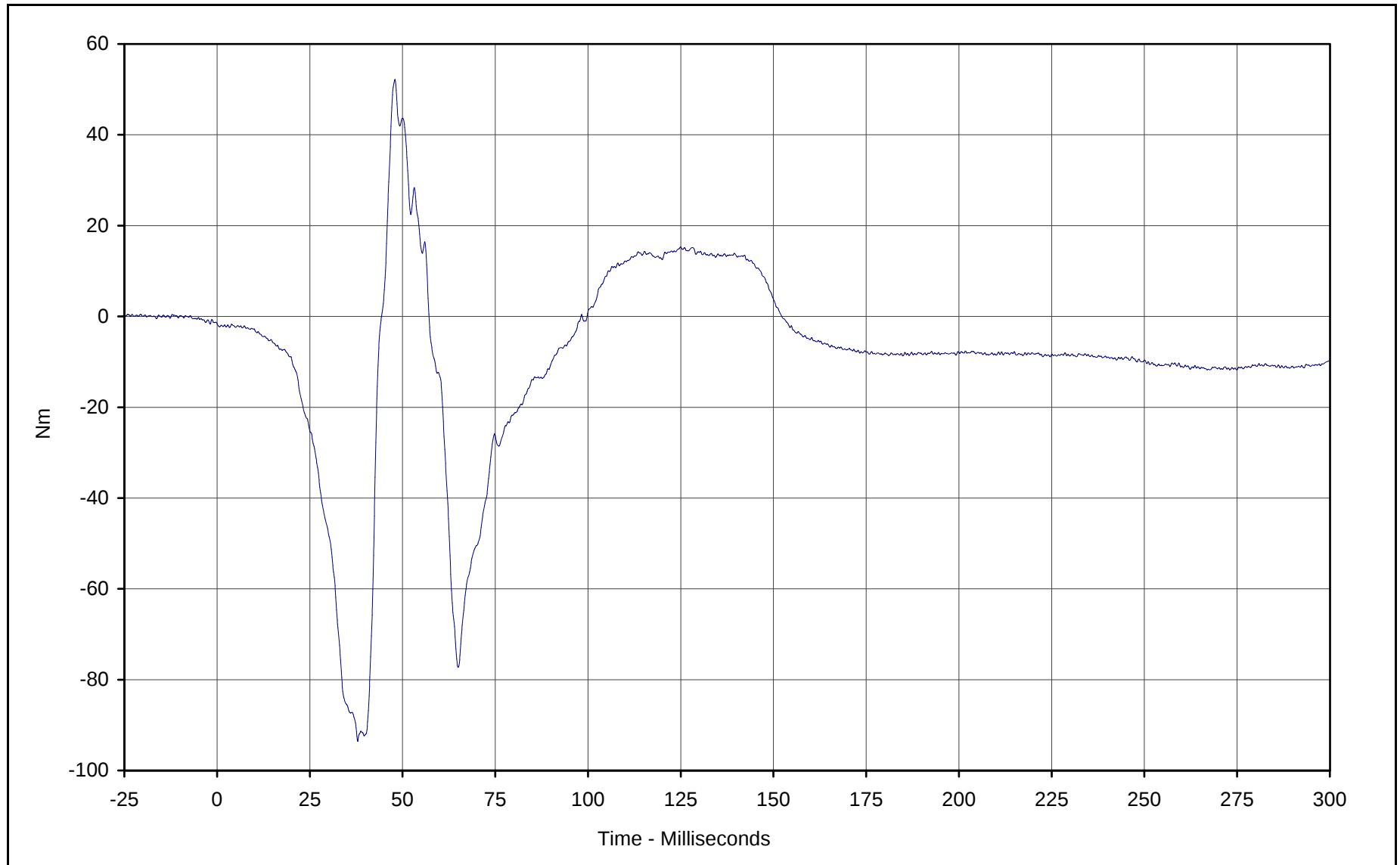
Curve Number: FIL-071

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 52.2 at 48.0 Milliseconds

Minimum Value: -93.6 at 37.9 Milliseconds

SAE Filter Class: 600

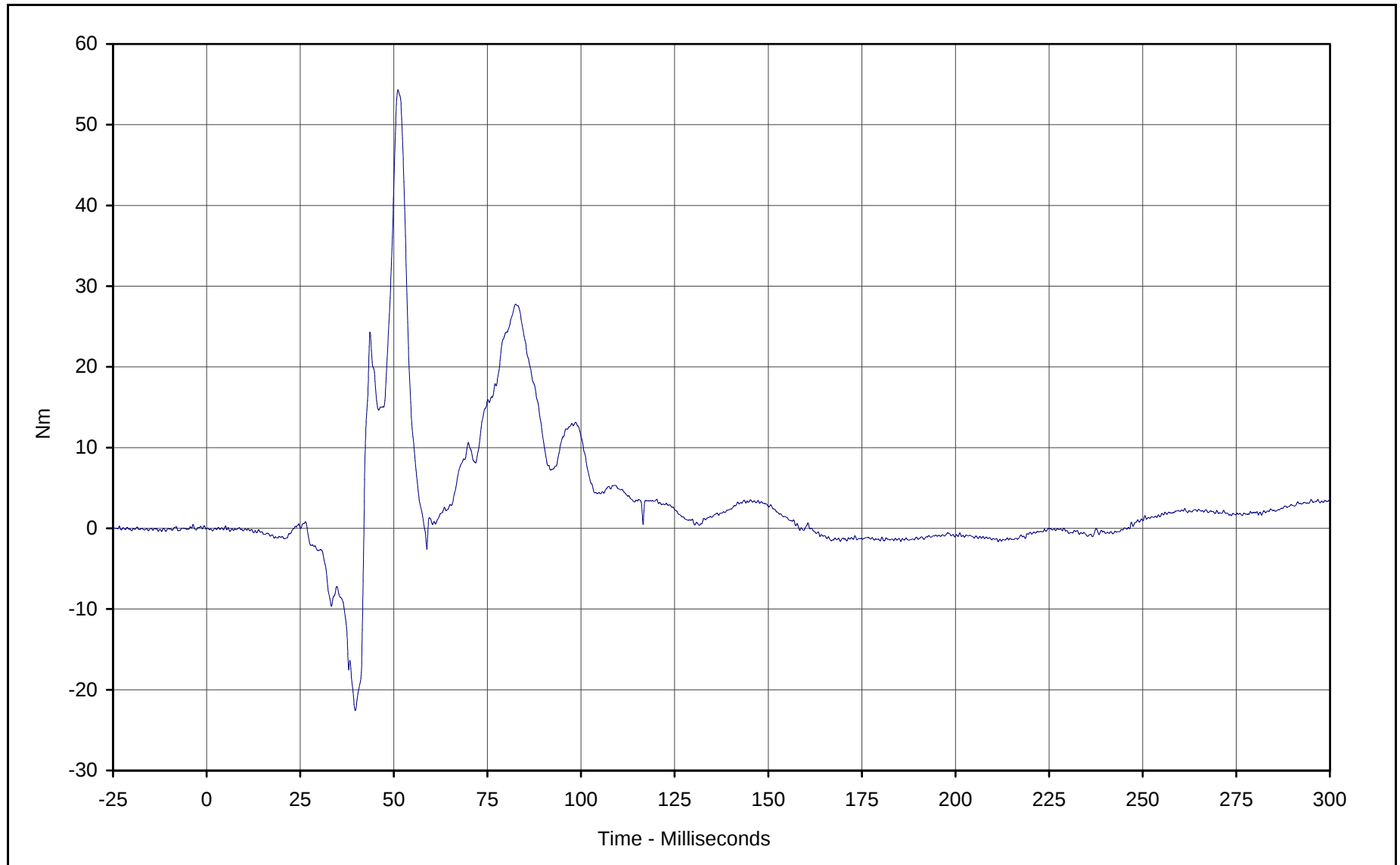
Date of Test: 12/4/01

Curve Number: FIL-072

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment X

Maximum Value: 54.3 at 51.1 Milliseconds

Minimum Value: -22.6 at 39.7 Milliseconds

SAE Filter Class: 600

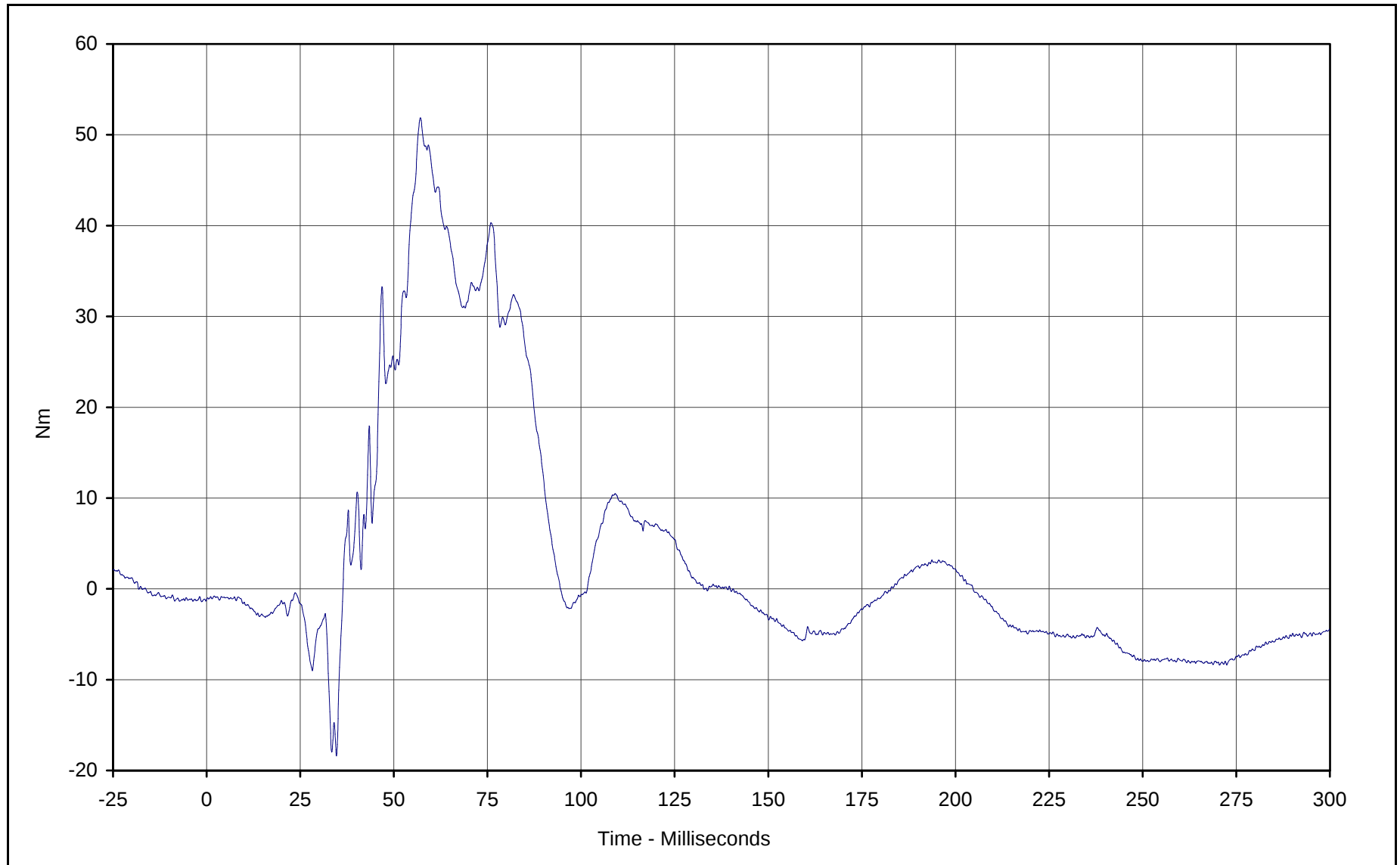
Date of Test: 12/4/01

Curve Number: FIL-073

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Moment Y

Maximum Value: 51.9 at 57.1 Milliseconds

Minimum Value: -18.4 at 34.7 Milliseconds

SAE Filter Class: 600

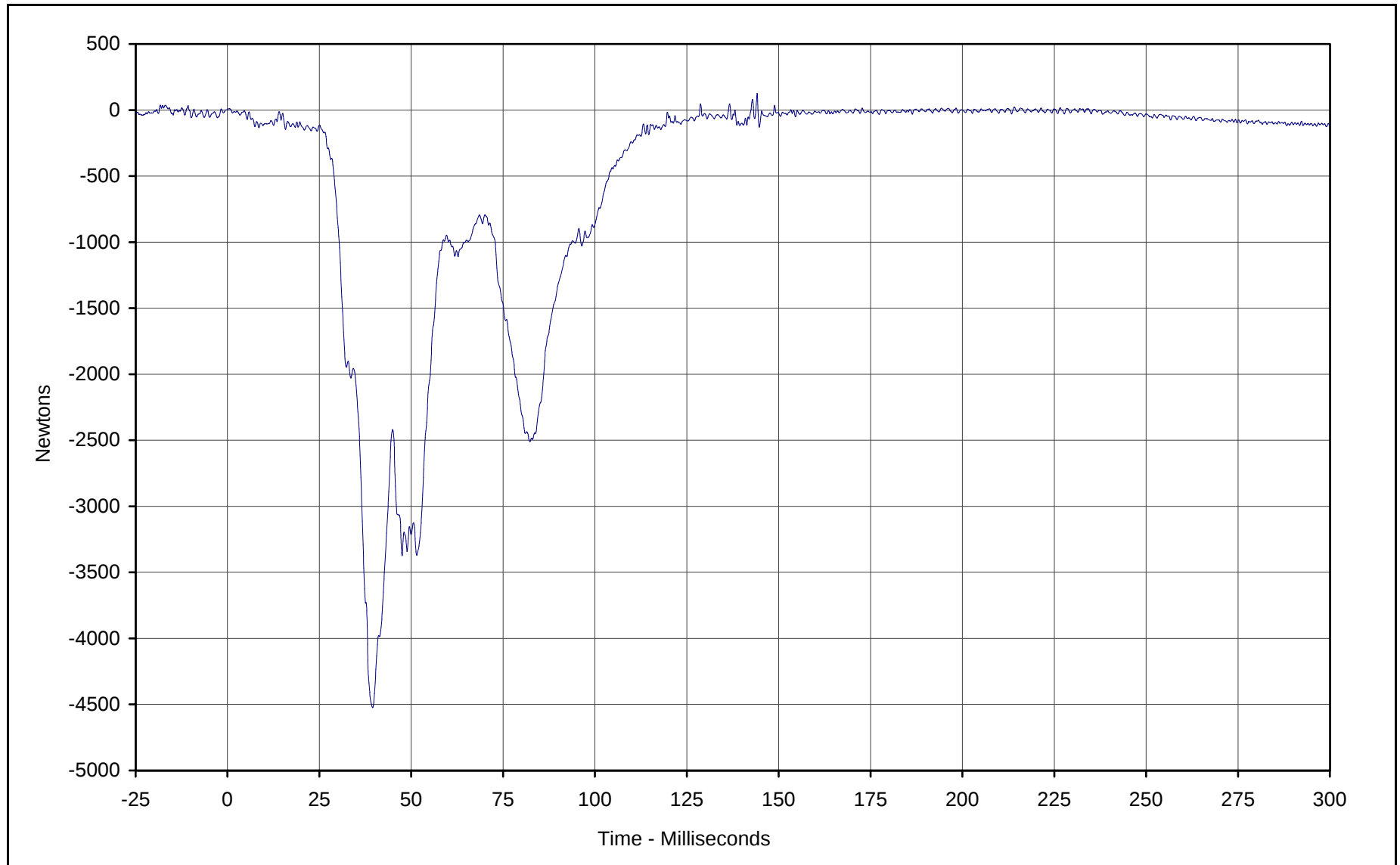
Date of Test: 12/4/01

Curve Number: FIL-074

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan





Curve Description: Passenger Left Lower Tibia Force Z

Maximum Value: 125.5 at 144.1 Milliseconds

Minimum Value: -4523.2 at 39.5 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

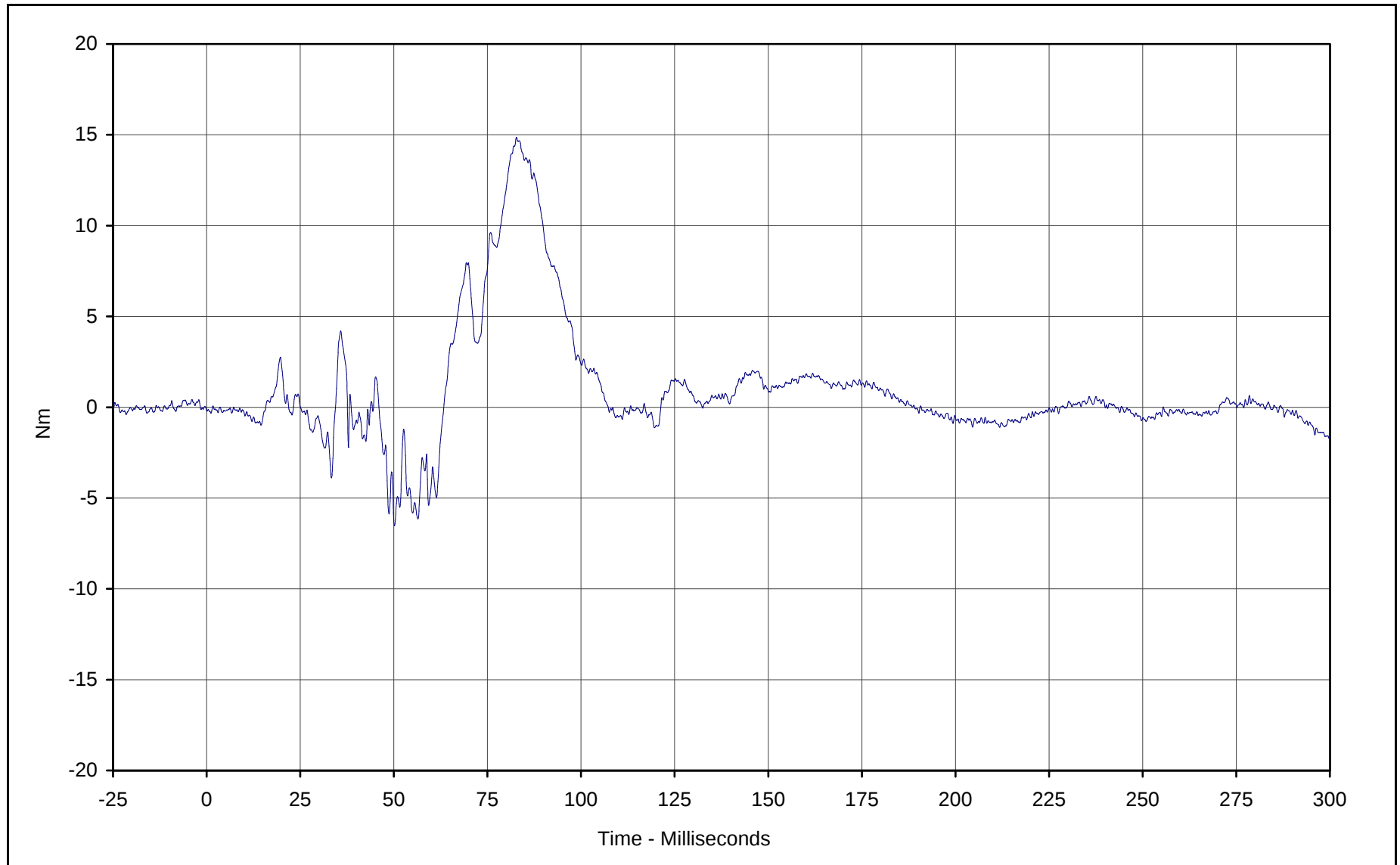
Curve Number: FIL-075

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 14.9 at 82.8 Milliseconds

Minimum Value: -6.5 at 50.2 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

Curve Number: FIL-076

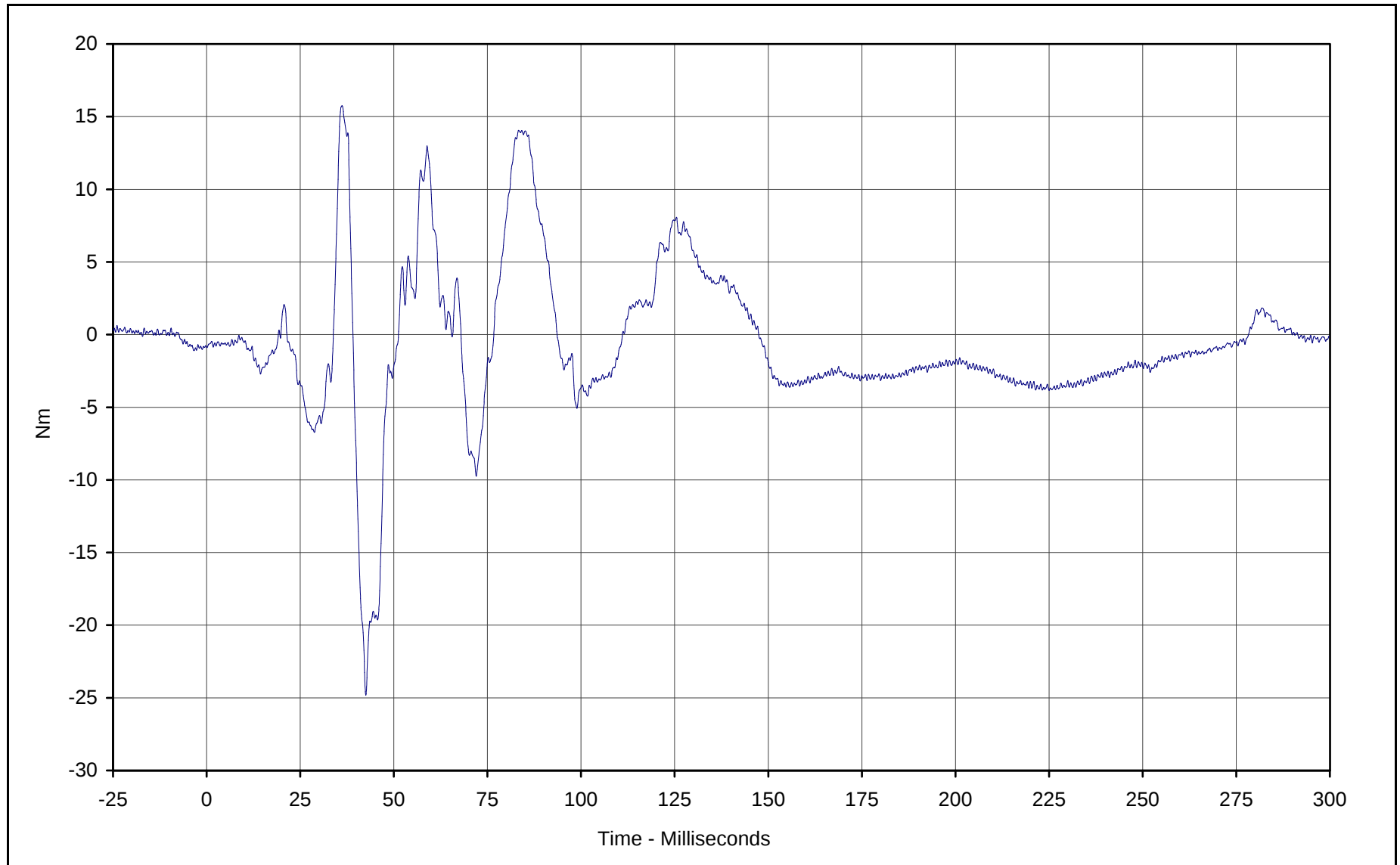
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Right Lower Tibia Moment Y

Maximum Value: 15.7 at 36.2 Milliseconds

Minimum Value: -24.8 at 42.5 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

Curve Number: FIL-077

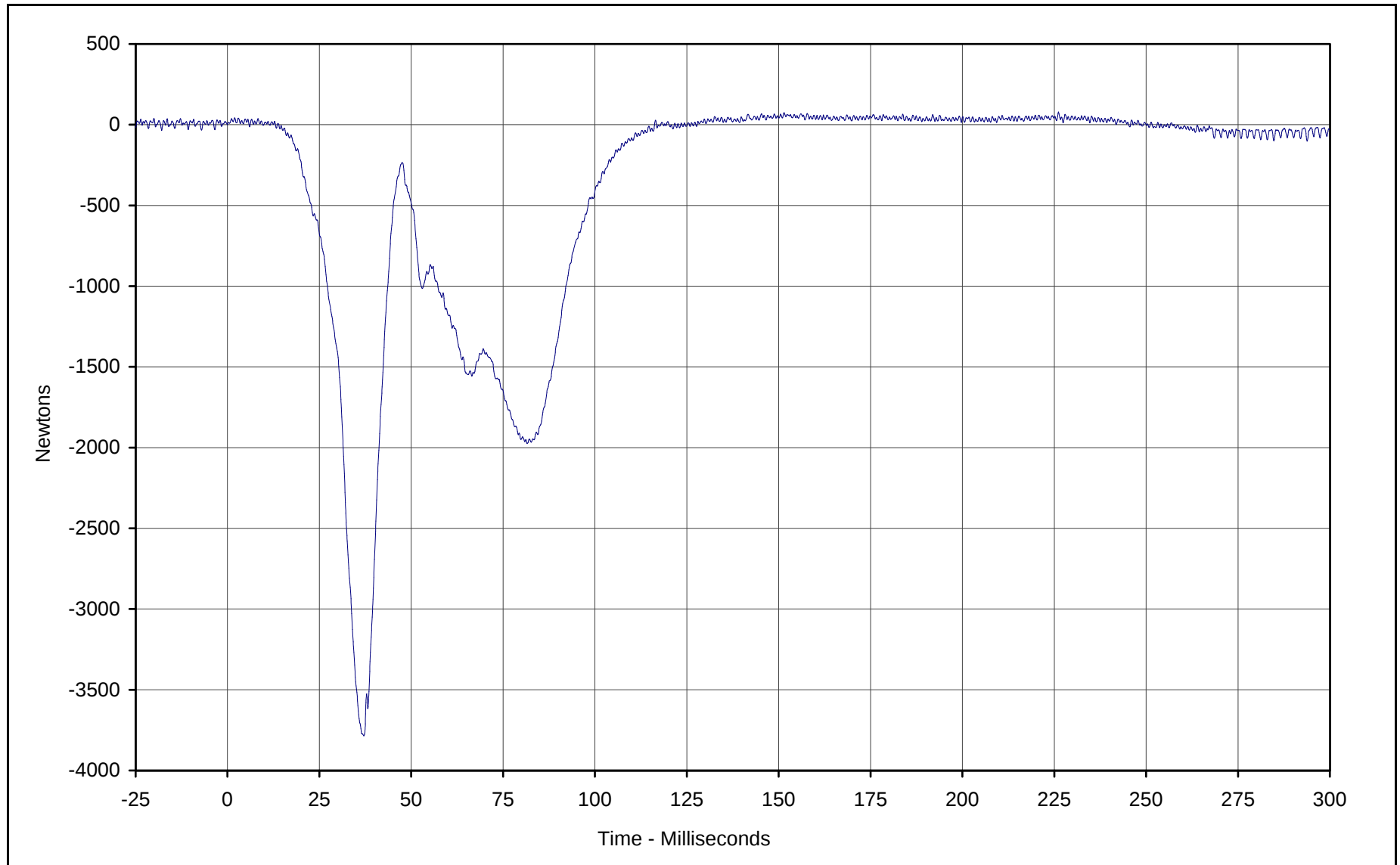
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Right lower Tibia Force Z

Maximum Value: 79.1 at 226.1 Milliseconds

Minimum Value: -3784.7 at 37.1 Milliseconds

SAE Filter Class: 600

Date of Test: 12/4/01

Curve Number: FIL-078

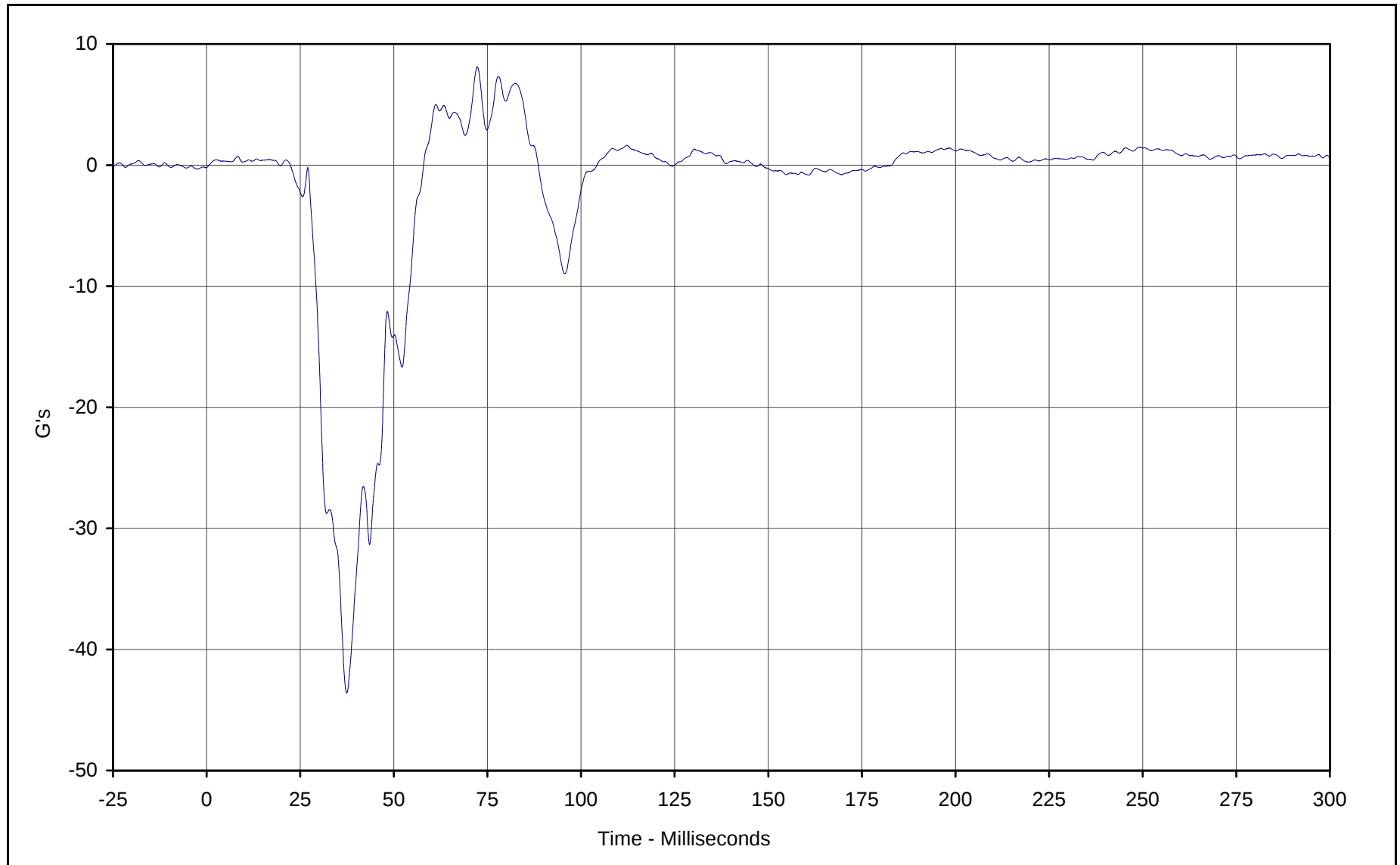
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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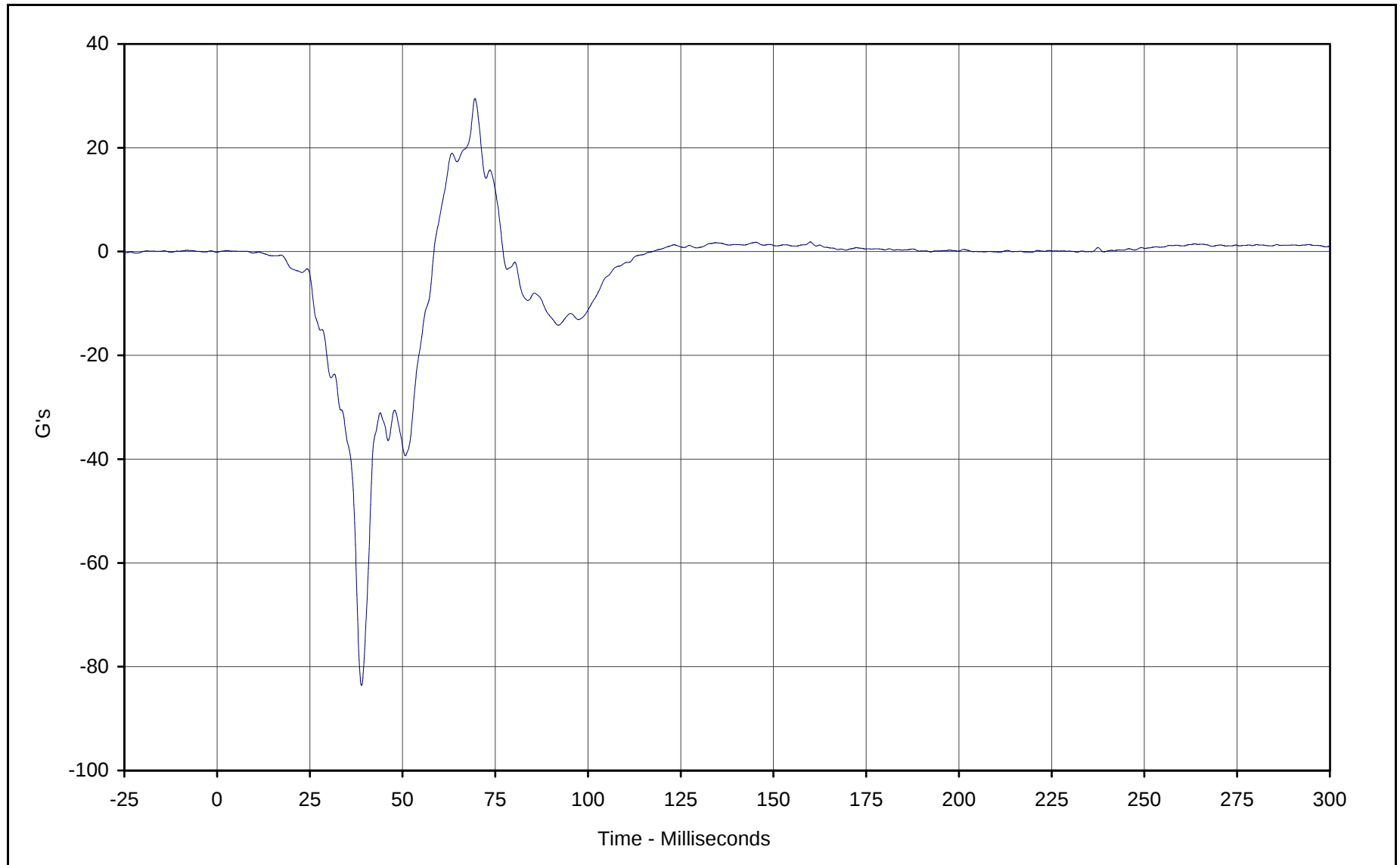
Curve Description: Passenger Left Foot Aft X
Maximum Value: 8.1 at 72.3 Milliseconds
Minimum Value: -43.6 at 37.4 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-079

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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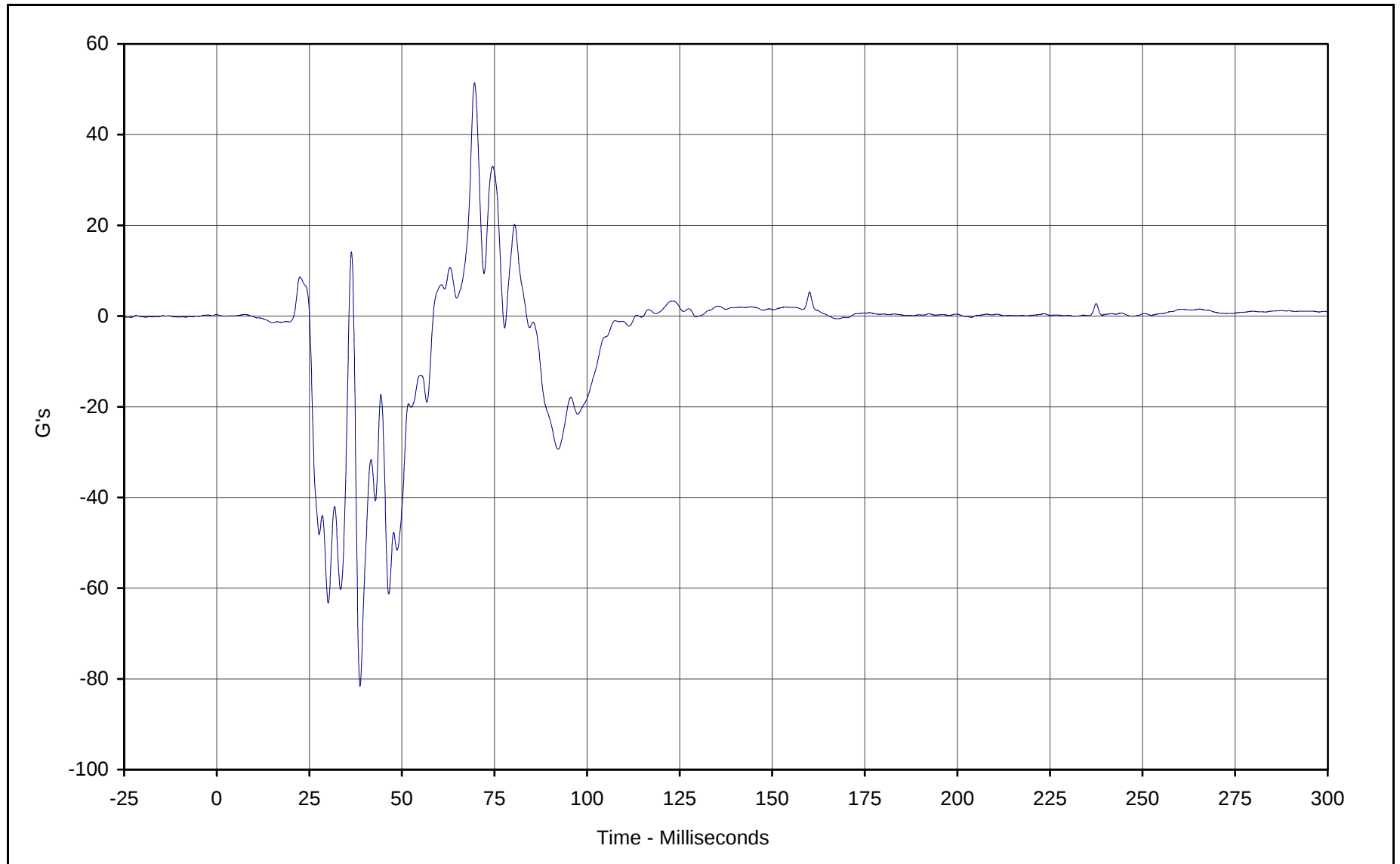
Curve Description: Passenger Left Foot Aft Z
Maximum Value: 29.5 at 69.5 Milliseconds
Minimum Value: -83.6 at 38.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-080

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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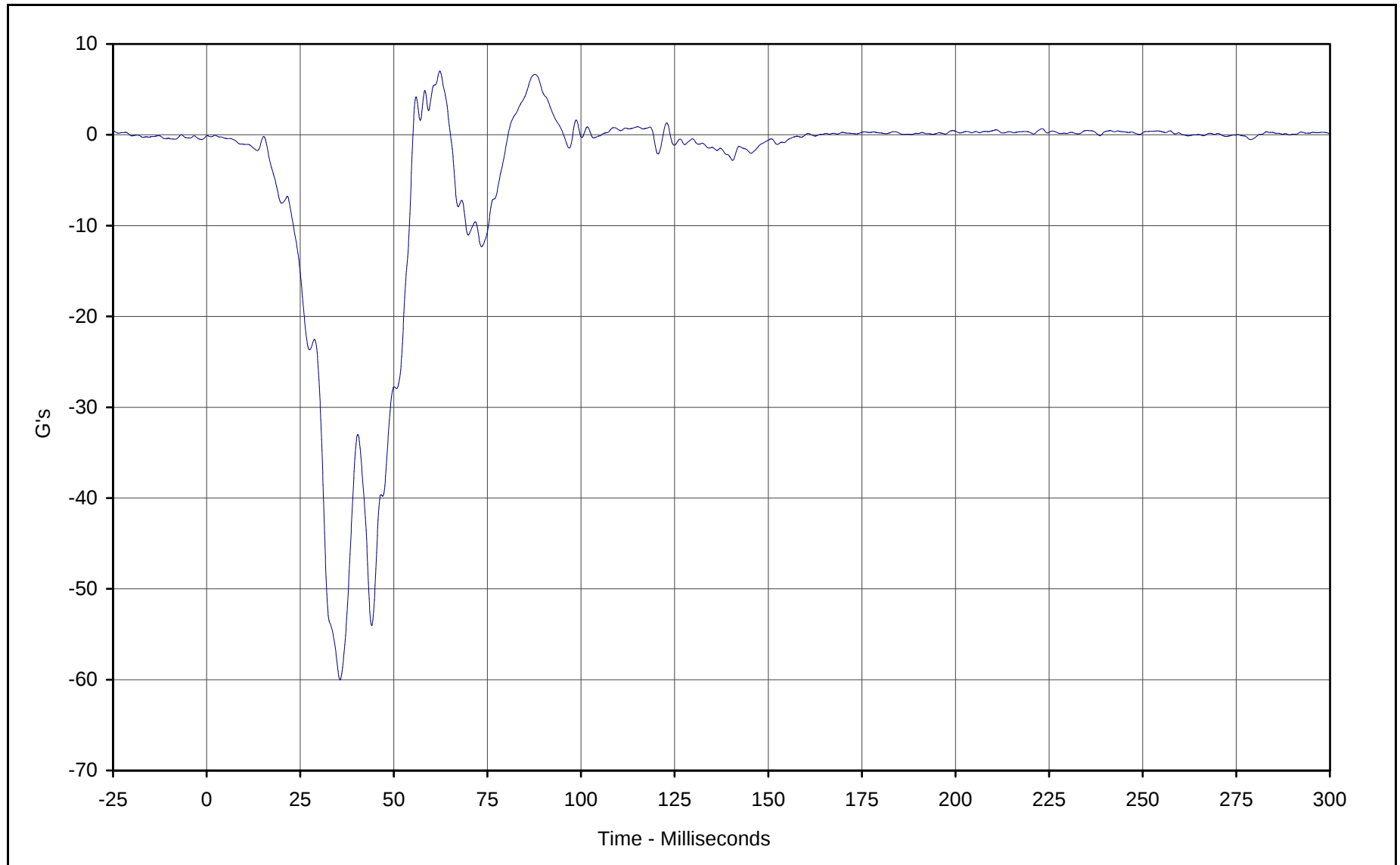
Curve Description: Passenger Left Foot Fore Z
Maximum Value: 51.4 at 69.6 Milliseconds
Minimum Value: -81.7 at 38.7 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-081

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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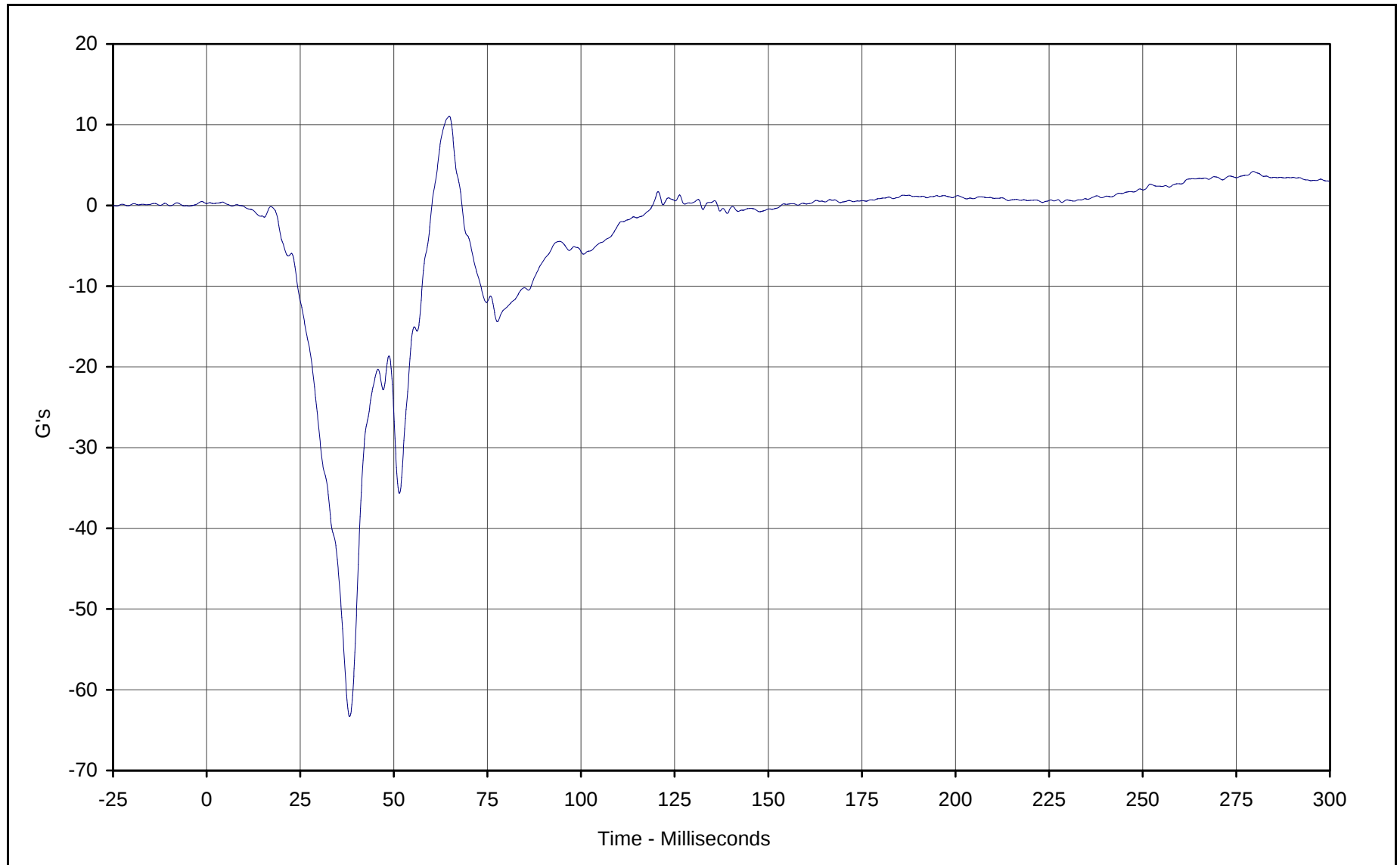
Curve Description: Passenger Right Foot Aft X
Maximum Value: 7.0 at 62.3 Milliseconds
Minimum Value: -60.0 at 35.6 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-082

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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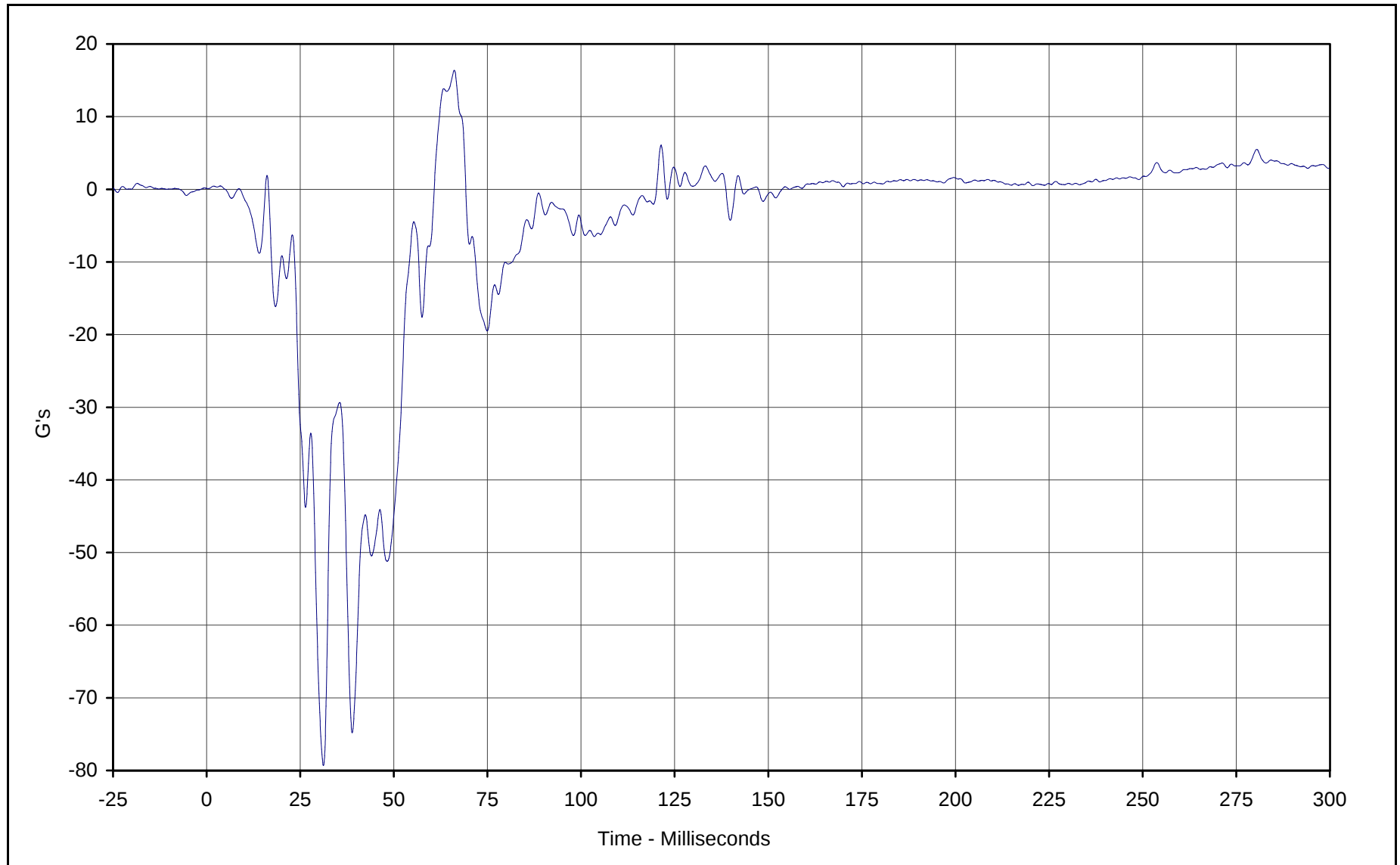
Curve Description: Passenger Right Foot Aft Z
Maximum Value: 11.0 at 64.8 Milliseconds
Minimum Value: -63.3 at 38.2 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-083

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Right Foot Fore Z
Maximum Value: 16.4 at 66.1 Milliseconds
Minimum Value: -79.3 at 31.2 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: FIL-084

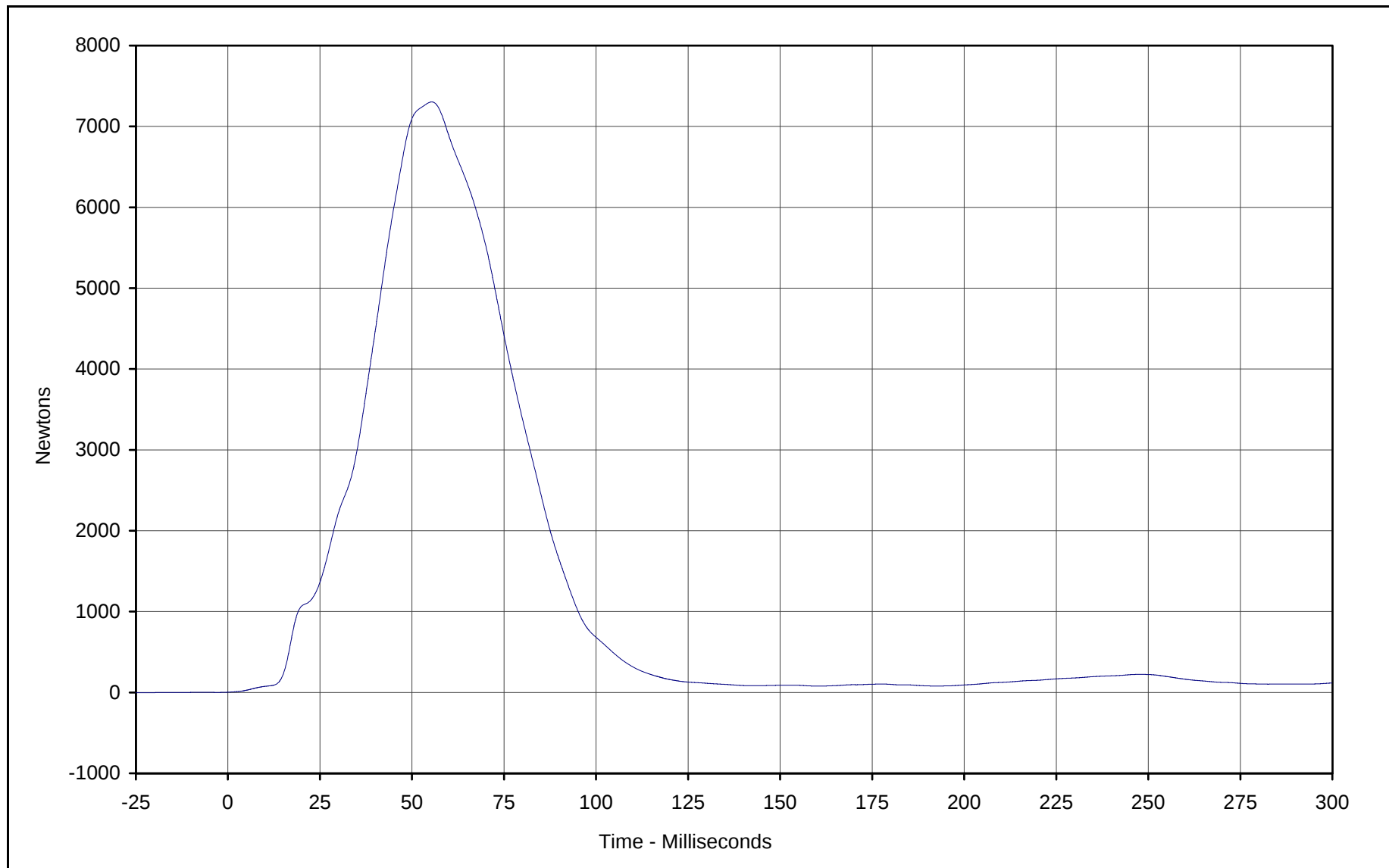
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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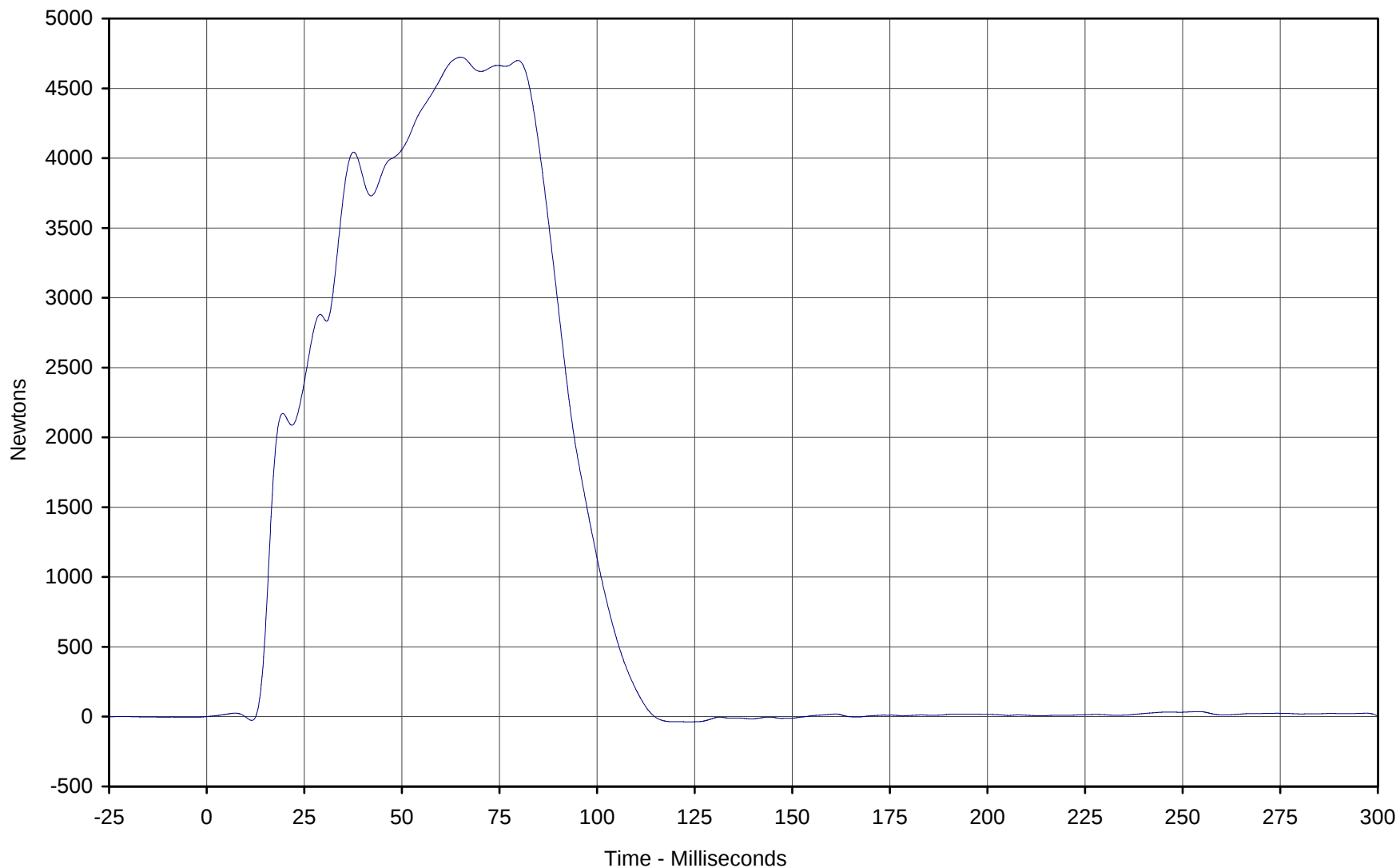


