

V3001

REPORT NO. KAR-99-08

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

MAZDA CORPORATION
1999 MAZDA PROTEGE DX 4-DOOR SEDAN
NHTSA NO. MX5401

PREPARED BY:
KARCO ENGINEERING
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301



JANUARY 26, 1999
FINAL REPORT

PREPARED FOR:
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16. <i>Abstract</i> A 35 mph (56.3 km/h) frontal barrier impact test was conducted on a 1999 MAZDA PROTEGE DX 4-DOOR SEDAN at KARCO Engineering on January 8, 1999. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and footwell intrusion performance. The impact velocity was 55.9 km/h. The ambient temperature at the barrier face at the time of impact was 12.7°C. The vehicle's maximum post-test static crush was 421 mm, located to the left of the vehicle centerline. The test vehicle was equipped with a 3-point continuous belt system and second generation supplemental airbags at both frontal outboard-seating positions. With respect to FMVSS 208 "Occupant Crash Protection – Injury Criteria" the occupant injury response data summary is as follows: <table border="1"> <thead> <tr> <th><u>Injury Criteria</u></th> <th><u>Threshold Value</u></th> <th><u>Driver Dummy</u></th> <th><u>Passenger Dummy</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>1000</td> <td>444.9</td> <td>534.4</td> </tr> <tr> <td>Chest Resultant Peak 3 msec clip</td> <td>60 G's</td> <td>55.3</td> <td>50.3</td> </tr> <tr> <td>Left Femur Force</td> <td>10009 N</td> <td>-5225.4</td> <td>-5410.7</td> </tr> <tr> <td>Right Femur Force</td> <td>10009 N</td> <td>-6328.9</td> <td>-3047.7</td> </tr> </tbody> </table>				<u>Injury Criteria</u>	<u>Threshold Value</u>	<u>Driver Dummy</u>	<u>Passenger Dummy</u>	Head Injury Criteria (HIC)	1000	444.9	534.4	Chest Resultant Peak 3 msec clip	60 G's	55.3	50.3	Left Femur Force	10009 N	-5225.4	-5410.7	Right Femur Force	10009 N	-6328.9	-3047.7
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SECTION 1

PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST MX5401

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the FY' 99 New Car Assessment Program (NCAP) frontal barrier crash worthiness evaluation program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract Number DTNH22-97-D-02007. The purpose of this test was to obtain vehicle crashworthiness, occupant restraint system performance data and lower leg data for frontal barrier impacts. The velocity used in this test was in excess of the current 30 mph (48 km/h) FMVSS 208/212/219/301 requirements.

1.2 TEST PROCEDURE

This 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated 01 October 1996 and corresponding KARCO Engineering Test Procedure KTP-001, dated October 18, 1996. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

The test was conducted at KARCO Engineering on January 8, 1999 at a speed of 55.9 km/h. The test vehicle was instrumented with seven (7) accelerometers to measure longitudinal axis accelerations. The driver and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap and shoulder belt tension. The specified impact velocity range was 55.5 to 57.1 km/h. The frontal barrier impact event was documented by one (1) real-time panning motion picture camera and sixteen (16) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The test vehicle contained two (2) part 572E 50th percentile adult male anthropomorphic test devices (ATDs). Both ATDs were instrumented with head, chest and, pelvic tri-axial accelerometers, left/right femur load cells, left/right lower leg sensors and left/right foot accelerometers. In addition, chest displacement and neck six-axis load and moment sensors were utilized. The ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Ninety-six channels of data were recorded with a PC based (TDAS) on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

The Driver ATD (serial No. 35) and the right-front passenger ATD (serial No.34) were calibrated one test prior to this NCAP test. Injury criteria were not exceeded by either ATD during this frontal barrier impact test.

1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST

An immovable barrier was impacted by a 1999 MAZDA PROTEGE DX 4-DOOR SEDAN at a velocity of 55.9 km/h. The test weight, with two (2) 50th percentile male ATDs, was 1321 kg. Twenty four (24) load cell barrier data channels were obtained in conducting the January 8, 1999 NCAP test. The test vehicle was equipped with a transverse mounted 1.6 liter, 4 cyl. engine and a 5-speed manual transmission.

The driver's Head Injury Criteria (HIC) was 444.9, the maximum chest deceleration over three (3) milliseconds was 55.3 g and the left and right femur loads were -5225.4 and -6328.9 Newtons, respectively. Chest deflection for the driver ATD was -28.0 mm. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag, the left and right knees contacted the steering column and knee bolster.

The right front passenger's HIC was 534.4, maximum chest deceleration over three (3) milliseconds was 50.3 g and the left and right femur loads were -5410.7 and -3047.7 Newtons respectively. Chest deflection for the passenger ATD was -23.4 mm. The passenger ATD head contacted the airbag, headrest and roof, the chest and abdomen contacted the airbag and both knees contacted the glovebox.

Seat belt spoolout, measured by on-board pullout potentiometers was 186.0 mm for the driver ATD and 220.2 mm for the passenger ATD. No data was collected for the driver or passenger on the shoulder belt stretch.

There was 100 percent windshield retention (minimum 50 percent required for passive restraint systems), no intrusion into the protected or unprotected zone of the windshield, and no Stoddard solvent leakage occurred after impact or during any phase of the rollover.

The test vehicle sustained a maximum static crush of 421 mm located to the left of the vehicle centerline. Both the driver side doors and the passenger side doors opened without the aid of tools.

1.4 GENERAL COMMENTS

The 1999 MAZDA PROTEGE DX 4-DOOR SEDAN passed the requirements of FMVSS 208, FMVSS 212, FMVSS 219 and FMVSS 301-75. Data pertaining to these standards are presented in the data sheets.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. Appendix B contains the dummy, vehicle and 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 restraint systems.

SECTION 2.

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

CONVERSION FACTORS USED IN THIS REPORT:

2.2 pounds (lb.)	=	1 kilogram (kg)
1 mile (mi.)	=	1.609 kilometer (km)
1 gallon (gal.)	=	3.785 liters (L)
1 pound/square inch (psi)	=	7000 Pascal (7 kPa)

DATA SHEET NO. 1

CRASH TEST SUMMARY

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

VEHICLE REBOUND

Measurements in mm	Left	Center	Right
Vehicle Rebound	922	629	862

VEHICLE REBOUND AND STATIC CRUSH; REBOUND ANGLE = 0°

Measurements in mm	Left	Center	Right
Pre-test Measurements	4091	4415	4091
Post-test Measurements	3790	4005	3722
Static Crush	-301	-410	-369
Average	-360		

DOOR OPENING AND SEAT TRACK INFORMATION

	Driver	Passenger
Door Opening (Front)	OPENED	OPENED
Door Opening (Rear)	OPENED	OPENED
Seat Track Shift (mm of shift)	NONE	NONE
Seat Back Failure	NONE	NONE

DUMMY INFORMATION

	Driver	Passenger
Dummy Type/No.	50% Male Hybrid III (S/N 35)	50% Male Hybrid III (S/N 34)
Data Channels	44	44
Visible Contact Points		
Head	AIR BAG/HEADREST	AIR BAG/HEADREST/ROOF
Chest	AIR BAG	AIRBAG
Abdomen	AIRBAG	AIRBAG
Left Knee	KNEE BOLSTER/STEERING COLUMN	GLOVE BOX
Right Knee	KNEE BOLSTER/STEERING COLUMN	GLOVE BOX

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

TEST VEHICLE INFORMATION			
Manufacturer	MAZDA CORPORATION	VIN	JM1BJ2224XO114514
Manufacturing Date	09/98	Delivery Date	12/17/98
Dealer	ROMERO MAZDA	NHTSA NO.	MX5401
Odometer Reading	20.0 mi	Fuel Type	UNLEADED
Engine Displacement	1.6 Liters	Cylinders	4
Transmission	MANUAL	Final Drive	FRONT
Engine Placement	TRANSVERSE	Color	BLACK
Tire Press./Max. Cap. Front	224 kpa	Cold Tire Press. Front	224 kpa
Tire Press./Max. Cap. Rear	224 kpa	Cold Tire Press. Rear	224 kpa
Recommend Tire Size	P185/65R14	Type of Spare	TEMP T125/70D14
Tire Size on Vehicle	P185/65R14	Manufacturer	TOYO
GVWR	1575 kg	Cargo Capacity	45 kg
GAWR Front	830 kg	GAWR Rear	750 kg
Air Conditioning	YES	Power Steering	NO
Power Brakes	YES	AM/FM/Cassette	YES
Disc Brakes (Front)	YES	Disc Brakes (Rear)	NO
Power Windows	NO	Tilt Steering	YES
Anti-lock Brakes (ABS)	NO	Power Seats	NO
Driver Airbag	YES	Passenger Airbag	YES

VEHICLE CAPACITY DATA: TYPE OF FRONT SEATS BUCKET SEATS

TOTAL NUMBER OF OCCUPANTS 5 OCCUPANTS x 68 kg. 340 kg

WEIGHT OF VEHICLE AS RECEIVED AT KARCO (with maximum fluids): 1131 kg

Data Sheet No. 2... (Continued)

VEHICLE CAPACITY DATA: TYPE OF FRONT SEATS BUCKET SEATS

TOTAL NUMBER OF OCCUPANTS 5 OCCUPANTS x 68 kg. 340 kg

WEIGHT OF VEHICLE AS RECEIVED AT KARCO (with maximum fluids): 1131 kg

VEHICLE CAPACITY WEIGHT (kg):

Vehicle Capacity Weight	385 kg
--------------------------------	--------

Occupant Weight	340 kg
-----------------	--------

Rated Cargo/Luggage Weight (RCLW)	45 kg
--	-------

	FRONT	REAR	TOTAL
Right	339	223	562
Left	341	228	569
Total	680	451	1131
Percent of Total	60.1	39.9	100%

CALCULATION OF TEST

TARGET WEIGHT (kg):

Total Delivered Weight 1131 kg

RCLW	45 kg
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Weight of 2 P572 ATDs	152 kg
-----------------------	--------

TARGET TEST WEIGHT	1328 kg
--------------------	---------

TEST WEIGHT OF VEHICLE WITH 2 ATDs AND BALLAST

	FRONT	REAR	TOTAL
Right	376	286	662
Left	372	287	659
Total	748	573	1321
Percent of Total	56.6	43.4	100%

Weight of Ballast secured in cargo area: 4 kg Does not include cameras, instrumentation, and brake abort system.

Vehicle Components Removed For Weight Reduction:

Side mirrors, jack, tools, spare tire and paneling.

TEST VEHICLE ATTITUDE (mm)

	LF	RF	LR	RR
As Delivered	664	667	665	667
As Tested	625	630	627	628

Vehicle Wheelbase: 2610 mm

FUEL SYSTEM DATA:

Fuel System Capacity From Owner's Manual = 49.9 liters

Usable Capacity Figure Furnished by COTR = 49.9 liters

Test Volume Range (92 to 94% of Usable Capacity) = 45.9 to 46.9 liters

ACTUAL TEST VOLUME = 46.4 liters (With entire fuel system filled)

Test Fluid Type = Stoddard Solvent

Specific Gravity = 0.764

Kinematic Viscosity = as per ASTM Standard D484-71

Color = Red

Type of Fuel Pump = Electric X Mechanical

Does electric pump operate with ignition switch "ON" & engine "OFF"? Yes X No

DETAILS OF FUEL SYSTEM: See manufacturers data.

DATA SHEET NO. 3**POST IMPACT DATA**Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDANNHTSA No.: MX5401Test Program: 1999 35 MPH FRONTAL IMPACTTest Date: 1/8/99REQUIRED IMPACT VELOCITY RANGE: 55.51 km/h to 57.11 km/h

BARRIER IMPACT VELOCITY: (speed traps within 5 feet of impact plane)

Trap No. 1 = 55.9 km/h Trap No. 2 = 55.8 km/h

Distance from vehicle to barrier - -

A. entering trap = 1524 mmB. leaving trap = 305 mm

VEHICLE STATIC CRUSH: (for Frontal and Rear Impacts Only)

Vehicle Length	Left	Center	Right
Pre-test Measurements (mm)	4091	4415	4091
Post-test Measurements (mm)	3790	4005	3722
Static Crush (mm)	-301	-410	-369

VEHICLE REBOUND: (from rigid barrier with rotational movement offsets only)

Measurements in mm	Left Front	Right Front	Left Rear	Right Rear
Vehicle Rebound X axis	N/A	N/A	N/A	N/A
Vehicle Rebound Y axis	N/A	N/A	N/A	N/A
Average X axis	N/A			
Average Y axis	N/A			

DATA SHEET NO. 4

TEST VEHICLE INFORMATION

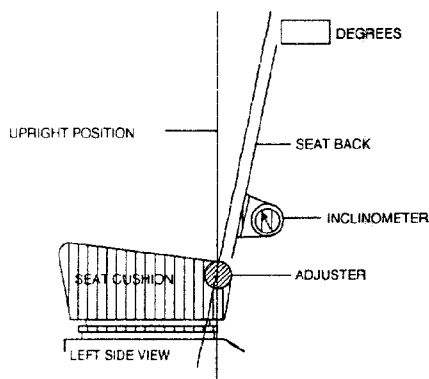
Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

1. NOMINAL DESIGN RIDING POSITION -



FRONT SEAT ASSEMBLY

For adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable. Indicate, if applicable, how the detents are numbered (Is the first detent "0" or "1"?).

Measurement Instructions: A special application tool with pointed probes was 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. The inclinometer was placed against the flat surface of the tool and the seat back angle was measured directly from the dial face. For reference purposes the first detent from the front of the seat was identified as number "1".

Seat back angle for driver's seat = 14° w/seated dummy taken at seat back cushion.

Measurement Instructions: A special application tool with pointed probes was 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. The inclinometer was placed against the flat surface of the tool and the seat back angle was measured directly from the dial face. For reference purposes the first detent from the front of the seat was identified as number "1".

Seat back angle for passenger's seat = 14° w/seated dummy, taken at seat back cushion.

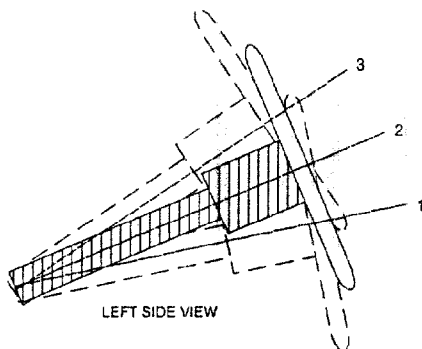
2. SEAT FORE & AFT POSITIONS:

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat: 17 seating positions, set to the 9th detent location from the front

Positioning of the passenger's seat (if applicable): 17 seating positions, set to 9th detent from the front.

3. STEERING COLUMN ADJUSTMENTS:



STEERING COLUMN ASSEMBLY

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions:

Position No. 1 is at 19°

Position No. 2 is at 21°

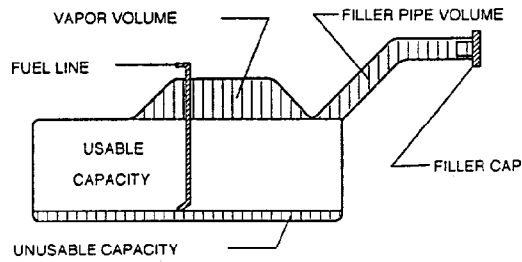
Position No. 3 is at 23°

4. SEAT BELT UPPER ANCHORAGE:

4 Positions, placed one notch down from topmost.

DATA SHEET NO. 4 (continued)

5. FUEL TANK CAPACITY DATA



5.1 A. "Usable Capacity" of standard equipment fuel tank = 49.9 liters.

B. "Usable Capacity" of optional equipment fuel tank = N/A liters.

C. "Usable Capacity" of vehicle(s) used for certification testing to requirements of FMVSS 301 = 45.9 to 46.9 liters.

VEHICLE FUEL TANK ASSEMBLY

Operational Instructions:

5.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 46.4 liters

5.3 Is vehicle equipped with electric fuel pump?

Yes X No

If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.

See manufacturers data.

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

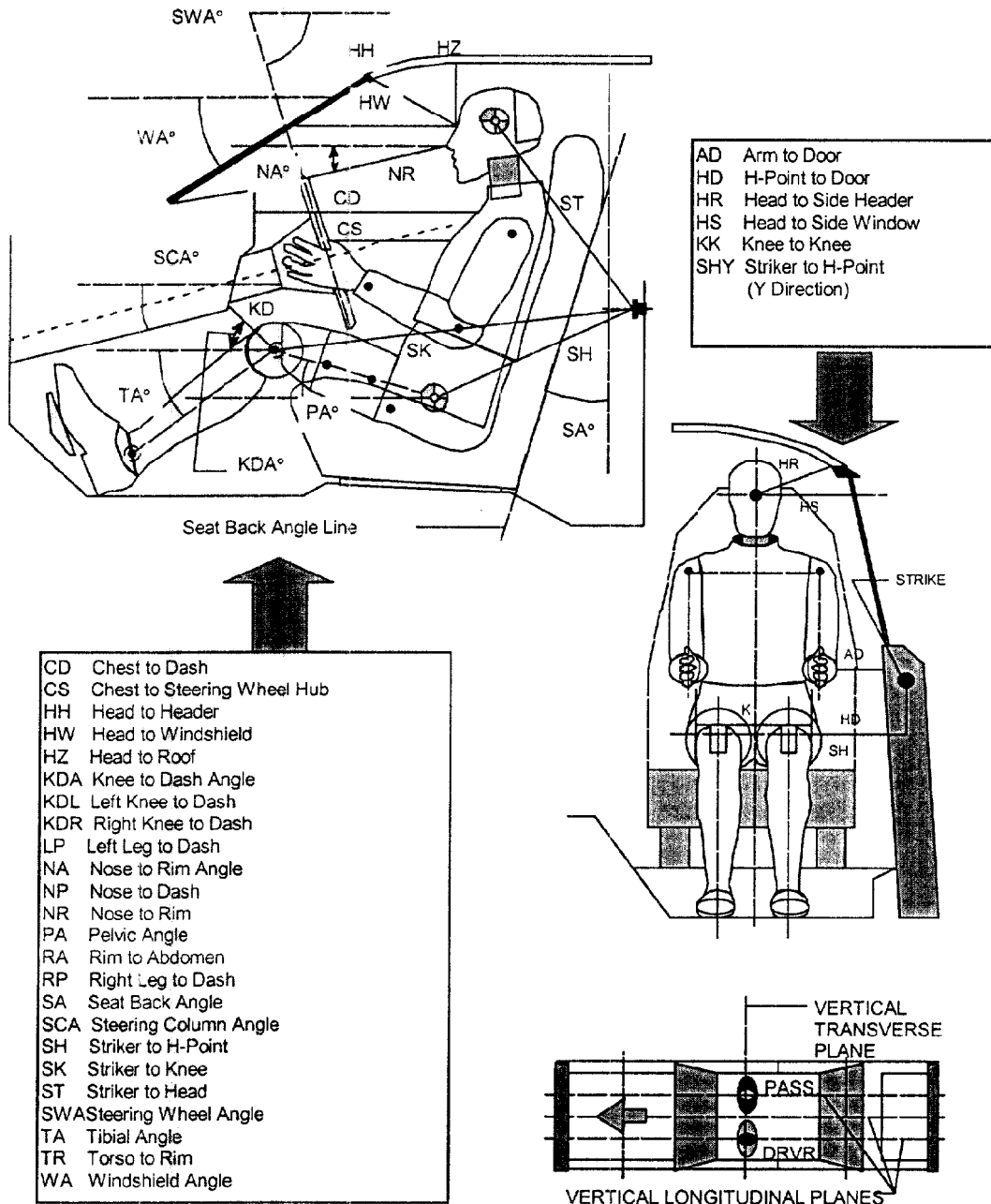
Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

DUMMY MEASUREMENT FOR FRONT SEAT PASSENGERS



DATA SHEET NO. 5...(continued)

DUMMY POSITIONING IN VEHICLE

FRONT SEAT MEASUREMENT TABLE

	DRIVER (Serial No. 35)		PASS. (Serial No. 34)	
	DISTANCE (mm)	ANGLE (°)	DISTANCE (mm)	ANGLE (°)
WA°		30		
SWA°		68		
SCA°		22		
SA°		14		14
HZ	200	90	176	90
HH	277	0	280	0
HW	505	0	538	0
HR	225		215	
NR	353	11		
CD	500		625	
CS	260	0		
RA	175	0		
KDL	150	22	150	
KDR	155		145	27
PA°		22		23
TA°		45		48
KK	340		275	
ST	535	77	525	80
SH	240	35	225	30
SHY	220		215	
HS	295		280	
HD	140		125	
AD	30		55	

DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

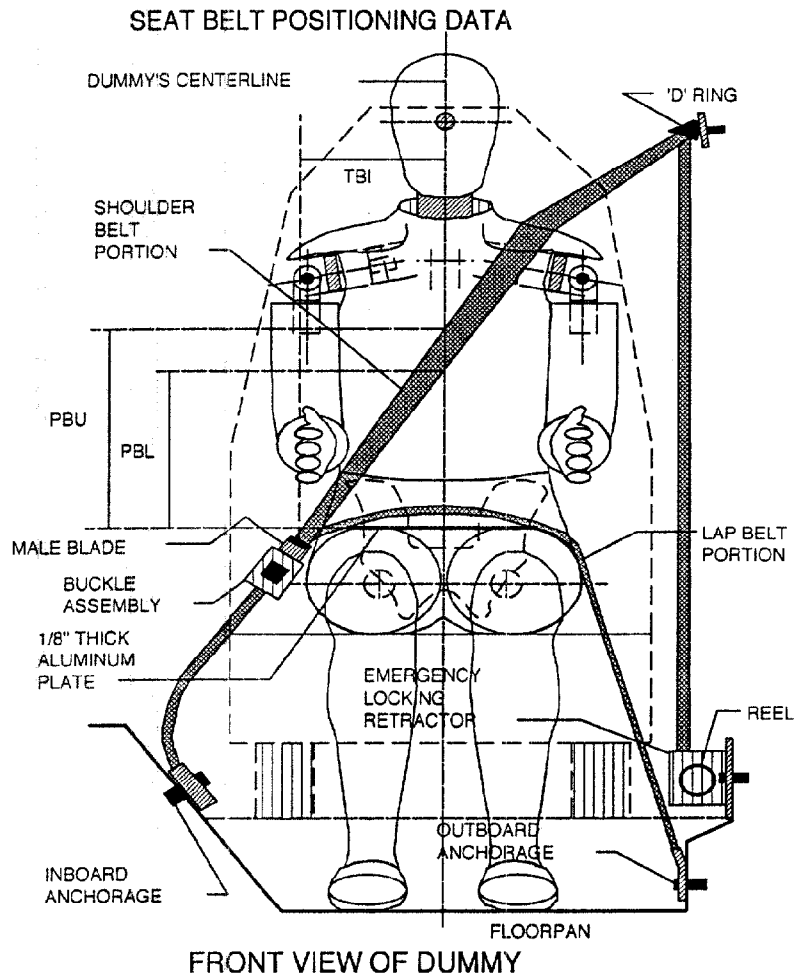
NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TCI - Dummy centerline to shoulder bolt	mm	190	190
PBU - Top surface of reference to belt upper edge	mm	344	350
PBL - Top surface of reference to belt lower edge	mm	265	277
Lap Belt tension	Newtons	10	10
Shoulder Belt tension	N/A	Retractor	Retractor



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

TEST VEHICLE: 1999 MAZDA PROTEGE DX 4 DOOR SEDAN NHTSA No.: MX5401

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP TEST DATE: 1/8/99

VEHICLE X-AXIS ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

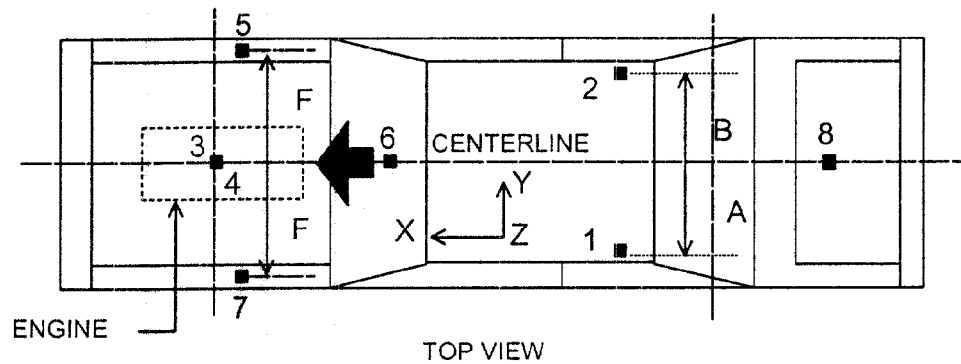
No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member (Pri.)	1465	-660	343	G's	1.0	129.6	-45.6	32.4
2	Right Rear X-Member (Pri.)	1470	657	345	G's	1.7	132.8	-39.6	54.1
3	Engine Top	3775	340	755	G's	18.9	34.8	-140.7	25.0 *
4	Engine Bottom	3805	255	140	G's	1.8	7.3	-118.4	22.8 *
5	Left Brake Caliper	3680	-655	310	G's	8.4	31.0	-223.5	36.4 *
6	Right Brake Caliper	3680	655	310	G's	2.0	31.2	-35.6	26.6 *
7	Instrument Panel	0	0	0	G's	0.0	0.0	0.0	0.0 **
8	Left Rear X-Member (Rednt.)	1410	-660	343	G's	0.9	129.8	-46.6	32.7

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

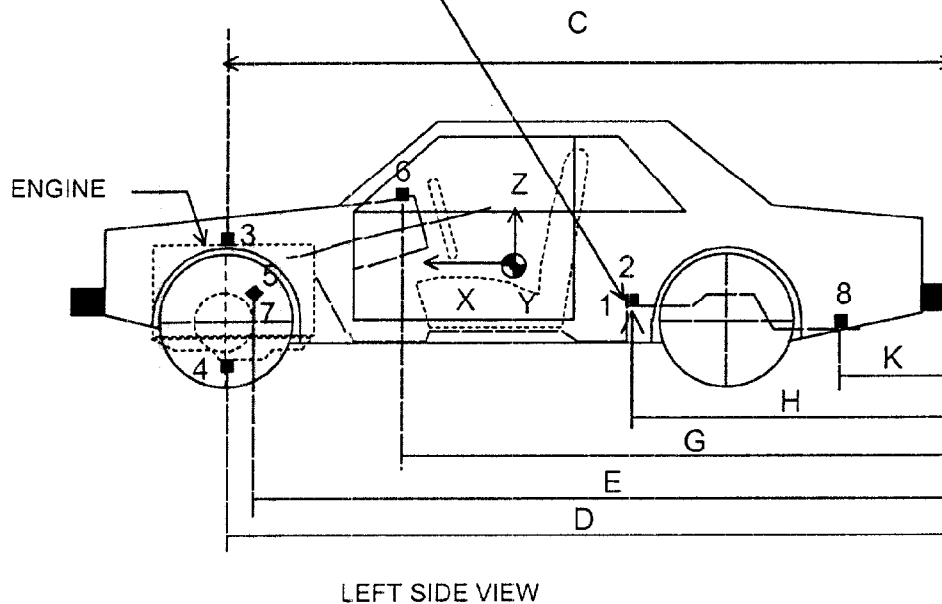
*Channels failed, check plots for time of failure.

**Instrument panel accelerometer removed on manufacturers request.

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



REAR SEAT CUSHION
ASSY. FRONT ATTACHMENT
BRACKET SUPPORT



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

TEST VEHICLE: 1999 MAZDA PROTEGE DX 4 DOOR SEDAN

NHTSA No.: MX5401

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 1/8/99

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	15.4	217.9	-61.4	66.9	4.7	250.4	-56.3	73.2
Head CG	Y	G's	8.9	71.9	-5.9	48.7	4.0	41.2	-18.7	94.1
Head CG	Z	G's	26.7	49.5	-10.4	83.9	29.4	60.3	-5.6	108.8
Head CG Resultant	N/A	G's	61.9	66.9			60.6	67.9		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.3	257.4	-55.1	62.1	2.8	132.1	-49.9	70.0
Chest CG	Y	G's	6.2	86.7	-7.8	55.7	2.6	49.8	-7.4	88.6
Chest CG	Z	G's	15.6	54.4	-7.6	107.6	23.2	69.5	-11.1	108.7
Chest CG Resultant	N/A	G's	56.6	62.0			54.8	69.9		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	918.9	54.2	-5225.4	47.1	314.5	37.4	-5410.7	47.5
Right Femur	Z	Newtons	376.2	39.7	-6328.9	45.9	202.0	296.6	-3047.7	45.0

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	8441.8	60.7	-20.7	105.5	8674.1	61.2	0.9	0.0
Shoulder Belt Force	N/A	Newtons	4003.7	75.2	-26.1	118.5	5698.3	81.7	-12.8	233.4
Shoulder Belt Spoolout	N/A	MM	186.0	77.7	-0.3	9.3	220.2	77.9	-0.6	11.5
Shoulder Belt Stretch	N/A	MM/CM	0.000	0.0	0.000	0.0	0.000	0.0	0.000	0.0 *

* No data collected on driver and passenger belt stretch.

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T ¹	T ²	HIC	Avg G's	T ¹	T ²
Head CG Primary	444.9	44.5	47.7	81.2	534.4	46.6	58.6	94.5

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	55.3	61.4	64.4	50.3	68.3	71.3

DATA SHEET NO. 8...(continued)

TEST VEHICLE: 1999 MAZDA PROTEGE DX 4 DOOR SEDAN

NHTSA No.: MX5401

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP

TEST DATE: 1/8/99

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	7.9	102.2	-94.2	45.8	6.2	91.3	-62.6	56.2
Pelvis	Y	G's	14.5	90.3	-26.5	45.7	9.7	45.8	-7.0	63.2
Pelvis	Z	G's	4.1	230.8	-22.6	65.7	2.3	286.0	-23.9	60.0

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	156.3	224.7	-517.5	67.9	494.2	75.4	-391.7	126.0
Neck Force	Y	Newtons	203.5	244.2	-244.1	73.6	94.0	213.4	-470.2	117.8
Neck Force	Z	Newtons	3121.3	61.4	-307.7	256.9	1578.3	60.1	-251.1	109.1
Neck Moment	X	N·m	25.1	63.0	-7.2	49.5	25.9	85.6	-34.0	120.1
Neck Moment	Y	N·m	36.4	136.6	-51.4	69.4	27.1	135.4	-18.5	64.1
Neck Moment	Z	N·m	7.4	142.1	-24.2	87.5	37.7	102.6	-14.2	148.9

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	18.0	45.2	-68.9	36.0	35.3	52.2	-111.5	38.8
Left Foot Aft	Z	G's	11.9	23.1	-57.8	34.9	29.8	71.3	-114.2	42.4
Left Foot Fore	Z	G's	17.3	23.1	-82.4	25.7	50.5	50.7	-129.3	42.6
Right Foot Aft	X	G's	129.9	49.9	-140.8	40.6	44.7	78.9	-62.1	40.0
Right Foot Aft	Z	G's	109.2	50.5	-170.2	41.1	4.1	183.5	-62.7	43.2
Right Foot Fore	Z	G's	167.9	52.0	-228.1	37.6	24.0	51.1	-85.3	43.2

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	32.1	60.3	-7.6	80.6	18.0	55.2	-40.6	66.6
Left Lower Moment	Y	N·m	40.5	79.6	-36.0	35.3	278.9	55.8	-66.4	42.1
Left Lower Force	Z	Newtons	423.2	57.7	-1879.2	79.6	134.8	130.8	-2833.6	41.8
Left Upper Moment	X	N·m	98.2	59.8	-15.6	276.1	45.7	54.8	-81.4	69.5
Left Upper Moment	Y	N·m	14.8	111.5	-111.9	49.4	47.5	60.9	-138.3	41.7
Right Lower Moment	X	N·m	136.5	51.2	-22.0	42.3	43.2	59.5	-8.9	46.8
Right Lower Moment	Y	N·m	411.1	56.6	-89.7	44.5	225.7	81.4	-40.6	45.9
Right Lower Force	Z	Newtons	407.0	145.9	-3956.2	53.6	120.7	299.9	-2607.4	81.9
Right Upper Moment	X	N·m	75.7	51.6	-28.8	43.1	17.2	158.3	-22.3	69.9
Right Upper Moment	Y	N·m	71.8	51.5	-231.4	45.0	22.1	79.8	-113.1	45.1

DATA SHEET NO. 8...(continued)

TEST VEHICLE: 1999 MAZDA PROTEGE DX 4 DOOR SEDAN NHTSA No.: MX5401

TEST PROGRAM: 1999 NHTSA 35 MPH NCAP TEST DATE: 1/8/99

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	MM	0.1	1.8	-28.0	68.2	0.7	28.8	-23.4	70.8

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	14.9	218.9	-60.4	66.9	4.2	252.1	-56.5	73.2
Head CG	Y	G's	11.2	71.6	-4.6	213.1	4.4	39.0	-19.5	94.7
Head CG	Z	G's	21.6	49.9	-12.3	75.2	29.6	60.1	-5.9	92.1
Head CG Resultant	N/A	G's	61.0	66.9			60.7	67.6		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.9	257.0	-55.1	62.0	2.3	137.0	-49.3	69.8
Chest CG	Y	G's	6.0	85.8	-7.0	55.7	5.9	49.8	-7.6	88.9
Chest CG	Z	G's	13.0	70.5	-8.1	107.1	24.3	69.4	-9.8	108.0
Chest CG Resultant	N/A	G's	56.3	61.9			54.7	69.7		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg G's	T ¹	T ²	HIC	Avg G's	T ¹	T ²
Head CG Redundant	461.4	44.3	47.6	82.8	497.8	45.3	56.4	92.3

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Redundant	55.5	66.4	69.4	49.2	68.2	71.2

DATA SHEET NO. 9**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDANNHTSA No.: MX5401Test Program: 1999 35 MPH FRONTAL IMPACTTest Date: 1/8/99**BELT LENGTH DATA**

Measurement Description	Units	Driver	Passenger
Retractor reel to 'D' ring	mm	690	690
Shoulder belt length as measured on ATD	mm	872	875
Lap belt length as measured on ATD	mm	788	795
Remainder of belt on reel	mm	675	670
Total belt length for continuous webbing systems	mm	3025	3030

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	195.0	272.0
As determined electronically	mm	186.0	220.2

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically from shoulder belt load cell and "D" ring	mm/cm	no data	no data
Mechanically	mm/cm	0.00	0.00

DATA SHEET NO. 10

SUMMARY OF FMVSS 212 DATA

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

Details of windshield mounting (method of retention, type of trim, etc.):

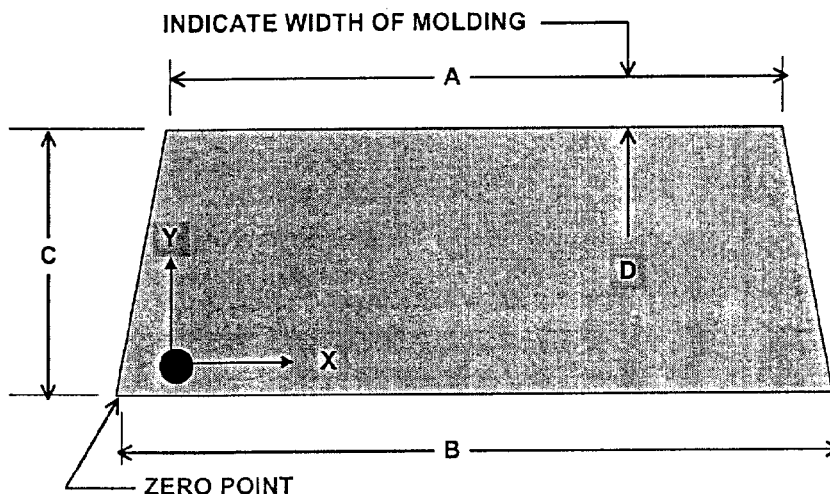
Windshield glass is secured to the vehicle frame with a rubber type adhesive, with rubber molding along the top and sides with rubber and plastic molding along the bottom.

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

WINDSHIELD PERIPHERY MEASUREMENTS

	Units	Left Side	Right Side	Total
Pre-Test	mm	2078	2078	100%
Post-Test	mm	2078	2078	100%
Percent of retention	Percent	100%	100%	

Indicate area of retention failure.



FRONT VIEW OF WINDSHIELD

Width of molding: Top: 10 mm, Sides: 10 mm, Bottom: 0 mm

Temperature of windshield molding during test: 21.1 °C

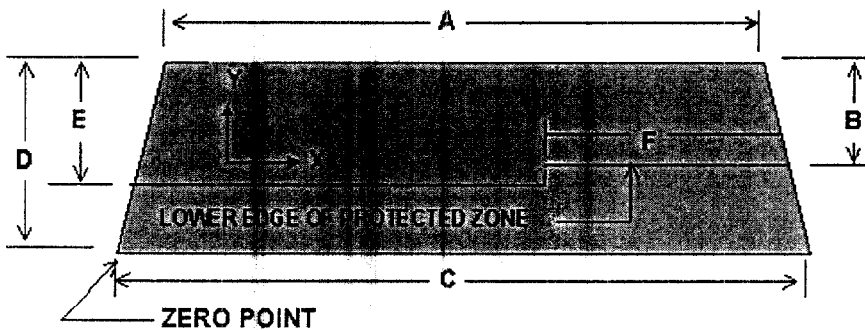
DATA SHEET NO. 11
WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1120
B	mm	355
C	mm	1496
D	mm	770
E	mm	553
F	mm	565

Provide all dimensions necessary to reproduce the protected area.

AREA OF PROTECTED ZONE FAILURES

- A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 in. by a vehicle component other than one which 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 template 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: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

Test Time: 1:05 PM Temperature at Time of Impact: 12.7° C

STODDARD SOLVENT SPILLAGE MEASUREMENT:

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

DATA SHEET NO. 13

FMVSS 301 STATIC ROLLOVER DATA SHEET

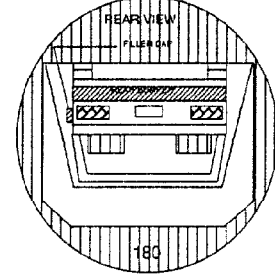
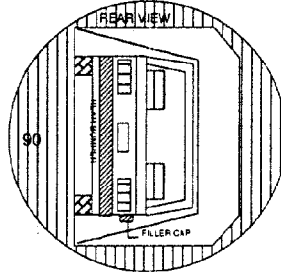
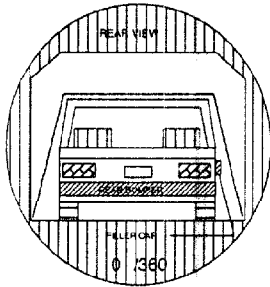
Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

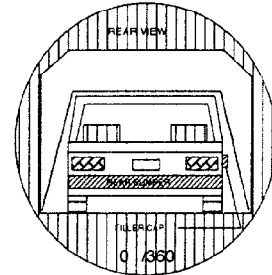
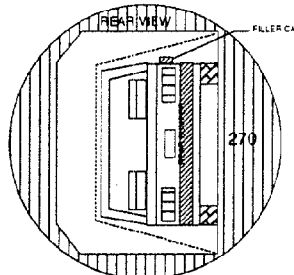
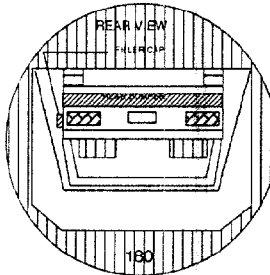
Test Date: 1/8/99

Time: 1:05 PM Temperature: 12.7 °C



0° TO 90°

90° TO 180°



180° TO 270°

270° TO 360°

1. The specified fixture rollover rate for each 90° of rotation = 60 to 120 seconds.
2. The position hold time at each position = 300 seconds (minimum).
3. Provide details of Stoddard Solvent spillage locations:
No solvent leakage occurred during rollover testing.

TEST PHASE	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° TO 90°	80	300	0.0
90° TO 180°	82	300	0.0
180° TO 270°	79	300	0.0
270° TO 360°	84	300	0.0

DATA SHEET NO. 14

VEHICLE MEASUREMENTS

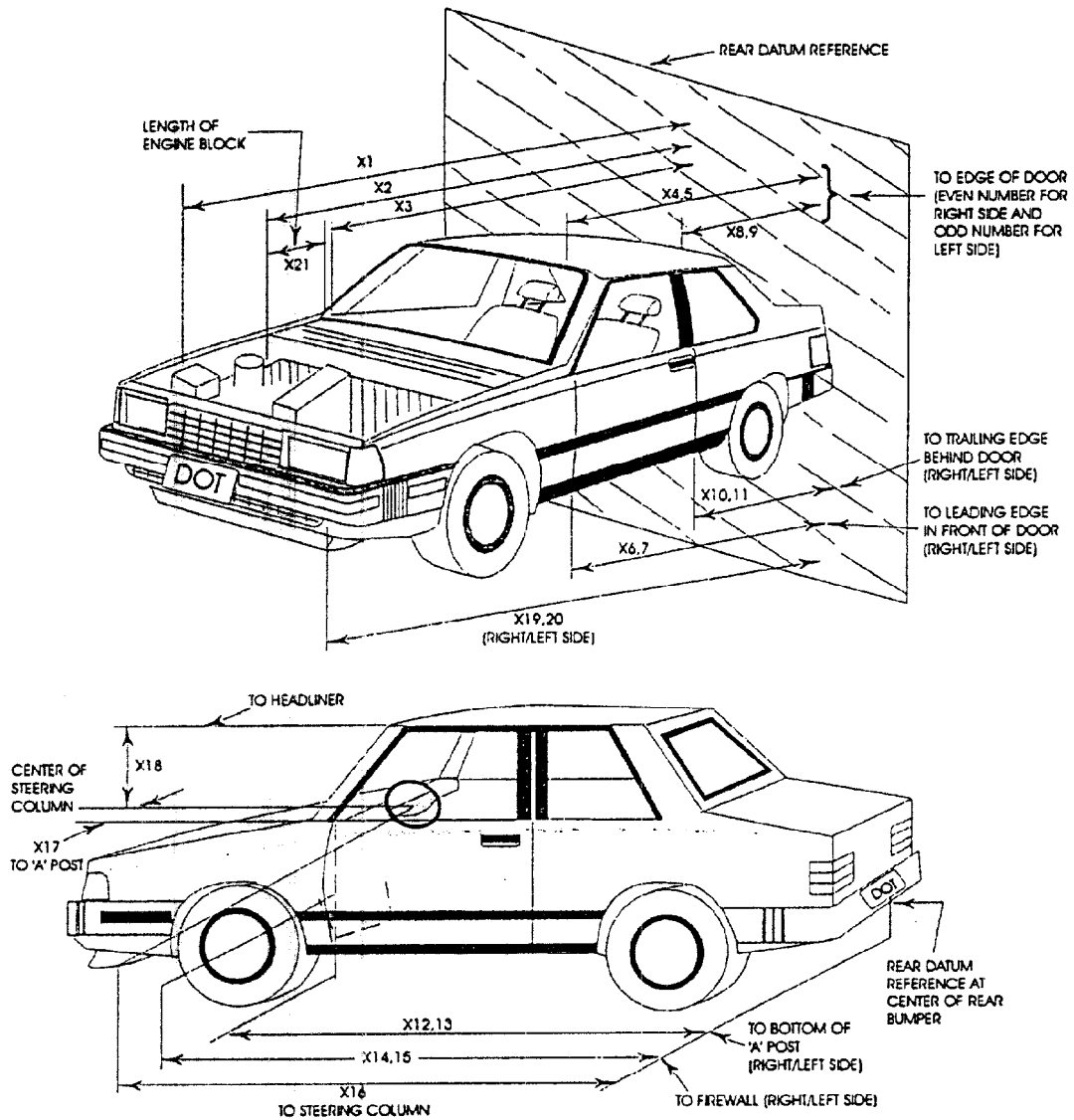
Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4415	4005	-410
2	RSOV to front of engine	mm	3918	3690	-228
3	RSOV to firewall centerline	mm	3441	3260	-181
4	RSOV to leading edge of right door	mm	3003	3000	-3
5	RSOV to leading edge of left door	mm	3006	2994	-12
6	RSOV to lower leading edge of right door	mm	2996	2980	-16
7	RSOV to lower leading edge of left door	mm	2997	2990	-7
8	RSOV to upper trailing edge of right door	mm	1987	1990	3
9	RSOV to upper trailing edge of left door	mm	1992	1991	-1
10	RSOV to lower trailing edge of right door	mm	1987	1967	-20
11	RSOV to lower trailing edge of left door	mm	1984	1975	-9
12	RSOV to bottom of right 'A' pillar	mm	2980	2954	-26
13	RSOV to bottom of left 'A' pillar	mm	2982	2975	-7
14	RSOV to firewall on right side	mm	3311	3225	-86
15	RSOV to firewall of left side	mm	3327	3265	-62
16	RSOV to steering column	mm	2610	2562	-48
17	Center of steering column to left 'A' pillar	mm	386	410	24
18	Center of steering column to headlining	mm	455	535	80
19	RSOV to right side of front bumper	mm	4091	3722	-369
20	RSOV to left side of front bumper	mm	4091	3790	-301
21	Length of engine block	mm	285	285	0
RD	RSOV to right side of dash panel	mm	2800	2768	-32
CD	RSOV to center of dash panel	mm	2868	2810	-58
LD	RSOV to left side of dash panel	mm	2800	2795	-5



DATA SHEET NO. 15

CAMERA LOCATIONS

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

No.	Camera View	Location (mm)			Angle (°)	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	1930	8280	1206	1	7747	13	880
3	Left Side, No. 2	1067	6248	1460	1	5867	25	910
4	Left Side, No. 3	3124	2896	2121	20	2896	19	980
5	Left Side, No. 4	2134	8306	3086	16	2896	19	900
6	Left Side, No. 5	2134	8382	2616	14	7849	19	900
7	Right Side, No. 1	1422	8230	864	1	7772	19	900
8	Right Side, No. 2	1676	8306	1518	2	7798	40	1000
9	Right Side, No. 3	3251	2946	1975	15	2819	19	890
10	Right Side, No. 4	2311	7391	851	3	6858	35	890
11	Overhead Overall	1069	0	457	90	N/A	13	850
12	Front View Driver	-120	419	2616	47	N/A	13	910
13	Front View, Passenger	-120	419	2616	52	N/A	13	900
14	Pit Camera, Engine	1295	0	-1524	88	N/A	10	730
15	Pit Camera, Fuel Tank	4064	76	-1778	57	N/A	12	850
16	Onboard, Driver	3404	279	1067	1	1194	13	**
17	Onboard, Passenger	3404	279	1067	3	1193	13	**

* X - Barrier Face Y - Monorail

** Cameras did not run.

DATA SHEET NO. 16
REFERENCE PHOTOGRAPH TARGETS

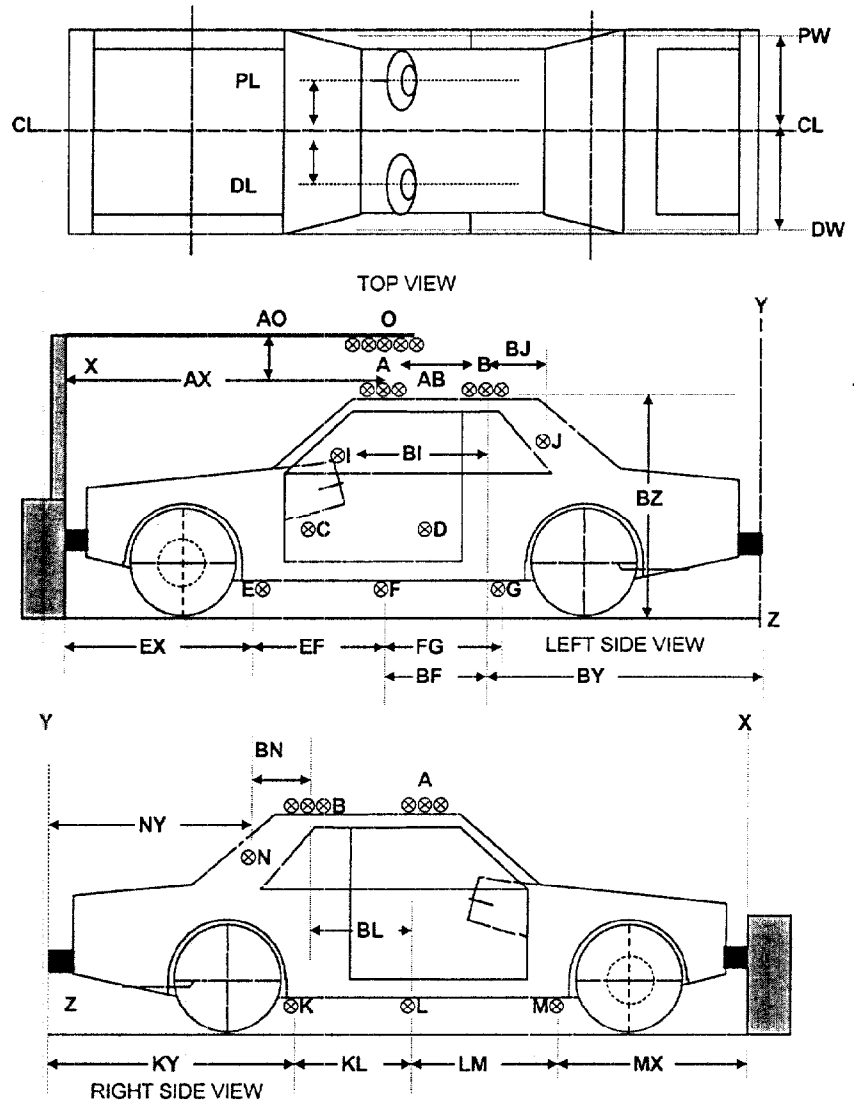
Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

Item	Value
AX	2258
AB	608
AO	152
BJ	443
BI	1240
BZ	1480
EX	1275
EF	877
FG	872
BF	680
BY	1553
NY	1080
BN	457
KY	1350
KL	885
BL	680
LM	895
MX	1270
CL/PL	340
CL/PW	747.5
CL/DL	340
CL/DW	747.5



DATA SHEET NO. 17

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

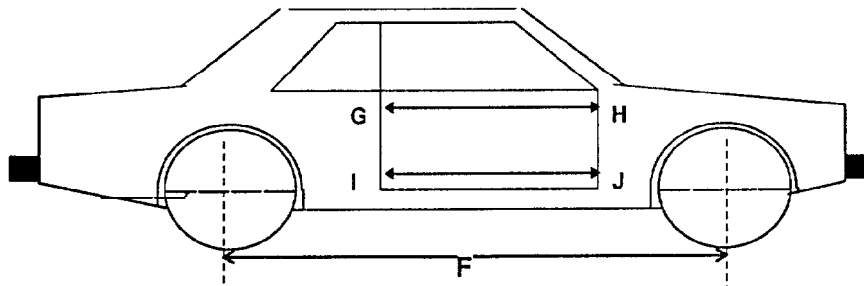
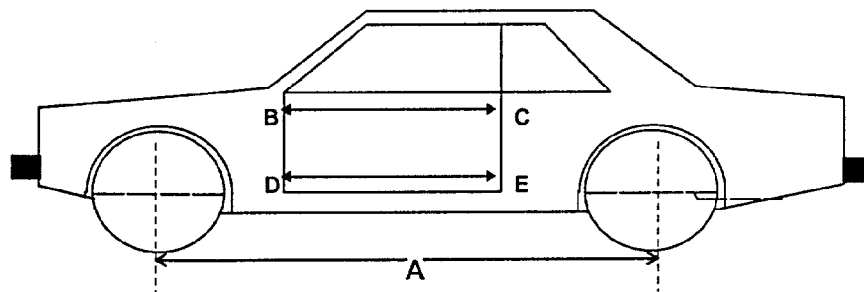
Test Date: 1/8/99

DOOR OPENING WIDTH

UNITS (mm)	LEFT SIDE		RIGHT SIDE	
MEASUREMENT	BC	DE	GH	IJ
PRE-TEST	923	854	926	870
POST-TEST	912	847	906	870
DIFFERENCE	-11	-7	-20	0

VEHICLE WHEELBASE CHANGE

UNITS (mm)	A = LEFT SIDE WHEELBASE	F = RIGHT SIDE WHEELBASE
PRE-TEST	2610	2610
POST-TEST	2605	2530
DIFFERENCE	-5	-80



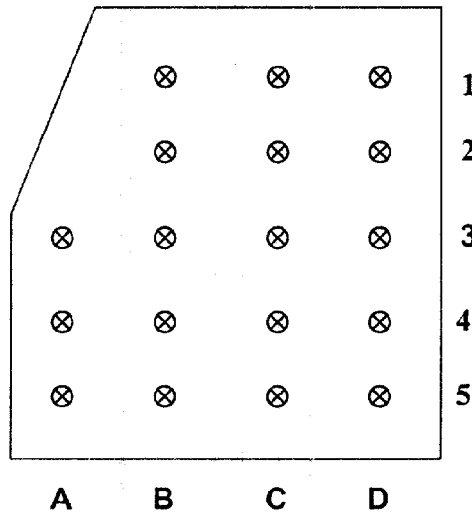
Data Sheet No. 17(Continued)

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

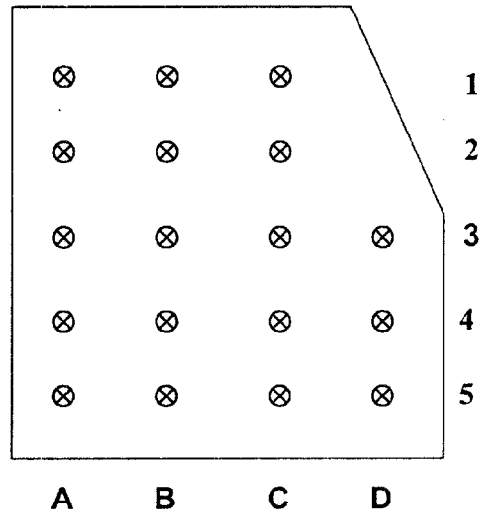
Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99



⊕ X
LEFT FRONT SEAT ANCHOR BOLT
↓
TO RSOV REFERENCE

DRIVER SIDE FLOOR PLAN



⊕ X
RIGHT FRONT SEAT ANCHOR BOLT
↓
TO RSOV REFERENCE

PASSENGER SIDE FLOORPAN

(Data Sheet No. 17Continued)

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

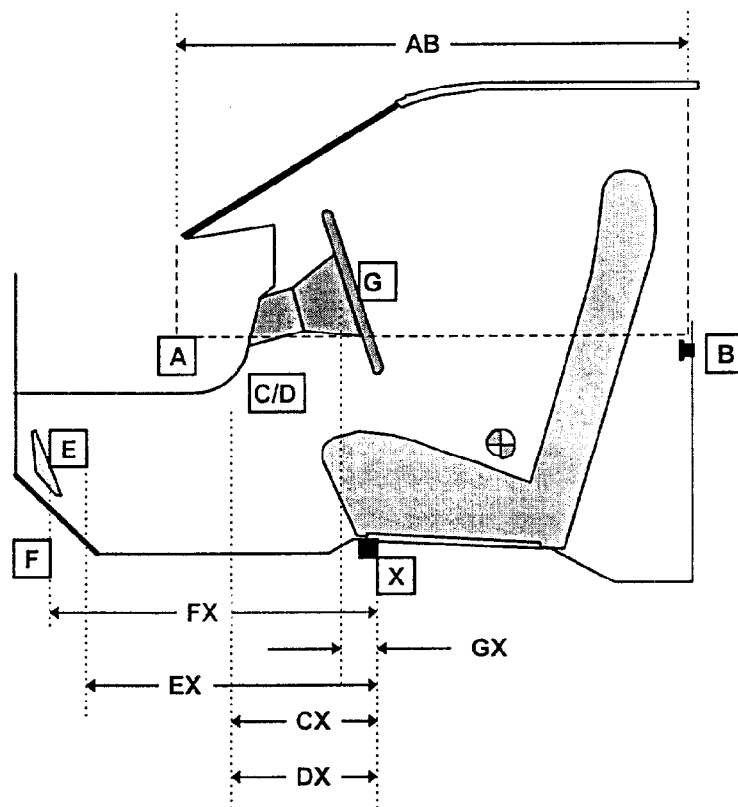
Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

DRIVER COMPARTMENT INTRUSION (Distances in mm)

REF.	DESCRIPTION	PRE-TEST	POST-TEST
AB	DOOR OPENING (INSIDE WINDOW JAM)	923	912
CX	LOWER LEFT KNEE BOLSTER TO X	280	255
DX	LOWER RIGHT KNEE BOLSTER TO X	265	260
EX	BRAKE PEDAL TO X	534	420
FX	FOOT REST TO X	610	560
GX	STEERING COLUMN HUB (CENTER) TO X	65	0
GX	STEERING COLUMN HUB (CENTER) TO X	65	0

X = LEFT FRONT SEAT ANCHOR BOLT



DRIVER COMPARTMENT

(Data Sheet No. 17Continued)

DRIVER SIDE "X"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1				726	602	-124	732	588	-144	731	581	-150
2				626	548	-78	628	534	-94	630	589	-41
3	528	530	2	525	538	13	530	526	-4	528	525	-3
4	427	430	3	426	432	6	429	438	9	430	443	13
5	330	335	5	328	340	12	329	340	11	328	340	12

DRIVER SIDE "Z"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1				107	130	23	108	125	17	108	127	19
2				-1	-65	-64	-2	-74	-72	-3	-85	-82
3	-62	-138	-76	-55	-140	-85	-58	-150	-92	-63	-130	-67
4	-56	-130	-74	-54	-142	-88	-60	-153	-93	-61	-140	-79
5	-61	-155	-94	-60	-145	-85	-65	-142	-77	-58	-120	-62

PASSENGER SIDE "X"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1	651	525	-126	653	540	-113	653	545	-108			
2	586	511	-75	593	510	-83	591	517	-74			
3	508	490	-18	508	490	-18	507	492	-15	508	500	-8
4	406	400	-6	408	396	-12	406	410	4	408	405	-3
5	305	300	-5	306	301	-5	306	310	4	306	310	4

PASSENGER SIDE "Z"

	A			B			C			D		
	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.	PRE-TEST	POST-TEST	DIFF.
1	113	120	7	108	125	17	107	130	23			
2	43	28	-15	41	32	-9	36	40	4			
3	-62	-61	1	-57	-72	-15	-60	-92	-32	-61	-76	-15
4	-62	-41	21	-61	-99	-38	-60	-1011	-951	-60	-82	-22
5	-60	-50	10	-61	-72	-11	-60	-78	-18	-65	-76	-11

RSOV to anchor bolt
Ground level to anchor bolt

DRIVER

PRE	POST	DIFF.
2515	2520	5
N/A	N/A	

PASSENGER

PRE	POST	DIFF.
2515	2515	0
N/A	N/A	

DATA SHEET NO. 18

OFFSET BARRIER ORIENTATION

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

NOT APPLICABLE TO THIS TEST

A = VEHICLE WIDTH MEASURED AT WIDEST POINT N/A mm

B = 40% OFFSET FROM LEFT EDGE OF VEHICLE N/A mm

ACTUAL OFFSET DURING TEST N/A mm = N/A

DATA SHEET NO. 19

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99

VIN: JM1BJ2224XO114514 Wheelbase: 2610 mm Test Weight: 1321 kg

Vehicle Size Category: MAZDA PROTÉGÉ DX 4-DOOR SEDAN

ACCELEROMETER DATA:

LOCATION: Left and right rear floor pans

CALIBRATION PROCEDURE: 6 months/ drop test

LINEARITY: Good

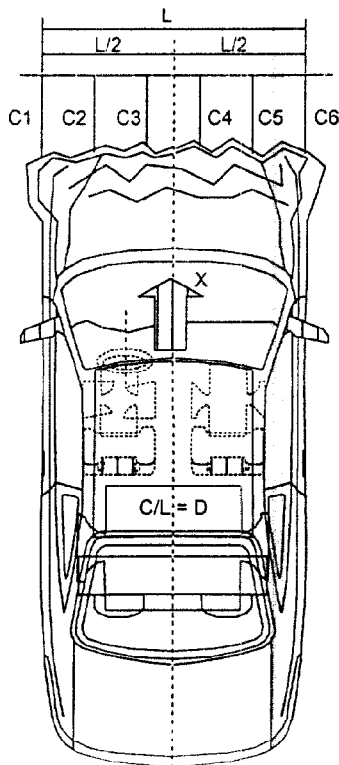
INTEGRATION ALGORITHM: NHTSA Standard

VEHICLE IMPACT SPEED: 55.9 km/h

TIME OF SEPARATION: 70.5 msec

VELOCITY CHANGE: 65.55 km/h

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE: F (frontal)



IMPACT MODE: Full Frontal

CRUSH DEPTH DIMENSIONS:

C1 = 301 mm

C2 = 421 mm

C3 = 409 mm

C4 = 417 mm

C5 = 406 mm

C6 = 369 mm

MIDPOINT OF DAMAGE: Vehicle Centerline

LENGTH OF DAMAGE REGION: 1531 mm

DATA SHEET NO. 20

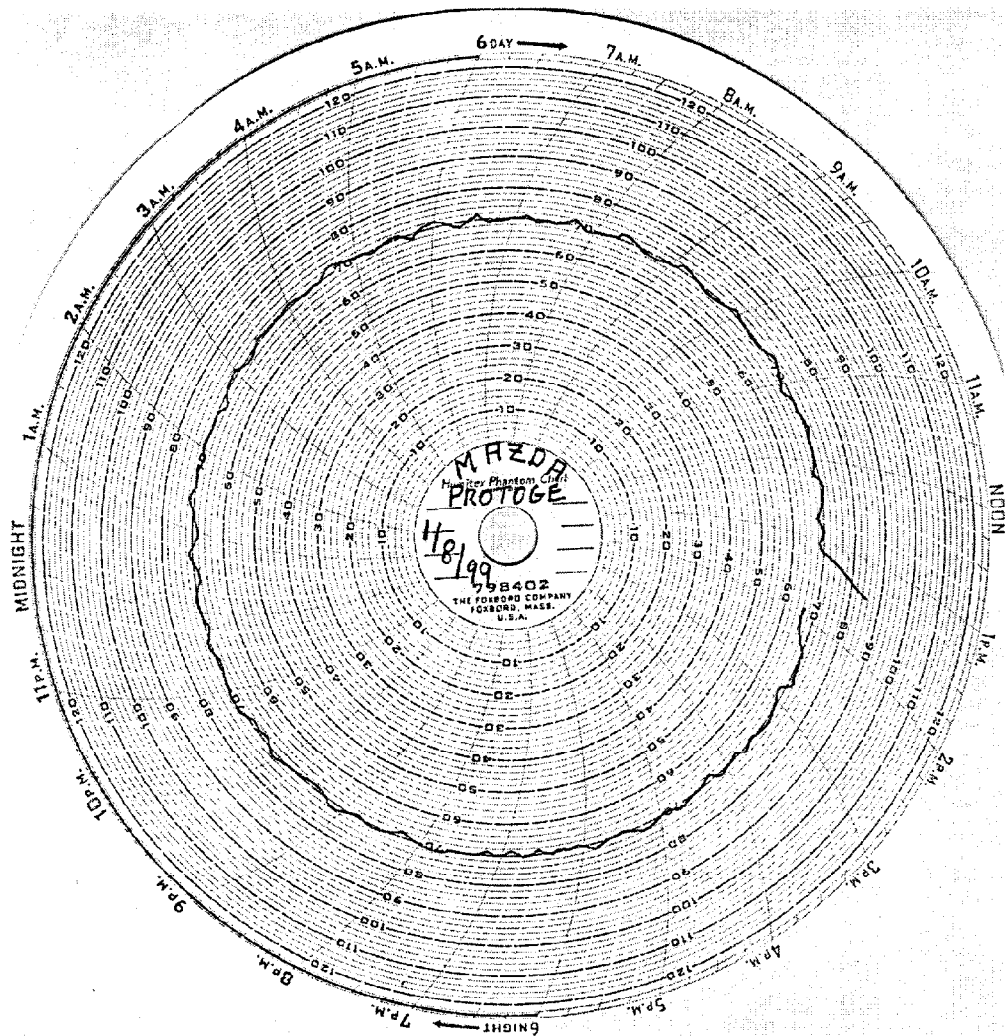
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 1999 MAZDA PROTÉGÉ DX 4-DOOR SEDAN

NHTSA No.: MX5401

Test Program: 1999 35 MPH FRONTAL IMPACT

Test Date: 1/8/99



APPENDIX A
PHOTOGRAPHS

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FIGURE A-1. RIGHT FRONT AS RECEIVED



FIGURE A-2. LEFT REAR AS RECEIVED

A-2

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FIGURE A-3. VEHICLE CERTIFICATION LABEL

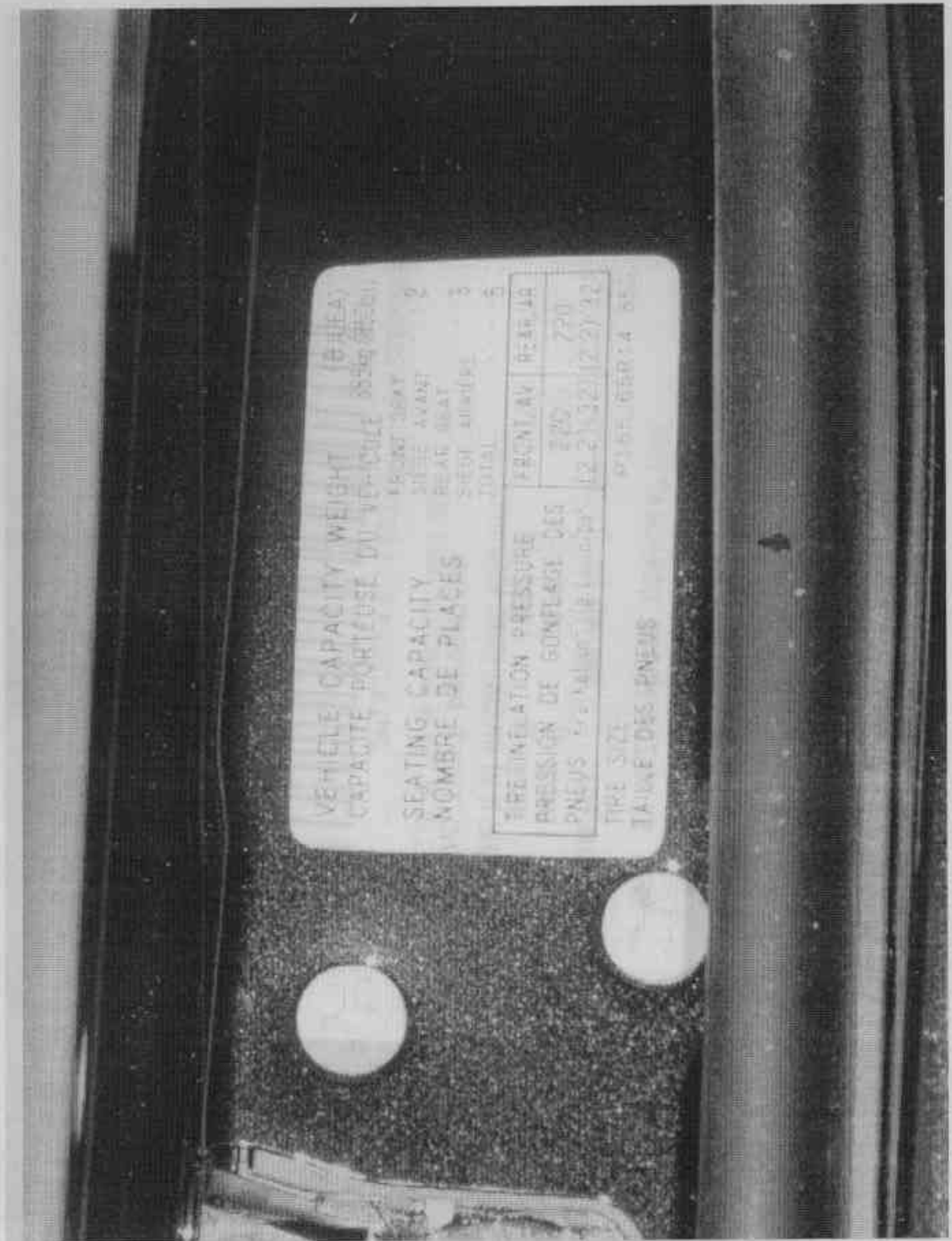


FIGURE A-4. VEHICLE TIRE PLACARD

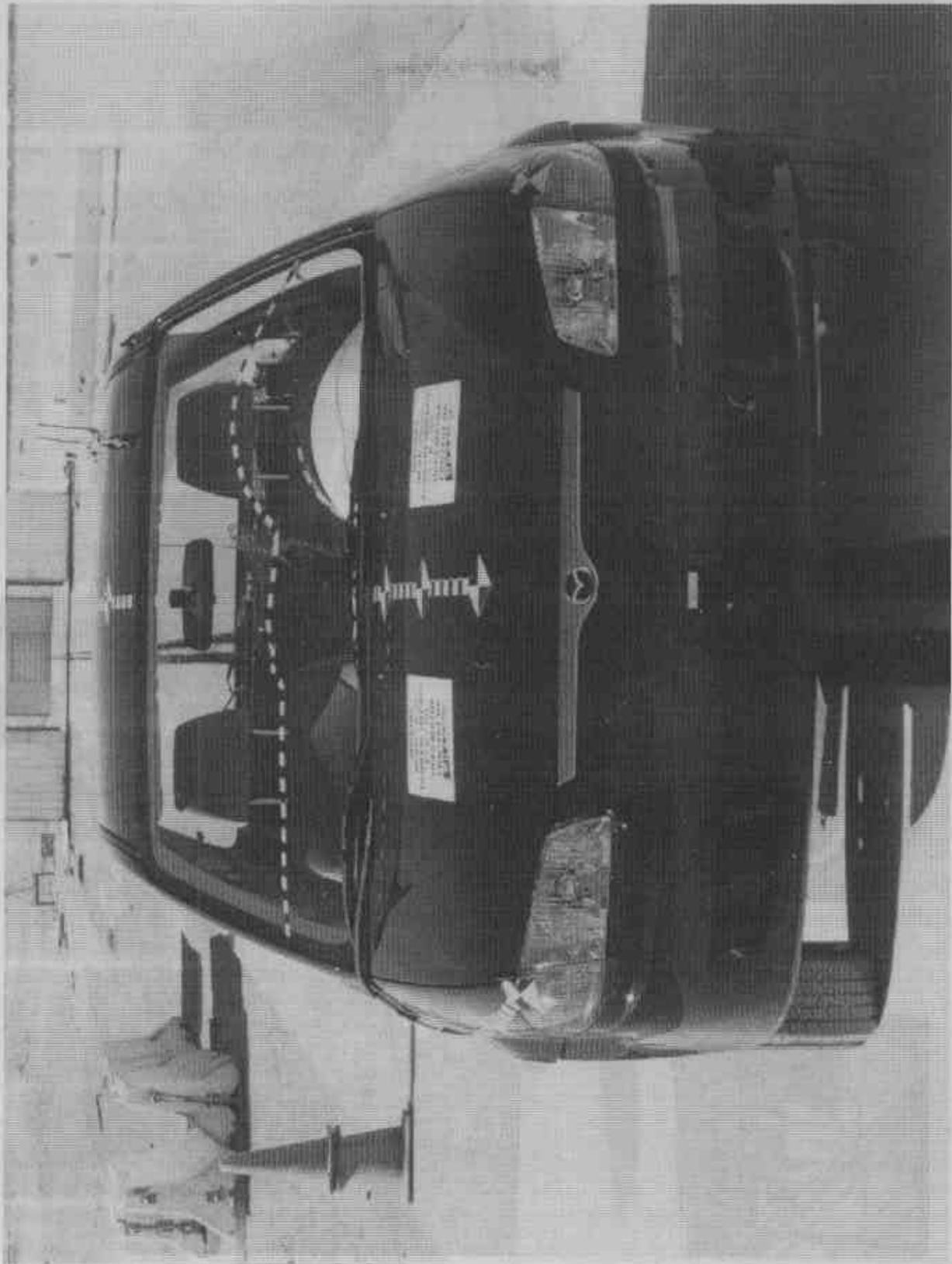


FIGURE A-5. PRETEST FRONT VIEW

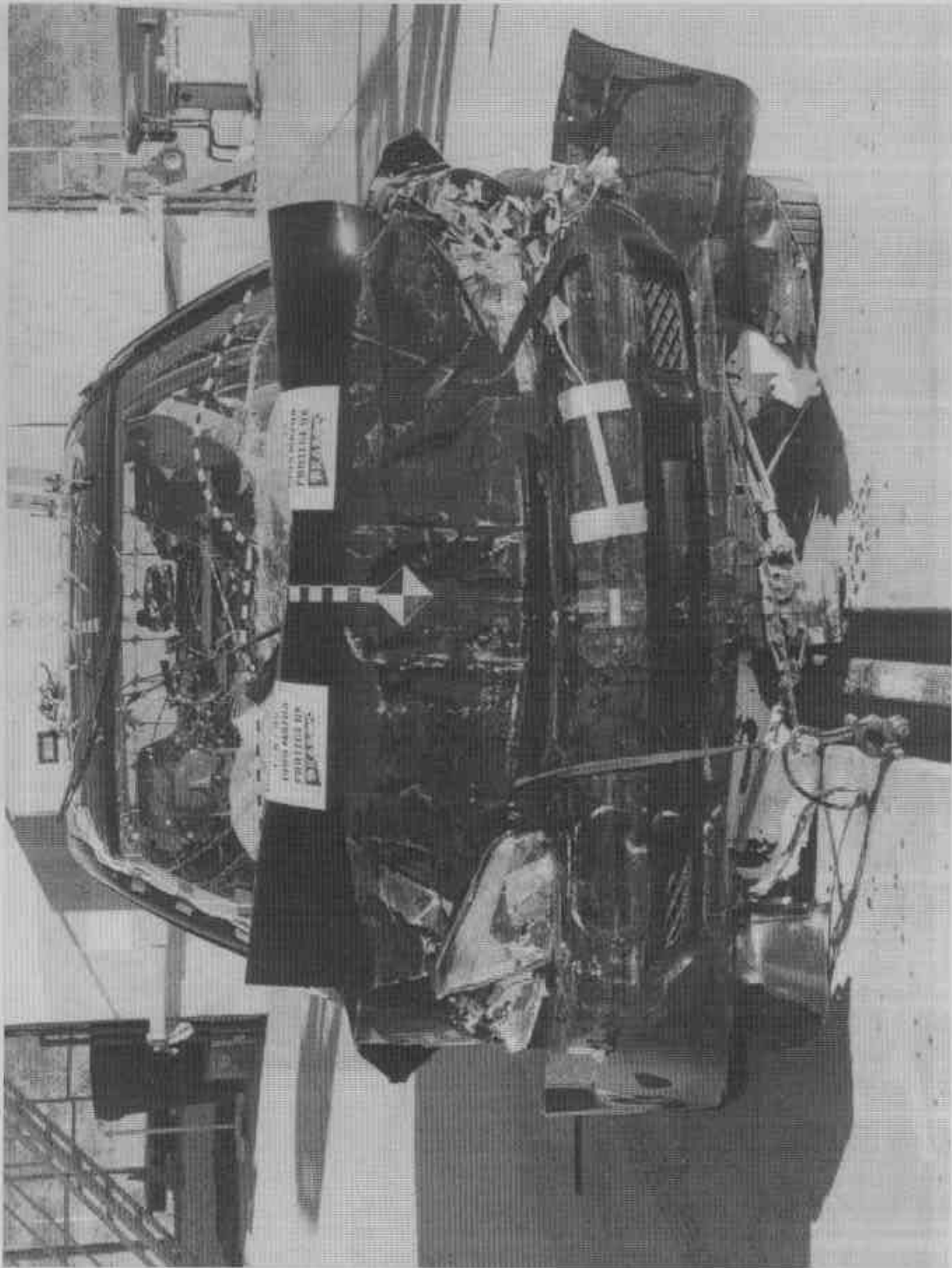


FIGURE A-6. POST TEST FRONT VIEW

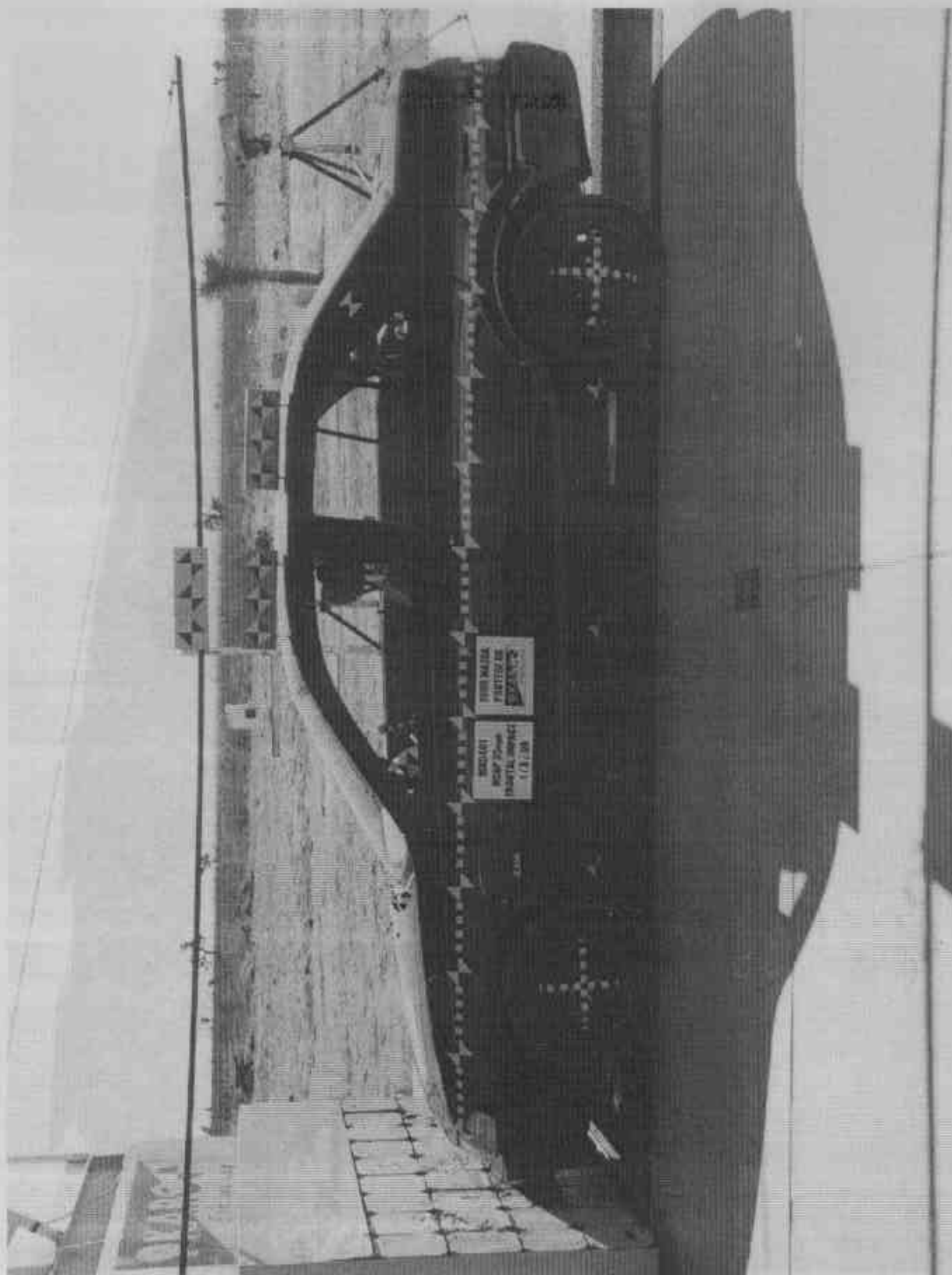


FIGURE A-7. PRETEST LEFT SIDE VIEW

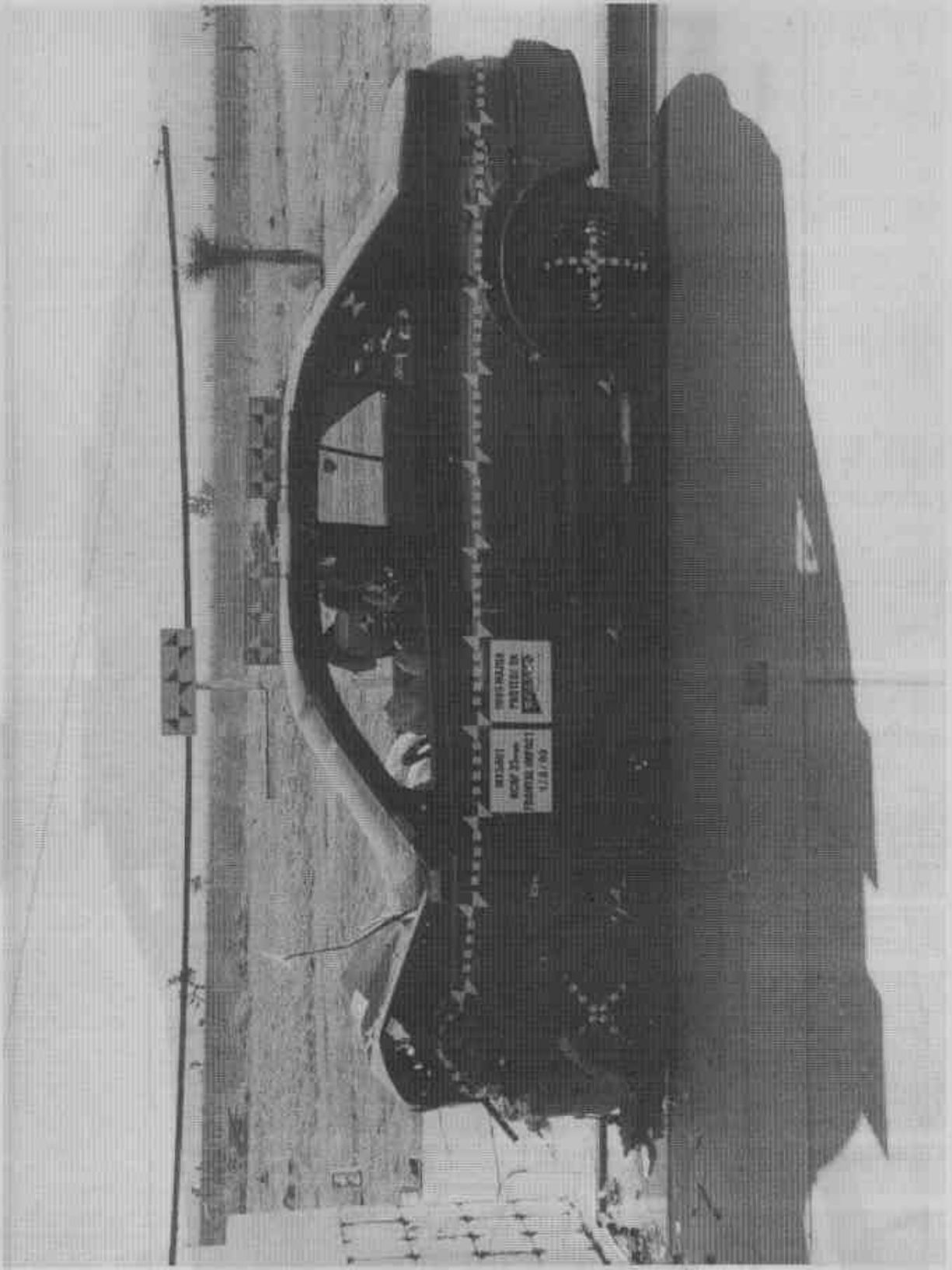


FIGURE A-8. POST TEST LEFT SIDE VIEW

A-8

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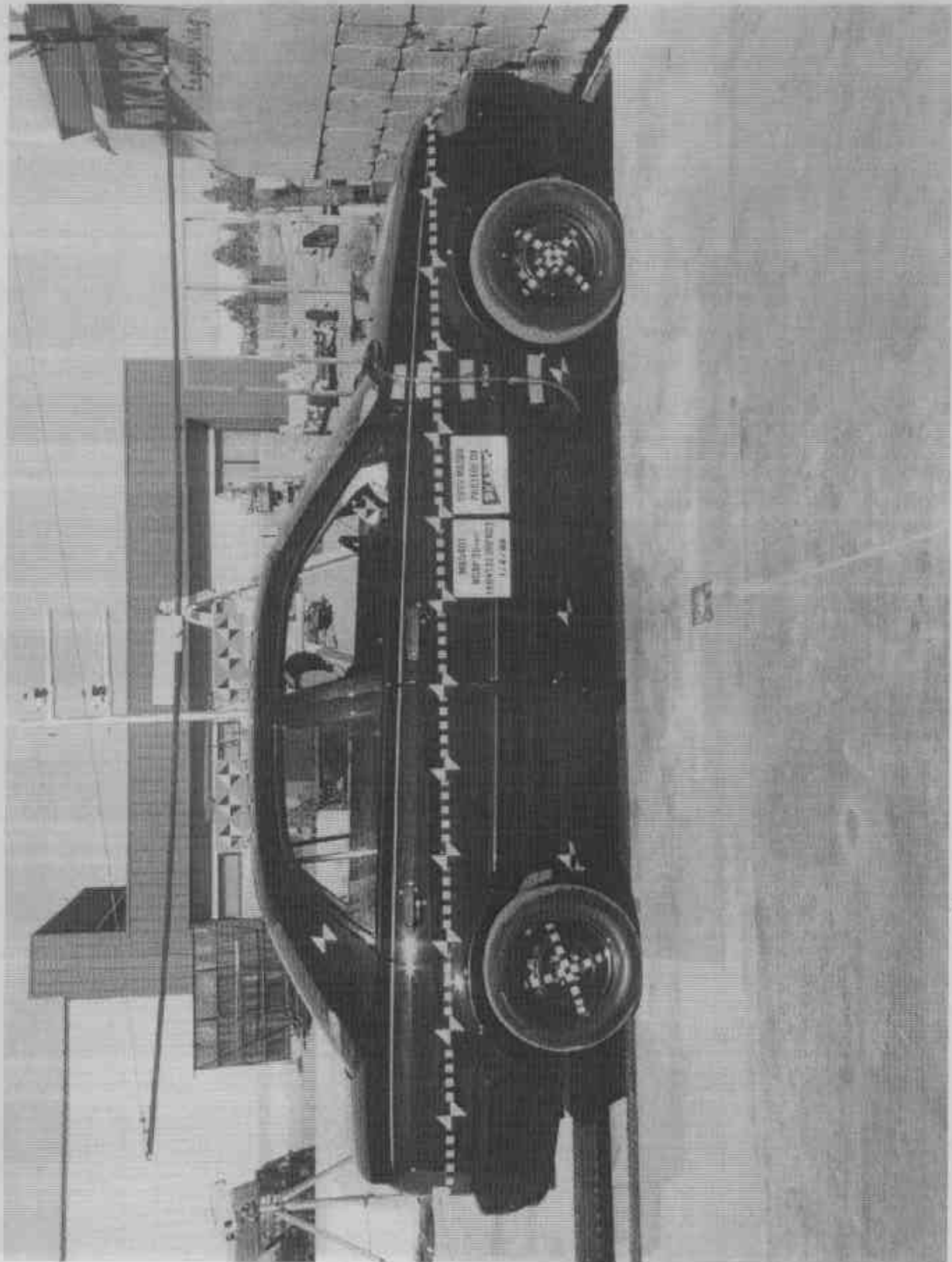


FIGURE A-9. PRETEST RIGHT SIDE VIEW

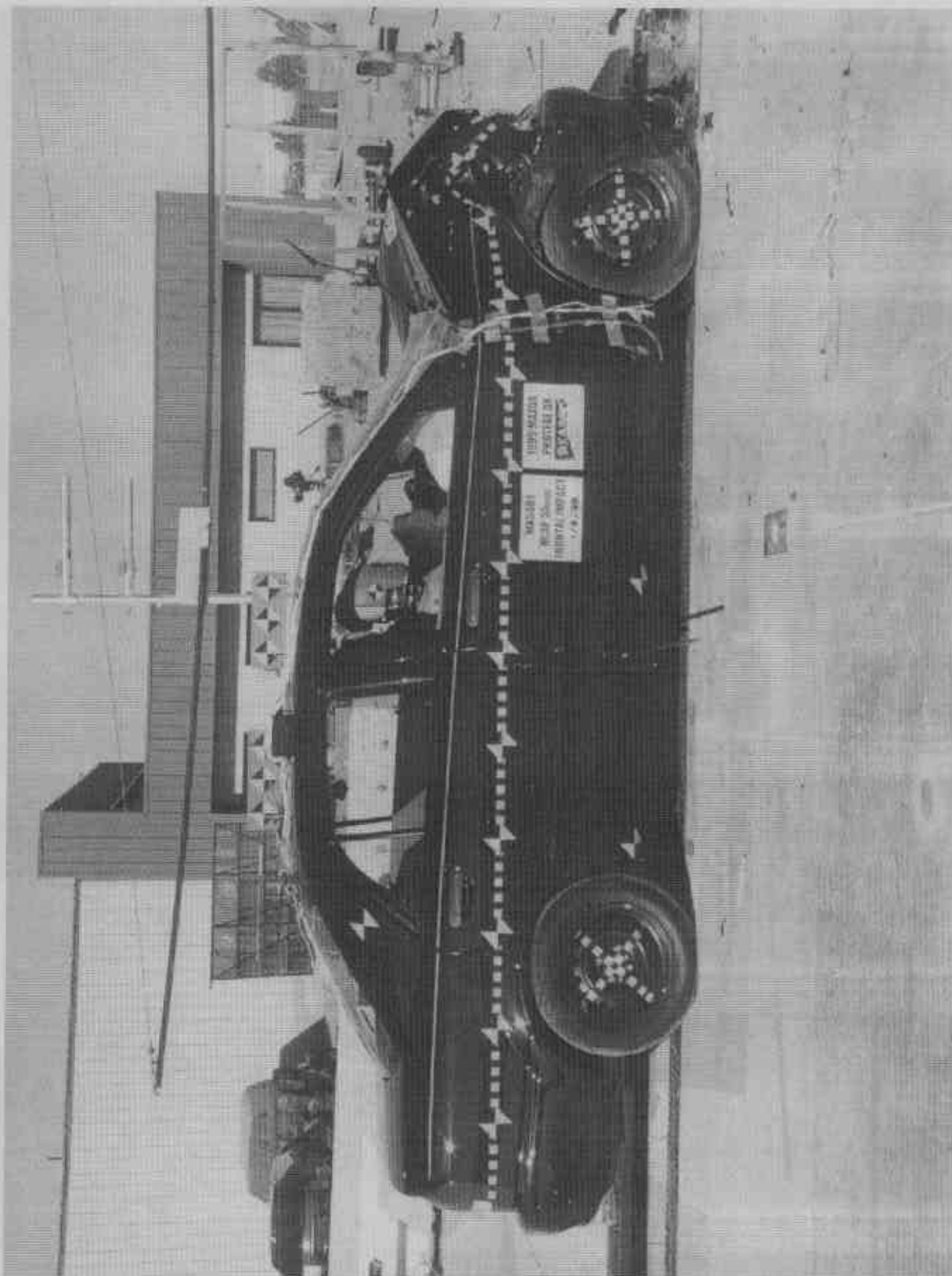


FIGURE A-10. POST TEST RIGHT SIDE VIEW

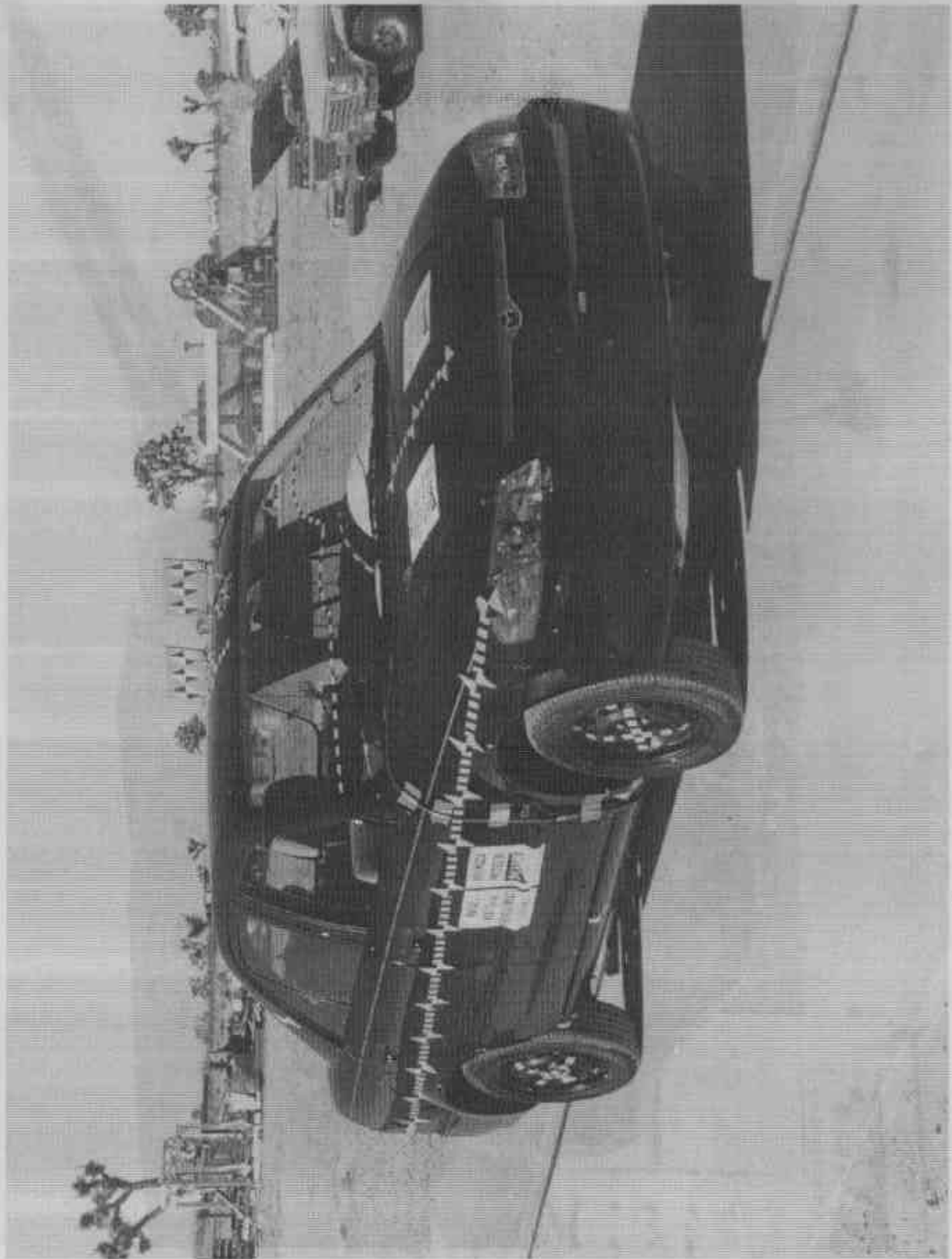


FIGURE A-11. PRETEST RIGHT FRONT VIEW

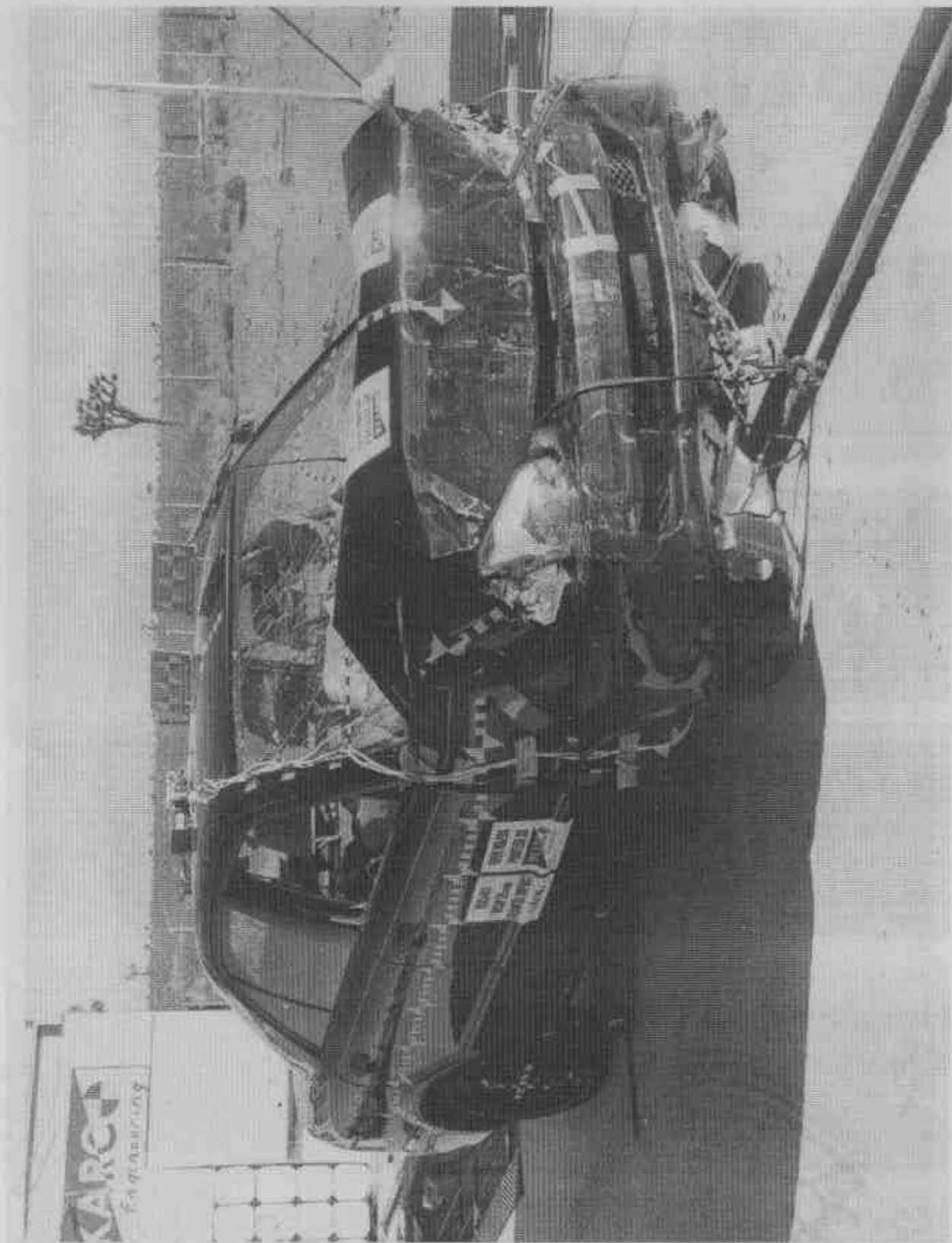


FIGURE A-12. POST TEST RIGHT FRONT VIEW



FIGURE A-13. PRETEST LEFT REAR VIEW



FIGURE A-14. POST TEST LEFT REAR VIEW

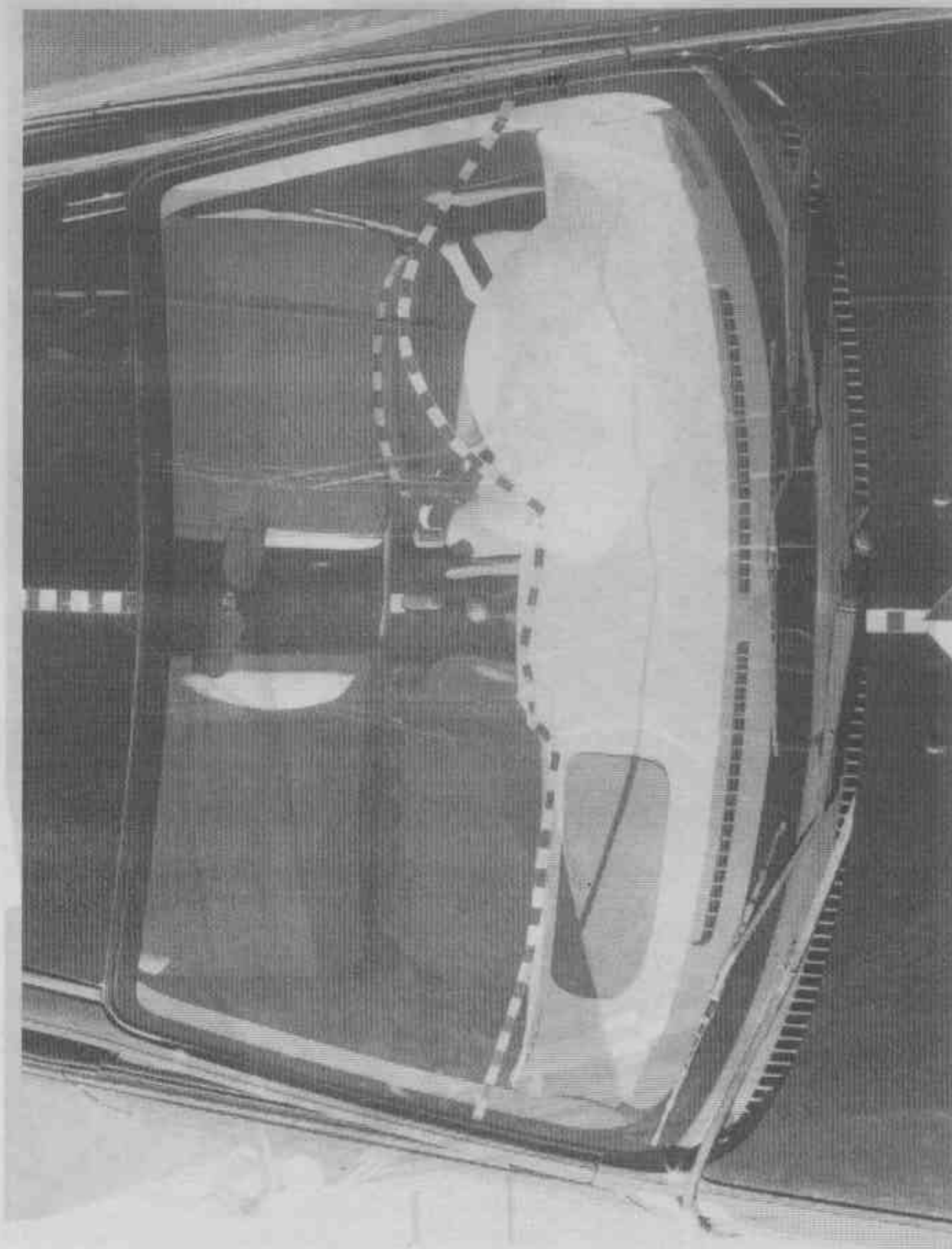


FIGURE A-15. PRETEST WINDSHIELD

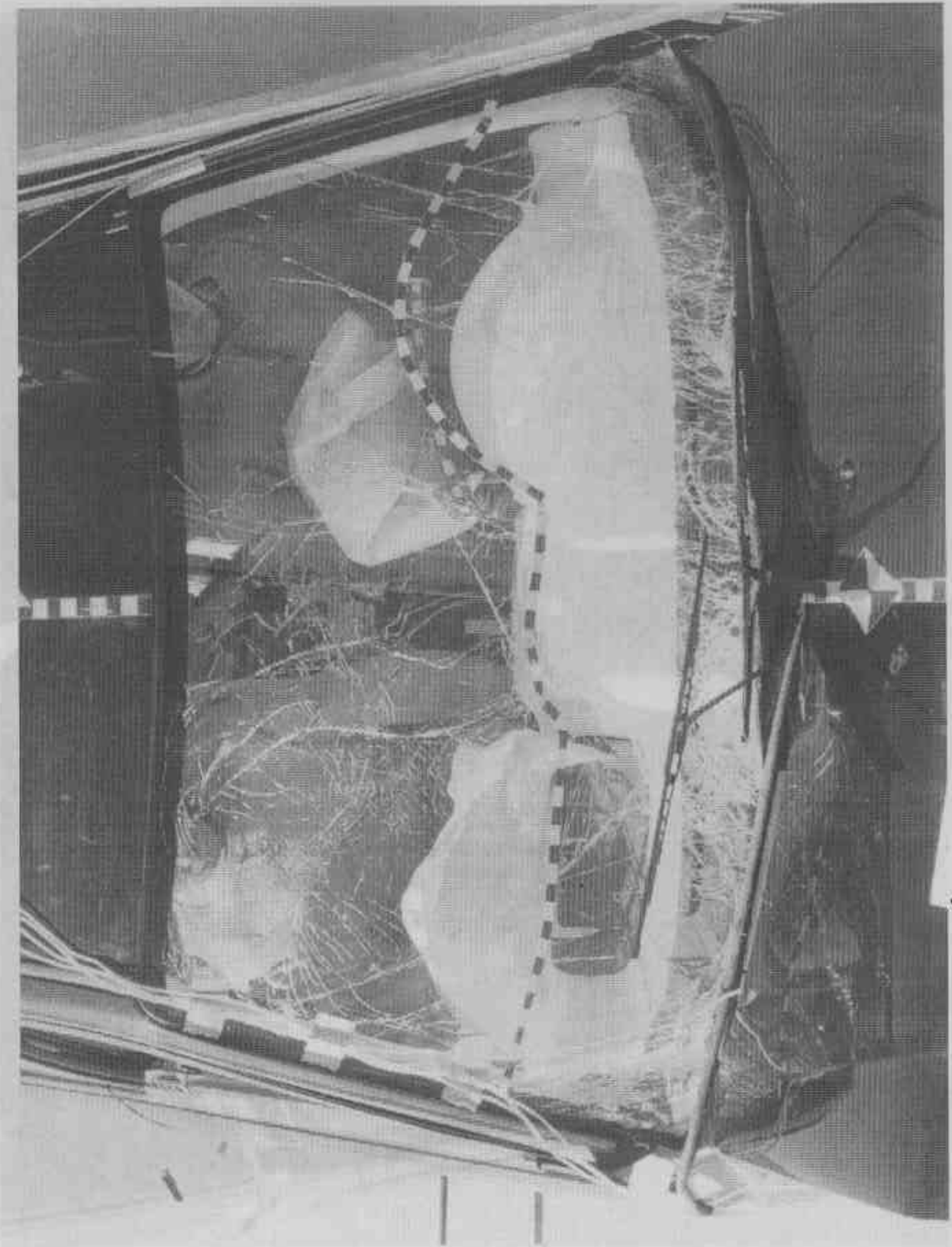


FIGURE A-16. POST TEST WINDSHIELD

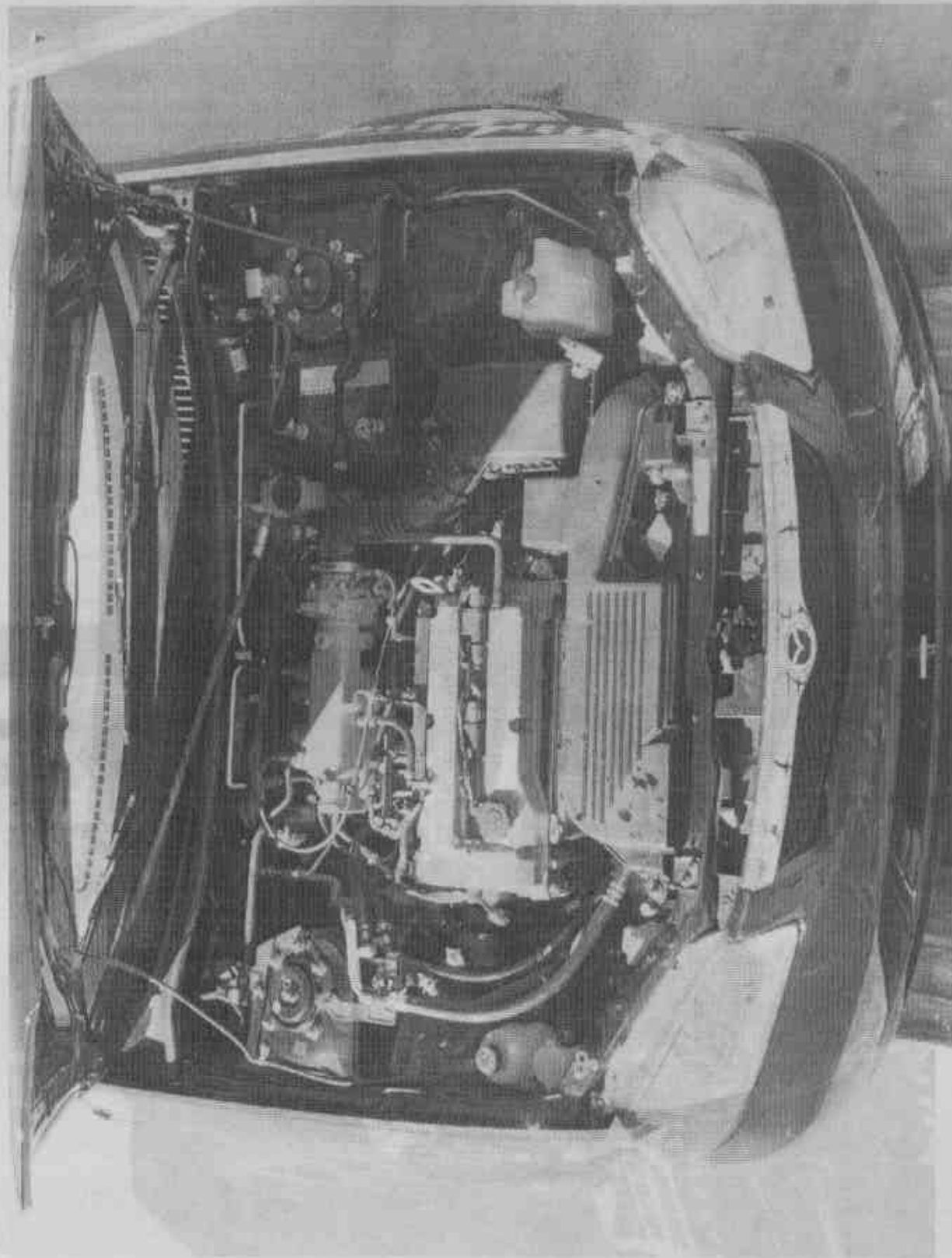


FIGURE A-17. PRETEST ENGINE COMPARTMENT

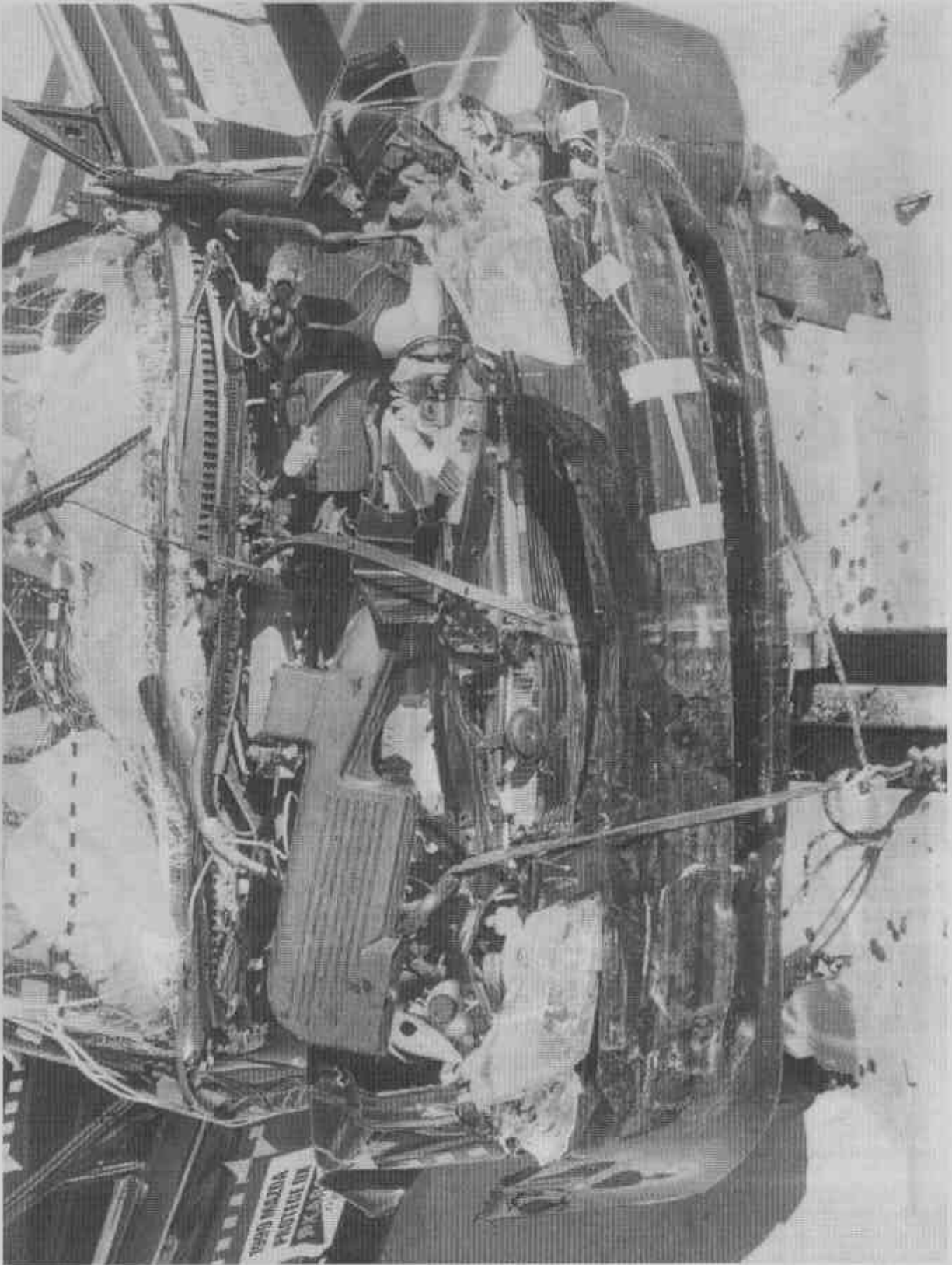


FIGURE A-18. POST TEST ENGINE COMPARTMENT

A-18

KAR99001-08

80-100195A2

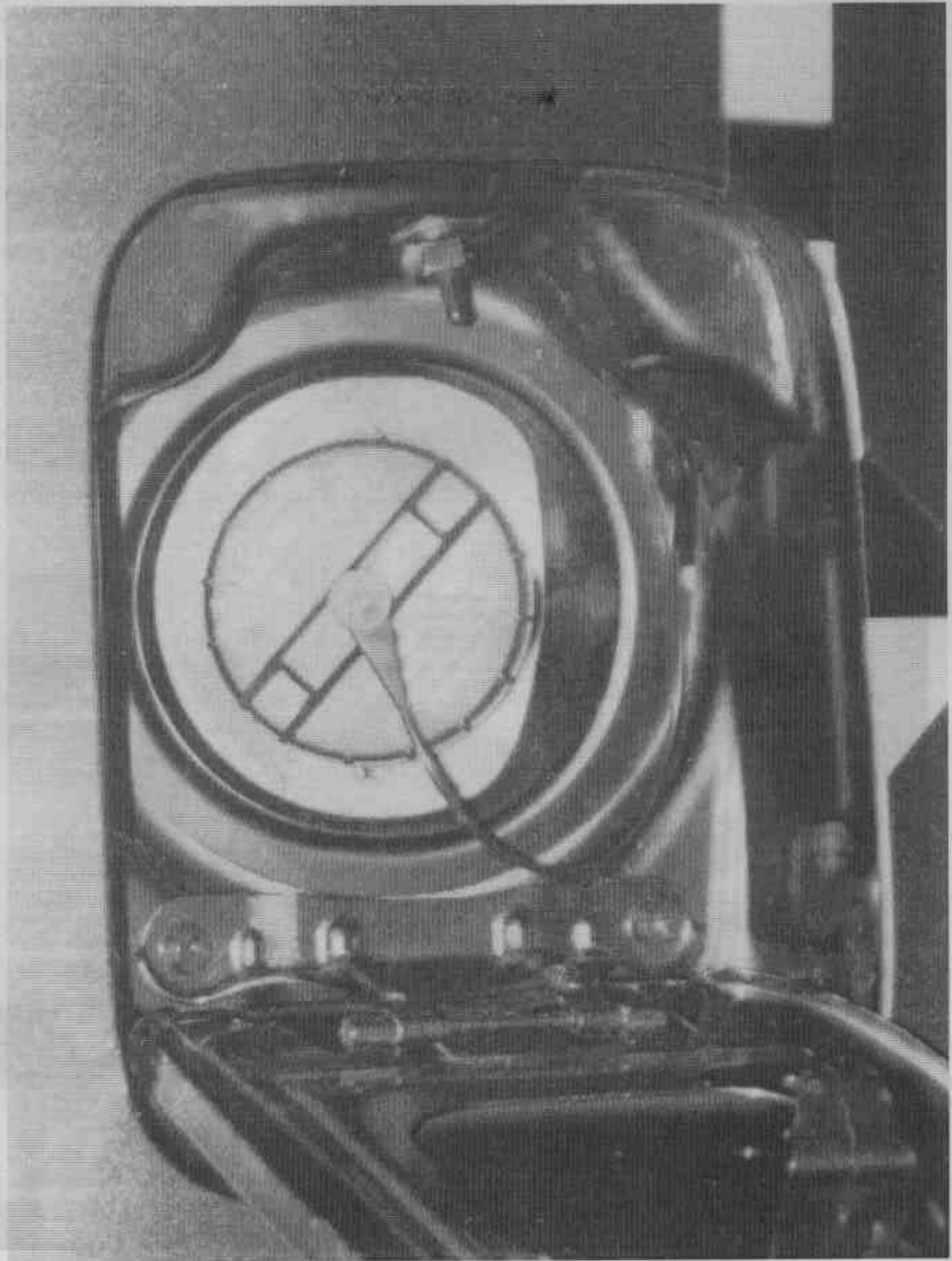


FIGURE A-19. PRETEST FUEL CAP



FIGURE A-20. POST TEST FUEL CAP

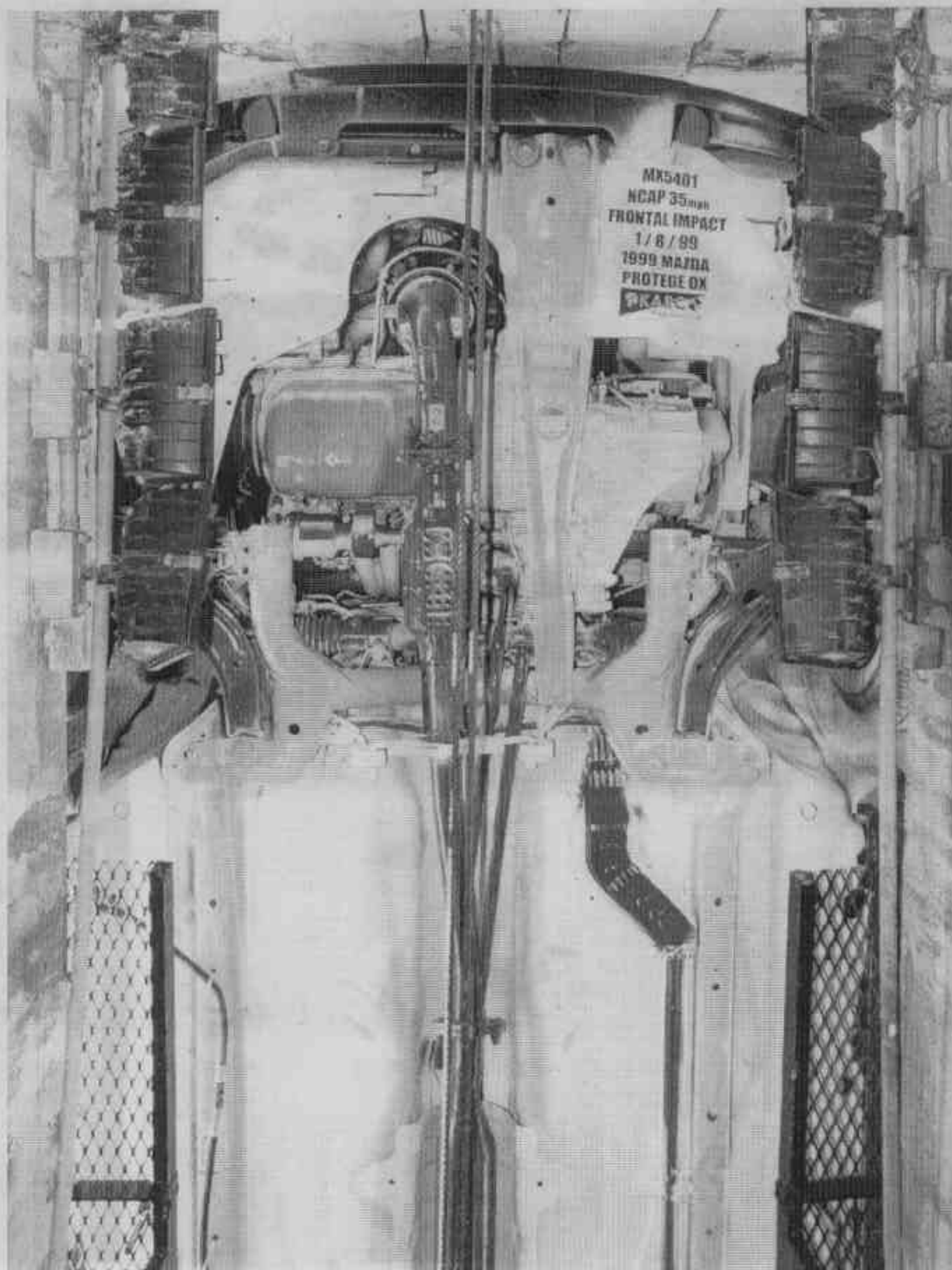


FIGURE A-21. PRETEST FRONT UNDERSIDE

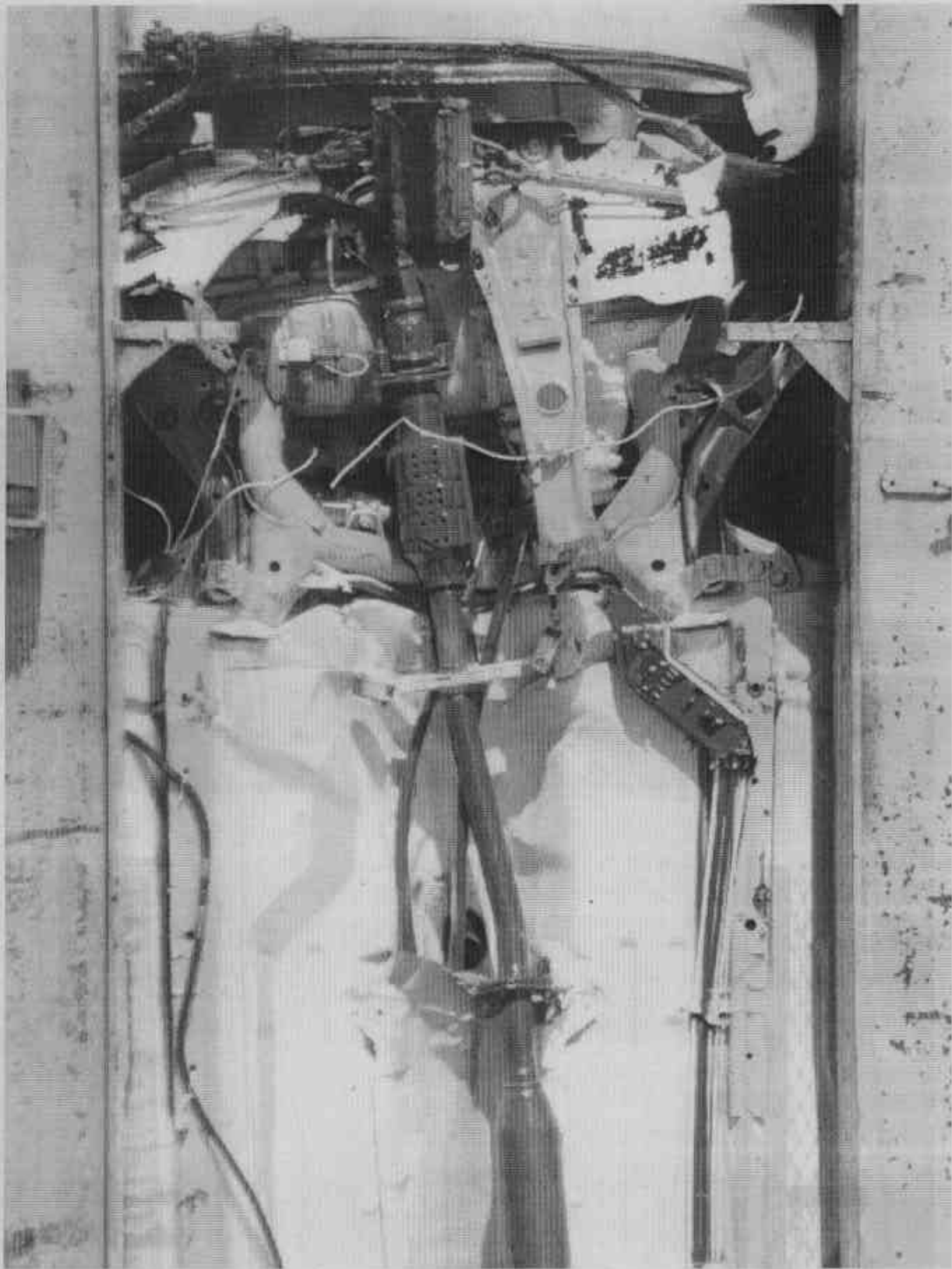


FIGURE A-22. POST TEST FRONT UNDERSIDE

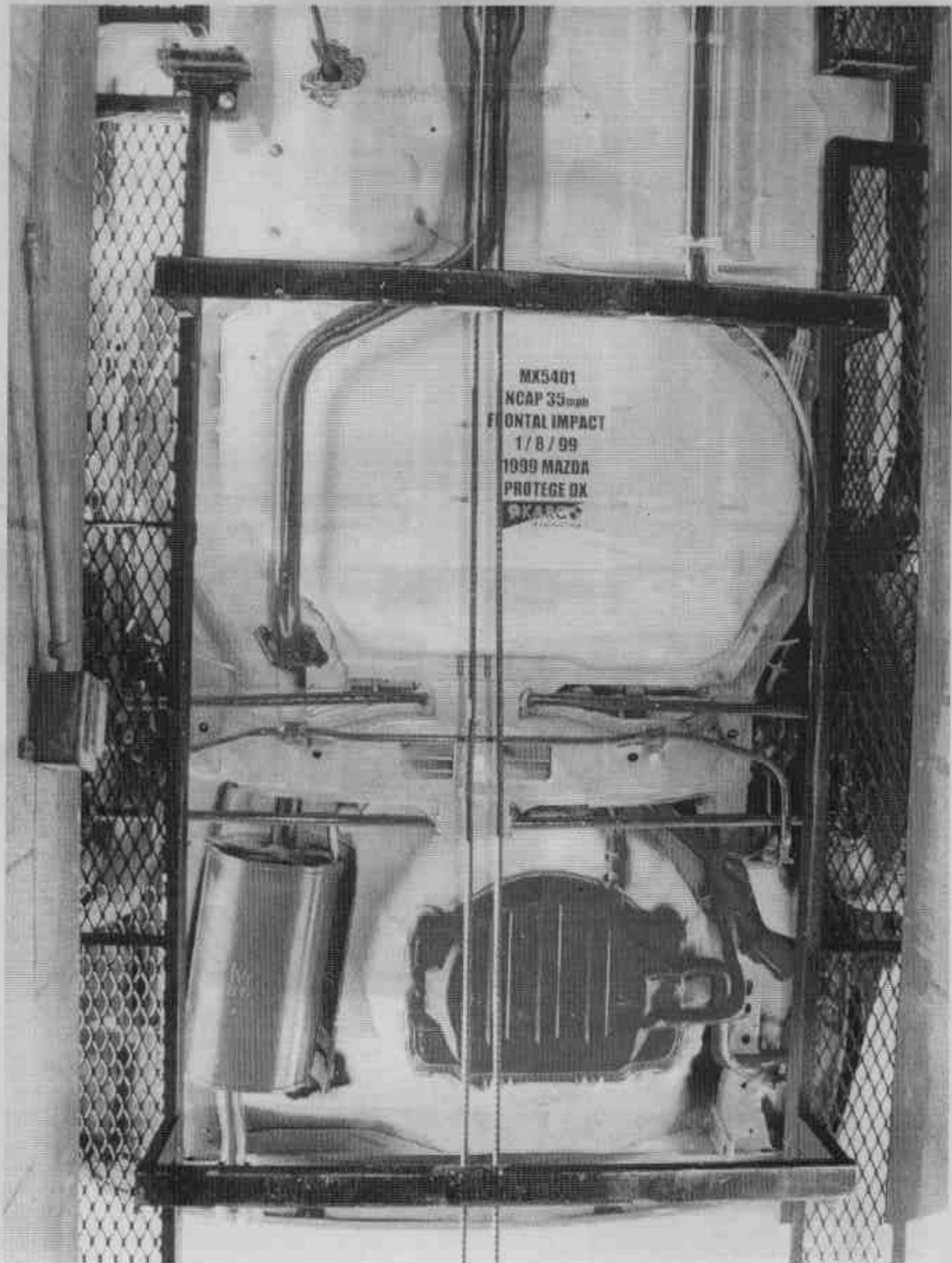


FIGURE A-23. PRETEST REAR UNDERSIDE

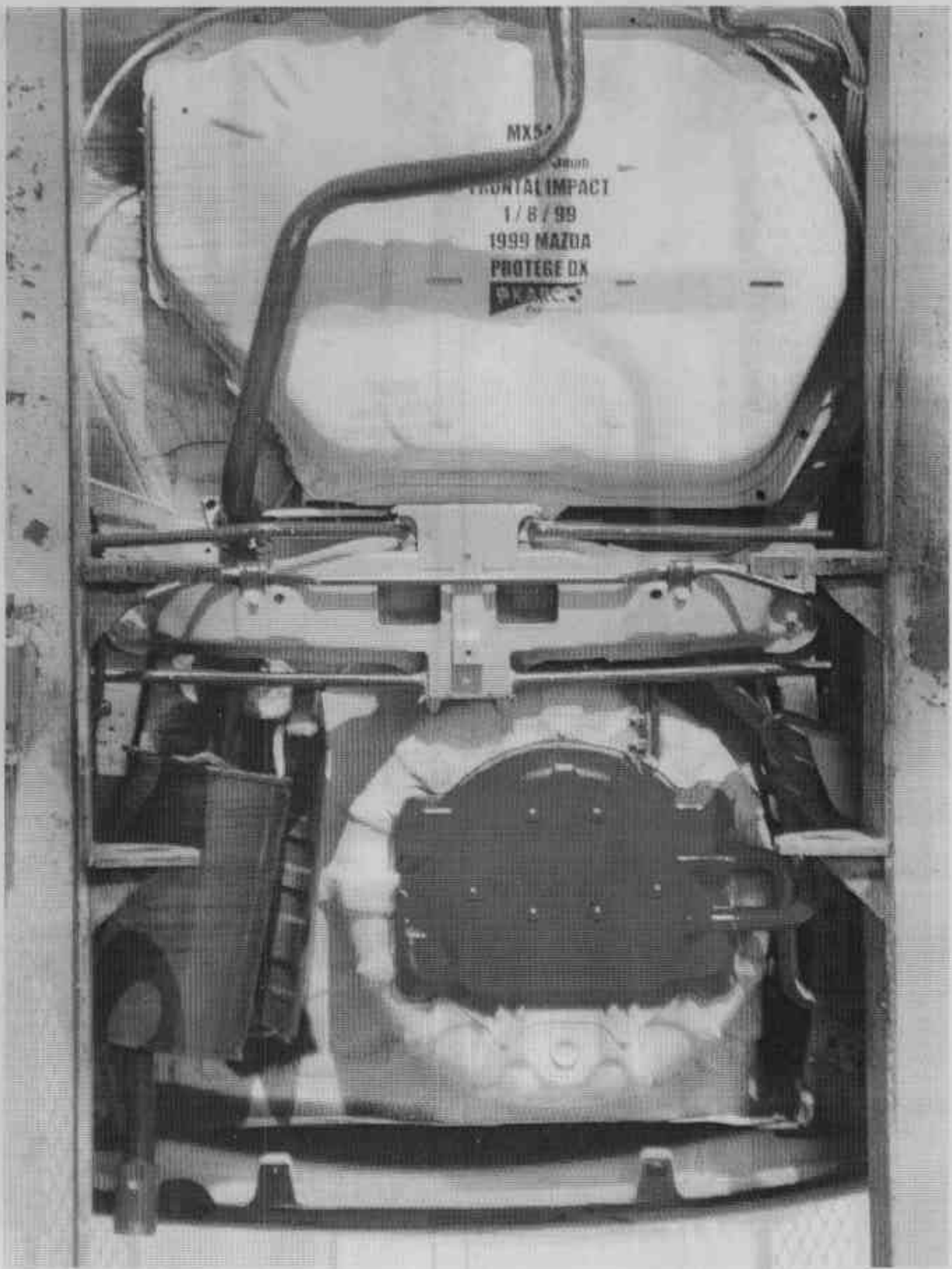


FIGURE A-24. POST TEST REAR UNDERSIDE

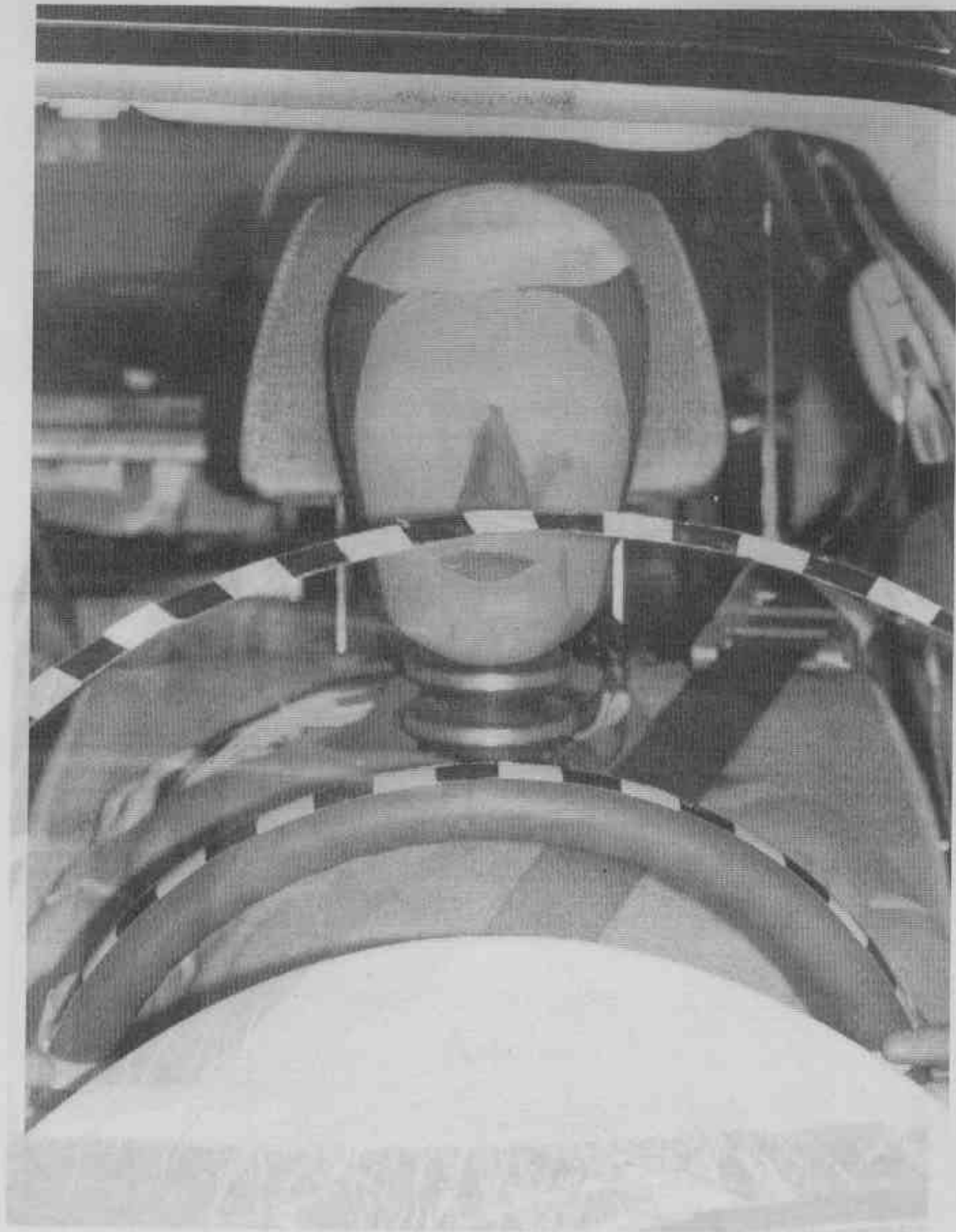


FIGURE A-25. PRETEST DRIVER DUMMY (FRONT VIEW)