Curve Description: Passenger Lap Belt Force
Maximum Value: 7303.5 at 55.4 Milliseconds
Minimum Value: 3.3 at 0.0 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-085

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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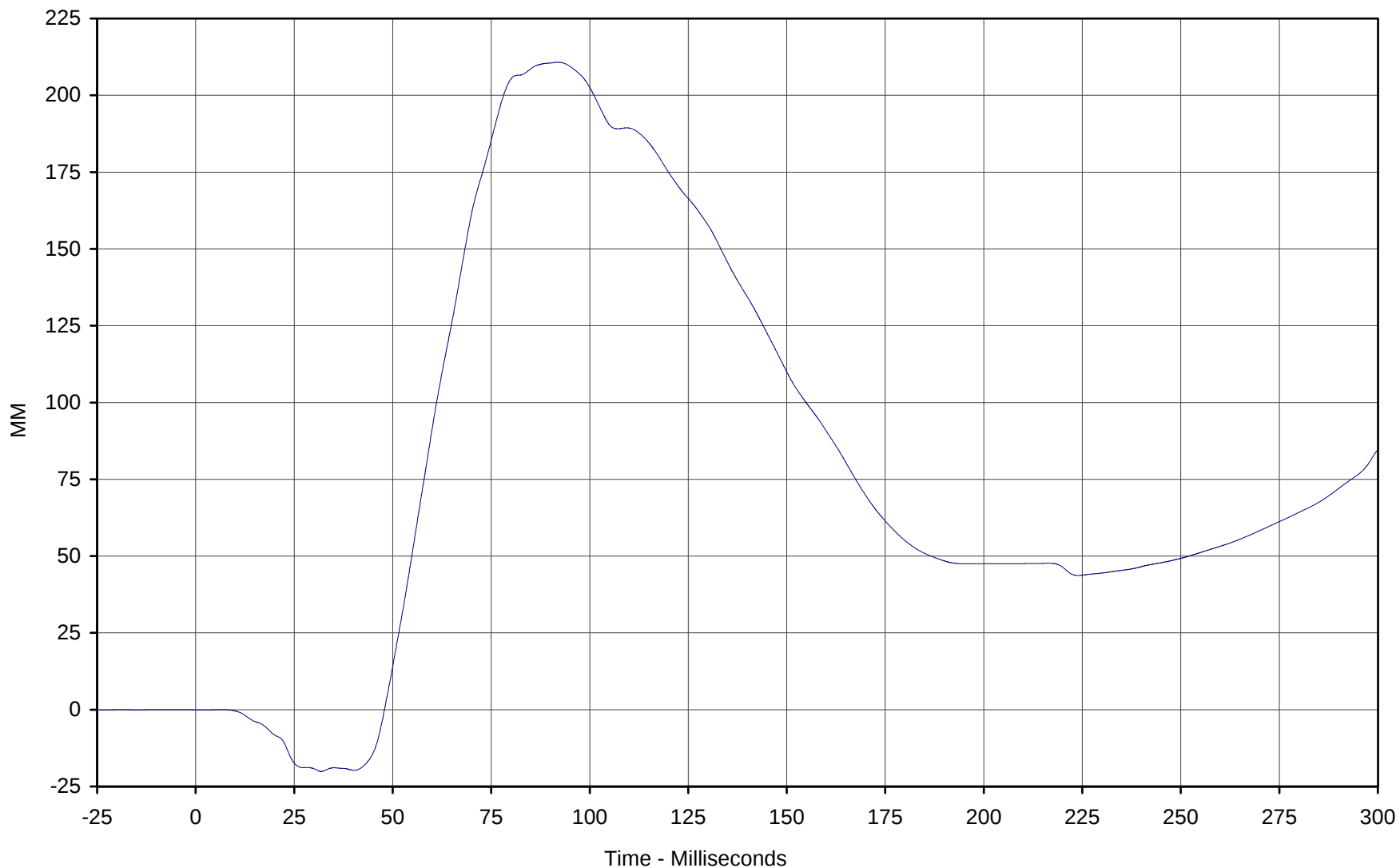
Curve Description: Passenger Shoulder Belt Force
Maximum Value: 4723.0 at 65.1 Milliseconds
Minimum Value: -38.2 at 123.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-086

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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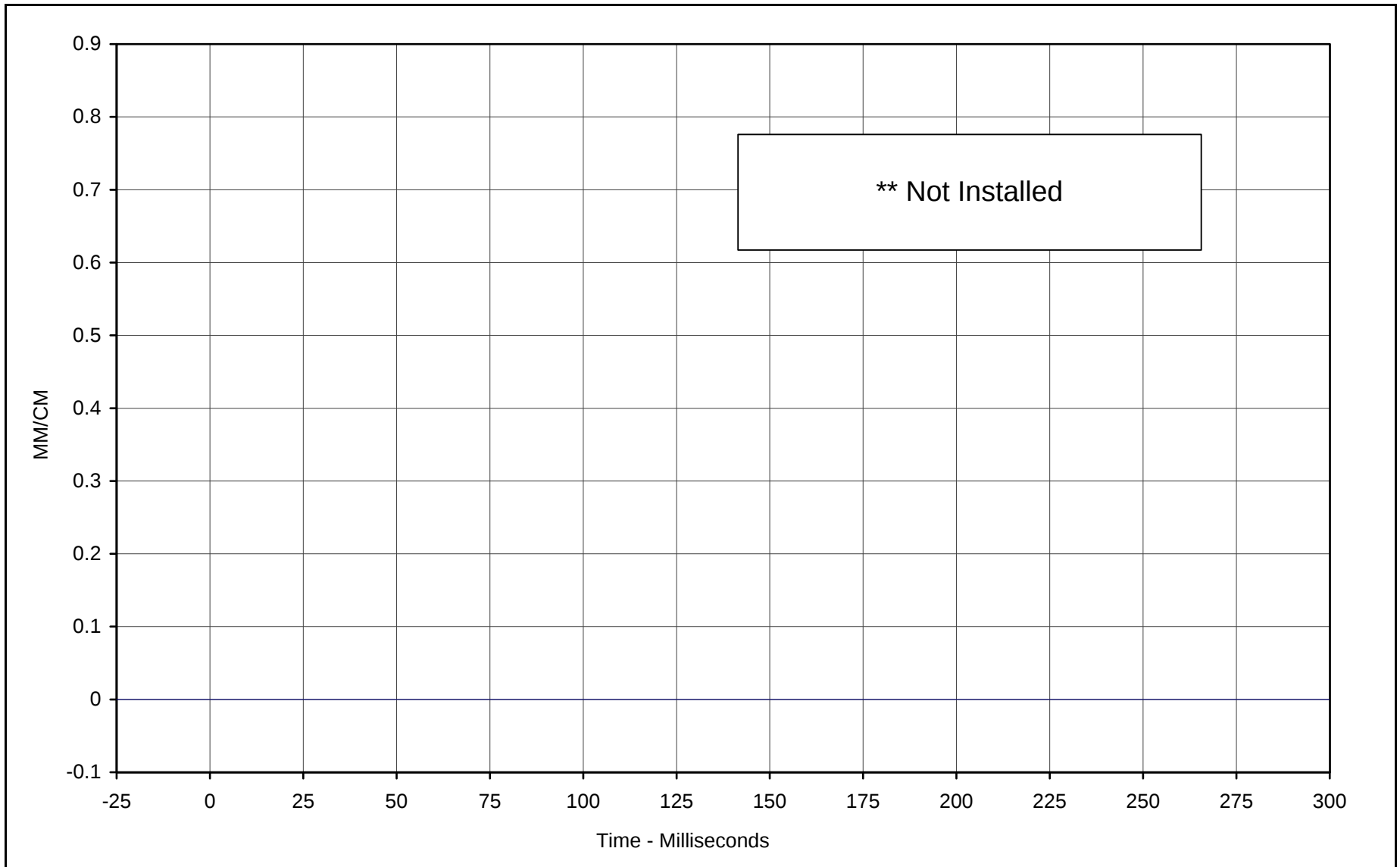
Curve Description: Passenger Shoulder Belt Pullout
Maximum Value: 210.8 at 91.9 Milliseconds
Minimum Value: -20.1 at 31.8 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-087

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Passenger Shoulder Belt Elongation **

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Maximum Value: 0.0 at 0.0 Milliseconds

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 12/4/01

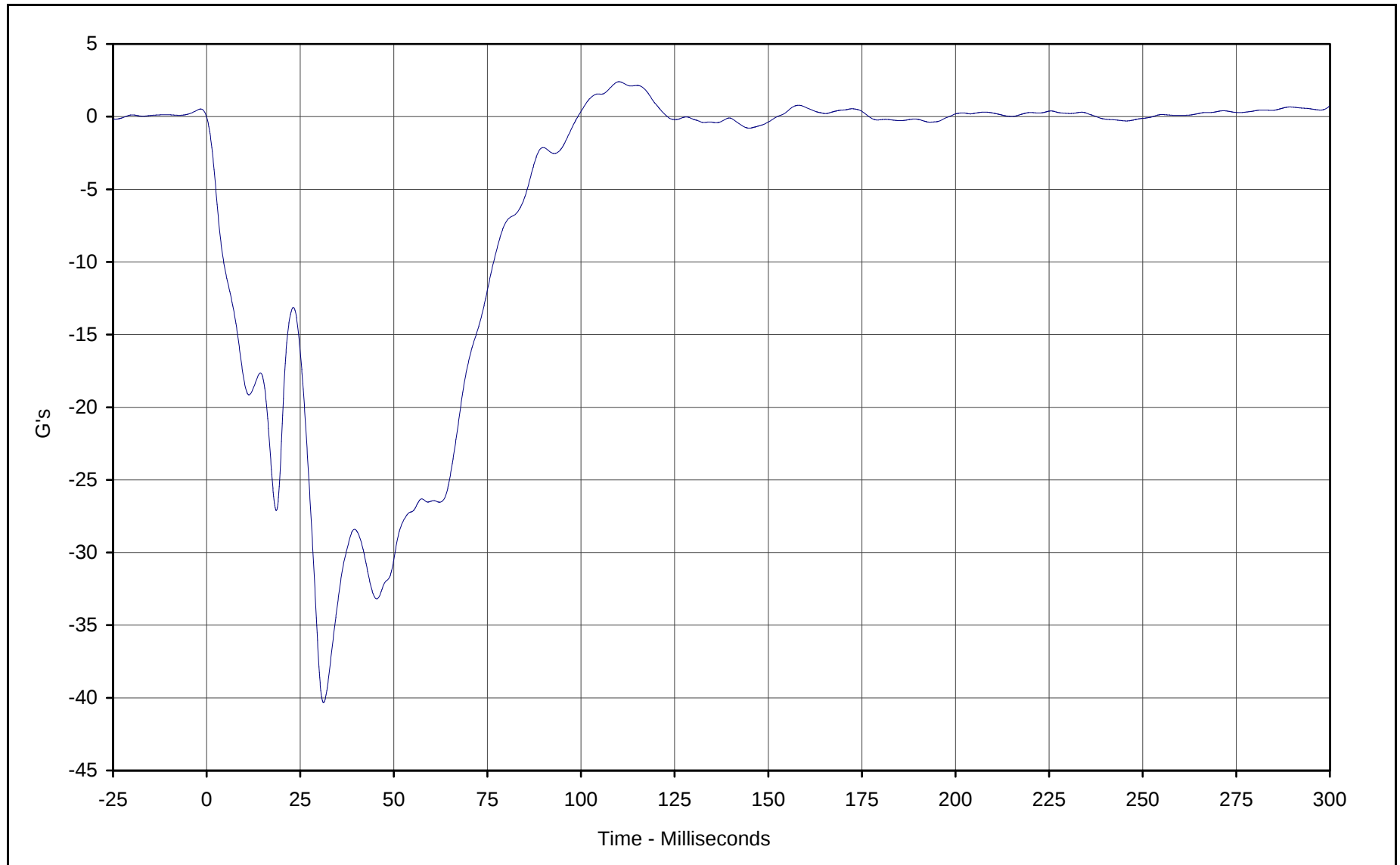
Curve Number: FIL-088

** Not installed



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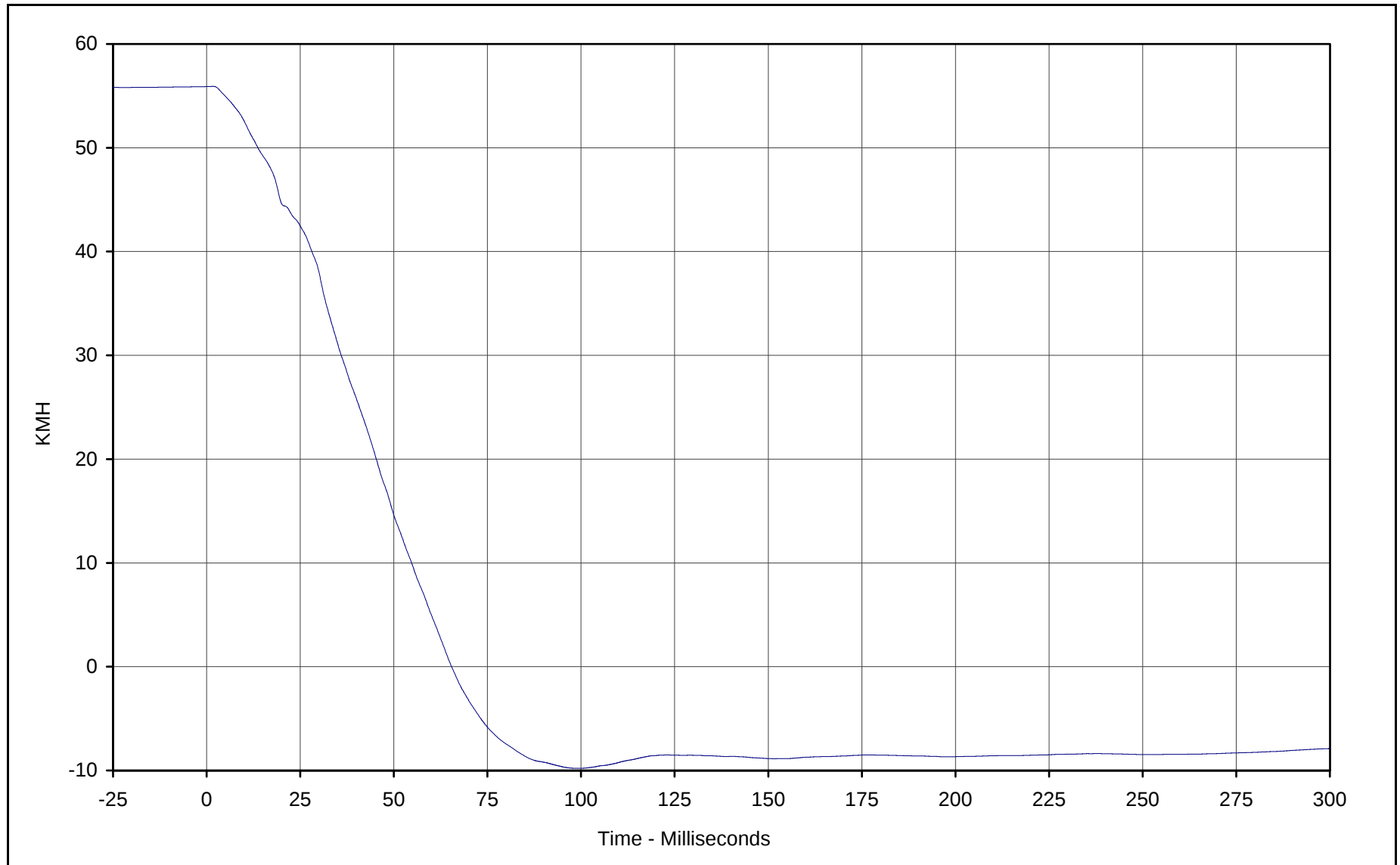
Curve Description: Vehicle Left Rear X
Maximum Value: 2.4 at 110.1 Milliseconds
Minimum Value: -40.3 at 31.2 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-089

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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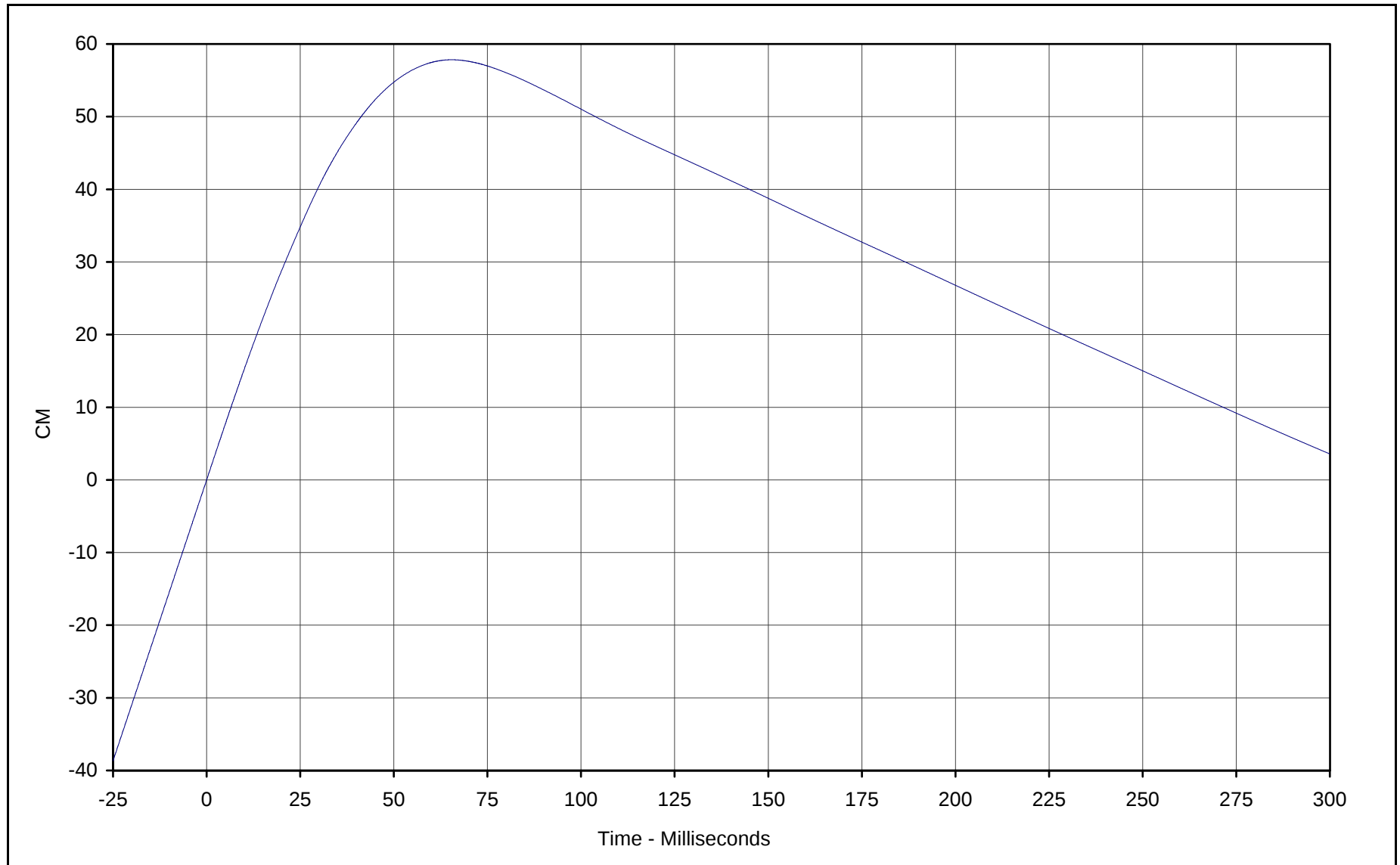
Curve Description: Vehicle Left Rear X Velocity
Maximum Value: 55.9 at 1.7 Milliseconds
Minimum Value: -9.8 at 98.8 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-089

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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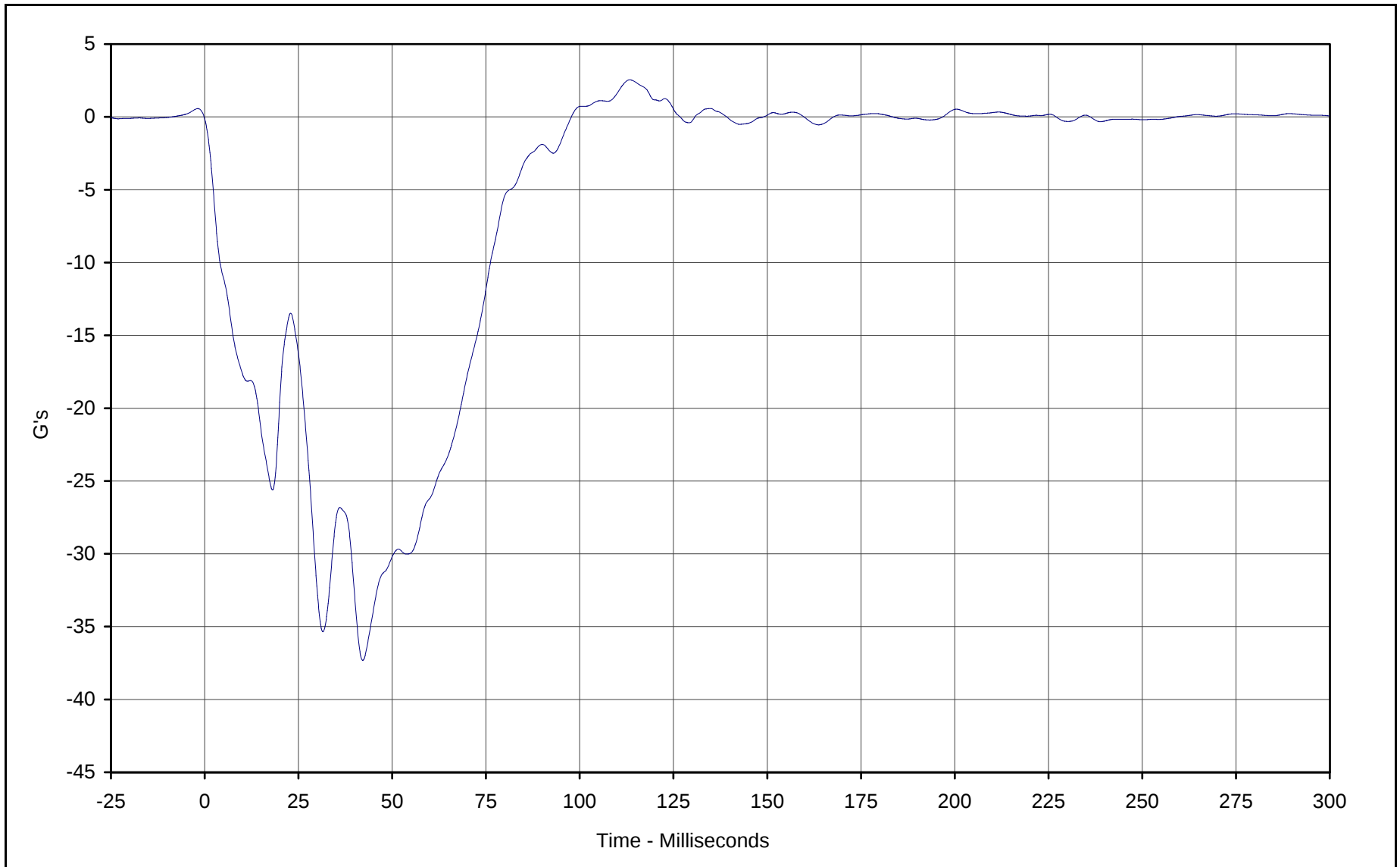
Curve Description: Vehicle Left Rear X Displ.
Maximum Value: 57.8 at 65.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-089

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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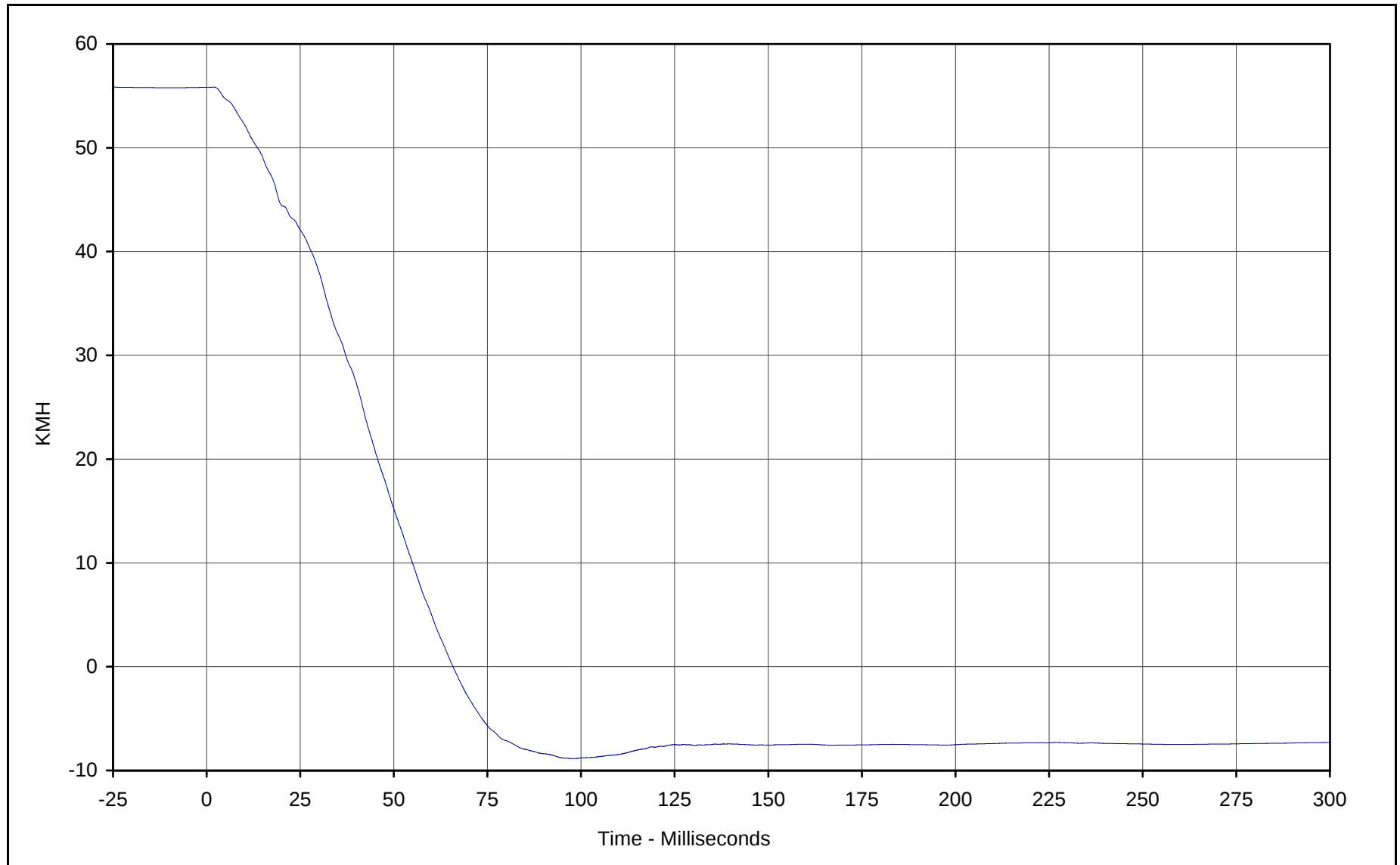
Curve Description: Vehicle Right Rear X
Maximum Value: 2.5 at 113.4 Milliseconds
Minimum Value: -37.3 at 42.1 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-090

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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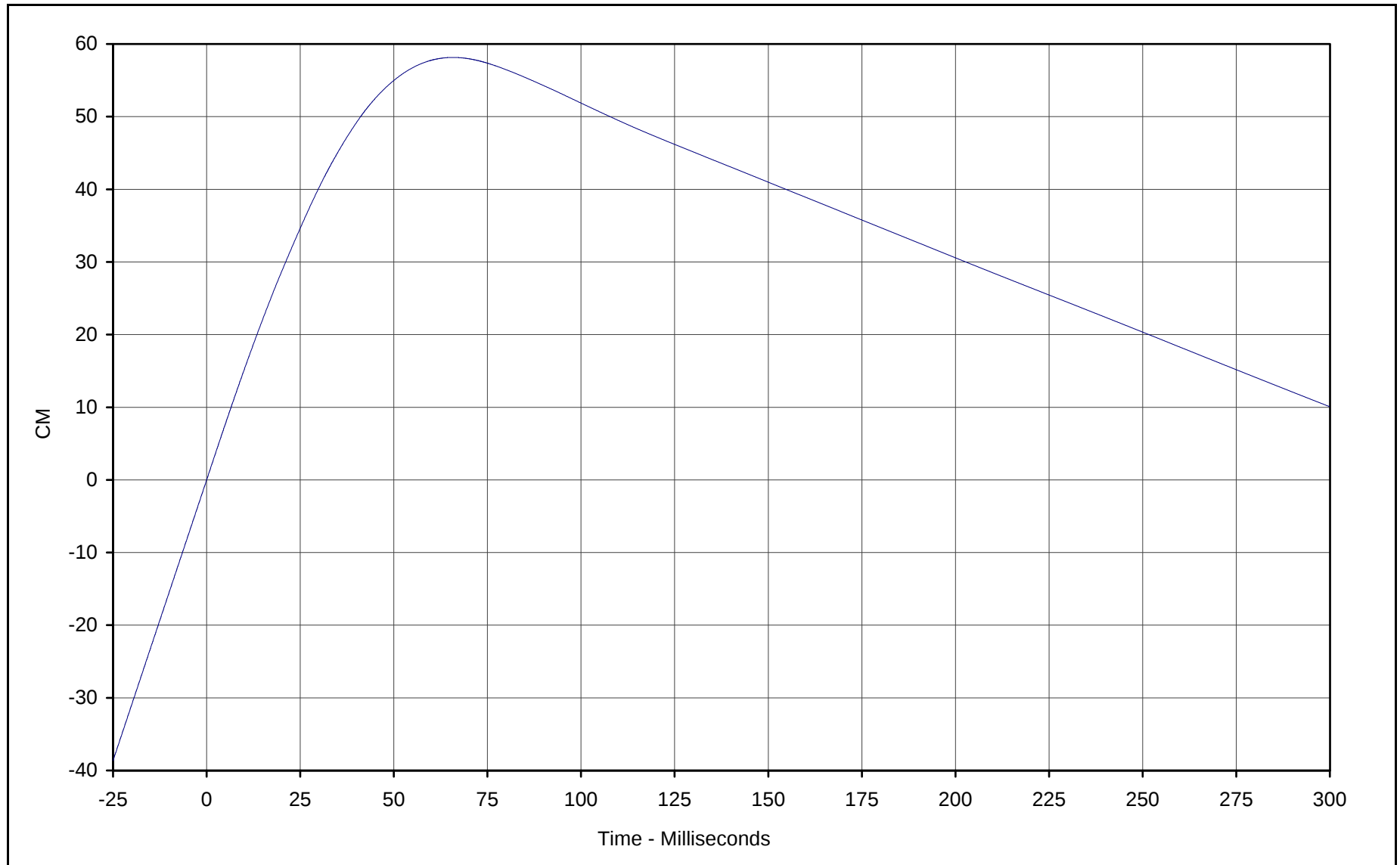
Curve Description: Vehicle Right Rear X Velocity
Maximum Value: 55.8 at 1.9 Milliseconds
Minimum Value: -8.9 at 97.8 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-090

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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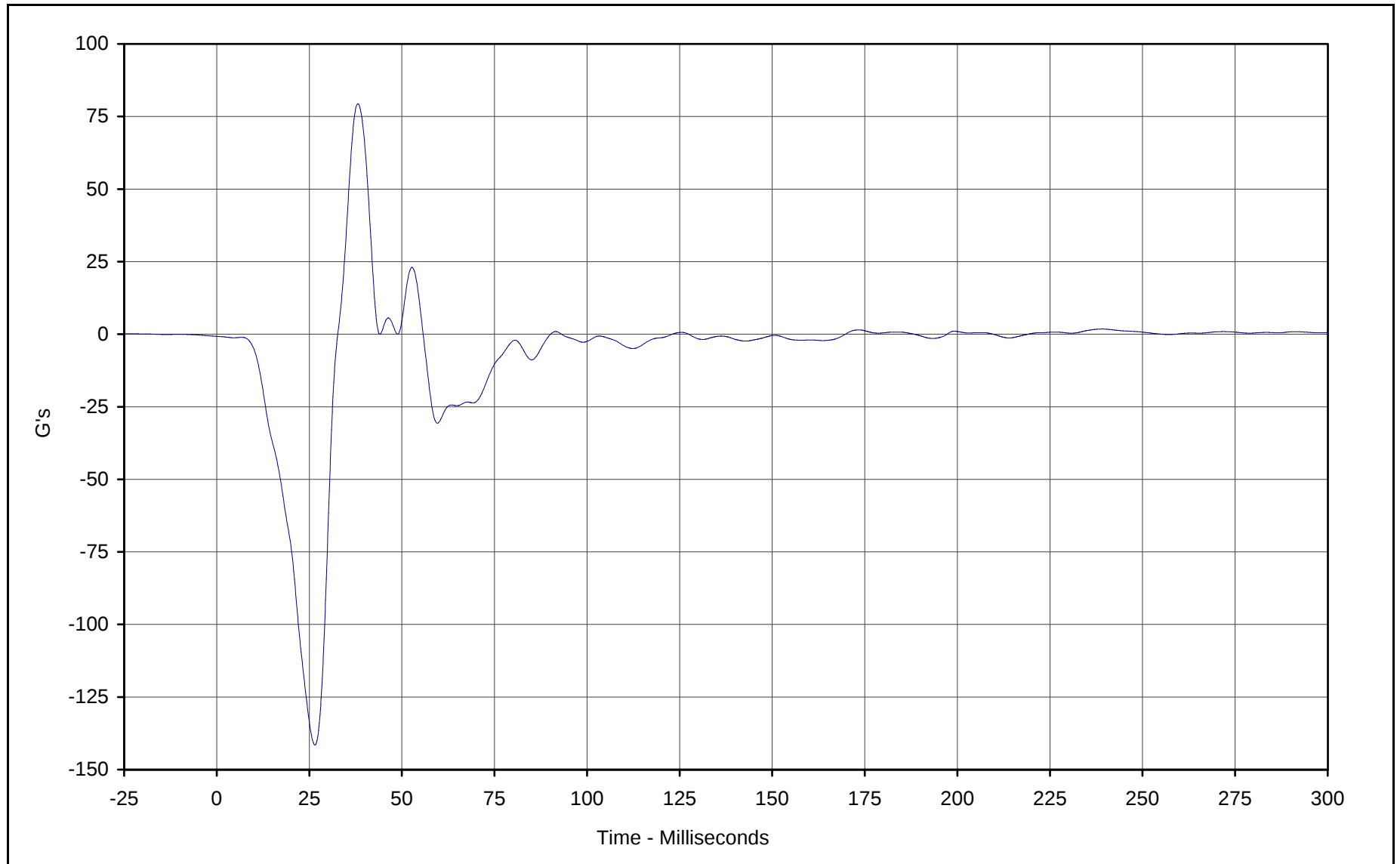
Curve Description: Vehicle Right Rear X Displ.
Maximum Value: 58.2 at 65.8 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-090

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Vehicle Engine Top

Maximum Value: 79.4 at 38.1 Milliseconds

Minimum Value: -141.6 at 26.5 Milliseconds

SAE Filter Class: 60

Date of Test: 12/4/01

Curve Number: FIL-091

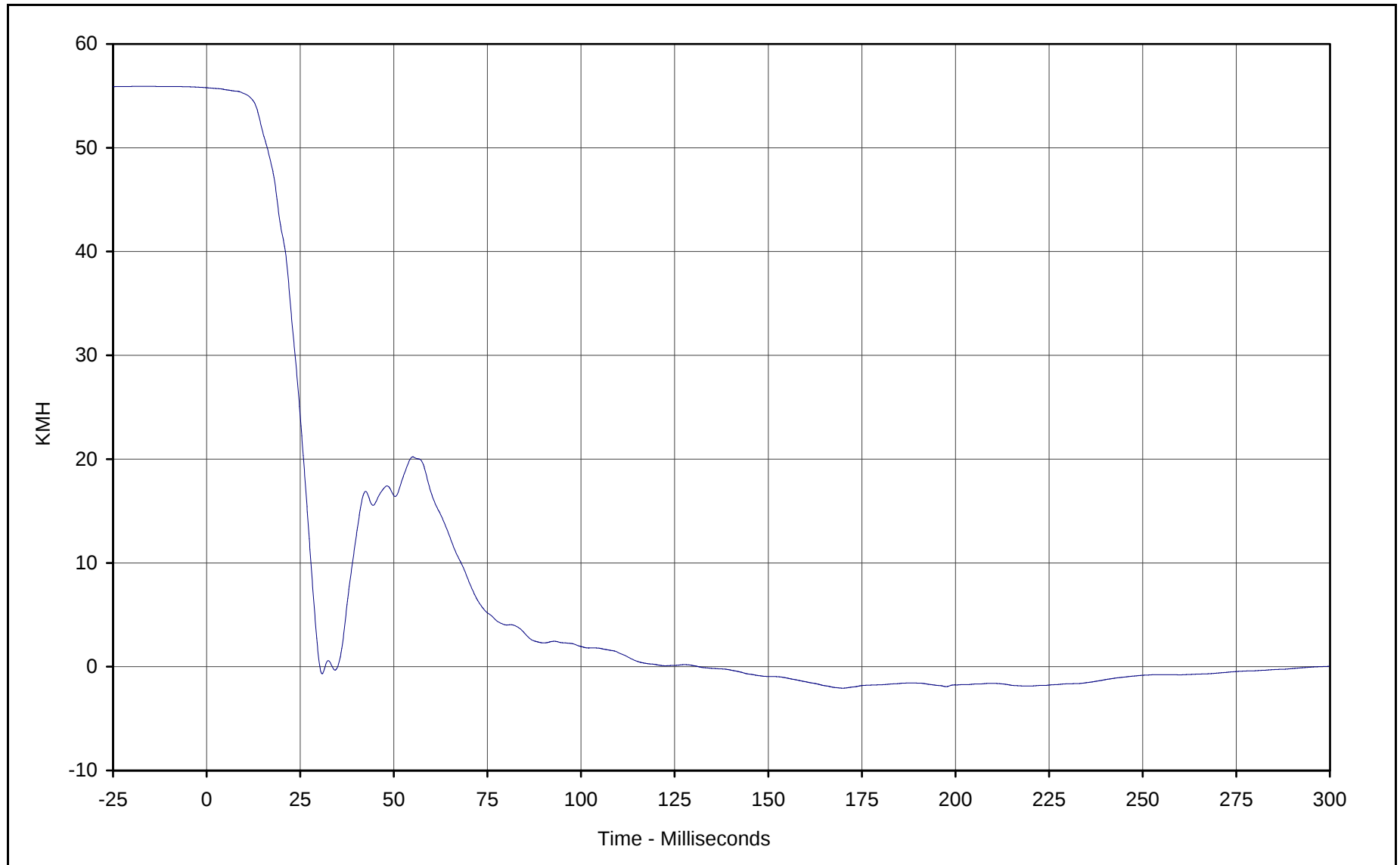
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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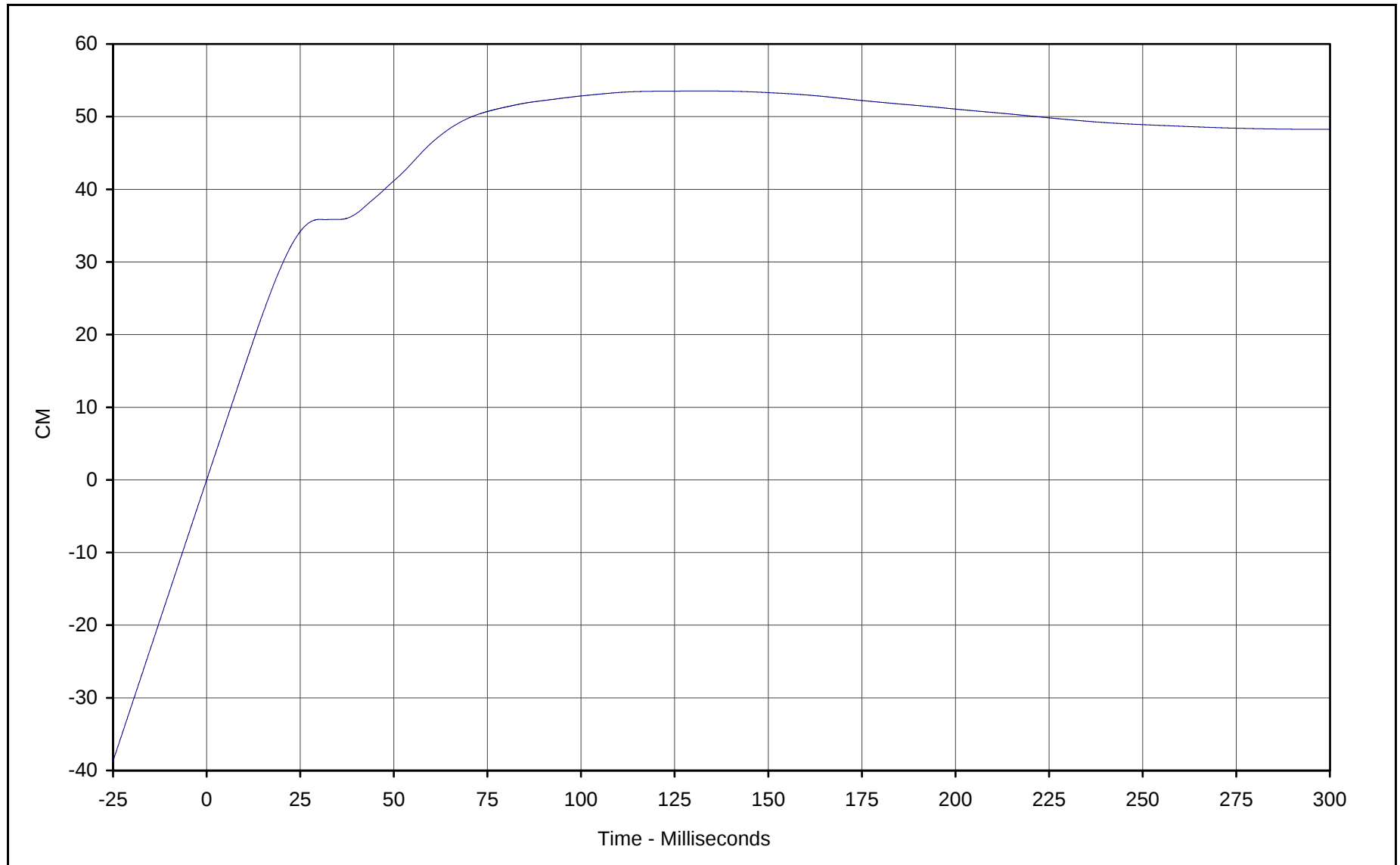
Curve Description: Vehicle Engine Top Velocity
Maximum Value: 55.8 at 0.0 Milliseconds
Minimum Value: -2.1 at 169.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-091

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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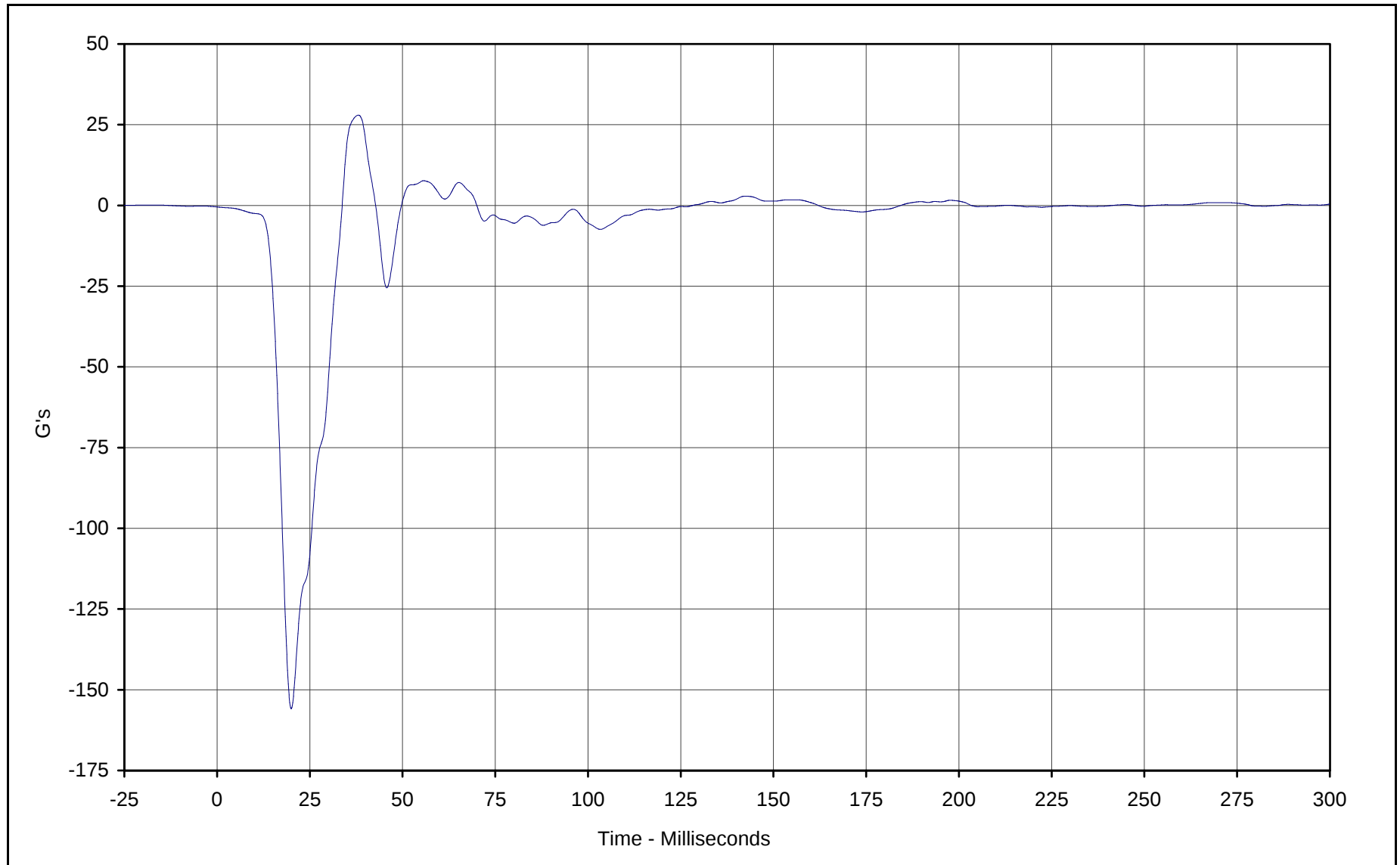
Curve Description: Vehicle Engine Top Displacement
Maximum Value: 53.5 at 131.4 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-091

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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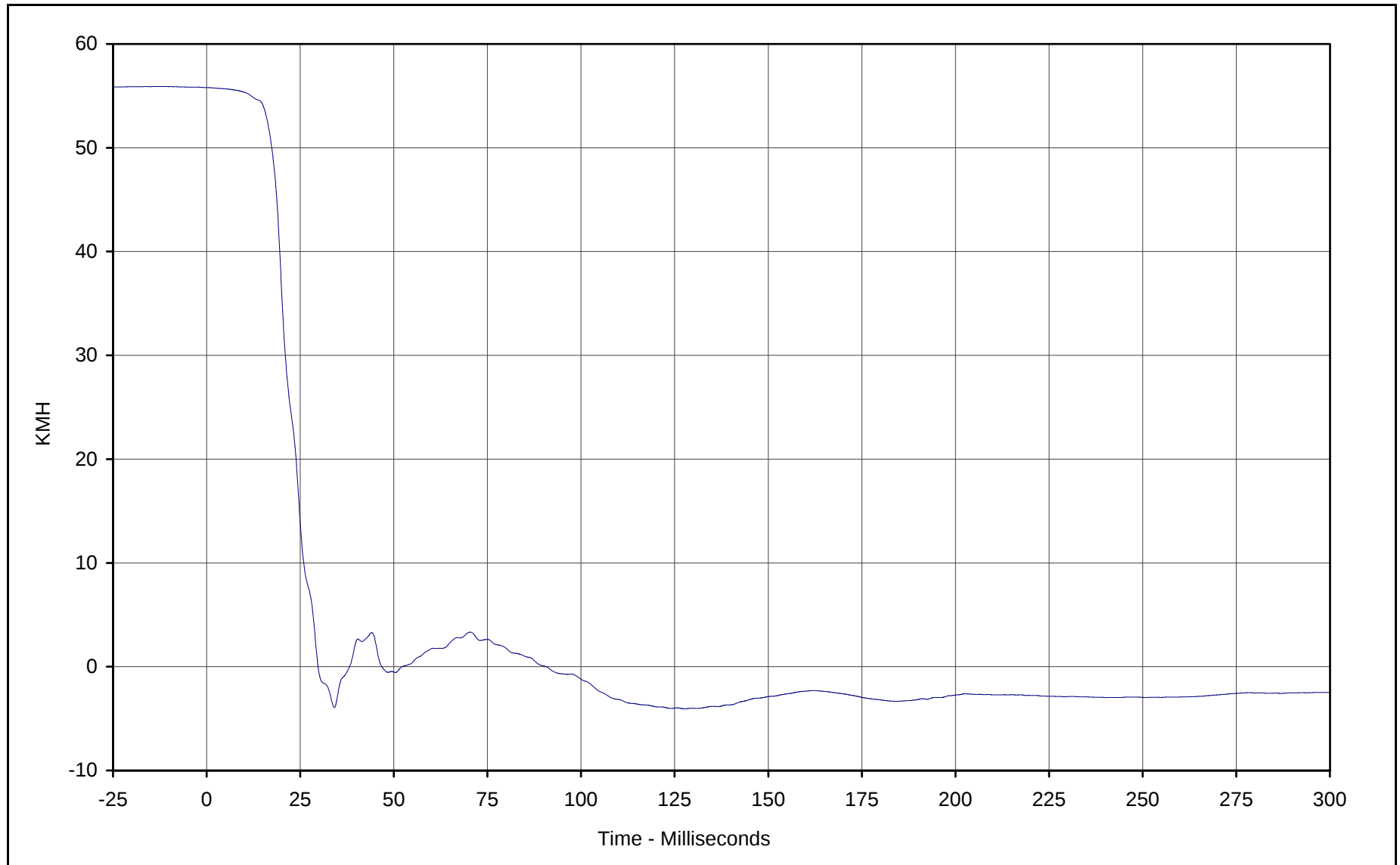
Curve Description: Vehicle Engine Bottom
Maximum Value: 28.0 at 38.1 Milliseconds
Minimum Value: -155.9 at 20.0 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-092

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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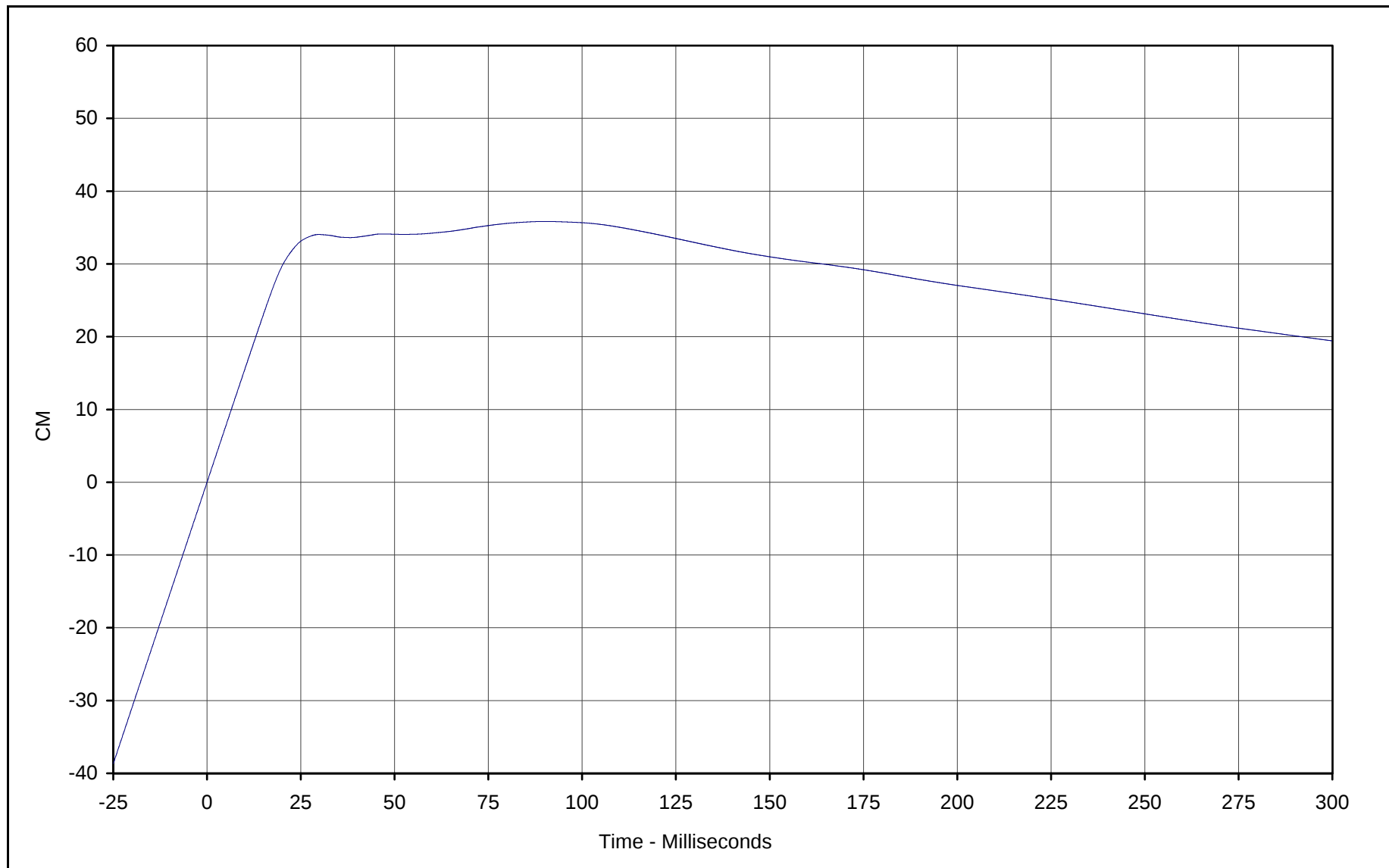
Curve Description: Vehicle Engine Bottom Velocity
Maximum Value: 55.8 at 0.0 Milliseconds
Minimum Value: -4.1 at 127.7 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-092

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Vehicle Engine Bottom Displacement

Maximum Value: 35.8 at 90.7 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

Curve Number: IN2-092

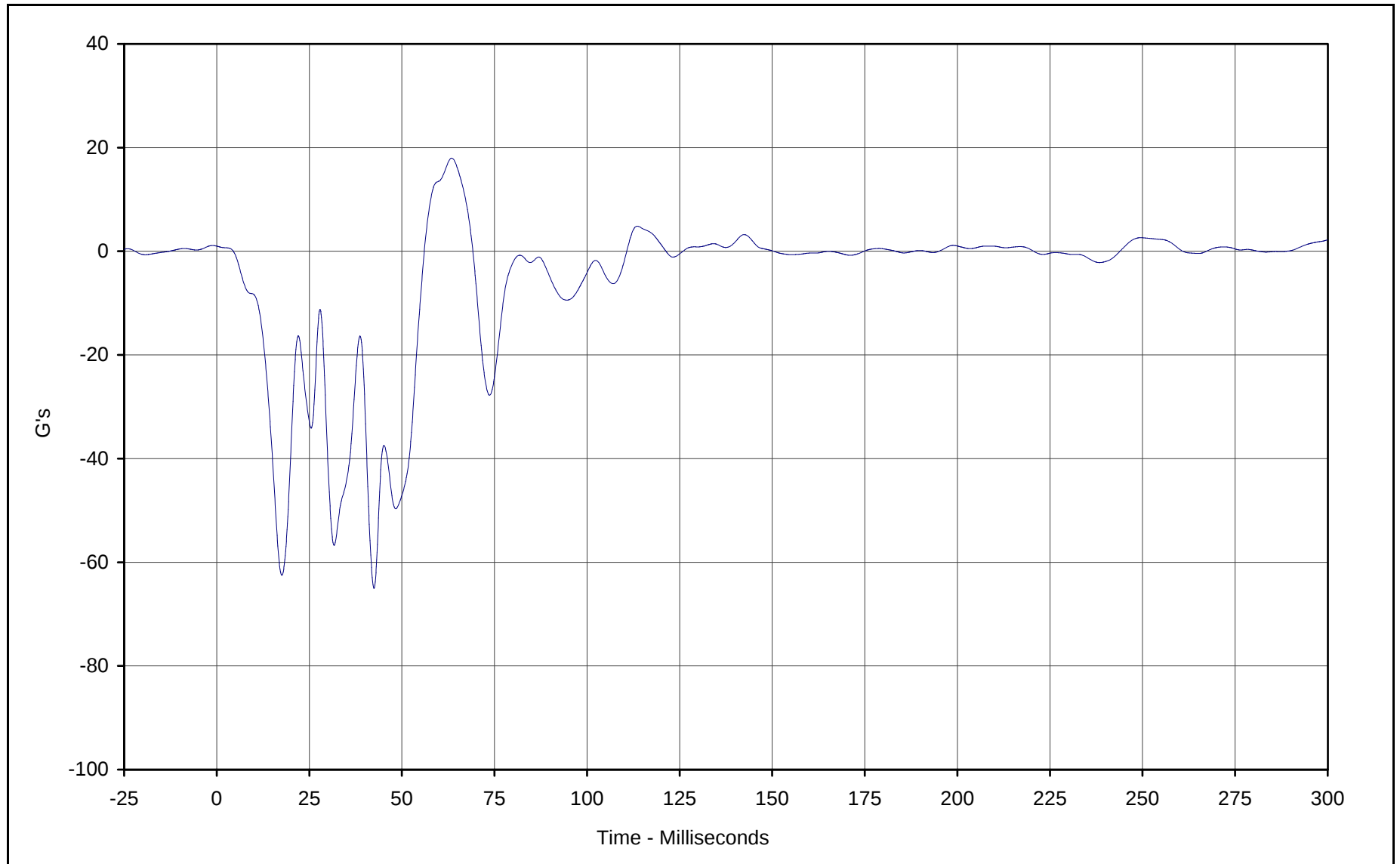
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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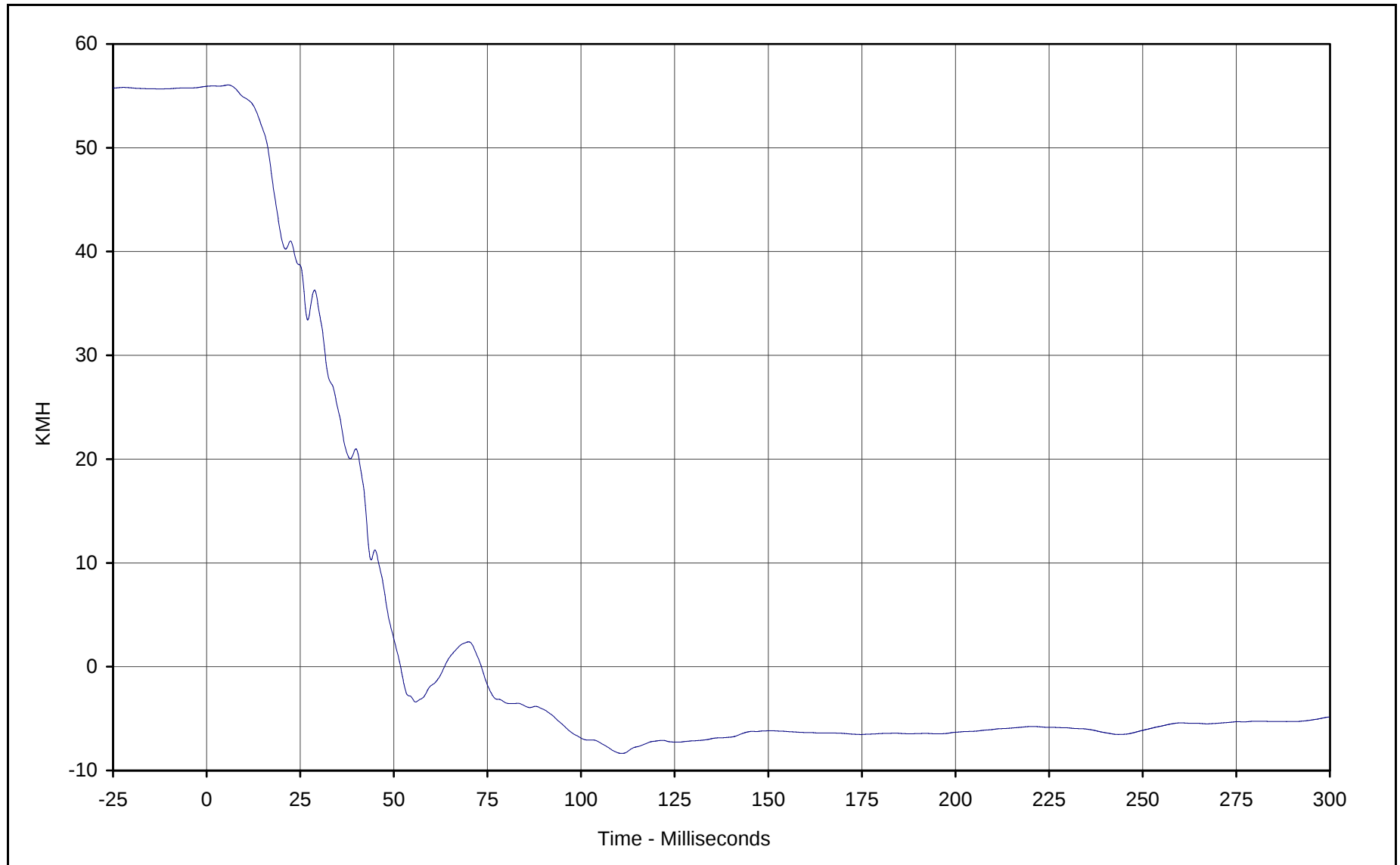


Curve Description: Vehicle Left Brake Caliper
Maximum Value: 18.0 at 63.4 Milliseconds
Minimum Value: -65.0 at 42.5 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-093

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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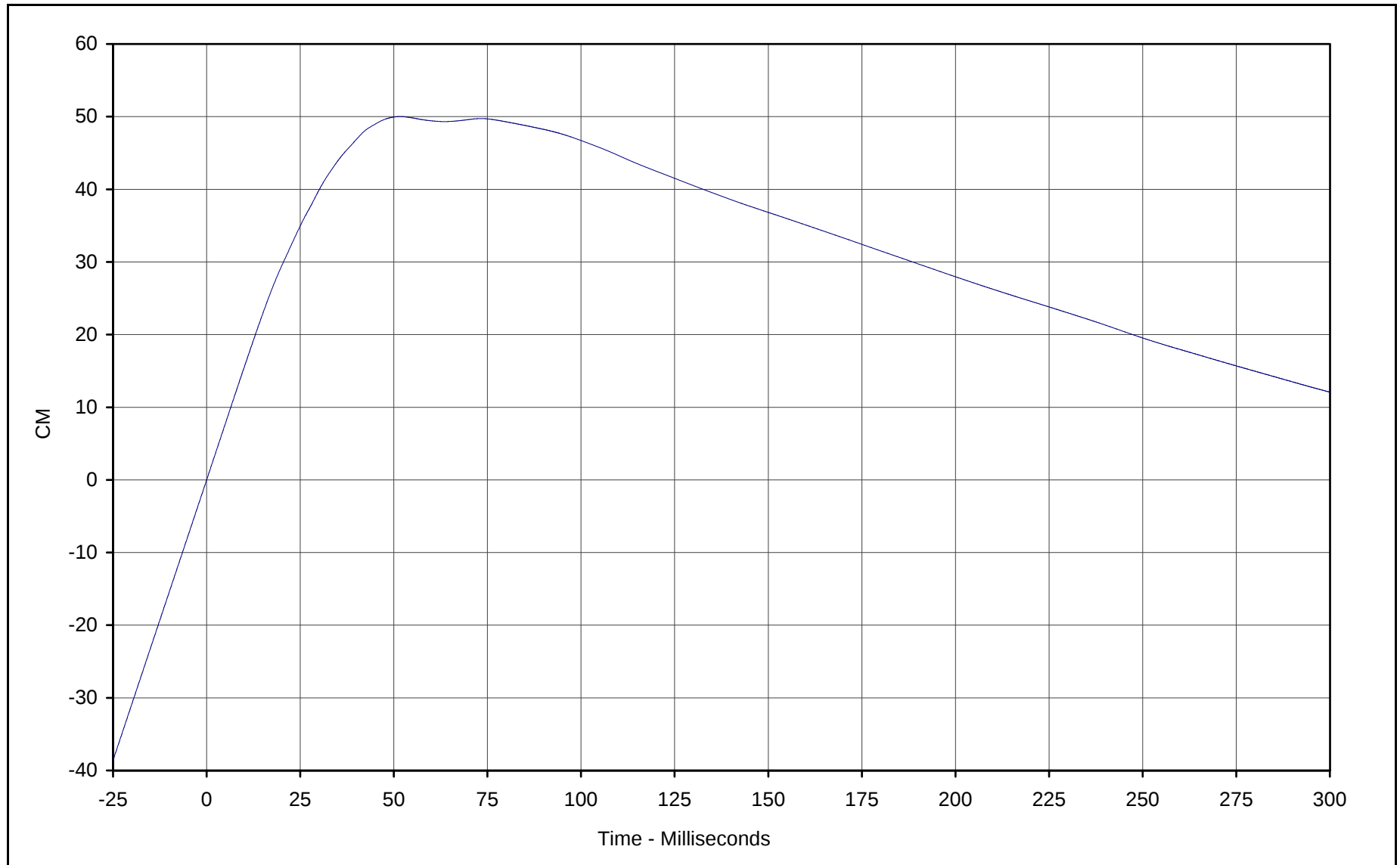


Curve Description: Vehicle Left Brake Caliper Velocity
Maximum Value: 56.1 at 5.7 Milliseconds
Minimum Value: -8.4 at 110.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-093

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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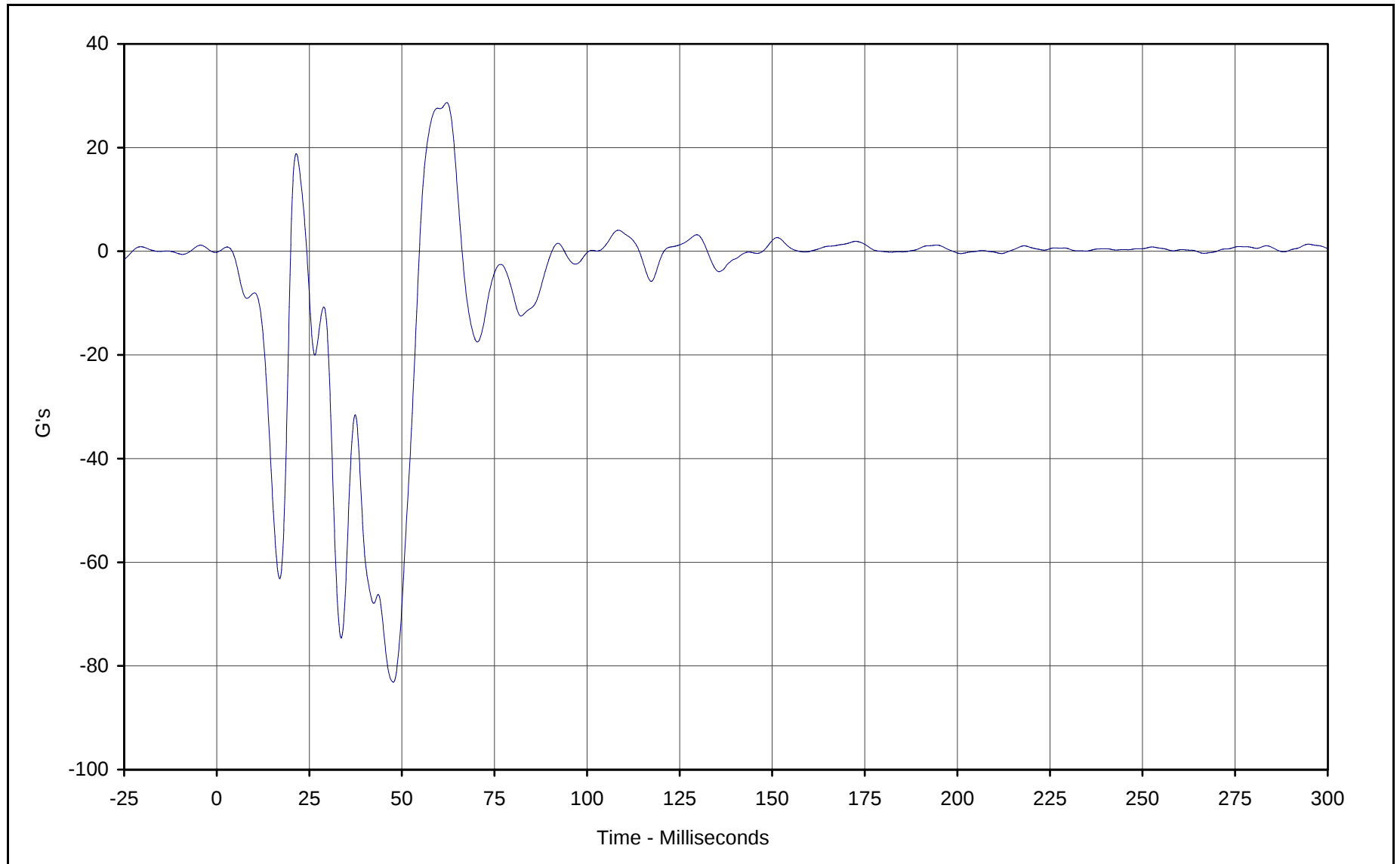
Curve Description: Vehicle Left Brake Caliper Displ.
Maximum Value: 50.0 at 51.8 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-093

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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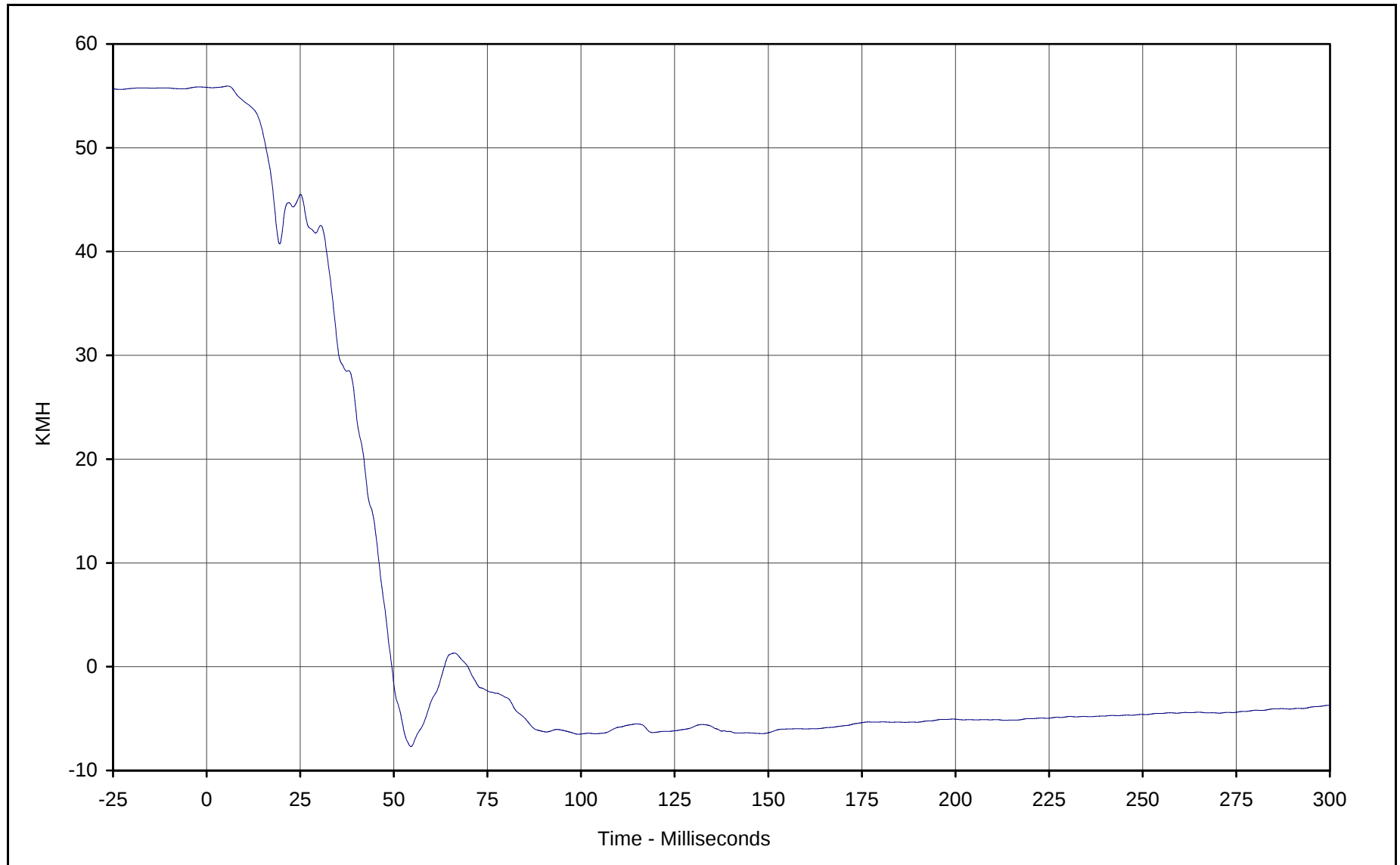
Curve Description: Vehicle Right Brake Caliper
Maximum Value: 28.7 at 62.1 Milliseconds
Minimum Value: -83.1 at 47.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-094

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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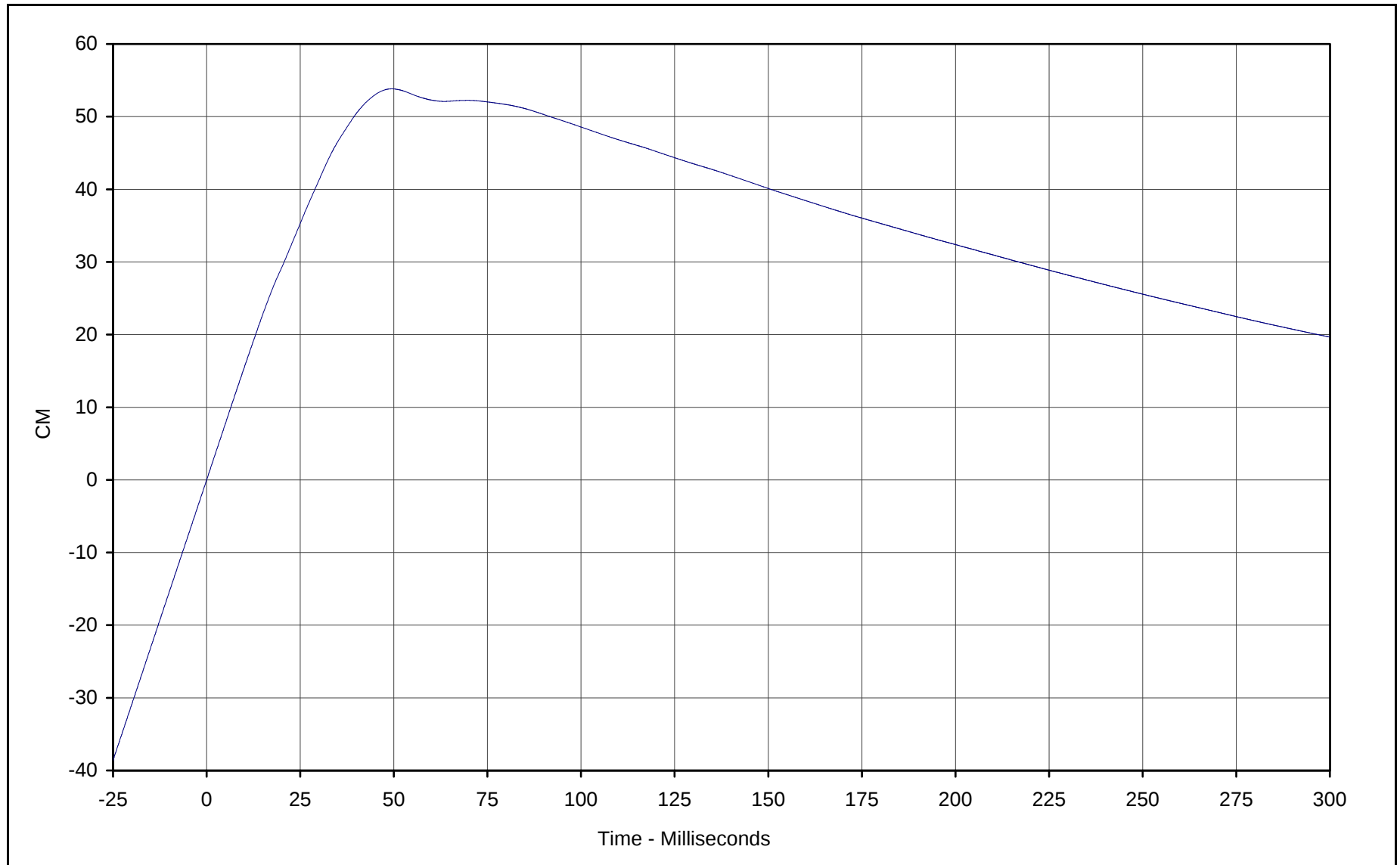
Curve Description: Vehicle Right Brake Caliper Velocity
Maximum Value: 55.9 at 5.6 Milliseconds
Minimum Value: -7.7 at 54.6 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-094

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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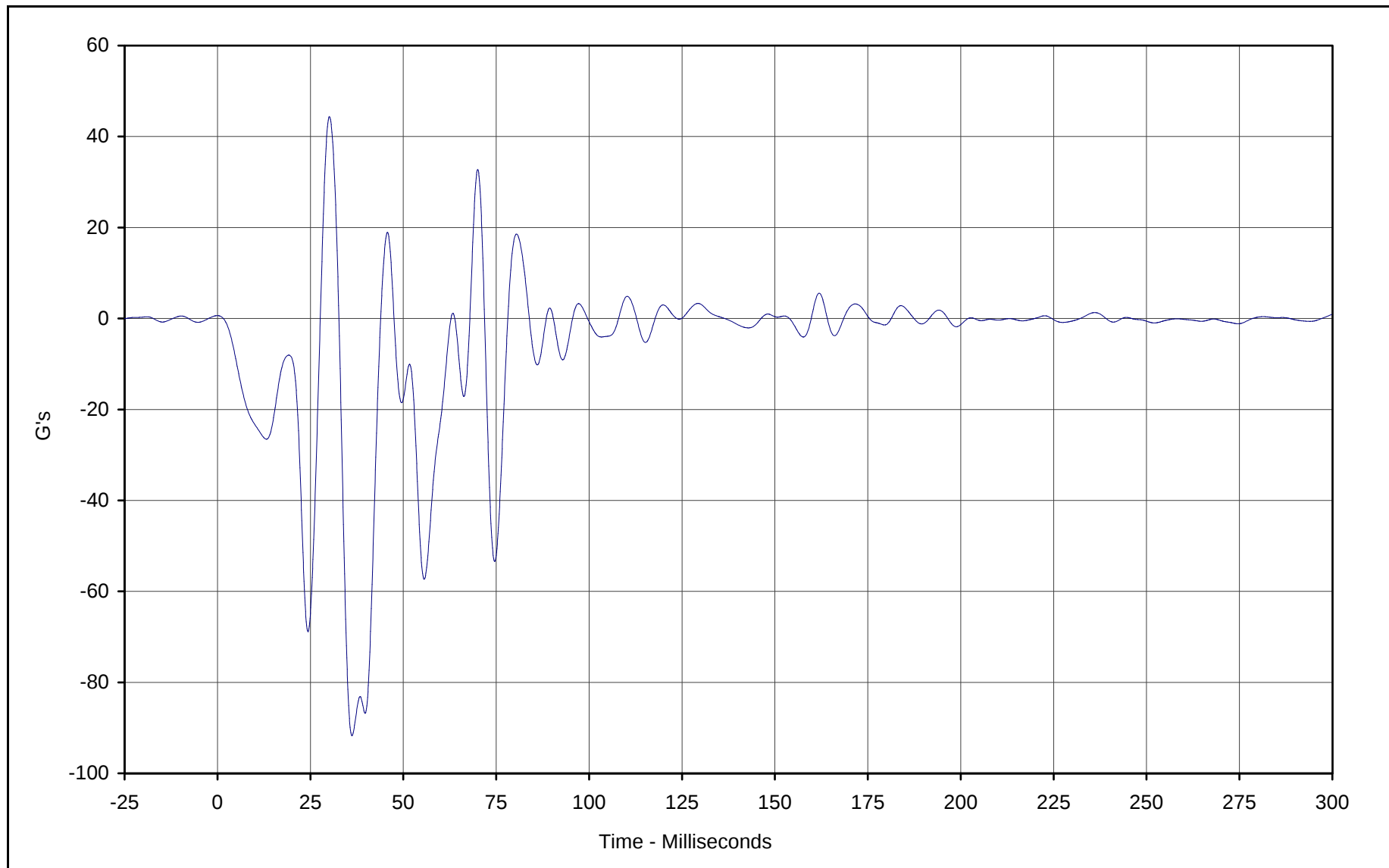
Curve Description: Vehicle Right Brake Caliper Displ.
Maximum Value: 53.8 at 49.5 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-094

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Vehicle Instrument Panel

Maximum Value: 44.4 at 30.1 Milliseconds

Minimum Value: -91.7 at 36.2 Milliseconds

SAE Filter Class: 60

Date of Test: 12/4/01

Curve Number: FIL-095

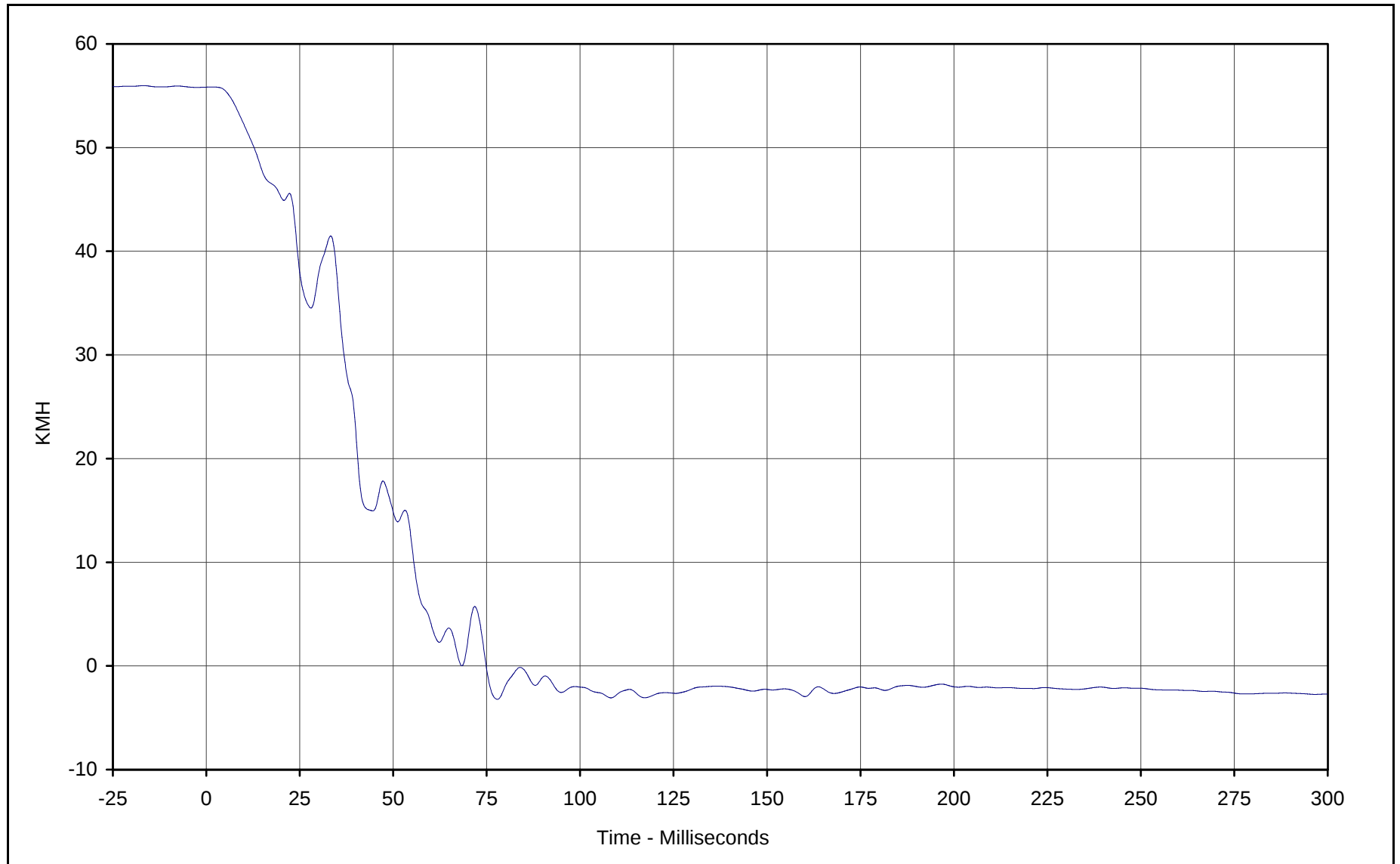
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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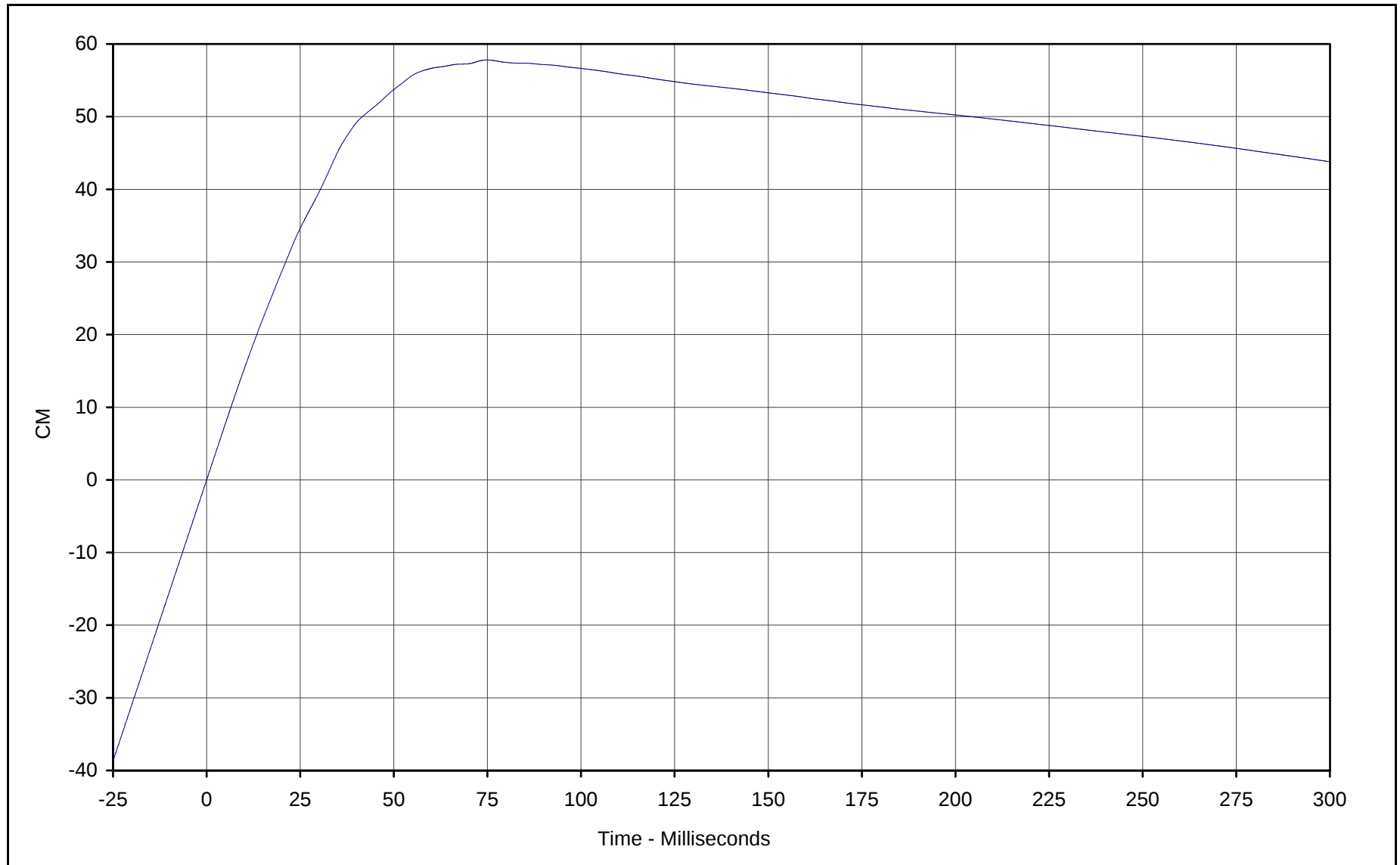
Curve Description: Vehicle Instrument Panel Velocity
Maximum Value: 55.8 at 1.5 Milliseconds
Minimum Value: -3.2 at 77.8 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-095

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Vehicle Instrument Panel Displacement

Maximum Value: 57.8 at 74.9 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 12/4/01

Curve Number: IN2-095

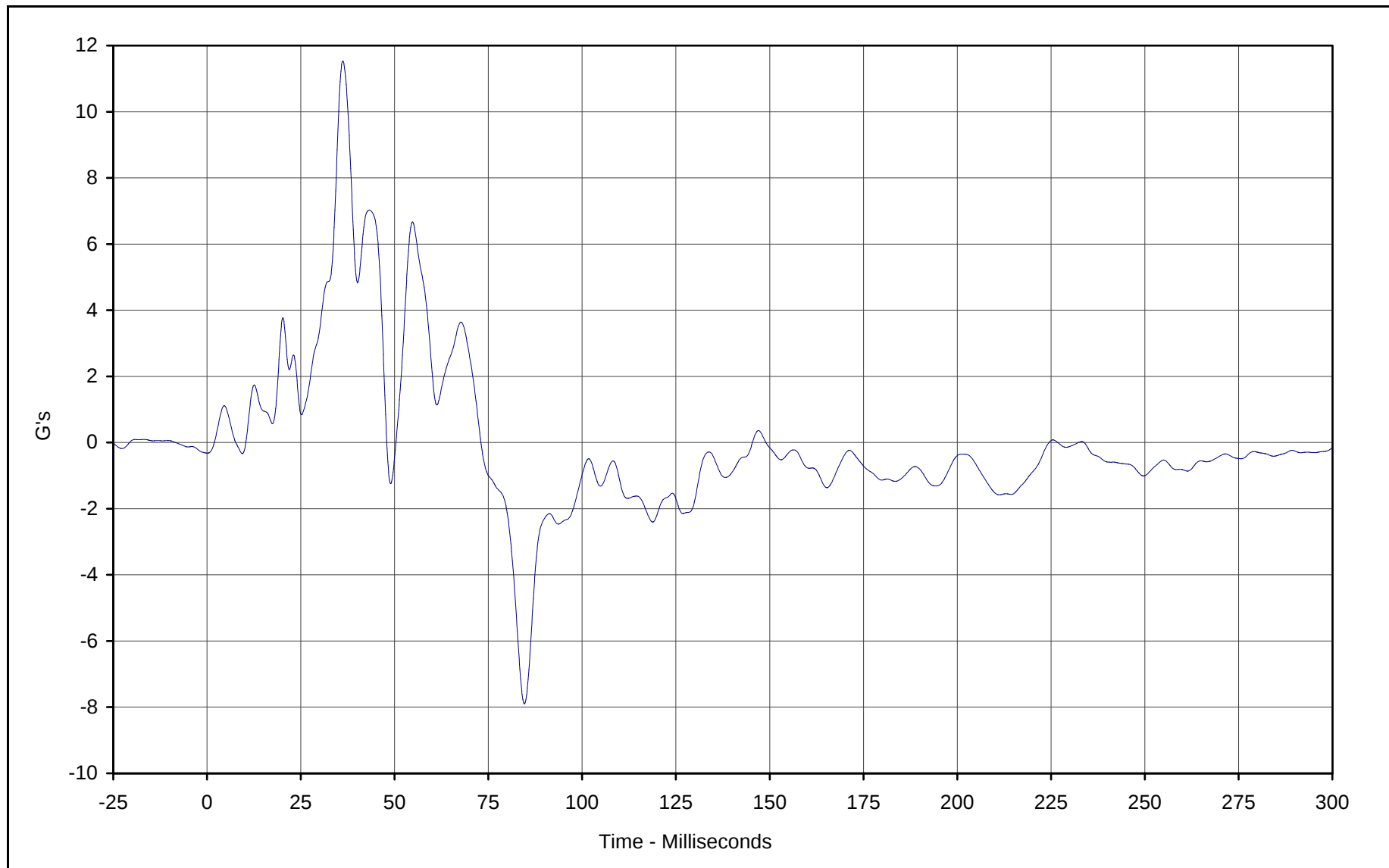
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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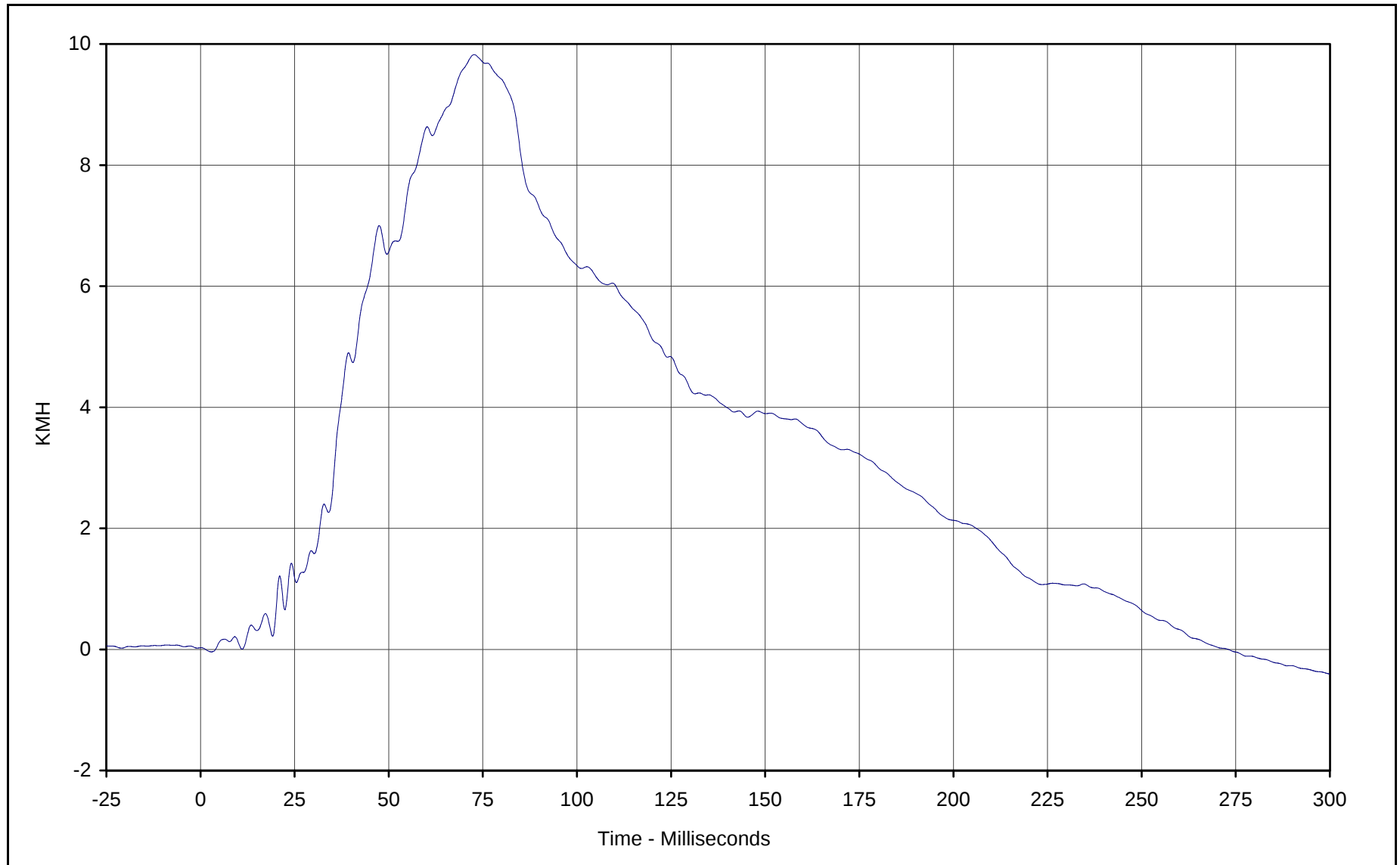
Curve Description: Vehicle Left Rear Z
Maximum Value: 11.5 at 36.2 Milliseconds
Minimum Value: -7.9 at 84.6 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-096

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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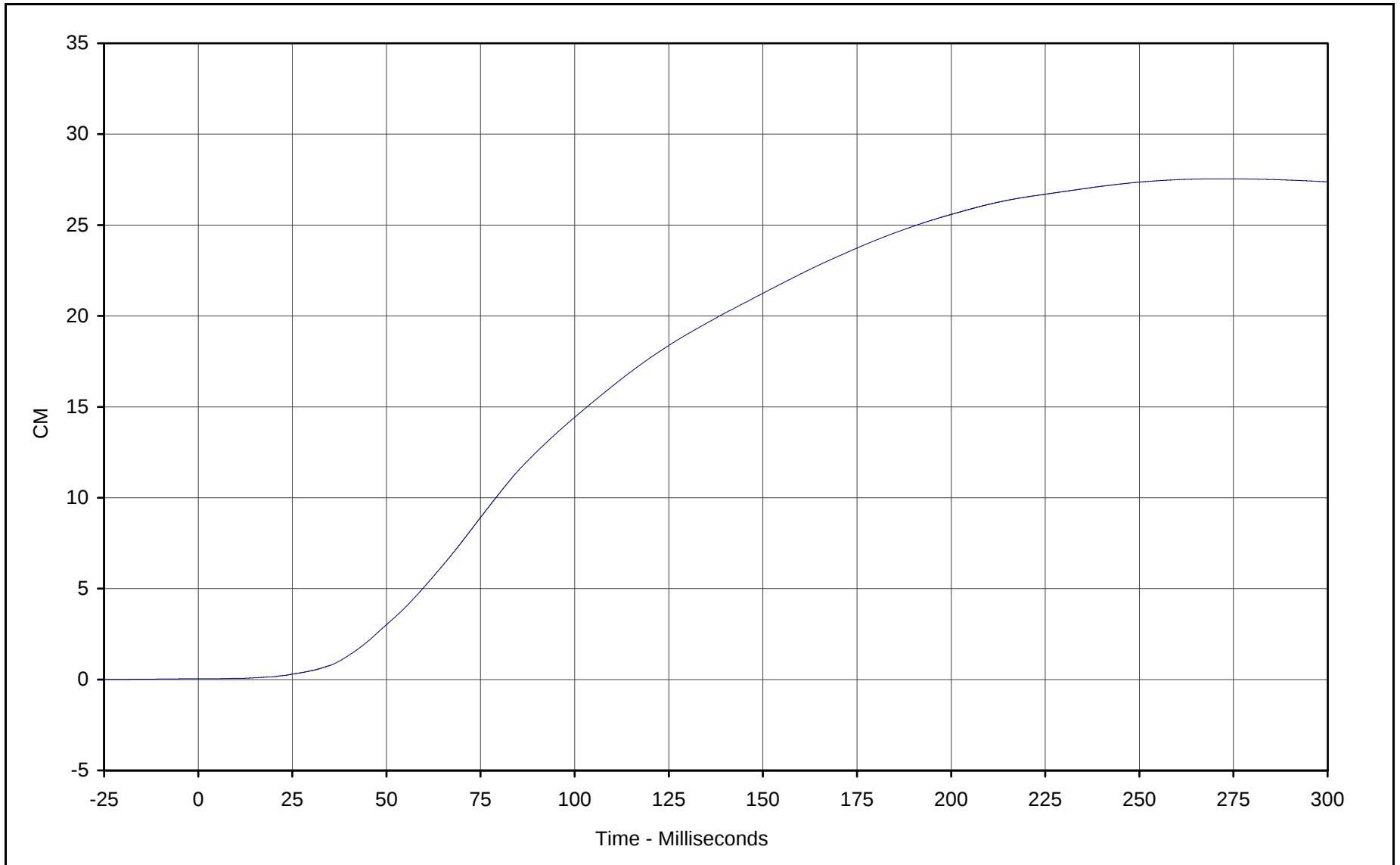
Curve Description: Vehicle Left Rear Z Velocity
Maximum Value: 9.8 at 72.7 Milliseconds
Minimum Value: -0.4 at 299.9 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-096

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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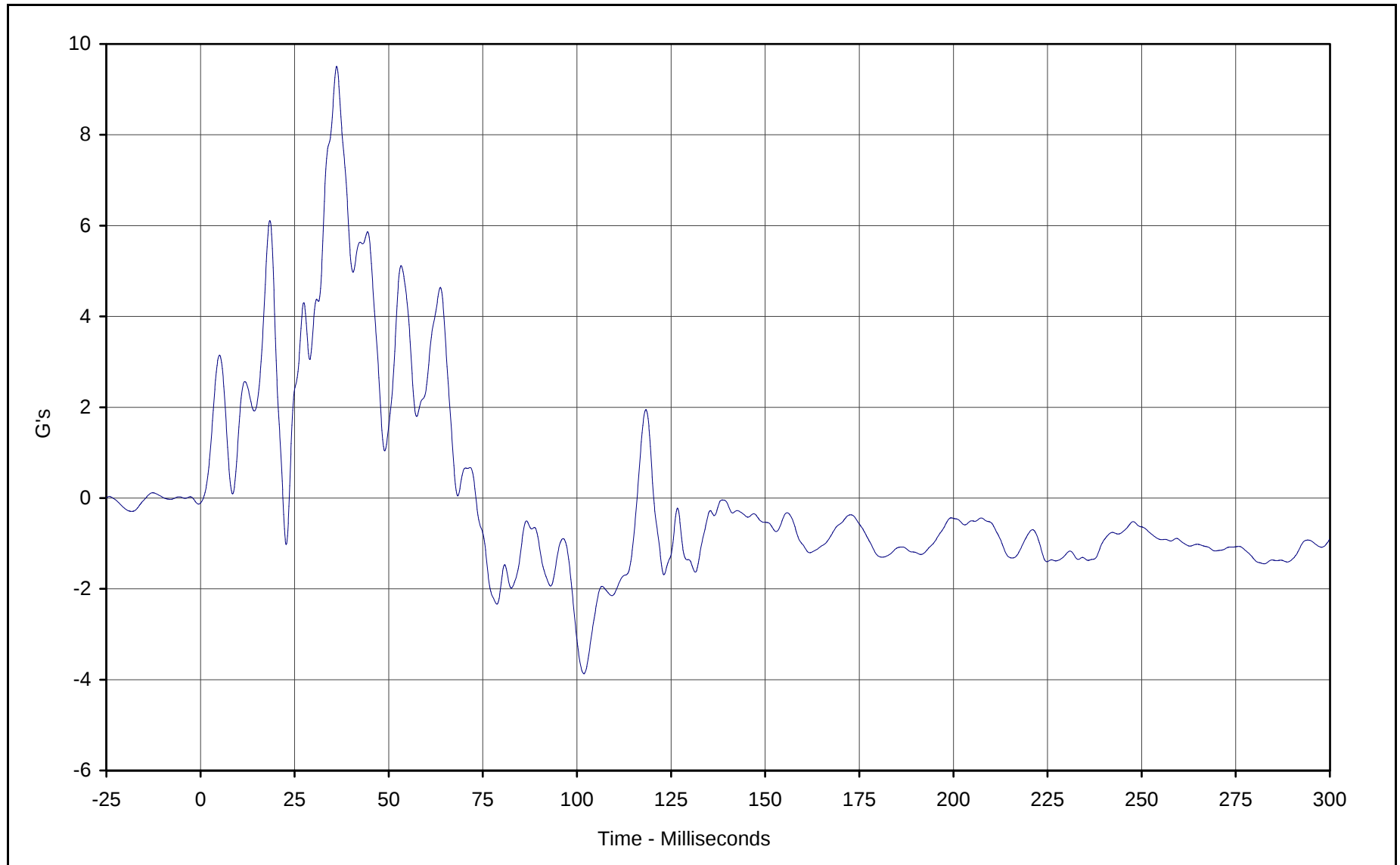
Curve Description: Vehicle Left Rear Z Displ.
Maximum Value: 27.5 at 273.0 Milliseconds
Minimum Value: 0.0 at 4.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-096

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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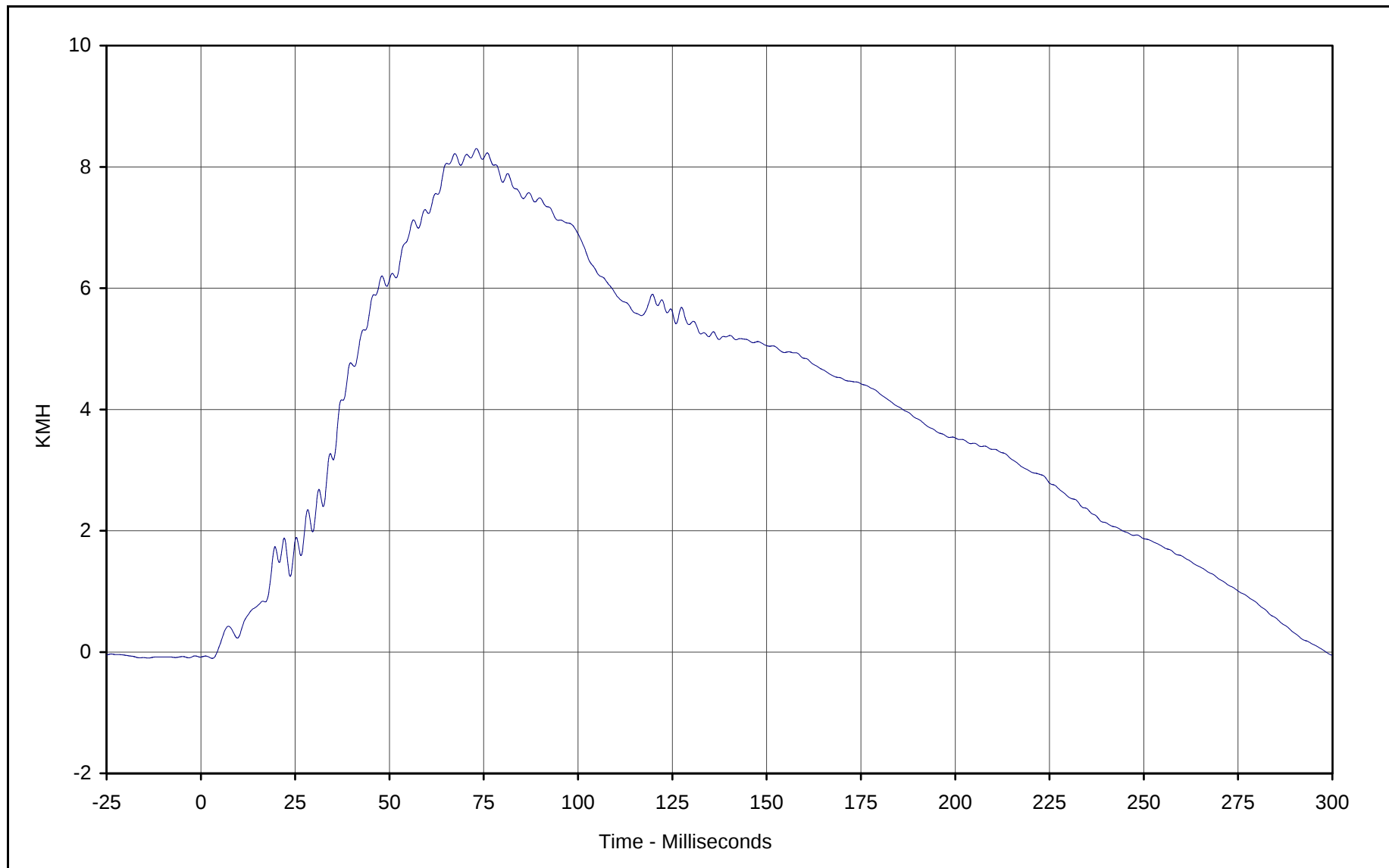
Curve Description: Vehicle Right Rear Z
Maximum Value: 9.5 at 36.2 Milliseconds
Minimum Value: -3.9 at 101.8 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-097

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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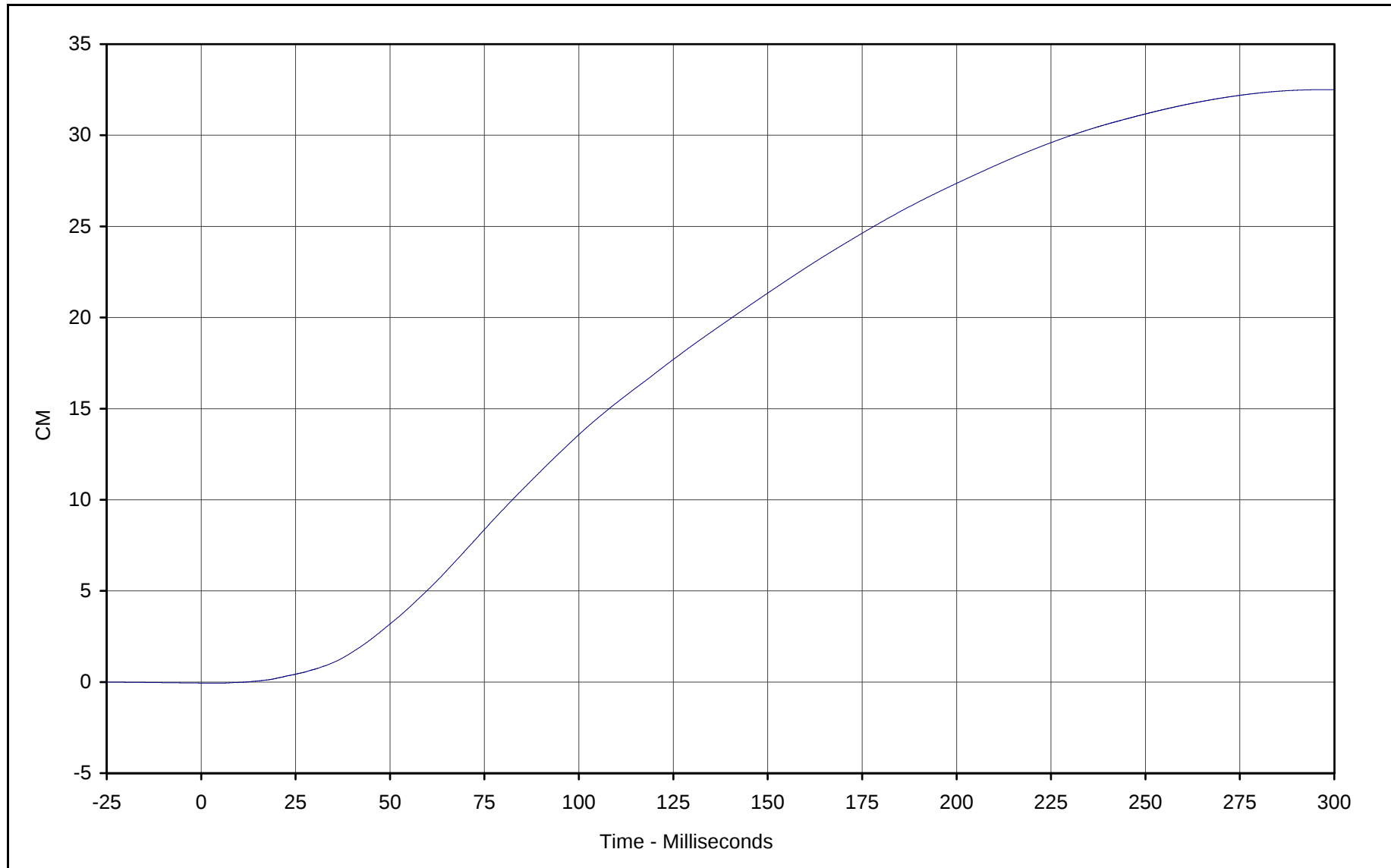
Curve Description: Vehicle Right Rear Z Velocity
Maximum Value: 8.3 at 73.1 Milliseconds
Minimum Value: -0.1 at 3.0 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN1-097

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Vehicle Right Rear Z Displ.
Maximum Value: 32.5 at 298.3 Milliseconds
Minimum Value: -0.1 at 4.3 Milliseconds
SAE Filter Class: 180
Date of Test: 12/4/01
Curve Number: IN2-097