FIGURE A-26. POST TEST DRIVER DUMMY (FRONT VIEW)

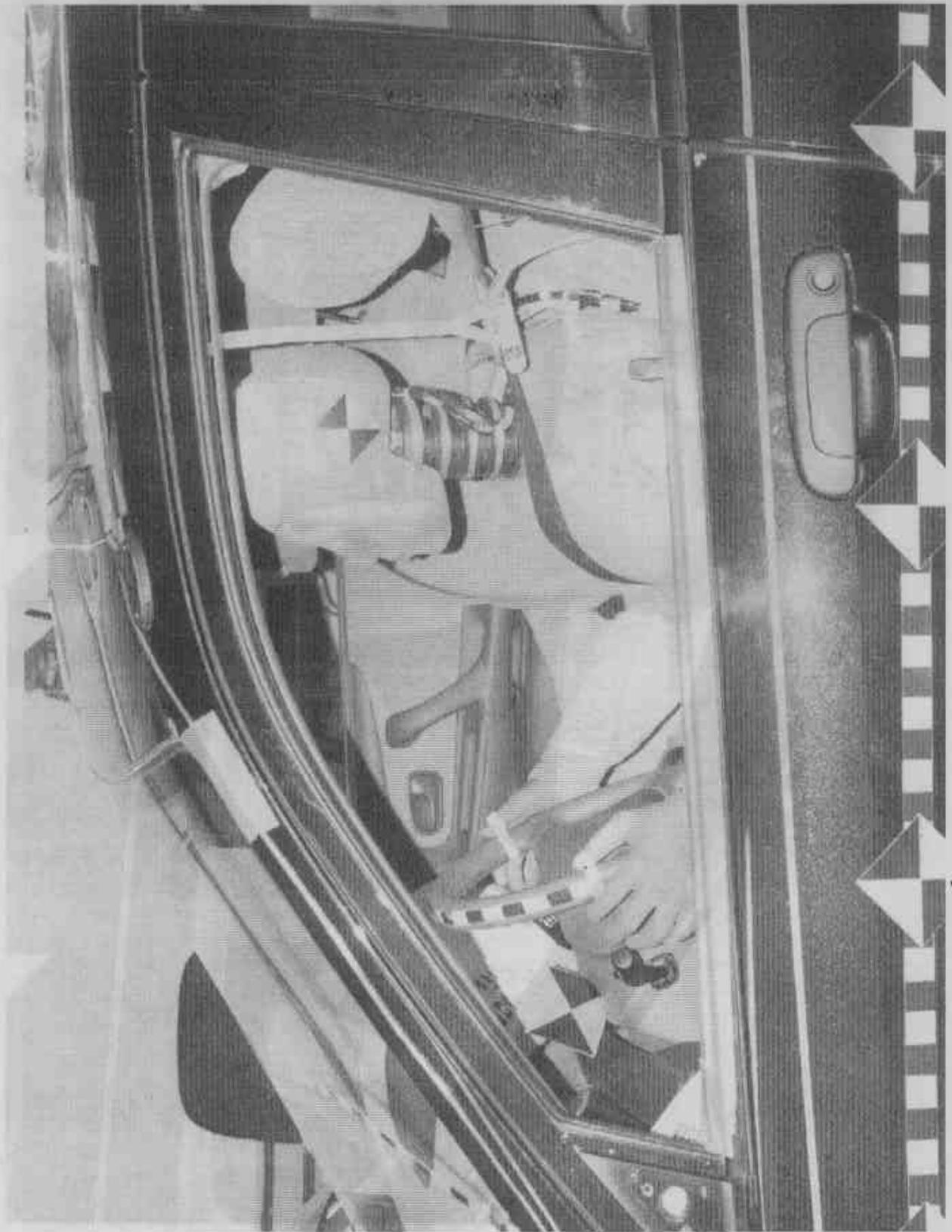


FIGURE A-27. PRETEST DRIVER DUMMY (THUR WINDOW)



FIGURE A-28. POST TEST DRIVER DUMMY (THUR WINDOW)



FIGURE A-29. PRETEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-30. POST TEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-31. PRETEST DRIVER DUMMY (90° TO VEHICLE)



FIGURE A-32. POST TEST DRIVER DUMMY (90° TO VEHICLE)

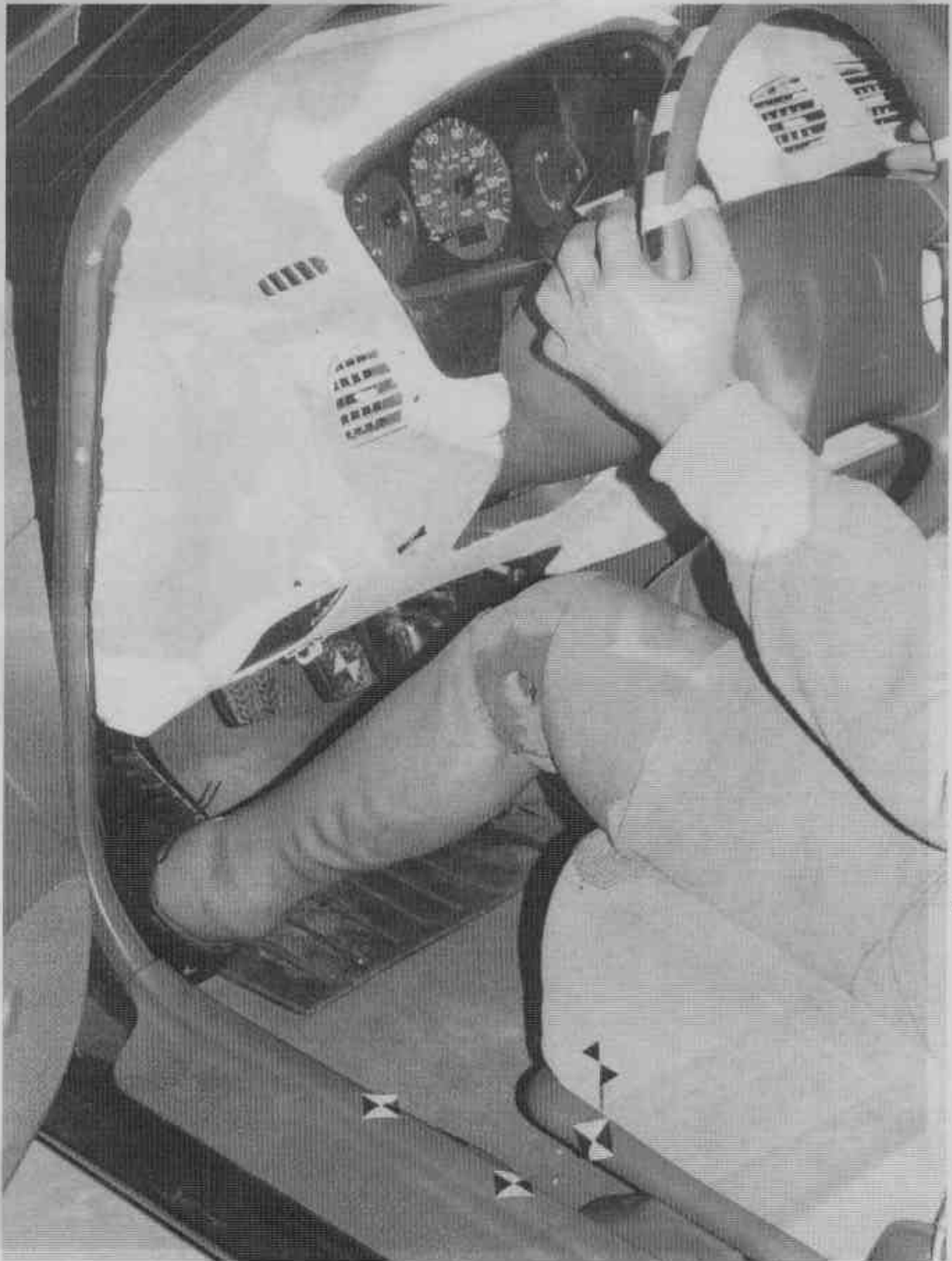


FIGURE A-33. PRETEST DRIVER DUMMY FEET



FIGURE A-34. POST TEST DRIVER DUMMY FEET AND KNEE CONTACT

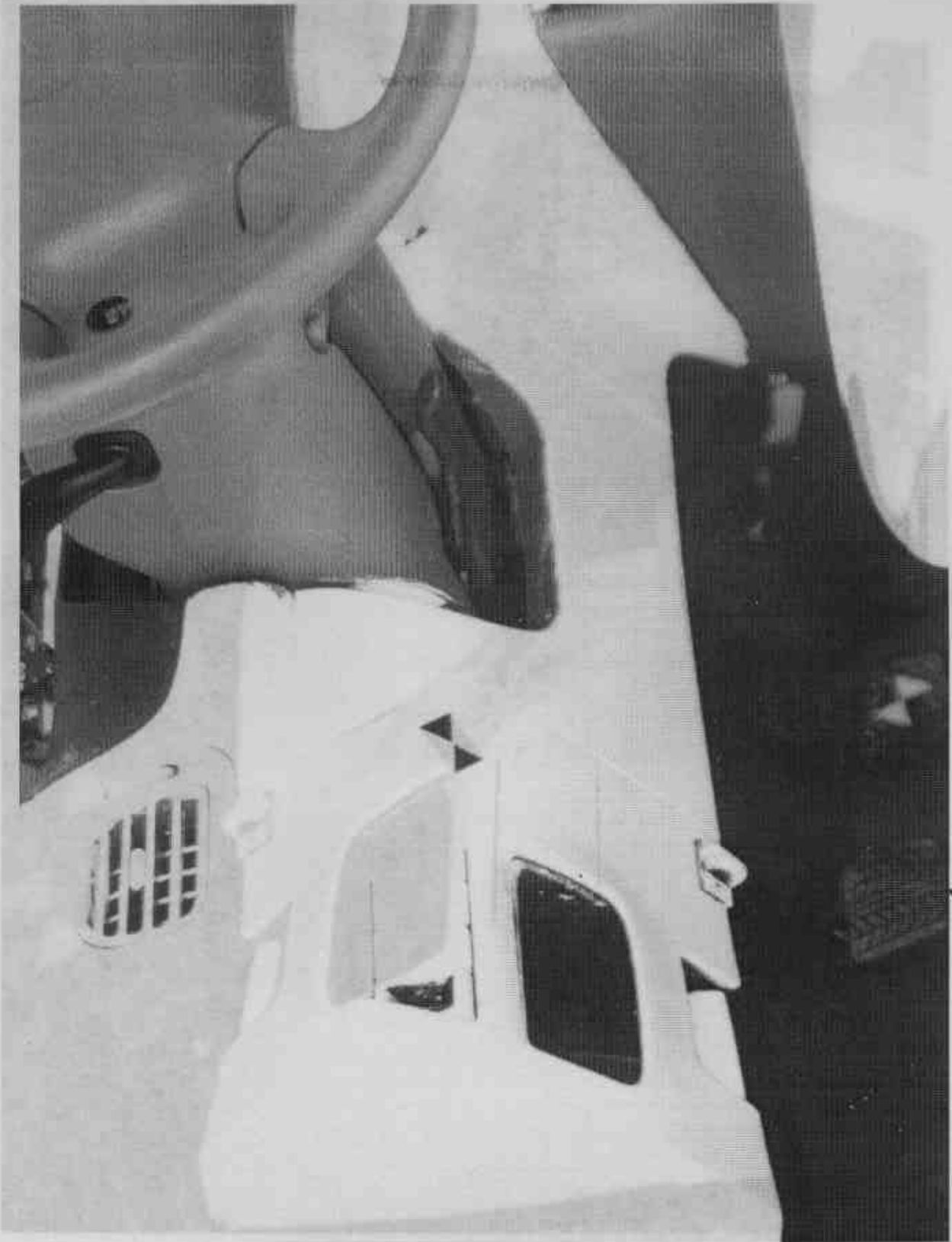


FIGURE A-35. PRETEST DRIVER KNEE BOLSTER

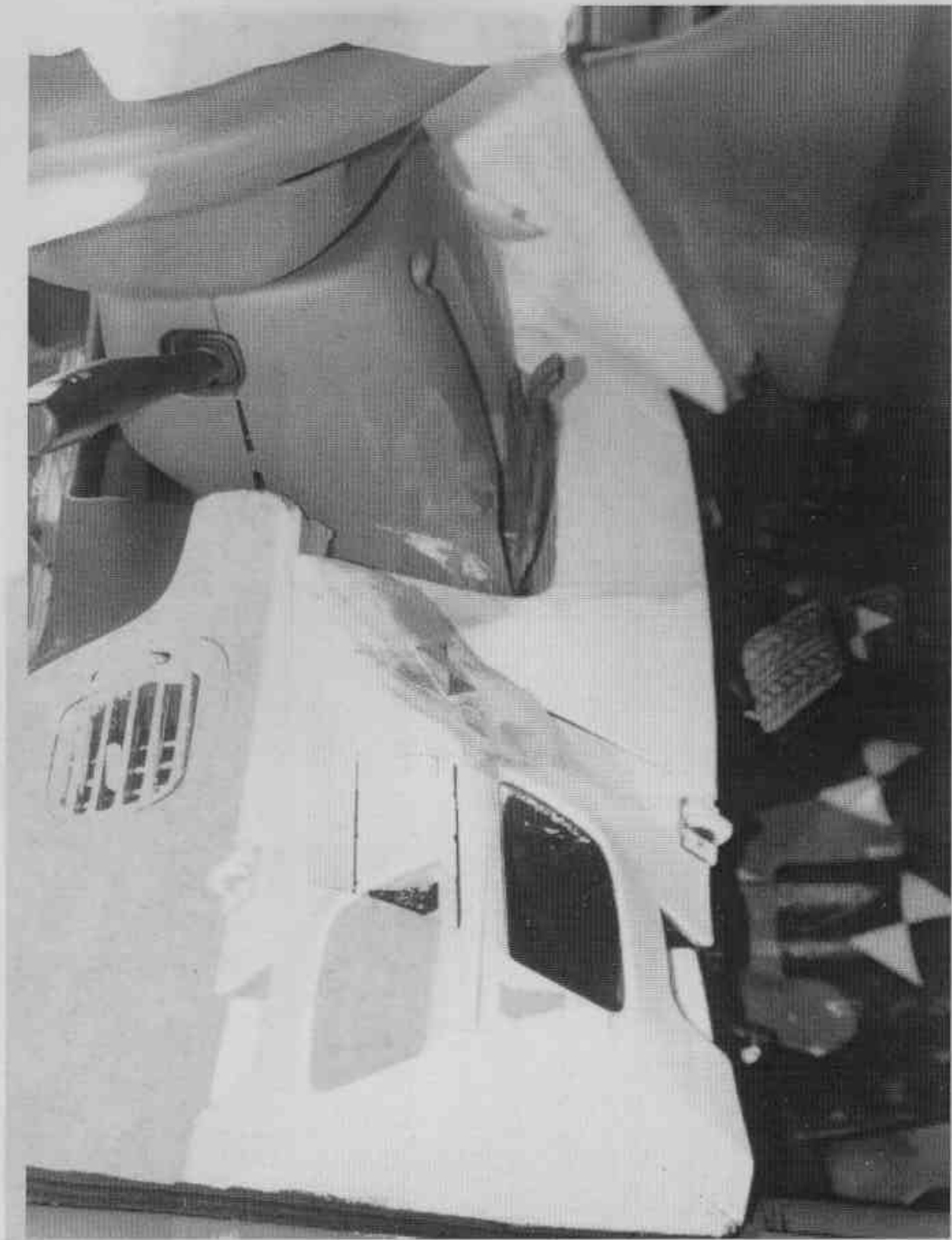


FIGURE A-36. POST TEST DRIVER KNEE BOLSTER

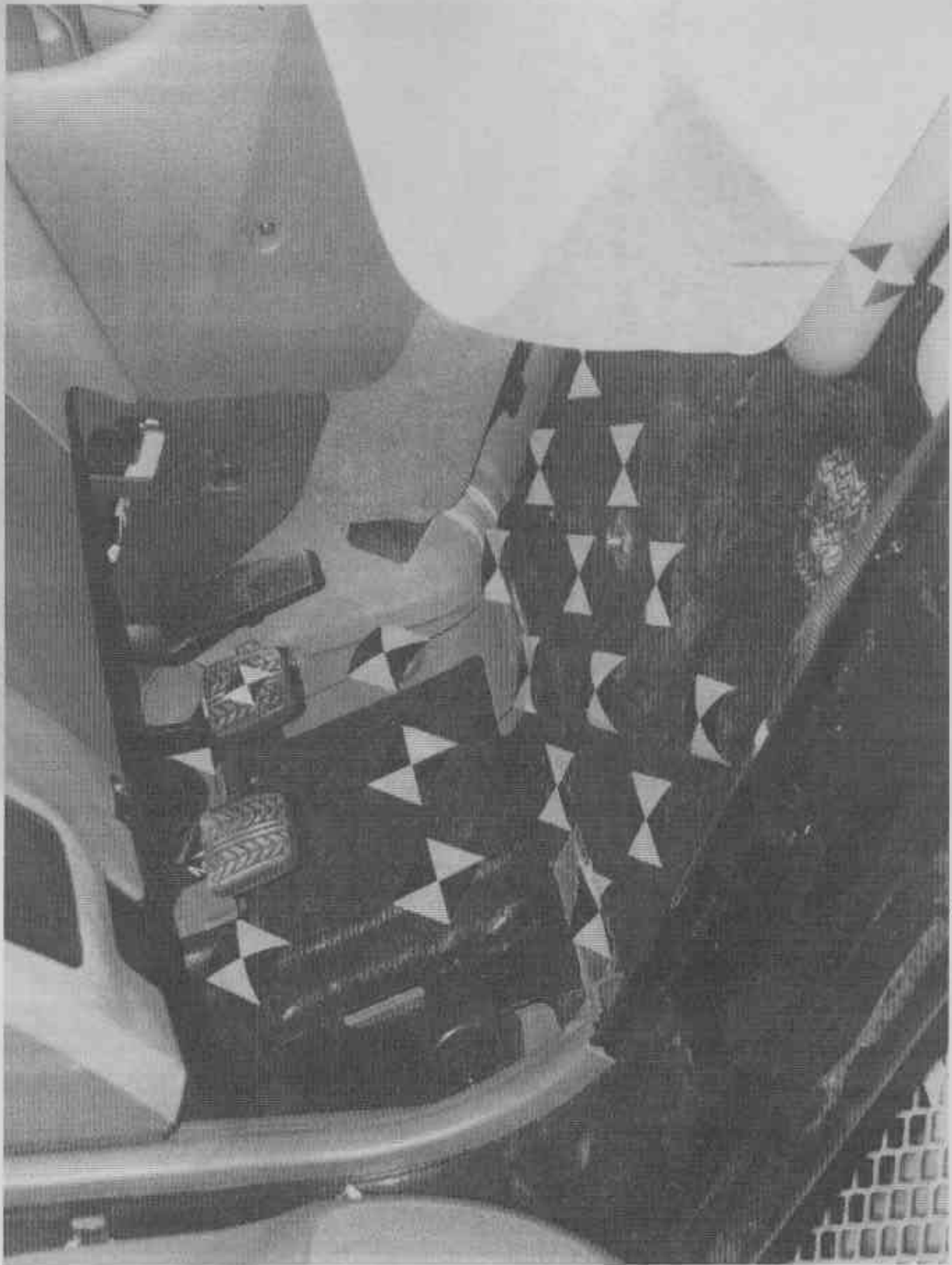


FIGURE A-37. PRETEST DRIVER SIDE FLOOR PAN



FIGURE A-38. POST TEST DRIVER SIDE FLOOR PAN

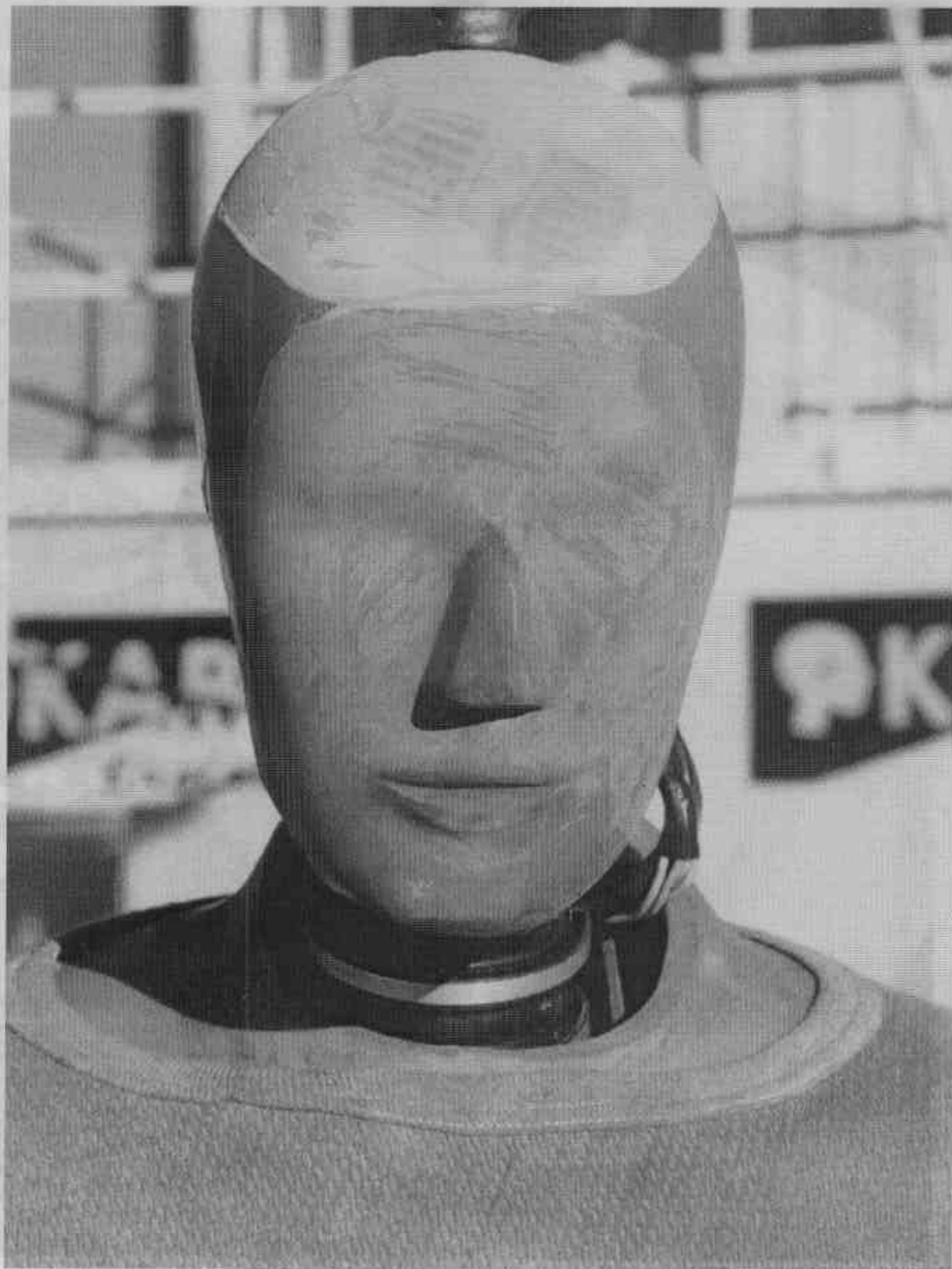


FIGURE A-39. POST TEST DRIVER HEAD

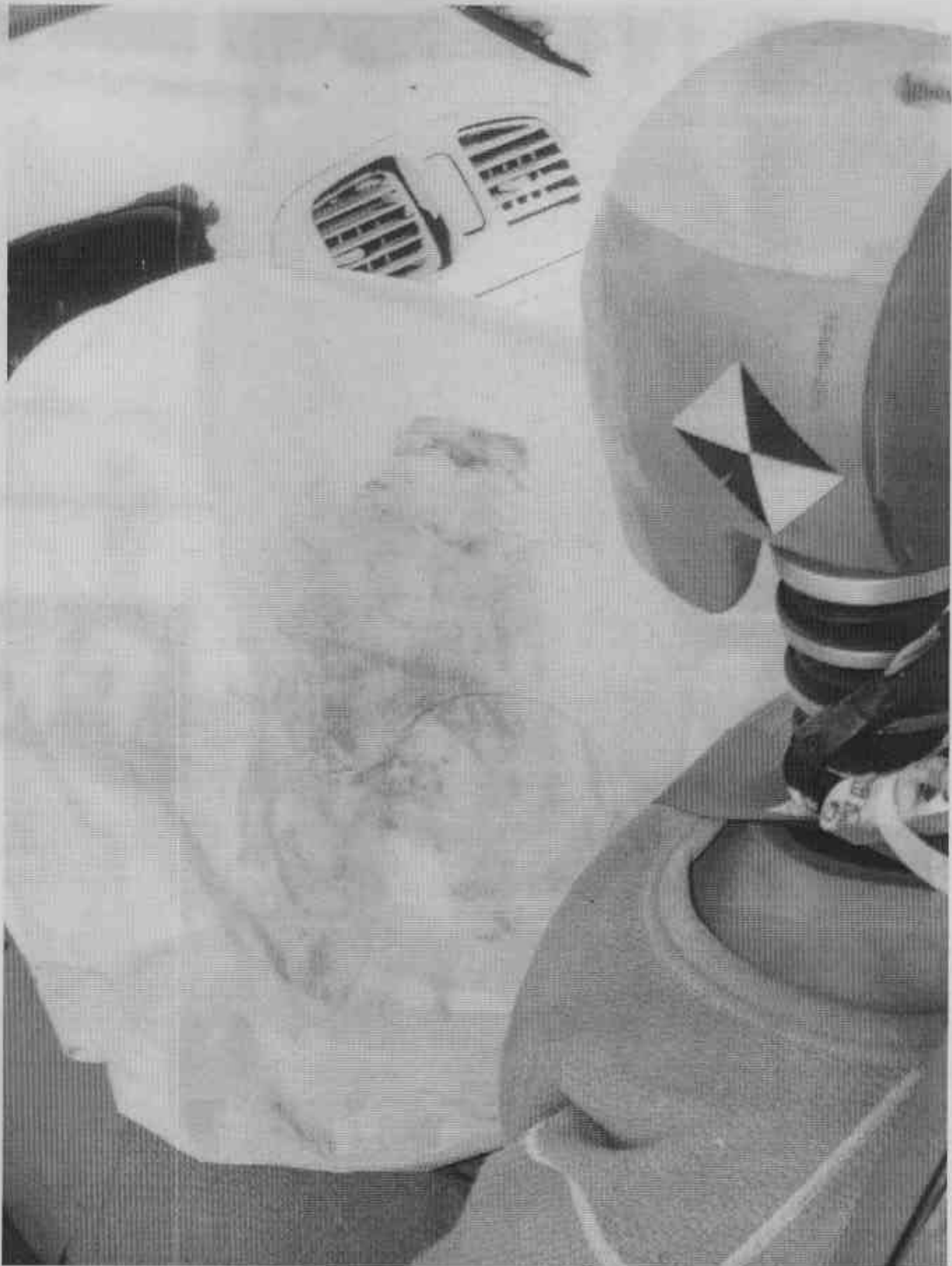


FIGURE A-40. POST TEST DRIVER DUMMY CONTACT



FIGURE A-41. PRETEST PASSENGER DUMMY (FRONT VIEW)

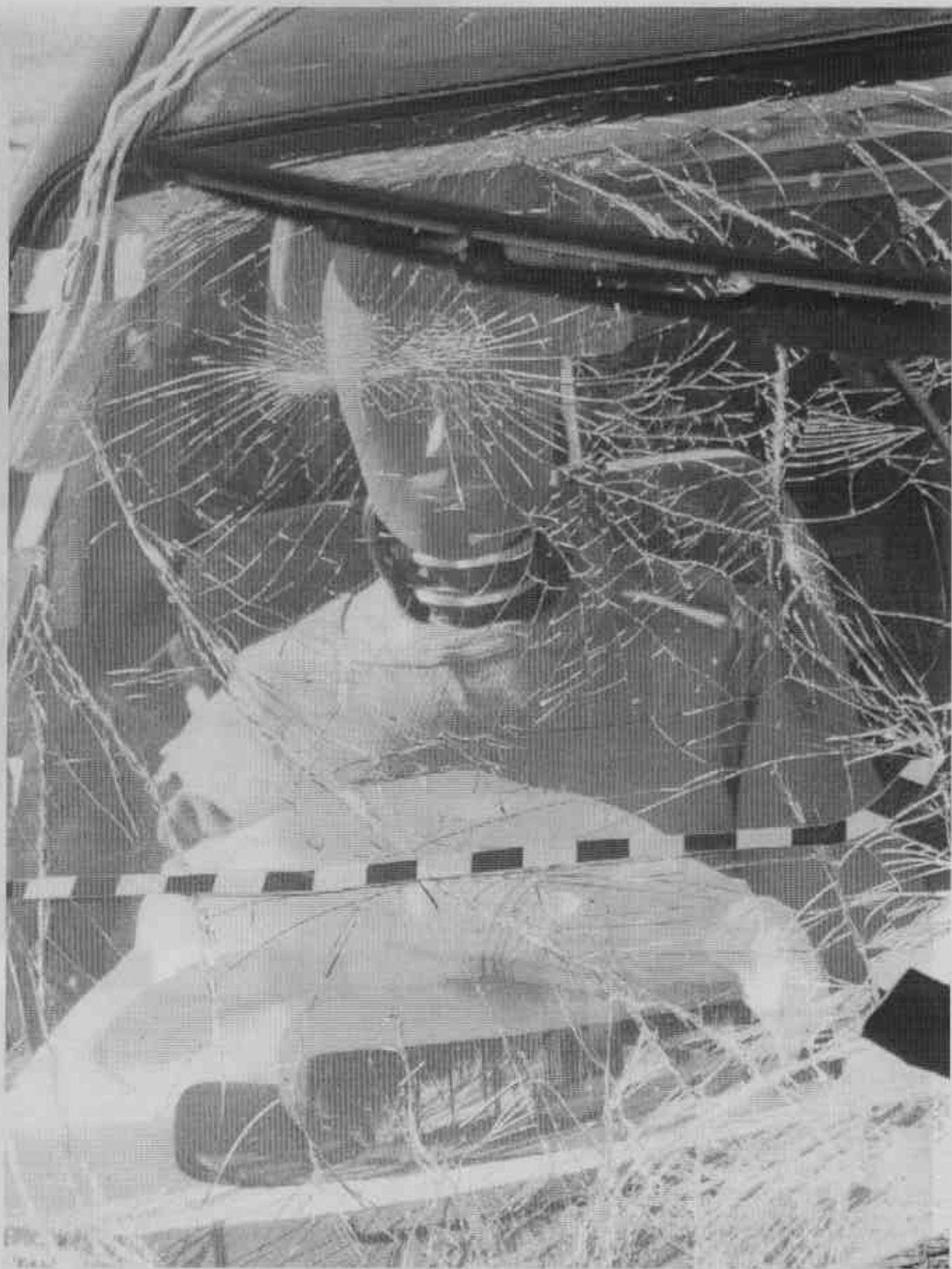


FIGURE A-42. POST TEST PASSENGER DUMMY (FRONT VIEW)



FIGURE A-43. PRETEST PASSENGER DUMMY (THRU WINDOW)



FIGURE A-44. POST TEST PASSENGER DUMMY (THUR WINDOW)



FIGURE A-45. PRETEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-46. POST TEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-47. PRETEST PASSENGER DUMMY (90° TO VEHICLE)



FIGURE A-48. POST TEST PASSENGER DUMMY (90° TO VEHICLE)

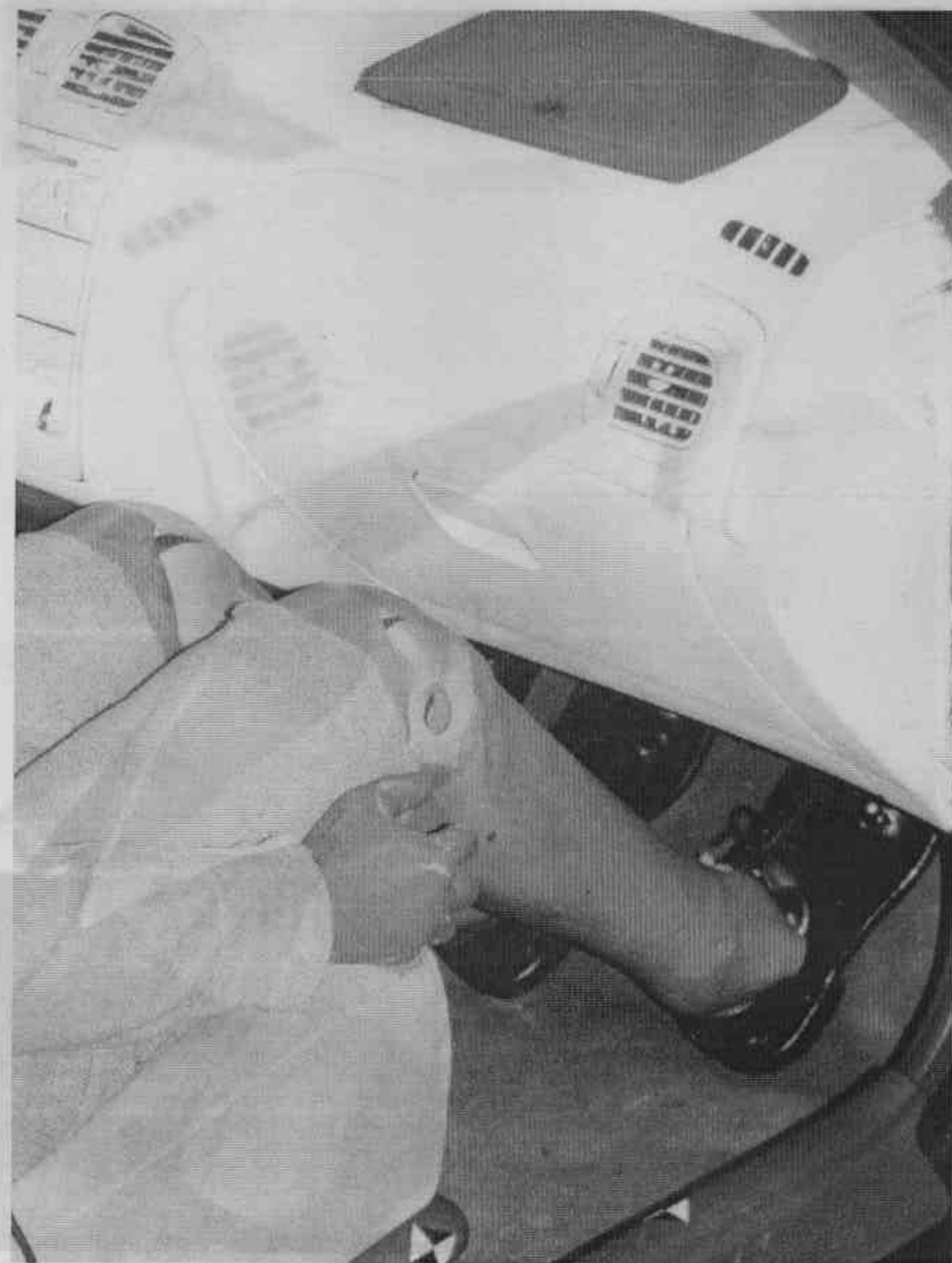


FIGURE A-49. PRETEST PASSENGER DUMMY FEET

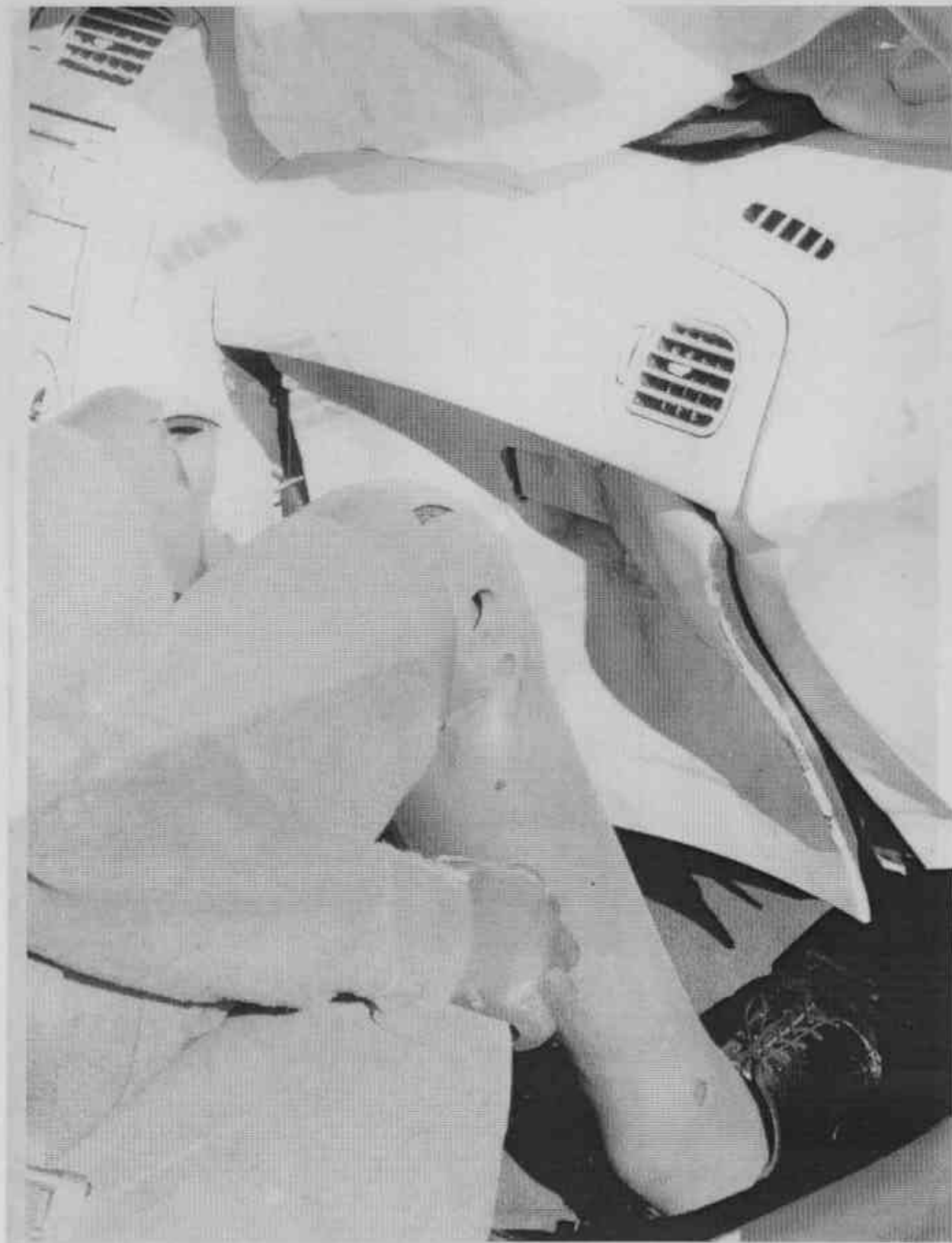


FIGURE A-50. POST TEST PASSENGER DUMMY FEET AND CONTACT POINT



FIGURE A-51. PRETEST PASSENGER SIDE FLOOR PAN

SD-700027403

A-51

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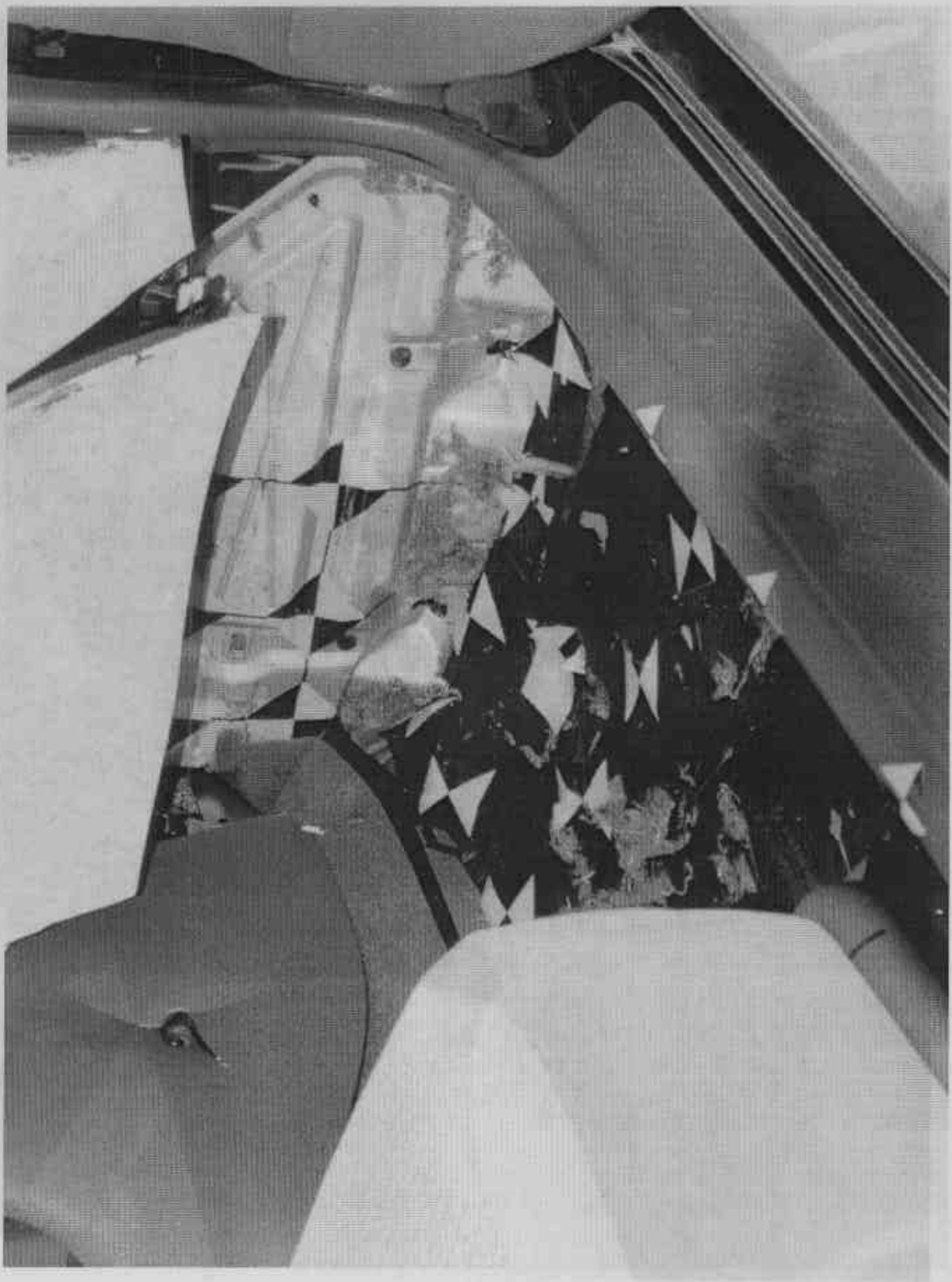


FIGURE A-52. POST TEST PASSENGER SIDE FLOOR PAN

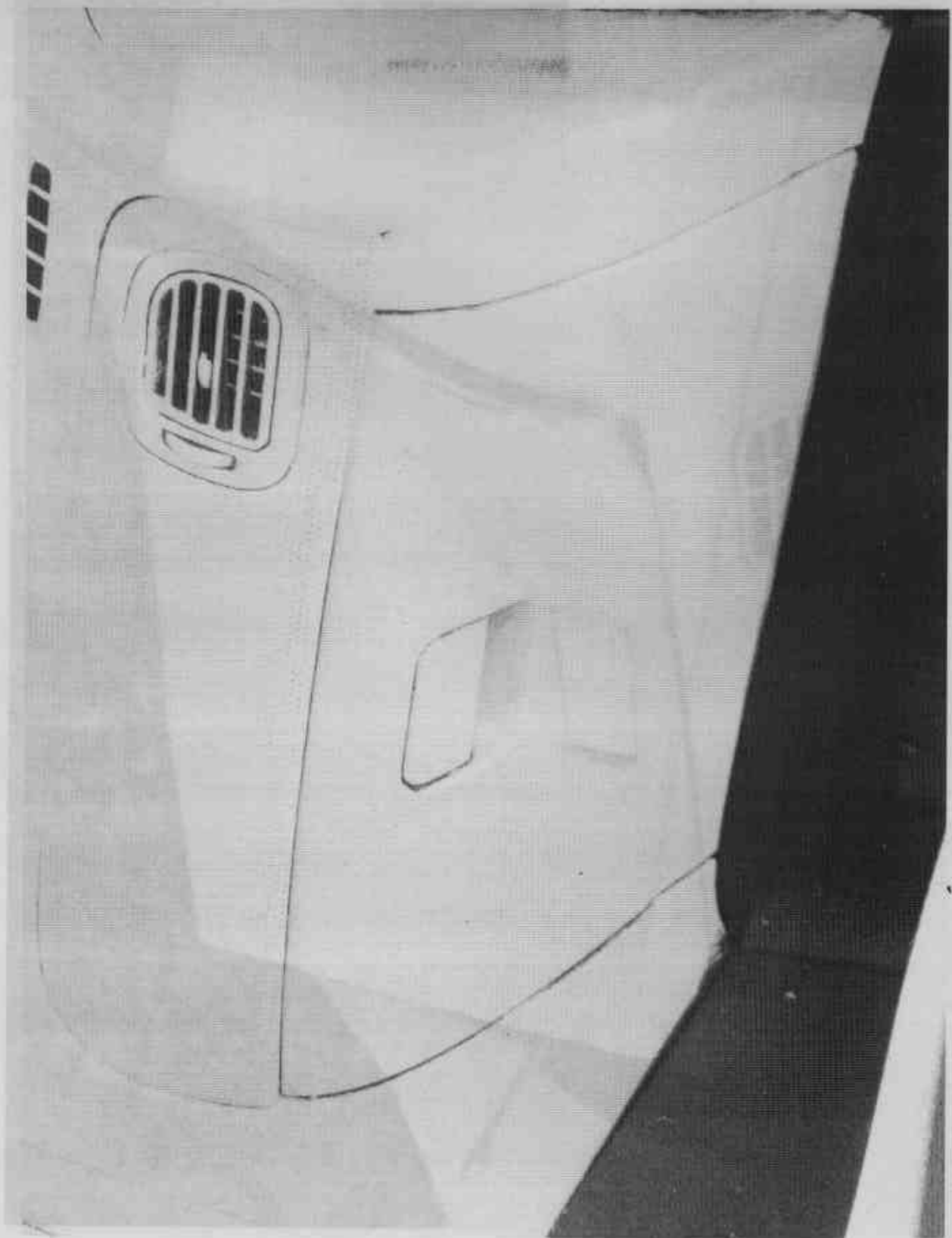


FIGURE A-53. PRETEST PASSENGER SIDE KNEE BOLSTER

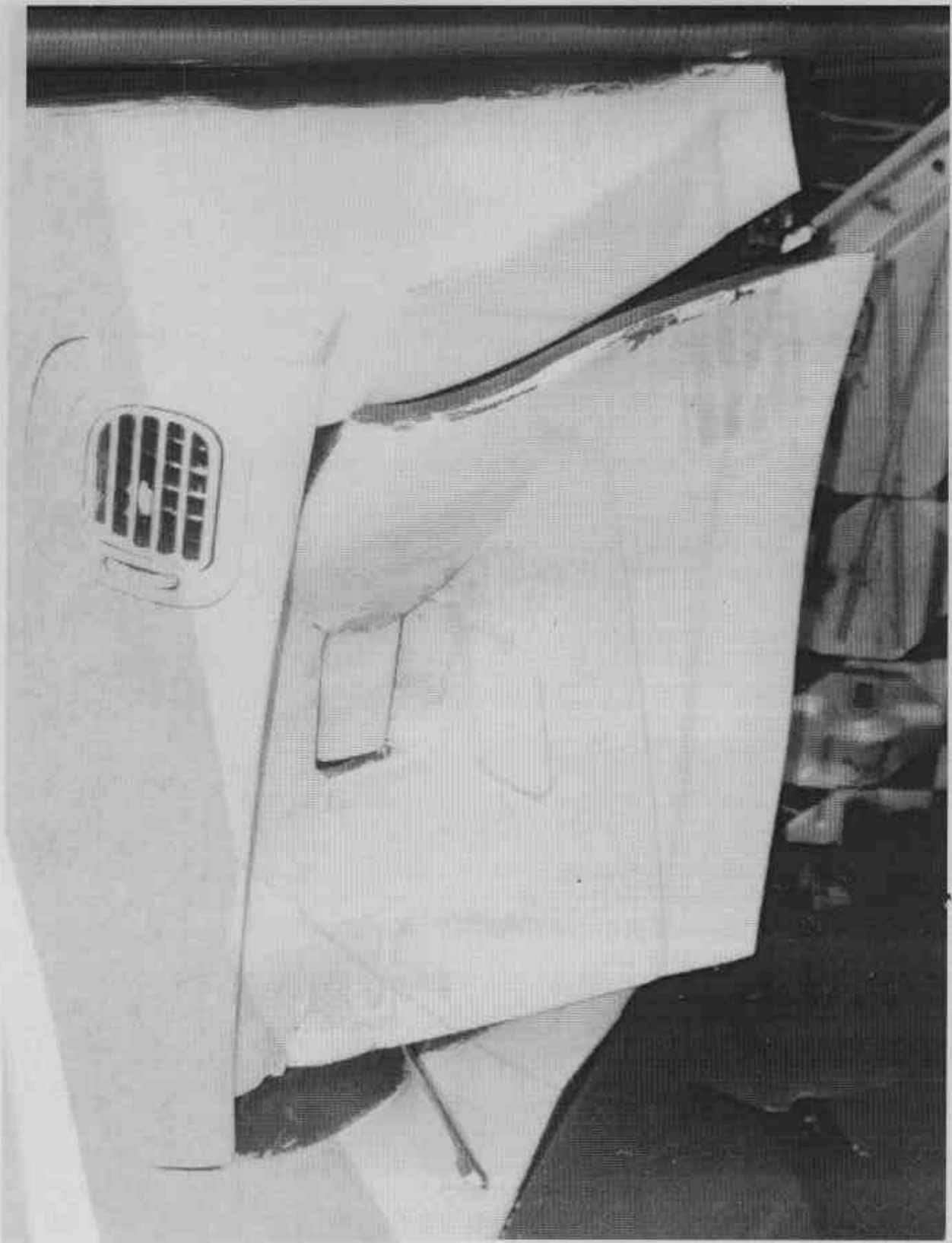


FIGURE A-54. POST TEST PASSENGER SIDE KNEE BOLSTER AND DUMMY CONTACT



FIGURE A-55. POST TEST PASSENGER HEAD

A-55

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FIGURE A-56. POST TEST PASSENGER DUMMY CONTACT

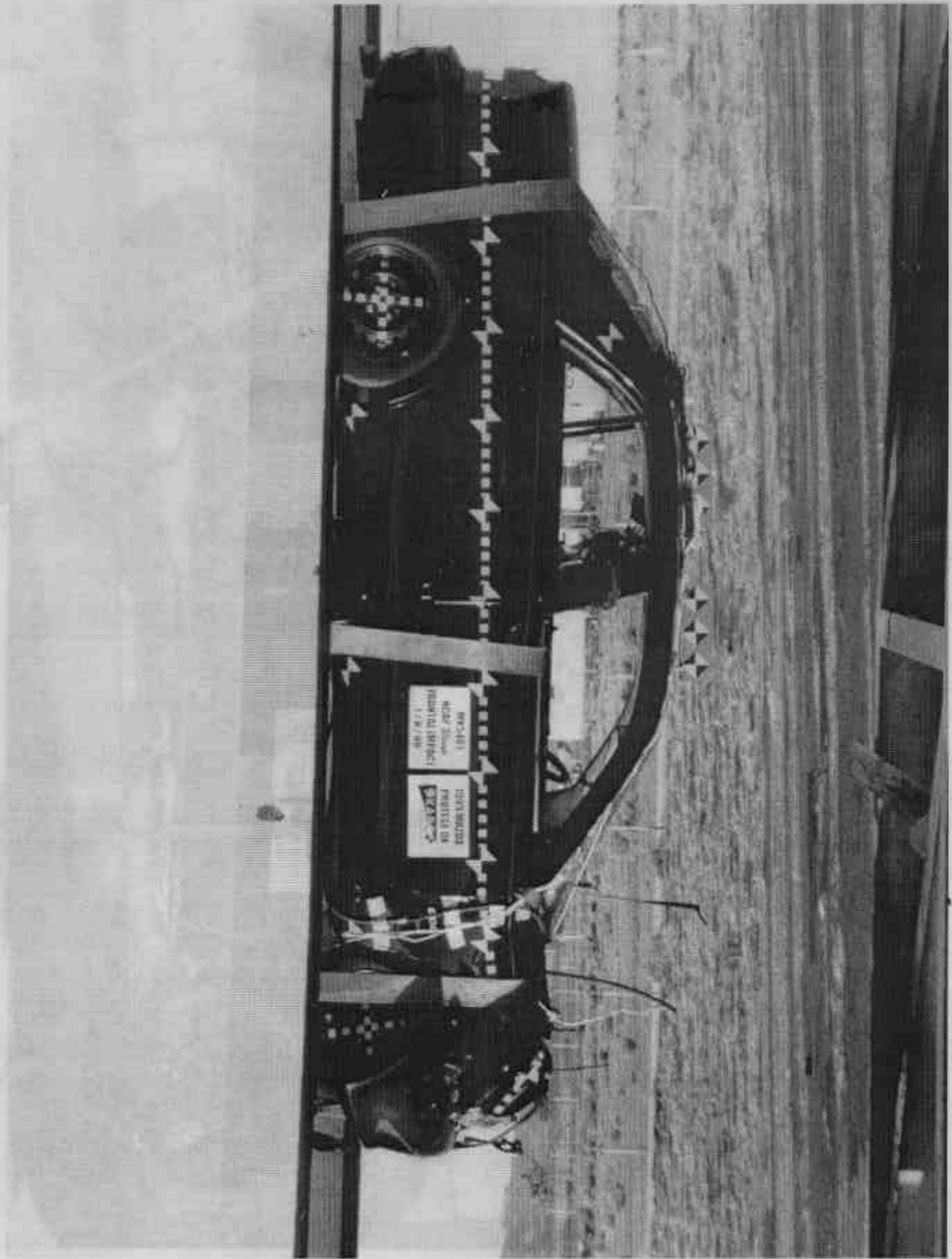


FIGURE A-57. VEHICLE ON ROLLOVER

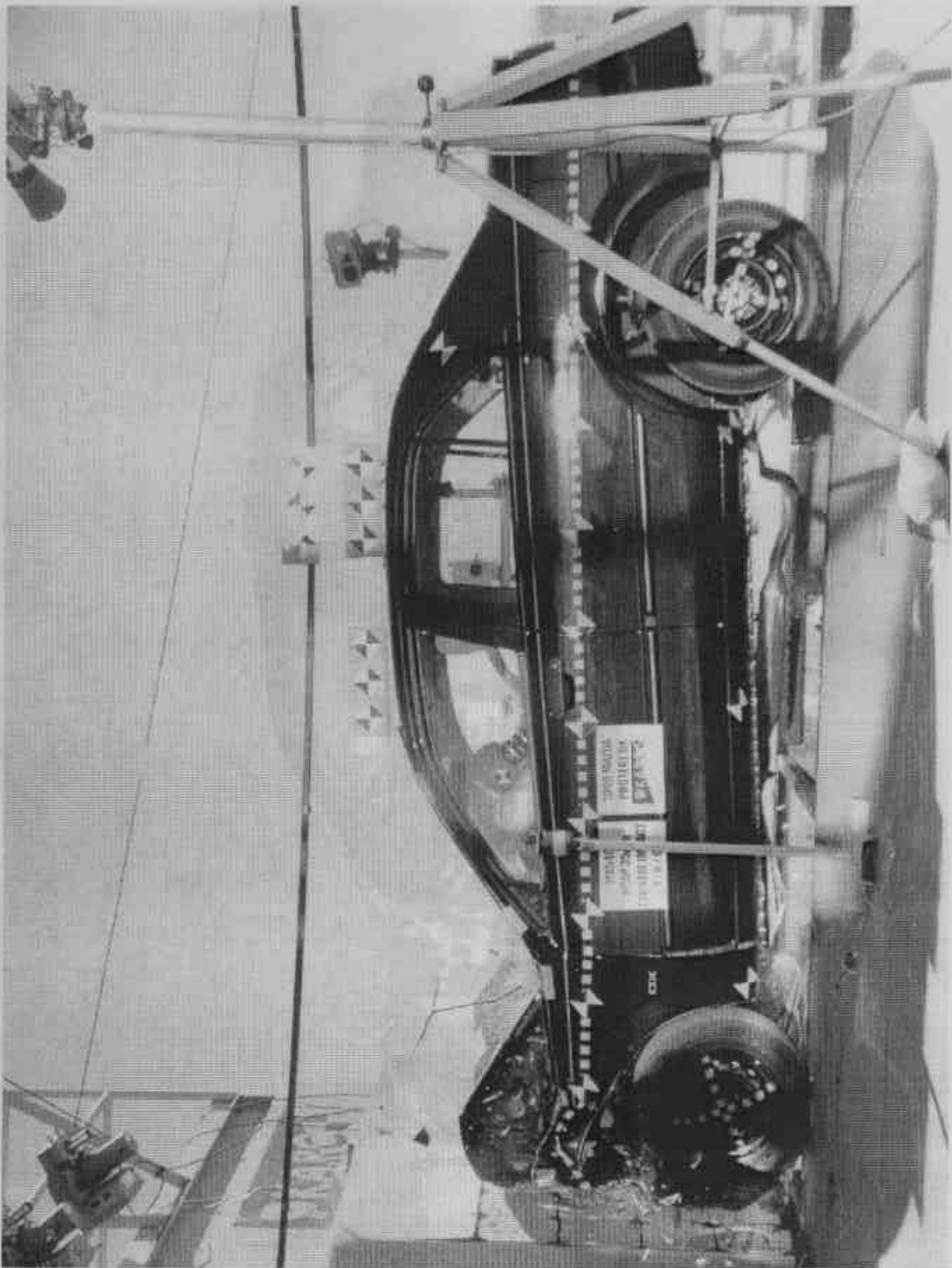


FIGURE A-58. VEHICLE DURING IMPACT

APPENDIX B
DUMMY AND VEHICLE RESPONSE DATA TRACES

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B-2	Driver Head Primary X Velocity	B-2
B-3	Driver Head Primary X Displacement	B-3
B-4	Driver Head Primary Y	B-4
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B-6	Driver Head Resultant Primary	B-6
B-7	Driver Head Redundant X	B-7
B-8	Driver Head Redundant X Velocity	B-8
B-9	Driver Head Redundant X Displacement	B-9
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B-18	Driver Neck Moment Y	B-18
B-19	Driver Neck Moment Z	B-19
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B-23	Driver Chest Primary X Displacement	B-23
B-24	Driver Chest Primary Y	B-24
B-25	Driver Chest Primary Z	B-25
B-26	Driver Chest Primary Resultant	B-26
B-27	Driver Chest Redundant X	B-27
B-28	Driver Chest Redundant X Velocity	B-28
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B-30	Driver Chest Redundant Y	B-30
B-31	Driver Chest Redundant Z	B-31
B-32	Driver Chest Redundant Resultant	B-32
B-33	Driver Chest Displacement X	B-33
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B-35	Driver Pelvis X Velocity	B-35

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B-37	Driver Pelvis Y	B-37
B-38	Driver Pelvis Z	B-38
B-39	Driver Pelvis Resultant	B-39
B-40	Driver Left Femur Force	B-40
B-41	Driver Right Femur Force	B-41
B-42	Driver Left Upper Tibia Moment X	B-42
B-43	Driver Left Upper Tibia Moment Y	B-43
B-44	Driver Right Upper Tibia Moment X	B-44
B-45	Driver Right Upper Tibia Moment Y	B-45
B-46	Driver Left Lower Tibia Moment X	B-46
B-47	Driver Left Lower Tibia Moment Y	B-47
B-48	Driver Left Lower Tibia Force Z	B-48
B-49	Driver Right Lower Tibia Moment X	B-49
B-50	Driver Right Lower Tibia Moment Y	B-50
B-51	Driver Right Lower Tibia Force Z	B-51
B-52	Driver Left Foot Aft X	B-52
B-53	Driver Left Foot Aft Z	B-53
B-54	Driver Left Foot Fore Z	B-54
B-55	Driver Right Foot Aft X	B-55
B-56	Driver Right Foot Aft Z	B-56
B-57	Driver Right Foot Fore Z	B-57
B-58	Driver Lap Belt Force	B-58
B-59	Driver Shoulder Belt Force	B-59
B-60	Driver Shoulder Belt Pullout	B-60
B-61	Driver Shoulder Belt Elongation	B-61
B-62	Passenger Head Primary X	B-62
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B-64	Passenger Head Primary X Displacement	B-64
B-65	Passenger Head Primary Y	B-65
B-66	Passenger Head Primary Z	B-66
B-67	Passenger Head Resultant Primary	B-67
B-68	Passenger Head Redundant X	B-68
B-69	Passenger Head Redundant X Velocity	B-69
B-70	Passenger Head Redundant X Displacement	B-70

LIST OF DATA PLOTS...(Continued)

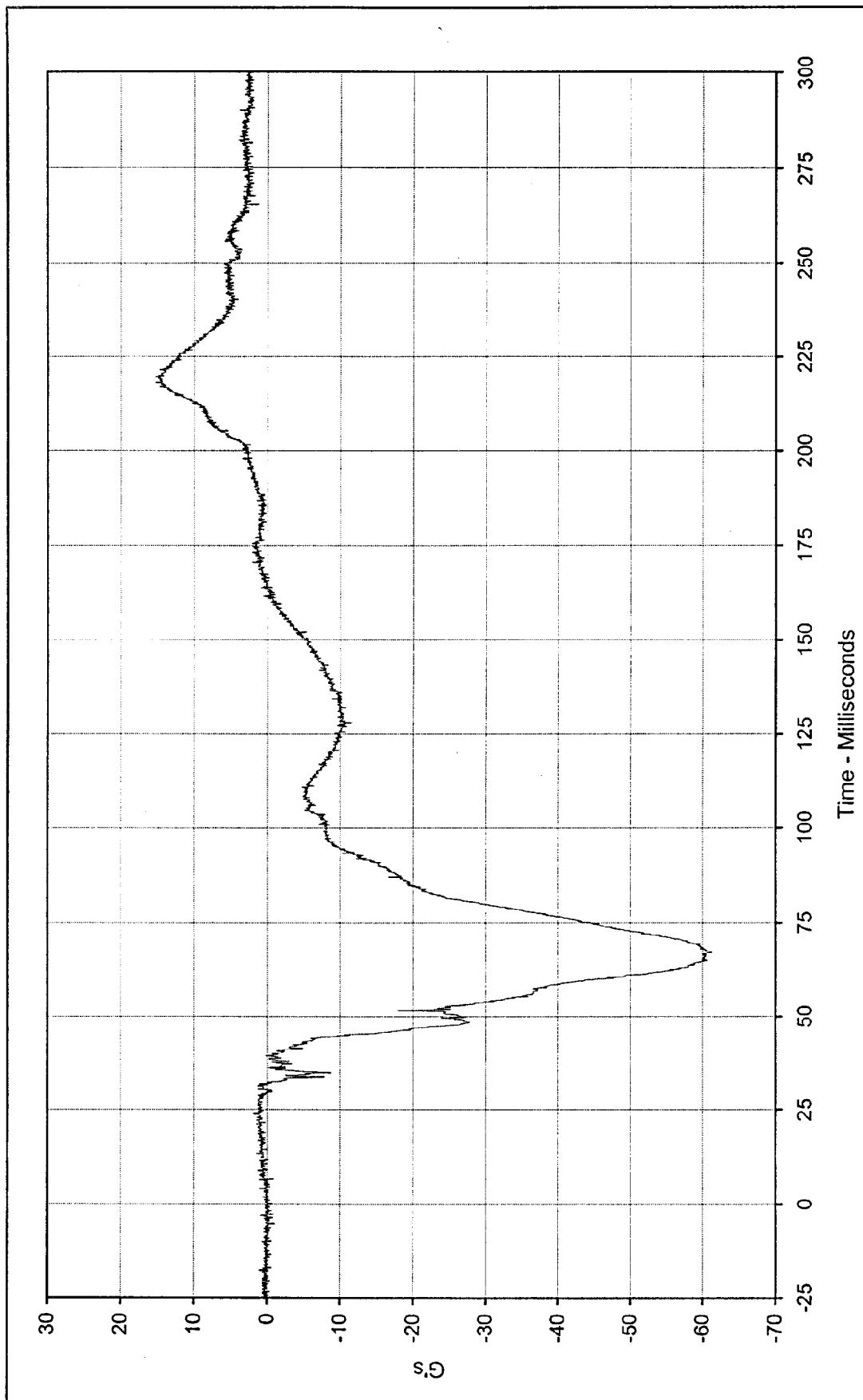
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Curve Description: Driver Head Primary X

Maximum Value: 15.4 at 217.9 Milliseconds

Minimum Value: -61.4 at 66.9 Milliseconds

SAE Filter Class: 1000

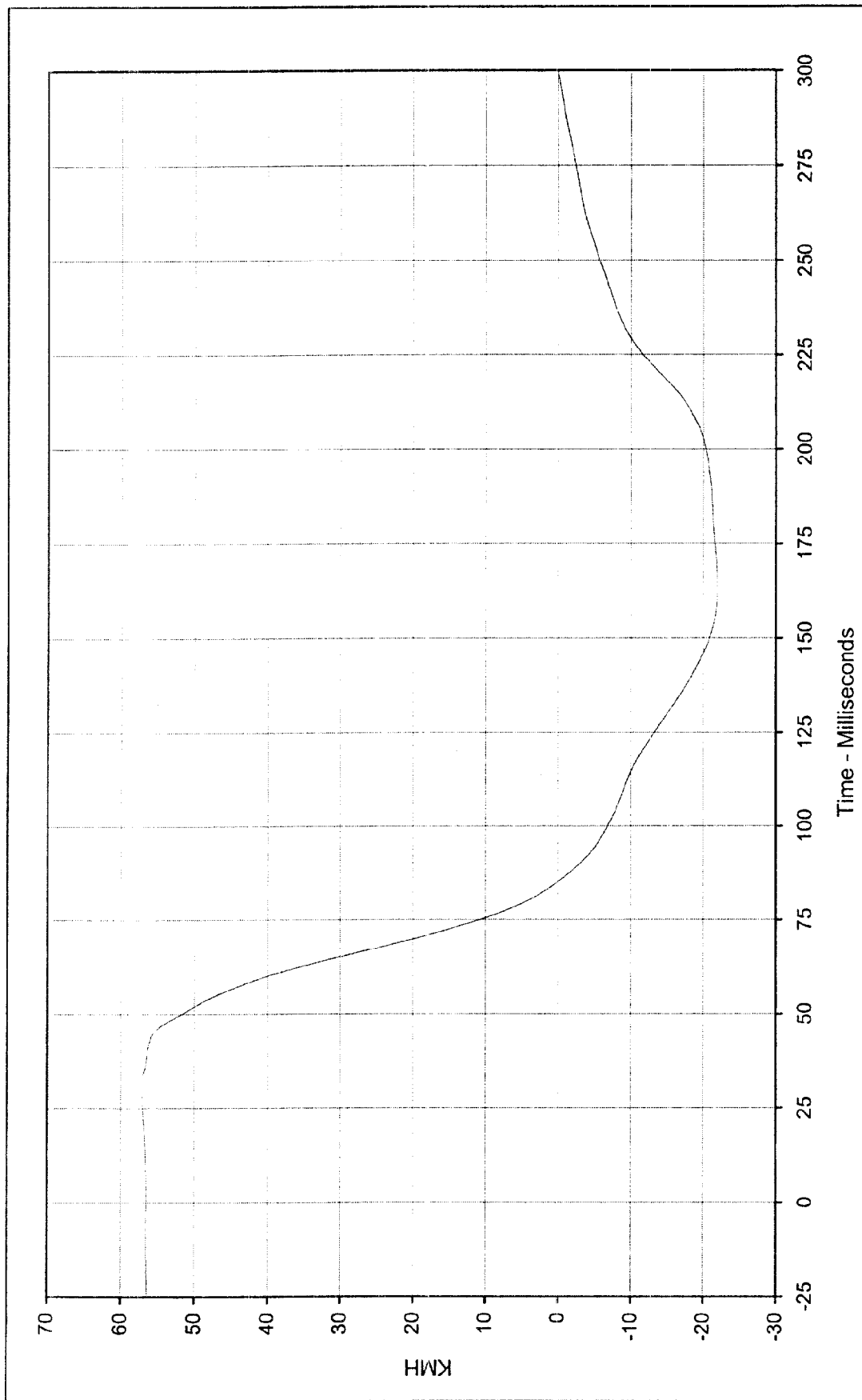
Date of Test: 1/8/99

Curve Number: FIL-001

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Driver Head Primary X Velocity

Maximum Value: 57.2 at 31.9 Milliseconds

Minimum Value: -22.0 at 163.5 Milliseconds

SAE Filter Class: 180

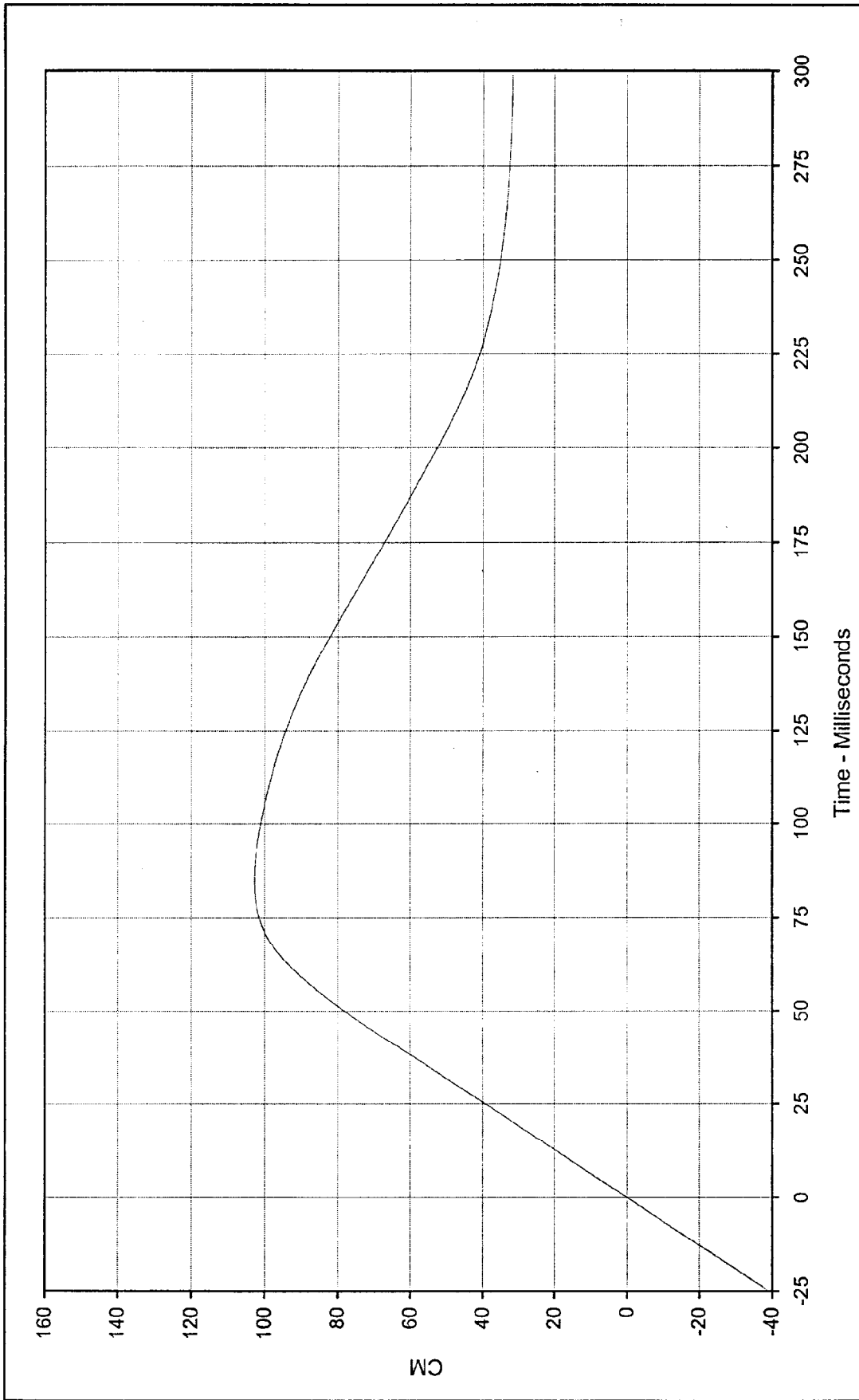
Date of Test: 1/8/99

Curve Number: IN1-001

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401

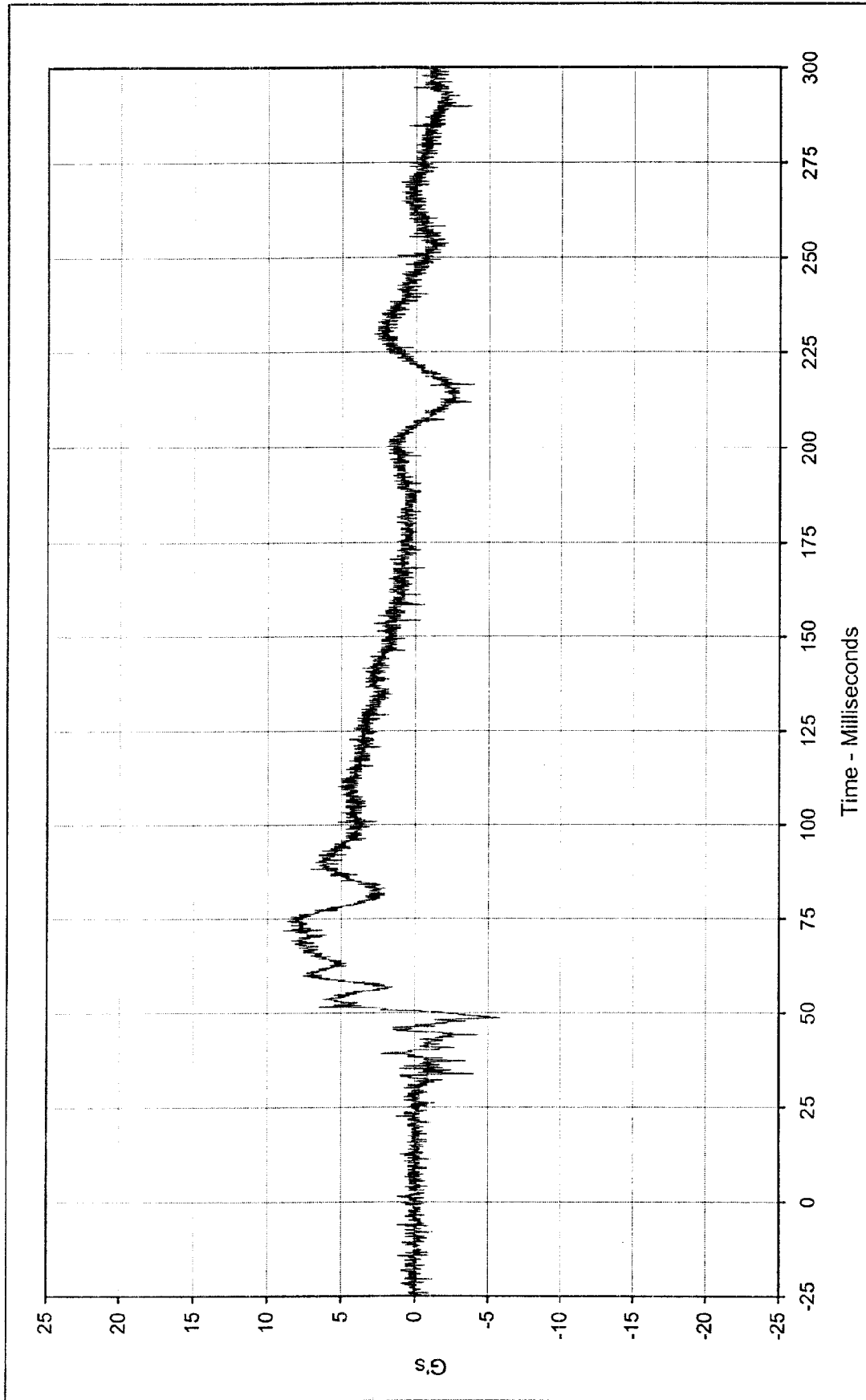
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





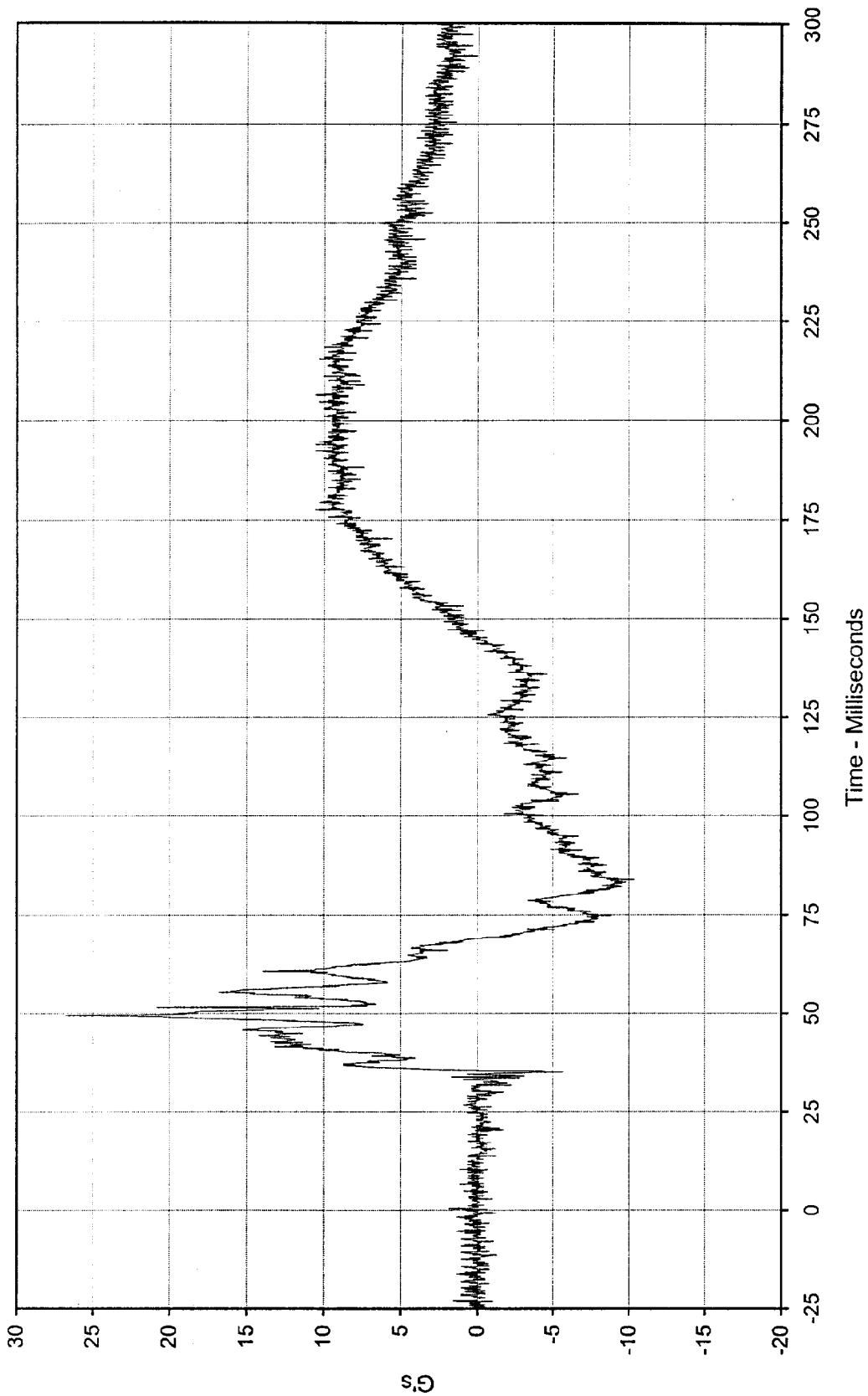
Curve Description:	Driver Head Primary X Displ.	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	102.7 at 85.0 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.0 at 0.0 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	IN2-001			





Curve Description:	Driver Head Primary Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	8.9 at 71.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-5.9 at 48.7 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-002			





Curve Description: Driver Head Primary Z

Test Program: 1999 NHTSA 35 mph NCAP

No.: MX5401

Maximum Value: 26.7 at 49.5 Milliseconds

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

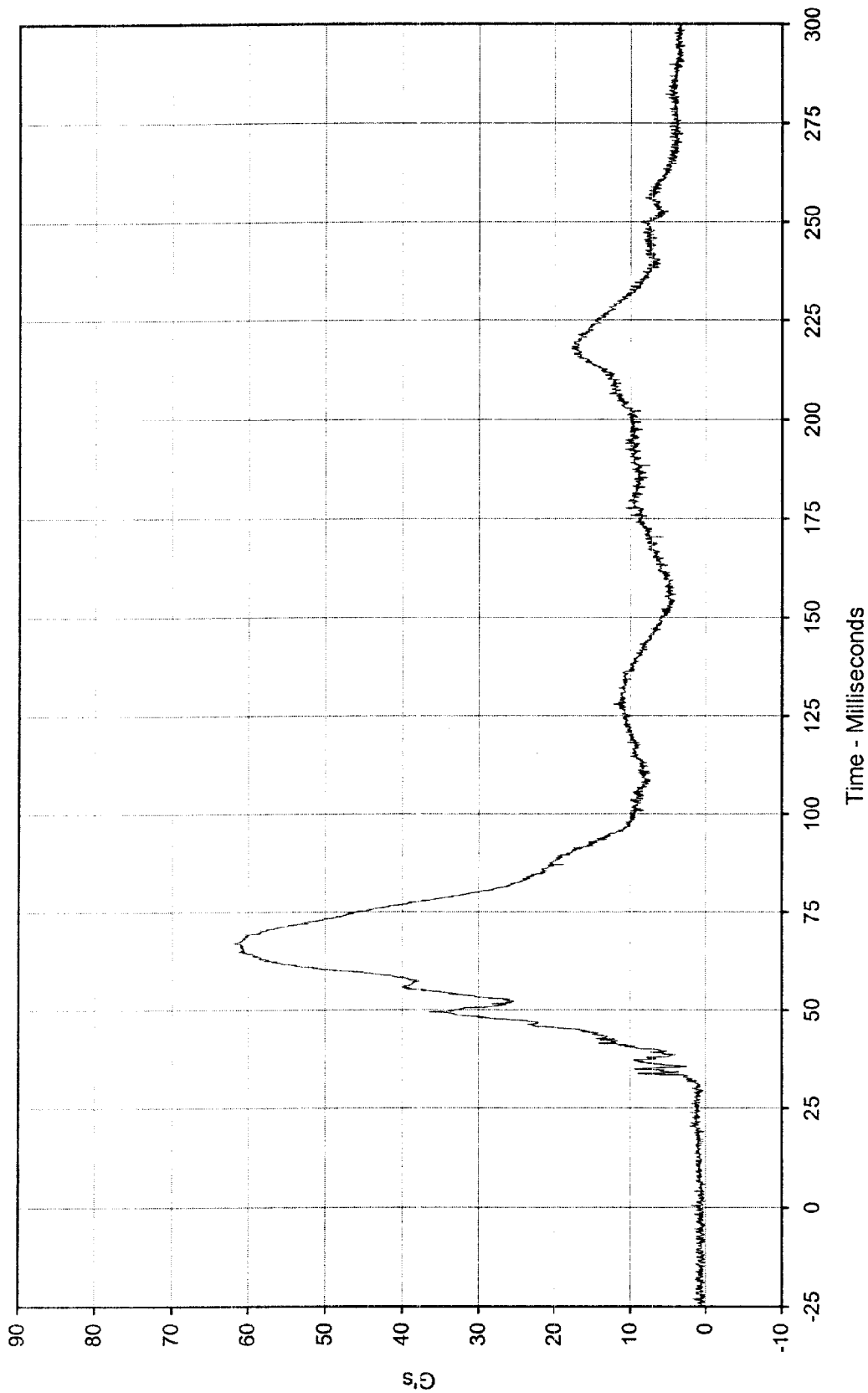
Minimum Value: -10.4 at 83.9 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/8/99

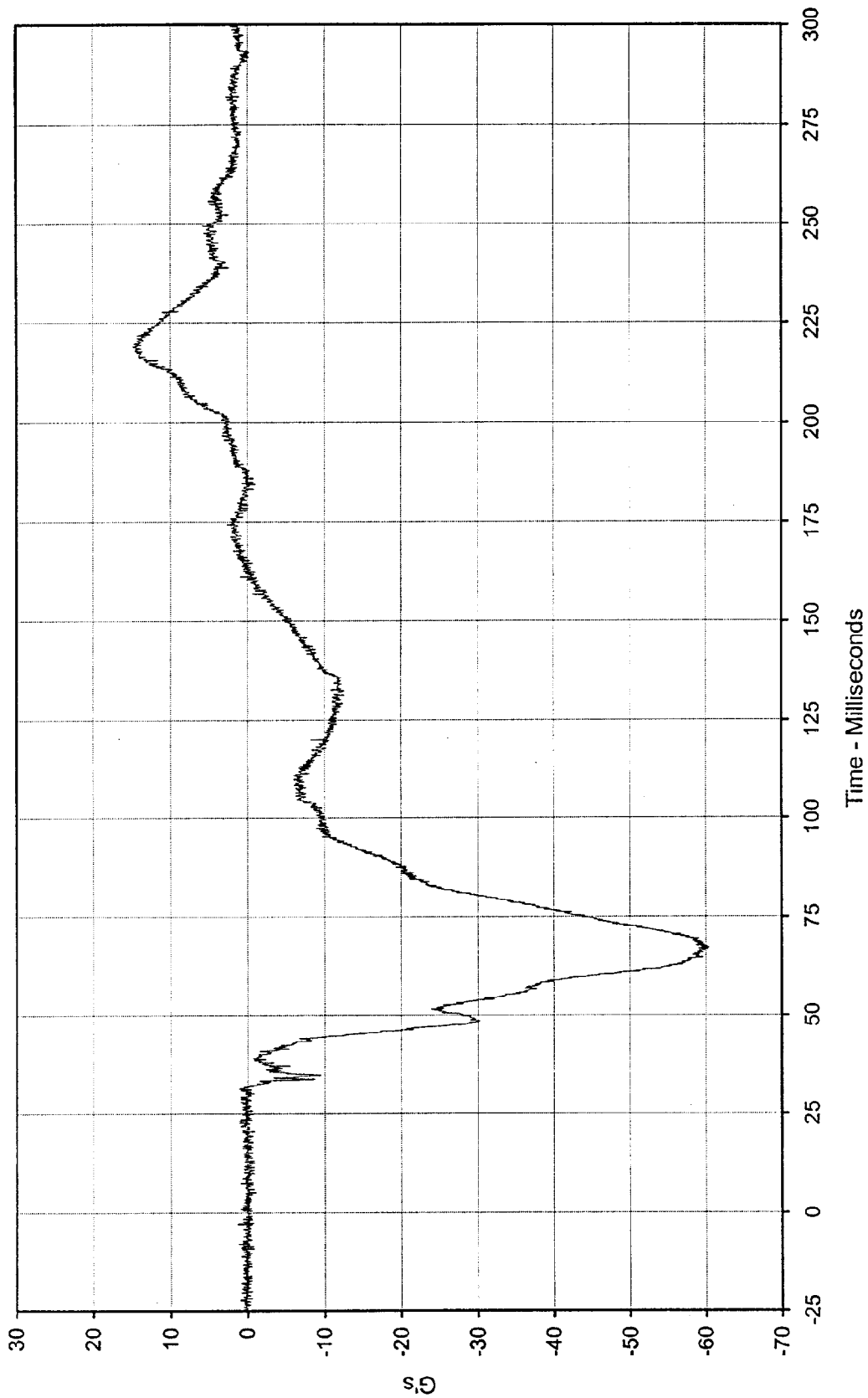
Curve Number: FIL-003





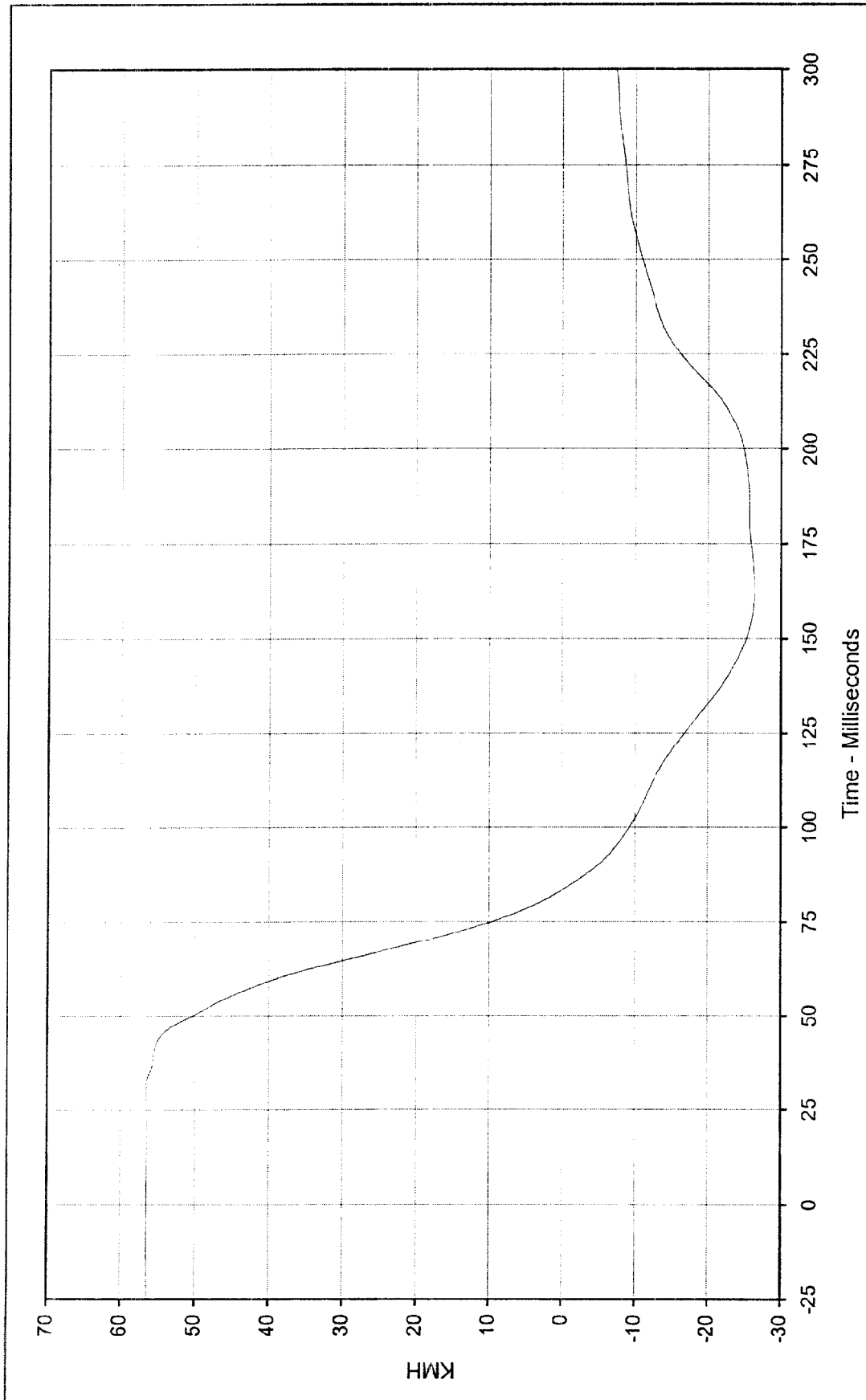
Curve Description:	Driver Head Resultant Primary	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	61.9 at 66.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.1 at 1.5 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	RES-001			





Curve Description:	Driver Head Redundant X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	14.9 at 218.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-60.4 at 66.9 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-004			





Curve Description: Driver Head Redundant X Velocity

Maximum Value: 56.5 at 31.7 Milliseconds

Minimum Value: -26.4 at 163.3 Milliseconds

SAE Filter Class: 180

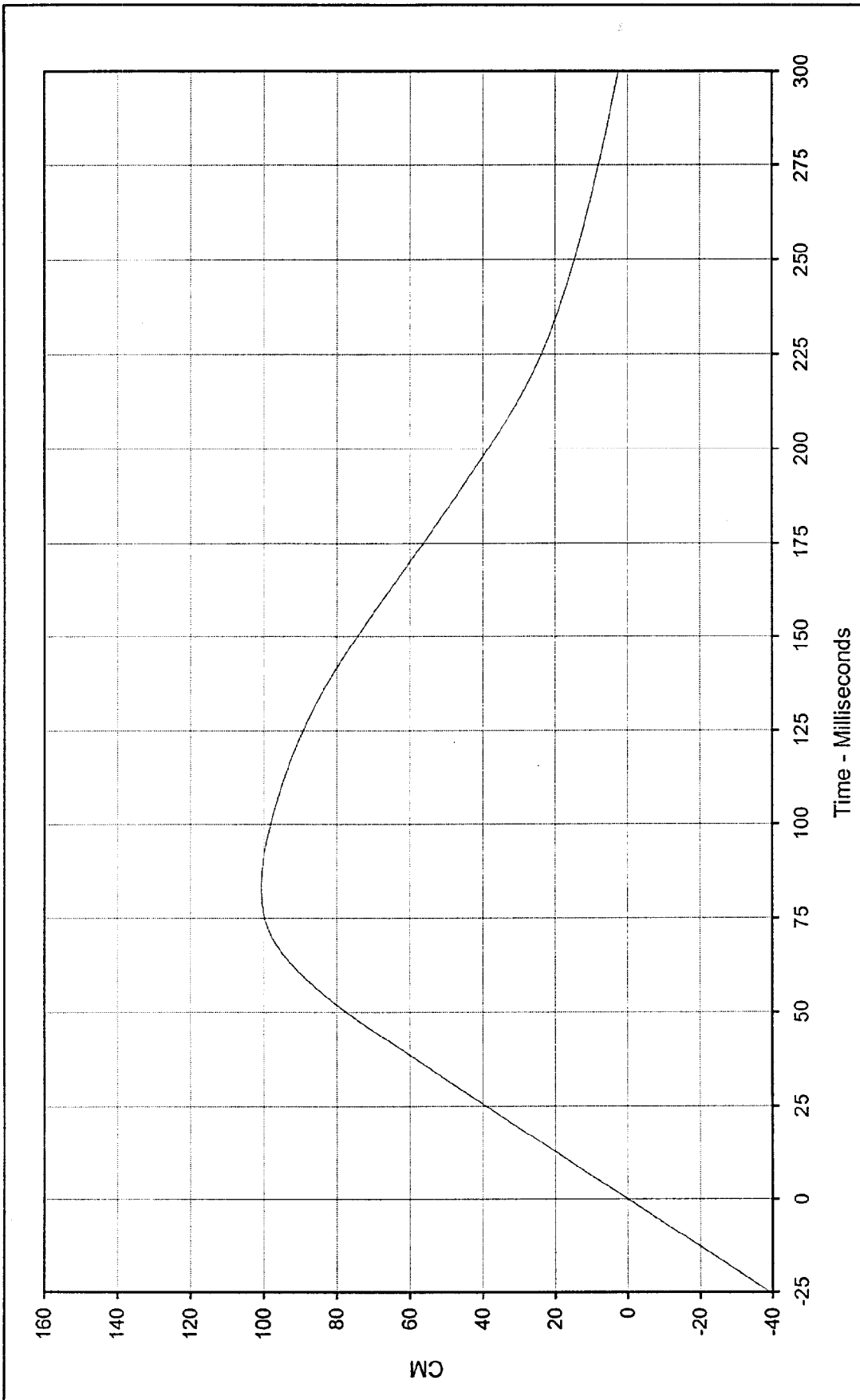
Date of Test: 1/8/99

Curve Number: IN1-004

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401

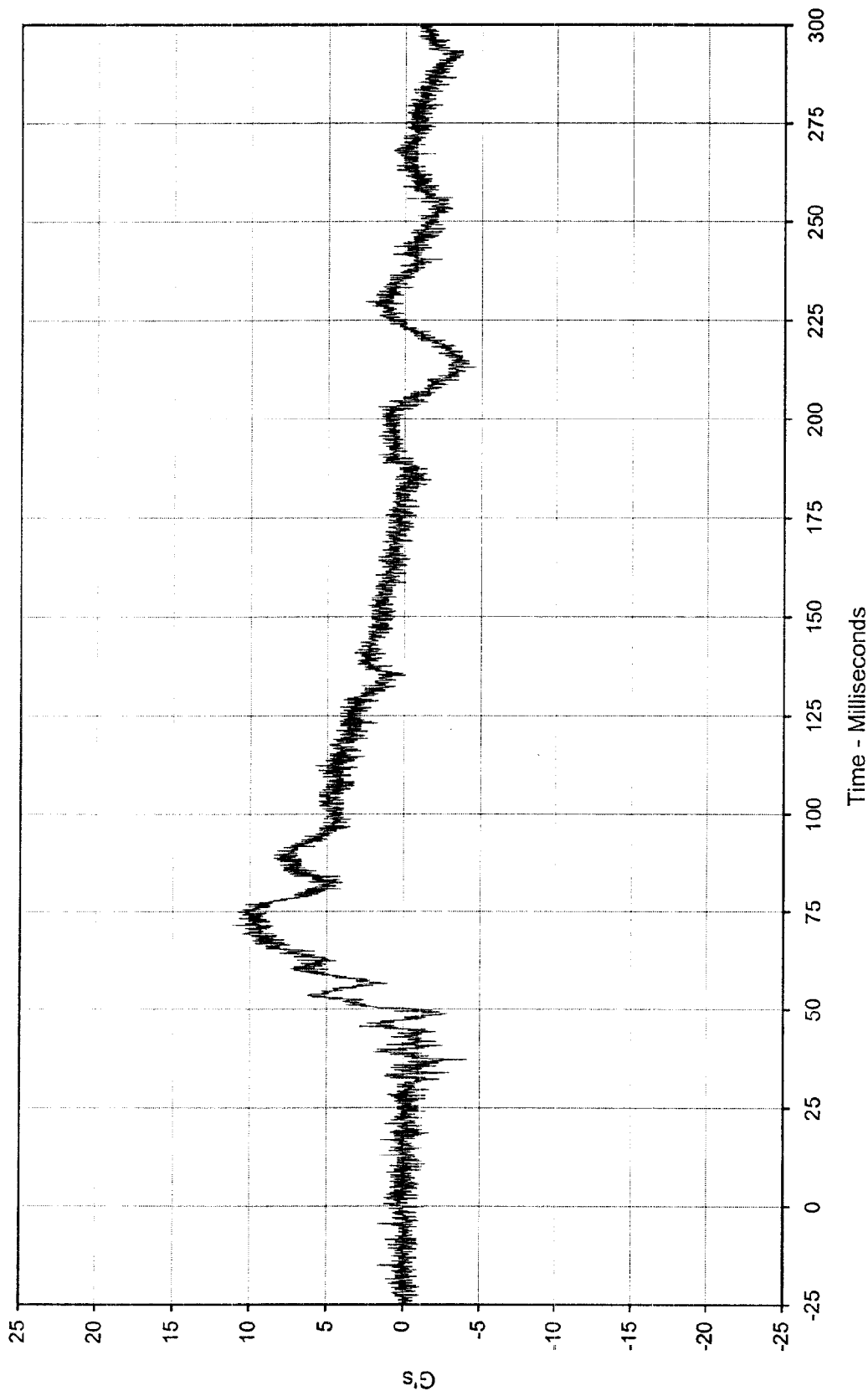
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Driver Head Redundant X Displ.	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	100.7 at 83.1 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	0.0 at 0.0 Milliseconds		
SAE Filter Class:	180		
Date of Test:	1/8/99		
Curve Number:	IN2-004		





Curve Description: Driver Head Redundant Y

Maximum Value: 11.2 at 71.6 Milliseconds

Minimum Value: -4.6 at 213.1 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/8/99

Curve Number: FIL-005

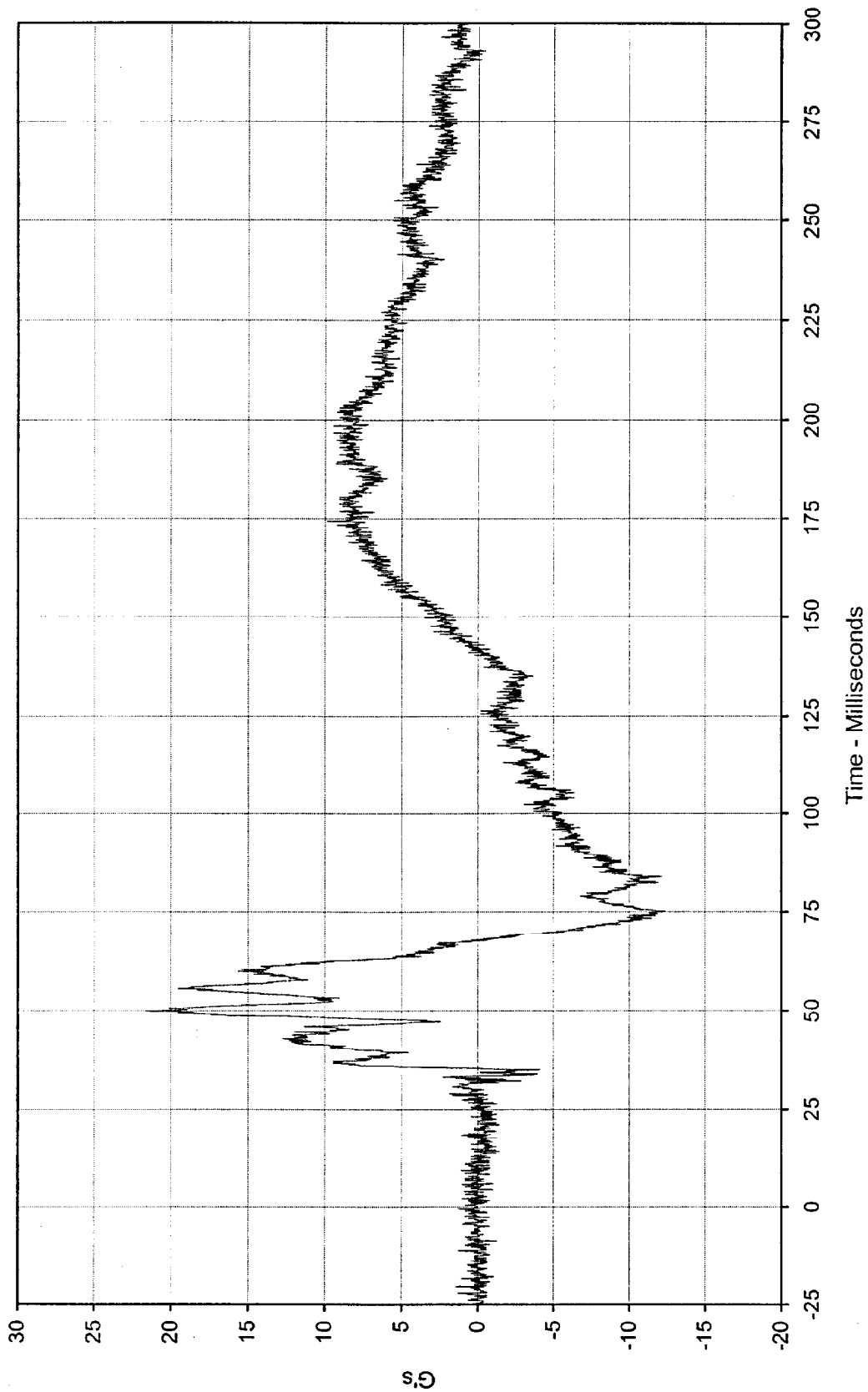
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Driver Head Redundant Z

Test Program: 1999 NHTSA 35 mph NCAP

No.: MX5401

Maximum Value: 21.6 at 49.9 Milliseconds

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

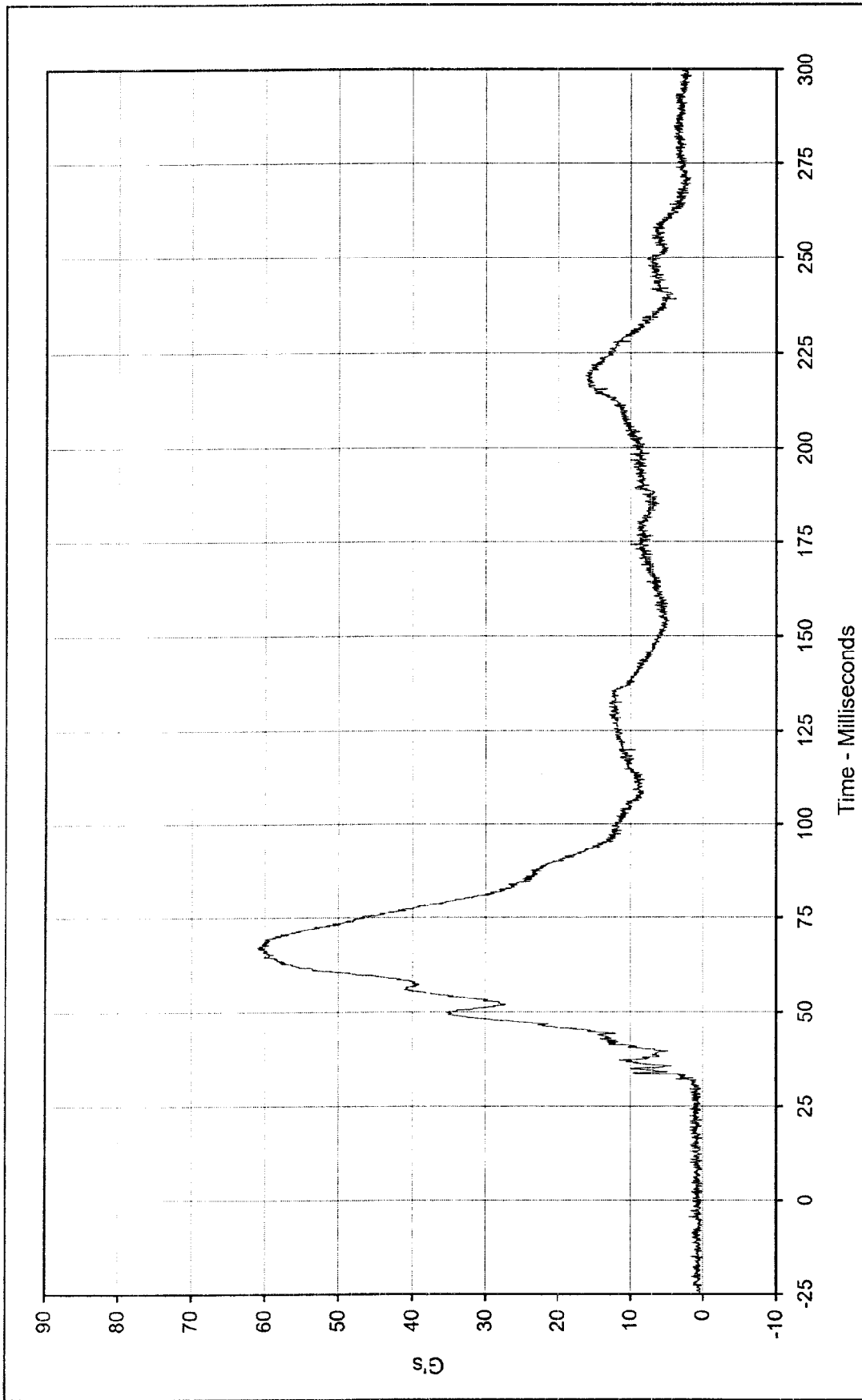
Minimum Value: -12.3 at 75.2 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/8/99

Curve Number: FIL-006





Curve Description: Driver Head Resultant Redundant Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Maximum Value: 61.0 at 66.9 Milliseconds Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

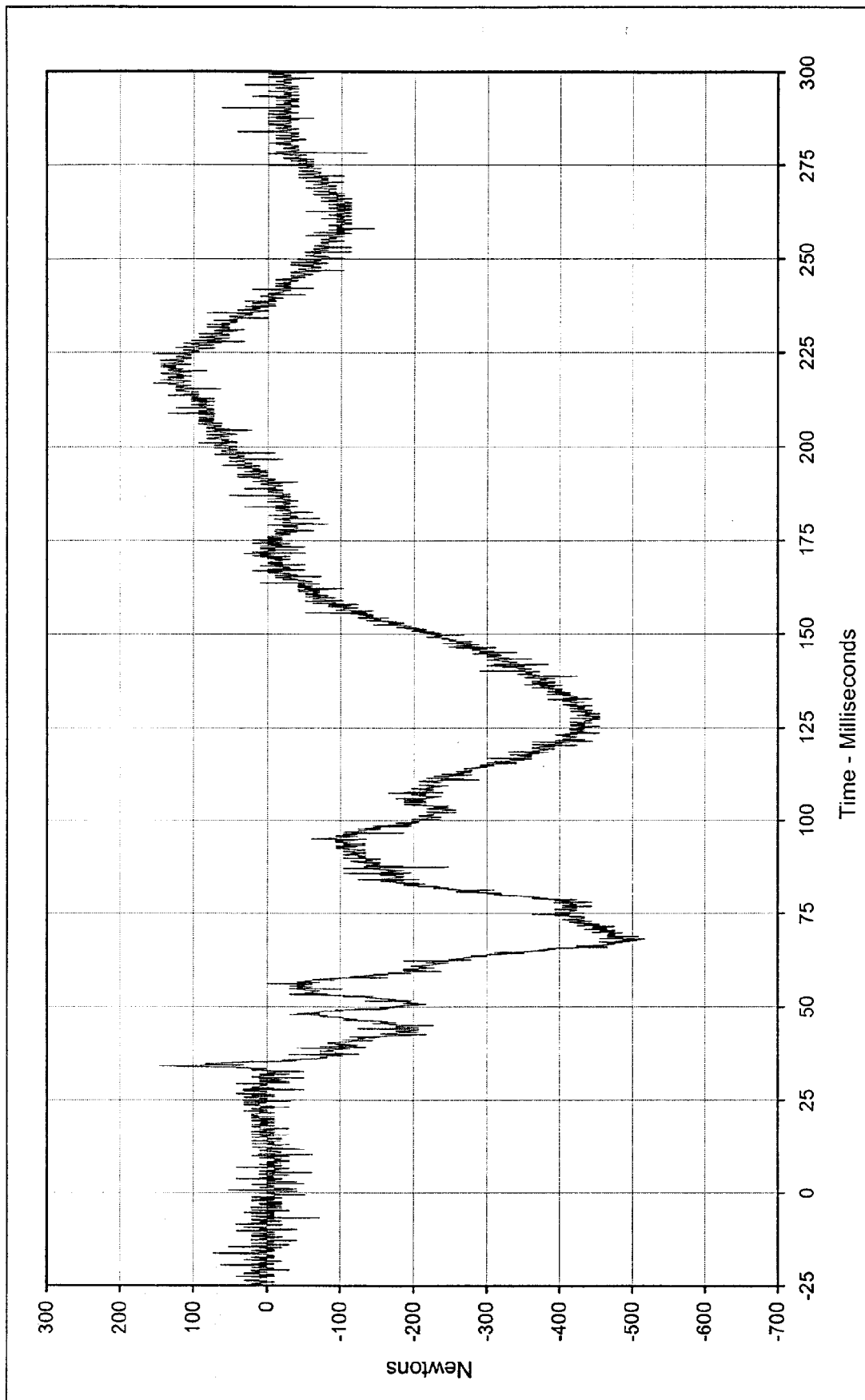
Minimum Value: 0.1 at 1.9 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/8/99

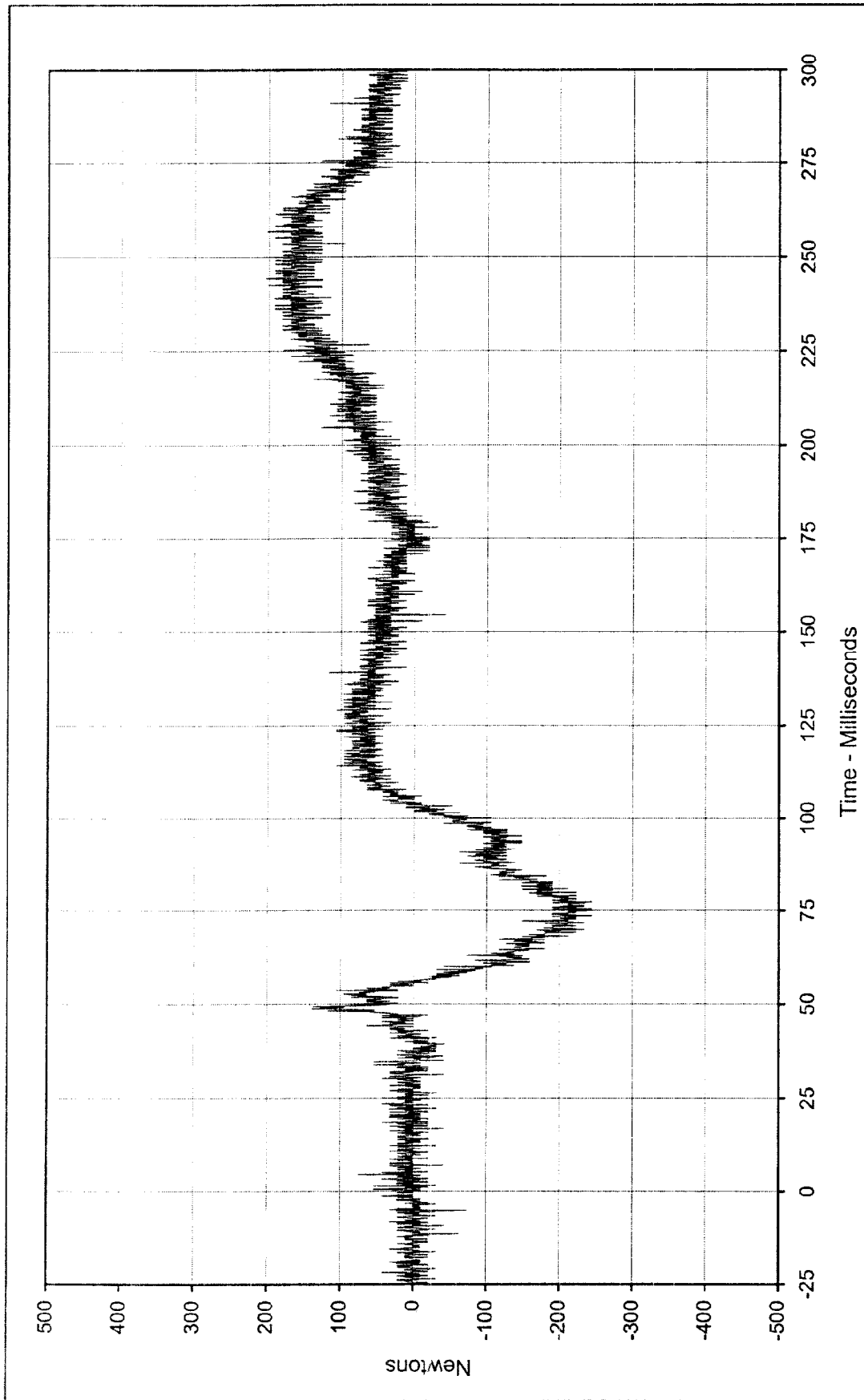
Curve Number: RES-004





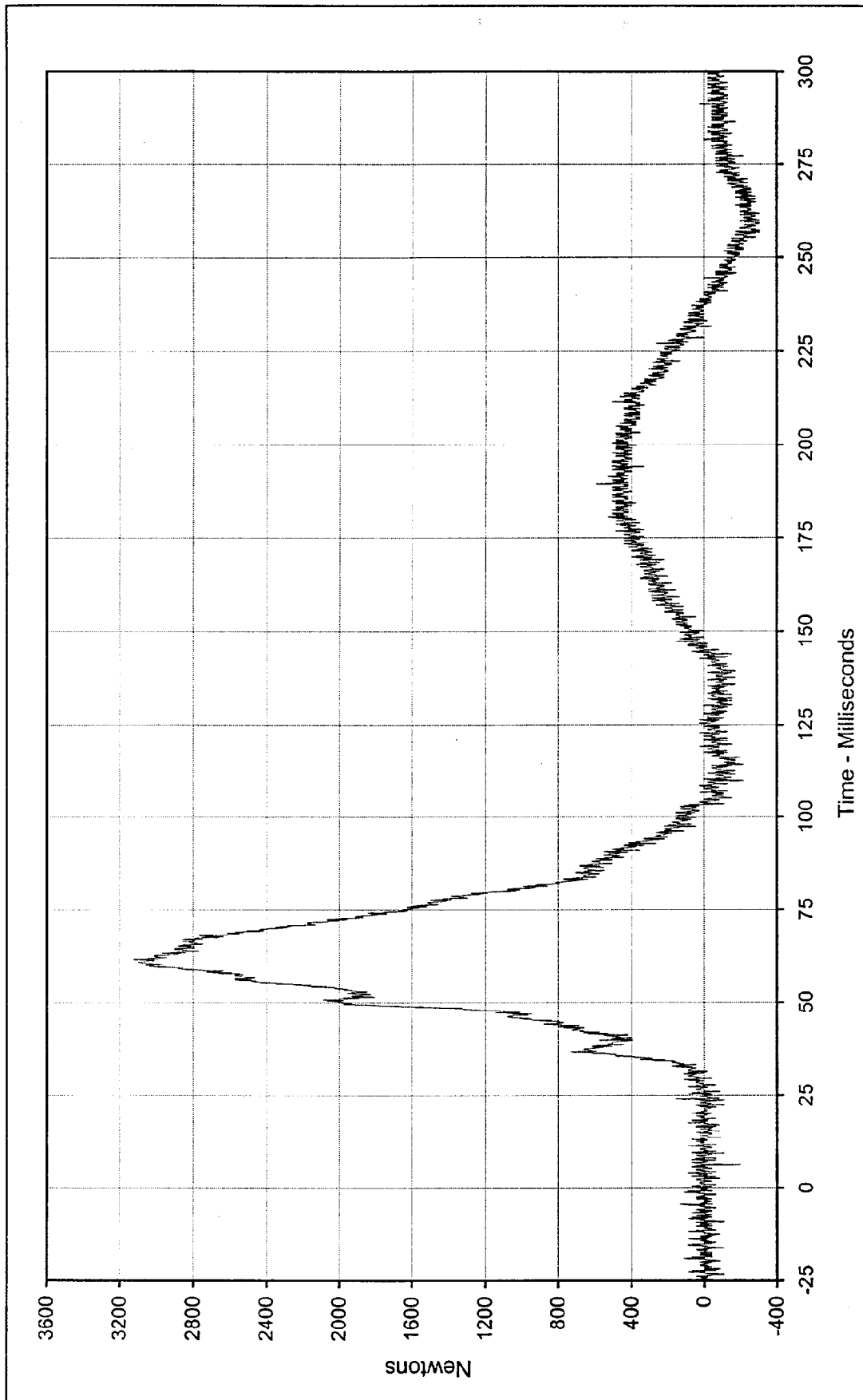
Curve Description:		Driver Neck Force X		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	156.3	at	224.7	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-517.5	at	67.9	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	FIL-007					





Curve Description:		Driver Neck Force Y		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	203.5	at	244.2	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-244.1	at	73.6	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	FIL-008					

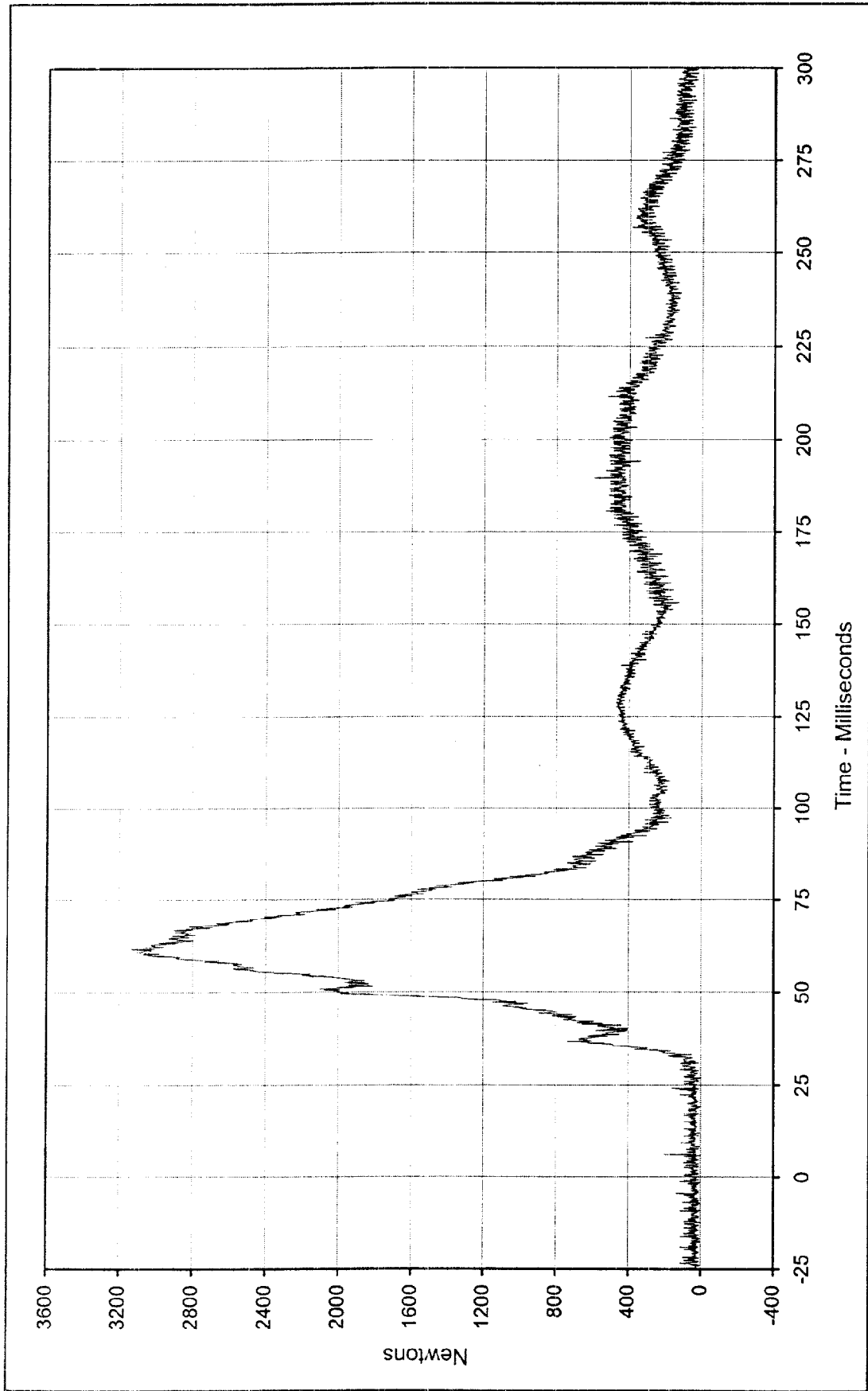




Curve Description:		Driver Neck Force Z		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	3121.3	at	61.4	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-307.7	at	256.9			
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	FIL-009					

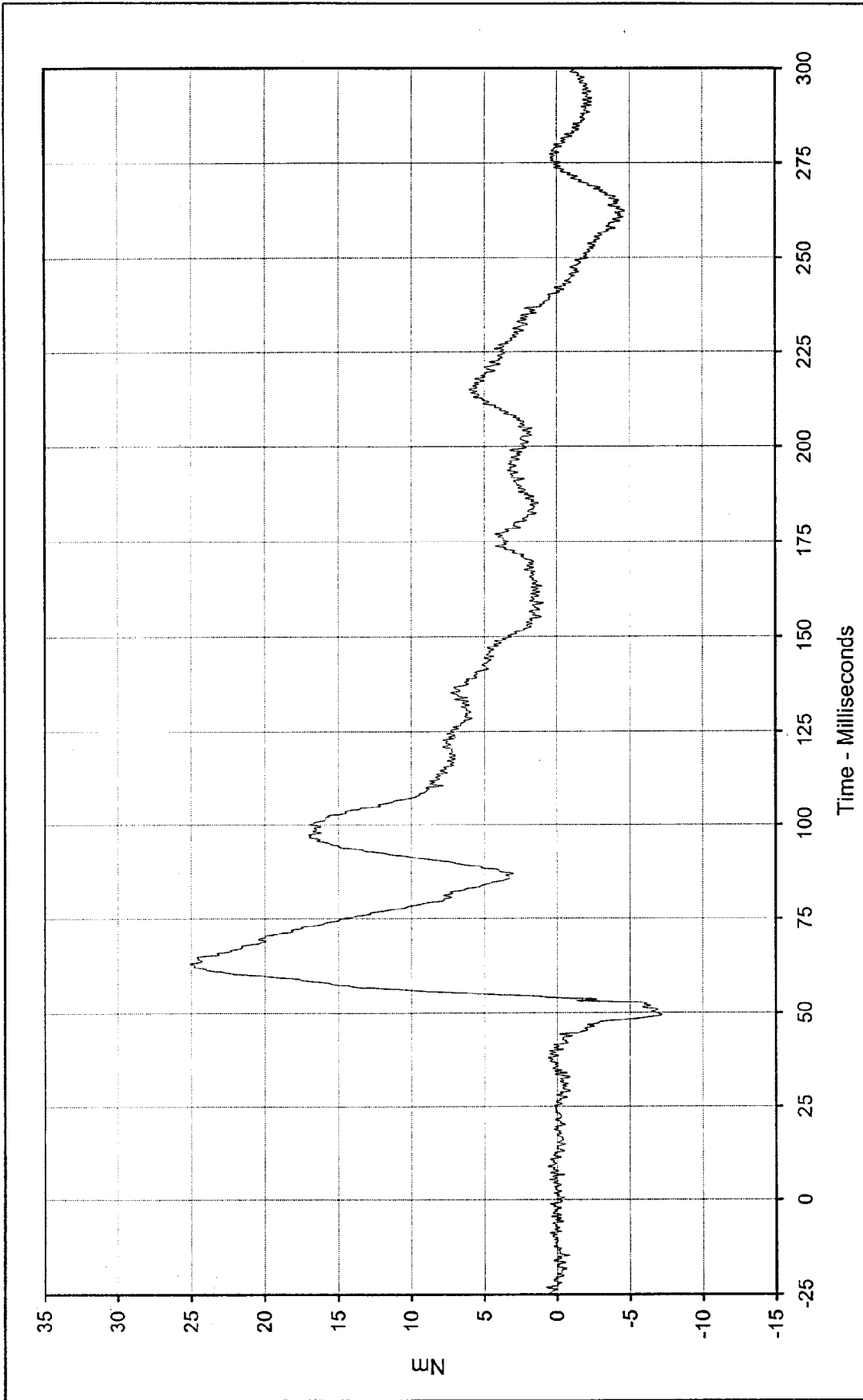
The logo for KARCO Engineering. It features the word "KARCO" in a large, bold, sans-serif font. A stylized graphic of a car wheel or a similar circular object is integrated into the letter "A". To the right of "KARCO", the word "Engineering" is written in a smaller, italicized, sans-serif font. The entire logo is set against a dark background with a light-colored diagonal stripe.