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

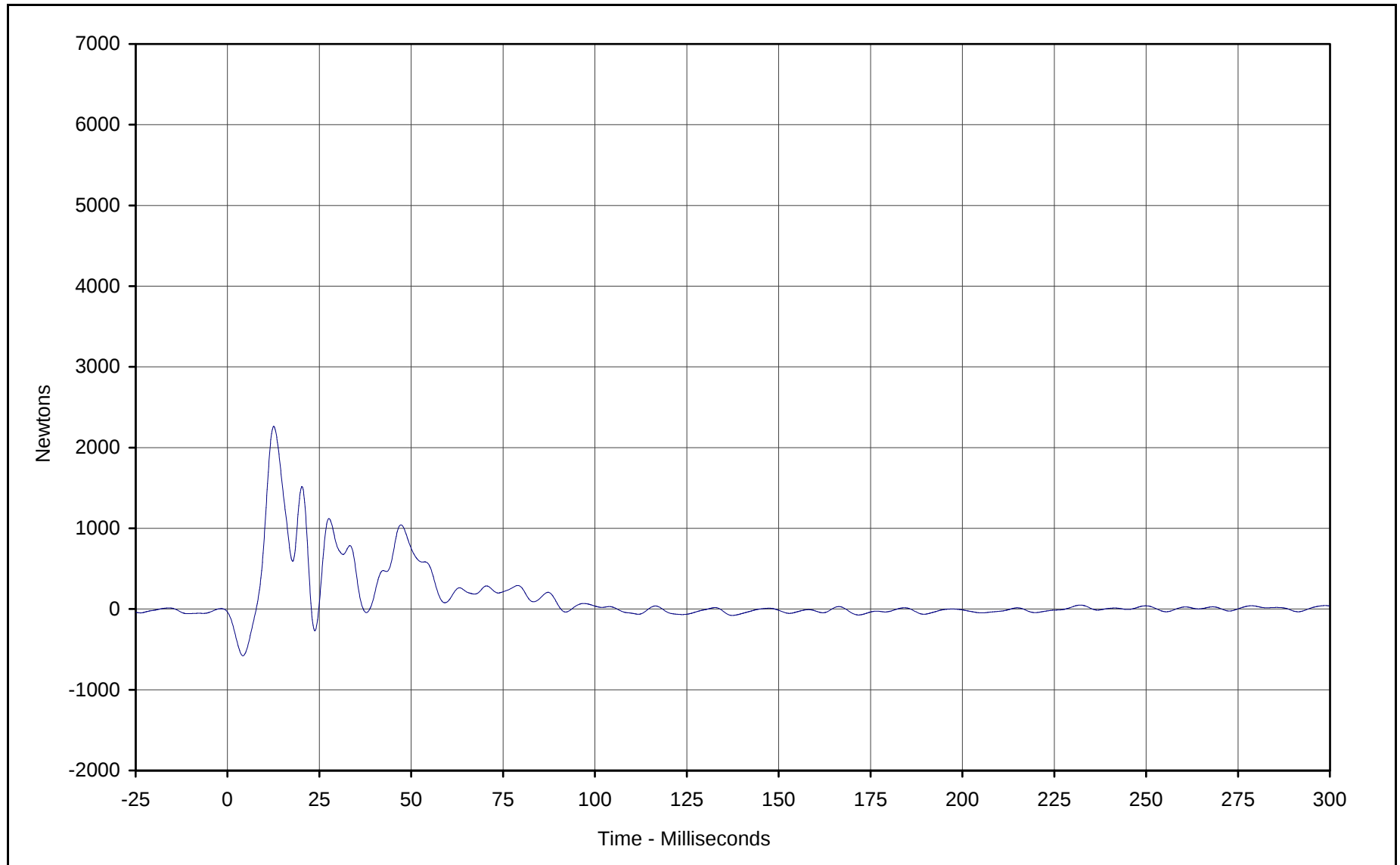


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APPENDIX C

LOAD CELL BARRIER DATA PLOTS

C-1



Curve Description: Barrier Force A2

Maximum Value: 2262.9 at 12.6 Milliseconds

Minimum Value: -579.3 at 4.2 Milliseconds

SAE Filter Class: 60

Date of Test: 12/4/01

Curve Number: FIL-099

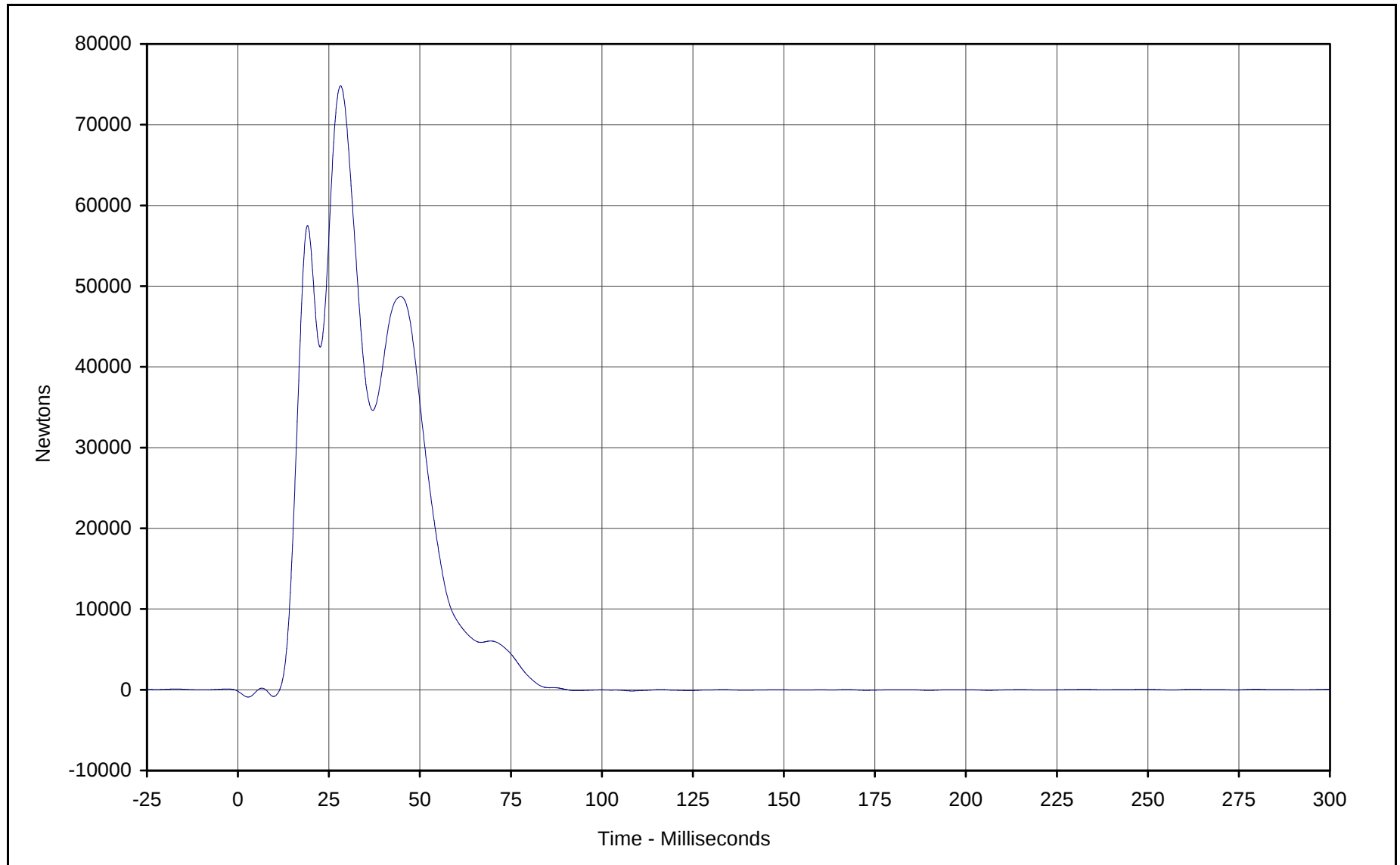
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-2



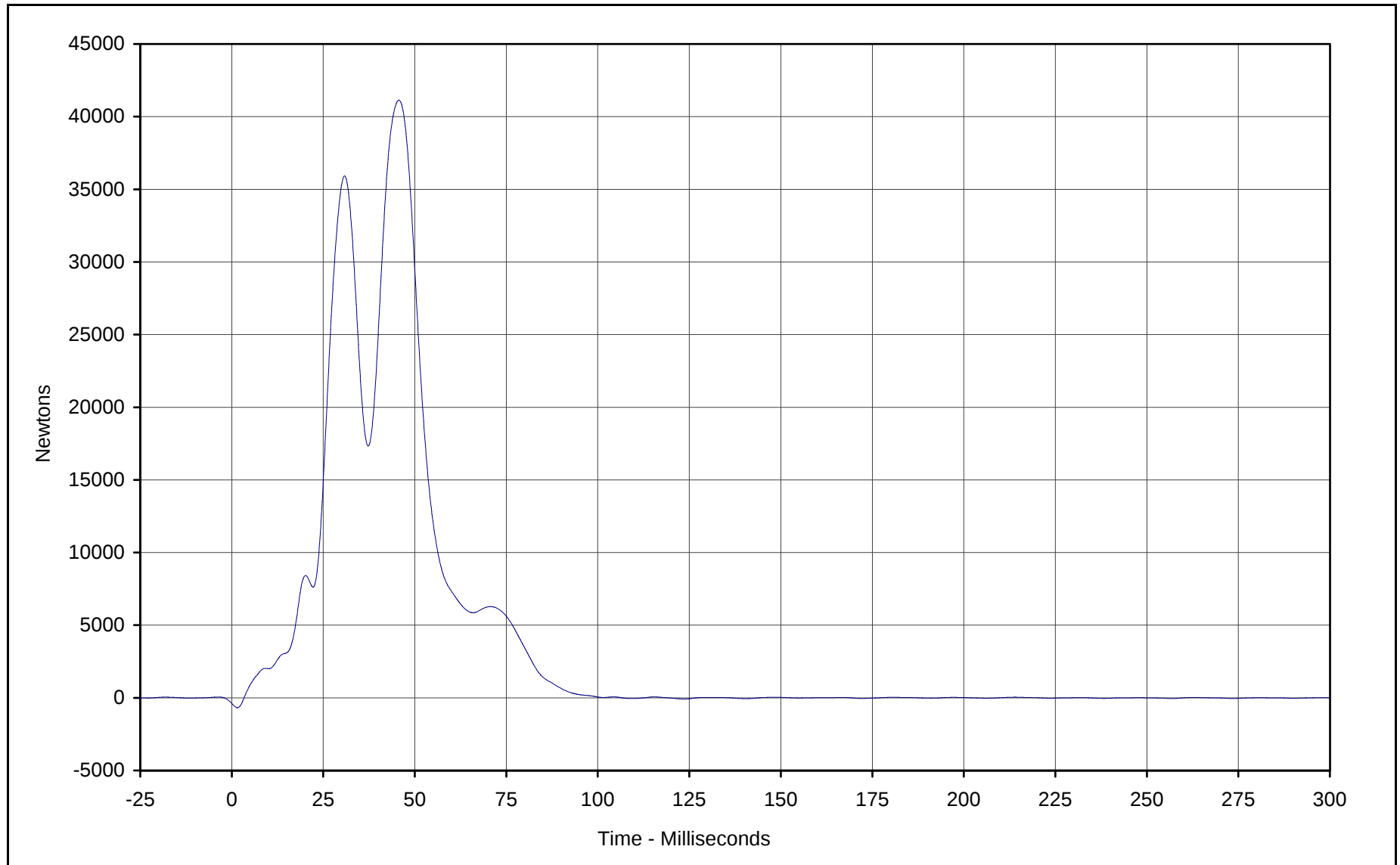
Curve Description: Barrier Force A3
Maximum Value: 74825.8 at 28.2 Milliseconds
Minimum Value: -904.3 at 2.8 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-100

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-3



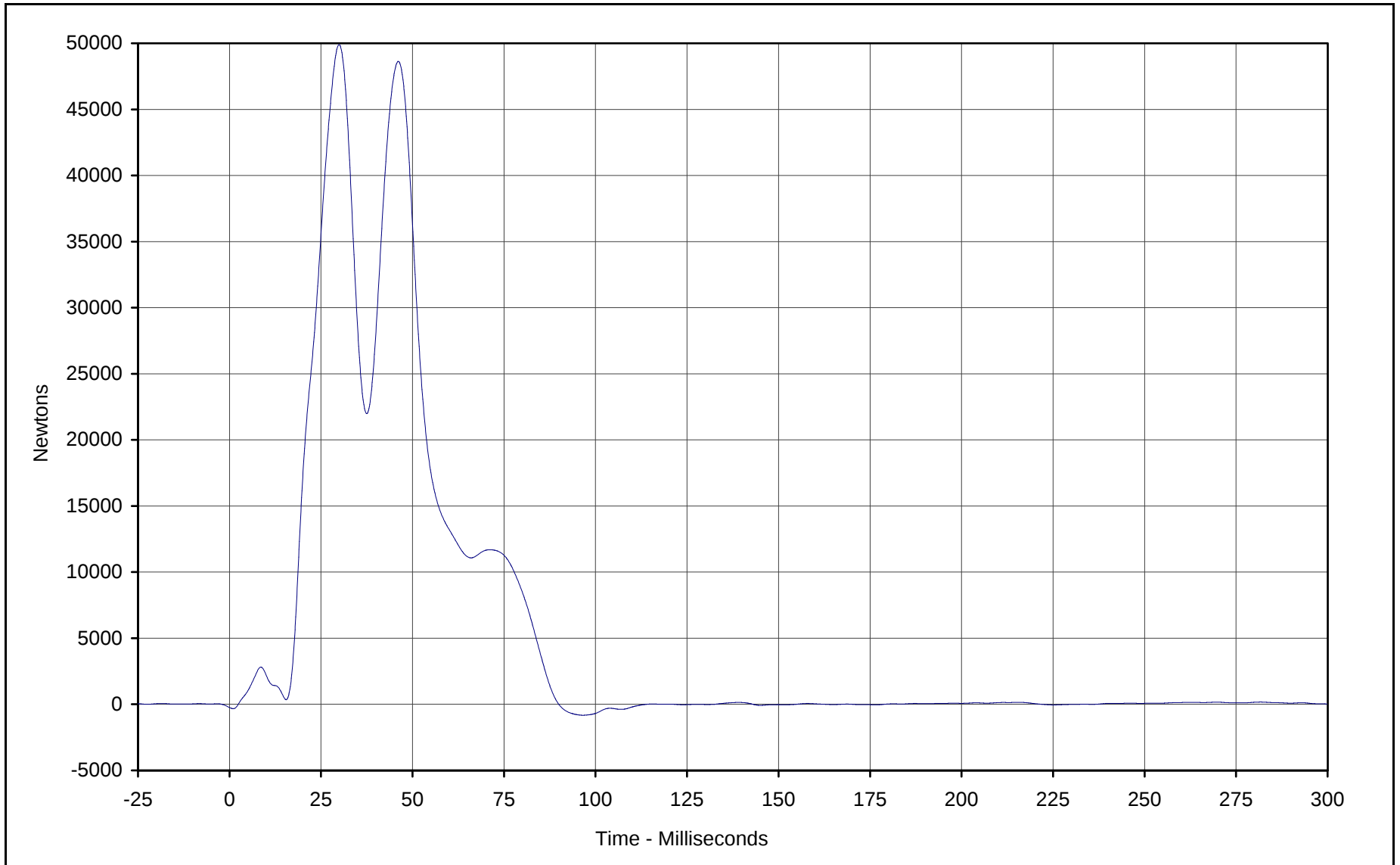
Curve Description: Barrier Force A4
Maximum Value: 41136.3 at 45.7 Milliseconds
Minimum Value: -678.8 at 1.5 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-101

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-4



Curve Description: Barrier Force A5

Maximum Value: 49899.6 at 29.9 Milliseconds

Minimum Value: -827.4 at 96.5 Milliseconds

SAE Filter Class: 60

Date of Test: 12/4/01

Curve Number: FIL-102

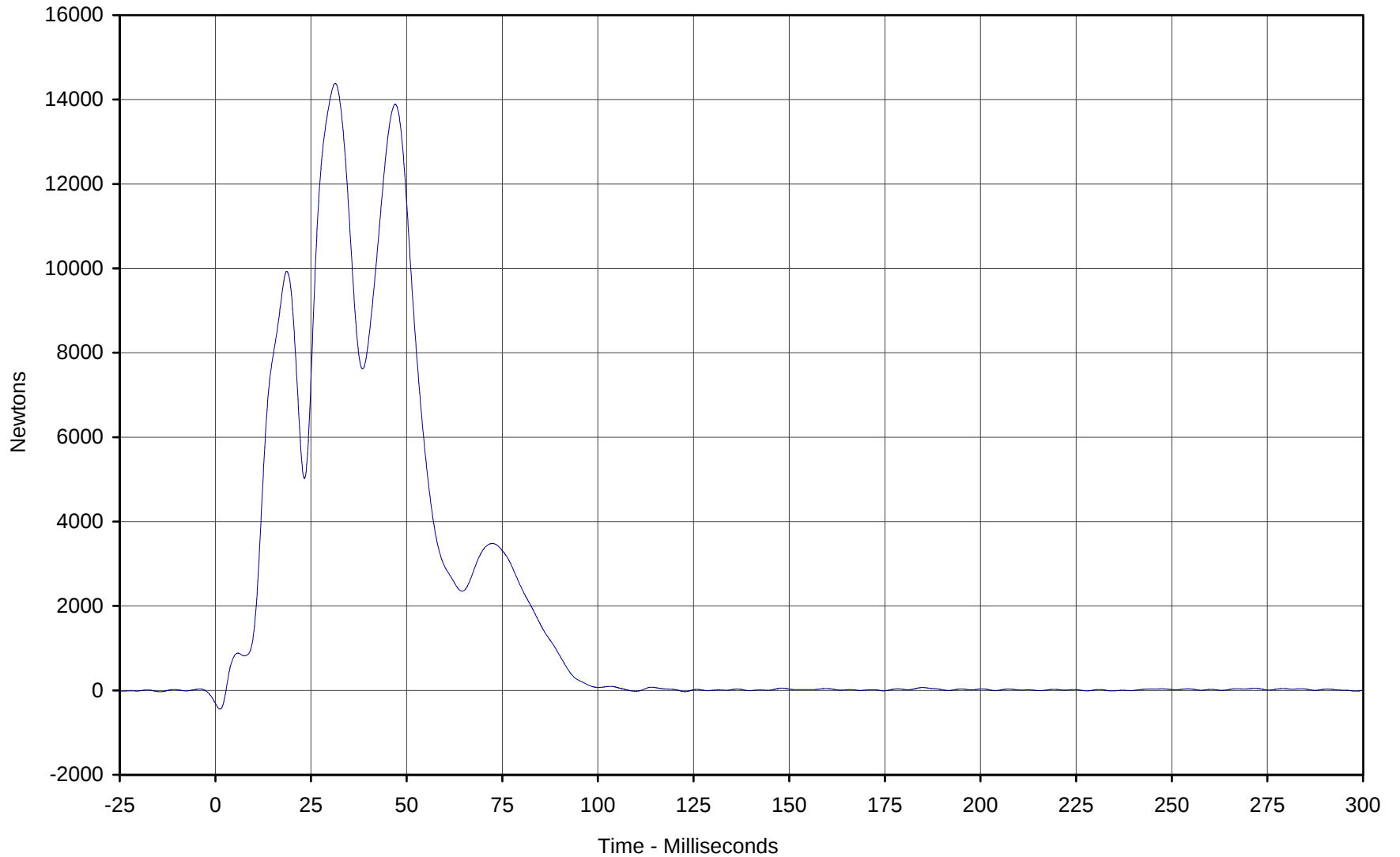
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-5



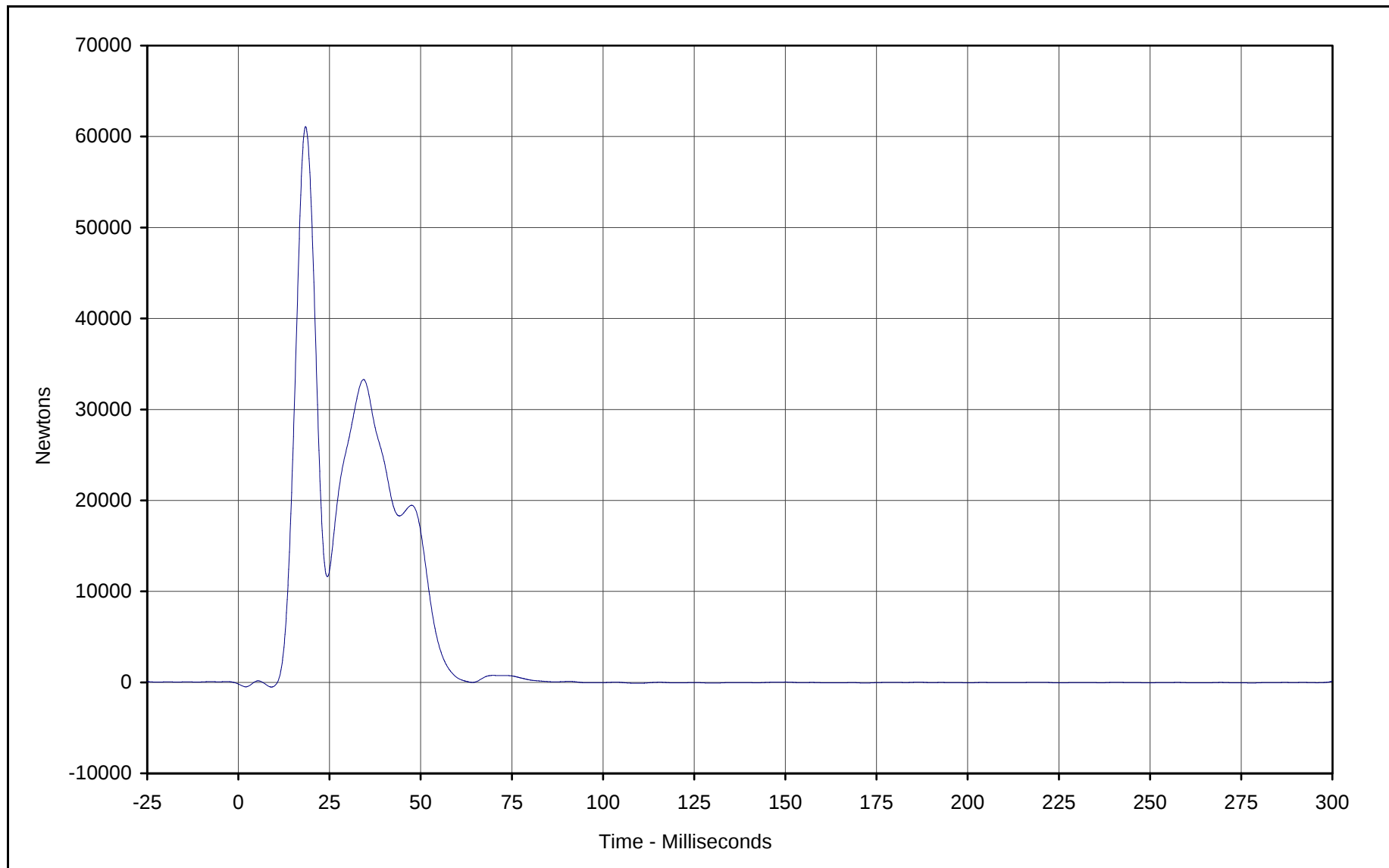
Curve Description: Barrier Force A6
Maximum Value: 14386.3 at 31.3 Milliseconds
Minimum Value: -443.5 at 1.2 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-103

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-6



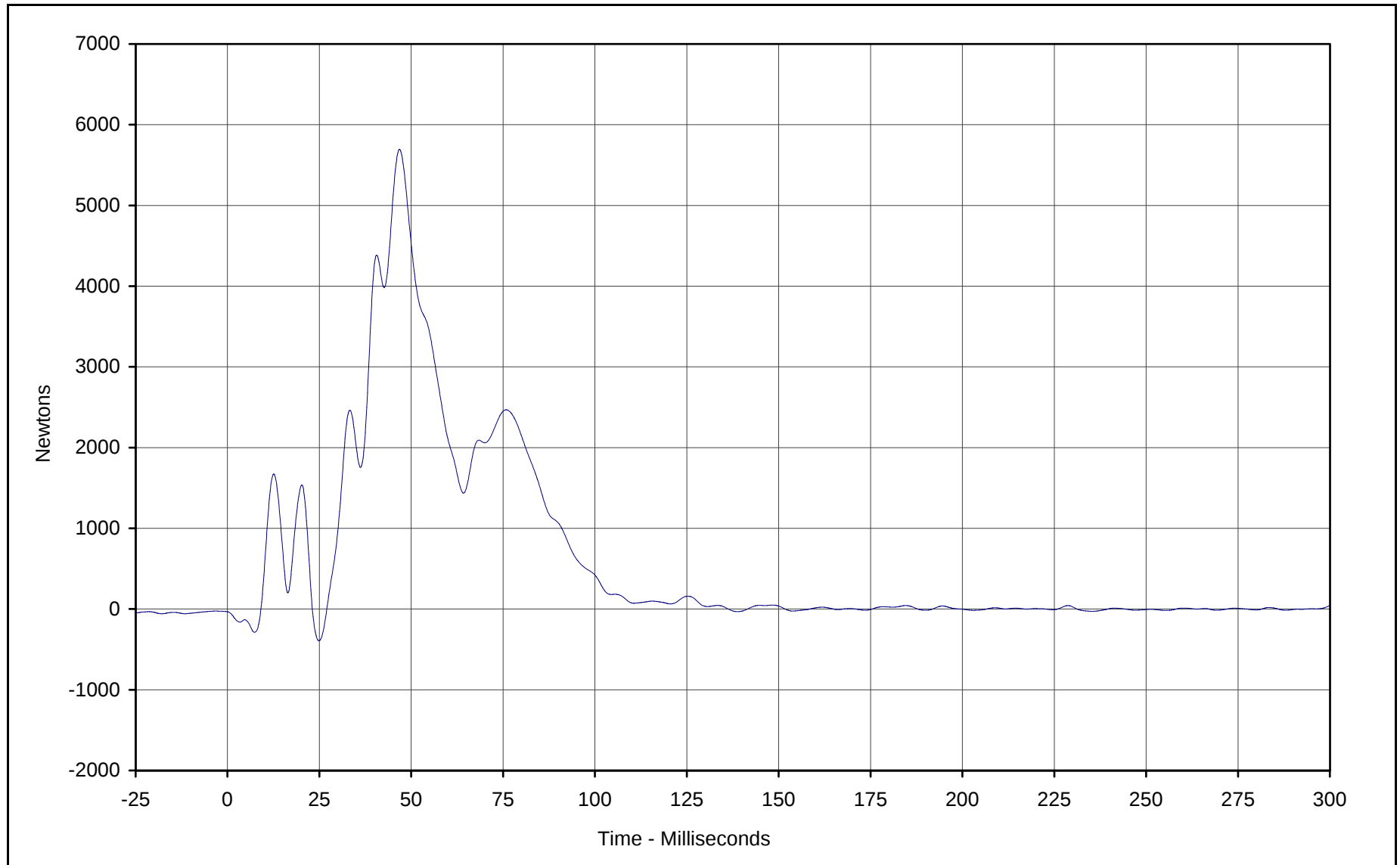
Curve Description: Barrier Force A7
Maximum Value: 61085.5 at 18.4 Milliseconds
Minimum Value: -514.7 at 9.1 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-104

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-7



Curve Description: Barrier Force A8
Maximum Value: 5694.6 at 46.8 Milliseconds
Minimum Value: -393.5 at 24.9 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-105

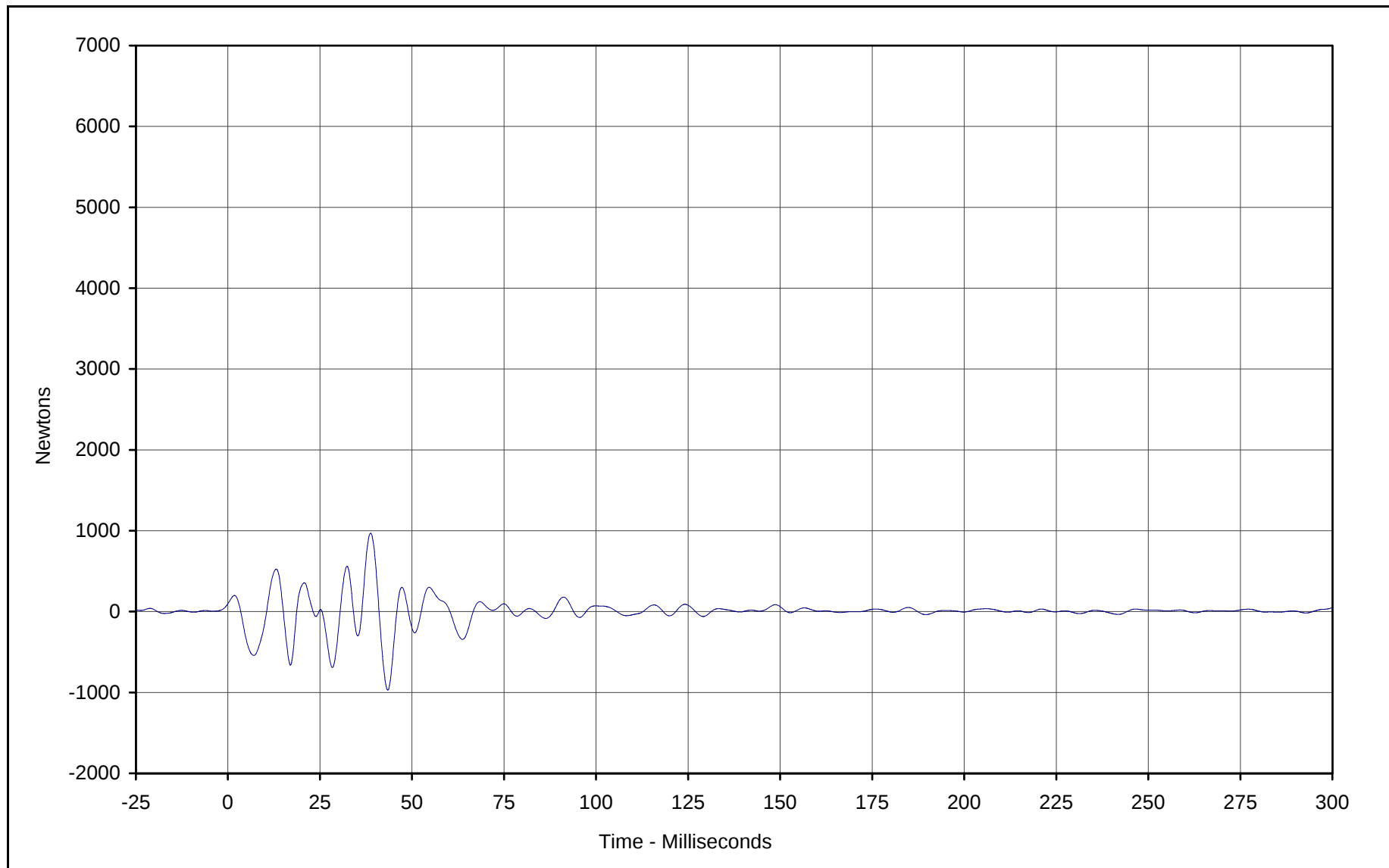
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-8



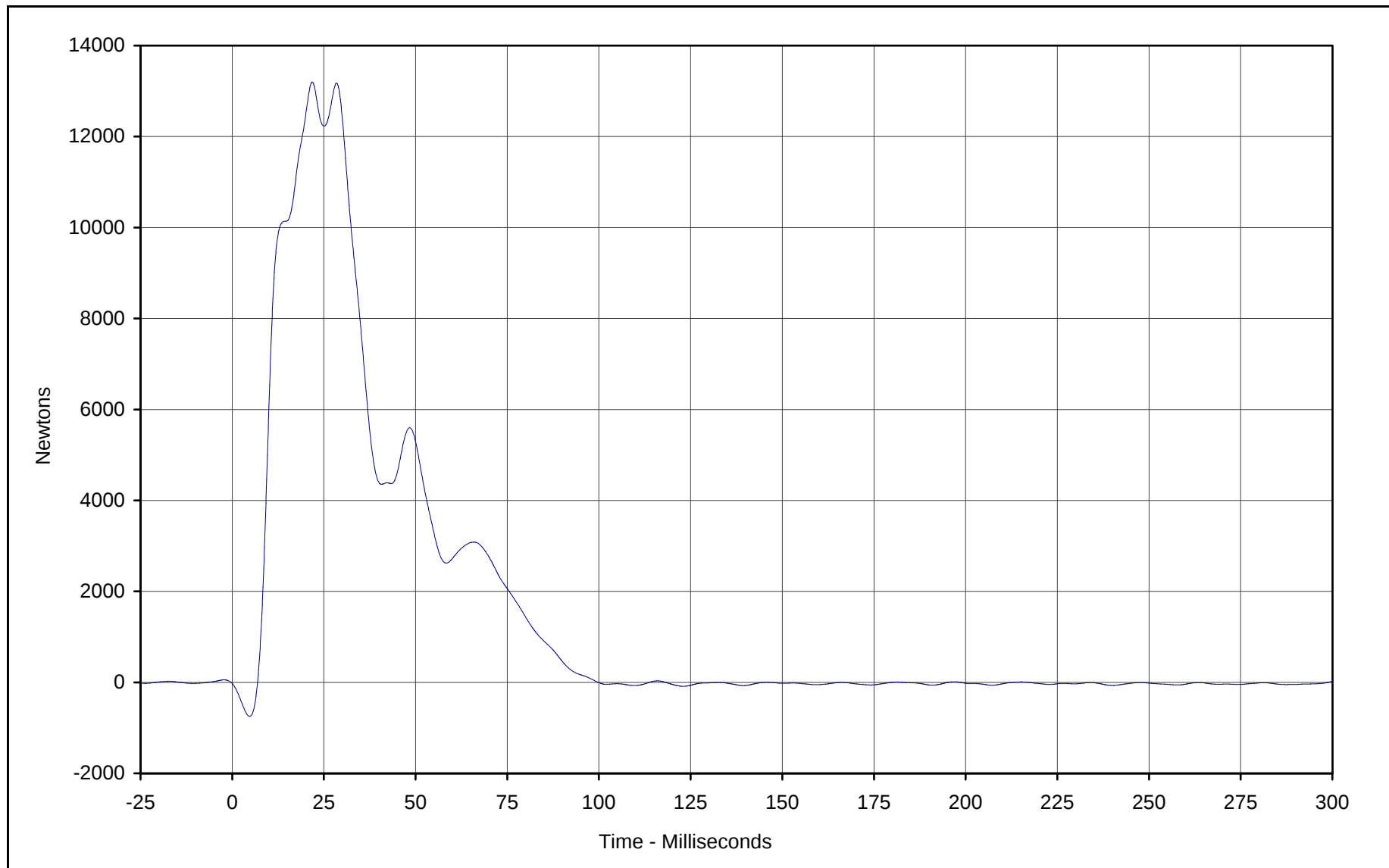
Curve Description: Barrier Force A9
Maximum Value: 969.8 at 38.8 Milliseconds
Minimum Value: -970.2 at 43.4 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-106

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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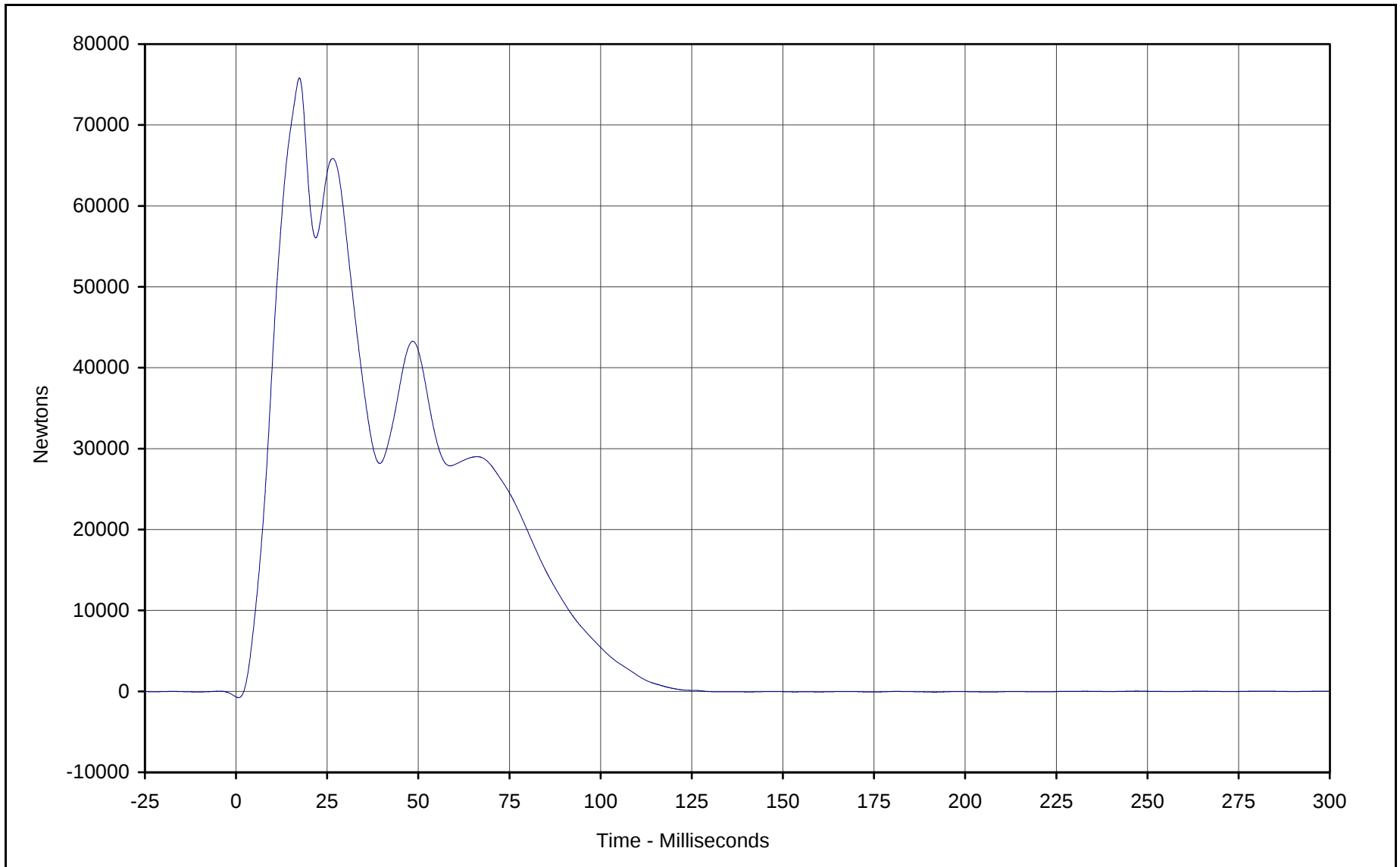
Curve Description: Barrier Force B2
Maximum Value: 13198.6 at 21.8 Milliseconds
Minimum Value: -748.1 at 4.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-108

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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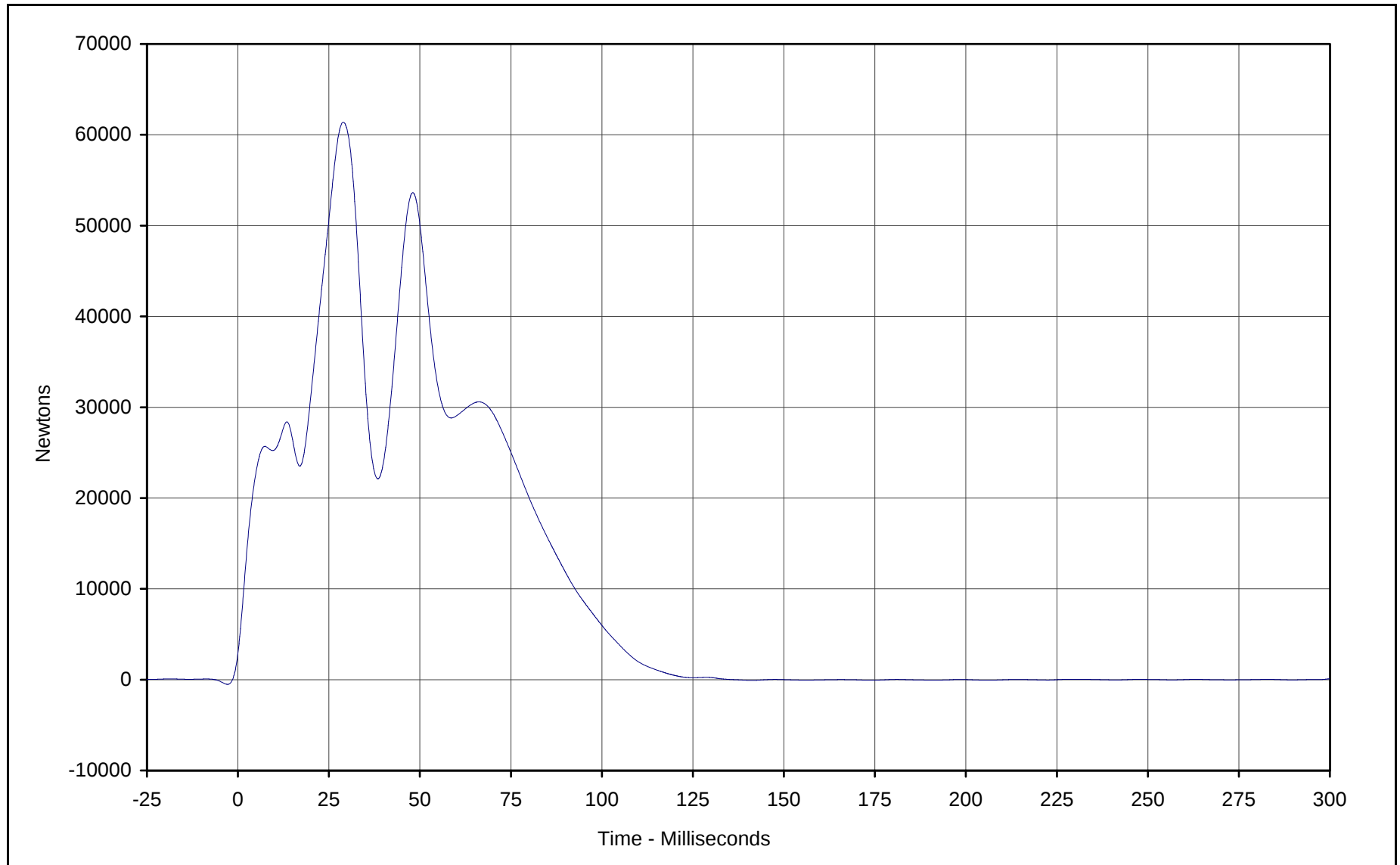
Curve Description: Barrier Force B3
Maximum Value: 75812.4 at 17.4 Milliseconds
Minimum Value: -774.0 at 0.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-109

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-11



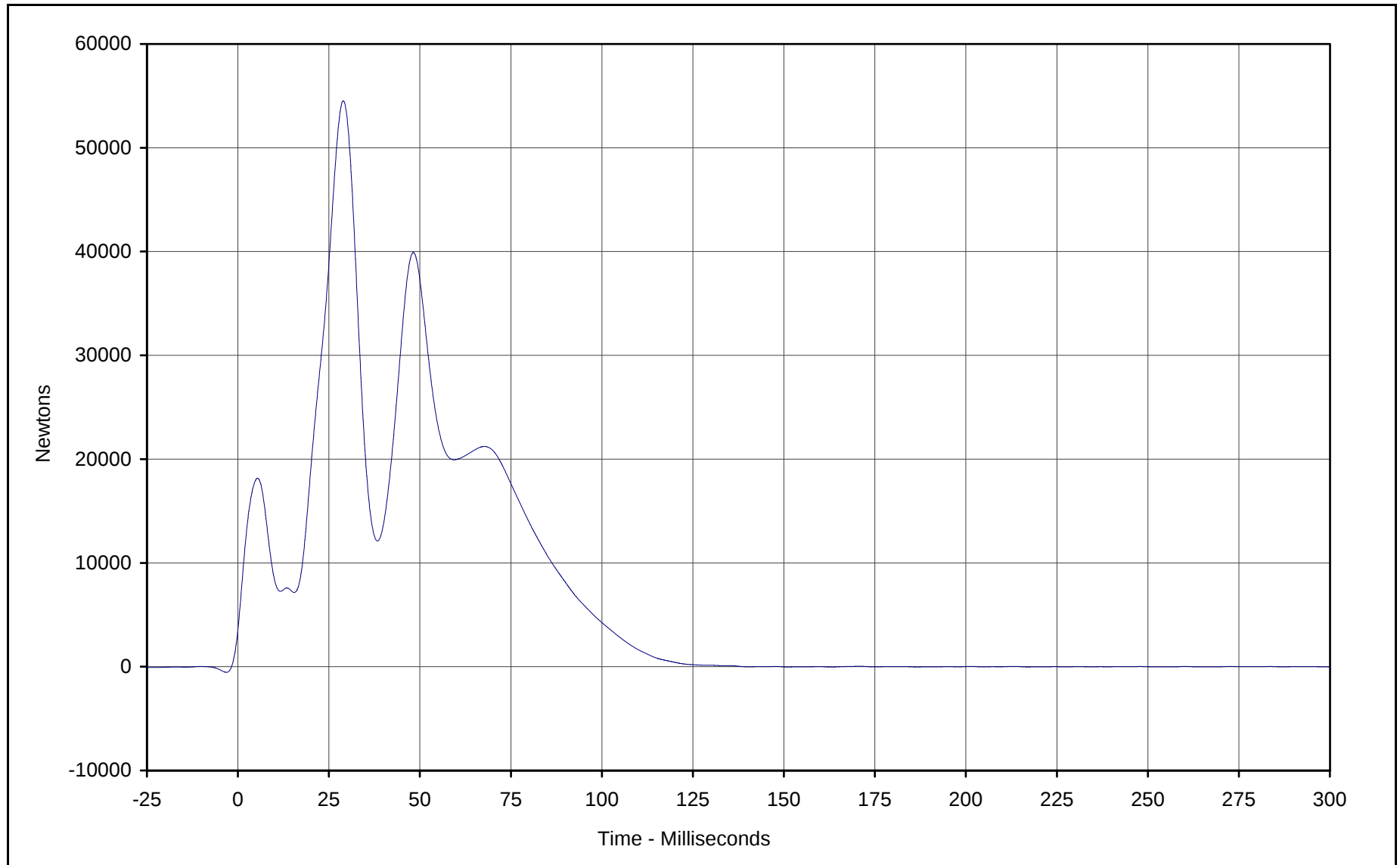
Curve Description: Barrier Force B4
Maximum Value: 61380.8 at 28.9 Milliseconds
Minimum Value: -77.8 at 141.1 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-110

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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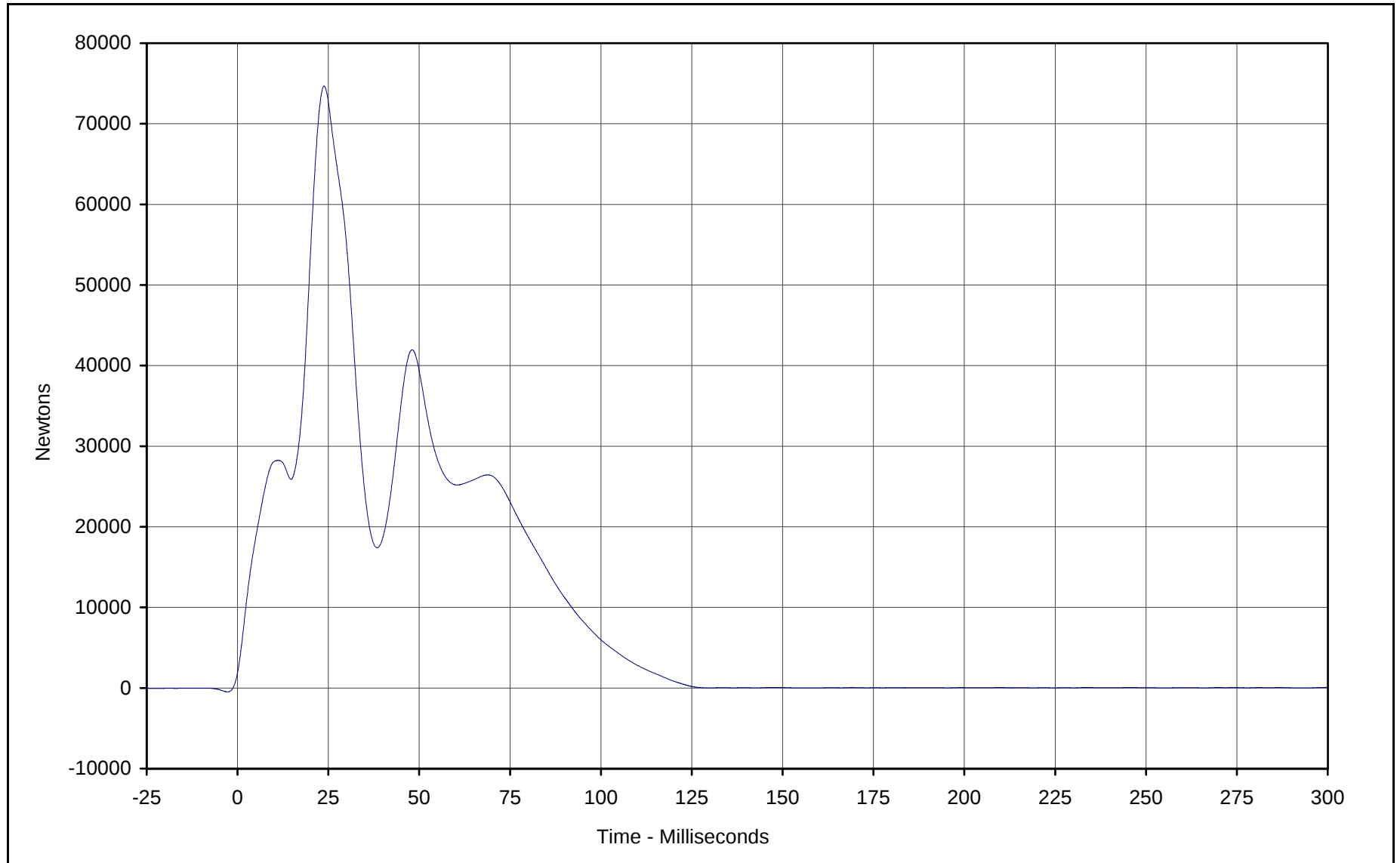
Curve Description: Barrier Force B5
Maximum Value: 54519.6 at 28.9 Milliseconds
Minimum Value: -33.7 at 163.1 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-111

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-13



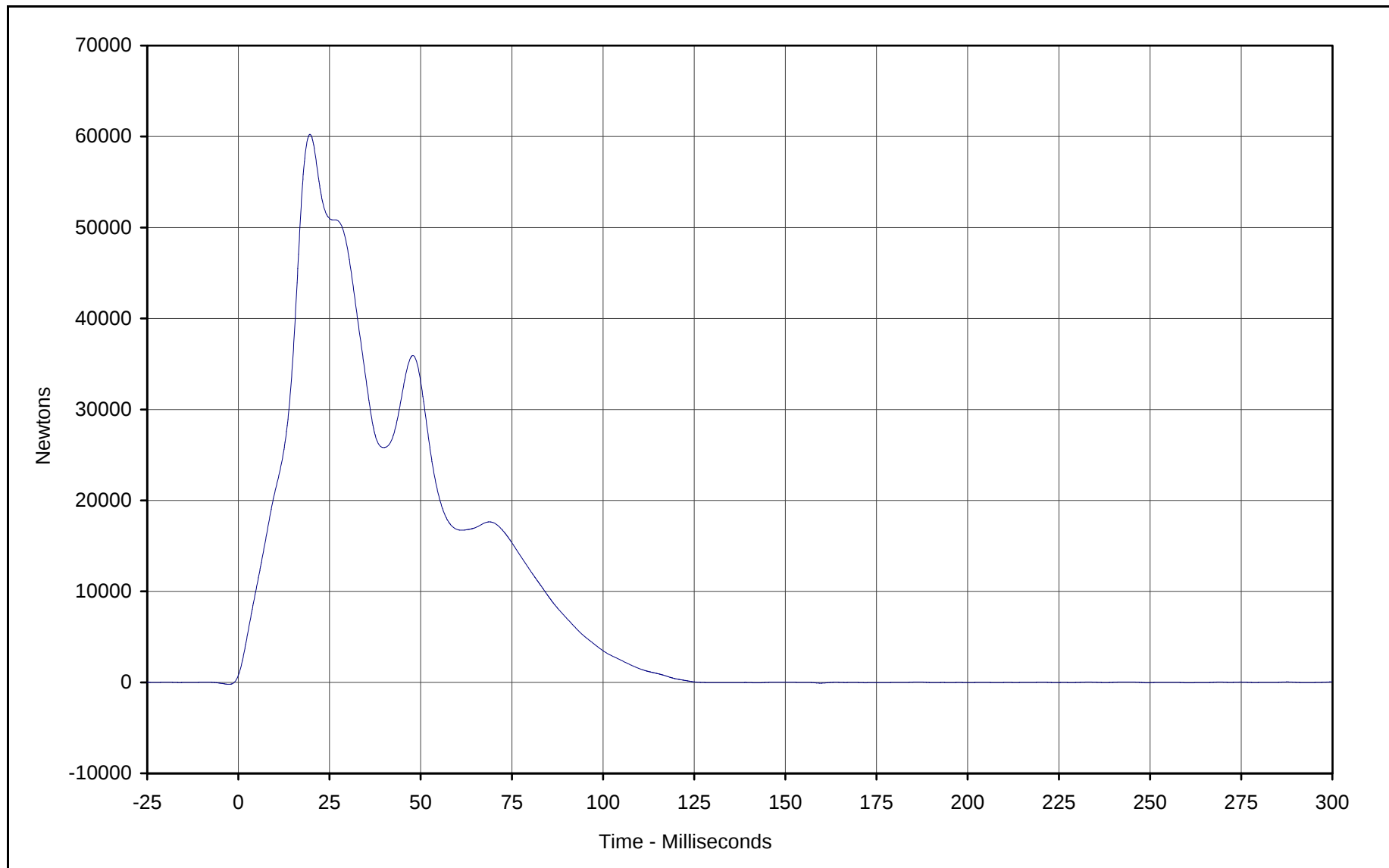
Curve Description: Barrier Force B6
Maximum Value: 74679.5 at 23.8 Milliseconds
Minimum Value: 6.5 at 254.9 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-112

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-14



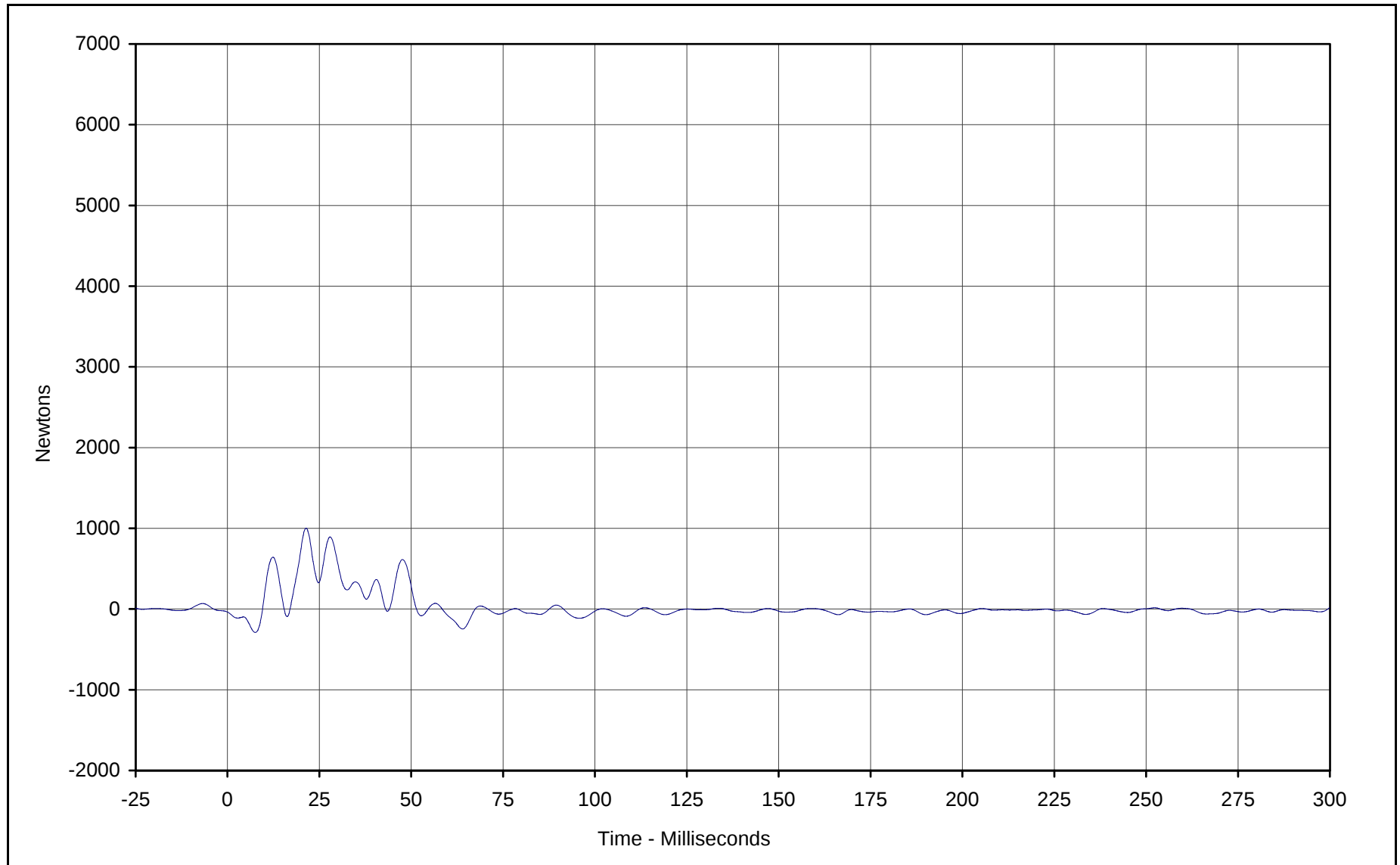
Curve Description: Barrier Force B7
Maximum Value: 60243.2 at 19.6 Milliseconds
Minimum Value: -88.9 at 159.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-113

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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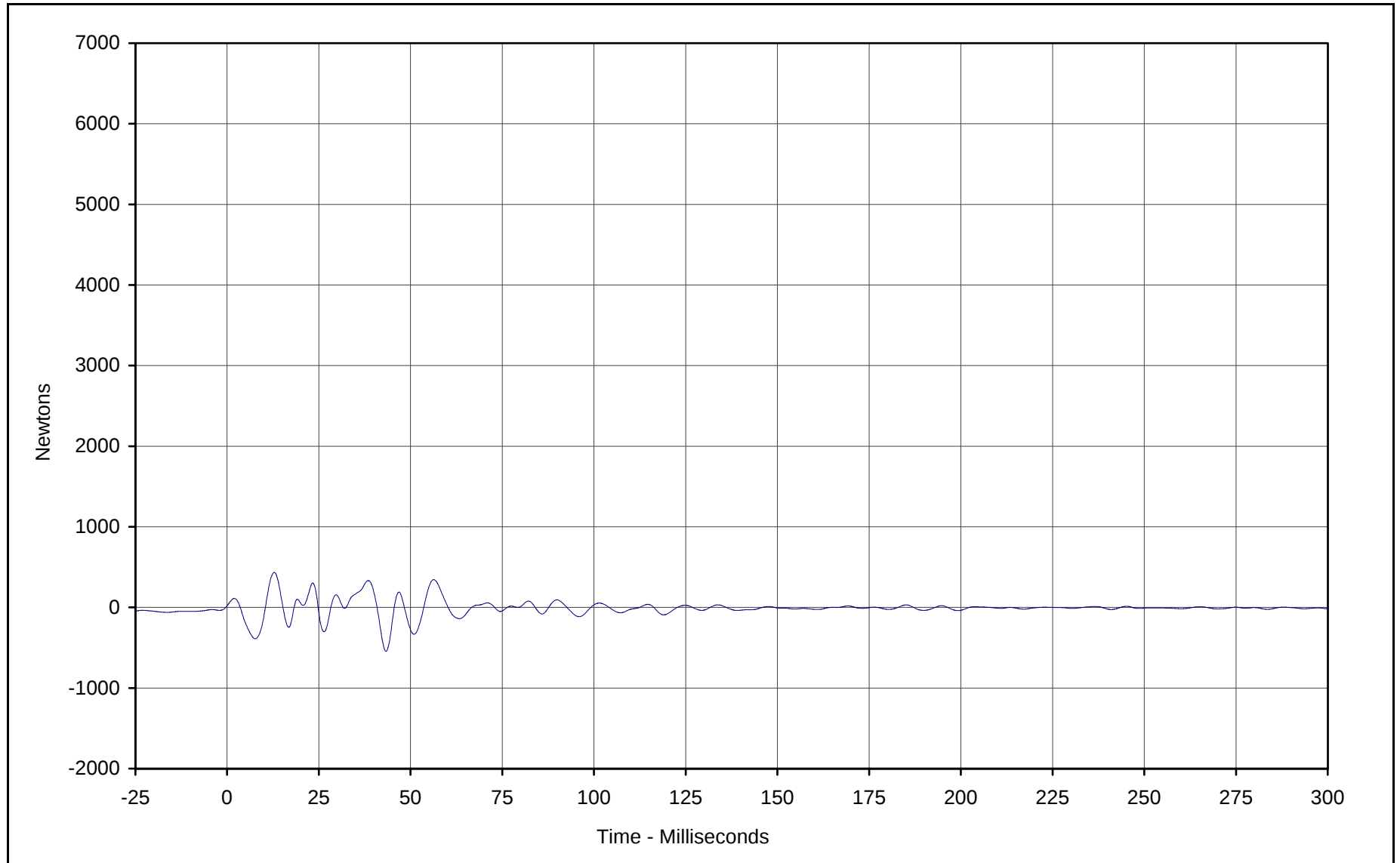


Curve Description: Barrier Force B8
Maximum Value: 1003.6 at 21.4 Milliseconds
Minimum Value: -289.8 at 7.6 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-114

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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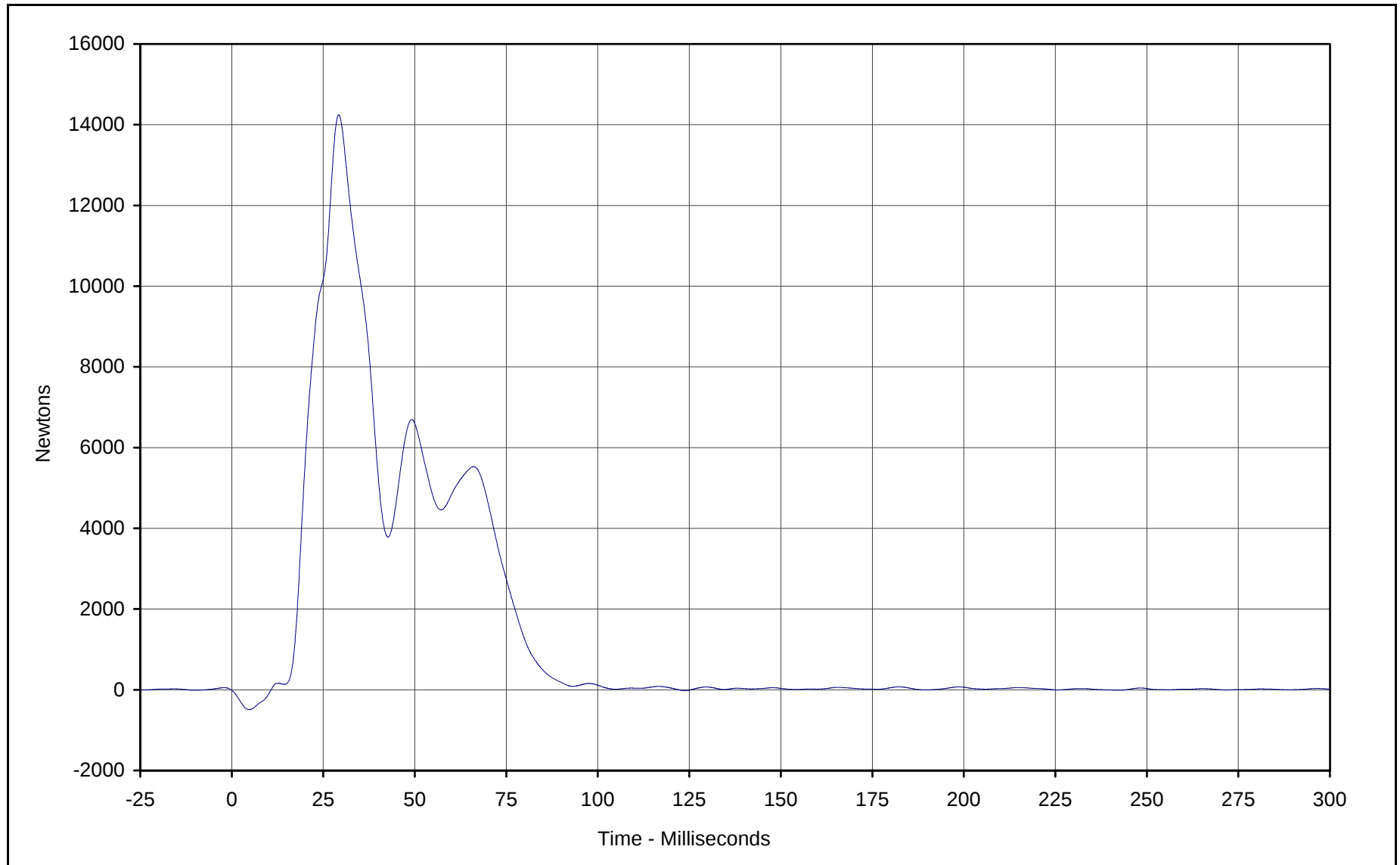


Curve Description: Barrier Force B9
Maximum Value: 435.0 at 12.9 Milliseconds
Minimum Value: -545.0 at 43.3 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-115

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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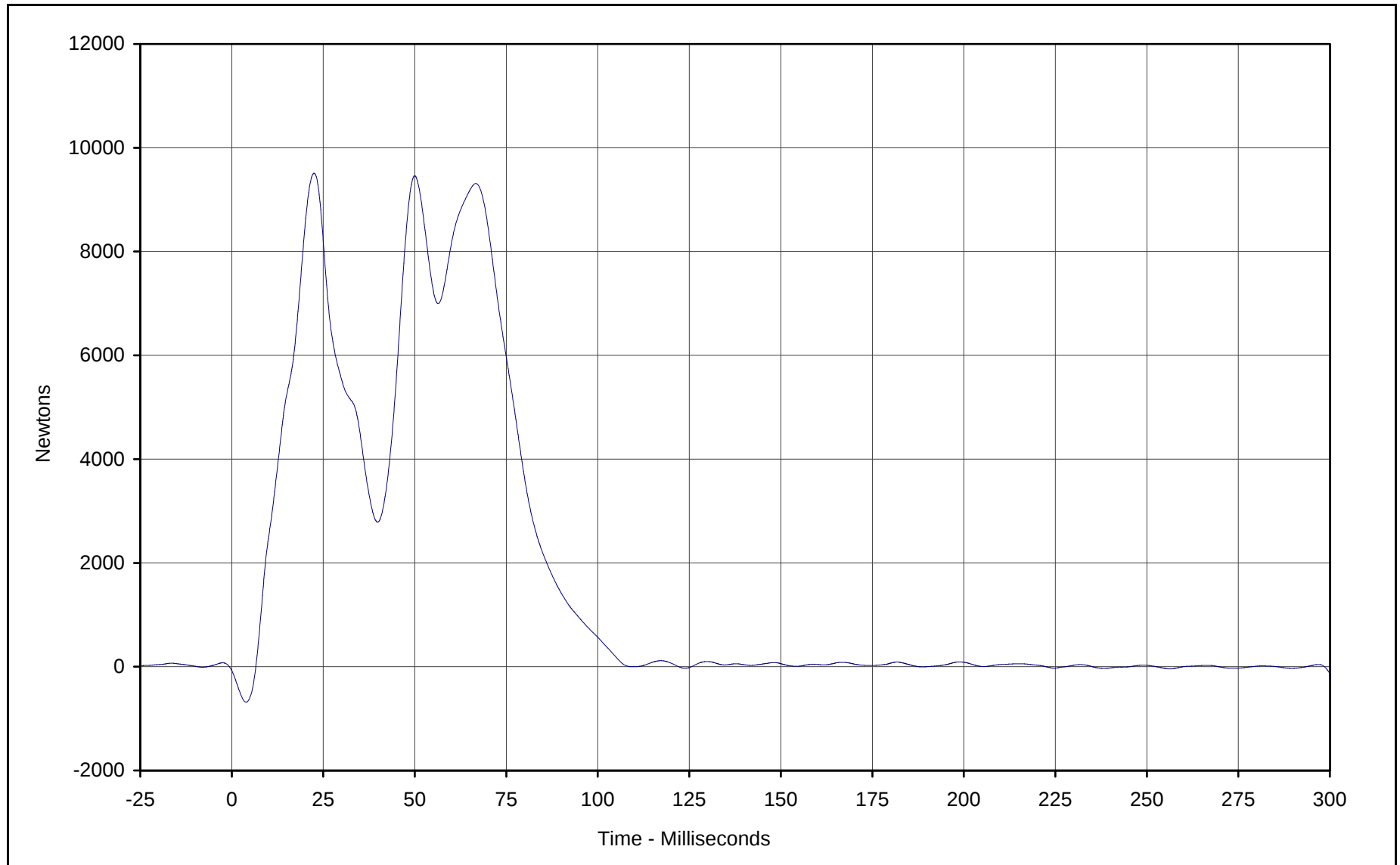
Curve Description: Barrier Force C2
Maximum Value: 14246.8 at 29.2 Milliseconds
Minimum Value: -493.5 at 4.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-117

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description: Barrier Force C3

Maximum Value: 9509.1 at 22.5 Milliseconds

Minimum Value: -683.8 at 3.9 Milliseconds

SAE Filter Class: 60

Date of Test: 12/4/01

Curve Number: FIL-118

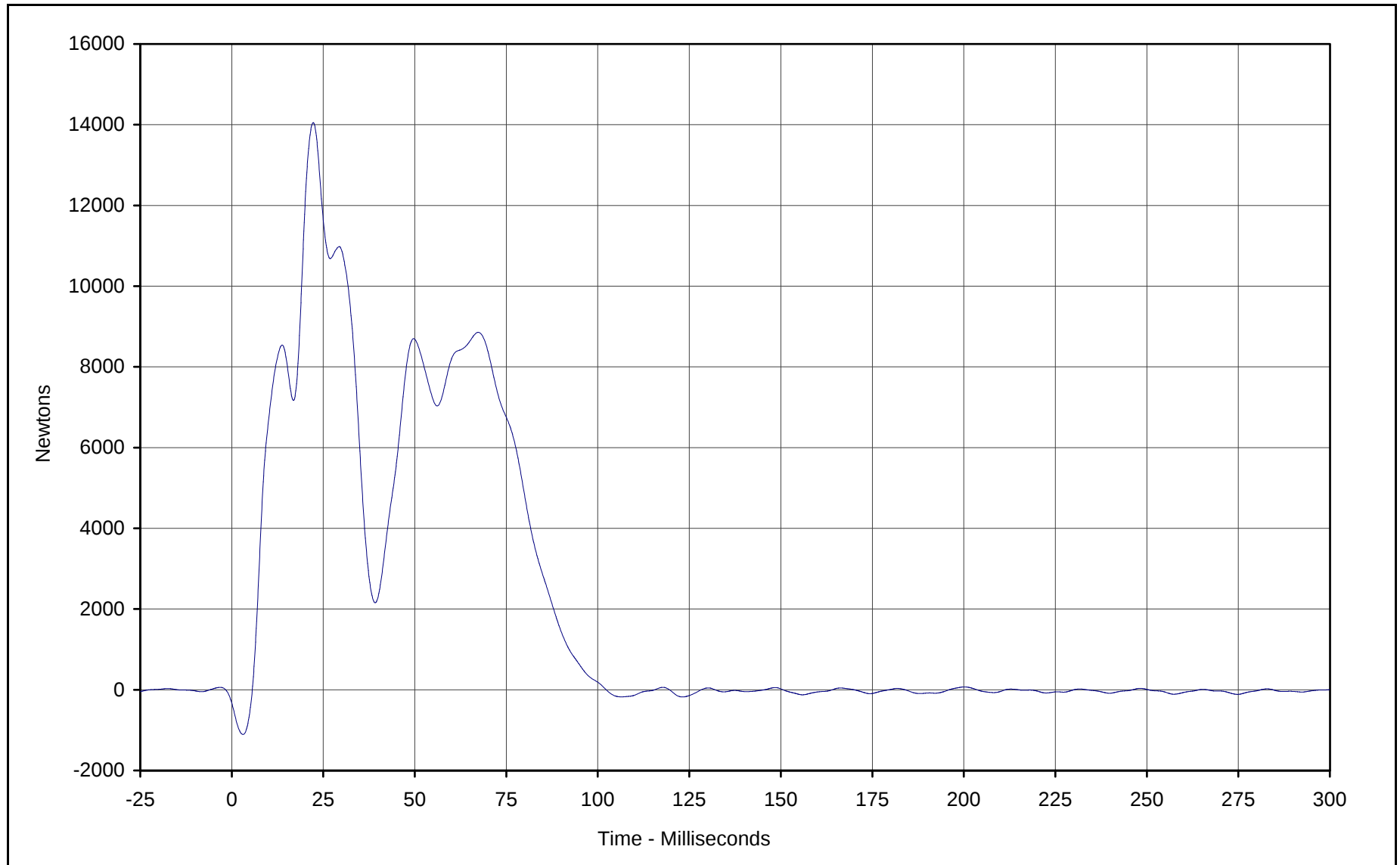
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-19



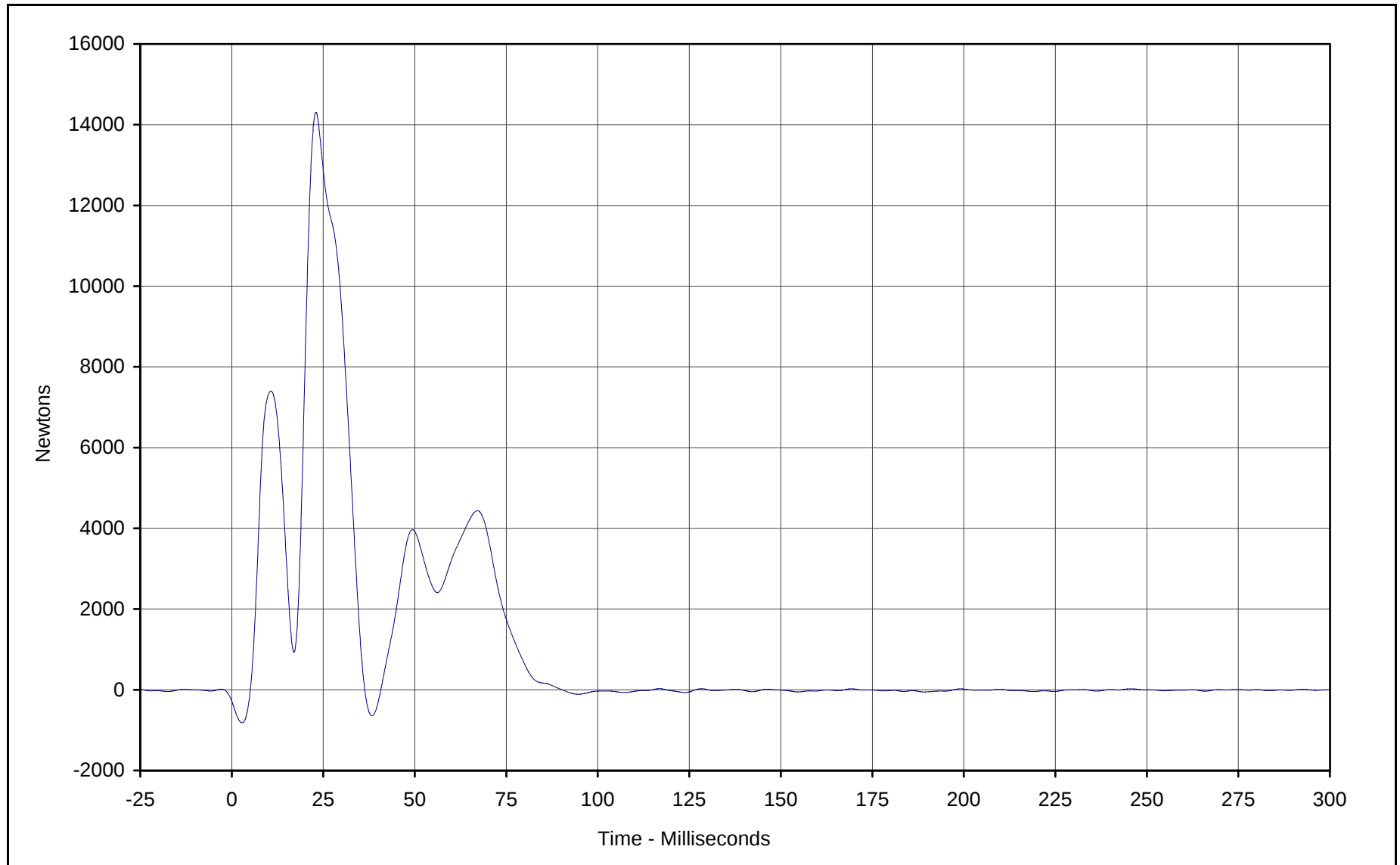
Curve Description: Barrier Force C4
Maximum Value: 14052.0 at 22.2 Milliseconds
Minimum Value: -1108.1 at 3.1 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-119

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-20



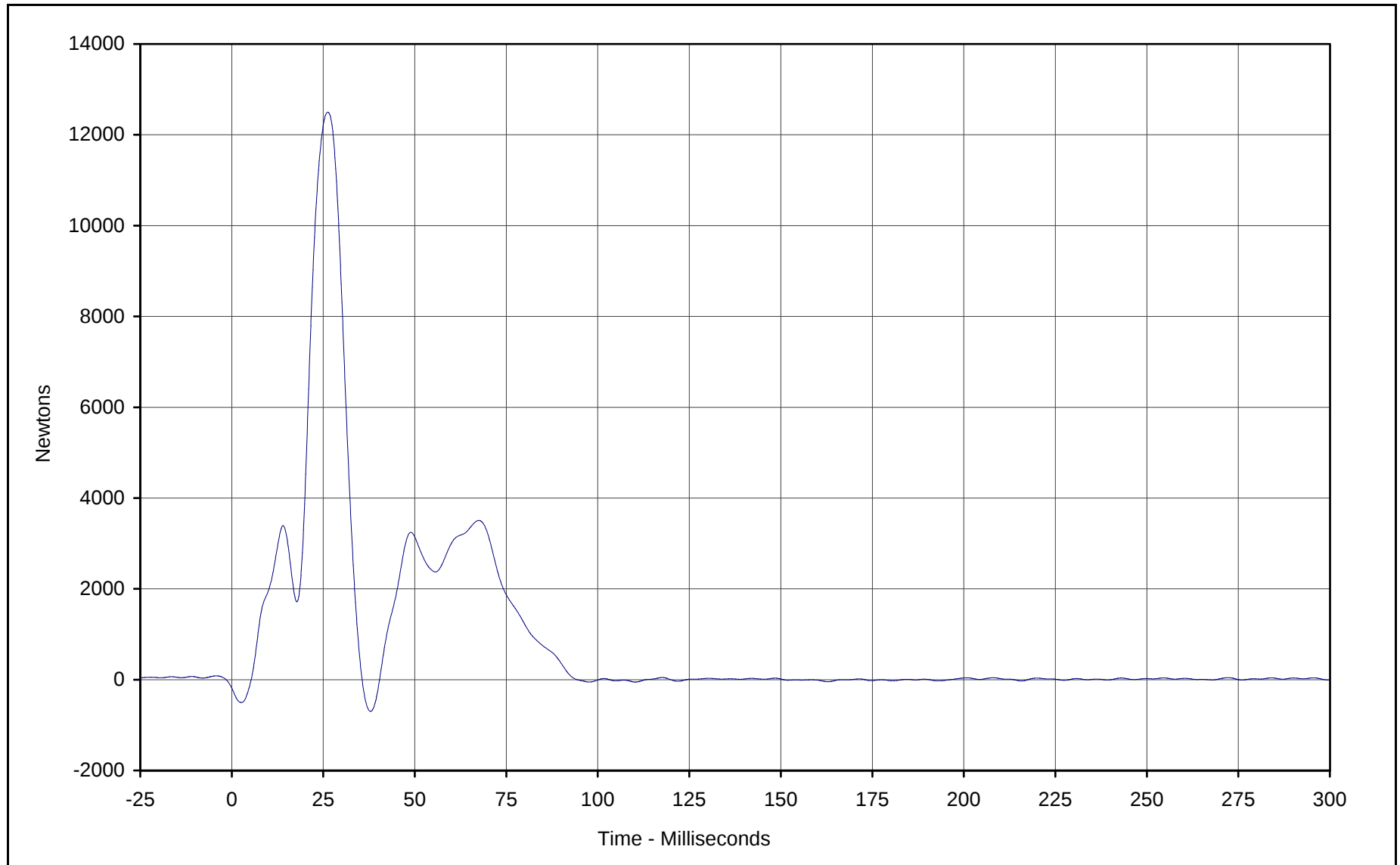
Curve Description: Barrier Force C5
Maximum Value: 14307.0 at 23.0 Milliseconds
Minimum Value: -817.0 at 2.9 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-120

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-21



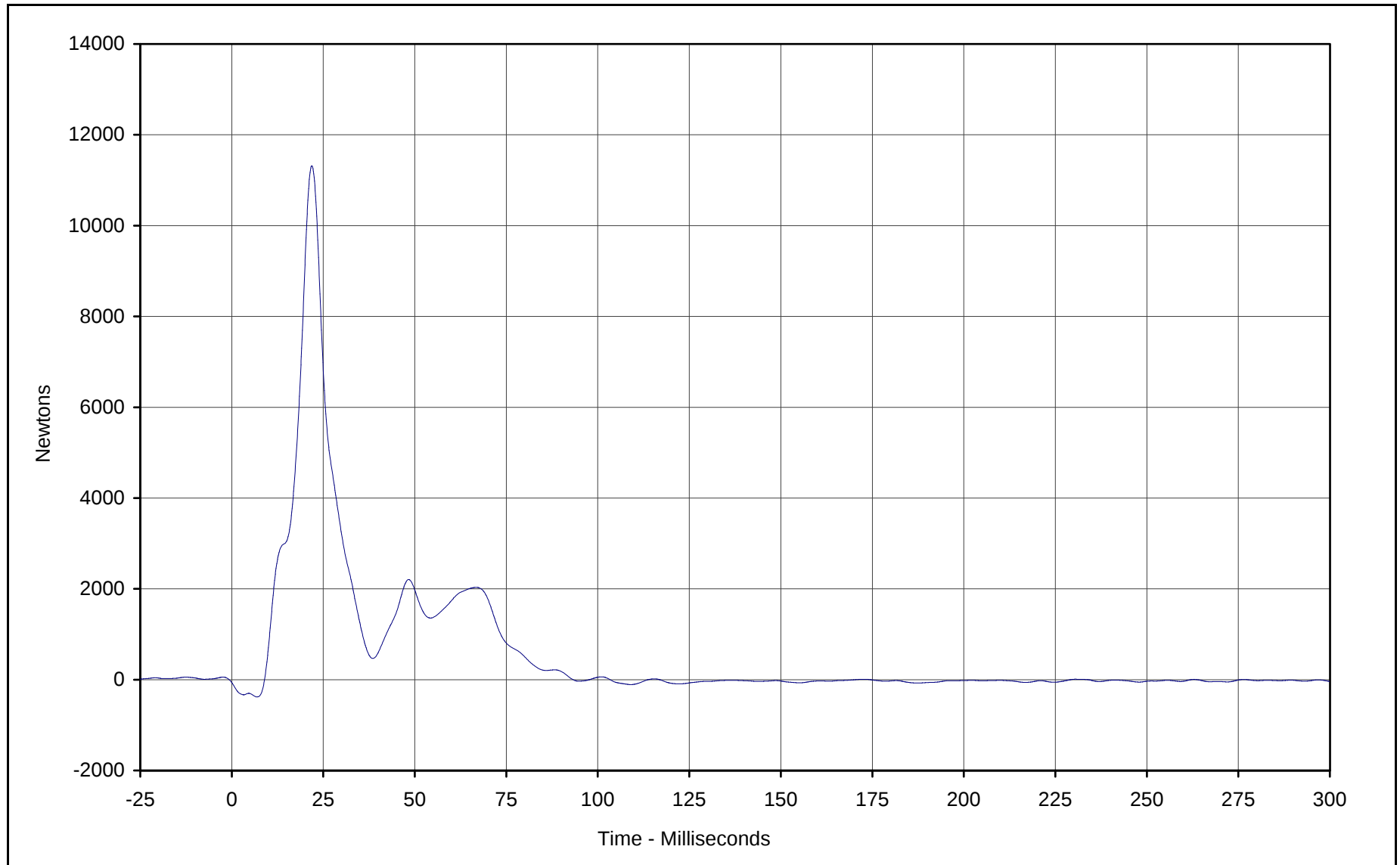
Curve Description: Barrier Force C6
Maximum Value: 12498.2 at 26.2 Milliseconds
Minimum Value: -697.3 at 37.9 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-121

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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Curve Description:	Barrier Force C7		
Maximum Value:	11316.3	at	21.9 Milliseconds
Minimum Value:	-379.8	at	6.9 Milliseconds
SAE Filter Class:	60		
Date of Test:	12/4/01		
Curve Number:	FIL-122		

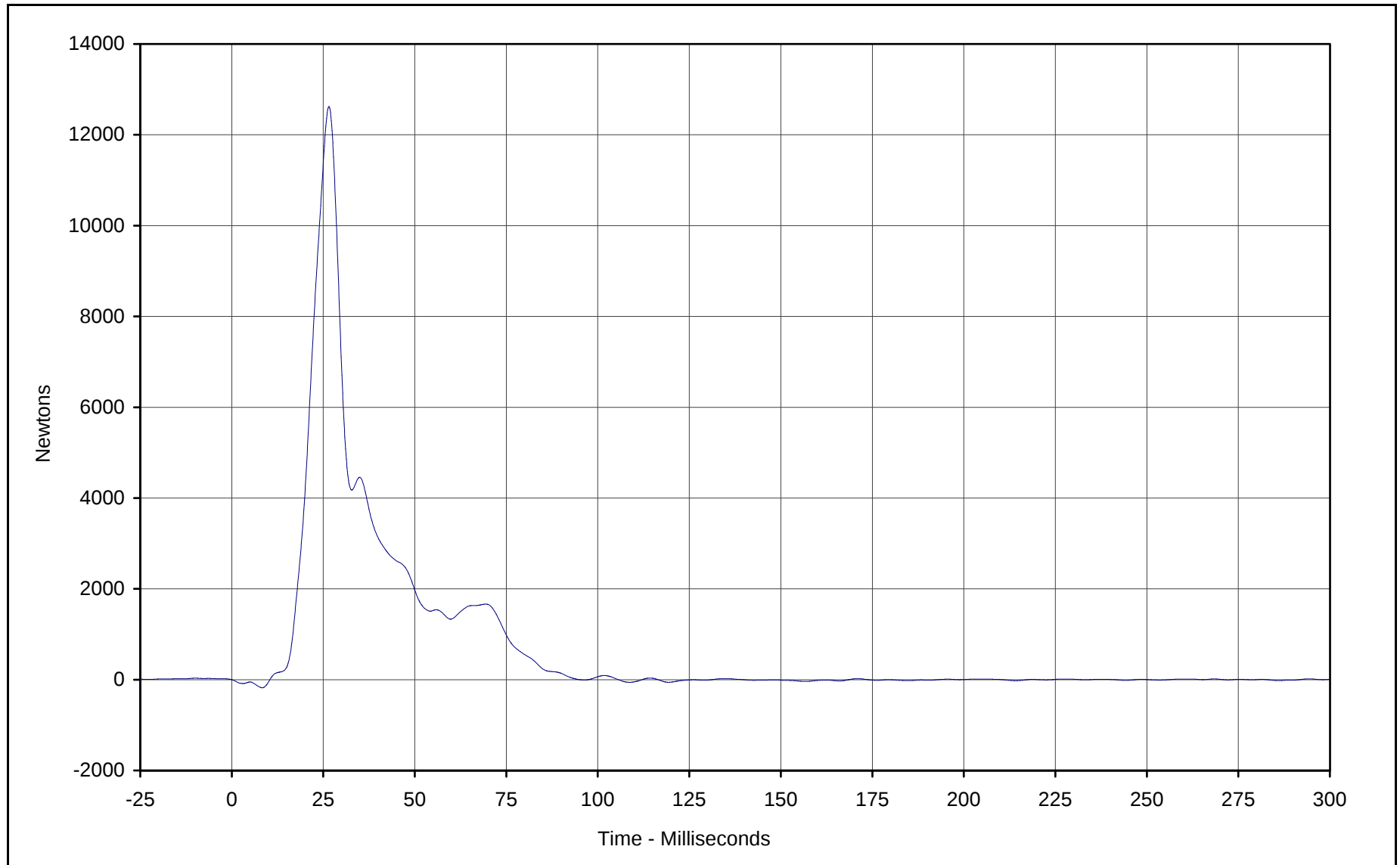
Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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C-23



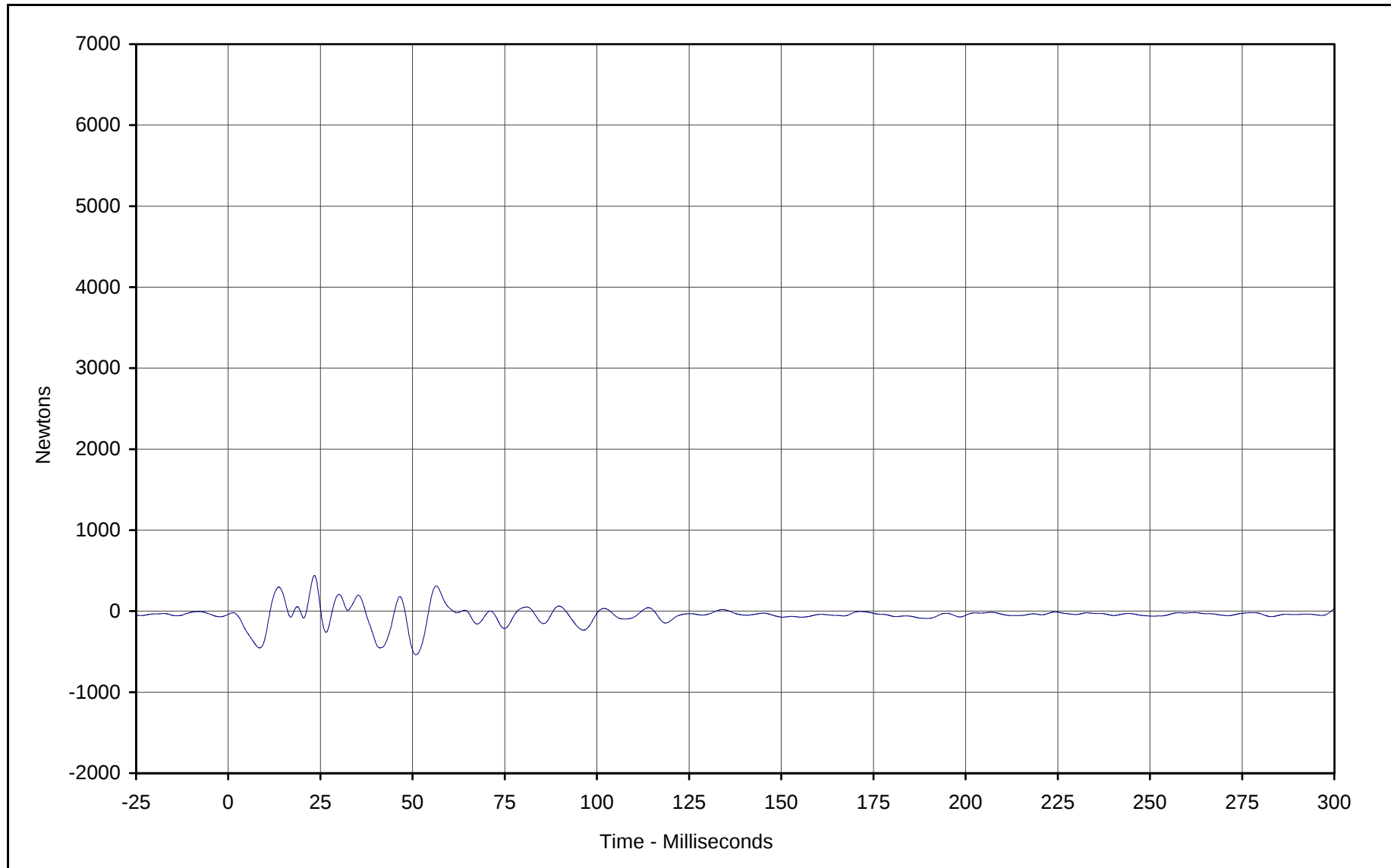
Curve Description: Barrier Force C8
Maximum Value: 12622.7 at 26.5 Milliseconds
Minimum Value: -178.7 at 8.3 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-123

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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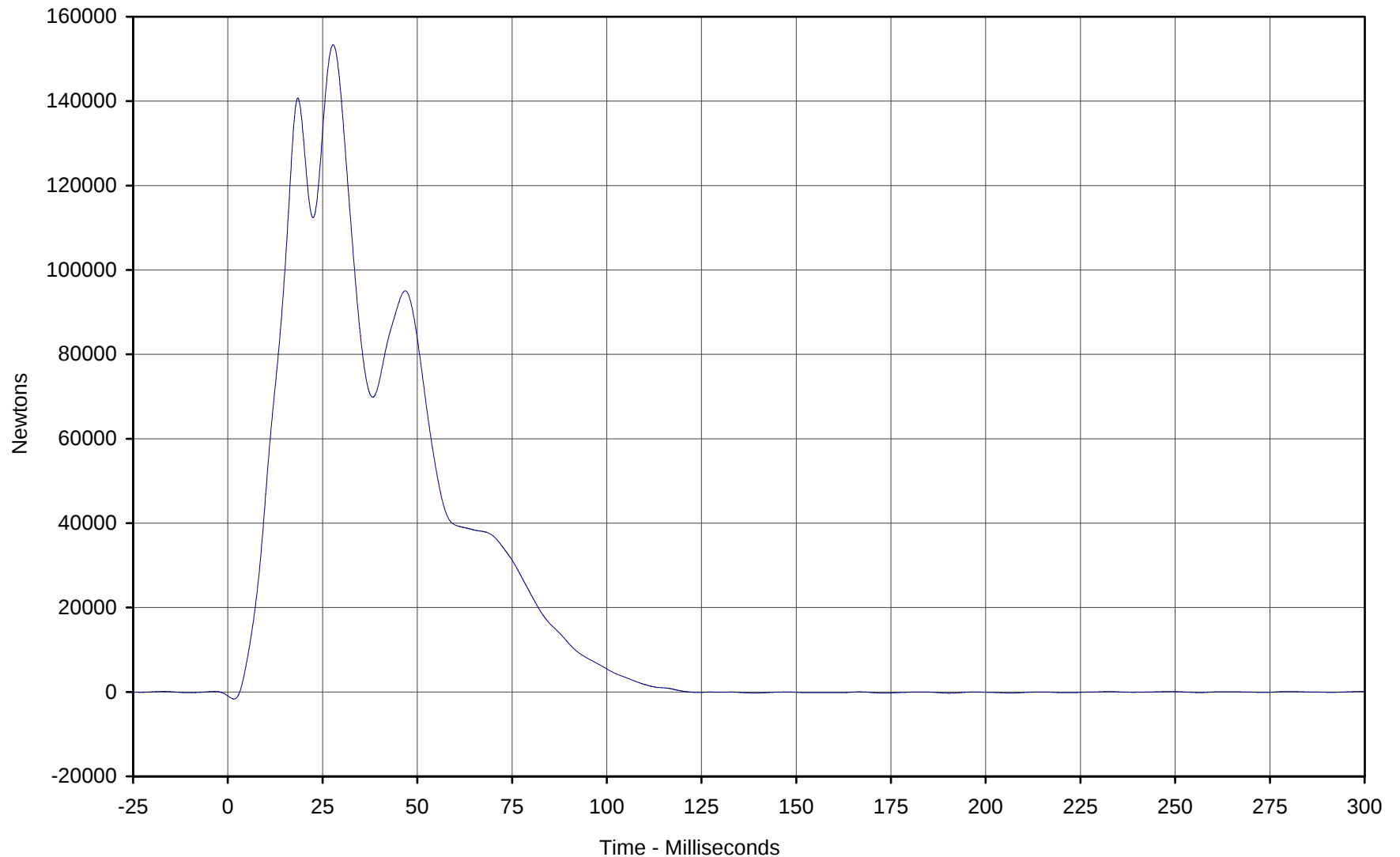
Curve Description: Barrier Force C9
Maximum Value: 440.5 at 23.4 Milliseconds
Minimum Value: -539.1 at 50.9 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: FIL-124

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



KAR21128-01

C-25

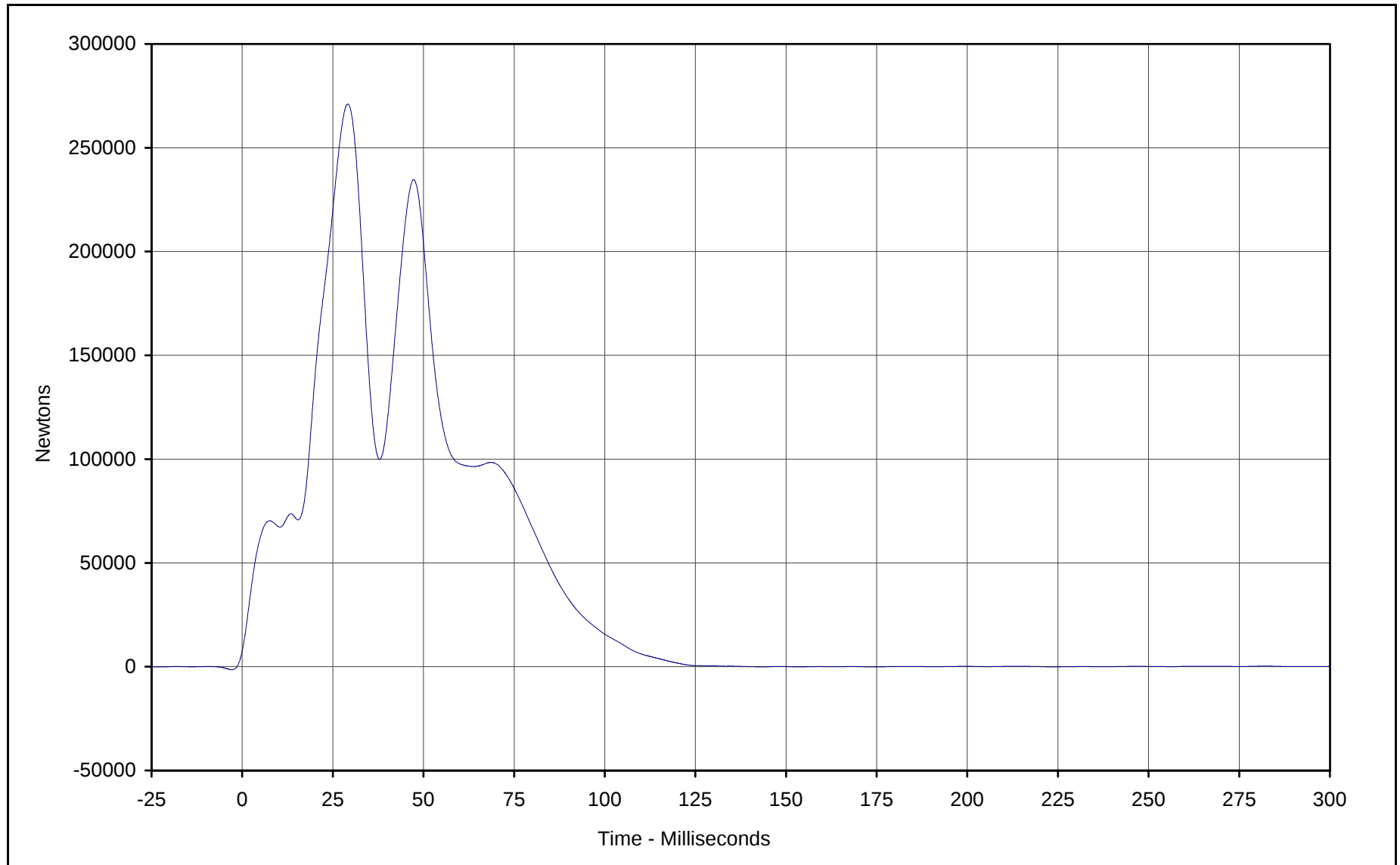


Curve Description: Barrier Force Sum Group 1
Maximum Value: 153359.9 at 27.8 Milliseconds
Minimum Value: -1674.4 at 1.6 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: SUM-001

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



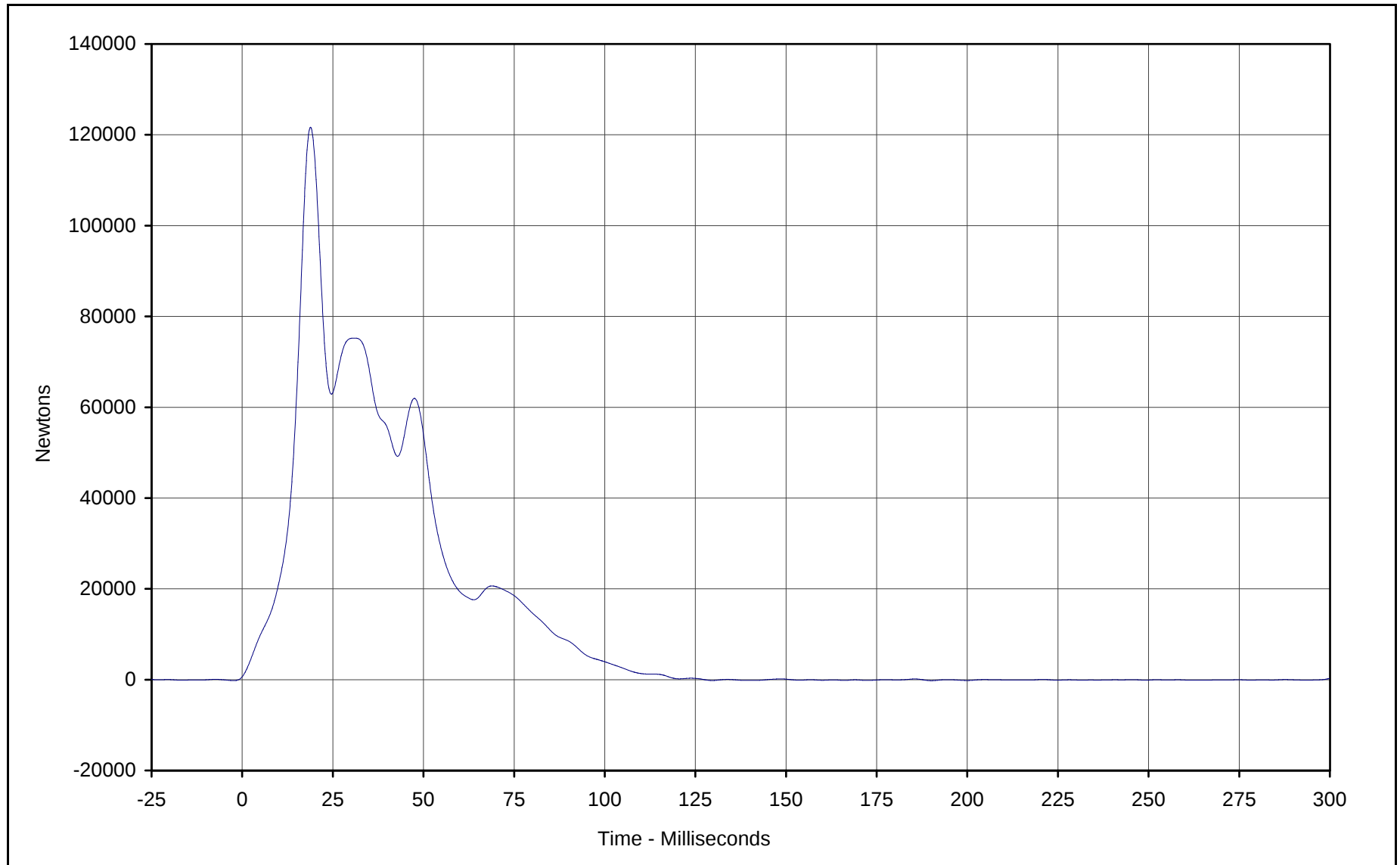
KAR21128-01



Curve Description: Barrier Force Sum Group 2
Maximum Value: 271046.0 at 29.1 Milliseconds
Minimum Value: -102.0 at 174.8 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: SUM-002

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

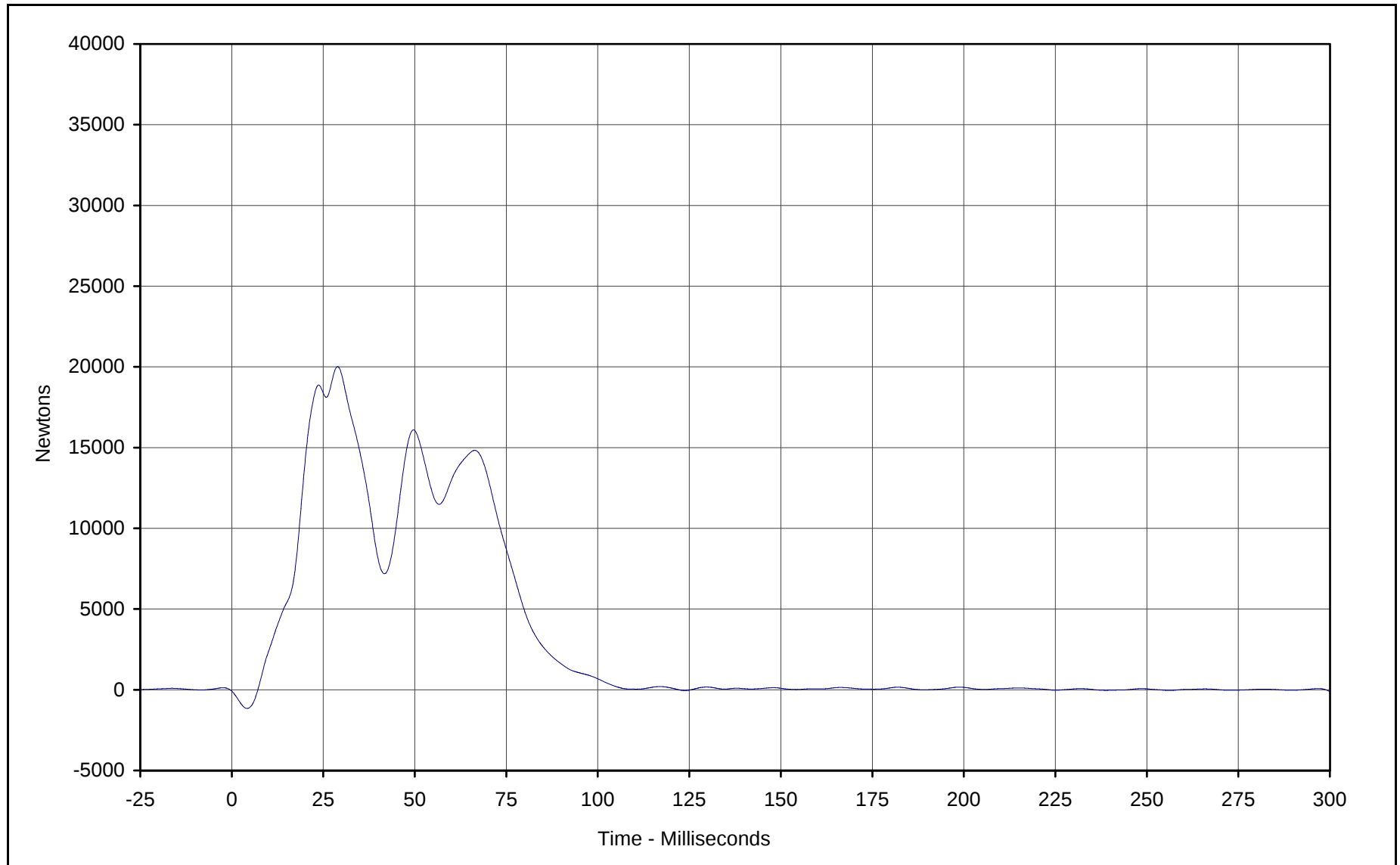




Curve Description: Barrier Force Sum Group 3
Maximum Value: 121657.2 at 18.8 Milliseconds
Minimum Value: -222.5 at 190.1 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: SUM-003

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan

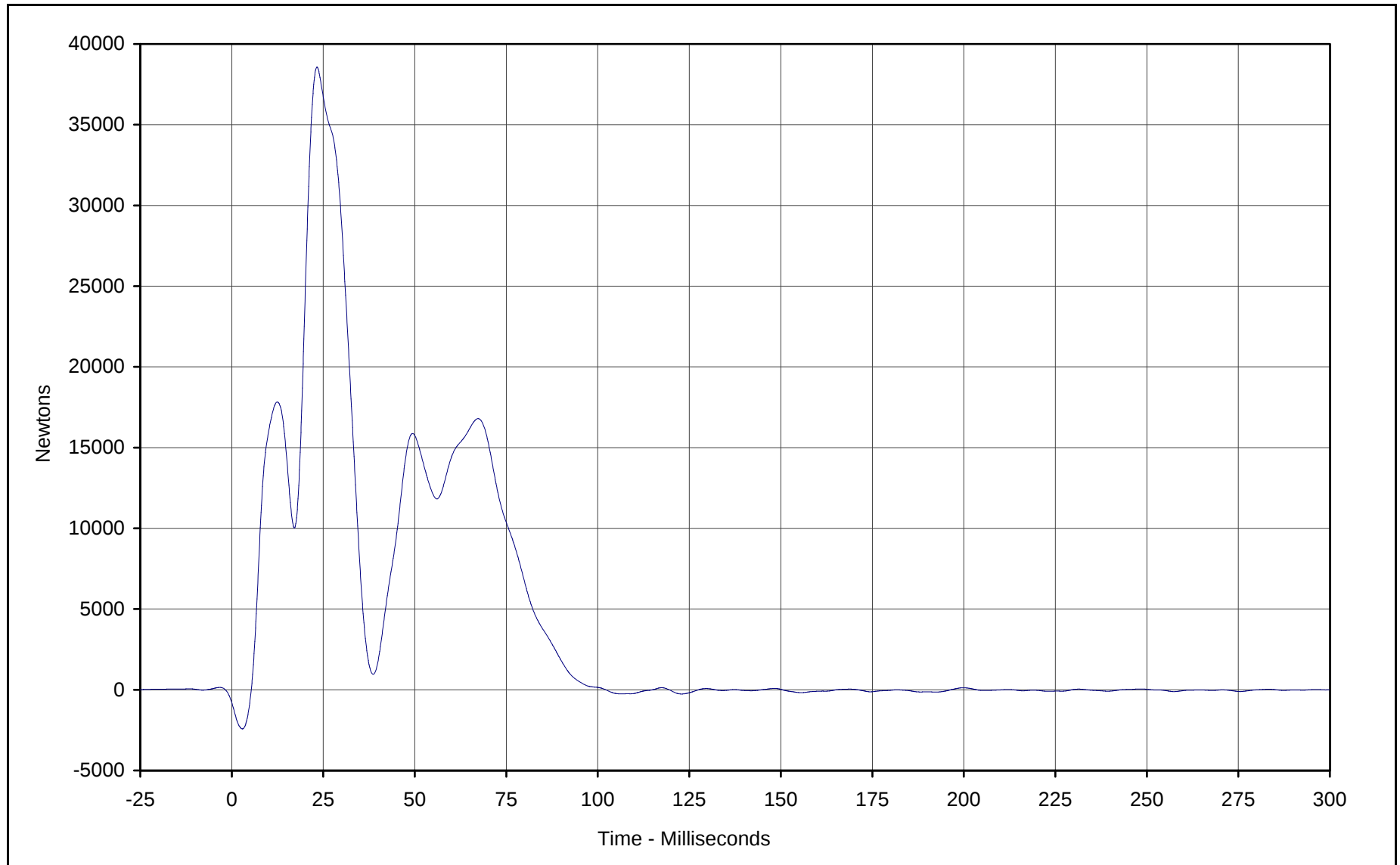




Curve Description: Barrier Force Sum Group 4
Maximum Value: 20019.7 at 28.9 Milliseconds
Minimum Value: -1158.2 at 4.2 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: SUM-004