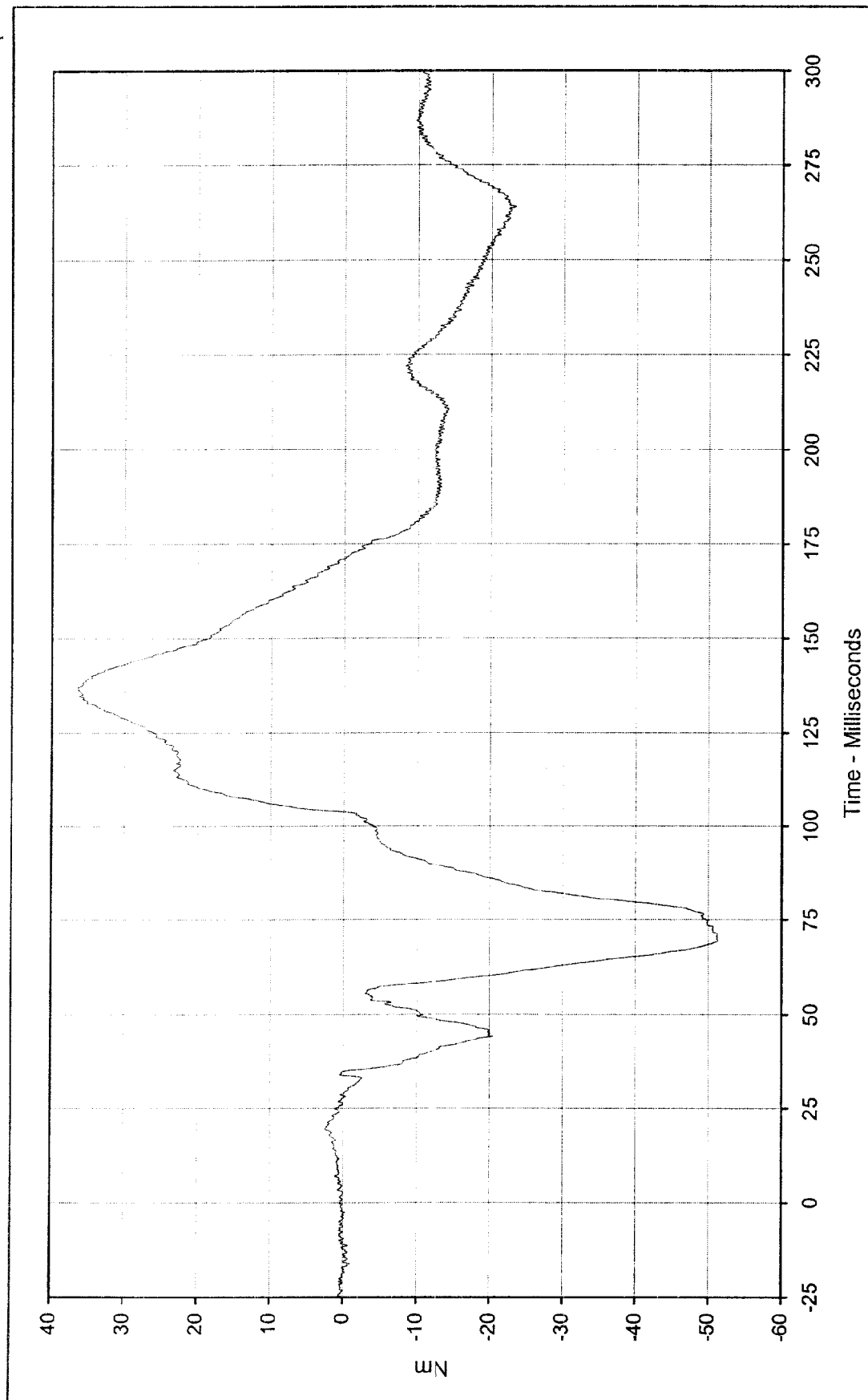
Curve Description:	Driver Neck Force Resultant	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	3133.4 at 61.6 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.0 at 5.9 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	RES-007			





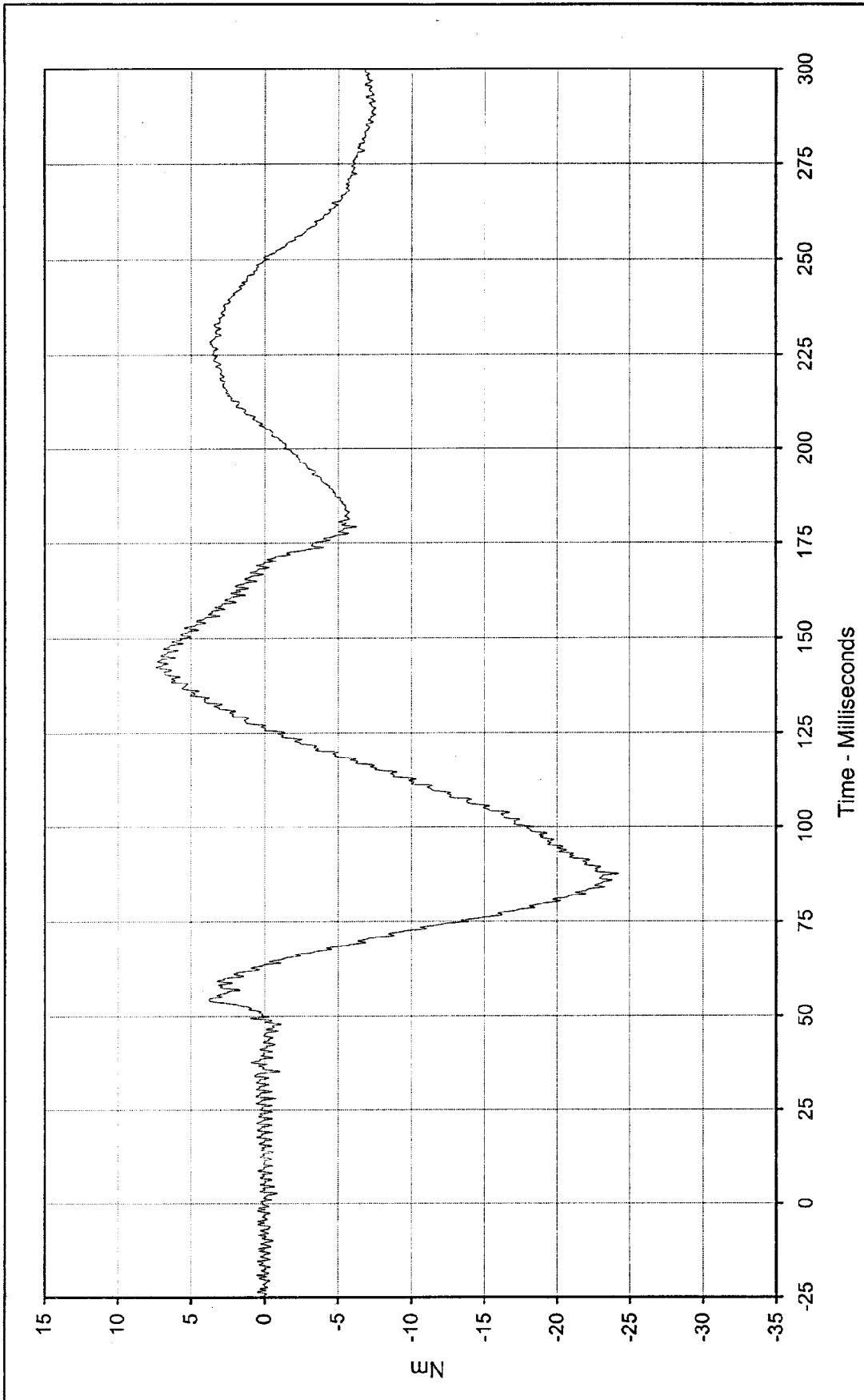
Curve Description:		Driver Neck Moment X		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	25.1	at	63.0	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-7.2	at	49.5	Milliseconds		
SAE Filter Class:	600					
Date of Test:	1/8/99					
Curve Number:	FIL-010					





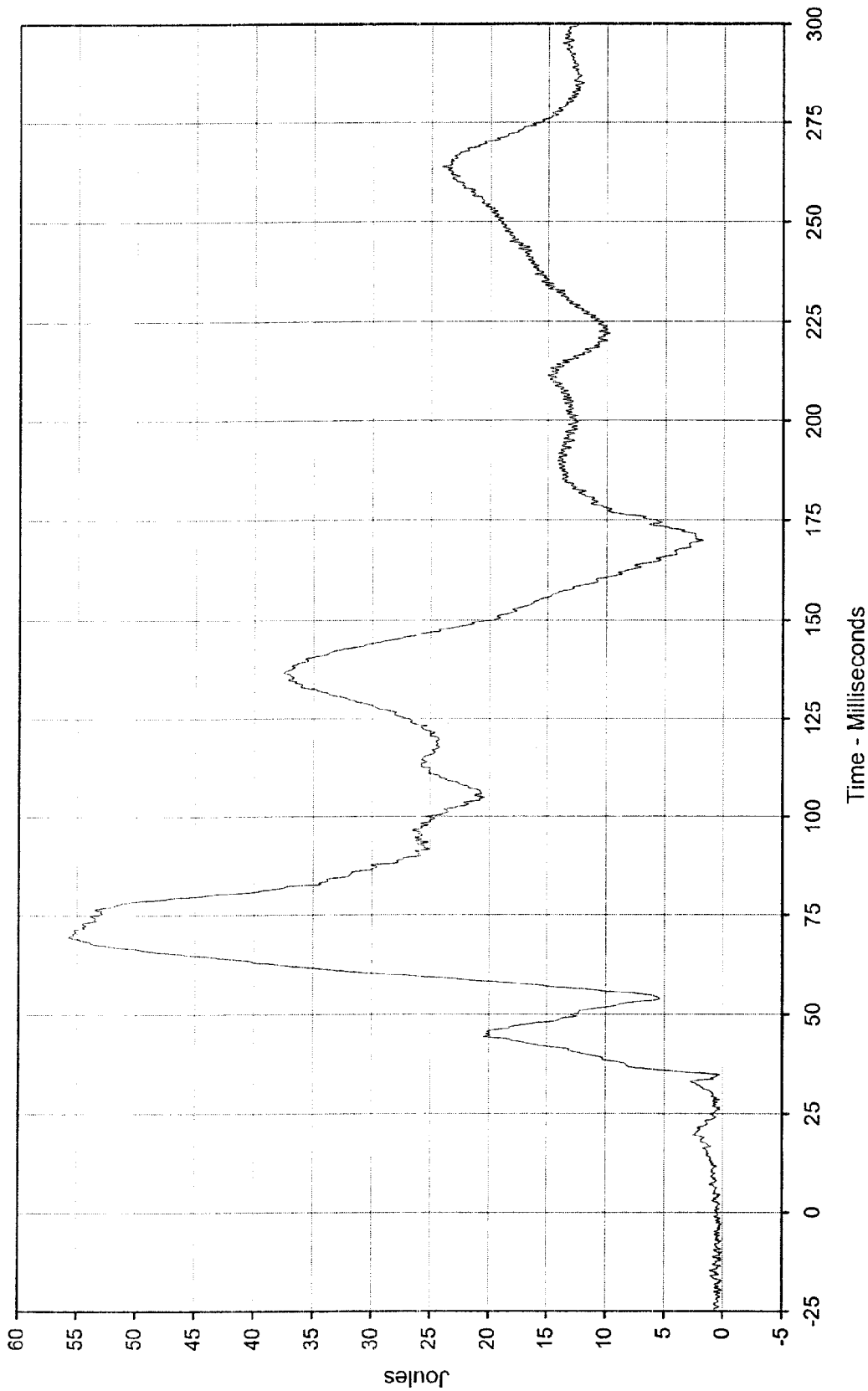
Curve Description:	Driver Neck Moment Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	36.4 at 36.6 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-51.4 at 69.4 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-011			





Curve Description:	Driver Neck Moment Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	7.4 at 142.1 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-24.2 at 87.5 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-012			



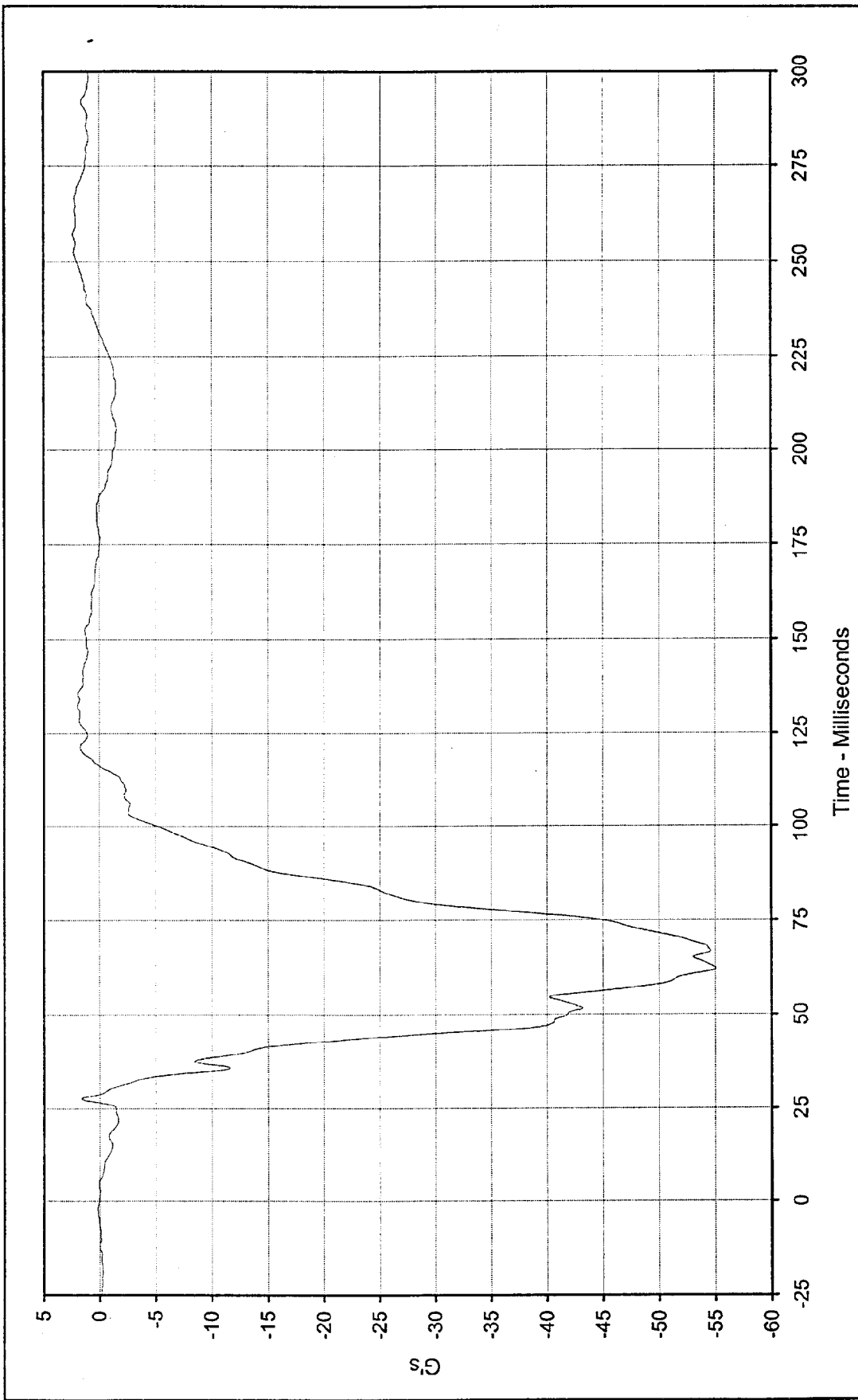


Curve Description: Driver Neck Moment Resultant

Maximum Value:	55.7	at	69.4	Milliseconds
Minimum Value:	0.2	at	4.3	Milliseconds
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	RES-010			

Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	

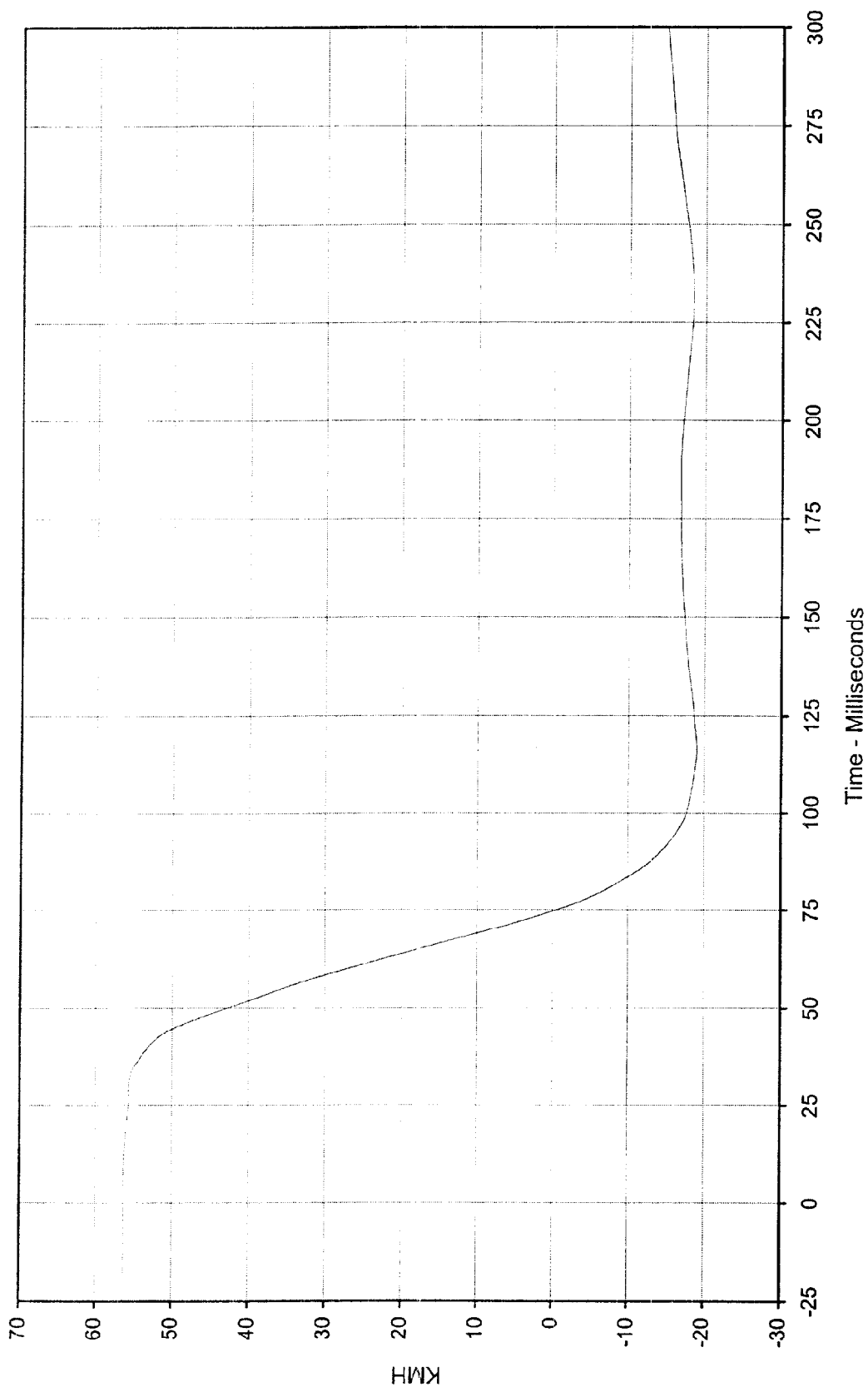




Curve Description:	Driver Chest Primary X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	2.3 at 257.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-55.1 at 62.1 Milliseconds			



SAE Filter Class:	180
Date of Test:	1/8/99
Curve Number:	FIL-013



Curve Description: Driver Chest Primary X Velocity

Maximum Value: 56.3 at 5.8 Milliseconds

Minimum Value: -19.0 at 116.1 Milliseconds

SAE Filter Class: 180

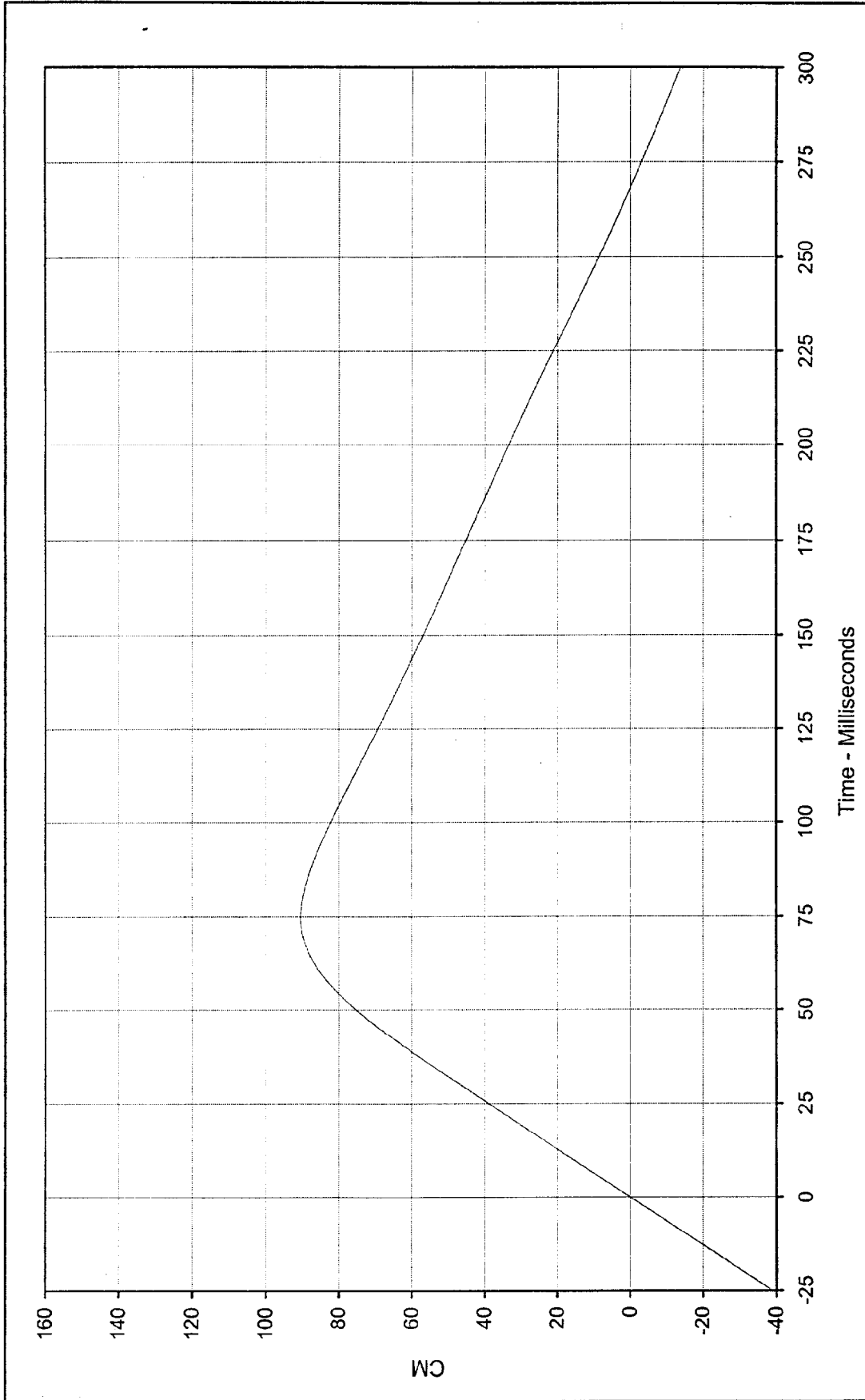
Date of Test: 1/8/99

Curve Number: IN1-013

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401

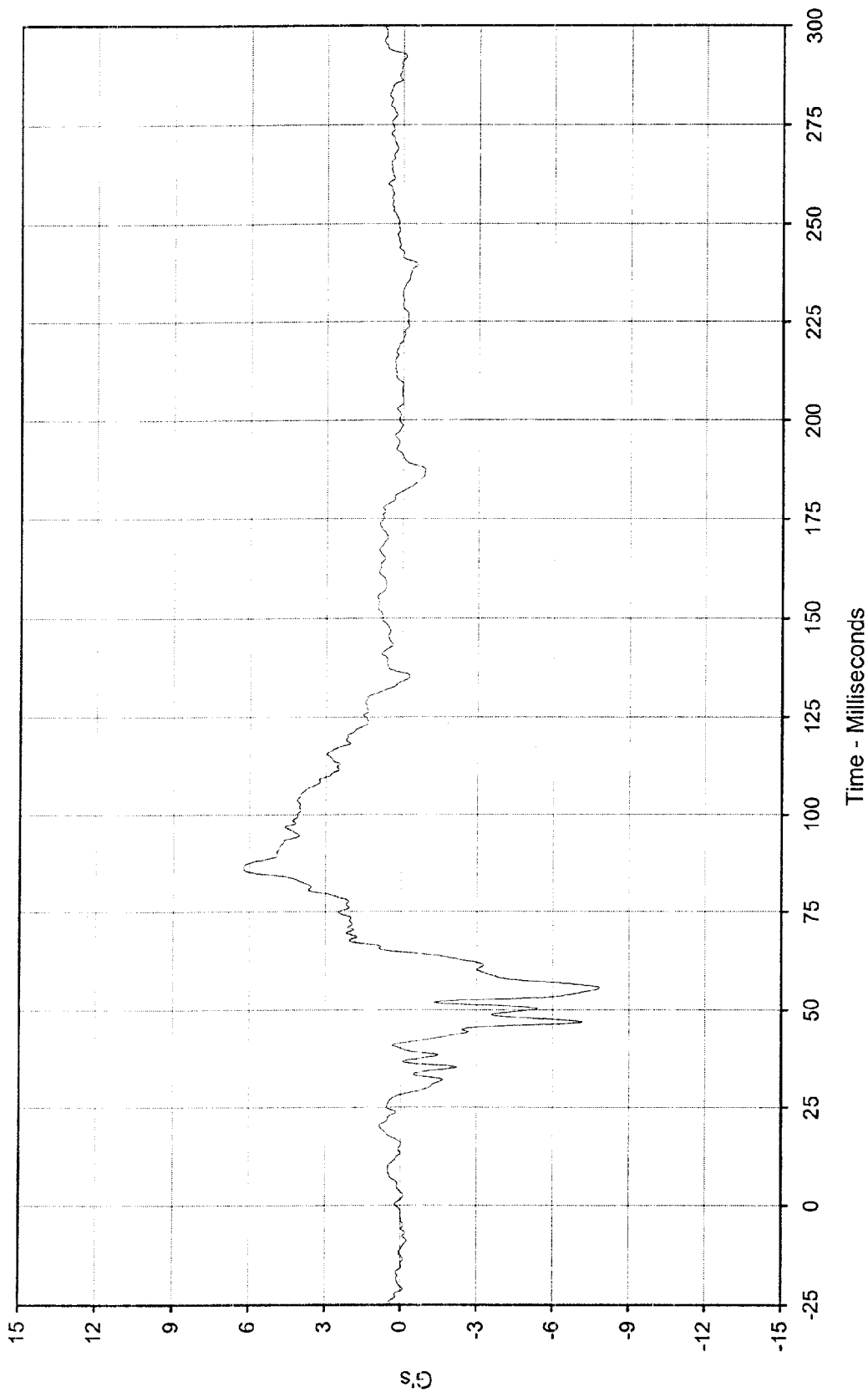
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Driver Chest Primary X Displ.	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	90.4 at 74.6 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-13.6 at 299.9 Milliseconds		
SAE Filter Class:	180		
Date of Test:	1/8/99		
Curve Number:	IN2-013		





Curve Description: Driver Chest Primary Y Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Maximum Value: 6.2 at 86.7 Milliseconds Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

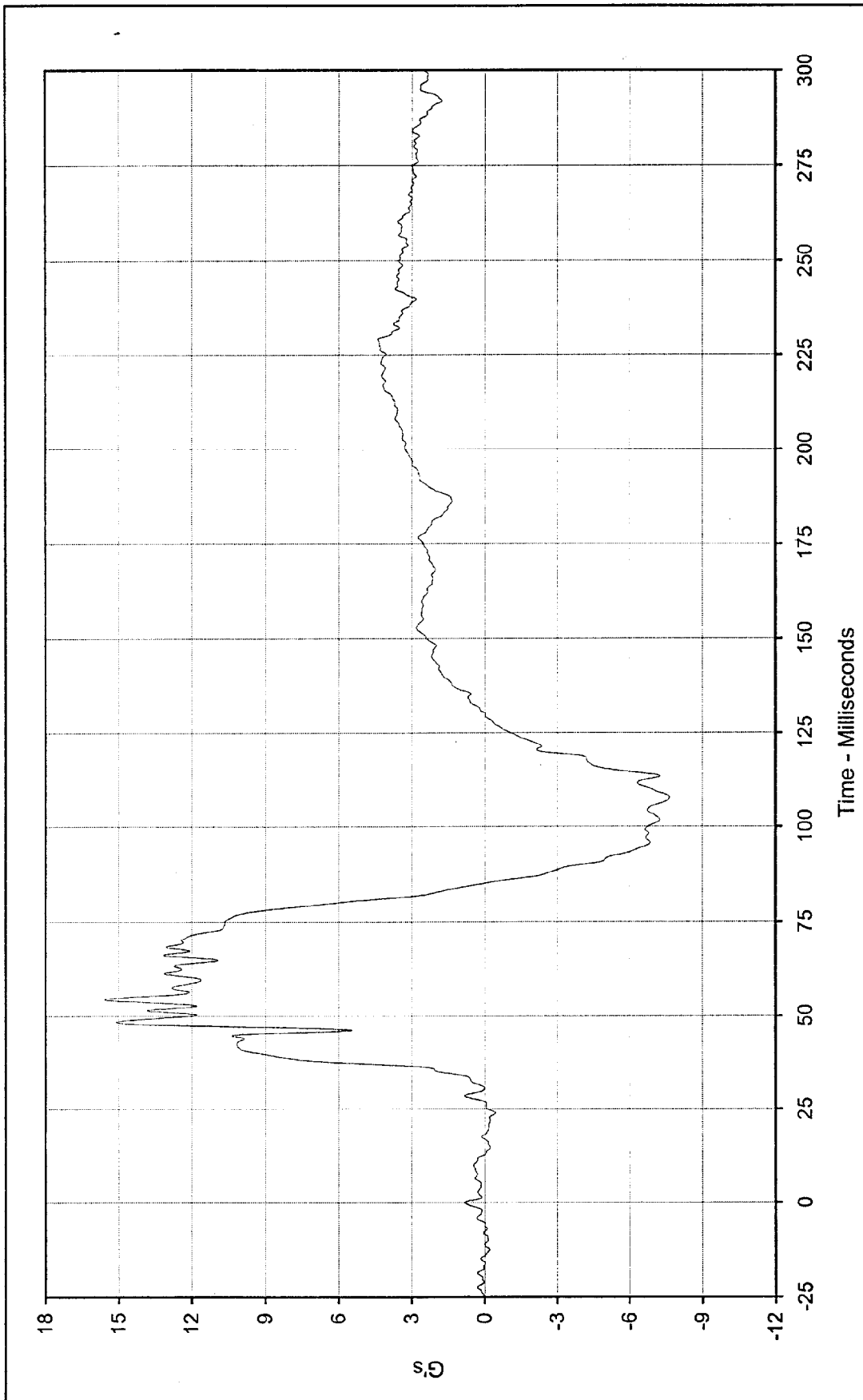
Minimum Value: -7.8 at 55.7 Milliseconds

SAE Filter Class: 180

Date of Test: 1/8/99

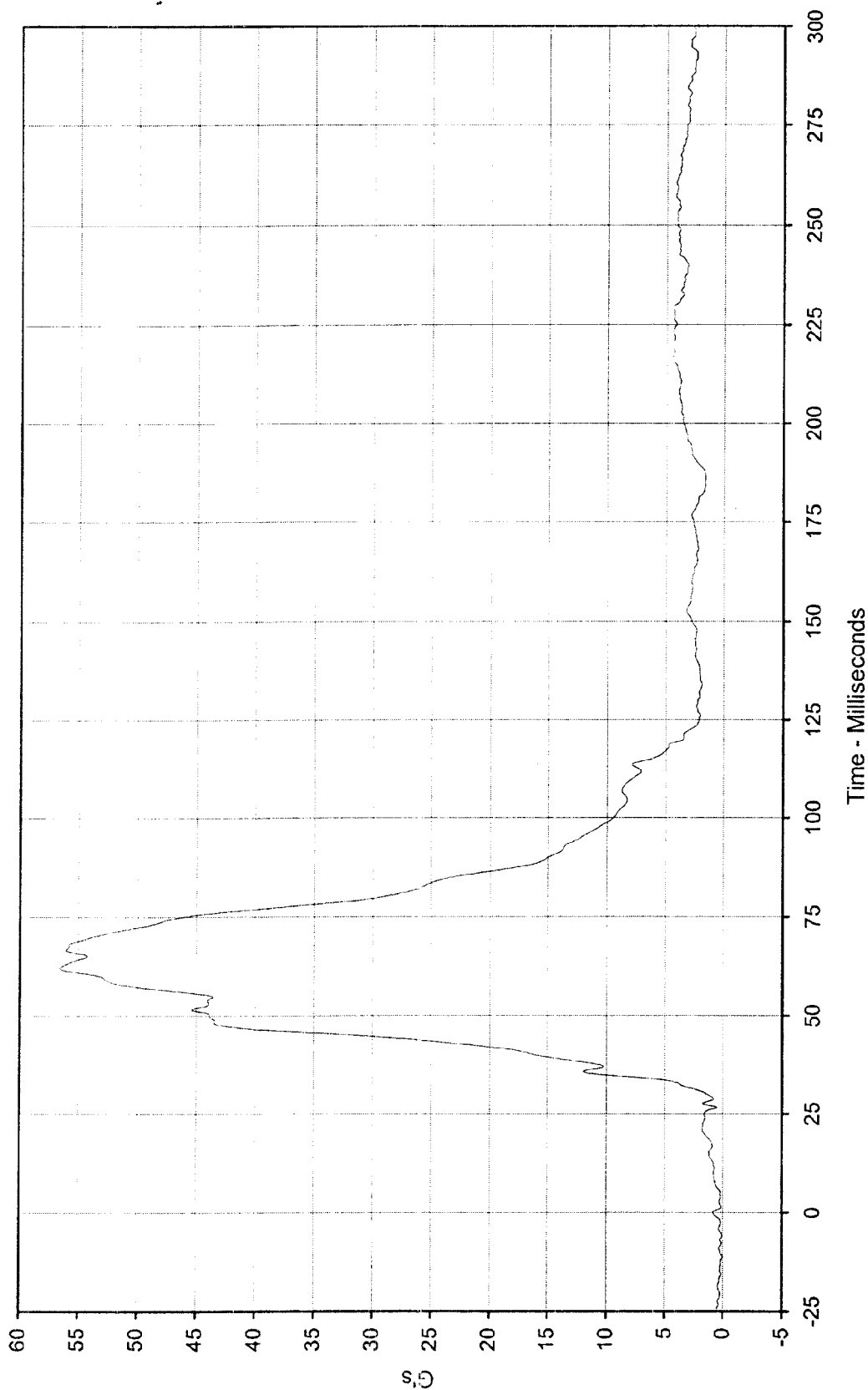
Curve Number: FIL-014





Curve Description:	Driver Chest Primary Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	15.6 at 54.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-7.6 at 107.6 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	FIL-015			





Curve Description: Driver Chest Resultant Primary

Maximum Value: 56.6 at 62.0 milliseconds

Minimum Value: 0.1 at 1.4 milliseconds

SAE Filter Class: 180

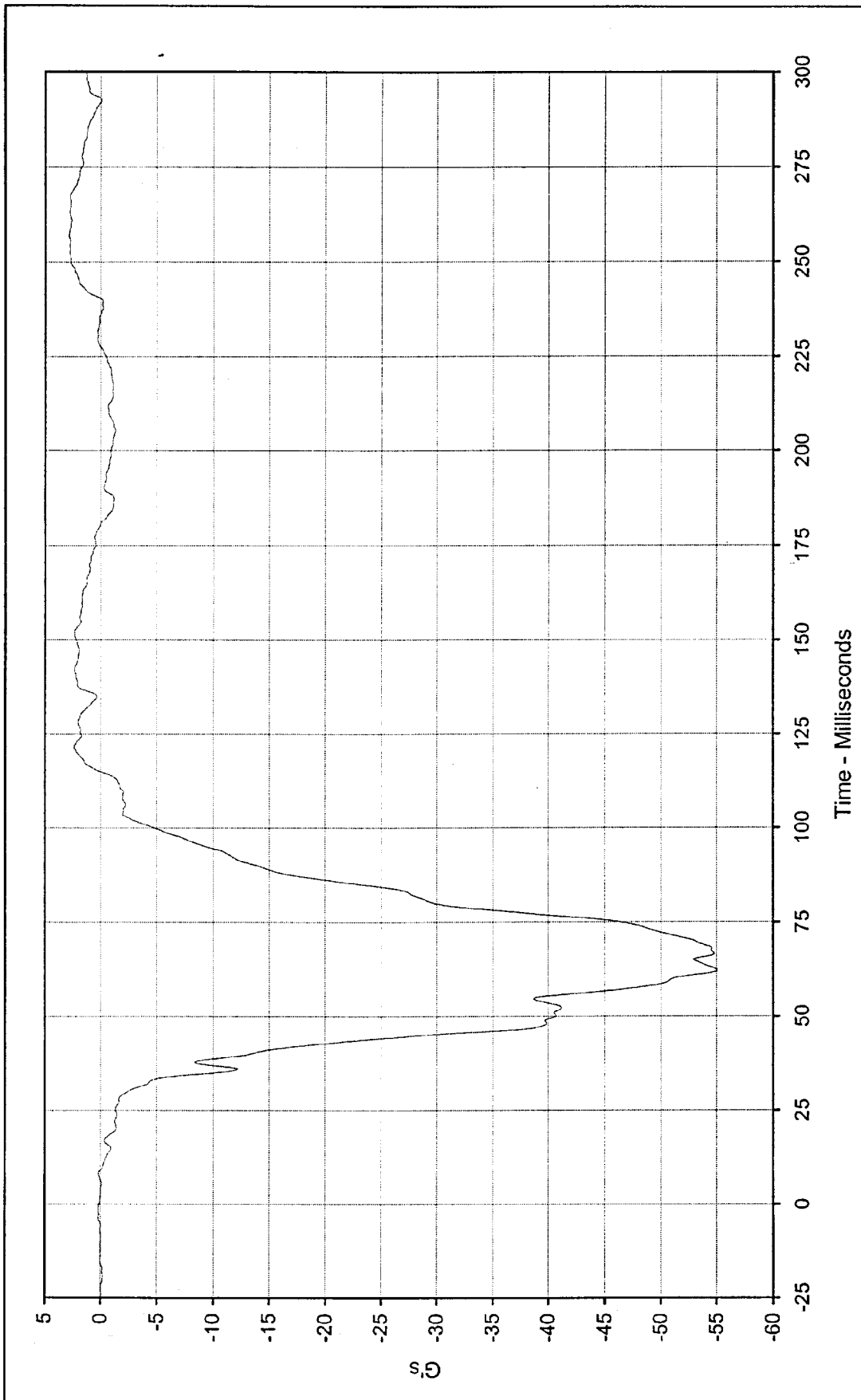
Date of Test: 1/8/99

Curve Number: RES-013

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

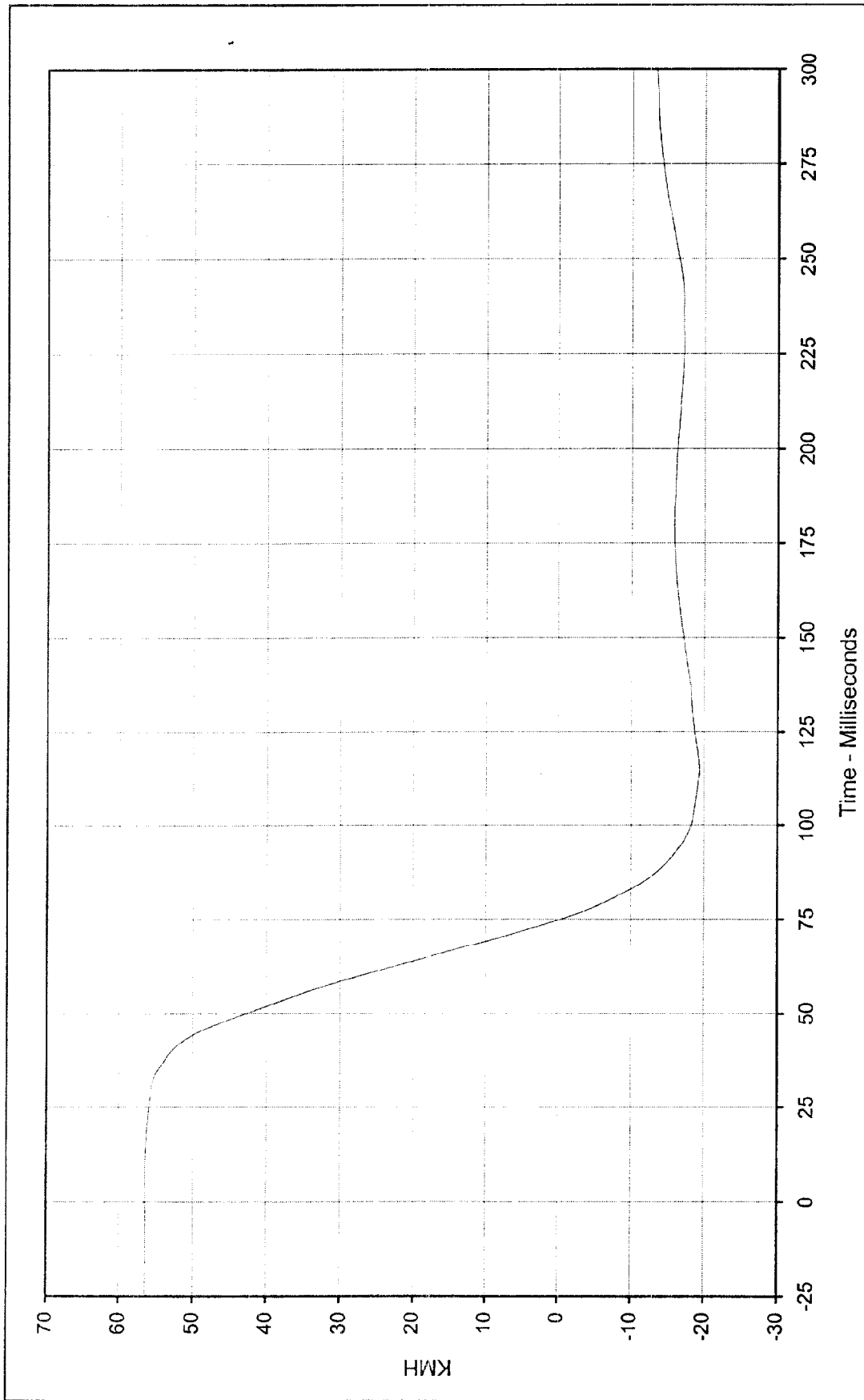
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Driver Chest Redundant X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	2.9 at 257.0 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-55.1 at 62.0 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	FIL-016			





Curve Description: Driver Chest Redundant X Velocity

Maximum Value: 56.4 at 9.0 Milliseconds

Minimum Value: -19.4 at 115.0 Milliseconds

SAE Filter Class: 180

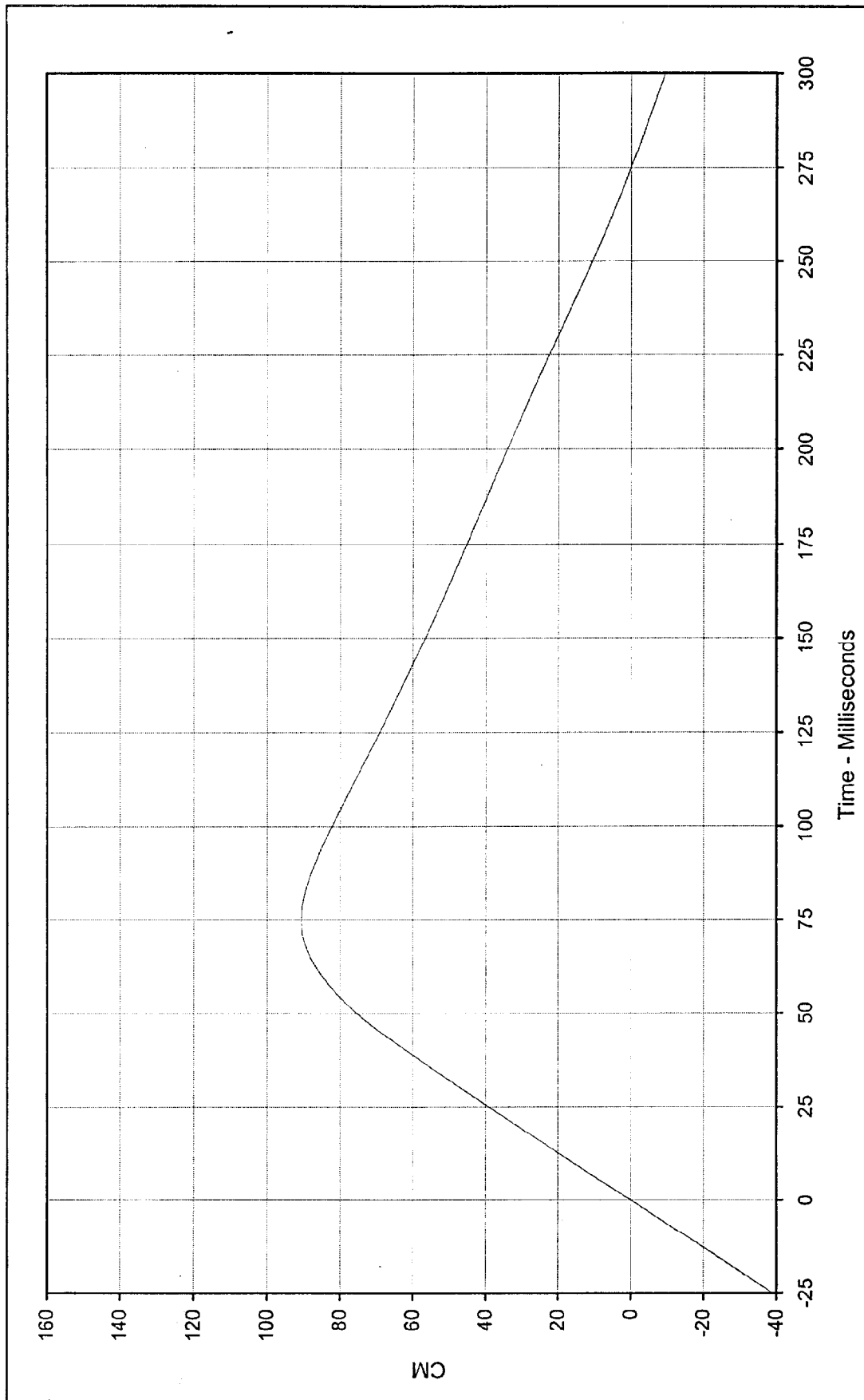
Date of Test: 1/8/99

Curve Number: IN1-016

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

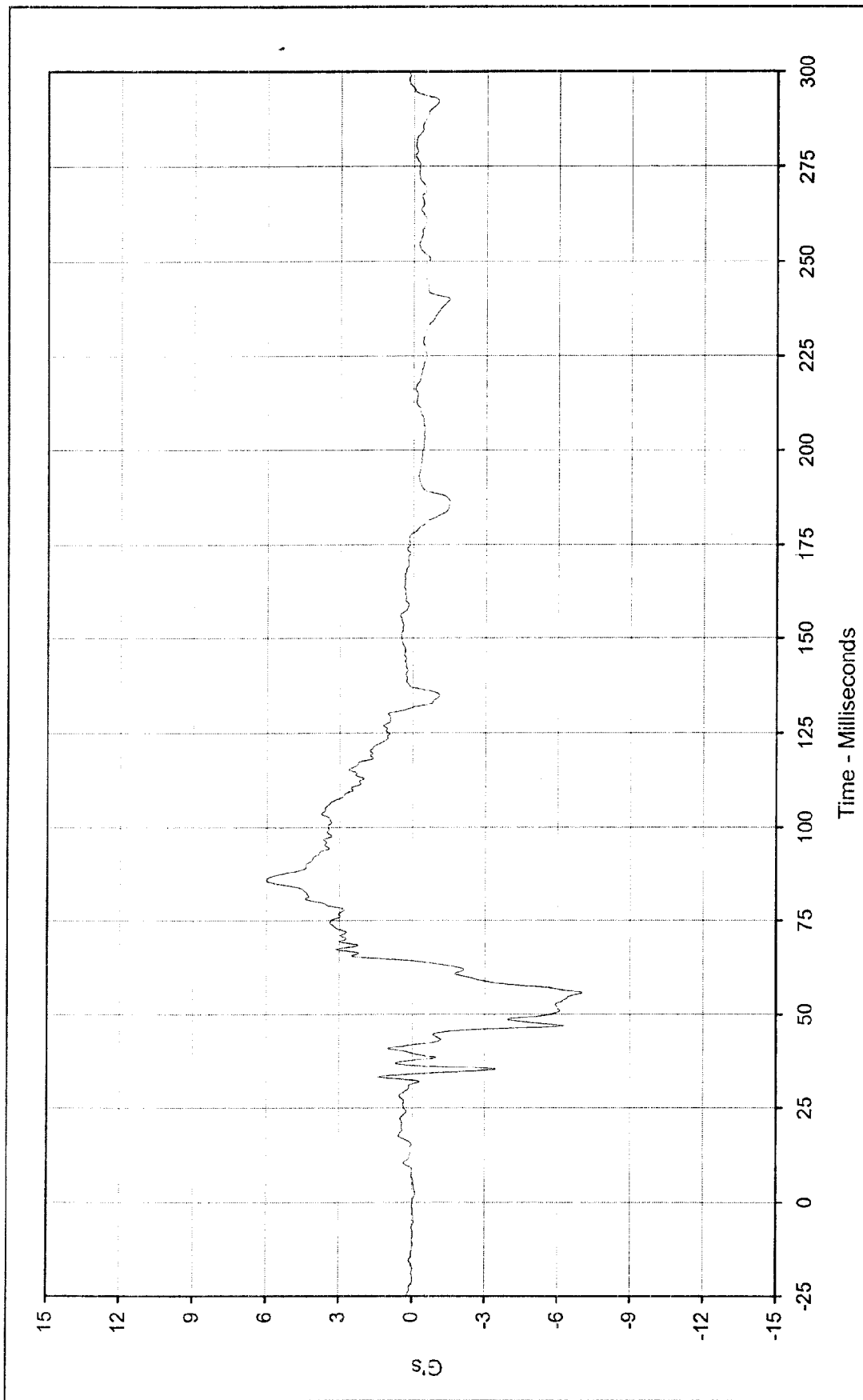




Curve Description: Driver Chest Redundant X Displ.
 Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

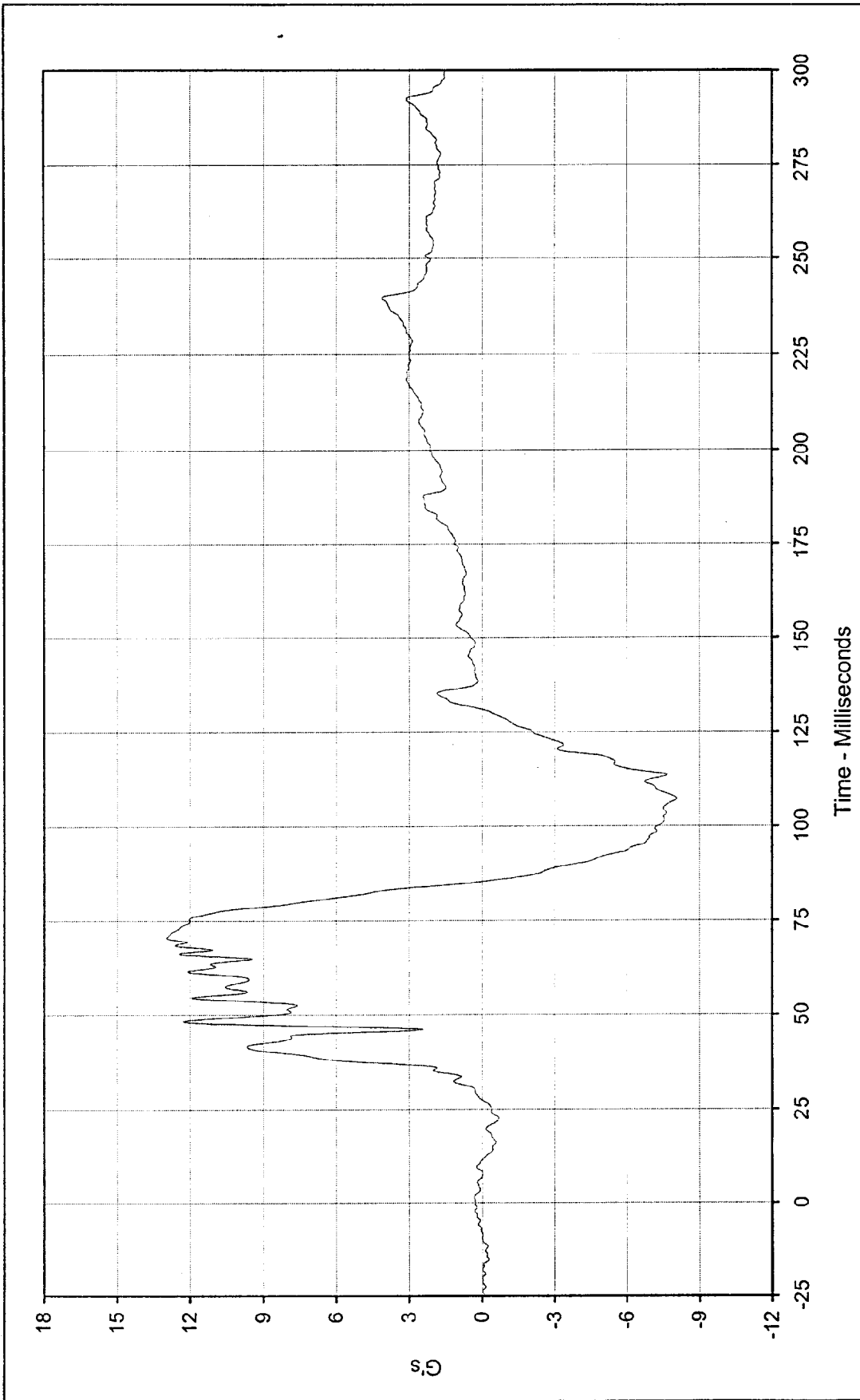
Maximum Value: 90.7 at 74.7 Milliseconds
 Minimum Value: -9.3 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 1/8/99
 Curve Number: IN2-016





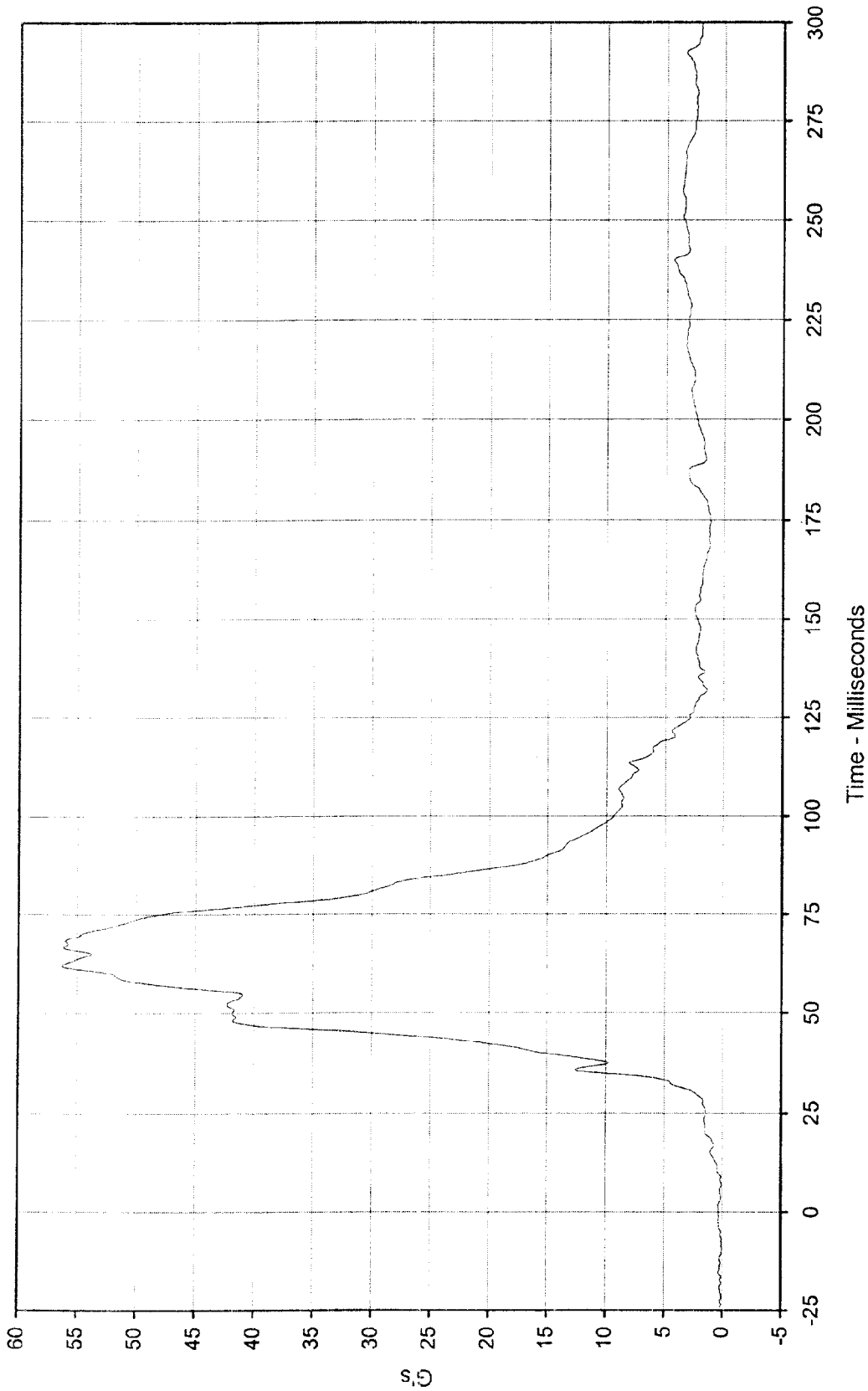
Curve Description:	Driver Chest Redundant Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	6.0 at 85.8 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-7.0 at 55.7 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	FIL-017			





Curve Description:	Driver Chest Redundant Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	13.0 at 70.5 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-8.1 at 107.1 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	FIL-018			





Curve Description: Driver Chest Resultant Redundant

Maximum Value: 56.3 at 61.9 Milliseconds

Minimum Value: 0.1 at 6.6 Milliseconds

SAE Filter Class: 180

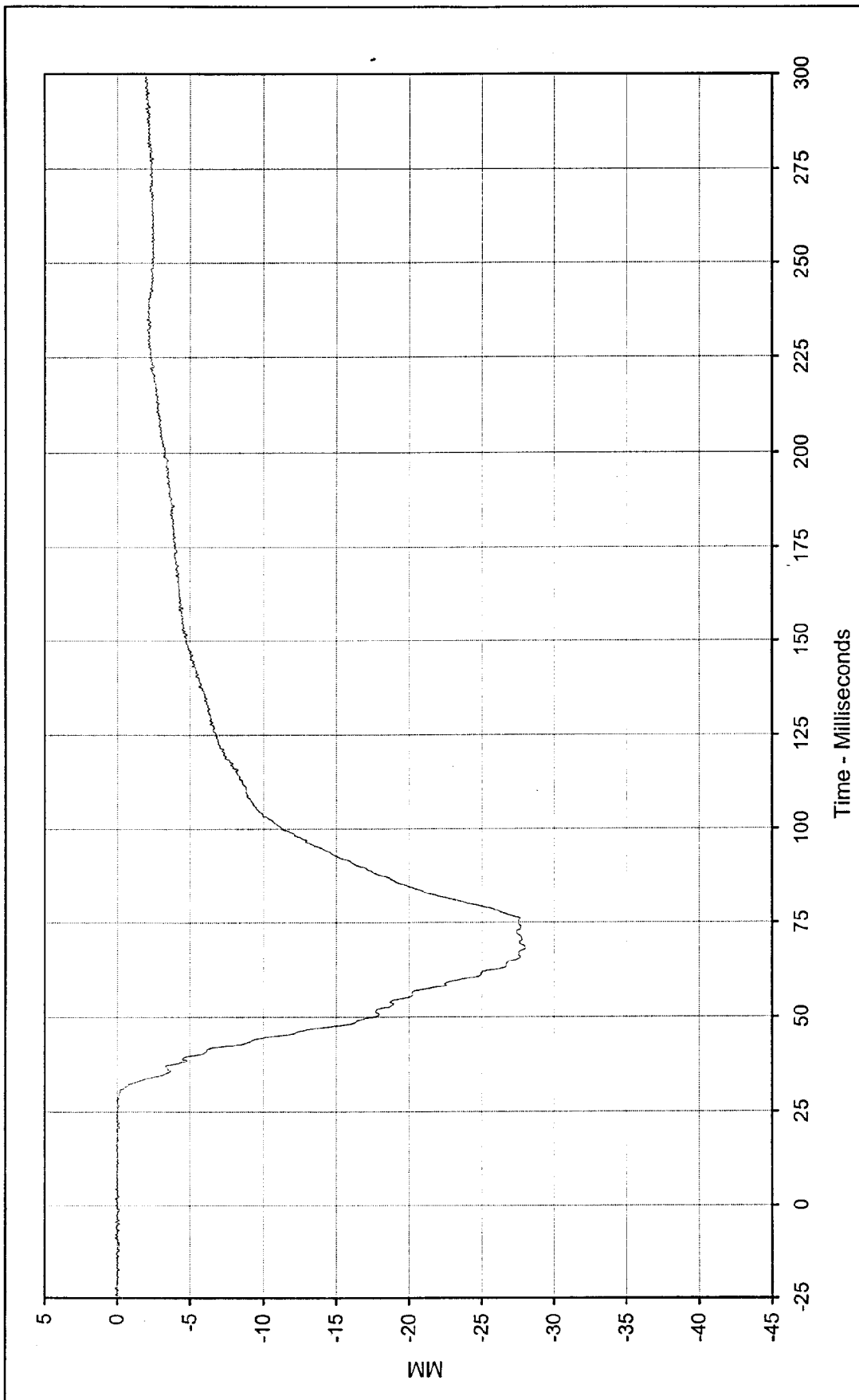
Date of Test: 1/8/99

Curve Number: RES-016

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

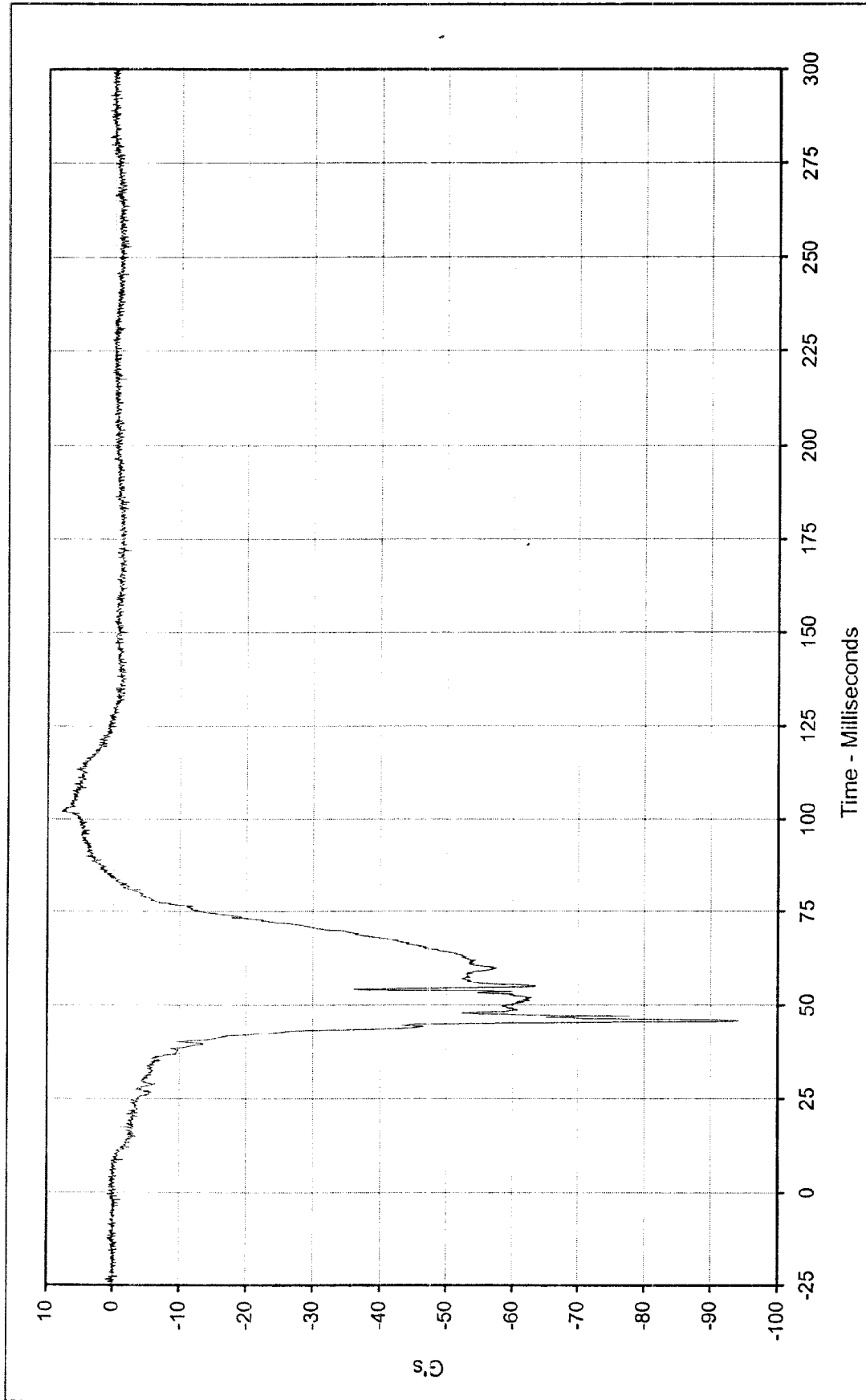
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





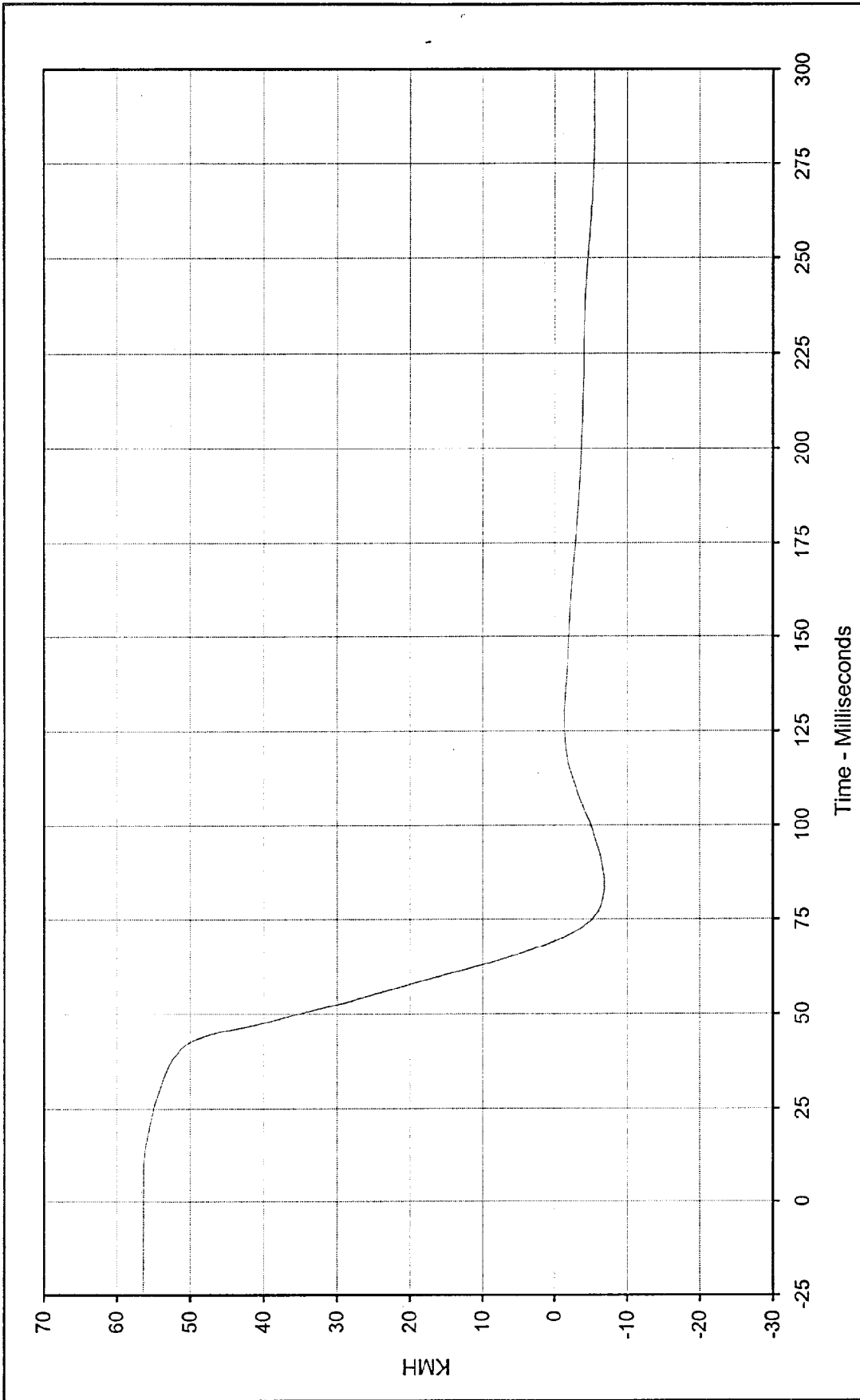
Curve Description:	Driver Chest Displacement X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	0.1 at 1.8 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-28.0 at 68.2 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-019			





Curve Description:		Driver Pelvis X		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	7.9	at	102.2	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-94.2	at	45.8	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	FIL-020					

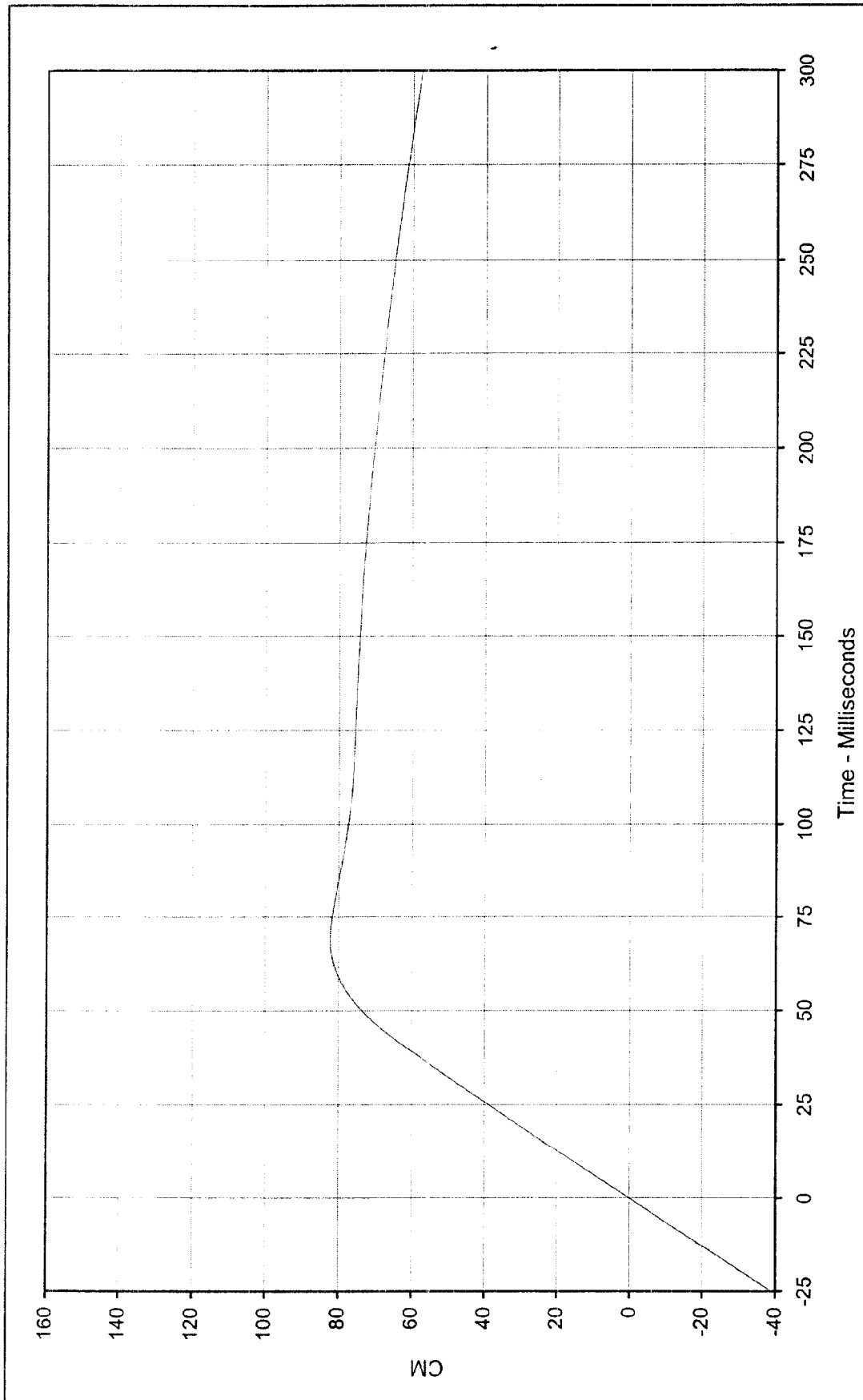




Curve Description: Driver Pelvis X Velocity
 Maximum Value: 56.4 at 4.2 Milliseconds
 Minimum Value: -6.9 at 84.2 Milliseconds
 SAE Filter Class: 180
 Date of Test: 1/8/99
 Curve Number: IN1-020

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

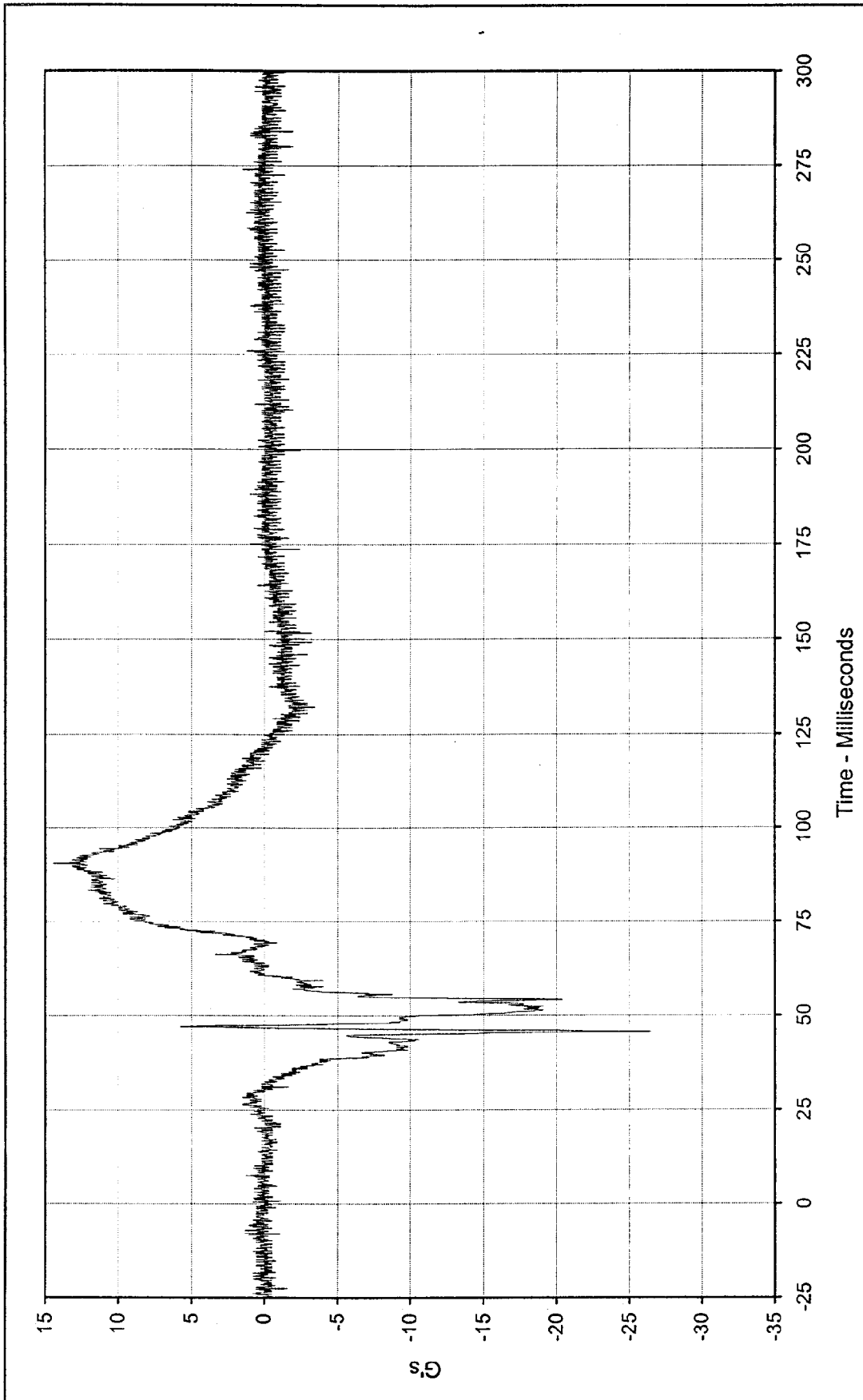




Curve Description: Driver Pelvis X Displ. Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value: 82.3 at 69.0 Milliseconds Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan
Minimum Value: 0.0 at 0.0 Milliseconds

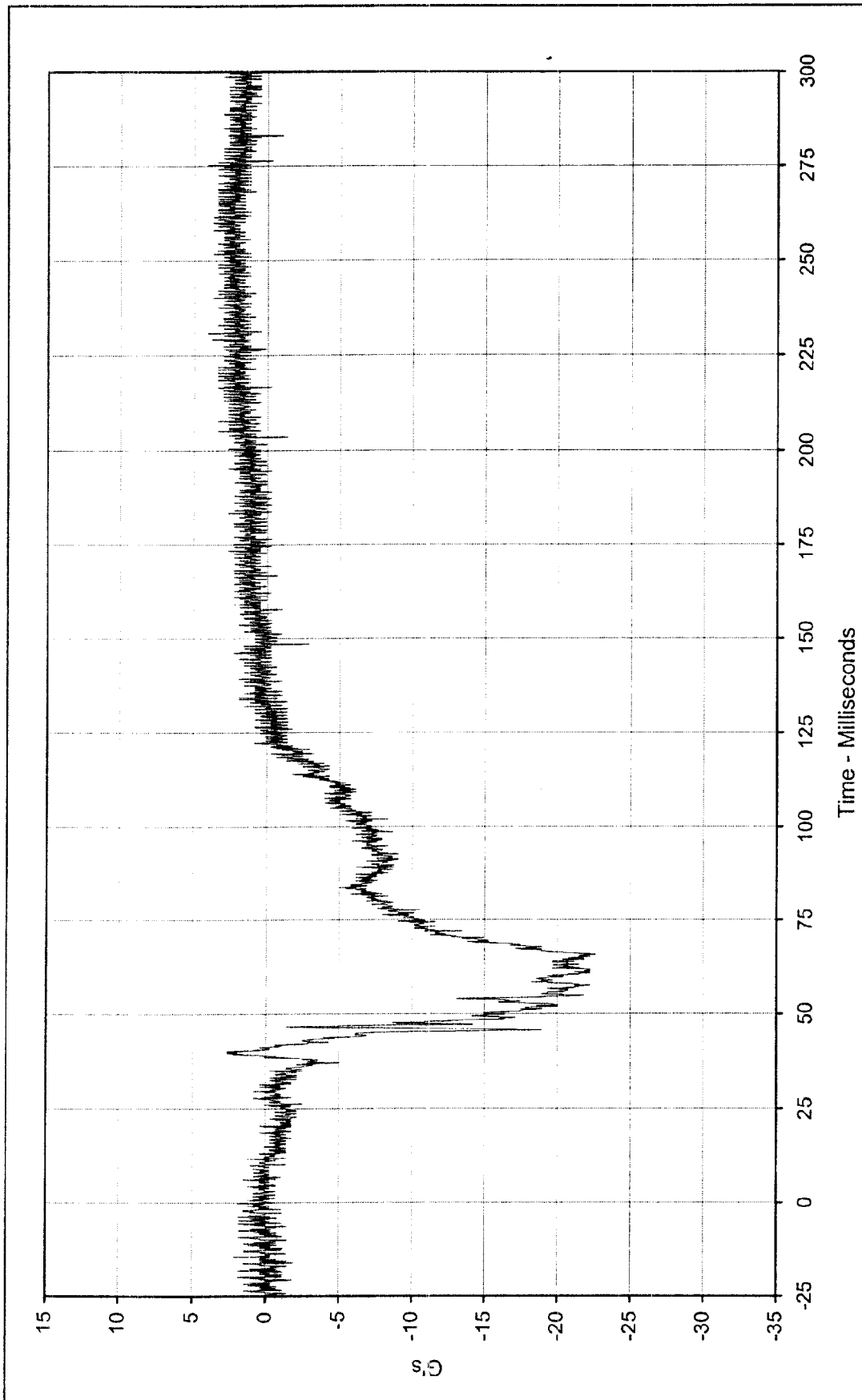


SAE Filter Class: 180
Date of Test: 1/8/99
Curve Number: IN2-020



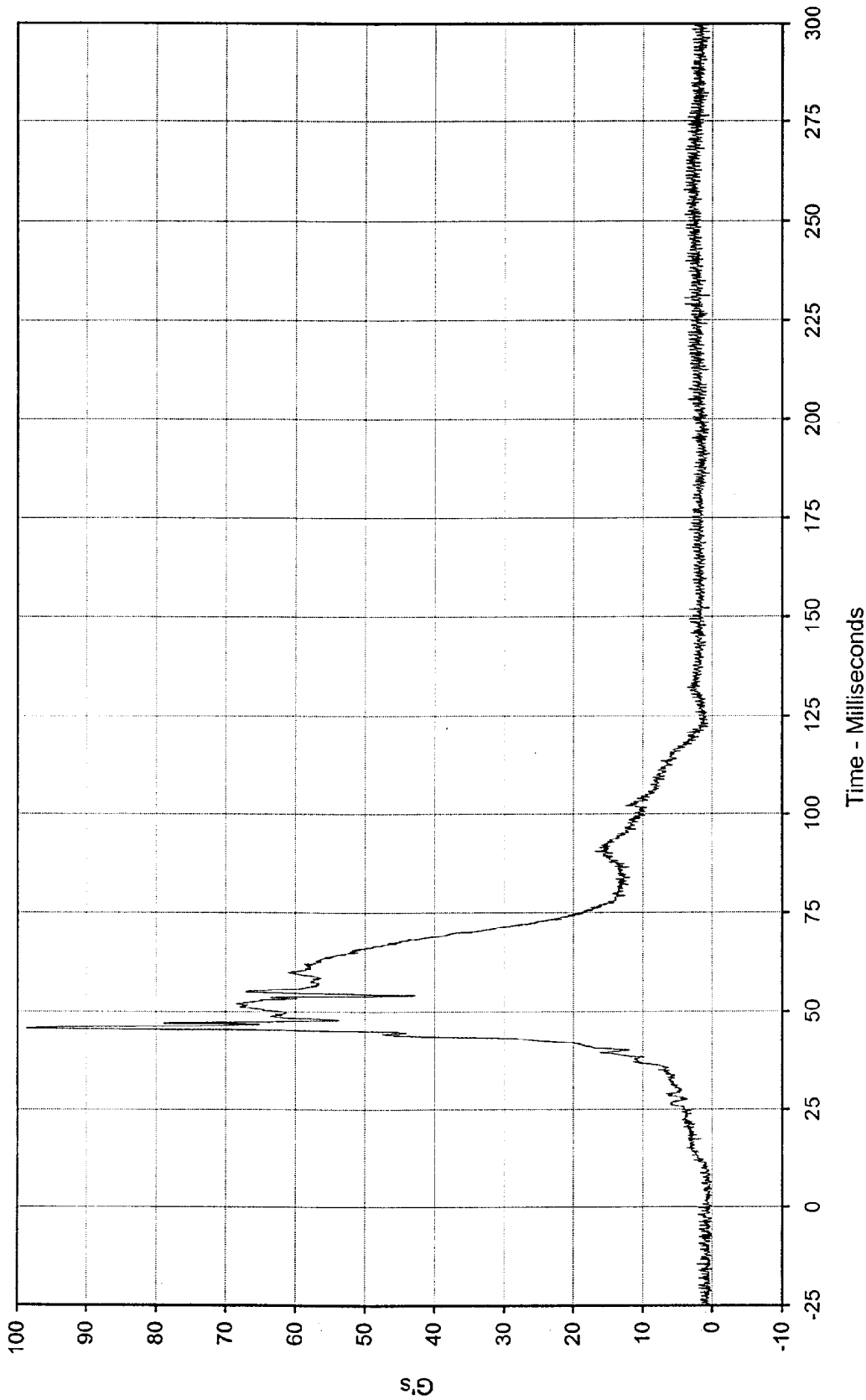
Curve Description:	Driver Pelvis Y	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	14.5 at 90.3 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-26.5 at 45.7 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	1/8/99		
Curve Number:	FIL-021		





Curve Description:		Driver Pelvis Z		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	4.1	at	230.8	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-22.6	at	65.7	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	FIL-022					





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Program:

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

Test Vehicle:

Driver Pelvis Resultant

Maximum Value: 98.7 at 45.8 Milliseconds

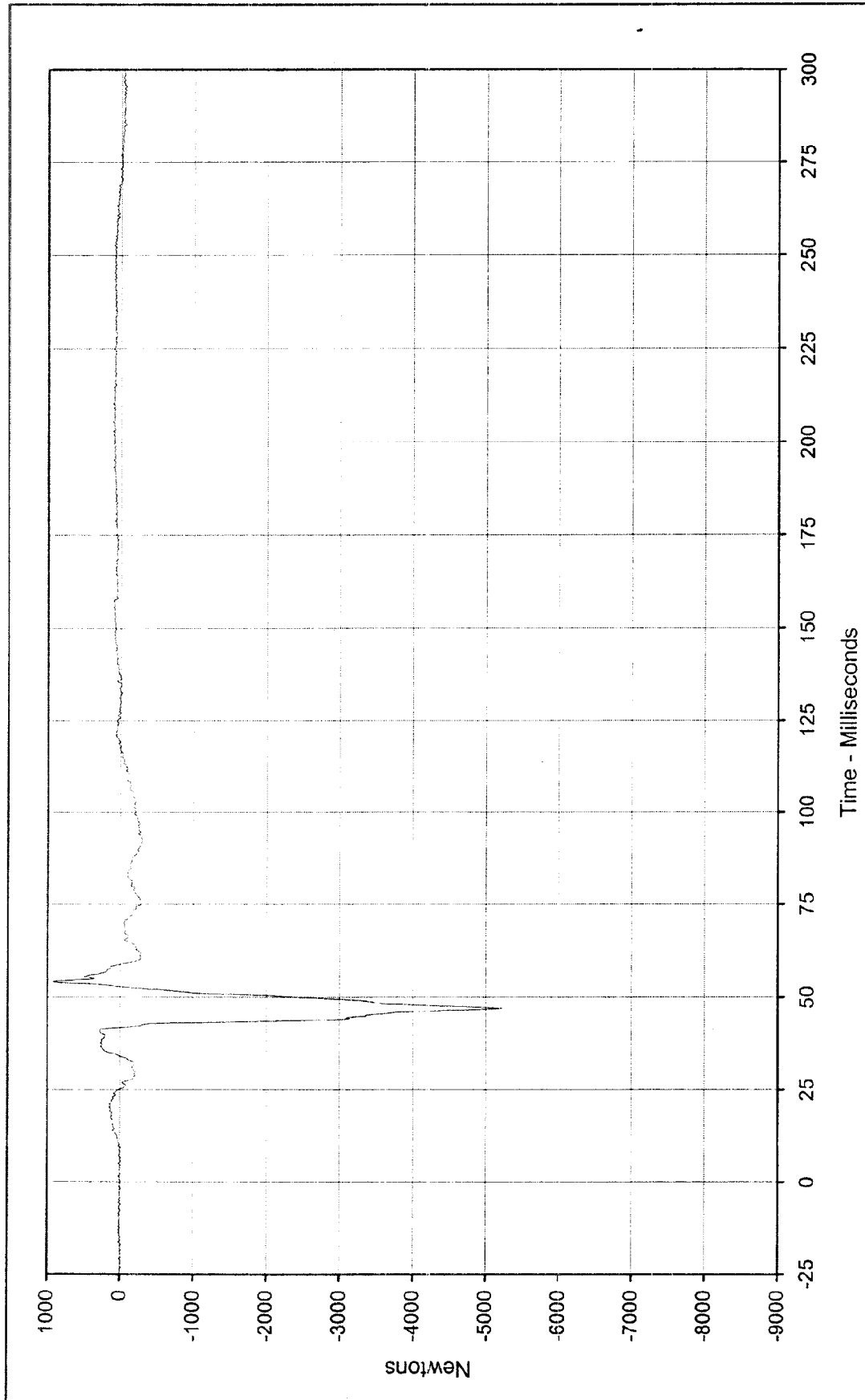
Minimum Value: 0.1 at 0.3 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/8/99

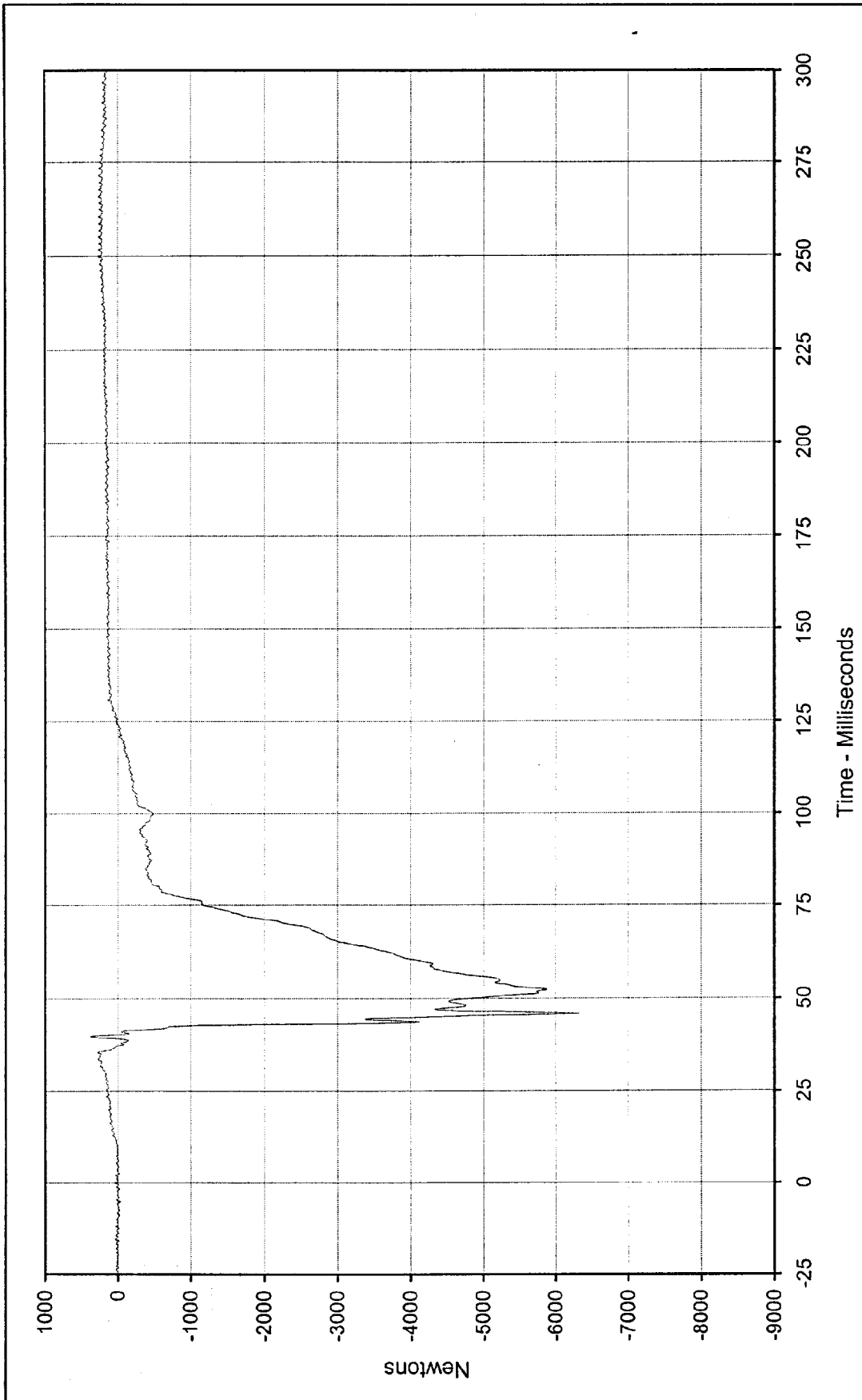
Curve Number: RES-020





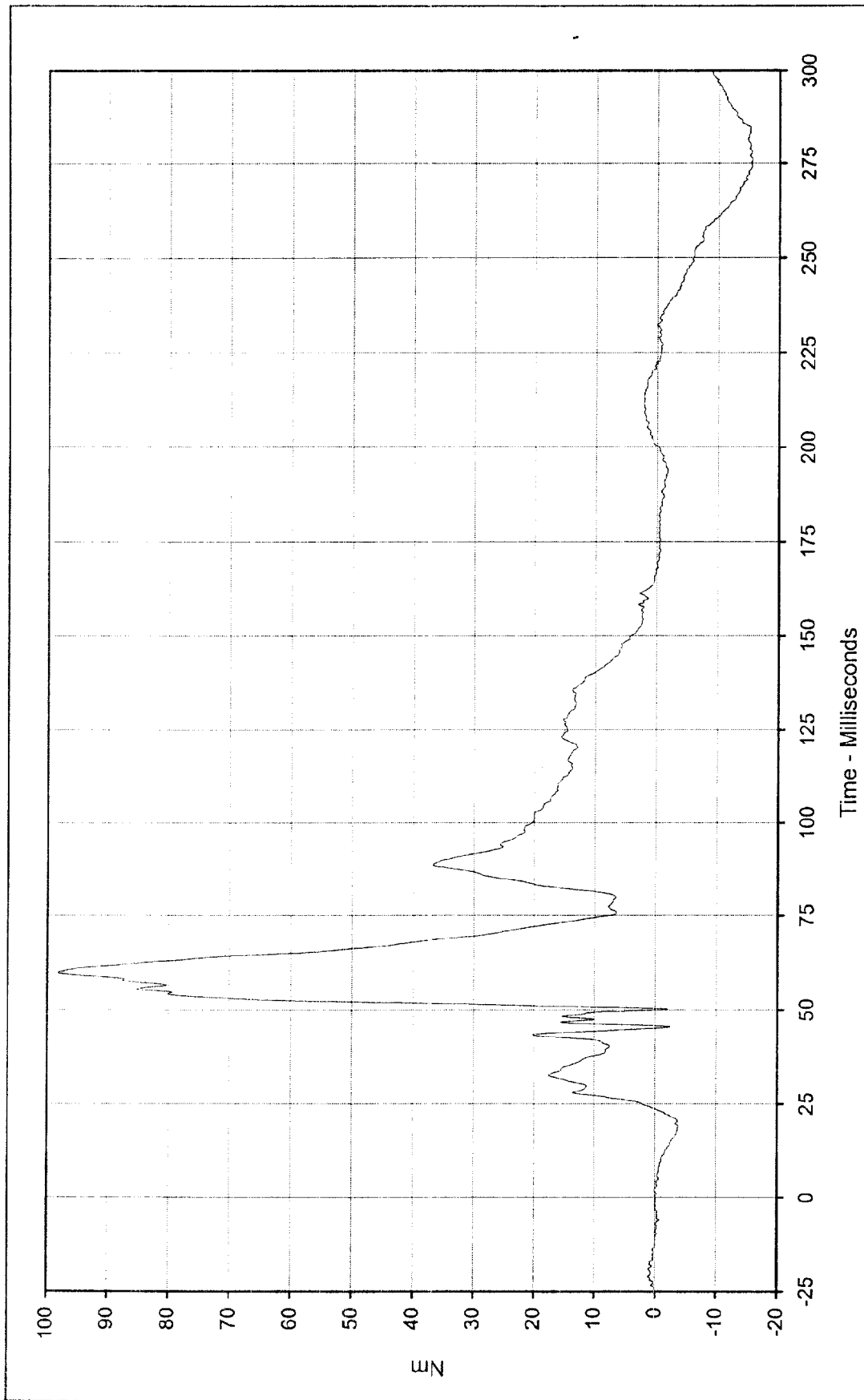
Curve Description:	Driver Left Femur Force	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	918.9	at	54.2	Milliseconds
Minimum Value:	-5225.4	at	47.1	Milliseconds
SAE Filter Class:	600			
Date of Test:	1/8/99	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Curve Number:	FIL-023			





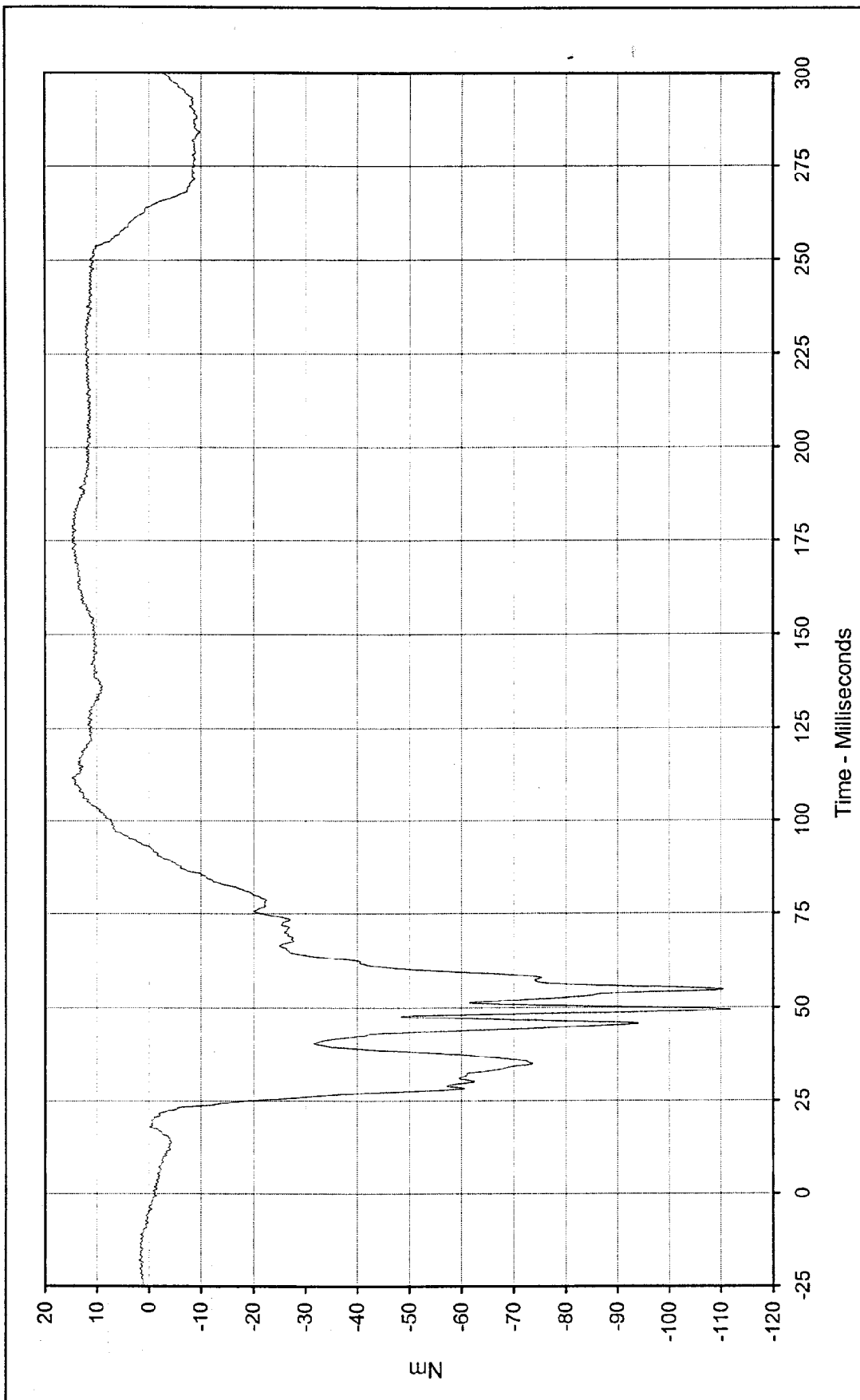
Curve Description:	Driver Right Femur Force	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	376.2 at 39.7 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-6328.9 at 45.9 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-024			





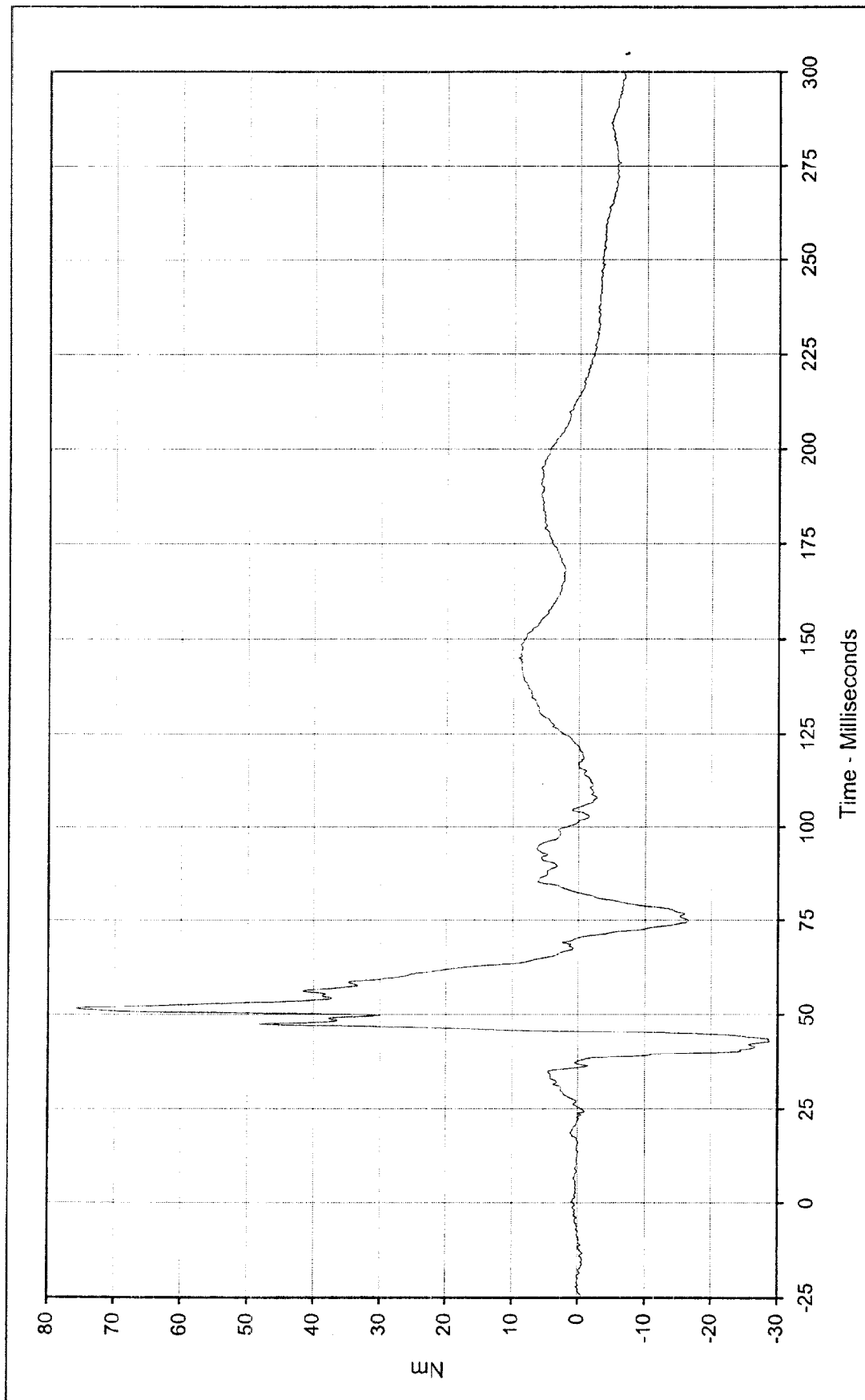
Curve Description:	Driver Left Upper Tibia Moment X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	98.2 at 59.8 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-15.6 at 276.1 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-025			





Curve Description: Driver Left Upper Tibia Moment Y
 Maximum Value: 14.8 at 111.5 Milliseconds
 Minimum Value: -111.9 at 49.4 Milliseconds
 SAE Filter Class: 600
 Date of Test: 1/8/99
 Curve Number: FIL-026





Curve Description: Driver Right Upper Tibia Moment X

Maximum Value: 75.7 at 51.6 Milliseconds

Minimum Value: -28.8 at 43.1 Milliseconds

SAE Filter Class: 600

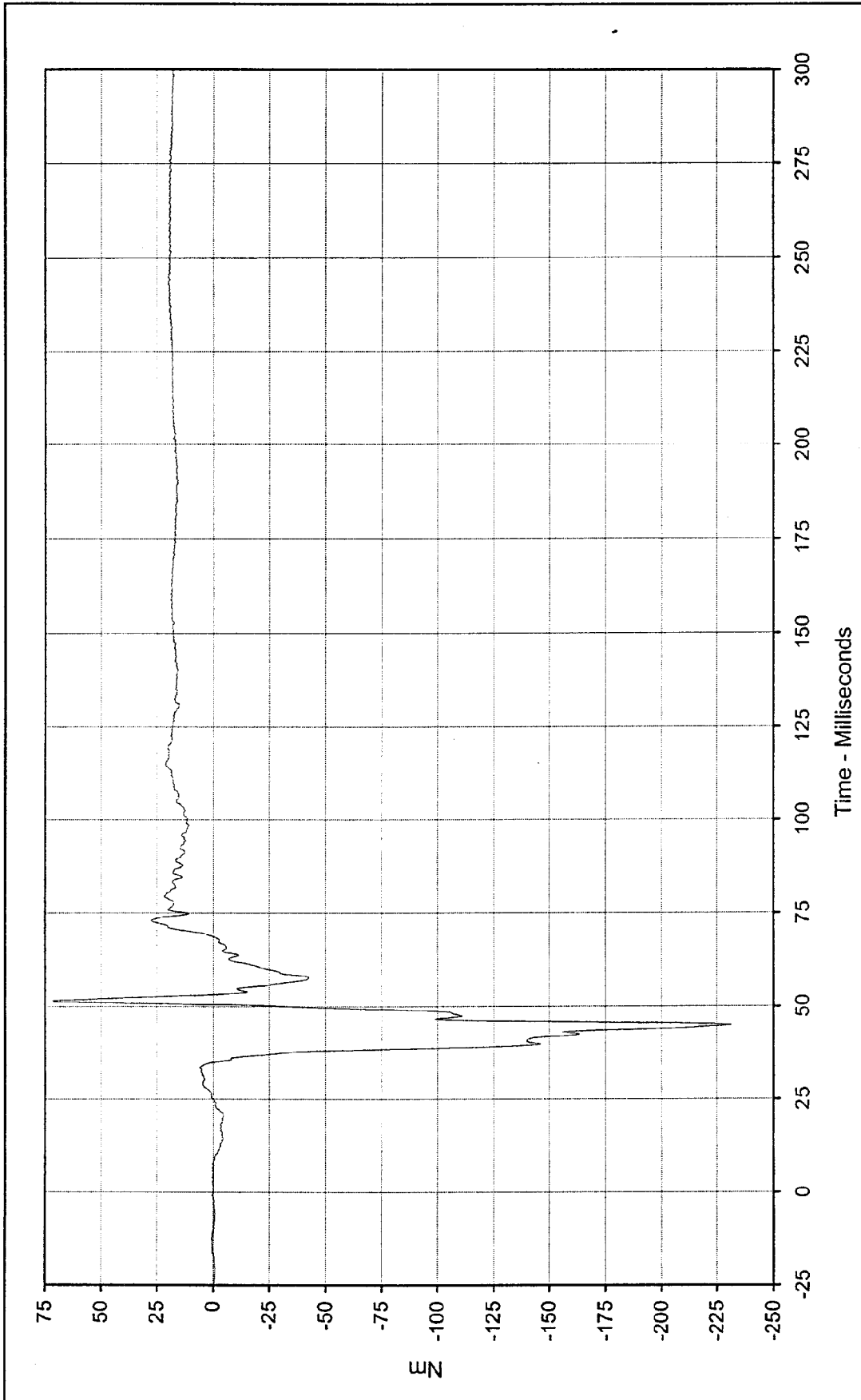
Date of Test: 1/8/99

Curve Number: FIL-027

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

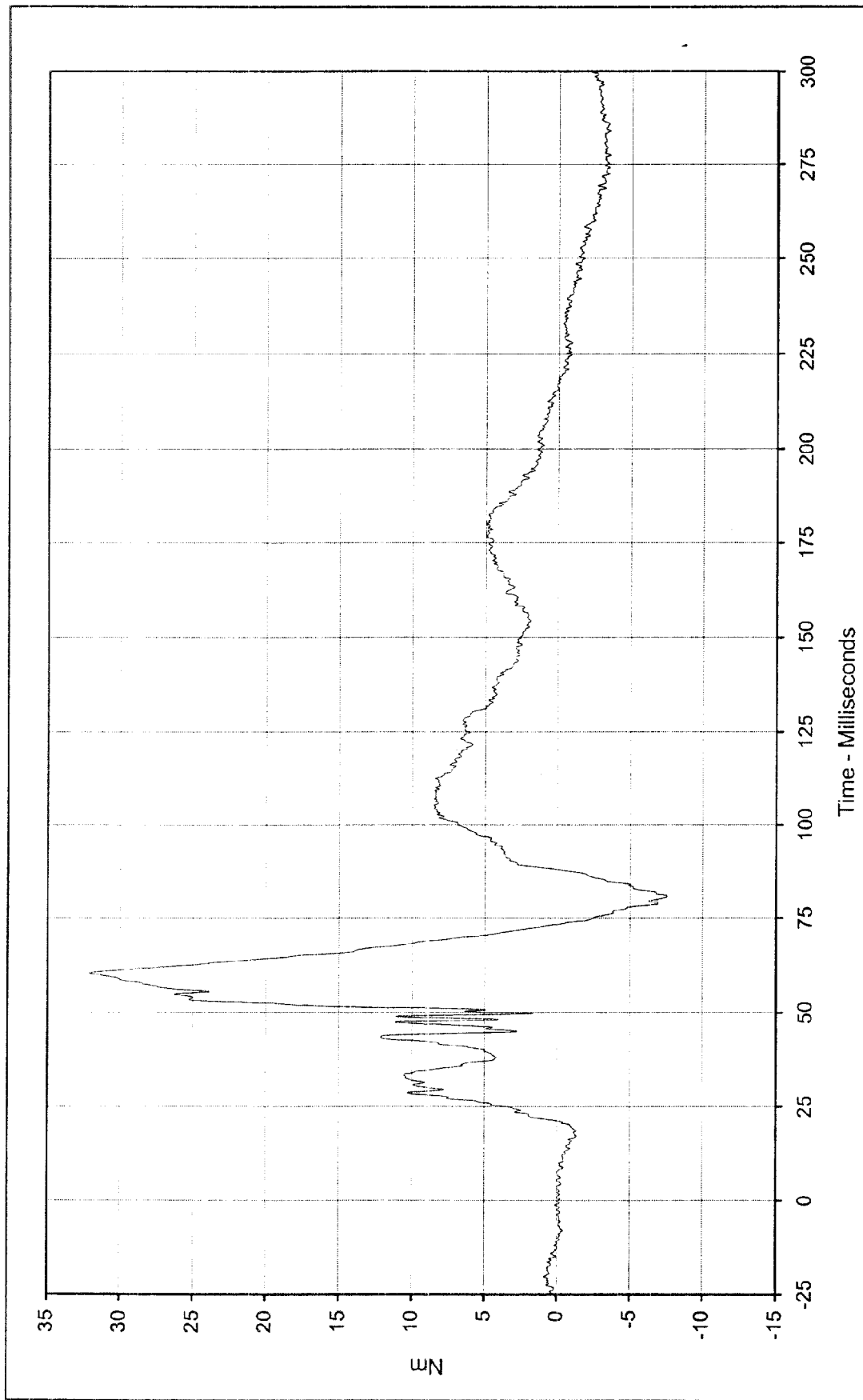
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Driver Right Upper Tibia Moment Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	71.8 at 51.5 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-231.4 at 45.0 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-028			

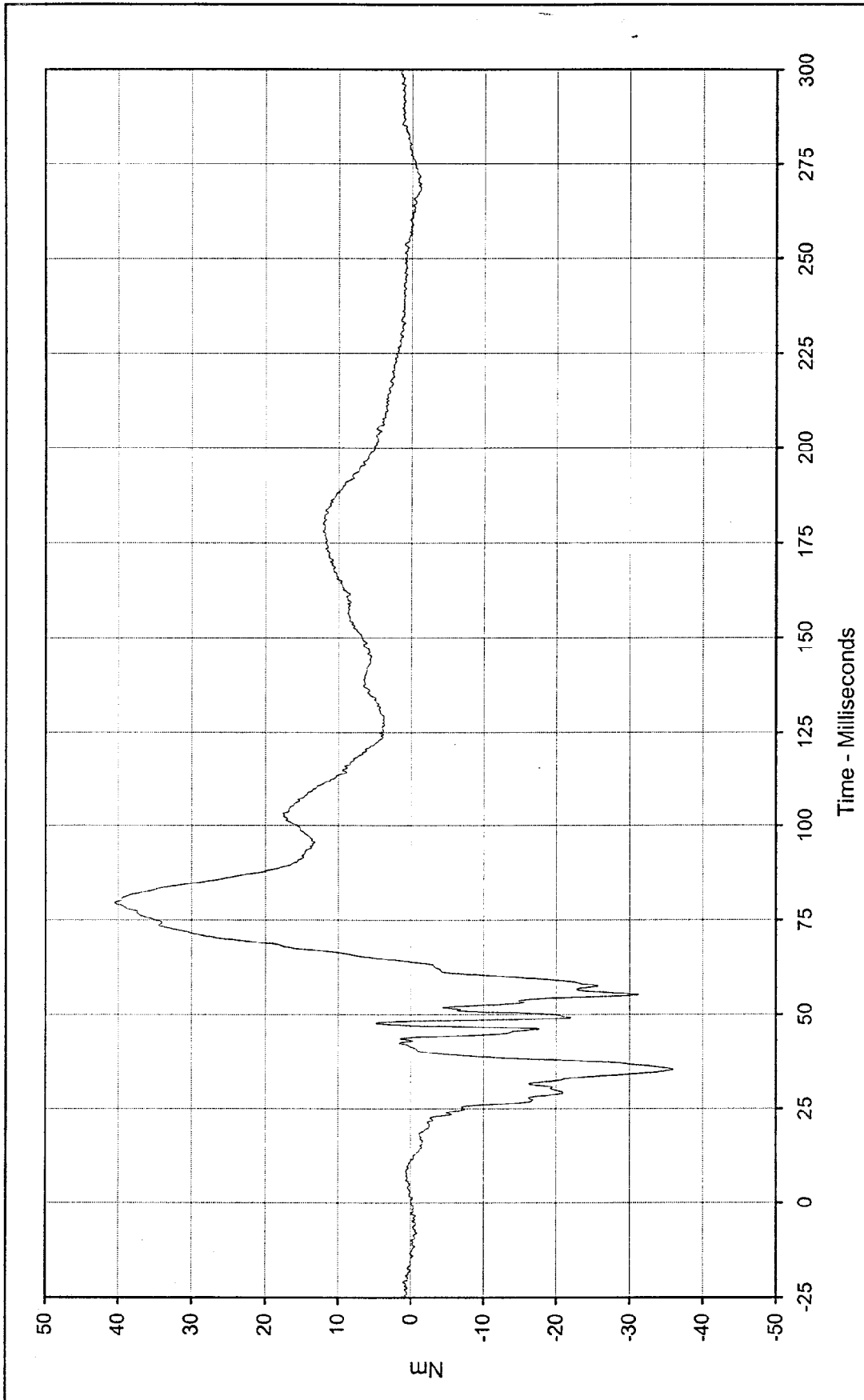




Curve Description: Driver Left Lower Tibia Moment X
 Maximum Value: 32.1 at 60.3 Milliseconds
 Minimum Value: -7.6 at 80.6 Milliseconds
 SAE Filter Class: 600
 Date of Test: 1/8/99
 Curve Number: FIL-029

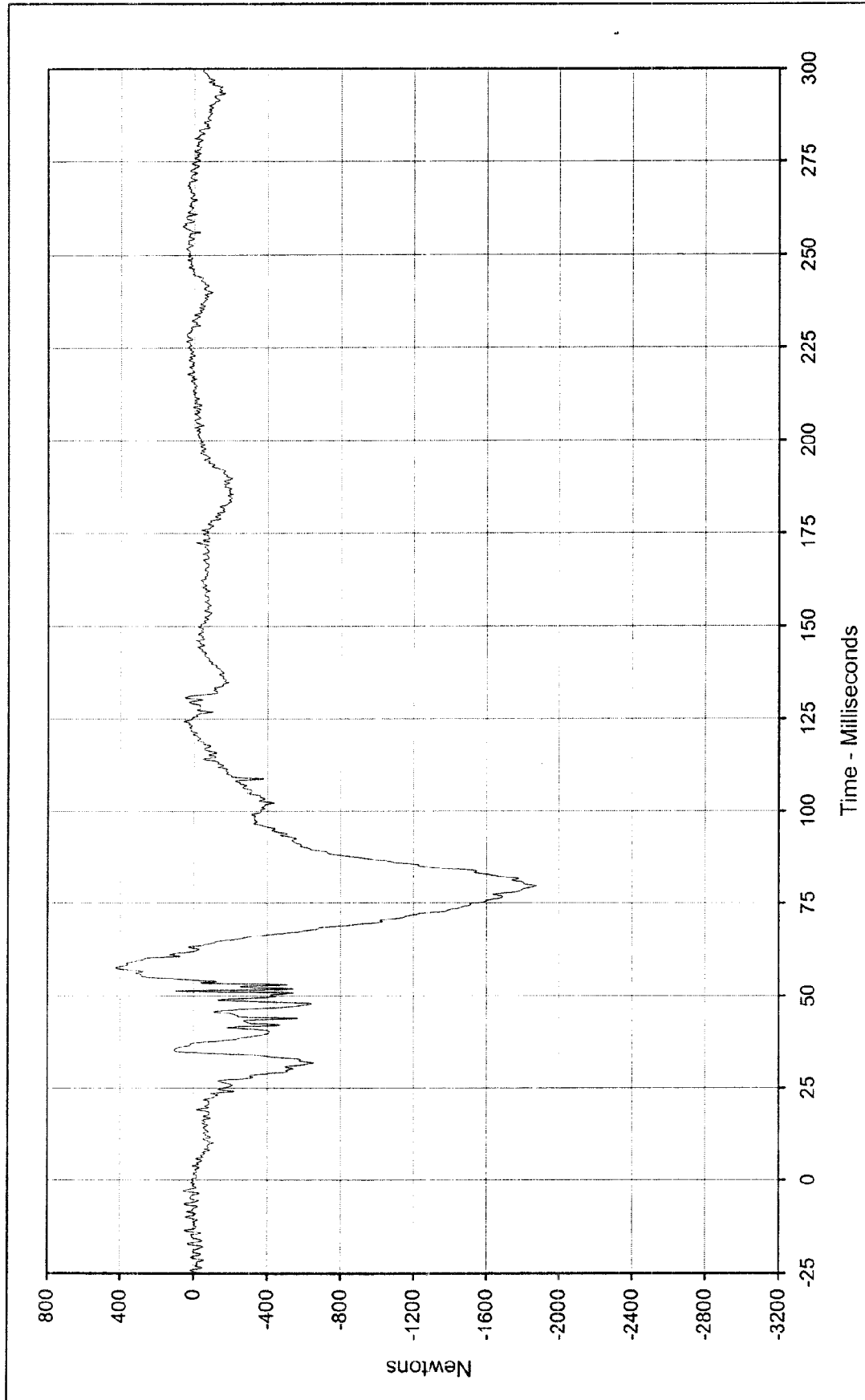
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





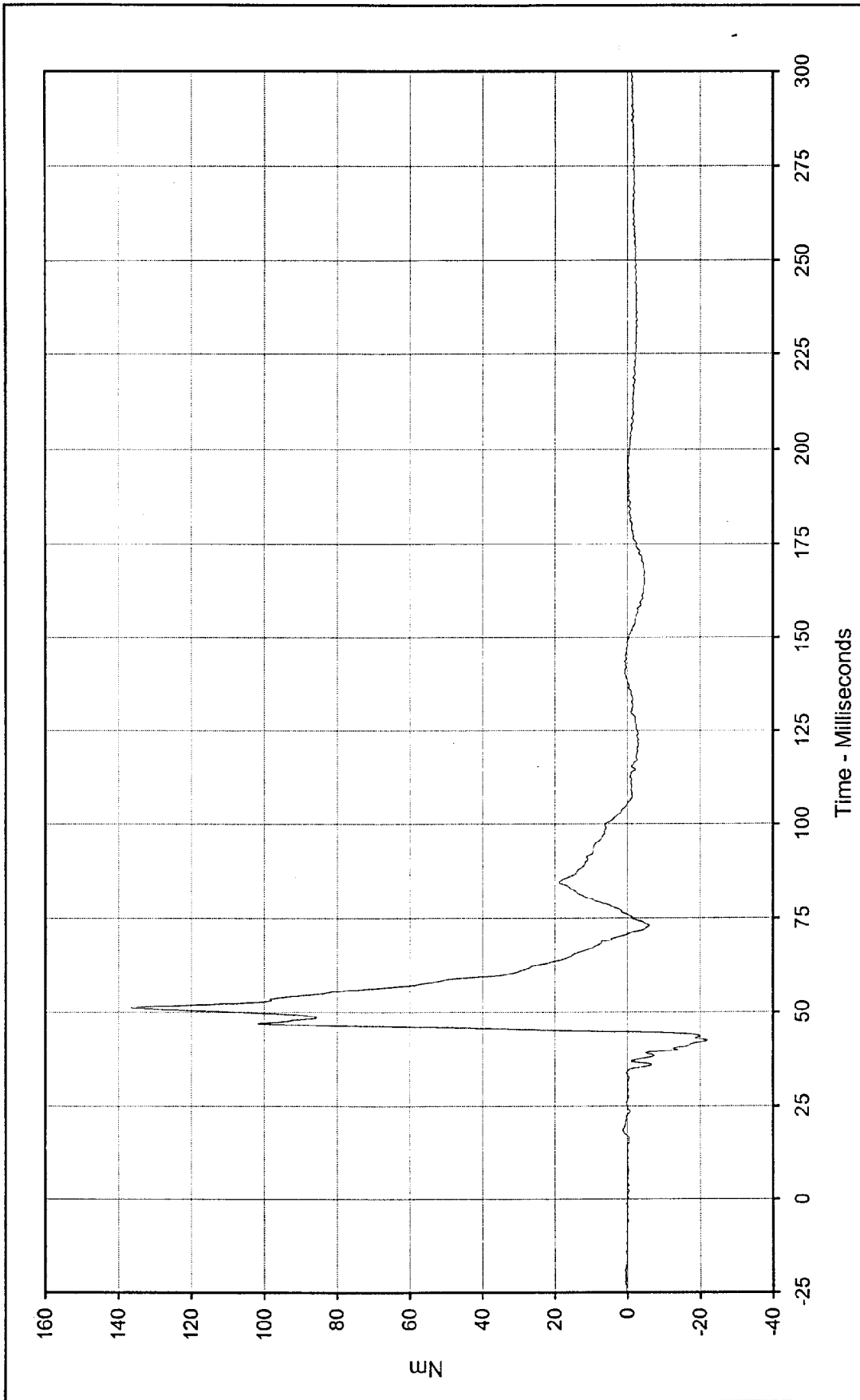
Curve Description:		Driver Left Lower Tibia Moment Y		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	40.5	at	79.6	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-36.0	at	35.3	Milliseconds		
SAE Filter Class:	600					
Date of Test:	1/8/99					
Curve Number:	FIL-030					





Curve Description:	Driver Left Lower Tibia Force Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	423.2 at 57.7 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-1879.2 at 79.6 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-031			

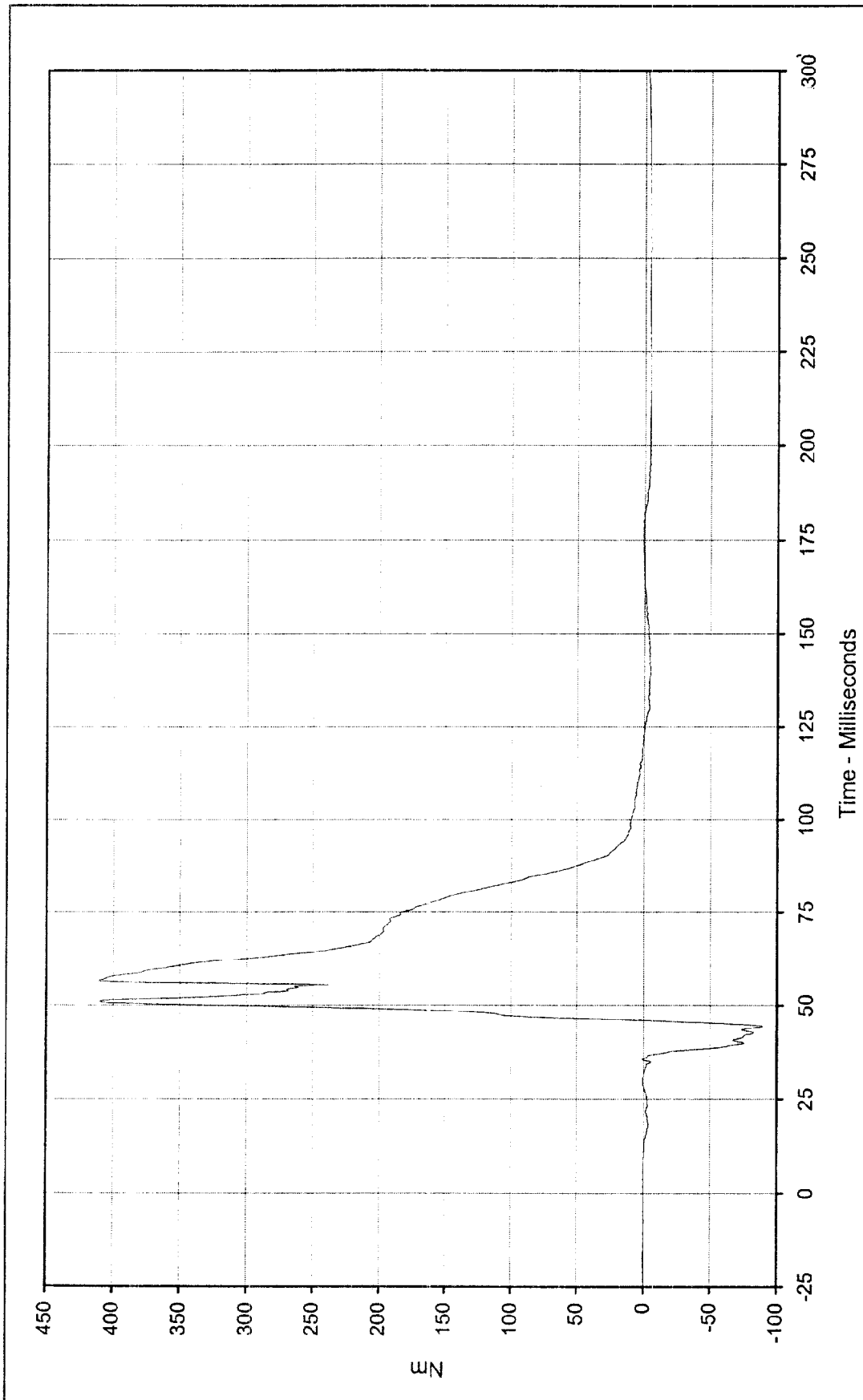




Curve Description:	Driver Right Lower Tibia Moment X			Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	136.5	at	51.2	Milliseconds	Test Vehicle:	1999 Mazda Protégé DX 4 Door Sedan
Minimum Value:	-22.0	at	42.3	Milliseconds		
SAE Filter Class:	600					
Date of Test:	1/8/99					
Curve Number:	FIL-032					







Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

Curve Description: Driver Right Lower Tibia Moment Y

Maximum Value: 411.1 at 56.6 Milliseconds

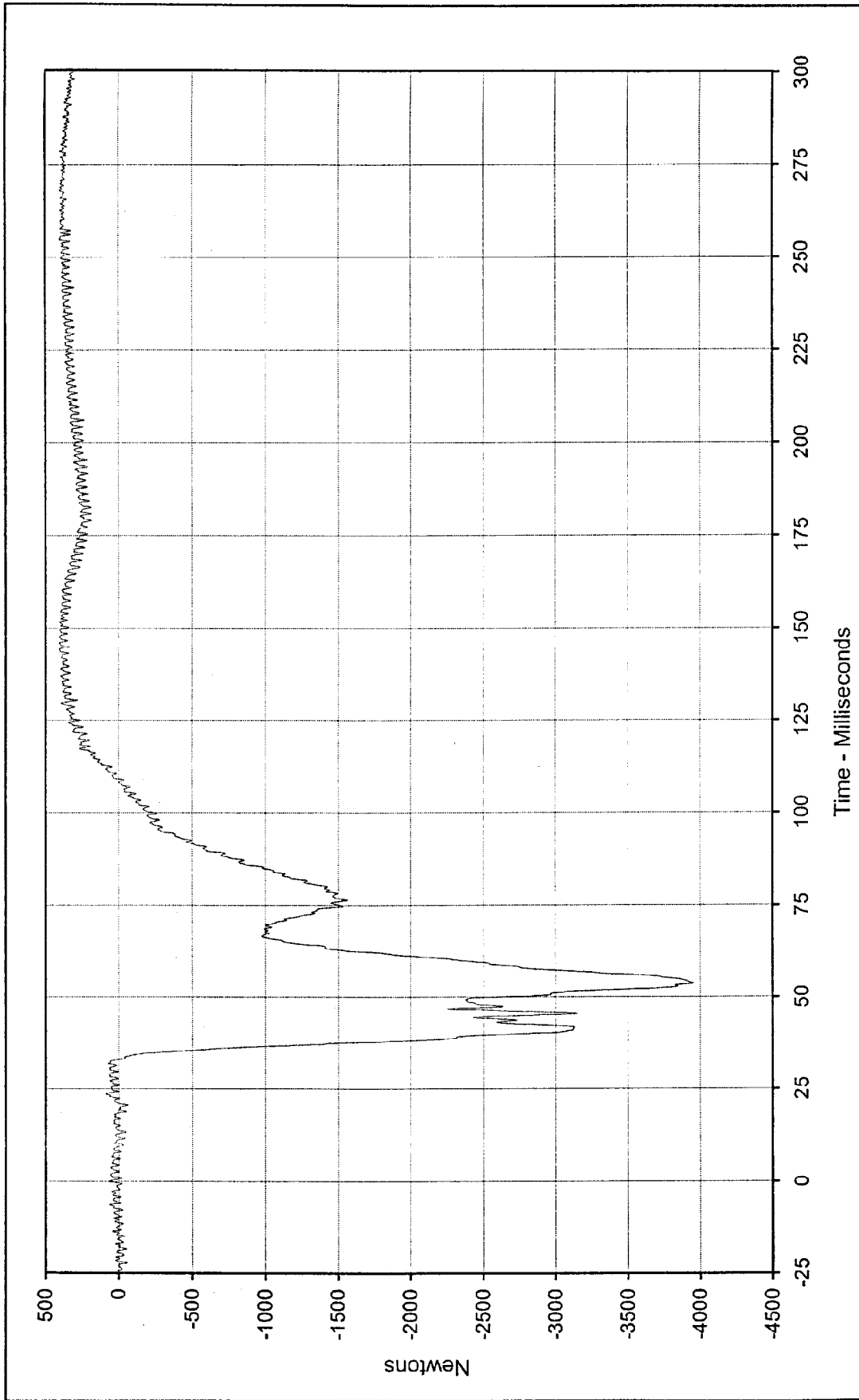
Minimum Value: -89.7 at 44.5 Milliseconds

SAE Filter Class: 600

Date of Test: 1/8/99

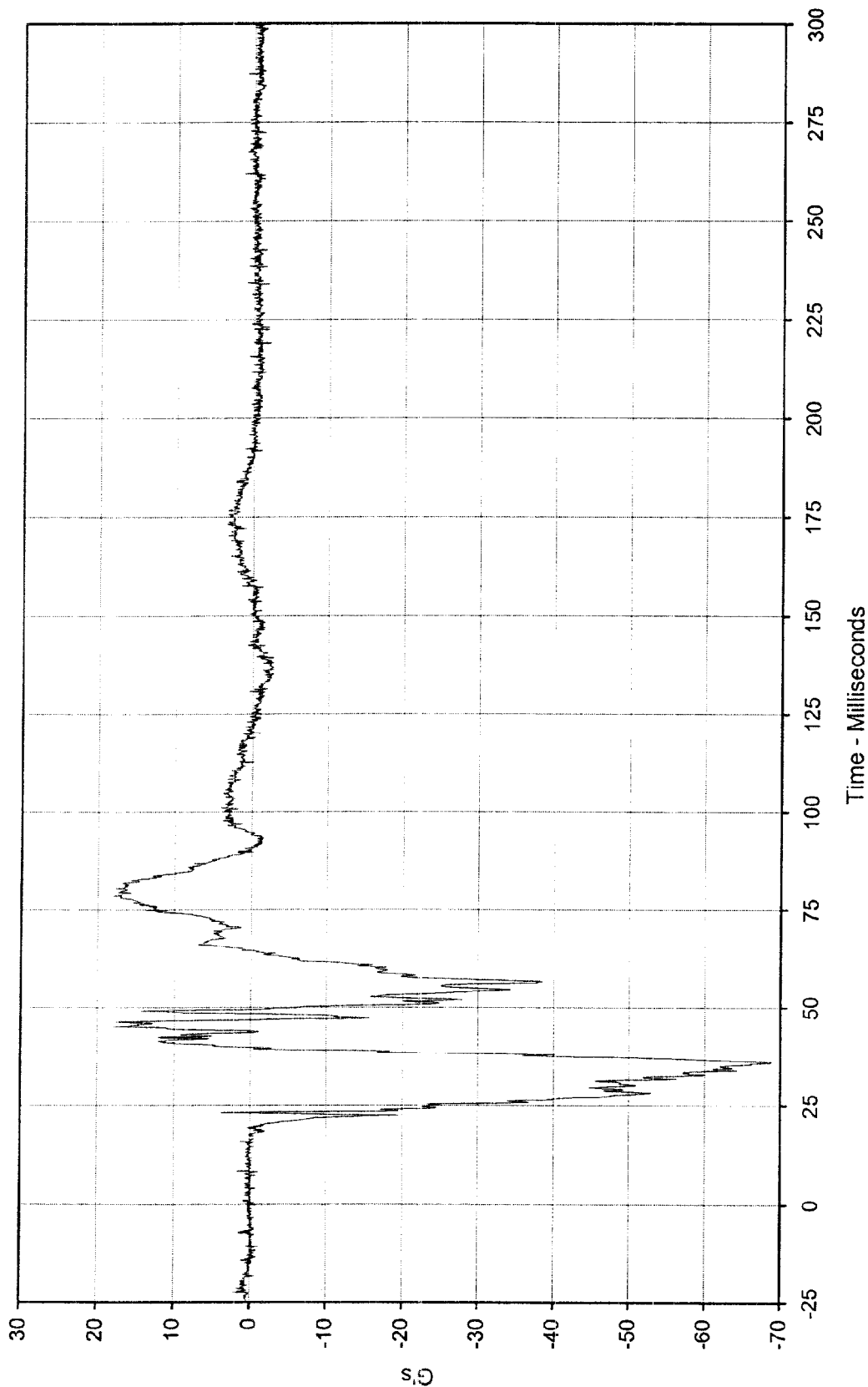
Curve Number: FIL-033





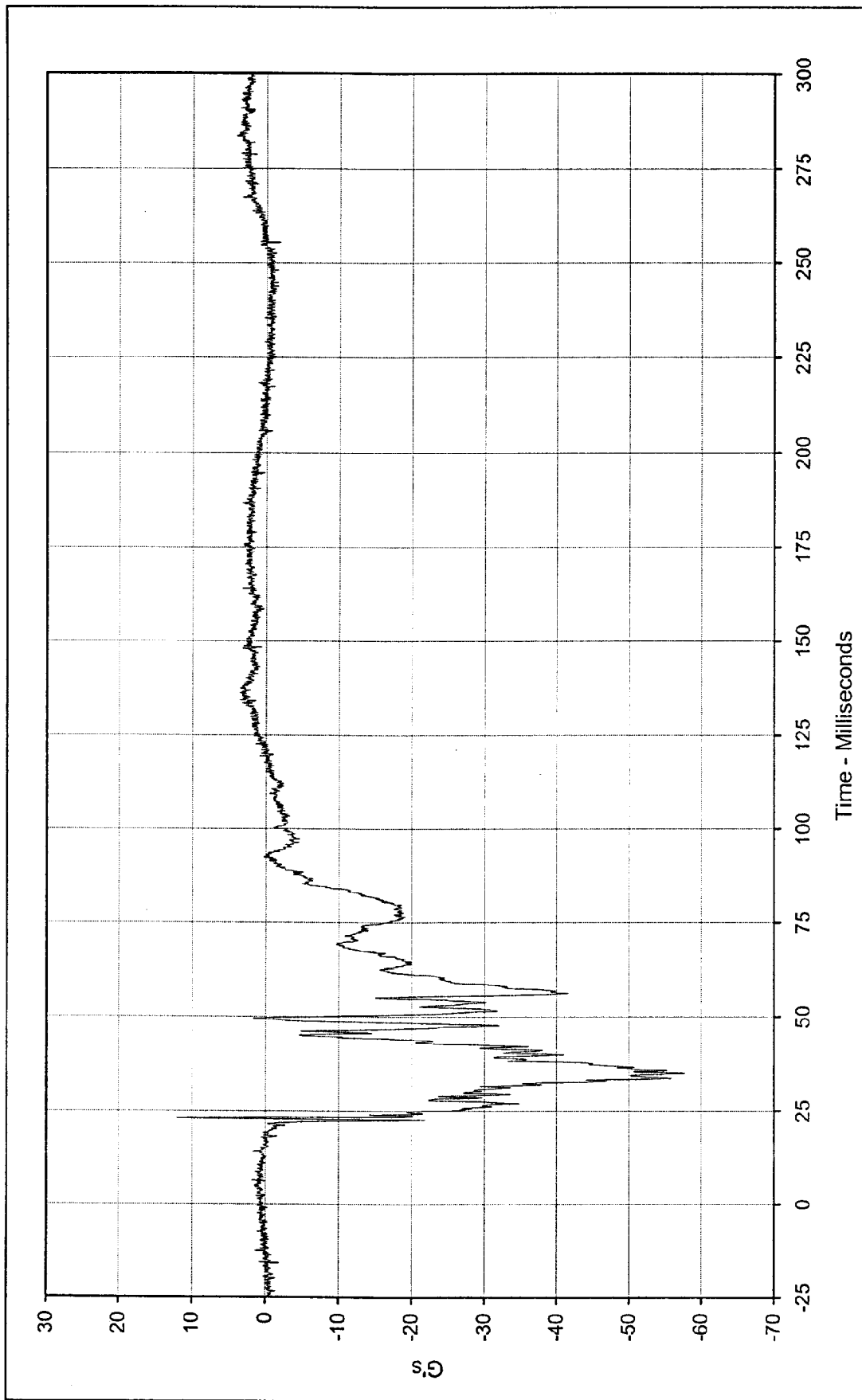
Curve Description:	Driver Right Lower Tibia Force Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	407.0 at 145.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-3956.2 at 53.6 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-034			





Curve Description:	Driver Left Foot Aft X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	18.0 at 45.2 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-68.9 at 36.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-035			

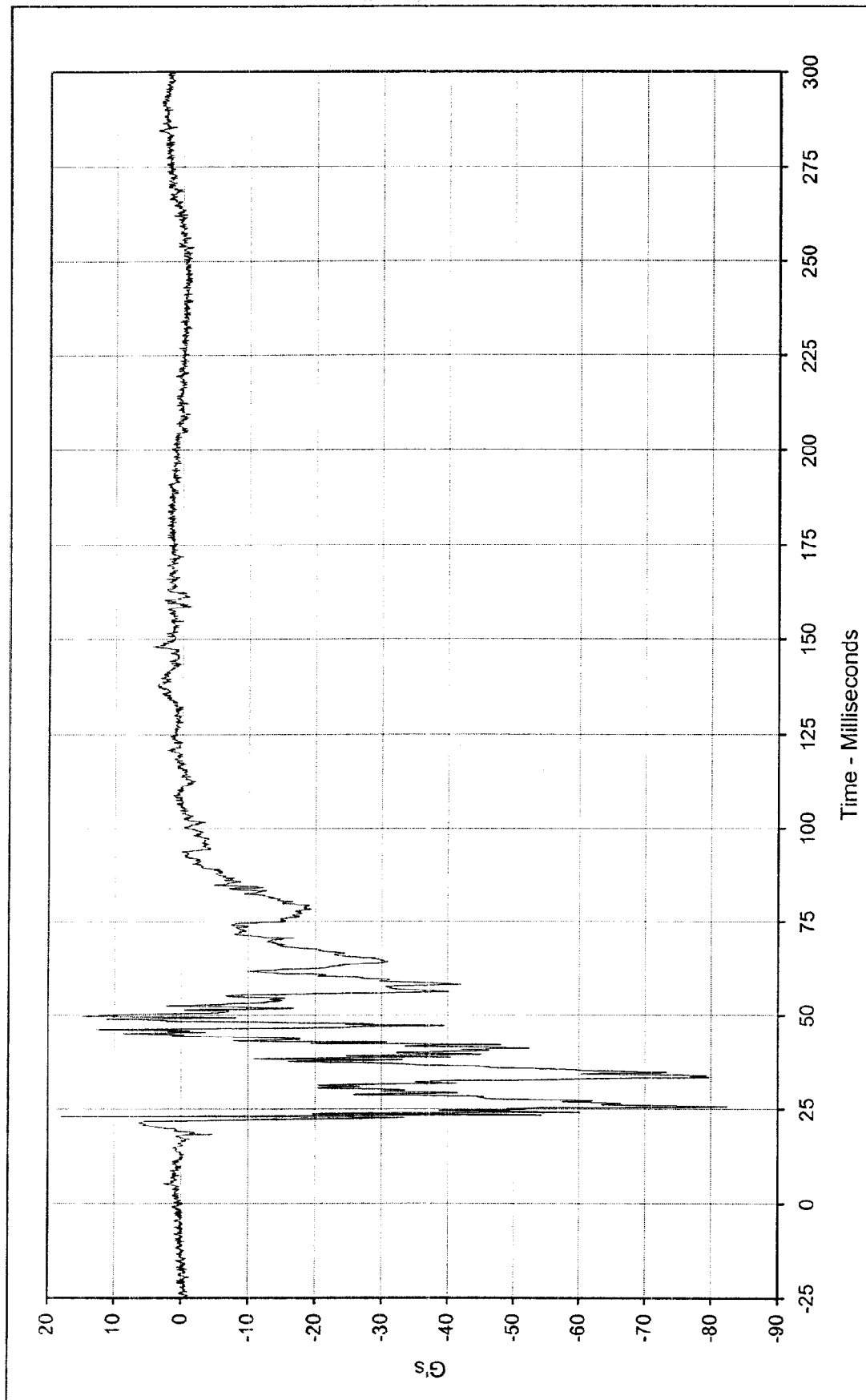




Curve Description:	Driver Left Foot Aft Z		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	11.9	at 23.1	Test Vehicle:	1999 Mazda Protégé DX 4 Door Sedan	
Minimum Value:	-57.8	at 34.9			
SAE Filter Class:	1000				
Date of Test:	1/8/99				
Curve Number:	FIL-036				

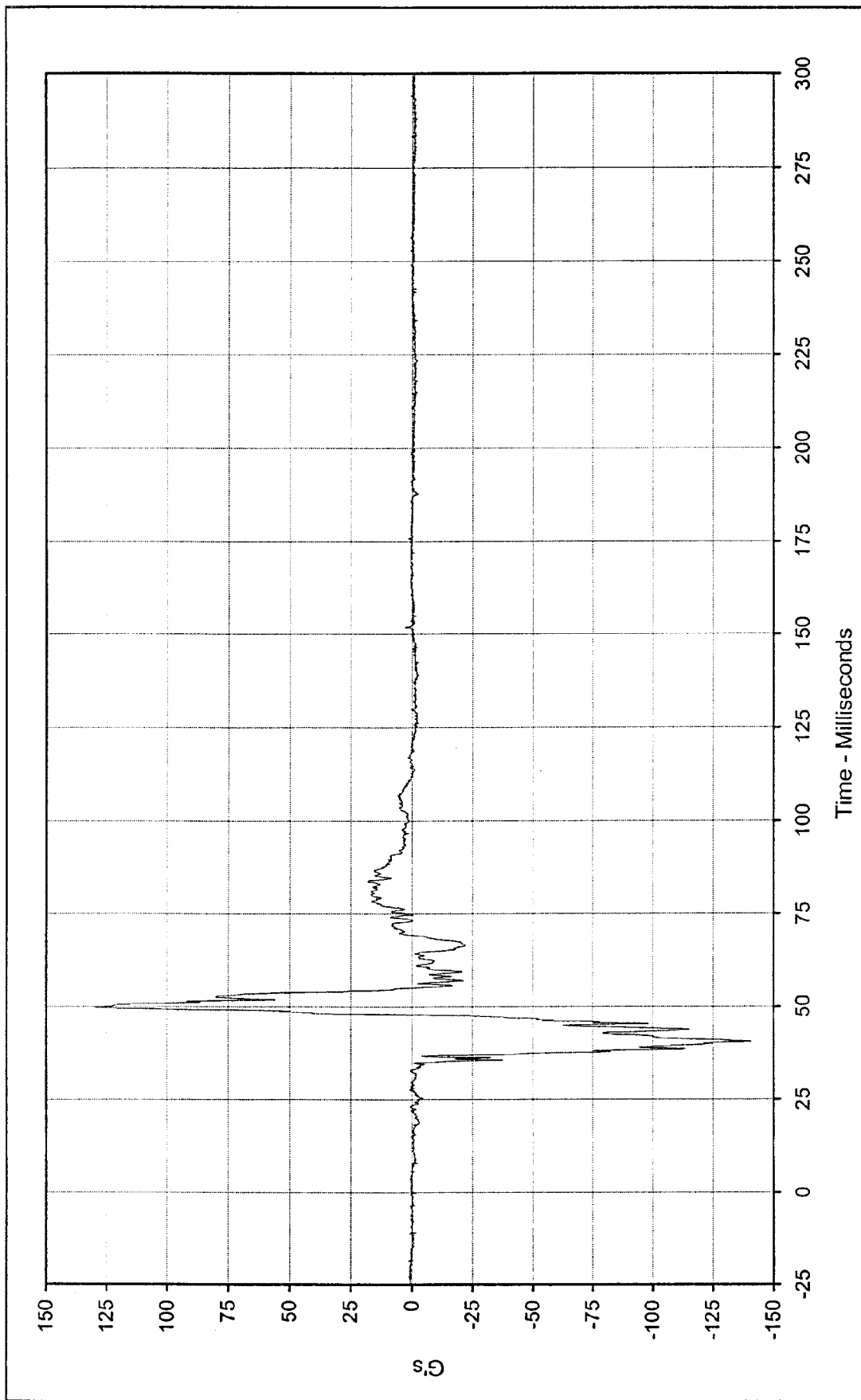






Curve Description:	Driver Left Foot Fore Z	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	17.3 at 23.1 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-82.4 at 25.7 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	1/8/99		
Curve Number:	FIL-037		



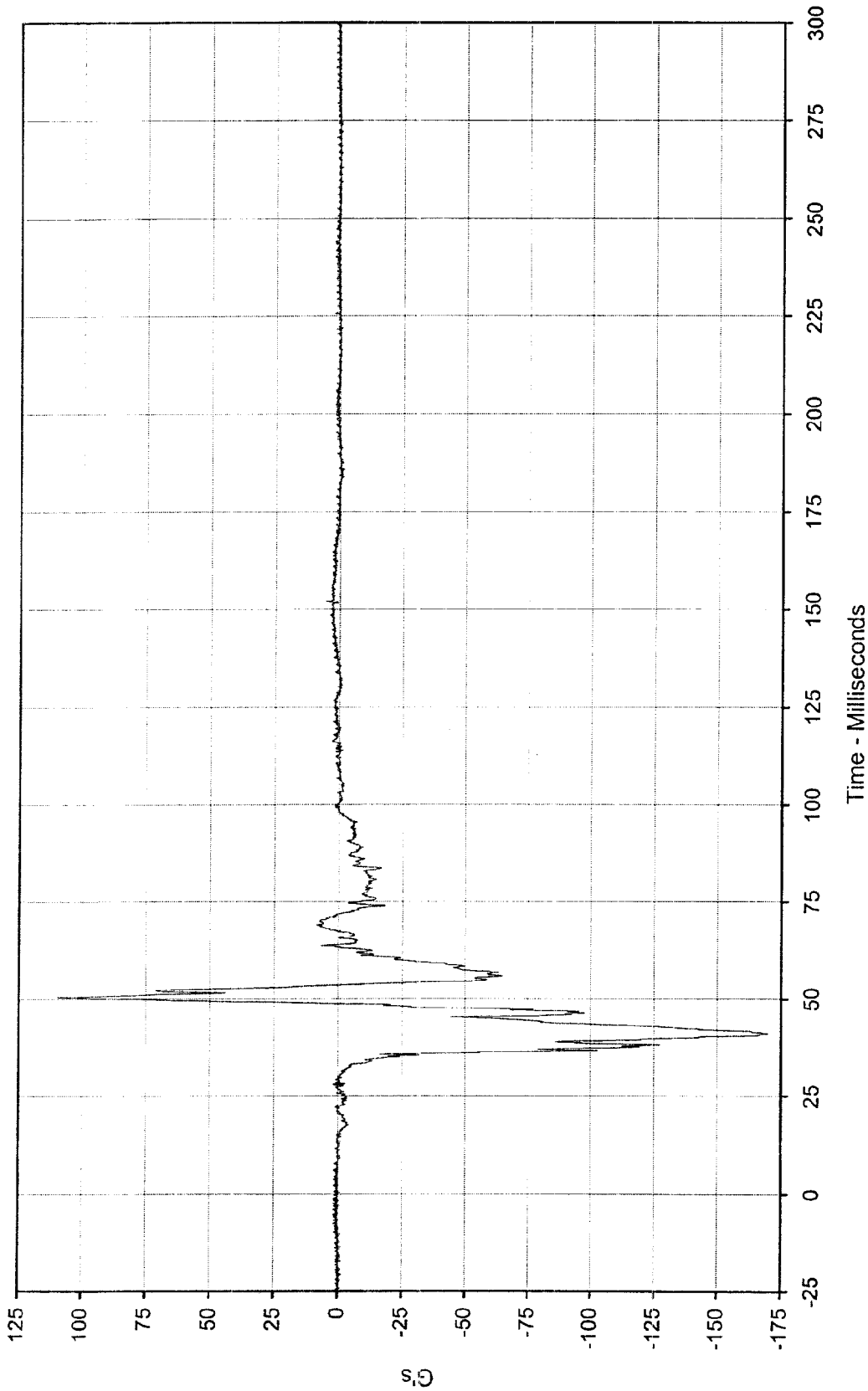


Curve Description: Driver Right Foot Aft X

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

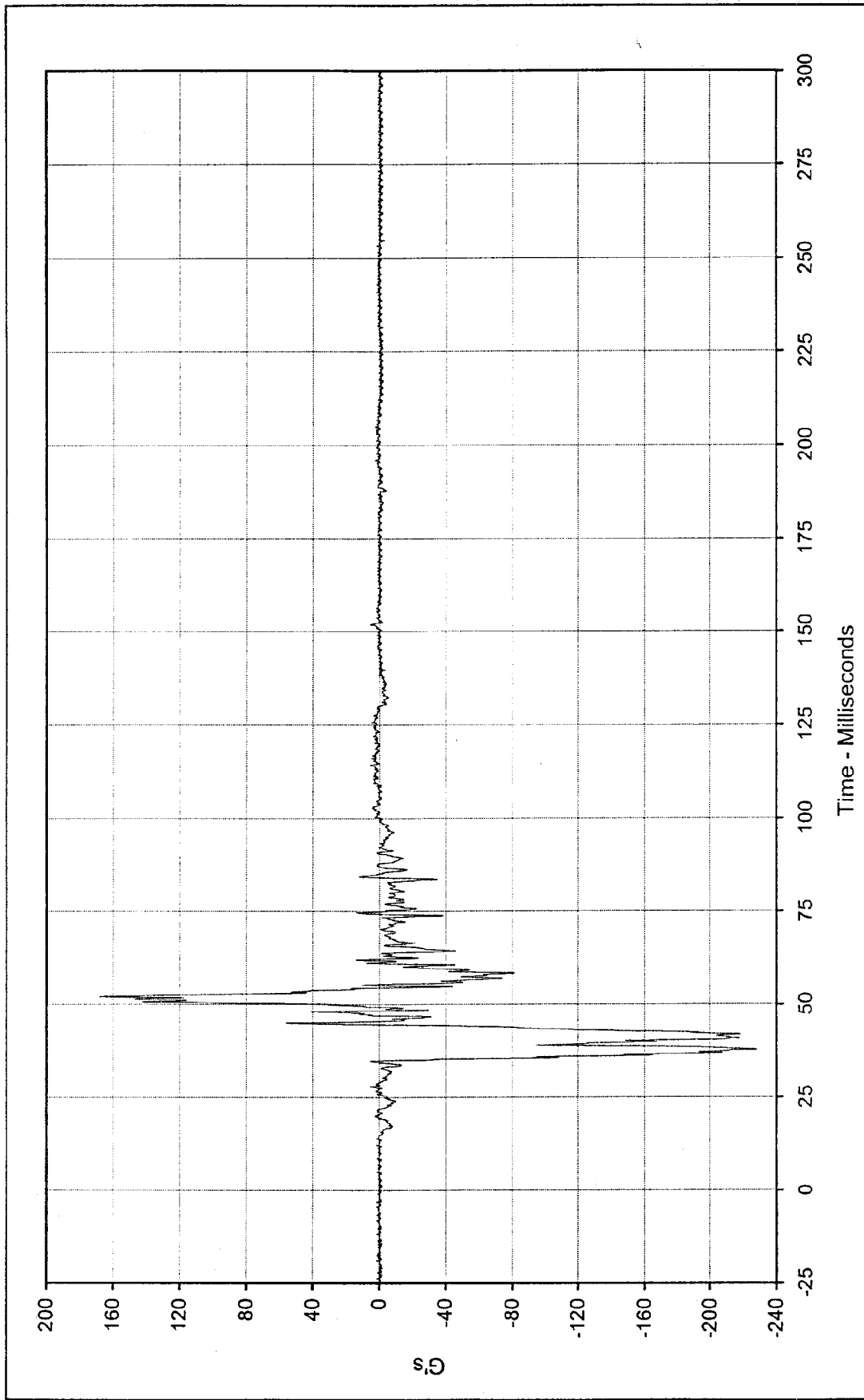
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





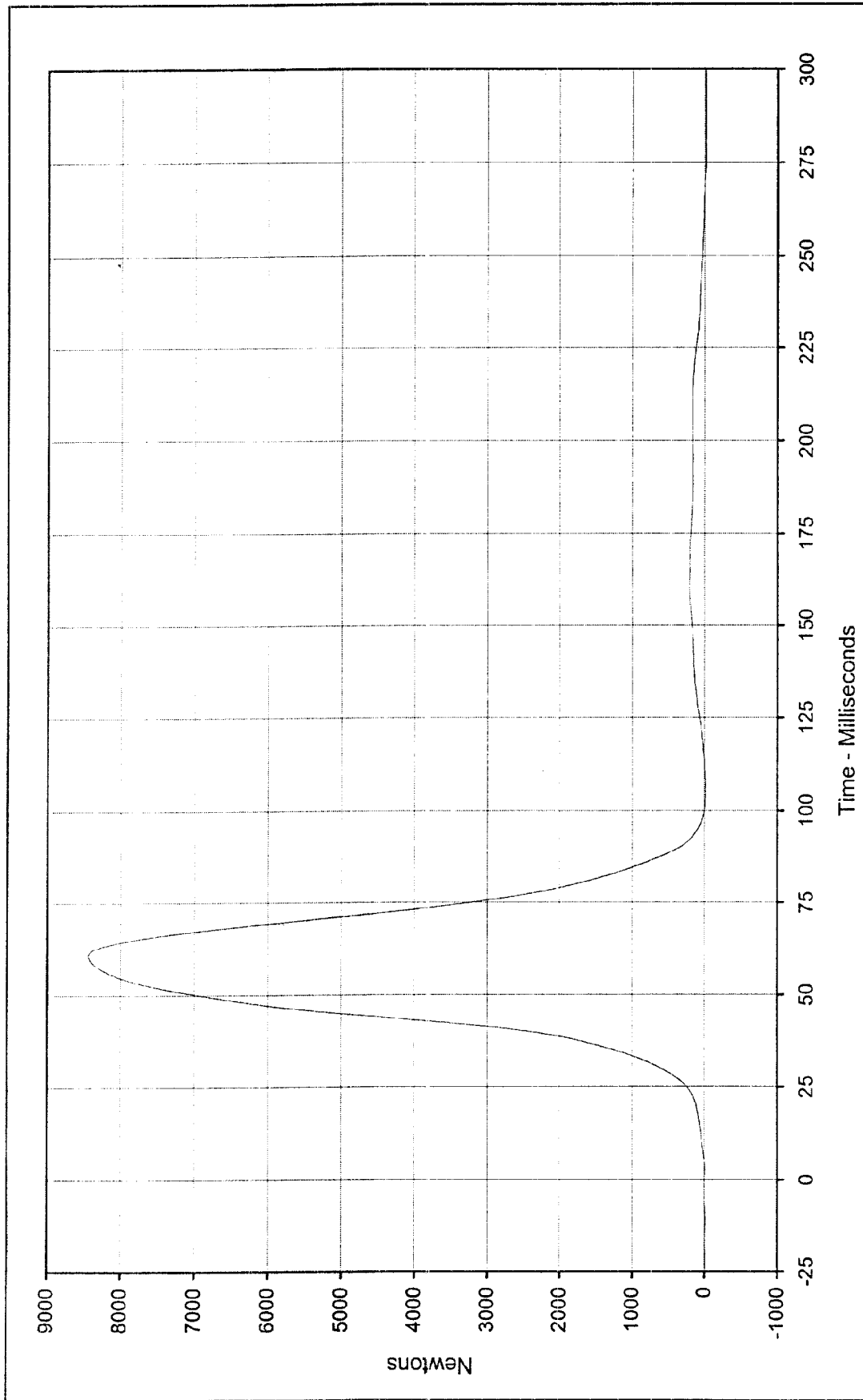
Curve Description:	Driver Right Foot Aft Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	109.2	at	50.5	Milliseconds
Minimum Value:	-170.2	at	41.1	Milliseconds
SAE Filter Class:	1000			
Date of Test:	1/8/99	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Curve Number:	FIL-039			





Curve Description:	Driver Right Foot Fore Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	167.9 at 52.0 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-228.1 at 37.6 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-040			

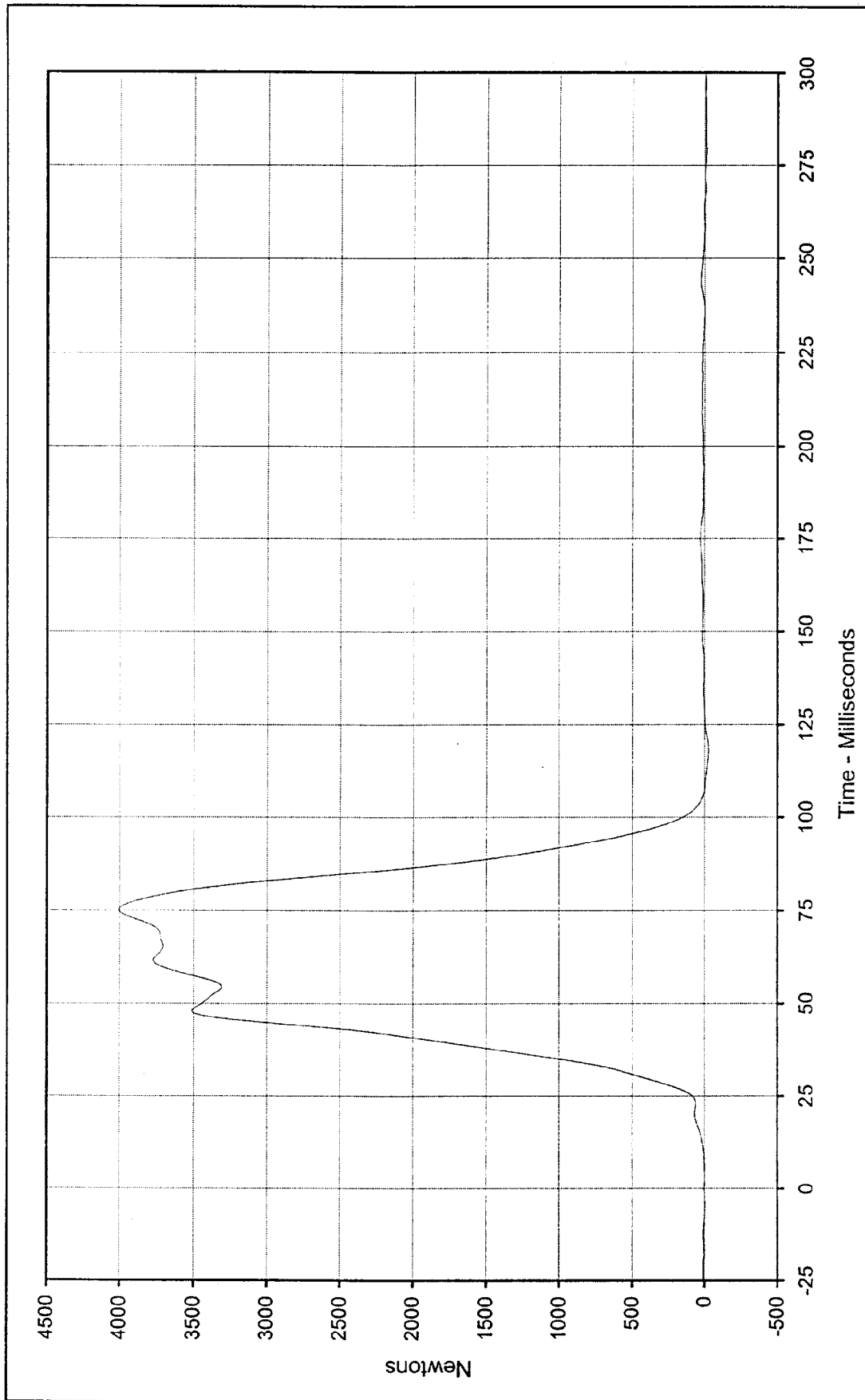




Curve Description: Driver Lap Belt Force
 Maximum Value: 8441.8 at 60.7 Milliseconds
 Minimum Value: -20.7 at 105.5 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-041

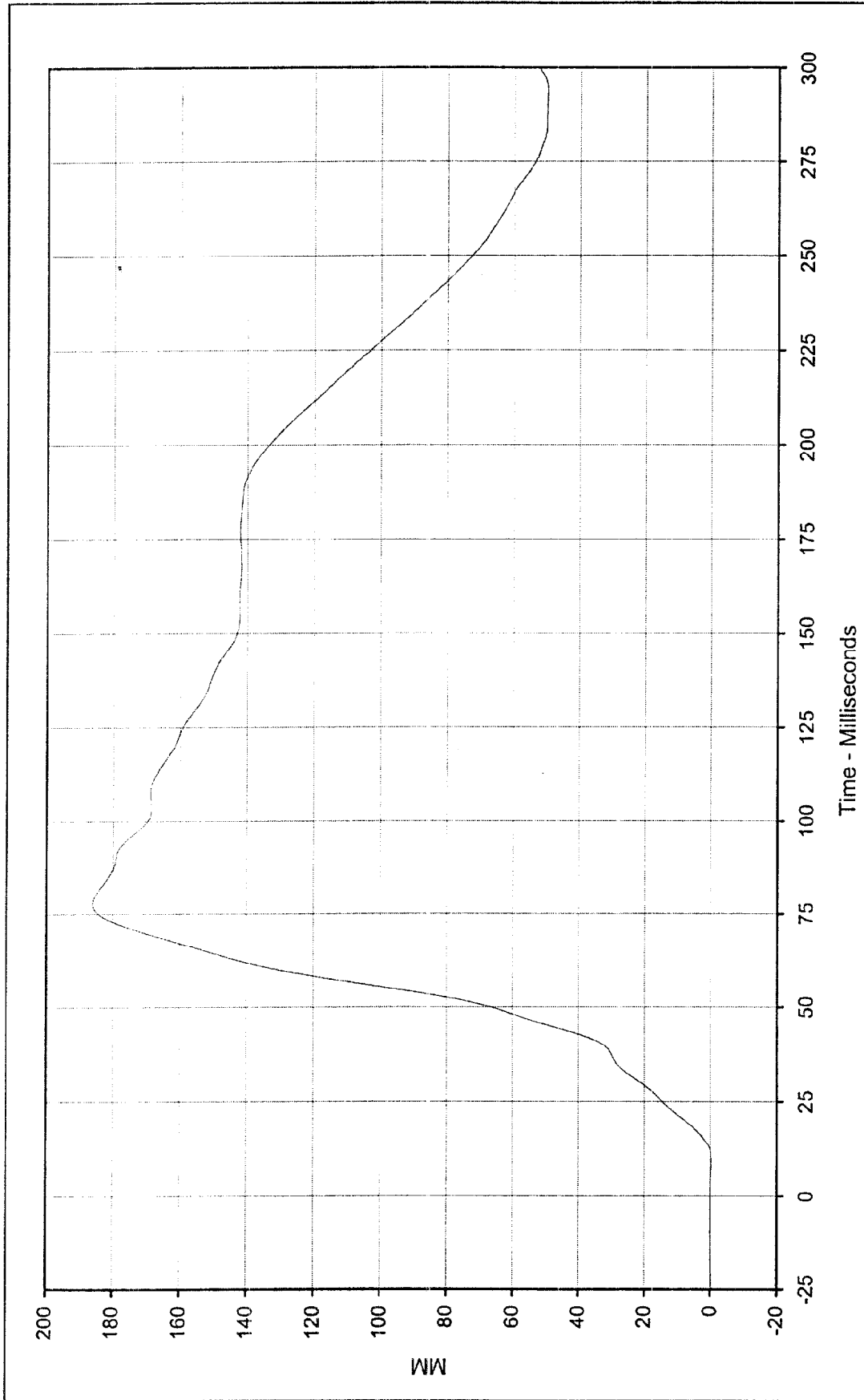
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





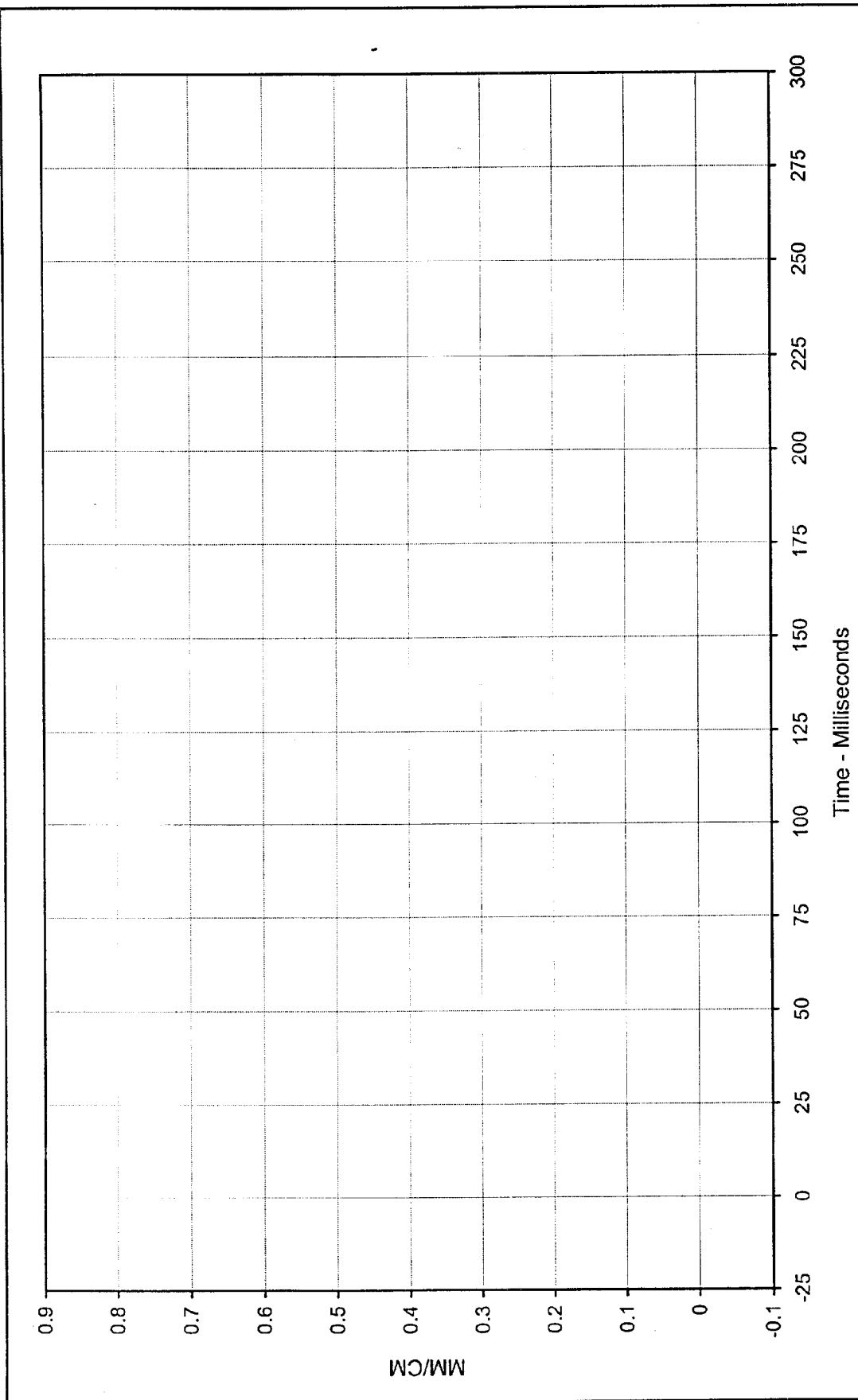
Curve Description:		Driver Shoulder Belt Force		Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	4003.7	at	75.2	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-26.1	at	118.5		
SAE Filter Class:	60				
Date of Test:	1/8/99				
Curve Number:	FIL-042				





Curve Description:	Driver Shoulder Belt Pullout	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	186.0 at 77.7 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-0.3 at 9.3 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-043			

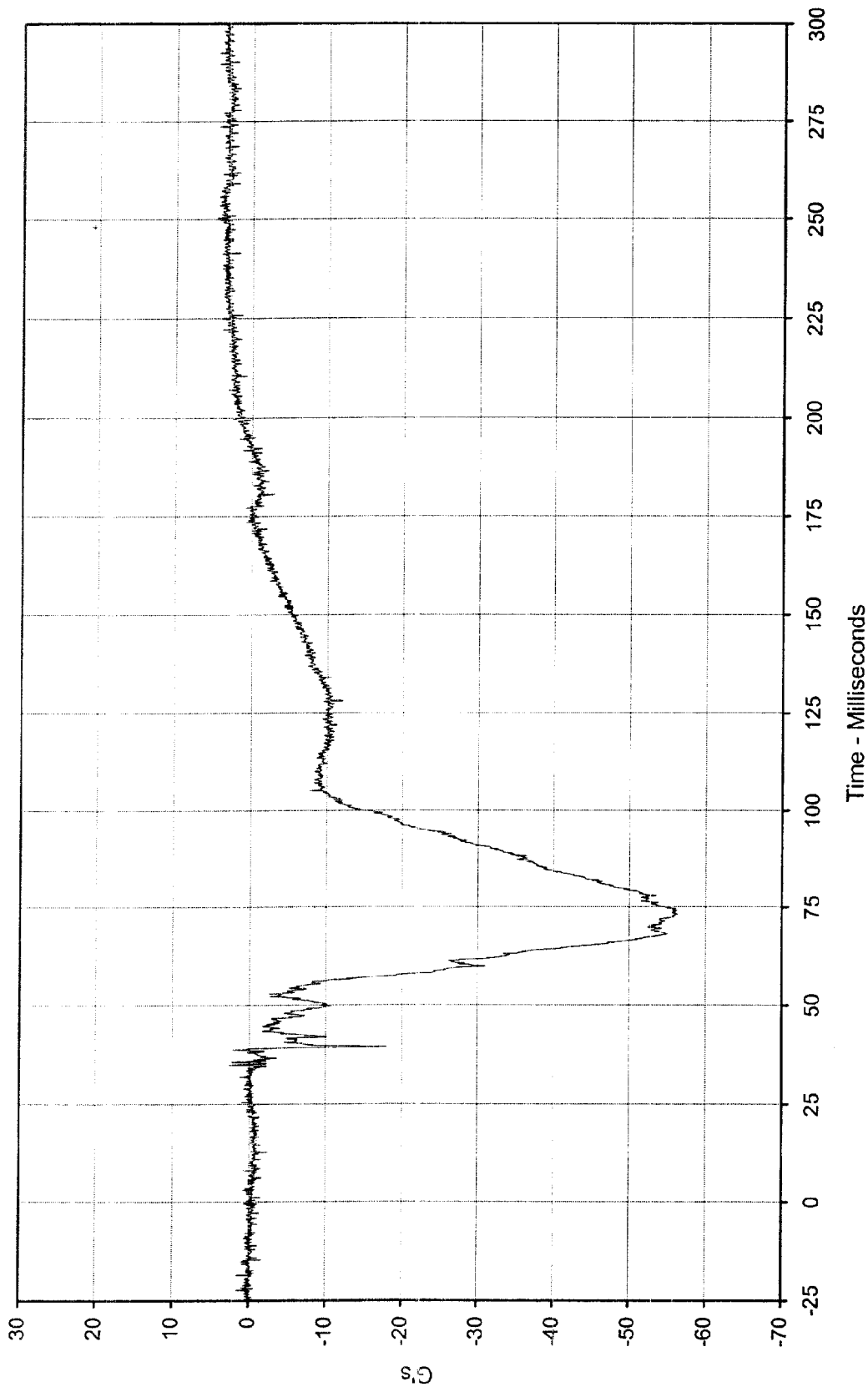




Curve Description:	Driver Shoulder Belt Elongation	*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	0.00	at 0.0	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.00	at 0.0			
SAE Filter Class:	60				
Date of Test:	1/8/98				
Curve Number:	FIL-044				

* No Data

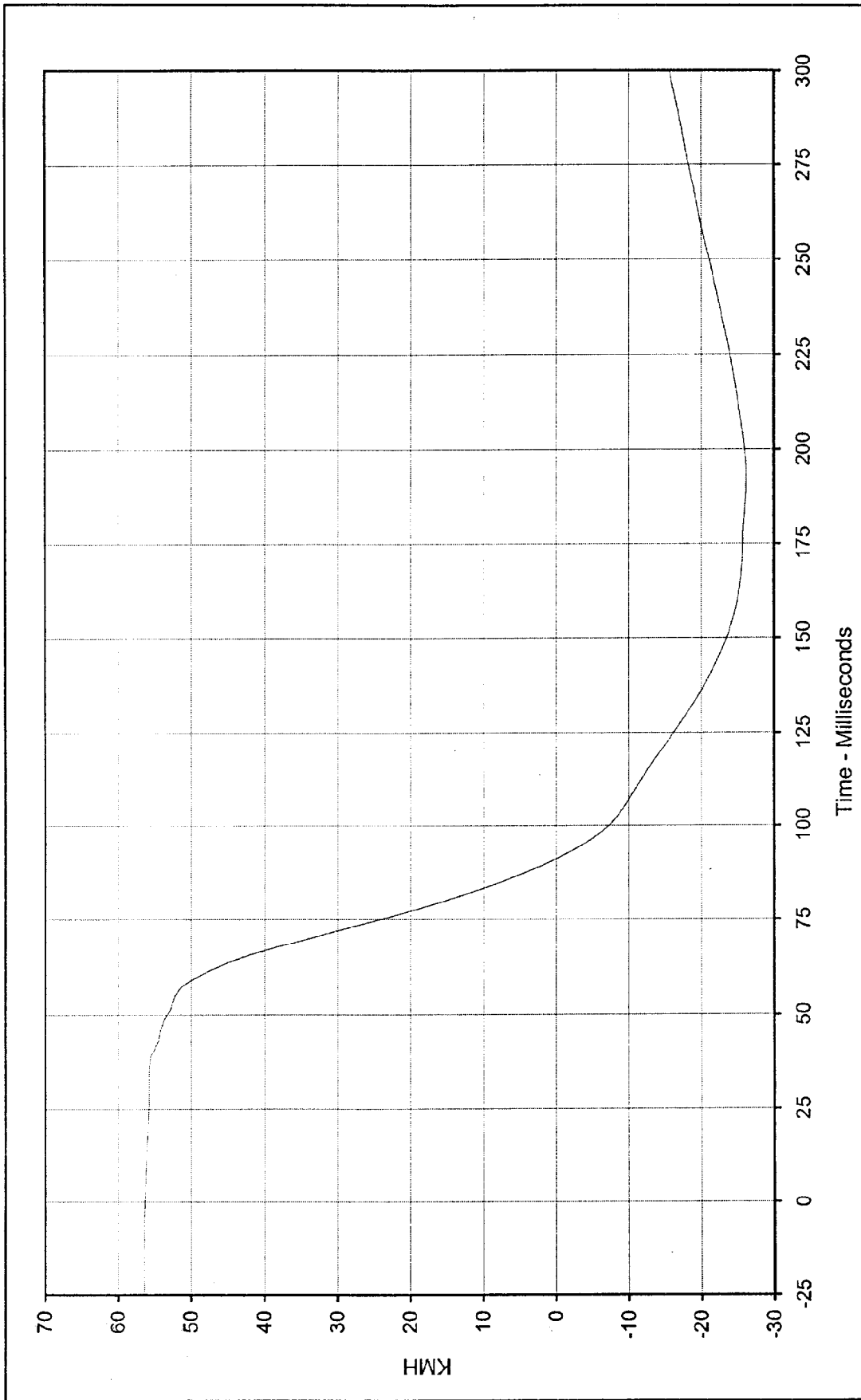




Curve Description: Passenger Head Primary X
 Maximum Value: 4.7 at 250.4 Milliseconds
 Minimum Value: -56.3 at 73.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 1/8/99
 Curve Number: FIL-045

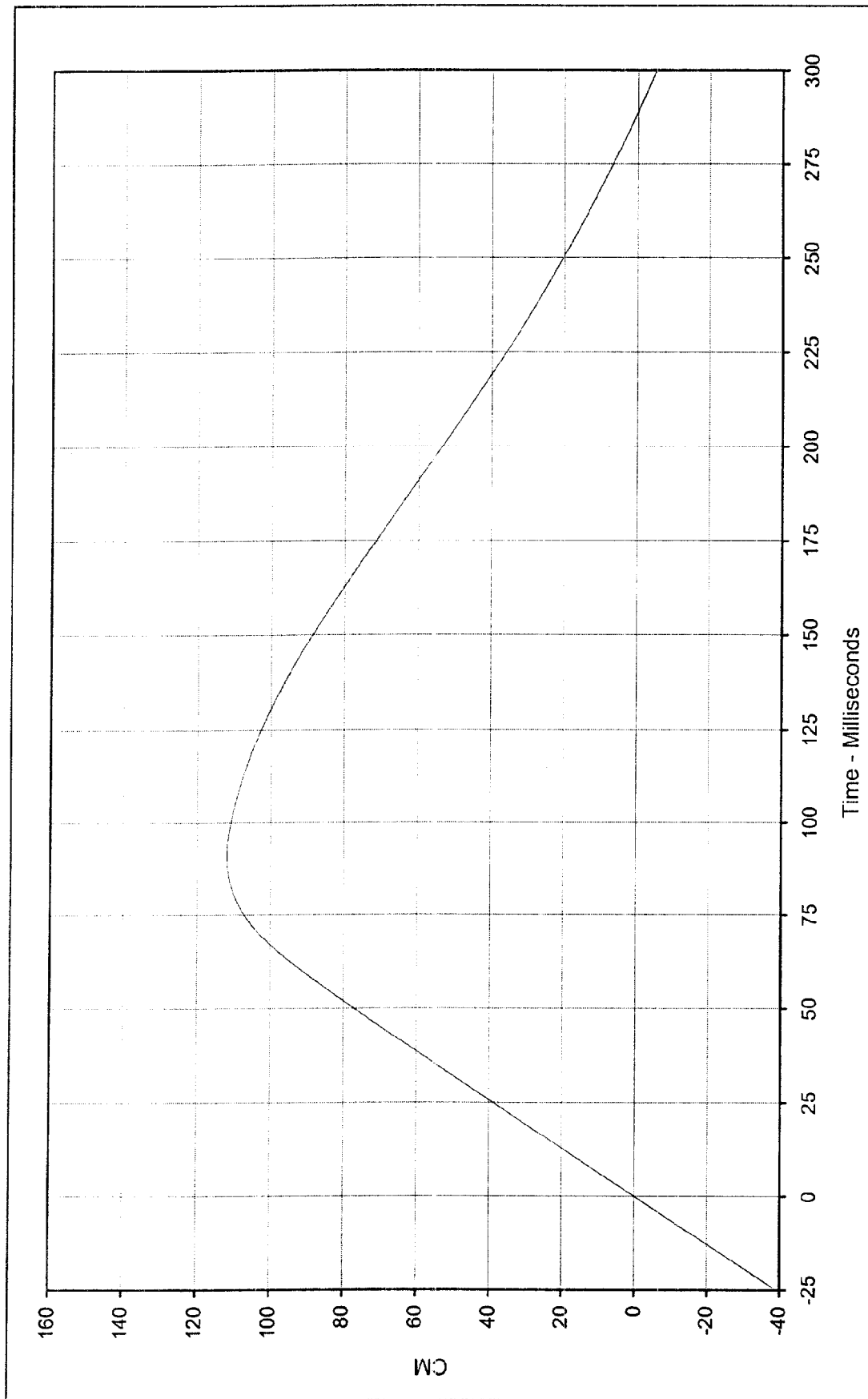
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Head Primary X Velocity		Testing Program: 1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	56.3	at	0.0
Minimum Value:	-26.2	at	192.3
SAE Filter Class:	180		
Date of Test:	1/8/99	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Curve Number:	IN1-045		





Curve Description: Passenger Head Primary X Displ.

Maximum Value: 111.9 at 90.9 Milliseconds

Minimum Value: -5.0 at 299.9 Milliseconds

SAE Filter Class: 180

Date of Test: 1/8/99

Curve Number: IN2-045

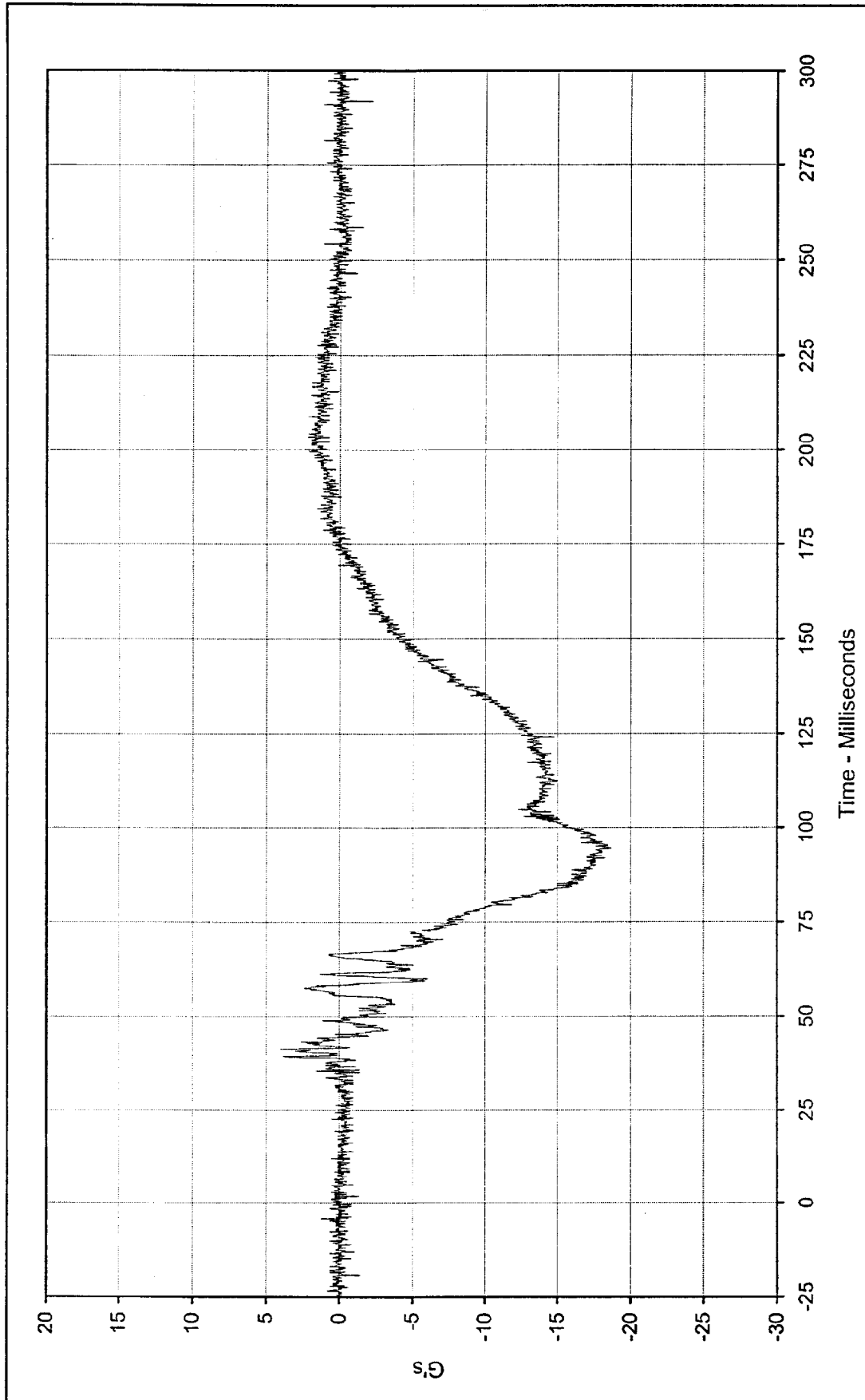
Test Program:

Test Vehicle:

1999 NHTSA 35 mph NCAP No.: MX5401

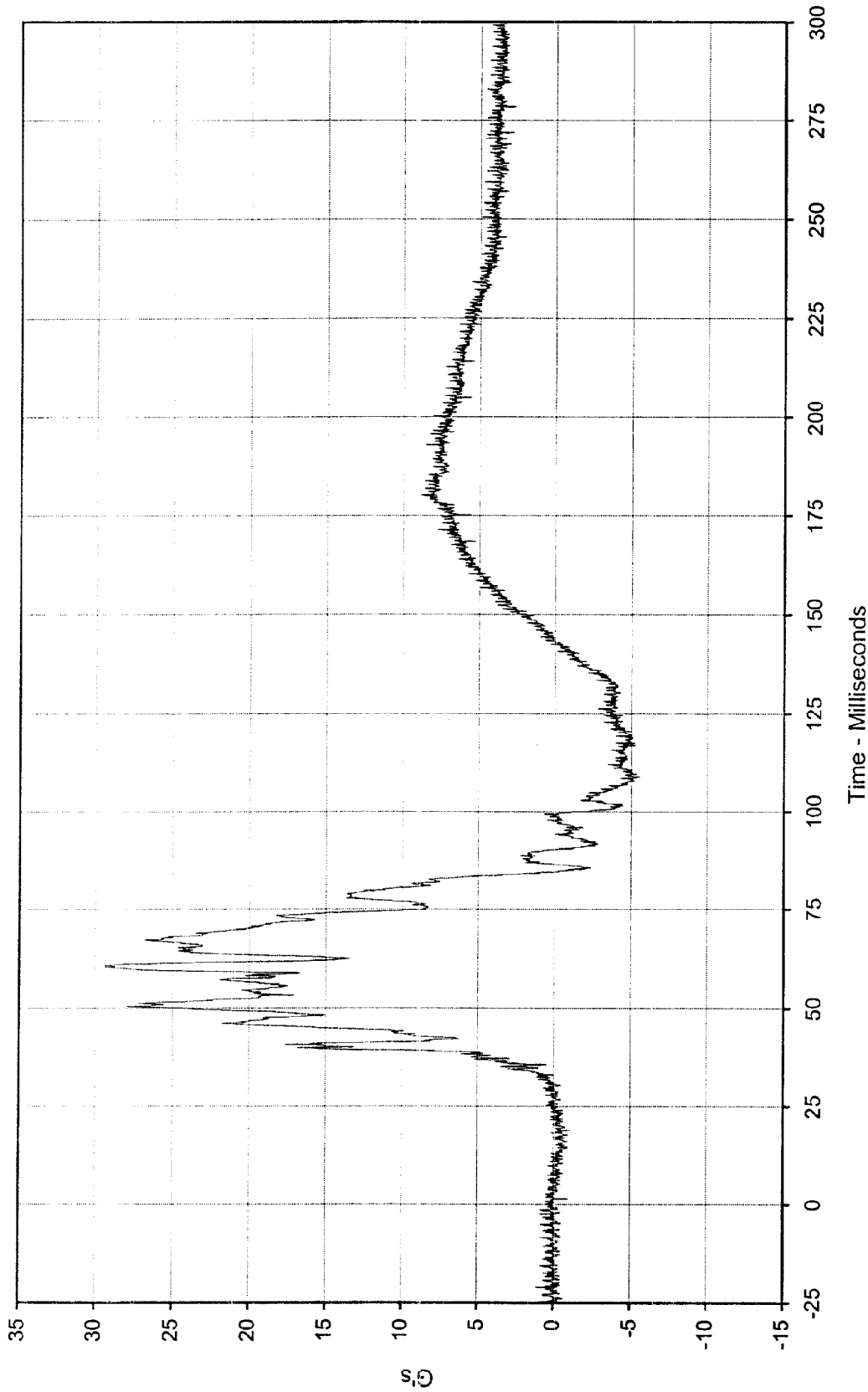
1999 Mazda Protegé DX 4 Door Sedan





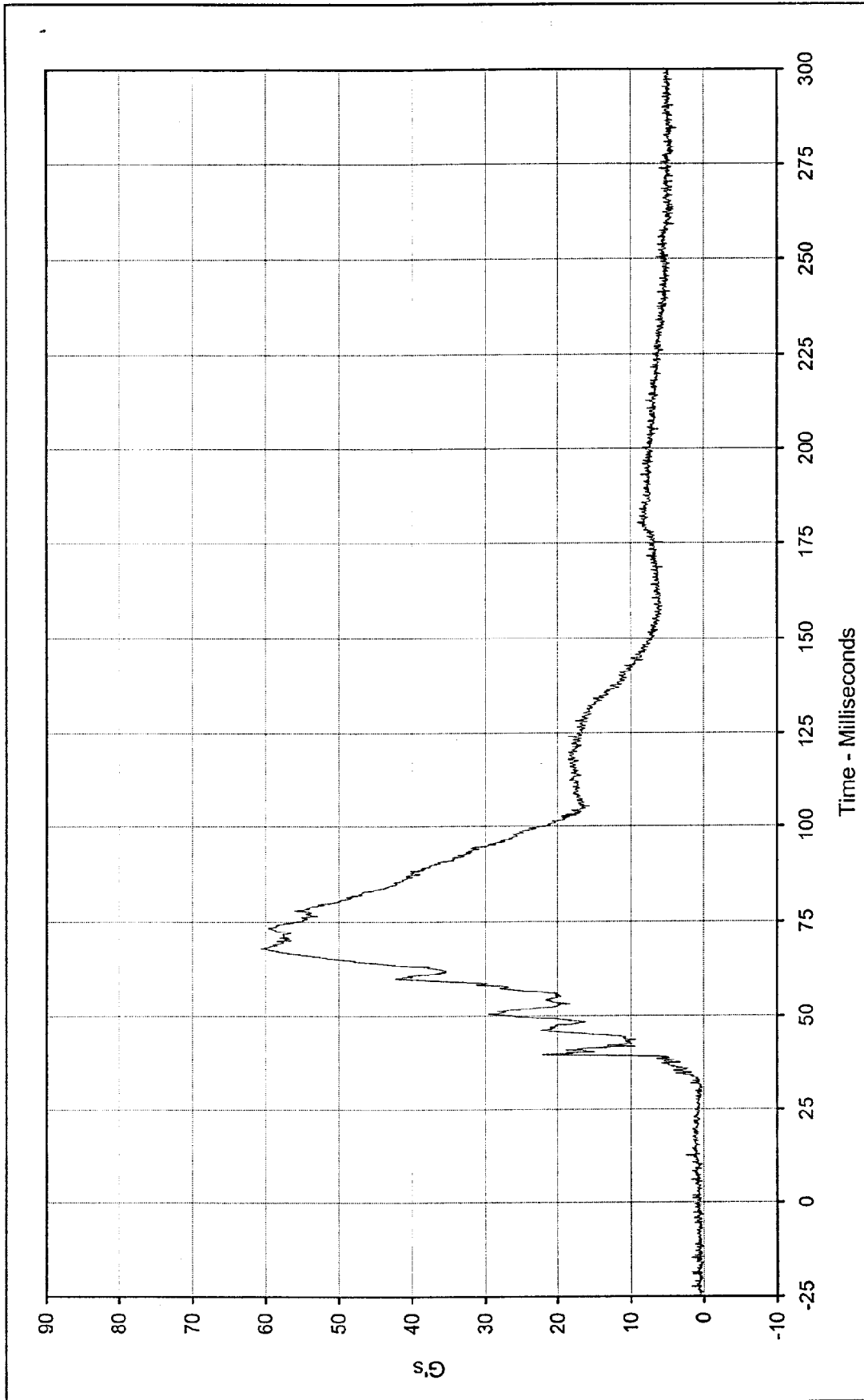
Curve Description:		Passenger Head Primary Y		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	4.0	at	41.2	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-18.7	at	94.1	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	FIL-046					





Curve Description:	Passenger Head Primary Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	29.4	at	60.3	Milliseconds
Minimum Value:	-5.6	at	108.8	Milliseconds
SAE Filter Class:	1000	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Date of Test:	1/8/99			
Curve Number:	FIL-047			

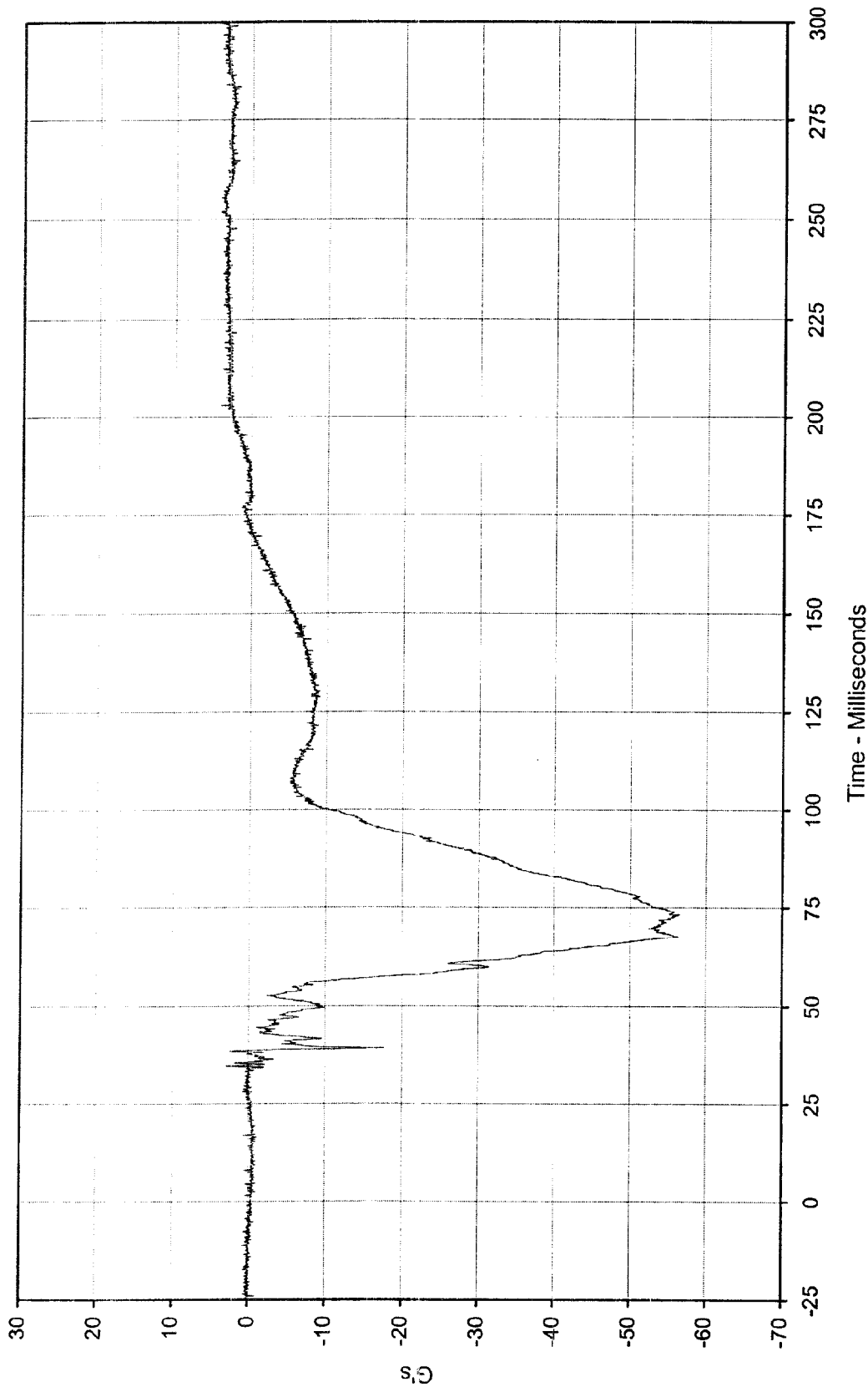




Curve Description:		Passenger Head Resultant Primary		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	60.6	at	67.9	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	0.2	at	3.6	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	RES-045					

The logo for KARCO Engineering. It features a stylized lightbulb with a gear-like base, followed by the word "KARCO" in a bold, sans-serif font. To the right of "KARCO", the word "Engineering" is written in a script font. The entire logo is set against a black background with a white diagonal stripe.

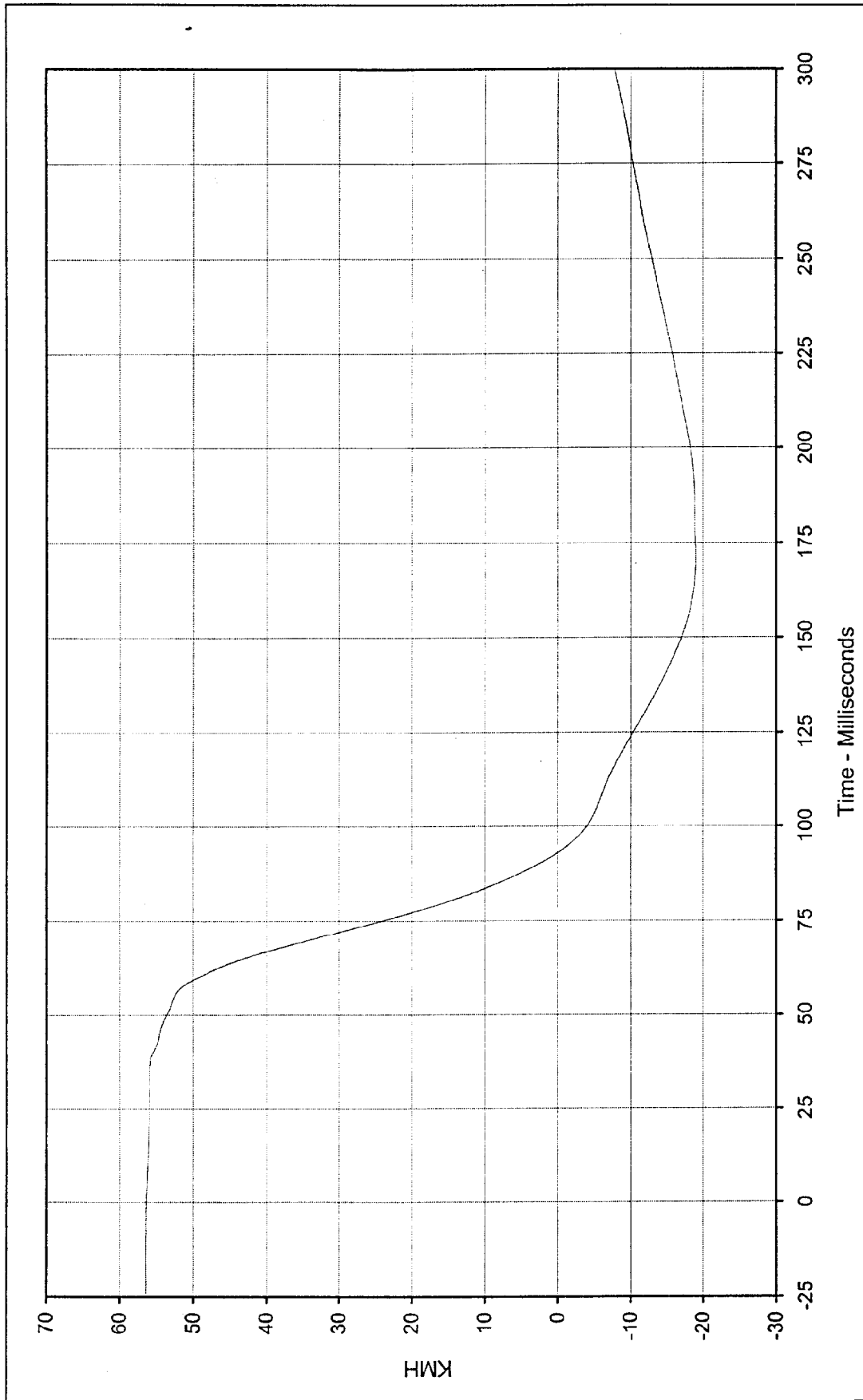




Curve Description: Passenger Head Redundant X
 Maximum Value: 4.2 at 252.1 Milliseconds
 Minimum Value: -56.5 at 73.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 1/8/99
 Curve Number: FIL-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 56.4 at 0.0 Milliseconds

Minimum Value: -19.0 at 171.2 Milliseconds

SAE Filter Class: 180

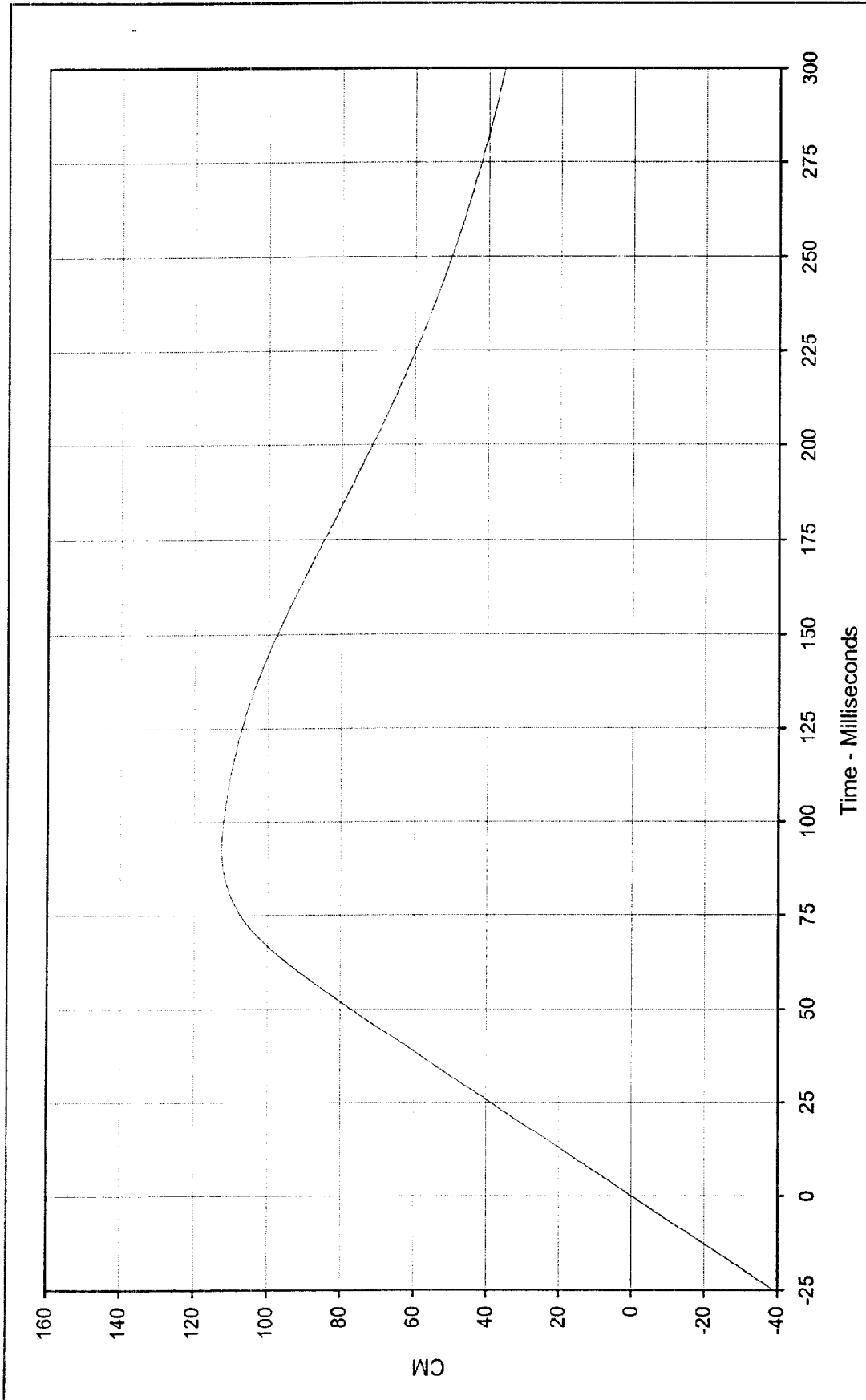
Date of Test: 1/8/99

Curve Number: IN1-048

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Head Redundant X Displ.

Maximum Value: 112.5 at 92.8 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

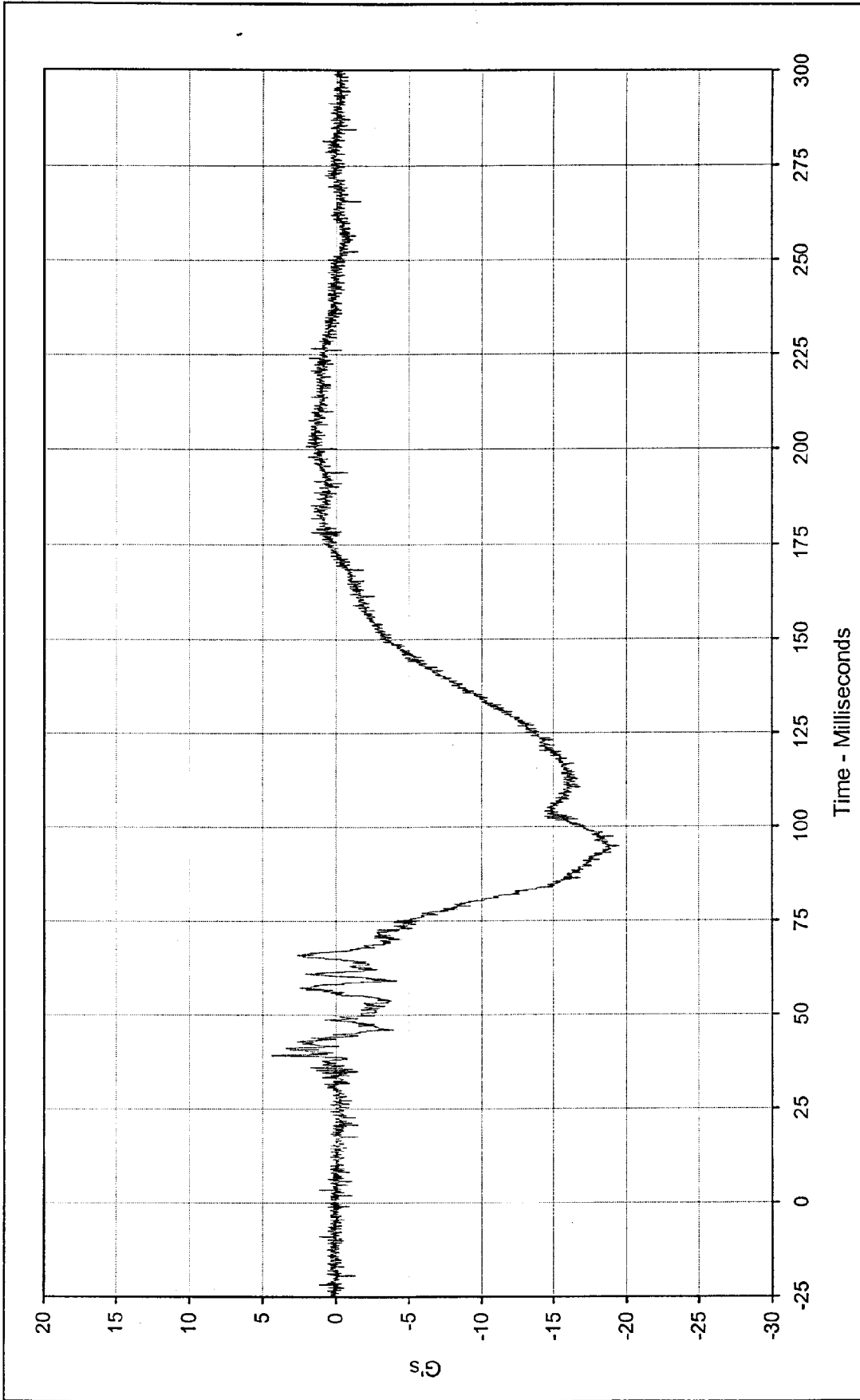
Date of Test: 1/8/99

Curve Number: IN2-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

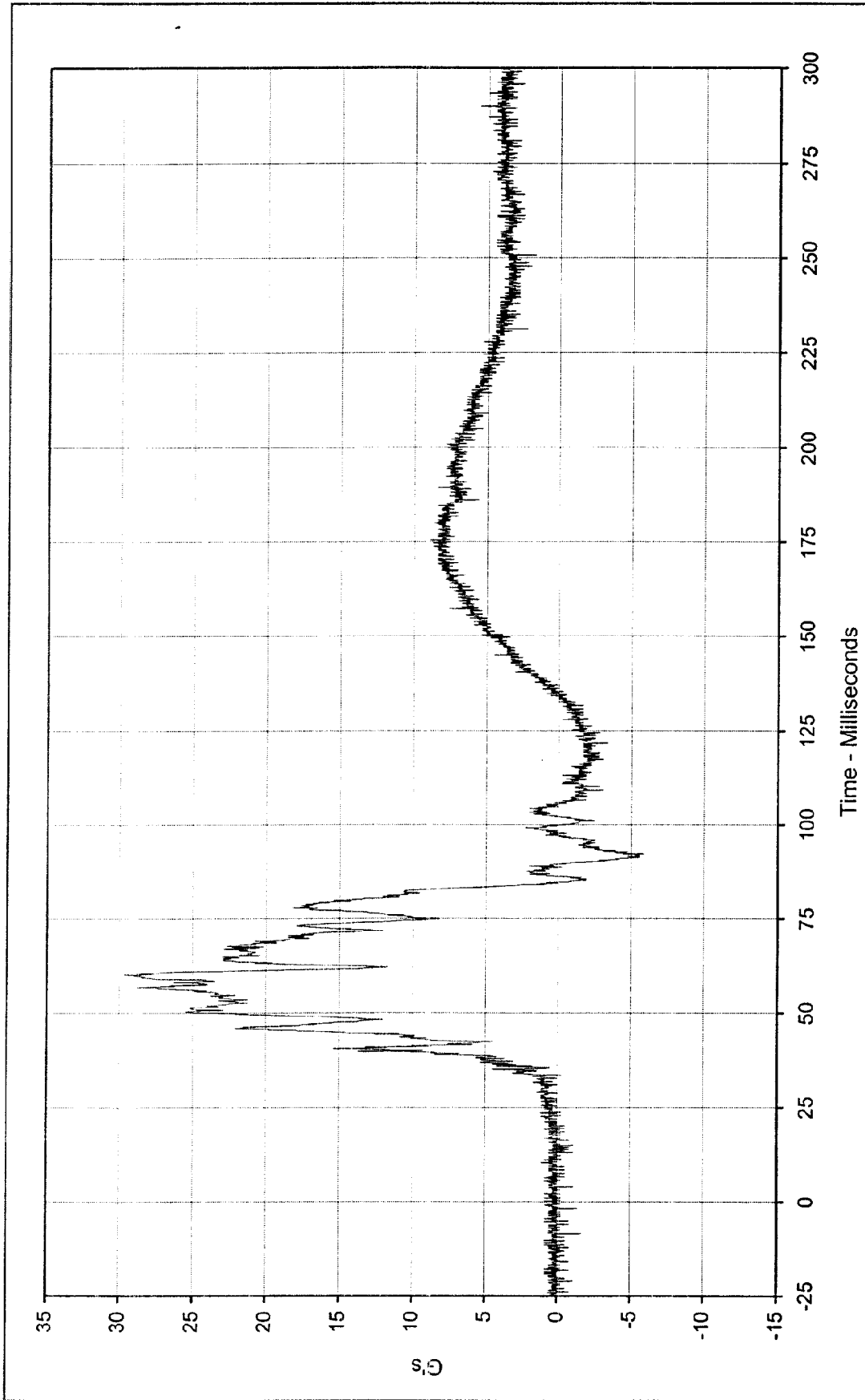
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Passenger Head Redundant Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	4.4 at 39.0 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-19.5 at 94.7 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-049			





Curve Description: Passenger Head Redundant Z

Maximum Value: 29.6 at 60.1 Milliseconds

Minimum Value: -5.9 at 92.1 Milliseconds

SAE Filter Class: 1000

Date of Test: 1/8/99

Curve Number: FIL-050

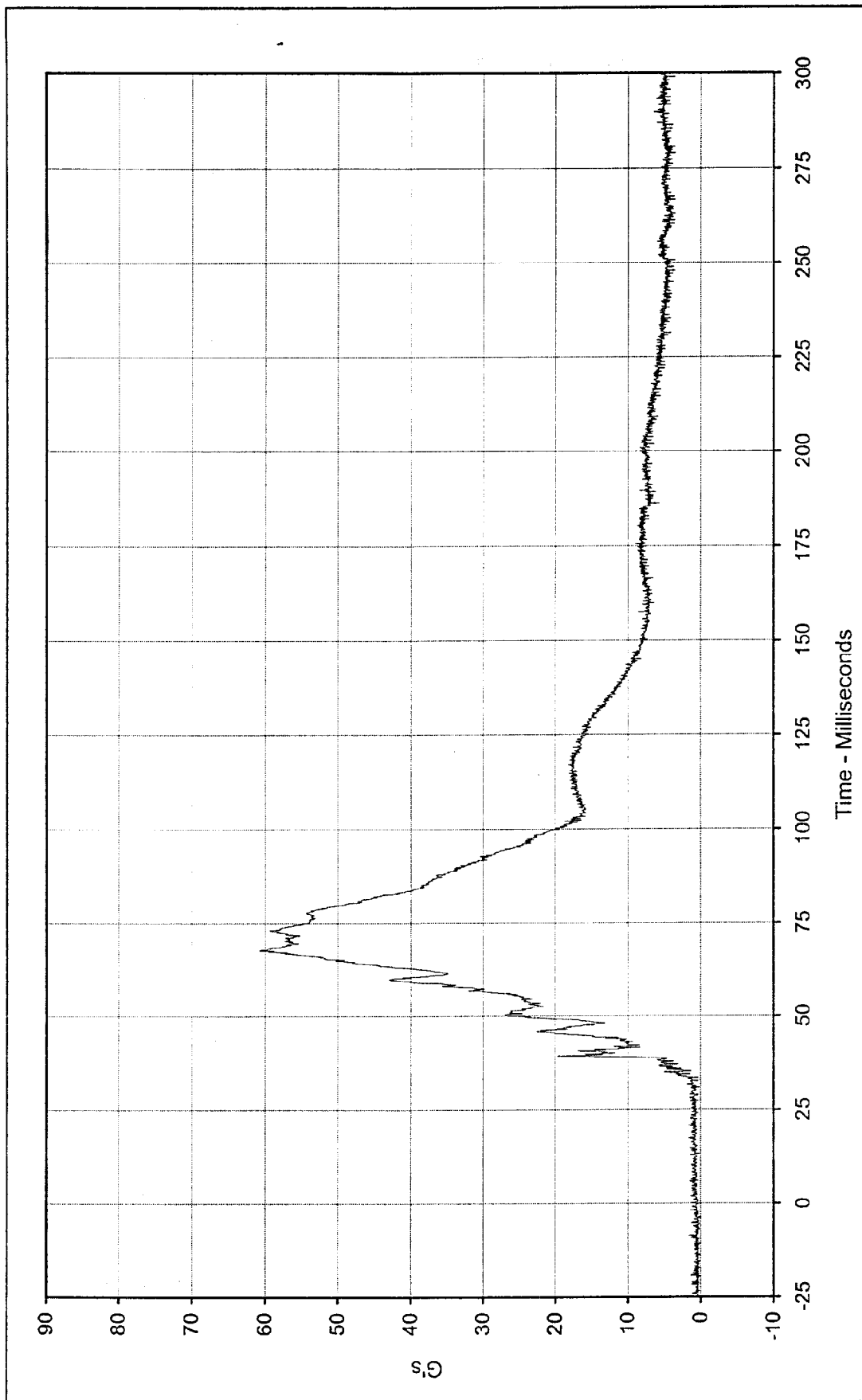
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Head Resultant Redundant

Maximum Value: 60.7 at 67.6 Milliseconds

Minimum Value: 0.2 at 13.1 Milliseconds

SAE Filter Class: 1000

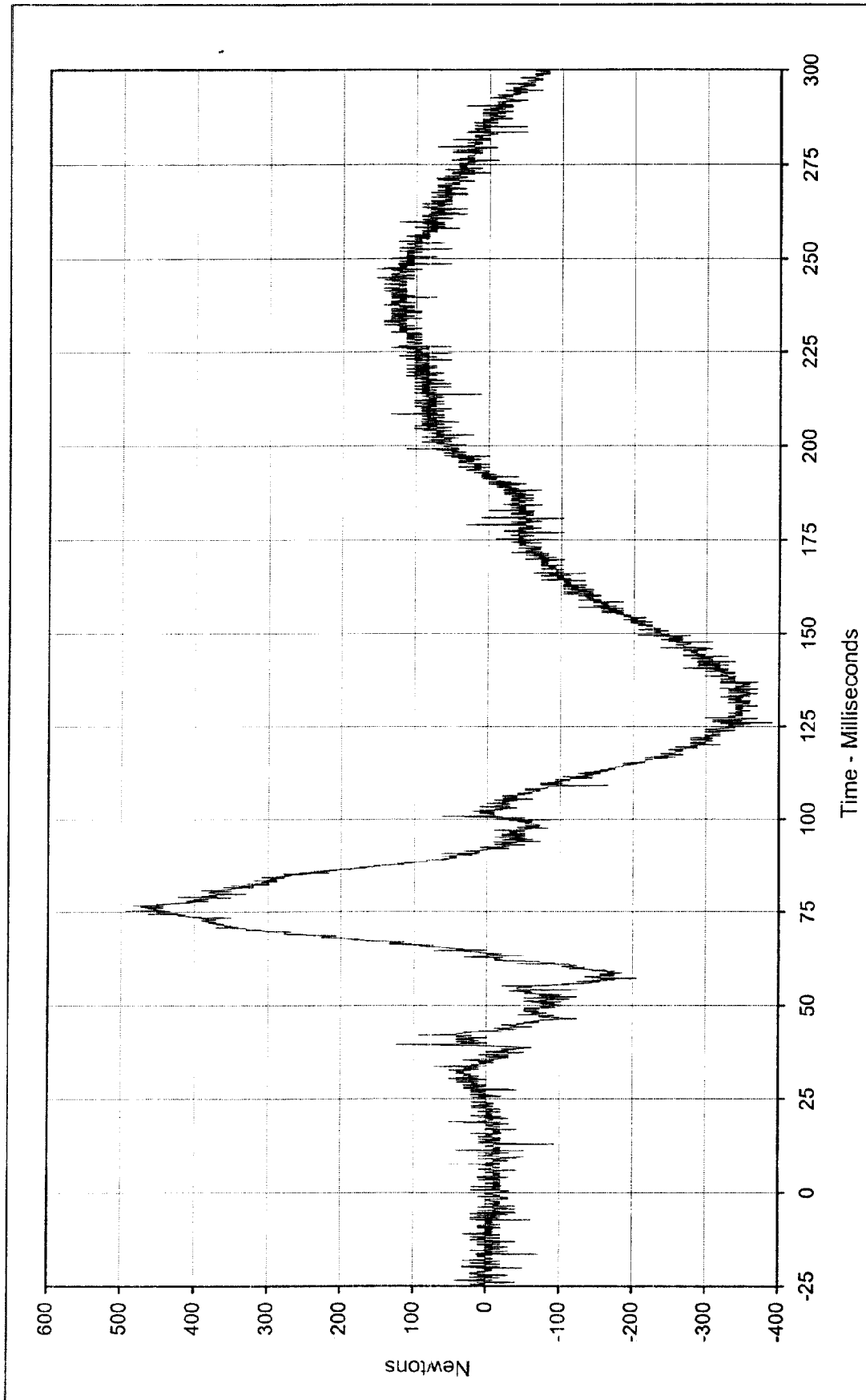
Date of Test: 1/8/99

Curve Number: RES-048

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

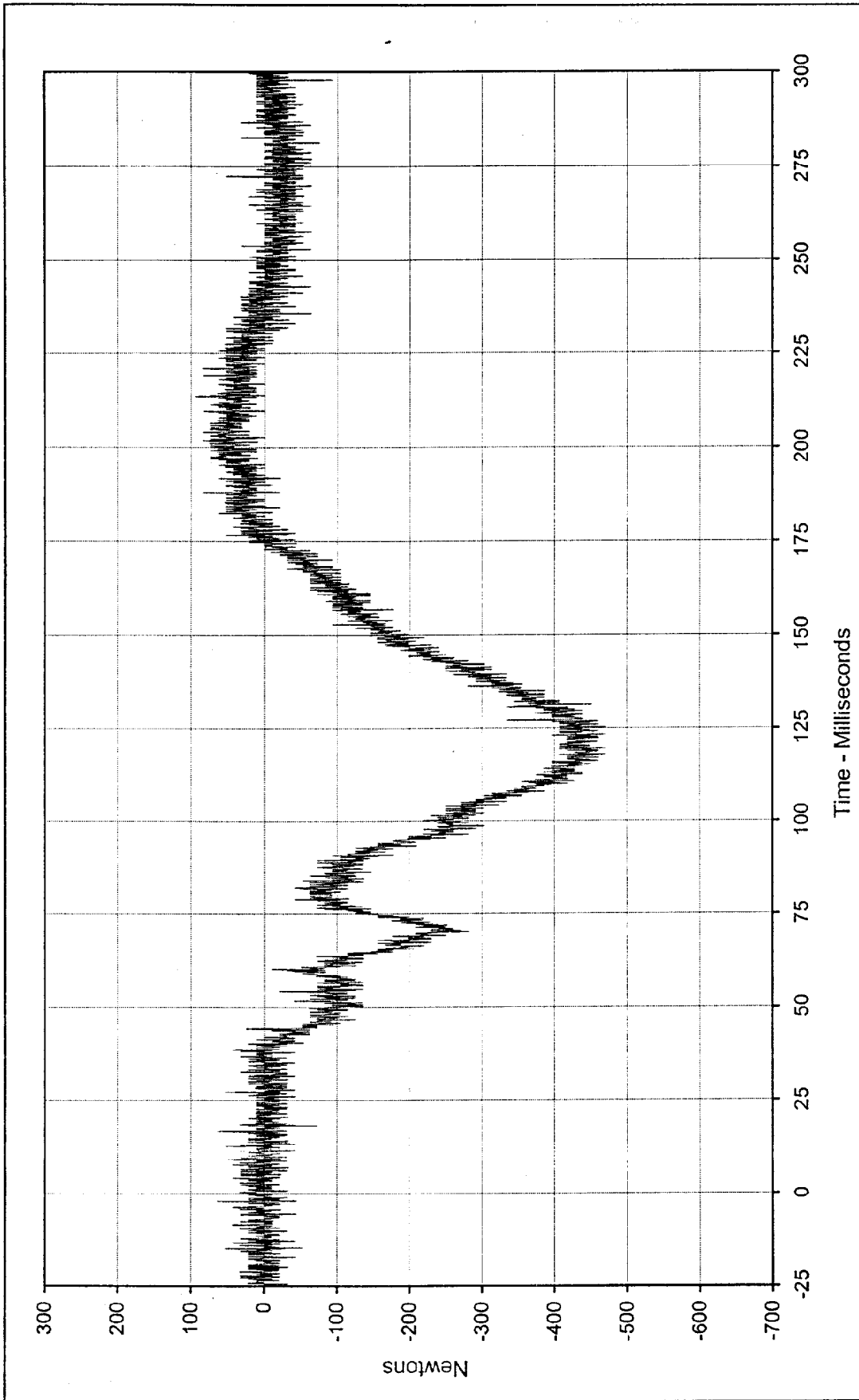
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





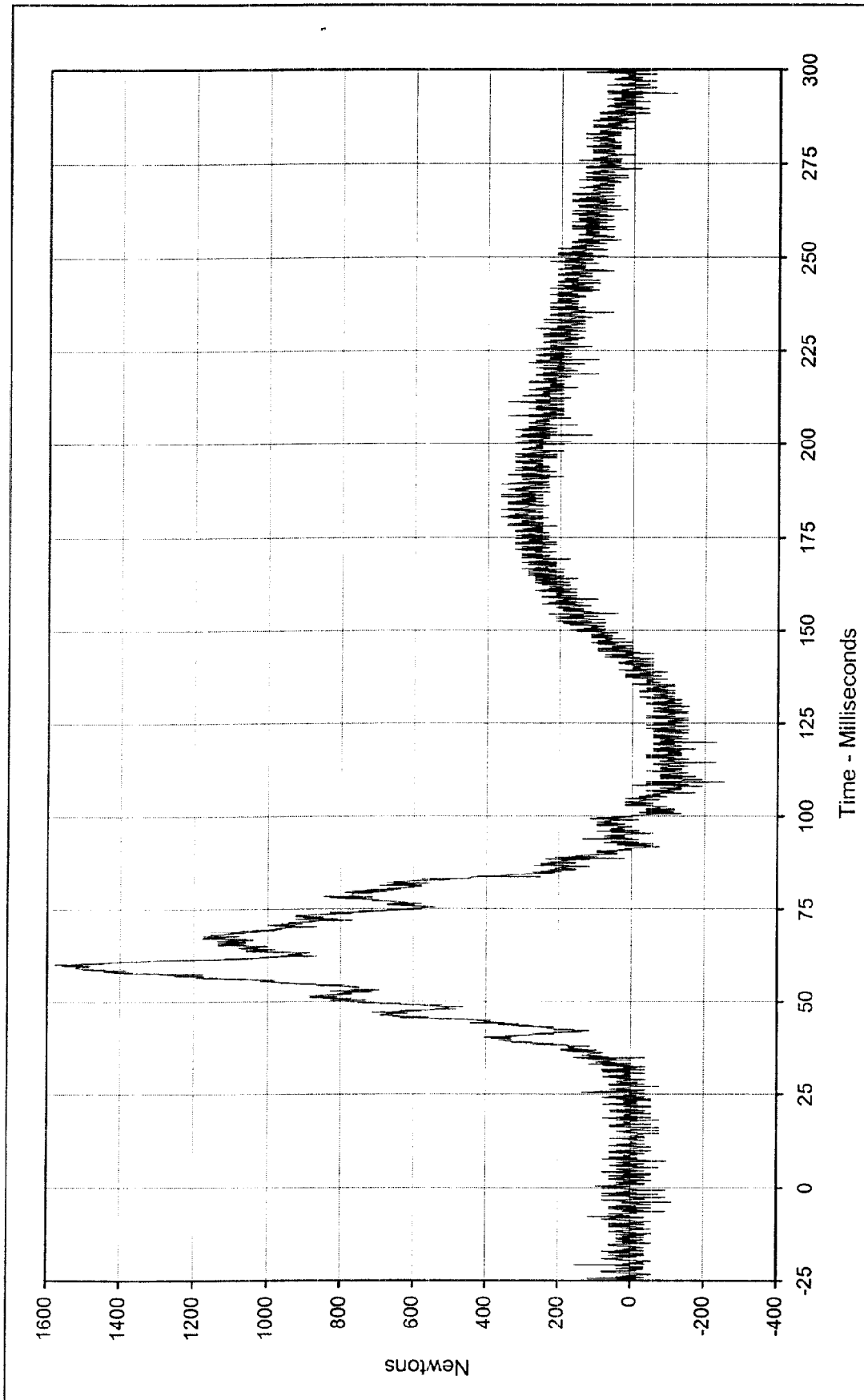
Curve Description:	Passenger Neck Force X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	494.2 at 75.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-391.7 at 126.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-051			





Curve Description:	Passenger Neck Force Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	94.0 at 213.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-470.2 at 117.8 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-052			

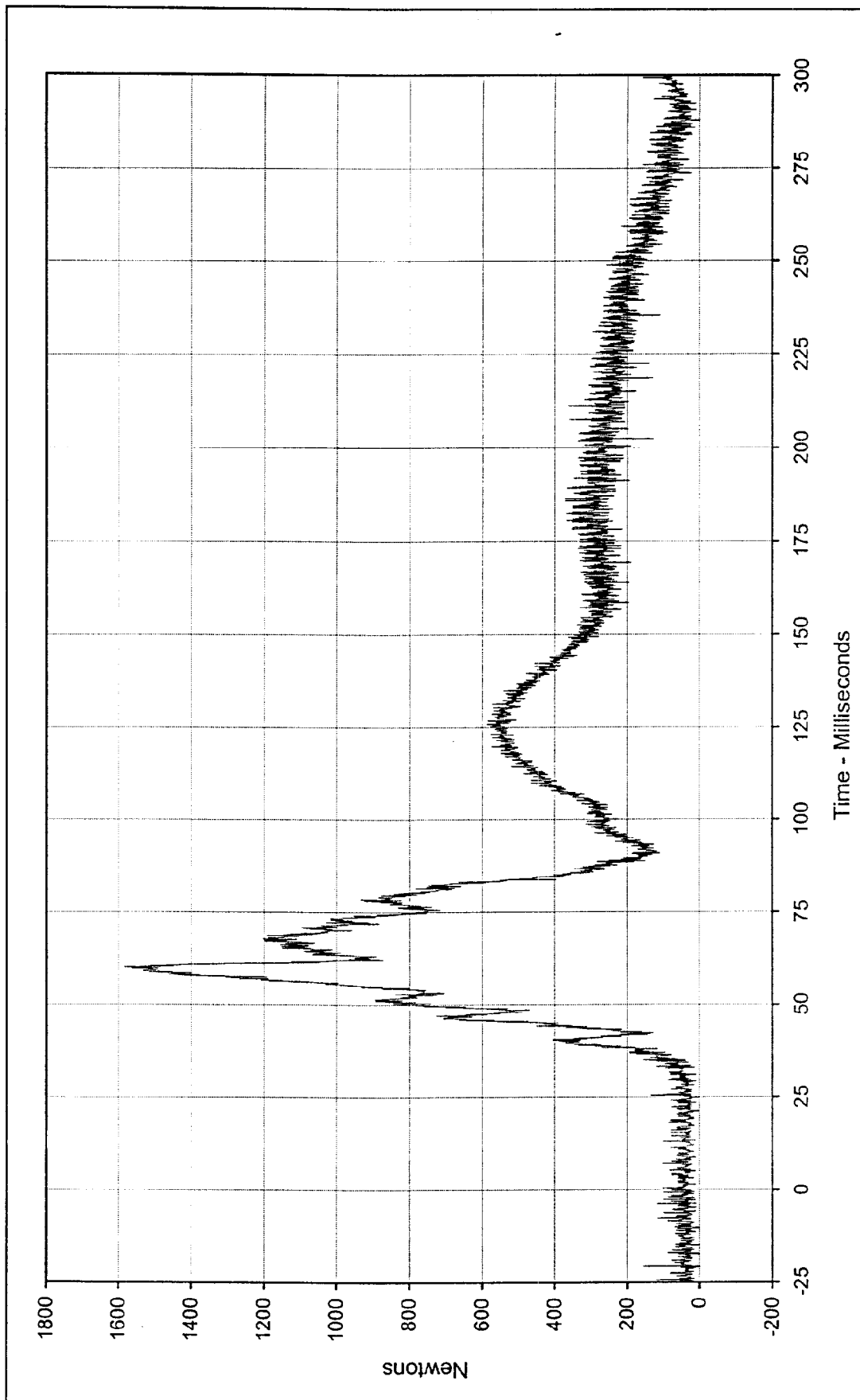




Curve Description: Passenger Neck Force Z
Maximum Value: 1578.3 at 60.1 Milliseconds
Minimum Value: -251.1 at 109.1 Milliseconds
SAE Filter Class: 1000
Date of Test: 1/8/99
Curve Number: FIL-053

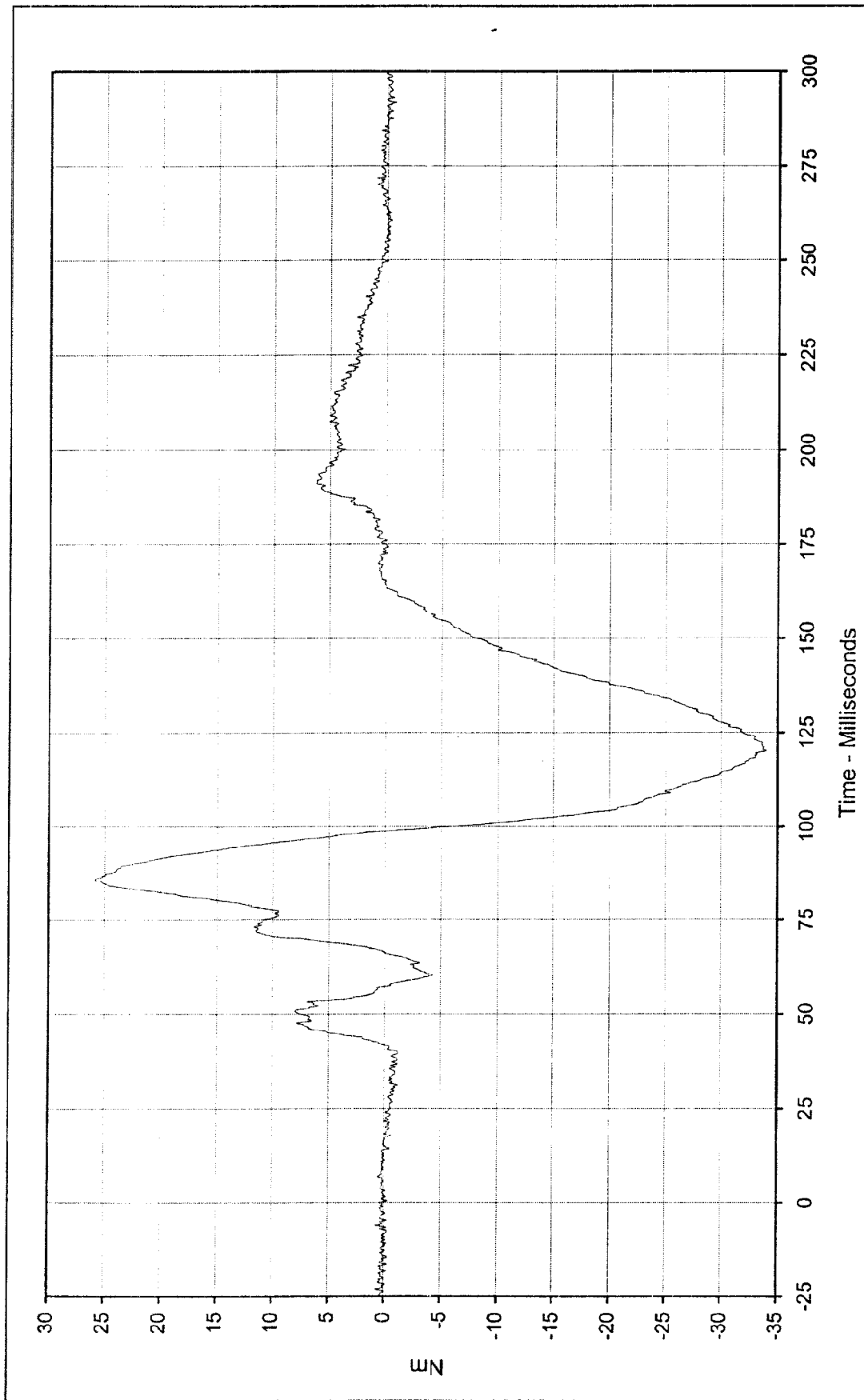
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





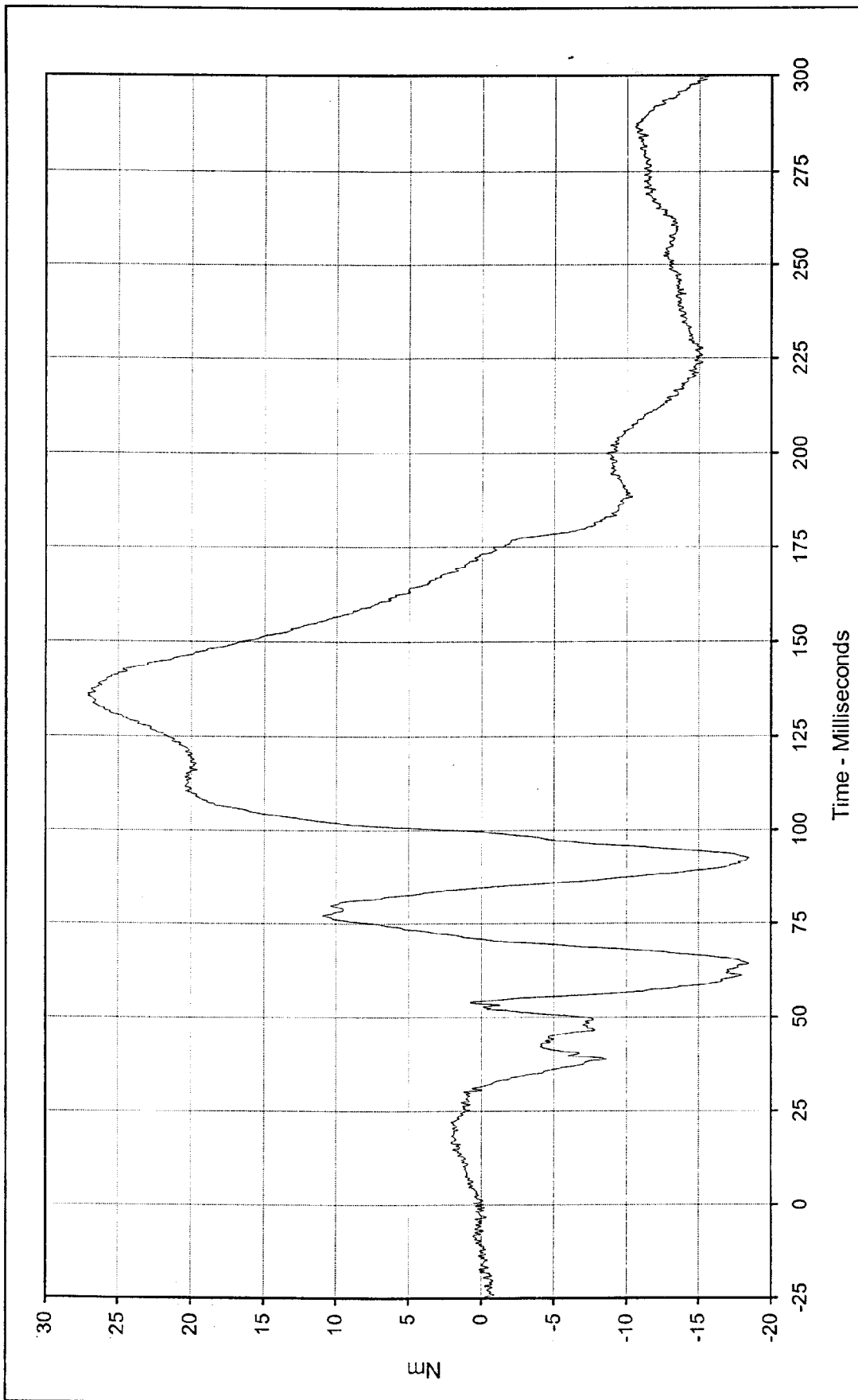
Curve Description:		Passenger Neck Force Resultant		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	1583.2	at	60.1	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	0.8	at	21.3	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	RES-051					





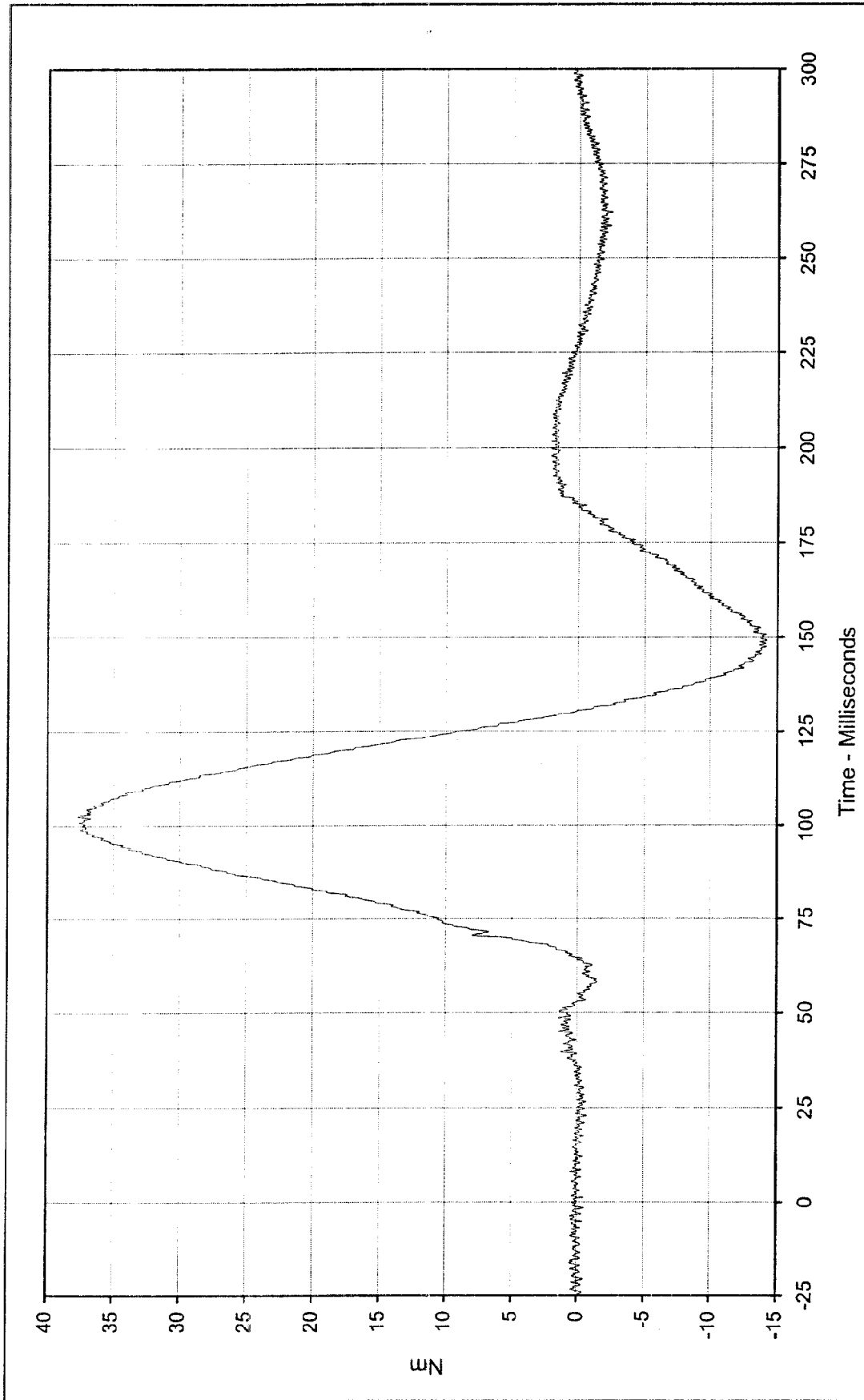
Curve Description:	Passenger Neck Moment X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	25.9 at 85.6 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-34.0 at 120.1 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-054			





Curve Description:		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	27.1	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-18.5			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-055			





Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

Curve Description: Passenger Neck Moment Z

Maximum Value: 37.7 at 102.6 Milliseconds

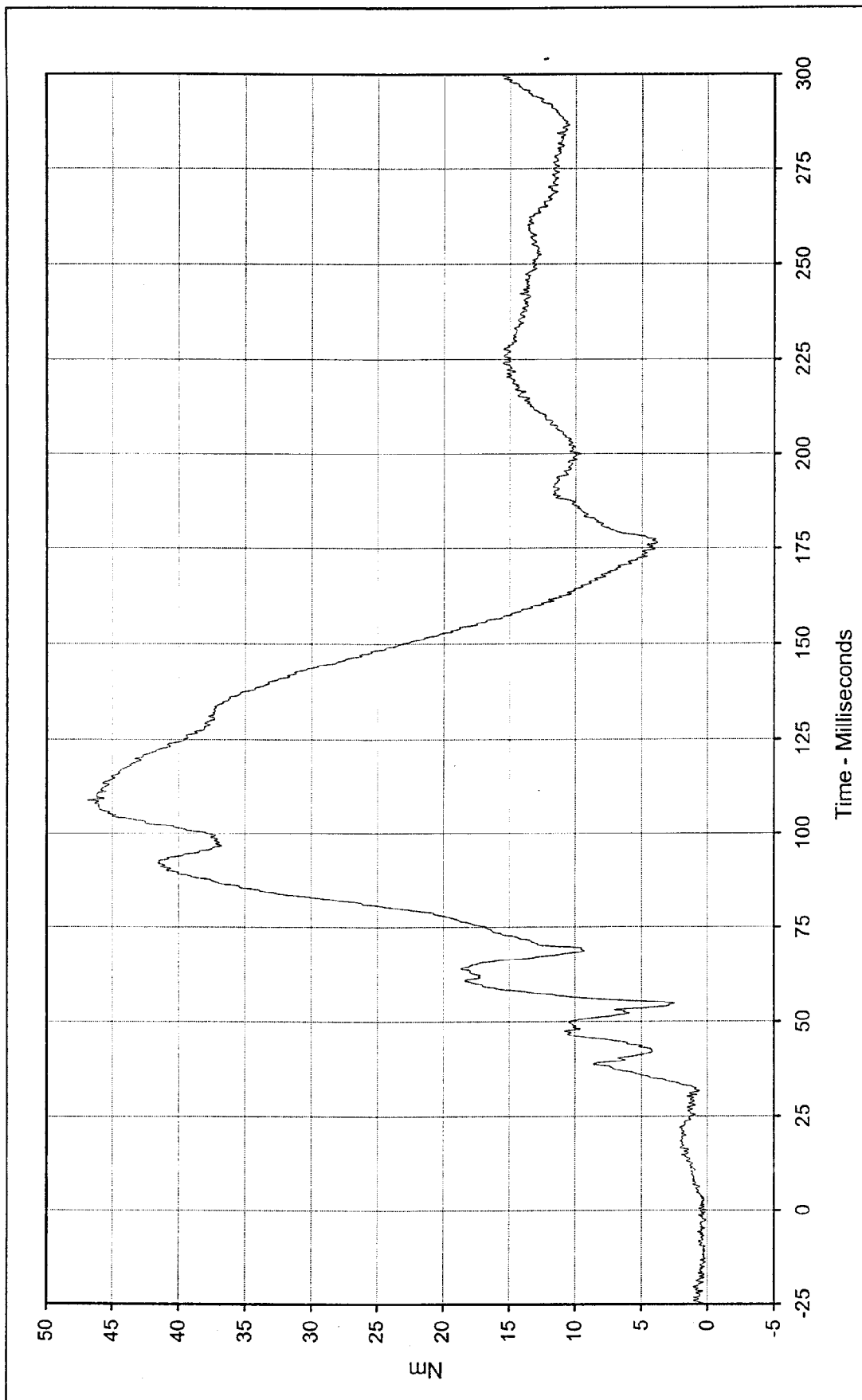
Minimum Value: -14.2 at 148.9 Milliseconds

SAE Filter Class: 600

Date of Test: 1/8/99

Curve Number: FIL-056





Curve Description: Passenger Neck Moment Resultant

Maximum Value: 46.9 at 108.8 Milliseconds

Minimum Value: 0.2 at 0.2 Milliseconds

SAE Filter Class: 600

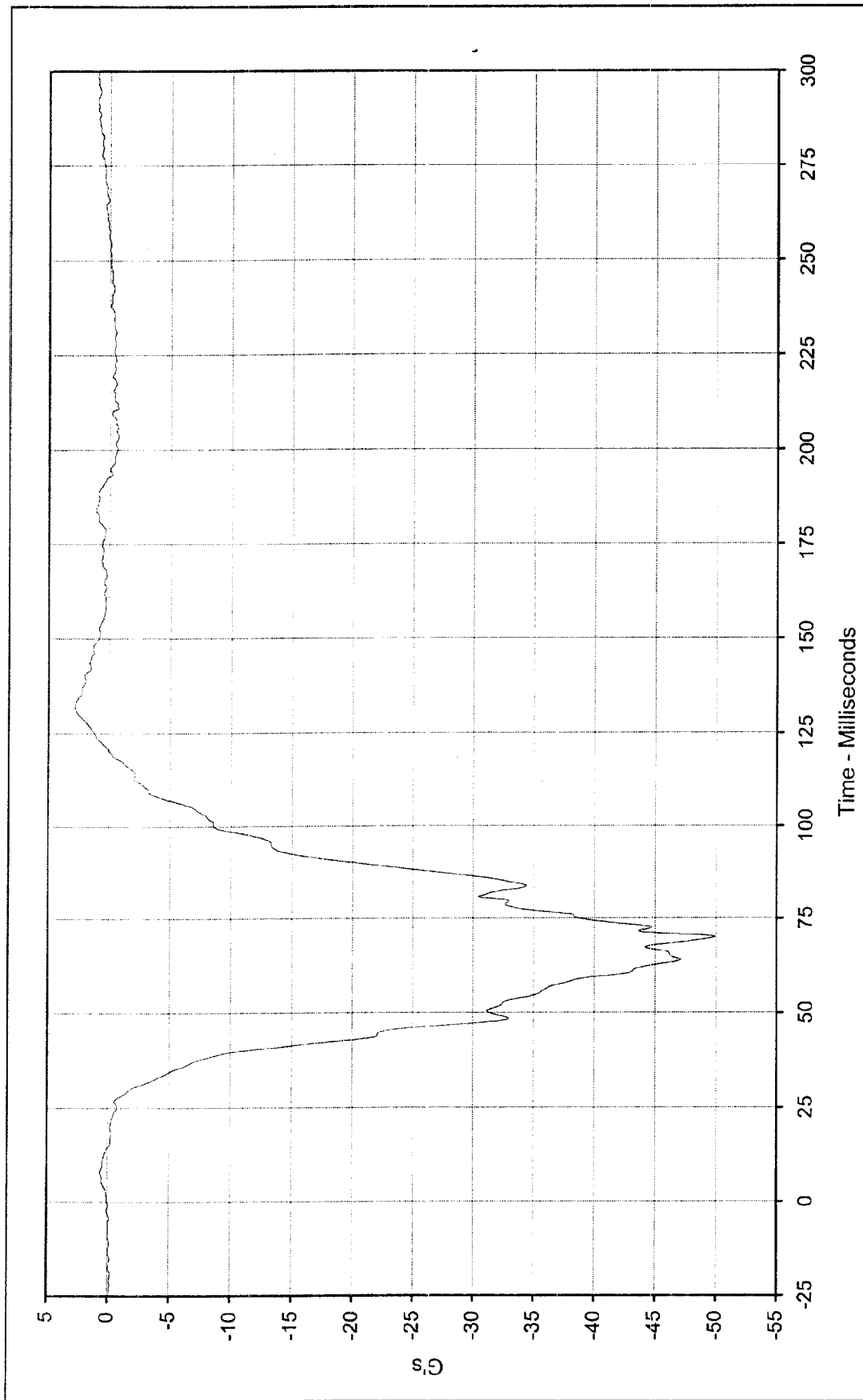
Date of Test: 1/8/99

Curve Number: RES-054

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

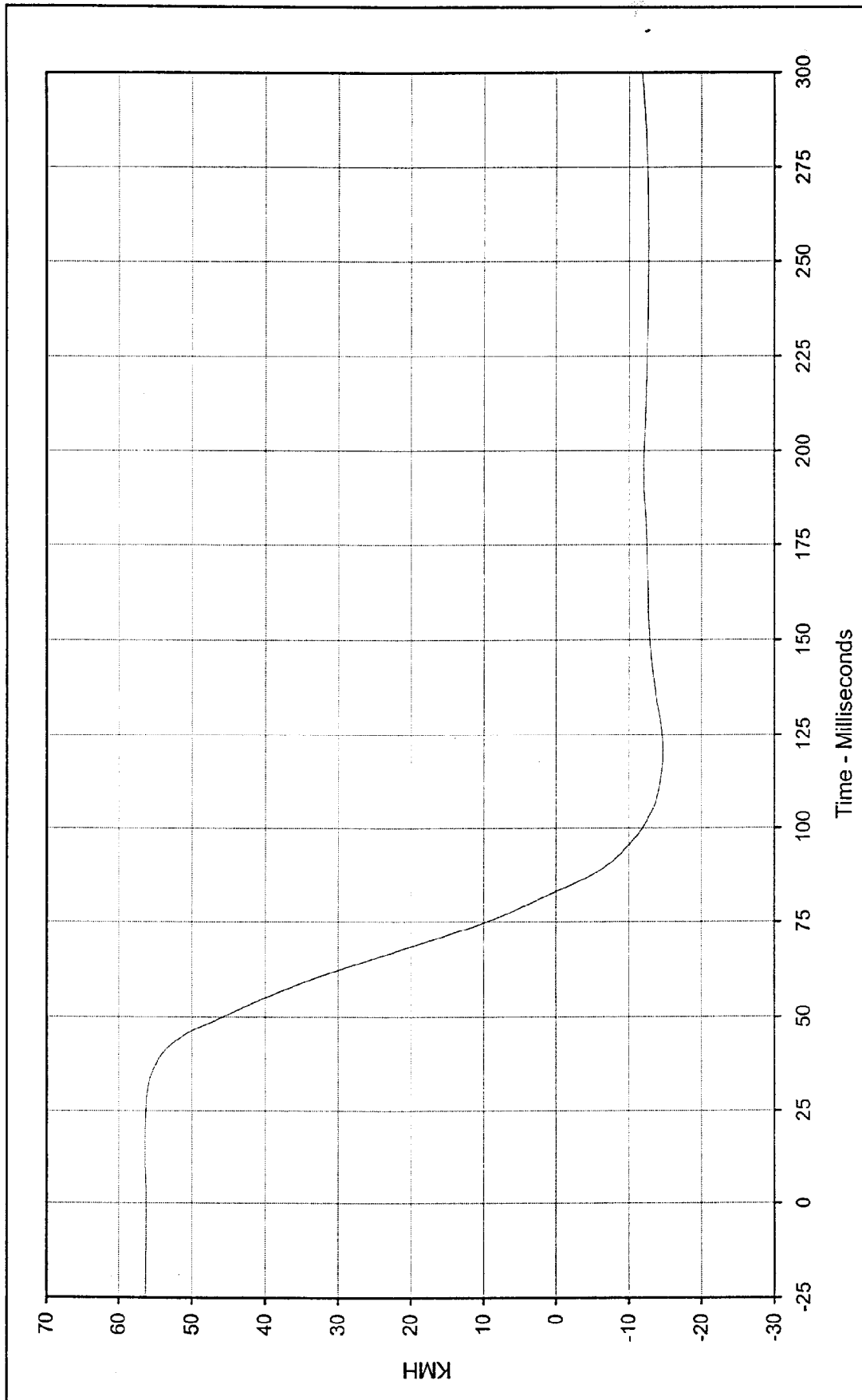




Curve Description: Passenger Chest Primary X
 Maximum Value: 2.8 at 132.1 Milliseconds
 Minimum Value: -49.9 at 70.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 1/8/99
 Curve Number: FIL-057