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



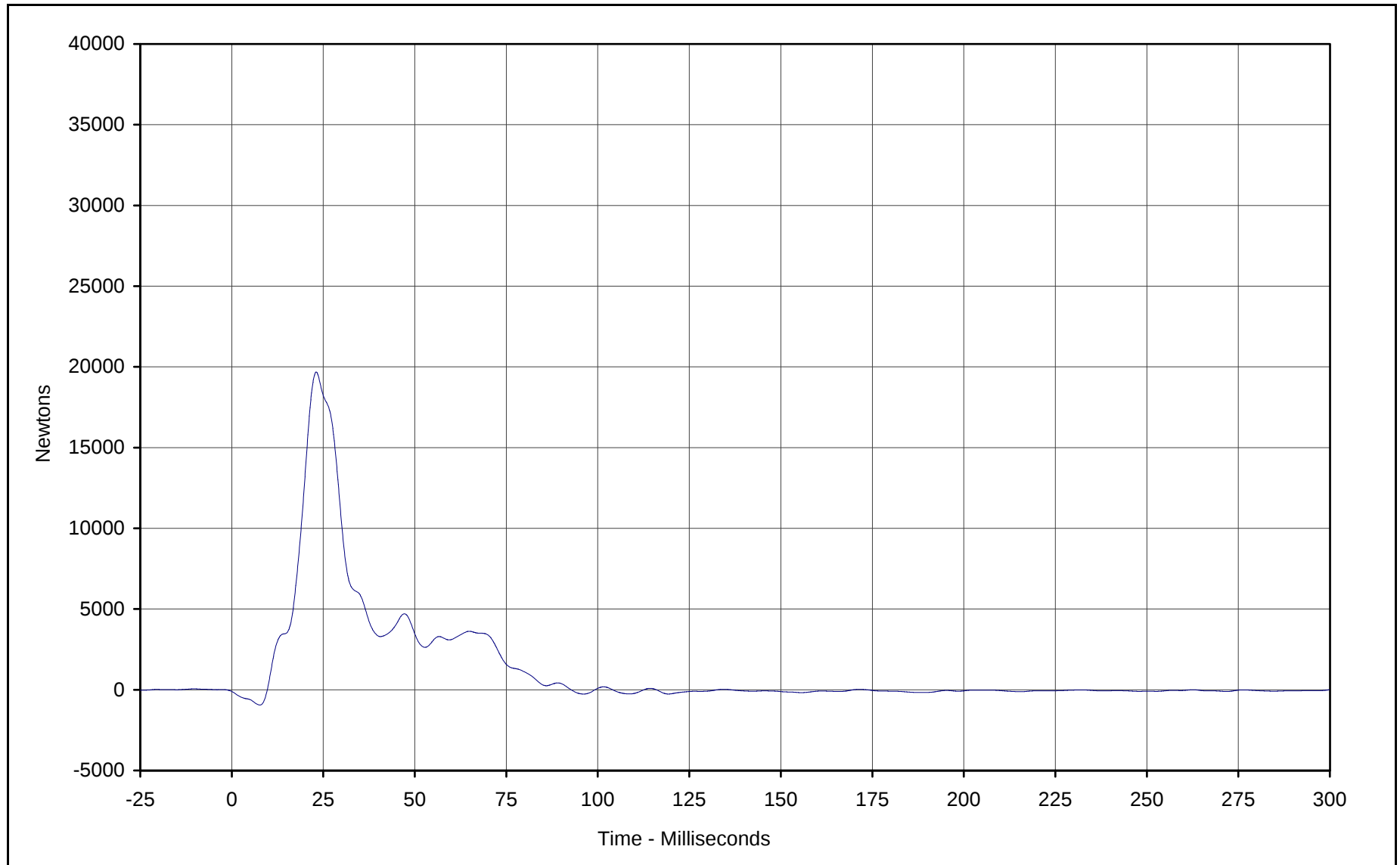


Curve Description: Barrier Force Sum Group 5
Maximum Value: 38570.9 at 23.3 Milliseconds
Minimum Value: -2421.7 at 2.9 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: SUM-005

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



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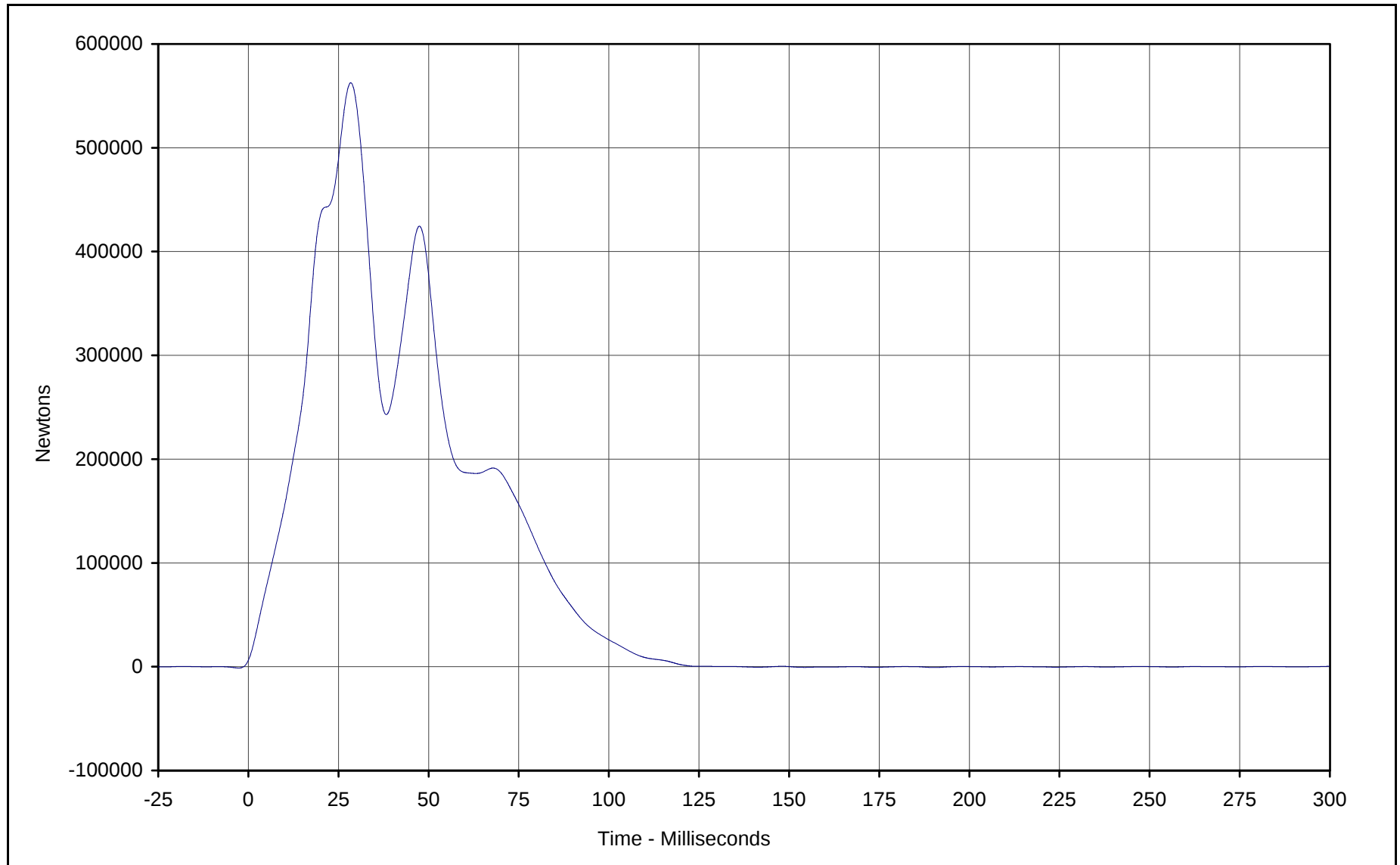
Curve Description: Barrier Force Sum Group 6
Maximum Value: 19676.6 at 23.1 Milliseconds
Minimum Value: -944.4 at 7.7 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: SUM-006

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



KAR21128-01

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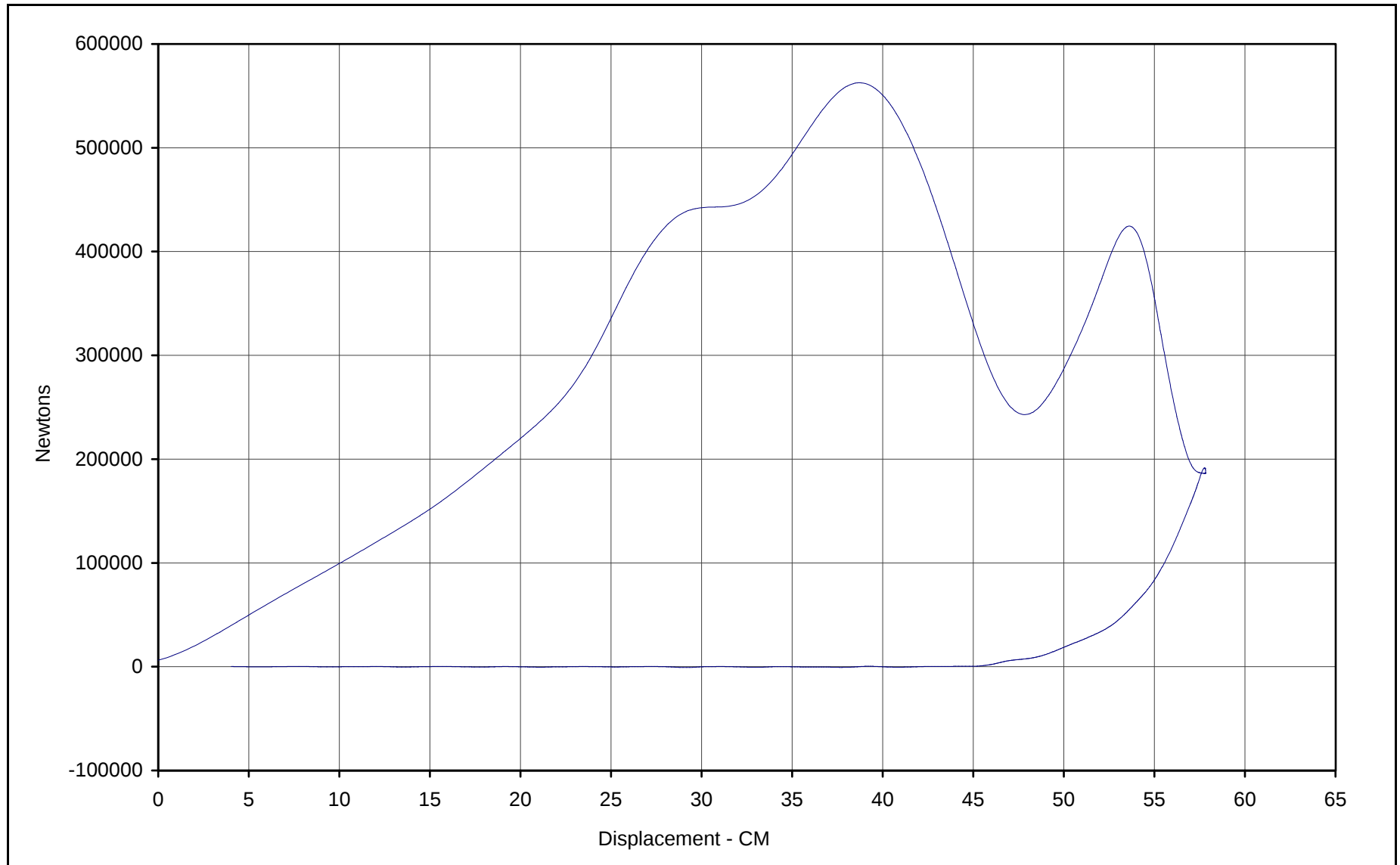
Curve Description: Barrier Force Sum Total
Maximum Value: 562634.7 at 28.4 Milliseconds
Minimum Value: -795.2 at 190.2 Milliseconds
SAE Filter Class: 60
Date of Test: 12/4/01
Curve Number: SUM-007

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000
Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



KAR21128-01

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Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 57.8 at 65.4 Milliseconds

Maximum Force: 562,635 at 28.4 Milliseconds

Measured Energy: 159,377 joules

Date of Test: 12/4/01

Curve Number: XVY-001

Test Program: 2002 NHTSA 35mph NCAP No.: HY5000

Test Vehicle: 2002 Hyundai Accent GL 4 Door Sedan



KAR21128-01

BARRIER LOAD CELL SUMMARY DATATest Vehicle: 2002 Hyundai Accent GL 4 Door SedanNHTSA No.: HY5000Test Program: 2002 NHTSA 35mph NCAPTest Date: 12/4/01**BARRIER LOAD CELL PEAK FORCES**

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	2262.9	12.6	-579.3	4.2
Barrier Force A3	Newtons	74825.8	28.2	-904.3	2.8
Barrier Force A4	Newtons	41136.3	45.7	-678.8	1.5
Barrier Force A5	Newtons	49899.6	29.9	-827.4	96.5
Barrier Force A6	Newtons	14386.3	31.3	-443.5	1.2
Barrier Force A7	Newtons	61085.5	18.4	-514.7	9.1
Barrier Force A8	Newtons	5694.6	46.8	-393.5	24.9
Barrier Force A9	Newtons	969.8	38.8	-970.2	43.4
Barrier Force B2	Newtons	13198.6	21.8	-748.1	4.7
Barrier Force B3	Newtons	75812.4	17.4	-774.0	0.7
Barrier Force B4	Newtons	61380.8	28.9	-77.8	141.1
Barrier Force B5	Newtons	54519.6	28.9	-33.7	163.1
Barrier Force B6	Newtons	74679.5	23.8	6.5	254.9
Barrier Force B7	Newtons	60243.2	19.6	-88.9	159.7
Barrier Force B8	Newtons	1003.6	21.4	-289.8	7.6
Barrier Force B9	Newtons	435.0	12.9	-545.0	43.3
Barrier Force C2	Newtons	14246.8	29.2	-493.5	4.7
Barrier Force C3	Newtons	9509.1	22.5	-683.8	3.9
Barrier Force C4	Newtons	14052.0	22.2	-1108.1	3.1
Barrier Force C5	Newtons	14307.0	23.0	-817.0	2.9
Barrier Force C6	Newtons	12498.2	26.2	-697.3	37.9
Barrier Force C7	Newtons	11316.3	21.9	-379.8	6.9
Barrier Force C8	Newtons	12622.7	26.5	-178.7	8.3
Barrier Force C9	Newtons	440.5	23.4	-539.1	50.9
Barrier Force Sum Group 1	Newtons	153359.9	27.8	-1674.4	1.6
Barrier Force Sum Group 2	Newtons	271046.0	29.1	-102.0	174.8
Barrier Force Sum Group 3	Newtons	121657.2	18.8	-222.5	190.1
Barrier Force Sum Group 4	Newtons	20019.7	28.9	-1158.2	4.2
Barrier Force Sum Group 5	Newtons	38570.9	23.3	-2421.7	2.9
Barrier Force Sum Group 6	Newtons	19676.6	23.1	-944.4	7.7
Barrier Force Sum Total	Newtons	562634.7	28.4	-795.2	190.2

Barrier Load cells A1,B1,C1, and D1 through D9 (12 locations) were not recorded.

APPENDIX D

INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

2002 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
12/4/01
2002 Hyundai Accent GL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
1	HEAD, PRIMARY	X	GPAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
2	HEAD, PRIMARY	Y	GPAC002	Accel., 1/2 bridge	Endevco	7264-2000	G
3	HEAD, PRIMARY	Z	GPAC003	Accel., 1/2 bridge	Endevco	7264-2000	G
4	HEAD, REDUNDANT	X	GPAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
5	HEAD, REDUNDANT	Y	GPAC021	Accel., 1/2 bridge	Endevco	7264-2000	G
6	HEAD, REDUNDANT	Z	GPAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
7	NECK FORCE	X	GPUN01FX	Load cell, six axis neck	R. A. Denton	1716A	N
8	NECK FORCE	Y	GPUN01FY	Load cell, six axis neck	R. A. Denton	1716A	N
9	NECK FORCE	Z	GPUN01FZ	Load cell, six axis neck	R. A. Denton	1716A	N
10	NECK MOMENT	X	GPUN01MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
11	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
12	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
13	CHEST , PRIMARY	X	GPAC005	Accel., 1/2 bridge	Endevco	7264-2000	G
14	CHEST , PRIMARY	Y	GPAC011	Accel., 1/2 bridge	Endevco	7264-2000	G
15	CHEST , PRIMARY	Z	GPAC010	Accel., 1/2 bridge	Endevco	7264-2000	G
16	CHEST , REDUNDANT	X	GPAC034	Accel., 1/2 bridge	Endevco	7264-2000	G
17	CHEST , REDUNDANT	Y	GPAC023	Accel., 1/2 bridge	Endevco	7264-2000	G
18	CHEST , REDUNDANT	Z	GPAC020	Accel., 1/2 bridge	Endevco	7264-2000	G
19	CHEST DISPLACEMENT	X	GPCP002	Rotary Pot Chest	Servo	14CBI	MM
20	PELVIS, PRIMARY	X	GPAC025	Accel., 1/2 bridge	Endevco	7264-2000	G
21	PELVIS, PRIMARY	Y	GPAC022	Accel., 1/2 bridge	Endevco	7264-2000	G
22	PELVIS, PRIMARY	Z	GPAC019	Accel., 1/2 bridge	Endevco	7264-2000	G
23	LEFT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	KEFF004	Load cell, Femur	R.A. Denton	2121	N

2002 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D. Serial Number 34
12/4/01
2002 Hyundai Accent GL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
26	UP. TIBIA LEFT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
27	UP. TIBIA RIGHT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
28	UP. TIBIA RIGHT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
29	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
30	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
31	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
32	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
33	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
34	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
35	FOOT LEFT	X	KEIC002X	Accel., Foot Triax	I.C. Sensor	3031-500	G
36	FOOT LEFT	Y	KEIC002Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
37	FOOT LEFT	Z	KEIC002Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
38	FOOT RIGHT	X	KEIC001X	Accel., Foot Triax	I.C. Sensor	3031-500	G
39	FOOT RIGHT	Y	KEIC001Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
40	FOOT RIGHT	Z	KEIC001Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
41	LAP BELT FORCE	X	KELC003	Load cell, Seat belt	Lebow	3371	N
42	SHOULDER BELT FORCE	X	KELC004	Load cell, Seat belt	Lebow	3371	N
43	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	MM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2002 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
12/4/01
2002 Hyundai Accent GL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
45	HEAD, PRIMARY	X	KEAC039	Accel., 1/2 bridge	Endevco	7264-2000	G
46	HEAD, PRIMARY	Y	KEAC038	Accel., 1/2 bridge	Endevco	7264-2000	G
47	HEAD, PRIMARY	Z	KEAC027	Accel., 1/2 bridge	Endevco	7264-2000	G
48	HEAD, REDUNDANT	X	KEAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
49	HEAD, REDUNDANT	Y	KEAC032	Accel., 1/2 bridge	Endevco	7264-2000	G
50	HEAD, REDUNDANT	Z	KEAC026	Accel., 1/2 bridge	Endevco	7264-2000	G
51	NECK FORCE	X	GPUN02FX	Load cell, six axis neck	R. A. Denton	1716A	N
52	NECK FORCE	Y	GPUN02FY	Load cell, six axis neck	R. A. Denton	1716A	N
53	NECK FORCE	Z	GPUN02FZ	Load cell, six axis neck	R. A. Denton	1716A	N
54	NECK MOMENT	X	GPUN02MX	Load cell, six axis neck	R. A. Denton	1716A	Nm
55	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	Nm
56	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	Nm
57	CHEST , PRIMARY	X	GPAC031	Accel., 1/2 bridge	Endevco	7264-2000	G
58	CHEST , PRIMARY	Y	GPAC024	Accel., 1/2 bridge	Endevco	7264-2000	G
59	CHEST , PRIMARY	Z	GPAC029	Accel., 1/2 bridge	Endevco	7264-2000	G
60	CHEST , REDUNDANT	X	KEAC023	Accel., 1/2 bridge	Endevco	7264-200	G
61	CHEST , REDUNDANT	Y	KEAC022	Accel., 1/2 bridge	Endevco	7264-200	G
62	CHEST , REDUNDANT	Z	KEAC024	Accel., 1/2 bridge	Endevco	7264-200	G
63	CHEST DISPLACEMENT	X	GPCP001	Rotary Pot Chest	Servo	14CBI	MM
64	PELVIS, PRIMARY	X	KEAC019	Accel., 1/2 bridge	Endevco	7264-200	G
65	PELVIS, PRIMARY	Y	KEAC020	Accel., 1/2 bridge	Endevco	7264-200	G
66	PELVIS, PRIMARY	Z	KEAC021	Accel., 1/2 bridge	Endevco	7264-200	G
67	LEFT FEMUR FORCE	Z	KEFF001	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF002	Load cell, Femur	R.A. Denton	2121	N

2002 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Passenger A.T.D. Serial Number 35
12/4/01
2002 Hyundai Accent GL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
70	UP. TIBIA LEFT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
71	UP. TIBIA RIGHT MOM.	X	GPOT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
72	UP. TIBIA RIGHT MOM.	Y	GPOT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	Nm
73	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
75	LWR. TIBIA LEFT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
76	LWR. TIBIA RIGHT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	Nm
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	Nm
78	LWR. TIBIA RIGHT FORCE	Z	GPLT09FZ	3 ch., lower tibia gage	R. A. Denton	3093	N
79	FOOT LEFT	X	KEIC003X	Accel., Foot Triax	I.C. Sensor	3031-500	G
80	FOOT LEFT	Y	KEIC003Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
81	FOOT LEFT	Z	KEIC003Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
82	FOOT RIGHT	X	KEIC004X	Accel., Foot Triax	I.C. Sensor	3031-500	G
83	FOOT RIGHT	Y	KEIC004Y	Accel., Foot Triax	I.C. Sensor	3031-500	G
84	FOOT RIGHT	Z	KEIC004Z	Accel., Foot Triax	I.C. Sensor	3031-500	G
85	LAP BELT FORCE	X	KELC001	Load cell, Seat belt	Lebow	3371	N
86	SHOULDER BELT FORCE	X	KELC002	Load cell, Seat belt	Lebow	3371	N
87	SHOULDER BELT SPOOL	X	KEPP001	Pullout pot	Celesco	PTX101-0030	CM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

2002 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers and Reference Channel
12/4/01
2002 Hyundai Accent GL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	Left Rear	X	KEVA002	Accel., Pre-Amp	I.C.S/Karco	3031-500	G
90	Right Rear	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	Engine Top	X	KEVA012	Accel., Vehicle block	I.C. Sensor	3031-500	G
92	Engine Bottom	X	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	Left Brake Caliper	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	Right Brake Caliper	X	KEVA001	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	Instrument Panel	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
96	Left Rear	Z	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G
97	Right Rear	Z	KEVA005	Accel., Vehicle block	I.C. Sensor	3031-500	G

2002 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
12/4/01
2002 Hyundai Accent GL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
98	BARRIER FORCE A1	X	BARRIER	Not Used	N/A	N/A	N/A
99	BARRIER FORCE A2	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
100	BARRIER FORCE A3	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
101	BARRIER FORCE A4	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
102	BARRIER FORCE A5	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
103	BARRIER FORCE A6	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
104	BARRIER FORCE A7	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
105	BARRIER FORCE A8	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
106	BARRIER FORCE A9	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
107	BARRIER FORCE B1	X	BARRIER	Not Used	N/A	N/A	N/A
108	BARRIER FORCE B2	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
109	BARRIER FORCE B3	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
110	BARRIER FORCE B4	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
111	BARRIER FORCE B5	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
112	BARRIER FORCE B6	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
113	BARRIER FORCE B7	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
114	BARRIER FORCE B8	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
115	BARRIER FORCE B9	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N

2002 NHTSA 35mph NCAP
Instrumentation Data Channel Assignments
Rigid Load Cell Barrier
12/4/01
2002 Hyundai Accent GL 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
116	BARRIER FORCE C1	X	BARRIER	Not Used	N/A	N/A	N/A
117	BARRIER FORCE C2	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
118	BARRIER FORCE C3	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
119	BARRIER FORCE C4	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
120	BARRIER FORCE C5	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
121	BARRIER FORCE C6	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
122	BARRIER FORCE C7	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
123	BARRIER FORCE C8	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
124	BARRIER FORCE C9	X	BARRIER	Load Cell, LCB	Lebow	1220-FS	N
125	BARRIER FORCE D1	X	BARRIER	Not Used	N/A	N/A	N/A
126	BARRIER FORCE D2	X	BARRIER	Not Used	N/A	N/A	N/A
127	BARRIER FORCE D3	X	BARRIER	Not Used	N/A	N/A	N/A
128	BARRIER FORCE D4	X	BARRIER	Not Used	N/A	N/A	N/A
129	BARRIER FORCE D5	X	BARRIER	Not Used	N/A	N/A	N/A
130	BARRIER FORCE D6	X	BARRIER	Not Used	N/A	N/A	N/A
131	BARRIER FORCE D7	X	BARRIER	Not Used	N/A	N/A	N/A
132	BARRIER FORCE D8	X	BARRIER	Not Used	N/A	N/A	N/A
133	BARRIER FORCE D9	X	BARRIER	Not Used	N/A	N/A	N/A

APPENDIX E

DUMMY CALIBRATION DATA



Hybrid III Calibration Data Sheet

Hybrid III 50th Percentile Male

Knee Impact Test

ATD Serial No.: 034

Location: Left Knee

Test I.D.: LK05C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5631	Pass
Overall Test Results				Pass

ATD Serial No.: 034

Location: Right Knee

Test I.D.: RK06C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	5638	Pass
Overall Test Results				Pass

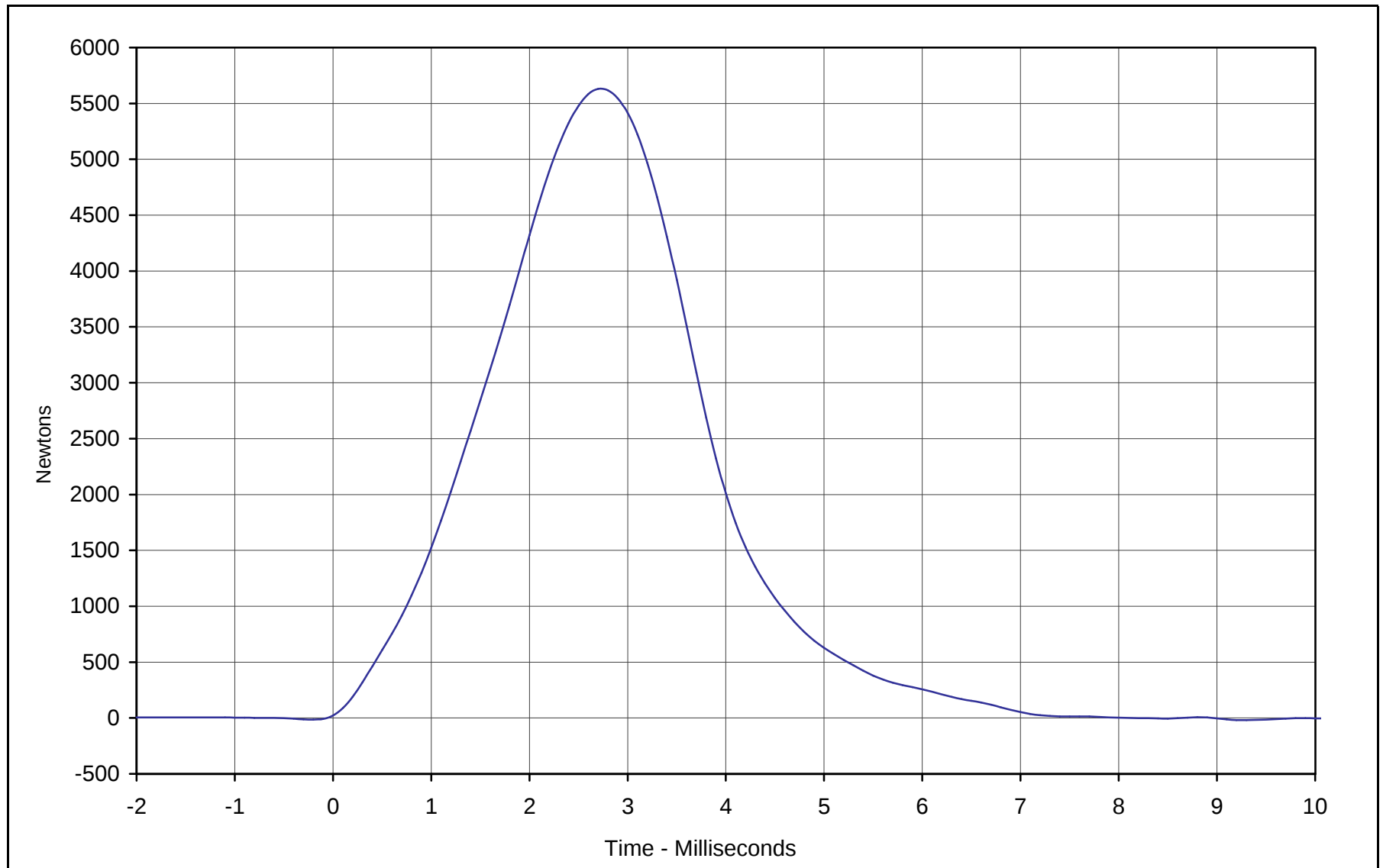
Laboratory Technician

November 28, 2001

Test Date

E-1

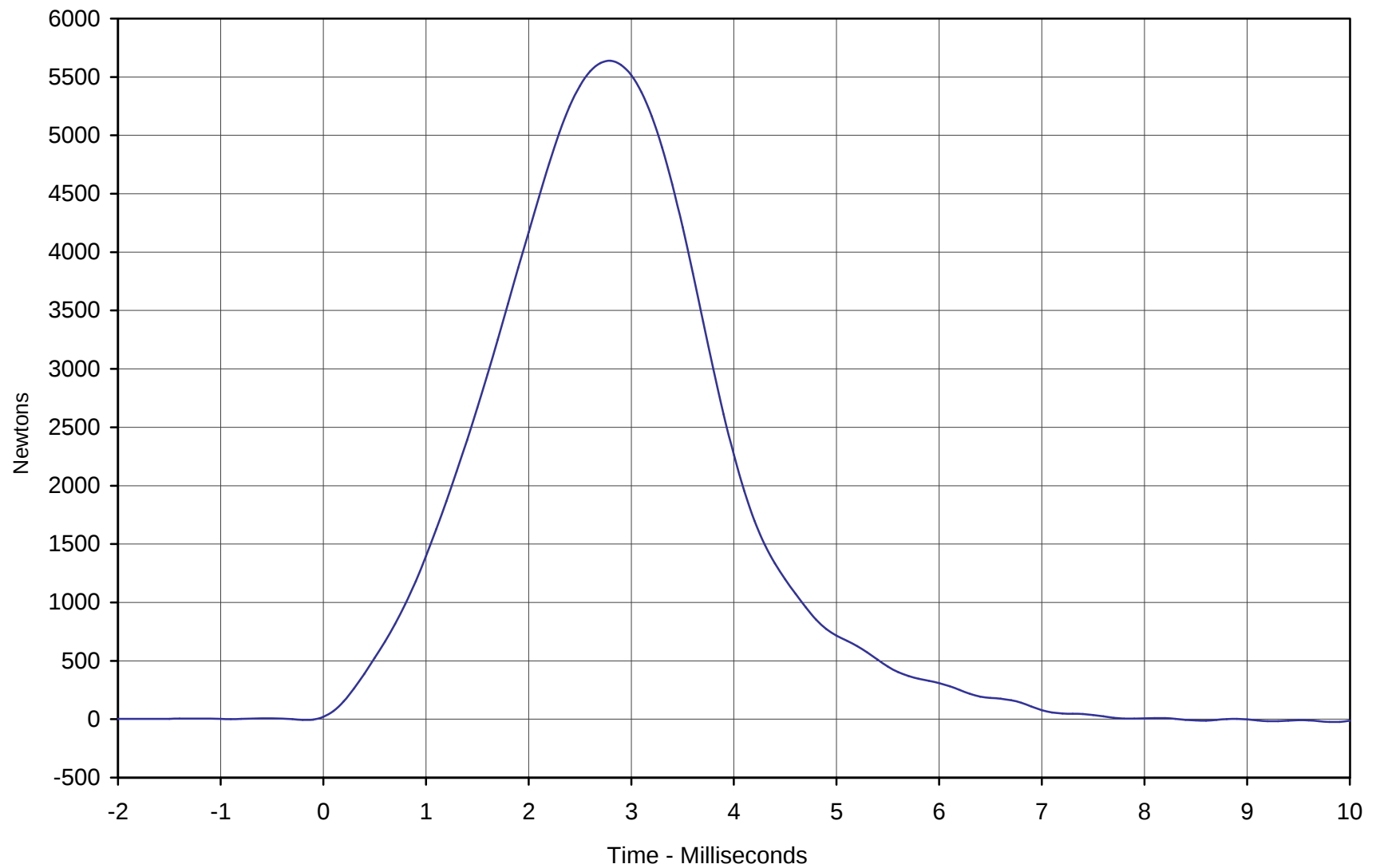
KAR21128-01



Curve Description: Probe Force
Maximum Value: 5631.1 at 2.7 Milliseconds
Minimum Value: -15.1 at -0.2 Milliseconds
SAE Filter Class: 600
Date of Test: 11/28/01
ATD Serial No.: 034

Test Program: Hybrid III Knee Impact Test
Test Information: Location: Left Knee Test I.D.: LK05C





Curve Description: Probe Force
Maximum Value: 5638.4 at 2.8 Milliseconds
Minimum Value: -5.5 at -0.2 Milliseconds
SAE Filter Class: 600
Date of Test: 11/28/01
ATD Serial No.: 034

Test Program: Hybrid III Knee Impact Test
Test Information: Location: Right Knee Test I.D.: RK06C





Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: N/A

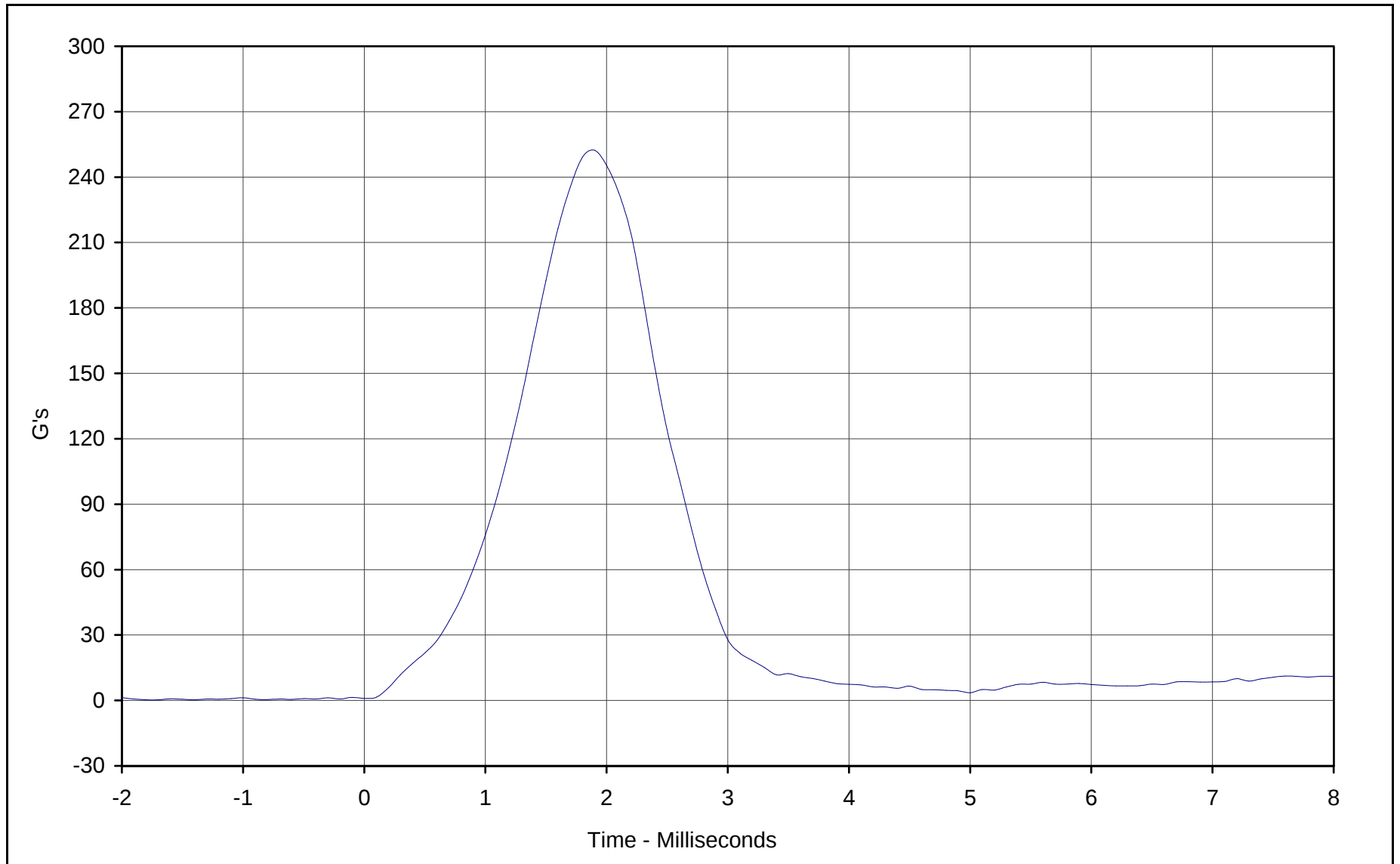
Test I.D.: HD05B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	252.3	Pass
Peak Lateral Acceleration	G's	≤15.0	11.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 28, 2001
Test Date

E-5



Curve Description: Head Resultant Acceleration

Maximum Value:	<u>252.3</u>	at	<u>1.9</u>	Milliseconds
Minimum Value:	<u>0.3</u>	at	<u>-1.7</u>	Milliseconds
SAE Filter Class:	<u>1000</u>			
Date of Test:	<u>11/28/01</u>			
ATD Serial No.:	<u>034</u>			

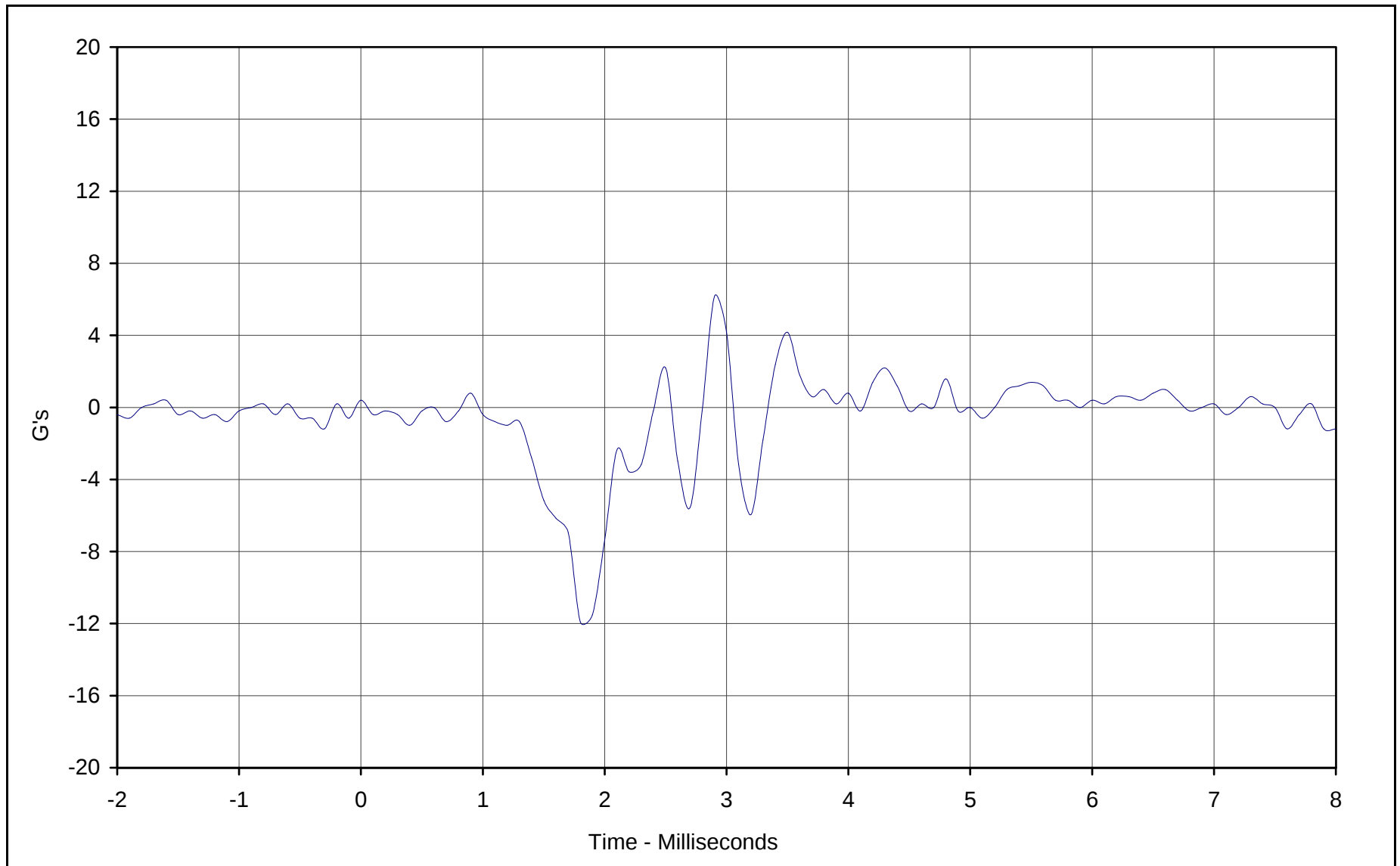
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD05B



KAR21128-01

E-6



Curve Description: Head Acceleration Y Axis

Maximum Value: 6.2 at 2.9 Milliseconds

Minimum Value: -11.9 at 1.8 Milliseconds

SAE Filter Class: 1000

Date of Test: 11/28/01

ATD Serial No.: 034

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD05B



KAR21128-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 034

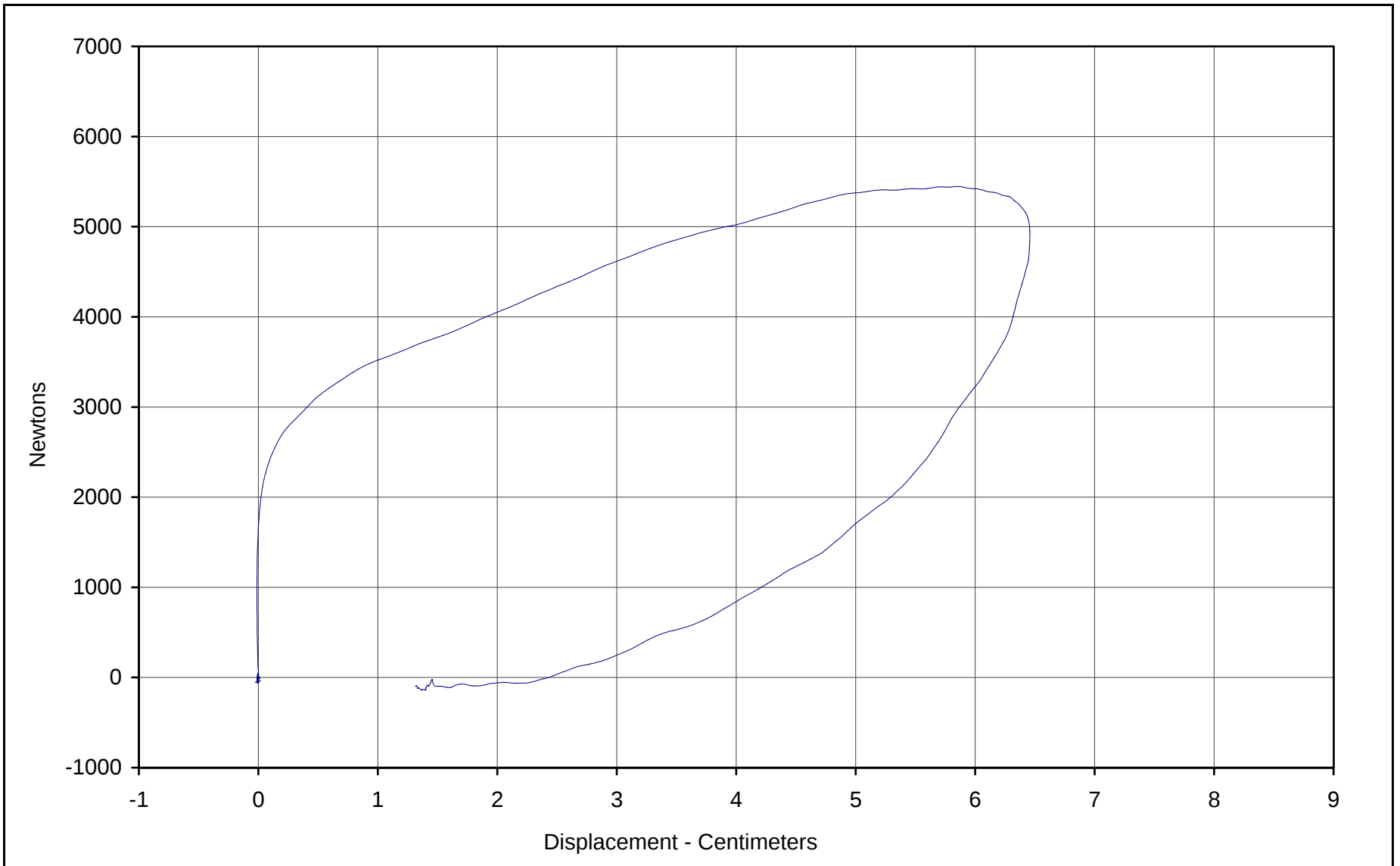
Part Serial No.: N/A

Test I.D.: CH11A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5447	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.46	Pass
Internal Hysteresis	%	69 to 85	79.6	Pass
Overall Test Results				Pass

Laboratory Technician

November 29, 2001
Test Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5447.1 Newtons

Chest Displ.: 6.46 Centimeters

SAE Filter Class: 180

Date of Test: 11/29/01

ATD Serial No.: 034

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH11A





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NF11A

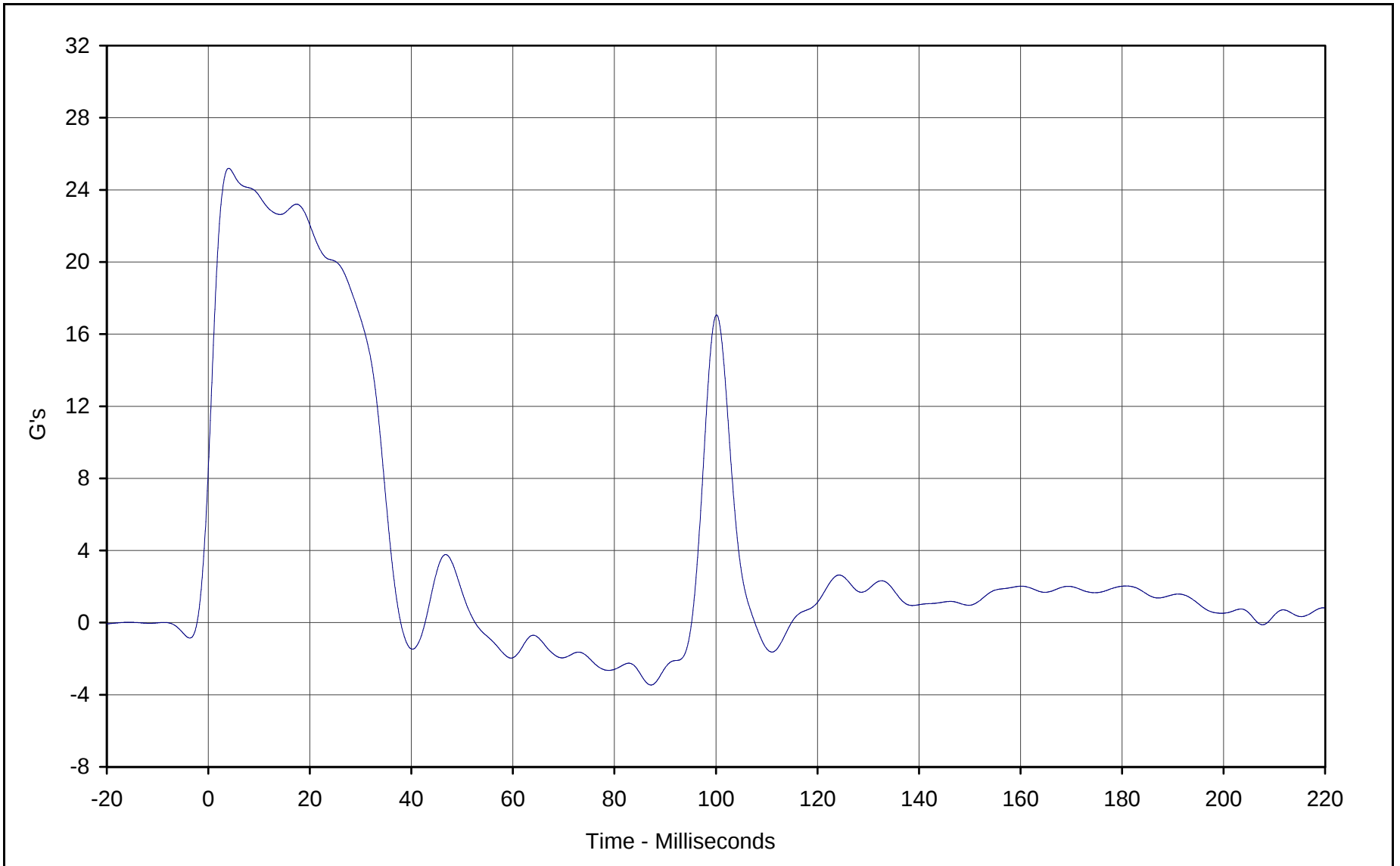
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	22.1	Pass
	30 Msec.	G's	12.5 to 18.5	16.9	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	68.6	Pass
	Time	Msec.	57.0 to 64.0	60.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	116.4	Pass
Moment About Occipital Condyle	Maximum	N·m	84.1 to 108.5	90.3	Pass
	Time	Msec.	47.0 to 58.0	48.3	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	99.7	Pass
Overall Test Results					Pass

Laboratory Technician

November 27, 2001

Test Date

E-10



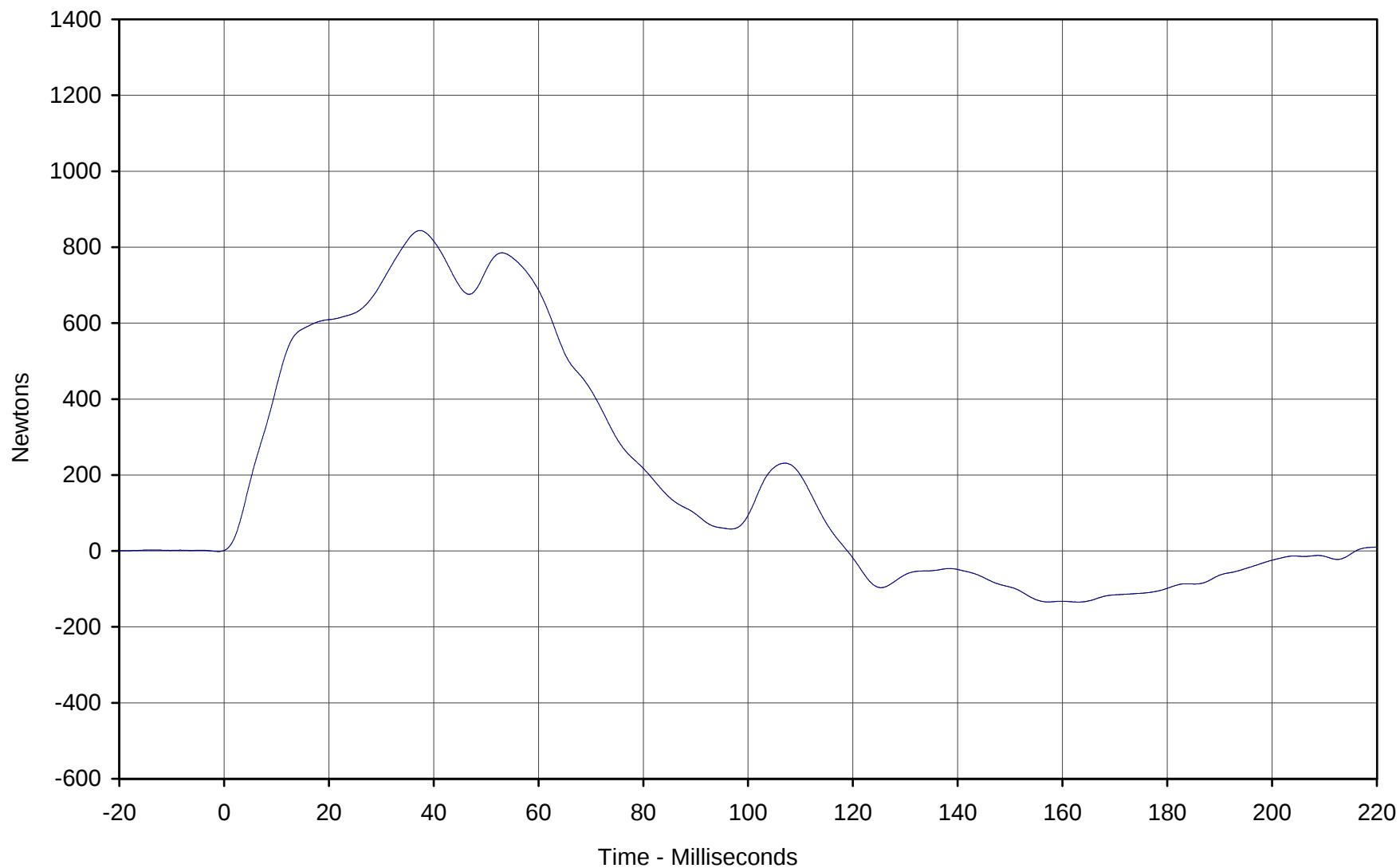
Curve Description:	Pendulum Deceleration		
Maximum Value:	25.2	at	4.0 Milliseconds
Minimum Value:	-3.5	at	87.2 Milliseconds
SAE Filter Class:	60		
Date of Test:	11/27/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Neck Flexion Test (Male)
Test Information:	S/N of Part: N/A Test I.D.: NF11A



KAR21128-01

E-11



Curve Description: Neck Force X

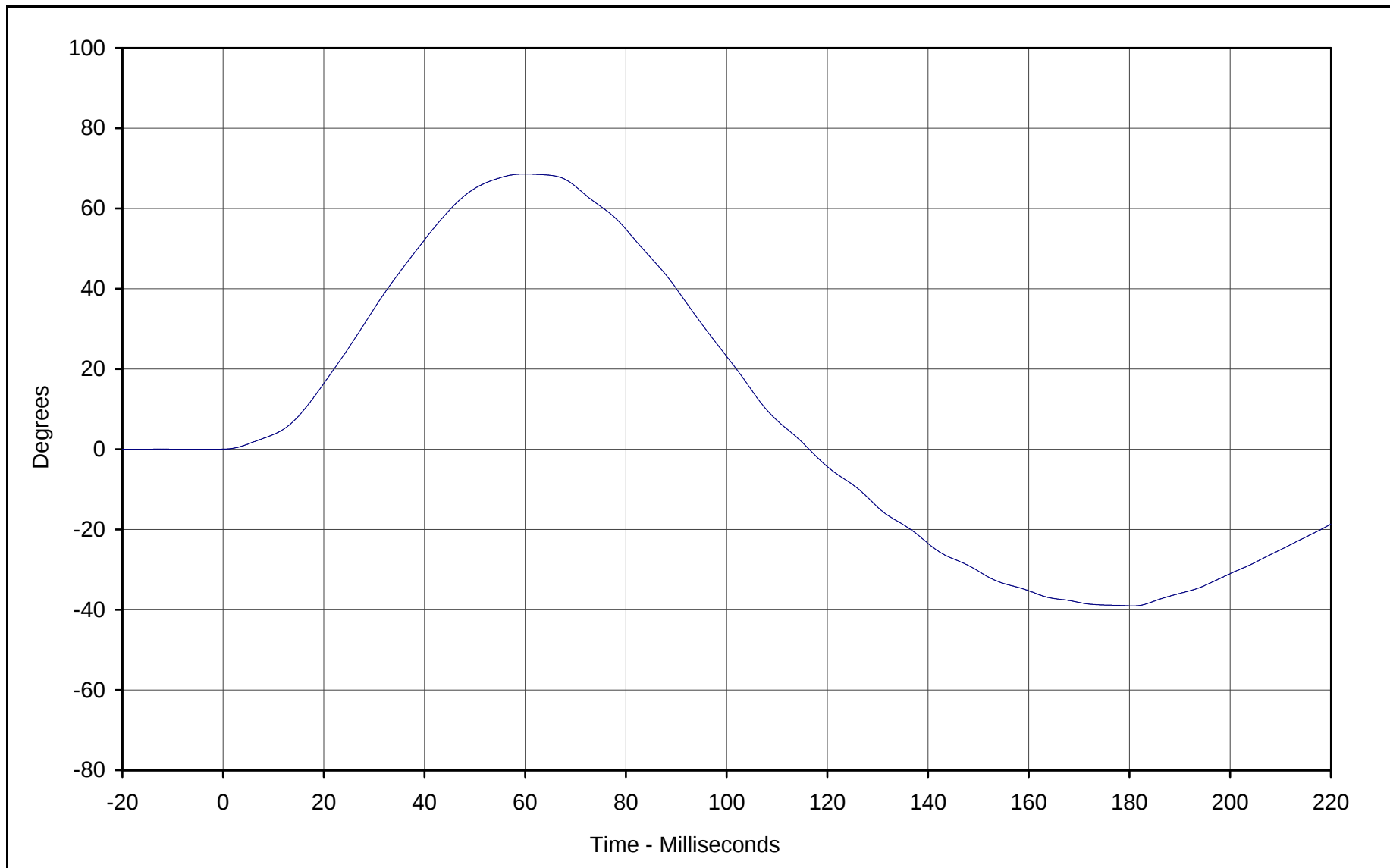
Maximum Value:	843.8	at	37.4	Milliseconds
Minimum Value:	-134.7	at	163.0	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF11A