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

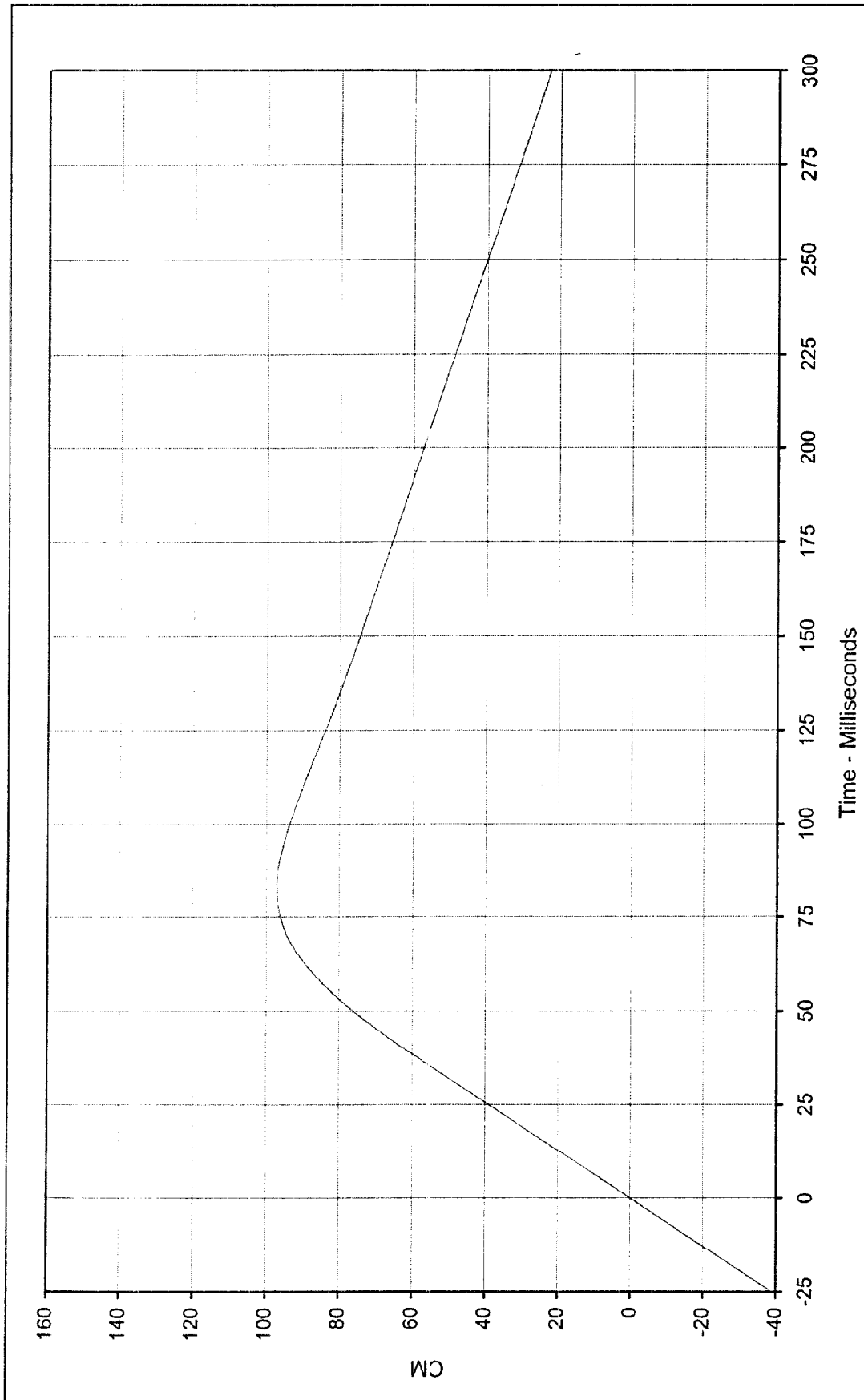




Curve Description:	Passenger Chest Primary X Velocity		Testing Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	56.4	at 14.5	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-14.7	at 120.5			
SAE Filter Class:	180				
Date of Test:	1/8/99				
Curve Number:	IN1-057				



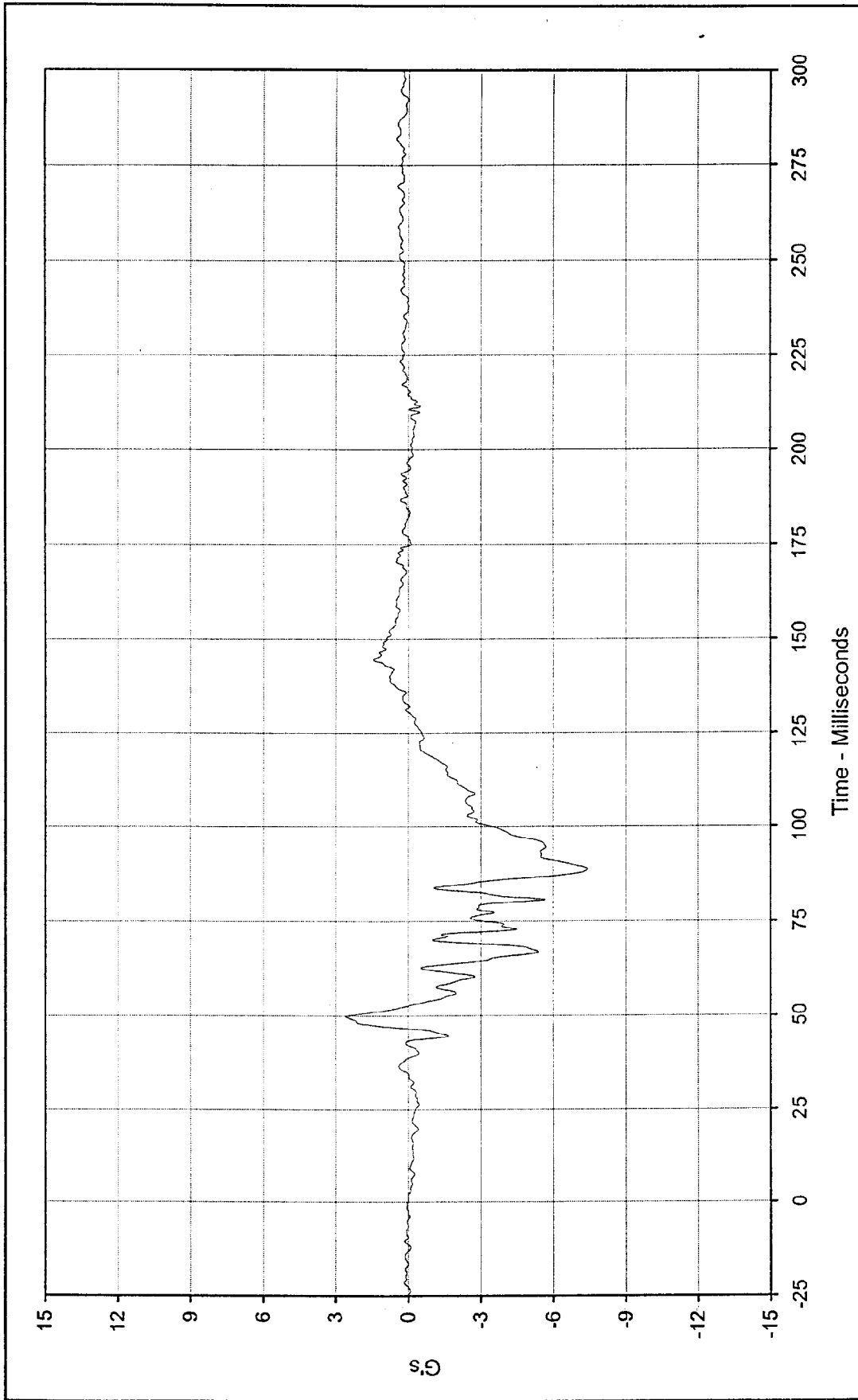




Curve Description: Passenger Chest Primary X Displ.
Maximum Value: 97.1 at 83.0 Milliseconds
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 1/8/99
Curve Number: IN2-057

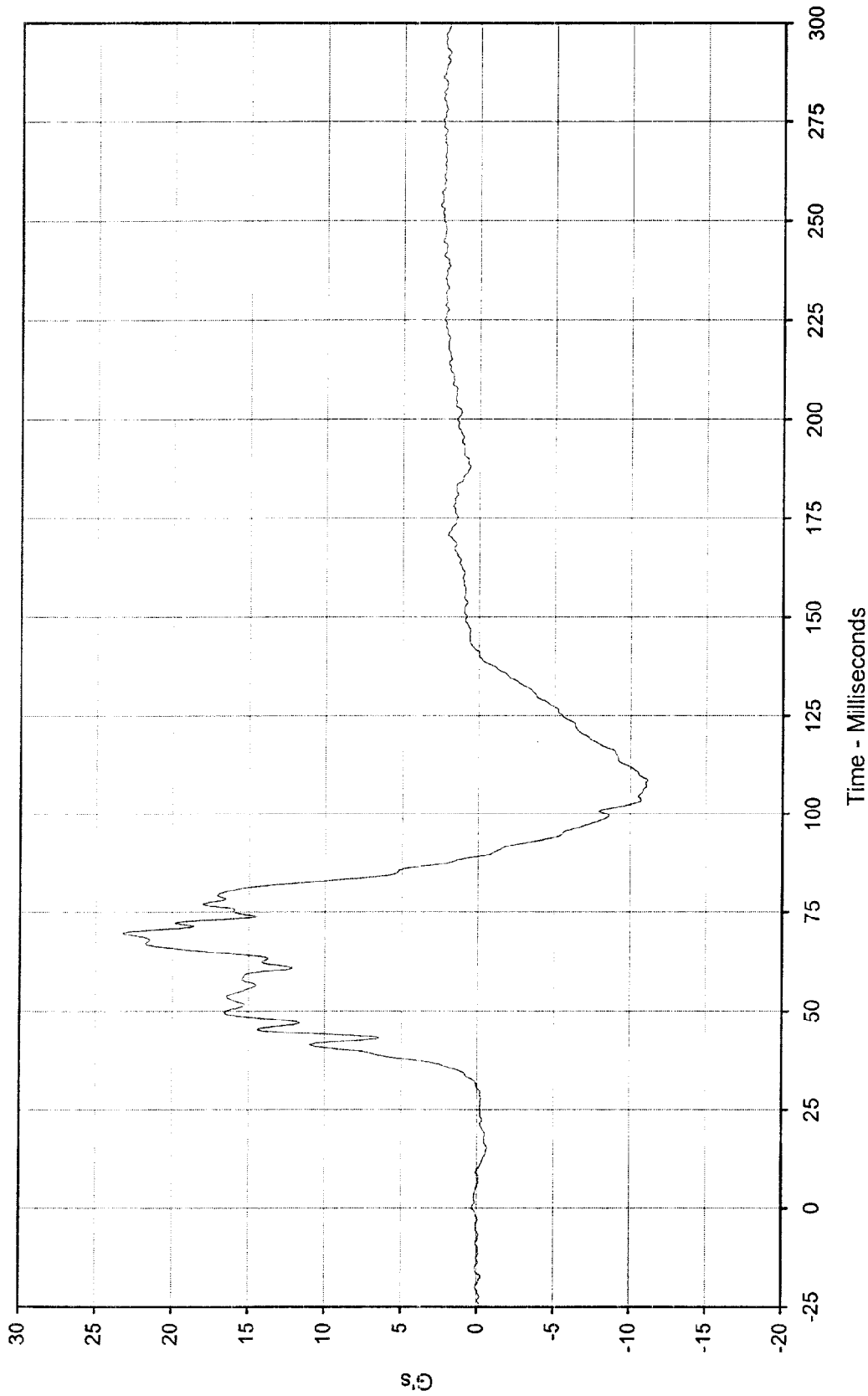
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





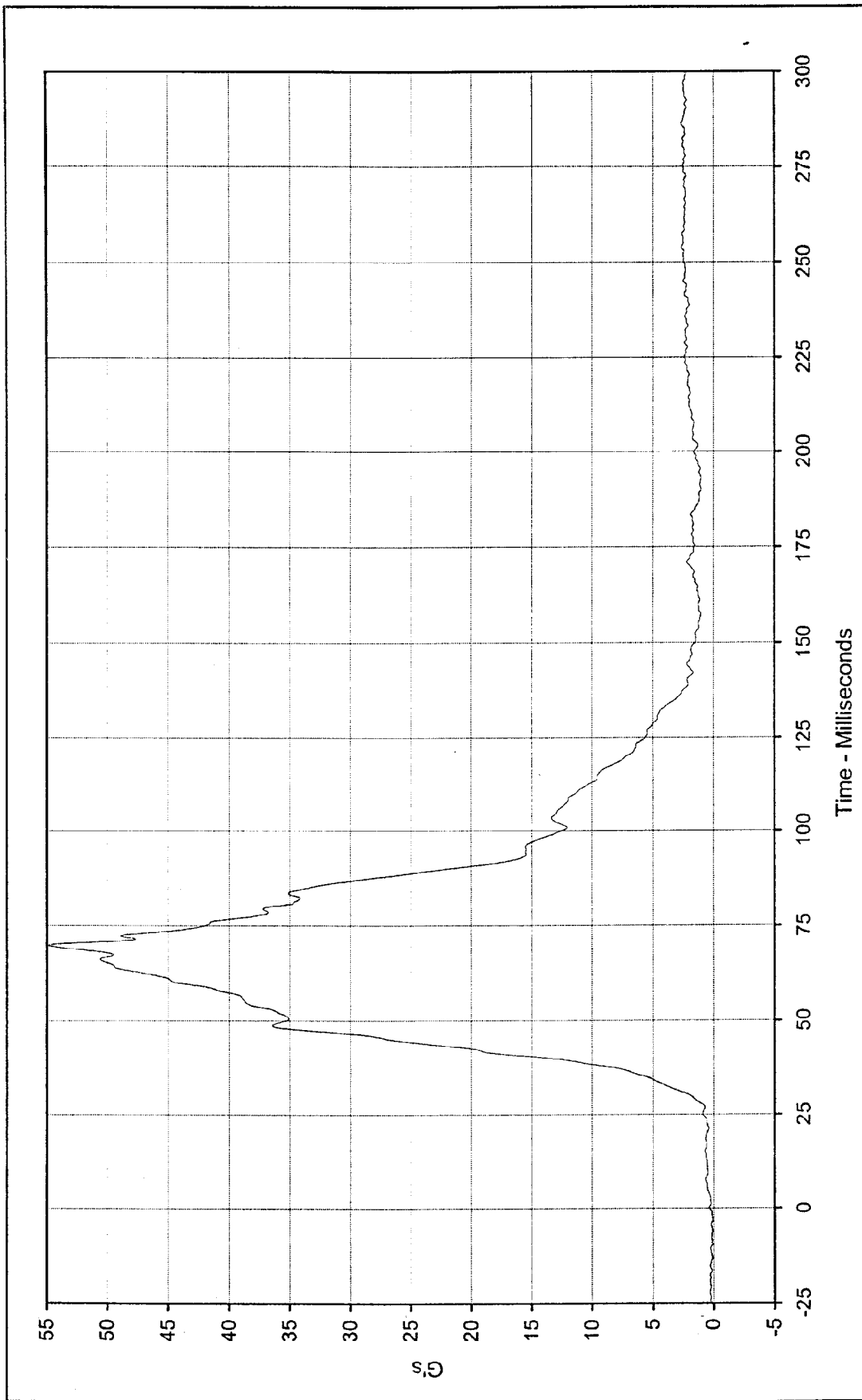
Curve Description:	Passenger Chest Primary Y	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	2.6 at 49.8 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-7.4 at 88.6 Milliseconds		
SAE Filter Class:	180		
Date of Test:	1/8/99		
Curve Number:	FIL-058		





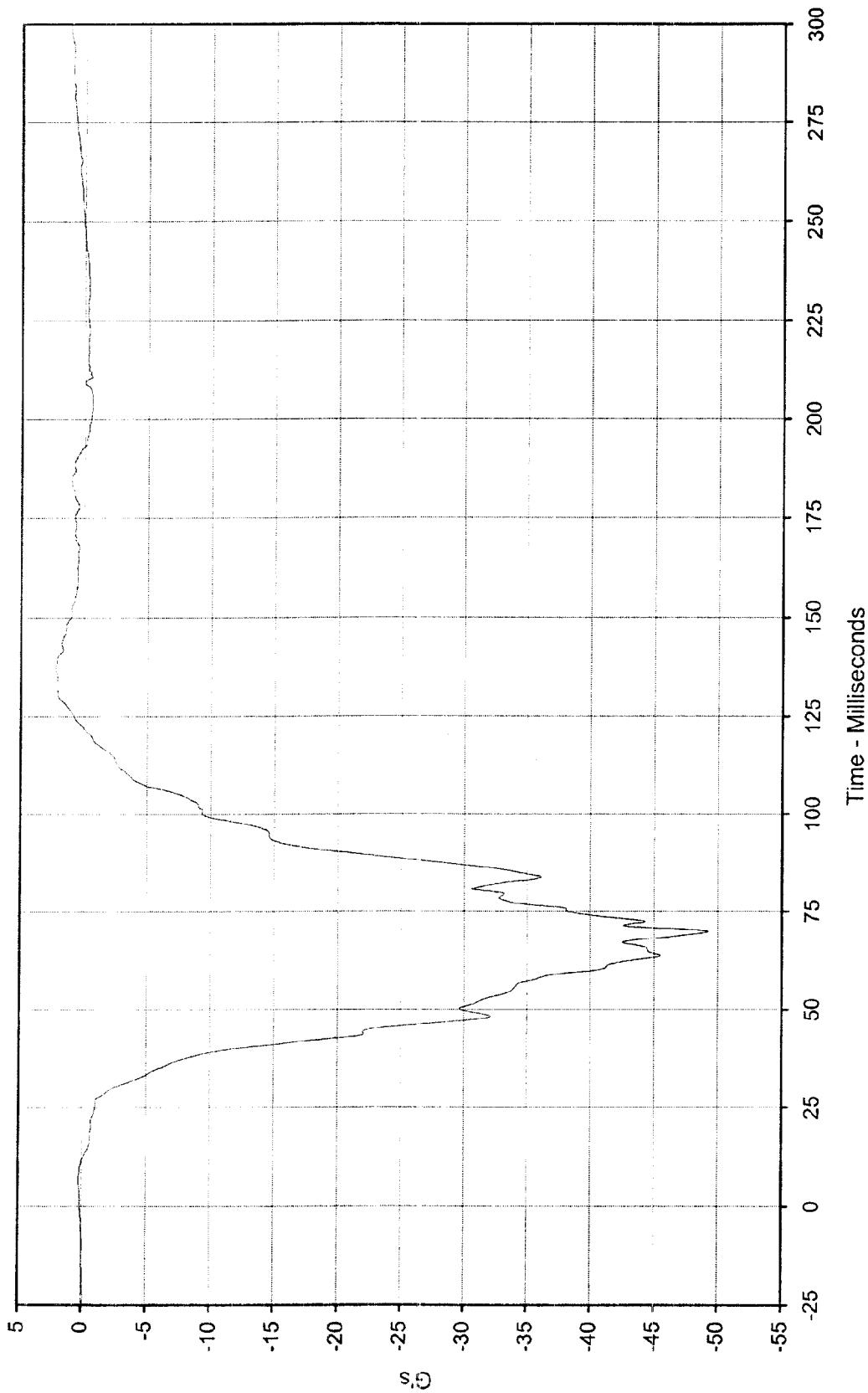
Curve Description:	Passenger Chest Primary Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	23.2 at 69.5 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-11.1 at 108.7 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	FIL-059			





Curve Description: Passenger Chest Resultant Primary		Test Program: 1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	54.8	at	69.9
Minimum Value:	0.2	at	1.3
SAE Filter Class:	180		
Date of Test:	1/8/99		
Curve Number:	RES-057		
		Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Chest Redundant X

Maximum Value: 2.3 at 137.0 Milliseconds

Minimum Value: -49.3 at 69.8 Milliseconds

SAE Filter Class: 180

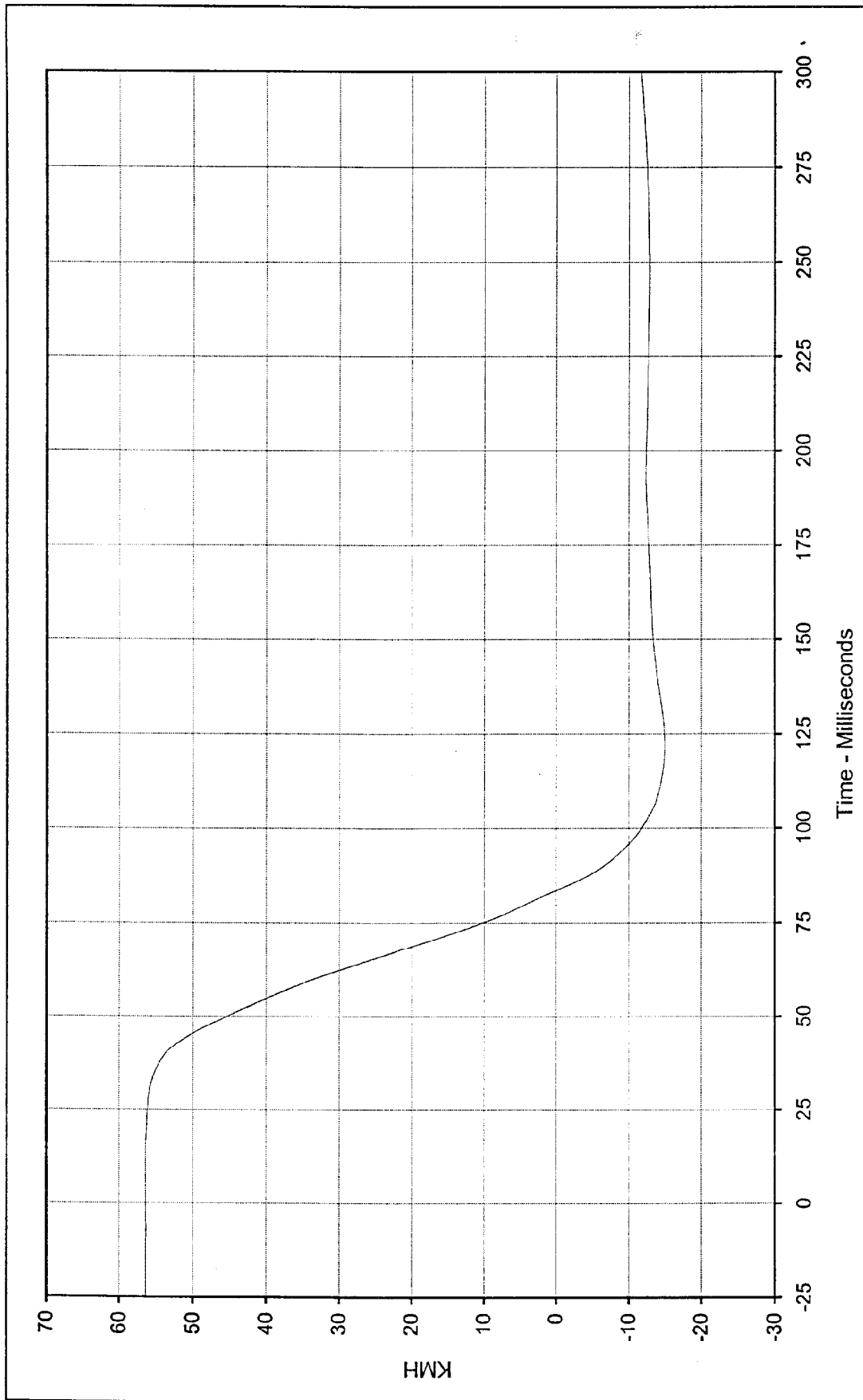
Date of Test: 1/8/99

Curve Number: FIL-060

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 56.4 at 11.5 Milliseconds

Minimum Value: -15.0 at 122.1 Milliseconds

SAE Filter Class: 180

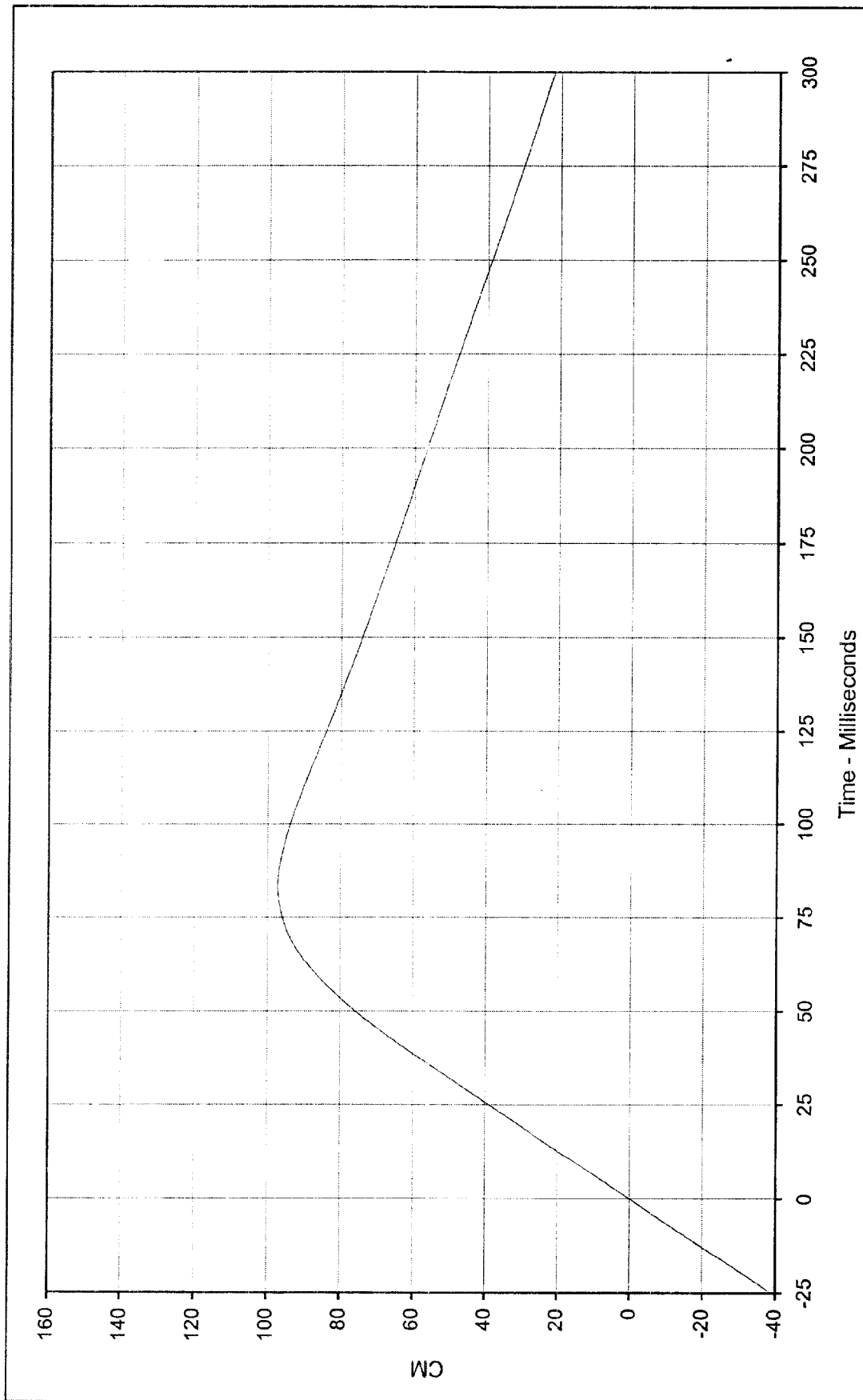
Date of Test: 1/8/99

Curve Number: IN1-060

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 97.1 at 83.5 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 1/8/99

Curve Number: IN2-060

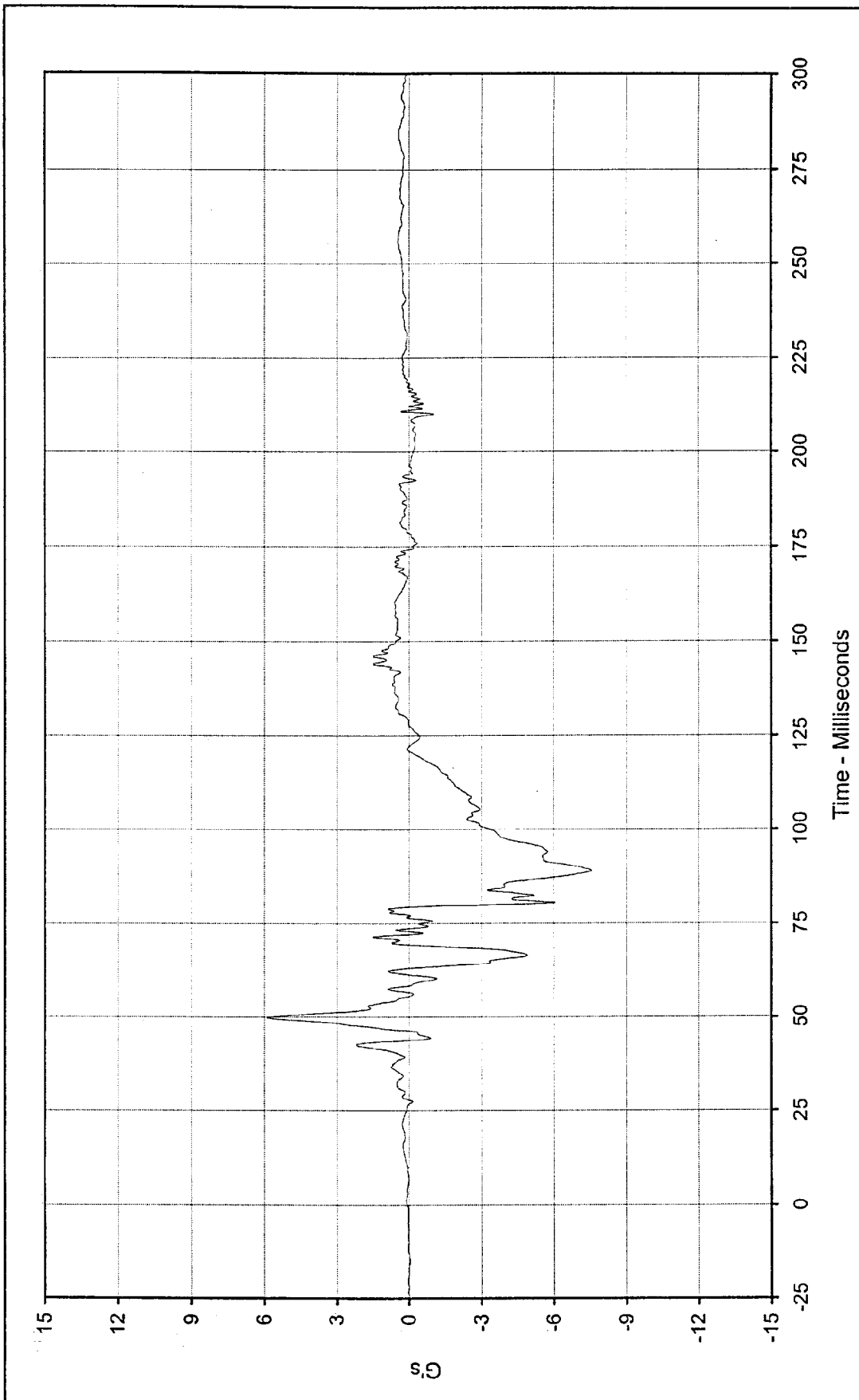
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

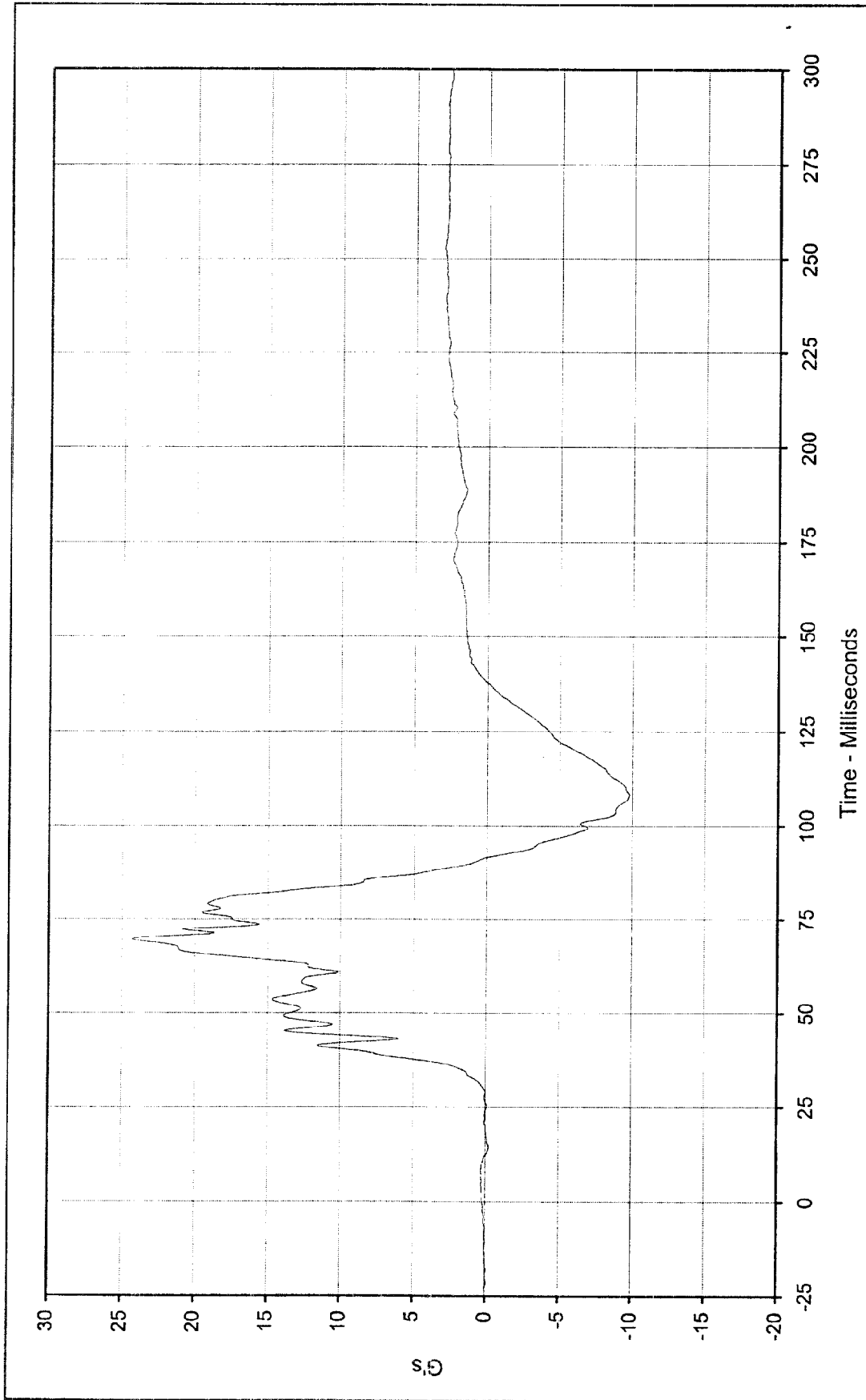
1999 Mazda Protegé DX 4 Door Sedan





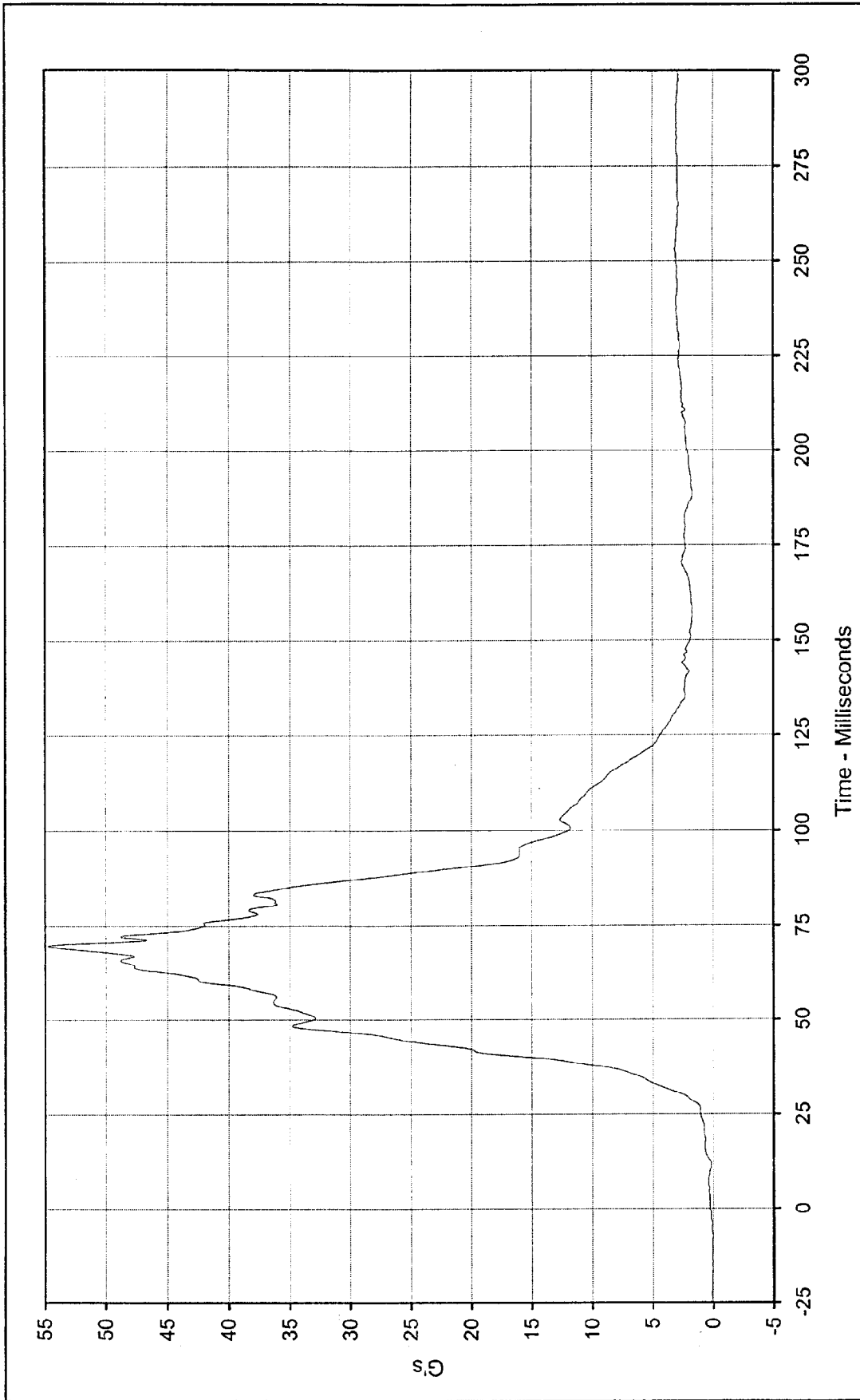
Curve Description:	Passenger Chest Redundant Y	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	5.9 at 49.8 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-7.6 at 88.9 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	FIL-061			





Curve Description:	Passenger Chest Redundant Z	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	24.3 at 69.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-9.8 at 108.0 Milliseconds		
SAE Filter Class:	180		
Date of Test:	1/8/99		
Curve Number:	FIL-062		

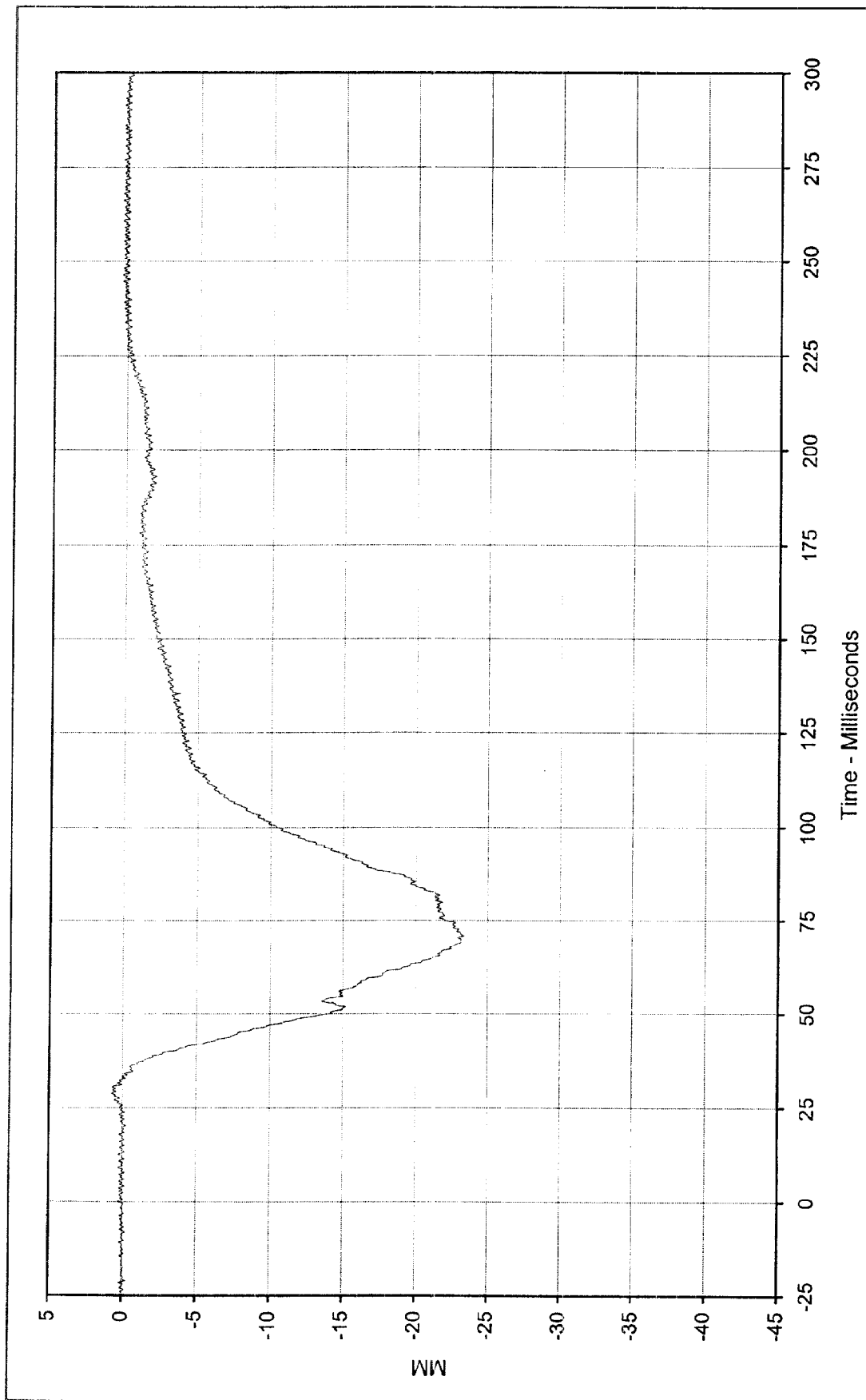




Curve Description: Passenger Chest Resultant Redundant
 Maximum Value: 54.7 at 69.7 Milliseconds
 Minimum Value: 0.2 at 12.1 Milliseconds
 SAE Filter Class: 180
 Date of Test: 1/8/99
 Curve Number: RES-060

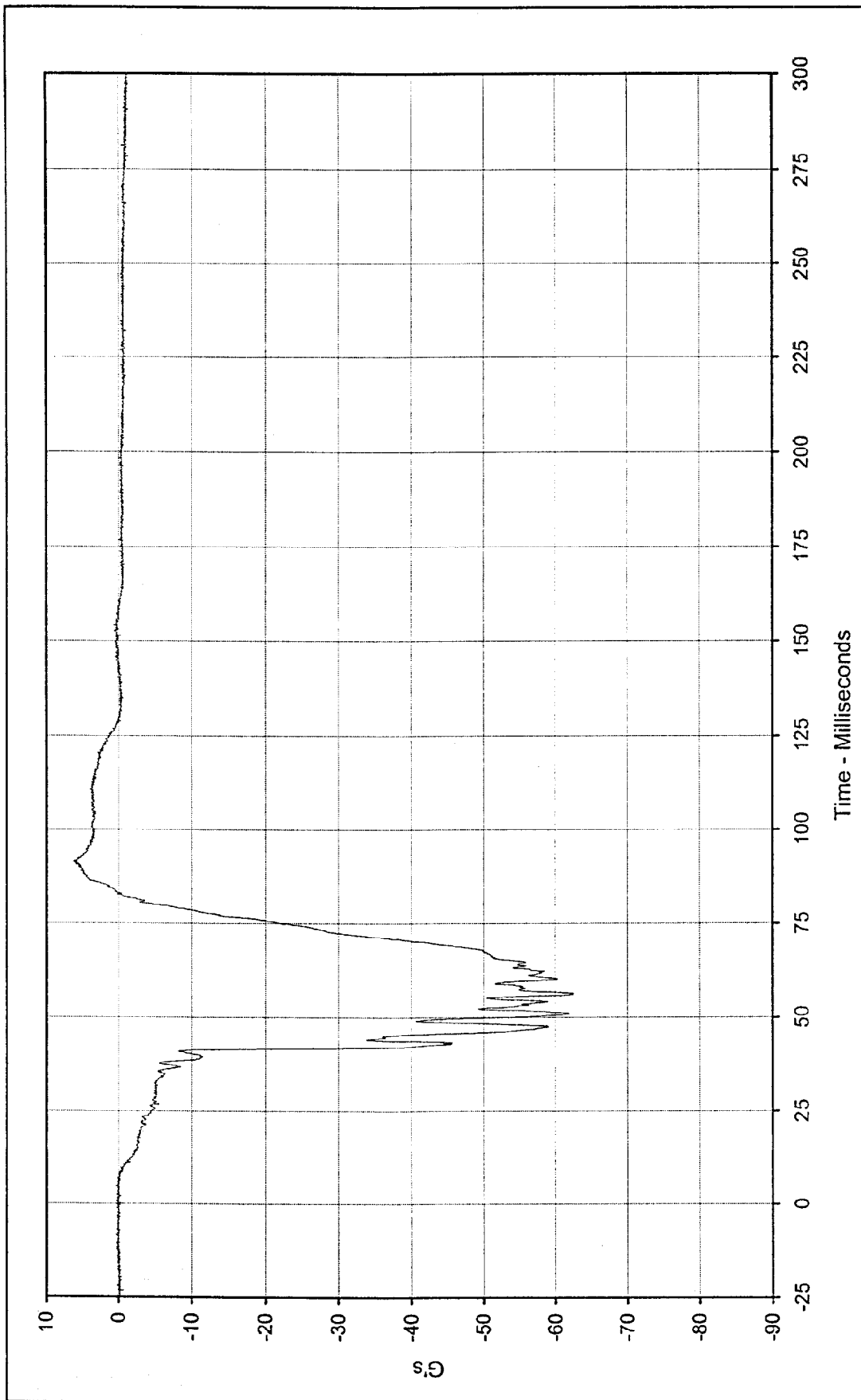
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





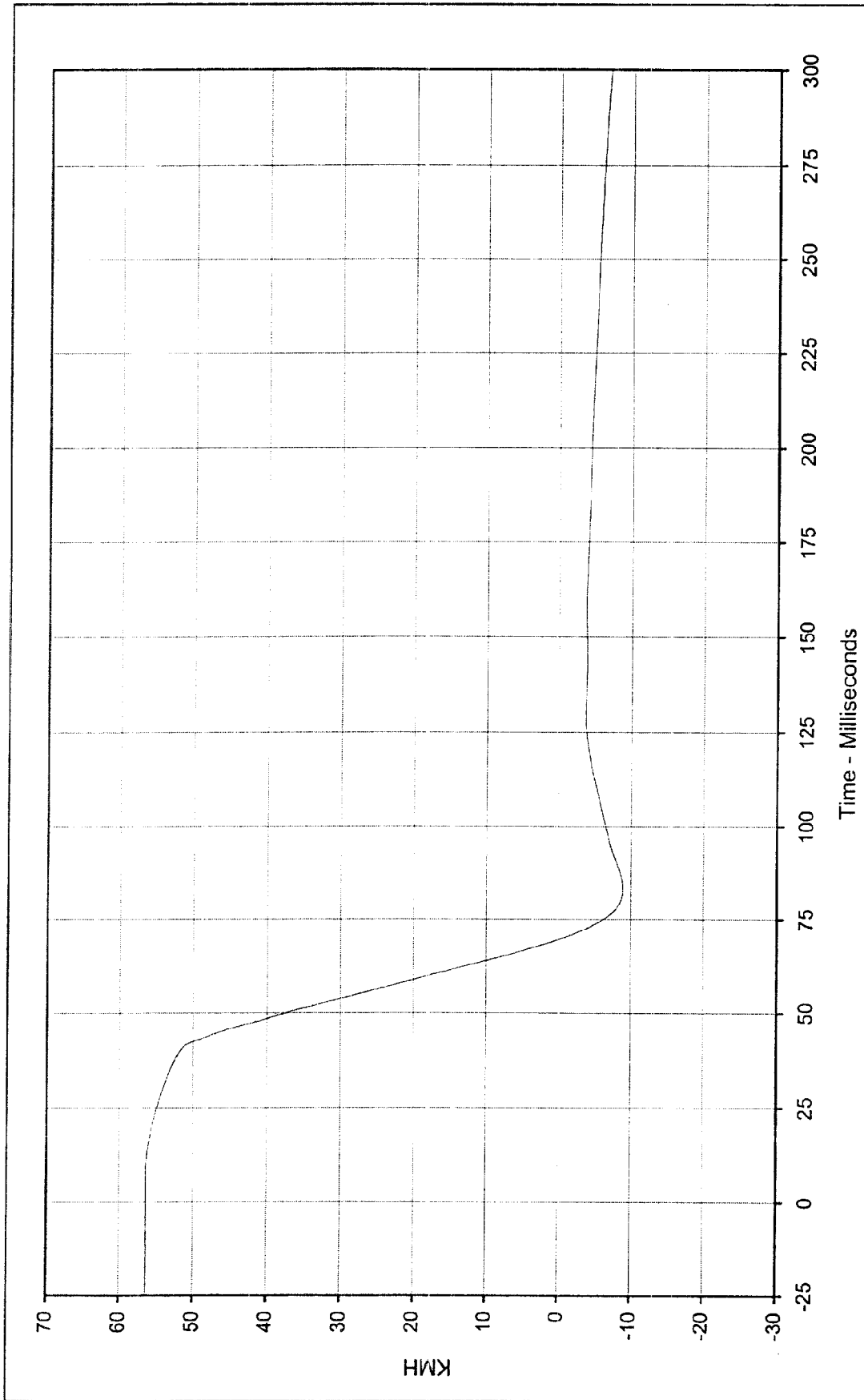
Curve Description:	Passenger Chest Displacement X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	0.7	at	28.8	Milliseconds
Minimum Value:	-23.4	at	70.8	Milliseconds
SAE Filter Class:	600			
Date of Test:	1/8/99	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Curve Number:	FIL-063			





Curve Description:		Passenger Pelvis X		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	6.2	at	91.3	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-62.6	at	56.2	Milliseconds		
SAE Filter Class:	1000					
Date of Test:	1/8/99					
Curve Number:	FIL-064					





Curve Description: Passenger Pelvis X Velocity

Maximum Value: 56.4 at 6.0 Milliseconds

Minimum Value: -8.9 at 82.9 Milliseconds

SAE Filter Class: 180

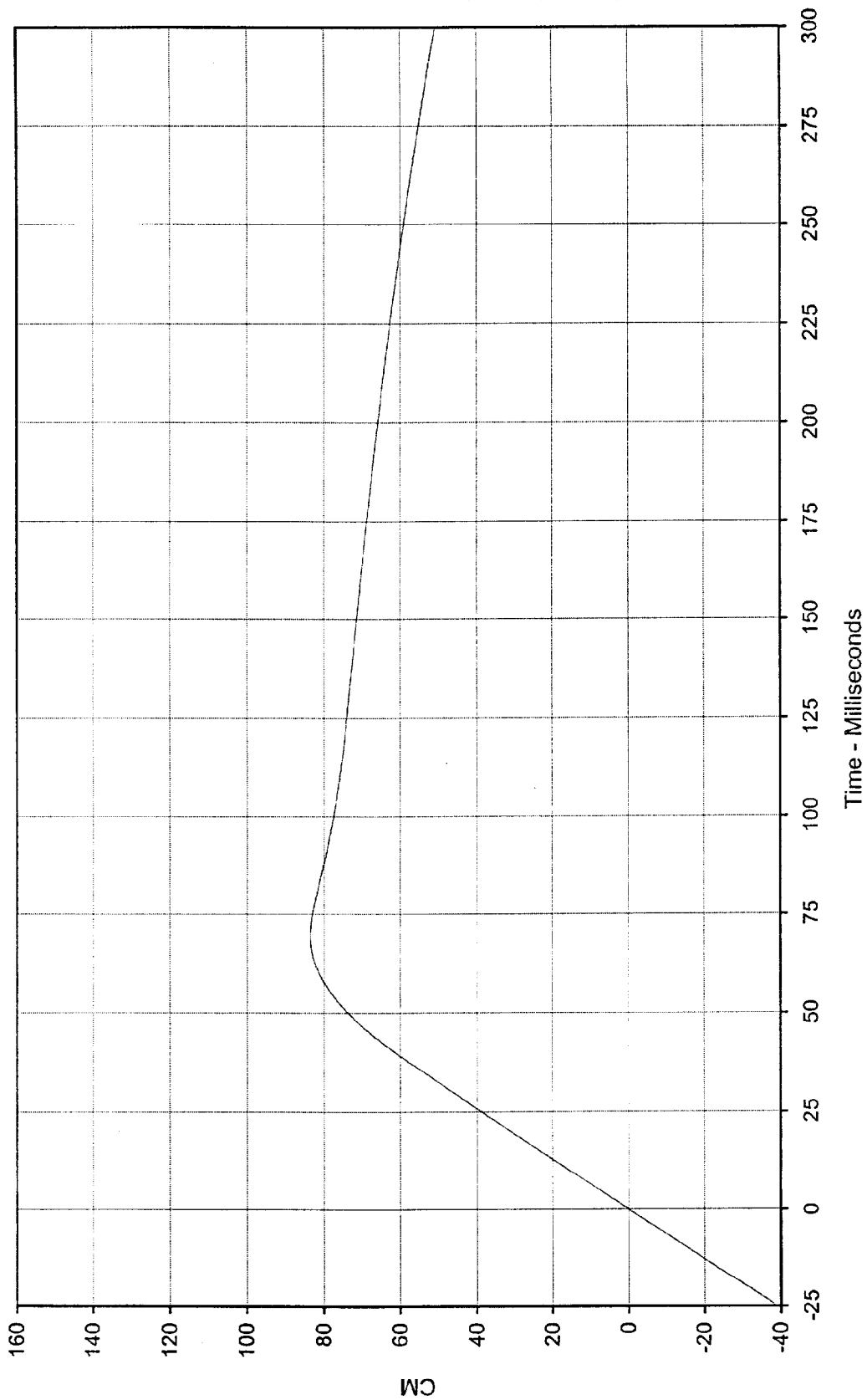
Date of Test: 1/8/99

Curve Number: IN1-064

Testing Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

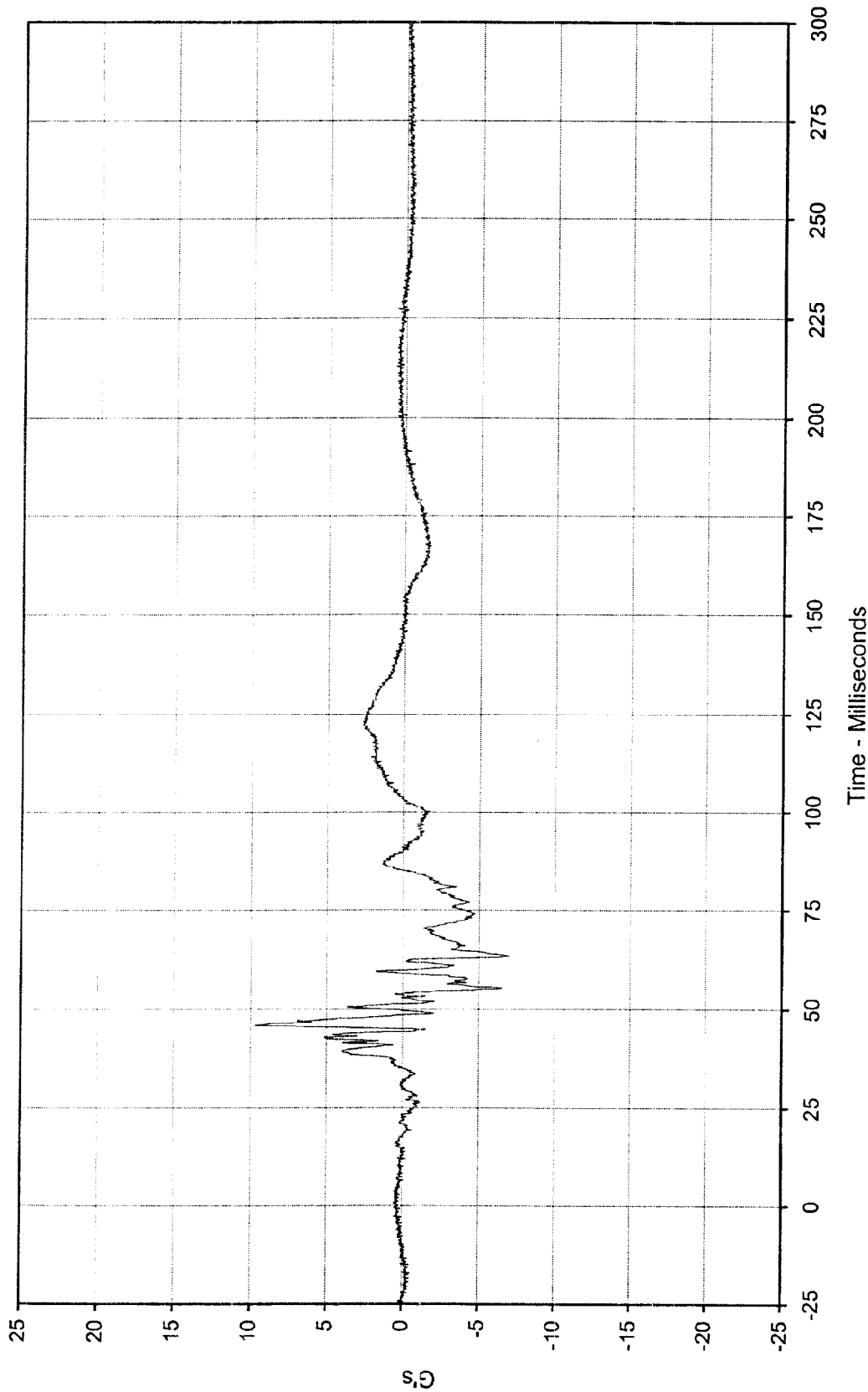




Curve Description: Passenger Pelvis X Displ.
 Maximum Value: 83.5 at 69.4 Milliseconds
 Minimum Value: 0.0 at 0.0 Milliseconds
 SAE Filter Class: 180
 Date of Test: 1/8/99
 Curve Number: IN2-064

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:

Passenger Pelvis Y

Maximum Value:

9.7 at 45.8 Milliseconds

Minimum Value:

-7.0 at 63.2 Milliseconds

SAE Filter Class:

1000

Date of Test:

1/8/99

Curve Number:

FIL-065

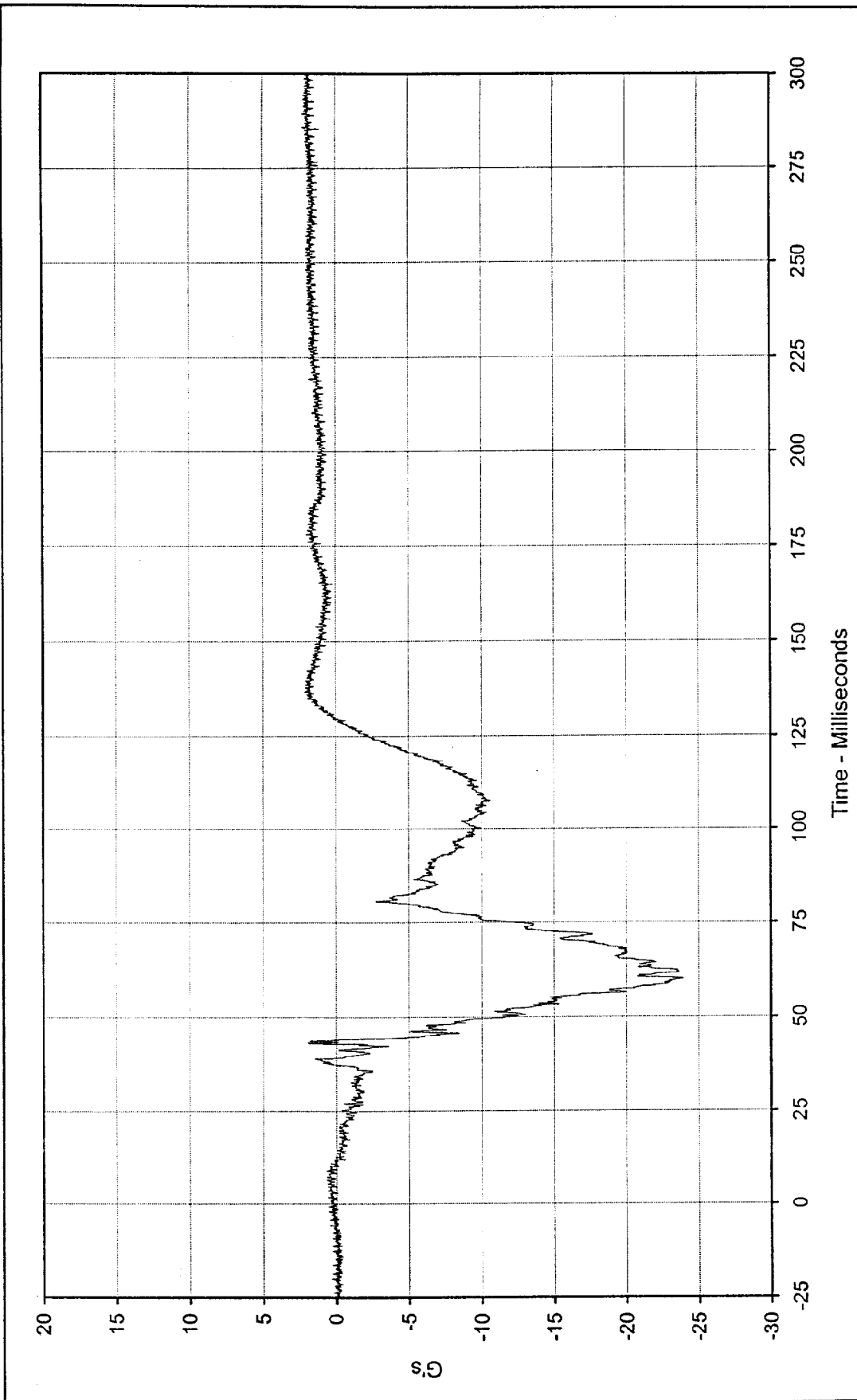
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

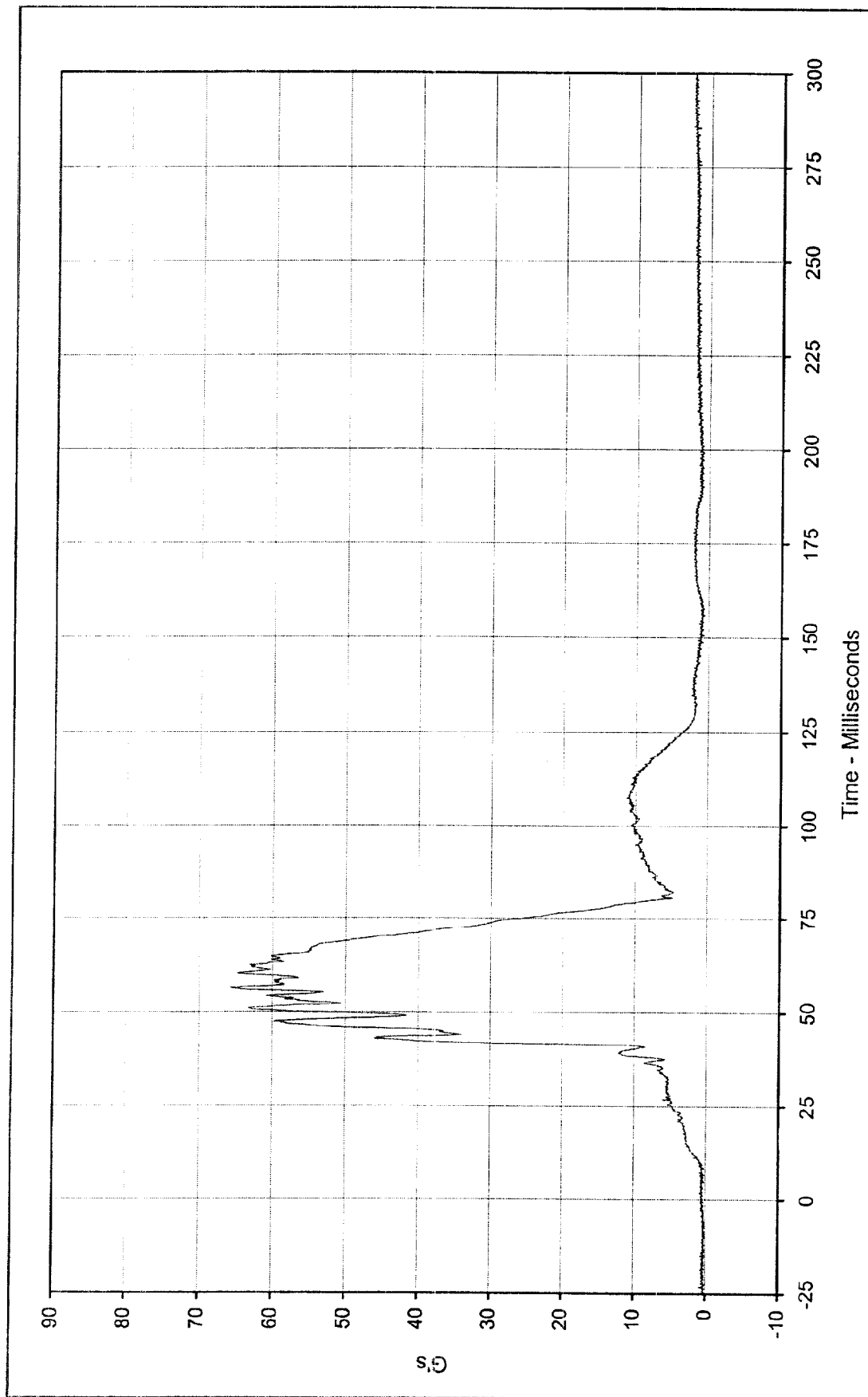
1999 Mazda Protegé DX 4 Door Sedan





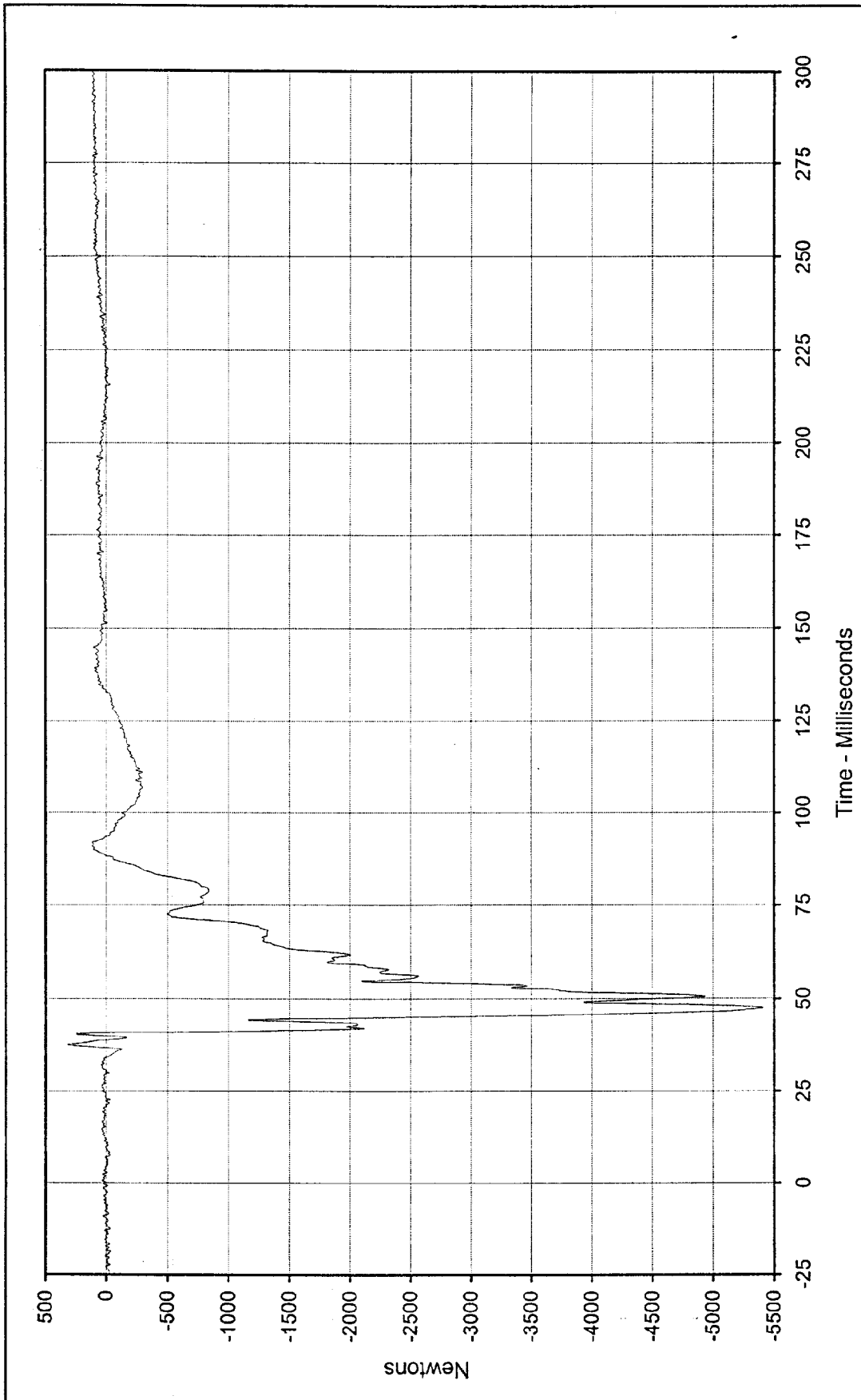
Curve Description:	Passenger Pelvis Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	2.3 at 286.0 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-23.9 at 60.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-066			





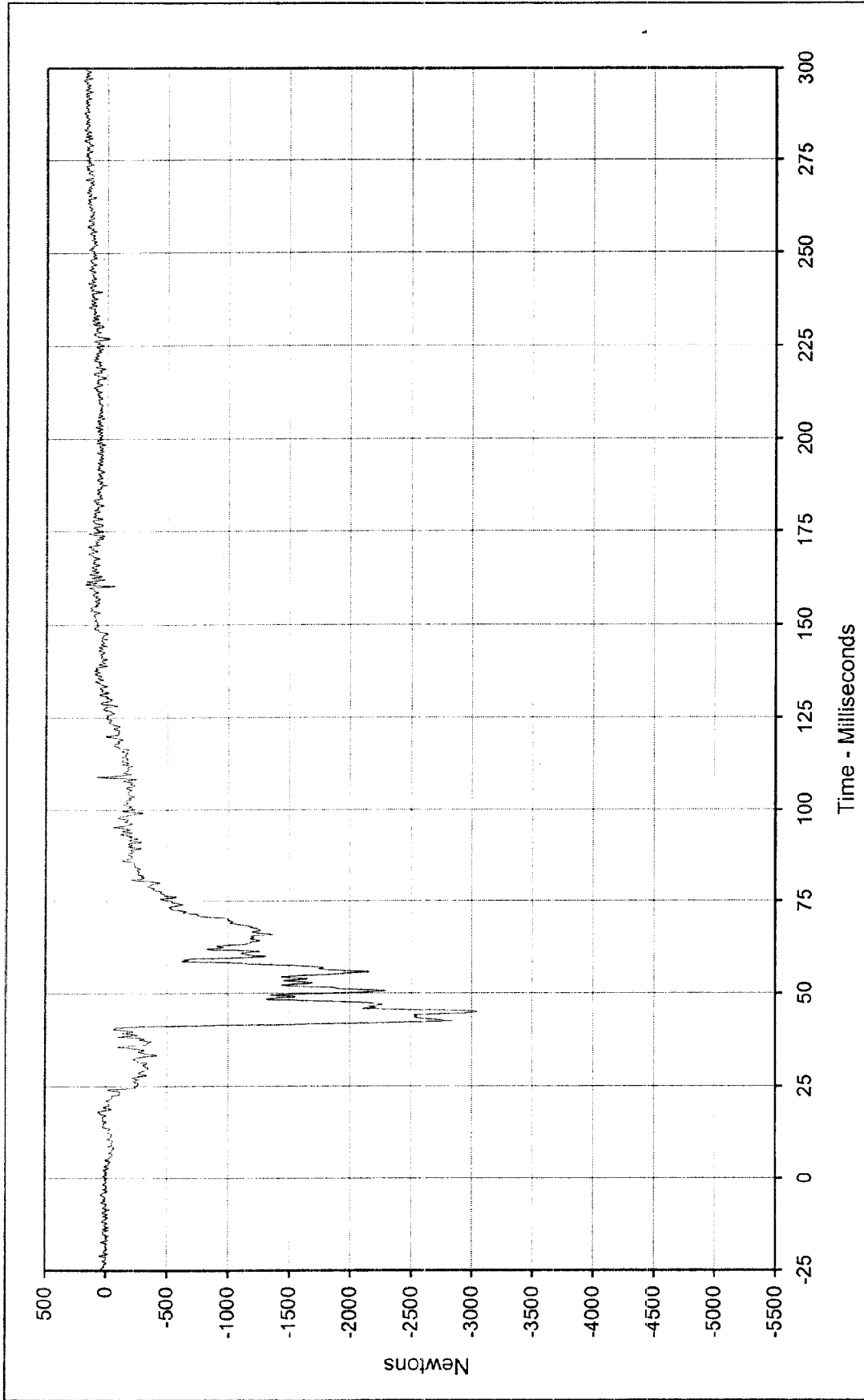
Curve Description:	Passenger Pelvis Resultant	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	65.7 at 56.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.1 at 4.8 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	RES-064			





Curve Description:	Passenger Left Femur Force	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	314.5 at 37.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-5410.7 at 47.5 Milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-067			

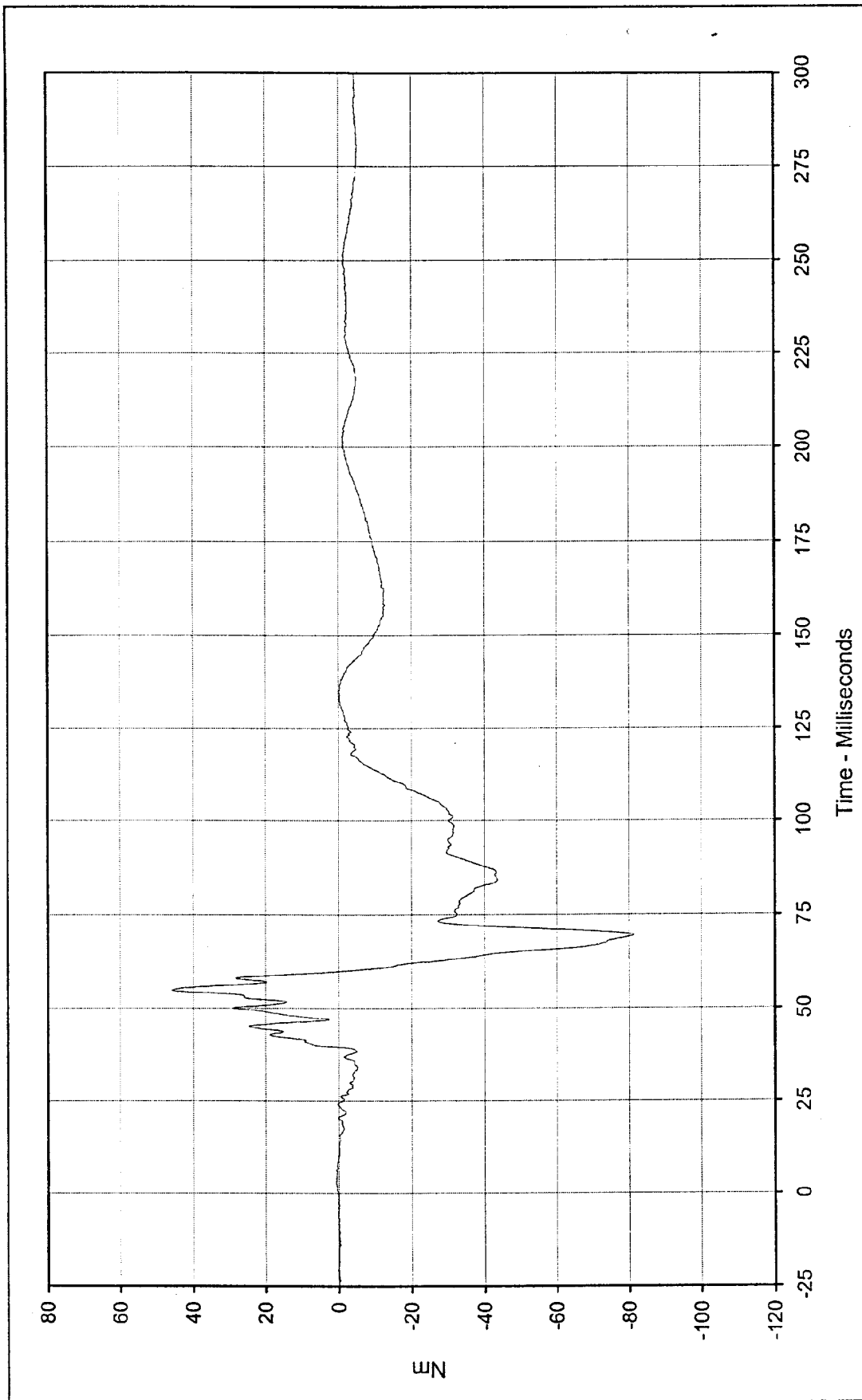




Curve Description:	Passenger Right Femur Force	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	202.0 at 296.6 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-3047.7 at 45.0 Milliseconds			



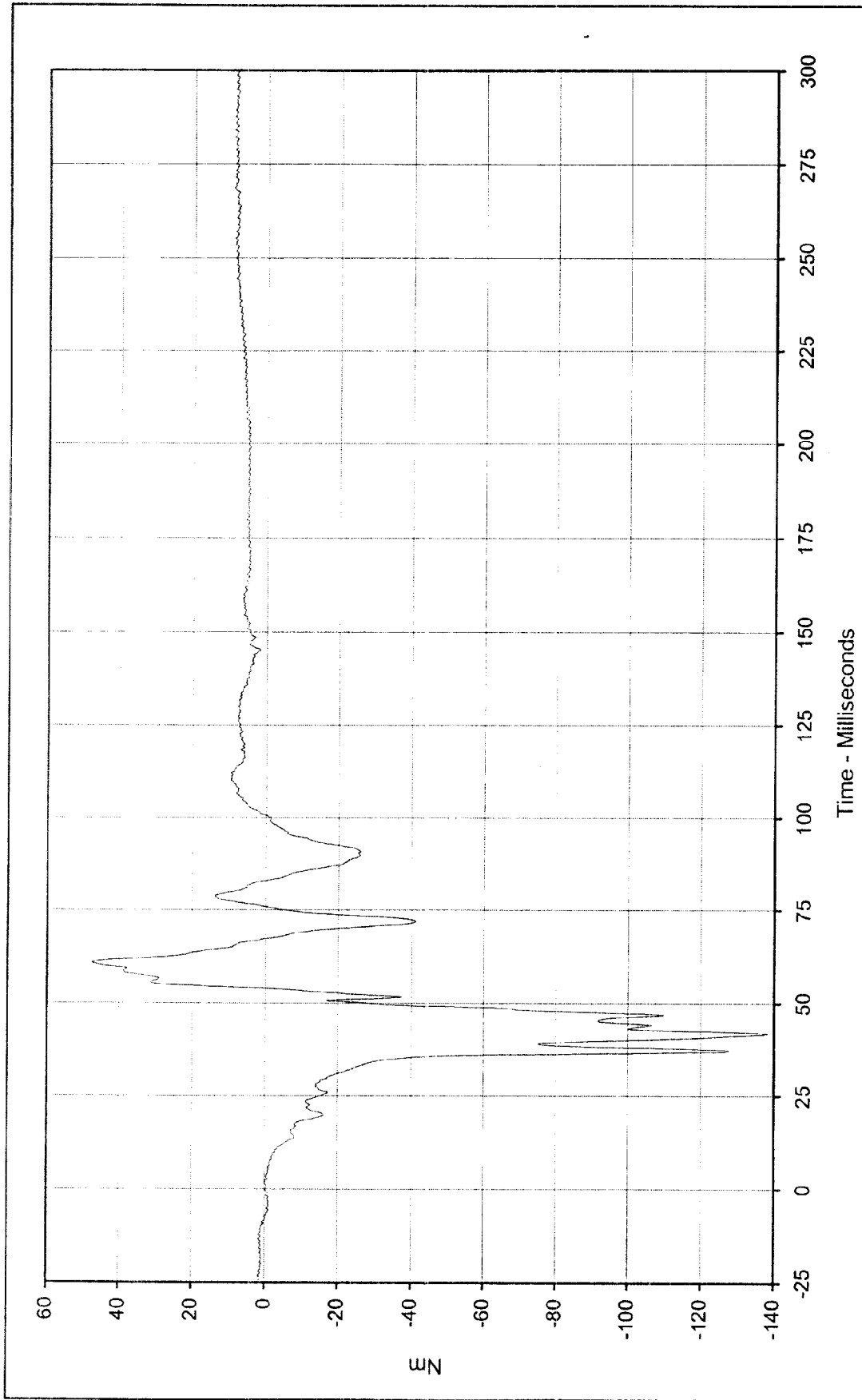
SAE Filter Class:	600
Date of Test:	1/8/99
Curve Number:	FIL-068



Curve Description: Passenger Left Upper Tibia Moment X
 Maximum Value: 45.7 at 54.8 Milliseconds
 Minimum Value: -81.4 at 69.5 Milliseconds
 SAE Filter Class: 600
 Date of Test: 1/8/99
 Curve Number: FIL-069

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 47.5 at 60.9 Milliseconds

Minimum Value: -138.3 at 41.7 Milliseconds

SAE Filter Class: 600

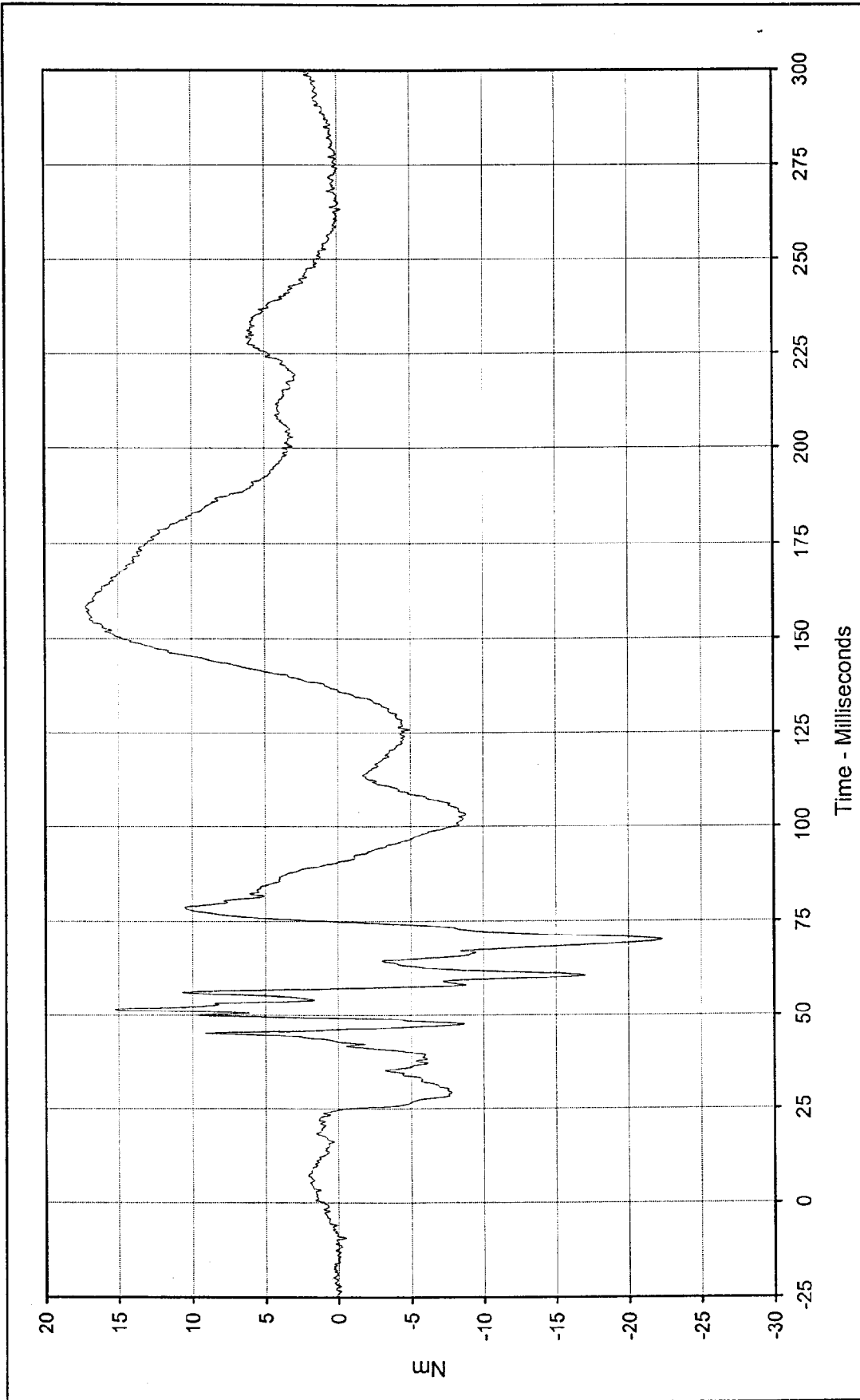
Date of Test: 1/8/99

Curve Number: FIL-070

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 17.2 at 158.3 Milliseconds

Minimum Value: -22.3 at 69.9 Milliseconds

SAE Filter Class: 600

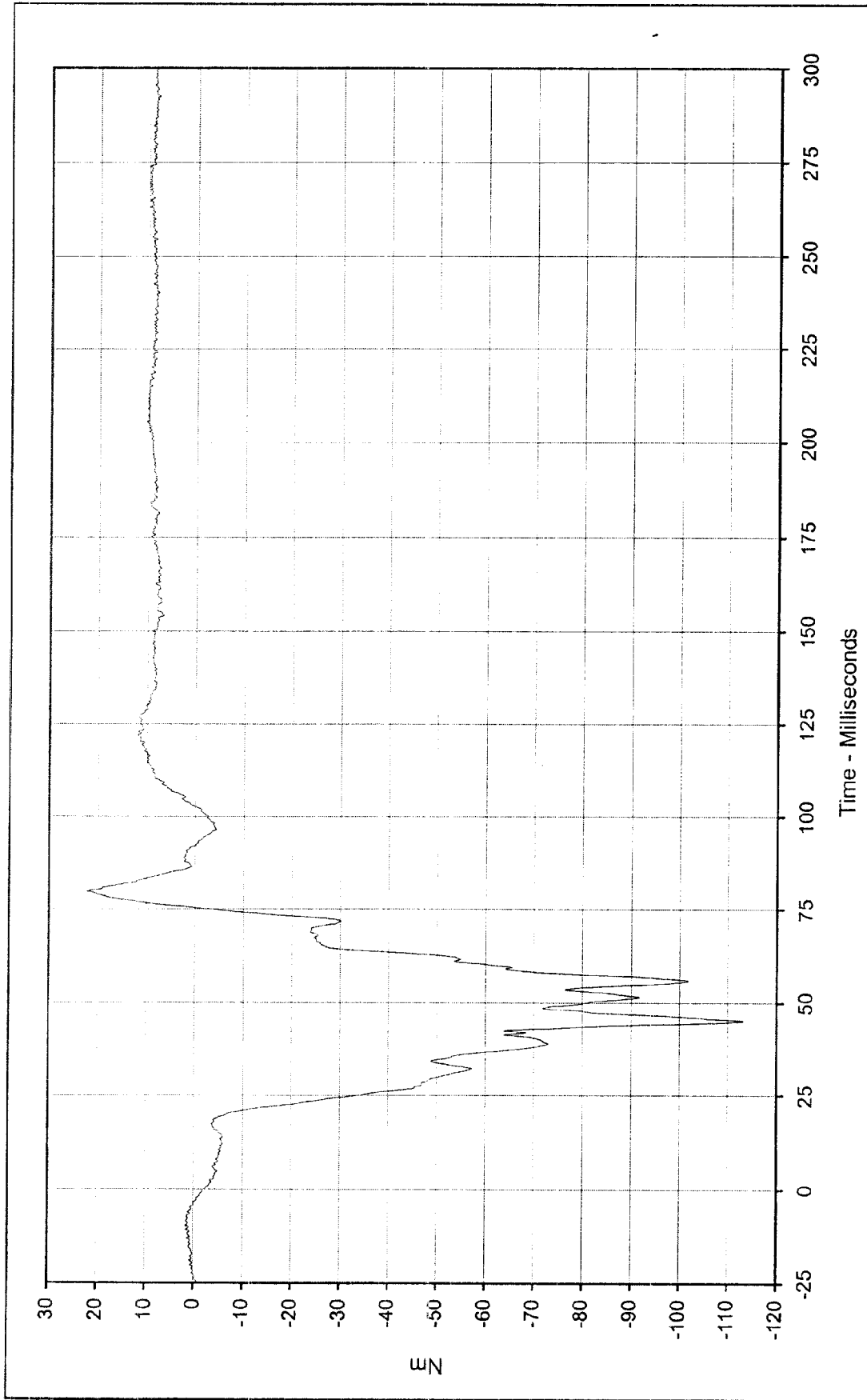
Date of Test: 1/8/99

Curve Number: FIL-071

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 22.1 at 79.8 Milliseconds

Minimum Value: -113.1 at 45.1 Milliseconds

SAE Filter Class: 600

Date of Test: 1/8/99

Curve Number: FIL-072

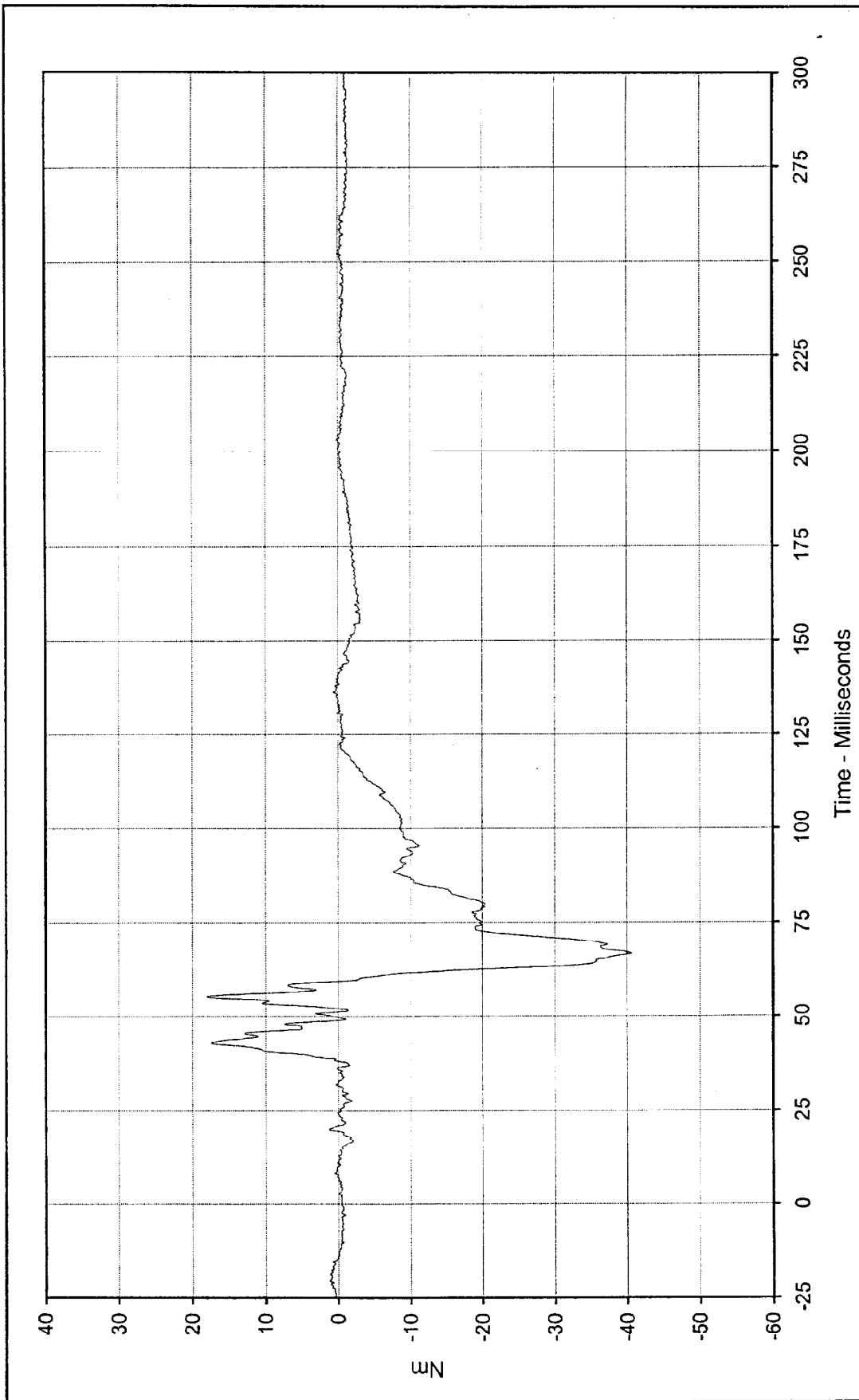
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

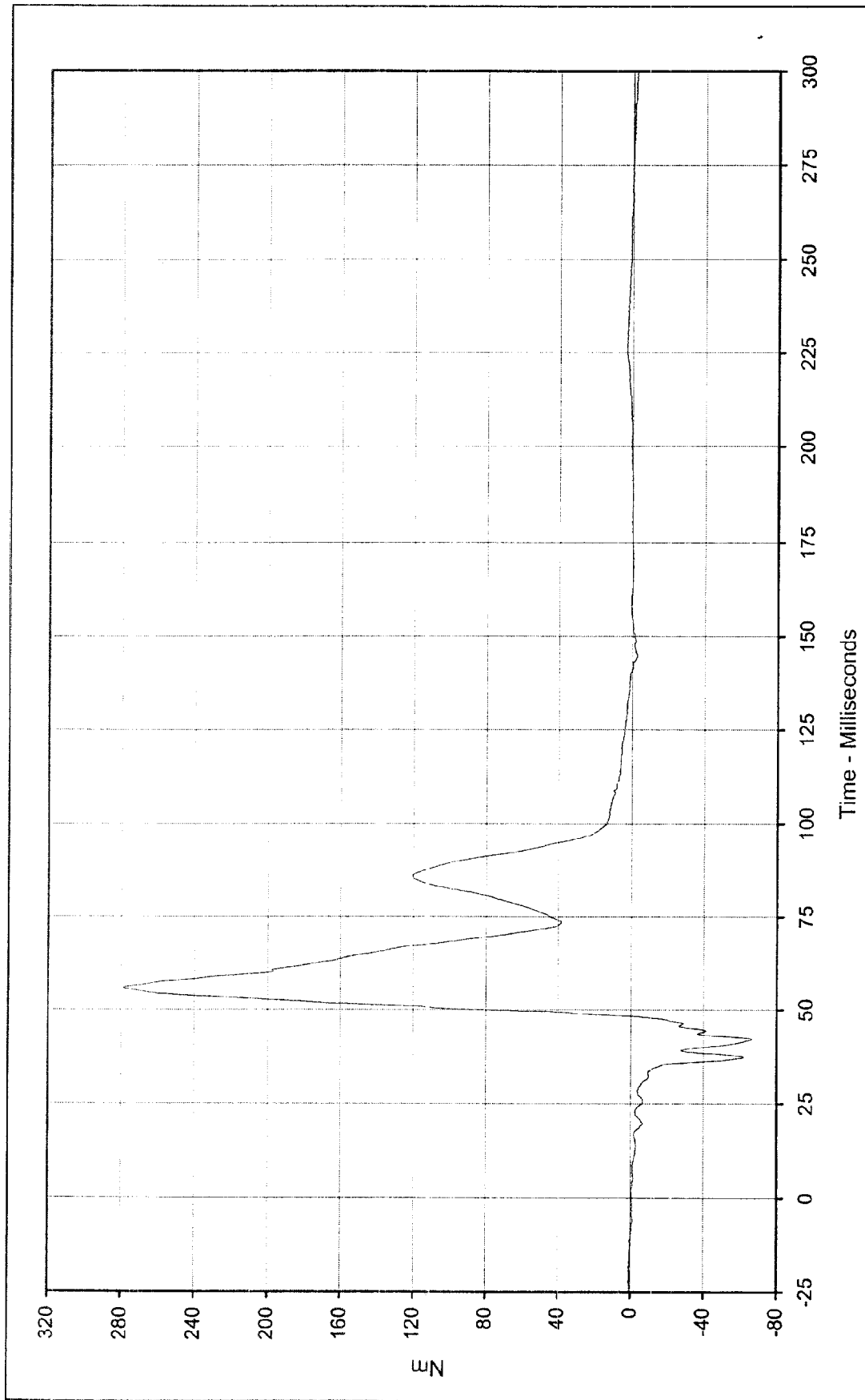
1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Passenger Left Lower Tibia Moment X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	18.0 at 55.2 milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-40.6 at 66.6 milliseconds			
SAE Filter Class:	600			
Date of Test:	1/8/99			
Curve Number:	FIL-073			





Curve Description: Passenger Left Lower Tibia Moment Y

Maximum Value: 278.9 at 55.8 Milliseconds

Minimum Value: -66.4 at 42.1 Milliseconds

SAE Filter Class: 600

Date of Test: 1/8/99

Curve Number: FIL-074

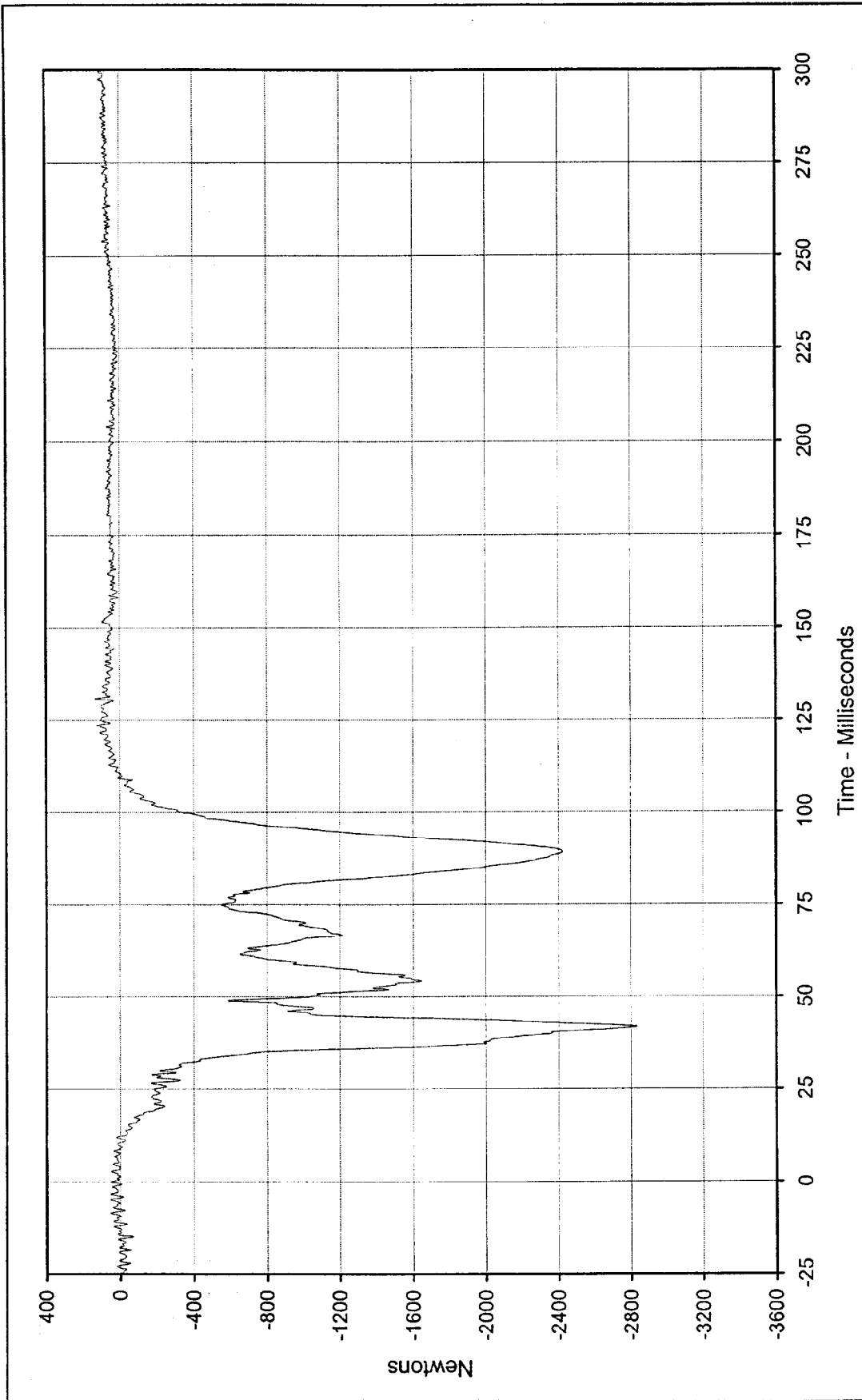
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

1999 Mazda Protegé DX 4 Door Sedan

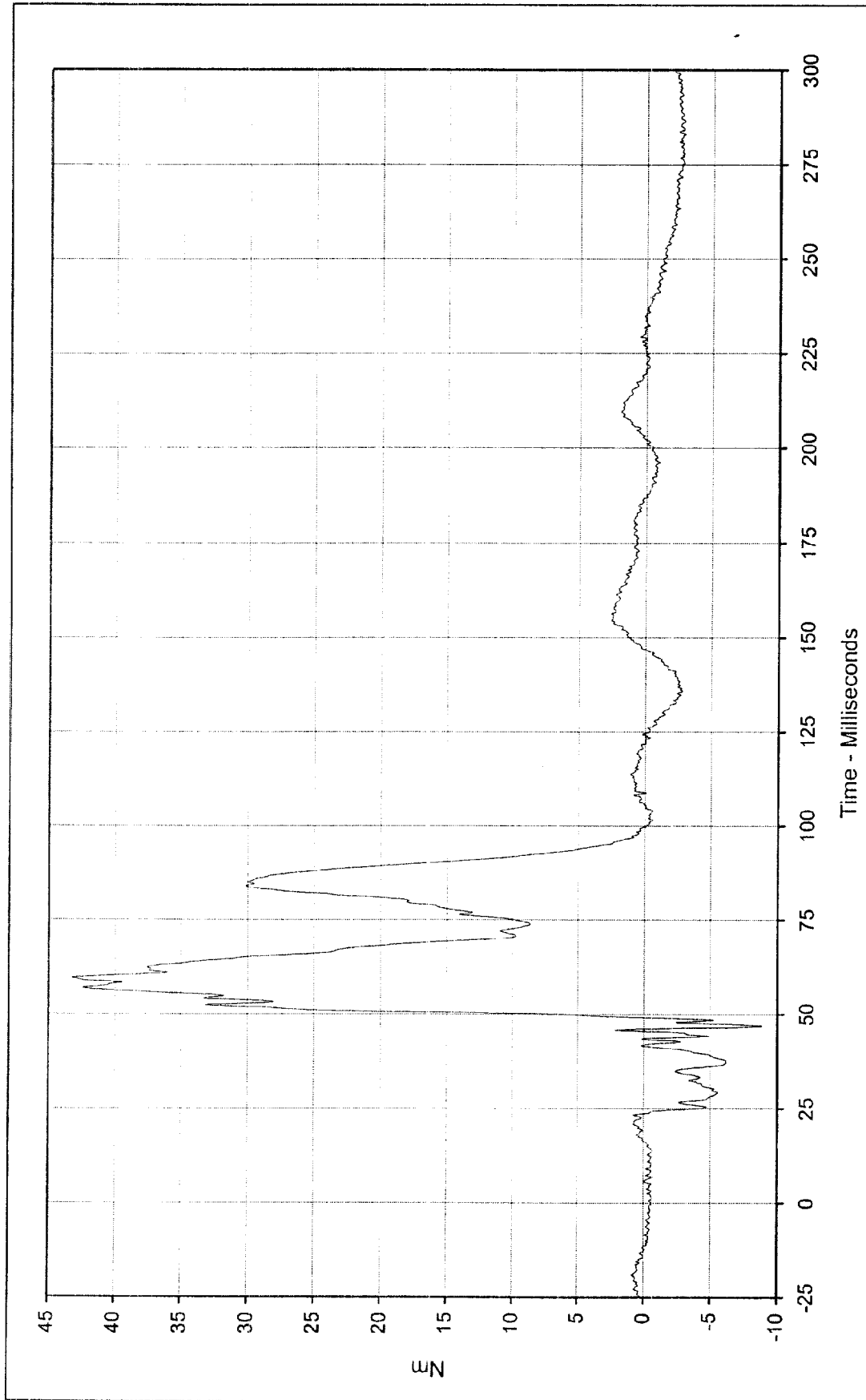




Curve Description: Passenger Left Lower Tibia Force Z
 Maximum Value: 134.8 at 130.8 Milliseconds
 Minimum Value: -2833.6 at 41.8 Milliseconds
 SAE Filter Class: 600
 Date of Test: 1/8/99
 Curve Number: FIL-075

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 43.2 at 59.5 Milliseconds

Minimum Value: -8.9 at 46.8 Milliseconds

SAE Filter Class: 600

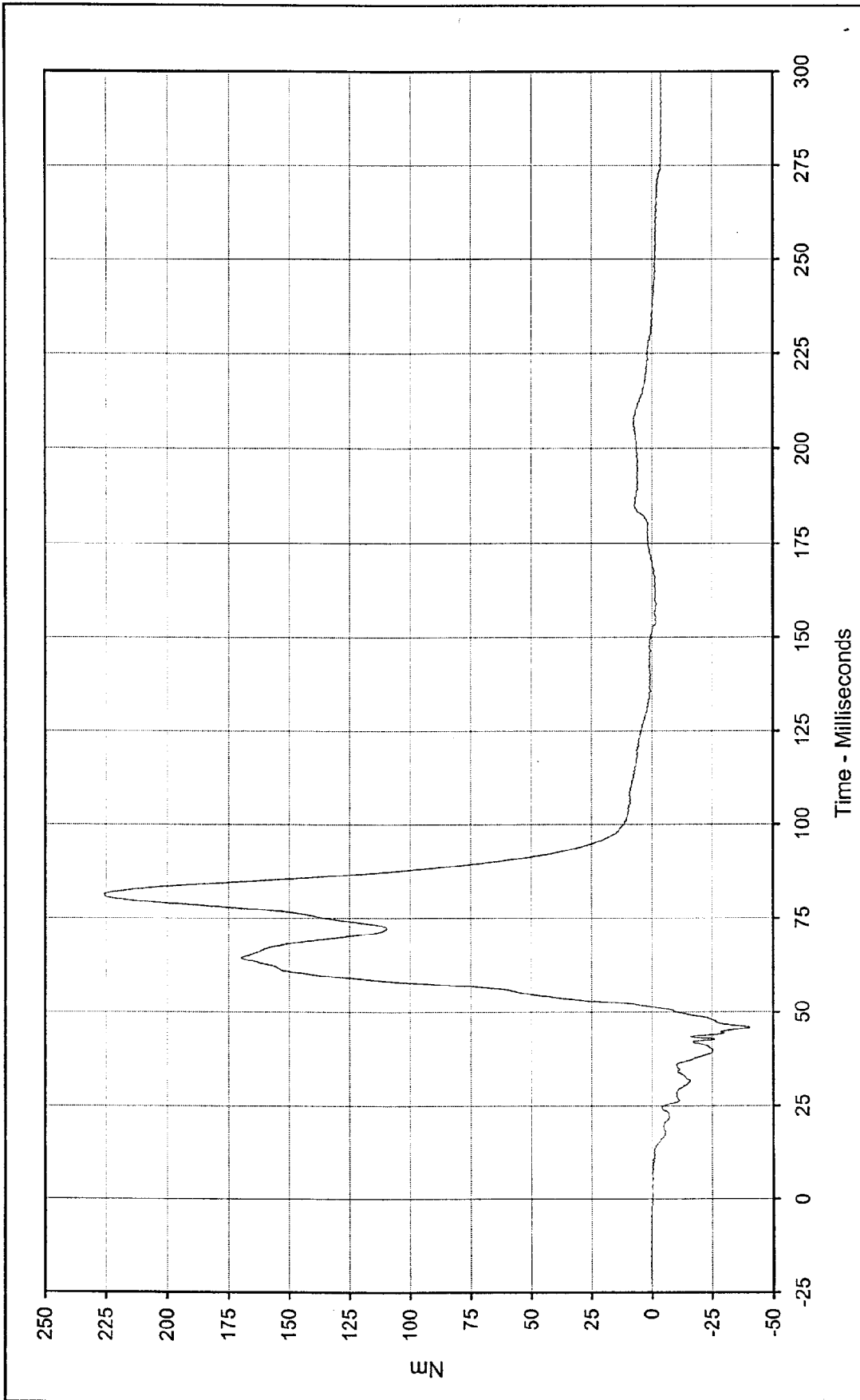
Date of Test: 1/8/99

Curve Number: FIL-076

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

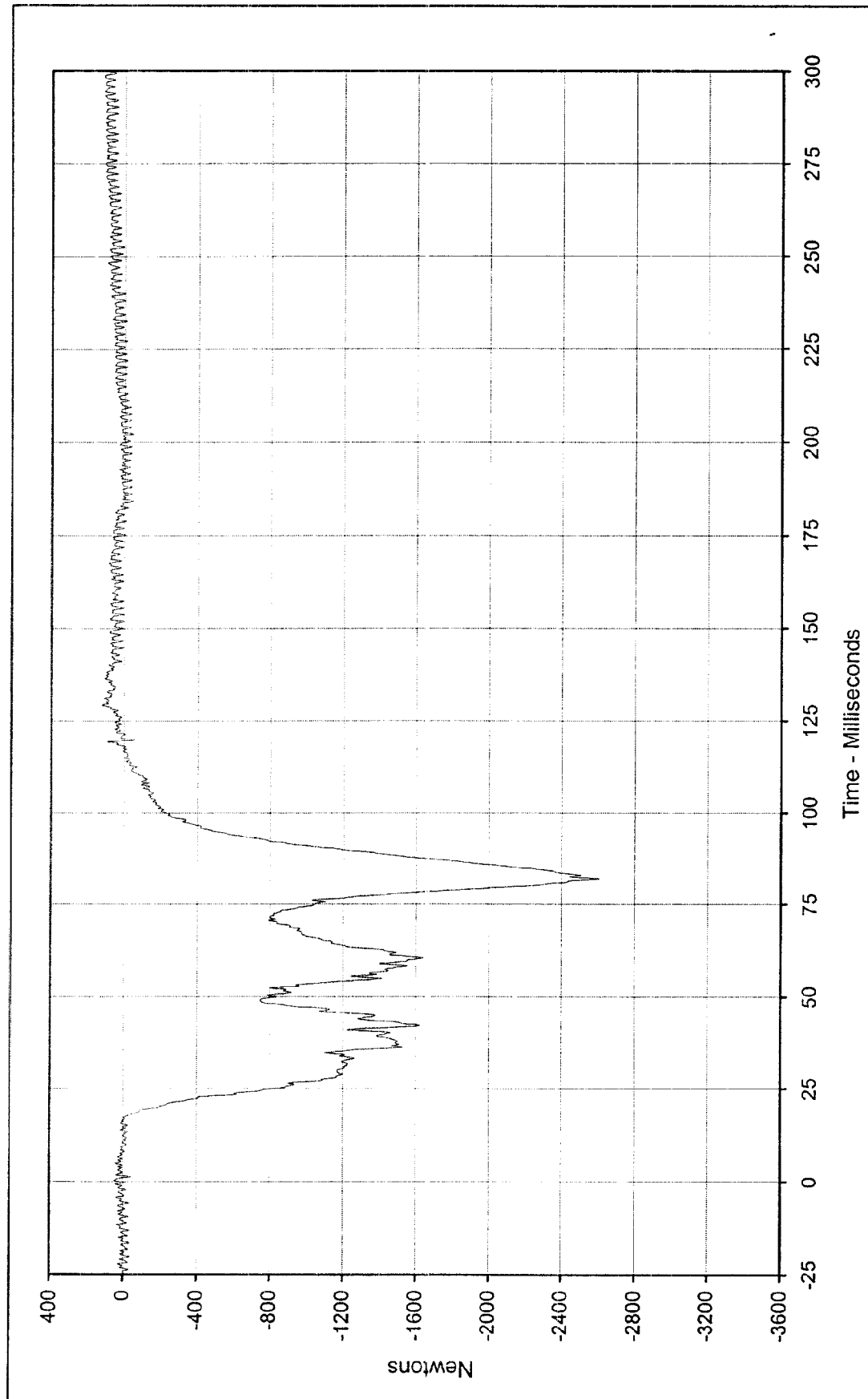




Curve Description: Passenger Right Lower Tibia Moment Y
Maximum Value: 225.7 at 25.7 Milliseconds
Minimum Value: -40.6 at 45.9 Milliseconds
SAE Filter Class: 600
Date of Test: 1/8/99
Curve Number: FIL-077

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Passenger Right lower Tibia Force Z

Maximum Value: 120.7 at 299.9 Milliseconds

Minimum Value: -2607.4 at 81.9 Milliseconds

SAE Filter Class: 600

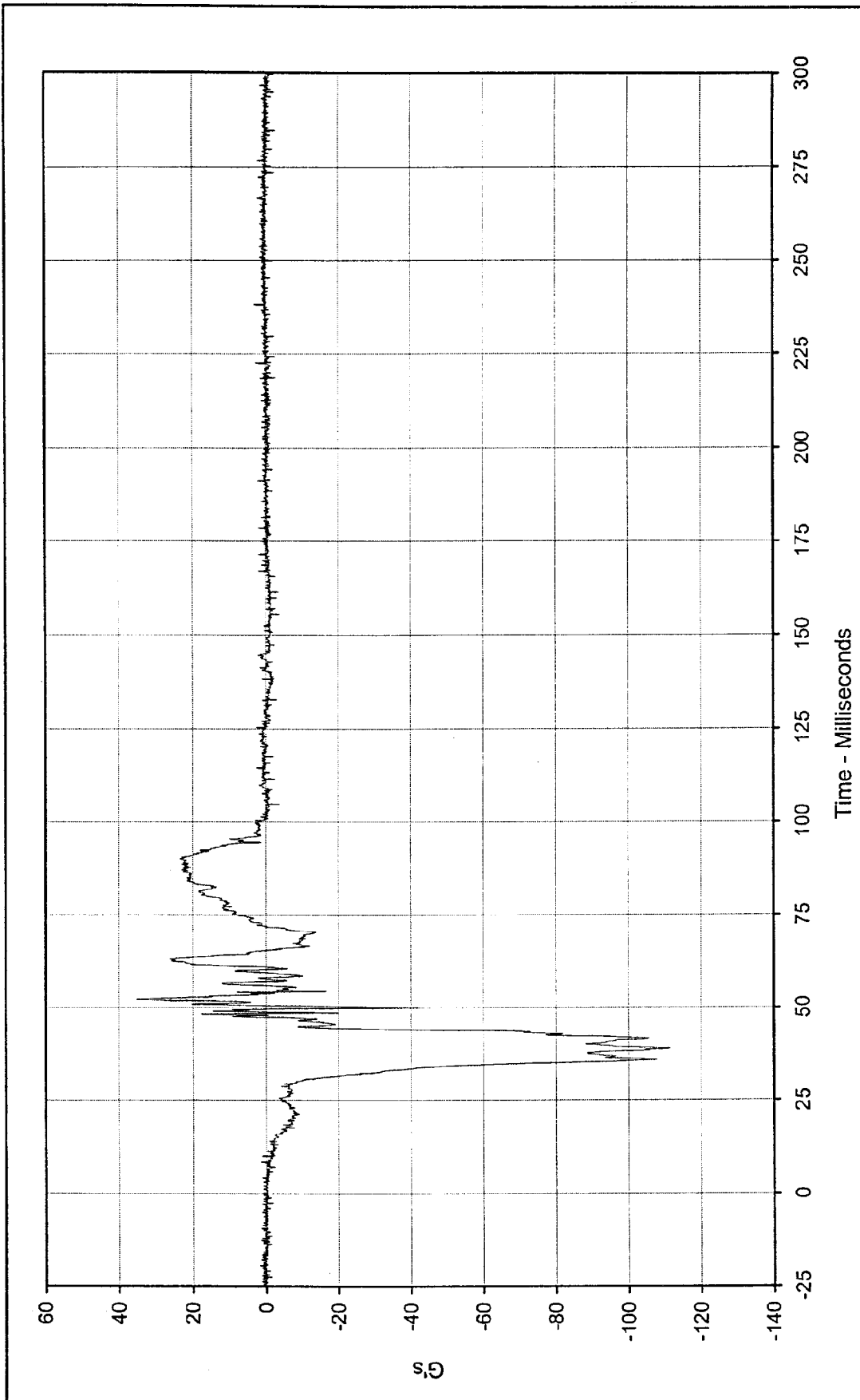
Date of Test: 1/8/99

Curve Number: FIL-078

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

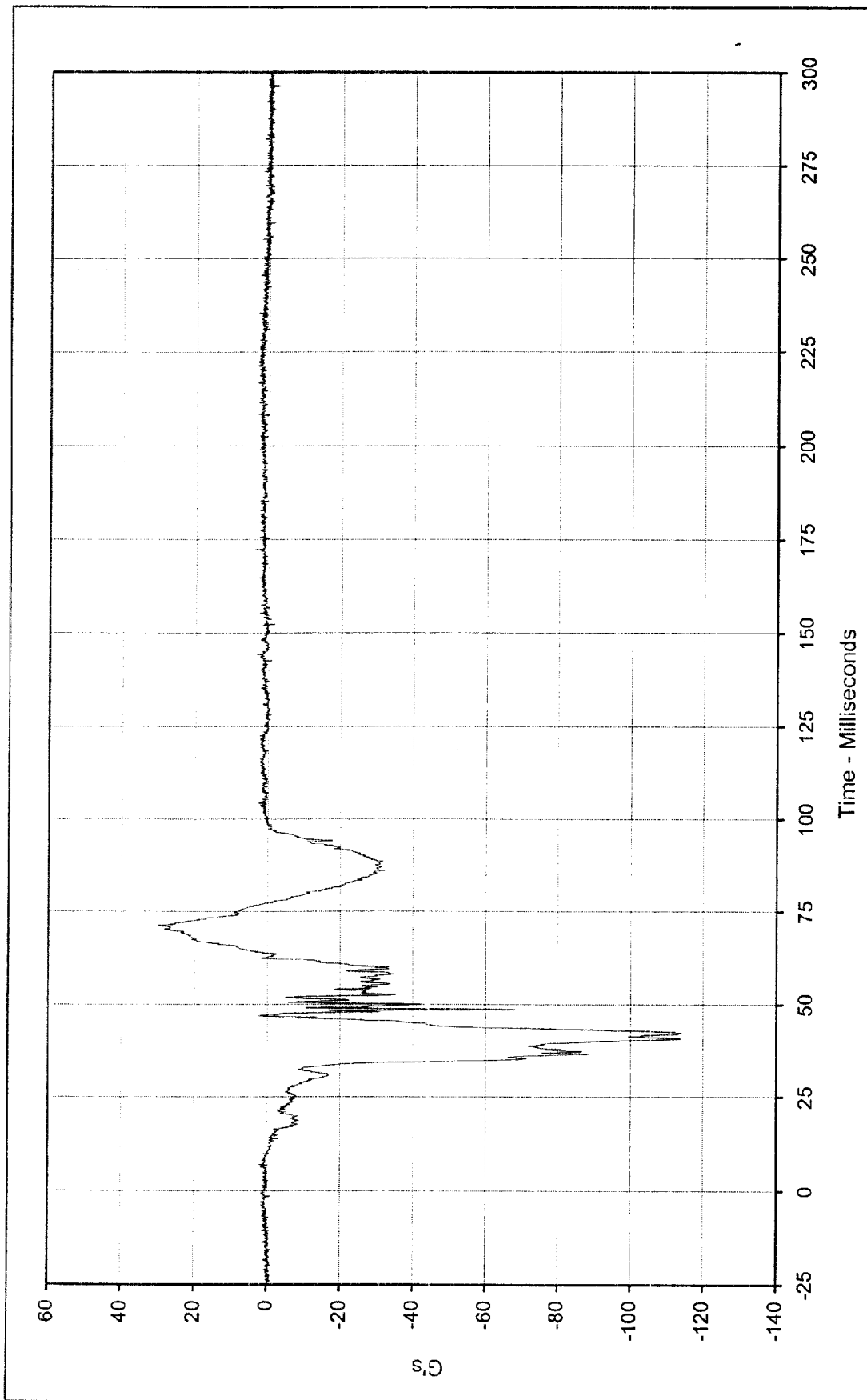




Curve Description: Passenger Left Foot Aft X
 Maximum Value: 35.3 at 52.2 Milliseconds
 Minimum Value: -111.5 at 38.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 1/8/99
 Curve Number: FIL-079

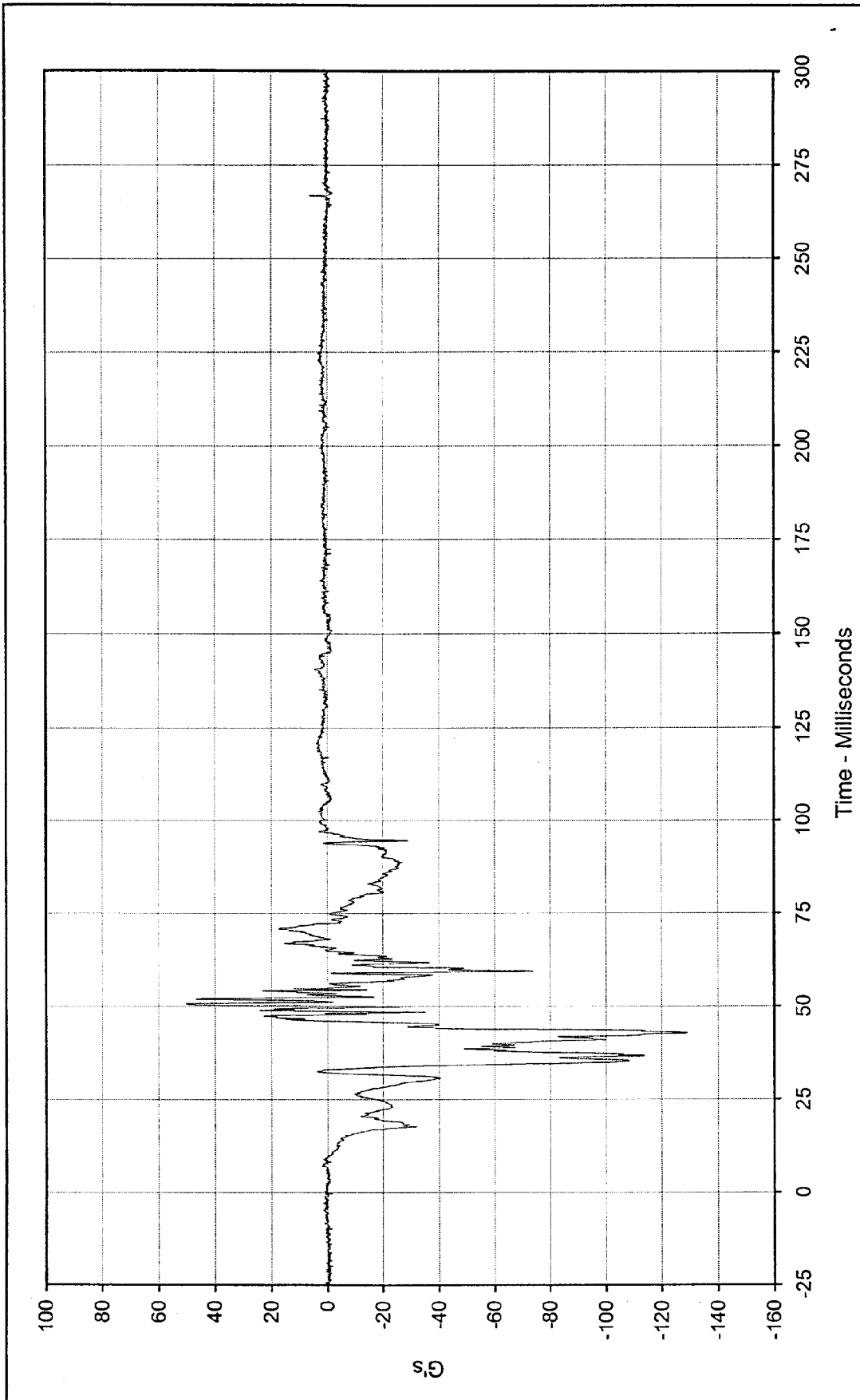
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





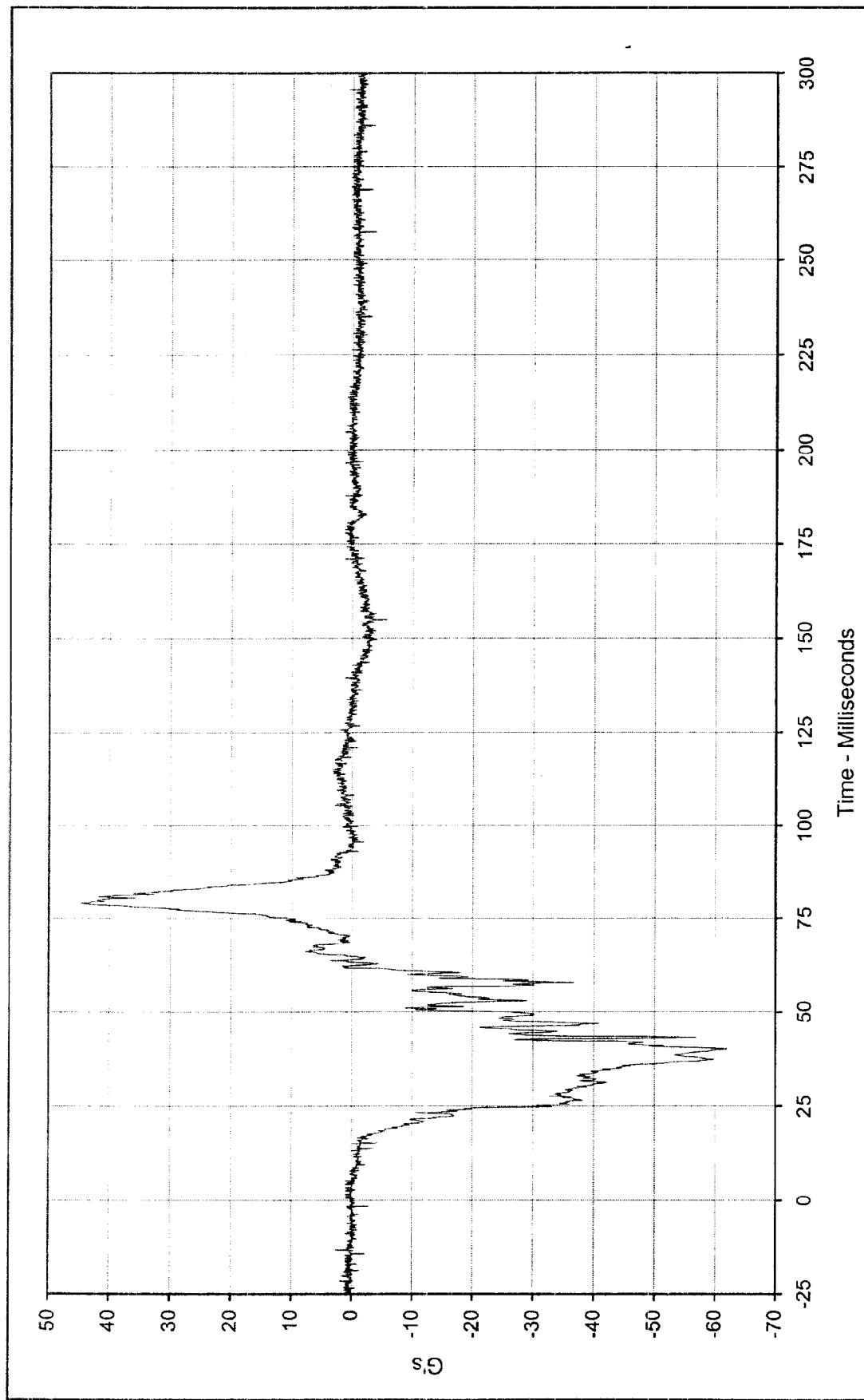
Curve Description:	Passenger Left Foot Aft Z	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	29.8 at 71.3 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-114.2 at 42.4 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	1/8/99		
Curve Number:	FIL-080		





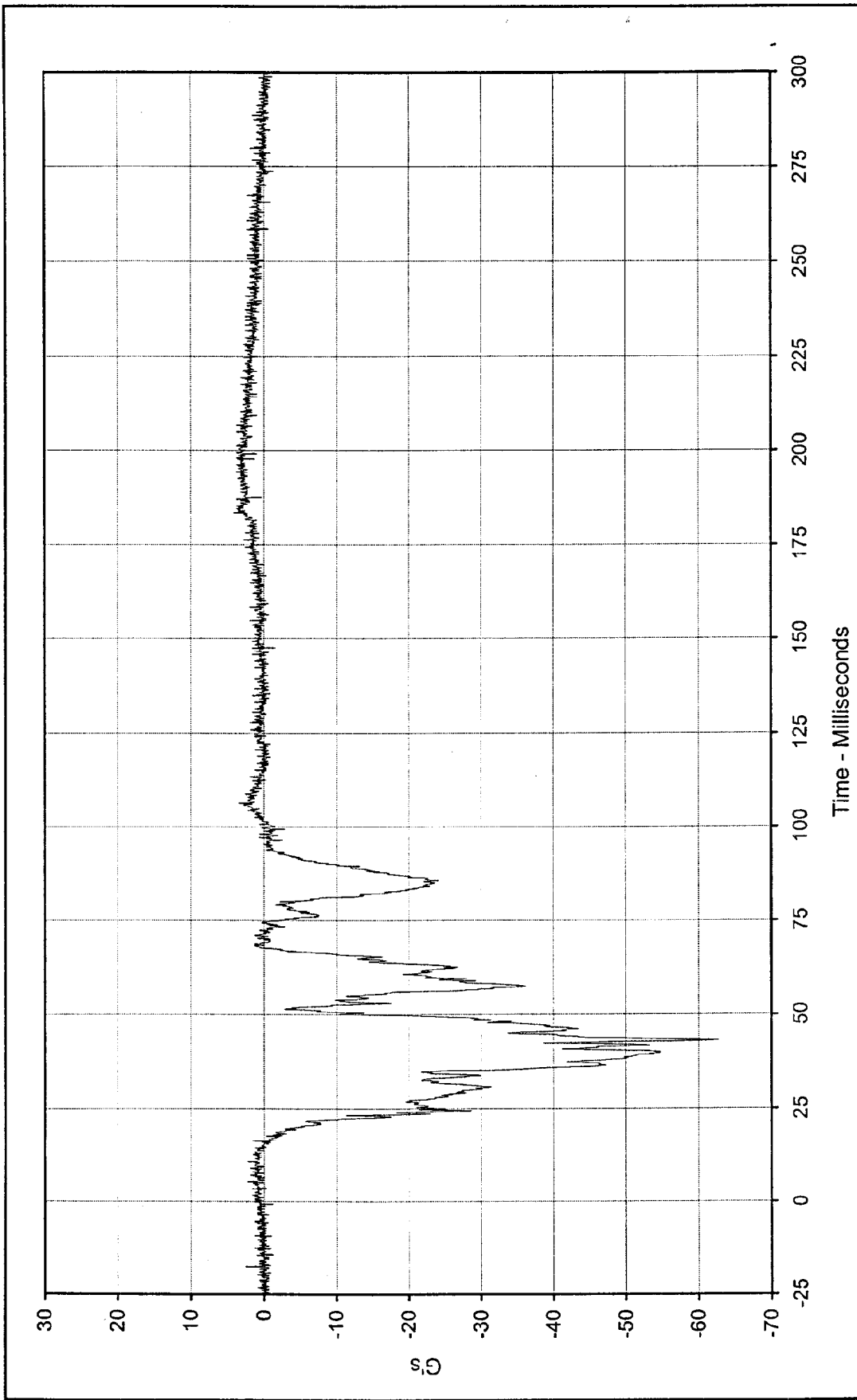
Curve Description:	Passenger Left Foot Fore Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	50.5 at 50.7 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-129.3 at 42.6 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-081			





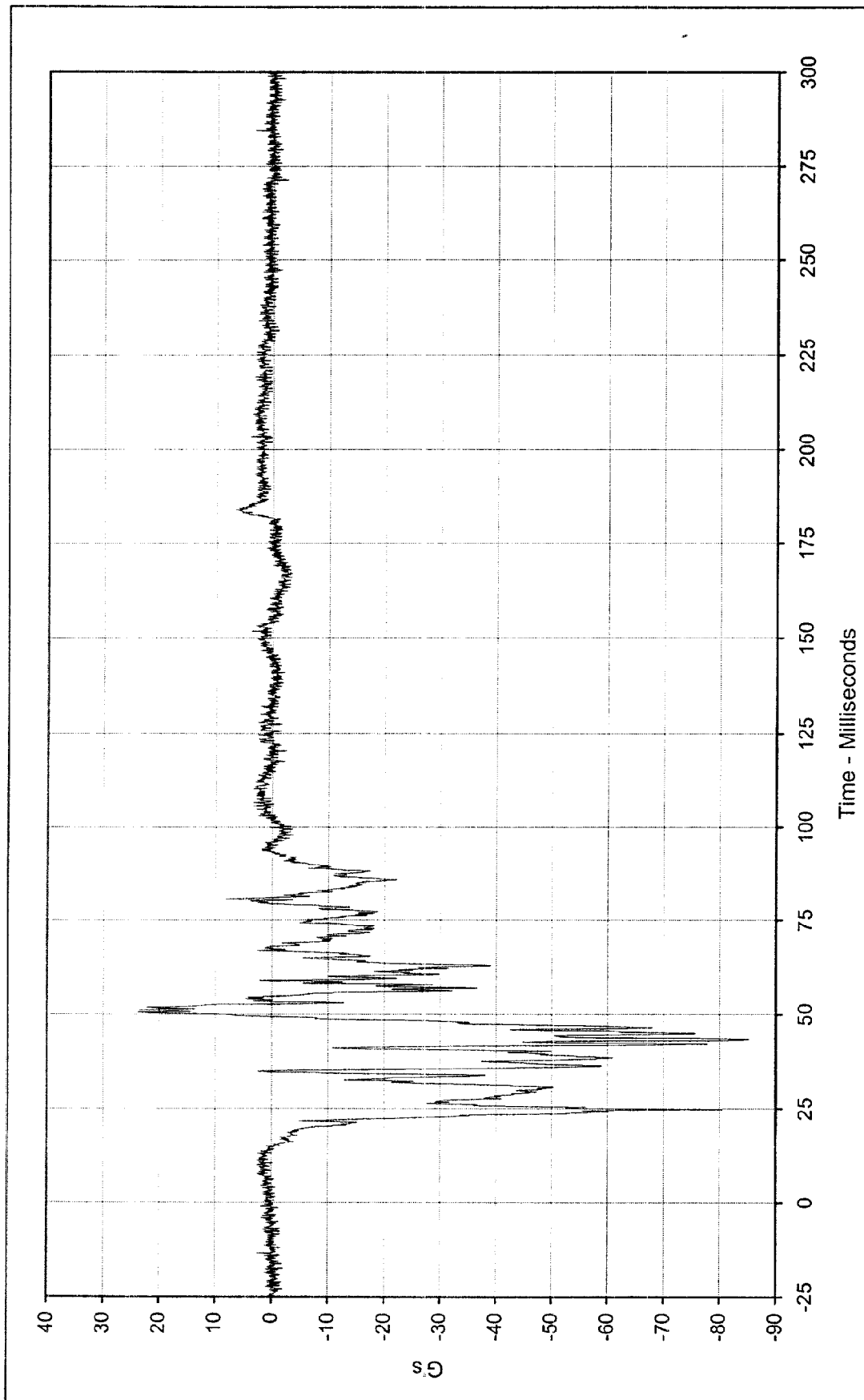
Curve Description:	Passenger Right Foot Aft X	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	44.7 at 78.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-62.1 at 40.0 Milliseconds			
SAE Filter Class:	1000			
Date of Test:	1/8/99			
Curve Number:	FIL-082			





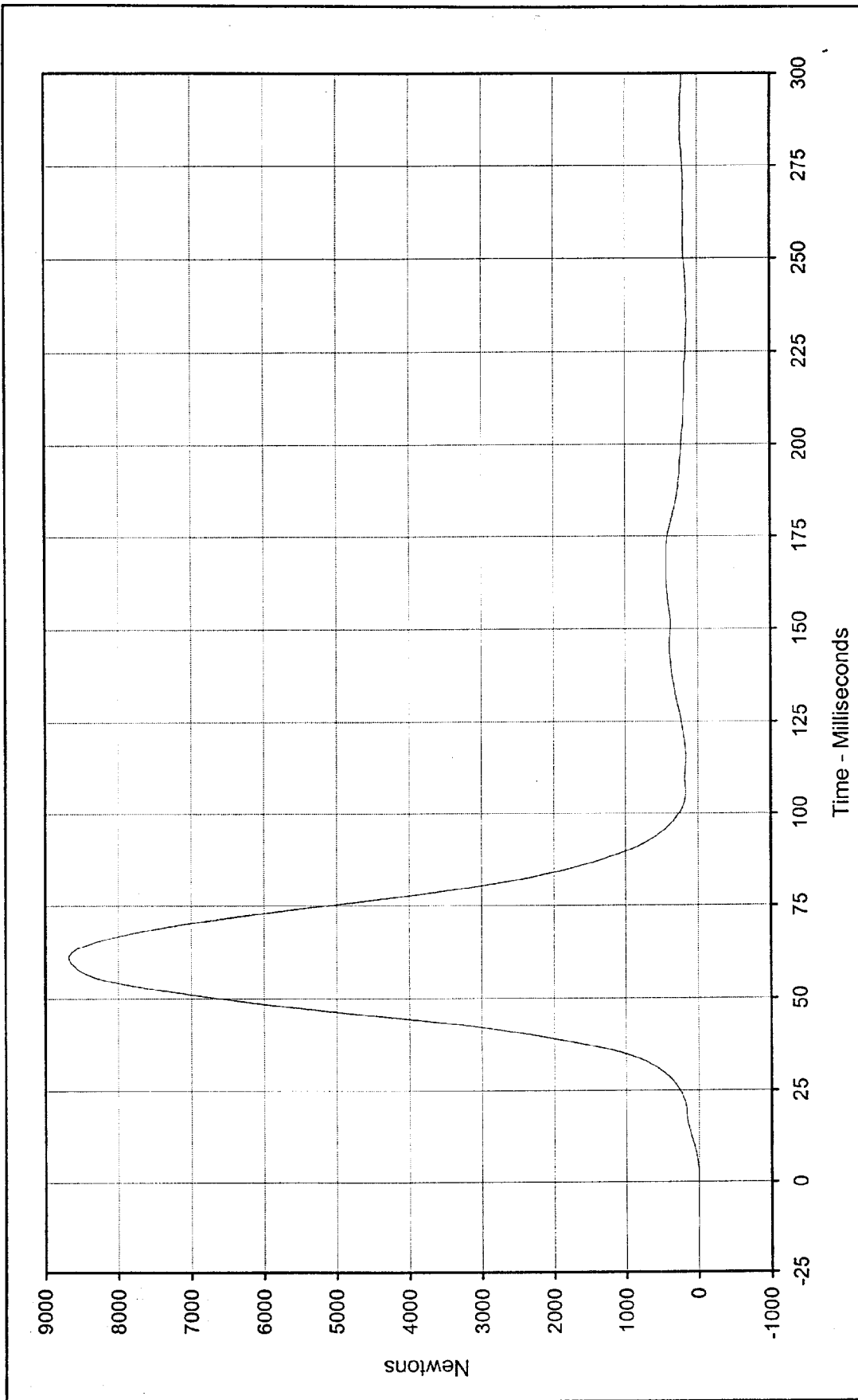
Curve Description: Passenger Right Foot Aft Z
 Maximum Value: 4.1 at 183.5 Milliseconds
 Minimum Value: -62.7 at 43.2 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 1/8/99
 Curve Number: FIL-083





Curve Description:	Passenger Right Foot Fore Z	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	24.0	at	51.1	Milliseconds
Minimum Value:	-85.3	at	43.2	Milliseconds
SAE Filter Class:	1000	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Date of Test:	1/8/99			
Curve Number:	FIL-084			

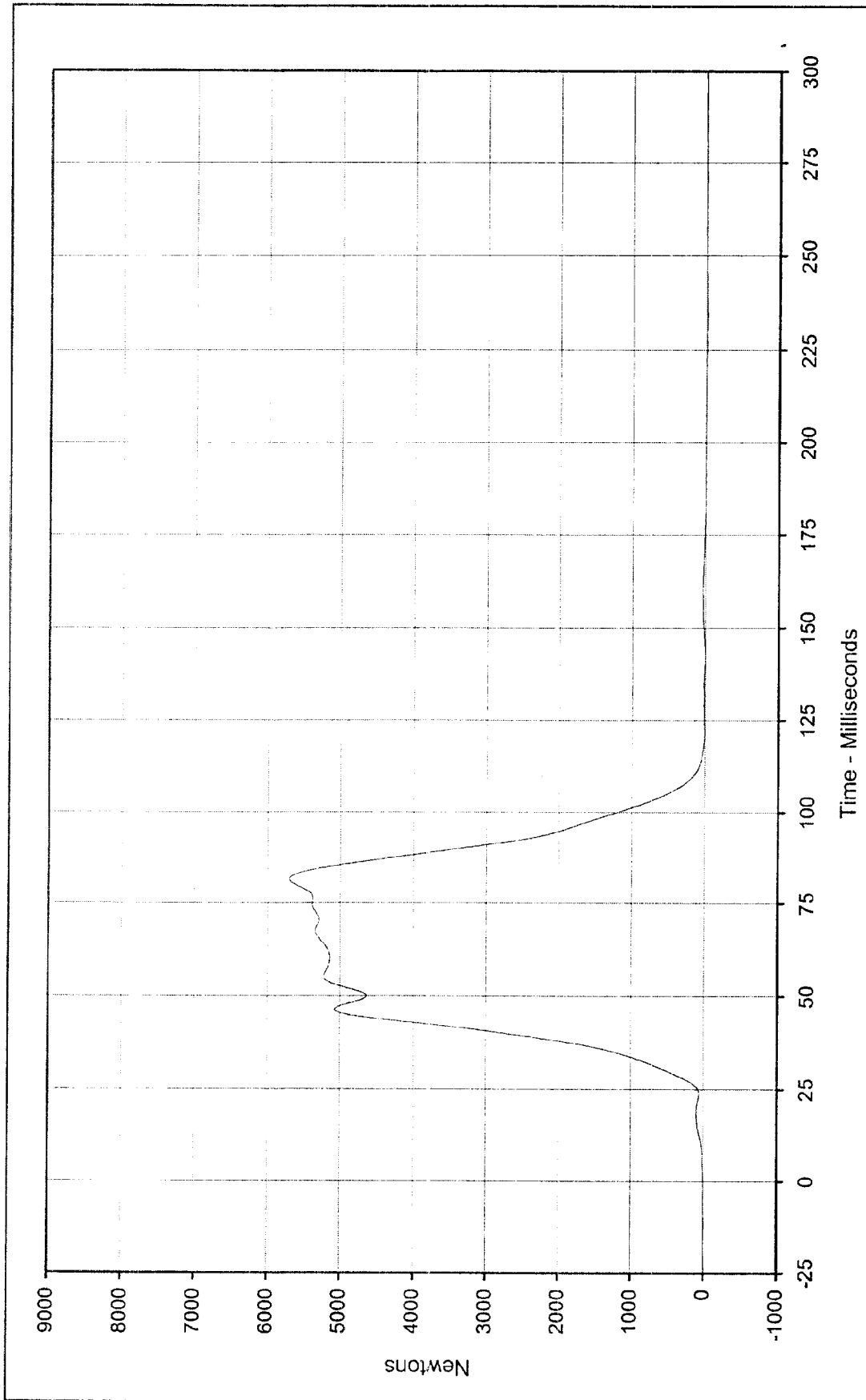




Curve Description: Passenger Lap Belt Force
 Maximum Value: 8674.1 at 61.2 Milliseconds
 Minimum Value: 0.9 at 0.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-085

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

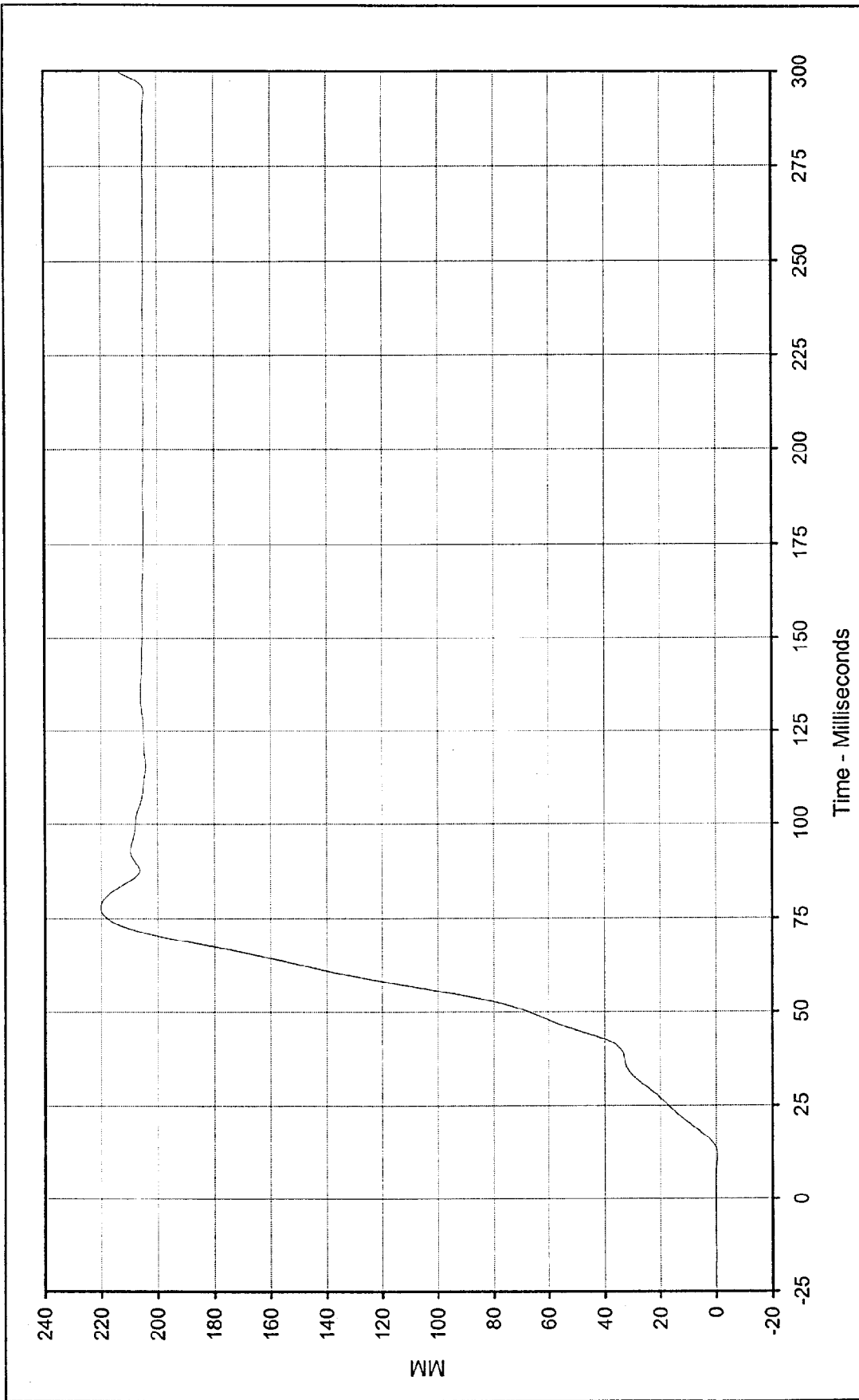




Curve Description: Passenger Shoulder Belt Force
Maximum Value: 5698.3 at 81.7 Milliseconds
Minimum Value: -12.8 at 233.4 Milliseconds
SAE Filter Class: 60
Date of Test: 1/8/99
Curve Number: FIL-086

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

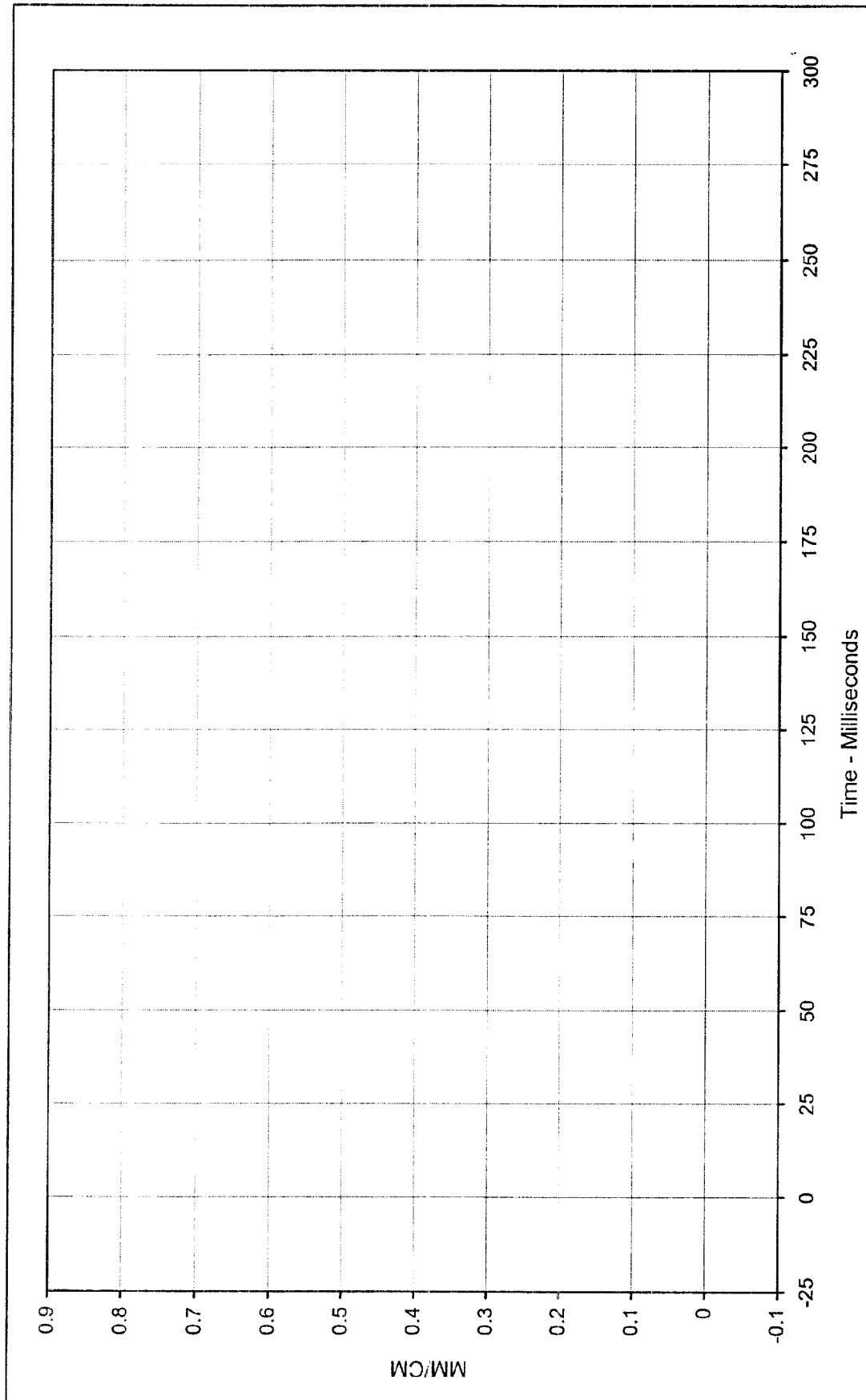




Curve Description:	Passenger Shoulder Belt Pullout	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	220.2 at 77.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-0.6 at 11.5 Milliseconds			



SAE Filter Class:	60
Date of Test:	1/8/99
Curve Number:	FIL-087



Curve Description: Passenger Shoulder Belt Elongation *

Maximum Value: 0.00 at 0.0 Milliseconds

Minimum Value: 0.00 at 0.0 Milliseconds

SAE Filter Class: 60

Date of Test: 1/8/99

Curve Number: FIL-088

Test Program:

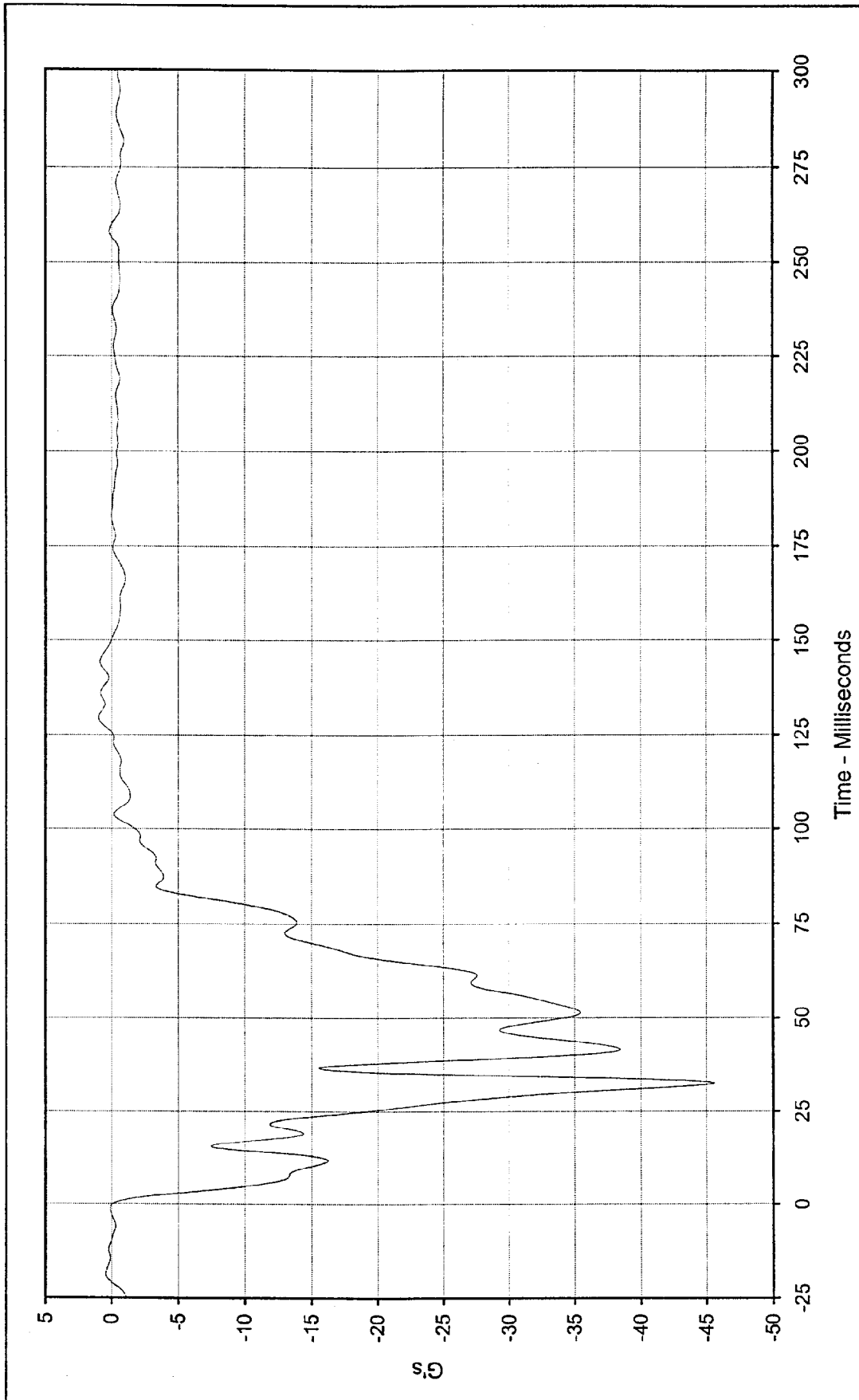
1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

1999 Mazda Protegé DX 4 Door Sedan



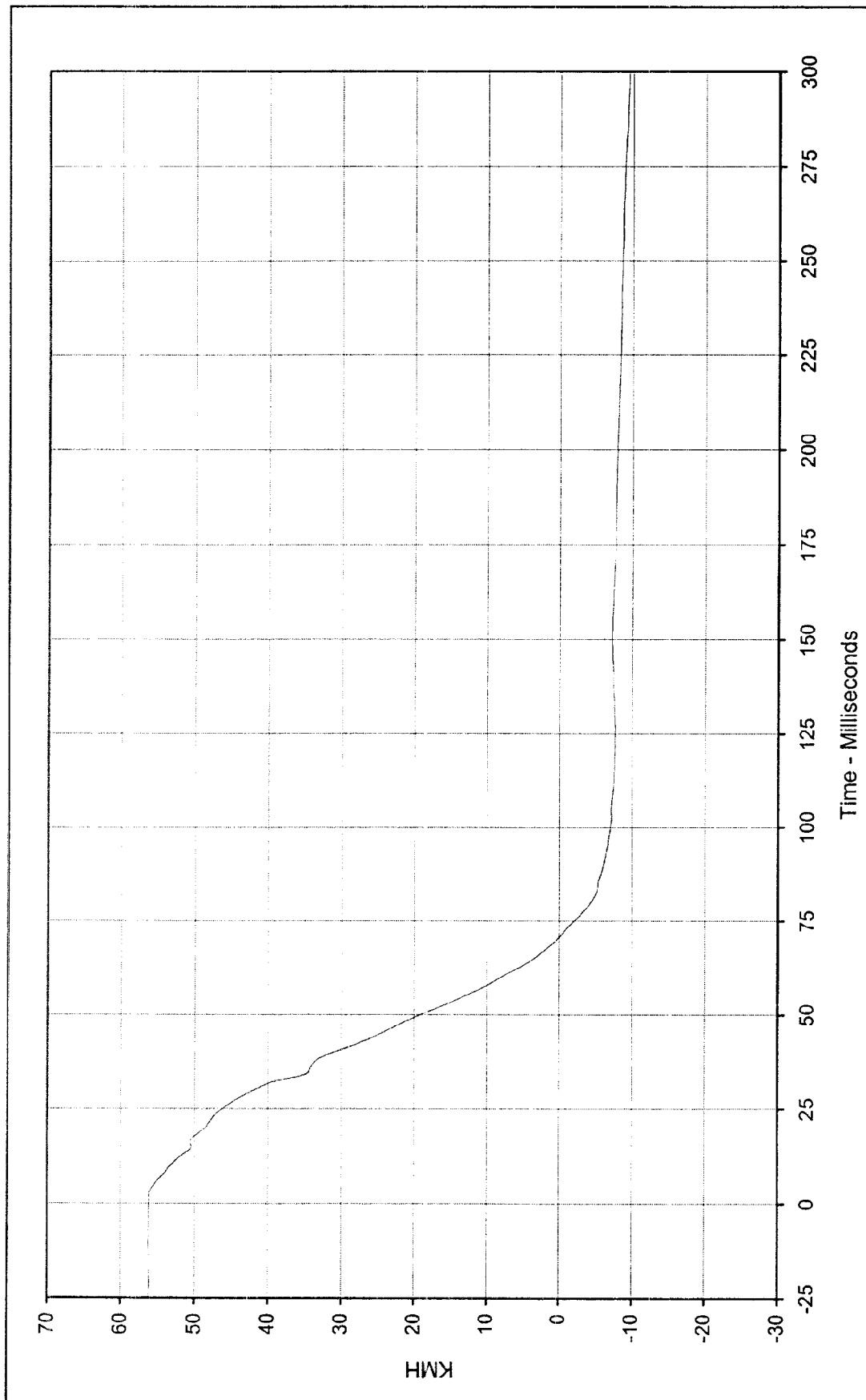
* Channel Failed, No Data



Curve Description: Vehicle Left Rear Primary
 Maximum Value: 1.0 at 129.6 Milliseconds
 Minimum Value: -45.6 at 32.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-089

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Vehicle Left Rear Primary Velocity

Maximum Value: 56.1 at 1.8 Milliseconds

Minimum Value: -9.4 at 299.9 Milliseconds

SAE Filter Class: 180

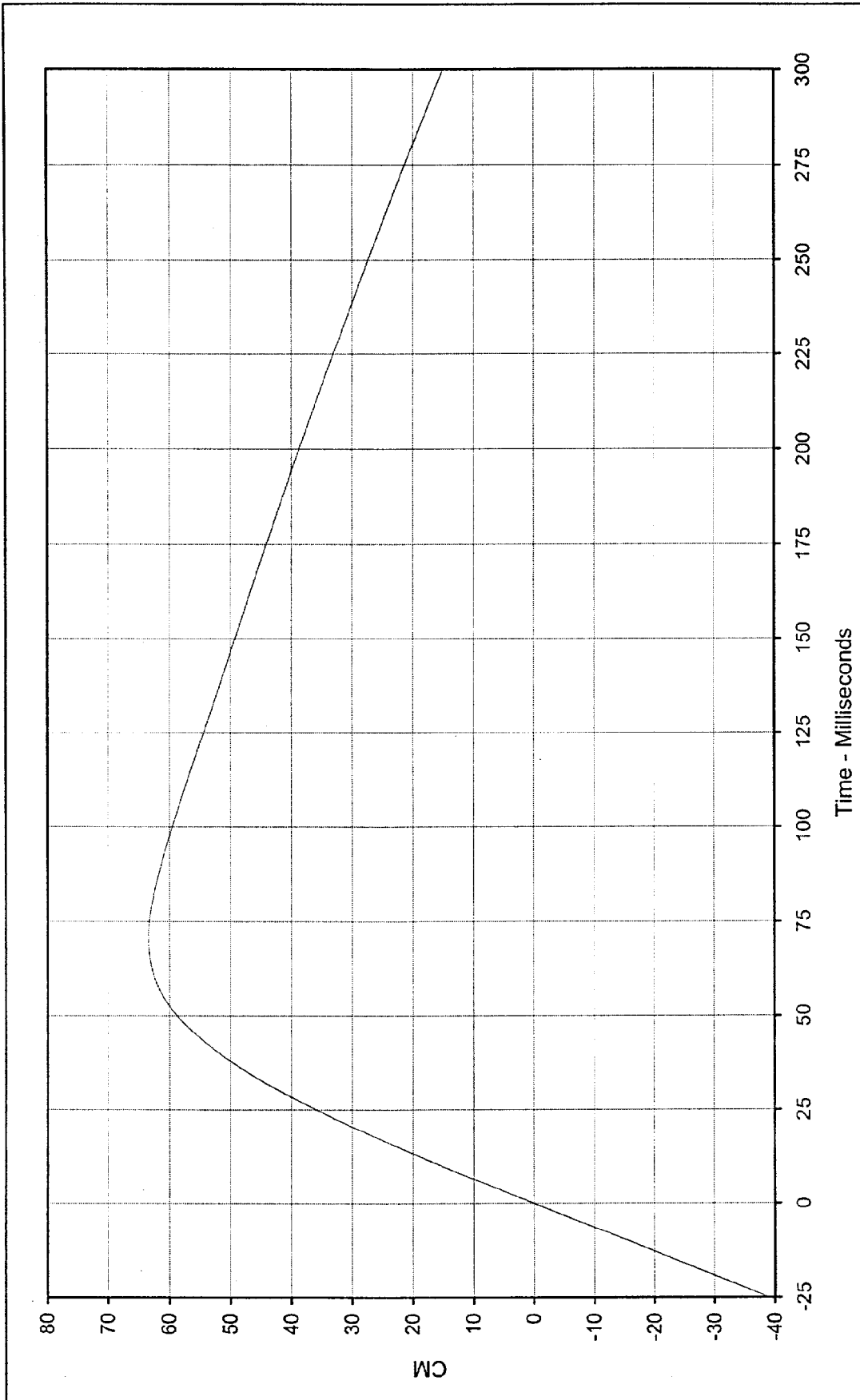
Date of Test: 1/8/99

Curve Number: IN1-089

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

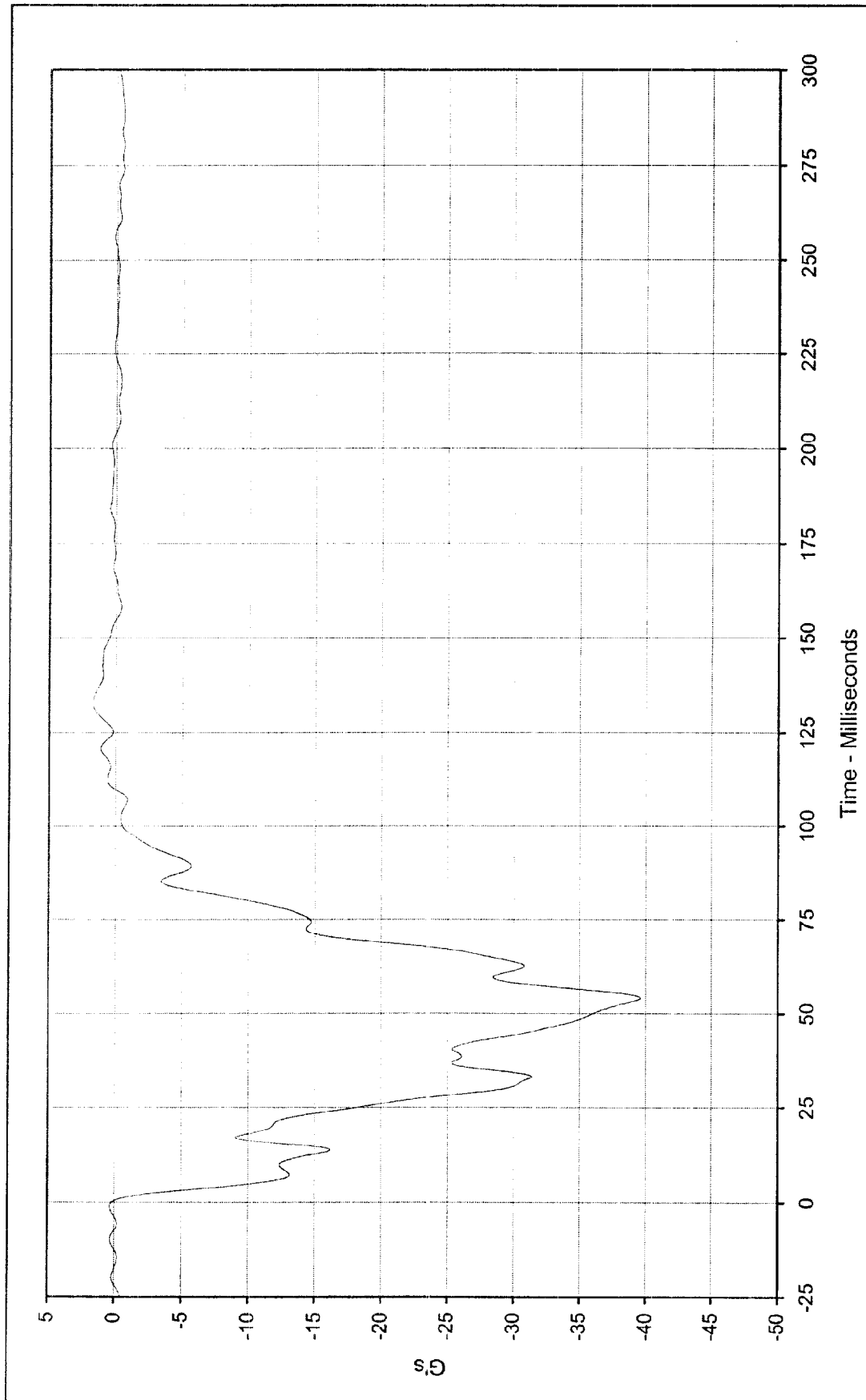
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





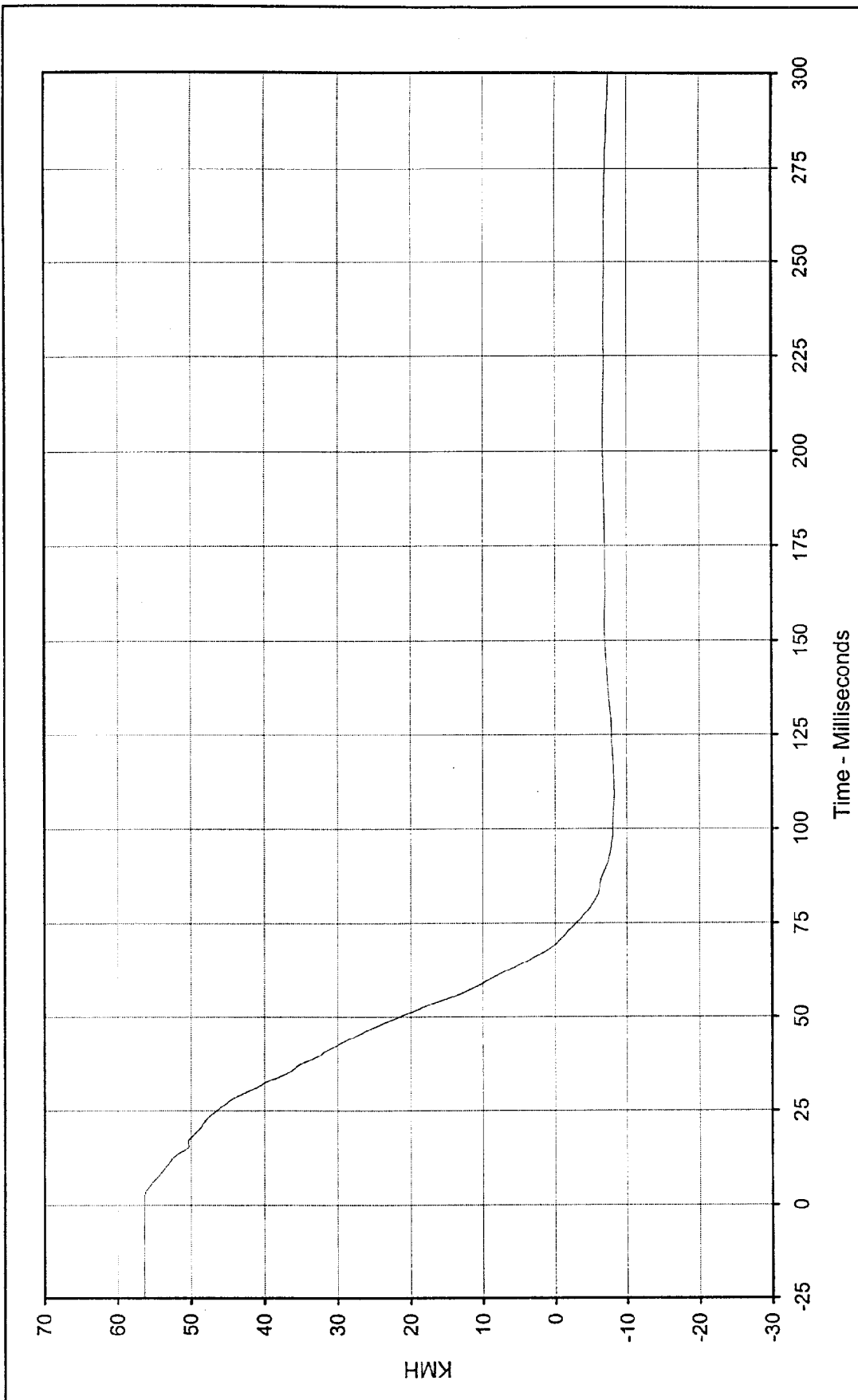
Curve Description:	Vehicle Left Rear Primary Displ.	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	63.4 at 70.5 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.0 at 0.0 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	IN2-089			





Curve Description:	Vehicle Right Rear Primary	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	1.7 at 132.8 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-39.6 at 54.1 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-090			





Curve Description: Vehicle Right Rear Primary Velocity

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

Maximum Value: 56.3 at 2.1 Milliseconds

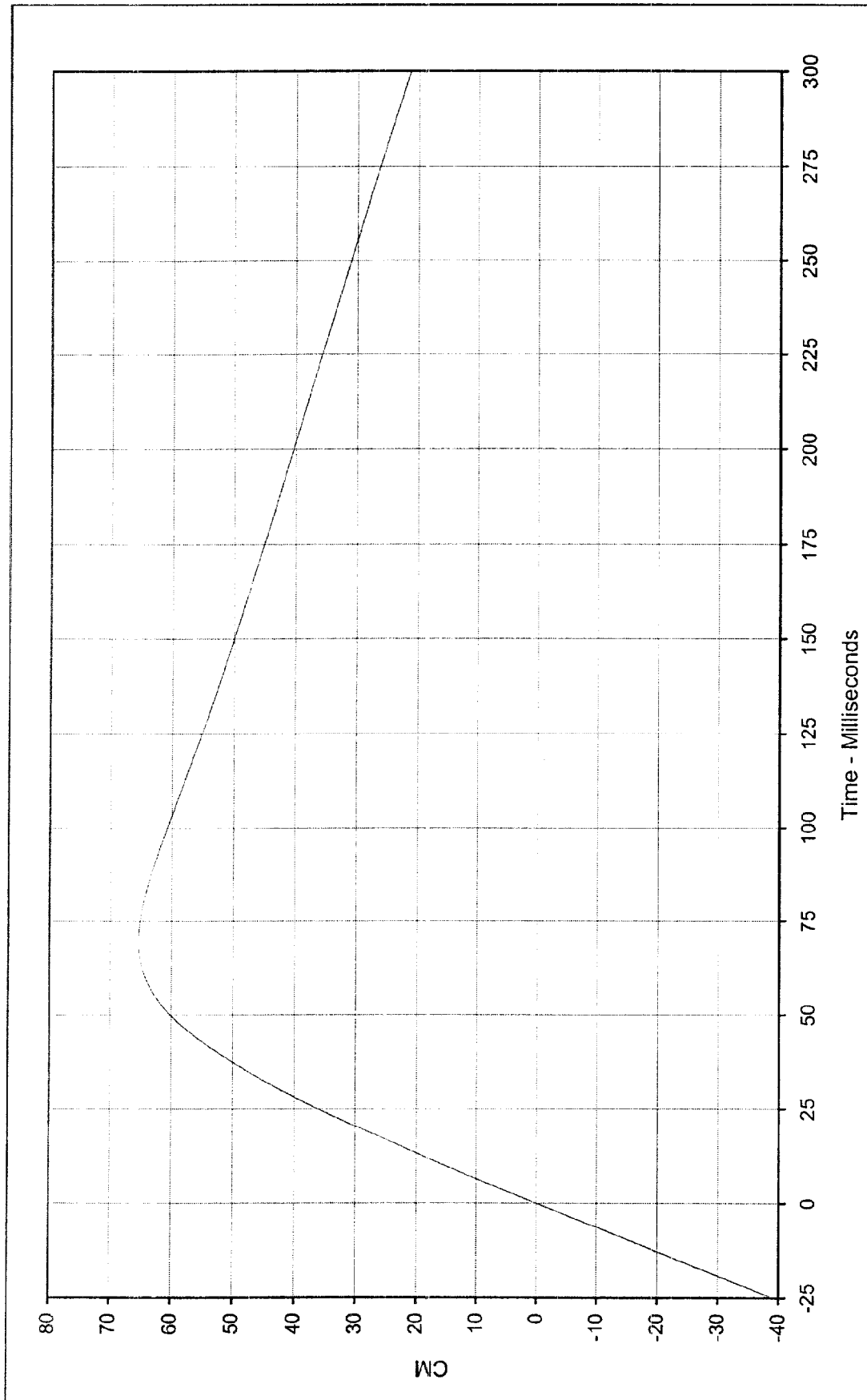
Minimum Value: -8.3 at 109.1 Milliseconds

SAE Filter Class: 180

Date of Test: 1/8/99

Curve Number: IN1-090





Curve Description: Vehicle Right Rear Primary Displ.

Maximum Value: 65.4 at 69.4 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

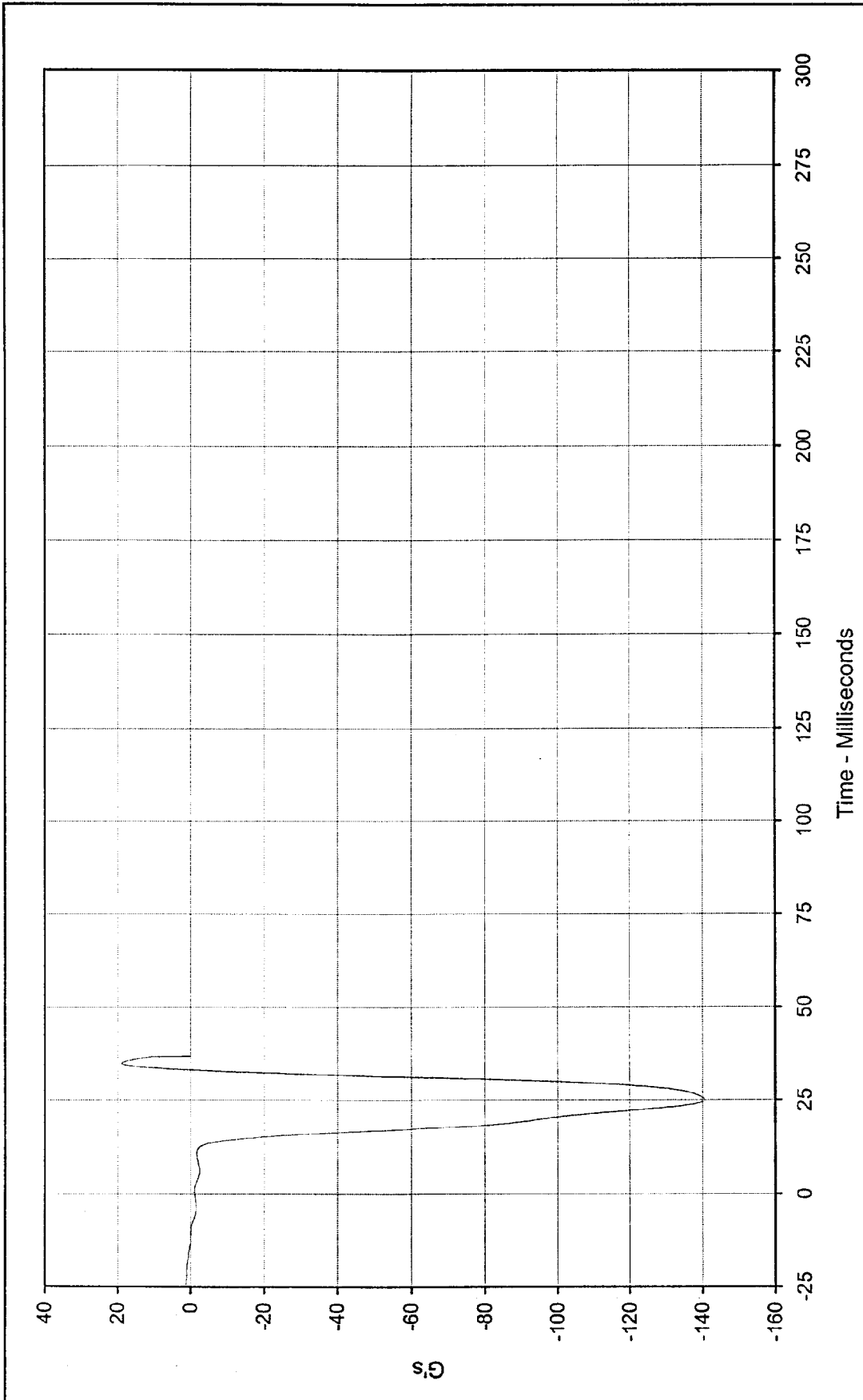
Date of Test: 1/8/99

Curve Number: IN2-090

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

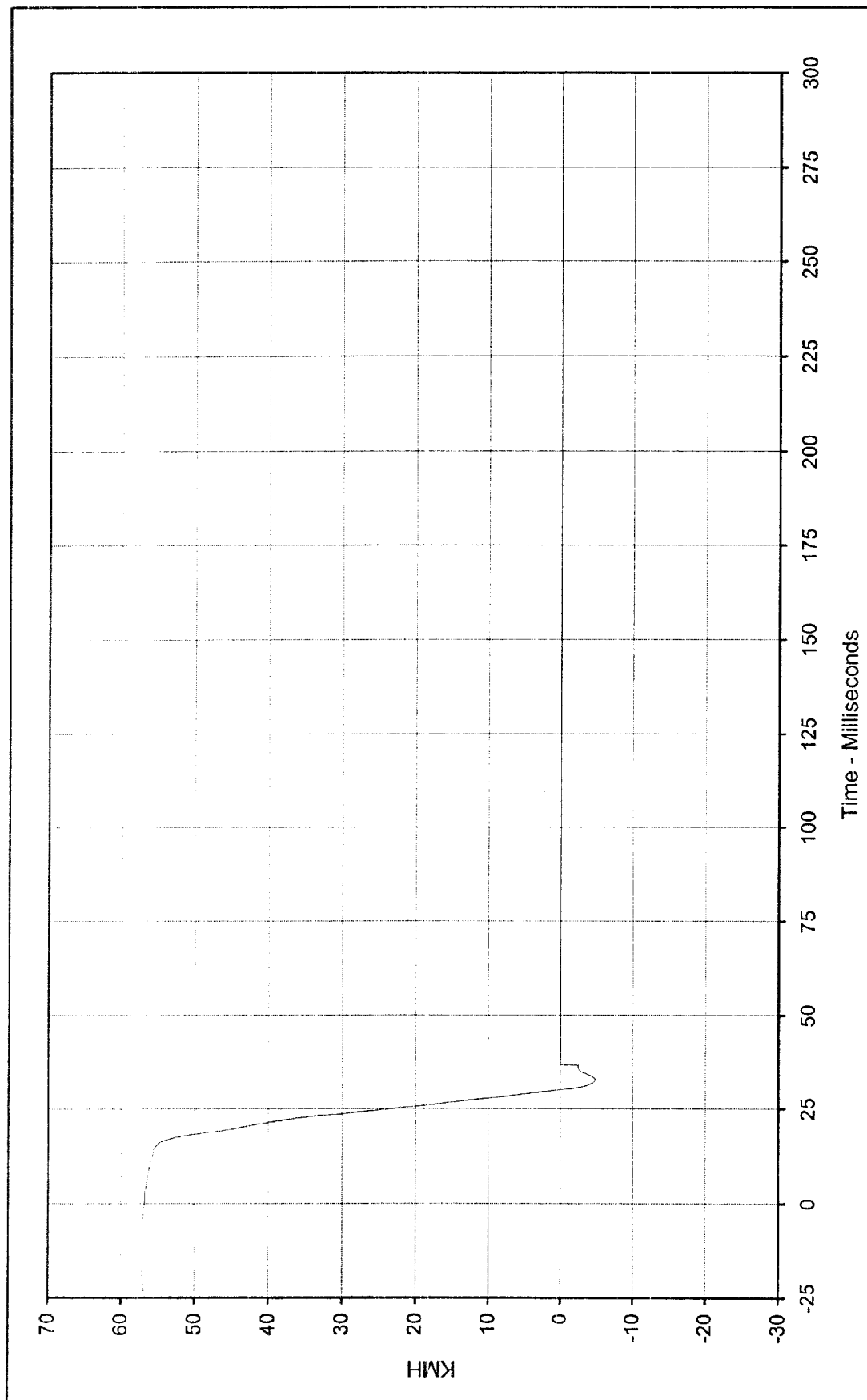




Curve Description:	Vehicle Engine Top	*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	18.9	at 34.8	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-140.7	at 25.0			
SAE Filter Class:	60				
Date of Test:	1/8/99				
Curve Number:	FIL-091				



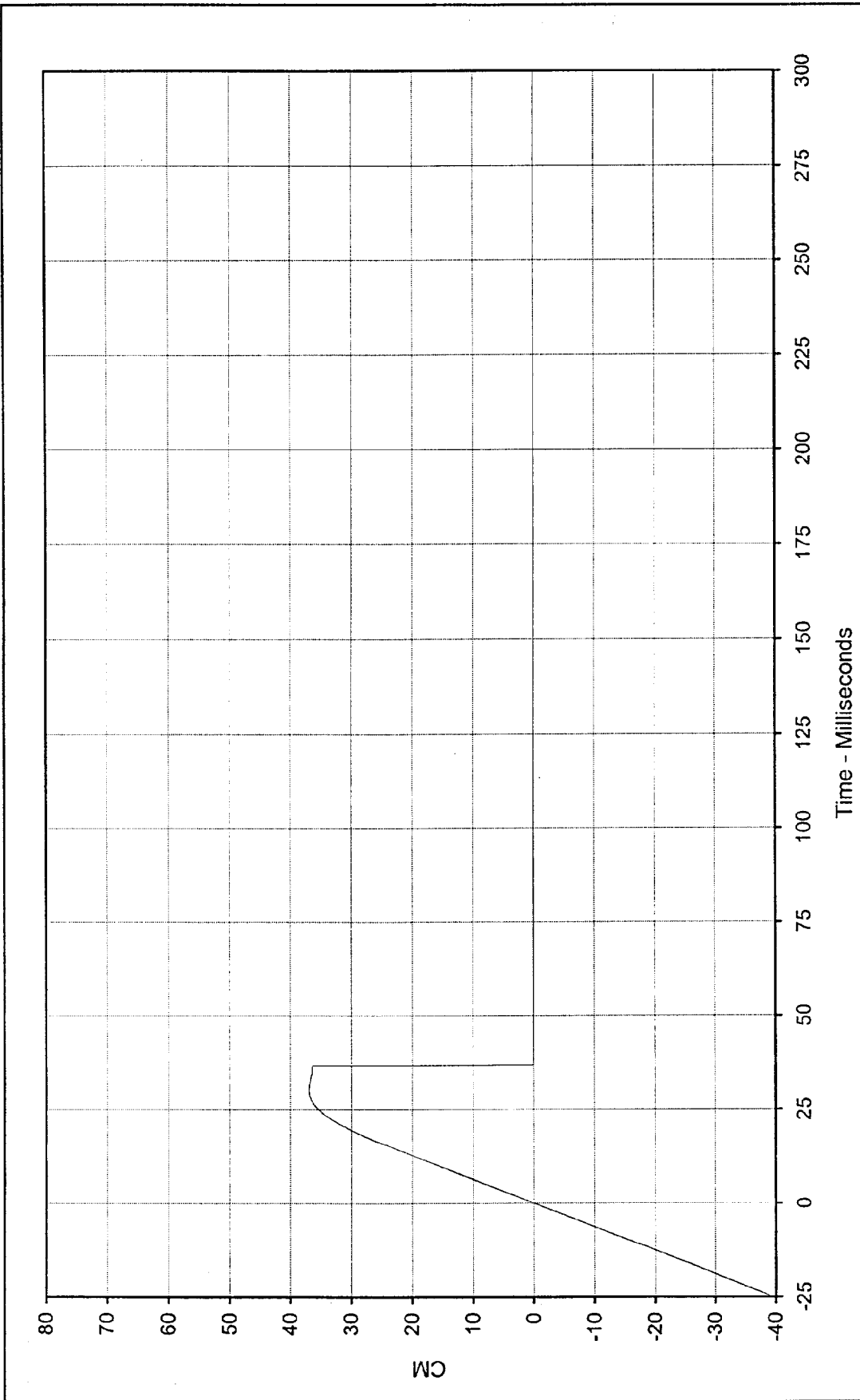
* Channel Failed at 36.7 Msec



Curve Description:	Vehicle Engine Top Velocity	*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	56.8	at 0.0	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-4.8	at 32.8			
SAE Filter Class:	180				
Date of Test:	1/8/99				
Curve Number:	IN1-091				



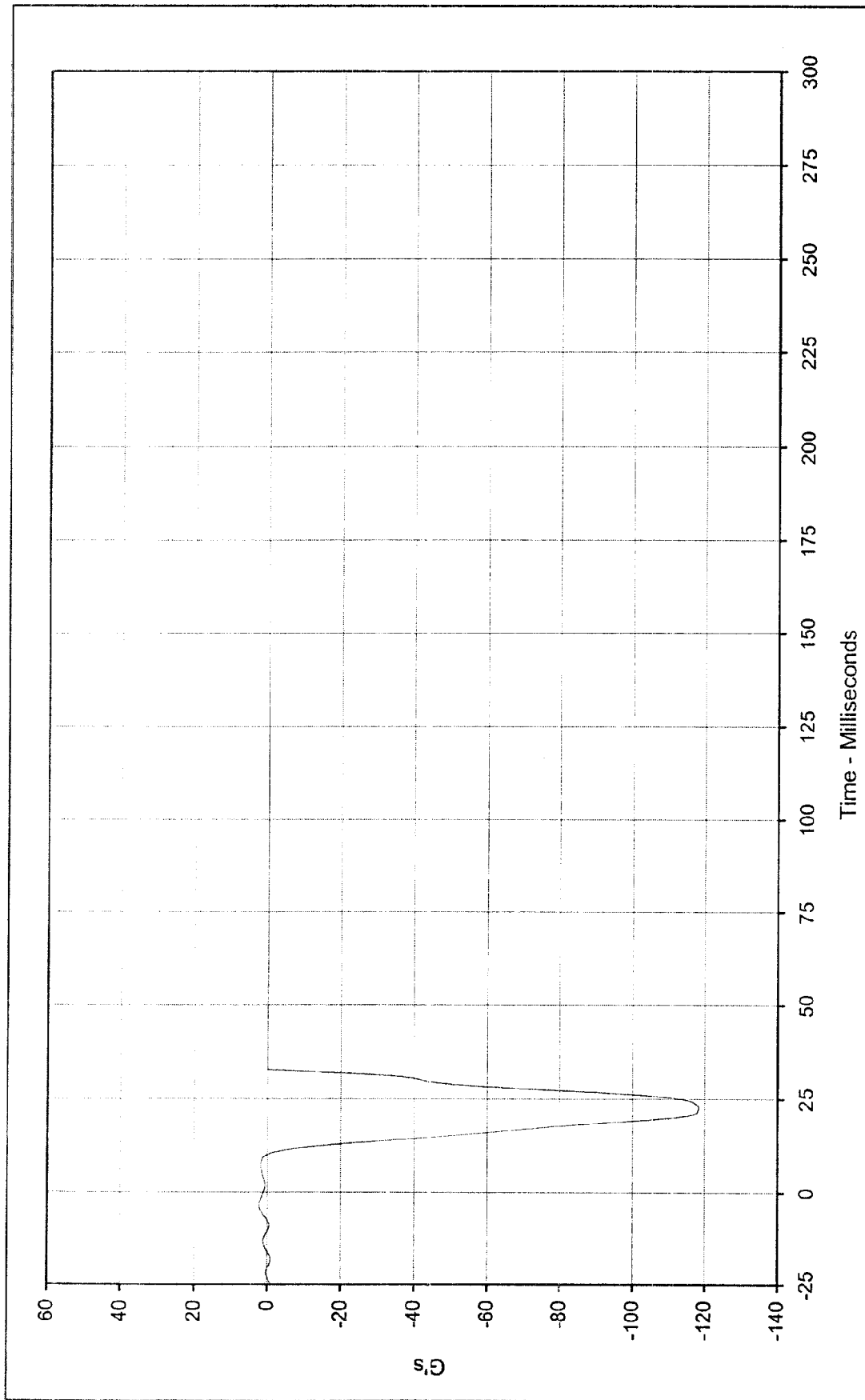
* Channel failed at 36.7 Msec.



Curve Description: Vehicle Engine Top Displ. * Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value: 37.0 at 30.1 Milliseconds Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan
Minimum Value: 0.0 at 0.0 Milliseconds
SAE Filter Class: 180
Date of Test: 1/8/99
Curve Number: IN2-091



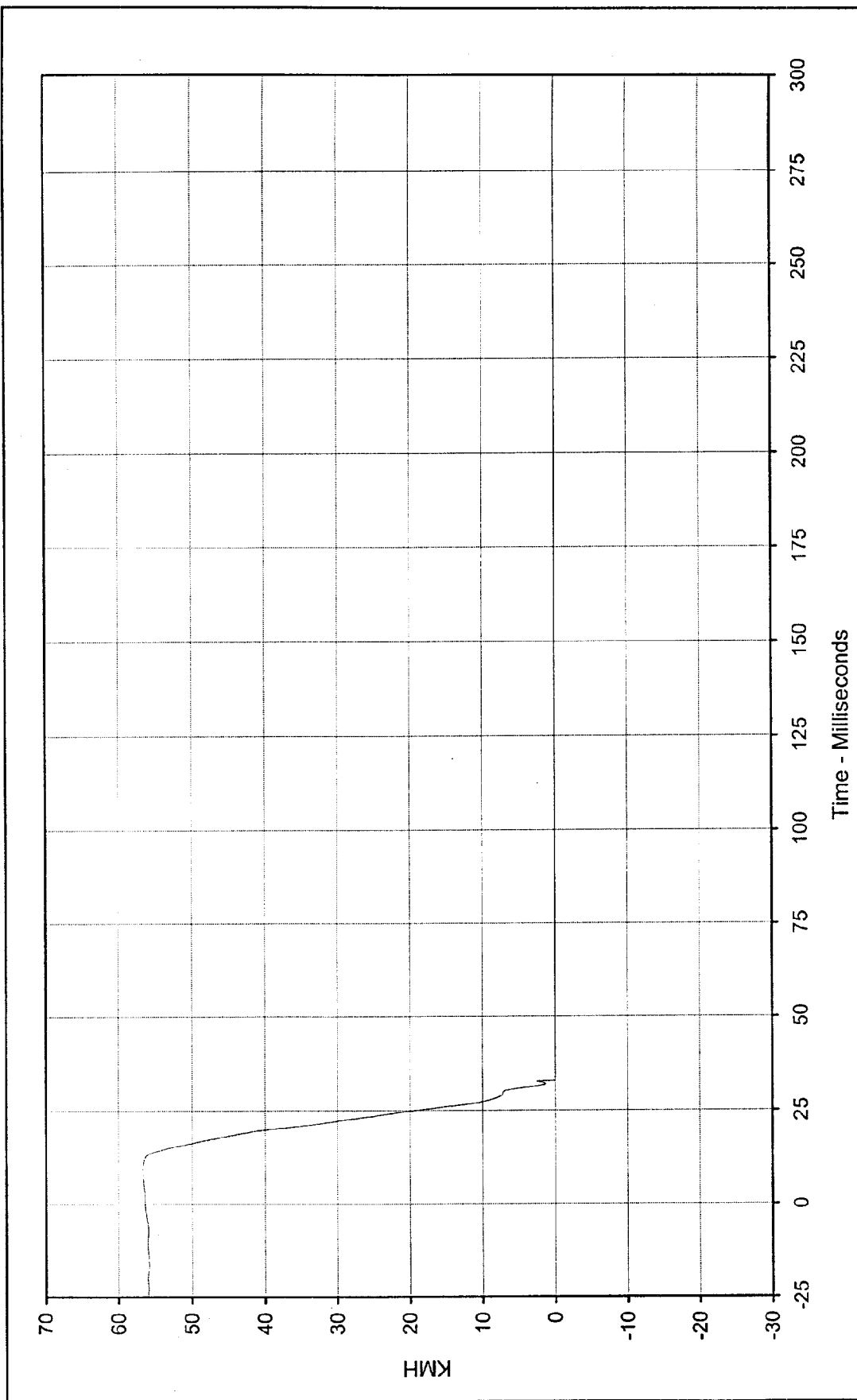
* Channel failed at 36.7 Msec.



Curve Description:	Vehicle Engine Bottom		*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	1.8	at	7.3	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-118.4	at	22.8			
SAE Filter Class:	60					
Date of Test:	1/8/99					
Curve Number:	FIL-092					



* Channel Failed at 32.8 Msec



Curve Description:	Vehicle Engine Bottom Velocity	*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	56.7	at 9.8	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.0	at 32.8			

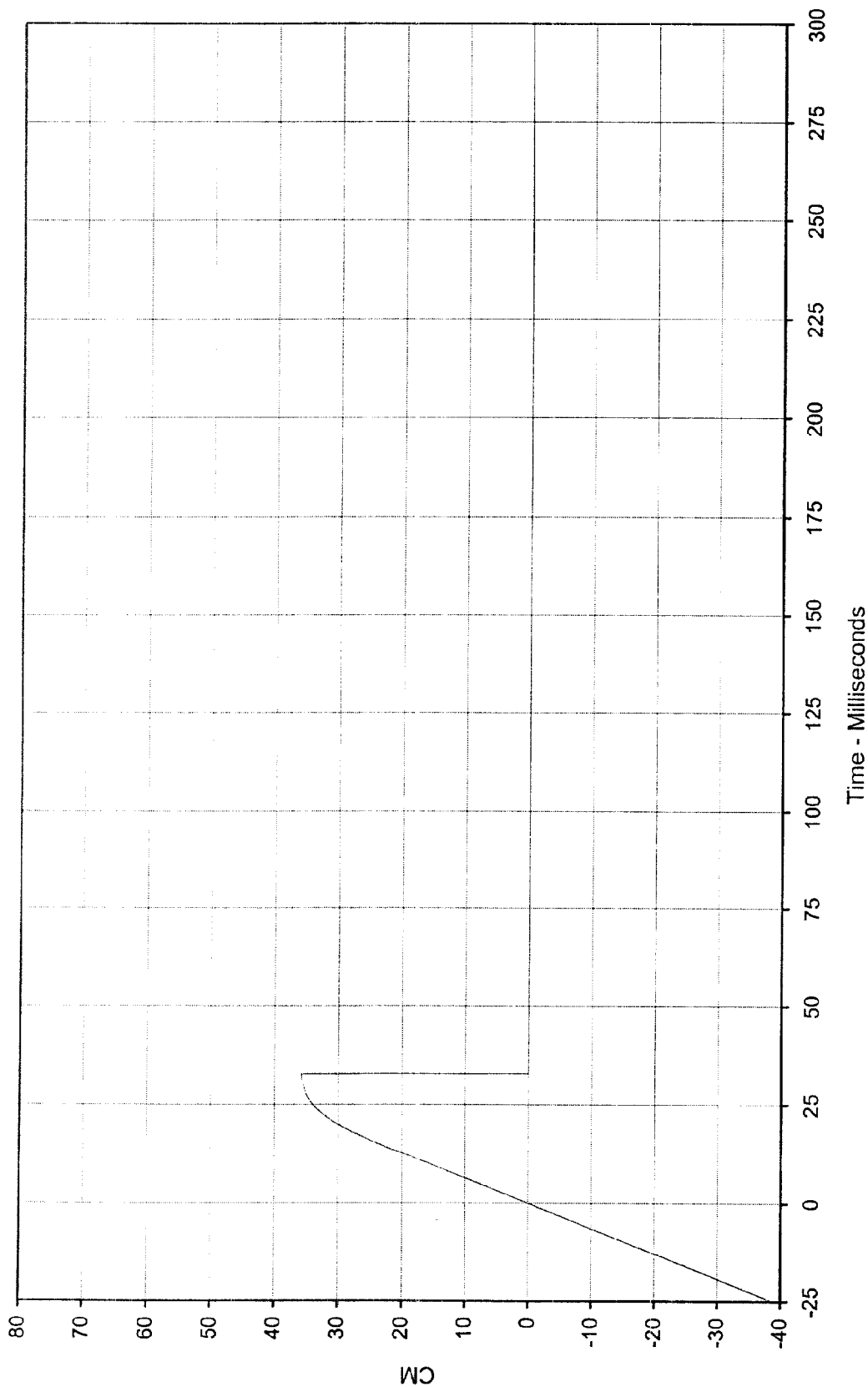
SAE Filter Class: 180

Date of Test: 1/8/99

Curve Number: IN1-092



* Channel failed at 32.8 Msec.



Curve Description: Vehicle Engine Bottom Displ. *

Maximum Value: 35.8 at 32.7 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 1/8/99

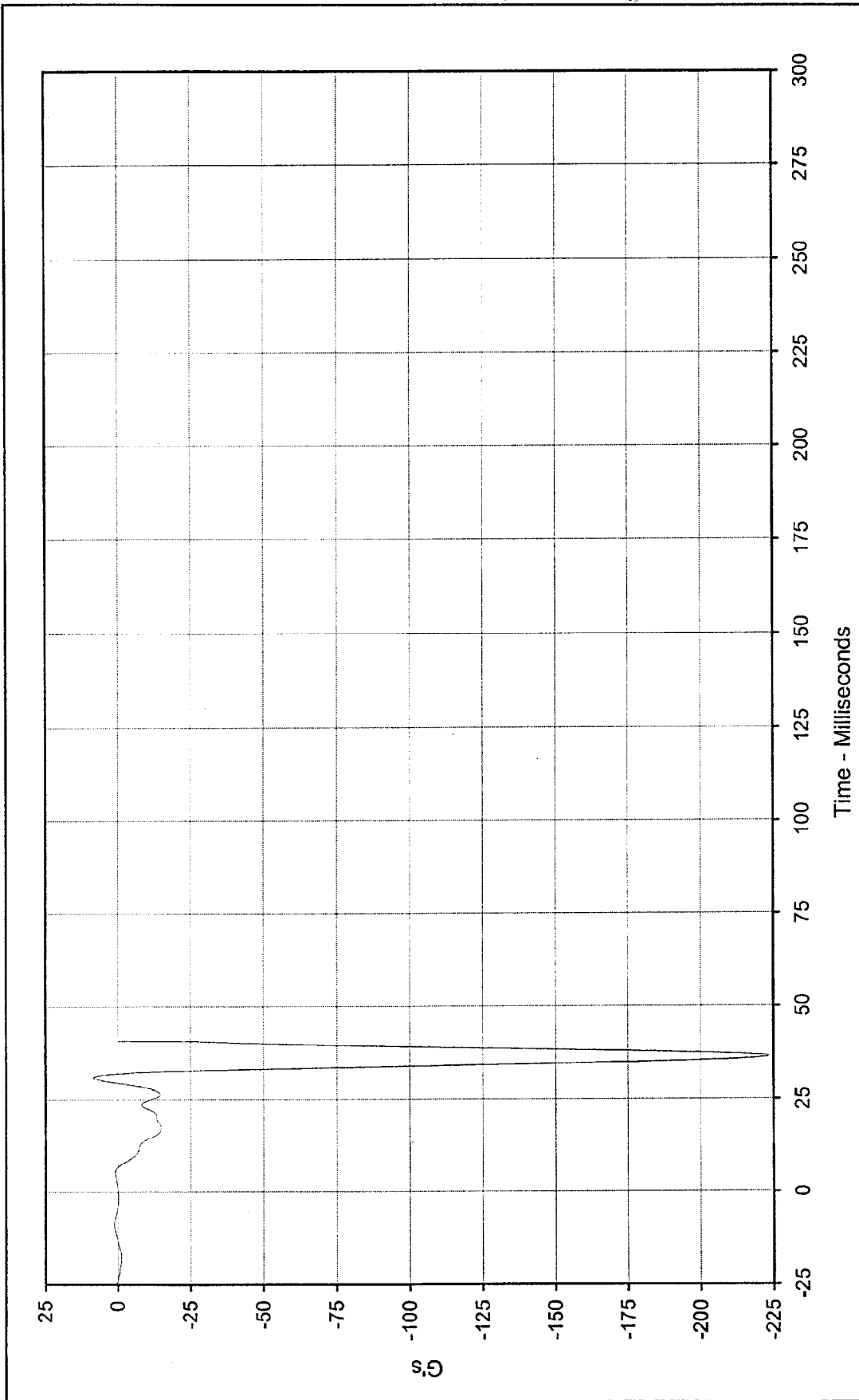
Curve Number: IN2-092

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan



* Channel failed at 32.8 Msec.

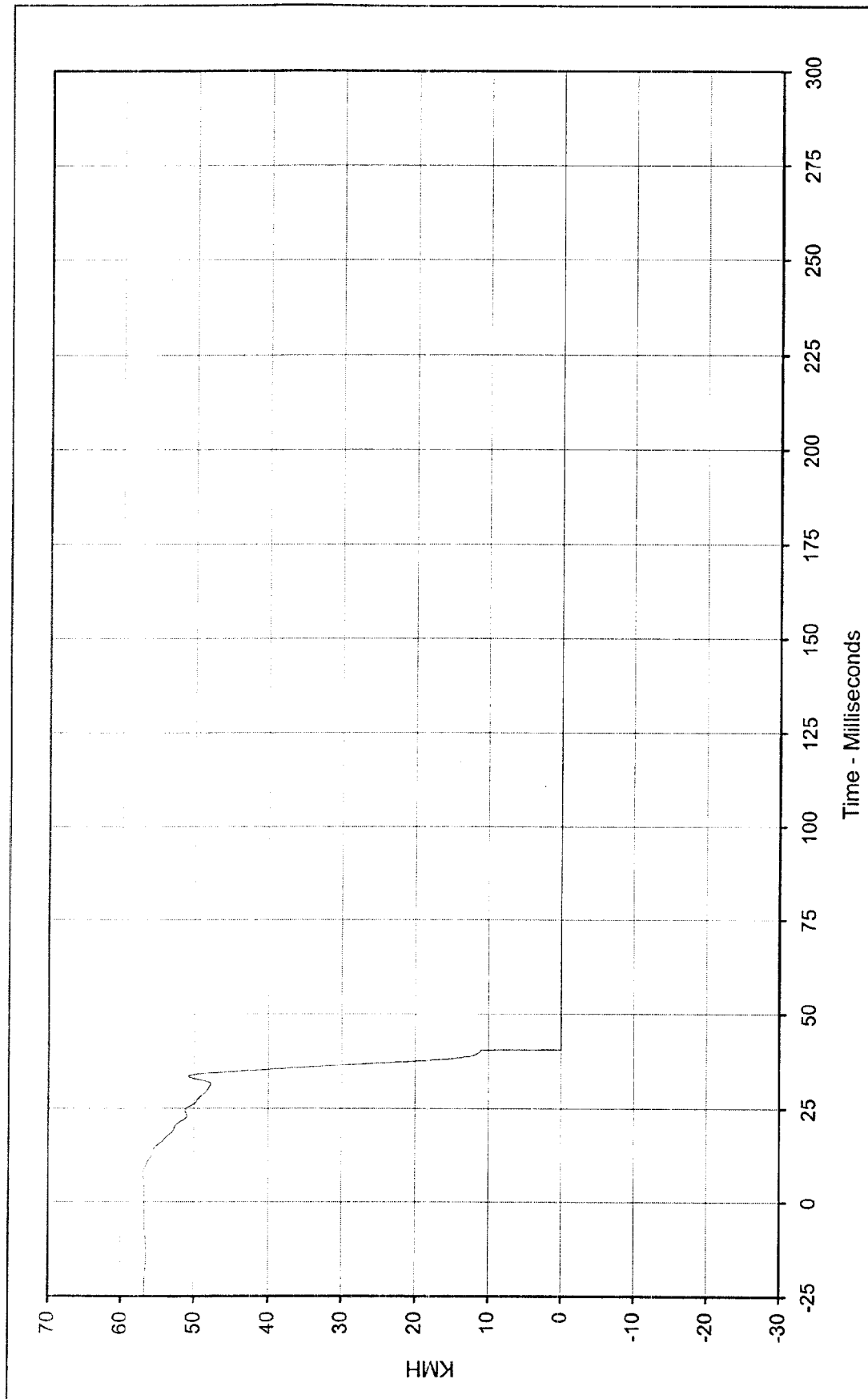


Curve Description: Vehicle Left Brake Caliper * Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value: 8.4 at 31.0 Milliseconds Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan
Minimum Value: -223.5 at 36.4 Milliseconds



SAE Filter Class: 60
Date of Test: 1/8/99
Curve Number: FIL-093

* Channel Failed at 40.7 Msec



Curve Description: Vehicle Left Brake Caliper Velocity *

Maximum Value: 57.0 at 7.5 Milliseconds

Minimum Value: 0.0 at 40.7 Milliseconds

SAE Filter Class: 180

Date of Test: 1/8/99

Curve Number: IN1-093

Test Program:

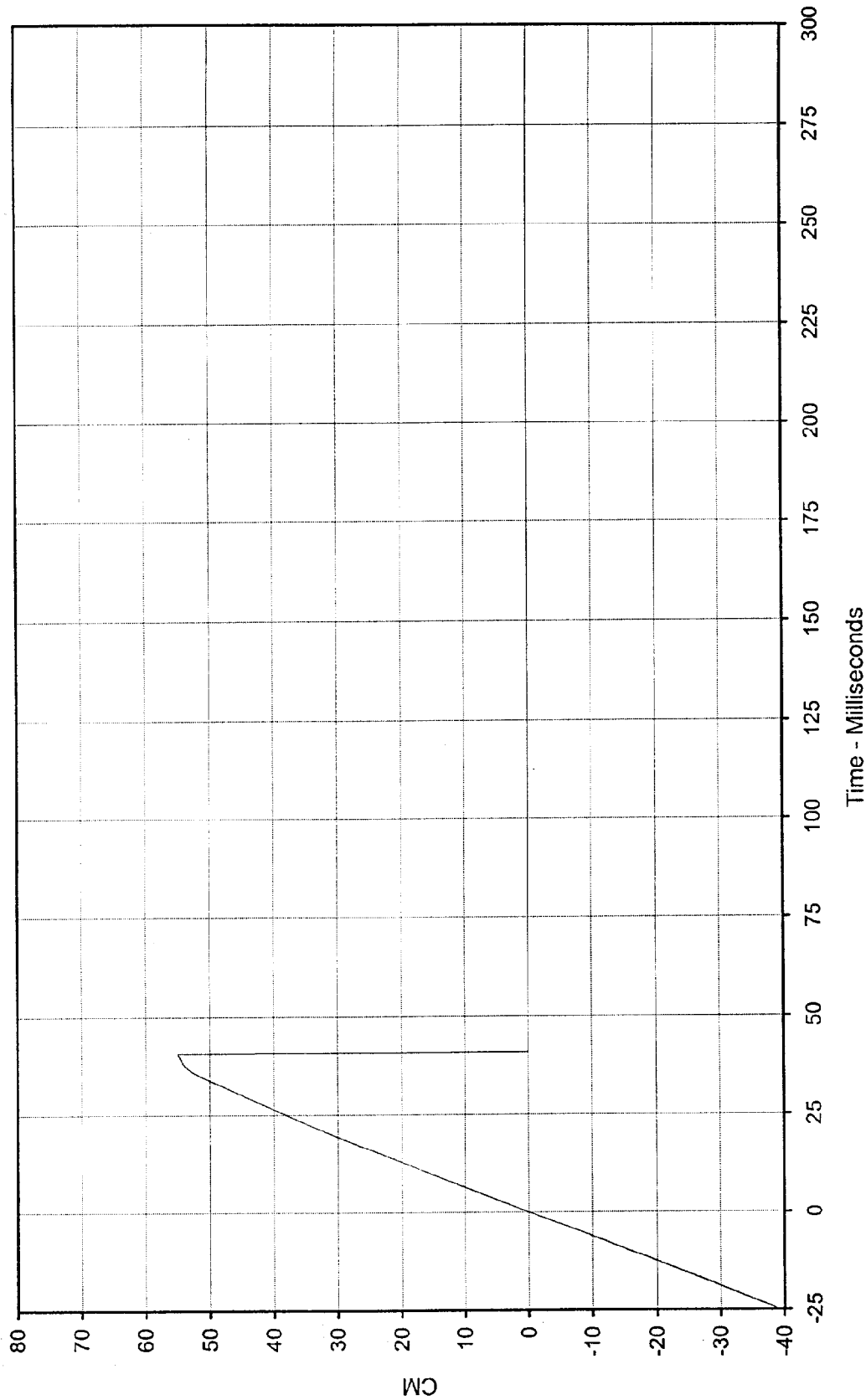
1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

1999 Mazda Protegé DX 4 Door Sedan



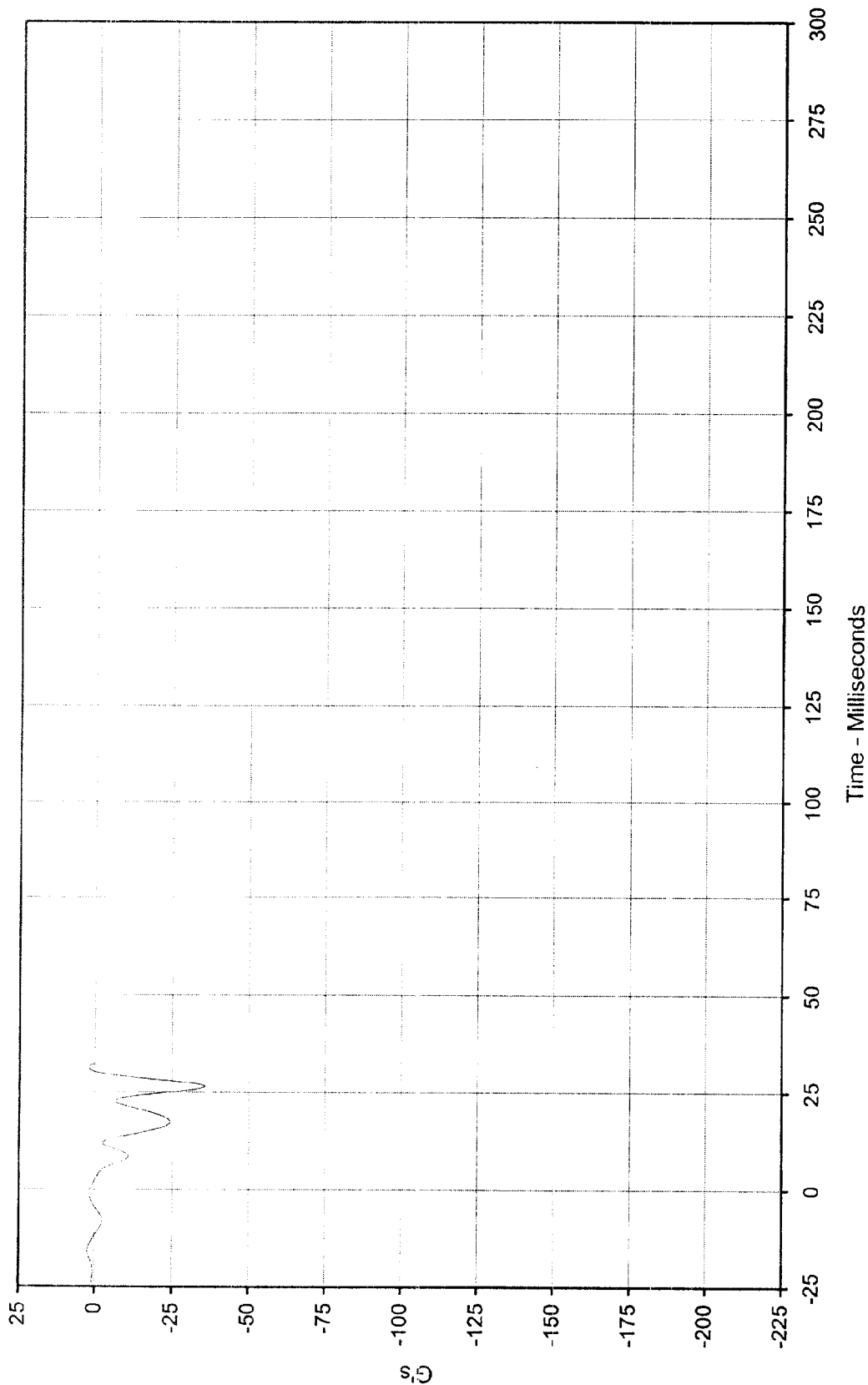
* Channel failed at 40.7 Msec



Curve Description:	Vehicle Left Brake Caliper Displ. *	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	55.0 at 40.6 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.0 at 40.7 Milliseconds			
SAE Filter Class:	180			
Date of Test:	1/8/99			
Curve Number:	IN2-093			



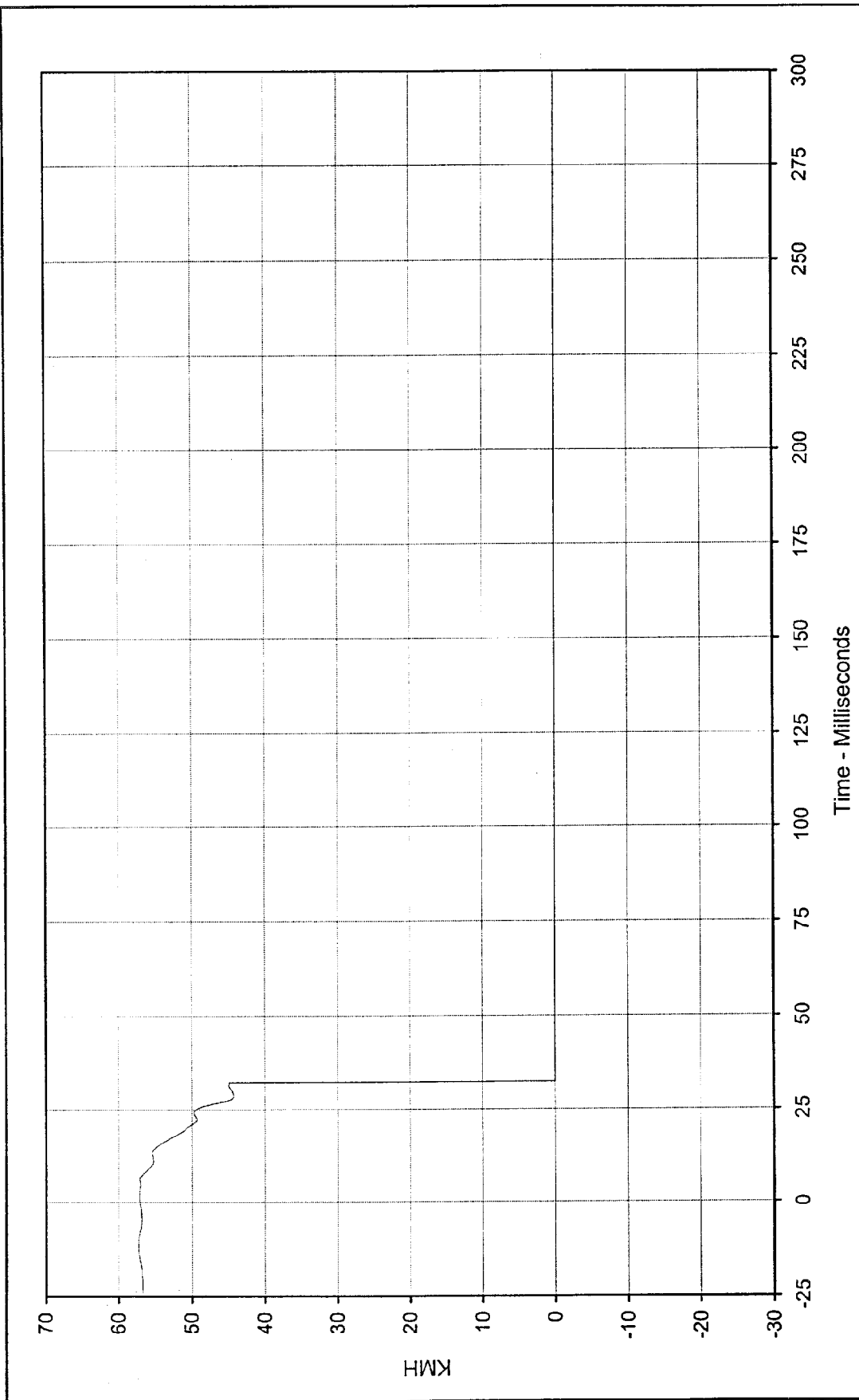
* Channel failed at 40.7 Msec.



Curve Description:	Vehicle Right Brake Caliper		*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	2.0	at	31.2	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-35.6	at	26.6	Milliseconds		
SAE Filter Class:	60					
Date of Test:	1/8/99					
Curve Number:	FIL-094					



* Channel Failed at 32.3 Msec

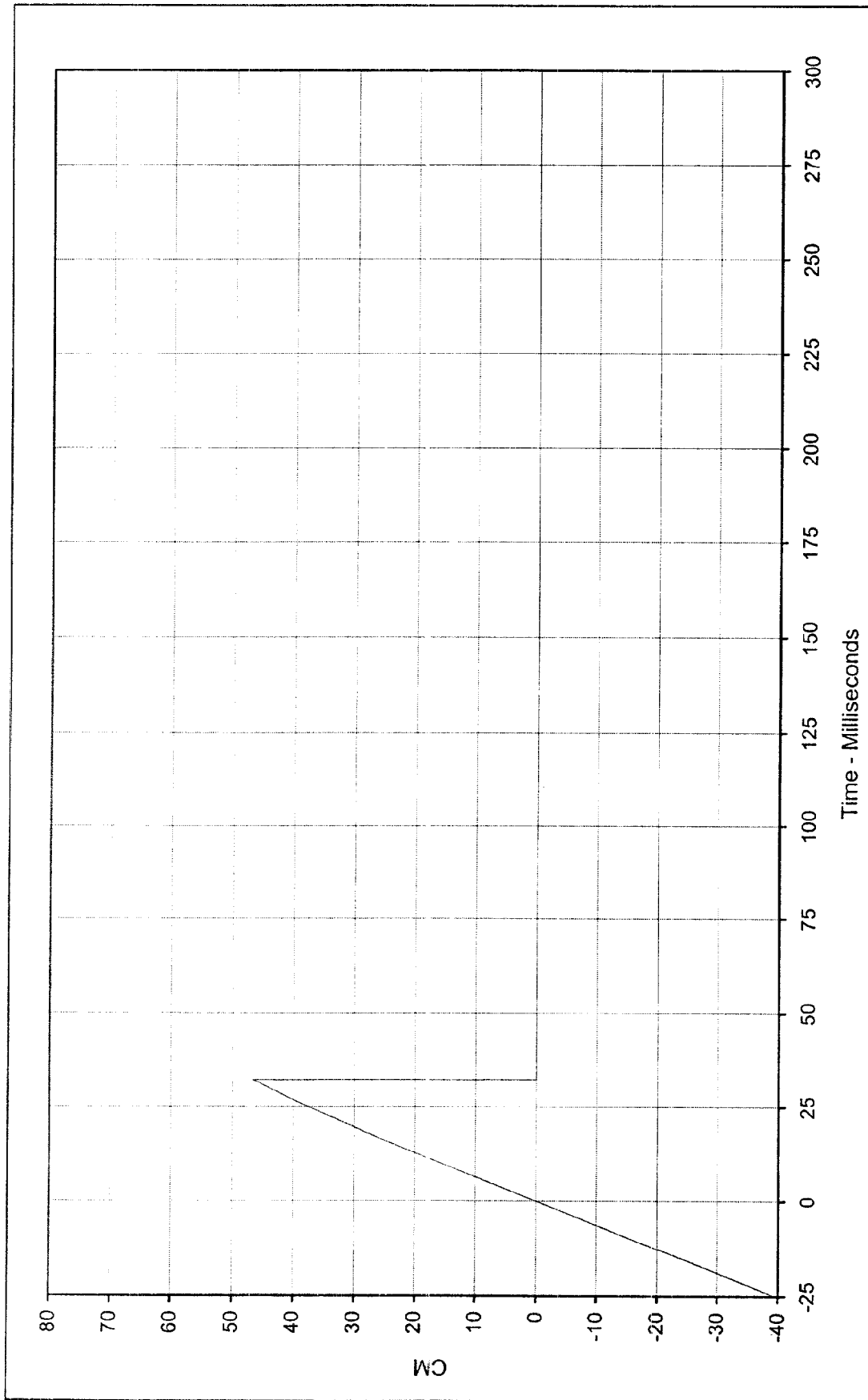


Curve Description:	Vehicle Right Brake Caliper Velocity	*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	57.2	at 1.3	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.0	at 32.3			
SAE Filter Class:	180				
Date of Test:	1/8/99				
Curve Number:	IN1-094				

* Channel failed at 32.3 Msec.



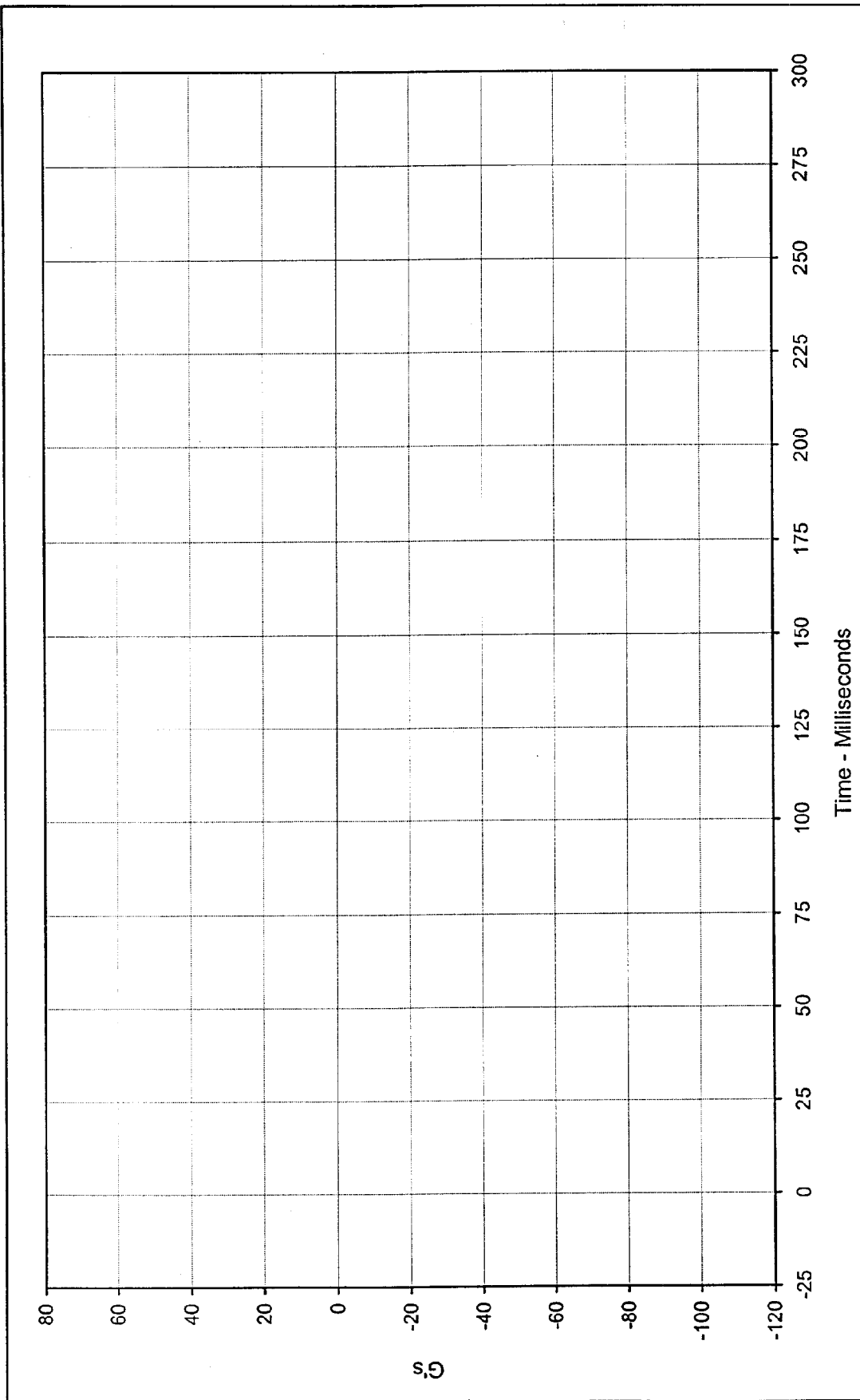
* Channel failed at 32.3 Msec.



Curve Description:	Vehicle Right Brake Caliper Displ.	*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	46.7	at 32.2	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	0.0	at 32.3			
SAE Filter Class:	180				
Date of Test:	1/8/99				
Curve Number:	IN2-094				



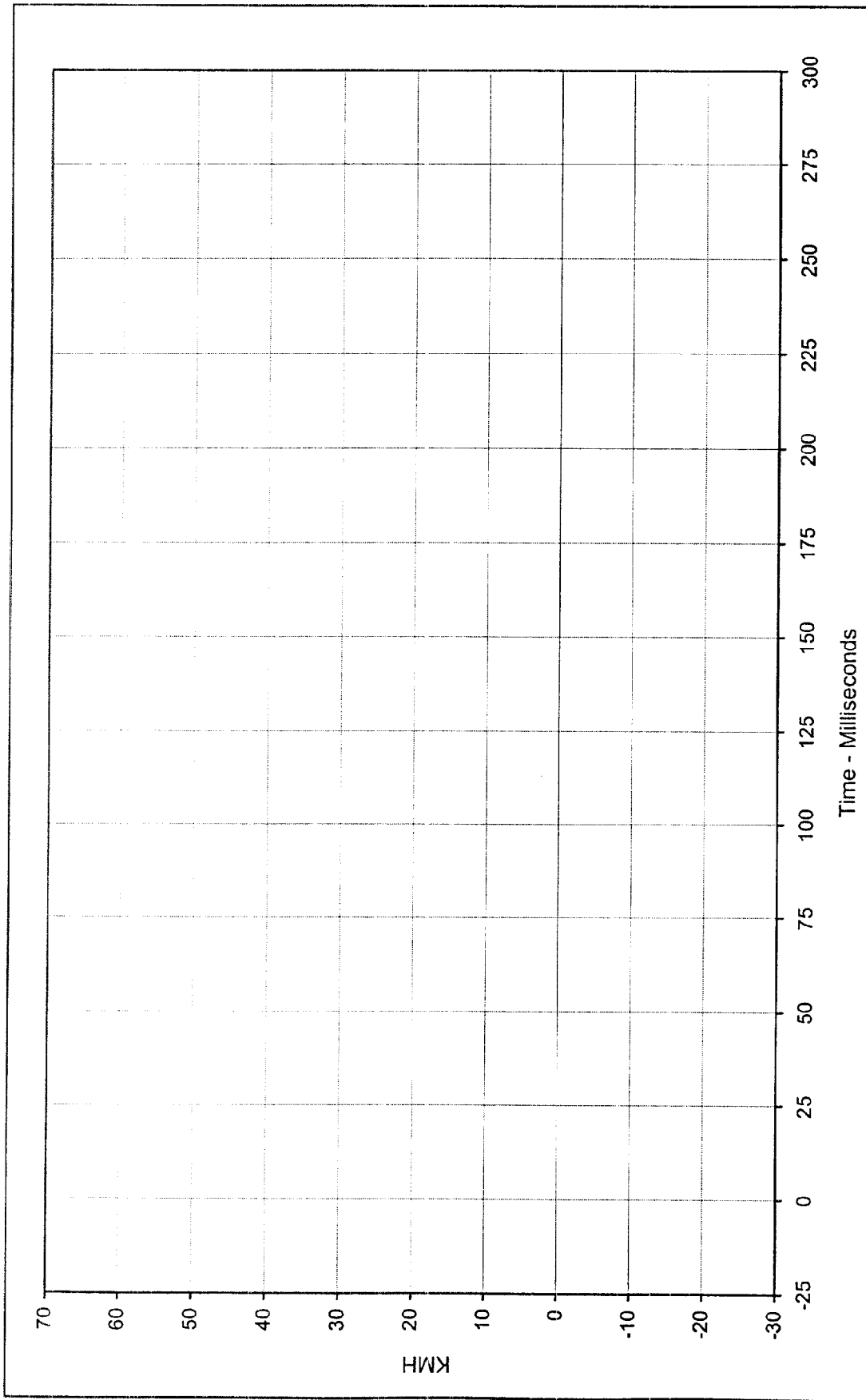
* Channel failed at 32.3 Msec.



Curve Description:	Vehicle Instrument Panel		*	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	0.0	at	0.0	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	0.0	at	0.0	Milliseconds		
SAE Filter Class:	60					
Date of Test:	1/8/99					
Curve Number:	FIL-095					



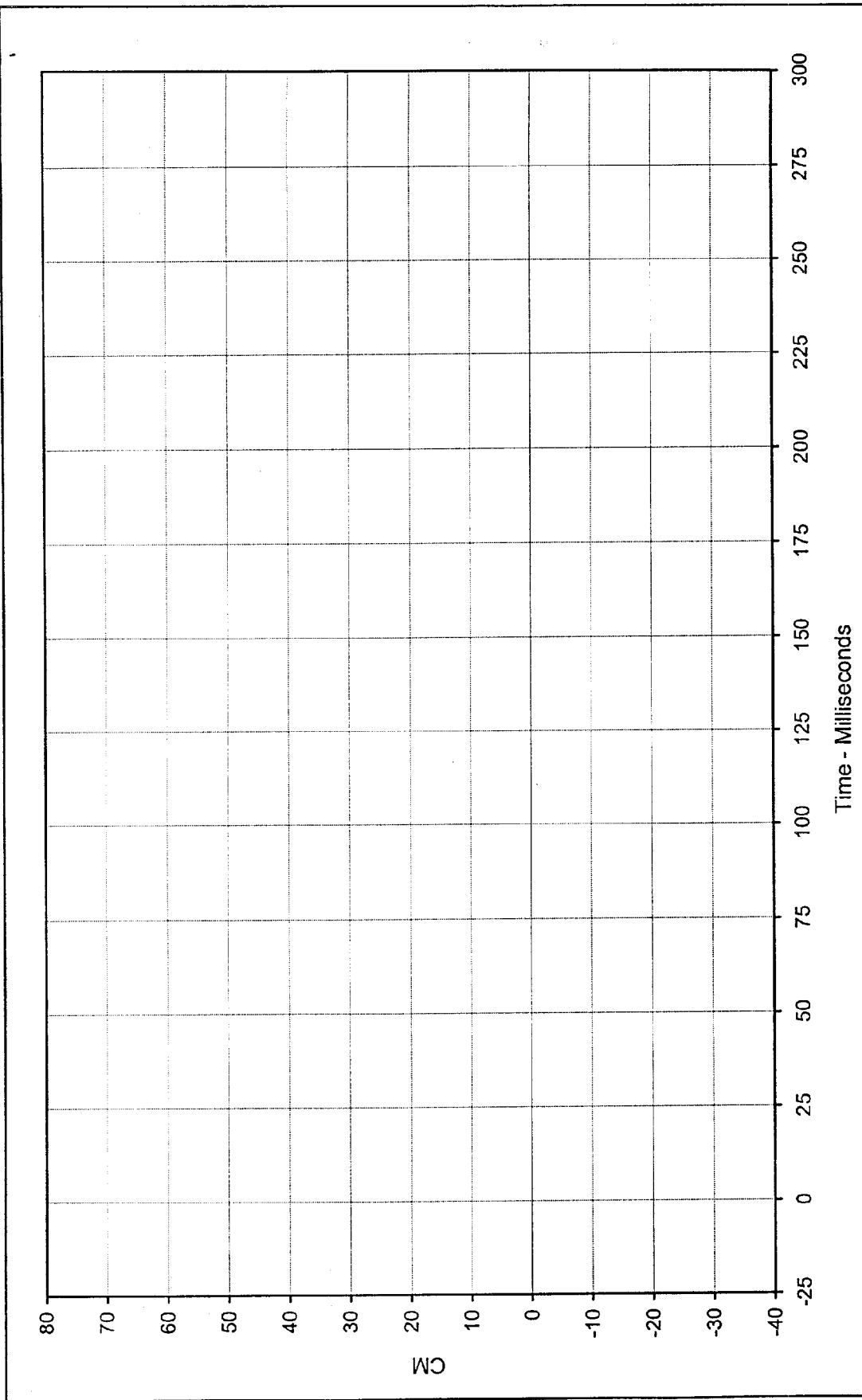
* Not Used, Manufacturer Request



Curve Description:		Vehicle Instrument Panel Velocity *		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	0.0	at	0.0	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	0.0	at	0.0	Milliseconds		
SAE Filter Class:	180					
Date of Test:	1/8/99					
Curve Number:	IN1-095					



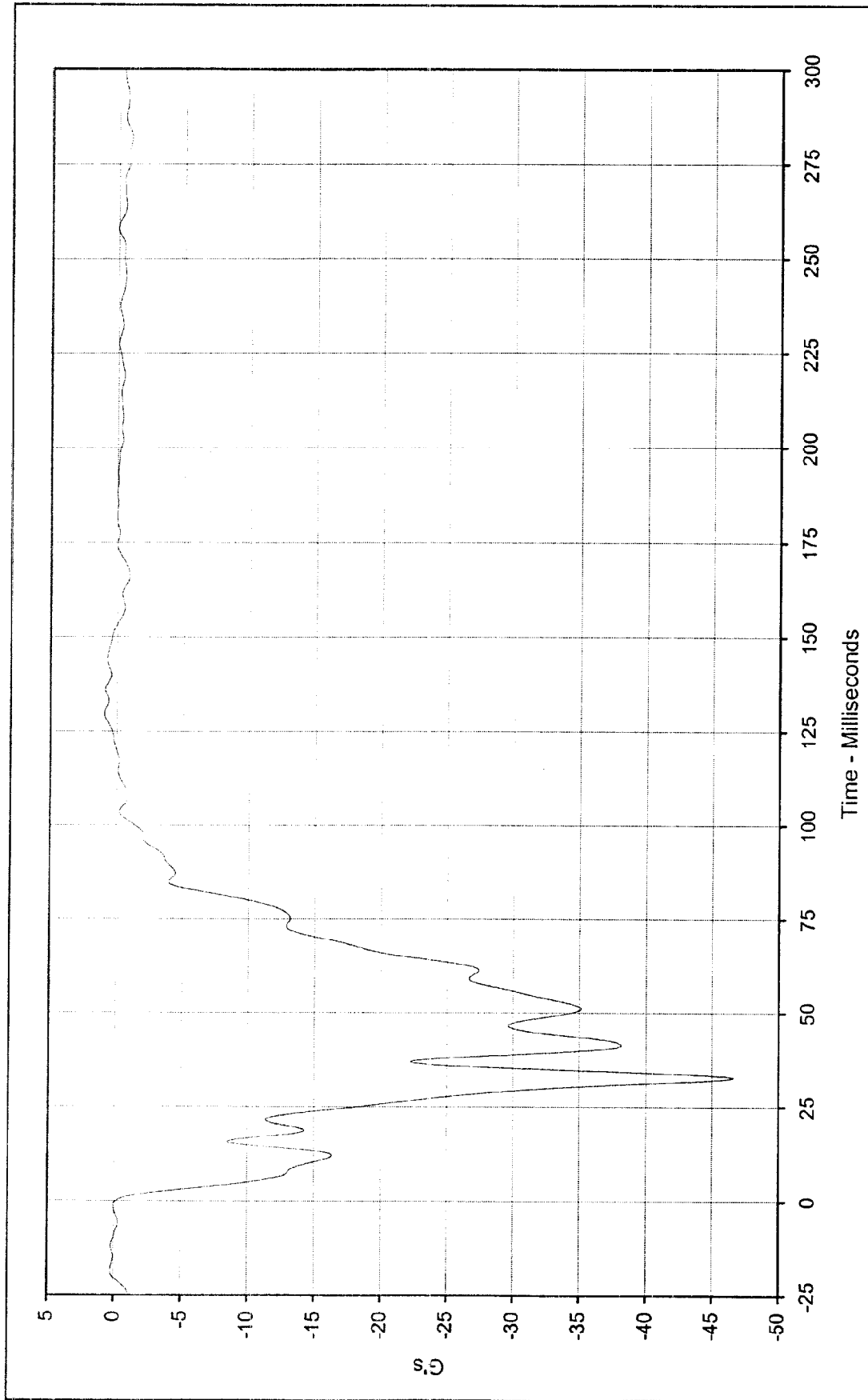
* Not Used, Manufacturer Request



Curve Description: _____ Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Maximum Value: 0.0 at 0.0 Milliseconds Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan
 Minimum Value: 0.0 at 0.0 Milliseconds



SAE Filter Class: 180
 Date of Test: 1/8/99
 Curve Number: IN2-095
 * Not Used, Manufacturer Request



Curve Description: Vehicle Left Rear Redundant

Maximum Value: 0.9 at 129.8 Milliseconds

Minimum Value: -46.6 at 32.7 Milliseconds

SAE Filter Class: 60

Date of Test: 1/8/99

Curve Number: FIL-096

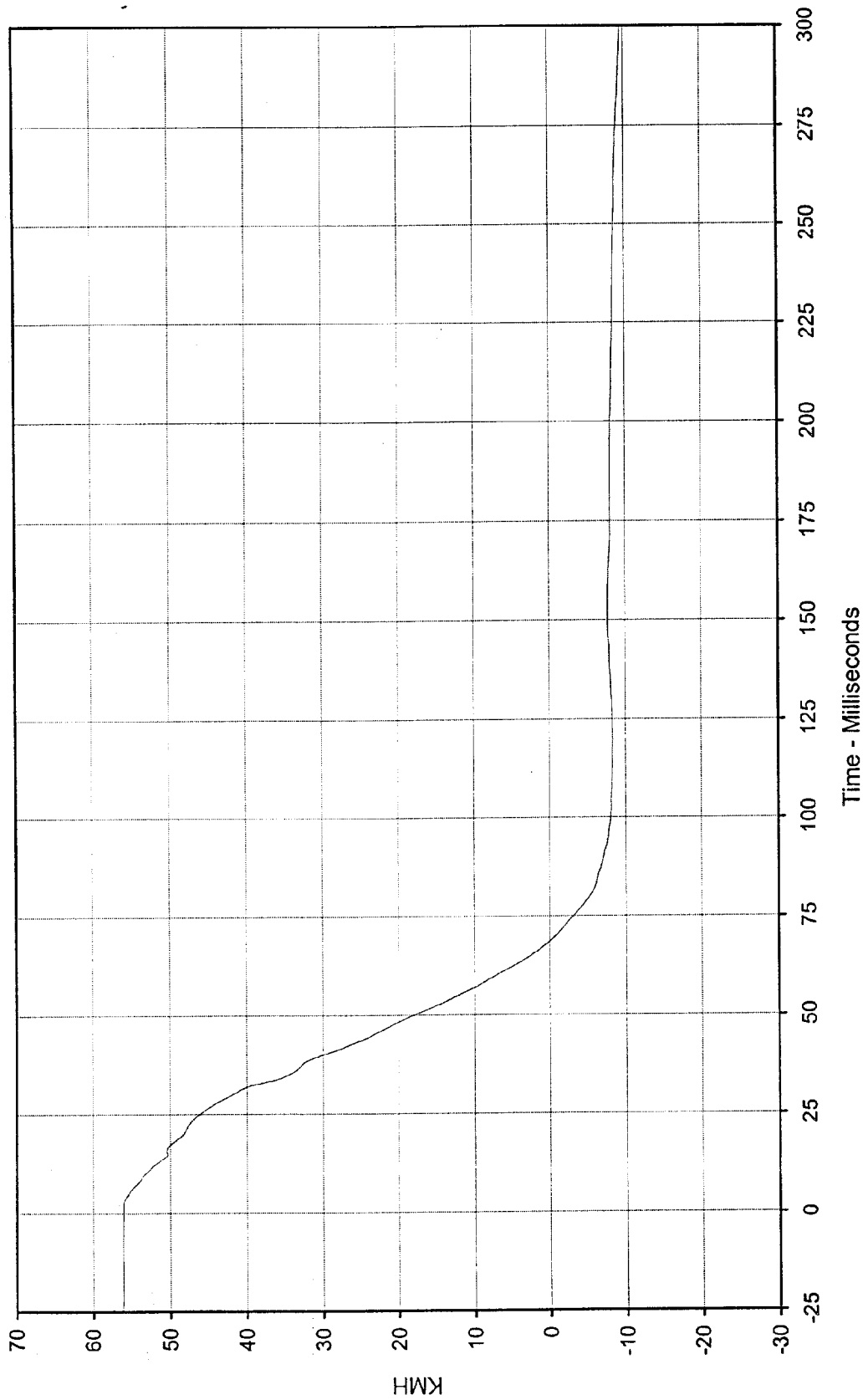
Test Program:

1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle:

1999 Mazda Protegé DX 4 Door Sedan

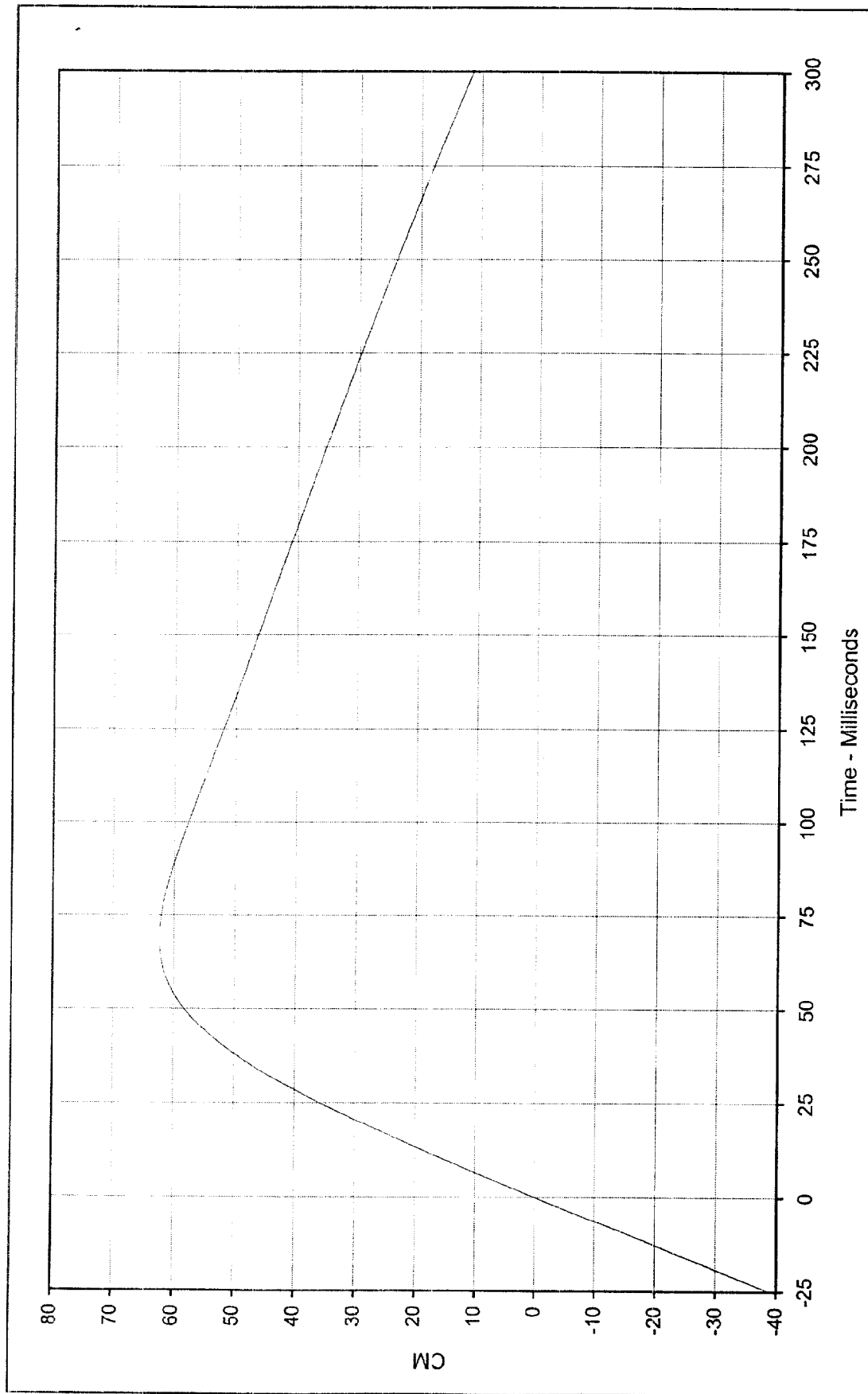




Curve Description: Vehicle Left Rear Redundant Velocity
 Maximum Value: 56.1 at 0.0 Milliseconds
 Minimum Value: -9.5 at 299.9 Milliseconds
 SAE Filter Class: 180
 Date of Test: 1/8/99
 Curve Number: IN1-096

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Vehicle Left Rear Redundant Displ.