KAR21128-01



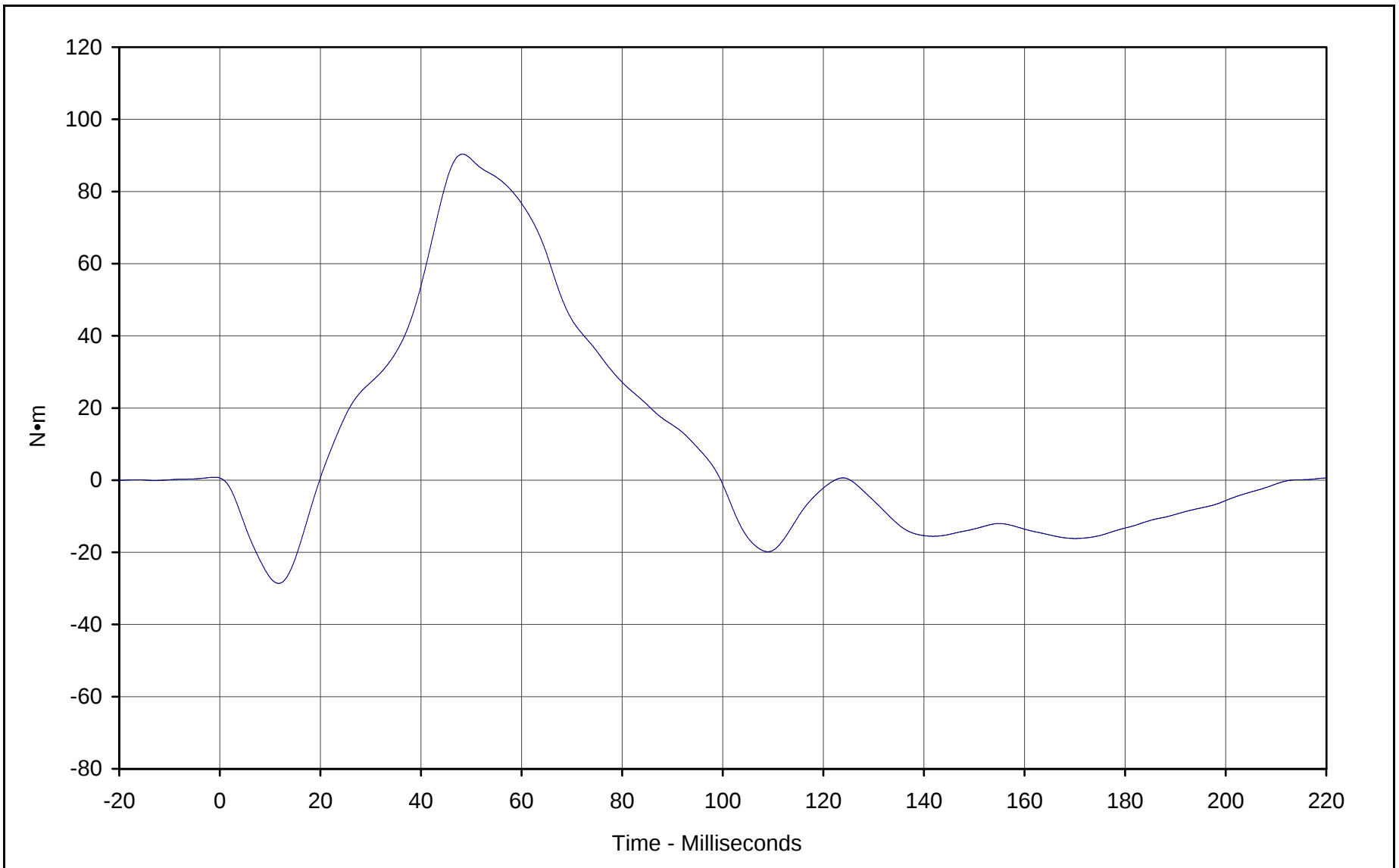
Curve Description: "D" Plane Rotation

Maximum Value:	68.6	at	60.0	Milliseconds
Minimum Value:	-39.0	at	180.7	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF11A





Curve Description: Moment About Occipital Condyles

Maximum Value: 90.3 at 48.3 Milliseconds

Minimum Value: -28.6 at 11.7 Milliseconds

SAE Filter Class: 60

Date of Test: 11/27/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF11A





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: NE11A

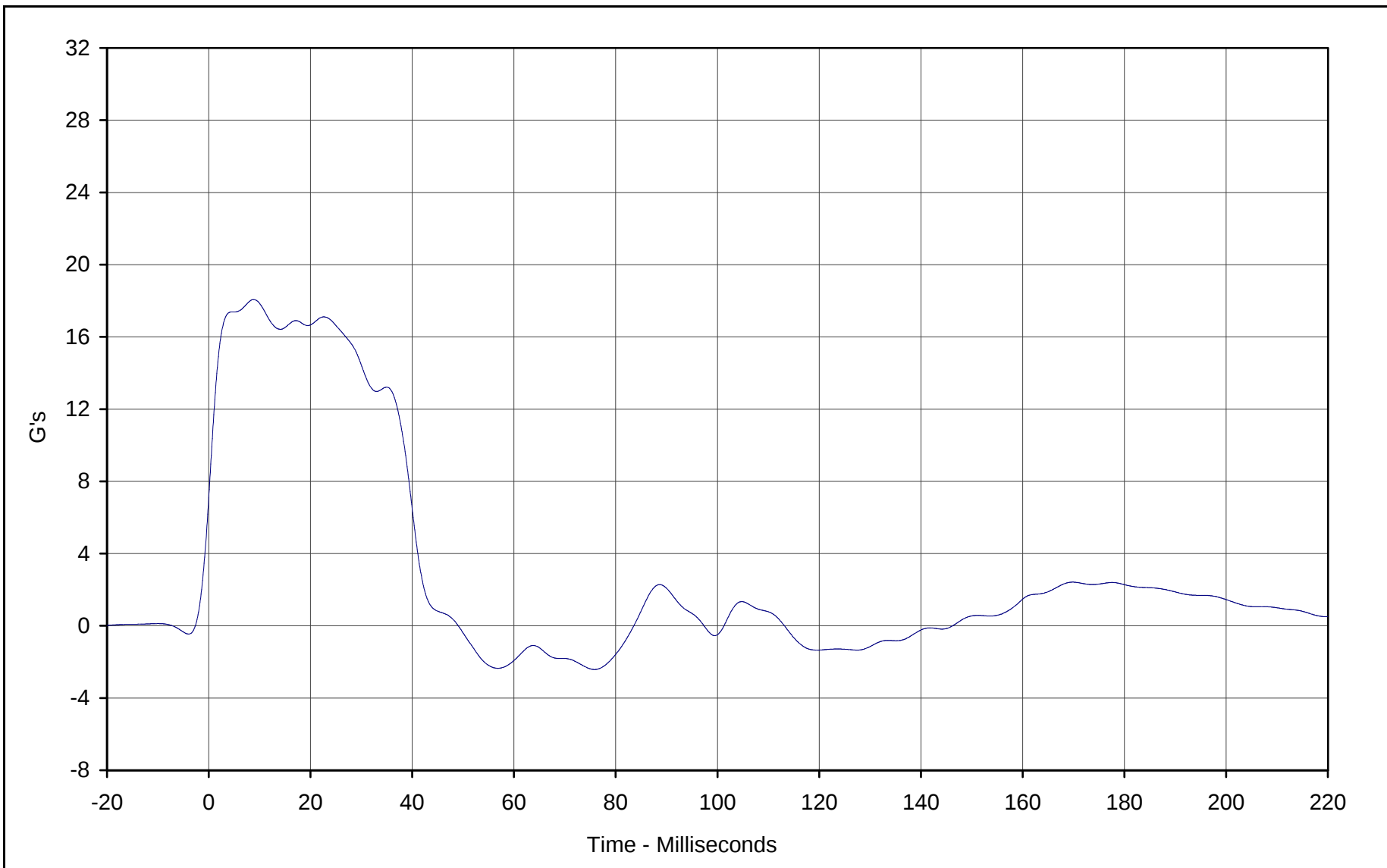
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.10	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.9	Pass
	20 Msec.	G's	14.0 to 19.0	16.7	Pass
	30 Msec.	G's	11.0 to 16.0	14.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	95.2	Pass
	Time	Msec.	72.0 to 82.0	75.2	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	156.5	Pass
Moment About Occipital Condyle	Maximum	N·m	-52.9 to- 79.9	-72.9	Pass
	Time	Msec.	65.0 to 79.0	66.6	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	137.2	Pass
Overall Test Results					Pass

Laboratory Technician

November 27, 2001

Test Date

E-15

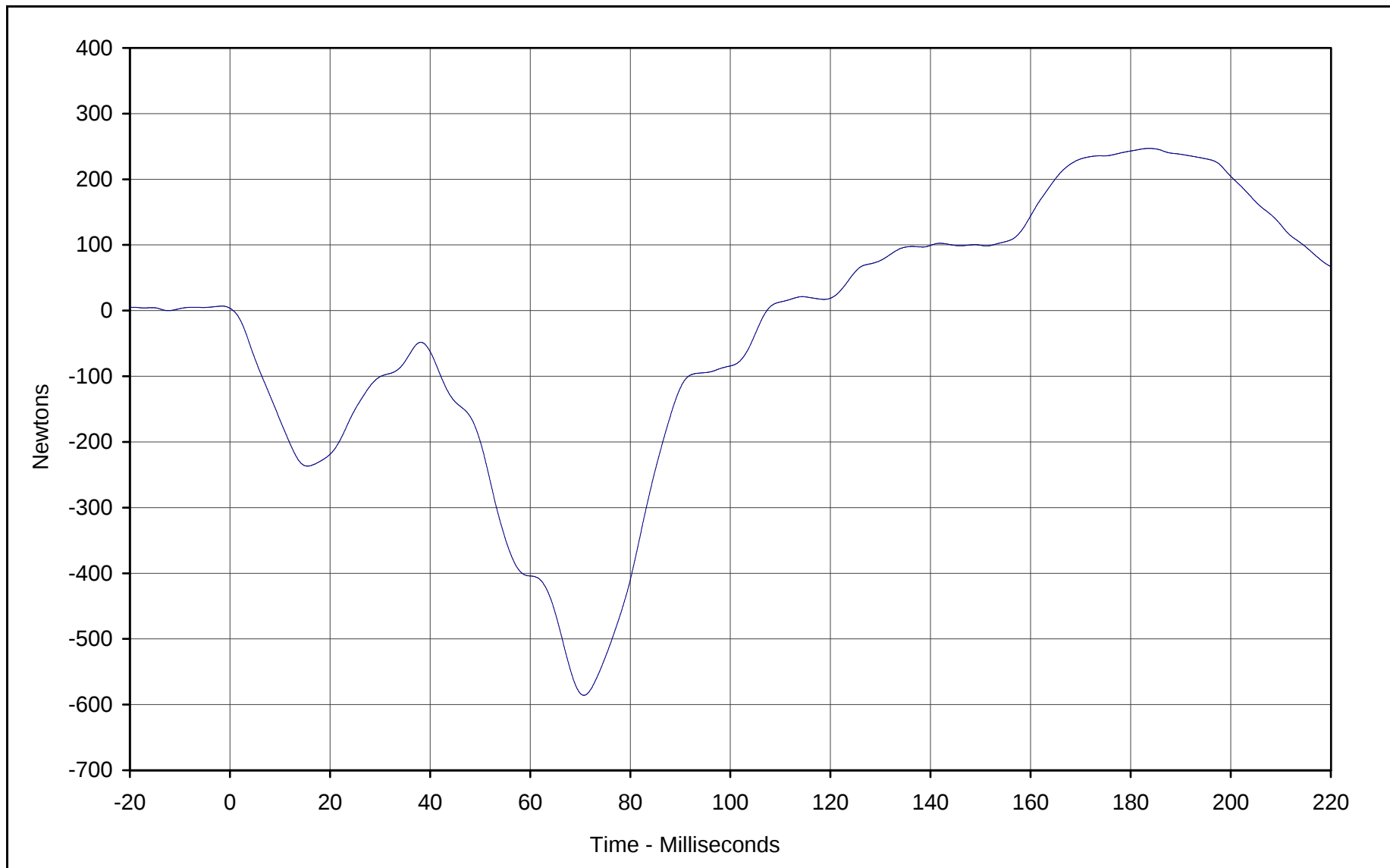


Curve Description:	Pendulum Deceleration		
Maximum Value:	18.1	at	8.8 Milliseconds
Minimum Value:	-2.4	at	75.8 Milliseconds
SAE Filter Class:	60		
Date of Test:	11/27/01		
ATD Serial No.:	034		

Testing Program:	Hybrid III Neck Extension Test (Male)
Test Information:	S/N of Part: N/A Test I.D.: NE11A



KAR21128-01



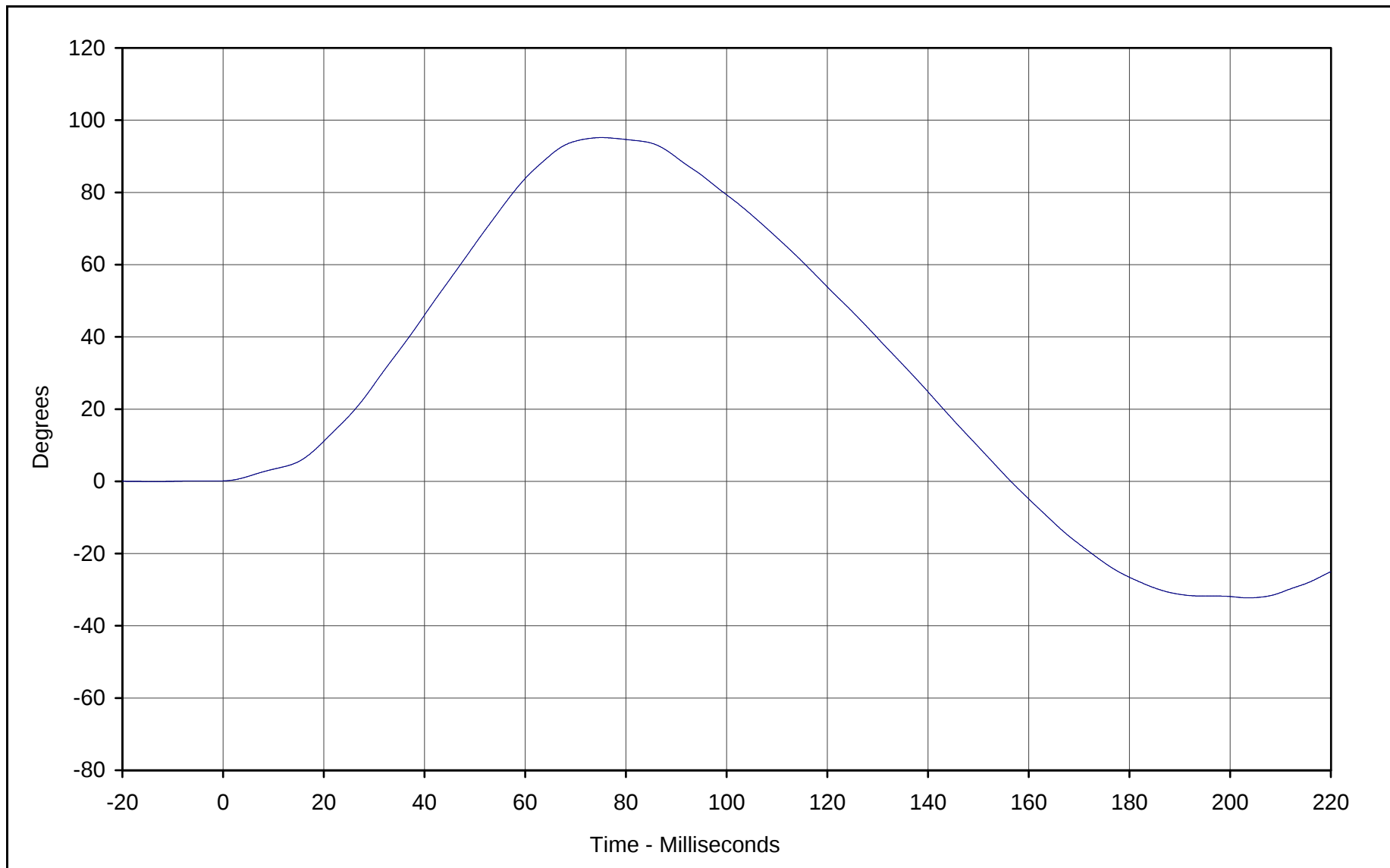
Curve Description: Neck Force X

Maximum Value:	247.0	at	183.7	Milliseconds
Minimum Value:	-585.9	at	70.7	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE11A





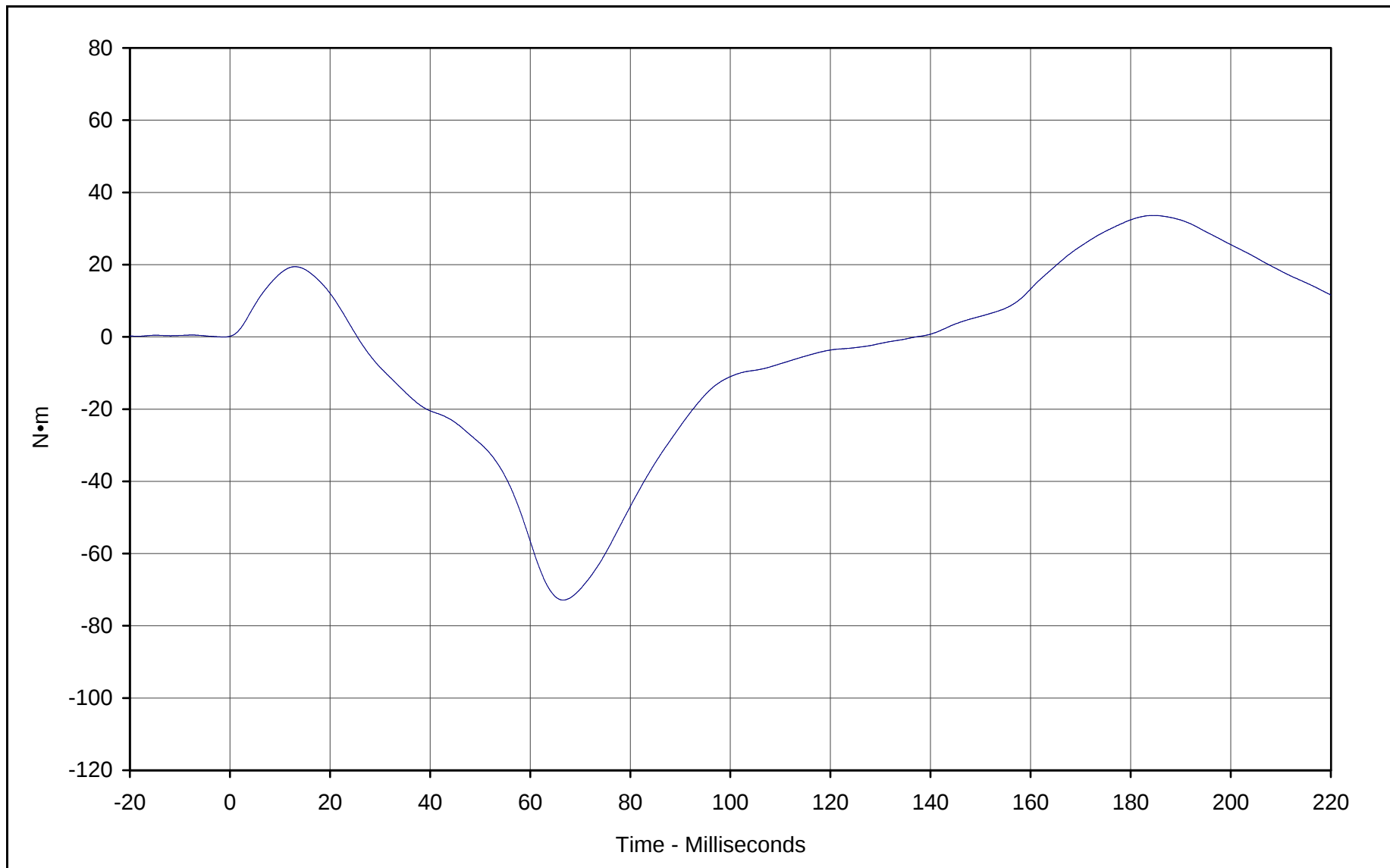
Curve Description: "D" Plane Rotation

Maximum Value:	95.2	at	75.2	Milliseconds
Minimum Value:	-32.3	at	203.6	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	034			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE11A





Curve Description: Moment About Occipital Condyles

Maximum Value: 33.6 at 184.5 Milliseconds

Minimum Value: -72.9 at 66.6 Milliseconds

SAE Filter Class: 60

Date of Test: 11/27/01

ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE11A





Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	879 to 889	885	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - "H" point height	mm	84 to 89	88	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	92	Pass
F - Thigh clearance	mm	140 to 155	145	Pass
G - Elbow back to wrist pivot	mm	290 to 305	295	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	342	Pass
J - Elbow rest height	mm	190 to 211	205	Pass
K - Buttock to knee length	mm	579 to 604	585	Pass
L - Popliteal length	mm	429 to 455	435	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock popliteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	220	Pass
P - Foot length	mm	251 to 267	265	Pass
V - Shoulder breadth	mm	422 to 437	425	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	985	Pass
Z - Waist circumference	mm	836 to 866	860	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

Laboratory Technician

December 3, 2001

Test Date



Hybrid III Calibration Data Sheet

Hybrid III 50th Percentile Male

Knee Impact Test

ATD Serial No.: 035

Location: Left Knee

Test I.D.: LK06A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5623	Pass
Overall Test Results				Pass

ATD Serial No.: 035

Location: Right Knee

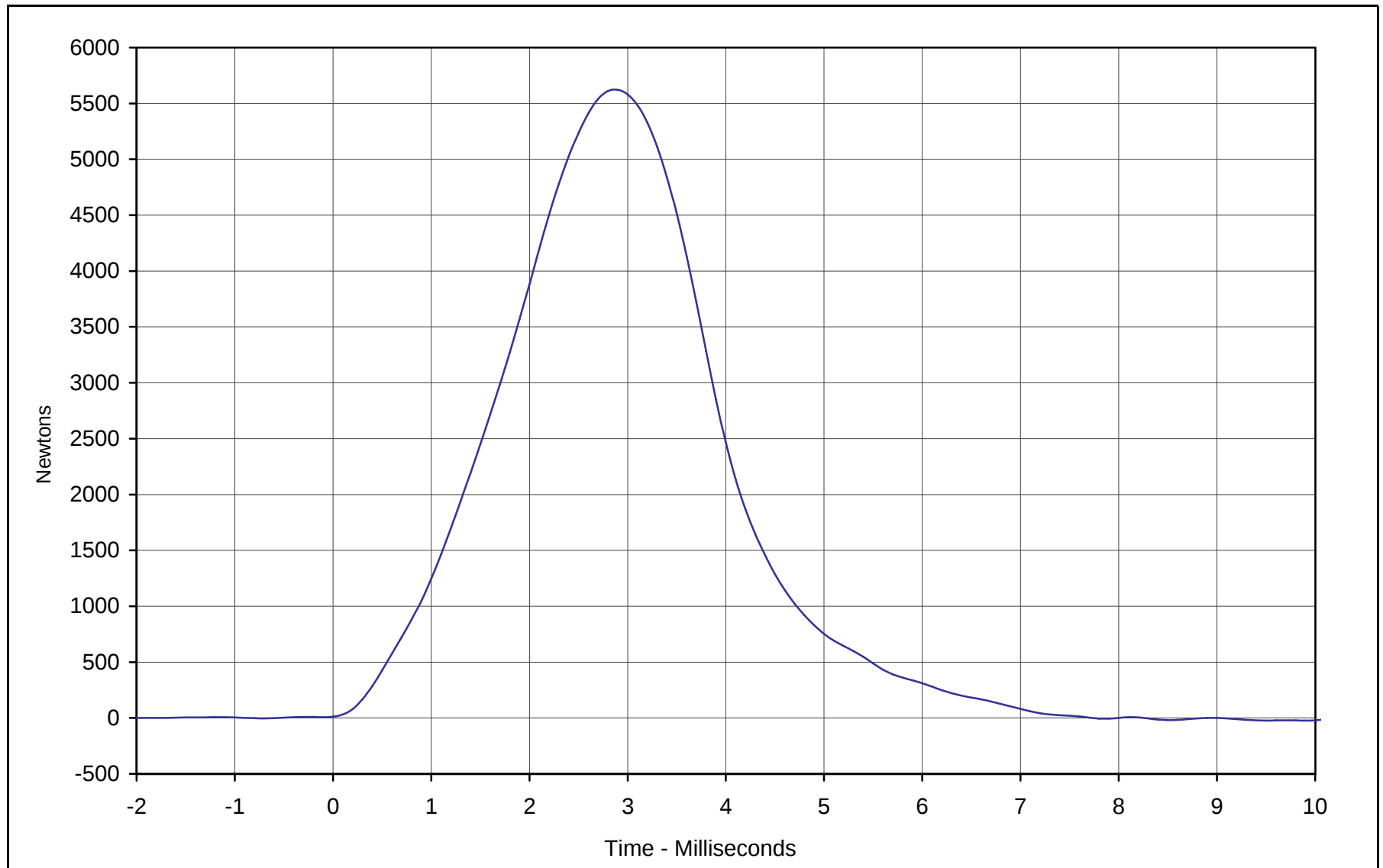
Test I.D.: RK06B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	5820	Fail
Overall Test Results				Fail

Laboratory Technician

November 28, 2001

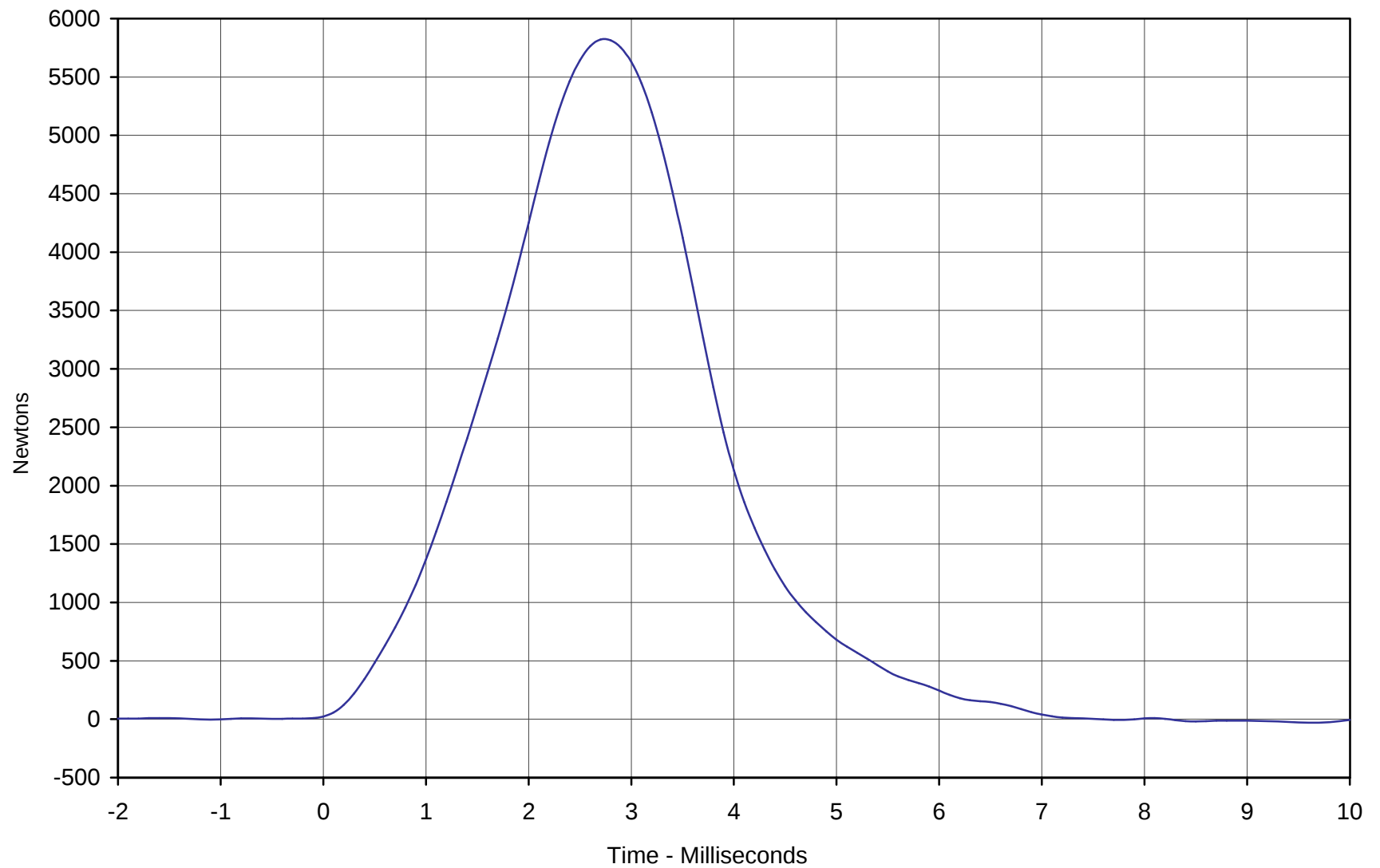
Test Date



Curve Description: Probe Force
Maximum Value: 5622.6 at 2.9 Milliseconds
Minimum Value: -6.1 at 7.9 Milliseconds
SAE Filter Class: 600
Date of Test: 11/28/01
ATD Serial No.: 035

Test Program: Hybrid III Knee Impact Test
Test Information: Location: Left Knee Test I.D.: LK06A





Curve Description: Probe Force
Maximum Value: 5820.3 at 2.7 Milliseconds
Minimum Value: -5.7 at 7.7 Milliseconds
SAE Filter Class: 600
Date of Test: 11/28/01
ATD Serial No.: 035

Test Program: Hybrid III Knee Impact Test
Test Information: Location: Right Knee Test I.D.: RK06B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: HD05C

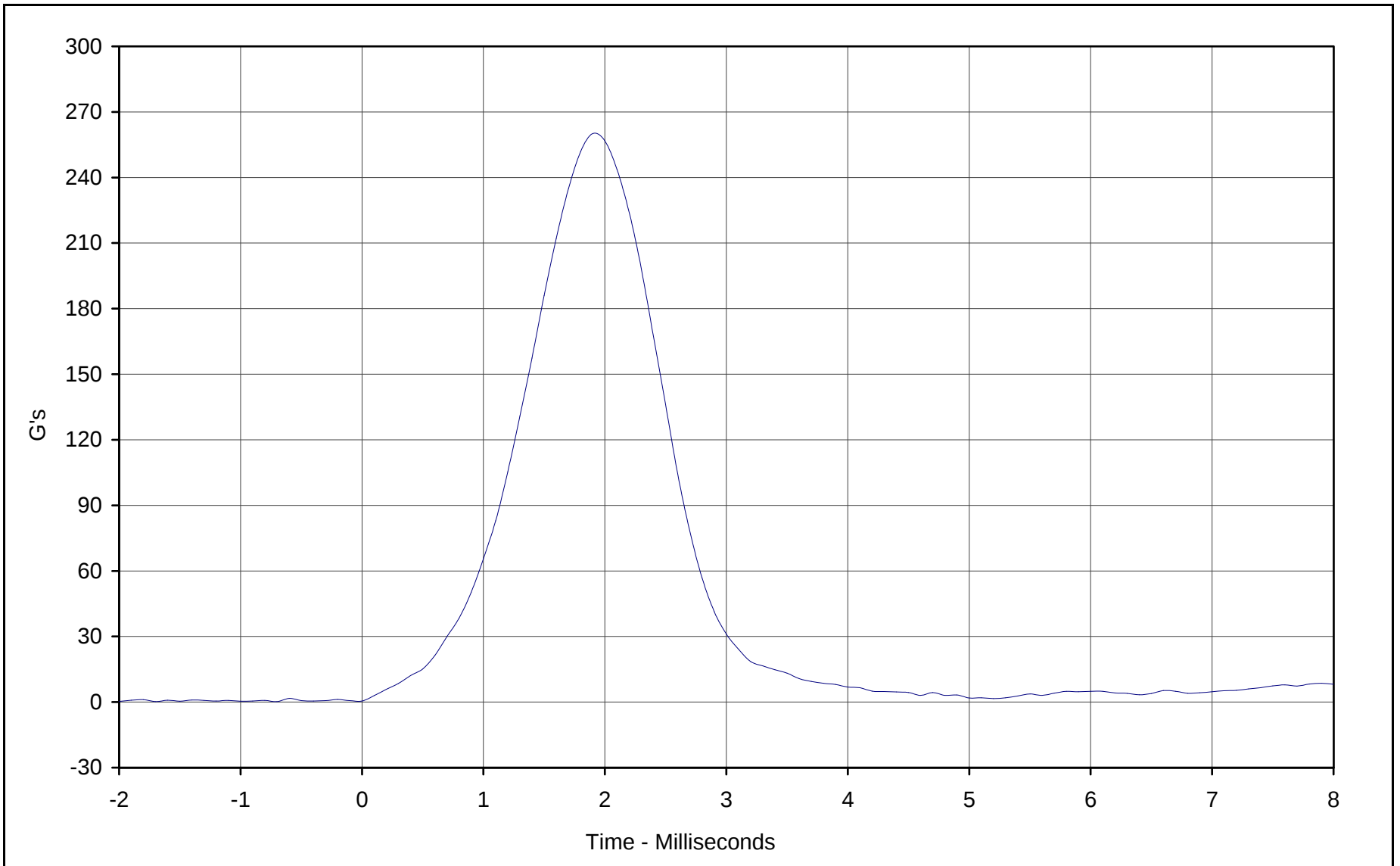
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	260.1	Pass
Peak Lateral Acceleration	G's	≤15.0	5.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

November 28, 2001

Test Date

E-24



Curve Description: Head Resultant Acceleration

Maximum Value:	<u>260.1</u>	at	<u>1.9</u>	Milliseconds
Minimum Value:	<u>0.2</u>	at	<u>-0.7</u>	Milliseconds
SAE Filter Class:	<u>1000</u>			
Date of Test:	<u>11/28/01</u>			
ATD Serial No.:	<u>035</u>			

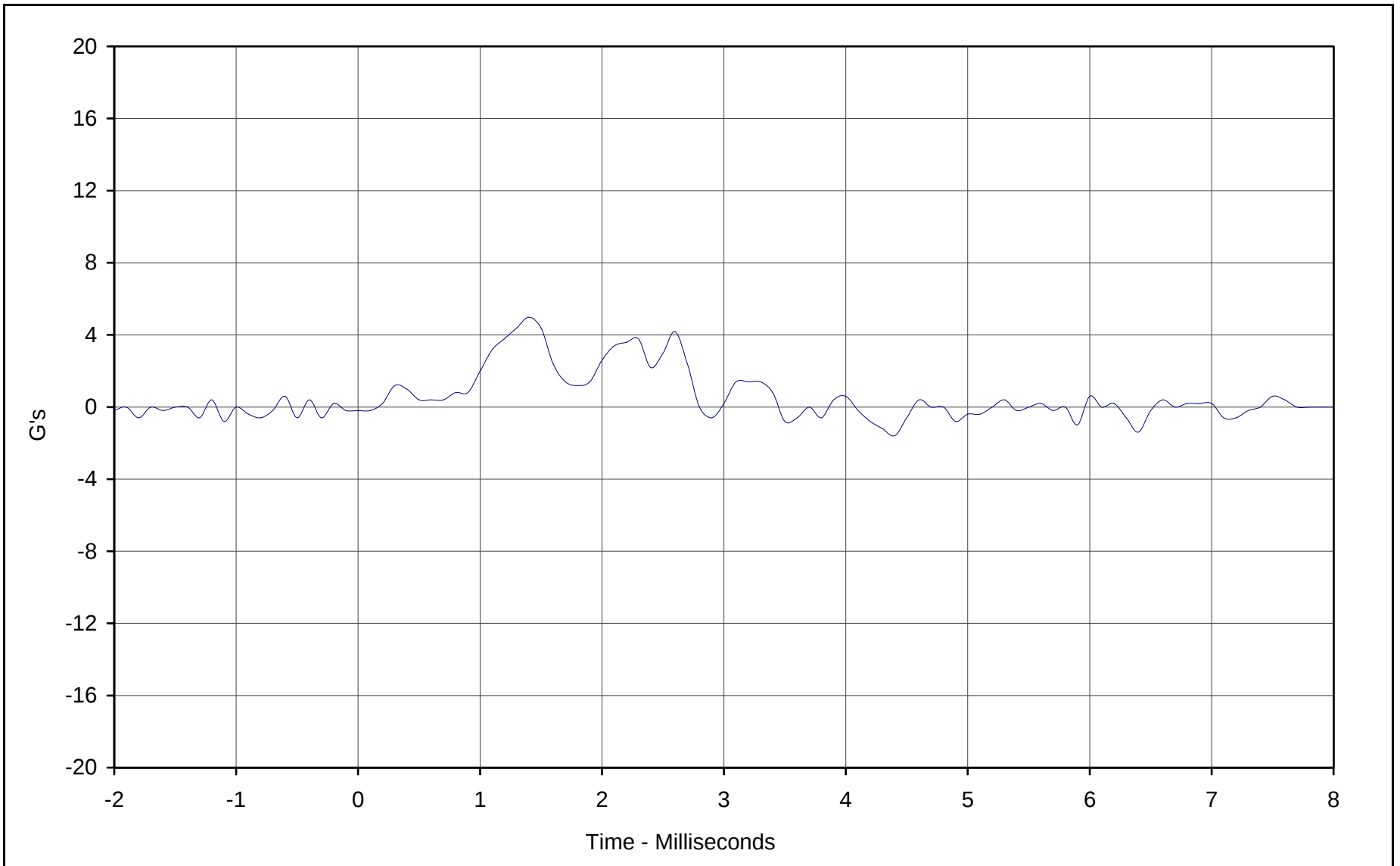
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD05C



KAR21128-01

E-25



Curve Description: Head Acceleration Y Axis

Maximum Value: 5.0 at 1.4 Milliseconds

Minimum Value: -1.6 at 4.4 Milliseconds

SAE Filter Class: 1000

Date of Test: 11/28/01

ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: N/A Test I.D.: HD05C



KAR21128-01



Hybrid III Calibration Data Sheet

50TH Percentile Male

Thorax Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

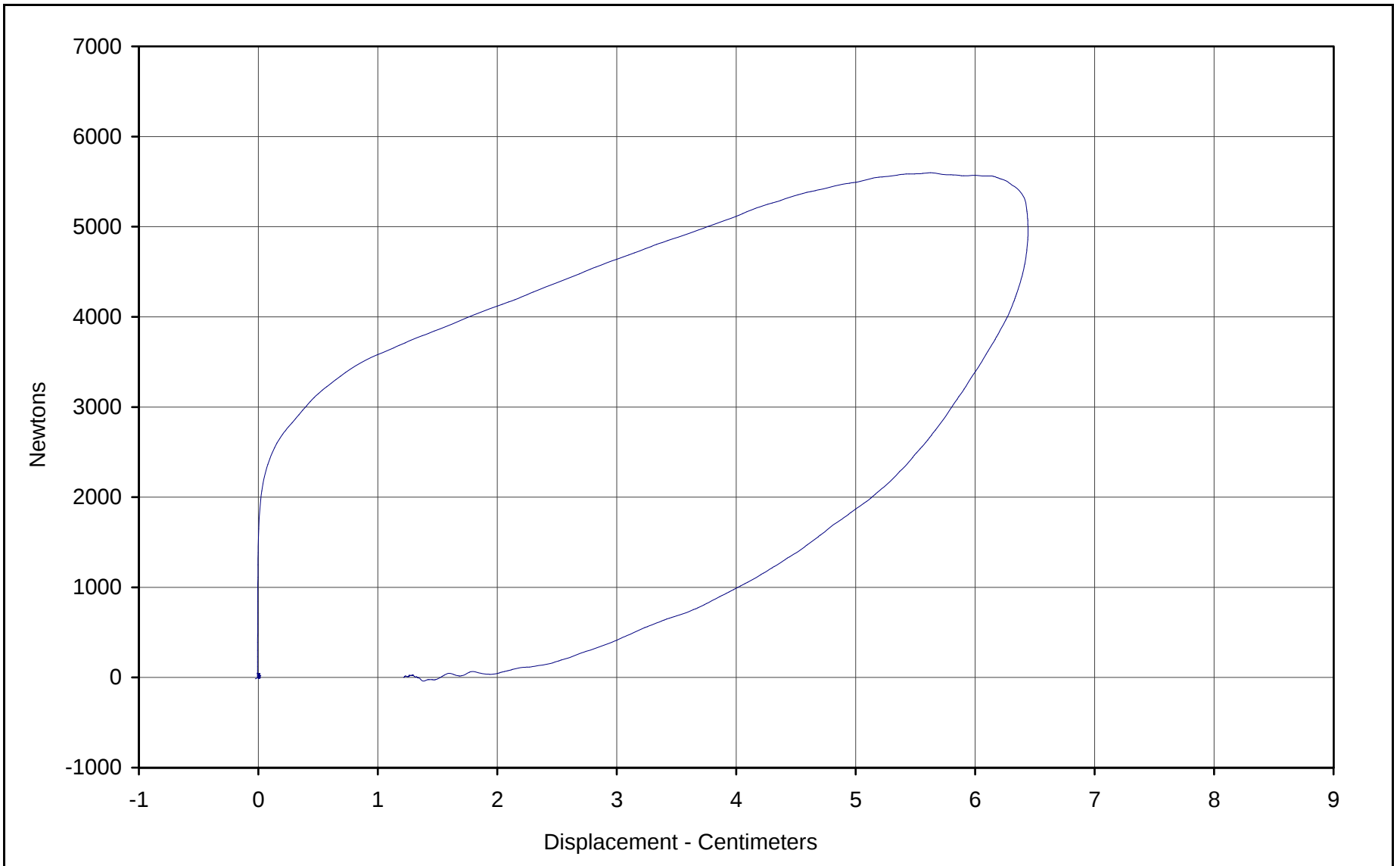
Test I.D.: CH11B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	Newtons	5159 to 5893	5597	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.44	Pass
Internal Hysteresis	%	69 to 85	77.6	Pass
Overall Test Results				Pass

Laboratory Technician

November 29, 2001

Test Date



Curve Description: Probe Force vs. Chest Displacement

Probe Force: 5597.3 Newtons

Chest Displ.: 6.44 Centimeters

SAE Filter Class: 180

Date of Test: 11/29/01

ATD Serial No.: 035

Testing Program: Hybrid III Thorax Impact Test

Test Information: S/N of Part: N/A Test I.D.: CH11B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Flexion Test

ATD Serial No.: 035

Part Serial No.: N/A

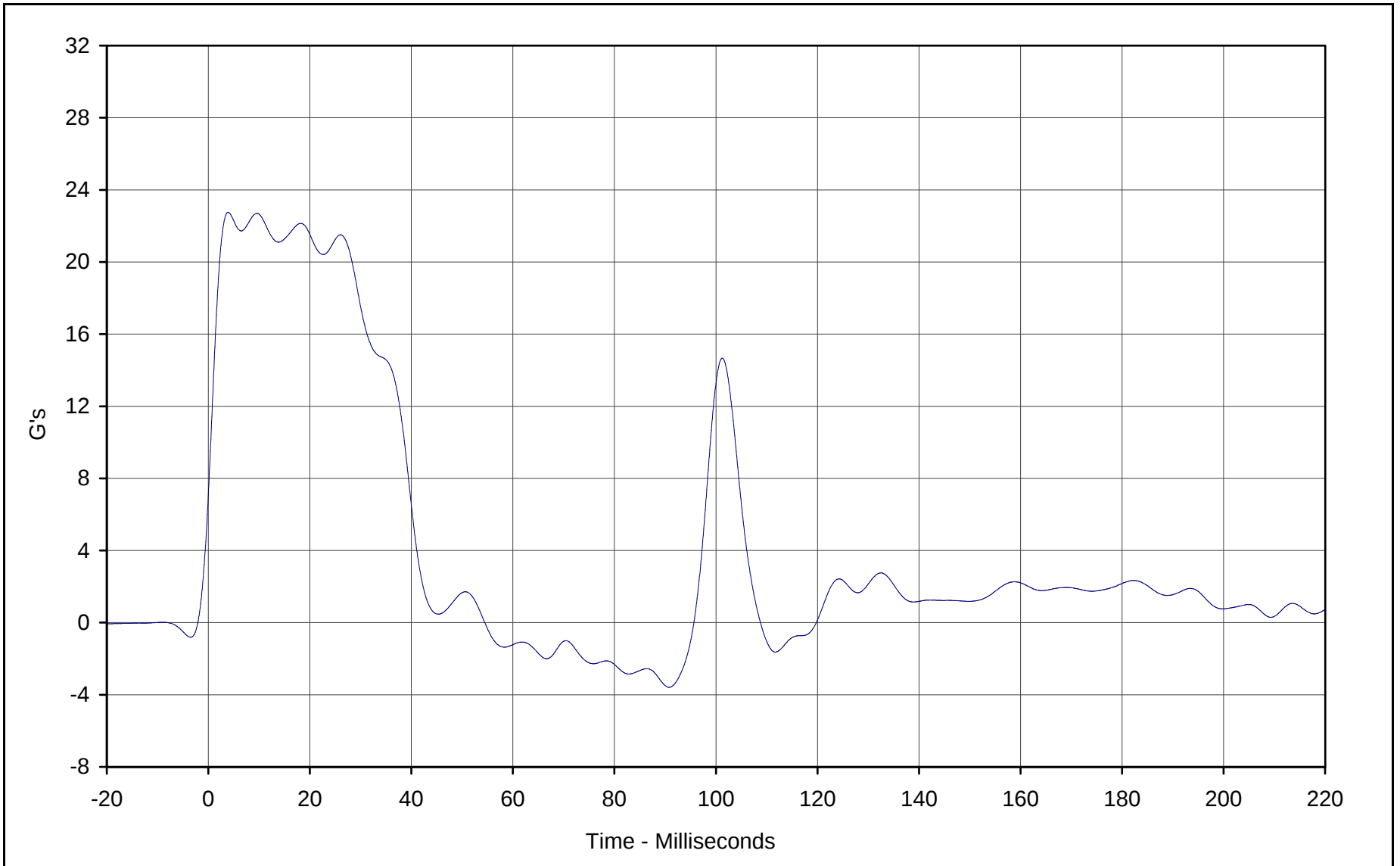
Test I.D.: NF11B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.6	Pass
	20 Msec.	G's	17.6 to 22.6	21.5	Pass
	30 Msec.	G's	12.5 to 18.5	17.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	40.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	68.8	Pass
	Time	Msec.	57.0 to 64.0	60.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	119.4	Pass
Moment About Occipital Condyle	Maximum	N·m	84.1 to 108.5	89.9	Pass
	Time	Msec.	47.0 to 58.0	53.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	101.5	Pass
Overall Test Results					Pass

Laboratory Technician

November 27, 2001

Test Date



Curve Description: Pendulum Deceleration

Maximum Value: 22.8 at 3.9 Milliseconds

Minimum Value: -3.6 at 90.8 Milliseconds

SAE Filter Class: 60

Date of Test: 11/27/01

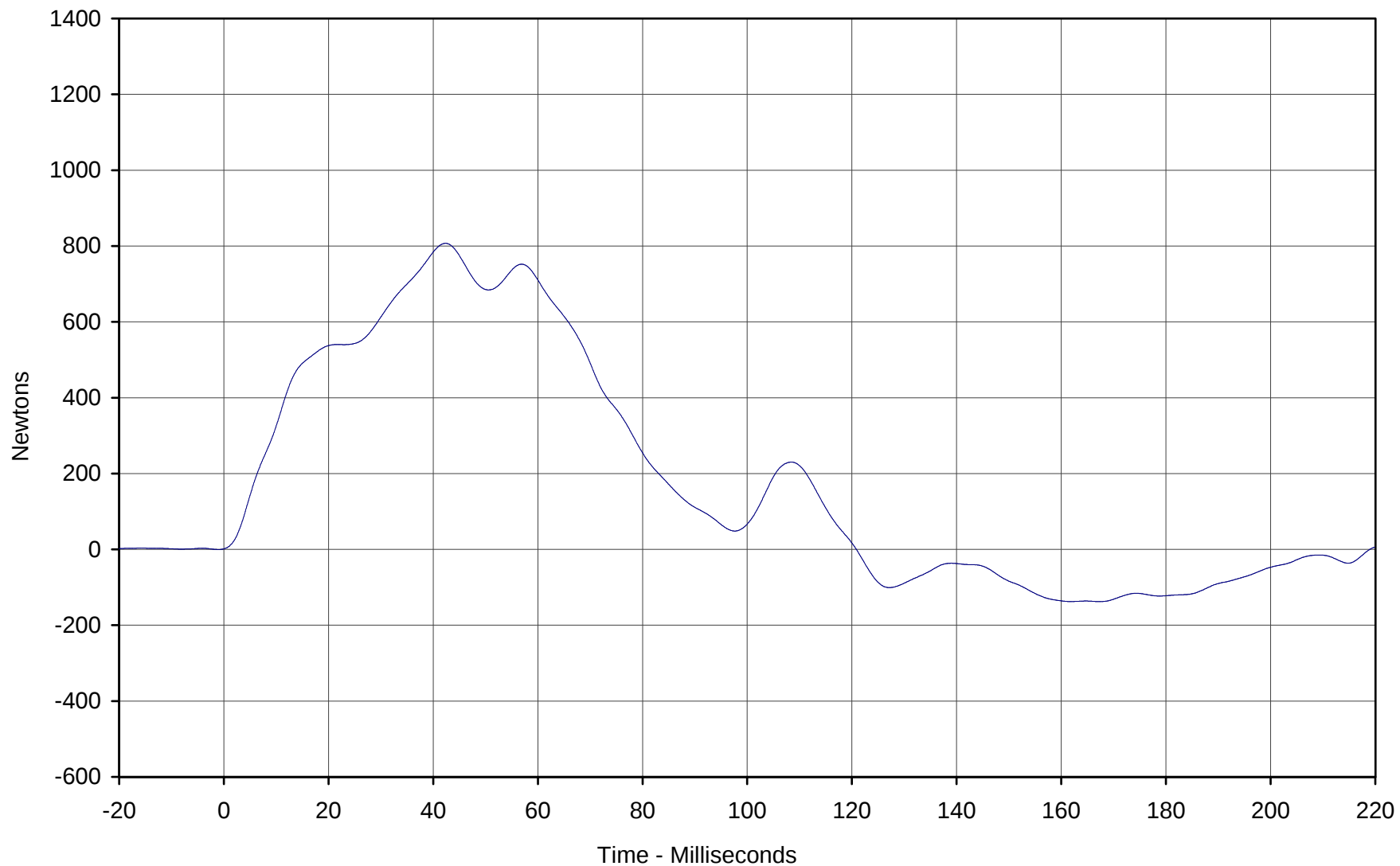
ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF11B



E-30



Curve Description: Neck Force X

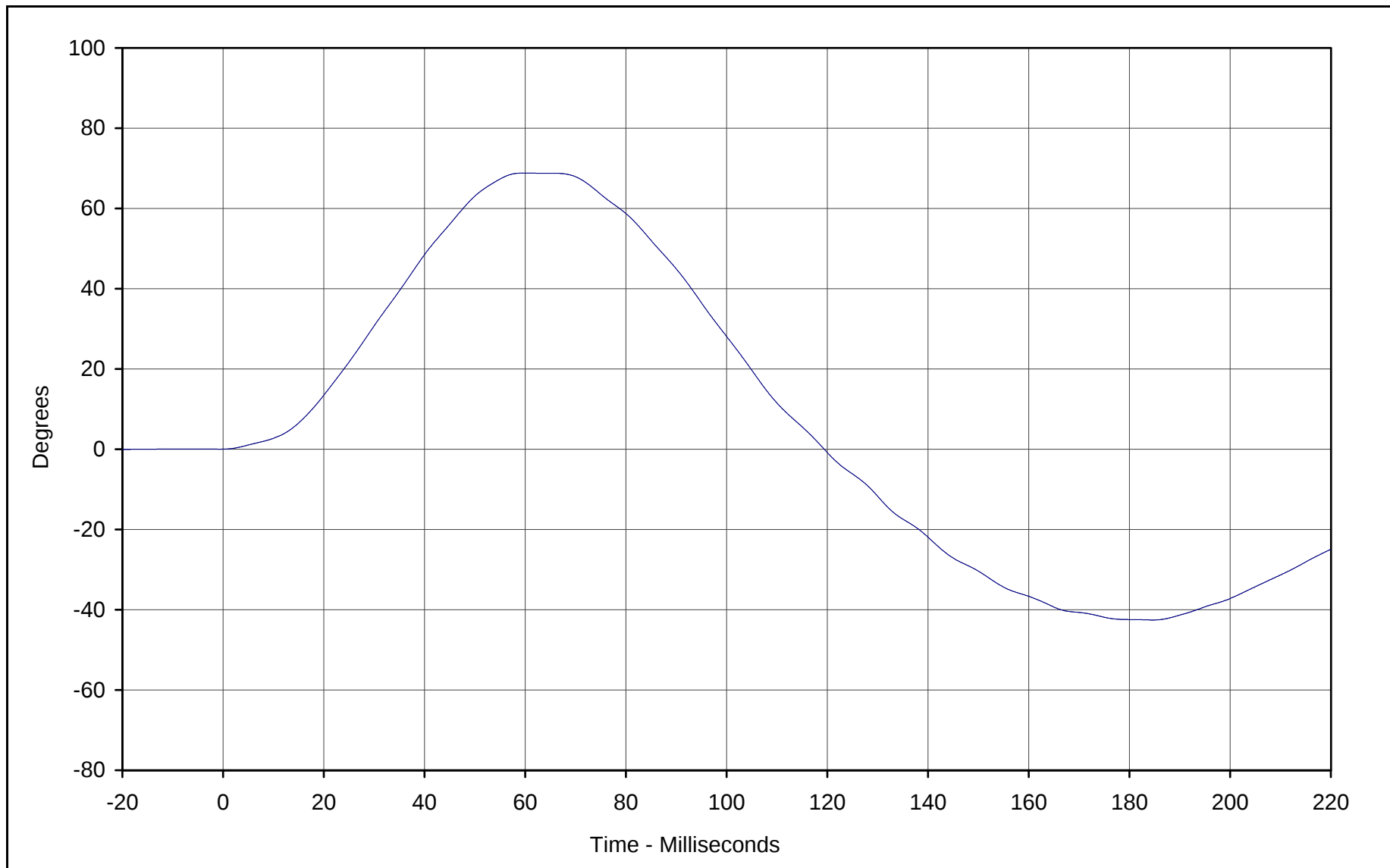
Maximum Value:	807.1	at	42.4	Milliseconds
Minimum Value:	-137.8	at	167.3	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF11B



KAR21128-01



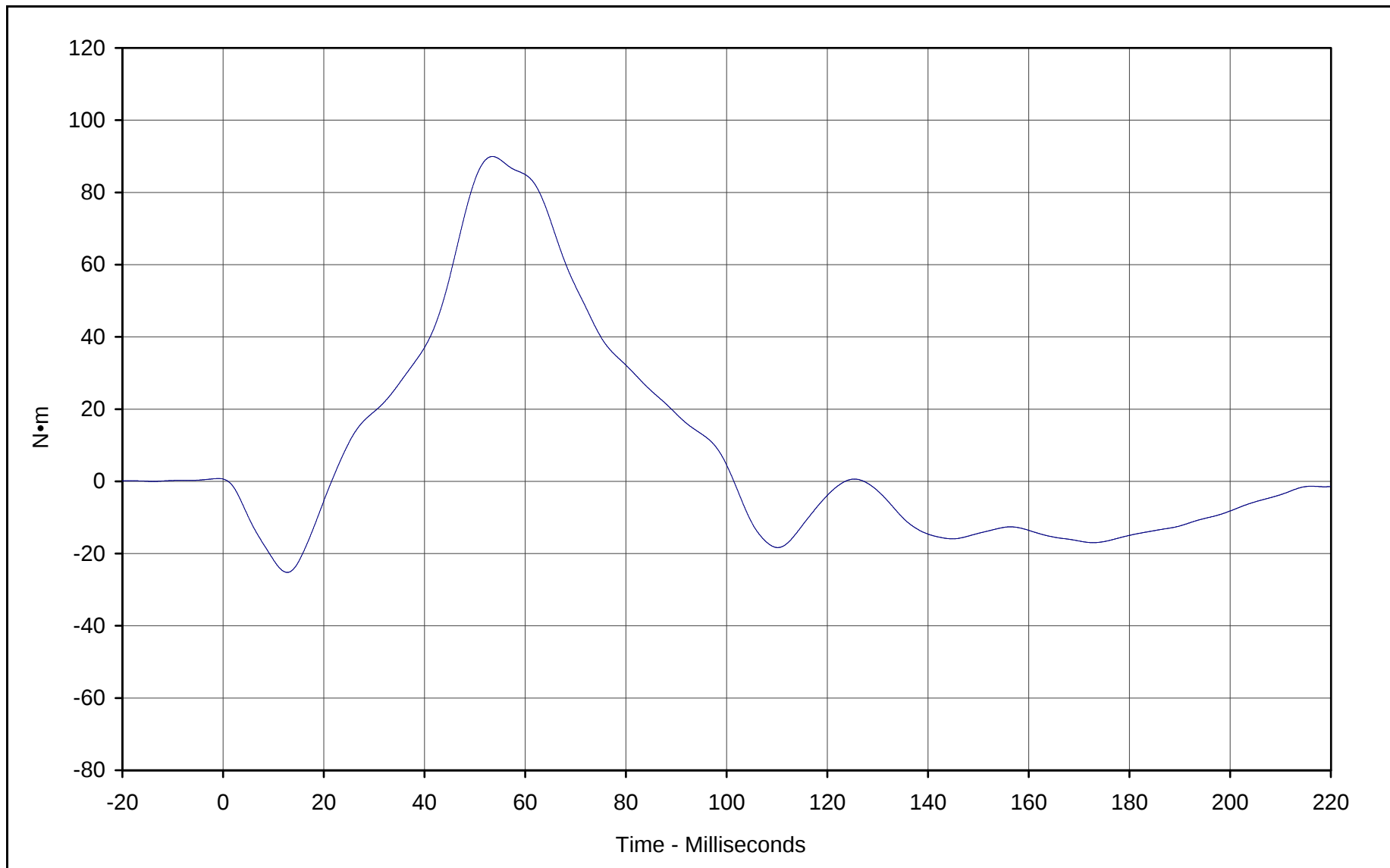
Curve Description: "D" Plane Rotation

Maximum Value:	68.8	at	60.0	Milliseconds
Minimum Value:	-42.6	at	184.6	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF11B