Maximum Value: 62.4 at 68.7 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 1/8/99

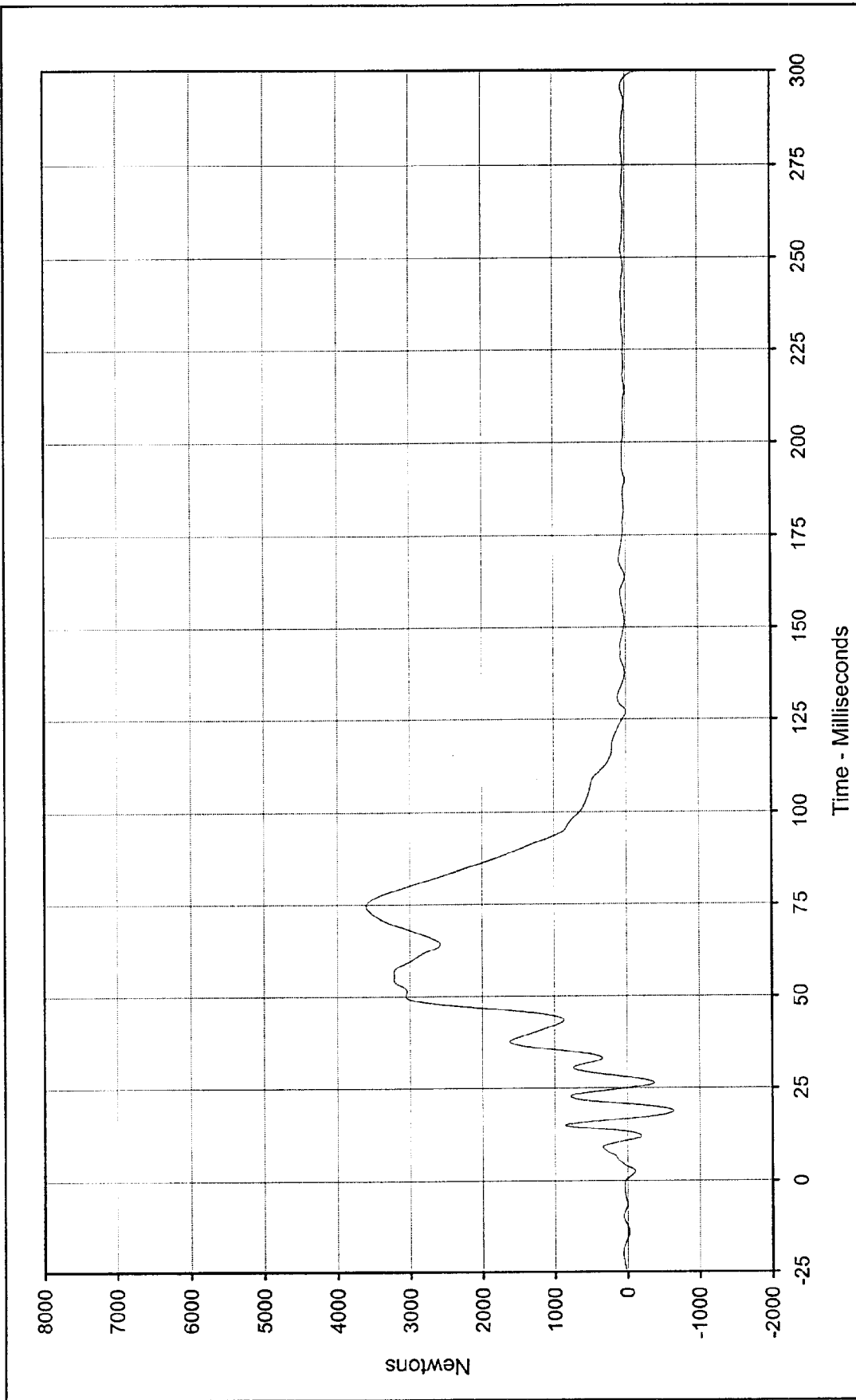
Curve Number: IN2-096

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan



APPENDIX C
LOAD CELL BARRIER INFORMATION



Curve Description: Barrier Force A2

Maximum Value: 3600.9 at 74.5 Milliseconds

Minimum Value: -643.6 at 18.9 Milliseconds

SAE Filter Class: 60

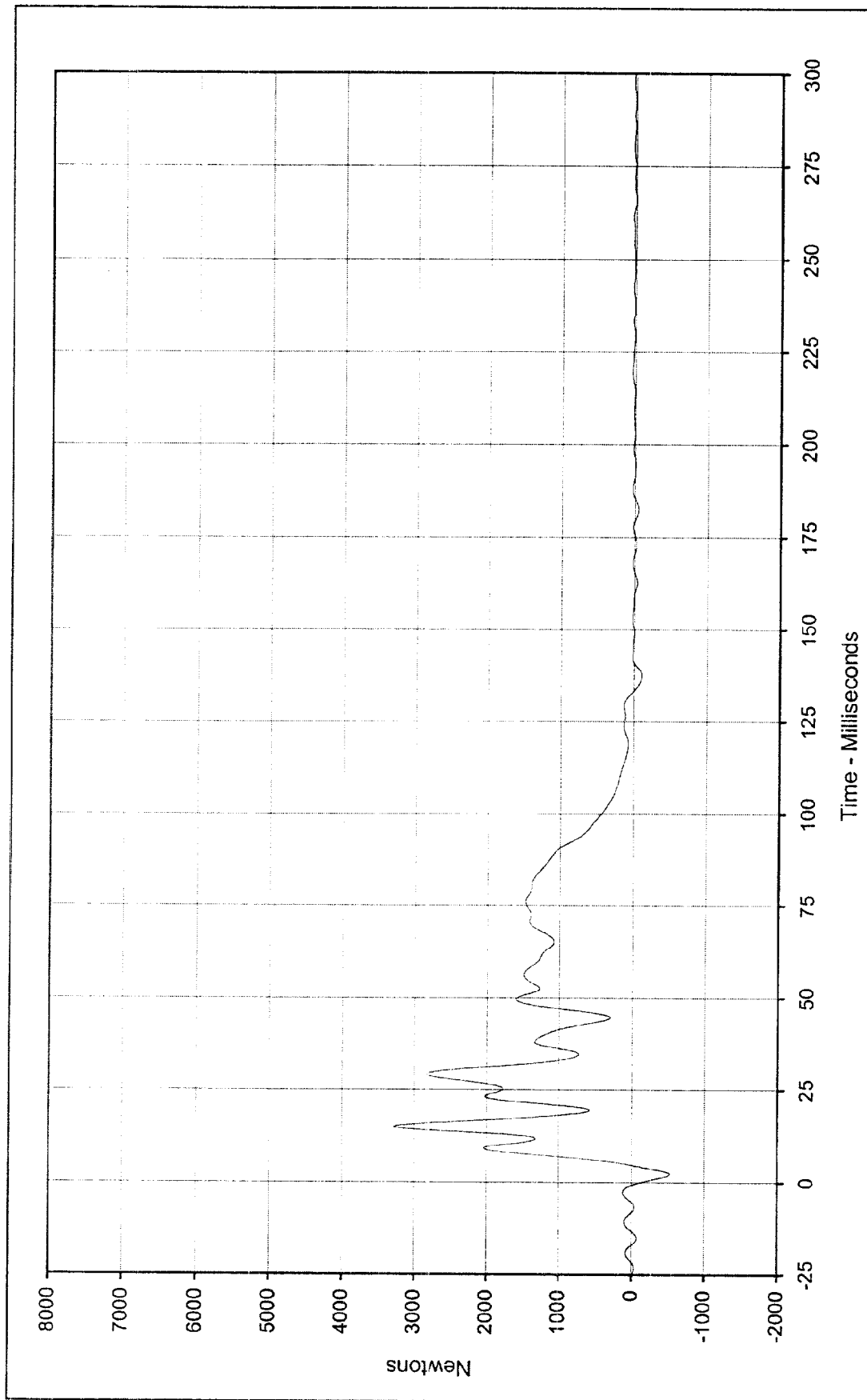
Date of Test: 1/8/99

Curve Number: FIL-099

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

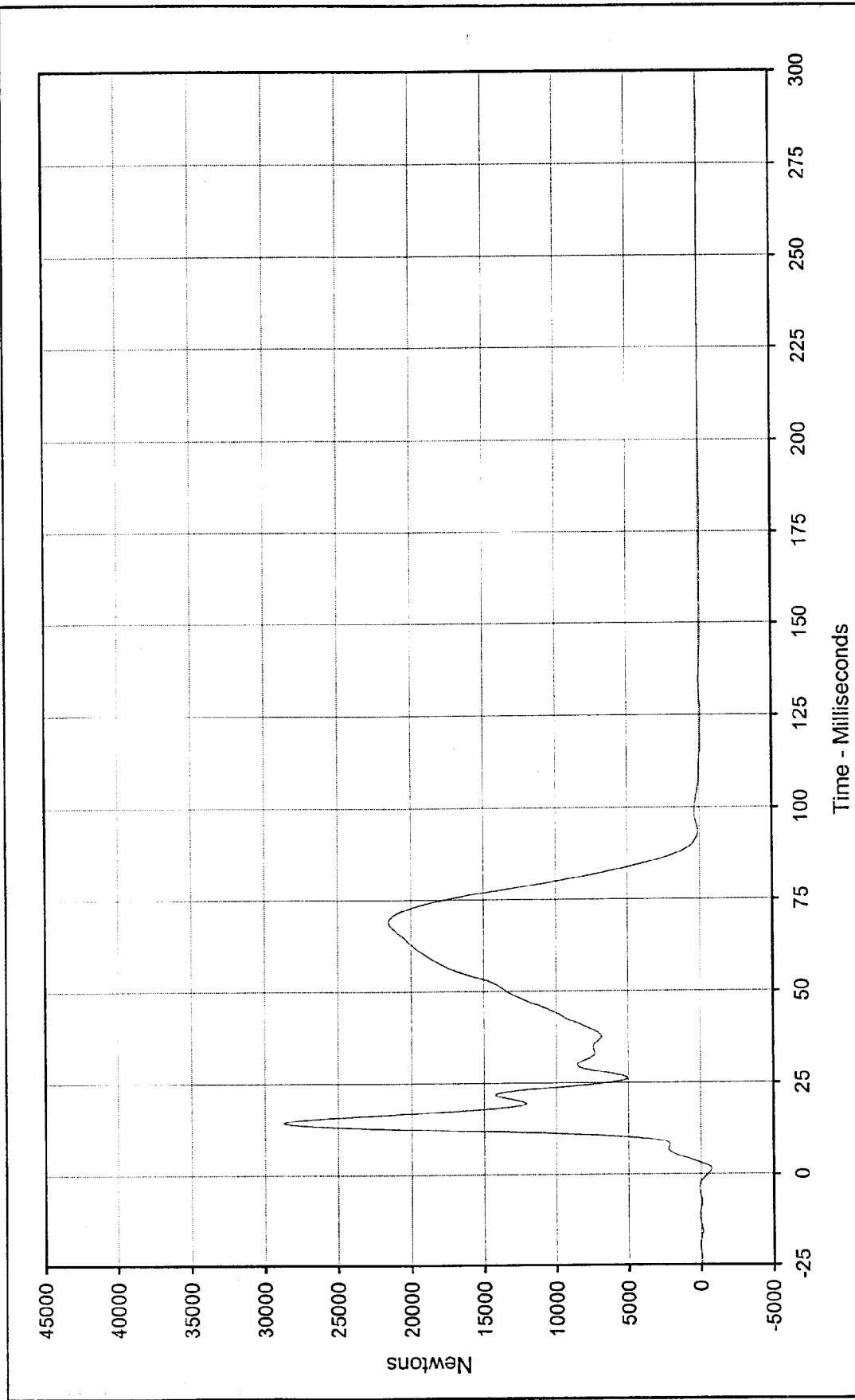
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:		Barrier Force A3		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	3280.3	at	15.1	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-528.5	at	2.3	Milliseconds		
SAE Filter Class:	60					
Date of Test:	1/8/99					
Curve Number:	FIL-100					

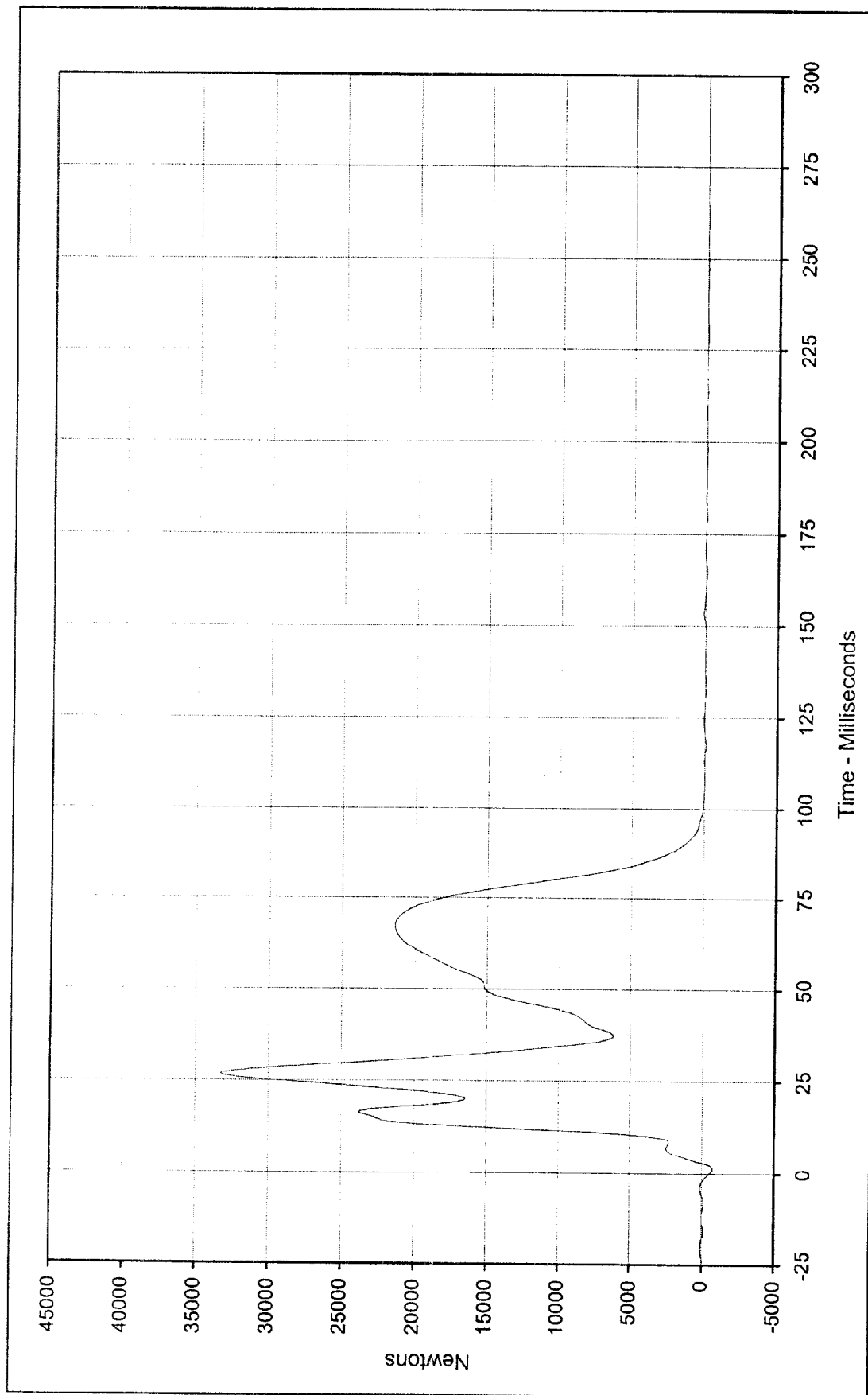




Curve Description: Barrier Force A4
 Maximum Value: 28709.6 at 14.4 Milliseconds
 Minimum Value: -745.3 at 1.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-101

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

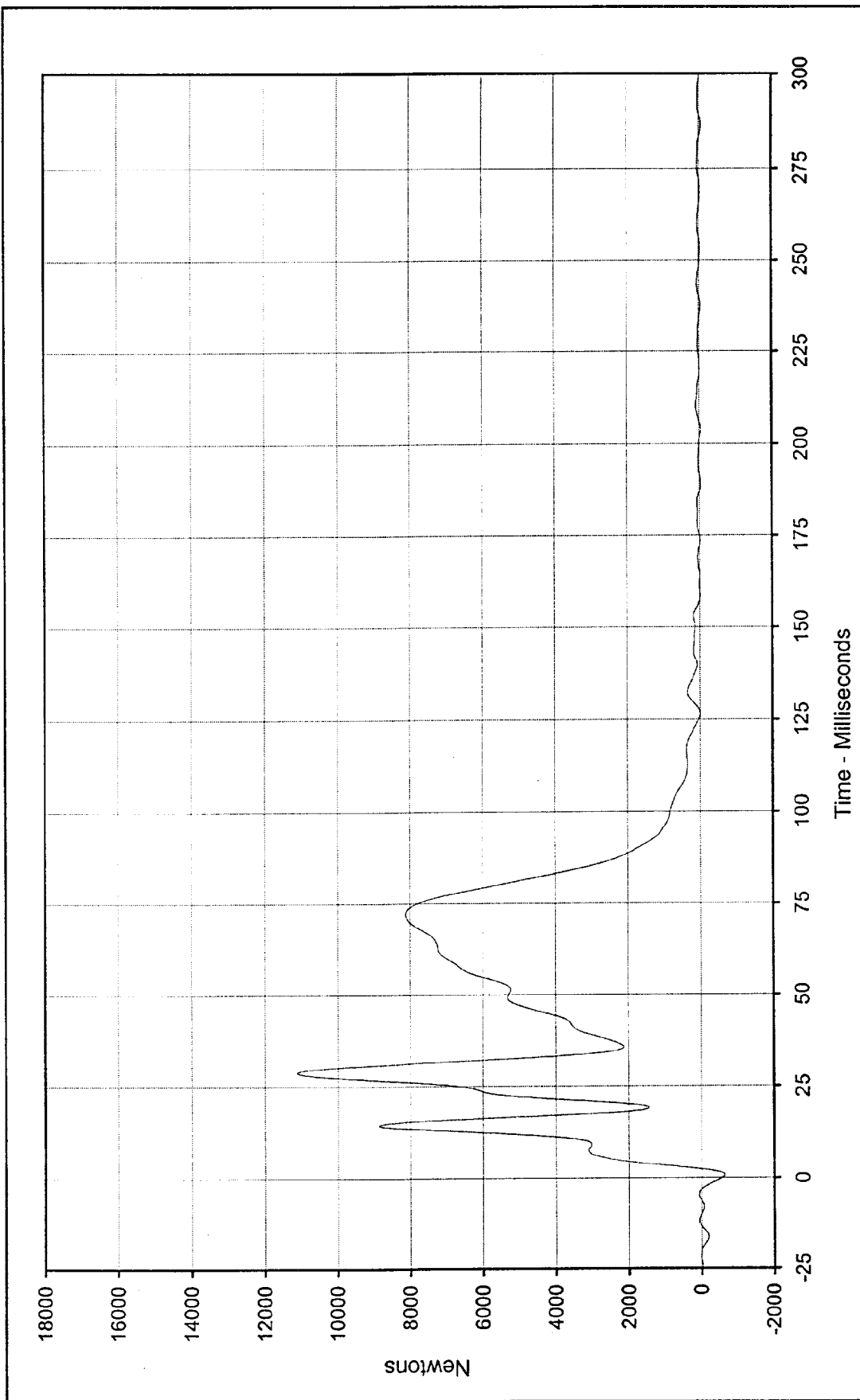




Curve Description:	Barrier Force A5		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	33255.2	at 26.7	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-775.8	at 1.4			
SAE Filter Class:	60				
Date of Test:	1/8/99				
Curve Number:	FIL-102				







Curve Description: Barrier Force A6

Maximum Value: 11118.1 at 28.8 Milliseconds

Minimum Value: -640.2 at 0.8 Milliseconds

SAE Filter Class: 60

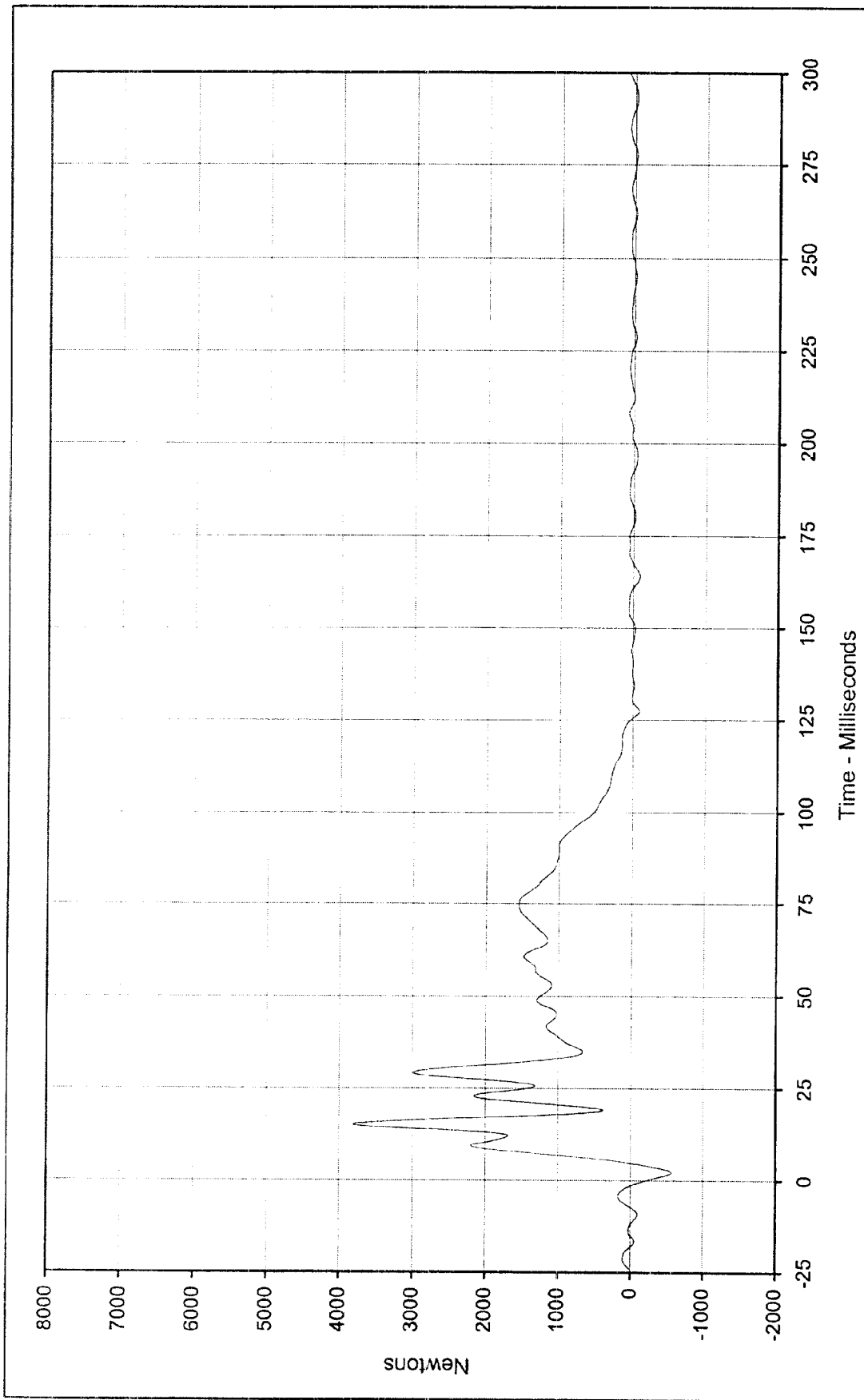
Date of Test: 1/8/99

Curve Number: FIL-103

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

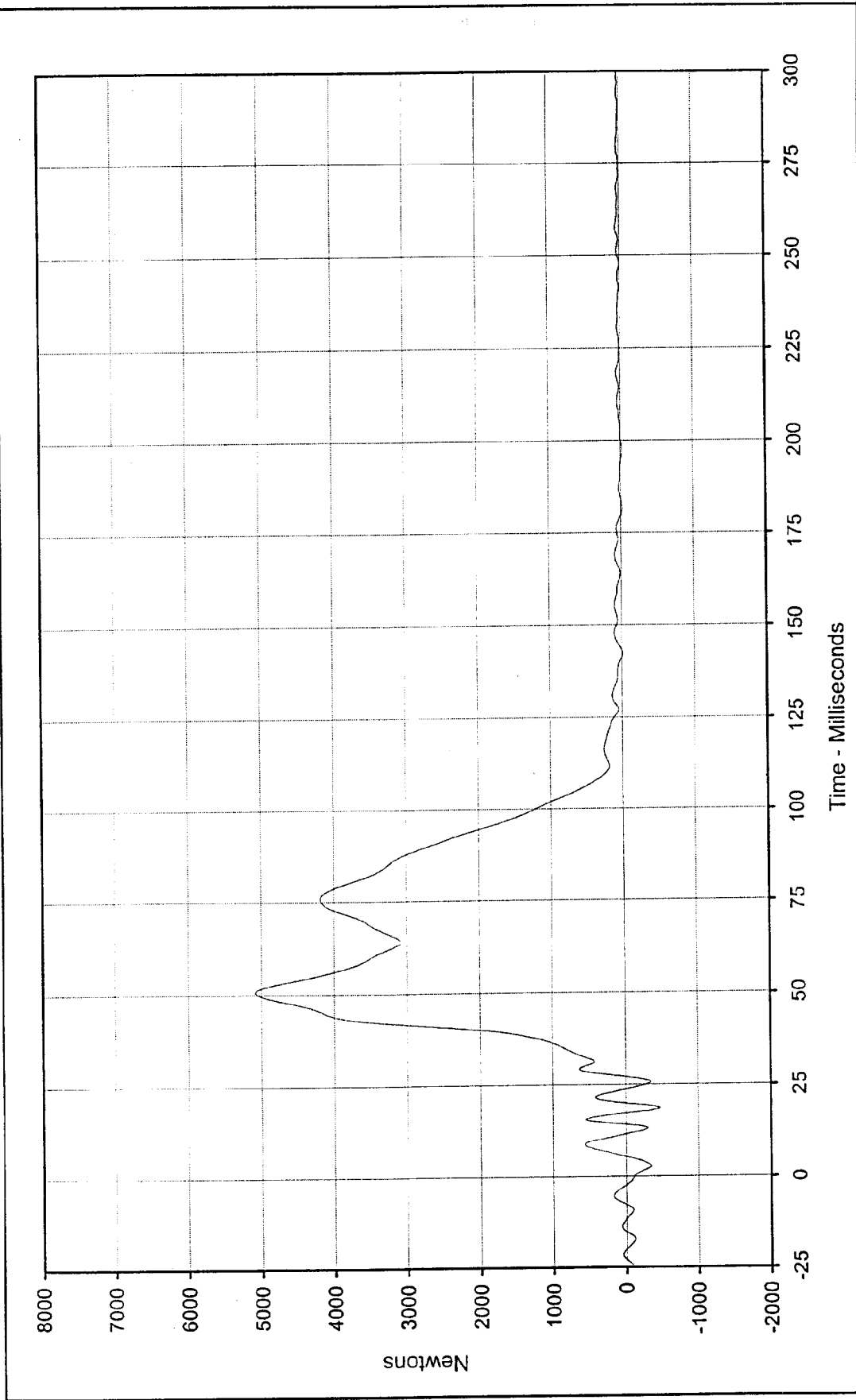
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Barrier Force A7	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	3804.9 at 15.2 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-564.6 at 2.2 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-104			

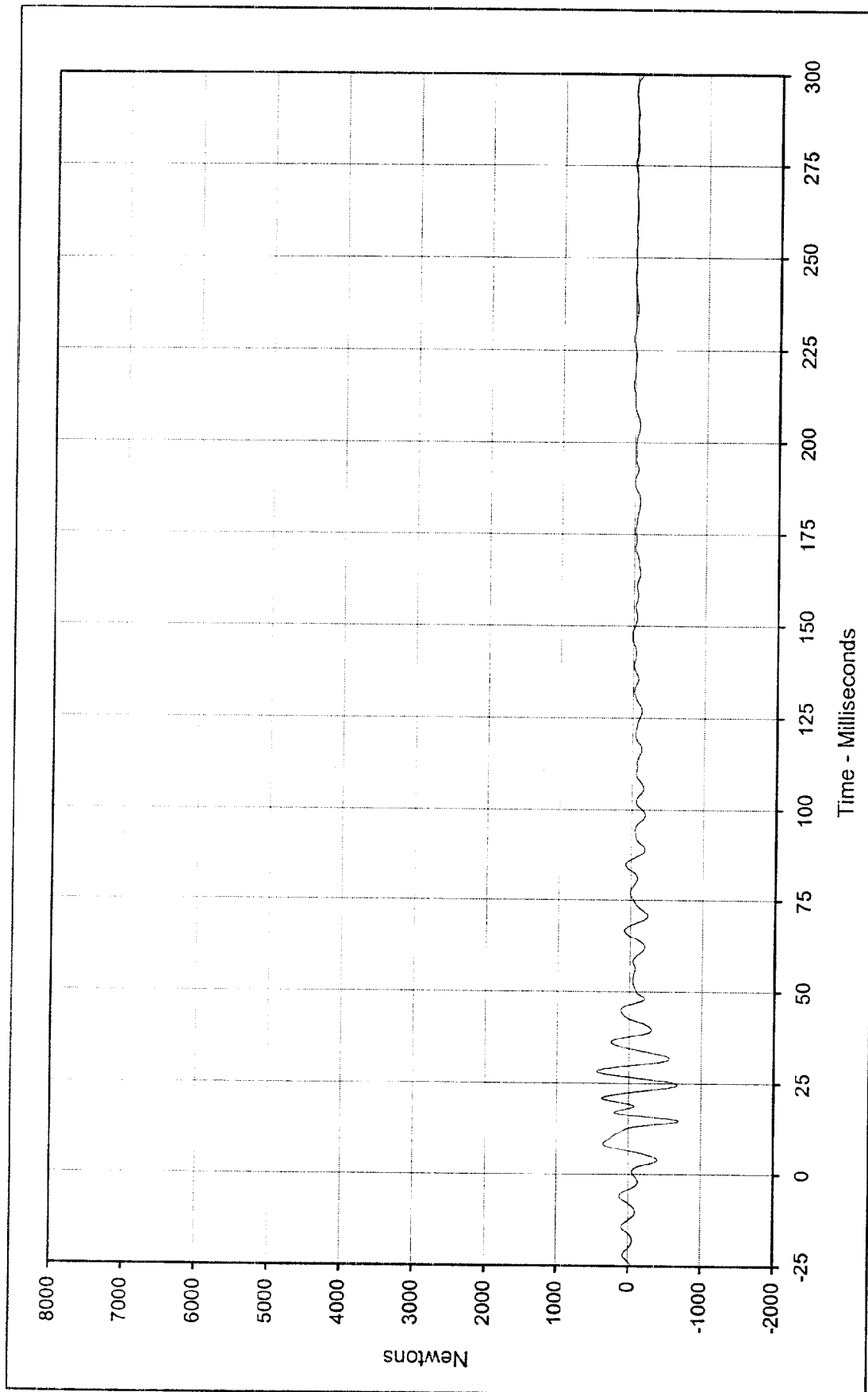




Curve Description: Barrier Force A8
 Maximum Value: 5084.4 at 50.7 Milliseconds
 Minimum Value: -470.4 at 18.6 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-105

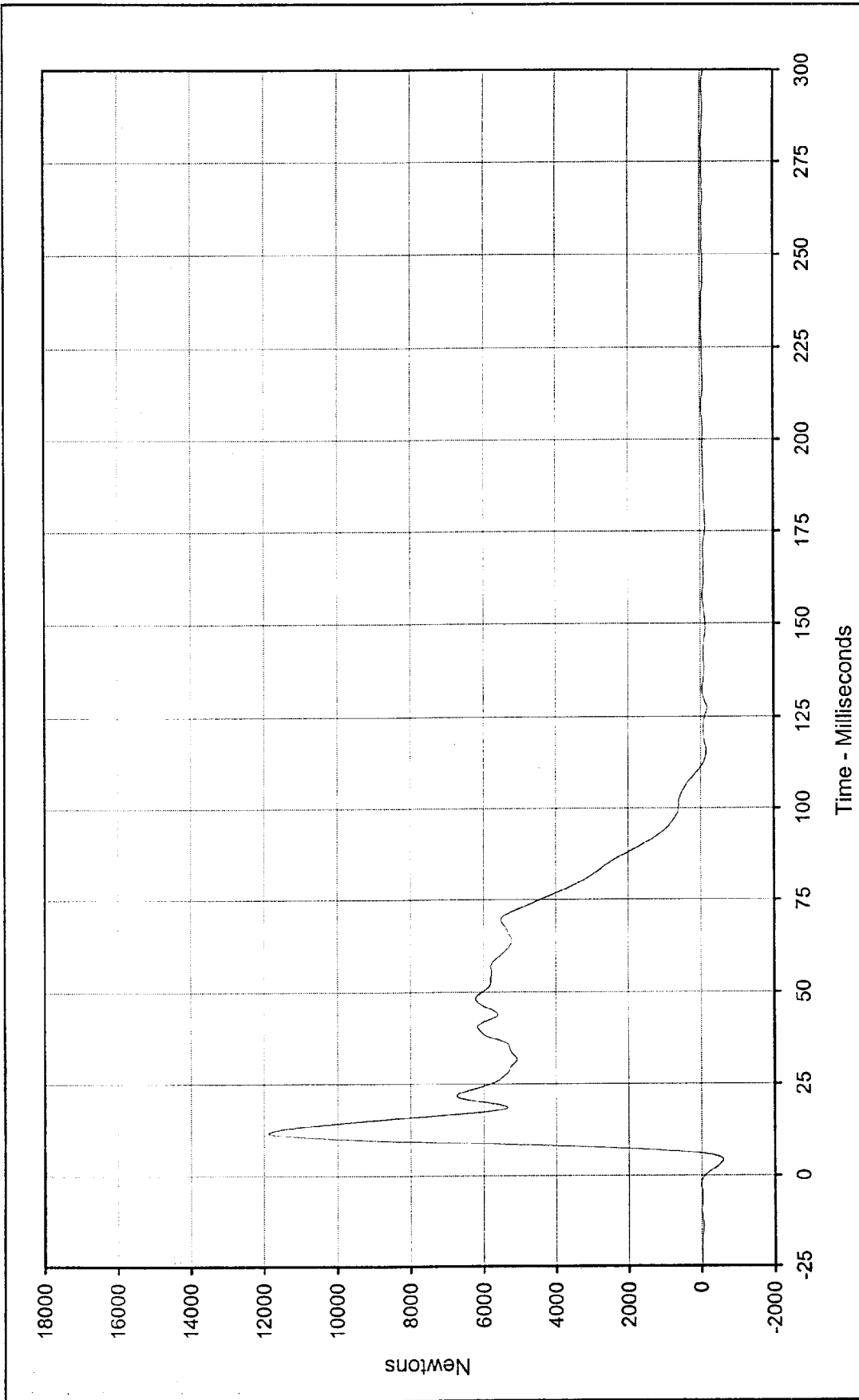
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





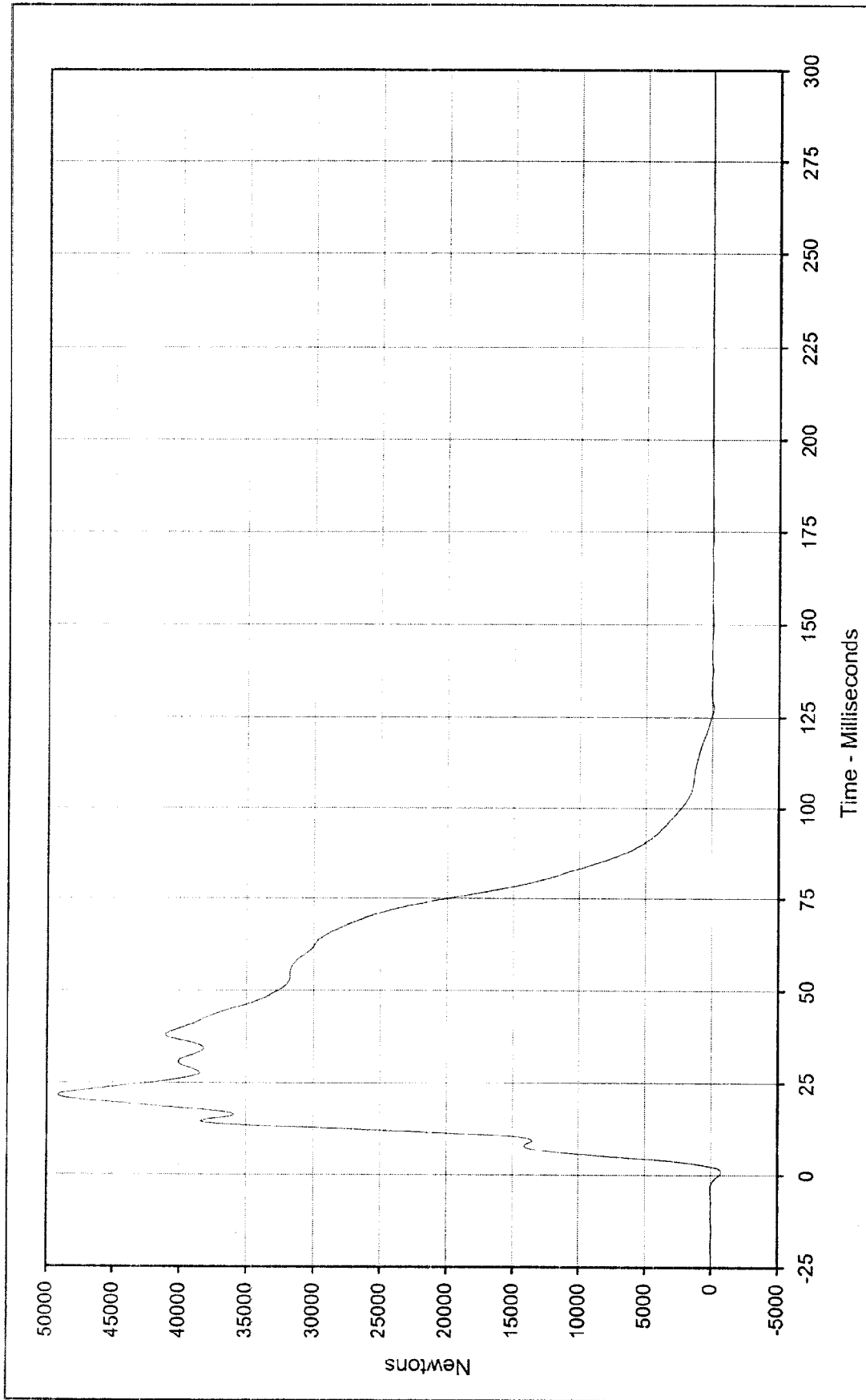
Curve Description:		Barrier Force A9		Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	446.5	at	28.3	Milliseconds	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-694.4	at	14.9	Milliseconds	
SAE Filter Class:	60				
Date of Test:	1/8/99				
Curve Number:	FIL-106				





Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5401
 Maximum Value: 11869.9 at 11.8 Milliseconds
 Minimum Value: -602.9 at 4.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-108





Curve Description: Barrier Force B3

Maximum Value: 49175.9 at 21.5 Milliseconds

Minimum Value: -769.9 at 0.9 Milliseconds

SAE Filler Class: 60

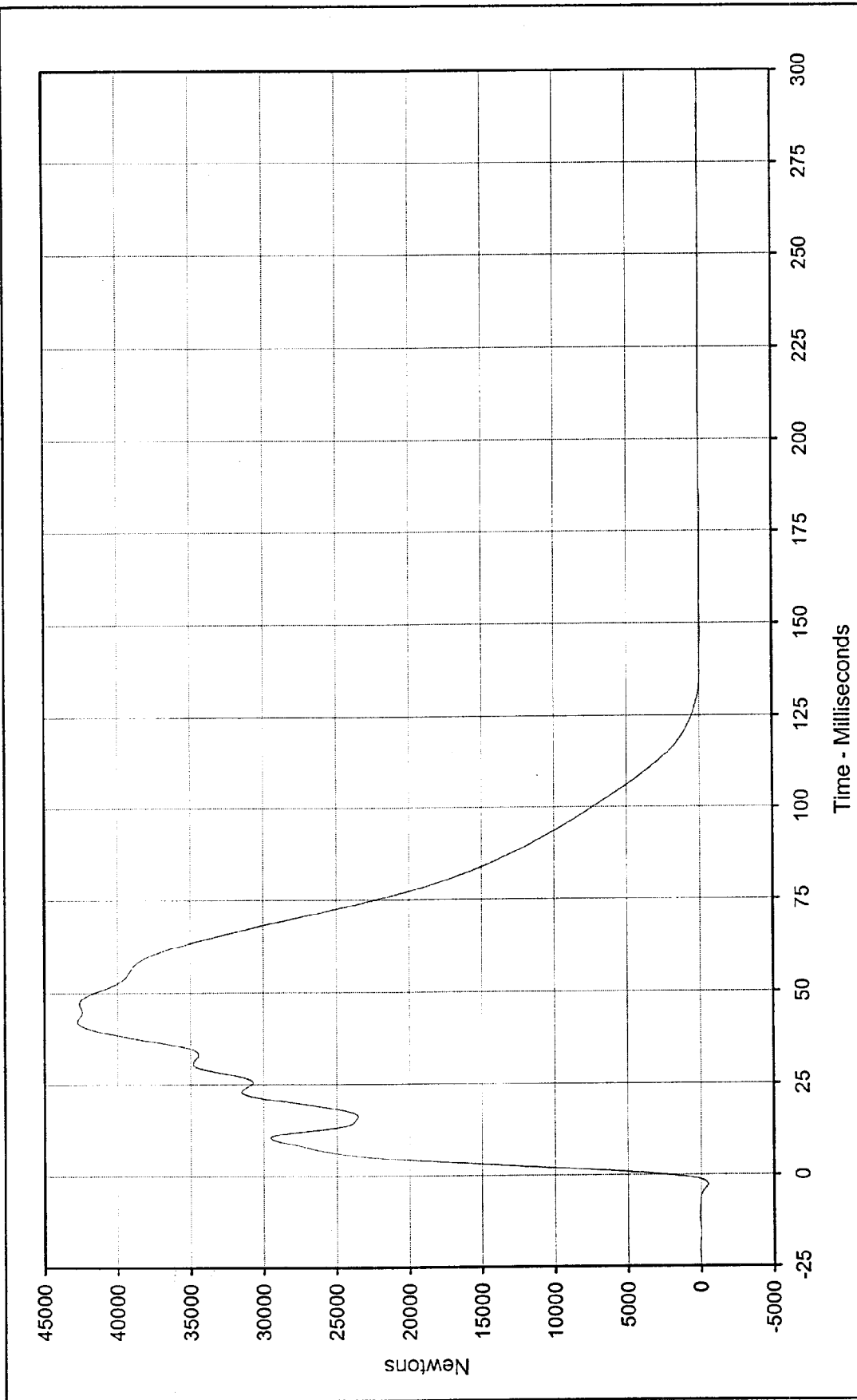
Date of Test: 1/8/99

Curve Number: FIL-109

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

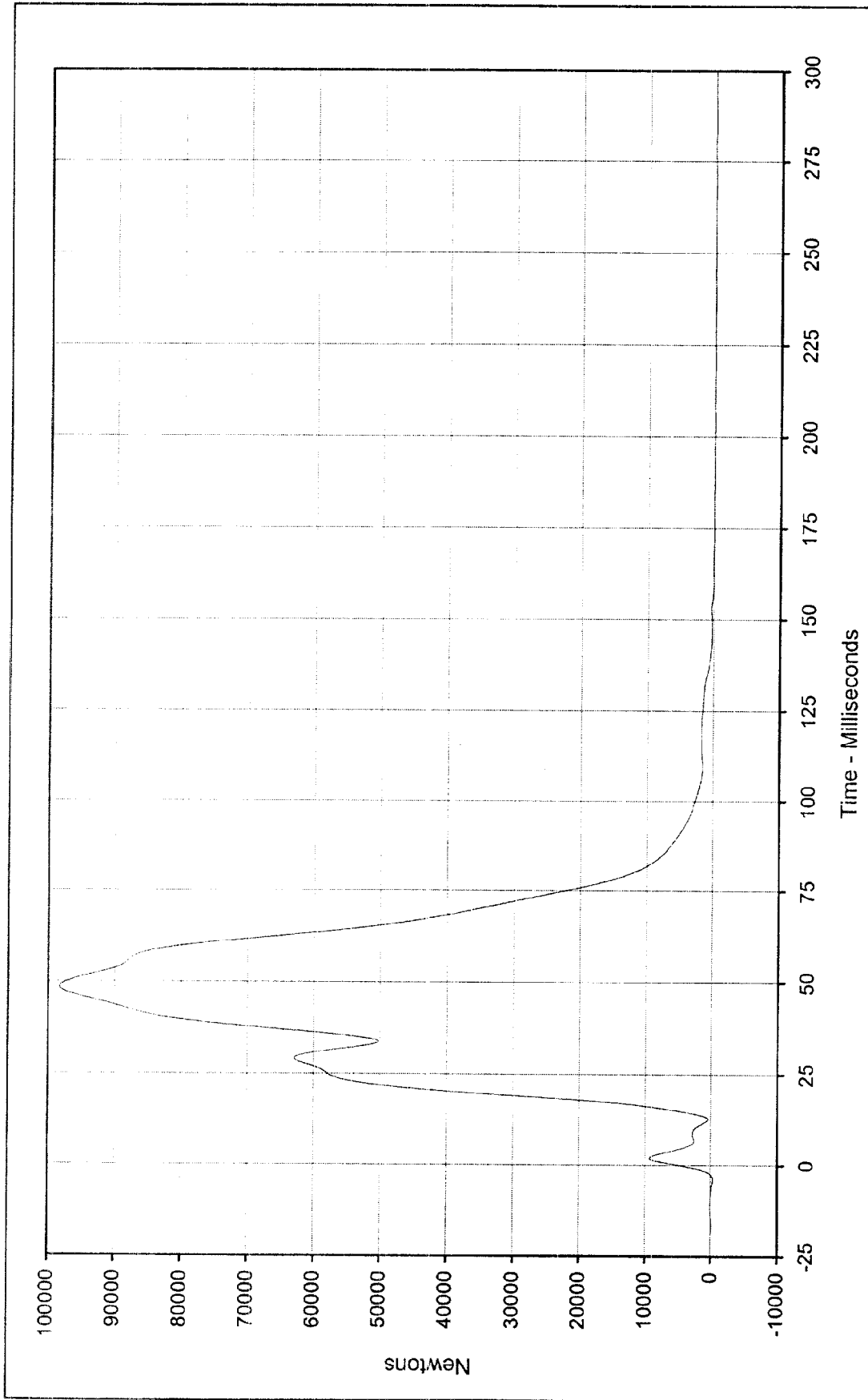
Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Barrier Force B4	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	42722.0 at 42.4 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-87.2 at 181.0 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-110			

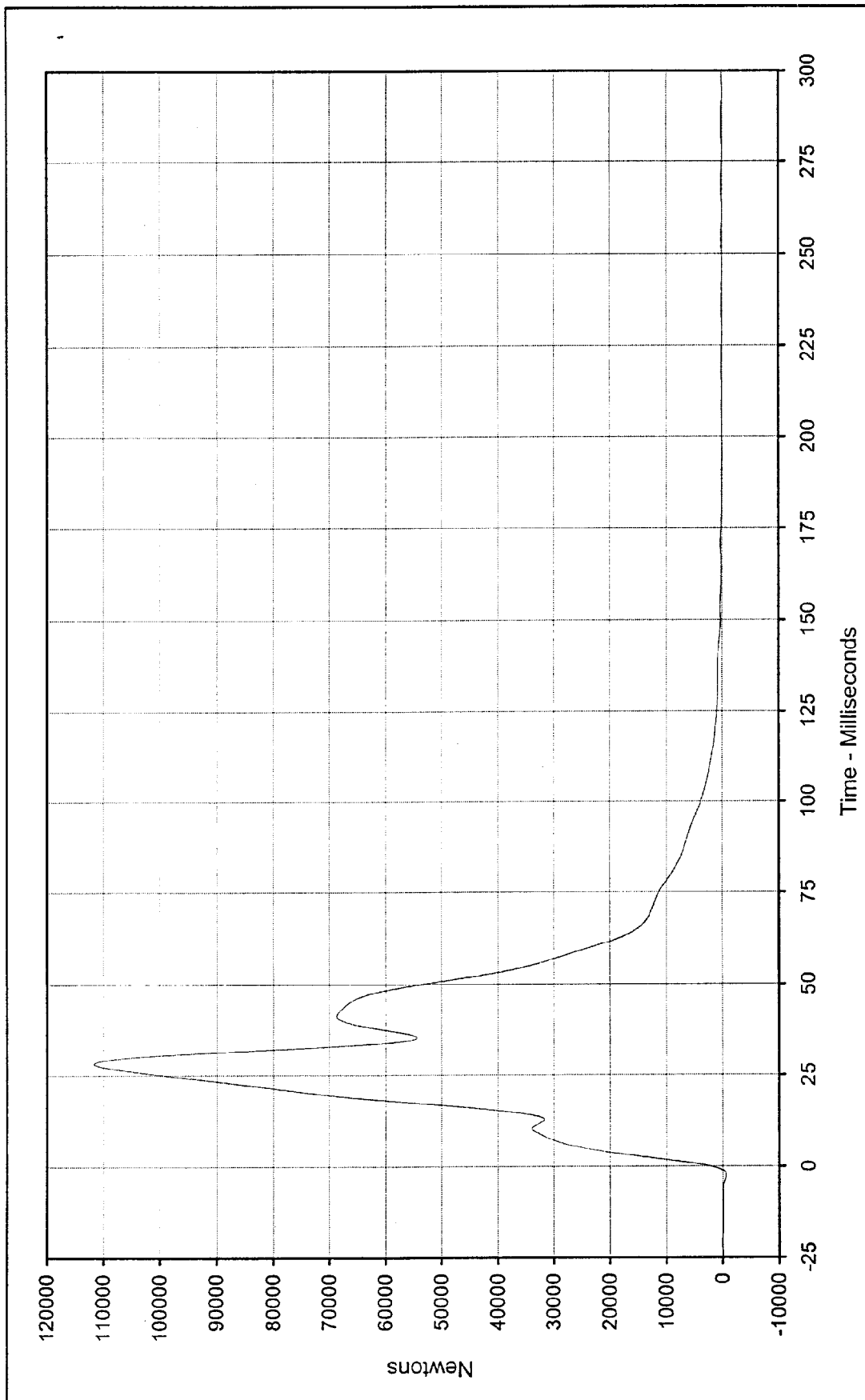




Curve Description:		Barrier Force B5		Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	98284.8	at	48.5	Milliseconds	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-45.2	at	190.2	Milliseconds	
SAE Filter Class:	60				
Date of Test:	1/8/99				
Curve Number:	FIL-111				

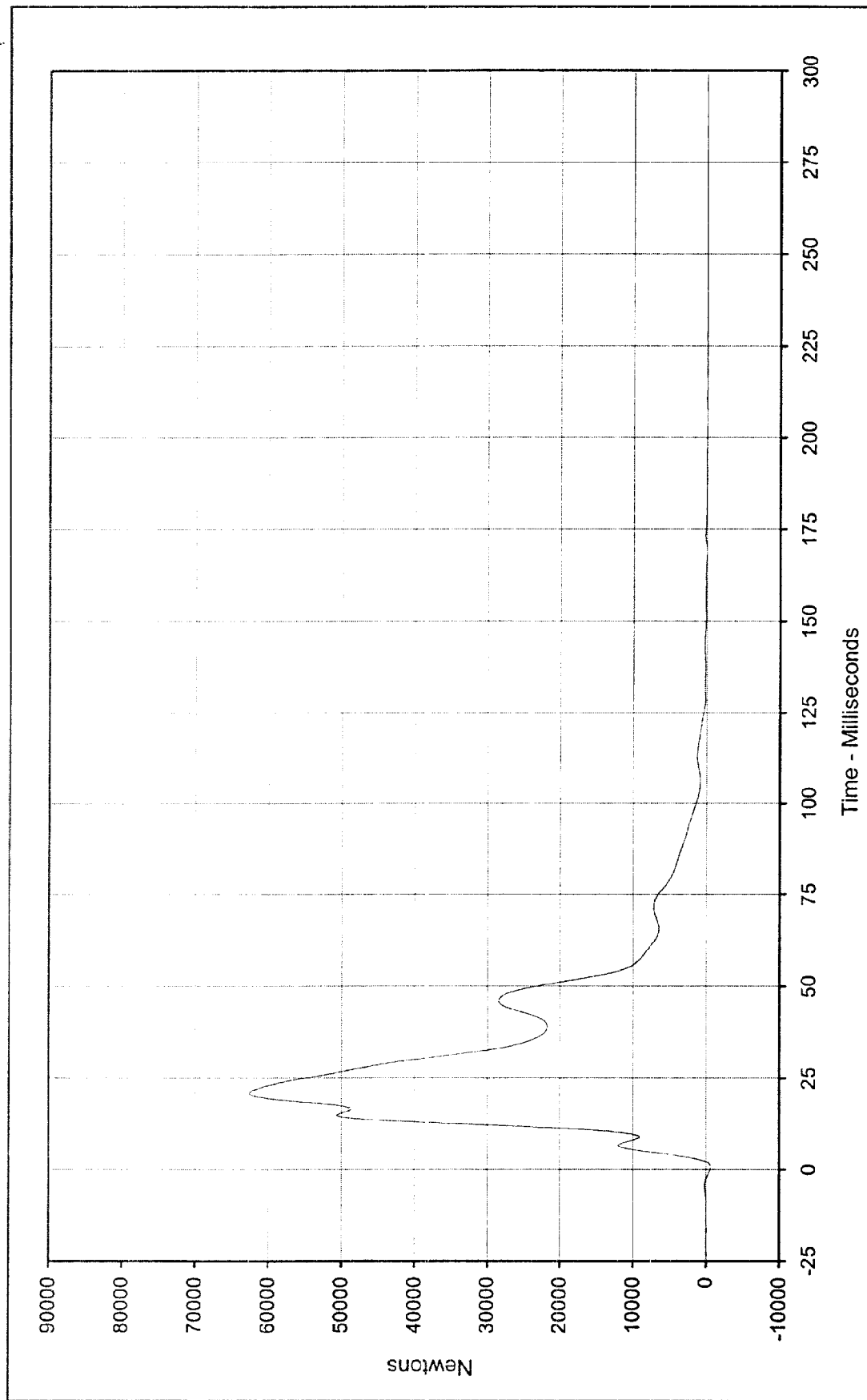






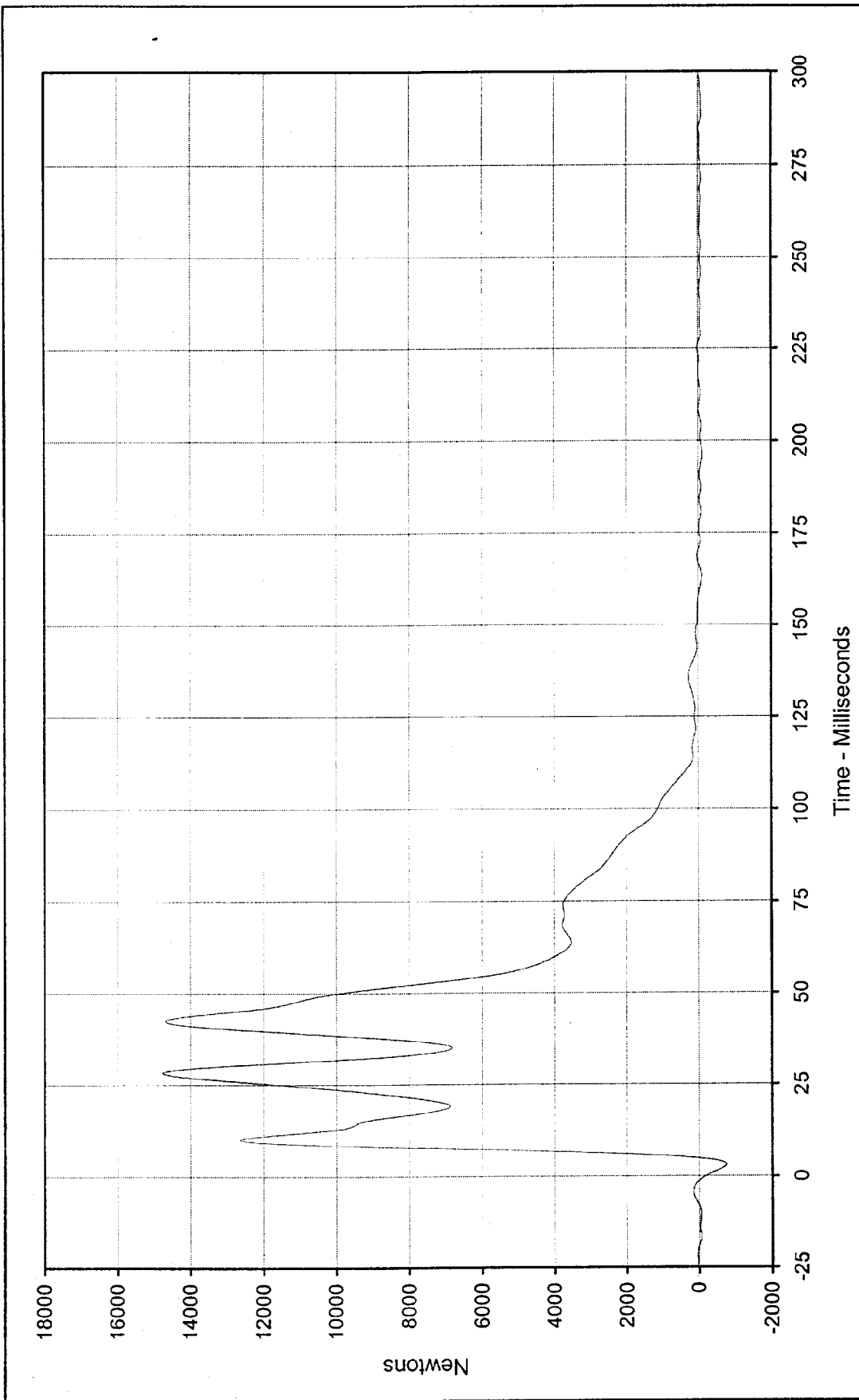
Curve Description:	Barrier Force B6	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	11651.8 at 28.2 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-22.5 at 261.7 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-112			





Curve Description:	Barrier Force B7	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	62633.3 at 20.8 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-690.0 at 0.6 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-113			

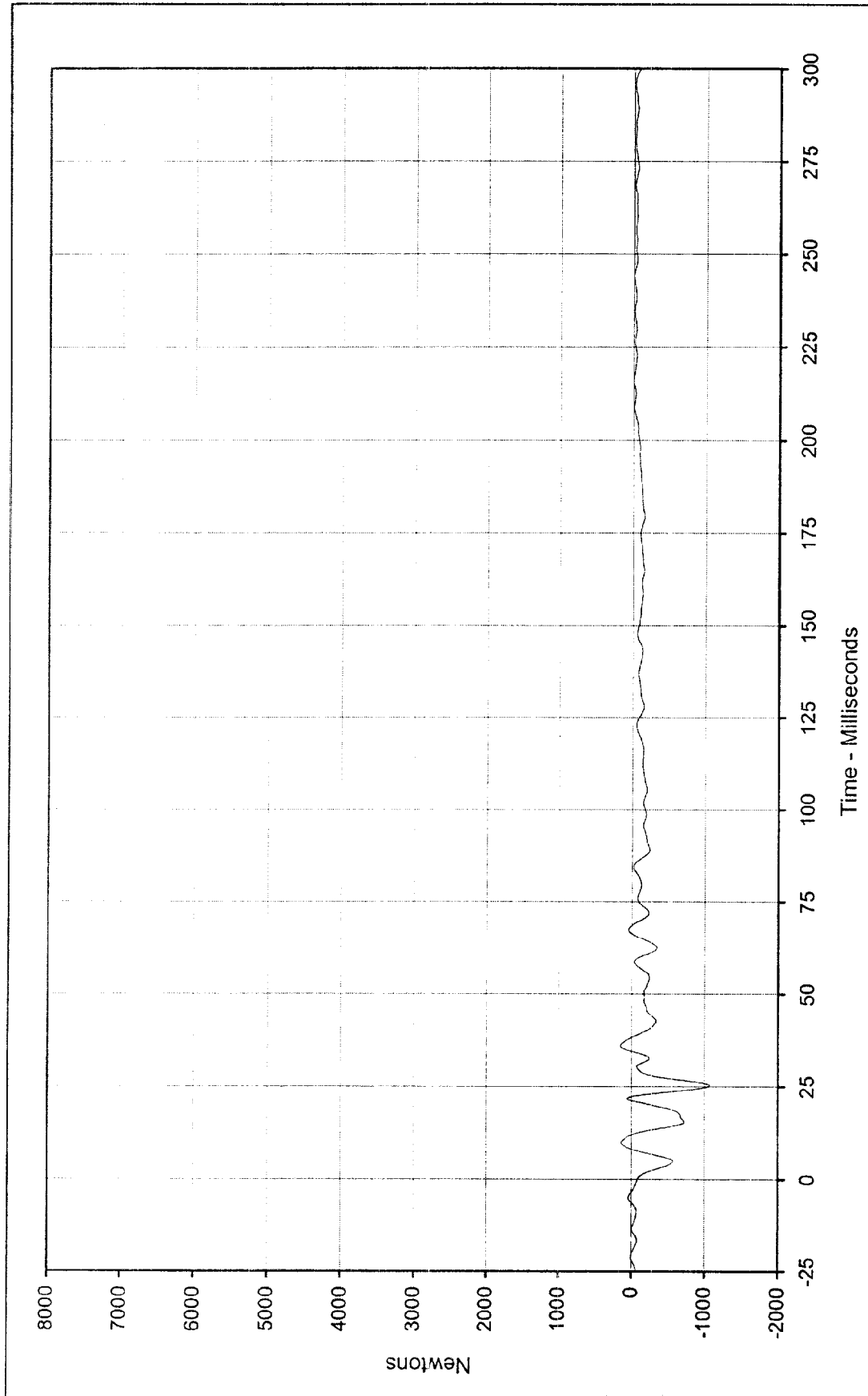




Curve Description: Barrier Force B8
 Maximum Value: 14747.8 at 28.2 Milliseconds
 Minimum Value: -755.3 at 3.1 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-114

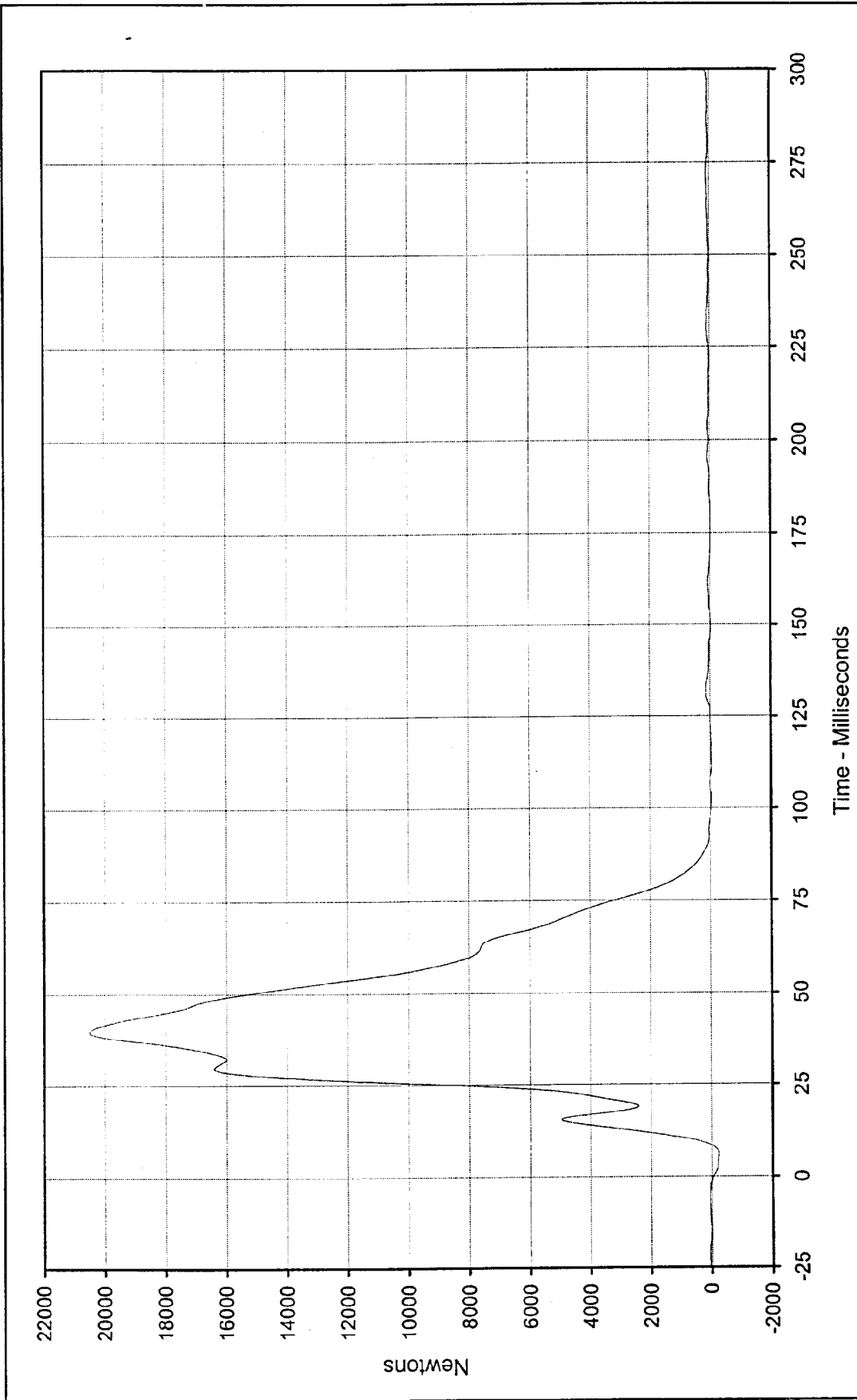
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description:	Barrier Force B9	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	150.3 at 36.0 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-1076.3 at 25.3 Milliseconds		
SAE Filter Class:	60		
Date of Test:	1/8/99		
Curve Number:	FIL-115		



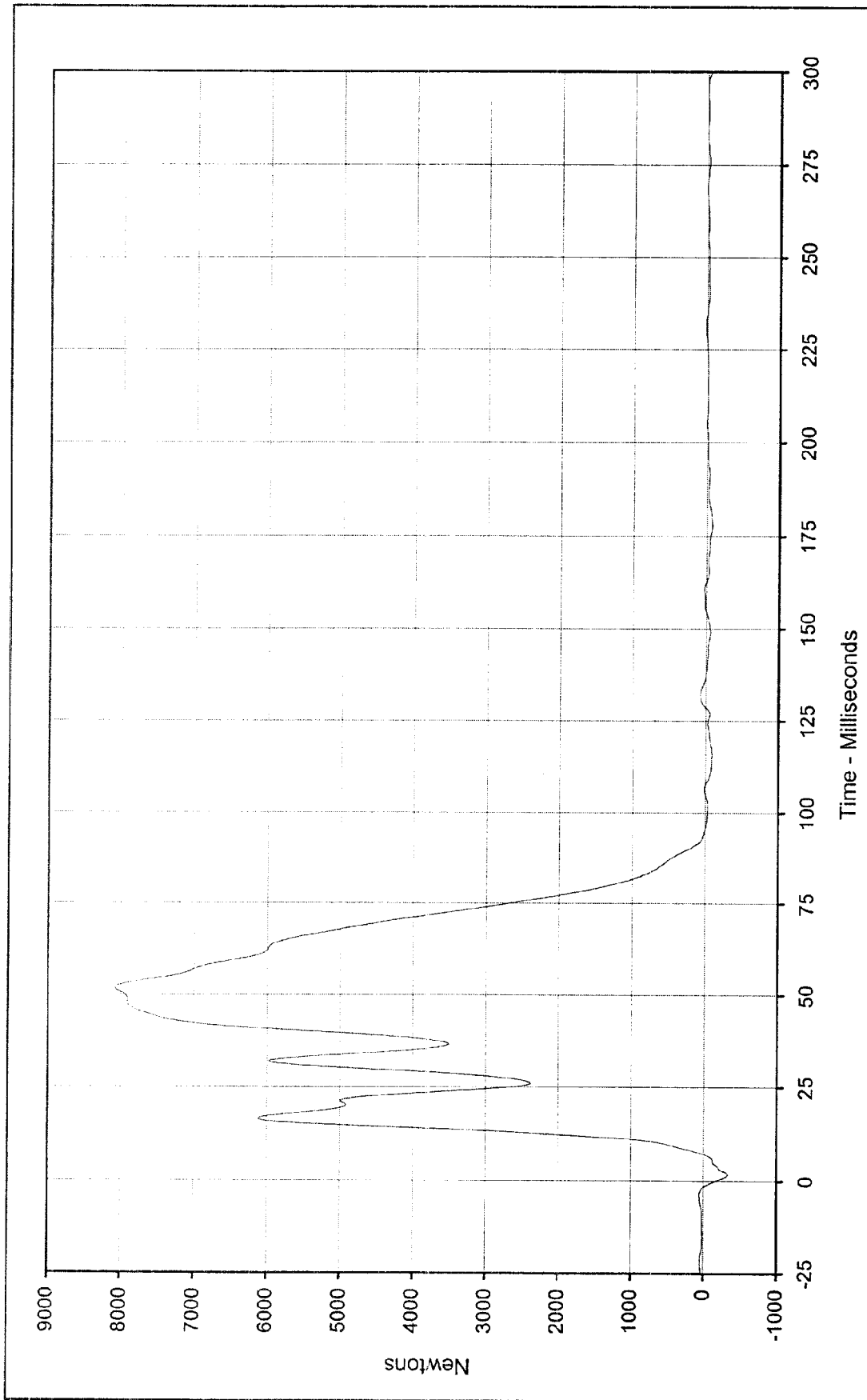


Curve Description:	Barrier Force C2	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	20505.2 at 39.7 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-248.6 at 6.0 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-117			



KARCO
Engineering

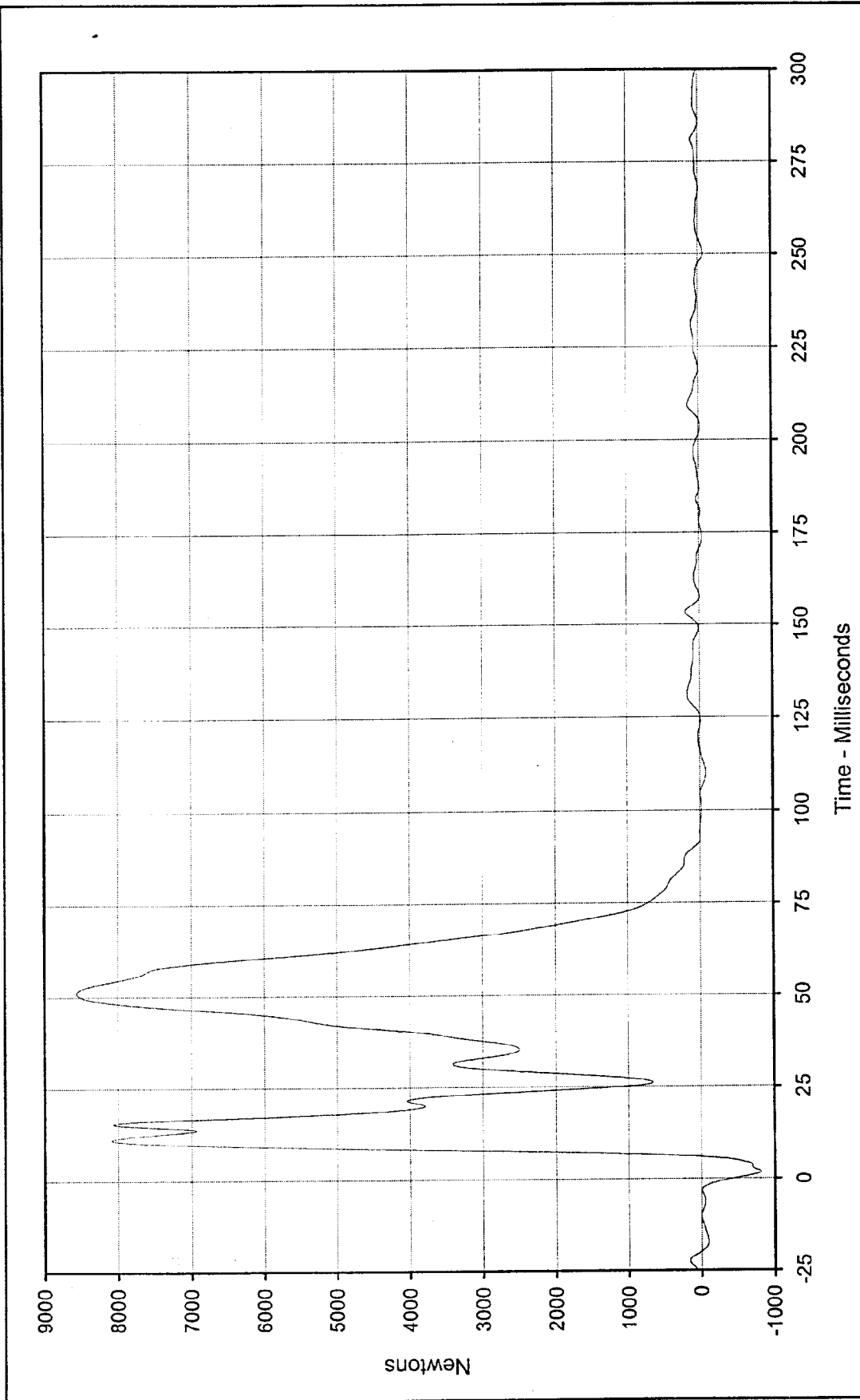




Curve Description:		Barrier Force C3		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	8082.7	at	51.9	Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-333.4	at	1.8	Milliseconds		
SAE Filter Class:	60					
Date of Test:	1/8/99					
Curve Number:	FIL-118					

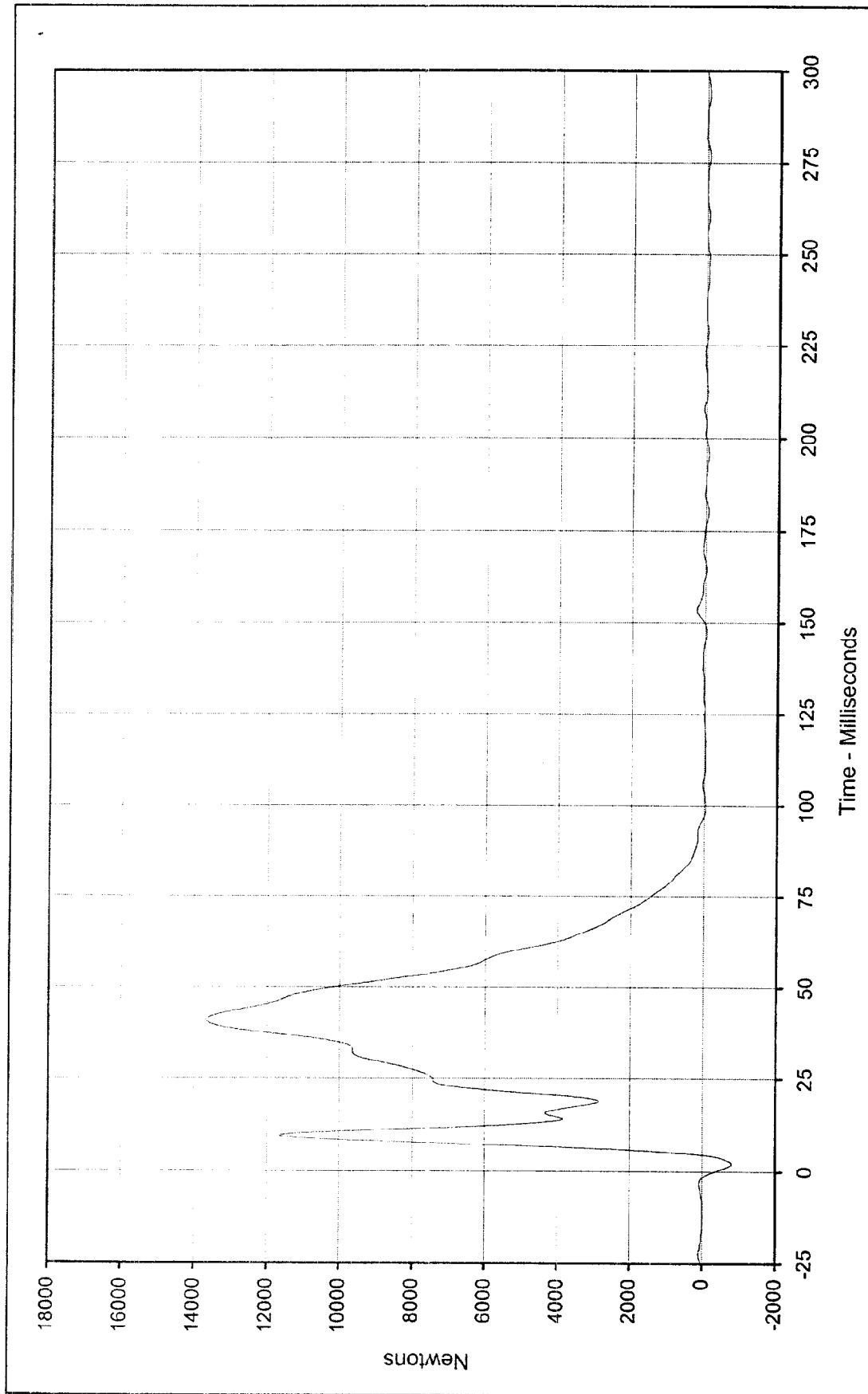






Curve Description:	Barrier Force C4	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	8561.0 at 51.0 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-816.8 at 1.8 Milliseconds		
SAE Filter Class:	60		
Date of Test:	1/8/99		
Curve Number:	FIL-119		

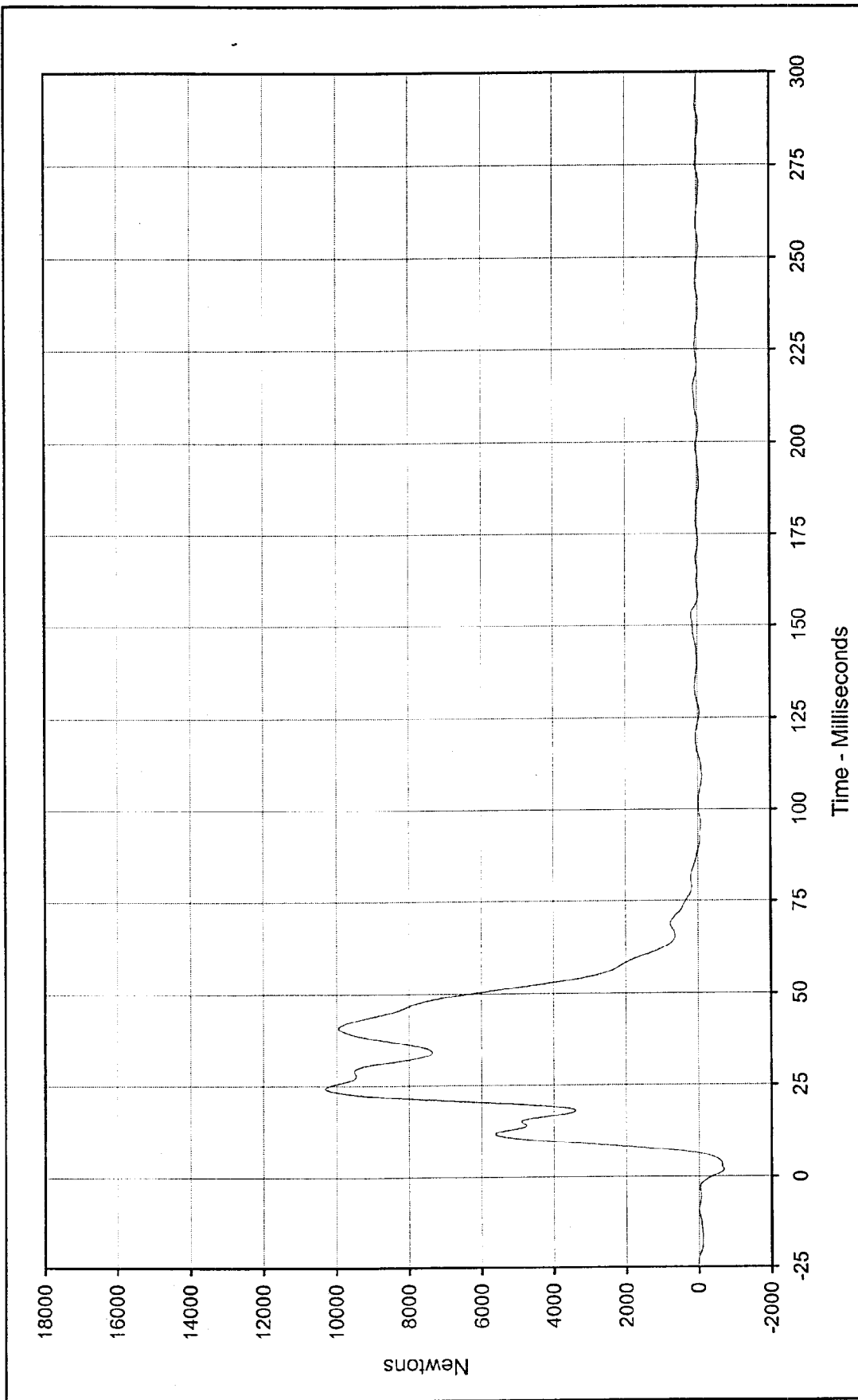




Curve Description: Barrier Force C5
 Maximum Value: 13674.3 at 41.2 Milliseconds
 Minimum Value: -811.8 at 2.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-120

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

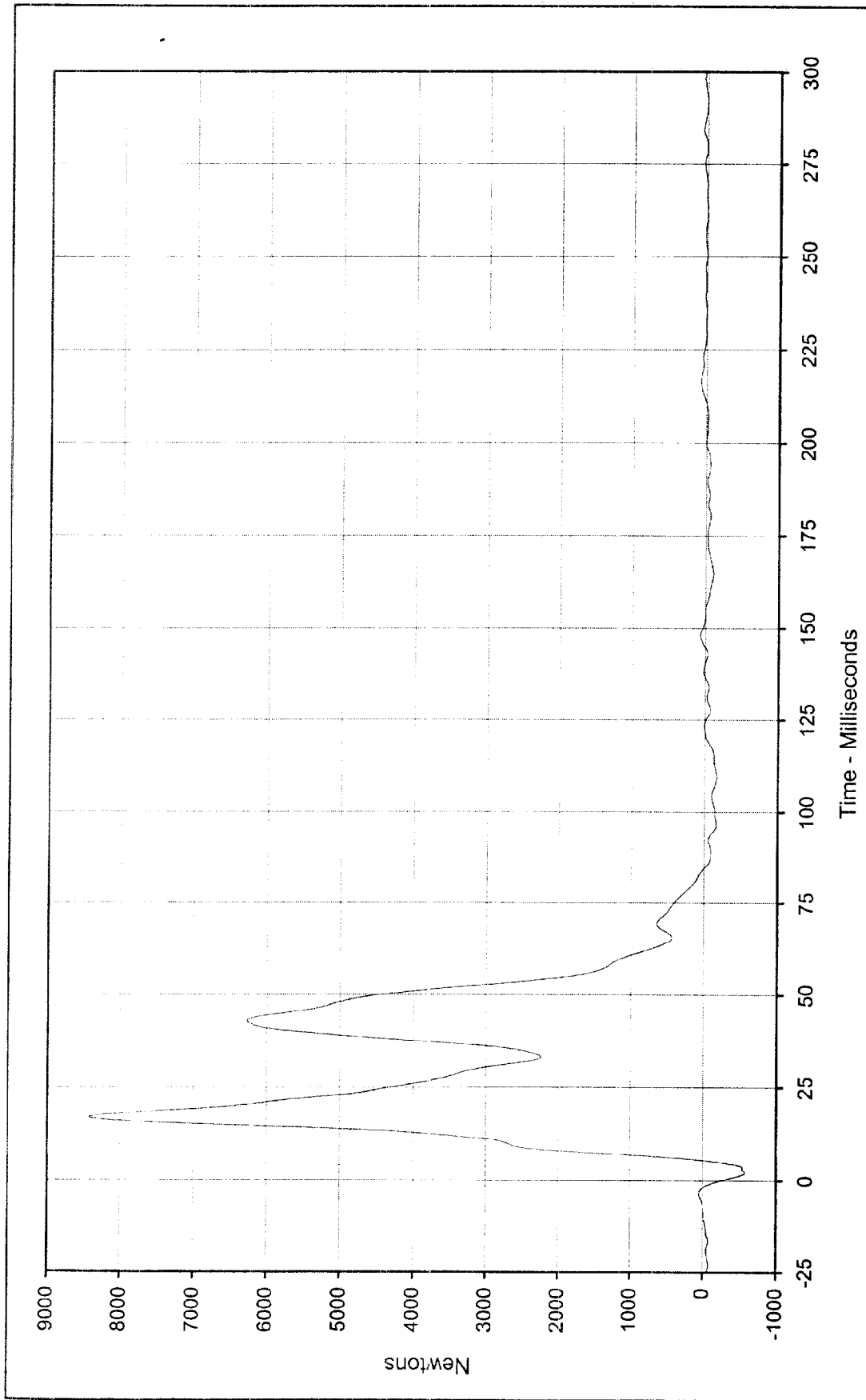




Curve Description: Barrier Force C6
 Maximum Value: 10315.9 at 24.3 Milliseconds
 Minimum Value: -691.6 at 1.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: FIL-121

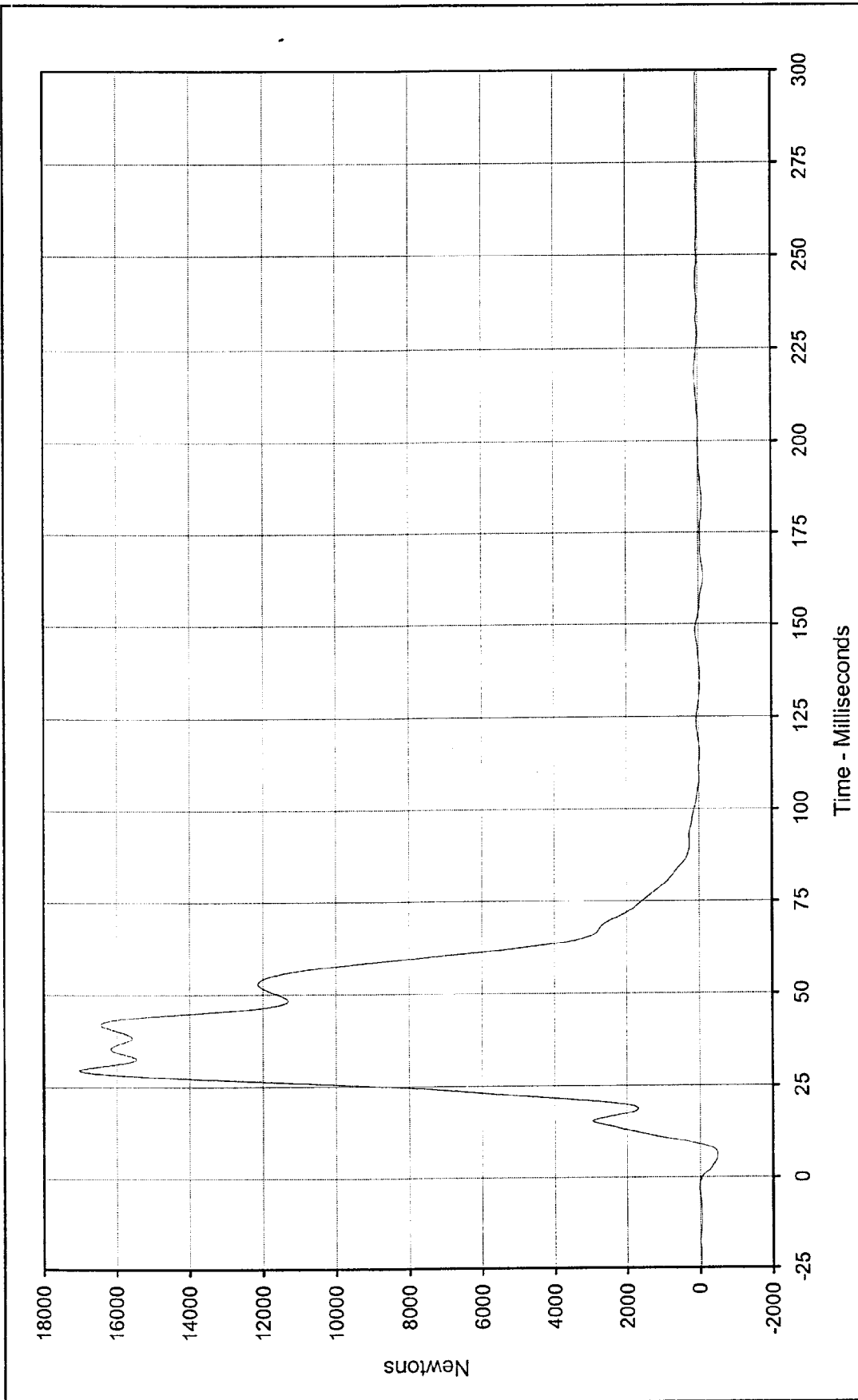
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





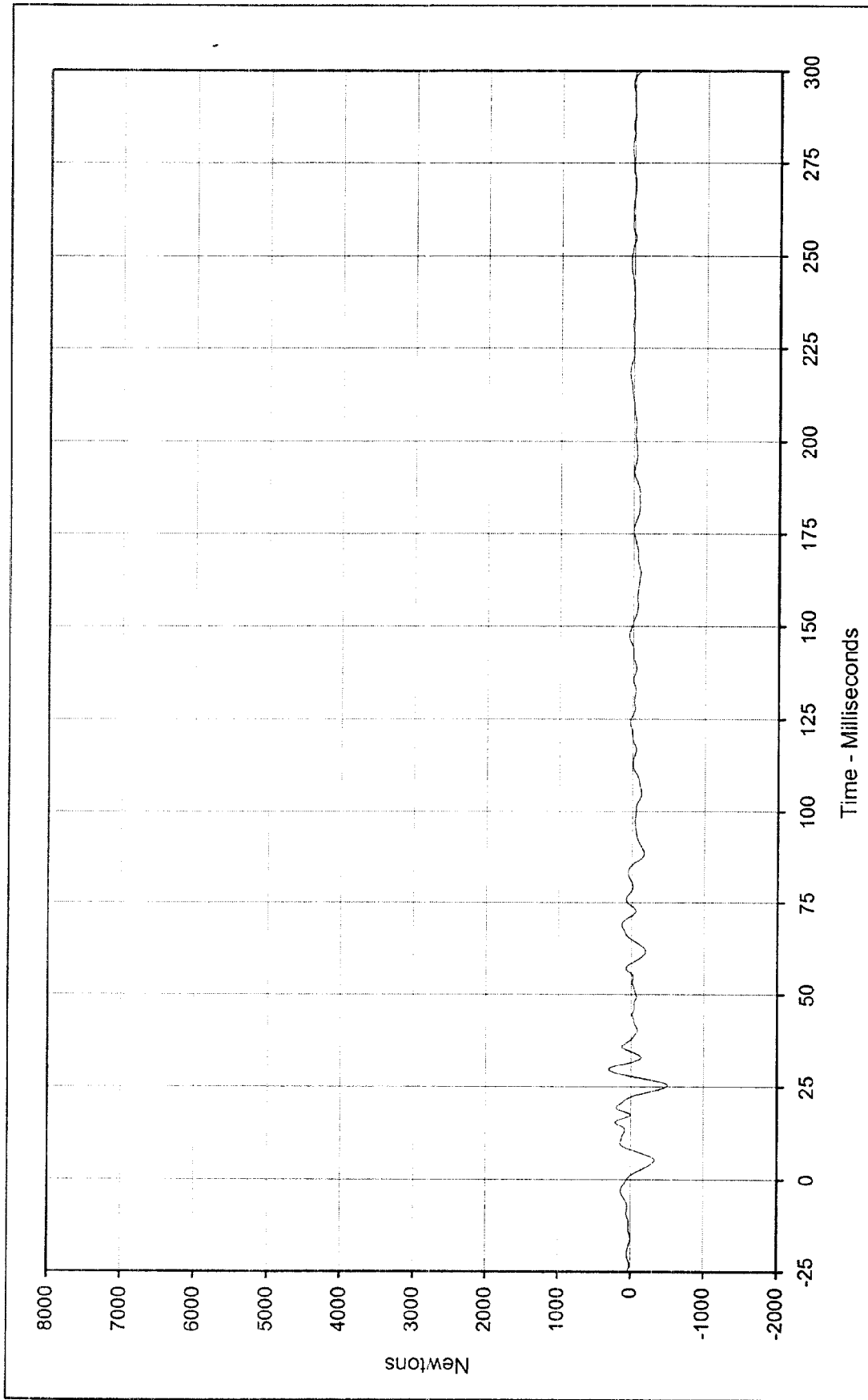
Curve Description:	Barrier Force C7	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	8422.3 at 17.2 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-577.6 at 2.1 Milliseconds		
SAE Filter Class:	60		
Date of Test:	1/8/99		
Curve Number:	FIL-122		





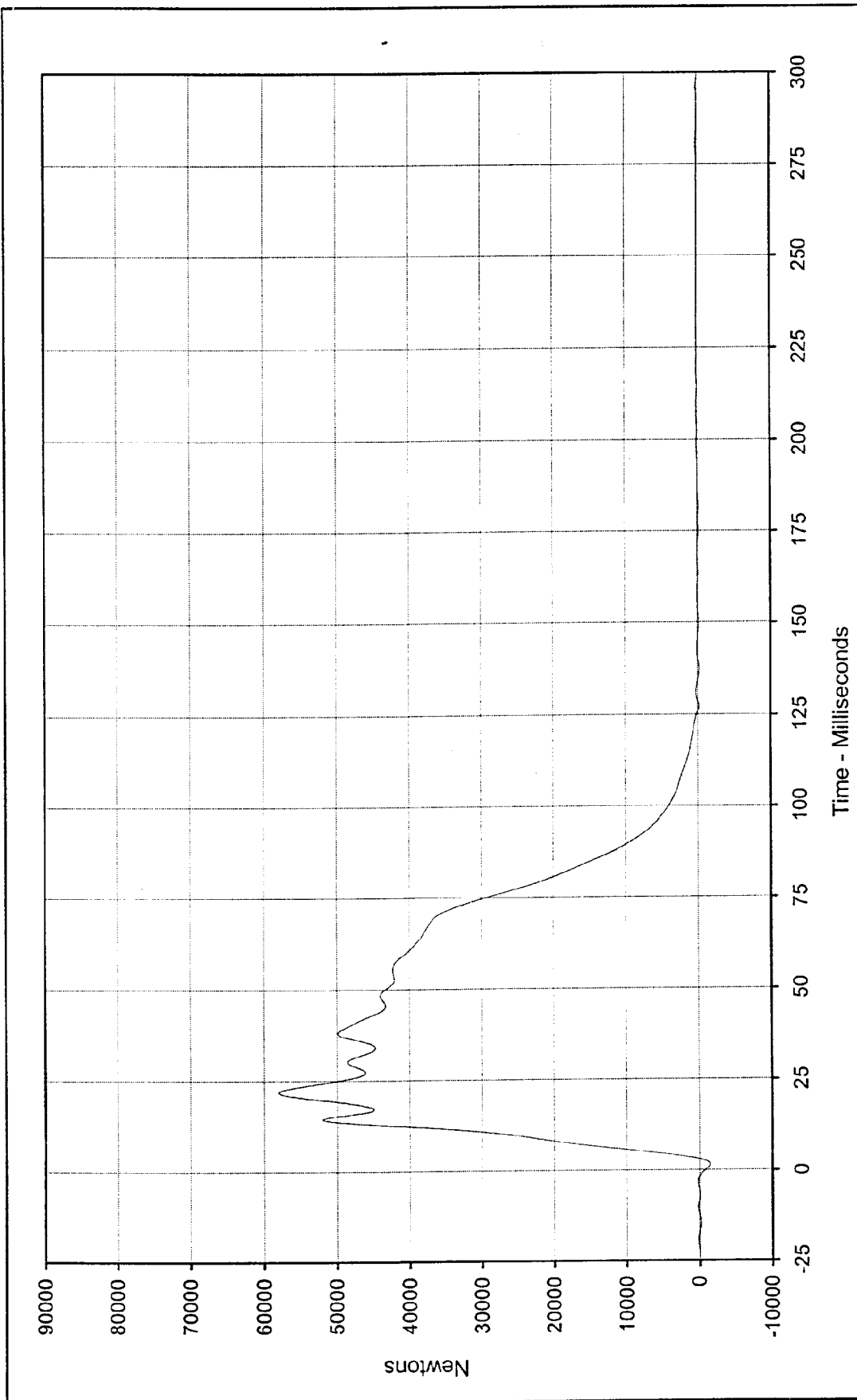
Curve Description:	Barrier Force C8	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	17021.3 at 29.5 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-477.6 at 6.3 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	FIL-123			





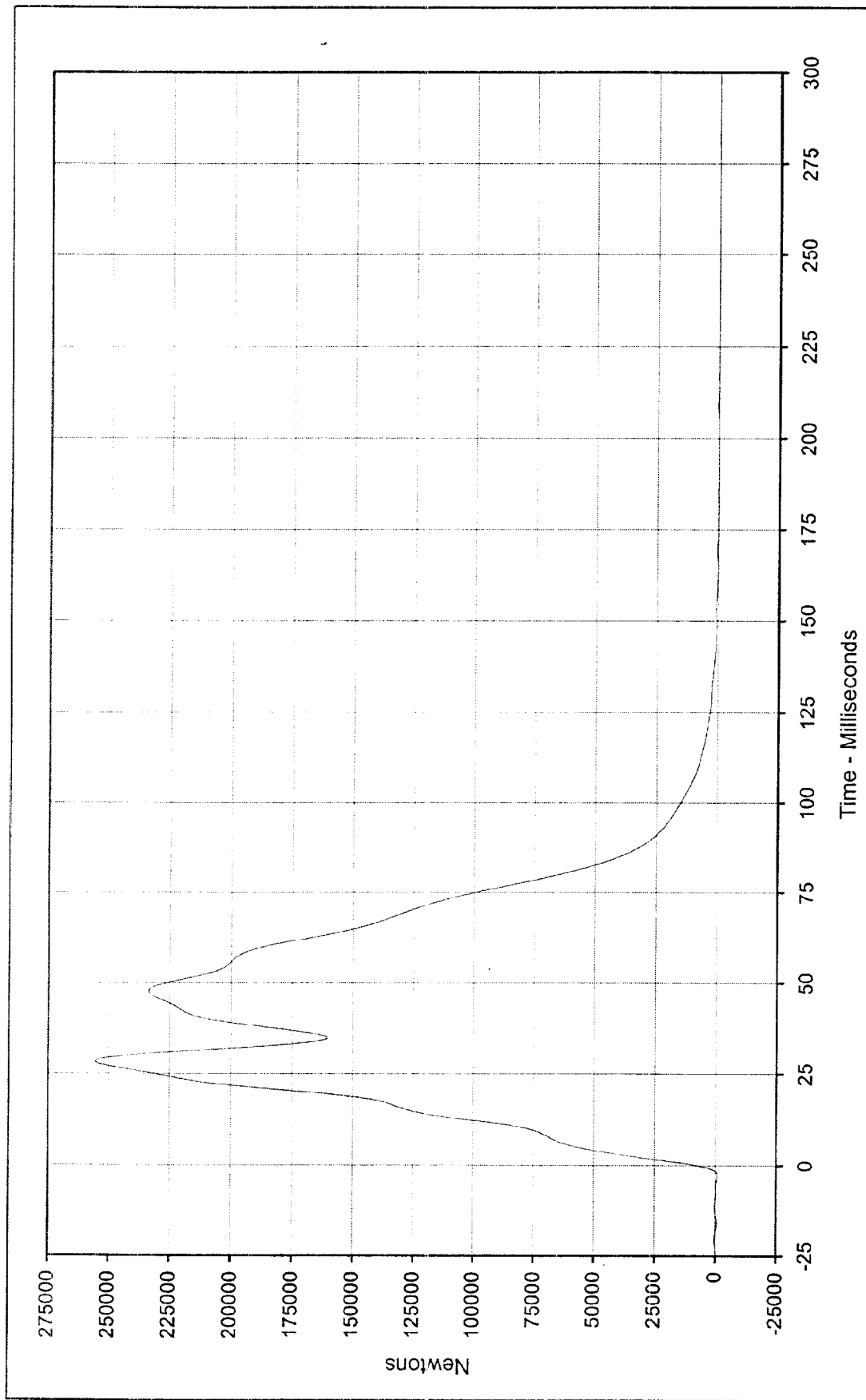
Curve Description:	Barrier Force C9		Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	303.9	at 29.6 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-498.1	at 25.4 Milliseconds			
SAE Filter Class:	60				
Date of Test:	1/8/99				
Curve Number:	FIL-124				





Curve Description:	Barrier Force Sum No. 1	Test Program:	1999 NHTSA 35 mph NCAP	No.: MX5401
Maximum Value:	58018.1 at 21.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan	
Minimum Value:	-1460.2 at 1.5 Milliseconds			
SAE Filter Class:	60			
Date of Test:	1/8/99			
Curve Number:	SUM-001			

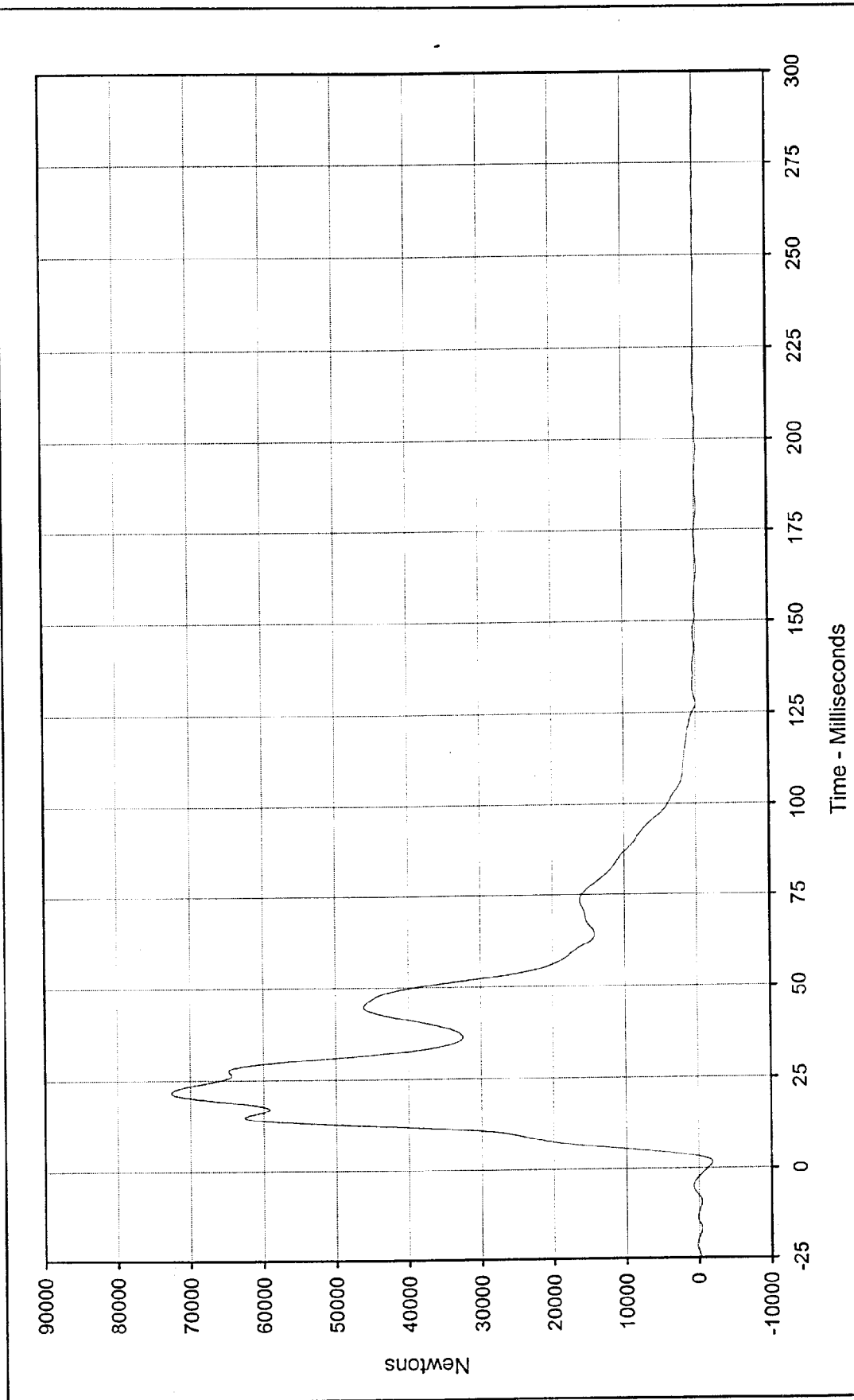




Curve Description: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Program:
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan

Barrier Force Sum No.2
 Maximum Value: 255659.1 at 28.4 Milliseconds
 Minimum Value: -123.4 at 249.1 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: SUM-002

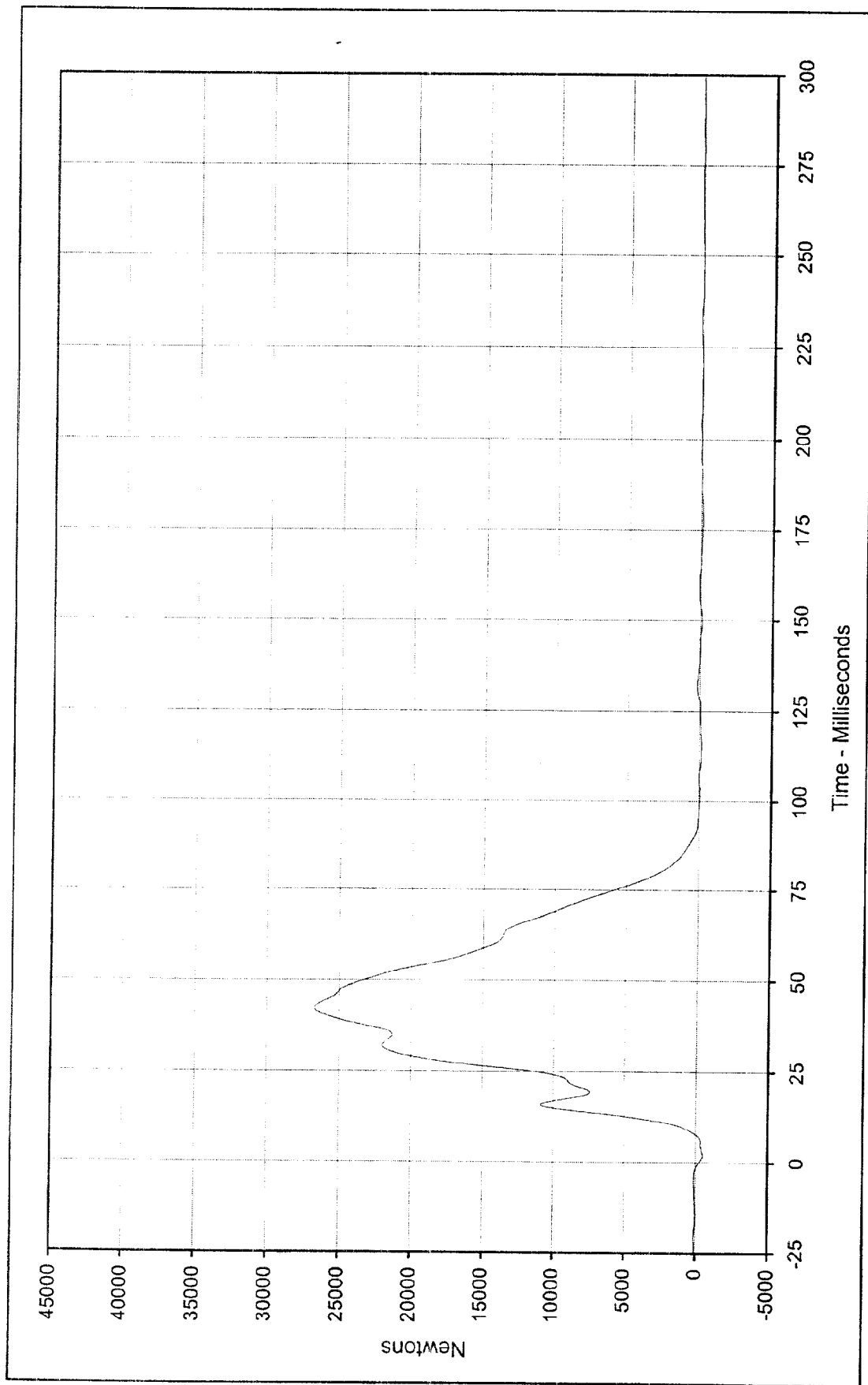




Curve Description: Barrier Force Sum No.3
 Maximum Value: 72610.3 at 21.6 Milliseconds
 Minimum Value: -1956.9 at 1.6 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: SUM-003

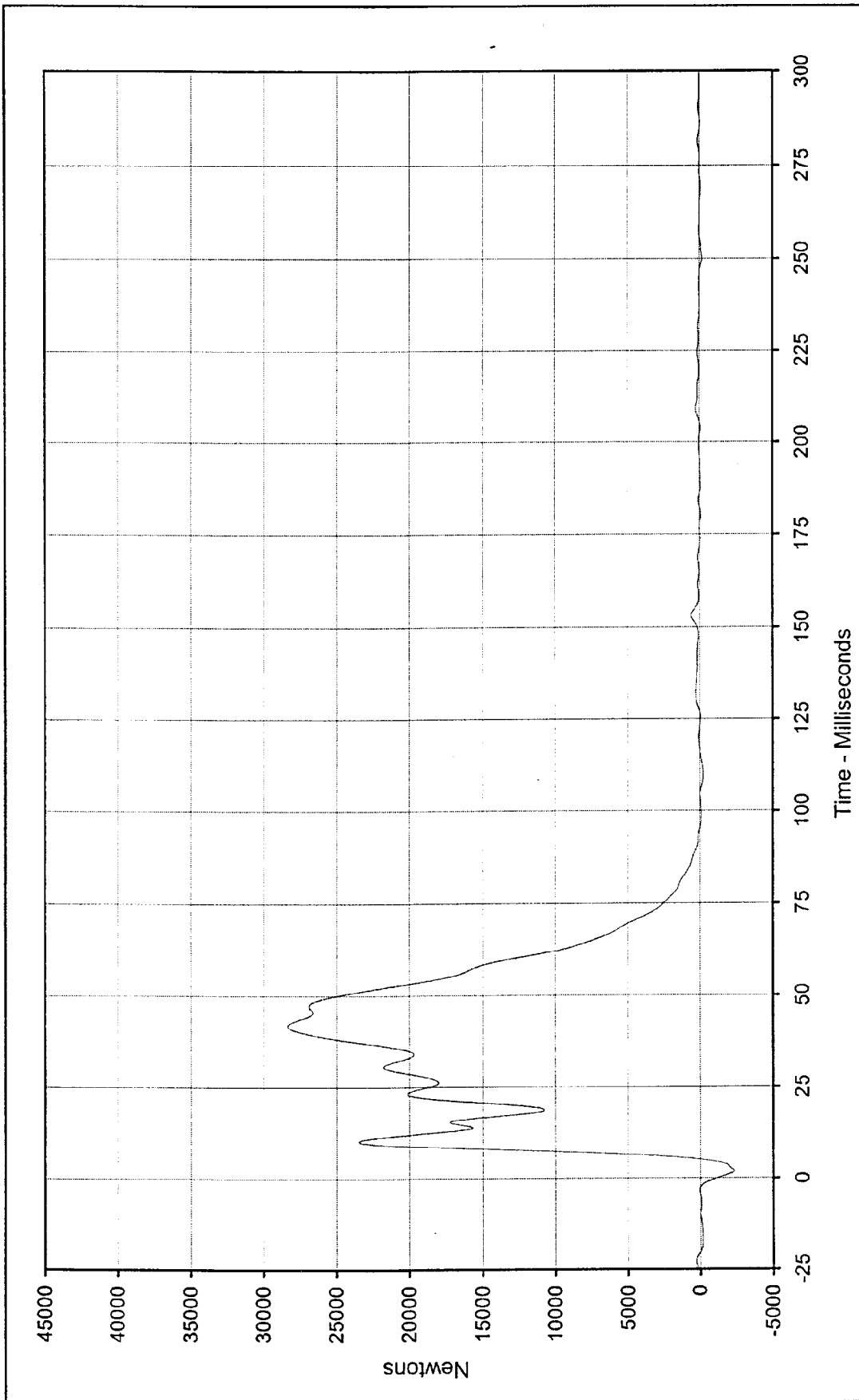
Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





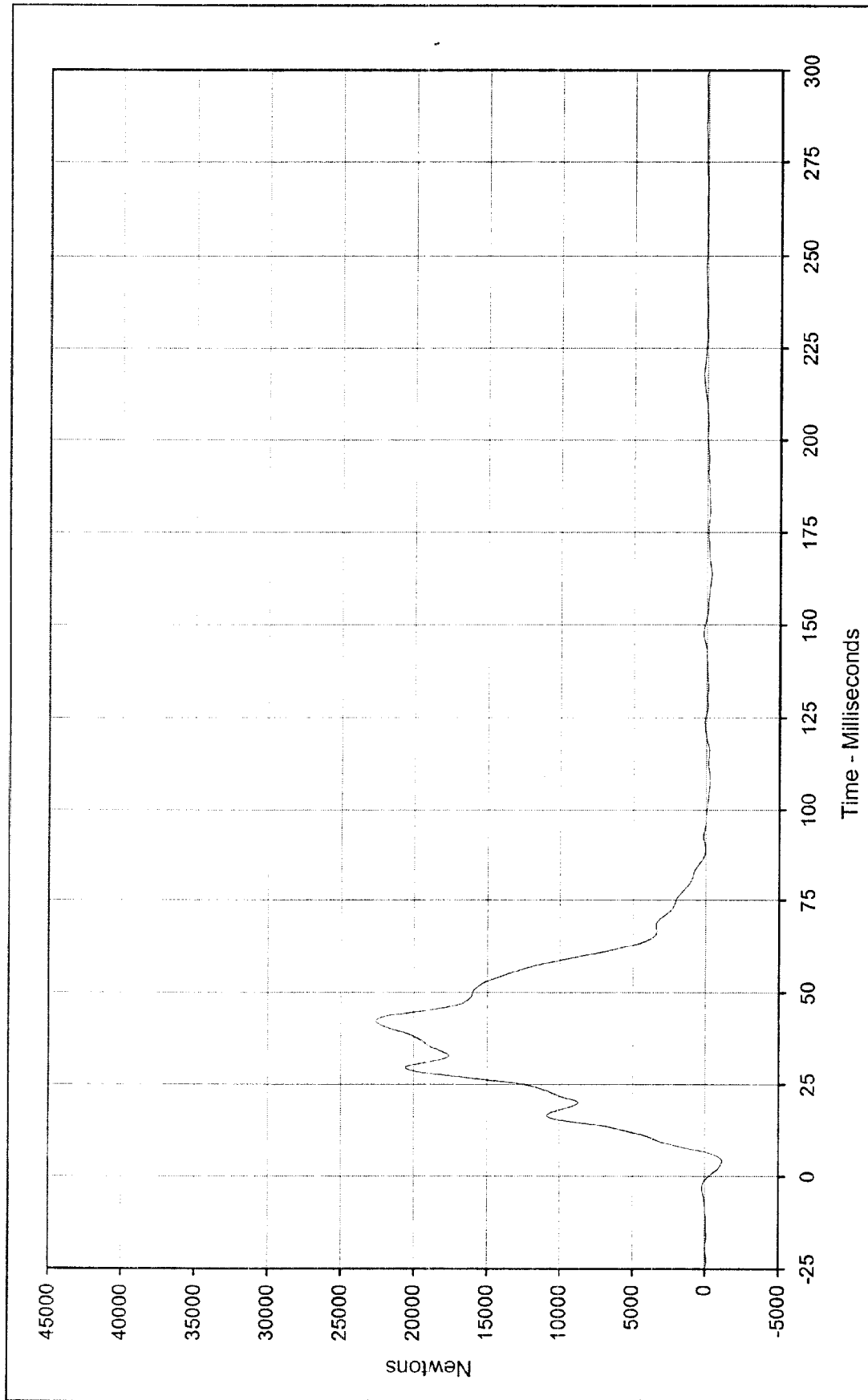
Curve Description:	Barrier Force Sum No.4	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	26700.8 at 42.2 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-515.7 at 2.0 Milliseconds		
SAE Filter Class:	60		
Date of Test:	1/8/99		
Curve Number:	SUM-004		





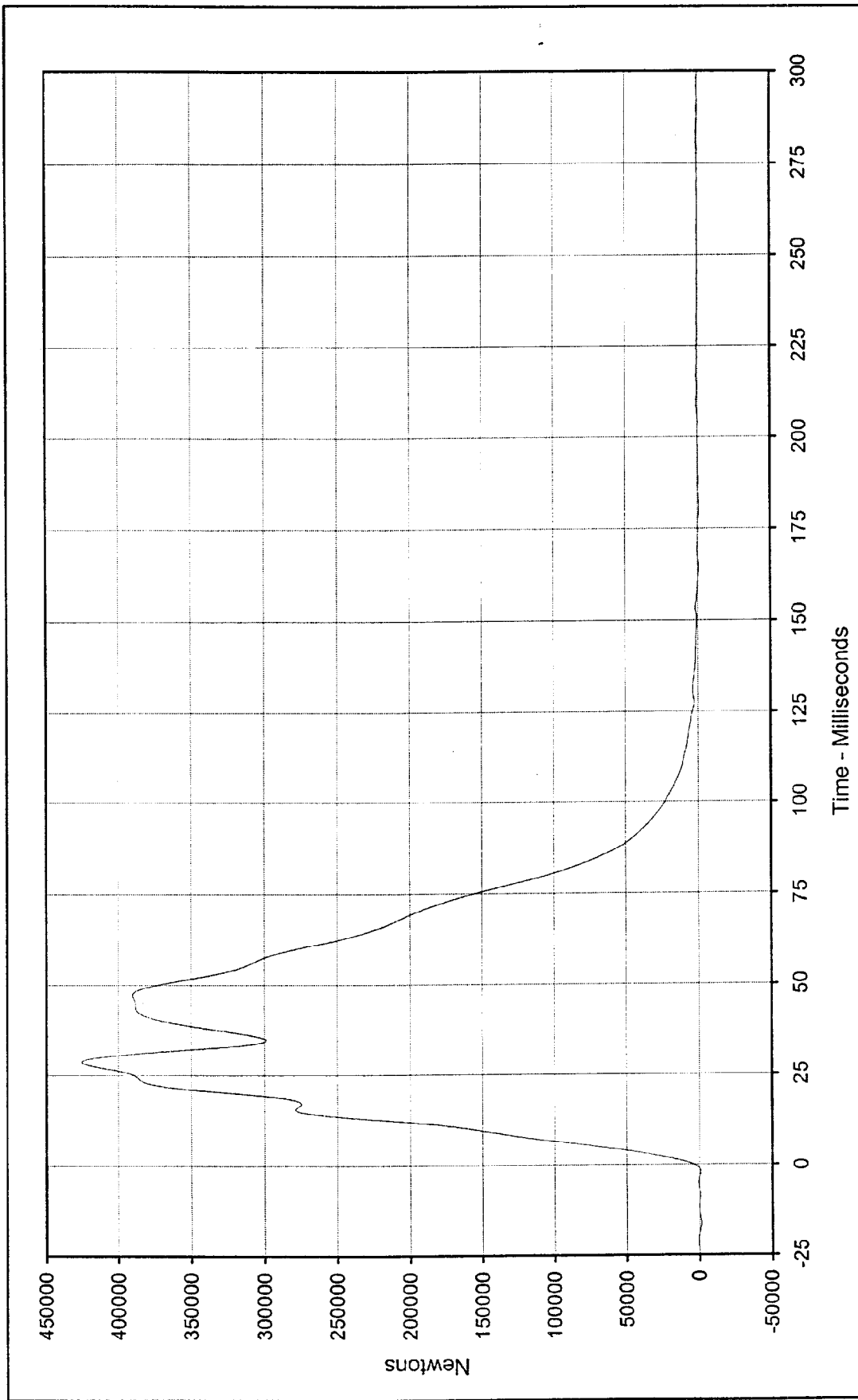
Curve Description:	Barrier Force Sum No.5	Test Program:	1999 NHTSA 35 mph NCAP No.: MX5401
Maximum Value:	28364.4 at 41.9 Milliseconds	Test Vehicle:	1999 Mazda Protegé DX 4 Door Sedan
Minimum Value:	-2316.2 at 1.9 Milliseconds		
SAE Filter Class:	60		
Date of Test:	1/8/99		
Curve Number:	SUM-005		





Curve Description: Barrier Force Sum No.6
 Maximum Value: 22605.7 at 42.4 Milliseconds
 Minimum Value: -1179.6 at 4.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: SUM-006

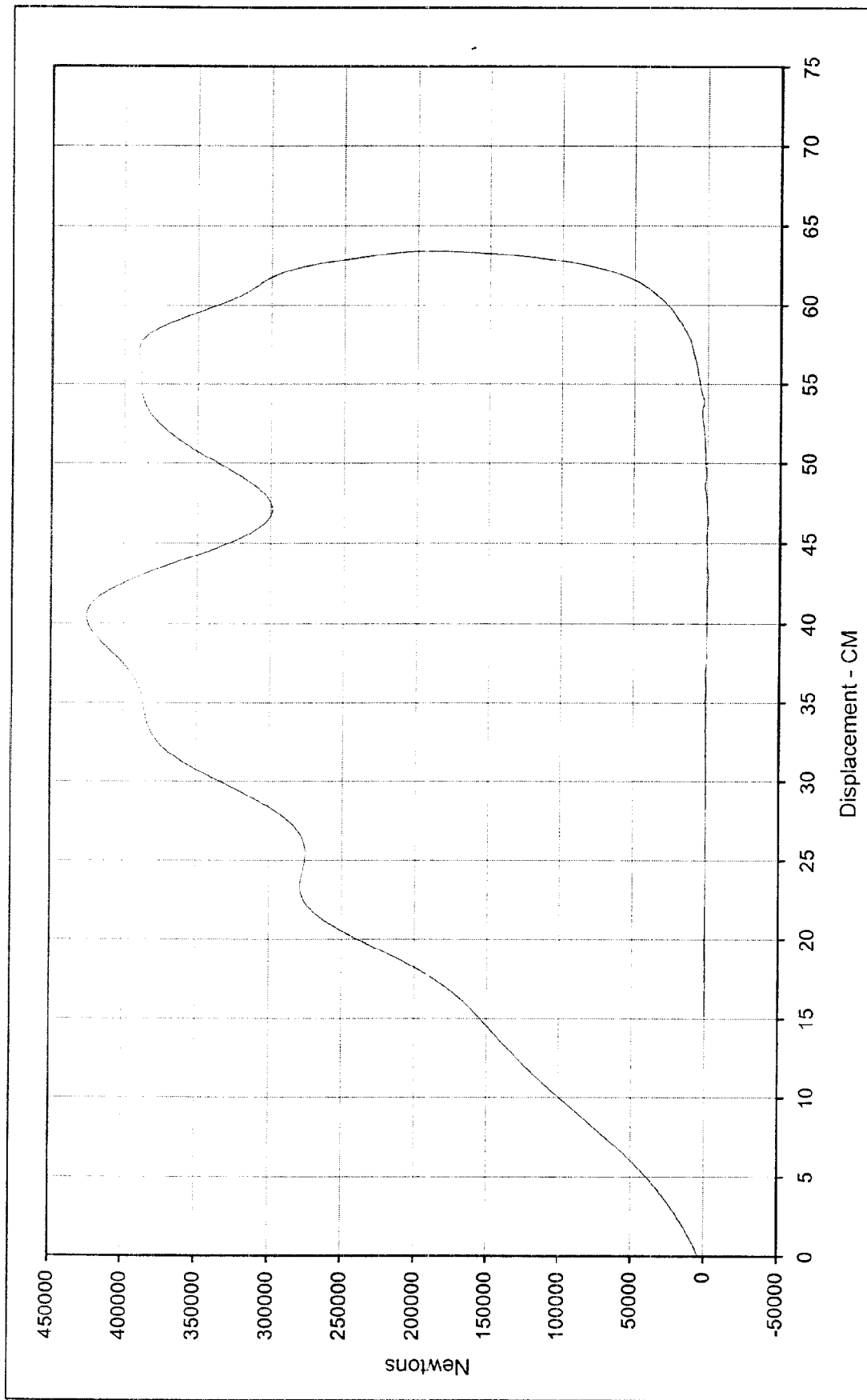




Curve Description: Barrier Force Sum Total
 Maximum Value: 425527.0 at 28.7 Milliseconds
 Minimum Value: -953.5 at 180.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 1/8/99
 Curve Number: SUM-007

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401
 Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan





Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 63.4 at 70.5 Milliseconds

Maximum Force: 425527.0 at 28.7 Milliseconds

SAE Filter Class: N/A

Date of Test: 1/8/99

Curve Number: XYY-001

Test Program: 1999 NHTSA 35 mph NCAP No.: MX5401

Test Vehicle: 1999 Mazda Protegé DX 4 Door Sedan



BARRIER LOAD CELL SUMMARY DATA

TEST VEHICLE: 1999 MAZDA PROTEGE DX 4 DOOR SEDAN NHTSA No.: MX5401
 TEST PROGRAM: 1999 NHTSA 35 MPH NCAP TEST DATE: 1/8/99

BARRIER LOAD CELL PEAK FORCES

Location	Units	Max	Time	Min	Time
Barrier Force A2	Newtons	3600.9	74.5	-643.6	18.9
Barrier Force A3	Newtons	3280.3	15.1	-528.5	2.3
Barrier Force A4	Newtons	28709.6	14.4	-745.3	1.4
Barrier Force A5	Newtons	33255.2	26.7	-775.8	1.4
Barrier Force A6	Newtons	11118.1	28.8	-640.2	0.8
Barrier Force A7	Newtons	3804.9	15.2	-564.6	2.2
Barrier Force A8	Newtons	5084.4	50.7	-470.4	18.6
Barrier Force A9	Newtons	446.5	28.3	-694.4	14.9
Barrier Force B2	Newtons	11869.9	11.8	-602.9	4.2
Barrier Force B3	Newtons	49175.9	21.5	-769.9	0.9
Barrier Force B4	Newtons	42722.0	42.4	-87.2	181.0
Barrier Force B5	Newtons	98284.8	48.5	-45.2	190.2
Barrier Force B6	Newtons	111651.8	28.2	-22.5	261.7
Barrier Force B7	Newtons	62633.3	20.8	-690.0	0.6
Barrier Force B8	Newtons	14747.8	28.2	-755.3	3.1
Barrier Force B9	Newtons	150.3	36.0	-1076.3	25.3
Barrier Force C2	Newtons	20505.2	39.7	-248.6	6.0
Barrier Force C3	Newtons	8082.7	51.9	-333.4	1.8
Barrier Force C4	Newtons	8561.0	51.0	-816.8	1.8
Barrier Force C5	Newtons	13674.3	41.2	-811.8	2.0
Barrier Force C6	Newtons	10315.9	24.3	-691.6	1.9
Barrier Force C7	Newtons	8422.3	17.2	-577.6	2.1
Barrier Force C8	Newtons	17021.3	29.5	-477.6	6.3
Barrier Force C9	Newtons	303.9	29.6	-498.1	25.4
Barrier Force Sum No.1	Newtons	58018.1	21.9	-1460.2	1.5
Barrier Force Sum No.2	Newtons	255659.1	28.4	-123.4	249.1
Barrier Force Sum No.3	Newtons	72610.3	21.6	-1956.9	1.6
Barrier Force Sum No.4	Newtons	26700.8	42.2	-515.7	2.0
Barrier Force Sum No.5	Newtons	28364.4	41.9	-2316.2	1.9
Barrier Force Sum No.6	Newtons	22605.7	42.4	-1179.6	4.0
Barrier Force Sum Total	Newtons	425527.0	28.7	-953.5	180.9

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

APPENDIX D
INSTRUMENTATION DATA CHANNEL ASSIGNMENTS

1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 35
1/8/99
1999 Mazda Protegé DX 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	N.m
11	NECK MOMENT	Y	GPUN01MY	Load cell, six axis neck	R. A. Denton	1716A	N.m
12	NECK MOMENT	Z	GPUN01MZ	Load cell, six axis neck	R. A. Denton	1716A	N.m
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	KEFF001	Load cell, Femur	R.A. Denton	2121	N
24	RIGHT FEMUR FORCE	Z	GPLC001	Load cell, Femur	G.S.E.	2430	N

1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 35
1/8/99
1999 Mazda Protégé DX 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
25	UP. TIBIA LEFT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
26	UP. TIBIA LEFT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
27	UP. TIBIA RIGHT MOM.	X	GPUT09MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
28	UP. TIBIA RIGHT MOM.	Y	GPUT09MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
29	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	N.m
30	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	N.m
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	N.m
33	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	N.m
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	CM
44	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 34
1/8/99
1999 Mazda Protégé DX 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	N.m
55	NECK MOMENT	Y	GPUN02MY	Load cell, six axis neck	R. A. Denton	1716A	N.m
56	NECK MOMENT	Z	GPUN02MZ	Load cell, six axis neck	R. A. Denton	1716A	N.m
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	KEFF002	Load cell, Femur	R.A. Denton	2121	N
68	RIGHT FEMUR FORCE	Z	KEFF003	Load cell, Femur	R.A. Denton	2121	N

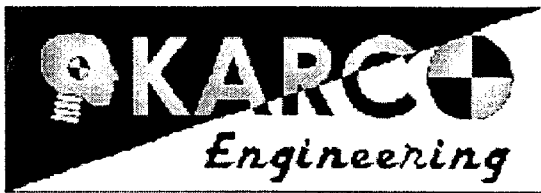
1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Driver A.T.D Serial Number 34
1/8/99
1999 Mazda Protégé DX 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
69	UP. TIBIA LEFT MOM.	X	GPU09MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
70	UP. TIBIA LEFT MOM.	Y	GPU09MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
71	UP. TIBIA RIGHT MOM.	X	GPU09MX	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
72	UP. TIBIA RIGHT MOM.	Y	GPU09MY	2 ch., Upper tibia gage	R. A. Denton	1583	N.m
73	LWR. TIBIA LEFT MOM.	X	GPLT09MX	3 ch., lower tibia gage	R. A. Denton	3093	N.m
74	LWR. TIBIA LEFT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	N.m
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	N.m
77	LWR. TIBIA RIGHT MOM.	Y	GPLT09MY	3 ch., lower tibia gage	R. A. Denton	3093	N.m
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	MM
88	SHOULDER BELT ELONG.	X	KEEP001	Linear pot., belt stretch	E.T.I.	LCP8-10 10K	MM/CM

1999 NHTSA 35 mph NCAP
Instrumentation Data Channel Assignments
Vehicle Accelerometers
1/8/99
1999 Mazda Protégé DX 4 Door Sedan

CH.	LOCATION	AXIS	IDENT. NO.	DESCRIPTION	MFR	MODEL	UNITS
89	Left Rear X-Member (Pri.)	X	KEVA005	Accel., Vehicle block	I.C. Sensor	3031-500	G
90	Right Rear X-Member (Pri.)	X	KEVA006	Accel., Vehicle block	I.C. Sensor	3031-200	G
91	Engine Top	X	KEVA011	Accel., Vehicle block	I.C. Sensor	3031-200	G
92	Engine Bottom	X	KEVA007	Accel., Vehicle block	I.C. Sensor	3031-500	G
93	Left Brake Caliper	X	KEVA008	Accel., Vehicle block	I.C. Sensor	3031-500	G
94	Right Brake Caliper	X	KEVA009	Accel., Vehicle block	I.C. Sensor	3031-500	G
95	Instrument Panel	X	KEVA004	Accel., Vehicle block	I.C. Sensor	3031-500	G
96	Left Rear X-Member (Rednt.)	X	KEVA010	Accel., Vehicle block	I.C. Sensor	3031-200	G

APPENDIX E
DUMMY CALIBRATION DATA



Hybrid III Calibration Data Sheet

50TH Percentile Male

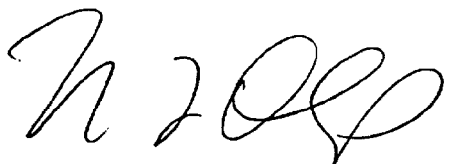
Left Knee Impact Test

ATD Serial No.: 34

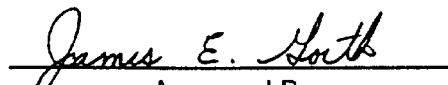
Part Serial No.: n/a

Test I.D.: KI12F

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
Probe Velocity	m/s	2.073 to 2.134	2.095	Pass
Peak Probe Force	Newtons	4715 to 5782	5322.1	Pass
Overall Test Results				Pass



Laboratory Technician



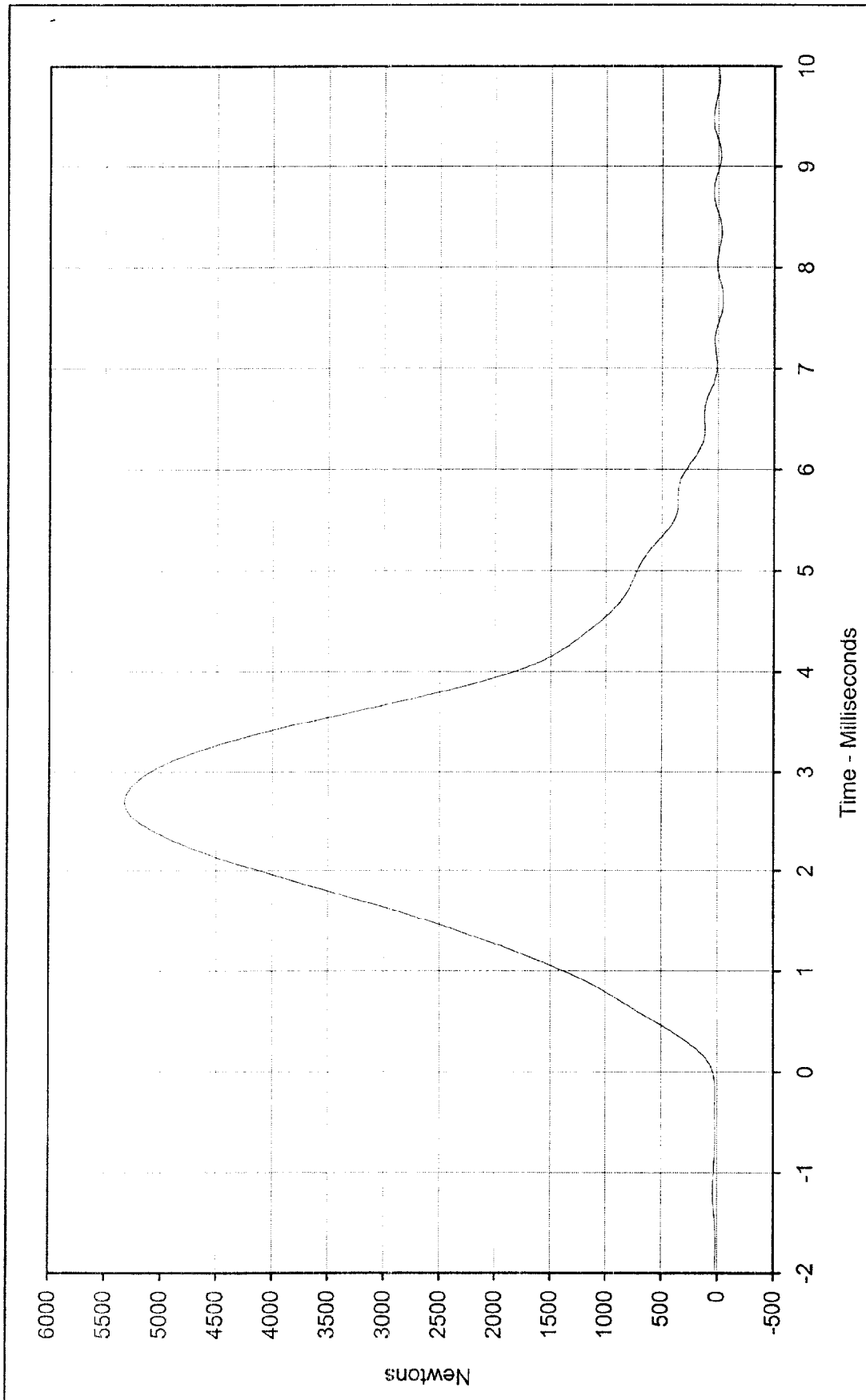
Approved By

December 28, 1998

Test Date

1/12/99

Date



Curve Description:		Testing Program	
Maximum Value:		Hybrid III Left Knee Impact Test	
Minimum Value:		Part S/N: n/a Test I.D.: K12F	
SAE Filter Class:			
Date of Test:			
ATD Serial No.:			

Probe Force

5322.1

at

2.7

Milliseconds

Minimum Value:

-46.0

at

7.7

Milliseconds

SAE Filter Class:

600

Date of Test:

12/28/98

ATD Serial No.:

34





Hybrid III Calibration Data Sheet

50TH Percentile Male

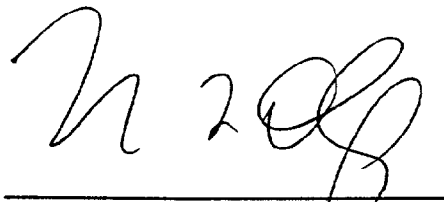
Right Knee Impact Test

ATD Serial No.: 34

Part Serial No.: n/a

Test I.D.: KI12E

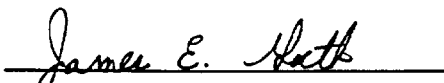
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	2.073 to 2.134	2.088	Pass
Peak Probe Force	Newtons	4715 to 5782	5417.2	Pass
Overall Test Results				Pass



Laboratory Technician

December 28, 1998

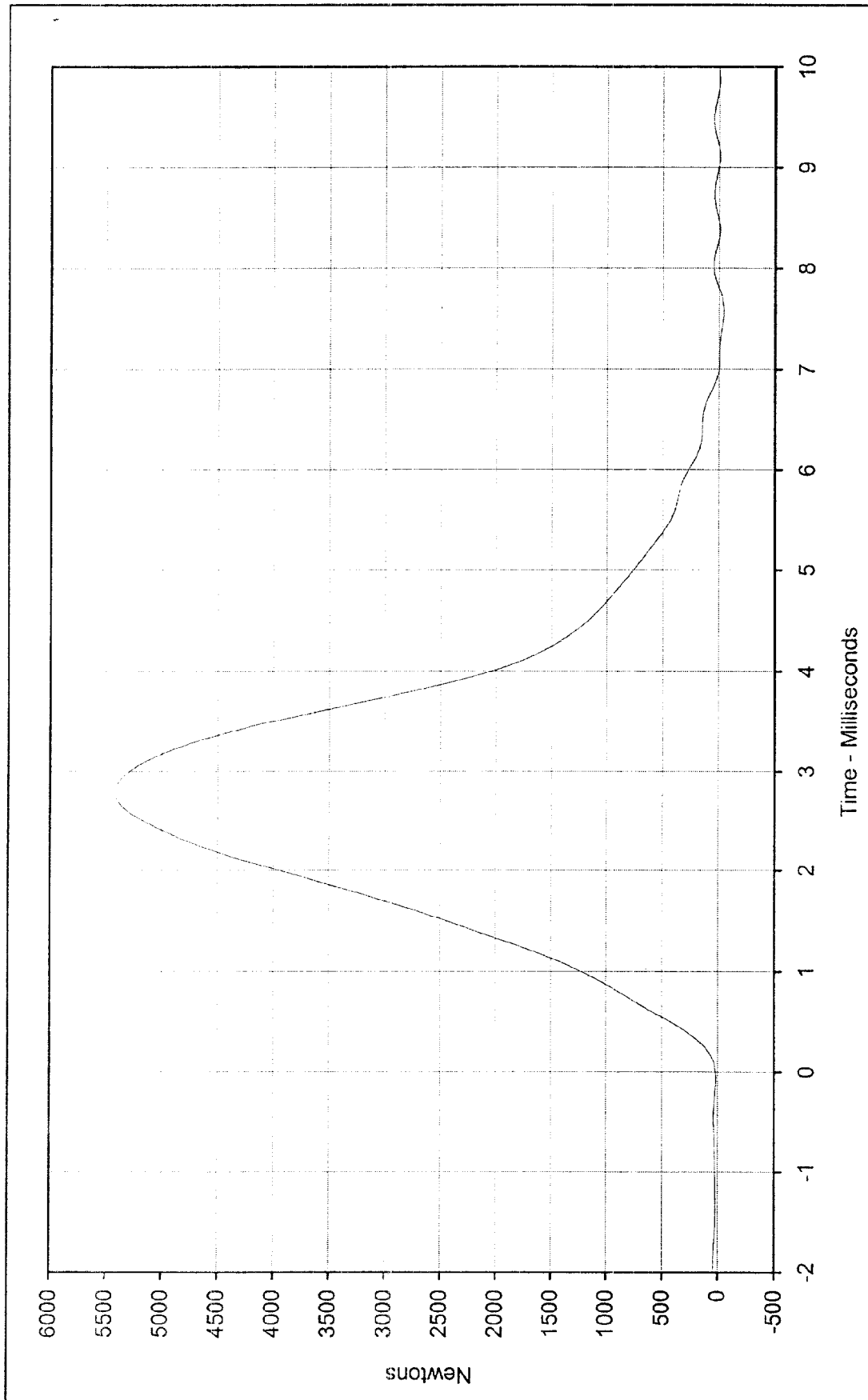
Test Date



Approved By

1/12/99

Date



Curve Description:		Testing Program	
Maximum Value:		Hybrid III Right Knee Impact Test	
Minimum Value:		Part S/N: n/a Test I.D.: K112E	
SAE Filter Class:		Test Information:	
Date of Test:		12/28/98	
ATD Serial No.:		34	





Hybrid III Calibration Data Sheet

50TH Percentile Male

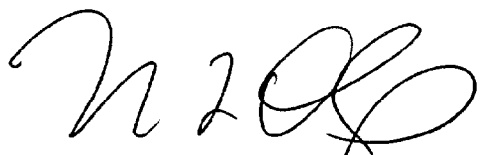
Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: n/a

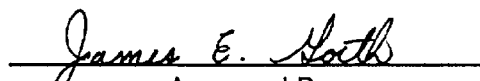
Test I.D.: HD12C

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	266.8	Pass
Peak Lateral Acceleration	G's	≤15.0	4.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

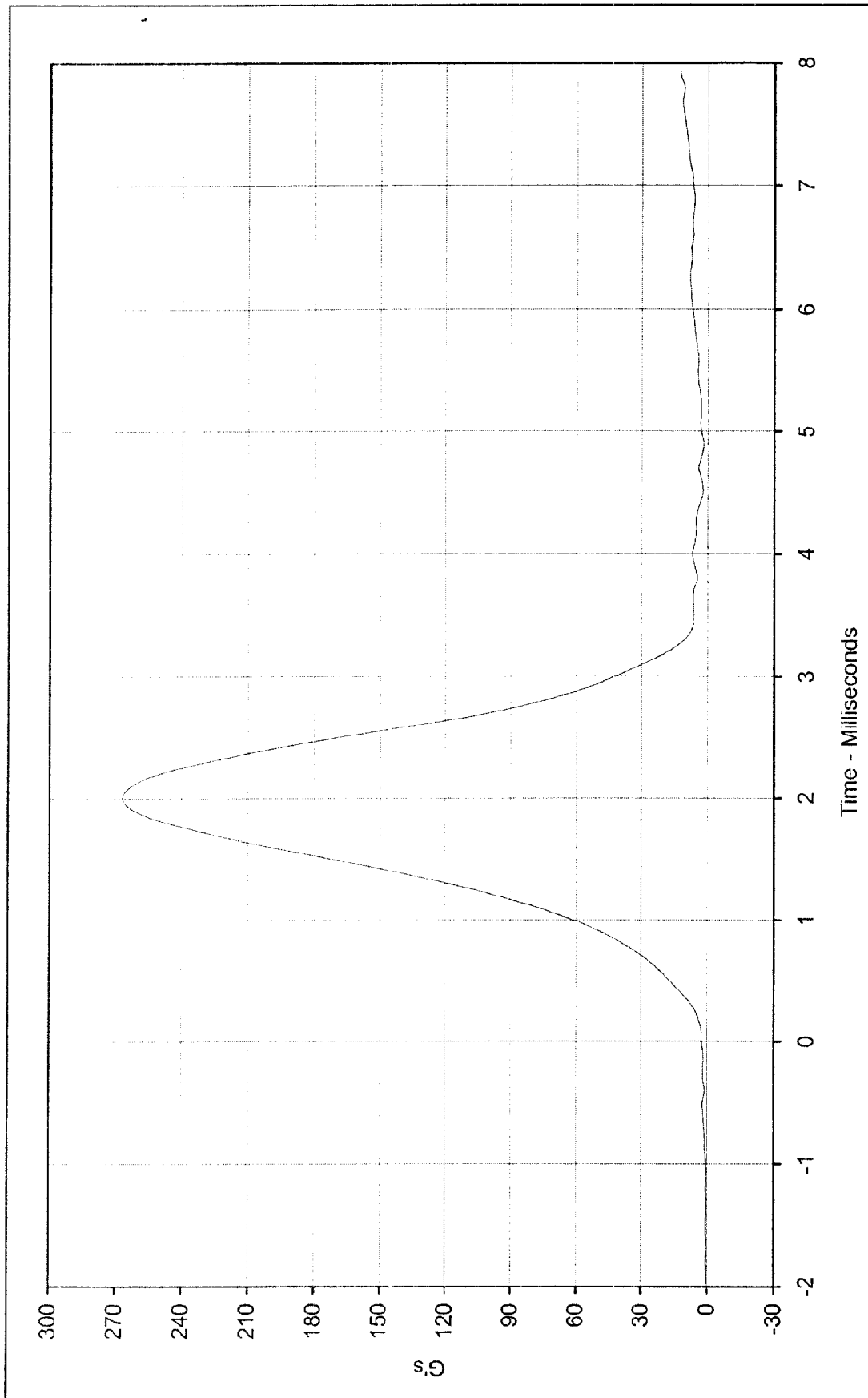
December 28, 1998

Test Date


Approved By

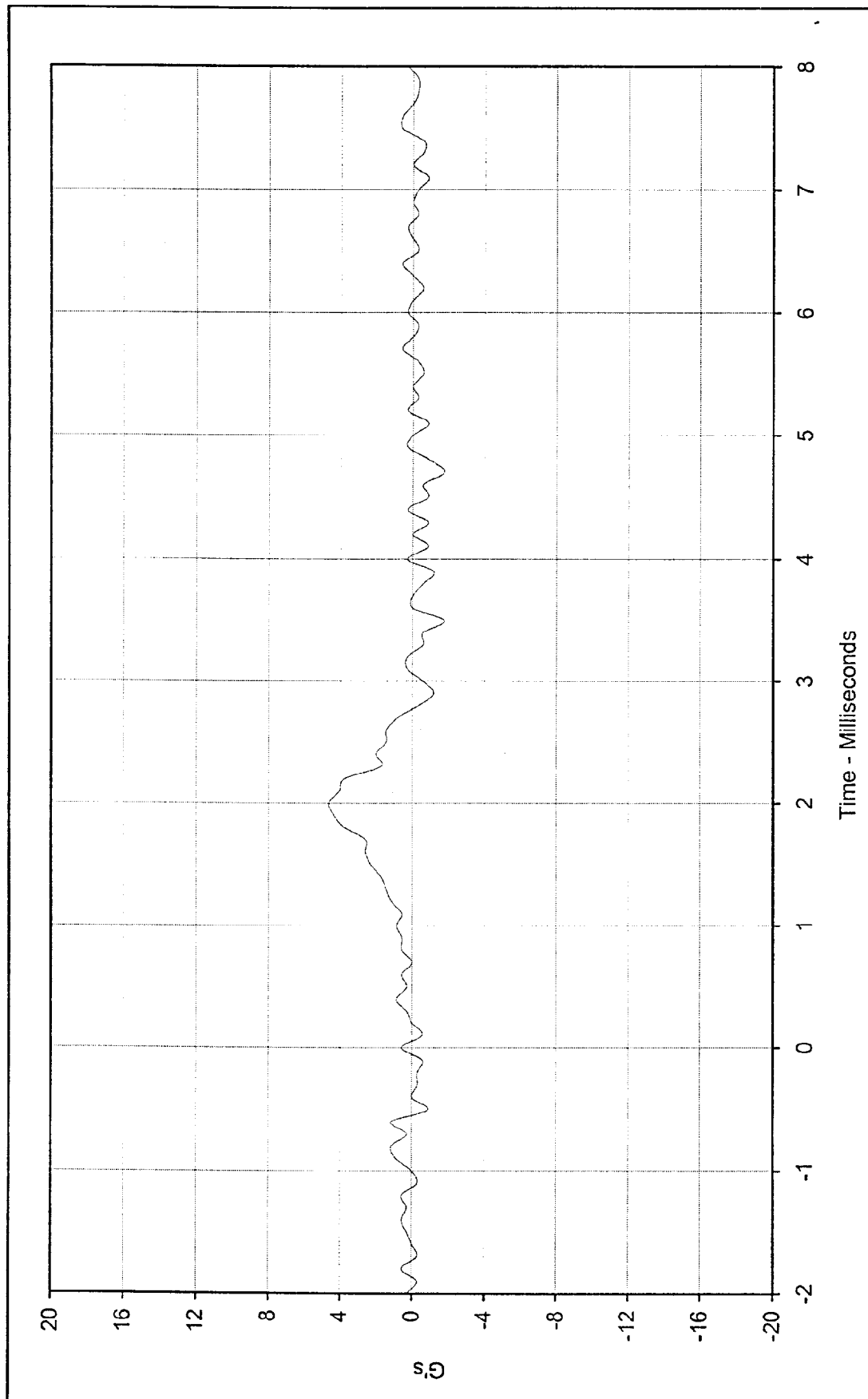
1/12/99

Date



Curve Description: Testing Program Hybrid III Head Drop Calibration (Male)
 Maximum Value: 266.8 at 2.0 Milliseconds
 Minimum Value: 0.3 at -2.0 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/28/98
 ATD Serial No.: 034





Curve Description: Hybrid III Head Drop Calibration (Male)
 Testing Program: S/N of Part: n/a Test I.D.: HD12C

Head Acceleration Y Axis
 Maximum Value: 4.6 at 2.0 Milliseconds
 Minimum Value: -1.7 at 3.5 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/28/98
 ATD Serial No.: 034





Hybrid III Calibration Data Sheet

50TH Percentile Male

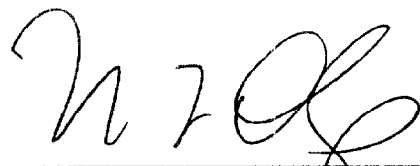
Thorax Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: CH12C

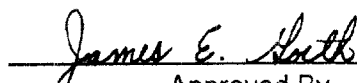
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5430	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.46	Pass
Internal Hysteresis	%	69 to 85	74.8	Pass
Overall Test Results				Pass



Laboratory Technician

December 29, 1998

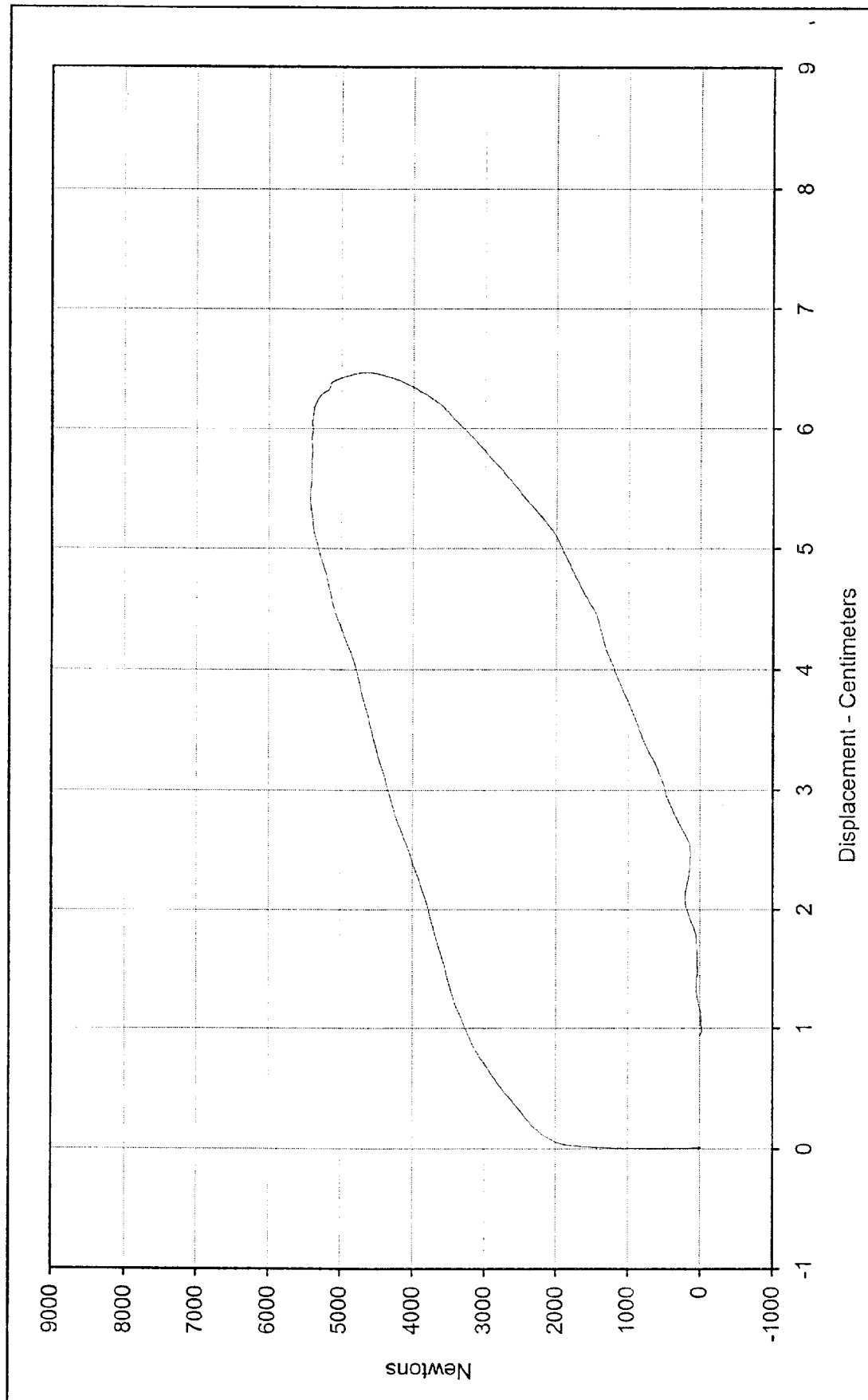
Test Date



Approved By

1/12/99

Date



Curve Description:		Probe Force vs. Chest Displacement	Testing Program	Hybrid III Thorax Impact Test
Probe Force:	5429.9	Newtons	Test Information:	
Chest Displ.:	6.46	Centimeters	S/N of Part: N/A Test I.D.: CH12C	
SAE Filter Class:	180			
Date of Test:	12/29/98			
ATD Serial No.:	034			





Hybrid III Calibration Data Sheet

50TH Percentile Male

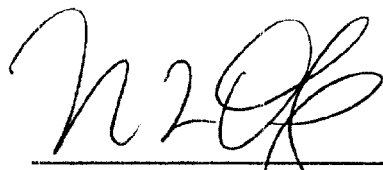
Neck Flexion Test

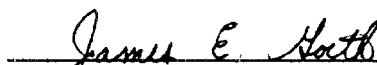
ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: NF12C

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	39	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.3	Pass
	20 Msec.	G's	17.6 to 22.6	20.7	Pass
	30 Msec.	G's	12.5 to 18.5	18.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	37.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	66.9	Pass
	Time	Msec.	57.0 to 64.0	60.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	113.2	Pass
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	89.0	Pass
	Time	Msec.	47.0 to 58.0	49.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.8	Pass
Overall Test Results					Pass


 Laboratory Technician

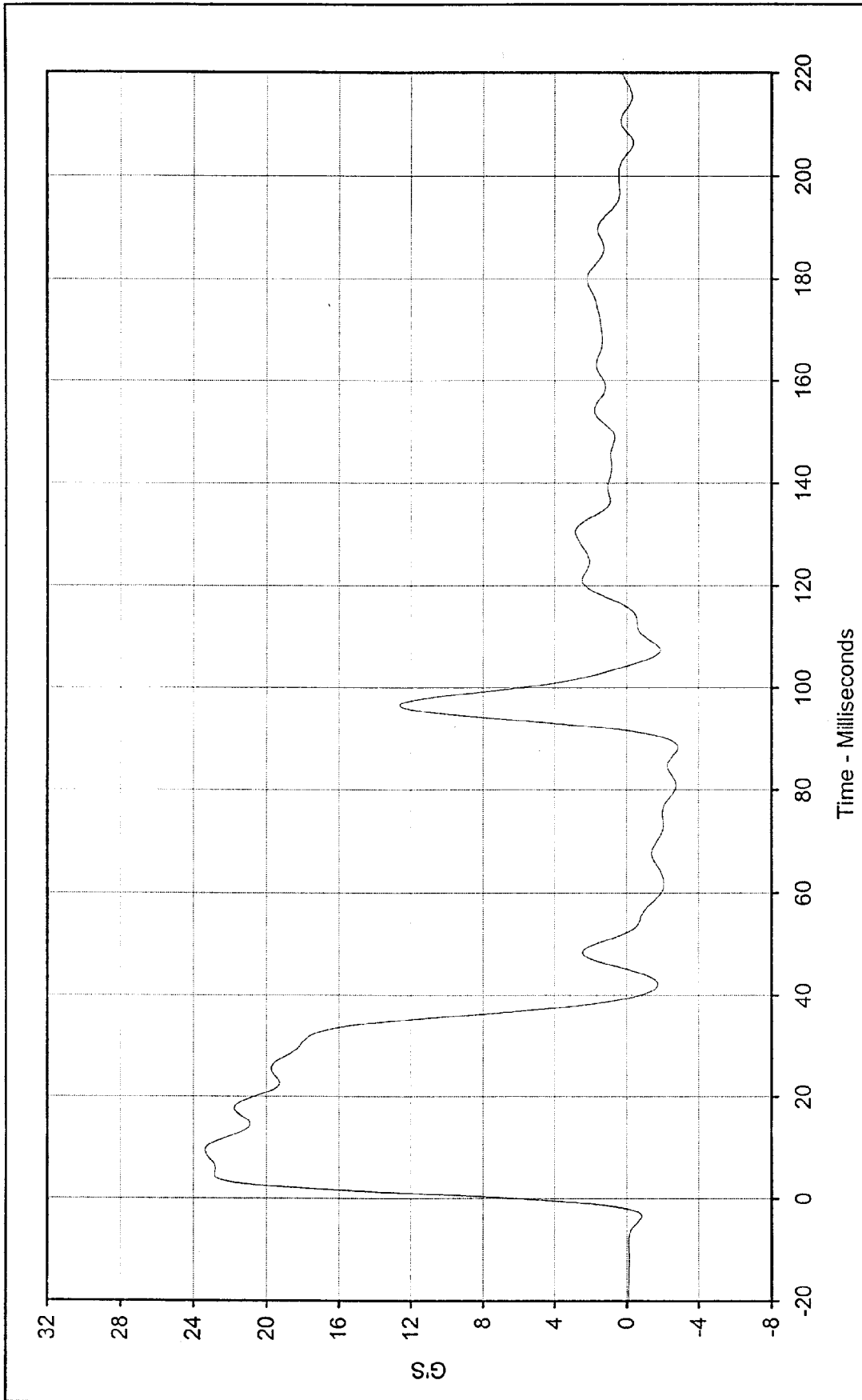

 Approved By

December 29, 1998

Test Date

1/12/99

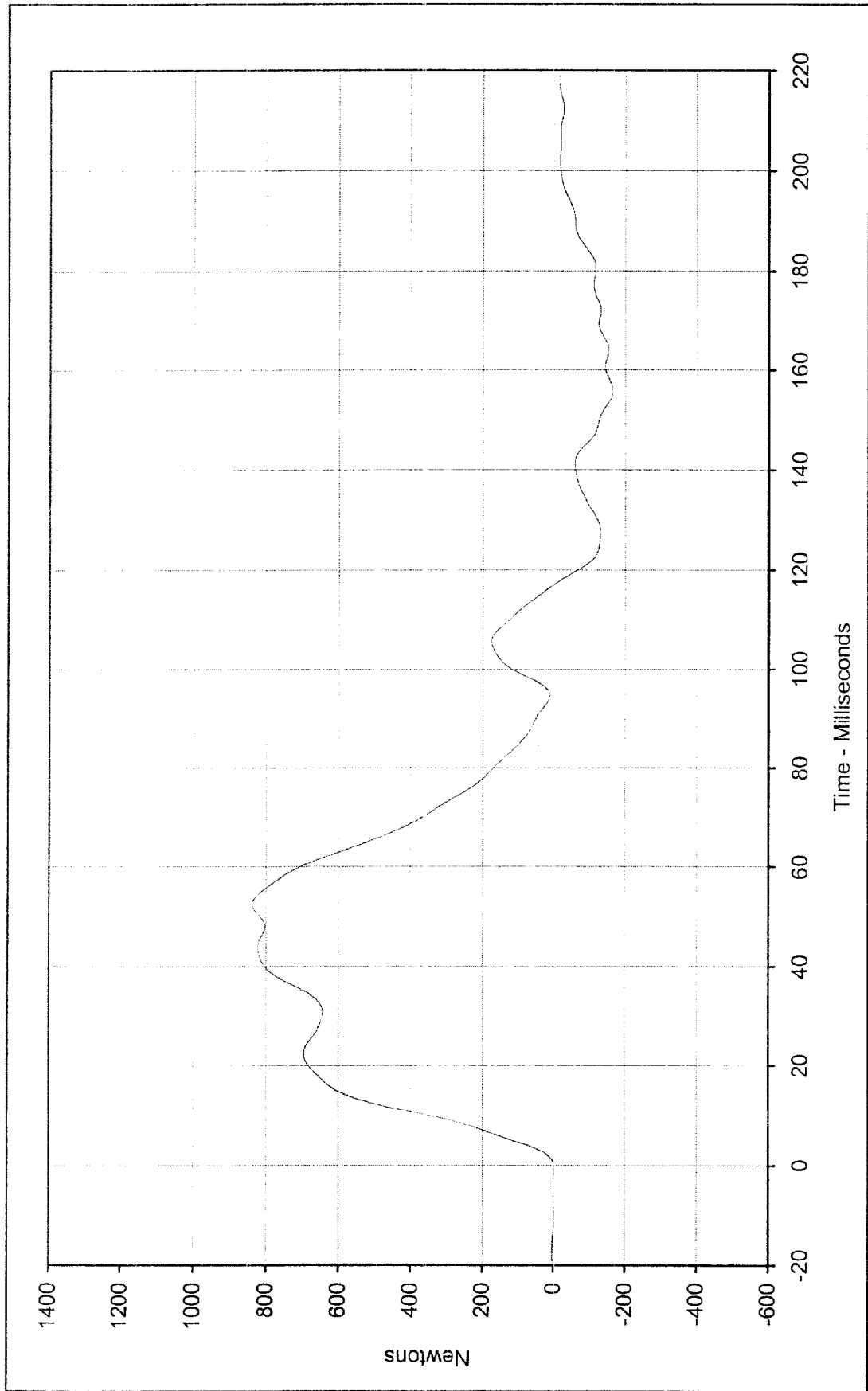
Date



Curve Description: Hybrid III Neck Flexion Test (Male)
 Testing Program: S/N of Part: n/a Test I.D.: NF12C

Pendulum Deceleration
 Maximum Value: 23.4 at 9.5 Milliseconds
 Minimum Value: -2.8 at 88.2 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/29/98
 ATD Serial No.: 034

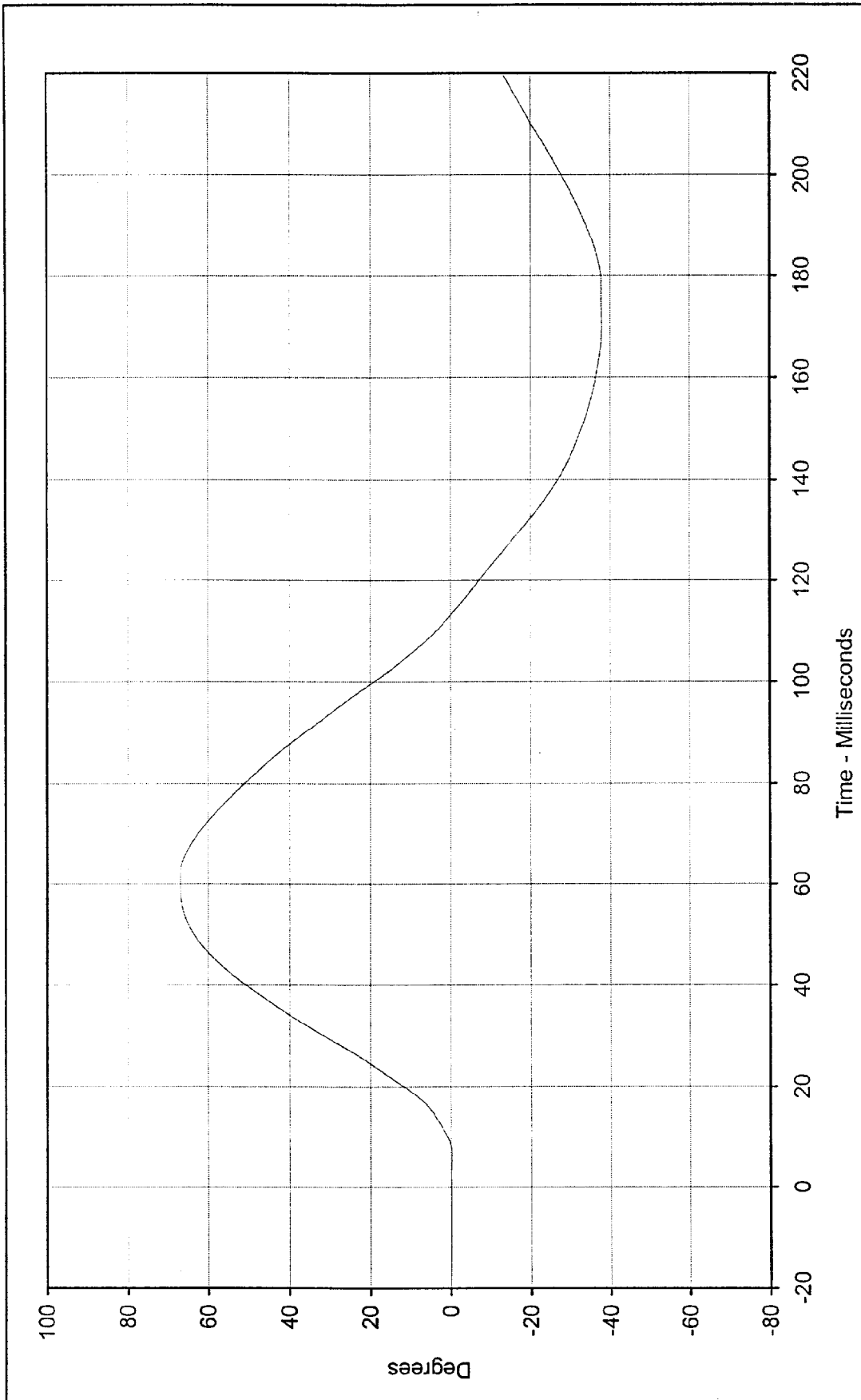




Curve Description: Neck Force X
 Maximum Value: 837.5 at 52.5 Milliseconds
 Minimum Value: -164.9 at 155.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/29/98
 ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NF12C





Curve Description: Hybrid III Neck Flexion Test (Male)

Maximum Value: 66.9 at 60.9 Milliseconds

Minimum Value: -37.9 at 170.1 Milliseconds

SAE Filter Class: 60

Date of Test: 12/29/98

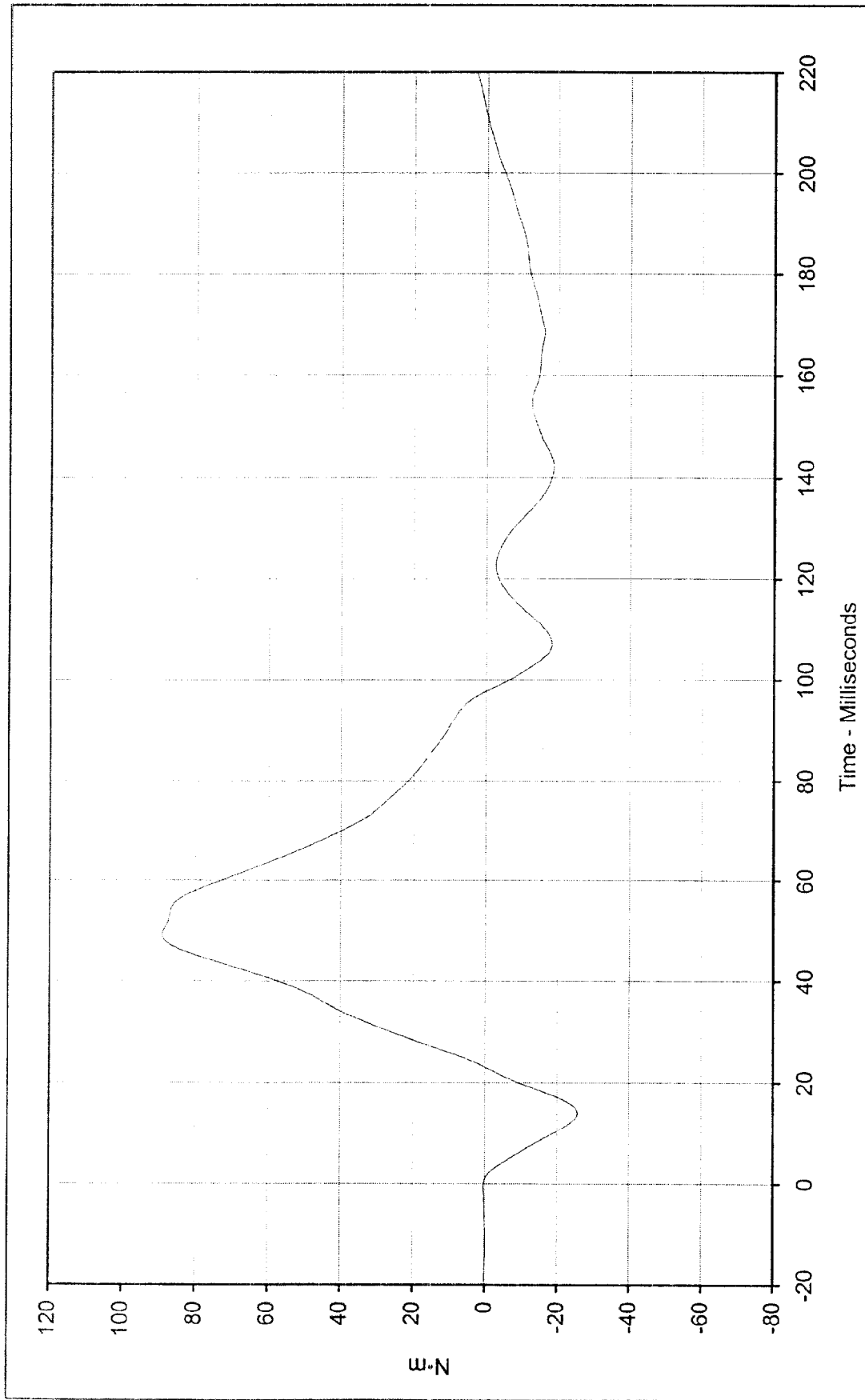
ATD Serial No.: 034

Testing Program

Test Information:

S/N of Part: n/a Test I.D.: NF12C





Curve Description:	Moment About Occipital Condyles	Testing Program	Hybrid III Neck Flexion Test (Male)
Maximum Value:	89.0 at 49.1 Milliseconds	Test Information:	S/N of Part: n/a Test I.D.: NF12C
Minimum Value:	-25.8 at 13.9 Milliseconds		





Hybrid III Calibration Data Sheet

50TH Percentile Male

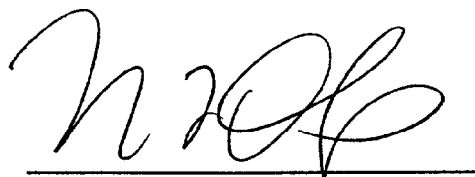
Neck Extension Test

ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: NE12D

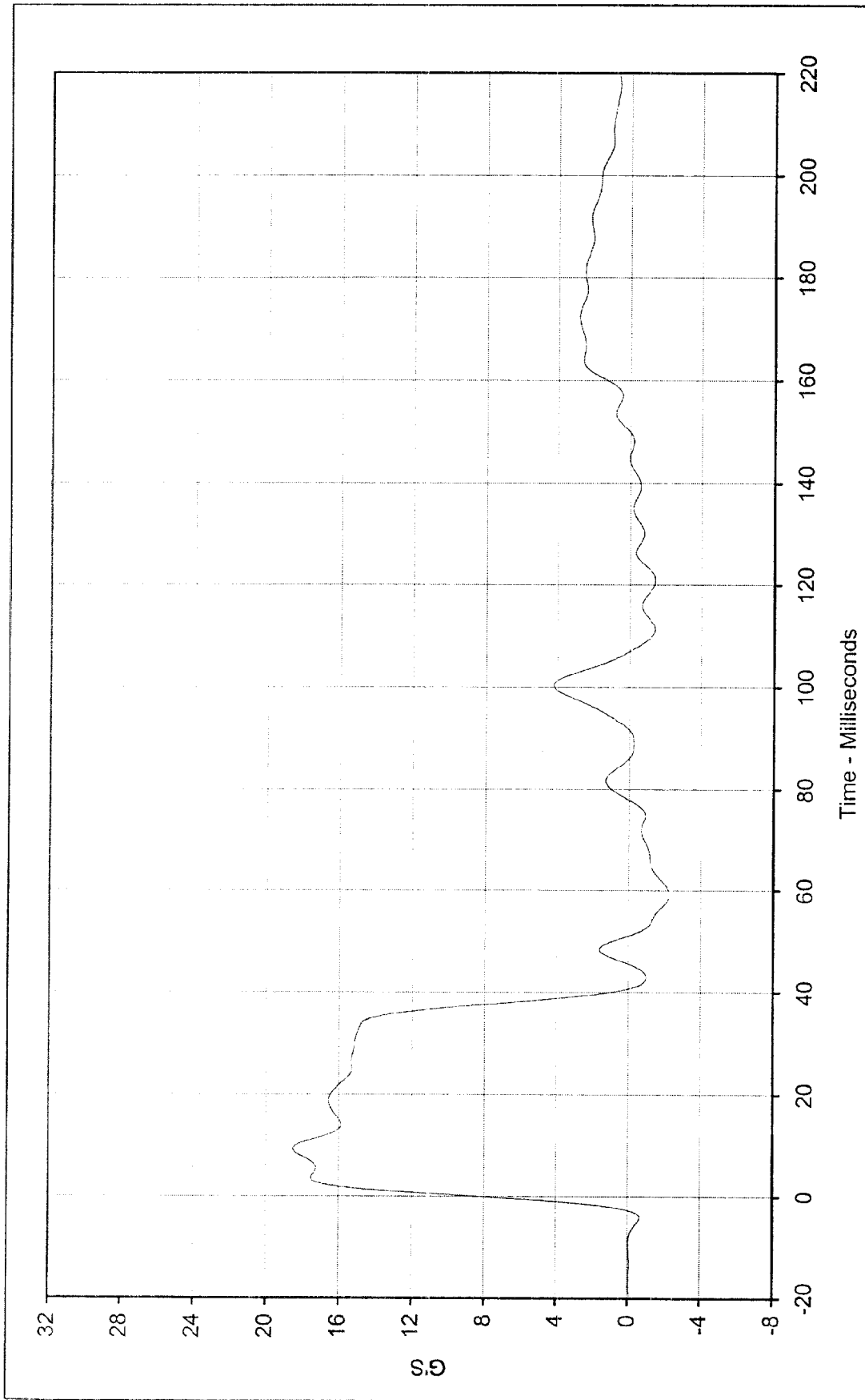
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	36	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.3	Pass
	20 Msec.	G's	14.0 to 19.0	16.5	Pass
	30 Msec.	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	38.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	95.6	Pass
	Time	Msec.	72.0 to 82.0	79.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	155.2	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-65.4	Pass
	Time	Msec.	65.0 to 79.0	68.0	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	137.5	Pass
Overall Test Results				Pass	


 Laboratory Technician


 Approved By

December 29, 1998
 Test Date

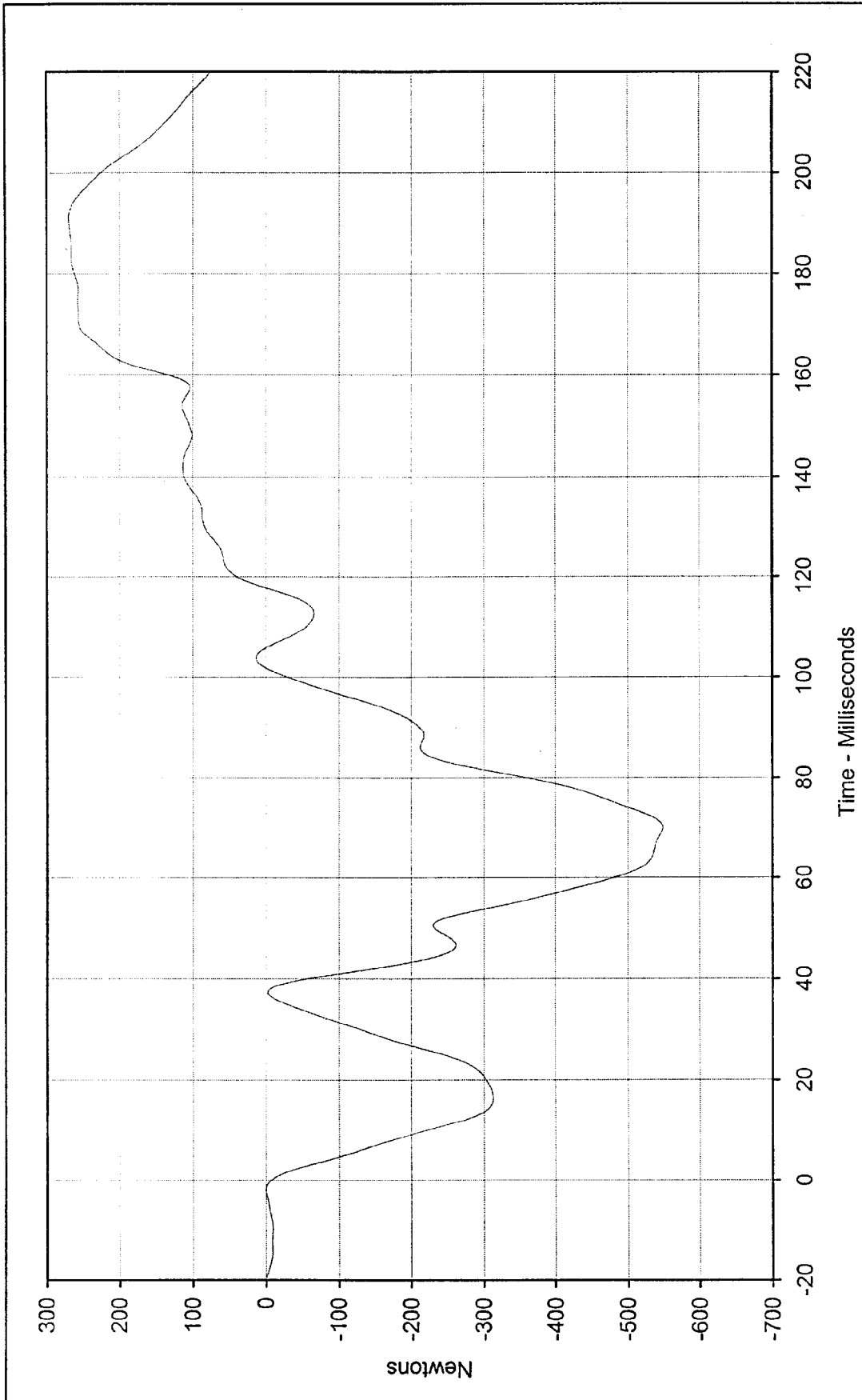
1/12/99
 Date



Curve Description: Pendulum Deceleration
 Maximum Value: 18.5 at 9.3 Milliseconds
 Minimum Value: -2.3 at 59.1 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/29/98
 ATD Serial No.: 034

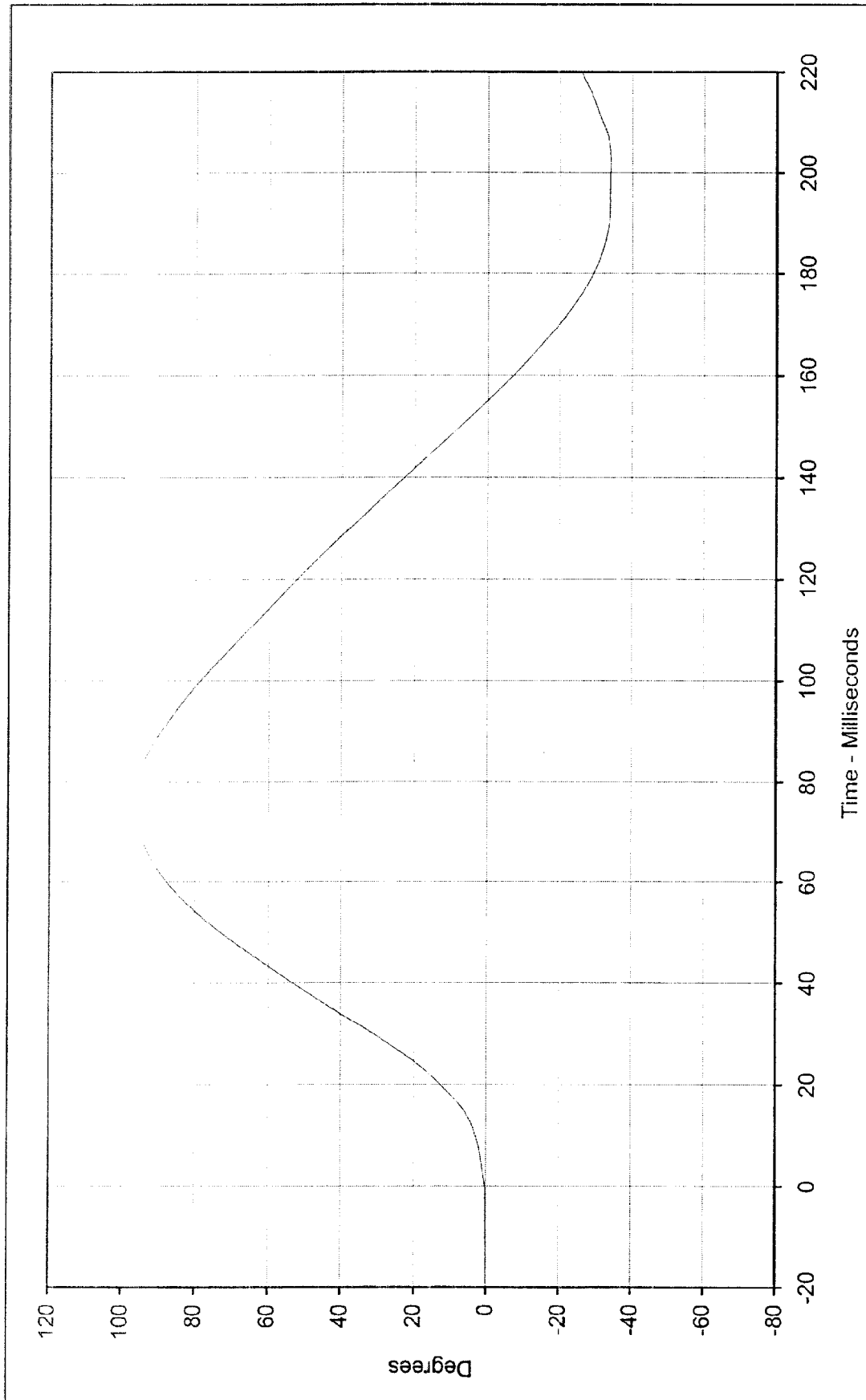
Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE12D





Curve Description:		Neck Force X		Testing Program	Hybrid III Neck Extension Test (Male)
Maximum Value:	270.0	at	191.2	Test Information:	S/N of Part: n/a
Minimum Value:	-548.6	at	70.0	Test I.D.:	NE12D
SAE Filter Class:	60				
Date of Test:	12/29/98				
ATD Serial No.:	034				





Curve Description:

"D" Plane Rotation

Maximum Value: 95.6 at 79.1 Milliseconds

Minimum Value: -34.0 at 201.8 Milliseconds

SAE Filter Class:

60

Date of Test:

12/29/98

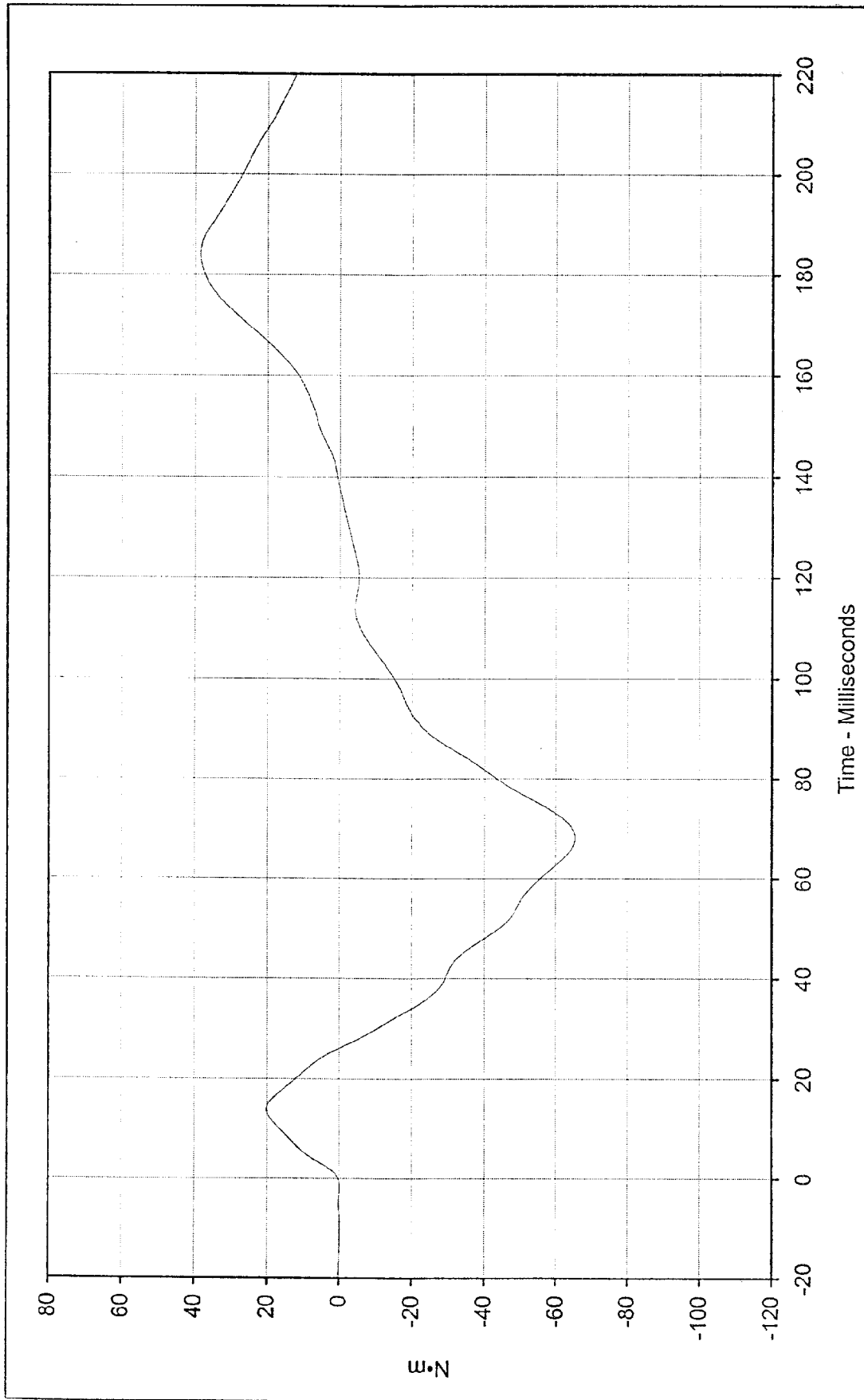
ATD Serial No.:

034

Testing Program Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NE12D





Testing Program: Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE12D

Curve Description: Moment About Occipital Condyles
 Maximum Value: 38.5 at 184.0 Milliseconds
 Minimum Value: -65.4 at 68.0 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/29/96
 ATD Serial No.: 034





Hybrid III Calibration Data Sheet

50TH Percentile Male

External Measurements

ATD Serial No.: 034

Part Serial No.: N/A

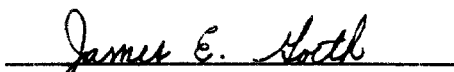
Test I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.9	Pass
Laboratory relative humidity	%	10 to 70	44	Pass
A - Total sitting height	mm	878.8 to 889.0	888.5	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	506.0	Pass
C - "H" point height	mm	83.8 to 88.9	88.0	Pass
D - "H" point from seat back	mm	134.6 to 139.7	136.5	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	93.1	Pass
F - Thigh clearance	mm	139.7 to 154.9	152.4	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	304.0	Pass
H - Skull cap to back line	mm	40.6 to 45.7	44.0	Pass
I - Shoulder to elbow length	mm	330.2 to 345.4	343.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	208.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	603.0	Pass
L - Popliteal length	mm	429.3 to 454.7	445.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	487.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	471.0	Pass
O - Chest depth	mm	213.4 to 228.6	223.0	Pass
P - Foot length	mm	251.5 to 266.7	260.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	435.0	Pass
W - Foot breadth	mm	91.4 to 106.7	92.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	980.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	864.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	430.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	229.0	Pass
Overall Test Results				Pass


 Laboratory Technician

December 31, 1998

Test Date


 Approved By

1/12/99

Date



Hybrid III Calibration Data Sheet

50TH Percentile Male

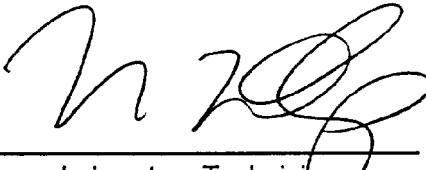
Left Knee Impact Test

ATD Serial No.: 35

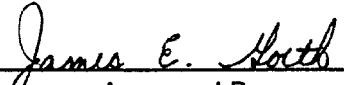
Part Serial No.: n/a

Test I.D.: KI12G

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
Probe Velocity	m/s	2.073 to 2.134	2.096	Pass
Peak Probe Force	Newtons	4715 to 5782	5361.6	Pass
Overall Test Results				Pass



Laboratory Technician



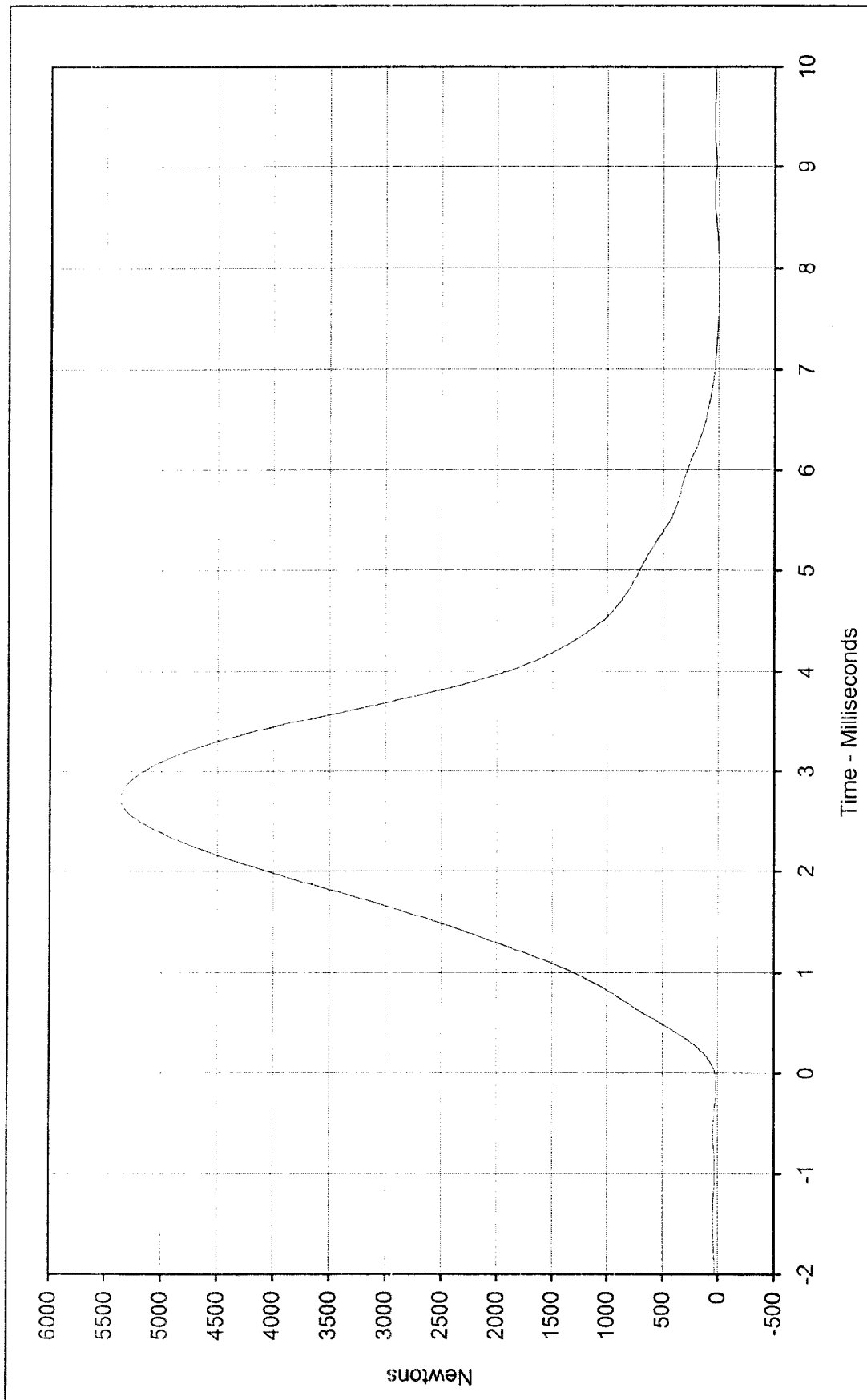
Approved By

December 28, 1998

Test Date

1/12/99

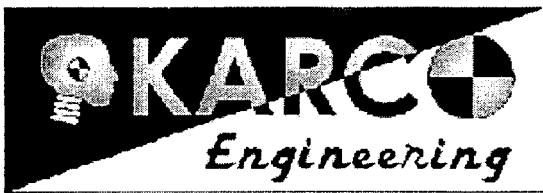
Date



Testing Program: Hybrid III Left Knee Impact Test
 Test Information: Part S/N: n/a Test I.D.: K112G



Curve Description: Probe Force
 Maximum Value: 5361.6 at 2.7 Milliseconds
 Minimum Value: -5.1 at 7.7 Milliseconds
 SAE Filter Class: 600
 Date of Test: 12/28/98
 ATD Serial No.: 35



Hybrid III Calibration Data Sheet

50TH Percentile Male

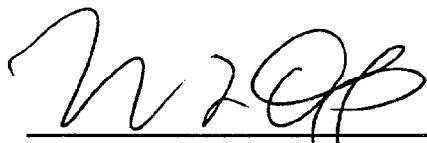
Right Knee Impact Test

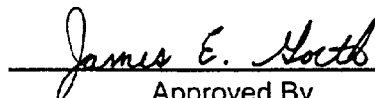
ATD Serial No.: 35

Part Serial No.: n/a

Test I.D.: KI12H

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
Probe Velocity	m/s	2.073 to 2.134	2.096	Pass
Peak Probe Force	Newtons	4715 to 5782	5384.9	Pass
Overall Test Results				Pass


Laboratory Technician

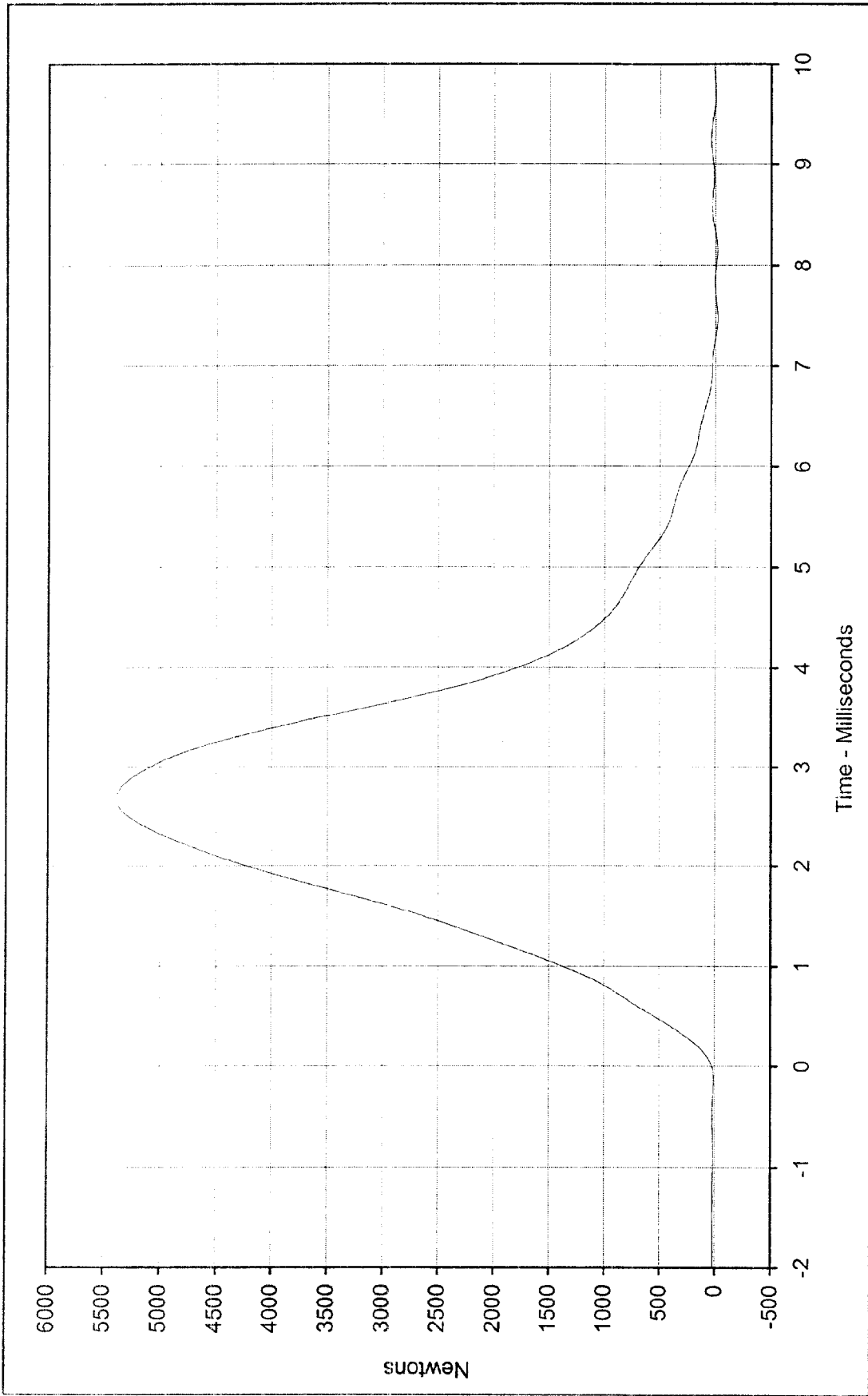

Approved By

December 28, 1998

Test Date

1/12/99

Date



Curve Description:		Testing Program		Hybrid III Right Knee Impact Test	
Maximum Value:	5384.9	at	2.7	Part S/N:	n/a
Minimum Value:	-19.7	at	7.5	Test I.D.:	K112H
SAE Filter Class:	600				
Date of Test:	12/28/98				
ATD Serial No.:	35				





Hybrid III Calibration Data Sheet

50TH Percentile Male

Head Drop Calibration

ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: HD12D

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	267.0	Pass
Peak Lateral Acceleration	G's	≤15.0	4.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass

Laboratory Technician

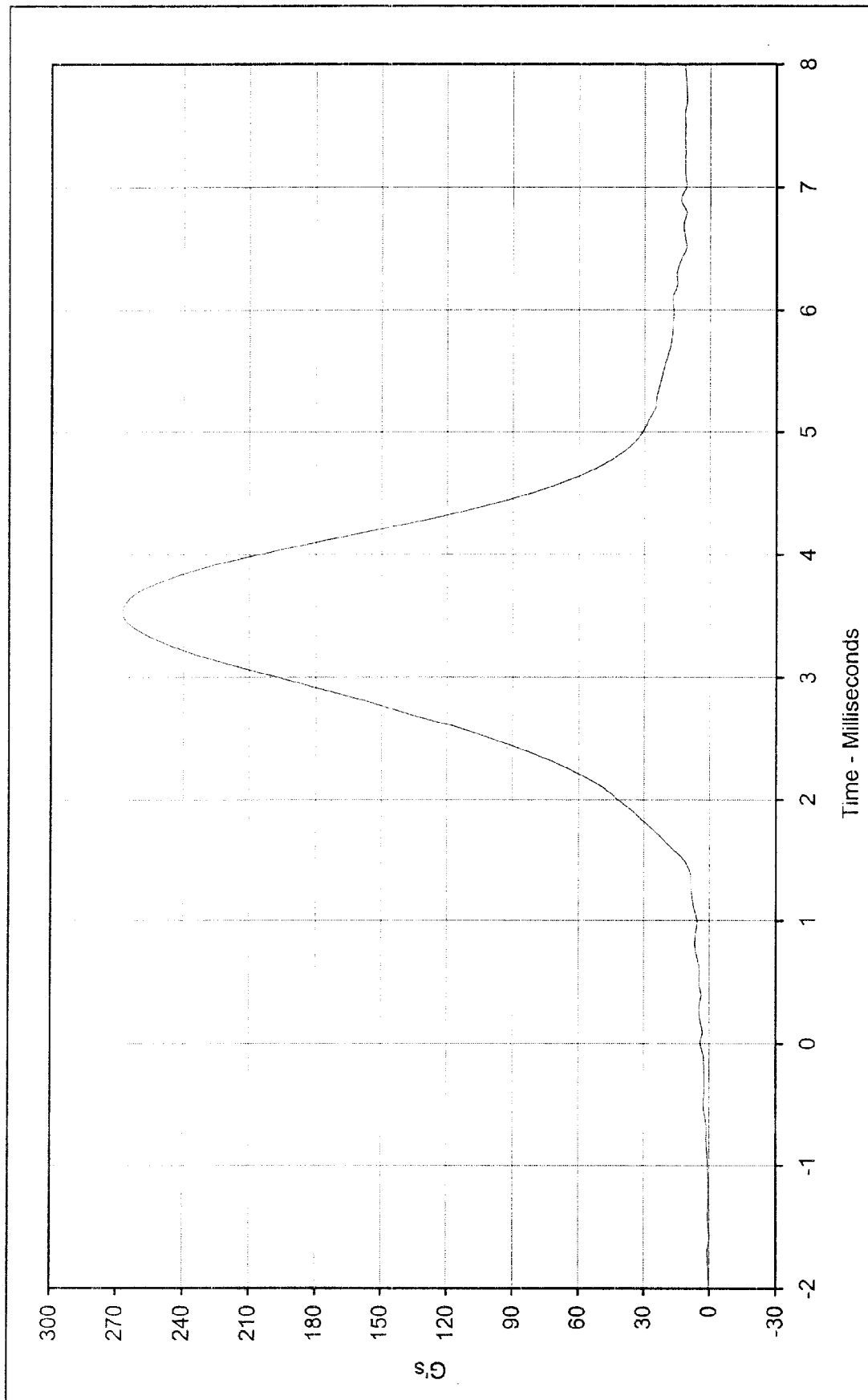
December 28, 1998

Test Date

Approved By

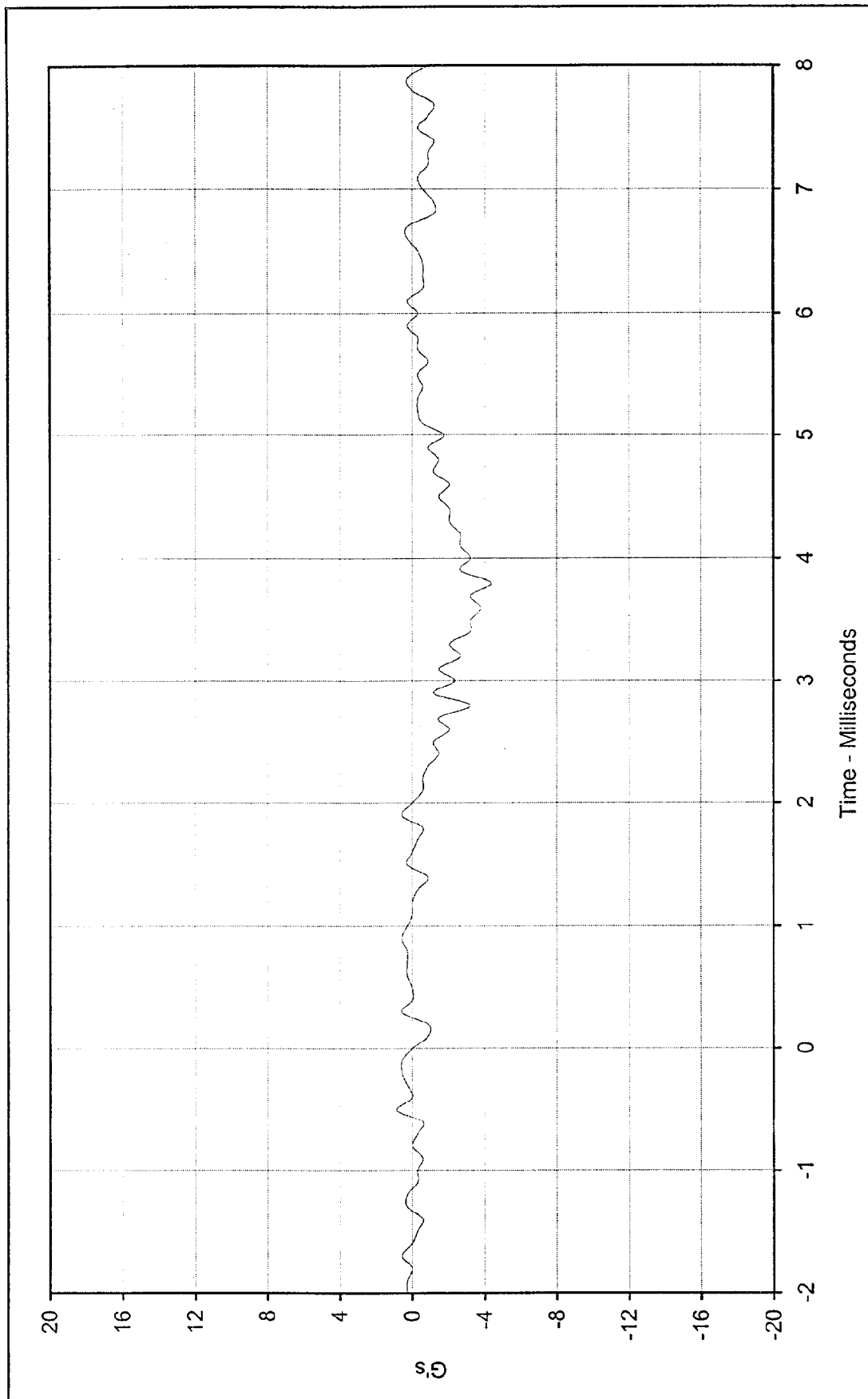
1/12/99

Date



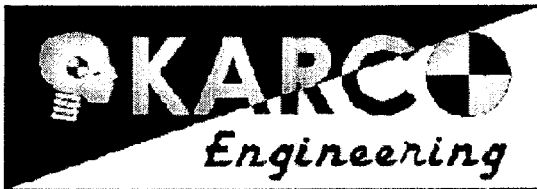
Curve Description:	Head Resultant Acceleration	Testing Program	Hybrid III Head Drop Calibration (Male)
Maximum Value:	267.0 at 3.5 Milliseconds	Test Information:	S/N of Part: n/a Test I.D.: HD12D
Minimum Value:	0.0 at -1.6 Milliseconds		
SAE Filter Class:	1000		
Date of Test:	12/28/98		
ATD Serial No.:	035		





Curve Description: Head Acceleration Y Axis Testing Program Hybrid III Head Drop Calibration (Male)
 Maximum Value: 0.9 at -0.5 Milliseconds
 Minimum Value: -4.4 at 3.8 Milliseconds
 SAE Filter Class: 1000
 Date of Test: 12/28/98
 ATD Serial No.: 035





Hybrid III Calibration Data Sheet

50TH Percentile Male

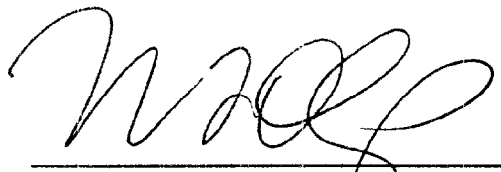
Thorax Impact Test

ATD Serial No.: 035

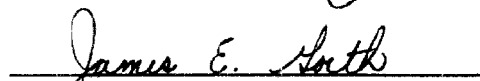
Part Serial No.: N/A

Test I.D.: CH12D

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/s	6.58 to 6.82	6.82	Pass
Peak Probe Force	Newtons	5159 to 5893	5677	Pass
Peak Sternum Displacement	CM	6.35 to 7.26	6.50	Pass
Internal Hysteresis	%	69 to 85	74.4	Pass
Overall Test Results				Pass



Laboratory Technician



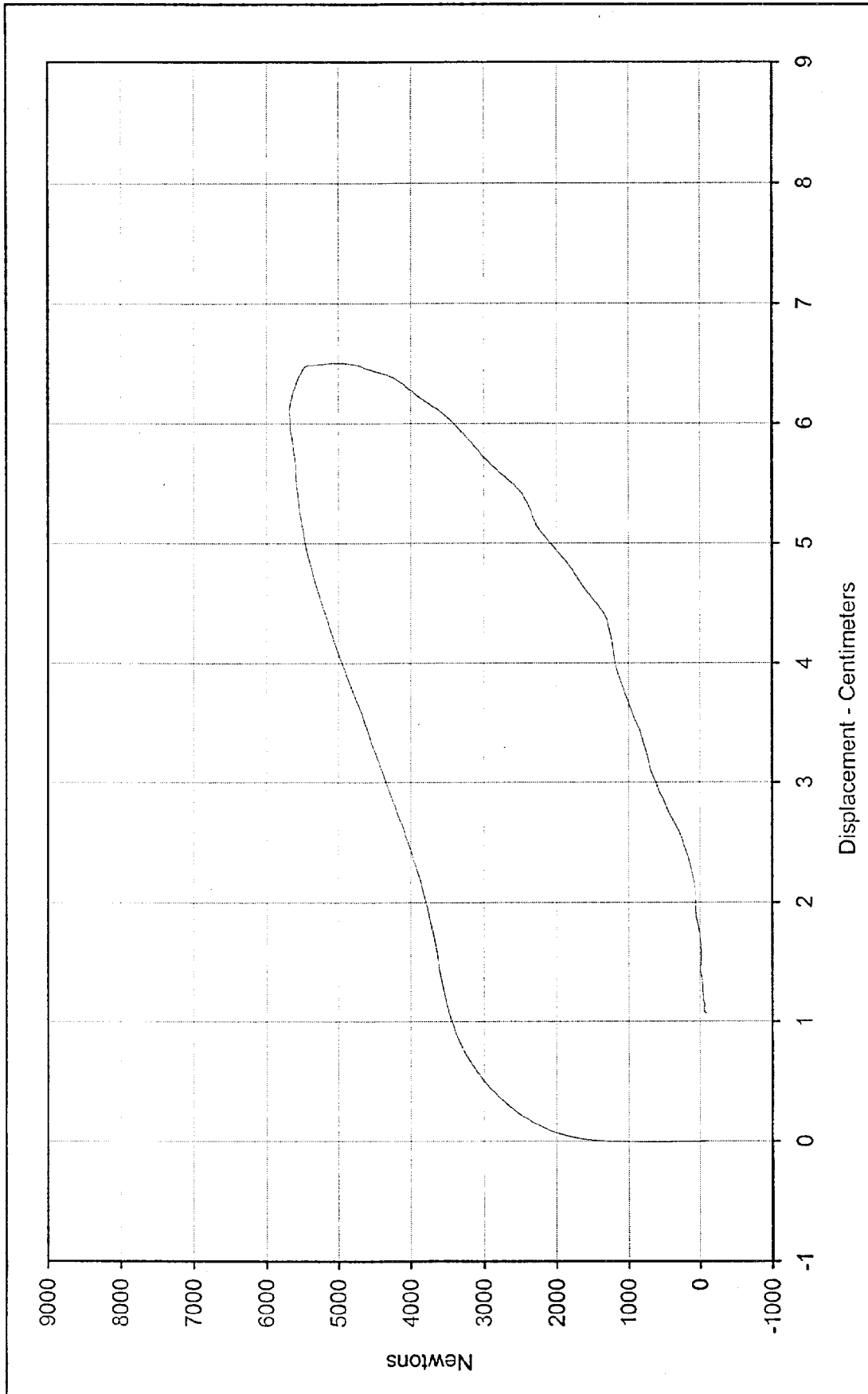
Approved By

December 29, 1998

Test Date

1/12/99

Date



Curve Description: Probe Force vs. Chest Displacement Testing Program: Hybrid III Thorax Impact Test
 Probe Force: 5677.4 Newtons Test Information: S/N of Part: N/A Test I.D.: CH12D
 Chest Displ.: 6.50 Centimeters

SAE Filter Class: 180
 Date of Test: 12/29/98
 ATD Serial No.: 035





Hybrid III Calibration Data Sheet

50TH Percentile Male

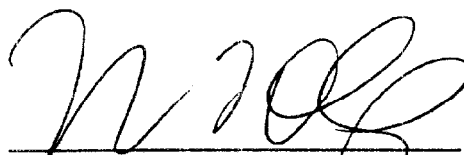
Neck Flexion Test

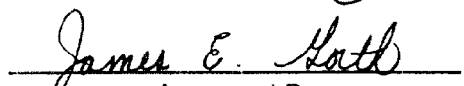
ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: NF12D

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	39	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.0	Pass
	20 Msec.	G's	17.6 to 22.6	19.4	Pass
	30 Msec.	G's	12.5 to 18.5	18.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	37.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	70.0	Pass
	Time	Msec.	57.0 to 64.0	62.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	118.4	Pass
Moment About Occipital Condyle	Maximum	N • m	84.1 to 108.5	85.8	Pass
	Time	Msec.	47.0 to 58.0	54.5	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.2	Pass
Overall Test Results					Pass

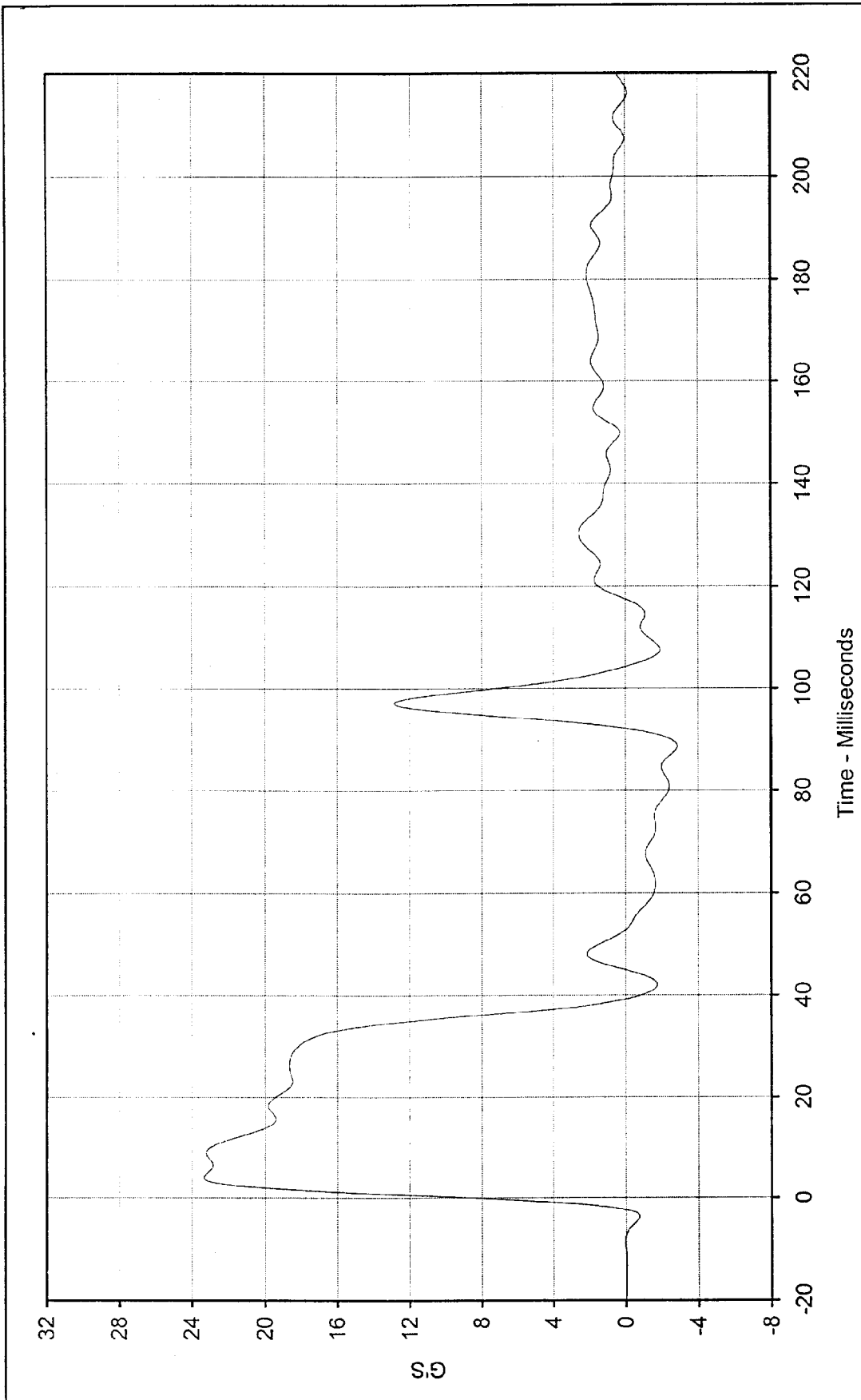

Laboratory Technician


Approved By

December 29, 1998

Test Date

1/12/99
Date



Curve Description: Pendulum Deceleration Testing Program Hybrid III Neck Flexion Test (Male)

Maximum Value: 23.4 at 4.0 Milliseconds Test Information: S/N of Part: n/a Test I.D.: NF12D

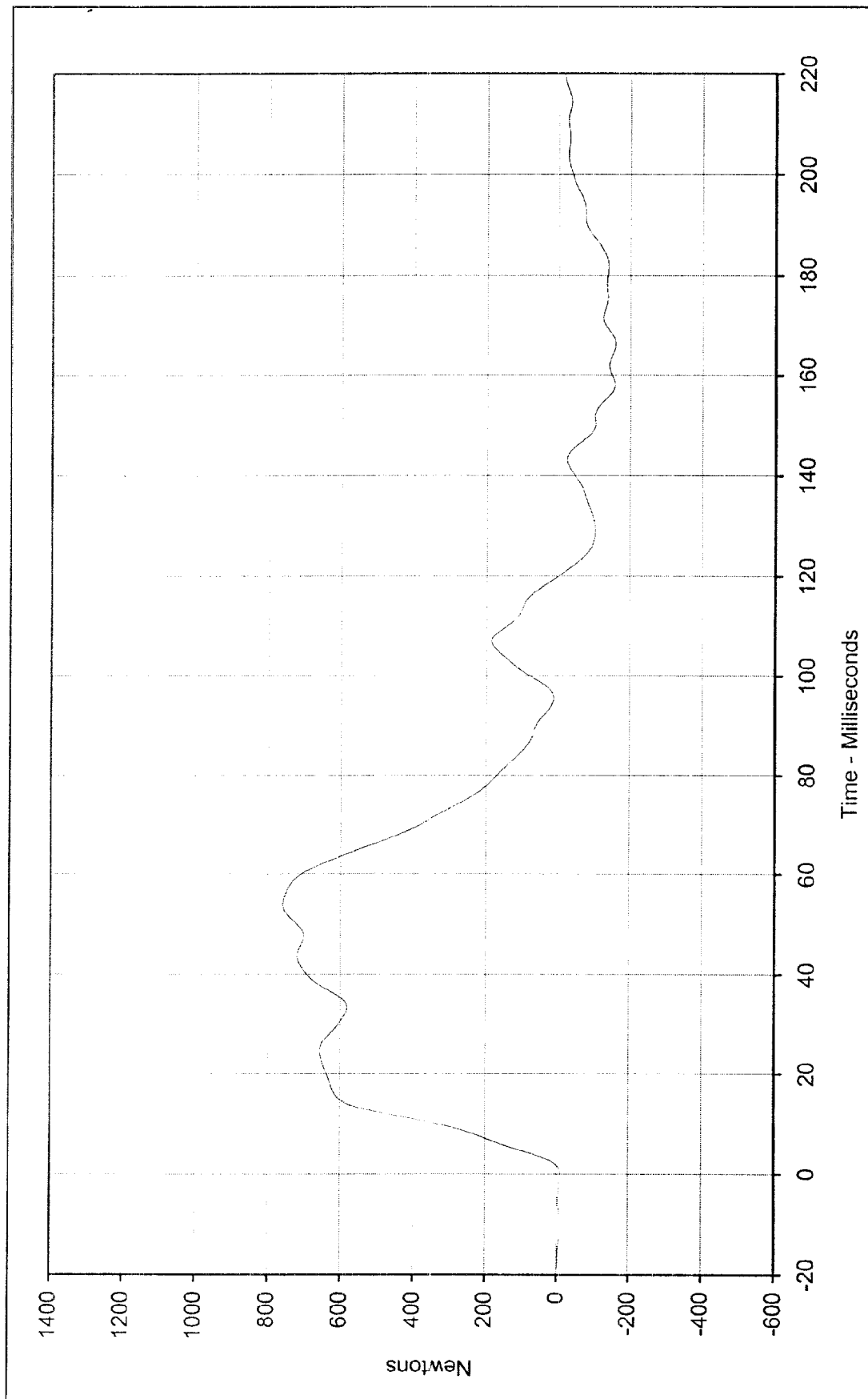
Minimum Value: -2.8 at 88.5 Milliseconds

SAE Filter Class: 60

Date of Test: 12/29/98

ATD Serial No.: 035

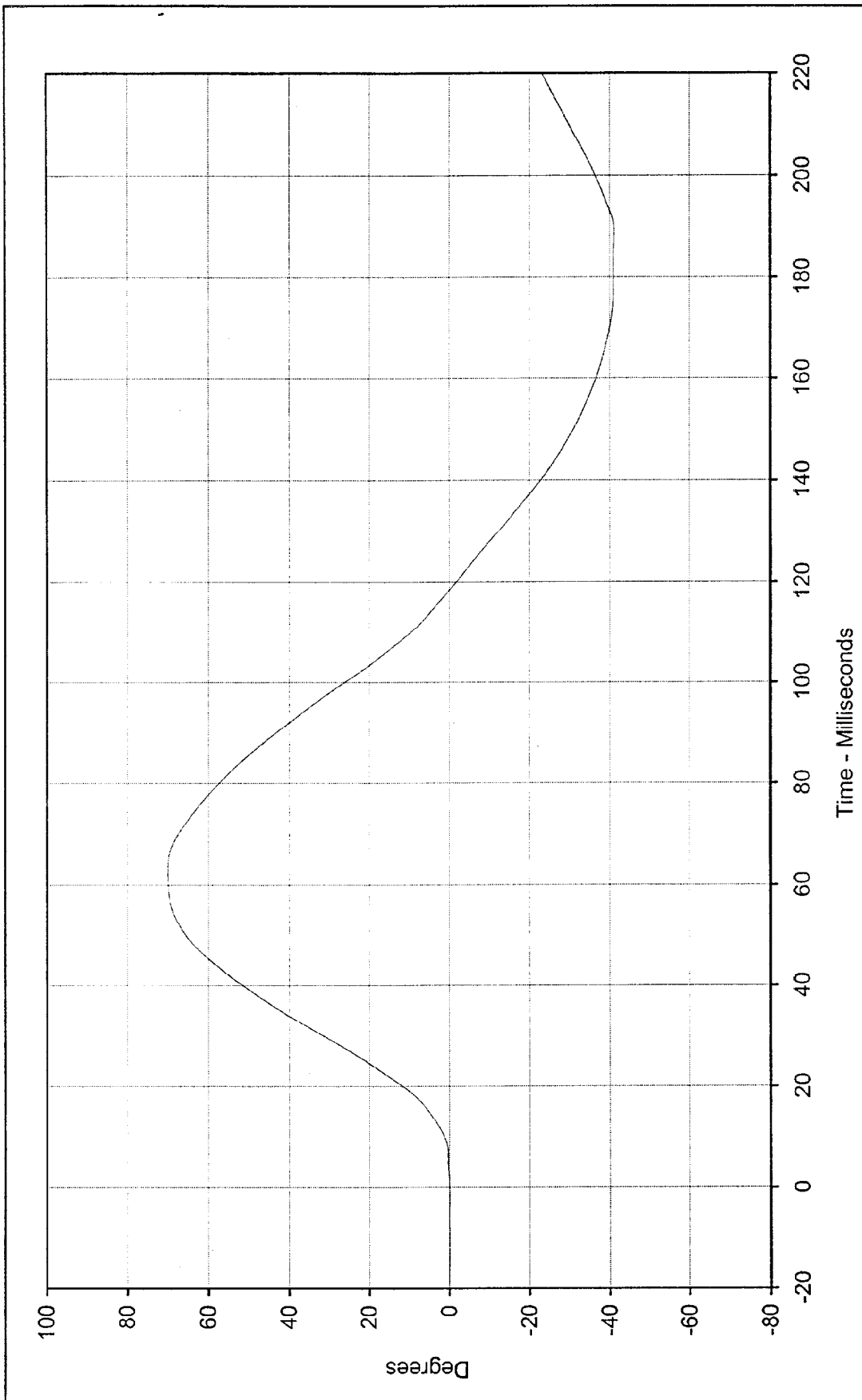




Curve Description:	Neck Force X	Testing Program	Hybrid III Neck Flexion Test (Male)
Maximum Value:	759.0 at 54.1 Milliseconds	Test Information:	S/N of Part: n/a Test I.D.: NF12D
Minimum Value:	-158.5 at 166.2 Milliseconds		

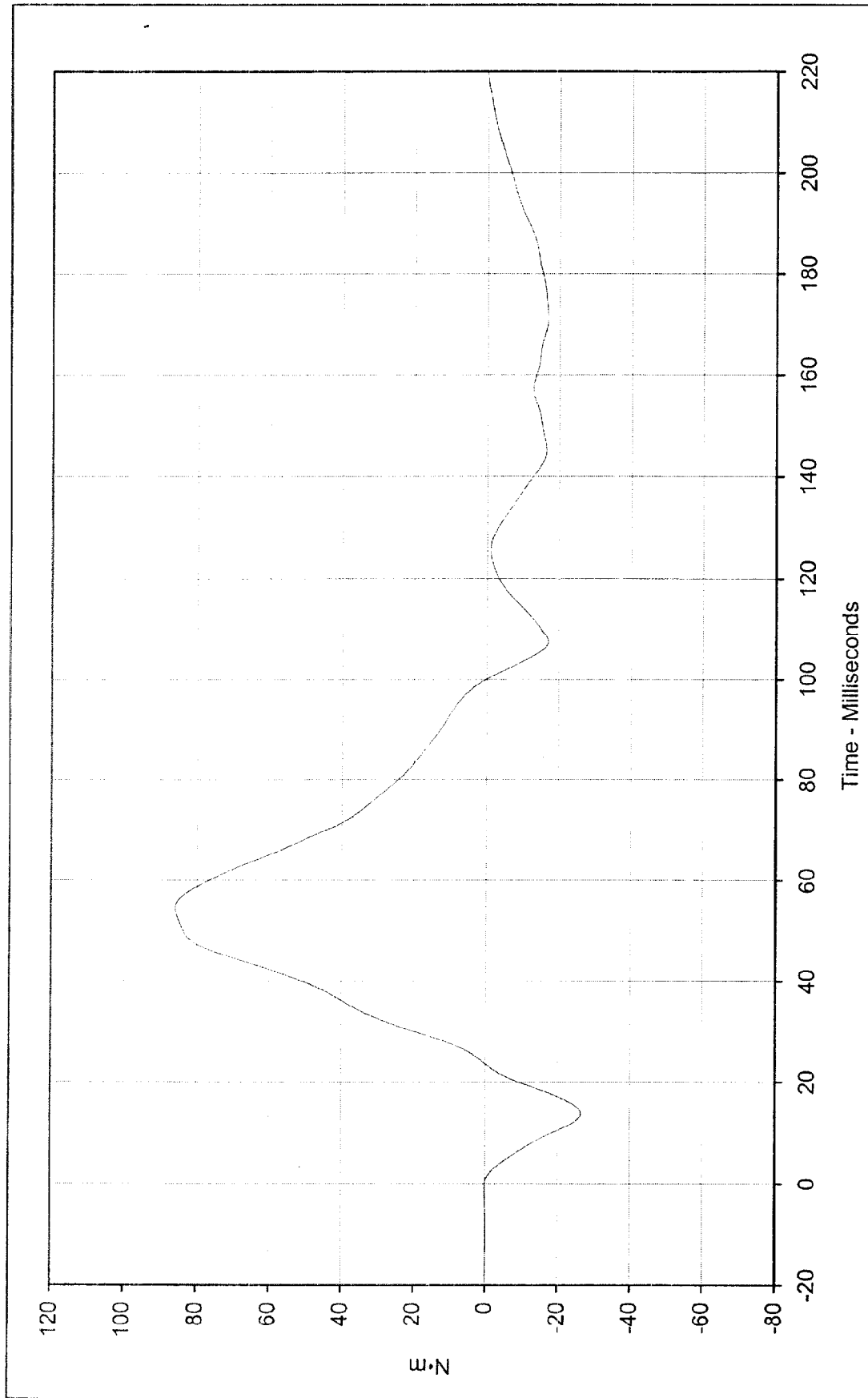


SAE Filter Class:	60
Date of Test:	12/29/98
ATD Serial No.:	035



Curve Description: _____ Testing Program: Hybrid III Neck Flexion Test (Male)
 Maximum Value: _____ Test Information: S/N of Part: n/a Test I.D.: NF12D
 Minimum Value: _____
 SAE Filter Class: 60
 Date of Test: 12/29/98
 ATD Serial No.: 035





Curve Description: Moment About Occipital Condyles

Maximum Value: 85.8 at 54.5 Milliseconds

Minimum Value: -26.5 at 13.8 Milliseconds

SAE Filter Class: 60

Date of Test: 12/29/98

ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF12D





Hybrid III Calibration Data Sheet

50TH Percentile Male

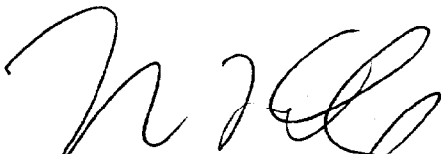
Neck Extension Test

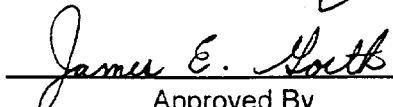
ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: NE12C

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	36	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.15	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.5	Pass
	20 Msec.	G's	14.0 to 19.0	17.1	Pass
	30 Msec.	G's	11.0 to 16.0	15.8	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.8	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	38.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	94.4	Pass
	Time	Msec.	72.0 to 82.0	80.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	162.8	Pass
Moment About Occipital Condyle	Maximum	N • m	-52.9 to- 79.9	-61.6	Pass
	Time	Msec.	65.0 to 79.0	73.1	Pass
Negative Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	141.1	Pass
Overall Test Results					Pass


 Laboratory Technician

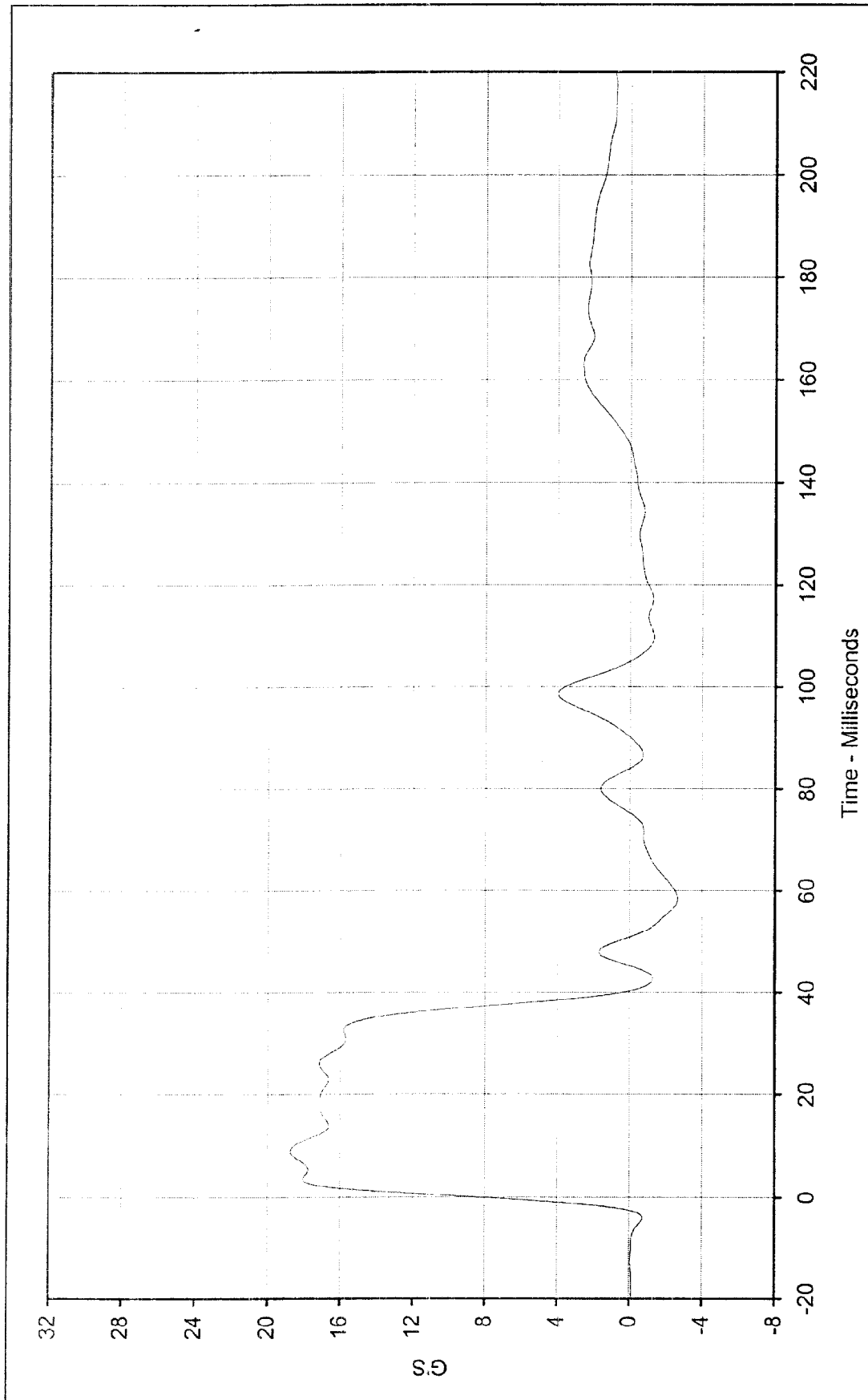

 Approved By

December 29, 1998

Test Date

1/12/99

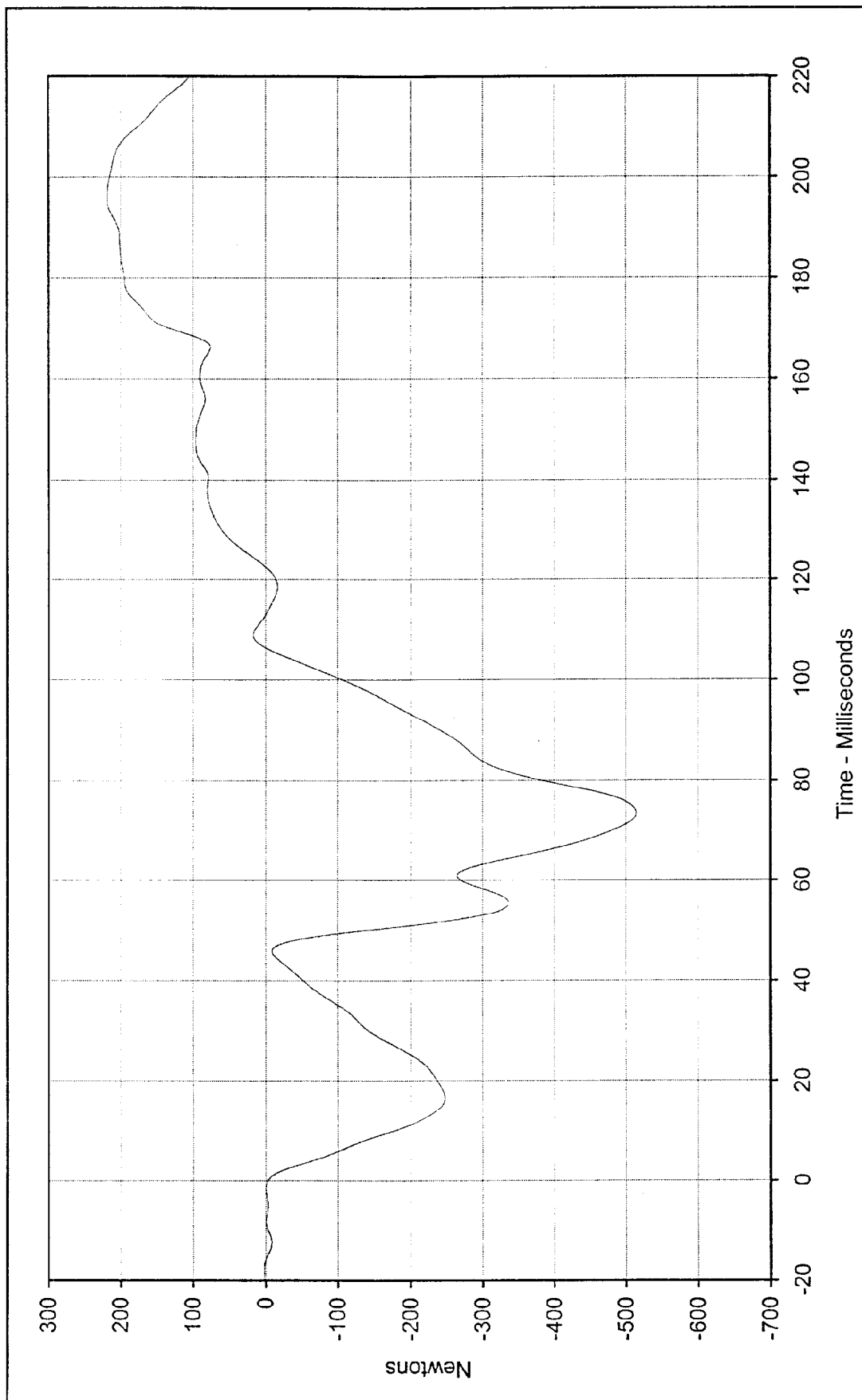
Date



Curve Description: Hybrid III Neck Extension Test (Male)
 Testing Program: S/N of Part: n/a Test I.D.: NE12C

Pendulum Deceleration
 Maximum Value: 18.7 at 9.0 Milliseconds
 Minimum Value: -2.7 at 58.3 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/29/98
 ATD Serial No.: 035

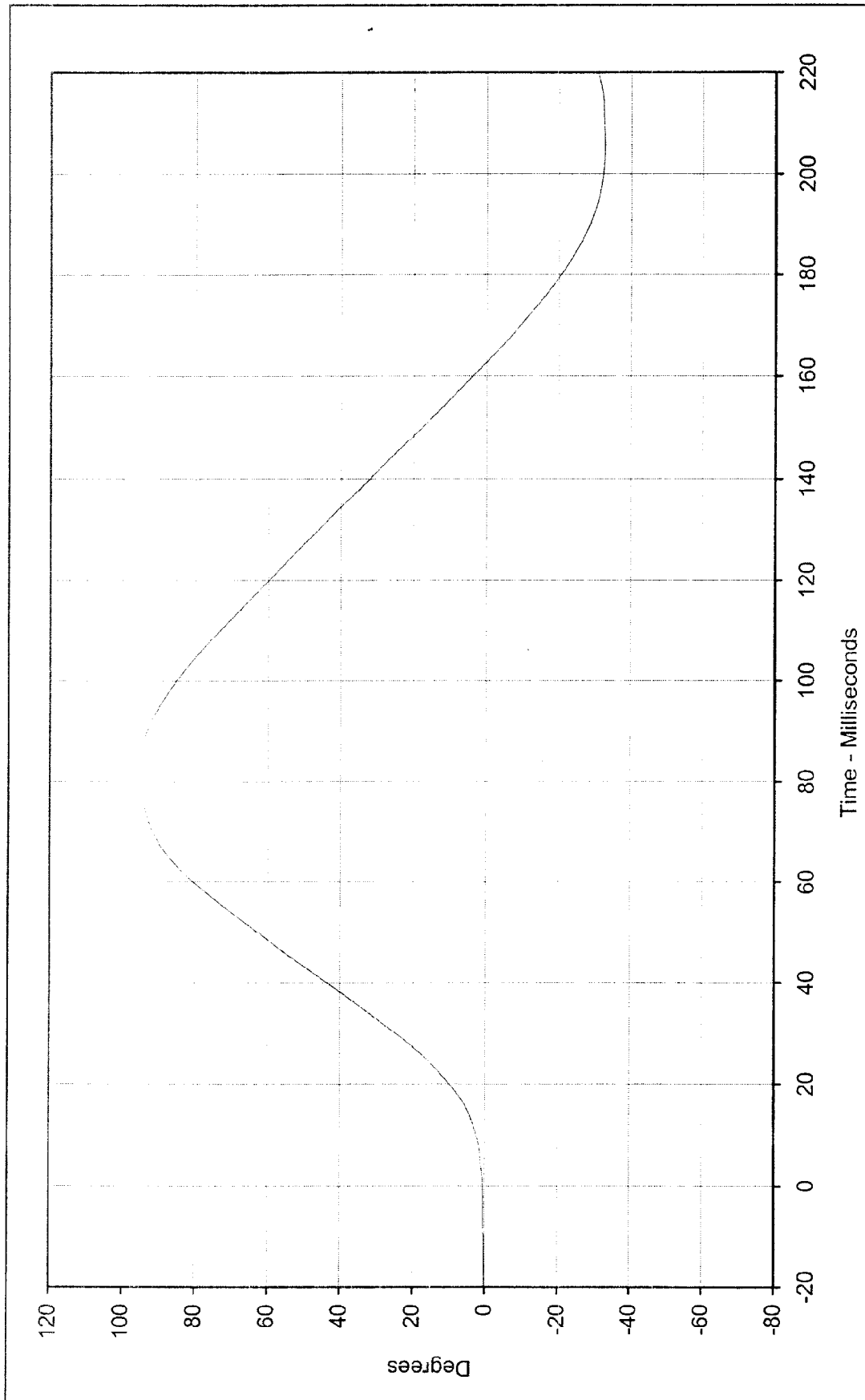




Curve Description: Neck Force X
 Maximum Value: 218.8 at 195.8 Milliseconds
 Minimum Value: -514.2 at 73.4 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/29/98
 ATD Serial No.: 035

Testing Program Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE12C

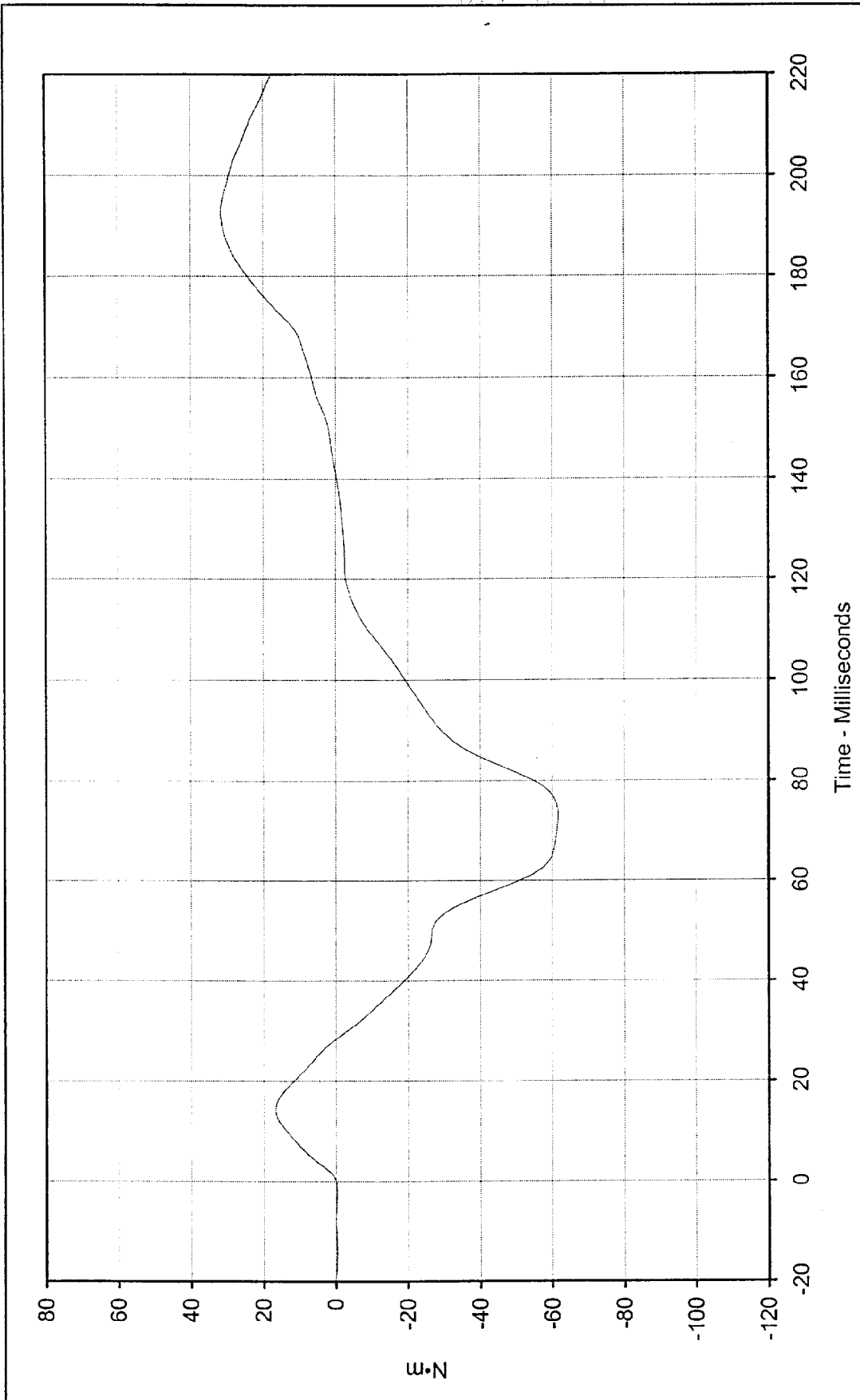




Curve Description: _____ Testing Program Hybrid III Neck Extension Test (Male)
 Test Information: S/N of Part: n/a Test I.D.: NE12C

"D" Plane Rotation
 Maximum Value: 94.4 at 80.7 Milliseconds
 Minimum Value: -32.6 at 204.9 Milliseconds
 SAE Filter Class: 60
 Date of Test: 12/29/98
 ATD Serial No.: 035





Curve Description: Moment About Occipital Condyles

Maximum Value: 31.6 at 192.8 Milliseconds

Minimum Value: -61.6 at 73.1 Milliseconds

SAE Filter Class: 60

Date of Test: 12/29/98

ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NE12C





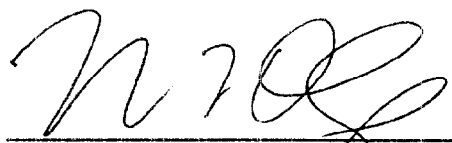
Hybrid III Calibration Data Sheet

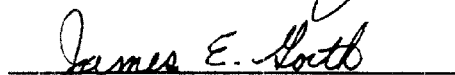
50TH Percentile Male

External Measurements

ATD Serial No.: 035Part Serial No.: N/ATest I.D.: N/A

External Measurement Data				
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.4 to 22.1	21.9	Pass
Laboratory relative humidity	%	10 to 70	44	Pass
A - Total sitting height	mm	878.8 to 889.0	886.0	Pass
B - Shoulder pivot height	mm	505.5 to 520.7	506.0	Pass
C - "H" point height	mm	83.8 to 88.9	88.0	Pass
D - "H" point from seat back	mm	134.6 to 139.7	137.3	Pass
E - Shoulder pivot from back	mm	83.8 to 94.0	92.5	Pass
F - Thigh clearance	mm	139.7 to 154.9	153.0	Pass
G - Elbow back to wrist pivot	mm	289.6 to 304.8	300.5	Pass
H - Skull cap to back line	mm	40.6 to 45.7	43.0	Pass
I - Shoulder to elbow length	mm	330.2 to 345.4	343.0	Pass
J - Elbow rest height	mm	190.5 to 210.8	208.0	Pass
K - Buttock to knee length	mm	579.1 to 604.5	602.0	Pass
L - Popliteal length	mm	429.3 to 454.7	445.0	Pass
M - Knee pivot height	mm	485.1 to 500.4	487.0	Pass
N - Buttock popliteal length	mm	452.1 to 477.5	475.0	Pass
O - Chest depth	mm	213.4 to 228.6	223.0	Pass
P - Foot length	mm	251.5 to 266.7	260.0	Pass
V - Shoulder breadth	mm	421.6 to 436.9	430.0	Pass
W - Foot breadth	mm	91.4 to 106.7	92.0	Pass
Y - Chest circumference	mm	970.3 to 1000.8	980.0	Pass
Z - Waist circumference	mm	835.7 to 866.1	864.0	Pass
AA - Location for chest circumference	mm	429.3 to 434.3	431.0	Pass
BB - Location for waist circumference	mm	226.1 to 231.1	229.0	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

December 31, 1998

Test Date

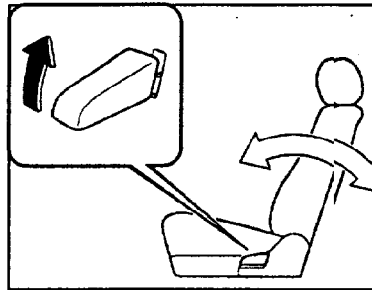
1/12/99

Date

APPENDIX F
VEHICLE OWNER'S MANUAL
OCCUPANT RESTRAINT INSTRUCTIONS

⚠ WARNING

Driver's Seat Adjustment:
Adjusting the driver's seat while the vehicle is moving is dangerous. The driver could lose control of the vehicle and have an accident. Adjust the driver's seat only when the vehicle is stopped.



■ **Seat Recline**

To change the seat-back angle, lean forward slightly and raise the lever. Then lean back to the position you want and release it.

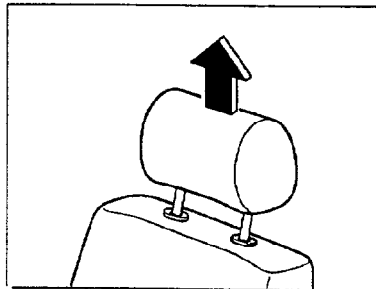
Make sure the lever returns to its original position.

⚠ WARNING

Reclining:
Sitting in a reclined position in a moving vehicle can be dangerous because you don't get the full protection from seat belts. In a collision or sudden stop, you can slide under the lap belt and suffer serious internal injuries. For maximum protection, sit well back and upright.

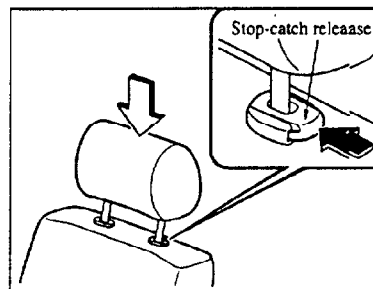
2-16

Knowing Your Mazda



■ **Head Restraint Height Adjustment**

To raise a head restraint, pull it up.

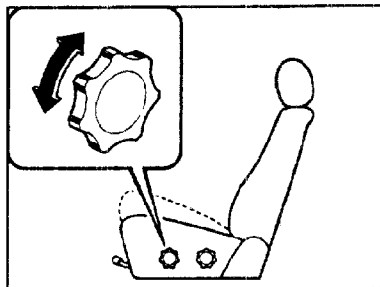


To lower, press the stop-catch release and push the head restraint down.

Adjust a head restraint so that the top parallels the top of the user's ears, never the user's neck.

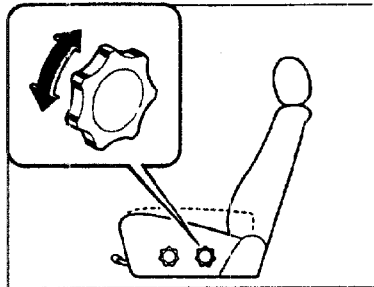
⚠ WARNING

Head Restraint Adjustment:
It's dangerous to drive with the head restraints adjusted too low or removed. With no support behind your head, your neck could be seriously injured in a collision. Always drive with the head restraints properly adjusted.



■ Seat Tilt (Driver's Seat)*

The seat cushion angle can be adjusted by rotating the dials.



2-18 *Some models.

Rear Seat

WARNING

Stacking Cargo:

Stacking luggage or other cargo higher than the seat backs or putting things on the rear package tray can be dangerous. During a sudden stop or collision, it can become a projectile that may hit and injure passengers. Don't stack things higher than the seat backs or put things on the rear package tray.

WARNING

Secure Seat:

A seat with adjustable components that are not securely latched is dangerous. In a collision or sudden stop, the seat or seat back could move, causing you to be injured. Slide the seat back and forth and wiggle the seat back to make sure they are locked in place.

Knowing Your Mazda

Seat Belt System

Seat belts help to decrease the possibility of severe injury during accidents and sudden stops. Mazda recommends that the driver and passengers always wear seat belts.

All of the seat belt retractors are designed to keep the lap/shoulder belts out of the way when not in use.

The driver's seat belt has no provisions for child-restraint systems and has only an emergency locking mode. The driver may wear it comfortably, and it will lock during a collision.

However, the front passenger's seat and rear lap/shoulder belt retractors operate in two modes: emergency locking mode and for child-restraint systems, automatic locking mode.

Emergency locking mode

If the belt has fully retracted, it will always be in the emergency locking mode until you move it into automatic locking mode by pulling the belt all the way out to its full length. In the emergency locking mode, the belt remains comfortable on the occupant and the retractor will lock in position during a collision.

If the belt feels tight and hinders comfortable movement while the vehicle is stopped or in motion, you may be in the automatic locking mode because you have pulled the belt too far out. To return to the more comfortable emergency locking mode, wait until you can stop the vehicle in a safe area, retract the belt fully and then again extend it around you.

Automatic locking mode

Always use the automatic locking mode to keep the child-restraint system from shifting to an unsafe position in the event of an accident. To get the seat belt into the automatic locking mode, pull it all the way out and connect it as instructed on the child-restraint system. It will retract down to the child restraint and stay locked on it. See the section on child-restraint systems (page

⚠ WARNING

Not Wearing Seat Belts:

Not wearing a seat belt is extremely dangerous. During a collision, occupants not wearing seat belts could hit someone or things inside the vehicle or even be thrown out of the vehicle. They could be seriously injured or even killed. In the same collision, occupants wearing seat belts would be much safer. Always wear your seat belt and make sure all occupants are properly restrained.

⚠ WARNING

Seat Belt Damaged During an Accident:

Using a damaged seat belt is dangerous. An accident could damage the belt webbing in use. A damaged seat belt cannot provide adequate protection in a collision. Have an Authorized Mazda Dealer inspect all seat belt systems in use during an accident before they are used again.

⚠ WARNING

Twisted Seat Belts:

Twisted seat belts can cause injury. In a collision, the full width of the belt isn't available to absorb the impact. This puts more force on the bones beneath the belt, which could break them or cause other serious injury. Don't wear twisted seat belts.

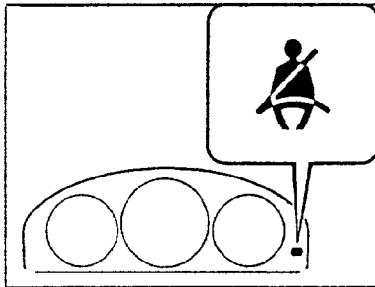
⚠ WARNING

One Belt, One Passenger:

Using one seat belt for more than one person at a time is dangerous. A seat belt used in this way can't spread the impact forces properly and the two passengers could be crushed together and seriously injured. Never use one belt for more than one person at a time.

2-22

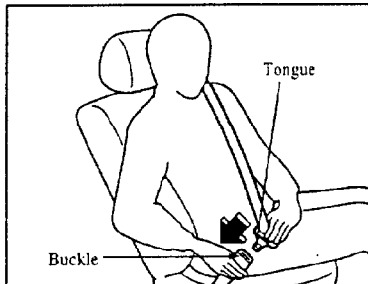
Knowing Your Mazda



■ Seat Belt Warning Light/Beep

If the driver's seat belt is not fastened when the ignition switch is turned to the ON position, a beep will sound for about 6 seconds and the seat belt warning light will remain on until the belt is fastened.

If the system does not operate correctly, consult an Authorized Mazda Dealer.



■ Front Seat Belts

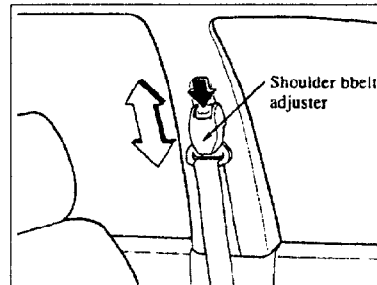
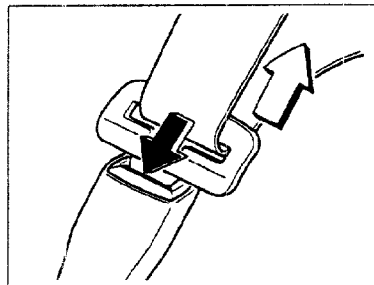
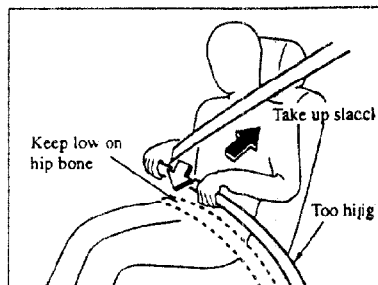
To fasten:

1. Grasp the buckle and tongue.
2. Slowly pull out the lap/shoulder belt.
3. Insert the tongue into the buckle until you hear a click.
4. Make sure the shoulder belt is snugly fitted against your body and not loose.

⚠ WARNING

Positioning the Shoulder Portion of the Seat Belt:

Improper positioning of the shoulder portion of the seat belt is dangerous. An improperly positioned belt will provide little or no protection in a collision. Always make sure the shoulder portion of the seat belt is positioned across your shoulder and near your neck, but never under your arm, on your neck, or on your upper arm.



⚠ WARNING

Positioning the Lap Portion of the Seat Belt:

The lap portion of the seat belt worn too high can be dangerous. In a collision, this would concentrate the impact force directly on the abdominal area, causing serious injury. Wear the lap portion of the belt snugly and as low as possible.

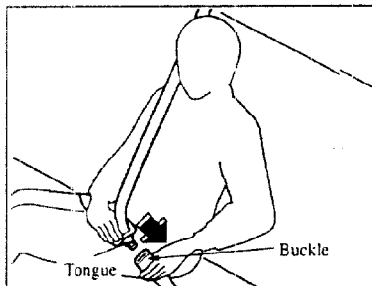
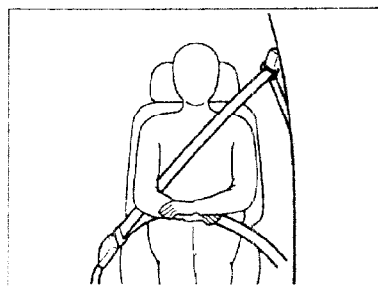
To unfasten:

Depress the button on the buckle.

▼ **Shoulder belt adjuster**

This adjusts the shoulder belt angle for a more comfortable fit. Simply push the button, move it to the desired position, and then release it. Make sure the adjuster is locked.

2-24



⚠ WARNING

Positioning the Shoulder Portion of the Seat Belt:

Improper positioning of the shoulder portion of the seat belt is dangerous. An improperly positioned belt will provide little or no protection in a collision. Always make sure the shoulder portion of the seat belt is positioned across your shoulder and near your neck, but never under your arm, on your neck, or on your upper arm.

⚠ WARNING

Positioning the Shoulder Portion of the Seat Belt:

Improper positioning of the shoulder portion of the seat belt is dangerous. An improperly positioned belt will provide little or no protection in a collision. Always make sure the shoulder portion of the seat belt is positioned across your shoulder and near your neck, but never under your arm, on your neck, or on your upper arm.

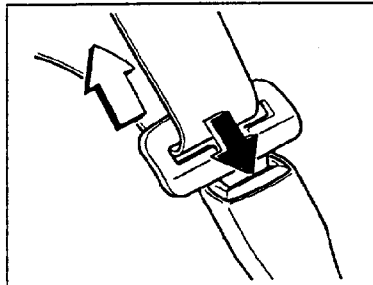
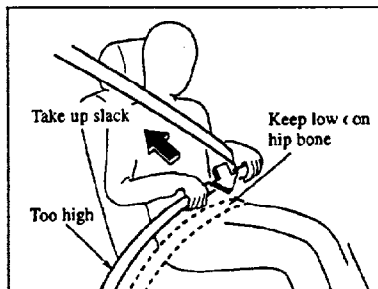
■ **Rear Seat Belts**

To fasten:

1. Grasp the tongue and pull it to the desired length.
2. Insert this tongue into the buckle until you hear a click.
3. Make sure the shoulder belt is snugly fitted against your body and not loose.

The retractor will take up excess belt and maintain tension.

2-25



NOTE

When you return the seat backs to their original positions after folding them, make sure the rear seat belts can be pulled out of the retractors. If a belt is locked, firmly pull and release it, then slowly pull it out again.

⚠ WARNING

Positioning the Lap Portion of the Seat Belt:

The lap portion of the seat belt worn too high can be dangerous. In a collision, this would concentrate the impact force directly on the abdominal area, causing serious injury. Wear the lap portion of the belt snugly and as low as possible.

To unfasten:

Depress the button on the buckle.

NOTE

If a belt does not fully retract, inspect it for kinks and twists.

2-26

belt routing instructions.

3. To get the retractor into the automatic locking mode, pull the shoulder belt portion of the seat belt until the entire length of the belt is out of the retractor. Push the child restraint firmly into the vehicle seat. Be sure the belt retracts as snugly as possible. Clicking from the retractor will be heard during retraction if the system is in automatic locking mode. If the belt does not lock, repeat this step.
4. Inspect this function before each use of the child restraint. You should not be able to pull the shoulder belt out of the retractor while the system is in the automatic locking mode. When you remove the child restraint, be sure the belt fully retracts to return the system to emergency locking mode before occupants use the seat belts.

⚠ WARNING

Child Restraint Positioning:

Child restraints used in the front seat and which face the rear are unsafe. The restraint can be hit by a deploying air bag, moved out of position, and result in your child being seriously injured. Don't use childrestraints which face the rear in the front seat.

■ Older Children

A child who has outgrown child-restraint systems should sit in the rear and use seat belts, both lap and shoulder. If the shoulder belt crosses the neck or face, move the child slightly away from the shoulder belt portion.

Accident statistics reveal that a child is safer in the rear seat.

⚠ CAUTION

A seat belt or child restraint can become very hot in a closed vehicle during warm weather. To avoid burning yourself or a child, inspect either before using.

Supplemental Restraint System

In a front-end accident, the supplemental restraint system with air bags is designed to provide protection for the driver and front seat passenger **in addition to the three-point seat belt system**. Without seat belt usage, the air bags cannot provide adequate protection during an accident. Seat belt usage is necessary to:

- Keep the passenger away from an inflating air bag.
- Reduce the possibility of injuries during an accident that is not designed for air bag inflation, such as: rollover, side or rear collisions.
- Reduce the possibility of injuries in frontal collisions that are not severe enough to activate the air bag.
- Reduce the possibility of being thrown from your vehicle.

- Reduce the possibility of injuries to lower body and legs during an accident because the air bag provides no protection to these parts.

Small children, those under 40 lbs. (18 kg), should be protected by a child restraint system.

WARNING

Air Bags without Seat Belts:

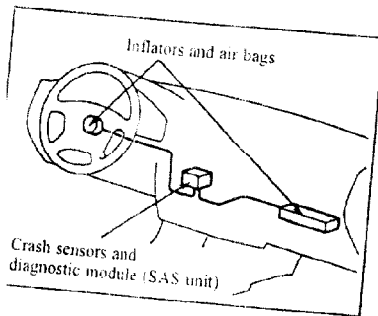
Depending only on the air bags for protection during an accident is dangerous. Alone, air bags may not prevent serious injuries. Air bags inflate only during a severe frontal or near-frontal collision. In other kinds of accidents, such as side impact, rear impact or a roll over, only the seat belt can provide protection to the front occupants. Vehicle occupants should always wear seat belts.

WARNING

Child Restraint Positioning:

Child restraints used in the front seat and which face the rear are unsafe. The restraint can be hit by a deploying air bag, moved out of position, and result in your child being seriously injured. Don't use child restraints which face the rear in the front seat.

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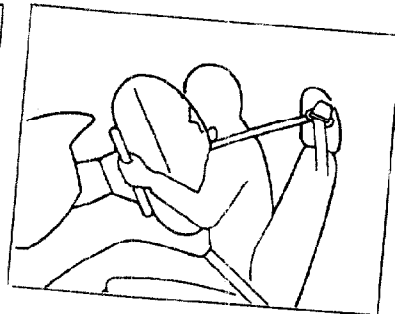
System Description

The supplemental restraint system has two basic subsystems:

The air bag system with inflators and air bags

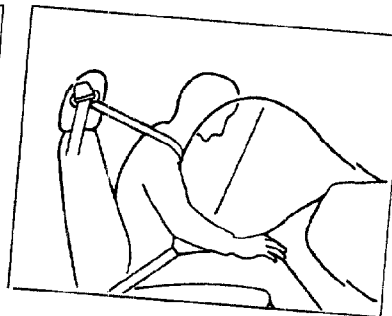
The electric system with crash sensors and diagnostic module

The air bags are mounted in the center of the steering wheel and passenger side of the dashboard, but they are out of sight when activated.



■ How Air Bags Work

When air bag crash sensors detect a severe frontal impact, an electrical current is sent to the inflators. Nitrogen and argon gases are produced to inflate both bags. After the inflation, they quickly deflate.



The air bags will function only once. After that, **the air bags will not work again and must be replaced.**

Only an Authorized Mazda Dealer can replace the system.

⚠ WARNING

Seating Position:
Sitting too close to an air-bag storage compartment or placing hands or feet on it is extremely dangerous. Air bags inflate with great force and speed. Serious injuries could occur if someone is sitting too close. The driver should always hold onto only the rim of the steering wheel. The front seat passenger should keep both feet on the floor. Front seat occupants should adjust their seats as far back as possible, always sit upright against the seat backs and wear their seat belts properly.

NOTE

- During a severe front-end impact, you will hear a loud inflation noise and some smoke will be released.

Neither will cause injury, and the smoke doesn't indicate a fire.

- The air bags will function only once. After that, the air bags will not work again and must be replaced.

Only an Authorized Mazda Dealer can replace the system.

⚠ WARNING

Hot Air Bag Inflators:
Hot air bag inflators are dangerous. Immediately after inflation, the inflators in the steering wheel and in the dashboard are very hot. You could get burned. Don't touch the internal components of the air bag storage areas after the bags have inflated.

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⚠ WARNING

Modification of the Supplemental Restraint System:
Modifying the components or wiring of the supplemental restraint system is dangerous. You could accidentally activate it or make it inoperable. Don't make any modifications to the supplemental restraint system. This includes installing trim, badges, or anything else over the air bag storage areas. It also includes installing extra electric equipment on or near system components or wiring.

⚠ WARNING

Installation of Front-End Equipment:
Installation of front-end equipment, such as frontal protection bar (kangaroo bar, bull bar, push bar, etc.), snowplow, or winches, is dangerous. The air bag crash sensor system could be affected. This could cause air bags to inflate unexpectedly, or it could prevent the air bags from inflating during an accident. Front occupants could be seriously injured. Don't install any front-end equipments to your vehicle.

⚠ WARNING

Air Bag Storage Area:
Attaching an object to an air bag storage area or placing one in front of it is dangerous. In an accident, the object could interfere with air bag inflation or injure the occupants. Always keep the air bag storage areas free of objects.

⚠ WARNING

Damaged Air Bag Sensors:

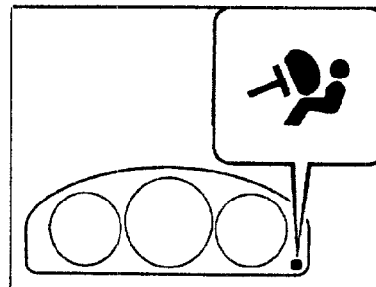
Driving with damaged air bag sensors could be dangerous. A collision, even one not strong enough to inflate the air bags, could damage the sensors. If there was a subsequent collision, a damaged sensor would not inflate the air bags. Always have an Authorized Mazda Dealer inspect the supplemental restraint system after a collision.

■ Constant Monitoring

These components are monitored by the supplemental restraint system warning light:

- SAS unit
- Air bag modules
- Related wiring

A diagnostic module continuously monitors the system's readiness. This begins when the ignition switch is turned to the ON position and continues while the vehicle is being driven.



If the supplemental restraint system is OK, the warning light comes on when the ignition switch is turned to the ON position or after the engine is cranked. After about 6 seconds it goes out.

A system malfunction is indicated when this light constantly flashes or stays on or if it doesn't come on at all. If one of these happens, consult an Authorized Mazda Dealer as soon as possible. The system may not work in an accident.

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⚠ WARNING

Self-Servicing the Supplemental Restraint System:

Self-servicing or tampering with the supplemental restraint system is dangerous. The air bags could accidentally activate or become disabled. This could cause serious injuries. Never tamper with the supplemental restraint system and always have an Authorized Mazda Dealer perform all servicing and repairs.

⚠ WARNING

Removing Interior Parts:

Removing the front dashboard, or the steering wheel could be dangerous. These parts contain air bags. The air bag could accidentally activate and cause serious injuries. Always have an Authorized Mazda Dealer remove these parts.

⚠ WARNING

Air Bag Disposal:

Disposing of an air bag can be dangerous. Unless all safety procedures are followed, injury can result. Ask an Authorized Mazda Dealer how to safely dispose of an air bag or how to scrap an air bag equipped vehicle.

■ Maintenance

This supplemental restraint system is maintenance-free. But if any of the following occurs, take your vehicle to an Authorized Mazda Dealer as soon as possible.

- Warning light flashes
- Warning light stays on
- Warning light doesn't come on when the ignition switch is turned to the ON position
- Air bags inflate

NOTE

Should you sell your Mazda, we urge you to tell the new owner it has a supplemental restraint system and that he or she should become familiar with all instructions about it in the Owner's Manual.