Curve Description: Moment About Occipital Condyles

Maximum Value: 89.9 at 53.5 Milliseconds

Minimum Value: -25.2 at 12.7 Milliseconds

SAE Filter Class: 60

Date of Test: 11/27/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NF11B





Hybrid III Calibration Data Sheet

50TH Percentile Male

Neck Extension Test

ATD Serial No.: 035

Part Serial No.: N/A

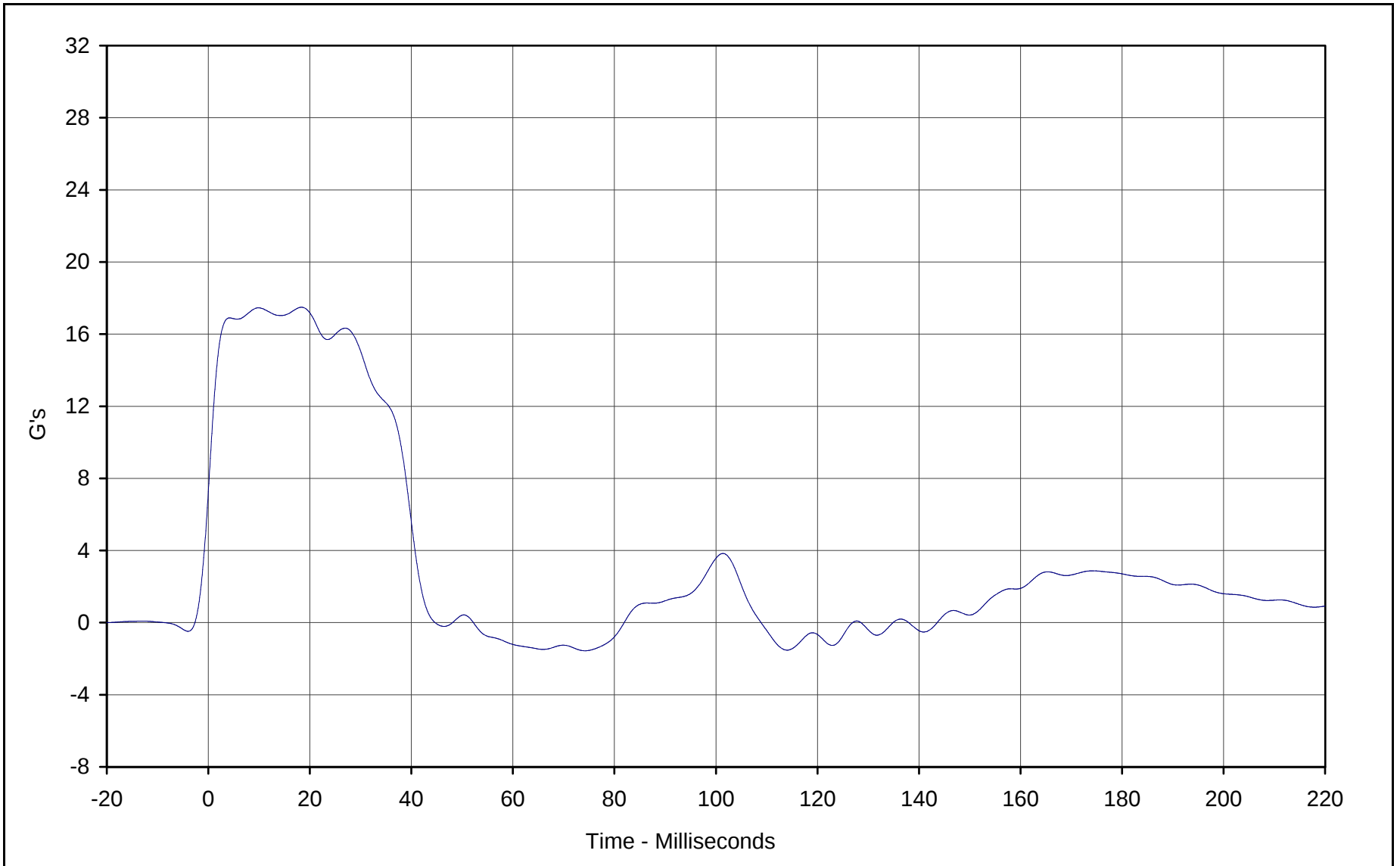
Test I.D.: NE11B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.10	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.5	Pass
	20 Msec.	G's	14.0 to 19.0	17.2	Pass
	30 Msec.	G's	11.0 to 16.0	15.1	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.1	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	40.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.2	Pass
	Time	Msec.	72.0 to 82.0	75.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	154.0	Pass
Moment About Occipital Condyle	Maximum	N·m	-52.9 to- 79.9	-75.2	Pass
	Time	Msec.	65.0 to 79.0	66.4	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.2	Pass
Overall Test Results					Pass

Laboratory Technician

November 27, 2001

Test Date

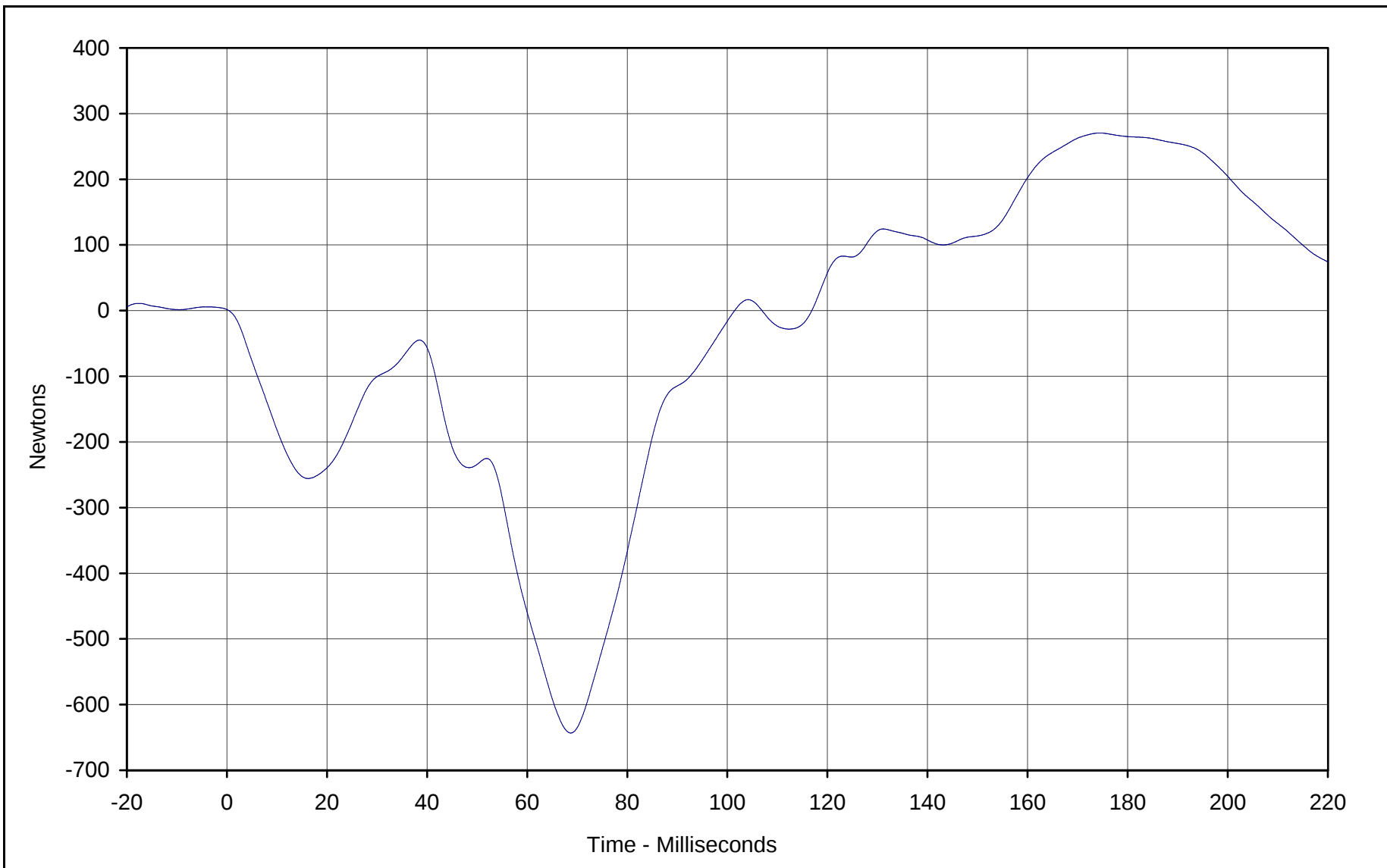


Curve Description:	Pendulum Deceleration		
Maximum Value:	17.5	at	18.3 Milliseconds
Minimum Value:	-1.6	at	74.2 Milliseconds
SAE Filter Class:	60		
Date of Test:	11/27/01		
ATD Serial No.:	035		

Testing Program:	Hybrid III Neck Extension Test (Male)
Test Information:	S/N of Part: N/A Test I.D.: NE11B



E-35



Curve Description: Neck Force X

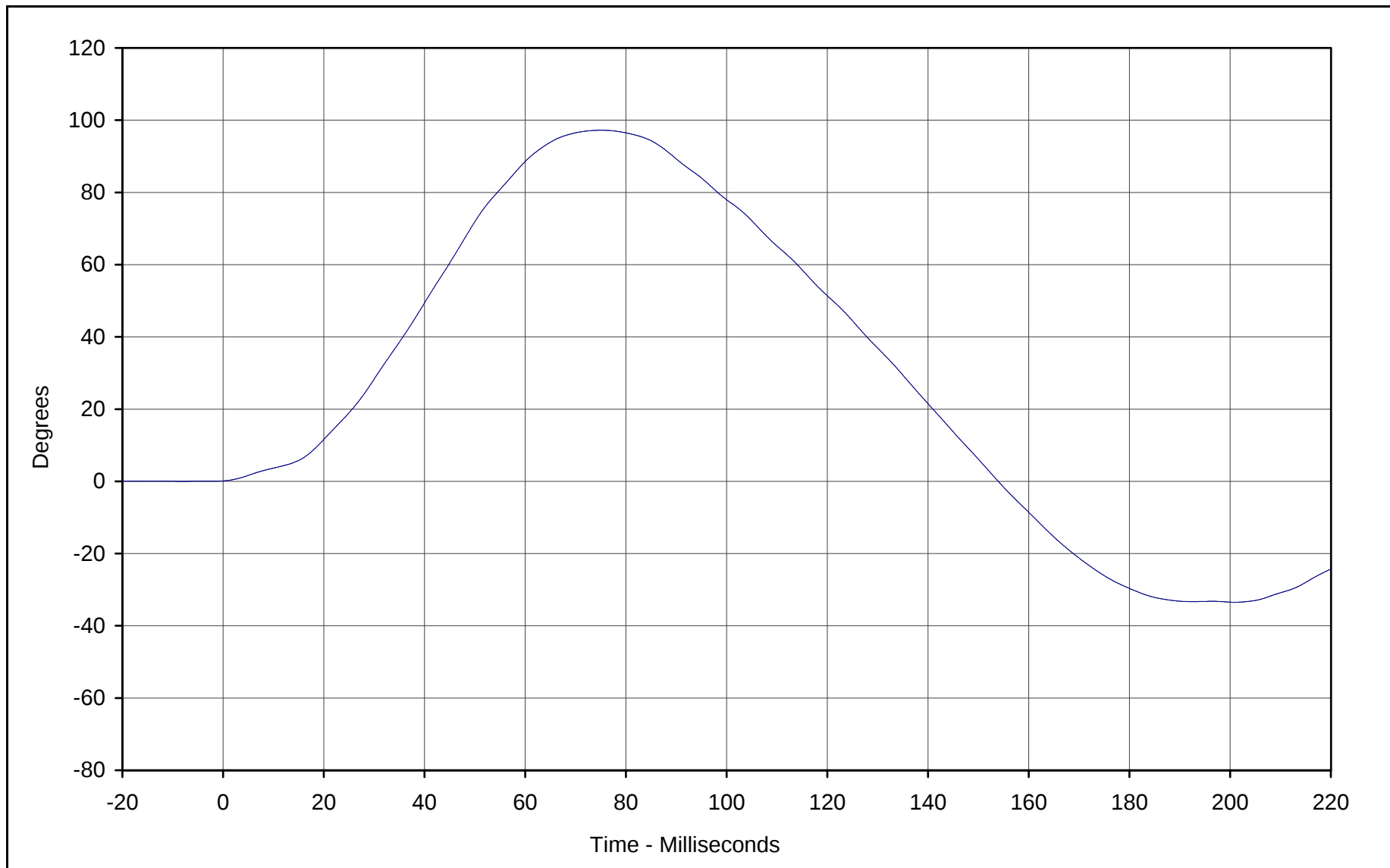
Maximum Value:	270.5	at	174.4	Milliseconds
Minimum Value:	-643.3	at	68.7	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE11B



KAR21128-01



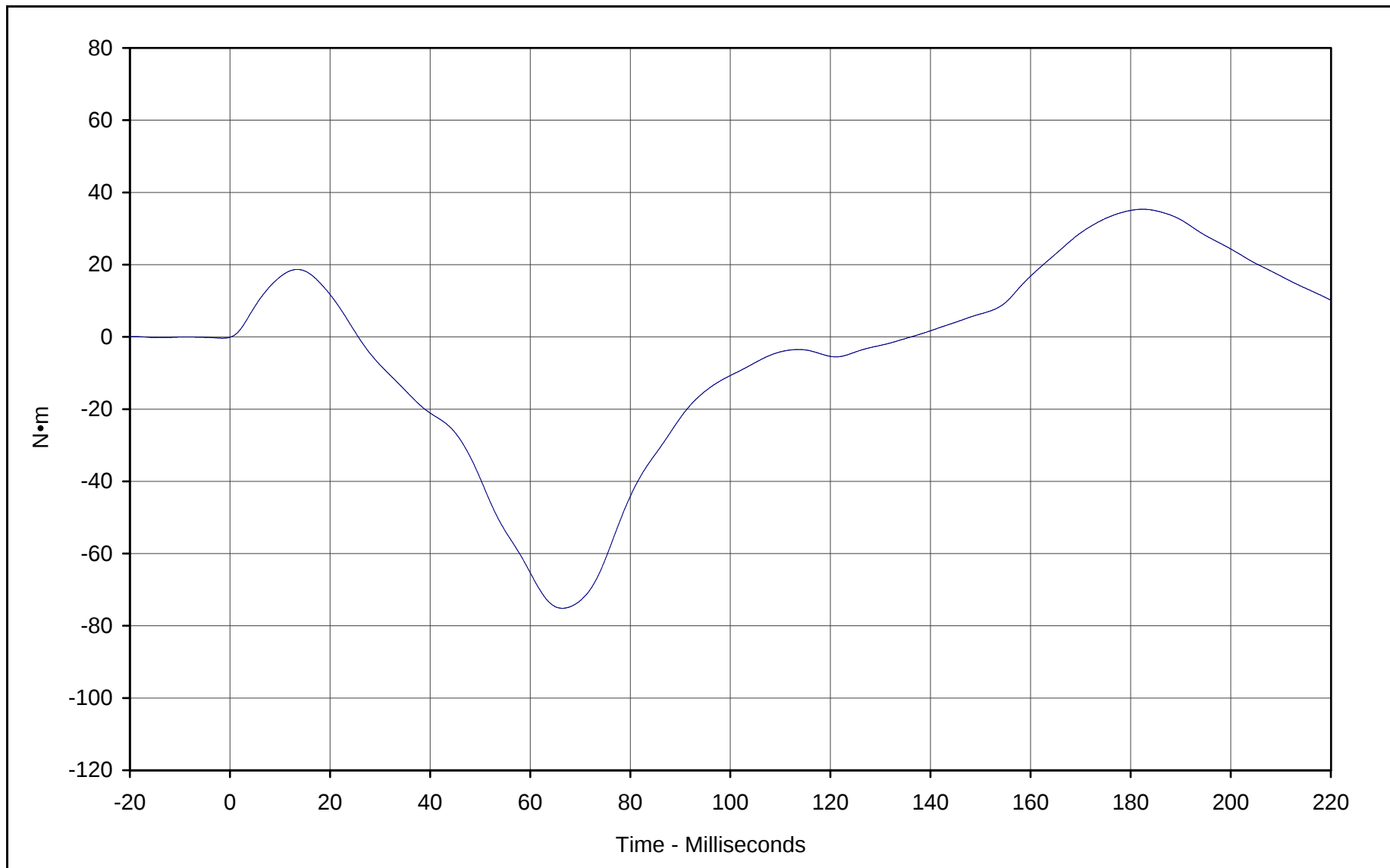
Curve Description: "D" Plane Rotation

Maximum Value:	97.2	at	75.1	Milliseconds
Minimum Value:	-33.5	at	200.9	Milliseconds
SAE Filter Class:	60			
Date of Test:	11/27/01			
ATD Serial No.:	035			

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE11B





Curve Description: Moment About Occipital Condyles

Maximum Value: 35.3 at 182.4 Milliseconds

Minimum Value: -75.2 at 66.4 Milliseconds

SAE Filter Class: 60

Date of Test: 11/27/01

ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: N/A Test I.D.: NE11B





Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	20.9	Pass
Laboratory relative humidity	%	10 to 70	43	Pass
A - Total sitting height	mm	879 to 889	885	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	135	Pass
E - Shoulder pivot from back	mm	84 to 94	85	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	295	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	210	Pass
K - Buttock to knee length	mm	579 to 604	590	Pass
L - Popliteal length	mm	429 to 455	435	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock popliteal length	mm	452 to 477	460	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	265	Pass
V - Shoulder breadth	mm	422 to 437	430	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	990	Pass
Z - Waist circumference	mm	836 to 866	850	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	230	Pass
Overall Test Results				Pass

Laboratory Technician

December 3, 2001

Test Date

APPENDIX F

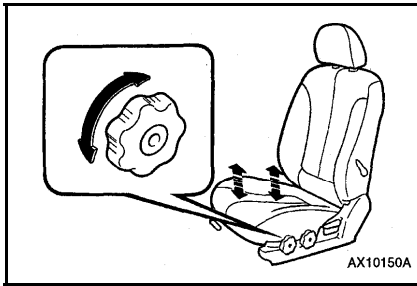
VEHICLE OWNER'S MANUAL

OCCUPANT RESTRAINT INSTRUCTIONS

FEATURES OF YOUR HYUNDAI

B080F01S-AAT

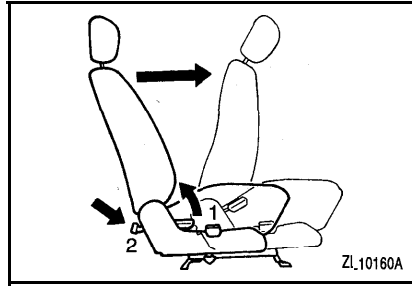
Seat Cushion Height Adjustment (Driver's Seat Only) (If Installed)



To raise or lower the front part of the seat cushion, turn the front knob forward or rearward. To raise or lower the rear part of the seat cushion, turn the rear knob forward or rearward.

B130A01A-AAT

REAR SEAT ENTRY (For 3-door model)



The front passenger **seatback** should be tilted to enter the rear seat.

By pulling up on the recliner control lever (1) at the outside of the front passenger seat, the **seatback** will tilt forward and the seat will automatically slide forward.

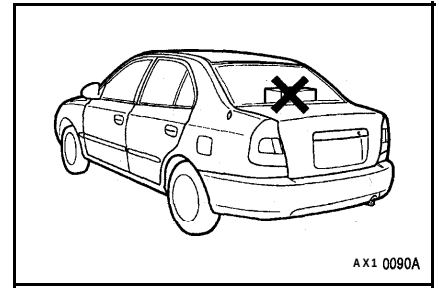
Rear seat occupants can tilt the front passenger **seatback** by depressing the foot lever (2) as shown in the illustration.

WARNING:

Passengers sitting in the rear seat should be careful not to accidentally press the foot lever (2) **while** the vehicle is moving, as this may cause the **seatback** to move forward and injure a front seat occupant.

B140A01S-AAT

REAR SEAT WARNING



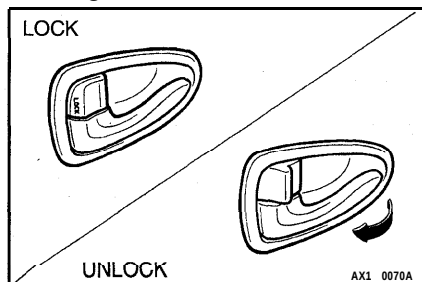
For the safety of all passengers, luggage or other cargo should not be piled higher than the top of the seatback. In addition, do not place objects on the rear shelf as they may move forward during braking or in an accident and strike vehicle passengers.

1-7

FEATURES OF YOUR HYUNDAI

B040D01A-AAT

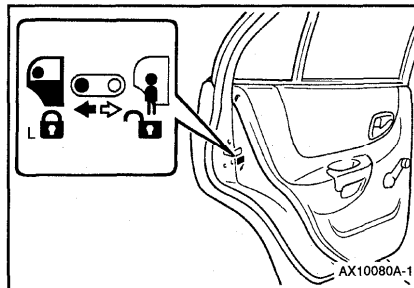
Locking from the Inside



To lock the doors from the inside, simply close the door and push the lock switch to the "LOCK" position. When this is done, neither the outside nor the inside door handle can be used.

B040E03A-AAT

CHILD-PROTECTOR REAR DOOR LOCK



Your Hyundai is equipped with a "child-protector" rear door lock assembly. When the lock mechanism is engaged, the rear door cannot be opened from the inside. Its use is recommended whenever there are small children in the rear seat.

To engage the child-protector feature so that the door cannot be opened from the inside, move the child-protector lever to the "LOCK" position and close the door. Move the lever to the opposite direction of "LOCK" position when normal door operation is desired.

If you wish to be able to open the door from the outside, the outside door handle will function normally.

B080A01A-AAT

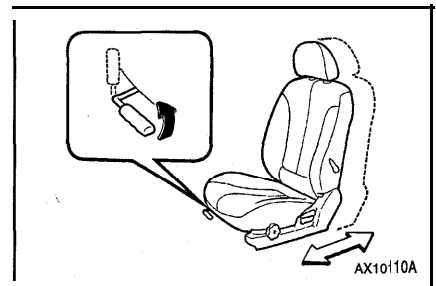
ADJUSTABLE FRONT SEATS

WARNING:

Never attempt to adjust the seat while the vehicle is moving. This could result in loss of control, and an accident causing death, serious injury, or property damage.

B080B01A-AAT

Adjusting Seat Forward and Rearward



To move the seat toward the front or rear, pull the lock release lever upward. This will release the seat on its track so you can move it forward or rearward to the desired position.

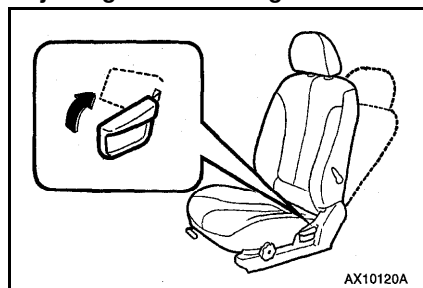
When you find the position you want, release the lever and slide the seat forward or rearward on its track until it locks into the desired position and cannot be moved further.

1-5

FEATURES OF YOUR HYUNDAI

B080C01A-AAT

Adjusting Seatback Angle



To recline the seatback, lean forward to take your weight off it, then pull up on the recliner control lever at the outside edge of the seat. Now lean back until the desired **seatback** angle is achieved. To lock the **seatback** into position, release the recliner control lever.

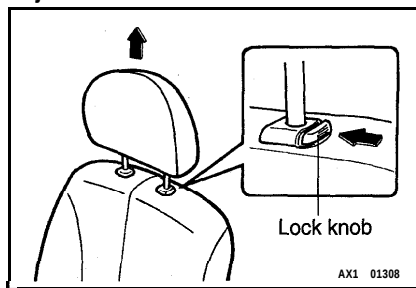
WARNING:

To minimize risk of severe injury in the event of a collision or sudden stop, both the driver and passenger seatbacks should always be in a nearly upright position while the vehicle is in motion. The protection provided by the seat belts and airbags may be reduced significantly when the **seatback** is reclined. There is greater risk that the driver and passenger will slide under the seat belt which may result in serious injury if a crash occurs when the **seatback** is reclined.

1-6

B080D02A-AAT

Adjustable Headrests



Headrests are designed to help reduce the risk of neck injuries.

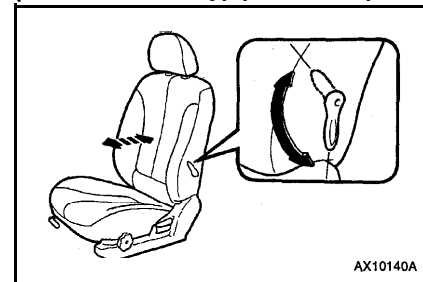
To raise the headrest, pull it up. To lower it, push it down while pressing the lock knob.

WARNING:

- o For maximum effectiveness in case of an accident, the headrest should be adjusted so the top of the headrest is at the same height as the top of the occupant's ears. The use of a cushion that holds the body away from the **seatback** is not recommended.
- o Do not operate the vehicle with the headrests removed as severe injury to an occupant may occur in the event of an accident. Headrests may provide protection against severe neck injuries when properly adjusted.

B080E01A-AAT

Lumbar Support Control (Driver's seat only) (If installed)

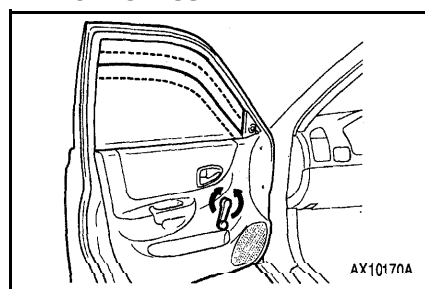


To adjust the lumbar support, turn the handle on the inboard side of the seat. To increase the amount of lumbar support, pull the lever forward. To decrease it, push the lever toward the rear.

FEATURES OF YOUR HYUNDAI

B050A01A-AAT

WINDOW GLASS



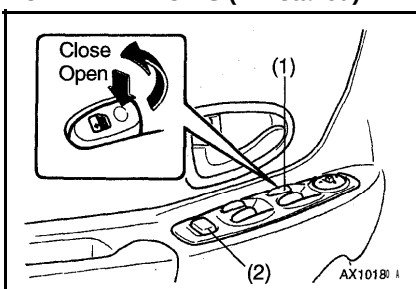
To raise or lower the window, turn the window regulator handle clockwise or counterclockwise.

WARNING:

When opening or closing the windows, make sure your passenger's arms, hands and body are safely out of the way.

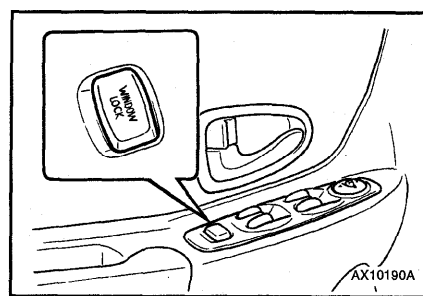
B060A03A-GAT

POWER WINDOWS (If installed)



The power windows operate when the ignition key is in the "ON" position. The main switches are located on the driver's armrest and control the front and rear windows on both sides of the vehicle. The windows may be opened by depressing the appropriate window switch and closed by pulling up the switch. To open the window on the driver's side, press the switch(1) down. The window moves as long as the switch is operated. In order to prevent operation of the passenger front and rear windows, a window lock switch(2) is provided on the armrest of the driver's door. To disable the power windows, press the window lock switch.

To revert to normal operation, press the window lock switch a second time.



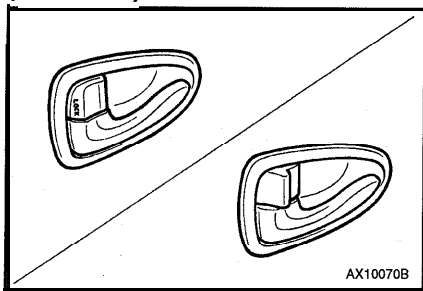
WARNING:

- 1) Be careful that someone's head, hands and body are not trapped by a closing window.
- 2) Never try to operate the main switch on the driver's door and the individual door window switch in opposing directions at the same time. If this is done, the window will stop and cannot be opened or closed.
- 3) Do not leave children alone in the car. Always remove the ignition key for their safety.

FEATURES OF YOUR HYUNDAI

B040G02A-GAT

CENTRAL DOOR LOCKING SYSTEM (If Installed)



This system is controlled by the driver's door lock and operates the passenger door locks. When the driver's door is locked, the passenger doors are locked automatically. If a rear door is open when the door lock switch is depressed, it will remain locked when closed. If the front passenger door is open when the door lock switch is locked, the outside door handle must be held in the raised position. When the door is closed, the door will remain locked. All doors will be unlocked automatically whenever the driver's door is unlocked whether by key or door lock switch.

B150A01A-AAT

SEAT BELT PRECAUTIONS

WARNING:

All occupants of the vehicle must **wear** their seat belts at all times. Note that this vehicle is equipped with a Supplemental Restraint (Airbag) System as discussed beginning on page 1-19. The seat belts must be used in conjunction with the supplemental **airbag** system. State laws require that some or all occupants of the vehicle use seat belts. The possibility of increased injury or severity of injury in an accident will be increased if this elementary safety precaution is not observed.

B150B02A-AAT

Infant or Small Child

All 50 states have child restraint laws. You should be aware of the specific requirements in your state. Child and/or infant safety seats must be properly placed and installed in the **rear seat**. Information about the use of these restraints begins on page 1-14.

WARNING:

Every person in your vehicle needs to be buckled up at all times, including infants and children. In a collision, an unrestrained child can become a "missile" inside the car. The force required to hold a child on your lap could be so great that you could not hold the child. Any child riding in the vehicle should always be in a proper restraint.

NOTE:

Small children are best protected from injury in an accident when properly restrained in the **rear seat** by a child restraint system that meets the requirements of the Federal Motor Vehicle Safety Standards. Before buying any child restraint system, make sure that it has a label certifying that it meets Motor Vehicle

Safety Standard 213. The restraint must be appropriate for your child's height and weight. Check the label on the child restraint for this information. See page 1-14.

B150C02A-AAT

Larger Children

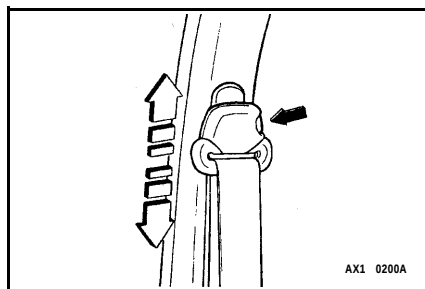
Children who are too large for child restraint systems should occupy the **rear seat** and use the available lap/shoulder belts. The lap portion should be fastened snug on the hips and as low as possible. Check belt fit periodically. A child's squirming could put the belt out of position. Children are afforded the most safety in the event of an accident when they are restrained by a proper restraint system in the rear seat. If a larger child (over age 13) must be seated in the front seat, the child should be securely restrained by the available lap/shoulder belt and the seat should be placed in the **rearmost** position. Children under the age of 13 should be restrained securely in the **rear seat**. NEVER place a rear facing child seat in the front seat of a vehicle.

1-9

FEATURES OF YOUR HYUNDAI

B170A03A-AAT

HEIGHT ADJUSTABLE FRONT SEAT SHOULDER BELT (If installed)



You can adjust the height of the shoulder belt anchor to one of the 4 positions.

If the height of the adjusting seat belt is too near your neck, you will not be getting the most effective protection. The shoulder portion should be adjusted so that it lies across your chest and midway over your shoulder nearest the door and not your neck.

To adjust the height of the seat belt anchor, lower or raise the height adjuster into an appropriate position when the height adjuster button is pushed.

Release the button to lock the anchor into position. Try sliding the release button to make sure that it has locked into the position.

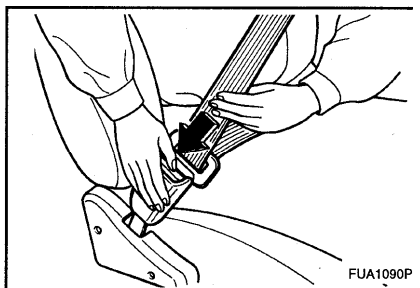
WARNING:

- o The height adjuster must be in the locked

- position whenever the vehicle is moving.
- o The misadjustment of height of the shoulder belt could reduce the effectiveness of the seat belt in a crash.

B180A01A-AAT

SEAT BELT-Driver's 3-Point System with Emergency Locking Retractor To Fasten Your Belt



To fasten your seat belt, pull it out of the retractor and insert the metal tab into the buckle. There will be an audible "click" when the tab locks into the buckle.

The seat belt automatically adjusts to the proper length only after the lap belt is adjusted manually so that it fits snugly around your hips. If you lean forward in a slow, easy motion, the belt will extend and let you move around. If there is a sudden stop or impact, however, the belt will lock into position. It will also lock if you try to lean forward too quickly.

NOTE:

If the driver's seat belt is not fastened when the ignition key is in the "ON" position, the seat belt warning light will flash and the warning chime will sound for approximately six seconds.

B190A01A-AAT

SEAT BELTS-Front Passenger and Outboard Rear Seat 3-Point System with Combination Locking Retractor To Fasten Your Belt

Combination retractor type seat belts are installed in the rear seat outboard positions to help accommodate the installation of child restraint systems. Although a combination retractor is also installed in the front passenger seat position, Hyundai strongly recommends that children always be seated in the **rear seat**. NEVER place any infant restraint system in the front seat of the vehicle.

This type of seat belt combines the features of both an emergency locking retractor seat belt and an automatic locking retractor seat belt. To fasten your seat belt, pull it out of the retractor and insert the metal tab into the buckle. There will be an audible "click" when the tab locks into the buckle. When not securing a child restraint, the seat belt operates in the same way as the driver's seat belt (Emergency Locking Retractor Type). It automatically adjusts to the proper length only after the lap belt portion of the seat belt is adjusted manually so that it fits snugly

I-11

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B150D01A-AAT

Pregnant Women

The use of a seat belt is recommended for pregnant women to lessen the chance of injury in an accident. When a seat belt is used, the lap belt portion should be placed as low and snugly as possible on the hips, not across the abdomen. For specific recommendations, consult a physician.

B150E01A-AAT

Injured Person

A seat belt should be used when an injured person is being transported. When this is necessary, you should consult a physician for recommendations.

B150F01A-AAT

One Person Per Belt

Two people (including children) should never attempt to use a single seat belt. This could increase the severity of injuries in case of an accident.

B150G01A-AAT

Do Not Lie Down

To reduce the chance of injuries in the event of an accident, and to achieve maximum effectiveness of the restraint system, all passengers should be sitting up and the front seats should be in an upright position when the car is moving. A seat belt cannot provide proper protection if the person is lying down in the rear seat or if the front seat is in a reclined position.

1-10

WARNING:

Sitting in a reclined position or lying down when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts can't do their job when you're reclined. The shoulder belt can't do its job because it won't be against your body.

Instead, it will be in front of you. In a crash you could go into it with great force, receiving serious neck or other injuries. The lap belt can't do its job either. In a crash the belt could go up over your abdomen. The belt forces would be there, not at your pelvic bones.

This could cause serious internal injuries.

For proper protection when the vehicle is in motion, have the **seatback** upright.

Then sit back in the seat and wear your safety belt properly. See Page 1-12.

B160A01A-AAT

CARE OF SEAT BELTS

Seat belt systems should never be disassembled or modified. In addition, care should be taken to assure that seat belts and belt hardware are not damaged by seat hinges, doors or other abuse.

WARNING:

When you return the rear **seatback** to its upright position after the rear **seatback** was folded down, be careful not to damage the seat belt webbing or buckle. Be sure that the

webbing or buckle does not get caught or pinched in the rear seat.

B160B01A-AAT

Periodic Inspection

It is recommended that all seat belts be inspected periodically for wear or damage of any kind. Parts of the system that are damaged should be replaced as soon as possible.

B160C01A-AAT

Keep Belts Clean and Dry

Seat belts should be kept clean and dry. If belts become dirty, they can be cleaned by using a mild soap solution and warm water. Bleach, dye, strong detergents or abrasives should not be used because they may damage and weaken the fabric.

B160D01A-AAT

When to Replace Seat Belts

Entire in-use seat belt assembly or assemblies should be replaced if the vehicle has been involved in an accident. This should be done even if no damage is visible. Additional questions concerning seat belt operation should be directed to your Hyundai Dealer.

FEATURES OF YOUR HYUNDAI

around your hips. When the seat belt is fully extended from the retractor to allow the installation of a child restraint system, the seat belt operation changes to allow the belt to retract, but not to extend (Automatic Locking Retractor Type). See page 1-16.

NOTE:

Although the combination retractor provides the same level of protection for seated passengers in either emergency or automatic locking modes, it is recommended that seated passengers use the emergency locking feature for improved convenience. The automatic locking function is intended to facilitate child restraint installation. To convert from the automatic locking feature to the emergency locking operation mode, allow the unbuckled seat belt to fully retract.

WARNING:

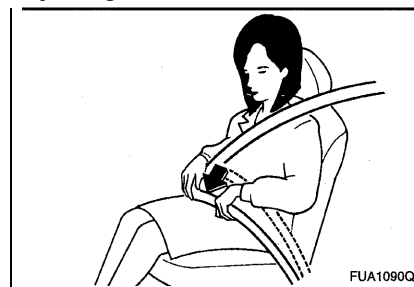
- For maximum restraint system protection, seat belts must always be used whenever the car is moving.
- Seat belts are most effective when seatbacks are in the upright position.
- Children must always be seatbelted in the rear seats. Never allow children to ride in the front passenger seat.
- The shoulder belt should be positioned midway over the shoulder nearest the door for the most effective protection. Never wear the seat belt under the arm nearest the door. Wearing the belt under

the arm nearest the door could cause serious or fatal injuries in an accident.

- Avoid wearing twisted seat belts. A twisted belt can't do its job as well. In a collision, it could even cut into you. Be sure the belt is straight and not twisted.
- Be careful not to damage the belt webbing or hardware. If the belt webbing or hardware is damaged, replace it.

B200A01A-AAT

Adjusting Your Seat Belt



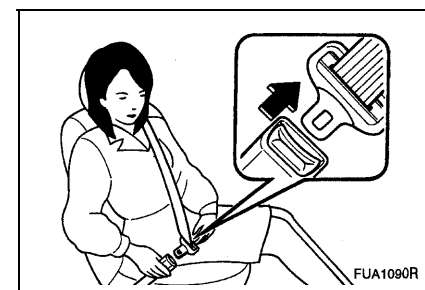
WARNING:

You should place the lap belt portion as low as possible and snugly across your hips, not on your waist. If the lap belt is located too high on your waist, it may increase the chance of injury in the event of a collision. Both arms should not be under or over the belt. Rather, one should be over and the

other under, as shown in the illustration. Never wear the seat belt under the arm nearest the door.

B210A01A-AAT

To Release the Seat Belt



The seat belt is released by pressing the release button in the locking buckle. When it is released, the belt should automatically draw back into the retractor.

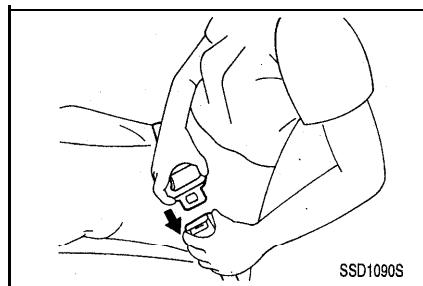
If this does not happen, check the belt to be sure it is not twisted, then try again.

FEATURES OF YOUR HYUNDAI

B220A01A-AAT

SEAT BELTS (P-Point Static Type) (Rear Seat Center)

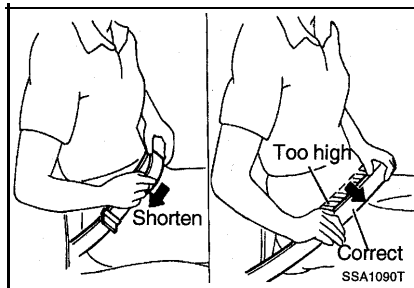
To Fasten Your Seat Belt



To fasten a 2-point static type belt, insert the metal tab into the locking buckle. There will be an audible "click" when the tab locks into the buckle. Check to make sure the belt is properly locked and that the belt is not twisted.

B220B01A-AAT

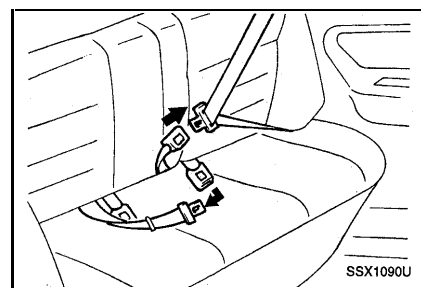
Adjusting Your Seat Belt



With a 2-point static type seat belt, the length must be adjusted manually so it fits snugly around your body. Fasten the belt and pull on the loose end to tighten. The belt should be placed as low as possible on your hips, not on your waist. If the belt is too high, it could increase the possibility of your being injured in an accident.

B220C01A-AAT

To Release the Seat Belt



When you want to release the seat belt, press the button in the locking buckle.

WARNING

The center lap belt latching mechanism is different from those for the rear seat shoulder belts. When fastening the rear seat shoulder belts or the center lap belt, make sure they are inserted into the correct buckle to obtain maximum protection from the seat belt system and assure proper operation.

1-13

FEATURES OF YOUR HYUNDAI

minate even if there is no malfunction of the SRS airbag system.

If the SRS airbag warning light does not illuminate when the ignition key is turned to "ON", or if it remains illuminated after blinking for approximately 6 seconds, or if it illuminates while the vehicle is being driven, please have an authorized Hyundai dealer inspect the pre-tensioner seat belt or SRS airbag system as soon as possible.

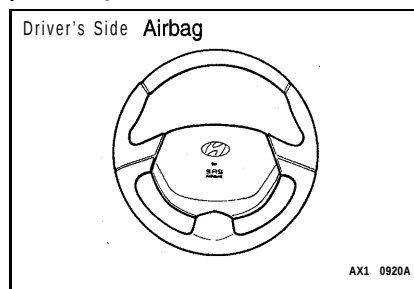
WARNING:

- o Pre-tensioners are designed to operate only one time. After activation, pre-tensioner seat belts must be replaced. All seat belts, of any type, should always be replaced after they have been worn during a collision.
- o The pre-tensioner seat belt assembly mechanisms become hot during activation. Do not touch the pre-tensioner seat belt assemblies for several minutes after they have been activated.
- o Do not attempt to inspect or replace the pre-tensioner seat belts yourself. This must be done by an authorized Hyundai dealer.
- o Do not strike the pre-tensioner seat belt assemblies.
- o Do not attempt to service or repair the pre-tensioner seat belt system in any manner.

- o Improper handling of the pre-tensioner seat belt assemblies, and failure to heed the warnings to not strike, modify, inspect, replace, service or repair the pre-tensioner seat belt assemblies may lead to improper operation or inadvertent activation and serious injury.
- o Always wear the seat belts when driving or riding in a motor vehicle.

B240A01F-AAT

SUPPLEMENTAL RESTRAINT (AIRBAG) SYSTEM (SRS)



Your Hyundai is equipped with a Supplemental Restraint (Airbag) System. The indications of the system's presence are the letters "SRS AIRBAG" embossed on the airbag pad cover in the steering wheel and the passenger's side front panel pad above the glove box.

The Hyundai SRS consists of airbags installed under the pad covers in the center of the steering wheel and the passenger's side front panel above the glove box. The purpose of the SRS is to provide the vehicle's driver and/or the front passenger with additional protection than that offered by the seat-belt system alone, in case of a frontal impact of sufficient severity.

NOTE:

Be sure to read information about the SRS on the labels provided on the backside of the sun visor and in the glove box.

WARNING:

- o As its name implies, the SRS is designed to work with, and be supplemental to, the driver's and the passenger's three point seat belt systems and is not a substitute for them. Therefore your seat belts must be worn at all times while the vehicle is in motion. In addition, the airbags deploy only in certain frontal impact conditions severe enough to cause significant injury to the vehicle occupants.
- o The SRS is designed to deploy the airbags only when an impact is sufficiently severe and when the impact angle is less than 30° from the forward longitudinal axis of the vehicle and will not deploy in side, rear or rollover impacts. Additionally, the airbags will only deploy once. Thus, seat belts must be worn at all times.

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CHILD RESTRAINT SYSTEM

Children riding in the car should sit in the rear seat and must always be properly restrained to minimize the risk of injury in an accident, sudden stop or sudden maneuver. According to accident statistics provided by the National Highway Traffic Safety Administration (NHTSA), children are safer when properly restrained in the rear seats than in the front seat. Larger children should use one of the seat belts provided.

All 50 states have child restraint laws. You should be aware of the specific requirements in your state. Child and/or infant safety seats must be properly placed and installed in the **rear seat**. You must use a commercially available child restraint system that meets the requirements of the Federal Motor Vehicle Safety Standards (FMVSS).

Children could be injured or killed in a crash if their restraints are not properly secured. For small children and babies, a child seat or infant seat must be used. Before buying a particular child restraint system, make sure it fits your car seat and seat belts, and fits your child. Follow all the instructions provided by the manufacturer when installing the child restraint system.

WARNING:

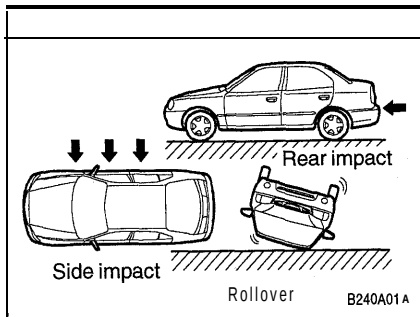
- o A child restraint system must be placed in the rear seat. Never install a child or infant seat on the front passenger's seat. Should an accident occur and cause the passenger side **airbag** to deploy, it could severely injure or kill an infant or child seated in an infant or child seat. Thus, only use a child restraint in the rear seat of your vehicle.
- o Since a safety belt or child restraint system can become very hot if it is left in a closed vehicle, be sure to check the seat cover and buckles before placing a child there.
- o When the child restraint system is not in use, store it in the trunk or fasten it with a safety belt so that it will not be thrown forward in the case of a sudden stop or an accident.
- o Children who are too large to be in a child restraint should still sit in the rear seat and be restrained with the available lap/shoulder belts. Never allow children to ride in the front passenger seat.
- o Always make sure that the shoulder belt portion of the outboard lap/shoulder belt is positioned midway over the shoulder, never across the neck or behind the back. Moving the child closer to the center of the vehicle may help provide a good shoulder belt fit. The lap belt portion of the lap/shoulder belt or the center seat

lap belt must always be positioned as low as possible on the child's hips and as snug as possible.

- o If the seat belt will not properly fit the child, we recommend the use of an approved booster seat in the rear seat in order to raise the child's seating height so that the seat belt will properly fit the child. Before purchasing a booster seat, make sure that it meets applicable Federal Motor Vehicle Safety Standards (FMVSS) and that it is satisfactory for use with this vehicle.
- o Never allow a child to stand up or kneel on the seat.
- o Never use an infant carrier or child safety seat that "hooks" over a seatback; it may not provide adequate security in an accident.
- o Never allow a child to be held in a person's arms while they are in a moving vehicle, as this could result in serious injury to the child in the event of an accident or a sudden stop. Holding a child in a moving vehicle does not provide the child with any means of protection during an accident, even if the person holding the child is wearing a seat belt.

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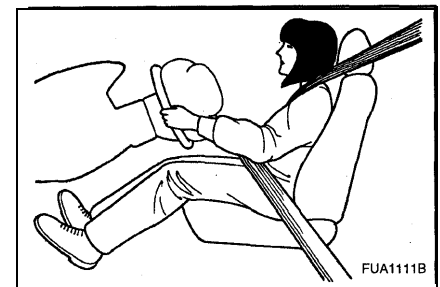


- o Front **airbags** are not intended to deploy in side-impact, rear-impact or rollover crashes. In addition, **airbags** will not deploy in frontal crashes below the deployment threshold speed.
- o The driver should sit back as far as possible while still maintaining control of the vehicle. If you are sitting too close to the **airbag**, it can cause death or serious injury when it inflates.
- o No objects should be placed over or near the **airbag** modules on the steering wheel, instrument panel, and the front passenger's panel above the glove box, because any such object could cause harm if the vehicle is in a crash severe enough to cause the **airbags** to inflate.
- o If the **airbags** inflate, they must be replaced by an authorized Hyundai dealer.

- o Do not tamper with or disconnect SRS wiring, or other components of the SRS system. Doing so could result in injury, due to accidental firing of the **airbags** or by rendering the SRS inoperative.
- o Do not install a child restraint system in the front passenger seat position. A child restraint system must never be placed in the front seat. The infant or child could be severely injured or killed by an **airbag** deployment in case of an accident.
- o Do not allow children to ride in the front passenger seat. If older children (teenagers and older) must ride in the front seat, make sure they are always properly belted and that the seat is moved back as far as possible.
- o For maximum safety protection in all types of crashes, all occupants including the driver should always wear their seat belts whether or not an **airbag** is also provided at their seating position to minimize the risk of severe injury or death in the event of a crash. Do not sit or lean unnecessarily close to the **airbag** while the vehicle is in motion.
- o The SRS **airbag** system must deploy very rapidly to provide protection in a crash. If an occupant is out of position because of not wearing a seat belt, the **airbag** may forcefully contact the occupant causing serious or fatal injuries.

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SRS Components and Functions



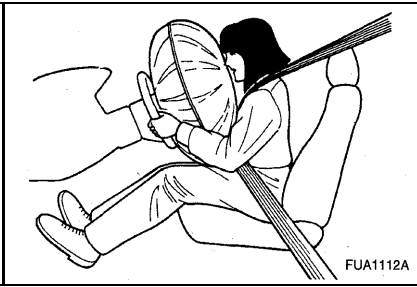
The SRS consists of the following components:

- Driver's Side **Airbag** Module
- Passenger's Side **Airbag** Module
- Knee Bolster
- SRS Service Reminder Indicator (SRI)
- SRS Control Module (SRSCM)

The SRSCM continually monitors all elements while the ignition is "ON" to determine if a frontal or near-frontal impact is severe enough to require **airbag** deployment.

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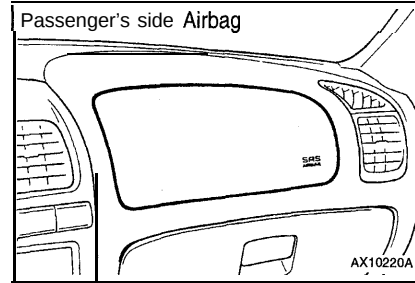
FEATURES OF YOUR HYUNDAI



The SRS service reminder indicator (SRI) on the instrument panel will blink for about 6 seconds after the ignition key is turned to the "ON" position or after the engine is started, after which the SRI should go out.



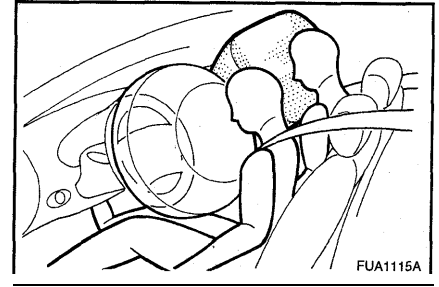
The airbag modules are located both in the center of the steering wheel and in the front passenger's panel above the glove box. When the SRSCM detects a considerable impact to the front of the vehicle, it will automatically deploy the airbags.



Upon deployment, tear seams molded directly into the pad covers will separate under pressure from the expansion of the airbags. Further opening of the covers then allows full inflation of the airbags.

A fully inflated airbag in combination with a properly worn seat belt slows the driver's or the passenger's forward motion, thus reducing the risk of head and chest injury.

After complete inflation, the airbag immediately starts deflating, enabling the driver to maintain forward visibility.



CAUTION:

When installing a container of liquid air freshener inside a vehicle, do not place it near the instrument cluster nor on the instrument panel pad surface. If there is any leakage from the air freshener onto these areas (instrument cluster, instrument panel pad or air ventilator), it may damage these parts. If the liquid from the air freshener does leak onto these areas, wash them with water immediately.

WARNING:

- o When the SRS is activated, there may be a loud noise and fine dust will be released throughout the vehicle. These conditions are normal and are not hazardous. However, the fine dust generated during airbag deployment may cause skin irritation. Be sure to wash your hands and face thoroughly with lukewarm wa-

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these precautions and procedures could increase the risk of personal injury.

- o If you sell your vehicle, be sure to inform the new owner of these important points and make certain that this manual is transferred to the new owner.
- o If your car was flooded and has soaked carpeting or water on the floor, you shouldn't try to start the engine; have the car towed to an authorized Hyundai dealer.

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ter and a mild soap after an accident in which the **airbags** were deployed.

- o The SRS can function only when the ignition key is in the "ON" position. If the SRS SRI does not come on, or continuously remains on, after flashing for about 6 seconds when the ignition key is turned to the "ON" position, or after the engine is started, or comes on while driving, the SRS is not working properly. If this occurs, have your vehicle immediately inspected by your Hyundai dealer.
- o Before you replace a fuse or disconnect a battery terminal, turn the ignition key to the "LOCK" position or remove the ignition key. Never remove or replace the air bag related fuse(s) when the ignition key is in the "ON" position. Failure to heed this warning will cause the SRS SRI to illuminate.

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SRS Care

- o The SRS is virtually maintenance free and there are no parts you can safely service by yourself. The entire SRS system must be inspected by an authorized Hyundai dealer in 10 years after the date that the vehicle was manufactured.
- o Any work on the SRS system, such as removing, installing, repairing, or any work on the steering wheel must be performed by a qualified Hyundai technician. Improper handling of the **airbag** system may result in serious personal injury.

WARNING:



- o Do not install a child restraint system in the front passenger seat position. A child restraint system must never be placed in the front seat. The infant or baby could be severely injured by an

airbag deployment in case of an accident.

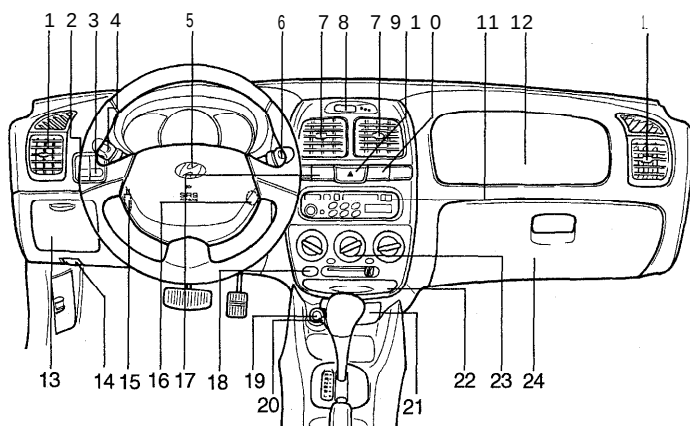
- o Modification to SRS components or wiring, including the addition of any kind of badges to the pad covers or modifications to the body structure, can adversely affect SRS performance and lead to possible injury.
- o For cleaning the **airbag** pad covers, use only a soft, dry cloth or one which has been moistened with plain water. Solvents or cleaners could adversely affect the **airbag** covers and proper deployment of the system.
- o No objects should be placed over or near the **airbag** modules on the steering wheel, instrument panel, and the front passenger's panel above the glove box, because any such object could cause harm if the vehicle is in a crash severe enough to cause the **airbags** to inflate.
- o If the **airbags** inflate, they must be replaced by an authorized Hyundai dealer.
- o Do not tamper with or disconnect SRS wiring, or other components of the SRS system. Doing so could result in injury, due to accidental firing of the **airbags** or by rendering the SRS inoperative.
- o If components of the **airbag** system must be discarded, or if the vehicle must be scrapped, certain safety precautions must be observed. Your Hyundai dealer knows these precautions and can give you the necessary information. Failure to follow

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B250A02A-GAT

INSTRUMENTS AND CONTROLS



CAUTION:

When installing the container of liquid air freshener inside a vehicle, do not place it near the instrument cluster nor on the crash pad surface. If there is any leakage from the air freshener onto these areas (instrument cluster, crash pad or air ventilator), it may damage these parts. If the liquid from the air freshener does leak onto these areas, wash them with water immediately.

AX10450G

1. Side Air Vent Louver
2. Panel Brightness Control Knob (Rheostat Switch)
3. Rear Wiper/Washer Switch (If installed)
4. Multi-Function Light Switch
5. Horn and Driver Side **Airbag**
6. Windshield Wiper/Washer Switch
7. Center Air Vent Louver
8. Digital Clock (If installed)

9. Hazard Warning Switch
10. Front Fog Light Switch (If installed)
11. Audio System
12. Passenger's Side **Airbag**
13. Accessory box
14. Hood Release Lever
15. Steering Wheel Tilt Lever
16. Ignition Switch

17. Rear Defroster Switch (If installed)
18. Air Conditioning Switch
19. Cigarette Lighter
20. Overdrive Switch (Auto T/A only)
21. Ashtray
22. Drink Holder
23. Heating/Air Conditioning Control Panel
24. Glove Box

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